

EXHIBIT 7: Report of Measurements

Subsections

(1) Types of Emissions

- (a) CDMA: F9W
- (b) TDMA: DXW (NADC)
- (c) PCS-1900(GSM) : GXW

(2) Frequency Range

CDMA: Block A - F
Forward : 1930-1990 MHz
Reverse: 1850-1910MHz
TDMA : Block A-F
Forward: 1930 - 1990 MHz
Reverse: 1850 - 1910 MHz

GSM(PCS-1900) : Block A-F
Forward: 1930 - 1990 MHz
Reverse: 1850 - 1910 MHz

(3) Range of Operating Power

55-95dB gain (-55-/+43dBm)

(4) Maximum Power Rating

CDMA :Maximum output power is 10 W
TDMA :Maximum output power is 15W
GSM: Maximum output power is 20 W

(5) Applied voltages and currents into the final transistor elements

Forward-2.2VDC @ 300mA on Q7 & 8 of Power Amp
Reverse-4.8VDC @ 1.2A on Q4d9 & Q415

(6) Function of Each Active Device

Refer to Exhibit 2, Schematic and Functional Block Diagram. Confidentiality is requested for these items

(7) Complete Circuit Diagrams and Functional Block Diagram

Refer to Exhibit 2 ,Schematic and Functional Block Diagram. Confidentiality is requested for these items.

(8) Instructions/Installation Manual

Refer to Exhibit 6.

(9) Tune-up/Optimization Procedure

Refer to installation manual, Exhibit 6.

(10) Means for Frequency Stabilization

U502: 10mhz reference for L.O. PLL U501

(11) Means for Limiting Modulation

Not applicable.

(11) Means for Limiting Power

Software that limits the output power to the maximum output power specified. If the unit detects that the output power exceeds this power then attenuation is added to keep the power at maximum. When no more attenuation can be added the unit is turned off.

(11) Means for Attenuating Higher Audio Frequencies

Not Applicable.

(12) Description of Digital Modulation Techniques

Not Applicable

2.983(e) Standard Test Conditions

The transmitter was tested under the following conditions:

Room Temperature: 20 - 23 °C

Relative Humidity: 35 - 50%

DC Supply Voltage: 24V

AC Supply Voltage: 110-230 VAC, 50/60Hz.

The transmitter was aligned and tuned up according to manufacturer's alignment procedure, prior to testing. All data presented represents the worst case parameter being measured.

Section 2.983(f) Equipment Identification

A drawing of the equipment identification nameplate appears in Exhibit 6.

Section 2.983(g) Photographs

Photographs of the equipment, internal and external views, are found in Exhibit 4.

Section 2.983 Description of Various Base Station Configurations

Not Applicable

Section 2.983 Use of Various Power Supplies

Current version uses AC power supply. With optional +24V Battery back-up input.

Section 2.987 Measurement Required: Modulation Characteristics

Not Applicable

Section 2.989 Measurement Required: Occupied Bandwidth

Limits:24.238

Measurement Equipment Used:

HP 8593E Spectrum Analyzer

QIM "The Workhorse" low loss cable, 9 ft (loss: 0.85 dB/ft@ 26 GHz)

Tektronix Digital Radiocommunications Tester/ Model:CMD80

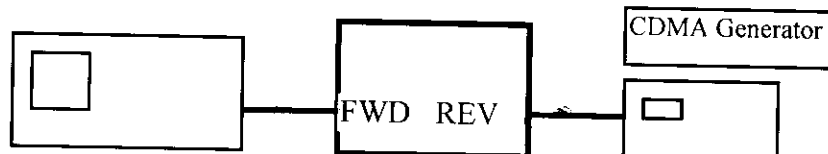
Marconi Instruments/ Digital and vector Signal Generator/ Model:2051

HP Signal generator / Model:8648C

Test Set-up

Spectrum Analyzer

EUT



Data on the bandwidth occupied by this transmitter is presented in graphical form using spectrum analyzer plots. Emission bandwidth (per 24.238b, the 26dB BW) was measured with RBW=30KHz, VBW=30KHz. Spectrum plot is supplied. Measured occupied bandwidth was approximately 1.438MHz.

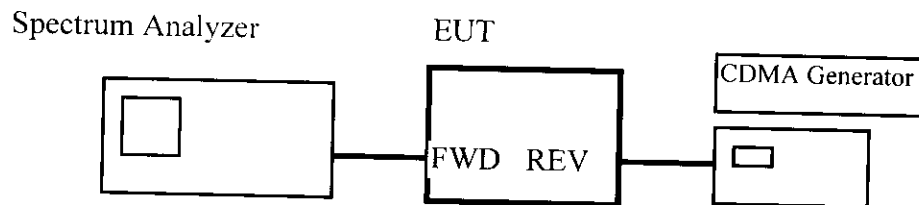
**Section 2.991 Measurements Required: Spurious and Harmonic Emissions
at Antenna Terminals
Section 24.238 Limits**

Measurement Equipment Used:

HP 8563E Spectrum Analyzer

QIM "The Workhorse" low loss cable, 9 ft (loss: 0.85 dB/ft@ 26 GHz)

Test Set-up



Minimum standard: The magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under conditions specified in the instruction manual and/or alignment procedure, shall not be less than $43+10 \log(\text{mean output power in watts})$ dBc below the mean power output outside a licensee's frequency block.

24.238 (b) & (c) Compliance with out of band emissions requirement is based on test being performed with 1MHz analyzer RES BW. At block edges, RES BW may be adjusted to a level at least as large as 1% of emission bandwidth. For the EUT this is at least

For CDMA

$.01 * 1.438\text{MHz} = 14.38\text{kHz}$. A RES BW of 30kHz was used for measurement.

For TDMA

$0.01 * 73.5\text{kHz} = 0.7\text{kHz}$. A RES BW of 1kHz was used for measurement.

For GSM

$0.01 * 296\text{kHz} = 2.96\text{kHz}$. A RES BW of 3kHz was used for measurement.

Test Results

Please refer to the following table which indicates the chart number associates with Low , High , Bandwidth and Spurious Emissions.

			Lo	Hi	BW	Spurious	Input
C D M A	Block A	Forw	100		86	101 + 102	103
		Rev	106		109	107+108	110
	Block D	Forw		105			104
		Rev		112			111
T D M A	Block B	Forw	51		50	52 + 53	54
		Rev	72		71	73 + 74	75
	Block E	Forw		56			55
		Rev		77			76
G S M	Block C	Forw	15		16	17 + 18	19
		Rev	23		22	24 + 25	26
	Block F	Forw		21			20
		Rev		28			27
C D M A	Block B	Forw	44		43	45 + 46	47
		Rev	65		64	66 + 67	68
	Block E	Forw		49			48
		Rev		70			69
C D M A	Block C	Forw	2		1	3 + 4	5
		Rev	37		36	38 + 39	40
	Block F	Forw		7			6
		Rev		42			41
T D M A	Block A	Forw	94		85	95 + 96	97
		Rev	120		121	122+123	124
	Block D	Forw		99			98
		Rev		126			125
T D M A	Block C	Forw	9		8	10 + 11	12
		Rev	30		29	31 + 32	33
	Block F	Forw		14			13
		Rev		35			34
G S M	Block	Forw	88		87	89 + 90	91
	A	Rev	113		114	115+116	117
	Block	Forw		93			92
	D	Rev		119			118
G S M	Block	Forw	58		57	59 + 60	61
	B	Rev	79		78	80 + 81	82
	Block	Forw		63			62
	E	Rev		84			83

1A127122 AllA HA, 199A
WJ R1920 PCS REPEATER
REF 35.4 dBm AT 20 dB

MKR 1.930000 GHz
-22.00 dBm

LOG
10
dB/
OFFST
32.0
dB
DL
-19.0
dBm

VA SB
SC FC
CORR

START 1.930000 GHz
RES BW 30 kHz

#VBW 1.6 Hz

STOP 1.931000 GHz
SWP 52.5 Hz

08:56:01 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.450 MHz
-1.90 dB

LOG REF 16.0 dBm

10
dB/
ATN
30 dB
DL
-19.0
dBm
VA SB
SC FC
CORR

CENTER 1.940000 GHz
#IF BW 30 kHz

#AVG BW 30 kHz

SPAN 5.000 MHz
SWP 20.0 msec

10:58:11 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.944 GHz
34.04 dBm

LOG REF OFFST 32.0 dB
REF 42.0 dBm

10
dB/
#ATN
30 dB
DL
-19.0
dBm
VA SB
SC FC
CORR

START 30 MHz

#IF BW 1.0 MHz

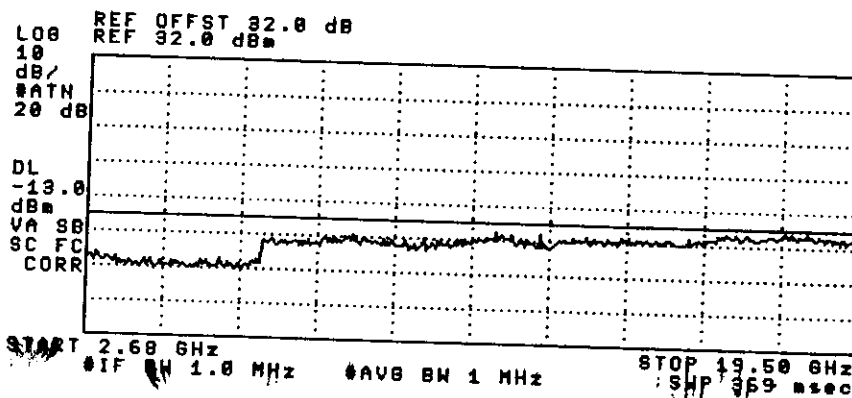
#AVG BW 1 MHz

STOP 2.679 GHz
SWP 53.0 msec

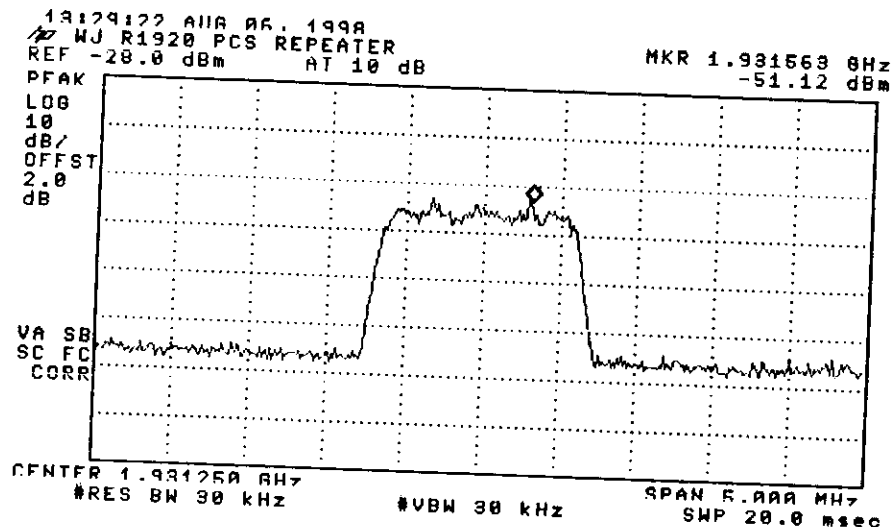
10:59:24 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AV8

102



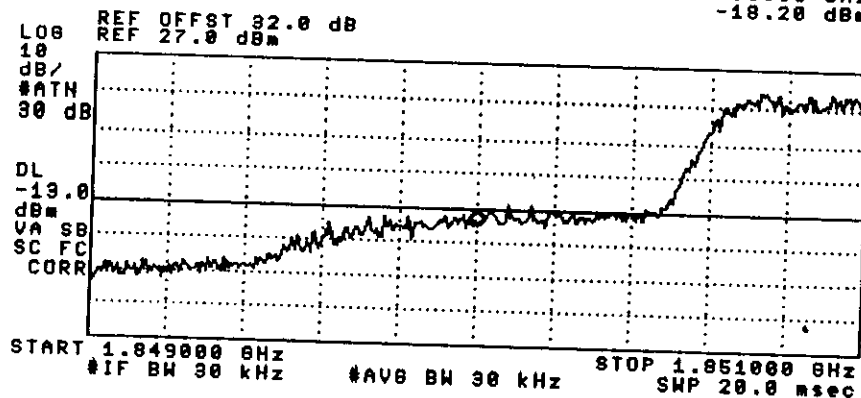
103



12:57:16 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AV8
MARKER 1.850000 GHz
-18.20 dBm

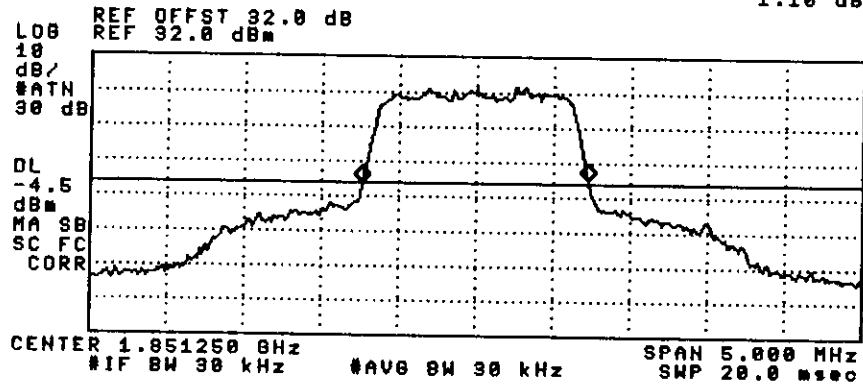
(106)



13:06:18 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.463 MHz
1.10 dB

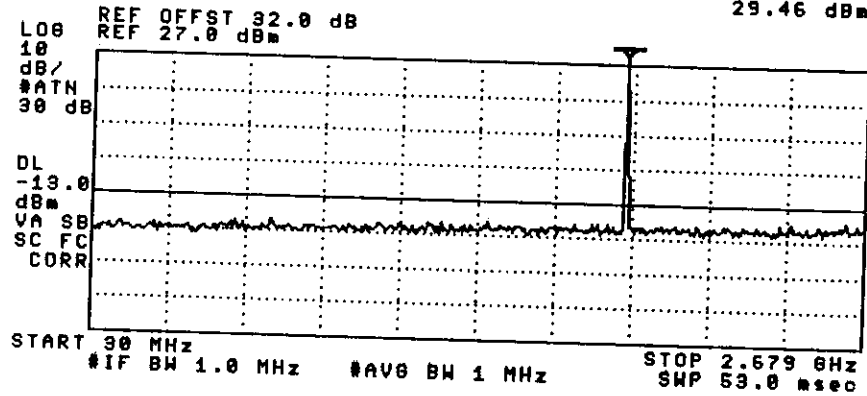
109



12:58:37 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.858 GHz
29.46 dBm

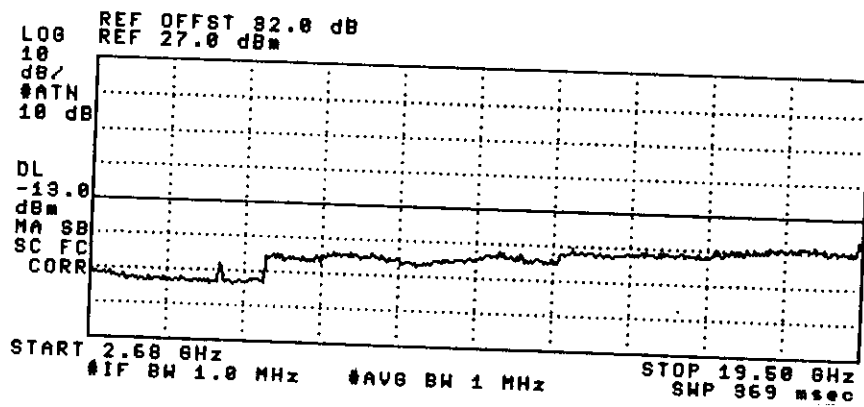
(107)



13:00:13 JUL 27, 1998
WJ R1920 PCS REPEATER

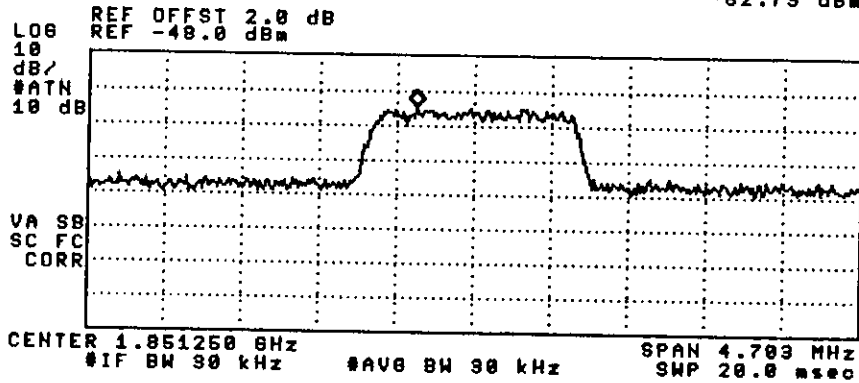
ACTV DET: PEAK
MEAS DET: PEAK QP AVG

(108)



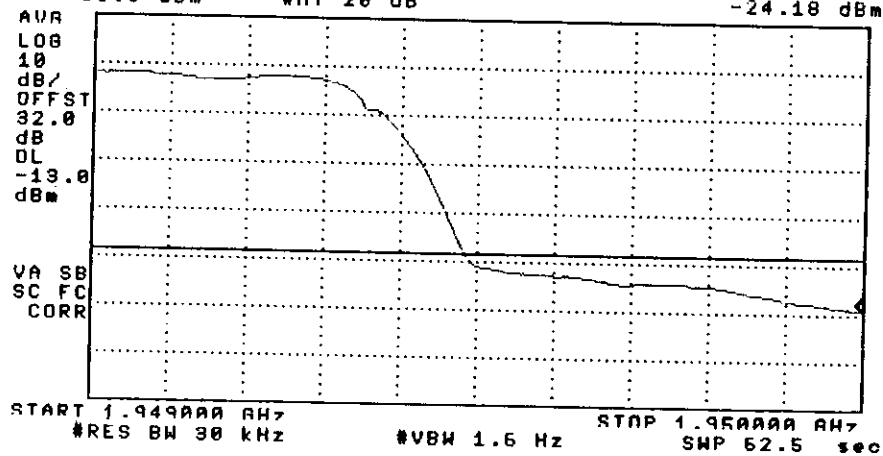
13:33:57 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AV8
MKR 1.850897 GHz
-62.73 dBm



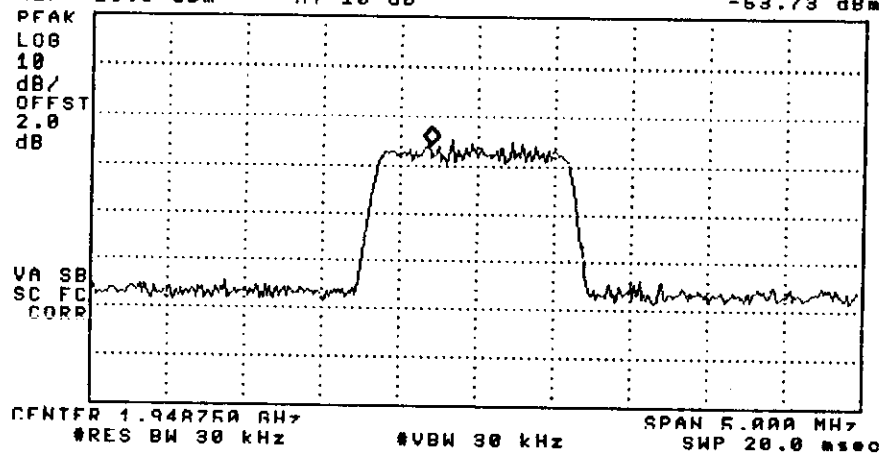
13:35:47 AIR RA, 1998
WJ R1920 PCS REPEATER
REF 35.3 dBm #AT 20 dB

MKR 1.950000 GHz
-24.18 dBm



13:31:22 AIR RA, 1998
WJ R1920 PCS REPEATER
REF -28.0 dBm AT 10 dB

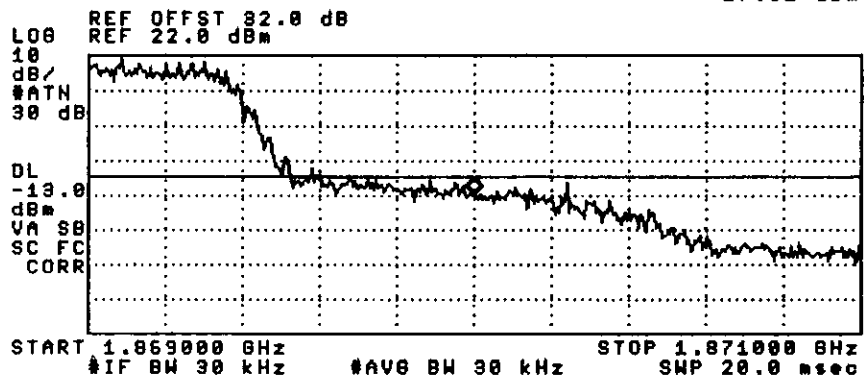
MKR 1.948450 GHz
-53.73 dBm



13:16:20 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.870000 GHz
-17.91 dBm

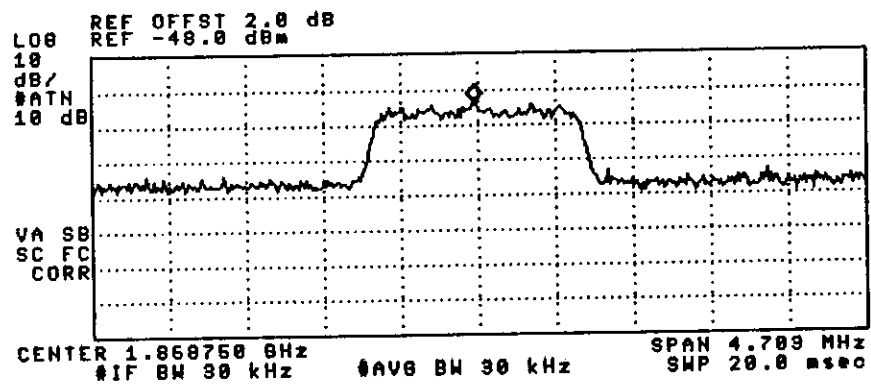
(112)



13:34:46 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.868726 GHz
-61.68 dBm

