Journal of Physical and Chemical Reference Data

Microwave Spectra of Molecules of Astrophysical Interest. XXV. Methylamine

Cite as: J. Phys. Chem. Ref. Data **36**, 1141 (2007); https://doi.org/10.1063/1.2769382
Submitted: 16 April 2007 . Accepted: 02 July 2007 . Published Online: 05 September 2007

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Microwave Spectra of Molecules of Astrophysical Interest. XXV. Methylamine

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(Received 16 April 2007; revised manuscript received 5 June 2007; accepted 2 July 2007; published online 5 September 2007)

The microwave spectrum of methylamine in its ground vibrational state is critically reviewed and supplemented with spectral frequency calculations derived from rotation-internal rotation-inversion analysis. The review covers the frequency range from 1 to 500 GHz and includes the transitions with rotational quantum number J from 0 to 30. The calculated frequency with uncertainty at the 95% confidence limit along with the lower state energy and line strength are presented. For $J \leqslant 10$ transitions and some $J > 10$ transitions exhibiting large hyperfine splittings, the quadrupole hyperfine structure is also tabulated. © *2007 by the U.S. Secretary of Commerce on behalf of the United States. All rights reserved.*. [DOI: 10.1063/1.2769382]

Key words: hyperfine structure; interstellar molecule; large amplitude motion; methylamine; microwave spectrum; radio astronomy; rotational transitions.

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1. List of Symbols

α = torsional angle of the methyl group CH_3

γ = inversion angle of the amine group NH_2

A, B, C = rotational parameters $A \geqslant B \geqslant C$, $\bar{B} = 0.5(B+C)$

$\Delta_J, \Delta_{JK}, \Delta_K, \delta_J, \delta_K$ = quartic centrifugal distortion parameters

$\Phi_J, \Phi_{JK}, \Phi_{KJ}, \Phi_K, \phi_K$ = sextic centrifugal distortion parameters

$\chi_{xx}, \chi_{yy}, \chi_{zz}$ = elements of quadrupole coupling tensor, $\chi_+ = \chi_{zz}$, $\chi_- = \chi_{yy} - \chi_{xx}$

ρ, ρ_K = internal rotation interaction parameters[2]

$h_{nV}, h_{nJ}, h_{nK}, q_n, f_n$, etc., $n = 2, 3, \ldots$ = tunneling parameters that describe torsional tunneling motion (odd $n = 3, 5, \ldots$) and inversion tunneling motion (even $n = 2, 4, \ldots$)[1,2,9,14]

μ, μ_x, μ_y, μ_z = electric dipole moment and components of the dipole moment along the molecular-fixed axis system

$\mu^2 S$ = the product of the square of the dipole moment (μ^2) and transition line strength (S)

W_{st} = nuclear spin statistical weight

A_1, A_2, B_1, B_2, $E_{1\pm1}$, and $E_{2\pm1}$ = torsion-inversion-rotation symmetry species representing irreducible representations of the permutation-inversion group G_{12}

J = rotational angular momentum quantum number

K_a = projection of J along the principal a axis in the limiting prolate symmetric top

F = total angular momentum quantum number including the nuclear spin I from the nitrogen atom

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Conversion factor = 1 cm^{-1} = 29 979.2458 MHz

2. Introduction

The present work is a part of a series of critical reviews on molecules identified in interstellar molecular clouds. Predicted and observed transition frequencies, energy levels, and line strengths for methylamine, CH_3NH_2, are provided for the frequency range between 1 and 500 GHz and for the range of quantum numbers $0 \leqslant J \leqslant 30$ and $0 \leqslant K_a \leqslant 15$. Also, since some hyperfine splittings in the methylamine spectrum can reach values up to 1 MHz, we decided to tabulate the frequencies of quadrupole hyperfine components for the low J transitions ($J \leqslant 10$) and some $J > 10$ transitions exhibiting large hyperfine splittings. The review is based on the recent progress in measuring, assigning, and fitting of the rotational spectrum of the ground vibrational state of methylamine,[1] CH_3NH_2, a spectrum complicated by both internal rotation of the methyl top and inversion of amino group. The phenomenological Hamiltonian used in the present work is based on the group-theoretical high-barrier tunneling formalism developed for methylamine by Ohashi and Hougen.[2] The model in use includes 53 parameters whose values were determined from the fit of 850 far-infrared and 696 microwave transitions in the ground state. In this fit almost all observed spectral lines are reproduced to within their measurement uncertainties and the overall weighted standard deviation of 0.8 is achieved.

3. Organization of Tables

In the following subsections we describe the molecular constants employed in the analysis as well as a procedure for the line strength calculation in the group-theoretical high-barrier tunneling formalism used for methylamine. Also we discuss the format of Table 2 containing the microwave transitions of CH_3NH_2 in order of frequency and different limits adopted for calculation of the transitions to keep this table at reasonable length.

3.1. Molecular Parameters

The parameters of the rotation-internal rotation-inversion Hamiltonian presented in Table 1 were obtained from a nonlinear least-squares fit of 850 far-infrared and 696 microwave transitions in the ground vibrational state of methylamine $^{12}CH_3{}^{14}NH_2$. The fit uses the group-theoretical high-barrier tunneling formalism developed for methylamine by Ohashi and Hougen.[2] This formalism describes the large amplitude vibrational motions in terms of tunneling frequencies and tunneling paths between energetically equivalent molecular frameworks separated by barriers hindering internal rotation of the methyl top and inversion of the amino group. The tunneling formalism proved to be most efficient in the case when several large amplitude vibrations are present in a molecule. In addition to the rotation-internal rotation-inversion Hamiltonian parameters, Table 1 contains the quadrupole coupling constants for methylamine obtained from the nonlinear least-squares fit of 893 hyperfine components. Ilyushin *et al.*[1] describe in detail the analysis of the observed quadrupole hyperfine structure of the microwave transitions.

The global fit of the observed transitions to 53 parameters of the rotation-internal rotation-inversion Hamiltonian in use is slightly different from the previous fit described by Ilyushin *et al.*[1] In the course of preparation of the current review, we have noticed that some of the old microwave measurements[3–8] summarized by Ohashi *et al.*[9] and used by Ilyushin *et al.*[1] were rounded up to the megahertz digit (following Ohashi *et al.*[9] this group of measurements was used by Ilyushin *et al.*[1] with uncertainty of 1 MHz). In the current fit we replaced these rounded frequencies by the original unrounded measured values.[3–8] In addition an inspection of the tables with the old measurements[3–8] gave us an opportunity to assign 24 new lines. Also we decided to assign an uncertainty of 0.5 MHz for the group of measurements used previously[1] with uncertainty of 1 MHz since after the refit described here, only a small fraction of transitions in this group had observed minus calculated values larger than 0.5 MHz. The rms deviation for this group of data has reduced from 0.403 MHz in the study of Ilyushin *et al.*[1] to 0.315 MHz in the current fit. All other groups of measurements[1,10,11] were weighted as described by Ilyushin *et al.*[1] (the weights in the fit were proportional to the reciprocals of the estimated uncertainties squared) and rms deviations for the other groups remained practically the same as in the study of Ilyushin *et al.*[1] (see Table 2 by Ilyushin *et al.*[1]). The set of 53 parameters of the rotation-internal rotation-inversion Hamiltonian used was the same as that by Ilyushin *et al.*[1] and the new parameter values obtained here differ from those of Ilyushin *et al.*[1] within statistical uncertainties.

The fitting program used by Ilyushin *et al.*[1] (supplied by Ohashi[12]) was modified to provide the line strength calculations for methylamine transitions. The total line strength of a microwave transition between the level L' containing $(2J'+1)M'$ components and the level L containing $(2J+1)M$ components is calculated as

$$S(L',L) = \frac{1}{\mu^2}\sum_M 3|\langle J',K_a',\Gamma',M|\mu_Z|J,K_a,\Gamma,M\rangle|^2, \qquad (1)$$

where μ^2 is the square of the electric dipole moment; $\mu_Z = \Sigma_g \Phi_{Zg}\mu_g$ is the instantaneous electric dipole moment component along the laboratory-fixed Z axis (the Φ_{Zg} represent direction cosines and μ_g the electric dipole moment component along the molecular-fixed $g=x,y,z$ axis); $|J,K_a,\Gamma,M\rangle$ and $|J',K_a',\Gamma',M\rangle$ are the wave functions that represent levels L' and L. The overall torsion-inversion-rotation wave function $|J,K_a,\Gamma,M\rangle$ can be written as

$$|J,K_a,\Gamma,M\rangle = \sum_k C_k^{J,K_a,\Gamma}|\Gamma(kJ)\rangle, \qquad (2)$$

where $|\Gamma(kJ)\rangle$ are torsion-inversion-rotation basis functions used to set up the Hamiltonian matrix which are the combinations of $|^{tw}E_t\rangle$ torsion-inversion wave functions and symmetric rotor basis functions $|J,K,M\rangle$ [explicit expressions

for the $|\Gamma(kJ)\rangle$ torsion-inversion-rotation basis functions can be found in the study by Ohashi *et al.*[9]; $C_k^{J,K_a,\Gamma}$ are eigenvector coefficients obtained after diagonalization of the Hamiltonian matrix. In view of the large amplitude internal rotation of the methyl top and inversion of amino group, the electric dipole moment components along molecular-fixed axes $\mu_g=\mu_g(\alpha,\gamma)$ are considered as functions of the methyl torsion angle α and amino umbrella angle γ. So, the line strength can be expressed as

$$S(L',L)=\frac{1}{\mu^2}\sum_M 3\left|\sum_g\sum_{k'}\sum_k C_{k'}^{J',K_a',\Gamma'}C_k^{J,K_a,\Gamma}\times\langle\Gamma'(k'J')|\mu_g(\alpha,\gamma)\Phi_{Zg}|\Gamma(kJ)\rangle\right|^2, \quad (3)$$

where $\langle\Gamma'(k'J')|\mu_g\Phi_{Zg}|\Gamma(kJ)\rangle$ is a combination of the terms of the $\langle J',K',M|\Phi_{Zg}|J,K,M\rangle\langle^{tw}E_{t'}|\mu_g(\alpha,\gamma)|^{tw}E_t\rangle$ type (see the study by Ohashi *et al.*[9] for more details on the exact expressions of the basis functions used to set up the Hamiltonian matrix). The expressions for the direction cosine matrix elements $\langle J',K',M|\Phi_{Zg}|J,K,M\rangle$ can be found elsewhere[13] and the dipole moment matrix elements $\langle^{tw}E_{t'}|\mu_g(\alpha,\gamma)|^{tw}E_t\rangle$ are expressed as Fourier expansions as usually done for all Hamiltonian terms in the group-theoretical high-barrier tunneling formalism in use.[1,2,9,14]

The molecular-fixed components of the dipole moment μ_x,μ_y are of species E_{3m-p} and that of μ_z is of species A_1 in the extended permutation-inversion group G_{12}^m used in the present treatment.[2] The Fourier series expression for the $\mu_x\pm i\mu_y$ (a combination of μ_x,μ_y components which is not mixed by the generating operations of the group G_{12}^m)[2] becomes

$$\langle^{tw}E_{u+}|\mu_x\pm i\mu_y|^{tw}E_{t+}\rangle = \langle 1\|\mu_\pm\|1\rangle + 2\sum_{n=1}^{3m-1}\langle 1\|\mu_\pm\|1+n\rangle\cos\left[\left(t\pm\frac{3m-p}{2}\right)n\frac{2\pi}{6m}\right] + \delta_{3m-p,even}(-1)^{t+(3m-p)/2}\langle 1\|\mu_\pm\|1+3m\rangle, \quad (4)$$

when subscripts on the symmetry species obey the selection rules $t=u\mp(3m-p)$ modulo $6m$ and which is zero otherwise. For the μ_z component we have

$$\langle^{tw}E_{u+}|\mu_z|^{tw}E_{t+}\rangle = \langle 1\|\mu_z\|1\rangle + 2\sum_{n=1}^{3m-1}\langle 1\|\mu_z\|1+n\rangle\times\cos\left[(n-1)t\frac{2\pi}{6m}\right] + (-1)^t\langle 1\|\mu_z\|1+3m\rangle, \quad (5)$$

when subscripts on the symmetry species obey the selection rules $u-t=0$ modulo $6m$ and which is zero otherwise.

In the terminology of Ohashi and Hougen,[2] there are both tunneling and nontunneling contributions to $\langle^{tw}E_{t'}|\mu_g(\alpha,\gamma)|^{tw}E_t\rangle$ matrix elements. We do not have any information on the tunneling contributions of dipole moment matrix elements and therefore they were set to zero for intensity calculations in the present review. The choice of nontunneling contributions is suggested by the fact that in the absence of Coriolis interactions, the $\Delta K_a=0$ transitions are caused by the μ_z component and $\Delta K_a=\pm 1$ transitions are caused by the $\mu_x\pm i\mu_y$ component (see discussion in Sec. 6 of the study of Ohashi and Hougen[2]). Our calculations show that mixing due to Coriolis interactions of μ_z and $\mu_x\pm i\mu_y$ contributions in methylamine is rather small, so that the situation essentially corresponds to the ordinary asymmetric rotor with nonzero μ_a and μ_c components where the $\Delta K_a=0$ transitions occur due to the μ_a component and $\Delta K_a=\pm 1$ transitions occur due to the μ_c component. Therefore we took the nontunneling contribution of dipole moment matrix elements to be $\langle 1\|\mu_z\|1\rangle=\mu_a$ and $\langle 1\|\mu_\pm\|1\rangle=\mu_c$. This correspondence is also supported by the fact that the s term of the Hamiltonian in use, which is responsible for the off-diagonal contributions to the moment of inertia tensor due to the internal-axis-method treatment of internal rotation in methylamine,[14] was not required by the final fit;[1] thus, the pure rotational part of the Hamiltonian corresponds to the principal axis system of the molecule. For the corresponding matrix element values in our calculations, we used $\langle 1\|\mu_z\|1\rangle=-0.307$ D, $\langle 1\|\mu_\pm\|1\rangle=1.258$ D, and $\mu^2=1.677$ D^2 as obtained, respectively, for μ_a and μ_c via Stark effect measurements by Lide, Jr.[15] and corrected by Takagi and Kojima.[7]

3.2. Microwave Transitions

Table 2 contains the predicted and observed rotational transitions for methylamine. For each spectral line, the first eight columns contain the upper state and lower state quantum numbers in the form J, K_a, and Γ, plus the total angular momentum quantum number $F=J+I$, $J+I-1$, $J-I$, where I is the nuclear spin angular momentum quantum number for the ^{14}N nucleus, with $I=1$. According to the adopted energy level labeling scheme,[9] each vibration-rotation-tunneling energy level is characterized by the usual quantum numbers J and K_a and by an overall torsion-inversion-rotation symmetry species Γ corresponding to an irreducible representation of the permutation-inversion group G_{12}. The labels of the irreducible representations of the point group C_{6v}, which is isomorphic with G_{12}, are used as the symbols for Γ's, i.e., A_1, A_2, B_1, B_2, E_1, and E_2. The symmetry labels of doubly degenerate levels E_1 and E_2 have additional ± 1 labels to distinguish between two degenerate levels with the same J and K_a (see discussion by Ohashi *et al.*[9]). For the $K_a=0$ levels where +1 and −1 labels have no meaning since there are only one E_1 and one E_2 levels, it was arbitrarily chosen to call all $K_a=0$ E levels as +1 levels. In the case when a measured line corresponds to the unresolved pair of the transitions $J,K_a,A_1\leftarrow J',K_a',A_2$ and $J,K_a,A_2\leftarrow J',K_a',A_1$ (or $J,K_a,B_1\leftarrow J',K_a',B_2$ and $J,K_a,B_2\leftarrow J',K_a',B_1$) the labels Γ =A (or B) appear in Table 2 to note that the average of the

two transition frequencies is considered. The labels $\Gamma = A$ (or B) appear only for measured lines and, for completeness in the current review, we give the calculated frequencies for the unresolved transitions also.

The quantum numbers for a given transition are followed by the observed frequency, when available, with experimentally estimated uncertainty (type B, $k=1$)[16] in parentheses in megahertz. We present the hyperfine free rotational transition frequencies which were used in the final fit of the rotation-internal rotation-inversion Hamiltonian parameters presented in Table 1. In the next column the calculated transition frequencies with calculated uncertainties in parentheses are presented, which were computed using the molecular parameters from Table 1. The calculated uncertainties were estimated from the variance-covariance matrix as described by Kirchhoff[17] and correspond approximately to 95% confidence interval (i.e., type A, $k=2$, representing twice the standard deviation).[16] The next two columns represent the energy of the lower state (E_l) in cm^{-1} and the product $\mu^2 S$ of the square of the dipole moment (μ^2) and transition line strength (S), calculated as discussed in the previous section [see expression (1)]. The $\mu^2 S$ value for each transition is followed by the nuclear spin statistical weight (W_{st}) which equals 1 for A_1, A_2, and E_2 species and equals 3 for B_1, B_2, and E_1 species. The last column gives the reference from which the measurements included in Table 2 were obtained.

As was already mentioned, the hyperfine quadrupole splittings in methylamine spectrum can reach values up to 1 MHz and therefore we decided to tabulate the frequencies of quadrupole hyperfine components for the low J transitions ($J \leqslant 10$) and some $J > 10$ transitions exhibiting large hyperfine splittings. For $J > 10$ transitions the hyperfine components are presented only if the quadrupole splitting exceeds an estimated linewidth observed for interstellar lines (recalculated from km s^{-1} to megahertz for a given transition frequency). As a typical linewidth we took 3 km s^{-1} which is equal to (or less than) the linewidths observed in such sources as Orion KL and Sgr B2 where methylamine lines were detected.[18,19] Also, to limit the size of Table 2, we have presented only the most intense hyperfine quadrupole components for which the relative intensities exceeded 5% of the total intensity of the rotation transition (i.e., mainly with the selection rule $\Delta F = \Delta J$). The expressions used for the relative intensities of the quadrupole hyperfine components can be found elsewhere.[20] For the quadrupole components, the line strength column contains the product of the $\mu^2 S$ for a given rotational transition and relative intensity of the quadrupole component.

The rotational transitions in the ground vibrational state of methylamine obeying the symmetry selection rules $A_1 \leftrightarrow A_2$, $B_1 \leftrightarrow B_2$, $E_1 \leftrightarrow E_1$, and $E_2 \leftrightarrow E_2$ were calculated for the range of rotational quantum numbers $0 \leqslant J \leqslant 30$ and $0 \leqslant K_a \leqslant 15$. We have included in the calculation rotational transitions with rotational selection rules $\Delta J = 0, \pm 1$ and $\Delta K_a = 0, \pm 1, \pm 2, \pm 3$. In Table 2, those transitions which match the frequency range requirement (from 1 to 500 GHz) and whose line strength exceeds the limit of 0.01 are included. The transitions in Table 2 are sorted in order of frequency with hyperfine quadrupole components following the corresponding rotational transition. As a convenience to the user, an asterisk (*) follows the calculated uncertainty of the pure rotational transition to distinguish more easily the calculated frequencies of the rotational transitions from hyperfine quadrupole components (also note that the upper state and lower state quantum numbers in the case of rotational transitions do not contain the total angular momentum quantum number F).

4. Acknowledgments

The authors are indebted to Dr. J. Hougen for helpful discussions and suggestions regarding intensity calculations in the group-theoretical high-barrier tunneling formalism developed for methylamine and to Dr. N. Ohashi for providing his fitting program for methylamine.

5. Methylamine Spectral Tables

The molecular parameters obtained from the global fit of the rotational spectrum of methylamine in the ground vibrational state are given in Table 1. The calculated spectrum for the ground vibrational state of methylamine is given in Table 2. References to the experimental data shown in Table 2 can be found in Sec. 6.

TABLE 1. Molecular parameters of the ground torsional state of methylamine CH_3NH_2 [parameter values are given in megahertz except for ρ and ρ_K which are unitless, statistical uncertainties are shown as one standard uncertainty (type A, $k=1$)[16] in units of the last digits]

Rotational[a]		Inversion[b]		Torsional[c]	
$\bar{B}$	22 169.366 36(30)	h_{2V}	−1 549.186 21(77)	h_{3V}	−2 493.514 0(12)
$A-\bar{B}$	80 986.382 3(11)	h_{4V}	2.731 86(96)	h_{5V}	2.883 98(55)
$B-C$	877.877 17(53)	h_{2J}	0.101 759(11)	h_{3J}	−0.052 546(20)
Δ_J	0.039 451 0(18)	h_{2K}	1.739 55(16)	h_{5J}	0.000 228 2(55)
Δ_{JK}	0.170 986(15)	h_{4K}	−0.004 778(37)	h_{3K}	1.166 76(22)
Δ_K	0.701 044(24)	h_{2JJ}	−0.000 005 466(88)	h_{5K}	−0.002 667(73)
δ_J	0.001 756 73(17)	h_{2KK}	−0.000 901 6(63)	h_{3JJ}	−0.000 017 296(44)
δ_K	−0.337 72(13)	h_{2JK}	−0.000 154 00(94)	h_{3KK}	−0.000 299 5(42)
Φ_J	−0.000 000 048 5(16)	h_{2JKK}	0.000 000 192 3(56)	h_{3JJK}	−0.000 000 047 02(67)
Φ_{JK}	0.000 002 442(50)	q_2	21.549 23(52)	f_3	−0.173 439(24)
Φ_{KJ}	−0.000 008 55(10)	q_4	−0.030 71(20)	f_{3J}	−0.000 002 61(13)
Φ_K	0.000 033 22(29)	q_{2J}	−0.003 736 8(45)	f_{3K}	−0.000 135 9(32)
ϕ_K	0.000 236 6(48)	q_{2K}	−0.019 676(43)	f_{3JK}	−0.000 000 064 6(27)
		q_{2JJ}	0.000 002 098(62)	$f_3^{(2)}$	−0.000 003 021(89)
		q_{2KK}	0.000 010 23(54)	$f_{3J}^{(2)}$	0.000 000 002 20(13)
ρ	0.649 760 23(13)	f_2	−0.096 739(38)		
ρ_K	−0.000 001 160 1(77)	f_4	0.000 215 3(39)		
		f_{2J}	0.000 004 452(67)		
		f_{2K}	0.001 188(37)		
		f_{2KK}	−0.000 001 600(47)		
		$f_2^{(2)}$	−0.000 002 443(55)		
χ_+	−2.413 6(12)	r_2	10.979(37)		
χ_-	6.064 6(24)	r_{2K}	−0.720 6(73)		

[a]These parameters do not involve tunneling motions.

[b]These parameters arise from the NH_2 inversion tunneling motion.

[c]These parameters arise from the CH_3 torsional tunneling motion.

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
16	3	E2−1		17	0	E2+1			1 111.760 (0.031)*	225.687	0.056	1	
16	3	E2−1	16	17	0	E2+1	17		1 111.066 (0.031)	225.687	0.018	1	
16	3	E2−1	17	17	0	E2+1	18		1 112.081 (0.031)	225.687	0.020	1	
16	3	E2−1	15	17	0	E2+1	16		1 112.138 (0.031)	225.687	0.017	1	
27	4	A2		27	4	A1			1 197.223 (0.031)*	602.056	0.108	1	
27	4	A2	27	27	4	A1	27		1 197.201 (0.031)	602.056	0.036	1	
27	4	A2	28	27	4	A1	28		1 197.233 (0.031)	602.056	0.037	1	
27	4	A2	26	27	4	A1	26		1 197.234 (0.031)	602.056	0.035	1	
27	4	B2		27	4	B1			1 222.140 (0.031)*	601.883	0.107	3	
27	4	B2	27	27	4	B1	27		1 222.118 (0.031)	601.883	0.036	3	
27	4	B2	28	27	4	B1	28		1 222.151 (0.031)	601.883	0.037	3	
27	4	B2	26	27	4	B1	26		1 222.152 (0.031)	601.883	0.034	3	
17	3	B2		17	3	B1			1 369.183 (0.014)*	250.966	0.096	3	
17	3	B2	17	17	3	B1	17		1 369.138 (0.014)	250.966	0.032	3	
17	3	B2	18	17	3	B1	18		1 369.204 (0.014)	250.966	0.034	3	
17	3	B2	16	17	3	B1	16		1 369.208 (0.014)	250.966	0.030	3	
17	3	A2		17	3	A1			1 398.049 (0.013)*	250.869	0.096	1	
17	3	A2	17	17	3	A1	17		1 398.002 (0.013)	250.869	0.032	1	
17	3	A2	18	17	3	A1			1 398.070 (0.013)	250.869	0.034	1	
17	3	A2	16	17	3	A1	16		1 398.074 (0.013)	250.869	0.030	1	
17	0	E2+1		16	3	E2+1			1 423.321 (0.033)*	225.639	0.024	1	
17	0	E2+1	16	16	3	E2+1	15		1 422.950 (0.033)	225.639	0.007	1	
17	0	E2+1	18	16	3	E2+1	17		1 423.006 (0.033)	225.639	0.008	1	
17	0	E2+1	17	16	3	E2+1	16		1 424.003 (0.033)	225.639	0.008	1	
8	2	A1		8	2	A2			1 449.601 (0.005)*	64.436	0.090	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	2	A1	8	8	2	A2	8		1 449.463 (0.005)	64.436	0.029	1	
8	2	A1	9	8	2	A2			1 449.659 (0.005)	64.436	0.033	1	
8	2	A1	7	8	2	A2	7		1 449.684 (0.005)	64.436	0.026	1	
13	3	E1+1		12	4	E1+1			1 458.564 (0.009)*	158.845	2.751	3	
13	3	E1+1	12	12	4	E1+1	11		1 458.527 (0.009)	158.845	0.844	3	
13	3	E1+1	14	12	4	E1+1	13		1 458.531 (0.009)	158.845	0.985	3	
13	3	E1+1	13	12	4	E1+1	12		1 458.632 (0.009)	158.845	0.912	3	
8	2	B1		8	2	B2			1 467.694 (0.005)*	64.473	0.088	3	
8	2	B1	8	8	2	B2	8		1 467.555 (0.005)	64.473	0.028	3	
8	2	B1	9	8	2	B2	9		1 467.753 (0.005)	64.473	0.032	3	
8	2	B1	7	8	2	B2	7		1 467.778 (0.005)	64.473	0.025	3	
19	6	E1+1		20	5	E1+1			1 580.521 (0.012)*	378.284	4.158	3	
19	6	E1+1	19	20	5	E1+1	20		1 580.470 (0.012)	378.284	1.383	3	
19	6	E1+1	20	20	5	E1+1	21		1 580.545 (0.012)	378.284	1.454	3	
19	6	E1+1	18	20	5	E1+1	19		1 580.547 (0.012)	378.284	1.315	3	
28	4	A1		28	4	A2			1 586.903 (0.042)*	643.397	0.104	1	
28	4	A1	28	28	4	A2	28		1 586.876 (0.042)	643.397	0.034	1	
28	4	A1	29	28	4	A2	29		1 586.915 (0.042)	643.397	0.036	1	
28	4	A1	27	28	4	A2	27		1 586.916 (0.042)	643.397	0.033	1	
28	4	B1		28	4	B2			1 619.633 (0.041)*	643.225	0.103	3	
28	4	B1	28	28	4	B2	28		1 619.606 (0.041)	643.225	0.034	3	
28	4	B1	29	28	4	B2	29		1 619.646 (0.041)	643.225	0.036	3	
28	4	B1	27	28	4	B2	27		1 619.647 (0.041)	643.225	0.033	3	
8	3	A1		9	2	A2			1 626.131 (0.009)*	77.814	1.855	1	
8	3	A1	8	9	2	A2	9		1 626.109 (0.009)	77.814	0.611	1	
8	3	A1	7	9	2	A2	8		1 626.140 (0.009)	77.814	0.546	1	
8	3	A1	9	9	2	A2	10		1 626.143 (0.009)	77.814	0.683	1	
18	3	B1		18	3	B2			1 909.138 (0.019)*	277.574	0.090	3	
18	3	B1	18	18	3	B2	18		1 909.082 (0.019)	277.574	0.030	3	
18	3	B1	19	18	3	B2	19		1 909.165 (0.019)	277.574	0.032	3	
18	3	B1	17	18	3	B2	17		1 909.169 (0.019)	277.574	0.028	3	
18	3	A1		18	3	A2			1 949.112 (0.018)*	277.478	0.091	1	
18	3	A1	18	18	3	A2	18		1 949.054 (0.018)	277.478	0.030	1	
18	3	A1	19	18	3	A2	19		1 949.139 (0.018)	277.478	0.032	1	
18	3	A1	17	18	3	A2	17		1 949.143 (0.018)	277.478	0.029	1	
7	2	E2−1		7	2	E2+1			1 954.821 (0.008)*	52.393	0.022	1	
7	2	E2−1	7	7	2	E2+1	7		1 954.768 (0.008)	52.393	0.007	1	
7	2	E2−1	8	7	2	E2+1	8		1 954.842 (0.008)	52.393	0.008	1	
7	2	E2−1	6	7	2	E2+1	6		1 954.853 (0.008)	52.393	0.006	1	
29	4	A2		29	4	A1			2 081.166 (0.054)*	686.209	0.100	1	
29	4	A2	29	29	4	A1	29		2 081.134 (0.054)	686.209	0.033	1	
29	4	A2	30	29	4	A1	30		2 081.181 (0.054)	686.209	0.034	1	
29	4	A2	28	29	4	A1	28		2 081.183 (0.054)	686.209	0.032	1	
29	4	B2		29	4	B1			2 123.670 (0.054)*	686.038	0.099	3	
29	4	B2	29	29	4	B1	29		2 123.637 (0.054)	686.038	0.033	3	
29	4	B2	30	29	4	B1	30		2 123.685 (0.054)	686.038	0.034	3	
29	4	B2	28	29	4	B1	28		2 123.687 (0.054)	686.038	0.032	3	
1	1	A2		2	0	A1			2 166.305 (0.008)*	4.437	0.779	1	
1	1	A2	1	2	0	A1	2		2 164.634 (0.008)	4.437	0.195	1	
1	1	A2	1	2	0	A1	1		2 165.857 (0.008)	4.437	0.065	1	
1	1	A2	2	2	0	A1	2		2 165.906 (0.008)	4.437	0.065	1	
1	1	A2	2	2	0	A1	3		2 166.692 (0.008)	4.437	0.364	1	
1	1	A2	0	2	0	A1	1		2 169.036 (0.008)	4.437	0.087	1	
9	2	A2		9	2	A1			2 272.403 (0.007)*	77.738	0.080	1	
9	2	A2	9	9	2	A1	9		2 272.231 (0.007)	77.738	0.026	1	
9	2	A2	10	9	2	A1	10		2 272.477 (0.007)	77.738	0.029	1	
9	2	A2	8	9	2	A1	8		2 272.504 (0.007)	77.738	0.024	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	2	E2−1		8	2	E2+1			2 299.900 (0.008)*	64.223	0.039	1	
8	2	E2−1	8	8	2	E2+1	8		2 299.804 (0.008)	64.223	0.013	1	
8	2	E2−1	9	8	2	E2+1	9		2 299.940 (0.008)	64.223	0.014	1	
8	2	E2−1	7	8	2	E2+1	7		2 299.958 (0.008)	64.223	0.011	1	
9	2	B2		9	2	B1			2 300.591 (0.007)*	77.775	0.078	3	
9	2	B2	9	9	2	B1	9		2 300.416 (0.007)	77.775	0.025	3	
9	2	B2	10	9	2	B1	10		2 300.666 (0.007)	77.775	0.028	3	
9	2	B2	8	9	2	B1	8		2 300.694 (0.007)	77.775	0.023	3	
19	3	B2		19	3	B1			2 612.776 (0.026)*	305.658	0.085	3	
19	3	B2	19	19	3	B1	19		2 612.706 (0.026)	305.658	0.028	3	
19	3	B2	20	19	3	B1	20		2 612.808 (0.026)	305.658	0.030	3	
19	3	B2	18	19	3	B1	18		2 612.814 (0.026)	305.658	0.027	3	
2	1	A1		2	1	A2			2 639.492 (0.002)*	7.408	0.078	1	
2	1	A1	2	2	1	A2	2		2 637.975 (0.002)	7.408	0.018	1	
2	1	A1	3	2	1	A2	2		2 638.562 (0.002)	7.408	0.004	1	
2	1	A1	1	2	1	A2	2		2 638.888 (0.002)	7.408	0.004	1	
2	1	A1	2	2	1	A2	3		2 639.338 (0.002)	7.408	0.004	1	
2	1	A1	3	2	1	A2	3		2 639.925 (0.002)	7.408	0.032	1	
2	1	A1	2	2	1	A2	1		2 640.095 (0.002)	7.408	0.004	1	
2	1	A1	1	2	1	A2	1		2 641.008 (0.002)	7.408	0.012	1	
2	1	B1		2	1	B2			2 644.074 (0.002)*	7.249	0.080	3	
2	1	B1	2	2	1	B2	2		2 642.557 (0.002)	7.249	0.018	3	
2	1	B1	3	2	1	B2	2		2 643.144 (0.002)	7.249	0.004	3	
2	1	B1	1	2	1	B2	2		2 643.470 (0.002)	7.249	0.004	3	
2	1	B1	2	2	1	B2	3		2 643.920 (0.002)	7.249	0.004	3	
2	1	B1	3	2	1	B2	3		2 644.507 (0.002)	7.249	0.033	3	
2	1	B1	2	2	1	B2	1		2 644.677 (0.002)	7.249	0.004	3	
2	1	B1	1	2	1	B2	1		2 645.590 (0.002)	7.249	0.012	3	
19	3	A2		19	3	A1			2 667.055 (0.025)*	305.563	0.086	1	
19	3	A2	19	19	3	A1	19		2 666.984 (0.025)	305.563	0.029	1	
19	3	A2	20	19	3	A1	20		2 667.088 (0.025)	305.563	0.030	1	
19	3	A2	18	19	3	A1	18		2 667.094 (0.025)	305.563	0.027	1	
30	4	A1		30	4	A2			2 702.214 (0.071)*	730.490	0.096	1	
30	4	A1	30	30	4	A2	30		2 702.175 (0.071)	730.490	0.032	1	
30	4	A1	31	30	4	A2	31		2 702.233 (0.071)	730.490	0.033	1	
30	4	A1	29	30	4	A2	29		2 702.235 (0.071)	730.490	0.031	1	
17	3	E2−1		17	3	E2+1			2 716.776 (0.015)*	250.776	0.026	1	
17	3	E2−1	17	17	3	E2+1	17		2 716.755 (0.015)	250.776	0.008	1	
17	3	E2−1	18	17	3	E2+1	18		2 716.786 (0.015)	250.776	0.009	1	
17	3	E2−1	16	17	3	E2+1	16		2 716.788 (0.015)	250.776	0.008	1	
30	4	B1		30	4	B2			2 756.813 (0.070)*	730.321	0.096	3	
30	4	B1	30	30	4	B2	30		2 756.773 (0.070)	730.321	0.032	3	
30	4	B1	31	30	4	B2	31		2 756.832 (0.070)	730.321	0.033	3	
30	4	B1	29	30	4	B2	29		2 756.834 (0.070)	730.321	0.031	3	
9	2	E2−1		9	2	E2+1			2 943.254 (0.008)*	77.529	0.052	1	
9	2	E2−1	9	9	2	E2+1	9		2 943.106 (0.008)	77.529	0.017	1	
9	2	E2−1	10	9	2	E2+1	10		2 943.317 (0.008)	77.529	0.019	1	
9	2	E2−1	8	9	2	E2+1	8		2 943.341 (0.008)	77.529	0.015	1	
30	1	B2		30	0	B1		3 015.170 (0.500)	3 014.962 (0.285)*	681.003	79.151	3	5
30	1	B2	29	30	0	B1	29		3 014.933 (0.285)	681.003	25.490	3	
30	1	B2	31	30	0	B1	31		3 014.935 (0.285)	681.003	27.220	3	
30	1	B2	30	30	0	B1	30		3 015.018 (0.285)	681.003	26.327	3	
30	1	E2−1		30	0	E2+1			3 020.581 (0.156)*	681.090	79.339	1	
30	1	E2−1	29	30	0	E2+1	29		3 020.556 (0.156)	681.090	25.551	1	
30	1	E2−1	31	30	0	E2+1	31		3 020.559 (0.156)	681.090	27.285	1	
30	1	E2−1	30	30	0	E2+1	30		3 020.629 (0.156)	681.090	26.390	1	
18	3	E2−1		18	3	E2+1			3 029.884 (0.018)*	277.390	0.038	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
18	3	E2−1	18	18	3	E2+1	18		3 029.849 (0.018)	277.390	0.013	1	
18	3	E2−1	19	18	3	E2+1	19		3 029.900 (0.018)	277.390	0.013	1	
18	3	E2−1	17	18	3	E2+1	17		3 029.903 (0.018)	277.390	0.012	1	
19	6	E2+1		20	5	E2+1			3 224.656 (0.012)*	378.322	4.152	1	
19	6	E2+1	19	20	5	E2+1	20		3 224.606 (0.012)	378.322	1.381	1	
19	6	E2+1	20	20	5	E2+1	21		3 224.680 (0.012)	378.322	1.452	1	
19	6	E2+1	18	20	5	E2+1	19		3 224.683 (0.012)	378.322	1.313	1	
10	2	A1		10	2	A2			3 397.541 (0.011)*	92.516	0.073	1	
10	2	A1	10	10	2	A2	10		3 397.331 (0.011)	92.516	0.024	1	
10	2	A1	11	10	2	A2	11		3 397.633 (0.011)	92.516	0.026	1	
10	2	A1	9	10	2	A2	9		3 397.663 (0.011)	92.516	0.022	1	
10	2	B1		10	2	B2			3 439.348 (0.011)*	92.553	0.070	3	
10	2	B1	10	10	2	B2	10		3 439.135 (0.011)	92.553	0.023	3	
10	2	B1	11	10	2	B2	11		3 439.440 (0.011)	92.553	0.025	3	
10	2	B1	9	10	2	B2	9		3 439.471 (0.011)	92.553	0.021	3	
8	3	B1		9	2	B2			3 482.673 (0.008)*	77.852	1.852	3	
8	3	B1	8	9	2	B2	9		3 482.654 (0.008)	77.852	0.610	3	
8	3	B1	7	9	2	B2	8		3 482.680 (0.008)	77.852	0.545	3	
8	3	B1	9	9	2	B2	10		3 482.684 (0.008)	77.852	0.682	3	
20	3	B1		20	3	B2			3 515.789 (0.034)*	335.217	0.081	3	
20	3	B1	20	20	3	B2	20		3 515.704 (0.034)	335.217	0.027	3	
20	3	B1	21	20	3	B2	21		3 515.828 (0.034)	335.217	0.028	3	
20	3	B1	19	20	3	B2	19		3 515.835 (0.034)	335.217	0.026	3	
19	3	E2−1		19	3	E2+1			3 527.441 (0.024)*	305.478	0.049	1	
19	3	E2−1	19	19	3	E2+1	19		3 527.389 (0.024)	305.478	0.016	1	
19	3	E2−1	20	19	3	E2+1	20		3 527.465 (0.024)	305.478	0.017	1	
19	3	E2−1	18	19	3	E2+1	18		3 527.469 (0.024)	305.478	0.016	1	
20	3	A1		20	3	A2			3 588.178 (0.033)*	335.122	0.081	1	
20	3	A1	20	20	3	A2	20		3 588.092 (0.033)	335.122	0.027	1	
20	3	A1	21	20	3	A2	21		3 588.219 (0.033)	335.122	0.028	1	
20	3	A1	19	20	3	A2	19		3 588.225 (0.033)	335.122	0.026	1	
19	6	E1−1		20	5	E1−1			3 691.665 (0.011)*	378.087	4.161	3	
19	6	E1−1	19	20	5	E1−1	20		3 691.615 (0.011)	378.087	1.383	3	
19	6	E1−1	20	20	5	E1−1	21		3 691.690 (0.011)	378.087	1.455	3	
19	6	E1−1	18	20	5	E1−1	19		3 691.692 (0.011)	378.087	1.316	3	
8	3	A2		9	2	A1			3 881.573 (0.010)*	77.738	1.848	1	
8	3	A2	8	9	2	A1	9		3 881.382 (0.010)	77.738	0.608	1	
8	3	A2	9	9	2	A1	10		3 881.658 (0.010)	77.738	0.681	1	
8	3	A2	7	9	2	A1	8		3 881.682 (0.010)	77.738	0.543	1	
8	3	E2+1		9	2	E2−1			3 913.781 (0.008)*	77.627	0.383	1	
8	3	E2+1	8	9	2	E2−1	9		3 913.752 (0.008)	77.627	0.126	1	
8	3	E2+1	7	9	2	E2−1	8		3 913.793 (0.008)	77.627	0.113	1	
8	3	E2+1	9	9	2	E2−1	10		3 913.796 (0.008)	77.627	0.141	1	
29	1	E2−1		29	0	E2+1			3 923.735 (0.138)*	637.437	76.114	1	
29	1	E2−1	28	29	0	E2+1	28		3 923.705 (0.138)	637.437	24.482	1	
29	1	E2−1	30	29	0	E2+1	30		3 923.708 (0.138)	637.437	26.202	1	
29	1	E2−1	29	29	0	E2+1	29		3 923.792 (0.138)	637.437	25.313	1	
10	2	E2−1		10	2	E2+1			3 963.165 (0.010)*	92.309	0.057	1	
10	2	E2−1	10	10	2	E2+1	10		3 962.965 (0.010)	92.309	0.019	1	
10	2	E2−1	11	10	2	E2+1	11		3 963.251 (0.010)	92.309	0.021	1	
10	2	E2−1	9	10	2	E2+1	9		3 963.280 (0.010)	92.309	0.017	1	
29	1	B1		29	0	B2		4 076.650 (0.500)	4 076.296 (0.250)*	637.344	75.884	3	5
29	1	B1	28	29	0	B2	28		4 076.262 (0.250)	637.344	24.408	3	
29	1	B1	30	29	0	B2	30		4 076.265 (0.250)	637.344	26.123	3	
29	1	B1	29	29	0	B2	29		4 076.362 (0.250)	637.344	25.237	3	
24	6	E2−1		23	7	E2−1			4 098.057 (0.014)*	540.301	5.054	1	
24	6	E2−1	23	23	7	E2−1	22		4 098.036 (0.014)	540.301	1.613	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
24	6	E2−1	25	23	7	E2−1	24		4 098.037 (0.014)	540.301	1.753	1	
24	6	E2−1	24	23	7	E2−1	23		4 098.096 (0.014)	540.301	1.682	1	
20	3	E2−1		20	3	E2+1			4 260.624 (0.033)*	335.042	0.058	1	
20	3	E2−1	20	20	3	E2+1	20		4 260.553 (0.033)	335.042	0.019	1	
20	3	E2−1	21	20	3	E2+1	21		4 260.657 (0.033)	335.042	0.020	1	
20	3	E2−1	19	20	3	E2+1	19		4 260.662 (0.033)	335.042	0.018	1	
8	3	E1+1		9	2	E1−1			4 352.012 (0.008)*	77.409	0.033	3	
8	3	E1+1	8	9	2	E1−1	9		4 351.886 (0.008)	77.409	0.011	3	
8	3	E1+1	9	9	2	E1−1	10		4 352.068 (0.008)	77.409	0.012	3	
8	3	E1+1	7	9	2	E1−1	8		4 352.081 (0.008)	77.409	0.010	3	
2	0	E1+1		1	1	E1+1			4 364.348 (0.005)*	4.592	0.456	3	
2	0	E1+1	1	1	1	E1+1	0		4 362.872 (0.005)	4.592	0.051	3	
2	0	E1+1	3	1	1	E1+1	2		4 364.087 (0.005)	4.592	0.213	3	
2	0	E1+1	1	1	1	E1+1	1		4 364.169 (0.005)	4.592	0.038	3	
2	0	E1+1	2	1	1	E1+1	2		4 364.873 (0.005)	4.592	0.038	3	
2	0	E1+1	2	1	1	E1+1	1		4 365.392 (0.005)	4.592	0.114	3	
17	0	E1+1		16	3	E1+1			4 399.998 (0.034)*	225.443	0.032	3	
17	0	E1+1	16	16	3	E1+1	15		4 399.625 (0.034)	225.443	0.010	3	
17	0	E1+1	18	16	3	E1+1	17		4 399.682 (0.034)	225.443	0.011	3	
17	0	E1+1	17	16	3	E1+1	16		4 400.685 (0.034)	225.443	0.010	3	
29	4	E1−1		29	4	E1+1			4 511.546 (0.181)*	686.283	0.021	3	
21	3	B2		21	3	B1			4 658.491 (0.045)*	366.251	0.077	3	
21	3	B2	21	21	3	B1	21		4 658.389 (0.045)	366.251	0.025	3	
21	3	B2	22	21	3	B1	22		4 658.538 (0.045)	366.251	0.027	3	
21	3	B2	20	21	3	B1	20		4 658.545 (0.045)	366.251	0.024	3	
9	2	E1+1		8	3	E1+1		4 660.420 (0.500)	4 660.428 (0.008)*	77.554	1.822	3	5
9	2	E1+1	8	8	3	E1+1	7		4 660.385 (0.008)	77.554	0.536	3	
9	2	E1+1	10	8	3	E1+1	9		4 660.391 (0.008)	77.554	0.671	3	
9	2	E1+1	9	8	3	E1+1	8		4 660.509 (0.008)	77.554	0.600	3	
30	4	E1−1		30	4	E1+1			4 750.888 (0.220)*	730.570	0.030	3	
21	3	A2		21	3	A1			4 753.437 (0.044)*	366.156	0.077	1	
21	3	A2	21	21	3	A1	21		4 753.334 (0.044)	366.156	0.026	1	
21	3	A2	22	21	3	A1	22		4 753.486 (0.044)	366.156	0.027	1	
21	3	A2	20	21	3	A1	20		4 753.493 (0.044)	366.156	0.024	1	
19	6	B2		20	5	B1		4 857.860 (0.500)	4 857.724 (0.010)*	378.111	4.162	3	5
19	6	B2	19	20	5	B1	20		4 857.675 (0.010)	378.111	1.384	3	
19	6	B2	20	20	5	B1	21		4 857.748 (0.010)	378.111	1.455	3	
19	6	B2	18	20	5	B1	19		4 857.750 (0.010)	378.111	1.316	3	
19	6	B1		20	5	B2		4 859.880 (0.500)	4 859.736 (0.010)*	378.111	4.162	3	5
19	6	B1	19	20	5	B2	20		4 859.687 (0.010)	378.111	1.384	3	
19	6	B1	20	20	5	B2	21		4 859.760 (0.010)	378.111	1.455	3	
19	6	B1	18	20	5	B2	19		4 859.762 (0.010)	378.111	1.316	3	
11	2	A2		11	2	A1			4 886.897 (0.016)*	108.769	0.066	1	
11	2	A2	11	11	2	A1	11		4 886.646 (0.016)	108.769	0.022	1	
11	2	A2	12	11	2	A1	12		4 887.008 (0.016)	108.769	0.024	1	
11	2	A2	10	11	2	A1	10		4 887.041 (0.016)	108.769	0.020	1	
11	2	B2		11	2	B1			4 946.415 (0.015)*	108.806	0.063	3	
11	2	B2	11	11	2	B1	11		4 946.161 (0.015)	108.806	0.021	3	
11	2	B2	12	11	2	B1	12		4 946.527 (0.015)	108.806	0.023	3	
11	2	B2	10	11	2	B1	10		4 946.560 (0.015)	108.806	0.019	3	
28	1	E2−1		28	0	E2+1		4 963.000 (0.500)	4 963.988 (0.121)*	595.218	72.870	1	5
28	1	E2−1	27	28	0	E2+1	27		4 963.952 (0.121)	595.218	23.408	1	
28	1	E2−1	29	28	0	E2+1	29		4 963.956 (0.121)	595.218	25.112	1	
28	1	E2−1	28	28	0	E2+1	28		4 964.056 (0.121)	595.218	24.230	1	
6	1	B2		5	2	B1			5 195.433 (0.010)*	33.427	1.256	3	
6	1	B2	5	5	2	B1	4		5 194.828 (0.010)	33.427	0.343	3	
6	1	B2	7	5	2	B1	6		5 195.040 (0.010)	33.427	0.483	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	1	B2	6	5	2	B1	5		5 196.401 (0.010)	33.427	0.407	3	
21	3	E2−1		21	3	E2+1			5 275.530 (0.044)*	366.079	0.063	1	
21	3	E2−1	21	21	3	E2+1	21		5 275.438 (0.044)	366.079	0.021	1	
21	3	E2−1	22	21	3	E2+1	22		5 275.573 (0.044)	366.079	0.022	1	
21	3	E2−1	20	21	3	E2+1	20		5 275.580 (0.044)	366.079	0.020	1	
3	1	A2		3	1	A1			5 278.693 (0.004)*	11.801	0.054	1	
3	1	A2	3	3	1	A1	3		5 277.177 (0.004)	11.801	0.015	1	
3	1	A2	4	3	1	A1	4		5 279.199 (0.004)	11.801	0.022	1	
3	1	A2	2	3	1	A1	2		5 279.906 (0.004)	11.801	0.011	1	
28	1	B2		28	0	B1		5 284.820 (0.500)	5 284.656 (0.218)*	595.119	72.613	3	5
28	1	B2	27	28	0	B1	27		5 284.615 (0.218)	595.119	23.325	3	
28	1	B2	29	28	0	B1	29		5 284.620 (0.218)	595.119	25.024	3	
28	1	B2	28	28	0	B1	28		5 284.734 (0.218)	595.119	24.145	3	
3	1	B2		3	1	B1			5 287.855 (0.004)*	11.642	0.056	3	
3	1	B2	3	3	1	B1	3		5 286.339 (0.004)	11.642	0.016	3	
3	1	B2	4	3	1	B1	4		5 288.360 (0.004)	11.642	0.023	3	
3	1	B2	2	3	1	B1	2		5 289.068 (0.004)	11.642	0.012	3	
11	2	E2−1		11	2	E2+1			5 416.292 (0.014)*	108.564	0.058	1	
11	2	E2−1	11	11	2	E2+1	11		5 416.041 (0.014)	108.564	0.019	1	
11	2	E2−1	12	11	2	E2+1	12		5 416.402 (0.014)	108.564	0.021	1	
11	2	E2−1	10	11	2	E2+1	10		5 416.435 (0.014)	108.564	0.017	1	
2	1	E1+1		2	1	E1−1			5 669.477 (0.008)*	7.370	0.017	3	
2	1	E1+1	2	2	1	E1−1	2		5 668.772 (0.008)	7.370	0.004	3	
2	1	E1+1	3	2	1	E1−1	2		5 668.837 (0.008)	7.370	0.001	3	
2	1	E1+1	1	2	1	E1−1	2		5 668.873 (0.008)	7.370	0.001	3	
2	1	E1+1	2	2	1	E1−1	3		5 669.613 (0.008)	7.370	0.001	3	
2	1	E1+1	3	2	1	E1−1	3		5 669.678 (0.008)	7.370	0.007	32	
2	1	E1+1	2	2	1	E1−1	1		5 670.080 (0.008)	7.370	0.001	3	
2	1	E1+1	1	2	1	E1−1	1		5 670.181 (0.008)	7.370	0.0033	4	
4	2	E1−1		5	1	E1+1			5 681.341 (0.009)*	25.444	0.319	34	
4	2	E1−1	3	5	1	E1+1	4		5 681.078 (0.009)	25.444	0.083	3	
4	2	E1−1	5	5	1	E1+1	6		5 681.200 (0.009)	25.444	0.126	3	
4	2	E1−1	4	5	1	E1+1	5		5 681.719 (0.009)	25.444	0.102	3	
8	3	B2		9	2	B1		5 766.680 (0.500)	5 766.665 (0.008)*	77.775	1.845	3	5
8	3	B2	8	9	2	B1	9		5 766.474 (0.008)	77.775	0.607	3	
8	3	B2	9	9	2	B1	10		5 766.750 (0.008)	77.775	0.680	3	
8	3	B2	7	9	2	B1	8		5 766.773 (0.008)	77.775	0.543	3	
22	3	B1		22	3	B2			6 085.787 (0.059)*	398.758	0.073	3	
22	3	B1	22	22	3	B2	22		6 085.666 (0.059)	398.758	0.024	3	
22	3	B1	23	22	3	B2	23		6 085.844 (0.059)	398.758	0.025	3	
22	3	B1	21	22	3	B2	21		6 085.852 (0.059)	398.758	0.023	3	
27	1	E2−1		27	0	E2+1			6 156.402 (0.107)*	554.435	69.614	1	
27	1	E2−1	26	27	0	E2+1	26		6 156.360 (0.107)	554.434	22.330	1	
27	1	E2−1	28	27	0	E2+1	28		6 156.364 (0.107)	554.434	24.018	1	
27	1	E2−1	27	27	0	E2+1	27		6 156.482 (0.107)	554.435	23.143	1	
22	3	A1		22	3	A2			6 208.400 (0.057)*	398.664	0.073	1	
22	3	A1	22	22	3	A2	22		6 208.277 (0.057)	398.664	0.024	1	
22	3	A1	23	22	3	A2	23		6 208.458 (0.057)	398.664	0.025	1	
22	3	A1	21	22	3	A2	21		6 208.466 (0.057)	398.664	0.023	1	
8	3	E2−1		9	2	E2−1		6 246.420 (0.500)	6 246.278 (0.009)*	77.627	1.471	1	5
8	3	E2−1	8	9	2	E2−1	9		6 246.251 (0.009)	77.627	0.484	1	
8	3	E2−1	7	9	2	E2−1	8		6 246.291 (0.009)	77.627	0.433	1	
8	3	E2−1	9	9	2	E2−1	10		6 246.293 (0.009)	77.627	0.542	1	
13	3	E2−1		12	4	E2−1		6 269.810 (0.500)	6 269.689 (0.009)*	158.965	2.737	1	5
13	3	E2−1	12	12	4	E2−1	11		6 269.652 (0.009)	158.965	0.839	1	
13	3	E2−1	14	12	4	E2−1	13		6 269.656 (0.009)	158.965	0.980	1	
13	3	E2−1	13	12	4	E2−1	12		6 269.759 (0.009)	158.965	0.907	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
2	0	E2+1		1	1	E2+1			6 437.552 (0.005)*	4.626	0.418	1	
2	0	E2+1	1	1	1	E2+1	0		6 436.225 (0.005)	4.626	0.046	1	
2	0	E2+1	1	1	1	E2+1	1		6 437.298 (0.005)	4.626	0.035	1	
2	0	E2+1	3	1	1	E2+1	2		6 437.306 (0.005)	4.626	0.195	1	
2	0	E2+1	2	1	1	E2+1	2		6 438.093 (0.005)	4.626	0.035	1	
2	0	E2+1	2	1	1	E2+1	1		6 438.522 (0.005)	4.626	0.104	1	
20	5	E2−1		19	6	E2−1		6 500.420 (0.500)	6 500.045 (0.011)*	378.016	4.164	1	5
20	5	E2−1	19	19	6	E2−1	18		6 500.018 (0.011)	378.016	1.317	1	
20	5	E2−1	21	19	6	E2−1	20		6 500.020 (0.011)	378.016	1.456	1	
20	5	E2−1	20	19	6	E2−1	19		6 500.096 (0.011)	378.016	1.385	1	
22	3	E2−1		22	3	E2+1			6 615.437 (0.058)*	398.590	0.065	1	
22	3	E2−1	22	22	3	E2+1	22		6 615.322 (0.058)	398.590	0.022	1	
22	3	E2−1	23	22	3	E2+1	23		6 615.491 (0.058)	398.590	0.023	1	
22	3	E2−1	21	22	3	E2+1	21		6 615.498 (0.058)	398.590	0.021	1	
27	1	B1		27	0	B2		6 655.040 (0.500)	6 654.772 (0.190)*	554.329	69.337	3	5
27	1	B1	26	27	0	B2	26		6 654.724 (0.190)	554.329	22.241	3	
27	1	B1	28	27	0	B2	28		6 654.729 (0.190)	554.329	23.922	3	
27	1	B1	27	27	0	B2	27		6 654.863 (0.190)	554.329	23.051	3	
12	2	A1		12	2	A2			6 805.197 (0.022)*	126.496	0.061	1	
12	2	A1	12	12	2	A2	12		6 804.903 (0.022)	126.496	0.020	1	
12	2	A1	13	12	2	A2	13		6 805.328 (0.022)	126.496	0.022	1	
12	2	A1	11	12	2	A2	11		6 805.363 (0.022)	126.496	0.019	1	
8	3	E2+1		9	2	E2+1		6 857.000 (0.500)	6 857.035 (0.007)*	77.529	1.470	1	9
8	3	E2+1	8	9	2	E2+1	9		6 856.859 (0.007)	77.529	0.484	1	
8	3	E2+1	9	9	2	E2+1	10		6 857.113 (0.007)	77.529	0.541	1	
8	3	E2+1	7	9	2	E2+1	8		6 857.134 (0.007)	77.529	0.432	1	
12	2	B1		12	2	B2			6 887.024 (0.021)*	126.533	0.058	3	
12	2	B1	12	12	2	B2	12		6 886.726 (0.021)	126.533	0.019	3	
12	2	B1	13	12	2	B2	13		6 887.156 (0.021)	126.533	0.021	3	
12	2	B1	11	12	2	B2	11		6 887.192 (0.021)	126.533	0.018	3	
24	4	B1		25	1	B2			6 889.573 (0.323)*	486.473	0.064	3	
24	4	B1	23	25	1	B2	24		6 889.470 (0.323)	486.473	0.021	3	
24	4	B1	25	25	1	B2	26		6 889.483 (0.323)	486.473	0.022	3	
24	4	B1	24	25	1	B2	25		6 889.766 (0.323)	486.473	0.021	3	
8	3	E1−1		9	2	E1+1			6 895.173 (0.012)*	77.710	0.034	3	
8	3	E1−1	8	9	2	E1+1	9		6 895.093 (0.012)	77.710	0.011	3	
8	3	E1−1	9	9	2	E1+1	10		6 895.210 (0.012)	77.710	0.012	3	
8	3	E1−1	7	9	2	E1+1	8		6 895.216 (0.012)	77.710	0.010	3	
16	3	E1−1		17	0	E1+1			7 018.732 (0.032)*	225.590	0.045	3	
16	3	E1−1	16	17	0	E1+1	17		7 018.046 (0.032)	225.590	0.015	3	
16	3	E1−1	17	17	0	E1+1	18		7 019.048 (0.032)	225.590	0.016	3	
16	3	E1−1	15	17	0	E1+1	16		7 019.104 (0.032)	225.590	0.014	3	
24	4	E2+1		25	1	E2+1			7 067.677 (0.234)*	486.533	0.036	1	
24	4	E2+1	23	25	1	E2+1	24		7 067.574 (0.234)	486.533	0.011	1	
24	4	E2+1	25	25	1	E2+1	26		7 067.587 (0.234)	486.533	0.012	1	
24	4	E2+1	24	25	1	E2+1	25		7 067.870 (0.234)	486.533	0.012	1	
3	1	E1+1		3	1	E1−1			7 278.907 (0.006)*	11.780	0.029	3	
3	1	E1+1	3	3	1	E1−1	3		7 277.809 (0.006)	11.780	0.008	3	
3	1	E1+1	4	3	1	E1−1	4		7 279.272 (0.006)	11.780	0.012	3	
3	1	E1+1	2	3	1	E1−1	2		7 279.784 (0.006)	11.780	0.006	3	
12	2	E2−1		12	2	E2+1			7 355.000 (0.019)*	126.293	0.055	1	
12	2	E2−1	12	12	2	E2+1	12		7 354.698 (0.019)	126.293	0.018	1	
12	2	E2−1	13	12	2	E2+1	13		7 355.133 (0.019)	126.293	0.020	1	
12	2	E2−1	11	12	2	E2+1	11		7 355.170 (0.019)	126.293	0.017	1	
26	1	E2−1		26	0	E2+1		7 515.560 (0.500)	7 516.246 (0.094)*	515.086	66.351	1	5
26	1	E2−1	25	26	0	E2+1	25		7 516.196 (0.094)	515.086	21.251	1	
26	1	E2−1	27	26	0	E2+1	27		7 516.202 (0.094)	515.086	22.920	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
26	1	E2−1	26	26	0	E2+1	26		7 516.341 (0.094)	515.086	22.054	1	
24	6	B2		23	7	B1			7 547.826 (0.012)*	540.441	5.046	3	
24	6	B1		23	7	B2			7 548.022 (0.012)*	540.441	5.046	3	
30	1	E1−1		30	0	E1+1		7 727.740 (0.500)	7 727.463 (0.150)*	681.009	79.403	3	3
30	1	E1−1	29	30	0	E1+1	29		7 727.436 (0.150)	681.009	25.571	3	
30	1	E1−1	31	30	0	E1+1	31		7 727.439 (0.150)	681.009	27.307	3	
30	1	E1−1	30	30	0	E1+1	30		7 727.514 (0.150)	681.009	26.411	3	
23	3	B2		23	3	B1			7 846.995 (0.076)*	432.737	0.070	3	
23	3	B2	23	23	3	B1	23		7 846.853 (0.076)	432.737	0.023	3	
23	3	B2	24	23	3	B1	24		7 847.061 (0.076)	432.737	0.024	3	
23	3	B2	22	23	3	B1	22		7 847.070 (0.076)	432.737	0.022	3	
23	3	A2		23	3	A1			8 003.037 (0.074)*	432.644	0.070	1	
23	3	A2	23	23	3	A1	23		8 002.892 (0.074)	432.644	0.023	1	
23	3	A2	24	23	3	A1	24		8 003.105 (0.074)	432.644	0.024	1	
23	3	A2	22	23	3	A1	22		8 003.114 (0.074)	432.644	0.022	1	
26	1	B2		26	0	B1		8 201.650 (0.500)	8 201.316 (0.164)*	514.975	66.060	3	3
26	1	B2	25	26	0	B1	25		8 201.259 (0.164)	514.975	21.158	3	
26	1	B2	27	26	0	B1	27		8 201.265 (0.164)	514.975	22.820	3	
26	1	B2	26	26	0	B1	26		8 201.422 (0.164)	514.975	21.957	3	
23	3	E2−1		23	3	E2+1			8 324.676 (0.075)*	432.573	0.0651	23	
23	3	E2−1	23	23	3	E2+1	23		8 324.537 (0.075)	432.573	0.022	1	
23	3	E2−1	24	23	3	E2+1	24		8 324.741 (0.075)	432.573	0.022	1	
23	3	E2−1	22	23	3	E2+1	22		8 324.750 (0.075)	432.573	0.021	1	
24	4	A1		25	1	A2			8 348.078 (0.316)*	486.602	0.070	1	
24	4	A1	23	25	1	A2	24		8 347.977 (0.316)	486.602	0.022	1	
24	4	A1	25	25	1	A2	26		8 347.989 (0.316)	486.602	0.024	1	
24	4	A1	24	25	1	A2	25		8 348.267 (0.316)	486.602	0.023	1	
13	3	E1−1		12	4	E1−1		8 411.940 (0.500)	8 411.969 (0.009)*	158.996	2.743	3	3
13	3	E1−1	12	12	4	E1−1	11		8 411.932 (0.009)	158.996	0.841	3	
13	3	E1−1	14	12	4	E1−1	13		8 411.936 (0.009)	158.996	0.982	3	
13	3	E1−1	13	12	4	E1−1	12		8 412.039 (0.009)	158.996	0.909	3	
29	1	E1−1		29	0	E1+1		8 684.290 (0.500)	8 684.145 (0.132)*	637.355	76.146	3	3
29	1	E1−1	28	29	0	E1+1	28		8 684.113 (0.132)	637.355	24.493	3	
29	1	E1−1	30	29	0	E1+1	30		8 684.116 (0.132)	637.355	26.213	3	
29	1	E1−1	29	29	0	E1+1	29		8 684.205 (0.132)	637.355	25.324	3	
2	0	B1		1	1	B2		8 777.826 (0.020)	8 777.827 (0.007)*	4.350	0.779	3	10
2	0	B1	1	1	1	B2	0		8 775.096 (0.008)	4.350	0.087	3	
2	0	B1	3	1	1	B2	2		8 777.440 (0.007)	4.350	0.363	3	
2	0	B1	2	1	1	B2	2		8 778.226 (0.007)	4.350	0.065	3	
2	0	B1	1	1	1	B2	1		8 778.275 (0.007)	4.350	0.065	3	
2	0	B1	2	1	1	B2	1		8 779.498 (0.007)	4.350	0.195	3	
4	1	A1		4	1	A2			8 797.064 (0.006)*	17.657	0.041	1	
4	1	A1	4	4	1	A2	4		8 795.548 (0.006)	17.657	0.012	1	
4	1	A1	5	4	1	A2	5		8 797.615 (0.006)	17.657	0.016	1	
4	1	A1	3	4	1	A2	3		8 798.147 (0.006)	17.657	0.010	1	
4	1	B1		4	1	B2			8 812.331 (0.006)*	17.498	0.044	3	
4	1	B1	4	4	1	B2	4		8 810.815 (0.006)	17.498	0.013	3	
4	1	B1	5	4	1	B2	5		8 812.882 (0.006)	17.498	0.017	3	
4	1	B1	3	4	1	B2	3		8 813.414 (0.006)	17.498	0.011	3	
25	1	E2−1		25	0	E2+1		9 057.850 (0.500)	9 058.506 (0.083)*	477.175	63.084	1	3
25	1	E2−1	24	25	0	E2+1	24		9 058.447 (0.083)	477.175	20.171	1	
25	1	E2−1	26	25	0	E2+1	26		9 058.454 (0.083)	477.175	21.820	1	
25	1	E2−1	25	25	0	E2+1	25		9 058.617 (0.083)	477.175	20.963	1	
8	3	E2−1		9	2	E2+1			9 189.533 (0.011)*	77.529	0.380	1	
8	3	E2−1	8	9	2	E2+1	9		9 189.357 (0.011)	77.529	0.125	1	
8	3	E2−1	9	9	2	E2+1	10		9 189.610 (0.011)	77.529	0.140	1	
8	3	E2−1	7	9	2	E2+1	8		9 189.632 (0.011)	77.529	0.112	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
13	2	A2		13	2	A1			9 218.586 (0.030)*	145.697	0.057	1	
13	2	A2	13	13	2	A1	13		9 218.246 (0.030)	145.697	0.019	1	
13	2	A2	14	13	2	A1	14		9 218.738 (0.030)	145.697	0.020	1	
13	2	A2	12	13	2	A1	12		9 218.776 (0.030)	145.697	0.017	1	
13	2	B2		13	2	B1			9 327.714 (0.029)*	145.734	0.053	3	
13	2	B2	13	13	2	B1	13		9 327.370 (0.029)	145.734	0.017	3	
13	2	B2	14	13	2	B1	14		9 327.868 (0.029)	145.734	0.019	3	
13	2	B2	12	13	2	B1	12		9 327.907 (0.029)	145.734	0.016	3	
2	0	E1+1		1	1	E1−1		9 459.230 (0.020)	9 459.246 (0.008)*	4.422	0.322	3	10
2	0	E1+1	1	1	1	E1−1	0		9 458.292 (0.008)	4.422	0.036	3	
2	0	E1+1	1	1	1	E1−1	1		9 458.805 (0.008)	4.422	0.027	3	
2	0	E1+1	3	1	1	E1−1	2		9 459.037 (0.008)	4.422	0.150	3	
2	0	E1+1	2	1	1	E1−1	2		9 459.823 (0.008)	4.422	0.027	3	
2	0	E1+1	2	1	1	E1−1	1		9 460.028 (0.008)	4.422	0.081	3	
24	6	A2		23	7	A1			9 706.100 (0.013)*	540.469	5.040	1	
24	6	A		23	7	A		9 706.100 (0.500)	9 706.198 (0.013)*	540.469	10.081	1	3
24	6	A1		23	7	A2			9 706.295 (0.013)*	540.469	5.040	1	
24	4	E1+1		25	1	E1+1			9 707.840 (0.222)*	486.594	0.036	3	
24	4	E1+1	23	25	1	E1+1	24		9 707.738 (0.222)	486.594	0.012	3	
24	4	E1+1	25	25	1	E1+1	26		9 707.750 (0.222)	486.594	0.012	3	
24	4	E1+1	24	25	1	E1+1	25		9 708.032 (0.222)	486.594	0.012	3	
28	1	E1−1		28	0	E1+1		9 779.330 (0.500)	9 779.108 (0.116)*	595.135	72.885	3	3
28	1	E1−1	27	28	0	E1+1	27		9 779.071 (0.116)	595.135	23.412	3	
28	1	E1−1	29	28	0	E1+1	29		9 779.075 (0.116)	595.135	25.117	3	
28	1	E1−1	28	28	0	E1+1	28		9 779.180 (0.116)	595.135	24.235	3	
13	2	E2−1		13	2	E2+1			9 835.070 (0.026)*	145.494	0.052	1	
13	2	E2−1	13	13	2	E2+1	13		9 834.718 (0.026)	145.494	0.017	1	
13	2	E2−1	14	13	2	E2+1	14		9 835.227 (0.026)	145.494	0.018	1	
13	2	E2−1	12	13	2	E2+1	12		9 835.267 (0.026)	145.494	0.016	1	
25	1	B1		25	0	B2		9 938.950 (0.500)	9 938.377 (0.142)*	477.056	62.783	3	3
25	1	B1	24	25	0	B2	24		9 938.311 (0.142)	477.056	20.075	3	
25	1	B1	26	25	0	B2	26		9 938.318 (0.142)	477.056	21.716	3	
25	1	B1	25	25	0	B2	25		9 938.500 (0.142)	477.056	20.863	3	
24	3	B1		24	3	B2			9 995.475 (0.097)*	468.189	0.066	3	
24	3	B1	24	24	3	B2	24		9 995.310 (0.097)	468.189	0.022	3	
24	3	B1	25	24	3	B2	25		9 995.553 (0.097)	468.189	0.023	3	
24	3	B1	23	24	3	B2	23		9 995.563 (0.097)	468.189	0.021	3	
11	2	E1+1		11	2	E1−1			10 028.566 (0.011)*	108.469	0.017	3	
11	2	E1+1	11	11	2	E1−1	11		10 028.436 (0.011)	108.469	0.006	3	
11	2	E1+1	12	11	2	E1−1	12		10 028.623 (0.011)	108.469	0.006	3	
11	2	E1+1	10	11	2	E1−1	10		10 028.640 (0.011)	108.469	0.005	3	
4	1	E1+1		4	1	E1−1			10 116.413 (0.005)*	17.647	0.031	3	
4	1	E1+1	4	4	1	E1−1	4		10 115.098 (0.005)	17.648	0.009	3	
4	1	E1+1	5	4	1	E1−1	5		10 116.892 (0.005)	17.647	0.012	3	
4	1	E1+1	3	4	1	E1−1	3		10 117.353 (0.005)	17.647	0.008	3	
24	3	A1		24	3	A2			10 191.328 (0.094)*	468.096	0.066	1	
24	3	A1	24	24	3	A2	24		10 191.159 (0.094)	468.096	0.022	1	
24	3	A1	25	24	3	A2	25		10 191.407 (0.094)	468.096	0.023	1	
24	3	A1	23	24	3	A2	23		10 191.418 (0.094)	468.096	0.021	1	
26	8	A1		27	7	A2			10 262.215 (0.023)*	690.966	5.559	1	
26	8	A		27	7	A		10 262.410 (0.500)	10 262.220 (0.023)*	690.966	11.118	1	3
26	8	A2		27	7	A1			10 262.226 (0.023)*	690.966	5.559	1	
4	2	E2+1		5	1	E2+1			10 286.188 (0.009)*	25.426	0.785	1	
4	2	E2+1	3	5	1	E2+1	4		10 286.021 (0.009)	25.426	0.204	1	
4	2	E2+1	5	5	1	E2+1	6		10 286.103 (0.009)	25.426	0.309	1	
4	2	E2+1	4	5	1	E2+1	5		10 286.422 (0.009)	25.426	0.251	1	
26	8	E1+1		27	7	E1+1			10 362.904 (0.017)*	690.781	5.568	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
24	3	E2−1		24	3	E2+1			10 451.107 (0.095)*	468.027	0.064	1	
24	3	E2−1	24	24	3	E2+1	24		10 450.943 (0.095)	468.027	0.021	1	
24	3	E2−1	25	24	3	E2+1	25		10 451.184 (0.095)	468.027	0.022	1	
24	3	E2−1	23	24	3	E2+1	23		10 451.194 (0.095)	468.027	0.020	1	
16	3	B1		17	0	B2			10 483.095 (0.037)*	225.516	0.070	3	
16	3	B1	16	17	0	B2	17		10 482.408 (0.037)	225.516	0.023	3	
16	3	B1	17	17	0	B2	18		10 483.412 (0.037)	225.516	0.025	3	
16	3	B1	15	17	0	B2	16		10 483.469 (0.037)	225.516	0.022	3	
24	1	E2−1		24	0	E2+1			10 797.255 (0.073)*	440.700	59.817	1	
24	1	E2−1	23	24	0	E2+1	23		10 797.186 (0.073)	440.700	19.092	1	
24	1	E2−1	25	24	0	E2+1	25		10 797.194 (0.073)	440.700	20.720	1	
24	1	E2−1	24	24	0	E2+1	24		10 797.385 (0.073)	440.700	19.873	1	
27	1	E1−1		27	0	E1+1			11 027.399 (0.102)*	554.350	69.618	3	
27	1	E1−1	26	27	0	E1+1	26		11 027.354 (0.102)	554.350	22.331	3	
27	1	E1−1	28	27	0	E1+1	28		11 027.359 (0.102)	554.350	24.019	3	
27	1	E1−1	27	27	0	E1+1	27		11 027.482 (0.102)	554.350	23.145	3	
6	1	A2		5	2	A1			11 081.648 (0.010)*	33.390	1.256	1	
6	1	A2	5	5	2	A1	4		11 081.043 (0.010)	33.390	0.342	1	
6	1	A2	7	5	2	A1	6		11 081.255 (0.010)	33.390	0.483	1	
6	1	A2	6	5	2	A1	5		11 082.617 (0.010)	33.390	0.407	1	
12	2	E1+1		12	2	E1−1			11 147.965 (0.014)*	126.210	0.024	3	
12	2	E1+1	12	12	2	E1−1	12		11 147.773 (0.014)	126.210	0.008	3	
12	2	E1+1	13	12	2	E1−1	13		11 148.050 (0.014)	126.210	0.009	3	
12	2	E1+1	11	12	2	E1−1	11		11 148.074 (0.014)	126.210	0.007	3	
15	5	E1−1		16	4	E1−1			11 269.410 (0.011)*	244.734	3.270	3	
24	1	B2		24	0	B1		11 878.900 (0.500)	11 878.813 (0.122)*	440.575	59.510	3	3
24	1	B2	23	24	0	B1	23		11 878.737 (0.122)	440.575	18.994	3	
24	1	B2	25	24	0	B1	25		11 878.746 (0.122)	440.575	20.613	3	
24	1	B2	24	24	0	B1	24		11 878.956 (0.122)	440.575	19.770	3	
13	3	A1		12	4	A2		11 961.290 (0.500)	11 961.246 (0.008)*	158.802	2.747	1	3
13	3	A1	12	12	4	A2	11		11 961.204 (0.008)	158.802	0.842	1	
13	3	A1	14	12	4	A2	13		11 961.209 (0.008)	158.802	0.983	1	
13	3	A1	13	12	4	A2	12		11 961.326 (0.008)	158.802	0.910	1	
4	2	E2−1		5	1	E2+1			12 029.973 (0.010)*	25.426	0.196	1	
4	2	E2−1	3	5	1	E2+1	4		12 029.808 (0.010)	25.426	0.051	1	
4	2	E2−1	5	5	1	E2+1	6		12 029.889 (0.010)	25.426	0.077	1	
4	2	E2−1	4	5	1	E2+1	5		12 030.205 (0.010)	25.426	0.063	1	
13	3	E2+1		12	4	E2+1		12 162.440 (0.500)	12 162.448 (0.009)*	158.689	2.741	1	3
14	2	A1		14	2	A2			12 193.021 (0.040)*	166.370	0.053	1	
14	2	A1	14	14	2	A2	14		12 192.635 (0.040)	166.370	0.017	1	
14	2	A1	15	14	2	A2	15		12 193.196 (0.040)	166.370	0.019	1	
14	2	A1	13	14	2	A2	13		12 193.236 (0.040)	166.370	0.016	1	
15	5	A2		16	4	A1		12 238.840 (0.500)	12 238.901 (0.008)*	244.540	3.274	1	3
13	3	A2		12	4	A1			12 251.348 (0.008)*	158.802	2.748	1	
15	5	A1		16	4	A2		12 258.960 (0.500)	12 258.623 (0.008)*	244.540	3.274	1	3
30	1	A2		30	0	A1		12 306.860 (0.500)	12 306.002 (0.290)*	680.842	79.087	1	3
14	2	B1		14	2	B2			12 334.687 (0.038)*	166.406	0.048	3	
14	2	B1	14	14	2	B2	14		12 334.296 (0.038)	166.407	0.016	3	
14	2	B1	15	14	2	B2	15		12 334.864 (0.038)	166.406	0.017	3	
14	2	B1	13	14	2	B2	13		12 334.905 (0.038)	166.406	0.015	3	
6	1	E2−1		5	2	E2−1			12 340.370 (0.008)*	33.224	0.914	1	
6	1	E2−1	5	5	2	E2−1	4		12 339.819 (0.008)	33.224	0.249	1	
6	1	E2−1	7	5	2	E2−1	6		12 340.012 (0.008)	33.224	0.352	1	
6	1	E2−1	6	5	2	E2−1	5		12 341.251 (0.008)	33.224	0.296	1	
26	1	E1−1		26	0	E1+1		12 444.040 (0.500)	12 444.234 (0.089)*	515.001	66.347	3	3
26	1	E1−1	25	26	0	E1+1	25		12 444.182 (0.089)	515.001	21.250	3	
26	1	E1−1	27	26	0	E1+1	27		12 444.188 (0.089)	515.001	22.919	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
26	1	E1−1	26	26	0	E1+1	26		12 444.333 (0.089)	515.001	22.053	3	
25	3	B2		25	3	B1			12 588.071 (0.122)*	505.110	0.063	3	
25	3	B2	25	25	3	B1	25		12 587.880 (0.122)	505.110	0.021	3	
25	3	B2	26	25	3	B1	26		12 588.161 (0.122)	505.110	0.022	3	
25	3	B2	24	25	3	B1	24		12 588.173 (0.122)	505.110	0.020	3	
22	3	E1−1		22	3	E1+1			12 618.224 (0.052)*	398.444	0.018	3	
23	1	E2−1		23	0	E2+1		12 744.250 (0.500)	12 744.881 (0.065)*	405.663	56.555	1	3
23	1	E2−1	22	23	0	E2+1	22		12 744.801 (0.065)	405.663	18.015	1	
23	1	E2−1	24	23	0	E2+1	24		12 744.810 (0.065)	405.663	19.620	1	
23	1	E2−1	23	23	0	E2+1	23		12 745.032 (0.065)	405.663	18.783	1	
25	3	A2		25	3	A1			12 830.657 (0.118)*	505.019	0.063	1	
25	3	A2	25	25	3	A1	25		12 830.462 (0.118)	505.019	0.021	1	
25	3	A2	26	25	3	A1	26		12 830.749 (0.118)	505.019	0.022	1	
25	3	A2	24	25	3	A1	24		12 830.760 (0.118)	505.019	0.020	1	
13	2	E1+1		13	2	E1−1			12 863.799 (0.020)*	145.424	0.031	3	
13	2	E1+1	13	13	2	E1−1	13		12 863.538 (0.020)	145.424	0.010	3	
13	2	E1+1	14	13	2	E1−1	14		12 863.916 (0.020)	145.424	0.011	3	
13	2	E1+1	12	13	2	E1−1	12		12 863.945 (0.020)	145.424	0.009	3	
14	2	E2−1		14	2	E2+1			12 915.344 (0.034)*	166.167	0.048	1	
14	2	E2−1	14	14	2	E2+1	14		12 914.942 (0.034)	166.167	0.016	1	
14	2	E2−1	15	14	2	E2+1	15		12 915.525 (0.034)	166.167	0.017	1	
14	2	E2−1	13	14	2	E2+1	13		12 915.567 (0.034)	166.167	0.015	1	
25	3	E2−1		25	3	E2+1			13 046.770 (0.118)*	504.952	0.062	1	
25	3	E2−1	25	25	3	E2+1	25		13 046.578 (0.118)	504.952	0.020	1	
25	3	E2−1	26	25	3	E2+1	26		13 046.860 (0.118)	504.952	0.021	1	
25	3	E2−1	24	25	3	E2+1	24		13 046.871 (0.118)	504.952	0.020	1	
6	1	E1−1		5	2	E1+1		13 176.170 (0.500)	13 176.156 (0.007)*	33.322	0.436	3	6
6	1	E1−1	5	5	2	E1+1	4		13 175.548 (0.007)	33.322	0.119	3	
6	1	E1−1	7	5	2	E1+1	6		13 175.762 (0.007)	33.322	0.168	3	
6	1	E1−1	6	5	2	E1+1	5		13 177.127 (0.007)	33.322	0.141	3	
5	1	A2		5	1	A1			13 193.898 (0.008)*	24.977	0.033	1	
5	1	A2	5	5	1	A1	5		13 192.383 (0.009)	24.977	0.010	1	
5	1	A2	6	5	1	A1	6		13 194.481 (0.008)	24.977	0.012	1	
5	1	A2	4	5	1	A1	4		13 194.909 (0.009)	24.977	0.009	1	
5	1	B2		5	1	B1			13 216.800 (0.008)*	24.818	0.037	3	
5	1	B2	5	5	1	B1	5		13 215.284 (0.008)	24.818	0.011	3	
5	1	B2	6	5	1	B1	6		13 217.383 (0.008)	24.818	0.014	3	
5	1	B2	4	5	1	B1	4		13 217.811 (0.008)	24.818	0.010	3	
16	3	A1		17	0	A2			13 373.268 (0.034)*	225.323	0.065	1	
16	3	A1	16	17	0	A2	17		13 372.585 (0.034)	225.323	0.022	1	
16	3	A1	17	17	0	A2	18		13 373.583 (0.034)	225.323	0.023	1	
16	3	A1	15	17	0	A2	16		13 373.640 (0.034)	225.323	0.020	1	
19	6	A2		20	5	A1		13 415.330 (0.500)	13 414.983 (0.010)*	377.927	4.164	1	3
19	6	A1		20	5	A2		13 416.570 (0.500)	13 417.026 (0.010)*	377.927	4.164	1	3
29	1	A1		29	0	A2		13 464.760 (0.500)	13 464.292 (0.253)*	637.181	75.815	1	3
23	3	E1−1		23	3	E1+1			13 525.100 (0.070)*	432.441	0.025	3	
23	1	B1		23	0	B2		14 033.540 (0.500)	14 033.469 (0.106)*	405.531	56.246	3	3
23	1	B1	22	23	0	B2	22		14 033.381 (0.106)	405.530	17.917	3	
23	1	B1	24	23	0	B2	24		14 033.391 (0.106)	405.530	19.513	3	
23	1	B1	23	23	0	B2	23		14 033.634 (0.106)	405.531	18.681	3	
25	1	E1−1		25	0	E1+1		14 044.390 (0.500)	14 044.520 (0.078)*	477.088	63.076	3	3
25	1	E1−1	24	25	0	E1+1	24		14 044.459 (0.078)	477.088	20.169	3	
25	1	E1−1	26	25	0	E1+1	26		14 044.466 (0.078)	477.088	21.818	3	
25	1	E1−1	25	25	0	E1+1	25		14 044.635 (0.078)	477.088	20.961	3	
24	4	E1−1		25	1	E1+1			14 054.938 (0.204)*	486.594	0.040	3	
24	4	E1−1	23	25	1	E1+1	24		14 054.834 (0.204)	486.594	0.013	3	
24	4	E1−1	25	25	1	E1+1	26		14 054.847 (0.204)	486.594	0.014	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
24	4	E1−1	24	25	1	E1+1	25		14 055.132 (0.204)	486.594	0.013	3	
6	1	E2−1		5	2	E2+1			14 095.288 (0.008)*	33.165	0.354	1	
6	1	E2−1	5	5	2	E2+1	4		14 094.742 (0.008)	33.165	0.096	1	
6	1	E2−1	7	5	2	E2+1	6		14 094.933 (0.008)	33.165	0.136	1	
6	1	E2−1	6	5	2	E2+1	5		14 096.161 (0.008)	33.165	0.115	1	
5	1	E1+1		5	1	E1−1			14 095.646 (0.006)*	24.974	0.029	3	
5	1	E1+1	5	5	1	E1−1	5		14 094.230 (0.006)	24.974	0.009	3	
5	1	E1+1	6	5	1	E1−1	6		14 096.191 (0.006)	24.974	0.011	3	
5	1	E1+1	4	5	1	E1−1	4		14 096.590 (0.006)	24.974	0.008	3	
24	6	E1+1		23	7	E1+1		14 098.160 (0.500)	14 098.175 (0.012)*	540.284	5.043	3	3
24	6	E1−1		23	7	E1−1		14 215.990 (0.500)	14 216.201 (0.014)*	540.152	5.054	3	3
4	2	E1+1		5	1	E1+1		14 437.750 (0.500)	14 438.113 (0.008)*	25.444	0.669	3	3
4	2	E1+1	3	5	1	E1+1	4		14 437.850 (0.008)	25.444	0.173	3	
4	2	E1+1	5	5	1	E1+1	6		14 437.972 (0.008)	25.444	0.263	3	
4	2	E1+1	4	5	1	E1+1	5		14 438.491 (0.008)	25.444	0.214	3	
28	1	A2		28	0	A1		14 771.220 (0.500)	14 770.940 (0.220)*	594.954	72.538	1	3
24	3	E1−1		24	3	E1+1			14 867.159 (0.092)*	467.909	0.032	3	
24	3	E1−1	24	24	3	E1+1	24		14 867.047 (0.092)	467.909	0.011	3	
24	3	E1−1	25	24	3	E1+1	25		14 867.212 (0.092)	467.909	0.011	3	
24	3	E1−1	23	24	3	E1+1	23		14 867.219 (0.092)	467.909	0.010	3	
22	1	E2−1		22	0	E2+1		14 910.710 (0.500)	14 911.177 (0.057)*	372.064	53.304	1	3
22	1	E2−1	21	22	0	E2+1	21		14 911.084 (0.057)	372.064	16.943	1	
22	1	E2−1	23	22	0	E2+1	23		14 911.096 (0.057)	372.064	18.523	1	
22	1	E2−1	22	22	0	E2+1	22		14 911.351 (0.057)	372.064	17.698	1	
24	4	E2−1		25	1	E2+1			14 983.323 (0.217)*	486.533	0.037	1	
24	4	E2−1	23	25	1	E2+1	24		14 983.218 (0.217)	486.533	0.012	1	
24	4	E2−1	25	25	1	E2+1	26		14 983.231 (0.217)	486.533	0.013	1	
24	4	E2−1	24	25	1	E2+1	25		14 983.519 (0.217)	486.533	0.012	1	
26	8	B1		27	7	B2			15 173.563 (0.014)*	690.939	5.552	3	
26	8	B2		27	7	B1			15 173.574 (0.014)*	690.939	5.552	3	
14	2	E1+1		14	2	E1−1			15 284.952 (0.028)*	166.109	0.035	3	
14	2	E1+1	14	14	2	E1−1	14		15 284.621 (0.028)	166.109	0.012	3	
14	2	E1+1	15	14	2	E1−1	15		15 285.102 (0.028)	166.109	0.013	3	
14	2	E1+1	13	14	2	E1−1	13		15 285.137 (0.028)	166.109	0.011	3	
26	3	B1		26	3	B2			15 684.318 (0.152)*	543.502	0.061	3	
26	3	B1	26	26	3	B2	26		15 684.100 (0.152)	543.502	0.020	3	
26	3	B1	27	26	3	B2	27		15 684.422 (0.152)	543.502	0.021	3	
26	3	B1	25	26	3	B2	25		15 684.434 (0.152)	543.502	0.019	3	
15	2	A2		15	2	A1			15 792.566 (0.053)*	188.514	0.049	1	
15	2	A2	15	15	2	A1	15		15 792.131 (0.053)	188.514	0.016	1	
15	2	A2	16	15	2	A1	16		15 792.763 (0.053)	188.514	0.017	1	
15	2	A2	14	15	2	A1	14		15 792.805 (0.053)	188.514	0.015	1	
24	1	E1−1		24	0	E1+1		15 842.140 (0.500)	15 842.216 (0.068)*	440.612	59.807	3	3
24	1	E1−1	23	24	0	E1+1	23		15 842.145 (0.068)	440.612	19.089	3	
24	1	E1−1	25	24	0	E1+1	25		15 842.153 (0.068)	440.612	20.716	3	
24	1	E1−1	24	24	0	E1+1	24		15 842.350 (0.068)	440.612	19.869	3	
8	3	E1−1		9	2	E1−1		15 907.610 (0.500)	15 907.613 (0.008)*	77.409	1.819	3	3
8	3	E1−1	8	9	2	E1−1	9		15 907.488 (0.008)	77.409	0.599	3	
8	3	E1−1	9	9	2	E1−1	10		15 907.669 (0.008)	77.409	0.670	3	
8	3	E1−1	7	9	2	E1−1	8		15 907.682 (0.008)	77.409	0.535	3	
15	2	B2		15	2	B1			15 972.063 (0.050)*	188.551	0.045	3	
15	2	B2	15	15	2	B1	15		15 971.623 (0.050)	188.551	0.015	3	
15	2	B2	16	15	2	B1	16		15 972.263 (0.050)	188.551	0.016	3	
15	2	B2	14	15	2	B1	14		15 972.305 (0.050)	188.551	0.014	3	
26	3	A1		26	3	A2			15 980.990 (0.146)*	543.411	0.060	1	
26	3	A1	26	26	3	A2	26		15 980.767 (0.146)	543.411	0.020	1	
26	3	A1	27	26	3	A2	27		15 981.095 (0.146)	543.411	0.021	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
26	3	A1	25	26	3	A2	25		15 981.107 (0.146)	543.411	0.019	1	
26	3	E2−1		26	3	E2+1			16 167.350 (0.145)*	543.346	0.059	1	
26	3	E2−1	26	26	3	E2+1	26		16 167.130 (0.145)	543.346	0.020	1	
26	3	E2−1	27	26	3	E2+1	27		16 167.454 (0.145)	543.346	0.021	1	
26	3	E2−1	25	26	3	E2+1	25		16 167.467 (0.145)	543.346	0.019	1	
27	1	A1		27	0	A2		16 240.640 (0.500)	16 240.419 (0.190)*	554.161	69.258	1	3
22	1	B2		22	0	B1		16 410.630 (0.500)	16 410.285 (0.091)*	371.925	52.998	3	3
22	1	B2	21	22	0	B1	21		16 410.184 (0.091)	371.925	16.846	3	
22	1	B2	23	22	0	B1	23		16 410.196 (0.091)	371.925	18.416	3	
22	1	B2	22	22	0	B1	22		16 410.475 (0.091)	371.925	17.596	3	
15	2	E2−1		15	2	E2+1			16 654.974 (0.044)*	188.312	0.045	1	
15	2	E2−1	15	15	2	E2+1	15		16 654.522 (0.044)	188.312	0.015	1	
15	2	E2−1	16	15	2	E2+1	16		16 655.180 (0.044)	188.312	0.016	1	
15	2	E2−1	14	15	2	E2+1	14		16 655.224 (0.044)	188.312	0.014	1	
15	5	E2−1		16	4	E2−1			16 680.607 (0.010)*	244.703	3.265	1	
25	3	E1−1		25	3	E1+1			16 742.546 (0.118)*	504.847	0.038	3	
25	3	E1−1	25	25	3	E1+1	25		16 742.400 (0.118)	504.847	0.013	3	
25	3	E1−1	26	25	3	E1+1	26		16 742.615 (0.118)	504.847	0.013	3	
25	3	E1−1	24	25	3	E1+1	24		16 742.624 (0.118)	504.847	0.012	3	
17	4	E2+1		16	5	E2+1		16 947.650 (0.500)	16 947.493 (0.010)*	268.991	3.643	1	3
21	1	E2−1		21	0	E2+1		17 302.030 (0.500)	17 302.333 (0.051)*	339.905	50.072	1	3
21	1	E2−1	20	21	0	E2+1	20		17 302.225 (0.051)	339.905	15.878	1	
21	1	E2−1	22	21	0	E2+1	22		17 302.239 (0.051)	339.905	17.431	1	
21	1	E2−1	21	21	0	E2+1	21		17 302.533 (0.051)	339.905	16.619	1	
4	2	A1		5	1	A2		17 475.860 (0.500)	17 475.825 (0.010)*	25.417	0.988	1	3
4	2	A1	3	5	1	A2	4		17 475.541 (0.010)	25.417	0.256	1	
4	2	A1	5	5	1	A2	6		17 475.672 (0.010)	25.417	0.389	1	
4	2	A1	4	5	1	A2	5		17 476.236 (0.010)	25.417	0.316	1	
5	1	E2+1		5	1	E2−1			17 741.081 (0.006)*	24.834	0.019	1	
5	1	E2+1	5	5	1	E2−1	5		17 739.955 (0.006)	24.834	0.006	1	
5	1	E2+1	6	5	1	E2−1	6		17 741.514 (0.006)	24.834	0.007	1	
5	1	E2+1	4	5	1	E2−1	4		17 741.832 (0.006)	24.834	0.005	1	
23	1	E1−1		23	0	E1+1		17 849.460 (0.500)	17 849.570 (0.059)*	405.573	56.544	3	3
23	1	E1−1	22	23	0	E1+1	22		17 849.487 (0.059)	405.573	18.012	3	
23	1	E1−1	24	23	0	E1+1	24		17 849.497 (0.059)	405.573	19.616	3	
23	1	E1−1	23	23	0	E1+1	23		17 849.725 (0.059)	405.573	18.780	3	
26	1	A2		26	0	A1		17 887.200 (0.500)	17 887.062 (0.163)*	514.804	65.975	1	3
2	0	E2+1		1	1	E2−1			18 348.552 (0.008)*	4.229	0.360	1	
2	0	E2+1	1	1	1	E2−1	0		18 347.449 (0.008)	4.229	0.040	1	
2	0	E2+1	1	1	1	E2−1	1		18 348.186 (0.008)	4.229	0.030	1	
2	0	E2+1	3	1	1	E2−1	2		18 348.328 (0.008)	4.229	0.168	1	
2	0	E2+1	2	1	1	E2−1	2		18 349.115 (0.008)	4.229	0.030	1	
2	0	E2+1	2	1	1	E2−1	1		18 349.410 (0.008)	4.229	0.090	1	
6	1	A1		6	1	A2			18 468.041 (0.011)*	33.759	0.027	1	
6	1	A1	6	6	1	A2	6		18 466.526 (0.011)	33.760	0.009	1	
6	1	A1	7	6	1	A2	7		18 468.648 (0.011)	33.759	0.010	1	
6	1	A1	5	6	1	A2	5		18 469.006 (0.011)	33.759	0.007	1	
15	2	E1+1		15	2	E1−1			18 483.926 (0.038)*	188.262	0.038	3	
15	2	E1+1	15	15	2	E1−1	15		18 483.526 (0.038)	188.262	0.012	3	
15	2	E1+1	16	15	2	E1−1	16		18 484.108 (0.038)	188.262	0.013	3	
15	2	E1+1	14	15	2	E1−1	14		18 484.146 (0.038)	188.262	0.012	3	
6	1	B1		6	1	B2			18 500.118 (0.011)*	33.601	0.032	3	
6	1	B1	6	6	1	B2	6		18 498.603 (0.011)	33.601	0.010	3	
6	1	B1	7	6	1	B2	7		18 500.724 (0.011)	33.601	0.012	3	
6	1	B1	5	6	1	B2	5		18 501.082 (0.011)	33.601	0.009	3	
28	7	E1−1		27	8	E1−1		18 562.400 (0.500)	18 562.473 (0.014)*	731.333	5.935	3	3
21	1	B1		21	0	B2		19 013.550 (0.500)	19 013.343 (0.078)*	339.759	49.775	3	3

