TEST DATA REPORT

Report Number: 101358077MIN-001
Project Number: G101358077

Testing performed on the
SPT-M3-8019-31-HP

to
47 CFR, Part 24:2010, Enclosure Spurious Radiated Emissions
47 CFR, Part 90:2010, Enclosure Spurious Radiated Emissions

For
ADC Telecommunications Inc.

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

Test Authorized by:
ADC Telecommunications, Inc.
541 E. Trimble Road
San Jose, CA 95131USA

Prepared by: _____ Date: October 22, 2013
Simon Khazon

Reviewed by: _____ Date: October 22, 2013
Norman Shpilsher

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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	SPT-M3-8019-31-HP
Type of EUT:	800P3_PCSP1_MRAU
Frequency Range:	851-869MHz (SMR Band) 1930-1995MHz (PCS Band)
Company:	ADC Telecommunications Inc.
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 90:2010, 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 15, 2013
Test Work Started:	October 15, 2013
Test Work Completed:	October 16, 2013
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 90	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 852MHz, 860MHz, and 868MHz
2	Continuous transmitting at 1931MHz, 1962MHz, and 1994MHz
3	RF Input setting: -11dBm; 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:	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

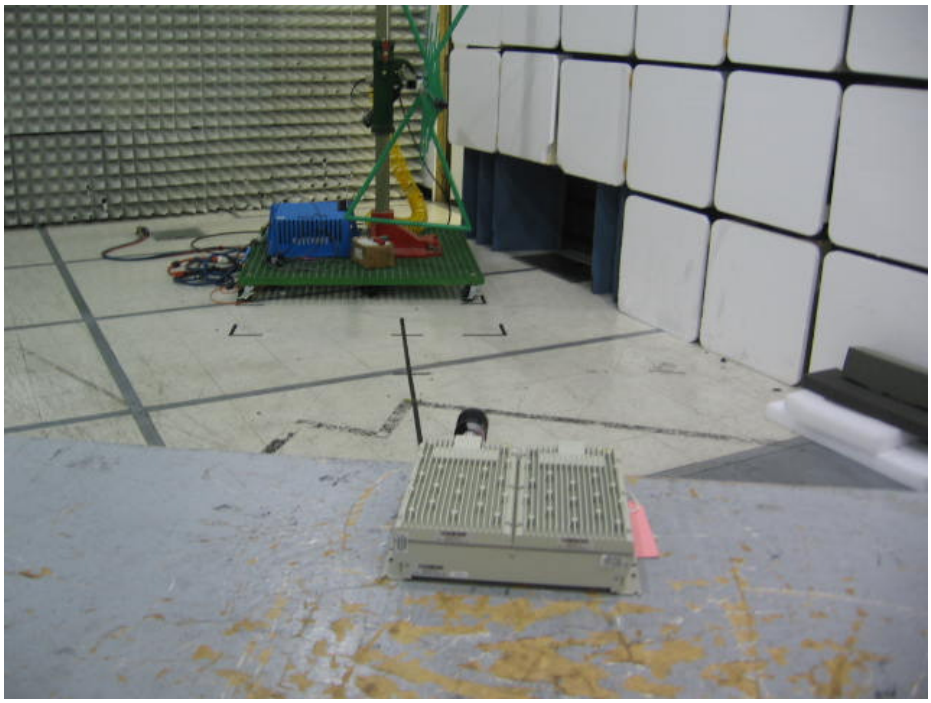
Test result: **Pass**

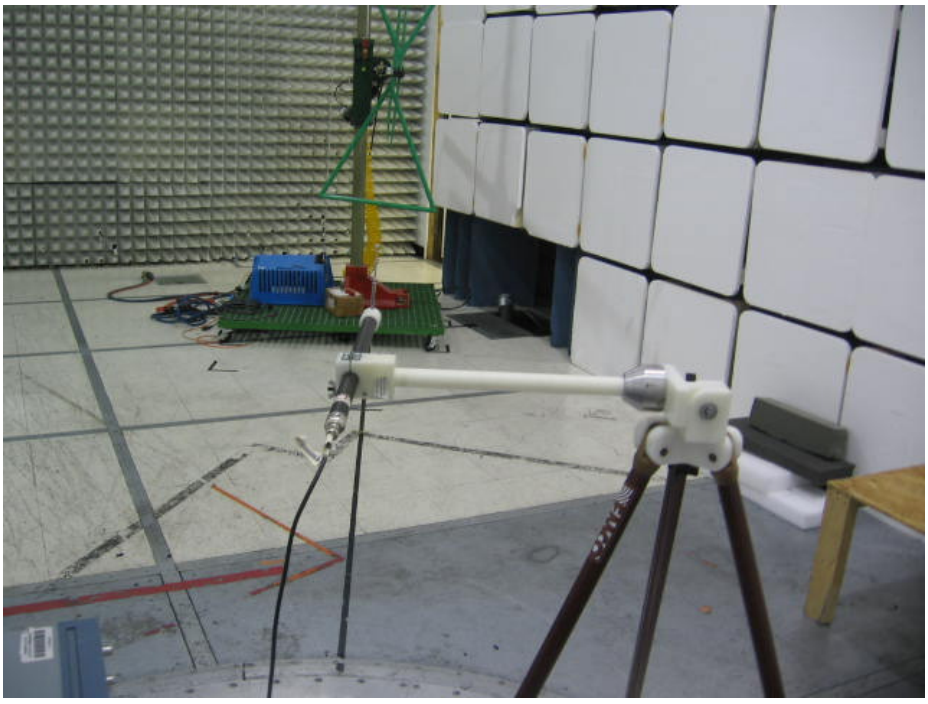
Frequency range: 30MHz-10GHz for SMR Band
30MHz-20GHz for PCS Band

Max. Emissions margin: 19.4dB below the Limits

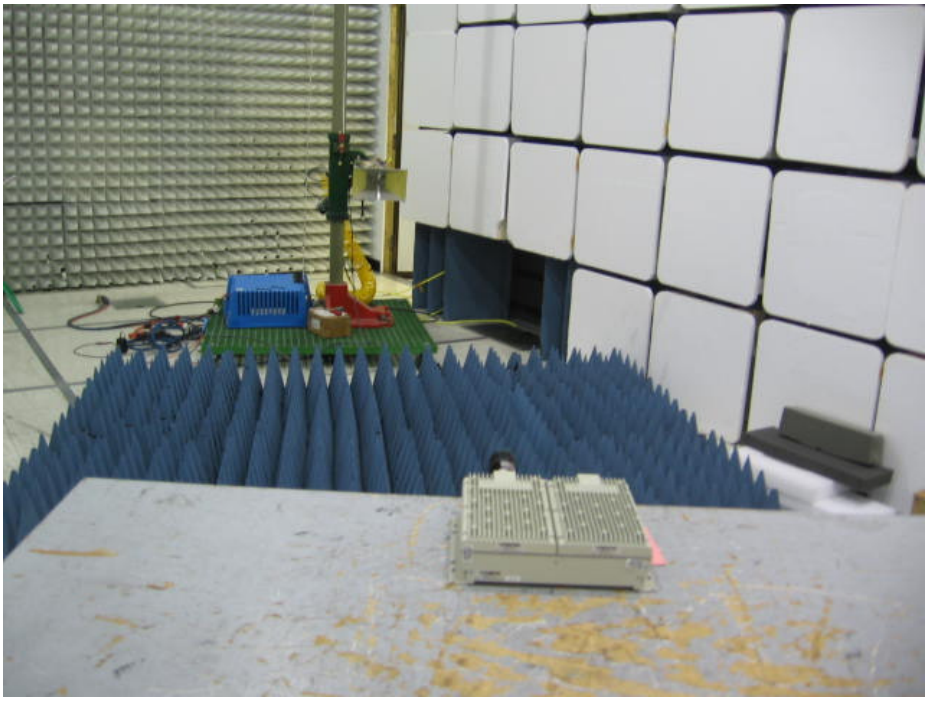
Notes:

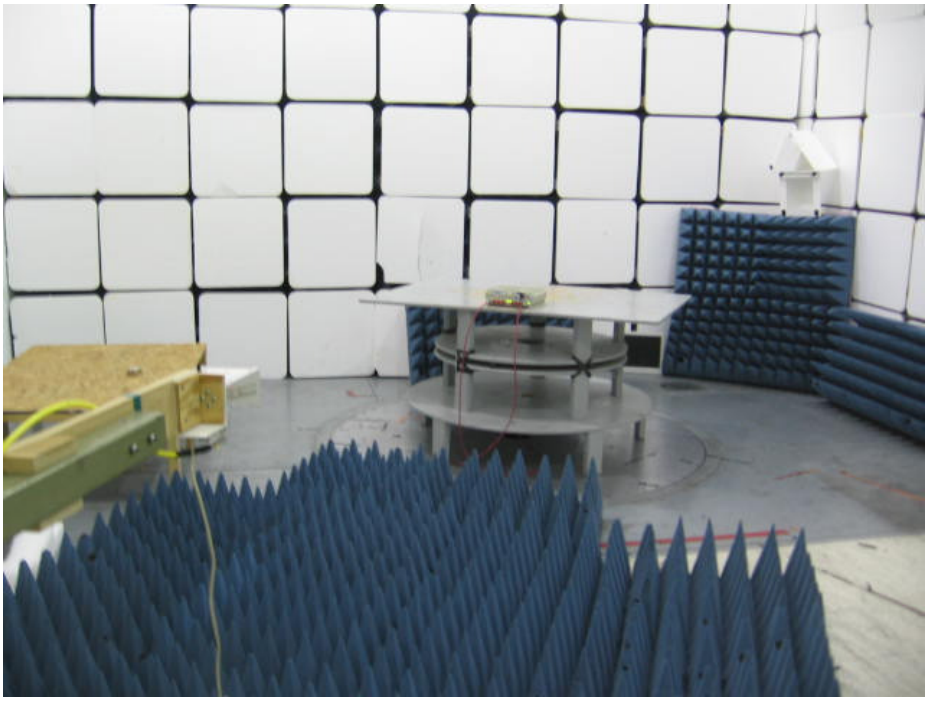
1. The Radiated Emissions testing was performed in the Anechoic chamber at 3m measurement distance (see Tables 1, 2, and 3 and Graphs 1-30)
2. The Spurious Radiated Power limits of -13dBm were correlated with the field strength Reference Limit of 82.2dBµV/m during direct field strength reference measurement at 3m distance (Graphs 1-30)
3. The substitution measurements were used for emission with the maximum field strength margin less than 20dB below the Reference Limit (see Table 4)
4. Emissions at operating frequencies were excluded from the Tables





