



## TEST DATA REPORT

Report Number: 100553609MIN-001

Project Number: G100553609

Testing performed on the  
FWP-B410000MOD

to

47 CFR, Part 22:2010, 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:  
ADC Telecommunications Inc.- a TE Connectivity  
Company  
541 E Trimble Road  
San Jose, CA 95131 USA

Prepared by: Uri Spector  
Uri Spector

Date: November 8, 2011

Reviewed by: Norman Shpilsher  
Norman Shpilsher

Date: November 8, 2011

*This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. This report must not be used to claim product endorsement by A2LA, NIST nor any other agency of the U.S. Government.*



TABLE OF CONTENTS

**1.0 DESCRIPTION OF THE SAMPLE (EUT) ..... 3**

**2.0 TEST SUMMARY..... 4**

2.1 Statement of the Measurement Uncertainty ..... 4

**3.0 EQUIPMENT UNDER TEST ..... 5**

3.1 Power Configuration ..... 5

3.2 EUT Configuration..... 5

3.3 Environmental conditions ..... 6

**4.0 TEST CONDITIONS AND RESULTS..... 7**

4.1 Enclosure Spurious Radiated Emissions..... 7

**5.0 TEST EQUIPMENT..... 19**

## 1.0 DESCRIPTION OF THE SAMPLE (EUT)

<b>Model:</b>	FWP-B410000MOD		
<b>Type of EUT:</b>	20W RF Output Repeater		
<b>Frequency Range:</b>	869-894MHz		
<b>Company:</b>	ADC Telecommunications Inc. - 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 <span style="background-color: gray; color: black;">T</span> <input type="checkbox"/> EN 55011:2007 +A2:2007, Group <span style="background-color: gray; color: black;">T</span> , Class <span style="background-color: gray; color: black;">T</span> <input checked="" type="checkbox"/> 47 CFR, Part 22:2010, 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 <span style="background-color: gray; color: black;">T</span> 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>	November 7, 2011		
<b>Test Work Started:</b>	November 8, 2011		
<b>Test Work Completed:</b>	November 8, 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

### 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 type="checkbox"/> 120VAC <input type="checkbox"/> 230VAC <input type="checkbox"/> 400VAC <input checked="" type="checkbox"/> 54VDC from external support power supply <input type="checkbox"/> Other: <input type="text"/>
<b>Rated current:</b>	<input type="text"/> Amp.
<b>Rated frequency:</b>	<input type="checkbox"/> 50Hz <input type="checkbox"/> 60Hz
<b>Number of phases:</b>	<input 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 transmission of RF signal at 870MHz, 881MHz, and 893MHz
3	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 8648B (located outside Test site)	Signal Generator
2	Prism Host Unit	
3	Prism Host 54VDC Power Supply	
3	30dB Attenuator	

**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

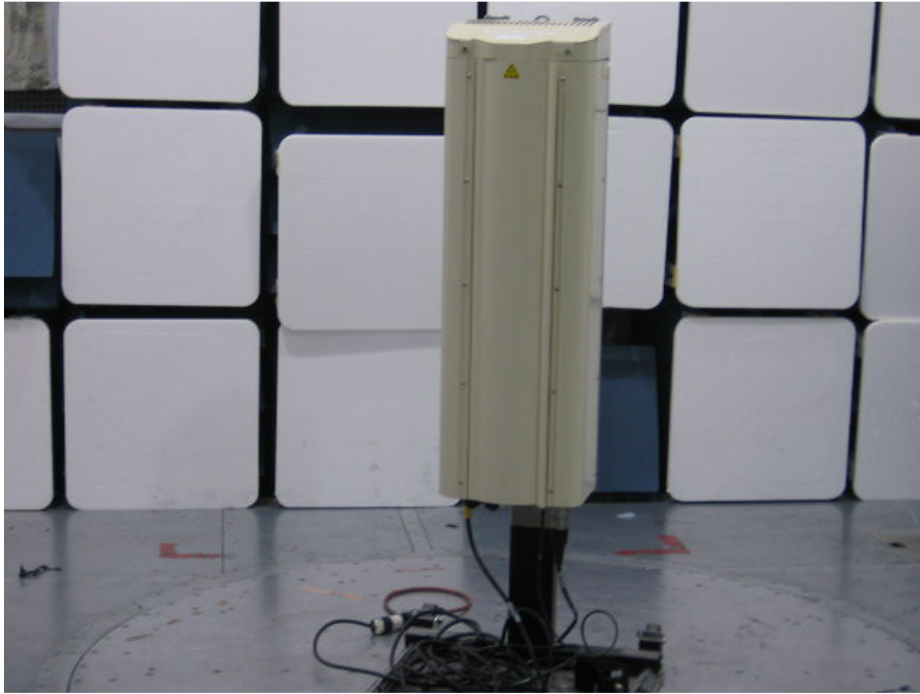
**Test distance:** ☐ 10 meters ☒ 3 meters

**Test result:** **Pass**

**Frequency range:** 30MHz-10GHz

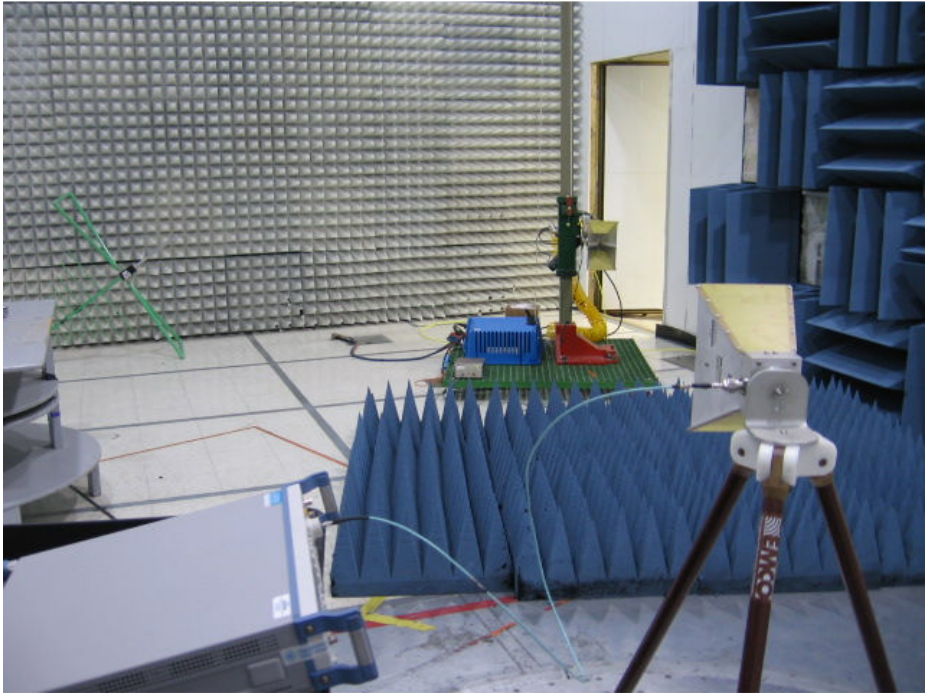
**Max. Emissions margin:** 22.7dB below the Limits for substitution measurement

