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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	URH-AWS
Type of EUT:	Fiber Optic Remote Transmitter
Serial Number:	N/A
Company:	ADC Telecommunications Inc.
Customer:	Mr. Mark Miska
Address:	1187 Park Place Shakopee, MN 55379
Phone:	952-403-8340
Fax:	952-403-8858
Test Standards:	<input type="checkbox"/> EN 55022:2006, Class [redacted] <input type="checkbox"/> EN 55011:1998 + A1:1999 + A2:2002, Group [redacted], Class [redacted] <input checked="" type="checkbox"/> 47 CFR, Part 27:2007 <input type="checkbox"/> EN 55014-1:2000 + A1:2001 + A2:2002 <input type="checkbox"/> EN 61326-1:2006 <input type="checkbox"/> Class [redacted] for Radiated and Conducted Emissions <input type="checkbox"/> EN 60601-1-2:2001 +A1:2006 <input type="checkbox"/> Class [redacted] Radiated and Conducted Emissions <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"/> Other [redacted]

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	Spurious Enclosure 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

General notes:

1. Test was performed with the EUT tuned to the low frequency (2110MHz), middle frequency (2132MHz), and upper frequency (2155MHz) of the operating band. Testing was performed in frequency range from 30MHz to 22GHz.
2. The EUT Antenna Port was terminated with 50Ohm terminator. The URH-Host, 48VDC input supply, signal generator, Fiber Optic Interface Device (Support Equipment) was located outside of the test site.
3. The Spurious Radiated Power limits of -13dBm was correlated with field strength reference level of 82.2dB μ V/m during field strength measurements at 3m measurement distance.



3.0 TEST RESULTS

TILE Instrument Control System EMI Measurement Software

Radiated Emissions from 30MHz to 1GHz

Date: 2/19/2008

Company: ADC Telecommunications
Model: URH-AWS
Test Engineer: Uri Spector
Special Info: 2110MHz
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

Table # 1

Frequency	Ant. Polarity	Peak Reading dBµV	Ant.Factor dB1/m	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
33.74 MHz	V	50.2	18.6	68.8	82.2	-13.4
37.55 MHz	V	52.2	16.5	68.7	82.2	-13.5
44.477 MHz	V	48.4	12.9	61.3	82.2	-20.9
82.391 MHz	V	44.4	9.2	53.6	82.2	-28.6
107.46 MHz	V	50.9	12.9	63.8	82.2	-18.4
136.56 MHz	V	44.2	13.3	57.5	82.2	-24.7
166.25 MHz	V	41.9	11.7	53.7	82.2	-28.5
187.47 MHz	V	36.8	10.9	47.7	82.2	-34.6
425.37 MHz	V	25.0	19.5	44.6	82.2	-37.6
437.84 MHz	V	34.3	19.4	53.7	82.2	-28.5
500.18 MHz	V	30.2	20.2	50.4	82.2	-31.8
812.56 MHz	V	19.4	23.9	43.3	82.2	-38.9
33.74 MHz	H	38.2	18.6	56.8	82.2	-25.4
37.481 MHz	H	41.3	16.6	57.8	82.2	-24.4
107.01 MHz	H	49.2	12.9	62.1	82.2	-20.1
159.82 MHz	H	36.9	12.1	49.0	82.2	-33.2
183.94 MHz	H	40.9	10.8	51.7	82.2	-30.5
225.09 MHz	H	38.3	11.9	50.2	82.2	-32.0
240.2 MHz	H	36.0	13.4	49.4	82.2	-32.8
250.17 MHz	H	35.5	14.4	50.0	82.2	-32.3
271.71 MHz	H	35.5	15.4	50.8	82.2	-31.4
399.74 MHz	H	31.9	18.5	50.4	82.2	-31.8
425.37 MHz	H	35.6	19.5	55.1	82.2	-27.1
437.84 MHz	H	41.8	19.4	61.3	82.2	-20.9
450.31 MHz	H	29.2	19.3	48.5	82.2	-33.7
475.24 MHz	H	29.0	19.7	48.7	82.2	-33.5
500.18 MHz	H	35.3	20.2	55.5	82.2	-26.7
552.82 MHz	H	27.1	21.1	48.2	82.2	-34.0



TILE Instrument Control System EMI Measurement Software

Radiated Emissions from 30MHz to 1GHz

Date: 2/19/2008

Company: ADC Telecommunications
Model: URH-AWS
Test Engineer: Uri Spector
Special Info: 2132MHz
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

Table # 2

Frequency	Ant. Polarity	Peak Reading dBµV	Ant.Factor dB1/m	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
33.671 MHz	V	49.8	18.6	68.4	82.2	-13.8
36.234 MHz	V	50.3	17.2	67.5	82.2	-14.7
44.269 MHz	V	48.9	13.0	61.9	82.2	-20.3
51.611 MHz	V	43.8	9.6	53.5	82.2	-28.8
107.16 MHz	V	49.2	12.9	62.1	82.2	-20.1
118.5 MHz	V	41.4	13.8	55.2	82.2	-27.0
134.02 MHz	V	41.8	13.4	55.2	82.2	-27.0
167.22 MHz	V	41.2	11.7	52.9	82.2	-29.3
425.37 MHz	V	24.7	19.5	44.2	82.2	-38.0
437.84 MHz	V	32.8	19.4	52.2	82.2	-30.0
475.24 MHz	V	27.4	19.7	47.1	82.2	-35.1
500.18 MHz	V	29.1	20.2	49.3	82.2	-32.9
583.99 MHz	V	20.8	21.5	42.4	82.2	-39.9
33.671 MHz	H	39.1	18.6	57.7	82.2	-24.5
37.065 MHz	H	39.4	16.8	56.2	82.2	-26.0
107.01 MHz	H	48.5	12.9	61.4	82.2	-20.8
160.79 MHz	H	36.3	12.1	48.4	82.2	-33.8
182.33 MHz	H	38.8	10.9	49.6	82.2	-32.6
225.09 MHz	H	39.1	11.9	51.1	82.2	-31.2
240.2 MHz	H	36.3	13.4	49.7	82.2	-32.5
250.17 MHz	H	35.3	14.4	49.7	82.2	-32.5
271.39 MHz	H	35.5	15.4	50.8	82.2	-31.4
399.74 MHz	H	32.1	18.5	50.6	82.2	-31.6
425.37 MHz	H	35.6	19.5	55.1	82.2	-27.1
437.84 MHz	H	41.4	19.4	60.8	82.2	-21.4
475.24 MHz	H	28.7	19.69	48.39	82.2	-33.81
500.18 MHz	H	34.82	20.19	55.01	82.2	-27.19
552.82 MHz	H	28.14	21.12	49.26	82.2	-32.94
562.52 MHz	H	26.38	21.33	47.71	82.2	-34.49
625.55 MHz	H	29.77	21.88	51.65	82.2	-30.55
645.64 MHz	H	26.3	22.03	48.33	82.2	-33.87