118



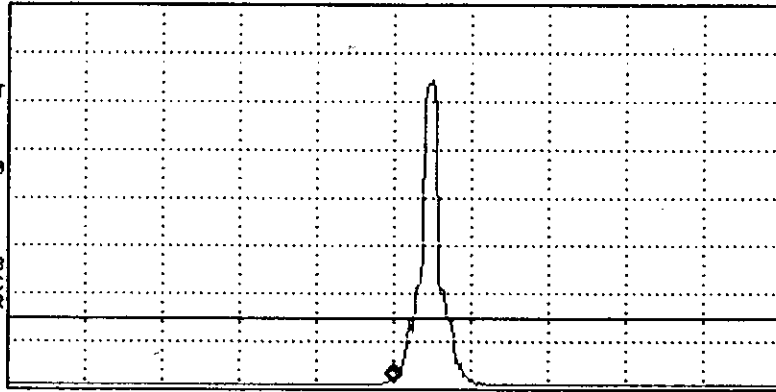
07:55:54 AMR 06. 1998
WJ R1920 PCS REPEATER
REF 52.0 dBm #AT 30 dB

MKR 1.950000 GHz
-26.43 dBm

51

PFAK
LOG
10
dB/
OFFST
32.0
dB
DL
-13.0
dBm

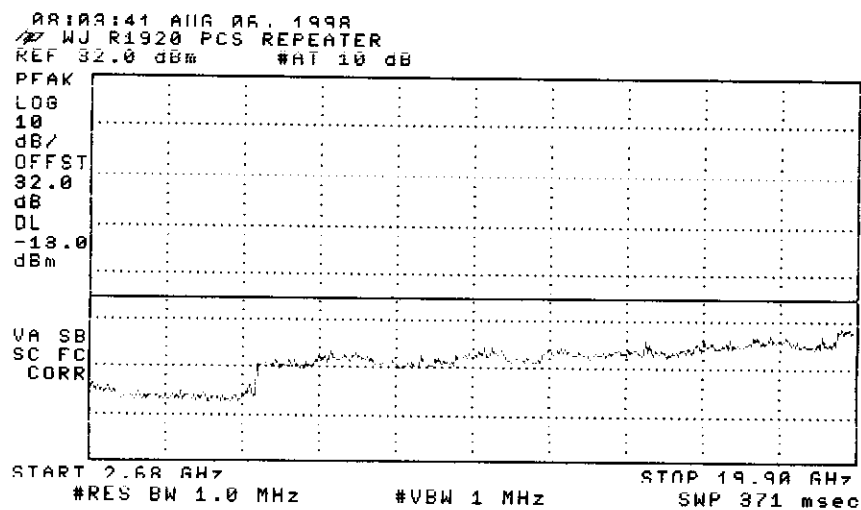
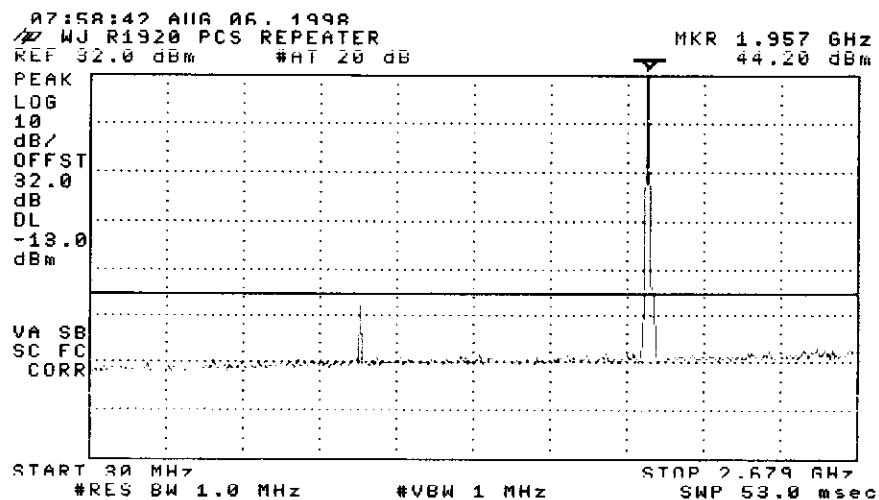
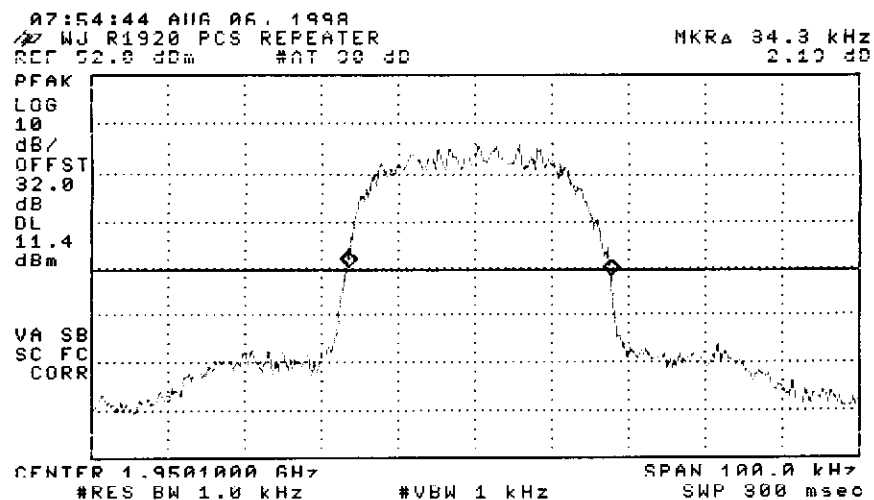
VA SB
SC FC
CORR

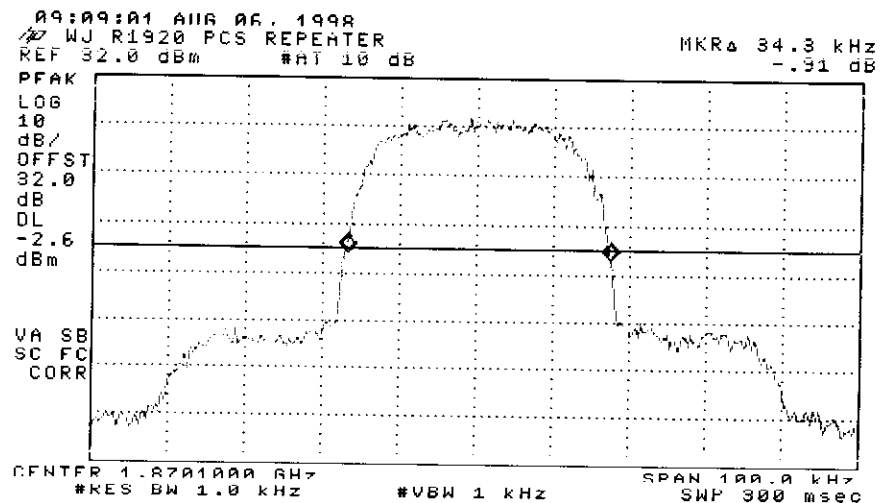
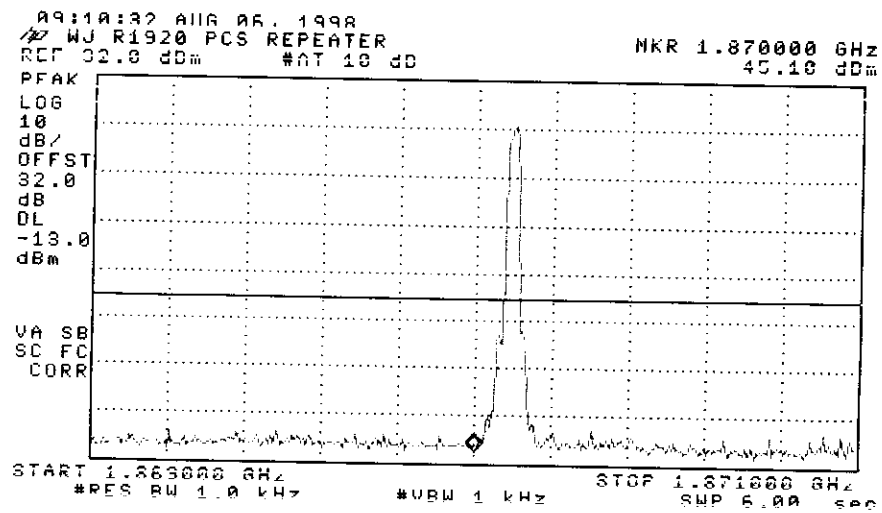
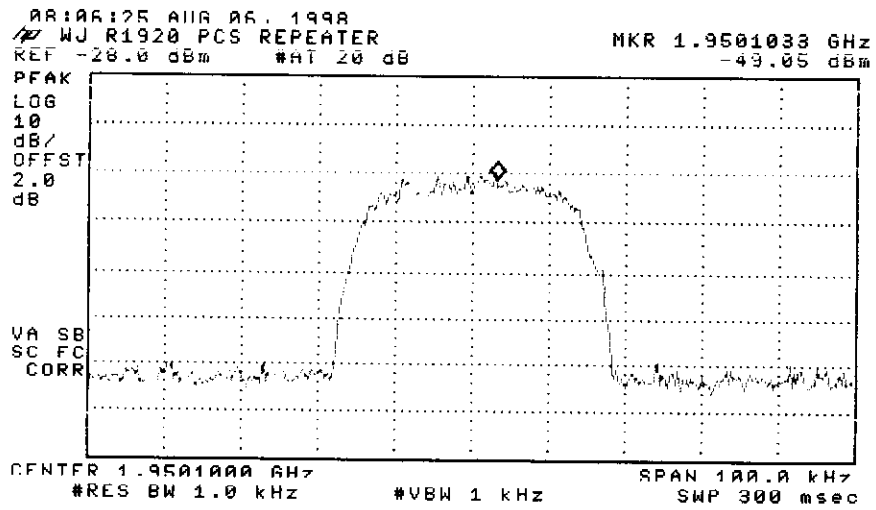


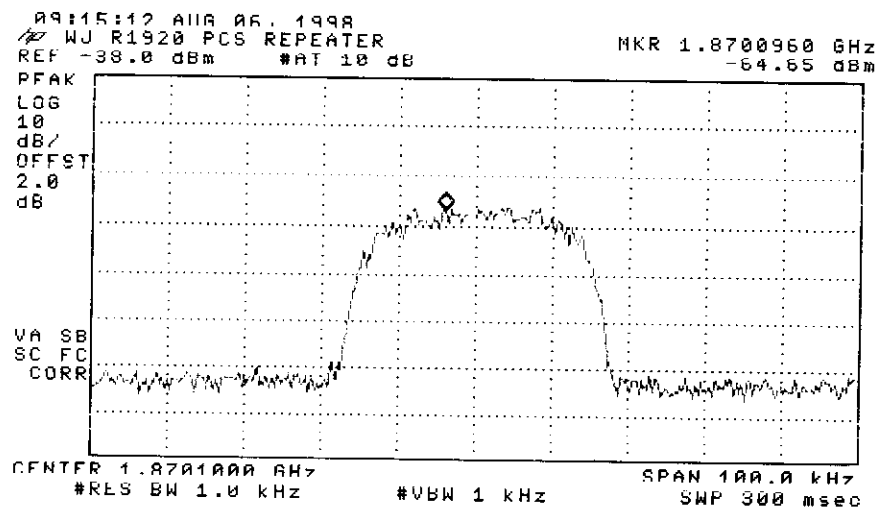
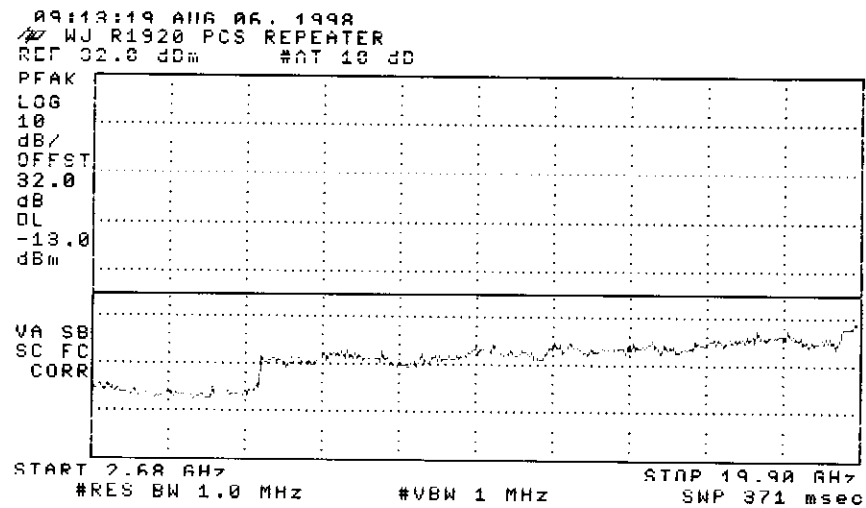
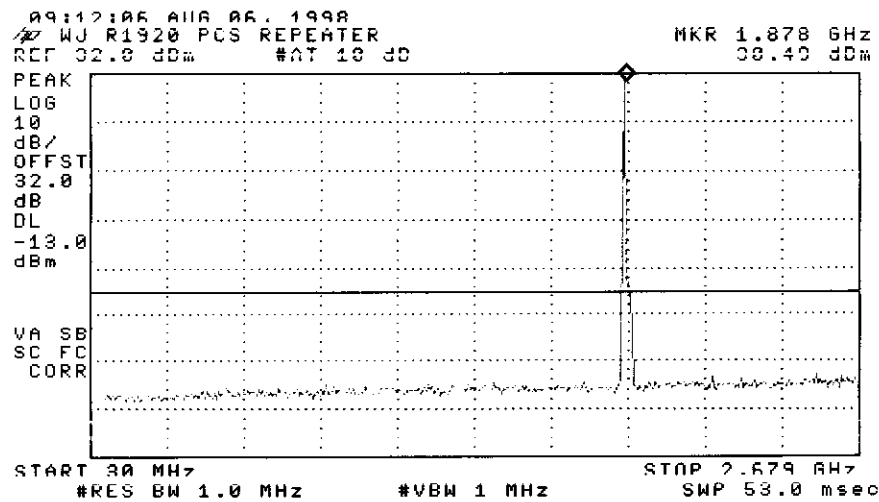
START 1.949000 GHz
#RES BW 1.0 kHz

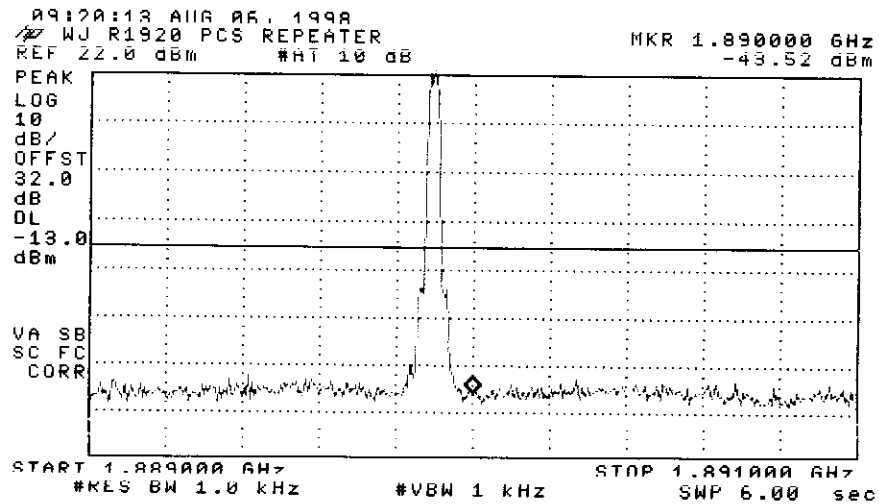
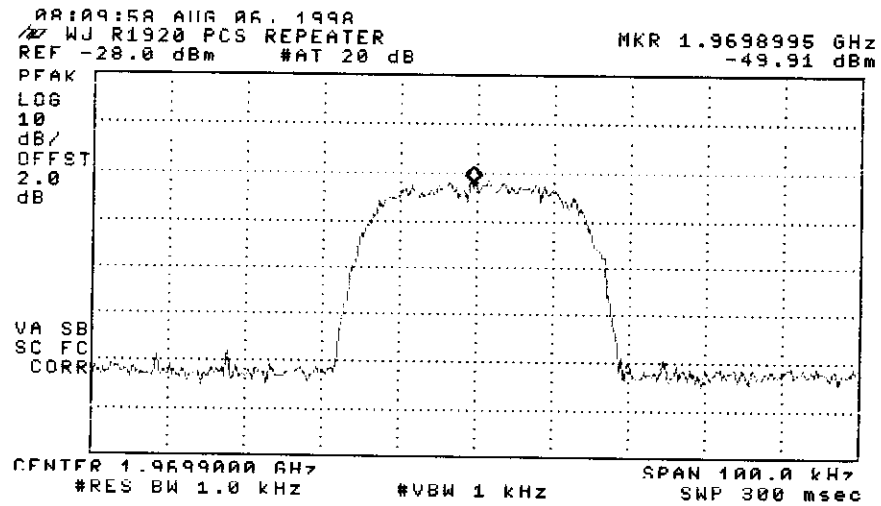
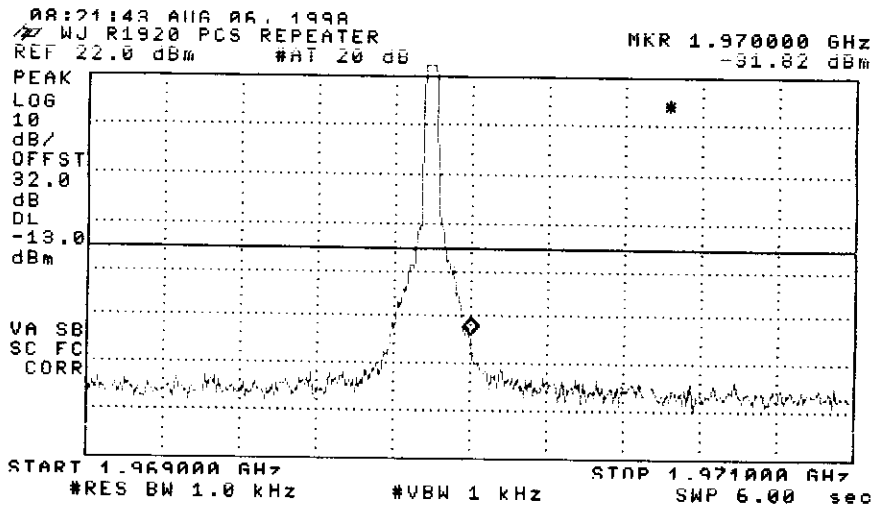
#VBW 1 kHz

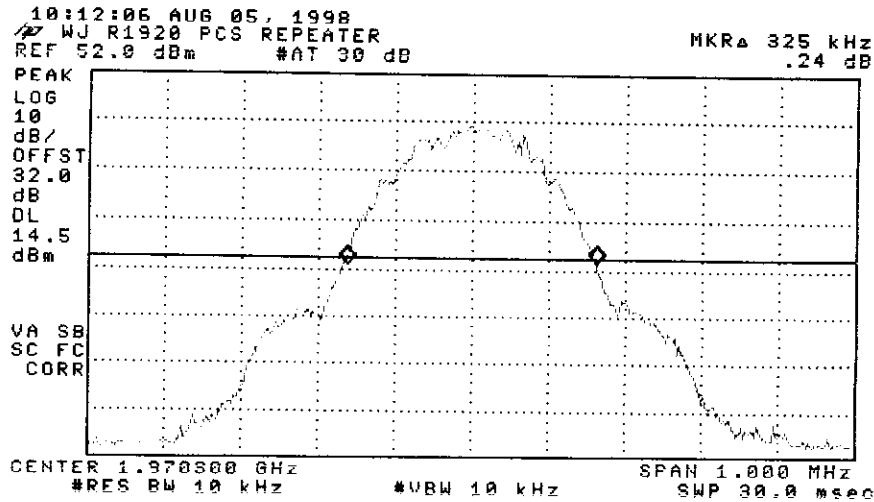
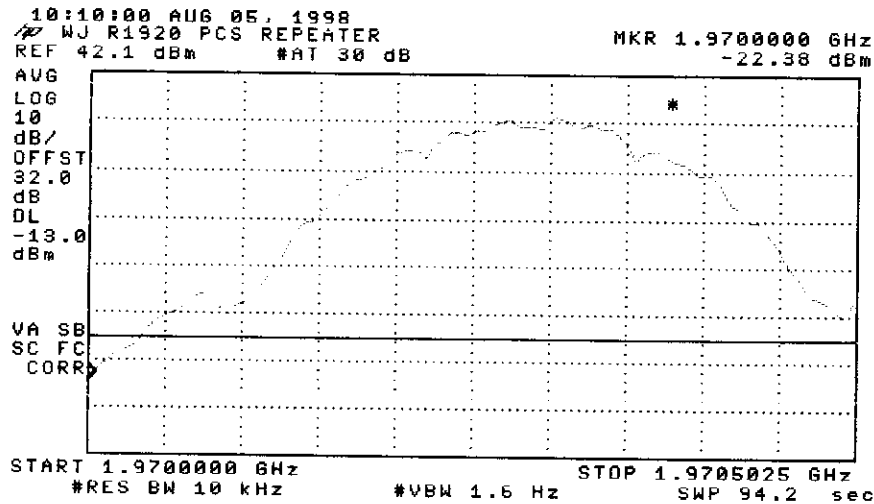
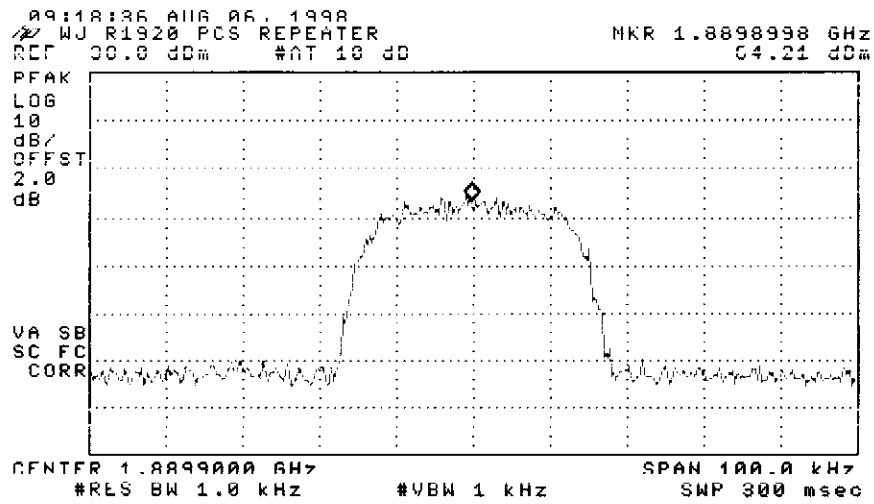
STOP 1.951000 GHz
SWP 0.1 Hz