- Notes:**
1. The Radiated Emissions testing was performed in the Anechoic chamber at 3m measurement distance (see Tables 1 & 2, Graphs 1-12)
  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 1-12)
  3. Only emissions with margin less than 20dB below the reference limit were measured with substitution method (see Table 3). No emissions were chosen for substitution measurements with the maximum field strength emission more than 20dB below the reference limit.
  4. Emissions at operating frequencies were excluded from the tables
-



**Test Setup Photos**





Test Setup Photo

<b>Date:</b>	November 8, 2011	<b>Result: Pass</b>
<b>Tested by:</b>	Uri Spector	
<b>Standard:</b>	FCC Part 22	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Note:</b>	None	

**Table 1**

Frequency	Ant. Polarity	Peak Reading dBμV	Ant.Factor dB1/m	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
<b>870MHz</b>						
49.883 MHz	V	36.5	10.0	46.5	82.2	-35.7
50.272 MHz	V	36.4	9.8	46.2	82.2	-36.0
56.78 MHz	V	40.3	7.7	48.0	82.2	-34.2
59.449 MHz	V	43.2	7.2	50.4	82.2	-31.9
60.172 MHz	V	39.5	7.1	46.6	82.2	-35.6
70.128 MHz	V	38.8	7.4	46.2	82.2	-36.0
30.0 MHz	H	14.0	20.3	34.3	82.2	-47.9
191.5 MHz	H	31.8	11.4	43.2	82.2	-39.0
368.78 MHz	H	23.6	18.0	41.6	82.2	-40.6
750.23 MHz	H	20.0	23.8	43.7	82.2	-38.5
<b>881MHz</b>						
30.07 MHz	V	20.3	20.3	40.6	82.2	-41.7
49.883 MHz	V	35.2	10.0	45.1	82.2	-37.1
50.272 MHz	V	36.0	9.8	45.8	82.2	-36.4
562.79 MHz	V	22.7	21.9	44.6	82.2	-37.6
750.23 MHz	V	21.5	23.8	45.2	82.2	-37.0
33.334 MHz	H	15.1	18.5	33.6	82.2	-48.6
59.394 MHz	H	24.7	7.2	31.9	82.2	-50.3
187.61 MHz	H	32.4	11.3	43.6	82.2	-38.6
368.78 MHz	H	23.6	18.0	41.5	82.2	-40.7
524.97 MHz	H	18.1	20.9	38.9	82.2	-43.3
750.23 MHz	H	20.0	23.8	43.8	82.2	-38.4
<b>893MHz</b>						
30.589 MHz	V	25.9	20.0	45.9	82.2	-36.3
59.442 MHz	V	42.3	7.2	49.4	82.2	-32.8
60.184 MHz	V	37.6	7.1	44.7	82.2	-37.5
562.7 MHz	V	22.9	21.9	44.8	82.2	-37.4
749.74 MHz	V	21.3	23.8	45.0	82.2	-37.2
30.954 MHz	H	13.9	19.8	33.7	82.2	-48.5
187.58 MHz	H	31.6	11.3	42.9	82.2	-39.3
368.77 MHz	H	23.0	18.0	40.9	82.2	-41.3
562.7 MHz	H	18.2	21.9	40.1	82.2	-42.1
749.74 MHz	H	19.5	23.8	43.2	82.2	-39.0

