



TEST REPORT

Report Number: 100488883MIN-001

Project Number: G100488883

Testing performed on the
Spectrum 700 Path 1 / 700 Path 2 MIMO RFIC Secondary Remote Antenna Unit

to
47 CFR, Part 27:2009, Enclosure Spurious Radiated Emissions

For
TE Connectivity / LGC Wireless

Test Performed by:
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Test Authorized by:
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Date: August 23, 2011

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Norman Shpilsher

Date: August 23, 2011

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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	Spectrum 700 Path 1 / 700 Path 2 MIMO RFIC Secondary Remote Antenna Unit SPT-S1-7070-1-MIMO
Type of EUT:	Repeater / Booster
Operating Frequency Range:	728 – 756MHz
Company:	TE Connectivity / LGC Wireless
Customer:	Sue Cyr
Address:	541 E. Trimble Road San Jose, CA 95131 USA
Phone:	408-952-2445
Fax:	408-952-2645
e-mail:	sue.cyr@te.com
Test Standards:	<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 27:2009, 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
Date Sample Submitted:	August 17, 2011
Test Work Started:	August 17, 2011
Test Work Completed:	August 17, 2011
Test Sample Conditions:	<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 27	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: ± 4 dB at 10m and ± 5.4 dB at 3m

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



3.0 EQUIPMENT UNDER TEST

3.1 Power Configuration

Rated voltage:	<input checked="" type="checkbox"/> 120VAC <input type="checkbox"/> 230VAC <input type="checkbox"/> 400VAC <input type="checkbox"/> VDC <input type="checkbox"/> Other:
Rated current:	Amp.
Rated frequency:	<input type="checkbox"/> 50Hz <input checked="" type="checkbox"/> 60Hz
Number of phases:	<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 amplifying at 729MHz 742MHz and 755MHz

Cables:

No.	Type	Length	Designation	Note
1	Two RF coax cables	10m each	RF input and output RF cables	

Support equipment/Services:

No.	Item	Description
1	Agilent 8648C	Signal Generator
2	Prism Host Unit p/n 1449226	Host Unit
3	IFEU p/n MR2216G7	54 V Power Supply
4	Prism DRU unit	DRU
5	Spectrum IFEU Unit	IFEU
6	Spectrum Main RAU	Remote Antenna

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

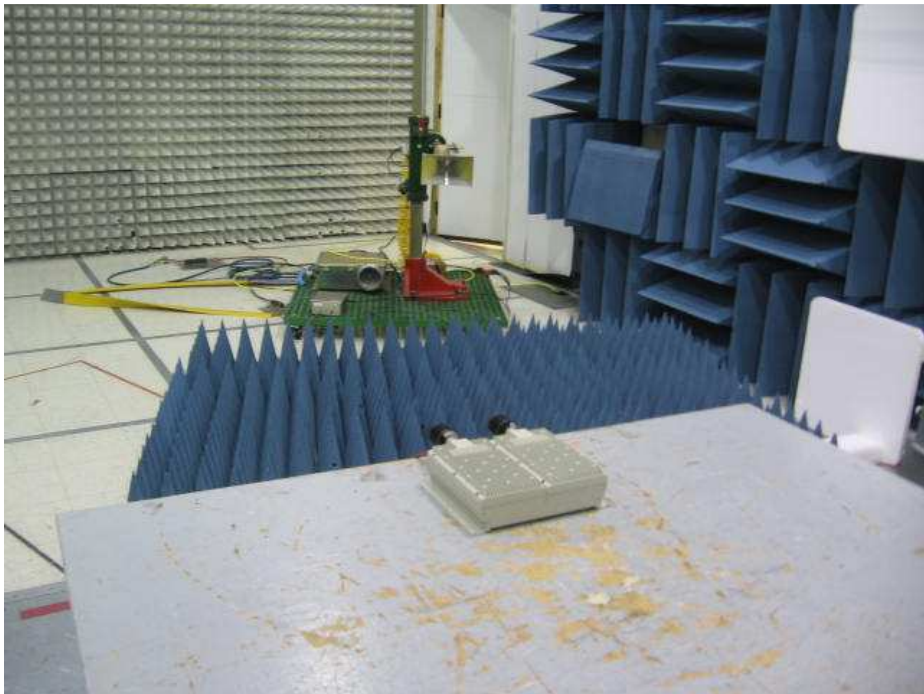
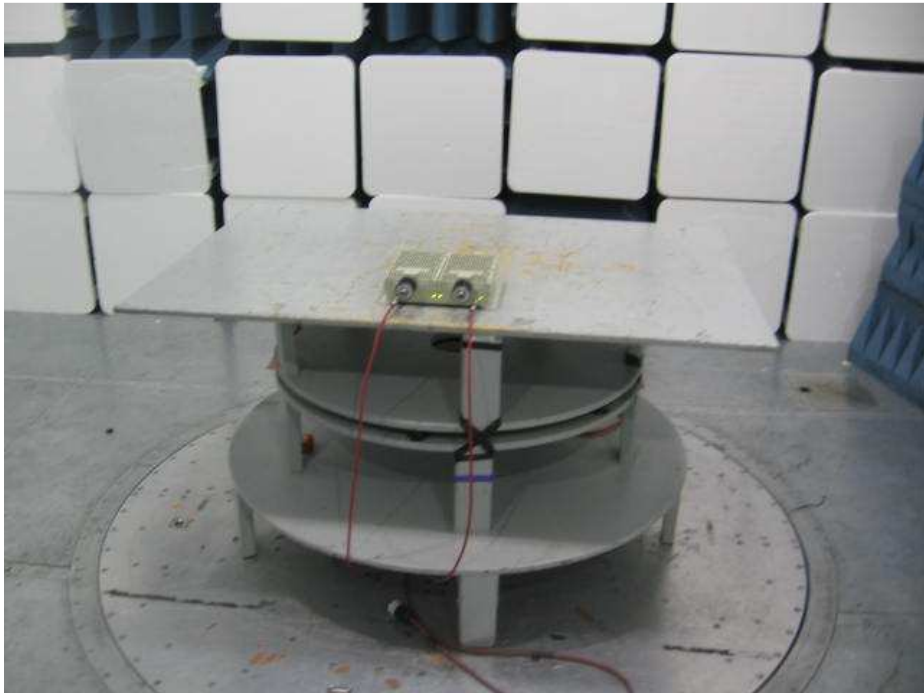
Test distance: 10 meters 3 meters

