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RADIO SPECTRUM STUDIES OF 32 FIRST-QUADRANT GALACTIC SUPERNOVA REMNANTS

NAMIR E. KASSIM[1]
University of Maryland, and E. O. Hulburt Center for Space Research, Naval Research Laboratory
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ABSTRACT

We present a comprehensive list of integrated radio continuum flux density measurements for 32 first-quadrant Galactic supernova remnants (SNRs). The list includes all available measurements from the literature, as well as some previously unpublished low-frequency measurements from the Clark Lake Galactic plane survey. All measurements have been placed on the same absolute flux density scale, and those which are deemed poor or otherwise inappropriate for the purposes of constructing continuum spectra have been noted. This compilation has been used in a separate paper to construct accurate spectra and to constrain the distribution and physical properties of ionized gas in the interstellar medium.

Subject headings: nebulae: supernova remnants — radio sources: general — radio sources: spectra

I. INTRODUCTION

It is widely accepted that the radio continuum spectra of Galactic supernova remnants (SNRs) have an intrinsic non-thermal power-law spectrum, characterized by a constant spectral index α ($S\alpha\nu^{+\alpha}$) over the entire radio range. Typical values of α range from -0.1 to -0.3 for plerionic or filled-center SNRs, -0.3 to -0.8 for shell-type SNRs, and intermediate values for composite remnants (Weiler and Sramek 1988). Theoretical reasons for expecting α to remain constant have been discussed by Dulk and Slee (1972), while Kassim (1989) has shown that, in the absence of intervening absorbing gas, it remains constant to dekameteric wavelengths. Therefore the spectra of Galactic SNRs provide an excellent probe of the properties and distribution of ionized gas in the interstellar medium (ISM), since turnovers in their low-frequency spectra must be extrinsic and due to absorption by intervening thermal material along the line of sight. Such turnovers have been shown to be common, particularly for SNRs located toward the inner Galaxy (Dulk and Slee 1972, 1975; Kassim 1989).

In order to use an individual SNR to measure or set limits on the opacity of any intervening ionized material, its entire radio spectrum must be accurately determined. Higher frequency ($\nu \gtrsim 300$ MHz) measurements are necessary to determine the intrinsic spectral index α which is then used, in conjunction with lower frequency (usually ≤ 100 MHz) measurements, to determine the free-free optical depth τ. Unfortunately, the information necessary to construct the entire spectrum of individual SNRs, specifically the measured values of the integrated flux densities, are often widely scattered throughout the literature and are thus not readily available. Moreover, flux densities for individual sources obtained from observations made by different authors using different instruments are rarely based on the same absolute flux density scale. Finally, many published flux density measurements are not appropriate for determining continuum spectra, usually for a variety of instrumental reasons.

In this paper, we have gathered all available integrated flux densities for 32 first-quadrant Galactic SNRs, including several previously unpublished low-frequency measurements made with the Clark Lake TPT telescope (Erickson, Mahoney, and Erb 1982; Kassim 1989, and references therein). All flux densities have been placed on the same absolute flux density scale, and poor or inappropriate measurements have been noted. The data presented here are used in a separate paper (Kassim 1989) to construct accurate spectra for these 32 sources, which in turn can be used to constrain the distribution and properties of low-density ionized gas in the ISM. Parameters from the derived spectra are also included here.

a) Data

The observed and derived parameters for each of the 32 SNRs are presented in Table 1 which is divided into 32 sections, one for each source. The header for each remnant gives the position (R.A., decl.), size (in arcminutes), and the best estimate of the morphological type (i.e., P, plerionic; S, shell; C, composite; or ?, uncertain) of each object. A distance estimate (in kiloparsecs) is included where one is available, with the reliability indicated by A, "good"; B, "reasonable"; C, "poor." Other names for the SNRs are listed where appropriate. These header parameters have been taken from the comprehensive SNR lists of Green (1984, 1988).

For each SNR we have also obtained the parameters α, τ_{408}, and S_{408} from a least-squares fit to the equation:

$$S_\nu = \left[S_{408}(\nu/408)^{\alpha}\right] \exp\left[-\tau_{408}(\nu/408)^{-2.1}\right], \quad (1)$$

where S_ν is the integrated flux density in janskys at frequency ν in MHz and S_{408} and τ_{408} are the flux density and optical depth at the reference frequency of 408 MHz, respectively.

[1]National Research Council/NRL Cooperative Research Associate.

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TABLE 1

OBSERVED AND DERIVED PARAMETERS FOR 32 GALACTIC SUPERNOVA REMNANTS

G349.7+0.2

R.A.: $17^h14^m35^s$ Size: 2′ S_{408}: 24.5 Jy Type: ?
Dec.: -37°23′ α: -0.3 Dist: 18.3±4.6 kpc (A) $\tau_{30.9}$: ≤0.7

ν(MHz)	Sc(Jy)[1]	Error(Jy)	Telescope	Reference	Correction[1]
57.5	39.5	±7.9	CLRO	CLGPS	1.0
80.0	22.6	±3.2	Culgoora	Slee & Higgins 1973	1.074
80.0	33.0	±7.0	Culgoora	Dulk & Slee 1975	1.0
160.0	33.7		Culgoora	Slee 1977	1.11
160.0	33.0	±7.0	Culgoora	Dulk & Slee 1975	1.0
408.0	28.1	±2.8	Molonglo	Green 1974	0.97
408.0	30.1	±3.0	Molonglo	Caswell et al. 1975	0.97
1410.0	18.6		Parkes	Milne et al. 1969	1.02
1660.0	17.1	±2.6	Parkes	Milne et al. 1969	NA
2650.0	13.1		Parkes	Beard et al. 1969	1.01
5000.0	9.1		Parkes	Caswell et al. 1975	1.0
10600.0	10.0	±1.5	NRAO 140′	Becker & Kundu 1975	0.99

G350.1-0.3

R.A.: $17^h17^m40^s$ Size: 4′? S_{408}: 16.0 Jy Type: ?
Dec: -37°24′ α: -0.8 Dist: $\tau_{30.9}$: ≤0.7

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
57.5	101.6	±20.3	CLRO	CLGPS	1.0
80.0	22.6		Culgoora	Slee 1977	1.074
160.0	15.3		Culgoora	Slee 1977	1.11
408.0	10.4		Molonglo	Clark et al. 1975	0.97
2695.0	5.0	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
5000.0	1.7		Parkes	Clark et al. 1975	1.0