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
21	1	B1	20	21	0	B2	20		19 013.227 (0.078)	339.759	15.784	3	
21	1	B1	22	21	0	B2	22		19 013.242 (0.078)	339.759	17.327	3	
21	1	B1	21	21	0	B2	21		19 013.560 (0.078)	339.759	16.520	3	
6	1	E1+1		6	1	E1−1			19 106.471 (0.007)*	33.761	0.026	3	
6	1	E1+1	6	6	1	E1−1	6		19 105.009 (0.007)	33.761	0.008	3	
6	1	E1+1	7	6	1	E1−1	7		19 107.055 (0.007)	33.761	0.010	3	
6	1	E1+1	5	6	1	E1−1	5		19 107.401 (0.007)	33.761	0.007	3	
26	3	E1−1		26	3	E1+1			19 235.757 (0.147)*	543.253	0.042	3	
26	3	E1−1	26	26	3	E1+1	26		19 235.574 (0.147)	543.253	0.014	3	
26	3	E1−1	27	26	3	E1+1	27		19 235.844 (0.147)	543.253	0.015	3	
26	3	E1−1	25	26	3	E1+1	25		19 235.854 (0.147)	543.253	0.014	3	
27	3	B2		27	3	B1			19 345.452 (0.188)*	583.362	0.058	3	
27	3	B2	27	27	3	B1	27		19 345.203 (0.188)	583.362	0.019	3	
27	3	B2	28	27	3	B1	28		19 345.569 (0.188)	583.362	0.020	3	
27	3	B2	26	27	3	B1	26		19 345.583 (0.188)	583.362	0.019	3	
27	3	A2		27	3	A1			19 703.833 (0.180)*	583.272	0.057	1	
27	3	A2	27	27	3	A1	27		19 703.581 (0.180)	583.272	0.019	1	
27	3	A2	28	27	3	A1	28		19 703.953 (0.180)	583.272	0.020	1	
27	3	A2	26	27	3	A1	26		19 703.967 (0.180)	583.272	0.018	1	
25	1	A1		25	0	A2		19 724.620 (0.500)	19 724.525 (0.138)*	476.883	62.693	1	3
25	1	A1	24	25	0	A2	24		19 724.456 (0.138)	476.883	20.046	1	
25	1	A1	26	25	0	A2	26		19 724.463 (0.138)	476.883	21.685	1	
25	1	A1	25	25	0	A2	25		19 724.656 (0.138)	476.883	20.833	1	
4	2	E1−1		5	1	E1−1		19 776.840 (0.500)	19 776.987 (0.008)*	24.974	0.633	3	3
4	2	E1−1	4	5	1	E1−1	5		19 775.949 (0.008)	24.974	0.203	3	
4	2	E1−1	5	5	1	E1−1	6		19 777.391 (0.008)	24.974	0.250	3	
4	2	E1−1	3	5	1	E1−1	4		19 777.668 (0.008)	24.974	0.164	3	
27	3	E2−1		27	3	E2+1			19 871.032 (0.176)*	583.209	0.057	1	
27	3	E2−1	27	27	3	E2+1	27		19 870.781 (0.176)	583.209	0.019	1	
27	3	E2−1	28	27	3	E2+1	28		19 871.151 (0.176)	583.209	0.020	1	
27	3	E2−1	26	27	3	E2+1	26		19 871.165 (0.176)	583.209	0.018	1	
20	1	E2−1		20	0	E2+1		19 919.560 (0.500)	19 919.873 (0.045)*	309.186	46.868	1	3
20	1	E2−1	19	20	0	E2+1	19		19 919.750 (0.045)	309.186	14.824	1	
20	1	E2−1	21	20	0	E2+1	21		19 919.767 (0.045)	309.186	16.348	1	
20	1	E2−1	20	20	0	E2+1	20		19 920.101 (0.045)	309.186	15.548	1	
22	1	E1−1		22	0	E1+1		20 076.000 (0.500)	20 076.216 (0.052)*	371.973	53.295	3	3
22	1	E1−1	21	22	0	E1+1	21		20 076.120 (0.052)	371.973	16.940	3	
22	1	E1−1	23	22	0	E1+1	23		20 076.132 (0.052)	371.973	18.519	3	
22	1	E1−1	22	22	0	E1+1	22		20 076.395 (0.052)	371.973	17.695	3	
16	2	A1		16	2	A2			20 077.687 (0.068)*	212.129	0.046	1	
16	2	A1	16	16	2	A2	16		20 077.204 (0.068)	212.129	0.015	1	
16	2	A1	17	16	2	A2	17		20 077.908 (0.068)	212.129	0.016	1	
16	2	A1	15	16	2	A2	15		20 077.952 (0.068)	212.129	0.014	1	
26	8	E2−1		27	7	E2−1			20 220.983 (0.015)*	690.800	5.559	1	
16	2	B1		16	2	B2			20 300.159 (0.064)*	212.165	0.041	3	
16	2	B1	16	16	2	B2	16		20 299.671 (0.064)	212.165	0.014	3	
16	2	B1	17	16	2	B2	17		20 300.383 (0.064)	212.165	0.014	3	
16	2	B1	15	16	2	B2	15		20 300.427 (0.064)	212.165	0.013	3	
13	3	B1		12	4	B2		20 547.170 (0.500)	20 547.315 (0.009)*	158.614	2.750	3	3
26	8	E2+1		27	7	E2+1			20 749.224 (0.015)*	690.609	5.566	1	
13	3	B2		12	4	B1		20 831.280 (0.500)	20 831.223 (0.009)*	158.614	2.751	3	3
17	4	B1		16	5	B2		21 019.170 (0.500)	21 019.071 (0.009)*	268.780	3.646	3	3
17	4	B2		16	5	B1		21 051.620 (0.500)	21 051.545 (0.009)*	268.780	3.646	3	3
16	2	E2−1		16	2	E2+1			21 110.614 (0.056)*	211.927	0.042	1	
16	2	E2−1	16	16	2	E2+1	16		21 110.112 (0.056)	211.927	0.014	1	
16	2	E2−1	17	16	2	E2+1	17		21 110.844 (0.056)	211.927	0.015	1	
16	2	E2−1	15	16	2	E2+1	15		21 110.890 (0.056)	211.927	0.013	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
15	5	E1+1		16	4	E1+1		21 712.650 (0.500)	21 712.659 (0.010)*	244.584	3.267	3	3
24	1	A2		24	0	A1		21 765.230 (0.500)	21 765.132 (0.117)*	440.399	59.416	1	3
24	1	A2	23	24	0	A1	23		21 765.052 (0.117)	440.399	18.964	1	
24	1	A2	25	24	0	A1	25		21 765.061 (0.117)	440.399	20.581	1	
24	1	A2	24	24	0	A1	24		21 765.283 (0.117)	440.399	19.740	1	
20	1	B2		20	0	B1		21 842.310 (0.500)	21 841.898 (0.068)*	309.034	46.584	3	3
20	1	B2	19	20	0	B1	19		21 841.766 (0.068)	309.034	14.734	3	
20	1	B2	21	20	0	B1	21		21 841.784 (0.068)	309.034	16.249	3	
20	1	B2	20	20	0	B1	20		21 842.144 (0.068)	309.034	15.454	3	
6	1	E1−1		5	2	E1−1		21 930.490 (0.500)	21 930.443 (0.008)*	33.030	0.822	3	3
6	1	E1−1	5	5	2	E1−1	4		21 929.835 (0.008)	33.030	0.224	3	
6	1	E1−1	7	5	2	E1−1	6		21 930.049 (0.008)	33.030	0.316	3	
6	1	E1−1	6	5	2	E1−1	5		21 931.413 (0.008)	33.030	0.266	3	
6	1	E2+1		6	1	E2−1			21 939.366 (0.007)*	33.635	0.021	1	
6	1	E2+1	6	6	1	E2−1	6		21 938.092 (0.007)	33.635	0.007	1	
6	1	E2+1	7	6	1	E2−1	7		21 939.875 (0.007)	33.635	0.008	1	
6	1	E2+1	5	6	1	E2−1	5		21 940.177 (0.007)	33.635	0.006	1	
24	6	E2+1		23	7	E2+1			22 080.797 (0.014)*	540.109	5.049	1	
22	7	E2+1		23	6	E2+1			22 221.211 (0.014)*	505.418	4.679	1	
27	3	E1−1		27	3	E1+1			22 415.503 (0.181)*	583.125	0.045	3	
27	3	E1−1	27	27	3	E1+1	27		22 415.281 (0.181)	583.125	0.015	3	
27	3	E1−1	28	27	3	E1+1	28		22 415.608 (0.181)	583.125	0.016	3	
27	3	E1−1	26	27	3	E1+1	26		22 415.620 (0.181)	583.125	0.014	3	
16	2	E1+1		16	2	E1−1			22 507.276 (0.050)*	211.884	0.038	3	
16	2	E1+1	16	16	2	E1−1	16		22 506.812 (0.050)	211.884	0.013	3	
16	2	E1+1	17	16	2	E1−1	17		22 507.487 (0.050)	211.884	0.013	3	
16	2	E1+1	15	16	2	E1−1	15		22 507.530 (0.050)	211.884	0.012	3	
21	1	E1−1		21	0	E1+1		22 528.020 (0.500)	22 528.182 (0.045)*	339.813	50.065	3	3
21	1	E1−1	20	21	0	E1+1	20		22 528.072 (0.045)	339.813	15.876	3	
21	1	E1−1	22	21	0	E1+1	22		22 528.087 (0.045)	339.813	17.429	3	
21	1	E1−1	21	21	0	E1+1	21		22 528.387 (0.045)	339.813	16.616	3	
17	4	E1+1		16	5	E1+1		22 722.630 (0.500)	22 722.583 (0.010)*	268.953	3.639	3	3
19	1	E2−1		19	0	E2+1		22 759.360 (0.500)	22 759.631 (0.040)*	279.909	43.703	1	3
19	1	E2−1	18	19	0	E2+1	18		22 759.491 (0.040)	279.909	13.782	1	
19	1	E2−1	20	19	0	E2+1	20		22 759.511 (0.040)	279.909	15.276	1	
19	1	E2−1	19	19	0	E2+1	19		22 759.890 (0.040)	279.909	14.491	1	
4	2	B1		5	1	B2		23 340.880 (0.500)	23 340.882 (0.011)*	25.259	0.989	3	3
4	2	B1	3	5	1	B2	4		23 340.598 (0.011)	25.259	0.256	3	
4	2	B1	5	5	1	B2	6		23 340.728 (0.011)	25.259	0.390	3	
4	2	B1	4	5	1	B2	5		23 341.292 (0.011)	25.259	0.317	3	
15	5	B2		16	4	B1		23 409.160 (0.500)	23 409.220 (0.009)*	244.355	3.273	3	3
15	5	B1		16	4	B2		23 429.420 (0.500)	23 429.382 (0.009)*	244.354	3.273	3	3
6	1	B1		5	2	B2		23 449.910 (0.500)	23 449.966 (0.011)*	33.435	1.401	3	3
6	1	B1	6	5	2	B2	5		23 449.475 (0.011)	33.435	0.454	3	
6	1	B1	7	5	2	B2	6		23 450.158 (0.011)	33.435	0.539	3	
6	1	B1	5	5	2	B2	4		23 450.288 (0.011)	33.435	0.382	3	
28	7	E2+1		27	8	E2+1			23 526.985 (0.014)*	731.121	5.937	1	
28	3	B1		28	3	B2			23 633.208 (0.231)*	624.688	0.056	3	
28	3	B1	28	28	3	B2	28		23 632.929 (0.231)	624.688	0.018	3	
28	3	B1	29	28	3	B2	29		23 633.341 (0.231)	624.688	0.019	3	
28	3	B1	27	28	3	B2	27		23 633.356 (0.231)	624.688	0.018	3	
11	4	B2		12	3	B1		23 683.170 (0.500)	23 683.273 (0.008)*	140.083	2.379	3	3
11	4	B1		12	3	B2		23 861.400 (0.500)	23 861.284 (0.008)*	140.077	2.379	3	3
23	1	A1		23	0	A2		24 019.010 (0.500)	24 019.088 (0.098)*	405.352	56.150	1	3
23	1	A1	22	23	0	A2	22		24 018.996 (0.098)	405.352	17.886	1	
23	1	A1	24	23	0	A2	24		24 019.007 (0.098)	405.352	19.479	1	
23	1	A1	23	23	0	A2	23		24 019.260 (0.098)	405.352	18.649	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
28	7	E2−1		27	8	E2−1			24 037.230 (0.015)*	731.295	5.929	1	
28	3	A1		28	3	A2			24 061.005 (0.221)*	624.599	0.054	1	
28	3	A1	28	28	3	A2	28		24 060.721 (0.221)	624.599	0.018	1	
28	3	A1	29	28	3	A2	29		24 061.140 (0.221)	624.599	0.019	1	
28	3	A1	27	28	3	A2	27		24 061.155 (0.221)	624.599	0.017	1	
18	0	A1		17	3	A2			24 099.571 (0.040)*	250.916	0.082	1	
18	0	A1	17	17	3	A2	16		24 099.171 (0.040)	250.916	0.026	1	
18	0	A1	19	17	3	A2	18		24 099.229 (0.040)	250.916	0.029	1	
18	0	A1	18	17	3	A2	17		24 100.309 (0.040)	250.916	0.027	1	
28	3	E2−1		28	3	E2+1			24 217.049 (0.212)*	624.539	0.055	1	
28	3	E2−1	28	28	3	E2+1	28		24 216.766 (0.212)	624.539	0.018	1	
28	3	E2−1	29	28	3	E2+1	29		24 217.184 (0.212)	624.539	0.019	1	
28	3	E2−1	27	28	3	E2+1	27		24 217.198 (0.212)	624.539	0.018	1	
7	1	A2		7	1	A1			24 617.704 (0.014)*	44.005	0.023	1	
7	1	A2	7	7	1	A1	7		24 616.190 (0.014)	44.005	0.007	1	
7	1	A2	8	7	1	A1	8		24 618.328 (0.014)	44.005	0.008	1	
7	1	A2	6	7	1	A1	6		24 618.636 (0.014)	44.005	0.006	1	
7	1	B2		7	1	B1			24 660.518 (0.015)*	43.846	0.028	3	
7	1	B2	7	7	1	B1	7		24 659.003 (0.015)	43.846	0.009	3	
7	1	B2	8	7	1	B1	8		24 661.141 (0.015)	43.846	0.011	3	
7	1	B2	6	7	1	B1	6		24 661.450 (0.015)	43.846	0.008	3	
19	1	B1		19	0	B2		24 889.540 (0.500)	24 889.489 (0.059)*	279.750	43.438	3	3
19	1	B1	18	19	0	B2	18		24 889.339 (0.059)	279.750	13.699	3	
19	1	B1	20	19	0	B2	20		24 889.361 (0.059)	279.750	15.184	3	
19	1	B1	19	19	0	B2	19		24 889.765 (0.059)	279.750	14.403	3	
7	1	E1+1		7	1	E1−1			25 080.129 (0.009)*	44.009	0.023	3	
7	1	E1+1	7	7	1	E1−1	7		25 078.645 (0.009)	44.010	0.007	3	
7	1	E1+1	8	7	1	E1−1	8		25 080.740 (0.009)	44.009	0.009	3	
7	1	E1+1	6	7	1	E1−1	6		25 081.042 (0.009)	44.009	0.007	3	
17	2	A2		17	2	A1			25 103.692 (0.087)*	237.213	0.044	1	
17	2	A2	17	17	2	A1	17		25 103.161 (0.087)	237.213	0.014	1	
17	2	A2	18	17	2	A1	18		25 103.936 (0.087)	237.213	0.015	1	
17	2	A2	16	17	2	A1	16		25 103.981 (0.087)	237.213	0.014	1	
20	1	E1−1		20	0	E1+1		25 206.620 (0.500)	25 206.857 (0.039)*	309.093	46.866	3	3
20	1	E1−1	19	20	0	E1+1	19		25 206.731 (0.039)	309.093	14.823	3	
20	1	E1−1	21	20	0	E1+1	21		25 206.748 (0.039)	309.093	16.347	3	
20	1	E1−1	20	20	0	E1+1	20		25 207.090 (0.039)	309.093	15.548	3	
17	2	B2		17	2	B1			25 373.918 (0.082)*	237.249	0.038	3	
17	2	B2	17	17	2	B1	17		25 373.381 (0.082)	237.249	0.013	3	
17	2	B2	18	17	2	B1	18		25 374.165 (0.082)	237.249	0.013	3	
17	2	B2	16	17	2	B1	16		25 374.211 (0.082)	237.249	0.012	3	
26	8	E1−1		27	7	E1−1			25 725.908 (0.014)*	690.654	5.564	3	
18	1	E2−1		18	0	E2+1		25 810.650 (0.500)	25 810.850 (0.035)*	252.076	40.587	1	3
18	1	E2−1	17	18	0	E2+1	17		25 810.692 (0.035)	252.076	12.758	1	
18	1	E2−1	19	18	0	E2+1	19		25 810.716 (0.035)	252.076	14.221	1	
18	1	E2−1	18	18	0	E2+1	18		25 811.142 (0.035)	252.076	13.450	1	
17	2	E2−1		17	2	E2+1			26 334.106 (0.070)*	237.011	0.039	1	
17	2	E2−1	17	17	2	E2+1	17		26 333.554 (0.070)	237.011	0.013	1	
17	2	E2−1	18	17	2	E2+1	18		26 334.360 (0.070)	237.011	0.014	1	
17	2	E2−1	16	17	2	E2+1	16		26 334.407 (0.070)	237.011	0.012	1	
28	3	E1−1		28	3	E1+1			26 337.839 (0.219)*	624.463	0.046	3	
28	3	E1−1	28	28	3	E1+1	28		26 337.578 (0.219)	624.463	0.015	3	
28	3	E1−1	29	28	3	E1+1	29		26 337.962 (0.219)	624.463	0.016	3	
28	3	E1−1	27	28	3	E1+1	27		26 337.976 (0.219)	624.463	0.015	3	
22	1	A2		22	0	A1		26 493.630 (0.500)	26 493.596 (0.081)*	371.744	52.901	1	3
22	1	A2	21	22	0	A1	21		26 493.490 (0.081)	371.744	16.815	1	
22	1	A2	23	22	0	A1	23		26 493.503 (0.081)	371.744	18.382	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
22	1	A2	22	22	0	A1	22		26 493.793 (0.081)	371.744	17.564	1	
18	0	B1		17	3	B2			26 947.496 (0.043)*	251.012	0.088	3	
18	0	B1	17	17	3	B2	16		26 947.094 (0.043)	251.012	0.028	3	
18	0	B1	19	17	3	B2	18		26 947.152 (0.043)	251.012	0.031	3	
18	0	B1	18	17	3	B2	17		26 948.238 (0.043)	251.012	0.029	3	
7	1	E2+1		7	1	E2−1			27 306.927 (0.008)*	43.893	0.021	1	
7	1	E2+1	7	7	1	E2−1	7		27 305.563 (0.008)	43.894	0.007	1	
7	1	E2+1	8	7	1	E2−1	8		27 307.489 (0.008)	43.893	0.008	1	
7	1	E2+1	6	7	1	E2−1	6		27 307.766 (0.008)	43.893	0.006	1	
17	2	E1+1		17	2	E1−1			27 387.721 (0.064)*	236.974	0.038	3	
17	2	E1+1	17	17	2	E1−1	17		27 387.199 (0.064)	236.974	0.013	3	
17	2	E1+1	18	17	2	E1−1	18		27 387.961 (0.064)	236.974	0.013	3	
17	2	E1+1	16	17	2	E1−1	16		27 388.006 (0.064)	236.974	0.012	3	
15	5	E2+1		16	4	E2+1		27 504.750 (0.500)	27 504.974 (0.010)*	244.429	3.270	1	3
17	4	E2−1		16	5	E2−1		27 758.400 (0.500)	27 758.481 (0.010)*	268.904	3.637	1	3
4	2	E2+1		5	1	E2−1			28 027.269 (0.008)*	24.834	0.165	1	
4	2	E2+1	4	5	1	E2−1	5		28 026.377 (0.008)	24.834	0.053	1	
4	2	E2+1	5	5	1	E2−1	6		28 027.617 (0.008)	24.834	0.065	1	
4	2	E2+1	3	5	1	E2−1	4		28 027.853 (0.008)	24.834	0.043	1	
19	1	E1−1		19	0	E1+1		28 107.750 (0.500)	28 107.994 (0.034)*	279.815	43.706	3	3
19	1	E1−1	18	19	0	E1+1	18		28 107.851 (0.034)	279.815	13.783	3	
19	1	E1−1	20	19	0	E1+1	20		28 107.872 (0.034)	279.815	15.278	3	
19	1	E1−1	19	19	0	E1+1	19		28 108.258 (0.034)	279.815	14.492	3	
18	1	B2		18	0	B1		28 142.850 (0.500)	28 143.214 (0.051)*	251.911	40.348	3	3
18	1	B2	17	18	0	B1	17		28 143.046 (0.051)	251.911	12.683	3	
18	1	B2	19	18	0	B1	19		28 143.071 (0.051)	251.911	14.137	3	
18	1	B2	18	18	0	B1	18		28 143.523 (0.051)	251.911	13.371	3	
10	2	E1−1		9	3	E1−1			28 513.369 (0.008)*	91.250	2.143	3	
10	2	E1−1	9	9	3	E1−1	8		28 513.313 (0.008)	91.250	0.639	3	
10	2	E1−1	11	9	3	E1−1	10		28 513.322 (0.008)	91.250	0.782	3	
10	2	E1−1	10	9	3	E1−1	9		28 513.473 (0.008)	91.250	0.707	3	
4	2	E1+1		5	1	E1−1		28 533.900 (0.500)	28 533.759 (0.007)*	24.974	0.283	3	4
4	2	E1+1	4	5	1	E1−1	5		28 532.721 (0.007)	24.974	0.091	3	
4	2	E1+1	5	5	1	E1−1	6		28 534.163 (0.007)	24.974	0.112	3	
4	2	E1+1	3	5	1	E1−1	4		28 534.440 (0.007)	24.974	0.073	3	
29	3	B2		29	3	B1			28 608.480 (0.280)*	667.480	0.053	3	
29	3	B2	29	29	3	B1	29		28 608.168 (0.280)	667.480	0.018	3	
29	3	B2	30	29	3	B1	30		28 608.629 (0.280)	667.480	0.018	3	
29	3	B2	28	29	3	B1	28		28 608.645 (0.280)	667.480	0.017	3	
17	1	E2−1		17	0	E2+1		29 055.200 (0.500)	29 055.515 (0.031)*	225.687	37.534	1	3
17	1	E2−1	16	17	0	E2+1	16		29 055.337 (0.031)	225.687	11.756	1	
17	1	E2−1	18	17	0	E2+1	18		29 055.365 (0.031)	225.687	13.186	1	
17	1	E2−1	17	17	0	E2+1	17		29 055.840 (0.031)	225.687	12.430	1	
28	7	B2		27	8	B1			29 098.539 (0.014)*	731.265	5.921	3	
28	7	B1		27	8	B2			29 098.558 (0.014)*	731.265	5.921	3	
29	3	A2		29	3	A1			29 113.250 (0.267)*	667.392	0.051	1	
29	3	A2	29	29	3	A1	29		29 112.933 (0.267)	667.392	0.017	1	
29	3	A2	30	29	3	A1	30		29 113.401 (0.267)	667.392	0.018	1	
29	3	A2	28	29	3	A1	28		29 113.417 (0.267)	667.392	0.017	1	
21	1	A1		21	0	A2		29 191.470 (0.500)	29 191.915 (0.067)*	339.575	49.677	1	3
21	1	A1	20	21	0	A2	20		29 191.795 (0.067)	339.575	15.753	1	
21	1	A1	22	21	0	A2	22		29 191.811 (0.067)	339.575	17.293	1	
21	1	A1	21	21	0	A2	21		29 192.139 (0.067)	339.575	16.487	1	
29	3	E2−1		29	3	E2+1			29 264.097 (0.254)*	667.334	0.053	1	
29	3	E2−1	29	29	3	E2+1	29		29 263.780 (0.254)	667.334	0.017	1	
29	3	E2−1	30	29	3	E2+1	30		29 264.247 (0.254)	667.334	0.018	1	
29	3	E2−1	28	29	3	E2+1	28		29 264.263 (0.254)	667.334	0.017	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	1	A1		5	2	A2			29 307.163 (0.010)*	33.398	1.398	1	
6	1	A1	6	5	2	A2	5		29 306.672 (0.010)	33.398	0.453	1	
6	1	A1	7	5	2	A2	6		29 307.355 (0.010)	33.398	0.538	1	
6	1	A1	5	5	2	A2	4		29 307.485 (0.010)	33.398	0.381	1	
4	2	E2−1		5	1	E2−1		29 771.400 (0.500)	29 771.054 (0.008)*	24.834	0.759	1	4
4	2	E2−1	4	5	1	E2−1	5		29 770.160 (0.008)	24.834	0.243	1	
4	2	E2−1	5	5	1	E2−1	6		29 771.403 (0.008)	24.834	0.299	1	
4	2	E2−1	3	5	1	E2−1	4		29 771.640 (0.008)	24.834	0.197	1	
22	7	E1−1		23	6	E1−1			30 088.199 (0.014)*	505.199	4.683	3	
22	7	E1+1		23	6	E1+1			30 236.457 (0.011)*	505.326	4.674	3	
18	0	E1+1		17	3	E1−1			30 444.449 (0.040)*	250.964	0.058	3	
18	0	E1+1	17	17	3	E1−1	16		30 444.049 (0.040)	250.964	0.018	3	
18	0	E1+1	19	17	3	E1−1	18		30 444.107 (0.040)	250.964	0.020	3	
18	0	E1+1	18	17	3	E1−1	17		30 445.186 (0.040)	250.964	0.019	3	
4	2	A2		5	1	A1		30 565.900 (0.500)	30 565.730 (0.009)*	24.977	0.914	1	4
4	2	A2	4	5	1	A1	5		30 564.661 (0.009)	24.977	0.292	1	
4	2	A2	5	5	1	A1	6		30 566.146 (0.009)	24.977	0.360	1	
4	2	A2	3	5	1	A1	4		30 566.431 (0.009)	24.977	0.237	1	
18	2	A1		18	2	A2			30 919.395 (0.110)*	263.765	0.041	1	
18	2	A1	18	18	2	A2	18		30 918.817 (0.110)	263.765	0.014	1	
18	2	A1	19	18	2	A2	19		30 919.662 (0.110)	263.765	0.014	1	
18	2	A1	17	18	2	A2	17		30 919.709 (0.110)	263.765	0.013	1	
21	5	A1		20	6	A2			30 993.856 (0.010)*	407.913	4.537	1	
21	5	A2		20	6	A1			30 997.166 (0.010)*	407.913	4.537	1	
29	3	E1−1		29	3	E1+1			31 050.689 (0.261)*	667.265	0.046	3	
29	3	E1−1	29	29	3	E1+1	29		31 050.389 (0.261)	667.265	0.015	3	
29	3	E1−1	30	29	3	E1+1	30		31 050.831 (0.261)	667.265	0.016	3	
29	3	E1−1	28	29	3	E1+1	28		31 050.847 (0.261)	667.265	0.015	3	
18	1	E1−1		18	0	E1+1		31 221.000 (0.500)	31 220.869 (0.029)*	251.980	40.599	3	3
18	1	E1−1	17	18	0	E1+1	17		31 220.707 (0.029)	251.980	12.762	3	
18	1	E1−1	19	18	0	E1+1	19		31 220.731 (0.029)	251.980	14.225	3	
18	1	E1−1	18	18	0	E1+1	18		31 221.166 (0.029)	251.980	13.454	3	
18	2	B1		18	2	B2			31 241.590 (0.103)*	263.801	0.035	3	
18	2	B1	18	18	2	B2	18		31 241.006 (0.103)	263.801	0.012	3	
18	2	B1	19	18	2	B2	19		31 241.860 (0.103)	263.801	0.012	3	
18	2	B1	17	18	2	B2	17		31 241.907 (0.103)	263.801	0.011	3	
17	1	B1		17	0	B2		31 583.640 (0.500)	31 583.276 (0.045)*	225.516	37.326	3	3
17	1	B1	16	17	0	B2	16		31 583.088 (0.045)	225.516	11.690	3	
17	1	B1	18	17	0	B2	18		31 583.118 (0.045)	225.516	13.112	3	
17	1	B1	17	17	0	B2	17		31 583.619 (0.045)	225.516	12.361	3	
8	1	A1		8	1	A2			31 640.247 (0.018)*	55.712	0.019	1	
8	1	A1	8	8	1	A2	8		31 638.734 (0.018)	55.712	0.006	1	
8	1	A1	9	8	1	A2	9		31 640.885 (0.018)	55.712	0.007	1	
8	1	A1	7	8	1	A2	7		31 641.156 (0.018)	55.712	0.006	1	
8	1	B1		8	1	B2			31 695.396 (0.018)*	55.553	0.026	3	
8	1	B1	8	8	1	B2	8		31 693.882 (0.018)	55.553	0.008	3	
8	1	B1	9	8	1	B2	9		31 696.033 (0.018)	55.553	0.009	3	
8	1	B1	7	8	1	B2	7		31 696.304 (0.018)	55.553	0.007	3	
8	1	E1+1		8	1	E1−1			31 977.468 (0.011)*	55.719	0.020	3	
8	1	E1+1	8	8	1	E1−1	8		31 975.973 (0.011)	55.719	0.007	3	
8	1	E1+1	9	8	1	E1−1	9		31 978.097 (0.011)	55.719	0.007	3	
8	1	E1+1	7	8	1	E1−1	7		31 978.365 (0.011)	55.719	0.006	3	
20	1	A2		20	0	A1		32 112.710 (0.500)	32 112.424 (0.054)*	308.847	46.488	1	3
20	1	A2	19	20	0	A1	19		32 112.288 (0.054)	308.847	14.703	1	
20	1	A2	21	20	0	A1	21		32 112.307 (0.054)	308.847	16.215	1	
20	1	A2	20	20	0	A1	20		32 112.677 (0.054)	308.847	15.422	1	
17	4	A1		16	5	A2		32 155.000 (0.500)	32 154.912 (0.008)*	268.594	3.648	1	6

