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VLB ARRAY MEMO No. 494

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OCT 03 1985

VLB ARRAY MEMO No. _____
NATIONAL RADIO ASTRONOMY OBSERVATORY
Socorro, NM

RFI SURVEY FOR THE VLBA
NORTH CENTRAL WASHINGTON SITE
Okanogan Valley, Washington
July 1985
Jim Oty

(1)

The Okanogan Valley in North Central Washington was the subject of VLBA RFI Survey number six. No specific location has yet been selected so the area of interest included the valley from Oroville, on the Canadian border, south to Brewster, Wa. The trip to this area from New Mexico took about four and a half days towing the equipment trailer.

The site selected for the main RFI survey effort was on Brewster Flats, about 5 miles north of Brewster, WA. Brewster Flats is presently occupied by a COMSAT ground station consisting of a 97 foot dish, a 12 foot dish, and support facilities. This COMSAT station was one of the original stations constructed about 20 years ago and is scheduled for de-activation in January, 1987. This site was obviously chosen very carefully by COMSAT. The RF environment is mild and the horizon is 4 degrees or less in all directions. The RFI monitoring trailer was parked near the main gate of the COMSAT station and electrical power was supplied by COMSAT.

A complete RF interference survey was conducted at this site. All VLBA bands from 75 MHz. to 11 GHz. were monitored. The survey lasted from July 8 through July 17, 1985. To insure complete coverage in the valley, a quick look survey was conducted at a second location. An attempt was made to operate from the Omak Airport but due to power problems this was not possible. I did, however, find a location at an apple farm about one mile south of the Omak Airport. This quick look survey was completed in two days and the the results are included in this report.

At the conclusion of the Okanogan Valley survey, the equipment was taken to the Owens Valley Radio Observatory in preparation for then next VLBA RFI survey that is scheduled during the month of August.

This report consists of two parts, Brewster Flats and the Omak Airport. Each part has a comment section and a table of plots. The usual Table of Harmful Interference Levels, at the end of the report, applies to both parts.

(2)

PART ONE, BTEWSTER COMSAT

This RFI survey did not turn up any significant interference. It did tend to confirm that COMSAT did their home work prior to building their station on Brewster Flats. The only signals that were of any consequence were associated with the COMSAT station and will disappear when the station is shut down.

The following comments are my observations:

73 MHz. to 75 MHz. No local low band VHF TV stations. Very little FM activity.

300 MHz. to 350 MHz. Not much military air/ground activity in this area. Closest military base is Fairchild AFB in Spokane. The usual low level rails generated by the Compaq computer are present in the 180 deg. azimuth plot.

550 MHz. to 650 MHz. TV channel 31 is an Omak low power translator located east of Omak. Power is only 100 watts but beamed into the Okanogan Valley. Other signals are distant TV stations.

500 MHz. to 1 GHz. Quick look at VLBA IF band. Only a few TV translators seen.

1.35 GHz. to 1.75 GHz. One fairly strong signal at 1.579 GHz. Rest of band clear except for some short term stuff.

2.15 GHz. to 2.35 GHz. Strong signal at 2.176 GHz. is link into the COMSAT station from the south. Transmit signal from the station is at 2.124 GHz. and not shown on this plot. Other signals are usual commercial links in the valley.

4.6 GHz. to 5.2 GHz. No signals.

5.9 GHz. to 6.4 GHz. Only signals in this band are the up-link signals from the COMSAT station.

7.9 GHz. to 10.7 GHz. No signals.

10.7 GHz. to 11.2 GHz. Three signals are from COMSAT station.

Table I lists the plots included with this report for part one. These are typical plots intended to show items of interest. Many other plots were generated and are on file.

(3)

PART TWO, OMAK AIRPORT

This shortened version of a RFI survey was conducted at a location very near to the Omak Airport. While all bands were looked at carefully, the time spent on each band was reduced. This test was meant to be a confidence builder to prove that the RF environment did not change significantly up and down the valley.

These are my comments:

73 MHz. to 75 MHz. Still no local low band VHF TV stations. Only a few local FM stations.

300 MHz. to 350 MHz. Not much military air/ground activity in this area. Closest military base is Fairchild AFB in Spokane. Looks even better than Brewster Flats.

550 MHz. to 650 MHz. TV channel 31 is an Omak low power translator located east of Omak on Omak Mt. Power is only 100 watts but beamed into the Okanogan Valley. Signal strength is amazing considering it's power.

500 MHz. to 1 GHz. Quick look at VLBA IF band. Only a few TV translators seen.

1.35 GHz. to 1.75 GHz. No evidence of strong signal at 1.579 GHz. that was seen at Brewster Flat. Band clear except for some short term stuff.

2.15 GHz. to 2.35 GHz. Only one significant commercial signal at 2.183 GHz.

4.6 GHz. to 5.2 GHz. No signals.

5.9 GHz. to 6.4 GHz. Signals from COMSAT station are not seen.

7.9 GHz. to 11.2 GHz. No signals.

Table II lists the plots included with this report for part one. These are typical plots intended to show items of interest. Many other plots were generated and are on file.

(4)

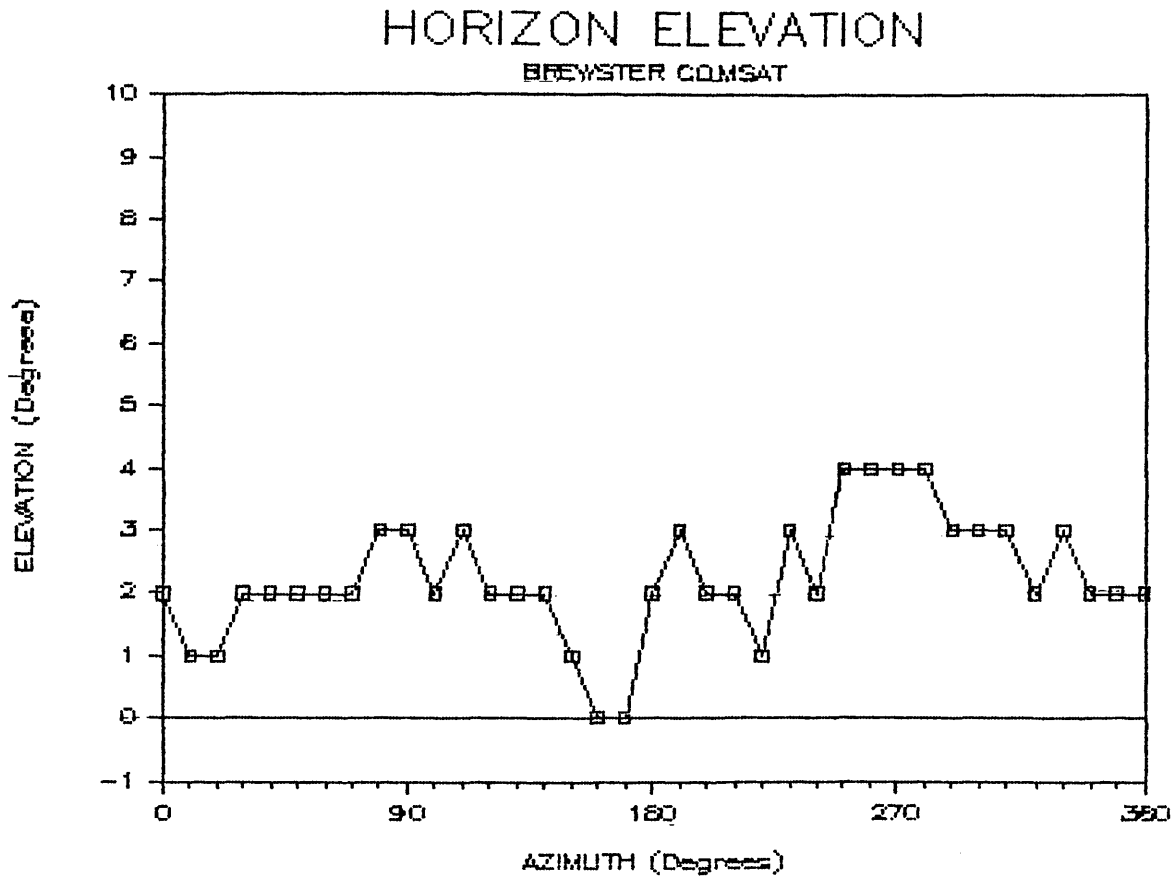
Table III has been expanded to include data from VLBA Electronics Memo 39, Table I. This data gives flux density required by an interfering signal that would result in a 1% compression in amplifiers.

A plot of the angle of elevation of the horizon versus the azimuth for the Brewster Flat location is included as Figure 1 for reference. This is typical of many locations including Omak Airport.

Figure 2 is a map of the area showing the locations of the two survey sites.

(5)

FIGURE 1



(6)
FIGURE 2

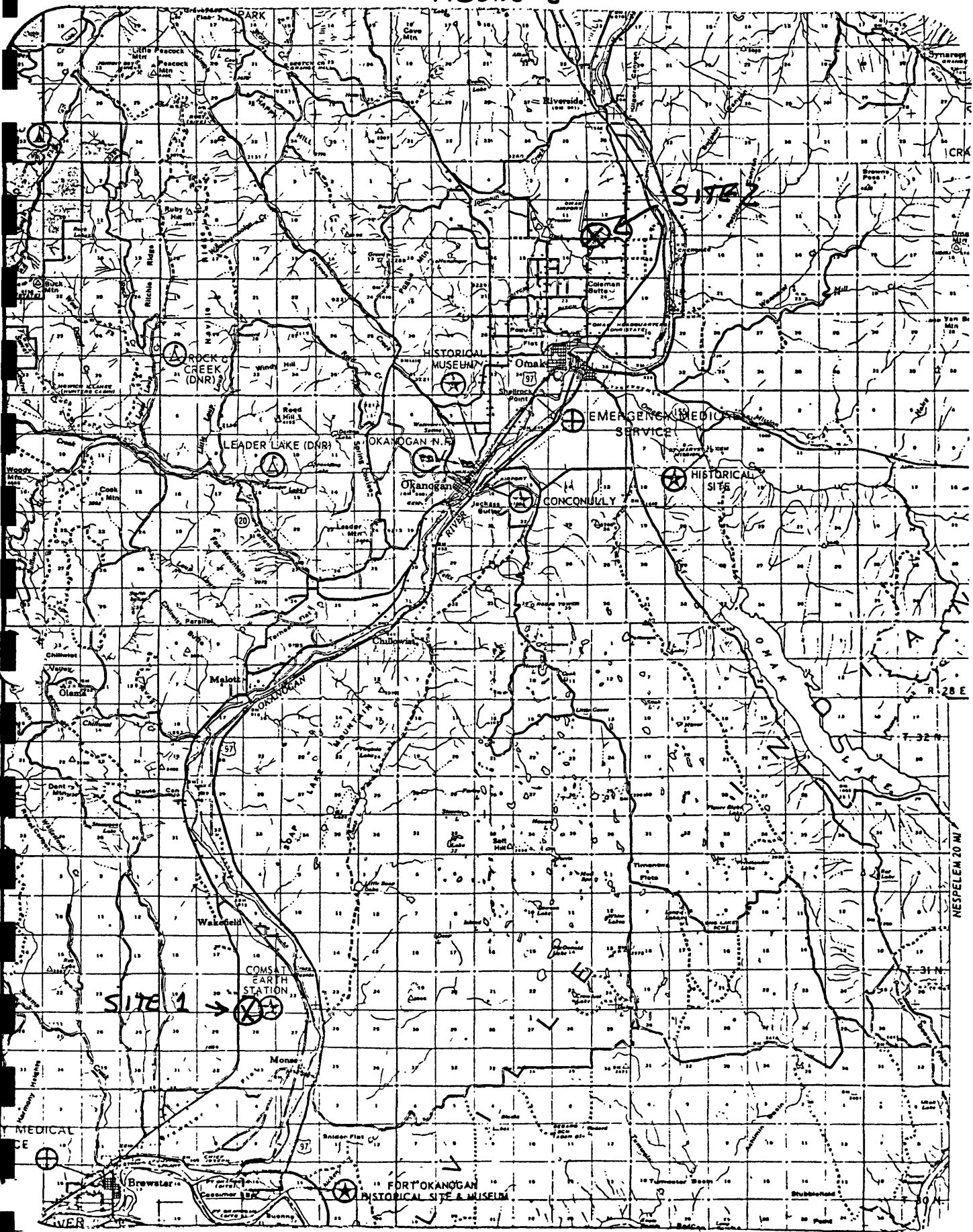


TABLE I
 BREWSTER FLATS COMSAT STATION
 Brewster, Washington

Plot #	Frequency	Filter Fc/BW	Comments
1	50 - 100 MHz	None	North. Typical plot.
2	50 - 100 MHz	None	South. Typical plot.
3	74 - 76 MHz	75/5%	North. Single plot showing noise floor.
4	74 - 76 MHz	75/5%	South. Single plot showing noise floor.
5	300 - 350 MHz	325/50	North. Very little air/ground communications.
6	300 - 350 MHz	325/50	South. Same as plot 5.
7	550 - 650 MHz	600/100	North. TV Ch 31 from Omak.
8	550 - 650 MHz	600/100	South.
9	500 - 1000 MHz	None	North. Quick look for signals in the VLBA IF band.
10	500 - 1000 MHz.	None	South. Same as plot 9.
11	1350 - 1550 MHz.	1500/1000	North.
12	1350 - 1550 MHz.	1500/1000	South.
13	1550 - 1750 MHz.	1500/1000	North. Strong signal at 1.579 GHz. of unknown origin.
14	1550 - 1750 MHz.	1500/1000	South.
15	1300 - 1800 MHz.	1500/1000	Omni. Long term plot.
16	2150 - 2350 MHz	HP2000	North. Signal at 2.176 GHz. is from COMSAT station.
17	2150 - 2350 MHz	None.	South
18	4.6 - 4.8 GHz	HP4000	Typical plot.

(8)

TABLE I (Cont.)

19	4.8 - 5.0 GHz	HP4000	Typical plot.
20	5.0 - 5.2 GHz.	HP4000	Typical plot.
21	5.9 - 6.4 GHz	HP4000	All signals from COMSAT station.
22	7.9 - 8.4 GHz.	HP6000	Typical plot.
23	8.4 - 8.9 GHz	HP6000	Typical plot.
24	10.2 -10.7 GHz	HP6000	Typical plot. Signal is spectrum analyzer birdie.
25	10.7 11.2 GHz	HP6000	Typical plot. Signals are from COMSAT station.

TABLE II
 OMAK AIRPORT
 Omak, Washington

Plot #	Frequency	Filter Fc/BW	Comments
26	50 - 100 MHz	None	North.
27	50 - 100 MHz	None	South.
28	74 - 76 MHz	75/5%	North. Single plot showing noise floor.
29	74 - 76 MHz	75/5%	South. Single plot showing noise floor.
30	300 - 350 MHz	325/50	North. Signals are air/ground communications.
31	300 - 350 MHz	325/50	South.
32	550 - 650 MHz	600/100	East. TV Ch 31 from Omak Mt.
33	550 - 650 MHz	600/100	South.
34	500 - 1000 MHz	None	North. Quick look for signals in the VLBA IF band.
35	500 - 1000 MHz.	None	South. Quick look for signals in VLBA IF band.
36	1350 - 1550 MHz.	1500/1000	North.
37	1350 - 1550 MHz.	1500/1000	South
38	1550 - 1750 MHz.	1500/1000	North.
39	1550 - 1750 MHz.	1500/1000	East.
40	2150 - 2350 MHz	None.	North.
41	2150 - 2350 MHz	None.	East.
42	4.6 - 4.8 GHz	HP4000	Typical plot.
43	4.8 - 5.0 GHz	HP4000	Typical plot.

(10)
TABLE II (Cont.)

44	5.0 - 5.2 GHz.	HP4000	Typical plot.
45	5.9 - 6.4 GHz	HP4000	South. Only signal found in this band.
46	7.9 - 8.4 GHz.	HP6000	Typical plot.
47	8.4 - 8.9 GHz	HP6000	Typical plot.
48	10.2 -10.7 GHz	HP6000	Typical plot.
49	10.7 11.2 GHz	HP6000	Typical plot.

TABLE III
HARMFUL INTERFERENCE LEVELS

VLBA TUNNING RANGE	HARMFUL INTERFERENCE LEVELS (Note 1)	RFI MEASURED THRESHOLD (Note 2 & 3)	FLUX DENSITY FOR 1% COMP. (Note 4)
50 - 100 MHz.	*	-138 dBW/m ²	#
310 - 340 MHz.	-151 dBW/m ²	-152 dBW/m ²	-72 dBW/m ²
580 - 640 MHz.	-146 dBW/m ²	-143 dBW/m ²	-67 dBW/m ²
1.35 - 1.75 GHz.	-135 dBW/m ²	-140 dBW/m ²	-59 dBW/m ²
2.175 - 2.425 GHz.	*	-138 dBW/m ²	-55 dBW/m ²
4.6 - 5.1 GHz.	-120 dBW/m ²	-128 dBW/m ²	-49 dBW/m ²
4.99 - 5.0 GHz. (Sub-band)	-127 dBW/m ²	-128 dBW/m ²	-49 dBW/m ²
5.9 - 6.4 GHz.	-120 dBW/m ²	-128 dBW/m ²	-47 dBW/m ²
8.0 - 8.8 GHz.	*	-120 dBW/m ²	-44 dBW/m ²
10.2 - 11.2 GHz.	-110 dBW/m ²	-115 dBW/m ²	-42 dBW/m ²

Note 1: These levels, from VLB Array Memo No. 81, are increased by 10 dB since ground based RFI is likely to enter the antenna through 0 dBI sidelobes rather than the +10 dBI sidelobes assumed in Memo 81.

Note 2: These levels are threshold levels from Table I plots.

Note 3: These values may vary slightly from survey to survey because of minor equipment changes.

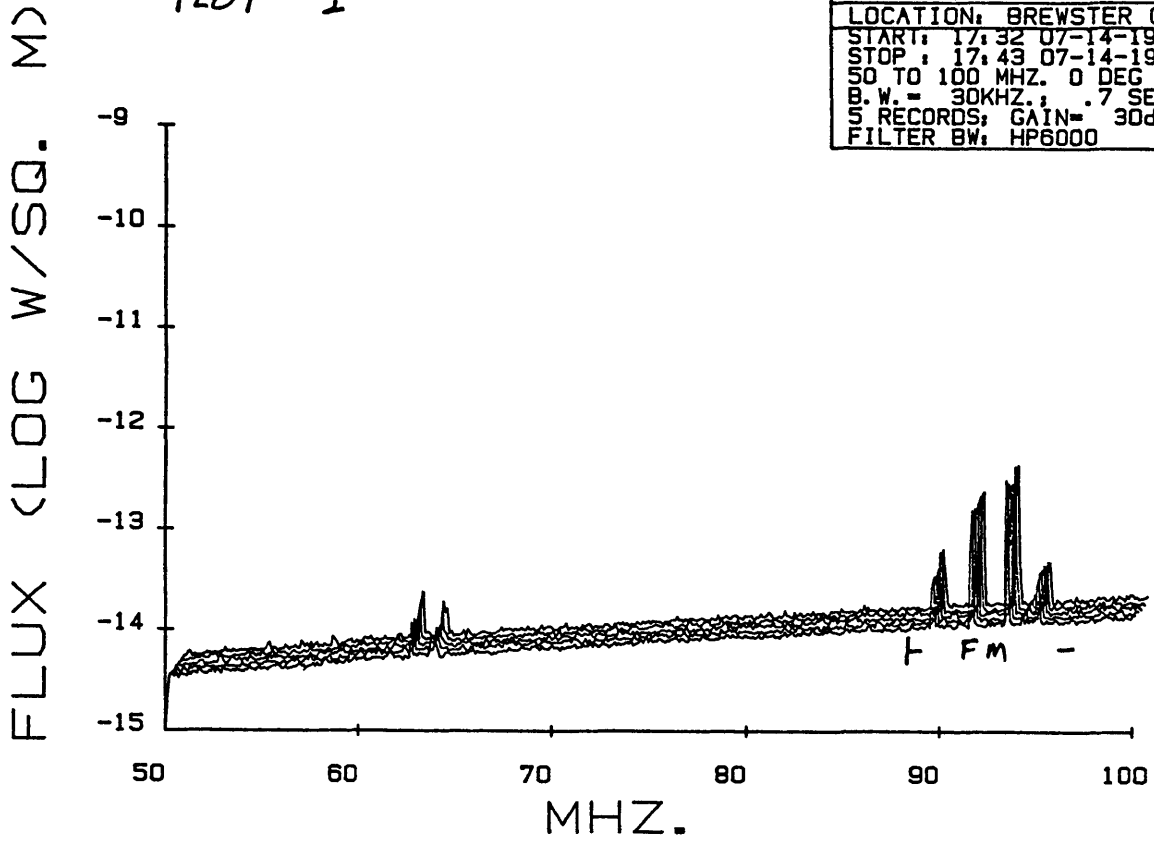
Note 4: These levels are from VLBA Electronics Memo No. 39.