G355.9-2.5

R.A.: $17^h42^m40^s$ Size: 14′ S_{408}: 12.0 Jy Type: S
Dec: -33°42′ α: -0.5 Dist: $\tau_{30.9}$: 1.1±0.2

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	14.3	±2.9	CLRO	CLGPS	1.0
408.0	11.9		Molonglo	Clark et al. 1975	0.97
5000.0	3.4		Parkes	Clark et al. 1975	1.0

TABLE 1—*Continued*

G6.4-0.1

R.A.: $17^h58^m00^s$ Size: 45′ S_{408}: 424.3 Jy Type: C?
Dec: -23°20′ α: -0.4 Dist: $\tau_{30.9}$:0.9±0.3
Other Names: W28, MSH 17-216, Kes 25

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	527.0	±105.4	CLRO	CLGPS	1.0
30.9	165.0	±16.0	FRO	Finlay & Jones 1973	1.05
86.0	855.0			Mills, Slee & Hill 1961	NA
408.0	486.0		JB	LMH 1961	1.20
408.0	430.0	±86.0	?	Davis, Gelato-Volders, & W. 1965	NA
408.0	446.2		Molonglo	Shaver & Goss 1970a	0.97
510.0	325.0	±81.3		Moran 1965	NA
635.0	321.3	±80.3	Parkes	Milne & Hill 1969	1.02
960.0	250.0		CTB	Milne & Hill 1969	0.98
1390.0	249.0	±74.7	Dwing	Milne & Hill 1969	0.79
1410.0	291.7	±58.3	Parkes	Milne & Hill 1969	1.02
1430.0	270.0			Milne & Hill 1969	NA
2650.0	192.6	±48.2	Parkes	Milne & Hill 1969	1.03
2695.0	53.5	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	216.3	±32.4	Parkes	Milne & Dickel 1974	1.03
2700.0	206.0			Milne & Hill 1969	NA
2700.0	199.0		Parkes	Goss & Day 1970	1.03
2727.0	220.0	±33.0	NRAO 140′	Kundu 1970	0.99
2800.0	127.8	±12.0	NRAO 140′	Kundu & Velusamy 1972	0.99
5000.0	186.2	±37.2	Parkes	Milne & Wilson 1971	1.04
5000.0	183.0		Parkes	Milne & Dickel 1975	1.04
5000.0	155.0	±23.3	NRAO 140′	Kundu 1970	0.99
5000.0	39.1	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03

G9.8+0.6

R.A.: $18^h02^m10^s$ Size: 13′ S_{408}: 5.8 Jy Type: S
Dec: -20°14′ α: -0.8 Dist: $\tau_{30.9}$: ≥8.0

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
57.5	<3.0	<±0.6	CLRO	CLGPS	1.0
408.0	5.6	±0.6	Molonglo	Caswell 1983	0.97
2695.0	1.0	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	1.8		Parkes	Goss & Day 1970	1.03

G10.0-0.3

R.A.: $18^h05^m45^s$ Size: 8′ S_{408}: 3.1 Jy Type: S?
Dec: -20°26′ α: -0.5 Dist: $\tau_{30.9}$: ≥3.9

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
57.5	<3.0		CLRO	CLGPS	1.0
408.0	5.2	±0.4	Molonglo	Shaver & Goss 1970b	0.97
408.0	1.8		Molonglo	Shaver & Goss 1970a	0.97
5000.0	0.83		Parkes	Shaver & Goss 1970b	1.04

TABLE 1—*Continued*

G11.2-0.3

R.A.: $18^h08^m30^s$ Size: 4′ S_{408}: 29.9 Jy Type: S
Dec: -19°27′ α: -0.5 Dist: 7.5±2.5 (C) $r_{30.9}$: 2.1±0.3

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	14.2	±2.8	CLRO	CLGPS	1.0
57.5	31.7	±6.3	CLRO	CLGPS	1.0
80.0	108.9	±15.0	Culgoora	Dickel 1973	1.1
80.0	53.0	±16.0	Culgoora	Dulk & Slee 1975	1.0
80.0	38.7	±5.4	Culgoora	Slee & Higgins 1973	1.074
160.0	43.0	±3.0	Culgoora	Dulk & Slee 1975	1.0
160.0	43.4		Culgoora	Slee 1977	1.11
408.0	34.8	±2.4	Molonglo	Shaver & Goss 1970a	0.97
635.0	13.2		?	Milne et al. 1969	NA
1000.0	13.0		?	Milne et al. 1969	NA
1410.0	12.9		Parkes	Milne et al. 1969	1.02
2650.0	11.8		Parkes	Milne et al. 1969	NA
2650.0	11.8		Effelsberg	Downes 1984	1.0
2695.0	10.9	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	12.4		Parkes	Goss & Day 1970	1.03
4875.0	9.0		Effelsberg	Downes et al. 1980	1.0
5000.0	11.3	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	8.8		Parkes	Shaver & Goss 1970b	1.04
5000.0	9.0		Effelsberg	Downes 1984	1.0
10600.0	5.7	±0.8	NRAO 140′	Becker & Kundu 1975	0.99

G11.4-0.1

R.A.: $18^h07^m45^s$ Size: 7′? S_{408}: 7.1 Jy Type: S
Dec: -19°06′ α: -0.4 Dist: $r_{30.9}$: 3.7±0.8

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
57.5	5.8	±1.2	CLRO	CLGPS	1.0
408.0	9.1	±0.9	Molonglo	Clark et al. 1975	0.97
408.0	5.1		Molonglo	Clark et al. 1973	0.97
2695.0	4.0	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	10.3		Parkes	Goss & Day 1970	1.03
4875.0	4.3		Effelsberg	Downs et al. 1980	1.0
5000.0	2.0	±0.4	NRAO 140′	Angerhofer et al. 1977	0.99
5000.0	2.8		Parkes	Clark et al. 1973	1.0

G12.0-0.1

R.A.: $18^h09^m10^s$ Size: 5′? S_{408}: 7.5 Jy Type: ?
Dec: -18°38′ α: -0.8 Dist: $r_{30.9}$: ≤0.2

