2.10 Band Edge Measurements

Band Edge measurements were made at a Low Channel and High Channel peak at highest EUT related emission outside the occupied bandwidth. A peak measurement was made of the fundamental, and the emission was measured using a peak setting. A Resolution Bandwidth of > 1% of the emission bandwidth was used. This procedure was repeated for the high channel.

The plots shown were verified to be from the worst case antenna used (Parabolic Dish), using a 17 foot, Flexco cable and Horn Antenna. No preamp was used.

The limits were derived as follows:

High Bandedge

5000 uV/m = -32.02 dBm

-33.02 dBm – 31.88 dB (antenna factor and cable loss) = -64.9 dBm
-64.9 dBm + 9.54* dB = -55.36 dBm limit

Low Bandedge

-33.02 dBm – 32.03 dB (antenna factor and cable loss) = 65.05 dBm
-65.05 dBm + 9.54* dB = -55.51 dBm limit

* -9.54 dB correction from 3m to 1m distance.

Figure 6a. Band Edge Compliance
Antenna Conducted, High Channel

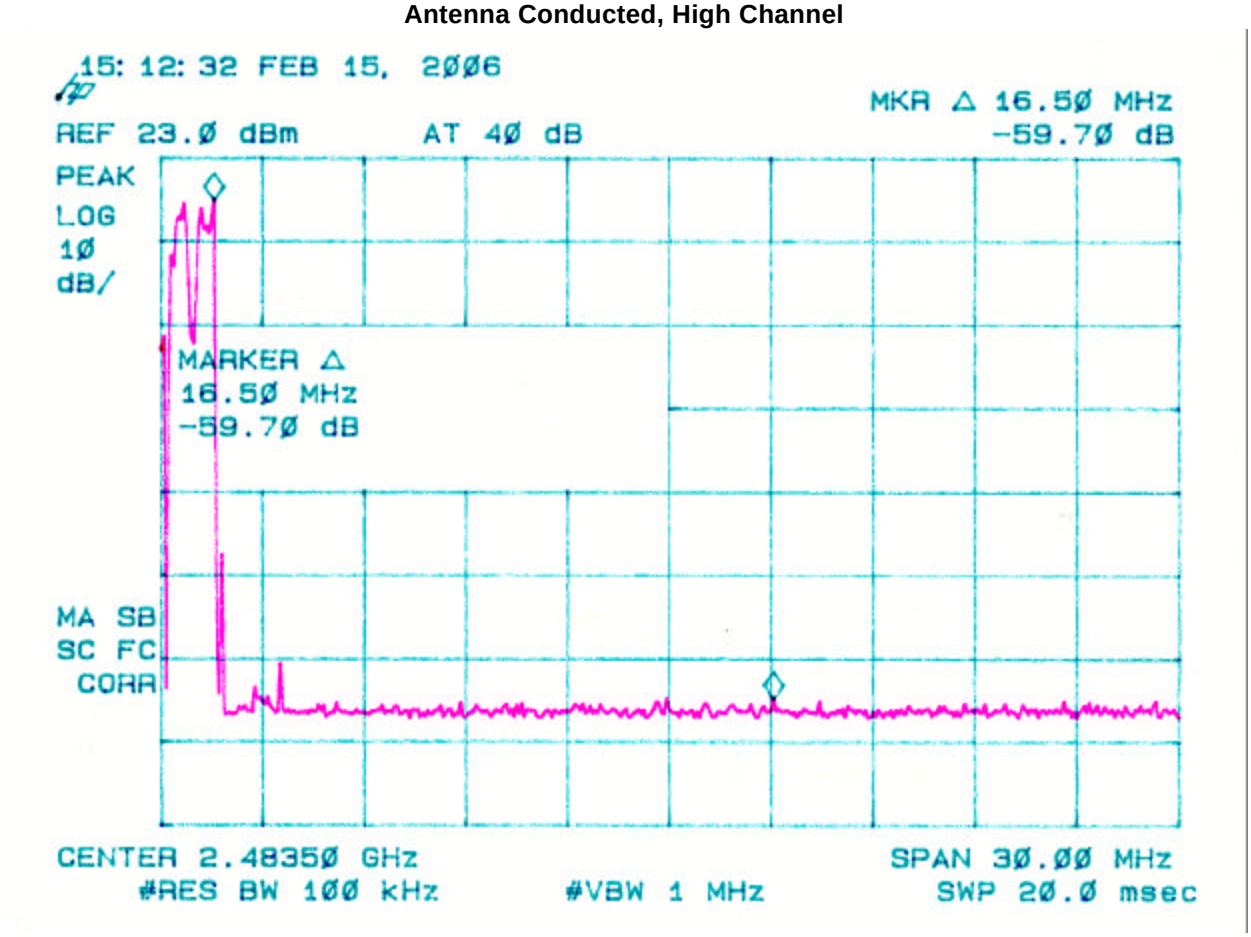


Figure 6b. Band Edge Compliance
Antenna Conducted, Low Channel

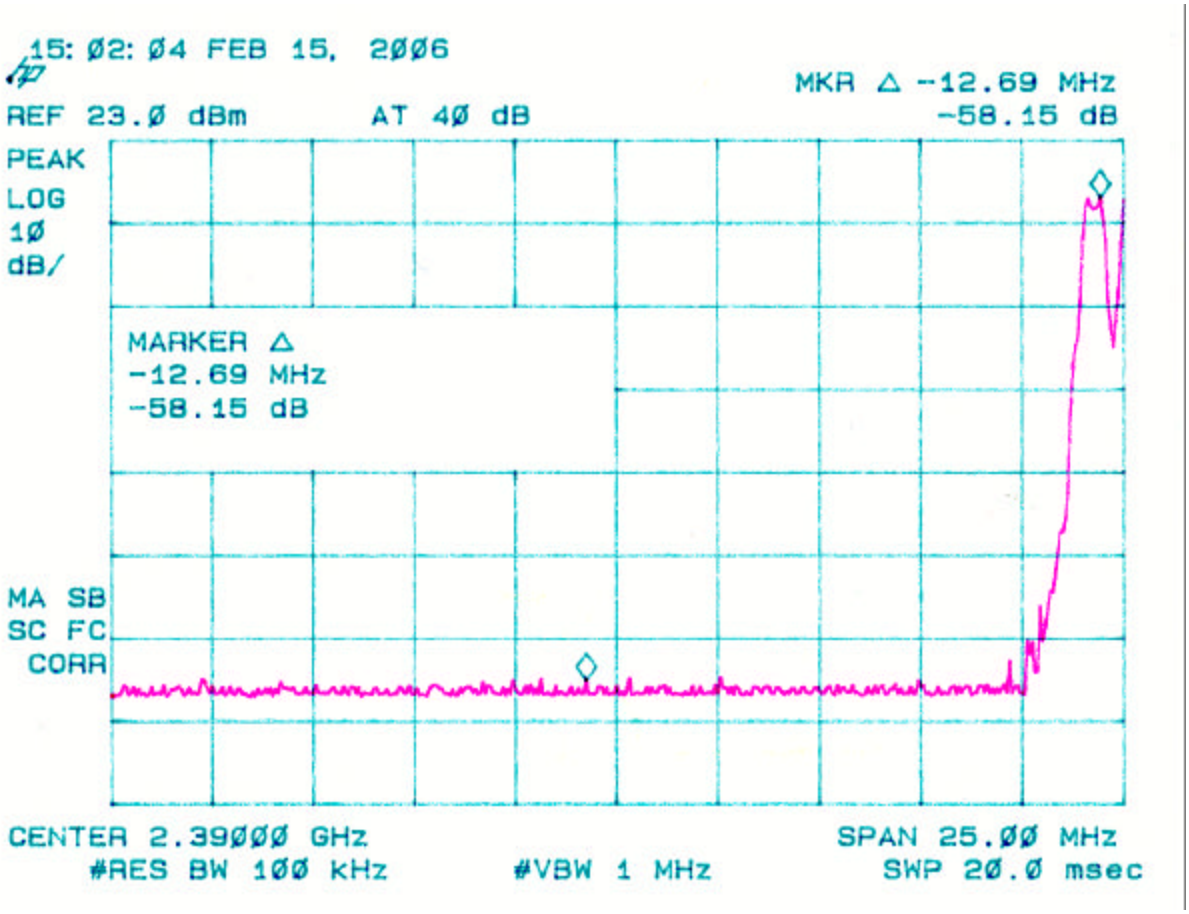
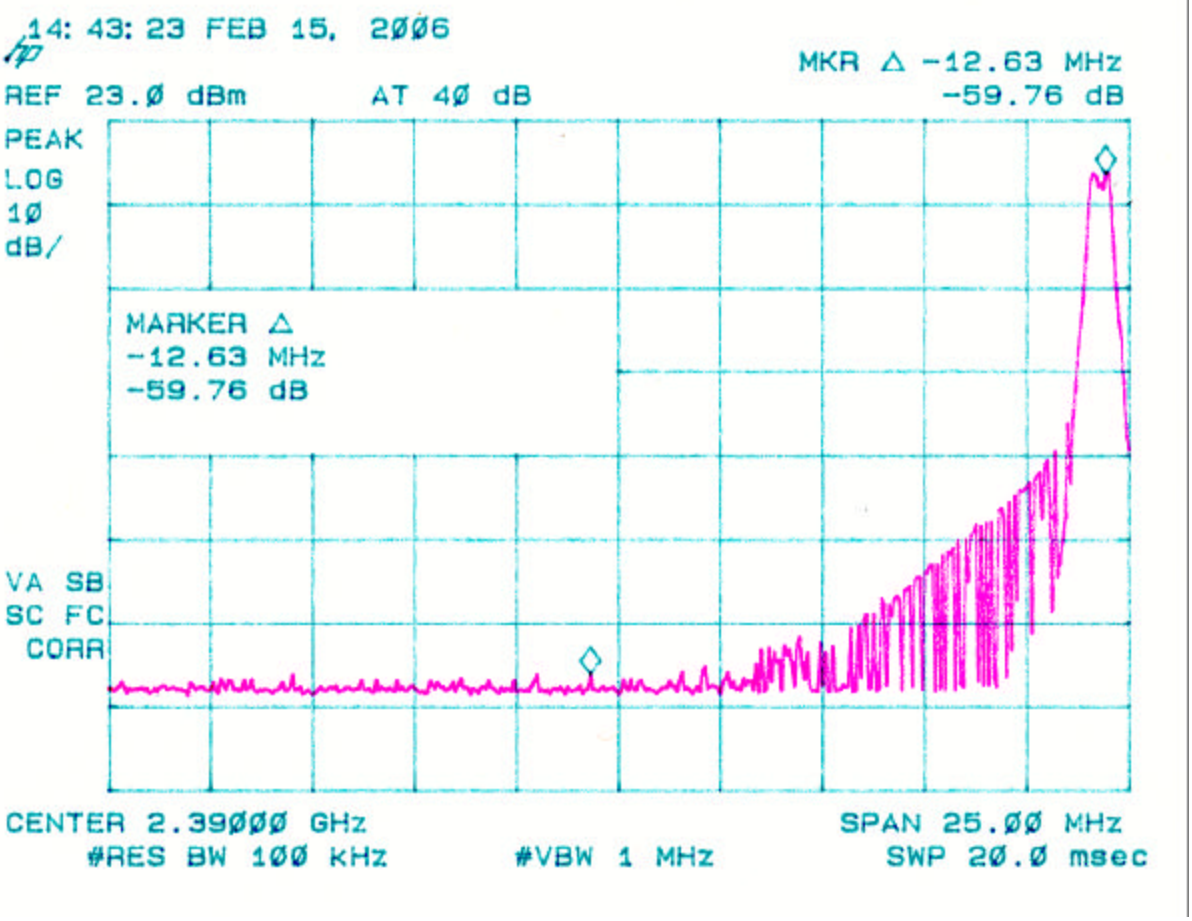


Figure 6c. Band Edge Compliance
Antenna Conducted, Low Channel



2.11 20 dB Bandwidth per FCC Section 15.247(a)(1)(ii)

The antenna port was connected to a spectrum analyzer that was set for a 50 Ω impedance with the RBW = approximately 1/100 of the manufacturers claimed RBW & VBW > RBW. The results of this test are given in Table 6 and Figure 7.