TILE Instrument Control System EMI Measurement Software

Radiated Emissions from 30MHz to 1GHz

Date: 2/19/2008

Company: ADC Telecommunications
Model: URH-AWS
Test Engineer: Uri Spector
Special Info: 2155MHz
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

Table # 3

Frequency	Ant. Polarity	Peak Reading dBµV	Ant.Factor dB1/m	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
33.879 MHz	V	49.3	18.5	67.8	82.2	-14.4
36.026 MHz	V	50.2	17.3	67.6	82.2	-14.6
44.13 MHz	V	48.0	13.0	61.0	82.2	-21.2
52.511 MHz	V	44.7	9.4	54.0	82.2	-28.2
75.527 MHz	V	43.9	8.5	52.5	82.2	-29.8
106.57 MHz	V	49.8	12.9	62.6	82.2	-19.6
118.21 MHz	V	41.2	13.8	54.9	82.2	-27.3
134.02 MHz	V	41.4	13.4	54.8	82.2	-27.4
157.89 MHz	V	39.4	12.2	51.6	82.2	-30.6
187.47 MHz	V	36.4	10.9	47.2	82.2	-35.0
437.84 MHz	V	32.9	19.4	52.3	82.2	-29.9
500.18 MHz	V	28.3	20.2	48.5	82.2	-33.7
33.602 MHz	H	38.5	18.6	57.1	82.2	-25.1
37.273 MHz	H	39.8	16.7	56.5	82.2	-25.7
106.42 MHz	H	48.1	12.9	61.0	82.2	-21.3
158.86 MHz	H	35.1	12.2	47.3	82.2	-34.9
182.65 MHz	H	39.2	10.8	50.0	82.2	-32.2
225.09 MHz	H	39.0	11.9	50.9	82.2	-31.3
240.2 MHz	H	36.32	13.44	49.76	82.2	-32.44
250.17 MHz	H	35.08	14.4	49.48	82.2	-32.72
269.46 MHz	H	35.8	15.51	51.31	82.2	-30.89
368.57 MHz	H	29.11	17.77	46.88	82.2	-35.32
399.74 MHz	H	32.25	18.48	50.73	82.2	-31.47
425.37 MHz	H	35.25	19.54	54.79	82.2	-27.41
437.84 MHz	H	41.01	19.41	60.42	82.2	-21.78
500.18 MHz	H	34.68	20.19	54.87	82.2	-27.33
625.55 MHz	H	28.53	21.88	50.41	82.2	-31.79



TILE Instrument Control System EMI Measurement Software

Radiated Emissions from 1GHz to 22GHz

Date: 02-19-2008

Company: ADC Telecommunications
Model: URH-AWS
Test Engineer: Uri Spector
Special Info: 2110MHz
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 All measurements were taken using a Peak detector

Table # 4

Frequency MHz	Antenna Polarity	Reading dBµV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
1.0476 GHz	V	49.0	27.5	39.8	36.8	82.2	-45.4
1.068 GHz	V	49.2	27.6	39.8	37.0	82.2	-45.2
1.102 GHz	V	47.9	27.7	39.7	35.9	82.2	-46.3
1.4692 GHz	V	44.7	28.8	39.4	34.1	82.2	-48.1
1.4964 GHz	V	44.2	28.9	39.4	33.7	82.2	-48.5
1.7548 GHz	V	43.0	30.2	39.0	34.2	82.2	-48.0
1.8432 GHz	V	47.9	30.6	38.9	39.6	82.2	-42.6
1.9996 GHz	V	41.8	31.4	38.6	34.6	82.2	-47.6
2.1084 GHz	V	47.6	31.7	38.4	40.8	82.2	-41.4
2.2104 GHz	V	40.9	31.9	38.3	34.5	82.2	-47.7
2.2512 GHz	V	42.3	32.0	38.2	36.1	82.2	-46.1
2.5028 GHz	V	42.6	32.6	37.8	37.4	82.2	-44.8
14.899 GHz	V	42.0	50.6	36.1	56.5	82.2	-25.7
1.0136 GHz	H	47.8	27.4	39.8	35.4	82.2	-46.8
1.0476 GHz	H	54.4	27.5	39.8	42.1	82.2	-40.1
1.068 GHz	H	57.2	27.6	39.8	45.1	82.2	-37.1
1.102 GHz	H	51.3	27.7	39.7	39.2	82.2	-43.0
1.2448 GHz	H	46.4	28.1	39.6	34.9	82.2	-47.3
1.4692 GHz	H	46.7	28.8	39.4	36.1	82.2	-46.1
1.4964 GHz	H	46.0	28.9	39.4	35.5	82.2	-46.7
1.748 GHz	H	47.7	30.2	39.0	38.9	82.2	-43.3
2.1084 GHz	H	49.0	31.7	38.4	42.3	82.2	-39.9
2.2104 GHz	H	43.0	31.9	38.3	36.6	82.2	-45.6
2.2512 GHz	H	43.5	32.0	38.2	37.3	82.2	-44.9
2.5028 GHz	H	42.3	32.6	37.8	37.1	82.2	-45.1
2.7544 GHz	H	38.7	33.3	37.9	34.1	82.2	-48.1
3.5024 GHz	H	37.9	35.5	37.6	35.8	82.2	-46.4
4.4 GHz	H	38.68	38.24	37.54	39.38	82.2	-42.82
13.682 GHz	H	41.91	50.44	35.05	57.29	82.2	-24.91



TILE Instrument Control System EMI Measurement Software

Radiated Emissions from 1GHz to 22GHz

Date: 02-19-2008

Company: ADC Telecommunications
Model: URH-AWS
Test Engineer: Uri Spector
Special Info: 2132MHz
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 All measurements were taken using a Peak detector