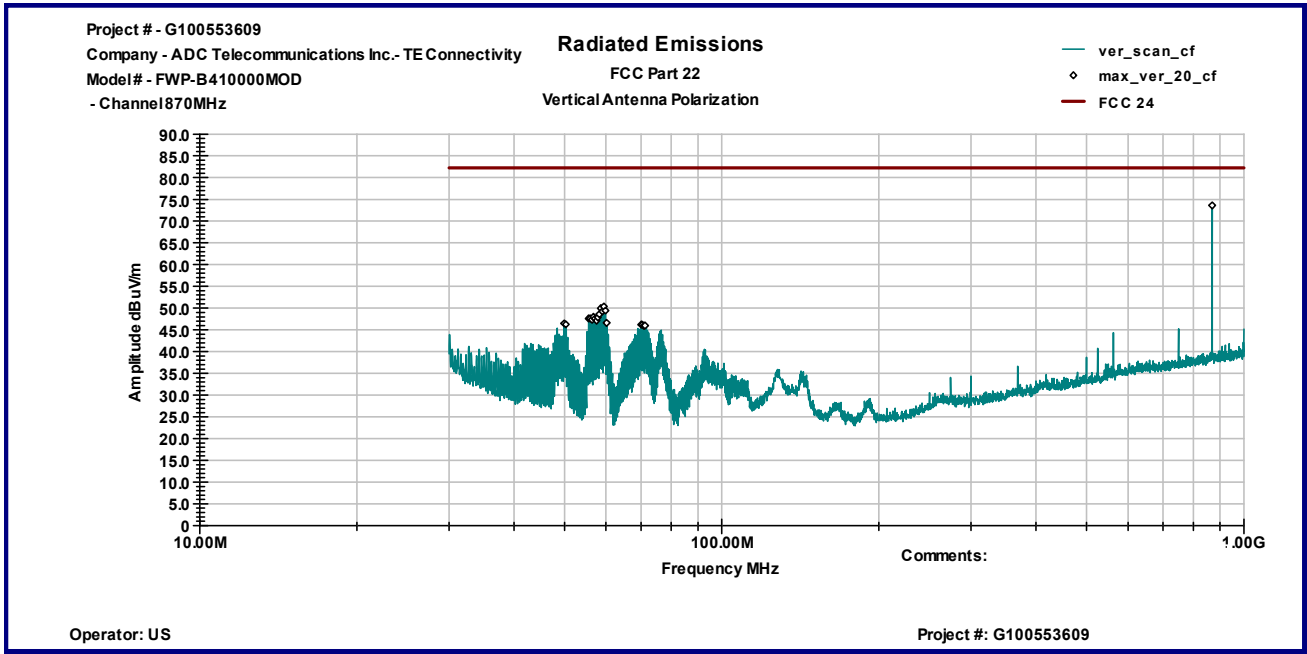
**Table 2**

Frequency MHz	Antenna Polarity	Peak Reading dBμV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
<b>870MHz</b>							
1.345 GHz	V	59.9	29.3	38.9	50.3	82.2	-32.0
3.067 GHz	V	51.6	37.4	37.7	51.3	82.2	-30.9
9.952 GHz	V	38.0	48.3	35.2	51.1	82.2	-31.1
1.63 GHz	H	66.7	30.8	38.8	58.8	82.2	-23.4
2.446 GHz	H	59.3	34.9	37.8	56.3	82.2	-25.9
3.067 GHz	H	65.4	37.2	37.7	64.9	82.2	-17.3
3.289 GHz	H	53.3	37.9	37.6	53.7	82.2	-28.5
4.132 GHz	H	56.2	40.4	37.1	59.6	82.2	-22.6
4.507 GHz	H	48.4	40.8	36.9	52.3	82.2	-29.9
<b>881MHz</b>							
1.345 GHz	V	59.2	29.3	38.9	49.6	82.2	-32.6
2.446 GHz	V	50.9	35.0	37.8	48.1	82.2	-34.1
4.132 GHz	V	45.0	40.5	37.1	48.4	82.2	-33.8
5.947 GHz	V	42.8	43.2	36.5	49.4	82.2	-32.8
9.892 GHz	V	37.5	48.3	35.3	50.5	82.2	-31.7
1.345 GHz	H	70.7	29.3	38.9	61.0	82.2	-21.2
1.63 GHz	H	67.0	30.8	38.8	59.1	82.2	-23.1
2.446 GHz	H	59.5	34.9	37.8	56.6	82.2	-25.6
3.067 GHz	H	65.4	37.2	37.7	64.9	82.2	-17.3
4.132 GHz	H	56.5	40.4	37.1	59.9	82.2	-22.4
5.947 GHz	H	45.3	43.1	36.5	51.9	82.2	-30.3
<b>893MHz</b>							
1.342 GHz	V	60.3	29.3	38.9	50.6	82.2	-31.6
2.5345 GHz	V	61.8	35.3	37.8	59.4	82.2	-22.9
2.7235 GHz	V	52.8	36.1	37.7	51.1	82.2	-31.1
5.9455 GHz	V	45.6	43.2	36.5	52.3	82.2	-29.9
9.46 GHz	V	39.1	48.1	35.5	51.7	82.2	-30.5
1.342 GHz	H	71.0	29.3	38.9	61.3	82.2	-20.9
1.63 GHz	H	66.9	30.8	38.8	58.9	82.2	-23.3
2.3815 GHz	H	55.7	34.6	37.9	52.5	82.2	-29.7
2.4445 GHz	H	58.8	34.9	37.8	55.9	82.2	-26.3
2.5345 GHz	H	63.2	35.2	37.8	60.7	82.2	-21.5
4.4155 GHz	H	56.8	40.7	36.9	60.6	82.2	-21.6
4.7935 GHz	H	46.3	41.3	36.7	50.9	82.2	-31.4
5.9455 GHz	H	46.1	43.1	36.5	52.7	82.2	-29.5

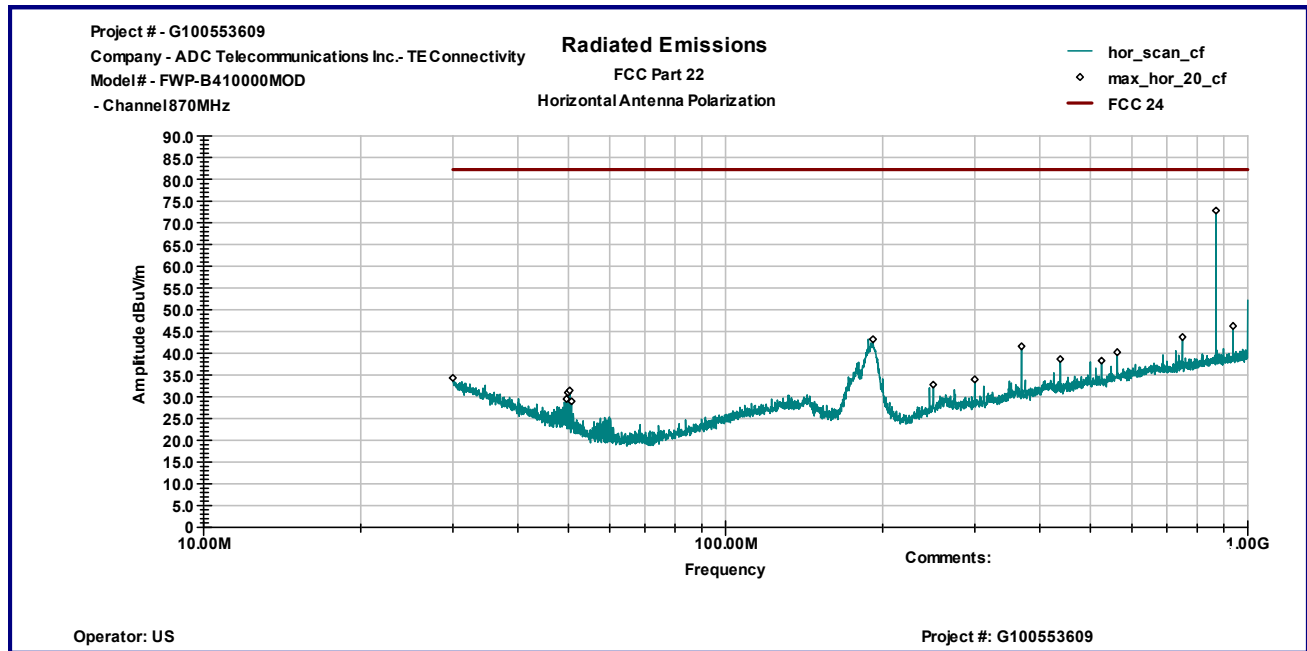
<b>Date:</b>	November 8, 2011	<b>Result: Pass</b>
<b>Tested by:</b>	Uri Spector	
<b>Standard:</b>	FCC Part 22	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Note:</b>	Substitution measurements	