* These frequency bands not included in memo 81.

These frequency bands not included in memo 39.

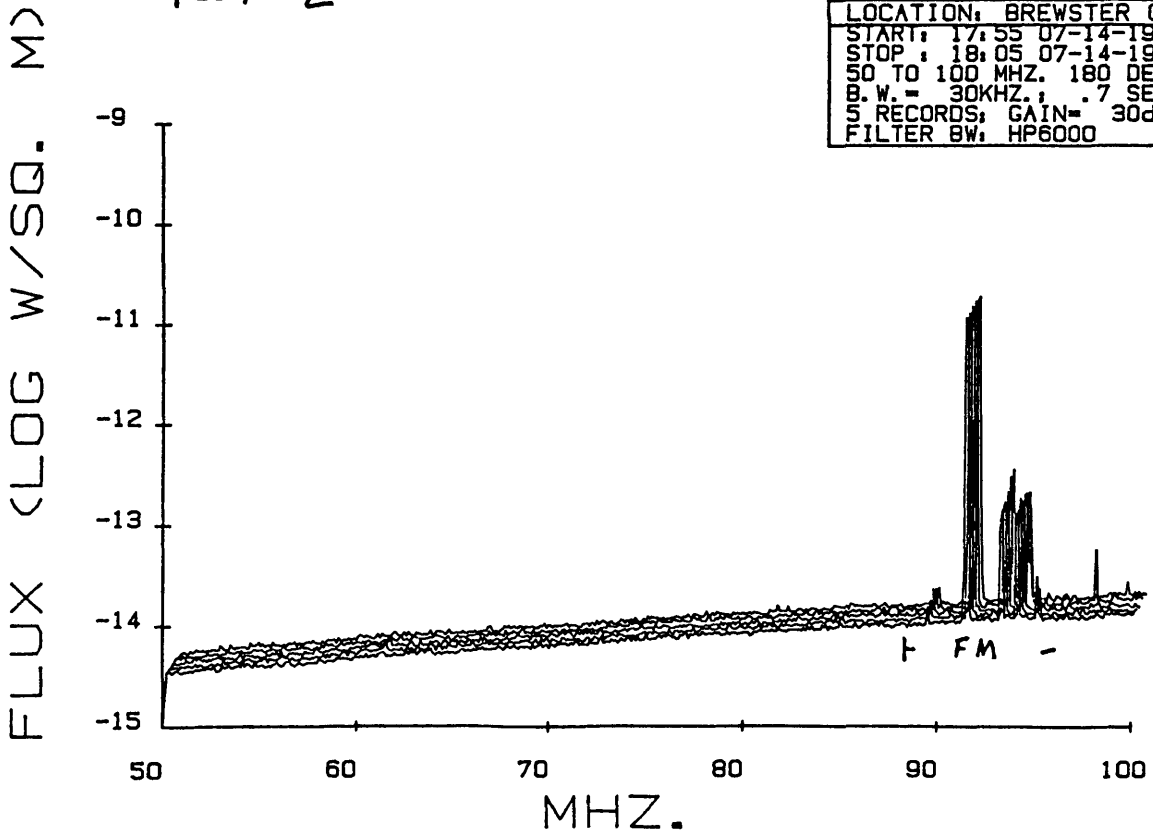
PLOT # 1

VLBA RFI SURVEY
LOCATION: BREWSTER CSAT
START: 17:32 07-14-1985
STOP: 17:43 07-14-1985
50 TO 100 MHZ. 0 DEG AZ.
B.W. = 30KHZ.; .7 SEC/CM.
5 RECORDS; GAIN= 30dB
FILTER BW: HP6000



PLOT # 2

VLBA RFI SURVEY
LOCATION: BREWSTER CSAT
START: 17:55 07-14-1985
STOP: 18:05 07-14-1985
50 TO 100 MHZ. 180 DEG AZ.
B.W. = 30KHZ.; .7 SEC/CM.
5 RECORDS; GAIN= 30dB
FILTER BW: HP6000



PLOT # 3

BREWSTER
JULY 17, 85
10KH₃ BW
FILTER: 74/5%
NORTH

POWER (W/M²)

4×10^{-16}

4×10^{-17}

4×10^{-18}

73

74

MHz

75

PLOT 4

BREWSTER
JULY 17, 85
10KH₃ BW
75/5% FILTER
SOUTH

POWER (W/M²)

4×10^{-16}

4×10^{-17}

4×10^{-18}

73

74

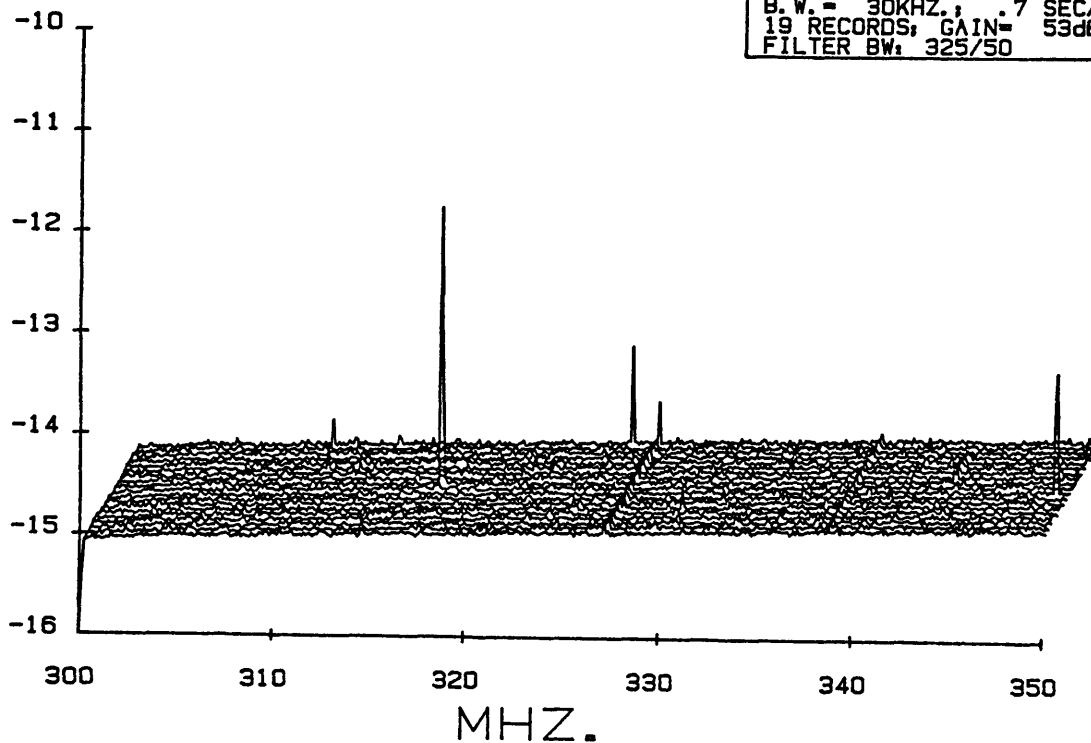
MHz

75

PLOT #5

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START: 16:58 07-15-1985	
STOP: 19:59 07-15-1985	
300 TO 350 MHZ. 0 DEG AZ.	
B.W. = 30KHZ.; .7 SEC/CM.	
19 RECORDS; GAIN= 53dB	
FILTER BW: 325/50	

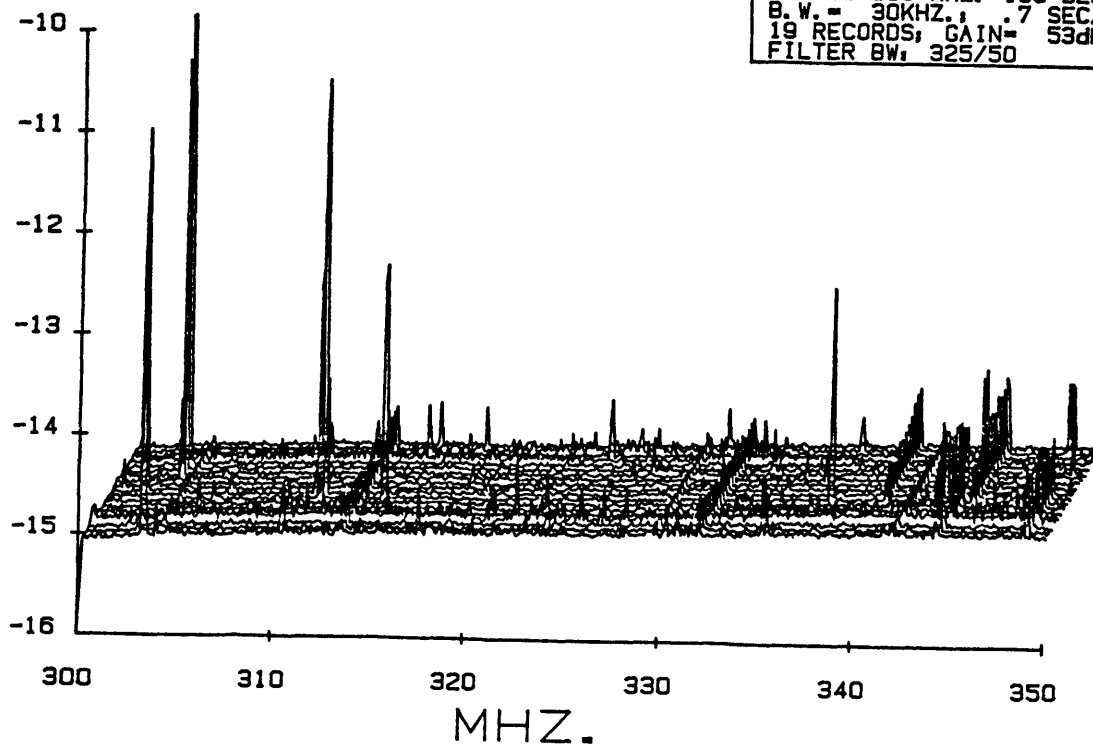
FLUX (LOG W/SQ. M)



PLOT #6

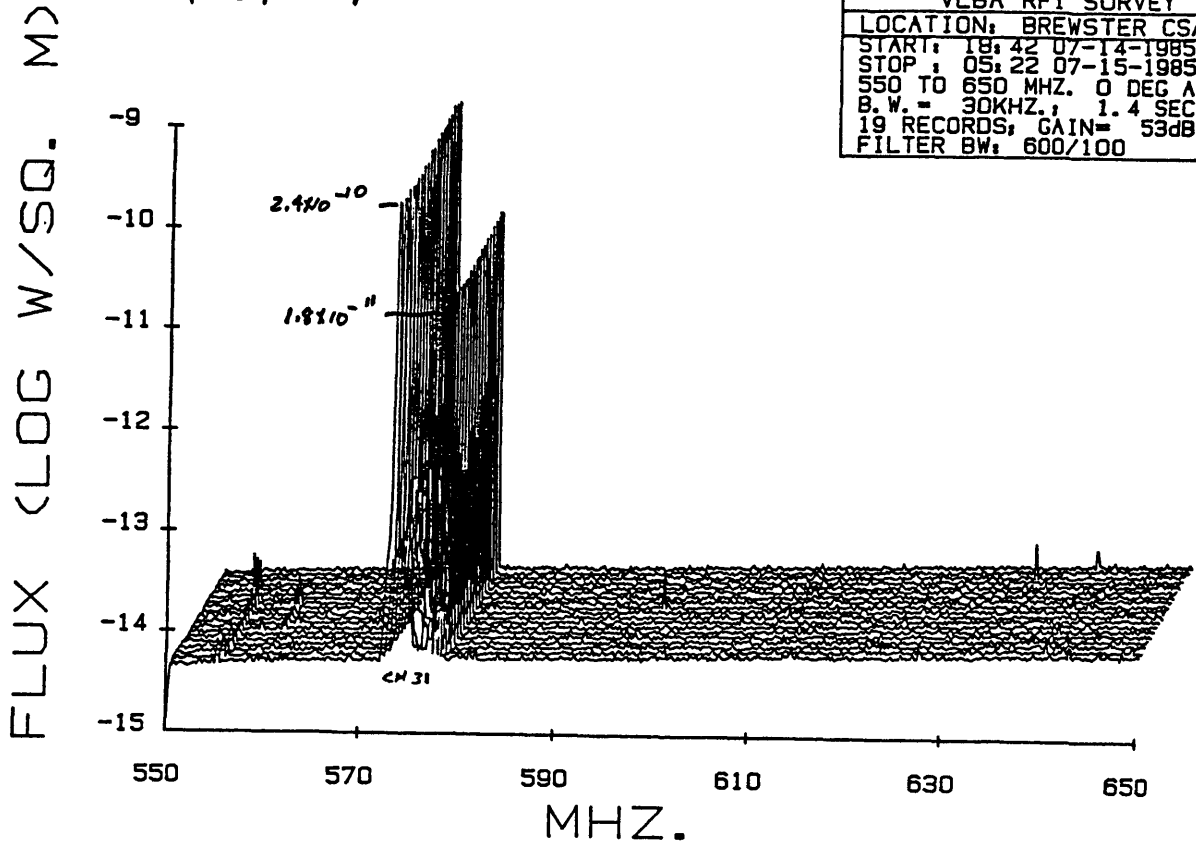
VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START: 07:14 07-16-1985	
STOP: 10:47 07-16-1985	
300 TO 350 MHZ. 180 DEG AZ.	
B.W. = 30KHZ.; .7 SEC/CM.	
19 RECORDS; GAIN= 53dB	
FILTER BW: 325/50	

FLUX (LOG W/SQ. M)



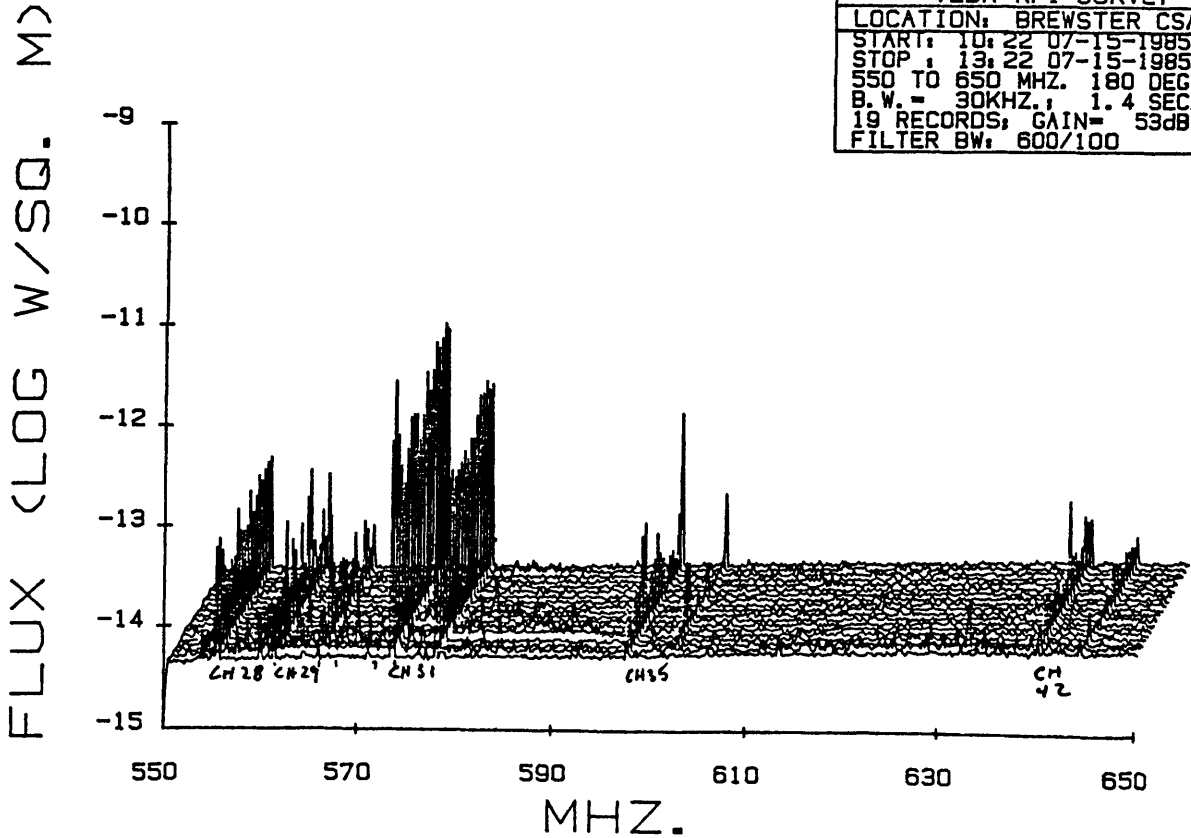
PLOT # 7

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START: 18:42 07-14-1985	
STOP: 05:22 07-15-1985	
550 TO 650 MHZ. 0 DEG AZ.	
B.W. = 30KHZ.; 1.4 SEC/CM.	
19 RECORDS; GAIN = 53dB	
FILTER BW: 600/100	