Test Setup Photos





Test Setup Photos

Date:	October 15, 2013	**Result:** **Pass**
Tested by:	Simon Khazon	
Standard:	FCC Part 90, SMR Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Frequency Range:30MHz-1000MHz	

Table 1

Frequency	Ant. Polarity	Peak Reading dBµV	Ant.Factor dB1/m	Total at 3m dBµV/m	Limit dBµV/m	Margin dB
Lower Channel 852MHz						
55.639 MHz	V	26.8	8.1	34.9	82.2	-47.4
62.981 MHz	V	30.5	7.0	37.5	82.2	-44.7
112.25 MHz	V	31.6	13.6	45.3	82.2	-37.0
30.211 MHz	H	8.5	20.2	28.7	82.2	-53.5
130.26 MHz	H	14.1	13.8	27.9	82.2	-54.3
132.84 MHz	H	14.8	13.8	28.6	82.2	-53.6
139.69 MHz	H	21.6	13.4	34.9	82.2	-47.3
795.21 MHz	H	16.0	24.1	40.1	82.2	-42.1
Middle Channel 860MHz						
54.249 MHz	V	34.1	8.5	42.6	82.2	-39.6
56.029 MHz	V	38.7	8.0	46.7	82.2	-35.5
59.561 MHz	V	42.2	7.3	49.4	82.2	-32.8
60.311 MHz	V	40.4	7.2	47.5	82.2	-34.7
228.26 MHz	V	33.1	12.7	45.8	82.2	-36.4
59.171 MHz	H	31.0	7.3	38.4	82.2	-43.9
228.26 MHz	H	34.5	12.7	47.2	82.2	-35.0
338.6 MHz	H	17.1	16.9	34.0	82.2	-48.2
Upper Channel 868MHz						
40.651 MHz	V	18.1	14.4	32.5	82.2	-49.7
55.028 MHz	V	31.9	8.2	40.1	82.2	-42.1
59.31 MHz	V	40.4	7.3	47.7	82.2	-34.5
60.868 MHz	V	36.7	7.1	43.8	82.2	-38.4
57.697 MHz	H	25.1	7.7	32.7	82.2	-49.5
220.29 MHz	H	28.5	12.2	40.7	82.2	-41.5
337.73 MHz	H	20.3	16.9	37.2	82.2	-45.0

Date:	October 15, 2013	**Result: Pass**
Tested by:	Simon Khazon	
Standard:	FCC Part 90, SMR Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Frequency Range:1GHz-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
Lower Channel 852MHz							
1.705 GHz	V	75.64	28.64	43.24	61.04	82.2	-21.2
2.554 GHz	V	55.8	31.8	43.5	44.1	82.2	-38.1
4.258 GHz	V	54.5	36.7	42.6	48.5	82.2	-33.7
9.712 GHz	V	51.2	44.1	41.0	54.2	82.2	-28.0
1.705 GHz	H	75.8	28.5	43.2	61.1	82.2	-21.1
3.409 GHz	H	57.8	34.5	43.6	48.7	82.2	-33.6
4.261 GHz	H	55.4	36.5	42.6	49.3	82.2	-32.9
9.358 GHz	H	51.4	43.5	40.7	54.3	82.2	-27.9
Middle Channel 860MHz							
1.078 GHz	V	65.5	25.9	42.8	48.5	82.2	-33.7
1.693 GHz	V	68.3	28.6	43.2	53.6	82.2	-28.6
1.72 GHz	V	75.2	28.7	43.3	60.7	82.2	-21.5
1.774 GHz	V	64.5	29.0	43.3	50.1	82.2	-32.1
3.442 GHz	V	62.5	34.8	43.6	53.7	82.2	-28.5
9.349 GHz	V	51.2	43.7	40.6	54.2	82.2	-28.0
1.72 GHz	H	71.6	28.6	43.3	56.9	82.2	-25.3
3.442 GHz	H	64.3	34.6	43.6	55.3	82.2	-26.9
9.526 GHz	H	51.1	43.6	40.8	53.9	82.2	-28.3
Upper Channel 868MHz							
1.687 GHz	V	74.3	28.6	43.2	59.7	82.2	-22.5
1.738 GHz	V	74.4	28.8	43.3	59.9	82.2	-22.3
9.568 GHz	V	51.8	43.9	40.9	54.8	82.2	-27.4
1.738 GHz	H	69.9	28.7	43.3	55.3	82.2	-26.9
3.472 GHz	H	62.1	34.7	43.6	53.2	82.2	-29.0
9.088 GHz	H	51.1	43.4	40.4	54.1	82.2	-28.1

Date:	October 16, 2013	**Result:** **Pass**
Tested by:	Simon Khazon	
Standard:	FCC Part 24, PCS Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Frequency Range: 30MHz-20GHz	

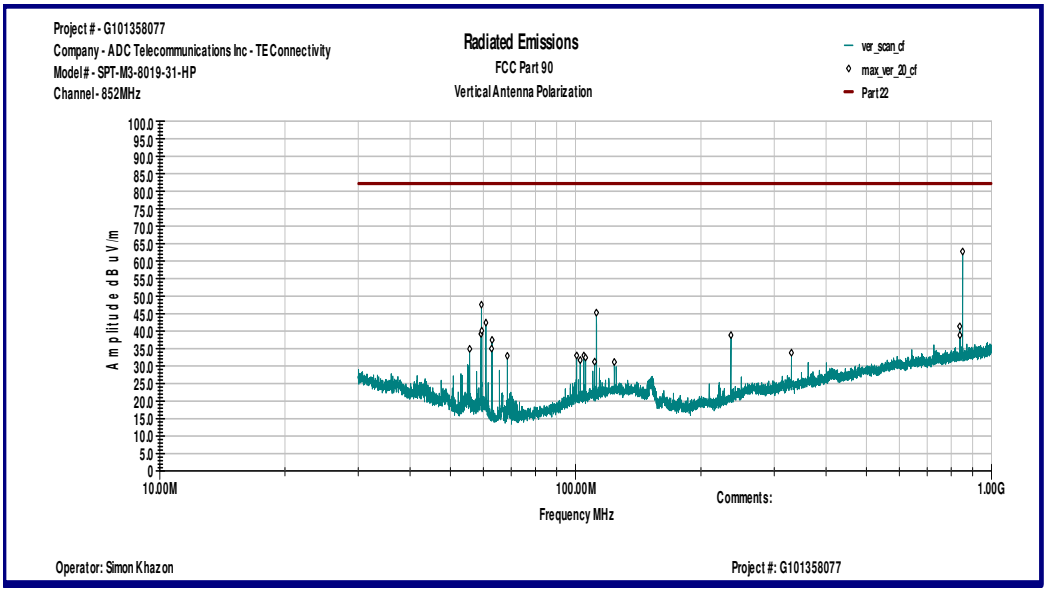
Table 3

Frequency	Ant. Polarity	Peak Reading dBµV	Ant.Factor dB1/m	Total at 3m dBµV/m	Limit dBµV/m	Margin dB
Lower Channel 1931MHz						
30.246 MHz	V	8.6	20.2	28.8	82.2	-53.4
44.739 MHz	V	14.2	12.5	26.7	82.2	-55.6
49.466 MHz	V	16.9	10.3	27.2	82.2	-55.0
117.93 MHz	V	16.0	13.8	29.8	82.2	-52.4
672.64 MHz	V	43.0	23.1	66.1	82.2	-16.1
932.72 MHz	V	11.0	25.7	36.7	82.2	-45.5
31.562 MHz	H	9.0	19.5	28.5	82.2	-53.8
130.54 MHz	H	11.7	13.8	25.5	82.2	-56.7
672.64 MHz	H	39.6	23.1	62.7	82.2	-19.5
Middle Channel 1962MHz						
33.194 MHz	V	9.8	18.6	28.4	82.2	-53.8
49.438 MHz	V	17.6	10.4	28.0	82.2	-54.3
53.192 MHz	V	17.1	8.9	26.0	82.2	-56.2
80.778 MHz	V	22.1	8.8	31.0	82.2	-51.2
641.49 MHz	V	42.9	22.8	65.7	82.2	-16.5
595.33 MHz	H	23.9	22.2	46.0	82.2	-36.2
641.49 MHz	H	35.8	22.8	58.6	82.2	-23.6
687.66 MHz	H	24.8	23.1	47.9	82.2	-34.3
943.57 MHz	H	11.7	25.8	37.5	82.2	-44.7
Upper Channel 1994MHz						
30.246 MHz	V	8.6	20.2	28.8	82.2	-53.4
102.6 MHz	V	19.4	12.7	32.1	82.2	-50.1
272.1 MHz	V	14.8	15.7	30.5	82.2	-51.7
400.89 MHz	V	12.8	18.7	31.6	82.2	-50.6
609.51 MHz	V	40.5	22.4	62.9	82.2	-19.3
31.035 MHz	H	8.3	19.8	28.1	82.2	-54.1
114.98 MHz	H	11.6	13.7	25.3	82.2	-56.9
609.51 MHz	H	35.5	22.4	57.9	82.2	-24.3
990.88 MHz	H	9.7	26.3	36.0	82.2	-46.2

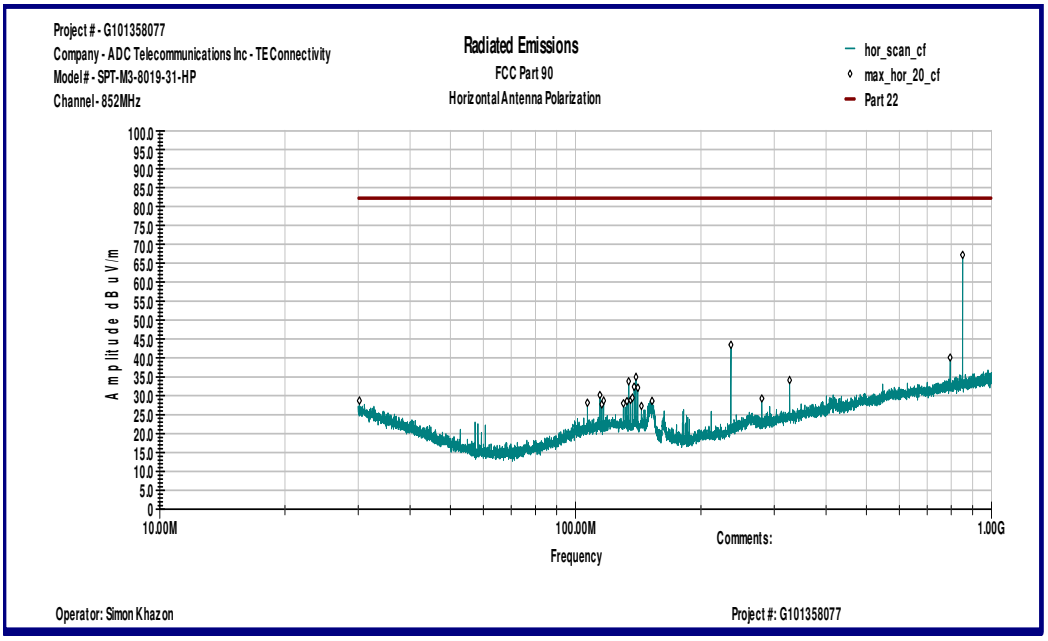
Date:	October 16, 2013	**Result:** **Pass**
Tested by:	Simon Khazon	
Standard:	FCC Part 24, PCS Band	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Substitution Measurements	

