2.7 Peak Radiated Spurious Emission in the Frequency Range 30 -25000 MHz (FCC Section 15.247(c))

A preliminary scan was performed on the EUT to determine frequencies that were caused by the transmitter portion of the product. Significant emissions that fell within restricted bands were then measured on an OAT's site. Radiated measurements below 1 GHz were tested with a RBW = 120 kHz. Radiated measurements above 1 GHz were measured using a RBW = VBW = 1 MHz. The results of peak radiated spurious emissions falling within restricted bands are given in Table 4a (low), Table 4b, (mid), Table 4c (high) and Figure 4a-4d (low), Figure 4e-4h (mid) and Figure 4i-4l (high).

Table 4a Peak Radiated Spurious Emissions (Low)

Freq. (GHz)	Test Data (dBm) @3m	Amp. Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Results (uV/m) @3m	FCC Limits (uV/m) @3m
4.814	-54.6*	34.2	34.7	7.9	1096.0	5000
7.221	-62.1**	33.8	37.1	7.8	637.9	5000
9.628	-56.1**	34.3	38.6	9.4	1695.7	5000
12.037	-65.6**	32.5	41.3	10.7	1102.2	5000

Table 4b Peak Radiated Spurious Emissions (Mid)

Freq. (GHz)	Test Data (dBm) @3m	Amp. Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Results (uV/m) @3m	FCC Limits (uV/m) @3m
4.861	-52.4*	34.1	34.8	8.0	1455.5	5000
7.292	-59.4**	33.8	37.2	7.9	873.7	5000
9.722	-54.6**	34.4	38.6	9.5	2019.1	5000
12.154	-63.9**	32.4	41.2	10.7	1485.7	5000

Table 4c Peak Radiated Spurious Emissions (High)

Freq. (GHz)	Test Data (dBm) @3m	Amp. Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Results (uV/m) @3m	FCC Limits (uV/m) @3m
4.954	-54.2*	34.1	35.0	8.3	1255.2	5000
7.432	-54.7**	33.8	37.4	7.9	1545.4	5000
9.909	-55.5**	34.5	38.7	9.6	1844.0	5000
12.387	-68.1**	32.3	41.0	10.7	816.2	5000

*** = Data adjusted by + 1 dB for high pass filter**

**** = Tested at 1 meter to achieve better dynamic range. Data adjusted by + 1 dB for high pass filter and 20 log (1/3) = -9.54 dB for conversion from 1 to 3 meter.**

SAMPLE CALCULATION:

RESULTS (uV/m @ 3m) = Antilog ((-54.6 - 34.2 + 34.7 + 7.9 + 107)/20) = 1096.0

CONVERSION FROM dBm TO dBuV = 107 dB

Tester

Signature: _____ Name: Tim R. Johnson

Figure 4a
Peak Radiated Spurious Emission 15.247(c) Low

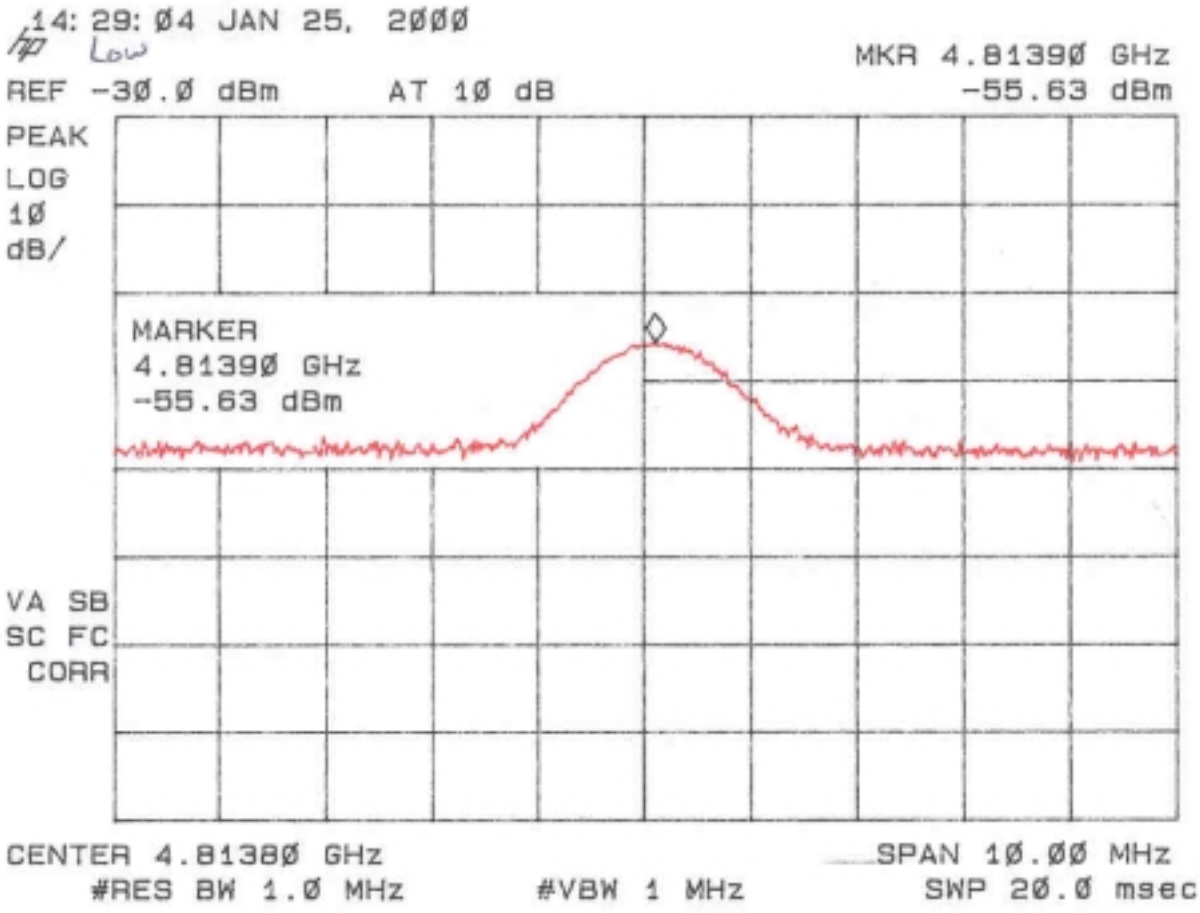


Figure 4b
Peak Radiated Spurious Emission 15.247(c) Low

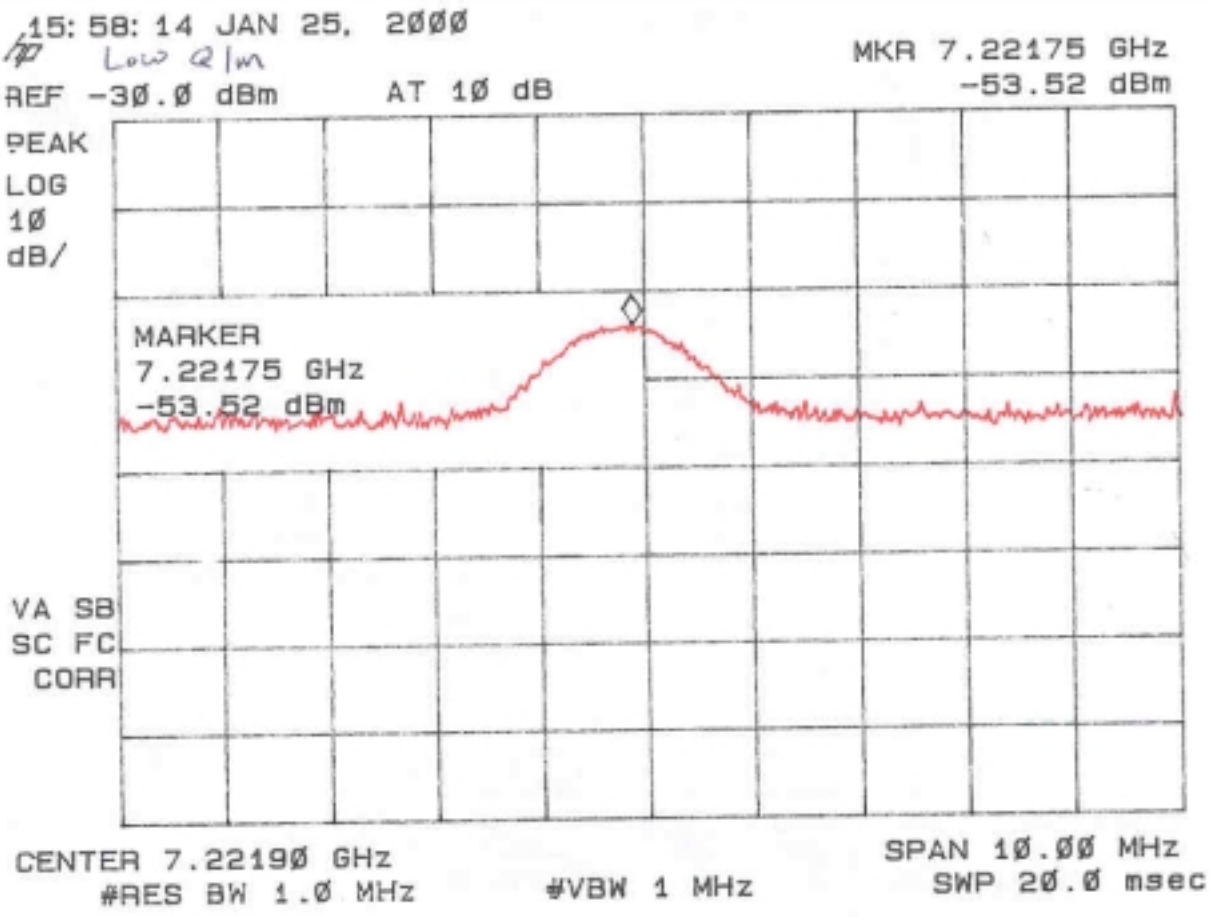


Figure 4c
Peak Radiated Spurious Emission 15.247(c) Low

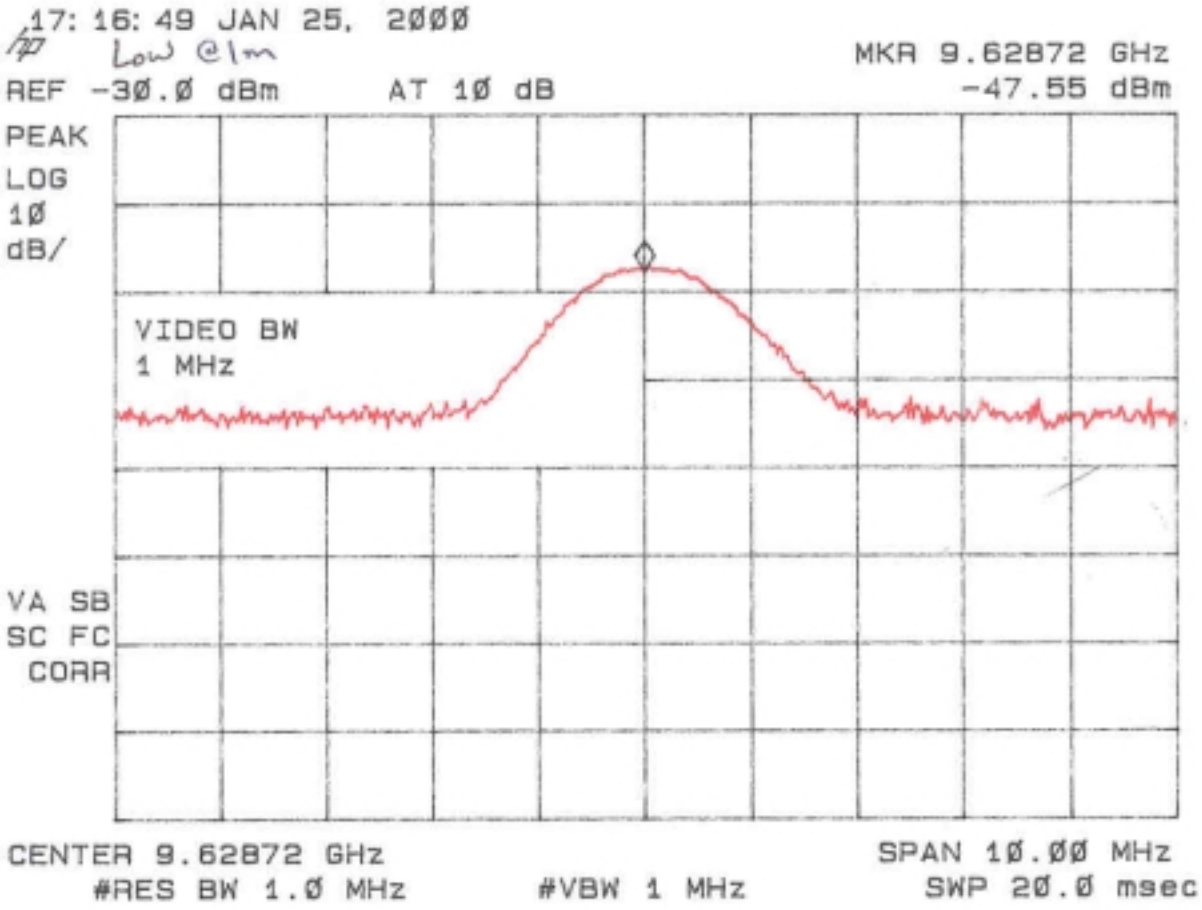


Figure 4d
Peak Radiated Spurious Emission 15.247(c) Low

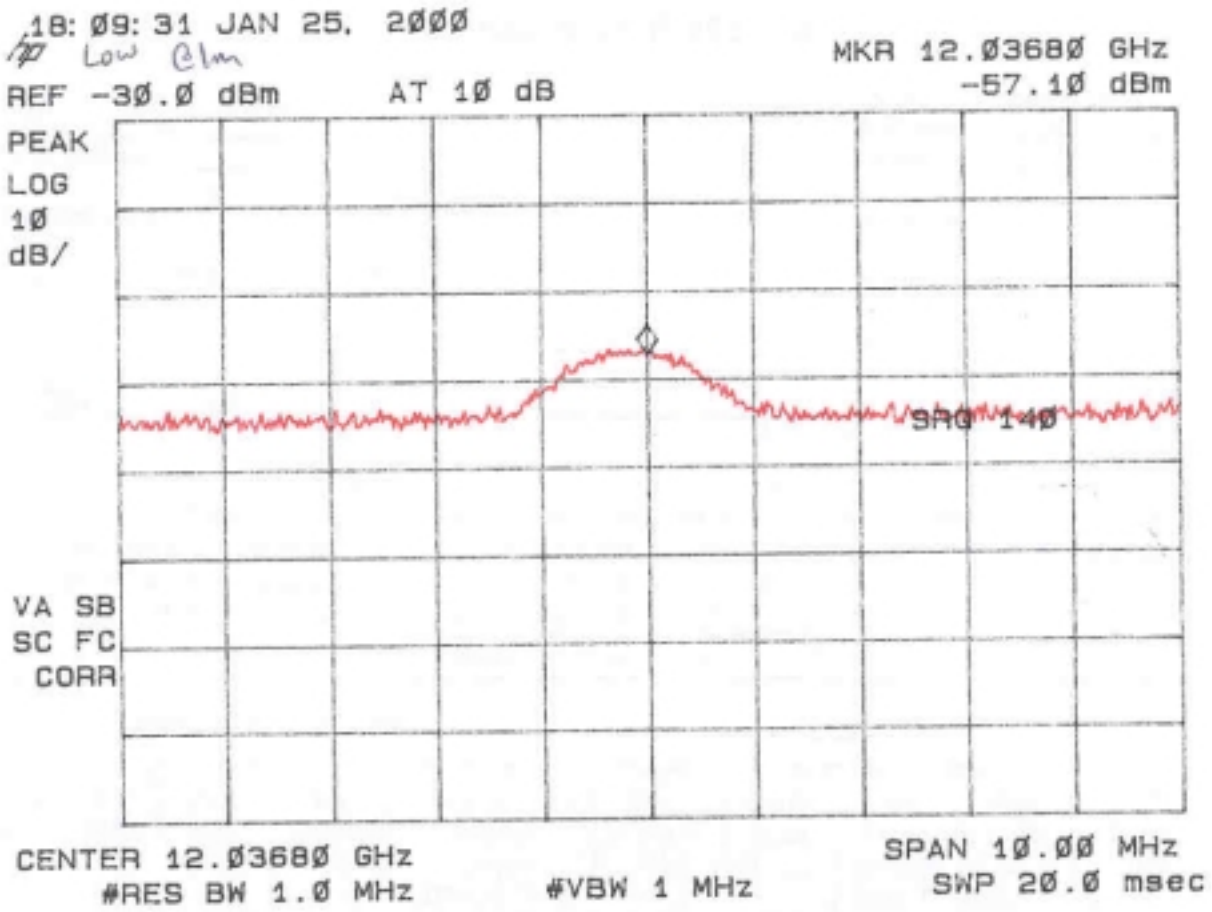