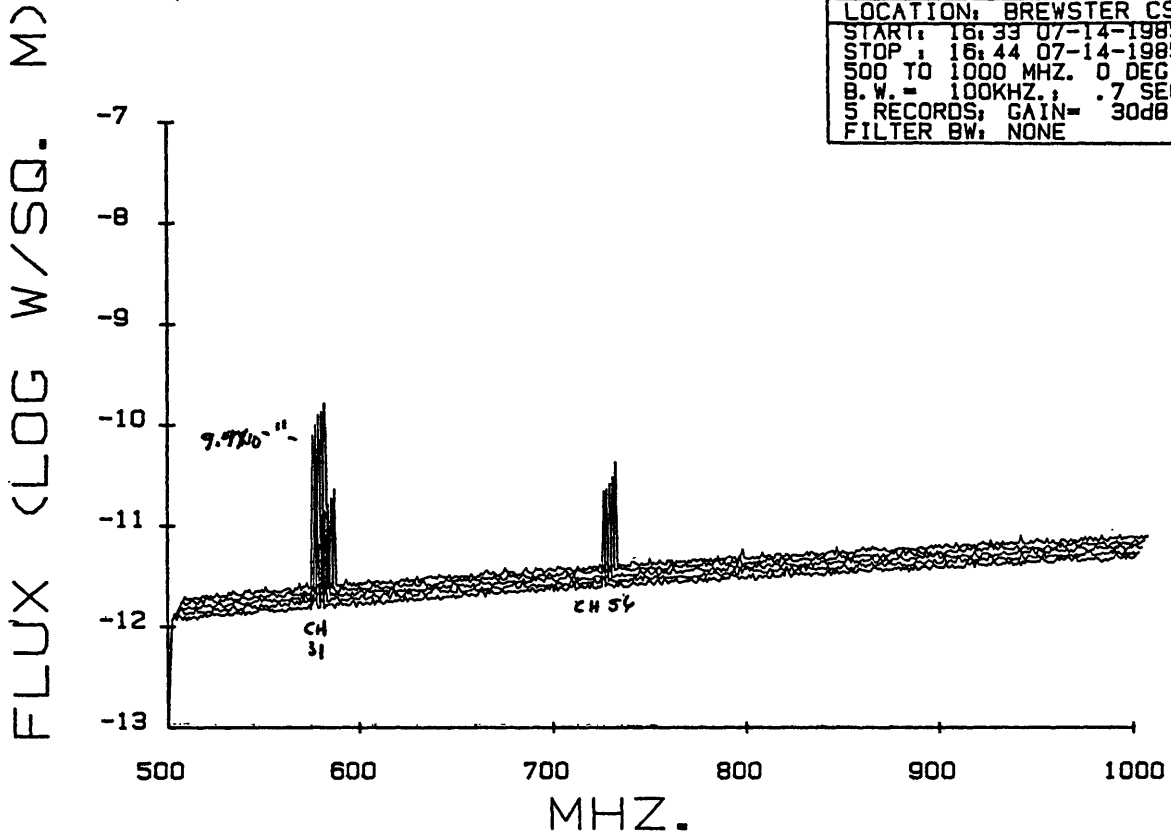
PLOT # 8

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START: 10:22 07-15-1985	
STOP: 13:22 07-15-1985	
550 TO 650 MHZ. 180 DEG AZ.	
B.W. = 30KHZ.; 1.4 SEC/CM.	
19 RECORDS; GAIN = 53dB	
FILTER BW: 600/100	



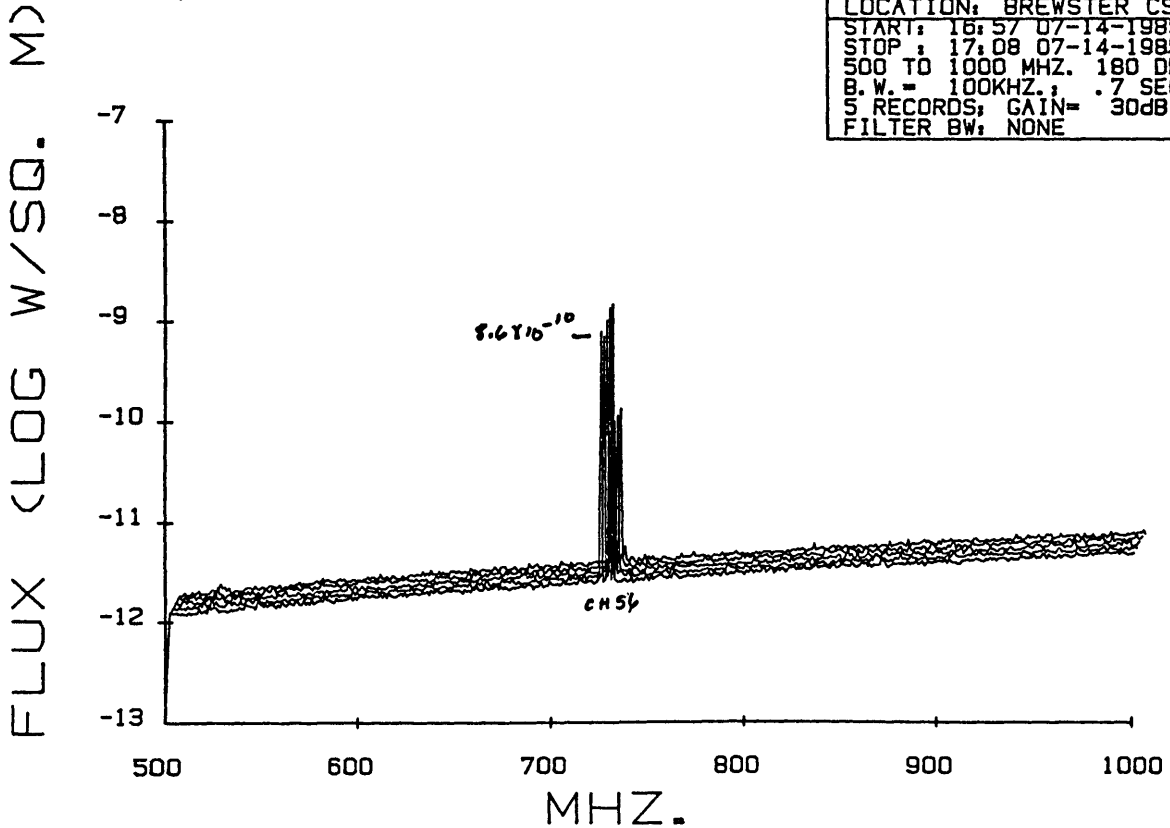
PLOT # 9

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START: 16:33 07-14-1985	
STOP: 16:44 07-14-1985	
500 TO 1000 MHZ. 0 DEG AZ.	
B.W. = 100KHZ.; .7 SEC/CM.	
5 RECORDS; GAIN= 30dB	
FILTER BW: NONE	



PLOT # 10

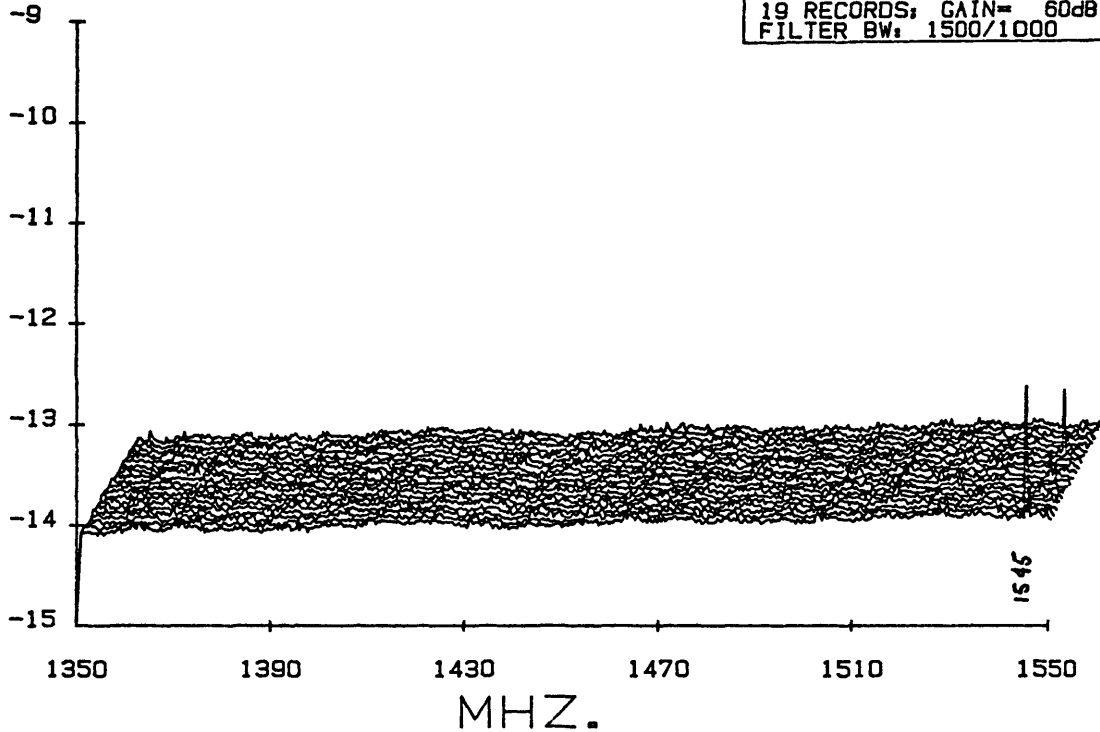
VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START: 16:57 07-14-1985	
STOP: 17:08 07-14-1985	
500 TO 1000 MHZ. 180 DEG AZ.	
B.W. = 100KHZ.; .7 SEC/CM.	
5 RECORDS; GAIN= 30dB	
FILTER BW: NONE	



PLOT #11

VLBA RFI SURVEY
LOCATION: BREWSTER CSAT
START: 14:08 07-13-1985
STOP : 18:29 07-13-1985
1350 TO 1550 MHZ. 0 DEG AZ.
B.W. = 30KHZ.; 2.8 SEC/CM.
19 RECORDS; GAIN= 60dB
FILTER BW: 1500/1000

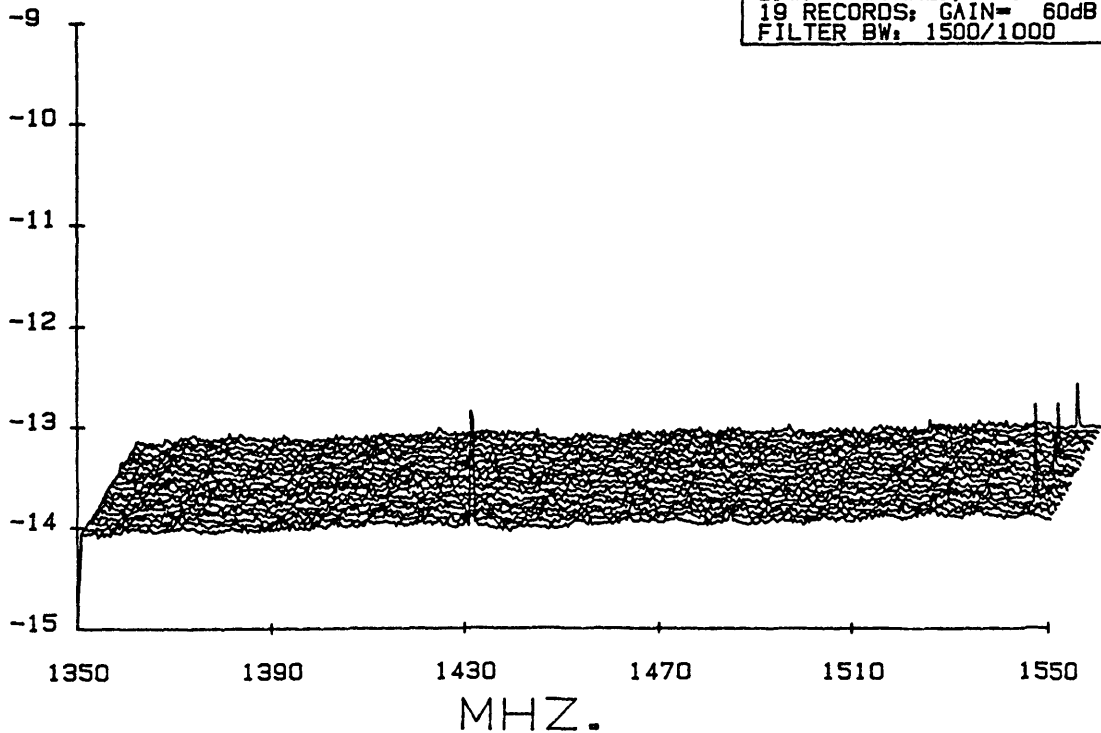
FLUX (LOG W/SQ. M)



PLOT #12

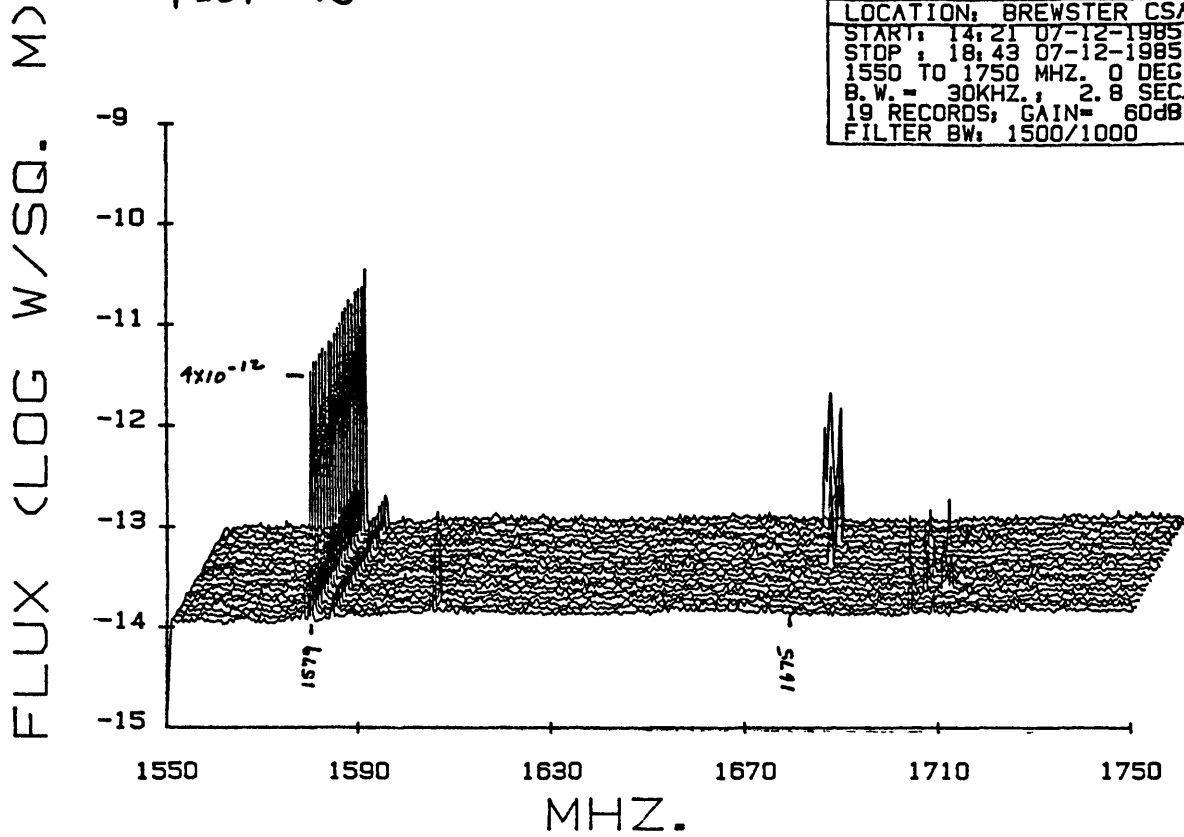
VLBA RFI SURVEY
LOCATION: BREWSTER CSAT
START: 07:50 07-13-1985
STOP : 12:09 07-13-1985
1350 TO 1550 MHZ. 180 DEG AZ.
B.W. = 30KHZ.; 2.8 SEC/CM.
19 RECORDS; GAIN= 60dB
FILTER BW: 1500/1000

FLUX (LOG W/SQ. M)



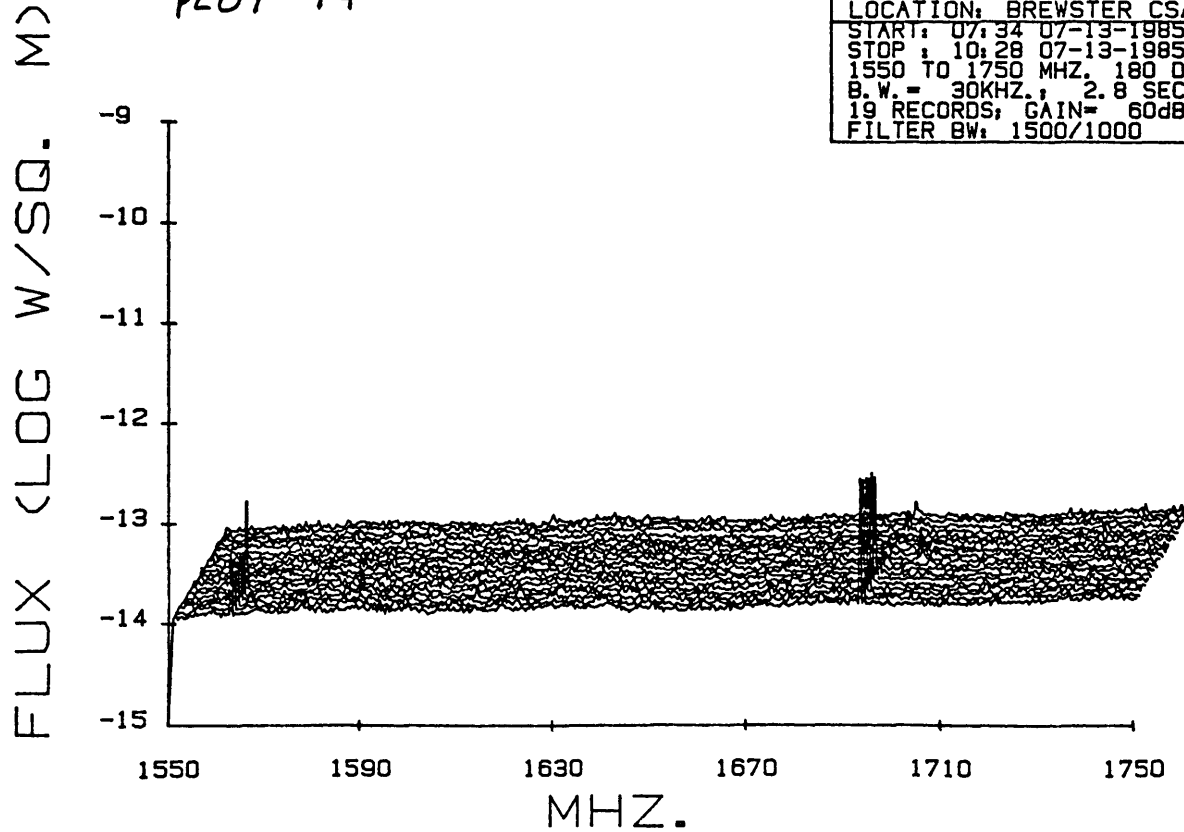
PLOT # 13

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	14:21 07-12-1985
STOP:	18:43 07-12-1985
1550 TO 1750 MHZ. 0 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
19 RECORDS;	GAIN= 60dB
FILTER BW: 1500/1000	