Test result: **Pass**

Frequency range: 30MHz-10GHz

Max. Emissions margin: 21.3dB below the Reference Limits

- Notes:**
1. The Radiated Emissions testing was performed in the Anechoic chamber at 3m measurement distance (see Table 1 and Graphs 1-12)
 2. The Spurious Radiated Power limits of -13dBm was correlated with field strength Reference Limit of 82.2dB μ V/m during field strength measurements at 3m measurement distance
 3. No spurious or harmonic emissions with margin less than 20dB below the Reference Limits were detected; therefore, no emissions were measured with substitution method
 4. Emissions at operating frequencies were excluded from the Table
-



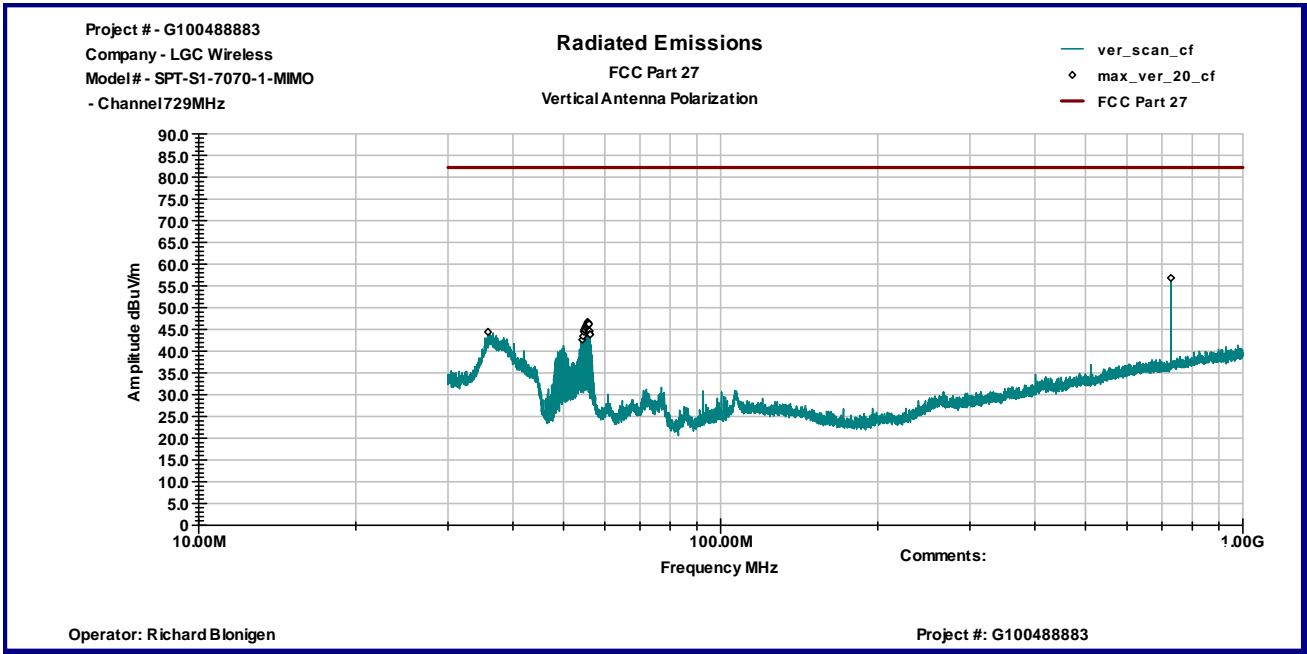
Test Setup Photos



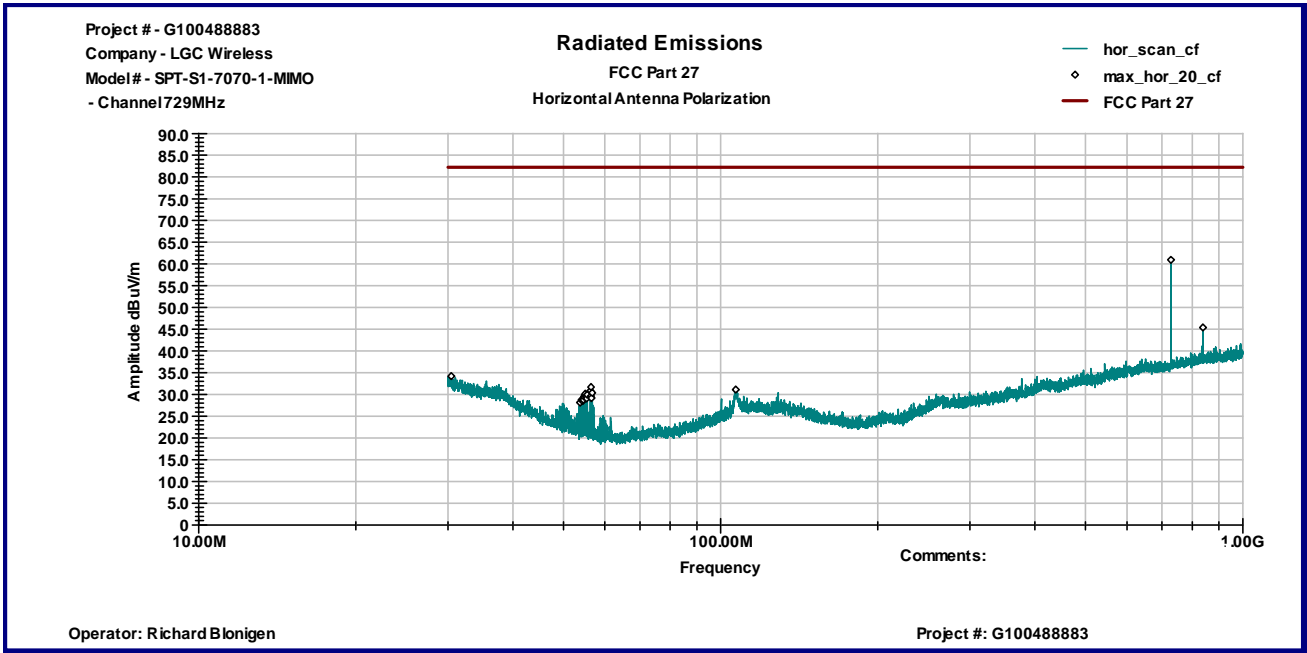
Date:	August 17, 2011	Result: Pass
Tested by:	Richard Blonigen	
Standard:	FCC Part 27	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Channels 728-756MHz Frequency Range 30MHz-10GHz	

Table 1

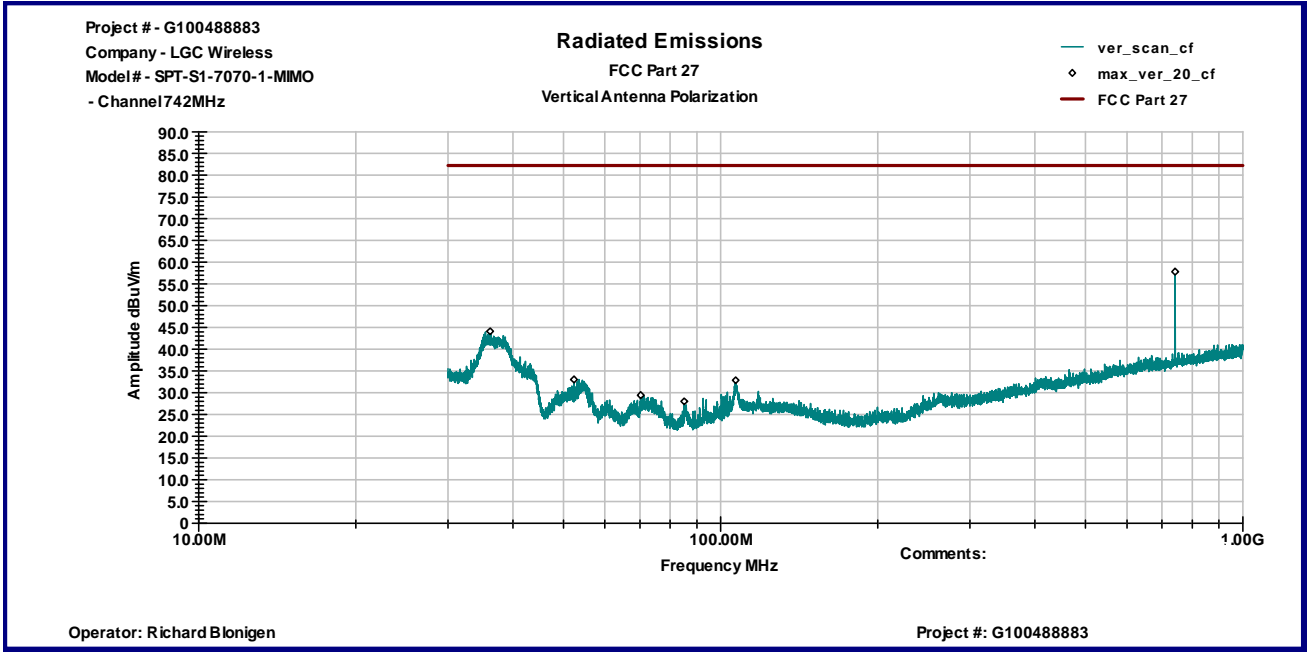
Frequency MHz	Antenna Polarity	Peak Reading dBμV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBμV/m	QP Limit dBμV/m	Margin dB
Channel 729MHz							
55.599 MHz	V	38.8	7.9	0.0	46.7	82.2	-35.5
55.747 MHz	V	38.6	7.9	0.0	46.5	82.2	-35.8
1.4572 GHz	V	66.1	27.9	38.9	55.1	82.2	-27.1
