



TEST REPORT

Report Number: 100856639MIN-001

Project Number: G100856639

Testing performed on the
SPT-S3-70AWS-11-HP

to

47 CFR, Part 27:2010, Enclosure Spurious Radiated Emissions

For

ADC Telecommunications Inc. - a TE Connectivity Company

Test Performed by:
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Oakdale, MN 55128 USA

Test Authorized by:
ADC Telecommunications Inc.- a TE Connectivity
Company
541 E Trimble Road
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Date: August 28, 2012

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Date: August 28, 2012

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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	SPT-S3-70AWS-11-HP
Type of EUT:	Booster
Operating Frequency Range:	728 – 757MHz (700 band) 2110 – 2155 MHz (AWS 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:	<input type="checkbox"/> EN 55022:2006 +A1:2007, Class █ <input type="checkbox"/> EN 55011:2007 +A2:2007, Group █, Class █ <input checked="" type="checkbox"/> 47 CFR, Part 27:2010, 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 █ 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 27, 2012
Test Work Started:	August 27, 2012
Test Work Completed:	August 27, 2012
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 type="checkbox"/> 120VAC <input type="checkbox"/> 230VAC <input type="checkbox"/> 400VAC <input checked="" type="checkbox"/> 54VDC from external support Power
Rated current:	<input type="checkbox"/> Amp.
Rated frequency:	<input type="checkbox"/> 50Hz <input type="checkbox"/> 60Hz
Number of phases:	<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 transmitting at 729MHz, 742MHz, and 756MHz at -17dBm input power
2	Continuous transmitting at 2111MHz, 2132MHz, and 2154MHz at -11dBm input power

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	Aeroflex IRF 3413	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

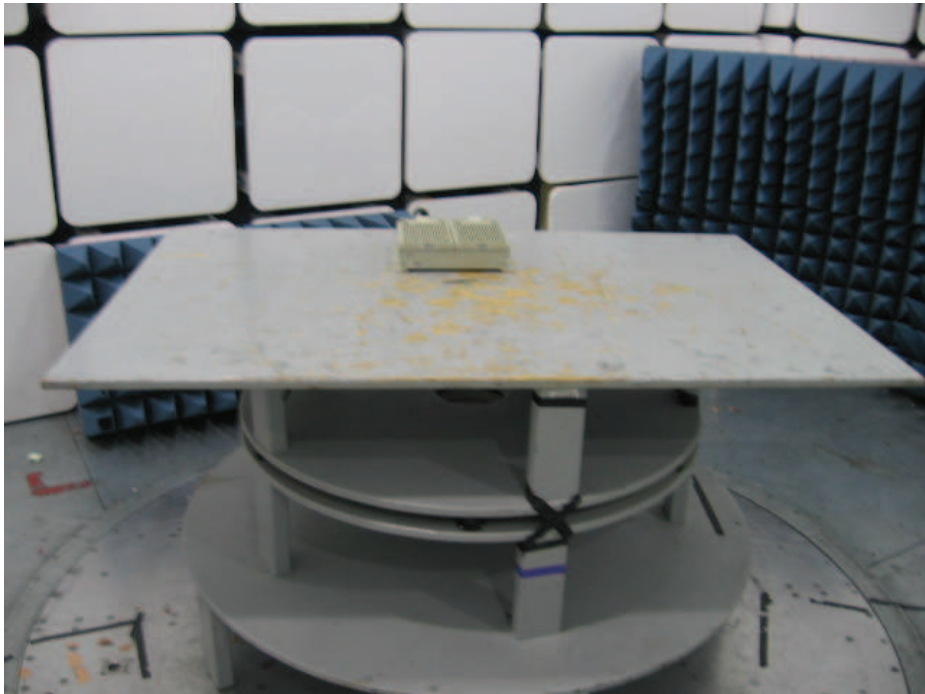
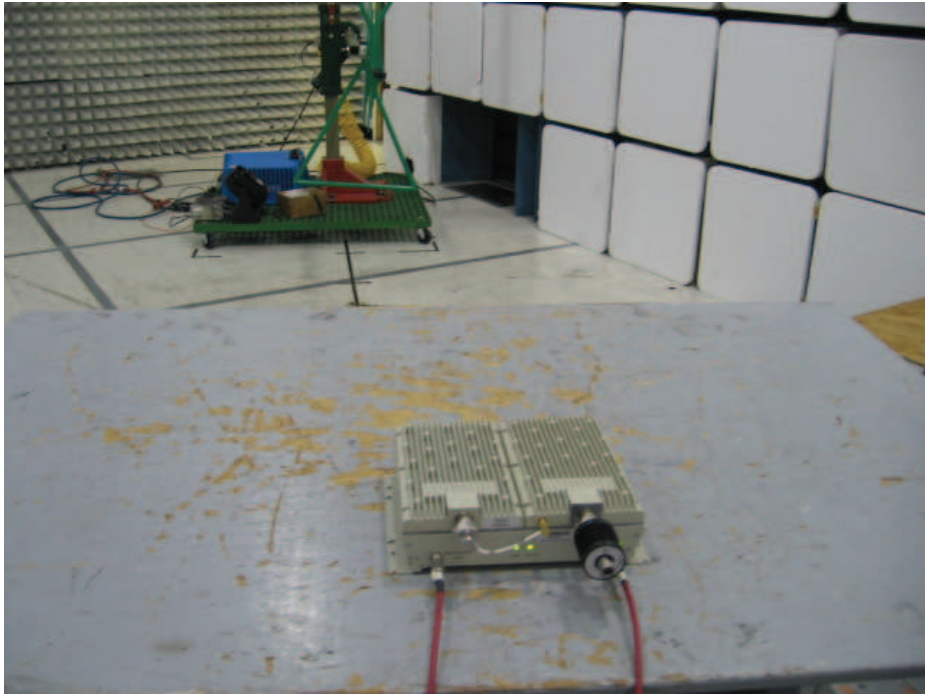
Test location: OATS Anechoic Chamber

Test distance: 10 meters 3 meters

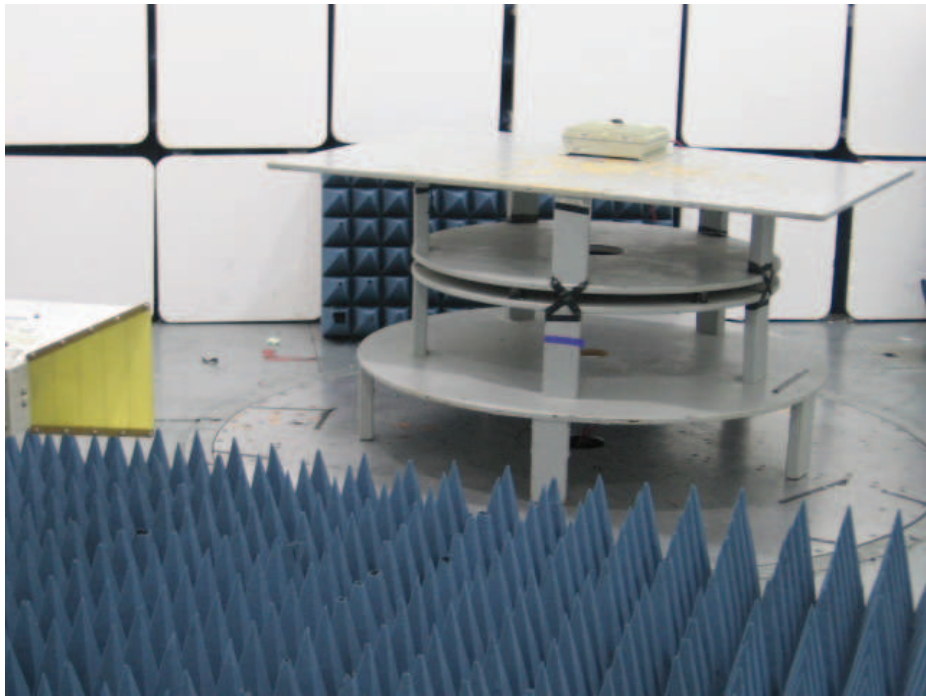
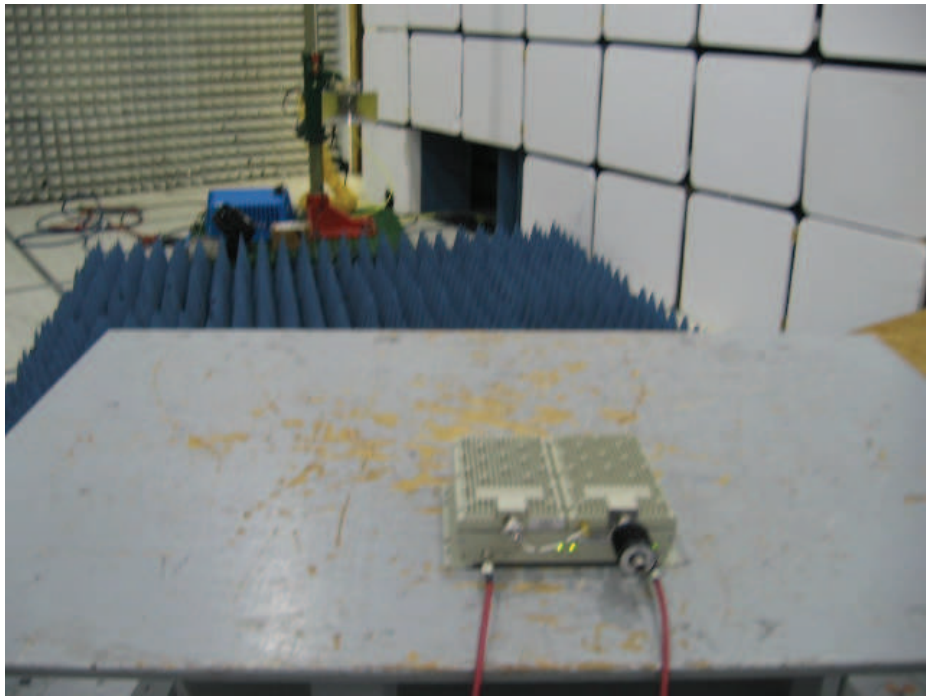
Test result: **Pass**

Frequency range: 30MHz-8GHz (700 Band)
30MHz-22GHz (AWS Band)

- 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 82.2dB 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 Tables
-