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
17	4	A2		16	5	A1		32 187.000 (0.500)	32 186.678 (0.008)*	268.594	3.648	1	6
6	1	E1+1		5	2	E1+1		32 283.000 (0.500)	32 282.626 (0.008)*	33.322	0.894	3	6
6	1	E1+1	6	5	2	E1+1	5		32 282.136 (0.008)	33.322	0.290	3	
6	1	E1+1	7	5	2	E1+1	6		32 282.817 (0.008)	33.322	0.344	3	
6	1	E1+1	5	5	2	E1+1	4		32 282.948 (0.008)	33.322	0.244	3	
11	4	A2		12	3	A1			32 287.197 (0.008)*	139.984	2.377	1	
11	4	E2+1		12	3	E2+1			32 305.992 (0.009)*	139.870	2.376	1	
18	2	E2−1		18	2	E2+1			32 370.756 (0.086)*	263.563	0.036	1	
18	2	E2−1	18	18	2	E2+1	18		32 370.156 (0.086)	263.563	0.012	1	
18	2	E2−1	19	18	2	E2+1	19		32 371.033 (0.086)	263.563	0.013	1	
18	2	E2−1	17	18	2	E2+1	17		32 371.082 (0.086)	263.563	0.011	1	
26	1	E2+1		25	4	E2−1			32 403.107 (0.249)*	523.960	0.047	1	
16	1	E2−1		16	0	E2+1		32 467.760 (0.500)	32 468.016 (0.028)*	200.745	34.556	1	7
16	1	E2−1	15	16	0	E2+1	15		32 467.819 (0.028)	200.745	10.778	1	
16	1	E2−1	17	16	0	E2+1	17		32 467.852 (0.028)	200.745	12.175	1	
16	1	E2−1	16	16	0	E2+1	16		32 468.377 (0.028)	200.745	11.434	1	
11	4	A1		12	3	A2		32 469.010 (0.500)	32 469.094 (0.008)*	139.978	2.376	1	9
18	2	E1+1		18	2	E1−1			33 151.069 (0.080)*	263.530	0.037	3	
18	2	E1+1	18	18	2	E1−1	18		33 150.491 (0.080)	263.530	0.012	3	
18	2	E1+1	19	18	2	E1−1	19		33 151.336 (0.080)	263.530	0.013	3	
18	2	E1+1	17	18	2	E1−1	17		33 151.383 (0.080)	263.530	0.012	3	
17	4	E1−1		16	5	E1−1		33 152.000 (0.500)	33 152.078 (0.012)*	268.755	3.642	3	6
26	1	E1+1		25	4	E1−1			33 284.571 (0.235)*	523.990	0.052	3	
8	1	E2+1		8	1	E2−1			33 760.994 (0.010)*	55.610	0.021	1	
8	1	E2+1	8	8	1	E2−1	8		33 759.577 (0.010)	55.610	0.007	1	
8	1	E2+1	9	8	1	E2−1	9		33 761.590 (0.010)	55.610	0.008	1	
8	1	E2+1	7	8	1	E2−1	7		33 761.844 (0.010)	55.610	0.006	1	
28	7	E1+1		27	8	E1+1			33 862.179 (0.017)*	730.947	5.939	3	
28	7	A2		27	8	A1			33 989.067 (0.022)*	731.129	5.929	1	
28	7	A1		27	8	A2			33 989.086 (0.022)*	731.129	5.929	1	
15	3	E1+1		16	0	E1+1			34 002.238 (0.029)*	200.647	0.025	3	
15	3	E1+1	15	16	0	E1+1	16		34 001.601 (0.029)	200.647	0.008	3	
15	3	E1+1	16	16	0	E1+1	17		34 002.531 (0.029)	200.647	0.009	3	
15	3	E1+1	14	16	0	E1+1	15		34 002.587 (0.029)	200.647	0.008	3	
6	1	E2+1		5	2	E2−1			34 279.736 (0.010)*	33.224	0.428	1	
6	1	E2+1	6	5	2	E2−1	5		34 279.343 (0.010)	33.224	0.139	1	
6	1	E2+1	7	5	2	E2−1	6		34 279.888 (0.010)	33.224	0.165	1	
6	1	E2+1	5	5	2	E2−1	4		34 279.996 (0.010)	33.224	0.117	1	
30	3	B1		30	3	B2			34 329.867 (0.337)*	711.736	0.051	3	
30	3	B1	30	30	3	B2	30		34 329.521 (0.337)	711.736	0.017	3	
30	3	B1	31	30	3	B2	31		34 330.032 (0.337)	711.736	0.018	3	
30	3	B1	29	30	3	B2	29		34 330.049 (0.337)	711.736	0.016	3	
17	1	E1−1		17	0	E1+1		34 527.510 (0.500)	34 527.671 (0.025)*	225.590	37.557	3	7
17	1	E1−1	16	17	0	E1+1	16		34 527.490 (0.025)	225.590	11.763	3	
17	1	E1−1	18	17	0	E1+1	18		34 527.518 (0.025)	225.590	13.193	3	
17	1	E1−1	17	17	0	E1+1	17		34 528.002 (0.025)	225.590	12.437	3	
22	7	A1		23	6	A2			34 623.414 (0.014)*	505.364	4.671	1	
22	7	A2		23	6	A1			34 623.531 (0.014)*	505.364	4.671	1	
10	2	E2+1		9	3	E2−1			34 896.565 (0.011)*	91.145	0.617	1	
10	2	E2+1	9	9	3	E2−1	8		34 896.474 (0.011)	91.145	0.184	1	
10	2	E2+1	11	9	3	E2−1	10		34 896.492 (0.011)	91.145	0.225	1	
10	2	E2+1	10	9	3	E2−1	9		34 896.727 (0.011)	91.145	0.204	1	
30	3	A1		30	3	A2			34 918.773 (0.321)*	711.649	0.049	1	
30	3	A1	30	30	3	A2	30		34 918.422 (0.321)	711.649	0.016	1	
30	3	A1	31	30	3	A2	31		34 918.941 (0.321)	711.649	0.017	1	
30	3	A1	29	30	3	A2	29		34 918.958 (0.321)	711.649	0.016	1	
30	3	E2−1		30	3	E2+1			35 068.706 (0.301)*	711.594	0.050	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
30	3	E2−1	30	30	3	E2+1	30		35 068.355 (0.301)	711.594	0.017	1	
30	3	E2−1	31	30	3	E2+1	31		35 068.874 (0.301)	711.594	0.017	1	
30	3	E2−1	29	30	3	E2+1	29		35 068.891 (0.301)	711.594	0.016	1	
16	1	B2		16	0	B1		35 182.730 (0.500)	35 182.874 (0.040)*	200.570	34.385	3	7
16	1	B2	15	16	0	B1	15		35 182.667 (0.040)	200.570	10.725	3	
16	1	B2	17	16	0	B1	17		35 182.701 (0.040)	200.570	12.114	3	
16	1	B2	16	16	0	B1	16		35 183.253 (0.040)	200.570	11.378	3	
19	1	A1		19	0	A2			35 247.763 (0.043)*	279.562	43.345	1	
19	1	A1	18	19	0	A2	18		35 247.610 (0.043)	279.562	13.669	1	
19	1	A1	20	19	0	A2	20		35 247.632 (0.043)	279.562	15.151	1	
19	1	A1	19	19	0	A2	19		35 248.047 (0.043)	279.562	14.372	1	
15	1	E2−1		15	0	E2+1		36 014.900 (0.500)	36 015.206 (0.024)*	177.253	31.665	1	7
15	1	E2−1	14	15	0	E2+1	14		36 014.987 (0.024)	177.253	9.830	1	
15	1	E2−1	16	15	0	E2+1	16		36 015.026 (0.024)	177.253	11.192	1	
15	1	E2−1	15	15	0	E2+1	15		36 015.602 (0.024)	177.253	10.467	1	
6	1	E2+1		5	2	E2+1			36 034.653 (0.009)*	33.165	0.966	1	
6	1	E2+1	6	5	2	E2+1	5		36 034.252 (0.009)	33.165	0.313	1	
6	1	E2+1	7	5	2	E2+1	6		36 034.809 (0.009)	33.165	0.371	1	
6	1	E2+1	5	5	2	E2+1	4		36 034.919 (0.009)	33.165	0.263	1	
11	4	E1−1		12	3	E1−1			36 066.769 (0.009)*	140.052	2.374	3	
18	0	E2+1		17	3	E2−1			36 234.540 (0.038)*	250.867	0.076	1	
18	0	E2+1	17	17	3	E2−1	16		36 234.134 (0.038)	250.867	0.024	1	
18	0	E2+1	19	17	3	E2−1	18		36 234.193 (0.038)	250.867	0.027	1	
18	0	E2+1	18	17	3	E2−1	17		36 235.290 (0.038)	250.867	0.025	1	
29	9	B2		30	8	B1			36 399.947 (0.033)*	859.525	6.077	3	
29	9	B1		30	8	B2			36 399.947 (0.033)*	859.525	6.077	3	
4	2	B2		5	1	B1		36 452.100 (0.500)	36 452.374 (0.009)*	24.818	0.914	3	4
4	2	B2	4	5	1	B1	5		36 451.305 (0.010)	24.818	0.293	3	
4	2	B2	5	5	1	B1	6		36 452.791 (0.009)	24.818	0.360	3	
4	2	B2	3	5	1	B1	4		36 453.076 (0.010)	24.818	0.237	3	
30	3	E1−1		30	3	E1+1			36 597.062 (0.308)*	711.530	0.046	3	
30	3	E1−1	30	30	3	E1+1	30		36 596.723 (0.308)	711.530	0.015	3	
30	3	E1−1	31	30	3	E1+1	31		36 597.223 (0.308)	711.530	0.016	3	
30	3	E1−1	29	30	3	E1+1	29		36 597.240 (0.308)	711.530	0.015	3	
22	7	B1		23	6	B2			36 792.477 (0.013)*	505.265	4.677	3	
22	7	B2		23	6	B1			36 792.596 (0.013)*	505.265	4.677	3	
15	3	E2+1		16	0	E2+1			37 013.782 (0.028)*	200.745	0.022	1	
15	3	E2+1	15	16	0	E2+1	16		37 013.146 (0.028)	200.745	0.007	1	
15	3	E2+1	16	16	0	E2+1	17		37 014.074 (0.028)	200.745	0.008	1	
15	3	E2+1	14	16	0	E2+1	15		37 014.130 (0.028)	200.745	0.007	1	
10	2	E2+1		9	3	E2+1			37 233.653 (0.008)*	91.067	1.607	1	
10	2	E2+1	9	9	3	E2+1	8		37 233.562 (0.008)	91.067	0.479	1	
10	2	E2+1	11	9	3	E2+1	10		37 233.579 (0.008)	91.067	0.587	1	
10	2	E2+1	10	9	3	E2+1	9		37 233.816 (0.008)	91.068	0.530	1	
19	2	A2		19	2	A1			37 566.135 (0.138)*	291.784	0.039	1	
19	2	A2	19	19	2	A1	19		37 565.511 (0.138)	291.784	0.013	1	
19	2	A2	20	19	2	A1	20		37 566.424 (0.138)	291.784	0.014	1	
19	2	A2	18	19	2	A1	18		37 566.472 (0.138)	291.784	0.012	1	
26	1	E1+1		25	4	E1+1			37 608.482 (0.262)*	523.845	0.043	3	
18	6	E2−1		19	5	E2−1			37 854.756 (0.011)*	348.689	3.795	1	
10	2	E1+1		9	3	E1−1			37 878.842 (0.011)*	91.250	0.086	3	
10	2	E1+1	11	9	3	E1−1	10		37 878.830 (0.011)	91.250	0.031	3	
10	2	E1+1	9	9	3	E1−1	8		37 878.832 (0.011)	91.250	0.026	3	
10	2	E1+1	10	9	3	E1−1	9		37 878.866 (0.011)	91.250	0.028	3	
19	2	B2		19	2	B1			37 943.777 (0.129)*	291.819	0.032	3	
19	2	B2	19	19	2	B1	19		37 943.147 (0.129)	291.819	0.011	3	
19	2	B2	20	19	2	B1	20		37 944.069 (0.129)	291.819	0.011	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
19	2	B2	18	19	2	B1	18		37 944.117 (0.129)	291.819	0.010	3	
16	1	E1−1		16	0	E1+1		38 002.870 (0.500)	38 003.250 (0.022)*	200.647	34.592	3	7
16	1	E1−1	15	16	0	E1+1	15		38 003.049 (0.022)	200.647	10.789	3	
16	1	E1−1	17	16	0	E1+1	17		38 003.082 (0.022)	200.647	12.187	3	
16	1	E1−1	16	16	0	E1+1	16		38 003.617 (0.022)	200.647	11.446	3	
11	4	E2−1		12	3	E2−1			38 216.581 (0.009)*	139.948	2.373	1	
10	2	B2		9	3	B1			38 252.306 (0.009)*	91.277	2.217	3	
10	2	B2	9	9	3	B1	8		38 252.211 (0.009)	91.277	0.661	3	
10	2	B2	11	9	3	B1	10		38 252.229 (0.009)	91.277	0.810	3	
10	2	B2	10	9	3	B1	9		38 252.478 (0.009)	91.277	0.732	3	
18	1	A2		18	0	A1			38 584.163 (0.035)*	251.720	40.259	1	
18	1	A2	17	18	0	A1	17		38 583.991 (0.035)	251.720	12.655	1	
18	1	A2	19	18	0	A1	19		38 584.017 (0.035)	251.720	14.106	1	
18	1	A2	18	18	0	A1	18		38 584.479 (0.035)	251.720	13.341	1	
10	2	E2−1		9	3	E2−1			38 859.729 (0.010)*	91.145	1.610	1	
10	2	E2−1	10	9	3	E2−1	9		38 859.692 (0.010)	91.145	0.531	1	
10	2	E2−1	11	9	3	E2−1	10		38 859.743 (0.010)	91.145	0.588	1	
10	2	E2−1	9	9	3	E2−1	8		38 859.755 (0.010)	91.145	0.480	1	
15	1	B1		15	0	B2			38 908.496 (0.035)*	177.073	31.536	3	
15	1	B1	14	15	0	B2	14		38 908.268 (0.035)	177.072	9.790	3	
15	1	B1	16	15	0	B2	16		38 908.308 (0.035)	177.072	11.147	3	
15	1	B1	15	15	0	B2	15		38 908.911 (0.035)	177.073	10.425	3	
18	0	E2+1		17	3	E2+1			38 951.317 (0.042)*	250.776	0.023	1	
18	0	E2+1	17	17	3	E2+1	16		38 950.922 (0.042)	250.776	0.007	1	
18	0	E2+1	19	17	3	E2+1	18		38 950.979 (0.042)	250.776	0.008	1	
18	0	E2+1	18	17	3	E2+1	17		38 952.045 (0.042)	250.776	0.008	1	
26	1	A1		25	4	A2			38 968.581 (0.380)*	523.811	0.088	1	
19	2	E2−1		19	2	E2+1			39 258.199 (0.105)*	291.582	0.034	1	
19	2	E2−1	19	19	2	E2+1	19		39 257.552 (0.105)	291.582	0.011	1	
19	2	E2−1	20	19	2	E2+1	20		39 258.499 (0.105)	291.582	0.012	1	
19	2	E2−1	18	19	2	E2+1	18		39 258.548 (0.105)	291.582	0.011	1	
15	3	E2−1		16	0	E2+1			39 451.294 (0.027)*	200.745	0.040	1	
15	3	E2−1	15	16	0	E2+1	16		39 450.653 (0.027)	200.745	0.013	1	
15	3	E2−1	16	16	0	E2+1	17		39 451.589 (0.027)	200.745	0.014	1	
15	3	E2−1	14	16	0	E2+1	15		39 451.645 (0.027)	200.745	0.012	1	
21	5	B1		20	6	B2			39 518.315 (0.011)*	407.812	4.535	3	
21	5	B2		20	6	B1			39 521.575 (0.011)*	407.812	4.535	3	
9	1	A2		9	1	A1			39 531.930 (0.021)*	68.880	0.017	1	
9	1	A2	9	9	1	A1	9		39 530.417 (0.021)	68.880	0.005	1	
9	1	A2	10	9	1	A1	10		39 532.578 (0.021)	68.880	0.006	1	
9	1	A2	8	9	1	A1	8		39 532.819 (0.021)	68.880	0.005	1	
9	1	B2		9	1	B1			39 601.070 (0.022)*	68.721	0.024	3	
9	1	B2	9	9	1	B1	9		39 599.557 (0.022)	68.721	0.008	3	
9	1	B2	10	9	1	B1	10		39 601.718 (0.022)	68.721	0.009	3	
9	1	B2	8	9	1	B1	8		39 601.959 (0.022)	68.721	0.007	3	
14	1	E2−1		14	0	E2+1			39 656.850 (0.021)*	155.212	28.870	1	
14	1	E2−1	13	14	0	E2+1	13		39 656.610 (0.021)	155.211	8.914	1	
14	1	E2−1	15	14	0	E2+1	15		39 656.655 (0.021)	155.211	10.241	1	
14	1	E2−1	14	14	0	E2+1	14		39 657.281 (0.021)	155.212	9.532	1	
9	1	E1+1		9	1	E1−1			39 774.639 (0.013)*	68.888	0.018	3	
9	1	E1+1	9	9	1	E1−1	9		39 773.139 (0.013)	68.888	0.006	3	
9	1	E1+1	10	9	1	E1−1	10		39 775.281 (0.013)	68.888	0.007	3	
9	1	E1+1	8	9	1	E1−1	8		39 775.521 (0.013)	68.888	0.005	3	
19	2	E1+1		19	2	E1−1			39 818.495 (0.098)*	291.552	0.035	3	
19	2	E1+1	19	19	2	E1−1	19		39 817.866 (0.098)	291.552	0.012	3	
19	2	E1+1	20	19	2	E1−1	20		39 818.787 (0.098)	291.552	0.012	3	
19	2	E1+1	18	19	2	E1−1	18		39 818.835 (0.098)	291.552	0.011	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	3	E1+1		8	2	E1+1			39 948.261 (0.008)*	64.390	1.475	3	
7	3	E1+1	7	8	2	E1+1	8		39 948.117 (0.008)	64.390	0.484	3	
7	3	E1+1	8	8	2	E1+1	9		39 948.324 (0.008)	64.390	0.550	3	
7	3	E1+1	6	8	2	E1+1	7		39 948.343 (0.008)	64.390	0.426	3	
10	2	E1−1		9	3	E1+1			40 060.218 (0.007)*	90.864	0.083	3	
10	2	E1−1	9	9	3	E1+1	8		40 060.161 (0.007)	90.864	0.025	3	
10	2	E1−1	11	9	3	E1+1	10		40 060.170 (0.007)	90.864	0.030	3	
10	2	E1−1	10	9	3	E1+1	9		40 060.323 (0.007)	90.864	0.028	3	
10	2	A2		9	3	A1			40 134.536 (0.011)*	91.177	2.221	1	
10	2	A2	9	9	3	A1	8		40 134.440 (0.011)	91.177	0.662	1	
10	2	A2	11	9	3	A1	10		40 134.459 (0.011)	91.177	0.811	1	
10	2	A2	10	9	3	A1	9		40 134.707 (0.011)	91.177	0.733	1	
22	7	E2−1		23	6	E2−1			40 249.736 (0.014)*	505.009	4.683	1	
26	1	E2+1		25	4	E2+1			40 263.454 (0.276)*	523.698	0.044	1	
26	1	B1		25	4	B2			40 498.584 (0.388)*	523.635	0.081	3	
21	5	E1−1		20	6	E1−1			40 706.706 (0.011)*	407.748	4.534	3	
6	1	E1+1		5	2	E1−1			41 036.913 (0.009)*	33.030	0.508	3	
6	1	E1+1	6	5	2	E1−1	5		41 036.422 (0.009)	33.030	0.165	3	
6	1	E1+1	7	5	2	E1−1	6		41 037.105 (0.009)	33.030	0.195	3	
6	1	E1+1	5	5	2	E1−1	4		41 037.236 (0.009)	33.030	0.139	3	
21	5	E2+1		20	6	E2+1			41 165.885 (0.013)*	407.967	4.524	1	
10	2	E2−1		9	3	E2+1			41 196.817 (0.008)*	91.067	0.623	1	
10	2	E2−1	10	9	3	E2+1	9		41 196.781 (0.008)	91.068	0.206	1	
10	2	E2−1	11	9	3	E2+1	10		41 196.831 (0.008)	91.067	0.227	1	
10	2	E2−1	9	9	3	E2+1	8		41 196.842 (0.008)	91.067	0.186	1	
9	1	E2+1		9	1	E2−1			41 232.752 (0.012)*	68.785	0.020	1	
9	1	E2+1	9	9	1	E2−1	9		41 231.303 (0.012)	68.786	0.006	1	
9	1	E2+1	10	9	1	E2−1	10		41 233.372 (0.012)	68.785	0.007	1	
9	1	E2+1	8	9	1	E2−1	8		41 233.603 (0.012)	68.785	0.006	1	
3	0	A2		2	1	A1			41 263.780 (0.008)*	7.496	1.541	1	
3	0	A2	2	2	1	A1	1		41 262.825 (0.008)	7.496	0.308	1	
3	0	A2	4	2	1	A1	3		41 263.442 (0.008)	7.496	0.661	1	
3	0	A2	3	2	1	A1	2		41 264.860 (0.008)	7.496	0.457	1	
15	1	E1−1		15	0	E1+1		41 615.340 (0.500)	41 615.271 (0.019)*	177.154	31.716	3	6
15	1	E1−1	14	15	0	E1+1	14		41 615.049 (0.019)	177.154	9.846	3	
15	1	E1−1	16	15	0	E1+1	16		41 615.088 (0.019)	177.154	11.210	3	
15	1	E1−1	15	15	0	E1+1	15		41 615.674 (0.019)	177.154	10.484	3	
10	2	B1		9	3	B2		41 658.420 (0.500)	41 658.481 (0.009)*	91.278	2.230	3	6
10	2	B1	10	9	3	B2	9		41 658.443 (0.009)	91.279	0.736	3	
10	2	B1	11	9	3	B2	10		41 658.495 (0.009)	91.278	0.814	3	
10	2	B1	9	9	3	B2	8		41 658.506 (0.009)	91.278	0.665	3	
18	0	E1+1		17	3	E1+1			41 859.373 (0.041)*	250.583	0.038	3	
18	0	E1+1	17	17	3	E1+1	16		41 858.975 (0.041)	250.583	0.012	3	
18	0	E1+1	19	17	3	E1+1	18		41 859.032 (0.041)	250.583	0.013	3	
18	0	E1+1	18	17	3	E1+1	17		41 860.110 (0.041)	250.584	0.013	3	
17	1	A1		17	0	A2		42 101.940 (0.500)	42 101.038 (0.027)*	225.323	37.244	1	6
17	1	A1	16	17	0	A2	16		42 100.847 (0.027)	225.323	11.665	1	
17	1	A1	18	17	0	A2	18		42 100.877 (0.027)	225.323	13.083	1	
17	1	A1	17	17	0	A2	17		42 101.389 (0.027)	225.323	12.334	1	
14	1	B2		14	0	B1		42 720.940 (0.500)	42 720.607 (0.031)*	155.027	28.789	3	6
14	1	B2	13	14	0	B1	13		42 720.357 (0.031)	155.027	8.889	3	
14	1	B2	15	14	0	B1	15		42 720.404 (0.031)	155.027	10.212	3	
14	1	B2	14	14	0	B1	14		42 721.057 (0.031)	155.027	9.505	3	
21	5	E1+1		20	6	E1+1		42 804.580 (0.500)	42 804.395 (0.013)*	407.875	4.531	3	6
11	4	E1+1		12	3	E1+1		43 040.720 (0.500)	43 040.424 (0.009)*	139.668	2.380	3	6
13	1	E2−1		13	0	E2+1		43 346.580 (0.500)	43 346.435 (0.019)*	134.624	26.178	1	6
13	1	E2−1	12	13	0	E2+1	12		43 346.175 (0.019)	134.624	8.032	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
13	1	E2−1	14	13	0	E2+1	14		43 346.227 (0.019)	134.624	9.325	1	
13	1	E2−1	13	13	0	E2+1	13		43 346.900 (0.019)	134.624	8.630	1	
10	2	A1		9	3	A2		43 498.320 (0.500)	43 498.183 (0.010)*	91.179	2.234	1	6
10	2	A1	10	9	3	A2	9		43 498.149 (0.010)	91.179	0.737	1	
10	2	A1	11	9	3	A2	10		43 498.196 (0.010)	91.179	0.816	1	
10	2	A1	9	9	3	A2	8		43 498.207 (0.010)	91.179	0.666	1	
1	0	B2		0	0	B1		44 338.070 (0.500)	44 337.938 (0.001)*	0.206	0.095	3	7
1	0	B2	0	0	0	B1	1		44 336.732 (0.002)	0.206	0.011	3	
1	0	B2	2	0	0	B1	1		44 337.818 (0.001)	0.206	0.053	3	
1	0	B2	1	0	0	B1	1		44 338.542 (0.001)	0.206	0.032	3	
1	0	E2+1		0	0	E2+1			44 338.468 (0.001)*	0.404	0.094	1	
1	0	E2+1	0	0	0	E2+1	1		44 337.262 (0.002)	0.404	0.010	1	
1	0	E2+1	2	0	0	E2+1	1		44 338.348 (0.001)	0.404	0.052	1	
1	0	E2+1	1	0	0	E2+1	1		44 339.072 (0.001)	0.404	0.031	1	
1	0	A2		0	0	A1		44 338.860 (0.500)	44 338.755 (0.001)*	0.000	0.094	1	7
1	0	A2	0	0	0	A1	1		44 337.548 (0.002)	0.000	0.010	1	
1	0	A2	2	0	0	A1	1		44 338.634 (0.001)	0.000	0.052	1	
1	0	A2	1	0	0	A1	1		44 339.358 (0.001)	0.000	0.031	1	
1	0	E1+1		0	0	E1+1		44 338.860 (0.500)	44 338.876 (0.001)*	0.301	0.094	3	7
1	0	E1+1	0	0	0	E1+1	1		44 337.669 (0.002)	0.301	0.010	3	
1	0	E1+1	2	0	0	E1+1	1		44 338.756 (0.001)	0.301	0.052	3	
1	0	E1+1	1	0	0	E1+1	1		44 339.480 (0.001)	0.301	0.031	3	
29	9	E2−1		30	8	E2−1			45 027.956 (0.060)*	859.557	6.070	1	
20	2	A1		20	2	A2			45 077.158 (0.171)*	321.268	0.037	1	
20	2	A1	20	20	2	A2	20		45 076.491 (0.171)	321.268	0.012	1	
20	2	A1	21	20	2	A2	21		45 077.469 (0.171)	321.268	0.013	1	
20	2	A1	19	20	2	A2	19		45 077.518 (0.171)	321.268	0.012	1	
14	1	E1−1		14	0	E1+1		45 324.520 (0.500)	45 324.797 (0.016)*	155.112	28.941	3	6
14	1	E1−1	13	14	0	E1+1	13		45 324.553 (0.016)	155.112	8.936	3	
14	1	E1−1	15	14	0	E1+1	15		45 324.599 (0.016)	155.112	10.266	3	
14	1	E1−1	14	14	0	E1+1	14		45 325.236 (0.016)	155.112	9.555	3	
15	3	E1−1		16	0	E1+1			45 438.942 (0.028)*	200.647	0.034	3	
15	3	E1−1	15	16	0	E1+1	16		45 438.307 (0.028)	200.647	0.011	3	
15	3	E1−1	16	16	0	E1+1	17		45 439.234 (0.028)	200.647	0.012	3	
15	3	E1−1	14	16	0	E1+1	15		45 439.289 (0.028)	200.647	0.011	3	
20	2	B1		20	2	B2			45 512.862 (0.160)*	321.303	0.030	3	
20	2	B1	20	20	2	B2	20		45 512.188 (0.160)	321.303	0.010	3	
20	2	B1	21	20	2	B2	21		45 513.175 (0.160)	321.303	0.010	3	
20	2	B1	19	20	2	B2	19		45 513.224 (0.160)	321.303	0.009	3	
29	9	A2		30	8	A1			45 759.185 (0.030)*	859.391	6.074	1	
29	9	A		30	8	A		45 759.260 (0.500)	45 759.186 (0.030)*	859.391	12.147	3	6
29	9	A1		30	8	A2			45 759.186 (0.030)*	859.391	6.074	1	
16	1	A2		16	0	A1		45 769.960 (0.500)	45 770.937 (0.022)*	200.374	34.310	1	6
16	1	A2	15	16	0	A1	15		45 770.726 (0.022)	200.374	10.702	1	
16	1	A2	17	16	0	A1	17		45 770.761 (0.022)	200.374	12.088	1	
16	1	A2	16	16	0	A1	16		45 771.322 (0.022)	200.374	11.353	1	
18	6	E1+1		19	5	E1+1		45 957.660 (0.500)	45 957.512 (0.012)*	348.739	3.789	3	6
14	3	E1+1		13	4	E1+1		45 994.560 (0.500)	45 994.525 (0.009)*	178.064	3.128	3	6
7	1	B1		6	2	B2			46 380.508 (0.011)*	42.299	1.596	3	
7	1	B1	6	6	2	B2	5		46 379.955 (0.011)	42.299	0.450	3	
7	1	B1	8	6	2	B2	7		46 380.127 (0.011)	42.299	0.603	3	
7	1	B1	7	6	2	B2	6		46 381.421 (0.011)	42.299	0.521	3	
29	9	E1−1		30	8	E1−1			46 410.195 (0.032)*	859.595	6.063	3	
7	3	A2		8	2	A1		46 544.840 (0.500)	46 544.555 (0.009)*	64.484	1.486	1	6
7	3	A2	7	8	2	A1	8		46 544.465 (0.009)	64.484	0.488	1	
7	3	A2	8	8	2	A1	9		46 544.596 (0.009)	64.484	0.554	1	
7	3	A2	6	8	2	A1	7		46 544.605 (0.009)	64.484	0.429	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
13	1	B1		13	0	B2		46 575.180 (0.500)	46 574.707 (0.028)*	134.437	26.151	3	6
13	1	B1	12	13	0	B2	12		46 574.436 (0.028)	134.437	8.024	3	
13	1	B1	14	13	0	B2	14		46 574.490 (0.028)	134.437	9.315	3	
13	1	B1	13	13	0	B2	13		46 575.191 (0.028)	134.437	8.621	3	
20	2	E2−1		20	2	E2+1			47 025.804 (0.127)*	321.066	0.031	1	
20	2	E2−1	20	20	2	E2+1	20		47 025.113 (0.127)	321.066	0.010	1	
20	2	E2−1	21	20	2	E2+1	21		47 026.125 (0.127)	321.066	0.011	1	
20	2	E2−1	19	20	2	E2+1	19		47 026.176 (0.127)	321.066	0.010	1	
12	1	E2−1		12	0	E2+1		47 032.080 (0.500)	47 032.201 (0.016)*	115.494	23.594	1	6
12	1	E2−1	11	12	0	E2+1	11		47 031.921 (0.016)	115.494	7.185	1	
12	1	E2−1	13	12	0	E2+1	13		47 031.981 (0.016)	115.494	8.444	1	
12	1	E2−1	12	12	0	E2+1	12		47 032.698 (0.016)	115.494	7.764	1	
20	2	E1+1		20	2	E1−1			47 406.587 (0.119)*	321.039	0.034	3	
20	2	E1+1	20	20	2	E1−1	20		47 405.910 (0.119)	321.039	0.011	3	
20	2	E1+1	21	20	2	E1−1	21		47 406.902 (0.119)	321.039	0.012	3	
20	2	E1+1	19	20	2	E1−1	19		47 406.952 (0.119)	321.039	0.011	3	
29	9	E2+1		30	8	E2+1			47 564.591 (0.035)*	859.383	6.078	1	
18	6	E2+1		19	5	E2+1		47 608.080 (0.500)	47 607.239 (0.012)*	348.777	3.785	1	6
7	3	A1		8	2	A2			47 986.442 (0.010)*	64.436	1.482	1	
7	3	A1	7	8	2	A2	8		47 986.216 (0.010)	64.436	0.486	1	
7	3	A1	8	8	2	A2	9		47 986.540 (0.010)	64.436	0.552	1	
7	3	A1	6	8	2	A2	7		47 986.573 (0.010)	64.436	0.428	1	
18	6	E1−1		19	5	E1−1			48 082.405 (0.011)*	348.542	3.792	3	
10	1	B1		10	1	B2			48 372.496 (0.025)*	83.350	0.022	3	
10	1	B1	10	10	1	B2	10		48 370.986 (0.025)	83.350	0.007	3	
10	1	B1	11	10	1	B2	11		48 373.153 (0.025)	83.350	0.008	3	
10	1	B1	9	10	1	B2	9		48 373.371 (0.025)	83.350	0.007	3	
3	0	E1+1		2	1	E1+1		48 385.200 (0.500)	48 385.595 (0.005)*	7.559	1.128	3	7
3	0	E1+1	2	2	1	E1+1	1		48 385.046 (0.005)	7.559	0.226	3	
3	0	E1+1	4	2	1	E1+1	3		48 385.373 (0.005)	7.559	0.483	3	
3	0	E1+1	3	2	1	E1+1	2		48 386.270 (0.005)	7.559	0.334	3	
14	3	E2+1		13	4	E2−1			48 409.398 (0.013)*	178.183	0.028	1	
7	3	B2		8	2	B1		48 414.500 (0.500)	48 413.933 (0.008)*	64.522	1.484	3	9
7	3	B2	7	8	2	B1	8		48 413.845 (0.008)	64.522	0.487	3	
7	3	B2	8	8	2	B1	9		48 413.973 (0.008)	64.522	0.553	3	
7	3	B2	6	8	2	B1	7		48 413.981 (0.008)	64.522	0.429	3	
25	6	E2−1		24	7	E2−1			48 448.455 (0.014)*	575.721	5.428	1	
7	3	E2+1		8	2	E2−1			48 770.496 (0.008)*	64.300	0.186	1	
7	3	E2+1	7	8	2	E2−1	8		48 770.389 (0.008)	64.300	0.061	1	
7	3	E2+1	8	8	2	E2−1	9		48 770.543 (0.008)	64.300	0.069	1	
7	3	E2+1	6	8	2	E2−1	7		48 770.555 (0.008)	64.300	0.054	1	
15	3	B2		16	0	B1			48 897.660 (0.033)*	200.570	0.054	3	
15	3	B2	15	16	0	B1	16		48 897.026 (0.033)	200.570	0.018	3	
15	3	B2	16	16	0	B1	17		48 897.952 (0.033)	200.570	0.019	3	
15	3	B2	14	16	0	B1	15		48 898.007 (0.033)	200.570	0.017	3	
13	1	E1−1		13	0	E1+1		49 087.192 (0.060)	49 087.261 (0.014)*	134.524	26.273	3	1
13	1	E1−1	12	13	0	E1+1	12		49 086.996 (0.014)	134.524	8.061	3	
13	1	E1−1	14	13	0	E1+1	14		49 087.049 (0.014)	134.524	9.358	3	
13	1	E1−1	13	13	0	E1+1	13		49 087.735 (0.014)	134.524	8.662	3	
18	6	B1		19	5	B2		49 228.724 (0.020)	49 228.693 (0.010)*	348.566	3.792	3	1
18	6	B2		19	5	B1		49 229.937 (0.020)	49 229.903 (0.010)*	348.566	3.792	3	1
10	2	E1+1		9	3	E1+1		49 425.686 (0.020)	49 425.691 (0.008)*	90.864	2.148	3	1
10	2	E1+1	11	9	3	E1+1	10		49 425.678 (0.008)	90.864	0.784	3	
10	2	E1+1	9	9	3	E1+1	8		49 425.680 (0.008)	90.864	0.641	3	
10	2	E1+1	10	9	3	E1+1	9		49 425.715 (0.008)	90.864	0.709	3	
15	1	A1		15	0	A2		49 559.857 (0.020)	49 559.870 (0.017)*	176.875	31.469	1	1
15	1	A1	14	15	0	A2	14		49 559.638 (0.017)	176.875	9.769	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
15	1	A1	16	15	0	A2	16		49 559.678 (0.017)	176.875	11.123	1	
15	1	A1	15	15	0	A2	15		49 560.290 (0.017)	176.875	10.403	1	
10	1	E2+1		10	1	E2−1			49 671.231 (0.014)*	83.420	0.019	1	
10	1	E2+1	10	10	1	E2−1	10		49 669.765 (0.014)	83.420	0.006	1	
10	1	E2+1	11	10	1	E2−1	11		49 671.869 (0.014)	83.420	0.007	1	
10	1	E2+1	9	10	1	E2−1	9		49 672.080 (0.014)	83.420	0.006	1	
7	3	B1		8	2	B2		49 874.067 (0.020)	49 874.078 (0.008)*	64.473	1.480	3	1
7	3	B1	7	8	2	B2	8		49 873.852 (0.008)	64.473	0.486	3	
7	3	B1	8	8	2	B2	9		49 874.176 (0.008)	64.473	0.552	3	
7	3	B1	6	8	2	B2	7		49 874.209 (0.008)	64.473	0.428	3	
12	1	B2		12	0	B1		50 423.400 (0.500)	50 422.652 (0.025)*	115.303	23.628	3	6
12	1	B2	11	12	0	B1	11		50 422.360 (0.025)	115.303	7.195	3	
12	1	B2	13	12	0	B1	13		50 422.422 (0.025)	115.303	8.456	3	
12	1	B2	12	12	0	B1	12		50 423.170 (0.025)	115.303	7.775	3	
3	0	E2+1		2	1	E2+1		50 615.829 (0.020)	50 615.856 (0.005)*	7.588	0.936	1	1
3	0	E2+1	2	2	1	E2+1	1		50 615.494 (0.005)	7.588	0.187	1	
3	0	E2+1	4	2	1	E2+1	3		50 615.687 (0.005)	7.588	0.401	1	
3	0	E2+1	3	2	1	E2+1	2		50 616.343 (0.005)	7.588	0.277	1	
11	1	E2−1		11	0	E2+1		50 658.152 (0.060)	50 658.217 (0.014)*	97.822	21.118	1	1
11	1	E2−1	10	11	0	E2+1	10		50 657.917 (0.014)	97.822	6.374	1	
11	1	E2−1	12	11	0	E2+1	12		50 657.986 (0.014)	97.822	7.598	1	
11	1	E2−1	11	11	0	E2+1	11		50 658.741 (0.014)	97.822	6.933	1	
14	3	E2−1		13	4	E2−1		50 797.855 (0.020)	50 797.859 (0.009)*	178.183	3.096	1	1
21	5	E2−1		20	6	E2−1		50 859.798 (0.020)	50 859.768 (0.011)*	407.555	4.538	1	1
7	3	E2+1		8	2	E2+1		51 070.378 (0.020)	51 070.396 (0.008)*	64.223	1.299	1	1
7	3	E2+1	7	8	2	E2+1	8		51 070.193 (0.008)	64.223	0.426	1	
7	3	E2+1	8	8	2	E2+1	9		51 070.484 (0.008)	64.223	0.484	1	
7	3	E2+1	6	8	2	E2+1	7		51 070.513 (0.008)	64.223	0.375	1	
7	3	E2−1		8	2	E2−1		51 098.272 (0.060)	51 098.340 (0.009)*	64.300	1.299	1	1
7	3	E2−1	7	8	2	E2−1	8		51 098.234 (0.009)	64.300	0.426	1	
7	3	E2−1	8	8	2	E2−1	9		51 098.387 (0.009)	64.300	0.484	1	
7	3	E2−1	6	8	2	E2−1	7		51 098.399 (0.009)	64.300	0.375	1	
15	3	A2		16	0	A1			51 828.571 (0.029)*	200.374	0.050	1	
15	3	A2	15	16	0	A1	16		51 827.940 (0.029)	200.374	0.017	1	
15	3	A2	16	16	0	A1	17		51 828.861 (0.029)	200.374	0.018	1	
15	3	A2	14	16	0	A1	15		51 828.916 (0.029)	200.374	0.016	1	
25	6	B1		24	7	B2		51 891.380 (0.020)	51 891.398 (0.011)*	575.861	5.420	3	1
25	6	B2		24	7	B1		51 891.699 (0.020)	51 891.717 (0.011)*	575.861	5.420	3	1
3	2	E1−1		4	1	E1+1		51 939.449 (0.060)	51 939.453 (0.009)*	17.985	0.155	3	1
3	2	E1−1	2	4	1	E1+1	3		51 939.363 (0.010)	17.985	0.037	3	
3	2	E1−1	4	4	1	E1+1	5		51 939.406 (0.009)	17.985	0.063	3	
3	2	E1−1	3	4	1	E1+1	4		51 939.581 (0.010)	17.985	0.049	3	
3	0	B2		2	1	B1		52 202.361 (0.020)	52 202.362 (0.008)*	7.337	1.540	3	1
3	0	B2	2	2	1	B1	1		52 201.407 (0.008)	7.337	0.308	3	
3	0	B2	4	2	1	B1	3		52 202.024 (0.008)	7.337	0.660	3	
3	0	B2	3	2	1	B1	2		52 203.442 (0.008)	7.337	0.456	3	
7	1	A1		6	2	A2		52 265.790 (0.020)	52 265.796 (0.011)*	42.261	1.595	1	1
7	1	A1	6	6	2	A2	5		52 265.243 (0.011)	42.261	0.450	1	
7	1	A1	8	6	2	A2	7		52 265.415 (0.011)	42.261	0.602	1	
7	1	A1	7	6	2	A2	6		52 266.710 (0.011)	42.261	0.521	1	
12	1	E1−1		12	0	E1+1		52 853.692 (0.060)	52 853.748 (0.012)*	115.392	23.719	3	1
12	1	E1−1	11	12	0	E1+1	11		52 853.461 (0.012)	115.392	7.223	3	
12	1	E1−1	13	12	0	E1+1	13		52 853.522 (0.012)	115.392	8.488	3	
12	1	E1−1	12	12	0	E1+1	12		52 854.256 (0.012)	115.392	7.805	3	
14	3	E1−1		13	4	E1−1		52 926.708 (0.060)	52 926.729 (0.009)*	178.215	3.119	3	1
7	3	E2−1		8	2	E2+1			53 398.239 (0.012)*	64.223	0.185	1	
7	3	E2−1	7	8	2	E2+1	8		53 398.037 (0.012)	64.223	0.061	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	3	E2−1	8	8	2	E2+1	9		53 398.327 (0.012)	64.223	0.069	1	
7	3	E2−1	6	8	2	E2+1	7		53 398.356 (0.012)	64.223	0.053	1	
14	1	A2		14	0	A1		53 428.030 (0.020)	53 428.037 (0.014)*	154.829	28.731	1	1
14	1	A2	13	14	0	A1	13		53 427.784 (0.014)	154.829	8.871	1	
14	1	A2	15	14	0	A1	15		53 427.832 (0.014)	154.829	10.192	1	
14	1	A2	14	14	0	A1	14		53 428.493 (0.014)	154.829	9.486	1	
21	2	A2		21	2	A1			53 477.403 (0.211)*	352.217	0.036	1	
21	2	A2	21	21	2	A1	21		53 476.693 (0.211)	352.217	0.012	1	
21	2	A2	22	21	2	A1	22		53 477.734 (0.211)	352.217	0.012	1	
21	2	A2	20	21	2	A1	20		53 477.783 (0.211)	352.217	0.011	1	
7	1	E2−1		6	2	E2−1		53 768.278 (0.020)	53 768.267 (0.009)*	42.100	0.961	1	1
7	1	E2−1	6	6	2	E2−1	5		53 767.726 (0.009)	42.100	0.271	1	
7	1	E2−1	8	6	2	E2−1	7		53 767.895 (0.009)	42.100	0.363	1	
7	1	E2−1	7	6	2	E2−1	6		53 769.158 (0.009)	42.100	0.314	1	
21	2	B2		21	2	B1			53 972.839 (0.197)*	352.250	0.028	3	
21	2	B2	21	21	2	B1	21		53 972.123 (0.197)	352.250	0.009	3	
21	2	B2	22	21	2	B1	22		53 973.172 (0.197)	352.250	0.010	3	
21	2	B2	20	21	2	B1	20		53 973.222 (0.197)	352.250	0.009	3	
25	6	A1		24	7	A2			54 037.621 (0.013)*	575.888	5.413	1	
25	6	A2		24	7	A1			54 037.938 (0.013)*	575.888	5.413	1	
3	0	E1+1		2	1	E1−1		54 055.300 (0.500)	54 055.072 (0.007)*	7.370	0.412	3	7
3	0	E1+1	3	2	1	E1−1	2		54 055.042 (0.007)	7.370	0.122	3	
3	0	E1+1	4	2	1	E1−1	3		54 055.051 (0.007)	7.370	0.176	3	
3	0	E1+1	2	2	1	E1−1	1		54 055.227 (0.007)	7.370	0.082	3	
10	1	E2−1		10	0	E2+1		54 165.810 (0.500)	54 165.263 (0.012)*	81.613	18.745	1	7
10	1	E2−1	9	10	0	E2+1	9		54 164.946 (0.012)	81.613	5.597	1	
10	1	E2−1	11	10	0	E2+1	11		54 165.025 (0.012)	81.613	6.787	1	
10	1	E2−1	10	10	0	E2+1	10		54 165.812 (0.012)	81.613	6.135	1	
11	1	B1		11	0	B2			54 214.140 (0.021)*	97.630	21.221	3	
11	1	B1	10	11	0	B2	10		54 213.826 (0.021)	97.630	6.405	3	
11	1	B1	12	11	0	B2	12		54 213.898 (0.021)	97.630	7.635	3	
11	1	B1	11	11	0	B2	11		54 214.689 (0.021)	97.630	6.967	3	
7	1	E1−1		6	2	E1+1			54 322.317 (0.008)*	42.197	0.581	3	
7	1	E1−1	6	6	2	E1+1	5		54 321.746 (0.008)	42.197	0.164	3	
7	1	E1−1	8	6	2	E1+1	7		54 321.925 (0.008)	42.197	0.219	3	
7	1	E1−1	7	6	2	E1+1	6		54 323.258 (0.008)	42.197	0.190	3	
25	8	A2		26	7	A1		54 519.149 (0.060)	54 519.108 (0.026)*	651.138	5.192	1	1
25	8	A1		26	7	A2			54 519.115 (0.026)*	651.138	5.192	1	
25	8	E1+1		26	7	E1+1		54 595.755 (0.060)	54 595.701 (0.016)*	650.953	5.200	3	1
23	4	B2		24	1	B1			54 865.083 (0.268)*	449.415	0.050	3	
23	4	E2+1		24	1	E2+1			54 972.672 (0.199)*	449.480	0.029	1	
29	9	E1+1		30	8	E1+1		55 547.366 (0.060)	55 547.408 (0.031)*	859.212	6.081	3	1
7	1	E2−1		6	2	E2+1		55 573.349 (0.060)	55 573.374 (0.009)*	42.040	0.646	1	1
7	1	E2−1	6	6	2	E2+1	5		55 572.849 (0.009)	42.040	0.182	1	
7	1	E2−1	8	6	2	E2+1	7		55 573.012 (0.009)	42.040	0.244	1	
7	1	E2−1	7	6	2	E2+1	6		55 574.242 (0.009)	42.040	0.211	1	
14	5	E1−1		15	4	E1−1		55 676.551 (0.020)	55 676.527 (0.011)*	221.084	2.902	3	1
21	2	E2−1		21	2	E2+1			55 694.565 (0.152)*	352.014	0.029	1	
21	2	E2−1	21	21	2	E2+1	21		55 693.833 (0.152)	352.015	0.010	1	
21	2	E2−1	22	21	2	E2+1	22		55 694.906 (0.152)	352.014	0.010	1	
21	2	E2−1	20	21	2	E2+1	20		55 694.958 (0.152)	352.014	0.009	1	
21	2	E1+1		21	2	E1−1			55 926.793 (0.144)*	351.990	0.032	3	
21	2	E1+1	21	21	2	E1−1	21		55 926.072 (0.144)	351.990	0.011	3	
21	2	E1+1	22	21	2	E1−1	22		55 927.130 (0.144)	351.990	0.011	3	
21	2	E1+1	20	21	2	E1−1	20		55 927.180 (0.144)	351.990	0.010	3	
3	2	E2+1		4	1	E2+1		56 040.931 (0.060)	56 040.953 (0.010)*	17.984	0.535	1	1
3	2	E2+1	3	4	1	E2+1	4		56 040.874 (0.010)	17.984	0.167	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
3	2	E2+1	4	4	1	E2+1	5		56 040.981 (0.010)	17.984	0.218	1	
3	2	E2+1	2	4	1	E2+1	3		56 041.010 (0.010)	17.984	0.127	1	
23	4	A2		24	1	A1			56 258.490 (0.262)*	449.547	0.055	1	
14	3	A2		13	4	A1		56 401.131 (0.060)	56 401.149 (0.009)*	178.021	3.124	1	1
11	1	E1−1		11	0	E1+1		56 572.382 (0.060)	56 572.426 (0.011)*	97.721	21.282	3	1
11	1	E1−1	10	11	0	E1+1	10		56 572.118 (0.011)	97.720	6.424	3	
11	1	E1−1	12	11	0	E1+1	12		56 572.189 (0.011)	97.720	7.657	3	
11	1	E1−1	11	11	0	E1+1	11		56 572.965 (0.011)	97.721	6.987	3	
14	5	A1		15	4	A2		56 647.584 (0.020)	56 647.585 (0.009)*	220.890	2.906	1	1
14	3	E2+1		13	4	E2+1		56 658.684 (0.060)	56 658.725 (0.009)*	177.908	3.101	1	1
14	5	A2		15	4	A1		56 659.440 (0.020)	56 659.449 (0.009)*	220.890	2.906	1	1
14	3	A1		13	4	A2		56 847.816 (0.020)	56 847.819 (0.009)*	178.021	3.125	1	1
13	1	A1		13	0	A2		57 330.891 (0.020)	57 330.896 (0.012)*	134.237	26.102	1	1
13	1	A1	12	13	0	A2	12		57 330.621 (0.012)	134.237	8.009	1	
13	1	A1	14	13	0	A2	14		57 330.676 (0.012)	134.237	9.298	1	
13	1	A1	13	13	0	A2	13		57 331.385 (0.012)	134.237	8.605	1	
9	1	E2−1		9	0	E2+1		57 491.217 (0.020)	57 491.252 (0.010)*	66.868	16.464	1	1
9	1	E2−1	8	9	0	E2+1	8		57 490.920 (0.010)	66.868	4.850	1	
9	1	E2−1	10	9	0	E2+1	10		57 491.010 (0.010)	66.868	6.005	1	
9	1	E2−1	9	9	0	E2+1	9		57 491.817 (0.010)	66.868	5.367	1	
23	4	E1+1		24	1	E1+1			57 599.225 (0.189)*	449.542	0.029	3	
3	2	E2−1		4	1	E2+1			57 785.034 (0.011)*	17.984	0.067	1	
3	2	E2−1	3	4	1	E2+1	4		57 784.955 (0.011)	17.984	0.021	1	
3	2	E2−1	4	4	1	E2+1	5		57 785.063 (0.011)	17.984	0.027	1	
3	2	E2−1	2	4	1	E2+1	3		57 785.092 (0.011)	17.984	0.016	1	
18	6	A1		19	5	A2			57 816.149 (0.011)*	348.381	3.794	1	
18	6	A2		19	5	A1			57 817.378 (0.011)*	348.381	3.794	1	
10	1	B2		10	0	B1		57 898.300 (0.500)	57 898.220 (0.019)*	81.418	18.930	3	7
10	1	B2	9	10	0	B1	9		57 897.885 (0.019)	81.418	5.652	3	
10	1	B2	11	10	0	B1	11		57 897.968 (0.019)	81.418	6.854	3	
10	1	B2	10	10	0	B1	10		57 898.797 (0.019)	81.418	6.196	3	
11	1	B2		11	1	B1			58 002.967 (0.030)*	99.438	0.021	3	
11	1	B2	11	11	1	B1	11		58 001.459 (0.030)	99.438	0.007	3	
11	1	B2	12	11	1	B1	12		58 003.631 (0.030)	99.438	0.007	3	
11	1	B2	10	11	1	B1	10		58 003.829 (0.030)	99.438	0.006	3	
25	6	E1+1		24	7	E1+1		58 432.951 (0.020)	58 432.953 (0.012)*	575.704	5.416	3	1
25	6	E1−1		24	7	E1−1		58 520.201 (0.060)	58 520.244 (0.015)*	575.573	5.428	3	1
11	1	E2+1		11	1	E2−1			59 038.669 (0.017)*	99.512	0.018	1	
11	1	E2+1	11	11	1	E2−1	11		59 037.192 (0.017)	99.512	0.006	1	
11	1	E2+1	12	11	1	E2−1	12		59 039.318 (0.017)	99.512	0.006	1	
11	1	E2+1	10	11	1	E2−1	10		59 039.512 (0.017)	99.512	0.005	1	
14	3	E2−1		13	4	E2+1			59 047.185 (0.008)*	177.908	0.028	1	
25	8	B2		26	7	B1			59 450.784 (0.015)*	651.111	5.186	3	
25	8	B		26	7	B		59 450.789 (0.020)	59 450.788 (0.015)*	651.111	10.372	3	1
25	8	B1		26	7	B2			59 450.791 (0.015)*	651.111	5.186	3	
10	1	E1−1		10	0	E1+1		60 189.952 (0.020)	60 189.983 (0.009)*	81.511	18.959	3	1
10	1	E1−1	9	10	0	E1+1	9		60 189.654 (0.009)	81.511	5.661	3	
10	1	E1−1	11	10	0	E1+1	11		60 189.736 (0.009)	81.511	6.864	3	
10	1	E1−1	10	10	0	E1+1	10		60 190.550 (0.009)	81.511	6.205	3	
7	3	E1−1		8	2	E1−1		60 356.184 (0.060)	60 356.209 (0.008)*	64.095	1.474	3	1
7	3	E1−1	7	8	2	E1−1	8		60 356.043 (0.008)	64.095	0.484	3	
7	3	E1−1	8	8	2	E1−1	9		60 356.281 (0.008)	64.095	0.549	3	
7	3	E1−1	6	8	2	E1−1	7		60 356.304 (0.008)	64.095	0.426	3	
19	0	A2		18	3	A1			60 516.391 (0.049)*	277.543	0.100	1	
19	0	A2	18	18	3	A1	17		60 515.963 (0.049)	277.543	0.031	1	
19	0	A2	20	18	3	A1	19		60 516.022 (0.049)	277.543	0.035	1	
19	0	A2	19	18	3	A1	18		60 517.185 (0.049)	277.543	0.033	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	1	E2−1		8	0	E2+1		60 570.849 (0.020)	60 570.881 (0.009)*	53.590	14.260	1	1
8	1	E2−1	7	8	0	E2+1	7		60 570.538 (0.009)	53.590	4.129	1	
8	1	E2−1	9	8	0	E2+1	9		60 570.640 (0.009)	53.590	5.247	1	
8	1	E2−1	8	8	0	E2+1	8		60 571.452 (0.009)	53.590	4.622	1	
3	2	E1+1		4	1	E1+1		60 699.167 (0.060)	60 699.160 (0.008)*	17.985	0.451	3	1
3	2	E1+1	2	4	1	E1+1	3		60 699.069 (0.008)	17.985	0.107	3	
3	2	E1+1	4	4	1	E1+1	5		60 699.113 (0.008)	17.985	0.184	3	
3	2	E1+1	3	4	1	E1+1	4		60 699.288 (0.008)	17.985	0.141	3	
14	5	E2−1		15	4	E2−1		61 103.863 (0.020)	61 103.862 (0.010)*	221.053	2.899	1	1
12	1	A2		12	0	A1		61 220.476 (0.020)	61 220.474 (0.011)*	115.102	23.588	1	1
12	1	A2	11	12	0	A1	11		61 220.179 (0.011)	115.102	7.183	1	
12	1	A2	13	12	0	A1	13		61 220.242 (0.011)	115.102	8.441	1	
12	1	A2	12	12	0	A1	12		61 220.996 (0.011)	115.102	7.762	1	
18	4	E2+1		17	5	E2+1		61 421.867 (0.020)	61 421.831 (0.011)*	294.111	4.020	1	1
9	1	B1		9	0	B2		61 424.722 (0.060)	61 424.731 (0.016)*	66.672	16.752	3	1
9	1	B1	8	9	0	B2	8		61 424.376 (0.016)	66.672	4.935	3	
9	1	B1	10	9	0	B2	10		61 424.473 (0.016)	66.672	6.110	3	
9	1	B1	9	9	0	B2	9		61 425.335 (0.016)	66.672	5.461	3	
23	4	E1−1		24	1	E1+1			61 974.046 (0.177)*	449.542	0.030	3	
3	2	E1−1		4	1	E1−1		62 055.870 (0.020)	62 055.866 (0.008)*	17.647	0.438	3	1
3	2	E1−1	3	4	1	E1−1	4		62 054.678 (0.008)	17.648	0.137	3	
3	2	E1−1	4	4	1	E1−1	5		62 056.298 (0.008)	17.647	0.178	3	
3	2	E1−1	2	4	1	E1−1	3		62 056.716 (0.008)	17.647	0.104	3	
3	0	E2+1		2	1	E2−1		62 783.284 (0.020)	62 783.275 (0.008)*	7.182	0.603	1	1
3	0	E2+1	4	2	1	E2−1	3		62 783.200 (0.008)	7.182	0.258	1	
3	0	E2+1	2	2	1	E2−1	1		62 783.241 (0.008)	7.182	0.121	1	
3	0	E2+1	3	2	1	E2−1	2		62 783.433 (0.008)	7.183	0.179	1	
22	2	A1		22	2	A2			62 783.614 (0.259)*	384.628	0.034	1	
22	2	A1	22	22	2	A2	22		62 782.865 (0.259)	384.628	0.011	1	
22	2	A1	23	22	2	A2	23		62 783.964 (0.259)	384.628	0.012	1	
22	2	A1	21	22	2	A2	21		62 784.014 (0.259)	384.628	0.011	1	
29	7	E1−1		28	8	E1−1		62 848.953 (0.020)	62 848.985 (0.017)*	772.620	6.308	3	1
23	4	E2−1		24	1	E2+1			62 941.602 (0.188)*	449.480	0.028	1	
7	1	E1−1		6	2	E1−1		63 079.501 (0.020)	63 079.479 (0.009)*	41.905	1.016	3	1
7	1	E1−1	6	6	2	E1−1	5		63 078.910 (0.009)	41.905	0.287	3	
7	1	E1−1	8	6	2	E1−1	7		63 079.088 (0.009)	41.905	0.384	3	
7	1	E1−1	7	6	2	E1−1	6		63 080.417 (0.009)	41.905	0.332	3	
19	0	B2		18	3	B1			63 321.747 (0.051)*	277.638	0.108	3	
19	0	B2	18	18	3	B1	17		63 321.317 (0.051)	277.638	0.034	3	
19	0	B2	20	18	3	B1	19		63 321.376 (0.051)	277.638	0.038	3	
19	0	B2	19	18	3	B1	18		63 322.545 (0.051)	277.638	0.036	3	
7	1	E2−1		7	0	E2+1		63 334.425 (0.020)	63 334.439 (0.008)*	41.781	12.109	1	1
7	1	E2−1	6	7	0	E2+1	6		63 334.093 (0.008)	41.781	3.427	1	
7	1	E2−1	8	7	0	E2+1	8		63 334.208 (0.008)	41.781	4.503	1	
7	1	E2−1	7	7	0	E2+1	7		63 335.001 (0.008)	41.781	3.894	1	
22	2	B1		22	2	B2			63 339.482 (0.242)*	384.661	0.026	3	
22	2	B1	22	22	2	B2	22		63 338.728 (0.242)	384.661	0.008	3	
22	2	B1	23	22	2	B2	23		63 339.835 (0.242)	384.661	0.009	3	
22	2	B1	21	22	2	B2	21		63 63 339.885 (0.242)	384.661	0.008	3	
9	1	E1−1		9	0	E1+1		63 652.855 (0.020)	63 652.874 (0.008)*	66.765	16.746	3	1
9	1	E1−1	8	9	0	E1+1	8		63 652.526 (0.008)	66.765	4.933	3	
9	1	E1−1	10	9	0	E1+1	10		63 652.620 (0.008)	66.765	6.108	3	
9	1	E1−1	9	9	0	E1+1	9		63 653.466 (0.008)	66.765	5.459	3	
3	2	A2		4	1	A1		63 909.185 (0.020)	63 909.207 (0.009)*	17.950	0.607	1	1
3	2	A2	2	4	1	A1	3		63 909.053 (0.009)	17.950	0.145	1	
3	2	A2	4	4	1	A1	5		63 909.127 (0.009)	17.950	0.247	1	
3	2	A2	3	4	1	A1	4		63 909.426 (0.009)	17.950	0.190	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
25	8	E2−1		26	7	E2−1		64 483.522 (0.020)	64 483.493 (0.016)*	650.971	5.192	1	1
8	1	B2		8	0	B1		64 745.572 (0.020)	64 745.574 (0.013)*	53.393	14.681	3	1
8	1	B2	7	8	0	B1	7		64 745.199 (0.013)	53.393	4.250	3	
8	1	B2	9	8	0	B1	9		64 745.311 (0.013)	53.393	5.402	3	
8	1	B2	8	8	0	B1	8		64 746.199 (0.013)	53.393	4.759	3	
14	3	B2		13	4	B1		64 962.730 (0.020)	64 962.757 (0.010)*	177.834	3.128	3	1
25	8	E2+1		26	7	E2+1		65 030.522 (0.020)	65 030.519 (0.016)*	650.780	5.199	1	1
11	1	A1		11	0	A2		65 046.842 (0.020)	65 046.834 (0.010)*	97.427	21.190	1	1
11	1	A1	10	11	0	A2	10		65 046.518 (0.010)	97.427	6.396	1	
11	1	A1	12	11	0	A2	12		65 046.591 (0.010)	97.427	7.624	1	
11	1	A1	11	11	0	A2	11		65 047.387 (0.010)	97.427	6.957	1	
22	2	E2−1		22	2	E2+1			65 277.366 (0.181)*	384.425	0.027	1	
22	2	E2−1	22	22	2	E2+1	22		65 276.595 (0.181)	384.425	0.009	1	
22	2	E2−1	23	22	2	E2+1	23		65 277.727 (0.181)	384.425	0.009	1	
22	2	E2−1	21	22	2	E2+1	21		65 277.778 (0.181)	384.425	0.009	1	
22	2	E1+1		22	2	E1−1			65 384.994 (0.172)*	384.403	0.031	3	
22	2	E1+1	22	22	2	E1−1	22		65 384.232 (0.172)	384.403	0.010	3	
22	2	E1+1	23	22	2	E1−1	23		65 385.350 (0.172)	384.403	0.011	3	
22	2	E1+1	21	22	2	E1−1	21		65 385.401 (0.172)	384.403	0.010	3	
14	3	B1		13	4	B2		65 399.830 (0.060)	65 399.896 (0.010)*	177.834	3.129	3	1
18	4	B2		17	5	B1		65 485.041 (0.020)	65 485.054 (0.009)*	293.900	4.024	3	1
18	4	B1		17	5	B2		65 535.921 (0.020)	65 535.920 (0.009)*	293.900	4.024	3	1
6	1	E2−1		6	0	E2+1		65 706.558 (0.020)	65 706.567 (0.007)*	31.443	9.986	1	1
6	1	E2−1	5	6	0	E2+1	5		65 706.231 (0.007)	31.443	2.738	1	
6	1	E2−1	7	6	0	E2+1	7		65 706.355 (0.007)	31.443	3.762	1	
6	1	E2−1	6	6	0	E2+1	6		65 707.095 (0.007)	31.443	3.172	1	
14	5	E1+1		15	4	E1+1		66 130.499 (0.020)	66 130.530 (0.010)*	220.934	2.901	3	1
25	6	E2+1		24	7	E2+1		66 381.212 (0.020)	66 381.243 (0.014)*	575.529	5.423	1	1
21	7	E2+1		22	6	E2+1		66 525.087 (0.020)	66 525.091 (0.014)*	471.462	4.312	1	1
19	0	E1+1		18	3	E1−1			66 884.546 (0.050)*	277.584	0.074	3	
19	0	E1+1	18	18	3	E1−1	17		66 884.120 (0.050)	277.584	0.023	3	
19	0	E1+1	20	18	3	E1−1	19		66 884.179 (0.050)	277.584	0.026	3	
19	0	E1+1	19	18	3	E1−1	18		66 885.336 (0.050)	277.584	0.025	3	
8	1	E1−1		8	0	E1+1		66 908.168 (0.020)	66 908.171 (0.007)*	53.487	14.635	3	1
8	1	E1−1	7	8	0	E1+1	7		66 907.804 (0.007)	53.487	4.237	3	
8	1	E1−1	9	8	0	E1+1	9		66 907.914 (0.007)	53.487	5.385	3	
8	1	E1−1	8	8	0	E1+1	8		66 908.782 (0.007)	53.487	4.744	3	
18	4	E1+1		17	5	E1+1		67 177.766 (0.020)	67 177.763 (0.011)*	294.073	4.016	3	1
5	1	E2−1		5	0	E2+1		67 609.018 (0.020)	67 609.017 (0.006)*	22.579	7.876	1	1
5	1	E2−1	4	5	0	E2+1	4		67 608.713 (0.006)	22.579	2.062	1	
5	1	E2−1	6	5	0	E2+1	6		67 608.841 (0.006)	22.579	3.016	1	
5	1	E2−1	5	5	0	E2+1	5		67 609.472 (0.006)	22.579	2.453	1	
29	7	E2+1		28	8	E2+1		67 798.137 (0.020)	67 798.134 (0.016)*	772.409	6.311	1	1
7	1	B1		7	0	B2		67 815.760 (0.020)	67 815.760 (0.011)*	41.584	12.709	3	1
7	1	B1	6	7	0	B2	6		67 815.366 (0.011)	41.584	3.597	3	
7	1	B1	8	7	0	B2	8		67 815.496 (0.011)	41.584	4.726	3	
7	1	B1	7	7	0	B2	7		67 816.402 (0.011)	41.584	4.086	3	
14	5	B1		15	4	B2		67 849.747 (0.020)	67 849.764 (0.009)*	220.704	2.905	3	1
14	5	B2		15	4	B1		67 861.880 (0.020)	67 861.893 (0.009)*	220.704	2.905	3	1
10	4	B1		11	3	B2		68 154.398 (0.020)	68 154.380 (0.008)*	122.336	2.015	3	1
10	4	B2		11	3	B1		68 261.483 (0.020)	68 261.478 (0.008)*	122.332	2.015	3	1
29	7	E2−1		28	8	E2−1			68 291.347 (0.019)*	772.582	6.302	1	
12	1	B1		12	1	B2			68 483.777 (0.035)*	116.985	0.020	3	
12	1	B1	12	12	1	B2	12		68 482.272 (0.035)	116.985	0.006	3	
12	1	B1	13	12	1	B2	13		68 484.445 (0.035)	116.985	0.007	3	
12	1	B1	11	12	1	B2	11		68 484.627 (0.035)	116.985	0.006	3	
10	1	A2		10	0	A1		68 759.556 (0.020)	68 759.547 (0.010)*	81.215	18.907	1	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	1	A2	9	10	0	A1	9		68 759.210 (0.010)	81.215	5.645	1	
10	1	A2	11	10	0	A1	11		68 759.294 (0.010)	81.215	6.845	1	
10	1	A2	10	10	0	A1	10		68 760.128 (0.010)	81.215	6.188	1	
4	1	E2−1		4	0	E2+1		68 978.320 (0.020)	68 978.318 (0.007)*	15.190	5.818	1	1
4	1	E2−1	3	4	0	E2+1	3		68 978.083 (0.007)	15.190	1.414	1	
4	1	E2−1	5	4	0	E2+1	5		68 978.199 (0.007)	15.190	2.276	1	
4	1	E2−1	4	4	0	E2+1	4		68 978.648 (0.007)	15.190	1.750	1	
3	2	B2		4	1	B1		69 781.149 (0.020)	69 781.117 (0.010)*	17.792	0.608	3	1
3	2	B2	2	4	1	B1	3		69 780.963 (0.010)	17.792	0.145	3	
3	2	B2	4	4	1	B1	5		69 781.037 (0.010)	17.792	0.248	3	
3	2	B2	3	4	1	B1	4		69 781.336 (0.010)	17.792	0.190	3	
3	1	E2−1		3	0	E2+1		69 809.476 (0.020)	69 809.475 (0.007)*	9.277	3.946	1	1
3	1	E2−1	2	3	0	E2+1	2		69 809.365 (0.007)	9.277	0.835	1	
3	1	E2−1	4	3	0	E2+1	4		69 809.429 (0.007)	9.277	1.585	1	
3	1	E2−1	3	3	0	E2+1	3		69 809.614 (0.007)	9.277	1.105	1	
7	1	E1−1		7	0	E1+1		69 903.701 (0.020)	69 903.704 (0.006)*	41.678	12.612	3	1
7	1	E1−1	6	7	0	E1+1	6		69 903.320 (0.006)	41.678	3.569	3	
7	1	E1−1	8	7	0	E1+1	8		69 903.447 (0.006)	41.678	4.690	3	
7	1	E1−1	7	7	0	E1+1	7		69 904.327 (0.006)	41.678	4.055	3	
25	8	E1−1		26	7	E1−1		70 016.487 (0.020)	70 016.463 (0.016)*	650.825	5.197	3	1
2	1	E2−1		2	0	E2+1		70 199.117 (0.020)	70 199.113 (0.008)*	4.841	2.420	1	1
2	1	E2−1	1	2	0	E2+1	2		70 198.035 (0.008)	4.841	0.121	1	
2	1	E2−1	3	2	0	E2+1	2		70 198.368 (0.008)	4.841	0.125	1	
2	1	E2−1	2	2	0	E2+1	2		70 198.967 (0.008)	4.841	0.560	1	
2	1	E2−1	3	2	0	E2+1	3		70 199.154 (0.008)	4.841	1.004	1	
2	1	E2−1	1	2	0	E2+1	1		70 199.259 (0.008)	4.841	0.363	1	
2	1	E2−1	2	2	0	E2+1	3		70 199.754 (0.008)	4.841	0.125	1	
2	1	E2−1	2	2	0	E2+1	1		70 200.190 (0.008)	4.841	0.121	1	
1	1	E2−1		1	0	E2+1		70 320.133 (0.020)	70 320.128 (0.008)*	1.883	1.274	1	1
1	1	E2−1	1	1	0	E2+1	1		70 319.279 (0.008)	1.883	0.106	1	
1	1	E2−1	2	1	0	E2+1	1		70 319.574 (0.008)	1.883	0.177	1	
1	1	E2−1	1	1	0	E2+1	2		70 320.003 (0.008)	1.883	0.177	1	
1	1	E2−1	0	1	0	E2+1	1		70 320.017 (0.008)	1.883	0.142	1	
1	1	E2−1		2	10	E2+1	2		70 320.298 (0.008)	1.883	0.531	1	
1	1	E2−1	1	1	0	E2+1	0		70 321.089 (0.008)	1.883	0.142	1	
7	1	B2		6	2	B1		70 550.223 (0.060)	70 550.275 (0.012)*	42.315	1.843	3	1
7	1	B2	7	6	2	B1	6		70 549.753 (0.012)	42.315	0.602	3	
7	1	B2	8	6	2	B1	7		70 550.486 (0.012)	42.315	0.696	3	
7	1	B2	6	6	2	B1	5		70 550.604 (0.012)	42.315	0.520	3	
6	1	B2		6	0	B1		70 594.240 (0.020)	70 594.237 (0.009)*	31.246	10.827	3	1
6	1	B2	5	6	0	B1	5		70 593.822 (0.009)	31.246	2.969	3	
6	1	B2	7	6	0	B1	7		70 593.976 (0.009)	31.246	4.079	3	
6	1	B2	6	6	0	B1	6		70 594.889 (0.009)	31.246	3.439	3	
3	2	E1+1		4	1	E1−1		70 815.577 (0.020)	70 815.573 (0.007)*	17.647	0.141	3	1
3	2	E1+1	3	4	1	E1−1	4		70 814.385 (0.007)	17.648	0.044	3	
3	2	E1+1	4	4	1	E1−1	5		70 816.004 (0.007)	17.647	0.058	3	
3	2	E1+1	2	4	1	E1−1	3		70 816.422 (0.007)	17.647	0.034	3	
3	2	E2+1		4	1	E2−1			70 815.585 (0.008)*	17.491	0.057	1	
3	2	E2+1	3	4	1	E2−1	4		70 814.604 (0.008)	17.491	0.018	1	
3	2	E2+1	4	4	1	E2−1	5		70 815.941 (0.008)	17.491	0.023	1	
3	2	E2+1	2	4	1	E2−1	3		70 816.286 (0.008)	17.491	0.014	1	
14	5	E2+1		15	4	E2+1		71 938.245 (0.060)	71 938.290 (0.011)*	220.779	2.903	1	1
18	4	E2−1		17	5	E2−1		72 215.664 (0.020)	72 215.661 (0.012)*	294.024	4.013	1	1
9	1	A1		9	0	A2		72 309.090 (0.020)	72 309.083 (0.009)*	66.468	16.736	1	1
9	1	A1	8	9	0	A2	8		72 308.727 (0.009)	66.468	4.930	1	
9	1	A1	10	9	0	A2	10		72 308.824 (0.009)	66.468	6.104	1	
9	1	A1	9	9	0	A2	9		72 309.690 (0.009)	66.468	5.455	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
19	0	E2+1		18	3	E2−1			72 506.470 (0.048)*	277.491	0.100	1	
19	0	E2+1	18	18	3	E2−1	17		72 506.034 (0.048)	277.491	0.032	1	
19	0	E2+1	20	18	3	E2−1	19		72 506.095 (0.048)	277.491	0.035	1	
19	0	E2+1	19	18	3	E2−1	18		72 507.277 (0.048)	277.491	0.033	1	
3	2	E2−1		4	1	E2−1		72 559.640 (0.020)	72 559.666 (0.008)*	17.491	0.526	1	1
3	2	E2−1	3	4	1	E2−1	4		72 558.685 (0.008)	17.491	0.165	1	
3	2	E2−1	4	4	1	E2−1	5		72 560.022 (0.008)	17.491	0.214	1	
3	2	E2−1	2	4	1	E2−1	3		72 560.368 (0.008)	17.491	0.125	1	
6	1	E1−1		6	0	E1−1		72 586.989 (0.020)	72 586.983 (0.006)*	31.340	10.658	3	1
6	1	E1−1	5	6	0	E1−1	5		72 586.587 (0.006)	31.340	2.923	3	
6	1	E1−1	7	6	0	E1−1	7		72 586.734 (0.006)	31.340	4.016	3	
6	1	E1−1	6	6	0	E1−1	6		72 587.606 (0.006)	31.340	3.386	3	
3	2	A1		4	1	A2		72 671.575 (0.020)	72 671.596 (0.009)*	17.657	0.577	1	1
3	2	A1	3	4	1	A2	4		72 670.319 (0.009)	17.657	0.180	1	
3	2	A1	4	4	1	A2	5		72 672.060 (0.009)	17.657	0.235	1	
3	2	A1	2	4	1	A2	3		72 672.508 (0.009)	17.657	0.137	1	
11	2	E1−1		10	3	E1−1		72 856.148 (0.020)	72 856.155 (0.009)*	106.038	2.425	3	1
23	2	A2		23	2	A1			73 004.732 (0.316)*	418.500	0.033	1	
23	2	A2	23	23	2	A1	23		73 003.948 (0.316)	418.500	0.011	1	
23	2	A2	24	23	2	A1	24		73 005.100 (0.316)	418.500	0.011	1	
23	2	A2	22	23	2	A1	22		73 005.151 (0.316)	418.500	0.010	1	
5	1	B1		5	0	B2		73 044.481 (0.020)	73 044.473 (0.008)*	22.381	9.024	3	1
5	1	B1	4	5	0	B2	4		73 044.038 (0.008)	22.381	2.363	3	
5	1	B1	6	5	0	B2	6		73 044.222 (0.008)	22.381	3.456	3	
5	1	B1	5	5	0	B2	5		73 045.126 (0.008)	22.381	2.811	3	
14	3	E1+1		15	0	E1+1			73 287.441 (0.026)*	177.154	0.019	3	
14	3	E1+1	14	15	0	E1+1	15		73 286.851 (0.026)	177.154	0.006	3	
14	3	E1+1	15	15	0	E1+1	16		73 287.711 (0.026)	177.154	0.007	3	
14	3	E1+1	13	15	0	E1+1	14		73 287.765 (0.026)	177.154	0.006	3	
29	7	B1		28	8	B2			73 365.598 (0.017)*	772.552	6.293	3	
29	7	B		28	8	B		73 365.624 (0.020)	73 365.613 (0.017)*	772.552	12.586	3	1
29	7	B2		28	8	B1			73 365.628 (0.017)*	772.552	6.293	3	
23	2	B2		23	2	B1			73 620.776 (0.296)*	418.532	0.024	3	
23	2	B2	23	23	2	B1	23		73 619.986 (0.296)	418.532	0.008	3	
23	2	B2	24	23	2	B1	24		73 621.147 (0.296)	418.532	0.008	3	
23	2	B2	22	23	2	B1	22		73 621.198 (0.296)	418.532	0.008	3	
21	7	E1−1		22	6	E1−1		74 393.483 (0.060)	74 393.392 (0.014)*	471.243	4.316	3	1
21	7	E1+1		22	6	E1+1		74 571.274 (0.020)	74 571.284 (0.012)*	471.370	4.308	3	1
5	1	E1−1		5	0	E1+1		74 901.949 (0.020)	74 901.933 (0.006)*	22.476	8.742	3	1
5	1	E1−1	4	5	0	E1+1	4		74 901.533 (0.006)	22.476	2.289	3	
5	1	E1−1	6	5	0	E1+1	6		74 901.702 (0.006)	22.476	3.348	3	
5	1	E1−1	5	5	0	E1+1	5		74 902.535 (0.006)	22.476	2.723	3	
4	1	B2		4	0	B1		75 134.870 (0.020)	75 134.858 (0.007)*	14.992	7.290	3	1
4	1	B2	3	4	0	B1	3		75 134.403 (0.007)	14.992	1.772	3	
4	1	B2	5	4	0	B1	5		75 134.626 (0.007)	14.992	2.851	3	
4	1	B2	4	4	0	B1	4		75 135.496 (0.007)	14.992	2.193	3	
22	5	A2		21	6	A1		75 416.594 (0.020)	75 416.615 (0.011)*	438.924	4.915	1	1
22	5	A1		21	6	A2		75 421.836 (0.020)	75 421.854 (0.011)*	438.924	4.915	1	1
19	0	E2+1		18	3	E2+1			75 536.354 (0.055)*	277.390	0.021	1	
19	0	E2+1	18	18	3	E2+1	17		75 535.937 (0.055)	277.390	0.007	1	
19	0	E2+1	20	18	3	E2+1	19		75 535.995 (0.055)	277.390	0.007	1	
19	0	E2+1	19	18	3	E2+1	18		75 537.126 (0.055)	277.390	0.007	1	
8	1	A2		8	0	A1		75 648.053 (0.020)	75 648.042 (0.008)*	53.188	14.670	1	1
8	1	A2	7	8	0	A1	7		75 647.665 (0.008)	53.188	4.247	1	
8	1	A2	9	8	0	A1	9		75 647.777 (0.008)	53.188	5.398	1	
8	1	A2	8	8	0	A1	8		75 648.669 (0.008)	53.188	4.755	1	
23	2	E2−1		23	2	E2+1			75 779.521 (0.215)*	418.298	0.025	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
23	2	E2−1	23	23	2	E2+1	23		75 778.715 (0.215)	418.298	0.008	1	
23	2	E2−1	24	23	2	E2+1	24		75 779.899 (0.215)	418.298	0.009	1	
23	2	E2−1	22	23	2	E2+1	22		75 779.951 (0.215)	418.298	0.008	1	
23	2	E1+1		23	2	E1−1			75 781.392 (0.205)*	418.276	0.029	3	
23	2	E1+1	23	23	2	E1−1	23		75 780.593 (0.205)	418.276	0.010	3	
23	2	E1+1	24	23	2	E1−1	24		75 781.767 (0.205)	418.276	0.010	3	
23	2	E1+1	22	23	2	E1−1	22		75 781.818 (0.205)	418.276	0.009	3	
14	3	E2+1		15	0	E2+1			76 313.733 (0.025)*	177.253	0.019	1	
14	3	E2+1	14	15	0	E2+1	15		76 313.143 (0.025)	177.253	0.006	1	
14	3	E2+1	15	15	0	E2+1	16		76 314.002 (0.025)	177.253	0.007	1	
14	3	E2+1	13	15	0	E2+1	14		76 314.056 (0.025)	177.253	0.006	1	
7	1	A2		6	2	A1		76 398.872 (0.020)	76 398.848 (0.011)*	42.277	1.838	1	1
7	1	A2	7	6	2	A1	6		76 398.325 (0.011)	42.277	0.600	1	
7	1	A2	8	6	2	A1	7		76 399.058 (0.011)	42.277	0.694	1	
7	1	A2	6	6	2	A1	5		76 399.177 (0.011)	42.277	0.518	1	
18	4	A2		17	5	A1		76 582.554 (0.020)	76 582.545 (0.009)*	293.714	4.026	1	1
18	4	A1		17	5	A2		76 632.307 (0.020)	76 632.303 (0.009)*	293.714	4.026	1	1
10	4	E2+1		11	3	E2+1		76 748.210 (0.020)	76 748.196 (0.009)*	122.124	2.014	1	1
10	4	A1		11	3	A2		76 779.047 (0.020)	76 779.030 (0.009)*	122.236	2.013	1	1
4	1	E1−1		4	0	E1+1		76 782.324 (0.020)	76 782.307 (0.006)*	15.086	6.816	3	1
4	1	E1−1	3	4	0	E1+1	3		76 781.924 (0.006)	15.086	1.657	3	
4	1	E1−1	5	4	0	E1+1	5		76 782.112 (0.006)	15.086	2.666	3	
4	1	E1−1	4	4	0	E1+1	4		76 782.844 (0.006)	15.086	2.051	3	
30	2	E1−1		30	1	E1+1		76 834.434 (0.020)	76 834.447 (0.022)*	693.605	44.437	3	1
3	1	B1		3	0	B2		76 838.943 (0.020)	76 838.932 (0.007)*	9.079	5.611	3	1
3	1	B1	2	3	0	B2	2		76 838.460 (0.007)	9.079	1.188	3	
3	1	B1	4	3	0	B2	4		76 838.735 (0.007)	9.079	2.254	3	
3	1	B1	3	3	0	B2	3		76 839.521 (0.007)	9.079	1.572	3	
10	4	A2		11	3	A1		76 888.483 (0.020)	76 888.467 (0.009)*	122.233	2.013	1	1
18	4	E1−1		17	5	E1−1		77 590.081 (0.060)	77 590.133 (0.014)*	293.875	4.019	3	1
29	7	E1+1		28	8	E1+1		78 079.451 (0.060)	78 079.501 (0.020)*	772.236	6.314	3	1
2	1	B2		2	0	B1		78 135.517 (0.020)	78 135.504 (0.007)*	4.643	3.976	3	1
2	1	B2	1	2	0	B1	2		78 133.832 (0.008)	4.643	0.199	3	
2	1	B2	3	2	0	B1	2		78 134.589 (0.007)	4.643	0.206	3	
2	1	B2	1	2	0	B1	1		78 135.055 (0.008)	4.643	0.5963	2	
2	1	B2	3	2	0	B1	3		78 135.376 (0.007)	4.643	1.649	3	
2	1	B2	2	2	0	B1	2		78 135.952 (0.008)	4.643	0.920	3	
2	1	B2	2	2	0	B1	3		78 136.738 (0.007)	4.643	0.206	3	
2	1	B2	2	2	0	B1	1		78 137.175 (0.008)	4.643	0.199	3	
3	1	E1−1		3	0	E1+1		78 146.195 (0.020)	78 146.174 (0.006)*	9.173	4.841	3	1
3	1	E1−1	2	3	0	E1+1	2		78 145.870 (0.006)	9.173	1.024	3	
3	1	E1−1	4	3	0	E1+1	4		78 146.047 (0.006)	9.173	1.945	3	
3	1	E1−1	3	3	0	E1+1	3		78 146.553 (0.006)	9.173	1.356	3	
29	7	A1		28	8	A2			78 234.845 (0.025)*	772.417	6.302	1	
29	7	A2		28	8	A1		78 234.879 (0.020)	78 234.875 (0.025)*	772.417	6.302	1	1
19	0	E1+1		18	3	E1+1			78 325.919 (0.053)*	277.202	0.043	3	
19	0	E1+1	18	18	3	E1+1	17		78 325.496 (0.053)	277.202	0.014	3	
19	0	E1+1	20	18	3	E1+1	19		78 325.554 (0.053)	277.202	0.015	3	
19	0	E1+1	19	18	3	E1+1	18		78 326.704 (0.053)	277.202	0.014	3	
3	2	B1		4	1	B2		78 558.347 (0.020)	78 558.334 (0.010)*	17.498	0.577	3	1
3	2	B1	3	4	1	B2	4		78 557.057 (0.010)	17.498	0.180	3	
3	2	B1	4	4	1	B2	5		78 558.799 (0.010)	17.498	0.235	3	
3	2	B1	2	4	1	B2	3		78 559.247 (0.010)	17.498	0.137	3	
14	3	E2−1		15	0	E2+1			78 702.193 (0.024)*	177.253	0.028	1	
14	3	E2−1	14	15	0	E2+1	15		78 701.601 (0.024)	177.253	0.009	1	
14	3	E2−1	15	15	0	E2+1	16		78 702.463 (0.024)	177.253	0.010	1	
14	3	E2−1	13	15	0	E2+1	14		78 702.517 (0.024)	177.253	0.009	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	1	A1		7	0	A2		78 732.165 (0.020)	78 732.155 (0.008)*	41.378	12.703	1	1
7	1	A1	6	7	0	A2	6		78 731.759 (0.008)	41.378	3.595	1	
7	1	A1	8	7	0	A2	8		78 731.890 (0.008)	41.378	4.724	1	
7	1	A1	7	7	0	A2	7		78 732.799 (0.008)	41.378	4.084	1	
30	2	E2+1		30	1	E2+1		78 738.008 (0.020)	78 738.002 (0.020)*	693.555	44.359	1	1
11	2	E2+1		10	3	E2−1		78 842.944 (0.020)	78 842.929 (0.011)*	105.934	0.858	1	1
2	1	E1−1		2	0	E1+1		78 928.748 (0.020)	78 928.726 (0.007)*	4.737	2.914	3	1
2	1	E1−1	1	2	0	E1+1	2		78 927.460 (0.007)	4.737	0.146	3	
2	1	E1−1	3	2	0	E1+1	2		78 927.927 (0.007)	4.737	0.151	3	
2	1	E1−1	1	2	0	E1+1	1		78 928.683 (0.007)	4.737	0.437	3	
2	1	E1−1	3	2	0	E1+1	3		78 928.713 (0.007)	4.737	1.209	3	
2	1	E1−1	2	2	0	E1+1	2		78 928.768 (0.007)	4.737	0.675	3	
2	1	E1−1	2	2	0	E1+1	3		78 929.554 (0.007)	4.737	0.151	3	
2	1	E1−1	2	2	0	E1+1	1		78 929.991 (0.007)	4.737	0.146	3	
21	7	A2		22	6	A1		78 951.788 (0.060)	78 951.775 (0.015)*	471.408	4.306	1	1
21	7	A1		22	6	A2		78 951.880 (0.060)	78 951.844 (0.015)*	471.408	4.306	1	1
1	1	B1		1	0	B2		79 008.707 (0.020)	79 008.693 (0.008)*	1.685	2.373	3	1
1	1	B1	0	1	0	B2	1		79 007.177 (0.008)	1.685	0.264	3	
1	1	B1	2	1	0	B2	1		79 007.998 (0.008)	1.685	0.330	3	
1	1	B1	1	1	0	B2	1		79 008.546 (0.008)	1.685	0.198	3	
1	1	B1	2	1	0	B2	2		79 008.722 (0.008)	1.685	0.989	3	
1	1	B1	1	1	0	B2	2		79 009.270 (0.008)	1.685	0.330	3	
1	1	B1	1	1	0	B2	0		79 010.356 (0.008)	1.685	0.264	3	
27	1	E2+1		26	4	E2−1			79 128.372 (0.285)*	562.361	0.060	1	
1	1	E1−1		1	0	E1+1		79 210.324 (0.020)	79 210.297 (0.008)*	1.780	1.392	3	1
1	1	E1−1	1	1	0	E1+1	1		79 209.523 (0.008)	1.780	0.116	3	
1	1	E1−1	2	1	0	E1+1	1		79 209.728 (0.008)	1.780	0.193	3	
1	1	E1−1	0	1	0	E1+1	1		79 210.036 (0.008)	1.780	0.155	3	
1	1	E1−1	1	1	0	E1+1	2		79 210.247 (0.008)	1.780	0.193	3	
1	1	E1−1	2	1	0	E1+1	2		79 210.452 (0.008)	1.780	0.580	3	
1	1	E1−1	1	1	0	E1+1	0		79 211.333 (0.008)	1.779	0.155	3	
7	1	E1+1		6	2	E1+1		79 402.422 (0.020)	79 402.446 (0.008)*	42.197	1.145	3	1
7	1	E1+1	7	6	2	E1+1	6		79 401.903 (0.008)	42.197	0.374	3	
7	1	E1+1	8	6	2	E1+1	7		79 402.665 (0.008)	42.197	0.433	3	
7	1	E1+1	6	6	2	E1+1	5		79 402.788 (0.008)	42.197	0.323	3	
13	1	B2		13	1	B1			79 803.866 (0.041)*	135.990	0.019	3	
13	1	B2	13	13	1	B1	13		79 802.366 (0.041)	135.990	0.006	3	
13	1	B2	14	13	1	B1	14		79 804.538 (0.041)	135.990	0.007	3	
13	1	B2	12	13	1	B1	12		79 804.706 (0.041)	135.990	0.006	3	
27	1	E1+1		26	4	E1−1			79 953.529 (0.271)*	562.391	0.067	3	
10	4	E1−1		11	3	E1−1		80 515.475 (0.020)	80 515.479 (0.010)*	122.306	2.011	3	1
28	9	B1		29	8	B2		80 569.830 (0.020)	80 569.826 (0.024)*	815.306	5.712	3	1
28	9	B1		29	8	B2			80 569.826 (0.024)*	815.306	5.712	3	
7	1	E2+1		6	2	E2−1		81 075.254 (0.060)	81 075.194 (0.010)*	42.100	0.799	1	1
7	1	E2+1	7	6	2	E2−1	6		81 074.722 (0.010)	42.100	0.261	1	
7	1	E2+1	8	6	2	E2−1	7		81 075.384 (0.010)	42.100	0.302	1	
7	1	E2+1	6	6	2	E2−1	5		81 075.493 (0.010)	42.100	0.225	1	
21	7	B2		22	6	B1		81 130.443 (0.060)	81 130.458 (0.015)*	471.308	4.310	3	1
21	7	B1		22	6	B2		81 130.540 (0.060)	81 130.527 (0.015)*	471.308	4.310	3	1
11	2	E2+1		10	3	E2+1		81 184.544 (0.020)	81 184.551 (0.009)*	105.856	1.745	1	1
6	1	A2		6	0	A1		81 521.084 (0.020)	81 521.078 (0.008)*	31.040	10.824	1	1
6	1	A2	5	6	0	A1	5		81 520.662 (0.008)	31.040	2.968	1	
6	1	A2	7	6	0	A1	7		81 520.816 (0.008)	31.040	4.078	1	
6	1	A2	6	6	0	A1	6		81 521.731 (0.008)	31.040	3.438	1	
11	2	B1		10	3	B2		82 164.199 (0.020)	82 164.188 (0.011)*	106.066	2.596	3	1
17	6	E2−1		18	5	E2−1		82 205.447 (0.060)	82 205.497 (0.012)*	320.619	3.430	1	1
1	1	E2+1		1	0	E2+1		82 231.156 (0.020)	82 231.128 (0.005)*	1.883	1.099	1	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
1	1	E2+1	1	1	0	E2+1	1		82 230.167 (0.005)	1.883	0.092	1	
1	1	E2+1	2	1	0	E2+1	1		82 230.597 (0.005)	1.883	0.153	1	
1	1	E2+1	1	1	0	E2+1	2		82 230.891 (0.005)	1.883	0.153	1	
1	1	E2+1	0	1	0	E2+1	1		82 231.240 (0.005)	1.883	0.122	1	
1	1	E2+1	2	1	0	E2+1	2		82 231.321 (0.005)	1.883	0.458	1	
1	1	E2+1	1	1	0	E2+1	0		82 231.978 (0.005)	1.883	0.122	1	
2	1	E2+1		2	0	E2+1		82 366.552 (0.020)	82 366.532 (0.005)*	4.841	1.558	1	1
2	1	E2+1	1	2	0	E2+1	2		82 365.782 (0.005)	4.841	0.078	1	
2	1	E2+1	3	2	0	E2+1	2		82 365.881 (0.005)	4.841	0.081	1	
2	1	E2+1	2	2	0	E2+1	2		82 366.057 (0.005)	4.841	0.361	1	
2	1	E2+1	3	2	0	E2+1	3		82 366.667 (0.005)	4.841	0.646	1	
2	1	E2+1	2	2	0	E2+1	3		82 366.844 (0.005)	4.841	0.081	1	
2	1	E2+1	1	2	0	E2+1	1		82 367.006 (0.005)	4.841	0.234	1	
2	1	E2+1	2	2	0	E2+1	1		82 367.281 (0.005)	4.841	0.078	1	
30	2	A2		30	1	A1		82 543.175 (0.020)	82 543.155 (0.023)*	693.631	44.341	1	1
10	4	E2−1		11	3	E2−1		82 669.877 (0.020)	82 669.881 (0.010)*	122.202	2.012	1	1
3	1	E2+1		3	0	E2+1		82 805.234 (0.020)	82 805.207 (0.005)*	9.277	1.669	1	1
3	1	E2+1	3	3	0	E2+1	3		82 804.731 (0.005)	9.277	0.467	1	
3	1	E2+1	4	3	0	E2+1	4		82 805.366 (0.005)	9.277	0.670	1	
3	1	E2+1	2	3	0	E2+1	2		82 805.589 (0.005)	9.277	0.353	1	
7	1	E2+1		6	2	E2+1		82 880.328 (0.020)	82 880.302 (0.009)*	42.040	1.040	1	1
7	1	E2+1	7	6	2	E2+1	6		82 879.806 (0.009)	42.040	0.339	1	
7	1	E2+1	8	6	2	E2+1	7		82 880.501 (0.009)	42.040	0.393	1	
7	1	E2+1	6	6	2	E2+1	5		82 880.615 (0.009)	42.040	0.293	1	
11	2	E1+1		10	3	E1−1		82 884.703 (0.020)	82 884.721 (0.011)*	106.038	0.189	3	1
4	1	E2+1		4	0	E2+1		83 752.981 (0.020)	83 752.950 (0.004)*	15.190	1.479	1	1
4	1	E2+1	4	4	0	E2+1	4		83 752.378 (0.004)	15.190	0.445	1	
4	1	E2+1	5	4	0	E2+1	5		83 753.158 (0.004)	15.190	0.578	1	
4	1	E2+1	3	4	0	E2+1	3		83 753.359 (0.004)	15.190	0.359	1	
29	2	E1−1		29	1	E1+1			83 895.407 (0.018)*	649.313	41.607	3	
22	5	B2		21	6	B1			83 905.444 (0.012)*	438.823	4.912	3	
22	5	B1		21	6	B2			83 910.605 (0.012)*	438.823	4.912	3	
5	1	A1		5	0	A2		83 978.920 (0.100)	83 978.941 (0.007)*	22.176	9.024	1	8
5	1	A1	4	5	0	A2	4		83 978.505 (0.007)	22.176	2.363	1	
5	1	A1	6	5	0	A2	6		83 978.690 (0.007)	22.176	3.456	1	
5	1	A1	5	5	0	A2	5		83 979.595 (0.007)	22.176	2.811	1	
11	2	A1		10	3	A2			84 043.256 (0.013)*	105.966	2.601	1	
24	2	A1		24	2	A2			84 142.458 (0.385)*	453.832	0.032	1	
24	2	A1	24	24	2	A2	24		84 141.640 (0.385)	453.832	0.010	1	
24	2	A1	25	24	2	A2	25		84 142.843 (0.385)	453.832	0.011	1	
24	2	A1	23	24	2	A2	23		84 142.893 (0.385)	453.832	0.010	1	
4	0	A1		3	1	A2		84 215.034 (0.020)	84 215.036 (0.009)*	11.977	2.281	1	1
4	0	A1	3	3	1	A2	2		84 214.337 (0.009)	11.977	0.543	1	
4	0	A1	5	3	1	A2	4		84 214.703 (0.009)	11.977	0.929	1	
4	0	A1	4	3	1	A2	3		84 215.978 (0.009)	11.977	0.713	1	
11	2	E2−1		10	3	E2−1		84 259.281 (0.060)	84 259.221 (0.011)*	105.934	1.753	1	1
27	1	E1+1		26	4	E1+1			84 266.228 (0.310)*	562.247	0.050	3	
1	1	E1+1		1	0	E1+1		84 305.236 (0.060)	84 305.195 (0.005)*	1.780	0.982	3	1
1	1	E1+1	1	1	0	E1+1	1		84 304.159 (0.005)	1.780	0.082	3	
1	1	E1+1	2	1	0	E1+1	1		84 304.678 (0.005)	1.780	0.136	3	
1	1	E1+1	1	1	0	E1+1	2		84 304.883 (0.005)	1.780	0.136	3	
1	1	E1+1	2	1	0	E1+1	2		84 305.402 (0.005)	1.780	0.409	3	
1	1	E1+1	0	1	0	E1+1	1		84 305.456 (0.005)	1.780	0.109	3	
1	1	E1+1	1	1	0	E1+1	0		84 305.969 (0.005)	1.779	0.109	3	
11	2	E1−1		10	3	E1+1		84 391.627 (0.020)	84 391.631 (0.008)*	105.654	0.184	3	1
6	3	E1+1		7	2	E1+1		84 454.889 (0.020)	84 454.892 (0.009)*	52.553	1.127	3	1
6	3	E1+1	6	7	2	E1+1	7		84 454.667 (0.009)	52.553	0.368	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	3	E1+1	7	7	2	E1+1	8		84 454.987 (0.009)	52.553	0.426	3	
6	3	E1+1	5	7	2	E1+1	6		84 455.027 (0.009)	52.553	0.318	3	
21	7	E2−1		22	6	E2−1		84 595.534 (0.060)	84 595.479 (0.015)*	471.052	4.316	1	1
2	1	E1+1		2	0	E1+1		84 598.235 (0.060)	84 598.202 (0.005)*	4.737	1.065	3	1
2	1	E1+1	2	2	0	E1+1	2		84 597.540 (0.005)	4.737	0.246	3	
2	1	E1+1	3	2	0	E1+1	2		84 597.605 (0.005)	4.737	0.055	3	
2	1	E1+1	1	2	0	E1+1	2		84 597.641 (0.005)	4.737	0.053	3	
2	1	E1+1	2	2	0	E1+1	3		84 598.326 (0.005)	4.737	0.055	3	
2	1	E1+1	3	2	0	E1+1	3		84 598.391 (0.005)	4.737	0.442	3	
2	1	E1+1	2	2	0	E1+1	1		84 598.763 (0.005)	4.737	0.053	3	
2	1	E1+1	1	2	0	E1+1	1		84 598.864 (0.005)	4.737	0.160	3	
14	3	E1−1		15	0	E1+1			84 747.088 (0.025)*	177.154	0.025	3	
14	3	E1−1	14	15	0	E1+1	15		84 746.501 (0.025)	177.154	0.008	3	
14	3	E1−1	15	15	0	E1+1	16		84 747.357 (0.025)	177.154	0.009	3	
14	3	E1−1	13	15	0	E1+1	14		84 747.411 (0.025)	177.154	0.008	3	
24	2	B1		24	2	B2			84 817.512 (0.360)*	453.863	0.022	3	
24	2	B1	24	24	2	B2	24		84 816.690 (0.360)	453.863	0.007	3	
24	2	B1	25	24	2	B2	25		84 817.900 (0.360)	453.863	0.008	3	
24	2	B1	23	24	2	B2	23		84 817.950 (0.360)	453.863	0.007	3	
22	5	E1−1		21	6	E1−1		85 113.805 (0.020)	85 113.777 (0.013)*	438.759	4.912	3	1
5	1	E2+1		5	0	E2+1		85 350.128 (0.020)	85 350.098 (0.005)*	22.579	1.162	1	1
5	1	E2+1	5	5	0	E2+1	5		85 349.428 (0.005)	22.579	0.362	1	
5	1	E2+1	6	5	0	E2+1	6		85 350.355 (0.005)	22.579	0.445	1	
5	1	E2+1	4	5	0	E2+1	4		85 350.545 (0.005)	22.579	0.304	1	
3	1	E1+1		3	0	E1+1		85 425.111 (0.020)	85 425.080 (0.005)*	9.173	0.775	3	1
3	1	E1+1	3	3	0	E1+1	3		85 424.362 (0.005)	9.173	0.217	3	
3	1	E1+1		43	0	E1+1	4		85 425.319 (0.005)	9.173	0.311	3	
3	1	E1+1	2	3	0	E1+1	2		85 425.654 (0.005)	9.173	0.164	3	
22	5	E2+1		21	6	E2+1		85 565.597 (0.020)	85 565.573 (0.014)*	438.978	4.900	1	1
27	1	A2		26	4	A1			85 598.310 (0.455)*	562.217	0.110	1	
29	2	E2+1		29	1	E2+1		85 902.717 (0.020)	85 902.706 (0.016)*	649.261	41.538	1	1
4	1	A2		4	0	A1		86 074.728 (0.020)	86 074.729 (0.007)*	14.786	7.290	1	1
4	1	A2	3	4	0	A1	3		86 074.273 (0.007)	14.786	1.772	1	
4	1	A2	5	4	0	A1	5		86 074.497 (0.007)	14.786	2.851	1	
4	1	A2	4	4	0	A1	4		86 075.367 (0.007)	14.786	2.193	1	
30	2	B2		30	1	B1		86 476.180 (0.020)	86 476.162 (0.025)*	693.524	44.161	3	1
11	2	E2−1		10	3	E2+1		86 600.879 (0.020)	86 600.842 (0.009)*	105.856	0.869	1	1
4	1	E1+1		4	0	E1+1		86 898.735 (0.020)	86 898.720 (0.005)*	15.086	0.481	3	1
4	1	E1+1	4	4	0	E1+1	4		86 897.941 (0.005)	15.086	0.145	3	
4	1	E1+1	5	4	0	E1+1	5		86 899.004 (0.005)	15.086	0.188	3	
4	1	E1+1	3	4	0	E1+1	3		86 899.277 (0.005)	15.086	0.117	3	
27	1	E2+1		26	4	E2+1			86 935.275 (0.326)*	562.101	0.052	1	
11	2	B2		10	3	B1		87 049.052 (0.020)	87 049.054 (0.011)*	106.068	2.617	3	1
8	1	B2		7	2	B1		87 098.137 (0.020)	87 098.139 (0.012)*	52.648	1.929	3	1
8	1	B2	7	7	2	B1	6		87 097.618 (0.012)	52.647	0.557	3	
8	1	B2	9	7	2	B1	8		87 097.764 (0.012)	52.647	0.719	3	
8	1	B2	8	7	2	B1	7		87 099.019 (0.012)	52.648	0.633	3	
24	2	E1+1		24	2	E1−1			87 110.686 (0.242)*	453.609	0.028	3	
24	2	E1+1	24	24	2	E1−1	24		87 109.854 (0.242)	453.609	0.009	3	
24	2	E1+1	25	24	2	E1−1	25		87 111.078 (0.242)	453.609	0.010	3	
24	2	E1+1	23	24	2	E1−1	23		87 111.129 (0.242)	453.609	0.009	3	
22	5	E1+1		21	6	E1+1		87 198.478 (0.020)	87 198.461 (0.014)*	438.886	4.908	3	1
24	2	E2−1		24	2	E2+1			87 199.457 (0.254)*	453.629	0.024	1	
24	2	E2−1	24	24	2	E2+1	24		87 198.619 (0.254)	453.629	0.008	1	
24	2	E2−1	25	24	2	E2+1	25		87 199.852 (0.254)	453.629	0.008	1	
24	2	E2−1	23	24	2	E2+1	23		87 199.903 (0.254)	453.629	0.008	1	
27	1	B2		26	4	B1			87 206.114 (0.465)*	562.042	0.100	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	4	E1+1		11	3	E1+1		87 507.283 (0.020)	87 507.267 (0.010)*	121.922	2.016	3	1
6	1	E2+1		6	0	E2+1		87 645.969 (0.020)	87 645.932 (0.005)*	31.443	0.864	1	1
6	1	E2+1	6	6	0	E2+1	6		87 645.187 (0.005)	31.443	0.274	1	
6	1	E2+1	7	6	0	E2+1	7		87 646.231 (0.005)	31.443	0.325	1	
6	1	E2+1	5	6	0	E2+1	5		87 646.407 (0.005)	31.443	0.237	1	
3	1	A1		3	0	A2		87 782.492 (0.020)	87 782.494 (0.008)*	8.873	5.613	1	1
3	1	A1	2	3	0	A2	2		87 782.022 (0.008)	8.873	1.188	1	
3	1	A1	4	3	0	A2	4		87 782.297 (0.008)	8.873	2.255	1	
3	1	A1	3	3	0	A2	3		87 783.084 (0.008)	8.873	1.572	1	
2	1	B2		1	1	B1		87 794.718 (0.020)	87 794.717 (0.002)*	4.321	0.141	3	1
2	1	B2	1	1	1	B1	1		87 793.201 (0.003)	4.321	0.012	3	
2	1	B2	3	1	1	B1	2		87 794.505 (0.002)	4.321	0.066	3	
2	1	B2	1	1	1	B1	0		87 794.570 (0.003)	4.321	0.016	3	
2	1	B2	2	1	1	B1	1		87 795.320 (0.002)	4.321	0.035	3	
2	1	B2	2	1	1	B1	2		87 795.868 (0.002)	4.321	0.012	3	
2	1	A2		1	1	A1		87 795.014 (0.020)	87 795.016 (0.002)*	4.480	0.141	1	1
2	1	A2	1	1	1	A1	1		87 793.500 (0.003)	4.480	0.012	1	
2	1	A2	3	1	1	A1	2		87 794.805 (0.002)	4.480	0.066	1	
2	1	A2	1	1	1	A1	0		87 794.869 (0.003)	4.480	0.016	1	
2	1	A2	2	1	1	A1	1		87 795.620 (0.002)	4.480	0.035	1	
2	1	A2	2	1	1	A1	2		87 796.167 (0.002)	4.480	0.012	1	
7	1	E1+1		6	2	E1−1		88 159.591 (0.020)	88 159.608 (0.009)*	41.905	0.701	3	1
7	1	E1+1	7	6	2	E1−1	6		88 159.062 (0.009)	41.905	0.229	3	
7	1	E1+1	8	6	2	E1−1	7		88 159.828 (0.009)	41.905	0.265	3	
7	1	E1+1	6	6	2	E1−1	5		88 159.952 (0.009)	41.905	0.198	3	
14	3	B1		15	0	B2			88 219.789 (0.030)*	177.073	0.041	3	
14	3	B1	14	15	0	B2	15		88 219.205 (0.030)	177.073	0.014	3	
14	3	B1	15	15	0	B2	16		88 220.057 (0.030)	177.072	0.014	3	
14	3	B1	13	15	0	B2	14		88 220.110 (0.030)	177.072	0.013	3	
2	1	E1−1		1	1	E1−1		88 387.978 (0.020)	88 387.971 (0.002)*	4.422	0.138	3	1
2	1	E1−1	1	1	1	E1−1	0		88 386.975 (0.003)	4.422	0.015	3	
2	1	E1−1	1	1	1	E1−1	1		88 387.488 (0.002)	4.422	0.012	3	
2	1	E1−1	3	1	1	E1−1	2		88 387.750 (0.002)	4.422	0.064	3	
2	1	E1−1	2	1	1	E1−1	2		88 388.591 (0.002)	4.422	0.012	3	
2	1	E1−1	2	1	1	E1−1	1		88 388.796 (0.002)	4.422	0.035	3	
2	1	E2−1		1	1	E2−1		88 547.670 (0.020)	88 547.665 (0.002)*	4.229	0.140	1	1
2	1	E2−1	1	1	1	E2−1	0		88 546.708 (0.003)	4.229	0.016	1	
2	1	E2−1	1	1	1	E2−1	1		88 547.445 (0.002)	4.229	0.012	1	
2	1	E2−1	3	1	1	E2−1	2		88 547.483 (0.002)	4.229	0.066	1	
2	1	E2−1	2	1	1	E2−1	2		88 548.082 (0.002)	4.229	0.012	1	
2	1	E2−1	2	1	1	E2−1	1		88 548.377 (0.002)	4.229	0.035	1	
2	0	B1		1	0	B2		88 667.913 (0.020)	88 667.906 (0.003)*	1.685	0.189	3	1
2	0	B1	1	1	0	B2	1		88 666.692 (0.003)	1.685	0.016	3	
2	0	B1	3	1	0	B2	2		88 667.852 (0.003)	1.685	0.088	3	
2	0	B1	2	1	0	B2	1		88 667.914 (0.003)	1.685	0.047	3	
2	0	B1	1	1	0	B2	0		88 668.502 (0.003)	1.685	0.021	3	
2	0	B1	2	1	0	B2	2		88 668.638 (0.003)	1.685	0.016	3	
2	0	E2+1		1	0	E2+1		88 668.660 (0.060)	88 668.681 (0.002)*	1.883	0.189	1	1
2	0	E2+1	1	1	0	E2+1	1		88 667.466 (0.003)	1.883	0.016	1	
2	0	E2+1	3	1	0	E2+1	2		88 668.627 (0.002)	1.883	0.088	1	
2	0	E2+1	2	1	0	E2+1	1		88 668.689 (0.002)	1.883	0.047	1	
2	0	E2+1	1	1	0	E2+1	0		88 669.276 (0.003)	1.883	0.021	1	
2	0	E2+1	2	1	0	E2+1	2		88 669.413 (0.003)	1.883	0.016	1	
2	0	E1+1		1	0	E1+1		88 669.583 (0.060)	88 669.543 (0.002)*	1.780	0.188	3	1
2	0	E1+1	1	1	0	E1+1	1		88 668.328 (0.003)	1.780	0.016	3	
2	0	E1+1	3	1	0	E1+1	2		88 669.489 (0.002)	1.780	0.088	3	
2	0	E1+1	2	1	0	E1+1	1		88 669.551 (0.002)	1.780	0.047	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
2	0	E1+1	1	1	0	E1+1	0		88 670.138 (0.003)	1.779	0.021	3	
2	0	E1+1	2	1	0	E1+1	2		88 670.275 (0.003)	1.780	0.016	3	
2	0	A1		1	0	A2			88 669.626 (0.002)*	1.479	0.188	1	
2	0	A1	1	1	0	A2	1		88 668.411 (0.003)	1.479	0.016	1	
2	0	A1	3	1	0	A2	2		88 669.572 (0.002)	1.479	0.088	1	
2	0	A1	2	1	0	A2	1		88 669.634 (0.002)	1.479	0.047	1	
2	0	A1	1	1	0	A2	0		88 670.221 (0.003)	1.479	0.021	1	
2	0	A1	2	1	0	A2	2		88 670.358 (0.003)	1.479	0.016	1	
2	1	E2+1		1	1	E2+1		88 804.093 (0.020)	88 804.084 (0.002)*	4.626	0.141	1	1
2	1	E2+1	1	1	1	E2+1	0		88 803.231 (0.003)	4.626	0.016	1	
2	1	E2+1	3	1	1	E2+1	2		88 803.973 (0.002)	4.626	0.066	1	
2	1	E2+1	2	1	1	E2+1	2		88 804.150 (0.002)	4.626	0.012	1	
2	1	E2+1	1	1	1	E2+1	1		88 804.304 (0.002)	4.626	0.012	1	
2	1	E2+1	2	1	1	E2+1	1		88 804.579 (0.002)	4.626	0.035	1	
11	2	A2		10	3	A1		88 867.230 (0.020)	88 867.270 (0.012)*	105.968	2.623	1	1
2	1	E1+1		1	1	E1+1		88 962.557 (0.020)	88 962.550 (0.002)*	4.592	0.138	3	1
2	1	E1+1	1	1	1	E1+1	0		88 961.736 (0.003)	4.592	0.015	3	
2	1	E1+1	2	1	1	E1+1	2		88 962.413 (0.003)	4.592	0.011	3	
2	1	E1+1	3	1	1	E1+1	2		88 962.478 (0.003)	4.592	0.064	3	
2	1	E1+1	2	1	1	E1+1	1		88 962.932 (0.003)	4.592	0.034	3	
2	1	E1+1	1	1	1	E1+1	1		88 963.033 (0.003)	4.592	0.011	3	
5	1	E1+1		5	0	E1+1		88 997.581 (0.020)	88 997.579 (0.006)*	22.476	0.296	3	1
5	1	E1+1	5	5	0	E1+1	5		88 996.765 (0.006)	22.476	0.092	3	
5	1	E1+1	6	5	0	E1+1	6		88 997.893 (0.006)	22.476	0.113	3	
5	1	E1+1	4	5	0	E1+1	4		88 998.123 (0.006)	22.476	0.078	3	
2	1	A2		2	0	A1		89 081.457 (0.020)	89 081.463 (0.008)*	4.437	3.978	1	1
2	1	A2	1	2	0	A1	2		89 079.791 (0.008)	4.437	0.199	1	
2	1	A2	3	2	0	A1	2		89 080.548 (0.008)	4.437	0.206	1	
2	1	A2	1	2	0	A1	1		89 081.014 (0.008)	4.437	0.597	1	
2	1	A2	3	2	0	A1	3		89 081.334 (0.008)	4.437	1.650	1	
2	1	A2	2	2	0	A1	2		89 081.911 (0.008)	4.437	0.921	1	
2	1	A2	2	2	0	A1	3		89 082.697 (0.008)	4.437	0.206	1	
2	1	A2	2	2	0	A1	1		89 083.134 (0.008)	4.437	0.199	1	
28	9	E2−1		29	8	E2−1			89 243.473 (0.054)*	815.337	5.706	1	
2	1	A1		1	1	A2		89 554.651 (0.020)	89 554.649 (0.003)*	4.509	0.141	1	1
2	1	A1	1	1	1	A2	0		89 552.986 (0.003)	4.509	0.016	1	
2	1	A1	2	1	1	A2	2		89 553.981 (0.003)	4.509	0.012	1	
2	1	A1	3	1	1	A2	2		89 554.567 (0.003)	4.509	0.066	1	
2	1	A1	2	1	1	A2	1		89 555.252 (0.003)	4.509	0.035	1	
2	1	A1	1	1	1	A2	1		89 556.165 (0.003)	4.509	0.012	1	
2	1	B1		1	1	B2		89 557.402 (0.020)	89 557.404 (0.003)*	4.350	0.141	3	1
2	1	B1	1	1	1	B2	0		89 555.741 (0.003)	4.350	0.016	3	
2	1	B1	2	1	1	B2	2		89 556.736 (0.003)	4.350	0.012	3	
2	1	B1	3	1	1	B2	2		89 557.323 (0.003)	4.350	0.066	3	
2	1	B1	2	1	1	B2	1		89 558.008 (0.003)	4.350	0.035	3	
2	1	B1	1	1	1	B2	1		89 558.920 (0.003)	4.350	0.012	3	
29	2	A1		29	1	A2		89 753.910 (0.020)	89 753.902 (0.017)*	649.335	41.517	1	1
1	1	A1		1	0	A2		89 956.068 (0.020)	89 956.072 (0.008)*	1.479	2.374	1	1
1	1	A1	0	1	0	A2	1		89 954.556 (0.008)	1.479	0.264	1	
1	1	A1	2	1	0	A2	1		89 955.378 (0.008)	1.479	0.330	1	
1	1	A1	1	1	0	A2	1		89 955.925 (0.008)	1.479	0.198	1	
1	1	A1	2	1	0	A2	2		89 956.102 (0.008)	1.479	0.989	1	
1	1	A1	1	1	0	A2	2		89 956.649 (0.008)	1.479	0.330	1	
1	1	A1	1	1	0	A2	0		89 957.735 (0.008)	1.479	0.264	1	
28	9	A2		29	8	A1		89 975.505 (0.020)	89 975.495 (0.022)*	815.171	5.709	1	1
28	9	A1		29	8	A2			89 975.495 (0.022)*	815.171	5.709	1	
17	6	E1+1		18	5	E1+1		90 327.712 (0.020)	90 327.707 (0.013)*	320.668	3.425	3	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
15	3	E1+1		14	4	E1+1		90 572.000 (0.060)	90 572.086 (0.010)*	198.760	3.510	3	1
28	9	E1−1		29	8	E1−1		90 628.677 (0.020)	90 628.656 (0.023)*	815.375	5.699	3	1
7	1	E2+1		7	0	E2+1		90 641.405 (0.020)	90 641.366 (0.006)*	41.781	0.634	1	1
7	1	E2+1	7	7	0	E2+1	7		90 640.564 (0.006)	41.781	0.204	1	
7	1	E2+1	8	7	0	E2+1	8		90 641.696 (0.006)	41.781	0.236	1	
7	1	E2+1	6	7	0	E2+1	6		90 641.859 (0.006)	41.781	0.180	1	
14	3	A1		15	0	A2			91 188.938 (0.026)*	176.875	0.038	1	
28	2	E1−1		28	1	E1+1		91 201.254 (0.020)	91 201.265 (0.015)*	606.463	38.890	3	1
6	3	A1		7	2	A2		91 294.624 (0.020)	91 294.630 (0.010)*	52.639	1.129	1	1
6	3	A1	6	7	2	A2	7		91 294.451 (0.010)	52.639	0.369	1	
6	3	A1	7	7	2	A2	8		91 294.707 (0.010)	52.639	0.427	1	
6	3	A1	5	7	2	A2	6		91 294.737 (0.010)	52.639	0.319	1	
6	1	E1+1		6	0	E1+1		91 693.436 (0.020)	91 693.454 (0.007)*	31.340	0.190	3	1
6	1	E1+1	6	6	0	E1+1	6		91 692.615 (0.007)	31.340	0.060	3	
6	1	E1+1	7	6	0	E1+1	7		91 693.789 (0.007)	31.340	0.072	3	
6	1	E1+1	5	6	0	E1+1	5		91 693.988 (0.007)	31.340	0.052	3	
28	9	E2+1		29	8	E2+1		91 749.815 (0.020)	91 749.829 (0.028)*	815.163	5.712	1	1
4	0	E1+1		3	1	E1+1		91 848.357 (0.020)	91 848.379 (0.006)*	12.023	1.963	3	1
4	0	E1+1	3	3	1	E1+1	2		91 847.846 (0.006)	12.023	0.467	3	
4	0	E1+1	5	3	1	E1+1	4		91 848.114 (0.006)	12.023	0.800	3	
4	0	E1+1	4	3	1	E1+1	3		91 849.113 (0.006)	12.023	0.613	3	
14	1	B1		14	1	B2			91 949.457 (0.049)*	156.452	0.018	3	
14	1	B1	14	14	1	B2	14		91 947.962 (0.049)	156.452	0.006	3	
14	1	B1	15	14	1	B2	15		91 950.132 (0.049)	156.452	0.006	3	
14	1	B1	13	14	1	B2	13		91 950.287 (0.049)	156.452	0.006	3	
17	6	E2+1		18	5	E2+1		91 982.964 (0.020)	91 982.952 (0.013)*	320.707	3.421	1	1
6	3	A2		7	2	A1		92 162.820 (0.020)	92 162.842 (0.010)*	52.610	1.128	1	1
6	3	A2	6	7	2	A1	7		92 162.557 (0.010)	52.610	0.368	1	
6	3	A2	7	7	2	A1	8		″92 162.962 (0.010)	52.610	0.426	1	
6	3	A2	5	7	2	A1	6		92 163.014 (0.010)	52.610	0.318	1	
17	6	E1−1		18	5	E1−1		92 466.434 (0.060)	92 466.488 (0.013)*	320.471	3.427	3	1
26	6	E2−1		25	7	E2−1		92 802.074 (0.020)	92 802.075 (0.015)*	612.611	5.806	1	1
15	3	E2+1		14	4	E2−1		92 942.993 (0.060)	92 943.059 (0.014)*	198.880	0.068	1	1
8	1	A2		7	2	A1		92 981.791 (0.020)	92 981.820 (0.012)*	52.610	1.927	1	1
8	1	A2	7	7	2	A1	6		92 981.299 (0.012)	52.610	0.557	1	
8	1	A2	9	7	2	A1	8		92 981.445 (0.012)	52.610	0.718	1	
8	1	A2	8	7	2	A1	7		92 982.700 (0.012)	52.610	0.632	1	
6	3	B1		7	2	B2		93 173.484 (0.020)	93 173.491 (0.009)*	52.677	1.128	3	1
6	3	B1	6	7	2	B2	7		93 173.313 (0.009)	52.677	0.368	3	
6	3	B1	7	7	2	B2	8		93 173.567 (0.009)	52.677	0.426	3	
6	3	B1	5	7	2	B2	6		93 173.596 (0.009)	52.677	0.318	3	
28	2	E2+1		28	1	E2+1		93 307.489 (0.020)	93 307.480 (0.013)*	606.408	38.830	1	1
6	3	E2+1		7	2	E2−1			93 423.699 (0.009)*	52.458	0.066	1	
6	3	E2+1	6	7	2	E2−1	7		93 423.495 (0.009)	52.458	0.022	1	
6	3	E2+1	7	7	2	E2−1	8		93 423.785 (0.009)	52.458	0.025	1	
6	3	E2+1	5	7	2	E2−1	6		93 423.820 (0.009)	52.458	0.019	1	
17	6	B2		18	5	B1		93 592.611 (0.020)	93 592.597 (0.011)*	320.496	3.428	3	1
17	6	B1		18	5	B2		93 593.318 (0.020)	93 593.305 (0.011)*	320.496	3.428	3	1
29	2	B1		29	1	B2		93 882.912 (0.020)	93 882.923 (0.018)*	649.223	41.348	3	1
6	3	B2		7	2	B1		94 052.685 (0.020)	94 052.694 (0.009)*	52.648	1.127	3	1
6	3	B2	6	7	2	B1	7		94 052.409 (0.009)	52.648	0.368	3	
6	3	B2	7	7	2	B1	8		94 052.814 (0.009)	52.647	0.426	3	
6	3	B2	5	7	2	B1	6		94 052.866 (0.009)	52.647	0.318	3	
8	1	E2+1		8	0	E2+1		94 331.915 (0.020)	94 331.875 (0.007)*	53.590	0.471	1	1
8	1	E2+1	8	8	0	E2+1	8		94 331.029 (0.007)	53.590	0.153	1	
8	1	E2+1	9	8	0	E2+1	9		94 332.231 (0.007)	53.590	0.173	1	
8	1	E2+1	7	8	0	E2+1	7		94 332.382 (0.007)	53.590	0.136	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
11	2	E1+1		10	3	E1+1		94 420.185 (0.020)	94 420.198 (0.008)*	105.654	2.434	3	1
4	0	E2+1		3	1	E2+1		94 466.126 (0.020)	94 466.155 (0.006)*	12.039	1.599	1	1
4	0	E2+1	3	3	1	E2+1	2		94 465.815 (0.006)	12.039	0.381	1	
4	0	E2+1	5	3	1	E2+1	4		94 465.971 (0.006)	12.039	0.652	1	
4	0	E2+1	4	3	1	E2+1	3		94 466.648 (0.006)	12.039	0.500	1	
8	1	E2−1		7	2	E2−1		94 495.959 (0.020)	94 495.966 (0.010)*	52.458	0.879	1	1
8	1	E2−1	7	7	2	E2−1	6		94 495.423 (0.010)	52.458	0.254	1	
8	1	E2−1	9	7	2	E2−1	8		94 495.577 (0.010)	52.458	0.328	1	
8	1	E2−1	8	7	2	E2−1	7		94 496.880 (0.010)	52.458	0.288	1	
8	1	E1−1		7	2	E1+1		94 890.070 (0.020)	94 890.051 (0.009)*	52.553	0.699	3	1
8	1	E1−1	7	7	2	E1+1	6		94 889.498 (0.009)	52.553	0.202	3	
8	1	E1−1	9	7	2	E1+1	8		94 889.655 (0.009)	52.553	0.261	3	
8	1	E1−1	8	7	2	E1+1	7		94 890.983 (0.009)	52.553	0.229	3	
7	1	E1+1		7	0	E1+1		94 983.799 (0.020)	94 983.832 (0.008)*	41.678	0.128	3	1
7	1	E1+1	7	7	0	E1+1	7		94 982.972 (0.008)	41.678	0.041	3	
7	1	E1+1	8	7	0	E1+1	8		94 984.187 (0.008)	41.678	0.048	3	
7	1	E1+1	6	7	0	E1+1	6		94 984.362 (0.008)	41.678	0.036	3	
4	0	B1		3	1	B2		95 145.314 (0.020)	95 145.307 (0.008)*	11.818	2.279	3	1
4	0	B1	3	3	1	B2	2		95 144.608 (0.008)	11.818	0.543	3	
4	0	B1	5	3	1	B2	4		95 144.973 (0.008)	11.818	0.928	3	
4	0	B1	4	3	1	B2	3		95 146.249 (0.008)	11.818	0.712	3	
22	5	E2−1		21	6	E2−1		95 225.389 (0.020)	95 225.365 (0.012)*	438.567	4.916	1	1
6	3	E2+1		7	2	E2+1		95 378.504 (0.020)	95 378.519 (0.009)*	52.393	1.063	1	1
6	3	E2+1	6	7	2	E2+1	7		95 378.263 (0.009)	52.393	0.347	1	
6	3	E2+1	7	7	2	E2+1	8		95 378.627 (0.009)	52.393	0.402	1	
6	3	E2+1	5	7	2	E2+1	6		95 378.673 (0.009)	52.393	0.300	1	
15	3	E2−1		14	4	E2−1		95 380.575 (0.020)	95 380.571 (0.010)*	198.880	3.439	1	1
6	3	E2−1		7	2	E2−1		95 746.899 (0.060)	95 746.970 (0.009)*	52.458	1.063	1	1
6	3	E2−1	6	7	2	E2−1	7		95 746.767 (0.009)	52.458	0.347	1	
6	3	E2−1	7	7	2	E2−1	8		95 747.056 (0.009)	52.458	0.402	1	
6	3	E2−1	5	7	2	E2−1	6		95 747.091 (0.009)	52.458	0.300	1	
20	0	A1		19	3	A2			95 807.828 (0.062)*	305.651	0.119	1	
20	0	A1	19	19	3	A2	18		95 807.371 (0.062)	305.651	0.038	1	
20	0	A1	21	19	3	A2	20		95 807.432 (0.062)	305.651	0.042	1	
20	0	A1	20	19	3	A2	19		95 808.679 (0.062)	305.652	0.040	1	
25	2	A2		25	2	A1			96 191.896 (0.465)*	490.622	0.030	1	
25	2	A2	25	25	2	A1	25		96 191.048 (0.465)	490.622	0.010	1	
25	2	A2	26	25	2	A1	26		96 192.295 (0.465)	490.622	0.011	1	
25	2	A2	24	25	2	A1	24		96 192.345 (0.465)	490.622	0.010	1	
26	6	B2		25	7	B1		96 238.837 (0.020)	96 238.838 (0.012)*	612.751	5.796	3	1
26	6	B1		25	7	B2		96 239.346 (0.020)	96 239.347 (0.012)*	612.751	5.796	3	1
8	1	E2−1		7	2	E2+1		96 450.749 (0.020)	96 450.786 (0.010)*	52.393	1.061	1	1
8	1	E2−1	7	7	2	E2+1	6		96 450.276 (0.010)	52.393	0.307	1	
8	1	E2−1	9	7	2	E2+1	8		96 450.419 (0.010)	52.393	0.395	1	
8	1	E2−1	8	7	2	E2+1	7		96 451.648 (0.010)	52.393	0.348	1	
25	2	B2		25	2	B1			96 923.956 (0.437)*	490.652	0.020	3	
25	2	B2	25	25	2	B1	25		96 923.104 (0.437)	490.652	0.007	3	
25	2	B2	26	25	2	B1	26		96 924.359 (0.437)	490.652	0.007	3	
25	2	B2	24	25	2	B1	24		96 924.409 (0.437)	490.652	0.006	3	
28	2	A2		28	1	A1		97 202.843 (0.020)	97 202.849 (0.013)*	606.481	38.809	1	1
15	3	E1−1		14	4	E1−1		97 484.743 (0.060)	97 484.761 (0.010)*	198.911	3.498	3	1
2	2	E1−1		3	1	E1+1		97 663.377 (0.060)	97 663.360 (0.010)*	12.023	0.042	3	1
2	2	E1−1	2	3	1	E1+1	3		97 662.846 (0.011)	12.023	0.013	3	
2	2	E1−1	3	3	1	E1+1	4		97 663.502 (0.010)	12.023	0.018	3	
2	2	E1−1	1	3	1	E1+1	2		97 663.893 (0.011)	12.023	0.008	3	
6	3	E2−1		7	2	E2+1			97 701.791 (0.013)*	52.393	0.066	1	
6	3	E2−1	6	7	2	E2+1	7		97 701.535 (0.013)	52.393	0.021	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	3	E2−1	7	7	2	E2+1	8		97 701.898 (0.013)	52.393	0.025	1	
6	3	E2−1	5	7	2	E2+1	6		97 701.944 (0.013)	52.393	0.018	1	
26	6	A2		25	7	A1		98 371.631 (0.020)	98 371.656 (0.013)*	612.779	5.788	1	1
26	6	A1		25	7	A2		98 372.136 (0.020)	98 372.162 (0.013)*	612.779	5.788	1	1
20	0	B1		19	3	B2			98 571.635 (0.063)*	305.746	0.128	3	
20	0	B1	19	19	3	B2	18		98 571.176 (0.063)	305.746	0.041	3	
20	0	B1	21	19	3	B2	20		98 571.237 (0.063)	305.746	0.045	3	
20	0	B1	20	19	3	B2	19		98 572.489 (0.063)	305.746	0.043	3	
27	2	E1−1		27	1	E1+1		98 707.320 (0.020)	98 707.349 (0.013)*	565.058	36.291	3	1
9	1	E2+1		9	0	E2+1		98 724.040 (0.020)	98 724.003 (0.008)*	66.868	0.357	1	1
9	1	E2+1	9	9	0	E2+1	9		98 723.120 (0.008)	66.868	0.116	1	
9	1	E2+1	10	9	0	E2+1	10		98 724.382 (0.008)	66.868	0.130	1	
9	1	E2+1	8	9	0	E2+1	8		98 724.523 (0.008)	66.868	0.105	1	
24	8	A1		25	7	A2		98 781.680 (0.060)	98 781.643 (0.029)*	612.779	4.828	1	1
24	8	A2		25	7	A1			98 781.647 (0.029)*	612.779	4.828	1	
24	8	E1+1		25	7	E1+1		98 836.155 (0.020)	98 836.137 (0.017)*	612.593	4.836	3	1
8	1	E1+1		8	0	E1+1		98 885.575 (0.060)	98 885.639 (0.009)*	53.487	0.090	3	1
8	1	E1+1	8	8	0	E1+1	8		98 884.756 (0.009)	53.487	0.029	3	
8	1	E1+1	9	8	0	E1+1	9		98 886.011 (0.009)	53.487	0.033	3	
8	1	E1+1	7	8	0	E1+1	7		98 886.169 (0.009)	53.487	0.026	3	
4	0	E1+1		3	1	E1−1		99 127.254 (0.020)	99 127.285 (0.007)*	11.780	0.314	3	1
4	0	E1+1	4	3	1	E1−1	3		99 126.922 (0.007)	11.780	0.098	3	
4	0	E1+1	5	3	1	E1−1	4		99 127.387 (0.007)	11.780	0.128	3	
4	0	E1+1	3	3	1	E1−1	2		99 127.630 (0.007)	11.780	0.075	3	
25	2	E1+1		25	2	E1−1			99 362.412 (0.286)*	490.400	0.027	3	
25	2	E1+1	25	25	2	E1−1	25		99 361.550 (0.286)	490.401	0.009	3	
25	2	E1+1	26	25	2	E1−1	26		99 362.819 (0.286)	490.400	0.009	3	
25	2	E1+1	24	25	2	E1−1	24		99 362.870 (0.286)	490.400	0.009	3	
25	2	E2−1		25	2	E2+1			99 529.446 (0.299)*	490.419	0.022	1	
25	2	E2−1	25	25	2	E2+1	25		99 528.579 (0.299)	490.419	0.007	1	
25	2	E2−1	26	25	2	E2+1	26		99 529.856 (0.299)	490.419	0.008	1	
25	2	E2−1	24	25	2	E2+1	24		99 529.907 (0.299)	490.419	0.007	1	
28	9	E1+1		29	8	E1+1		99 775.934 (0.020)	99 775.957 (0.022)*	814.991	5.715	3	1
13	5	E1−1		14	4	E1−1		100 071.284 (0.020)	100 071.274 (0.011)*	198.911	2.541	3	1
15	3	A1		14	4	A2		100 848.225 (0.060)	100 848.247 (0.011)*	198.717	3.506	1	1
27	2	E2+1		27	1	E2+1		100 907.749 (0.020)	100 907.737 (0.012)*	565.000	36.243	1	1
13	5	A2		14	4	A1		101 042.110 (0.020)	101 042.106 (0.010)*	198.717	2.544	1	1
13	5	A1		14	4	A2		101 048.990 (0.020)	101 048.991 (0.010)*	198.717	2.544	1	1
15	3	E2+1		14	4	E2+1			101 181.754 (0.010)*	198.605	3.444	1	
2	2	E2+1		3	1	E2+1			101 236.885 (0.011)*	12.039	0.252	1	
2	2	E2+1	2	3	1	E2+1	3		101 236.130 (0.011)	12.039	0.075	1	
2	2	E2+1	3	3	1	E2+1	4		101 237.108 (0.011)	12.039	0.108	1	
2	2	E2+1	1	3	1	E2+1	2		101 237.611 (0.011)	12.039	0.050	1	
15	3	A2		14	4	A1			101 515.371 (0.010)*	198.717	3.508	1	
28	2	B2		28	1	B1			101 515.410 (0.015)*	606.364	38.652	3	
17	6	A2		18	5	A1		102 207.753 (0.020)	102 207.748 (0.012)*	320.310	3.429	1	1
17	6	A1		18	5	A2		102 208.469 (0.020)	102 208.467 (0.012)*	320.310	3.429	1	1
20	0	E1+1		19	3	E1−1			102 237.124 (0.064)*	305.682	0.092	3	
20	0	E1+1	19	19	3	E1−1	18		102 236.670 (0.064)	305.682	0.029	3	
20	0	E1+1	21	19	3	E1−1	20		102 236.731 (0.064)	305.682	0.032	3	
20	0	E1+1	20	19	3	E1−1	19		102 237.967 (0.064)	305.682	0.031	3	
26	6	E1+1		25	7	E1+1		102 768.256 (0.020)	102 768.268 (0.013)*	612.593	5.792	3	1
26	6	E1−1		25	7	E1−1		102 824.442 (0.020)	102 824.419 (0.018)*	612.464	5.805	3	1
22	4	B1		23	1	B2			103 337.304 (0.222)*	413.815	0.039	3	
22	4	E2+1		23	1	E2+1			103 366.508 (0.170)*	413.885	0.023	1	
9	1	E1+1		9	0	E1+1		103 427.422 (0.060)	103 427.513 (0.010)*	66.765	0.066	3	1
9	1	E1+1	9	9	0	E1+1	9		103 426.605 (0.010)	66.765	0.021	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	1	E1+1	10	9	0	E1+1	10		103 427.902 (0.010)	66.765	0.024	3	
9	1	E1+1	8	9	0	E1+1	8		103 428.047 (0.010)	66.765	0.019	3	
15	3	E2−1		14	4	E2+1			103 619.266 (0.009)*	198.605	0.069	1	
8	1	E1−1		7	2	E1−1		103 668.387 (0.020)	103 668.361 (0.010)*	52.261	1.230	3	1
8	1	E1−1	7	7	2	E1−1	6		103 667.815 (0.010)	52.261	0.355	3	
8	1	E1−1	9	7	2	E1−1	8		103 667.969 (0.010)	52.261	0.458	3	
8	1	E1−1	8	7	2	E1−1	7		103 669.284 (0.010)	52.261	0.404	3	
24	8	B1		25	7	B2			103 733.126 (0.016)*	612.751	4.823	3	
24	8	B		25	7	B		103 733.125 (0.020)	103 733.128 (0.016)*	612.751	9.646	3	1
24	8	B2		25	7	B1			103 733.130 (0.016)*	612.751	4.823	3	
10	1	E2+1		10	0	E2+1		103 836.510 (0.020)	103 836.495 (0.009)*	81.613	0.276	1	1
10	1	E2+1	10	10	0	E2+1	10		103 835.576 (0.009)	81.613	0.090	1	
10	1	E2+1	11	10	0	E2+1	11		103 836.894 (0.009)	81.613	0.100	1	
10	1	E2+1	9	10	0	E2+1	9		103 837.026 (0.009)	81.613	0.082	1	
22	4	A1		23	1	A2			104 671.934 (0.217)*	413.951	0.043	1	
6	3	E1−1		7	2	E1−1		104 800.135 (0.020)	104 800.165 (0.009)*	52.261	1.126	3	1
6	3	E1−1	6	7	2	E1−1	7		104 799.930 (0.009)	52.261	0.368	3	
6	3	E1−1	7	7	2	E1−1	8		104 800.264 (0.009)	52.261	0.425	3	
6	3	E1−1	5	7	2	E1−1	6		104 800.305 (0.009)	52.261	0.318	3	
27	2	A1		27	1	A2		104 845.170 (0.020)	104 845.176 (0.012)*	565.072	36.222	1	1
15	1	B2		15	1	B1			104 903.674 (0.060)*	178.370	0.017	3	
15	1	B2	15	15	1	B1	15		104 902.186 (0.060)	178.370	0.006	3	
15	1	B2	16	15	1	B1	16		104 904.350 (0.060)	178.370	0.006	3	
15	1	B2	14	15	1	B1	14		104 904.495 (0.060)	178.370	0.005	3	
2	2	E1−1		3	1	E1−1		104 942.283 (0.020)	104 942.266 (0.008)*	11.780	0.221	3	1
2	2	E1−1	2	3	1	E1−1	3		104 940.655 (0.008)	11.780	0.065	3	
2	2	E1−1	3	3	1	E1−1	4		104 942.775 (0.008)	11.780	0.095	3	
2	2	E1−1	1	3	1	E1−1	2		104 943.677 (0.008)	11.780	0.044	3	
13	5	E2−1		14	4	E2−1		105 513.362 (0.020)	105 513.346 (0.012)*	198.880	2.538	1	1
19	4	E2+1		18	5	E2+1		105 921.006 (0.020)	105 920.972 (0.011)*	320.707	4.402	1	1
22	4	E1+1		23	1	E1+1			105 981.834 (0.162)*	413.948	0.023	3	
26	2	E1−1		26	1	E1+1		106 365.818 (0.020)	106 365.824 (0.012)*	525.100	33.815	3	1
2	2	E1+1		3	1	E1+1		106 425.151 (0.020)	106 425.145 (0.009)*	12.023	0.223	3	1
2	2	E1+1	2	3	1	E1+1	3		106 424.631 (0.009)	12.023	0.066	3	
2	2	E1+1	3	3	1	E1+1	4		106 425.288 (0.009)	12.023	0.096	3	
2	2	E1+1	1	3	1	E1+1	2		106 425.678 (0.009)	12.023	0.045	3	
30	7	E1−1		29	8	E1−1		107 133.956 (0.020)	107 133.969 (0.023)*	815.375	6.684	3	1
4	0	E2+1		3	1	E2−1		107 461.880 (0.020)	107 461.887 (0.008)*	11.605	0.676	1	1
4	0	E2+1	4	3	1	E2−1	3		107 461.765 (0.008)	11.605	0.211	1	
4	0	E2+1	5	3	1	E2−1	4		107 461.908 (0.008)	11.605	0.275	1	
4	0	E2+1	3	3	1	E2−1	2		107 462.039 (0.008)	11.605	0.161	1	
20	0	E2+1		19	3	E2−1			107 626.876 (0.061)*	305.596	0.127	1	
20	0	E2+1	19	19	3	E2−1	18		107 626.410 (0.061)	305.596	0.040	1	
20	0	E2+1	21	19	3	E2−1	20		107 626.472 (0.061)	305.596	0.045	1	
20	0	E2+1	20	19	3	E2−1	19		107 627.741 (0.061)	305.596	0.042	1	
10	1	E1+1		10	0	E1+1		108 644.848 (0.060)	108 644.937 (0.012)*	81.511	0.049	3	1
10	1	E1+1	10	10	0	E1+1	10		108 644.003 (0.012)	81.511	0.016	3	
10	1	E1+1	11	10	0	E1+1	11		108 645.343 (0.012)	81.511	0.018	3	
10	1	E1+1	9	10	0	E1+1	9		108 645.478 (0.012)	81.511	0.015	3	
26	2	E2+1		26	1	E2+1		108 655.985 (0.020)	108 655.974 (0.011)*	525.041	33.780	1	1
24	8	E2−1		25	7	E2−1		108 750.455 (0.020)	108 750.466 (0.018)*	612.611	4.829	1	1
26	2	A1		26	2	A2			109 142.201 (0.561)*	528.868	0.029	1	
26	2	A1	26	26	2	A2	26		109 141.326 (0.561)	528.868	0.010	1	
26	2	A1	27	26	2	A2	27		109 142.615 (0.561)	528.868	0.010	1	
26	2	A1	25	26	2	A2	25		109 142.664 (0.561)	528.868	0.009	1	
24	8	E2+1		25	7	E2+1		109 316.904 (0.020)	109 316.897 (0.018)*	612.420	4.834	1	1
27	2	B1		27	1	B2		109 328.324 (0.020)	109 328.352 (0.013)*	564.951	36.077	3	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
15	3	B1		14	4	B2		109 382.495 (0.020)	109 382.524 (0.012)*	198.530	3.511	3	1
11	1	E2+1		11	0	E2+1		109 696.905 (0.020)	109 696.885 (0.010)*	97.822	0.218	1	1
11	1	E2+1	11	11	0	E2+1	11		109 695.933 (0.010)	97.822	0.072	1	
11	1	E2+1	12	11	0	E2+1	12		109 697.304 (0.010)	97.822	0.078	1	
11	1	E2+1	10	11	0	E2+1	10		109 697.429 (0.010)	97.822	0.066	1	
26	2	B1		26	2	B2			109 928.507 (0.528)*	528.898	0.019	3	
26	2	B1	26	26	2	B2	26		109 927.627 (0.528)	528.898	0.006	3	
26	2	B1	27	26	2	B2	27		109 928.923 (0.528)	528.898	0.007	3	
26	2	B1	25	26	2	B2	25		109 928.973 (0.528)	528.898	0.006	3	
2	2	A1		3	1	A2		109 959.690 (0.020)	109 959.713 (0.009)*	11.977	0.267	1	1
2	2	A1	2	3	1	A2	3		109 959.405 (0.010)	11.977	0.079	1	
2	2	A1	3	3	1	A2	4		109 959.787 (0.009)	11.977	0.114	1	
2	2	A1	1	3	1	A2	2		109 960.082 (0.010)	11.977	0.053	1	
19	4	B1		18	5	B2		109 970.045 (0.020)	109 970.078 (0.010)*	320.496	4.407	3	1
15	3	B2		14	4	B1		110 035.334 (0.060)	110 035.425 (0.011)*	198.530	3.513	3	1
19	4	B2		18	5	B1		110 047.779 (0.020)	110 047.790 (0.010)*	320.496	4.407	3	1
22	4	E1−1		23	1	E1+1			110 384.680 (0.153)*	413.948	0.023	3	
13	5	E1+1		14	4	E1+1		110 533.343 (0.060)	110 533.406 (0.012)*	198.760	2.540	3	1
26	6	E2+1		25	7	E2+1		110 680.455 (0.020)	110 680.484 (0.017)*	612.420	5.799	1	1
20	7	E2+1		21	6	E2+1		110 831.081 (0.020)	110 831.101 (0.016)*	438.978	3.950	1	1
22	4	E2−1		23	1	E2+1			111 384.664 (0.164)*	413.885	0.022	1	
19	4	E1+1		18	5	E1+1		111 655.647 (0.020)	111 655.638 (0.012)*	320.668	4.397	3	1
30	7	E2+1		29	8	E2+1		112 064.286 (0.020)	112 064.281 (0.024)*	815.163	6.688	1	1
13	5	B2		14	4	B1		112 273.032 (0.020)	112 273.044 (0.011)*	198.530	2.543	3	1
13	5	B1		14	4	B2		112 280.072 (0.020)	112 280.082 (0.011)*	198.530	2.543	3	1
26	2	E1+1		26	2	E1−1			112 521.357 (0.336)*	528.648	0.026	3	
26	2	E1+1	26	26	2	E1−1	26		112 520.467 (0.336)	528.648	0.009	3	
26	2	E1+1	27	26	2	E1−1	27		112 521.777 (0.336)	528.648	0.009	3	
26	2	E1+1	25	26	2	E1−1	25		112 521.827 (0.336)	528.648	0.008	3	
30	7	E2−1		29	8	E2−1		112 541.583 (0.020)	112 541.607 (0.026)*	815.337	6.677	1	1
9	4	B2		10	3	B1		112 591.184 (0.020)	112 591.176 (0.010)*	106.068	1.660	3	1
9	4	B2	9	10	3	B1	10		112 591.021 (0.010)	106.068	0.548	3	
9	4	B2	10	10	3	B1	11		112 591.246 (0.010)	106.068	0.606	3	
9	4	B2	8	10	3	B1	9		112 591.264 (0.010)	106.068	0.495	3	
26	2	A2		26	1	A1		112 633.261 (0.020)	112 633.269 (0.012)*	525.111	33.760	1	1
9	4	B1		10	3	B2		112 652.518 (0.020)	112 652.517 (0.010)*	106.066	1.660	3	1
9	4	B1	9	10	3	B2	10		112 652.355 (0.010)	106.066	0.548	3	
9	4	B1	10	10	3	B2	11		112 652.588 (0.010)	106.066	0.606	3	
9	4	B1	8	10	3	B2	9		112 652.607 (0.010)	106.066	0.495	3	
26	2	E2−1		26	2	E2+1			112 756.294 (0.352)*	528.665	0.021	1	
26	2	E2−1	26	26	2	E2+1	26		112 755.400 (0.352)	528.665	0.007	1	
26	2	E2−1	27	26	2	E2+1	27		112 756.717 (0.352)	528.665	0.007	1	
26	2	E2−1	25	26	2	E2+1	25		112 756.767 (0.352)	528.665	0.007	1	
2	2	E1+1		3	1	E1−1		113 704.058 (0.020)	113 704.052 (0.007)*	11.780	0.039	3	1
2	2	E1+1	2	3	1	E1−1	3		113 702.440 (0.007)	11.780	0.012	3	
2	2	E1+1	3	3	1	E1−1	4		113 704.560 (0.007)	11.780	0.017	3	
2	2	E1+1	1	3	1	E1−1	2		113 705.462 (0.007)	11.780	0.008	3	
20	0	E1+1		19	3	E1+1			113 761.670 (0.069)*	305.298	0.047	3	
20	0	E1+1	19	19	3	E1+1	18		113 761.223 (0.069)	305.298	0.015	3	
20	0	E1+1	21	19	3	E1+1	20		113 761.282 (0.069)	305.298	0.016	3	
20	0	E1+1	20	19	3	E1+1	19		113 762.502 (0.069)	305.298	0.016	3	
25	2	E1−1		25	1	E1+1		114 126.905 (0.020)	114 126.906 (0.012)*	486.594	31.463	3	1
24	8	E1−1		25	7	E1−1		114 309.465 (0.020)	114 309.459 (0.018)*	612.464	4.832	3	1
11	1	E1+1		11	0	E1+1		114 576.909 (0.060)	114 577.035 (0.013)*	97.721	0.038	3	1
11	1	E1+1	11	11	0	E1+1	11		114 576.072 (0.013)	97.721	0.012	3	
11	1	E1+1	12	11	0	E1+1	12		114 577.458 (0.013)	97.720	0.014	3	
11	1	E1+1	10	11	0	E1+1	10		114 577.585 (0.013)	97.720	0.011	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
1	1	E2−1		0	0	E2+1		114 658.603 (0.020)	114 658.597 (0.008)*	0.404	0.733	1	1
1	1	E2−1	1	0	0	E2+1	1		114 658.351 (0.008)	0.404	0.244	1	
1	1	E2−1	2	0	0	E2+1	1		114 658.646 (0.008)	0.404	0.407	1	
1	1	E2−1	0	0	0	E2+1	1		114 659.088 (0.008)	0.404	0.081	1	
2	2	A2		3	1	A1		115 231.444 (0.020)	115 231.470 (0.009)*	11.801	0.258	1	1
2	2	A2	2	3	1	A1	3		115 229.653 (0.009)	11.801	0.077	1	
2	2	A2	3	3	1	A1	4		115 232.047 (0.009)	11.801	0.111	1	
2	2	A2		1	3	1	A1	2	115 233.044 (0.009)	11.801	0.052	1	
2	2	B1		3	1	B2		115 837.305 (0.020)	115 837.272 (0.010)*	11.818	0.267	3	1
2	2	B1	2	3	1	B2	3		115 836.964 (0.010)	11.818	0.079	3	
2	2	B1	3	3	1	B2	4		115 837.346 (0.010)	11.818	0.114	3	
2	2	B1	1	3	1	B2	2		115 837.641 (0.010)	11.818	0.053	3	
2	2	E2−1		3	1	E2−1		115 978.857 (0.020)	115 978.884 (0.009)*	11.605	0.250	1	1
2	2	E2−1	2	3	1	E2−1	3		115 977.513 (0.009)	11.605	0.074	1	
2	2	E2−1	3	3	1	E2−1	4		115 979.311 (0.009)	11.605	0.107	1	
2	2	E2−1	1	3	1	E2−1	2		115 980.101 (0.009)	11.605	0.050	1	
12	1	E2+1		12	0	E2+1		116 337.625 (0.020)	116 337.606 (0.012)*	115.494	0.176	1	1
12	1	E2+1	12	12	0	E2+1	12		116 336.621 (0.012)	115.494	0.058	1	
12	1	E2+1	13	12	0	E2+1	13		116 338.044 (0.012)	115.494	0.063	1	
12	1	E2+1	11	12	0	E2+1	11		116 338.163 (0.012)	115.494	0.054	1	
13	5	E2+1		14	4	E2+1		116 354.911 (0.060)	116 354.973 (0.012)*	198.605	2.542	1	1
25	2	E2+1		25	1	E2+1		116 503.007 (0.020)	116 503.000 (0.011)*	486.533	31.443	1	1
19	4	E2−1		18	5	E2−1		116 693.415 (0.020)	116 693.407 (0.014)*	320.619	4.393	1	1
12	2	E1−1		11	3	E1−1		117 058.097 (0.020)	117 058.109 (0.010)*	122.306	2.645	3	1
26	2	B2		26	1	B1		117 273.926 (0.020)	117 273.953 (0.013)*	524.986	33.629	3	1
30	7	B2		29	8	B1			117 627.684 (0.025)*	815.306	6.667	3	
30	7	B		29	8	B		117 627.723 (0.020)	117 627.709 (0.025)*	815.306	13.335	3	1
30	7	B1		29	8	B2			117 627.733 (0.025)*	815.306	6.667	3	
8	1	B1		7	2	B2		117 911.252 (0.060)	117 911.310 (0.014)*	52.677	2.316	3	1
8	1	B1	8	7	2	B2	7		117 910.784 (0.014)	52.677	0.760	3	
8	1	B1	9	7	2	B2	8		117 911.528 (0.014)	52.677	0.863	3	
8	1	B1	7	7	2	B2	6		117 911.632 (0.014)	52.677	0.669	3	
16	1	B1		16	1	B2			118 646.171 (0.074)*	201.743	0.017	3	
16	1	B1	16	16	1	B2	16		118 644.691 (0.074)	201.743	0.006	3	
16	1	B1	17	16	1	B2	17		118 646.848 (0.074)	201.743	0.006	3	
16	1	B1	15	16	1	B2	15		118 646.983 (0.074)	201.743	0.005	3	
20	7	E1−1		21	6	E1−1		118 699.842 (0.060)	118 699.762 (0.016)*	438.759	3.953	3	1
13	3	E2−1		14	0	E2+1			118 782.989 (0.022)*	155.212	0.019	1	
20	7	E1+1		21	6	E1+1		118 906.594 (0.020)	118 906.597 (0.014)*	438.886	3.946	3	1
23	5	A1		22	6	A2		119 852.650 (0.020)	119 852.664 (0.012)*	471.408	5.297	1	1
23	5	A2		22	6	A1		119 860.775 (0.020)	119 860.785 (0.012)*	471.408	5.297	1	1
25	2	A1		25	1	A2		120 517.957 (0.020)	120 517.962 (0.013)*	486.602	31.425	1	1
19	4	A1		18	5	A2		121 025.597 (0.020)	121 025.583 (0.010)*	320.310	4.409	1	1
19	4	A2		18	5	A1		121 101.618 (0.020)	121 101.606 (0.010)*	320.310	4.409	1	1
2	2	B2		3	1	B1		121 118.122 (0.020)	121 118.103 (0.010)*	11.642	0.258	3	1
2	2	B2	2	3	1	B1	3		121 116.287 (0.010)	11.642	0.077	3	
2	2	B2	3	3	1	B1	4		121 118.680 (0.010)	11.642	0.111	3	
2	2	B2	1	3	1	B1	2		121 119.677 (0.010)	11.642	0.052	3	
9	4	E2+1		10	3	E2+1		121 167.133 (0.020)	121 167.124 (0.010)*	105.856	1.660	1	1
9	4	E2+1	9	10	3	E2+1	10		121 166.967 (0.010)	105.856	0.548	1	
9	4	E2+1	10	10	3	E2+1	11		121 167.194 (0.010)	105.856	0.606	1	
9	4	E2+1	8	10	3	E2+1	9		121 167.213 (0.010)	105.856	0.495	1	
9	4	A2		10	3	A1		121 233.632 (0.020)	121 233.606 (0.010)*	105.968	1.659	1	1
9	4	A2	9	10	3	A1	10		121 233.451 (0.010)	105.968	0.547	1	
9	4	A2	10	10	3	A1	11		121 233.675 (0.010)	105.968	0.606	1	
9	4	A2	8	10	3	A1	9		121 233.693 (0.010)	105.968	0.495	1	
12	1	E1+1		12	0	E1+1		121 263.923 (0.060)	121 264.058 (0.014)*	115.392	0.030	3	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
12	1	E1+1	12	12	0	E1+1	12		121 263.066 (0.014)	115.392	0.010	3	
12	1	E1+1	13	12	0	E1+1	13		121 264.499 (0.014)	115.392	0.011	3	
12	1	E1+1	11	12	0	E1+1	11		121 264.618 (0.014)	115.392	0.009	3	
9	4	A1		10	3	A2		121 296.313 (0.020)	121 296.286 (0.010)*	105.966	1.659	1	1
9	4	A1	9	10	3	A2	10		121 296.125 (0.010)	105.966	0.547	1	
9	4	A1	10	10	3	A2	11		121 296.357 (0.010)	105.966	0.606	1	
9	4	A1	8	10	3	A2	9		121 296.376 (0.010)	105.966	0.495	1	
24	2	E1−1		24	1	E1+1		121 940.015 (0.020)	121 940.010 (0.012)*	449.542	29.234	3	1
19	4	E1−1		18	5	E1−1		122 047.125 (0.060)	122 047.180 (0.016)*	320.471	4.401	3	1
30	7	E1+1		29	8	E1+1		122 289.027 (0.020)	122 289.044 (0.027)*	814.991	6.690	3	1
30	7	A2		29	8	A1			122 475.218 (0.037)*	815.171	6.677	1	
30	7	A		29	8	A		122 475.304 (0.060)	122 475.242 (0.037)*	815.171	13.354	3	1
30	7	A1		29	8	A2			122 475.267 (0.037)*	815.171	6.677	1	
12	2	E2+1		11	3	E2−1		122 633.590 (0.020)	122 633.608 (0.012)*	122.202	1.080	1	1
27	2	A2		27	2	A1			122 977.173 (0.674)*	568.569	0.029	1	
27	2	A2	27	27	2	A1	27		122 976.274 (0.674)	568.569	0.010	1	
27	2	A2	28	27	2	A1	28		122 977.599 (0.674)	568.569	0.010	1	
27	2	A2	26	27	2	A1	26		122 977.648 (0.674)	568.569	0.009	1	
20	7	A1		21	6	A2			123 279.311 (0.017)*	438.924	3.944	1	
20	7	A		21	6	A		123 279.331 (0.020)	123 279.331 (0.017)*	438.924	7.889	1	1
20	7	A2		21	6	A1			123 279.351 (0.017)*	438.924	3.944	1	
1	1	E1−1		0	0	E1+1		123 549.225 (0.060)	123 549.174 (0.008)*	0.301	0.655	3	1
1	1	E1−1	1	0	0	E1+1	1		123 549.003 (0.008)	0.301	0.218	3	
1	1	E1−1	2	0	0	E1+1	1		123 549.208 (0.008)	0.301	0.364	3	
1	1	E1−1	0	0	0	E1+1	1		123 549.516 (0.008)	0.301	0.073	3	
8	1	A1		7	2	A2		123 750.792 (0.020)	123 750.768 (0.013)*	52.639	2.308	1	1
8	1	A1	8	7	2	A2	7		123 750.241 (0.013)	52.639	0.757	1	
8	1	A1	9	7	2	A2	8		123 750.986 (0.013)	52.639	0.860	1	
8	1	A1	7	7	2	A2	6		123 751.090 (0.013)	52.639	0.667	1	
13	1	E2+1		13	0	E2+1		123 792.456 (0.020)	123 792.467 (0.015)*	134.624	0.144	1	1
13	1	E2+1	13	13	0	E2+1	13		123 791.449 (0.015)	134.624	0.048	1	
13	1	E2+1	14	13	0	E2+1	14		123 792.924 (0.015)	134.624	0.051	1	
13	1	E2+1	12	13	0	E2+1	12		123 793.038 (0.015)	134.624	0.044	1	
27	2	B2		27	2	B1			123 814.286 (0.636)*	568.598	0.018	3	
27	2	B2	27	27	2	B1	27		123 813.383 (0.636)	568.598	0.006	3	
27	2	B2	28	27	2	B1	28		123 814.714 (0.636)	568.598	0.006	3	
27	2	B2	26	27	2	B1	26		123 814.764 (0.636)	568.598	0.006	3	
1	1	B2		0	0	B1		124 228.031 (0.020)	124 228.018 (0.008)*	0.206	1.582	3	1
1	1	B2	1	0	0	B1	1		124 226.958 (0.008)	0.206	0.527	3	
1	1	B2	2	0	0	B1	1		124 228.230 (0.008)	0.206	0.879	3	
1	1	B2	0	0	0	B1	1		124 230.137 (0.008)	0.206	0.176	3	
24	2	E2+1		24	1	E2+1		124 399.128 (0.020)	124 399.123 (0.012)*	449.480	29.233	1	1
27	9	B1		28	8	B2		124 751.988 (0.020)	124 752.019 (0.022)*	772.552	5.350	3	1
27	9	B2		28	8	B1			124 752.019 (0.022)*	772.552	5.350	3	
13	3	E1−1		14	0	E1+1			124 870.500 (0.023)*	155.112	0.018	3	
9	4	E1−1		10	3	E1−1		124 939.240 (0.020)	124 939.252 (0.011)*	106.038	1.657	3	1
9	4	E1−1	9	10	3	E1−1	10		124 939.094 (0.011)	106.038	0.547	3	
9	4	E1−1	10	10	3	E1−1	11		124 939.322 (0.011)	106.038	0.605	3	
9	4	E1−1	8	10	3	E1−1	9		124 939.340 (0.011)	106.038	0.494	3	
12	2	E2+1		11	3	E2+1		124 980.103 (0.020)	124 980.126 (0.011)*	122.124	1.909	1	1
28	1	E2+1		27	4	E2−1			125 101.525 (0.326)*	602.235	0.077	1	
25	2	B1		25	1	B2		125 303.098 (0.020)	125 303.110 (0.013)*	486.473	31.308	3	1
20	7	B1		21	6	B2			125 466.531 (0.017)*	438.823	3.948	3	
20	7	B		21	6	B		125 466.548 (0.020)	125 466.551 (0.017)*	438.823	7.896	3	1
20	7	B2		21	6	B1			125 466.571 (0.017)*	438.823	3.948	3	
28	1	E1+1		27	4	E1−1			125 858.439 (0.312)*	602.265	0.088	3	
12	2	B2		11	3	B1		125 949.095 (0.020)	125 949.084 (0.013)*	122.332	2.979	3	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
16	6	E2−1		17	5	E2−1		126 552.891 (0.060)	126 552.954 (0.015)*	294.024	3.070	1	1
27	2	E1+1		27	2	E1−1			126 567.954 (0.394)*	568.350	0.025	3	
27	2	E1+1	27	27	2	E1−1	27		126 567.041 (0.394)	568.350	0.008	3	
27	2	E1+1	28	27	2	E1−1	28		126 568.387 (0.394)	568.350	0.009	3	
27	2	E1+1	26	27	2	E1−1	26		126 568.437 (0.394)	568.350	0.008	3	
1	1	E2+1		0	0	E2+1		126 569.624 (0.020)	126 569.597 (0.005)*	0.404	0.850	1	1
1	1	E2+1	1	0	0	E2+1	1		126 569.239 (0.006)	0.404	0.283	1	
1	1	E2+1	2	0	0	E2+1	1		126 569.668 (0.005)	0.404	0.472	1	
1	1	E2+1	0	0	0	E2+1	1		126 570.312 (0.006)	0.404	0.094	1	
5	0	A2		4	1	A1		126 664.485 (0.020)	126 664.492 (0.010)*	17.950	2.992	1	1
5	0	A2	4	4	1	A1	3		126 663.882 (0.010)	17.950	0.776	1	
5	0	A2	6	4	1	A1	5		126 664.152 (0.010)	17.950	1.179	1	
5	0	A2	5	4	1	A1	4		126 665.390 (0.010)	17.950	0.957	1	
27	2	E2−1		27	2	E2+1			126 861.936 (0.413)*	568.366	0.020	1	
27	2	E2−1	27	27	2	E2+1	27		126 861.019 (0.413)	568.366	0.007	1	
27	2	E2−1	28	27	2	E2+1	28		126 862.370 (0.413)	568.366	0.007	1	
27	2	E2−1	26	27	2	E2+1	26		126 862.420 (0.413)	568.366	0.006	1	
8	1	E1+1		7	2	E1+1		126 867.494 (0.020)	126 867.519 (0.008)*	52.553	1.442	3	1
8	1	E1+1	8	7	2	E1+1	7		126 866.956 (0.008)	52.553	0.473	3	
8	1	E1+1	9	7	2	E1+1	8		126 867.752 (0.008)	52.553	0.537	3	
8	1	E1+1	7	7	2	E1+1	6		126 867.863 (0.008)	52.553	0.417	3	
9	4	E2−1		10	3	E2−1		127 096.777 (0.020)	127 096.783 (0.011)*	105.934	1.658	1	1
9	4	E2−1	9	10	3	E2−1	10		127 096.626 (0.011)	105.934	0.547	1	
9	4	E2−1	10	10	3	E2−1	11		127 096.854 (0.011)	105.934	0.605	1	
9	4	E2−1	8	10	3	E2−1	9		127 096.872 (0.011)	105.934	0.495	1	
9	1	B1		8	2	B2		127 343.598 (0.020)	127 343.597 (0.014)*	64.473	2.253	3	1
9	1	B1	8	8	2	B2	7		127 343.098 (0.014)	64.473	0.663	3	
9	1	B1	10	8	2	B2	9		127 343.225 (0.014)	64.473	0.830	3	
9	1	B1	9	8	2	B2	8		127 344.456 (0.014)	64.473	0.742	3	
12	2	A2		11	3	A1		127 824.784 (0.060)	127 824.720 (0.016)*	122.233	2.985	1	1
12	2	E1+1		11	3	E1−1		128 206.031 (0.060)	128 206.074 (0.012)*	122.306	0.360	3	1
8	1	E2+1		7	2	E2−1		128 257.005 (0.060)	128 256.959 (0.010)*	52.458	1.345	1	1
8	1	E2+1	8	7	2	E2−1	7		128 256.457 (0.010)	52.458	0.441	1	
8	1	E2+1	9	7	2	E2−1	8		128 257.167 (0.010)	52.458	0.501	1	
8	1	E2+1	7	7	2	E2−1	6		128 257.267 (0.010)	52.458	0.389	1	
23	5	B1		22	6	B2		128 302.937 (0.020)	128 302.910 (0.014)*	471.308	5.293	3	1
23	5	B2		22	6	B1		128 310.937 (0.020)	128 310.911 (0.014)*	471.308	5.293	3	1
13	3	B2		14	0	B1			128 369.694 (0.028)*	155.027	0.030	3	
24	2	A2		24	1	A1		128 449.722 (0.020)	128 449.724 (0.013)*	449.547	29.217	1	1
12	2	E1−1		11	3	E1+1		128 579.230 (0.020)	128 579.200 (0.009)*	121.922	0.350	3	1
1	1	E1+1		0	0	E1+1		128 644.116 (0.060)	128 644.071 (0.006)*	0.301	0.928	3	1
1	1	E1+1	1	0	0	E1+1	1		128 643.639 (0.006)	0.301	0.309	3	
1	1	E1+1	2	0	0	E1+1	1		128 644.158 (0.006)	0.301	0.515	3	
1	1	E1+1	0	0	0	E1+1	1		128 644.936 (0.006)	0.301	0.103	3	
13	1	E1+1		13	0	E1+1			128 745.104 (0.017)*	134.524	0.024	3	
13	1	E1+1	13	13	0	E1+1	13		128 744.082 (0.017)	134.524	0.008	3	
13	1	E1+1	14	13	0	E1+1	14		128 745.563 (0.017)	134.524	0.008	3	
13	1	E1+1	12	13	0	E1+1	12		128 745.677 (0.017)	134.524	0.007	3	
5	3	E1+1		6	2	E1+1		128 896.395 (0.020)	128 896.395 (0.010)*	42.197	0.789	3	1
5	3	E1+1	5	6	2	E1+1	6		128 896.049 (0.010)	42.197	0.256	3	
5	3	E1+1	6	6	2	E1+1	7		128 896.535 (0.010)	42.197	0.303	3	
5	3	E1+1	4	6	2	E1+1	5		128 896.614 (0.010)	42.197	0.215	3	
20	7	E2−1		21	6	E2−1		128 939.733 (0.060)	128 939.674 (0.017)*	438.567	3.953	1	1
23	5	E1−1		22	6	E1−1		129 530.714 (0.020)	129 530.712 (0.015)*	471.243	5.293	3	1
23	2	E1−1		23	1	E1+1		129 754.766 (0.020)	129 754.758 (0.013)*	413.948	27.126	3	1
21	0	A2		20	3	A1			129 908.712 (0.077)*	335.242	0.139	1	
21	0	A2	20	20	3	A1	19		129 908.225 (0.077)	335.242	0.044	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
21	0	A2	22	20	3	A1	21		129 908.288 (0.077)	335.242	0.048	1	
21	0	A2	21	20	3	A1	20		129 909.619 (0.077)	335.242	0.046	1	
23	5	E2+1		22	6	E2+1		129 975.755 (0.060)	129 975.698 (0.016)*	471.462	5.279	1	1
12	2	E2−1		11	3	E2−1		129 988.659 (0.060)	129 988.608 (0.014)*	122.202	1.923	1	1
28	1	E1+1		27	4	E1+1			130 184.247 (0.367)*	602.121	0.057	3	
8	1	E2+1		7	2	E2+1		130 211.807 (0.020)	130 211.780 (0.009)*	52.393	0.972	1	1
8	1	E2+1	8	7	2	E2+1	7		130 211.225 (0.009)	52.393	0.319	1	
8	1	E2+1	9	7	2	E2+1	8		130 212.009 (0.009)	52.393	0.362	1	
8	1	E2+1	7	7	2	E2+1	6		130 212.120 (0.009)	52.393	0.281	1	
13	3	A2		14	0	A1			131 373.827 (0.024)*	154.829	0.027	1	
28	1	A1		27	4	A2			131 446.503 (0.542)*	602.096	0.135	1	
23	5	E1+1		22	6	E1+1		131 603.057 (0.060)	131 603.009 (0.016)*	471.370	5.288	3	1
3	1	B1		2	1	B2		131 685.374 (0.020)	131 685.367 (0.003)*	7.249	0.251	3	1
3	1	B1	4	2	1	B2	3		131 685.266 (0.003)	7.249	0.108	3	
3	1	B1	2	2	1	B2	1		131 685.457 (0.003)	7.249	0.050	3	
3	1	B1	3	2	1	B2	2		131 685.521 (0.003)	7.249	0.074	3	
3	1	A1		2	1	A2		131 685.749 (0.020)	131 685.766 (0.003)*	7.408	0.251	1	1
3	1	A1	4	2	1	A2	3		131 685.664 (0.003)	7.408	0.108	1	
3	1	A1	2	2	1	A2	1		131 685.855 (0.003)	7.408	0.050	1	
3	1	A1	3	2	1	A2	2		131 685.919 (0.003)	7.408	0.075	1	
9	4	E1+1		10	3	E1+1		131 946.690 (0.020)	131 946.681 (0.010)*	105.654	1.660	3	1
9	4	E1+1	9	10	3	E1+1	10		131 946.525 (0.010)	105.654	0.548	3	
9	4	E1+1	10	10	3	E1+1	11		131 946.751 (0.010)	105.654	0.606	3	
9	4	E1+1	8	10	3	E1+1	9		131 946.769 (0.010)	105.654	0.495	3	
14	1	E2+1		14	0	E2+1		132 093.519 (0.060)	132 093.564 (0.020)*	155.212	0.120	1	1
14	1	E2+1	14	14	0	E2+1	14		132 092.514 (0.020)	155.212	0.040	1	
14	1	E2+1	15	14	0	E2+1	15		132 094.039 (0.020)	155.211	0.043	1	
14	1	E2+1	13	14	0	E2+1	13		132 094.148 (0.020)	155.211	0.037	1	
3	1	E1−1		2	1	E1−1		132 201.245 (0.020)	132 201.246 (0.004)*	7.370	0.245	3	1
3	1	E1−1	2	2	1	E1−1	1		132 201.096 (0.004)	7.370	0.049	3	
3	1	E1−1	4	2	1	E1−1	3		132 201.098 (0.004)	7.370	0.105	3	
3	1	E1−1	3	2	1	E1−1	2		132 201.595 (0.004)	7.370	0.073	3	
23	2	E2+1		23	1	E2+1		132 295.205 (0.020)	132 295.210 (0.012)*	413.885	27.148	1	1
12	2	E2−1		11	3	E2+1		132 335.172 (0.060)	132 335.126 (0.012)*	122.124	1.097	1	1
3	1	E2−1		2	1	E2−1		132 592.754 (0.020)	132 592.750 (0.003)*	7.182	0.249	1	1
3	1	E2−1	2	2	1	E2−1	1		132 592.606 (0.003)	7.182	0.050	1	
3	1	E2−1	4	2	1	E2−1	3		132 592.629 (0.003)	7.182	0.107	1	
3	1	E2−1	3	2	1	E2−1	2		132 593.047 (0.003)	7.183	0.074	1	
21	0	B2		20	3	B1			132 633.421 (0.077)*	335.335	0.149	3	
21	0	B2	20	20	3	B1	19		132 632.933 (0.077)	335.335	0.047	3	
21	0	B2	22	20	3	B1	21		132 632.995 (0.077)	335.335	0.052	3	
21	0	B2	21	20	3	B1	20		132 634.331 (0.077)	335.335	0.050	3	
12	2	B1		11	3	B2		132 728.525 (0.020)	132 728.522 (0.013)*	122.336	3.012	3	1
28	1	E2+1		27	4	E2+1			132 863.615 (0.385)*	601.976	0.061	1	
3	0	B2		2	0	B1		132 981.947 (0.020)	132 981.939 (0.004)*	4.643	0.284	3	1
3	0	B2	4	2	0	B1	3		132 981.906 (0.004)	4.643	0.122	3	
3	0	B2	3	2	0	B1	2		132 981.951 (0.004)	4.643	0.084	3	
3	0	B2	2	2	0	B1	1		132 982.052 (0.004)	4.643	0.057	3	
3	0	E2+1		2	0	E2+1		132 982.380 (0.020)	132 982.388 (0.004)*	4.841	0.283	1	1
3	0	E2+1	4	2	0	E2+1	3		132 982.354 (0.004)	4.841	0.121	1	
3	0	E2+1	3	2	0	E2+1	2		132 982.400 (0.004)	4.841	0.084	1	
3	0	E2+1	2	2	0	E2+1	1		132 982.500 (0.004)	4.841	0.057	1	
3	0	E1+1		2	0	E1+1		132 983.805 (0.020)	132 983.798 (0.004)*	4.737	0.282	3	1
3	0	E1+1	4	2	0	E1+1	3		132 983.764 (0.004)	4.737	0.121	3	
3	0	E1+1	3	2	0	E1+1	2		132 983.810 (0.004)	4.737	0.084	3	
3	0	E1+1	2	2	0	E1+1	1		132 983.910 (0.004)	4.737	0.056	3	
3	0	A2		2	0	A1		132 984.724 (0.020)	132 984.734 (0.004)*	4.437	0.282	1	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
3	0	A2	4	2	0	A1	3		132 984.701 (0.004)	4.437	0.121	1	
3	0	A2	3	2	0	A1	2		132 984.746 (0.004)	4.437	0.083	1	
3	0	A2	2	2	0	A1	1		132 984.847 (0.004)	4.437	0.056	1	
3	2	B1		2	2	B2		133 008.250 (0.020)	133 008.251 (0.003)*	15.682	0.157	3	1
3	2	B1	2	2	2	B2	1		133 007.648 (0.003)	15.682	0.031	3	
3	2	B1	4	2	2	B2	3		133 008.079 (0.003)	15.682	0.067	3	
3	2	B1	3	2	2	B2	2		133 008.855 (0.003)	15.682	0.047	3	
3	2	A1		2	2	A2		133 008.592 (0.020)	133 008.584 (0.003)*	15.644	0.157	1	1
3	2	A1	2	2	2	A2	1		133 007.981 (0.003)	15.644	0.031	1	
3	2	A1	4	2	2	A2	3		133 008.412 (0.003)	15.644	0.067	1	
3	2	A1	3	2	2	A2	2		133 009.188 (0.003)	15.644	0.047	1	
3	2	E2−1		2	2	E2−1			133 020.988 (0.003)*	15.474	0.157	1	
3	2	E2−1	2	2	2	E2−1	1		133 020.389 (0.003)	15.474	0.031	1	
3	2	E2−1	4	2	2	E2−1	3		133 020.818 (0.003)	15.474	0.067	1	
3	2	E2−1	3	2	2	E2−1	2		133 021.585 (0.003)	15.474	0.047	1	
3	2	E1+1		2	2	E1+1		133 021.099 (0.020)	133 021.113 (0.003)*	15.573	0.157	3	1
3	2	E1+1	2	2	2	E1+1	1		133 020.514 (0.003)	15.573	0.031	3	
3	2	E1+1	4	2	2	E1+1	3		133 020.943 (0.003)	15.573	0.067	3	
3	2	E1+1	3	2	2	E1+1	2		133 021.711 (0.003)	15.573	0.047	3	
3	2	E2+1		2	2	E2+1		133 023.194 (0.020)	133 023.173 (0.003)*	15.416	0.157	1	1
3	2	E2+1	2	2	2	E2+1	1		133 022.574 (0.003)	15.416	0.031	1	
3	2	E2+1	4	2	2	E2+1	3		133 023.003 (0.003)	15.416	0.067	1	
3	2	E2+1	3	2	2	E2+1	2		133 023.770 (0.003)	15.416	0.046	1	
3	2	E1−1		2	2	E1−1			133 023.192 (0.003)*	15.280	0.157	3	
3	2	E1−1	2	2	2	E1−1	1		133 022.593 (0.003)	15.280	0.031	3	
3	2	E1−1	4	2	2	E1−1	3		133 023.022 (0.003)	15.280	0.067	3	
3	2	E1−1	3	2	2	E1−1	2		133 023.789 (0.003)	15.280	0.046	3	
3	2	A2		2	2	A1			133 036.323 (0.003)*	15.645	0.157	1	
3	2	A2	2	2	2	A1	1		133 035.728 (0.003)	15.645	0.031	1	
3	2	A2	4	2	2	A1	3		133 036.155 (0.003)	15.645	0.067	1	
3	2	A2	3	2	2	A1	2		133 036.915 (0.003)	15.645	0.047	1	
3	2	B2		2	2	B1		133 036.340 (0.020)	133 036.341 (0.003)*	15.682	0.157	3	1
3	2	B2	2	2	2	B1	1		133 035.746 (0.003)	15.682	0.031	3	
3	2	B2	4	2	2	B1	3		133 036.173 (0.003)	15.682	0.067	3	
3	2	B2	3	2	2	B1	2		133 036.932 (0.003)	15.682	0.047	3	
28	1	B1		27	4	B2			133 138.083 (0.554)*	601.923	0.123	3	
9	1	A1		8	2	A2		133 224.733 (0.060)	133 224.788 (0.014)*	64.436	2.251	1	1
9	1	A1	8	8	2	A2	7		133 224.288 (0.014)	64.436	0.662	1	
9	1	A1	10	8	2	A2	9		133 224.416 (0.014)	64.436	0.829	1	
9	1	A1	9	8	2	A2	8		133 225.648 (0.014)	64.436	0.741	1	
24	2	B2		24	1	B1		133 366.566 (0.020)	133 366.570 (0.014)*	449.415	29.114	3	1
3	1	E2+1		2	1	E2+1		133 421.065 (0.020)	133 421.063 (0.004)*	7.588	0.249	1	1
3	1	E2+1	4	2	1	E2+1	3		133 421.054 (0.004)	7.588	0.107	1	
3	1	E2+1	3	2	1	E2+1	2		133 421.074 (0.004)	7.588	0.074	1	
3	1	E2+1	2	2	1	E2+1	1		133 421.083 (0.004)	7.588	0.050	1	
27	9	E2−1		28	8	E2−1			133 467.129 (0.053)*	772.582	5.344	1	
3	1	E1+1		2	1	E1+1		133 810.677 (0.020)	133 810.676 (0.004)*	7.559	0.245	3	1
3	1	E1+1	3	2	1	E1+1	2		133 810.633 (0.004)	7.559	0.072	3	
3	1	E1+1	4	2	1	E1+1	3		133 810.692 (0.004)	7.559	0.105	3	
3	1	E1+1	2	2	1	E1+1	1		133 810.700 (0.004)	7.559	0.049	3	
27	9	A2		28	8	A1		134 202.258 (0.020)	134 202.245 (0.021)*	772.417	5.347	1	1
27	9	A1		28	8	A2			134 202.245 (0.021)*	772.417	5.347	1	
3	1	A2		2	1	A1		134 324.933 (0.060)	134 324.967 (0.004)*	7.496	0.252	1	1
3	1	A2	2	2	1	A1	1		134 324.753 (0.004)	7.496	0.050	1	
3	1	A2	4	2	1	A1	3		134 324.938 (0.004)	7.496	0.108	1	
3	1	A2	3	2	1	A1	2		134 325.121 (0.004)	7.496	0.075	1	
3	1	B2		2	1	B1		134 329.075 (0.060)	134 329.149 (0.004)*	7.337	0.251	3	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
3	1	B2	2	2	1	B1	1		134 328.935 (0.004)	7.337	0.050	3	
3	1	B2	4	2	1	B1	3		134 329.119 (0.004)	7.337	0.108	3	
3	1	B2	3	2	1	B1	2		134 329.302 (0.004)	7.337	0.074	3	
9	1	E2−1		8	2	E2−1		134 478.242 (0.060)	134 478.295 (0.010)*	64.300	0.693	1	1
9	1	E2−1	8	8	2	E2−1	7		134 477.742 (0.010)	64.300	0.204	1	
9	1	E2−1	10	8	2	E2−1	9		134 477.885 (0.010)	64.300	0.255	1	
9	1	E2−1	9	8	2	E2−1	8		134 479.244 (0.010)	64.300	0.228	1	
12	2	A1		11	3	A2		134 519.943 (0.060)	134 520.004 (0.014)*	122.236	3.021	1	1
5	0	E1+1		4	1	E1+1		134 631.679 (0.020)	134 631.684 (0.006)*	17.985	2.787	3	1
5	0	E1+1	4	4	1	E1+1	3		134 631.144 (0.006)	17.985	0.723	3	
5	0	E1+1	6	4	1	E1+1	5		134 631.379 (0.006)	17.985	1.098	3	
5	0	E1+1	5	4	1	E1+1	4		134 632.484 (0.006)	17.985	0.892	3	
16	6	E1+1		17	5	E1+1		134 692.125 (0.020)	134 692.134 (0.016)*	294.073	3.066	3	1
9	1	E1−1		8	2	E1+1		134 845.659 (0.020)	134 845.631 (0.010)*	64.390	0.776	3	1
9	1	E1−1	8	8	2	E1+1	7		134 845.085 (0.010)	64.390	0.228	3	
9	1	E1−1	10	8	2	E1+1	9		134 845.226 (0.010)	64.390	0.286	3	
9	1	E1−1	9	8	2	E1+1	8		134 846.569 (0.010)	64.390	0.256	3	
27	9	E1−1		28	8	E1−1		134 855.819 (0.020)	134 855.853 (0.021)*	772.620	5.339	3	1
1	1	A2		0	0	A1		135 174.683 (0.020)	135 174.686 (0.009)*	0.000	1.583	1	1
1	1	A2	1	0	0	A1	1		135 173.626 (0.009)	0.000	0.528	1	
1	1	A2	2	0	0	A1	1		135 174.898 (0.009)	0.000	0.879	1	
1	1	A2	0	0	0	A1	1		135 176.805 (0.009)	0.000	0.176	1	
16	3	E1+1		15	4	E1+1		135 195.028 (0.060)	135 195.126 (0.011)*	220.934	3.896	3	1
8	1	E1+1		7	2	E1−1		135 645.809 (0.020)	135 645.829 (0.009)*	52.261	0.880	3	1
8	1	E1+1	8	7	2	E1−1	7		135 645.257 (0.010)	52.261	0.289	3	
8	1	E1+1	9	7	2	E1−1	8		135 646.066 (0.009)	52.261	0.328	3	
8	1	E1+1	7	7	2	E1−1	6		135 646.180 (0.009)	52.261	0.254	3	
5	3	A2		6	2	A1		135 911.458 (0.020)	135 911.469 (0.010)*	42.277	0.789	1	1
5	3	A2	5	6	2	A1	6		135 911.159 (0.010)	42.277	0.256	1	
5	3	A2	6	6	2	A1	7		135 911.594 (0.010)	42.277	0.303	1	
5	3	A2	4	6	2	A1	5		135 911.666 (0.010)	42.277	0.215	1	
27	9	E2+1		28	8	E2+1		135 945.260 (0.060)	135 945.323 (0.028)*	772.409	5.350	1	1
16	6	E2+1		17	5	E2+1		136 352.798 (0.020)	136 352.790 (0.016)*	294.111	3.063	1	1
23	2	A1		23	1	A2		136 379.713 (0.020)	136 379.710 (0.014)*	413.951	27.134	1	1
5	3	A1		6	2	A2		136 395.070 (0.020)	136 395.093 (0.010)*	42.261	0.788	1	1
5	3	A1	5	6	2	A2	6		136 394.703 (0.010)	42.261	0.255	1	
5	3	A1	6	6	2	A2	7		136 395.249 (0.010)	42.261	0.303	1	
5	3	A1	4	6	2	A2	5		136 395.339 (0.010)	42.261	0.215	1	
21	0	E1+1		20	3	E1−1			136 437.186 (0.082)*	335.262	0.113	3	
21	0	E1+1	20	20	3	E1−1	19		136 436.706 (0.082)	335.262	0.036	3	
21	0	E1+1	22	20	3	E1−1	21		136 436.767 (0.082)	335.262	0.039	3	
21	0	E1+1	21	20	3	E1−1	20		136 438.084 (0.082)	335.262	0.038	3	
9	1	E2−1		8	2	E2+1		136 778.150 (0.060)	136 778.195 (0.011)*	64.223	1.570	1	1
9	1	E2−1	8	8	2	E2+1	7		136 777.699 (0.011)	64.223	0.462	1	
9	1	E2−1	10	8	2	E2+1	9		136 777.826 (0.011)	64.223	0.578	1	
9	1	E2−1	9	8	2	E2+1	8		136 779.047 (0.011)	64.223	0.517	1	
16	6	E1−1		17	5	E1−1		136 844.762 (0.020)	136 844.802 (0.016)*	293.875	3.067	3	1
14	1	E1+1		14	0	E1+1			137 055.904 (0.020)*	155.112	0.019	3	
14	1	E1+1	14	14	0	E1+1	14		137 054.852 (0.020)	155.112	0.006	3	
14	1	E1+1	15	14	0	E1+1	15		137 056.380 (0.020)	155.112	0.007	3	
14	1	E1+1	13	14	0	E1+1	13		137 056.489 (0.020)	155.112	0.006	3	
27	6	E2−1		26	7	E2−1		137 159.620 (0.020)	137 159.586 (0.018)*	650.971	6.186	1	1
16	3	E2+1		15	4	E2−1		137 500.832 (0.020)	137 500.823 (0.015)*	221.053	0.152	1	1
22	2	E1−1		22	1	E1+1		137 521.827 (0.060)	137 521.807 (0.013)*	379.815	25.132	3	1
5	0	B2		4	1	B1		137 583.312 (0.020)	137 583.292 (0.010)*	17.792	2.988	3	1
5	0	B2	4	4	1	B1	3		137 582.682 (0.010)	17.792	0.775	3	
5	0	B2	6	4	1	B1	5		137 582.951 (0.010)	17.792	1.177	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
5	0	B2	5	4	1	B1	4		137 584.190 (0.010)	17.792	0.956	3	
28	2	A1		28	2	A2			137 675.746 (0.807)*	609.723	0.028	1	
28	2	A1	28	28	2	A2	28		137 674.826 (0.807)	609.723	0.009	1	
28	2	A1	29	28	2	A2	29		137 676.183 (0.807)	609.723	0.010	1	
28	2	A1	27	28	2	A2	27		137 676.232 (0.807)	609.723	0.009	1	
5	0	E2+1		4	1	E2+1		137 774.448 (0.020)	137 774.487 (0.006)*	17.984	2.377	1	1
5	0	E2+1	4	4	1	E2+1	3		137 774.095 (0.006)	17.984	0.616	1	
5	0	E2+1	6	4	1	E2+1	5		137 774.258 (0.006)	17.984	0.937	1	
5	0	E2+1	5	4	1	E2+1	4		137 775.081 (0.006)	17.984	0.761	1	
5	3	B2		6	2	B1		137 797.085 (0.020)	137 797.088 (0.010)*	42.315	0.788	3	1
5	3	B2	5	6	2	B1	6		137 796.778 (0.010)	42.315	0.255	3	
5	3	B2	6	6	2	B1	7		137 797.212 (0.010)	42.315	0.303	3	
5	3	B2	4	6	2	B1	5		137 797.283 (0.010)	42.315	0.215	3	
16	6	B1		17	5	B2		137 950.573 (0.020)	137 950.581 (0.013)*	293.900	3.068	3	1
16	6	B2		17	5	B1		137 950.972 (0.020)	137 950.982 (0.013)*	293.900	3.068	3	1
5	3	B1		6	2	B2		138 286.823 (0.020)	138 286.831 (0.009)*	42.299	0.788	3	1
5	3	B1	5	6	2	B2	6		138 286.441 (0.009)	42.299	0.255	3	
5	3	B1	6	6	2	B2	7		138 286.987 (0.009)	42.299	0.303	3	
5	3	B1	4	6	2	B2	5		138 287.077 (0.009)	42.299	0.215	3	
23	5	E2−1		22	6	E2−1		139 597.898 (0.020)	139 597.877 (0.015)*	471.052	5.298	1	1
12	2	E1+1		11	3	E1+1		139 727.142 (0.020)	139 727.165 (0.010)*	121.922	2.661	3	1
5	3	E2+1		6	2	E2+1		139 740.707 (0.020)	139 740.713 (0.010)*	42.040	0.773	1	1
5	3	E2+1	5	6	2	E2+1	6		139 740.353 (0.010)	42.040	0.250	1	
5	3	E2+1	6	6	2	E2+1	7		139 740.858 (0.010)	42.040	0.297	1	
5	3	E2+1	4	6	2	E2+1	5		139 740.940 (0.010)	42.040	0.211	1	
16	3	E2−1		15	4	E2−1		140 035.916 (0.020)	140 035.904 (0.011)*	221.053	3.743	1	1
22	2	E2+1		22	1	E2+1		140 143.567 (0.020)	140 143.577 (0.012)*	379.751	25.183	1	1
5	3	E2−1		6	2	E2−1		140 254.496 (0.060)	140 254.570 (0.010)*	42.100	0.773	1	1
5	3	E2−1	5	6	2	E2−1	6		140 254.234 (0.010)	42.100	0.250	1	
5	3	E2−1	6	6	2	E2−1	7		140 254.705 (0.010)	42.100	0.297	1	
5	3	E2−1	4	6	2	E2−1	5		140 254.782 (0.010)	42.100	0.211	1	
27	6	B1		26	7	B2		140 590.951 (0.020)	140 590.920 (0.015)*	651.111	6.175	3	1
27	6	B2		26	7	B1		140 591.747 (0.020)	140 591.716 (0.015)*	651.111	6.175	3	1
15	1	E2+1		15	0	E2+1		141 268.464 (0.060)	141 268.536 (0.027)*	177.253	0.101	1	1
15	1	E2+1	15	15	0	E2+1	15		141 267.454 (0.027)	177.253	0.033	1	
15	1	E2+1	16	15	0	E2+1	16		141 269.028 (0.027)	177.253	0.036	1	
15	1	E2+1	14	15	0	E2+1	14		141 269.133 (0.027)	177.253	0.031	1	
23	2	B1		23	1	B2		141 415.960 (0.020)	141 415.946 (0.014)*	413.815	27.043	3	1
28	2	E1+1		28	2	E1−1			141 478.620 (0.460)*	609.505	0.024	3	
28	2	E1+1	28	28	2	E1−1	28		141 477.686 (0.460)	609.505	0.008	3	
28	2	E1+1	29	28	2	E1−1	29		141 479.063 (0.460)	609.505	0.008	3	
28	2	E1+1	27	28	2	E1−1	27		141 479.112 (0.460)	609.505	0.008	3	
21	0	E2+1		20	3	E2−1			141 526.282 (0.077)*	335.184	0.155	1	
21	0	E2+1	20	20	3	E2−1	19		141 525.787 (0.077)	335.184	0.049	1	
21	0	E2+1	22	20	3	E2−1	21		141 525.850 (0.077)	335.184	0.054	1	
21	0	E2+1	21	20	3	E2−1	20		141 527.206 (0.077)	335.184	0.052	1	
28	2	E2−1		28	2	E2+1			141 823.905 (0.483)*	609.520	0.019	1	
28	2	E2−1	28	28	2	E2+1	28		141 822.968 (0.483)	609.521	0.006	1	
28	2	E2−1	29	28	2	E2+1	29		141 824.350 (0.483)	609.520	0.006	1	
28	2	E2−1	27	28	2	E2+1	27		141 824.399 (0.483)	609.520	0.006	1	
16	3	E1−1		15	4	E1−1		142 095.145 (0.020)	142 095.153 (0.012)*	221.084	3.881	3	1
27	6	A1		26	7	A2		142 708.906 (0.020)	142 708.887 (0.015)*	651.138	6.166	1	1
27	6	A2		26	7	A1		142 709.698 (0.020)	142 709.679 (0.015)*	651.138	6.166	1	1
23	8	A2		24	7	A1			143 049.836 (0.031)*	575.888	4.468	1	
23	8	A1		24	7	A2		143 049.856 (0.060)	143 049.839 (0.031)*	575.888	4.468	1	1
23	8	E1+1		24	7	E1+1		143 084.119 (0.020)	143 084.104 (0.020)*	575.704	4.474	3	1
9	1	E1−1		8	2	E1−1		143 691.447 (0.020)	143 691.412 (0.010)*	64.095	1.476	3	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	1	E1−1	8	8	2	E1−1	7		143 690.879 (0.010)	64.095	0.434	3	
9	1	E1−1	10	8	2	E1−1	9		143 691.017 (0.010)	64.095	0.544	3	
9	1	E1−1	9	8	2	E1−1	8		143 692.327 (0.010)	64.095	0.486	3	
27	9	E1+1		28	8	E1+1		144 012.297 (0.020)	144 012.311 (0.022)*	772.236	5.353	3	1
22	2	A2		22	1	A1		144 260.676 (0.020)	144 260.662 (0.015)*	379.816	25.172	1	1
12	5	E1−1		13	4	E1−1		144 455.453 (0.020)	144 455.459 (0.013)*	178.215	2.187	3	1
5	0	E1+1		4	1	E1−1		144 748.091 (0.020)	144 748.097 (0.007)*	17.647	0.196	3	1
5	0	E1+1	5	4	1	E1−1	4		144 747.581 (0.007)	17.648	0.063	3	
5	0	E1+1	6	4	1	E1−1	5		144 748.271 (0.007)	17.647	0.077	3	
5	0	E1+1	4	4	1	E1−1	3		144 748.497 (0.007)	17.647	0.051	3	
21	2	E1−1		21	1	E1+1		145 193.469 (0.020)	145 193.442 (0.014)*	347.147	23.247	3	1
16	3	A2		15	4	A1		145 299.029 (0.060)	145 299.065 (0.012)*	220.890	3.893	1	1
12	5	A1		13	4	A2		145 424.820 (0.020)	145 424.835 (0.012)*	178.021	2.189	1	1
12	5	A2		13	4	A1		145 428.657 (0.020)	145 428.667 (0.012)*	178.021	2.189	1	1
16	3	E2+1		15	4	E2+1		145 726.063 (0.020)	145 726.089 (0.011)*	220.779	3.749	1	1
16	3	A1		15	4	A2		146 269.263 (0.020)	146 269.281 (0.012)*	220.890	3.896	1	1
16	6	A1		17	5	A2		146 591.065 (0.020)	146 591.069 (0.014)*	293.714	3.069	1	1
16	6	A2		17	5	A1		146 591.470 (0.020)	146 591.477 (0.014)*	293.714	3.069	1	1
27	6	E1+1		26	7	E1+1		147 104.529 (0.020)	147 104.560 (0.017)*	650.953	6.171	3	1
27	6	E1−1		26	7	E1−1		147 129.374 (0.060)	147 129.275 (0.022)*	650.825	6.186	3	1
21	2	E2+1		21	1	E2+1		147 898.677 (0.020)	147 898.694 (0.013)*	347.081	23.333	1	1
29	4	B1		30	1	B2			147 938.665 (0.671)*	681.104	0.019	3	
29	4	B1	29	30	1	B2	30		147 937.469 (0.671)	681.104	0.006	3	
29	4	B1	30	30	1	B2	31		147 939.235 (0.671)	681.103	0.007	3	
29	4	B1	28	30	1	B2	29		147 939.293 (0.671)	681.103	0.006	3	
23	8	B2		24	7	B1			148 020.575 (0.018)*	575.861	4.463	3	
23	8	B		24	7	B		148 020.578 (0.020)	148 020.576 (0.018)*	575.861	8.927	1	1
23	8	B1		24	7	B2			148 020.578 (0.018)*	575.861	4.463	3	
21	0	E1+1		20	3	E1+1			148 142.663 (0.091)*	334.871	0.049	3	
16	3	E2−1		15	4	E2+1		148 261.176 (0.020)	148 261.170 (0.010)*	220.779	0.153	1	1
29	4	A1		30	1	A2			148 586.667 (0.669)*	681.252	0.022	1	
29	4	A1	29	30	1	A2	30		148 585.471 (0.669)	681.253	0.007	1	
29	4	A1	30	30	1	A2	31		148 587.236 (0.669)	681.252	0.008	1	
29	4	A1	28	30	1	A2	29		148 587.295 (0.669)	681.252	0.007	1	
5	3	E1−1		6	2	E1−1		149 223.890 (0.020)	149 223.921 (0.010)*	41.905	0.788	3	1
5	3	E1−1	5	6	2	E1−1	6		149 223.571 (0.010)	41.905	0.255	3	
5	3	E1−1	6	6	2	E1−1	7		149 224.062 (0.010)	41.905	0.303	3	
5	3	E1−1	4	6	2	E1−1	5		149 224.142 (0.010)	41.905	0.215	3	
22	2	B2		22	1	B1		149 404.611 (0.020)	149 404.578 (0.015)*	379.677	25.093	3	1
12	5	E2−1		13	4	E2−1			149 910.934 (0.014)*	178.183	2.185	1	
29	4	E1+1		30	1	E1−1			150 380.346 (0.679)*	681.267	0.018	3	
29	4	E1+1	29	30	1	E1−1	30		150 379.141 (0.679)	681.267	0.006	3	
29	4	E1+1	30	30	1	E1−1	31		150 380.921 (0.679)	681.267	0.006	3	
29	4	E1+1	28	30	1	E1−1	29		150 380.980 (0.679)	681.267	0.006	3	
20	4	E2+1		19	5	E2+1			150 448.043 (0.013)*	348.777	4.788	1	
16	1	E2+1		16	0	E2+1			151 338.165 (0.036)*	200.745	0.087	1	
16	1	E2+1	16	16	0	E2+1	16		151 337.054 (0.036)	200.745	0.029	1	
16	1	E2+1	17	16	0	E2+1	17		151 338.673 (0.036)	200.745	0.030	1	
16	1	E2+1	15	16	0	E2+1	15		151 338.775 (0.036)	200.745	0.027	1	
21	2	A1		21	1	A2			152 047.614 (0.016)*	347.145	23.326	1	
21	4	E2+1		22	1	E2+1			152 165.937 (0.146)*	379.751	0.017	1	
21	4	B2		22	1	B1			152 219.049 (0.184)*	379.677	0.030	3	
5	0	E2+1		4	1	E2−1			152 549.119 (0.008)*	17.491	0.604	1	
5	0	E2+1	5	4	1	E2−1	4		152 548.811 (0.008)	17.491	0.193	1	
5	0	E2+1	6	4	1	E2−1	5		152 549.217 (0.008)	17.491	0.238	1	
5	0	E2+1	4	4	1	E2−1	3		152 549.371 (0.008)	17.491	0.157	1	
20	2	E1−1		20	1	E1+1			152 723.932 (0.014)*	315.945	21.459	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
23	8	E2−1		24	7	E2−1			153 022.029 (0.022)*	575.721	4.468	1	
29	2	A2		29	2	A1			153 212.369 (0.962)*	652.329	0.027	1	
21	4	A2		22	1	A1			153 500.996 (0.180)*	379.816	0.033	1	
23	8	E2+1		24	7	E2+1			153 608.325 (0.022)*	575.529	4.473	1	
16	3	B2		15	4	B1			153 803.005 (0.014)*	220.704	3.900	3	
20	4	B2		19	5	B1			154 475.512 (0.012)*	348.566	4.794	3	
20	4	B1		19	5	B2			154 591.616 (0.012)*	348.566	4.794	3	
16	3	B1		15	4	B2			154 752.560 (0.013)*	220.704	3.903	3	
21	4	E1+1		22	1	E1+1			154 773.130 (0.140)*	379.815	0.018	3	
12	5	E1+1		13	4	E1+1			154 923.464 (0.014)*	178.064	2.186	3	
27	6	E2+1		26	7	E2+1			154 978.932 (0.022)*	650.780	6.179	1	
19	7	E2+1		20	6	E2+1			155 139.454 (0.019)*	407.967	3.592	1	
20	2	E2+1		20	1	E2+1			155 517.698 (0.013)*	315.879	21.594	1	
20	4	E1+1		19	5	E1+1			156 159.130 (0.014)*	348.739	4.782	3	
12	5	B1		13	4	B2			156 681.635 (0.013)*	177.834	2.189	3	
12	5	B2		13	4	B1			156 685.553 (0.013)*	177.834	2.189	3	
8	4	B1		9	3	B2			157 001.220 (0.011)*	91.278	1.316	3	
8	4	B1	8	9	3	B2	9		157 001.013 (0.011)	91.279	0.433	3	
8	4	B1	9	9	3	B2	10		157 001.310 (0.011)	91.278	0.485	3	
8	4	B1	7	9	3	B2	8		157 001.339 (0.011)	91.278	0.387	3	
8	4	B2		9	3	B1			157 034.312 (0.011)*	91.277	1.316	3	
8	4	B2	8	9	3	B1	9		157 034.102 (0.011)	91.277	0.433	3	
8	4	B2	9	9	3	B1	10		157 034.404 (0.011)	91.277	0.485	3	
8	4	B2	7	9	3	B1	8		157 034.434 (0.011)	91.277	0.387	3	
29	2	E1+1		29	2	E1−1			157 225.982 (0.538)*	652.112	0.023	3	
21	2	B1		21	1	B2			157 288.190 (0.016)*	347.004	23.259	3	
29	2	E2−1		29	2	E2+1			157 615.671 (0.564)*	652.126	0.018	1	
23	8	E1−1		24	7	E1−1			158 605.124 (0.022)*	575.573	4.471	3	
2	1	E2−1		1	0	E2+1			158 867.794 (0.009)*	1.883	0.929	1	
2	1	E2−1	1	1	0	E2+1	1		158 866.724 (0.009)	1.883	0.077	1	
2	1	E2−1	2	1	0	E2+1	1		158 867.656 (0.009)	1.883	0.232	1	
2	1	E2−1	3	1	0	E2+1	2		158 867.781 (0.009)	1.883	0.434	1	
2	1	E2−1	2	1	0	E2+1	2		158 868.380 (0.009)	1.883	0.077	1	
2	1	E2−1	1	1	0	E2+1	0		158 868.534 (0.009)	1.883	0.103	1	
21	4	E1−1		22	1	E1+1			159 202.052 (0.133)*	379.815	0.017	3	
20	2	A2		20	1	A1			159 698.409 (0.018)*	315.941	21.591	1	
19	2	E1−1		19	1	E1+1			160 069.630 (0.015)*	286.213	19.758	3	
12	5	E2+1		13	4	E2+1			160 757.327 (0.014)*	177.908	2.187	1	
13	2	E1−1		12	3	E1−1			161 058.043 (0.012)*	140.052	2.800	3	
20	4	E2−1		19	5	E2−1			161 194.432 (0.016)*	348.689	4.778	1	
17	1	E2+1		17	0	E2+1			162 314.378 (0.050)*	225.687	0.075	1	
17	1	E2+1	17	17	0	E2+1	17		162 313.240 (0.050)	225.687	0.025	1	
17	1	E2+1	18	17	0	E2+1	18		162 314.901 (0.050)	225.687	0.026	1	
17	1	E2+1	16	17	0	E2+1	16		162 314.999 (0.050)	225.687	0.023	1	
22	0	A1		21	3	A2			162 757.789 (0.097)*	366.315	0.158	1	
19	2	E2+1		19	1	E2+1			162 960.701 (0.014)*	286.146	19.958	1	
19	7	E1−1		20	6	E1−1			163 007.636 (0.019)*	407.748	3.594	3	
19	7	E1+1		20	6	E1+1			163 242.638 (0.017)*	407.875	3.588	3	
24	5	A2		23	6	A1			164 303.480 (0.015)*	505.364	5.682	1	
24	5	A1		23	6	A2			164 315.828 (0.015)*	505.364	5.682	1	
20	2	B2		20	1	B1			165 025.383 (0.017)*	315.798	21.533	3	
22	0	B1		21	3	B2			165 447.305 (0.096)*	366.406	0.170	3	
9	1	B2		8	2	B1			165 476.973 (0.016)*	64.522	2.823	3	
9	1	B2	9	8	2	B1	8		165 476.459 (0.016)	64.522	0.929	3	
9	1	B2	10	8	2	B1	9		165 477.190 (0.016)	64.522	1.040	3	
9	1	B2	8	8	2	B1	7		165 477.279 (0.016)	64.522	0.830	3	
20	4	A2		19	5	A1			165 485.190 (0.011)*	348.381	4.797	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	4	E2+1		9	3	E2+1			165 566.241 (0.012)*	91.067	1.316	1	
8	4	E2+1	8	9	3	E2+1	9		165 566.034 (0.012)	91.068	0.433	1	
8	4	E2+1	9	9	3	E2+1	10		165 566.331 (0.012)	91.067	0.485	1	
8	4	E2+1	7	9	3	E2+1	8		165 566.360 (0.012)	91.067	0.387	1	
20	4	A1		19	5	A2			165 598.775 (0.012)*	348.381	4.797	1	
8	4	A1		9	3	A2			165 658.813 (0.011)*	91.179	1.315	1	
8	4	A1	8	9	3	A2	9		165 658.607 (0.011)	91.179	0.433	1	
8	4	A1	9	9	3	A2	10		165 658.903 (0.011)	91.179	0.484	1	
8	4	A1	7	9	3	A2	8		165 658.932 (0.011)	91.179	0.387	1	
8	4	A2		9	3	A1			165 692.628 (0.011)*	91.177	1.315	1	
8	4	A2	8	9	3	A1	9		165 692.419 (0.011)	91.177	0.433	1	
8	4	A2	9	9	3	A1	10		165 692.720 (0.011)	91.177	0.484	1	
8	4	A2	7	9	3	A1	8		165 692.749 (0.011)	91.177	0.387	1	
13	2	E2+1		12	3	E2−1			166 248.905 (0.015)*	139.948	1.267	1	
20	4	E1−1		19	5	E1−1			166 525.902 (0.019)*	348.542	4.786	3	
10	1	B2		9	2	B1			167 112.266 (0.017)*	77.775	2.566	3	
10	1	B2	9	9	2	B1	8		167 111.782 (0.017)	77.775	0.765	3	
10	1	B2	11	9	2	B1	10		167 111.895 (0.017)	77.775	0.937	3	
10	1	B2	10	9	2	B1	9		167 113.112 (0.017)	77.775	0.847	3	
19	2	A1		19	1	A2			167 174.043 (0.019)*	286.208	19.958	1	
18	2	E1−1		18	1	E1+1			167 188.848 (0.015)*	257.953	18.127	3	
2	1	E1−1		1	0	E1+1			167 598.269 (0.008)*	1.780	0.636	3	
2	1	E1−1	1	1	0	E1+1	1		167 597.011 (0.008)	1.780	0.053	3	
2	1	E1−1	3	1	0	E1+1	2		167 598.202 (0.008)	1.780	0.297	3	
2	1	E1−1	2	1	0	E1+1	1		167 598.319 (0.008)	1.780	0.159	3	
2	1	E1−1	1	1	0	E1+1	0		167 598.822 (0.008)	1.779	0.071	3	
2	1	E1−1	2	1	0	E1+1	2		167 599.043 (0.008)	1.780	0.053	3	
19	7	A2		20	6	A1			167 606.488 (0.021)*	407.913	3.587	1	
19	7	A1		20	6	A2			167 606.510 (0.021)*	407.913	3.587	1	
6	0	A1		5	1	A2			168 584.383 (0.012)*	25.417	3.668	1	
6	0	A1	5	5	1	A2	4		168 583.814 (0.012)	25.417	1.000	1	
6	0	A1	7	5	1	A2	6		168 584.032 (0.012)	25.417	1.411	1	
6	0	A1	6	5	1	A2	5		168 585.269 (0.012)	25.417	1.189	1	
13	2	E2+1		12	3	E2+1			168 602.044 (0.014)*	139.870	2.110	1	
26	9	B1		27	8	B2			168 946.166 (0.027)*	731.265	4.991	3	
26	9	B2		27	8	B1			168 946.167 (0.027)*	731.265	4.991	3	
12	3	B1		13	0	B2			169 265.226 (0.026)*	134.437	0.021	3	
8	4	E1−1		9	3	E1−1			169 342.494 (0.012)*	91.250	1.314	3	
8	4	E1−1	8	9	3	E1−1	9		169 342.287 (0.012)	91.250	0.433	3	
8	4	E1−1	9	9	3	E1−1	10		169 342.585 (0.012)	91.250	0.484	3	
8	4	E1−1	7	9	3	E1−1	8		169 342.614 (0.012)	91.250	0.386	3	
22	0	E1+1		21	3	E1−1			169 416.850 (0.103)*	366.322	0.137	3	
2	1	B1		1	0	B2		169 447.508 (0.100)	169 447.484 (0.009)*	1.685	2.373	3	11
2	1	B1	2	1	0	B2	1		169 446.424 (0.009)	1.685	0.593	3	
2	1	B1	2	1	0	B2	2		169 447.148 (0.009)	1.685	0.198	3	
2	1	B1	1	1	0	B2	1		169 447.337 (0.009)	1.685	0.198	3	
2	1	B1	3	1	0	B2	2		169 447.735 (0.009)	1.685	1.108	3	
2	1	B1	1	1	0	B2	0		169 449.147 (0.009)	1.685	0.264	3	
30	2	A1		30	2	A2			169 557.266 (1.144)*	696.384	0.026	1	
13	2	B1		12	3	B2			169 586.021 (0.017)*	140.077	3.365	3	
19	7	B2		20	6	B1			169 801.248 (0.022)*	407.812	3.590	3	
19	7	B1		20	6	B2			169 801.270 (0.022)*	407.812	3.590	3	
18	2	E2+1		18	1	E2+1			170 190.943 (0.014)*	257.886	18.419	1	
29	1	E2+1		28	4	E2−1			170 230.481 (0.372)*	643.582	0.098	1	
15	6	E2−1		16	5	E2−1			170 897.816 (0.018)*	268.904	2.715	1	
29	1	E1+1		28	4	E1−1			170 903.491 (0.359)*	643.613	0.113	3	
2	1	E2+1		1	0	E2+1		171 035.274 (0.100)	171 035.212 (0.006)*	1.883	1.444	1	11

