



## TEST DATA REPORT

Report Number: 100497156MIN-001

Project Number: G100497156

Testing performed on the  
SPT-M1-8519-1

to

47 CFR, Part 22:2010, Enclosure Spurious Radiated Emissions  
47 CFR, Part 24:2010, Enclosure Spurious Radiated Emissions

For

LGC Wireless, LLC - a TE Connectivity Company

Test Performed by:  
Intertek Testing Services NA, Inc.  
7250 Hudson Blvd., Suite 100  
Oakdale, MN 55128 USA

Test Authorized by:  
LGC Wireless, LLC - a TE Connectivity Company  
541 E Trimble Road  
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Date: September 2, 2011

Reviewed by: NShpilsher  
Norman Shpilsher

Date: September 2, 2011

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## 1.0 DESCRIPTION OF THE SAMPLE (EUT)

<b>Model:</b>	SPT-M1-8519-1
<b>Type of EUT:</b>	Spectrum Cell P1/PCS P1 RFIC MRAU Repeater
<b>Frequency Range:</b>	869-894MHz (Cell Phone Band) 1930-1990MHz (PCS Band)
<b>Company:</b>	LGC Wireless, LLC - a TE Connectivity Company
<b>Customer:</b>	Sue Cyr
<b>Address:</b>	541 E. Trimble Road San Jose, CA 95131 USA
<b>Phone:</b>	408-952-2445
<b>Fax:</b>	408-952-2645
<b>e-mail:</b>	<a href="mailto:sue.cyr@te.com">sue.cyr@te.com</a>
<b>Test Standards:</b>	<input type="checkbox"/> EN 55022:2006 +A1:2007, Class [REDACTED] <input type="checkbox"/> EN 55011:2007 +A2:2007, Group [REDACTED], Class [REDACTED] <input checked="" type="checkbox"/> 47 CFR, Part 22:2010, Enclosure Spurious Radiated Emissions <input checked="" type="checkbox"/> 47 CFR, Part 24:2010, Enclosure Spurious Radiated Emissions <input type="checkbox"/> ICES-003, Issue 4:2004 <input type="checkbox"/> EN 55014-1:2006 <input type="checkbox"/> EN 61326-1:2006 <input type="checkbox"/> Class [REDACTED] for Radiated and Conducted Emissions <input type="checkbox"/> Basic Immunity Test Requirements <input type="checkbox"/> Immunity Test Requirements for Industrial Locations <input type="checkbox"/> EN 60601-1-2:2001 +A1:2006 <input type="checkbox"/> EN 61000-6-3:2007 <input type="checkbox"/> EN 61000-6-4:2007 <input type="checkbox"/> EN 61000-3-2:2006 <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001 +A2:2006 <input type="checkbox"/> EN 61000-6-1:2007 <input type="checkbox"/> EN 61000-6-2:2005 <input type="checkbox"/> EN 55024:1998 + A1:2001 + A2:2003
<b>Date Sample Submitted:</b>	September 1, 2011
<b>Test Work Started:</b>	September 1, 2011
<b>Test Work Completed:</b>	September 1, 2011
<b>Test Sample Conditions:</b>	<input type="checkbox"/> Damaged <input type="checkbox"/> Poor (Usable) <input checked="" type="checkbox"/> Good <input type="checkbox"/> Prototype <input checked="" type="checkbox"/> Production <input type="checkbox"/> Used

## 2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST STANDARD	TEST	RESULT
Part 22	Enclosure Spurious Radiated Emissions	Pass
Part 24	Enclosure Spurious Radiated Emissions	Pass

### 2.1 Statement of the Measurement Uncertainty

**Note:** The measured result in this report is within the specification limits by more than the measurement uncertainty; the measured result indicates that the product tested complies with the specification limit.

The expanded uncertainty ( $k = 2$ ) for radiated emissions from 30 to 1000 MHz has been determined to be:  $\pm 4$  dB at 10m and  $\pm 5.4$  dB at 3m

The expanded uncertainty ( $k = 2$ ) for conducted emissions from 150 kHz to 30 MHz has been determined to be:  
 $\pm 2.6$  dB

### 3.0 EQUIPMENT UNDER TEST

#### 3.1 Power Configuration

<b>Rated voltage:</b>	<input checked="" type="checkbox"/> 120VAC <input type="checkbox"/> 230VAC <input type="checkbox"/> 400VAC <input type="checkbox"/> VDC <input type="checkbox"/> Other:
<b>Rated current:</b>	Amp.
<b>Rated frequency:</b>	<input type="checkbox"/> 50Hz <input checked="" type="checkbox"/> 60Hz
<b>Number of phases:</b>	<input checked="" type="checkbox"/> 1 Phase <input type="checkbox"/> 3 Phases

#### 3.2 EUT Configuration

The equipment under test was operated during the measurement under the following conditions:

- Standby
- Test program (H - Pattern)
- Continuous Operation (see details below)
- Specific test program
- 

##### Operating modes of the EUT:

No.	Description
1	Continuous transmitting at 870MHz, 881MHz, and 893MHz
2	Continuous transmitting at 1931MHz, 1960MHz, and 1989MHz
3	RF Input setting: -12dBm; CW. The EUT antenna port was terminated.

##### Cables:

No.	Type	Length	Designation	Note
1	Two RF coax	10m each	RF signal cables to the Support Equipment	

##### Support equipment/Services:

No.	Item	Description
1	Agilent 8648C (located outside Test site)	Signal Generator
2	SPT-M1-AWS19-11(located outside Test site)	Distributed Antenna System / Repeater1
3	50Ohm, 40dB Terminator	Terminator

**General notes:** None



### 3.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

**Temperature:** 15-35 °C

**Humidity:** 30-60 %

**Atmospheric pressure:** 86-106 kPa



## 4.0 TEST CONDITIONS AND RESULTS

### 4.1 Enclosure Spurious Radiated Emissions

#### Description of the test location

**Test location:**         OATS             Anechoic Chamber

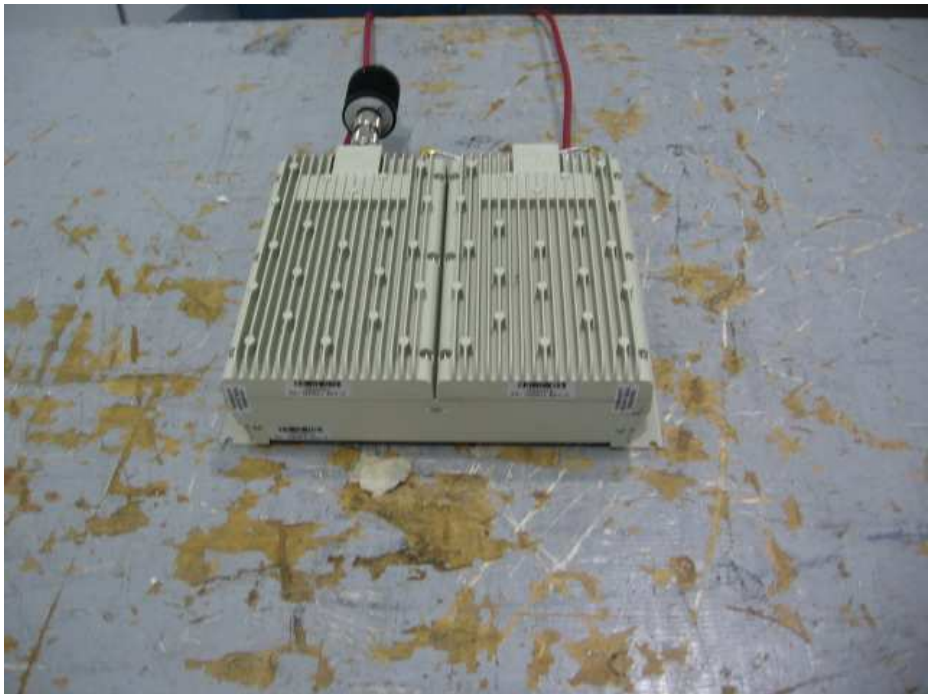
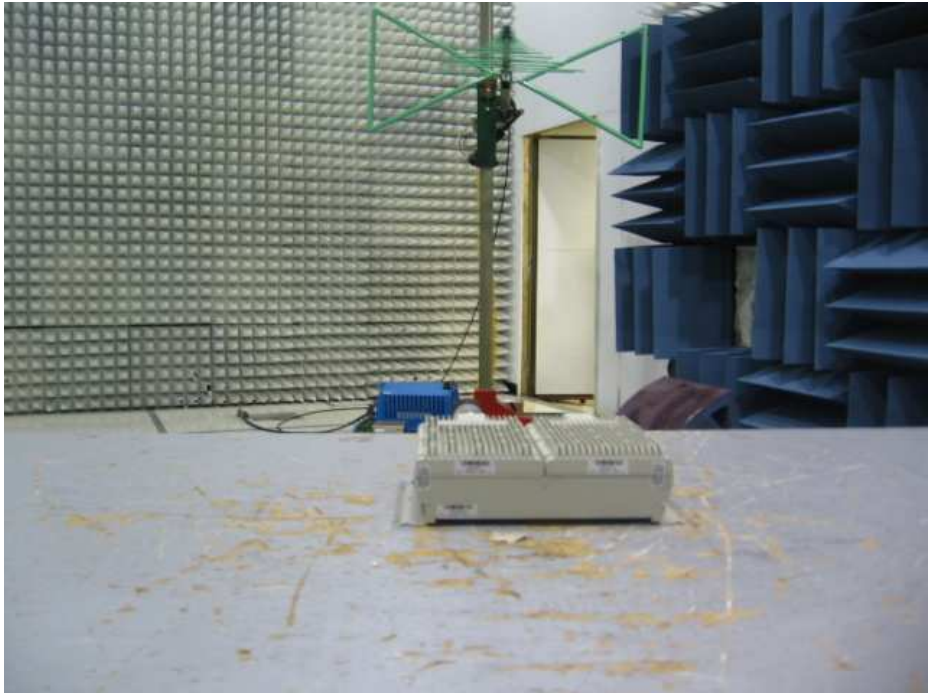
**Test distance:**        10 meters     3 meters