Test Setup Photos

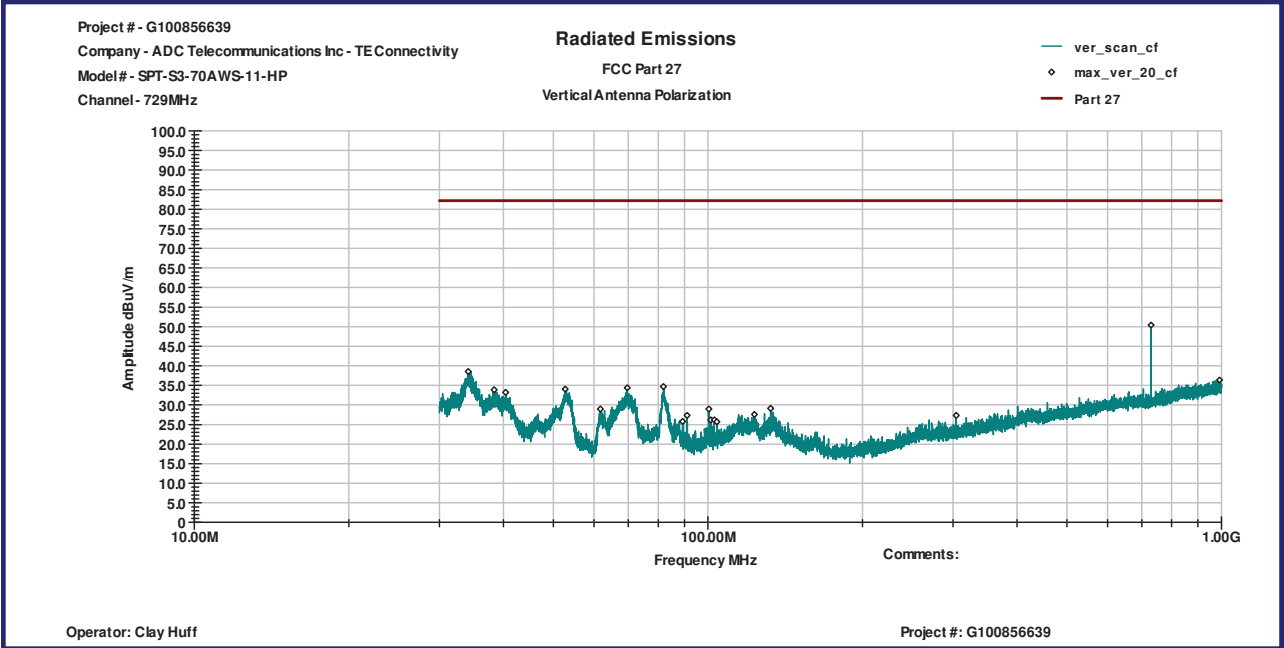


Test Setup Photos

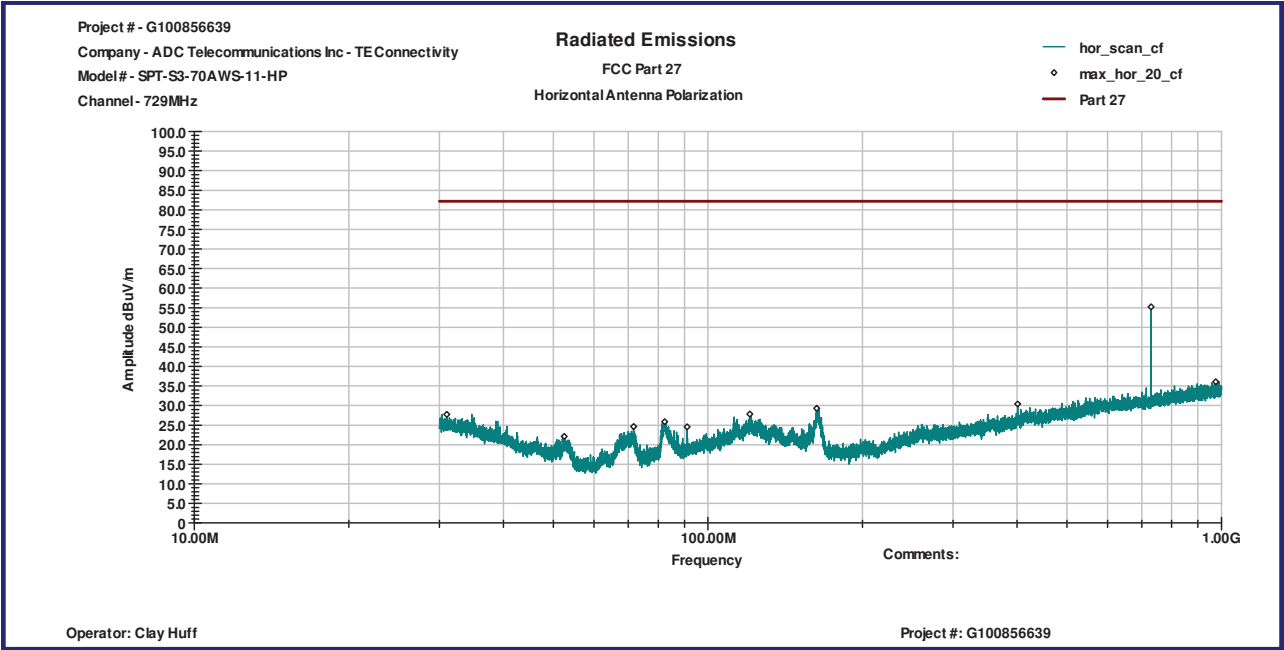
Date:	August 27, 2012	Result: Pass
Tested by:	Clay Huff	
Standard:	FCC Part 27	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Channels 728-756MHz Frequency Range 30MHz-8GHz	

Table 1

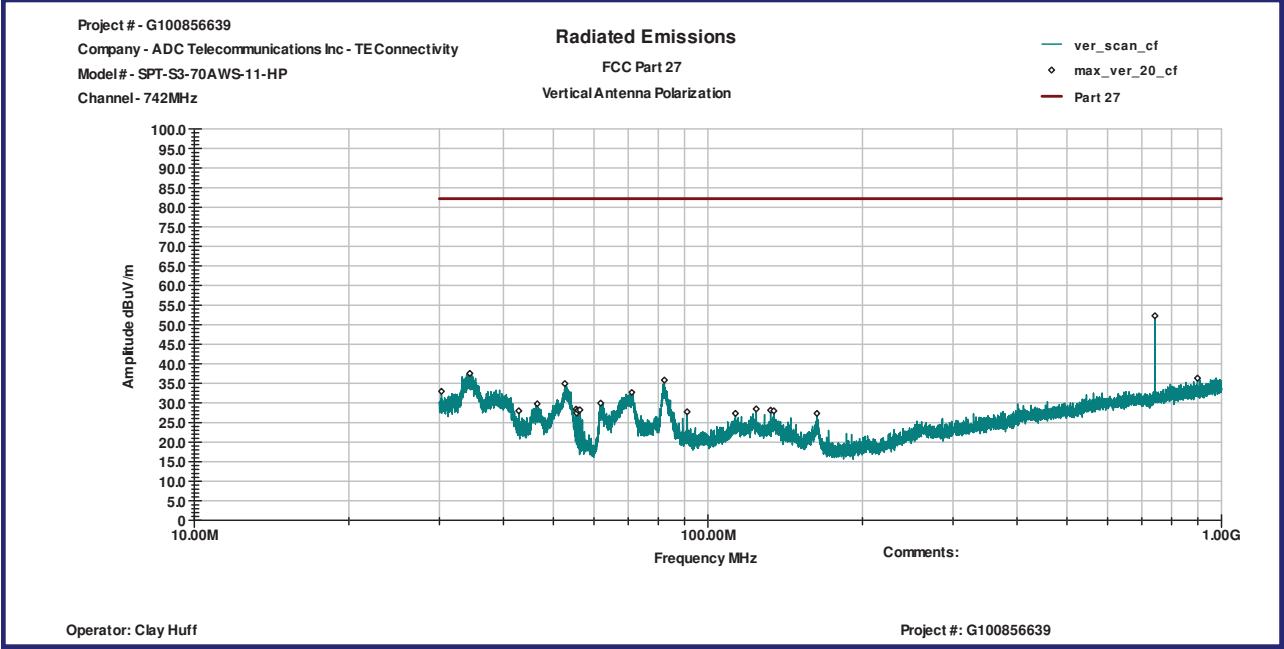
Frequency MHz	Antenna Polarity	Peak Reading dB μ V	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dB μ V/m	Limit dB μ V/m	Margin dB
Channel 729MHz							
34.16 MHz	V	20.77	17.79	0.0	38.56	82.2	-43.64
91.107 MHz	V	16.61	10.69	0.0	27.3	82.2	-54.9
132.47 MHz	V	15.37	13.75	0.0	29.12	82.2	-53.08
304.32 MHz	V	11.28	16.04	0.0	27.32	82.2	-54.88
729.01 MHz	V	27.33	23.08	0.0	50.42	82.2	-31.78
1.8937 GHz	V	53.99	29.55	43.4	40.12	82.2	-42.08
31.005 MHz	H	8.09	19.62	0.0	27.71	82.2	-54.49
120.63 MHz	H	13.87	13.95	0.0	27.81	82.2	-54.39
400.96 MHz	H	11.44	18.95	0.0	30.38	82.2	-51.82
729.01 MHz	H	32.14	23.08	0.0	55.22	82.2	-26.98
974.82 MHz	H	10.01	26.07	0.0	36.08	82.2	-46.12
1.854 GHz	H	57.6	29.2	43.4	43.5	82.2	-38.7
Channel 742MHz							
30.292 MHz	V	12.92	20.05	0.0	32.96	82.2	-49.24
34.37 MHz	V	19.83	17.71	0.0	37.54	82.2	-44.66
82.299 MHz	V	26.85	8.98	0.0	35.82	82.2	-46.38
742.09 MHz	V	28.7	23.53	0.0	52.23	82.2	-29.97
1.483 GHz	V	53.86	27.57	43.0	38.41	82.2	-43.79
30.339 MHz	H	7.63	20.02	0.0	27.65	82.2	-54.55
162.22 MHz	H	17.99	11.95	0.0	29.93	82.2	-52.27
168.03 MHz	H	13.8	11.67	0.0	25.47	82.2	-56.73
742.09 MHz	H	34	23.53	0.0	57.54	82.2	-24.66
7.944 GHz	H	50.33	42.02	40.7	51.66	82.2	-30.54
Channel 756MHz							
34.627 MHz	V	20.86	17.61	0.0	38.47	82.2	-43.73
38.658 MHz	V	18.09	15.33	0.0	33.42	82.2	-48.78
60.515 MHz	V	25.52	7.12	0.0	32.64	82.2	-49.56
132.47 MHz	V	15.44	13.75	0.0	29.19	82.2	-53.01
1.511 GHz	V	55.5	27.7	43.0	40.16	82.2	-42.04
30.117 MHz	H	7.29	20.15	0.0	27.44	82.2	-54.76
82.08 MHz	H	16.96	8.93	0.0	25.9	82.2	-56.3
121.41 MHz	H	14.27	13.95	0.0	28.22	82.2	-53.98
163.43 MHz	H	17.37	11.91	0.0	29.28	82.2	-52.92
7.923 GHz	H	50.2	42.0	40.7	51.5	82.2	-30.7