PLOT # 14

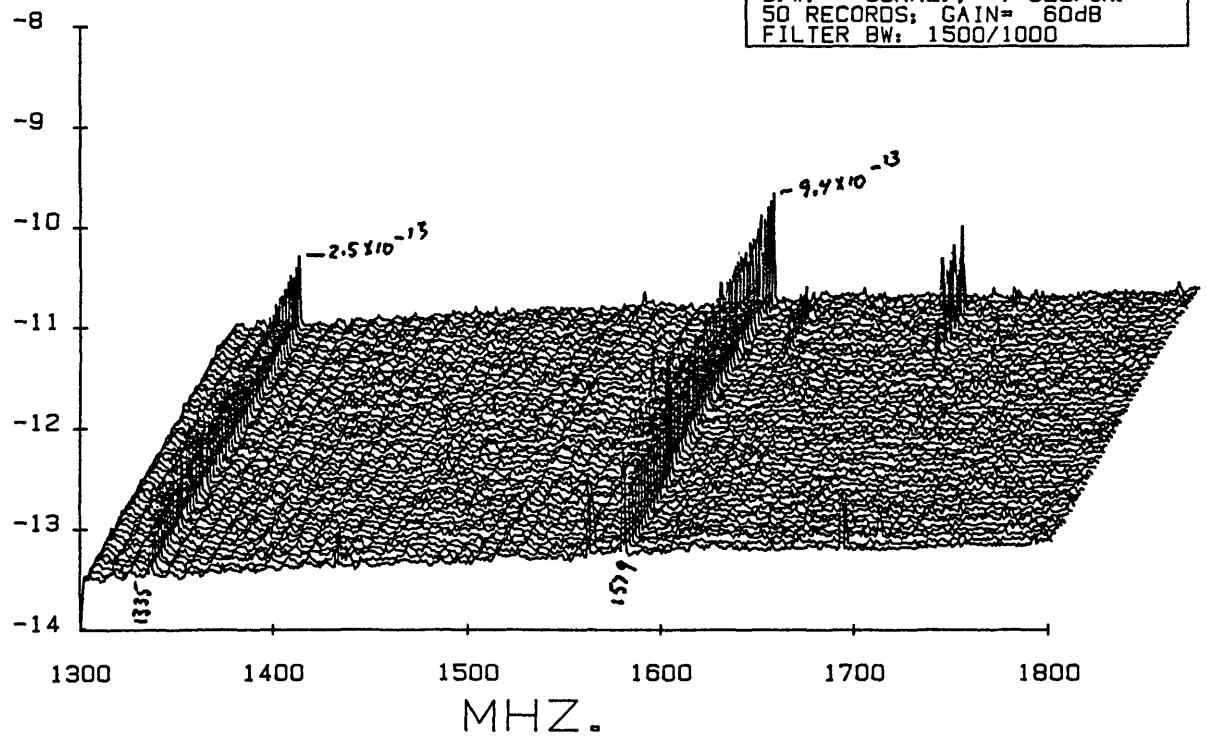
VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	07:34 07-13-1985
STOP:	10:28 07-13-1985
1550 TO 1750 MHZ. 180 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
19 RECORDS;	GAIN= 60dB
FILTER BW: 1500/1000	



PLOT # 15

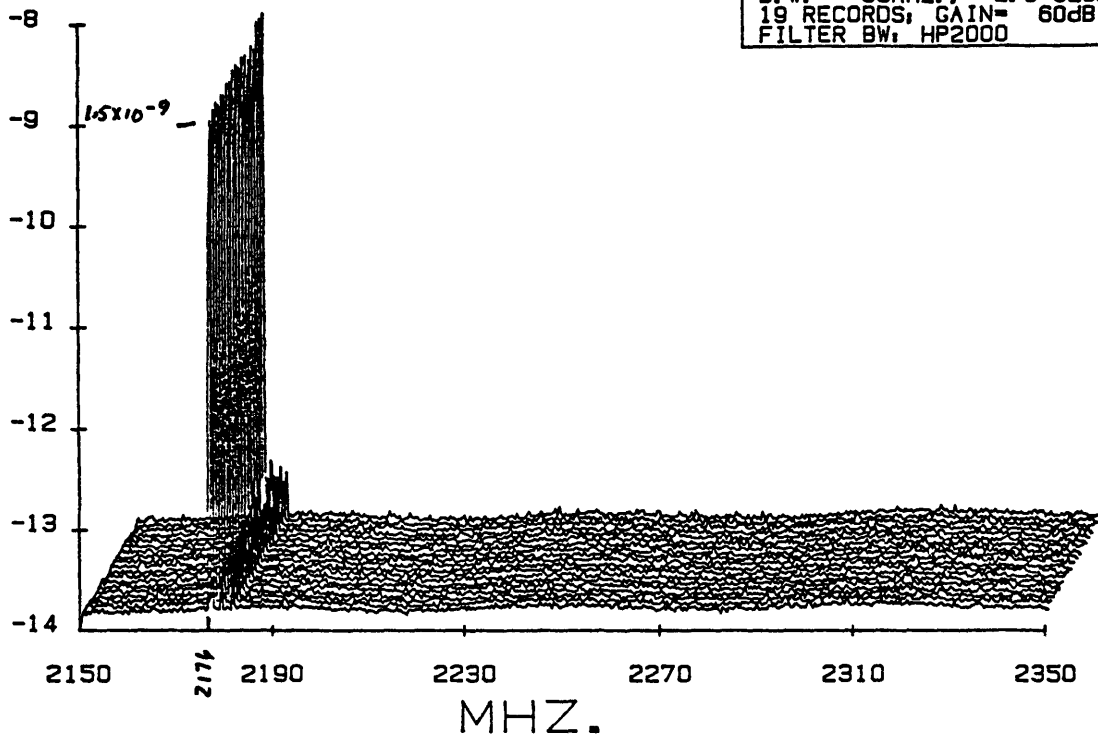
VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	21:20 07-09-1985
STOP:	06:55 07-10-1985
1300 TO 1800 MHZ. OMNI ANT.	
B. W. =	30KHZ.; 7 SEC/CM.
50 RECORDS; GAIN= 60dB	
FILTER BW: 1500/1000	

FLUX (LOG W/SQ. M)



FLUX (LOG W/SQ. M)

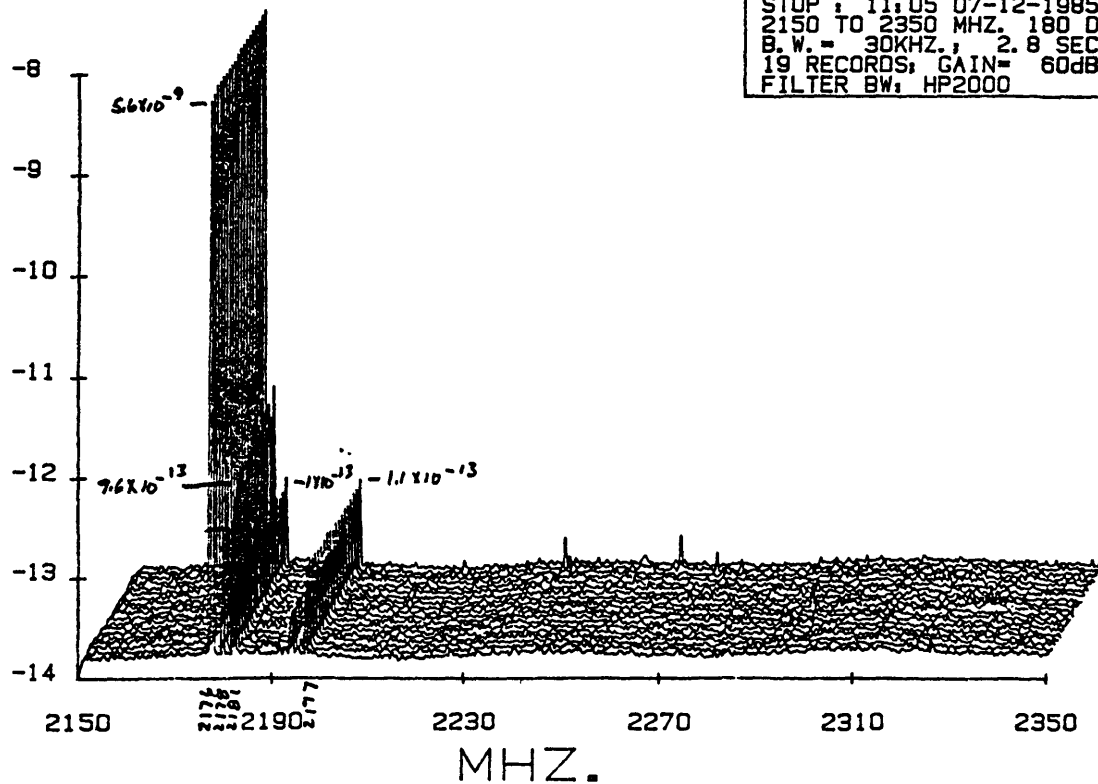
PLOT #16



VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	16:38 07-11-1985
STOP:	19:35 07-11-1985
2150 TO 2350 MHZ. 0 DEG AZ.	
B. W. =	30KHZ.; 2.8 SEC/CM.
19 RECORDS; GAIN= 60dB	
FILTER BW: HP2000	

FLUX (LOG W/SQ. M)

PLOT #17

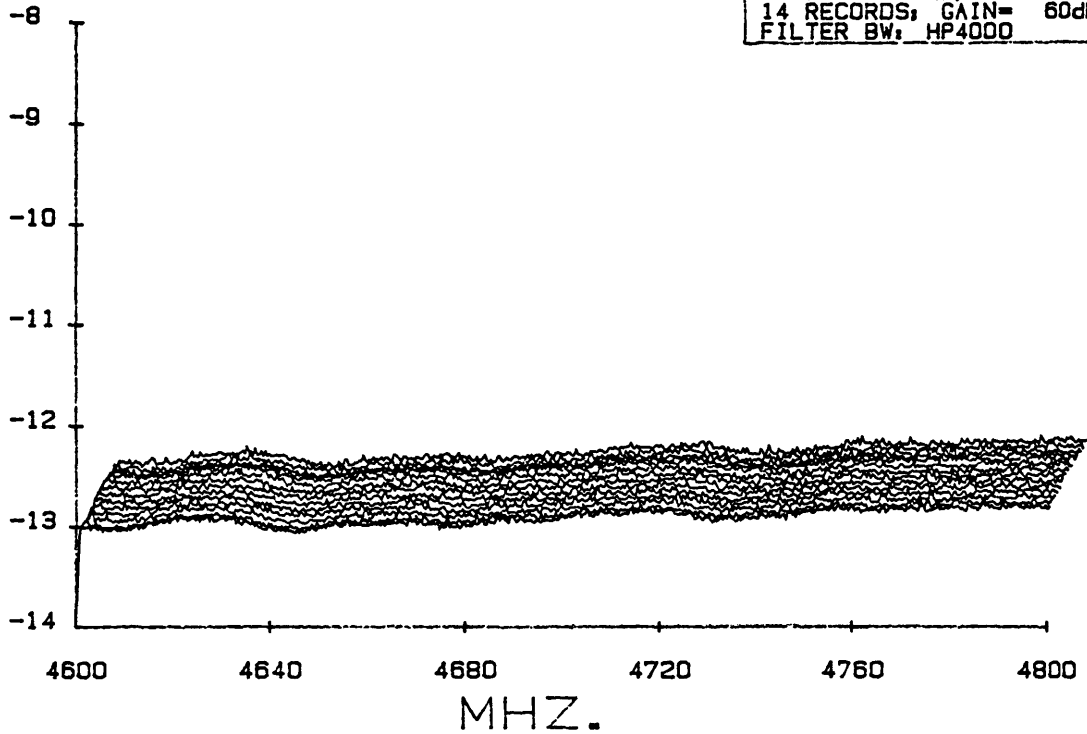


VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	07:27 07-12-1985
STOP:	11:05 07-12-1985
2150 TO 2350 MHZ. 180 DEG AZ.	
B. W. =	30KHZ.; 2.8 SEC/CM.
19 RECORDS; GAIN= 60dB	
FILTER BW: HP2000	

PLOT # 18

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	15:11 07-11-1985
STOP:	15:45 07-11-1985
4600 TO 4800 MHZ. 270 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS;	GAIN= 60dB
FILTER BW: HP4000	

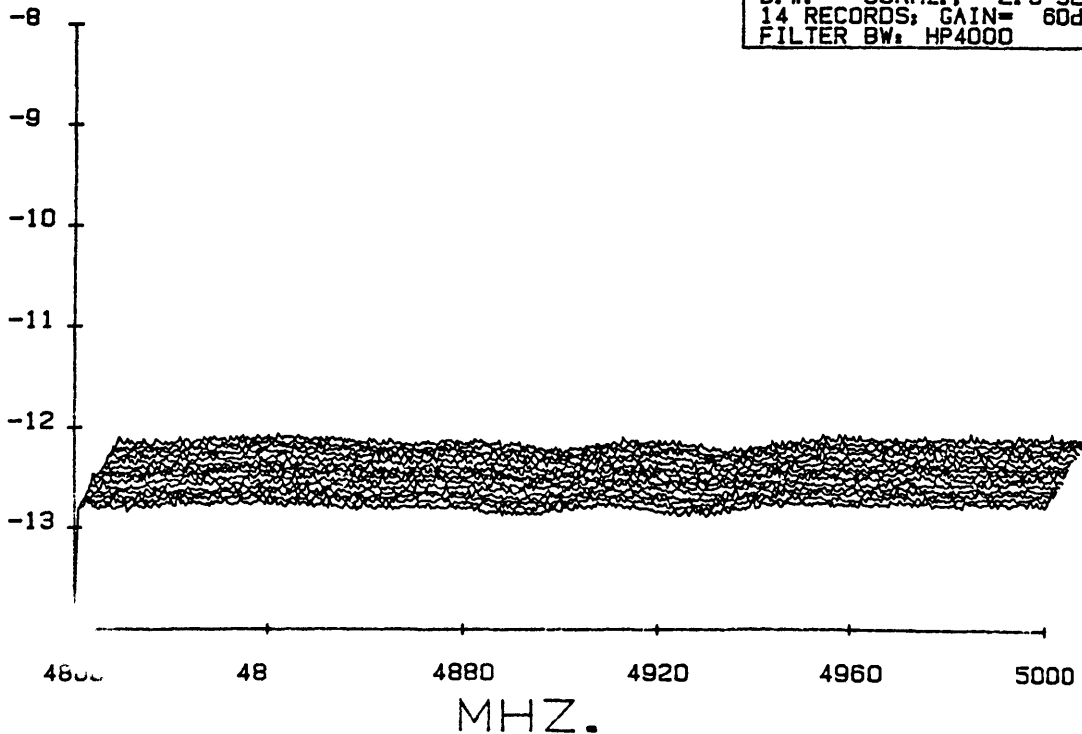
FLUX (LOG W/SQ. M)

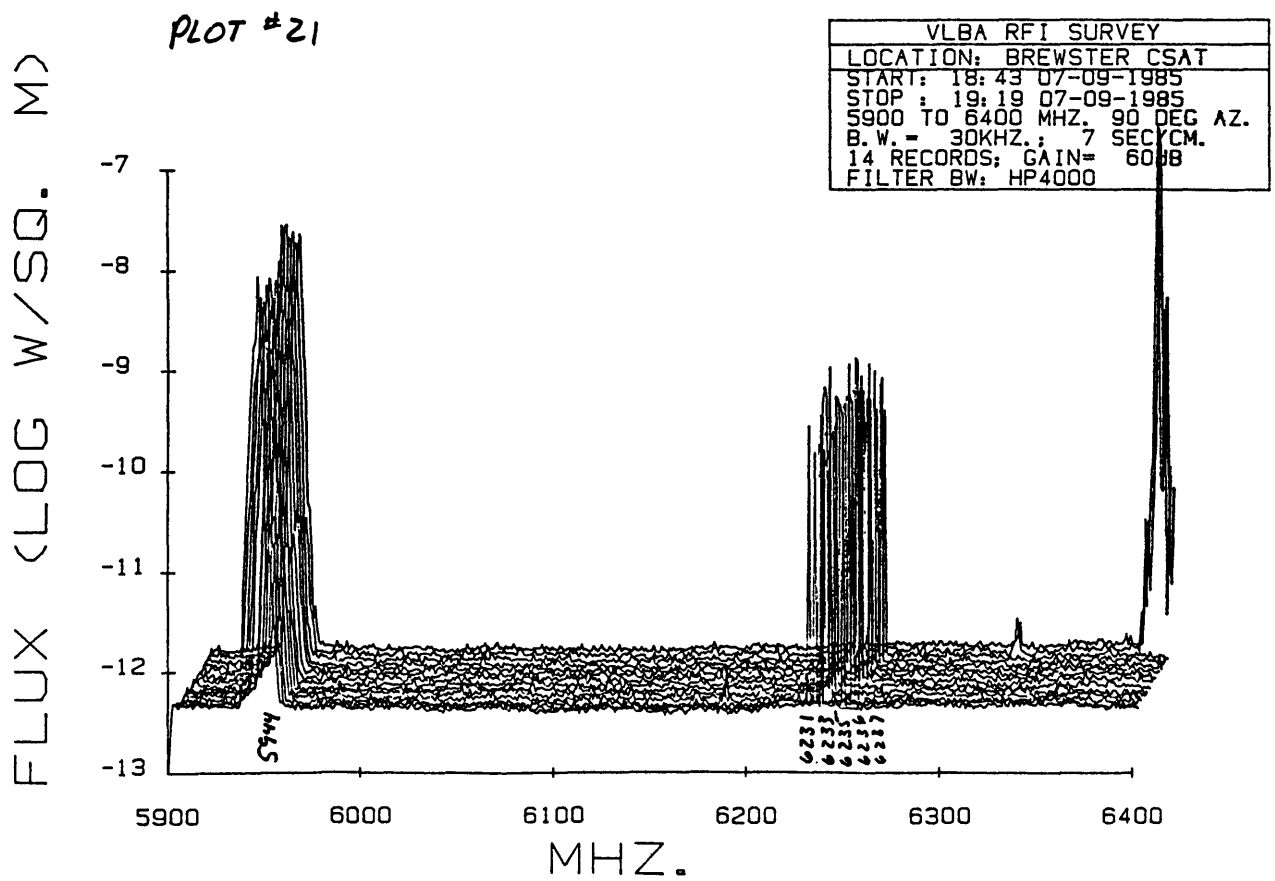
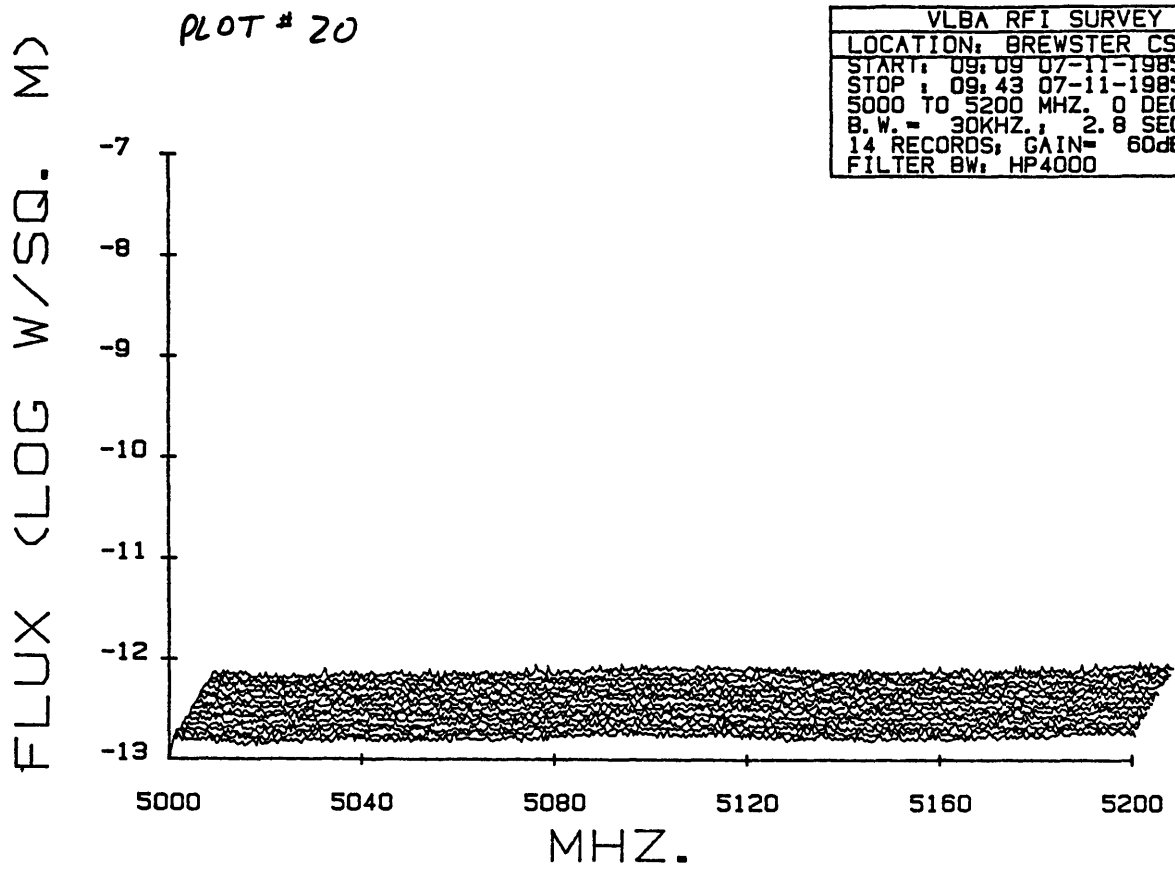