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	62.9	±12.6	CLRO	CLGPS	1.0
408.0	6.4	±0.6	Molonglo	Clark et al. 1975	0.97
2700.0	6.8		Parkes	Goss & Day 1970	1.03
5000.0	1.1		Parkes	Clark et al. 1975	1.0

TABLE 1—*Continued*

G15.9+0.2

R.A.: $18^h16^m10^s$ Size: 5′ S_{408}: 8.5 Jy Type: S?
Dec: -15°03′ α: -0.7 Dist: $r_{30.9}$: 2.1±0.3

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	6.0	±1.2	CLRO	CLGPS	1.0
80.0	22.6		Culgoora	Slee 1977	1.074
160.0	14.5		Culgoora	Slee 1977	1.11
408.0	7.5		Molonglo	Clark et al. 1975	0.97
1414.0	3.0	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
2695.0	3.0	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
5000.0	1.9		Parkes	Clark et al. 1975	1.0
5000.0	1.1	±0.2	NRAO 140′	Angerhofer et al. 1977	0.99

G18.8+0.3

R.A.: $18^h21^m10^s$ Size: 15′ S_{408}: 49.4 Jy Type: S
Dec: -12°25′ α: -0.5 Dist: 14±5 (B $r_{30.9}$: 0.6±0.3
Other Names: Kes 67

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	87.4	±17.5	CLRO	CLGPS	1.0
80.0	94.5	±14.2	Culgoora	Slee & Higgins 1973	1.074
80.0	157.3	±50.0	Culgoora	Dickel 1973	1.1
408.0	36.9	±3.7	Parkes	Clark et al. 1975	0.97
408.0	38.4		Molonglo	Kesteven 1968	1.129
1414.0	33.3	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
2695.0	18.8	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	17.2	±7.0	NRAO 300′	Willis 1973	1.011
2700.0	22.7	±3.4	Parkes	Milne & Dickel 1974	1.03
2700.0	12.4		Parkes	Goss & Day 1970	1.03
4875.0	23.4		Effelsberg	Downes et al. 1980	1.0
5000.0	19.2		Parkes	Milne & Dickel 1975	1.04
5000.0	15.7	±2.4	Parkes	Milne 1969	1.04
5000.0	12.4	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03

TABLE 1—*Continued*

G21.5-0.9

R.A.: $18^h30^m45^s$ Size: 1.2′ S_{408}: 7.2 Jy Type: F
Dec: -10°37′ α: -0.0 Dist: $r_{30.9}$: ≤0.2

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	10.4	±2.1	CLRO	CLGPS	1.0
57.5	6.0	±1.2	CLRO	CLGPS	1.0
80.0	8.6	±3.9	Culgoora	Slee & Higgins 1975	1.074
160.0	8.4		Culgoora	Slee 1977	1.11
408.0	4.9		Molonglo	Caswell & Clark 1975	0.97
1414.0	6.1	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
1660.0	6.5		Parkes	Milne et al. 1969	NA
2695.0	6.9	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	5.7		Parkes	Milne et al. 1969	NA
2700.0	7.0	±0.7	Parkes	Milne & Dickel 1974	1.03
2700.0	7.0	±0.4	NRAO Inter.	Becker & Kundu 1976	NA
2700.0	6.9		Parkes	Goss & Day 1970	1.03
4875.0	6.9		Effelsberg	Downes et al. 1980	1.0
5000.0	8.3		WRST	Wilson & Weiler 1976	1.17
5000.0	6.2	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
8100.0	7.0	±0.4	NRAO Inter.	Becker & Kundu 1976	NA
8900.0	6.6		Parkes	Caswell & Clark 1975	1.0
10600.0	6.8	±0.8	NRAO 140′	Becker & Kundu 1975	0.99

G21.8-0.6

R.A.: $18^h30^m00^s$ Size: 20′ S_{408}: 94.6 Jy Type: S
Dec: -10°10′ α: -0.5 Dist: ≥ 6.3 (C) $r_{30.9}$: 0.9±0.3
Other Names: Kes 69

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	170.6	±34.1	CLRO	CLGPS	1.0
57.5	168.0	±33.6	CLRO	CLGPS	1.0
80.0	320.1	±100.0	Culgoora	Dickel 1973	1.1
80.0	103.1		Culgoora	Slee & Higgins 1973	1.074
408.0	68.9	±6.9	Molonglo	Shaver & Goss 1970b	0.97
408.0	106.7		Molonglo	Shaver & Goss 1970a	0.97
408.0	180.6		Molonglo	Kesteven 1968	1.129
1414.0	46.5	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
1660.0	41.5		Parkes	Milne et al. 1969	NA
2695.0	29.7	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	41.0		Parkes	Milne et al. 1969	NA
2700.0	31.3		NRAO 300′	Willis 1973	1.011
2700.0	42.8	±4.6	NRAO 300′	Velusamy & Kundu 1974	1.011
2700.0	40.2	±8.0	Parkes	Milne & Dickel 1974	1.03
2700.0	39.0		Parkes	Goss & Day 1970	1.03
4875.0	27.6		Effelsberg	Downes et al. 1980	1.0
5000.0	20.6	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	16.7		Parkes	Shaver & Goss 1970b	1.04
5000.0	24.0		NRAO 140′	Kundu et al. 1974	0.99
5000.0	31.2		Parkes	Milne & Dickel 1974	1.04
5000.0	29.1		Parkes	Goss and Shaver 1970	1.04
10700.0	14.0		NRAO 140′	Kundu et al. 1974	0.99

TABLE 1—*Continued*

G22.7-0.2

R.A.: $18^h30^m30^s$ Size: 25′ S_{408}: 65.0 Jy Type: S
Dec: -09°15′ α: -0.2 Dist: $\tau_{30.9}$: 3.5±0.9

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
57.5	37.5	±7.5	CLRO	CLGPS	1.0
408.0	53.4		Molonglo	Shaver & Goss 1970b	0.97
1414.0	66.7	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
2695.0	50.5	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
4875.0	7.2		Effelsberg	Downes et al. 1980	1.0
5000.0	42.2	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	28.0		Parkes	Shaver & Goss 1970b	1.04

G23.3-0.3

R.A.: $18^h32^m00^s$ Size: 22′ S_{408}: 119.3 Jy Type: S?
Dec: -08°45′ α: -0.4 Dist: $\tau_{30.9}$: 7.2±0.8