TABLE 6
20 dB Bandwidth

Test Date: **February 15, 2006**
UST Project: **05-0311**
Customer: **Cirronet**
Model: **WIT2410G**

Frequency (GHz)	20 dB Bandwidth (MHz)	MAXIMUM FCC LIMIT (MHz)
2.40189	0.850	1.0
2.43556	0.875	1.0
2.46968	0.875	1.0

.

Tester Signature:  **Name:** **Austin Thompson**

Figure 7a.
20 dB Bandwidth per FCC Section 15.247(a)(1)(ii) Low

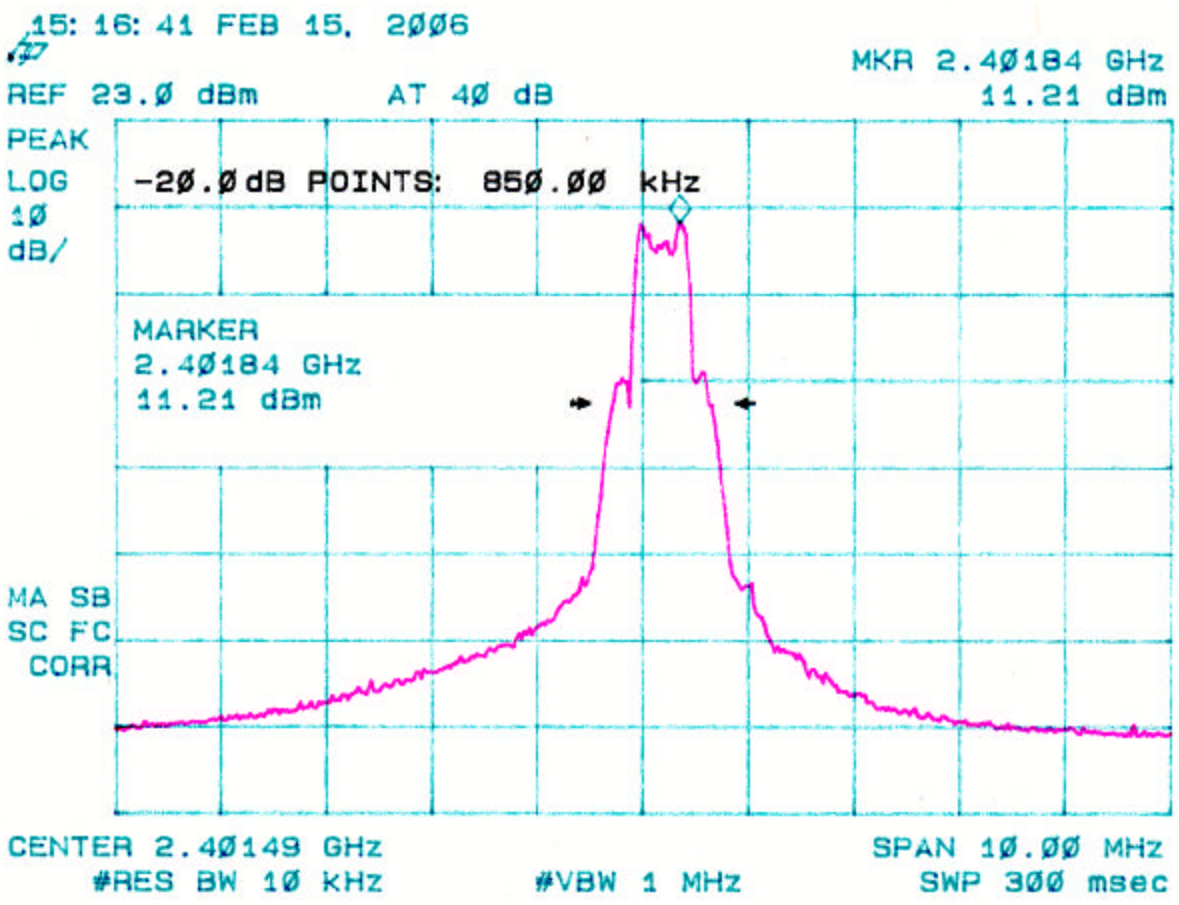


Figure 7b.
20 dB Bandwidth per FCC Section 15.247(a)(1)(ii) Mid

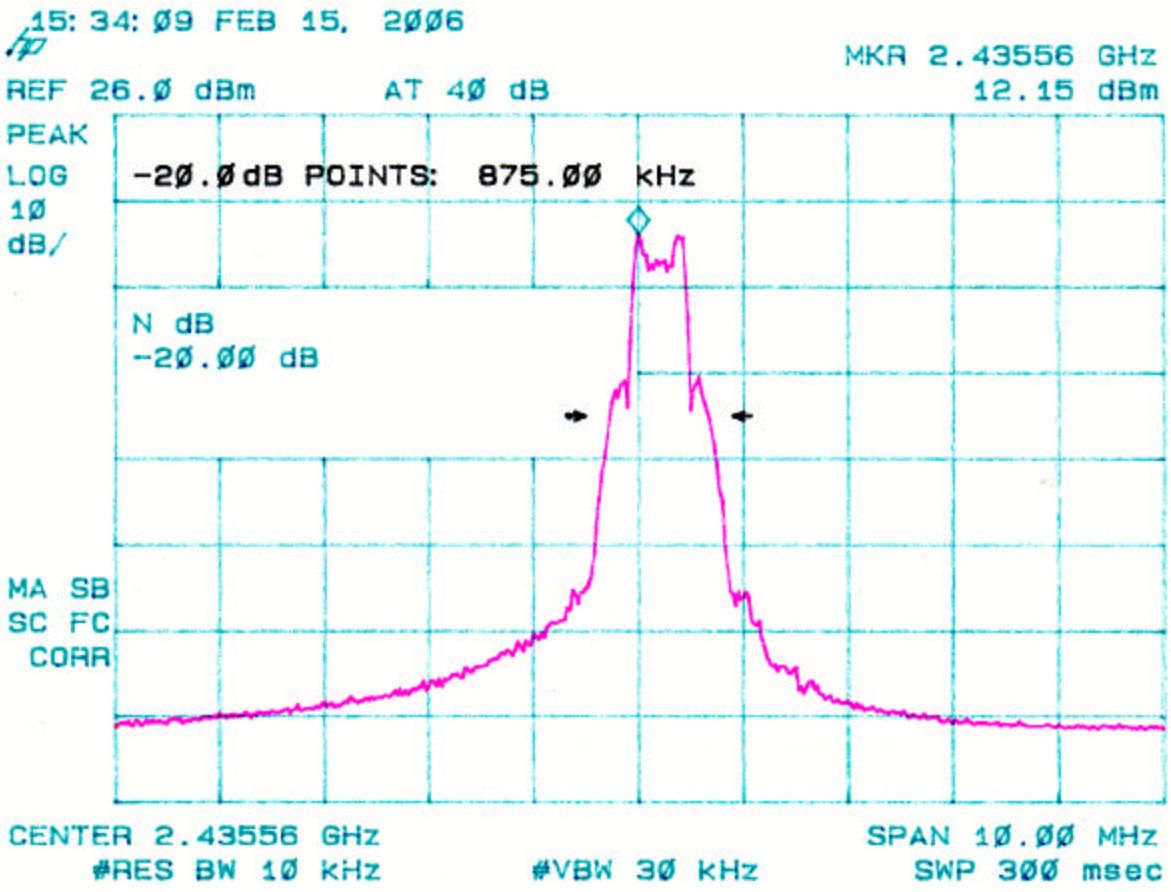
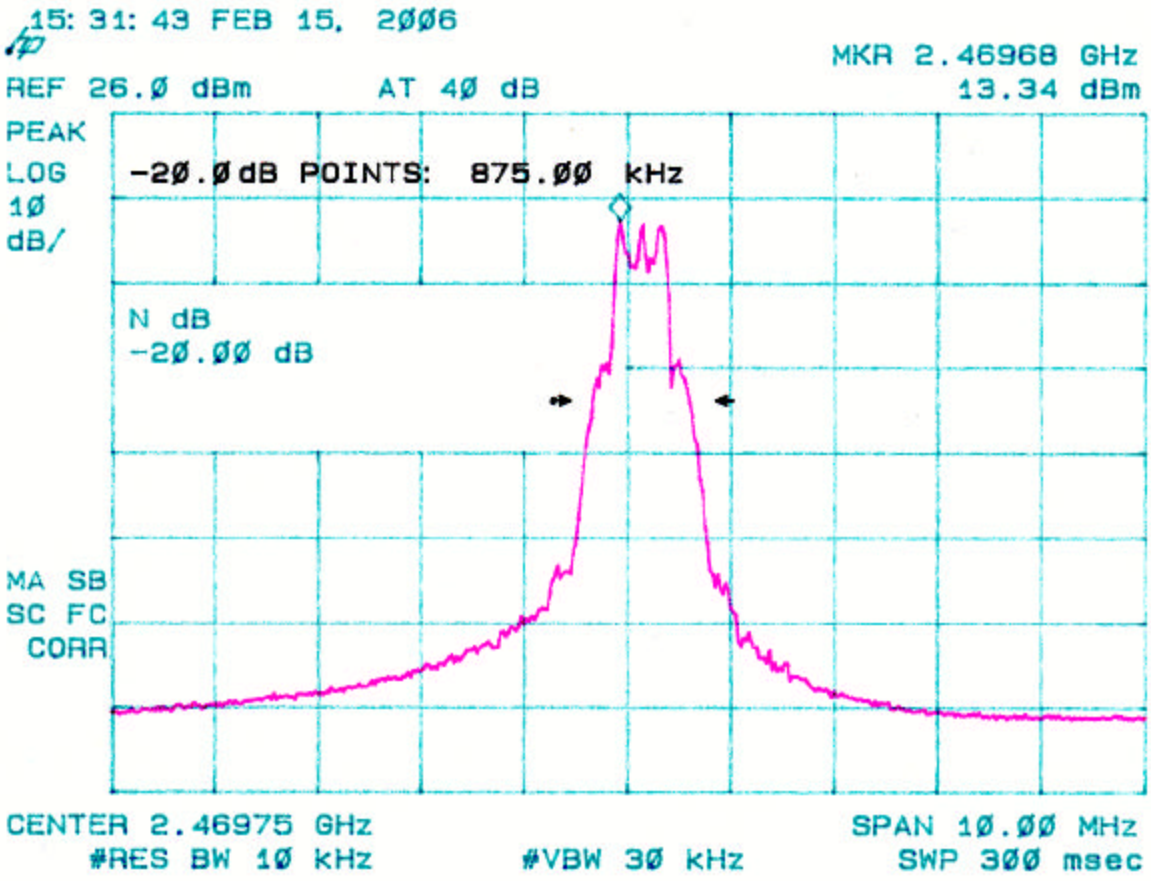


Figure 7c.
20 dB Bandwidth per FCC Section 15.247(a)(1)(ii) High



2.12 Number of Hopping Channels FCC Section 15.247(a)(1)(ii)

The transmitter was placed into a typical frequency hopping mode of operation. The 2400 – 2483.5 MHz band was centered on the screen and the RBW and VBW chosen such that the individual channels could be discerned. The trace capture time was a minimum of 5 minutes.

The results of this test are given in Table 7 and Figures 8a through 8c.

TABLE 7
NUMBER OF HOPPING CHANNELS

Test Date: February 13, 2006
UST Project: 05-0311
Customer: Cirronet
Model: WIT2410G

Number of Hopping Frequencies Measured	FCC Limit (Minimum Number of Channels)
75	75

Figure 8a
Number of Hopping Channels FCC Section 15.247(a)(1)(ii)