Figure 4e
Peak Radiated Spurious Emission 15.247(c) Mid

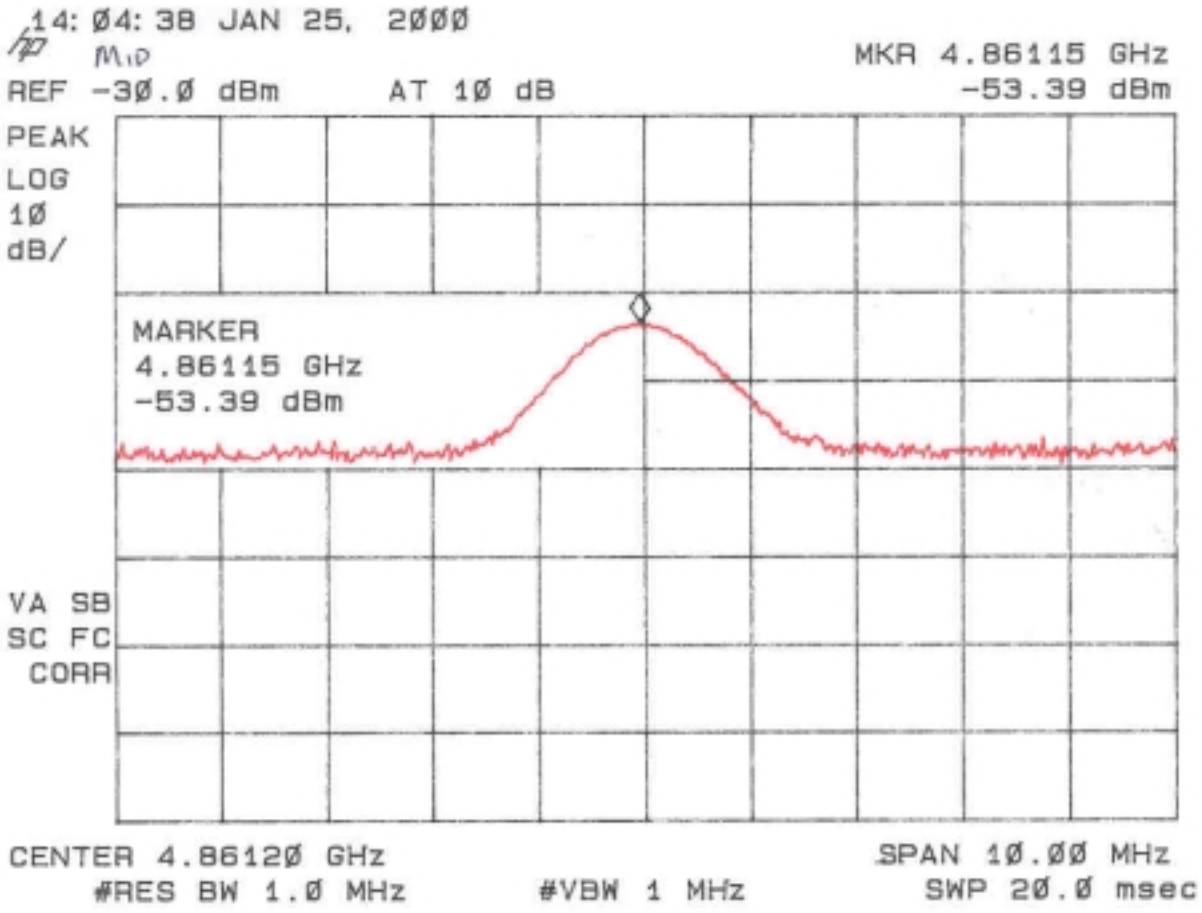


Figure 4f
Peak Radiated Spurious Emission 15.247(c) Mid

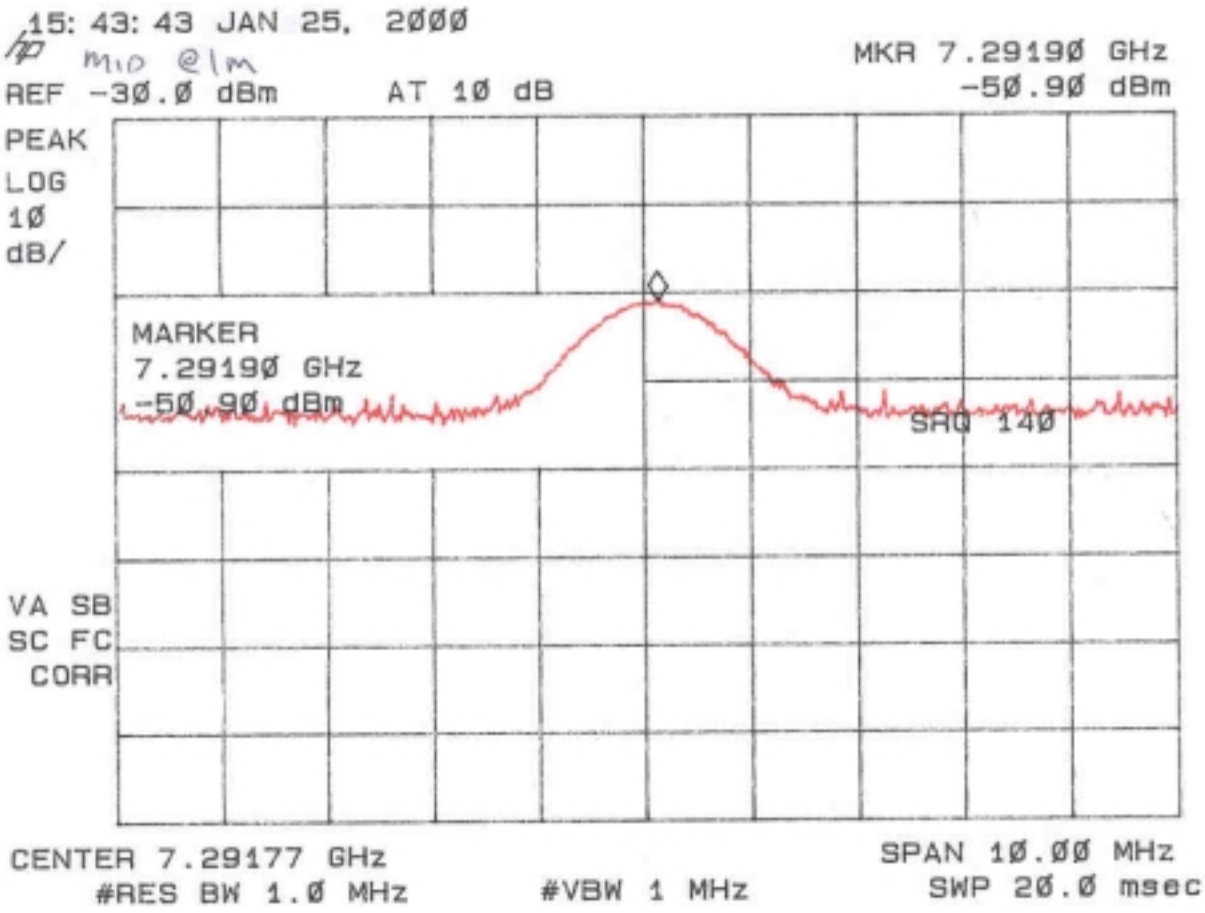


Figure 4g
Peak Radiated Spurious Emission 15.247(c) Mid

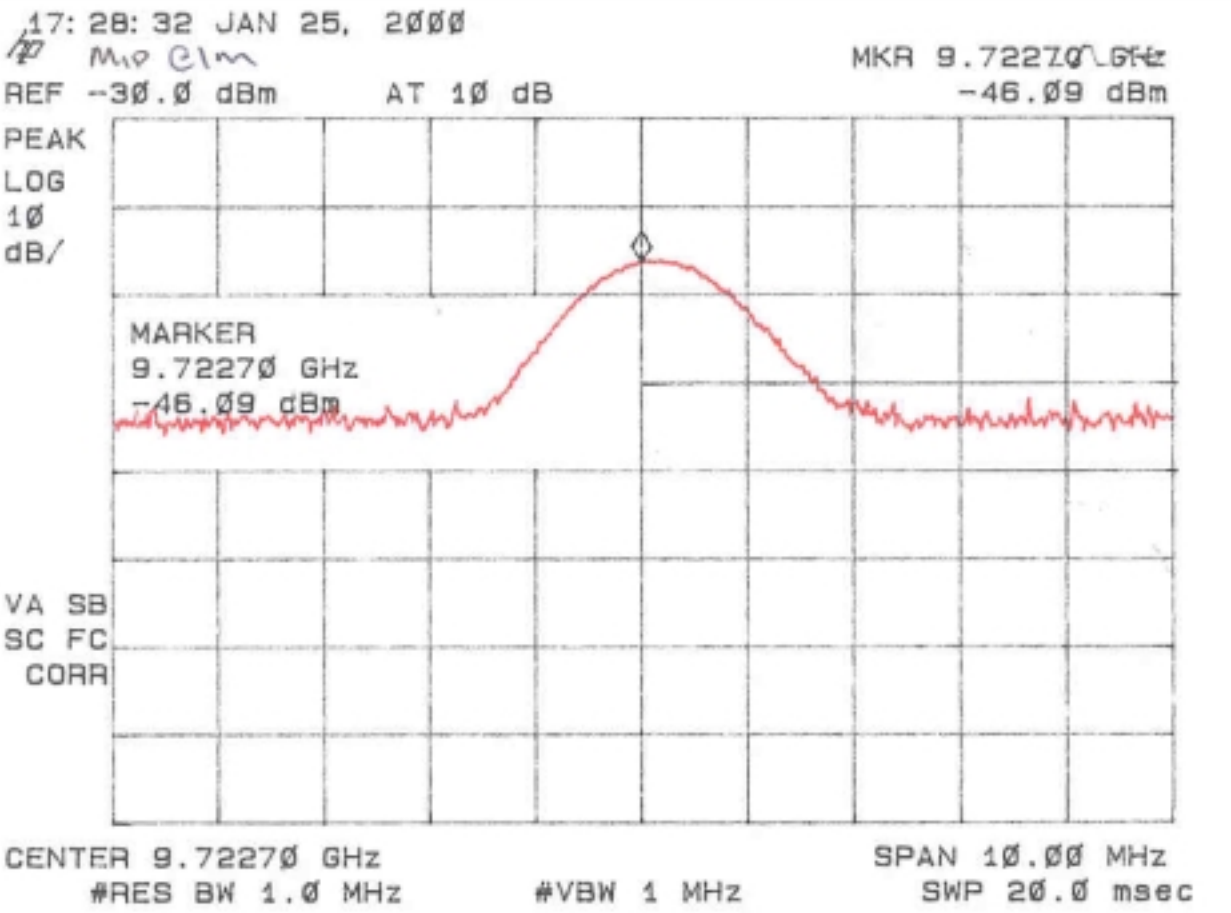


Figure 4h
Peak Radiated Spurious Emission 15.247(c) Mid

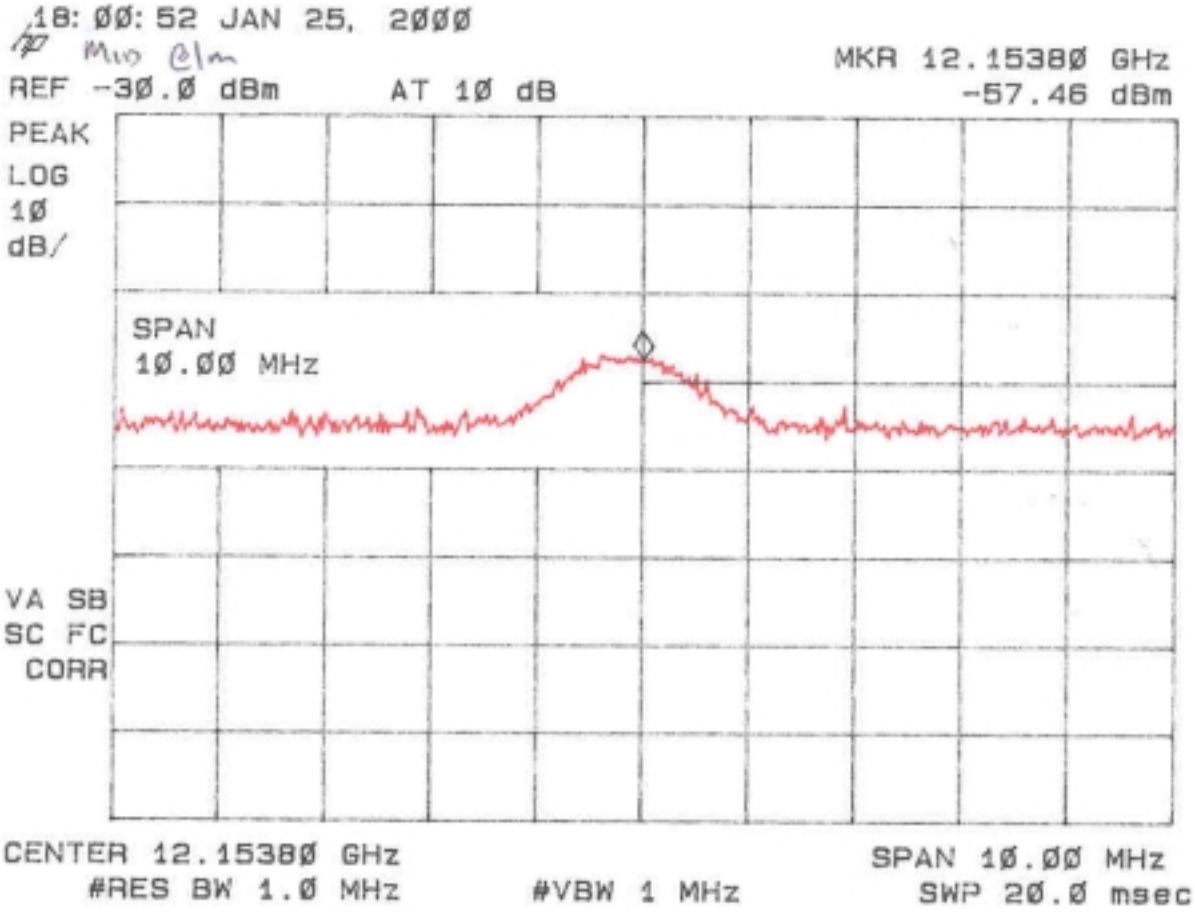


Figure 4i
Peak Radiated Spurious Emission 15.247(c) High

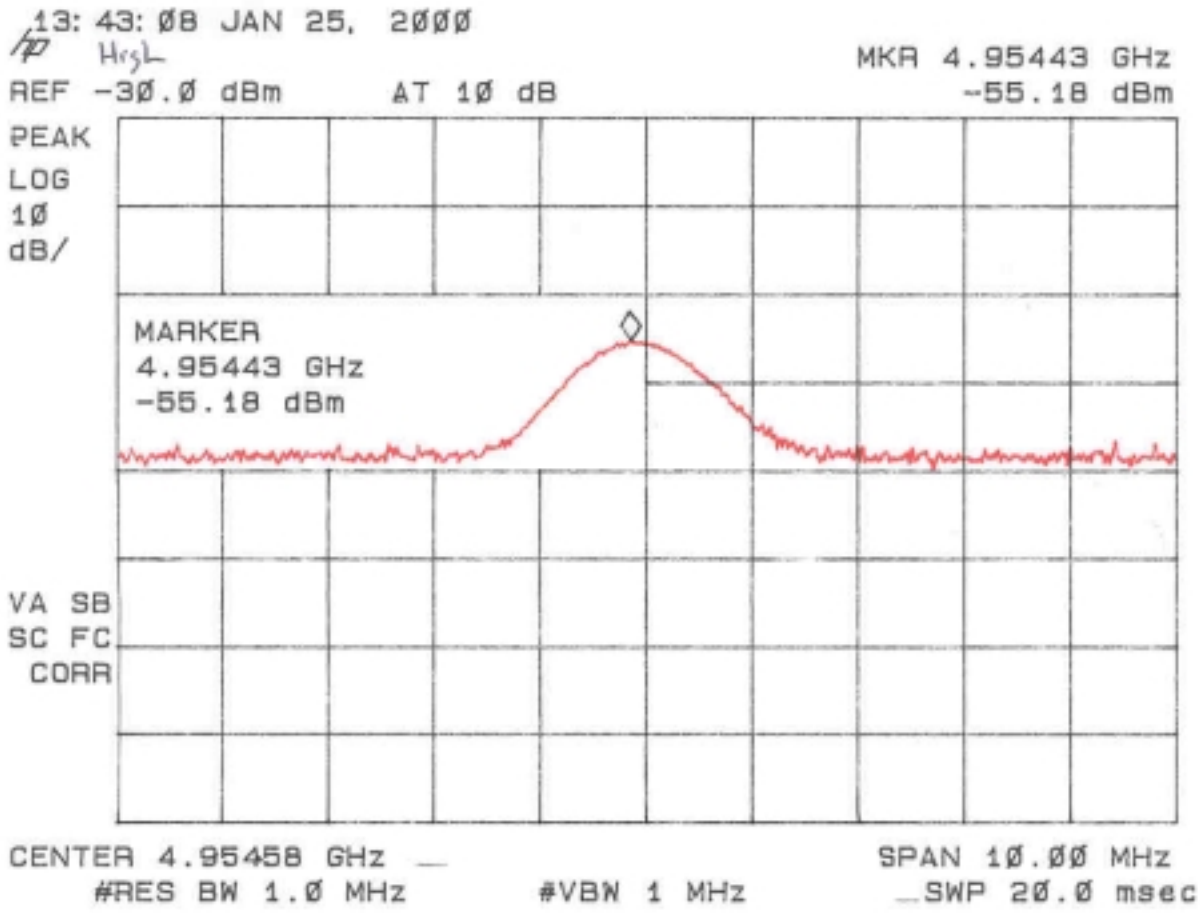


Figure 4j
Peak Radiated Spurious Emission 15.247(c) High