**Table 3**

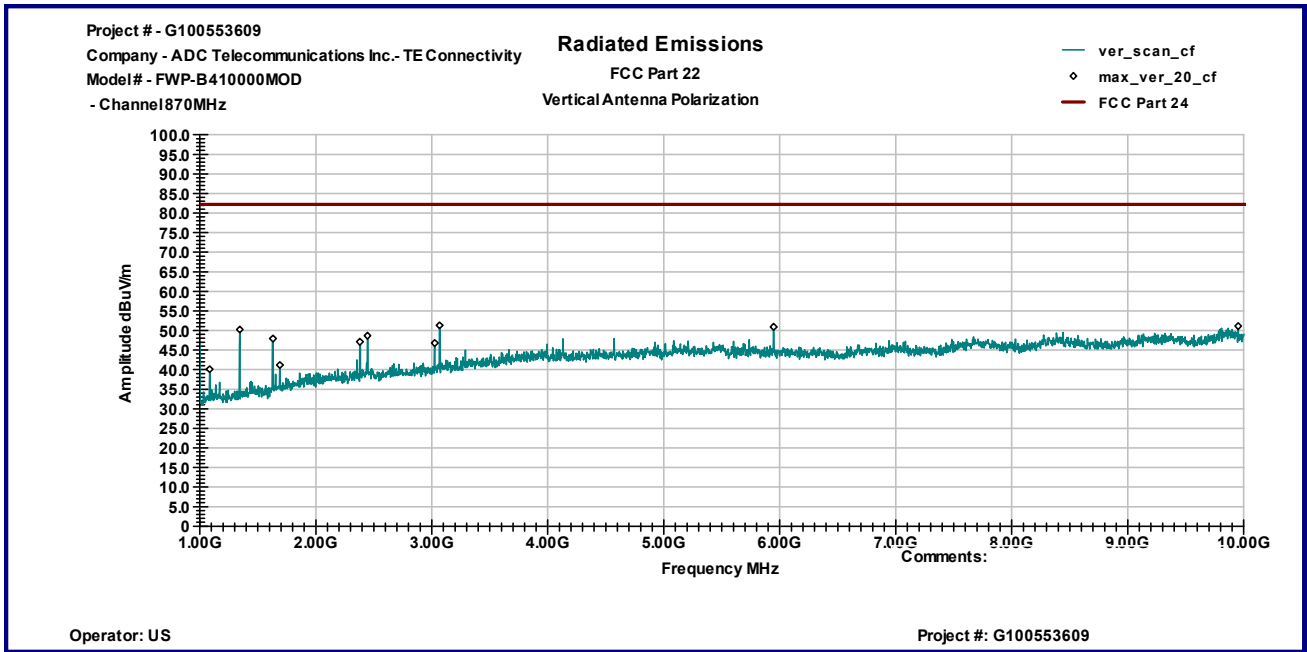
Frequency MHz	Antenna Polarity	Measured Emissions dBμV	Substitution Antenna Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	Additional Loss/Gain dB	Emissions EIRP dBm	Limits dBm	Margin dB
<b>870MHz</b>									
3067.00	H	65.4	-43.5	9.6	1.8	0.0	-35.7	-13.0	-22.7
<b>881MHz</b>									
3067.00	H	65.4	-43.5	9.6	1.8	0.0	-35.7	-13.0	-22.7



