TEST REPORT

Report Number: 100913866MIN-001
Project Number: G100913866

Testing performed on the
FWP-C41T000MOD

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

For
ADC Telecommunications Inc. - 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: Richard Blonigen — Date: November 2, 2012

Reviewed by: Norman Shpilsher — Date: November 2, 2012

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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	FWP-C41T000MOD
Type of EUT:	850/1900 MHz HDM Dual Band RF Module
Operating Frequency Range:	869-894MHz 1930-1995 MHz
Company:	ADC Telecommunications Inc. - a TE Connectivity Company
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:	☐ EN 55022:2006 +A1:2007, Class ☐ EN 55011:2007 +A2:2007, Group , Class ☒ 47 CFR, Part 22:2010, Enclosure Spurious Radiated Emissions ☒ 47 CFR, Part 24:2010, Enclosure Spurious Radiated Emissions ☐ ICES-003, Issue 4:2004 ☐ EN 55014-1:2006 ☐ EN 61326-1:2006 ☐ Class for Radiated and Conducted Emissions ☐ Basic Immunity Test Requirements ☐ Immunity Test Requirements for Industrial Locations ☐ EN 60601-1-2:2001 +A1:2006 ☐ EN 61000-6-3:2007 ☐ EN 61000-6-4:2007 ☐ EN 61000-3-2:2006 ☐ EN 61000-3-3:1995 +A1:2001 +A2:2006 ☐ EN 61000-6-1:2007 ☐ EN 61000-6-2:2005 ☐ EN 55024:1998 + A1:2001 + A2:2003
Date Sample Submitted:	October 26, 2012
Test Work Started:	October 26, 2012
Test Work Completed:	October 26, 2012
Test Sample Conditions:	☐ Damaged ☐Poor (Usable) ☒ Good ☐ Prototype ☒Production ☐ 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: ±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:	☒ 120VAC ☐ 230VAC ☐ 400VAC ☐ other
Rated current:	Amp.
Rated frequency:	☐ 50Hz ☒ 60Hz
Number of phases:	☒ 1 Phase ☐ 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 at 43dBm output power
2	Continuous transmitting at 1931MHz, 1962MHz, and 1994MHz at 43dBm output power

Cables:

No.	Type	Length	Designation	Note
1	Fibre optic	10m	RF signal cables to the Support Equipment	
2	3-wire unshielded	2m	AC Power	

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	
4	30dB Attenuator (2)	

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

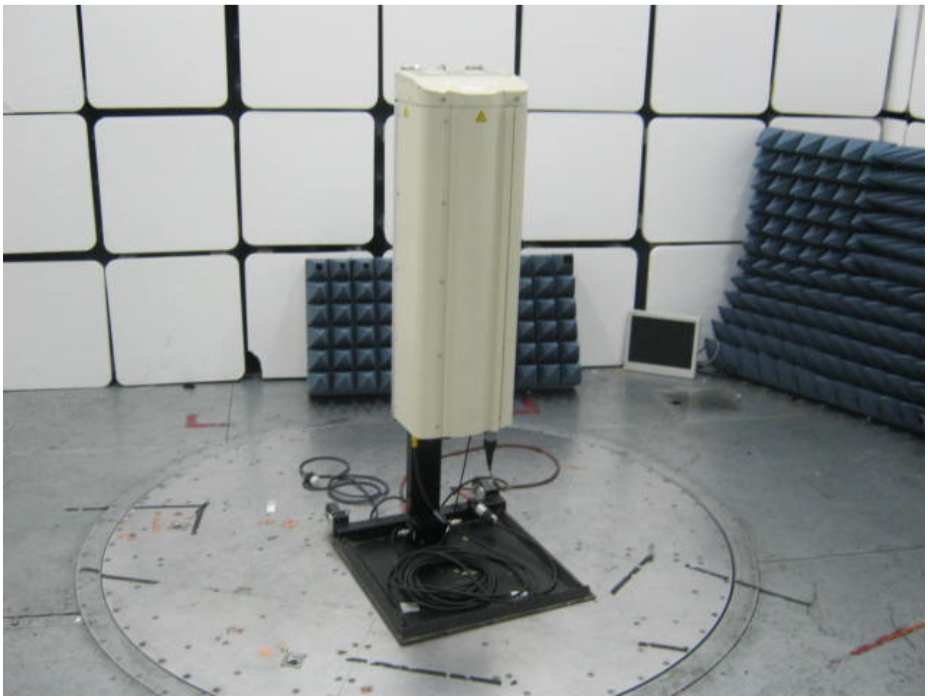
4.1 Enclosure Spurious Radiated Emissions

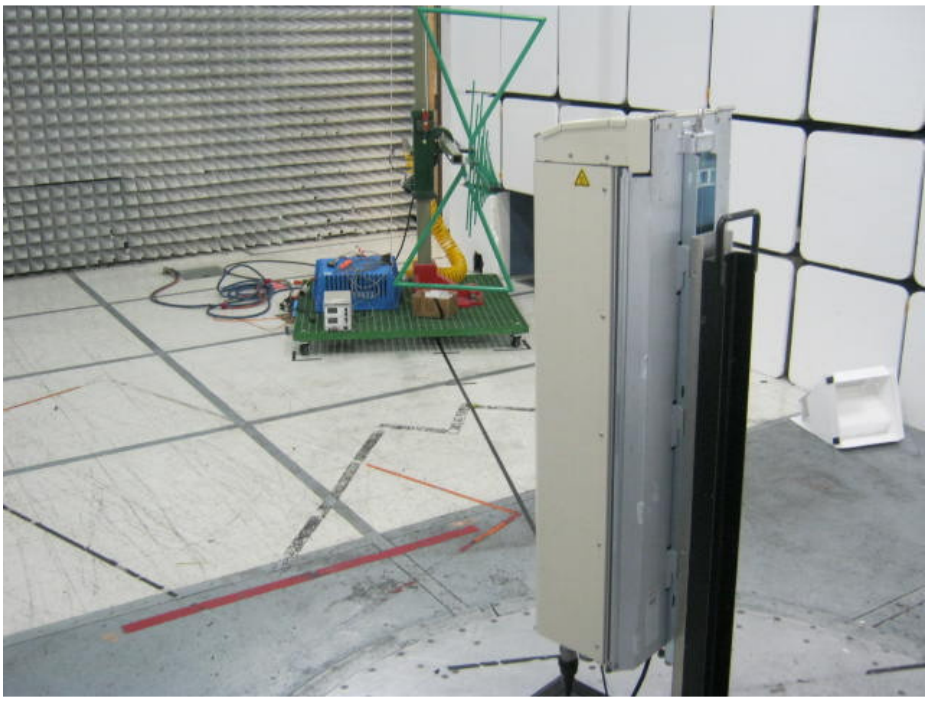
Description of the test location

Test location:	☐ OATS	☒ Anechoic Chamber
Test distance:	☐ 10 meters	☒ 3 meters
Test result:	**Pass**	
Frequency range:		30MHz-10GHz (850 Band) 30MHz-20GHz (1900 Band)
Max. Emissions margin:		22.6 dB below the Limits

Notes:

1. The Radiated Emissions testing was performed in the Anechoic chamber at 3m measurement distance (see Table 1 & 2 and Graphs 1-30)
2. The Spurious Radiated Power limits of -13dBm was correlated with field strength Reference Limit of 82.2dBµV/m during field strength measurements at 3m measurement distance
3. No emissions were chosen for substitution measurements as the maximum field strength emission is more than 20dB below the Reference Limit
4. Emissions at operating frequencies were excluded from the Tables





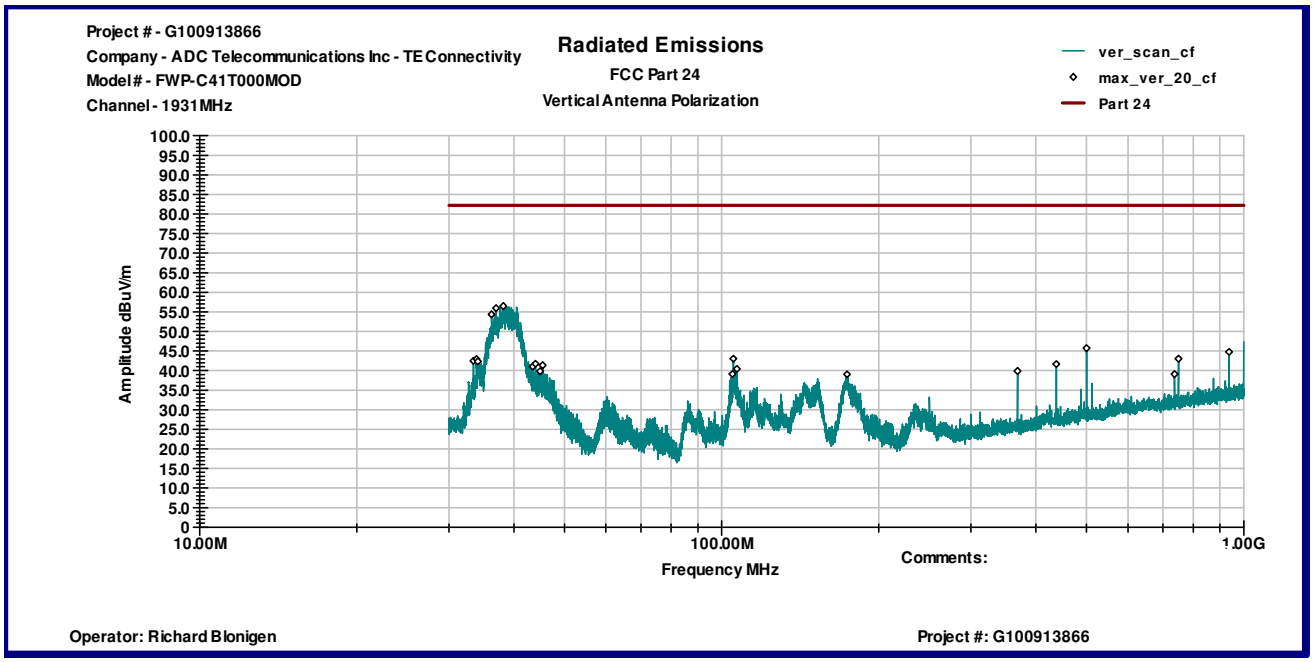
Test Setup Photos

Test Setup Photos

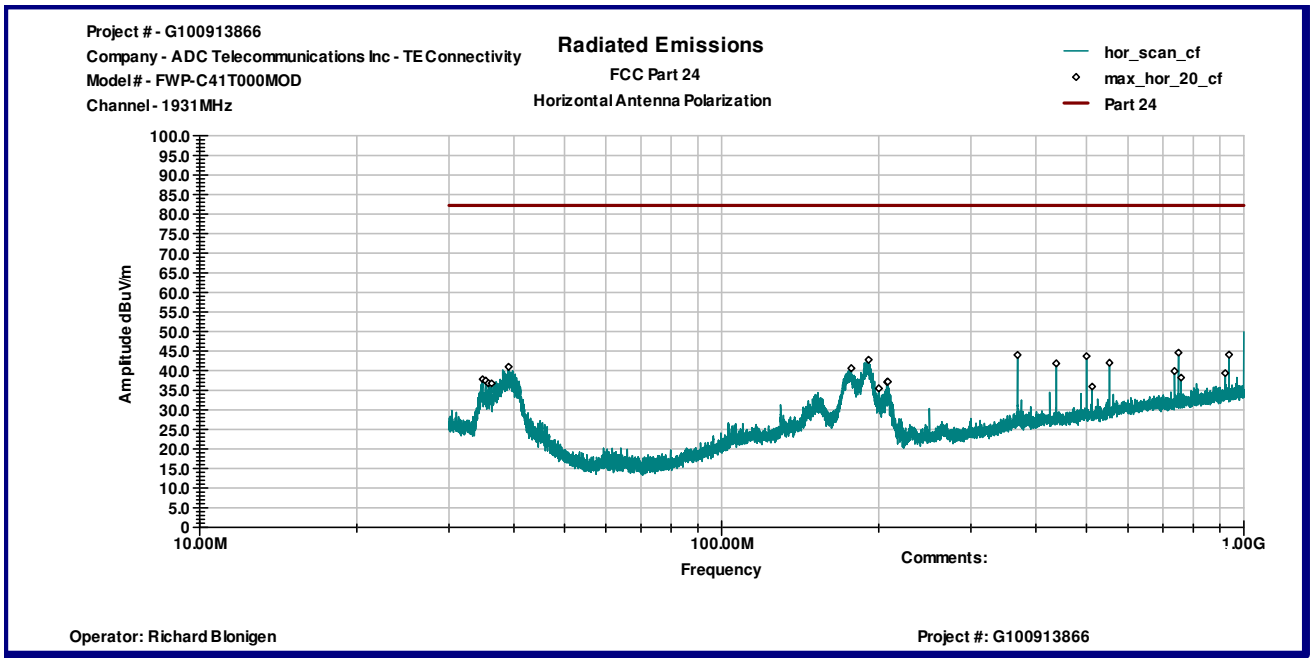
Date:	October 26, 2012	**Result:** **Pass**
Tested by:	Richard Blonigen	
Standard:	FCC Part 24	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Channels 1931 - 1994MHz Frequency Range 30MHz-20GHz	