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
57.5	57.7	±11.5	CLRO	CLGPS	1.0
80.0	35.4		Culgoora	Slee & Higgins 1973	1.074
408.0	109.3		Molonglo	Shaver & Goss 1970b	0.97
408.0	146.8		Molonglo	Kesteven 1968	1.129
408.0	228.9		Molonglo	Shaver & Goss 1970a	0.97
1414.0	50.5	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
2695.0	35.6	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	92.7		Parkes	Goss & Day 1970	1.03
4875.0	13.0		Effelsberg	Downes et al. 1980	1.0
5000.0	61.1		Parkes	Shaver & Goss 1970b	1.04
5000.0	47.8		Parkes	Goss & Shaver 1970	1.04
5000.0	234.0		Parkes	Milne 1969	1.04
5000.0	24.7	±.4	NRAO 300′	Altenhoff et al. 1970	1.03

G23.6+0.3

R.A.: $18^h30^m20^s$ Size: 7′ S_{408}: 10.2 Jy Type: ?
Dec: -08°14′ α: -0.1 Dist: $\tau_{30.9}$: ≥5.3

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
57.5	<3.0		CLRO	CLGPS	1.0
408.0	10.0		Molonglo	Shaver & Goss 1970b	0.97
5000.0	7.0		Molonglo	Shaver & Goss 1970b	1.04

TABLE 1—*Continued*

G24.7+0.6

R.A.: $18^h31^m40^s$ Size: 16'? S_{408}: 21.3 Jy Type: ?
Dec: -07°08' α: -0.1 Dist: $r_{30.9}$: ≥1.0

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	10.5	±2.1	CLRO	CLGPS	1.0
408.0	18.2		Molonglo	Shaver & Goss 1970b	0.97
408.0	19.+		Molonglo	Green 1974	0.97
408.0	26.2		Molonglo	Shaver & Goss 1970a	0.97
1414.0	14.1	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
2695.0	10.9	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
2695.0	19.0	±3.0	Effelsberg	Reich et al. 1984	1.0
2700.0	21.6		Parkes	Goss & Day 1970	1.03
4750.0	17.0	±4.0	Effelsberg	Reich et al 1984	1.0
5000.0	13.4	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
10200.0	15.0	±3.0	Effelsberg	Reich et al. 1984	1.0

G24.7-0.6

R.A.: $18^h36^m00^s$ Size: 15'? S_{408}: 11.8 Jy Type: S
Dec: -07°35' α: -0.6 Dist: $r_{30.9}$: ≥1.6

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	11.3	±2.3	CLRO	CLGPS	1.0
408.0	11.9	±1.2	Molonglo	Clark et al. 1975	0.97
1414.0	6.1	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
2695.0	3.0	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
5000.0	3.6		Parkes	Clark et al. 1975	1.0
5000.0	2.2	±0.5	NRAO 140'	Angerhofer et al. 1977	0.99

G27.4+0.0

R.A.: $18^h38^m40^s$ Size: 4' S_{408}: 13.3 Jy Type: S?
Dec: -04°59' α: -0.7 Dist: $r_{30.9}$: ≥2.8
Other Names: Kes 73, 4C -04.71

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	<5.0	<±1.0	CLRO	CLGPS	1.0
80.0	33.0	±18.0	Culgoora	Dulk & Slee 1975	1.0
160.0	23.0	±3.0	Culgoora	Dulk & Slee 1975	1.0
160.0	23.0		Culgoora	Slee 1977	1.11
408.0	10.4		?	Caswell 1982	NA
1414.0	13.1	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
2695.0	9.9	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
2700.0	23.3	±7.0	NRAO 300'	Willis 1973	1.011
2700.0	49.1	±5.0	NRAO 300'	Velusamy & Kundu 1974	NA
2700.0	35.0	±7.0	Parkes	Milne & Dickel 1974	1.03
4875.0	4.0		Effelsberg	Downes et al. 1980	1.0
5000.0	8.2	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	1.9	±0.2		Haynes et al. 1978	NA
5000.0	2.0	±0.5	NRAO 140'	Angerhofer et al. 1977	0.99

TABLE 1—*Continued*

G29.7-0.3

R.A.: $18^h43^m50^s$ Size: 2.5′ S_{408}: 15.1 Jy Type: C
Dec: -03°02′ α: -0.6 Dist: $\tau_{30.9}$: 0.8±0.2

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	32.6	±6.5	CLRO	CLGPS	1.0
80.0	34.4	±4.8	Culgoora	Slee & Higgins 1973	1.074
80.0	37.0	±5.0	Culgoora	Dulk & Slee 1975	1.0
160.0	29.5		Culgoora	Slee 1977	1.11
160.0	31.0	±5.0	Culgoora	Dulk & Slee 1975	1.0
178.0	20.1		4C	Gower et al. 1967	1.11
408.0	14.0		Molonglo	Shaver & Goss 1970b	0.97
408.0	12.4		Molonglo	Kesteven 1968	1.129
408.0	18.9		Molonglo	Shaver & Goss 1970a	0.97
1414.0	7.1	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
2650.0	3.6		Parkes	Beard & Kerr 1969	1.0
2695.0	5.0	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	5.2	±1.0	Parkes	Milne & Dickel 1974	1.0
4875.0	3.0		Effelsberg	Downes et al. 1980	1.0
5000.0	3.4	±0.3	Parkes	Milne 1969	1.04
10600.0	2.8	±0.5	NRAO 140′	Becker & Kundu 1975	0.99

G31.9+0.0

R.A.: $18^h46^m50^s$ Size: 5′ S_{408}: 32.6 Jy Type: S
Dec: -00°59′ α: -0.5 Dist: 11±2.5 (C) $\tau_{30.9}$: ≥3.2
Other Names: 3C391