**Test result:**            **Pass**

**Frequency range:**            30MHz-10GHz for Cell Phone Band  
   30MHz-20GHz for PCS Band

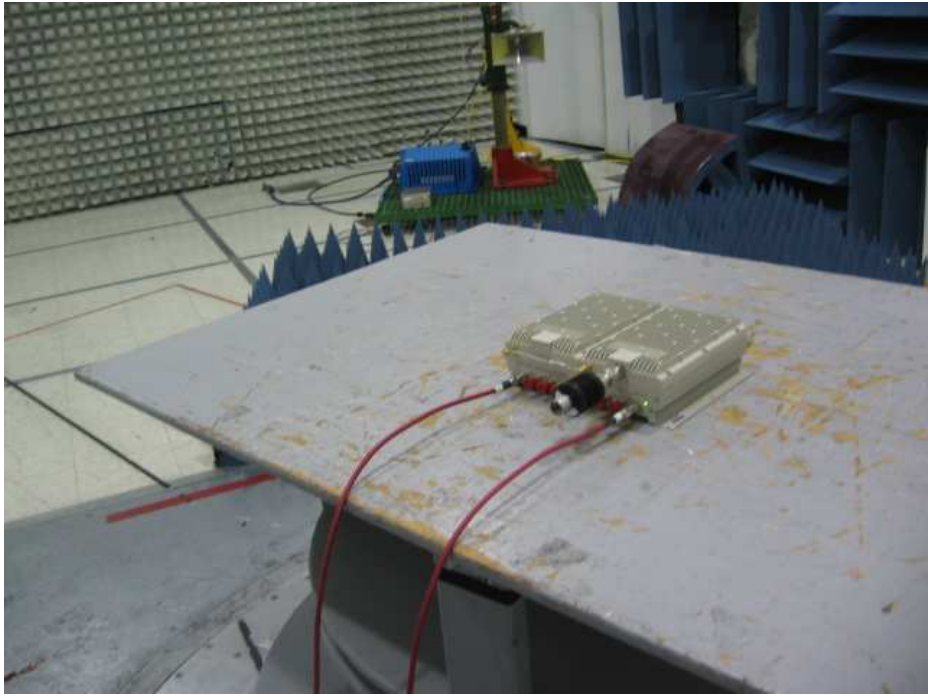
**Max. Emissions margin:**            8.7dB below the Limits

- Notes:**
1. The Radiated Emissions testing was performed in the Anechoic chamber at 3m measurement distance (see Tables 1 and 2 and Graphs 1-30)
  2. The Spurious Radiated Power limits of -13dBm was correlated with field strength Reference Limit of 82.2dB $\mu$ V/m during field strength pre-scan at 3m measurement distance (Graphs 1-30)
  3. Emissions with margin less than 20dB below the reference limit were measured with substitution method (see Tables 1 and 2)
  4. Emissions at operating frequencies were excluded from the Tables
-



Test Setup Photos





Test Setup Photos



<b>Date:</b>	September 1, 2011	<b>Result: Pass</b>
<b>Tested by:</b>	Norman Shpilsher	
<b>Standard:</b>	FCC Part 22, Cell Phone Band	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Note:</b>	Substitution Method	

**Table 1**

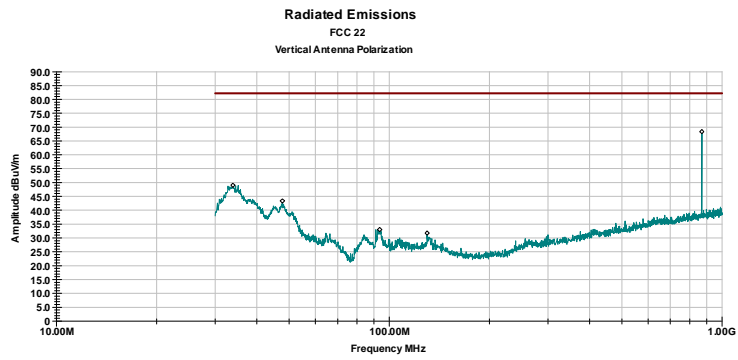
Frequency MHz	Antenna Polarity	Measured Emissions dB $\mu$ V	Substitution Antenna Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	Additional Loss/Gain dB	Emissions EIRP dBm	Limits dBm	Margin dB
1742.50	V	76.1	-29.2	8.5	1.0	0.0	-21.7	-13.0	-8.7
1762.75	V	81.2	-34.4	8.5	1.0	0.0	-26.9	-13.0	-13.9
2611.00	V	65.3	-41.3	9.6	1.4	0.0	-33.1	-13.0	-20.1
2642.50	V	66.7	-39.9	9.6	1.5	0.0	-31.7	-13.0	-18.7
1742.50	H	75.1	-35.4	8.5	1.0	0.0	-27.9	-13.0	-14.9
1762.75	H	80.2	-30.2	8.5	1.0	0.0	-22.7	-13.0	-9.7
2611.00	H	69.2	-37.6	9.6	1.4	0.0	-29.4	-13.0	-16.4
2642.50	H	70.7	-36.3	9.6	1.5	0.0	-28.1	-13.0	-15.1



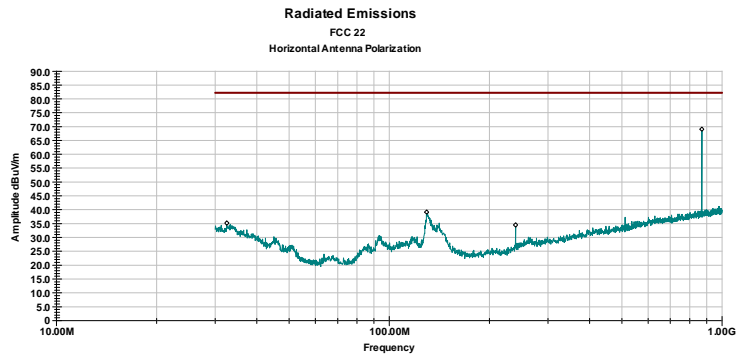
<b>Date:</b>	September 1, 2011	<b>Result: Pass</b>
<b>Tested by:</b>	Norman Shpilsher	
<b>Standard:</b>	FCC Part 24, PCS Band	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Note:</b>	Substitution Method	