2.188 GHz	V	49.9	31.1	38.1	42.9	82.2	-39.3
9.9856 GHz	V	35.8	45.6	35.2	46.2	82.2	-26.0
106.91 MHz	H	17.8	13.3	0.0	31.1	82.2	-51.1
839.24 MHz	H	20.6	24.8	0.0	45.4	82.2	-36.8
1.4572 GHz	H	60.1	27.9	38.9	49.1	82.2	-33.1
4.3768 GHz	H	47.8	37.4	36.9	48.3	82.2	-33.9
5.104 GHz	H	44.5	38.5	36.5	46.4	82.2	-35.8
Channel 742MHz							
36.161 MHz	V	27.2	16.9	0.0	44.1	82.2	-38.1
52.35 MHz	V	24.0	9.0	0.0	33.0	82.2	-49.2
1.018 GHz	V	50.7	26.4	38.9	38.1	82.2	-44.1
1.4824 GHz	V	68.0	28.0	38.9	57.0	82.2	-25.2
9.748 GHz	V	36.3	45.1	35.3	46.1	82.2	-36.1
30.112 MHz	H	13.9	20.3	0.0	34.2	82.2	-48.0
120.35 MHz	H	17.4	14.0	0.0	31.5	82.2	-50.7
1.4824 GHz	H	60.4	28.0	38.9	49.5	82.2	-32.7
5.194 GHz	H	42.2	38.7	36.5	44.4	82.2	-37.8
9.7192 GHz	H	35.8	45.1	35.4	45.6	82.2	-36.6
Channel 755MHz							
35.993 MHz	V	27.3	17.0	0.0	44.3	82.2	-37.9
982.82 MHz	V	15.5	26.2	0.0	41.7	82.2	-40.5
1.5112 GHz	V	71.7	28.1	38.9	60.9	82.2	-21.3
2.2672 GHz	V	52.4	31.3	38.0	45.7	82.2	-36.5
3.7756 GHz	V	47.6	36.4	37.3	46.7	82.2	-35.5
4.5316 GHz	V	49.2	37.4	36.8	49.7	82.2	-32.5
30.112 MHz	H	13.5	20.3	0.0	33.7	82.2	-48.5
1.5112 GHz	H	64.7	28.2	38.9	54.0	82.2	-28.2
2.2672 GHz	H	53.3	31.6	38.0	46.9	82.2	-35.3
3.7756 GHz	H	52.5	36.5	37.3	51.7	82.2	-30.5
4.5316 GHz	H	52.2	37.5	36.8	52.9	82.2	-29.3
9.7156 GHz	H	36.5	45.1	35.4	46.3	82.2	-35.9