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	≤5.0	≤1.0	CLRO	CLGPS	1.0
80.0	28.9	±5.0	Culgoora	Caswell et al. 1971	1.07
80.0	56.9		Culgoora	Slee & Higgins 1973	1.074
80.0	40.0	±8.0	Culgoora	Dulk & Slee 1975	1.0
85.0	17.1		MSH	Holden & Caswell 1969	1.07
160.0	43.1		Culgoora	Slee 1977	1.11
160.0	42.0	±3.0	Culgoora	Dulk & slee 1975	1.0
178.0	18.9			Holden & Caswell 1969	1.11
178.0	19.7		4C	Holden & Caswell 1969	1.11
178.0	25.2		3C	Bennett 1962	1.049
178.0	17.8			KPW	1.049
318.0	34.0	±5.0		Condon 1971	1.05
408.0	33.4		Molonglo	Caswell et al. 1971	0.97?
408.0	30.5		Molonglo	Kesteven 1968	1.129
408.0	33.4		Molonglo	Green 1974	0.97
750.0	32.8			Holden & Caswell 1969	1.114
750.0	29.4		NRAO 300′	KPW	1.046
1400.0	20.8			KPW	1.029
1400.0	22.7			Holden & Caswell 1969	1.099
1400.0	20.0	±2.0	FST	Goss et al. 1979	NA
1410.0	19.8		Parkes	Beard & Kerr 1969	1.04
1414.0	20.2	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
2650.0	10.8		Parkes	Beard & Kerr 1969	0.98
2695.0	13.8		NRAO 140′	KPW	1.011
2695.0	13.9	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	14.0		NRAO Inter.	Becker & Kundu 1976	NA
4875.0	9.8		Effelsberg	Downes et al 1980	1.0
5000.0	10.0		NRAO 140′	KPW	0.993
5000.0	9.3		Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	10.4	±0.8	Parkes	Milne 1969	1.04
6630.0	9.0	±0.5	Algonquin	Bridle & Kesteven 1971	1.0
8160.0	7.8		NRAO Inter.	Becker & Kundu 1976	1.0
8800.0	10.2		Parkes	Dickel et al. 1973	1.06
10600.0	7.9	±1.0	NRAO 140′	Becker & Kundu 1975	0.99
10630.0	7.6	±0.6	Algonquin	Bridle & Kesteven 1971	1.0
10700.0	7.5	±0.8	FST	Goss et al. 1979	1.0
15500.0	5.3	±0.5	Haystack	Chaisson 1974	0.99

TABLE 1—*Continued*

G32.8-0.1

R.A.: $18^h48^m50^s$ Size: 17'? S_{408}: 17.3 Jy Type: S
Dec: -00°12' α: -0.5 Dist: $r_{30.9}$: ≤0.2
Other Names: Kes 78

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	64.5	±12.9	CLRO	CLGPS	1.0
408.0	12.4	±1.2	Molonglo	Caswell et al. 1975	0.97
430.0	20.0	±15.5	Arecibo	Dickel & DeNoyer 1975	1.05
2650.0	2.0		Parkes	Beard & Kerr 1969	0.98
2695.0	5.9	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
2700.0	7.3	±0.5	NRAO 300'	Velusamy & Kundu 1974	1.011
5000.0	7.7		Parkes	Caswell et al. 1975	1.0
10600.0	2.8	±0.6	NRAO 140'	Becker & Kundu 1975	0.99

G33.2-0.6

R.A.: $18^h51^m10^s$ Size: 18'? S_{408}: 8.5 Jy Type: S?
Dec: -00°12' α: -0.6 Dist: $r_{30.9}$: ≤0.2

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	44.1	±8.8	CLRO	CLGPS	1.0
2700.0	2.6	±0.3	Effelsberg	Reich 1982	1.0
4750.0	1.75	±0.2	Effelsberg	Reich 1982	1.0

G33.6+0.1

R.A.: $18^h50^m10^s$ Size: 10'x8.6' S_{408}: 27.4 Jy Type: S
Dec: 00°37' α: -0.5 Dist: ≥ 7 (C) $r_{30.9}$: ≤0.2

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	94.0	±18.8	CLRO	CLGPS	1.0
80.0	111.1	±25.0	Culgoora	Dickel 1973	1.1
80.0	41.9		Culgoora	Slee 1977	1.074
80.0	58.0	±8.7	Culgoora	Slee & Higgins 1973	1.074
80.0	31.2	±4.7	Culgoora	Slee & Higgins 1975	1.074
160.0	63.1		Culgoora	Slee 1977	1.11
408.0	33.4	±3.3	Molonglo	Caswell et al. 1975	0.97
408.0	37.8		Molonglo	Kesteven 1968	1.129
430.0	72.5	±33.0	Arecibo	Dickel & DeNoyer 1975	1.05
1410.0	9.9		Parkes	Beard & Kerr 1969	0.98
1414.0	13.1	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
2650.0	7.8		Parkes	Beard & Kerr 1969	0.98
2695.0	8.9	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
4875.0	3.7		Effelsberg	Downes et al. 1980	1.0
5000.0	7.8		Parkes	Caswell et al. 1975	1.0
5000.0	11.3	±1.1	NRAO 140'	Angerhofer et al. 1977	0.99
5000.0	5.2	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
10600.0	6.7	±1.5	NRAO 140'	Becker & Kundu 1975	0.99

TABLE 1—*Continued*

G34.7-0.4

R.A.: $18^h53^m30^s$ Size: 35'x25' S_{408}: 325.1 Jy Type: S
Dec: 01°18' α: -0.4 Dist: 3±1 (A) $r_{30.9}$: ≤0.2
Other Names: W44, 3C392