**Table 2**

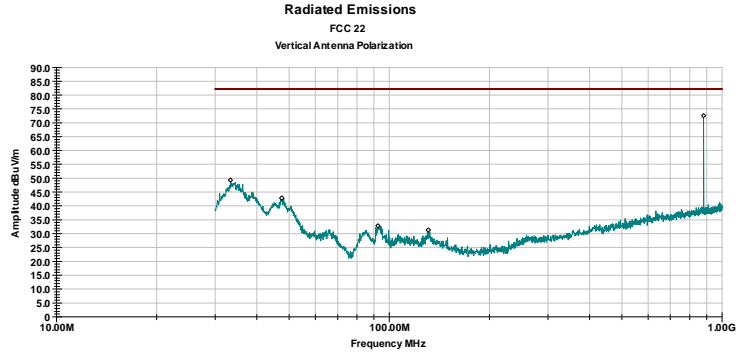
Frequency MHz	Antenna Polarity	Measured Emissions dB $\mu$ V	Substitution Antenna Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	Additional Loss/Gain dB	Emissions EIRP dBm	Limits dBm	Margin dB
3992.00	V	57.8	-43.2	9.7	2.3	0.0	-35.8	-13.0	-22.8
5882.00	V	59.4	-40.3	11.1	1.9	0.0	-31.1	-13.0	-18.1
3992.00	H	62.2	-41.4	9.7	2.3	0.0	-34.0	-13.0	-21.0
5882.00	H	61.5	-38.3	11.1	1.9	0.0	-29.1	-13.0	-16.1