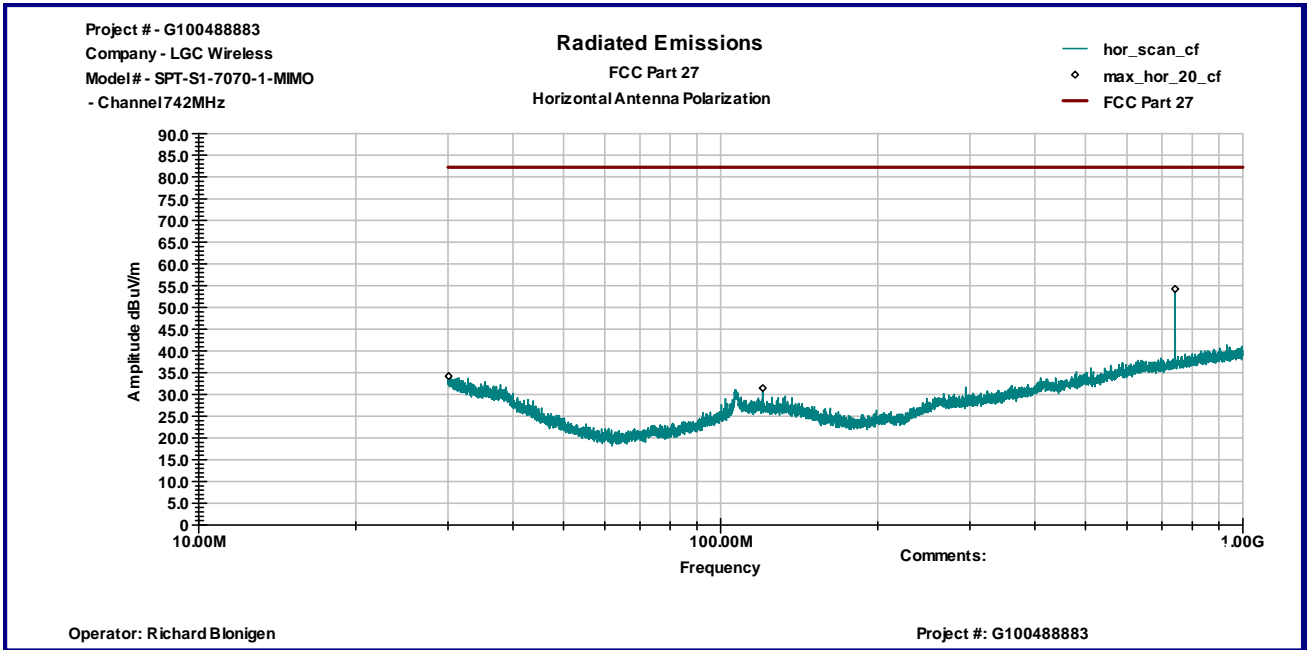
Graph 1



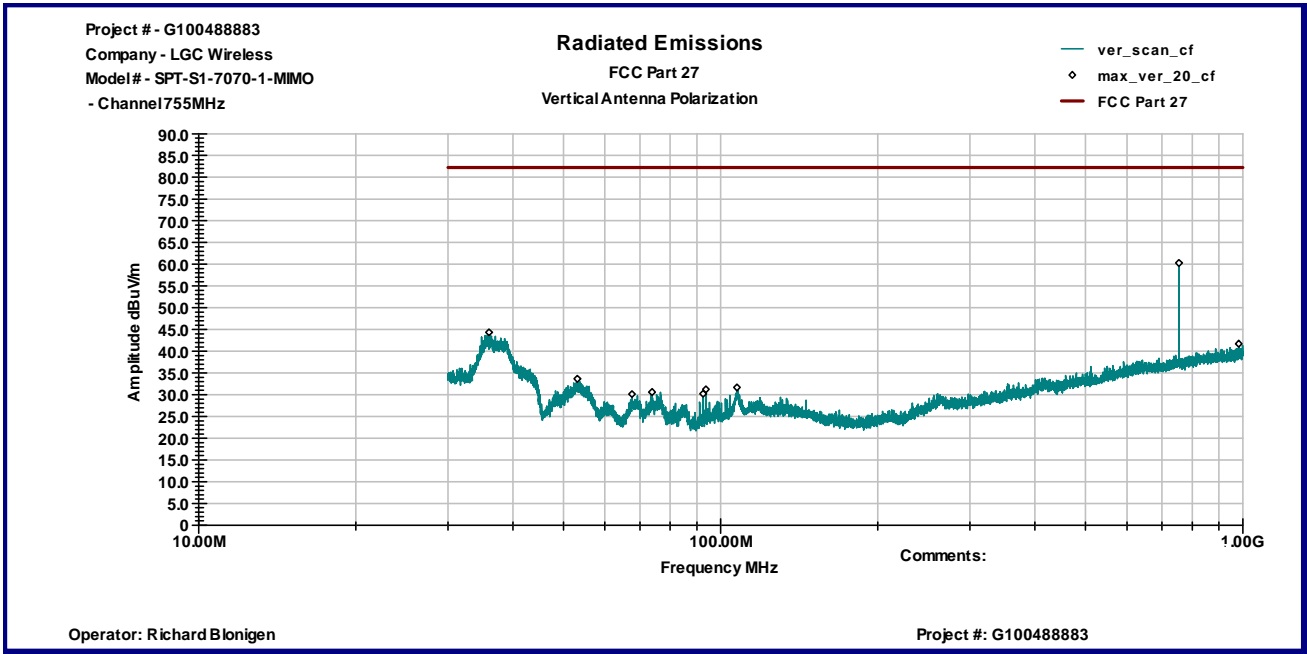
Graph 2



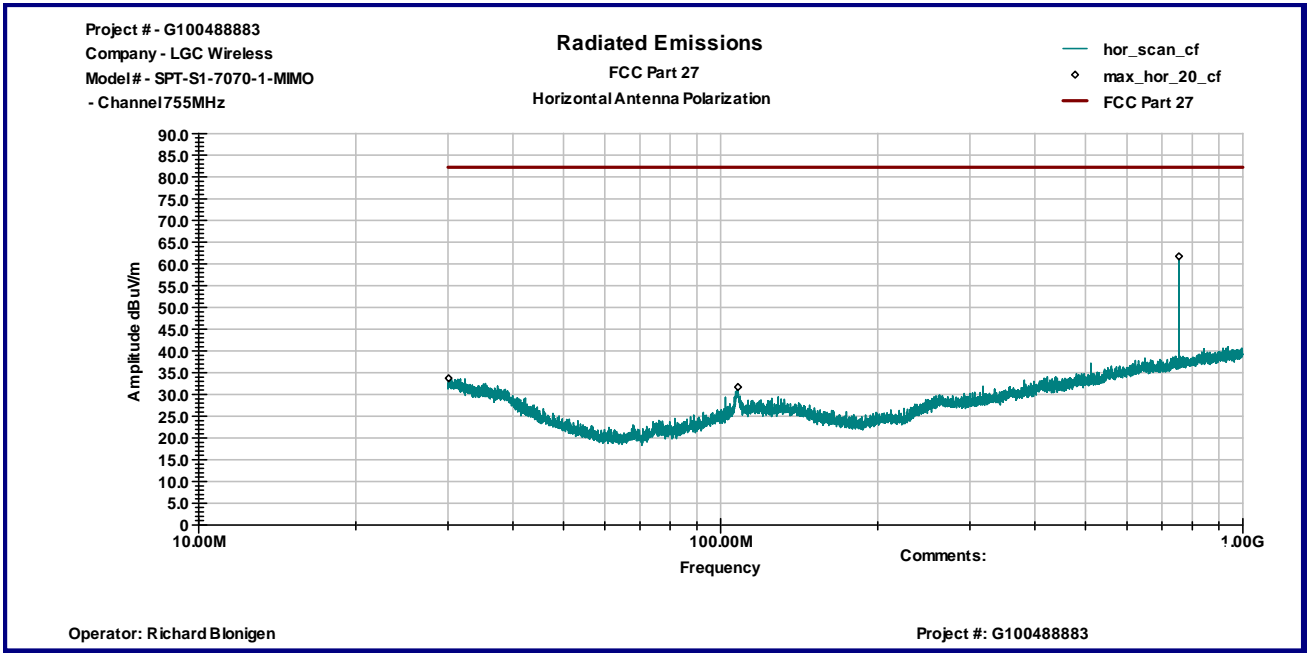