Table # 5

Frequency MHz	Antenna Polarity	Reading dBµV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
1.0476 GHz	V	49.5	27.5	39.8	37.3	82.2	-44.9
1.068 GHz	V	49.6	27.6	39.8	37.5	82.2	-44.7
1.102 GHz	V	48.1	27.7	39.7	36.1	82.2	-46.1
1.2448 GHz	V	47.8	28.1	39.6	36.3	82.2	-45.9
1.4692 GHz	V	44.6	28.8	39.4	34.0	82.2	-48.3
1.4964 GHz	V	43.4	28.9	39.4	32.9	82.2	-49.3
1.7548 GHz	V	43.1	30.2	39.0	34.3	82.2	-47.9
1.8432 GHz	V	48.0	30.6	38.9	39.8	82.2	-42.4
2.1356 GHz	V	39.9	31.7	38.4	33.2	82.2	-49.0
2.2104 GHz	V	41.0	31.9	38.3	34.6	82.2	-47.6
2.5028 GHz	V	42.5	32.6	37.8	37.3	82.2	-44.9
13.716 GHz	V	41.7	50.4	35.1	57.0	82.2	-25.2
1.0476 GHz	H	53.6	27.5	39.8	41.3	82.2	-40.9
1.068 GHz	H	56.8	27.6	39.8	44.6	82.2	-37.6
1.102 GHz	H	51.3	27.7	39.7	39.2	82.2	-43.0
1.2448 GHz	H	46.1	28.1	39.6	34.6	82.2	-47.6
1.4692 GHz	H	46.3	28.8	39.4	35.7	82.2	-46.5
1.4964 GHz	H	44.3	28.9	39.4	33.8	82.2	-48.4
1.748 GHz	H	46.8	30.2	39.0	38.0	82.2	-44.2
1.8432 GHz	H	50.6	30.6	38.9	42.3	82.2	-39.9
1.9996 GHz	H	40.8	31.4	38.6	33.6	82.2	-48.6
2.1288 GHz	H	44.7	31.7	38.4	38.0	82.2	-44.2
2.2104 GHz	H	42.9	31.9	38.3	36.5	82.2	-45.7
2.5028 GHz	H	42.5	32.6	37.8	37.3	82.2	-44.9
3.9716 GHz	H	41.4	36.8	37.7	40.5	82.2	-41.7
4.4 GHz	H	38.2	38.2	37.5	38.9	82.2	-43.4
13.702 GHz	H	42.09	50.39	35.09	57.39	82.2	-24.81



TILE Instrument Control System EMI Measurement Software

Radiated Emissions from 1GHz to 22GHz

Date: 02-19-2008

Company: ADC Telecommunications
Model: URH-AWS
Test Engineer: Uri Spector
Special Info: 2155MHz
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 All measurements were taken using a Peak detector

Table # 6

Frequency MHz	Antenna Polarity	Reading dBµV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
1.0476 GHz	V	49.6	27.5	39.8	37.3	82.2	-44.9
1.068 GHz	V	51.1	27.6	39.8	38.9	82.2	-43.3
1.102 GHz	V	48.9	27.7	39.7	36.9	82.2	-45.3
1.2448 GHz	V	47.6	28.1	39.6	36.1	82.2	-46.1
1.374 GHz	V	40.8	28.5	39.5	29.9	82.2	-52.4
1.4964 GHz	V	45.4	28.9	39.4	34.9	82.2	-47.3
1.7548 GHz	V	45.8	30.2	39.0	37.0	82.2	-45.2
1.8432 GHz	V	49.7	30.6	38.9	41.4	82.2	-40.8
2.156 GHz	V	46.6	31.8	38.4	40.1	82.2	-42.1
2.2104 GHz	V	43.0	31.9	38.3	36.6	82.2	-45.6
2.2512 GHz	V	43.6	32.0	38.2	37.4	82.2	-44.8
2.5028 GHz	V	44.9	32.6	37.8	39.7	82.2	-42.5
13.682 GHz	V	41.3	50.4	35.1	56.7	82.2	-25.5
1.0476 GHz	H	54.2	27.5	39.8	42.0	82.2	-40.2
1.068 GHz	H	57.0	27.6	39.8	44.8	82.2	-37.4
1.102 GHz	H	50.5	27.7	39.7	38.5	82.2	-43.7
1.2448 GHz	H	46.9	28.1	39.6	35.4	82.2	-46.8
1.4692 GHz	H	46.8	28.8	39.4	36.2	82.2	-46.0
1.8432 GHz	H	51.5	30.6	38.9	43.2	82.2	-39.0
2.156 GHz	H	50.0	31.8	38.4	43.4	82.2	-38.8
2.2104 GHz	H	44.3	31.9	38.3	37.9	82.2	-44.3
2.2512 GHz	H	44.4	32.0	38.2	38.2	82.2	-44.0
2.5028 GHz	H	43.4	32.6	37.8	38.2	82.2	-44.0
3.5024 GHz	H	39.0	35.5	37.6	36.9	82.2	-45.3
3.992 GHz	H	41.4	36.8	37.7	40.5	82.2	-41.7
4.4136 GHz	H	40.6	38.3	37.5	41.3	82.2	-40.9
13.77 GHz	H	41.8	50.2	35.2	56.8	82.2	-25.4



Spurious Enclosure Emissions

Date: 02-19-2008

Company: ADC Telecommunications Inc.
Model: URH-AWS
Test Engineer: Uri Spector
Special Config. Info: 2110MHz; 2132MHz; 2155MHz
 Substitution Measurements

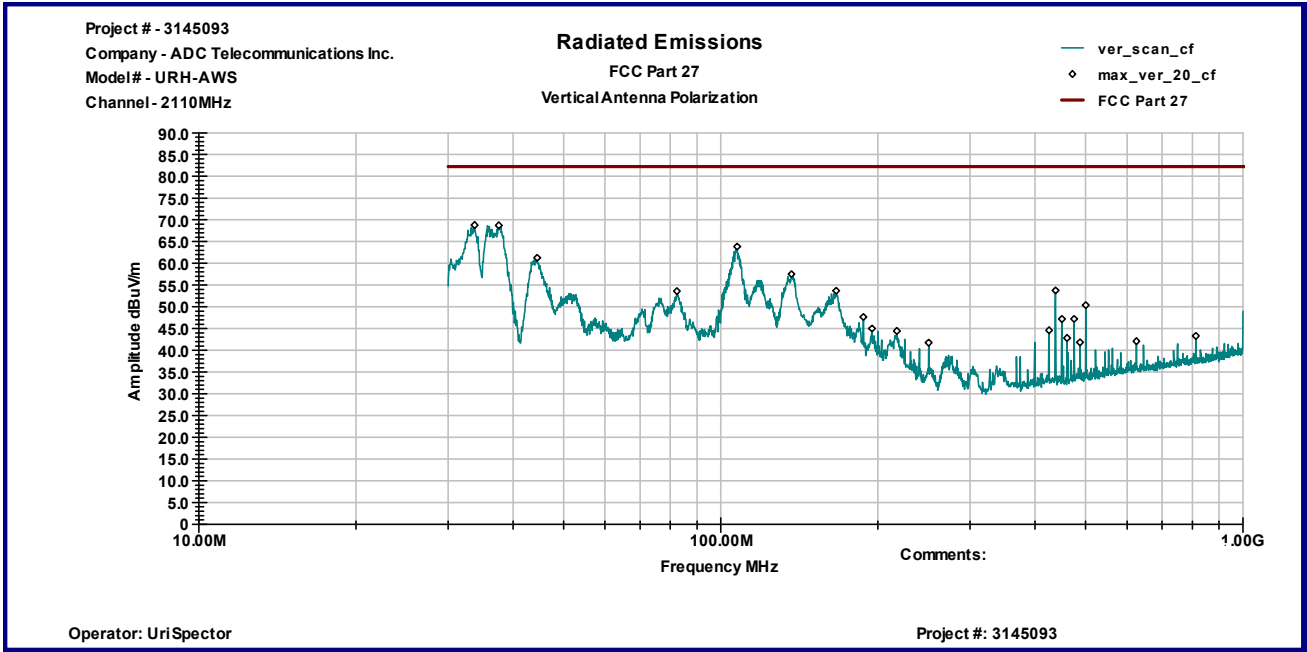
Limits FCC Part 27
Frequency Range: 30MHz - 22GHz

