



TEST DATA REPORT

Report Number: 100779277MIN-001

Project Number: G100779277

Testing performed on the
SPT-M3-8519-11-SH

to

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

Date: June 14, 2012

Reviewed by: Norman Shpilsher
Norman Shpilsher

Date: June 14, 2012

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..... 32

1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	SPT-M3-8519-11-SH
Type of EUT:	Spectrum Cellp1/HP PCSp1MRAU
Frequency Range:	869-894MHz (CELL Band) 1930-1995MHz (PCS Band)
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 24:2010, Enclosure Spurious Radiated Emissions ☒ 47 CFR, Part 22:2010, 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:	June 11, 2012
Test Work Started:	June 11, 2012
Test Work Completed:	June 13, 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 24	Enclosure Spurious Radiated Emissions	Pass
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: ± 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 ☒ 54VDC from external support Power Supply ☐ 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
2	Continuous transmitting at 1931MHz, 1962MHz, and 1994MHz
3	RF Input setting: -10.7dBm; 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	SMR 20	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:	<u>15-35 ° C</u>
---------------------	------------------

Humidity:	<u>30-60 %</u>
------------------	----------------

Atmospheric pressure:	<u>86-106 kPa</u>
------------------------------	-------------------

4.0 TEST CONDITIONS AND RESULTS

4.1 Enclosure Spurious Radiated Emissions

Description of the test location

Test location: ☐ OATS ☒ Anechoic Chamber

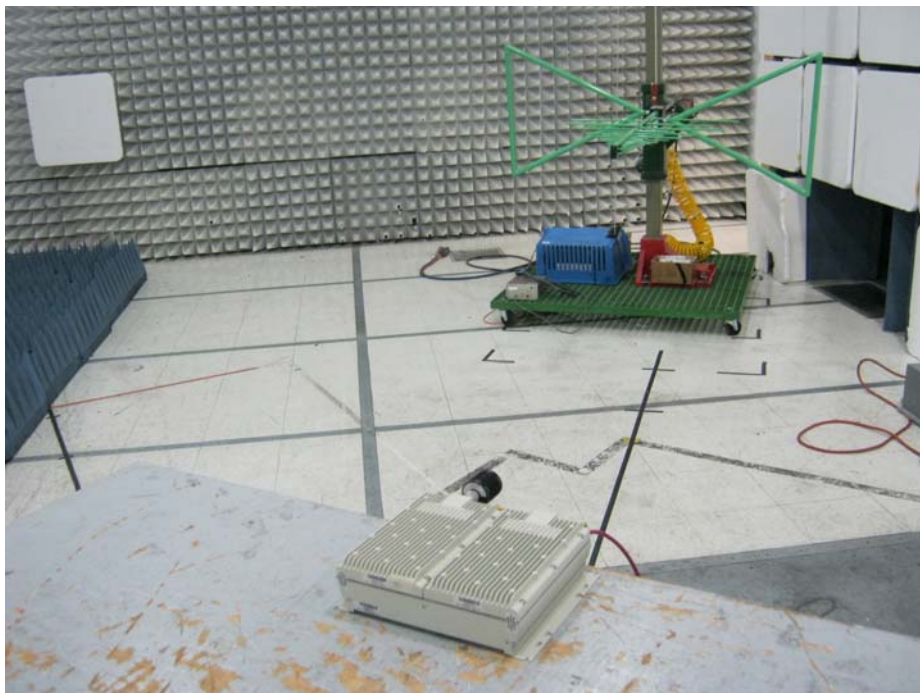
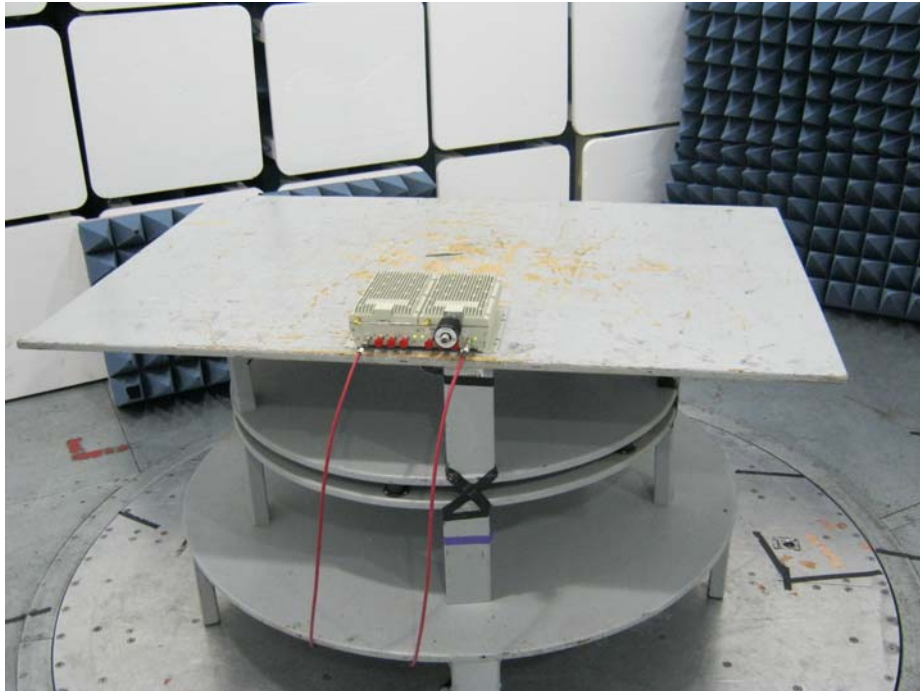
Test distance: ☐ 10 meters ☒ 3 meters

Test result: **Pass**

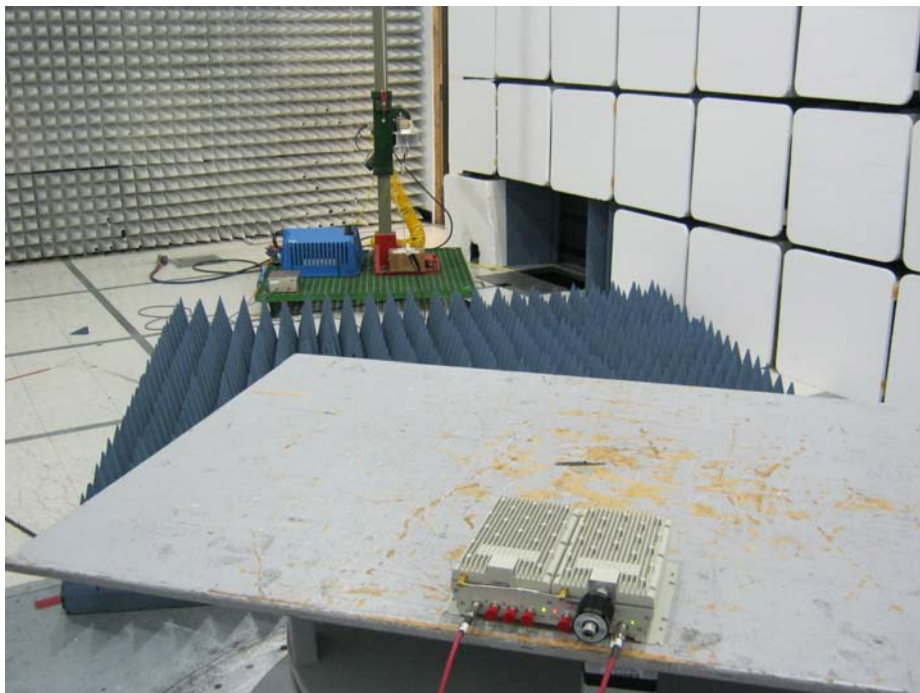
Frequency range: 30MHz-10GHz for CELL Band
30MHz-20GHz for PCS Band

Max. Emissions margin: 0.3 dB below the Limits

- Notes:**
1. The Radiated Emissions testing was performed in the Anechoic chamber at 3m measurement distance (see Tables 1 - 4 and Graphs 1 - 30)
 2. The Spurious Radiated Power limits of -13dBm was correlated with field strength Reference Limit of 82.2dB μ V/m during field strength reference testing 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 5 and 6)
 4. Emissions at operating frequencies were excluded from the Tables
-



Test Setup Photos



Test Setup Photos



Test Setup Photos

Date:	June 11-12, 2012	Result: Pass
Tested by:	Richard Blonigen	
Standard:	FCC Part 22, AWS Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Frequency Range: 30MHz-10GHz	

Table 1

Frequency	Ant. Polarity	Peak Reading dBμV	Total C.F. dB1/m	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
870MHz						
53.276 MHz	V	33.2	8.9	42.1	82.2	-40.1
58.865 MHz	V	35.9	7.4	43.3	82.2	-38.9
83.731 MHz	V	35.8	9.3	45.0	82.2	-37.2
113.35 MHz	V	28.9	13.7	42.6	82.2	-39.6
239.77 MHz	V	29.8	14.0	43.8	82.2	-38.4
83.599 MHz	H	24.1	9.2	33.3	82.2	-48.9
89.284 MHz	H	20.1	10.0	30.1	82.2	-52.1
113.17 MHz	H	23.6	13.7	37.2	82.2	-45.0
129.84 MHz	H	22.7	13.8	36.5	82.2	-45.7
239.77 MHz	H	36.3	14.0	50.2	82.2	-32.0
881MHz						
53.192 MHz	V	33.8	8.9	42.7	82.2	-39.5
58.17 MHz	V	33.5	7.6	41.1	82.2	-41.2
84.084 MHz	V	34.7	9.3	44.0	82.2	-38.2
84.26 MHz	V	36.3	9.3	45.6	82.2	-36.6
128.86 MHz	V	26.2	13.8	40.1	82.2	-42.1
59.255 MHz	H	23.0	7.3	30.3	82.2	-51.9
84.701 MHz	H	27.1	9.4	36.5	82.2	-45.7
114.1 MHz	H	20.0	13.7	33.7	82.2	-48.6
130.19 MHz	H	23.1	13.8	36.9	82.2	-45.3
228.81 MHz	H	30.4	12.8	43.2	82.2	-39.0
893MHz						
39.037 MHz	V	25.1	15.3	40.3	82.2	-41.9
54.166 MHz	V	32.4	8.5	40.9	82.2	-41.3
58.587 MHz	V	34.2	7.5	41.7	82.2	-40.5
84.701 MHz	V	33.2	9.4	42.6	82.2	-39.6
131.03 MHz	V	26.6	13.8	40.3	82.2	-41.9
59.505 MHz	H	22.8	7.3	30.1	82.2	-52.2
84.701 MHz	H	25.1	9.4	34.5	82.2	-47.7
113.83 MHz	H	19.3	13.7	33.0	82.2	-49.2
130.4 MHz	H	22.8	13.8	36.6	82.2	-45.6
216.74 MHz	H	23.9	12.0	35.9	82.2	-46.3

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
870MHz							
1.741 GHz	V	77.8	28.8	43.3	63.3	82.2	-18.9
2.608 GHz	V	69.5	32.0	43.5	57.9	82.2	-24.3
3.481 GHz	V	60.5	35.0	43.6	51.9	82.2	-30.3
6.961 GHz	V	54.3	40.1	41.8	52.6	82.2	-29.6
9.715 GHz	V	51.7	44.1	41.0	54.7	82.2	-27.5
1.741 GHz	H	78.8	28.7	43.3	64.3	82.2	-18.0
2.608 GHz	H	71.9	31.9	43.5	60.3	82.2	-21.9
3.481 GHz	H	57.7	34.7	43.6	48.9	82.2	-33.3
5.221 GHz	H	54.4	37.9	41.9	50.4	82.2	-31.8
9.727 GHz	H	51.2	44.0	41.1	54.1	82.2	-28.1
881MHz							
1.762 GHz	V	82.0	28.9	43.3	67.6	82.2	-14.6
2.641 GHz	V	74.5	32.1	43.6	63.1	82.2	-19.1
3.526 GHz	V	67.6	35.1	43.5	59.2	82.2	-23.0
4.405 GHz	V	65.9	36.7	42.4	60.2	82.2	-22.0
7.048 GHz	V	65.2	40.4	41.7	63.8	82.2	-18.4
1.762 GHz	H	80.7	28.8	43.3	66.1	82.2	-16.1
2.641 GHz	H	75.3	32.0	43.6	63.7	82.2	-18.5
3.526 GHz	H	62.8	34.8	43.5	54.2	82.2	-28.1
4.405 GHz	H	59.1	36.6	42.4	53.3	82.2	-29.0
9.706 GHz	H	51.2	43.9	41.0	54.1	82.2	-28.1
893MHz							
1.786 GHz	V	70.4	29.0	43.3	56.2	82.2	-26.1
2.68 GHz	V	66.5	32.3	43.6	55.1	82.2	-27.1
3.574 GHz	V	70.4	35.2	43.5	62.1	82.2	-20.1
4.465 GHz	V	63.4	36.8	42.3	57.9	82.2	-24.3
9.718 GHz	V	52.9	44.1	41.0	55.9	82.2	-26.3
1.786 GHz	H	66.8	28.9	43.3	52.3	82.2	-29.9
2.68 GHz	H	65.4	32.2	43.6	54.0	82.2	-28.2
3.574 GHz	H	65.4	35.0	43.5	56.9	82.2	-25.3
4.465 GHz	H	60.8	36.6	42.3	55.1	82.2	-27.1
8.479 GHz	H	51.9	42.9	40.3	54.5	82.2	-27.7