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	849.0	±169.8	CLRO	CLGPS	1.0
38.0	834.9		WKB	KPW	1.09
80.0	363.0	±54.5	Culgoora	Slee & Higgins 1973	1.074
85.0	468.3		MSH	Holden & Caswell 1969	1.074
178.0	396.5		Pencil Beam	KPW	1.049
178.0	419.6		3CR	Bennett 1962	1.049
178.0	479.5		3CR	Holden & Caswell 1969	1.11
178.0	419.6		Pencil Beam	Holden & Caswell 1969	1.11
195.0	441.8		K&V 1967	Holden & Caswell 1969	1.11
400.0	406.4		D	Holden & Caswell 1969	1.129
408.0	291.3		LMH	Holden & Caswell 1969	1.129
408.0	290.0		Molonglo	Clark et al. 1975	0.97
408.0	440.3		Molonglo	Kesteven 1968	1.129
430.0	567.0	±187.0	Arecibo	Dickel & DeNoyer 1975	1.05
430.0	291.3		K&V	Holden & Caswell 1969	1.129
610.0	313.6		JB	Holden & Caswell 1969	1.12
750.0	269.6		NRAO 300'	Holden & Caswell 1969	1.114
750.0	242.0		NRAO 300'	KPW	1.046
960.0	253.1		CTB	Holden & Caswell 1969	1.11
1390.0	163.8		W	Holden & Caswell 1969	1.099
1400.0	187.9		NRAO 300'	Holden & Caswell 1969	1.099
1400.0	172.7		NRAO 300'	KPW	1.029
1410.0	236.1		Parkes	Beard & Kerr 1969	1.04
1410.0	236.3		S	Holden & Caswell 1969	1.099
1414.0	274.7	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
2650.0	166.6		Parkes	Beard & Kerr 1969	0.98
2695.0	170.3	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
2700.0	107.2		A	Holden & Caswell 1969	1.083
2700.0	168.8	±18.0	NRAO 300'	Willis 1973	1.011
2700.0	179.0	±10.0	NRAO 300'	Velusamy & Kundu 1974	1.011
2700.0	123.6	±18.5	Parkes	Milne & Dickel 1974	1.03
3000.0	146.2		S	Holden & Caswell 1969	1.083
3125.0	135.4		K42	Holden & Caswell 1969	1.083
4875.0	123.1		Effelsberg	Downes et al. 1980	1.0
5000.0	126.7	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	155.0	±23.3	Parkes	Milne 1969	1.04
10700.0	104.0	±7.0	NRAO 140'	Kundu & Velusamy 1972	0.99

TABLE 1—*Continued*

G39.2-0.3

R.A.: $19^h01^m35^s$ Size: 6.5'x6' S_{408}: 25.1 Jy Type: ?
Dec: 05°23' α: -0.4 Dist: ≥ 7.7 (A) $r_{30.9}$: 0.5±0.2
Other Names: 3C396, HC24, NRAO 593

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	45.3	±9.1	CLRO	CLGPS	1.0
38.0	61.7		WKB	Holden & Caswell 1969	1.029
80.0	43.0	±7.0	Culgoora	Dulk & Slee 1975	1.0
80.0	40.8		Culgoora	Slee & Higgins 1973	1.074
80.0	83.6		Culgoora	Dickel 1973	1.1
160.0	37.5		Culgoora	Slee 1977	1.11
160.0	38.0	±7.0	Culgoora	Dulk & Slee 1975	1.0
178.0	95.5		Pencil Beam	Holden & Caswell 1969	1.11
178.0	18.8		4C	Holden & Caswell 1969	1.11
178.0	41.7		3C	Bennett 1962	1.049
178.0	25.0		3C	KPW	1.049
408.0	30.3		Molonglo	Shaver & Goss 1970b	0.97
408.0	29.1		Molonglo	Shaver & Goss 1970a	0.97
408.0	63.2		LMH	Holden & Caswell 1969	1.129
430.0	56.7	±38.0	Arecibo	Dickel & DeNoyer 1975	1.05
610.0	40.3		JB	Holden & Caswell 1969	1.12
750.0	19.3		NRAO 300'	Holden & caswell 1969	1.114
750.0	17.3		NRAO 300'	KPW	1.046
960.0	15.5		CTB	Holden & Caswell 1969	1.11
1400.0	13.8		NRAO 300'	KPW	1.029
1400.0	15.2		NRAO 300'	Holden & Caswell 1969	1.099
1410.0	16.3		Parkes	Milne et al. 1969	1.02
1414.0	16.2	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
2650.0	12.7		Parkes	Milne et al. 1969	1.03?
2695.0	10.9	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
2700.0	12.1		Parkes	Day et al. 1970	1.01
4875.0	8.0		Effelsberg	Downes et al. 1980	1.0
5000.0	10.0		NRAO 140'	KPW	0.993
5000.0	9.3	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	9.2		Parkes	Milne & Dickel 1974	1.04
10600.0	4.1	±1.0	NRAO 140'	Becker & Kundu 1975	0.99

G40.5-0.5

R.A.: $19^h04^m45^s$ Size: 26' S_{408}: 15.5 Jy Type: S
Dec: 06°25' α: -0.5 Dist: $r_{30.9}$: 2.1±0.3
Other Names: Flo

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	6.3	±1.3	CLRO	CLGPS	1.0
1414.0	8.1	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
1720.0	9.3	±1.3	Effelsberg	Downes et al. 1980	1.0
2695.0	5.9	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
2700.0	7.2	±0.5	Effelsberg	Downes et al. 1980	1.0
2700.0	3.0		Parkes 210'	Day et al. 1970	1.01

TABLE 1—*Continued*

G41.1-0.3

R.A.: $19^h05^m10^s$ Size: 3'x4' S_{408}: 38.7 Jy Type: ?
Dec: 07°03' α: -0.4 Dist: ≥ 7.5 (A) $r_{30.9}$: 0.9±0.3
Other Names: 3C397, HC 26, NRAO 597