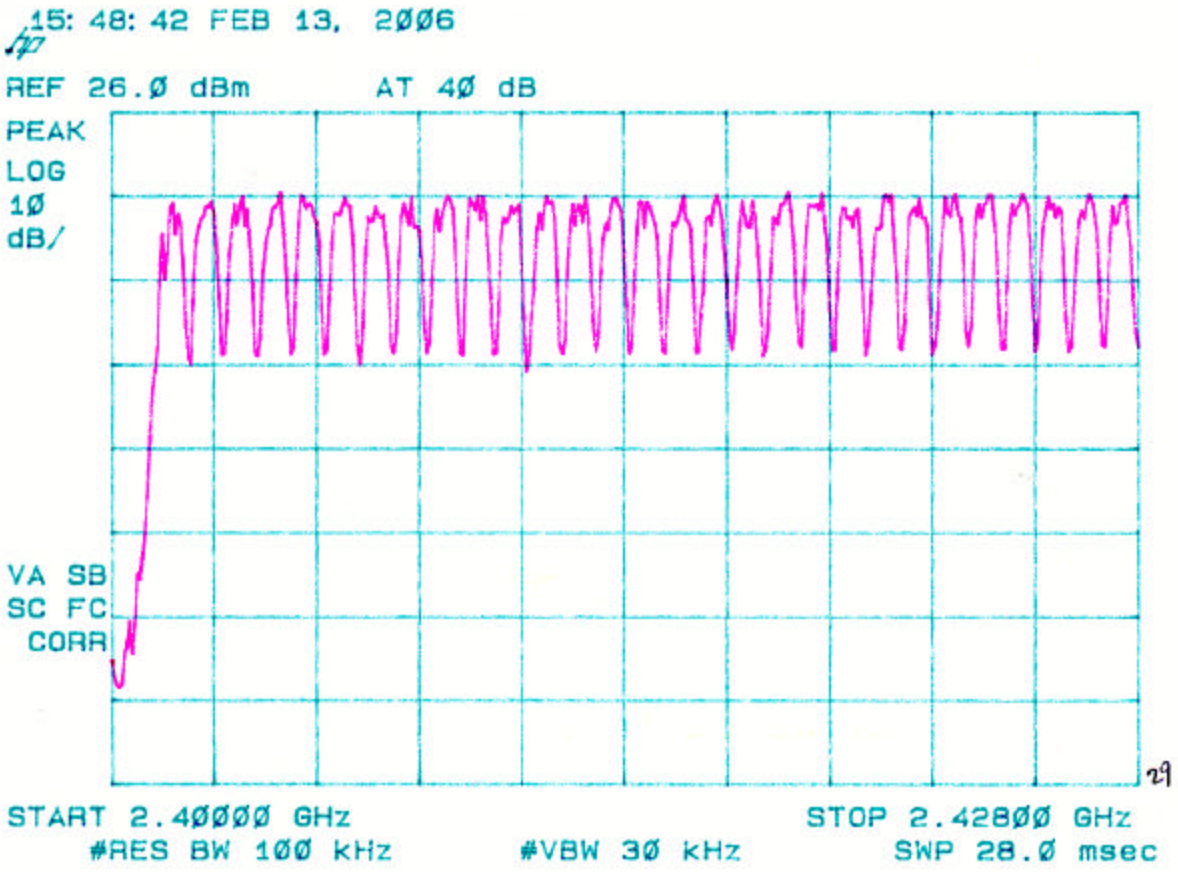


Figure 8b
Number of Hopping Channels FCC Section 15.247(a)(1)(ii)

