

VLA TEST MEMORANDUM #139

RADIO INTERFERENCE IN THE 20-cm BAND

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This report details the results of 10 short test runs made in 1982 in an attempt to locate serious radio frequency interference within L-band. The array was used in spectral line mode with a channel width of 195 KHz. All runs but one were with IF 'A'. All frequencies between 1345 and 1735 MHz were scanned. Spectra were made by simply summing over all baselines. No attempt at accurate calibration was made as it was felt that the uncalibrated data were sufficient to attain the goals of the experiment.

The observations were made at random times, including both weekends and weekdays, nights and days. There are clearly two classes of interfering signals; one class contains those signals which are nearly always present - these are easily avoided. The other class contains the very infrequent signals. Unfortunately, these come in all strengths - and we do not have the means to predict their appearance.

The results are listed in Table I. Listed are: (1) the frequencies at which RFI was detected, (2) the number of observations in which the RFI was detected (max=10), (3) a letter giving a rough estimate of strength (S=strong, M=medium, W=weak, where $10 \times M$ and $M = 10 \times W$) and (4), a comment. Weak signals should present no problem to wide-band observations. Medium signals (M) could be

detrimental, strong signals (S) certainly will be, and must be avoided. One run was made with IF 'C', and a few interfering signals, apparently unique to this polarization, were found. These are noted in the table.

Most of the data in Table 1 is presented in Fig. 1 in graphical form. The height of the bar represents the interference strength, and the number represents the number of occurrences (max=10). Use of this figure should help in frequency selection.

Further observations in both polarizations will be made, and an updated report submitted when sufficient data acquired.

TABLE I
RESULTS OF L-BAND MONITORING

FREQ (MHz)	#	STRENGTH	COMMENT
1350	10	M	50-MHz Birdie
1351	1	M	IF 'C' only
1361	9	M-S	
1370	4	W	
1380	3	W	
1390	1	W	
1400	10	M	50-MHz Birdie
1404	10	M	Harmonic Response
1418.6	2	W	
1424.3	8	M-W	Harmonic Response
1427	1	W	
1432	1	M	
1434	1	W	
1450	10	M	50-MHz Birdie
1455.6	1	W	
1462.9	1	W	
1464.9	2	W	
1470	1	W	
1476.3	6	W	
1483.7	3	W	
1485.7	6	W	
1500	9	M	50-MHz Birdie

1505.9	1	W	
1510	2	W	
1516.3	1	W	
1520	1	W	
1521	1	W	
1522	1	W	
1530	1	W	
1535-1545	8		Numerous weak signals
1550	10	M	50-MHz Birdie
1557	1	W	
1560	1	W	
1575.1	1	M	
1576.0	5	M	Very wide
1600	10	S	
1607.5	5	W	
1650	9	M-W	50-MHz Birdie
1666.3	1	M	
1675.6	1	S	
1676.3	2	M-S	
1676.7	1	S	
1680-1682	6	M	At Least 4 different frequencies
1685.9	1	S	
1687.1	6	M	1 MHz wide on one occasion
1691.0	8	M	
1692.4	2	W	
1697.4	2	W	

1700	10	M	50-MHz Birdie
1711.0	1	M	C IF only
1713.9	5	S	
1714.3	9	S	
1714.7	1	M	Wide, in 'C' IF only
1722.9	7	M	
1729.0	9	S	
1735.1	9	M	

RP/bmg

Fig 1. FREQUENCY AND STRENGTHS OF L-BAND RFI