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
26.3	32.9		Clark Lake	Erickson & Cronyn 1965	1.029
30.9	40.7	±8.1	CLRO	CLGPS	1.0
38.0	43.6		WKB	KPW	1.09
80.0	56.9		Culgoora	Slee 1977	1.074
80.0	53.7	±8.1	Culgoora	Slee & Higgins 1973	1.074
80.0	64.4	±8.4	Culgoora	Slee & Higgins 1975	1.074
80.0	61.0	±6.0	Culgoora	Dulk & Slee 1975	1.0
160.0	57.4		Culgoora	Slee 1977	1.11
160.0	41.0	±7.0	Culgoora	Dulk & Slee 1975	1.0
178.0	33.3		3CR	Holden & Caswell 1969	1.11
178.0	26.5		4C	Holden & Caswell 1969	1.11
178.0	68.8		Pencil Beam	Holden & Caswell 1969	1.11
178.0	65.0		Pencil Beam	KPW	1.049
178.0	29.4	±5.9	3CR	Bennett 1963	1.049
408.0	24.8		LMH	Holden & Caswell 1969	1.129
408.0	28.9	±2.9	Molonglo	Caswell et al. 1975	0.97
430.0	86.1	±51.0	Arecibo	Dickel & DeNoyer 1975	1.05
610.0	40.3		JB	Holden & Caswell 1969	1.12
750.0	42.1		NRAO 300'	KPW	1.046
750.0	46.8		NRAO 300'	Holden & Caswell 1969	1.114
960.0	21.1		CTB	Holden & Caswell 1969	1.11
1400.0	31.9		NRAO 300'	Holden & Caswell 1969	1.099
1400.0	29.2		NRAO 300'	KPW	1.029
1414.0	24.2	±0.4	NRAO 300'	Altenhoff et al. 1970	1.01
2695.0	16.8	±0.4	NRAO 140'	Altenhoff et al. 1970	0.99
2695.0	19.8		NRAO 140'	KPW	1.011
2700.0	18.1	±3.6	NRAO 300'	Willis 1973	1.011
2700.0	21.5	±1.2	NRAO 300'	Velusamy & Kundu 1974	1.011
2700.0	20.2		Parkes	Day et al. 1970	1.01
4875.0	6.4		Effelsberg	Downes et al. 1980	1.0
5000.0	15.5	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
5000.0	15.1		NRAO 140'	Kellermann, Pauliny-toth, + W.	0.993
5000.0	8.7		Parkes	Caswell et al. 1975	1.0
5000.0	19.6		NRAO 140'	Kundu et al. 1974	0.99
10600.0	12.0	±2.0	Arecibo	Dickel & DeNoyer 1975	NA
10700.0	13.9		NRAO 140'	Kundu et al. 1974	0.99
15500.0	8.5	±3.0	Arecibo	Dickel & DeNoyer 1975	NA

TABLE 1—*Continued*

G43.3-0.2

R.A.: $19^h08^m40^s$ Size: 4′ S_{408}: 45.6 Jy Type: S
Dec: 09°01′ α: -0.4 Dist: 10.0 (B) $r_{30.9}$: 0.9±0.3
Other Names: 3C398, W49B

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	59.2	±11.8	CLRO	CLGPS	1.0
38.0	16.5		WKB	Holden & Caswell 1969	1.029
80.0	49.4		Culgoora	Slee & Higgins 1973	1.074
80.0	73.7	±12.0	Culgoora	Dickel 1973	1.1
80.0	55.0	±7.0	Culgoora	Dulk & Slee 1975	1.0
160.0	69.0	±6.0	Culgoora	Dulk & Slee 1975	1.0
160.0	74.0		Culgoora	Slee 1977	1.11
178.0	65.5		3CR	Holden & Caswell 1969	1.11
178.0	86.6		Pencil Beam	Holden & Caswell 1969	1.11
178.0	71.3		Pencil Beam	KPW	1.049
178.0	35.1		4C	Holden & Caswell 1969	1.11
408.0	56.9		Molonglo	Shaver & Goss 1970	0.97
408.0	51.4		Molonglo	Shaver 1969	0.97
408.0	88.1		LMH	Holden & Caswell 1969	1.129
610.0	69.4		JB	Holden & Caswell 1969	1.12
750.0	101.4		NRAO 300′	Holden & Caswell 1969	1.114
750.0	46.3		NRAO 300′	KPW	1.046
960.0	78.8		CTB	Holden & Caswell 1969	1.11
1390.0	64.8		W49	Holden & Caswell 1969	1.099
1400.0	36.8		NRAO 300′	KPW	1.029
1400.0	96.3		NRAO 300′	Holden & Caswell 1969	1.099
1414.0	29.3	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
2650.0	25.8	±5.2	Parkes	Milne & Hill 1969	1.03
2695.0	19.8	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	58.5		A56	Holden & Caswell 1969	1.083
2700.0	27.3		Parkes	Day et al. 1970	1.01
3125.0	85.6		K46	Holden & Caswell 1969	1.07
4875.0	18.5		Effelsberg	Downes et al. 1980	1.0
5000.0	16.6		Parkes	Goss & Shaver	1.04
5000.0	17.4		Parkes	Shaver & Goss 1970	1.04
5000.0	14.6		NRAO 140′	KPW	0.993
5000.0	14.4	±0.4	Ft. Davis	Altenhoff et al. 1970	1.03
7830.0	18.7		Haystack	Burke & Wilson 1967	0.99
15000.0	8.9	±0.7	Effelsberg	Green et al. 1975	0.99

G46.8-0.3

R.A.: $19^h15^m50^s$ Size: 17′ S_{408}: 28.6 Jy Type: S
Dec: 12°04′ α: -0.6 Dist: $r_{30.9}$: ≤0.2
Other Names: Part of HC30

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	93.9	±18.8	CLRO	CLGPS	1.0
38.0	102.9		WKB	Holden & Caswell 1969	1.029
80.0	111.1	±50.0	Culgoora	Dickel 1973	1.1
80.0	43.0		Culgoora	Slee & Higgins 1973	1.074
178.0	46.6		Pencil Beam	Holden & Caswell 1969	1.11
408.0	19.6		Molonglo	Caswell et al. 1975	0.97
408.0	24.8		JB	Holden & Caswell 1969	1.129
430.0	48.3	±21.0	Arecibo	Dickel & DeNoyer 1975	1.05
610.0	23.4		JB	Holden & Caswell 1969	1.112
750.0	27.9		NRAO 300′	Holden & Caswell 1969	1.114
1400.0	18.9		NRAO 300′	Holden & Caswell 1969	1.099
1414.0	17.2	±0.4	NRAO 300′	Altenhoff et al. 1970	1.01
1665.0	15.4	±5.5	VRO 37m	Willis 1973	1.06
2695.0	10.0	±0.4	NRAO 140′	Altenhoff et al. 1970	0.99
2700.0	10.1		Parkes	Day et al. 1970	1.01
2700.0	6.5		A	Holden & Caswell 1969	1.083
2730.0	10.9	±0.9	NRAO 300′	Willis 1973	1.02
5000.0	7.1		Parkes	Caswell et al. 1975	1.0
5000.0	5.2	±0.5	NRAO 140′	Angerhofer et al. 1977	0.99

TABLE 1—*Continued*

G54.4-0.3

R.A.: $19^h31^m10^s$	Size: 40′?	S_{408}: 36.0 Jy	Type: S
Dec: 18°45′	α: -0.3	Dist:	$r_{30.9}$: ≤0.2