Table 1

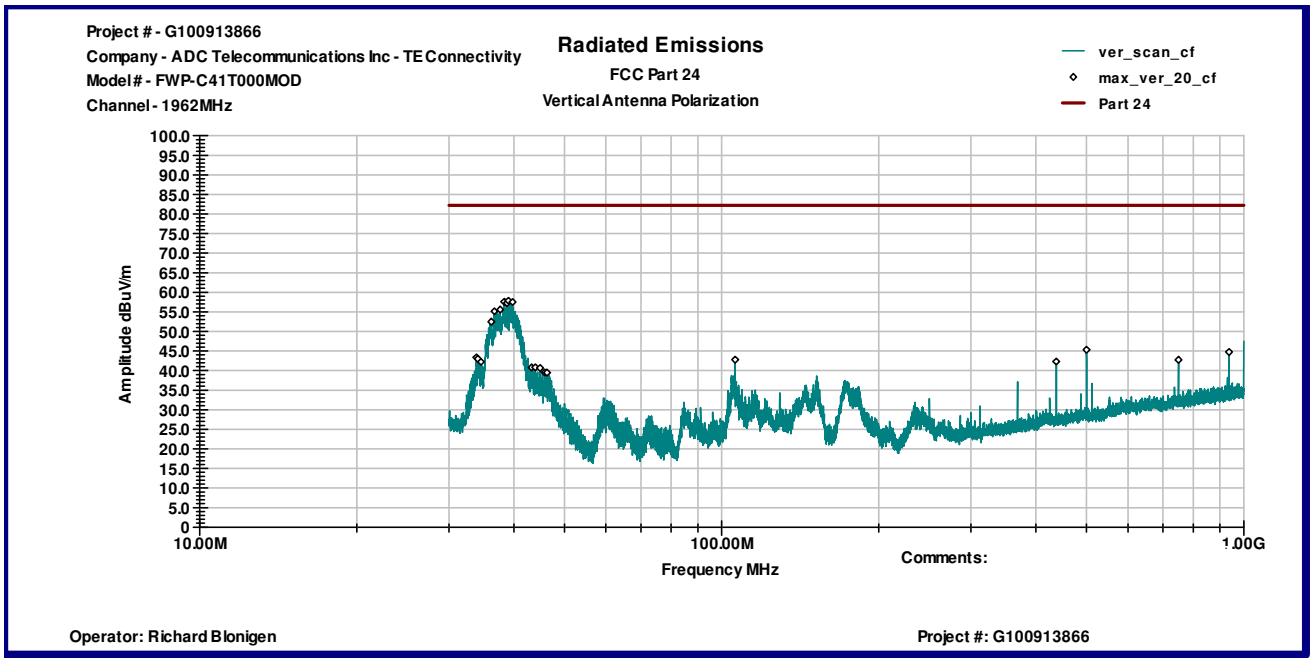
Frequency MHz	Antenna Polarity	Peak Reading dBµV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBµV/m	Limit dBµV/m	Margin dB
Channel 1931MHz							
36.24 MHz	V	37.5	16.9	0.0	54.3	82.2	-27.9
36.952 MHz	V	39.5	16.5	0.0	55.9	82.2	-26.3
38.156 MHz	V	40.7	15.8	0.0	56.5	82.2	-25.7
499.98 MHz	V	25.0	20.7	0.0	45.7	82.2	-36.5
2.1118 GHz	V	63.1	30.4	43.5	50.0	82.2	-32.2
3.8628 GHz	V	56.5	36.1	43.2	49.5	82.2	-32.7
1.2482 GHz	H	69.2	26.6	42.9	52.9	82.2	-29.3
1.8398 GHz	H	61.4	29.1	43.4	47.2	82.2	-35.1
2.0676 GHz	H	58.4	30.1	43.5	44.9	82.2	-37.3
2.1118 GHz	H	65.2	30.2	43.5	51.9	82.2	-30.3
3.0332 GHz	H	60.1	33.5	43.8	49.7	82.2	-32.5
3.8628 GHz	H	59.6	35.9	43.2	52.3	82.2	-29.9
Channel 1962MHz							
38.308 MHz	V	41.9	15.7	0.0	57.6	82.2	-24.7
38.799 MHz	V	41.9	15.4	0.0	57.3	82.2	-25.0
39.009 MHz	V	42.6	15.3	0.0	57.8	82.2	-24.4
39.745 MHz	V	42.6	14.9	0.0	57.5	82.2	-24.7
2.1118 GHz	V	63.1	30.4	43.5	50.0	82.2	-32.2
3.924 GHz	V	57.6	36.3	43.1	50.9	82.2	-31.4
749.99 MHz	H	21.6	23.8	0.0	45.4	82.2	-36.8
937.54 MHz	H	18.7	25.7	0.0	44.4	82.2	-37.8
1.2482 GHz	H	69.2	26.6	42.9	52.9	82.2	-29.3
2.1118 GHz	H	65.0	30.2	43.5	51.8	82.2	-30.5
3.0332 GHz	H	59.8	33.5	43.8	49.4	82.2	-32.8
3.924 GHz	H	66.6	36.1	43.1	59.6	82.2	-22.6
Channel 1994MHz							
37.607 MHz	V	40.4	16.1	0.0	56.5	82.2	-25.7
39.032 MHz	V	42.8	15.3	0.0	58.0	82.2	-24.2
39.313 MHz	V	42.6	15.1	0.0	57.7	82.2	-24.5
2.4212 GHz	V	63.6	31.4	43.5	51.5	82.2	-30.7
2.4416 GHz	V	64.8	31.5	43.5	52.7	82.2	-29.5
2.4518 GHz	V	66.0	31.5	43.5	54.0	82.2	-28.2
749.99 MHz	H	20.2	23.8	0.0	43.9	82.2	-38.3
937.54 MHz	H	17.7	25.7	0.0	43.5	82.2	-38.7
1.2482 GHz	H	69.1	26.6	42.9	52.8	82.2	-29.4
2.1118 GHz	H	65.1	30.2	43.5	51.8	82.2	-30.4
3.0332 GHz	H	59.2	33.5	43.8	48.9	82.2	-33.4
3.9886 GHz	H	57.7	36.3	43.0	50.9	82.2	-31.3



Graph 1



Graph 2



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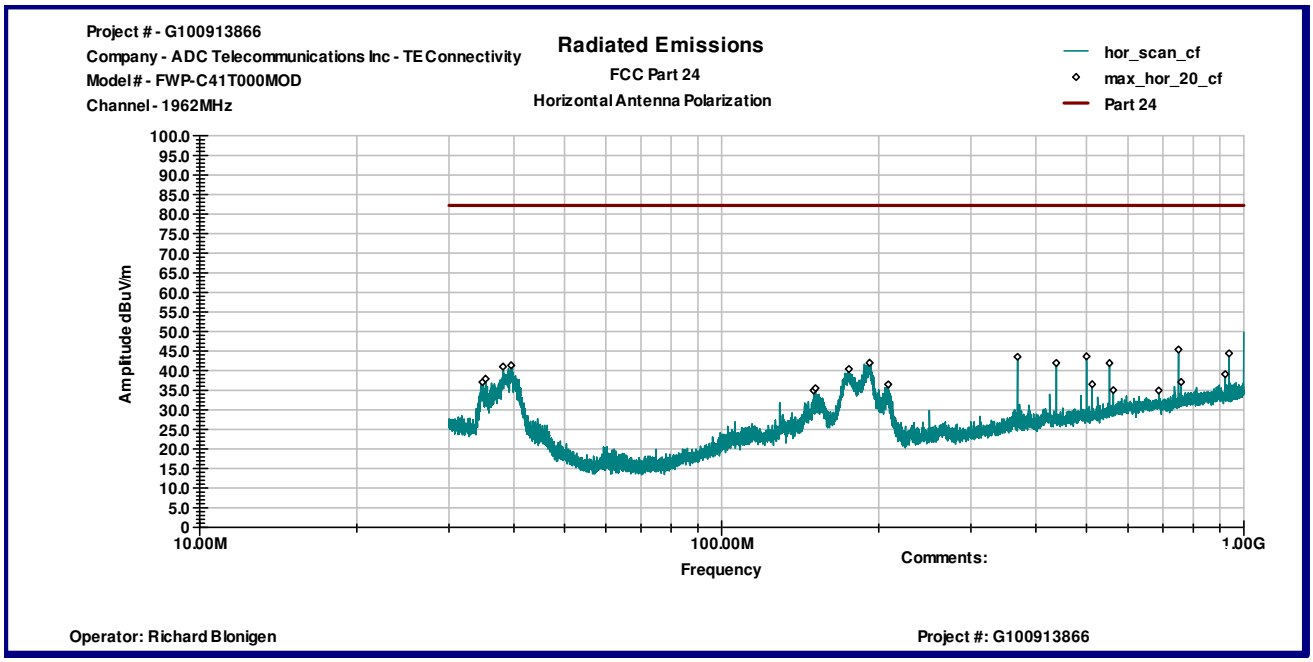

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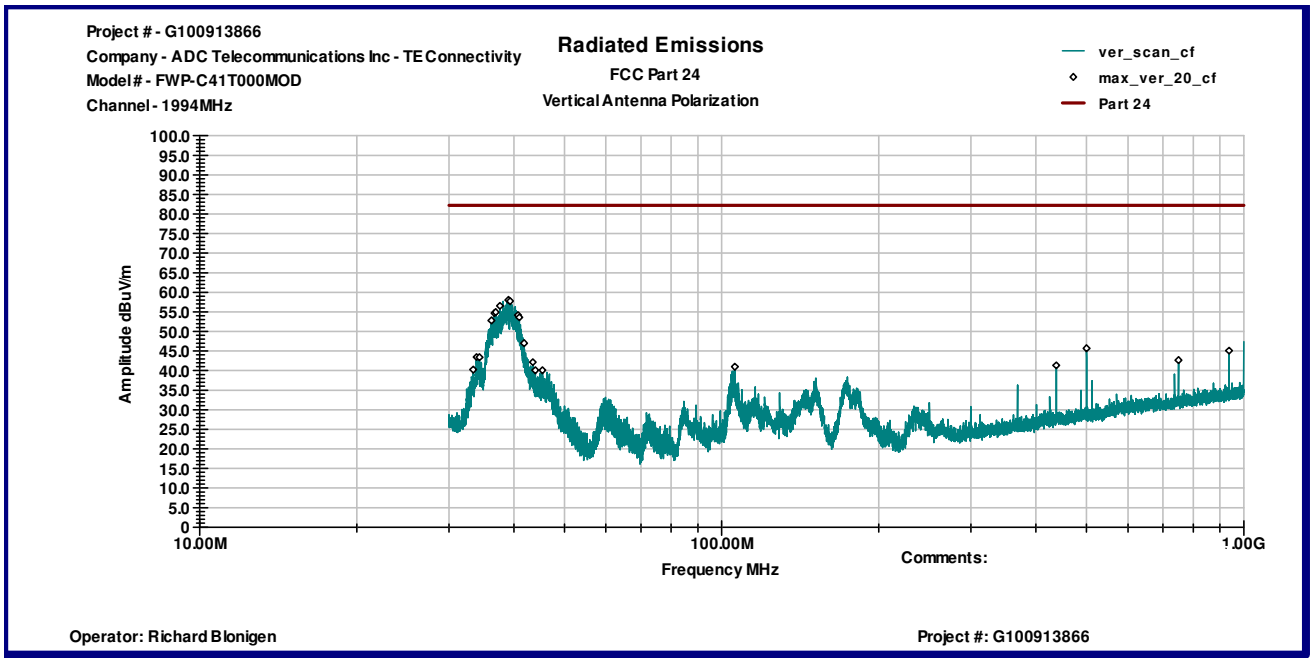