PLOT # 19

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	12:51 07-11-1985
STOP:	13:25 07-11-1985
4800 TO 5000 MHZ. 0 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS;	GAIN= 60dB
FILTER BW: HP4000	

FLUX (LOG W/SQ. M)

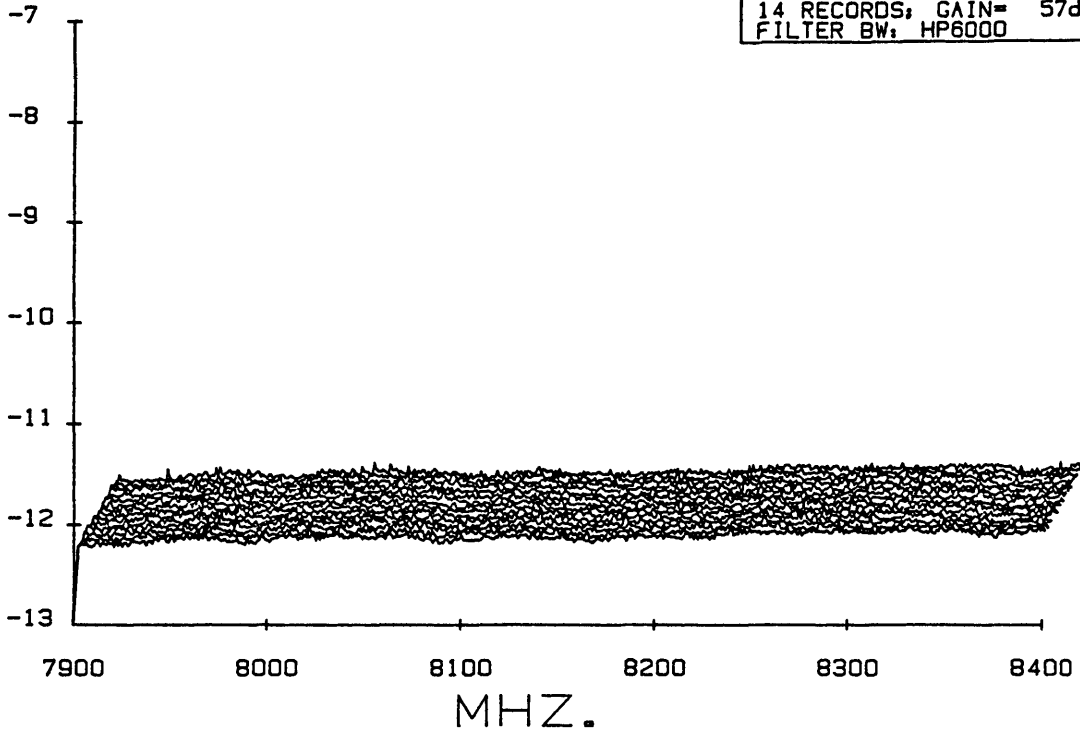




PLOT # 22

VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	08:26 07-10-1985
STOP :	09:00 07-10-1985
7900 TO 8400 MHZ. 0 DEG AZ.	
B.W. =	30KHZ.; 7 SEC/CM.
14 RECORDS;	GAIN= 57dB
FILTER BW: HP6000	

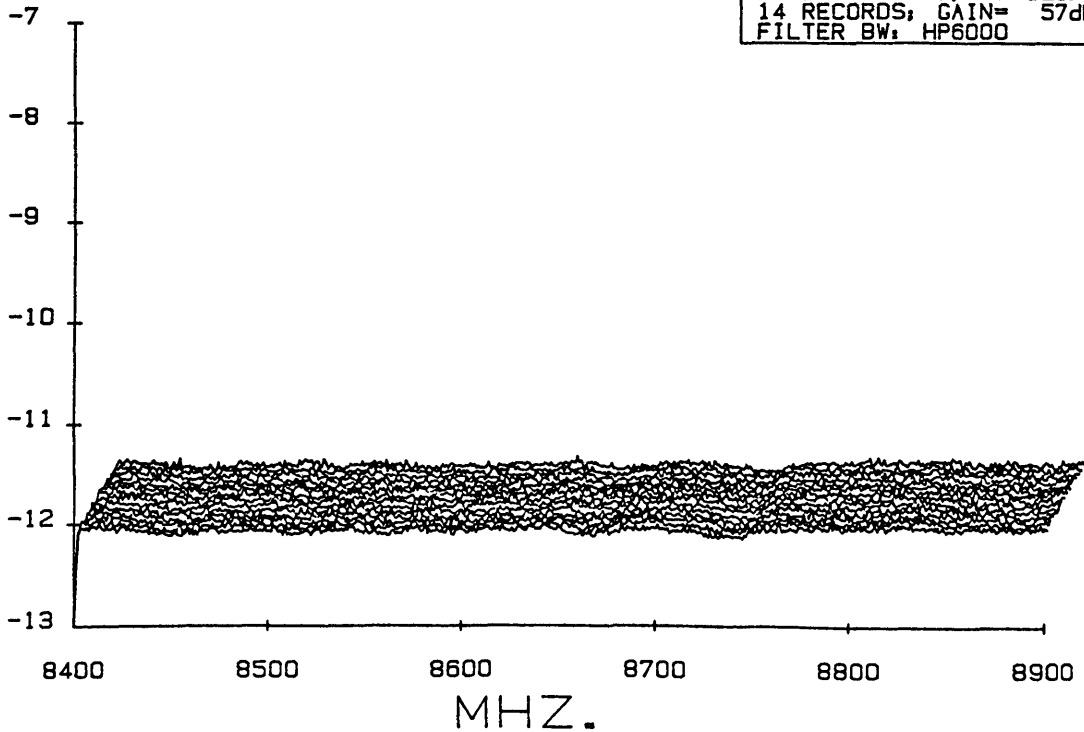
FLUX (LOG W/SQ. M)



PLOT # 23

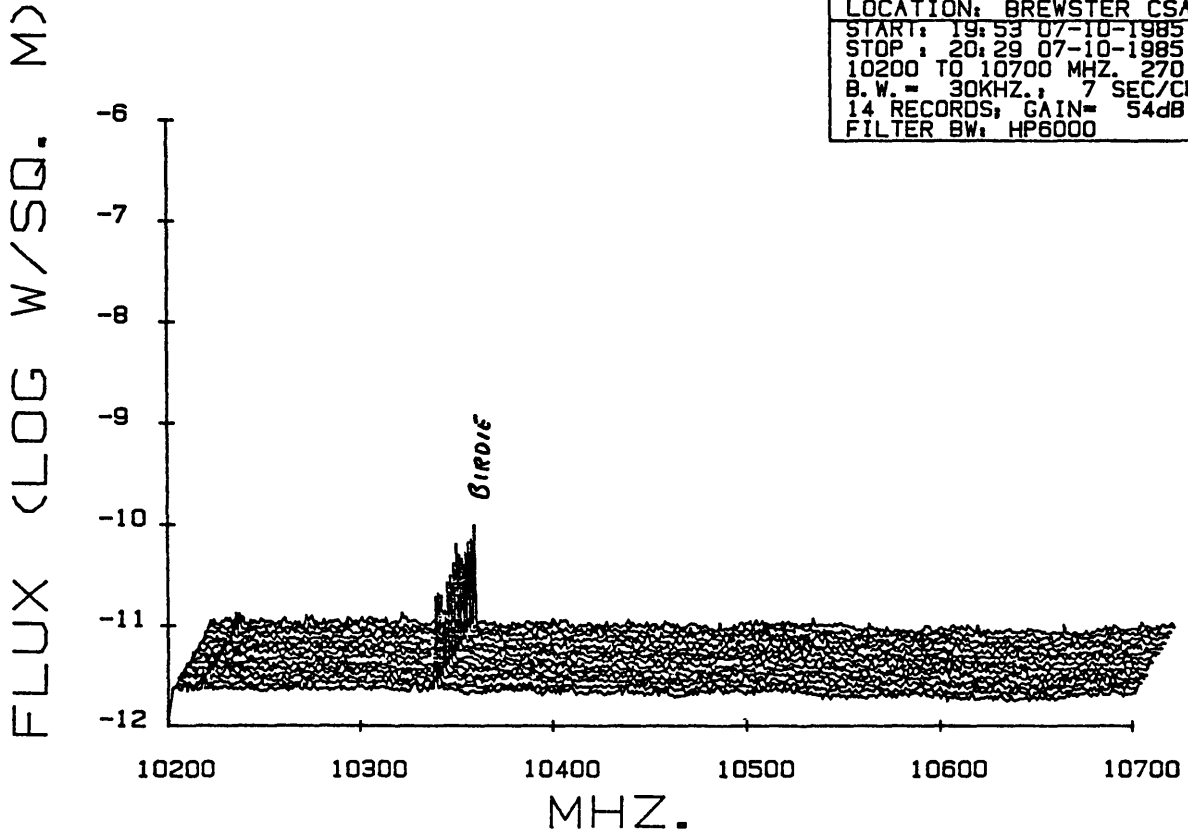
VLBA RFI SURVEY	
LOCATION: BREWSTER CSAT	
START:	11:33 07-10-1985
STOP :	12:09 07-10-1985
8400 TO 8900 MHZ. 0 DEG AZ.	
B.W. =	30KHZ.; 7 SEC/CM.
14 RECORDS;	GAIN= 57dB
FILTER BW: HP6000	

FLUX (LOG W/SQ. M)



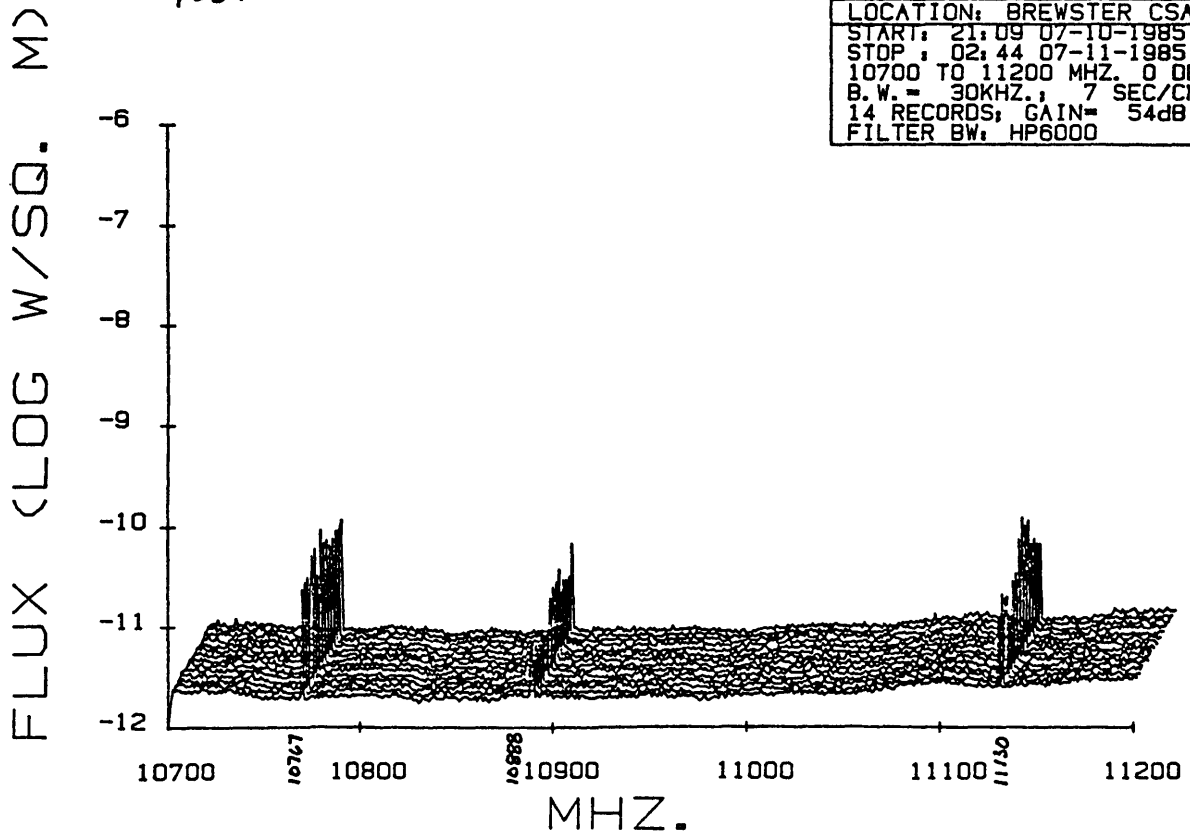
PLOT # 24

VLBA RFI SURVEY
LOCATION: BREWSTER CSAT
START: 19:53 07-10-1985
STOP: 20:29 07-10-1985
10200 TO 10700 MHZ. 270 DEG AZ.
B.W. = 30KHZ.; 7 SEC/CM.
14 RECORDS; GAIN= 54dB
FILTER BW: HP6000



PLOT # 25

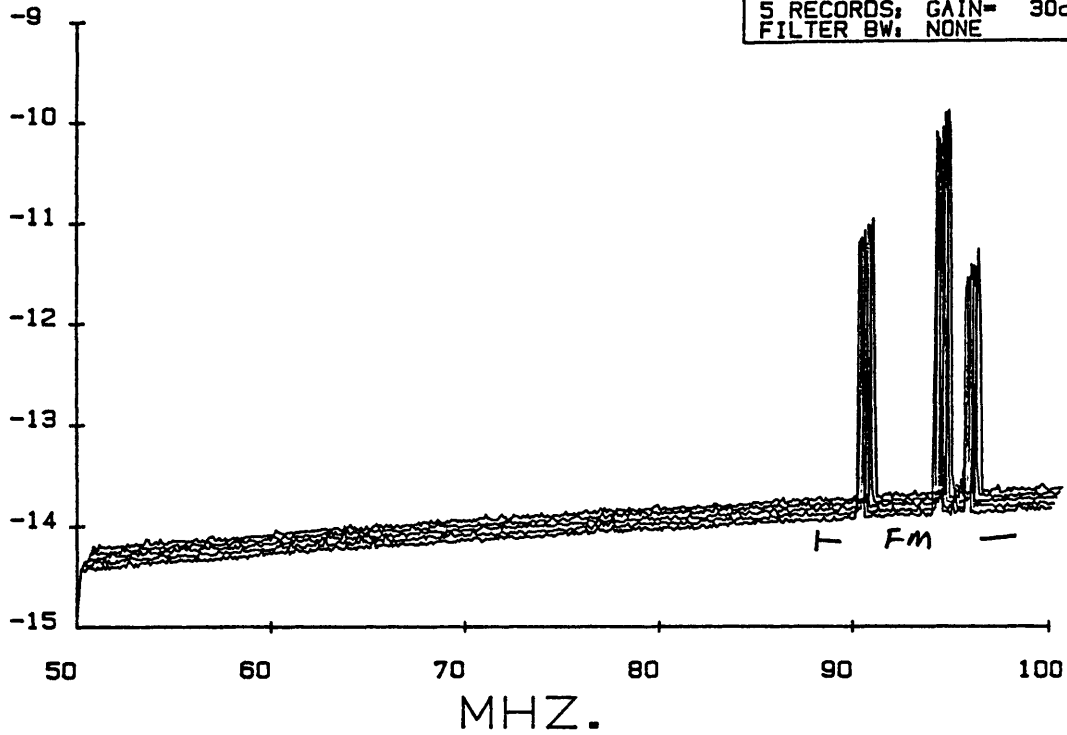
VLBA RFI SURVEY
LOCATION: BREWSTER CSAT
START: 21:09 07-10-1985
STOP: 02:44 07-11-1985
10700 TO 11200 MHZ. 0 DEG AZ.
B.W. = 30KHZ.; 7 SEC/CM.
14 RECORDS; GAIN= 54dB
FILTER BW: HP6000



PLOT # 26

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START: 16:55 07-17-1985	
STOP : 17:06 07-17-1985	
50 TO 100 MHZ. 0 DEG AZ.	
B.W. = 30KHZ.; .7 SEC/CM.	
5 RECORDS; GAIN= 30dB	
FILTER BW: NONE	

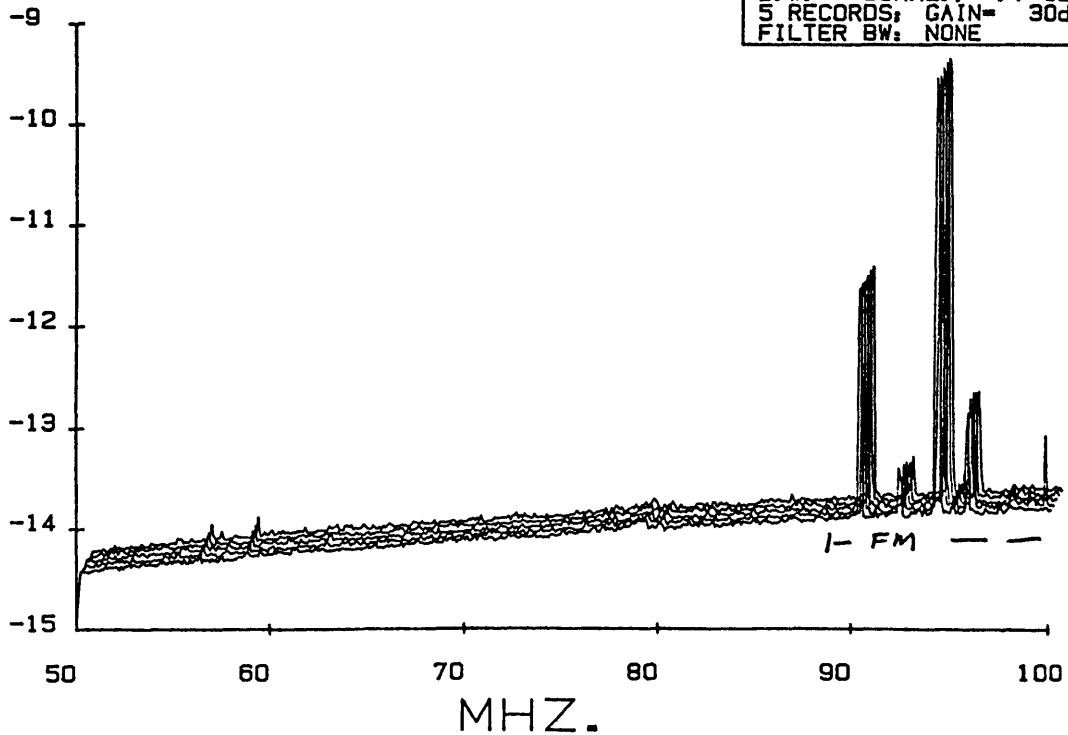
FLUX (LOG W/SQ. M)