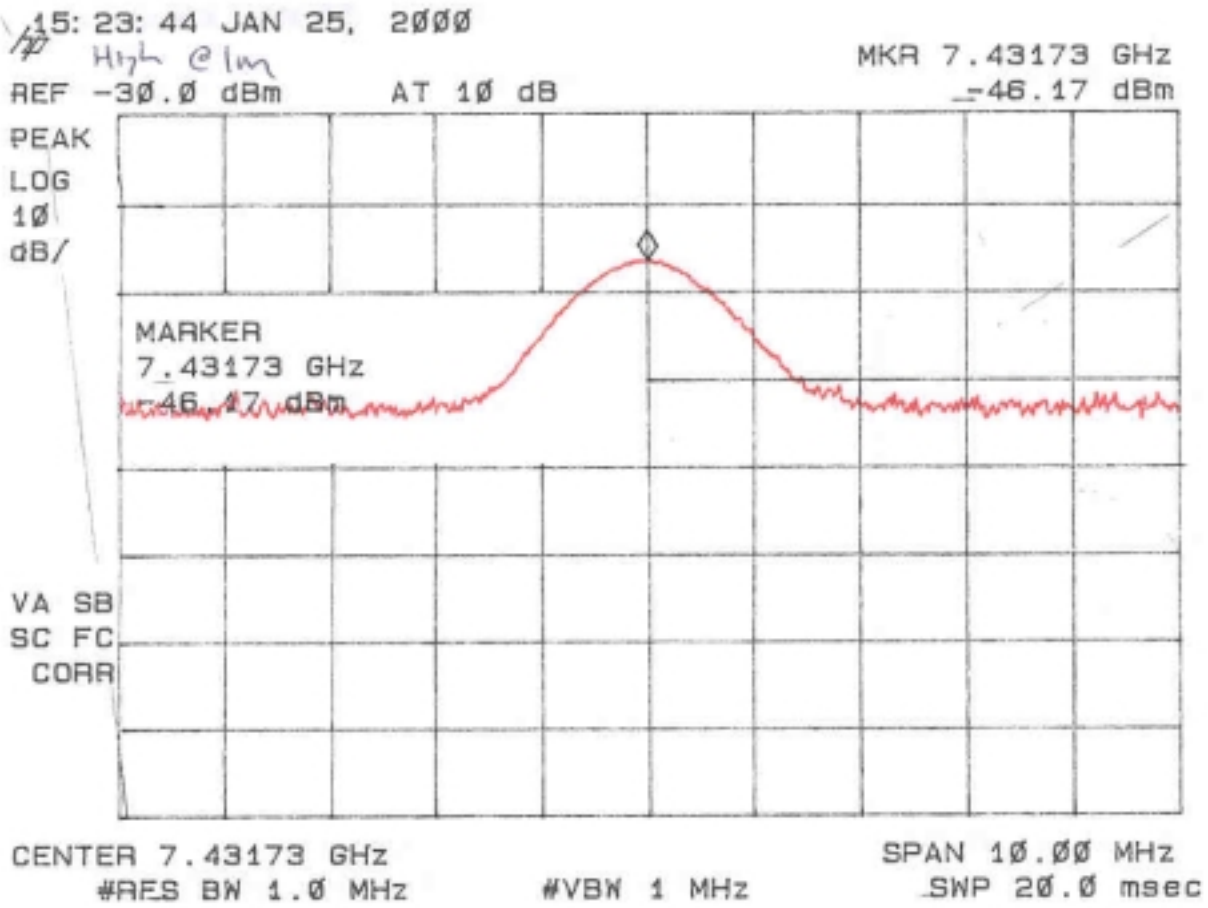


Figure 4k
Peak Radiated Spurious Emission 15.247(c) High

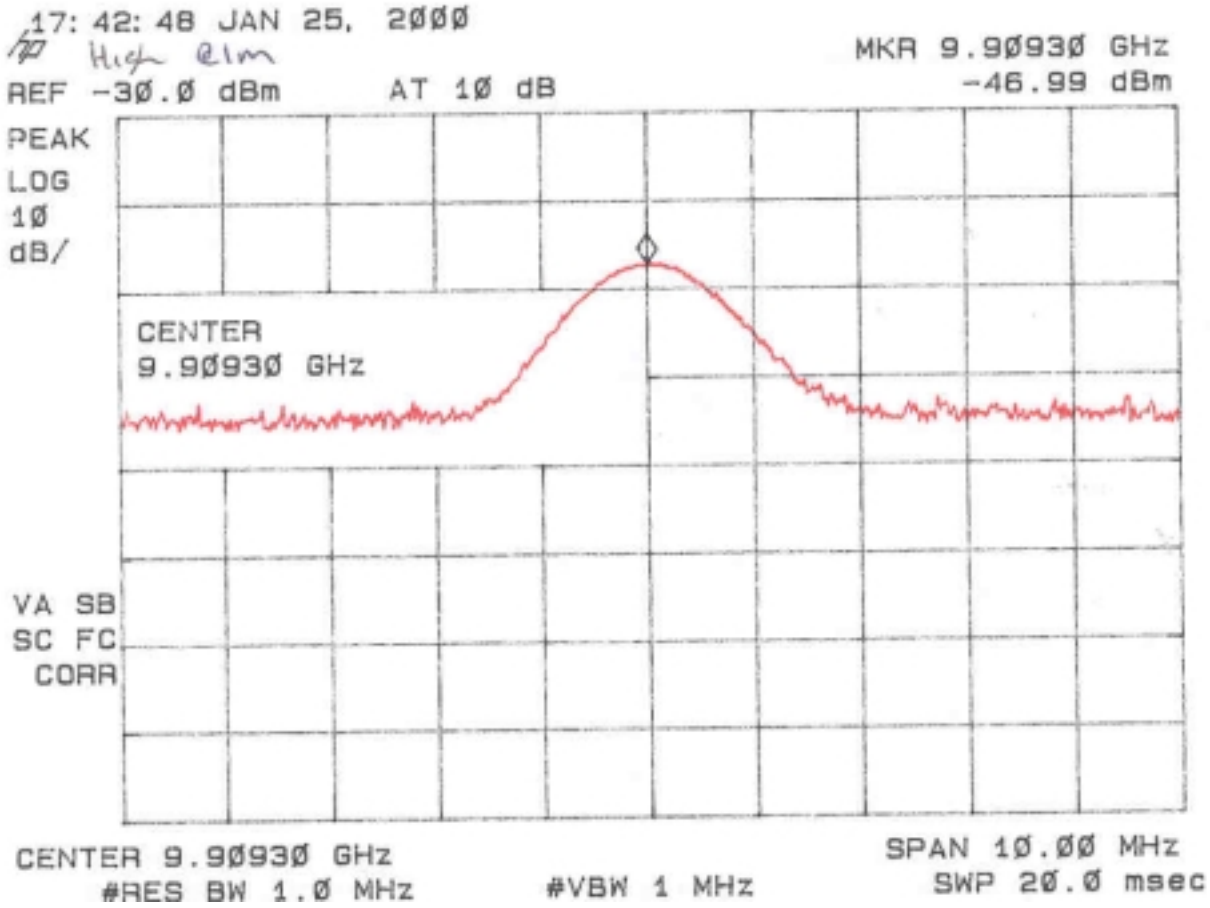
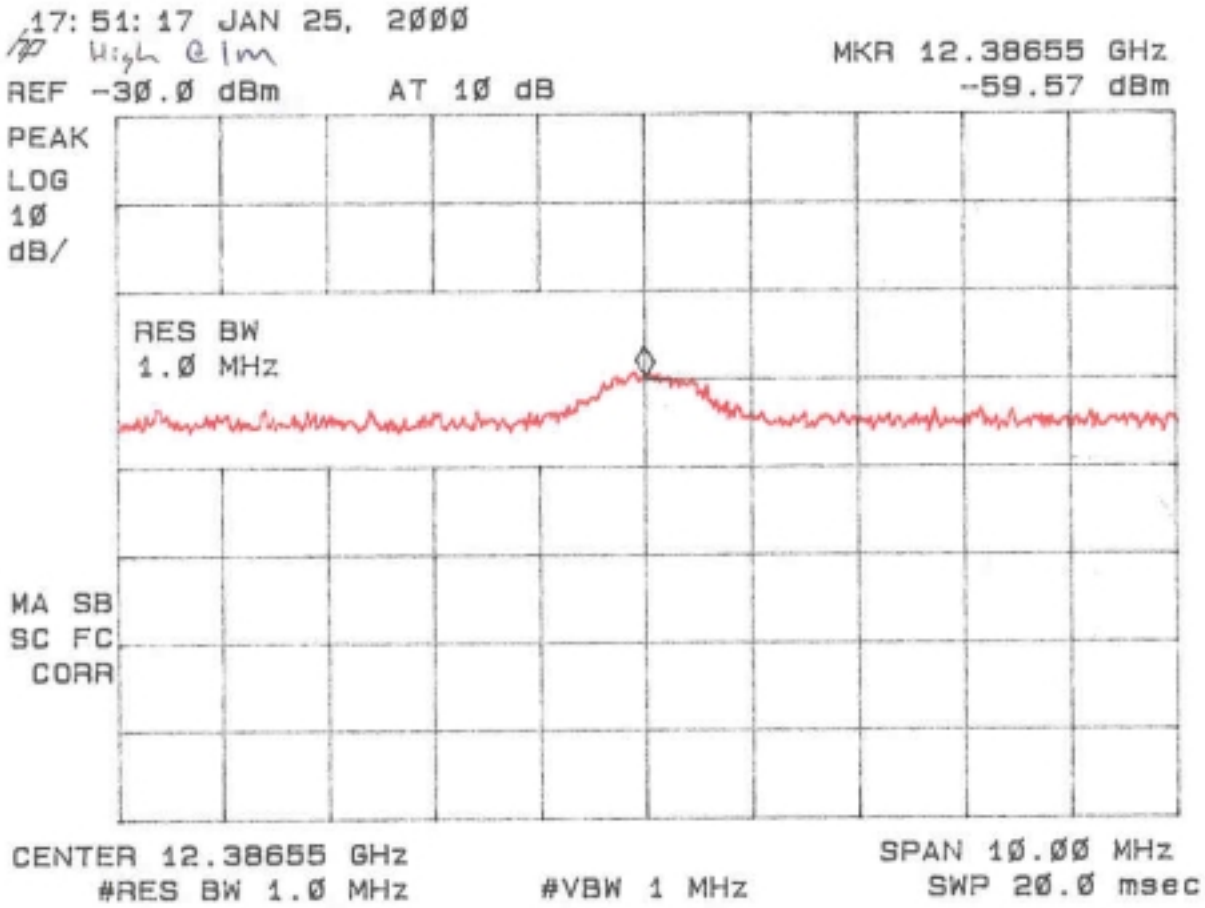


Figure 4l
Peak Radiated Spurious Emission 15.247(c) High



2.8 Average Spurious Emission in the Frequency Range 30 - 25000 MHz (FCC Section 15.247(c))

The results of average radiated spurious emissions falling within restricted bands are given in Table 5a (low), Table 5b, (mid), Table 5c (high) and Figure 5a-5d (low), Figure 5e-5h (mid) and Table 5i-5l (high).