Table 4

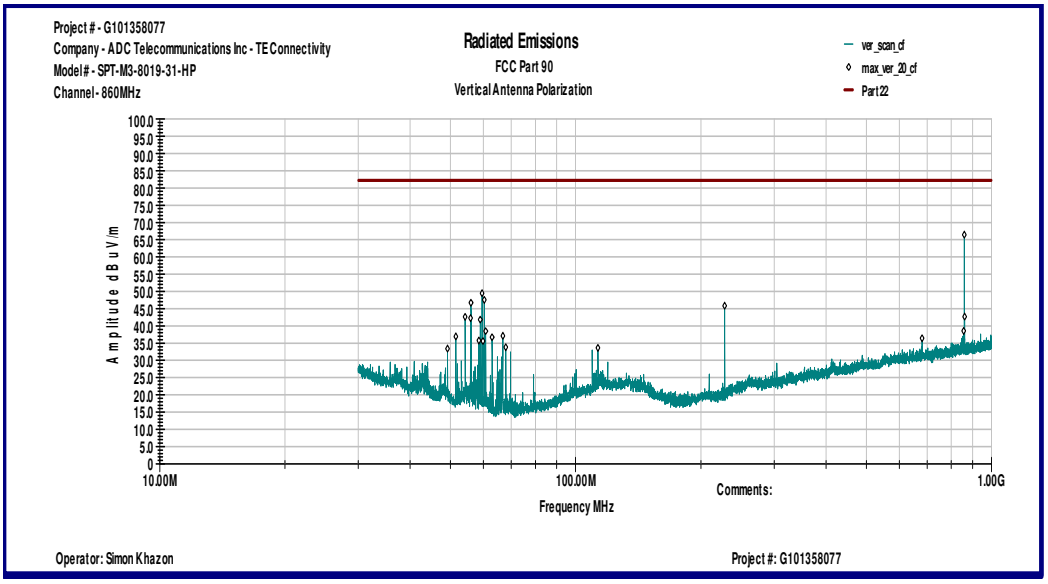
Frequency MHz	Antenna Polarity	Measured Emissions dBµV	Substitution Antenna Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	Additional Loss/Gain dB	Emissions EIRP dBm	Limits dBm	Margin dB
			Lower Channel 1931MHz						
672.64	V	43.0	-31.8	0.0	0.6	0.0	-32.4	-13.0	-19.4
			Middle Channel 1962MHz						
641.49	V	42.9	-31.9	0.0	0.6	0.0	-32.5	-13.0	-19.5
			Upper Channel 1994MHz						
609.51	V	40.5	-34.3	0.0	0.6	0.0	-34.9	-13.0	-21.9



Graph 1



Graph 2



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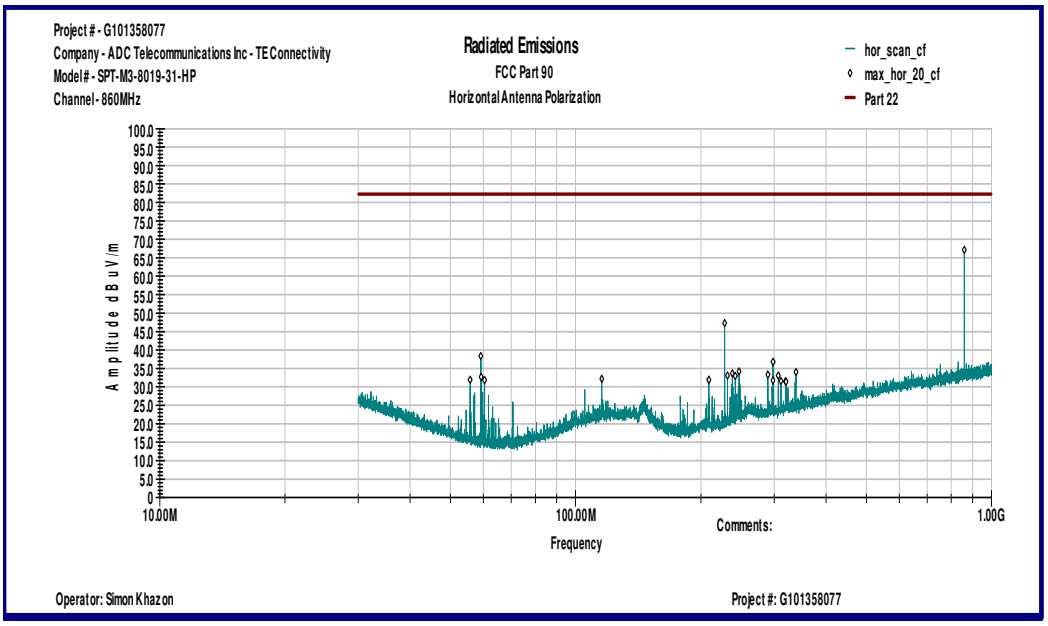

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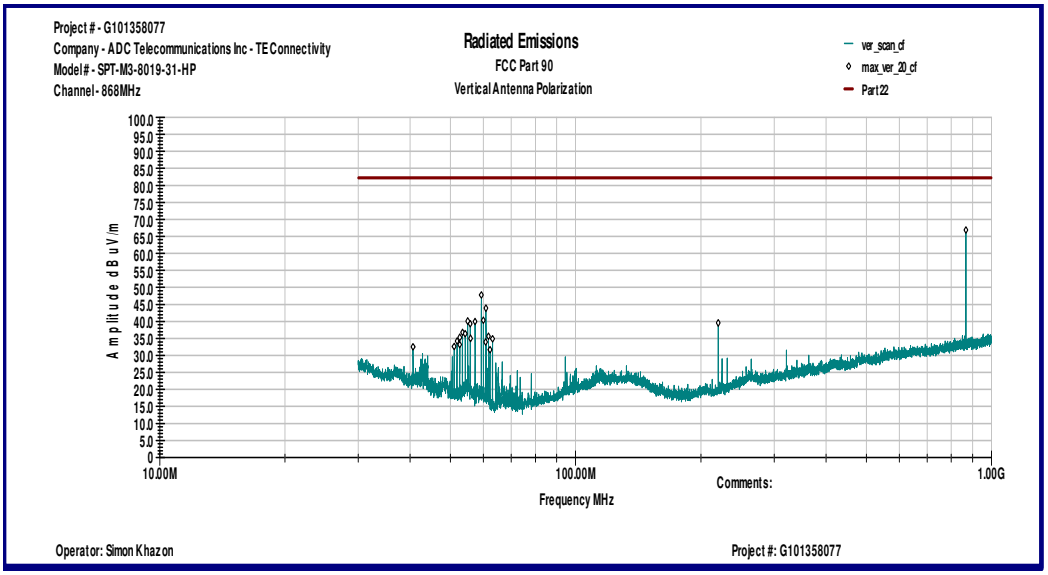

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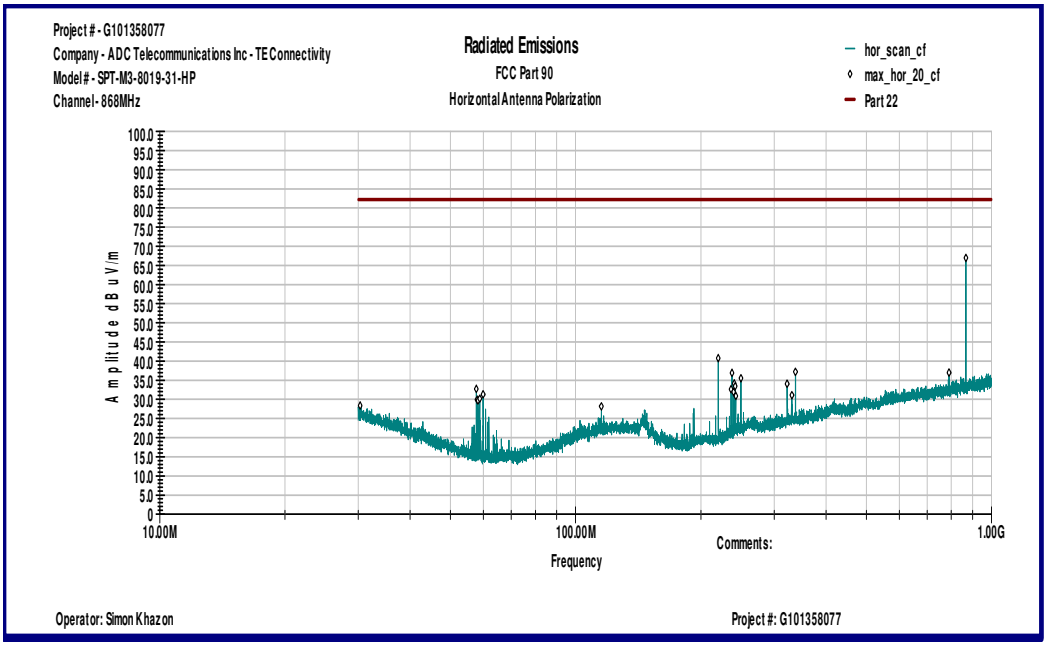