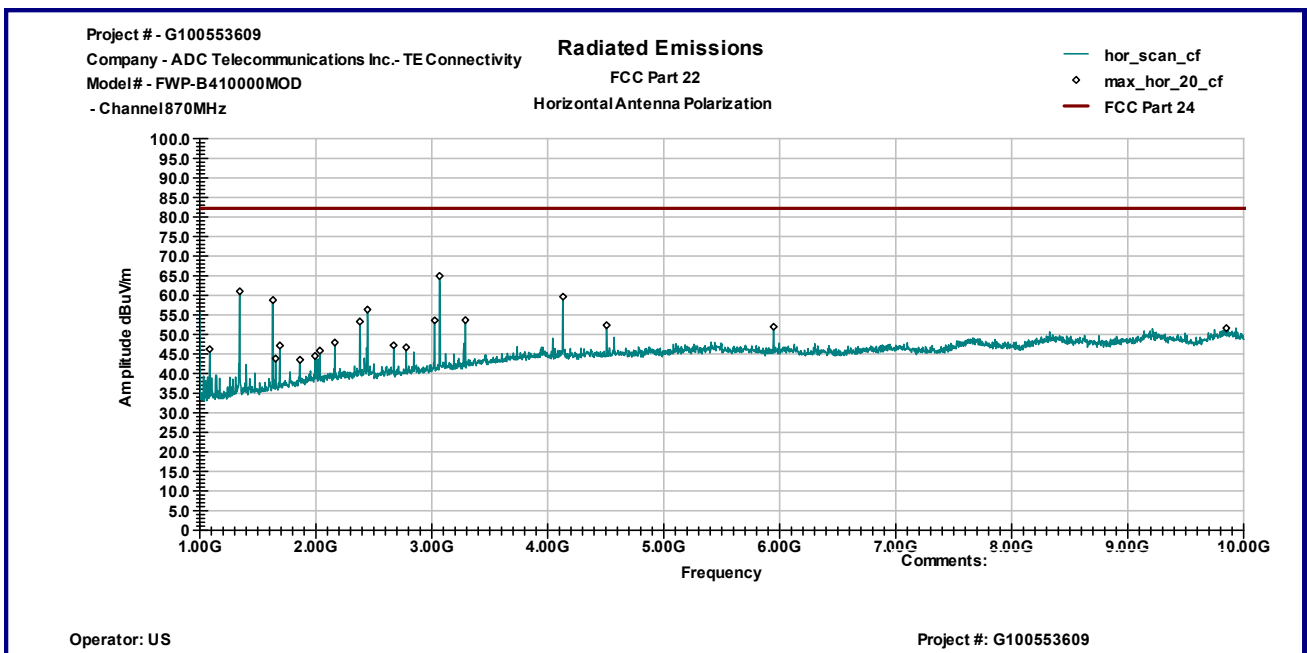
Graph 1



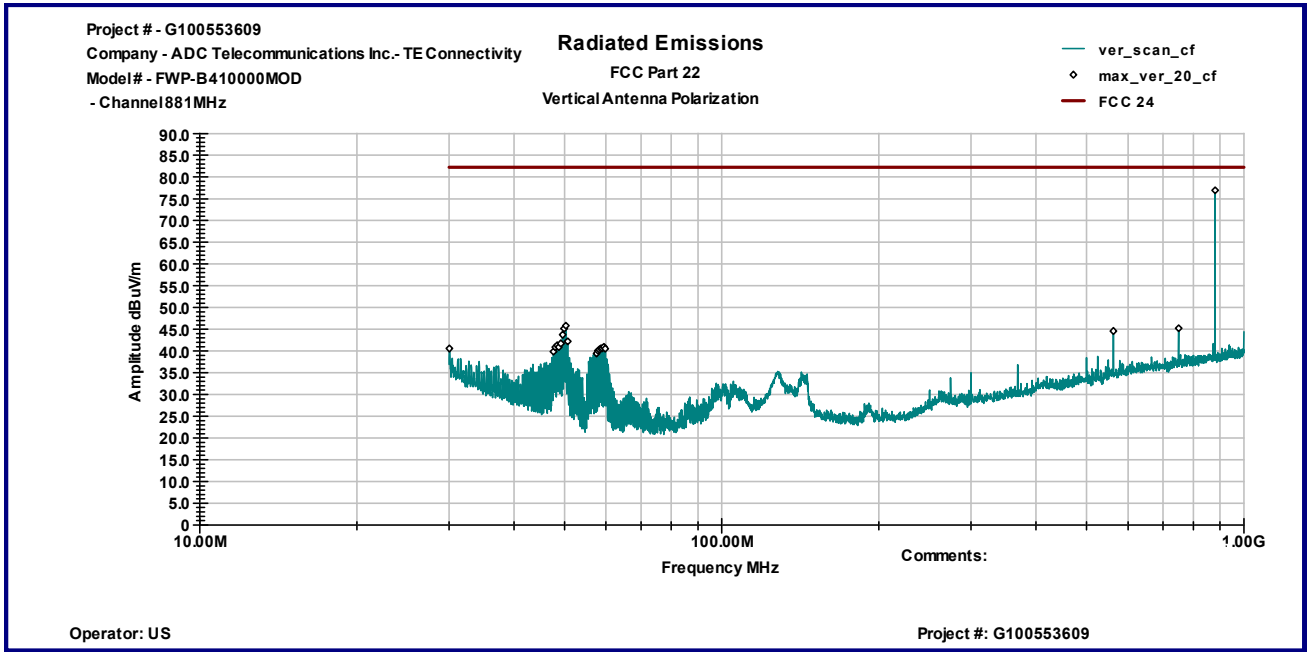
Graph 2



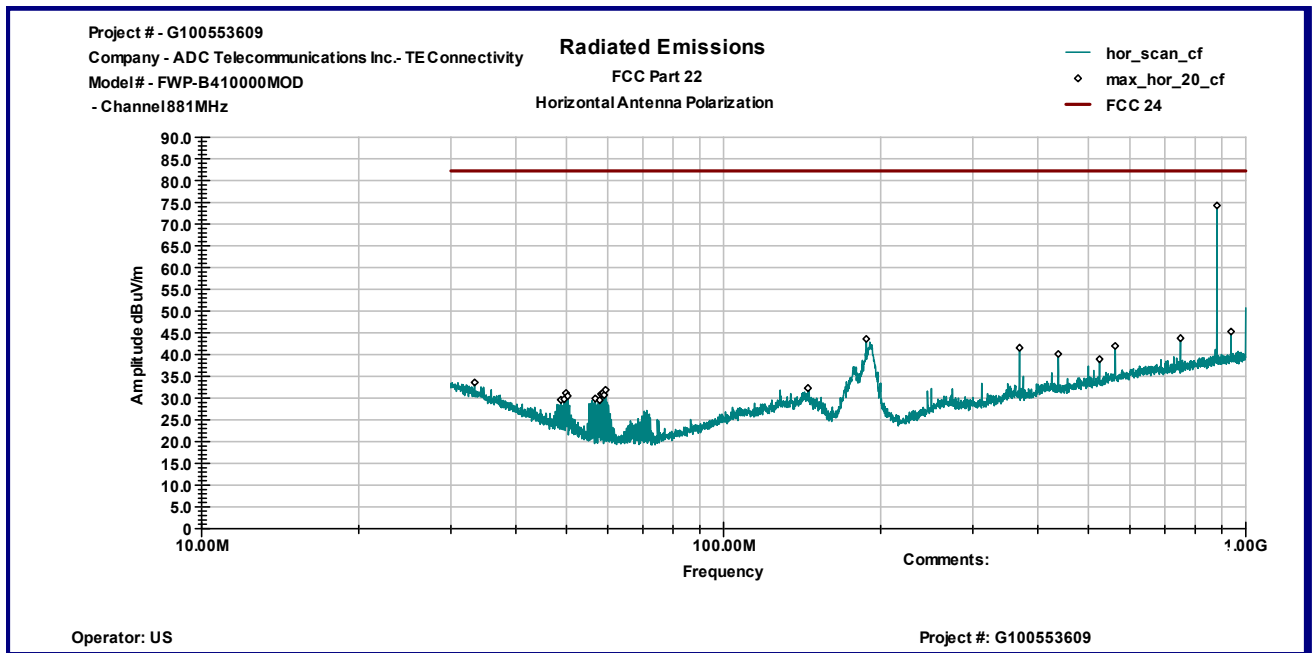
Graph 3



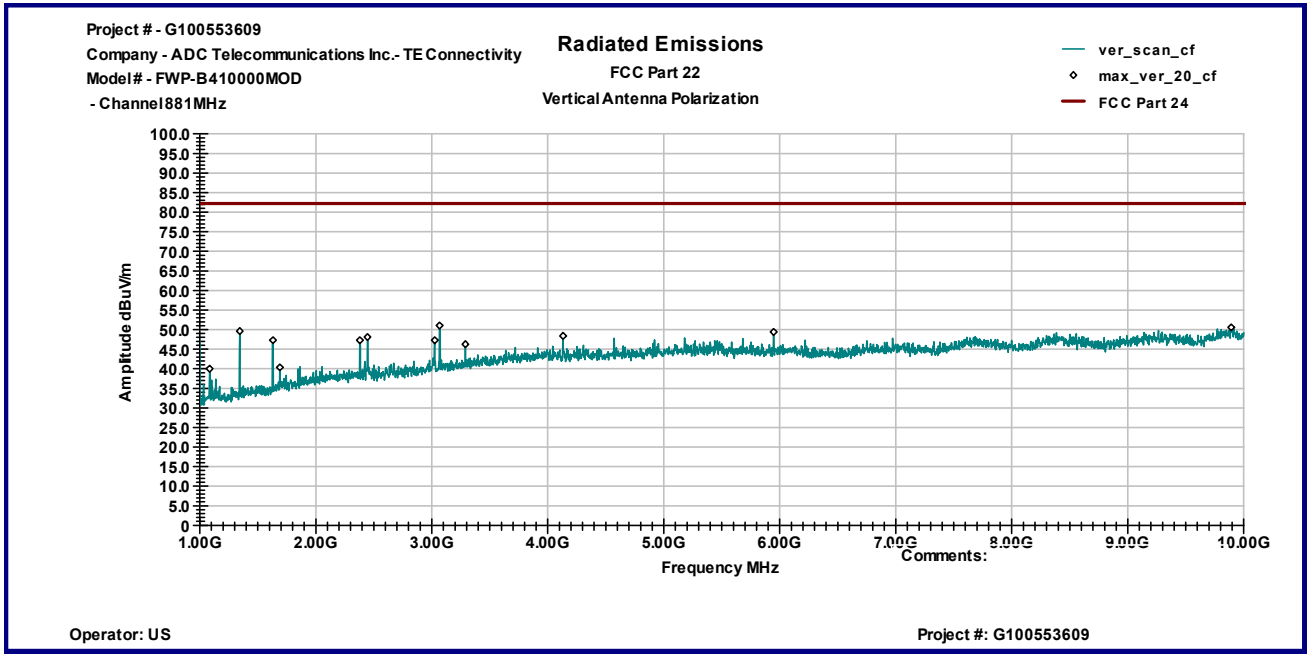
Graph 4



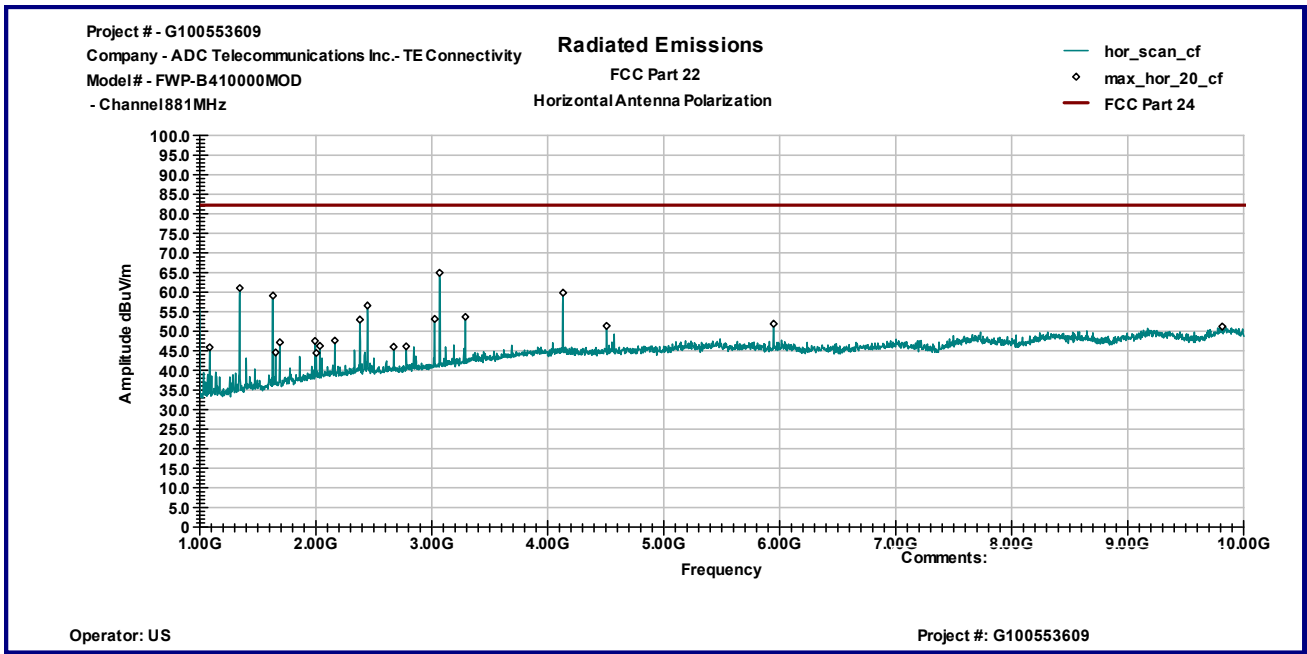