Date:	June 11-12, 2012	Result: Pass
Tested by:	Richard Blonigen	
Standard:	FCC Part 24, PCS Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Frequency Range: 30MHz-20GHz	

Table 3

Frequency	Ant. Polarity	Peak Reading dBμV	Total C.F. dB1/m	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
1931MHz						
54.36 MHz	V	33.2	8.5	41.6	82.2	-40.6
59.143 MHz	V	33.6	7.4	40.9	82.2	-41.3
84.128 MHz	V	36.2	9.3	45.5	82.2	-36.7
131.8 MHz	V	26.4	13.8	40.2	82.2	-42.0
672.64 MHz	V	37.4	23.1	60.5	82.2	-21.7
83.863 MHz	H	22.6	9.3	31.9	82.2	-50.4
111.98 MHz	H	20.7	13.6	34.3	82.2	-47.9
129.56 MHz	H	21.6	13.8	35.4	82.2	-46.8
672.64 MHz	H	30.6	23.1	53.7	82.2	-28.5
990.88 MHz	H	11.5	26.3	37.9	82.2	-44.3
1962MHz						
52.998 MHz	V	34.0	9.0	43.0	82.2	-39.2
58.559 MHz	V	34.7	7.5	42.2	82.2	-40.0
84.084 MHz	V	31.6	9.3	40.9	82.2	-41.3
111.98 MHz	V	25.8	13.6	39.4	82.2	-42.8
641.49 MHz	V	36.1	22.8	58.9	82.2	-23.3
53.498 MHz	H	22.4	8.8	31.2	82.2	-51.0
111.67 MHz	H	19.7	13.6	33.3	82.2	-48.9
131.1 MHz	H	22.2	13.8	36.0	82.2	-46.2
641.49 MHz	H	33.0	22.8	55.8	82.2	-26.4
989.16 MHz	H	10.0	26.3	36.3	82.2	-45.9
1994MHz						
52.998 MHz	V	34.1	9.0	43.0	82.2	-39.2
57.864 MHz	V	33.6	7.6	41.2	82.2	-41.0
111.5 MHz	V	27.5	13.6	41.1	82.2	-41.1
130.89 MHz	V	26.4	13.8	40.2	82.2	-42.0
609.51 MHz	V	37.7	22.4	60.1	82.2	-22.1
84.392 MHz	H	23.7	9.4	33.0	82.2	-49.2
112.29 MHz	H	20.3	13.6	33.9	82.2	-48.3
129.98 MHz	H	21.8	13.8	35.6	82.2	-46.6
609.51 MHz	H	34.6	22.4	57.0	82.2	-25.2
980.78 MHz	H	10.8	26.1	36.9	82.2	-45.3

Table 4

Frequency MHz	Antenna Polarity	Peak Reading dB μ V	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dB μ V/m	Limit dB μ V/m	Margin dB
1931MHz							
2.4662 GHz	V	53.4	31.5	43.5	41.5	82.2	-40.7
3.8602 GHz	V	69.9	36.1	43.2	62.9	82.2	-19.3
5.794 GHz	V	59.6	38.9	41.9	56.6	82.2	-25.6
3.8602 GHz	H	62.8	35.9	43.2	55.5	82.2	-26.7
5.794 GHz	H	56.4	38.8	41.9	53.2	82.2	-29.0
1962MHz							
2.462 GHz	V	52.8	31.5	43.5	40.9	82.2	-41.3
3.924 GHz	V	69.2	36.3	43.1	62.4	82.2	-19.8
5.8875 GHz	V	63.2	39.0	42.0	60.3	82.2	-21.9
7.8467 GHz	V	60.1	42.1	40.8	61.4	82.2	-20.8
3.924 GHz	H	67.4	36.1	43.1	60.4	82.2	-21.8
5.8875 GHz	H	61.1	38.8	42.0	58.0	82.2	-24.2
7.8467 GHz	H	61.8	41.9	40.8	62.9	82.2	-19.3
1994MHz							
3.9877 GHz	V	75.2	36.5	43.0	68.7	82.2	-13.5
5.981 GHz	V	67.4	39.1	42.0	64.6	82.2	-17.6
7.9742 GHz	V	60.2	42.3	40.7	61.8	82.2	-20.4
3.9877 GHz	H	70.9	36.3	43.0	64.2	82.2	-18.0
5.981 GHz	H	57.1	38.9	42.0	54.1	82.2	-28.1
7.9742 GHz	H	54.5	42.1	40.7	55.9	82.2	-26.3

Date:	June 13, 2012	Result: Pass
Tested by:	Richard Blonigen	
Standard:	FCC Part 22, AWS Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Substitution Method	

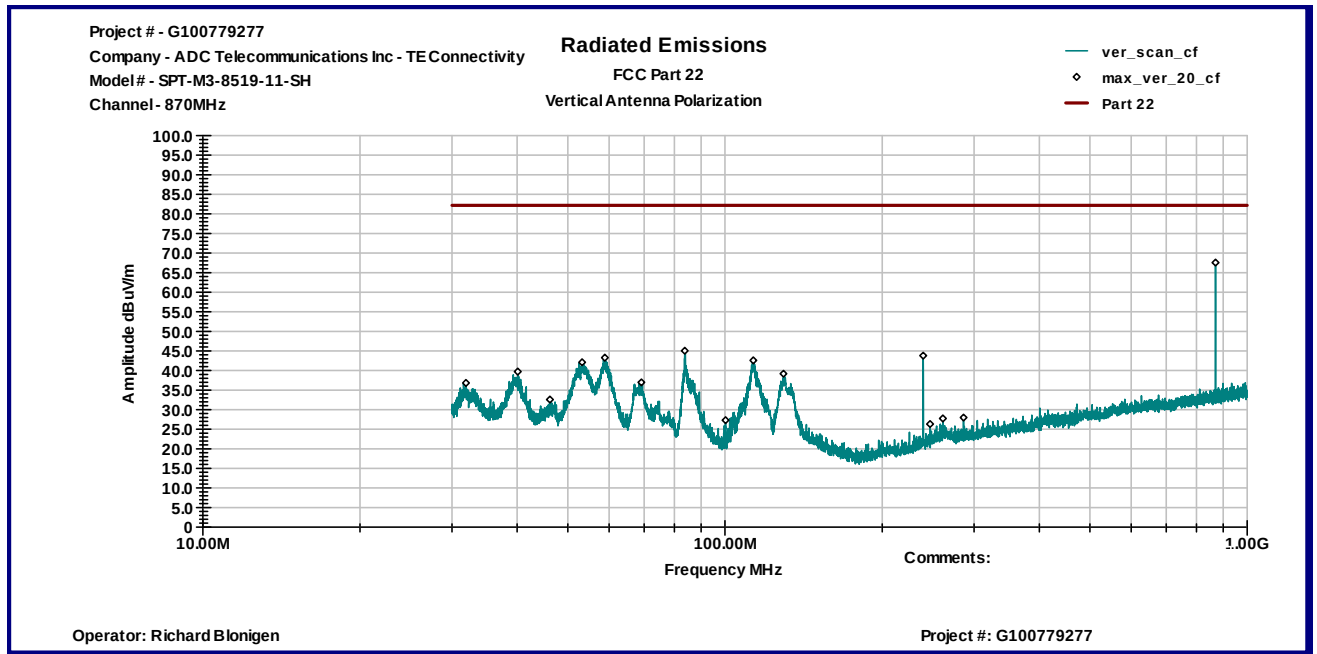
Table 5

Frequency MHz	Antenna Polarity	Measured Peak Emissions dBμV	Substitution Antenna Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	Additional Loss/Gain dB	Emissions EIRP dBm	Limits dBm	Margin dB
870MHz									
1740.00	V	77.8	-25.0	8.5	1.0	0.0	-17.5	-13.0	-4.5
1740.00	H	78.8	-24.1	8.5	1.0	0.0	-16.6	-13.0	-3.6
881MHz									
1760.00	V	82.0	-20.8	8.5	1.0	0.0	-13.3	-13.0	-0.3
2640.00	V	74.5	-29.0	9.6	1.5	0.0	-20.8	-13.0	-7.8
7050.00	V	65.2	-34.1	11.8	2.0	0.0	-24.3	-13.0	-11.3
1760.00	H	80.7	-27.3	8.5	1.0	0.0	-19.8	-13.0	-6.8
2640.00	H	75.3	-28.2	9.6	1.5	0.0	-20.0	-13.0	-7.0

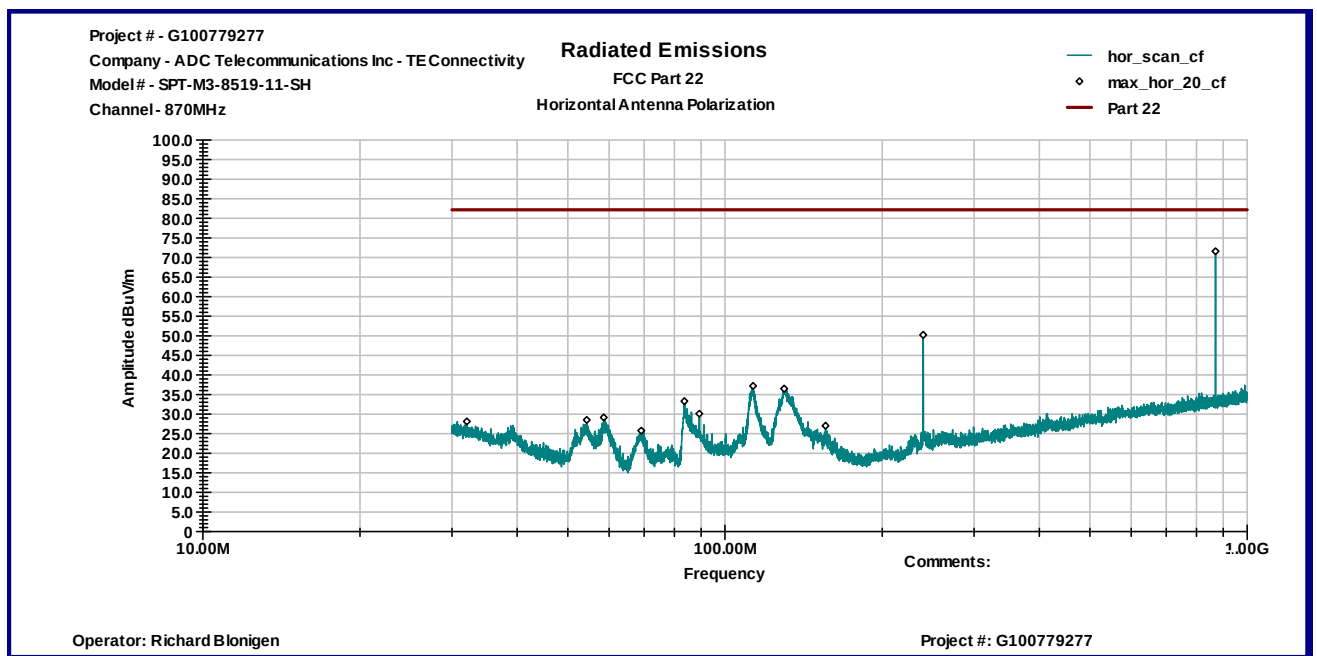
Date:	June 13, 2012	Result: Pass
Tested by:	Richard Blonigen	
Standard:	FCC Part 24, PCS Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Substitution Method	