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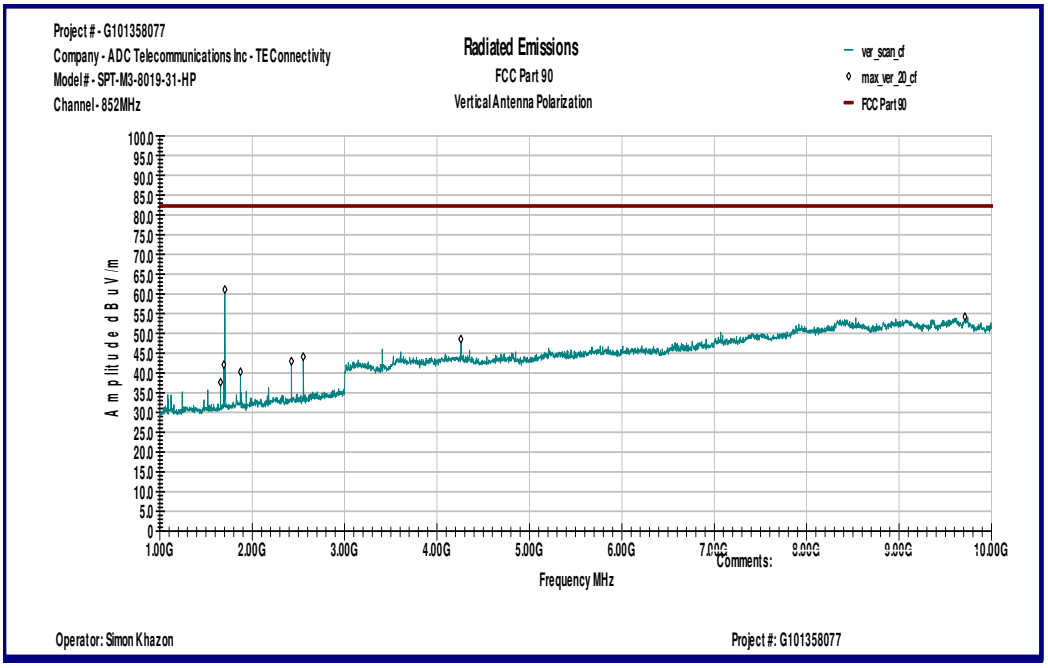

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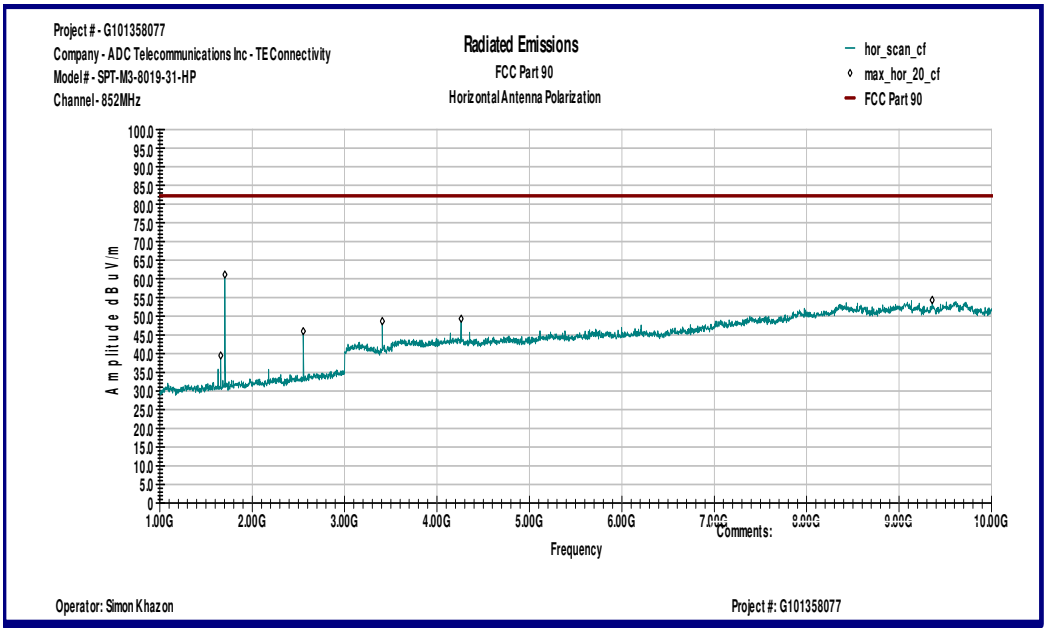

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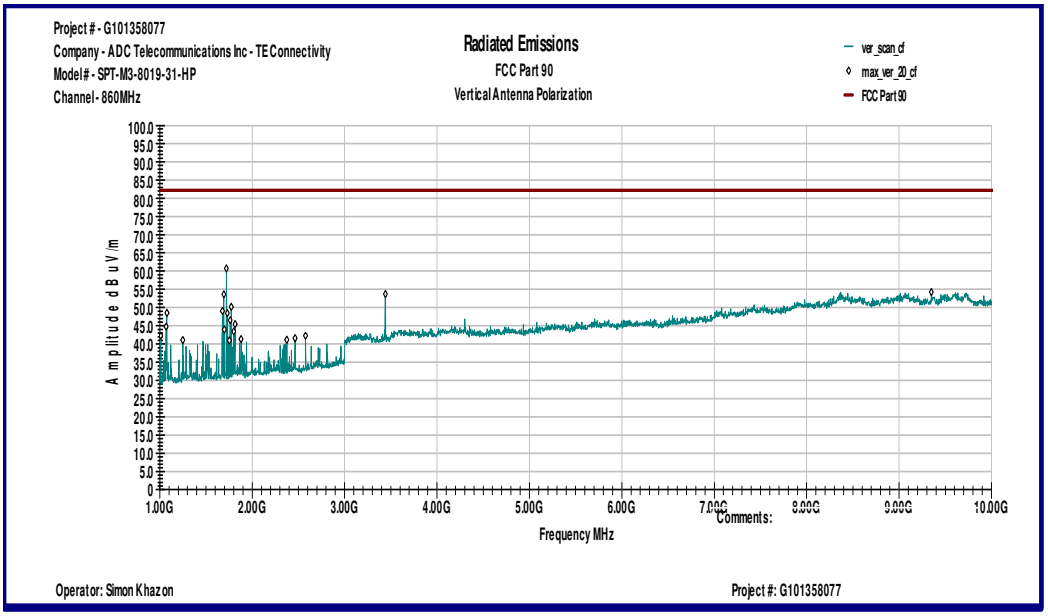

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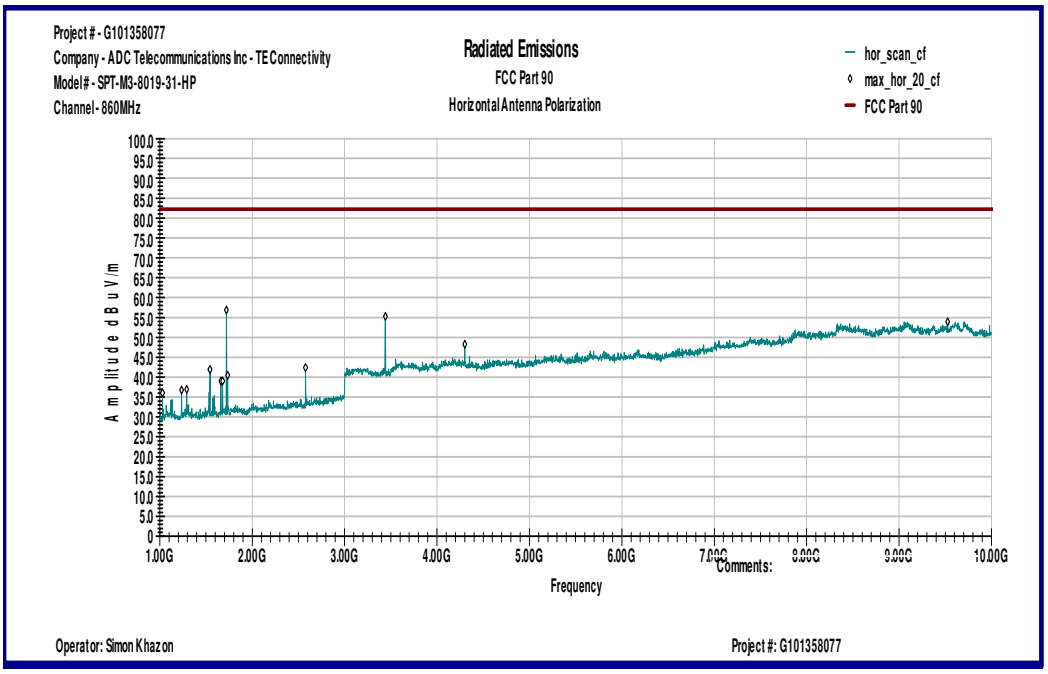

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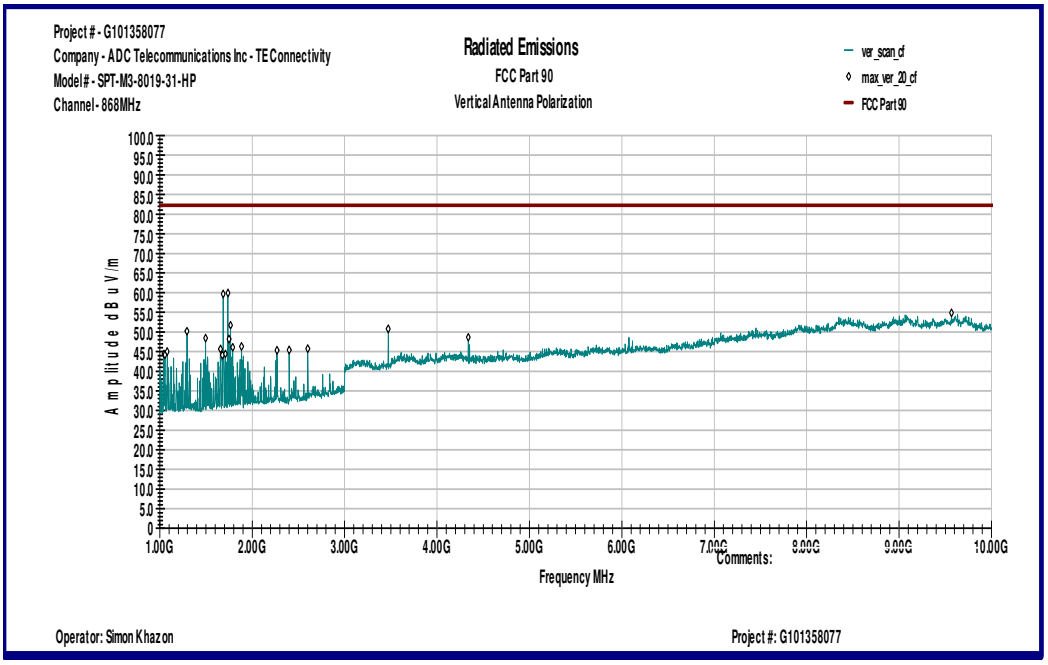