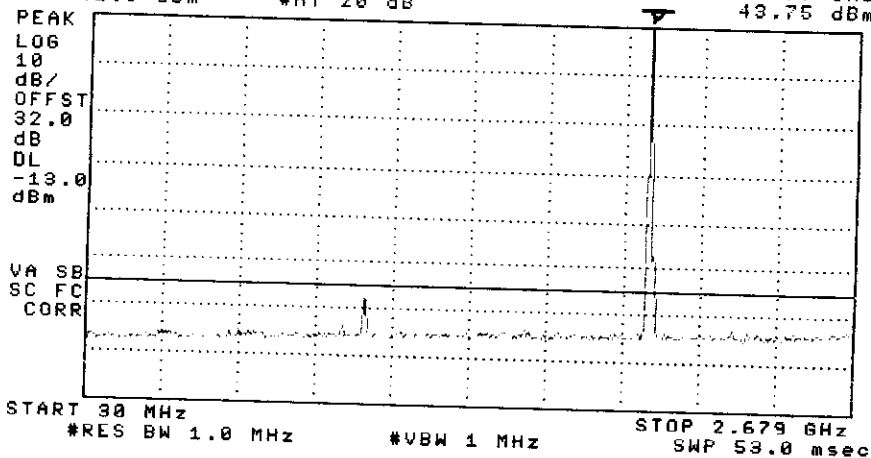




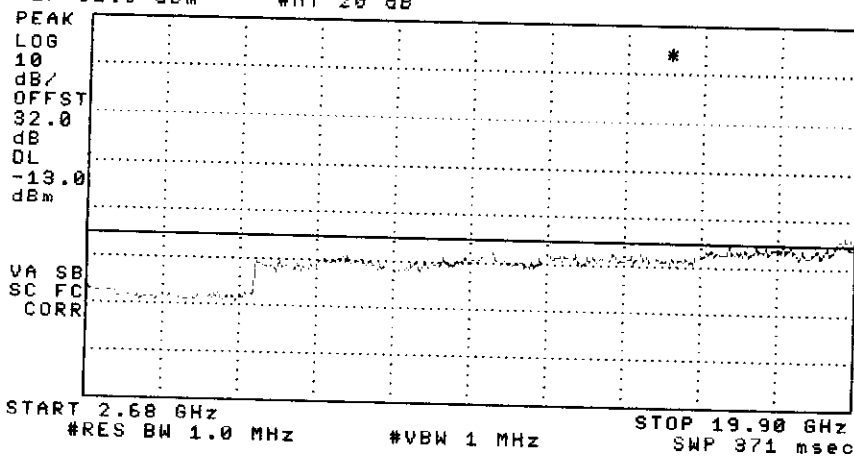


10:14:00 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 42.0 dBm #AT 20 dB

MKR 1.977 GHz
43.75 dBm

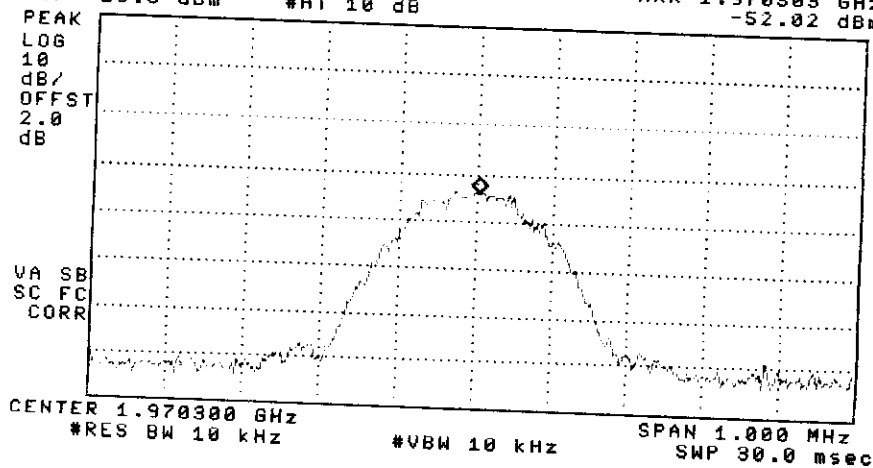


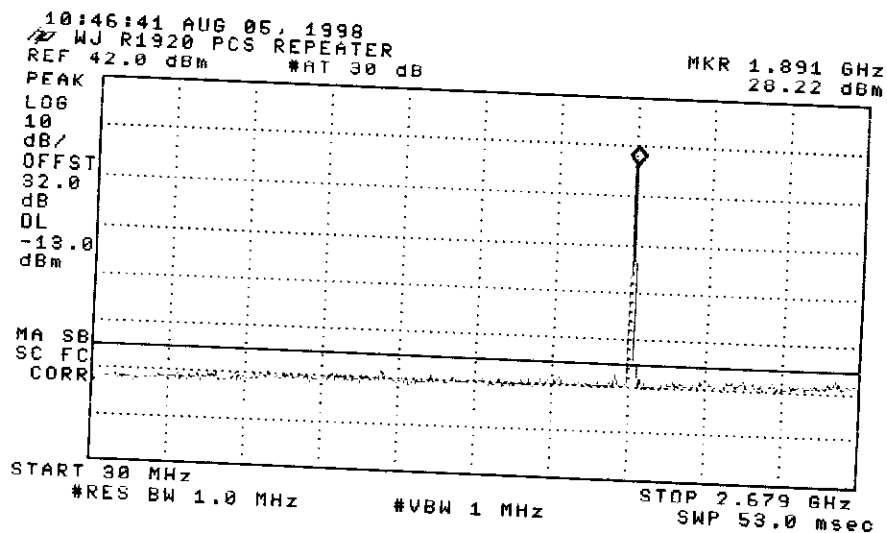
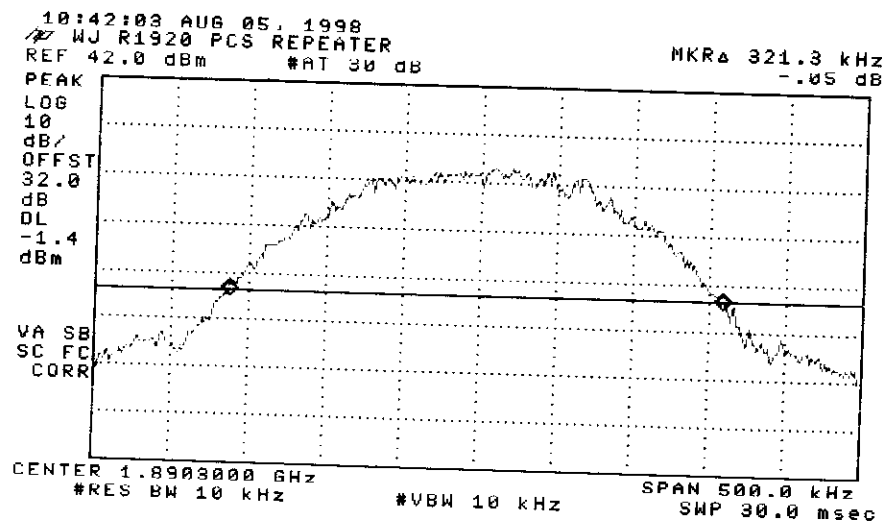
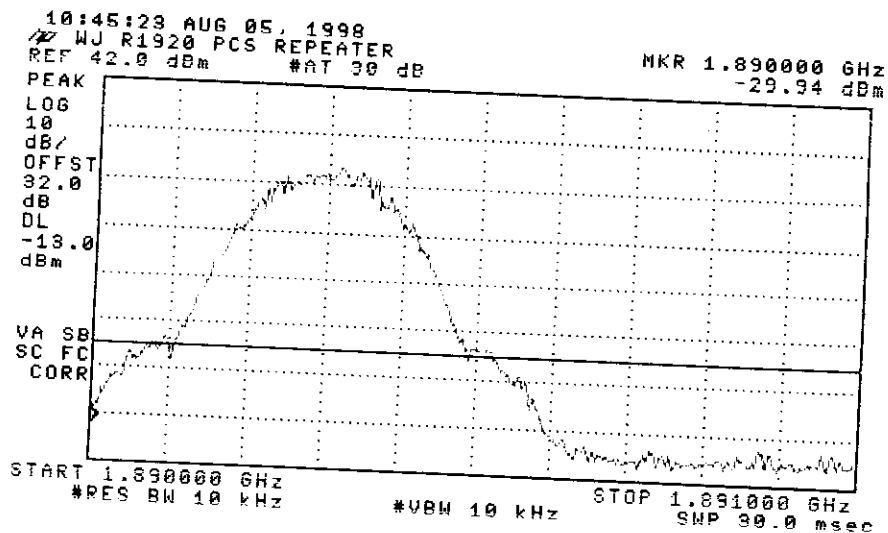
10:15:18 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 32.0 dBm #AT 20 dB



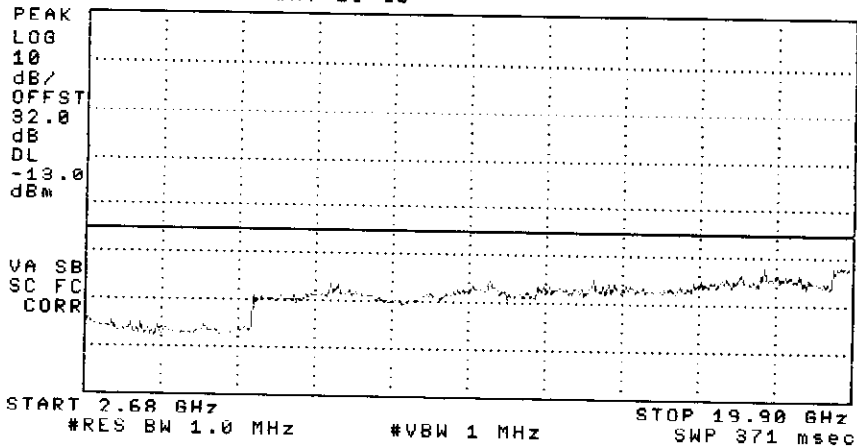
10:18:03 AUG 05, 1998
WJ R1920 PCS REPEATER
REF -18.0 dBm #AT 10 dB

MKR 1.970303 GHz
-52.02 dBm



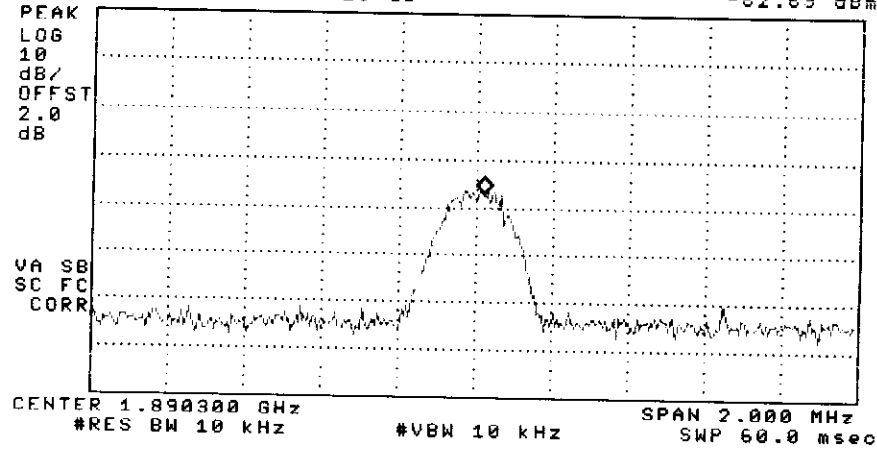


10:48:50 AUG 05, 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #AT 10 dB



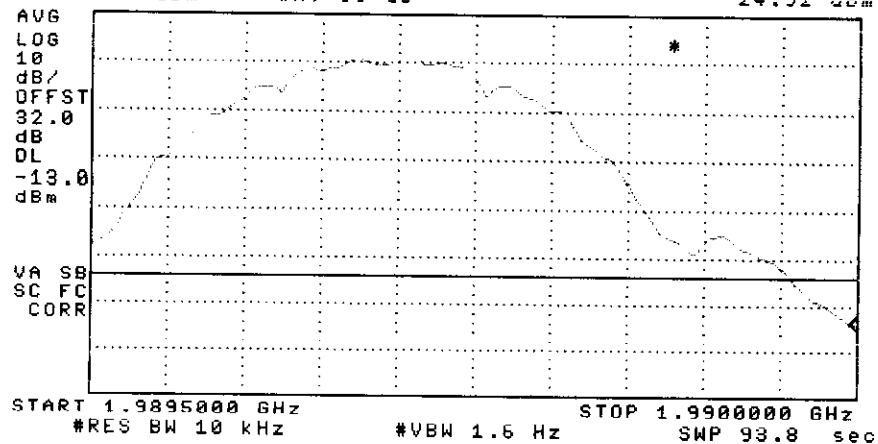
10:51:41 AUG 05, 1998
 WJ R1920 PCS REPEATER
 REF -26.0 dBm #AT 10 dB

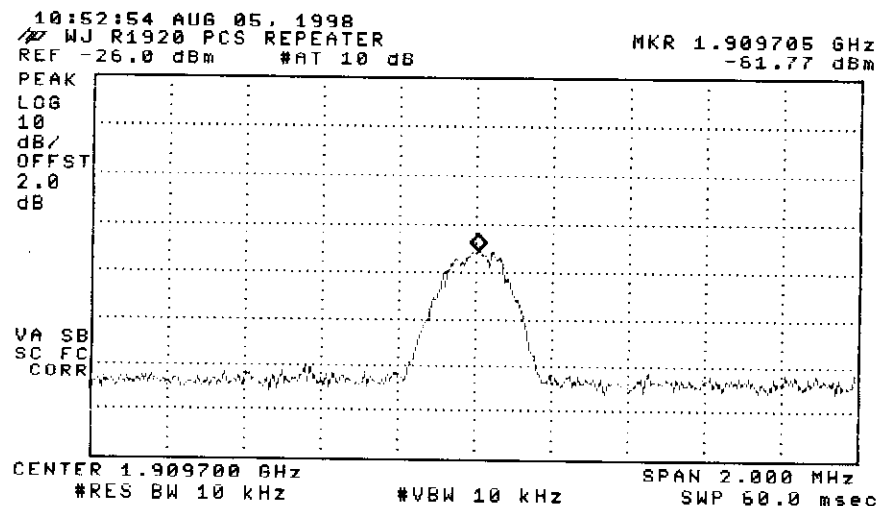
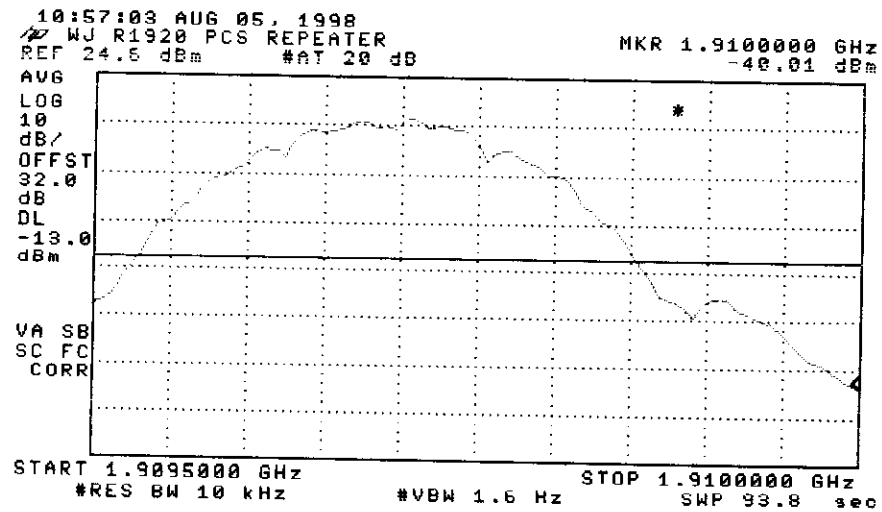
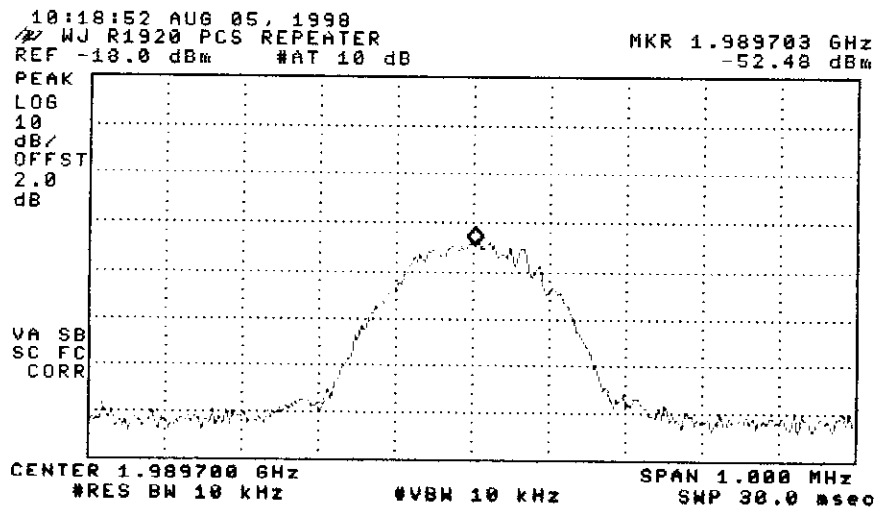
MKR 1.890320 GHz
 -62.63 dBm



10:25:29 AUG 05, 1998
 WJ R1920 PCS REPEATER
 REF 41.0 dBm #AT 30 dB

MKR 1.9900000 GHz
 -24.32 dBm



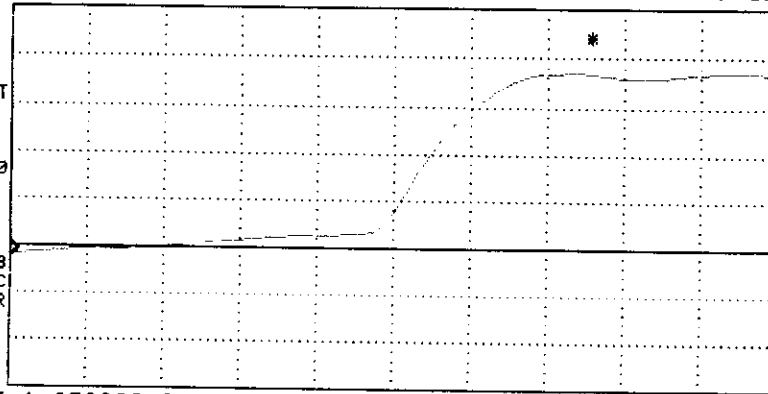


07:32:24 AIR 05. 1998
 WJ R1920 PCS REPEATER
 REF 37.0 dBm AT 20 dB

MKR 1.950000 GHz
 -15.42 dBm

AVA
 LOG
 10
 dB/
 OFFST
 32.0
 dB
 DL
 -13.0
 dBm

VA SB
 SC FC
 CORR



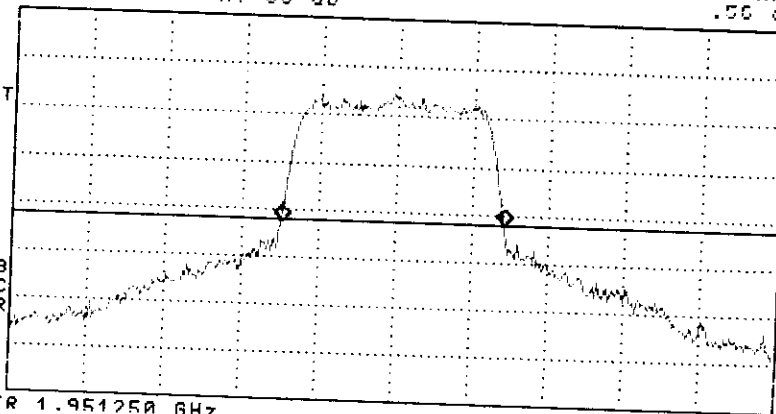
START 1.950000 GHz #RES BW 30 kHz #VBW 1.6 Hz S STOP 1.951000 GHz SWP 62.5 sec

07:12R:47 AIR 05. 1998
 WJ R1920 PCS REPEATER
 REF 52.0 dBm AT 30 dB

MKR 1.450 MHz
 .50 dB

PEAK
 LOG
 10
 dB/
 OFFST
 32.0
 dB
 DL
 10.0
 dBm

VA SB
 SC FC
 CORR



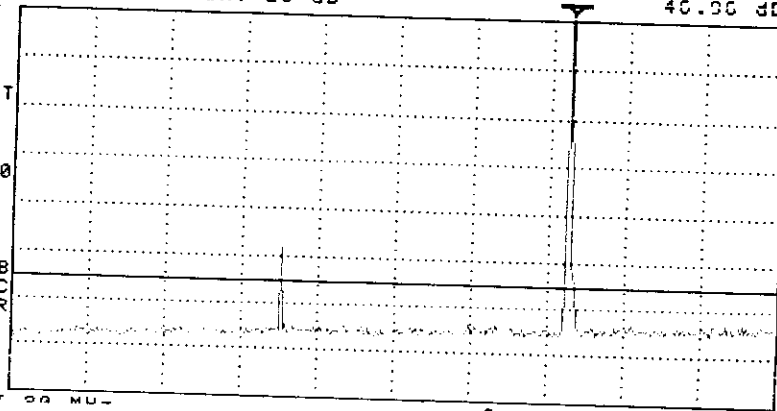
CENTER 1.951250 GHz #RES BW 30 kHz #VBW 30 kHz SPAN 5.000 MHz SWP 20.0 msec

07:34:13 AIR 05. 1998
 WJ R1920 PCS REPEATER
 REF 42.0 dBm AT 20 dB

MKR 1.957 GHz
 40.20 dBm

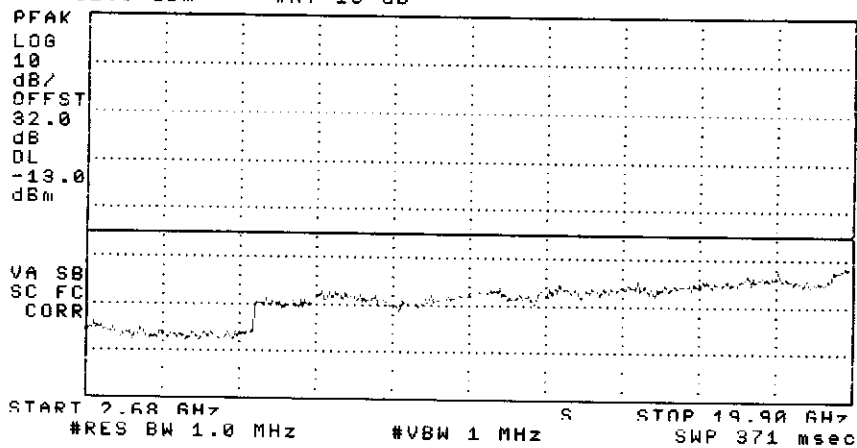
PEAK
 LOG
 10
 dB/
 OFFST
 32.0
 dB
 DL
 -13.0
 dBm