Table 6

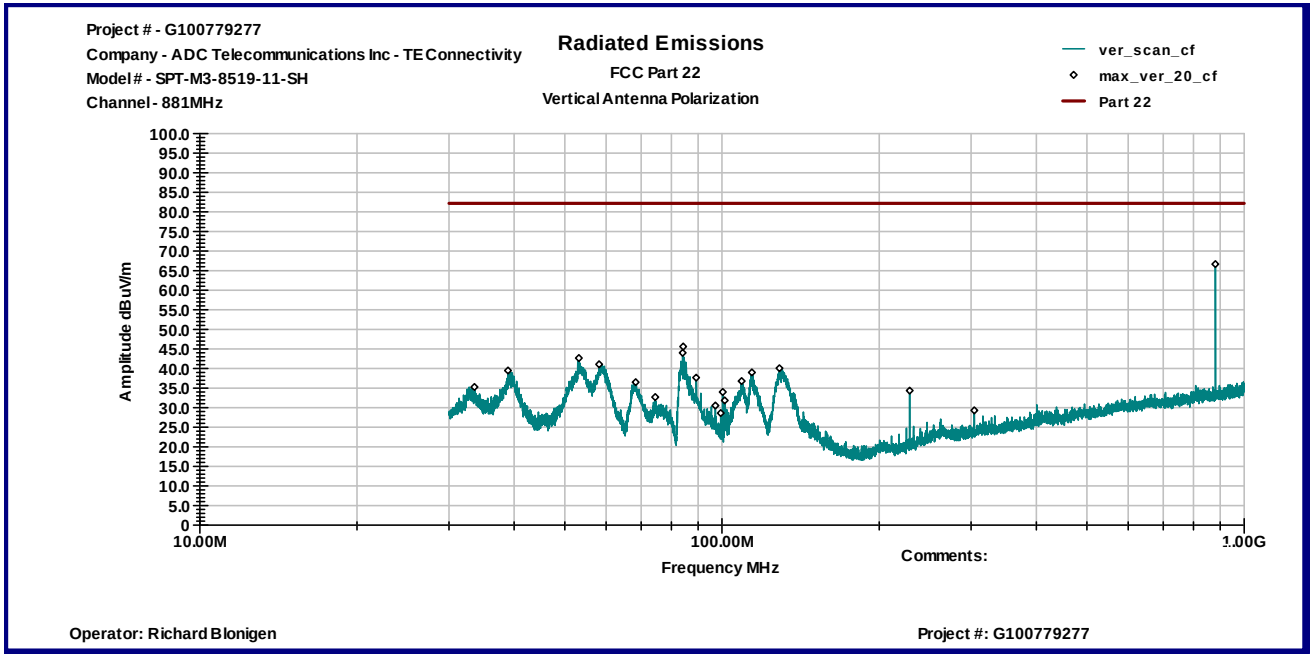
Frequency MHz	Antenna Polarity	Measured Peak Emissions dBμV	Substitution Antenna Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	Additional Loss/Gain dB	Emissions EIRP dBm	Limits dBm	Margin dB
1931MHz									
3860.00	V	69.9	-32.5	9.7	2.4	0.0	-25.2	-13.0	-12.2
1962MHz									
3920.00	V	69.2	-33.2	9.7	2.3	0.0	-25.9	-13.0	-12.9
7850.00	H	61.8	-37.5	11.3	2.2	0.0	-28.4	-13.0	-15.4
1994MHz									
3990.00	V	75.2	-27.2	9.7	2.3	0.0	-19.8	-13.0	-6.8
5980.00	V	67.4	-33.2	11.2	1.9	0.0	-23.9	-13.0	-10.9
3990.00	H	70.9	-31.5	9.7	2.3	0.0	-24.1	-13.0	-11.1