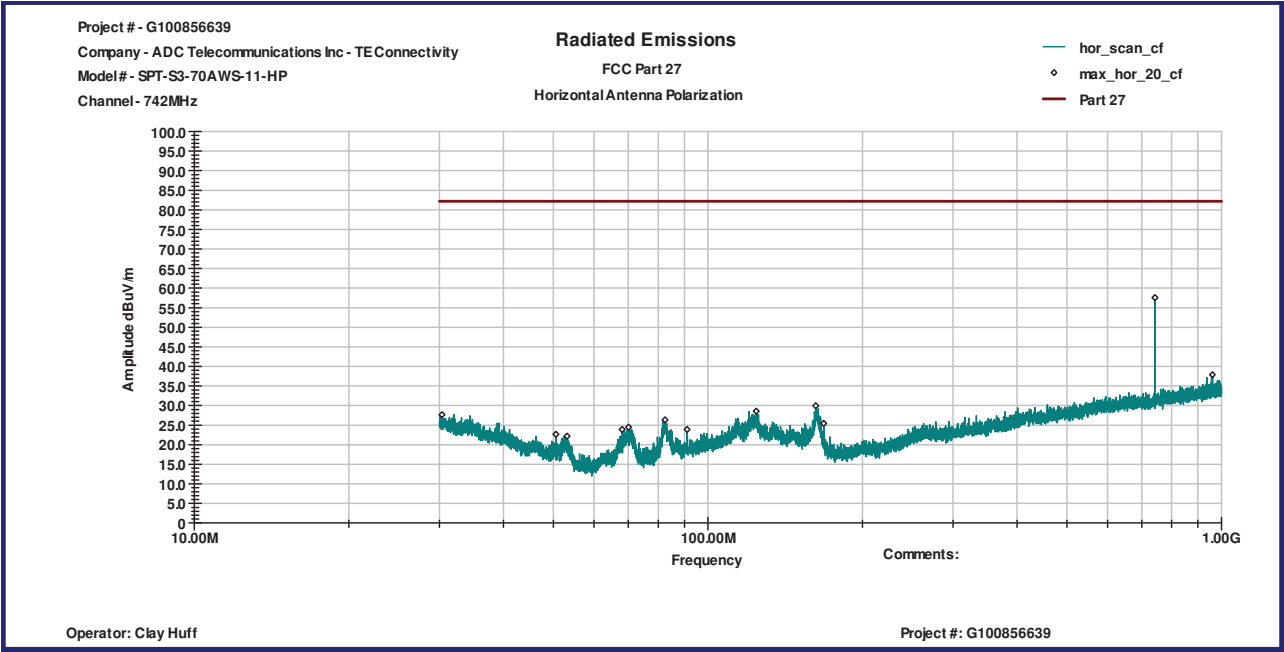
Graph 1



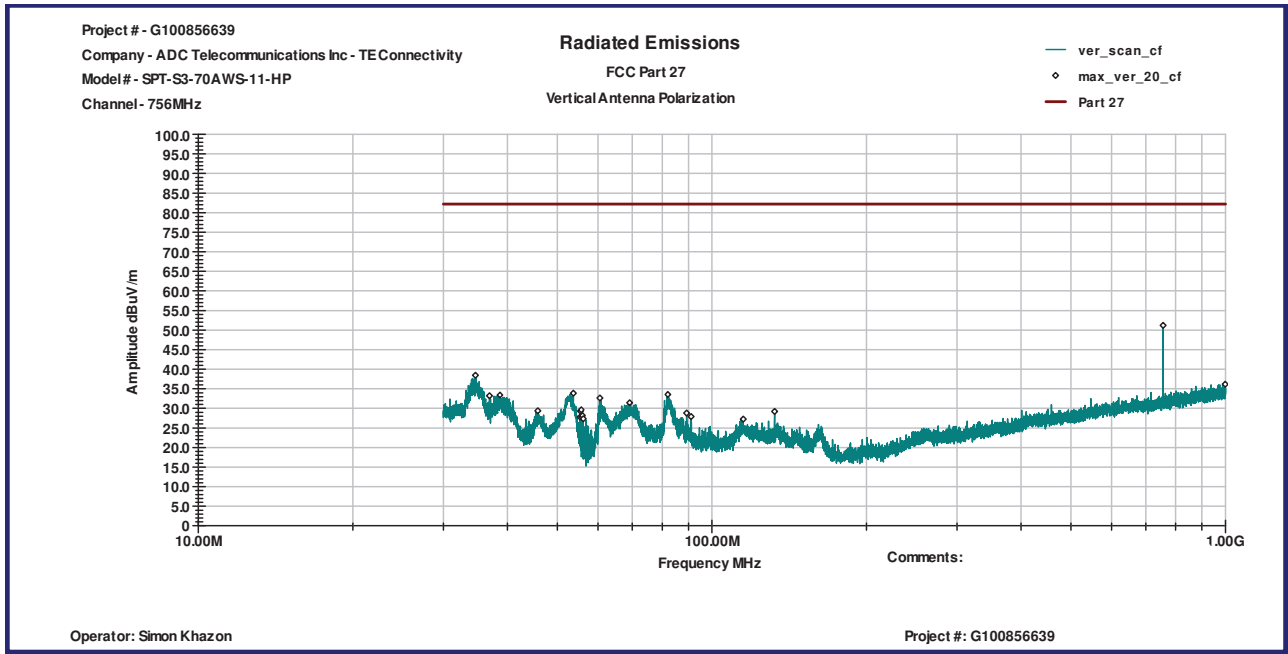
Graph 2



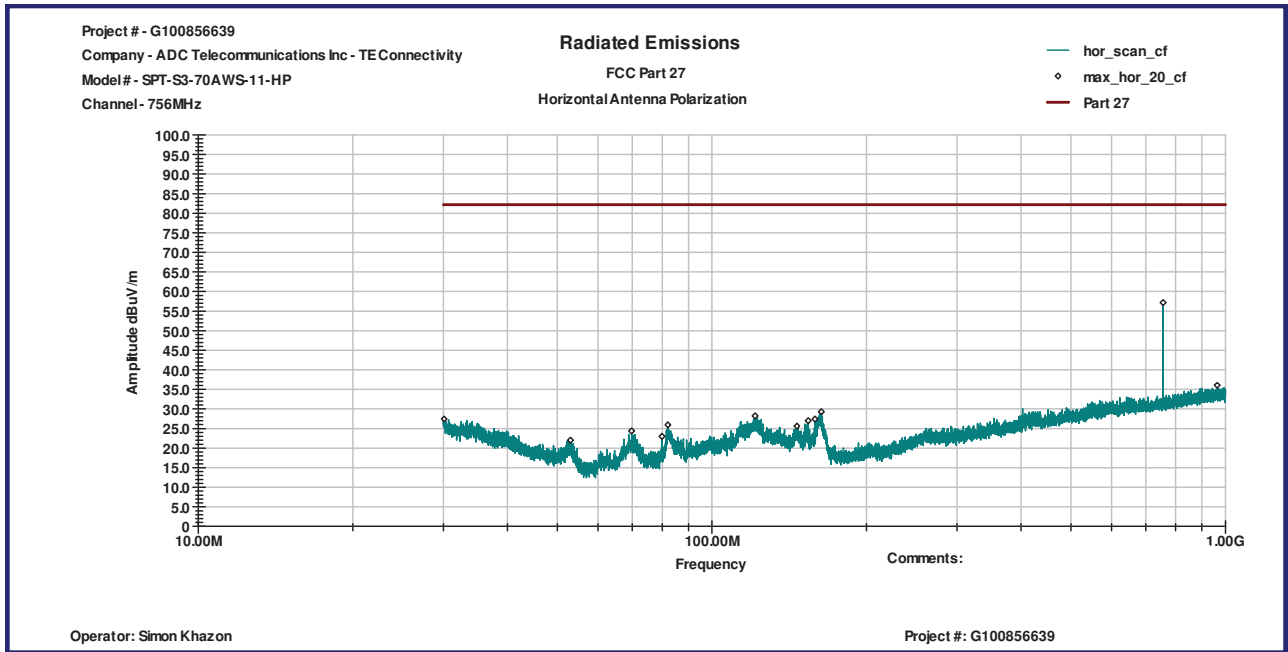
Graph 3



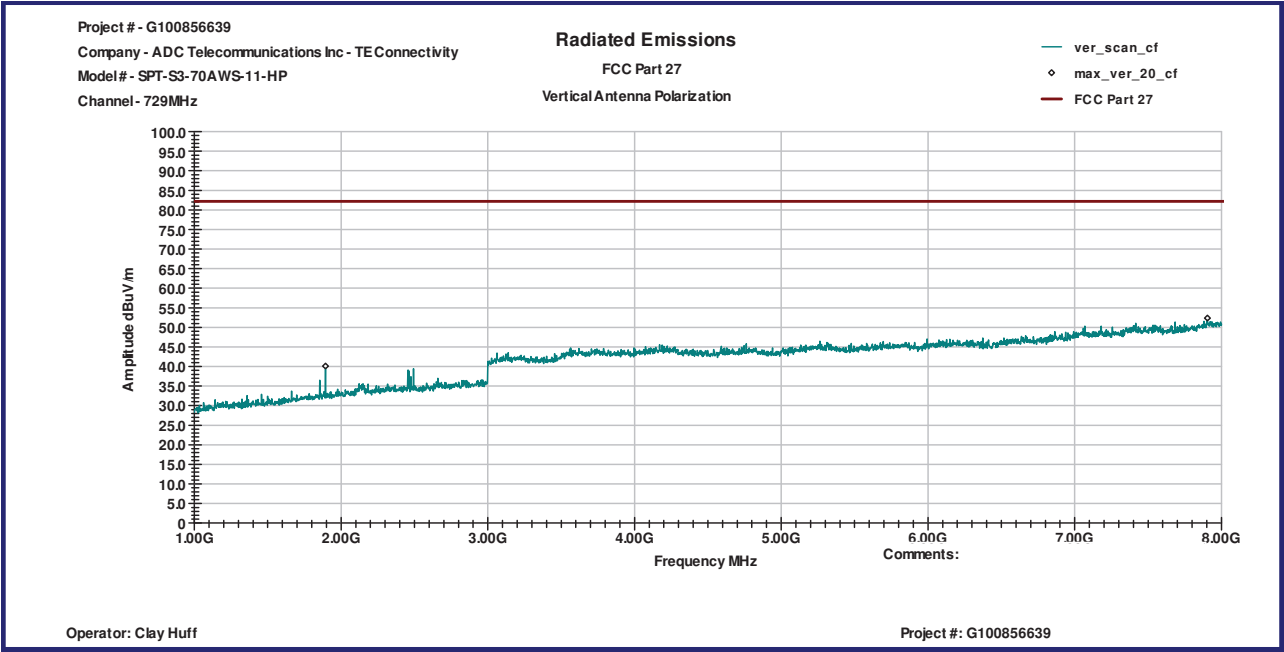
Graph 4



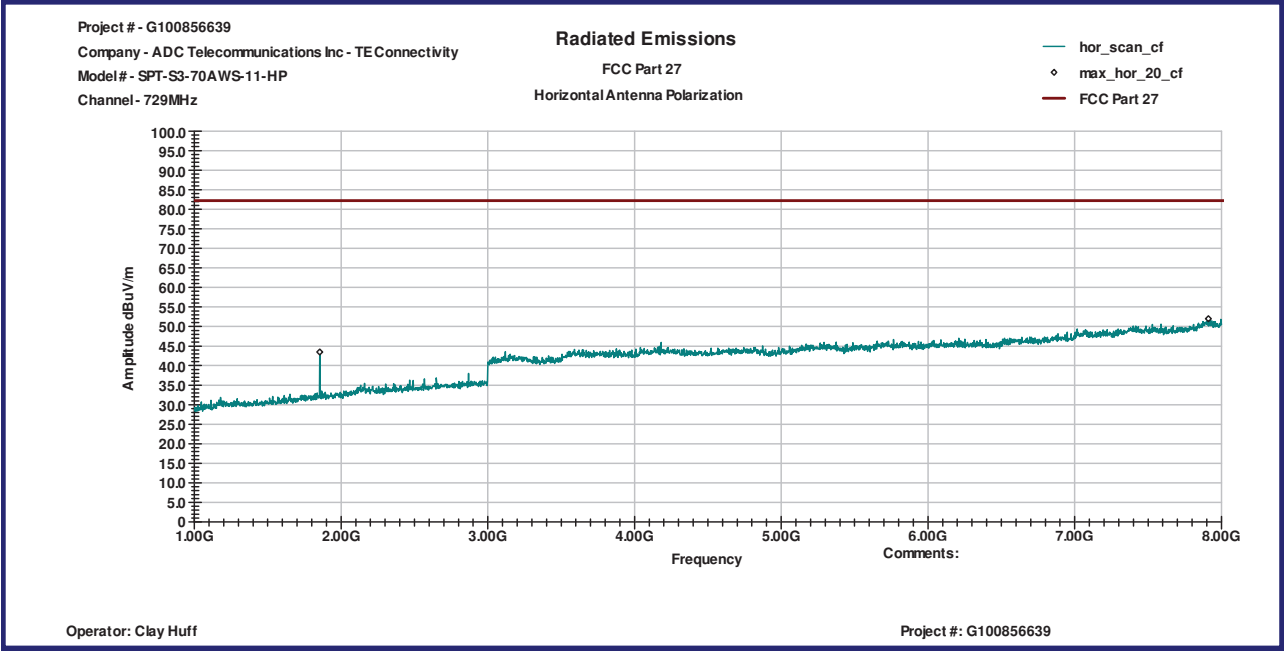
Graph 5



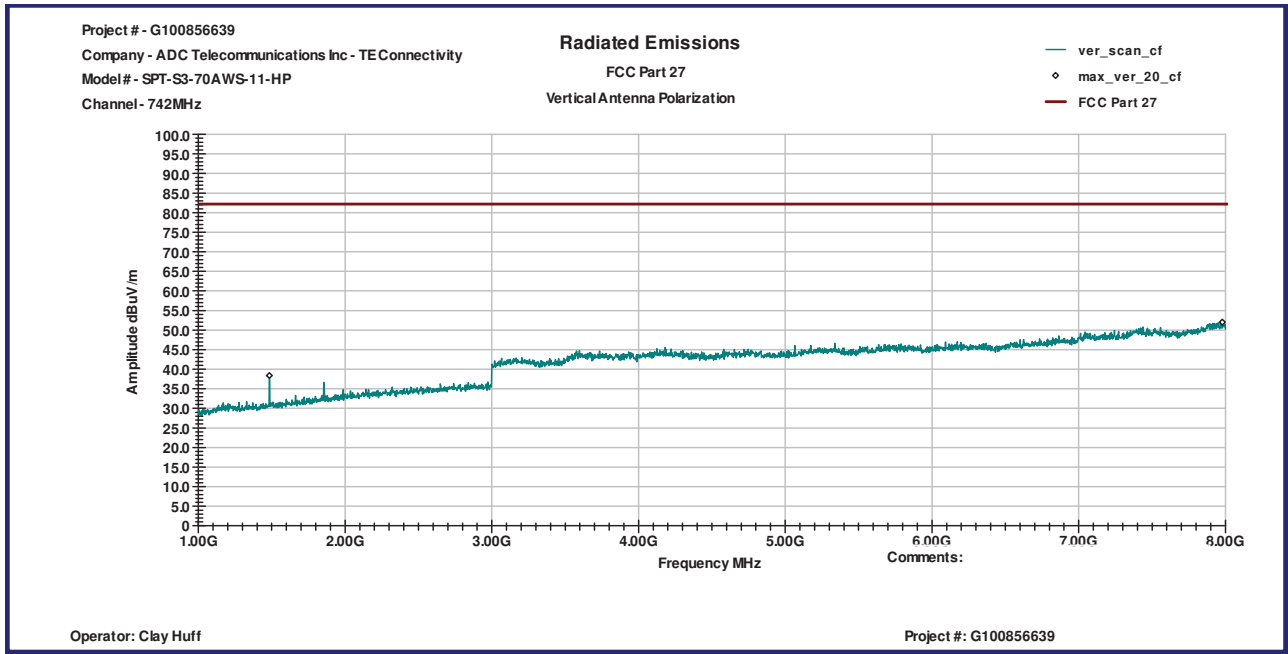
Graph 6



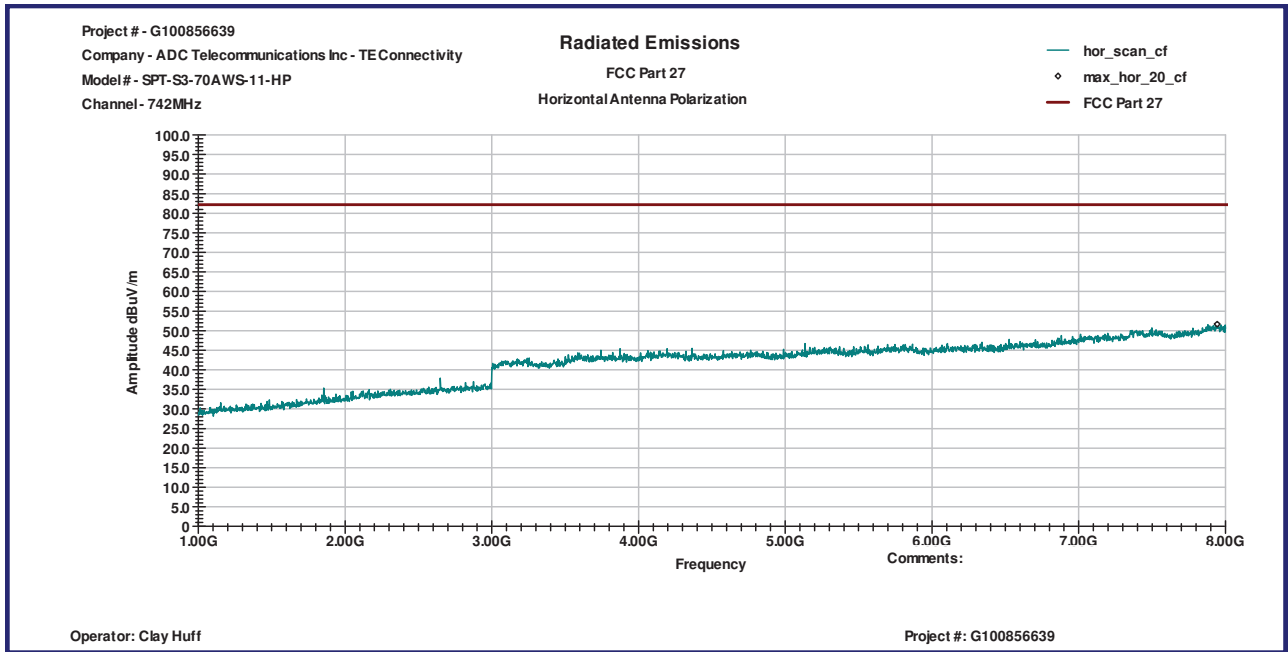
Graph 7



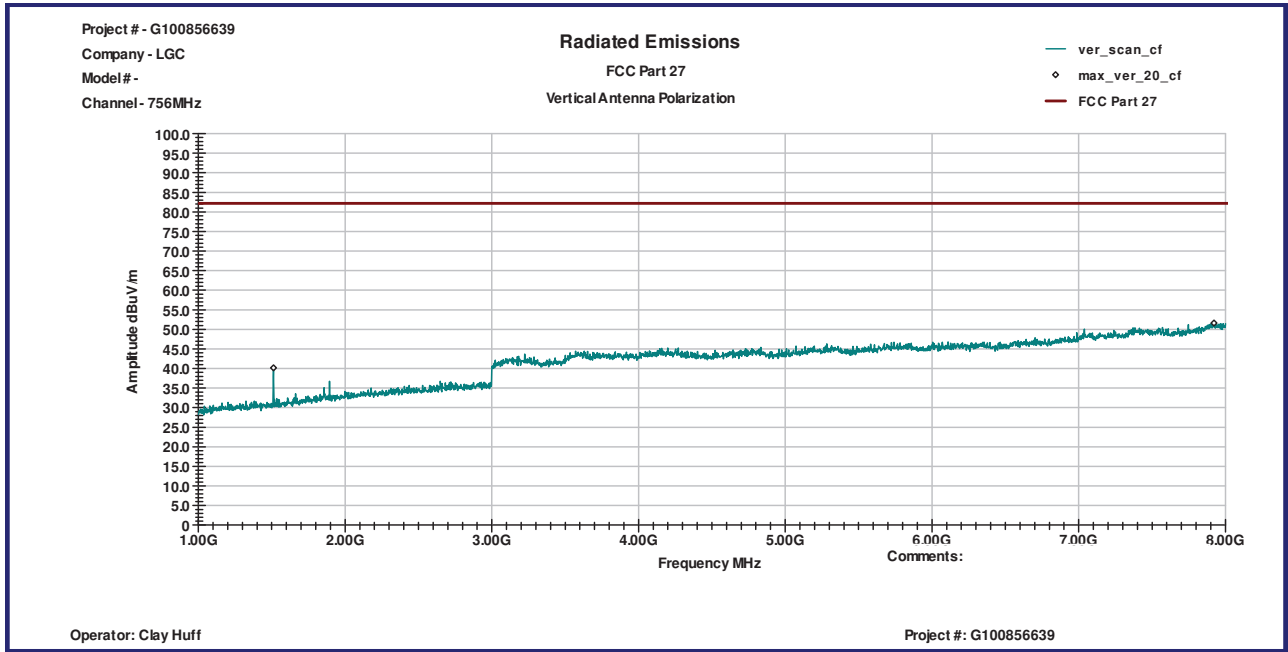
Graph 8



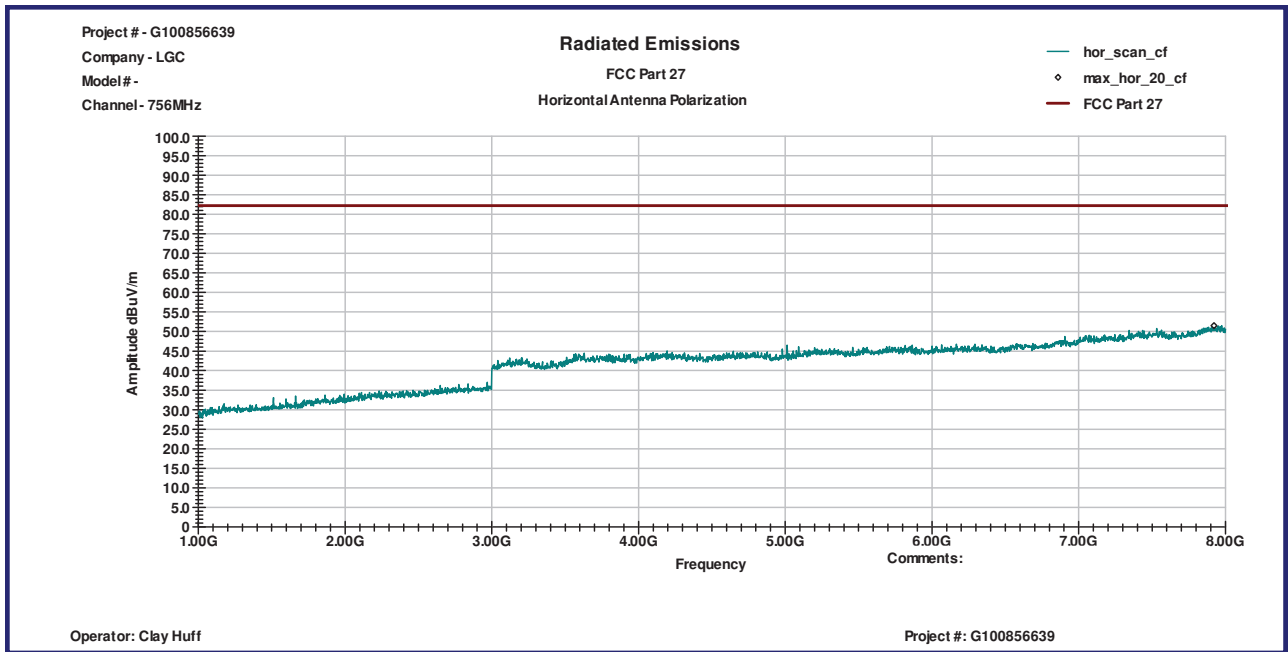
Graph 9



Graph 10



Graph 11

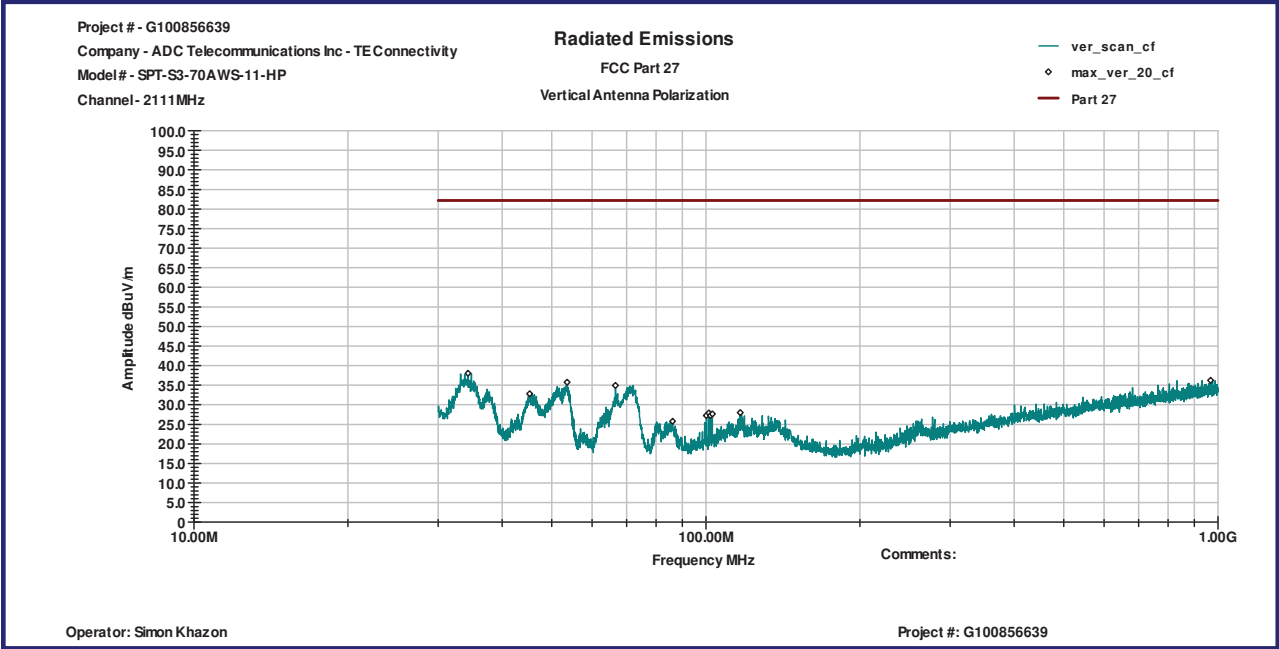


Graph 12

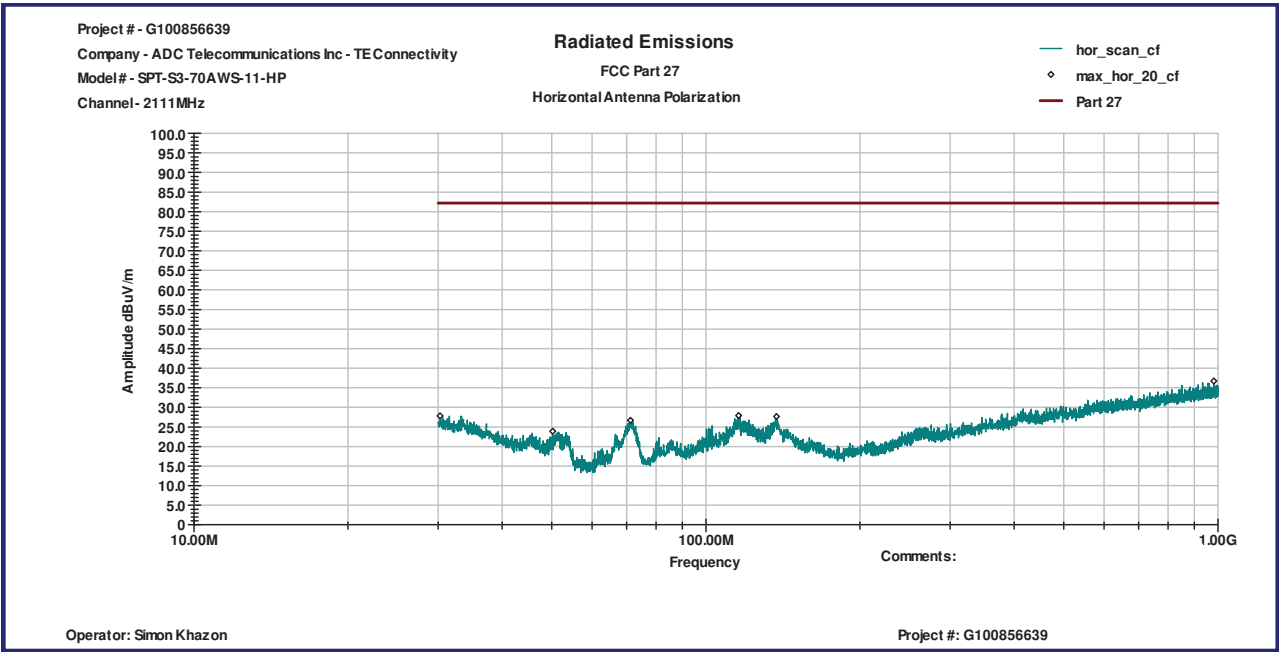
Date:	August 27, 2012	Result: Pass
Tested by:	Simon Khazon	
Standard:	FCC Part 27	
Test Point:	Enclosure	
Operation mode:	See page 5	
Note:	Channels 2110 – 2155 MHz Frequency Range 30MHz-22GHz	

Table 2

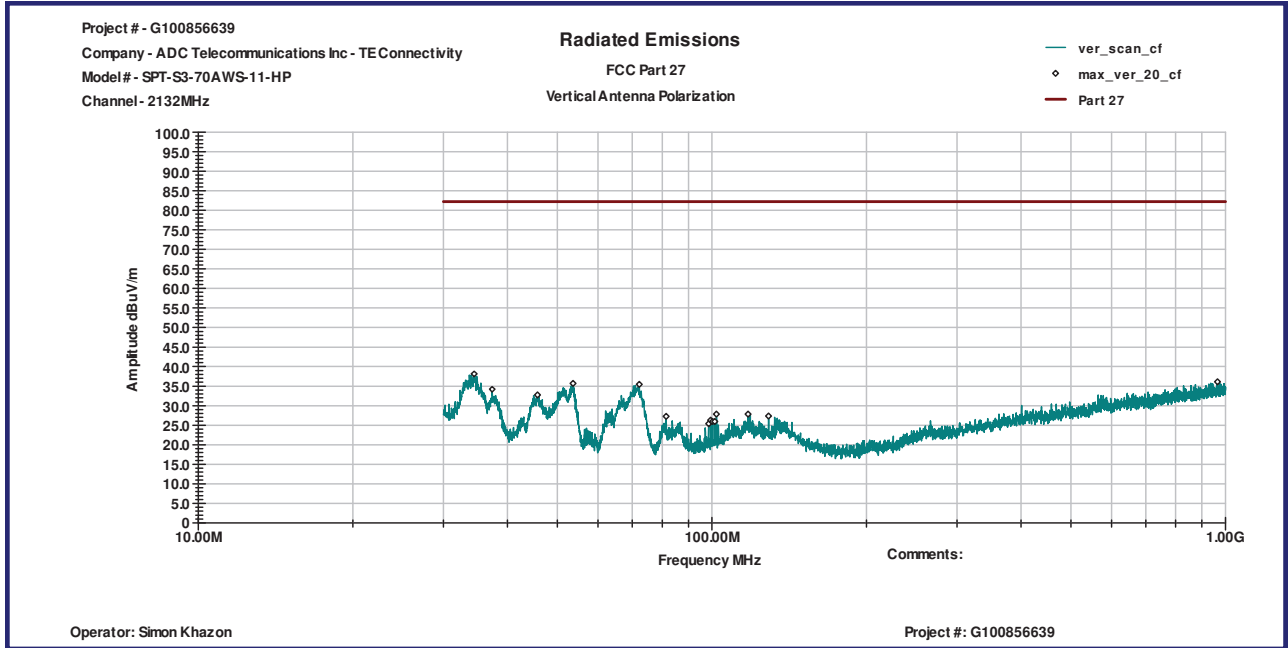