VA SB
 SC FC
 CORR

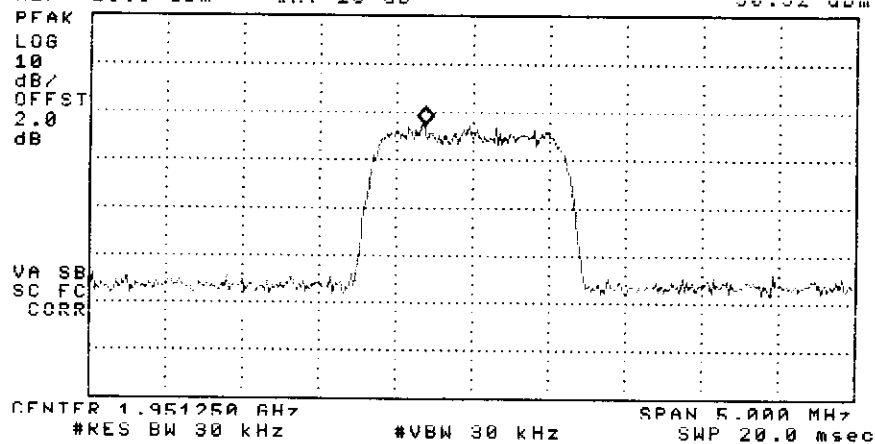


START 1.956 GHz STOP 1.958 GHz

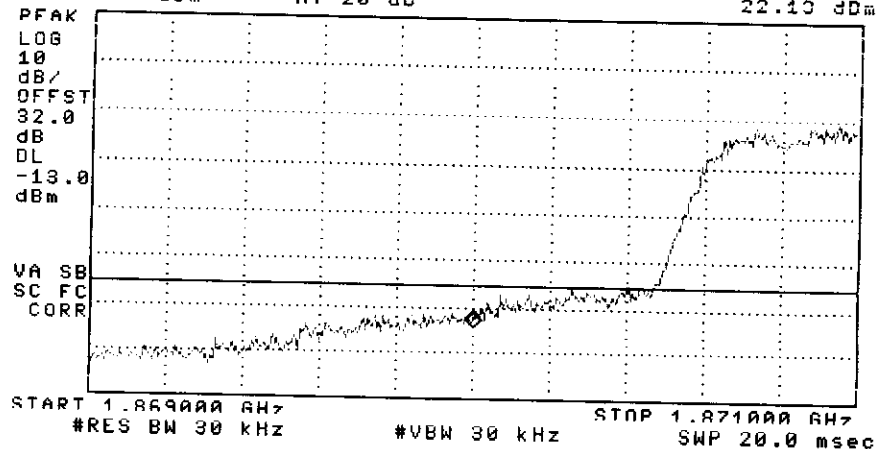
07:35:33 AHA 06. 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #AT 10 dB



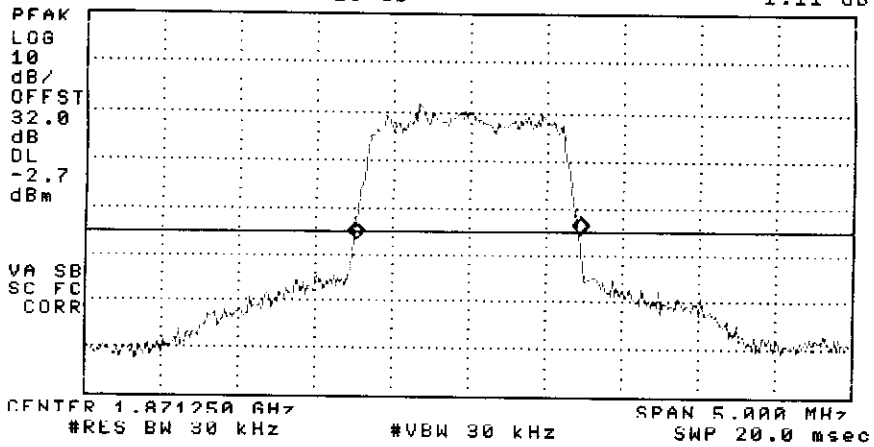
07:37:48 AHA 06. 1998
 WJ R1920 PCS REPEATER
 REF 20.0 dBm #AT 10 dB
 MKR 1.950938 GHz
 50.02 dBm



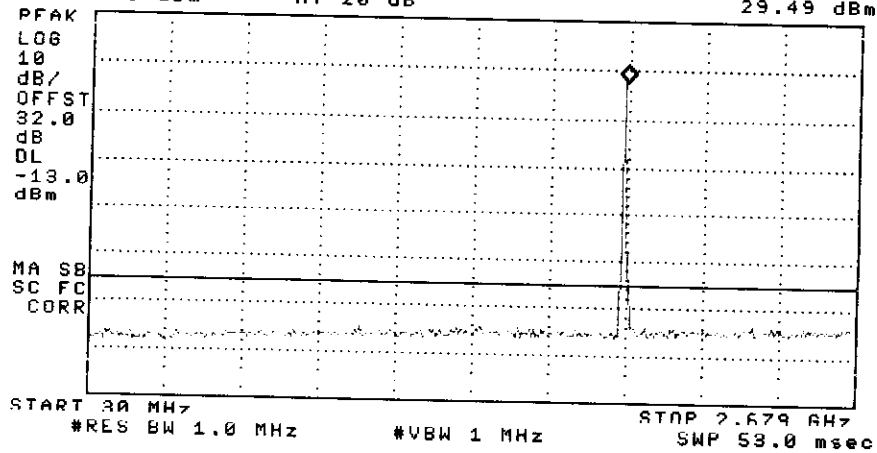
08:53:59 AHA 06. 1998
 WJ R1920 PCS REPEATER
 REF 42.0 dBm #AT 20 dB
 MKR 1.870000 GHz
 22.10 dBm



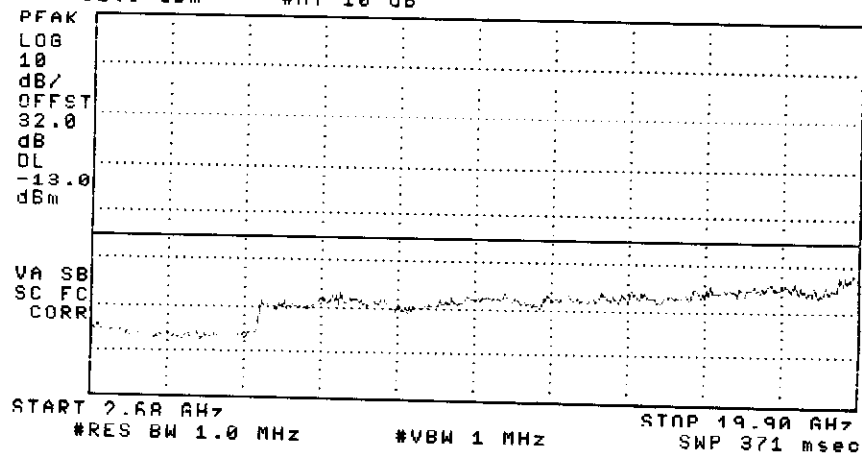
08:51:23 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 42.0 dBm AT 20 dB
 MKR 1.463 MHz
 1.11 dB

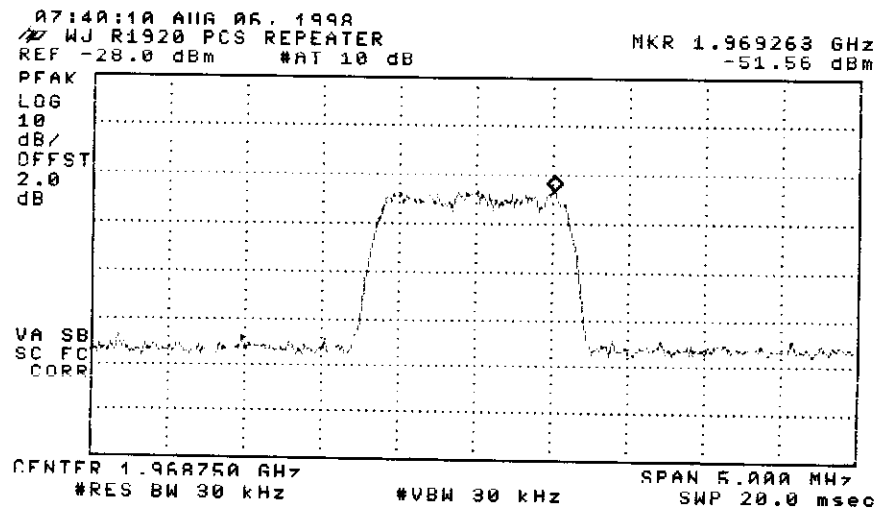
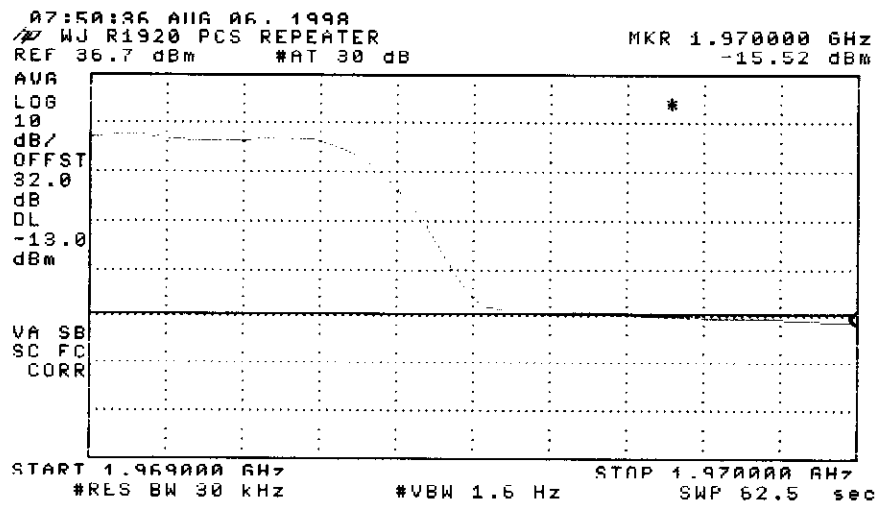
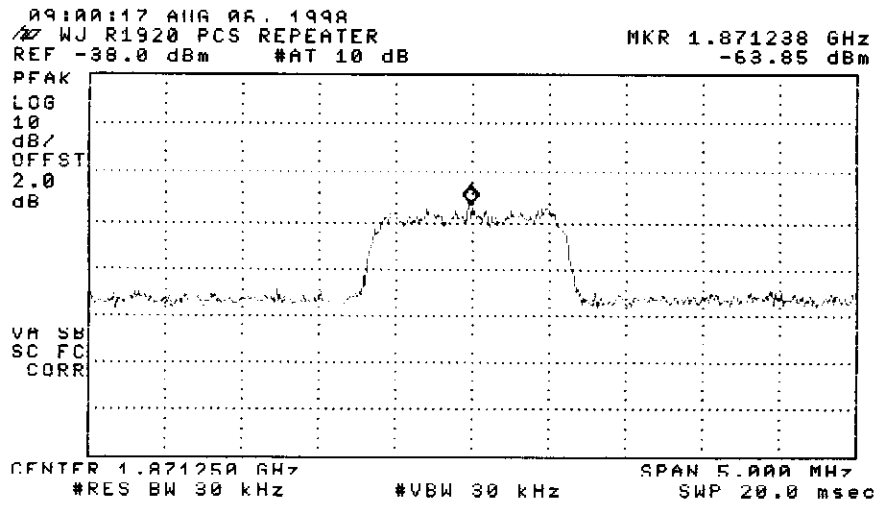


08:55:08 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 42.0 dBm AT 20 dB
 MKR 1.878 GHz
 29.49 dBm

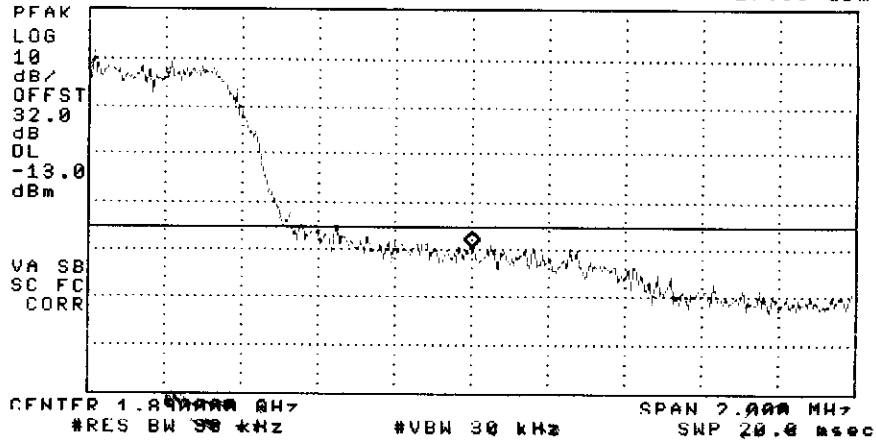


08:56:08 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #HT 10 dB

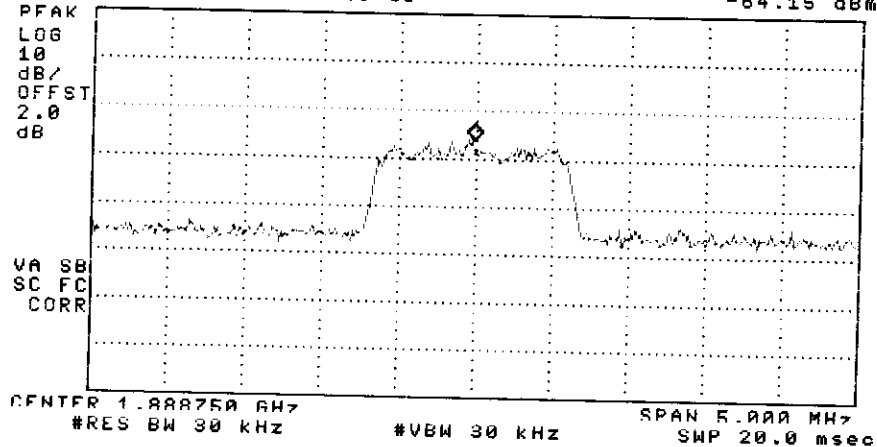




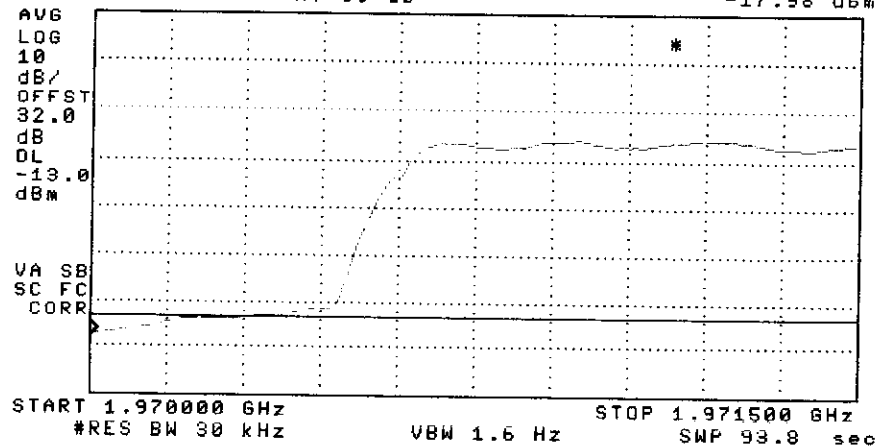
09:03:53 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #AT 10 dB MKR 1.890000 GHz
 -17.58 dBm



09:07:33 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF -38.0 dBm #AT 10 dB MKR 1.888738 GHz
 -64.15 dBm

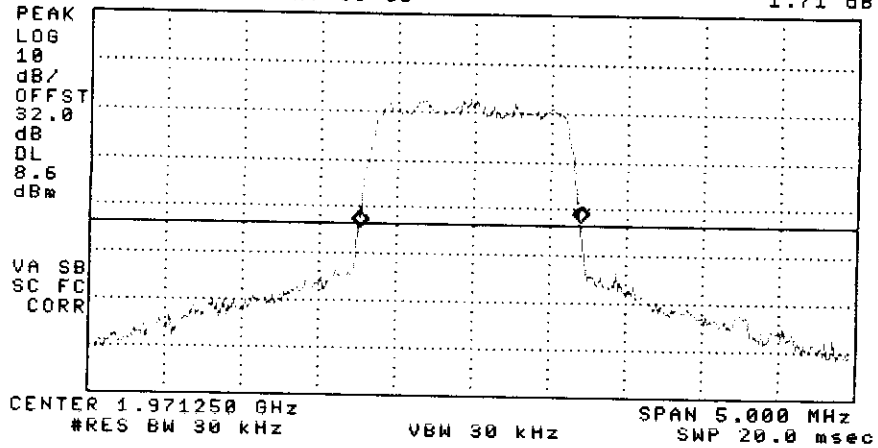


00:59:00 AUG 05, 1998
 WJ R1920 PCS REPEATER
 REF 50.0 dBm AT 30 dB MKR 1.970000 GHz
 -17.98 dBm



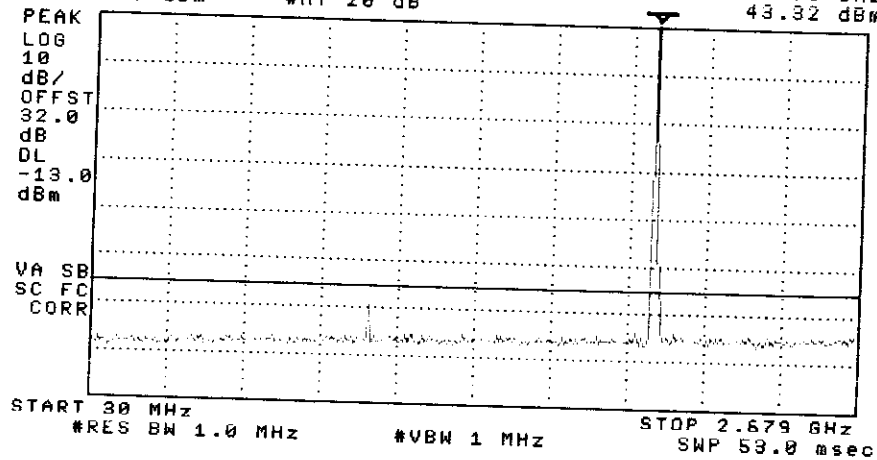
08:50:48 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 52.0 dBm AT 30 dB

MKR 1.438 MHz
1.71 dB

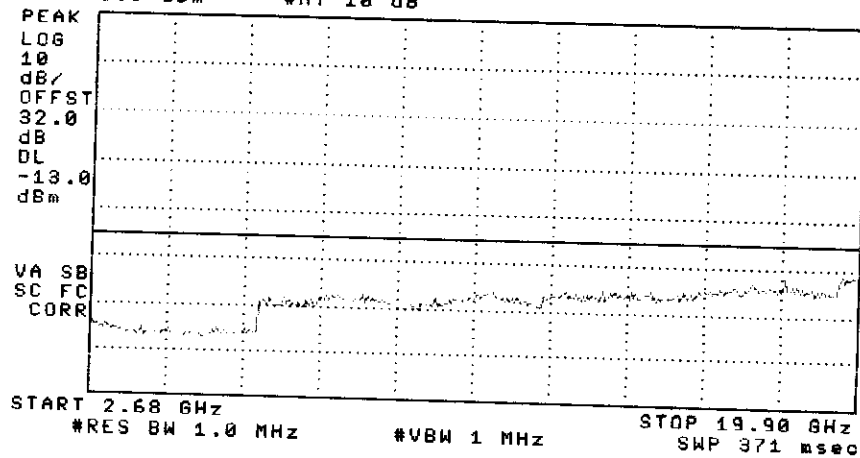


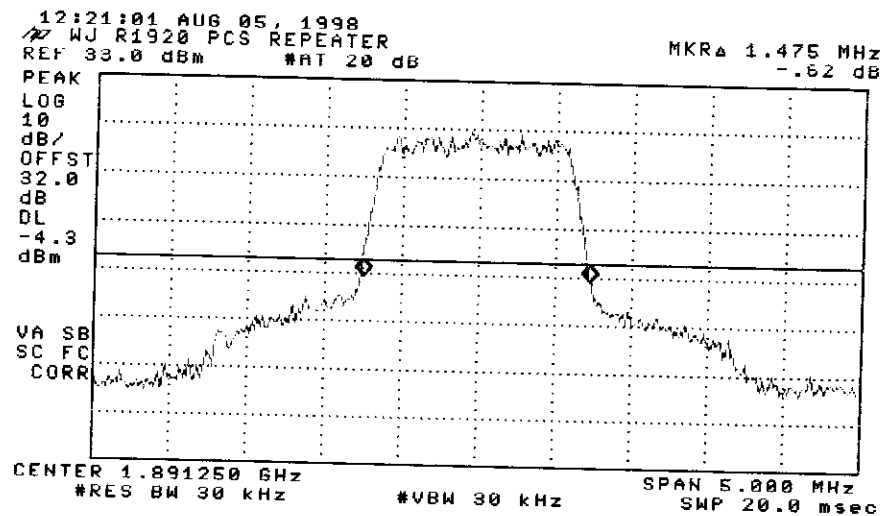
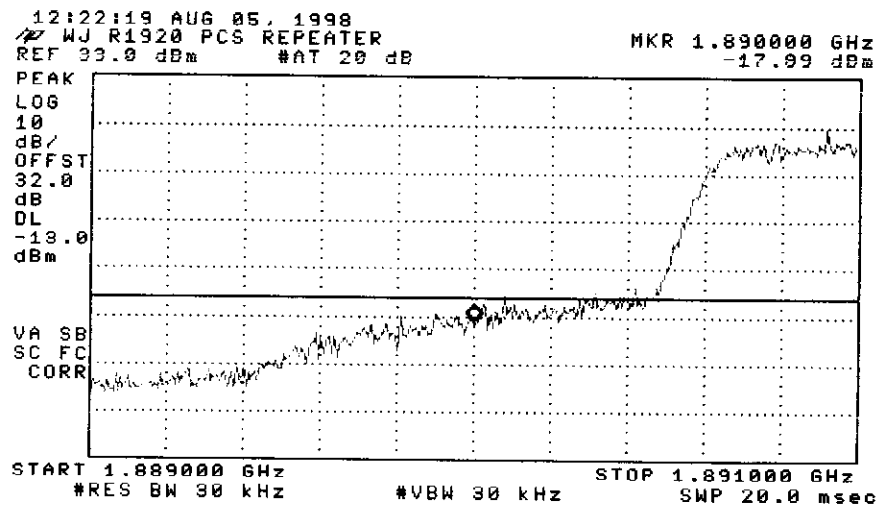
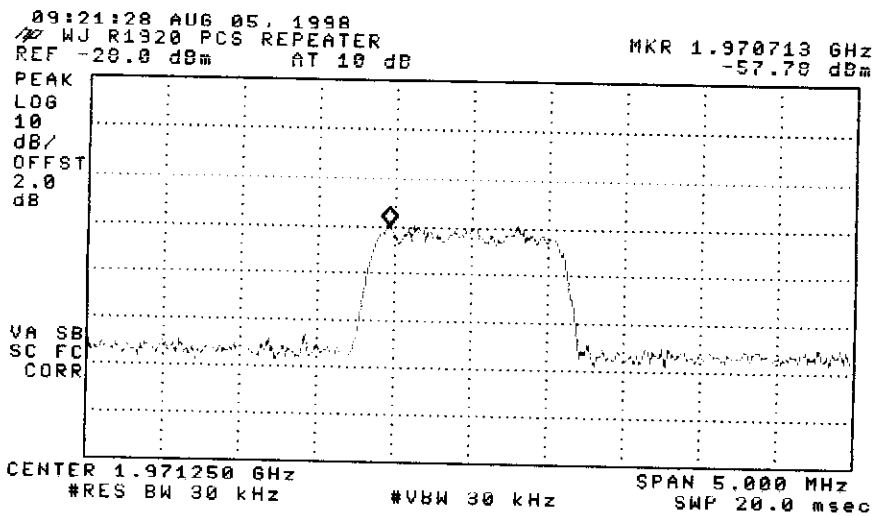
09:55:48 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 42.0 dBm #AT 20 dB