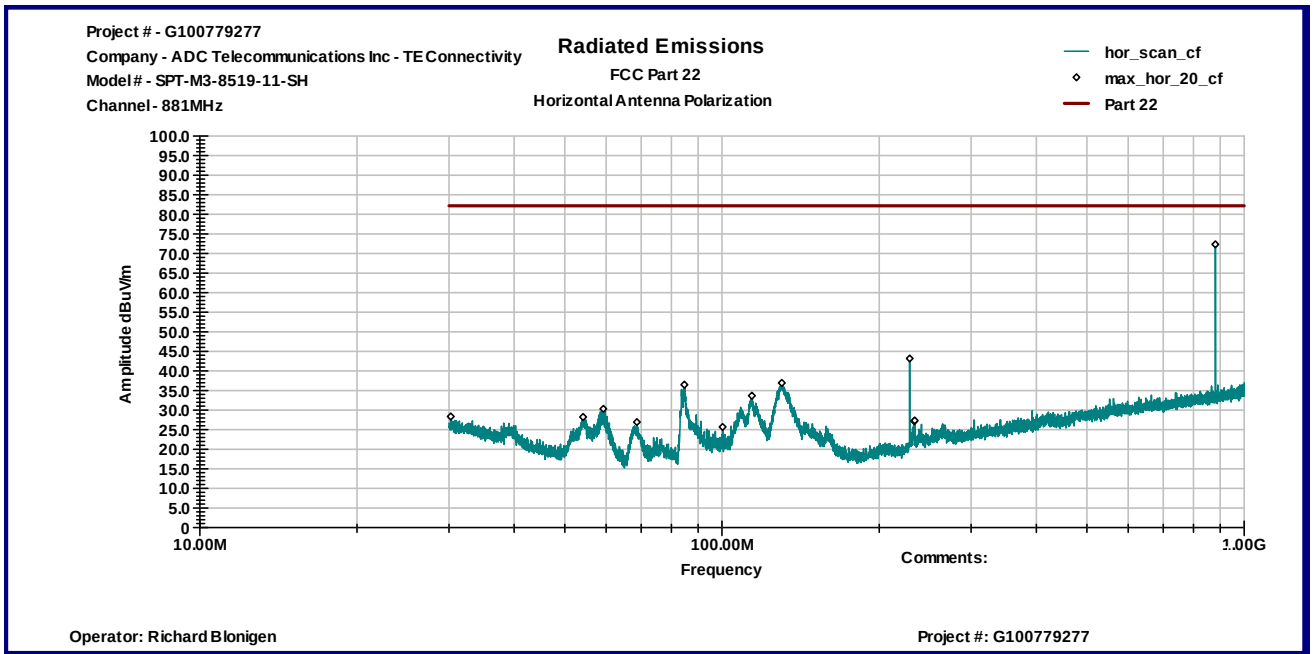
Graph 1



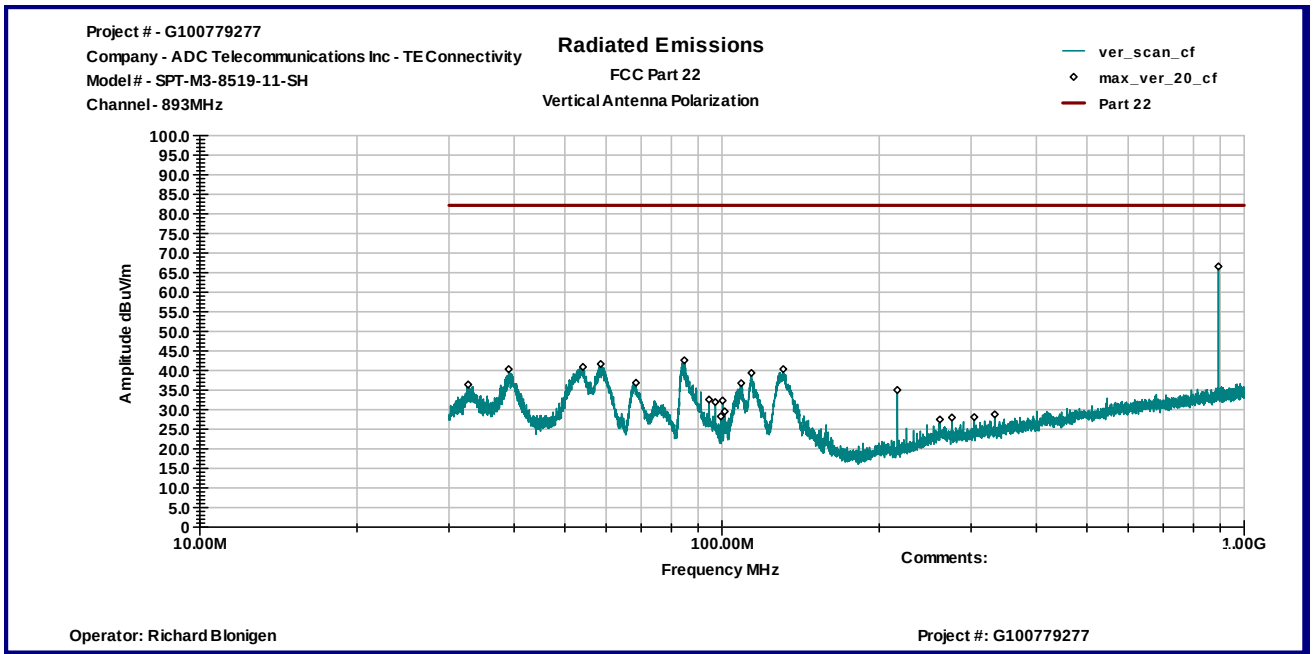
Graph 2



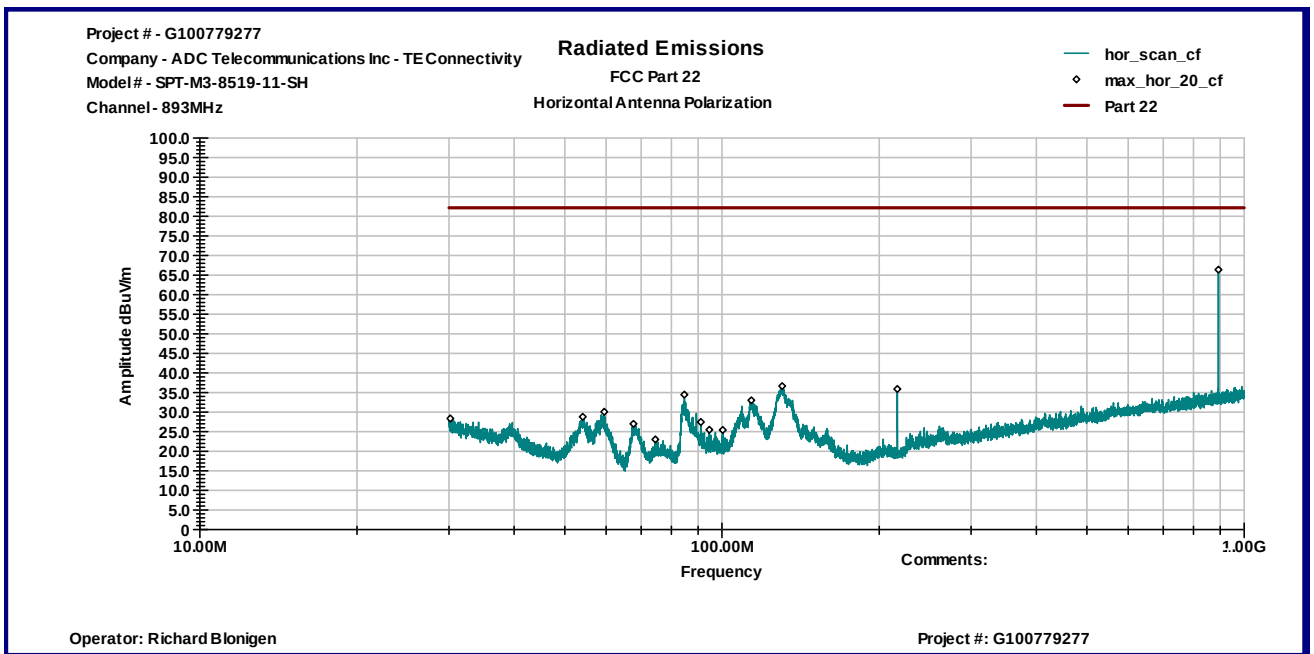
Graph 3



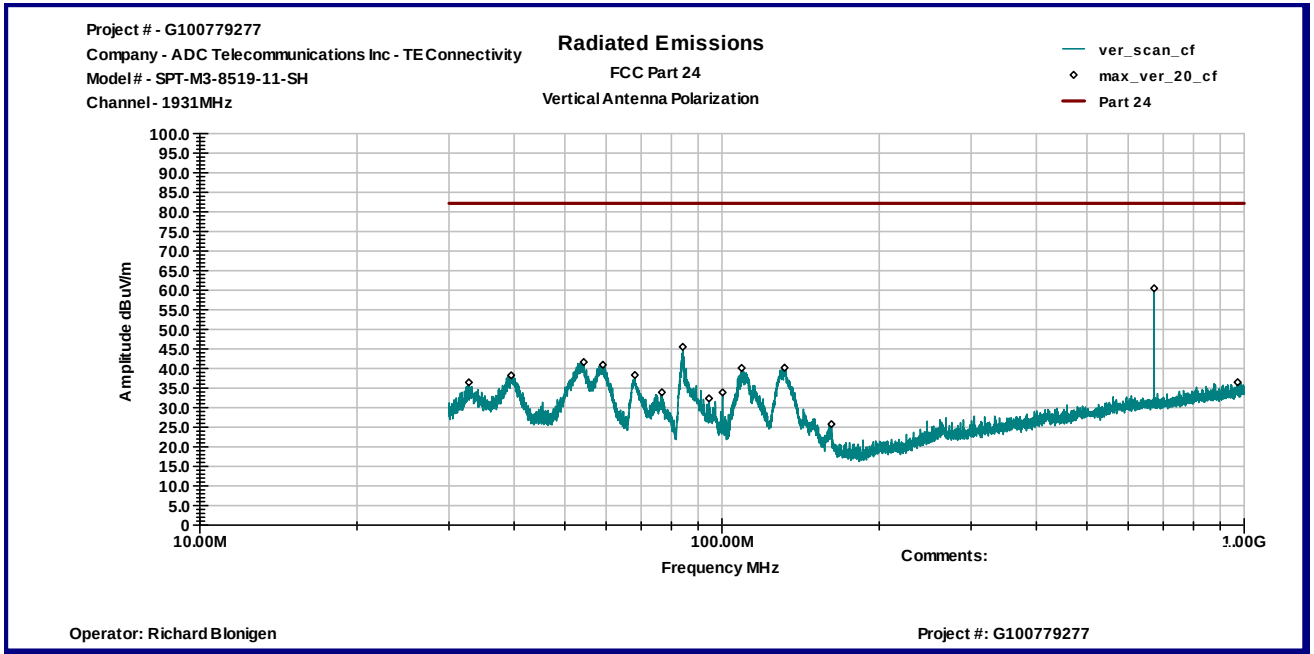
Graph 4



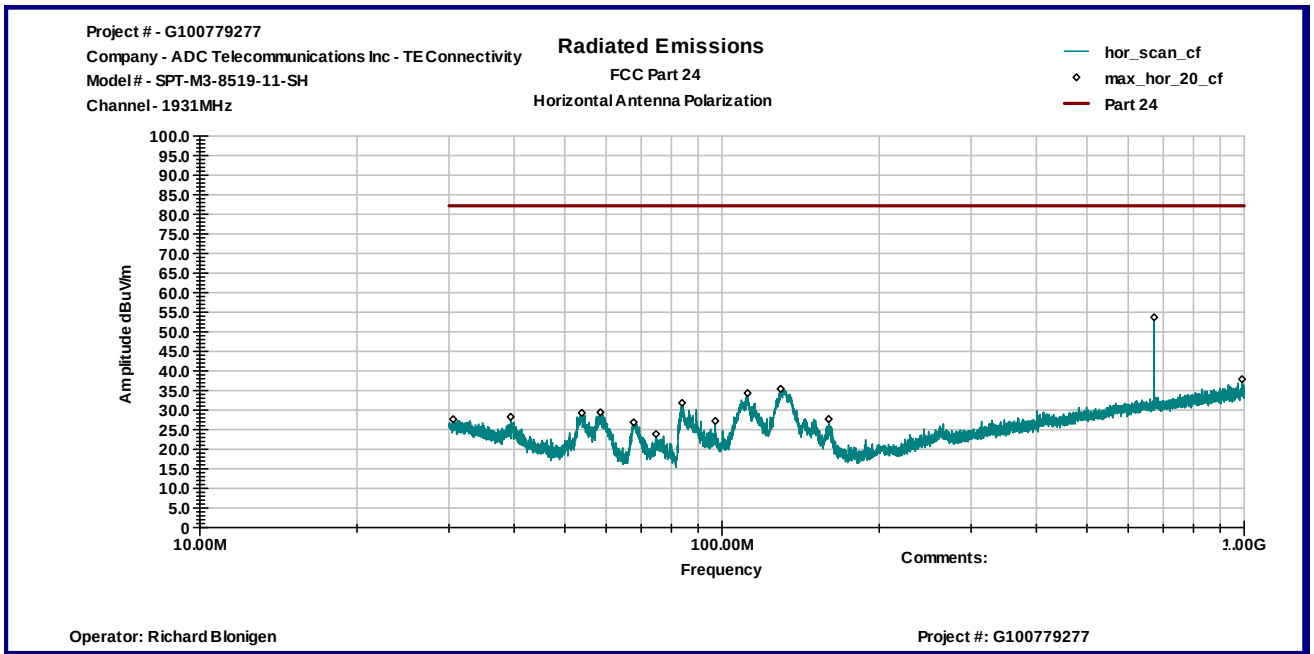
Graph 5



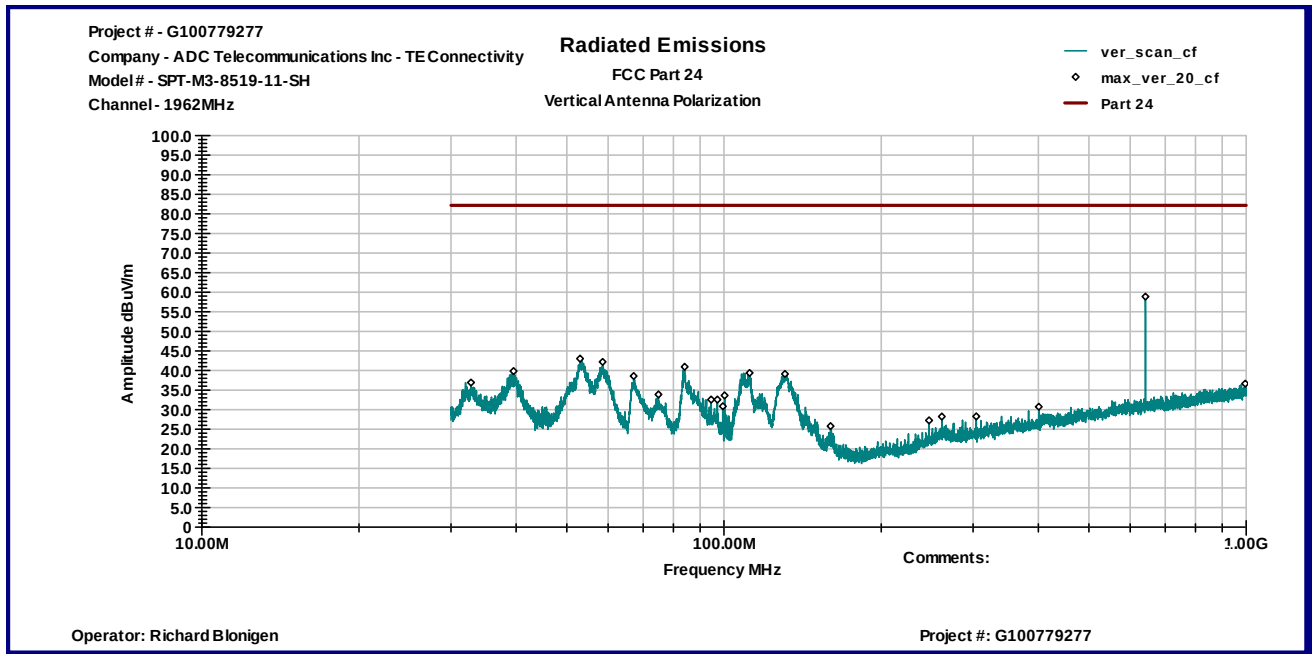
Graph 6



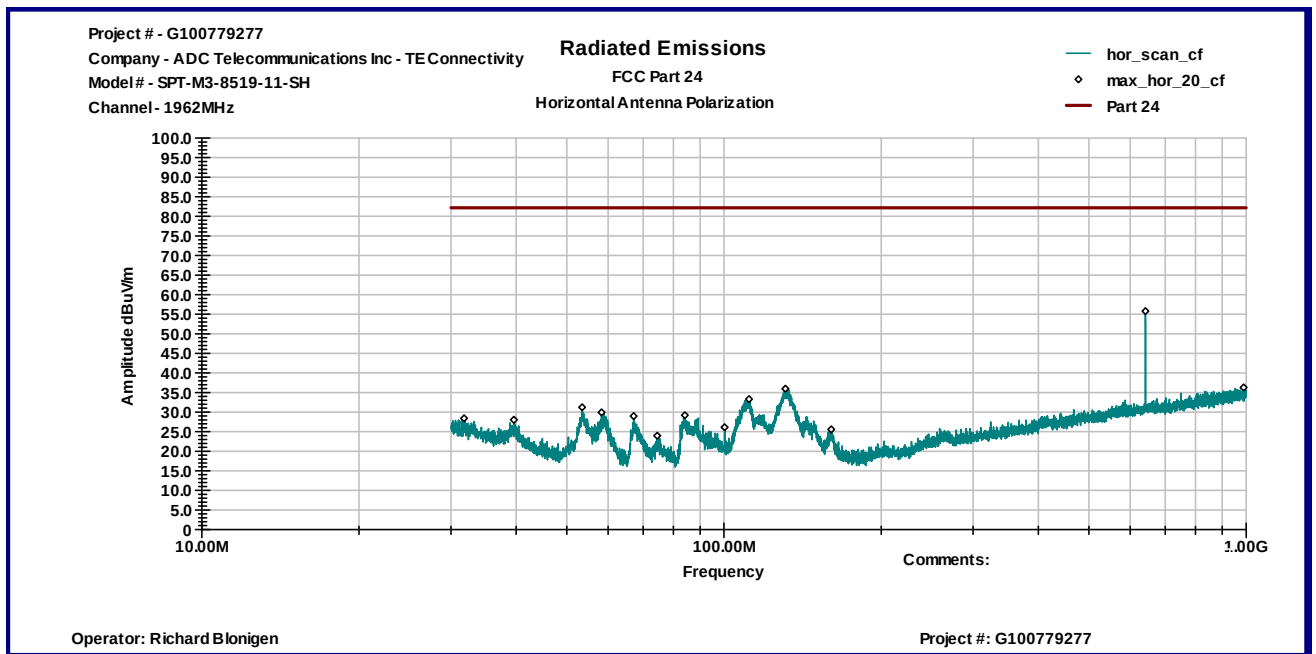
Graph 7



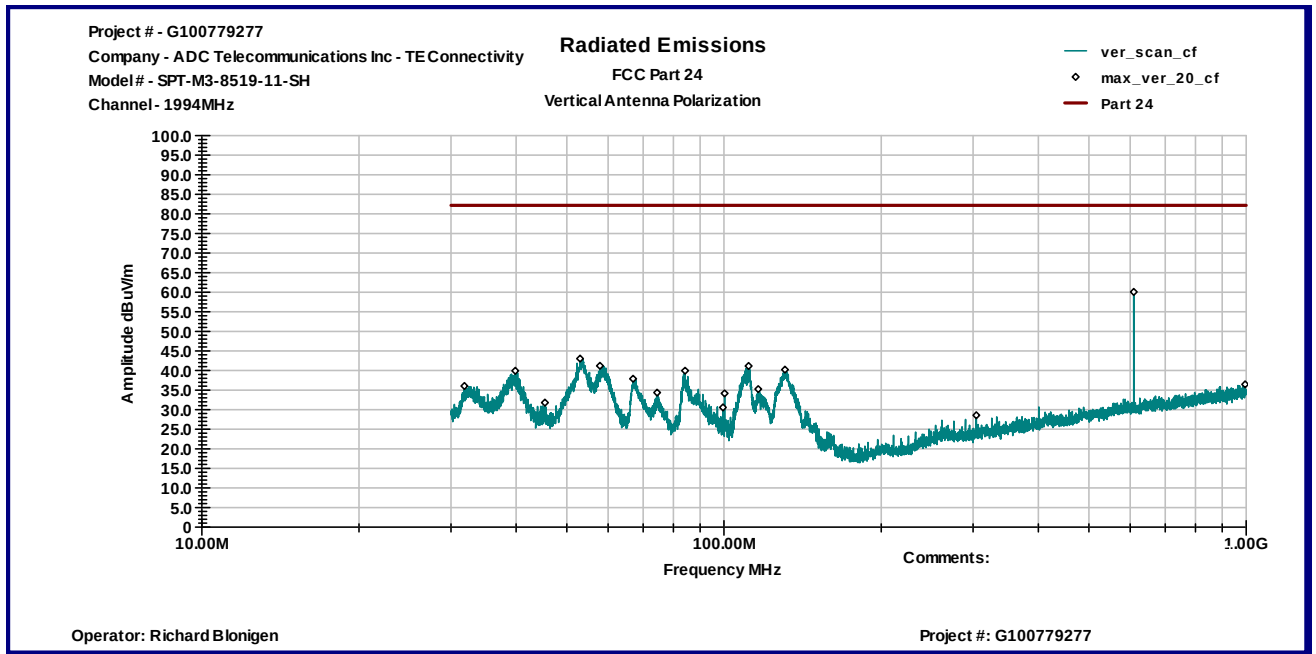