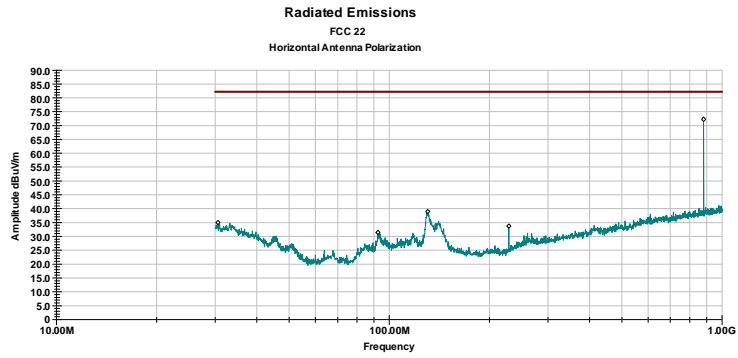
**Graph 1**



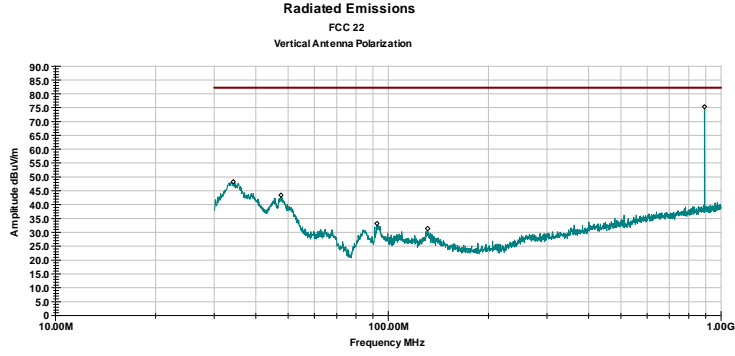
**Graph 2**



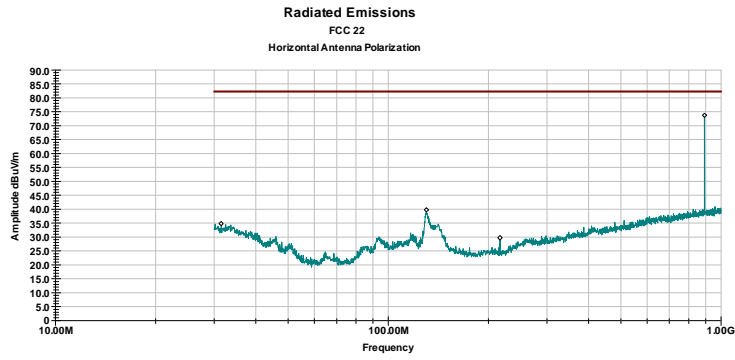
**Graph 3**



**Graph 4**

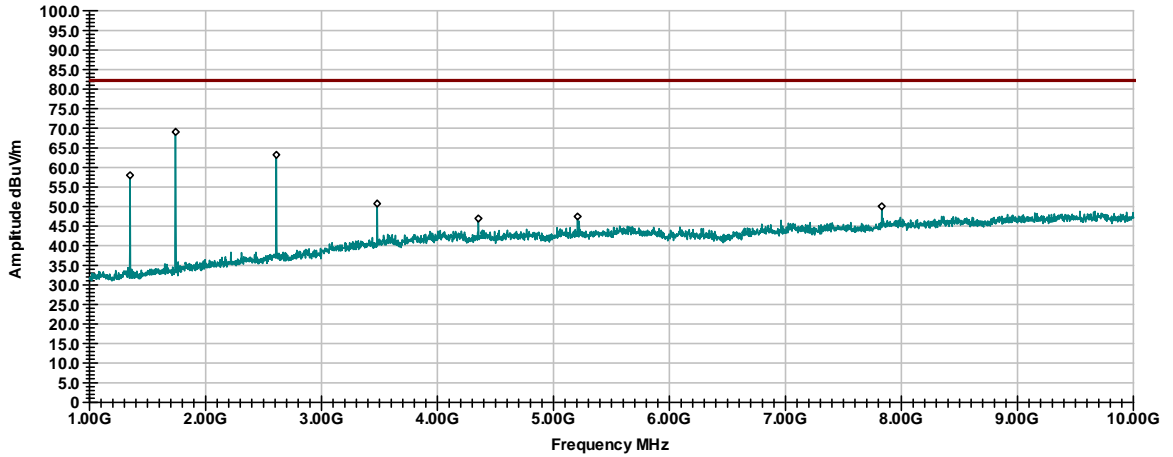


**Graph 5**



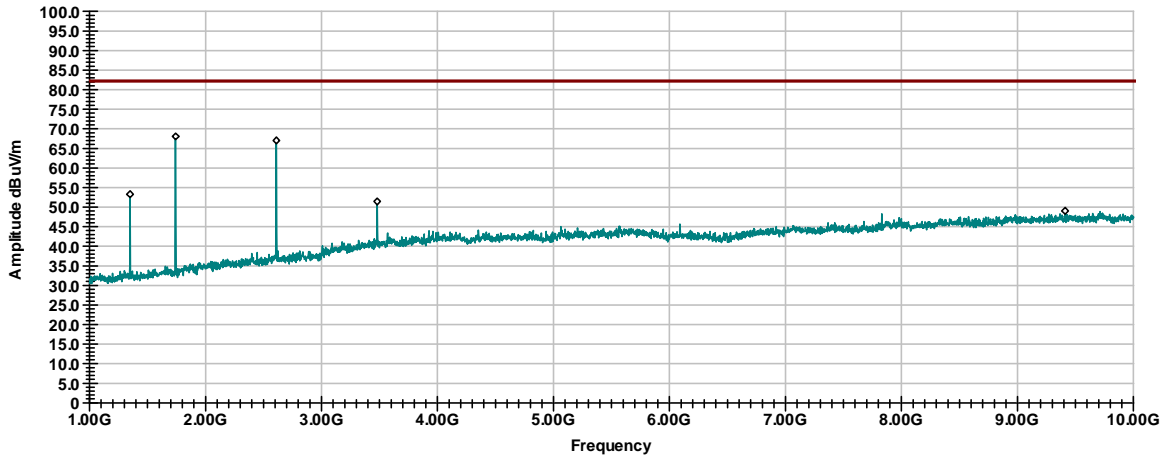
**Graph 6**

**Radiated Emissions**  
FCC Part 22  
Vertical Antenna Polarization



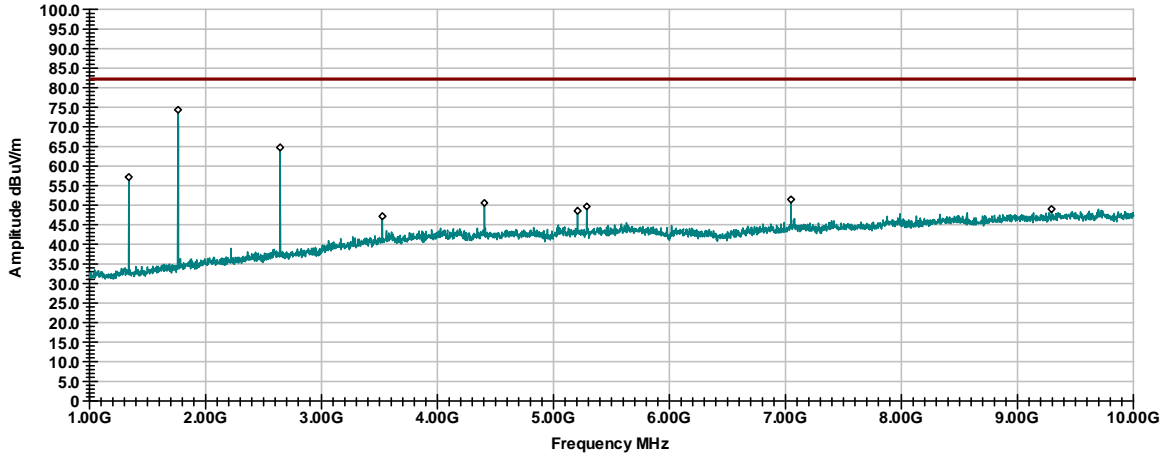
**Graph 7**

**Radiated Emissions**  
FCC Part 22  
Horizontal Antenna Polarization



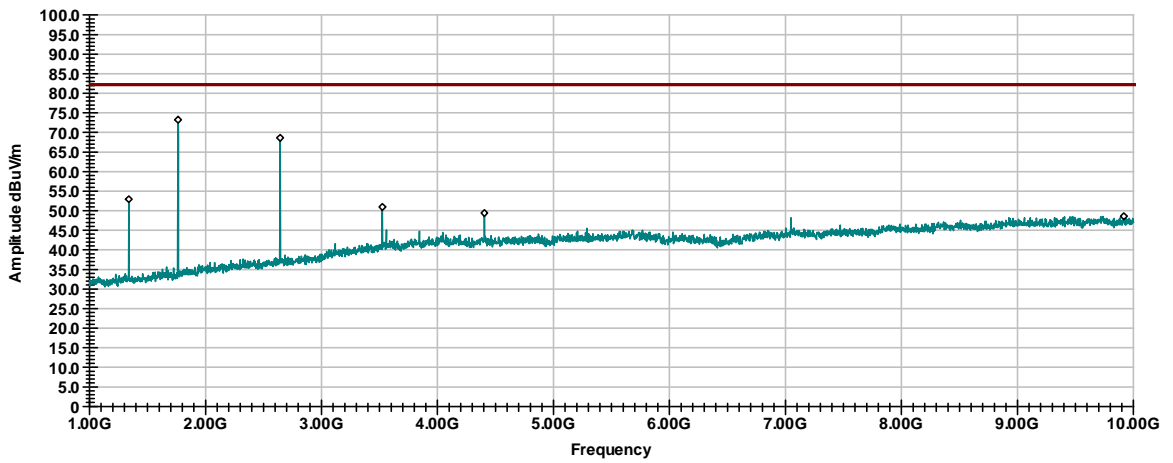
**Graph 8**

**Radiated Emissions**  
FCC Part 22  
Vertical Antenna Polarization



**Graph 9**

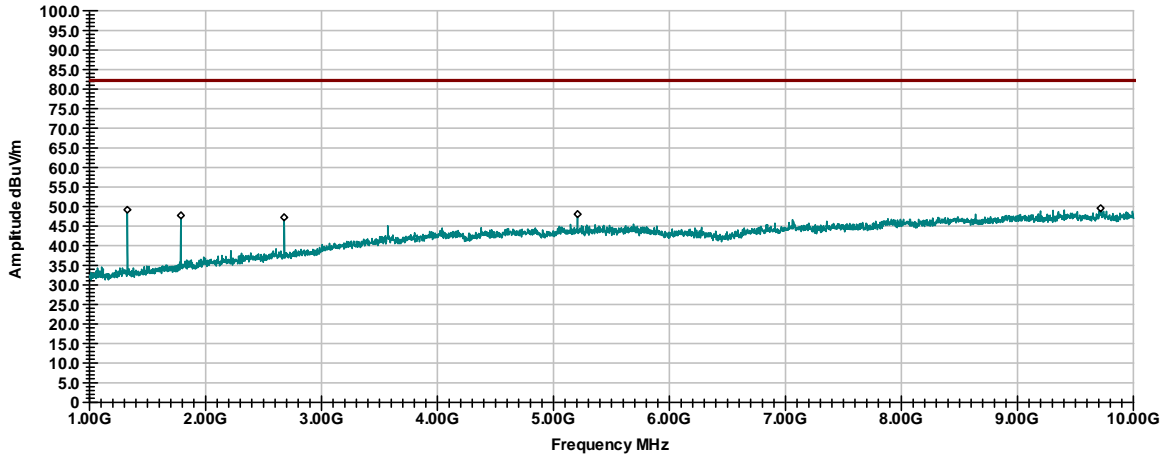
**Radiated Emissions**  
FCC Part 22  
Horizontal Antenna Polarization