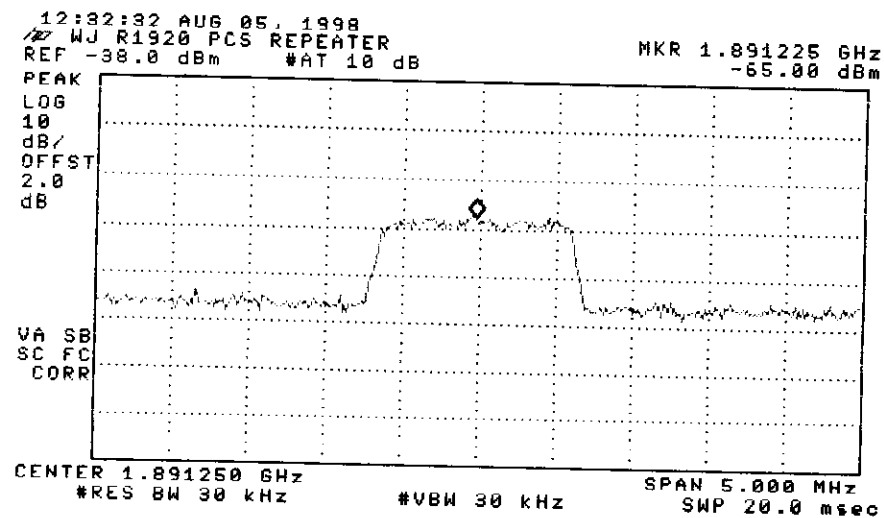
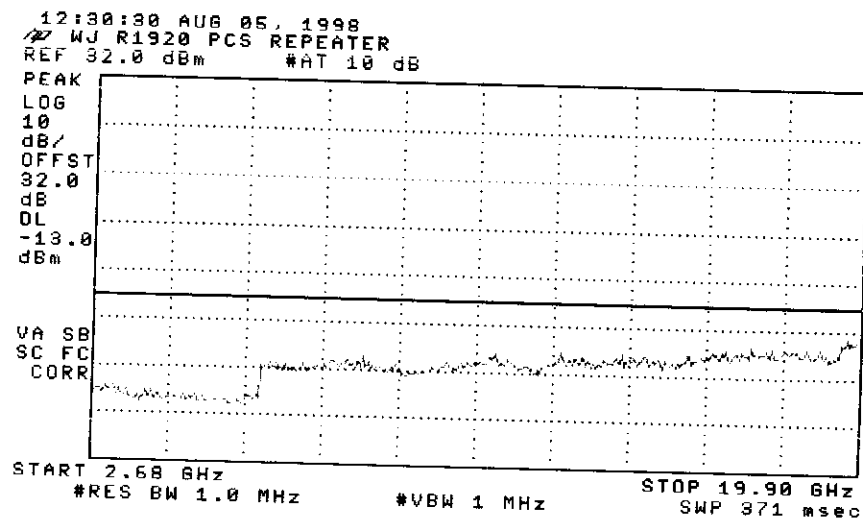
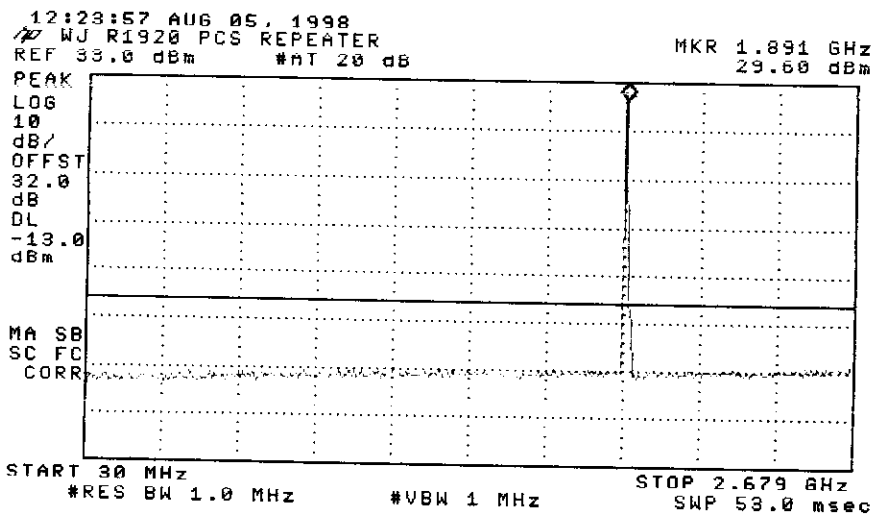
MKR 1.970 GHz
43.32 dBm

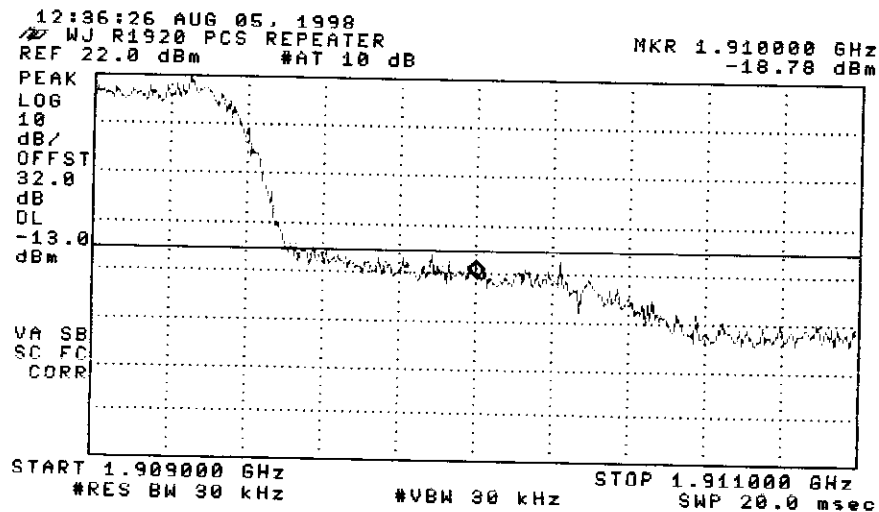
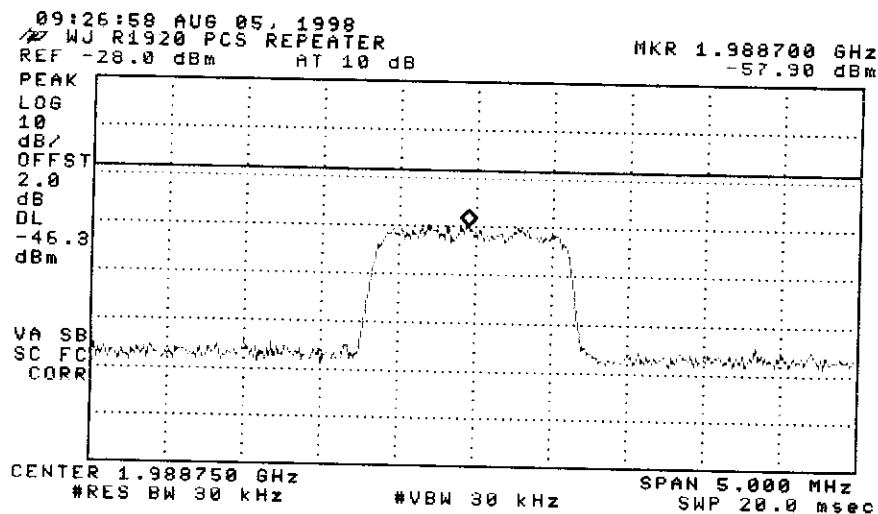
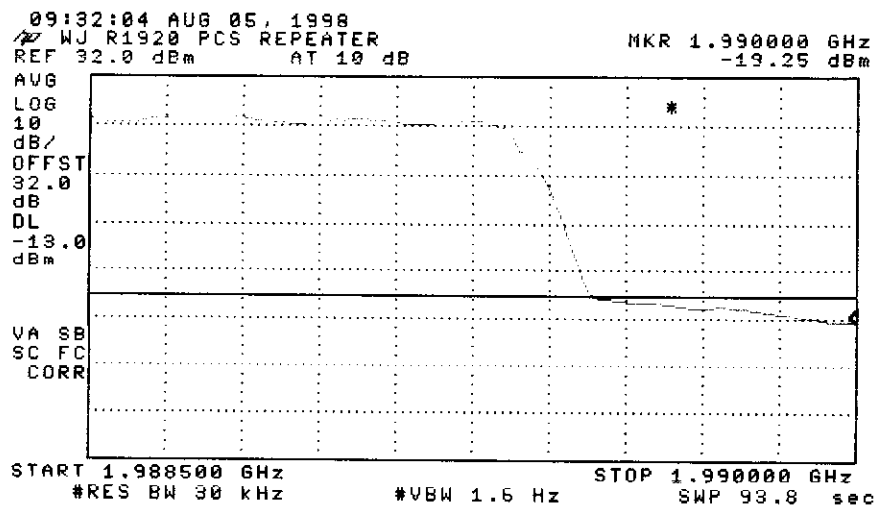


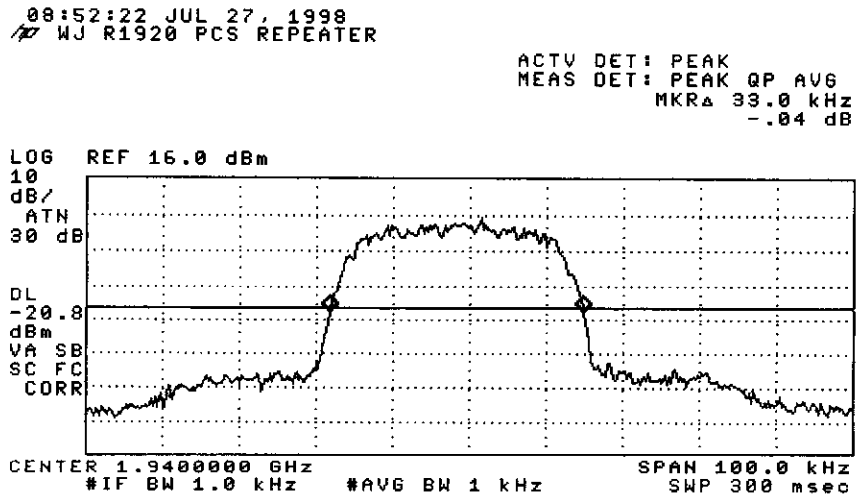
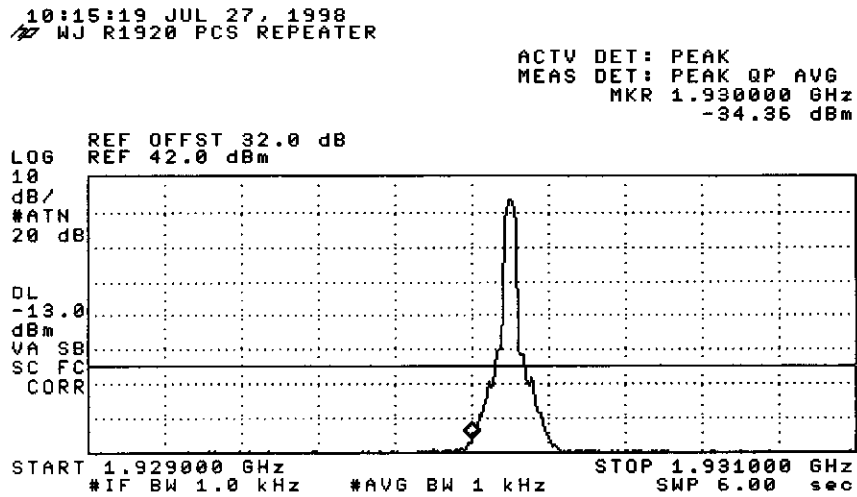
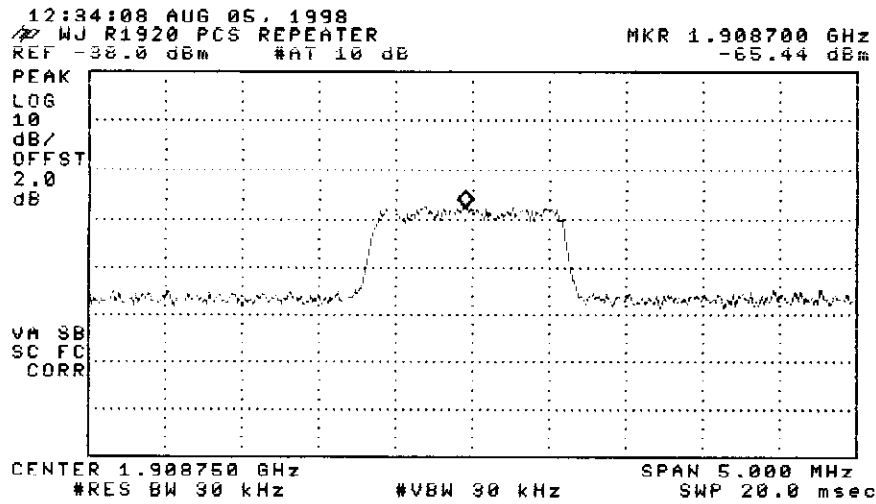
09:56:43 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 32.0 dBm #AT 10 dB





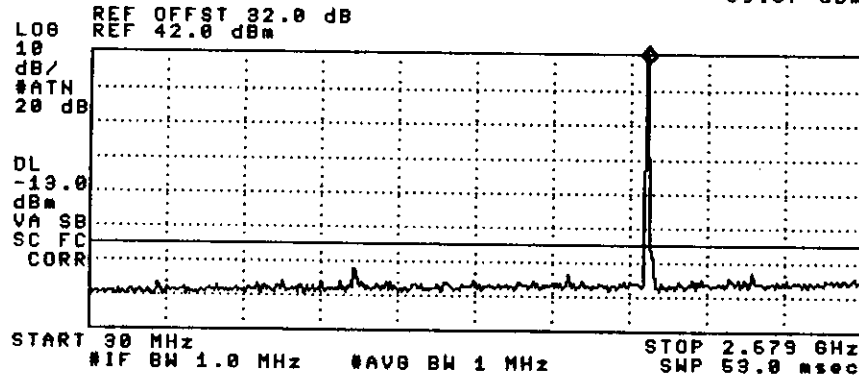






10:16:43 JUL 27, 1998
WJ R1920 PCS REPEATER

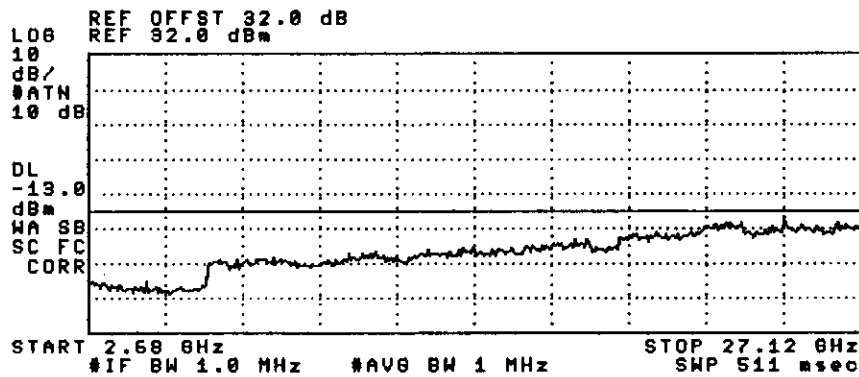
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.944 GHz
39.37 dBm



H12 100% OK

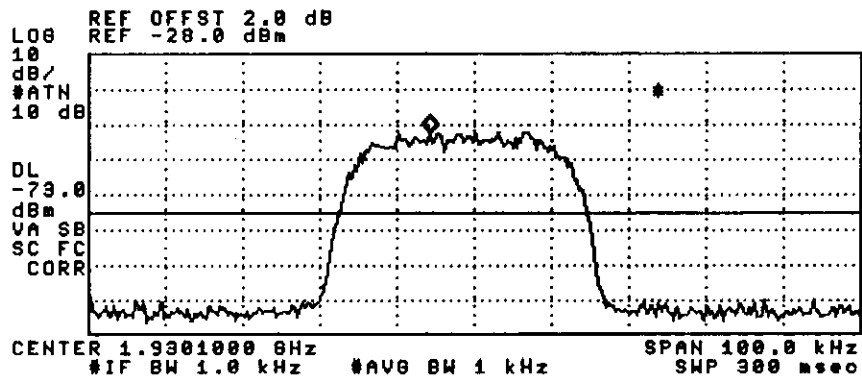
10:17:49 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



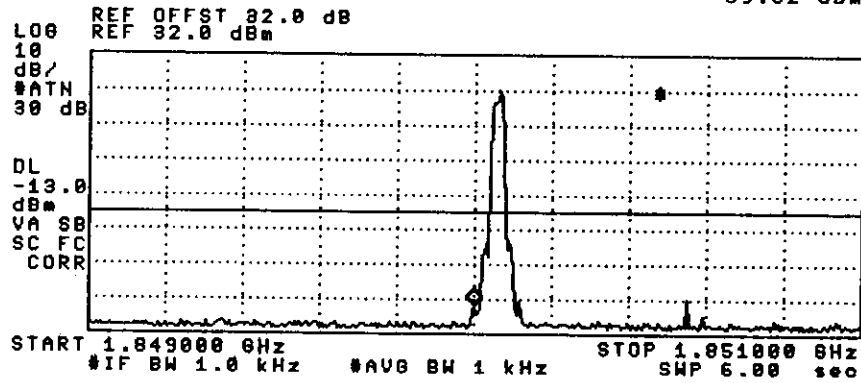
10:21:19 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.9300943 GHz
-50.51 dBm



13:43:25 JUL 27, 1998
WJ R1920 PCS REPEATER

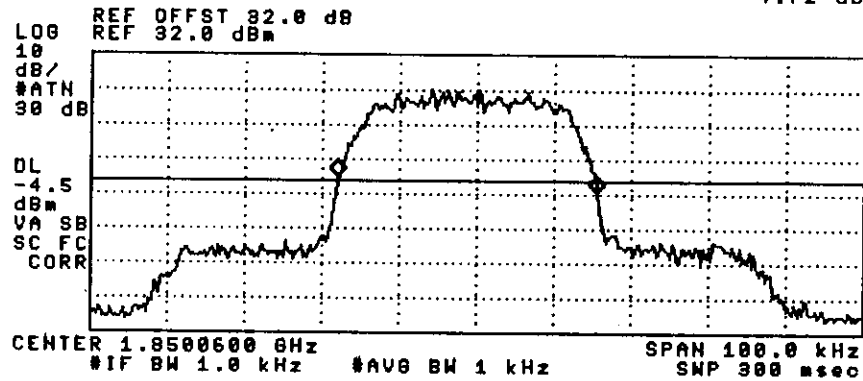
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.850000 GHz
-39.82 dBm



(121)

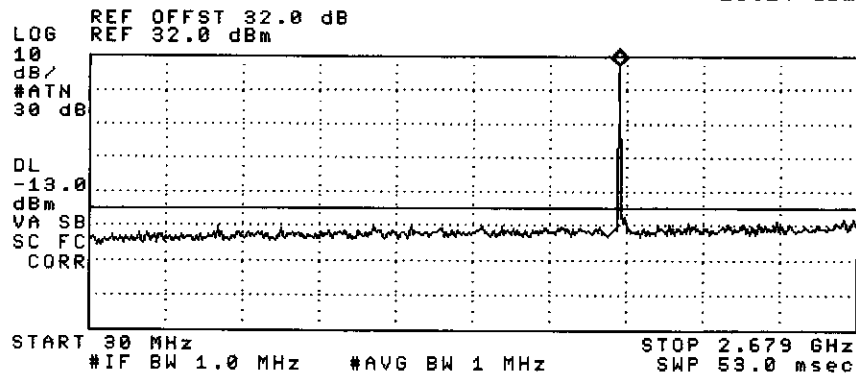
13:45:04 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 33.5 kHz
-4.72 dB



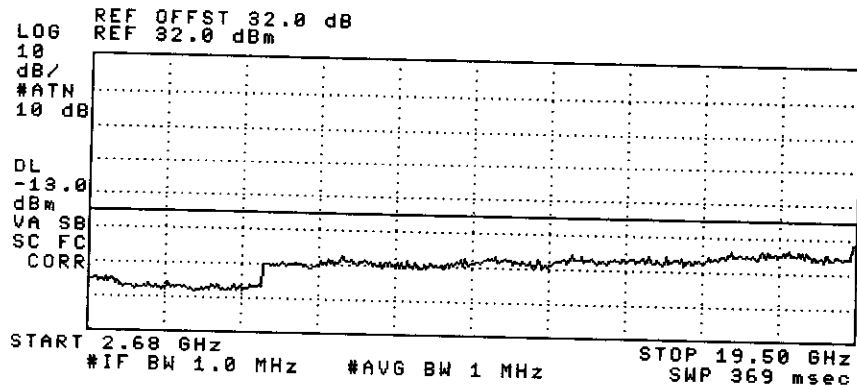
13:46:06 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.858 GHz
29.24 dBm