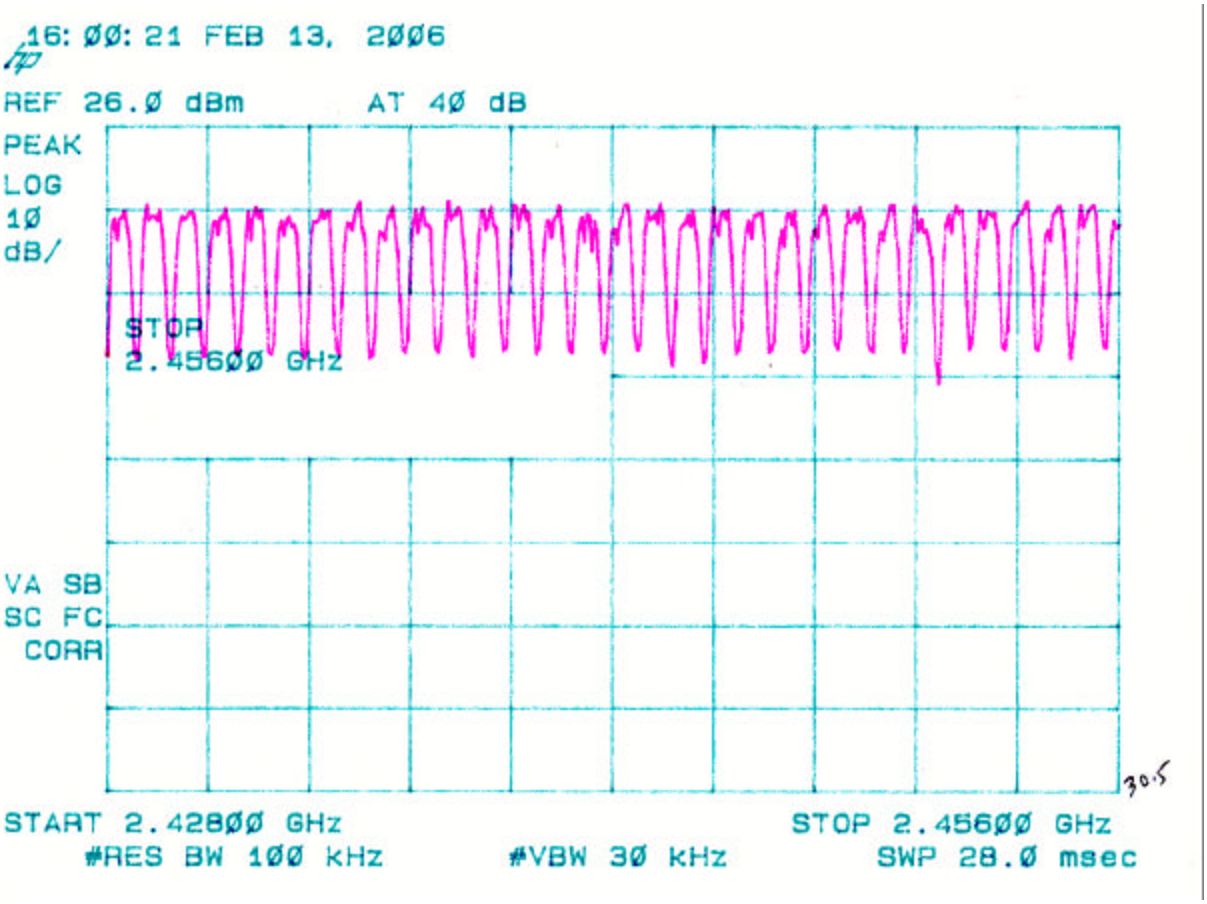
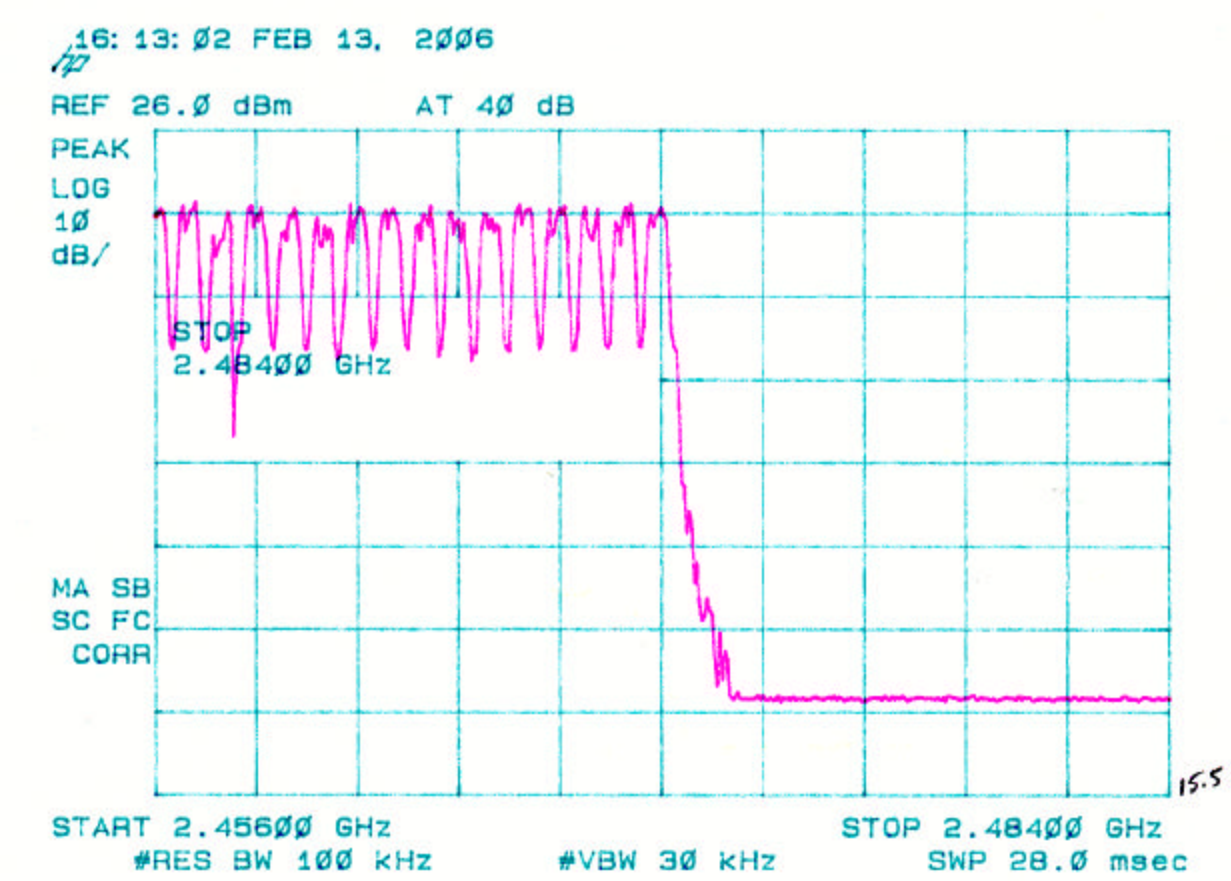


Figure 8c
Number of Hopping Channels FCC Section 15.247(a)(1)(ii)



2.13 Average Time of Occupancy per Channel FCC Section 15.247(a)(1)(ii)