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
2	1	E2+1	1	1	0	E2+1	1		171 034.472 (0.006)	1.883	0.120	1	
2	1	E2+1	2	1	0	E2+1	1		171 034.746 (0.006)	1.883	0.361	1	
2	1	E2+1	3	1	0	E2+1	2		171 035.294 (0.006)	1.883	0.674	1	
2	1	E2+1	2	1	0	E2+1	2		171 035.470 (0.006)	1.883	0.120	1	
2	1	E2+1	1	1	0	E2+1	0		171 036.282 (0.006)	1.883	0.160	1	
9	1	A2		8	2	A1			171 307.117 (0.014)*	64.484	2.811	1	
9	1	A2	9	8	2	A1	8		171 306.602 (0.014)	64.484	0.925	1	
9	1	A2	10	8	2	A1	9		171 307.334 (0.014)	64.484	1.036	1	
9	1	A2	8	8	2	A1	7		171 307.424 (0.014)	64.484	0.827	1	
13	2	A1		12	3	A2			171 457.999 (0.019)*	139.978	3.373	1	
8	4	E2−1		9	3	E2−1			171 502.399 (0.013)*	91.145	1.315	1	
8	4	E2−1	8	9	3	E2−1	9		171 502.191 (0.013)	91.145	0.433	1	
8	4	E2−1	9	9	3	E2−1	10		171 502.489 (0.013)	91.145	0.484	1	
8	4	E2−1	7	9	3	E2−1	8		171 502.519 (0.013)	91.145	0.387	1	
28	4	B2		29	1	B1			172 229.136 (0.576)*	637.480	0.018	3	
28	4	B2	28	29	1	B1	29		172 227.955 (0.576)	637.480	0.006	3	
28	4	B2	29	29	1	B1	30		172 229.698 (0.576)	637.480	0.006	3	
28	4	B2	27	29	1	B1	28		172 229.757 (0.576)	637.480	0.006	3	
12	3	A1		13	0	A2			172 300.585 (0.022)*	134.237	0.019	1	
13	2	E1−1		12	3	E1+1			172 561.491 (0.012)*	139.668	0.585	3	
19	2	B1		19	1	B2			172 577.937 (0.018)*	286.062	19.910	3	
24	5	B2		23	6	B1			172 712.030 (0.017)*	505.265	5.678	3	
24	5	B1		23	6	B2			172 724.195 (0.017)*	505.265	5.678	3	
28	4	A2		29	1	A1			172 900.101 (0.574)*	637.630	0.020	1	
28	4	A2	28	29	1	A1	29		172 898.920 (0.574)	637.630	0.007	1	
28	4	A2	29	29	1	A1	30		172 900.663 (0.574)	637.630	0.007	1	
28	4	A2	27	29	1	A1	28		172 900.723 (0.574)	637.630	0.006	1	
10	1	A2		9	2	A1			172 989.866 (0.016)*	77.738	2.563	1	
10	1	A2	9	9	2	A1	8		172 989.381 (0.016)	77.738	0.764	1	
10	1	A2	11	9	2	A1	10		172 989.494 (0.016)	77.738	0.936	1	
10	1	A2	10	9	2	A1	9		172 990.712 (0.016)	77.738	0.846	1	
2	1	E1+1		1	0	E1+1		173 267.798 (0.100)	173 267.745 (0.006)*	1.780	1.739	3	11
2	1	E1+1	2	1	0	E1+1	1		173 267.091 (0.006)	1.780	0.435	3	
2	1	E1+1	1	1	0	E1+1	1		173 267.192 (0.006)	1.780	0.145	3	
2	1	E1+1	2	1	0	E1+1	2		173 267.815 (0.006)	1.780	0.145	3	
2	1	E1+1	3	1	0	E1+1	2		173 267.880 (0.006)	1.780	0.811	3	
2	1	E1+1	1	1	0	E1+1	0		173 269.003 (0.006)	1.779	0.193	3	
19	7	E2−1		20	6	E2−1			173 282.767 (0.021)*	407.555	3.594	1	
4	3	E1+1		5	2	E1+1			173 296.472 (0.012)*	33.322	0.473	3	
4	3	E1+1	4	5	2	E1+1	5		173 295.917 (0.012)	33.322	0.151	3	
4	3	E1+1	5	5	2	E1+1	6		173 296.681 (0.012)	33.322	0.186	3	
4	3	E1+1	3	5	2	E1+1	4		173 296.853 (0.012)	33.322	0.123	3	
10	1	E2−1		9	2	E2−1			173 654.079 (0.012)*	77.627	0.487	1	
10	1	E2−1	9	9	2	E2−1	8		173 653.509 (0.012)	77.627	0.145	1	
10	1	E2−1	11	9	2	E2−1	10		173 653.646 (0.012)	77.627	0.178	1	
10	1	E2−1	10	9	2	E2−1	9		173 655.068 (0.012)	77.627	0.161	1	
30	2	E1+1		30	2	E1−1			173 779.029 (0.627)*	696.168	0.023	3	
13	2	E1+1		12	3	E1−1			173 921.842 (0.014)*	140.052	0.604	3	
24	5	E1−1		23	6	E1−1			173 958.770 (0.019)*	505.199	5.677	3	
17	2	E1−1		17	1	E1+1			174 041.549 (0.016)*	231.168	16.548	3	
10	1	E1−1		9	2	E1+1			174 135.785 (0.011)*	77.710	0.797	3	
10	1	E1−1	9	9	2	E1+1	8		174 135.236 (0.011)	77.710	0.238	3	
10	1	E1−1	11	9	2	E1+1	10		174 135.367 (0.011)	77.710	0.291	3	
10	1	E1−1	10	9	2	E1+1	9		174 136.741 (0.011)	77.710	0.263	3	
22	0	E2+1		21	3	E2−1			174 144.057 (0.098)*	366.255	0.182	1	
18	1	E2+1		18	0	E2+1			174 198.713 (0.067)*	252.076	0.065	1	
18	1	E2+1	18	18	0	E2+1	18		174 197.552 (0.067)	252.076	0.022	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
18	1	E2+1	19	18	0	E2+1	19		174 199.249 (0.067)	252.076	0.023	1	
18	1	E2+1	17	18	0	E2+1	17		174 199.344 (0.067)	252.076	0.020	1	
24	5	E2+1		23	6	E2+1			174 397.654 (0.018)*	505.418	5.661	1	
18	2	A2		18	1	A1			174 438.850 (0.020)*	257.947	18.422	1	
9	1	E1+1		8	2	E1+1			174 620.270 (0.009)*	64.390	1.810	3	
9	1	E1+1	9	8	2	E1+1	8		174 619.707 (0.009)	64.390	0.596	3	
9	1	E1+1	10	8	2	E1+1	9		174 620.508 (0.009)	64.390	0.667	3	
9	1	E1+1	8	8	2	E1+1	7		174 620.606 (0.009)	64.390	0.532	3	
29	1	E1+1		28	4	E1+1			175 286.105 (0.433)*	643.466	0.061	3	
4	1	B2		3	1	B1			175 568.020 (0.004)*	11.642	0.353	3	
4	1	B2	5	3	1	B1	4		175 567.960 (0.004)	11.642	0.144	3	
4	1	B2	3	3	1	B1	2		175 568.078 (0.004)	11.642	0.084	3	
4	1	B2	4	3	1	B1	3		175 568.084 (0.004)	11.642	0.110	3	
4	1	A2		3	1	A1			175 568.458 (0.004)*	11.801	0.354	1	
4	1	A2	5	3	1	A1	4		175 568.398 (0.004)	11.801	0.144	1	
4	1	A2	3	3	1	A1	2		175 568.516 (0.004)	11.801	0.084	1	
4	1	A2	4	3	1	A1	3		175 568.522 (0.004)	11.801	0.111	1	
9	1	E2+1		8	2	E2−1			175 711.047 (0.011)*	64.300	2.052	1	
9	1	E2+1	9	8	2	E2−1	8		175 710.547 (0.011)	64.300	0.675	1	
9	1	E2+1	10	8	2	E2−1	9		175 711.258 (0.011)	64.300	0.756	1	
9	1	E2+1	8	8	2	E2−1	7		175 711.345 (0.011)	64.300	0.603	1	
4	1	E1−1		3	1	E1−1			175 909.592 (0.005)*	11.780	0.349	3	
4	1	E1−1	5	3	1	E1−1	4		175 909.499 (0.005)	11.780	0.142	3	
4	1	E1−1	3	3	1	E1−1	2		175 909.554 (0.005)	11.780	0.083	3	
4	1	E1−1	4	3	1	E1−1	3		175 909.766 (0.005)	11.780	0.109	3	
24	5	E1+1		23	6	E1+1			176 019.472 (0.019)*	505.326	5.672	3	
13	2	E2−1		12	3	E2−1			176 083.975 (0.018)*	139.948	2.134	1	
8	4	E1+1		9	3	E1+1			176 363.085 (0.012)*	90.864	1.316	3	
8	4	E1+1	8	9	3	E1+1	9		176 362.879 (0.012)	90.864	0.433	3	
8	4	E1+1	9	9	3	E1+1	10		176 363.175 (0.012)	90.864	0.485	3	
8	4	E1+1	7	9	3	E1+1	8		176 363.204 (0.012)	90.864	0.387	3	
29	1	A2		28	4	A1			176 418.253 (0.642)*	643.450	0.163	1	
4	1	E2−1		3	1	E2−1			176 440.205 (0.004)*	11.605	0.349	1	
4	1	E2−1	5	3	1	E2−1	4		176 440.107 (0.004)	11.605	0.142	1	
4	1	E2−1	3	3	1	E2−1	2		176 440.122 (0.004)	11.605	0.083	1	
4	1	E2−1	4	3	1	E2−1	3		176 440.413 (0.004)	11.605	0.109	1	
10	1	E2−1		9	2	E2+1			176 597.333 (0.012)*	77.529	2.088	1	
10	1	E2−1	9	9	2	E2+1	8		176 596.850 (0.012)	77.529	0.623	1	
10	1	E2−1	11	9	2	E2+1	10		176 596.963 (0.012)	77.529	0.762	1	
10	1	E2−1	10	9	2	E2+1	9		176 598.174 (0.012)	77.529	0.689	1	
6	0	E1+1		5	1	E1+1			176 749.056 (0.007)*	25.444	3.534	3	
6	0	E1+1	5	5	1	E1+1	4		176 748.517 (0.008)	25.444	0.964	3	
6	0	E1+1	7	5	1	E1+1	6		176 748.723 (0.008)	25.444	1.359	3	
6	0	E1+1	6	5	1	E1+1	5		176 749.896 (0.008)	25.444	1.145	3	
17	2	E2+1		17	1	E2+1			177 174.771 (0.014)*	231.101	16.969	1	
4	0	E2+1		3	0	E2+1		177 271.444 (0.100)	177 271.362 (0.005)*	9.277	0.378	1	11
4	0	E2+1	5	3	0	E2+1	4		177 271.337 (0.005)	9.277	0.154	1	
4	0	E2+1	4	3	0	E2+1	3		177 271.379 (0.005)	9.277	0.118	1	
4	0	E2+1	3	3	0	E2+1	2		177 271.404 (0.005)	9.277	0.090	1	
4	0	B1		3	0	B2		177 272.161 (0.100)	177 272.094 (0.005)*	9.079	0.378	3	11
4	0	B1	5	3	0	B2	4		177 272.069 (0.005)	9.079	0.154	3	
4	0	B1	4	3	0	B2	3		177 272.110 (0.005)	9.079	0.118	3	
4	0	B1	3	3	0	B2	2		177 272.136 (0.005)	9.079	0.090	3	
4	0	E1+1		3	0	E1+1		177 273.525 (0.100)	177 273.459 (0.005)*	9.173	0.376	3	11
4	0	E1+1	5	3	0	E1+1	4		177 273.434 (0.005)	9.173	0.153	3	
4	0	E1+1	4	3	0	E1+1	3		177 273.475 (0.005)	9.173	0.118	3	
4	0	E1+1	3	3	0	E1+1	2		177 273.500 (0.005)	9.173	0.090	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
4	0	A1		3	0	A2		177 276.280 (0.100)	177 276.223 (0.005)*	8.873	0.376	1	11
4	0	A1	5	3	0	A2	4		177 276.198 (0.005)	8.873	0.153	1	
4	0	A1	4	3	0	A2	3		177 276.239 (0.005)	8.873	0.117	1	
4	0	A1	3	3	0	A2	2		177 276.265 (0.005)	8.873	0.089	1	
4	2	B2		3	2	B1			177 334.136 (0.004)*	20.119	0.283	3	
4	2	B2	3	3	2	B1	2		177 333.962 (0.004)	20.119	0.067	3	
4	2	B2	5	3	2	B1	4		177 334.047 (0.004)	20.119	0.115	3	
4	2	B2	4	3	2	B1	3		177 334.379 (0.004)	20.119	0.088	3	
4	2	A2		3	2	A1			177 334.631 (0.004)*	20.081	0.283	1	
4	2	A2	3	3	2	A1	2		177 334.457 (0.004)	20.081	0.067	1	
4	2	A2	5	3	2	A1	4		177 334.542 (0.004)	20.081	0.115	1	
4	2	A2	4	3	2	A1	3		177 334.874 (0.004)	20.081	0.088	1	
4	3	E2+1		3	3	E2+1			177 344.712 (0.004)*	33.391	0.165	1	
4	3	E2+1	3	3	3	E2+1	2		177 344.262 (0.004)	33.391	0.039	1	
4	3	E2+1	5	3	3	E2+1	4		177 344.539 (0.004)	33.391	0.067	1	
4	3	E2+1	4	3	3	E2+1	3		177 345.251 (0.004)	33.391	0.052	1	
4	3	B2		3	3	B1			177 346.311 (0.004)*	33.601	0.165	3	
4	3	B2	3	3	3	B1	2		177 345.861 (0.004)	33.601	0.039	3	
4	3	B2	5	3	3	B1	4		177 346.138 (0.004)	33.601	0.067	3	
4	3	B2	4	3	3	B1	3		177 346.850 (0.004)	33.601	0.052	3	
4	3	B1		3	3	B2			177 346.527 (0.004)*	33.601	0.165	3	
4	3	B1	3	3	3	B2	2		177 346.077 (0.004)	33.601	0.039	3	
4	3	B1	5	3	3	B2	4		177 346.354 (0.004)	33.601	0.067	3	
4	3	B1	4	3	3	B2	3		177 347.066 (0.004)	33.601	0.052	3	
4	3	E1−1		3	3	E1−1			177 346.547 (0.004)*	33.573	0.165	3	
4	3	E1−1	3	3	3	E1−1	2		177 346.097 (0.004)	33.573	0.039	3	
4	3	E1−1	5	3	3	E1−1	4		177 346.374 (0.004)	33.573	0.067	3	
4	3	E1−1	4	3	3	E1−1	3		177 347.086 (0.004)	33.573	0.052	3	
4	3	E2−1		3	3	E2−1			177 347.987 (0.004)*	33.468	0.165	1	
4	3	E2−1	3	3	3	E2−1	2		177 347.537 (0.004)	33.468	0.039	1	
4	3	E2−1	5	3	3	E2−1	4		177 347.814 (0.004)	33.468	0.067	1	
4	3	E2−1	4	3	3	E2−1	3		177 348.526 (0.004)	33.468	0.052	1	
4	3	E1+1		3	3	E1+1			177 348.086 (0.004)*	33.187	0.165	3	
4	3	E1+1	3	3	3	E1+1	2		177 347.636 (0.004)	33.187	0.039	3	
4	3	E1+1	5	3	3	E1+1	4		177 347.913 (0.004)	33.187	0.067	3	
4	3	E1+1	4	3	3	E1+1	3		177 348.625 (0.004)	33.187	0.052	3	
4	3	A2		3	3	A1			177 348.237 (0.004)*	33.501	0.165	1	
4	3	A2	3	3	3	A1	2		177 347.787 (0.004)	33.501	0.039	1	
4	3	A2	5	3	3	A1	4		177 348.064 (0.004)	33.501	0.067	1	
4	3	A2	4	3	3	A1	3		177 348.777 (0.004)	33.501	0.052	1	
4	3	A1		3	3	A2			177 348.458 (0.004)*	33.501	0.165	1	
4	3	A1	3	3	3	A2	2		177 348.008 (0.004)	33.501	0.039	1	
4	3	A1	5	3	3	A2	4		177 348.285 (0.004)	33.501	0.067	1	
4	3	A1	4	3	3	A2	3		177 348.997 (0.004)	33.501	0.052	1	
4	2	E1+1		3	2	E1+1			177 368.216 (0.004)*	20.010	0.283	3	
4	2	E1+1	3	3	2	E1+1	2		177 368.048 (0.004)	20.010	0.067	3	
4	2	E1+1	5	3	2	E1+1	4		177 368.131 (0.004)	20.010	0.115	3	
4	2	E1+1	4	3	2	E1+1	3		177 368.451 (0.004)	20.010	0.088	3	
4	2	E2−1		3	2	E2−1			177 369.524 (0.004)*	19.911	0.283	1	
4	2	E2−1	3	3	2	E2−1	2		177 369.356 (0.004)	19.911	0.067	1	
4	2	E2−1	5	3	2	E2−1	4		177 369.439 (0.004)	19.911	0.115	1	
4	2	E2−1	4	3	2	E2−1	3		177 369.758 (0.004)	19.911	0.088	1	
4	2	E2+1		3	2	E2+1			177 369.820 (0.004)*	19.853	0.282	1	
4	2	E2+1	3	3	2	E2+1	2		177 369.651 (0.004)	19.853	0.067	1	
4	2	E2+1	5	3	2	E2+1	4		177 369.735 (0.004)	19.853	0.115	1	
4	2	E2+1	4	3	2	E2+1	3		177 370.056 (0.004)	19.853	0.088	1	
4	2	E1−1		3	2	E1−1			177 371.151 (0.004)*	19.717	0.282	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
4	2	E1−1	3	3	2	E1−1	2		177 370.982 (0.004)	19.717	0.067	3	
4	2	E1−1	5	3	2	E1−1	4		177 371.066 (0.004)	19.717	0.115	3	
4	2	E1−1	4	3	2	E1−1	3		177 371.386 (0.004)	19.717	0.088	3	
4	2	A1		3	2	A2			177 403.949 (0.004)*	20.082	0.283	1	
4	2	A1	3	3	2	A2	2		177 403.785 (0.004)	20.082	0.067	1	
4	2	A1	5	3	2	A2	4		177 403.867 (0.004)	20.082	0.115	1	
4	2	A1	4	3	2	A2	3		177 404.177 (0.004)	20.082	0.088	1	
4	2	B1		3	2	B2			177 404.330 (0.004)*	20.120	0.283	3	
4	2	B1	3	3	2	B2	2		177 404.166 (0.004)	20.120	0.067	3	
4	2	B1	5	3	2	B2	4		177 404.248 (0.004)	20.120	0.115	3	
4	2	B1	4	3	2	B2	3		177 404.557 (0.004)	20.120	0.088	3	
26	9	E2−1		27	8	E2−1			177 698.831 (0.054)*	731.295	4.986	1	
29	1	E2+1		28	4	E2+1			177 967.640 (0.454)*	643.324	0.070	1	
9	1	E2+1		8	2	E2+1			178 010.946 (0.009)*	64.223	0.779	1	
9	1	E2+1	9	8	2	E2+1	8		178 010.351 (0.009)	64.223	0.256	1	
9	1	E2+1	10	8	2	E2+1	9		178 011.198 (0.009)	64.223	0.287	1	
9	1	E2+1	8	8	2	E2+1	7		178 011.303 (0.009)	64.223	0.229	1	
29	1	B2		28	4	B1			178 199.016 (0.655)*	643.279	0.149	3	
4	1	E2+1		3	1	E2+1			178 219.105 (0.005)*	12.039	0.349	1	
4	1	E2+1	4	3	1	E2+1	3		178 219.026 (0.005)	12.039	0.109	1	
4	1	E2+1	5	3	1	E2+1	4		178 219.129 (0.005)	12.039	0.142	1	
4	1	E2+1	3	3	1	E2+1	2		178 219.174 (0.005)	12.039	0.083	1	
13	2	E2−1		12	3	E2+1			178 437.114 (0.016)*	139.870	1.293	1	
26	9	A1		27	8	A2			178 439.102 (0.027)*	731.129	4.988	1	
26	9	A2		27	8	A1			178 439.102 (0.027)*	731.129	4.988	1	
13	2	B2		12	3	B1			178 734.682 (0.016)*	140.083	3.417	3	
4	1	E1+1		3	1	E1+1			178 747.099 (0.005)*	12.023	0.348	3	
4	1	E1+1	4	3	1	E1+1	3		178 747.054 (0.005)	12.023	0.109	3	
4	1	E1+1	5	3	1	E1+1	4		178 747.118 (0.005)	12.023	0.142	3	
4	1	E1+1	3	3	1	E1+1	2		178 747.123 (0.005)	12.023	0.083	3	
15	6	E1+1		16	5	E1+1			179 051.725 (0.019)*	268.953	2.712	3	
4	1	A1		3	1	A2			179 086.829 (0.005)*	11.977	0.354	1	
4	1	A1	3	3	1	A2	2		179 086.757 (0.005)	11.977	0.084	1	
4	1	A1	5	3	1	A2	4		179 086.814 (0.005)	11.977	0.144	1	
4	1	A1	4	3	1	A2	3		179 086.893 (0.005)	11.977	0.111	1	
26	9	E1−1		27	8	E1−1			179 091.627 (0.025)*	731.333	4.981	3	
4	1	B1		3	1	B2			179 092.496 (0.005)*	11.818	0.353	3	
4	1	B1	3	3	1	B2	2		179 092.424 (0.005)	11.818	0.084	3	
4	1	B1	5	3	1	B2	4		179 092.482 (0.005)	11.818	0.144	3	
4	1	B1	4	3	1	B2	3		179 092.560 (0.005)	11.818	0.110	3	
6	0	B1		5	1	B2			179 488.052 (0.012)*	25.259	3.662	3	
6	0	B1	5	5	1	B2	4		179 487.481 (0.012)	25.259	0.999	3	
6	0	B1	7	5	1	B2	6		179 487.700 (0.012)	25.259	1.409	3	
6	0	B1	6	5	1	B2	5		179 488.939 (0.012)	25.259	1.187	3	
17	3	E1+1		16	4	E1+1			179 865.917 (0.012)*	244.584	4.281	3	
18	2	B2		18	1	B1			179 910.977 (0.019)*	257.799	18.382	3	
26	9	E2+1		27	8	E2+1			180 150.874 (0.034)*	731.121	4.991	1	
2	1	A1		1	0	A2			180 390.580 (0.009)*	1.479	2.374	1	
2	1	A1	2	1	0	A2	1		180 389.520 (0.009)	1.479	0.594	1	
2	1	A1	2	1	0	A2	2		180 390.244 (0.009)	1.479	0.198	1	
2	1	A1	1	1	0	A2	1		180 390.433 (0.009)	1.479	0.198	1	
2	1	A1	3	1	0	A2	2		180 390.831 (0.009)	1.479	1.108	1	
2	1	A1	1	1	0	A2	0		180 392.243 (0.009)	1.479	0.264	1	
6	0	E2+1		5	1	E2+1			180 392.476 (0.007)*	25.426	3.181	1	
6	0	E2+1	5	5	1	E2+1	4		180 392.034 (0.007)	25.426	0.868	1	
6	0	E2+1	7	5	1	E2+1	6		180 392.198 (0.007)	25.426	1.224	1	
6	0	E2+1	6	5	1	E2+1	5		180 393.171 (0.007)	25.426	1.031	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
4	3	A1		5	2	A2			180 426.925 (0.011)*	33.398	0.473	1	
4	3	A1	4	5	2	A2	5		180 426.396 (0.011)	33.398	0.151	1	
4	3	A1	5	5	2	A2	6		180 427.124 (0.011)	33.398	0.186	1	
4	3	A1	3	5	2	A2	4		180 427.288 (0.011)	33.398	0.123	1	
13	2	A2		12	3	A1			180 493.669 (0.018)*	139.984	3.428	1	
16	2	E1−1		16	1	E1+1			180 589.048 (0.016)*	205.860	14.995	3	
4	3	A2		5	2	A1			180 669.194 (0.011)*	33.390	0.473	1	
4	3	A2	4	5	2	A1	5		180 668.609 (0.011)	33.390	0.151	1	
4	3	A2	5	5	2	A1	6		180 669.414 (0.011)	33.390	0.186	1	
4	3	A2	3	5	2	A1	4		180 669.594 (0.011)	33.390	0.123	1	
15	6	E2+1		16	5	E2+1			180 717.651 (0.019)*	268.991	2.710	1	
15	6	E1−1		16	5	E1−1			181 218.144 (0.019)*	268.755	2.714	3	
22	0	E1+1		21	3	E1+1			181 460.449 (0.118)*	365.920	0.047	3	
17	2	A1		17	1	A2			181 460.553 (0.020)*	231.160	16.976	1	
28	6	E2−1		27	7	E2−1			181 521.718 (0.025)*	690.800	6.570	1	
17	3	E2+1		16	4	E2−1			182 071.953 (0.017)*	244.703	0.305	1	
15	6	B2		16	5	B1			182 303.671 (0.016)*	268.780	2.714	3	
15	6	B1		16	5	B2			182 303.891 (0.016)*	268.780	2.714	3	
4	3	B1		5	2	B2			182 317.154 (0.010)*	33.435	0.472	3	
4	3	B1	4	5	2	B2	5		182 316.625 (0.010)	33.435	0.151	3	
4	3	B1	5	5	2	B2	6		182 317.352 (0.010)	33.435	0.186	3	
4	3	B1	3	5	2	B2	4		182 317.516 (0.010)	33.435	0.122	3	
4	3	B2		5	2	B1			182 562.487 (0.010)*	33.427	0.472	3	
4	3	B2	4	5	2	B1	5		182 561.902 (0.010)	33.427	0.151	3	
4	3	B2	5	5	2	B1	6		182 562.707 (0.010)	33.427	0.186	3	
4	3	B2	3	5	2	B1	4		182 562.887 (0.010)	33.427	0.122	3	
10	1	E1−1		9	2	E1−1			183 148.225 (0.011)*	77.409	1.767	3	
10	1	E1−1	9	9	2	E1−1	8		183 147.702 (0.011)	77.409	0.527	3	
10	1	E1−1	11	9	2	E1−1	10		183 147.826 (0.011)	77.409	0.645	3	
10	1	E1−1	10	9	2	E1−1	9		183 149.136 (0.011)	77.409	0.583	3	
9	1	E1+1		8	2	E1−1			183 466.051 (0.010)*	64.095	1.024	3	
9	1	E1+1	9	8	2	E1−1	8		183 465.466 (0.010)	64.095	0.337	3	
9	1	E1+1	10	8	2	E1−1	9		183 466.298 (0.010)	64.095	0.377	3	
9	1	E1+1	8	8	2	E1−1	7		183 466.400 (0.010)	64.095	0.301	3	
16	2	E2+1		16	1	E2+1			183 881.486 (0.014)*	205.793	15.600	1	
24	5	E2−1		23	6	E2−1			183 978.440 (0.019)*	505.009	5.683	1	
4	3	E2+1		5	2	E2+1			184 118.965 (0.012)*	33.165	0.470	1	
4	3	E2+1	4	5	2	E2+1	5		184 118.405 (0.012)	33.165	0.150	1	
4	3	E2+1	5	5	2	E2+1	6		184 119.176 (0.012)	33.165	0.185	1	
4	3	E2+1	3	5	2	E2+1	4		184 119.349 (0.012)	33.165	0.122	1	
4	3	E2−1		5	2	E2−1			184 679.146 (0.011)*	33.224	0.470	1	
4	3	E2−1	4	5	2	E2−1	5		184 678.595 (0.011)	33.224	0.150	1	
4	3	E2−1	5	5	2	E2−1	6		184 679.353 (0.011)	33.224	0.185	1	
4	3	E2−1	3	5	2	E2−1	4		184 679.524 (0.011)	33.224	0.122	1	
17	3	E2−1		16	4	E2−1			184 788.729 (0.013)*	244.703	3.983	1	
28	6	B2		27	7	B1			184 948.472 (0.024)*	690.939	6.557	3	
28	6	B1		27	7	B2			184 949.697 (0.024)*	690.939	6.557	3	
13	2	E1+1		12	3	E1+1			185 425.290 (0.013)*	139.668	2.826	3	
17	3	E1−1		16	4	E1−1			186 769.707 (0.014)*	244.734	4.264	3	
15	2	E1−1		15	1	E1+1			186 794.123 (0.016)*	182.031	13.442	3	
19	1	E2+1		19	0	E2+1			186 981.325 (0.089)*	279.909	0.057	1	
17	2	B1		17	1	B2			186 993.002 (0.020)*	231.011	16.943	3	
28	6	A2		27	7	A1			187 050.047 (0.022)*	690.966	6.547	1	
28	6	A1		27	7	A2			187 051.267 (0.022)*	690.966	6.547	1	
22	8	A1		23	7	A2			187 323.671 (0.035)*	540.469	4.112	1	
22	8	A2		23	7	A1			187 323.672 (0.035)*	540.469	4.112	1	
22	8	E1+1		23	7	E1+1			187 339.468 (0.025)*	540.284	4.117	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
16	2	A2		16	1	A1			188 210.220 (0.021)*	205.851	15.611	1	
26	9	E1+1		27	8	E1+1			188 256.359 (0.030)*	730.947	4.993	3	
11	5	E1−1		12	4	E1−1			188 830.715 (0.016)*	158.996	1.841	3	
17	3	A1		16	4	A2			189 748.896 (0.014)*	244.540	4.286	1	
11	5	A2		12	4	A1			189 797.822 (0.014)*	158.802	1.843	1	
11	5	A1		12	4	A2			189 799.855 (0.014)*	158.802	1.843	1	
17	3	E2+1		16	4	E2+1			190 280.580 (0.012)*	244.429	3.990	1	
15	2	E2+1		15	1	E2+1			190 283.041 (0.014)*	181.965	14.306	1	
6	0	E1+1		5	1	E1−1			190 844.702 (0.007)*	24.974	0.119	3	
6	0	E1+1	6	5	1	E1−1	5		190 844.126 (0.007)	24.974	0.039	3	
6	0	E1+1	7	5	1	E1−1	6		190 844.913 (0.007)	24.974	0.046	3	
6	0	E1+1	5	5	1	E1−1	4		190 845.107 (0.007)	24.974	0.033	3	
15	6	A2		16	5	A1			190 967.278 (0.017)*	268.594	2.715	1	
15	6	A1		16	5	A2			190 967.501 (0.017)*	268.594	2.715	1	
17	3	A2		16	4	A1			191 127.106 (0.015)*	244.540	4.290	1	
28	6	E1−1		27	7	E1−1			191 435.414 (0.029)*	690.654	6.570	3	
28	6	E1+1		27	7	E1+1			191 442.323 (0.024)*	690.781	6.552	3	
22	8	B1		23	7	B2			192 313.089 (0.023)*	540.441	4.107	3	
22	8	B2		23	7	B1			192 313.091 (0.023)*	540.441	4.107	3	
14	2	E1−1		14	1	E1+1			192 622.389 (0.016)*	159.683	11.863	3	
17	3	E2−1		16	4	E2+1			192 997.356 (0.012)*	244.429	0.307	1	
4	3	E1−1		5	2	E1−1			193 623.457 (0.011)*	33.030	0.473	3	
4	3	E1−1	4	5	2	E1−1	5		193 622.901 (0.011)	33.030	0.151	3	
4	3	E1−1	5	5	2	E1−1	6		193 623.666 (0.011)	33.030	0.186	3	
4	3	E1−1	3	5	2	E1−1	4		193 623.838 (0.011)	33.030	0.123	3	
16	2	B2		16	1	B1			193 795.822 (0.021)*	205.701	15.584	3	
23	0	A2		22	3	A1			194 297.280 (0.121)*	398.871	0.176	1	
11	5	E2−1		12	4	E2−1			194 298.321 (0.016)*	158.965	1.839	1	
15	2	A1		15	1	A2			194 662.131 (0.021)*	182.021	14.322	1	
21	4	E2+1		20	5	E2+1			195 006.356 (0.015)*	378.322	5.178	1	
14	2	E2+1		14	1	E2+1			196 353.593 (0.013)*	159.618	13.078	1	
23	0	B2		22	3	B1			196 956.921 (0.119)*	398.961	0.190	3	
22	8	E2−1		23	7	E2−1			197 298.273 (0.028)*	540.301	4.112	1	
22	8	E2+1		23	7	E2+1			197 904.739 (0.029)*	540.109	4.116	1	
29	10	E1−1		30	9	E1−1			197 950.147 (0.090)*	905.353	5.503	3	
13	2	E1−1		13	1	E1+1			198 046.158 (0.016)*	138.818	10.247	3	
6	0	E2+1		5	1	E2−1			198 133.557 (0.008)*	24.834	0.469	1	
6	0	E2+1	6	5	1	E2−1	5		198 133.126 (0.008)	24.834	0.152	1	
6	0	E2+1	7	5	1	E2−1	6		198 133.712 (0.008)	24.834	0.181	1	
6	0	E2+1	5	5	1	E2−1	4		198 133.865 (0.008)	24.834	0.128	1	
27	4	A1		28	1	A2			198 161.371 (0.489)*	595.446	0.019	1	
17	3	B1		16	4	B2			198 219.371 (0.017)*	244.354	4.294	3	
21	4	B1		20	5	B2			199 002.524 (0.015)*	378.111	5.185	3	
21	4	B2		20	5	B1			199 172.516 (0.015)*	378.111	5.185	3	
28	6	E2+1		27	7	E2+1			199 277.046 (0.031)*	690.609	6.562	1	
11	5	E1+1		12	4	E1+1			199 302.686 (0.016)*	158.845	1.840	3	
18	7	E2+1		19	6	E2+1			199 450.313 (0.023)*	378.429	3.238	1	
17	3	B2		16	4	B1			199 568.277 (0.016)*	244.355	4.299	3	
19	2	E1+1		19	1	E1+1			199 888.126 (0.100)*	286.213	0.244	3	
20	2	E1+1		20	1	E1+1			200 130.519 (0.120)*	315.945	0.182	3	
15	2	B1		15	1	B2		200 294.510 (0.060)	200 294.423 (0.021)*	181.870	14.300	3	1
18	2	E1+1		18	1	E1+1			200 339.917 (0.083)*	257.953	0.332	3	
20	1	E2+1		20	0	E2+1			200 640.556 (0.117)*	309.186	0.050	1	
21	4	E1+1		20	5	E1+1			200 691.291 (0.017)*	378.284	5.170	3	
14	2	A2		14	1	A1			200 793.602 (0.021)*	159.672	13.100	1	
11	5	B2		12	4	B1			201 077.784 (0.015)*	158.614	1.842	3	
11	5	B1		12	4	B2			201 079.863 (0.015)*	158.614	1.842	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
23	0	E1+1		22	3	E1−1			201 103.974 (0.129)*	398.865	0.162	3	
21	2	E1+1		21	1	E1+1			201 120.235 (0.144)*	347.147	0.138	3	
7	4	B2		8	3	B1			201 390.724 (0.013)*	77.968	0.986	3	
7	4	B2	7	8	3	B1	8		201 390.445 (0.013)	77.968	0.323	3	
7	4	B2	8	8	3	B1	9		201 390.842 (0.013)	77.968	0.367	3	
7	4	B2	6	8	3	B1	7		201 390.890 (0.013)	77.968	0.285	3	
7	4	B1		8	3	B2			201 407.296 (0.013)*	77.968	0.986	3	
7	4	B1	7	8	3	B2	8		201 407.015 (0.013)	77.968	0.323	3	
7	4	B1	8	8	3	B2	9		201 407.415 (0.013)	77.968	0.367	3	
7	4	B1	6	8	3	B2	7		201 407.464 (0.013)	77.968	0.285	3	
20	4	B1		21	1	B2			201 427.226 (0.153)*	347.004	0.022	3	
17	2	E1+1		17	1	E1+1			201 429.270 (0.068)*	231.168	0.459	3	
13	2	E2+1		13	1	E2+1			202 068.859 (0.013)*	138.754	11.908	1	
20	4	A1		21	1	A2			202 662.247 (0.149)*	347.145	0.025	1	
3	1	E2−1		2	0	E2+1			202 791.863 (0.009)*	4.841	0.938	1	
3	1	E2−1	4	2	0	E2+1	3		202 791.784 (0.009)	4.841	0.402	1	
3	1	E2−1	2	2	0	E2+1	1		202 791.865 (0.009)	4.841	0.188	1	
3	1	E2−1	3	2	0	E2+1	2		202 792.014 (0.009)	4.841	0.278	1	
22	8	E1−1		23	7	E1−1			202 903.649 (0.028)*	540.152	4.115	3	
22	2	E1+1		22	1	E1+1			202 906.800 (0.171)*	379.815	0.106	3	
12	2	E1−1		12	1	E1+1			203 050.982 (0.016)*	119.437	8.625	3	
16	2	E1+1		16	1	E1+1			203 096.324 (0.055)*	205.860	0.641	3	
14	2	E1−1		13	3	E1−1			204 807.794 (0.015)*	159.277	2.901	3	
29	10	A1		30	9	A2			205 110.933 (0.071)*	905.127	5.510	1	
29	10	A2		30	9	A1			205 110.933 (0.071)*	905.127	5.510	1	
11	5	E2+1		12	4	E2+1			205 147.457 (0.017)*	158.689	1.841	1	
15	2	E1+1		15	1	E1+1			205 278.048 (0.044)*	182.031	0.899	3	
29	10	E2−1		30	9	E2−1			205 291.212 (0.066)*	905.270	5.499	1	
23	0	E2+1		22	3	E2−1			205 426.622 (0.122)*	398.810	0.206	1	
23	2	E1+1		23	1	E1+1			205 536.150 (0.203)*	413.948	0.083	3	
21	4	E2−1		20	5	E2−1			205 721.725 (0.019)*	378.233	5.166	1	
11	1	B1		10	2	B2			206 399.779 (0.020)*	92.553	2.867	3	
14	2	B2		14	1	B1			206 466.776 (0.020)*	159.519	13.083	3	
13	2	A1		13	1	A2			206 584.764 (0.020)*	138.806	11.940	1	
18	7	E1−1		19	6	E1−1			207 317.291 (0.024)*	378.210	3.241	3	
12	2	E2+1		12	1	E2+1		207 405.161 (0.060)	207 405.217 (0.012)*	119.374	10.785	1	1
18	7	E1+1		19	6	E1+1			207 579.603 (0.022)*	378.336	3.236	3	
11	2	E1−1		11	1	E1+1			207 641.431 (0.015)*	101.542	7.072	3	
14	2	E1+1		14	1	E1+1			207 907.342 (0.035)*	159.683	1.253	3	
25	5	A1		24	6	A2			208 770.585 (0.021)*	540.792	6.070	1	
25	5	A2		24	6	A1			208 789.031 (0.021)*	540.792	6.070	1	
24	2	E1+1		24	1	E1+1			209 050.696 (0.241)*	449.542	0.066	3	
14	2	E2+1		13	3	E2−1			209 664.168 (0.018)*	159.174	1.406	1	
7	0	A2		6	1	A1			209 942.420 (0.015)*	34.376	4.303	1	
7	0	A2	6	6	1	A1	5		209 941.868 (0.015)	34.376	1.214	1	
7	0	A2	8	6	1	A1	7		209 942.055 (0.015)	34.376	1.625	1	
7	0	A2	7	6	1	A1	6		209 943.309 (0.015)	34.376	1.405	1	
7	4	E2+1		8	3	E2+1			209 949.032 (0.013)*	77.758	0.986	1	
7	4	E2+1	7	8	3	E2+1	8		209 948.754 (0.013)	77.758	0.323	1	
7	4	E2+1	8	8	3	E2+1	9		209 949.151 (0.013)	77.758	0.367	1	
7	4	E2+1	6	8	3	E2+1	7		209 949.199 (0.013)	77.758	0.285	1	
21	4	A1		20	5	A2			209 962.331 (0.014)*	377.927	5.188	1	
7	4	A2		8	3	A1			210 061.153 (0.013)*	77.868	0.985	1	
7	4	A2	7	8	3	A1	8		210 060.875 (0.013)	77.868	0.323	1	
7	4	A2	8	8	3	A1	9		210 061.271 (0.013)	77.868	0.367	1	
7	4	A2	6	8	3	A1	7		210 061.319 (0.013)	77.868	0.285	1	
7	4	A1		8	3	A2			210 078.088 (0.013)*	77.868	0.985	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	4	A1	7	8	3	A2	8		210 077.807 (0.013)	77.868	0.323	1	
7	4	A1	8	8	3	A2	9		210 078.206 (0.013)	77.868	0.367	1	
7	4	A1	6	8	3	A2	7		210 078.255 (0.013)	77.868	0.285	1	
21	4	A2		20	5	A1			210 128.643 (0.014)*	377.927	5.189	1	
29	10	E1+1		30	9	E1+1			210 298.016 (0.070)*	905.276	5.499	3	
13	2	E1+1		13	1	E1+1			210 909.957 (0.027)*	138.818	1.704	3	
21	4	E1−1		20	5	E1−1			211 029.308 (0.022)*	378.087	5.175	3	
3	1	E1−1		2	0	E1+1			211 129.971 (0.008)*	4.737	0.436	3	
3	1	E1−1	2	2	0	E1+1	1		211 129.780 (0.008)	4.737	0.087	3	
3	1	E1−1	4	2	0	E1+1	3		211 129.811 (0.008)	4.737	0.187	3	
3	1	E1−1	3	2	0	E1+1	2		211 130.363 (0.008)	4.737	0.129	3	
10	2	E1−1		10	1	E1+1			211 839.029 (0.014)*	85.135	5.677	3	
10	2	E1−1	9	10	1	E1+1	9		211 838.675 (0.014)	85.135	1.695	3	
10	2	E1−1	11	10	1	E1+1	11		211 838.763 (0.014)	85.135	2.055	3	
10	2	E1−1	10	10	1	E1+1	10		211 839.639 (0.014)	85.135	1.858	3	
18	7	A1		19	6	A2			211 933.711 (0.026)*	378.374	3.235	1	
18	7	A2		19	6	A1			211 933.722 (0.026)*	378.374	3.235	1	
11	1	E2−1		10	2	E2−1			211 964.699 (0.013)*	92.442	0.324	1	
12	2	A2		12	1	A1		212 018.341 (0.060)	212 018.335 (0.019)*	119.424	10.834	1	1
14	2	E2+1		13	3	E2+1			212 028.958 (0.018)*	159.095	2.363	1	
11	1	A1		10	2	A2			212 272.455 (0.020)*	92.516	2.863	1	
13	2	B1		13	1	B2			212 293.620 (0.020)*	138.652	11.927	3	
11	2	E2+1		11	1	E2+1			212 338.485 (0.011)*	101.481	9.693	1	
29	10	E2+1		30	9	E2+1			212 456.445 (0.111)*	905.181	5.504	1	
11	1	E1−1		10	2	E1+1			212 685.476 (0.013)*	92.513	0.754	3	
14	2	B2		13	3	B1			213 053.137 (0.022)*	159.300	3.754	3	
25	9	B2		26	8	B1			213 151.895 (0.036)*	691.446	4.635	3	
25	9	B1		26	8	B2			213 151.895 (0.036)*	691.446	4.635	3	
10	1	B1		9	2	B2			213 184.172 (0.018)*	77.852	3.364	3	
10	1	B1	10	9	2	B2	9		213 183.682 (0.018)	77.852	1.110	3	
10	1	B1	11	9	2	B2	10		213 184.382 (0.018)	77.852	1.228	3	
10	1	B1	9	9	2	B2	8		213 184.459 (0.018)	77.852	1.003	3	
25	2	E1+1		25	1	E1+1			213 489.319 (0.284)*	486.594	0.054	3	
23	0	E1+1		22	3	E1+1			213 722.198 (0.152)*	398.444	0.043	3	
7	4	E1−1		8	3	E1−1			213 729.052 (0.014)*	77.940	0.985	3	
7	4	E1−1	7	8	3	E1−1	8		213 728.772 (0.014)	77.940	0.323	3	
7	4	E1−1	8	8	3	E1−1	9		213 729.170 (0.014)	77.940	0.367	3	
7	4	E1−1	6	8	3	E1−1	7		213 729.218 (0.014)	77.940	0.284	3	
18	7	B1		19	6	B2			214 135.095 (0.027)*	378.273	3.237	3	
18	7	B2		19	6	B1			214 135.107 (0.027)*	378.273	3.237	3	
12	2	E1+1		12	1	E1+1			214 198.947 (0.021)*	119.437	2.217	3	
30	1	E2+1		29	4	E2−1			214 422.303 (0.423)*	686.402	0.123	1	
29	10	B1		30	9	B2			214 587.691 (0.060)*	904.950	5.511	3	
29	10	B2		30	9	B1			214 587.691 (0.060)*	904.950	5.511	3	
12	2	E2−1		12	1	E2+1			214 760.217 (0.026)*	119.374	0.025	1	
14	2	A2		13	3	A1			214 921.289 (0.024)*	159.201	3.764	1	
30	1	E1+1		29	4	E1−1			214 990.901 (0.413)*	686.434	0.146	3	
3	1	B2		2	0	B1			215 108.726 (0.009)*	4.643	3.156	3	
3	1	B2	3	2	0	B1	2		215 107.812 (0.009)	4.643	0.935	3	
3	1	B2	4	2	0	B1	3		215 109.002 (0.009)	4.643	1.353	3	
3	1	B2	2	2	0	B1	1		215 109.580 (0.009)	4.643	0.631	3	
21	1	E2+1		21	0	E2+1			215 143.053 (0.150)*	339.905	0.045	1	
14	6	E2−1		15	5	E2−1			215 240.692 (0.022)*	245.259	2.368	1	
9	2	E1−1		9	1	E1+1			215 670.049 (0.012)*	70.215	4.494	3	
9	2	E1−1	8	9	1	E1+1	8		215 669.694 (0.012)	70.215	1.324	3	
9	2	E1−1	10	9	1	E1+1	10		215 669.790 (0.012)	70.215	1.639	3	
9	2	E1−1	9	9	1	E1+1	9		215 670.654 (0.012)	70.215	1.465	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
3	1	E2+1		2	0	E2+1			215 787.595 (0.007)*	4.841	2.218	1	
3	1	E2+1	3	2	0	E2+1	2		215 787.131 (0.007)	4.841	0.657	1	
3	1	E2+1	4	2	0	E2+1	3		215 787.721 (0.007)	4.841	0.951	1	
3	1	E2+1	2	2	0	E2+1	1		215 788.089 (0.007)	4.841	0.444	1	
7	4	E2−1		8	3	E2−1			215 890.887 (0.014)*	77.835	0.985	1	
7	4	E2−1	7	8	3	E2−1	8		215 890.607 (0.014)	77.835	0.323	1	
7	4	E2−1	8	8	3	E2−1	9		215 891.005 (0.014)	77.835	0.367	1	
7	4	E2−1	6	8	3	E2−1	7		215 891.053 (0.014)	77.835	0.285	1	
11	1	E2−1		10	2	E2+1			215 927.863 (0.015)*	92.309	2.550	1	
14	2	E1−1		13	3	E1+1			216 290.465 (0.015)*	158.894	0.876	3	
10	2	E2+1		10	1	E2+1		216 842.416 (0.060)	216 842.498 (0.011)*	85.076	8.607	1	1
10	2	E2+1	9	10	1	E2+1	9		216 842.121 (0.011)	85.076	2.570	1	
10	2	E2+1	11	10	1	E2+1	11		216 842.215 (0.011)	85.076	3.116	1	
10	2	E2+1	10	10	1	E2+1	10		216 843.150 (0.011)	85.076	2.817	1	
11	2	A1		11	1	A2		217 079.400 (0.060)	217 079.373 (0.017)*	101.528	9.778	1	1
25	5	B1		24	6	B2			217 134.164 (0.022)*	540.693	6.066	3	
25	5	B2		24	6	B1			217 152.337 (0.023)*	540.693	6.066	3	
18	7	E2−1		19	6	E2−1			217 625.145 (0.027)*	378.016	3.241	1	
11	2	E1+1		11	1	E1+1			217 669.997 (0.016)*	101.542	2.711	3	
3	3	E1+1		4	2	E1+1			217 670.157 (0.013)*	25.926	0.197	3	
3	3	E1+1	3	4	2	E1+1	4		217 669.176 (0.013)	25.926	0.062	3	
3	3	E1+1	4	4	2	E1+1	5		217 670.491 (0.013)	25.926	0.080	3	
3	3	E1+1	2	4	2	E1+1	3		217 670.923 (0.013)	25.926	0.047	3	
11	2	E2−1		11	1	E2+1			217 754.777 (0.021)*	101.481	0.057	1	
12	2	B2		12	1	B1			217 758.226 (0.019)*	119.270	10.825	3	
7	0	E1+1		6	1	E1+1			218 220.928 (0.009)*	34.399	4.206	3	
7	0	E1+1	6	6	1	E1+1	5		218 220.391 (0.009)	34.399	1.186	3	
7	0	E1+1	8	6	1	E1+1	7		218 220.573 (0.009)	34.399	1.589	3	
7	0	E1+1	7	6	1	E1+1	6		218 221.796 (0.009)	34.399	1.374	3	
25	5	E1−1		24	6	E1−1			218 399.312 (0.025)*	540.627	6.065	3	
3	1	E1+1		2	0	E1+1		218 408.868 (0.100)	218 408.878 (0.007)*	4.737	2.721	3	11
3	1	E1+1	3	2	0	E1+1	2		218 408.172 (0.007)	4.737	0.806	3	
3	1	E1+1	4	2	0	E1+1	3		218 409.084 (0.007)	4.737	1.166	3	
3	1	E1+1	2	2	0	E1+1	1		218 409.564 (0.007)	4.737	0.544	3	
25	5	E2+1		24	6	E2+1			218 832.943 (0.022)*	540.845	6.047	1	
26	2	E1+1		26	1	E1+1			218 887.180 (0.335)*	525.100	0.044	3	
10	1	A1		9	2	A2			219 005.088 (0.017)*	77.814	3.348	1	
10	1	A1	10	9	2	A2	9		219 004.596 (0.017)	77.814	1.105	1	
10	1	A1	11	9	2	A2	10		219 005.299 (0.017)	77.814	1.222	1	
10	1	A1	9	9	2	A2	8		219 005.376 (0.017)	77.814	0.999	1	
8	2	E1−1		8	1	E1+1			219 151.222 (0.011)*	56.785	3.519	3	
8	2	E1−1	7	8	1	E1+1	7		219 150.864 (0.011)	56.785	1.019	3	
8	2	E1−1	9	8	1	E1+1	9		219 150.970 (0.011)	56.785	1.295	3	
8	2	E1−1	8	8	1	E1+1	8		219 151.818 (0.011)	56.785	1.141	3	
5	1	B1		4	1	B2			219 440.096 (0.005)*	17.498	0.452	3	
5	1	B1	6	4	1	B2	5		219 440.056 (0.005)	17.498	0.178	3	
5	1	B1	5	4	1	B2	4		219 440.131 (0.005)	17.498	0.145	3	
5	1	B1	4	4	1	B2	3		219 440.133 (0.005)	17.498	0.117	3	
5	1	A1		4	1	A2			219 440.497 (0.005)*	17.657	0.453	1	
5	1	A1	6	4	1	A2	5		219 440.457 (0.005)	17.657	0.178	1	
5	1	A1	5	4	1	A2	4		219 440.532 (0.005)	17.657	0.145	1	
5	1	A1	4	4	1	A2	3		219 440.534 (0.005)	17.657	0.117	1	
30	1	E1+1		29	4	E1+1			219 502.447 (0.510)*	686.283	0.062	3	
5	1	E1−1		4	1	E1−1			219 650.030 (0.005)*	17.647	0.450	3	
5	1	E1−1	6	4	1	E1−1	5		219 649.973 (0.005)	17.647	0.177	3	
5	1	E1−1	4	4	1	E1−1	3		219 650.030 (0.005)	17.647	0.117	3	
5	1	E1−1	5	4	1	E1−1	4		219 650.116 (0.005)	17.648	0.144	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
18	3	E1+1		17	4	E1−1			220 082.856 (0.021)*	269.861	0.032	3	
14	2	E1+1		13	3	E1−1			220 092.746 (0.018)*	159.277	0.907	3	
5	1	E2−1		4	1	E2−1			220 158.136 (0.005)*	17.491	0.448	1	
5	1	E2−1	6	4	1	E2−1	5		220 158.059 (0.005)	17.491	0.176	1	
5	1	E2−1	4	4	1	E2−1	3		220 158.084 (0.005)	17.491	0.116	1	
5	1	E2−1	5	4	1	E2−1	4		220 158.283 (0.005)	17.491	0.143	1	
30	1	A1		29	4	A2			220 419.557 (0.755)*	686.278	0.195	1	
25	5	E1+1		24	6	E1+1			220 449.395 (0.024)*	540.754	6.059	3	
7	4	E1+1		8	3	E1+1			220 760.509 (0.013)*	77.554	0.986	3	
7	4	E1+1	7	8	3	E1+1	8		220 760.230 (0.013)	77.554	0.323	3	
7	4	E1+1	8	8	3	E1+1	9		220 760.627 (0.013)	77.554	0.367	3	
7	4	E1+1	6	8	3	E1+1	7		220 760.675 (0.013)	77.554	0.285	3	
10	2	E2−1		10	1	E2+1			220 805.663 (0.017)*	85.076	0.125	1	
10	2	E2−1	9	10	1	E2+1	9		220 805.401 (0.017)	85.076	0.037	1	
10	2	E2−1	11	10	1	E2+1	11		220 805.466 (0.017)	85.076	0.045	1	
10	2	E2−1	10	10	1	E2+1	10		220 806.115 (0.017)	85.076	0.041	1	
7	0	B2		6	1	B1		220 826.728 (0.060)	220 826.704 (0.015)*	34.218	4.295	3	1
7	0	B2	6	6	1	B1	5		220 826.152 (0.015)	34.218	1.211	3	
7	0	B2	8	6	1	B1	7		220 826.339 (0.015)	34.218	1.623	3	
7	0	B2	7	6	1	B1	6		220 827.596 (0.015)	34.218	1.403	3	
9	2	E2+1		9	1	E2+1		220 888.349 (0.060)	220 888.443 (0.010)*	70.161	7.496	1	1
9	2	E2+1	8	9	1	E2+1	8		220 888.072 (0.010)	70.161	2.208	1	
9	2	E2+1	10	9	1	E2+1	10		220 888.173 (0.010)	70.161	2.734	1	
9	2	E2+1	9	9	1	E2+1	9		220 889.072 (0.010)	70.161	2.444	1	
10	2	E1+1		10	1	E1+1		221 204.485 (0.060)	221 204.501 (0.013)*	85.135	3.089	3	1
10	2	E1+1	9	10	1	E1+1	9		221 204.194 (0.013)	85.135	0.922	3	
10	2	E1+1	11	10	1	E1+1	11		221 204.271 (0.013)	85.135	1.118	3	
10	2	E1+1	10	10	1	E1+1	10		221 205.032 (0.013)	85.135	1.011	3	
5	0	E2+1		4	0	E2+1		221 527.452 (0.060)	221 527.438 (0.005)*	15.190	0.472	1	1
5	0	E2+1	6	4	0	E2+1	5		221 527.416 (0.005)	15.190	0.186	1	
5	0	E2+1	4	4	0	E2+1	3		221 527.454 (0.005)	15.190	0.122	1	
5	0	E2+1	5	4	0	E2+1	4		221 527.458 (0.005)	15.190	0.151	1	
5	0	E1+1		4	0	E1+1		221 530.466 (0.060)	221 530.404 (0.005)*	15.086	0.470	3	1
5	0	E1+1	6	4	0	E1+1	5		221 530.383 (0.005)	15.086	0.185	3	
5	0	E1+1	4	4	0	E1+1	3		221 530.421 (0.005)	15.086	0.122	3	
5	0	E1+1	5	4	0	E1+1	4		221 530.425 (0.005)	15.086	0.150	3	
5	0	B2		4	0	B1			221 530.481 (0.006)*	14.992	0.473	3	
5	0	B2	6	4	0	B1	5		221 530.460 (0.006)	14.992	0.186	3	
5	0	B2	4	4	0	B1	3		221 530.498 (0.006)	14.992	0.123	3	
5	0	B2	5	4	0	B1	4		221 530.501 (0.006)	14.992	0.151	3	
5	0	A2		4	0	A1		221 536.290 (0.060)	221 536.285 (0.006)*	14.786	0.470	1	1
5	0	A2	6	4	0	A1	5		221 536.264 (0.006)	14.786	0.185	1	
5	0	A2	4	4	0	A1	3		221 536.302 (0.006)	14.786	0.122	1	
5	0	A2	5	4	0	A1	4		221 536.305 (0.006)	14.786	0.150	1	
5	2	B1		4	2	B2			221 651.281 (0.005)*	26.034	0.396	3	
5	2	B1	4	4	2	B2	3		221 651.210 (0.005)	26.034	0.103	3	
5	2	B1	6	4	2	B2	5		221 651.229 (0.005)	26.034	0.156	3	
5	2	B1	5	4	2	B2	4		221 651.405 (0.005)	26.034	0.127	3	
5	2	A1		4	2	A2			221 651.982 (0.005)*	25.996	0.396	1	
5	2	A1	4	4	2	A2	3		221 651.911 (0.005)	25.996	0.103	1	
5	2	A1	6	4	2	A2	5		221 651.929 (0.005)	25.996	0.156	1	
5	2	A1	5	4	2	A2	4		221 652.106 (0.005)	25.996	0.127	1	
5	4	A1		4	4	A2			221 660.320 (0.007)*	58.258	0.170	1	
5	4	A1	4	4	4	A2	3		221 659.960 (0.007)	58.258	0.044	1	
5	4	A1	6	4	4	A2	5		221 660.153 (0.007)	58.258	0.067	1	
5	4	A1	5	4	4	A2	4		221 660.799 (0.007)	58.258	0.054	1	
5	4	A2		4	4	A1			221 660.321 (0.007)*	58.258	0.170	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
5	4	A2	4	4	4	A1	3		221 659.961 (0.007)	58.258	0.044	1	
5	4	A2	6	4	4	A1	5		221 660.154 (0.007)	58.258	0.067	1	
5	4	A2	5	4	4	A1	4		221 660.801 (0.007)	58.258	0.054	1	
5	4	E1+1		4	4	E1+1			221 661.202 (0.007)*	58.301	0.170	3	
5	4	E1+1	4	4	4	E1+1	3		221 660.842 (0.007)	58.301	0.044	3	
5	4	E1+1	6	4	4	E1+1	5		221 661.036 (0.007)	58.301	0.067	3	
5	4	E1+1	5	4	4	E1+1	4		221 661.682 (0.007)	58.301	0.054	3	
5	4	E1−1		4	4	E1−1			221 663.274 (0.006)*	58.452	0.170	3	
5	4	E1−1	4	4	4	E1−1	3		221 662.914 (0.006)	58.452	0.044	3	
5	4	E1−1	6	4	4	E1−1	5		221 663.108 (0.006)	58.452	0.067	3	
5	4	E1−1	5	4	4	E1−1	4		221 663.754 (0.006)	58.452	0.054	3	
5	4	E2+1		4	4	E2+1			221 664.120 (0.006)*	58.143	0.170	1	
5	4	E2+1	4	4	4	E2+1	3		221 663.760 (0.006)	58.143	0.044	1	
5	4	E2+1	6	4	4	E2+1	5		221 663.953 (0.006)	58.143	0.067	1	
5	4	E2+1	5	4	4	E2+1	4		221 664.600 (0.007)	58.143	0.054	1	
5	4	B1		4	4	B2			221 664.314 (0.007)*	58.069	0.170	3	
5	4	B1	4	4	4	B2	3		221 663.954 (0.007)	58.069	0.044	3	
5	4	B1	6	4	4	B2	5		221 664.147 (0.007)	58.069	0.067	3	
5	4	B1	5	4	4	B2	4		221 664.794 (0.007)	58.069	0.054	3	
5	4	B2		4	4	B1			221 664.315 (0.007)*	58.069	0.170	3	
5	4	B2	4	4	4	B1	3		221 663.955 (0.007)	58.069	0.044	3	
5	4	B2	6	4	4	B1	5		221 664.149 (0.007)	58.069	0.067	3	
5	4	B2	5	4	4	B1	4		221 664.795 (0.007)	58.069	0.054	3	
5	4	E2−1		4	4	E2−1			221 664.347 (0.006)*	58.419	0.170	1	
5	4	E2−1	4	4	4	E2−1	3		221 663.987 (0.006)	58.419	0.044	1	
5	4	E2−1	6	4	4	E2−1	5		221 664.180 (0.006)	58.419	0.067	1	
5	4	E2−1	5	4	4	E2−1	4		221 664.827 (0.006)	58.419	0.054	1	
5	3	E2+1		4	3	E2+1			221 680.497 (0.006)*	39.307	0.302	1	
5	3	E2+1	4	4	3	E2+1	3		221 680.308 (0.006)	39.307	0.078	1	
5	3	E2+1	6	4	3	E2+1	5		221 680.398 (0.006)	39.307	0.119	1	
5	3	E2+1	5	4	3	E2+1	4		221 680.765 (0.006)	39.307	0.097	1	
5	3	B1		4	3	B2			221 681.852 (0.005)*	39.517	0.302	3	
5	3	B1	4	4	3	B2	3		221 681.663 (0.005)	39.517	0.078	3	
5	3	B1	6	4	3	B2	5		221 681.753 (0.005)	39.517	0.119	3	
5	3	B1	5	4	3	B2	4		221 682.120 (0.005)	39.517	0.097	3	
5	3	E1−1		4	3	E1−1			221 682.530 (0.005)*	39.488	0.302	3	
5	3	E1−1	4	4	3	E1−1	3		221 682.341 (0.005)	39.488	0.078	3	
5	3	E1−1	6	4	3	E1−1	5		221 682.432 (0.005)	39.488	0.119	3	
5	3	E1−1	5	4	3	E1−1	4		221 682.798 (0.005)	39.488	0.097	3	
5	3	B2		4	3	B1			221 682.607 (0.005)*	39.517	0.302	3	
5	3	B2	4	4	3	B1	3		221 682.418 (0.005)	39.517	0.078	3	
5	3	B2	6	4	3	B1	5		221 682.509 (0.005)	39.517	0.119	3	
5	3	B2	5	4	3	B1	4		221 682.875 (0.005)	39.517	0.097	3	
5	3	E2−1		4	3	E2−1			221 684.363 (0.005)*	39.384	0.301	1	
5	3	E2−1	4	4	3	E2−1	3		221 684.174 (0.005)	39.384	0.078	1	
5	3	E2−1	6	4	3	E2−1	5		221 684.264 (0.005)	39.384	0.119	1	
5	3	E2−1	5	4	3	E2−1	4		221 684.631 (0.005)	39.384	0.096	1	
5	3	A1		4	3	A2			221 684.367 (0.006)*	39.416	0.302	1	
5	3	A1	4	4	3	A2	3		221 684.178 (0.006)	39.416	0.078	1	
5	3	A1	6	4	3	A2	5		221 684.269 (0.006)	39.416	0.119	1	
5	3	A1	5	4	3	A2	4		221 684.635 (0.006)	39.416	0.096	1	
5	3	E1+1		4	3	E1+1			221 684.864 (0.006)*	39.102	0.301	3	
5	3	E1+1	4	4	3	E1+1	3		221 684.675 (0.006)	39.102	0.078	3	
5	3	E1+1	6	4	3	E1+1	5		221 684.766 (0.006)	39.102	0.119	3	
5	3	E1+1	5	4	3	E1+1	4		221 685.132 (0.006)	39.102	0.096	3	
5	3	A2		4	3	A1			221 685.139 (0.006)*	39.416	0.302	1	
5	3	A2	4	4	3	A1	3		221 684.950 (0.006)	39.416	0.078	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
5	3	A2	6	4	3	A1	5		221 685.041 (0.006)	39.416	0.119	1	
5	3	A2	5	4	3	A1	4		221 685.407 (0.006)	39.416	0.096	1	
5	2	E2+1		4	2	E2+1		221 717.585 (0.060)	221 717.567 (0.005)*	25.769	0.395	1	1
5	2	E2+1	4	4	2	E2+1	3		221 717.500 (0.005)	25.769	0.102	1	
5	2	E2+1	6	4	2	E2+1	5		221 717.518 (0.005)	25.769	0.156	1	
5	2	E2+1	5	4	2	E2+1	4		221 717.684 (0.005)	25.769	0.126	1	
5	2	E1+1		4	2	E1+1		221 721.773 (0.060)	221 721.771 (0.005)*	25.926	0.396	3	1
5	2	E1+1	4	4	2	E1+1	3		221 721.706 (0.005)	25.926	0.103	3	
5	2	E1+1	6	4	2	E1+1	5		221 721.723 (0.005)	25.926	0.156	3	
5	2	E1+1	5	4	2	E1+1	4		221 721.884 (0.005)	25.926	0.127	3	
5	2	E1−1		4	2	E1−1		221 724.239 (0.060)	221 724.256 (0.005)*	25.634	0.395	3	1
5	2	E1−1	4	4	2	E1−1	3		221 724.191 (0.005)	25.634	0.102	3	
5	2	E1−1	6	4	2	E1−1	5		221 724.207 (0.005)	25.634	0.156	3	
5	2	E1−1	5	4	2	E1−1	4		221 724.370 (0.005)	25.634	0.127	3	
5	2	E2−1		4	2	E2−1		221 728.698 (0.060)	221 728.700 (0.005)*	25.827	0.396	1	1
5	2	E2−1	4	4	2	E2−1	3		221 728.637 (0.005)	25.827	0.103	1	
5	2	E2−1	6	4	2	E2−1	5		221 728.653 (0.005)	25.827	0.156	1	
5	2	E2−1	5	4	2	E2−1	4		221 728.810 (0.005)	25.827	0.127	1	
10	2	A2		10	1	A1		221 755.055 (0.060)	221 755.043 (0.016)*	85.119	8.764	1	1
10	2	A2	9	10	1	A1	9		221 754.646 (0.016)	85.119	2.617	1	
10	2	A2	11	10	1	A1	11		221 754.745 (0.016)	85.119	3.173	1	
10	2	A2	10	10	1	A1	10		221 755.728 (0.016)	85.119	2.868	1	
5	2	A2		4	2	A1		221 790.469 (0.060)	221 790.514 (0.005)*	26.000	0.396	1	1
5	2	A2	4	4	2	A1	3		221 790.455 (0.005)	26.000	0.103	1	
5	2	A2	6	4	2	A1	5		221 790.470 (0.005)	26.000	0.156	1	
5	2	A2	5	4	2	A1	4		221 790.618 (0.005)	26.000	0.127	1	
5	2	B2		4	2	B1		221 791.536 (0.060)	221 791.559 (0.005)*	26.037	0.396	3	1
5	2	B2	4	4	2	B1	3		221 791.499 (0.005)	26.037	0.103	3	
5	2	B2	6	4	2	B1	5		221 791.514 (0.005)	26.037	0.156	3	
5	2	B2	5	4	2	B1	4		221 791.662 (0.005)	26.037	0.127	3	
25	9	E2−1		26	8	E2−1			221 938.460 (0.058)*	691.474	4.631	1	
11	1	E1−1		10	2	E1−1			222 050.948 (0.013)*	92.201	2.109	3	
30	1	E2+1		29	4	E2+1			222 172.247 (0.534)*	686.144	0.077	1	
7	0	E2+1		6	1	E2+1			222 263.031 (0.008)*	34.367	3.937	1	
7	0	E2+1	6	6	1	E2+1	5		222 262.553 (0.008)	34.367	1.110	1	
7	0	E2+1	8	6	1	E2+1	7		222 262.713 (0.008)	34.367	1.487	1	
7	0	E2+1	7	6	1	E2+1	6		222 263.806 (0.008)	34.367	1.285	1	
7	2	E1−1		7	1	E1+1			222 282.224 (0.010)*	44.846	2.713	3	
7	2	E1−1	6	7	1	E1+1	6		222 281.866 (0.010)	44.846	0.768	3	
7	2	E1−1	8	7	1	E1+1	8		222 281.984 (0.010)	44.846	1.009	3	
7	2	E1−1	7	7	1	E1+1	7		222 282.807 (0.010)	44.846	0.872	3	
30	1	B1		29	4	B2			222 294.068 (0.771)*	686.109	0.179	3	
14	2	E2−1		13	3	E2−1			222 579.512 (0.022)*	159.174	2.402	1	
10	1	E1+1		9	2	E1+1			222 590.740 (0.009)*	77.710	2.274	3	
10	1	E1+1	10	9	2	E1+1	9		222 590.193 (0.009)	77.710	0.750	3	
10	1	E1+1	11	9	2	E1+1	10		222 590.975 (0.009)	77.710	0.830	3	
10	1	E1+1	9	9	2	E1+1	8		222 591.060 (0.009)	77.710	0.678	3	
25	9	A2		26	8	A1			222 685.715 (0.036)*	691.309	4.633	1	
25	9	A1		26	8	A2			222 685.715 (0.036)*	691.309	4.633	1	
11	2	B1		11	1	B2		222 846.216 (0.060)	222 846.153 (0.018)*	101.373	9.771	3	1
5	1	E2+1		4	1	E2+1		223 124.584 (0.060)	223 124.585 (0.005)*	17.984	0.448	1	1
5	1	E2+1	5	4	1	E2+1	4		223 124.508 (0.005)	17.984	0.143	1	
5	1	E2+1	6	4	1	E2+1	5		223 124.613 (0.005)	17.984	0.177	1	
5	1	E2+1	4	4	1	E2+1	3		223 124.640 (0.005)	17.984	0.116	1	
10	1	E2+1		9	2	E2−1			223 325.310 (0.011)*	77.627	2.831	1	
10	1	E2+1	10	9	2	E2−1	9		223 324.833 (0.011)	77.627	0.934	1	
10	1	E2+1	11	9	2	E2−1	10		223 325.515 (0.011)	77.627	1.033	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	1	E2+1	9	9	2	E2−1	8		223 325.590 (0.011)	77.627	0.844	1	
25	9	E1−1		26	8	E1−1			223 335.793 (0.033)*	691.512	4.626	3	
14	6	E1+1		15	5	E1+1			223 407.315 (0.024)*	245.308	2.365	3	
5	1	E1+1		4	1	E1+1		223 629.272 (0.060)	223 629.263 (0.005)*	17.985	0.450	3	1
5	1	E1+1	5	4	1	E1+1	4		223 629.248 (0.005)	17.985	0.144	3	
5	1	E1+1	4	4	1	E1+1	3		223 629.267 (0.005)	17.985	0.117	3	
5	1	E1+1	6	4	1	E1+1	5		223 629.272 (0.005)	17.985	0.177	3	
9	2	E2−1		9	1	E2+1			223 831.697 (0.014)*	70.161	0.255	1	
9	2	E2−1	8	9	1	E2+1	8		223 831.413 (0.014)	70.161	0.075	1	
9	2	E2−1	10	9	1	E2+1	10		223 831.490 (0.014)	70.161	0.093	1	
9	2	E2−1	9	9	1	E2+1	9		223 832.179 (0.014)	70.161	0.083	1	
5	1	A2		4	1	A1			223 837.331 (0.006)*	17.950	0.453	1	
5	1	A2	4	4	1	A1	3		223 837.297 (0.006)	17.950	0.117	1	
5	1	A2	6	4	1	A1	5		223 837.323 (0.006)	17.950	0.178	1	
5	1	A2	5	4	1	A1	4		223 837.367 (0.006)	17.950	0.145	1	
5	1	B2		4	1	B1			223 844.565 (0.006)*	17.792	0.452	3	
5	1	B2	4	4	1	B1	3		223 844.530 (0.006)	17.792	0.117	3	
5	1	B2	6	4	1	B1	5		223 844.557 (0.006)	17.792	0.178	3	
5	1	B2	5	4	1	B1	4		223 844.600 (0.006)	17.792	0.145	3	
26	4	A2		27	1	A1			224 358.140 (0.414)*	554.703	0.017	1	
25	9	E2+1		26	8	E2+1			224 366.260 (0.043)*	691.301	4.635	1	
8	2	E2+1		8	1	E2+1			224 447.558 (0.010)*	56.736	6.352	1	
8	2	E2+1	7	8	1	E2+1	7		224 447.201 (0.010)	56.736	1.839	1	
8	2	E2+1	9	8	1	E2+1	9		224 447.308 (0.010)	56.736	2.337	1	
8	2	E2+1	8	8	1	E2+1	8		224 448.152 (0.010)	56.736	2.059	1	
24	0	A1		23	3	A2			224 472.366 (0.150)*	432.911	0.193	1	
18	3	E1+1		17	4	E1+1			224 583.841 (0.014)*	269.711	4.664	3	
9	2	E1+1		9	1	E1+1			224 682.489 (0.011)*	70.215	3.293	3	
9	2	E1+1	8	9	1	E1+1	8		224 682.160 (0.011)	70.215	0.970	3	
9	2	E1+1	10	9	1	E1+1	10		224 682.249 (0.011)	70.215	1.201	3	
9	2	E1+1	9	9	1	E1+1	9		224 683.049 (0.011)	70.215	1.073	3	
3	3	A2		4	2	A1			224 868.981 (0.012)*	26.000	0.197	1	
3	3	A2	3	4	2	A1	4		224 868.017 (0.012)	26.000	0.061	1	
3	3	A2	4	4	2	A1	5		224 869.309 (0.012)	26.000	0.080	1	
3	3	A2	2	4	2	A1	3		224 869.735 (0.012)	26.000	0.047	1	
14	2	E2−1		13	3	E2+1			224 944.302 (0.020)*	159.095	1.442	1	
3	3	A1		4	2	A2			224 972.938 (0.012)*	25.996	0.197	1	
3	3	A1	3	4	2	A2	4		224 971.938 (0.012)	25.996	0.061	1	
3	3	A1	4	4	2	A2	5		224 973.279 (0.012)	25.996	0.080	1	
3	3	A1	2	4	2	A2	3		224 973.717 (0.012)	25.996	0.047	1	
6	2	E1−1		6	1	E1+1			225 045.153 (0.010)*	34.399	2.024	3	
6	2	E1−1	5	6	1	E1+1	5		225 044.801 (0.010)	34.399	0.555	3	
6	2	E1−1	7	6	1	E1+1	7		225 044.932 (0.010)	34.399	0.763	3	
6	2	E1−1	6	6	1	E1+1	6		225 045.706 (0.010)	34.399	0.643	3	
14	6	E2+1		15	5	E2+1			225 078.337 (0.023)*	245.347	2.363	1	
14	2	B1		13	3	B2			225 101.833 (0.021)*	159.309	3.832	3	
27	2	E1+1		27	1	E1+1			225 275.303 (0.394)*	565.058	0.037	3	
14	6	E1−1		15	5	E1−1			225 587.224 (0.023)*	245.110	2.366	3	
29	6	E2−1		28	7	E2−1			225 889.259 (0.037)*	732.096	6.956	1	
9	2	A1		9	1	A2		226 034.398 (0.060)	226 034.388 (0.014)*	70.199	7.787	1	1
9	2	A1	8	9	1	A2	8		226 033.989 (0.014)	70.199	2.294	1	
9	2	A1	10	9	1	A2	10		226 034.097 (0.014)	70.199	2.840	1	
9	2	A1	9	9	1	A2	9		226 035.067 (0.014)	70.199	2.538	1	
3	1	A2		2	0	A1			226 045.921 (0.010)*	4.437	3.157	1	
3	1	A2	3	2	0	A1	2		226 045.007 (0.010)	4.437	0.936	1	
3	1	A2	4	2	0	A1	3		226 046.197 (0.010)	4.437	1.353	1	
3	1	A2	2	2	0	A1	1		226 046.775 (0.010)	4.437	0.631	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	1	E2+1		9	2	E2+1			226 268.564 (0.010)*	77.529	0.550	1	
10	1	E2+1	10	9	2	E2+1	9		226 267.939 (0.010)	77.529	0.182	1	
10	1	E2+1	11	9	2	E2+1	10		226 268.832 (0.010)	77.529	0.201	1	
10	1	E2+1	9	9	2	E2+1	8		226 268.930 (0.010)	77.529	0.164	1	
18	3	E2+1		17	4	E2−1			226 640.429 (0.019)*	269.830	0.548	1	
14	6	B1		15	5	B2			226 652.785 (0.020)*	245.136	2.367	3	
14	6	B2		15	5	B1			226 652.900 (0.020)*	245.136	2.367	3	
8	2	E2−1		8	1	E2+1			226 747.458 (0.012)*	56.736	0.450	1	
8	2	E2−1	7	8	1	E2+1	7		226 747.159 (0.012)	56.736	0.130	1	
8	2	E2−1	9	8	1	E2+1	9		226 747.248 (0.012)	56.736	0.166	1	
8	2	E2−1	8	8	1	E2+1	8		226 747.956 (0.012)	56.736	0.146	1	
3	3	B2		4	2	B1			226 762.186 (0.011)*	26.037	0.197	3	
3	3	B2	3	4	2	B1	4		226 761.222 (0.011)	26.037	0.061	3	
3	3	B2	4	4	2	B1	5		226 762.513 (0.011)	26.037	0.0803	3	
3	3	B2	2	4	2	B1	3		226 762.939 (0.011)	26.037	0.047	3	
14	2	A1		13	3	A2			226 822.170 (0.023)*	159.211	3.847	1	
3	3	B1		4	2	B2			226 867.457 (0.011)*	26.034	0.197	3	
3	3	B1	3	4	2	B2	4		226 866.457 (0.011)	26.034	0.061	3	
3	3	B1	4	4	2	B2	5		226 867.798 (0.011)	26.034	0.080	3	
3	3	B1	2	4	2	B2	3		226 868.236 (0.011)	26.034	0.047	3	
24	0	B1		23	3	B2			227 108.765 (0.147)*	432.999	0.208	3	
5	2	E1−1		5	1	E1+1			227 405.596 (0.010)*	25.444	1.410	3	
5	2	E1−1	4	5	1	E1+1	4		227 405.269 (0.010)	25.444	0.369	3	
5	2	E1−1	6	5	1	E1+1	6		227 405.407 (0.010)	25.444	0.540	3	
5	2	E1−1	5	5	1	E1+1	5		227 406.088 (0.010)	25.444	0.439	3	
7	2	E2+1		7	1	E2+1		227 497.882 (0.060)	227 497.908 (0.010)*	44.804	5.251	1	1
7	2	E2+1	6	7	1	E2+1	6		227 497.574 (0.010)	44.804	1.486	1	
7	2	E2+1	8	7	1	E2+1	8		227 497.684 (0.010)	44.804	1.953	1	
7	2	E2+1	7	7	1	E2+1	7		227 498.452 (0.010)	44.804	1.689	1	
10	2	B2		10	1	B1		227 545.040 (0.100)	227 545.018 (0.016)*	84.963	8.759	3	11
10	2	B2	9	10	1	B1	9		227 544.620 (0.016)	84.963	2.615	3	
10	2	B2	11	10	1	B1	11		227 544.719 (0.016)	84.963	3.171	3	
10	2	B2	10	10	1	B1	10		227 545.704 (0.016)	84.963	2.867	3	
8	2	E1+1		8	1	E1+1		227 997.008 (0.060)	227 997.003 (0.010)*	56.785	3.320	3	1
8	2	E1+1	7	8	1	E1+1	7		227 996.658 (0.010)	56.785	0.961	3	
8	2	E1+1	9	8	1	E1+1	9		227 996.761 (0.010)	56.785	1.222	3	
8	2	E1+1	8	8	1	E1+1	8		227 997.577 (0.010)	56.785	1.076	3	
25	5	E2−1		24	6	E2−1			228 368.290 (0.026)*	540.437	6.072	1	
3	3	E2+1		4	2	E2+1			228 491.820 (0.013)*	25.769	0.197	1	
3	3	E2+1	3	4	2	E2+1	4		228 490.838 (0.013)	25.769	0.061	1	
3	3	E2+1	4	4	2	E2+1	5		228 492.155 (0.013)	25.769	0.080	1	
3	3	E2+1	2	4	2	E2+1	3		228 492.587 (0.013)	25.769	0.047	1	
3	3	E2−1		4	2	E2−1			229 059.859 (0.012)*	25.827	0.197	1	
3	3	E2−1	3	4	2	E2−1	4		229 058.879 (0.013)	25.827	0.061	1	
3	3	E2−1	4	4	2	E2−1	5		229 060.193 (0.012)	25.827	0.080	1	
3	3	E2−1	2	4	2	E2−1	3		229 060.624 (0.012)	25.827	0.047	1	
4	2	E1−1		4	1	E1+1			229 310.604 (0.011)*	17.985	0.848	3	
4	2	E1−1	3	4	1	E1+1	3		229 310.345 (0.011)	17.985	0.206	3	
4	2	E1−1	5	4	1	E1+1	5		229 310.472 (0.011)	17.985	0.332	3	
4	2	E1−1	4	4	1	E1+1	4		229 310.967 (0.011)	17.985	0.255	3	
29	6	B1		28	7	B2			229 312.378 (0.038)*	732.236	6.942	3	
29	6	B2		28	7	B1			229 314.235 (0.038)*	732.236	6.942	3	
7	2	E2−1		7	1	E2+1			229 452.729 (0.011)*	44.804	0.628	1	
7	2	E2−1	6	7	1	E2+1	6		229 452.427 (0.011)	44.804	0.178	1	
7	2	E2−1	8	7	1	E2+1	8		229 452.527 (0.011)	44.804	0.234	1	
7	2	E2−1	7	7	1	E2+1	7		229 453.220 (0.011)	44.804	0.202	1	
18	3	E2−1		17	4	E2−1			229 670.312 (0.017)*	269.830	4.138	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	2	A2		8	1	A1		229 908.118 (0.060)	229 908.120 (0.013)*	56.767	6.842	1	1
8	2	A2	7	8	1	A1	7		229 907.720 (0.013)	56.767	1.981	1	
8	2	A2	9	8	1	A1	9		229 907.839 (0.013)	56.767	2.518	1	
8	2	A2	8	8	1	A1	8		229 908.788 (0.013)	56.767	2.218	1	
6	2	E2+1		6	1	E2+1		230 024.073 (0.060)	230 024.095 (0.010)*	34.367	4.319	1	1
6	2	E2+1	5	6	1	E2+1	5		230 023.797 (0.010)	34.367	1.184	1	
6	2	E2+1	7	6	1	E2+1	7		230 023.908 (0.010)	34.367	1.627	1	
6	2	E2+1	6	6	1	E2+1	6		230 024.564 (0.010)	34.367	1.372	1	
22	1	E2+1		22	0	E2+1			230 444.387 (0.191)*	372.064	0.040	1	
3	2	E1−1		3	1	E1+1			230 686.552 (0.011)*	12.023	0.371	3	
3	2	E1−1	2	3	1	E1+1	2		230 686.485 (0.011)	12.023	0.078	3	
3	2	E1−1	4	3	1	E1+1	4		230 686.524 (0.011)	12.023	0.149	3	
3	2	E1−1	3	3	1	E1+1	3		230 686.635 (0.011)	12.023	0.104	3	
7	2	E1+1		7	1	E1+1		231 060.560 (0.060)	231 060.535 (0.009)*	44.846	3.204	3	1
7	2	E1+1	6	7	1	E1+1	6		231 060.182 (0.009)	44.846	0.907	3	
7	2	E1+1	8	7	1	E1+1	8		231 060.299 (0.009)	44.846	1.191	3	
7	2	E1+1	7	7	1	E1+1	7		231 061.107 (0.009)	44.846	1.030	3	
29	6	A1		28	7	A2			231 395.924 (0.034)*	732.263	6.931	1	
29	6	A2		28	7	A1			231 397.773 (0.034)*	732.263	6.931	1	
24	0	E1+1		23	3	E1−1			231 423.151 (0.158)*	432.892	0.188	3	
2	2	E1−1		2	1	E1+1			231 474.035 (0.012)*	7.559	0.078	3	
2	2	E1−1	2	2	1	E1+1	1		231 473.377 (0.012)	7.559	0.004	3	
2	2	E1−1	2	2	1	E1+1	3		231 473.413 (0.012)	7.559	0.004	3	
2	2	E1−1	2	2	1	E1+1	2		231 473.478 (0.012)	7.559	0.018	3	
2	2	E1−1	3	2	1	E1+1	3		231 474.195 (0.012)	7.559	0.032	3	
2	2	E1−1	3	2	1	E1+1	2		231 474.260 (0.012)	7.559	0.004	3	
2	2	E1−1	1	2	1	E1+1	1		231 474.592 (0.012)	7.559	0.012	3	
2	2	E1−1	1	2	1	E1+1	2		231 474.694 (0.012)	7.559	0.004	3	
18	3	E1−1		17	4	E1−1			231 524.229 (0.017)*	269.861	4.643	3	
14	2	E1+1		13	3	E1+1			231 575.418 (0.017)*	158.894	2.942	3	
21	8	E1+1		22	7	E1+1			231 602.063 (0.032)*	506.335	3.764	3	
21	8	A2		22	7	A1			231 603.100 (0.040)*	506.519	3.759	1	
21	8	A1		22	7	A2			231 603.101 (0.040)*	506.519	3.759	1	
10	1	E1+1		9	2	E1−1			231 603.180 (0.011)*	77.409	1.107	3	
10	1	E1+1	10	9	2	E1−1	9		231 602.588 (0.011)	77.409	0.365	3	
10	1	E1+1	11	9	2	E1−1	10		231 603.434 (0.011)	77.409	0.404	3	
10	1	E1+1	9	9	2	E1−1	8		231 603.526 (0.011)	77.409	0.330	3	
6	2	E2−1		6	1	E2+1			231 829.203 (0.011)*	34.367	0.657	1	
6	2	E2−1	5	6	1	E2+1	5		231 828.920 (0.011)	34.367	0.180	1	
6	2	E2−1	7	6	1	E2+1	7		231 829.025 (0.011)	34.367	0.247	1	
6	2	E2−1	6	6	1	E2+1	6		231 829.649 (0.011)	34.367	0.209	1	
9	2	B1		9	1	B2		231 844.292 (0.100)	231 844.267 (0.015)*	70.042	7.784	3	11
9	2	B1	8	9	1	B2	8		231 843.867 (0.015)	70.042	2.293	3	
9	2	B1	10	9	1	B2	10		231 843.976 (0.015)	70.042	2.839	3	
9	2	B1	9	9	1	B2	9		231 844.946 (0.015)	70.042	2.537	3	
5	2	E2+1		5	1	E2+1		232 003.712 (0.060)	232 003.755 (0.010)*	25.426	3.580	1	1
5	2	E2+1	4	5	1	E2+1	4		232 003.522 (0.010)	25.426	0.937	1	
5	2	E2+1	6	5	1	E2+1	6		232 003.621 (0.010)	25.426	1.371	1	
5	2	E2+1	5	5	1	E2+1	5		232 004.106 (0.010)	25.426	1.115	1	
25	9	E1+1		26	8	E1+1			232 507.967 (0.041)*	691.126	4.637	3	
28	2	E1+1		28	1	E1+1			232 679.885 (0.462)*	606.463	0.031	3	
10	5	E1−1		11	4	E1−1			233 198.502 (0.019)*	141.255	1.505	3	
7	2	A1		7	1	A2		233 368.424 (0.060)	233 368.423 (0.012)*	44.826	5.922	1	1
7	2	A1	6	7	1	A2	6		233 368.024 (0.012)	44.826	1.676	1	
7	2	A1	8	7	1	A2	8		233 368.156 (0.012)	44.826	2.202	1	
7	2	A1	7	7	1	A2	7		233 369.072 (0.012)	44.826	1.904	1	
4	2	E2+1		4	1	E2+1		233 410.781 (0.100)	233 410.773 (0.011)*	17.984	2.923	1	11