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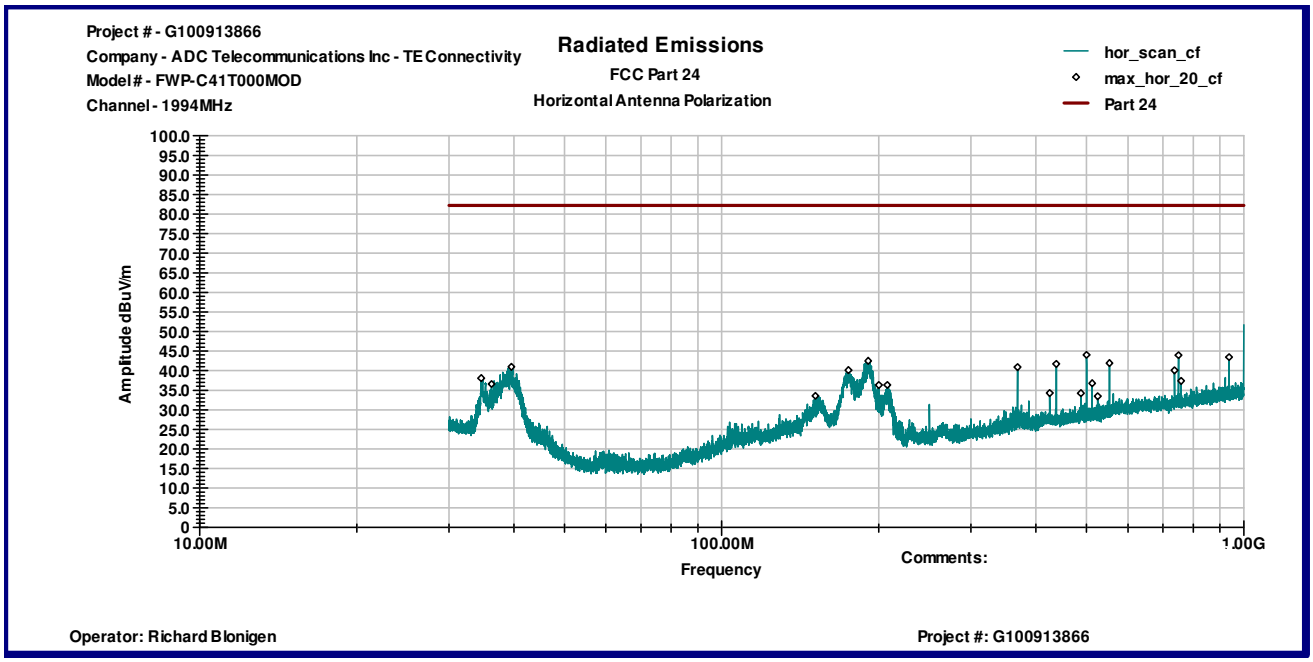

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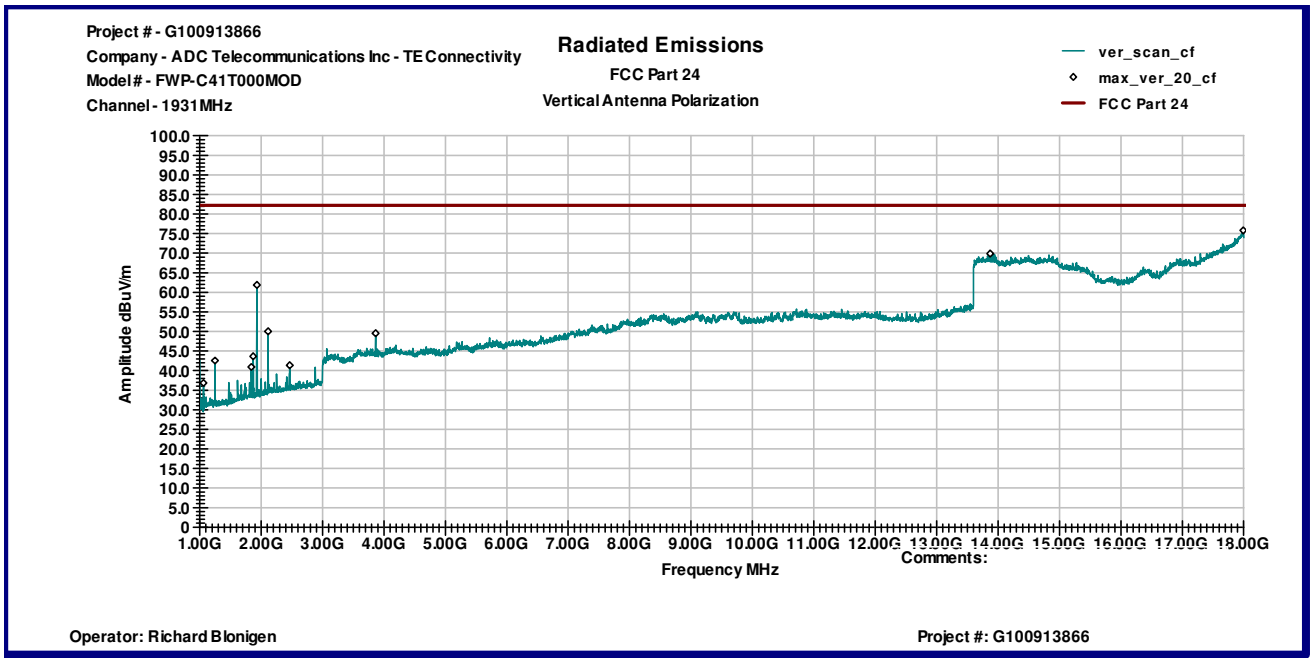

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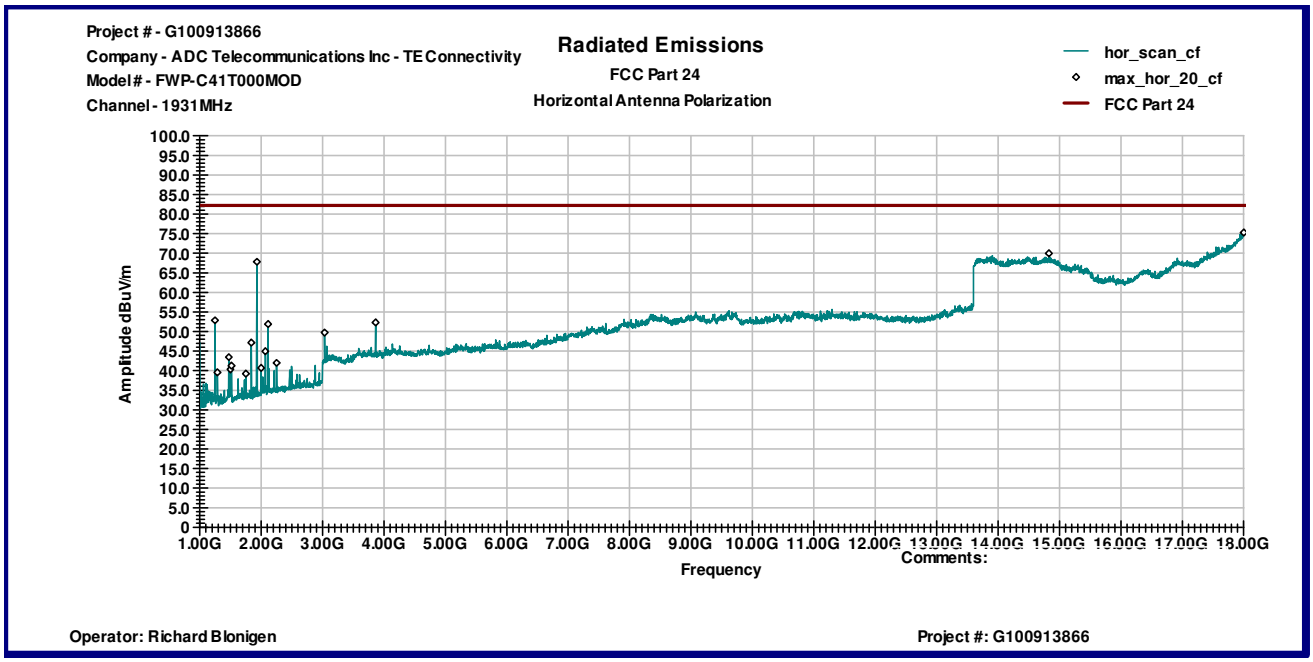
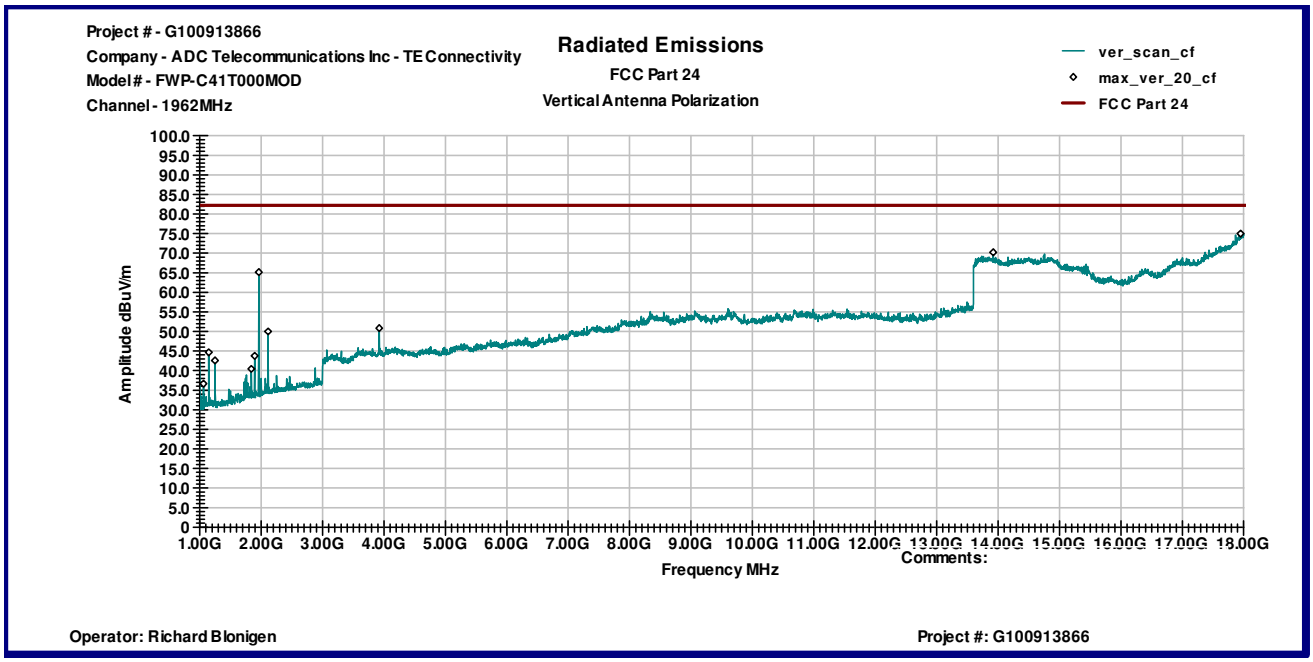
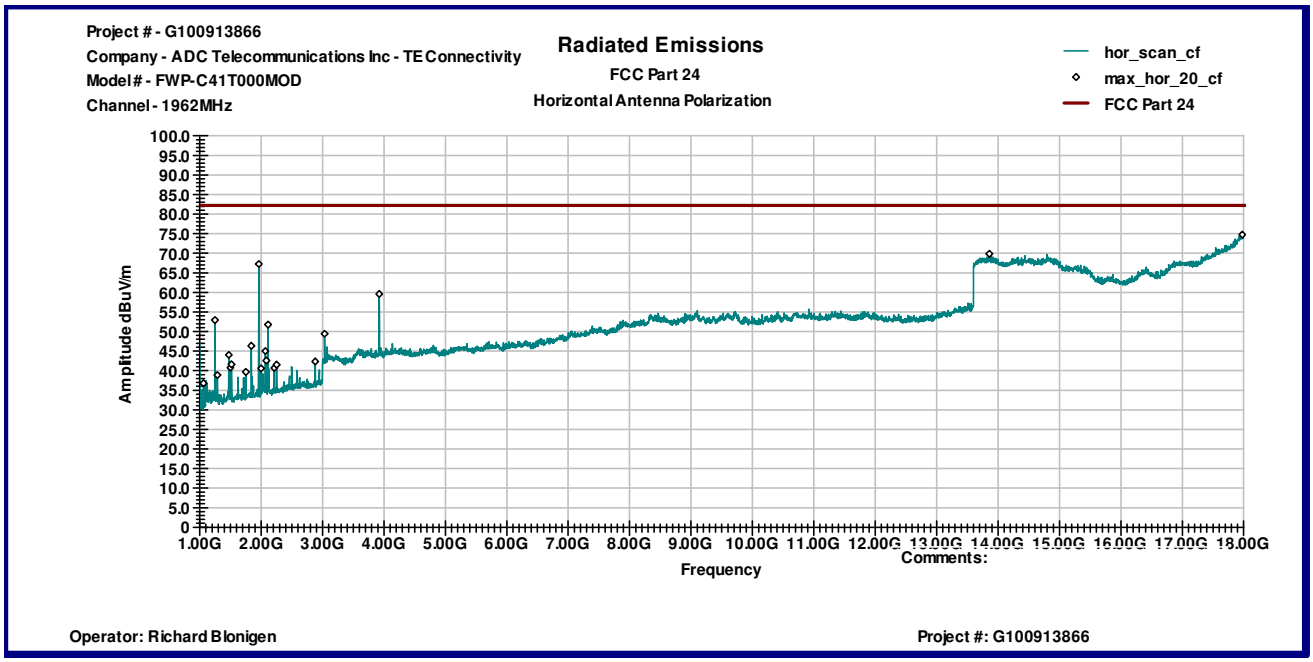