Graph 8



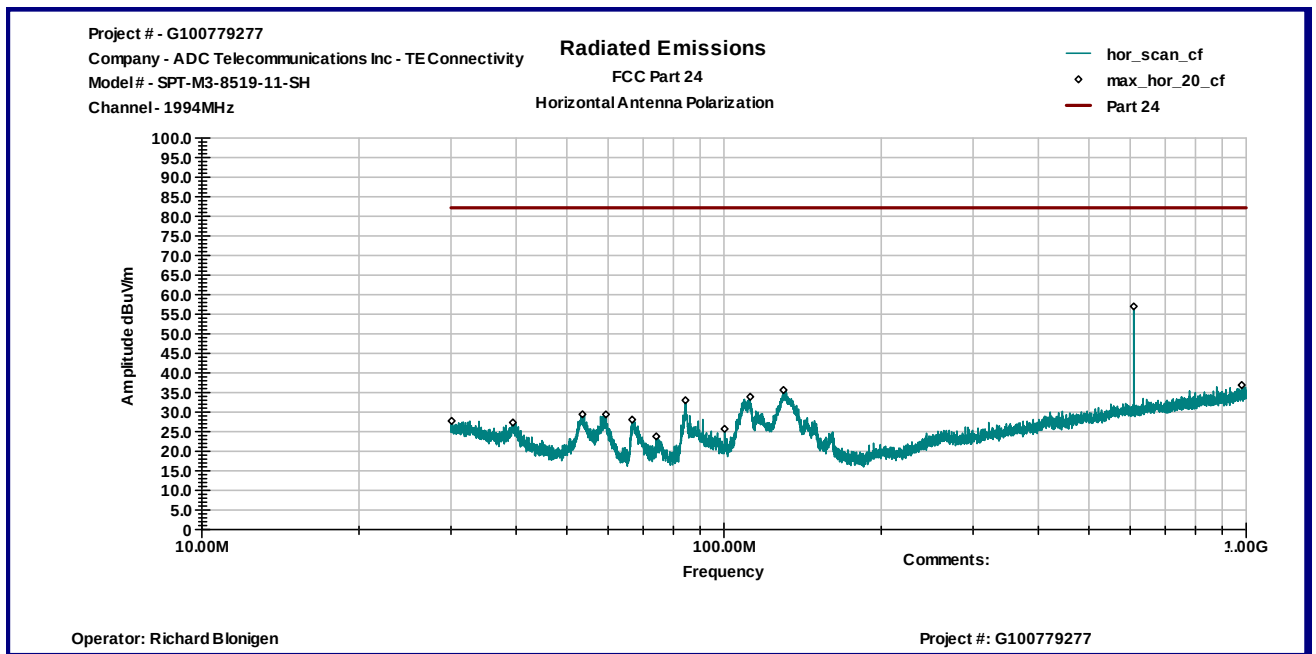
Graph 9



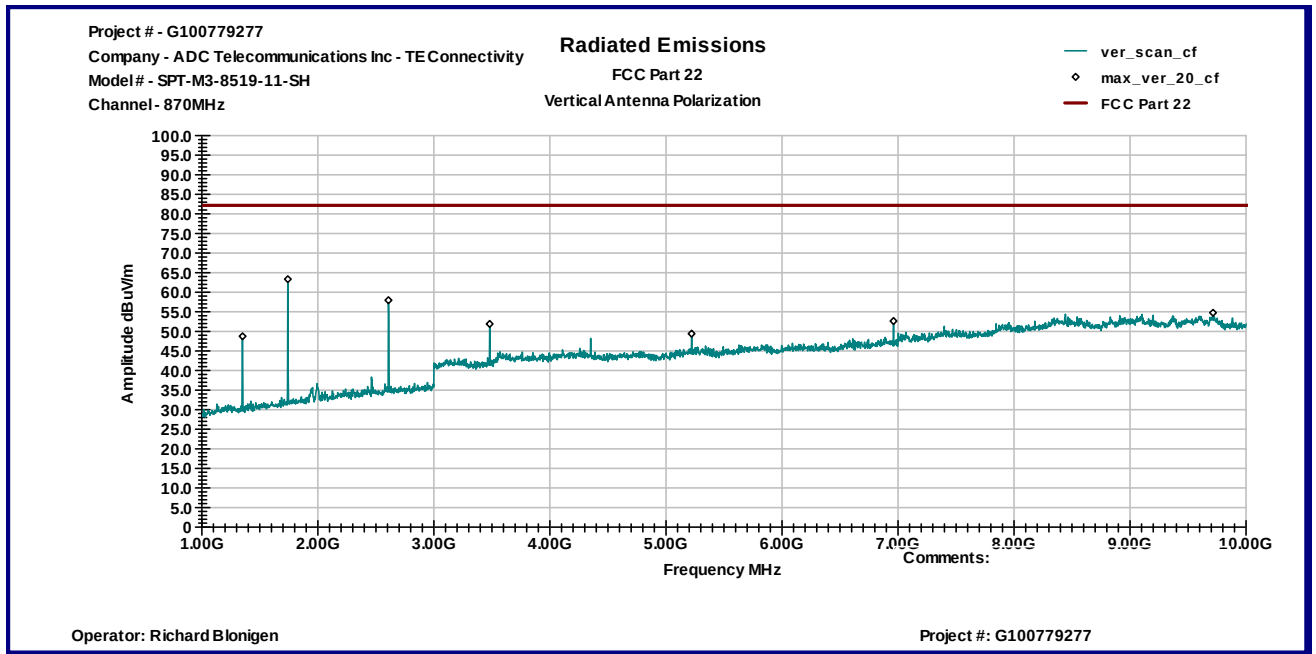
Graph 10



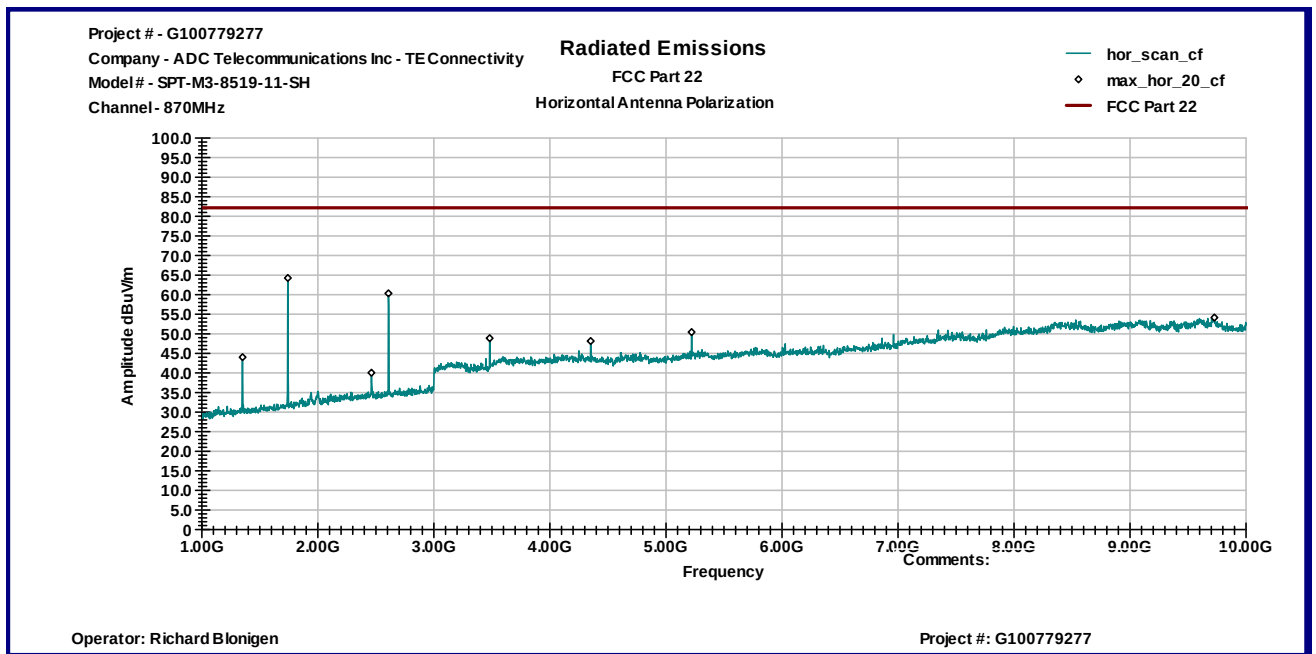
Graph 11



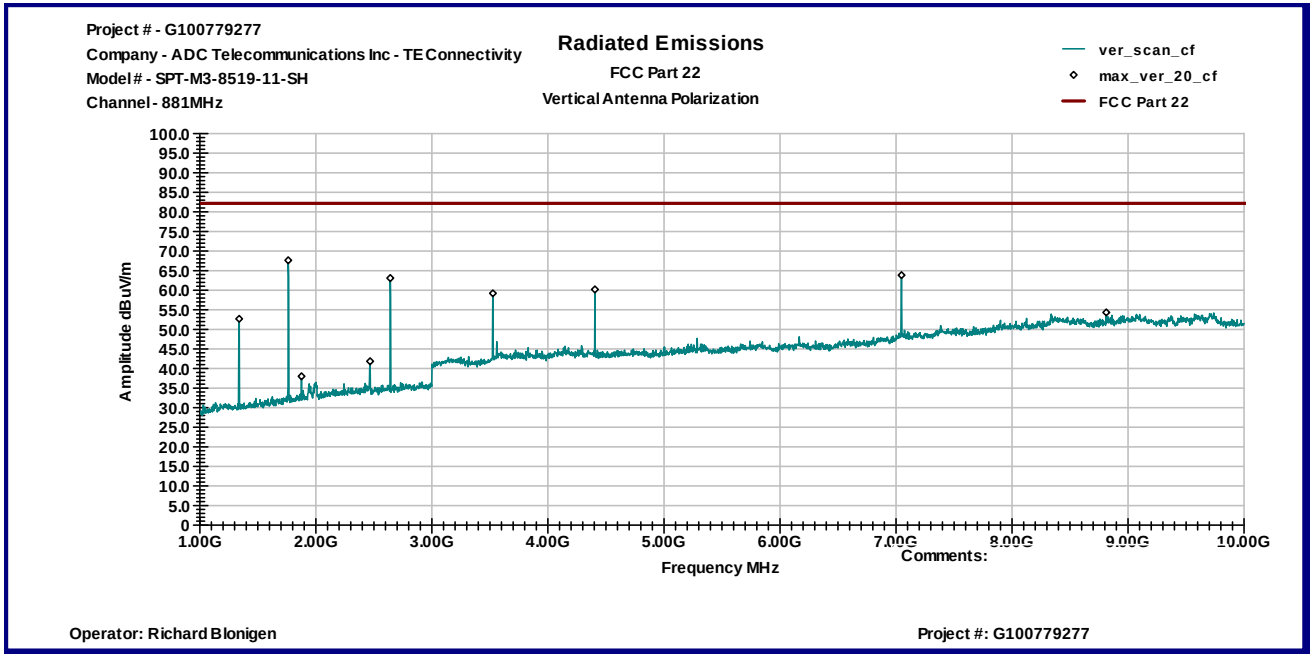
Graph 12



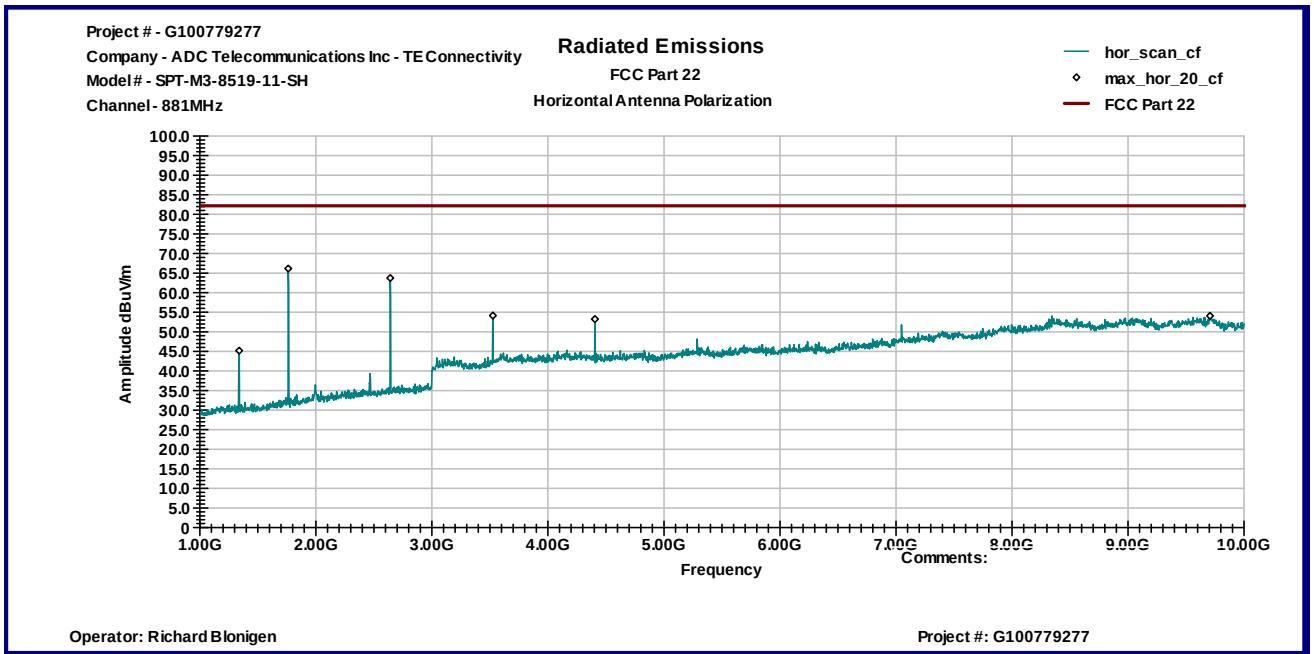
Graph 13



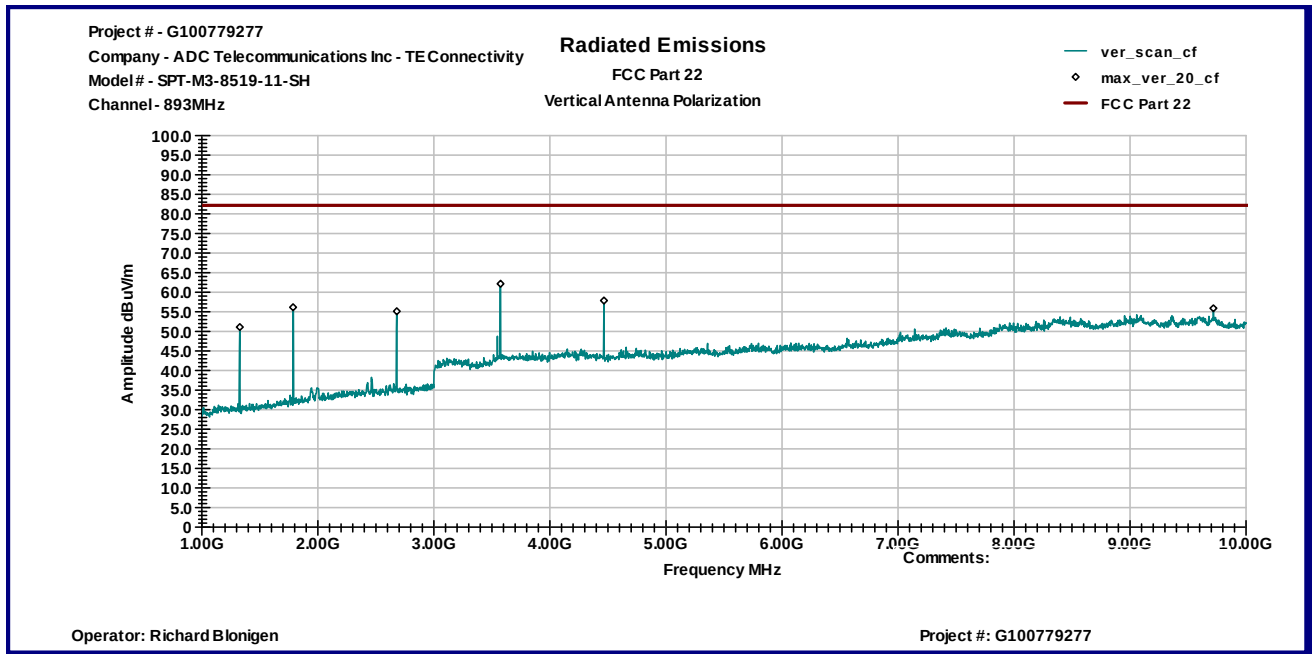
Graph 14



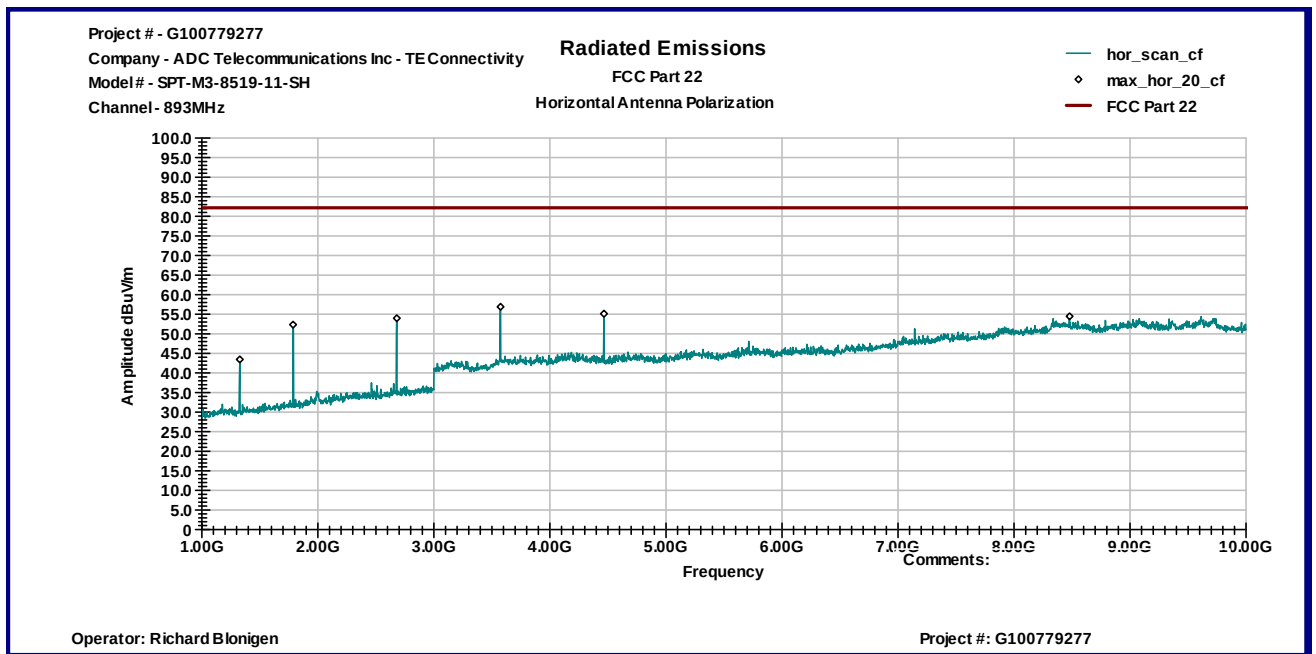
Graph 15