Graph 5



Graph 6

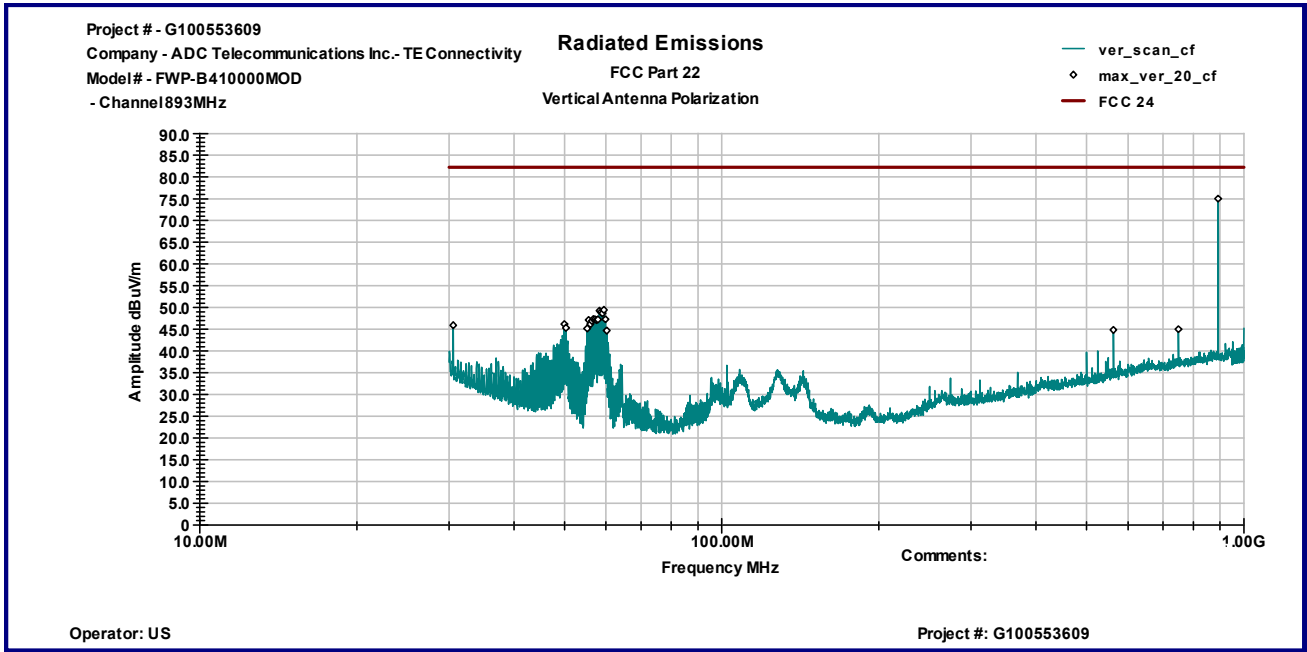


Graph 7

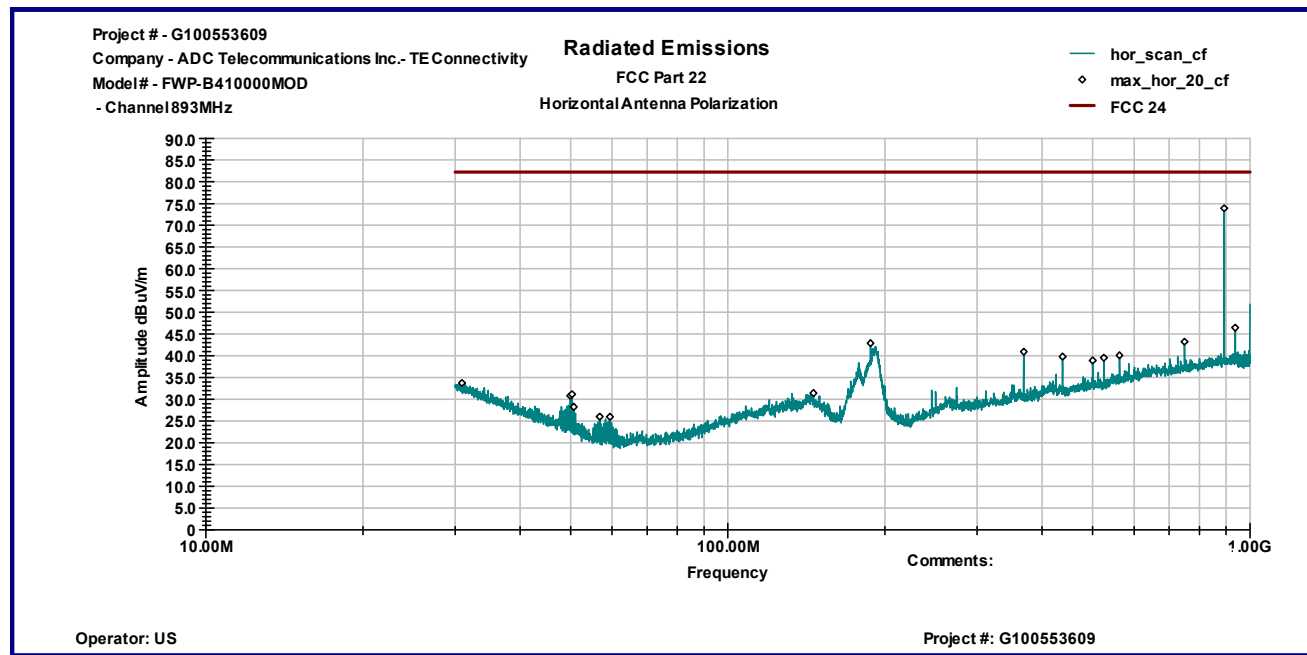


Graph 8

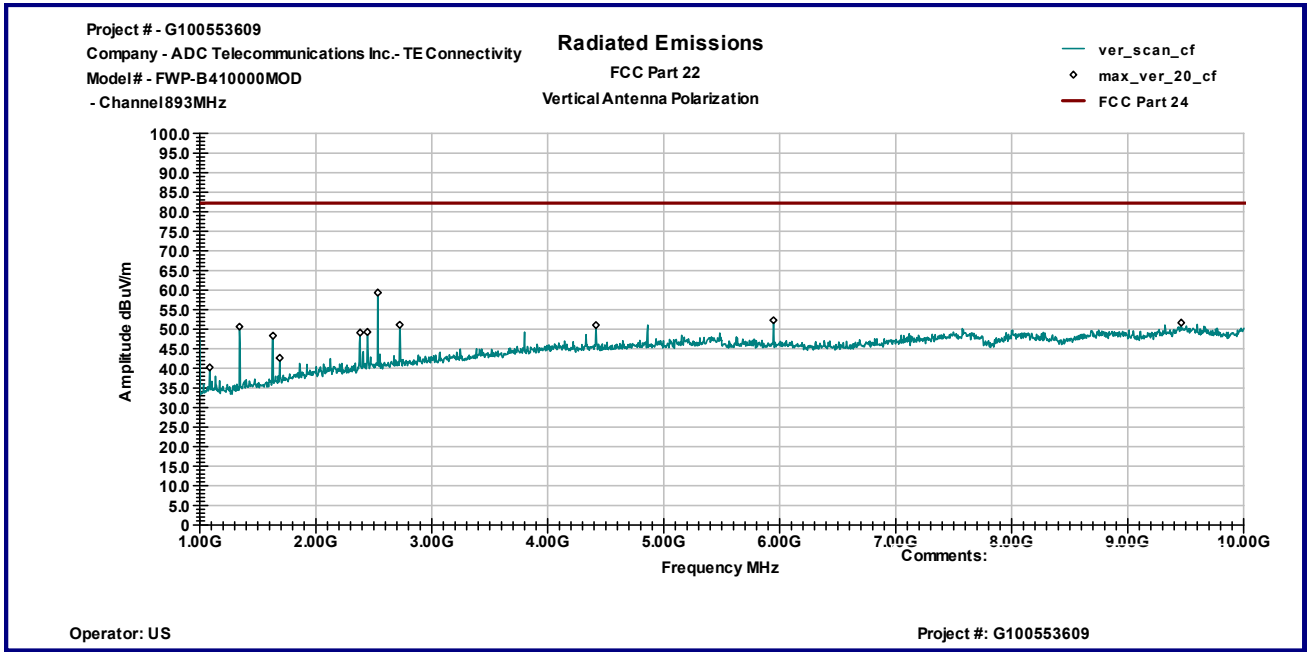




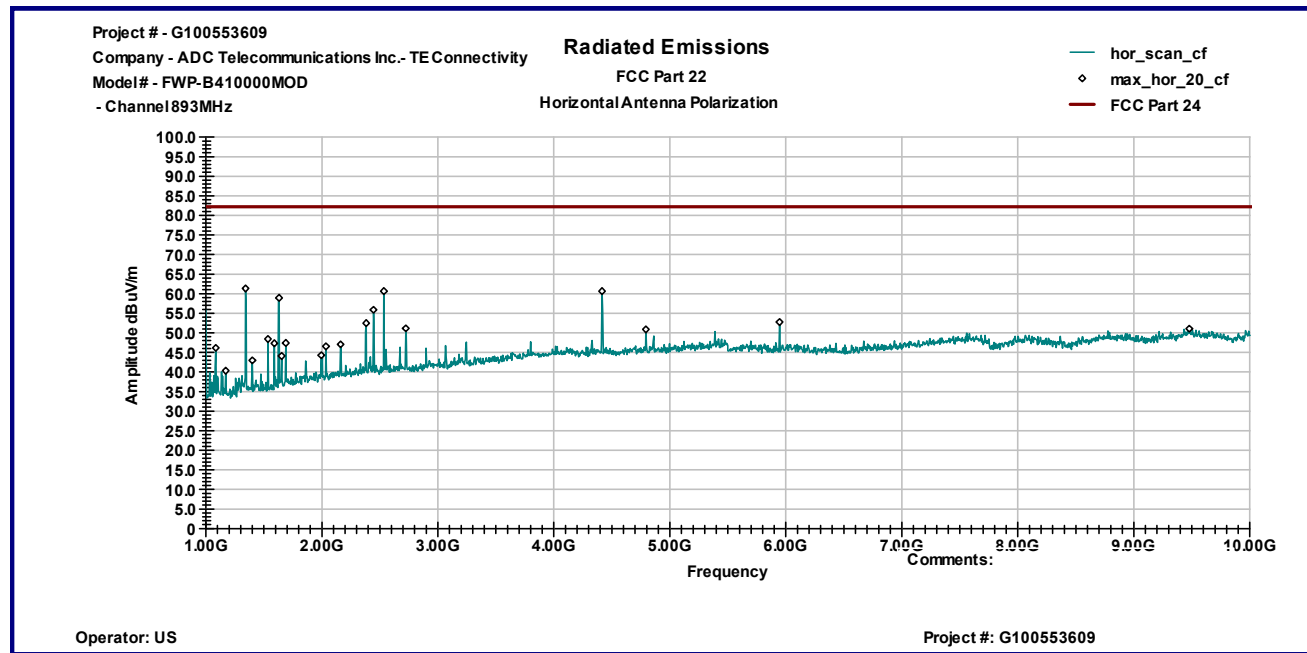
Graph 9



Graph 10



Graph 11



Graph 12

## 5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	R & S	FSV 30	101101		11/09/2011	<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	2630	14459	11/22/2011	<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"/>
Signal Generator	R & S	SMR20	101469	25233	10/03/2012	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1122951	13475	11/30/2011	<input checked="" type="checkbox"/>
System	TILE! Instrument Control		Ver. 3.4.K.29	15259	VBV	<input checked="" type="checkbox"/>