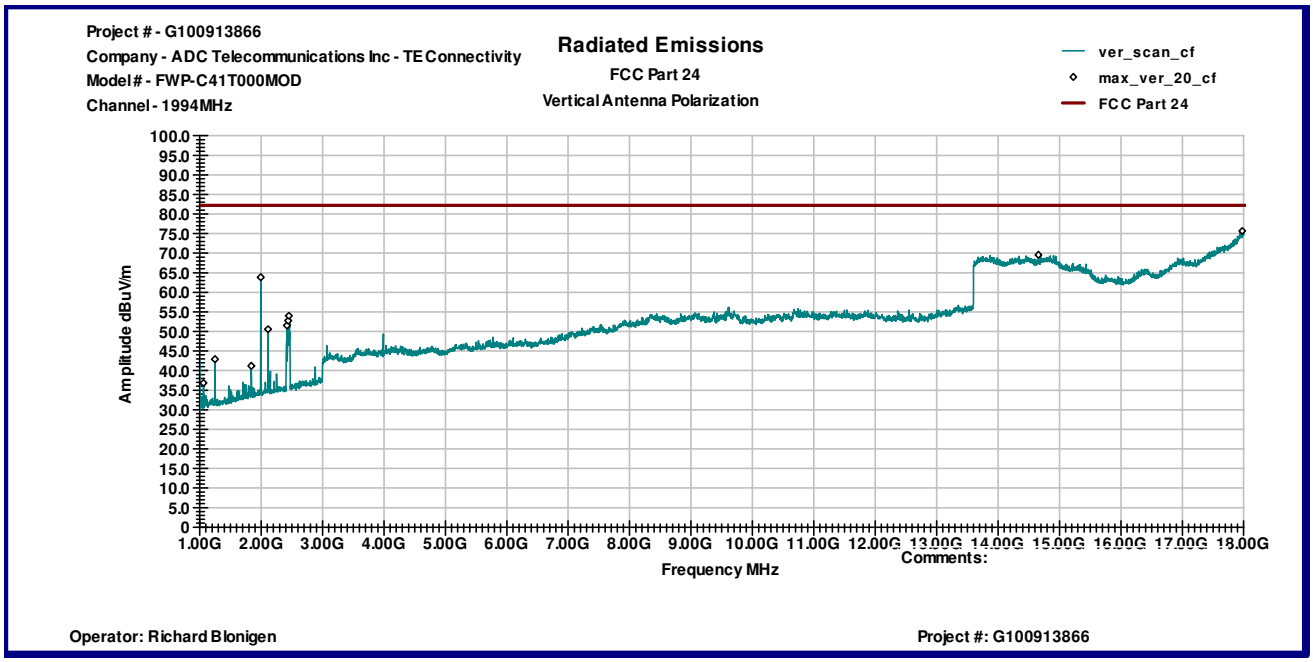
Graph 8



Graph 9



Graph 10



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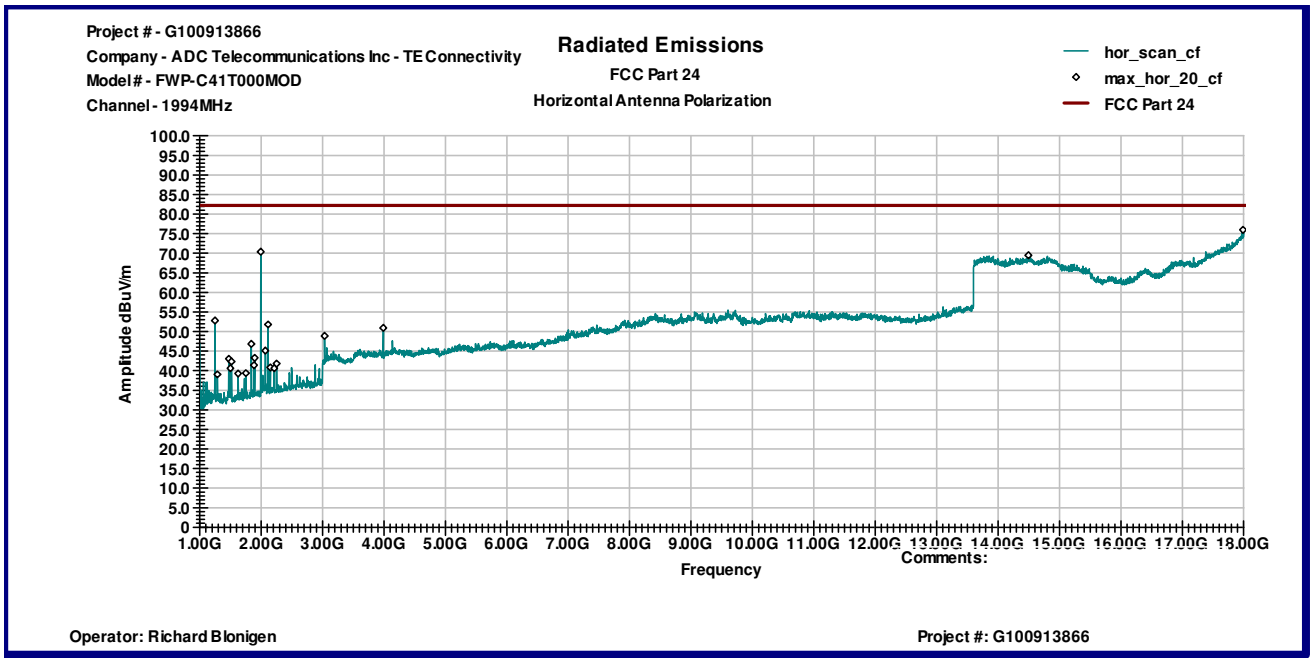
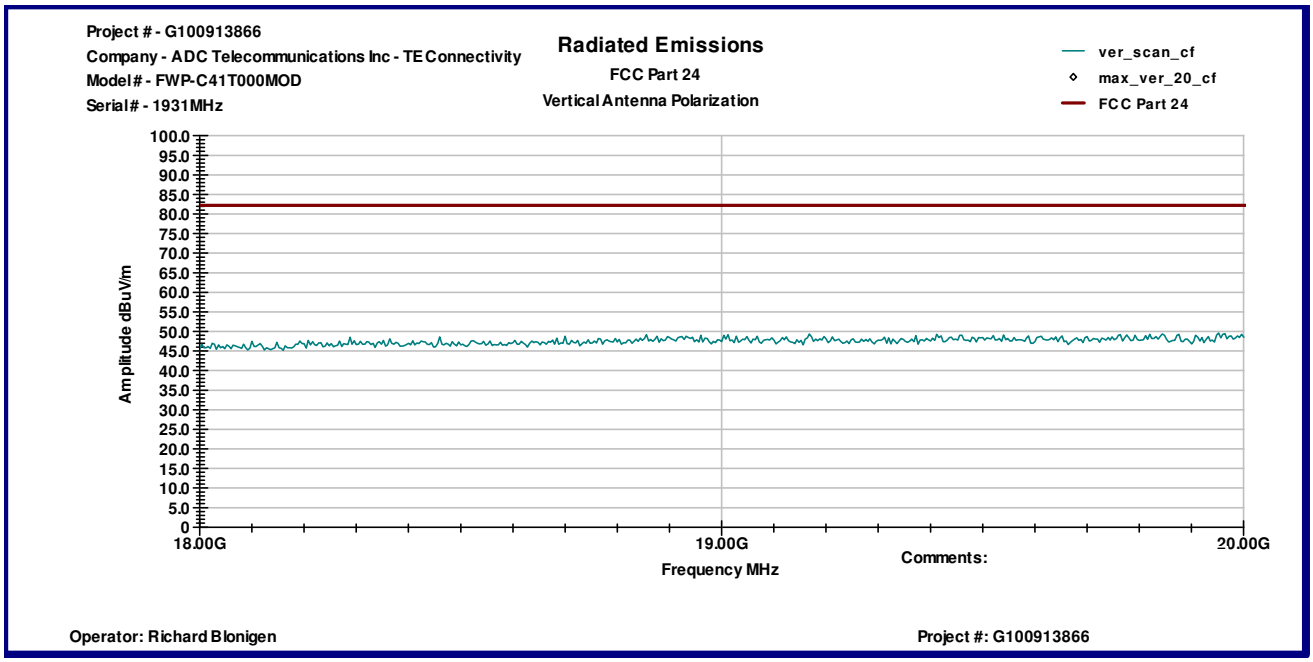
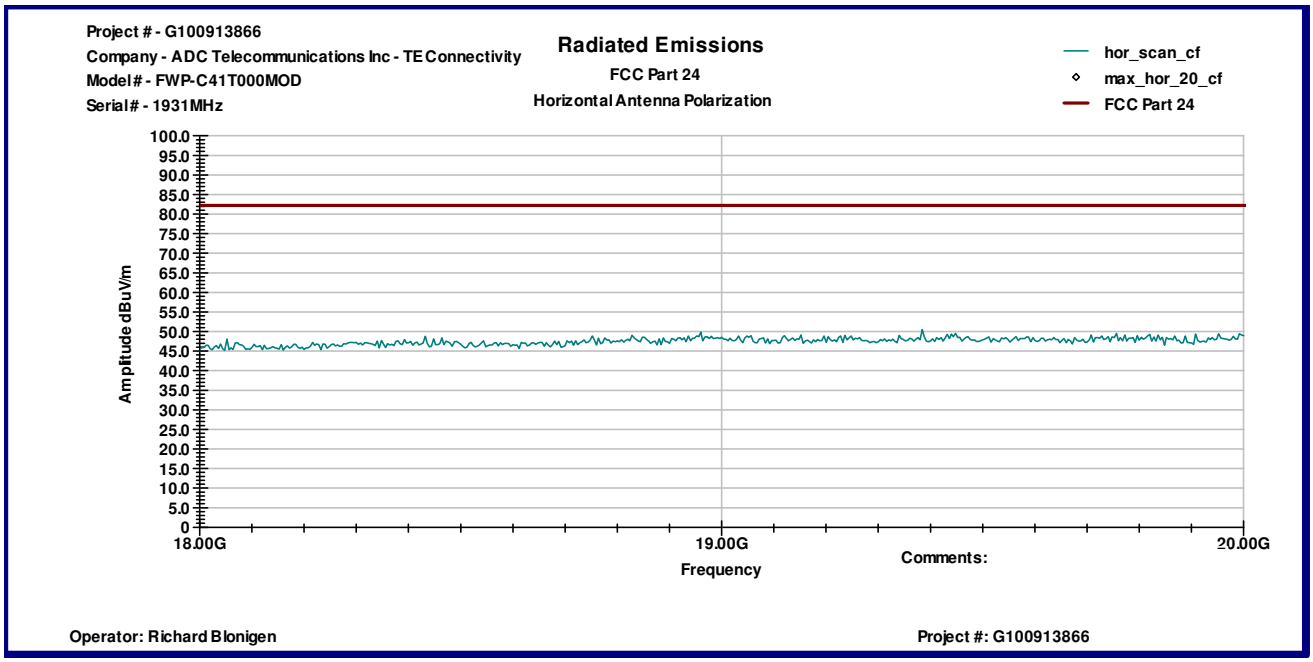