**Graph 10**

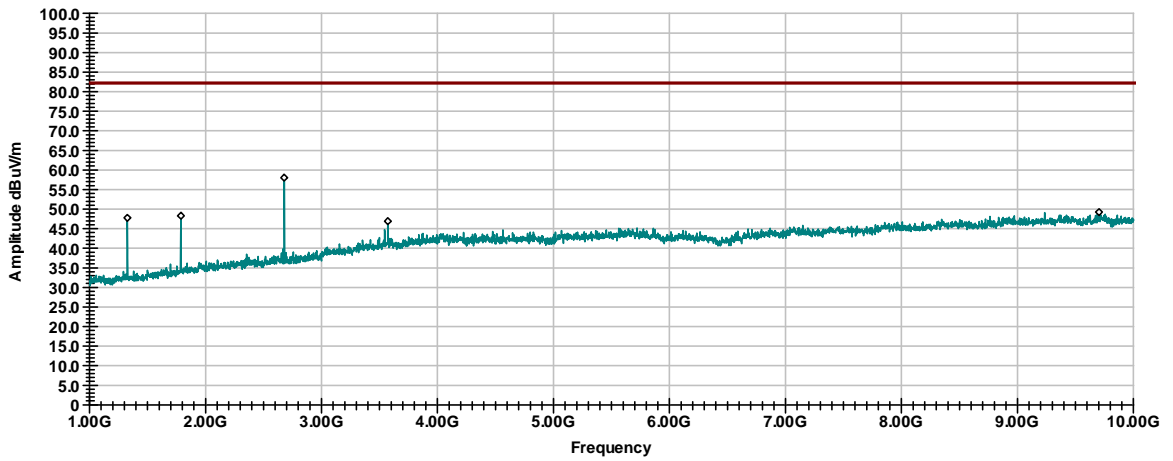


**Radiated Emissions**  
FCC Part 22  
Vertical Antenna Polarization



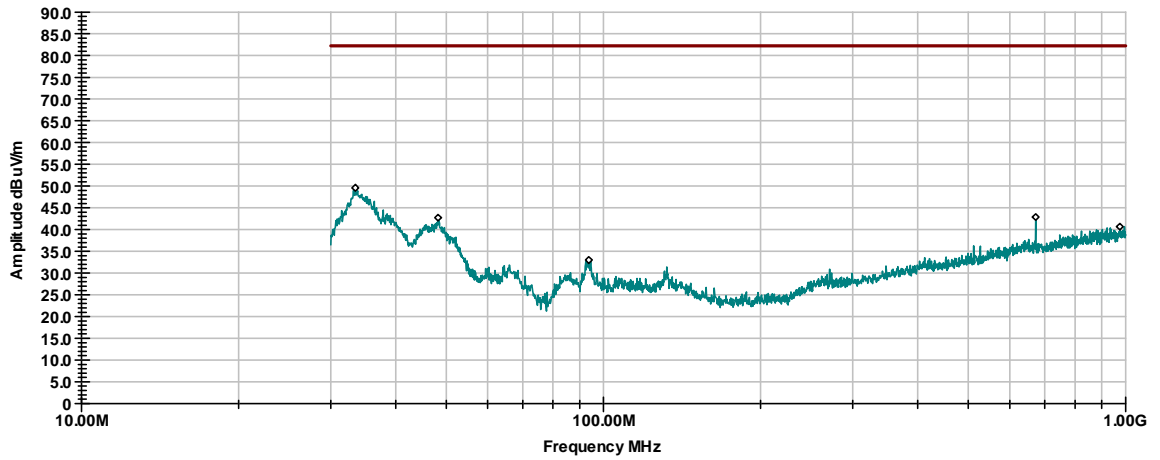
**Graph 11**

**Radiated Emissions**  
FCC Part 22  
Horizontal Antenna Polarization



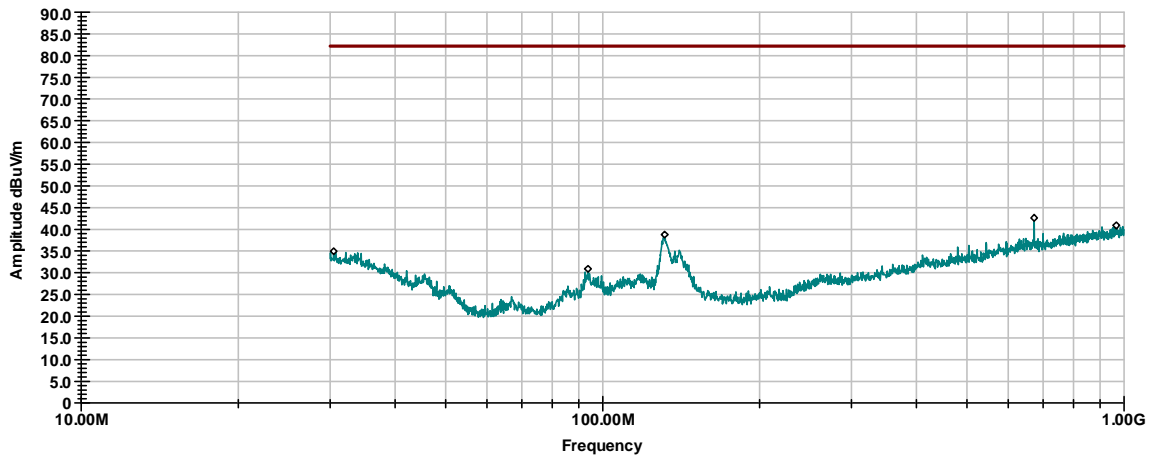
**Graph 12**

**Radiated Emissions**  
FCC 24  
Vertical Antenna Polarization



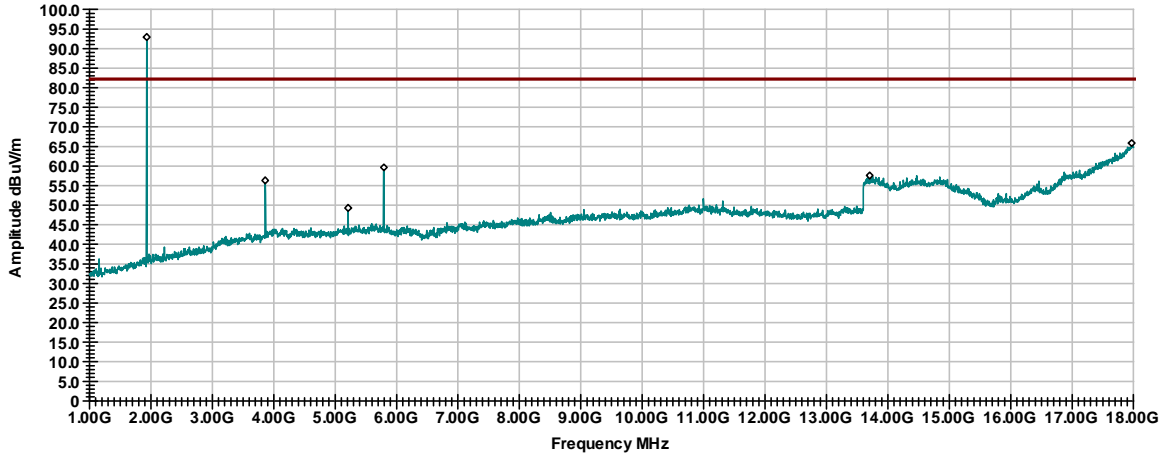
**Graph 13**

**Radiated Emissions**  
FCC 24  
Horizontal Antenna Polarization



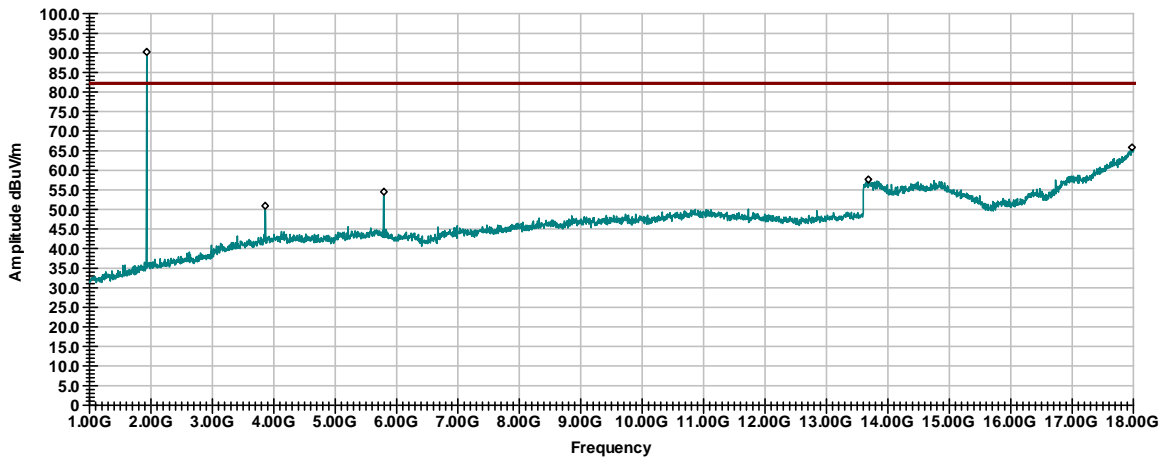
**Graph 14**

**Radiated Emissions**  
FCC Part 24  
Vertical Antenna Polarization



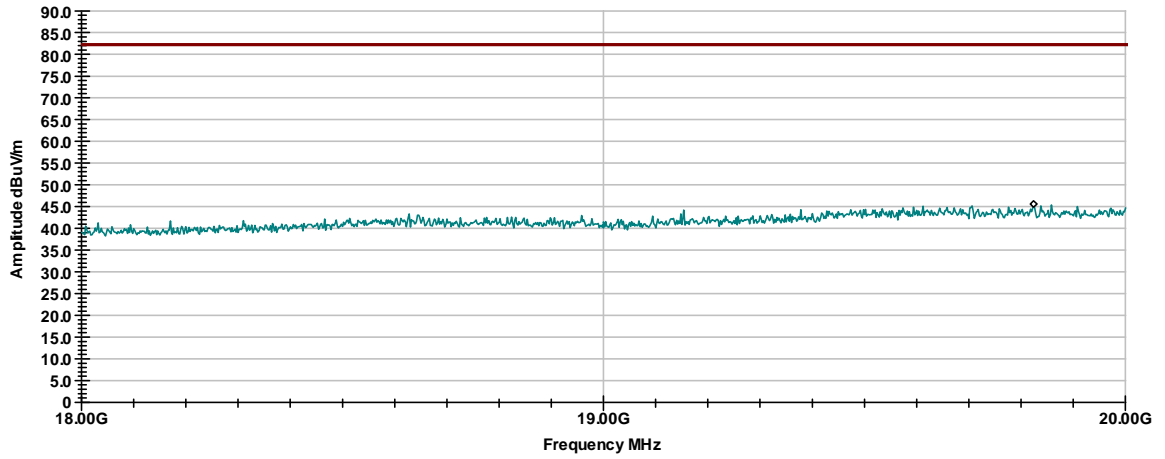
**Graph 15**

**Radiated Emissions**  
FCC Part 24  
Horizontal Antenna Polarization



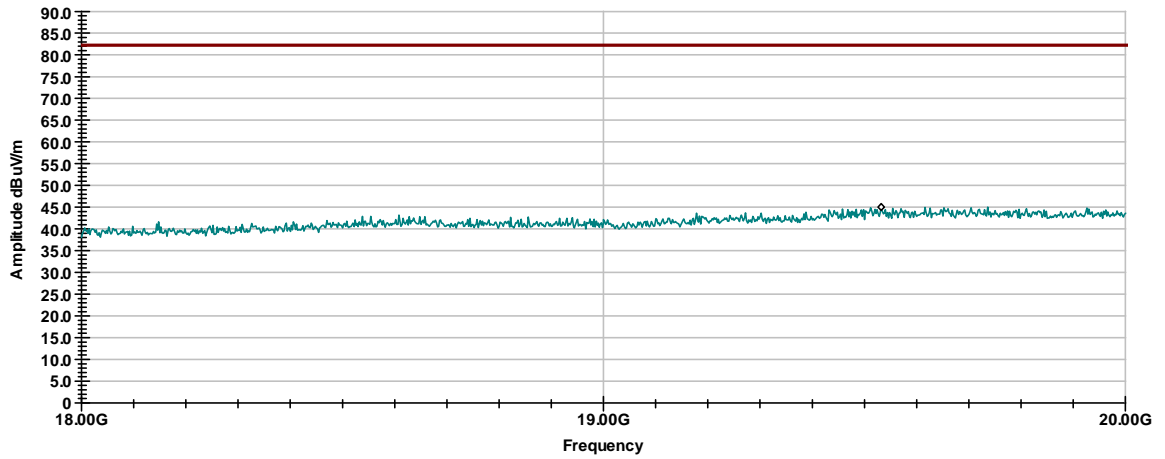