Figure 5a
Average Radiated Spurious Emission 15.247(c) Low

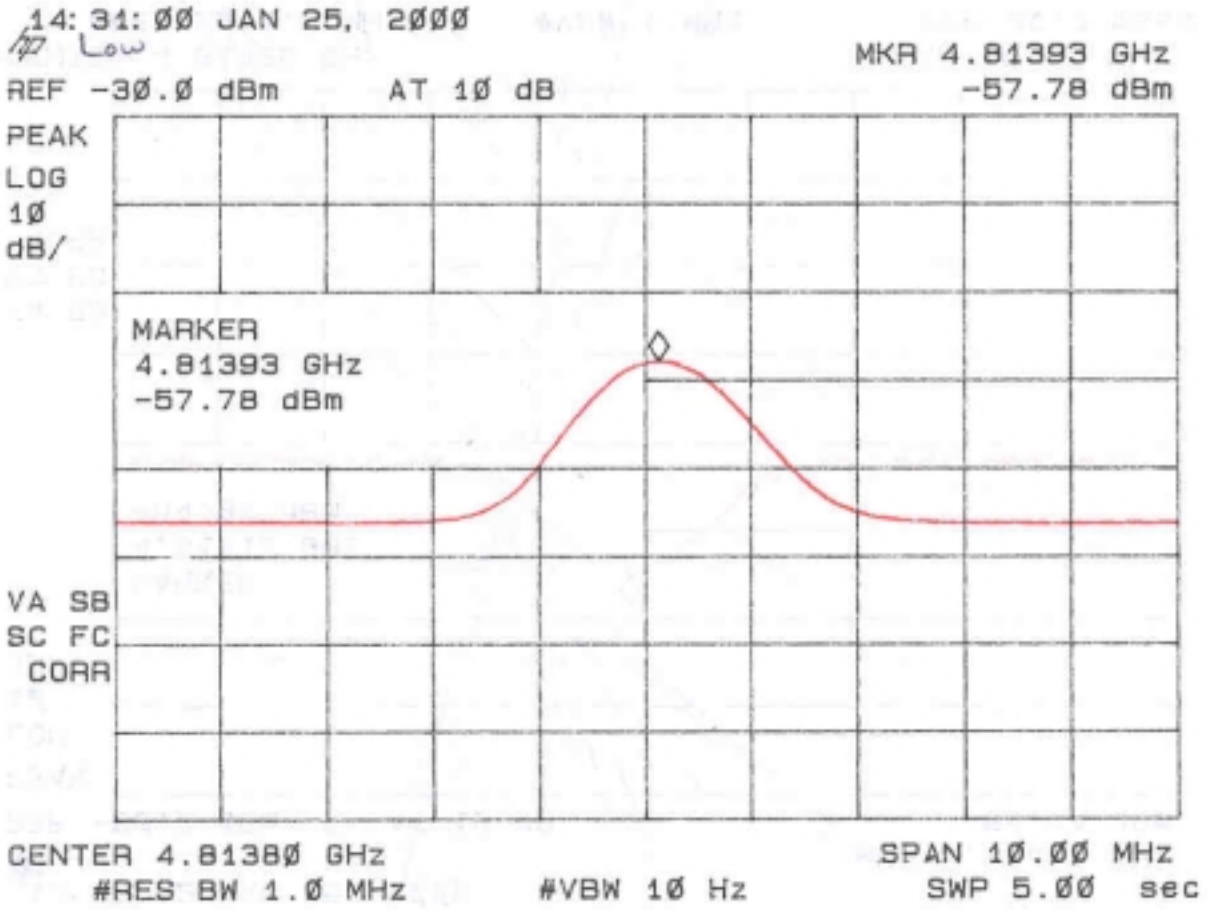


Figure 5b
Average Radiated Spurious Emission 15.247(c) Low

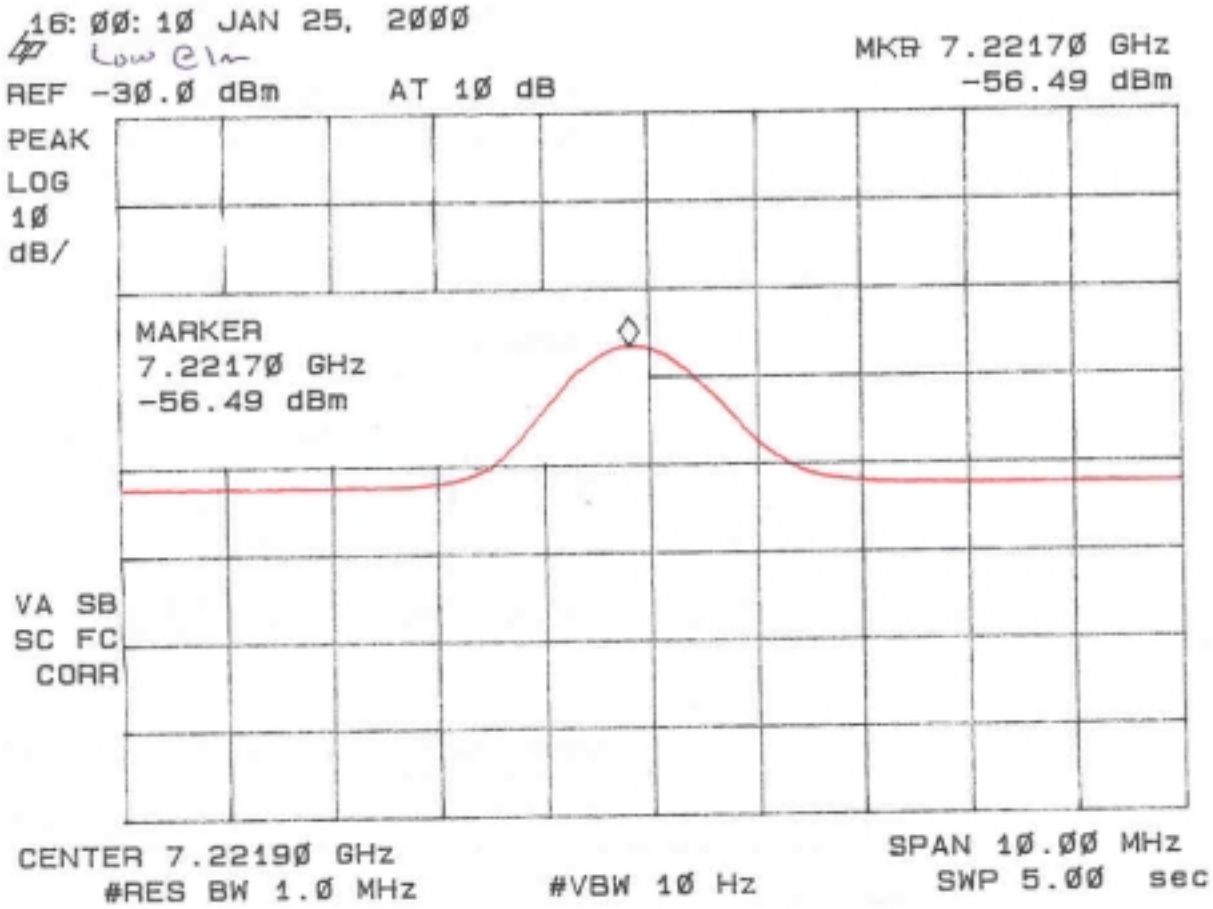


Figure 5c
Average Radiated Spurious Emission 15.247(c) Low

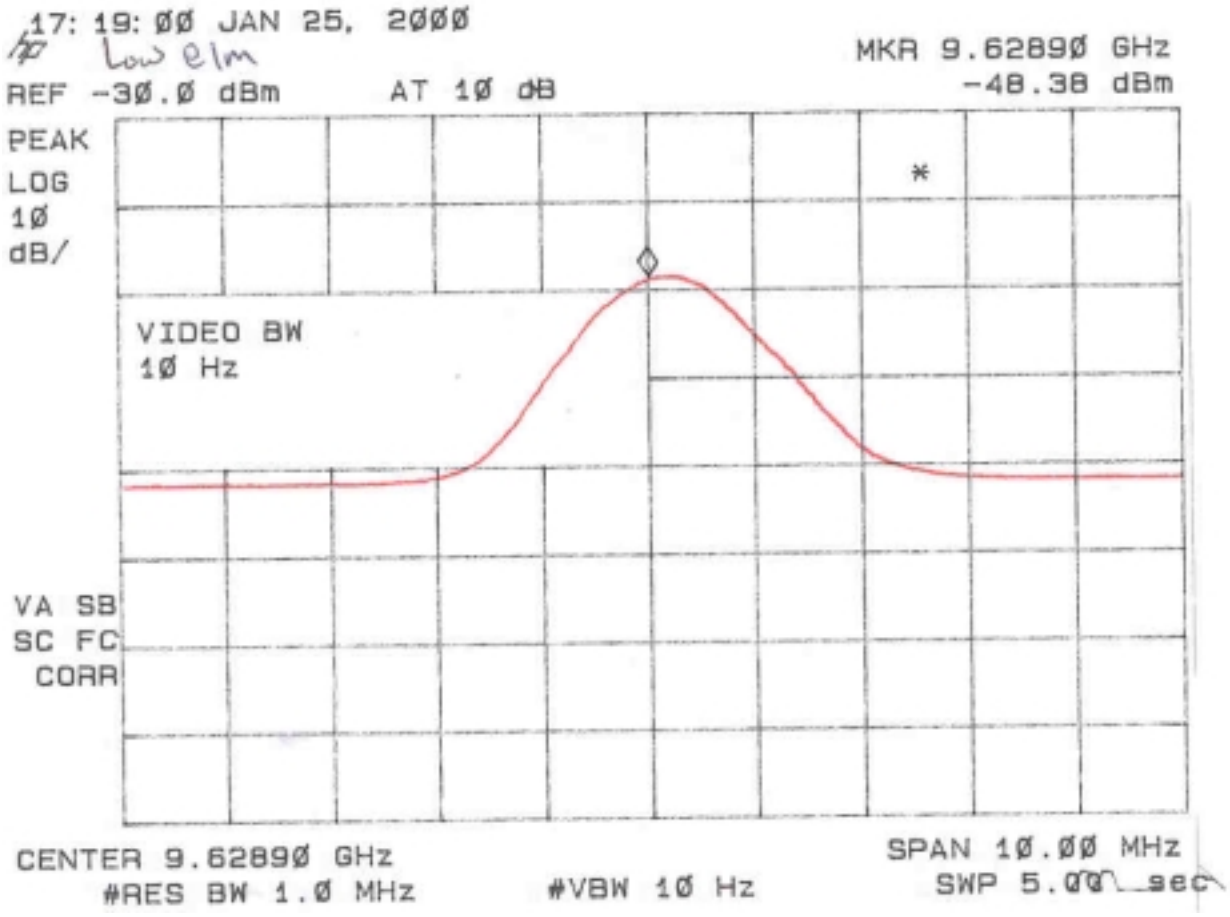


Figure 5d
Average Radiated Spurious Emission 15.247(c) Low

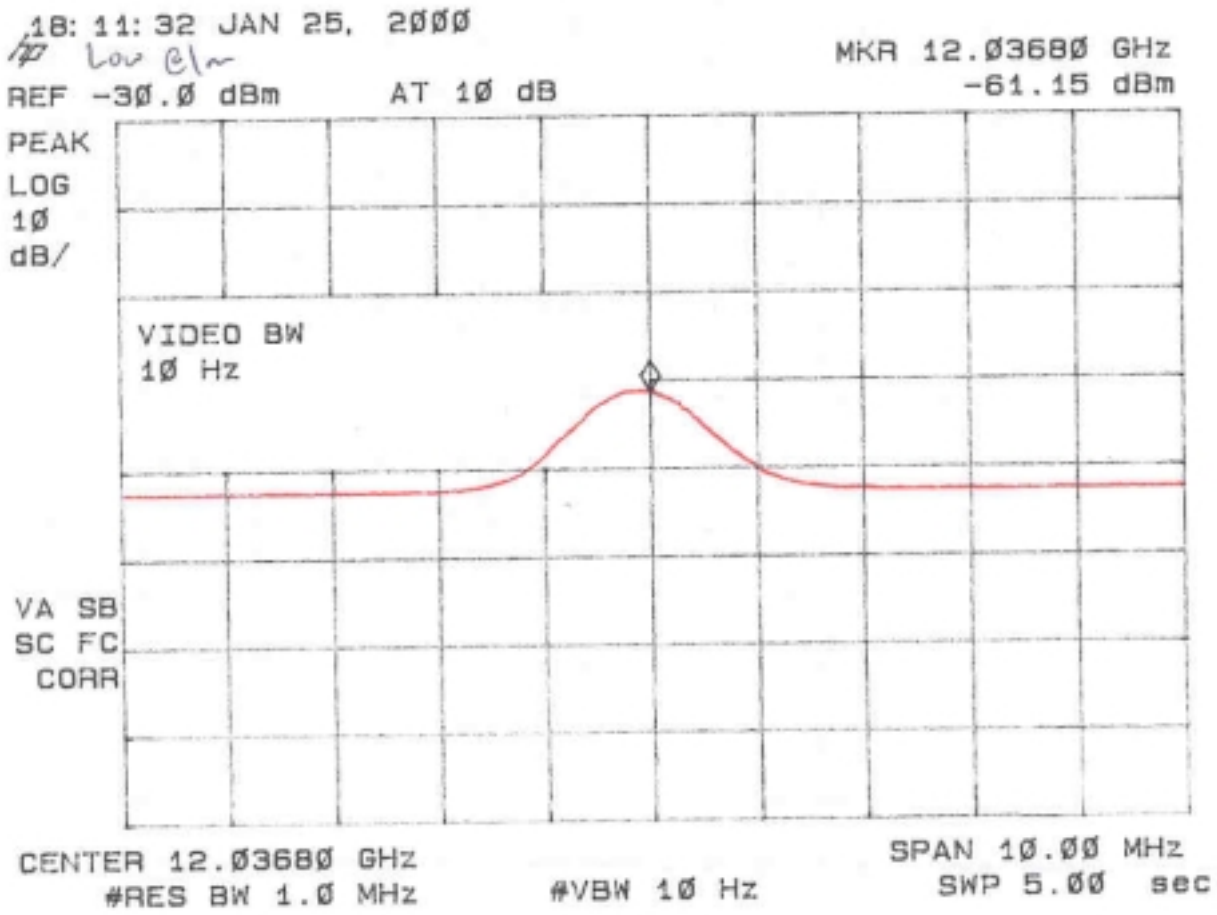


Figure 5e
Average Radiated Spurious Emission 15.247(c) Mid

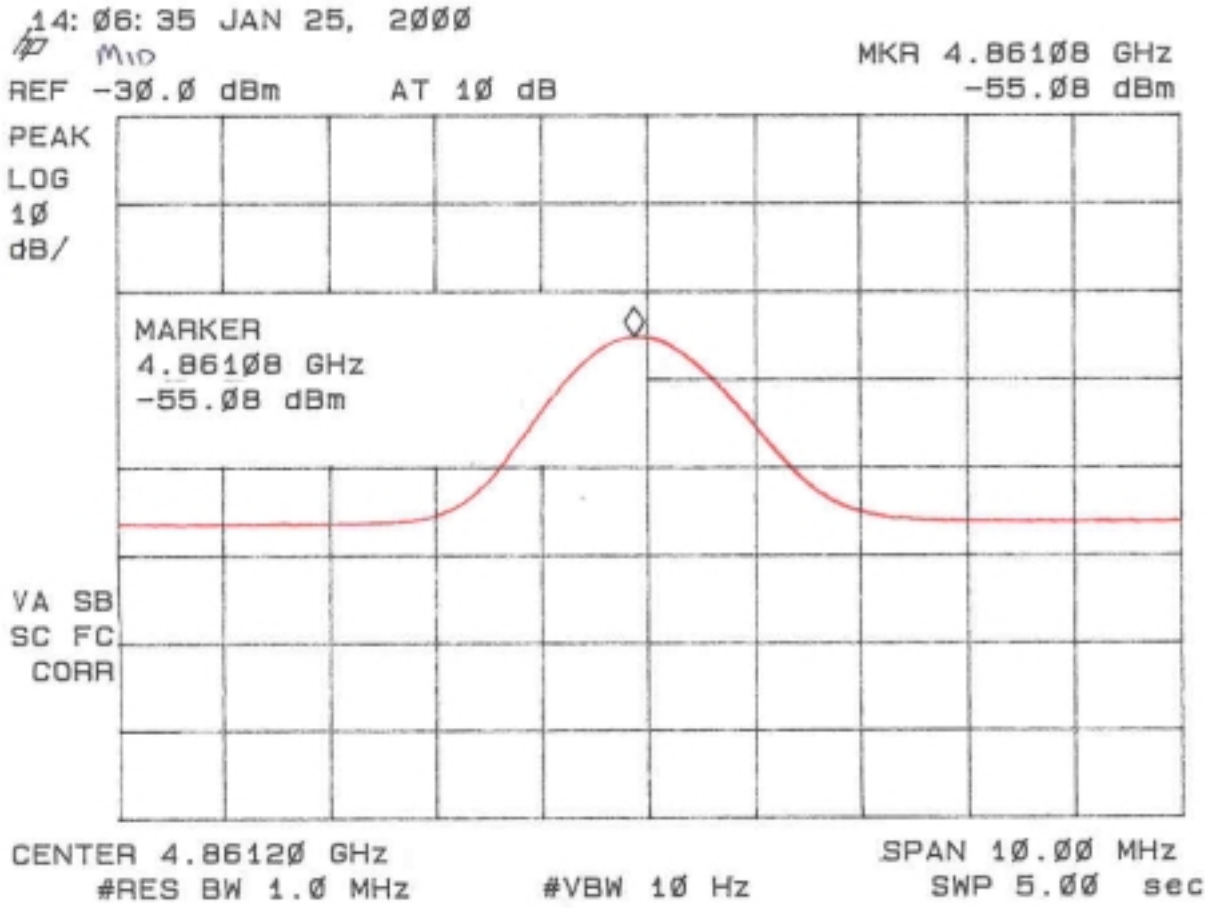


Figure 5f
Average Radiated Spurious Emission 15.247(c) Mid

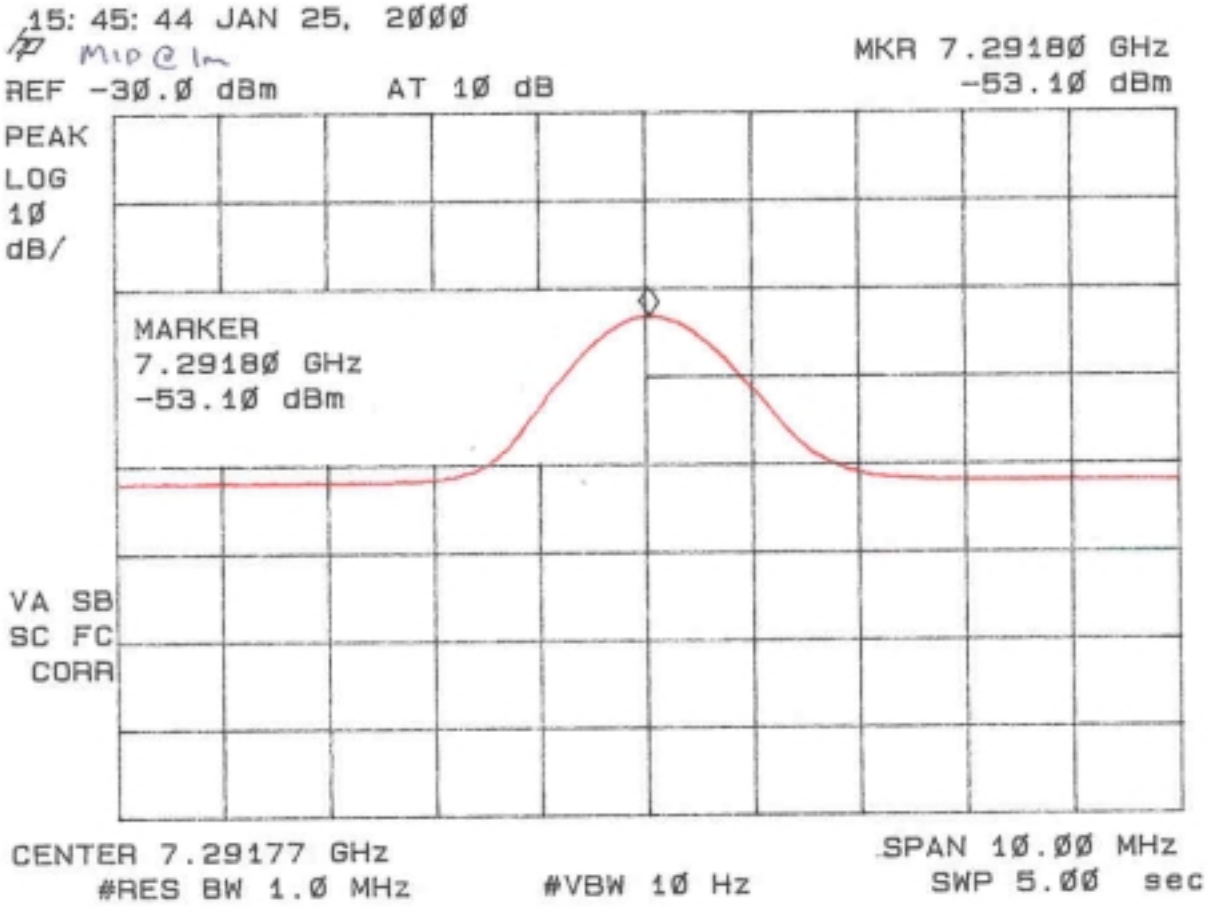


Figure 5g
Average Radiated Spurious Emission 15.247(c) Mid

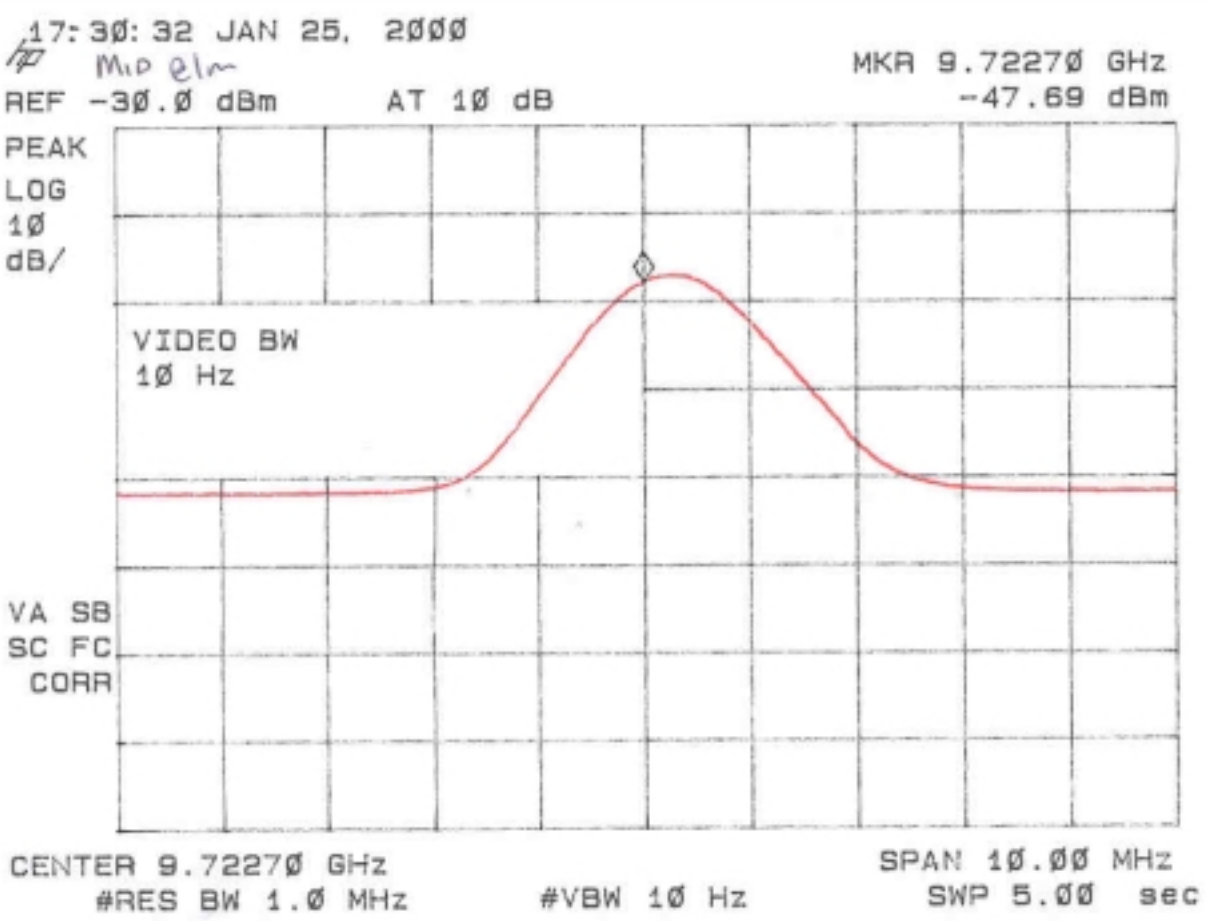


Figure 5h
Average Radiated Spurious Emission 15.247(c) Mid

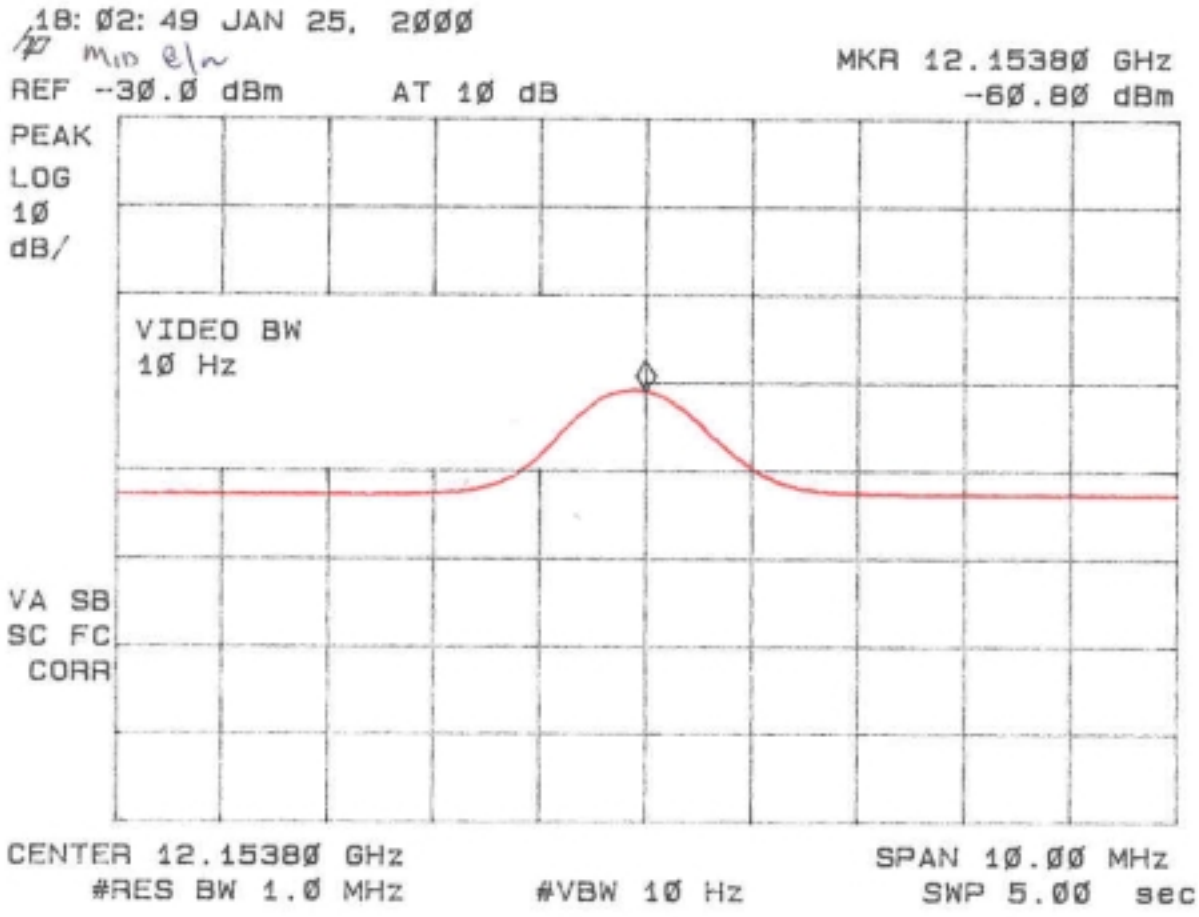


Figure 5i
Average Radiated Spurious Emission 15.247(c) High

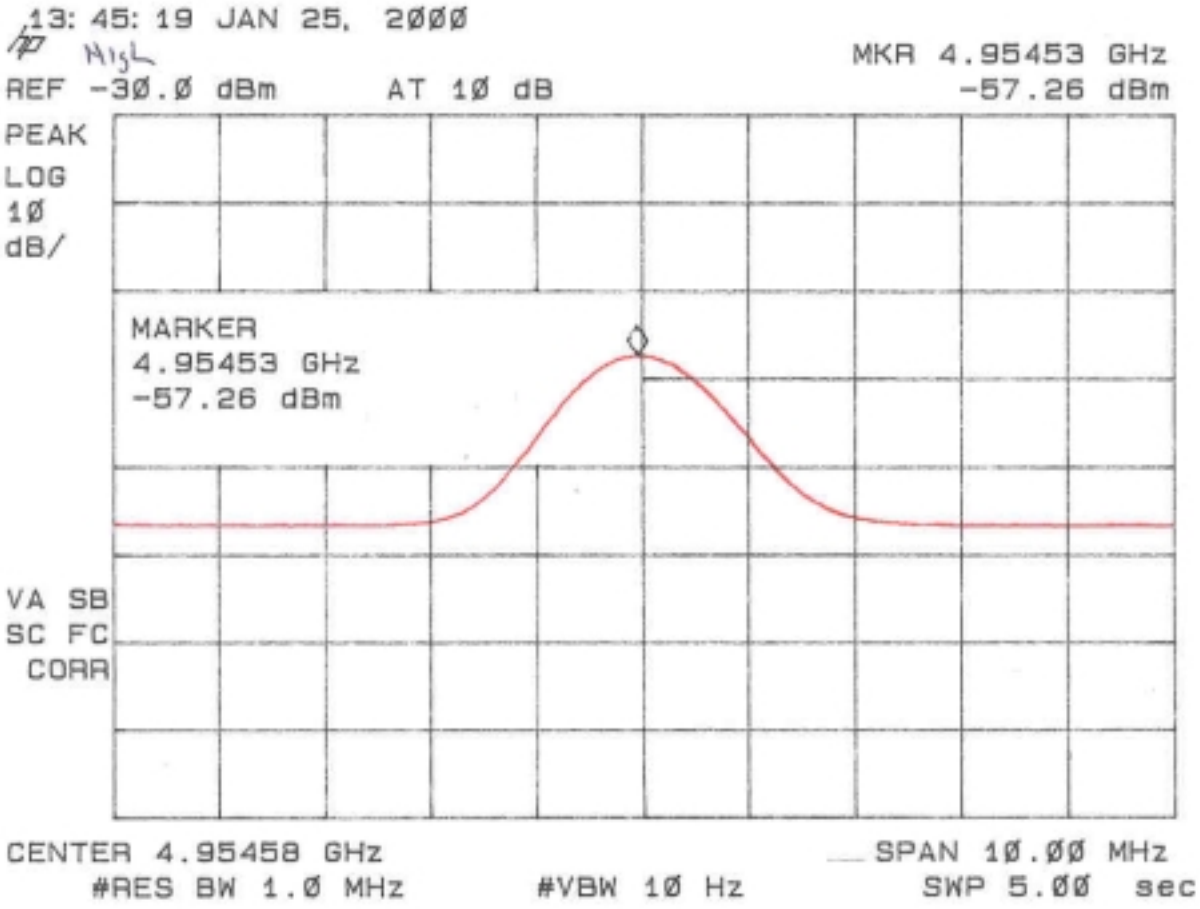


Figure 5j
Average Radiated Spurious Emission 15.247(c) High

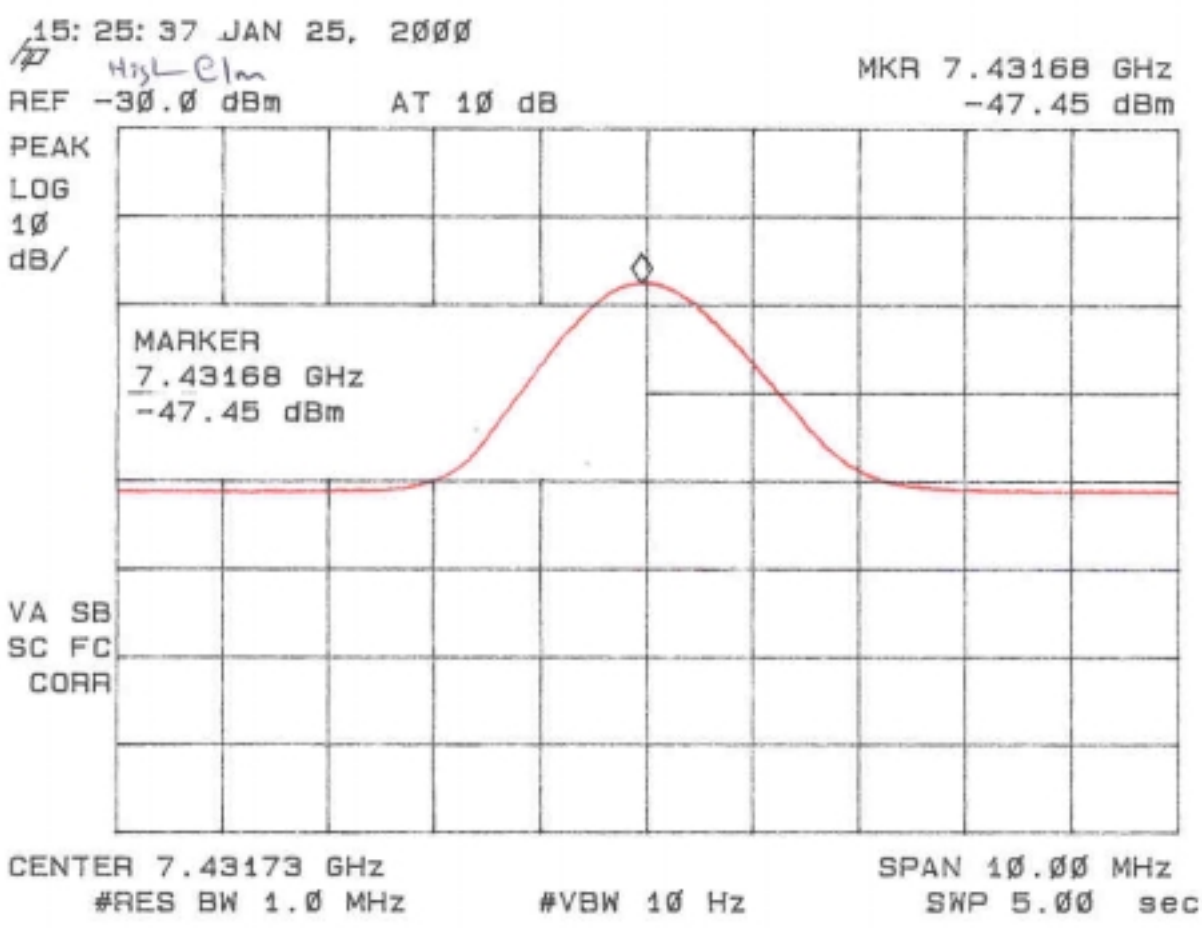


Figure 5k
Average Radiated Spurious Emission 15.247(c) High

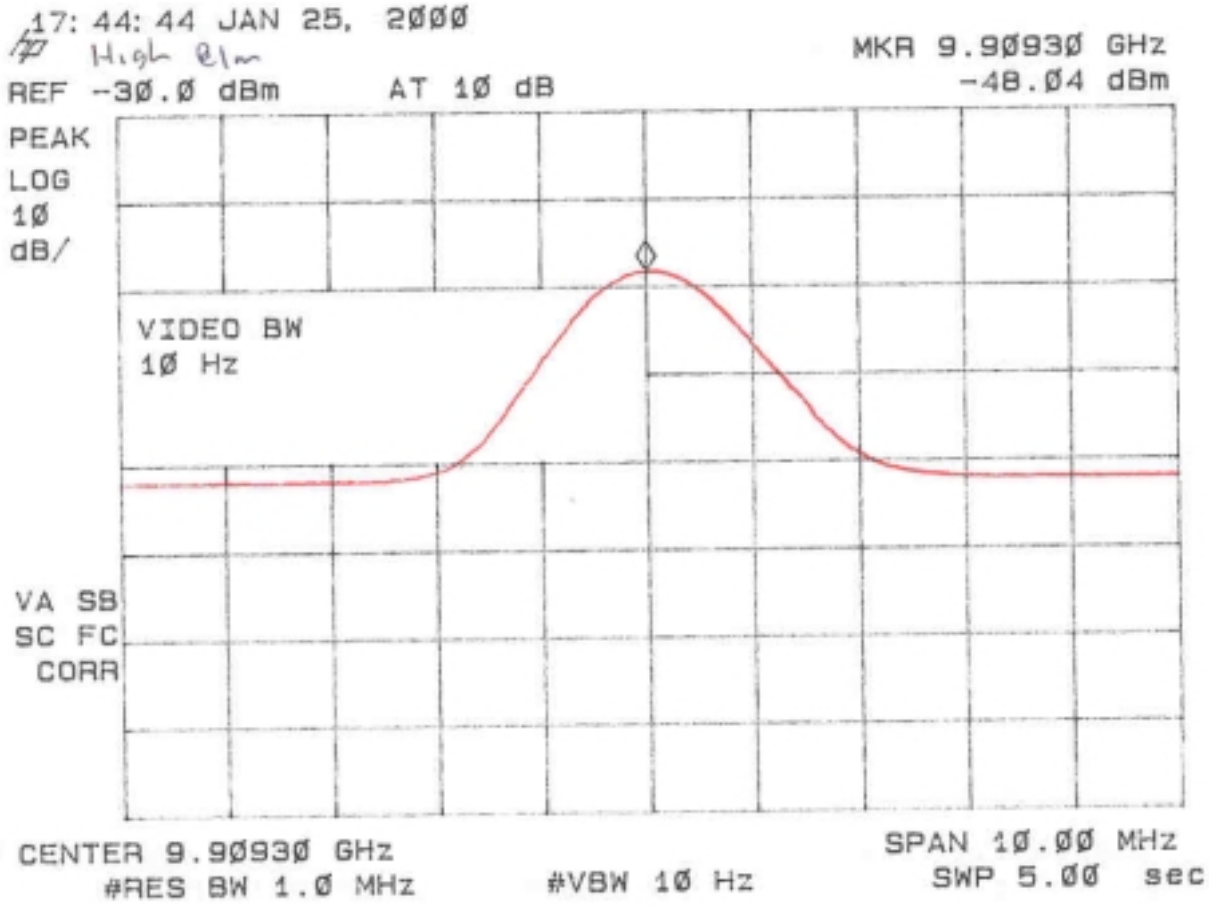


Figure 5l
Average Radiated Spurious Emission 15.247(c) High

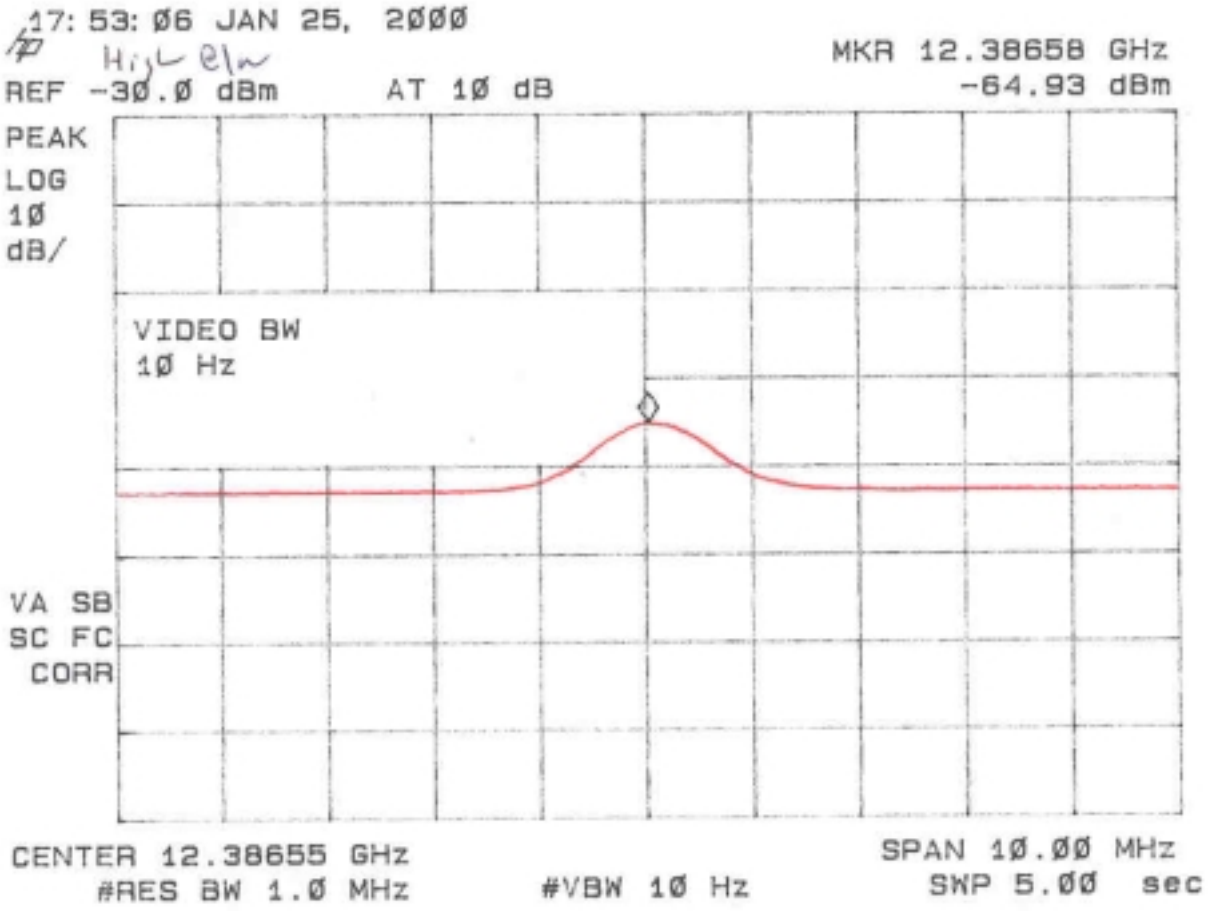


Table 4a Average Radiated Spurious Emissions (Low)