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
4	2	E2+1	3	4	1	E2+1	3		233 410.661 (0.011)	17.984	0.711	1	
4	2	E2+1	5	4	1	E2+1	5		233 410.716 (0.011)	17.984	1.143	1	
4	2	E2+1	4	4	1	E2+1	4		233 410.930 (0.011)	17.984	0.879	1	
5	2	E2−1		5	1	E2+1			233 758.673 (0.011)*	25.426	0.506	1	
5	2	E2−1	4	5	1	E2+1	4		233 758.445 (0.011)	25.426	0.132	1	
5	2	E2−1	6	5	1	E2+1	6		233 758.542 (0.011)	25.426	0.194	1	
5	2	E2−1	5	5	1	E2+1	5		233 759.015 (0.011)	25.426	0.158	1	
6	2	E1+1		6	1	E1+1		233 802.311 (0.060)	233 802.315 (0.009)*	34.399	2.989	3	1
6	2	E1+1	5	6	1	E1+1	5		233 801.965 (0.009)	34.399	0.820	3	
6	2	E1+1	7	6	1	E1+1	7		233 802.095 (0.009)	34.399	1.126	3	
6	2	E1+1	6	6	1	E1+1	6		233 802.864 (0.009)	34.399	0.949	3	
10	5	A1		11	4	A2			234 162.840 (0.016)*	141.061	1.506	1	
10	5	A2		11	4	A1			234 163.857 (0.016)*	141.061	1.506	1	
18	3	A2		17	4	A1			234 191.682 (0.017)*	269.666	4.682	1	
3	2	E2+1		3	1	E2+1		234 260.005 (0.100)	234 260.058 (0.012)*	12.039	2.199	1	11
3	2	E2+1	3	3	1	E2+1	3		234 259.900 (0.012)	12.039	0.616	1	
3	2	E2+1	4	3	1	E2+1	4		234 260.111 (0.012)	12.039	0.883	1	
3	2	E2+1	2	3	1	E2+1	2		234 260.184 (0.012)	12.039	0.465	1	
2	2	E2+1		2	1	E2+1		234 657.910 (0.060)	234 657.948 (0.012)*	7.588	1.294	1	1
2	2	E2+1	2	2	1	E2+1	2		234 657.203 (0.012)	7.588	0.300	1	
2	2	E2+1	2	2	1	E2+1	3		234 657.380 (0.012)	7.588	0.067	1	
2	2	E2+1	2	2	1	E2+1	1		234 657.478 (0.012)	7.588	0.065	1	
2	2	E2+1	3	2	1	E2+1	2		234 657.985 (0.012)	7.588	0.067	1	
2	2	E2+1	3	2	1	E2+1	3		234 658.161 (0.012)	7.588	0.537	1	
2	2	E2+1	1	2	1	E2+1	2		234 658.419 (0.012)	7.588	0.065	1	
2	2	E2+1	1	2	1	E2+1	1		234 658.693 (0.012)	7.588	0.194	1	
18	3	E2+1		17	4	E2+1			234 828.775 (0.014)*	269.556	4.145	1	
4	2	E2−1		4	1	E2+1			235 154.558 (0.011)*	17.984	0.276	1	
4	2	E2−1	3	4	1	E2+1	3		235 154.448 (0.011)	17.984	0.067	1	
4	2	E2−1	5	4	1	E2+1	5		235 154.502 (0.011)	17.984	0.108	1	
4	2	E2−1	4	4	1	E2+1	4		235 154.713 (0.011)	17.984	0.083	1	
24	0	E2+1		23	3	E2−1			235 324.765 (0.151)*	432.850	0.228	1	
14	6	A1		15	5	A2			235 337.423 (0.021)*	244.949	2.367	1	
14	6	A2		15	5	A1			235 337.540 (0.021)*	244.949	2.367	1	
8	2	B2		8	1	B1		235 735.037 (0.100)	235 734.966 (0.014)*	56.610	6.840	3	11
8	2	B2	7	8	1	B1	7		235 734.566 (0.014)	56.610	1.980	3	
8	2	B2	9	8	1	B1	9		235 734.685 (0.014)	56.610	2.517	3	
8	2	B2	8	8	1	B1	8		235 735.635 (0.014)	56.610	2.217	3	
29	6	E1−1		28	7	E1−1			235 743.501 (0.041)*	731.952	6.956	3	
29	6	E1+1		28	7	E1+1			235 782.105 (0.035)*	732.077	6.937	3	
3	2	E2−1		3	1	E2+1			236 004.139 (0.012)*	12.039	0.096	1	
3	2	E2−1	3	3	1	E2+1	3		236 003.981 (0.012)	12.039	0.027	1	
3	2	E2−1	4	3	1	E2+1	4		236 004.192 (0.012)	12.039	0.039	1	
3	2	E2−1	2	3	1	E2+1	2		236 004.266 (0.012)	12.039	0.020	1	
18	3	E1−1		17	4	E1+1			236 025.213 (0.014)*	269.711	0.033	3	
18	3	A1		17	4	A2			236 108.805 (0.018)*	269.667	4.689	1	
5	2	E1+1		5	1	E1+1		236 159.846 (0.100)	236 159.884 (0.009)*	25.444	2.710	3	11
5	2	E1+1	4	5	1	E1+1	4		236 159.556 (0.009)	25.444	0.710	3	
5	2	E1+1	6	5	1	E1+1	6		236 159.695 (0.009)	25.444	1.038	3	
5	2	E1+1	5	5	1	E1+1	5		236 160.375 (0.009)	25.444	0.844	3	
6	2	A2		6	1	A1		236 408.788 (0.060)	236 408.779 (0.011)*	34.376	5.020	1	1
6	2	A2	5	6	1	A1	5		236 408.384 (0.011)	34.376	1.377	1	
6	2	A2	7	6	1	A1	7		236 408.531 (0.011)	34.376	1.892	1	
6	2	A2	6	6	1	A1	6		236 409.398 (0.011)	34.376	1.595	1	
21	8	B2		22	7	B1			236 610.593 (0.029)*	506.492	3.756	3	
21	8	B1		22	7	B2			236 610.594 (0.029)*	506.492	3.756	3	
2	2	E1−1		2	1	E1−1		237 143.530 (0.100)	237 143.512 (0.010)*	7.370	1.230	3	11

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
2	2	E1−1	2	2	1	E1−1	2		237 142.250 (0.010)	7.370	0.285	3	
2	2	E1−1	3	2	1	E1−1	2		237 143.032 (0.010)	7.370	0.064	3	
2	2	E1−1	2	2	1	E1−1	3		237 143.091 (0.010)	7.370	0.064	3	
2	2	E1−1	1	2	1	E1−1	2		237 143.466 (0.010)	7.370	0.061	3	
2	2	E1−1	2	2	1	E1−1	1		237 143.558 (0.010)	7.370	0.061	3	
2	2	E1−1	3	2	1	E1−1	3		237 143.872 (0.010)	7.370	0.510	3	
2	2	E1−1	1	2	1	E1−1	1		237 144.773 (0.010)	7.370	0.184	3	
7	0	E1+1		6	1	E1−1			237 327.399 (0.008)*	33.761	0.075	3	
7	0	E1+1	7	6	1	E1−1	6		237 326.805 (0.008)	33.761	0.024	3	
7	0	E1+1	8	6	1	E1−1	7		237 327.628 (0.008)	33.761	0.028	3	
7	0	E1+1	6	6	1	E1−1	5		237 327.792 (0.008)	33.761	0.021	3	
18	3	E2−1		17	4	E2+1			237 858.659 (0.015)*	269.556	0.551	1	
3	2	E1−1		3	1	E1−1		237 965.522 (0.100)	237 965.458 (0.010)*	11.780	1.908	3	11
3	2	E1−1	3	3	1	E1−1	3		237 964.444 (0.010)	11.780	0.534	3	
3	2	E1−1	4	3	1	E1−1	4		237 965.797 (0.010)	11.780	0.767	3	
3	2	E1−1	2	3	1	E1−1	2		237 966.270 (0.010)	11.780	0.404	3	
3	3	E1−1		4	2	E1−1			238 001.166 (0.012)*	25.634	0.197	3	
3	3	E1−1	3	4	2	E1−1	4		238 000.184 (0.012)	25.634	0.062	3	
3	3	E1−1	4	4	2	E1−1	5		238 001.500 (0.012)	25.634	0.080	3	
3	3	E1−1	2	4	2	E1−1	3		238 001.932 (0.012)	25.634	0.047	3	
4	2	E1+1		4	1	E1+1		238 067.520 (0.100)	238 067.376 (0.009)*	17.985	2.377	3	11
4	2	E1+1	3	4	1	E1+1	3		238 067.117 (0.009)	17.985	0.578	3	
4	2	E1+1	5	4	1	E1+1	5		238 067.244 (0.009)	17.985	0.930	3	
4	2	E1+1	4	4	1	E1+1	4		238 067.739 (0.009)	17.985	0.715	3	
10	5	E2−1		11	4	E2−1			238 677.024 (0.019)*	141.223	1.504	1	
5	2	A1		5	1	A2		239 023.740 (0.100)	239 023.813 (0.010)*	25.417	4.129	1	11
5	2	A1	4	5	1	A2	4		239 023.433 (0.010)	25.417	1.081	1	
5	2	A1	6	5	1	A2	6		239 023.594 (0.010)	25.417	1.581	1	
5	2	A1	5	5	1	A2	5		239 024.384 (0.010)	25.417	1.286	1	
7	2	B1		7	1	B2		239 209.628 (0.100)	239 209.612 (0.012)*	44.668	5.921	3	11
7	2	B1	6	7	1	B2	6		239 209.213 (0.012)	44.668	1.675	3	
7	2	B1	8	7	1	B2	8		239 209.345 (0.012)	44.668	2.202	3	
7	2	B1	7	7	1	B2	7		239 210.262 (0.012)	44.668	1.904	3	
4	2	E1−1		4	1	E1−1		239 427.041 (0.100)	239 427.017 (0.009)*	17.647	2.299	3	11
4	2	E1−1	4	4	1	E1−1	4		239 426.064 (0.009)	17.648	0.692	3	
4	2	E1−1	5	4	1	E1−1	5		239 427.364 (0.009)	17.647	0.899	3	
4	2	E1−1	3	4	1	E1−1	3		239 427.698 (0.009)	17.647	0.559	3	
3	2	E1+1		3	1	E1+1		239 446.290 (0.100)	239 446.259 (0.010)*	12.023	1.937	3	11
3	2	E1+1	2	3	1	E1+1	2		239 446.192 (0.010)	12.023	0.410	3	
3	2	E1+1	4	3	1	E1+1	4		239 446.231 (0.010)	12.023	0.778	3	
3	2	E1+1	3	3	1	E1+1	3		239 446.342 (0.010)	12.023	0.542	3	
22	4	E2+1		21	5	E2+1			239 599.365 (0.020)*	409.340	5.571	1	
2	2	E1+1		2	1	E1+1		240 235.858 (0.100)	240 235.821 (0.011)*	7.559	1.235	3	11
2	2	E1+1	2	2	1	E1+1	1		240 235.163 (0.011)	7.559	0.062	3	
2	2	E1+1	2	2	1	E1+1	3		240 235.199 (0.011)	7.559	0.064	3	
2	2	E1+1	2	2	1	E1+1	2		240 235.264 (0.011)	7.559	0.286	3	
2	2	E1+1	3	2	1	E1+1	3		240 235.980 (0.011)	7.559	0.512	3	
2	2	E1+1	3	2	1	E1+1	2		240 236.045 (0.011)	7.559	0.064	3	
2	2	E1+1	1	2	1	E1+1	1		240 236.378 (0.011)	7.559	0.185	3	
2	2	E1+1	1	2	1	E1+1	2		240 236.479 (0.011)	7.559	0.062	3	
29	2	E1+1		29	1	E1+1			241 121.389 (0.541)*	649.313	0.026	3	
4	2	A2		4	1	A1			241 209.163 (0.010)*	17.950	3.235	1	
4	2	A2	3	4	1	A1	3		241 208.819 (0.010)	17.950	0.786	1	
4	2	A2	5	4	1	A1	5		241 208.988 (0.010)	17.950	1.265	1	
4	2	A2	4	4	1	A1	4		241 209.645 (0.010)	17.950	0.973	1	
5	2	E1−1		5	1	E1−1			241 501.242 (0.010)*	24.974	2.554	3	
5	2	E1−1	5	5	1	E1−1	5		241 500.318 (0.010)	24.974	0.795	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
5	2	E1−1	6	5	1	E1−1	6		241 501.598 (0.010)	24.974	0.978	3	
5	2	E1−1	4	5	1	E1−1	4		241 501.859 (0.010)	24.974	0.669	3	
21	8	E2−1		22	7	E2−1			241 579.251 (0.034)*	506.351	3.759	1	
29	5	A2		30	2	A1			241 992.689 (0.606)*	702.040	0.029	1	
28	10	E1−1		29	9	E1−1			242 112.893 (0.089)*	861.143	5.149	3	
21	8	E2+1		22	7	E2+1			242 206.047 (0.037)*	506.159	3.763	1	
6	2	B2		6	1	B1			242 261.957 (0.011)*	34.218	5.020	3	
6	2	B2	5	6	1	B1	5		242 261.562 (0.012)	34.218	1.376	3	
6	2	B2	7	6	1	B1	7		242 261.709 (0.012)	34.218	1.891	3	
6	2	B2	6	6	1	B1	6		242 262.577 (0.012)	34.218	1.594	3	
18	3	B2		17	4	B1			242 625.458 (0.020)*	269.481	4.692	3	
3	2	A1		3	1	A2			242 961.361 (0.010)*	11.977	2.317	1	
3	2	A1	2	3	1	A2	2		242 961.119 (0.010)	11.977	0.490	1	
3	2	A1	4	3	1	A2	4		242 961.260 (0.010)	11.977	0.931	1	
3	2	A1	3	3	1	A2	3		242 961.664 (0.010)	11.977	0.649	1	
22	4	B2		21	5	B1			243 552.009 (0.020)*	409.130	5.580	3	
29	6	E2+1		28	7	E2+1			243 575.344 (0.045)*	731.906	6.947	1	
10	5	E1+1		11	4	E1+1			243 672.858 (0.019)*	141.104	1.504	3	
17	7	E2+1		18	6	E2+1			243 763.795 (0.028)*	350.365	2.891	1	
22	4	B1		21	5	B2			243 796.367 (0.020)*	409.130	5.580	3	
6	2	E1−1		6	1	E1−1			244 151.624 (0.010)*	33.761	2.725	3	
6	2	E1−1	6	6	1	E1−1	6		244 150.715 (0.010)	33.761	0.866	3	
6	2	E1−1	7	6	1	E1−1	7		244 151.987 (0.010)	33.761	1.027	3	
6	2	E1−1	5	6	1	E1−1	5		244 152.202 (0.010)	33.761	0.747	3	
7	0	E2+1		6	1	E2−1			244 202.397 (0.009)*	33.635	0.340	1	
7	0	E2+1	7	6	1	E2−1	6		244 201.897 (0.009)	33.635	0.111	1	
7	0	E2+1	8	6	1	E2−1	7		244 202.588 (0.009)	33.635	0.129	1	
7	0	E2+1	6	6	1	E2−1	5		244 202.729 (0.009)	33.635	0.096	1	
2	2	A2		2	1	A1			244 277.744 (0.011)*	7.496	1.319	1	
2	2	A2	2	2	1	A1	1		244 276.684 (0.011)	7.496	0.066	1	
2	2	A2	2	2	1	A1	3		244 277.010 (0.011)	7.496	0.068	1	
2	2	A2	2	2	1	A1	2		244 277.597 (0.011)	7.496	0.305	1	
2	2	A2	3	2	1	A1	3		244 277.786 (0.011)	7.496	0.547	1	
2	2	A2	1	2	1	A1	1		244 277.891 (0.011)	7.496	0.198	1	
2	2	A2	3	2	1	A1	2		244 278.373 (0.011)	7.496	0.068	1	
2	2	A2	1	2	1	A1	2		244 278.804 (0.011)	7.496	0.066	1	
18	3	B1		17	4	B2			244 501.902 (0.019)*	269.482	4.699	3	
5	2	B1		5	1	B2			244 886.856 (0.011)*	25.259	4.129	3	
5	2	B1	4	5	1	B2	4		244 886.475 (0.011)	25.259	1.081	3	
5	2	B1	6	5	1	B2	6		244 886.636 (0.011)	25.259	1.581	3	
5	2	B1	5	5	1	B2	5		244 887.426 (0.011)	25.259	1.286	3	
24	0	E1+1		23	3	E1+1			244 948.250 (0.193)*	432.441	0.036	3	
12	1	B2		11	2	B1			245 202.161 (0.026)*	108.806	3.154	3	
22	4	E1+1		21	5	E1+1			245 255.221 (0.021)*	409.302	5.560	3	
10	5	B1		11	4	B2			245 463.442 (0.018)*	140.873	1.506	3	
10	5	B2		11	4	B1			245 464.483 (0.018)*	140.873	1.506	3	
29	5	B2		30	2	B1			245 530.120 (0.571)*	702.096	0.031	3	
6	4	B1		7	3	B2			245 764.729 (0.016)*	66.137	0.675	3	
6	4	B1	6	7	3	B2	7		245 764.340 (0.016)	66.137	0.220	3	
6	4	B1	7	7	3	B2	8		245 764.888 (0.016)	66.137	0.255	3	
6	4	B1	5	7	3	B2	6		245 764.970 (0.016)	66.137	0.190	3	
6	4	B2		7	3	B1			245 772.271 (0.016)*	66.137	0.675	3	
6	4	B2	6	7	3	B1	7		245 771.881 (0.016)	66.137	0.220	3	
6	4	B2	7	7	3	B1	8		245 772.430 (0.016)	66.137	0.255	3	
6	4	B2	5	7	3	B1	6		245 772.513 (0.016)	66.137	0.190	3	
2	2	E1+1		2	1	E1−1			245 905.297 (0.009)*	7.370	0.073	3	
2	2	E1+1	2	2	1	E1−1	2		245 904.036 (0.009)	7.370	0.017	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
2	2	E1+1	3	2	1	E1−1	2		245 904.817 (0.009)	7.370	0.004	3	
2	2	E1+1	2	2	1	E1−1	3		245 904.877 (0.009)	7.370	0.004	3	
2	2	E1+1	1	2	1	E1−1	2		245 905.251 (0.009)	7.370	0.004	3	
2	2	E1+1	2	2	1	E1−1	1		245 905.344 (0.009)	7.370	0.004	3	
2	2	E1+1	3	2	1	E1−1	3		245 905.658 (0.009)	7.370	0.030	3	
2	2	E1+1	1	2	1	E1−1	1		245 906.559 (0.009)	7.370	0.011	3	
4	1	E2−1		3	0	E2+1			246 249.681 (0.009)*	9.277	0.795	1	
4	1	E2−1	3	3	0	E2+1	2		246 249.487 (0.009)	9.277	0.189	1	
4	1	E2−1	5	3	0	E2+1	4		246 249.536 (0.009)	9.277	0.324	1	
4	1	E2−1	4	3	0	E2+1	3		246 250.026 (0.009)	9.277	0.248	1	
23	1	E2+1		23	0	E2+1			246 490.084 (0.239)*	405.663	0.036	1	
3	2	E1+1		3	1	E1−1			246 725.165 (0.008)*	11.780	0.343	3	
3	2	E1+1	3	3	1	E1−1	3		246 724.151 (0.008)	11.780	0.096	3	
3	2	E1+1	4	3	1	E1−1	4		246 725.503 (0.008)	11.780	0.138	3	
3	2	E1+1	2	3	1	E1−1	2		246 725.976 (0.008)	11.780	0.073	3	
2	2	A1		2	1	A2			246 924.172 (0.011)*	7.408	1.298	1	
2	2	A1	2	2	1	A2	2		246 922.501 (0.011)	7.408	0.300	1	
2	2	A1	3	2	1	A2	2		246 923.287 (0.011)	7.408	0.067	1	
2	2	A1	1	2	1	A2	2		246 923.723 (0.011)	7.408	0.065	1	
2	2	A1	2	2	1	A2	3		246 923.863 (0.011)	7.408	0.067	1	
2	2	A1	2	2	1	A2	1		246 924.620 (0.011)	7.408	0.065	1	
2	2	A1	3	2	1	A2	3		246 924.649 (0.011)	7.408	0.538	1	
2	2	A1	1	2	1	A2	1		246 925.843 (0.011)	7.408	0.195	1	
4	2	B2		4	1	B1			247 080.140 (0.011)*	17.792	3.235	3	
4	2	B2	3	4	1	B1	3		247 079.795 (0.011)	17.792	0.786	3	
4	2	B2	5	4	1	B1	5		247 079.964 (0.011)	17.792	1.265	3	
4	2	B2	4	4	1	B1	4		247 080.622 (0.011)	17.792	0.973	3	
21	8	E1−1		22	7	E1−1			247 205.184 (0.035)*	506.203	3.762	3	
3	2	E2+1		3	1	E2−1			247 255.790 (0.009)*	11.605	0.081	1	
3	2	E2+1	3	3	1	E2−1	3		247 255.017 (0.009)	11.605	0.023	1	
3	2	E2+1	4	3	1	E2−1	4		247 256.048 (0.009)	11.605	0.033	1	
3	2	E2+1	2	3	1	E2−1	2		247 256.408 (0.009)	11.605	0.017	1	
7	2	E1−1		7	1	E1−1			247 362.353 (0.011)*	44.009	2.807	3	
7	2	E1−1	7	7	1	E1−1	7		247 361.451 (0.011)	44.010	0.902	3	
7	2	E1−1	8	7	1	E1−1	8		247 362.724 (0.011)	44.009	1.044	3	
7	2	E1−1	6	7	1	E1−1	6		247 362.907 (0.011)	44.009	0.794	3	
4	2	E1+1		4	1	E1−1			248 183.789 (0.008)*	17.647	0.772	3	
4	2	E1+1	4	4	1	E1−1	4		248 182.837 (0.008)	17.648	0.232	3	
4	2	E1+1	5	4	1	E1−1	5		248 184.136 (0.008)	17.647	0.302	3	
4	2	E1+1	3	4	1	E1−1	3		248 184.470 (0.008)	17.647	0.188	3	
4	2	E2+1		4	1	E2−1			248 185.405 (0.009)*	17.491	0.229	1	
4	2	E2+1	4	4	1	E2−1	4		248 184.660 (0.009)	17.491	0.069	1	
4	2	E2+1	5	4	1	E2−1	5		248 185.676 (0.009)	17.491	0.090	1	
4	2	E2+1	3	4	1	E2−1	3		248 185.937 (0.009)	17.491	0.056	1	
15	2	E1−1		14	3	E1−1			248 273.693 (0.020)*	179.981	2.967	3	
3	2	A2		3	1	A1			248 274.729 (0.010)*	11.801	2.245	1	
3	2	A2	3	3	1	A1	3		248 273.496 (0.010)	11.801	0.629	1	
3	2	A2	4	3	1	A1	4		248 275.140 (0.010)	11.801	0.902	1	
3	2	A2	2	3	1	A1	2		248 275.716 (0.010)	11.801	0.475	1	
2	2	E2−1		2	1	E2−1			248 571.634 (0.010)*	7.182	1.292	1	
2	2	E2−1	2	2	1	E2−1	2		248 570.560 (0.010)	7.183	0.299	1	
2	2	E2−1	2	2	1	E2−1	3		248 571.159 (0.010)	7.182	0.067	1	
2	2	E2−1	3	2	1	E2−1	2		248 571.341 (0.010)	7.183	0.067	1	
2	2	E2−1	2	2	1	E2−1	1		248 571.492 (0.010)	7.182	0.065	1	
2	2	E2−1	1	2	1	E2−1	2		248 571.775 (0.010)	7.183	0.065	1	
2	2	E2−1	3	2	1	E2−1	3		248 571.941 (0.010)	7.182	0.536	1	
2	2	E2−1	1	2	1	E2−1	1		248 572.707 (0.010)	7.182	0.194	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
3	2	B1		3	1	B2			248 838.500 (0.011)*	11.818	2.317	3	
3	2	B1	2	3	1	B2	2		248 838.257 (0.011)	11.818	0.490	3	
3	2	B1	4	3	1	B2	4		248 838.399 (0.011)	11.818	0.931	3	
3	2	B1	3	3	1	B2	3		248 838.803 (0.011)	11.818	0.649	3	
3	2	E2−1		3	1	E2−1			248 999.871 (0.010)*	11.605	2.182	1	
3	2	E2−1	3	3	1	E2−1	3		248 999.098 (0.010)	11.605	0.611	1	
3	2	E2−1	4	3	1	E2−1	4		249 000.129 (0.010)	11.605	0.877	1	
3	2	E2−1	2	3	1	E2−1	2		249 000.490 (0.010)	11.605	0.462	1	
28	10	A2		29	9	A1			249 258.957 (0.072)*	860.917	5.155	1	
28	10	A1		29	9	A2			249 258.957 (0.072)*	860.917	5.155	1	
12	1	E2−1		11	2	E2−1			249 355.670 (0.015)*	108.745	0.215	1	
28	10	E2−1		29	9	E2−1			249 487.692 (0.064)*	861.059	5.145	1	
10	5	E2+1		11	4	E2+1			249 527.261 (0.019)*	140.948	1.505	1	
5	2	E2+1		5	1	E2−1			249 744.836 (0.009)*	24.834	0.405	1	
5	2	E2+1	5	5	1	E2−1	5		249 744.061 (0.009)	24.834	0.126	1	
5	2	E2+1	6	5	1	E2−1	6		249 745.135 (0.009)	24.834	0.155	1	
5	2	E2+1	4	5	1	E2−1	4		249 745.353 (0.009)	24.834	0.106	1	
4	2	E2−1		4	1	E2−1			249 929.190 (0.009)*	17.491	2.865	1	
4	2	E2−1	4	4	1	E2−1	4		249 928.443 (0.009)	17.491	0.862	1	
4	2	E2−1	5	4	1	E2−1	5		249 929.462 (0.009)	17.491	1.121	1	
4	2	E2−1	3	4	1	E2−1	3		249 929.723 (0.009)	17.491	0.696	1	
4	2	A1		4	1	A2			250 110.220 (0.010)*	17.657	3.067	1	
4	2	A1	4	4	1	A2	4		250 109.151 (0.010)	17.657	0.923	1	
4	2	A1	5	4	1	A2	5		250 110.609 (0.010)	17.657	1.200	1	
4	2	A1	3	4	1	A2	3		250 110.985 (0.010)	17.657	0.746	1	
2	2	B2		2	1	B1			250 159.397 (0.011)*	7.337	1.319	3	
2	2	B2	2	2	1	B1	1		250 158.337 (0.011)	7.337	0.066	3	
2	2	B2	2	2	1	B1	3		250 158.663 (0.011)	7.337	0.068	3	
2	2	B2	2	2	1	B1	2		250 159.250 (0.011)	7.337	0.305	3	
2	2	B2	3	2	1	B1	3		250 159.439 (0.011)	7.337	0.547	3	
2	2	B2	1	2	1	B1	1		250 159.544 (0.011)	7.337	0.198	3	
2	2	B2	3	2	1	B1	2		250 160.026 (0.011)	7.337	0.068	3	
2	2	B2	1	2	1	B1	2		250 160.457 (0.011)	7.337	0.066	3	
5	2	E1+1		5	1	E1−1			250 255.530 (0.009)*	24.974	1.251	3	
5	2	E1+1	5	5	1	E1−1	5		250 254.605 (0.009)	24.974	0.390	3	
5	2	E1+1	6	5	1	E1−1	6		250 255.885 (0.009)	24.974	0.479	3	
5	2	E1+1	4	5	1	E1−1	4		250 256.146 (0.009)	24.974	0.327	3	
22	4	E2−1		21	5	E2−1			250 278.619 (0.022)*	409.252	5.558	1	
12	1	E1−1		11	2	E1+1			250 398.508 (0.015)*	108.803	0.653	3	
30	2	E1+1		30	1	E1+1			250 613.476 (0.632)*	693.605	0.023	3	
8	0	A1		7	1	A2			250 702.202 (0.018)*	44.826	4.891	1	
8	0	A1	7	7	1	A2	6		250 701.658 (0.018)	44.826	1.413	1	
8	0	A1	9	7	1	A2	8		250 701.823 (0.018)	44.826	1.822	1	
8	0	A1	8	7	1	A2	7		250 703.104 (0.018)	44.826	1.605	1	
12	1	A2		11	2	A1			251 068.343 (0.025)*	108.769	3.149	1	
8	2	E1−1		8	1	E1−1			251 128.689 (0.012)*	55.719	2.776	3	
8	2	E1−1	8	8	1	E1−1	8		251 127.791 (0.012)	55.719	0.900	3	
8	2	E1−1	9	8	1	E1−1	9		251 129.068 (0.012)	55.719	1.022	3	
8	2	E1−1	7	8	1	E1−1	7		251 129.228 (0.012)	55.719	0.804	3	
5	2	E2−1		5	1	E2−1			251 499.754 (0.009)*	24.834	3.430	1	
5	2	E2−1	5	5	1	E2−1	5		251 498.970 (0.009)	24.834	1.068	1	
5	2	E2−1	6	5	1	E2−1	6		251 500.056 (0.009)	24.834	1.314	1	
5	2	E2−1	4	5	1	E2−1	4		251 500.277 (0.009)	24.834	0.898	1	
17	7	E1−1		18	6	E1−1			251 628.951 (0.029)*	350.145	2.892	3	
17	7	E1+1		18	6	E1+1			251 917.639 (0.027)*	350.272	2.888	3	
6	2	E2+1		6	1	E2−1			251 963.461 (0.010)*	33.635	0.498	1	
6	2	E2+1	6	6	1	E2−1	6		251 962.656 (0.010)	33.635	0.158	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	2	E2+1	7	6	1	E2−1	7		251 963.783 (0.010)	33.635	0.188	1	
6	2	E2+1	5	6	1	E2−1	5		251 963.974 (0.010)	33.635	0.137	1	
19	4	A2		20	1	A1			252 076.738 (0.125)*	315.941	0.018	1	
5	2	A2		5	1	A1			252 460.238 (0.010)*	24.977	3.809	1	
5	2	A2	5	5	1	A1	5		252 459.237 (0.010)	24.977	1.187	1	
5	2	A2	6	5	1	A1	6		252 460.623 (0.010)	24.977	1.459	1	
5	2	A2	4	5	1	A1	4		252 460.905 (0.010)	24.977	0.997	1	
2	2	B1		2	1	B2			252 810.495 (0.011)*	7.249	1.298	3	
2	2	B1	2	2	1	B2	2		252 808.823 (0.011)	7.249	0.300	3	
2	2	B1	3	2	1	B2	2		252 809.609 (0.011)	7.249	0.067	3	
2	2	B1	1	2	1	B2	2		252 810.046 (0.011)	7.249	0.065	3	
2	2	B1	2	2	1	B2	3		252 810.186 (0.011)	7.249	0.067	3	
2	2	B1	2	2	1	B2	1		252 810.943 (0.011)	7.249	0.065	3	
2	2	B1	3	2	1	B2	3		252 810.972 (0.011)	7.249	0.538	3	
2	2	B1	1	2	1	B2	1		252 812.166 (0.011)	7.249	0.195	3	
15	2	E2+1		14	3	E2−1			252 849.385 (0.023)*	179.878	1.479	1	
6	2	E1+1		6	1	E1−1			252 908.786 (0.009)*	33.761	1.740	3	
6	2	E1+1	6	6	1	E1−1	6		252 907.873 (0.009)	33.761	0.553	3	
6	2	E1+1	7	6	1	E1−1	7		252 909.150 (0.009)	33.761	0.655	3	
6	2	E1+1	5	6	1	E1−1	5		252 909.366 (0.009)	33.761	0.477	3	
25	0	A2		24	3	A1			253 230.758 (0.184)*	468.436	0.207	1	
26	5	A2		25	6	A1			253 255.533 (0.030)*	577.691	6.461	1	
26	5	A1		25	6	A2			253 282.642 (0.030)*	577.691	6.461	1	
6	2	E2−1		6	1	E2−1			253 768.569 (0.010)*	33.635	3.999	1	
6	2	E2−1	6	6	1	E2−1	6		253 767.740 (0.010)	33.635	1.270	1	
6	2	E2−1	7	6	1	E2−1	7		253 768.900 (0.010)	33.635	1.507	1	
6	2	E2−1	5	6	1	E2−1	5		253 769.096 (0.010)	33.635	1.096	1	
4	1	E1−1		3	0	E1+1			254 055.766 (0.008)*	9.173	0.259	3	
4	1	E1−1	3	3	0	E1+1	2		254 055.424 (0.008)	9.173	0.062	3	
4	1	E1−1	5	3	0	E1+1	4		254 055.546 (0.008)	9.173	0.106	3	
4	1	E1−1	4	3	0	E1+1	3		254 056.319 (0.008)	9.173	0.081	3	
3	2	B2		3	1	B1			254 161.468 (0.011)*	11.642	2.244	3	
3	2	B2	3	3	1	B1	3		254 160.235 (0.011)	11.642	0.628	3	
3	2	B2	4	3	1	B1	4		254 161.879 (0.011)	11.642	0.902	3	
3	2	B2	2	3	1	B1	2		254 162.455 (0.011)	11.642	0.475	3	
6	4	E2+1		7	3	E2+1			254 318.755 (0.015)*	65.927	0.675	1	
6	4	E2+1	6	7	3	E2+1	7		254 318.366 (0.015)	65.927	0.221	1	
6	4	E2+1	7	7	3	E2+1	8		254 318.913 (0.015)	65.927	0.255	1	
6	4	E2+1	5	7	3	E2+1	6		254 318.996 (0.015)	65.927	0.190	1	
6	4	A1		7	3	A2			254 445.917 (0.015)*	66.037	0.675	1	
6	4	A1	6	7	3	A2	7		254 445.529 (0.015)	66.037	0.220	1	
6	4	A1	7	7	3	A2	8		254 446.076 (0.015)	66.037	0.255	1	
6	4	A1	5	7	3	A2	6		254 446.158 (0.015)	66.037	0.190	1	
6	4	A2		7	3	A1			254 453.624 (0.015)*	66.037	0.675	1	
6	4	A2	6	7	3	A1	7		254 453.234 (0.015)	66.037	0.220	1	
6	4	A2	7	7	3	A1	8		254 453.783 (0.015)	66.037	0.255	1	
6	4	A2	5	7	3	A1	6		254 453.866 (0.015)	66.037	0.190	1	
22	4	A2		21	5	A1			254 457.696 (0.019)*	408.946	5.584	1	
28	10	E1+1		29	9	E1+1			254 483.646 (0.071)*	861.065	5.145	3	
22	4	A1		21	5	A2			254 696.778 (0.019)*	408.947	5.584	1	
12	1	E2−1		11	2	E2+1			254 771.962 (0.020)*	108.564	2.944	1	
7	2	E2+1		7	1	E2−1			254 804.835 (0.010)*	43.893	0.437	1	
7	2	E2+1	7	7	1	E2−1	7		254 804.015 (0.010)	43.894	0.141	1	
7	2	E2+1	8	7	1	E2−1	8		254 805.173 (0.010)	43.893	0.163	1	
7	2	E2+1	6	7	1	E2−1	6		254 805.340 (0.010)	43.893	0.124	1	
15	2	E2+1		14	3	E2+1			255 237.845 (0.023)*	179.798	2.683	1	
6	2	A1		6	1	A2			255 361.473 (0.011)*	33.759	4.480	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	2	A1	6	6	1	A2	6		255 360.498 (0.011)	33.760	1.423	1	
6	2	A1	7	6	1	A2	7		255 361.863 (0.011)	33.759	1.688	1	
6	2	A1	5	6	1	A2	5		255 362.093 (0.011)	33.759	1.229	1	
9	2	E1−1		9	1	E1−1			255 444.688 (0.013)*	68.888	2.612	3	
9	2	E1−1	9	9	1	E1−1	9		255 443.792 (0.013)	68.888	0.851	3	
9	2	E1−1	10	9	1	E1−1	10		255 445.072 (0.013)	68.888	0.953	3	
9	2	E1−1	8	9	1	E1−1	8		255 445.215 (0.013)	68.888	0.769	3	
22	4	E1−1		21	5	E1−1			255 560.830 (0.025)*	409.106	5.567	3	
25	0	B2		24	3	B1			255 851.705 (0.180)*	468.522	0.224	3	
4	2	B1		4	1	B2			255 997.778 (0.011)*	17.498	3.065	3	
4	2	B1	4	4	1	B2	4		255 996.708 (0.011)	17.498	0.922	3	
4	2	B1	5	4	1	B2	5		255 998.167 (0.011)	17.498	1.199	3	
4	2	B1	3	4	1	B2	3		255 998.542 (0.011)	17.498	0.745	3	
7	2	E1+1		7	1	E1−1			256 140.663 (0.010)*	44.009	2.243	3	
7	2	E1+1	7	7	1	E1−1	7		256 139.752 (0.010)	44.010	0.721	3	
7	2	E1+1	8	7	1	E1−1	8		256 141.038 (0.010)	44.009	0.834	3	
7	2	E1+1	6	7	1	E1−1	6		256 141.224 (0.010)	44.009	0.635	3	
17	7	A2		18	6	A1			256 261.325 (0.032)*	350.310	2.887	1	
17	7	A1		18	6	A2			256 261.331 (0.032)*	350.310	2.887	1	
15	2	B1		14	3	B2			256 327.873 (0.028)*	180.000	4.144	3	
28	10	E2+1		29	9	E2+1			256 654.921 (0.107)*	860.969	5.150	1	
7	2	E2−1		7	1	E2−1			256 759.656 (0.011)*	43.893	4.643	1	
7	2	E2−1	7	7	1	E2−1	7		256 758.783 (0.011)	43.894	1.493	1	
7	2	E2−1	8	7	1	E2−1	8		256 760.016 (0.011)	43.893	1.726	1	
7	2	E2−1	6	7	1	E2−1	6		256 760.193 (0.011)	43.893	1.314	1	
24	9	B1		25	8	B2			257 368.810 (0.047)*	653.094	4.283	3	
24	9	B2		25	8	B1			257 368.810 (0.047)*	653.094	4.283	3	
6	4	E1−1		7	3	E1−1			258 102.274 (0.015)*	66.109	0.675	3	
6	4	E1−1	6	7	3	E1−1	7		258 101.885 (0.015)	66.109	0.220	3	
6	4	E1−1	7	7	3	E1−1	8		258 102.433 (0.015)	66.109	0.255	3	
6	4	E1−1	5	7	3	E1−1	6		258 102.516 (0.015)	66.109	0.190	3	
15	2	A1		14	3	A2			258 192.108 (0.030)*	179.902	4.157	1	
8	2	E2+1		8	1	E2−1			258 208.552 (0.011)*	55.610	0.274	1	
8	2	E2+1	8	8	1	E2−1	8		258 207.729 (0.011)	55.610	0.089	1	
8	2	E2+1	9	8	1	E2−1	9		258 208.898 (0.011)	55.610	0.101	1	
8	2	E2+1	7	8	1	E2−1	7		258 209.045 (0.011)	55.610	0.079	1	
5	2	B2		5	1	B1			258 349.241 (0.011)*	24.818	3.804	3	
5	2	B2	5	5	1	B1	5		258 348.239 (0.011)	24.818	1.185	3	
5	2	B2	6	5	1	B1	6		258 349.626 (0.011)	24.818	1.457	3	
5	2	B2	4	5	1	B1	4		258 349.908 (0.011)	24.818	0.996	3	
17	7	B2		18	6	B1			258 468.501 (0.034)*	350.208	2.890	3	
17	7	B1		18	6	B2			258 468.508 (0.034)*	350.208	2.890	3	
28	10	B2		29	9	B1			258 782.233 (0.064)*	860.739	5.156	3	
28	10	B1		29	9	B2			258 782.233 (0.064)*	860.739	5.156	3	
7	2	A2		7	1	A1			258 857.426 (0.012)*	44.005	5.080	1	
7	2	A2	7	7	1	A1	7		258 856.454 (0.012)	44.005	1.633	1	
7	2	A2	8	7	1	A1	8		258 857.827 (0.012)	44.005	1.889	1	
7	2	A2	6	7	1	A1	6		258 858.025 (0.012)	44.005	1.438	1	
8	0	E1+1		7	1	E1+1			259 042.415 (0.010)*	44.846	4.812	3	
8	0	E1+1	7	7	1	E1+1	6		259 041.876 (0.010)	44.846	1.390	3	
8	0	E1+1	9	7	1	E1+1	8		259 042.040 (0.010)	44.846	1.793	3	
8	0	E1+1	8	7	1	E1+1	7		259 043.308 (0.010)	44.846	1.579	3	
13	6	E2−1		14	5	E2−1			259 582.107 (0.026)*	223.091	2.028	1	
15	2	E1−1		14	3	E1+1			259 733.340 (0.020)*	179.598	1.204	3	
8	2	E1+1		8	1	E1−1			259 974.470 (0.012)*	55.719	2.781	3	
8	2	E1+1	8	8	1	E1−1	8		259 973.550 (0.012)	55.719	0.901	3	
8	2	E1+1	9	8	1	E1−1	9		259 974.858 (0.012)	55.719	1.023	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	2	E1+1	7	8	1	E1−1	7		259 975.023 (0.012)	55.719	0.805	3	
6	4	E2−1		7	3	E2−1			260 265.737 (0.016)*	66.004	0.675	1	
6	4	E2−1	6	7	3	E2−1	7		260 265.348 (0.016)	66.004	0.220	1	
6	4	E2−1	7	7	3	E2−1	8		260 265.896 (0.016)	66.004	0.255	1	
6	4	E2−1	5	7	3	E2−1	6		260 265.978 (0.016)	66.004	0.190	1	
10	2	E1−1		10	1	E1−1		260 293.904 (0.060)	260 293.983 (0.014)*	83.518	2.308	3	1
10	2	E1−1	10	10	1	E1−1	10		260 293.092 (0.015)	83.518	0.755	3	
10	2	E1−1	11	10	1	E1−1	11		260 294.371 (0.014)	83.518	0.836	3	
10	2	E1−1	9	10	1	E1−1	9		260 294.499 (0.014)	83.518	0.689	3	
25	0	E1+1		24	3	E1−1			260 299.617 (0.192)*	468.405	0.212	3	
12	1	E1−1		11	2	E1−1			260 427.074 (0.016)*	108.469	2.495	3	
8	2	E2−1		8	1	E2−1			260 508.452 (0.012)*	55.610	5.309	1	
8	2	E2−1	8	8	1	E2−1	8		260 507.533 (0.012)	55.610	1.721	1	
8	2	E2−1	9	8	1	E2−1	9		260 508.838 (0.012)	55.610	1.953	1	
8	2	E2−1	7	8	1	E2−1	7		260 509.003 (0.012)	55.610	1.537	1	
11	1	B2		10	2	B1		260 963.336 (0.060)	260 963.398 (0.021)*	92.668	3.943	3	1
4	1	E2+1		3	0	E2+1			261 024.312 (0.007)*	9.277	3.128	1	
4	1	E2+1	4	3	0	E2+1	3		261 023.757 (0.007)	9.277	0.978	1	
4	1	E2+1	5	3	0	E2+1	4		261 024.495 (0.007)	9.277	1.275	1	
4	1	E2+1	3	3	0	E2+1	2		261 024.763 (0.007)	9.277	0.745	1	
4	1	B1		3	0	B2		261 219.290 (0.060)	261 219.283 (0.010)*	9.079	3.924	3	1
4	1	B1	4	3	0	B2	3		261 218.420 (0.010)	9.079	1.226	3	
4	1	B1	5	3	0	B2	4		261 219.577 (0.010)	9.079	1.599	3	
4	1	B1	3	3	0	B2	2		261 219.952 (0.010)	9.079	0.934	3	
6	2	B1		6	1	B2		261 252.887 (0.060)	261 252.825 (0.011)*	33.601	4.472	3	1
6	2	B1	6	6	1	B2	6		261 251.850 (0.011)	33.601	1.420	3	
6	2	B1	7	6	1	B2	7		261 253.216 (0.011)	33.601	1.685	3	
6	2	B1	5	6	1	B2	5		261 253.446 (0.011)	33.601	1.226	3	
8	0	B1		7	1	B2		261 562.197 (0.060)	261 562.178 (0.018)*	44.668	4.881	3	1
8	0	B1	7	7	1	B2	6		261 561.632 (0.018)	44.668	1.410	3	
8	0	B1	9	7	1	B2	8		261 561.798 (0.018)	44.668	1.818	3	
8	0	B1	8	7	1	B2	7		261 563.082 (0.018)	44.668	1.602	3	
26	5	B2		25	6	B1			261 570.705 (0.031)*	577.592	6.457	3	
26	5	B1		25	6	B2			261 597.415 (0.031)*	577.592	6.457	3	
17	7	E2−1		18	6	E2−1			261 967.145 (0.033)*	349.952	2.892	1	
9	2	E2+1		9	1	E2−1			262 121.194 (0.012)*	68.785	0.124	1	
9	2	E2+1	9	9	1	E2−1	9		262 120.376 (0.012)	68.786	0.040	1	
9	2	E2+1	10	9	1	E2−1	10		262 121.545 (0.012)	68.785	0.045	1	
9	2	E2+1	8	9	1	E2−1	8		262 121.676 (0.012)	68.785	0.037	1	
26	5	E1−1		25	6	E1−1			262 853.801 (0.034)*	577.525	6.456	3	
8	2	A1		8	1	A2			262 997.969 (0.014)*	55.712	5.605	1	
8	2	A1	8	8	1	A2	8		262 996.985 (0.014)	55.712	1.817	1	
8	2	A1	9	8	1	A2	9		262 998.383 (0.014)	55.712	2.062	1	
8	2	A1	7	8	1	A2	7		262 998.559 (0.014)	55.712	1.623	1	
24	1	E2+1		24	0	E2+1			263 216.992 (0.295)*	440.700	0.032	1	
26	5	E2+1		25	6	E2+1			263 283.183 (0.028)*	577.743	6.435	1	
6	1	B2		5	1	B1			263 299.089 (0.006)*	24.818	0.549	3	
6	1	B2	7	5	1	B1	6		263 299.059 (0.006)	24.818	0.211	3	
6	1	B2	6	5	1	B1	5		263 299.112 (0.006)	24.818	0.178	3	
6	1	B2	5	5	1	B1	4		263 299.114 (0.006)	24.818	0.150	3	
6	1	A2		5	1	A1			263 299.359 (0.006)*	24.977	0.550	1	
6	1	A2	7	5	1	A1	6		263 299.330 (0.006)	24.977	0.212	1	
6	1	A2	6	5	1	A1	5		263 299.383 (0.006)	24.977	0.178	1	
6	1	A2	5	5	1	A1	4		263 299.385 (0.006)	24.977	0.150	1	
8	0	E2+1		7	1	E2+1			263 377.814 (0.009)*	44.804	4.613	1	
8	0	E2+1	7	7	1	E2+1	6		263 377.312 (0.009)	44.804	1.333	1	
8	0	E2+1	9	7	1	E2+1	8		263 377.463 (0.009)	44.804	1.719	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	0	E2+1	8	7	1	E2+1	7		263 378.648 (0.009)	44.804	1.514	1	
6	1	E1−1		5	1	E1−1			263 431.685 (0.006)*	24.974	0.549	3	
6	1	E1−1	7	5	1	E1−1	6		263 431.647 (0.006)	24.974	0.211	3	
6	1	E1−1	5	5	1	E1−1	4		263 431.694 (0.006)	24.974	0.150	3	
6	1	E1−1	6	5	1	E1−1	5		263 431.732 (0.006)	24.974	0.178	3	
25	0	E2+1		24	3	E2−1			263 791.670 (0.185)*	468.376	0.247	1	
6	1	E2−1		5	1	E2−1		263 840.097 (0.060)	263 840.124 (0.006)*	24.834	0.546	1	1
6	1	E2−1	7	5	1	E2−1	6		263 840.068 (0.006)	24.834	0.210	1	
6	1	E2−1	5	5	1	E2−1	4		263 840.096 (0.006)	24.834	0.149	1	
6	1	E2−1	6	5	1	E2−1	5		263 840.221 (0.006)	24.834	0.177	1	
4	1	E1+1		3	0	E1+1			264 172.179 (0.008)*	9.173	3.665	3	
4	1	E1+1	4	3	0	E1+1	3		264 171.416 (0.008)	9.173	1.145	3	
4	1	E1+1	5	3	0	E1+1	4		264 172.437 (0.008)	9.173	1.493	3	
4	1	E1+1	3	3	0	E1+1	2		264 172.777 (0.008)	9.173	0.873	3	
9	2	E1+1		9	1	E1−1			264 457.128 (0.014)*	68.888	3.370	3	
9	2	E1+1	9	9	1	E1−1	9		264 456.187 (0.014)	68.888	1.099	3	
9	2	E1+1	10	9	1	E1−1	10		264 457.531 (0.014)	68.888	1.229	3	
9	2	E1+1	8	9	1	E1−1	8		264 457.681 (0.014)	68.888	0.993	3	
7	2	B2		7	1	B1		264 752.377 (0.060)	264 752.355 (0.012)*	43.846	5.067	3	1
7	2	B2	7	7	1	B1	7		264 751.382 (0.012)	43.846	1.629	3	
7	2	B2	8	7	1	B1	8		264 752.755 (0.012)	43.846	1.884	3	
7	2	B2	6	7	1	B1	6		264 752.953 (0.012)	43.846	1.434	3	
19	3	E1+1		18	4	E1−1			264 855.705 (0.025)*	296.463	0.064	3	
26	5	E1+1		25	6	E1+1			264 894.433 (0.032)*	577.653	6.449	3	
9	2	E2−1		9	1	E2−1		265 064.393 (0.060)	265 064.448 (0.014)*	68.785	5.877	1	1
9	2	E2−1	9	9	1	E2−1	9		265 063.482 (0.014)	68.786	1.916	1	
9	2	E2−1	10	9	1	E2−1	10		265 064.862 (0.014)	68.785	2.144	1	
9	2	E2−1	8	9	1	E2−1	8		265 065.017 (0.014)	68.785	1.731	1	
6	4	E1+1		7	3	E1+1			265 142.551 (0.015)*	65.723	0.675	3	
6	4	E1+1	6	7	3	E1+1	7		265 142.163 (0.015)	65.723	0.221	3	
6	4	E1+1	7	7	3	E1+1	8		265 142.710 (0.015)	65.723	0.255	3	
6	4	E1+1	5	7	3	E1+1	6		265 142.792 (0.015)	65.723	0.191	3	
11	2	E1−1		11	1	E1−1		265 645.945 (0.060)	265 646.040 (0.016)*	99.608	1.895	3	1
6	0	E2+1		5	0	E2+1		265 742.552 (0.060)	265 742.574 (0.006)*	22.579	0.566	1	1
6	0	E2+1	7	5	0	E2+1	6		265 742.554 (0.006)	22.579	0.218	1	
6	0	E2+1	5	5	0	E2+1	4		265 742.578 (0.006)	22.579	0.154	1	
6	0	E2+1	6	5	0	E2+1	5		265 742.599 (0.006)	22.579	0.184	1	
6	0	E1+1		5	0	E1+1		265 746.624 (0.060)	265 746.636 (0.006)*	22.476	0.564	3	1
6	0	E1+1	7	5	0	E1+1	6		265 746.616 (0.006)	22.476	0.217	3	
6	0	E1+1	5	5	0	E1+1	4		265 746.640 (0.006)	22.476	0.154	3	
6	0	E1+1	6	5	0	E1+1	5		265 746.660 (0.006)	22.476	0.183	3	
6	0	B1		5	0	B2		265 749.321 (0.060)	265 749.325 (0.007)*	22.381	0.567	3	1
6	0	B1	7	5	0	B2	6		265 749.305 (0.007)	22.381	0.218	3	
6	0	B1	5	5	0	B2	4		265 749.330 (0.007)	22.381	0.155	3	
6	0	B1	6	5	0	B2	5		265 749.349 (0.007)	22.381	0.184	3	
6	0	A1		5	0	A2		265 757.212 (0.060)	265 757.223 (0.006)*	22.176	0.564	1	1
6	0	A1	7	5	0	A2	6		265 757.203 (0.006)	22.176	0.217	1	
6	0	A1	5	5	0	A2	4		265 757.228 (0.006)	22.176	0.154	1	
6	0	A1	6	5	0	A2	5		265 757.247 (0.006)	22.176	0.183	1	
6	2	B2		5	2	B1		265 957.488 (0.060)	265 957.508 (0.006)*	33.427	0.503	3	1
6	2	B2	5	5	2	B1	4		265 957.472 (0.006)	33.427	0.137	3	
6	2	B2	7	5	2	B1	6		265 957.473 (0.006)	33.427	0.193	3	
6	2	B2	6	5	2	B1	5		265 957.580 (0.006)	33.427	0.163	3	
6	2	A2		5	2	A1		265 958.426 (0.060)	265 958.468 (0.006)*	33.390	0.503	1	1
6	2	A2	5	5	2	A1	4		265 958.433 (0.006)	33.390	0.137	1	
6	2	A2	7	5	2	A1	6		265 958.433 (0.006)	33.390	0.193	1	
6	2	A2	6	5	2	A1	5		265 958.541 (0.006)	33.390	0.163	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	5	B1		5	5	B2			265 962.622 (0.011)*	89.922	0.173	3	
6	5	B1	5	5	5	B2	4		265 962.322 (0.011)	89.922	0.047	3	
6	5	B1	7	5	5	B2	6		265 962.465 (0.011)	89.922	0.066	3	
6	5	B1	6	5	5	B2	5		265 963.051 (0.011)	89.922	0.056	3	
6	5	B2		5	5	B1			265 962.622 (0.011)*	89.922	0.173	3	
6	5	B2	5	5	5	B1	4		265 962.322 (0.011)	89.922	0.047	3	
6	5	B2	7	5	5	B1	6		265 962.465 (0.011)	89.922	0.066	3	
6	5	B2	6	5	5	B1	5		265 963.051 (0.011)	89.922	0.056	3	
6	5	E2−1		5	5	E2−1			265 963.744 (0.010)*	90.046	0.173	1	
6	5	E2−1	5	5	5	E2−1	4		265 963.444 (0.010)	90.046	0.047	1	
6	5	E2−1	7	5	5	E2−1	6		265 963.587 (0.010)	90.046	0.066	1	
6	5	E2−1	6	5	5	E2−1	5		265 964.172 (0.010)	90.046	0.056	1	
6	5	E2+1		5	5	E2+1			265 966.624 (0.010)*	90.131	0.173	1	
6	5	E2+1	5	5	5	E2+1	4		265 966.324 (0.010)	90.131	0.047	1	
6	5	E2+1	7	5	5	E2+1	6		265 966.467 (0.010)	90.131	0.066	1	
6	5	E2+1	6	5	5	E2+1	5		265 967.052 (0.010)	90.131	0.056	1	
6	5	E1+1		5	5	E1+1			265 966.983 (0.010)*	90.092	0.173	3	
6	5	E1+1	5	5	5	E1+1	4		265 966.683 (0.010)	90.092	0.047	3	
6	5	E1+1	7	5	5	E1+1	6		265 966.825 (0.010)	90.092	0.066	3	
6	5	E1+1	6	5	5	E1+1	5		265 967.411 (0.010)	90.092	0.056	3	
6	5	A2		5	5	A1		265 967.066 (0.060)	265 967.016 (0.011)*	89.732	0.173	1	1
6	5	A2	5	5	5	A1	4		265 966.716 (0.011)	89.732	0.047	1	
6	5	A2	7	5	5	A1	6		265 966.859 (0.011)	89.732	0.067	1	
6	5	A2	6	5	5	A1	5		265 967.444 (0.011)	89.732	0.056	1	
6	5	A1		5	5	A2			265 967.016 (0.011)*	89.732	0.173	1	
6	5	A1	5	5	5	A2	4		265 966.716 (0.011)	89.732	0.047	1	
6	5	A1	7	5	5	A2	6		265 966.859 (0.011)	89.732	0.067	1	
6	5	A1	6	5	5	A2	5		265 967.444 (0.011)	89.732	0.056	1	
6	5	E1−1		5	5	E1−1			265 967.779 (0.010)*	89.894	0.173	3	
6	5	E1−1	5	5	5	E1−1	4		265 967.479 (0.010)	89.894	0.047	3	
6	5	E1−1	7	5	5	E1−1	6		265 967.622 (0.010)	89.894	0.067	3	
6	5	E1−1	6	5	5	E1−1	5		265 968.208 (0.010)	89.894	0.056	3	
6	4	A2		5	4	A1			265 986.986 (0.008)*	65.652	0.314	1	
6	4	A2	5	5	4	A1	4		265 986.801 (0.008)	65.652	0.086	1	
6	4	A2	7	5	4	A1	6		265 986.882 (0.008)	65.652	0.121	1	
6	4	A2	6	5	4	A1	5		265 987.259 (0.008)	65.652	0.102	1	
6	4	A		5	4	A		265 986.927 (0.060)	265 986.988 (0.008)*	65.652	0.628	1	1
6	4	A	5	5	4	A	4		265 986.803 (0.008)	65.652	0.171	1	
6	4	A	7	5	4	A	6		265 986.885 (0.008)	65.652	0.242	1	
6	4	A	6	5	4	A	5		265 987.262 (0.008)	65.652	0.204	1	
6	4	A1		5	4	A2			265 986.991 (0.008)*	65.652	0.314	1	
6	4	A1	5	5	4	A2	4		265 986.806 (0.008)	65.652	0.086	1	
6	4	A1	7	5	4	A2	6		265 986.888 (0.008)	65.652	0.121	1	
6	4	A1	6	5	4	A2	5		265 987.265 (0.008)	65.652	0.102	1	
6	4	E1+1		5	4	E1+1		265 988.006 (0.060)	265 988.079 (0.008)*	65.695	0.314	3	1
6	4	E1+1	5	5	4	E1+1	4		265 987.894 (0.008)	65.695	0.086	3	
6	4	E1+1	7	5	4	E1+1	6		265 987.976 (0.008)	65.695	0.121	3	
6	4	E1+1	6	5	4	E1+1	5		265 988.353 (0.008)	65.695	0.102	3	
6	4	E1−1		5	4	E1−1		265 990.310 (0.060)	265 990.312 (0.008)*	65.846	0.314	3	1
6	4	E1−1	5	5	4	E1−1	4		265 990.127 (0.008)	65.846	0.086	3	
6	4	E1−1	7	5	4	E1−1	6		265 990.208 (0.008)	65.846	0.121	3	
6	4	E1−1	6	5	4	E1−1	5		265 990.585 (0.008)	65.845	0.102	3	
6	4	E2−1		5	4	E2−1			265 991.618 (0.008)*	65.813	0.314	1	
6	4	E2−1	5	5	4	E2−1	4		265 991.433 (0.008)	65.813	0.086	1	
6	4	E2−1	7	5	4	E2−1	6		265 991.515 (0.008)	65.813	0.121	1	
6	4	E2−1	6	5	4	E2−1	5		265 991.892 (0.008)	65.813	0.102	1	
6	4	E2+1		5	4	E2+1		265 991.761 (0.060)	265 991.657 (0.008)*	65.537	0.314	1	1