**Graph 16**

**Radiated Emissions**  
FCC 24  
Vertical Antenna Polarization



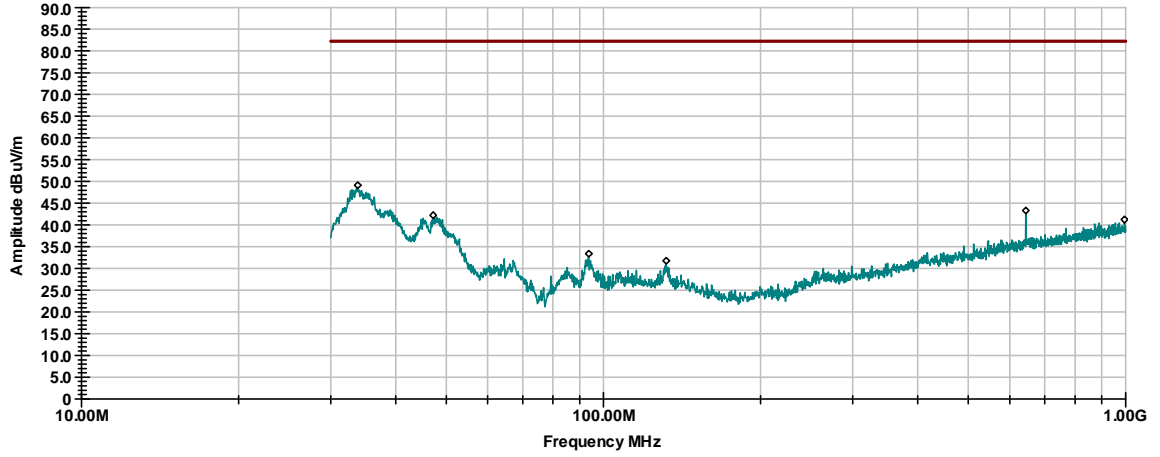
**Graph 17**

**Radiated Emissions**  
FCC 24  
Horizontal Antenna Polarization



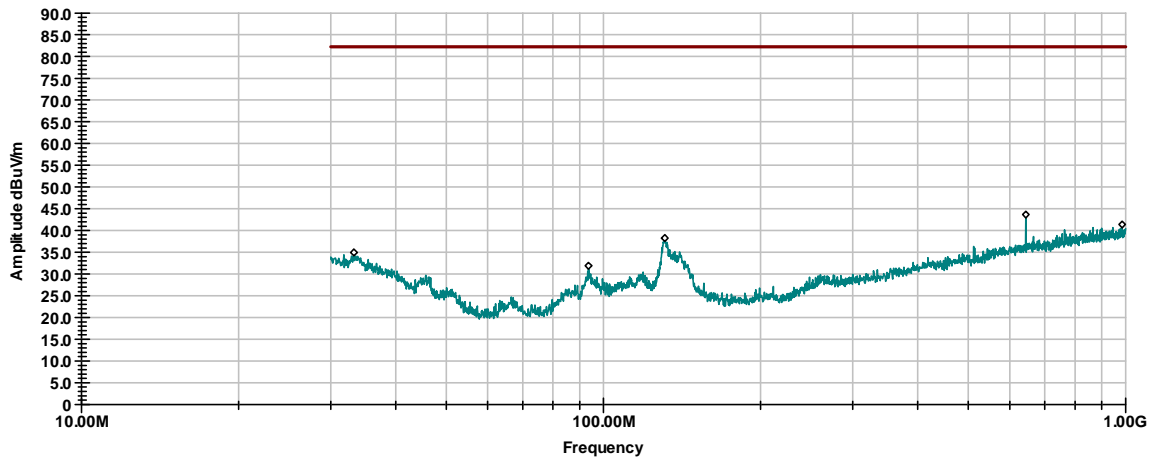
**Graph 18**

**Radiated Emissions**  
FCC 24  
Vertical Antenna Polarization



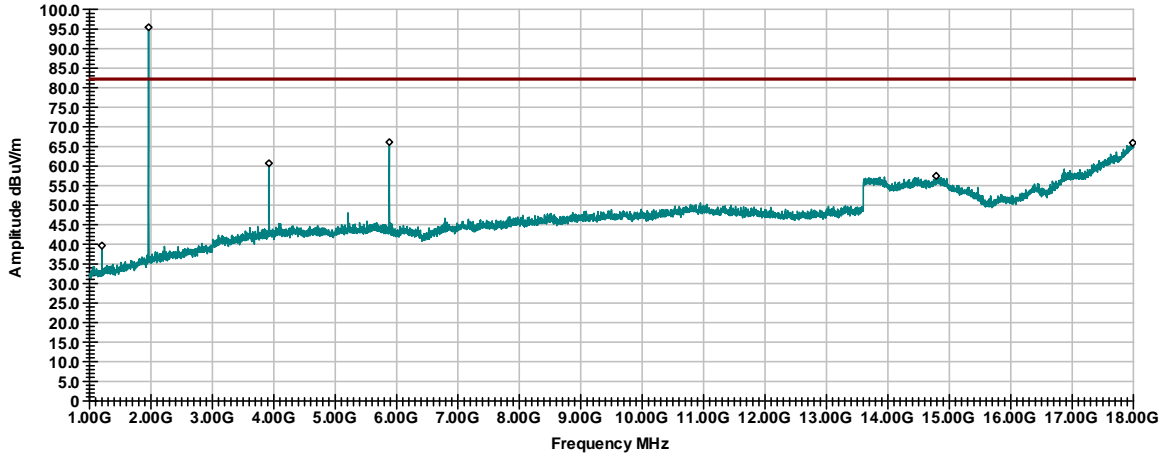
**Graph 19**

**Radiated Emissions**  
FCC 24  
Horizontal Antenna Polarization



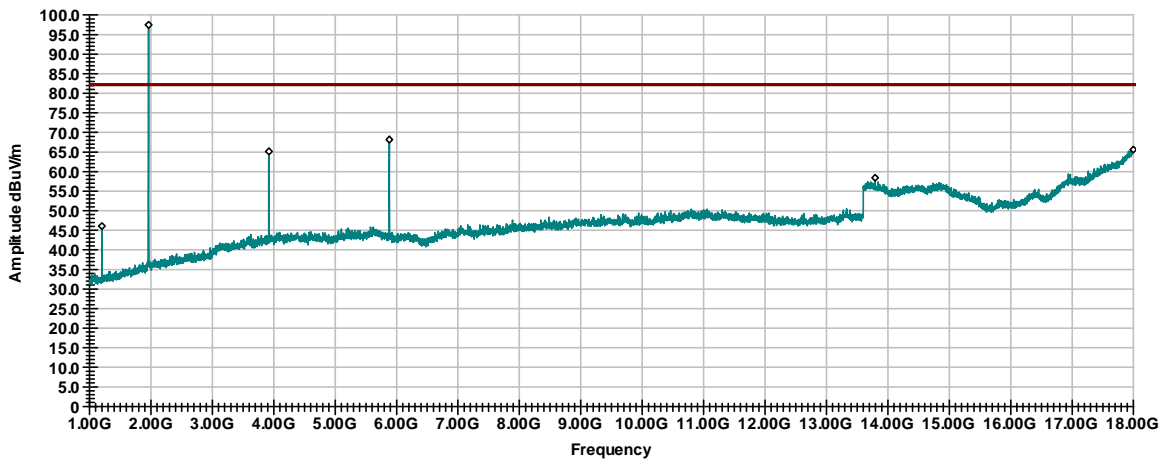
**Graph 20**

**Radiated Emissions**  
FCC Part 24  
Vertical Antenna Polarization



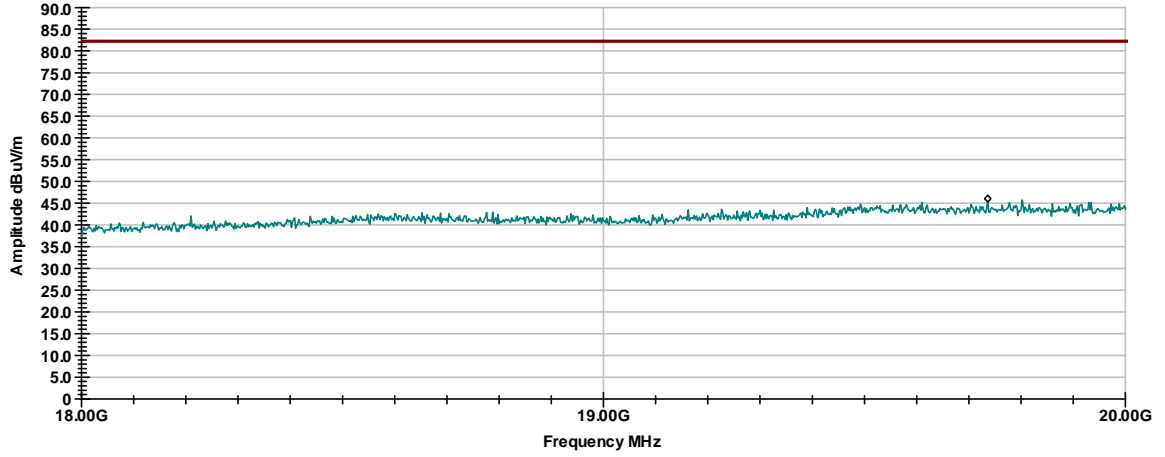
**Graph 21**

**Radiated Emissions**  
FCC Part 24  
Horizontal Antenna Polarization



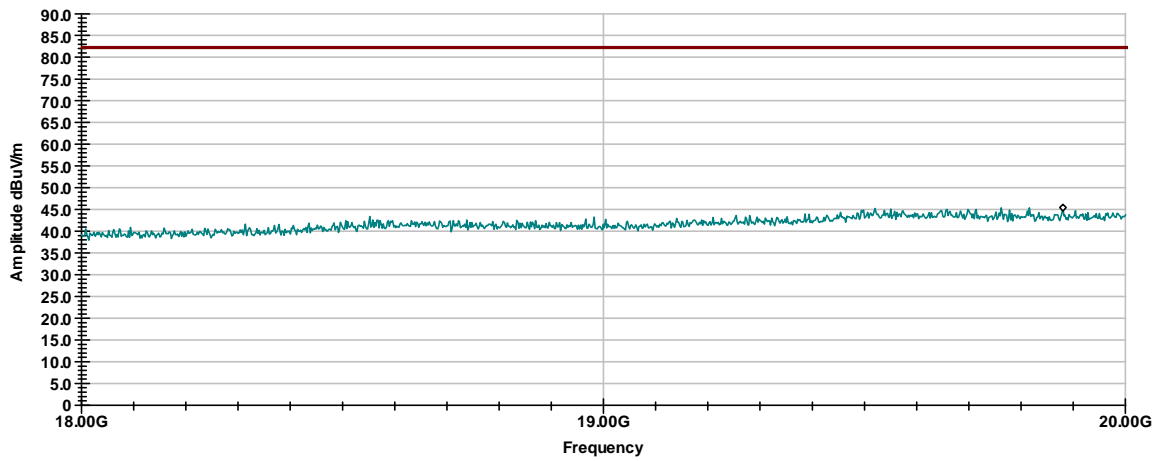
**Graph 22**

**Radiated Emissions**  
FCC 24  
Vertical Antenna Polarization