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
30.9	68.5	±13.7	CLRO	CLGPS	1.0
38.0	67.9		WKB	Holden & Caswell 1969	1.029
178.0	65.7	±15.0	Pencil Beam	Day et al. 1972	1.011
178.0	4.1		4C	Holden & Caswell 1969	1.011
178.0	44.4		Pencil Beam	Holden & Caswell 1969	1.011
1414.0	21.2	±10.0	NRAO 300′	Day et al. 1972	1.01
2700.0	34.8	±5.0	NRAO 300′	Velusamy & Kundu 1974	1.011
2700.0	17.2	±8.0	Parkes	Day et al. 1972	1.01

G94.0+1.0

R.A.: $21^h23^m10^s$	Size: 30′x25′	S_{408}: 20.5 Jy	Type: ?
Dec: 51°40′	α: -0.5	Dist:	$r_{30.9}$: ≤0.1

ν(MHz)	Sc(Jy)	Error(Jy)	Telescope	Reference	Correction
26.3	72.5	±7.0	Clark Lake	Montovani et al. 1982	1.0
30.9	99.3	±19.9	CLRO	CLGPS	1.0
38.0	63.2	±6.0	WKB	Montovani et al. 1982	1.0
178.0	35.5	±5.0	Pencil Beam	Montovani et al. 1982	1.0
750.0	13.3	±1.5	NRAO 300′	Montovani et al. 1982	1.0
1400.0	12.0	±1.5	NRAO 300′	Montovani et al. 1982	1.0
1665.0	11.7	±3.0	NRAO 300′	Montovani et al. 1982	1.0
1720.0	12.0	±1.3	Bologna	Montovani et al. 1982	1.0
2700.0	5.9	±0.4	NRAO 300′	Montovani et al. 1982	1.0
2730.0	6.2	±0.8	NRAO 300′	Montovani et al. 1982	1.0

NOTES.—The following are a list of abbreviations used for references and telescopes cited in Table 1.

Reference abbreviations:

A	Altenhoff *et al.* 1960
3C(R)	Bennett 1962, 1963
D	Davis, Volders, and Westerhout 1965
CLGPS	Kassim 1987, 1988
K&V	Kundu and Velusamy 1972
K	Kuzmin *et al.* 1960
LMH	Large, Mathewson, and Hoslam 1961
MSH	Mills, Slee, and Hill 1958
4C	Pilkington and Scott 1964, Gower, Scott, and Wills 1967
S	Scheuer 1963
W	Westerhout 1958
WKB	Williams, Kenderdine, and Baldwin 1966
CTB	Wilson 1963

Telescope abbreviations:

Algonquin	Algonquin 48 m
Arecibo	Arecibo 1000′
Bologna	Bologna Cross Telescope
CLRO	Clark Lake TPT
Culgoora	Culgoora Radio Heliograph
Dwing	Dwingeloo 25 m
Effelsberg	Effelsberg 100 m
FRO	Fleurs Radio Observatory
Ft. Davis	Fort Davis 85′
FST	Fleurs Synthesis Telescope
Haystack	Haystack 36.5 m
JB	Jodrell Bank 250′
Molongolo	Molongolo Cross Telescope
Parkes	Parkes 64 m
VRO	Vermillion Radio Observatory
WRST	Westerbork Synthesis Array

[1]Sc = Correction × S (published). The correction factor has been used to bring the published flux density in the literature to the Baars *et al.* 1977 scale.

The intrinsic spectral index of the SNR (α) is assumed to be constant throughout the radio range. In the headers of Table 1 we have scaled the derived optical depths to 30.9 MHz ($\tau_{30.9}$) by multiplication of τ_{408} by the appropriate conversion factor of $(30.9/408)^{-2.1}$ (see Kassim 1989, and references therein).

As expected, $\tau_{30.9}$ is most sensitive to the accuracy of the lowest frequency flux density measurements, i.e., those from Clark Lake, so that the errors for τ have been obtained from the $\sim 20\%$ error estimate appropriate to the Clark Lake data (Kassim 1987, 1988; see also Kassim 1989). While τ is also dependent on the spectral index of the SNR and therefore on the higher frequency measurements, in most cases numerous higher frequency points are available to determine the optically thin spectral index, making τ relatively insensitive to the error of any individual measurement.

Table 1 lists all available integrated flux density measurements. Columns (1), (2), and (3) list, respectively, the observing frequency in MHz, the corrected (see below) integrated flux density (Sc) in janskys (underlined values are not used; see below), and an error estimate (also in janskys) if one is available. Columns (4) and (5) list the instrument and reference for each observation, and column (6) gives the correction factor which was used to bring the published flux density to the absolute scale of Baars *et al.* (1977). Most of these correction factors were obtained from Kuhr *et al.* (1981). The remainder was derived by comparing the assumed flux densities of the original calibrators with their values determined by Baars *et al.* (1977). The notation "NA" in column (6) means that an estimate of the correction factor is not available, usually because the original reference does not list the assumed flux densities of the primary calibrators. (In some cases note that only a secondary reference or instrument description is listed in col. [4].)

The flux densities listed in Table 1 have also been edited to remove poor or inappropriate measurements. The principal rejection criteria were the following:

1. The observations have been superseded by more recent, higher quality observations at a comparable frequency, or the observations are in strong disagreement with a number of other measurements made at nearby frequencies.

2. The observations were made with an instrument having insufficient resolution to avoid confusion from nearby sources. Confusion by thermal sources often leads to an overestimate of the flux density at high frequencies.

3. The observations were made by an interferometer with insufficient short spacings to measure the full integrated flux density of a large remnant. This undersampling leads to an underestimate of the flux density.

Some personal judgement was often required in compiling Table 1 since the data rarely fall neatly into the acceptance or rejection categories. Therefore, column (2) lists *all* of the available flux densities, but the underlined measurements are those which were not used to derive the spectra presented in Kassim (1989).

A discussion of the analysis and interpretation of these data and plots of the points and fitted spectra for the SNRs within the radio regime are given in Kassim (1989). Results of that analysis are inconsistent with low-frequency absorption of SNRs by a widely distributed, homogeneous ionized component of the ISM. Instead they suggest that low-frequency turnovers in SNR spectra are due to absorption by localized regions of low-density ionized gas probably associated with normal H II regions.

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NAMIR E. KASSIM: NRL-Code 4131K, Naval Research Laboratory, Washington, DC 20375-5000