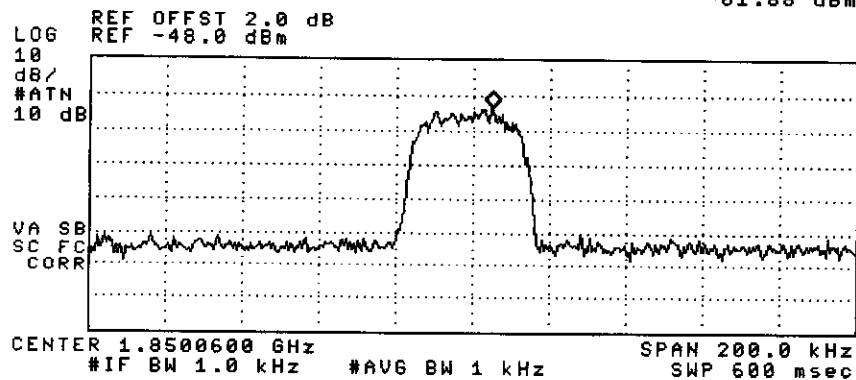
13:47:00 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



13:48:46 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.8500650 GHz
-61.88 dBm



10:24:30 JUL 27, 1998
WJ R1920 PCS REPEATER

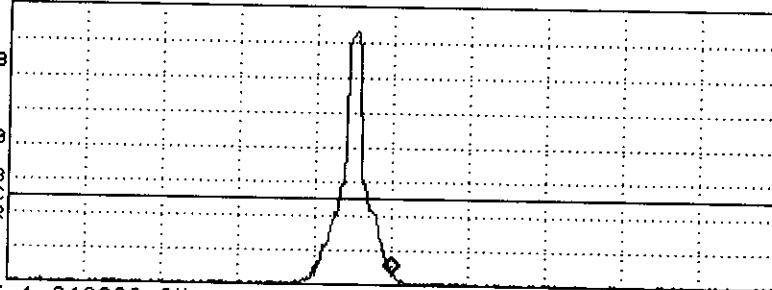
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.950000 GHz
-34.80 dBm

LOG REF OFFST 32.0 dB
10 REF 42.0 dBm
dB/

#ATN
30 dB

DL
-13.0
dBm
VA SB
SC FC
CORR

START 1.949000 GHz
#IF BW 1.0 kHz #AVG BW 1 kHz STOP 1.951000 GHz
SWP 6.00 sec



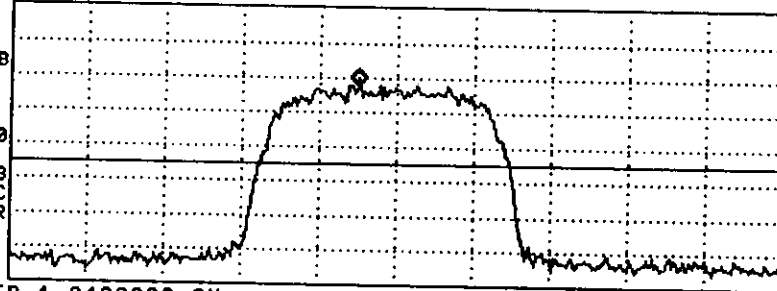
10:22:16 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AV8
MKR 1.9498950 GHz
-50.39 dBm

LOG REF OFFST 2.0 dB
10 REF -28.0 dBm

dB/
#ATH
10 dB

DL
-79.0
dBm
VA SB
SC FC
CORR



CENTER 1.9498800 GHz

#IF BW 1.0 kHz

#AV8 BW 1 kHz

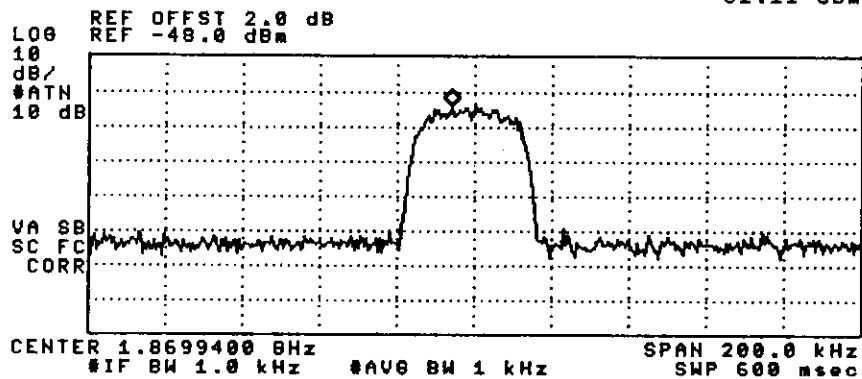
SPAN 100.0 kHz
SWP 300 msec

(125)

13:50:12 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.8699340 GHz
-62.11 dBm

125

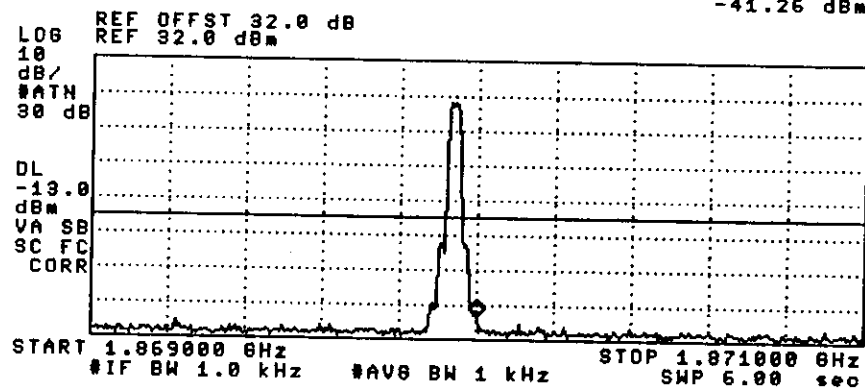


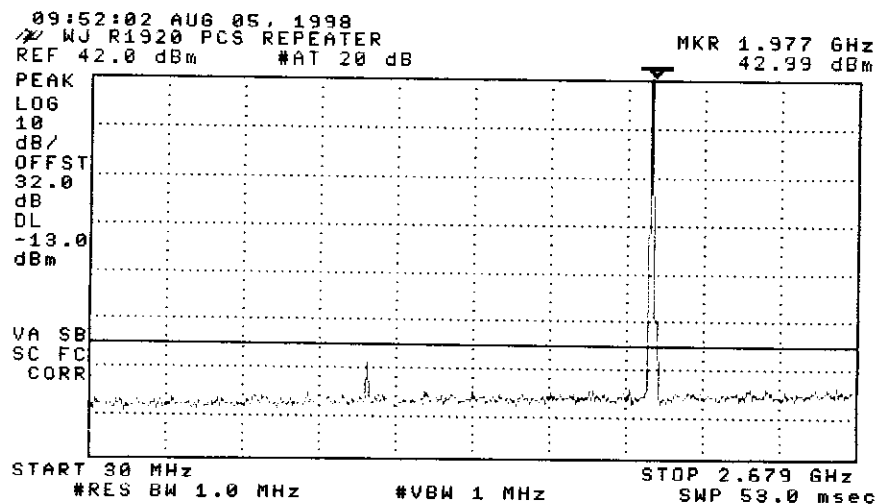
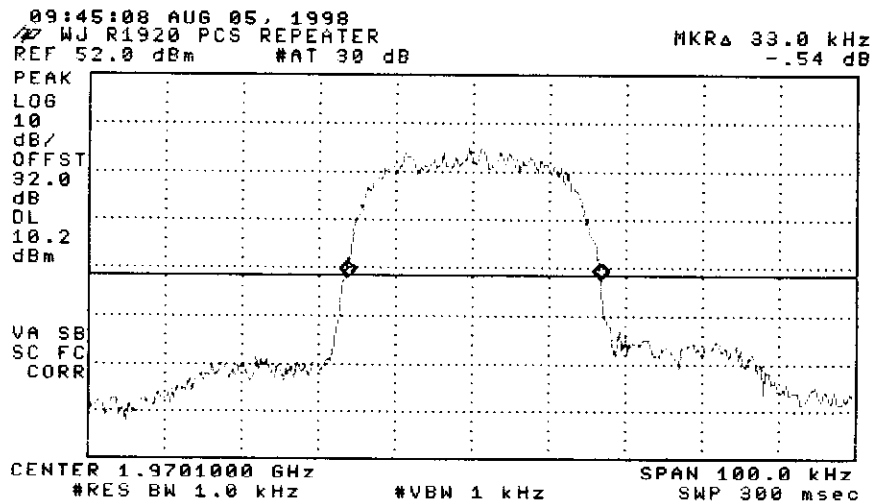
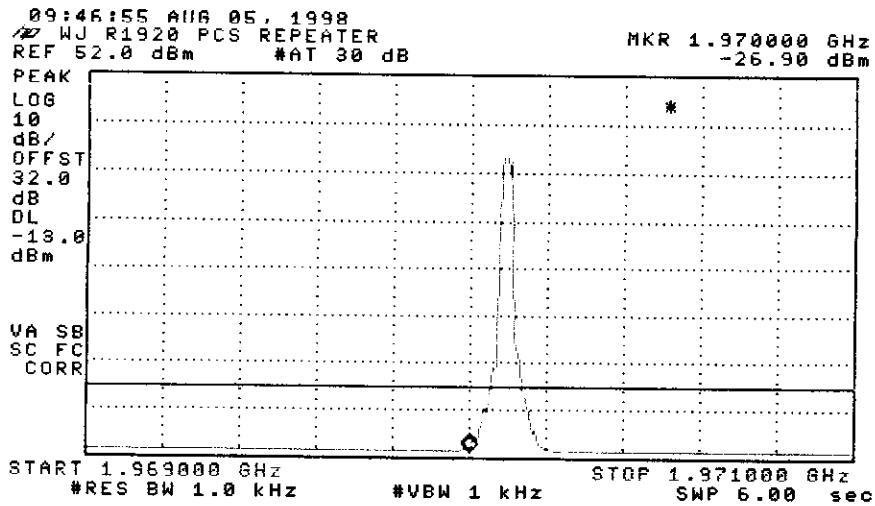
(126)

13:52:28 JUL 27, 1998
WJ R1920 PCS REPEATER

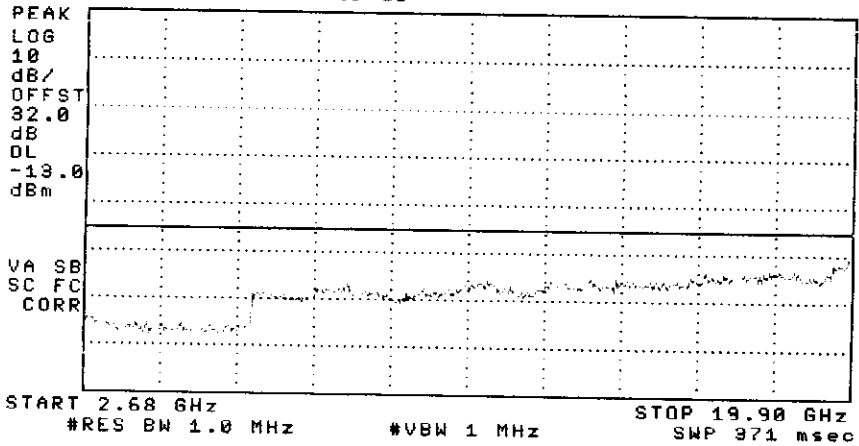
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.870000 GHz
-41.26 dBm

126

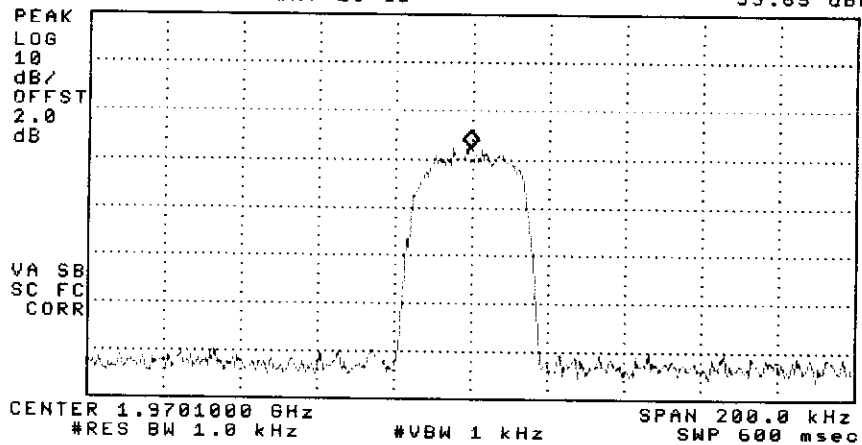




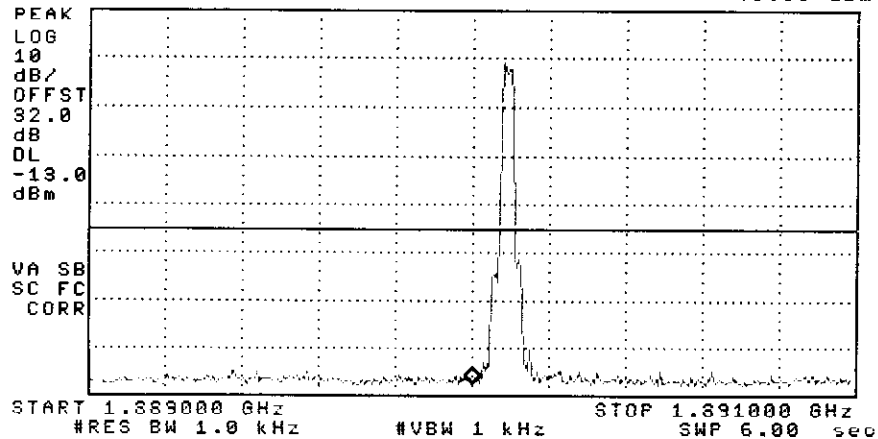
09:53:23 AUG 05, 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #AT 10 dB



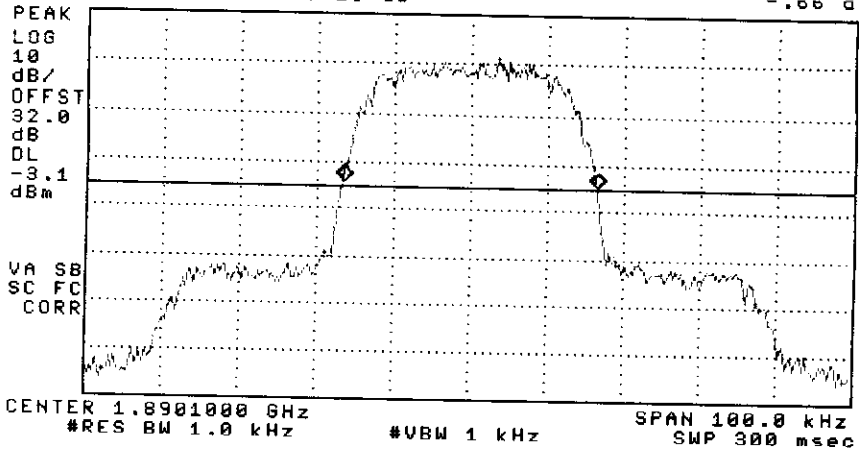
09:58:04 AUG 05, 1998
 WJ R1920 PCS REPEATER
 REF -23.0 dBm #AT 10 dB MKR 1.9700995 GHz
 -55.65 dBm



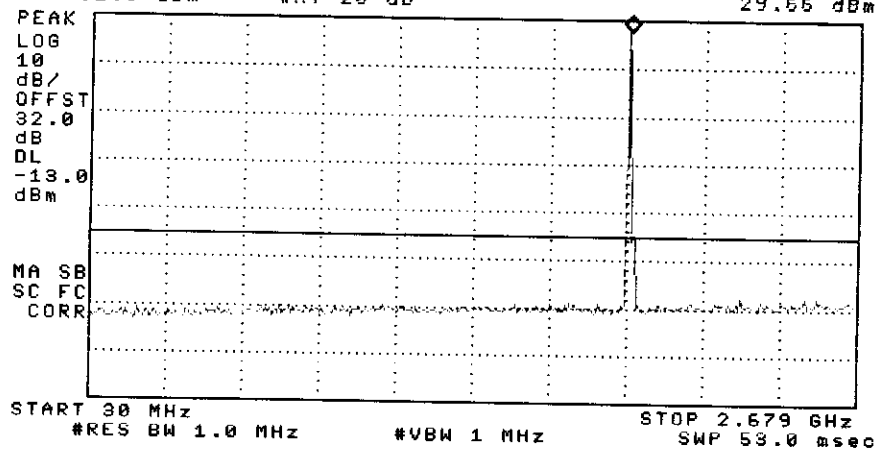
12:07:00 AUG 05, 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #AT 20 dB MKR 1.890000 GHz
 -45.68 dBm



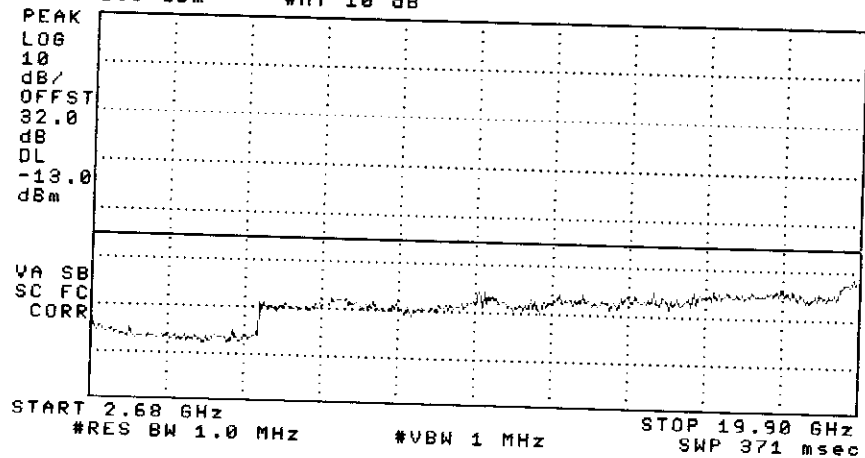
12:05:00 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 32.0 dBm #AT 20 dB MKRA 33.0 kHz
-0.66 dB

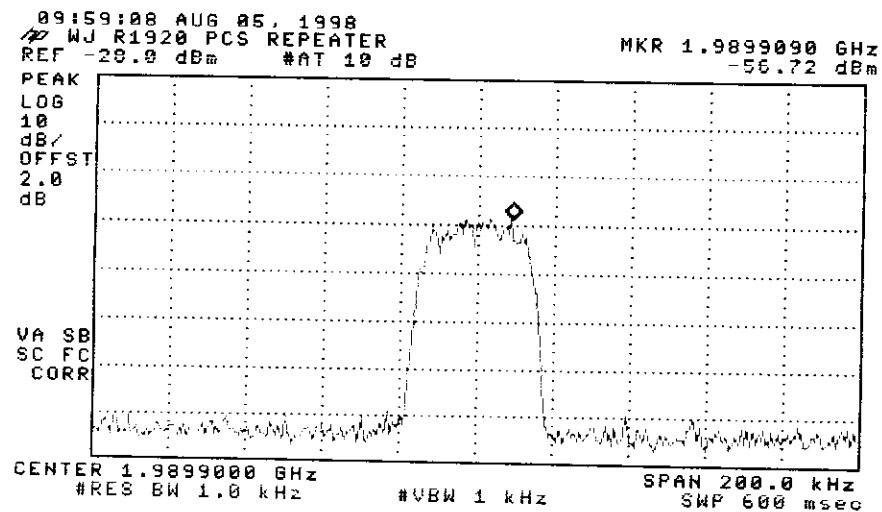
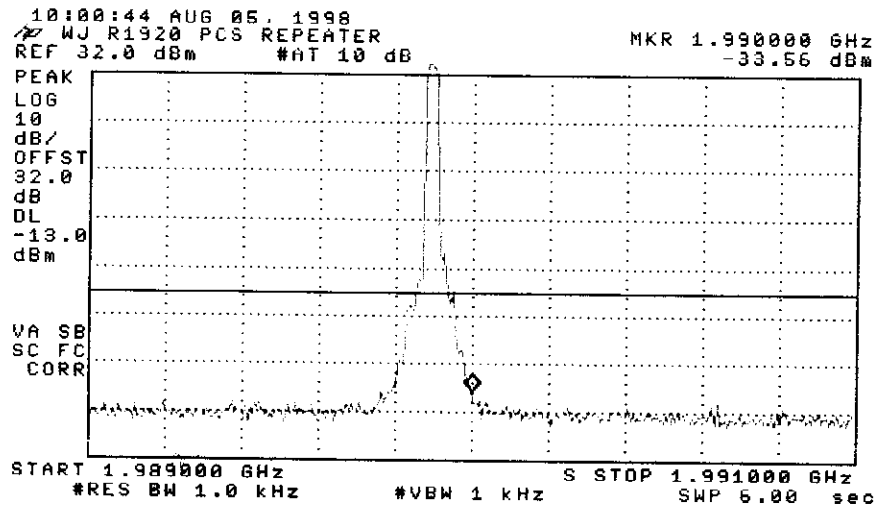
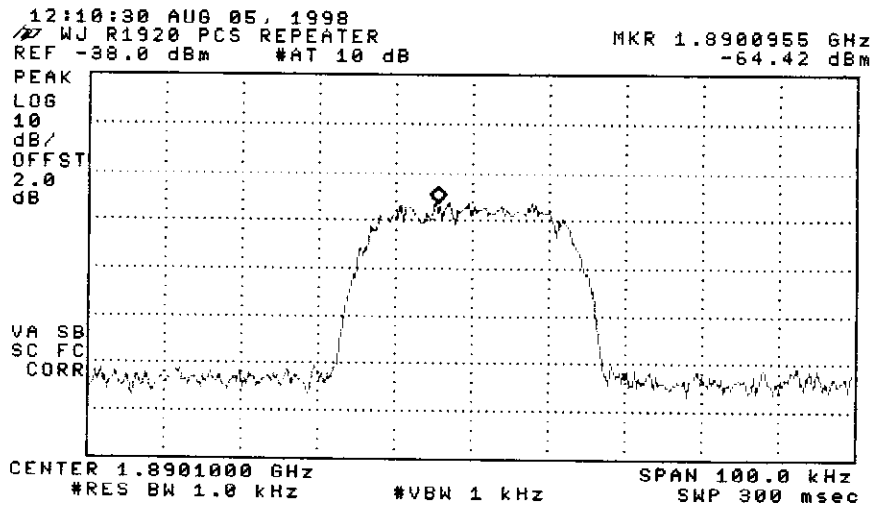