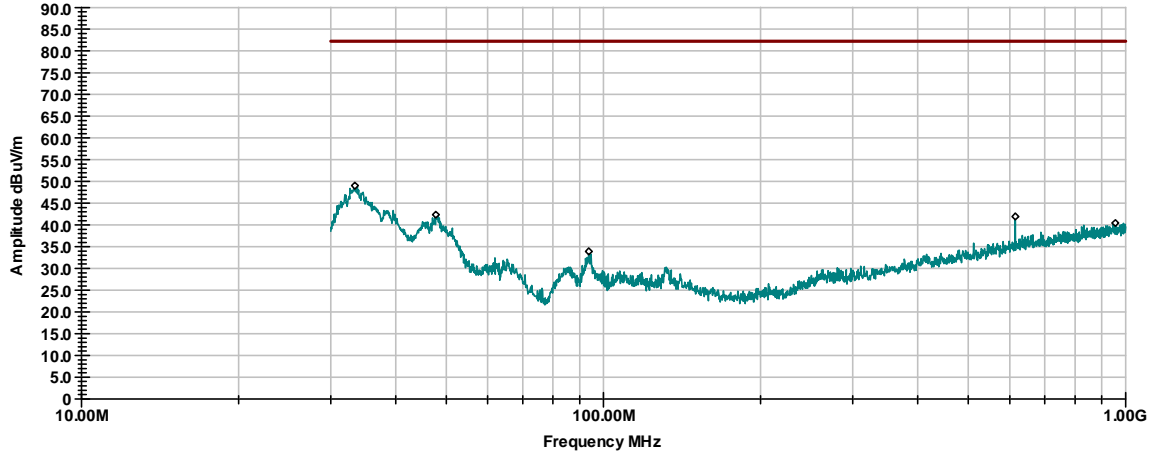
**Graph 23**

**Radiated Emissions**  
FCC 24  
Horizontal Antenna Polarization



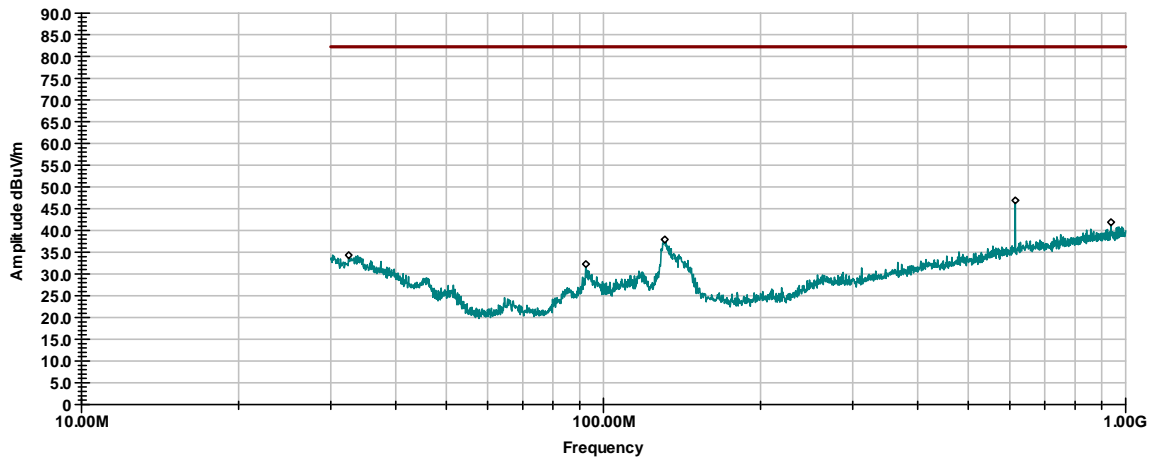
**Graph 24**

**Radiated Emissions**  
FCC 24  
Vertical Antenna Polarization



**Graph 25**

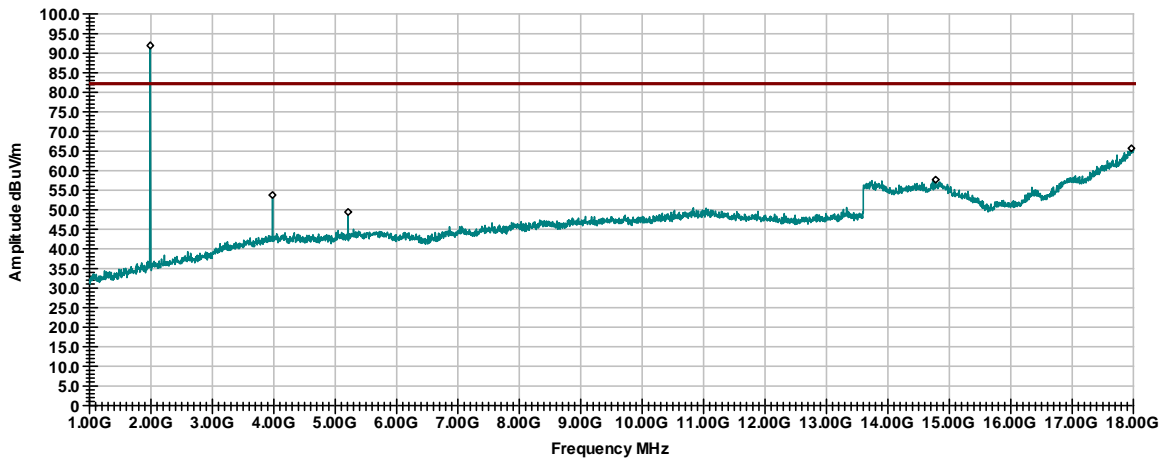
**Radiated Emissions**  
FCC 24  
Horizontal Antenna Polarization



**Graph 26**

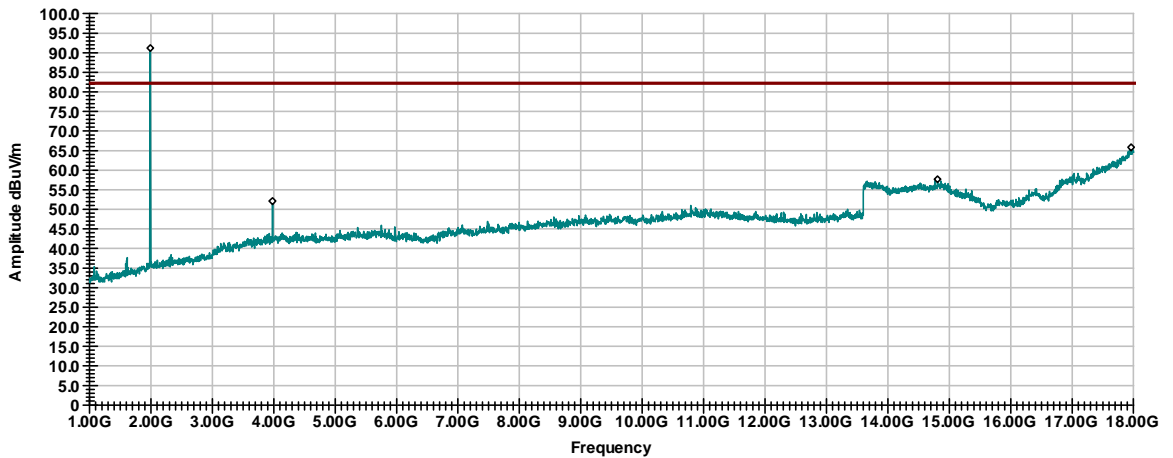


**Radiated Emissions**  
FCC Part 24  
Vertical Antenna Polarization



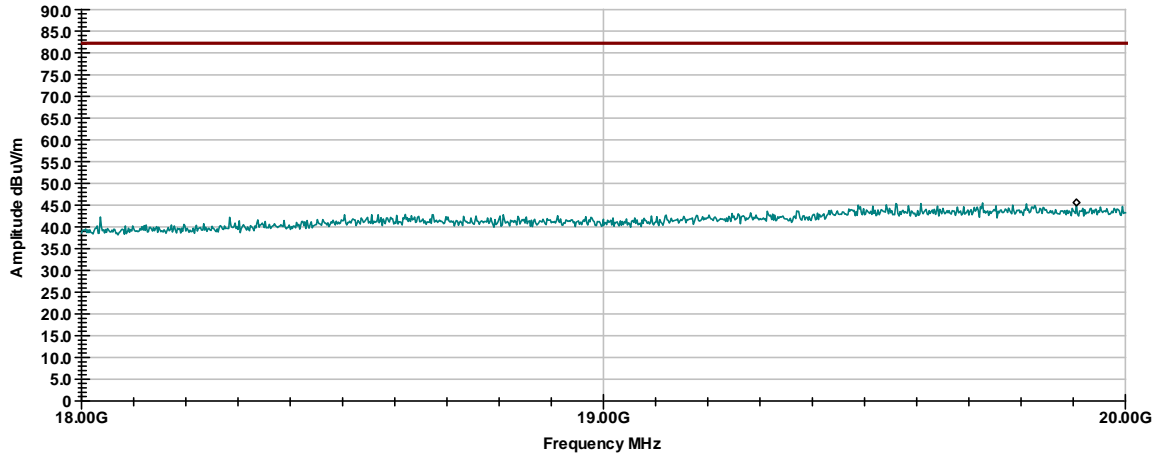
**Graph 27**

**Radiated Emissions**  
FCC Part 24  
Horizontal Antenna Polarization



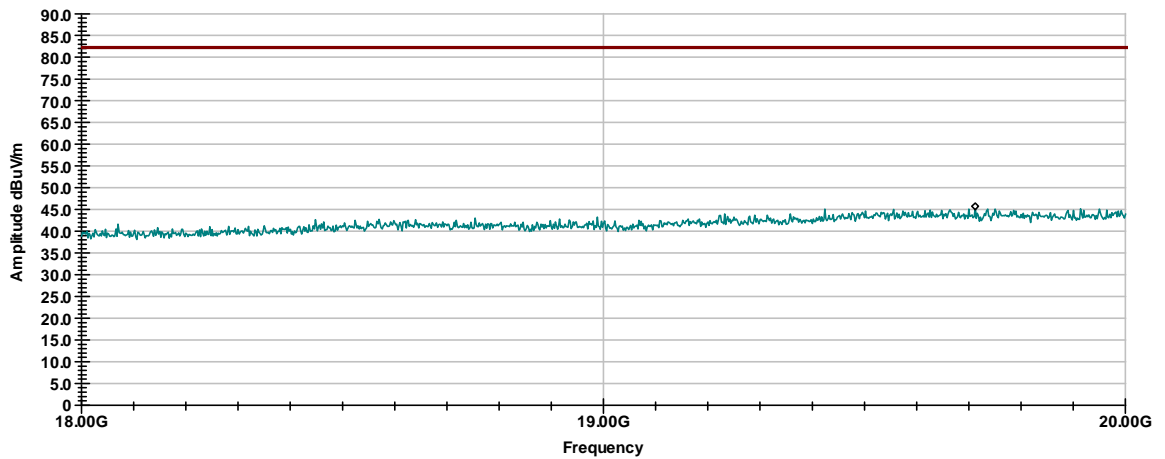
**Graph 28**

**Radiated Emissions**  
FCC 24  
Vertical Antenna Polarization



**Graph 29**

**Radiated Emissions**  
FCC 24  
Horizontal Antenna Polarization



**Graph 30**



## 5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	R & S	FSP 40	100024	12559	12/07/2011	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESCI	100358	12909	05/12/2012	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	14459	10/18/2011	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	9507-4513	9936	04/29/2012	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	6579	15580	05/25/2012	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1122951	13475	10/06/2011	<input checked="" type="checkbox"/>
System	TILE! Instrument Control		Ver. 3.4.K.29	15259	VBU	<input checked="" type="checkbox"/>
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	10/04/2011	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	MIN-0065	10/06/2011	<input checked="" type="checkbox"/>