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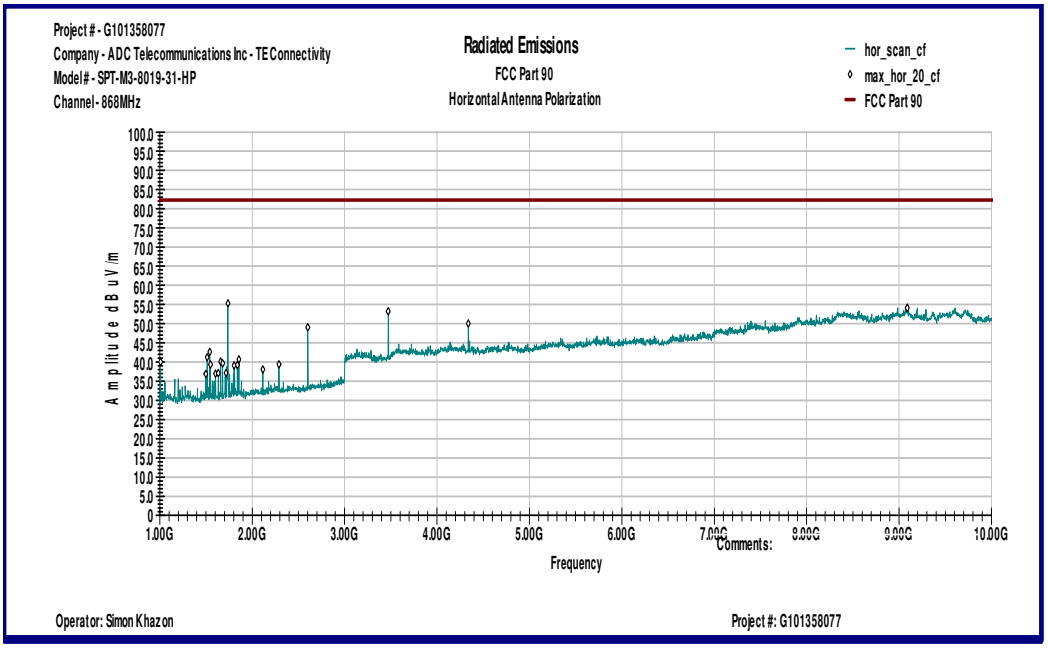

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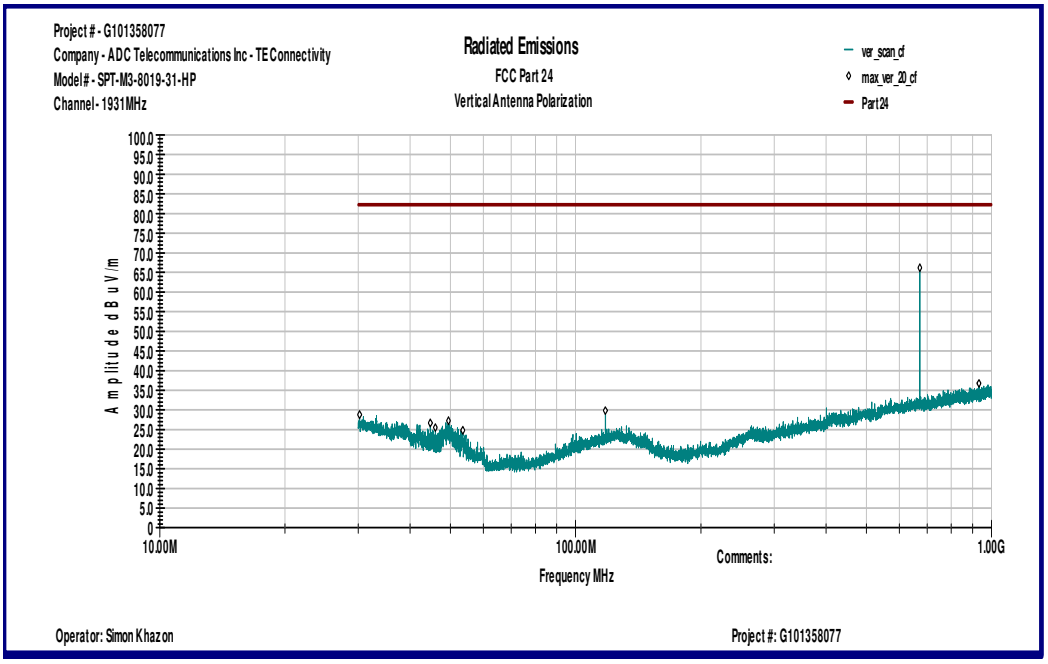

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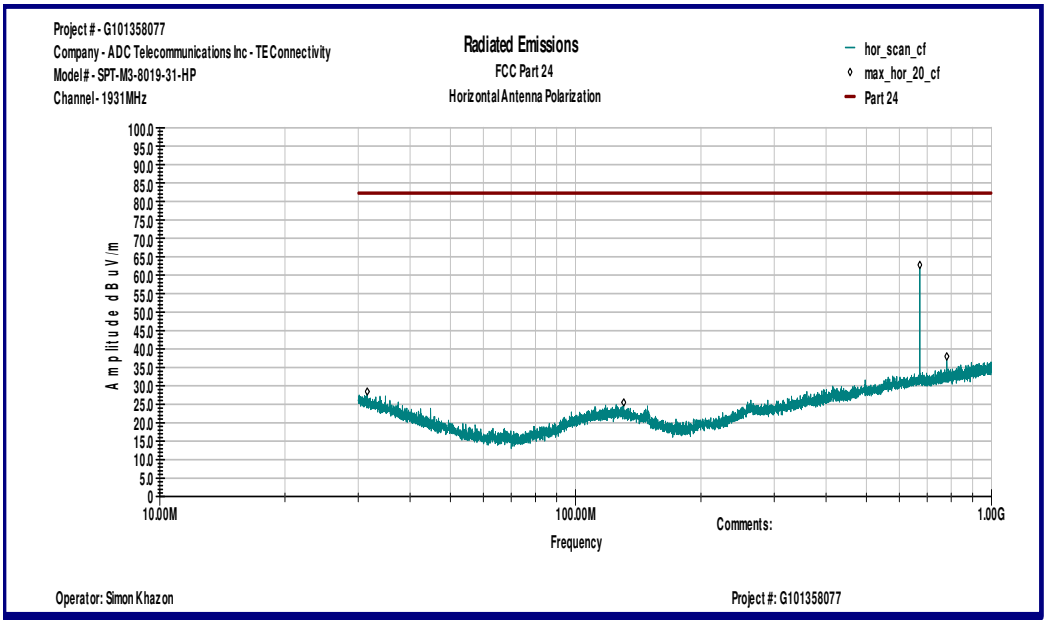

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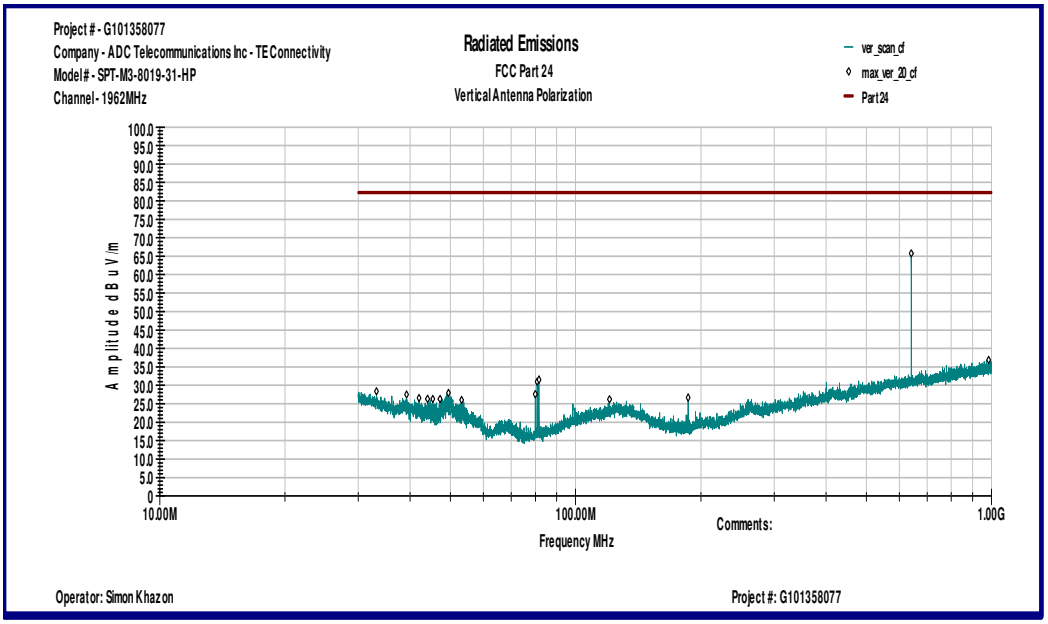

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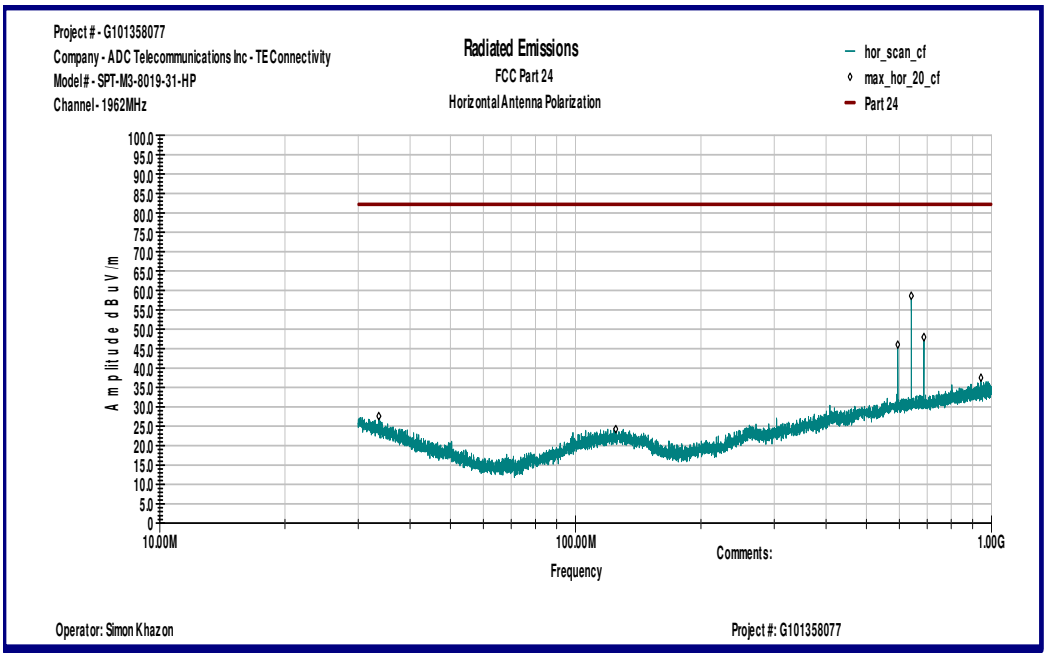