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	4	E2+1	5	5	4	E2+1	4		265 991.472 (0.008)	65.537	0.086	1	
6	4	E2+1	7	5	4	E2+1	6		265 991.553 (0.008)	65.537	0.121	1	
6	4	E2+1	6	5	4	E2+1	5		265 991.930 (0.008)	65.537	0.102	1	
6	4	B2		5	4	B1			265 991.879 (0.008)*	65.462	0.314	3	
6	4	B2	5	5	4	B1	4		265 991.694 (0.008)	65.462	0.086	3	
6	4	B2	7	5	4	B1	6		265 991.775 (0.008)	65.462	0.121	3	
6	4	B2	6	5	4	B1	5		265 992.152 (0.008)	65.462	0.102	3	
6	4	B1		5	4	B2			265 991.885 (0.008)*	65.462	0.314	3	
6	4	B1	5	5	4	B2	4		265 991.700 (0.008)	65.462	0.086	3	
6	4	B1	7	5	4	B2	6		265 991.781 (0.008)	65.462	0.121	3	
6	4	B1	6	5	4	B2	5		265 992.158 (0.008)	65.462	0.102	3	
6	3	E2+1		5	3	E2+1		266 015.981 (0.060)	266 016.016 (0.007)*	46.701	0.424	1	1
6	3	E2+1	5	5	3	E2+1	4		266 015.921 (0.007)	46.701	0.116	1	
6	3	E2+1	7	5	3	E2+1	6		266 015.955 (0.007)	46.701	0.163	1	
6	3	E2+1	6	5	3	E2+1	5		266 016.168 (0.007)	46.701	0.138	1	
6	3	B2		5	3	B1		266 016.495 (0.060)	266 016.502 (0.007)*	46.911	0.424	3	1
6	3	B2	5	5	3	B1	4		266 016.407 (0.007)	46.911	0.116	3	
6	3	B2	7	5	3	B1	6		266 016.440 (0.007)	46.911	0.163	3	
6	3	B2	6	5	3	B1	5		266 016.654 (0.007)	46.911	0.137	3	
6	3	E1−1		5	3	E1−1			266 018.076 (0.007)*	46.883	0.424	3	
6	3	E1−1	5	5	3	E1−1	4		266 017.981 (0.007)	46.883	0.116	3	
6	3	E1−1	7	5	3	E1−1	6		266 018.014 (0.007)	46.883	0.163	3	
6	3	E1−1	6	5	3	E1−1	5		266 018.227 (0.007)	46.883	0.138	3	
6	3	B1		5	3	B2		266 018.409 (0.060)	266 018.515 (0.007)*	46.911	0.424	3	1
6	3	B1	5	5	3	B2	4		266 018.421 (0.007)	46.911	0.116	3	
6	3	B1	7	5	3	B2	6		266 018.454 (0.007)	46.911	0.163	3	
6	3	B1	6	5	3	B2	5		266 018.667 (0.007)	46.911	0.1373	6	
6	3	A2		5	3	A1			266 019.673 (0.007)*	46.811	0.424	1	
6	3	A2	5	5	3	A1	4		266 019.578 (0.007)	46.811	0.116	1	
6	3	A2	7	5	3	A1	6		266 019.612 (0.007)	46.811	0.163	1	
6	3	A2	6	5	3	A1	5		266 019.825 (0.007)	46.811	0.137	1	
6	3	E2−1		5	3	E2−1			266 020.323 (0.007)*	46.778	0.424	1	
6	3	E2−1	5	5	3	E2−1	4		266 020.228 (0.007)	46.778	0.116	1	
6	3	E2−1	7	5	3	E2−1	6		266 020.262 (0.007)	46.778	0.163	1	
6	3	E2−1	6	5	3	E2−1	5		266 020.475 (0.007)	46.778	0.137	1	
6	3	E1+1		5	3	E1+1		266 021.467 (0.060)	266 021.477 (0.007)*	46.497	0.424	3	1
6	3	E1+1	5	5	3	E1+1	4		266 021.382 (0.007)	46.497	0.116	3	
6	3	E1+1	7	5	3	E1+1	6		266 021.416 (0.007)	46.497	0.163	3	
6	3	E1+1	6	5	3	E1+1	5		266 021.628 (0.007)	46.497	0.137	3	
6	3	A1		5	3	A2			266 021.731 (0.007)*	46.811	0.424	1	
6	3	A1	5	5	3	A2	4		266 021.636 (0.007)	46.811	0.116	1	
6	3	A1	7	5	3	A2	6		266 021.669 (0.007)	46.811	0.163	1	
6	3	A1	6	5	3	A2	5		266 021.882 (0.007)	46.811	0.137	1	
6	2	E2+1		5	2	E2+1		266 058.732 (0.060)	266 058.749 (0.006)*	33.165	0.500	1	1
6	2	E2+1	5	5	2	E2+1	4		266 058.716 (0.006)	33.165	0.136	1	
6	2	E2+1	7	5	2	E2+1	6		266 058.716 (0.006)	33.165	0.192	1	
6	2	E2+1	6	5	2	E2+1	5		266 058.817 (0.006)	33.165	0.162	1	
6	2	E1−1		5	2	E1−1		266 082.055 (0.060)	266 082.066 (0.006)*	33.030	0.502	3	1
6	2	E1−1	7	5	2	E1−1	6		266 082.036 (0.006)	33.030	0.193	3	
6	2	E1−1	5	5	2	E1−1	4		266 082.037 (0.006)	33.030	0.137	3	
6	2	E1−1	6	5	2	E1−1	5		266 082.128 (0.006)	33.030	0.163	3	
6	2	E1+1		5	2	E1+1		266 084.933 (0.060)	266 084.941 (0.006)*	33.322	0.503	3	1
6	2	E1+1	7	5	2	E1+1	6		266 084.912 (0.006)	33.322	0.193	3	
6	2	E1+1	5	5	2	E1+1	4		266 084.914 (0.006)	33.322	0.137	3	
6	2	E1+1	6	5	2	E1+1	5		266 085.000 (0.006)	33.322	0.163	3	
6	2	E2−1		5	2	E2−1		266 108.951 (0.060)	266 108.939 (0.006)*	33.224	0.501	1	1
6	2	E2−1	7	5	2	E2−1	6		266 108.912 (0.006)	33.224	0.193	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	2	E2−1	5	5	2	E2−1	4		266 108.915 (0.006)	33.224	0.137	1	
6	2	E2−1	6	5	2	E2−1	5		266 108.992 (0.006)3	3.224	0.162	1	
24	9	E2−1		25	8	E2−1			266 185.873 (0.064)*	653.122	4.279	1	
6	2	A1		5	2	A2		266 200.594 (0.060)	266 200.595 (0.006)*	33.398	0.503	1	1
6	2	A1	7	5	2	A2	6		266 200.570 (0.006)	33.398	0.193	1	
6	2	A1	5	5	2	A2	4		266 200.573 (0.006)	33.398	0.137	1	
6	2	A1	6	5	2	A2	5		266 200.644 (0.006)	33.398	0.163	1	
6	2	B1		5	2	B2		266 202.659 (0.060)	266 202.673 (0.006)*	33.435	0.503	3	1
6	2	B1	7	5	2	B2	6		266 202.649 (0.006)	33.435	0.193	3	
6	2	B1	5	5	2	B2	4		266 202.652 (0.006)	33.435	0.137	3	
6	2	B1	6	5	2	B2	5		266 202.722 (0.006)	33.435	0.163	3	
10	2	E2+1		10	1	E2−1			266 513.729 (0.014)*	83.420	0.041	1	
10	2	E2+1	10	10	1	E2−1	10		266 512.915 (0.014)	83.420	0.013	1	
10	2	E2+1	11	10	1	E2−1	11		266 514.083 (0.014)	83.420	0.015	1	
10	2	E2+1	9	10	1	E2−1	9		266 514.201 (0.014)	83.420	0.012	1	
15	2	E1+1		14	3	E1−1			266 757.618 (0.024)*	179.981	1.254	3	
11	1	A2		10	2	A1		266 775.502 (0.060)	266 775.423 (0.019)*	92.630	3.921	1	1
24	9	A1		25	8	A2			266 941.716 (0.047)*	652.957	4.281	1	
24	9	A2		25	8	A1			266 941.716 (0.047)*	652.957	4.281	1	
24	9	E1−1		25	8	E1−1			267 588.147 (0.042)*	653.160	4.275	3	
13	6	E1+1		14	5	E1+1			267 759.645 (0.028)*	223.140	2.026	3	
9	2	A2		9	1	A1			267 838.721 (0.016)*	68.880	6.051	1	
9	2	A2	9	9	1	A1	9		267 837.715 (0.016)	68.880	1.973	1	
9	2	A2	10	9	1	A1	10		267 839.152 (0.016)	68.880	2.207	1	
9	2	A2	8	9	1	A1	8		267 839.312 (0.016)	68.880	1.782	1	
6	1	E2+1		5	1	E2+1			268 038.409 (0.006)*	25.426	0.546	1	
6	1	E2+1	6	5	1	E2+1	5		268 038.358 (0.006)	25.426	0.177	1	
6	1	E2+1	7	5	1	E2+1	6		268 038.429 (0.006)	25.426	0.210	1	
6	1	E2+1	5	5	1	E2+1	4		268 038.441 (0.006)	25.426	0.149	1	
6	1	E1+1		5	1	E1+1			268 442.510 (0.006)*	25.444	0.549	3	
6	1	E1+1	5	5	1	E1+1	4		268 442.505 (0.006)	25.444	0.150	3	
6	1	E1+1	6	5	1	E1+1	5		268 442.510 (0.006)	25.444	0.178	3	
6	1	E1+1	7	5	1	E1+1	6		268 442.512 (0.006)	25.444	0.211	3	
6	1	A1		5	1	A2			268 573.503 (0.006)*	25.417	0.551	1	
6	1	A1	5	5	1	A2	4		268 573.481 (0.006)	25.417	0.150	1	
6	1	A1	7	5	1	A2	6		268 573.496 (0.006)	25.417	0.212	1	
6	1	A1	6	5	1	A2	5		268 573.526 (0.006)	25.417	0.178	1	
6	1	B1		5	1	B2			268 582.407 (0.006)*	25.259	0.549	3	
6	1	B1	5	5	1	B2	4		268 582.386 (0.006)	25.259	0.150	3	
6	1	B1	7	5	1	B2	6		268 582.400 (0.006)	25.259	0.211	3	
6	1	B1	6	5	1	B2	5		268 582.430 (0.006)	25.259	0.178	3	
24	9	E2+1		25	8	E2+1			268 591.237 (0.054)*	652.949	4.283	1	
8	2	B1		8	1	B2			268 898.057 (0.014)*	55.553	5.586	3	
8	2	B1	8	8	1	B2	8		268 897.072 (0.014)	55.553	1.811	3	
8	2	B1	9	8	1	B2	9		268 898.472 (0.014)	55.553	2.056	3	
8	2	B1	7	8	1	B2	7		268 898.648 (0.014)	55.553	1.617	3	
19	3	E1+1		18	4	E1+1			269 343.626 (0.017)*	296.314	5.035	3	
13	6	E2+1		14	5	E2+1			269 435.561 (0.027)*	223.178	2.025	1	
15	2	E2−1		14	3	E2−1			269 504.359 (0.027)*	179.878	2.744	1	
10	2	E1+1		10	1	E1−1			269 659.456 (0.016)*	83.518	4.011	3	
10	2	E1+1	10	10	1	E1−1	10		269 658.485 (0.016)	83.518	1.313	3	
10	2	E1+1	11	10	1	E1−1	11		269 659.878 (0.016)	83.518	1.452	3	
10	2	E1+1	9	10	1	E1−1	9		269 660.018 (0.016)	83.518	1.198	3	
13	6	E1−1		14	5	E1−1			269 952.665 (0.028)*	222.942	2.027	3	
30	6	E2−1		29	7	E2−1			270 263.058 (0.054)*	774.860	7.346	1	
10	2	E2−1		10	1	E2−1		270 476.893 (0.060)	270 476.894 (0.017)*	83.420	6.291	1	1
10	2	E2−1	10	10	1	E2−1	10		270 475.880 (0.017)	83.420	2.059	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	2	E2−1	11	10	1	E2−1	11		270 477.335 (0.017)	83.420	2.278	1	
10	2	E2−1	9	10	1	E2−1	9		270 477.481 (0.017)	83.420	1.878	1	
11	1	E1+1		10	2	E1+1			270 690.085 (0.010)*	92.513	2.859	3	
13	6	B2		14	5	B1			270 998.730 (0.024)*	222.967	2.027	3	
13	6	B1		14	5	B2			270 998.788 (0.024)*	222.967	2.027	3	
11	1	E2+1		10	2	E2−1		271 003.355 (0.060)	271 003.368 (0.013)*	92.442	3.605	1	1
19	3	E2+1		18	4	E2−1			271 187.891 (0.022)*	296.432	0.875	1	
12	2	E1−1		12	1	E1−1			271 461.292 (0.017)*	117.155	1.441	3	
15	2	B2		14	3	B1			271 858.866 (0.026)*	180.015	4.257	3	
15	2	E2−1		14	3	E2+1			271 892.819 (0.026)*	179.798	1.529	1	
4	1	A1		3	0	A2			272 148.016 (0.011)*	8.873	3.926	1	
4	1	A1	4	3	0	A2	3		272 147.154 (0.011)	8.873	1.227	1	
4	1	A1	5	3	0	A2	4		272 148.310 (0.011)	8.873	1.599	1	
4	1	A1	3	3	0	A2	2		272 148.685 (0.011)	8.873	0.935	1	
26	5	E2−1		25	6	E2−1			272 768.757 (0.035)*	577.337	6.464	1	
10	2	A1		10	1	A2		273 440.216 (0.060)	273 440.209 (0.018)*	83.509	6.414	1	1
10	2	A1	10	10	1	A2	10		273 439.174 (0.018)	83.509	2.099	1	
10	2	A1	11	10	1	A2	11		273 440.659 (0.018)	83.509	2.322	1	
10	2	A1	9	10	1	A2	9		273 440.808 (0.018)	83.509	1.915	1	
15	2	A2		14	3	A1			273 534.159 (0.028)*	179.917	4.277	1	
30	6	B2		29	7	B1			273 683.571 (0.059)*	774.999	7.330	3	
30	6	B1		29	7	B2			273 686.343 (0.059)*	774.999	7.330	3	
9	2	B2		9	1	B1		273 745.850 (0.060)	273 745.927 (0.016)*	68.721	6.025	3	1
9	2	B2	9	9	1	B1	9		273 744.920 (0.016)	68.721	1.964	3	
9	2	B2	10	9	1	B1	10		273 746.359 (0.016)	68.721	2.198	3	
9	2	B2	8	9	1	B1	8		273 746.520 (0.016)	68.721	1.775	3	
19	3	E2−1		18	4	E2−1			274 715.332 (0.022)*	296.432	4.213	1	
11	1	E2+1		10	2	E2+1			274 966.532 (0.011)*	92.309	0.365	1	
25	0	E1+1		24	3	E1+1			275 166.776 (0.242)*	467.909	0.028	3	
11	2	E1+1		11	1	E1−1			275 674.606 (0.018)*	99.608	4.671	3	
30	6	A2		29	7	A1			275 747.357 (0.051)*	775.026	7.318	1	
30	6	A1		29	7	A2			275 750.117 (0.051)*	775.026	7.318	1	
20	8	E1+1		21	7	E1+1			275 871.697 (0.040)*	473.858	3.416	3	
20	8	A1		21	7	A2			275 888.043 (0.046)*	474.042	3.412	1	
20	8	A2		21	7	A1			275 888.043 (0.046)*	474.042	3.412	1	
19	3	E1−1		18	4	E1−1			276 380.251 (0.021)*	296.463	5.011	3	
24	9	E1+1		25	8	E1+1			276 766.978 (0.054)*	652.774	4.285	3	
11	2	E2−1		11	1	E2−1			276 793.445 (0.020)*	99.512	6.564	1	
9	5	E1−1		10	4	E1−1			277 560.111 (0.023)*	124.992	1.182	3	
9	5	E1−1	9	10	4	E1−1	10		277 559.879 (0.023)	124.992	0.390	3	
9	5	E1−1	10	10	4	E1−1	11		277 560.213 (0.023)	124.992	0.431	3	
9	5	E1−1	8	10	4	E1−1	9		277 560.245 (0.023)	124.992	0.352	3	
13	2	E1−1		13	1	E1−1			277 704.001 (0.021)*	136.161	1.023	3	
15	2	E1+1		14	3	E1+1			278 217.266 (0.022)*	179.598	3.027	3	
9	5	A2		10	4	A1			278 521.409 (0.019)*	124.797	1.182	1	
9	5	A2	9	10	4	A1	10		278 521.177 (0.019)	124.797	0.390	1	
9	5	A2	10	10	4	A1	11		278 521.510 (0.019)	124.797	0.432	1	
9	5	A2	8	10	4	A1	9		278 521.542 (0.019)	124.797	0.353	1	
9	5	A1		10	4	A2			278 521.884 (0.019)*	124.797	1.182	1	
9	5	A1	9	10	4	A2	10		278 521.653 (0.019)	124.797	0.390	1	
9	5	A1	10	10	4	A2	11		278 521.985 (0.019)	124.797	0.432	1	
9	5	A1	8	10	4	A2	9		278 522.017 (0.019)	124.797	0.353	1	
19	3	A1		18	4	A2			278 619.919 (0.020)*	296.269	5.083	1	
19	3	E2+1		18	4	E2+1			279 351.877 (0.016)*	296.160	4.219	1	
10	2	B1		10	1	B2			279 356.862 (0.018)*	83.350	6.379	3	
10	2	B1	10	10	1	B2	10		279 355.825 (0.018)	83.350	2.088	3	
10	2	B1	11	10	1	B2	11		279 357.313 (0.018)	83.350	2.310	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	2	B1	9	10	1	B2	9		279 357.462 (0.018)	83.350	1.905	3	
13	6	A2		14	5	A1			279 702.440 (0.025)*	222.780	2.028	1	
13	6	A1		14	5	A2			279 702.498 (0.025)*	222.780	2.028	1	
11	2	A2		11	1	A1			279 866.780 (0.020)*	99.597	6.689	1	
30	6	E1−1		29	7	E1−1			280 054.257 (0.058)*	774.717	7.345	3	
11	1	E1+1		10	2	E1−1			280 055.557 (0.012)*	92.201	1.109	3	
30	6	E1+1		29	7	E1+1			280 124.509 (0.051)*	774.840	7.324	3	
26	0	A1		25	3	A2			280 522.414 (0.225)*	505.447	0.219	1	
25	1	E2+1		25	0	E2+1			280 554.893 (0.361)*	477.175	0.029	1	
19	3	E1−1		18	4	E1+1			280 868.172 (0.018)*	296.314	0.065	3	
20	8	B1		21	7	B2			280 912.980 (0.037)*	474.014	3.409	3	
20	8	B2		21	7	B1			280 912.980 (0.037)*	474.014	3.409	3	
19	3	A2		18	4	A1			281 236.808 (0.023)*	296.270	5.093	1	
12	2	E1+1		12	1	E1−1			282 609.257 (0.022)*	117.155	5.282	3	
19	3	E2−1		18	4	E2+1			282 879.318 (0.020)*	296.160	0.881	1	
9	5	E2−1		10	4	E2−1			283 048.390 (0.022)*	124.960	1.181	1	
9	5	E2−1	9	10	4	E2−1	10		283 048.159 (0.022)	124.960	0.390	1	
9	5	E2−1	10	10	4	E2−1	11		283 048.492 (0.022)	124.960	0.431	1	
9	5	E2−1	8	10	4	E2−1	9		283 048.524 (0.022)	124.960	0.352	1	
26	0	B1		25	3	B2			283 136.654 (0.218)*	505.530	0.237	3	
13	1	B1		12	2	B2		283 515.960 (0.060)	283 515.979 (0.033)*	126.533	3.427	3	1
12	2	E2−1		12	1	E2−1		284 065.688 (0.060)	284 065.621 (0.023)*	117.062	6.722	1	1
8	0	E1+1		7	1	E1−1			284 122.543 (0.010)*	44.009	0.049	3	
8	0	E1+1	8	7	1	E1−1	7		284 121.953 (0.010)	44.010	0.016	3	
8	0	E1+1	9	7	1	E1−1	8		284 122.779 (0.010)	44.009	0.018	3	
8	0	E1+1	7	7	1	E1−1	6		284 122.918 (0.010)	44.009	0.014	3	
23	4	E2+1		22	5	E2+1			284 230.598 (0.027)*	441.833	5.967	1	
14	2	E1−1		14	1	E1−1			284 353.497 (0.026)*	156.624	0.689	3	
13	1	E2−1		12	2	E2−1			285 770.558 (0.017)*	126.538	0.147	1	
11	2	B2		11	1	B1		285 795.489 (0.060)	285 795.535 (0.020)*	99.438	6.645	3	1
20	8	E2−1		21	7	E2−1			285 864.980 (0.043)*	473.874	3.412	1	
27	10	E1−1		28	9	E1−1			286 289.194 (0.096)*	818.398	4.798	3	
20	8	E2+1		21	7	E2+1			286 512.124 (0.047)*	473.681	3.415	1	
30	3	E1+1		30	2	E1+1			286 769.309 (0.248)*	701.965	23.861	3	
19	3	B1		18	4	B2			287 013.679 (0.023)*	296.085	5.095	3	
13	1	E1−1		12	2	E1+1			287 165.866 (0.017)*	126.582	0.517	3	
12	2	A1		12	1	A2		287 185.230 (0.060)	287 185.255 (0.022)*	117.144	6.877	1	1
26	0	E1+1		25	3	E1−1			287 664.634 (0.231)*	505.406	0.233	3	
30	3	E2+1		30	2	E2−1			287 847.596 (0.259)*	701.992	24.225	1	
30	6	E2+1		29	7	E2+1			287 874.396 (0.064)*	774.670	7.336	1	
9	5	E1+1		10	4	E1+1			288 035.577 (0.022)*	124.840	1.181	3	
9	5	E1+1	9	10	4	E1+1	10		288 035.345 (0.022)	124.840	0.390	3	
9	5	E1+1	10	10	4	E1+1	11		288 035.678 (0.022)	124.840	0.431	3	
9	5	E1+1	8	10	4	E1+1	9		288 035.710 (0.022)	124.840	0.352	3	
30	3	A2		30	2	A1			288 078.730 (0.404)*	702.040	24.419	1	
16	7	E2+1		17	6	E2+1			288 079.971 (0.035)*	323.775	2.549	1	
23	4	B1		22	5	B2			288 124.505 (0.027)*	441.622	5.979	3	
23	4	B2		22	5	B1			288 469.912 (0.027)*	441.622	5.980	3	
30	3	B2		30	2	B1			289 000.109 (0.354)*	702.096	24.488	3	
5	1	E2−1		4	0	E2+1			289 136.454 (0.009)*	15.190	0.600	1	
5	1	E2−1	4	4	0	E2+1	3		289 136.167 (0.009)	15.190	0.156	1	
5	1	E2−1	6	4	0	E2+1	5		289 136.258 (0.009)	15.190	0.236	1	
5	1	E2−1	5	4	0	E2+1	4		289 136.931 (0.009)	15.190	0.192	1	
13	1	A1		12	2	A2			289 373.852 (0.032)*	126.496	3.420	1	
19	3	B2		18	4	B1			289 575.187 (0.023)*	296.086	5.106	3	
9	5	B2		10	4	B1			289 840.296 (0.021)*	124.609	1.182	3	
9	5	B2	9	10	4	B1	10		289 840.065 (0.021)	124.609	0.390	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	5	B2	10	10	4	B1	11		289 840.397 (0.021)	124.609	0.432	3	
9	5	B2	8	10	4	B1	9		289 840.429 (0.021)	124.609	0.353	3	
9	5	B1		10	4	B2			289 840.782 (0.021)*	124.609	1.182	3	
9	5	B1	9	10	4	B2	10		289 840.551 (0.021)	124.609	0.390	3	
9	5	B1	10	10	4	B2	11		289 840.883 (0.021)	124.609	0.432	3	
9	5	B1	8	10	4	B2	9		289 840.915 (0.021)	124.609	0.353	3	
23	4	E1+1		22	5	E1+1			289 853.935 (0.028)*	441.795	5.952	3	
5	4	B2		6	3	B1			290 127.257 (0.018)*	55.785	0.394	3	
5	4	B2	5	6	3	B1	6		290 126.688 (0.018)	55.785	0.128	3	
5	4	B2	6	6	3	B1	7		290 127.479 (0.018)	55.785	0.151	3	
5	4	B2	4	6	3	B1	5		290 127.631 (0.018)	55.785	0.107	3	
5	4	B1		6	3	B2			290 130.277 (0.018)*	55.785	0.394	3	
5	4	B1	5	6	3	B2	6		290 129.707 (0.018)	55.785	0.128	3	
5	4	B1	6	6	3	B2	7		290 130.499 (0.018)	55.785	0.151	3	
5	4	B1	4	6	3	B2	5		290 130.651 (0.018)	55.785	0.107	3	
13	2	E1+1		13	1	E1−1			290 567.800 (0.025)*	136.161	5.768	3	
8	0	E2+1		7	1	E2−1			290 684.741 (0.011)*	43.893	0.242	1	
8	0	E2+1	8	7	1	E2−1	7		290 684.212 (0.011)	43.894	0.079	1	
8	0	E2+1	9	7	1	E2−1	8		290 684.952 (0.011)	43.893	0.090	1	
8	0	E2+1	7	7	1	E2−1	6		290 685.078 (0.011)	43.893	0.070	1	
26	0	E2+1		25	3	E2−1			290 781.966 (0.224)*	505.387	0.261	1	
9	0	A2		8	1	A1			290 823.825 (0.021)*	56.767	5.428	1	
9	0	A2	8	8	1	A1	7		290 823.281 (0.021)	56.767	1.597	1	
9	0	A2	10	8	1	A1	9		290 823.431 (0.021)	56.767	2.000	1	
9	0	A2	9	8	1	A1	8		290 824.746 (0.021)	56.767	1.787	1	
15	2	E1−1		15	1	E1−1			291 405.509 (0.035)*	178.542	0.450	3	
16	2	E1−1		15	3	E1−1			291 430.126 (0.026)*	202.163	3.008	3	
20	8	E1−1		21	7	E1−1			291 509.841 (0.044)*	473.724	3.414	3	
13	2	E2−1		13	1	E2−1			292 349.961 (0.027)*	136.070	6.781	1	
13	1	E2−1		12	2	E2+1			293 125.558 (0.027)*	126.293	3.283	1	
12	2	B1		12	1	B2		293 128.948 (0.060)	293 129.026 (0.023)*	116.985	6.822	3	1
27	10	A1		28	9	A2			293 421.315 (0.080)*	818.172	4.803	1	
27	10	A2		28	9	A1			293 421.315 (0.080)*	818.172	4.803	1	
27	10	E2−1		28	9	E2−1			293 696.744 (0.071)*	818.314	4.795	1	
9	5	E2+1		10	4	E2+1			293 898.439 (0.022)*	124.684	1.182	1	
9	5	E2+1	9	10	4	E2+1	10		293 898.207 (0.022)	124.684	0.390	1	
9	5	E2+1	10	10	4	E2+1	11		293 898.540 (0.022)	124.684	0.431	1	
9	5	E2+1	8	10	4	E2+1	9		293 898.572 (0.022)	124.684	0.352	1	
23	4	E2−1		22	5	E2−1			294 868.887 (0.026)*	441.744	5.952	1	
13	2	A2		13	1	A1		295 463.400 (0.060)	295 463.358 (0.024)*	136.149	6.976	1	1
16	2	E2+1		15	3	E2−1			295 768.357 (0.029)*	202.061	1.470	1	
16	7	E1−1		17	6	E1−1			295 942.787 (0.036)*	323.555	2.551	3	
28	5	A1		29	2	A2			296 142.661 (0.519)*	657.439	0.023	1	
16	7	E1+1		17	6	E1+1			296 256.846 (0.033)*	323.681	2.547	3	
5	1	E1−1		4	0	E1+1			296 432.338 (0.009)*	15.086	0.153	3	
5	1	E1−1	4	4	0	E1+1	3		296 431.954 (0.009)	15.086	0.040	3	
5	1	E1−1	6	4	0	E1+1	5		296 432.085 (0.009)	15.086	0.060	3	
5	1	E1−1	5	4	0	E1+1	4		296 432.959 (0.009)	15.086	0.049	3	
29	3	E1+1		29	2	E1+1			297 060.763 (0.214)*	657.356	22.537	3	
27	5	A1		26	6	A2			297 759.895 (0.042)*	616.060	6.856	1	
27	5	A2		26	6	A1			297 799.139 (0.042)*	616.060	6.856	1	
16	2	E2+1		15	3	E2+1			298 205.869 (0.028)*	201.980	3.087	1	
29	3	E2+1		29	2	E2−1			298 309.970 (0.222)*	657.383	23.027	1	
13	1	E1−1		12	2	E1−1			298 313.831 (0.022)*	126.210	2.902	3	
29	3	A1		29	2	A2			298 372.370 (0.347)*	657.439	23.224	1	
26	1	E2+1		26	0	E2+1			298 428.284 (0.436)*	515.086	0.027	1	
5	4	E2+1		6	3	E2+1			298 678.312 (0.017)*	55.574	0.394	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
5	4	E2+1	5	6	3	E2+1	6		298 677.743 (0.017)	55.574	0.128	1	
5	4	E2+1	6	6	3	E2+1	7		298 678.534 (0.017)	55.574	0.151	1	
5	4	E2+1	4	6	3	E2+1	5		298 678.685 (0.017)	55.574	0.107	1	
27	10	E1+1		28	9	E1+1			298 680.735 (0.082)*	818.319	4.795	3	
5	4	A2		6	3	A1			298 817.340 (0.017)*	55.684	0.394	1	
5	4	A2	5	6	3	A1	6		298 816.772 (0.017)	55.684	0.128	1	
5	4	A2	6	6	3	A1	7		298 817.562 (0.017)	55.684	0.151	1	
5	4	A2	4	6	3	A1	5		298 817.713 (0.017)	55.684	0.107	1	
5	4	A1		6	3	A2			298 820.426 (0.017)*	55.684	0.394	1	
5	4	A1	5	6	3	A2	6		298 819.857 (0.017)	55.684	0.128	1	
5	4	A1	6	6	3	A2	7		298 820.648 (0.017)	55.684	0.151	1	
5	4	A1	4	6	3	A2	5		298 820.799 (0.017)	55.684	0.107	1	
16	2	E1−1		16	1	E1−1			298 865.819 (0.047)*	201.915	0.288	3	
23	4	A1		22	5	A2			298 971.625 (0.026)*	441.440	5.983	1	
9	0	E1+1		8	1	E1+1			299 189.760 (0.012)*	56.785	5.353	3	
9	0	E1+1	8	8	1	E1+1	7		299 189.217 (0.012)	56.785	1.574	3	
9	0	E1+1	10	8	1	E1+1	9		299 189.367 (0.012)	56.785	1.972	3	
9	0	E1+1	9	8	1	E1+1	8		299 190.679 (0.012)	56.785	1.762	3	
23	4	A2		22	5	A1			299 309.598 (0.025)*	441.440	5.984	1	
29	3	B1		29	2	B2			299 313.549 (0.304)*	657.496	23.286	3	
16	2	B2		15	3	B1			299 387.174 (0.036)*	202.179	4.535	3	
14	2	E1+1		14	1	E1−1			299 638.450 (0.030)*	156.624	6.084	3	
28	5	B1		29	2	B2			299 716.458 (0.491)*	657.496	0.025	3	
23	4	E1−1		22	5	E1−1			300 124.496 (0.030)*	441.598	5.960	3	
16	7	A1		17	6	A2			300 589.620 (0.038)*	323.720	2.547	1	
16	7	A2		17	6	A1			300 589.624 (0.038)*	323.720	2.547	1	
27	10	E2+1		28	9	E2+1			300 863.579 (0.112)*	818.223	4.799	1	
16	2	A2		15	3	A1			301 247.502 (0.038)*	202.081	4.550	1	
13	2	B2		13	1	B1			301 425.201 (0.025)*	135.990	6.910	3	
23	9	B2		24	8	B1			301 596.505 (0.059)*	616.212	3.935	3	
23	9	B1		24	8	B2			301 596.505 (0.059)*	616.212	3.935	3	
9	0	B2		8	1	B1			301 653.833 (0.022)*	56.610	5.415	39	
9	0	B2	8	8	1	B1	7		301 653.287 (0.022)	56.610	1.593	3	
9	0	B2	10	8	1	B1	9		301 653.438 (0.022)	56.610	1.995	3	
9	0	B2	9	8	1	B1	8		301 654.757 (0.022)	56.610	1.783	3	
14	2	E2−1		14	1	E2−1			301 705.652 (0.031)*	156.534	6.752	1	
5	4	E1−1		6	3	E1−1			302 465.058 (0.017)*	55.756	0.393	3	
5	4	E1−1	5	6	3	E1−1	6		302 464.489 (0.017)	55.756	0.127	3	
5	4	E1−1	6	6	3	E1−1	7		302 465.280 (0.017)	55.756	0.151	3	
5	4	E1−1	4	6	3	E1−1	5		302 465.431 (0.017)	55.756	0.107	3	
16	7	B1		17	6	B2			302 801.831 (0.041)*	323.618	2.548	3	
16	7	B2		17	6	B1			302 801.834 (0.041)*	323.618	2.548	3	
16	2	E1−1		15	3	E1+1			302 866.830 (0.026)*	201.781	1.558	3	
27	10	B1		28	9	B2			302 988.856 (0.077)*	817.993	4.804	3	
27	10	B2		28	9	B1			302 988.856 (0.077)*	817.993	4.804	3	
9	0	E2+1		8	1	E2+1			303 734.501 (0.010)*	56.736	5.207	1	
9	0	E2+1	8	8	1	E2+1	7		303 733.981 (0.010)	56.736	1.531	1	
9	0	E2+1	10	8	1	E2+1	9		303 734.124 (0.010)	56.736	1.918	1	
9	0	E2+1	9	8	1	E2+1	8		303 735.383 (0.010)	56.736	1.714	1	
12	6	E2−1		13	5	E2−1			303 922.504 (0.030)*	202.399	1.698	1	
26	0	E1+1		25	3	E1+1			304 407.180 (0.298)*	504.847	0.020	3	
5	4	E2−1		6	3	E2−1			304 629.905 (0.017)*	55.652	0.394	1	
5	4	E2−1	5	6	3	E2−1	6		304 629.336 (0.017)	55.652	0.128	1	
5	4	E2−1	6	6	3	E2−1	7		304 630.127 (0.017)	55.652	0.151	1	
5	4	E2−1	4	6	3	E2−1	5		304 630.278 (0.017)	55.652	0.107	1	
14	2	A1		14	1	A2		304 768.006 (0.060)	304 767.960 (0.026)*	156.611	6.991	1	1
27	5	B1		26	6	B2			306 023.059 (0.043)*	615.962	6.851	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
27	5	B2		26	6	B1			306 061.728 (0.043)*	615.962	6.851	3	
27	0	A2		26	3	A1			306 299.517 (0.273)*	543.944	0.227	1	
16	7	E2−1		17	6	E2−1			306 309.042 (0.040)*	323.361	2.551	1	
17	2	E1−1		17	1	E1−1			306 743.215 (0.063)*	226.742	0.184	3	
5	1	E2+1		4	0	E2+1			306 877.535 (0.008)*	15.190	4.068	1	
5	1	E2+1	5	4	0	E2+1	4		306 876.886 (0.008)	15.190	1.302	1	
5	1	E2+1	6	4	0	E2+1	5		306 877.772 (0.008)	15.190	1.603	1	
5	1	E2+1	4	4	0	E2+1	3		306 877.999 (0.008)	15.190	1.055	1	
28	3	E1+1		28	2	E1+1			306 946.945 (0.183)*	614.224	21.232	3	
7	1	B1		6	1	B2			307 142.583 (0.007)*	33.601	0.646	3	
7	1	B1	8	6	1	B2	7		307 142.560 (0.007)	33.601	0.244	3	
7	1	B1	6	6	1	B2	5		307 142.600 (0.007)	33.601	0.182	3	
7	1	B1	7	6	1	B2	6		307 142.600 (0.007)	33.601	0.211	3	
7	1	A1		6	1	A2			307 142.616 (0.007)*	33.759	0.647	1	
7	1	A1	8	6	1	A2	7		307 142.594 (0.007)	33.759	0.244	1	
7	1	A1	6	6	1	A2	5		307 142.634 (0.007)	33.759	0.182	1	
7	1	A1	7	6	1	A2	6		307 142.634 (0.007)	33.760	0.211	1	
7	1	E1−1		6	1	E1−1			307 231.103 (0.007)*	33.761	0.646	3	
7	1	E1−1	8	6	1	E1−1	7		307 231.075 (0.007)	33.761	0.244	3	
7	1	E1−1	6	6	1	E1−1	5		307 231.112 (0.007)	33.761	0.182	3	
7	1	E1−1	7	6	1	E1−1	6		307 231.132 (0.007)	33.761	0.211	3	
27	5	E1−1		26	6	E1−1			307 323.807 (0.048)*	615.894	6.850	3	
7	1	E2−1		6	1	E2−1			307 536.836 (0.007)*	33.635	0.644	1	
7	1	E2−1	8	6	1	E2−1	7		307 536.796 (0.007)	33.635	0.243	1	
7	1	E2−1	6	6	1	E2−1	5		307 536.823 (0.007)	33.635	0.182	1	
7	1	E2−1	7	6	1	E2−1	6		307 536.899 (0.007)	33.635	0.210	1	
27	5	E2+1		26	6	E2+1			307 750.115 (0.037)*	616.112	6.827	1	
5	1	B2		4	0	B1		307 791.746 (0.060)	307 791.754 (0.012)*	14.992	4.671	3	1
5	1	B2	5	4	0	B1	4		307 790.911 (0.012)	14.992	1.495	3	
5	1	B2	6	4	0	B1	5		307 792.065 (0.012)	14.992	1.840	3	
5	1	B2	4	4	0	B1	3		307 792.347 (0.012)	14.992	1.211	3	
28	3	A2		28	2	A1			308 290.051 (0.298)*	614.316	22.104	1	
28	3	E2+1		28	2	E2−1			308 409.328 (0.191)*	614.251	21.901	1	
12	1	B1		11	2	B2		308 739.484 (0.060)	308 739.522 (0.025)*	108.971	4.559	3	1
27	0	B2		26	3	B1			308 916.506 (0.264)*	544.025	0.246	3	
28	3	B2		28	2	B1			309 259.391 (0.261)*	614.372	22.160	3	
27	5	E1+1		26	6	E1+1			309 356.365 (0.044)*	616.021	6.842	3	
5	4	E1+1		6	3	E1+1			309 512.362 (0.016)*	55.371	0.394	3	
5	4	E1+1	5	6	3	E1+1	6		309 511.794 (0.016)	55.371	0.128	3	
5	4	E1+1	6	6	3	E1+1	7		309 512.584 (0.016)	55.371	0.151	3	
5	4	E1+1	4	6	3	E1+1	5		309 512.735 (0.016)	55.371	0.107	3	
20	3	E1+1		19	4	E1−1			309 661.580 (0.029)*	324.542	0.121	3	
15	2	E1+1		15	1	E1−1			309 889.435 (0.035)*	178.542	6.226	3	
7	0	E2+1		6	0	E2+1		309 908.988 (0.060)	309 908.963 (0.007)*	31.443	0.661	1	1
7	0	E2+1	8	6	0	E2+1	7		309 908.943 (0.007)	31.443	0.250	1	
7	0	E2+1	6	6	0	E2+1	5		309 908.960 (0.007)	31.443	0.186	1	
7	0	E2+1	7	6	0	E2+1	6		309 908.992 (0.007)	31.443	0.216	1	
7	0	E1+1		6	0	E1+1		309 914.410 (0.060)	309 914.382 (0.007)*	31.340	0.658	3	1
7	0	E1+1	8	6	0	E1+1	7		309 914.362 (0.007)	31.340	0.249	3	
7	0	E1+1	6	6	0	E1+1	5		309 914.379 (0.007)	31.340	0.186	3	
7	0	E1+1	7	6	0	E1+1	6		309 914.411 (0.007)	31.340	0.215	3	
7	0	B2		6	0	B1		309 921.089 (0.060)	309 921.059 (0.007)*	31.246	0.662	3	1
7	0	B2	8	6	0	B1	7		309 921.040 (0.007)	31.246	0.250	3	
7	0	B2	6	6	0	B1	5		309 921.056 (0.007)	31.246	0.187	3	
7	0	B2	7	6	0	B1	6		309 921.087 (0.007)	31.246	0.216	3	
7	0	A2		6	0	A1		309 931.604 (0.060)	309 931.539 (0.007)*	31.040	0.658	1	1
7	0	A2	8	6	0	A1	7		309 931.519 (0.007)	31.040	0.248	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	0	A2	6	6	0	A1	5		309 931.536 (0.007)	31.040	0.185	1	
7	0	A2	7	6	0	A1	6		309 931.566 (0.007)	31.040	0.215	1	
7	6	E1−1		6	6	E1−1			310 248.275 (0.017)*	128.477	0.175	3	
7	6	E1−1	6	6	6	E1−1	5		310 248.017 (0.017)	128.477	0.049	3	
7	6	E1−1	8	6	6	E1−1	7		310 248.127 (0.017)	128.477	0.066	3	
7	6	E1−1	7	6	6	E1−1	6		310 248.660 (0.017)	128.477	0.057	3	
7	2	B1		6	2	B2			310 250.638 (0.007)*	42.299	0.606	3	
7	2	B1	8	6	2	B2	7		310 250.613 (0.007)	42.299	0.229	3	
7	2	B1	6	6	2	B2	5		310 250.618 (0.007)	42.299	0.171	3	
7	2	B1	7	6	2	B2	6		310 250.686 (0.007)	42.299	0.198	3	
7	6	E2+1		6	6	E2+1			310 251.643 (0.016)*	128.696	0.175	1	
7	6	E2+1	6	6	6	E2+1	5		310 251.386 (0.016)	128.696	0.049	1	
7	6	E2+1	8	6	6	E2+1	7		310 251.496 (0.016)	128.696	0.066	1	
7	6	E2+1	7	6	6	E2+1	6		310 252.029 (0.016)	128.696	0.057	1	
7	6	A1		6	6	A2			310 251.774 (0.017)*	128.640	0.175	1	
7	6	A1	6	6	6	A2	5		310 251.517 (0.017)	128.640	0.049	1	
7	6	A1	8	6	6	A2	7		310 251.627 (0.017)	128.640	0.066	1	
7	6	A1	7	6	6	A2	6		310 252.160 (0.017)	128.640	0.057	1	
7	6	A2		6	6	A1			310 251.774 (0.017)*	128.640	0.175	1	
7	6	A2	6	6	6	A1	5		310 251.517 (0.017)	128.640	0.049	1	
7	6	A2	8	6	6	A1	7		310 251.627 (0.017)	128.640	0.066	1	
7	6	A2	7	6	6	A1	6		310 252.160 (0.017)	128.640	0.057	1	
7	2	A1		6	2	A2			310 251.924 (0.007)*	42.261	0.606	1	
7	2	A1	8	6	2	A2	7		310 251.899 (0.007)	42.261	0.229	1	
7	2	A1	6	6	2	A2	5		310 251.903 (0.007)	42.261	0.171	1	
7	2	A1	7	6	2	A2	6		310 251.972 (0.007)	42.261	0.1981	7	
7	6	E2−1		6	6	E2−1			310 253.846 (0.017)*	128.279	0.176	1	
7	6	E2−1	6	6	6	E2−1	5		310 253.589 (0.017)	128.279	0.050	1	
7	6	E2−1	8	6	6	E2−1	7		310 253.698 (0.017)	128.279	0.066	1	
7	6	E2−1	7	6	6	E2−1	6		310 254.231 (0.017)	128.279	0.057	1	
7	6	B1		6	6	B2			310 253.995 (0.017)*	128.536	0.175	3	
7	6	B1	6	6	6	B2	5		310 253.738 (0.017)	128.536	0.049	3	
7	6	B1	8	6	6	B2	7		310 253.848 (0.017)	128.536	0.066	3	
7	6	B1	7	6	6	B2	6		310 254.381 (0.017)	128.536	0.057	3	
7	6	B2		6	6	B1			310 253.995 (0.017)*	128.536	0.175	3	
7	6	B2	6	6	6	B1	5		310 253.738 (0.017)	128.536	0.049	3	
7	6	B2	8	6	6	B1	7		310 253.848 (0.017)	128.536	0.066	3	
7	6	B2	7	6	6	B1	6		310 254.381 (0.017)	128.536	0.057	3	
7	6	E1+1		6	6	E1+1			310 254.992 (0.017)*	128.600	0.175	3	
7	6	E1+1	6	6	6	E1+1	5		310 254.735 (0.017)	128.600	0.049	3	
7	6	E1+1	8	6	6	E1+1	7		310 254.844 (0.017)	128.600	0.066	3	
7	6	E1+1	7	6	6	E1+1	6		310 255.377 (0.017)	128.600	0.057	3	
7	5	B2		6	5	B1			310 279.636 (0.013)*	98.794	0.323	3	
7	5	B2	6	6	5	B1	5		310 279.461 (0.013)	98.794	0.091	37	
7	5	B2	8	6	5	B1	7		310 279.531 (0.013)	98.794	0.122	3	
7	5	B2	7	6	5	B1	6		310 279.903 (0.013)	98.794	0.105	3	
7	5	B1		6	5	B2			310 279.636 (0.013)*	98.794	0.323	3	
7	5	B1	6	6	5	B2	5		310 279.461 (0.013)	98.794	0.091	3	
7	5	B1	8	6	5	B2	7		310 279.531 (0.013)	98.794	0.122	3	
7	5	B1	7	6	5	B2	6		310 279.903 (0.013)	98.794	0.105	3	
7	5	E2−1		6	5	E2−1			310 280.743 (0.013)*	98.917	0.323	1	
7	5	E2−1	6	6	5	E2−1	5		310 280.569 (0.013)	98.917	0.091	1	
7	5	E2−1	8	6	5	E2−1	7		310 280.639 (0.013)	98.917	0.122	1	
7	5	E2−1	7	6	5	E2−1	6		310 281.010 (0.013)	98.917	0.105	1	
7	5	E2+1		6	5	E2+1			310 284.084 (0.013)*	99.003	0.323	1	
7	5	E2+1	6	6	5	E2+1	5		310 283.909 (0.013)	99.003	0.091	1	
7	5	E2+1	8	6	5	E2+1	7		310 283.979 (0.013)	99.003	0.122	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	5	E2+1	7	6	5	E2+1	6		310 284.351 (0.013)	99.003	0.1061	7	
7	5	E1+1		6	5	E1+1			310 284.535 (0.012)*	98.964	0.323	3	
7	5	E1+1	6	6	5	E1+1	5		310 284.361 (0.012)	98.964	0.091	3	
7	5	E1+1	8	6	5	E1+1	7		310 284.431 (0.012)	98.964	0.122	3	
7	5	E1+1	7	6	5	E1+1	6		310 284.803 (0.012)	98.964	0.106	3	
7	5	A2		6	5	A1			310 284.846 (0.013)*	98.604	0.324	1	
7	5	A2	6	6	5	A1	5		310 284.671 (0.013)	98.604	0.091	1	
7	5	A2	8	6	5	A1	7		310 284.741 (0.013)	98.604	0.122	1	
7	5	A2	7	6	5	A1	6		310 285.113 (0.013)	98.604	0.106	1	
7	5	A1		6	5	A2			310 284.846 (0.013)*	98.604	0.324	1	
7	5	A1	6	6	5	A2	5		310 284.671 (0.013)	98.604	0.091	1	
7	5	A1	8	6	5	A2	7		310 284.741 (0.013)	98.604	0.122	1	
7	5	A1	7	6	5	A2	6		310 285.113 (0.013)	98.604	0.1061	7	
7	5	E1−1		6	5	E1−1			310 285.504 (0.013)*	98.766	0.324	3	
7	5	E1−1	6	6	5	E1−1	5		310 285.329 (0.013)	98.766	0.091	37	
7	5	E1−1	8	6	5	E1−1	7		310 285.399 (0.013)	98.766	0.122	3	
7	5	E1−1	7	6	5	E1−1	6		310 285.771 (0.013)	98.766	0.106	3	
7	4	A1		6	4	A2			310 310.701 (0.010)*	74.524	0.444	1	
7	4	A1	6	6	4	A2	5		310 310.594 (0.010)	74.524	0.125	1	
7	4	A1	8	6	4	A2	7		310 310.632 (0.010)	74.524	0.168	1	
7	4	A1	7	6	4	A2	6		310 310.870 (0.010)	74.524	0.145	1	
7	4	A2		6	4	A1			310 310.720 (0.010)*	74.524	0.444	1	
7	4	A2	6	6	4	A1	5		310 310.613 (0.010)	74.524	0.125	1	
7	4	A2	8	6	4	A1	7		310 310.651 (0.010)	74.524	0.168	1	
7	4	A2	7	6	4	A1	6		310 310.890 (0.010)	74.524	0.145	1	
7	4	E1+1		6	4	E1+1			310 312.027 (0.010)*	74.567	0.444	3	
7	4	E1+1	6	6	4	E1+1	5		310 311.921 (0.010)	74.567	0.125	3	
7	4	E1+1	8	6	4	E1+1	7		310 311.958 (0.010)	74.567	0.168	3	
7	4	E1+1	7	6	4	E1+1	6		310 312.197 (0.010)	74.567	0.145	3	
7	4	E1−1		6	4	E1−1			310 314.281 (0.009)*	74.718	0.444	3	
7	4	E1−1	6	6	4	E1−1	5		310 314.175 (0.009)	74.718	0.125	3	
7	4	E1−1	8	6	4	E1−1	7		310 314.212 (0.009)	74.718	0.168	3	
7	4	E1−1	7	6	4	E1−1	6		310 314.451 (0.009)	74.718	0.145	3	
7	4	E2−1		6	4	E2−1			310 315.832 (0.010)*	74.686	0.444	1	
7	4	E2−1	6	6	4	E2−1	5		310 315.726 (0.010)	74.686	0.125	1	
7	4	E2−1	8	6	4	E2−1	7		310 315.763 (0.010)	74.686	0.168	1	
7	4	E2−1	7	6	4	E2−1	6		310 316.002 (0.010)	74.686	0.145	1	
7	4	E2+1		6	4	E2+1			310 316.306 (0.010)*	74.410	0.444	1	
7	4	E2+1	6	6	4	E2+1	5		310 316.199 (0.010)	74.410	0.125	1	
7	4	E2+1	8	6	4	E2+1	7		310 316.237 (0.010)	74.410	0.168	1	
7	4	E2+1	7	6	4	E2+1	6		310 316.476 (0.010)	74.410	0.145	1	
7	4	B1		6	4	B2			310 316.546 (0.010)*	74.335	0.444	3	
7	4	B1	6	6	4	B2	5		310 316.440 (0.010)	74.335	0.125	3	
7	4	B1	8	6	4	B2	7		310 316.477 (0.010)	74.335	0.168	3	
7	4	B1	7	6	4	B2	6		310 316.716 (0.010)	74.335	0.1453	7	
7	4	B2		6	4	B1			310 316.566 (0.010)*	74.335	0.444	3	
7	4	B2	6	6	4	B1	5		310 316.459 (0.010)	74.335	0.125	3	
7	4	B2	8	6	4	B1	7		310 316.497 (0.010)	74.335	0.168	3	
7	4	B2	7	6	4	B1	6		310 316.735 (0.010)	74.335	0.145	3	
7	3	B1		6	3	B2			310 349.885 (0.008)*	55.785	0.539	3	
7	3	B1	6	6	3	B2	5		310 349.832 (0.008)	55.785	0.152	3	
7	3	B1	8	6	3	B2	7		310 349.844 (0.008)	55.785	0.204	3	
7	3	B1	7	6	3	B2	6		310 349.978 (0.008)	55.785	0.176	3	
7	3	E2+1		6	3	E2+1			310 351.214 (0.008)*	55.574	0.539	1	
7	3	E2+1	6	6	3	E2+1	5		310 351.161 (0.008)	55.574	0.152	1	
7	3	E2+1	8	6	3	E2+1	7		310 351.174 (0.008)	55.574	0.204	1	
7	3	E2+1	7	6	3	E2+1	6		310 351.307 (0.008)	55.574	0.1761	7	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	3	E1−1		6	3	E1−1			310 353.095 (0.008)*	55.756	0.539	3	
7	3	E1−1	6	6	3	E1−1	5		310 353.042 (0.008)	55.756	0.152	3	
7	3	E1−1	8	6	3	E1−1	7		310 353.054 (0.008)	55.756	0.204	3	
7	3	E1−1	7	6	3	E1−1	6		310 353.188 (0.008)	55.756	0.176	3	
7	3	A1		6	3	A2			310 353.788 (0.008)*	55.684	0.538	1	
7	3	A1	6	6	3	A2	5		310 353.734 (0.008)	55.684	0.152	1	
7	3	A1	8	6	3	A2	7		310 353.747 (0.008)	55.684	0.203	1	
7	3	A1	7	6	3	A2	6		310 353.881 (0.008)	55.684	0.176	1	
7	3	B2		6	3	B1			310 354.413 (0.008)*	55.785	0.539	3	
7	3	B2	6	6	3	B1	5		310 354.360 (0.008)	55.785	0.152	3	
7	3	B2	8	6	3	B1	7		310 354.373 (0.008)	55.785	0.204	3	
7	3	B2	7	6	3	B1	6		310 354.506 (0.008)	55.785	0.176	3	
7	3	E2−1		6	3	E2−1			310 355.787 (0.008)*	55.652	0.538	1	
7	3	E2−1	6	6	3	E2−1	5		310 355.734 (0.008)	55.652	0.152	1	
7	3	E2−1	8	6	3	E2−1	7		310 355.746 (0.008)	55.652	0.203	1	
7	3	E2−1	7	6	3	E2−1	6		310 355.880 (0.008)	55.652	0.176	1	
7	3	E1+1		6	3	E1+1			310 357.890 (0.008)*	55.371	0.538	3	
7	3	E1+1	6	6	3	E1+1	5		310 357.838 (0.008)	55.371	0.152	3	
7	3	E1+1	8	6	3	E1+1	7		310 357.850 (0.008)	55.371	0.203	3	
7	3	E1+1	7	6	3	E1+1	6		310 357.983 (0.008)	55.371	0.176	3	
7	3	A2		6	3	A1			310 358.415 (0.008)*	55.684	0.538	1	
7	3	A2	6	6	3	A1	5		310 358.362 (0.008)	55.684	0.152	1	
7	3	A2	8	6	3	A1	7		310 358.374 (0.008)	55.684	0.203	1	
7	3	A2	7	6	3	A1	6		310 358.507 (0.008)	55.684	0.176	1	
7	2	E2+1		6	2	E2+1		310 378.150 (0.060)	310 378.210 (0.007)*	42.040	0.599	1	1
7	2	E2+1	8	6	2	E2+1	7		310 378.185 (0.007)	42.040	0.226	1	
7	2	E2+1	6	6	2	E2+1	5		310 378.189 (0.007)	42.040	0.169	1	
7	2	E2+1	7	6	2	E2+1	6		310 378.258 (0.007)	42.040	0.196	1	
23	9	E2−1		24	8	E2−1			310 440.904 (0.072)*	616.239	3.932	1	
7	2	E1−1		6	2	E1−1		310 441.820 (0.060)	310 441.832 (0.007)*	41.905	0.605	3	1
7	2	E1−1	8	6	2	E1−1	7		310 441.812 (0.007)	41.905	0.228	3	
7	2	E1−1	6	6	2	E1−1	5		310 441.818 (0.007)	41.905	0.171	3	
7	2	E1−1	7	6	2	E1−1	6		310 441.868 (0.007)	41.905	0.197	3	
7	2	E1+1		6	2	E1+1			310 462.980 (0.007)*	42.197	0.606	3	
7	2	E1+1	8	6	2	E1+1	7		310 462.963 (0.007)	42.197	0.229	3	
7	2	E1+1	6	6	2	E1+1	5		310 462.970 (0.007)	42.197	0.171	3	
7	2	E1+1	7	6	2	E1+1	6		310 463.011 (0.007)	42.197	0.198	3	
7	2	E2−1		6	2	E2−1			310 527.923 (0.007)*	42.100	0.600	1	
7	2	E2−1	8	6	2	E2−1	7		310 527.911 (0.007)	42.100	0.227	1	
7	2	E2−1	6	6	2	E2−1	5		310 527.920 (0.007)	42.100	0.169	1	
7	2	E2−1	7	6	2	E2−1	6		310 527.942 (0.007)	42.100	0.196	1	
5	1	E1+1		4	0	E1+1			310 527.984 (0.009)*	15.086	4.516	3	
5	1	E1+1	5	4	0	E1+1	4		310 527.190 (0.009)	15.086	1.445	3	
5	1	E1+1	6	4	0	E1+1	5		310 528.275 (0.009)	15.086	1.779	3	
5	1	E1+1	4	4	0	E1+1	3		310 528.543 (0.009)	15.086	1.171	3	
7	2	A2		6	2	A1		310 638.549 (0.060)	310 638.570 (0.007)*	42.277	0.606	1	1
7	2	A2	8	6	2	A1	7		310 638.557 (0.007)	42.277	0.229	1	
7	2	A2	6	6	2	A1	5		310 638.565 (0.007)	42.277	0.171	1	
7	2	A2	7	6	2	A1	6		310 638.590 (0.007)	42.277	0.198	1	
7	2	B2		6	2	B1		310 642.098 (0.060)	310 642.112 (0.007)*	42.315	0.606	3	1
7	2	B2	8	6	2	B1	7		310 642.100 (0.007)	42.315	0.229	3	
7	2	B2	6	6	2	B1	5		310 642.107 (0.007)	42.315	0.171	3	
7	2	B2	7	6	2	B1	6		310 642.132 (0.007)	42.315	0.198	3	
14	2	B1		14	1	B2		310 750.839 (0.060)	310 750.920 (0.028)*	156.452	6.913	3	1
23	9	A2		24	8	A1			311 206.720 (0.060)*	616.074	3.933	1	
23	9	A1		24	8	A2			311 206.720 (0.060)*	616.074	3.933	1	
23	9	E1−1		24	8	E1−1			311 848.459 (0.053)*	616.277	3.928	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
12	6	E1+1		13	5	E1+1			312 109.362 (0.033)*	202.447	1.696	3	
15	2	E2−1		15	1	E2−1			312 191.346 (0.036)*	178.454	6.645	1	
23	9	E2+1		24	8	E2+1			312 825.538 (0.066)*	616.066	3.935	1	
7	1	E2+1		6	1	E2+1			312 904.397 (0.007)*	34.367	0.644	1	
7	1	E2+1	7	6	1	E2+1	6		312 904.370 (0.007)	34.367	0.210	1	
7	1	E2+1	8	6	1	E2+1	7		312 904.409 (0.007)	34.367	0.243	1	
7	1	E2+1	6	6	1	E2+1	5		312 904.412 (0.007)	34.367	0.182	1	
7	1	E1+1		6	1	E1+1		313 204.773 (0.060)	313 204.761 (0.007)*	34.399	0.646	3	1
7	1	E1+1	6	6	1	E1+1	5		313 204.753 (0.007)	34.399	0.182	3	
7	1	E1+1	8	6	1	E1+1	7		313 204.760 (0.007)	34.399	0.244	3	
7	1	E1+1	7	6	1	E1+1	6		313 204.768 (0.007)	34.399	0.211	3	
7	1	A2		6	1	A1			313 292.279 (0.007)*	34.376	0.647	1	
7	1	A2	6	6	1	A1	5		313 292.264 (0.007)	34.376	0.183	1	
7	1	A2	8	6	1	A1	7		313 292.274 (0.007)	34.376	0.245	1	
7	1	A2	7	6	1	A1	6		313 292.298 (0.007)	34.376	0.211	1	
7	1	B2		6	1	B1			313 302.982 (0.007)*	34.218	0.645	3	
7	1	B2	6	6	1	B1	5		313 302.967 (0.007)	34.218	0.182	3	
7	1	B2	8	6	1	B1	7		313 302.977 (0.007)	34.218	0.244	3	
7	1	B2	7	6	1	B1	6		313 303.000 (0.007)	34.218	0.211	3	
27	0	E1+1		26	3	E1−1			313 459.474 (0.276)*	543.895	0.249	3	
12	6	E2+1		13	5	E2+1			313 789.939 (0.031)*	202.486	1.695	1	
16	2	E1+1		15	3	E1−1			313 937.402 (0.030)*	202.163	1.634	3	
20	3	E1+1		19	4	E1+1			314 133.232 (0.020)*	324.393	5.386	3	
12	6	E1−1		13	5	E1−1			314 315.004 (0.033)*	202.249	1.697	3	
12	1	A1		11	2	A2			314 543.168 (0.023)*	108.932	4.530	1	
18	2	E1−1		18	1	E1−1			315 045.248 (0.083)*	253.021	0.117	3	
15	2	A2		15	1	A1			315 163.227 (0.029)*	178.528	6.927	1	
12	6	B1		13	5	B2			315 342.215 (0.029)*	202.275	1.697	3	
12	6	B2		13	5	B1			315 342.242 (0.029)*	202.275	1.697	3	
20	3	E2+1		19	4	E2−1			315 697.393 (0.026)*	324.511	1.257	1	
27	0	E2+1		26	3	E2−1			316 251.551 (0.269)*	543.885	0.272	1	
27	3	E1+1		27	2	E1+1			316 382.365 (0.157)*	572.572	19.921	3	
27	1	E2+1		27	0	E2+1			316 758.281 (0.523)*	554.435	0.024	1	
16	2	E2−1		15	3	E2−1			316 878.972 (0.033)*	202.061	3.183	1	
27	5	E2−1		26	6	E2−1			317 181.277 (0.049)*	615.707	6.859	1	
27	3	A1		27	2	A2			317 794.500 (0.256)*	572.671	21.054	1	
27	3	E2+1		27	2	E2−1			318 106.900 (0.163)*	572.598	20.837	1	
12	1	E2+1		11	2	E2−1			318 661.075 (0.016)*	108.745	4.359	1	
5	1	A2		4	0	A1			318 709.124 (0.012)*	14.786	4.674	1	
5	1	A2	5	4	0	A1	4		318 708.282 (0.012)	14.786	1.496	1	
5	1	A2	6	4	0	A1	5		318 709.435 (0.012)	14.786	1.841	1	
5	1	A2	4	4	0	A1	3		318 709.716 (0.012)	14.786	1.212	1	
27	3	B1		27	2	B2			318 799.634 (0.224)*	572.728	21.104	3	
12	1	E1+1		11	2	E1+1			318 808.818 (0.011)*	108.803	3.570	3	
16	2	B1		15	3	B2			319 027.367 (0.032)*	202.201	4.696	3	
16	2	E2−1		15	3	E2+1			319 316.483 (0.033)*	201.980	1.532	1	
20	3	E2−1		19	4	E2−1			319 958.016 (0.029)*	324.511	4.238	1	
19	8	E1+1		20	7	E1+1			320 148.149 (0.050)*	442.852	3.072	3	
19	8	A2		20	7	A1			320 178.387 (0.055)*	443.036	3.069	1	
19	8	A1		20	7	A2			320 178.387 (0.055)*	443.036	3.069	1	
2	2	E1−1		1	1	E1+1			320 436.586 (0.014)*	4.592	0.018	3	
2	2	E1−1	2	1	1	E1+1	2		320 435.892 (0.014)	4.592	0.002	3	
2	2	E1−1	1	1	1	E1+1	0		320 436.329 (0.014)	4.592	0.002	3	
2	2	E1−1	2	1	1	E1+1	1		320 436.410 (0.014)	4.592	0.005	3	
2	2	E1−1	3	1	1	E1+1	2		320 436.673 (0.014)	4.592	0.008	3	
2	2	E1−1	1	1	1	E1+1	1		320 437.626 (0.014)	4.592	0.002	3	
16	2	A1		15	3	A2			320 651.153 (0.035)*	202.103	4.720	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
23	9	E1+1		24	8	E1+1			321 033.209 (0.068)*	615.890	3.937	3	
14	1	E2−1		13	2	E2−1			321 149.234 (0.020)*	145.822	0.104	1	
15	2	B2		15	1	B1			321 170.160 (0.031)*	178.370	6.837	3	
14	1	B2		13	2	B1			321 338.491 (0.043)*	145.734	3.685	3	
20	3	E1−1		19	4	E1−1			321 367.056 (0.027)*	324.542	5.359	3	
16	2	E1+1		16	1	E1−1			321 373.094 (0.041)*	201.915	6.221	3	
8	5	E1−1		9	4	E1−1			321 916.667 (0.026)*	110.206	0.875	3	
8	5	E1−1	8	9	4	E1−1	9		321 916.367 (0.026)	110.206	0.288	3	
8	5	E1−1	9	9	4	E1−1	10		321 916.796 (0.026)	110.206	0.322	3	
8	5	E1−1	7	9	4	E1−1	8		321 916.844 (0.026)	110.206	0.257	3	
8	5	A1		9	4	A2			322 874.824 (0.022)*	110.012	0.875	1	
8	5	A1	8	9	4	A2	9		322 874.524 (0.022)	110.012	0.288	1	
8	5	A1	9	9	4	A2	10		322 874.952 (0.022)	110.012	0.322	1	
8	5	A1	7	9	4	A2	8		322 875.000 (0.022)	110.012	0.257	1	
8	5	A2		9	4	A1			322 875.028 (0.022)*	110.012	0.875	1	
8	5	A2	8	9	4	A1	9		322 874.728 (0.022)	110.012	0.288	1	
8	5	A2	9	9	4	A1	10		322 875.156 (0.022)	110.012	0.322	1	
8	5	A2	7	9	4	A1	8		322 875.204 (0.022)	110.012	0.257	1	
14	1	E1−1		13	2	E1+1			322 881.287 (0.020)*	145.853	0.378	3	
30	3	E2−1		30	2	E2−1			322 916.303 (0.301)*	701.992	0.019	1	
20	3	A2		19	4	A1			323 024.579 (0.024)*	324.347	5.488	1	
30	3	E1−1		30	2	E1+1			323 366.371 (0.297)*	701.965	0.343	3	
2	2	E2+1		1	1	E2+1			323 462.032 (0.014)*	4.626	2.377	1	
2	2	E2+1	2	1	1	E2+1	2		323 461.353 (0.014)	4.626	0.198	1	
2	2	E2+1	2	1	1	E2+1	1		323 461.782 (0.014)	4.626	0.594	1	
2	2	E2+1	1	1	1	E2+1	0		323 461.925 (0.014)	4.626	0.264	1	
2	2	E2+1	3	1	1	E2+1	2		323 462.134 (0.014)	4.626	1.109	1	
2	2	E2+1	1	1	1	E2+1	1		323 462.998 (0.014)	4.626	0.198	1	
19	2	E1−1		19	1	E1−1			323 776.520 (0.108)*	280.752	0.074	3	
20	3	E2+1		19	4	E2+1			323 832.507 (0.020)*	324.240	4.243	1	
16	2	E2−1		16	1	E2−1			323 862.249 (0.042)*	201.828	6.470	1	
12	6	A1		13	5	A2			324 063.155 (0.030)*	202.087	1.697	1	
12	6	A2		13	5	A1			324 063.183 (0.030)*	202.087	1.697	1	
12	1	E2+1		11	2	E2+1			324 077.367 (0.012)*	108.564	0.239	1	
19	8	B2		20	7	B1			325 220.113 (0.046)*	443.009	3.067	3	
19	8	B1		20	7	B2			325 220.113 (0.046)*	443.009	3.067	3	
26	3	E1+1		26	2	E1+1			325 324.606 (0.133)*	532.401	18.581	3	
16	2	E1+1		15	3	E1+1			325 374.106 (0.029)*	201.781	3.093	3	
2	2	E1−1		1	1	E1−1			325 531.483 (0.011)*	4.422	2.362	3	
2	2	E1−1	2	1	1	E1−1	2		325 530.841 (0.011)	4.422	0.197	3	
2	2	E1−1	2	1	1	E1−1	1		325 531.047 (0.011)	4.422	0.591	3	
2	2	E1−1	3	1	1	E1−1	2		325 531.623 (0.011)	4.422	1.102	3	
2	2	E1−1	1	1	1	E1−1	0		325 531.749 (0.011)	4.422	0.262	3	
2	2	E1−1	1	1	1	E1−1	1		325 532.262 (0.011)	4.422	0.197	3	
20	3	E1−1		19	4	E1+1			325 838.709 (0.023)*	324.393	0.124	3	
20	3	A1		19	4	A2			326 536.013 (0.029)*	324.350	5.502	1	
16	2	A1		16	1	A2		326 708.830 (0.060)	326 708.787 (0.032)*	201.901	6.791	1	1
26	3	A2		26	2	A1			326 850.896 (0.219)*	532.509	20.065	1	
14	1	A2		13	2	A1			327 185.995 (0.041)*	145.697	3.677	1	
26	3	E2+1		26	2	E2−1			327 365.768 (0.139)*	532.426	19.824	1	
8	5	E2−1		9	4	E2−1			327 413.595 (0.025)*	110.174	0.874	1	
8	5	E2−1	8	9	4	E2−1	9		327 413.295 (0.025)	110.174	0.288	1	
8	5	E2−1	9	9	4	E2−1	10		327 413.723 (0.025)	110.174	0.322	1	
8	5	E2−1	7	9	4	E2−1	8		327 413.772 (0.025)	110.174	0.257	1	
29	3	E2−1		29	2	E2−1			327 574.067 (0.254)*	657.383	0.029	1	
26	3	B2		26	2	B1			327 898.659 (0.192)*	532.564	20.110	3	
20	3	E2−1		19	4	E2+1			328 093.131 (0.026)*	324.240	1.266	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
29	3	E1−1		29	2	E1+1			328 111.452 (0.251)*	657.356	0.482	3	
12	1	E1+1		11	2	E1−1			328 837.384 (0.014)*	108.469	1.021	3	
24	4	E2+1		23	5	E2+1			328 903.531 (0.036)*	475.798	6.366	1	
2	2	E1+1		1	1	E1+1			329 198.371 (0.013)*	4.592	2.363	3	
2	2	E1+1	2	1	1	E1+1	2		329 197.677 (0.013)	4.592	0.197	3	
2	2	E1+1	1	1	1	E1+1	0		329 198.114 (0.013)	4.592	0.263	3	
2	2	E1+1	2	1	1	E1+1	1		329 198.196 (0.013)	4.592	0.591	3	
2	2	E1+1	3	1	1	E1+1	2		329 198.458 (0.013)	4.592	1.103	3	
2	2	E1+1	1	1	1	E1+1	1		329 199.411 (0.013)	4.592	0.197	3	
19	8	E2−1		20	7	E2−1			330 155.440 (0.052)*	442.868	3.069	1	
10	0	A1		9	1	A2			330 264.707 (0.025)*	70.199	5.910	1	
10	0	A1	9	9	1	A2	8		330 264.159 (0.025)	70.199	1.763	1	
10	0	A1	11	9	1	A2	10		330 264.297 (0.025)	70.199	2.157	1	
10	0	A1	10	9	1	A2	9		330 265.651 (0.025)	70.199	1.950	1	
26	10	E1−1		27	9	E1−1			330 478.574 (0.108)*	777.119	4.451	3	
28	0	A1		27	3	A2			330 516.719 (0.328)*	583.929	0.232	1	
19	8	E2+1		20	7	E2+1			330 822.820 (0.058)*	442.675	3.072	1	
14	1	E2−1		13	2	E2+1			330 984.304 (0.036)*	145.494	3.581	1	
9	0	E1+1		8	1	E1−1			331 167.228 (0.011)*	55.719	0.033	3	
9	0	E1+1	9	8	1	E1−1	8		331 166.652 (0.011)	55.719	0.011	3	
9	0	E1+1	10	8	1	E1−1	9		331 167.464 (0.011)	55.719	0.012	3	
9	0	E1+1	8	8	1	E1−1	7		331 167.582 (0.011)	55.719	0.010	3	
20	3	B2		19	4	B1			331 374.945 (0.028)*	324.164	5.502	3	
6	1	E2−1		5	0	E2+1			331 449.141 (0.010)*	22.579	0.428	1	
6	1	E2−1	5	5	0	E2+1	4		331 448.809 (0.010)	22.579	0.117	1	
6	1	E2−1	7	5	0	E2+1	6		331 448.909 (0.010)	22.579	0.165	1	
6	1	E2−1	6	5	0	E2+1	5		331 449.694 (0.010)	22.579	0.139	1	
8	5	E1+1		9	4	E1+1			332 392.245 (0.025)*	110.055	0.875	3	
8	5	E1+1	8	9	4	E1+1	9		332 391.945 (0.025)	110.055	0.288	3	
8	5	E1+1	9	9	4	E1+1	10		332 392.373 (0.025)	110.055	0.322	3	
8	5	E1+1	7	9	4	E1+1	8		332 392.421 (0.025)	110.055	0.257	3	
15	7	E2+1		16	6	E2+1			332 398.865 (0.041)*	298.660	2.215	1	
28	3	E2−1		28	2	E2−1			332 626.377 (0.213)*	614.251	0.042	1	
24	4	B2		23	5	B1			332 720.112 (0.037)*	475.588	6.382	3	
16	2	B1		16	1	B2			332 742.153 (0.035)*	201.743	6.690	3	
20	2	E1−1		20	1	E1−1			332 938.358 (0.139)*	309.934	0.047	3	
28	0	B1		27	3	B2			333 146.350 (0.317)*	584.007	0.252	3	
24	4	B1		23	5	B2			333 200.881 (0.037)*	475.588	6.383	3	
28	3	E1−1		28	2	E1+1			333 284.784 (0.211)*	614.224	0.678	3	
25	3	E1+1		25	2	E1+1			333 736.923 (0.113)*	493.715	17.200	3	
2	2	A1		1	1	A2			333 839.329 (0.012)*	4.509	2.386	1	
2	2	A1	1	1	1	A2	0		333 837.821 (0.012)	4.509	0.265	1	
2	2	A1	2	1	1	A2	2		333 838.506 (0.012)	4.509	0.199	1	
2	2	A1	3	1	1	A2	2		333 839.292 (0.012)	4.509	1.114	1	
2	2	A1	2	1	1	A2	1		333 839.778 (0.012)	4.509	0.597	1	
2	2	A1	1	1	1	A2	1		333 841.000 (0.012)	4.509	0.199	1	
17	2	E1+1		17	1	E1−1			334 130.937 (0.049)*	226.742	6.100	3	
8	5	B1		9	4	B2			334 209.791 (0.024)*	109.823	0.875	3	
8	5	B1	8	9	4	B2	9		334 209.491 (0.024)	109.823	0.288	3	
8	5	B1	9	9	4	B2	10		334 209.919 (0.024)	109.823	0.322	3	
8	5	B1	7	9	4	B2	8		334 209.967 (0.024)	109.823	0.257	3	
8	5	B2		9	4	B1			334 210.000 (0.024)*	109.823	0.875	3	
8	5	B2	8	9	4	B1	9		334 209.700 (0.024)	109.823	0.288	3	
8	5	B2	9	9	4	B1	10		334 210.128 (0.024)	109.823	0.322	3	
8	5	B2	7	9	4	B1	8		334 210.176 (0.024)	109.823	0.257	3	
17	2	E1−1		16	3	E1−1			334 252.154 (0.033)*	225.824	3.027	3	
2	2	E1+1		1	1	E1−1			334 293.269 (0.010)*	4.422	0.017	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
2	2	E1+1	2	1	1	E1−1	2		334 292.627 (0.010)	4.422	0.001	3	
2	2	E1+1	2	1	1	E1−1	1		334 292.832 (0.010)	4.422	0.004	3	
2	2	E1+1	3	1	1	E1−1	2		334 293.408 (0.010)	4.422	0.008	3	
2	2	E1+1	1	1	1	E1−1	0		334 293.534 (0.010)	4.422	0.002	3	
2	2	E1+1	1	1	1	E1−1	1		334 294.047 (0.010)	4.422	0.001	3	
4	4	B1		5	3	B2			334 481.458 (0.020)*	46.911	0.157	3	
4	4	B1	4	5	3	B2	5		334 480.560 (0.020)	46.911	0.050	3	
4	4	B1	5	5	3	B2	6		334 481.785 (0.020)	46.911	0.062	3	
4	4	B1	3	5	3	B2	4		334 482.096 (0.020)	46.911	0.041	3	
4	4	B2		5	3	B1			334 482.465 (0.020)*	46.911	0.157	3	
4	4	B2	4	5	3	B1	5		334 481.567 (0.020)	46.911	0.050	3	
4	4	B2	5	5	3	B1	6		334 482.792 (0.020)	46.911	0.062	3	
4	4	B2	3	5	3	B1	4		334 483.103 (0.020)	46.911	0.041	3	
24	4	E1+1		23	5	E1+1			334 490.127 (0.037)*	475.760	6.342	3	
2	2	A2		1	1	A1			334 712.252 (0.012)*	4.480	2.374	1	
2	2	A2	2	1	1	A1	1		334 711.192 (0.012)	4.480	0.593	1	
2	2	A2	2	1	1	A1	2		334 711.740 (0.012)	4.480	0.198	1	
2	2	A2	1	1	1	A1	1		334 712.399 (0.012)	4.480	0.198	1	
2	2	A2	3	1	1	A1	2		334 712.515 (0.012)	4.480	1.108	1	
2	2	A2	1	1	1	A1	0		334 713.768 (0.012)	4.480	0.264	1	
20	3	B1		19	4	B2			334 812.311 (0.029)*	324.167	5.518	3	
25	3	A1		25	2	A2			335 427.203 (0.187)*	493.830	19.130	1	
28	1	E2+1		28	0	E2+1			335 464.560 (0.622)*	595.218	0.022	1	
14	1	E1−1		13	2	E1−1			335 745.086 (0.030)*	145.424	3.296	3	
19	8	E1−1		20	7	E1−1			335 817.694 (0.054)*	442.718	3.071	3	
25	3	E2+1		25	2	E2−1			336 151.066 (0.119)*	493.739	18.848	1	
25	3	B1		25	2	B2			336 523.557 (0.165)*	493.885	19.172	3	
17	2	E2−1		17	1	E2−1			336 767.741 (0.051)*	226.656	6.236	1	
2	2	E2−1		1	1	E2−1			337 119.299 (0.011)*	4.229	2.377	1	
2	2	E2−1	2	1	1	E2−1	2		337 118.642 (0.011)	4.229	0.198	1	
2	2	E2−1	2	1	1	E2−1	1		337 118.937 (0.011)	4.229	0.594	1	
2	2	E2−1	1	1	1	E2−1	0		337 119.415 (0.011)	4.229	0.264	1	
2	2	E2−1	3	1	1	E2−1	2		337 119.423 (0.011)	4.229	1.109	1	
2	2	E2−1	1	1	1	E2−1	1		337 120.152 (0.011)	4.229	0.198	1	
9	0	E2+1		8	1	E2−1			337 495.495 (0.013)*	55.610	0.172	1	
9	0	E2+1	9	8	1	E2−1	8		337 494.960 (0.013)	55.610	0.057	1	
9	0	E2+1	10	8	1	E2−1	9		337 495.714 (0.013)	55.610	0.063	1	
9	0	E2+1	8	8	1	E2−1	7		337 495.825 (0.013)	55.610	0.051	1	
26	10	A2		27	9	A1			337 597.504 (0.092)*	776.893	4.456	1	
26	10	A1		27	9	A2			337 597.504 (0.092)*	776.893	4.456	1	
28	0	E1+1		27	3	E1−1			337 636.254 (0.326)*	583.873	0.260	3	
26	10	E2−1		27	9	E2−1			337 917.876 (0.083)*	777.034	4.448	1	
27	3	E2−1		27	2	E2−1			337 977.932 (0.178)*	572.598	0.063	1	
8	5	E2+1		9	4	E2+1			338 262.488 (0.025)*	109.898	0.875	1	
8	5	E2+1	8	9	4	E2+1	9		338 262.189 (0.025)	109.898	0.288	1	
8	5	E2+1	9	9	4	E2+1	10		338 262.616 (0.025)	109.898	0.322	1	
8	5	E2+1	7	9	4	E2+1	8		338 262.665 (0.025)	109.898	0.257	1	
6	1	E1−1		5	0	E1+1			338 333.619 (0.009)*	22.476	0.095	3	
6	1	E1−1	5	5	0	E1+1	4		338 333.227 (0.009)	22.476	0.026	3	
6	1	E1−1	7	5	0	E1+1	6		338 333.350 (0.009)	22.476	0.036	3	
6	1	E1−1	6	5	0	E1+1	5		338 334.266 (0.009)	22.476	0.031	3	
17	2	E2+1		16	3	E2−1			338 377.389 (0.037)*	225.724	1.365	1	
10	0	E1+1		9	1	E1+1			338 628.292 (0.014)*	70.215	5.830	3	
10	0	E1+1	9	9	1	E1+1	8		338 627.742 (0.014)	70.215	1.739	3	
10	0	E1+1	11	9	1	E1+1	10		338 627.881 (0.014)	70.215	2.129	3	
10	0	E1+1	10	9	1	E1+1	9		338 629.239 (0.014)	70.215	1.924	3	
27	3	E1−1		27	2	E1+1			338 797.868 (0.176)*	572.572	0.948	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
24	4	E1−1		23	5	E1+1			338 837.225 (0.028)*	475.760	0.019	3	
17	2	A2		17	1	A1		339 458.081 (0.100)	339 458.030 (0.037)*	226.728	6.593	1	11
24	4	E2−1		23	5	E2−1			339 496.904 (0.032)*	475.708	6.348	1	
2	2	B1		1	1	B2			339 723.825 (0.012)*	4.350	2.387	3	
2	2	B1	1	1	1	B2	0		339 722.317 (0.012)	4.350	0.265	3	
2	2	B1	2	1	1	B2	2		339 723.002 (0.012)	4.350	0.199	3	
2	2	B1	3	1	1	B2	2		339 723.788 (0.012)	4.350	1.114	3	
2	2	B1	2	1	1	B2	1		339 724.274 (0.012)	4.350	0.597	3	
2	2	B1	1	1	1	B2	1		339 725.496 (0.012)	4.350	0.199	3	
28	0	E2+1		27	3	E2−1			340 157.920 (0.320)*	583.872	0.278	1	
15	7	E1−1		16	6	E1−1			340 258.920 (0.043)*	298.440	2.216	3	
24	4	E1+1		23	5	E1−1			340 378.100 (0.045)*	475.564	0.019	3	
15	7	E1+1		16	6	E1+1			340 597.276 (0.040)*	298.566	2.213	3	
2	2	B2		1	1	B1			340 598.188 (0.012)*	4.321	2.374	3	
2	2	B2	2	1	1	B1	1		340 597.128 (0.012)	4.321	0.593	3	
2	2	B2	2	1	1	B1	2		340 597.675 (0.012)	4.321	0.198	3	
2	2	B2	1	1	1	B1	1		340 598.335 (0.012)	4.321	0.198	3	
2	2	B2	3	1	1	B1	2		340 598.451 (0.012)	4.321	1.108	3	
2	2	B2	1	1	1	B1	0		340 599.704 (0.012)	4.321	0.264	3	
17	2	E2+1		16	3	E2+1			340 912.470 (0.035)*	225.639	3.586	1	
10	0	B1		9	1	B2			341 058.314 (0.026)*	70.042	5.892	3	
10	0	B1	9	9	1	B2	8		341 057.764 (0.026)	70.042	1.757	3	
10	0	B1	11	9	1	B2	10		341 057.902 (0.026)	70.042	2.151	3	
10	0	B1	10	9	1	B2	9		341 059.261 (0.026)	70.042	1.944	3	
24	3	E1+1		24	2	E1+1			341 591.576 (0.096)*	456.515	15.790	3	
17	2	B1		16	3	B2			342 207.701 (0.047)*	225.834	4.925	3	
28	5	A2		27	6	A1			342 285.233 (0.059)*	655.898	7.254	1	
28	5	A1		27	6	A2			342 341.253 (0.059)*	655.898	7.254	1	
21	2	E1−1		21	1	E1−1			342 529.002 (0.175)*	340.564	0.030	3	
26	10	E1+1		27	9	E1+1			342 888.950 (0.097)*	777.039	4.448	3	
4	4	E2+1		5	3	E2+1			343 030.208 (0.019)*	46.701	0.157	1	
4	4	E2+1	4	5	3	E2+1	5		343 029.311 (0.019)	46.701	0.050	1	
4	4	E2+1	5	5	3	E2+1	6		343 030.535 (0.019)	46.701	0.062	1	
4	4	E2+1	3	5	3	E2+1	4		343 030.846 (0.019)	46.701	0.041	1	
4	4	A1		5	3	A2			343 178.750 (0.019)*	46.811	0.157	1	
4	4	A1	4	5	3	A2	5		343 177.853 (0.019)	46.811	0.050	1	
4	4	A1	5	5	3	A2	6		343 179.077 (0.019)	46.811	0.062	1	
4	4	A1	3	5	3	A2	4		343 179.388 (0.019)	46.811	0.041	1	
4	4	A2		5	3	A1			343 179.779 (0.019)*	46.811	0.157	1	
4	4	A2	4	5	3	A1	5		343 178.882 (0.019)	46.811	0.050	1	
4	4	A2	5	5	3	A1	6		343 180.107 (0.019)	46.811	0.062	1	
4	4	A2	3	5	3	A1	4		343 180.418 (0.019)	46.811	0.041	1	
10	0	E2+1		9	1	E2+1			343 320.512 (0.012)*	70.161	5.720	1	
10	0	E2+1	9	9	1	E2+1	8		343 319.976 (0.012)	70.161	1.706	1	
10	0	E2+1	11	9	1	E2+1	10		343 320.111 (0.012)	70.161	2.088	1	
10	0	E2+1	10	9	1	E2+1	9		343 321.435 (0.012)	70.161	1.888	1	
24	3	A2		24	2	A1			343 494.628 (0.160)*	456.639	18.244	1	
24	4	A2		23	5	A1			343 504.028 (0.036)*	475.406	6.387	1	
26	3	E2−1		26	2	E2−1			343 533.119 (0.148)*	532.426	0.096	1	
24	4	A1		23	5	A2			343 974.484 (0.035)*	475.406	6.388	1	
17	2	A1		16	3	A2			344 064.247 (0.048)*	225.736	4.943	1	
24	3	E2+1		24	2	E2−1			344 430.297 (0.101)*	456.538	17.893	1	
26	3	E1−1		26	2	E1+1			344 560.363 (0.146)*	532.401	1.309	3	
24	3	B2		24	2	B1			344 644.580 (0.141)*	456.692	18.282	3	
24	4	E1−1		23	5	E1−1			344 725.197 (0.037)*	475.564	6.351	3	
15	7	A2		16	6	A1			344 918.827 (0.045)*	298.604	2.213	1	
15	7	A1		16	6	A2			344 918.829 (0.045)*	298.604	2.213	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
26	10	E2+1		27	9	E2+1			345 082.164 (0.122)*	776.943	4.452	1	
17	2	B2		17	1	B1		345 519.675 (0.100)	345 519.697 (0.040)*	226.570	6.482	3	11
17	2	E1−1		16	3	E1+1			345 670.884 (0.033)*	225.443	1.934	3	
22	9	B1		23	8	B2			345 834.551 (0.073)*	580.799	3.592	3	
22	9	B2		23	8	B1			345 834.551 (0.073)*	580.799	3.592	3	
4	4	E1−1		5	3	E1−1			346 819.859 (0.018)*	46.883	0.157	3	
4	4	E1−1	4	5	3	E1−1	5		346 818.962 (0.018)	46.883	0.050	3	
4	4	E1−1	5	5	3	E1−1	6		346 820.186 (0.018)	46.883	0.062	3	
4	4	E1−1	3	5	3	E1−1	4		346 820.497 (0.018)	46.883	0.041	3	
15	7	B2		16	6	B1			347 135.389 (0.049)*	298.502	2.214	3	
15	7	B1		16	6	B2			347 135.391 (0.049)*	298.502	2.214	3	
26	10	B2		27	9	B1			347 207.118 (0.094)*	776.714	4.456	3	
26	10	B1		27	9	B2			347 207.118 (0.094)*	776.714	4.456	3	
18	2	E1+1		18	1	E1−1			348 196.317 (0.060)*	253.021	5.894	3	
11	6	E2−1		12	5	E2−1			348 262.248 (0.035)*	183.184	1.378	1	
23	3	E1+1		23	2	E1+1			348 872.526 (0.081)*	420.804	14.392	3	
4	4	E2−1		5	3	E2−1			348 985.881 (0.019)*	46.778	0.157	1	
4	4	E2−1	4	5	3	E2−1	5		348 984.984 (0.019)	46.778	0.050	1	
4	4	E2−1	5	5	3	E2−1	6		348 986.209 (0.019)	46.778	0.062	1	
4	4	E2−1	3	5	3	E2−1	4		348 986.520 (0.019)	46.778	0.041	1	
25	3	E2−1		25	2	E2−1			349 197.836 (0.123)*	493.739	0.146	1	
27	5	A2		28	2	A1			350 090.497 (0.447)*	614.316	0.019	1	
25	3	E1−1		25	2	E1+1			350 479.469 (0.120)*	493.715	1.765	3	
28	5	B2		27	6	B1			350 492.626 (0.059)*	655.801	7.248	3	
28	5	B1		27	6	B2			350 547.829 (0.059)*	655.801	7.248	3	
15	7	E2−1		16	6	E2−1			350 651.061 (0.047)*	298.245	2.216	1	
18	2	E2−1		18	1	E2−1			350 949.562 (0.062)*	252.936	5.957	1	
8	1	A2		7	1	A1			350 967.947 (0.008)*	44.005	0.743	1	
8	1	A2	9	7	1	A1	8		350 967.928 (0.008)	44.005	0.277	1	
8	1	A2	7	7	1	A1	6		350 967.959 (0.008)	44.005	0.215	1	
8	1	A2	8	7	1	A1	7		350 967.962 (0.008)	44.005	0.244	1	
8	1	B2		7	1	B1			350 968.269 (0.008)*	43.846	0.742	3	
8	1	B2	9	7	1	B1	8		350 968.250 (0.008)	43.846	0.276	3	
8	1	B2	7	7	1	B1	6		350 968.281 (0.008)	43.846	0.214	3	
8	1	B2	8	7	1	B1	7		350 968.284 (0.008)	43.846	0.243	3	
23	3	A1		23	2	A2			351 028.213 (0.136)*	420.935	17.399	1	
8	1	E1−1		7	1	E1−1			351 030.714 (0.008)*	44.009	0.742	3	
8	1	E1−1	9	7	1	E1−1	8		351 030.693 (0.008)	44.009	0.276	3	
8	1	E1−1	7	7	1	E1−1	6		351 030.722 (0.008)	44.009	0.214	3	
8	1	E1−1	8	7	1	E1−1	7		351 030.735 (0.008)	44.010	0.243	3	
8	1	E2−1		7	1	E2−1			351 255.622 (0.008)*	43.893	0.740	1	
8	1	E2−1	9	7	1	E2−1	8		351 255.592 (0.008)	43.893	0.276	1	
8	1	E2−1	7	7	1	E2−1	6		351 255.616 (0.008)	43.893	0.214	1	
8	1	E2−1	8	7	1	E2−1	7		351 255.664 (0.008)	43.894	0.243	1	
28	5	E1−1		27	6	E1−1			351 811.008 (0.065)*	655.732	7.247	3	
23	3	E2+1		23	2	E2−1			352 173.804 (0.086)*	420.825	16.934	1	
28	5	E2+1		27	6	E2+1			352 235.613 (0.051)*	655.949	7.221	1	
23	3	B1		23	2	B2			352 235.731 (0.121)*	420.988	17.434	3	
22	2	E1−1		22	1	E1−1			352 543.946 (0.218)*	372.643	0.019	3	
29	0	A2		28	3	A1			353 131.680 (0.392)*	625.402	0.234	1	
6	1	E2+1		5	0	E2+1		353 388.593 (0.100)	353 388.506 (0.009)*	22.579	4.956	1	11
6	1	E2+1	6	5	0	E2+1	5		353 387.786 (0.009)	22.579	1.606	1	
6	1	E2+1	7	5	0	E2+1	6		353 388.785 (0.009)	22.579	1.906	1	
6	1	E2+1	5	5	0	E2+1	4		353 388.985 (0.009)	22.579	1.352	1	
18	2	A1		18	1	A2		353 456.680 (0.100)	353 456.680 (0.045)*	253.007	6.343	1	11
27	5	B2		28	2	B1			353 706.088 (0.424)*	614.372	0.020	3	
28	5	E1+1		27	6	E1+1			353 837.095 (0.060)*	655.860	7.238	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
4	4	E1+1		5	3	E1+1			353 872.637 (0.018)*	46.497	0.157	3	
4	4	E1+1	4	5	3	E1+1	5		353 871.740 (0.018)	46.497	0.050	3	
4	4	E1+1	5	5	3	E1+1	6		353 872.964 (0.018)	46.497	0.062	3	
4	4	E1+1	3	5	3	E1+1	4		353 873.275 (0.018)	46.497	0.041	3	
8	0	E2+1		7	0	E2+1		354 019.214 (0.100)	354 019.180 (0.008)*	41.781	0.755	1	11
8	0	E2+1	9	7	0	E2+1	8		354 019.160 (0.008)	41.781	0.281	1	
8	0	E2+1	7	7	0	E2+1	6		354 019.171 (0.008)	41.781	0.218	1	
8	0	E2+1	8	7	0	E2+1	7		354 019.213 (0.008)	41.781	0.248	1	
8	0	E1+1		7	0	E1+1		354 026.284 (0.100)	354 026.247 (0.008)*	41.678	0.752	3	11
8	0	E1+1	9	7	0	E1+1	8		354 026.226 (0.008)	41.678	0.280	3	
8	0	E1+1	7	7	0	E1+1	6		354 026.238 (0.008)	41.678	0.217	3	
8	0	E1+1	8	7	0	E1+1	7		354 026.279 (0.008)	41.678	0.247	3	
8	0	B1		7	0	B2		354 038.469 (0.100)	354 038.456 (0.008)*	41.584	0.756	3	11
8	0	B1	9	7	0	B2	8		354 038.436 (0.008)	41.584	0.282	3	
8	0	B1	7	7	0	B2	6		354 038.448 (0.008)	41.584	0.218	3	
8	0	B1	8	7	0	B2	7		354 038.487 (0.008)	41.584	0.248	3	
8	0	A1		7	0	A2		354 052.026 (0.100)	354 052.061 (0.008)*	41.378	0.752	1	11
8	0	A1	9	7	0	A2	8		354 052.041 (0.008)	41.378	0.280	1	
8	0	A1	7	7	0	A2	6		354 052.053 (0.008)	41.378	0.217	1	
8	0	A1	8	7	0	A2	7		354 052.092 (0.008)	41.378	0.247	1	
29	1	E2+1		29	0	E2+1			354 467.302 (0.733)*	637.437	0.021	1	
21	3	E1+1		20	4	E1−1			354 479.887 (0.035)*	354.096	0.215	3	
8	7	E1+1		7	7	E1+1			354 515.681 (0.025)*	173.971	0.176	3	
8	7	E1+1	7	7	7	E1+1	6		354 515.456 (0.025)	173.971	0.051	3	
8	7	E1+1	9	7	7	E1+1	8		354 515.543 (0.025)	173.971	0.066	3	
8	7	E1+1	8	7	7	E1+1	7		354 516.031 (0.025)	173.970	0.058	3	
8	7	E2−1		7	7	E2−1			354 517.040 (0.026)*	173.984	0.176	1	
8	7	E2−1	7	7	7	E2−1	6		354 516.815 (0.026)	173.984	0.051	1	
8	7	E2−1	9	7	7	E2−1	8		354 516.902 (0.026)	173.984	0.066	1	
8	7	E2−1	8	7	7	E2−1	7		354 517.390 (0.026)	173.984	0.058	1	
8	7	A2		7	7	A1			354 520.452 (0.025)*	174.151	0.177	1	
8	7	A2	7	7	7	A1	6		354 520.227 (0.025)	174.151	0.051	1	
8	7	A2	9	7	7	A1	8		354 520.314 (0.025)	174.151	0.066	1	
8	7	A2	8	7	7	A1	7		354 520.802 (0.025)	174.151	0.058	1	
8	7	A1		7	7	A2			354 520.452 (0.025)*	174.151	0.177	1	
8	7	A1	7	7	7	A2	6		354 520.227 (0.025)	174.151	0.051	1	
8	7	A1	9	7	7	A2	8		354 520.314 (0.025)	174.151	0.066	1	
8	7	A1	8	7	7	A2	7		354 520.802 (0.025)	174.151	0.058	1	
8	7	E1−1		7	7	E1−1			354 521.296 (0.026)*	173.831	0.177	3	
8	7	E1−1	7	7	7	E1−1	6		354 521.071 (0.026)	173.831	0.051	3	
8	7	E1−1	9	7	7	E1−1	8		354 521.157 (0.026)	173.831	0.066	3	
8	7	E1−1	8	7	7	E1−1	7		354 521.646 (0.026)	173.831	0.058	3	
8	7	E2+1		7	7	E2+1			354 521.847 (0.026)*	173.788	0.178	1	
8	7	E2+1	7	7	7	E2+1	6		354 521.622 (0.026)	173.788	0.051	1	
8	7	E2+1	9	7	7	E2+1	8		354 521.709 (0.026)	173.788	0.066	1	
8	7	E2+1	8	7	7	E2+1	7		354 522.197 (0.026)	173.788	0.058	1	
8	7	B2		7	7	B1			354 522.361 (0.025)*	174.122	0.177	3	
8	7	B2	7	7	7	B1	6		354 522.136 (0.025)	174.122	0.051	3	
8	7	B2	9	7	7	B1	8		354 522.222 (0.025)	174.122	0.066	3	
8	7	B2	8	7	7	B1	7		354 522.711 (0.025)	174.122	0.058	3	
8	7	B1		7	7	B2			354 522.361 (0.025)*	174.122	0.177	3	
8	7	B1	7	7	7	B2	6		354 522.136 (0.025)	174.122	0.051	3	
8	7	B1	9	7	7	B2	8		354 522.222 (0.025)	174.122	0.066	3	
8	7	B1	8	7	7	B2	7		354 522.711 (0.025)	174.122	0.058	3	
8	2	B2		7	2	B1			354 528.501 (0.008)*	52.648	0.707	3	
8	2	B2	9	7	2	B1	8		354 528.483 (0.008)	52.647	0.263	3	
8	2	B2	7	7	2	B1	6		354 528.488 (0.008)	52.647	0.204	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	2	B2	8	7	2	B1	7		354 528.536 (0.008)	52.648	0.232	3	
8	2	A2		7	2	A1			354 530.188 (0.008)*	52.610	0.707	1	
8	2	A2	9	7	2	A1	8		354 530.169 (0.008)	52.610	0.263	1	
8	2	A2	7	7	2	A1	6		354 530.175 (0.008)	52.610	0.204	1	
8	2	A2	8	7	2	A1	7		354 530.222 (0.008)	52.610	0.232	1	
8	6	E1−1		7	6	E1−1			354 554.186 (0.020)*	138.826	0.329	3	
8	6	E1−1	7	7	6	E1−1	6		354 554.023 (0.020)	138.826	0.095	3	
8	6	E1−1	9	7	6	E1−1	8		354 554.083 (0.020)	138.826	0.123	3	
8	6	E1−1	8	7	6	E1−1	7		354 554.443 (0.020)	138.826	0.108	3	
8	6	E2+1		7	6	E2+1			354 557.826 (0.019)*	139.045	0.329	1	
8	6	E2+1	7	7	6	E2+1	6		354 557.663 (0.019)	139.045	0.095	1	
8	6	E2+1	9	7	6	E2+1	8		354 557.723 (0.019)	139.045	0.123	1	
8	6	E2+1	8	7	6	E2+1	7		354 558.083 (0.019)	139.045	0.108	1	
8	6	A2		7	6	A1			354 558.117 (0.020)*	138.989	0.329	1	
8	6	A2	7	7	6	A1	6		354 557.954 (0.020)	138.989	0.095	1	
8	6	A2	9	7	6	A1	8		354 558.014 (0.020)	138.989	0.123	1	
8	6	A2	8	7	6	A1	7		354 558.374 (0.020)	138.988	0.108	1	
8	6	A1		7	6	A2			354 558.117 (0.020)*	138.989	0.329	1	
8	6	A1	7	7	6	A2	6		354 557.954 (0.020)	138.989	0.095	1	
8	6	A1	9	7	6	A2	8		354 558.014 (0.020)	138.989	0.123	1	
8	6	A1	8	7	6	A2	7		354 558.374 (0.020)	138.988	0.108	1	
8	6	E2−1		7	6	E2−1			354 560.625 (0.020)*	138.628	0.331	1	
8	6	E2−1	7	7	6	E2−1	6		354 560.462 (0.020)	138.628	0.096	1	
8	6	E2−1	9	7	6	E2−1	8		354 560.522 (0.020)	138.628	0.123	1	
8	6	E2−1	8	7	6	E2−1	7		354 560.881 (0.020)	138.628	0.109	1	
8	6	B2		7	6	B1			354 560.718 (0.020)*	138.885	0.330	3	
8	6	B2	7	7	6	B1	6		354 560.556 (0.020)	138.885	0.095	3	
8	6	B2	9	7	6	B1	8		354 560.616 (0.020)	138.885	0.123	3	
8	6	B2	8	7	6	B1	7		354 560.975 (0.020)	138.885	0.108	3	
8	6	B1		7	6	B2			354 560.718 (0.020)*	138.885	0.330	3	
8	6	B1	7	7	6	B2	6		354 560.556 (0.020)	138.885	0.095	3	
8	6	B1	9	7	6	B2	8		354 560.616 (0.020)	138.885	0.123	3	
8	6	B1	8	7	6	B2	7		354 560.975 (0.020)	138.885	0.108	3	
8	6	E1+1		7	6	E1+1			354 561.660 (0.020)*	138.949	0.330	3	
8	6	E1+1	7	7	6	E1+1	6		354 561.497 (0.020)	138.949	0.095	3	
8	6	E1+1	9	7	6	E1+1	8		354 561.557 (0.020)	138.949	0.123	3	
8	6	E1+1	8	7	6	E1+1	7		354 561.916 (0.020)	138.949	0.108	3	
8	5	B1		7	5	B2			354 591.988 (0.015)*	109.143	0.459	3	
8	5	B1	7	7	5	B2	6		354 591.879 (0.015)	109.143	0.133	3	
8	5	B1	9	7	5	B2	8		354 591.916 (0.015)	109.143	0.171	3	
8	5	B1	8	7	5	B2	7		354 592.166 (0.015)	109.143	0.151	3	
8	5	B2		7	5	B1			354 591.988 (0.015)*	109.143	0.459	3	
8	5	B2	7	7	5	B1	6		354 591.878 (0.015)	109.143	0.133	3	
8	5	B2	9	7	5	B1	8		354 591.915 (0.015)	109.143	0.171	3	
8	5	B2	8	7	5	B1	7		354 592.166 (0.015)	109.143	0.151	3	
8	5	E2−1		7	5	E2−1			354 592.988 (0.015)*	109.267	0.459	1	
8	5	E2−1	7	7	5	E2−1	6		354 592.878 (0.015)	109.267	0.133	1	
8	5	E2−1	9	7	5	E2−1	8		354 592.915 (0.015)	109.267	0.171	1	
8	5	E2−1	8	7	5	E2−1	7		354 593.166 (0.015)	109.267	0.151	1	
8	5	E2+1		7	5	E2+1			354 596.780 (0.015)*	109.353	0.459	1	
8	5	E2+1	7	7	5	E2+1	6		354 596.670 (0.015)	109.353	0.133	1	
8	5	E2+1	9	7	5	E2+1	8		354 596.707 (0.015)	109.353	0.171	1	
8	5	E2+1	8	7	5	E2+1	7		354 596.958 (0.015)	109.353	0.151	1	
8	5	E1+1		7	5	E1+1			354 597.340 (0.015)*	109.314	0.460	3	
8	5	E1+1	7	7	5	E1+1	6		354 597.230 (0.015)	109.314	0.133	3	
8	5	E1+1	9	7	5	E1+1	8		354 597.267 (0.015)	109.314	0.171	3	
8	5	E1+1	8	7	5	E1+1	7		354 597.517 (0.015)	109.314	0.151	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
8	5	A1		7	5	A2			354 598.053 (0.015)*	108.954	0.460	1	
8	5	A1	7	7	5	A2	6		354 597.943 (0.015)	108.954	0.133	1	
8	5	A1	9	7	5	A2	8		354 597.980 (0.015)	108.954	0.171	1	
8	5	A1	8	7	5	A2	7		354 598.231 (0.015)	108.954	0.151	1	
8	5	A2		7	5	A1			354 598.053 (0.015)*	108.954	0.460	1	
8	5	A2	7	7	5	A1	6		354 597.943 (0.015)	108.954	0.133	1	
8	5	A2	9	7	5	A1	8		354 597.980 (0.015)	108.954	0.171	1	
8	5	A2	8	7	5	A1	7		354 598.231 (0.015)	108.954	0.151	1	
8	5	E1−1		7	5	E1−1			354 598.498 (0.015)*	109.116	0.460	3	
8	5	E1−1	7	7	5	E1−1	6		354 598.388 (0.015)	109.116	0.133	3	
8	5	E1−1	9	7	5	E1−1	8		354 598.425 (0.015)	109.116	0.171	3	
8	5	E1−1	8	7	5	E1−1	7		354 598.675 (0.015)	109.116	0.151	3	
8	4	A2		7	4	A1			354 630.965 (0.012)*	84.875	0.565	1	
8	4	A2	7	7	4	A1	6		354 630.899 (0.012)	84.875	0.163	1	
8	4	A2	9	7	4	A1	8		354 630.917 (0.012)	84.875	0.211	1	
8	4	A2	8	7	4	A1	7		354 631.078 (0.012)	84.875	0.185	1	
8	4	A1		7	4	A2			354 631.018 (0.012)*	84.875	0.565	1	
8	4	A1	7	7	4	A2	6		354 630.951 (0.012)	84.875	0.163	1	
8	4	A1	9	7	4	A2	8		354 630.970 (0.012)	84.875	0.211	1	
8	4	A1	8	7	4	A2	7		354 631.130 (0.012)	84.875	0.185	1	
8	4	E1+1		7	4	E1+1			354 632.555 (0.012)*	84.918	0.565	3	
8	4	E1+1	7	7	4	E1+1	6		354 632.489 (0.012)	84.918	0.163	3	
8	4	E1+1	9	7	4	E1+1	8		354 632.507 (0.012)	84.918	0.211	3	
8	4	E1+1	8	7	4	E1+1	7		354 632.667 (0.012)	84.918	0.186	3	
8	4	E1−1		7	4	E1−1			354 634.669 (0.011)*	85.069	0.565	3	
8	4	E1−1	7	7	4	E1−1	6		354 634.603 (0.011)	85.069	0.163	3	
8	4	E1−1	9	7	4	E1−1	8		354 634.621 (0.011)	85.069	0.211	3	
8	4	E1−1	8	7	4	E1−1	7		354 634.781 (0.011)	85.069	0.186	3	
8	4	E2−1		7	4	E2−1			354 636.477 (0.012)*	85.037	0.566	1	
8	4	E2−1	7	7	4	E2−1	6		354 636.410 (0.012)	85.037	0.163	1	
8	4	E2−1	9	7	4	E2−1	8		354 636.429 (0.012)	85.037	0.211	1	
8	4	E2−1	8	7	4	E2−1	7		354 636.589 (0.012)	85.037	0.186	1	
8	4	E2+1		7	4	E2+1			354 637.583 (0.012)*	84.761	0.566	1	
8	4	E2+1	7	7	4	E2+1	6		354 637.517 (0.012)	84.761	0.163	1	
8	4	E2+1	9	7	4	E2+1	8		354 637.535 (0.012)	84.761	0.211	1	
8	4	E2+1	8	7	4	E2+1	7		354 637.695 (0.012)	84.761	0.186	1	
8	4	B2		7	4	B1			354 637.826 (0.012)*	84.686	0.566	3	
8	4	B2	7	7	4	B1	6		354 637.759 (0.012)	84.686	0.163	3	
8	4	B2	9	7	4	B1	8		354 637.778 (0.012)	84.686	0.211	3	
8	4	B2	8	7	4	B1	7		354 637.938 (0.012)	84.686	0.186	3	
8	4	B1		7	4	B2			354 637.879 (0.012)*	84.686	0.566	3	
8	4	B1	7	7	4	B2	6		354 637.813 (0.012)	84.686	0.163	3	
8	4	B1	9	7	4	B2	8		354 637.831 (0.012)	84.686	0.211	3	
8	4	B1	8	7	4	B2	7		354 637.992 (0.012)	84.686	0.186	3	
8	2	E2+1		7	2	E2+1			354 659.338 (0.008)*	52.393	0.696	1	
8	2	E2+1	9	7	2	E2+1	8		354 659.317 (0.008)	52.393	0.259	1	
8	2	E2+1	7	7	2	E2+1	6		354 659.321 (0.008)	52.393	0.201	1	
8	2	E2+1	8	7	2	E2+1	7		354 659.378 (0.008)	52.393	0.228	1	
8	3	B2		7	3	B1			354 681.521 (0.009)*	66.137	0.648	3	
8	3	B2	7	7	3	B1	6		354 681.489 (0.009)	66.137	0.187	3	
8	3	B2	9	7	3	B1	8		354 681.492 (0.009)	66.137	0.241	3	
8	3	B2	8	7	3	B1	7		354 681.582 (0.009)	66.137	0.213	3	
8	3	E2+1		7	3	E2+1			354 686.028 (0.010)*	65.927	0.648	1	
8	3	E2+1	7	7	3	E2+1	6		354 685.996 (0.010)	65.927	0.187	1	
8	3	E2+1	9	7	3	E2+1	8		354 686.000 (0.010)	65.927	0.242	1	
8	3	E2+1	8	7	3	E2+1	7		354 686.088 (0.010)	65.927	0.213	1	
8	3	A2		7	3	A1			354 686.237 (0.009)*	66.037	0.648	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	$\mu^2 S$ (D^2)	W_{st}	Ref.
8	3	A2	7	7	3	A1	6		354 686.205 (0.009)	66.037	0.187	1	
8	3	A2	9	7	3	A1	8		354 686.209 (0.009)	66.037	0.241	1	
8	3	A2	8	7	3	A1	7		354 686.298 (0.009)	66.037	0.213	1	
8	3	E1−1		7	3	E1−1			354 687.504 (0.009)*	66.109	0.648	3	
8	3	E1−1	7	7	3	E1−1	6		354 687.472 (0.009)	66.109	0.187	3	
8	3	E1−1	9	7	3	E1−1	8		354 687.476 (0.009)	66.109	0.242	3	
8	3	E1−1	8	7	3	E1−1	7		354 687.564 (0.009)	66.109	0.213	3	
8	3	B1		7	3	B2			354 690.570 (0.009)*	66.137	0.648	3	
8	3	B1	7	7	3	B2	6		354 690.539 (0.009)	66.137	0.187	3	
8	3	B1	9	7	3	B2	8		354 690.542 (0.009)	66.137	0.241	3	
8	3	B1	8	7	3	B2	7		354 690.630 (0.009)	66.137	0.213	3	
8	3	E2−1		7	3	E2−1			354 690.682 (0.009)*	66.004	0.648	1	
8	3	E2−1	7	7	3	E2−1	6		354 690.650 (0.009)	66.004	0.187	1	
8	3	E2−1	9	7	3	E2−1	8		354 690.654 (0.009)	66.004	0.241	1	
8	3	E2−1	8	7	3	E2−1	7		354 690.743 (0.009)	66.004	0.213	1	
8	3	E1+1		7	3	E1+1			354 694.070 (0.010)*	65.723	0.647	3	
8	3	E1+1	7	7	3	E1+1	6		354 694.038 (0.010)	65.723	0.187	3	
8	3	E1+1	9	7	3	E1+1	8		354 694.042 (0.010)	65.723	0.241	3	
8	3	E1+1	8	7	3	E1+1	7		354 694.130 (0.010)	65.723	0.212	3	
8	3	A1		7	3	A2			354 695.483 (0.009)*	66.037	0.648	1	
8	3	A1	7	7	3	A2	6		354 695.452 (0.009)	66.037	0.187	1	
8	3	A1	9	7	3	A2	8		354 695.455 (0.009)	66.037	0.241	1	
8	3	A1	8	7	3	A2	7		354 695.543 (0.009)	66.037	0.213	1	
22	9	E2−1		23	8	E2−1			354 703.359 (0.082)*	580.825	3.589	1	
8	2	E1−1		7	2	E1−1			354 797.051 (0.008)*	52.261	0.705	3	
8	2	E1−1	9	7	2	E1−1	8		354 797.037 (0.008)	52.261	0.263	3	
8	2	E1−1	7	7	2	E1−1	6		354 797.043 (0.008)	52.261	0.204	3	
8	2	E1−1	8	7	2	E1−1	7		354 797.075 (0.008)	52.261	0.231	3	
6	1	B1		5	0	B2		354 843.731 (0.100)	354 843.680 (0.014)*	22.381	5.390	3	11
6	1	B1	6	5	0	B2	5		354 842.840 (0.014)	22.381	1.747	3	
6	1	B1	7	5	0	B2	6		354 844.006 (0.014)	22.381	2.073	3	
6	1	B1	5	5	0	B2	4		354 844.234 (0.014)	22.381	1.470	3	
8	2	E1+1		7	2	E1+1			354 864.522 (0.008)*	52.553	0.707	3	
8	2	E1+1	9	7	2	E1+1	8		354 864.513 (0.008)	52.553	0.263	3	
8	2	E1+1	7	7	2	E1+1	6		354 864.521 (0.008)	52.553	0.204	3	
8	2	E1+1	8	7	2	E1+1	7		354 864.533 (0.008)	52.553	0.232	3	
24	3	E2−1		24	2	E2−1			354 881.404 (0.102)*	456.538	0.224	1	
8	2	E2−1		7	2	E2−1			355 004.417 (0.009)*	52.458	0.698	1	
8	2	E2−1	8	7	2	E2−1	7		355 004.413 (0.009)	52.458	0.229	1	
8	2	E2−1	9	7	2	E2−1	8		355 004.415 (0.009)	52.458	0.260	1	
8	2	E2−1	7	7	2	E2−1	6		355 004.426 (0.009)	52.458	0.202	1	
8	2	A1		7	2	A2			355 108.490 (0.008)*	52.639	0.707	1	
8	2	A1	9	7	2	A2	8		355 108.485 (0.008)	52.639	0.263	1	
8	2	A1	8	7	2	A2	7		355 108.493 (0.008)	52.639	0.232	1	
8	2	A1	7	7	2	A2	6		355 108.494 (0.008)	52.639	0.204	1	
8	2	B1		7	2	B2			355 113.971 (0.008)*	52.677	0.707	3	
8	2	B1	9	7	2	B2	8		355 113.967 (0.008)	52.677	0.263	3	
8	2	B1	8	7	2	B2	7		355 113.974 (0.008)	52.677	0.232	3	
8	2	B1	7	7	2	B2	6		355 113.975 (0.008)	52.677	0.204	3	
15	1	E2−1		14	2	E2−1			355 429.832 (0.025)*	166.598	0.076	1	
22	9	A1		23	8	A2			355 480.324 (0.074)*	580.660	3.590	1	
22	9	A2		23	8	A1			355 480.324 (0.074)*	580.660	3.590	1	
22	3	E1+1		22	2	E1+1			355 575.513 (0.068)*	386.584	13.067	3	
29	0	B2		28	3	B1			355 783.976 (0.378)*	625.476	0.254	3	
22	9	E1−1		23	8	E1−1			356 116.475 (0.065)*	580.864	3.586	3	
13	1	B2		12	2	B1			356 432.821 (0.031)*	126.763	5.213	3	
11	6	E1+1		12	5	E1+1			356 457.017 (0.038)*	183.232	1.378	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
24	3	E1−1		24	2	E1+1			356 458.735 (0.098)*	456.515	2.299	3	
22	9	E2+1		23	8	E2+1			357 068.872 (0.079)*	580.653	3.592	1	
6	1	E1+1		5	0	E1+1		357 440.091 (0.100)	357 440.089 (0.010)*	22.476	5.292	3	11
6	1	E1+1	6	5	0	E1+1	5		357 439.275 (0.010)	22.476	1.715	3	
6	1	E1+1	7	5	0	E1+1	6		357 440.405 (0.010)	22.476	2.035	3	
6	1	E1+1	5	5	0	E1+1	4		357 440.627 (0.010)	22.476	1.443	3	
15	1	E1−1		14	2	E1+1			357 455.035 (0.024)*	166.618	0.261	3	
8	1	E2+1		7	1	E2+1			357 709.688 (0.008)*	44.804	0.740	1	
8	1	E2+1	8	7	1	E2+1	7		357 709.677 (0.008)	44.804	0.243	1	
8	1	E2+1	7	7	1	E2+1	6		357 709.694 (0.008)	44.804	0.214	1	
8	1	E2+1	9	7	1	E2+1	8		357 709.694 (0.008)	44.804	0.276	1	
8	1	E1+1		7	1	E1+1			357 928.053 (0.008)*	44.846	0.742	3	
8	1	E1+1	7	7	1	E1+1	6		357 928.045 (0.008)	44.846	0.214	3	
8	1	E1+1	9	7	1	E1+1	8		357 928.051 (0.008)	44.846	0.277	3	
8	1	E1+1	8	7	1	E1+1	7		357 928.063 (0.008)	44.846	0.244	3	
8	1	A1		7	1	A2			357 990.490 (0.008)*	44.826	0.744	1	
8	1	A1	7	7	1	A2	6		357 990.478 (0.008)	44.826	0.215	1	
8	1	A1	9	7	1	A2	8	357 990.485 (0.008)	44.826	0.277	1		
8	1	A1	8	7	1	A2	7		357 990.506 (0.008)	44.826	0.244	1	
8	1	B1		7	1	B2			358 003.147 (0.008)*	44.668	0.741	3	
8	1	B1	7	7	1	B2	6		358 003.135 (0.008)	44.668	0.214	3	
8	1	B1	9	7	1	B2	8		358 003.142 (0.008)	44.668	0.276	3	
8	1	B1	8	7	1	B2	7		358 003.163 (0.008)	44.668	0.243	3	
22	3	A2		22	2	A1			358 007.535 (0.116)*	386.722	16.590	1	
11	6	E2+1		12	5	E2+1			358 141.999 (0.035)*	183.271	1.377	1	
15	1	B1		14	2	B2			358 667.789 (0.056)*	166.406	3.927	3	
11	6	E1−1		12	5	E1−1			358 674.692 (0.038)*	183.034	1.378	3	
21	3	E1+1		20	4	E1+1			358 931.872 (0.026)*	353.948	5.703	3	
22	3	B2		22	2	B1			359 275.470 (0.104)*	386.774	16.621	3	
22	3	E2+1		22	2	E2−1			359 355.434 (0.072)*	386.603	15.939	1	
18	2	B1		18	1	B2		359 547.640 (0.100)	359 547.730 (0.049)*	252.849	6.224	3	11
11	6	B2		12	5	B1			359 683.844 (0.034)*	183.060	1.378	3	
11	6	B1		12	5	B2			359 683.856 (0.034)*	183.060	1.378	3	
21	3	E2+1		20	4	E2−1			360 154.910 (0.031)*	354.066	1.654	1	
29	0	E1+1		28	3	E1−1			360 156.335 (0.384)*	625.342	0.266	3	
23	3	E2−1		23	2	E2−1			360 498.480 (0.084)*	420.825	0.349	1	
28	5	E2−1		27	6	E2−1			361 607.383 (0.067)*	655.546	7.257	1	
17	2	E1+1		16	3	E1−1			361 639.875 (0.038)*	225.824	2.046	3	
21	3	E1+1		21	2	E1+1			361 704.739 (0.057)*	353.855	11.880	3	
29	11	E2−1		30	10	E2−1			361 914.813 (0.150)*	956.319	4.971	1	
13	1	A2		12	2	A1			362 228.663 (0.029)*	126.723	5.176	1	
23	3	E1−1		23	2	E1+1			362 397.626 (0.080)*	420.804	2.864	3	
29	0	E2+1		28	3	E2−1			362 460.851 (0.378)*	625.346	0.281	1	
29	11	E1+1		30	10	E1+1			362 779.449 (0.221)*	956.492	4.965	3	
19	2	E1+1		19	1	E1−1			363 595.016 (0.074)*	280.752	5.629	3	
21	3	A1		21	2	A2			364 417.475 (0.099)*	354.001	15.808	1	
18	8	E1+1		19	7	E1+1			364 431.171 (0.060)*	413.320	2.735	3	
18	8	A1		19	7	A2			364 473.988 (0.064)*	413.503	2.733	1	
18	8	A2		19	7	A1			364 473.988 (0.064)*	413.503	2.733	1	
3	2	E1−1		2	1	E1+1			364 497.227 (0.014)*	7.559	0.155	3	
3	2	E1−1	2	2	1	E1+1	1		364 497.185 (0.014)	7.559	0.031	3	
3	2	E1−1	4	2	1	E1+1	3		364 497.217 (0.014)	7.559	0.066	3	
3	2	E1−1	3	2	1	E1+1	2		364 497.267 (0.014)	7.559	0.046	3	
15	1	A1		14	2	A2			364 502.620 (0.053)*	166.370	3.918	1	
17	2	E2−1		16	3	E2−1			364 711.495 (0.040)*	225.724	3.734	1	
22	9	E1+1		23	8	E1+1			365 306.456 (0.084)*	580.476	3.593	3	
21	3	E2−1		20	4	E2−1			365 430.440 (0.039)*	354.066	4.253	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	1	A1		5	0	A2			365 746.342 (0.014)*	22.176	5.394	1	
6	1	A1	6	5	0	A2	5		365 745.503 (0.014)	22.176	1.748	1	
6	1	A1	7	5	0	A2	6		365 746.667 (0.014)	22.176	2.075	1	
6	1	A1	5	5	0	A2	4		365 746.896 (0.014)	22.176	1.471	1	
21	3	B1		21	2	B2			365 747.497 (0.089)*	354.051	15.837	3	
21	3	E2+1		21	2	E2−1			365 953.506 (0.061)*	353.872	14.866	1	
22	3	E2−1		22	2	E2−1			365 970.871 (0.070)*	386.603	0.544	1	
13	1	E2+1		12	2	E2−1			366 216.591 (0.019)*	126.538	5.106	1	
7	5	E1−1		8	4	E1−1			366 269.130 (0.029)*	96.898	0.590	3	
7	5	E1−1	7	8	4	E1−1	8		366 268.730 (0.029)	96.898	0.194	3	
7	5	E1−1	8	8	4	E1−1	9		366 269.296 (0.029)	96.898	0.220	3	
7	5	E1−1	6	8	4	E1−1	7		366 269.373 (0.029)	96.898	0.171	3	
19	2	E2−1		19	1	E2−1			366 440.594 (0.076)*	280.668	5.644	1	
21	3	E1−1		20	4	E1−1			366 523.486 (0.035)*	354.096	5.674	3	
17	2	B2		16	3	B1			366 619.878 (0.039)*	225.866	5.149	3	
13	1	E1+1		12	2	E1+1			366 823.709 (0.014)*	126.582	4.388	3	
7	5	A2		8	4	A1			367 224.171 (0.025)*	96.704	0.591	1	
7	5	A2	7	8	4	A1	8		367 223.771 (0.025)	96.704	0.194	1	
7	5	A2	8	8	4	A1	9		367 224.337 (0.025)	96.704	0.220	1	
7	5	A2	6	8	4	A1	7		367 224.414 (0.025)	96.704	0.171	1	
7	5	A1		8	4	A2			367 224.249 (0.025)*	96.704	0.591	1	
7	5	A1	7	8	4	A2	8		367 223.850 (0.025)	96.704	0.194	1	
7	5	A1	8	8	4	A2	9		367 224.416 (0.025)	96.704	0.220	1	
7	5	A1	6	8	4	A2	7		367 224.492 (0.025)	96.704	0.171	1	
29	11	E2+1		30	10	E2+1			367 245.428 (0.149)*	956.469	4.961	1	
17	2	E2−1		16	3	E2+1			367 246.576 (0.041)*	225.639	1.439	1	
20	3	E1+1		20	2	E1+1			367 267.871 (0.048)*	322.620	10.873	3	
21	3	A1		20	4	A2			367 395.066 (0.030)*	353.901	5.896	1	
3	2	E2+1		2	1	E2+1			367 681.122 (0.014)*	7.588	2.624	1	
3	2	E2+1	3	2	1	E2+1	2		367 680.974 (0.014)	7.588	0.777	1	
3	2	E2+1	4	2	1	E2+1	3		367 681.164 (0.014)	7.588	1.124	1	
3	2	E2+1	2	2	1	E2+1	1		367 681.267 (0.014)	7.588	0.525	1	
17	2	A2		16	3	A1			368 185.801 (0.043)*	225.769	5.179	1	
22	3	E1−1		22	2	E1+1			368 193.738 (0.066)*	386.584	3.389	3	
21	3	E2+1		20	4	E2+1			368 256.255 (0.025)*	353.795	4.256	1	
15	1	E2−1		14	2	E2+1			368 345.175 (0.048)*	166.167	3.849	1	
11	6	A2		12	5	A1			368 420.287 (0.034)*	182.872	1.378	1	
11	6	A1		12	5	A2			368 420.299 (0.034)*	182.872	1.378	1	
19	2	A2		19	1	A1		368 741.745 (0.100)	368 741.703 (0.057)*	280.737	6.054	1	11
11	0	A2		10	1	A1			368 980.664 (0.030)*	85.119	6.332	1	
3	2	E2−1		2	1	E2+1			369 425.203 (0.014)*	7.588	0.041	1	
3	2	E2−1	3	2	1	E2+1	2		369 425.055 (0.014)	7.588	0.012	1	
3	2	E2−1	4	2	1	E2+1	3		369 425.246 (0.014)	7.588	0.017	1	
3	2	E2−1	2	2	1	E2+1	1		369 425.349 (0.014)	7.588	0.008	1	
18	8	B1		19	7	B2			369 531.823 (0.056)*	413.476	2.731	3	
18	8	B2		19	7	B1			369 531.823 (0.056)*	413.476	2.731	3	
3	2	E1−1		2	1	E1−1			370 166.704 (0.012)*	7.370	2.505	3	
3	2	E1−1	3	2	1	E1−1	2		370 166.040 (0.012)	7.370	0.742	3	
3	2	E1−1	4	2	1	E1−1	3		370 166.894 (0.012)	7.370	1.073	3	
3	2	E1−1	2	2	1	E1−1	1		370 167.366 (0.012)	7.370	0.501	3	
20	3	A2		20	2	A1			370 249.006 (0.084)*	322.772	15.049	1	
21	3	E1−1		20	4	E1+1			370 975.471 (0.030)*	353.948	0.220	3	
21	3	E2−1		21	2	E2−1			371 229.036 (0.058)*	353.872	0.847	1	
20	3	B2		20	2	B1			371 641.566 (0.076)*	322.821	15.076	3	
29	11	E1−1		30	10	E1−1			371 653.996 (0.153)*	956.158	4.971	3	
7	5	E2−1		8	4	E2−1			371 773.645 (0.028)*	96.866	0.590	1	
7	5	E2−1	7	8	4	E2−1	8		371 773.245 (0.028)	96.866	0.194	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	5	E2−1	8	8	4	E2−1	9		371 773.811 (0.028)	96.866	0.220	1	
7	5	E2−1	6	8	4	E2−1	7		371 773.888 (0.028)	96.866	0.170	1	
20	3	E2+1		20	2	E2−1			371 952.326 (0.051)*	322.635	13.670	1	
21	3	A2		20	4	A1			372 033.683 (0.038)*	353.905	5.917	1	
29	11	B1		30	10	B2			372 159.583 (0.172)*	956.310	4.967	3	
29	11	B2		30	10	B1			372 159.583 (0.172)*	956.310	4.967	3	
19	3	E1+1		19	2	E1+1			372 272.213 (0.040)*	292.880	10.061	3	
15	1	E1−1		14	2	E1−1			372 739.987 (0.041)*	166.109	3.653	3	
17	2	E1+1		16	3	E1+1			373 058.605 (0.036)*	225.443	3.142	3	
7	1	E2−1		6	0	E2+1		373 243.386 (0.100)	373 243.402 (0.010)*	31.443	0.302	1	11
7	1	E2−1	6	6	0	E2+1	5		373 243.053 (0.010)	31.443	0.085	1	
7	1	E2−1	8	6	0	E2+1	7		373 243.151 (0.010)	31.443	0.114	1	
7	1	E2−1	7	6	0	E2+1	6		373 243.993 (0.010)	31.443	0.098	1	
3	2	E1+1		2	1	E1+1			373 256.934 (0.013)*	7.559	2.514	3	
3	2	E1+1	2	2	1	E1+1	1		373 256.892 (0.013)	7.559	0.503	3	
3	2	E1+1	4	2	1	E1+1	3		373 256.923 (0.013)	7.559	1.078	3	
3	2	E1+1	3	2	1	E1+1	2		373 256.974 (0.013)	7.559	0.745	3	
21	3	E2−1		20	4	E2+1			373 531.785 (0.034)*	353.795	1.668	1	
13	1	E2+1		12	2	E2+1			373 571.590 (0.015)*	126.293	0.160	1	
25	4	E2+1		24	5	E2+1			373 621.382 (0.050)*	511.235	6.764	1	
30	1	E2+1		30	0	E2+1			373 689.064 (0.858)*	681.090	0.019	1	
21	3	E1−1		21	2	E1+1			373 748.338 (0.054)*	353.855	3.806	3	
30	0	A1		29	3	A2			374 105.854 (0.466)*	668.363	0.232	1	
18	8	E2−1		19	7	E2−1			374 450.575 (0.061)*	413.335	2.733	1	
25	10	E1−1		26	9	E1−1			374 680.547 (0.123)*	737.306	4.108	3	
19	2	B2		19	1	B1		374 862.255 (0.100)	374 862.281 (0.061)*	280.581	5.926	3	11
18	8	E2+1		19	7	E2+1			375 137.951 (0.069)*	413.142	2.735	1	
19	3	A1		19	2	A2			375 499.898 (0.071)*	293.037	14.306	1	
21	3	B1		20	4	B2			375 698.621 (0.035)*	353.719	5.912	3	
20	3	E2−1		20	2	E2−1			376 212.949 (0.048)*	322.635	1.294	1	
18	2	E1−1		17	3	E1−1			376 710.565 (0.043)*	250.964	3.017	3	
14	7	E2+1		15	6	E2+1			376 720.454 (0.049)*	275.019	1.889	1	
18	3	E1+1		18	2	E1+1			376 723.491 (0.034)*	264.636	9.440	3	
7	5	E1+1		8	4	E1+1			376 744.076 (0.028)*	96.747	0.590	3	
7	5	E1+1	7	8	4	E1+1	8		376 743.677 (0.028)	96.747	0.194	3	
7	5	E1+1	8	8	4	E1+1	9		376 744.242 (0.028)	96.747	0.220	3	
7	5	E1+1	6	8	4	E1+1	7		376 744.319 (0.028)	96.747	0.170	3	
30	0	B1		29	3	B2			376 790.650 (0.449)*	668.435	0.253	3	
19	3	B1		19	2	B2			376 954.229 (0.065)*	293.085	14.331	3	
11	0	E1+1		10	1	E1+1			377 317.551 (0.016)*	85.135	6.243	3	
3	2	A2		2	1	A1			377 321.003 (0.012)*	7.496	2.679	1	
3	2	A2	2	2	1	A1	1		377 320.563 (0.012)	7.496	0.536	1	
3	2	A2	4	2	1	A1	3		377 320.880 (0.012)	7.496	1.148	1	
3	2	A2	3	2	1	A1	2		377 321.440 (0.012)	7.496	0.794	1	
25	4	B1		24	5	B2			377 338.401 (0.052)*	511.026	6.788	3	
19	3	E2+1		19	2	E2−1			377 344.479 (0.043)*	292.891	12.324	1	
29	11	A1		30	10	A2			377 458.139 (0.188)*	956.172	4.971	1	
29	11	A2		30	10	A1			377 458.139 (0.188)*	956.172	4.971	1	
13	1	E1+1		12	2	E1−1			377 971.674 (0.015)*	126.210	0.866	3	
25	4	B2		24	5	B1			377 998.119 (0.051)*	511.026	6.790	3	
10	0	E1+1		9	1	E1−1			378 402.930 (0.013)*	68.888	0.023	3	
10	0	E1+1	10	9	1	E1−1	9		378 402.378 (0.013)	68.888	0.007	3	
10	0	E1+1	11	9	1	E1−1	10		378 403.162 (0.013)	68.888	0.008	3	
10	0	E1+1	9	9	1	E1−1	8		378 403.263 (0.013)	68.888	0.007	3	
7	5	B2		8	4	B1			378 573.152 (0.027)*	96.515	0.590	3	
7	5	B2	7	8	4	B1	8		378 572.753 (0.027)	96.516	0.194	3	
7	5	B2	8	8	4	B1	9		378 573.318 (0.027)	96.515	0.220	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	5	B2	6	8	4	B1	7		378 573.395 (0.027)	96.515	0.171	3	
7	5	B1		8	4	B2			378 573.232 (0.027)*	96.515	0.590	3	
7	5	B1	7	8	4	B2	8		378 572.833 (0.027)	96.515	0.194	3	
7	5	B1	8	8	4	B2	9		378 573.399 (0.027)	96.515	0.220	3	
7	5	B1	6	8	4	B2	7		378 573.475 (0.027)	96.515	0.171	3	
3	2	E1+1		2	1	E1−1			378 926.411 (0.011)*	7.370	0.145	3	
3	2	E1+1	3	2	1	E1−1	2		378 925.746 (0.011)	7.370	0.043	3	
3	2	E1+1	4	2	1	E1−1	3		378 926.601 (0.011)	7.370	0.062	3	
3	2	E1+1	2	2	1	E1−1	1		378 927.073 (0.011)	7.370	0.029	3	
20	3	E1−1		20	2	E1+1			378 973.347 (0.045)*	322.620	4.064	3	
25	4	E1+1		24	5	E1+1			379 165.792 (0.050)*	511.198	6.726	3	
11	0	B2		10	1	B1			379 730.657 (0.030)*	84.963	6.310	3	
7	1	E1−1		6	0	E1+1		379 817.800 (0.100)	379 818.086 (0.010)*	31.340	0.061	3	11
7	1	E1−1	6	6	0	E1+1	5		379 817.699 (0.010)	31.340	0.017	3	
7	1	E1−1	8	6	0	E1+1	7		379 817.809 (0.010)	31.340	0.023	3	
7	1	E1−1	7	6	0	E1+1	6		379 818.738 (0.010)	31.340	0.020	3	
3	2	E2+1		2	1	E2−1			379 848.540 (0.011)*	7.182	0.035	1	
3	2	E2+1	3	2	1	E2−1	2		379 848.064 (0.011)	7.183	0.010	1	
3	2	E2+1	4	2	1	E2−1	3		379 848.677 (0.011)	7.182	0.015	1	
3	2	E2+1	2	2	1	E2−1	1		379 849.015 (0.011)	7.182	0.007	1	
3	2	A1		2	1	A2			379 925.820 (0.012)*	7.408	2.638	1	
3	2	A1	3	2	1	A2	2		379 924.760 (0.012)	7.408	0.781	1	
3	2	A1	4	2	1	A2	3		379 926.122 (0.012)	7.408	1.130	1	
3	2	A1	2	2	1	A2	1		379 926.879 (0.012)	7.408	0.528	1	
18	8	E1−1		19	7	E1−1			380 128.776 (0.065)*	413.185	2.734	3	
18	3	A2		18	2	A1			380 175.276 (0.060)*	264.797	13.575	1	
21	3	B2		20	4	B1			380 239.791 (0.037)*	353.723	5.936	3	
20	2	E1+1		20	1	E1−1			380 344.945 (0.092)*	309.934	5.324	3	
18	2	E2+1		17	3	E2−1			380 624.196 (0.048)*	250.867	1.170	1	
17	3	E1+1		17	2	E1+1			380 626.734 (0.029)*	237.887	8.989	3	
19	3	E2−1		19	2	E2−1			380 871.920 (0.041)*	292.891	1.908	1	
30	0	E1+1		29	3	E1−1			380 988.206 (0.449)*	668.301	0.267	3	
3	2	E2−1		2	1	E2−1			381 592.622 (0.012)*	7.182	2.620	1	
3	2	E2−1	3	2	1	E2−1	2		381 592.145 (0.012)	7.183	0.776	1	
3	2	E2−1	4	2	1	E2−1	3		381 592.758 (0.012)	7.182	1.123	1	
3	2	E2−1	2	2	1	E2−1	1		381 593.096 (0.012)	7.182	0.524	1	
18	3	B2		18	2	B1			381 689.440 (0.055)*	264.843	13.597	3	
25	10	A1		26	9	A2			381 787.011 (0.108)*	737.081	4.112	1	
25	10	A2		26	9	A1			381 787.011 (0.108)*	737.081	4.112	1	
11	0	E2+1		10	1	E2+1			382 112.145 (0.015)*	85.076	6.157	1	
18	3	E2+1		18	2	E2−1			382 133.597 (0.036)*	264.643	10.855	1	
25	10	E2−1		26	9	E2−1			382 150.584 (0.099)*	737.222	4.105	1	
7	5	E2+1		8	4	E2+1			382 620.711 (0.028)*	96.590	0.590	1	
7	5	E2+1	7	8	4	E2+1	8		382 620.311 (0.028)	96.590	0.194	1	
7	5	E2+1	8	8	4	E2+1	9		382 620.877 (0.028)	96.590	0.220	1	
7	5	E2+1	6	8	4	E2+1	7		382 620.954 (0.028)	96.590	0.171	1	
30	0	E2+1		29	3	E2−1			383 123.346 (0.443)*	668.310	0.280	1	
3	2	B2		2	1	B1			383 202.762 (0.013)*	7.337	2.680	3	
3	2	B2	2	2	1	B1	1		383 202.322 (0.013)	7.337	0.536	3	
3	2	B2	4	2	1	B1	3		383 202.638 (0.013)	7.337	1.148	3	
3	2	B2	3	2	1	B1	2		383 203.198 (0.013)	7.337	0.794	3	
20	2	E2−1		20	1	E2−1			383 264.185 (0.094)*	309.850	5.309	1	
18	2	E2+1		17	3	E2+1			383 340.973 (0.043)*	250.776	4.174	1	
25	4	E1−1		24	5	E1+1			383 489.703 (0.038)*	511.198	0.039	3	
19	3	E1−1		19	2	E1+1			383 796.759 (0.038)*	292.880	4.144	3	
16	3	E1+1		16	2	E1+1			383 988.051 (0.025)*	212.635	8.686	3	
25	4	E2−1		24	5	E2−1			384 167.891 (0.039)*	511.146	6.744	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
17	3	A1		17	2	A2			384 287.907 (0.051)*	238.051	12.849	1	
10	0	E2+1		9	1	E2−1			384 553.263 (0.015)*	68.785	0.124	1	
10	0	E2+1	10	9	1	E2−1	9		384 552.738 (0.015)	68.786	0.041	1	
10	0	E2+1	11	9	1	E2−1	10		384 553.483 (0.015)	68.785	0.045	1	
10	0	E2+1	9	9	1	E2−1	8		384 553.580 (0.015)	68.785	0.037	1	
14	7	E1−1		15	6	E1−1			384 577.419 (0.050)*	274.800	1.890	3	
18	2	B2		17	3	B1			384 766.032 (0.060)*	250.966	5.314	3	
14	7	E1+1		15	6	E1+1			384 938.936 (0.047)*	274.925	1.888	3	
25	4	E1+1		24	5	E1−1			385 045.193 (0.061)*	511.002	0.039	3	
18	3	E2−1		18	2	E2−1			385 163.481 (0.034)*	264.643	2.656	1	
20	2	A1		20	1	A2		385 340.661 (0.100)	385 340.630 (0.074)*	309.918	5.736	1	11
3	2	B1		2	1	B2			385 811.722 (0.013)*	7.249	2.638	3	
3	2	B1	3	2	1	B2	2		385 810.662 (0.013)	7.249	0.782	3	
3	2	B1	4	2	1	B2	3		385 812.025 (0.013)	7.249	1.130	3	
3	2	B1	2	2	1	B2	1		385 812.782 (0.013)	7.249	0.528	3	
17	3	B1		17	2	B2			385 858.893 (0.047)*	238.095	12.870	3	
17	3	E2+1		17	2	E2−1			386 335.991 (0.031)*	237.889	9.358	1	
18	2	A2		17	3	A1			386 619.067 (0.061)*	250.869	5.334	1	
15	3	E1+1		15	2	E1+1			386 816.619 (0.022)*	188.879	8.500	3	
29	5	A1		28	6	A2			386 833.078 (0.080)*	697.206	7.655	1	
29	5	A2		28	6	A1			386 912.006 (0.080)*	697.206	7.655	1	
25	10	E1+1		26	9	E1+1			387 107.941 (0.114)*	737.227	4.105	3	
16	3	A2		16	2	A1			387 858.160 (0.043)*	212.799	12.125	1	
25	4	A1		24	5	A2			388 054.293 (0.050)*	510.845	6.794	1	
18	2	E1−1		17	3	E1+1			388 125.490 (0.042)*	250.583	2.337	3	
18	3	E1−1		18	2	E1+1			388 164.864 (0.032)*	264.636	4.044	3	
16	1	E2−1		15	2	E2−1			388 551.665 (0.031)*	188.868	0.058	1	
25	4	A2		24	5	A1			388 699.913 (0.047)*	510.845	6.796	1	
17	3	E2−1		17	2	E2−1			389 052.768 (0.030)*	237.889	3.439	1	
14	3	E1+1		14	2	E1+1			389 127.204 (0.020)*	166.618	8.388	3	
14	7	A1		15	6	A2			389 249.118 (0.052)*	274.964	1.888	1	
14	7	A2		15	6	A1			389 249.119 (0.052)*	274.964	1.888	1	
25	10	E2+1		26	9	E2+1			389 310.401 (0.136)*	737.130	4.108	1	
25	4	E1−1		24	5	E1−1			389 369.104 (0.047)*	511.002	6.737	3	
16	3	B2		16	2	B1			389 482.036 (0.040)*	212.842	12.144	3	
16	3	E2+1		16	2	E2−1			389 979.131 (0.026)*	212.631	7.950	1	
21	9	B2		22	8	B1			390 082.506 (0.087)*	546.856	3.253	3	
21	9	B1		22	8	B2			390 082.506 (0.087)*	546.856	3.253	3	
16	1	E1−1		15	2	E1+1			390 817.630 (0.029)*	188.879	0.173	3	
15	3	A1		15	2	A2			390 913.592 (0.036)*	189.041	11.400	1	
13	3	E1+1		13	2	E1+1			390 944.319 (0.018)*	145.853	8.287	3	
25	10	B1		26	9	B2			391 436.567 (0.114)*	736.901	4.112	3	
25	10	B2		26	9	B1			391 436.567 (0.114)*	736.901	4.112	3	
14	7	B1		15	6	B2			391 469.418 (0.056)*	274.861	1.889	3	
14	7	B2		15	6	B1			391 469.419 (0.056)*	274.861	1.889	3	
20	2	B1		20	1	B2		391 489.690 (0.100)	391 489.836 (0.078)*	309.762	5.603	3	11
17	3	E1−1		17	2	E1+1			392 041.658 (0.028)*	237.887	3.778	3	
12	3	E1+1		12	2	E1+1			392 308.376 (0.017)*	126.582	8.119	3	
16	3	E2−1		16	2	E2−1			392 514.212 (0.026)*	212.631	4.132	1	
15	3	B1		15	2	B2			392 585.698 (0.034)*	189.083	11.417	3	
10	6	E2−1		11	5	E2−1			392 601.623 (0.040)*	165.446	1.074	1	
15	3	E2+1		15	2	E2−1			393 097.431 (0.022)*	188.868	6.710	1	
11	3	E1+1		11	2	E1+1			393 280.600 (0.016)*	108.803	7.812	3	
14	3	A2		14	2	A1			393 488.153 (0.031)*	166.777	10.669	1	
10	3	E1+1		10	2	E1+1			393 939.884 (0.014)*	92.513	7.338	3	
10	3	E1+1	9	10	2	E1+1	9		393 939.882 (0.014)	92.513	2.191	3	
10	3	E1+1	11	10	2	E1+1	11		393 939.883 (0.014)	92.513	2.657	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	3	E1+1	10	10	2	E1+1	10		393 939.887 (0.014)	92.513	2.402	3	
9	3	E1+1		9	2	E1+1			394 369.550 (0.013)*	77.710	6.716	3	
9	3	E1+1	9	9	2	E1+1	9		394 369.510 (0.013)	77.710	2.189	3	
9	3	E1+1	10	9	2	E1+1	10		394 369.568 (0.013)	77.710	2.450	3	
9	3	E1+1	8	9	2	E1+1	8		394 369.574 (0.013)	77.710	1.978	3	
8	3	E1+1		8	2	E1+1			394 642.331 (0.012)*	64.390	5.989	3	
8	3	E1+1	8	8	2	E1+1	8		394 642.247 (0.012)	64.390	1.941	3	
8	3	E1+1	9	8	2	E1+1	9		394 642.366 (0.012)	64.390	2.204	3	
8	3	E1+1	7	8	2	E1+1	7		394 642.381 (0.012)	64.390	1.734	3	
9	1	A1		8	1	A2			394 773.156 (0.009)*	55.712	0.838	1	
9	1	A1	10	8	1	A2	9		394 773.140 (0.009)	55.712	0.309	1	
9	1	A1	8	8	1	A2	7		394 773.164 (0.009)	55.712	0.247	1	
9	1	A1	9	8	1	A2	8		394 773.169 (0.009)	55.712	0.276	1	
9	1	B1		8	1	B2			394 773.960 (0.009)*	55.553	0.837	3	
9	1	B1	10	8	1	B2	9		394 773.944 (0.009)	55.553	0.308	3	
9	1	B1	8	8	1	B2	7		394 773.968 (0.009)	55.553	0.246	3	
9	1	B1	9	8	1	B2	8		394 773.973 (0.009)	55.553	0.276	3	
7	3	E1+1		7	2	E1+1			394 812.783 (0.012)*	52.553	5.191	3	
7	3	E1+1	7	7	2	E1+1	7		394 812.650 (0.012)	52.553	1.669	3	
7	3	E1+1	8	7	2	E1+1	8		394 812.837 (0.012)	52.553	1.931	3	
7	3	E1+1	6	7	2	E1+1	6		394 812.864 (0.012)	52.553	1.469	3	
9	1	E1−1		8	1	E1−1			394 820.102 (0.009)*	55.719	0.838	3	
9	1	E1−1	10	8	1	E1−1	9		394 820.084 (0.009)	55.719	0.309	3	
9	1	E1−1	8	8	1	E1−1	7		394 820.108 (0.009)	55.719	0.246	3	
9	1	E1−1	9	8	1	E1−1	8		394 820.119 (0.009)	55.719	0.276	3	
6	3	E1+1		6	2	E1+1			394 917.872 (0.012)*	42.197	4.342	3	
6	3	E1+1	6	6	2	E1+1	6		394 917.677 (0.012)	42.197	1.379	3	
6	3	E1+1	7	6	2	E1+1	7		394 917.950 (0.012)	42.197	1.636	3	
6	3	E1+1	5	6	2	E1+1	5		394 917.997 (0.012)	42.197	1.191	3	
29	5	B1		28	6	B2			394 980.776 (0.079)*	697.109	7.648	3	
5	3	E1+1		5	2	E1+1			394 981.336 (0.013)*	33.322	3.442	3	
5	3	E1+1	5	5	2	E1+1	5		394 981.049 (0.013)	33.322	1.072	3	
5	3	E1+1	6	5	2	E1+1	6		394 981.447 (0.013)	33.322	1.318	3	
5	3	E1+1	4	5	2	E1+1	4		394 981.528 (0.013)	33.322	0.901	3	
9	1	E2−1		8	1	E2−1			394 986.747 (0.009)*	55.610	0.836	1	
9	1	E2−1	10	8	1	E2−1	9		394 986.724 (0.009)	55.610	0.308	1	
9	1	E2−1	8	8	1	E2−1	7		394 986.745 (0.009)	55.610	0.246	1	
9	1	E2−1	9	8	1	E2−1	8		394 986.777 (0.009)	55.610	0.275	1	
14	7	E2−1		15	6	E2−1			394 993.369 (0.055)*	274.604	1.890	1	
4	3	E1+1		4	2	E1+1			395 018.243 (0.014)*	25.926	2.470	3	
4	3	E1+1	4	4	2	E1+1	4		395 017.801 (0.014)	25.926	0.743	3	
4	3	E1+1	5	4	2	E1+1	5		395 018.404 (0.014)	25.926	0.966	3	
4	3	E1+1	3	4	2	E1+1	3		395 018.559 (0.014)	25.926	0.600	3	
3	3	E1+1		3	2	E1+1			395 038.374 (0.015)*	20.010	1.375	3	
3	3	E1+1	3	3	2	E1+1	3		395 037.627 (0.015)	20.010	0.385	3	
3	3	E1+1	4	3	2	E1+1	4		395 038.622 (0.015)	20.010	0.552	3	
3	3	E1+1	2	3	2	E1+1	2		395 038.971 (0.015)	20.010	0.291	3	
29	5	B2		28	6	B1			395 058.560 (0.079)*	697.109	7.648	3	
14	3	B2		14	2	B1			395 203.326 (0.028)*	166.818	10.684	3	
16	3	E1−1		16	2	E1+1			395 406.781 (0.025)*	212.635	3.365	3	
16	1	B2		15	2	B1			395 502.941 (0.071)*	188.551	4.154	3	
15	3	E2−1		15	2	E2−1			395 534.942 (0.023)*	188.868	4.656	1	
13	3	A1		13	2	A2			395 621.059 (0.026)*	146.004	9.931	1	
14	3	E2+1		14	2	E2−1			395 728.358 (0.019)*	166.598	5.646	1	
29	5	E1−1		28	6	E1−1			396 317.194 (0.088)*	697.040	7.647	3	
29	5	E2+1		28	6	E2+1			396 741.709 (0.069)*	697.256	7.617	1	
12	3	A2		12	2	A1			397 355.428 (0.022)*	126.723	9.182	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
13	3	B1		13	2	B2			397 373.872 (0.024)*	146.045	9.943	3	
13	3	E2+1		13	2	E2−1			397 910.584 (0.016)*	145.822	4.723	1	
9	0	E2+1		8	0	E2+1		398 066.418 (0.100)	398 066.376 (0.009)*	53.590	0.849	1	11
9	0	E2+1	10	8	0	E2+1	9		398 066.354 (0.009)	53.590	0.313	1	
9	0	E2+1	8	8	0	E2+1	7		398 066.363 (0.009)	53.590	0.250	1	
9	0	E2+1	9	8	0	E2+1	8		398 066.412 (0.009)	53.590	0.280	1	
9	0	E1+1		8	0	E1+1		398 075.422 (0.100)	398 075.399 (0.009)*	53.487	0.847	3	11
9	0	E1+1	10	8	0	E1+1	9		398 075.377 (0.009)	53.487	0.312	3	
9	0	E1+1	8	8	0	E1+1	7		398 075.386 (0.009)	53.487	0.249	3	
9	0	E1+1	9	8	0	E1+1	8		398 075.435 (0.009)	53.487	0.279	3	
9	0	B2		8	0	B1		398 094.797 (0.100)	398 094.802 (0.009)*	53.393	0.850	3	11
9	0	B2	10	8	0	B1	9		398 094.782 (0.009)	53.393	0.313	3	
9	0	B2	8	8	0	B1	7		398 094.790 (0.009)	53.393	0.250	3	
9	0	B2	9	8	0	B1	8		398 094.837 (0.009)	53.393	0.280	3	
9	0	A2		8	0	A1		398 112.100 (0.100)	398 112.114 (0.009)*	53.188	0.846	1	11
9	0	A2	10	8	0	A1	9		398 112.093 (0.009)	53.188	0.312	1	
9	0	A2	8	8	0	A1	7		398 112.102 (0.009)	53.188	0.249	1	
9	0	A2	9	8	0	A1	8		398 112.148 (0.009)	53.188	0.278	1	
14	3	E2−1		14	2	E2−1			398 116.818 (0.020)*	166.598	4.996	1	
15	3	E1−1		15	2	E1+1			398 253.322 (0.022)*	188.879	2.834	3	
29	5	E1+1		28	6	E1+1			398 338.668 (0.082)*	697.167	7.637	3	
21	2	E1+1		21	1	E1−1			398 455.795 (0.115)*	340.564	4.998	3	
11	3	A1		11	2	A2			398 736.783 (0.018)*	108.932	8.422	1	
9	8	E2+1		8	8	E2+1			398 760.141 (0.038)*	226.218	0.177	1	
9	8	E2+1	8	8	8	E2+1	7		398 759.941 (0.038)	226.218	0.052	1	
9	8	E2+1	10	8	8	E2+1	9		398 760.011 (0.038)	226.218	0.065	1	
9	8	E2+1	9	8	8	E2+1	8		398 760.461 (0.038)	226.218	0.058	1	
9	8	B2		8	8	B1			398 762.004 (0.037)*	226.364	0.177	3	
9	8	B2	8	8	8	B1	7		398 761.804 (0.037)	226.364	0.052	3	
9	8	B2	10	8	8	B1	9		398 761.874 (0.037)	226.364	0.065	3	
9	8	B2	9	8	8	B1	8		398 762.324 (0.037)	226.364	0.058	3	
9	8	B1		8	8	B2			398 762.004 (0.037)*	226.364	0.177	3	
9	8	B1	8	8	8	B2	7		398 761.804 (0.037)	226.364	0.052	3	
9	8	B1	10	8	8	B2	9		398 761.874 (0.037)	226.364	0.065	3	
9	8	B1	9	8	8	B2	8		398 762.324 (0.037)	226.364	0.058	3	
9	8	E1+1		8	8	E1+1			398 766.277 (0.038)*	226.036	0.179	3	
9	8	E1+1	8	8	8	E1+1	7		398 766.077 (0.038)	226.036	0.053	3	
9	8	E1+1	10	8	8	E1+1	9		398 766.148 (0.038)	226.036	0.066	3	
9	8	E1+1	9	8	8	E1+1	8		398 766.597 (0.038)	226.036	0.059	3	
9	8	E1−1		8	8	E1−1			398 766.391 (0.038)*	226.425	0.178	3	
9	8	E1−1	8	8	8	E1−1	7		398 766.190 (0.038)	226.425	0.052	3	
9	8	E1−1	10	8	8	E1−1	9		398 766.261 (0.038)	226.425	0.065	3	
9	8	E1−1	9	8	8	E1−1	8		398 766.711 (0.038)	226.425	0.059	3	
9	8	E2−1		8	8	E2−1			398 766.564 (0.037)*	226.386	0.178	1	
9	8	E2−1	8	8	8	E2−1	7		398 766.364 (0.037)	226.386	0.052	1	
9	8	E2−1	10	8	8	E2−1	9		398 766.435 (0.037)	226.386	0.066	1	
9	8	E2−1	9	8	8	E2−1	8		398 766.884 (0.037)	226.386	0.059	1	
9	8	A2		8	8	A1			398 767.967 (0.038)*	226.221	0.179	1	
9	8	A2	8	8	8	A1	7		398 767.767 (0.038)	226.221	0.053	1	
9	8	A2	10	8	8	A1	9		398 767.837 (0.038)	226.221	0.066	1	
9	8	A2	9	8	8	A1	8		398 768.287 (0.038)	226.221	0.059	1	
9	8	A1		8	8	A2			398 767.967 (0.038)*	226.221	0.179	1	
9	8	A1	8	8	8	A2	7		398 767.767 (0.038)	226.221	0.053	1	
9	8	A1	10	8	8	A2	9		398 767.837 (0.038)	226.221	0.066	1	
9	8	A1	9	8	8	A2	8		398 768.287 (0.038)	226.221	0.059	1	
9	2	B1		8	2	B2			398 788.934 (0.009)*	64.473	0.807	3	