Graph 3



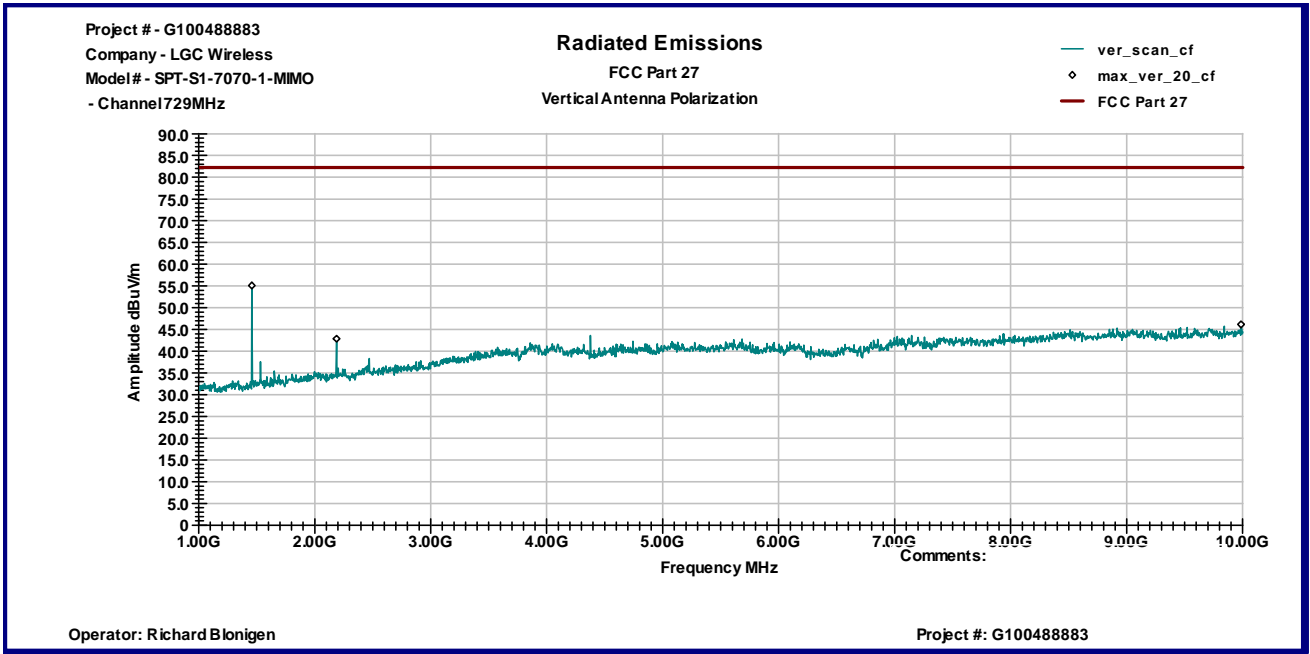
Graph 4



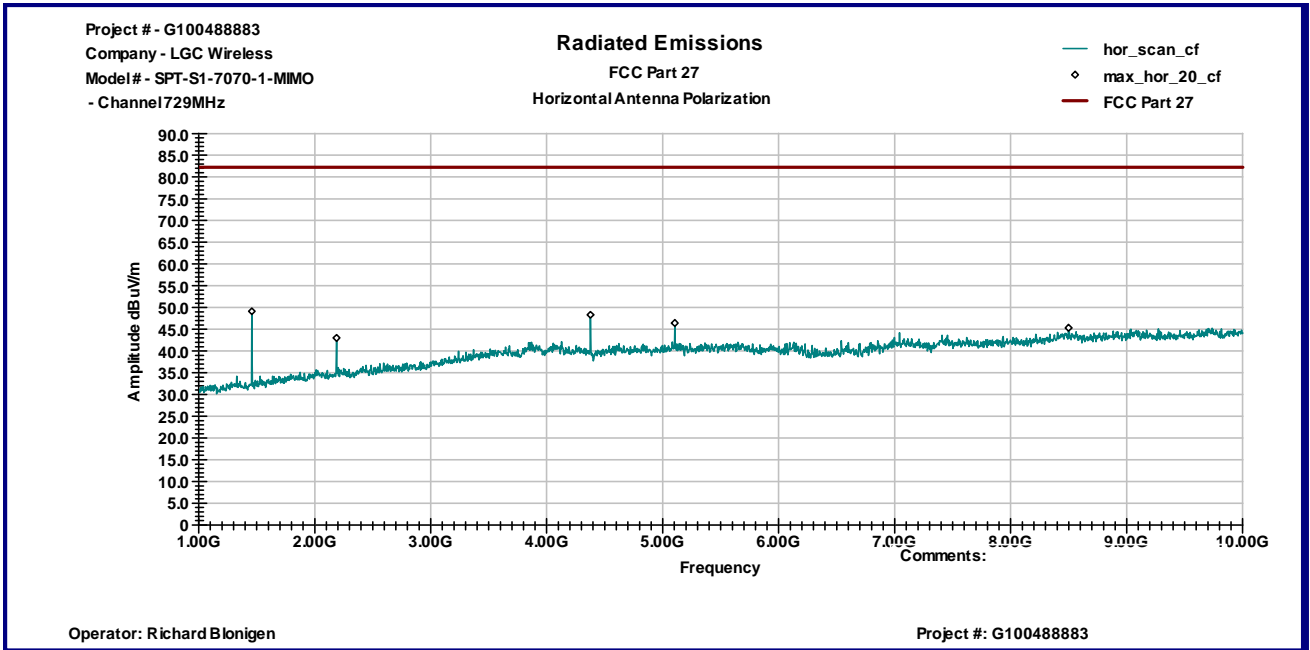
Graph 5