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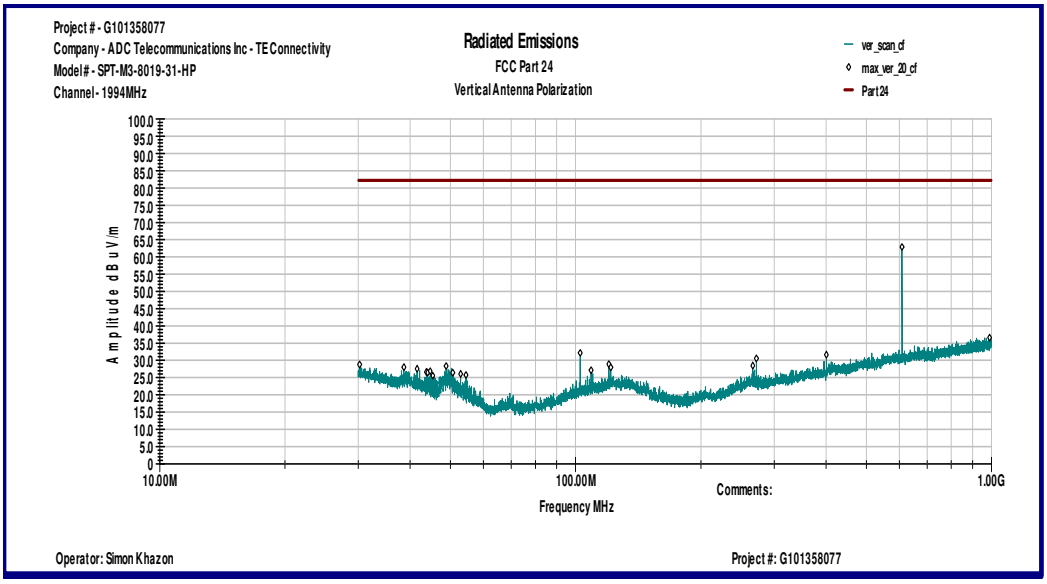

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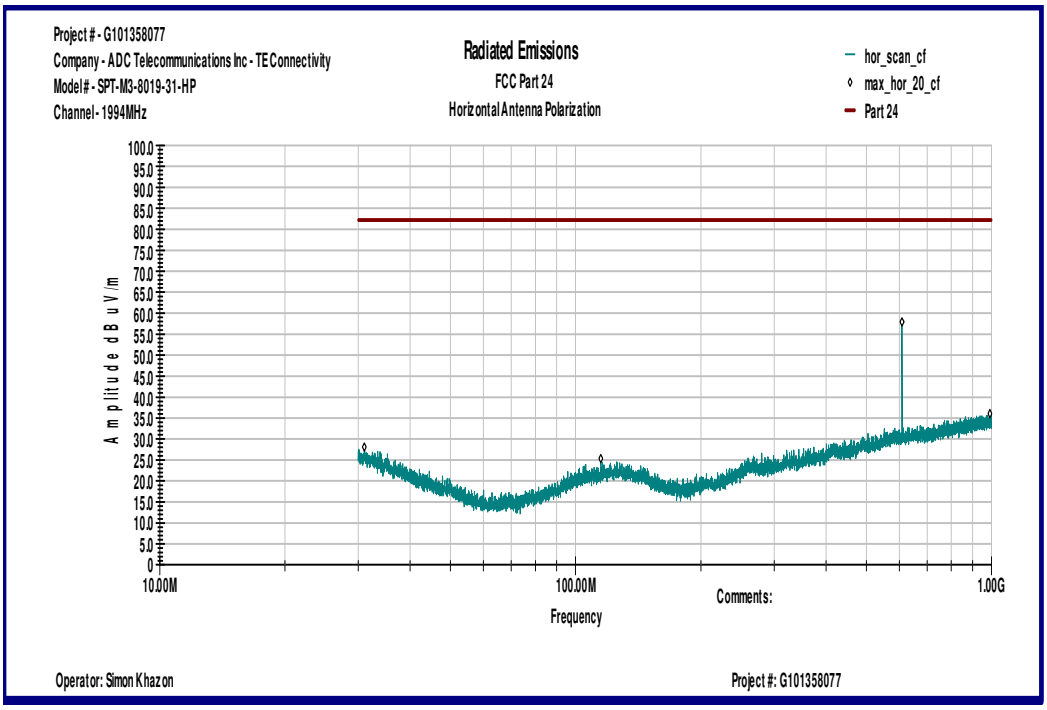

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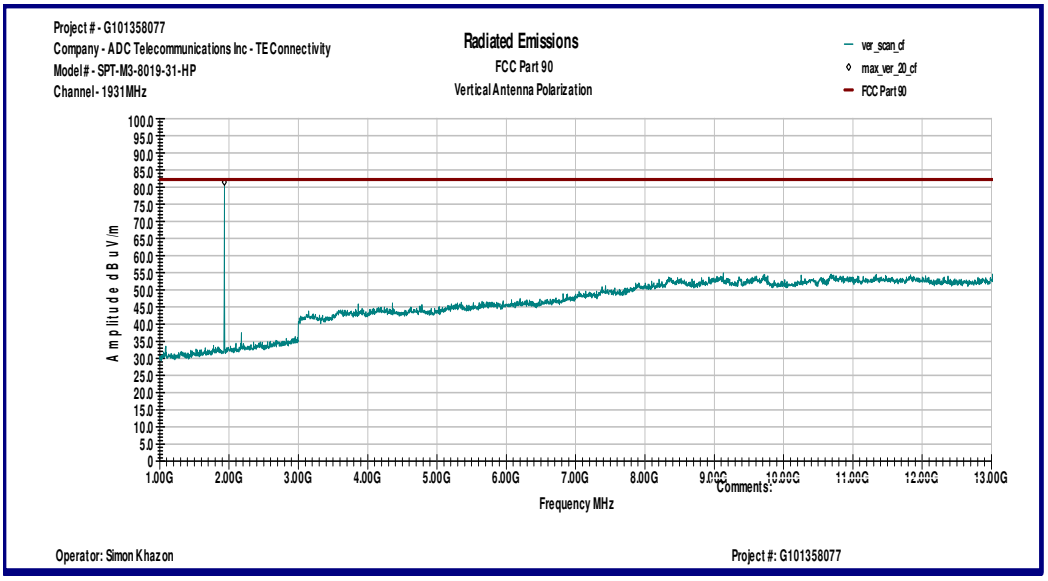

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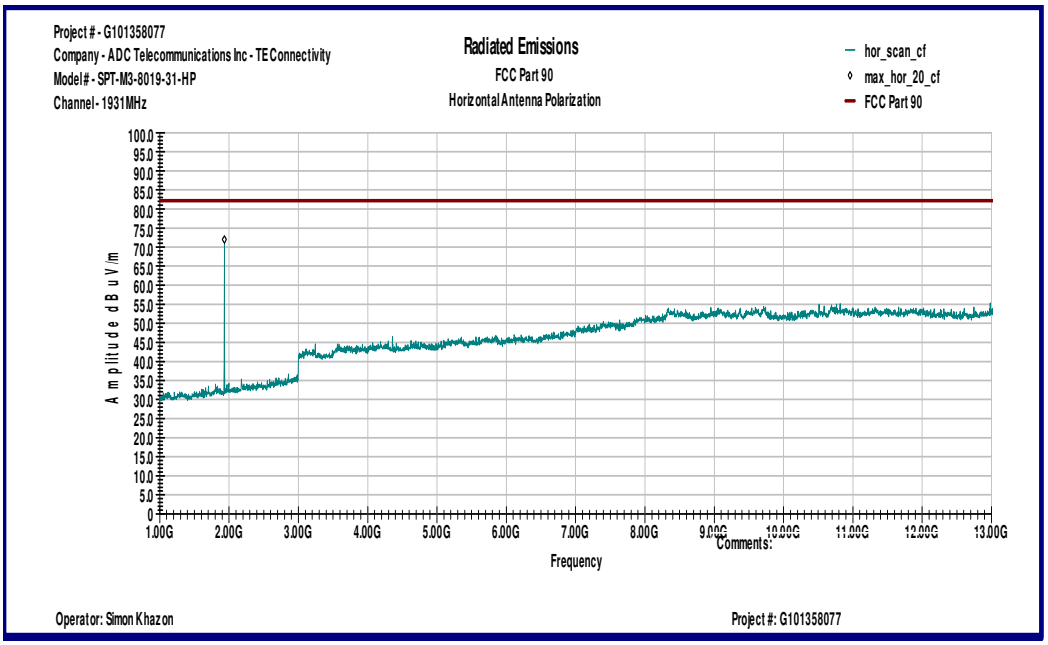

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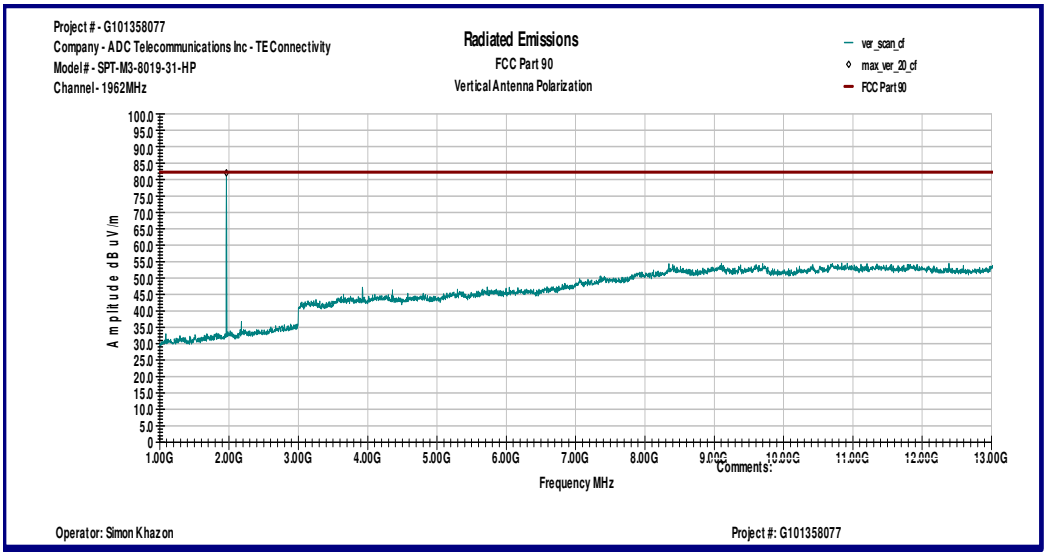