Test Site: 3m Anechoic Chamber

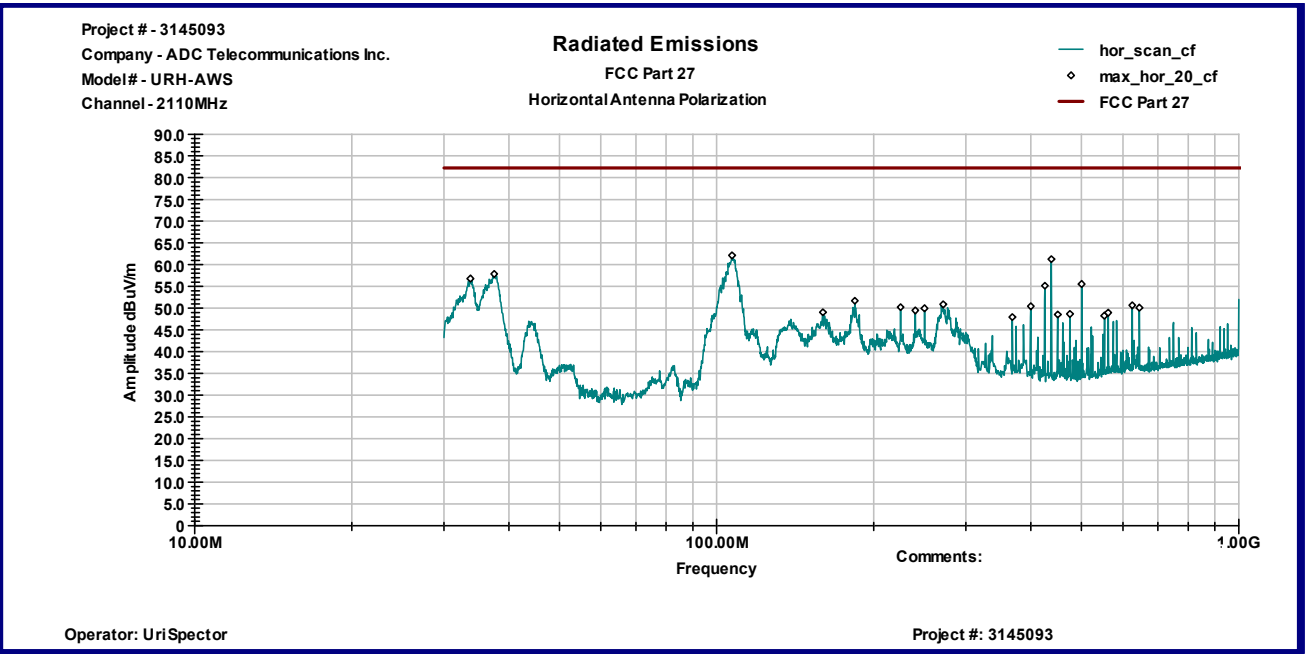
Note: The table shows radiated emissions with margin less than 20dB below straight measurements limits

Table # 7

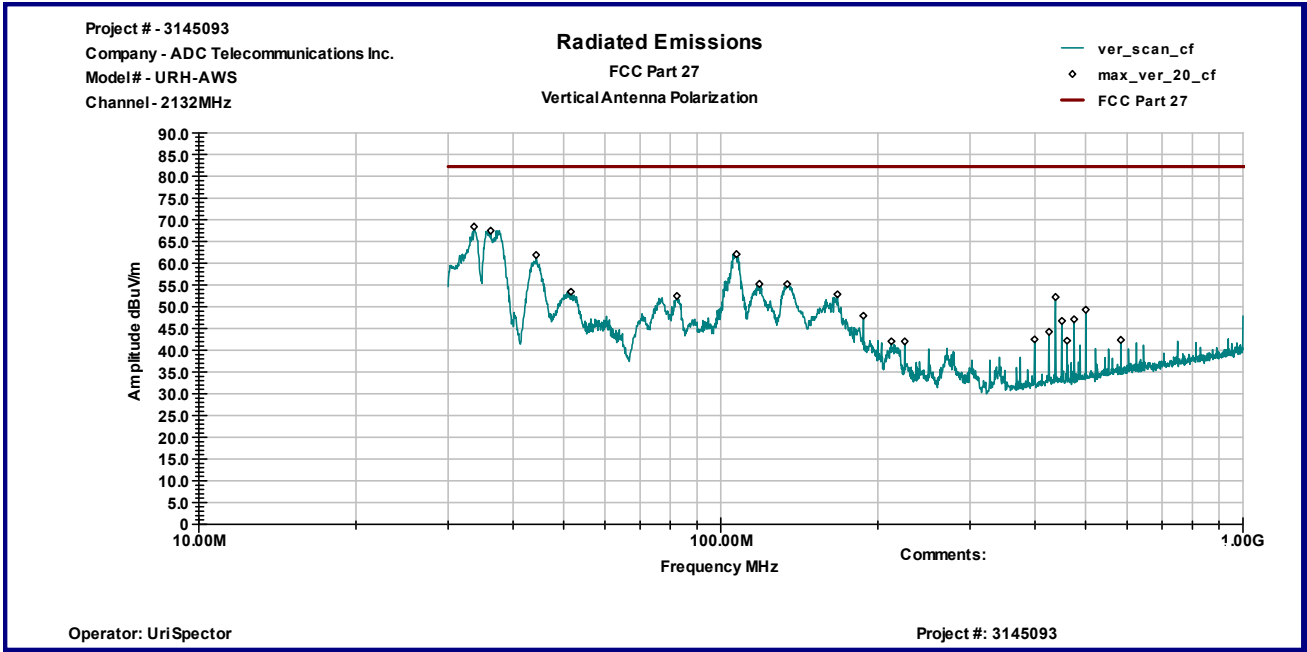
Frequency MHz	Antenna Polarity	Measured Emissions dBµV	Substitution Antenna Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	ERP Spur. Emissions dBm	Limit dBm	Margin dB
Operating frequency 2110MHz								
33.74	V	50.22	-24.0	-9.2	0.1	-33.3	-13.0	-20.3
37.55	V	52.17	-23.0	-8.6	0.1	-31.7	-13.0	-18.7
107.46	V	50.90	-32.5	-1.6	0.1	-34.2	-13.0	-21.2
Operating frequency 2155MHz								
33.87	V	49.28	-25.2	-9.1	0.1	-34.4	-13.0	-21.4
36.02	V	50.22	-24.5	-8.9	0.1	-33.5	-13.0	-20.5
106.56	V	49.75	-33.7	-1.6	0.1	-35.4	-13.0	-22.4
Operating frequency 2132MHz								
33.67	V	49.82	-24.5	-9.2	0.1	-33.8	-13.0	-20.8
36.23	V	50.26	-24.4	-8.8	0.1	-33.3	-13.0	-20.3