Graph 12



Graph 13



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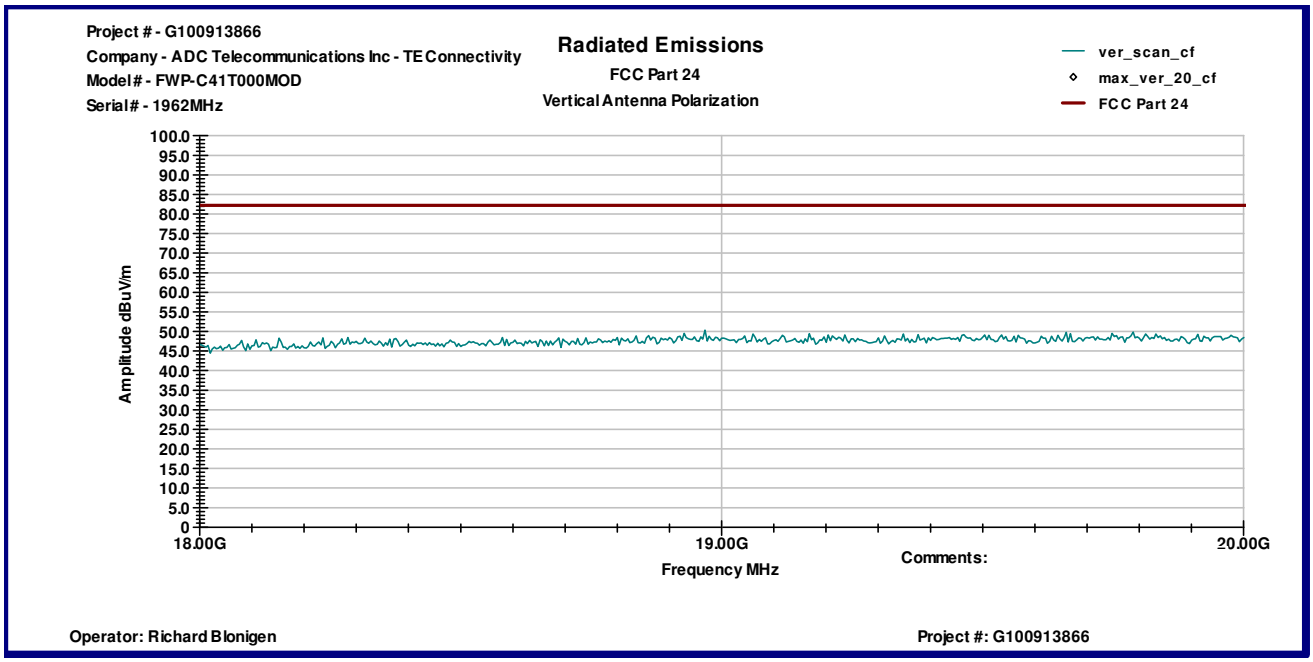

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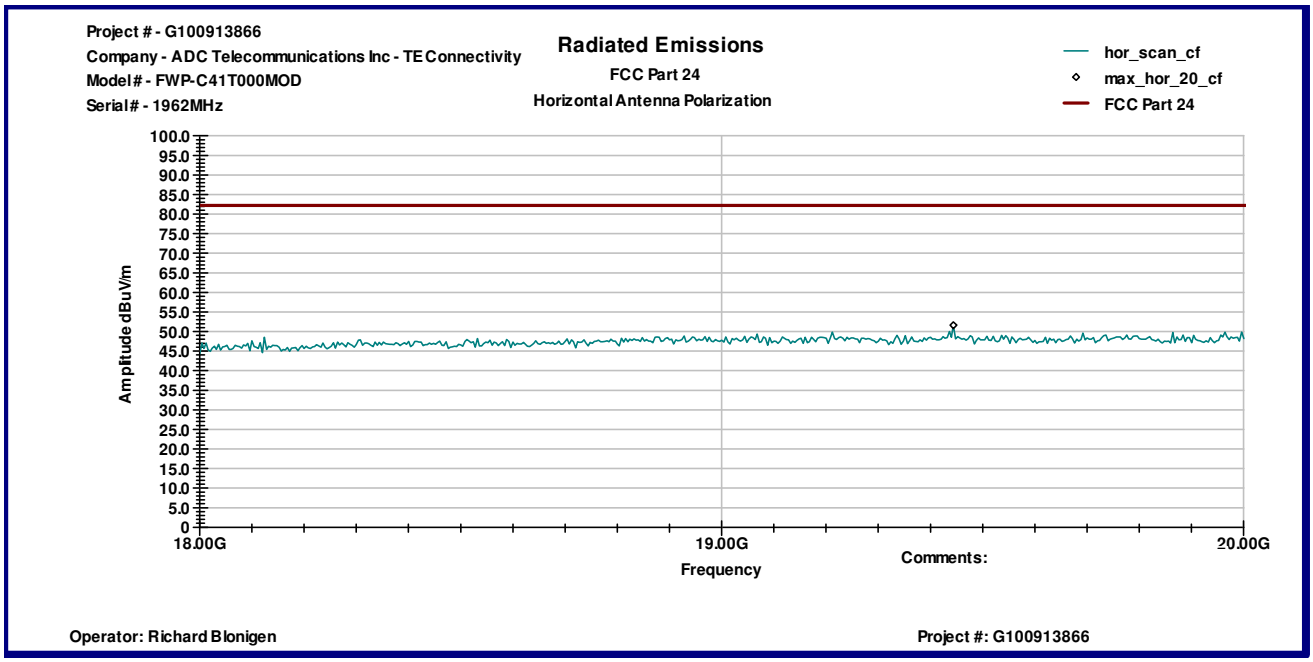

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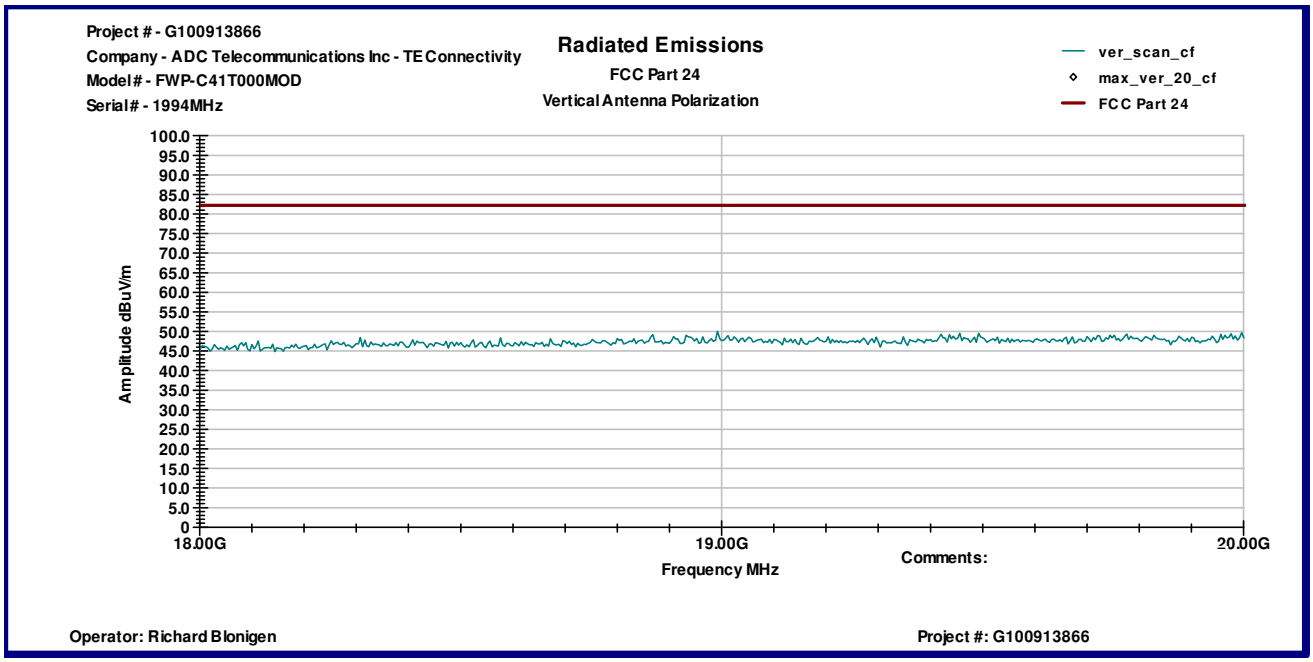
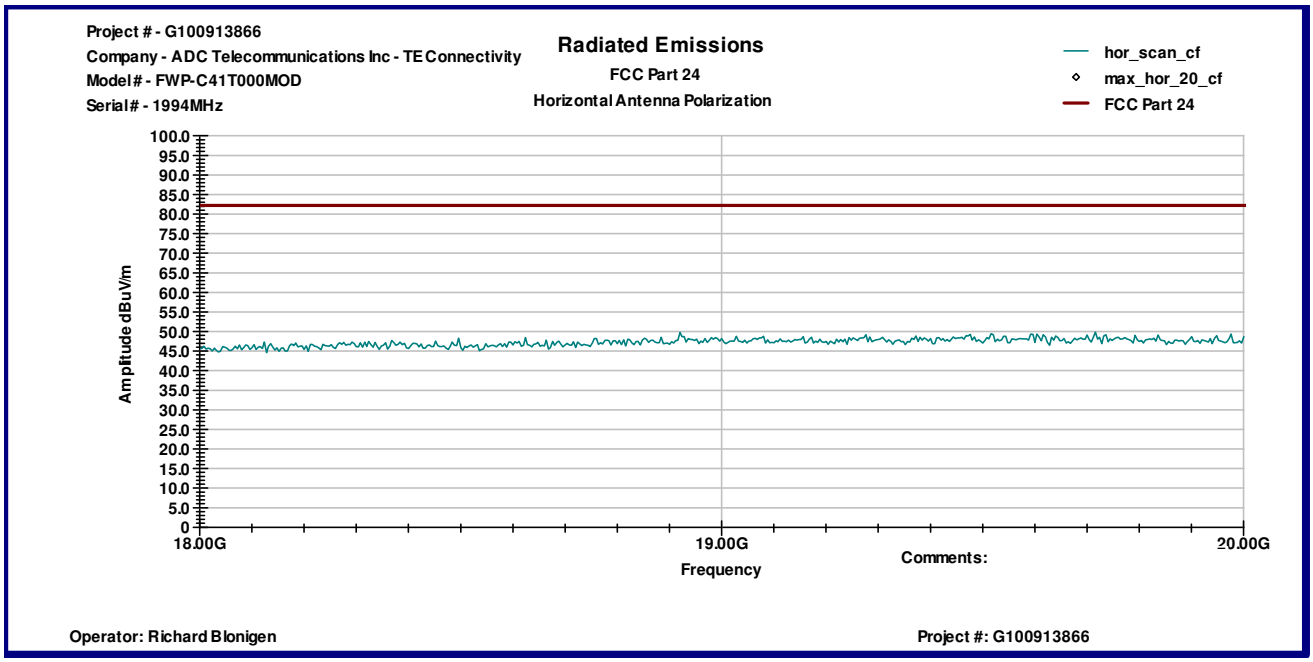