Please refer to the Average Spurious Emissions portion of the report for details, and to Figure 9a-b.

Figure 9a

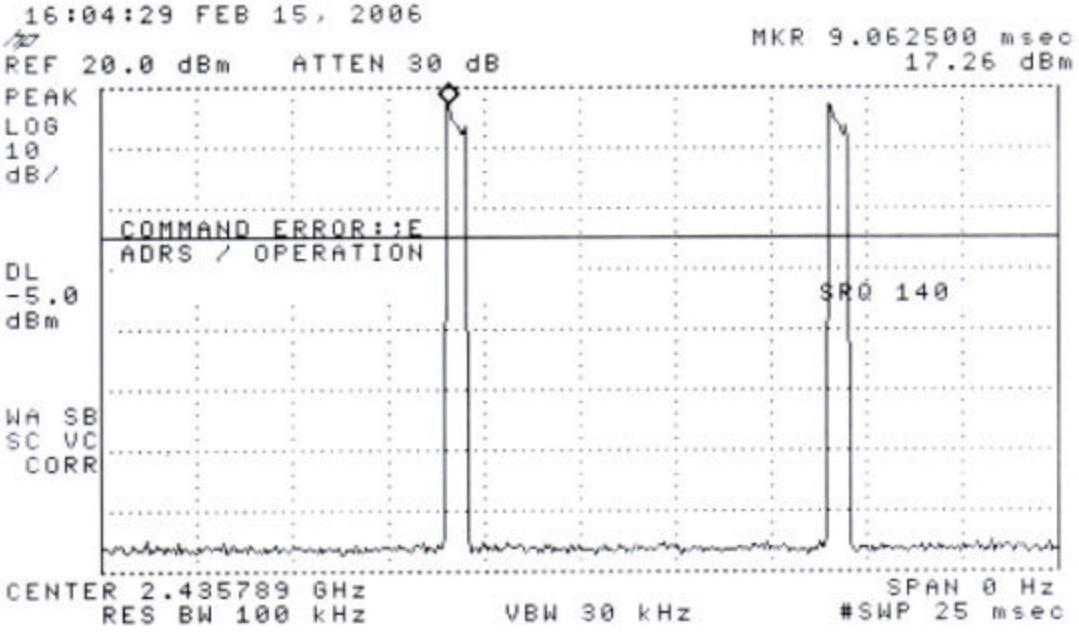
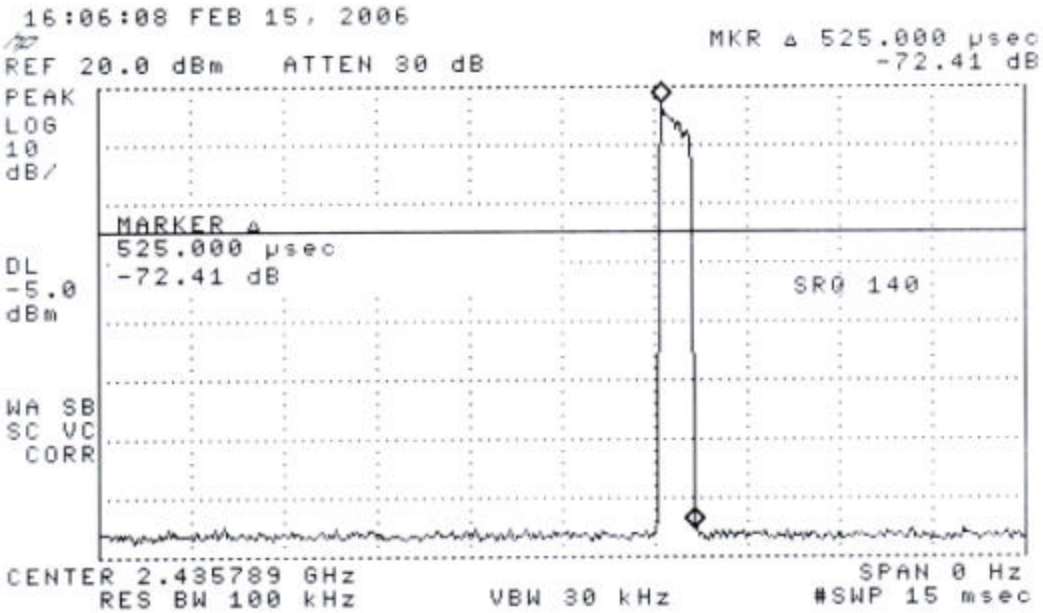