PLOT # 27

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START: 17:18 07-17-1985	
STOP : 17:28 07-17-1985	
50 TO 100 MHZ. 180 DEG AZ.	
B.W. = 30KHZ.; .7 SEC/CM.	
5 RECORDS; GAIN= 30dB	
FILTER BW: NONE	

FLUX (LOG W/SQ. M)



PLOT # 28

OMAK
JULY 19, 85
10KH, BW
74 MHz, 5%
NORTH

POWER (w/m²)

4×10^{-16}
 4×10^{-17}
 10^{-18}

73 74 75 MHz

PLOT # 29

OMAK
JULY 19, 85
10KH, BW
74/5% FILTER
SOUTH

POWER (w/m²)

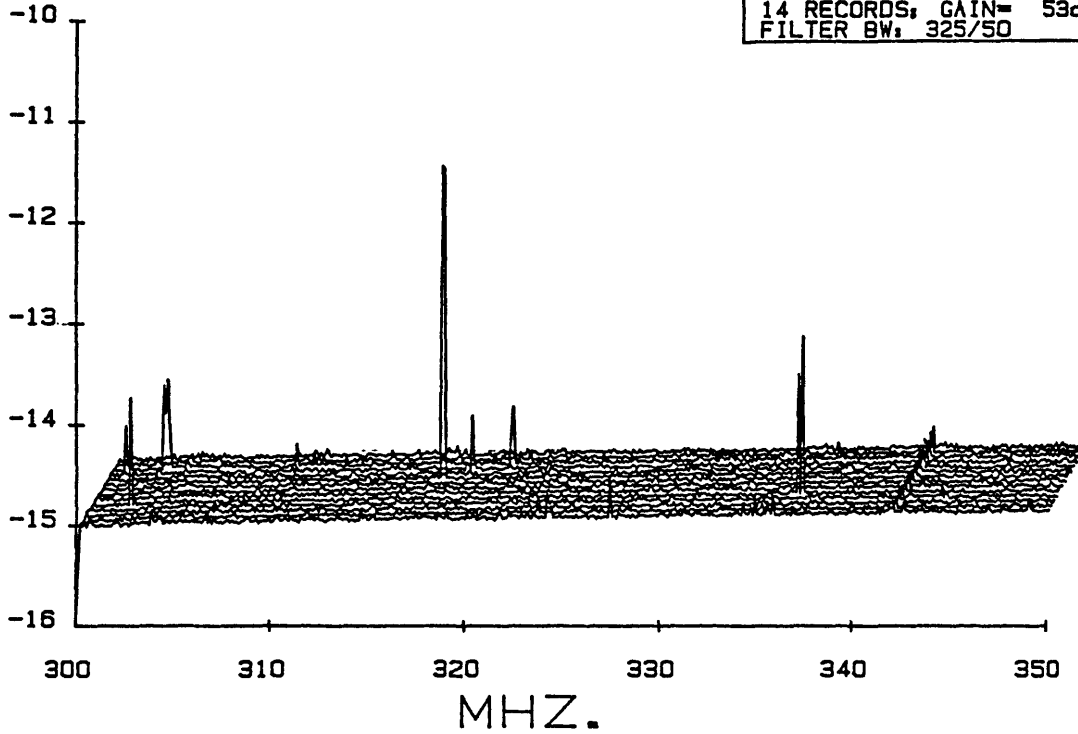
4×10^{-16}
 4×10^{-7}
... -18

73 74 75 MHz

PLOT #30

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	17:46 07-17-1985
STOP:	21:12 07-17-1985
300 TO 350 MHZ. 0 DEG AZ.	
B.W.:	30KHZ. .7 SEC/CM.
14 RECORDS:	GAIN= 53dB
FILTER BW: 325/50	

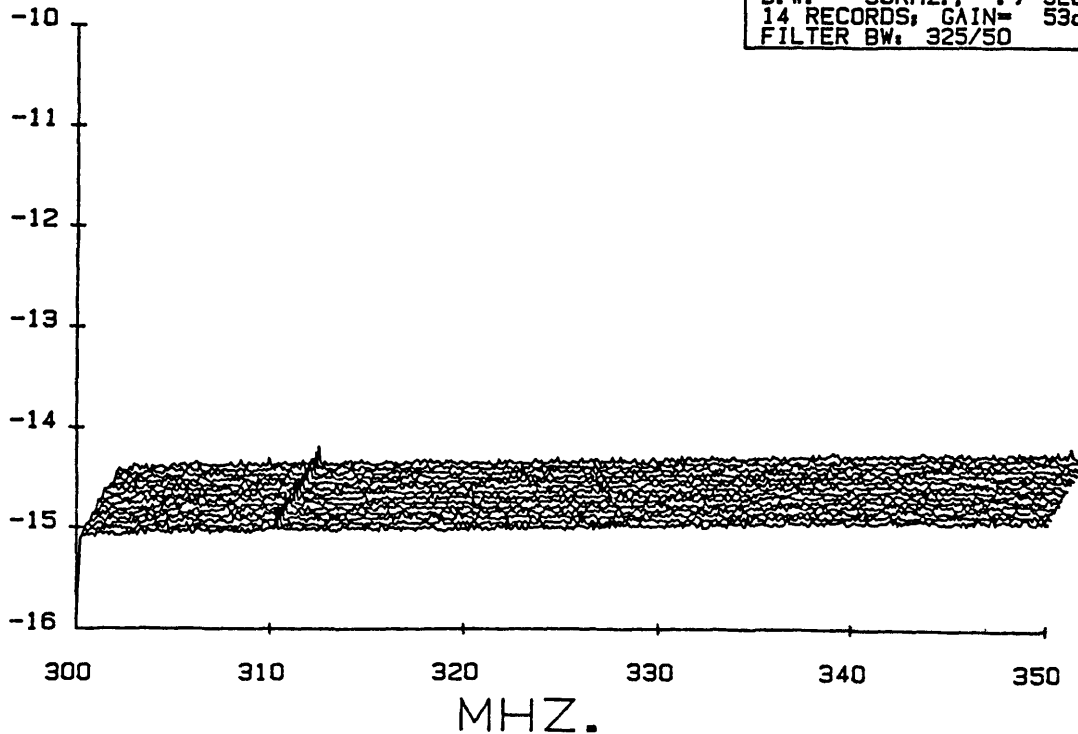
FLUX (LOG W/SQ. M)



PLOT # 31

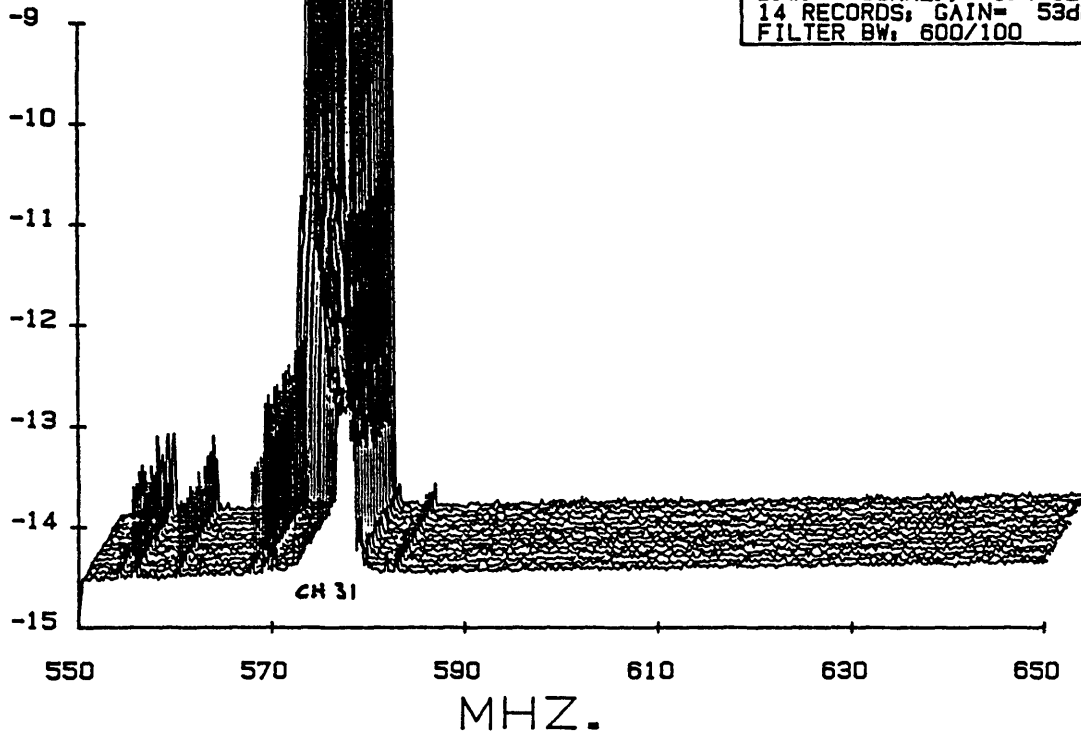
VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	07:29 07-18-1985
STOP:	07:57 07-18-1985
300 TO 350 MHZ. 180 DEG AZ.	
B.W.:	30KHZ. .7 SEC/CM.
14 RECORDS:	GAIN= 53dB
FILTER BW: 325/50	

FLUX (LOG W/SQ. M)



FLUX (LOG W/SQ. M)

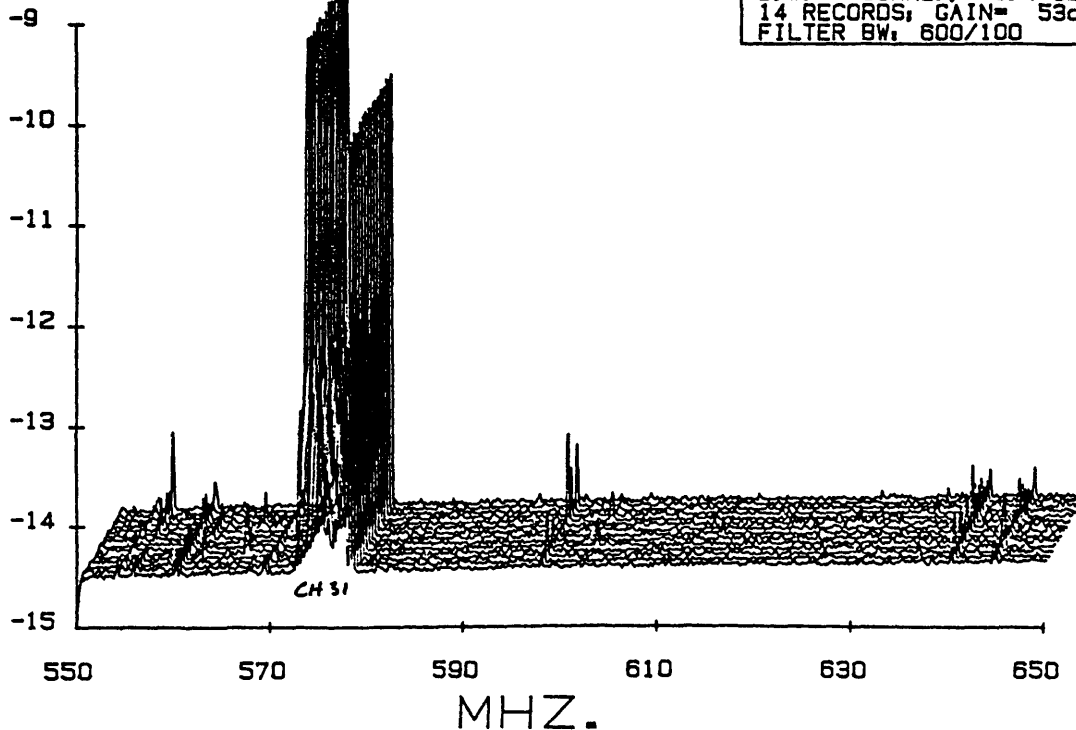
4.710⁻⁹
PLOT # 32



VLBA RFI SURVEY	
LOCATION:	OMAK WA
START:	08:57 07-18-1985
STOP:	09:25 07-18-1985
550 TO 650 MHZ. 90 DEG AZ.	
B.W.:	30KHZ.; 1.4 SEC/CM.
14 RECORDS; GAIN= 53dB	
FILTER BW: 600/100	

FLUX (LOG W/SQ. M)

PLOT # 33

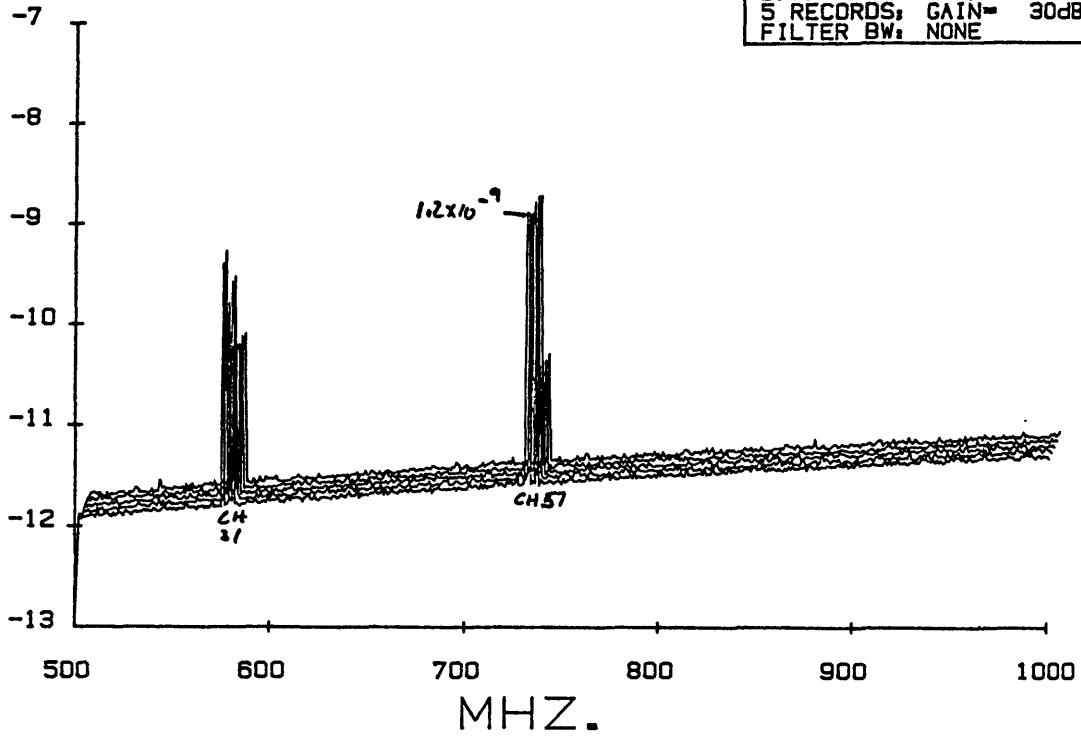


VLBA RFI SURVEY	
LOCATION:	OMAK WA
START:	09:26 07-18-1985
STOP:	10:19 07-18-1985
550 TO 650 MHZ. 180 DEG AZ.	
B.W.:	30KHZ.; 1.4 SEC/CM.
14 RECORDS; GAIN= 53dB	
FILTER BW: 600/100	

PLOT # 34

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START: 16:10 07-17-1985	
STOP : 16:20 07-17-1985	
500 TO 1000 MHZ. 0 DEG AZ.	
B.W. = 100KHZ. .7 SEC/CM.	
5 RECORDS; GAIN= 30dB	
FILTER BW: NONE	

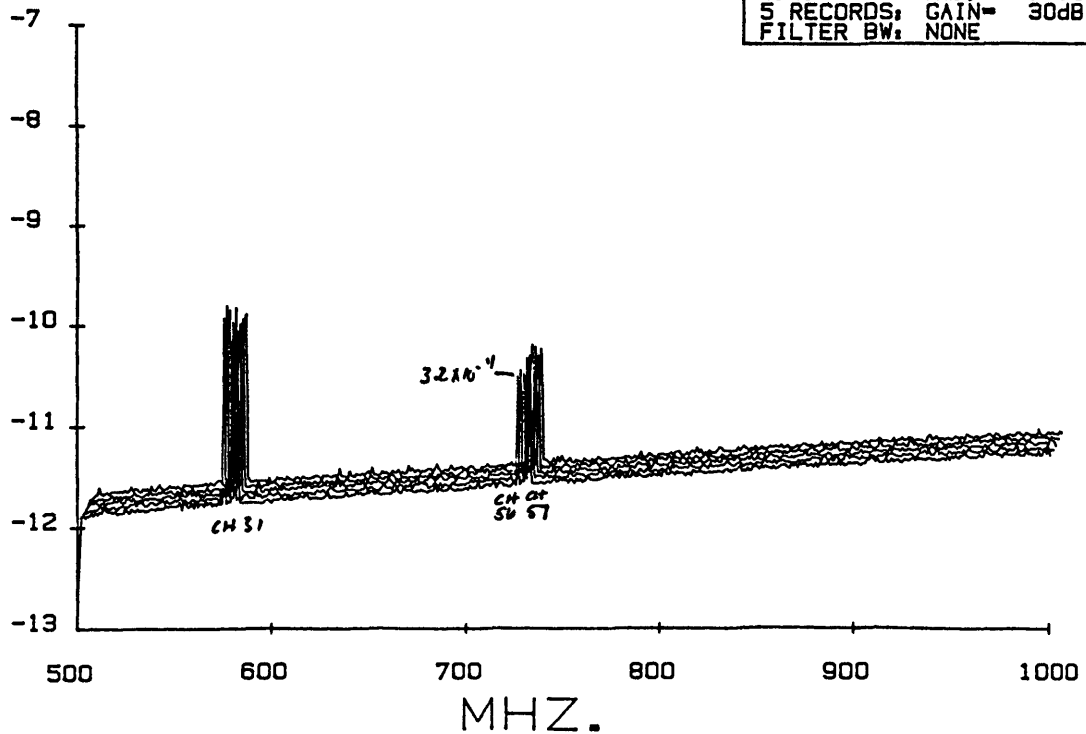
FLUX (LOG W/SQ. M)



PLOT # 35

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START: 16:33 07-17-1985	
STOP : 16:43 07-17-1985	
500 TO 1000 MHZ. 180 DEG AZ.	
B.W. = 100KHZ. .7 SEC/CM.	
5 RECORDS; GAIN= 30dB	
FILTER BW: NONE	