9	2	B1	10	8	2	B2	9		398 788.919 (0.009)	64.473	0.297	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	2	B1	8	8	2	B2	7		398 788.924 (0.009)	64.473	0.237	3	
9	2	B1	9	8	2	B2	8		398 788.960 (0.009)	64.473	0.266	3	
9	2	A1		8	2	A2			398 791.106 (0.009)*	64.436	0.806	1	
9	2	A1	10	8	2	A2	9		398 791.091 (0.009)	64.436	0.297	1	
9	2	A1	8	8	2	A2	7		398 791.096 (0.009)	64.436	0.237	1	
9	2	A1	9	8	2	A2	8		398 791.132 (0.009)	64.436	0.265	1	
9	7	E1+1		8	7	E1+1			398 809.125 (0.029)*	185.796	0.334	3	
9	7	E1+1	8	8	7	E1+1	7		398 808.974 (0.029)	185.796	0.098	3	
9	7	E1+1	10	8	7	E1+1	9		398 809.025 (0.029)	185.796	0.123	3	
9	7	E1+1	9	8	7	E1+1	8		398 809.370 (0.029)	185.796	0.110	3	
9	7	E2−1		8	7	E2−1			398 810.766 (0.030)*	185.810	0.334	1	
9	7	E2−1	8	8	7	E2−1	7		398 810.615 (0.030)	185.810	0.098	1	
9	7	E2−1	10	8	7	E2−1	9		398 810.666 (0.030)	185.810	0.123	1	
9	7	E2−1	9	8	7	E2−1	8		398 811.011 (0.030)	185.810	0.110	1	
9	7	A1		8	7	A2			398 814.418 (0.029)*	185.977	0.335	1	
9	7	A1	8	8	7	A2	7		398 814.267 (0.029)	185.977	0.098	1	
9	7	A1	10	8	7	A2	9		398 814.318 (0.029)	185.977	0.123	1	
9	7	A1	9	8	7	A2	8		398 814.663 (0.029)	185.977	0.110	1	
9	7	A2		8	7	A1			398 814.418 (0.029)*	185.977	0.335	1	
9	7	A2	8	8	7	A1	7		398 814.267 (0.029)	185.977	0.098	1	
9	7	A2	10	8	7	A1	9		398 814.318 (0.029)	185.977	0.123	1	
9	7	A2	9	8	7	A1	8		398 814.663 (0.029)	185.977	0.110	1	
9	7	E1−1		8	7	E1−1			398 815.629 (0.029)*	185.657	0.336	3	
9	7	E1−1	8	8	7	E1−1	7		398 815.477 (0.029)	185.657	0.099	3	
9	7	E1−1	10	8	7	E1−1	9		398 815.529 (0.029)	185.657	0.124	3	
9	7	E1−1	9	8	7	E1−1	8		398 815.873 (0.029)	185.656	0.111	3	
9	7	E2+1		8	7	E2+1			398 816.107 (0.030)*	185.614	0.337	1	
9	7	E2+1	8	8	7	E2+1	7		398 815.955 (0.030)	185.614	0.099	1	
9	7	E2+1	10	8	7	E2+1	9		398 816.006 (0.030)	185.614	0.124	1	
9	7	E2+1	9	8	7	E2+1	8		398 816.351 (0.030)	185.614	0.111	1	
9	7	B1		8	7	B2			398 816.533 (0.029)*	185.948	0.335	3	
9	7	B1	8	8	7	B2	7		398 816.381 (0.029)	185.948	0.099	3	
9	7	B1	10	8	7	B2	9		398 816.432 (0.029)	185.948	0.124	3	
9	7	B1	9	8	7	B2	8		398 816.777 (0.029)	185.948	0.110	3	
9	7	B2		8	7	B1			398 816.533 (0.029)*	185.948	0.335	3	
9	7	B2	8	8	7	B1	7		398 816.381 (0.029)	185.948	0.099	3	
9	7	B2	10	8	7	B1	9		398 816.432 (0.029)	185.948	0.124	3	
9	7	B2	9	8	7	B1	8		398 816.777 (0.029)	185.948	0.110	3	
9	6	E1−1		8	6	E1−1			398 853.985 (0.023)*	150.653	0.470	3	
9	6	E1−1	8	8	6	E1−1	7		398 853.876 (0.023)	150.653	0.138	3	
9	6	E1−1	10	8	6	E1−1	9		398 853.911 (0.023)	150.653	0.173	3	
9	6	E1−1	9	8	6	E1−1	8		398 854.164 (0.023)	150.653	0.155	3	
9	6	E2+1		8	6	E2+1			398 857.811 (0.023)*	150.871	0.471	1	
9	6	E2+1	8	8	6	E2+1	7		398 857.702 (0.023)	150.871	0.138	1	
9	6	E2+1	10	8	6	E2+1	9		398 857.737 (0.023)	150.871	0.173	1	
9	6	E2+1	9	8	6	E2+1	8		398 857.991 (0.023)	150.871	0.155	1	
9	6	A1		8	6	A2			398 858.319 (0.023)*	150.815	0.471	1	
9	6	A1	8	8	6	A2	7		398 858.210 (0.023)	150.815	0.138	1	
9	6	A1	10	8	6	A2	9		398 858.244 (0.023)	150.815	0.173	1	
9	6	A1	9	8	6	A2	8		398 858.498 (0.023)	150.815	0.155	1	
9	6	A2		8	6	A1			398 858.319 (0.023)*	150.815	0.471	1	
9	6	A2	8	8	6	A1	7		398 858.210 (0.023)	150.815	0.138	1	
9	6	A2	10	8	6	A1	9		398 858.244 (0.023)	150.815	0.173	1	
9	6	A2	9	8	6	A1	8		398 858.498 (0.023)	150.815	0.155	1	
9	6	E2−1		8	6	E2−1			398 861.319 (0.023)*	150.455	0.473	1	
9	6	E2−1	8	8	6	E2−1	7		398 861.210 (0.023)	150.455	0.139	1	
9	6	E2−1	10	8	6	E2−1	9		398 861.245 (0.023)	150.455	0.174	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	6	E2−1	9	8	6	E2−1	8		398 861.498 (0.023)	150.455	0.156	1	
9	6	B1		8	6	B2			398 861.326 (0.023)*	150.712	0.472	3	
9	6	B1	8	8	6	B2	7		398 861.217 (0.023)	150.712	0.139	3	
9	6	B1	10	8	6	B2	9		398 861.252 (0.023)	150.712	0.174	3	
9	6	B1	9	8	6	B2	8		398 861.506 (0.023)	150.712	0.155	3	
9	6	B2		8	6	B1			398 861.326 (0.023)*	150.712	0.472	3	
9	6	B2	8	8	6	B1	7		398 861.217 (0.023)	150.712	0.139	3	
9	6	B2	10	8	6	B1	9		398 861.252 (0.023)	150.712	0.174	3	
9	6	B2	9	8	6	B1	8		398 861.506 (0.023)	150.712	0.155	3	
9	6	E1+1		8	6	E1+1			398 862.133 (0.023)*	150.776	0.472	3	
9	6	E1+1	8	8	6	E1+1	7		398 862.024 (0.023)	150.776	0.139	3	
9	6	E1+1	10	8	6	E1+1	9		398 862.059 (0.023)	150.776	0.174	3	
9	6	E1+1	9	8	6	E1+1	8		398 862.313 (0.023)	150.776	0.155	3	
9	5	B1		8	5	B2			398 899.011 (0.018)*	120.971	0.586	3	
9	5	B1	8	8	5	B2	7		398 898.938 (0.018)	120.971	0.172	3	
9	5	B1	10	8	5	B2	9		398 898.958 (0.018)	120.971	0.216	3	
9	5	B1	9	8	5	B2	8		398 899.135 (0.018)	120.971	0.193	3	
9	5	B2		8	5	B1			398 899.012 (0.018)*	120.971	0.586	3	
9	5	B2	8	8	5	B1	7		398 898.938 (0.018)	120.971	0.172	3	
9	5	B2	10	8	5	B1	9		398 898.959 (0.018)	120.971	0.216	3	
9	5	B2	9	8	5	B1	8		398 899.135 (0.018)	120.971	0.193	3	
9	2	E2+1		8	2	E2+1			398 899.389 (0.009)*	64.223	0.796	1	
9	2	E2+1	10	8	2	E2+1	9		398 899.371 (0.009)	64.223	0.293	1	
9	2	E2+1	8	8	2	E2+1	7		398 899.375 (0.009)	64.223	0.234	1	
9	2	E2+1	9	8	2	E2+1	8		398 899.423 (0.009)	64.223	0.262	1	
9	5	E2−1		8	5	E2−1			398 899.797 (0.018)*	121.095	0.586	1	
9	5	E2−1	8	8	5	E2−1	7		398 899.724 (0.018)	121.095	0.172	1	
9	5	E2−1	10	8	5	E2−1	9		398 899.744 (0.018)	121.095	0.216	1	
9	5	E2−1	9	8	5	E2−1	8		398 899.921 (0.018)	121.095	0.193	1	
9	5	E2+1		8	5	E2+1			398 904.030 (0.018)*	121.181	0.586	1	
9	5	E2+1	8	8	5	E2+1	7		398 903.957 (0.018)	121.181	0.172	1	
9	5	E2+1	10	8	5	E2+1	9		398 903.978 (0.018)	121.181	0.216	1	
9	5	E2+1	9	8	5	E2+1	8		398 904.154 (0.018)	121.181	0.193	1	
9	5	E1+1		8	5	E1+1			398 904.715 (0.018)*	121.142	0.587	3	
9	5	E1+1	8	8	5	E1+1	7		398 904.642 (0.018)	121.142	0.173	3	
9	5	E1+1	10	8	5	E1+1	9		398 904.662 (0.018)	121.142	0.216	3	
9	5	E1+1	9	8	5	E1+1	8		398 904.839 (0.018)	121.142	0.193	3	
9	5	A1		8	5	A2			398 905.974 (0.018)*	120.782	0.587	1	
9	5	A1	8	8	5	A2	7		398 905.901 (0.018)	120.782	0.173	1	
9	5	A1	10	8	5	A2	9		398 905.922 (0.018)	120.782	0.216	1	
9	5	A1	9	8	5	A2	8		398 906.098 (0.018)	120.782	0.193	1	
9	5	A2		8	5	A1			398 905.975 (0.018)*	120.782	0.587	1	
9	5	A2	8	8	5	A1	7		398 905.902 (0.018)	120.782	0.173	1	
9	5	A2	10	8	5	A1	9		398 905.922 (0.018)	120.782	0.216	1	
9	5	A2	9	8	5	A1	8		398 906.099 (0.018)	120.782	0.193	1	
9	5	E1−1		8	5	E1−1			398 906.083 (0.018)*	120.944	0.587	3	
9	5	E1−1	8	8	5	E1−1	7		398 906.010 (0.018)	120.944	0.173	3	
9	5	E1−1	10	8	5	E1−1	9		398 906.030 (0.018)	120.944	0.216	3	
9	5	E1−1	9	8	5	E1−1	8		398 906.207 (0.018)	120.944	0.193	3	
9	4	A1		8	4	A2			398 947.275 (0.014)*	96.704	0.680	1	
9	4	A1	8	8	4	A2	7		398 947.231 (0.014)	96.704	0.200	1	
9	4	A1	10	8	4	A2	9		398 947.240 (0.014)	96.704	0.251	1	
9	4	A1	9	8	4	A2	8		398 947.353 (0.014)	96.704	0.224	1	
9	4	A2		8	4	A1			398 947.401 (0.014)*	96.704	0.680	1	
9	4	A2	8	8	4	A1	7		398 947.357 (0.014)	96.704	0.200	1	
9	4	A2	10	8	4	A1	9		398 947.366 (0.014)	96.704	0.251	1	
9	4	A2	9	8	4	A1	8		398 947.478 (0.014)	96.704	0.224	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	4	E1+1		8	4	E1+1			398 949.171 (0.014)*	96.747	0.681	3	
9	4	E1+1	8	8	4	E1+1	7		398 949.128 (0.014)	96.747	0.200	3	
9	4	E1+1	10	8	4	E1+1	9		398 949.136 (0.014)	96.747	0.251	3	
9	4	E1+1	9	8	4	E1+1	8		398 949.249 (0.014)	96.747	0.224	3	
9	4	E1−1		8	4	E1−1			398 950.960 (0.014)*	96.898	0.681	3	
9	4	E1−1	8	8	4	E1−1	7		398 950.916 (0.014)	96.898	0.200	3	
9	4	E1−1	10	8	4	E1−1	9		398 950.925 (0.014)	96.898	0.251	3	
9	4	E1−1	9	8	4	E1−1	8		398 951.038 (0.014)	96.898	0.224	3	
9	4	E2−1		8	4	E2−1			398 953.038 (0.014)*	96.866	0.681	1	
9	4	E2−1	8	8	4	E2−1	7		398 952.994 (0.014)	96.866	0.200	1	
9	4	E2−1	10	8	4	E2−1	9		398 953.003 (0.014)	96.866	0.251	1	
9	4	E2−1	9	8	4	E2−1	8		398 953.116 (0.014)	96.866	0.224	1	
9	4	E2+1		8	4	E2+1			398 955.003 (0.014)*	96.590	0.681	1	
9	4	E2+1	8	8	4	E2+1	7		398 954.959 (0.014)	96.590	0.200	1	
9	4	E2+1	10	8	4	E2+1	9		398 954.968 (0.014)	96.590	0.251	1	
9	4	E2+1	9	8	4	E2+1	8		398 955.081 (0.014)	96.590	0.224	1	
9	4	B1		8	4	B2			398 955.221 (0.014)*	96.515	0.681	3	
9	4	B1	8	8	4	B2	7		398 955.178 (0.014)	96.515	0.200	3	
9	4	B1	10	8	4	B2	9		398 955.186 (0.014)	96.515	0.251	3	
9	4	B1	9	8	4	B2	8		398 955.299 (0.014)	96.515	0.224	3	
9	4	B2		8	4	B1			398 955.350 (0.014)*	96.515	0.681	3	
9	4	B2	8	8	4	B1	7		398 955.306 (0.014)	96.515	0.200	3	
9	4	B2	10	8	4	B1	9		398 955.315 (0.014)	96.515	0.251	3	
9	4	B2	9	8	4	B1	8		398 955.427 (0.014)	96.516	0.224	3	
21	9	E2−1		22	8	E2−1			398 973.023 (0.094)*	546.882	3.251	1	
9	3	B1		8	3	B2			399 010.809 (0.011)*	77.968	0.754	3	
9	3	B1	10	8	3	B2	9		399 010.789 (0.011)	77.968	0.278	3	
9	3	B1	8	8	3	B2	7		399 010.789 (0.011)	77.968	0.222	3	
9	3	B1	9	8	3	B2	8		399 010.851 (0.011)	77.968	0.248	3	
9	3	A1		8	3	A2			399 016.424 (0.011)*	77.868	0.754	1	
9	3	A1	10	8	3	A2	9		399 016.404 (0.011)	77.868	0.278	1	
9	3	A1	8	8	3	A2	7		399 016.404 (0.011)	77.868	0.222	1	
9	3	A1	9	8	3	A2	8		399 016.466 (0.011)	77.868	0.248	1	
9	3	E2+1		8	3	E2+1			399 020.375 (0.011)*	77.758	0.755	1	
9	3	E2+1	10	8	3	E2+1	9		399 020.355 (0.011)	77.758	0.278	1	
9	3	E2+1	8	8	3	E2+1	7		399 020.355 (0.011)	77.758	0.222	1	
9	3	E2+1	9	8	3	E2+1	8		399 020.415 (0.011)	77.758	0.248	1	
9	3	E1−1		8	3	E1−1			399 021.226 (0.011)*	77.940	0.754	3	
9	3	E1−1	10	8	3	E1−1	9		399 021.206 (0.011)	77.940	0.278	3	
9	3	E1−1	8	8	3	E1−1	7		399 021.206 (0.011)	77.940	0.222	3	
9	3	E1−1	9	8	3	E1−1	8		399 021.267 (0.011)	77.940	0.248	3	
9	3	E2−1		8	3	E2−1			399 024.965 (0.011)*	77.835	0.754	1	
9	3	E2−1	10	8	3	E2−1	9		399 024.945 (0.011)	77.835	0.278	1	
9	3	E2−1	8	8	3	E2−1	7		399 024.945 (0.011)	77.835	0.222	1	
9	3	E2−1	9	8	3	E2−1	8		399 025.005 (0.011)	77.835	0.248	1	
9	3	B2		8	3	B1			399 027.383 (0.011)*	77.968	0.754	3	
9	3	B2	10	8	3	B1	9		399 027.363 (0.011)	77.968	0.278	3	
9	3	B2	8	8	3	B1	7		399 027.364 (0.011)	77.968	0.222	3	
9	3	B2	9	8	3	B1	8		399 027.423 (0.011)	77.968	0.248	3	
9	3	E1+1		8	3	E1+1			399 029.979 (0.011)*	77.554	0.753	3	
9	3	E1+1	10	8	3	E1+1	9		399 029.959 (0.011)	77.554	0.278	3	
9	3	E1+1	8	8	3	E1+1	7		399 029.959 (0.011)	77.554	0.222	3	
9	3	E1+1	9	8	3	E1+1	8		399 030.019 (0.011)	77.554	0.248	3	
9	3	A2		8	3	A1			399 033.358 (0.011)*	77.868	0.754	1	
9	3	A2	10	8	3	A1	9		399 033.338 (0.011)	77.868	0.278	1	
9	3	A2	8	8	3	A1	7		399 033.339 (0.011)	77.868	0.222	1	
9	3	A2	9	8	3	A1	8		399 033.398 (0.011)	77.868	0.248	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	2	E1−1		8	2	E1−1			399 136.100 (0.010)*	64.095	0.803	3	
9	2	E1−1	10	8	2	E1−1	9		399 136.088 (0.010)	64.095	0.296	3	
9	2	E1−1	8	8	2	E1−1	7		399 136.094 (0.010)	64.095	0.236	3	
9	2	E1−1	9	8	2	E1−1	8		399 136.119 (0.010)	64.095	0.265	3	
12	3	B2		12	2	B1			399 140.420 (0.020)*	126.763	9.193	3	
22	3	E1+1		21	4	E1−1			399 280.262 (0.042)*	385.126	0.360	3	
9	2	E1+1		8	2	E1+1			399 302.759 (0.010)*	64.390	0.805	3	
9	2	E1+1	9	8	2	E1+1	8		399 302.756 (0.010)	64.390	0.265	3	
9	2	E1+1	10	8	2	E1+1	9		399 302.757 (0.010)	64.390	0.297	3	
9	2	E1+1	8	8	2	E1+1	7		399 302.766 (0.010)	64.390	0.237	3	
9	2	E2−1		8	2	E2−1			399 542.743 (0.011)*	64.300	0.797	1	
9	2	E2−1	9	8	2	E2−1	8		399 542.726 (0.011)	64.300	0.262	1	
9	2	E2−1	10	8	2	E2−1	9		399 542.748 (0.011)	64.300	0.294	1	
9	2	E2−1	8	8	2	E2−1	7		399 542.758 (0.011)	64.300	0.234	1	
9	2	A2		8	2	A1			399 613.907 (0.010)*	64.484	0.806	1	
9	2	A2	9	8	2	A1	8		399 613.899 (0.010)	64.484	0.265	1	
9	2	A2	10	8	2	A1	9		399 613.908 (0.010)	64.484	0.297	1	
9	2	A2	8	8	2	A1	7		399 613.917 (0.010)	64.484	0.237	1	
9	2	B2		8	2	B1			399 621.830 (0.010)*	64.522	0.807	3	
9	2	B2	9	8	2	B1	8		399 621.822 (0.010)	64.522	0.266	3	
9	2	B2	10	8	2	B1	9		399 621.831 (0.010)	64.522	0.297	3	
9	2	B2	8	8	2	B1	7		399 621.840 (0.010)	64.522	0.237	3	
12	3	E2+1		12	2	E2−1			399 683.406 (0.014)*	126.538	3.885	1	
21	9	A2		22	8	A1			399 762.110 (0.089)*	546.717	3.252	1	
21	9	A1		22	8	A2			399 762.110 (0.089)*	546.717	3.252	1	
10	3	A2		10	2	A1			399 811.540 (0.016)*	92.630	7.647	1	
10	3	A2	9	10	2	A1	9		399 811.501 (0.016)	92.630	2.283	1	
10	3	A2	11	10	2	A1	11		399 811.511 (0.016)	92.630	2.769	1	
10	3	A2	10	10	2	A1	10		399 811.608 (0.016)	92.630	2.503	1	
13	3	E2−1		13	2	E2−1			400 275.374 (0.018)*	145.822	5.188	1	
21	9	E1−1		22	8	E1−1			400 391.918 (0.078)*	546.921	3.248	3	
11	3	B1		11	2	B2			400 548.664 (0.017)*	108.971	8.431	3	
7	1	E2+1		6	0	E2+1		400 550.464 (0.100)	400 550.329 (0.010)*	31.443	5.765	1	11
7	1	E2+1	7	6	0	E2+1	6		400 549.557 (0.010)	31.443	1.882	1	
7	1	E2+1	8	6	0	E2+1	7		400 550.640 (0.010)	31.443	2.178	1	
7	1	E2+1	6	6	0	E2+1	5		400 550.819 (0.010)	31.443	1.626	1	
14	3	E1−1		14	2	E1+1			400 586.852 (0.021)*	166.618	2.222	3	
9	3	A1		9	2	A2			400 625.595 (0.014)*	77.814	6.857	1	
9	3	A1	8	9	2	A2	8		400 625.582 (0.014)	77.814	2.020	1	
9	3	A1	10	9	2	A2	10		400 625.586 (0.014)	77.814	2.501	1	
9	3	A1	9	9	2	A2	9		400 625.617 (0.014)	77.814	2.235	1	
10	6	E1+1		11	5	E1+1			400 803.069 (0.043)*	165.493	1.073	3	
11	3	E2+1		11	2	E2−1			401 086.166 (0.013)*	108.745	3.079	1	
8	3	A2		8	2	A1			401 223.078 (0.013)*	64.484	6.047	1	
8	3	A2	8	8	2	A1	8		401 223.051 (0.013)	64.484	1.960	1	
8	3	A2	9	8	2	A1	9		401 223.090 (0.013)	64.484	2.225	1	
8	3	A2	7	8	2	A1	7		401 223.095 (0.013)	64.484	1.751	1	
21	9	E2+1		22	8	E2+1			401 320.928 (0.093)*	546.710	3.253	1	
16	1	A2		15	2	A1			401 322.559 (0.068)*	188.514	4.143	1	
21	2	E2−1		21	1	E2−1			401 433.979 (0.118)*	340.482	4.963	1	
7	3	A1		7	2	A2			401 645.331 (0.012)*	52.639	5.214	1	
7	3	A1	7	7	2	A2	7		401 645.246 (0.012)	52.639	1.676	1	
7	3	A1	8	7	2	A2	8		401 645.366 (0.012)	52.639	1.939	1	
7	3	A1	6	7	2	A2	6		401 645.383 (0.012)	52.639	1.475	1	
10	3	B2		10	2	B1			401 645.363 (0.015)*	92.668	7.654	3	
10	3	B2	9	10	2	B1	9		401 645.323 (0.015)	92.668	2.285	3	
10	3	B2	11	10	2	B1	11		401 645.333 (0.015)	92.668	2.771	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	3	B2	10	10	2	B1	10		401 645.434 (0.015)	92.668	2.505	3	
6	3	A2		6	2	A1			401 930.113 (0.012)*	42.277	4.351	1	
6	3	A2	6	6	2	A1	6		401 929.955 (0.012)	42.277	1.382	1	
6	3	A2	7	6	2	A1	7		401 930.176 (0.012)	42.277	1.639	1	
6	3	A2	5	6	2	A1	5		401 930.214 (0.012)	42.277	1.193	1	
12	3	E2−1		12	2	E2−1			402 036.545 (0.016)*	126.538	5.283	1	
5	3	A1		5	2	A2			402 111.035 (0.013)*	33.398	3.445	1	
5	3	A1	5	5	2	A2	5		402 110.774 (0.013)	33.398	1.073	1	
5	3	A1	6	5	2	A2	6		402 111.135 (0.013)	33.398	1.319	1	
5	3	A1	4	5	2	A2	4		402 111.209 (0.013)	33.398	0.902	1	
10	3	E2+1		10	2	E2−1			402 157.302 (0.012)*	92.442	2.272	1	
10	3	E2+1	9	10	2	E2−1	9		402 157.265 (0.012)	92.442	0.678	1	
10	3	E2+1	11	10	2	E2−1	11		402 157.274 (0.012)	92.442	0.823	1	
10	3	E2+1	10	10	2	E2−1	10		402 157.366 (0.012)	92.442	0.744	1	
4	3	A2		4	2	A1			402 217.182 (0.013)*	26.000	2.471	1	
4	3	A2	4	4	2	A1	4		402 216.756 (0.013)	26.000	0.743	1	
4	3	A2	5	4	2	A1	5		402 217.336 (0.013)	26.000	0.967	1	
4	3	A2	3	4	2	A1	3		402 217.485 (0.013)	26.000	0.601	1	
3	3	A1		3	2	A2			402 272.894 (0.014)*	20.082	1.375	1	
3	3	A1	3	3	2	A2	3		402 272.157 (0.014)	20.082	0.385	1	
3	3	A1	4	3	2	A2	4		402 273.139 (0.014)	20.082	0.553	1	
3	3	A1	2	3	2	A2	2		402 273.483 (0.014)	20.082	0.291	1	
3	3	A2		3	2	A1			402 307.606 (0.014)*	20.081	1.375	1	
3	3	A2	3	3	2	A1	3		402 306.849 (0.014)	20.081	0.385	1	
3	3	A2	4	3	2	A1	4		402 307.858 (0.014)	20.081	0.553	1	
3	3	A2	2	3	2	A1	2		402 308.211 (0.014)	20.081	0.291	1	
4	3	A1		4	2	A2			402 321.433 (0.013)*	25.996	2.471	1	
4	3	A1	4	4	2	A2	4		402 320.972 (0.013)	25.996	0.743	1	
4	3	A1	5	4	2	A2	5		402 321.601 (0.013)	25.996	0.966	1	
4	3	A1	3	4	2	A2	3		402 321.762 (0.013)	25.996	0.601	1	
5	3	A2		5	2	A1			402 354.590 (0.013)*	33.390	3.443	1	
5	3	A2	5	5	2	A1	5		402 354.274 (0.013)	33.390	1.072	1	
5	3	A2	6	5	2	A1	6		402 354.712 (0.013)	33.390	1.319	1	
5	3	A2	4	5	2	A1	4		402 354.802 (0.013)	33.390	0.901	1	
7	1	B2		6	0	B1		402 397.378 (0.100)	402 397.337 (0.016)*	31.246	6.076	3	11
7	1	B2	7	6	0	B1	6		402 396.492 (0.016)	31.246	1.984	3	
7	1	B2	8	6	0	B1	7		402 397.677 (0.016)	31.246	2.296	3	
7	1	B2	6	6	0	B1	5		402 397.872 (0.016)	31.246	1.714	3	
6	3	A1		6	2	A2			402 417.853 (0.012)*	42.261	4.347	1	
6	3	A1	6	6	2	A2	6		402 417.615 (0.012)	42.261	1.381	1	
6	3	A1	7	6	2	A2	7		402 417.948 (0.012)	42.261	1.638	1	
6	3	A1	5	6	2	A2	5		402 418.005 (0.012)	42.261	1.192	1	
13	3	E1−1		13	2	E1+1			402 426.990 (0.019)*	145.853	1.591	3	
9	1	E2+1		8	1	E2+1			402 458.504 (0.009)*	56.736	0.836	1	
9	1	E2+1	9	8	1	E2+1	8		402 458.503 (0.009)	56.736	0.275	1	
9	1	E2+1	8	8	1	E2+1	7		402 458.504 (0.009)	56.736	0.246	1	
9	1	E2+1	10	8	1	E2+1	9		402 458.506 (0.009)	56.736	0.308	1	
9	3	B1		9	2	B2			402 476.883 (0.013)*	77.852	6.862	3	
9	3	B1	8	9	2	B2	8		402 476.869 (0.013)	77.852	2.021	3	
9	3	B1	10	9	2	B2	10		402 476.873 (0.013)	77.852	2.503	3	
9	3	B1	9	9	2	B2	9		402 476.908 (0.013)	77.852	2.237	3	
10	6	E2+1		11	5	E2+1			402 492.173 (0.039)*	165.532	1.072	1	
7	3	A2		7	2	A1			402 524.344 (0.013)*	52.610	5.206	1	
7	3	A2	7	7	2	A1	7		402 524.151 (0.013)	52.610	1.674	1	
7	3	A2	8	7	2	A1	8		402 524.424 (0.013)	52.610	1.936	1	
7	3	A2	6	7	2	A1	6		402 524.463 (0.013)	52.610	1.473	1	
9	1	E1+1		8	1	E1+1			402 617.272 (0.009)*	56.785	0.838	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
9	1	E1+1	8	8	1	E1+1	7		402 617.264 (0.009)	56.785	0.247	3	
9	1	E1+1	10	8	1	E1+1	9		402 617.268 (0.009)	56.785	0.309	3	
9	1	E1+1	9	8	1	E1+1	8		402 617.284 (0.009)	56.785	0.276	3	
9	1	A2		8	1	A1			402 664.838 (0.009)*	56.767	0.839	1	
9	1	A2	8	8	1	A1	7		402 664.827 (0.009)	56.767	0.247	1	
9	1	A2	10	8	1	A1	9		402 664.833 (0.009)	56.767	0.309	1	
9	1	A2	9	8	1	A1	8		402 664.853 (0.009)	56.767	0.276	1	
9	1	B2		8	1	B1			402 679.634 (0.009)*	56.610	0.836	3	
9	1	B2	8	8	1	B1	7		402 679.623 (0.009)	56.610	0.246	3	
9	1	B2	10	8	1	B1	9		402 679.628 (0.009)	56.610	0.308	3	
9	1	B2	9	8	1	B1	8		402 679.648 (0.009)	56.610	0.275	3	
8	3	A1		8	2	A2			402 689.640 (0.014)*	64.436	6.031	1	
8	3	A1	8	8	2	A2	8		402 689.472 (0.014)	64.436	1.955	1	
8	3	A1	9	8	2	A2	9		402 689.710 (0.014)	64.436	2.219	1	
8	3	A1	7	8	2	A2	7		402 689.740 (0.014)	64.436	1.746	1	
9	3	A2		9	2	A1			402 931.892 (0.016)*	77.738	6.829	1	
9	3	A2	9	9	2	A1	9		402 931.738 (0.016)	77.738	2.226	1	
9	3	A2	10	9	2	A1	10		402 931.958 (0.016)	77.738	2.491	1	
9	3	A2	8	9	2	A1	8		402 931.982 (0.016)	77.738	2.011	1	
9	3	E2+1		9	2	E2−1			402 934.155 (0.011)*	77.627	1.475	1	
9	3	E2+1	8	9	2	E2−1	8		402 934.148 (0.011)	77.627	0.434	1	
9	3	E2+1	10	9	2	E2−1	10		402 934.150 (0.011)	77.627	0.538	1	
9	3	E2+1	9	9	2	E2−1	9		402 934.167 (0.011)	77.627	0.481	1	
10	6	E1−1		11	5	E1−1			403 032.097 (0.042)*	165.295	1.073	3	
8	3	B2		8	2	B1			403 087.904 (0.012)*	64.522	6.051	3	
8	3	B2	8	8	2	B1	8		403 087.879 (0.012)	64.522	1.961	3	
8	3	B2	9	8	2	B1	9		403 087.915 (0.012)	64.522	2.226	3	
8	3	B2	7	8	2	B1	7		403 087.920 (0.012)	64.522	1.752	3	
21	2	A2		21	1	A1			403 271.288 (0.096)*	340.549	5.400	1	
10	3	A1		10	2	A2			403 271.966 (0.019)*	92.516	7.600	1	
10	3	A1	10	10	2	A2	10		403 271.817 (0.019)	92.516	2.488	1	
10	3	A1	11	10	2	A2	11		403 272.030 (0.019)	92.516	2.752	1	
10	3	A1	9	10	2	A2	9		403 272.052 (0.019)	92.516	2.269	1	
10	3	E1+1		10	2	E1−1			403 305.357 (0.016)*	92.201	0.272	3	
10	3	E1+1	10	10	2	E1−1	10		403 305.280 (0.016)	92.201	0.089	3	
10	3	E1+1	11	10	2	E1−1	11		403 305.390 (0.016)	92.201	0.099	3	
10	3	E1+1	9	10	2	E1−1	9		403 305.401 (0.016)	92.201	0.081	3	
11	3	E1+1		11	2	E1−1			403 309.166 (0.019)*	108.469	0.554	3	
9	3	E1+1		9	2	E1−1			403 381.990 (0.013)*	77.409	0.117	3	
9	3	E1+1	9	9	2	E1−1	9		403 381.905 (0.013)	77.409	0.038	3	
9	3	E1+1	10	9	2	E1−1	10		403 382.027 (0.013)	77.409	0.043	3	
9	3	E1+1	8	9	2	E1−1	8		403 382.040 (0.013)	77.409	0.034	3	
11	3	E2−1		11	2	E2−1			403 432.684 (0.015)*	108.745	5.332	1	
12	3	E1+1		12	2	E1−1			403 456.341 (0.024)*	126.210	0.982	3	
8	3	E2+1		8	2	E2−1			403 456.524 (0.011)*	64.300	0.778	1	
8	3	E2+1	8	8	2	E2−1	8		403 456.478 (0.011)	64.300	0.252	1	
8	3	E2+1	9	8	2	E2−1	9		403 456.543 (0.011)	64.300	0.286	1	
8	3	E2+1	7	8	2	E2−1	7		403 456.551 (0.011)	64.300	0.225	1	
8	3	E1+1		8	2	E1−1			403 488.112 (0.012)*	64.095	0.043	3	
8	3	E1+1	8	8	2	E1−1	8		403 488.006 (0.012)	64.095	0.014	3	
8	3	E1+1	9	8	2	E1−1	9		403 488.156 (0.012)	64.095	0.016	3	
8	3	E1+1	7	8	2	E1−1	7		403 488.175 (0.012)	64.095	0.013	3	
7	3	B1		7	2	B2			403 520.355 (0.012)*	52.677	5.216	3	
7	3	B1	7	7	2	B2	7		403 520.271 (0.012)	52.677	1.677	3	
7	3	B1	8	7	2	B2	8		403 520.389 (0.012)	52.677	1.940	3	
7	3	B1	6	7	2	B2	6		403 520.406 (0.012)	52.677	1.476	3	
22	3	E1+1		21	4	E1+1			403 709.184 (0.034)*	384.978	5.973	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	$\mu^2 S$ (D^2)	W_{st}	Ref.
11	3	A2		11	2	A1			403 733.594 (0.024)*	108.769	8.346	1	
7	3	E2+1		7	2	E2−1			403 774.913 (0.011)*	52.458	0.310	1	
7	3	E2+1	7	7	2	E2−1	7		403 774.803 (0.011)	52.458	0.100	1	
7	3	E2+1	8	7	2	E2−1	8		403 774.958 (0.011)	52.458	0.115	1	
7	3	E2+1	6	7	2	E2−1	6		403 774.981 (0.011)	52.458	0.088	1	
13	3	E1+1		13	2	E1−1			403 808.118 (0.030)*	145.424	1.528	3	
12	3	E1−1		12	2	E1+1			403 811.824 (0.019)*	126.582	1.018	3	
6	3	B2		6	2	B1			403 812.582 (0.012)*	42.315	4.352	3	
6	3	B2	6	6	2	B1	6		403 812.425 (0.012)	42.315	1.382	3	
6	3	B2	7	6	2	B1	7		403 812.645 (0.012)	42.315	1.640	3	
6	3	B2	5	6	2	B1	5		403 812.682 (0.012)	42.315	1.193	3	
6	3	E2+1		6	2	E2−1			403 951.622 (0.011)*	42.100	0.090	1	
6	3	E2+1	6	6	2	E2−1	6		403 951.437 (0.011)	42.100	0.029	1	
6	3	E2+1	7	6	2	E2−1	7		403 951.696 (0.011)	42.100	0.034	1	
6	3	E2+1	5	6	2	E2−1	5		403 951.739 (0.011)	42.100	0.025	1	
14	1	B1		13	2	B2			403 960.233 (0.038)*	146.045	5.901	3	
5	3	B1		5	2	B2			403 998.754 (0.012)*	33.435	3.446	3	
5	3	B1	5	5	2	B2	5		403 998.493 (0.012)	33.435	1.073	3	
5	3	B1	6	5	2	B2	6		403 998.854 (0.012)	33.435	1.320	3	
5	3	B1	4	5	2	B2	4		403 998.927 (0.012)	33.435	0.902	3	
10	6	B1		11	5	B2			404 024.124 (0.039)*	165.322	1.073	3	
10	6	B2		11	5	B1			404 024.129 (0.039)*	165.322	1.073	3	
5	3	E2+1		5	2	E2−1			404 044.544 (0.011)*	33.224	0.019	1	
5	3	E2+1	5	5	2	E2−1	5		404 044.261 (0.011)	33.224	0.006	1	
5	3	E2+1	6	5	2	E2−1	6		404 044.653 (0.011)	33.224	0.007	1	
5	3	E2+1	4	5	2	E2−1	4		404 044.733 (0.011)	33.224	0.005	1	
4	3	B2		4	2	B1			404 108.460 (0.013)*	26.037	2.472	3	
4	3	B2	4	4	2	B1	4		404 108.036 (0.013)	26.037	0.744	3	
4	3	B2	5	4	2	B1	5		404 108.615 (0.013)	26.037	0.967	3	
4	3	B2	3	4	2	B1	3		404 108.764 (0.013)	26.037	0.601	3	
3	3	B1		3	2	B2			404 166.479 (0.013)*	20.120	1.375	3	
3	3	B1	3	3	2	B2	3		404 165.743 (0.013)	20.120	0.385	3	
3	3	B1	4	3	2	B2	4		404 166.725 (0.013)	20.120	0.553	3	
3	3	B1	2	3	2	B2	2		404 167.069 (0.013)	20.120	0.291	3	
3	3	B2		3	2	B1			404 201.629 (0.013)*	20.119	1.375	3	
3	3	B2	3	3	2	B1	3		404 200.872 (0.013)	20.119	0.385	3	
3	3	B2	4	3	2	B1	4		404 201.881 (0.013)	20.119	0.553	3	
3	3	B2	2	3	2	B1	2		404 202.234 (0.013)	20.119	0.291	3	
4	3	B1		4	2	B2			404 214.020 (0.013)*	26.034	2.471	3	
4	3	B1	4	4	2	B2	4		404 213.559 (0.013)	26.034	0.743	3	
4	3	B1	5	4	2	B2	5		404 214.187 (0.013)	26.034	0.967	3	
4	3	B1	3	4	2	B2	3		404 214.349 (0.013)	26.034	0.601	3	
5	3	B2		5	2	B1			404 245.346 (0.012)*	33.427	3.444	3	
5	3	B2	5	5	2	B1	5		404 245.029 (0.012)	33.427	1.073	3	
5	3	B2	6	5	2	B1	6		404 245.468 (0.012)	33.427	1.319	3	
5	3	B2	4	5	2	B1	4		404 245.557 (0.012)	33.427	0.902	3	
6	3	B1		6	2	B2			404 306.354 (0.012)*	42.299	4.349	3	
6	3	B1	6	6	2	B2	6		404 306.115 (0.012)	42.299	1.381	3	
6	3	B1	7	6	2	B2	7		404 306.449 (0.012)	42.299	1.638	3	
6	3	B1	5	6	2	B2	5		404 306.505 (0.012)	42.299	1.193	3	
12	3	A1		12	2	A2			404 343.542 (0.029)*	126.496	9.065	1	
7	3	B2		7	2	B1			404 410.129 (0.012)*	52.648	5.209	3	
7	3	B2	7	7	2	B1	7		404 409.936 (0.012)	52.648	1.675	3	
7	3	B2	8	7	2	B1	8		404 410.208 (0.012)	52.647	1.937	3	
7	3	B2	6	7	2	B1	6		404 410.248 (0.012)	52.647	1.474	3	
14	3	E1+1		14	2	E1−1			404 412.157 (0.037)*	166.109	2.121	3	
10	3	E2−1		10	2	E2−1			404 498.924 (0.014)*	92.442	5.367	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	3	E2−1	9	10	2	E2−1	9		404 498.886 (0.014)	92.442	1.603	1	
10	3	E2−1	11	10	2	E2−1	11		404 498.895 (0.014)	92.442	1.943	1	
10	3	E2−1	10	10	2	E2−1	10		404 498.989 (0.014)	92.442	1.757	1	
22	3	E2+1		21	4	E2−1			404 548.051 (0.038)*	385.095	2.036	1	
8	3	B1		8	2	B2			404 572.198 (0.013)*	64.473	6.036	3	
8	3	B1	8	8	2	B2	8		404 572.030 (0.013)	64.473	1.957	3	
8	3	B1	9	8	2	B2	9		404 572.268 (0.013)	64.473	2.221	3	
8	3	B1	7	8	2	B2	7		404 572.298 (0.013)	64.473	1.748	3	
11	3	E1−1		11	2	E1+1			404 801.691 (0.018)*	108.803	0.573	3	
9	3	B2		9	2	B1			404 810.647 (0.015)*	77.775	6.836	3	
9	3	B2	9	9	2	B1	9		404 810.494 (0.015)	77.775	2.228	3	
9	3	B2	10	9	2	B1	10		404 810.713 (0.015)	77.775	2.493	3	
9	3	B2	8	9	2	B1	8		404 810.738 (0.015)	77.775	2.014	3	
7	1	E1+1		6	0	E1+1			404 898.214 (0.011)*	31.340	6.008	3	
7	1	E1+1	7	6	0	E1+1	6		404 897.382 (0.011)	31.340	1.962	3	
7	1	E1+1	8	6	0	E1+1	7		404 898.549 (0.011)	31.340	2.270	3	
7	1	E1+1	6	6	0	E1+1	5		404 898.741 (0.011)	31.340	1.694	3	
13	3	A2		13	2	A1			405 131.784 (0.035)*	145.697	9.756	1	
10	3	B1		10	2	B2			405 146.260 (0.018)*	92.553	7.610	3	
10	3	B1	10	10	2	B2	10		405 146.112 (0.018)	92.553	2.491	3	
10	3	B1	11	10	2	B2	11		405 146.325 (0.018)	92.553	2.755	3	
10	3	B1	9	10	2	B2	9		405 146.346 (0.018)	92.553	2.272	3	
16	1	E2−1		15	2	E2+1			405 206.639 (0.063)*	188.312	4.092	1	
9	3	E2−1		9	2	E2−1			405 271.243 (0.013)*	77.627	5.376	1	
9	3	E2−1	8	9	2	E2−1	8		405 271.236 (0.013)	77.627	1.584	1	
9	3	E2−1	10	9	2	E2−1	10		405 271.238 (0.013)	77.627	1.961	1	
9	3	E2−1	9	9	2	E2−1	9		405 271.256 (0.013)	77.627	1.752	1	
15	3	E1+1		15	2	E1−1			405 300.544 (0.046)*	188.262	2.683	3	
10	3	E1−1		10	2	E1+1			405 475.361 (0.017)*	92.513	0.281	3	
10	3	E1−1	9	10	2	E1+1	9		405 475.358 (0.017)	92.513	0.084	3	
10	3	E1−1	11	10	2	E1+1	11		405 475.359 (0.017)	92.513	0.102	3	
10	3	E1−1	10	10	2	E1+1	10		405 475.365 (0.017)	92.513	0.092	3	
11	3	B2		11	2	B1			405 602.664 (0.022)*	108.806	8.359	3	
7	3	E2+1		7	2	E2+1			405 729.734 (0.012)*	52.393	4.897	1	
7	3	E2+1	7	7	2	E2+1	7		405 729.571 (0.012)	52.393	1.575	1	
7	3	E2+1	8	7	2	E2+1	8		405 729.801 (0.012)	52.393	1.821	1	
7	3	E2+1	6	7	2	E2+1	6		405 729.834 (0.012)	52.393	1.386	1	
8	3	E2+1		8	2	E2+1			405 756.424 (0.012)*	64.223	5.257	1	
8	3	E2+1	8	8	2	E2+1	8		405 756.281 (0.012)	64.223	1.704	1	
8	3	E2+1	9	8	2	E2+1	9		405 756.484 (0.012)	64.223	1.934	1	
8	3	E2+1	7	8	2	E2+1	7		405 756.509 (0.012)	64.223	1.522	1	
6	3	E2+1		6	2	E2+1			405 756.729 (0.012)*	42.040	4.257	1	
6	3	E2+1	6	6	2	E2+1	6		405 756.521 (0.012)	42.040	1.352	1	
6	3	E2+1	7	6	2	E2+1	7		405 756.813 (0.012)	42.040	1.604	1	
6	3	E2+1	5	6	2	E2+1	5		405 756.862 (0.012)	42.040	1.167	1	
8	3	E2−1		8	2	E2−1			405 789.022 (0.012)*	64.300	5.264	1	
8	3	E2−1	8	8	2	E2−1	8		405 788.976 (0.012)	64.300	1.706	1	
8	3	E2−1	9	8	2	E2−1	9		405 789.041 (0.012)	64.300	1.937	1	
8	3	E2−1	7	8	2	E2−1	7		405 789.049 (0.012)	64.300	1.524	1	
5	3	E2+1		5	2	E2+1			405 799.462 (0.013)*	33.165	3.425	1	
5	3	E2+1	5	5	2	E2+1	5		405 799.170 (0.013)	33.165	1.067	1	
5	3	E2+1	6	5	2	E2+1	6		405 799.574 (0.013)	33.165	1.312	1	
5	3	E2+1	4	5	2	E2+1	4		405 799.656 (0.013)	33.165	0.897	1	
4	3	E2+1		4	2	E2+1			405 836.532 (0.014)*	25.769	2.468	1	
4	3	E2+1	4	4	2	E2+1	4		405 836.089 (0.014)	25.769	0.743	1	
4	3	E2+1	5	4	2	E2+1	5		405 836.694 (0.014)	25.769	0.965	1	
4	3	E2+1	3	4	2	E2+1	3		405 836.849 (0.014)	25.769	0.600	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
3	3	E2+1		3	2	E2+1			405 861.640 (0.015)*	19.853	1.375	1	
3	3	E2+1	3	3	2	E2+1	3		405 860.894 (0.015)	19.853	0.385	1	
3	3	E2+1	4	3	2	E2+1	4		405 861.889 (0.015)	19.853	0.552	1	
3	3	E2+1	2	3	2	E2+1	2		405 862.238 (0.015)	19.853	0.291	1	
9	3	E2+1		9	2	E2+1			405 877.409 (0.014)*	77.529	5.362	1	
9	3	E2+1	9	9	2	E2+1	9		405 877.273 (0.014)	77.529	1.748	1	
9	3	E2+1	10	9	2	E2+1	10		405 877.467 (0.014)	77.529	1.956	1	
9	3	E2+1	8	9	2	E2+1	8		405 877.489 (0.014)	77.529	1.579	1	
9	3	E1−1		9	2	E1+1			405 916.399 (0.016)*	77.710	0.120	3	
9	3	E1−1	9	9	2	E1+1	9		405 916.360 (0.016)	77.710	0.039	3	
9	3	E1−1	10	9	2	E1+1	10		405 916.416 (0.016)	77.710	0.044	3	
9	3	E1−1	8	9	2	E1+1	8		405 916.422 (0.016)	77.710	0.035	3	
29	5	E2−1		28	6	E2−1			406 048.703 (0.091)*	696.854	7.658	1	
28	11	E2−1		29	10	E2−1			406 049.772 (0.164)*	912.118	4.627	1	
7	3	E2−1		7	2	E2−1			406 102.757 (0.012)*	52.458	4.901	1	
7	3	E2−1	7	7	2	E2−1	7		406 102.647 (0.012)	52.458	1.576	1	
7	3	E2−1	8	7	2	E2−1	8		406 102.802 (0.012)	52.458	1.823	1	
7	3	E2−1	6	7	2	E2−1	6		406 102.824 (0.012)	52.458	1.387	1	
10	3	E2+1		10	2	E2+1			406 120.467 (0.017)*	92.309	5.344	1	
10	3	E2+1	10	10	2	E2+1	10		406 120.331 (0.017)	92.309	1.749	1	
10	3	E2+1	11	10	2	E2+1	11		406 120.526 (0.017)	92.309	1.935	1	
10	3	E2+1	9	10	2	E2+1	9		406 120.545 (0.017)	92.309	1.595	1	
14	3	A1		14	2	A2			406 131.689 (0.043)*	166.370	10.416	1	
8	3	E1−1		8	2	E1+1			406 197.932 (0.016)*	64.390	0.045	3	
8	3	E1−1	8	8	2	E1+1	8		406 197.849 (0.016)	64.390	0.014	3	
8	3	E1−1	9	8	2	E1+1	9		406 197.967 (0.016)	64.390	0.016	3	
8	3	E1−1	7	8	2	E1+1	7		406 197.982 (0.016)	64.390	0.013	3	
12	3	B1		12	2	B2			406 206.498 (0.027)*	126.533	9.083	3	
6	3	E2−1		6	2	E2−1			406 274.893 (0.012)*	42.100	4.259	1	
6	3	E2−1	6	6	2	E2−1	6		406 274.709 (0.012)	42.100	1.353	1	
6	3	E2−1	7	6	2	E2−1	7		406 274.967 (0.012)	42.100	1.605	1	
6	3	E2−1	5	6	2	E2−1	5		406 275.010 (0.012)	42.100	1.168	1	
5	3	E2−1		5	2	E2−1			406 363.509 (0.013)*	33.224	3.425	1	
5	3	E2−1	5	5	2	E2−1	5		406 363.226 (0.013)	33.224	1.067	1	
5	3	E2−1	6	5	2	E2−1	6		406 363.617 (0.013)	33.224	1.312	1	
5	3	E2−1	4	5	2	E2−1	4		406 363.697 (0.013)	33.224	0.897	1	
4	3	E2−1		4	2	E2−1			406 407.846 (0.014)*	25.827	2.469	1	
4	3	E2−1	4	4	2	E2−1	4		406 407.405 (0.014)	25.827	0.743	1	
4	3	E2−1	5	4	2	E2−1	5		406 408.006 (0.014)	25.827	0.966	1	
4	3	E2−1	3	4	2	E2−1	3		406 408.161 (0.014)	25.827	0.600	1	
3	3	E2−1		3	2	E2−1			406 429.383 (0.015)*	19.911	1.375	1	
3	3	E2−1	3	3	2	E2−1	3		406 428.637 (0.015)	19.911	0.385	1	
3	3	E2−1	4	3	2	E2−1	4		406 429.632 (0.015)	19.911	0.553	1	
3	3	E2−1	2	3	2	E2−1	2		406 429.980 (0.015)	19.911	0.291	1	
16	3	E1+1		16	2	E1−1			406 495.326 (0.056)*	211.884	3.154	3	
11	3	E2+1		11	2	E2+1			406 502.457 (0.021)*	108.564	5.294	1	
12	0	A1		11	1	A2			406 927.242 (0.034)*	101.528	6.692	1	
28	11	E1+1		29	10	E1+1			406 946.942 (0.227)*	912.290	4.622	3	
13	3	B2		13	2	B1			406 987.578 (0.033)*	145.734	9.779	3	
12	3	E2+1		12	2	E2+1			407 038.405 (0.026)*	126.293	5.227	1	
15	3	A2		15	2	A1			407 380.194 (0.053)*	188.514	11.040	1	
13	3	E2+1		13	2	E2+1			407 745.654 (0.032)*	145.494	5.109	1	
14	3	B1		14	2	B2			407 979.082 (0.041)*	166.406	10.444	3	
17	3	E1+1		17	2	E1−1			408 014.455 (0.067)*	236.974	3.493	3	
7	3	E2−1		7	2	E2+1			408 057.577 (0.015)*	52.393	0.308	1	
7	3	E2−1	7	7	2	E2+1	7		408 057.415 (0.015)	52.393	0.099	1	
7	3	E2−1	8	7	2	E2+1	8		408 057.644 (0.015)	52.393	0.115	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
7	3	E2−1	6	7	2	E2+1	6		408 057.677 (0.015)	52.393	0.087	1	
4	2	E1−1		3	1	E1+1			408 057.703 (0.014)*	12.023	0.471	3	
4	2	E1−1	3	3	1	E1+1	2		408 057.468 (0.014)	12.023	0.112	3	
4	2	E1−1	5	3	1	E1+1	4		408 057.590 (0.014)	12.023	0.192	3	
4	2	E1−1	4	3	1	E1+1	3		408 058.021 (0.014)	12.023	0.147	3	
6	3	E2−1		6	2	E2+1			408 080.001 (0.015)*	42.040	0.089	1	
6	3	E2−1	6	6	2	E2+1	6		408 079.793 (0.015)	42.040	0.028	1	
6	3	E2−1	7	6	2	E2+1	7		408 080.084 (0.015)	42.040	0.034	1	
6	3	E2−1	5	6	2	E2+1	5		408 080.133 (0.015)	42.040	0.025	1	
8	3	E2−1		8	2	E2+1			408 088.922 (0.016)*	64.223	0.774	1	
8	3	E2−1	8	8	2	E2+1	8		408 088.780 (0.016)	64.223	0.251	1	
8	3	E2−1	9	8	2	E2+1	9		408 088.981 (0.016)	64.223	0.285	1	
8	3	E2−1	7	8	2	E2+1	7		408 089.007 (0.016)	64.223	0.224	1	
5	3	E2−1		5	2	E2+1			408 118.426 (0.016)*	33.165	0.018	1	
5	3	E2−1	5	5	2	E2+1	5		408 118.135 (0.016)	33.165	0.006	1	
5	3	E2−1	6	5	2	E2+1	6		408 118.538 (0.016)	33.165	0.007	1	
5	3	E2−1	4	5	2	E2+1	4		408 118.621 (0.016)	33.165	0.005	1	
9	3	E2−1		9	2	E2+1			408 214.497 (0.017)*	77.529	1.465	1	
9	3	E2−1	9	9	2	E2+1	9		408 214.362 (0.017)	77.529	0.478	1	
9	3	E2−1	10	9	2	E2+1	10		408 214.555 (0.017)	77.529	0.534	1	
9	3	E2−1	8	9	2	E2+1	8		408 214.577 (0.017)	77.529	0.432	1	
10	3	E2−1		10	2	E2+1			408 462.088 (0.019)*	92.309	2.254	1	
10	3	E2−1	10	10	2	E2+1	10		408 461.953 (0.019)	92.309	0.738	1	
10	3	E2−1	11	10	2	E2+1	11		408 462.147 (0.019)	92.309	0.816	1	
10	3	E2−1	9	10	2	E2+1	9		408 462.166 (0.019)	92.309	0.673	1	
14	3	E2+1		14	2	E2+1			408 643.702 (0.039)*	166.167	4.891	1	
17	8	E1+1		18	7	E1+1			408 720.484 (0.071)*	385.260	2.405	3	
17	8	A2		18	7	A1			408 774.667 (0.075)*	385.444	2.403	1	
17	8	A1		18	7	A2			408 774.667 (0.075)*	385.444	2.403	1	
11	3	E2−1		11	2	E2+1			408 848.975 (0.022)*	108.564	3.047	1	
16	3	A1		16	2	A2			408 917.985 (0.064)*	212.129	11.626	1	
15	3	B2		15	2	B1			409 217.727 (0.050)*	188.551	11.076	3	
16	1	E1−1		15	2	E1−1			409 301.556 (0.055)*	188.262	3.965	3	
12	3	E2−1		12	2	E2+1			409 391.544 (0.027)*	126.293	3.832	1	
21	2	B2		21	1	B1			409 447.116 (0.100)*	340.393	5.263	3	
21	9	E1+1		22	8	E1+1			409 586.487 (0.100)*	546.533	3.254	3	
14	1	A1		13	2	A2			409 748.746 (0.036)*	146.004	5.855	1	
15	3	E2+1		15	2	E2+1			409 752.405 (0.047)*	188.312	4.524	1	
18	2	E1+1		17	3	E1−1			409 861.634 (0.046)*	250.964	2.499	3	
18	3	E1+1		18	2	E1−1			409 874.561 (0.079)*	263.530	3.676	3	
13	3	E2−1		13	2	E2+1			410 110.444 (0.032)*	145.494	4.639	1	
6	5	E1−1		7	4	E1−1			410 618.295 (0.032)*	85.069	0.337	3	
6	5	E1−1	6	7	4	E1−1	7		410 617.741 (0.032)	85.069	0.110	3	
6	5	E1−1	7	7	4	E1−1	8		410 618.518 (0.032)	85.069	0.127	3	
6	5	E1−1	5	7	4	E1−1	6		410 618.646 (0.032)	85.069	0.095	3	
16	3	B1		16	2	B2			410 743.936 (0.061)*	212.165	11.669	3	
17	3	A2		17	2	A1			410 789.647 (0.078)*	237.213	12.169	1	
14	3	E2−1		14	2	E2+1			411 032.162 (0.039)*	166.167	5.514	1	
16	3	E2+1		16	2	E2+1			411 089.745 (0.056)*	211.927	3.977	1	
22	3	E2−1		21	4	E2−1			411 163.488 (0.051)*	385.095	4.288	1	
28	11	E2+1		29	10	E2+1			411 432.566 (0.160)*	912.267	4.618	1	
29	5	A1		30	2	A2			411 469.796 (0.875)*	696.384	0.017	1	
6	5	A1		7	4	A2			411 570.343 (0.027)*	84.875	0.337	1	
6	5	A1	6	7	4	A2	7		411 569.788 (0.027)	84.875	0.110	1	
6	5	A1	7	7	4	A2	8		411 570.565 (0.027)	84.875	0.127	1	
6	5	A1	5	7	4	A2	6		411 570.694 (0.027)	84.875	0.095	1	
6	5	A2		7	4	A1			411 570.369 (0.027)*	84.875	0.337	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
6	5	A2	6	7	4	A1	7		411 569.814 (0.027)	84.875	0.110	1	
6	5	A2	7	7	4	A1	8		411 570.591 (0.027)	84.875	0.127	1	
6	5	A2	5	7	4	A1	6		411 570.720 (0.027)	84.875	0.095	1	
4	2	E2+1		3	1	E2+1			411 629.878 (0.014)*	12.039	2.850	1	
4	2	E2+1	3	3	1	E2+1	2		411 629.835 (0.014)	12.039	0.679	1	
4	2	E2+1	5	3	1	E2+1	4		411 629.845 (0.014)	12.039	1.161	1	
4	2	E2+1	4	3	1	E2+1	3		411 629.956 (0.014)	12.039	0.891	1	
22	3	A2		21	4	A1			411 719.182 (0.038)*	384.930	6.309	1	
22	3	E1−1		21	4	E1−1			411 898.486 (0.048)*	385.126	5.943	3	
19	3	E1+1		19	2	E1−1			412 090.708 (0.093)*	291.552	3.690	3	
15	3	E2−1		15	2	E2+1			412 189.917 (0.048)*	188.312	6.504	1	
17	3	B2		17	2	B1			412 601.994 (0.075)*	237.249	12.221	3	
22	3	E2+1		21	4	E2+1			412 610.440 (0.033)*	384.826	4.287	1	
17	3	E2+1		17	2	E2+1			412 670.097 (0.066)*	237.011	3.270	1	
10	6	A1		11	5	A2			412 774.447 (0.039)*	165.133	1.074	1	
10	6	A2		11	5	A1			412 774.452 (0.039)*	165.133	1.074	1	
18	2	E2−1		17	3	E2−1			412 994.952 (0.047)*	250.867	4.398	1	
18	3	A1		18	2	A2			413 043.784 (0.096)*	263.765	12.663	1	
7	1	A2		6	0	A1			413 281.398 (0.016)*	31.040	6.082	1	
7	1	A2	7	6	0	A1	6		413 280.554 (0.016)	31.040	1.986	1	
7	1	A2	8	6	0	A1	7		413 281.738 (0.016)	31.040	2.298	1	
7	1	A2	6	6	0	A1	5		413 281.932 (0.016)	31.040	1.715	1	
4	2	E2−1		3	1	E2+1			413 373.663 (0.014)*	12.039	0.182	1	
4	2	E2−1	3	3	1	E2+1	2		413 373.622 (0.014)	12.039	0.043	1	
4	2	E2−1	5	3	1	E2+1	4		413 373.631 (0.014)	12.039	0.074	1	
4	2	E2−1	4	3	1	E2+1	3		413 373.739 (0.014)	12.039	0.057	1	
14	1	E2+1		13	2	E2−1			413 585.949 (0.024)*	145.822	5.859	1	
16	3	E2−1		16	2	E2+1			413 624.826 (0.058)*	211.927	7.634	1	
17	8	B2		18	7	B1			413 847.911 (0.067)*	385.416	2.401	3	
17	8	B1		18	7	B2			413 847.911 (0.067)*	385.416	2.401	3	
18	3	E2+1		18	2	E2+1			414 504.353 (0.077)*	263.563	2.489	1	
8	1	E2−1		7	0	E2+1			414 590.061 (0.012)*	41.781	0.214	1	
8	1	E2−1	7	7	0	E2+1	6		414 589.709 (0.012)	41.781	0.062	1	
8	1	E2−1	9	7	0	E2+1	8		414 589.800 (0.012)	41.781	0.080	1	
8	1	E2−1	8	7	0	E2+1	7		414 590.665 (0.012)	41.781	0.070	1	
14	1	E1+1		13	2	E1+1			414 612.395 (0.018)*	145.853	5.270	3	
18	2	B1		17	3	B2			414 638.439 (0.047)*	251.012	5.619	3	
20	3	E1+1		20	2	E1−1			414 674.458 (0.109)*	321.039	3.528	3	
11	3	E1−1		11	2	E1−1			414 830.257 (0.020)*	108.469	7.803	3	
18	3	B1		18	2	B2			414 840.169 (0.093)*	263.801	12.725	3	
10	3	E1−1		10	2	E1−1			414 840.833 (0.017)*	92.201	7.337	3	
10	3	E1−1	10	10	2	E1−1	10		414 840.758 (0.017)	92.201	2.401	3	
10	3	E1−1	11	10	2	E1−1	11		414 840.866 (0.017)	92.201	2.657	3	
10	3	E1−1	9	10	2	E1−1	9		414 840.877 (0.017)	92.201	2.191	3	
9	3	E1−1		9	2	E1−1			414 928.839 (0.014)*	77.409	6.719	3	
9	3	E1−1	9	9	2	E1−1	9		414 928.755 (0.014)	77.409	2.190	3	
9	3	E1−1	10	9	2	E1−1	10		414 928.875 (0.014)	77.409	2.451	3	
9	3	E1−1	8	9	2	E1−1	8		414 928.888 (0.014)	77.409	1.979	3	
12	3	E1−1		12	2	E1−1			414 959.789 (0.025)*	126.210	8.094	3	
8	3	E1−1		8	2	E1−1			415 043.713 (0.013)*	64.095	5.992	3	
8	3	E1−1	8	8	2	E1−1	8		415 043.608 (0.013)	64.095	1.942	3	
8	3	E1−1	9	8	2	E1−1	9		415 043.757 (0.013)	64.095	2.205	3	
8	3	E1−1	7	8	2	E1−1	7		415 043.776 (0.013)	64.095	1.735	3	
7	3	E1−1		7	2	E1−1			415 153.260 (0.012)*	52.261	5.195	3	
7	3	E1−1	7	7	2	E1−1	7		415 153.118 (0.012)	52.261	1.670	3	
7	3	E1−1	8	7	2	E1−1	8		415 153.318 (0.012)	52.261	1.932	3	
7	3	E1−1	6	7	2	E1−1	6		415 153.347 (0.012)	52.261	1.470	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
12	0	E1+1		11	1	E1+1			415 214.757 (0.019)*	101.542	6.590	3	
6	3	E1−1		6	2	E1−1			415 241.997 (0.012)*	41.905	4.345	3	
6	3	E1−1	6	6	2	E1−1	6		415 241.798 (0.012)	41.905	1.380	3	
6	3	E1−1	7	6	2	E1−1	7		415 242.076 (0.012)	41.905	1.637	3	
6	3	E1−1	5	6	2	E1−1	5		415 242.123 (0.012)	41.905	1.191	3	
13	3	E1−1		13	2	E1−1			415 290.789 (0.030)*	145.424	8.235	3	
5	3	E1−1		5	2	E1−1			415 305.987 (0.012)*	33.030	3.443	3	
5	3	E1−1	5	5	2	E1−1	5		415 305.699 (0.012)	33.030	1.072	3	
5	3	E1−1	6	5	2	E1−1	6		415 306.098 (0.012)	33.030	1.319	3	
5	3	E1−1	4	5	2	E1−1	4		415 306.179 (0.012)	33.030	0.901	3	
4	2	E1−1		3	1	E1−1			415 336.609 (0.012)*	11.780	2.541	3	
4	2	E1−1	4	3	1	E1−1	3		415 335.830 (0.012)	11.780	0.794	3	
4	2	E1−1	5	3	1	E1−1	4		415 336.862 (0.012)	11.780	1.035	3	
4	2	E1−1	3	3	1	E1−1	2		415 337.252 (0.012)	11.780	0.605	3	
4	3	E1−1		4	2	E1−1			415 347.713 (0.013)*	25.634	2.471	3	
4	3	E1−1	4	4	2	E1−1	4		415 347.271 (0.013)	25.634	0.743	3	
4	3	E1−1	5	4	2	E1−1	5		415 347.874 (0.013)	25.634	0.966	3	
4	3	E1−1	3	4	2	E1−1	3		415 348.029 (0.013)	25.634	0.601	3	
3	3	E1−1		3	2	E1−1			415 372.317 (0.014)*	19.717	1.375	3	
3	3	E1−1	3	3	2	E1−1	3		415 371.570 (0.014)	19.717	0.385	3	
3	3	E1−1	4	3	2	E1−1	4		415 372.565 (0.014)	19.717	0.553	3	
3	3	E1−1	2	3	2	E1−1	2		415 372.914 (0.014)	19.717	0.291	3	
17	3	E2−1		17	2	E2+1			415 386.874 (0.070)*	237.011	8.881	1	
18	2	E2−1		17	3	E2+1			415 711.729 (0.050)*	250.776	1.250	1	
19	3	A2		19	2	A1			415 733.089 (0.117)*	291.784	13.104	1	
28	11	E1−1		29	10	E1−1			415 833.937 (0.170)*	911.956	4.627	3	
14	3	E1−1		14	2	E1−1			415 871.804 (0.037)*	166.109	8.296	3	
29	5	B1		30	2	B2			415 971.560 (0.876)*	696.409	0.019	3	
6	5	E2−1		7	4	E2−1			416 129.378 (0.030)*	85.037	0.337	1	
6	5	E2−1	6	7	4	E2−1	7		416 128.824 (0.030)	85.037	0.110	1	
6	5	E2−1	7	7	4	E2−1	8		416 129.601 (0.030)	85.037	0.127	1	
6	5	E2−1	5	7	4	E2−1	6		416 129.730 (0.030)	85.037	0.095	1	
18	2	A1		17	3	A2			416 140.414 (0.053)*	250.916	5.656	1	
28	11	B2		29	10	B1			416 317.360 (0.186)*	912.108	4.624	3	
28	11	B1		29	10	B2			416 317.360 (0.186)*	912.108	4.624	3	
22	3	E1−1		21	4	E1+1			416 327.408 (0.040)*	384.978	0.369	3	
19	3	E2+1		19	2	E2+1			416 602.678 (0.089)*	291.582	1.756	1	
15	3	E1−1		15	2	E1−1			416 737.248 (0.045)*	188.262	8.351	3	
4	2	E1+1		3	1	E1+1			416 814.475 (0.013)*	12.023	2.576	3	
4	2	E1+1	3	3	1	E1+1	2		416 814.240 (0.013)	12.023	0.613	3	
4	2	E1+1	5	3	1	E1+1	4		416 814.362 (0.013)	12.023	1.049	3	
4	2	E1+1	4	3	1	E1+1	3		416 814.793 (0.013)	12.023	0.805	3	
19	3	B2		19	2	B1			417 510.782 (0.115)*	291.819	13.178	3	
18	3	E2−1		18	2	E2+1			417 534.237 (0.086)*	263.563	10.153	1	
12	0	B1		11	1	B2			417 625.661 (0.035)*	101.373	6.665	3	
21	3	E1+1		21	2	E1−1			417 631.533 (0.126)*	351.990	3.203	3	
22	3	A1		21	4	A2			417 759.215 (0.049)*	384.936	6.338	1	
16	3	E1−1		16	2	E1−1			417 914.056 (0.055)*	211.884	8.457	3	
22	2	E1+1		22	1	E1−1			417 928.940 (0.144)*	372.643	4.663	3	
26	4	E2+1		25	5	E2+1			418 386.770 (0.068)*	548.145	7.160	1	
17	8	E2−1		18	7	E2−1			418 750.289 (0.071)*	385.276	2.403	1	
19	2	E1−1		18	3	E1−1			418 769.061 (0.055)*	277.584	2.968	3	
24	10	E1−1		25	9	E1−1			418 894.612 (0.140)*	698.962	3.768	3	
20	3	A1		20	2	A2			418 914.342 (0.143)*	321.268	13.486	1	
20	3	E2+1		20	2	E2+1			418 978.130 (0.104)*	321.066	1.166	1	
22	3	E2−1		21	4	E2+1			419 225.877 (0.044)*	384.826	2.055	1	
17	3	E1−1		17	2	E1−1			419 429.380 (0.067)*	236.974	8.651	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
17	8	E2+1		18	7	E2+1			419 457.307 (0.081)*	385.082	2.405	1	
22	3	B2		21	4	B1			419 972.496 (0.043)*	384.749	6.327	3	
12	0	E2+1		11	1	E2+1			420 078.246 (0.018)*	101.481	6.520	1	
19	3	E2−1		19	2	E2+1			420 130.119 (0.104)*	291.582	11.322	1	
4	2	A1		3	1	A2			420 399.985 (0.013)*	11.977	3.056	1	
4	2	A1	3	3	1	A2	2		420 399.595 (0.013)	11.977	0.728	1	
4	2	A1	5	3	1	A2	4		420 399.809 (0.013)	11.977	1.245	1	
4	2	A1	4	3	1	A2	3		420 400.496 (0.013)	11.977	0.955	1	
17	1	E2−1		16	2	E2−1			420 457.966 (0.039)*	212.631	0.045	1	
20	3	B1		20	2	B2			420 670.216 (0.141)*	321.303	13.572	3	
8	1	E1−1		7	0	E1+1			420 934.418 (0.011)*	41.678	0.041	3	
8	1	E1−1	7	7	0	E1+1	6		420 934.042 (0.011)	41.678	0.012	3	
8	1	E1−1	9	7	0	E1+1	8		420 934.140 (0.011)	41.678	0.015	3	
8	1	E1−1	8	7	0	E1+1	7		420 935.062 (0.011)	41.678	0.014	3	
22	2	E2−1		22	1	E2−1			420 954.152 (0.147)*	372.561	4.615	1	
22	3	E1+1		22	2	E1−1			420 960.507 (0.146)*	384.403	2.747	3	
13	7	E2+1		14	6	E2+1			421 044.671 (0.057)*	252.854	1.574	1	
26	4	E2+1		25	5	E2−1			421 081.392 (0.084)*	548.055	0.026	1	
6	5	E1+1		7	4	E1+1			421 092.096 (0.030)*	84.918	0.337	3	
6	5	E1+1	6	7	4	E1+1	7		421 091.542 (0.030)	84.918	0.110	3	
6	5	E1+1	7	7	4	E1+1	8		421 092.318 (0.030)	84.918	0.127	3	
6	5	E1+1	5	7	4	E1+1	6		421 092.447 (0.030)	84.918	0.095	3	
18	2	E1+1		17	3	E1+1			421 276.559 (0.045)*	250.583	3.168	3	
18	3	E1−1		18	2	E1−1			421 315.933 (0.080)*	263.530	8.951	3	
28	11	A2		29	10	A1			421 641.181 (0.203)*	911.969	4.627	1	
28	11	A1		29	10	A2			421 641.181 (0.203)*	911.969	4.627	1	
21	3	E2+1		21	2	E2+1			421 648.070 (0.121)*	352.014	0.743	1	
26	4	B2		25	5	B1			421 978.317 (0.070)*	547.936	7.198	3	
19	2	E2+1		18	3	E2−1			422 448.496 (0.062)*	277.491	0.918	1	
22	2	A1		22	1	A2			422 541.894 (0.124)*	372.628	5.056	1	
21	3	A2		21	2	A1			422 648.315 (0.176)*	352.217	13.803	1	
26	4	B1		25	5	B2			422 871.725 (0.068)*	547.936	7.201	3	
17	1	E1−1		16	2	E1+1			422 915.719 (0.037)*	212.635	0.113	3	
6	5	B1		7	4	B2			422 931.395 (0.029)*	84.686	0.337	3	
6	5	B1	6	7	4	B2	7		422 930.841 (0.029)	84.686	0.110	3	
6	5	B1	7	7	4	B2	8		422 931.618 (0.029)	84.686	0.127	3	
6	5	B1	5	7	4	B2	6		422 931.747 (0.029)	84.686	0.095	3	
6	5	B2		7	4	B1			422 931.422 (0.029)*	84.686	0.337	3	
6	5	B2	6	7	4	B1	7		422 930.868 (0.029)	84.686	0.110	3	
6	5	B2	7	7	4	B1	8		422 931.645 (0.029)	84.686	0.127	3	
6	5	B2	5	7	4	B1	6		422 931.773 (0.029)	84.686	0.095	3	
20	3	E2−1		20	2	E2+1			423 238.754 (0.126)*	321.066	12.291	1	
14	1	E2+1		13	2	E2+1			423 421.019 (0.018)*	145.494	0.110	1	
19	3	E1−1		19	2	E1−1			423 615.255 (0.097)*	291.552	9.367	3	
26	4	E1+1		25	5	E1+1			423 881.634 (0.067)*	548.108	7.095	3	
4	2	E1+1		3	1	E1−1			424 093.382 (0.011)*	11.780	0.436	3	
4	2	E1+1	4	3	1	E1−1	3		424 092.603 (0.011)	11.780	0.136	3	
4	2	E1+1	5	3	1	E1−1	4		424 093.635 (0.011)	11.780	0.178	3	
4	2	E1+1	3	3	1	E1−1	2		424 094.024 (0.011)	11.780	0.104	3	
21	3	B2		21	2	B1			424 378.826 (0.175)*	352.250	13.904	3	
17	8	E1−1		18	7	E1−1			424 443.078 (0.077)*	385.125	2.404	3	
4	2	E2+1		3	1	E2−1			424 625.610 (0.012)*	11.605	0.159	1	
4	2	E2+1	4	3	1	E2−1	3		424 625.073 (0.012)	11.605	0.050	1	
4	2	E2+1	5	3	1	E2−1	4		424 625.782 (0.012)	11.605	0.065	1	
4	2	E2+1	3	3	1	E2−1	2		424 626.059 (0.012)	11.605	0.038	1	
22	3	E2+1		22	2	E2+1			424 632.800 (0.141)*	384.425	0.464	1	
23	3	E1+1		23	2	E1−1			424 653.918 (0.168)*	418.276	2.219	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
19	2	E2+1		18	3	E2+1			425 478.380 (0.053)*	277.390	4.816	1	
4	2	A2		3	1	A1			425 574.685 (0.013)*	11.801	2.963	1	
4	2	A2	4	3	1	A1	3		425 573.715 (0.013)	11.801	0.926	1	
4	2	A2	5	3	1	A1	4		425 575.001 (0.013)	11.801	1.207	1	
4	2	A2	3	3	1	A1	2		425 575.481 (0.013)	11.801	0.706	1	
22	3	B1		21	4	B2			425 886.267 (0.048)*	384.755	6.360	3	
24	10	A2		25	9	A1			425 989.309 (0.125)*	698.737	3.772	1	
24	10	A1		25	9	A2			425 989.309 (0.125)*	698.737	3.772	1	
26	4	E2−1		25	5	E2+1			426 193.674 (0.048)*	548.145	0.026	1	
4	2	B1		3	1	B2			426 277.943 (0.013)*	11.818	3.058	3	
4	2	B1	3	3	1	B2	2		426 277.553 (0.013)	11.818	0.728	3	
4	2	B1	5	3	1	B2	4		426 277.767 (0.013)	11.818	1.246	3	
4	2	B1	4	3	1	B2	3		426 278.453 (0.013)	11.818	0.956	3	
4	2	E2−1		3	1	E2−1			426 369.395 (0.012)*	11.605	2.833	1	
4	2	E2−1	4	3	1	E2−1	3		426 368.856 (0.012)	11.605	0.885	1	
4	2	E2−1	5	3	1	E2−1	4		426 369.568 (0.012)	11.605	1.154	1	
4	2	E2−1	3	3	1	E2−1	2		426 369.846 (0.012)	11.605	0.675	1	
20	3	E1−1		20	2	E1−1			426 379.935 (0.117)*	321.039	9.899	3	
24	10	E2−1		25	9	E2−1			426 394.352 (0.116)*	698.877	3.766	1	
21	3	E2−1		21	2	E2+1			426 923.600 (0.153)*	352.014	13.027	1	
6	5	E2+1		7	4	E2+1			426 974.210 (0.030)*	84.761	0.337	1	
6	5	E2+1	6	7	4	E2+1	7		426 973.656 (0.030)	84.761	0.110	1	
6	5	E2+1	7	7	4	E2+1	8		426 974.433 (0.030)	84.761	0.127	1	
6	5	E2+1	5	7	4	E2+1	6		426 974.561 (0.030)	84.761	0.095	1	
22	3	A1		22	2	A2			426 999.548 (0.217)*	384.628	14.052	1	
19	2	B1		18	3	B2			427 038.878 (0.077)*	277.574	5.700	3	
14	1	E1+1		13	2	E1−1			427 476.193 (0.018)*	145.424	0.682	3	
23	3	E2+1		23	2	E2+1			427 953.325 (0.164)*	418.298	0.287	1	
26	4	E1−1		25	5	E1+1			428 194.333 (0.050)*	548.108	0.078	3	
22	3	B1		22	2	B2			428 700.739 (0.216)*	384.661	14.167	3	
24	3	E1+1		24	2	E1−1			428 702.262 (0.193)*	453.609	1.688	3	
22	2	B1		22	1	B2			428 741.227 (0.128)*	372.472	4.917	3	
26	4	E2−1		25	5	E2−1			428 888.295 (0.050)*	548.055	7.138	1	
19	2	A1		18	3	A2			428 888.834 (0.077)*	277.478	5.723	1	
13	7	E1−1		14	6	E1−1			428 898.302 (0.057)*	252.635	1.574	3	
13	7	E1+1		14	6	E1+1			429 281.783 (0.055)*	252.760	1.573	3	
21	3	E1−1		21	2	E1−1			429 675.132 (0.141)*	351.990	10.529	3	
26	4	E1+1		25	5	E1−1			429 751.602 (0.083)*	547.912	0.078	3	
19	2	E1−1		18	3	E1+1			430 210.433 (0.052)*	277.202	2.778	3	
22	3	E2−1		22	2	E2+1			431 248.237 (0.183)*	384.425	13.550	1	
24	10	E1+1		25	9	E1+1			431 337.336 (0.133)*	698.882	3.766	3	
30	5	A2		29	6	A1			431 404.899 (0.107)*	739.981	8.059	1	
4	2	B2		3	1	B1			431 460.490 (0.013)*	11.642	2.963	3	
4	2	B2	4	3	1	B1	3		431 459.521 (0.013)	11.642	0.926	3	
4	2	B2	5	3	1	B1	4		431 460.806 (0.013)	11.642	1.207	3	
4	2	B2	3	3	1	B1	2		431 461.287 (0.013)	11.642	0.706	3	
30	5	A1		29	6	A2			431 514.754 (0.107)*	739.981	8.059	1	
24	3	E2+1		24	2	E2+1			431 629.754 (0.193)*	453.629	0.177	1	
11	0	E2+1		10	1	E2−1			431 783.376 (0.017)*	83.420	0.091	1	
17	1	B1		16	2	B2			431 844.117 (0.091)*	212.165	4.365	3	
23	3	A2		23	2	A1			432 035.982 (0.267)*	418.500	14.226	1	
26	4	A2		25	5	A1			432 621.197 (0.068)*	547.756	7.205	1	
25	3	E1+1		25	2	E1−1			433 099.336 (0.223)*	490.400	1.215	3	
26	4	A1		25	5	A2			433 495.592 (0.063)*	547.757	7.208	1	
24	10	E2+1		25	9	E2+1			433 547.996 (0.153)*	698.785	3.769	1	
22	3	E1−1		22	2	E1−1			433 578.731 (0.171)*	384.403	11.220	3	
13	7	A1		14	6	A2			433 580.609 (0.059)*	252.799	1.573	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
13	7	A2		14	6	A1			433 580.609 (0.059)*	252.799	1.573	1	
23	3	B2		23	2	B1			433 703.502 (0.266)*	418.532	14.357	3	
26	4	E1−1		25	5	E1−1			434 064.301 (0.059)*	547.912	7.108	3	
20	9	B1		21	8	B2			434 339.909 (0.102)*	514.384	2.920	3	
20	9	B2		21	8	B1			434 339.909 (0.102)*	514.384	2.920	3	
24	10	B2		25	9	B1			435 676.732 (0.136)*	698.556	3.772	3	
24	10	B1		25	9	B2			435 676.732 (0.136)*	698.556	3.772	3	
25	3	E2+1		25	2	E2+1			435 680.512 (0.226)*	490.419	0.109	1	
13	7	B1		14	6	B2			435 804.101 (0.064)*	252.696	1.573	3	
13	7	B2		14	6	B1			435 804.101 (0.064)*	252.696	1.573	3	
23	3	E2−1		23	2	E2+1			436 278.001 (0.219)*	418.298	13.897	1	
9	6	E2−1		10	5	E2−1			436 940.832 (0.045)*	149.185	0.787	1	
9	6	E2−1	9	10	5	E2−1	10		436 940.524 (0.045)	149.185	0.260	1	
9	6	E2−1	10	10	5	E2−1	11		436 940.965 (0.045)	149.185	0.287	1	
9	6	E2−1	8	10	5	E2−1	9		436 941.011 (0.045)	149.185	0.235	1	
17	1	A1		16	2	A2			437 645.755 (0.087)*	212.129	4.353	1	
24	3	A1		24	2	A2			437 828.414 (0.327)*	453.832	14.322	1	
26	3	E1+1		26	2	E1−1			437 845.963 (0.258)*	528.648	0.835	3	
23	3	E1−1		23	2	E1−1			438 179.018 (0.207)*	418.276	11.908	3	
10	1	A2		9	1	A1			438 556.184 (0.011)*	68.880	0.934	1	
10	1	A2	11	9	1	A1	10		438 556.169 (0.011)	68.880	0.341	1	
10	1	A2	9	9	1	A1	8		438 556.189 (0.011)	68.880	0.278	1	
10	1	A2	10	9	1	A1	9		438 556.197 (0.011)	68.880	0.308	1	
10	1	B2		9	1	B1			438 557.603 (0.011)*	68.721	0.932	3	
10	1	B2	11	9	1	B1	10		438 557.589 (0.011)	68.721	0.340	3	
10	1	B2	9	9	1	B1	8		438 557.608 (0.011)	68.721	0.278	3	
10	1	B2	10	9	1	B1	9		438 557.616 (0.011)	68.721	0.308	3	
10	1	E1−1		9	1	E1−1			438 592.913 (0.011)*	68.888	0.933	3	
10	1	E1−1	11	9	1	E1−1	10		438 592.898 (0.011)	68.888	0.341	3	
10	1	E1−1	9	9	1	E1−1	8		438 592.917 (0.011)	68.888	0.278	3	
10	1	E1−1	10	9	1	E1−1	9		438 592.928 (0.011)	68.888	0.308	3	
10	1	E2−1		9	1	E2−1			438 718.527 (0.011)*	68.785	0.932	1	
10	1	E2−1	11	9	1	E2−1	10		438 718.508 (0.011)	68.785	0.340	1	
10	1	E2−1	9	9	1	E2−1	8		438 718.526 (0.011)	68.785	0.278	1	
10	1	E2−1	10	9	1	E2−1	9		438 718.550 (0.011)	68.786	0.308	1	
23	2	E1+1		23	1	E1−1			438 757.658 (0.179)*	406.169	4.329	3	
13	7	E2−1		14	6	E2−1			439 336.076 (0.063)*	252.439	1.574	1	
24	3	B1		24	2	B2			439 457.568 (0.328)*	453.863	14.470	3	
30	5	B2		29	6	B1			439 488.819 (0.105)*	739.885	8.052	3	
30	5	B1		29	6	B2			439 597.090 (0.105)*	739.885	8.052	3	
26	3	E2+1		26	2	E2+1			440 122.063 (0.265)*	528.665	0.068	1	
30	5	E1−1		29	6	E1−1			440 844.259 (0.118)*	739.815	8.050	3	
30	5	E2+1		29	6	E2+1			441 270.613 (0.094)*	740.031	8.016	1	
17	1	E2−1		16	2	E2+1			441 568.581 (0.081)*	211.927	4.313	1	
23	2	E2−1		23	1	E2−1			441 819.934 (0.183)*	406.088	4.273	1	
10	0	E2+1		9	0	E2+1		442 044.358 (0.100)	442 044.515 (0.011)*	66.868	0.943	1	11
10	0	E2+1	11	9	0	E2+1	10		442 044.493 (0.011)	66.868	0.344	1	
10	0	E2+1	9	9	0	E2+1	8		442 044.499 (0.011)	66.868	0.281	1	
10	0	E2+1	10	9	0	E2+1	9		442 044.555 (0.011)	66.868	0.311	1	
10	0	E1+1		9	0	E1+1		442 055.811 (0.100)	442 055.805 (0.011)*	66.765	0.941	3	11
10	0	E1+1	11	9	0	E1+1	10		442 055.782 (0.011)	66.765	0.343	3	
10	0	E1+1	9	9	0	E1+1	8		442 055.789 (0.011)	66.765	0.281	3	
10	0	E1+1	10	9	0	E1+1	9		442 055.844 (0.011)	66.765	0.310	3	
24	3	E2−1		24	2	E2+1			442 080.861 (0.261)*	453.629	14.098	1	
10	0	B1		9	0	B2		442 084.152 (0.100)	442 084.115 (0.011)*	66.672	0.944	3	11
10	0	B1	11	9	0	B2	10		442 084.093 (0.011)	66.672	0.345	3	
10	0	B1	9	9	0	B2	8		442 084.100 (0.011)	66.672	0.282	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	0	B1	10	9	0	B2	9		442 084.153 (0.011)	66.672	0.312	3	
10	0	A1		9	0	A2		442 105.756 (0.100)	442 105.720 (0.011)*	66.468	0.940	1	11
10	0	A1	11	9	0	A2	10		442 105.699 (0.011)	66.468	0.343	1	
10	0	A1	9	9	0	A2	8		442 105.705 (0.011)	66.468	0.280	1	
10	0	A1	10	9	0	A2	9		442 105.758 (0.011)	66.468	0.310	1	
30	5	E1+1		29	6	E1+1			442 863.285 (0.110)*	739.942	8.039	3	
27	3	E1+1		27	2	E1−1			442 950.319 (0.300)*	568.350	0.553	3	
10	9	A1		9	9	A2			442 978.948 (0.054)*	285.376	0.177	1	
10	9	A1	9	9	9	A2	8		442 978.768 (0.054)	285.376	0.053	1	
10	9	A1	11	9	9	A2	10		442 978.826 (0.054)	285.376	0.065	1	
10	9	A1	10	9	9	A2	9		442 979.242 (0.054)	285.375	0.059	1	
10	9	A2		9	9	A1			442 978.948 (0.054)*	285.376	0.177	1	
10	9	A2	9	9	9	A1	8		442 978.768 (0.054)	285.376	0.053	1	
10	9	A2	11	9	9	A1	10		442 978.826 (0.054)	285.376	0.065	1	
10	9	A2	10	9	9	A1	9		442 979.242 (0.054)	285.375	0.059	1	
10	9	E1−1		9	9	E1−1			442 983.878 (0.054)*	285.598	0.178	3	
10	9	E1−1	9	9	9	E1−1	8		442 983.697 (0.054)	285.598	0.053	3	
10	9	E1−1	11	9	9	E1−1	10		442 983.756 (0.054)	285.598	0.065	3	
10	9	E1−1	10	9	9	E1−1	9		442 984.172 (0.054)	285.598	0.059	3	
10	9	E1+1		9	9	E1+1			442 984.037 (0.055)*	285.516	0.178	3	
10	9	E1+1	9	9	9	E1+1	8		442 983.856 (0.055)	285.516	0.053	3	
10	9	E1+1	11	9	9	E1+1	10		442 983.915 (0.055)	285.516	0.065	3	
10	9	E1+1	10	9	9	E1+1	9		442 984.331 (0.055)	285.516	0.059	3	
10	9	B1		9	9	B2			442 986.475 (0.054)*	285.187	0.181	3	
10	9	B1	9	9	9	B2	8		442 986.294 (0.054)	285.187	0.054	3	
10	9	B1	11	9	9	B2	10		442 986.353 (0.054)	285.187	0.066	3	
10	9	B1	10	9	9	B2	9		442 986.769 (0.054)	285.187	0.060	3	
10	9	B2		9	9	B1			442 986.475 (0.054)*	285.187	0.181	3	
10	9	B2	9	9	9	B1	8		442 986.294 (0.054)	285.187	0.054	3	
10	9	B2	11	9	9	B1	10		442 986.353 (0.054)	285.187	0.066	3	
10	9	B2	10	9	9	B1	9		442 986.769 (0.054)	285.187	0.060	3	
10	9	E2+1		9	9	E2+1			442 986.703 (0.054)*	285.415	0.180	1	
10	9	E2+1	9	9	9	E2+1	8		442 986.523 (0.054)	285.415	0.054	1	
10	9	E2+1	11	9	9	E2+1	10		442 986.581 (0.054)	285.415	0.066	1	
10	9	E2+1	10	9	9	E2+1	9		442 986.998 (0.054)	285.415	0.059	1	
10	9	E2−1		9	9	E2−1			442 988.736 (0.054)*	285.509	0.180	1	
10	9	E2−1	9	9	9	E2−1	8		442 988.556 (0.054)	285.509	0.054	1	
10	9	E2−1	11	9	9	E2−1	10		442 988.614 (0.054)	285.509	0.066	1	
10	9	E2−1	10	9	9	E2−1	9		442 989.030 (0.054)	285.509	0.059	1	
10	2	B2		9	2	B1			443 029.780 (0.011)*	77.775	0.905	3	
10	2	B2	11	9	2	B1	10		443 029.768 (0.011)	77.775	0.330	3	
10	2	B2	9	9	2	B1	8		443 029.773 (0.011)	77.775	0.270	3	
10	2	B2	10	9	2	B1	9		443 029.802 (0.011)	77.775	0.299	3	
10	2	A2		9	2	A1			443 032.533 (0.011)*	77.738	0.904	1	
10	2	A2	11	9	2	A1	10		443 032.521 (0.011)	77.738	0.330	1	
10	2	A2	9	9	2	A1	8		443 032.526 (0.011)	77.738	0.270	1	
10	2	A2	10	9	2	A1	9		443 032.555 (0.011)	77.738	0.298	1	
10	8	E2+1		9	8	E2+1			443 039.701 (0.043)*	239.520	0.337	1	
10	8	E2+1	9	9	8	E2+1	8		443 039.560 (0.043)	239.520	0.101	1	
10	8	E2+1	11	9	8	E2+1	10		443 039.605 (0.043)	239.520	0.123	1	
10	8	E2+1	10	9	8	E2+1	9		443 039.934 (0.043)	239.520	0.111	1	
10	8	B1		9	8	B2			443 041.565 (0.042)*	239.666	0.338	3	
10	8	B1	9	9	8	B2	8		443 041.424 (0.042)	239.666	0.101	3	
10	8	B1	11	9	8	B2	10		443 041.468 (0.042)	239.666	0.123	3	
10	8	B1	10	9	8	B2	9		443 041.797 (0.042)	239.666	0.111	3	
10	8	B2		9	8	B1			443 041.565 (0.042)*	239.666	0.338	3	
10	8	B2	9	9	8	B1	8		443 041.424 (0.042)	239.666	0.101	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	8	B2	11	9	8	B1	10		443 041.468 (0.042)	239.666	0.123	3	
10	8	B2	10	9	8	B1	9		443 041.797 (0.042)	239.666	0.111	3	
10	8	E1−1		9	8	E1−1			443 046.497 (0.043)*	239.726	0.339	3	
10	8	E1−1	9	9	8	E1−1	8		443 046.356 (0.043)	239.727	0.101	3	
10	8	E1−1	11	9	8	E1−1	10		443 046.400 (0.043)	239.727	0.124	3	
10	8	E1−1	10	9	8	E1−1	9		443 046.729 (0.043)	239.726	0.112	3	
10	8	E1+1		9	8	E1+1			443 046.590 (0.043)*	239.337	0.342	3	
10	8	E1+1	9	9	8	E1+1	8		443 046.449 (0.043)	239.337	0.102	3	
10	8	E1+1	11	9	8	E1+1	10		443 046.493 (0.043)	239.337	0.125	3	
10	8	E1+1	10	9	8	E1+1	9		443 046.822 (0.043)	239.337	0.113	3	
10	8	E2−1		9	8	E2−1			443 046.753 (0.042)*	239.687	0.340	1	
10	8	E2−1	9	9	8	E2−1	8		443 046.612 (0.042)	239.687	0.101	1	
10	8	E2−1	11	9	8	E2−1	10		443 046.656 (0.042)	239.687	0.124	1	
10	8	E2−1	10	9	8	E2−1	9		443 046.985 (0.042)	239.687	0.112	1	
10	8	A1		9	8	A2			443 048.198 (0.043)*	239.522	0.341	1	
10	8	A1	9	9	8	A2	8		443 048.057 (0.043)	239.522	0.102	1	
10	8	A1	11	9	8	A2	10		443 048.102 (0.043)	239.522	0.124	1	
10	8	A1	10	9	8	A2	9		443 048.431 (0.043)	239.522	0.113	1	
10	8	A2		9	8	A1			443 048.198 (0.043)*	239.522	0.341	1	
10	8	A2	9	9	8	A1	8		443 048.057 (0.043)	239.522	0.102	1	
10	8	A2	11	9	8	A1	10		443 048.102 (0.043)	239.522	0.124	1	
10	8	A2	10	9	8	A1	9		443 048.431 (0.043)	239.522	0.113	1	
10	7	E1+1		9	7	E1+1			443 095.147 (0.034)*	199.099	0.479	3	
10	7	E1+1	9	9	7	E1+1	8		443 095.041 (0.034)	199.099	0.143	3	
10	7	E1+1	11	9	7	E1+1	10		443 095.073 (0.034)	199.099	0.175	3	
10	7	E1+1	10	9	7	E1+1	9		443 095.325 (0.034)	199.099	0.158	3	
10	7	E2−1		9	7	E2−1			443 097.109 (0.034)*	199.113	0.479	1	
10	7	E2−1	9	9	7	E2−1	8		443 097.003 (0.034)	199.113	0.143	1	
10	7	E2−1	11	9	7	E2−1	10		443 097.034 (0.034)	199.113	0.175	1	
10	7	E2−1	10	9	7	E2−1	9		443 097.287 (0.034)	199.113	0.158	1	
10	7	A2		9	7	A1			443 100.935 (0.033)*	199.280	0.480	1	
10	7	A2	9	9	7	A1	8		443 100.829 (0.033)	199.280	0.143	1	
10	7	A2	11	9	7	A1	10		443 100.860 (0.033)	199.280	0.175	1	
10	7	A2	10	9	7	A1	9		443 101.113 (0.033)	199.280	0.159	1	
10	7	A1		9	7	A2			443 100.935 (0.033)*	199.280	0.480	1	
10	7	A1	9	9	7	A2	8		443 100.829 (0.033)	199.280	0.143	1	
10	7	A1	11	9	7	A2	10		443 100.860 (0.033)	199.280	0.175	1	
10	7	A1	10	9	7	A2	9		443 101.113 (0.033)	199.280	0.159	1	
10	7	E1−1		9	7	E1−1			443 102.605 (0.034)*	198.960	0.482	3	
10	7	E1−1	9	9	7	E1−1	8		443 102.499 (0.034)	198.960	0.144	3	
10	7	E1−1	11	9	7	E1−1	10		443 102.530 (0.034)	198.960	0.176	3	
10	7	E1−1	10	9	7	E1−1	9		443 102.783 (0.034)	198.960	0.159	3	
10	7	E2+1		9	7	E2+1			443 102.959 (0.034)*	198.917	0.483	1	
10	7	E2+1	9	9	7	E2+1	8		443 102.852 (0.034)	198.917	0.144	1	
10	7	E2+1	11	9	7	E2+1	10		443 102.884 (0.034)	198.917	0.176	1	
10	7	E2+1	10	9	7	E2+1	9		443 103.136 (0.034)	198.917	0.159	1	
10	7	B2		9	7	B1			443 103.244 (0.034)*	199.251	0.481	3	
10	7	B2	9	9	7	B1	8		443 103.137 (0.034)	199.251	0.143	3	
10	7	B2	11	9	7	B1	10		443 103.169 (0.034)	199.251	0.176	3	
10	7	B2	10	9	7	B1	9		443 103.422 (0.034)	199.251	0.159	3	
10	7	B1		9	7	B2			443 103.244 (0.034)*	199.251	0.481	3	
10	7	B1	9	9	7	B2	8		443 103.137 (0.034)	199.251	0.143	3	
10	7	B1	11	9	7	B2	10		443 103.169 (0.034)	199.251	0.176	3	
10	7	B1	10	9	7	B2	9		443 103.422 (0.034)	199.251	0.159	3	
10	2	E2+1		9	2	E2+1			443 111.062 (0.011)*	77.529	0.897	1	
10	2	E2+1	11	9	2	E2+1	10		443 111.047 (0.011)	77.529	0.328	1	
10	2	E2+1	9	9	2	E2+1	8		443 111.051 (0.011)	77.529	0.268	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	2	E2+1	10	9	2	E2+1	9		443 111.090 (0.011)	77.529	0.296	1	
10	6	E1−1		9	6	E1−1			443 146.905 (0.027)*	163.957	0.601	3	
10	6	E1−1	9	9	6	E1−1	8		443 146.828 (0.027)	163.957	0.179	3	
10	6	E1−1	11	9	6	E1−1	10		443 146.849 (0.027)	163.957	0.220	3	
10	6	E1−1	10	9	6	E1−1	9		443 147.035 (0.027)	163.957	0.198	3	
10	6	E2+1		9	6	E2+1			443 150.822 (0.026)*	164.176	0.602	1	
10	6	E2+1	9	9	6	E2+1	8		443 150.746 (0.026)	164.176	0.180	1	
10	6	E2+1	11	9	6	E2+1	10		443 150.766 (0.026)	164.176	0.220	1	
10	6	E2+1	10	9	6	E2+1	9		443 150.952 (0.026)	164.176	0.199	1	
23	2	A2		23	1	A1			443 151.444 (0.159)*	406.153	4.714	1	
10	6	A2		9	6	A1			443 151.610 (0.027)*	164.120	0.602	1	
10	6	A2	9	9	6	A1	8		443 151.534 (0.027)	164.120	0.180	1	
10	6	A2	11	9	6	A1	10		443 151.554 (0.027)	164.120	0.220	1	
10	6	A2	10	9	6	A1	9		443 151.740 (0.027)	164.120	0.199	1	
10	6	A1		9	6	A2			443 151.610 (0.027)*	164.120	0.602	1	
10	6	A1	9	9	6	A2	8		443 151.534 (0.027)	164.120	0.180	1	
10	6	A1	11	9	6	A2	10		443 151.554 (0.027)	164.120	0.220	1	
10	6	A1	10	9	6	A2	9		443 151.740 (0.027)	164.120	0.199	1	
10	6	B2		9	6	B1			443 155.052 (0.027)*	164.016	0.604	3	
10	6	B2	9	9	6	B1	8		443 154.975 (0.027)	164.016	0.180	3	
10	6	B2	11	9	6	B1	10		443 154.996 (0.027)	164.016	0.221	3	
10	6	B2	10	9	6	B1	9		443 155.182 (0.027)	164.016	0.199	3	
10	6	B1		9	6	B2			443 155.052 (0.027)*	164.016	0.604	3	
10	6	B1	9	9	6	B2	8		443 154.975 (0.027)	164.016	0.180	3	
10	6	B1	11	9	6	B2	10		443 154.996 (0.027)	164.016	0.221	3	
10	6	B1	10	9	6	B2	9		443 155.182 (0.027)	164.016	0.199	3	
10	6	E2−1		9	6	E2−1			443 155.166 (0.027)*	163.759	0.605	1	
10	6	E2−1	9	9	6	E2−1	8		443 155.089 (0.027)	163.759	0.180	1	
10	6	E2−1	11	9	6	E2−1	10		443 155.110 (0.027)	163.759	0.221	1	
10	6	E2−1	10	9	6	E2−1	9		443 155.296 (0.027)	163.759	0.200	1	
10	6	E1+1		9	6	E1+1			443 155.635 (0.027)*	164.081	0.604	3	
10	6	E1+1	9	9	6	E1+1	8		443 155.559 (0.027)	164.081	0.180	3	
10	6	E1+1	11	9	6	E1+1	10		443 155.579 (0.027)	164.081	0.221	3	
10	6	E1+1	10	9	6	E1+1	9		443 155.765 (0.027)	164.081	0.199	3	
10	5	B2		9	5	B1			443 200.035 (0.021)*	134.277	0.706	3	
10	5	B2	9	9	5	B1	8		443 199.984 (0.021)	134.277	0.211	3	
10	5	B2	11	9	5	B1	10		443 199.995 (0.021)	134.277	0.258	3	
10	5	B2	10	9	5	B1	9		443 200.124 (0.021)	134.277	0.233	3	
10	5	B1		9	5	B2			443 200.036 (0.021)*	134.277	0.706	3	
10	5	B1	9	9	5	B2	8		443 199.985 (0.021)	134.277	0.211	3	
10	5	B1	11	9	5	B2	10		443 199.996 (0.021)	134.277	0.258	3	
10	5	B1	10	9	5	B2	9		443 200.125 (0.021)	134.277	0.233	3	
10	5	E2−1		9	5	E2−1			443 200.487 (0.021)*	134.401	0.706	1	
10	5	E2−1	9	9	5	E2−1	8		443 200.436 (0.021)	134.401	0.211	1	
10	5	E2−1	11	9	5	E2−1	10		443 200.448 (0.021)	134.401	0.258	1	
10	5	E2−1	10	9	5	E2−1	9		443 200.577 (0.021)	134.401	0.233	1	
10	5	E2+1		9	5	E2+1			443 205.150 (0.021)*	134.487	0.707	1	
10	5	E2+1	9	9	5	E2+1	8		443 205.099 (0.021)	134.487	0.211	1	
10	5	E2+1	11	9	5	E2+1	10		443 205.111 (0.021)	134.487	0.258	1	
10	5	E2+1	10	9	5	E2+1	9		443 205.240 (0.021)	134.487	0.233	1	
10	5	E1+1		9	5	E1+1			443 205.979 (0.021)*	134.448	0.707	3	
10	5	E1+1	9	9	5	E1+1	8		443 205.928 (0.021)	134.448	0.211	3	
10	5	E1+1	11	9	5	E1+1	10		443 205.940 (0.021)	134.448	0.258	3	
10	5	E1+1	10	9	5	E1+1	9		443 206.069 (0.021)	134.448	0.233	3	
10	5	E1−1		9	5	E1−1			443 207.579 (0.021)*	134.250	0.708	3	
10	5	E1−1	9	9	5	E1−1	8		443 207.528 (0.021)	134.250	0.211	3	
10	5	E1−1	11	9	5	E1−1	10		443 207.540 (0.021)	134.250	0.258	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	5	E1−1	10	9	5	E1−1	9		443 207.669 (0.021)	134.250	0.234	3	
10	5	A2		9	5	A1			443 207.946 (0.021)*	134.088	0.708	1	
10	5	A2	9	9	5	A1	8		443 207.895 (0.021)	134.088	0.211	1	
10	5	A2	11	9	5	A1	10		443 207.906 (0.021)	134.088	0.258	1	
10	5	A2	10	9	5	A1	9		443 208.035 (0.021)	134.088	0.234	1	
10	5	A1		9	5	A2			443 207.947 (0.021)*	134.088	0.708	1	
10	5	A1	9	9	5	A2	8		443 207.896 (0.021)	134.088	0.211	1	
10	5	A1	11	9	5	A2	10		443 207.907 (0.021)	134.088	0.258	1	
10	5	A1	10	9	5	A2	9		443 208.036 (0.021)	134.088	0.234	1	
20	9	E2−1		21	8	E2−1			443 249.650 (0.108)*	514.410	2.918	1	
10	4	A2		9	4	A1			443 259.118 (0.017)*	110.012	0.791	1	
10	4	A2	9	9	4	A1	8		443 259.088 (0.017)	110.012	0.236	1	
10	4	A2	11	9	4	A1	10		443 259.092 (0.017)	110.012	0.289	1	
10	4	A2	10	9	4	A1	9		443 259.173 (0.017)	110.012	0.261	1	
10	4	A1		9	4	A2			443 259.390 (0.017)*	110.012	0.791	1	
10	4	A1	9	9	4	A2	8		443 259.360 (0.017)	110.012	0.236	1	
10	4	A1	11	9	4	A2	10		443 259.364 (0.017)	110.012	0.289	1	
10	4	A1	10	9	4	A2	9		443 259.445 (0.017)	110.012	0.261	1	
10	4	E1+1		9	4	E1+1			443 261.383 (0.017)*	110.055	0.792	3	
10	4	E1+1	9	9	4	E1+1	8		443 261.353 (0.017)	110.055	0.236	3	
10	4	E1+1	11	9	4	E1+1	10		443 261.357 (0.017)	110.055	0.289	3	
10	4	E1+1	10	9	4	E1+1	9		443 261.439 (0.017)	110.055	0.261	3	
10	4	E1−1		9	4	E1−1			443 262.639 (0.016)*	110.206	0.792	3	
10	4	E1−1	9	9	4	E1−1	8		443 262.609 (0.016)	110.206	0.236	3	
10	4	E1−1	11	9	4	E1−1	10		443 262.613 (0.016)	110.206	0.289	3	
10	4	E1−1	10	9	4	E1−1	9		443 262.694 (0.016)	110.206	0.261	3	
10	4	E2−1		9	4	E2−1			443 265.002 (0.016)*	110.174	0.792	1	
10	4	E2−1	9	9	4	E2−1	8		443 264.972 (0.016)	110.174	0.236	1	
10	4	E2−1	11	9	4	E2−1	10		443 264.976 (0.016)	110.174	0.289	1	
10	4	E2−1	10	9	4	E2−1	9		443 265.057 (0.016)	110.174	0.261	1	
10	4	E2+1		9	4	E2+1			443 268.080 (0.017)*	109.898	0.792	1	
10	4	E2+1	9	9	4	E2+1	8		443 268.050 (0.017)	109.898	0.236	1	
10	4	E2+1	11	9	4	E2+1	10		443 268.054 (0.017)	109.898	0.289	1	
10	4	E2+1	10	9	4	E2+1	9		443 268.136 (0.017)	109.898	0.261	1	
10	4	B2		9	4	B1			443 268.228 (0.017)*	109.823	0.792	3	
10	4	B2	9	9	4	B1	8		443 268.199 (0.017)	109.823	0.236	3	
10	4	B2	11	9	4	B1	10		443 268.203 (0.017)	109.823	0.289	3	
10	4	B2	10	9	4	B1	9		443 268.284 (0.017)	109.823	0.261	3	
10	4	B1		9	4	B2			443 268.507 (0.017)*	109.823	0.792	3	
10	4	B1	9	9	4	B2	8		443 268.477 (0.017)	109.823	0.236	3	
10	4	B1	11	9	4	B2	10		443 268.481 (0.017)	109.823	0.289	3	
10	4	B1	10	9	4	B2	9		443 268.562 (0.017)	109.823	0.261	3	
10	3	B2		9	3	B1			443 337.017 (0.013)*	91.277	0.858	3	
10	3	B2	11	9	3	B1	10		443 337.002 (0.013)	91.277	0.313	3	
10	3	B2	9	9	3	B1	8		443 337.004 (0.013)	91.277	0.256	3	
10	3	B2	10	9	3	B1	9		443 337.046 (0.013)	91.277	0.283	3	
10	3	A2		9	3	A1			443 343.617 (0.013)*	91.177	0.857	1	
10	3	A2	11	9	3	A1	10		443 343.602 (0.013)	91.177	0.313	1	
10	3	A2	9	9	3	A1	8		443 343.604 (0.013)	91.177	0.256	1	
10	3	A2	10	9	3	A1	9		443 343.646 (0.013)	91.177	0.283	1	
10	3	E2+1		9	3	E2+1			443 354.120 (0.014)*	91.067	0.858	1	
10	3	E2+1	11	9	3	E2+1	10		443 354.105 (0.014)	91.067	0.313	1	
10	3	E2+1	9	9	3	E2+1	8		443 354.107 (0.014)	91.067	0.256	1	
10	3	E2+1	10	9	3	E2+1	9		443 354.147 (0.014)	91.068	0.283	1	
10	3	E1−1		9	3	E1−1			443 354.203 (0.013)*	91.250	0.858	3	
10	3	E1−1	11	9	3	E1−1	10		443 354.188 (0.013)	91.250	0.313	3	
10	3	E1−1	9	9	3	E1−1	8		443 354.190 (0.013)	91.250	0.256	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	3	E1−1	10	9	3	E1−1	9		443 354.231 (0.013)	91.250	0.283	3	
10	3	E2−1		9	3	E2−1			443 358.653 (0.013)*	91.145	0.857	1	
10	3	E2−1	11	9	3	E2−1	10		443 358.639 (0.013)	91.145	0.313	1	
10	3	E2−1	9	9	3	E2−1	8		443 358.641 (0.013)	91.145	0.256	1	
10	3	E2−1	10	9	3	E2−1	9		443 358.681 (0.013)	91.145	0.283	1	
10	3	B1		9	3	B2			443 365.393 (0.014)*	91.278	0.858	3	
10	3	B1	11	9	3	B2	10		443 365.379 (0.014)	91.278	0.313	3	
10	3	B1	9	9	3	B2	8		443 365.381 (0.014)	91.278	0.256	3	
10	3	B1	10	9	3	B2	9		443 365.420 (0.014)	91.279	0.283	3	
10	3	E1+1		9	3	E1+1			443 365.575 (0.014)*	90.864	0.857	3	
10	3	E1+1	11	9	3	E1+1	10		443 365.560 (0.014)	90.864	0.313	3	
10	3	E1+1	9	9	3	E1+1	8		443 365.562 (0.014)	90.864	0.256	3	
10	3	E1+1	10	9	3	E1+1	9		443 365.602 (0.014)	90.864	0.283	3	
10	3	A1		9	3	A2			443 372.607 (0.014)*	91.179	0.857	1	
10	3	A1	11	9	3	A2	10		443 372.593 (0.014)	91.179	0.313	1	
10	3	A1	9	9	3	A2	8		443 372.596 (0.014)	91.179	0.256	1	
10	3	A1	10	9	3	A2	9		443 372.634 (0.014)	91.179	0.283	1	
10	2	E1−1		9	2	E1−1			443 442.208 (0.011)*	77.409	0.900	3	
10	2	E1−1	11	9	2	E1−1	10		443 442.197 (0.011)	77.409	0.329	3	
10	2	E1−1	9	9	2	E1−1	8		443 442.201 (0.011)	77.409	0.268	3	
10	2	E1−1	10	9	2	E1−1	9		443 442.228 (0.011)	77.409	0.297	3	
24	3	E1−1		24	2	E1−1			443 569.422 (0.249)*	453.609	12.521	3	
10	2	E1+1		9	2	E1+1			443 795.241 (0.012)*	77.710	0.902	3	
10	2	E1+1	10	9	2	E1+1	9		443 795.225 (0.012)	77.710	0.298	3	
10	2	E1+1	11	9	2	E1+1	10		443 795.245 (0.012)	77.710	0.329	3	
10	2	E1+1	9	9	2	E1+1	8		443 795.255 (0.012)	77.710	0.269	3	
23	3	E1+1		22	4	E1−1			444 023.996 (0.051)*	417.630	0.561	3	
20	9	A1		21	8	A2			444 051.640 (0.105)*	514.245	2.919	1	
20	9	A2		21	8	A1			444 051.640 (0.105)*	514.245	2.919	1	
13	0	A2		12	1	A1			444 061.292 (0.040)*	119.424	6.990	1	
10	2	E2−1		9	2	E2−1			444 130.973 (0.013)*	77.627	0.898	1	
10	2	E2−1	10	9	2	E2−1	9		444 130.948 (0.013)	77.627	0.296	1	
10	2	E2−1	11	9	2	E2−1	10		444 130.981 (0.013)	77.627	0.328	1	
10	2	E2−1	9	9	2	E2−1	8		444 130.990 (0.013)	77.627	0.268	1	
10	2	A1		9	2	A2			444 157.672 (0.012)*	77.814	0.904	1	
10	2	A1	10	9	2	A2	9		444 157.656 (0.012)	77.814	0.298	1	
10	2	A1	11	9	2	A2	10		444 157.677 (0.012)	77.814	0.330	1	
10	2	A1	9	9	2	A2	8		444 157.685 (0.012)	77.814	0.270	1	
10	2	B1		9	2	B2			444 168.537 (0.012)*	77.852	0.905	3	
10	2	B1	10	9	2	B2	9		444 168.520 (0.012)	77.852	0.299	3	
10	2	B1	11	9	2	B2	10		444 168.542 (0.012)	77.852	0.330	3	
10	2	B1	9	9	2	B2	8		444 168.550 (0.012)	77.852	0.270	3	
25	3	A2		25	2	A1			444 449.755 (0.401)*	490.622	14.337	1	
20	9	E1−1		21	8	E1−1			444 674.487 (0.093)*	514.449	2.916	3	
27	3	E2+1		27	2	E2+1			444 968.835 (0.311)*	568.366	0.042	1	
9	6	E1+1		10	5	E1+1			445 147.883 (0.048)*	149.232	0.787	3	
9	6	E1+1	9	10	5	E1+1	10		445 147.575 (0.048)	149.232	0.260	3	
9	6	E1+1	10	10	5	E1+1	11		445 148.016 (0.048)	149.232	0.287	3	
9	6	E1+1	8	10	5	E1+1	9		445 148.062 (0.048)	149.232	0.235	3	
17	1	E1−1		16	2	E1−1			445 422.995 (0.073)*	211.884	4.233	3	
20	9	E2+1		21	8	E2+1			445 581.369 (0.107)*	514.238	2.920	1	
25	3	B2		25	2	B1			446 035.585 (0.403)*	490.652	14.503	3	
9	6	E2+1		10	5	E2+1			446 840.804 (0.043)*	149.271	0.786	1	
9	6	E2+1	9	10	5	E2+1	10		446 840.497 (0.043)	149.271	0.259	1	
9	6	E2+1	10	10	5	E2+1	11		446 840.937 (0.043)	149.271	0.287	1	
9	6	E2+1	8	10	5	E2+1	9		446 840.984 (0.043)	149.271	0.234	1	
10	1	E2+1		9	1	E2+1			447 157.007 (0.011)*	70.161	0.932	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
10	1	E2+1	9	9	1	E2+1	8		447 157.003 (0.011)	70.161	0.278	1	
10	1	E2+1	11	9	1	E2+1	10		447 157.005 (0.011)	70.161	0.340	1	
10	1	E2+1	10	9	1	E2+1	9		447 157.011 (0.011)	70.161	0.307	1	
10	1	E1+1		9	1	E1+1			447 273.229 (0.011)*	70.215	0.934	3	
10	1	E1+1	9	9	1	E1+1	8		447 273.220 (0.011)	70.215	0.279	3	
10	1	E1+1	11	9	1	E1+1	10		447 273.224 (0.011)	70.215	0.341	3	
10	1	E1+1	10	9	1	E1+1	9		447 273.242 (0.011)	70.215	0.308	3	
10	1	A1		9	1	A2			447 311.879 (0.011)*	70.199	0.935	1	
10	1	A1	9	9	1	A2	8		447 311.869 (0.011)	70.199	0.279	1	
10	1	A1	11	9	1	A2	10		447 311.873 (0.011)	70.199	0.341	1	
10	1	A1	10	9	1	A2	9		447 311.894 (0.011)	70.199	0.309	1	
10	1	B1		9	1	B2			447 329.029 (0.011)*	70.042	0.931	3	
10	1	B1	9	9	1	B2	8		447 329.020 (0.011)	70.042	0.278	3	
10	1	B1	11	9	1	B2	10		447 329.024 (0.011)	70.042	0.340	3	
10	1	B1	10	9	1	B2	9		447 329.044 (0.011)	70.042	0.307	3	
9	6	E1−1		10	5	E1−1			447 387.499 (0.047)*	149.034	0.787	3	
9	6	E1−1	9	10	5	E1−1	10		447 387.192 (0.047)	149.034	0.260	3	
9	6	E1−1	10	10	5	E1−1	11		447 387.632 (0.047)	149.034	0.287	3	
9	6	E1−1	8	10	5	E1−1	9		447 387.678 (0.047)	149.034	0.235	3	
8	1	E2+1		7	0	E2+1		448 351.229 (0.100)	448 351.055 (0.011)*	41.781	6.492	1	11
8	1	E2+1	8	7	0	E2+1	7		448 350.242 (0.011)	41.781	2.130	1	
8	1	E2+1	9	7	0	E2+1	8		448 351.390 (0.011)	41.781	2.419	1	
8	1	E2+1	7	7	0	E2+1	6		448 351.553 (0.011)	41.781	1.876	1	
9	6	B2		10	5	B1			448 363.464 (0.043)*	149.061	0.787	3	
9	6	B2	9	10	5	B1	10		448 363.157 (0.043)	149.061	0.260	3	
9	6	B2	10	10	5	B1	11		448 363.597 (0.043)	149.061	0.287	3	
9	6	B2	8	10	5	B1	9		448 363.643 (0.043)	149.061	0.235	3	
9	6	B1		10	5	B2			448 363.466 (0.043)*	149.061	0.787	3	
9	6	B1	9	10	5	B2	10		448 363.159 (0.043)	149.061	0.260	3	
9	6	B1	10	10	5	B2	11		448 363.599 (0.043)	149.061	0.287	3	
9	6	B1	8	10	5	B2	9		448 363.645 (0.043)	149.061	0.235	3	
28	3	E1+1		28	2	E1−1			448 425.565 (0.350)*	609.505	0.355	3	
23	3	E1+1		22	4	E1+1			448 426.842 (0.044)*	417.483	6.189	3	
25	3	E2−1		25	2	E2+1			448 727.282 (0.309)*	490.419	14.176	1	
23	3	E2+1		22	4	E2−1			448 863.872 (0.048)*	417.600	2.384	1	
23	2	B2		23	1	B1			449 370.094 (0.163)*	405.999	4.573	3	
25	3	E1−1		25	2	E1−1			449 841.882 (0.298)*	490.400	12.995	3	
27	11	E2−1		28	10	E2−1			450 200.977 (0.184)*	869.381	4.287	1	
28	3	E2+1		28	2	E2+1			450 233.233 (0.365)*	609.520	0.026	1	
8	1	B1		7	0	B2		450 479.471 (0.100)	450 479.425 (0.019)*	41.584	6.722	3	11
8	1	B1	8	7	0	B2	7		450 478.568 (0.019)	41.584	2.206	3	
8	1	B1	9	7	0	B2	8		450 479.780 (0.019)	41.584	2.504	3	
8	1	B1	7	7	0	B2	6		450 479.951 (0.019)	41.584	1.942	3	
30	5	E2−1		29	6	E2−1			450 506.951 (0.120)*	739.631	8.061	1	
5	2	E1−1		4	1	E1+1			451 034.860 (0.014)*	17.985	0.853	3	
5	2	E1−1	4	4	1	E1+1	3		451 034.535 (0.014)	17.985	0.221	3	
5	2	E1−1	6	4	1	E1+1	5		451 034.679 (0.014)	17.985	0.336	3	
5	2	E1−1	5	4	1	E1+1	4		451 035.336 (0.014)	17.985	0.273	3	
18	1	E2−1		17	2	E2−1			451 098.158 (0.049)*	237.889	0.036	1	
27	11	E1+1		28	10	E1+1			451 127.866 (0.242)*	869.553	4.282	3	
15	1	B2		14	2	B1			451 236.776 (0.048)*	166.818	6.620	3	
26	3	A1		26	2	A2			451 974.087 (0.489)*	528.868	14.270	1	
13	0	E1+1		12	1	E1+1			452 277.552 (0.024)*	119.437	6.871	3	
8	1	E1+1		7	0	E1+1			452 911.886 (0.013)*	41.678	6.669	3	
8	1	E1+1	8	7	0	E1+1	7		452 911.035 (0.013)	41.678	2.188	3	
8	1	E1+1	9	7	0	E1+1	8		452 912.237 (0.013)	41.678	2.484	3	
8	1	E1+1	7	7	0	E1+1	6		452 912.407 (0.013)	41.678	1.927	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
16	8	E1+1		17	7	E1+1			453 015.784 (0.082)*	358.675	2.083	3	
16	8	A1		17	7	A2			453 080.216 (0.087)*	358.858	2.081	1	
16	8	A2		17	7	A1			453 080.216 (0.087)*	358.858	2.081	1	
26	3	B1		26	2	B2			453 511.485 (0.493)*	528.898	14.454	3	
18	1	E1−1		17	2	E1+1			453 706.976 (0.046)*	237.887	0.073	3	
20	9	E1+1		21	8	E1+1			453 873.050 (0.116)*	514.060	2.921	3	
29	3	E1+1		29	2	E1−1			454 286.746 (0.410)*	652.112	0.223	3	
13	0	B2		12	1	B1			454 699.498 (0.041)*	119.270	6.958	3	
5	5	E1−1		6	4	E1−1			454 964.797 (0.035)*	74.718	0.131	3	
5	5	E1−1	5	6	4	E1−1	6		454 963.984 (0.035)	74.718	0.042	3	
5	5	E1−1	6	6	4	E1−1	7		454 965.108 (0.035)	74.718	0.050	3	
5	5	E1−1	4	6	4	E1−1	5		454 965.342 (0.035)	74.718	0.036	3	
5	2	E2+1		4	1	E2+1			455 128.341 (0.014)*	17.984	2.926	1	
5	2	E2+1	4	4	1	E2+1	3		455 128.162 (0.014)	17.984	0.759	1	
5	2	E2+1	6	4	1	E2+1	5		455 128.234 (0.014)	17.984	1.153	1	
5	2	E2+1	5	4	1	E2+1	4		455 128.614 (0.014)	17.984	0.936	1	
9	1	E2−1		8	0	E2+1		455 557.635 (0.100)	455 557.627 (0.014)*	53.590	0.154	1	11
9	1	E2−1	8	8	0	E2+1	7		455 557.282 (0.014)	53.590	0.045	1	
9	1	E2−1	10	8	0	E2+1	9		455 557.364 (0.014)	53.590	0.057	1	
9	1	E2−1	9	8	0	E2+1	8		455 558.229 (0.014)	53.590	0.051	1	
27	11	E2+1		28	10	E2+1			455 632.960 (0.178)*	869.530	4.279	1	
5	5	A2		6	4	A1			455 914.046 (0.030)*	74.524	0.131	1	
5	5	A2	5	6	4	A1	6		455 913.233 (0.030)	74.524	0.043	1	
5	5	A2	6	6	4	A1	7		455 914.357 (0.030)	74.524	0.050	1	
5	5	A2	4	6	4	A1	5		455 914.591 (0.030)	74.524	0.036	1	
5	5	A1		6	4	A2			455 914.053 (0.030)*	74.524	0.131	1	
5	5	A1	5	6	4	A2	6		455 913.241 (0.030)	74.524	0.043	1	
5	5	A1	6	6	4	A2	7		455 914.365 (0.030)	74.524	0.050	1	
5	5	A1	4	6	4	A2	5		455 914.598 (0.030)	74.524	0.036	1	
23	3	A1		22	4	A2			455 983.135 (0.048)*	417.434	6.724	1	
26	3	E2−1		26	2	E2+1			456 289.413 (0.366)*	528.665	14.146	1	
23	3	E2+1		22	4	E2+1			456 882.028 (0.043)*	417.333	4.355	1	
5	2	E2−1		4	1	E2+1			456 883.258 (0.014)*	17.984	0.530	1	
5	2	E2−1	4	4	1	E2+1	3		456 883.085 (0.014)	17.984	0.137	1	
5	2	E2−1	6	4	1	E2+1	5		456 883.155 (0.014)	17.984	0.209	1	
5	2	E2−1	5	4	1	E2+1	4		456 883.523 (0.014)	17.984	0.170	1	
15	1	A2		14	2	A1			457 018.130 (0.046)*	166.777	6.565	1	
26	3	E1−1		26	2	E1−1			457 081.720 (0.356)*	528.648	13.295	3	
9	6	A2		10	5	A1			457 126.140 (0.044)*	148.872	0.787	1	
9	6	A2	9	10	5	A1	10		457 125.833 (0.044)	148.872	0.260	1	
9	6	A2	10	10	5	A1	11		457 126.273 (0.044)	148.872	0.287	1	
9	6	A2	8	10	5	A1	9		457 126.319 (0.044)	148.872	0.235	1	
9	6	A1		10	5	A2			457 126.142 (0.044)*	148.872	0.787	1	
9	6	A1	9	10	5	A2	10		457 125.835 (0.044)	148.872	0.260	1	
9	6	A1	10	10	5	A2	11		457 126.275 (0.044)	148.872	0.287	1	
9	6	A1	8	10	5	A2	9		457 126.321 (0.044)	148.872	0.235	1	
13	0	E2+1		12	1	E2+1			457 184.340 (0.023)*	119.374	6.811	1	
23	3	E2−1		22	4	E2−1			457 188.548 (0.066)*	417.600	4.360	1	
23	3	E1−1		22	4	E1−1			457 549.096 (0.064)*	417.630	6.161	3	
16	8	B1		17	7	B2			458 168.144 (0.078)*	358.830	2.080	3	
16	8	B2		17	7	B1			458 168.144 (0.078)*	358.830	2.080	3	
19	2	E1+1		18	3	E1−1			458 587.556 (0.056)*	277.584	3.008	3	
5	2	E1+1		4	1	E1+1			459 789.147 (0.013)*	17.985	2.626	3	
5	2	E1+1	4	4	1	E1+1	3		459 788.823 (0.013)	17.985	0.681	3	
5	2	E1+1	6	4	1	E1+1	5		459 788.967 (0.013)	17.985	1.035	3	
5	2	E1+1	5	4	1	E1+1	4		459 789.623 (0.013)	17.985	0.840	3	
27	11	E1−1		28	10	E1−1			460 028.283 (0.192)*	869.219	4.287	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
20	2	E1−1		19	3	E1−1			460 382.338 (0.070)*	305.682	2.866	3	
27	3	A2		27	2	A1			460 475.506 (0.595)*	568.569	14.121	1	
5	5	E2−1		6	4	E2−1			460 481.467 (0.033)*	74.686	0.131	1	
5	5	E2−1	5	6	4	E2−1	6		460 480.654 (0.033)	74.686	0.042	1	
5	5	E2−1	6	6	4	E2−1	7		460 481.778 (0.033)	74.686	0.050	1	
5	5	E2−1	4	6	4	E2−1	5		460 482.012 (0.033)	74.686	0.036	1	
27	11	B1		28	10	B2			460 489.086 (0.208)*	869.371	4.284	3	
27	11	B2		28	10	B1			460 489.086 (0.208)*	869.371	4.284	3	
30	3	E1+1		30	2	E1−1			460 548.339 (0.480)*	696.168	0.137	3	
15	1	E2+1		14	2	E2−1			460 683.162 (0.031)*	166.598	6.626	1	
24	2	E1+1		24	1	E1−1			460 927.592 (0.221)*	441.140	4.004	3	
5	2	E1−1		4	1	E1−1			461 151.273 (0.013)*	17.647	2.547	3	
5	2	E1−1	5	4	1	E1−1	4		461 150.434 (0.013)	17.648	0.815	3	
5	2	E1−1	6	4	1	E1−1	5		461 151.571 (0.013)	17.647	1.003	3	
5	2	E1−1	4	4	1	E1−1	3		461 151.888 (0.013)	17.647	0.660	3	
8	1	A1		7	0	A2		461 340.579 (0.100)	461 340.350 (0.019)*	41.378	6.730	1	11
8	1	A1	8	7	0	A2	7		461 339.494 (0.019)	41.378	2.208	1	
8	1	A1	9	7	0	A2	8		461 340.704 (0.019)	41.378	2.507	1	
8	1	A1	7	7	0	A2	6		461 340.874 (0.019)	41.378	1.944	1	
19	2	E2−1		18	3	E2−1			461 706.695 (0.054)*	277.491	5.146	1	
9	1	E1−1		8	0	E1+1			461 728.273 (0.012)*	53.487	0.029	3	
9	1	E1−1	8	8	0	E1+1	7		461 727.912 (0.012)	53.487	0.009	3	
9	1	E1−1	10	8	0	E1+1	9		461 727.998 (0.012)	53.487	0.011	3	
9	1	E1−1	9	8	0	E1+1	8		461 728.901 (0.012)	53.487	0.010	3	
23	3	E1−1		22	4	E1+1			461 951.941 (0.053)*	417.483	0.576	3	
27	3	B2		27	2	B1			461 959.372 (0.601)*	568.598	14.322	3	
15	1	E1+1		14	2	E1+1			462 066.422 (0.024)*	166.618	6.171	3	
16	8	E2−1		17	7	E2−1			463 054.452 (0.082)*	358.690	2.081	1	
19	2	B2		18	3	B1			463 073.517 (0.057)*	277.638	6.109	3	
5	2	A2		4	1	A1			463 103.671 (0.013)*	17.950	3.483	1	
5	2	A2	4	4	1	A1	3		463 103.293 (0.013)	17.950	0.903	1	
5	2	A2	6	4	1	A1	5		463 103.464 (0.013)	17.950	1.372	1	
5	2	A2	5	4	1	A1	4		463 104.221 (0.013)	17.950	1.115	1	
23	10	E1−1		24	9	E1−1			463 120.257 (0.158)*	662.086	3.434	3	
27	4	E2+1		26	5	E2+1			463 201.197 (0.090)*	586.525	7.548	1	
23	3	A2		22	4	A1			463 743.758 (0.064)*	417.442	6.765	1	
16	8	E2+1		17	7	E2+1			463 780.644 (0.094)*	358.496	2.082	1	
20	2	E2+1		19	3	E2−1			463 785.129 (0.079)*	305.596	0.662	1	
24	2	E2−1		24	1	E2−1			464 018.318 (0.226)*	441.060	3.944	1	
23	3	B1		22	4	B2			464 182.791 (0.055)*	417.254	6.746	3	
19	2	A2		18	3	A1			464 505.857 (0.064)*	277.543	6.154	1	
19	2	E2−1		18	3	E2+1			464 736.578 (0.062)*	277.390	0.998	1	
27	3	E2−1		27	2	E2+1			464 839.868 (0.431)*	568.366	14.018	1	
24	2	A1		24	1	A2			465 090.306 (0.202)*	441.125	4.378	1	
23	3	E2−1		22	4	E2+1			465 206.704 (0.056)*	417.333	2.411	1	
27	3	E1−1		27	2	E1−1			465 365.822 (0.422)*	568.350	13.414	3	
12	7	E2+1		13	6	E2+1			465 371.400 (0.064)*	232.166	1.271	1	
5	5	E1+1		6	4	E1+1			465 437.140 (0.033)*	74.567	0.131	3	
5	5	E1+1	5	6	4	E1+1	6		465 436.327 (0.033)	74.567	0.042	3	
5	5	E1+1	6	6	4	E1+1	7		465 437.451 (0.033)	74.567	0.050	3	
5	5	E1+1	4	6	4	E1+1	5		465 437.685 (0.033)	74.567	0.036	3	
27	11	A1		28	10	A2			465 836.513 (0.226)*	869.232	4.287	1	
27	11	A2		28	10	A1			465 836.513 (0.226)*	869.232	4.287	1	
27	4	E2+1		26	5	E2−1			465 904.270 (0.113)*	586.435	0.051	1	
27	4	B1		26	5	B2			466 638.083 (0.094)*	586.317	7.612	3	
5	5	B2		6	4	B1			467 285.339 (0.032)*	74.335	0.131	3	
5	5	B2	5	6	4	B1	6		467 284.526 (0.032)	74.335	0.042	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
5	5	B2	6	6	4	B1	7		467 285.650 (0.032)	74.335	0.050	3	
5	5	B2	4	6	4	B1	5		467 285.883 (0.032)	74.335	0.036	3	
5	5	B1		6	4	B2			467 285.346 (0.032)*	74.335	0.131	3	
5	5	B1	5	6	4	B2	6		467 284.533 (0.032)	74.335	0.042	3	
5	5	B1	6	6	4	B2	7		467 285.657 (0.032)	74.335	0.050	3	
5	5	B1	4	6	4	B2	5		467 285.891 (0.032)	74.335	0.036	3	
20	2	E2+1		19	3	E2+1			467 312.569 (0.064)*	305.478	5.459	1	
18	1	B2		17	2	B1			467 692.704 (0.114)*	237.249	4.561	3	
27	4	B2		26	5	B1			467 833.192 (0.089)*	586.318	7.616	3	
27	4	E1+1		26	5	E1+1			468 636.239 (0.088)*	586.489	7.435	3	
16	8	E1−1		17	7	E1−1			468 760.553 (0.088)*	358.539	2.082	3	
5	2	B2		4	1	B1			468 977.006 (0.014)*	17.792	3.486	3	
5	2	B2	4	4	1	B1	3		468 976.628 (0.014)	17.792	0.904	3	
5	2	B2	6	4	1	B1	5		468 976.799 (0.014)	17.792	1.373	3	
5	2	B2	5	4	1	B1	4		468 977.555 (0.014)	17.792	1.116	3	
20	2	B2		19	3	B1			469 003.284 (0.098)*	305.658	6.081	3	
5	2	E2+1		4	1	E2−1			469 902.972 (0.012)*	17.491	0.462	1	
5	2	E2+1	5	4	1	E2−1	4		469 902.344 (0.012)	17.491	0.148	1	
5	2	E2+1	6	4	1	E2−1	5		469 903.193 (0.012)	17.491	0.182	1	
5	2	E2+1	4	4	1	E2−1	3		469 903.437 (0.012)	17.491	0.120	1	
5	2	E1+1		4	1	E1−1			469 905.560 (0.012)*	17.647	0.776	3	
5	2	E1+1	5	4	1	E1−1	4		469 904.720 (0.012)	17.648	0.248	3	
5	2	E1+1	6	4	1	E1−1	5		469 905.858 (0.012)	17.647	0.306	3	
5	2	E1+1	4	4	1	E1−1	3		469 906.176 (0.012)	17.647	0.201	3	
28	3	A1		28	2	A2			470 026.802 (0.720)*	609.723	13.891	1	
19	2	E1+1		18	3	E1+1			470 028.929 (0.056)*	277.202	3.159	3	
23	10	A1		24	9	A2			470 203.859 (0.144)*	661.861	3.437	1	
23	10	A2		24	9	A1			470 203.859 (0.144)*	661.861	3.437	1	
23	10	E2−1		24	9	E2−1			470 648.650 (0.135)*	662.001	3.432	1	
20	2	A2		19	3	A1			470 850.780 (0.097)*	305.563	6.108	1	
27	4	E2−1		26	5	E2+1			470 963.287 (0.065)*	586.525	0.051	1	
24	2	B1		24	1	B2			471 323.085 (0.206)*	440.971	4.238	3	
5	5	E2+1		6	4	E2+1			471 323.892 (0.033)*	74.410	0.131	1	
5	5	E2+1	5	6	4	E2+1	6		471 323.079 (0.033)	74.410	0.042	1	
5	5	E2+1	6	6	4	E2+1	7		471 324.203 (0.033)	74.410	0.050	1	
5	5	E2+1	4	6	4	E2+1	5		471 324.437 (0.033)	74.410	0.036	1	
28	3	B1		28	2	B2			471 452.227 (0.729)*	609.751	14.110	3	
5	2	E2−1		4	1	E2−1			471 657.890 (0.013)*	17.491	2.885	1	
5	2	E2−1	5	4	1	E2−1	4		471 657.253 (0.013)	17.491	0.923	1	
5	2	E2−1	6	4	1	E2−1	5		471 658.114 (0.013)	17.491	1.137	1	
5	2	E2−1	4	4	1	E2−1	3		471 658.361 (0.013)	17.491	0.748	1	
5	2	A1		4	1	A2			471 658.208 (0.013)*	17.657	3.310	1	
5	2	A1	5	4	1	A2	4		471 657.298 (0.013)	17.657	1.059	1	
5	2	A1	6	4	1	A2	5		471 658.532 (0.013)	17.657	1.304	1	
5	2	A1	4	4	1	A2	3		471 658.876 (0.013)	17.657	0.858	1	
23	3	B2		22	4	B1			471 782.145 (0.062)*	417.262	6.791	3	
20	2	E1−1		19	3	E1+1			471 906.884 (0.063)*	305.298	3.268	3	
27	4	E1−1		26	5	E1+1			472 962.046 (0.067)*	586.489	0.149	3	
12	7	E1−1		13	6	E1−1			473 221.535 (0.064)*	231.946	1.271	3	
18	1	A2		17	2	A1			473 473.380 (0.110)*	237.213	4.547	1	
15	1	E2+1		14	2	E2+1			473 598.506 (0.022)*	166.167	0.077	1	
12	7	E1+1		13	6	E1+1			473 625.730 (0.062)*	232.071	1.270	3	
27	4	E2−1		26	5	E2−1			473 666.361 (0.063)*	586.435	7.524	1	
28	3	E2−1		28	2	E2+1			474 450.282 (0.506)*	609.520	13.801	1	
27	4	E1+1		26	5	E1−1			474 495.855 (0.111)*	586.293	0.148	3	
28	3	E1−1		28	2	E1−1			474 763.404 (0.497)*	609.505	13.370	3	
23	10	E1+1		24	9	E1+1			475 576.747 (0.153)*	662.006	3.432	3	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
27	4	A1		26	5	A2			477 202.807 (0.090)*	586.139	7.620	1	
15	1	E1+1		14	2	E1−1			477 351.374 (0.021)*	166.109	0.510	3	
18	1	E2−1		17	2	E2+1			477 432.264 (0.102)*	237.011	4.515	1	
5	2	B1		4	1	B2			477 543.752 (0.014)*	17.498	3.310	3	
5	2	B1	5	4	1	B2	4		477 542.841 (0.014)	17.498	1.059	3	
5	2	B1	6	4	1	B2	5		477 544.075 (0.014)	17.498	1.304	3	
5	2	B1	4	4	1	B2	3		477 544.419 (0.014)	17.498	0.858	3	
23	10	E2+1		24	9	E2+1			477 794.635 (0.172)*	661.908	3.435	1	
12	7	A2		13	6	A1			477 913.356 (0.065)*	232.110	1.270	1	
12	7	A1		13	6	A2			477 913.356 (0.065)*	232.110	1.270	1	
27	4	A2		26	5	A1			478 372.601 (0.084)*	586.140	7.624	1	
19	9	B2		20	8	B1			478 606.282 (0.118)*	483.384	2.594	3	
19	9	B1		20	8	B2			478 606.282 (0.118)*	483.384	2.594	3	
27	4	E1−1		26	5	E1−1			478 821.663 (0.076)*	586.293	7.450	3	
12	0	E2+1		11	1	E2−1			479 116.914 (0.020)*	99.512	0.067	1	
23	10	B1		24	9	B2			479 927.135 (0.159)*	661.679	3.438	3	
23	10	B2		24	9	B1			479 927.135 (0.159)*	661.679	3.438	3	
12	7	B2		13	6	B1			480 139.558 (0.072)*	232.007	1.270	3	
12	7	B1		13	6	B2			480 139.558 (0.072)*	232.007	1.270	3	
14	0	A1		13	1	A2			480 342.722 (0.047)*	138.806	7.226	1	
19	1	E2−1		18	2	E2−1			480 429.582 (0.062)*	264.643	0.029	1	
29	3	A2		29	2	A1			480 697.988 (0.868)*	652.329	13.585	1	
18	1	E1−1		17	2	E1−1			481 094.697 (0.094)*	236.974	4.466	3	
8	6	E2−1		9	5	E2−1			481 280.000 (0.049)*	134.401	0.525	1	
8	6	E2−1	8	9	5	E2−1	9		481 279.603 (0.049)	134.401	0.173	1	
8	6	E2−1	9	9	5	E2−1	10		481 280.168 (0.049)	134.401	0.193	1	
8	6	E2−1	7	9	5	E2−1	8		481 280.238 (0.049)	134.401	0.154	1	
29	3	B2		29	2	B1			482 060.468 (0.879)*	652.355	13.820	3	
11	1	A1		10	1	A2			482 315.123 (0.013)*	83.509	1.029	1	
11	1	B1		10	1	B2			482 317.293 (0.013)*	83.350	1.027	3	
11	1	E1−1		10	1	E1−1			482 344.931 (0.013)*	83.518	1.028	3	
11	1	E2−1		10	1	E2−1			482 441.593 (0.013)*	83.420	1.027	1	
19	1	E1−1		18	2	E1+1			483 157.404 (0.059)*	264.636	0.047	3	
12	7	E2−1		13	6	E2−1			483 679.238 (0.071)*	231.750	1.271	1	
25	2	E1+1		25	1	E1−1			484 417.335 (0.271)*	477.556	3.693	3	
29	3	E2−1		29	2	E2+1			485 189.738 (0.593)*	652.126	13.502	1	
29	3	E1−1		29	2	E1−1			485 337.434 (0.584)*	652.112	13.185	3	
11	0	E2+1		10	0	E2+1			485 948.640 (0.013)*	81.613	1.037	1	
11	0	E1+1		10	0	E1+1			485 962.488 (0.013)*	81.511	1.035	3	
11	0	B2		10	0	B1			486 001.373 (0.013)*	81.418	1.038	3	
11	0	A2		10	0	A1			486 027.836 (0.013)*	81.215	1.034	1	
11	10	E2−1		10	10	E2−1			487 171.092 (0.077)*	351.451	0.178	1	
11	10	B1		10	10	B2			487 172.875 (0.078)*	351.436	0.178	3	
11	10	B2		10	10	B1			487 172.875 (0.078)*	351.436	0.178	3	
11	10	E1+1		10	10	E1+1			487 177.555 (0.076)*	351.616	0.180	3	
11	10	A1		10	10	A2			487 178.119 (0.076)*	351.290	0.182	1	
11	10	A2		10	10	A1			487 178.119 (0.076)*	351.290	0.182	1	
11	10	E1−1		10	10	E1−1			487 179.222 (0.077)*	351.279	0.182	3	
11	10	E2+1		10	10	E2+1			487 180.440 (0.078)*	351.590	0.180	1	
11	9	A2		10	9	A1			487 242.808 (0.061)*	300.152	0.340	1	
11	9	A1		10	9	A2			487 242.808 (0.061)*	300.152	0.340	1	
11	9	E1−1		10	9	E1−1			487 248.080 (0.060)*	300.374	0.341	3	
11	9	E1+1		10	9	E1+1			487 248.430 (0.061)*	300.292	0.341	3	
11	2	B1		10	2	B2			487 248.899 (0.013)*	92.553	1.003	3	
11	9	B2		10	9	B1			487 251.137 (0.060)*	299.963	0.346	3	
11	9	B1		10	9	B2			487 251.137 (0.060)*	299.963	0.346	3	
11	9	E2+1		10	9	E2+1			487 251.443 (0.060)*	300.192	0.345	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
11	2	A1		10	2	A2			487 252.338 (0.013)*	92.516	1.002	1	
11	9	E2−1		10	9	E2−1			487 253.393 (0.061)*	300.285	0.344	1	
11	2	E2+1		10	2	E2+1			487 305.017 (0.013)*	92.309	0.998	1	
11	8	E2+1		10	8	E2+1			487 310.692 (0.049)*	254.298	0.485	1	
11	8	B2		10	8	B1			487 312.490 (0.048)*	254.444	0.486	3	
11	8	B1		10	8	B2			487 312.490 (0.048)*	254.444	0.486	3	
11	8	E1−1		10	8	E1−1			487 317.985 (0.048)*	254.505	0.488	3	
11	8	E2−1		10	8	E2−1			487 318.343 (0.048)*	254.465	0.489	1	
11	8	E1+1		10	8	E1+1			487 318.354 (0.048)*	254.115	0.492	3	
11	8	A2		10	8	A1			487 319.796 (0.048)*	254.301	0.491	1	
11	8	A1		10	8	A2			487 319.796 (0.048)*	254.301	0.491	1	
11	7	E1+1		10	7	E1+1			487 372.919 (0.039)*	213.879	0.614	3	
11	7	E2−1		10	7	E2−1			487 375.246 (0.039)*	213.893	0.615	1	
11	7	A1		10	7	A2			487 379.173 (0.038)*	214.060	0.616	1	
11	7	A2		10	7	A1			487 379.173 (0.038)*	214.060	0.616	1	
11	7	E1−1		10	7	E1−1			487 381.405 (0.039)*	213.740	0.619	3	
11	7	E2+1		10	7	E2+1			487 381.578 (0.039)*	213.697	0.620	1	
11	7	B1		10	7	B2			487 381.663 (0.038)*	214.031	0.617	3	
11	7	B2		10	7	B1			487 381.663 (0.038)*	214.031	0.617	3	
11	6	E1−1		10	6	E1−1			487 432.177 (0.031)*	178.739	0.726	3	
11	6	E2+1		10	6	E2+1			487 436.080 (0.030)*	178.958	0.727	1	
11	6	A1		10	6	A2			487 437.220 (0.031)*	178.902	0.727	1	
11	6	A2		10	6	A1			487 437.220 (0.031)*	178.902	0.727	1	
11	6	B1		10	6	B2			487 441.126 (0.031)*	178.799	0.729	3	
11	6	B2		10	6	B1			487 441.126 (0.031)*	178.799	0.729	3	
11	6	E1+1		10	6	E1+1			487 441.387 (0.031)*	178.863	0.729	3	
11	6	E2−1		10	6	E2−1			487 441.400 (0.031)*	178.541	0.730	1	
11	5	E2−1		10	5	E2−1			487 494.375 (0.025)*	149.185	0.822	1	
11	5	B1		10	5	B2			487 494.388 (0.025)*	149.061	0.821	3	
11	5	B2		10	5	B1			487 494.391 (0.025)*	149.061	0.821	3	
11	5	E2+1		10	5	E2+1			487 499.453 (0.024)*	149.271	0.822	1	
11	5	E1+1		10	5	E1+1			487 500.449 (0.024)*	149.232	0.823	3	
11	5	E1−1		10	5	E1−1			487 502.307 (0.025)*	149.034	0.824	3	
11	5	A1		10	5	A2			487 503.301 (0.025)*	148.872	0.824	1	
11	5	A2		10	5	A1			487 503.304 (0.025)*	148.872	0.824	1	
25	2	E2−1		25	1	E2−1			487 528.833 (0.276)*	477.477	3.630	1	
19	9	E2−1		20	8	E2−1			487 532.974 (0.123)*	483.409	2.592	1	
11	4	A1		10	4	A2			487 565.972 (0.020)*	124.797	0.899	1	
11	4	A2		10	4	A1			487 566.516 (0.020)*	124.797	0.899	1	
11	4	E1+1		10	4	E1+1			487 568.698 (0.020)*	124.840	0.900	3	
11	4	E1−1		10	4	E1−1			487 569.189 (0.019)*	124.992	0.899	3	
11	4	E2−1		10	4	E2−1			487 571.853 (0.020)*	124.960	0.900	1	
11	4	E2+1		10	4	E2+1			487 576.327 (0.020)*	124.684	0.900	1	
11	4	B1		10	4	B2			487 576.334 (0.020)*	124.609	0.900	3	
11	4	B2		10	4	B1			487 576.889 (0.020)*	124.609	0.900	3	
11	3	B1		10	3	B2			487 659.267 (0.016)*	106.066	0.960	3	
11	3	A1		10	3	A2			487 666.937 (0.016)*	105.966	0.959	1	
11	3	E1−1		10	3	E1−1			487 686.412 (0.016)*	106.038	0.960	3	
11	3	E2+1		10	3	E2+1			487 687.008 (0.017)*	105.856	0.960	1	
11	3	E2−1		10	3	E2−1			487 691.904 (0.016)*	105.934	0.959	1	
11	2	E1−1		10	2	E1−1			487 696.988 (0.013)*	92.201	0.996	3	
11	3	E1+1		10	3	E1+1			487 700.797 (0.017)*	105.654	0.959	3	
11	3	B2		10	3	B1			487 705.303 (0.016)*	106.068	0.960	3	
11	3	A2		10	3	A1			487 713.966 (0.016)*	105.968	0.959	1	
25	2	A2		25	1	A1			488 340.920 (0.254)*	477.541	4.055	1	
19	9	A2		20	8	A1			488 348.462 (0.122)*	483.244	2.593	1	
19	9	A1		20	8	A2			488 348.462 (0.122)*	483.244	2.593	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
11	2	E1+1		10	2	E1+1			488 360.081 (0.015)*	92.513	0.998	3	
14	0	E1+1		13	1	E1+1			488 466.447 (0.030)*	138.818	7.089	3	
24	3	E1+1		23	4	E1−1			488 668.227 (0.062)*	451.609	0.811	3	
11	2	A2		10	2	A1			488 741.694 (0.015)*	92.630	1.002	1	
11	2	B2		10	2	B1			488 755.966 (0.015)*	92.668	1.003	3	
11	2	E2−1		10	2	E2−1			488 758.144 (0.016)*	92.442	0.999	1	
19	9	E1−1		20	8	E1−1			488 963.857 (0.108)*	483.448	2.590	3	
8	6	E1+1		9	5	E1+1			489 491.729 (0.052)*	134.448	0.524	3	
8	6	E1+1	8	9	5	E1+1	9		489 491.332 (0.052)	134.448	0.173	3	
8	6	E1+1	9	9	5	E1+1	10		489 491.897 (0.052)	134.448	0.193	3	
8	6	E1+1	7	9	5	E1+1	8		489 491.967 (0.052)	134.448	0.154	3	
19	9	E2+1		20	8	E2+1			489 849.838 (0.122)*	483.238	2.594	1	
14	0	B1		13	1	B2			490 911.504 (0.048)*	138.652	7.188	3	
8	6	E2+1		9	5	E2+1			491 188.143 (0.047)*	134.487	0.524	1	
8	6	E2+1	8	9	5	E2+1	9		491 187.746 (0.047)	134.487	0.173	1	
8	6	E2+1	9	9	5	E2+1	10		491 188.311 (0.047)	134.487	0.193	1	
8	6	E2+1	7	9	5	E2+1	8		491 188.381 (0.047)	134.487	0.154	1	
8	6	E1−1		9	5	E1−1			491 741.093 (0.052)*	134.250	0.524	3	
8	6	E1−1	8	9	5	E1−1	9		491 740.696 (0.052)	134.250	0.173	3	
8	6	E1−1	9	9	5	E1−1	10		491 741.262 (0.052)	134.250	0.193	3	
8	6	E1−1	7	9	5	E1−1	8		491 741.331 (0.052)	134.250	0.154	3	
11	1	E2+1		10	1	E2+1			491 809.030 (0.013)*	85.076	1.026	1	
11	1	E1+1		10	1	E1+1			491 894.586 (0.013)*	85.135	1.029	3	
11	1	A2		10	1	A1			491 928.007 (0.013)*	85.119	1.031	1	
11	1	B2		10	1	B1			491 947.764 (0.013)*	84.963	1.025	3	
30	3	A1		30	2	A2			492 554.770 (1.041)*	696.384	13.209	1	
8	6	B2		9	5	B1			492 702.174 (0.048)*	134.277	0.524	3	
8	6	B2	8	9	5	B1	9		492 701.777 (0.048)	134.277	0.173	3	
8	6	B2	9	9	5	B1	10		492 702.342 (0.048)	134.277	0.193	3	
8	6	B2	7	9	5	B1	8		492 702.412 (0.048)	134.277	0.154	3	
8	6	B1		9	5	B2			492 702.174 (0.048)*	134.277	0.524	3	
8	6	B1	8	9	5	B2	9		492 701.776 (0.048)	134.277	0.173	3	
8	6	B1	9	9	5	B2	10		492 702.342 (0.048)	134.277	0.193	3	
8	6	B1	7	9	5	B2	8		492 702.411 (0.048)	134.277	0.154	3	
24	3	E1+1		23	4	E1+1			493 043.048 (0.057)*	451.463	6.359	3	
24	3	E2+1		23	4	E2−1			493 087.276 (0.060)*	451.579	2.692	1	
14	0	E2+1		13	1	E2+1			493 396.313 (0.030)*	138.754	7.035	1	
6	2	E1−1		5	1	E1+1			493 487.663 (0.014)*	25.444	1.193	3	
6	2	E1−1	5	5	1	E1+1	4		493 487.306 (0.014)	25.444	0.325	3	
6	2	E1−1	7	5	1	E1+1	6		493 487.444 (0.014)	25.444	0.459	3	
6	2	E1−1	6	5	1	E1+1	5		493 488.216 (0.014)	25.444	0.387	3	
30	3	B1		30	2	B2			493 850.437 (1.055)*	696.409	13.459	3	
26	11	E2−1		27	10	E2−1			494 367.757 (0.207)*	828.110	3.951	1	
25	2	B2		25	1	B1			494 581.735 (0.258)*	477.388	3.916	3	
26	11	E1+1		27	10	E1+1			495 321.727 (0.261)*	828.282	3.947	3	
10	1	E2−1		9	0	E2+1			496 209.779 (0.016)*	66.868	0.113	1	
10	1	E2−1	9	9	0	E2+1	8		496 209.445 (0.016)	66.868	0.034	1	
10	1	E2−1	11	9	0	E2+1	10		496 209.518 (0.016)	66.868	0.041	1	
10	1	E2−1	10	9	0	E2+1	9		496 210.366 (0.016)	66.868	0.037	1	
9	1	E2+1		8	0	E2+1			496 790.379 (0.013)*	53.590	7.145	1	
9	1	E2+1	9	8	0	E2+1	8		496 789.532 (0.013)	53.590	2.352	1	
9	1	E2+1	10	8	0	E2+1	9		496 790.736 (0.013)	53.590	2.632	1	
9	1	E2+1	8	8	0	E2+1	7		496 790.886 (0.013)	53.590	2.101	1	
30	3	E2−1		30	2	E2+1			497 123.149 (0.692)*	696.181	13.130	1	
30	3	E1−1		30	2	E1−1			497 145.400 (0.683)*	696.168	12.885	3	
15	8	E1+1		16	7	E1+1			497 316.739 (0.094)*	333.564	1.770	3	
15	8	A2		16	7	A1			497 390.391 (0.099)*	333.746	1.768	1	