Graph 17

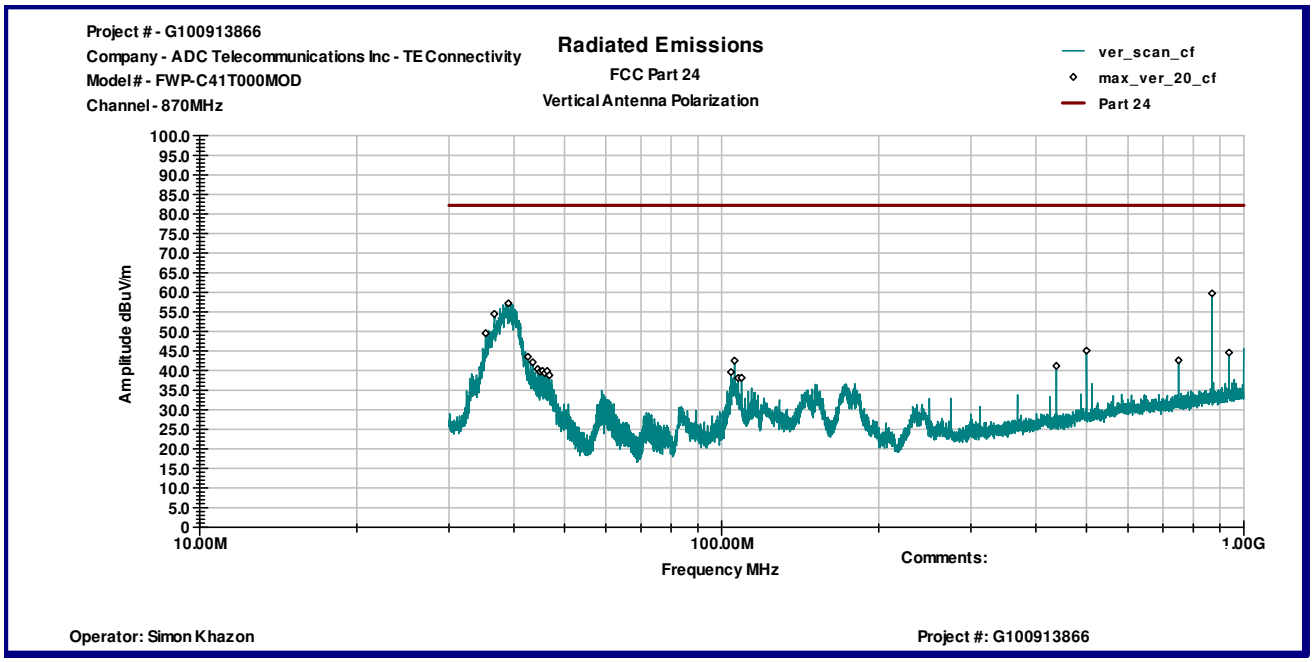


Graph 18

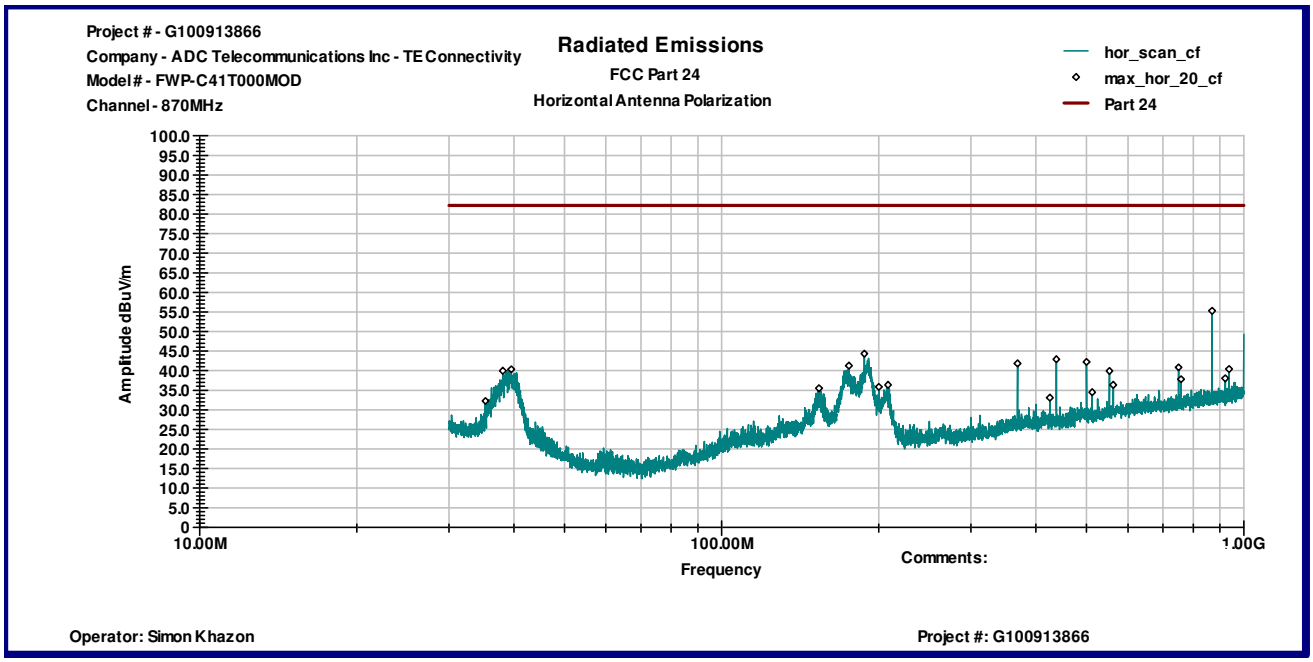
Date:	October 26, 2012	**Result:** **Pass**
Tested by:	Simon Khazon & Richard Blonigen	
Standard:	FCC Part 22	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Channels 870-893 MHz Frequency Range 30MHz-10GHz	

Table 2

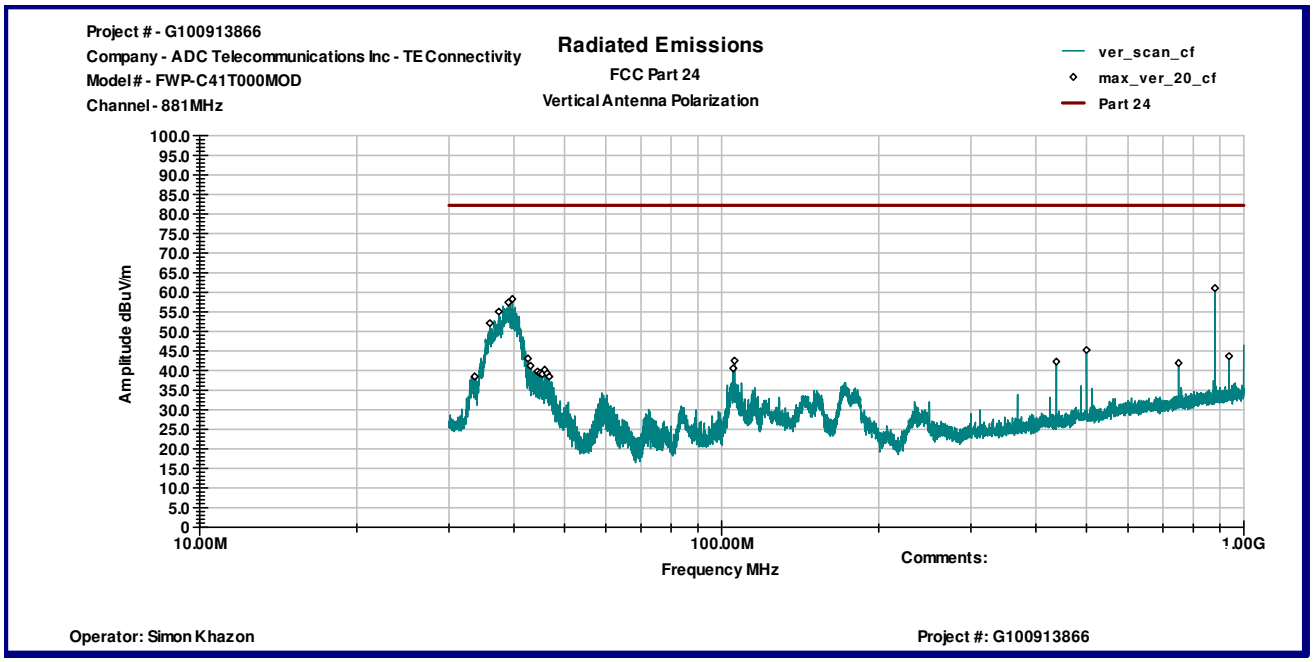
Frequency MHz	Antenna Polarity	Peak Reading dBµV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBµV/m	Limit dBµV/m	Margin dB
Channel 870MHz							
35.299 MHz	V	32.1	17.4	0.0	49.5	82.2	-32.7
36.668 MHz	V	37.8	16.6	0.0	54.5	82.2	-27.8
39.037 MHz	V	41.9	15.3	0.0	57.2	82.2	-25.0
937.65 MHz	V	18.9	25.7	0.0	44.6	82.2	-37.6
2.1106 GHz	V	59.4	30.4	43.5	46.3	82.2	-35.9
2.4598 GHz	V	55.0	31.5	43.5	43.0	82.2	-39.2
187.54 MHz	H	33.1	11.2	0.0	44.3	82.2	-37.9
437.57 MHz	H	23.3	19.6	0.0	42.9	82.2	-39.3
1.2502 GHz	H	69.1	26.6	42.9	52.8	82.2	-29.4
1.8406 GHz	H	60.6	29.1	43.4	46.4	82.2	-35.8
2.1106 GHz	H	64.2	30.2	43.5	50.9	82.2	-31.3
3.034 GHz	H	59.0	33.5	43.8	48.7	82.2	-33.5
Channel 881MHz							
35.966 MHz	V	35.1	17.0	0.0	52.1	82.2	-30.1
37.405 MHz	V	38.9	16.2	0.0	55.1	82.2	-27.1
39.037 MHz	V	42.1	15.3	0.0	57.4	82.2	-24.8
39.721 MHz	V	43.4	14.9	0.0	58.3	82.2	-23.9
499.94 MHz	V	24.6	20.7	0.0	45.2	82.2	-37.0
2.1106 GHz	V	59.7	30.4	43.5	46.6	82.2	-35.6
187.54 MHz	H	32.6	11.2	0.0	43.8	82.2	-38.4
437.57 MHz	H	23.0	19.6	0.0	42.6	82.2	-39.6
1.2502 GHz	H	68.8	26.6	42.9	52.5	82.2	-29.7
1.8406 GHz	H	59.4	29.1	43.4	45.1	82.2	-37.1
2.1124 GHz	H	64.0	30.2	43.5	50.7	82.2	-31.5
3.034 GHz	H	59.0	33.5	43.8	48.7	82.2	-33.5
Channel 893MHz							
36.229 MHz	V	35.7	16.9	0.0	52.6	82.2	-29.6
39.528 MHz	V	42.8	15.0	0.0	57.8	82.2	-24.4
499.94 MHz	V	25.5	20.7	0.0	46.2	82.2	-36.0
937.65 MHz	V	18.2	25.7	0.0	43.9	82.2	-38.3
1.2502 GHz	V	59.7	26.6	42.9	43.4	82.2	-38.9
2.1124 GHz	V	60.1	30.4	43.5	47.0	82.2	-35.2
190.28 MHz	H	31.9	11.3	0.0	43.1	82.2	-39.1
937.65 MHz	H	19.3	25.7	0.0	45.0	82.2	-37.2
1.2502 GHz	H	69.0	26.6	42.9	52.7	82.2	-29.5
1.8406 GHz	H	59.3	29.1	43.4	45.1	82.2	-37.2
2.1106 GHz	H	63.9	30.2	43.5	50.6	82.2	-31.6
3.034 GHz	H	59.0	33.5	43.8	48.7	82.2	-33.5