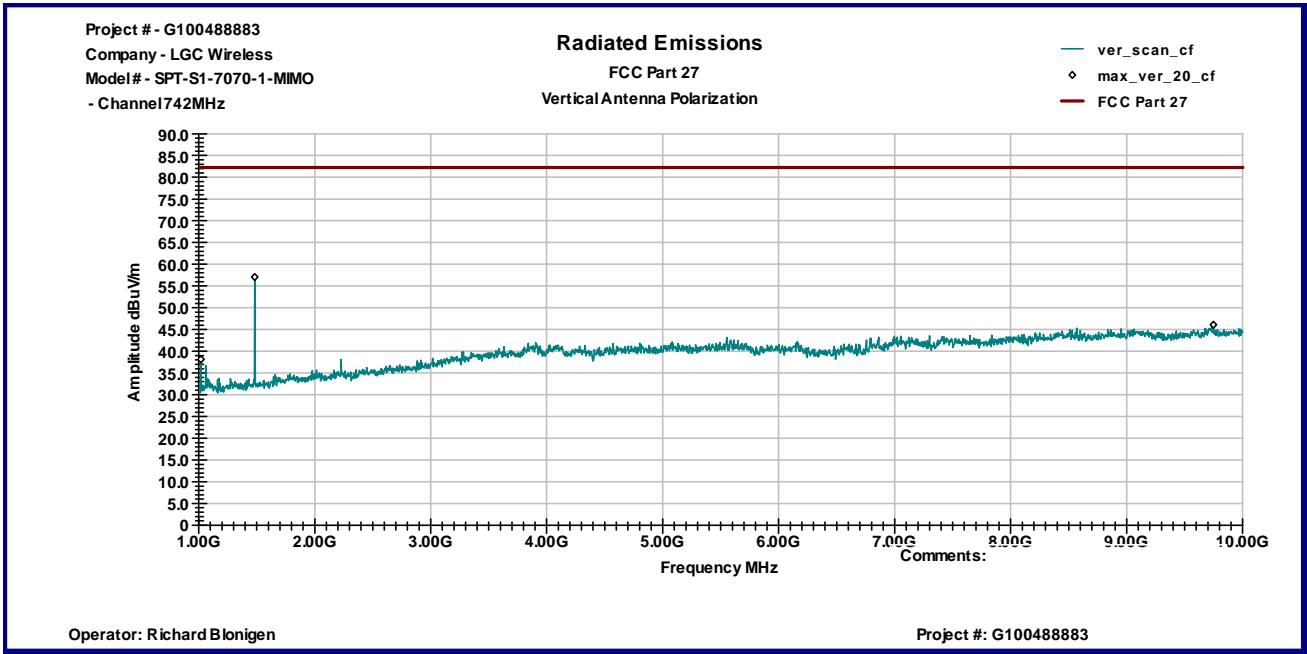
Graph 6



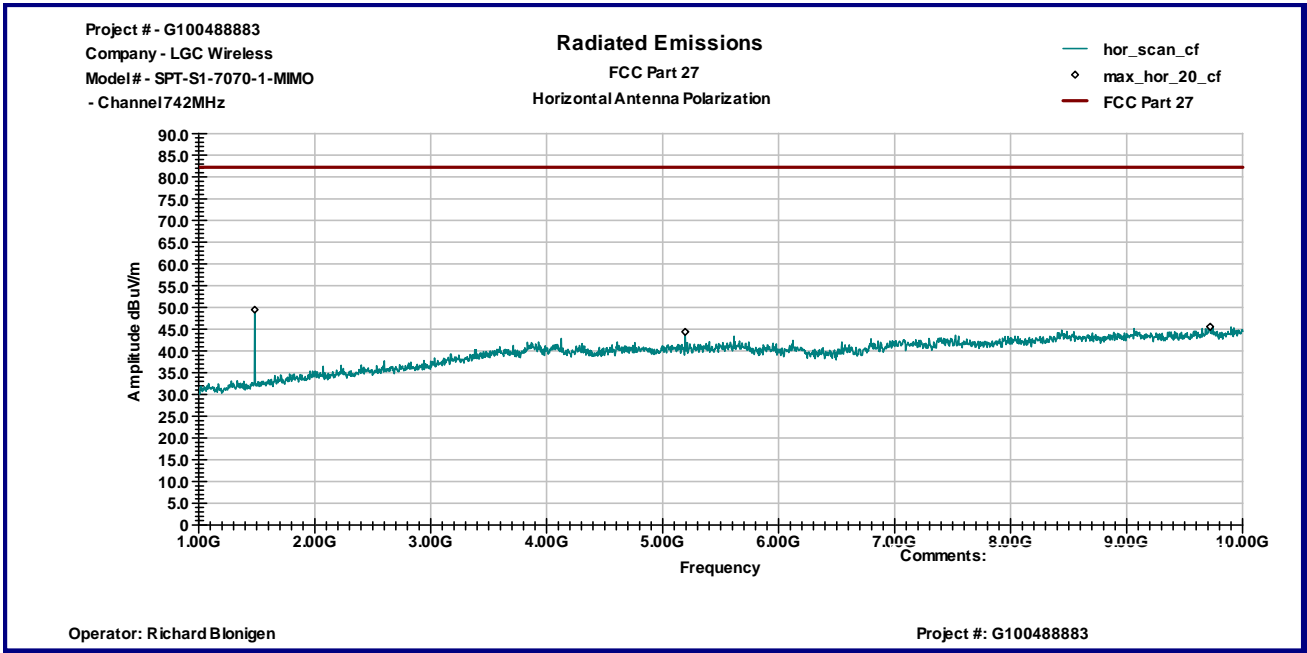
Graph 7