Frequency MHz	Antenna Polarity	Peak Reading dB μ V	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dB μ V/m	Limit dB μ V/m	Margin dB
Channel 2111MHz							
34.329 MHz	V	20.12	17.93	0.0	38.06	82.2	-44.14
102.98 MHz	V	14.86	12.79	0.0	27.66	82.2	-54.54
116.71 MHz	V	14.2	13.78	0.0	27.98	82.2	-54.22
4.2232 GHz	V	59.5	36.7	42.7	53.5	82.2	-28.7
30.277 MHz	H	7.63	20.17	0.0	27.8	82.2	-54.4
50.226 MHz	H	13.86	10.01	0.0	23.87	82.2	-58.33
71.274 MHz	H	19.23	7.45	0.0	26.68	82.2	-55.52
115.97 MHz	H	14.12	13.75	0.0	27.87	82.2	-54.33
137.46 MHz	H	14.1	13.53	0.0	27.63	82.2	-54.57
4.2232 GHz	H	57.2	36.5	42.7	51.0	82.2	-31.2
Channel 2132MHz							
34.433 MHz	V	20.22	17.88	0.0	38.1	82.2	-44.1
45.758 MHz	V	20.73	12.01	0.0	32.74	82.2	-49.46
53.654 MHz	V	26.93	8.73	0.0	35.67	82.2	-46.53
99.478 MHz	V	13.92	12.32	0.0	26.25	82.2	-55.95
102.09 MHz	V	15.11	12.68	0.0	27.79	82.2	-54.41
4.264 GHz	V	61.3	36.7	42.6	55.3	82.2	-26.9
32.563 MHz	H	8.77	18.91	0.0	27.68	82.2	-54.52