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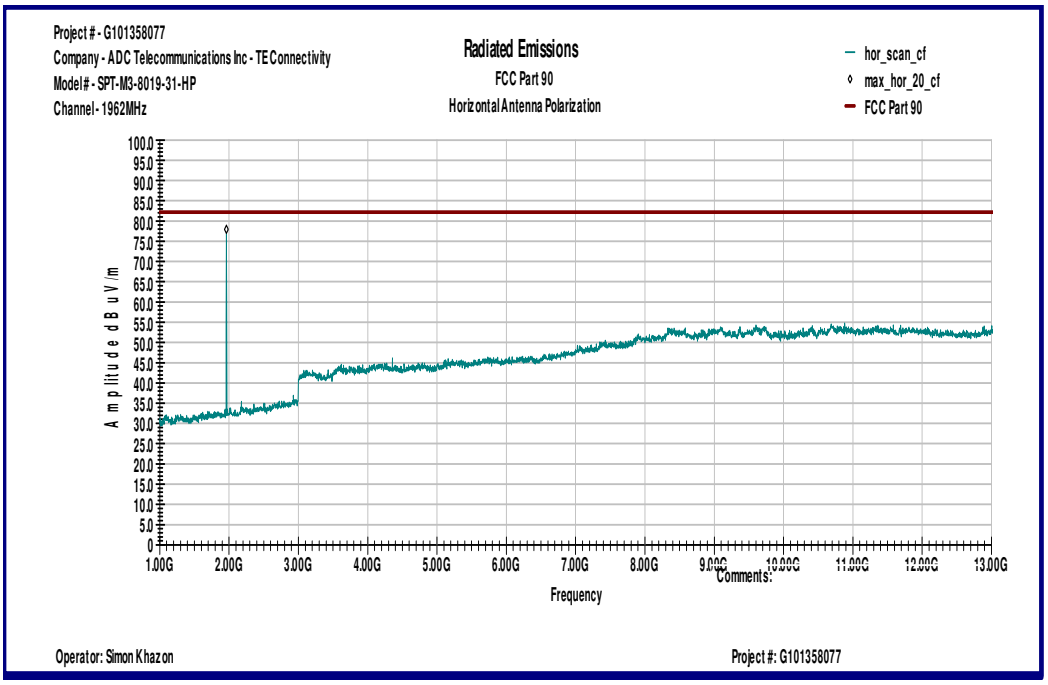

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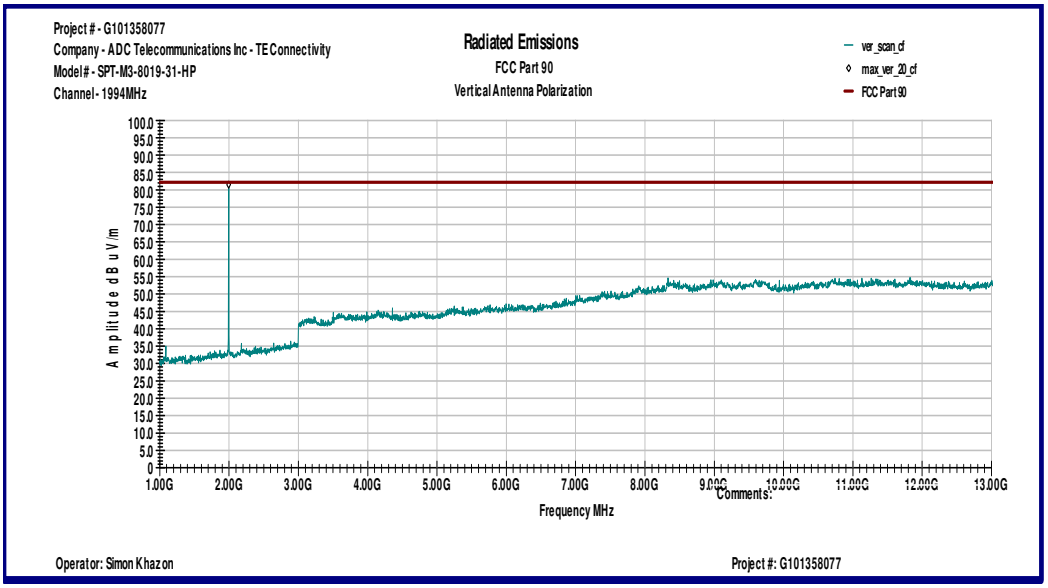
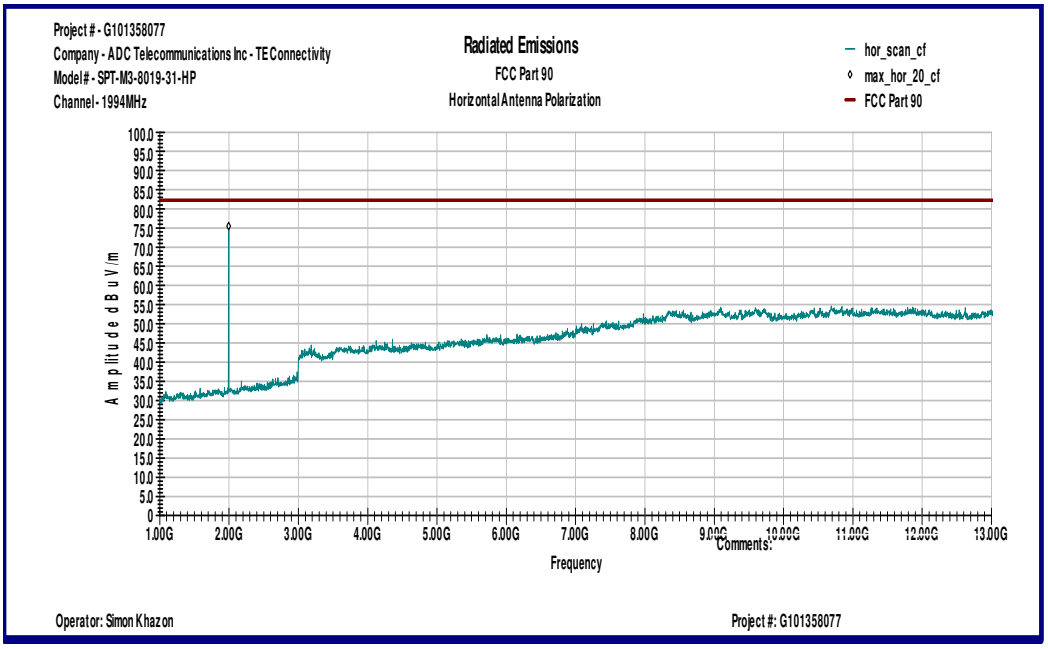
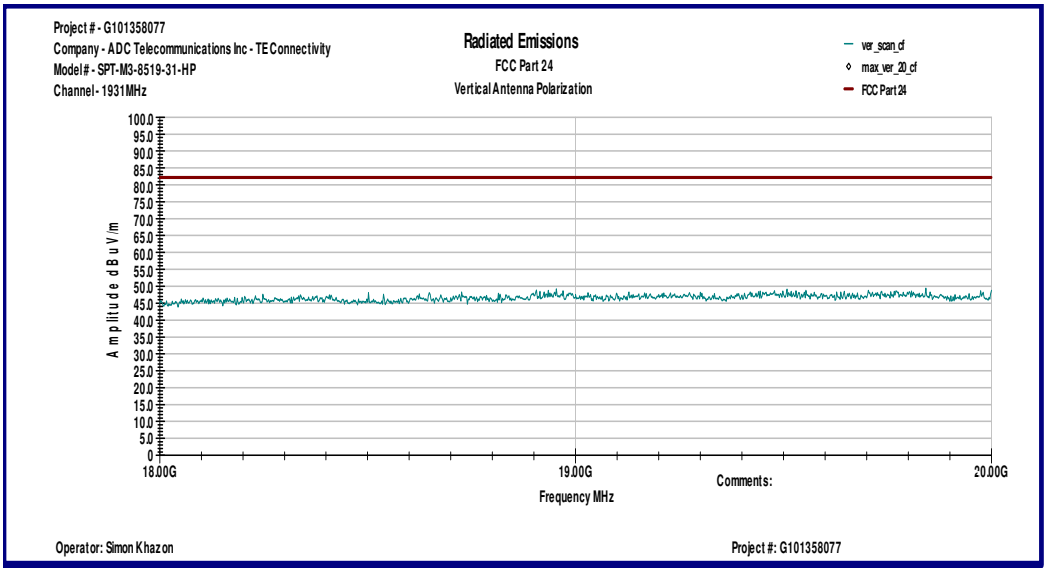