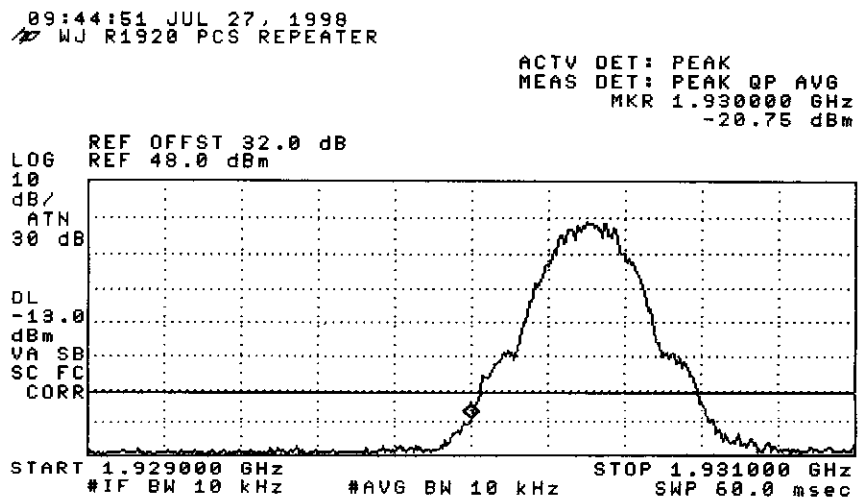
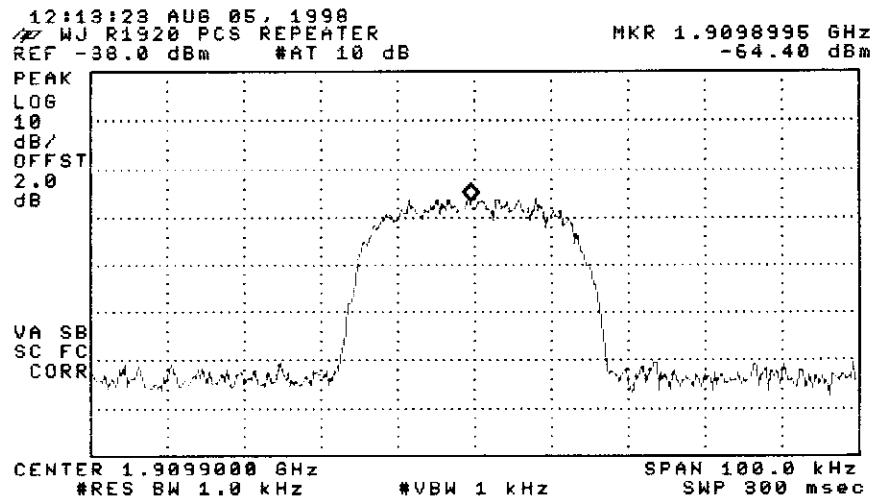
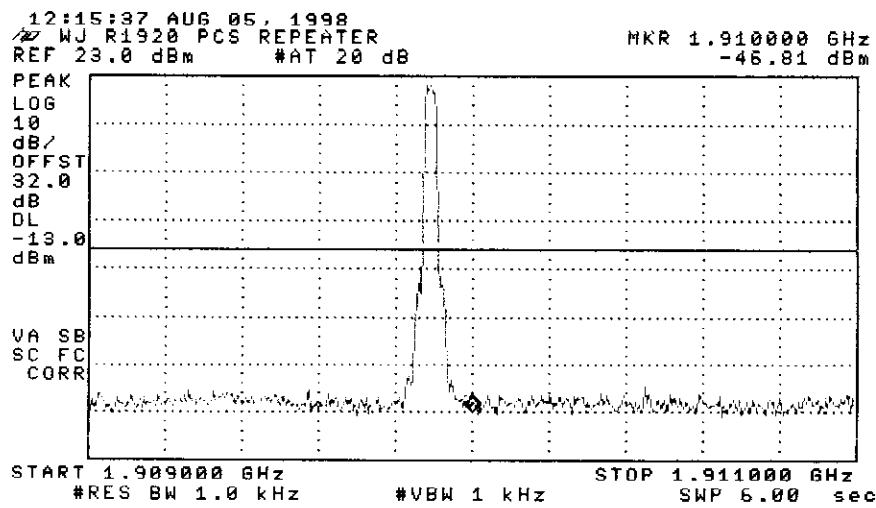
12:07:49 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 32.0 dBm #AT 20 dB MKR 1.891 GHz
29.66 dBm



12:08:58 AUG 05, 1998
WJ R1920 PCS REPEATER
REF 32.0 dBm #AT 10 dB

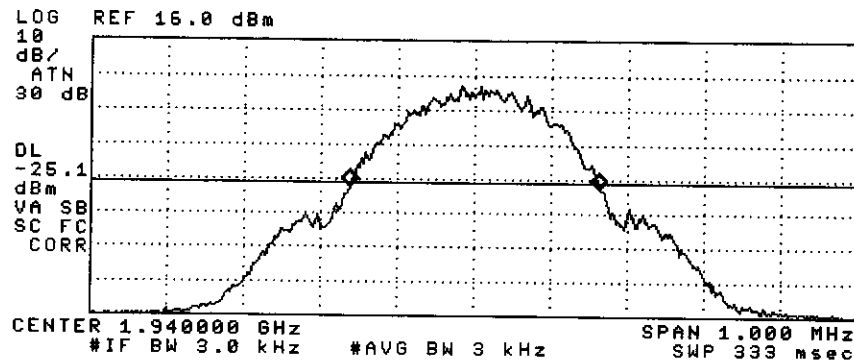






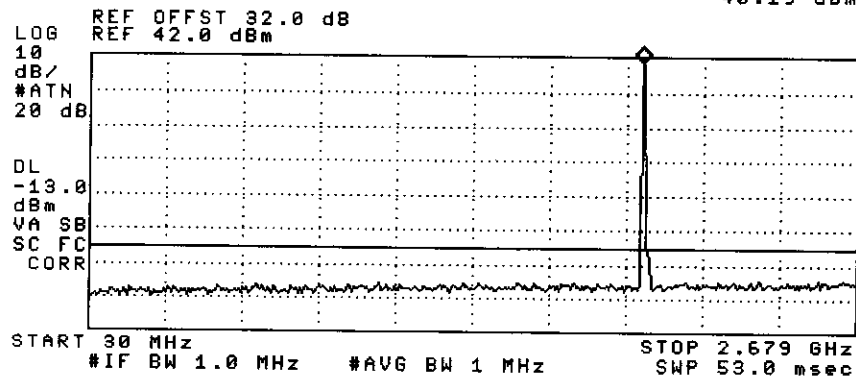
08:57:20 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 325 kHz
-13 dB



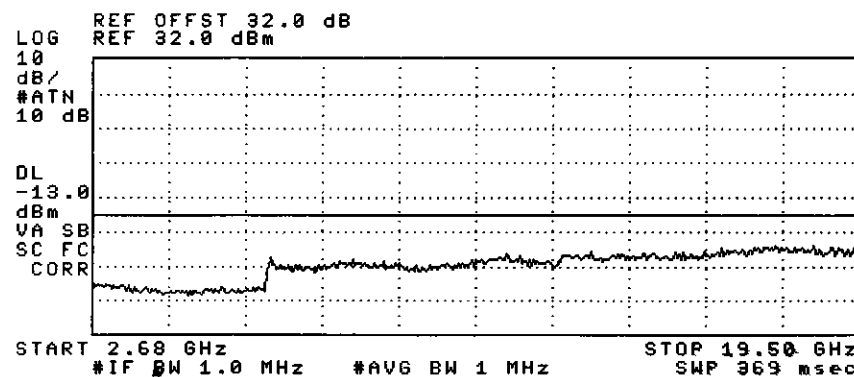
09:55:24 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.937 GHz
40.19 dBm



09:58:16 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



10:00:37 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.9302819 GHz
-59.76 dBm

LOG REF OFFST 2.0 dB
10 REF -28.0 dBm

dB/
#ATN
10 dB

VA SB
SC FC
CORR

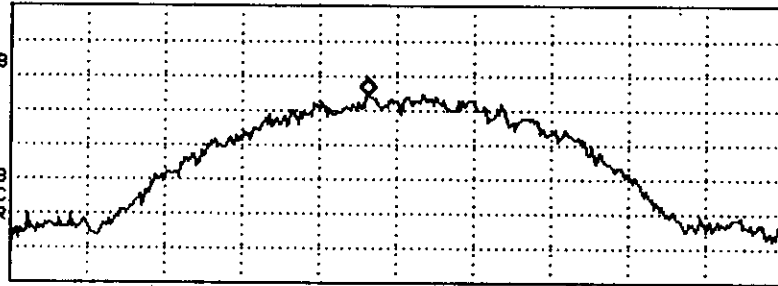
CENTER 1.9303000 GHz

#IF BW 3.0 kHz

#AVG BW 3 kHz

SPAN 500.0 kHz

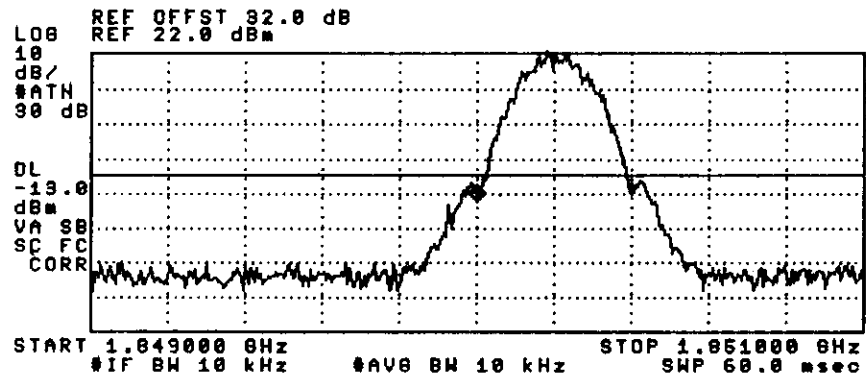
SWP 167 mseg



13:19:19 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AV8
MKR 1.850000 GHz
-20.64 dBm

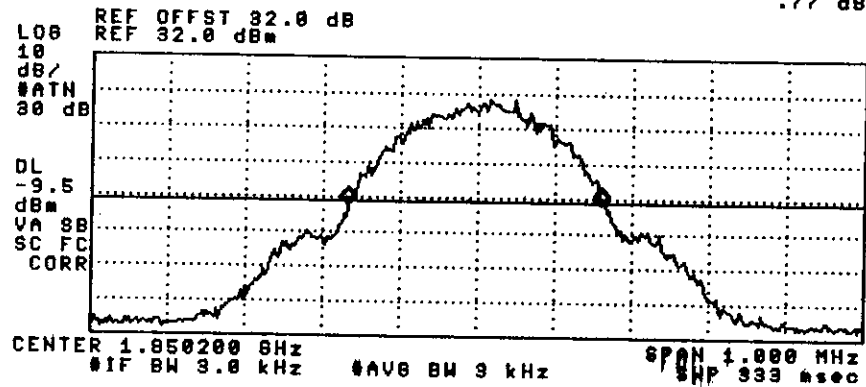
(113)



13:21:58 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AV8
MKR 328 kHz
.77 dB

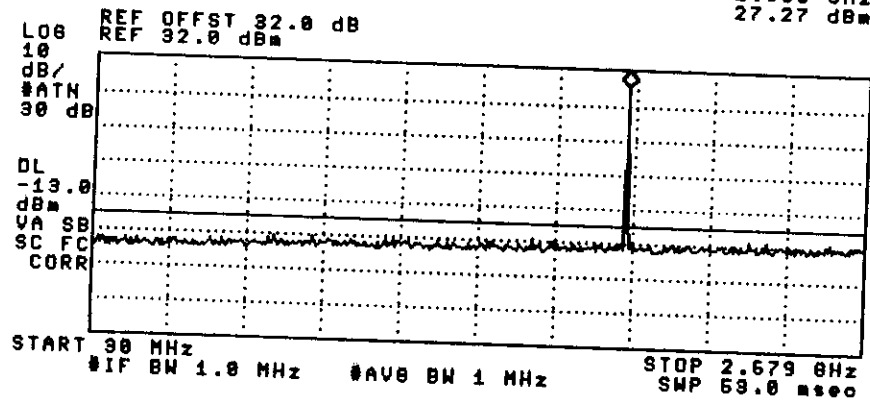
(114)



13:23:32 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AV8
MKR 1.850 GHz
27.27 dBm

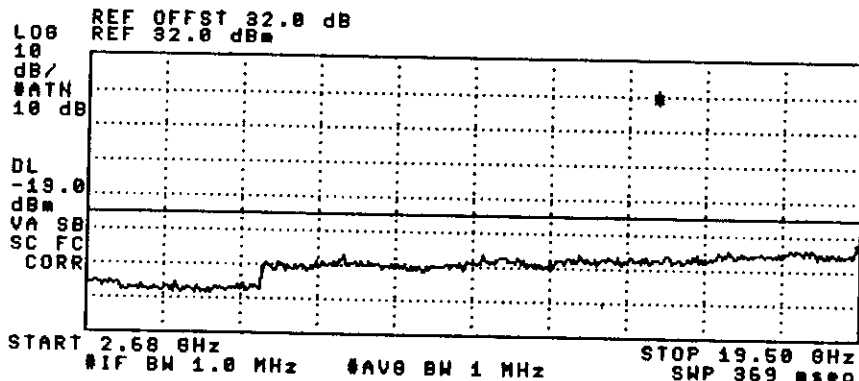
(115)



116

19:24:22 JUL 27, 1998
WJ R1920 PCS REPEATER

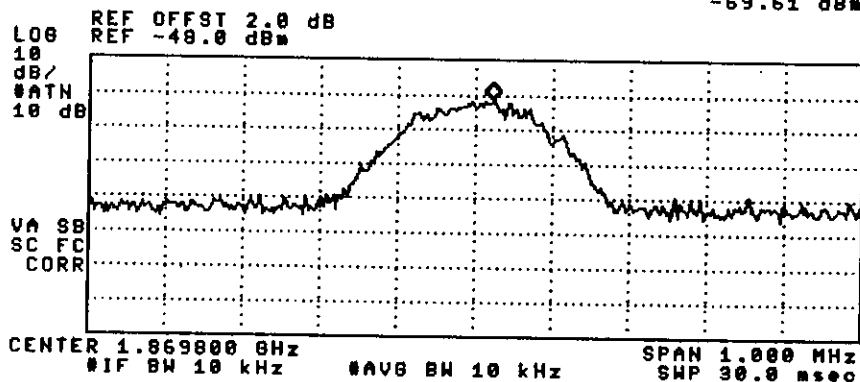
ACTV DET: PEAK
MEAS DET: PEAK QP AVG



117

19:36:45 JUL 27, 1998
WJ R1920 PCS REPEATER

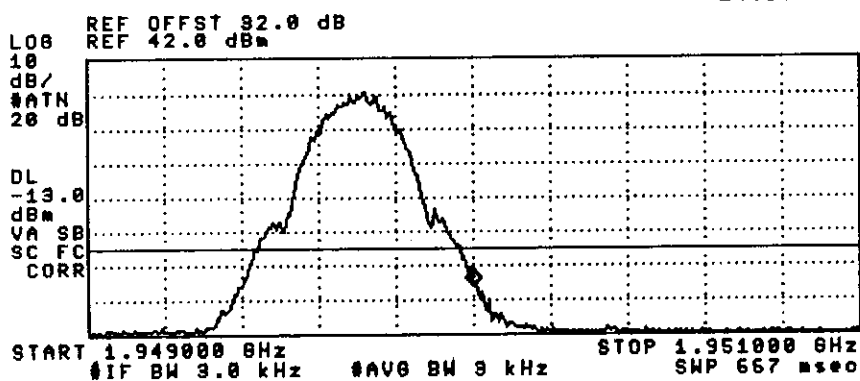
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.869823 GHz
-59.61 dBm



10:08:49 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.950000 GHz
-24.23 dBm

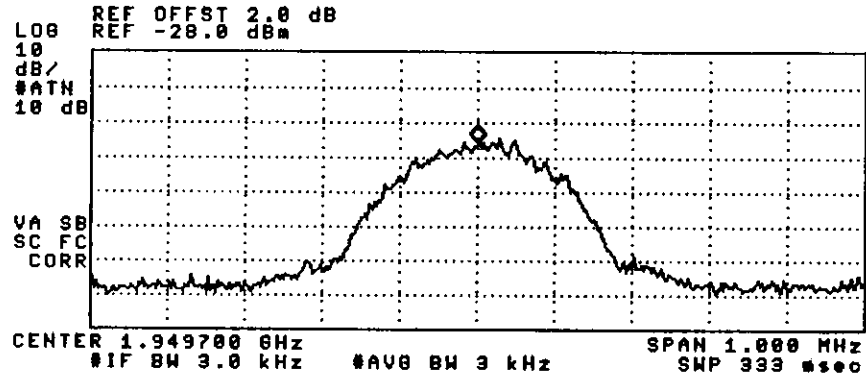
93



10:06:10 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.949700 GHz
-54.15 dBm

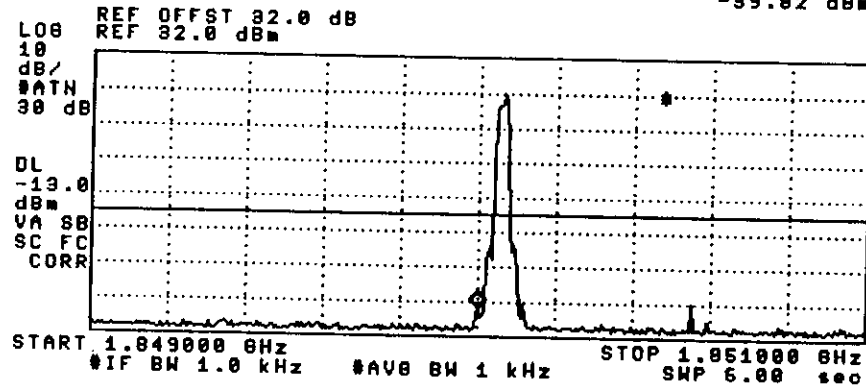
92



13:43:25 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.850000 GHz
-39.82 dBm

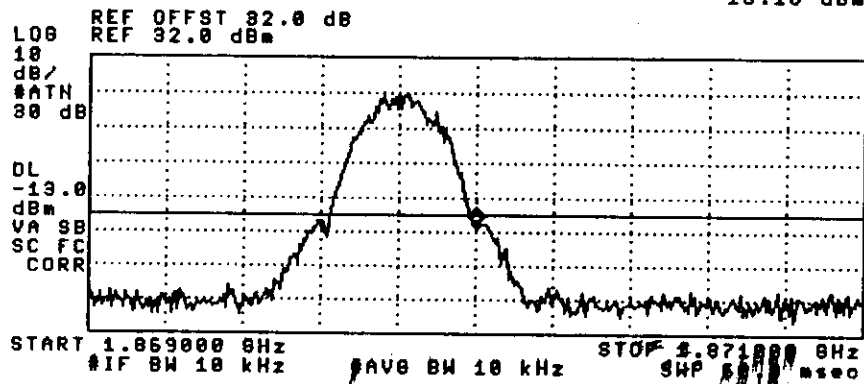
119

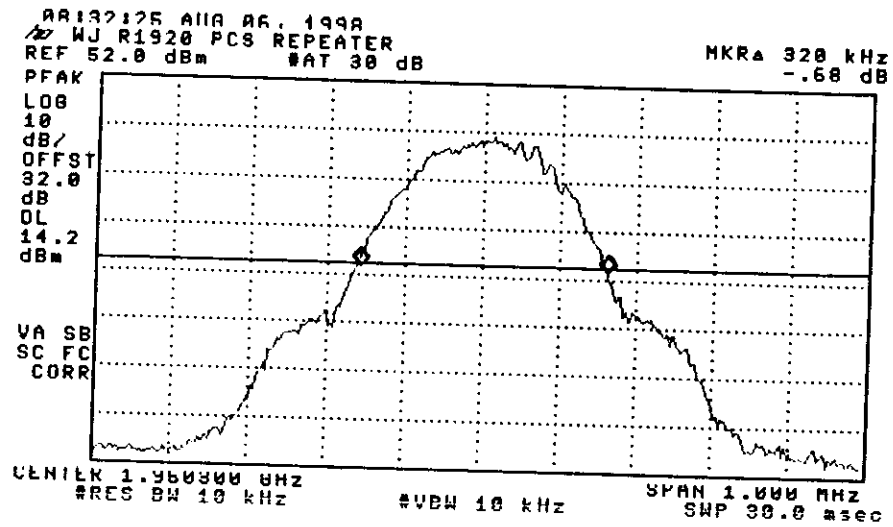
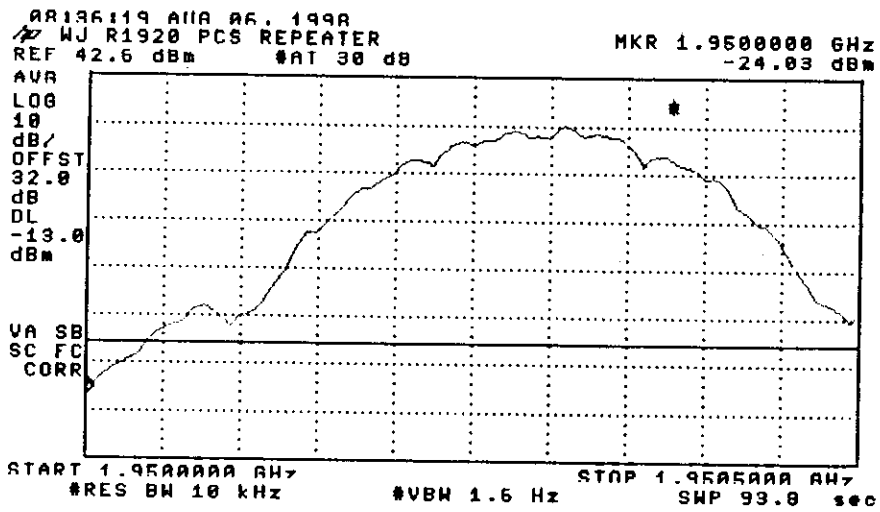