51.265 MHz	H	15.14	9.62	0.0	24.76	82.2	-57.44
72.095 MHz	H	20.94	7.58	0.0	28.52	82.2	-53.68
102.91 MHz	H	12.42	12.78	0.0	25.2	82.2	-57
115.3 MHz	H	14.1	13.71	0.0	27.82	82.2	-54.38
4.264 GHz	H	57.2	36.5	42.6	51.1	82.2	-31.1
Channel 2154MHz							
34.017 MHz	V	19.55	18.11	0.0	37.65	82.2	-44.55
53.585 MHz	V	27.19	8.76	0.0	35.94	82.2	-46.26
71.199 MHz	V	28.52	7.43	0.0	35.96	82.2	-46.24
83.585 MHz	V	18.43	9.23	0.0	27.66	82.2	-54.54
99.478 MHz	V	14.72	12.32	0.0	27.04	82.2	-55.16
117.83 MHz	V	15.01	13.84	0.0	28.85	82.2	-53.35
2.4416 GHz	V	55.8	31.5	43.5	43.8	82.2	-38.5
4.3116 GHz	V	64.8	36.7	42.5	58.9	82.2	-23.3
31.108 MHz	H	9.64	19.71	0.0	29.35	82.2	-52.85
50.884 MHz	H	14.96	9.76	0.0	24.72	82.2	-57.48
71.871 MHz	H	18.85	7.55	0.0	26.4	82.2	-55.8
85.749 MHz	H	13.37	9.53	0.0	22.9	82.2	-59.3
136.19 MHz	H	13.24	13.63	0.0	26.87	82.2	-55.33
4.3116 GHz	H	60.2	36.5	42.5	54.2	82.2	-28.0