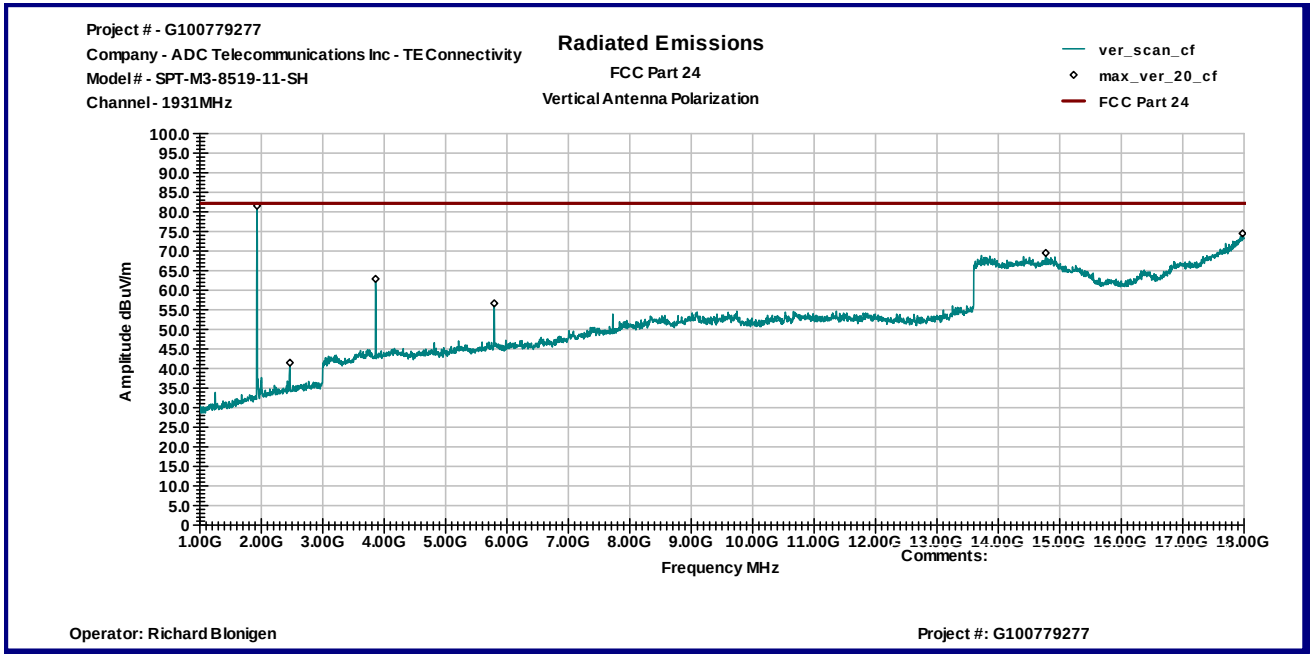
Graph 16



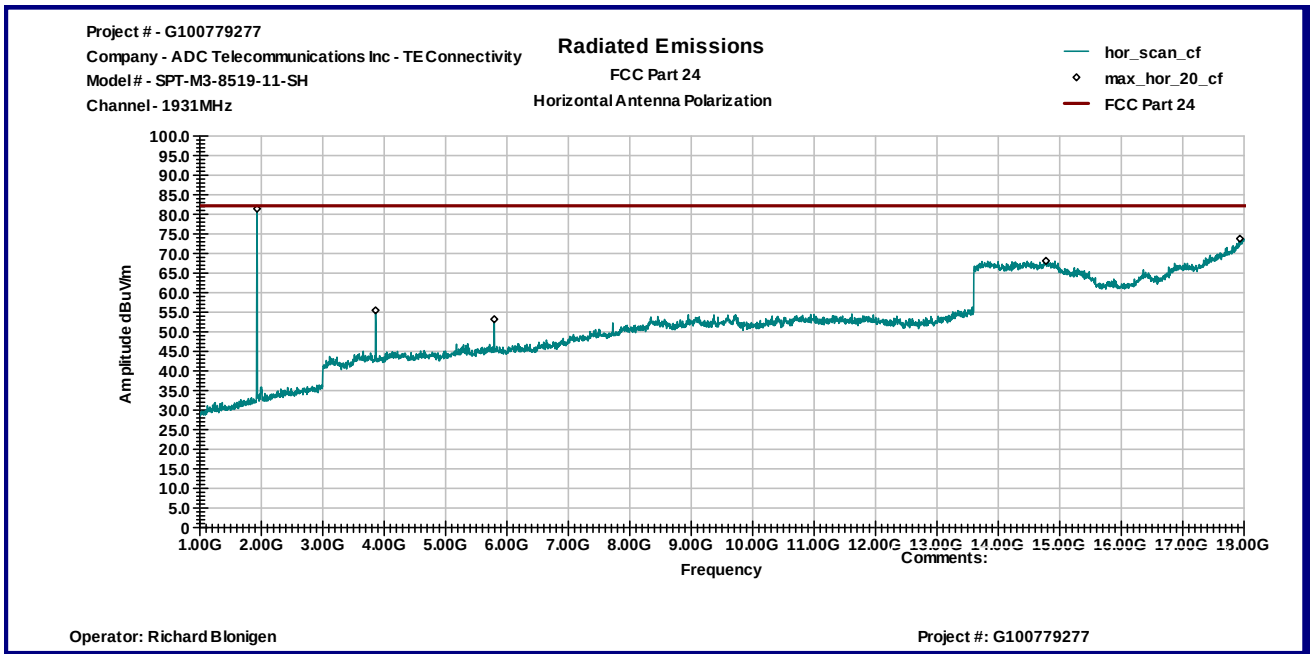
Graph 17



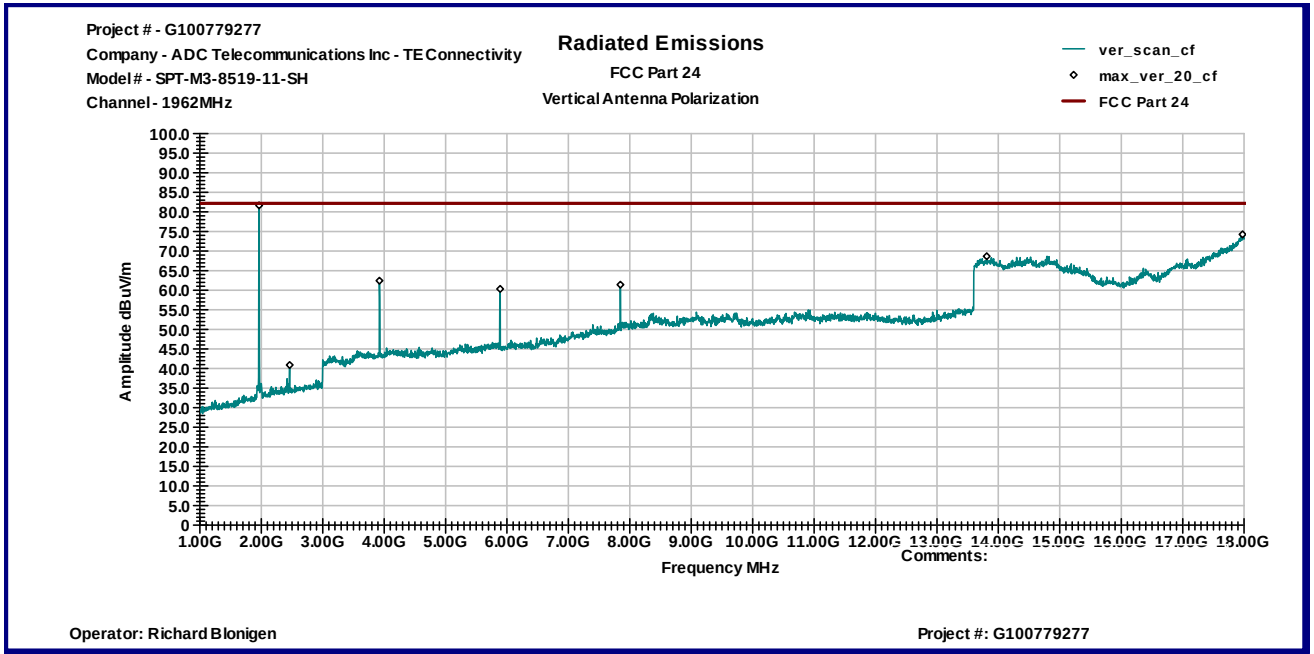
Graph 18



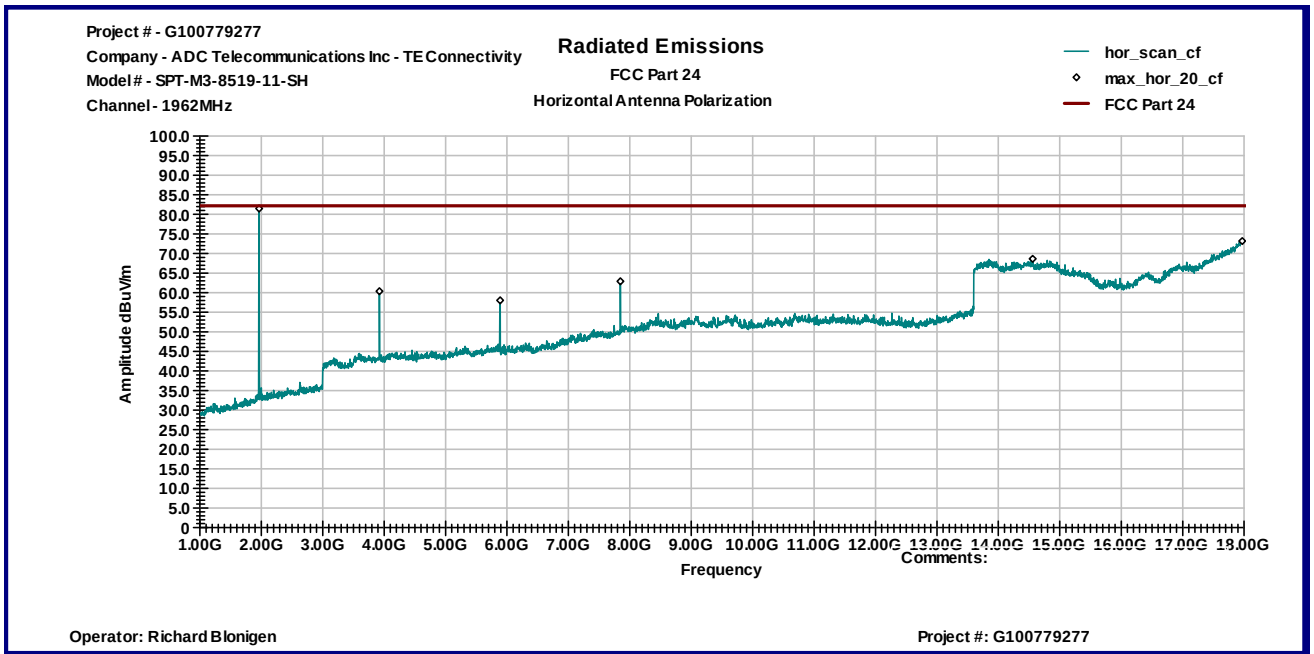
Graph 19



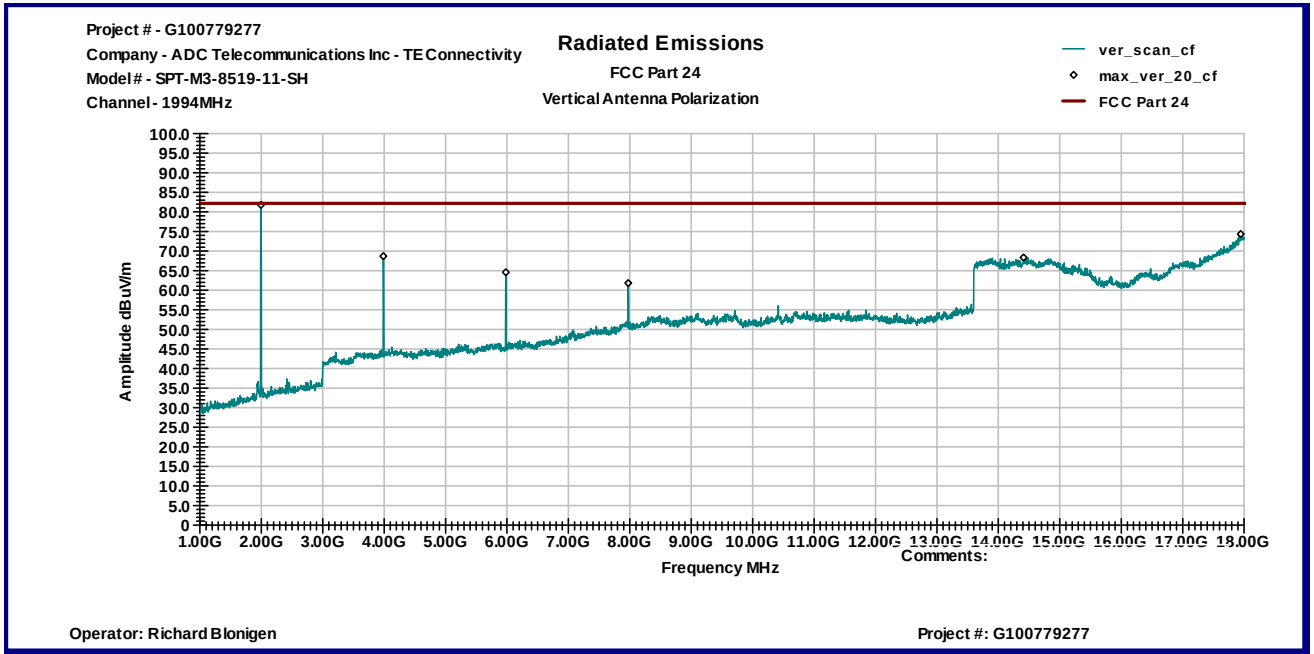
Graph 20



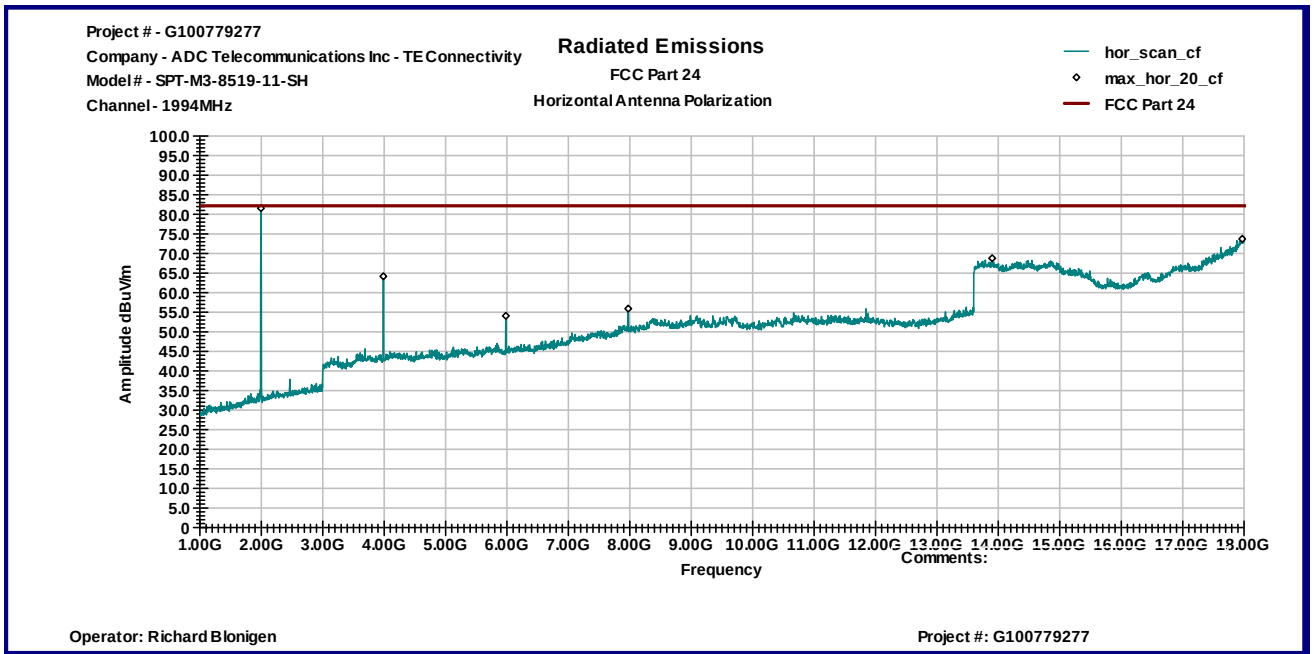
Graph 21



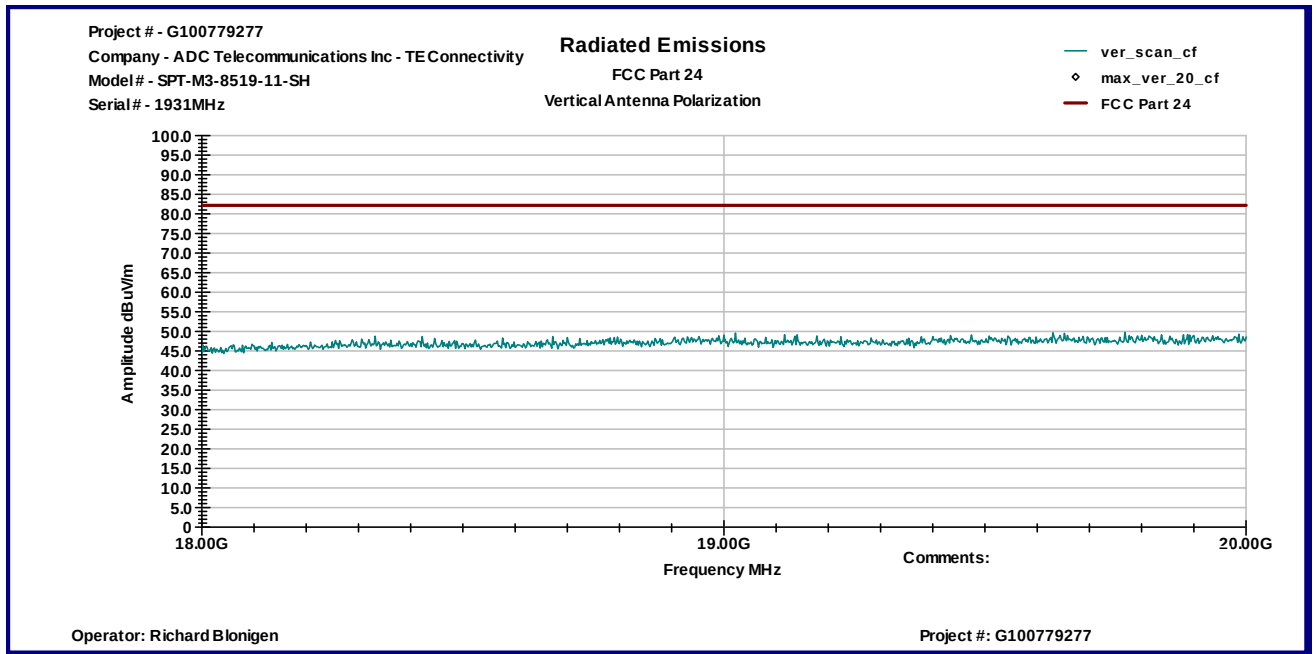
Graph 22