Freq. (GHz)	Test Data (dBm) @3m	Amp. Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Results (uV/m) @3m	FCC Limits (uV/m) @3m
4.814	-68.2*	34.2	34.7	7.9	230.0	5000
7.221	-76.4**	33.8	37.1	7.8	122.2	5000
9.628	-68.3**	34.3	38.6	9.4	415.8	5000
12.037	-81.1**	32.5	41.3	10.7	186.5	5000

Table 4b Average Radiated Spurious Emissions (Mid)

Freq. (GHz)	Test Data (dBm) @3m	Amp. Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Results (uV/m) @3m	FCC Limits (uV/m) @3m
4.861	-65.5*	34.1	34.8	8.0	322.5	5000
7.292	-73.0**	33.8	37.2	7.9	183.0	5000
9.722	-67.6**	34.4	38.6	9.5	453.1	5000
12.154	-80.7**	32.4	41.2	10.7	193.2	5000

Table 4c Average Radiated Spurious Emissions (High)

Freq. (GHz)	Test Data (dBm) @3m	Amp. Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Results (uV/m) @3m	FCC Limits (uV/m) @3m
4.954	-67.6*	34.1	35.0	8.3	266.5	5000
7.432	-67.4**	33.8	37.4	7.9	359.8	5000
9.909	-68.0**	34.5	38.7	9.6	440.8	5000
12.387	-84.9**	32.3	41.0	10.7	118.8	5000

*** = Data adjusted by + 1 dB for high pass filter and worse case duty cycle of 20 log (0.2706) = -11.4 dB**

**** = Tested at 1 meter to achieve better dynamic range. Data adjusted by + 1 dB for high pass filter, worse case duty cycle of 20 log (0.2706) = -11.4 dB, and 20 log (1/3) = -9.54 dB for conversion from 1 to 3 meter.**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-68.2 - 34.2 + 34.7 + 7.9 + 107)/20) = 230.0
CONVERSION FROM dBm TO dBuV = 107 dB