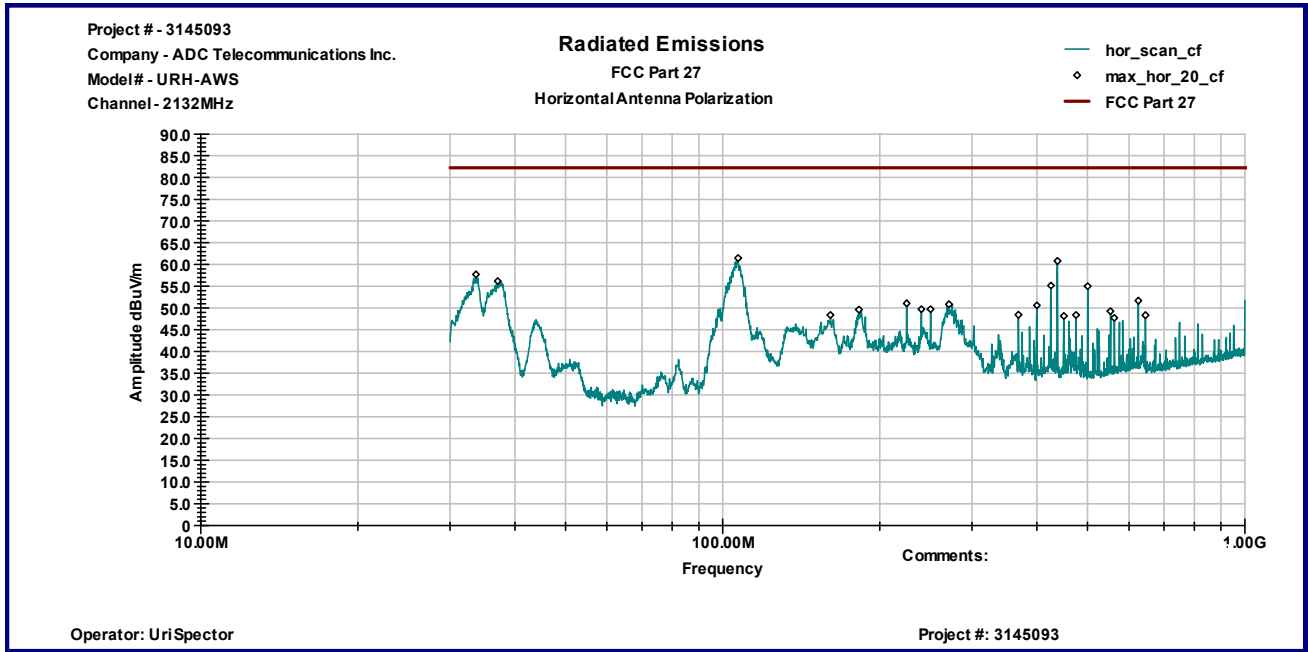
Graph 1



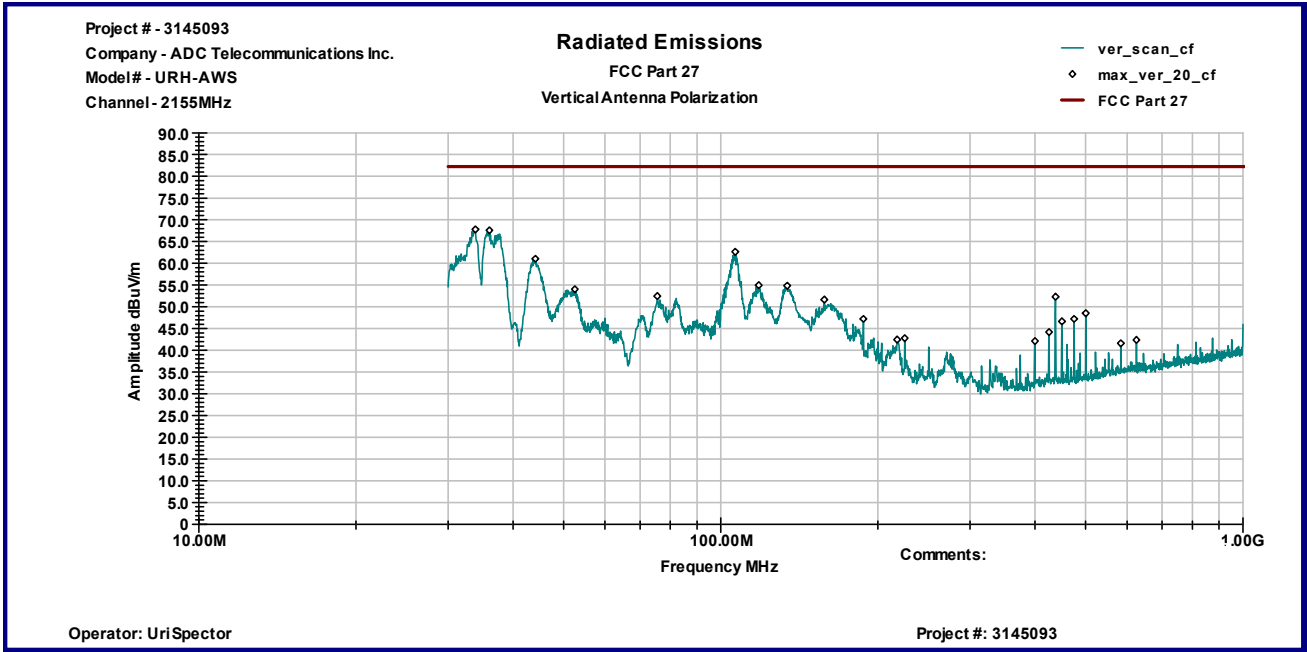
Graph 2