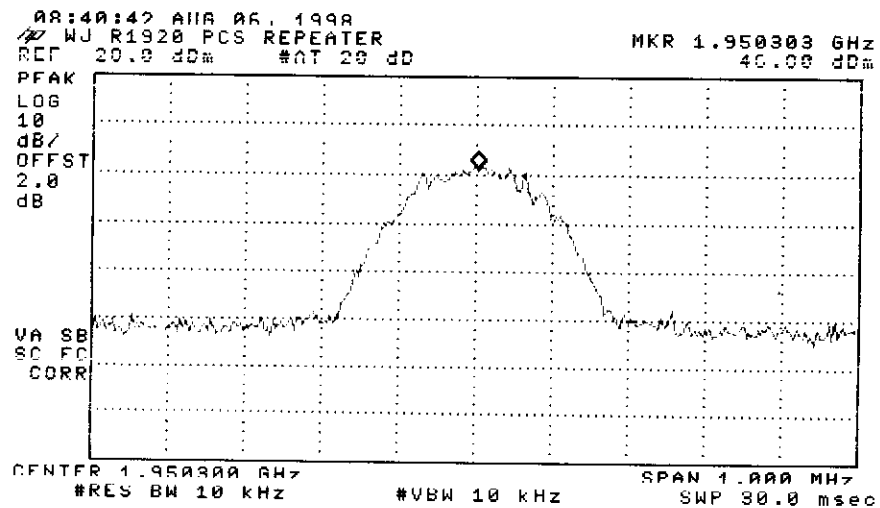
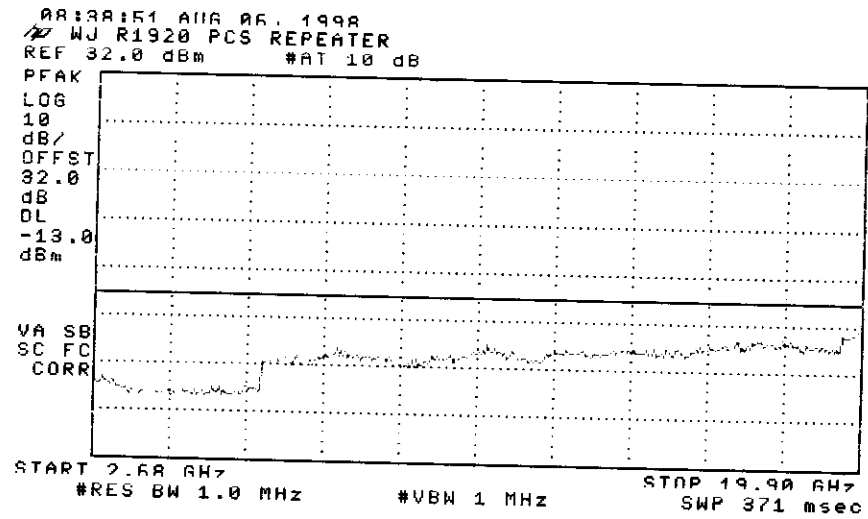
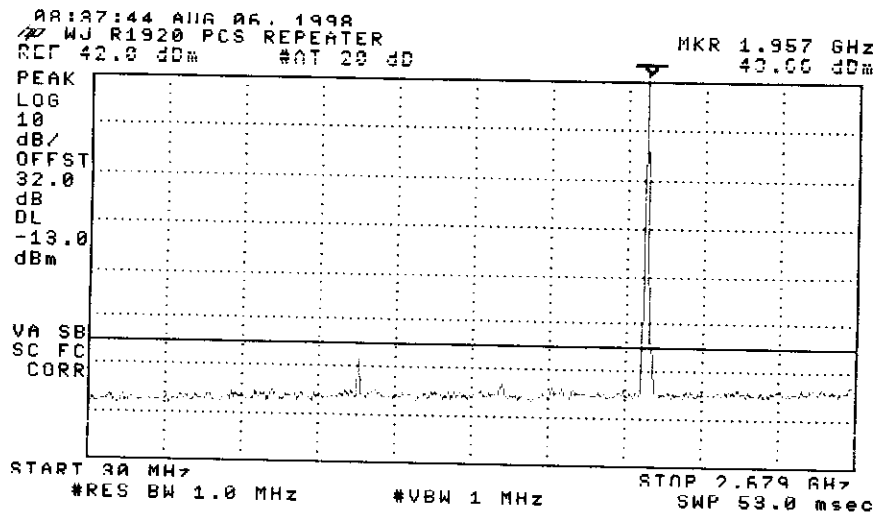
13:38:03 JUL 27, 1998
WJ R1920 PCS REPEATER

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.870000 GHz
-16.18 dBm

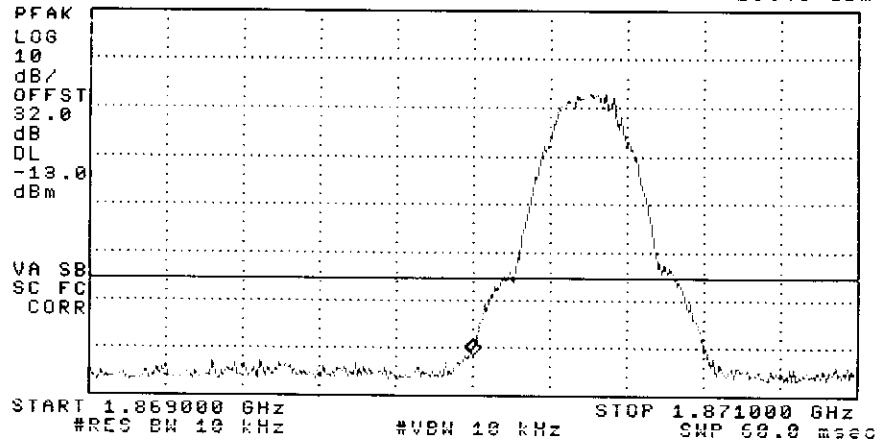
118



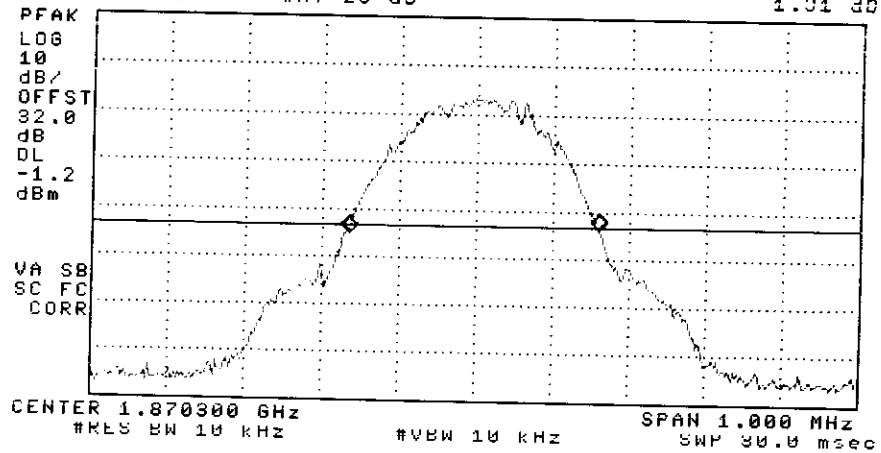




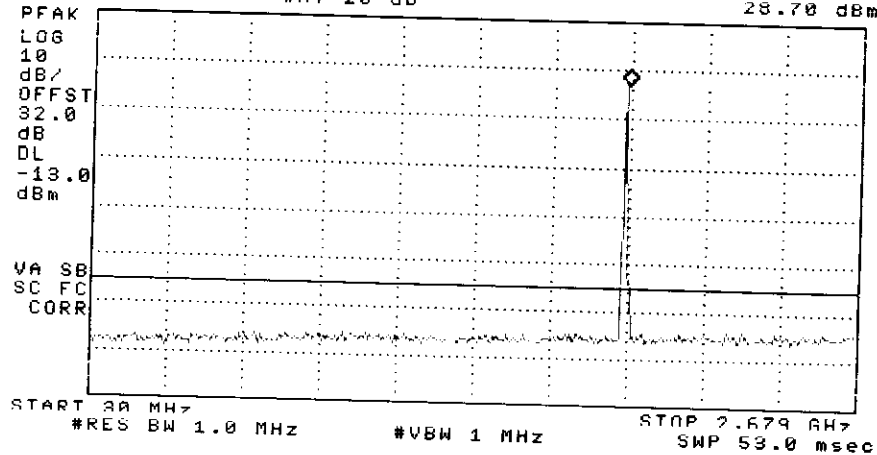
09:29:45 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 42.0 dBm #AT 20 dB MKR 1.870000 GHz
 -29.46 dBm



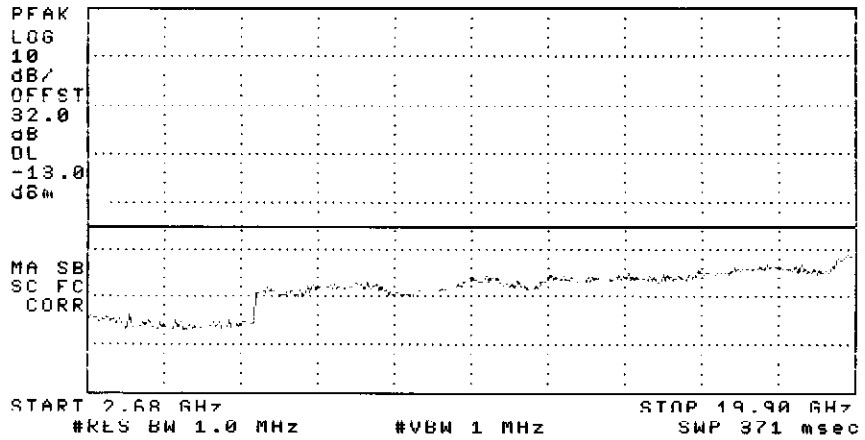
09:28:31 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 42.0 dBm #AT 20 dB MKR 325 kHz
 1.01 dB



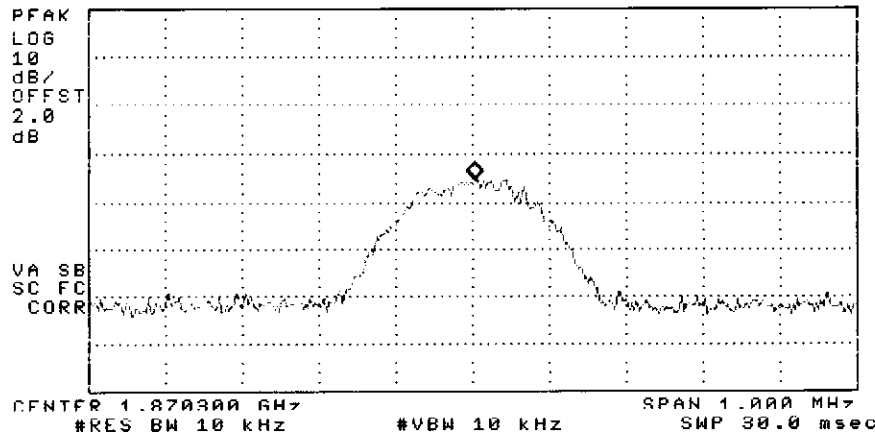
09:31:01 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 42.0 dBm #AT 20 dB MKR 1.878 GHz
 28.70 dBm



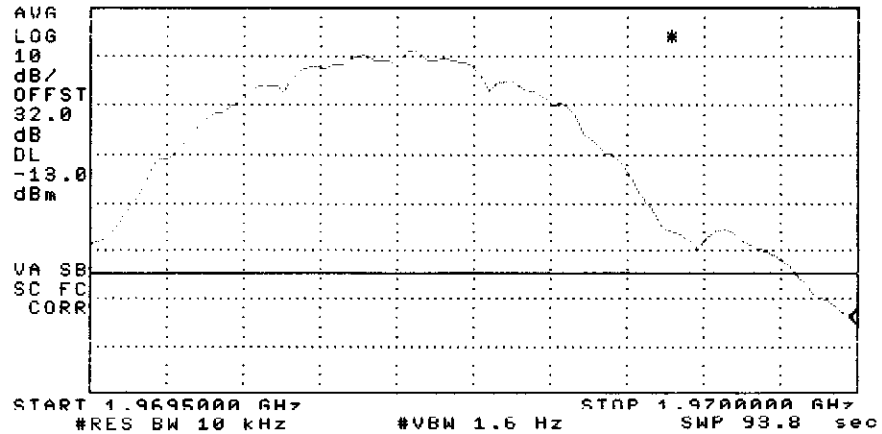
09:32:15 AIR 06, 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #AT 10 dB



09:34:48 AIR 06, 1998
 WJ R1920 PCS REPEATER
 REF 20.0 dBm #AT 10 dB MKR 1.870303 GHz
 33.18 dBm



09:45:41 AIR 06, 1998
 WJ R1920 PCS REPEATER
 REF 41.7 dBm #AT 30 dB MKR 1.9700000 GHz
 23.78 dBm



09:42:35 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF -28.0 dBm #AT 20 dB

MKR 1.969700 GHz
 -46.66 dBm

PEAK
 LOG
 10
 dB/
 OFFST
 2.0
 dB

VA SB
 SC FC
 CORR

CENTER 1.969700 GHz
 #RES BW 10 kHz

#VBW 10 kHz

SPAN 1.000 MHz
 SWP 30.0 msec

09:37:34 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF 32.0 dBm #AT 20 dB

MKR 1.890000 GHz
 27.55 dBm

PEAK
 LOG
 10
 dB/
 OFFST
 32.0
 dB
 DL
 -13.0
 dBm

VA SB
 SC FC
 CORR

START 1.889000 GHz
 #RES BW 10 kHz

#VBW 10 kHz

STOP 1.891000 GHz
 SWP 60.0 msec

09:36:16 AUG 06, 1998
 WJ R1920 PCS REPEATER
 REF -28.0 dBm #AT 10 dB

MKR 1.889703 GHz
 -63.16 dBm

PEAK
 LOG
 10
 dB/
 OFFST
 2.0
 dB

VA SB
 SC FC
 CORR

CENTER 1.889700 GHz
 #RES BW 10 kHz

#VBW 10 kHz

SPAN 1.000 MHz
 SWP 30.0 msec

Section 2.993 Measurement Required: Field Strength of Spurious and Harmonic Radiation

Measurement Equipment Used:

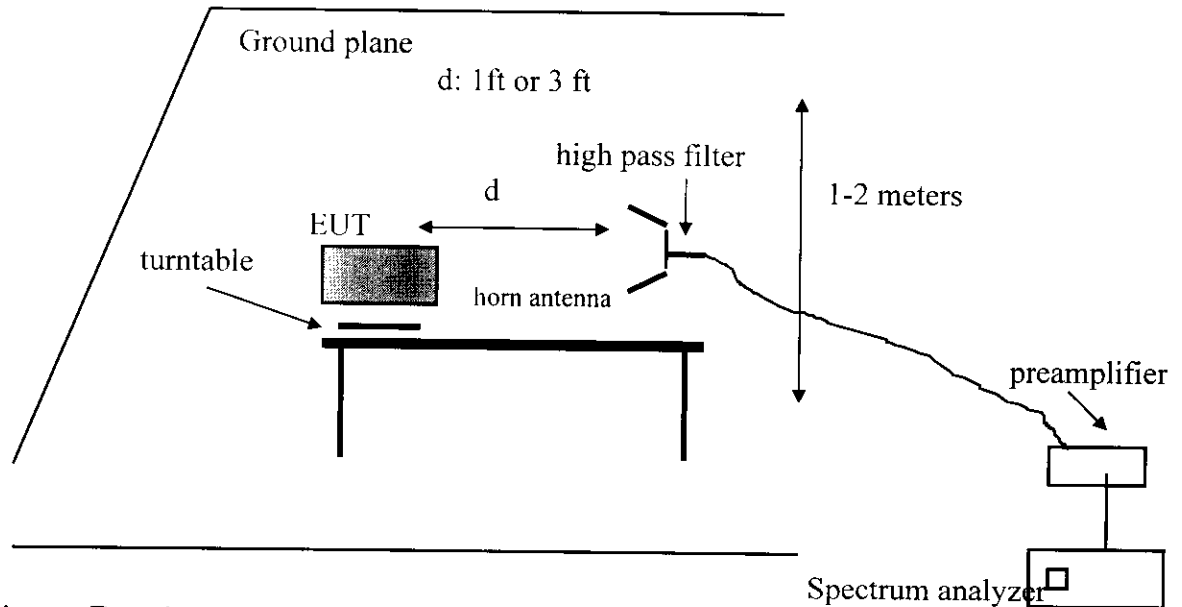
HP 8563E Spectrum Analyzer

HP 8449 B Preamplifier, 1-26 GHz

ARA DRG-118/A Double Ridged Horn antenna, 1 - 18 GHz

QIM "The Workhorse" low loss cable, 9 ft (loss: 0.85 dB/ft@ 26 GHz)

Test Set-Up



Minimum Requirement

The magnitude of each spurious and harmonic emission detected as being radiated from the EUT must be at a level more than $43 + 10 \log(\text{mean output power, watts})$ dB below the mean power output ($= -13$ dBm).

Resultant radiated field at 3 m from -13 dBm source feeding isotropic antenna: 82.4 dBuV/m

Test Method

The antenna output port of the EUT was terminated with a 50 ohm shielded termination. With the transmitter operating at full power, the EUT was rotated 360° and the search antenna was raised and lowered in both polarities, all in an attempt to maximize the levels of the received emission for each harmonic and spurious emission up to 10 fo.

Test Results

Corrected field strength readings extrapolated to 3m: more than 20 dB below limit.

Section 2.995 Measurement Required: Frequency Stability

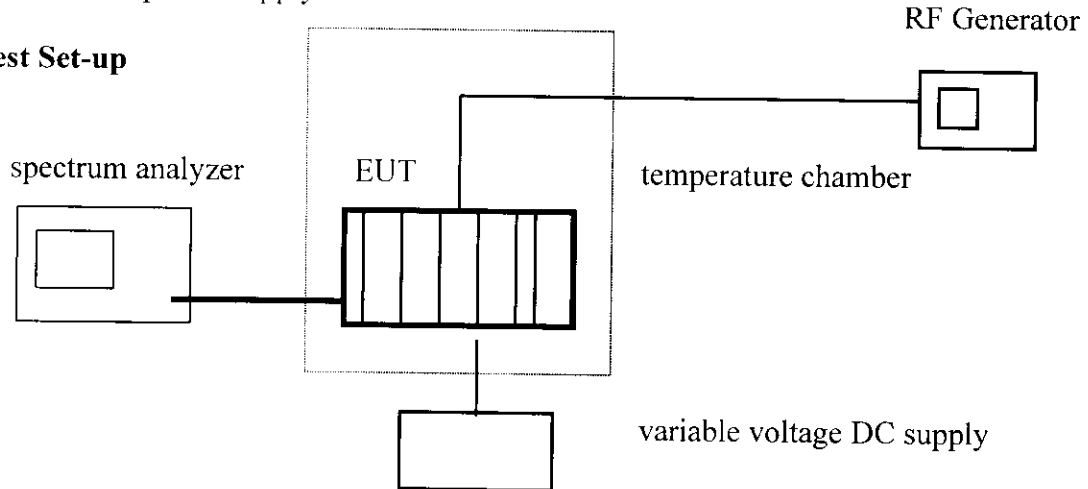
Measurement Equipment Used:

HP 8563E Spectrum Analyzer

QIM "The Workhorse" low loss cable, 9 ft (loss: 0.85 dB/ft@ 26 GHz)

Variable DC power supply

Test Set-up



Section 24.235 : States Frequency stability shall be sufficient to ensure that fundamental emission stays within the authorized frequency block.

Test Method

Temperature: Vary the ambient temperature from -30 to +50°C, in 10 degree increments, allowing the EUT to stabilize at each temperature.

Primary Supply Voltage: Vary the supply voltage from 85% to 115% of the nominal operating voltage with EUT at 20°C.

Test Procedure :

At each frequency the MKR function of the analyzer was activated and a marker was placed where the emission mask intersected the bandedge frequency of the adjacent frequency block. During frequency stability test, if the operating frequency drifted towards band edge, the marker would appear to "crawl" up the emission mask. Amplitude level at the marker (bandedge indicator) must remain below the -13dBm limit line.

Test Results

Frequencies at top of column are frequencies measured out of signal generator.
Frequencies below are frequencies measured during testing out of EUTs.

Temp	Freq. in MHz A&D Unit		Freq. in MHz B&E Unit		Freq. in MHz C&F Unit		Duration
	1949.9	1869.9	1960	1880	1980	1900	
-30	.90000	.90000	.00000	.00000	.00000	.00000	2hour
-20	.90000	.90000	.00000	.00000	.00000	.00000	1hour
-10	.90000	.90000	.00000	.00000	.00000	.00000	.5hour
0	.90000	.90000	.00000	.00000	.00000	.00000	.25hour
10	.90000	.90000	.00000	.00000	.00000	.00000	.25hour
20	.90000	.90000	.00000	.00000	.00000	.00000	.25hour
30	.90000	.90000	.00000	.00000	.00000	.00000	.5hour
40	.90000	.90000	.00000	.00000	.00000	.00000	1hour
50	.90000	.90000	.00000	.00000	.00000	.00000	2hour
Voltage							
115%	.90000	.90000	.00000	.00000	.00000	.00000	
85%	.90000	.90000	.00000	.00000	.00000	.00000	
Spectrum Analyzer Reference connected to Signal Generator reference Voltage from 102V to 138V							

For both temperature Vs frequency and voltage Vs frequency stability tests, no discernible drift of the emission mask was detected.

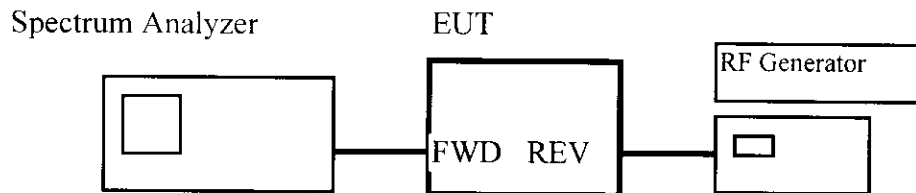
Section 24.232: RF Power Output

Measurement Equipment Used:

HP 8563E Spectrum Analyzer

QIM "The Workhorse" low loss cable, 9 ft (loss: 0.85 dB/ft@ 26 GHz)

Test Setup:



Test Method

RF output power was measured with Power Meter

For CDMA

Forward:

Power In : -51.5dBm

Power Out: +40dBm

Reverse:

Power In: -59.5dBm

Power Out: +28 dBm

For TDMA

Forward:

Power In: -50.3dBm

Power Out:+41.7dBm

Reverse:

Power In: -58.9dBm

Power Out: +28dBm

For GSM

Forward:

Power In: -43.3dBm

Power Out: +43.1dBm

Reverse:

Power In: -59.7dBm

Power Out: +28dBm

Section 1.1307 Routine Environmental Evaluation

The R1920 repeater total power output is much less than 2000W ERP and therefore routine evaluation is NOT required for RF exposure to personnel.