Figure 9b



2.14 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 Tables 8a-8b.

TABLE 8a. CONDUCTED EMISSIONS DATA

CLASS B

Test Date: February 26, 2006
UST Project: 05-0311
Customer: Cirronet
Model: WIT2410G

Worse Case Mode of Operaton (TX – Low channel)

(Peak/QP vs QP Limits)

.

Conducted Emissions								
Test By:	**Test:**	PK/QP vs QP Conducted Emissions			**Client:**	Cirronet		
AT	**Project:**	05-0311		**Class:**	**B**	**Model:**	WIT2410G	
Frequency	**Test Data**	**AF**	**Test Data**	**AF+CA-AMP**	**Results**	**Limits**	**Margin**	**PK = n**
(MHz)	**(dBm)**	**Table**	**(dBuV)**	**(dB)**	**(dBuV)**	**(dBuV)**	**(dB)**	**/ QP**
0.15	-43.0	LISNP	64.0	-0.2	63.8	65.8	**2.0**	**PK**
0.305	-50.0	LISNP	57.0	-0.1	56.9	60.1	**3.2**	**PK**
0.378	-59.0	LISNP	48.0	0.0	48.0	56.8	**8.8**	**PK**
0.455	-58.0	LISNP	49.0	0.0	49.0	58.3	**9.3**	**PK**
1.04	-63.0	LISNP	44.0	0.1	44.1	56.0	**11.9**	**PK**
1.19	-64.0	LISNP	43.0	0.2	43.2	56.0	**12.8**	**PK**
0.15	-47.0	LISNN	60.0	-0.2	59.8	66.0	**6.2**	**PK**
0.298	-51.0	LISNN	56.0	-0.1	55.9	60.3	**4.4**	**PK**
0.445	-59.0	LISNN	48.0	0.0	48.0	56.9	**8.9**	**PK**
1.043	-61.0	LISNN	46.0	0.1	46.1	56.0	**9.9**	**PK**
1.19	-62.0	LISNN	45.0	0.2	45.2	56.0	**10.8**	**PK**
1.788	-65.0	LISNN	42.0	0.2	42.2	56.0	**13.8**	**PK**

SAMPLE CALCULATIONS: 64.0 + -0.2 = 63.8 dBuV

Tester Signature:  **Name: Austin Thompson**

TABLE 8b. CONDUCTED EMISSIONS DATA

CLASS B

Test Date: February 26, 2006
UST Project: 05-0311
Customer: Cirronet
Model: WIT2410G

Worse Case Mode of Operaton (TX – Low channel)

(AVG vs Average Limits)

Conducted Emissions								
Test By:	**Test:**	AVG vs AVG Conducted Emissions				**Client:**	Cirronet	
AT	**Project:**	05-0311		**Class:**	**B**	**Model:**	WIT2410G	
Frequency	**Test Data**	**AF**	**Test Data**	**AF+CA-AMP**	**Results**	**Limits**	**Margin**	**PK = n**
(MHz)	**(dBm)**	**Table**	**(dBuV)**	**(dB)**	**(dBuV)**	**(dBuV)**	**(dB)**	**/ QP**
0.15	-60.0	LISNP	47.0	-0.2	46.8	55.8	**9.0**	**AVG**
0.305	-77.0	LISNP	30.0	-0.1	29.9	50.1	**20.2**	**AVG**
0.378	-88.1	LISNP	18.9	0.0	18.9	46.8	**27.9**	**AVG**
0.455	-75.0	LISNP	32.0	0.0	32.0	48.3	**16.3**	**AVG**
1.04	-84.0	LISNP	23.0	0.1	23.1	46.0	**22.9**	**AVG**
1.19	-85.0	LISNP	22.0	0.2	22.2	46.0	**23.8**	**AVG**
0.15	-64.0	LISNN	43.0	-0.2	42.8	56.0	**13.2**	**AVG**
0.298	-66.0	LISNN	41.0	-0.1	40.9	50.3	**9.4**	**AVG**
0.445	-72.0	LISNN	35.0	0.0	35.0	46.9	**11.9**	**AVG**
1.043	-83.0	LISNN	24.0	0.1	24.1	46.0	**21.9**	**AVG**
1.19	-83.0	LISNN	24.0	0.2	24.2	46.0	**21.8**	**AVG**
1.788	-94.6	LISNN	12.4	0.2	12.6	46.0	**33.4**	**AVG**

SAMPLE CALCULATIONS: 47.0 + -0.2 = 46.8 dBuV

.