TABLE 2. Microwave transitions of CH_3NH_2 in order of frequency—Continued

J'	K'_a	Γ'	F'	J''	K''_a	Γ''	F''	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	E_l (cm^{-1})	μ^2S (D^2)	W_{st}	Ref.
15	8	A1		16	7	A2			497 390.391 (0.099)*	333.746	1.768	1	
6	2	E2+1		5	1	E2+1			498 062.504 (0.014)*	25.426	2.765	1	
6	2	E2+1	5	5	1	E2+1	4		498 062.238 (0.014)	25.426	0.754	1	
6	2	E2+1	7	5	1	E2+1	6		498 062.337 (0.014)	25.426	1.064	1	
6	2	E2+1	6	5	1	E2+1	5		498 062.922 (0.014)	25.426	0.896	1	
19	9	E1+1		20	8	E1+1			498 165.864 (0.134)*	483.060	2.595	3	
16	1	B1		15	2	B2			498 177.050 (0.060)*	189.083	7.366	3	
9	1	B2		8	0	B1			499 120.603 (0.022)*	53.393	7.323	3	
9	1	B2	9	8	0	B1	8		499 119.729 (0.022)	53.393	2.411	3	
9	1	B2	10	8	0	B1	9		499 120.972 (0.022)	53.393	2.698	3	
9	1	B2	8	8	0	B1	7		499 121.126 (0.022)	53.393	2.154	3	
26	11	E2+1		27	10	E2+1			499 846.068 (0.200)*	828.259	3.944	1	
6	2	E2−1		5	1	E2+1			499 867.612 (0.015)*	25.426	1.163	1	
6	2	E2−1	5	5	1	E2+1	4		499 867.360 (0.015)	25.426	0.317	1	
6	2	E2−1	7	5	1	E2+1	6		499 867.454 (0.015)	25.426	0.447	1	
6	2	E2−1	6	5	1	E2+1	5		499 868.007 (0.015)	25.426	0.377	1	

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