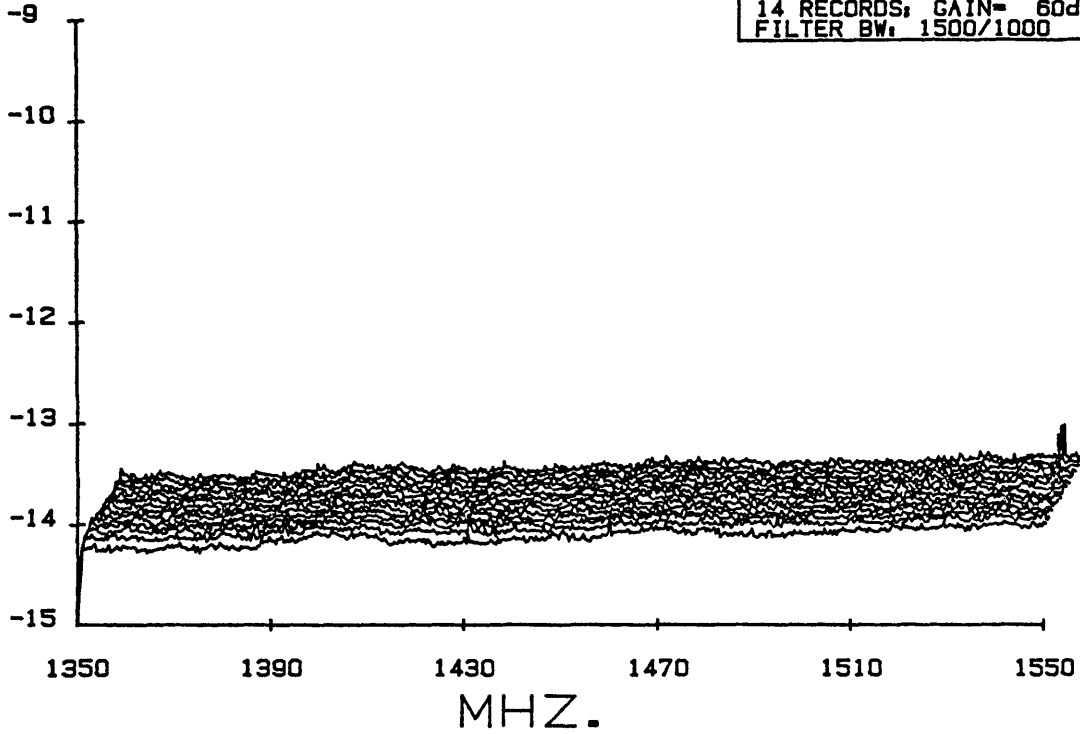
FLUX (LOG W/SQ. M)



PLOT #36

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	11:25 07-18-1985
STOP :	11:59 07-18-1985
1350 TO 1550 MHZ. 0 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS; GAIN= 60dB	
FILTER BW: 1500/1000	

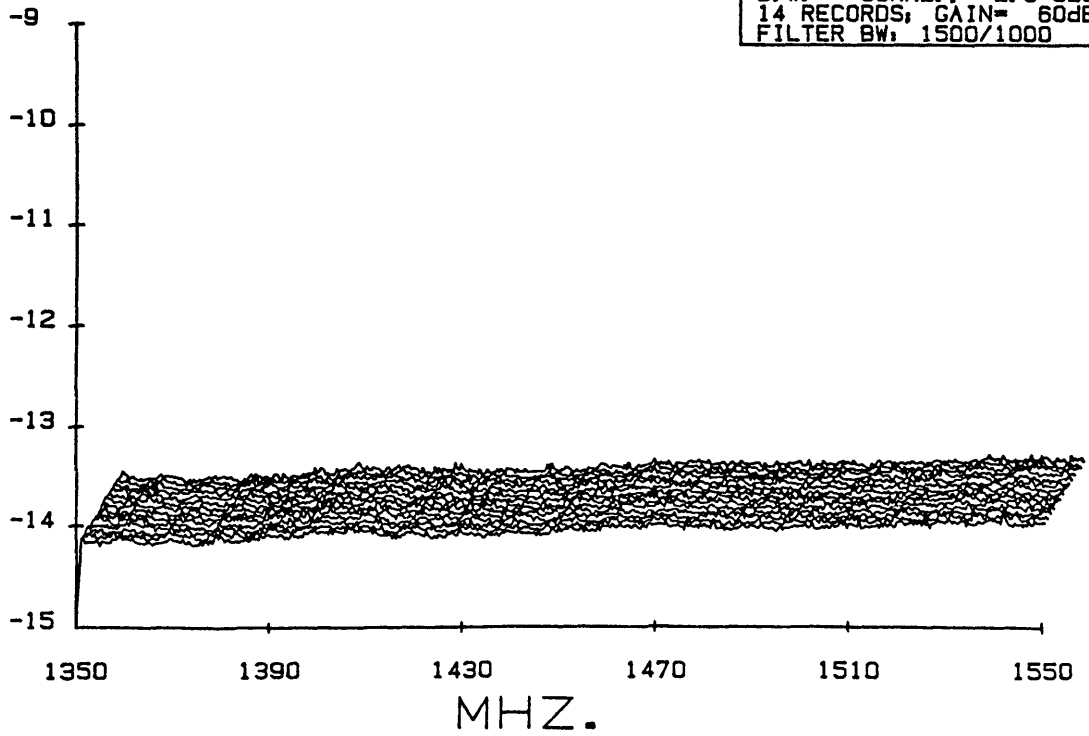
FLUX (LOG W/SQ. M)



PLOT #37

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	12:33 07-18-1985
STOP :	13:36 07-18-1985
1350 TO 1550 MHZ. 180 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS; GAIN= 60dB	
FILTER BW: 1500/1000	

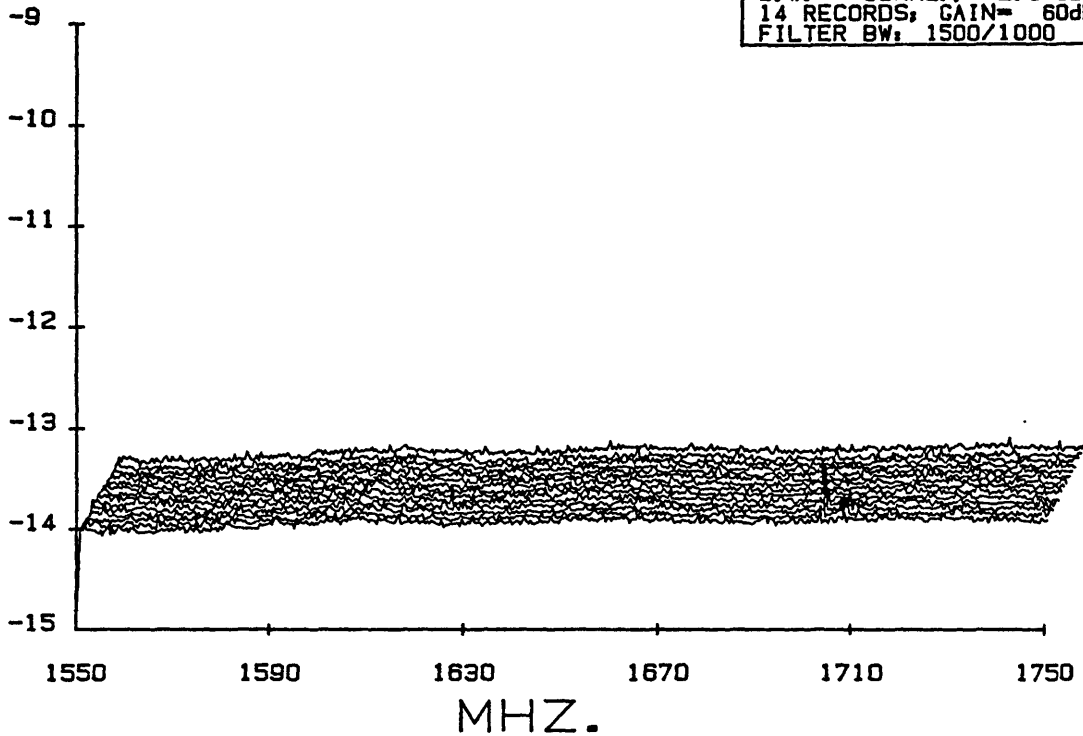
FLUX (LOG W/SQ. M)



PLOT #38

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	14:24 07-18-1985
STOP :	14:56 07-18-1985
1550 TO 1750 MHZ. 0 DEG AZ.	
B. W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS; GAIN= 60dB	
FILTER BW: 1500/1000	

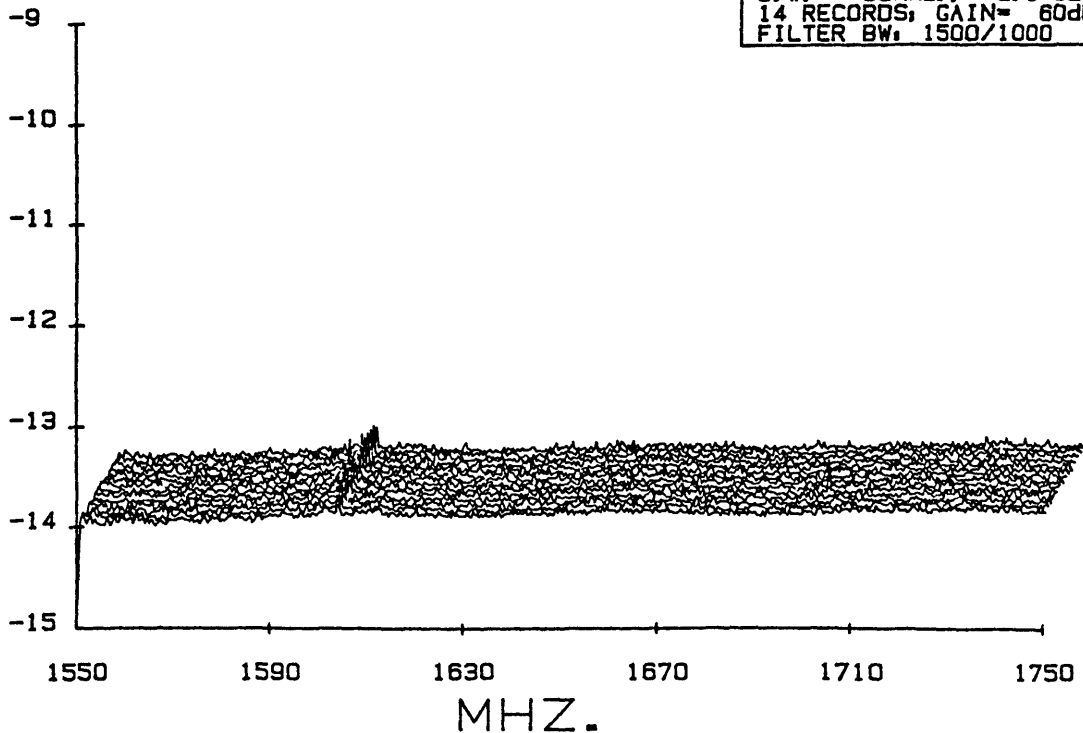
FLUX (LOG W/SQ. M)



PLOT #39

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	14:56 07-18-1985
STOP :	15:25 07-18-1985
1550 TO 1750 MHZ. 90 DEG AZ.	
B. W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS; GAIN= 60dB	
FILTER BW: 1500/1000	

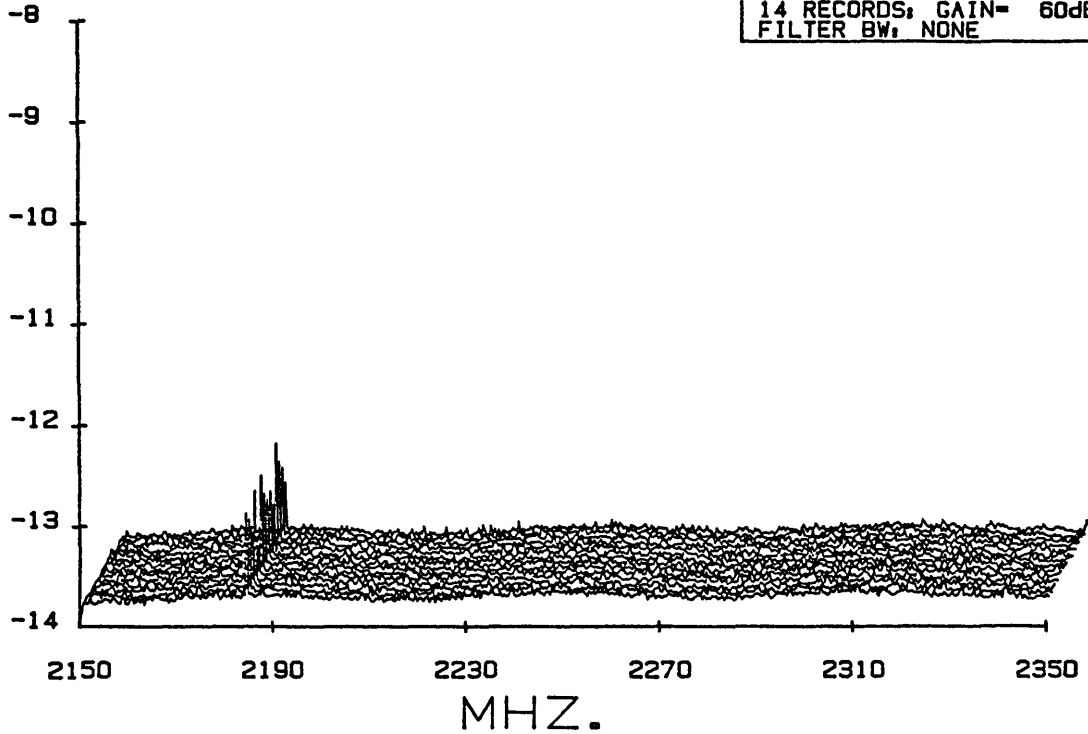
FLUX (LOG W/SQ. M)



PLOT # 40

VLBA RFI SURVEY	
LOCATION:	OMAK WA
START:	16:27 07-18-1985
STOP:	16:57 07-18-1985
2150 TO 2350 MHZ. 0 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS;	GAIN= 60dB
FILTER BW: NONE	

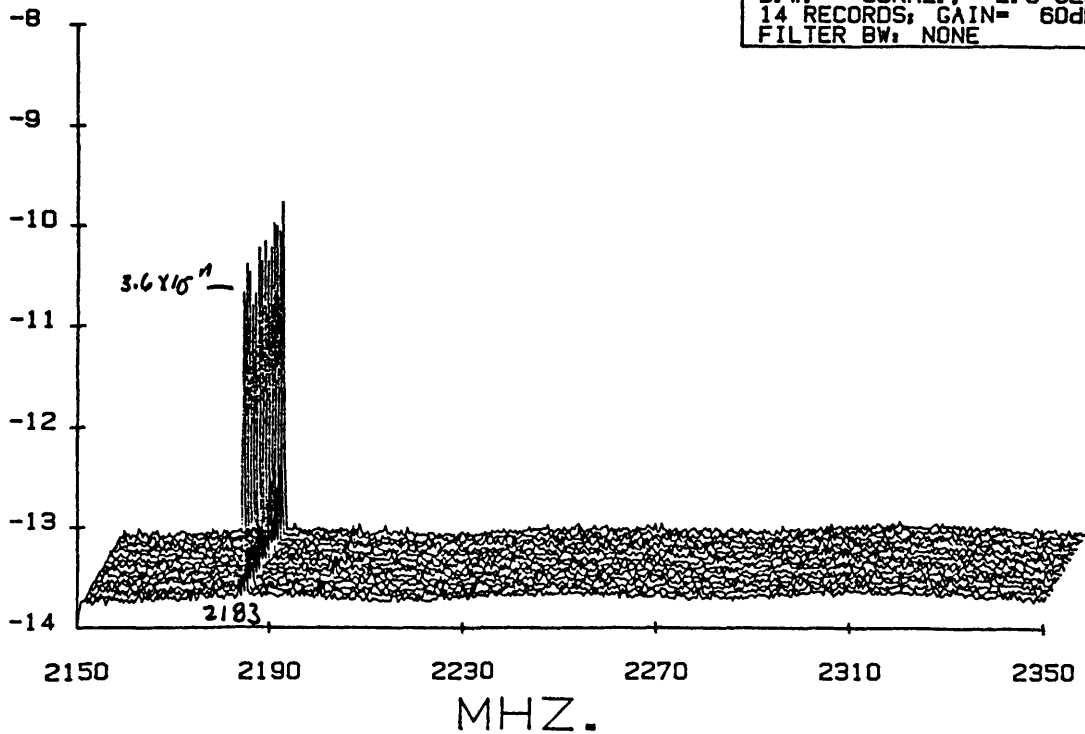
FLUX (LOG W/SQ. M)



PLOT # 41

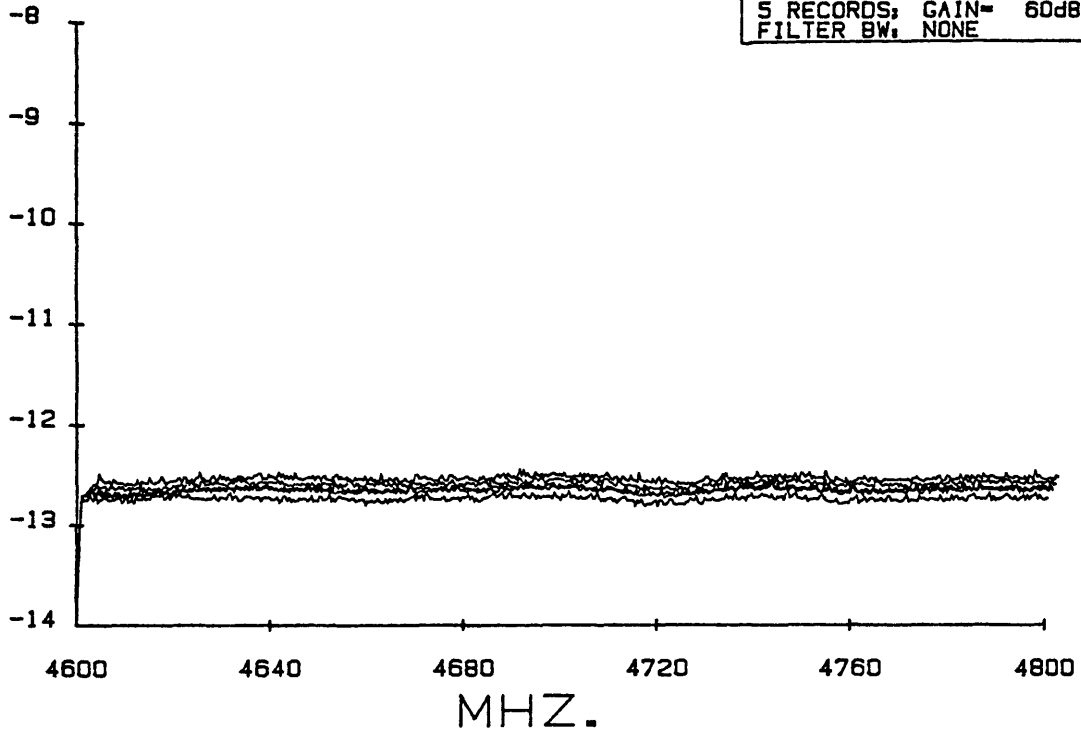
VLBA RFI SURVEY	
LOCATION:	OMAK WA
START:	16:57 07-18-1985
STOP:	17:27 07-18-1985
2150 TO 2350 MHZ. 90 DEG AZ.	
B.W. =	30KHZ.; 2.8 SEC/CM.
14 RECORDS;	GAIN= 60dB
FILTER BW: NONE	

FLUX (LOG W/SQ. M)



FLUX (LOG W/SQ. M)