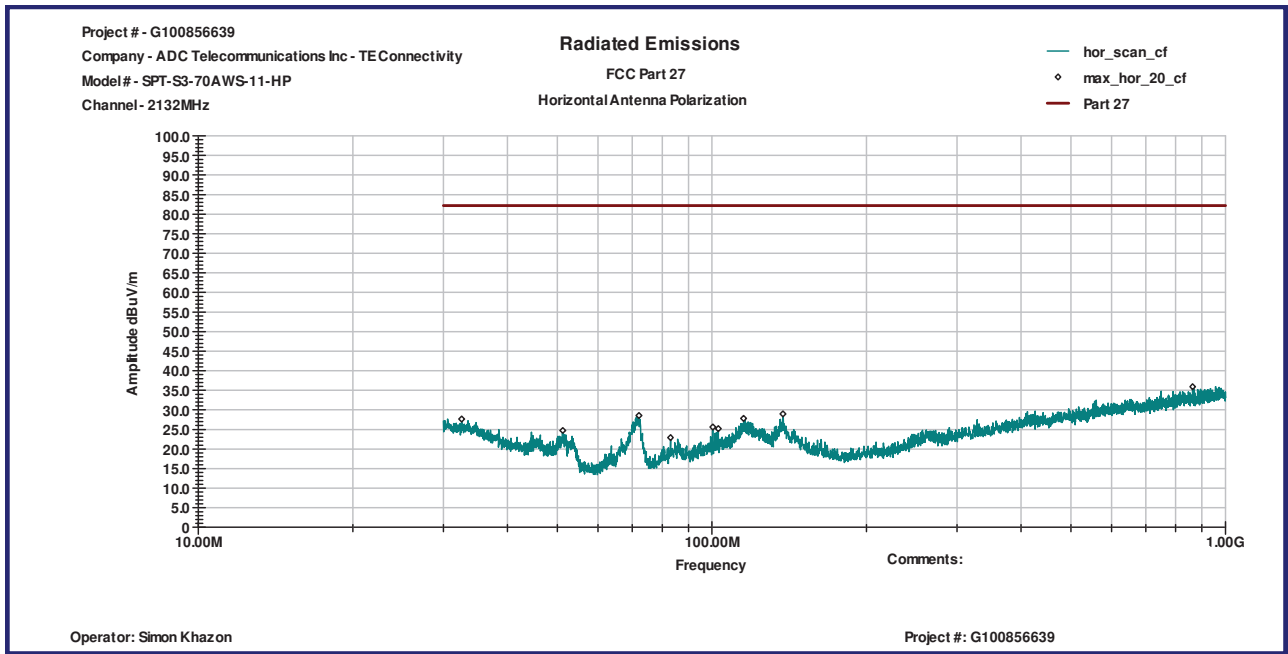
Graph 13



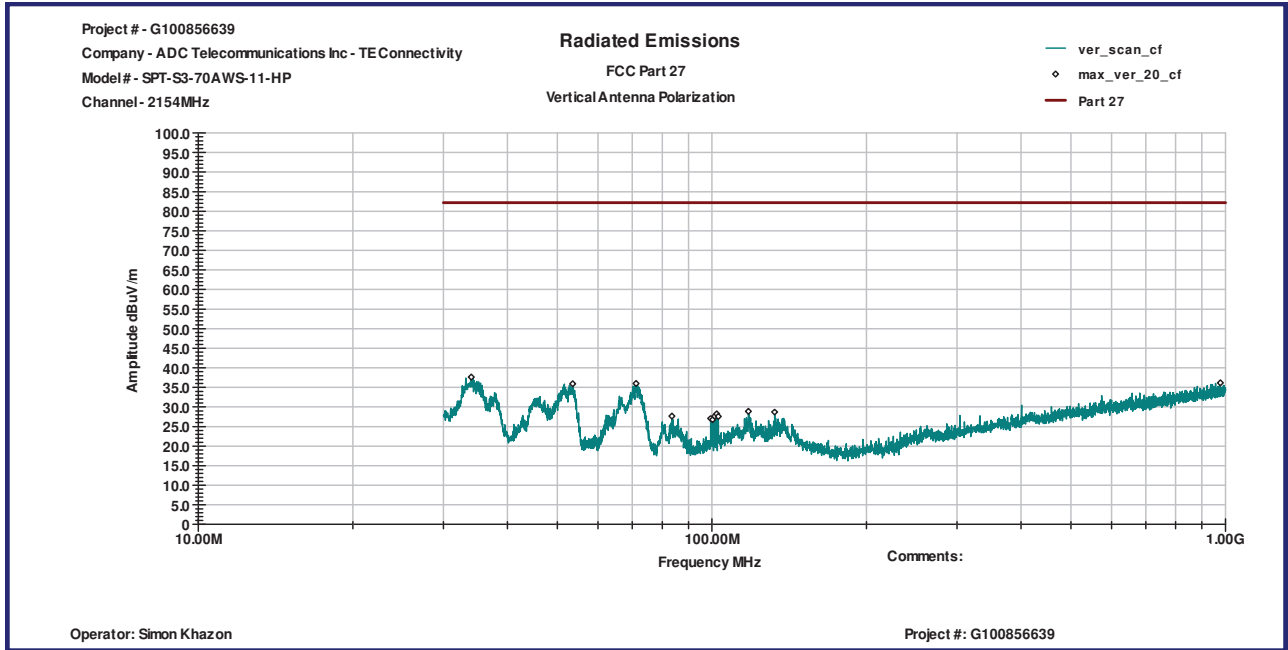
Graph 14



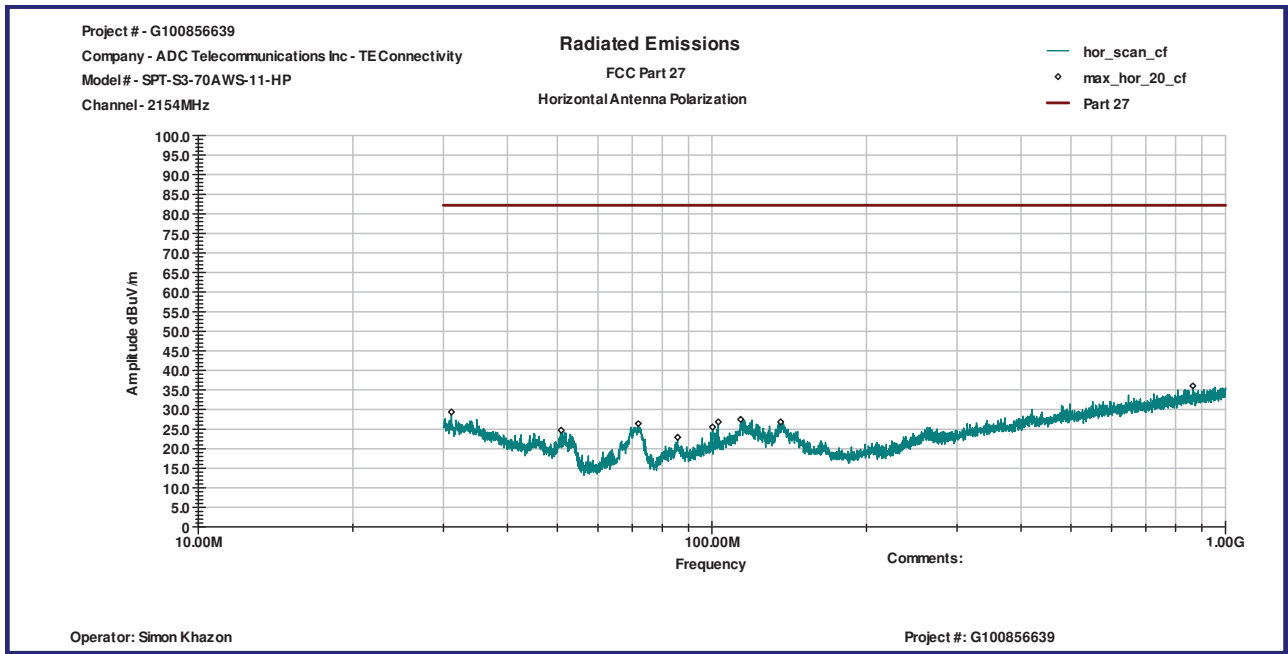
Graph 15



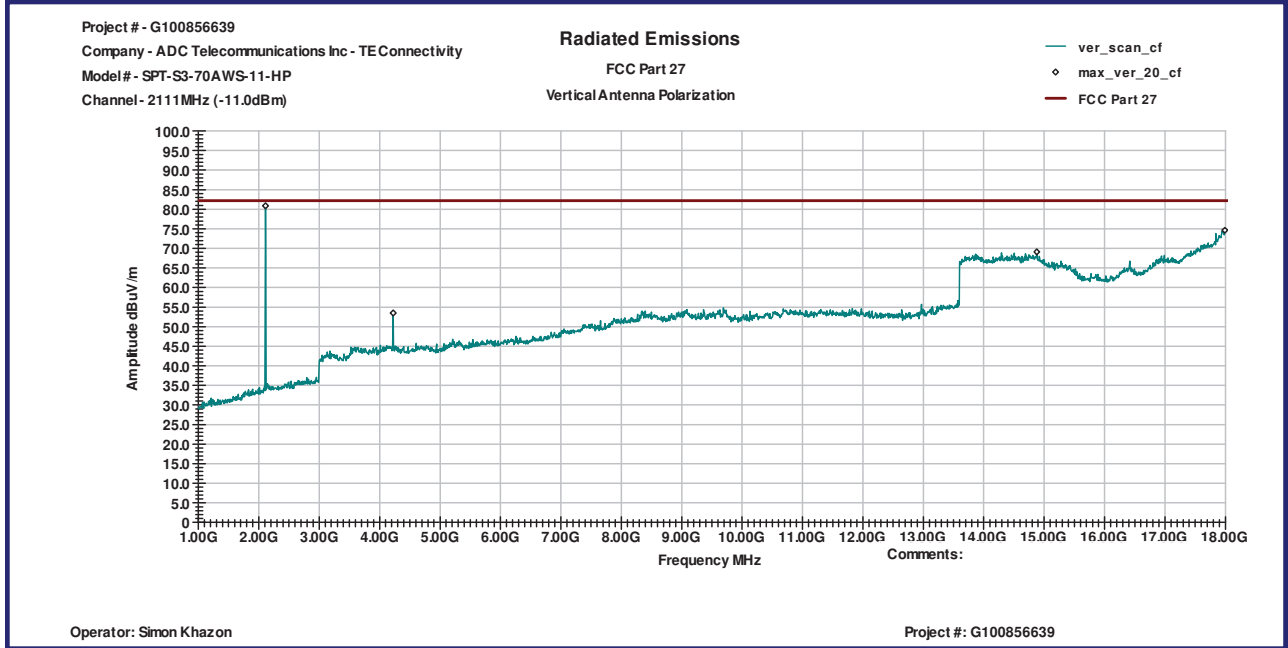
Graph 16



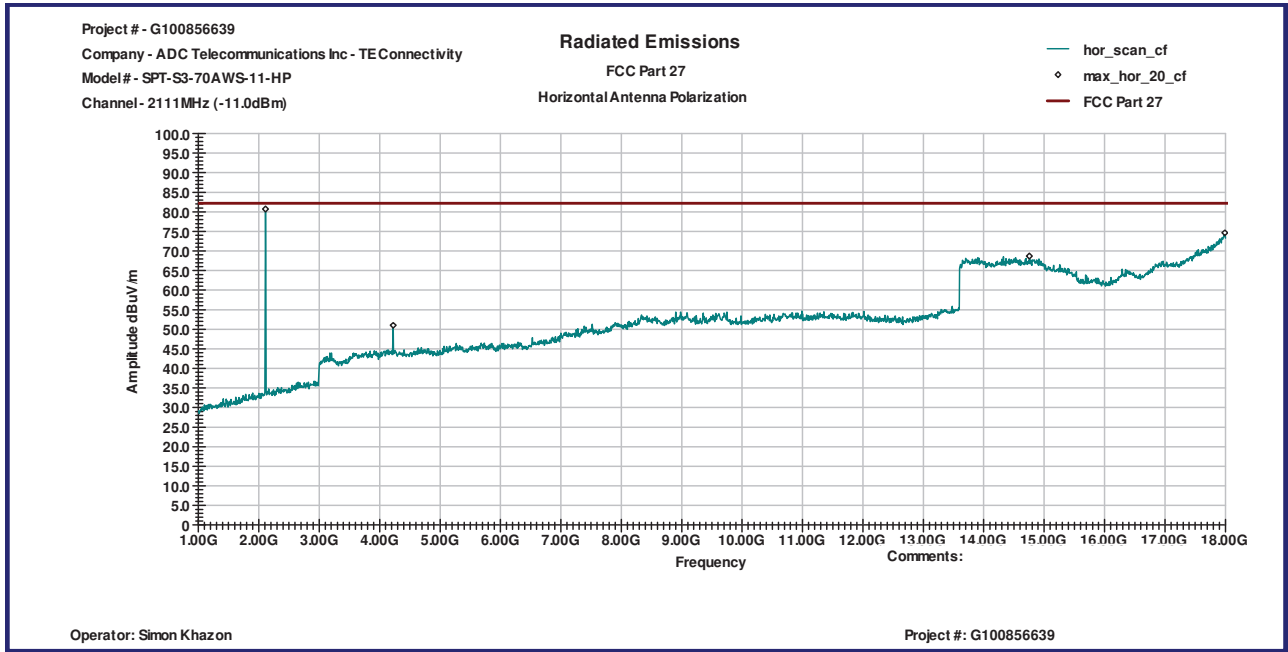
Graph 17



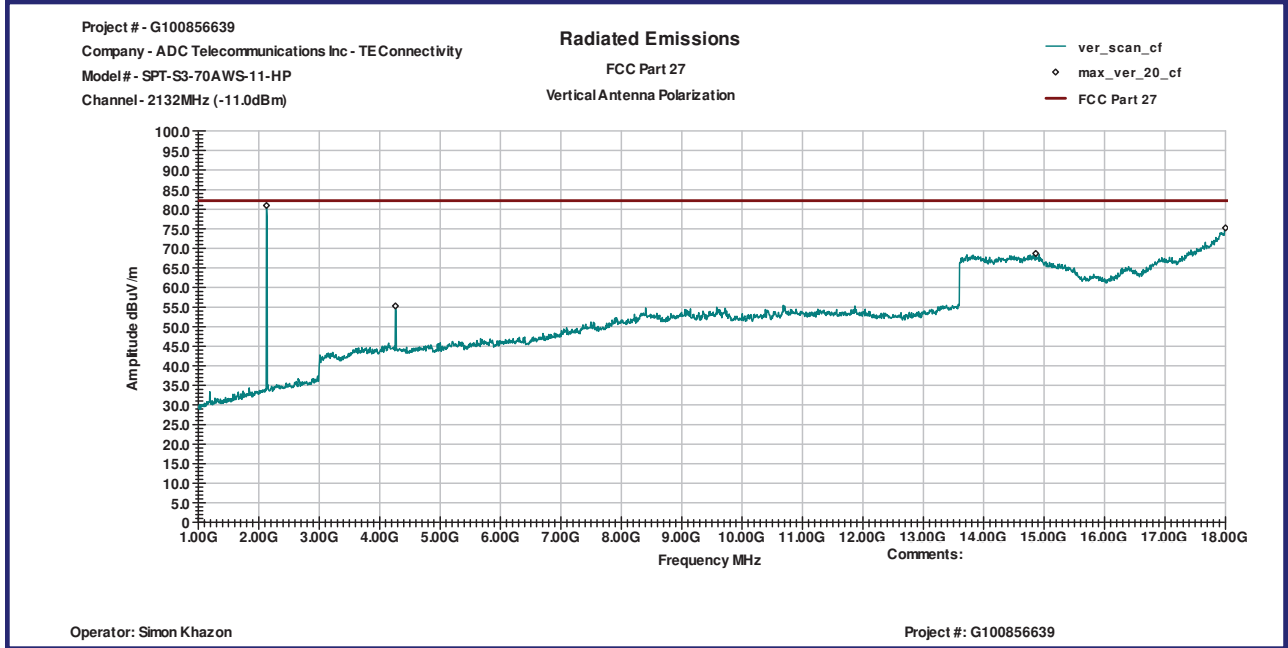
Graph 18



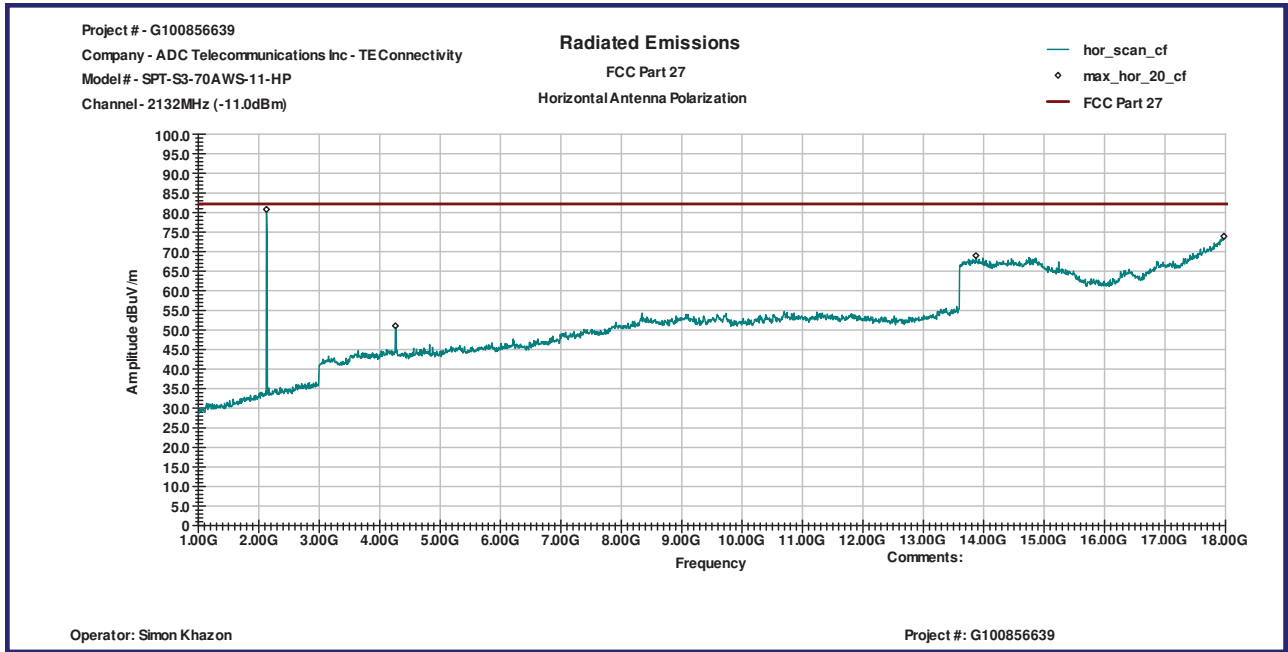
Graph 19



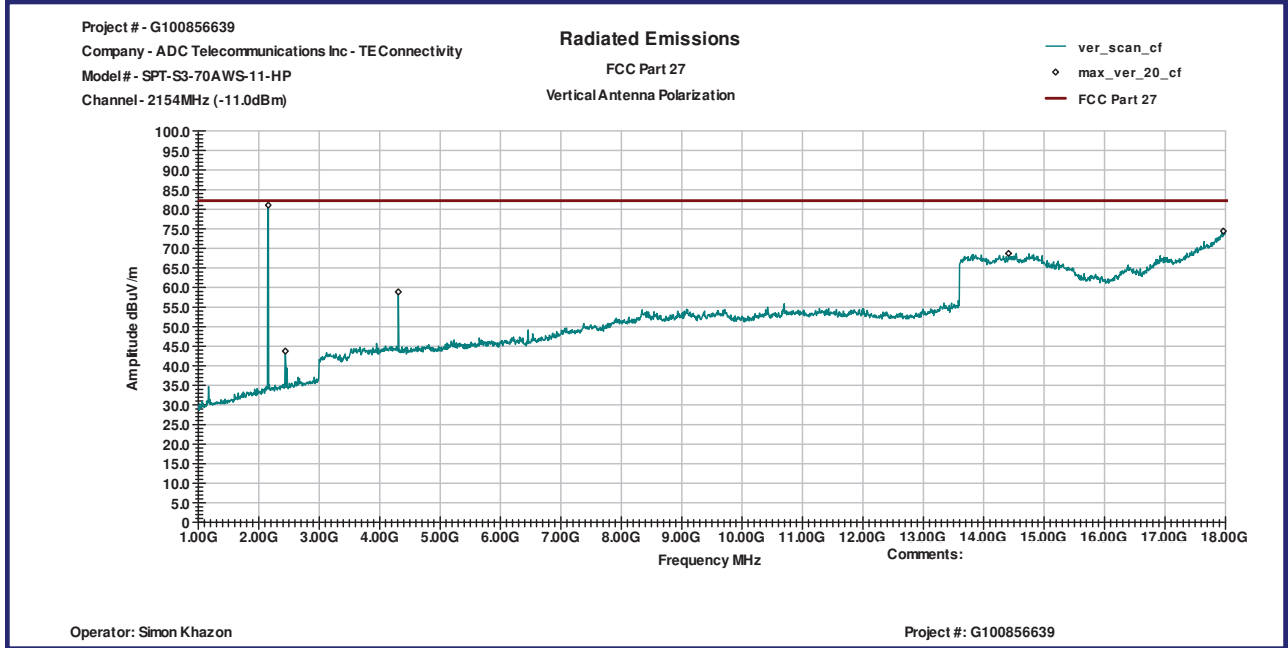
Graph 20



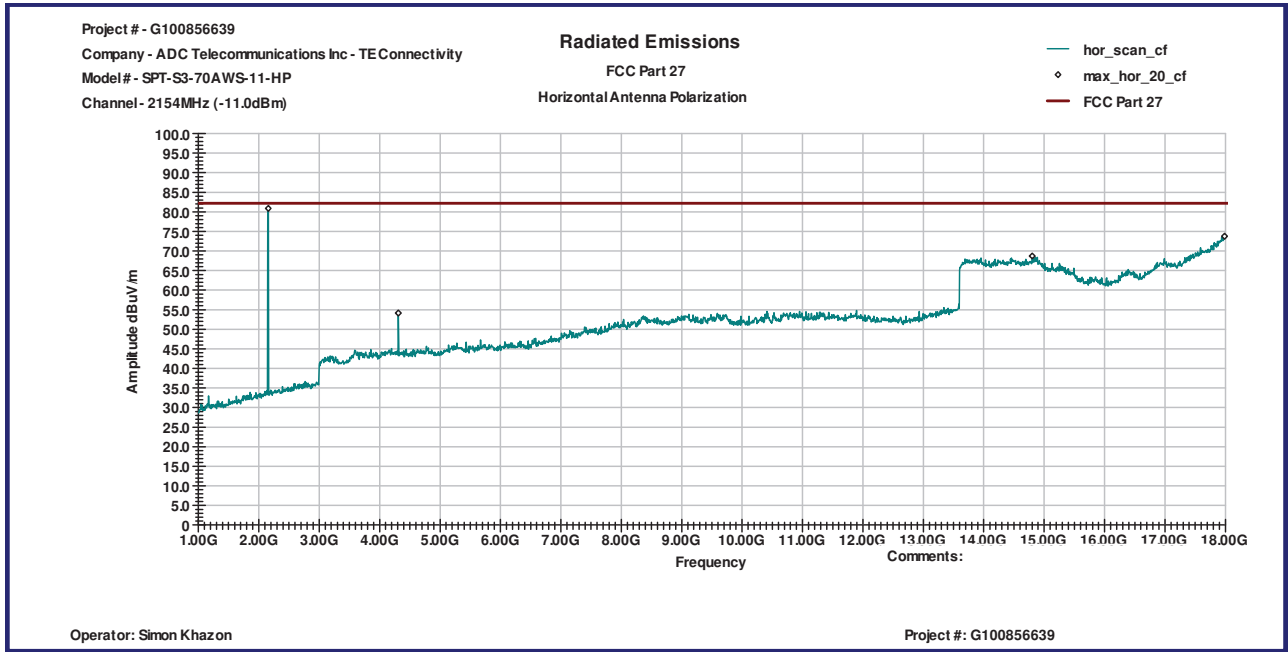