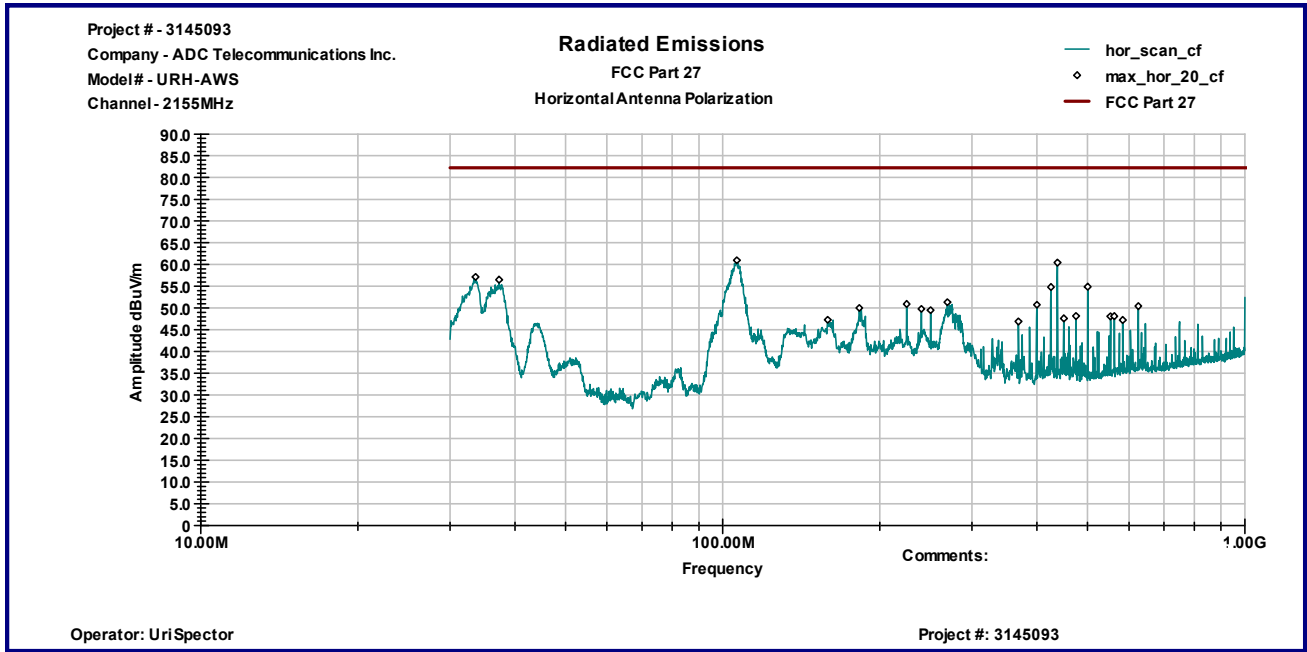
Graph 3



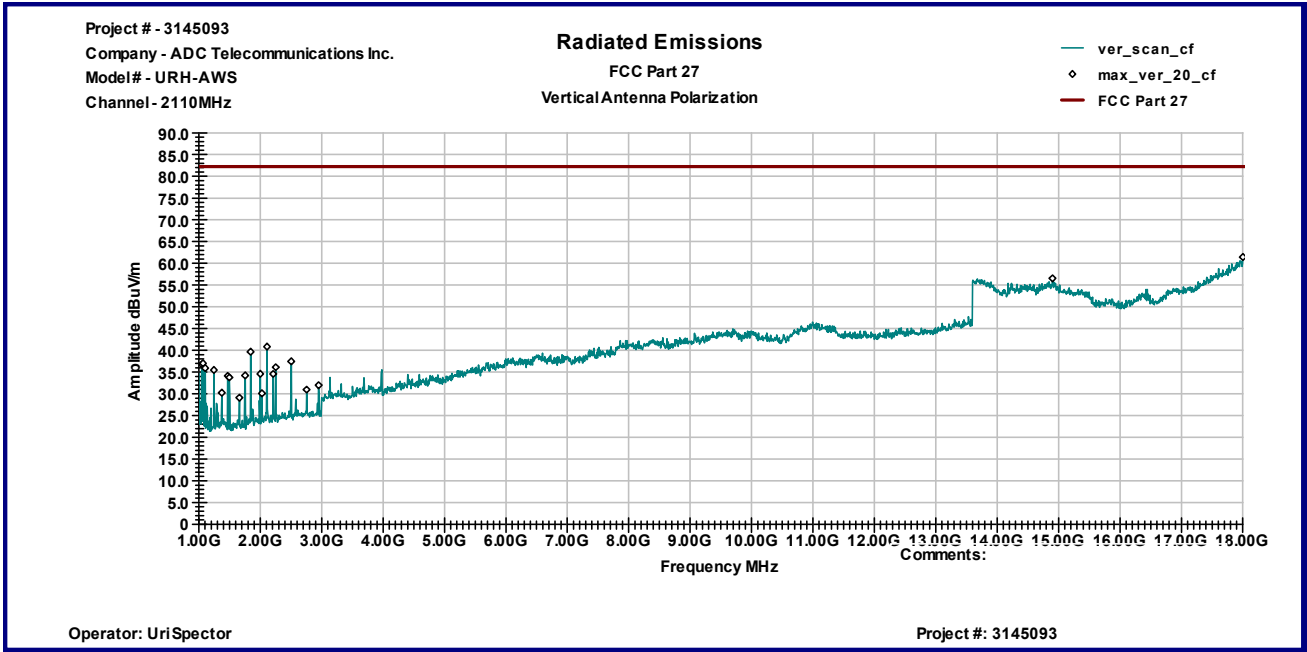
Graph 4



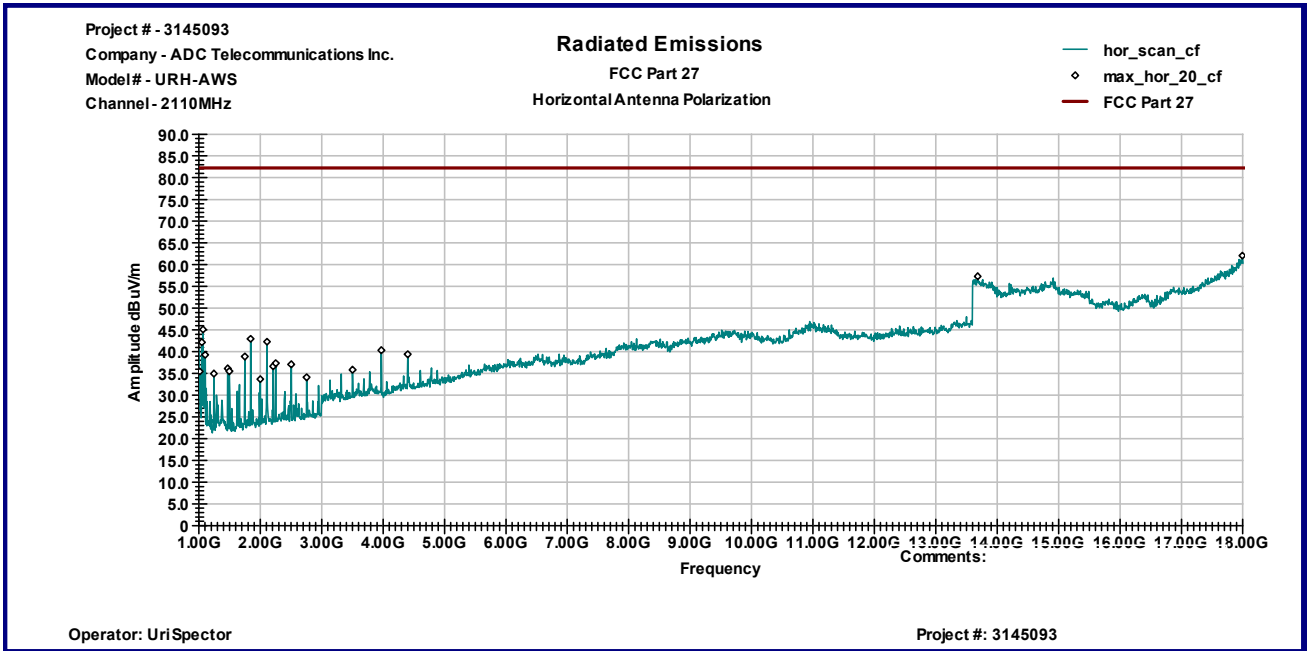