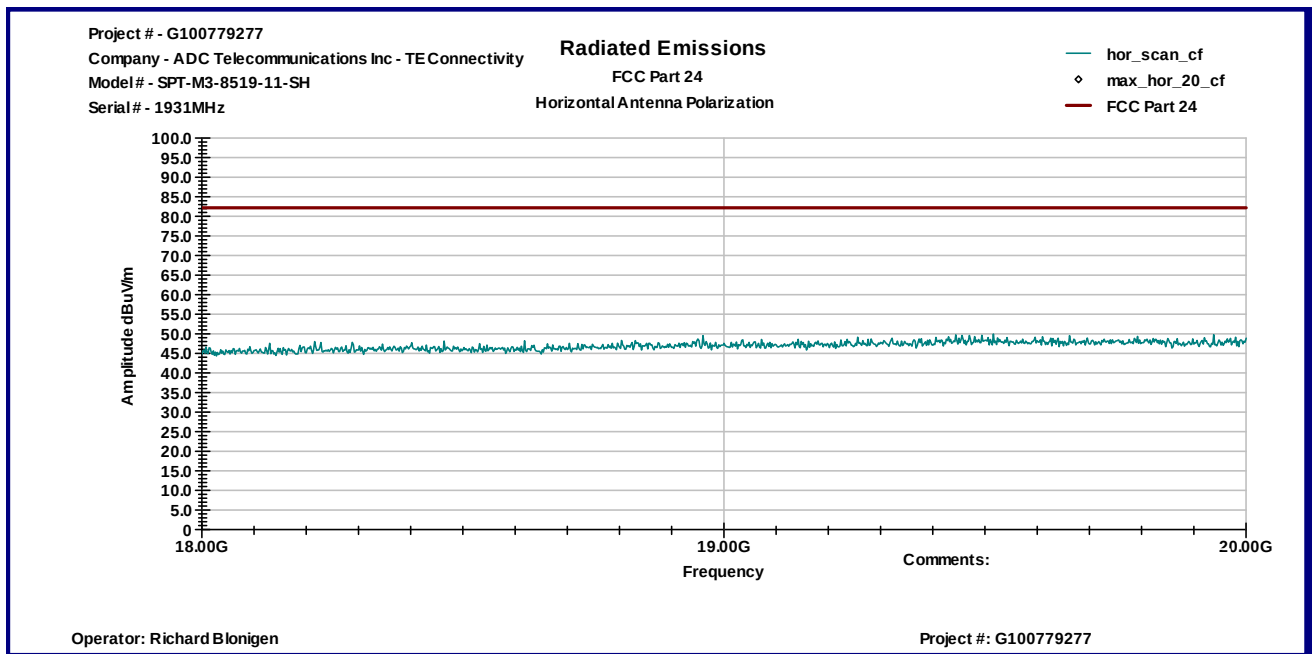
Graph 23



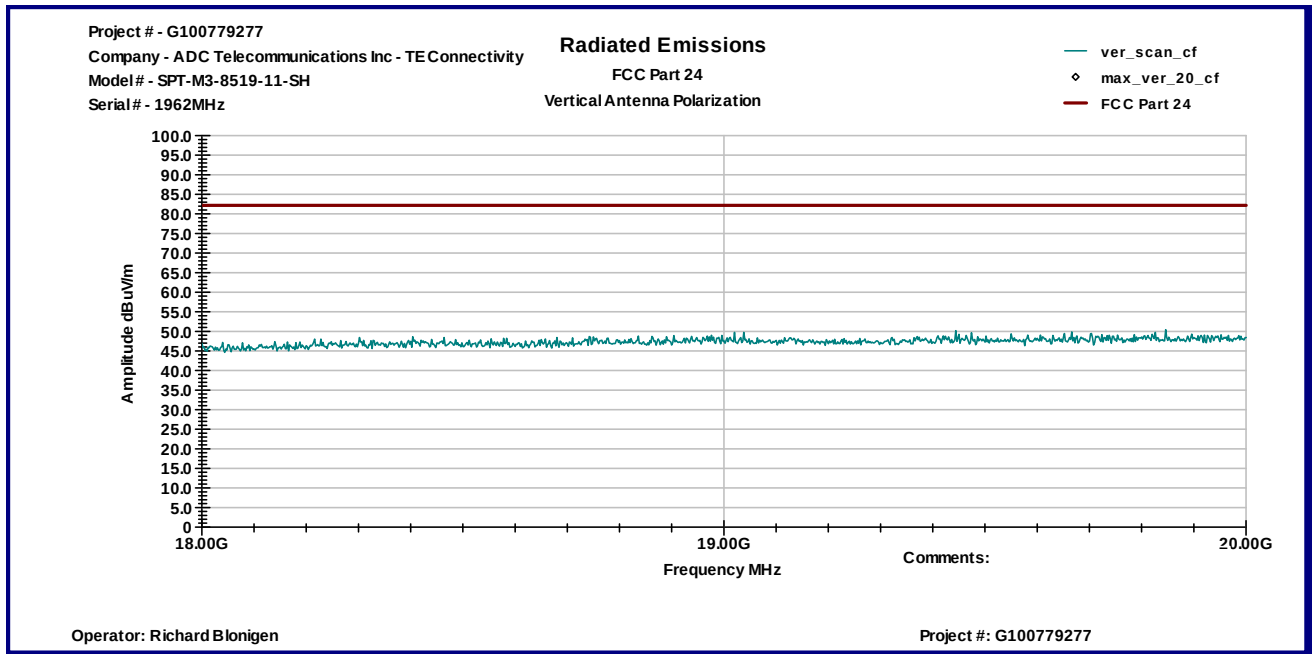
Graph 24



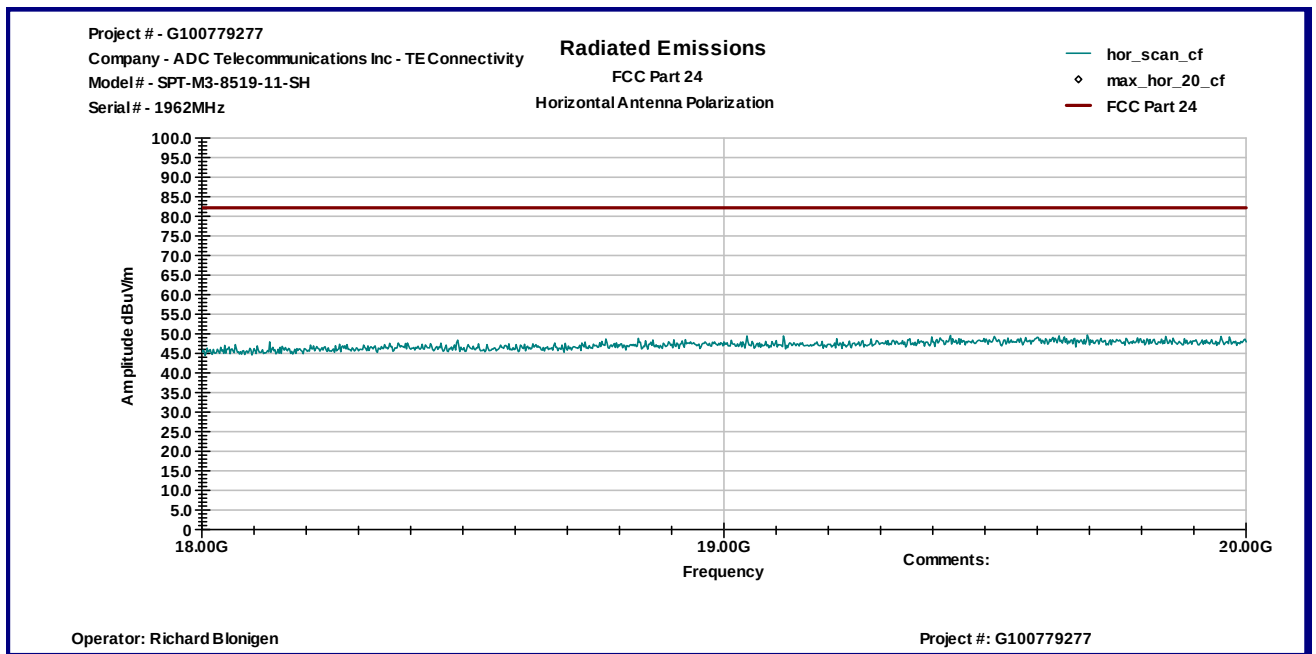
Graph 25



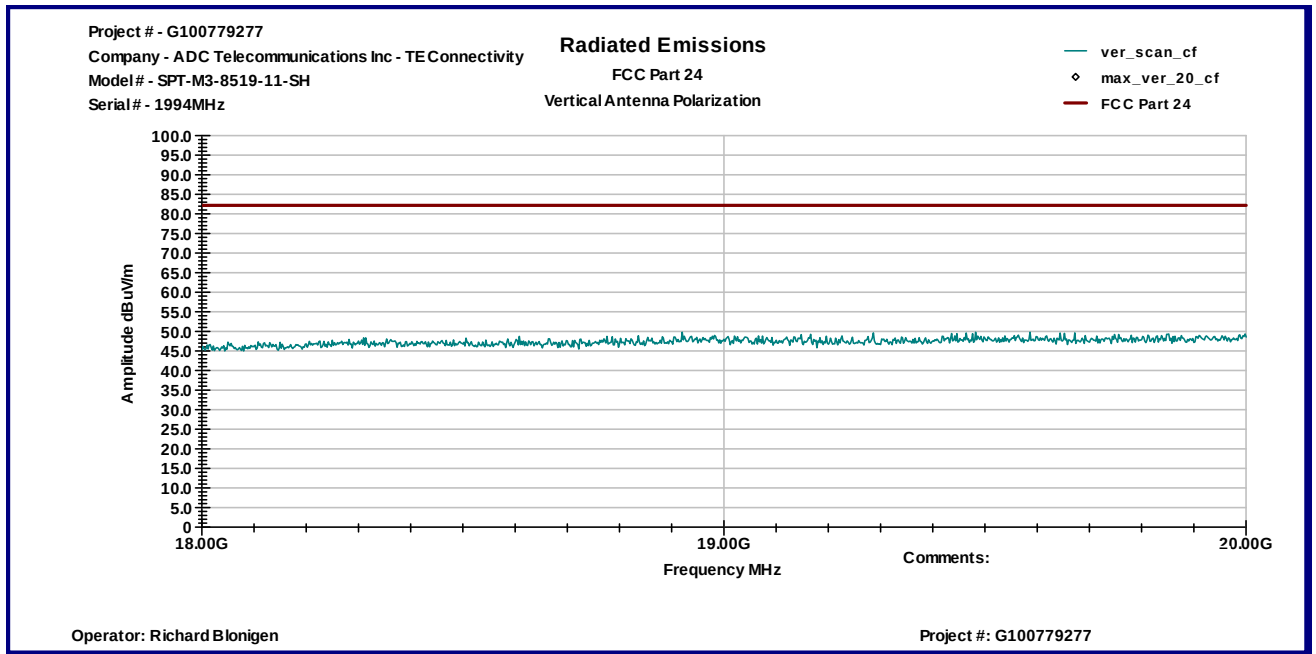
Graph 26



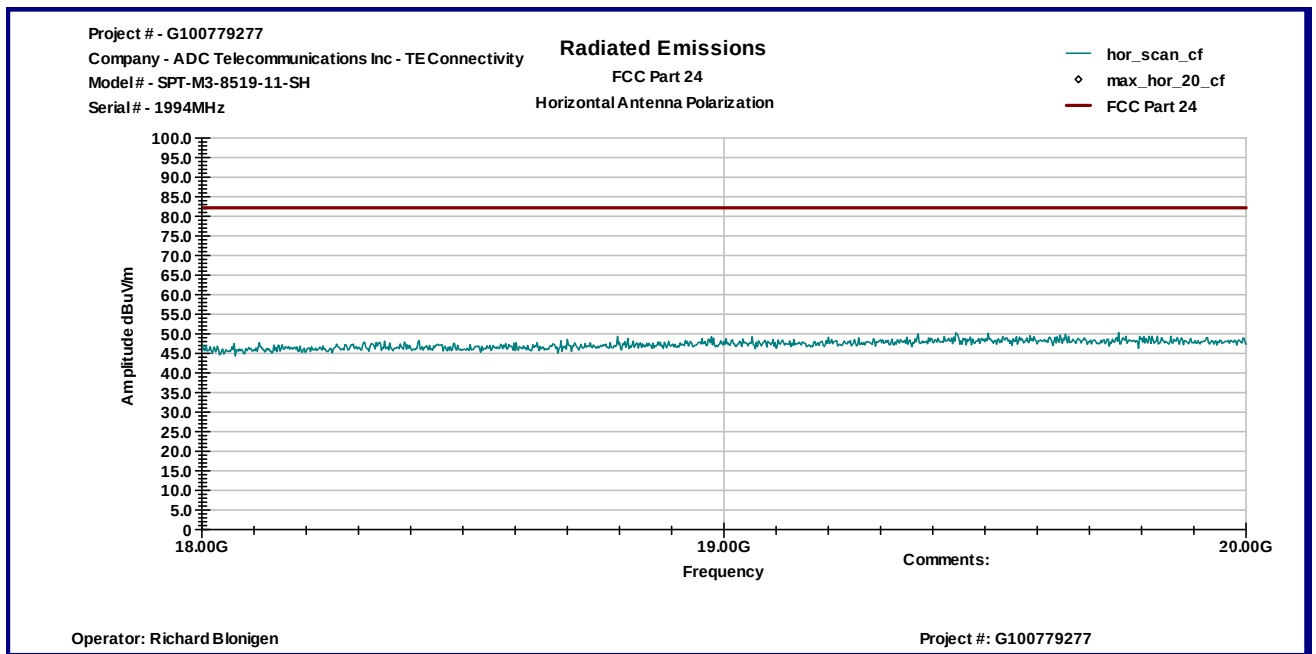
Graph 27



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	Schaffner-Chase	CBL 6112 B	2468	9734	11/08/2012	☒
Horn Antenna	EMCO	3115	9507-4513	9936	05/16/2013	☒
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1402232	172081	10/31/2012	☒
System	TILE! Instrument Control		Ver. 3.4.K.29	15259	VBV	☒
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	10/31/2012	☒
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	MIN-0065	10/31/2012	☒
Horn Antenna	EMCO	3115	6579	15580	06/25/2012	☒
Signal Generator	R & S	SMR20	101469	25233	10/03/2012	☒