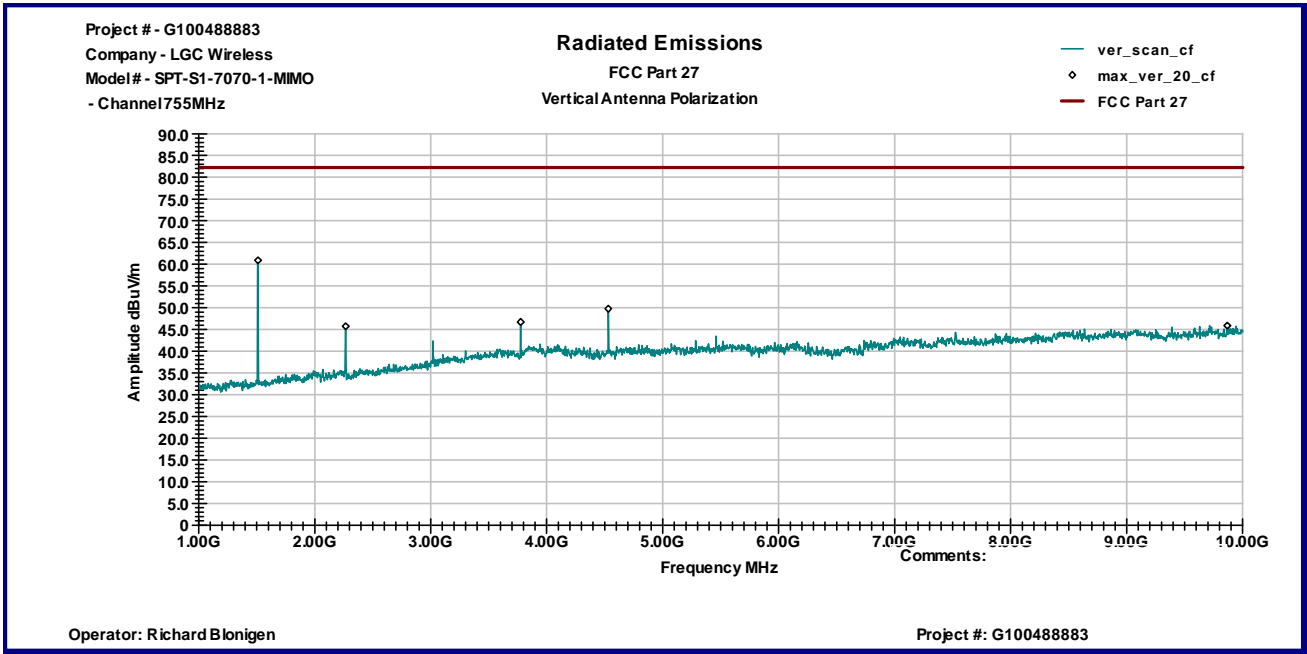
Graph 8



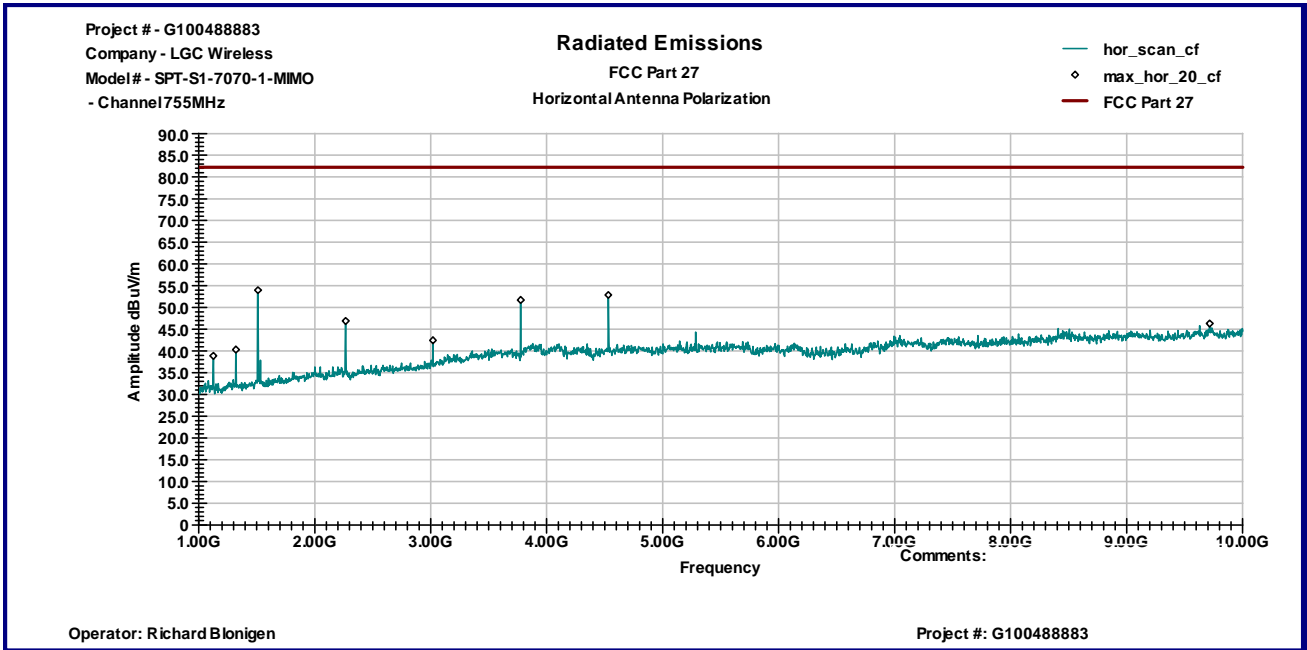
Graph 9



Graph 10



Graph 11



Graph 12



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	6579	15580	04/29/2012	<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"/>