Graph 5



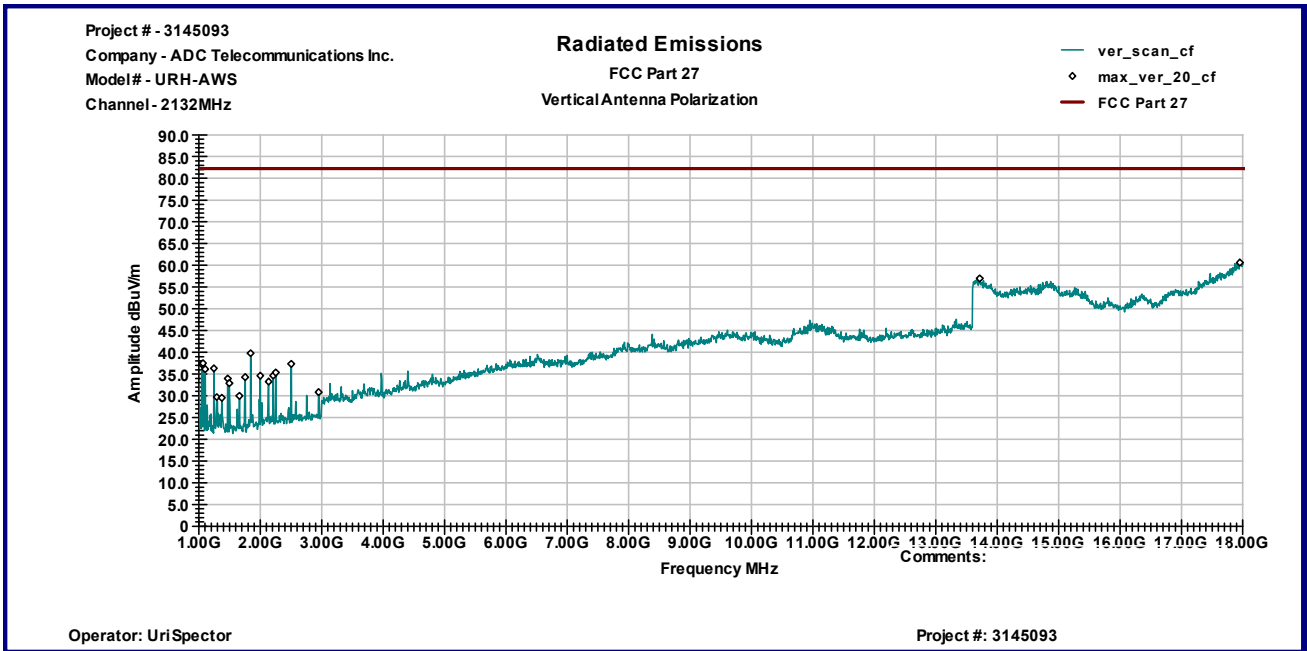
Graph 6



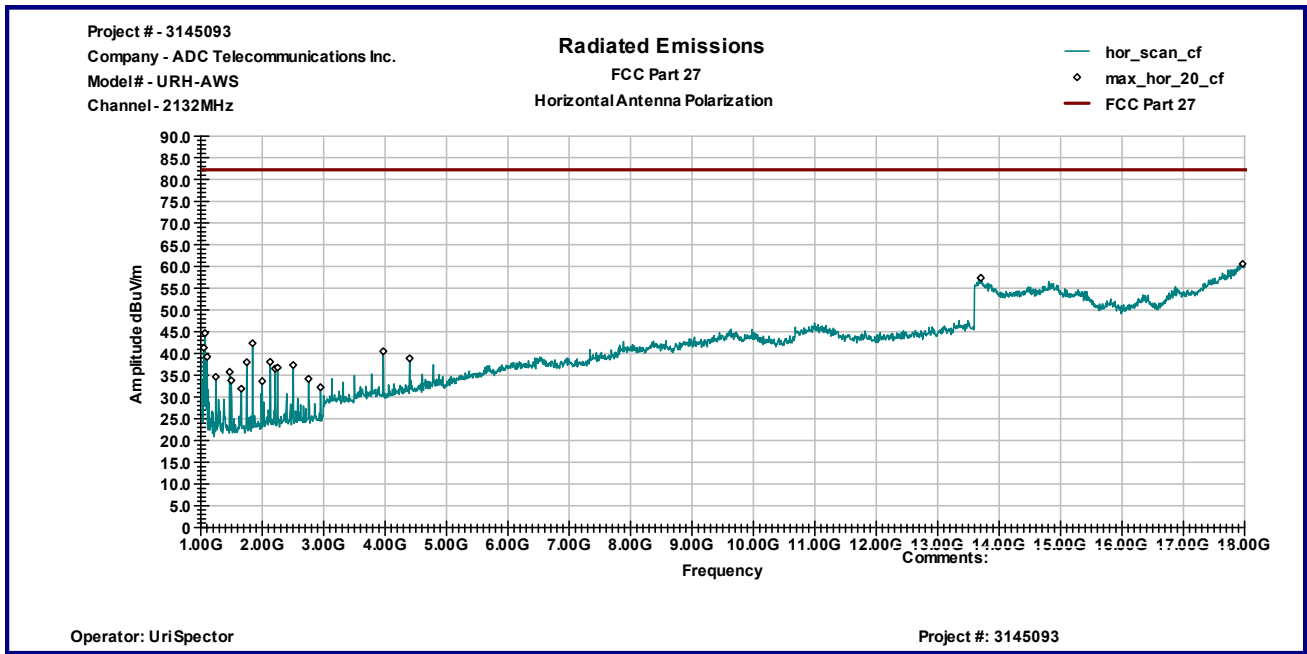