Graph 19



Graph 20



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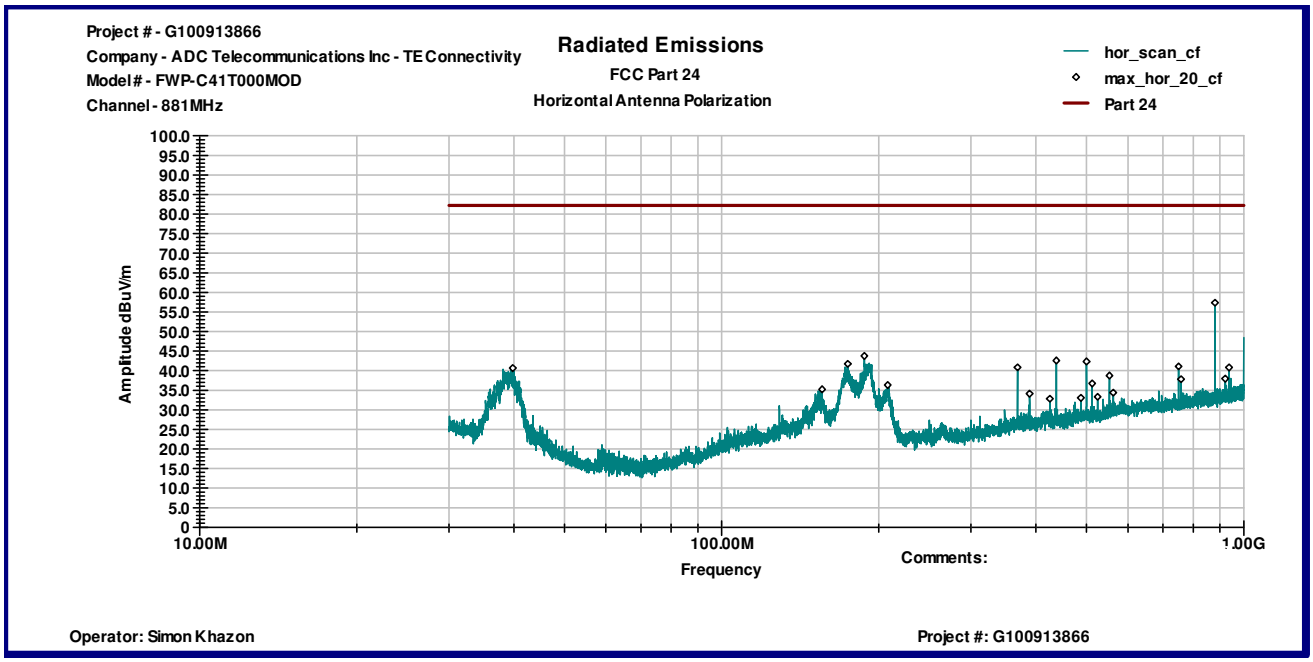

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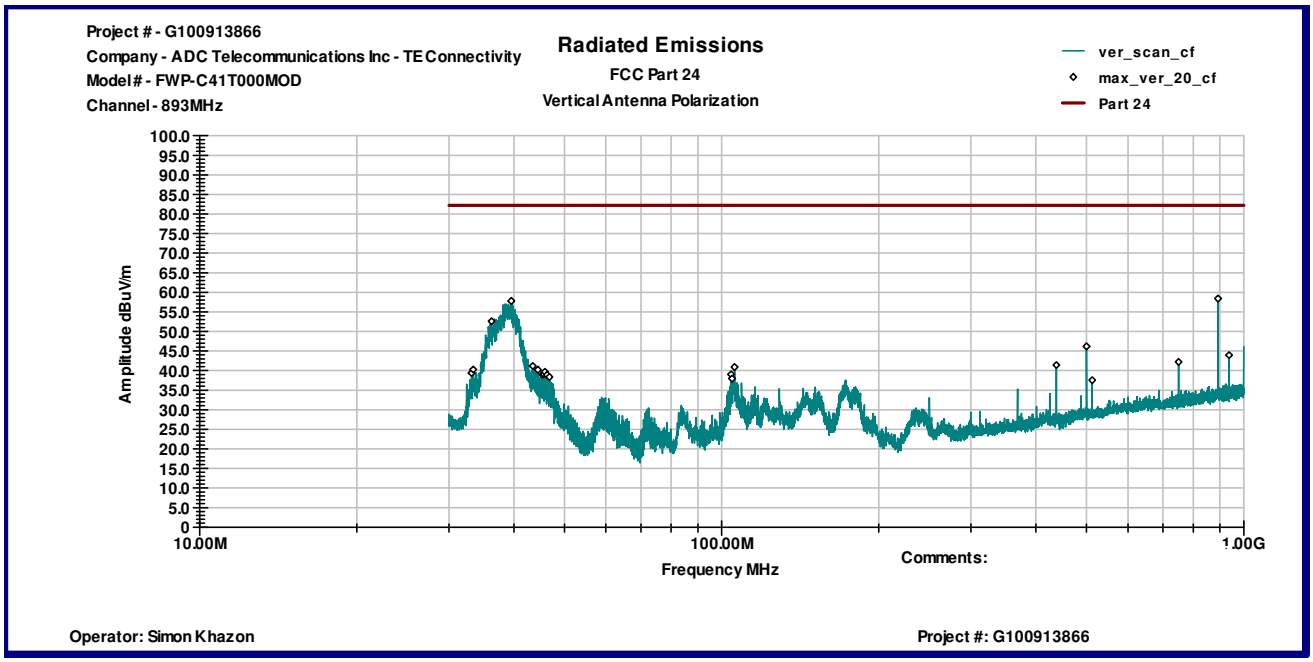
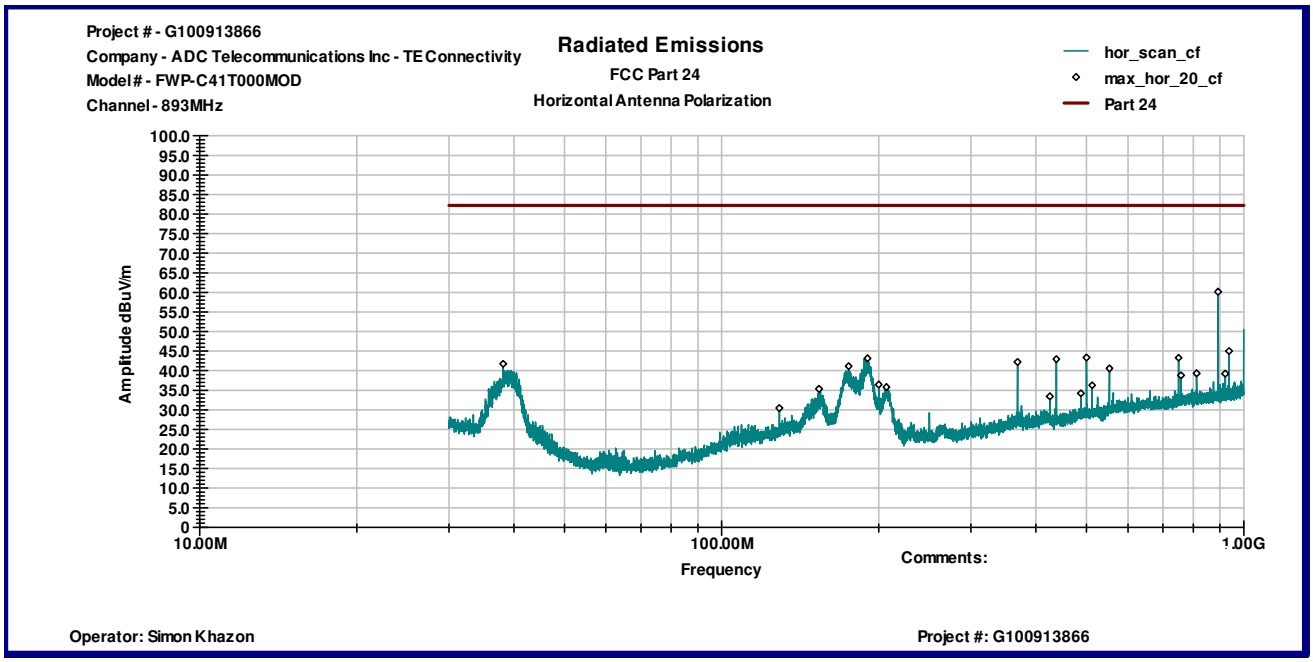
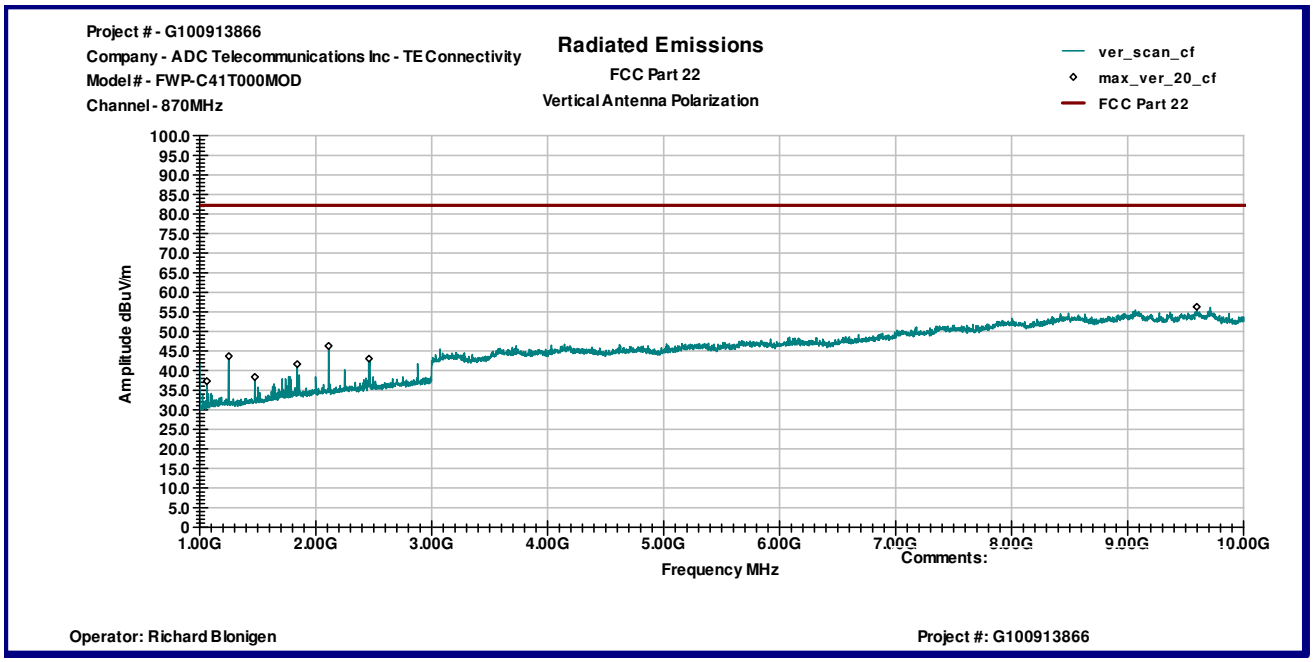