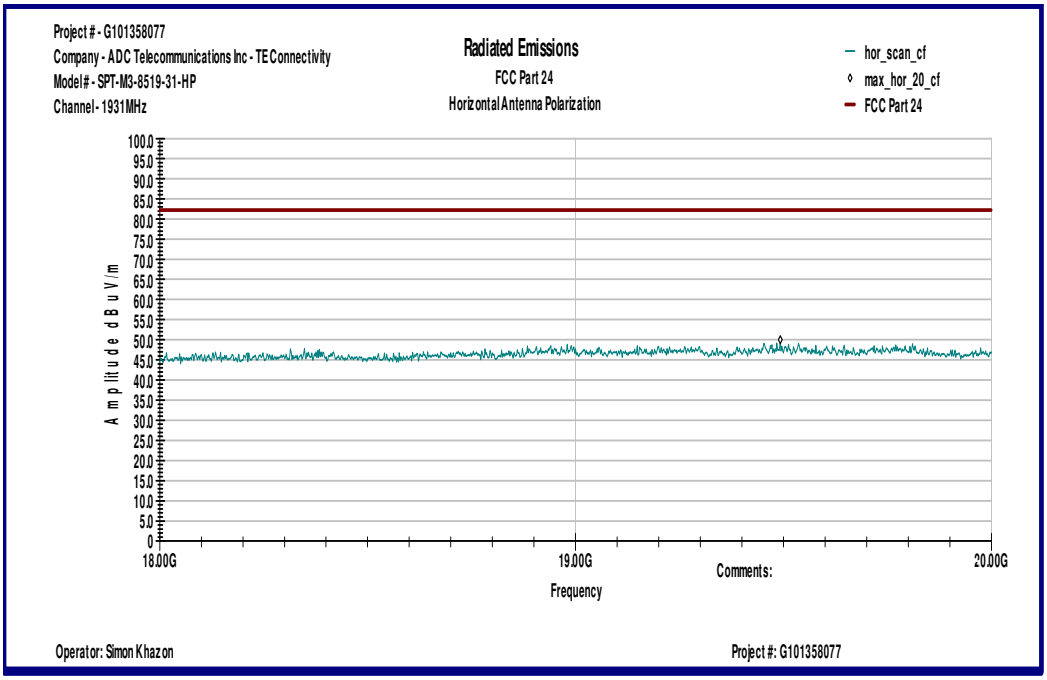
Graph 23



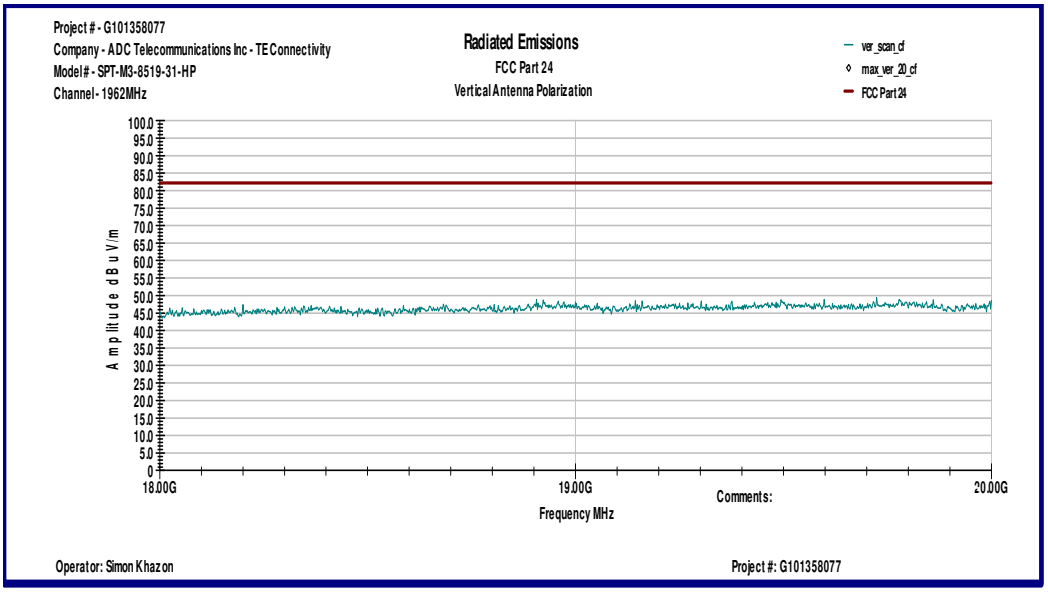
Graph 24



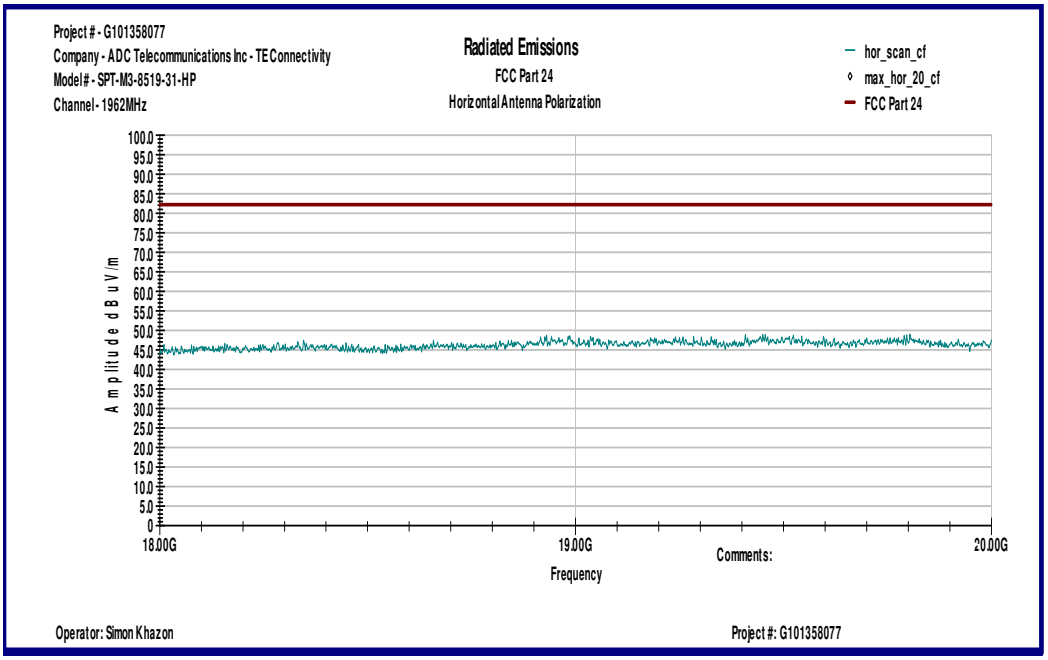
Graph 25



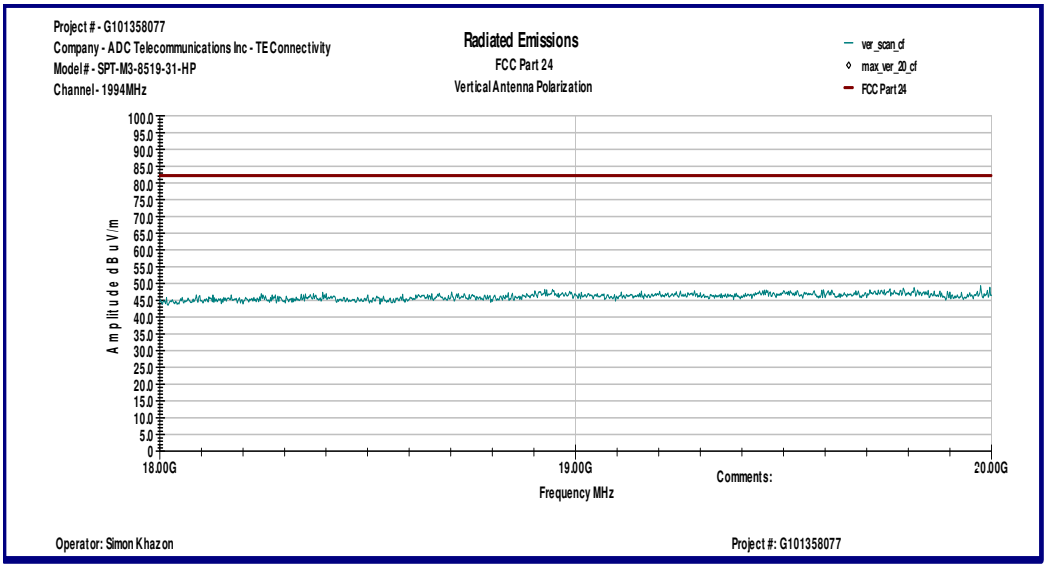
Graph 26



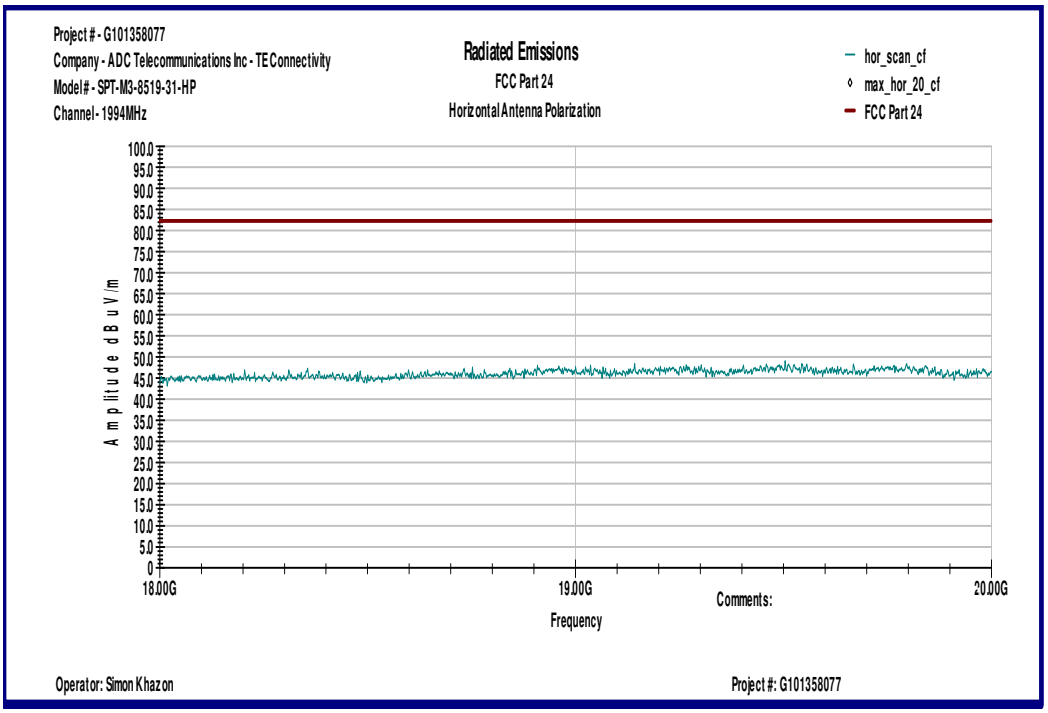
Graph 27



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	11/29/2013	☒
Spectrum Analyzer	R & S	ESU	100398	25283	12/19/2013	☒
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	9734	11/30/2013	☒
Horn Antenna	EMCO	3115	9507-4513	9936	05/28/2014	☒
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1402232	172081	11/01/2013	☒
System	TILE! Instrument Control		Ver. 3.4.K.29	15259	VBU	☒
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	11/07/2013	☒
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	MIN-0065	11/01/2013	☒