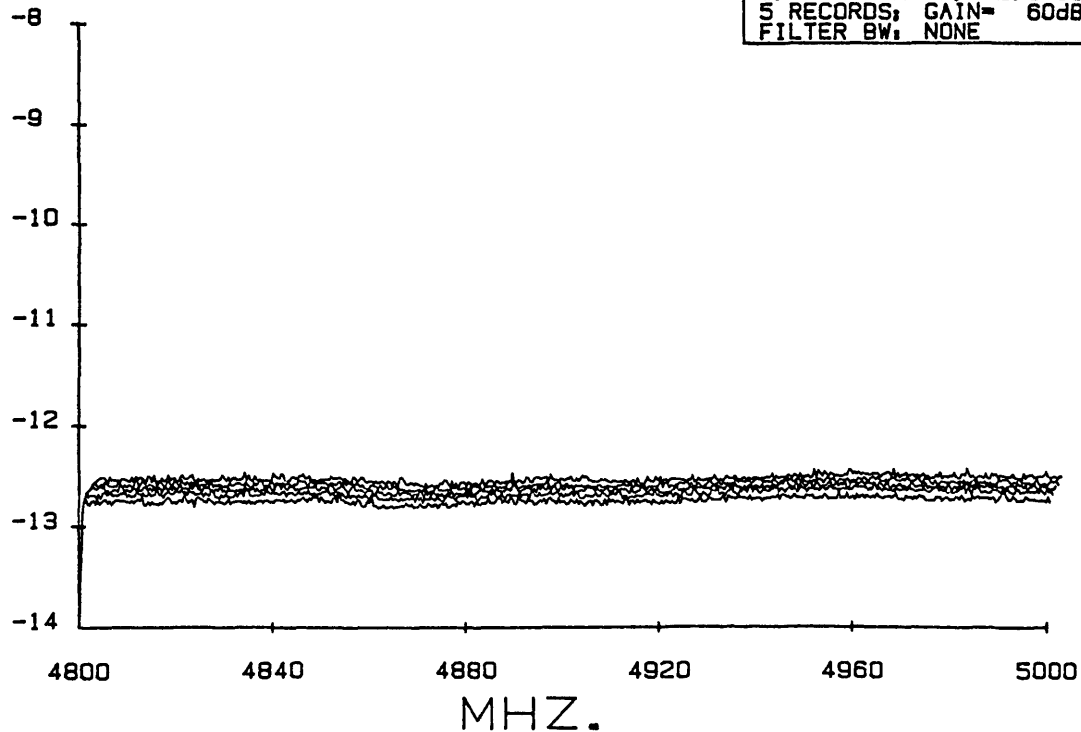
PLOT # 42



VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	07:35 07-19-1985
STOP :	07:46 07-19-1985
4600 TO 4800 MHZ. 180 DEG AZ.	
B.W. = 30KHZ.; 2.8 SEC/CM.	
5 RECORDS; GAIN= 60dB	
FILTER BW: NONE	

FLUX (LOG W/SQ. M)

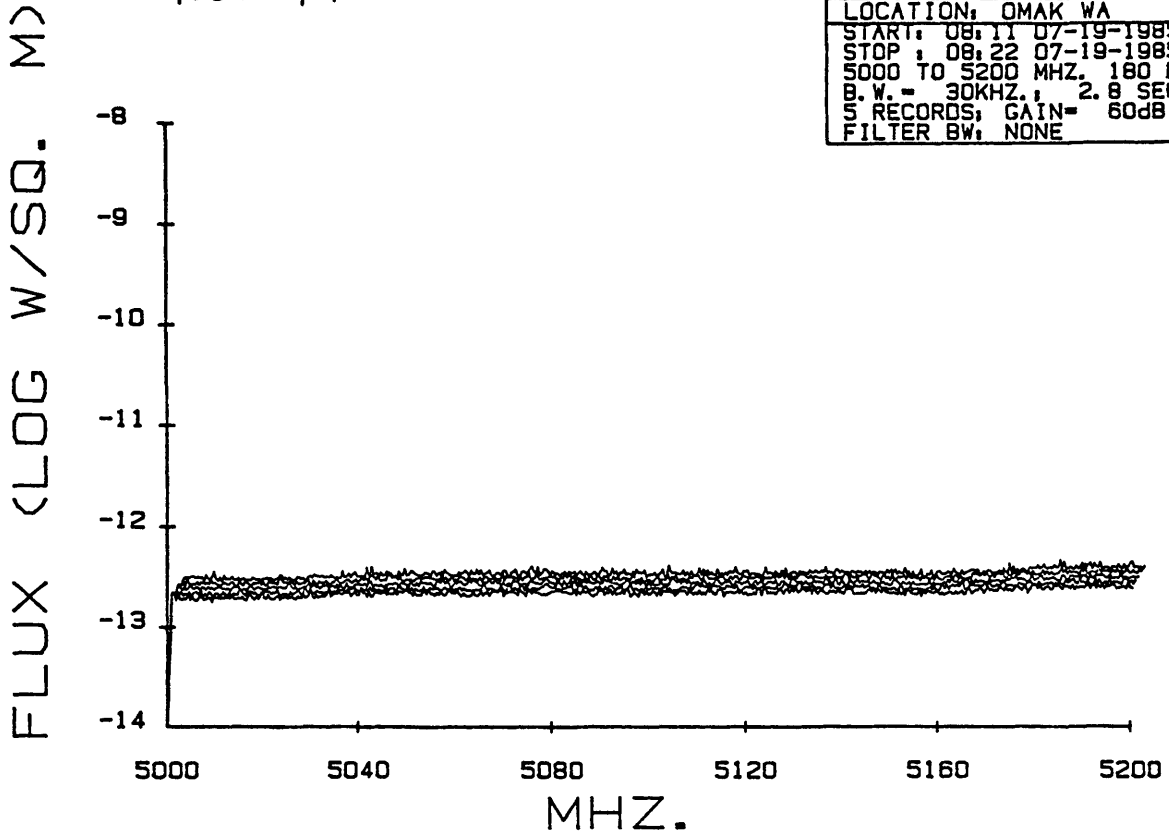
PLOT # 43



VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	07:59 07-19-1985
STOP :	08:10 07-19-1985
4800 TO 5000 MHZ. 180 DEG AZ.	
B.W. = 30KHZ.; 2.8 SEC/CM.	
5 RECORDS; GAIN= 60dB	
FILTER BW: NONE	

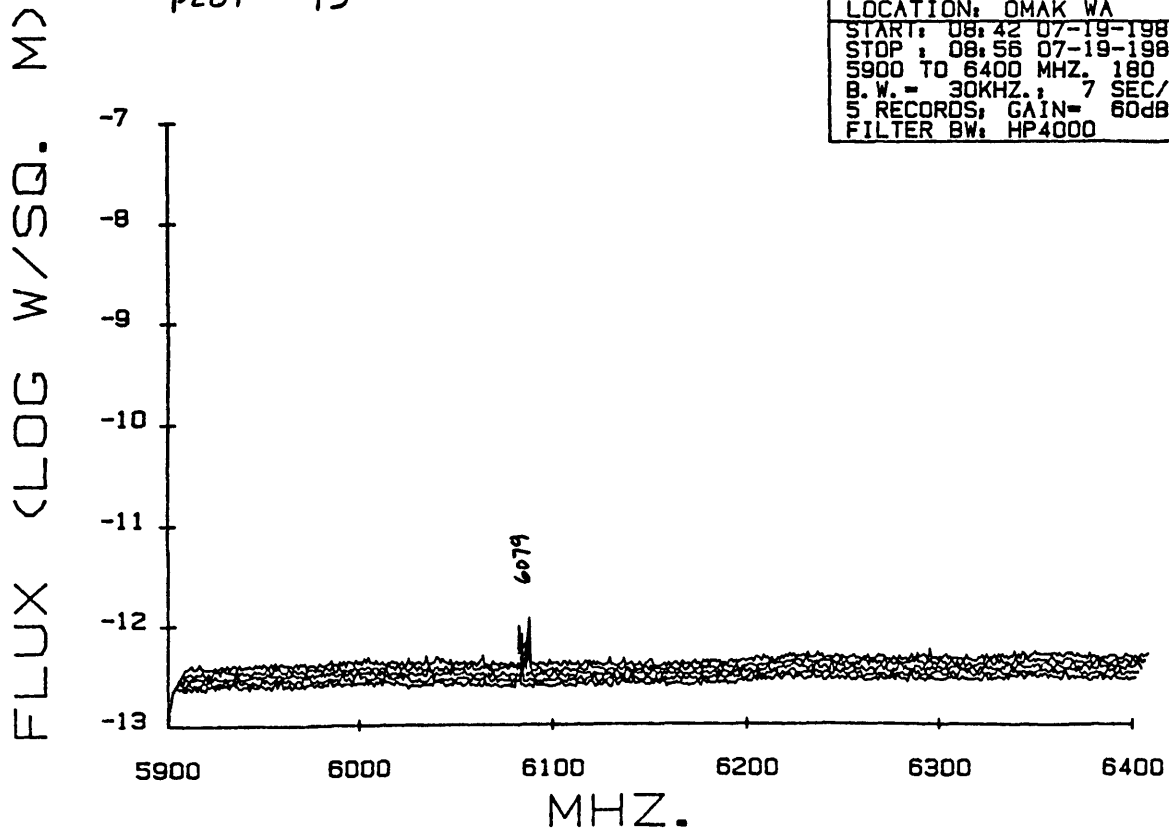
PLOT # 44

VLBA RFI SURVEY	
LOCATION:	OMAK WA
START:	08:11 07-19-1985
STOP:	08:22 07-19-1985
5000 TO 5200 MHZ, 180 DEG AZ.	
B. W. =	30KHZ. ; 2.8 SEC/CM.
S RECORDS:	GAIN= 60dB
FILTER BW:	NONE



PLOT # 45

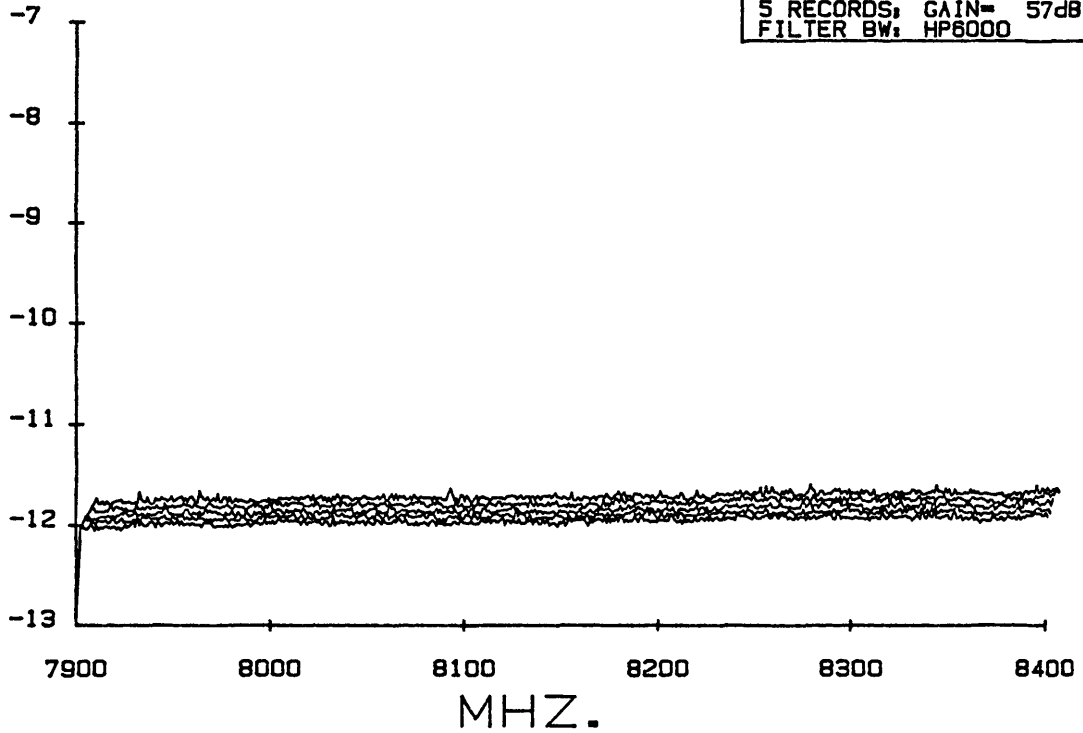
VLBA RFI SURVEY	
LOCATION:	OMAK WA
START:	08:42 07-19-1985
STOP:	08:56 07-19-1985
5900 TO 6400 MHZ, 180 DEG AZ.	
B. W. =	30KHZ. ; 7 SEC/CM.
S RECORDS:	GAIN= 60dB
FILTER BW:	HP4000



PLOT # 46

VLBA RFI SURVEY
LOCATION: OMAK WA
START: 08:57 07-19-1985
STOP : 09:11 07-19-1985
7900 TO 8400 MHZ. 180 DEG AZ.
B. W. = 30KHZ. ; 7 SEC/CM.
5 RECORDS; GAIN= 57dB
FILTER BW: HP6000

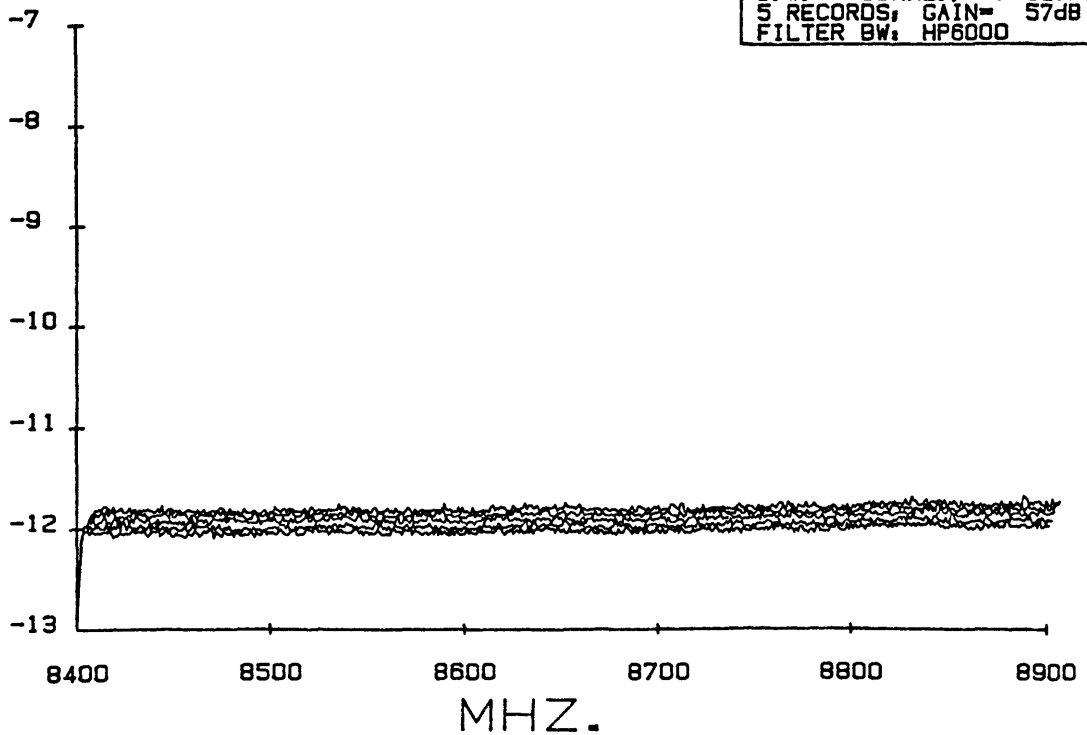
FLUX (LOG W/SQ. M)



PLOT # 47

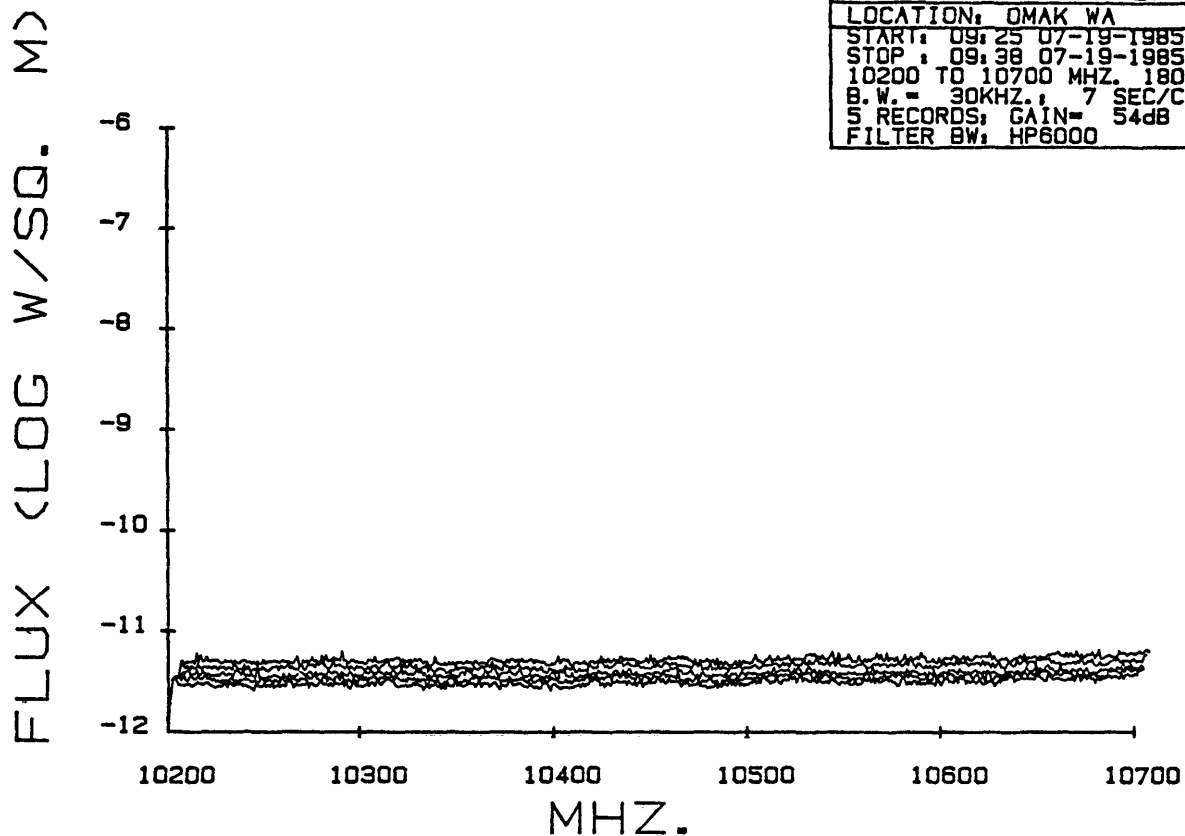
VLBA RFI SURVEY
LOCATION: OMAK WA
START: 09:12 07-19-1985
STOP : 09:24 07-19-1985
8400 TO 8900 MHZ. 180 DEG AZ.
B. W. = 30KHZ. ; 7 SEC/CM.
5 RECORDS; GAIN= 57dB
FILTER BW: HP6000

FLUX (LOG W/SQ. M)



PLOT # 48

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	09:25 07-19-1985
STOP:	09:38 07-19-1985
10200 TO 10700 MHZ. 180 DEG AZ.	
B.W.:	30KHZ.; 7 SEC/CM.
S RECORDS:	GAIN= 54dB
FILTER BW: HP6000	



PLOT # 49

VLBA RFI SURVEY	
LOCATION: OMAK WA	
START:	09:39 07-19-1985
STOP:	09:51 07-19-1985
10700 TO 11200 MHZ. 180 DEG AZ.	
B.W.:	30KHZ.; 7 SEC/CM.
S RECORDS:	GAIN= 54dB
FILTER BW: HP6000	