Graph 21



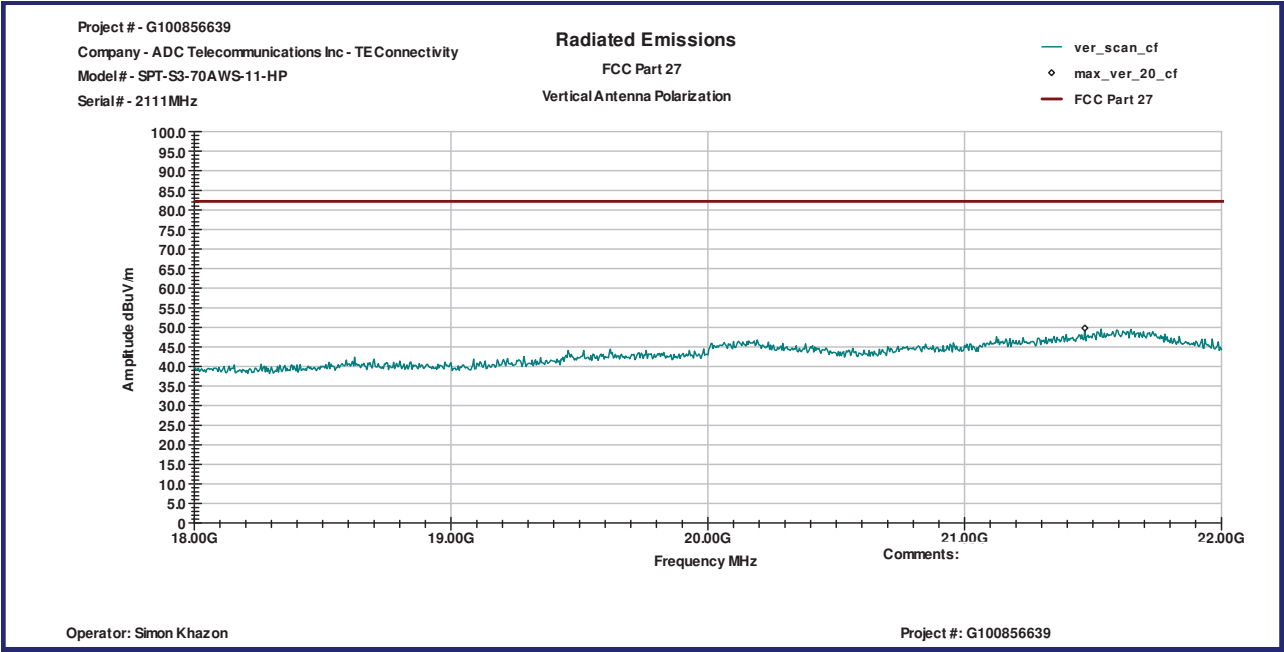
Graph 22



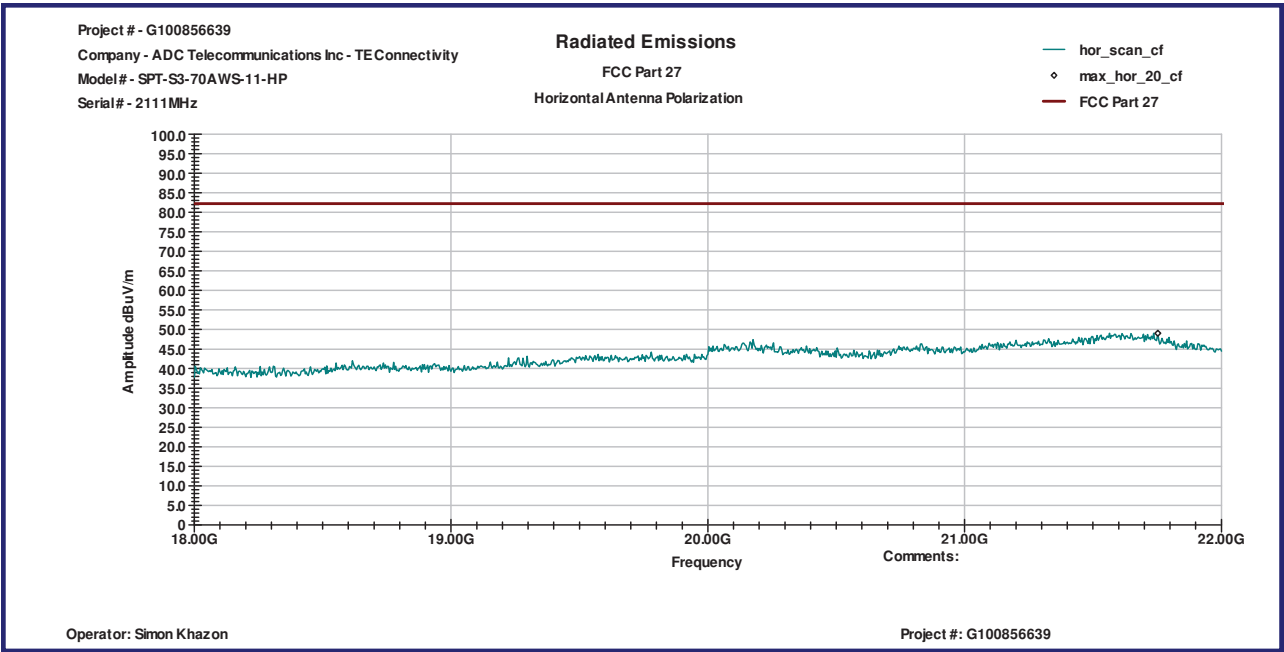
Graph 23



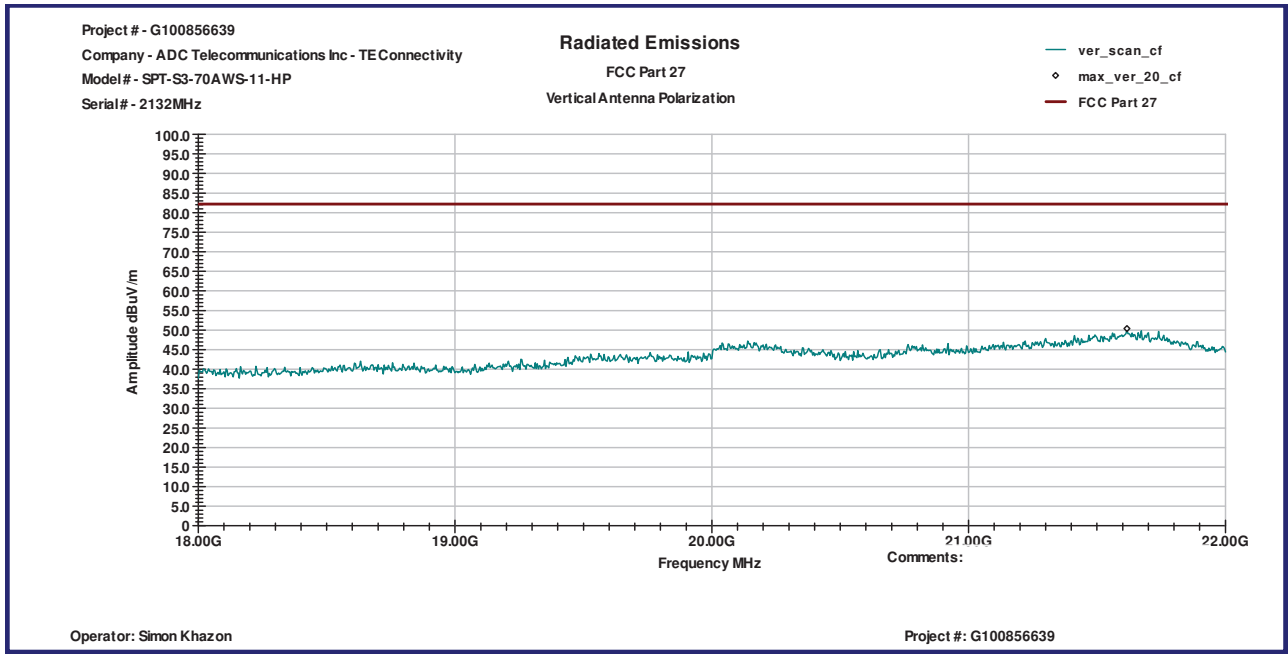
Graph 24



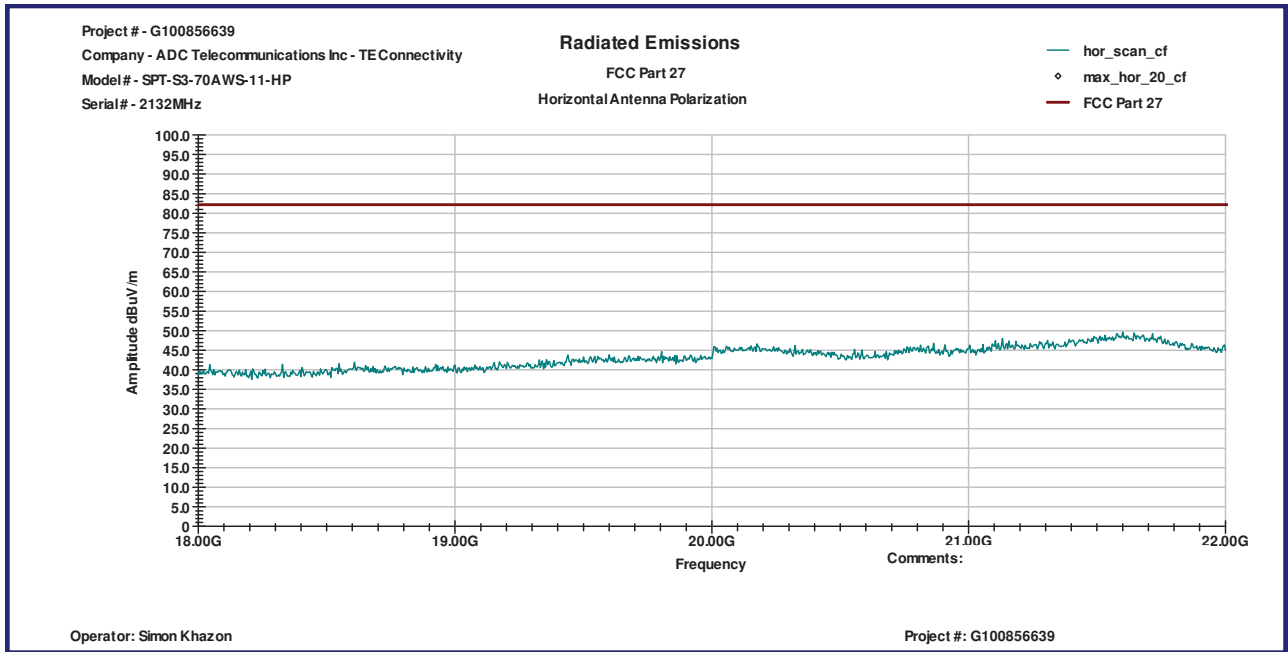
Graph 25



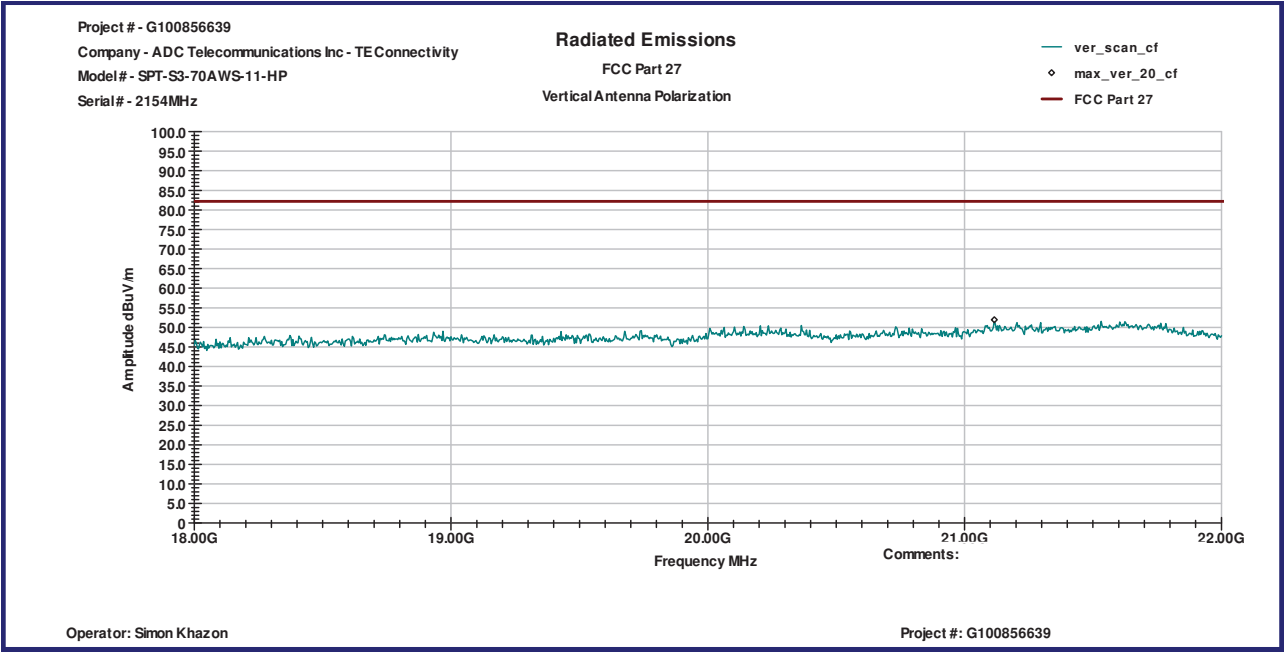
Graph 26



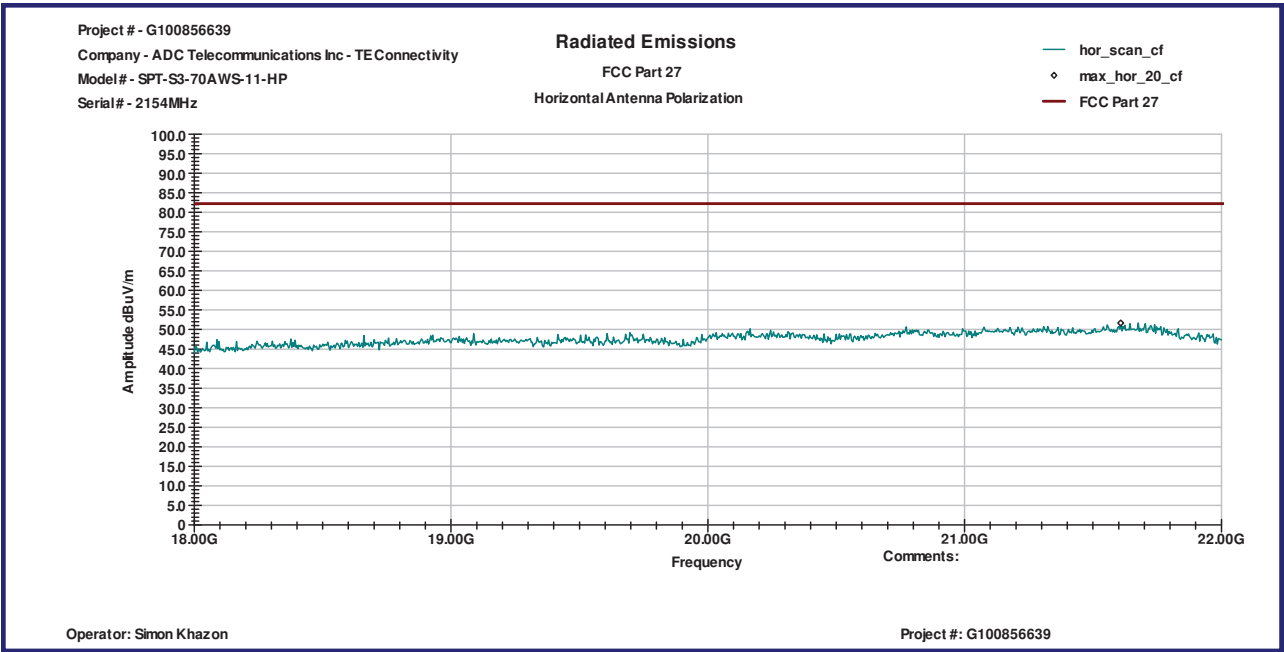
Graph 27



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	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESU	100398	25283	12/09/2012	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL6112D	32859	25289	08/09/2013	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	9507-4513	9936	05/16/2013	<input checked="" type="checkbox"/>
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	10/31/2012	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1402232	172081	10/31/2012	<input checked="" type="checkbox"/>
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	<input checked="" type="checkbox"/>