Tester
Signature: _____ Name: Tim R. Johnson

2.9 Power Line Conducted Emissions for Transmitter FCC Section 15.207

The conducted voltage measurements have been carried out in accordance with FCC Section 15.207, with a spectrum analyzer connected to a LISN and the EUT placed into a continuous mode of transmit. The results are given in Table 6.

Table 6. Conducted Emissions Data
Class B

Test Date: February 8, 2000
UST Project: 99-956
Customer: Xetron Corporation
Product: Hornet

All channels yielded similar readings

Frequency (MHz)	Test Data (dBm)		Results (uV)		FCC Limits (uV)
	Phase	Neutral	Phase	Neutral	
1.5	-81.0	-91.0	20.0	6.3	250
2.2	-83.0	-89.0	15.8	7.9	250
3.2	-83.0	-89.0	15.8	7.9	250
4.4	-83.0	-90.0	15.8	7.1	250
8.1	-84.0	-90.0	14.1	7.1	250
9.3	-88.0	-90.0	8.9	7.1	250
17.8	-87.0	-89.0	10.0	7.9	250

SAMPLE CALCULATIONS:

RESULTS uV = ANTILOG ((-81.0 + 107)/20) = 20.0
CONVERSION FROM dBm TO dBuV = 107 dB

Tester
Signature: _____ **Name:** Tim R. Johnson

2.10 Radiated Emissions (47 CFR 15.109a)

Radiated emissions were evaluated from 30 to 1000 MHz. Measurements were made with the analyzer's bandwidth set to 120 kHz for measurements made less than 1 and are shown in Table 7.

Table 7. Radiated Emissions Data

Class B

Test Date: February 8, 2000
UST Project: 99-956
Customer: Xetron Corporation