Tester Signature:  **Name: Austin Thompson**

2.15 Radiated Emissions for Digital Device & Receiver (47 CFR 15.109a)

Radiated emissions were evaluated from 30 to 14500 MHz while the EUT was placed into a Receive mode of operation. Measurements were made with the analyzer's bandwidth set to 120 kHz measurements made less than 1 GHz and 1 MHz for measurements made greater than or equal to 1 GHz. The results for less than 1 GHz are shown in Table 9.

TABLE 9. RADIATED EMISSIONS DATA
(Digital Device & Receiver)

CLASS B

Test Date: December 8, 2005
UST Project: 05-0311
Customer: Cirronet
Product: WIT2410G

Radiated Emissions								
Test By:	**Test:**	FCC Part 15 - Permissive Change				**Client:**	Cirronet	
	Project:	05-0311		**Class:**	**B**	**Model:**	WIT-2410	
Frequency Range		**Table**	**Model**		**S/N**	**Valid**	**Calibrated:**	
		OATS	Cable: 75ft.		S/N	Yes	1/Septernber/2005	
		NCR3V	Model: E:100		S/N 172	Yes	19/Sep/2005	
Frequency	**Test Data**	**AF**	**Test Data**	**AF+CA-AMP**	**Results**	**Limits**	**Margin**	**PK = n**
(MHz)	**(dBm)**	**Table**	**(dBuV)**	**(dB)**	**(uV/m)**	**(uV/m)**	**(dB)**	**/ QP**
43.00	-92.0	NCR3V	15.0	12.1	22.6	100.0	**12.9**	**PK = n**
41.6	-92.0	NCR3V	15.0	12.2	22.8	100.0	**12.8**	**PK = n**
38	-89.0	NCR3V	18.0	12.1	32.0	100.0	**9.9**	**PK = n**
40.8	-86.0	NCR3V	21.0	12.2	45.5	100.0	**6.8**	**QP**
44.2	-86.0	NCR3V	21.0	12.1	45.1	100.0	**6.9**	**PK = n**
47.9	-87.0	NCR3V	20.0	12.0	39.7	100.0	**8.0**	**PK = n**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-92.0 + 12.1 + 107)/20) = 22.6
CONVERSION FROM dBm TO dBuV = 107 dB

Tester Signature:  **Name: Austin Thompson**

.2.16 Power Line Conducted Emissions for Digital Device and Receiver
FCC Section 15.107

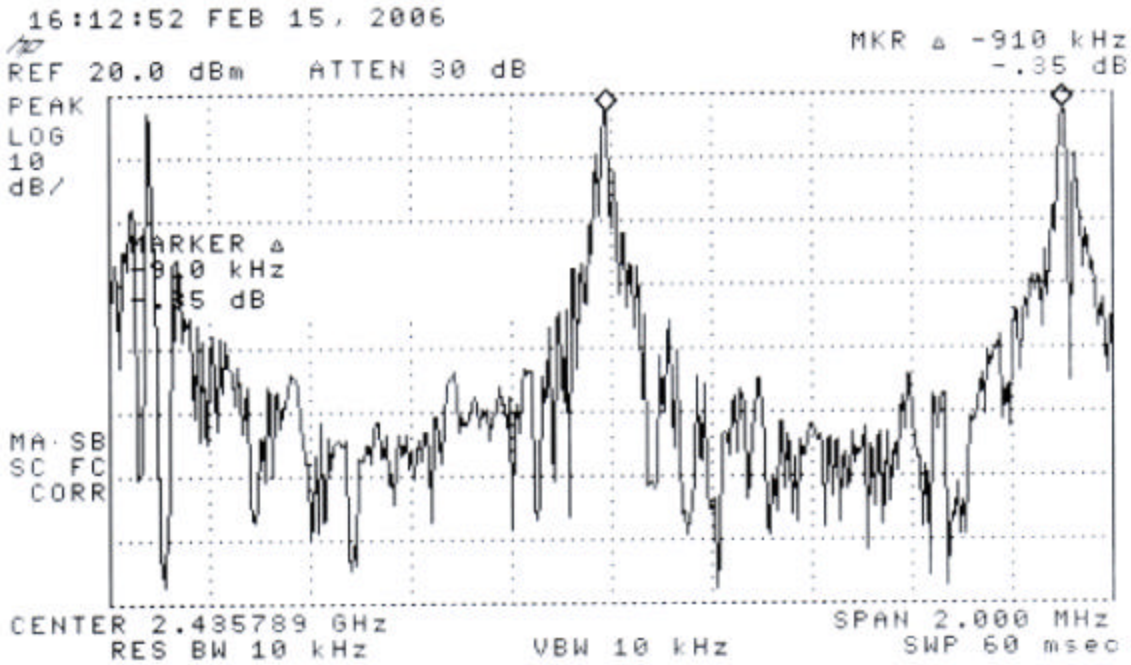
The conducted voltage measurements have been carried out in accordance with FCC Section 15.107, with a spectrum analyzer connected to a LISN and the EUT placed into an idle condition or a continuous mode of receive. Similar results were seen as compared to the EUT in a transmit mode of operation. **Therefore, please refer to the results as shown in Table 8.**

2.17 Channel Separation (15.247(a)(1))

The transmitter was placed into a typical frequency hopping mode of operation. The 2388 – 2488 MHz band was centered on the screen and the RBW and VBW chosen such that the individual channels could be discerned. The trace capture time was a minimum of 20msec.

Results are shown in Figure 10a.

Figure 10a


16:12:52 FEB 15, 2006
MKR Δ -910 kHz
-.35 dB
REF 20.0 dBm
ATTEN 30 dB
PEAK
LOG
10
dB/
MARKER Δ
-910 kHz
-.35 dB
MA SB
SC FC
CORR
CENTER 2.435789 GHz
RES BW 10 kHz
VBW 10 kHz
SPAN 2.000 MHz
SWP 60 msec