Species Tag:	17002	Name:	NH_3
Version:	4		Ammonia hyperfine lines
Date:	Oct. 2009		GS, $\nu_2 = 1$
Contributor:	S. Yu, B. Drouin and J. Pearson		
Lines Listed:	110577	Q(300.0)=	1766.3358
Freq. (GHz) <	39999	Q(225.0)=	1140.9789
Max. J:	20	Q(150.0)=	623.7662
LOGSTR0=	-20.0	Q(75.00)=	225.4150
LOGSTR1=	-20.0	Q(37.50)=	84.0965
Isotope Corr.:	0.0	Q(18.75)=	34.7977
Egy. (cm^{-1}) >	0.0	Q(9.375)=	17.2096
μ_a =		A=	331411.77
μ_b =		B=	A
μ_c =	1.471932	C=	186836.77

The two inversion states of the ground state and the $\nu_2 = 1$ state are included in this analysis. The vibrational designations are as the following: 0 for 0^+; 1 for 0^-; 2 for ν_2^+, 3 for ν_2^-. Seven quanta were used to describe each level: J, K, V, F1, F2, I_{tot}, F (F1 = J + I_N; F = F1 + I_{tot}; F2 = 4 for K = 1, 4 or 7 etc.; F2 = 2 for K = 2, 5 or 8 etc.; F2 = 0 for K = 0, 3, 6 etc.)

The hyperfine lines in the ground state were reported by Kukolich, Phys. Rev. **156**, 83 (1967); Kukolich et al, J. Chem. Phys. **52**, 5477(1970); Kukolich et al, Phys. Rev. A **138**, 1323 (1965); Ruben et al, J. Chem. Phys. **61**, 3780 (1974); Cazzoli et al, Astron. Astrophys. 2009 (submitted). Both the N and H hyperfine splittings are resolved in these studies.

The hyperfine lines in the $\nu_2 = 1$ state were reported by Belov et al, J. Mol. Spectrosc. **189**, 1 (1998); Urban et al, J. Mol. Spectrosc. **2000**, 280 (2000); Fichoux et al, J. Mol. Spectrosc. **192**, 169 (1998). Only the N hyperfine splittings are resolved in these studies.

The microwave lines without hyperfine splittings were reported by Poynter et al, APJS **29**, 87 (1975); Belov et al, J. Mol. Spectrosc. **84**, 288 (1980); Minguzzi et al, J. Mol. Spectrosc. **96**, 294 (1982); Siemsen et al, Optics Lett. **10**, 594 (1985); Sasada et al, J. Mol. Spectrosc. **117**, 317 (1986); Tanaka et al, Chem. Phys. Lett. **146**, 165 (1988); Winnewisser et al, Naturforsch. **51a**, 200 (1996); Belov et al, J. Mol. Spectrosc. **189**, 1 (1998); Chen et al, J. Mol. Spectrosc. **236**, 116 (2006);

The infrared and far-infrared lines without hyperfine splittings were reported by Freund and Oka, Phys Rev. A **13**, 2178 (1976); Laughton et al, J. Mol. Spectrosc. **62**, 263 (1976); Hillman et al, Optics Lett. **1**, 81 (1977); Sattler et al, J. Mol. Spectrosc. **88**, 347 (1981); Shoja-Chagherv et al, J. Mol. Spectrosc. **97**, 287 (1983); Poynter and Margolis, Mol. Phys. **48**, 401 (1983); Urban et al, J. Mol. Spectrosc. **101**, 1 (1983); Poynter and Marglis, Mol. Phys. **51**, 393 (1984); Brown and Toth, J. Opt. Soc. Am. B **2**, 842 (1985); Hermanussen et al, J. Mol. Spectrosc. **119**, 291 (1986);

Urban et al, J. Mol. Spectrosc. **118**, 298 (1986); Fusina et al, J. Mol. Spectrosc. **141**, 23 (1990); Chu et al, JQSRT **51**, 591 (1994); Fabian et al, J. Mol. Spectrosc. **173**, 591 (1995); Krupnov et al, J. Mol. Spectrosc. **176**, 442 (1996).

The rotational dipoles and their J and K dependences for both ground and $\nu_2 = 1$ state from Ueda and Iwahori (J. Mol. Spectrosc. **116** 191 (1986)) were used along with the ν_2-band dipoles, and their Herman-Wallis constants reported by Fabian and Yamada (J. Mol. Spectrosc. **198** 191(1999)).

The partition function includes contributions from the $\nu_2 = 1$ state and J up to 20. This entry is a prediction of ground state rotation-inversion transitions only.