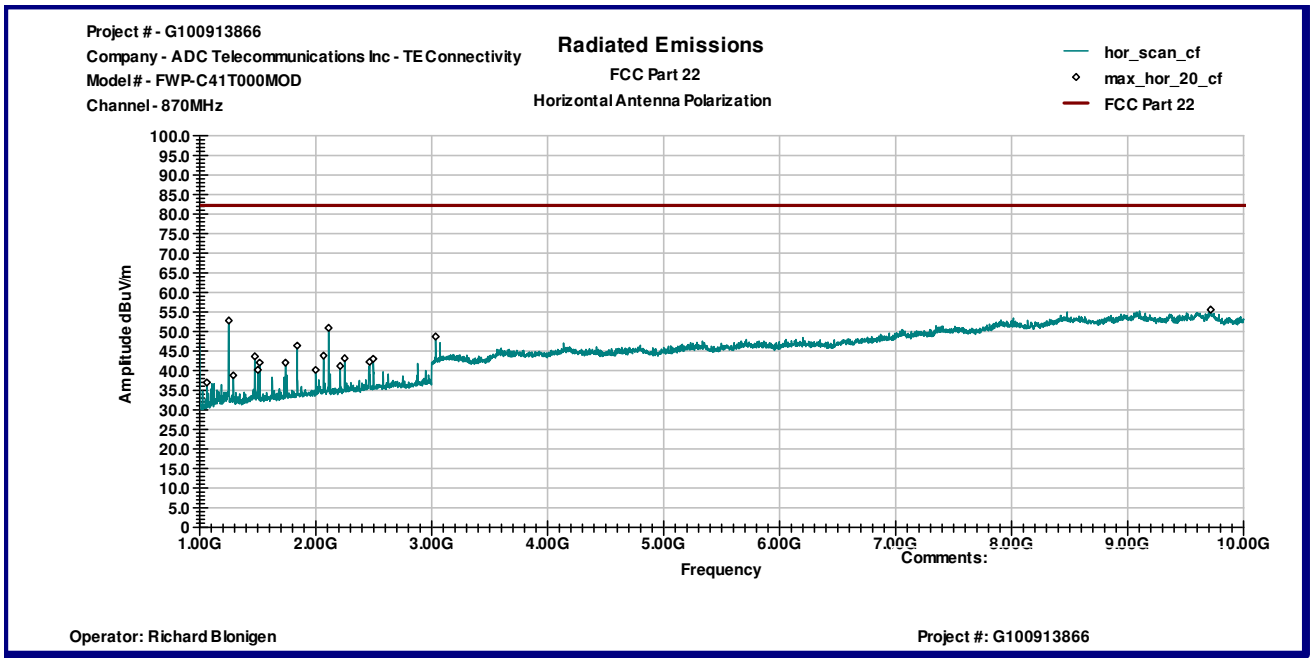
Graph 23



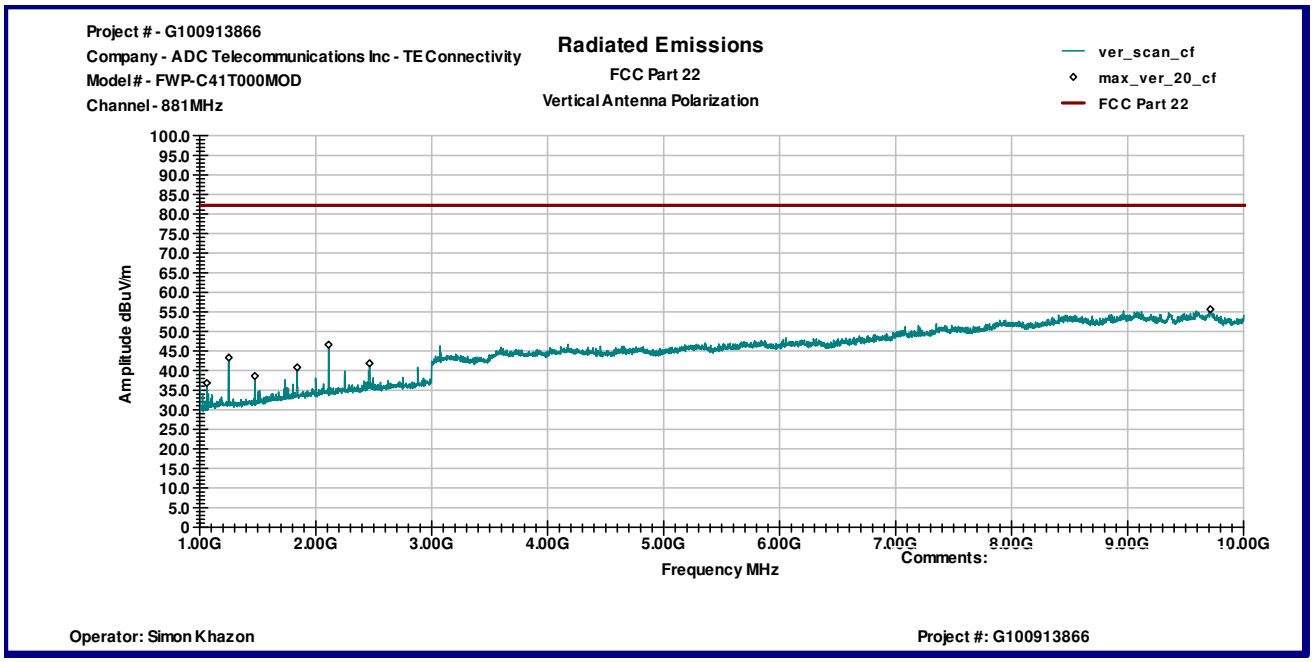
Graph 24



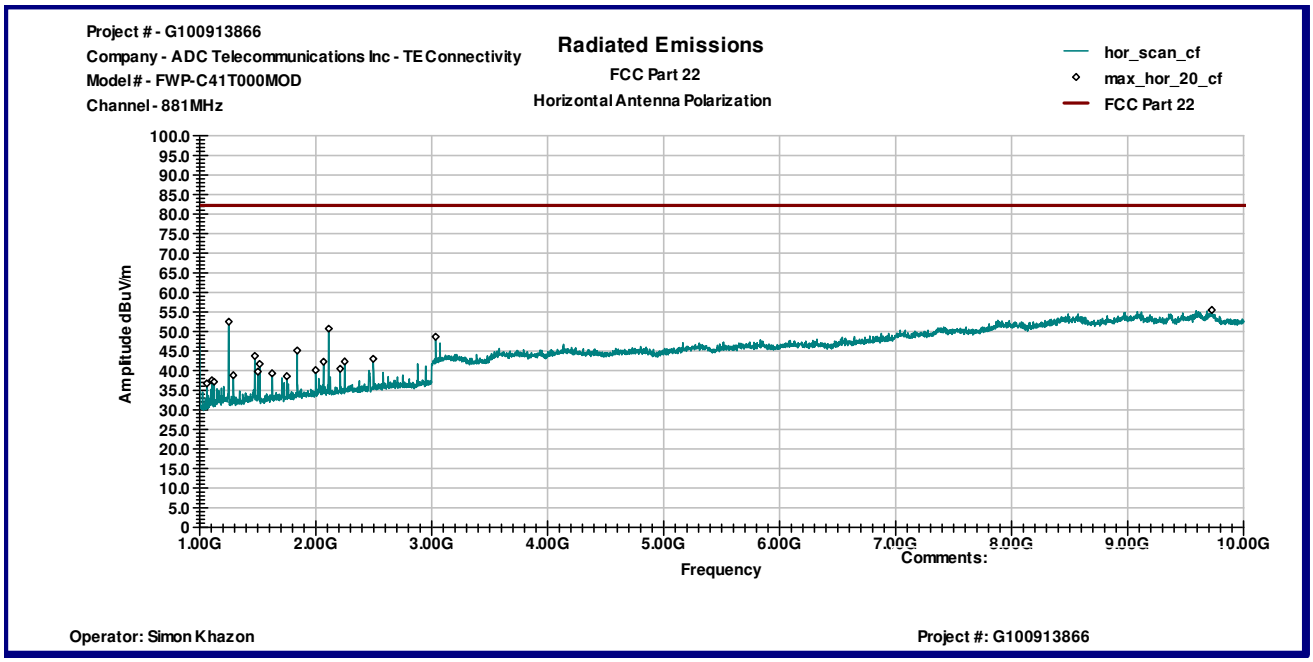
Graph 25



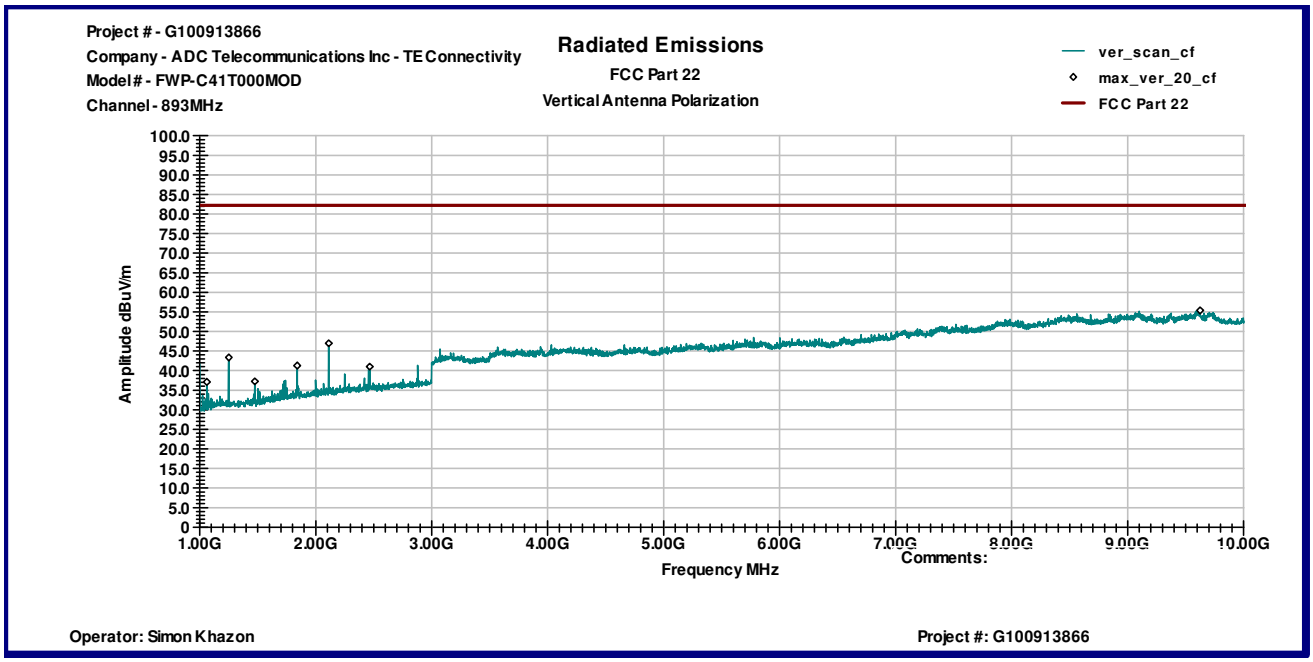
Graph 26



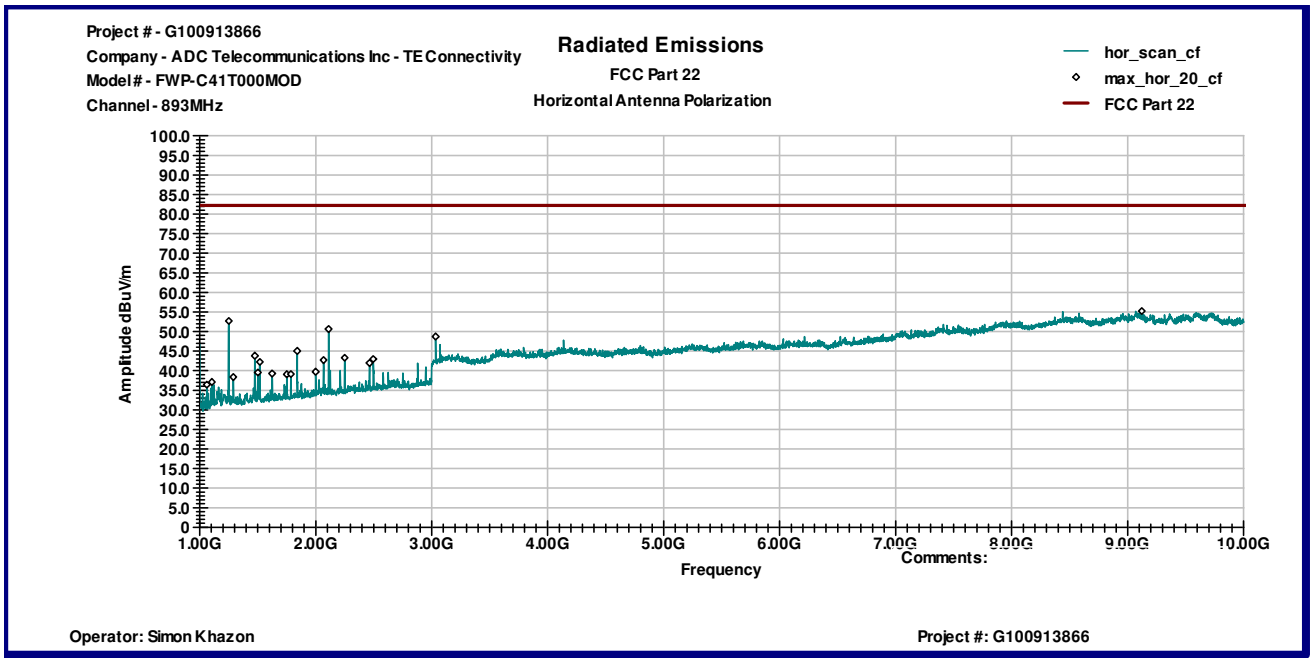
Graph 27



Graph 28



Graph 29



Graph 30

5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	R & S	FSP 40	100024	12559	11/17/2012	☒
Spectrum Analyzer	R & S	ESU	100398	25283	12/09/2012	☒
Bicono-Log Antenna	Teseq	CBL6112D	32859	25289	08/09/2013	☒
Horn Antenna	EMCO	3115	9507-4513	9936	05/16/2013	☒
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	10/31/2012	☒
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1402232	172081	10/31/2012	☒
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	MIN-0065	10/31/2012	☒
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	☒