Product: Hornet

Frequency (MHz)	Receiver Reading (dBm) @3m	Correction Factor (dB)	Corrected Reading (uV/m)	FCC Limit (uV/m) @3m
36.8	-88.0	13.9	44.0	100.0
110.6	-81.0	12.9	88.5	150.0
258.0	-88.0	16.5	59.7	200.0

SAMPLE CALCULATIONS:

RESULTS uV/m @ 3m = Antilog ((-88.0 + 13.9 + 107)/20) = 44.0
CONVERSION FROM dBm TO dBuV = 107 dB

Tester
Signature: _____ **Name:** Tim R. Johnson

2.11 Power Line Conducted Emissions for Digital Device FCC Section 15.107

The conducted voltage measurements have been carried out in accordance with FCC Section 15.107, with a spectrum analyzer connected to a LISN and the EUT placed into a continuous mode of transmit. The results are given in Table 8.

Table 8. Conducted Emissions Data – Digital Device Class B

Test Date: February 8, 2000
UST Project: 99-956
Customer: Xetron Corporation
Product: Hornet

All channels yielded similar results

Frequency (MHz)	Test Data (dBm)		Results (uV)		FCC Limits (uV)
	Phase	Neutral	Phase	Neutral	
2.3	-83.0	-89.0	15.8	7.9	250
4.4	-84.0	-88.0	14.1	8.9	250
4.9	-83.0	-88.0	15.8	8.9	250
8.1	-83.0	-89.0	15.8	7.9	250
11.8	-79.0	-85.0	25.1	12.6	250
17.7	-76.0	-86.0	35.5	11.2	250
17.8	-78.0	-86.0	28.2	11.2	250

SAMPLE CALCULATIONS:

RESULTS uV = ANTILOG ((-83.0 + 107)/20) = 15.8
CONVERSION FROM dBm TO dBuV = 107 dB

Tester
Signature: _____ **Name:** Tim R. Johnson