Graph 7



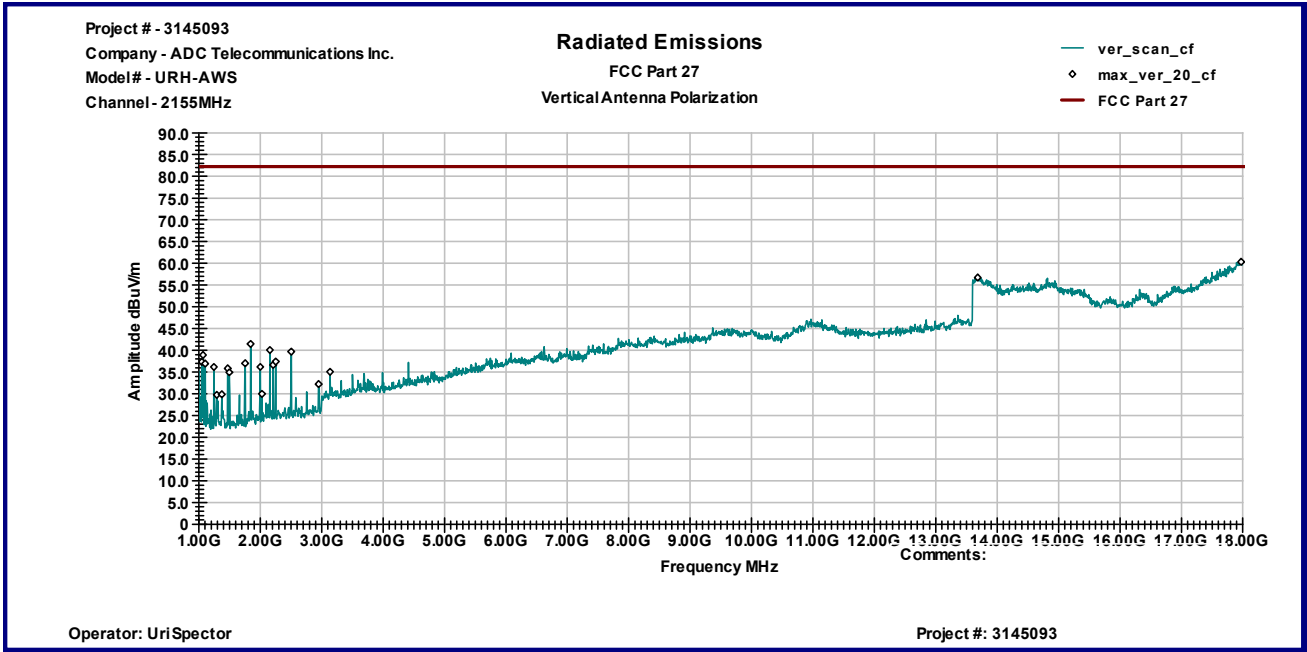
Graph 8



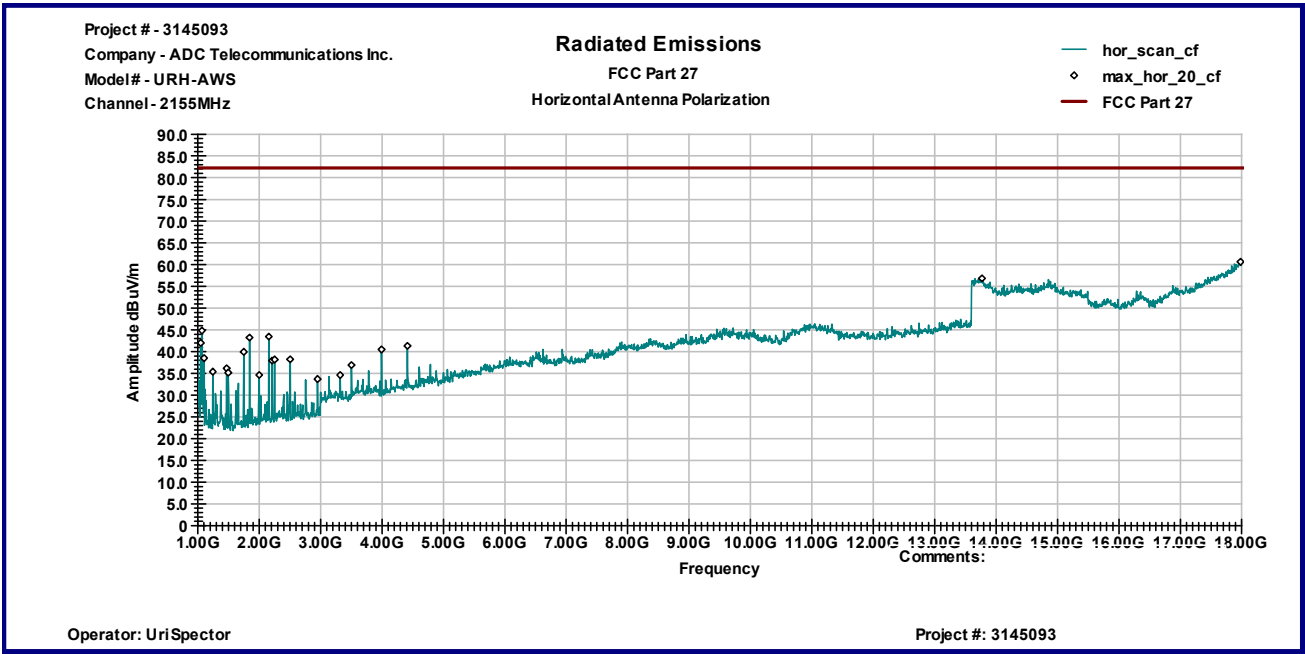
Graph 9



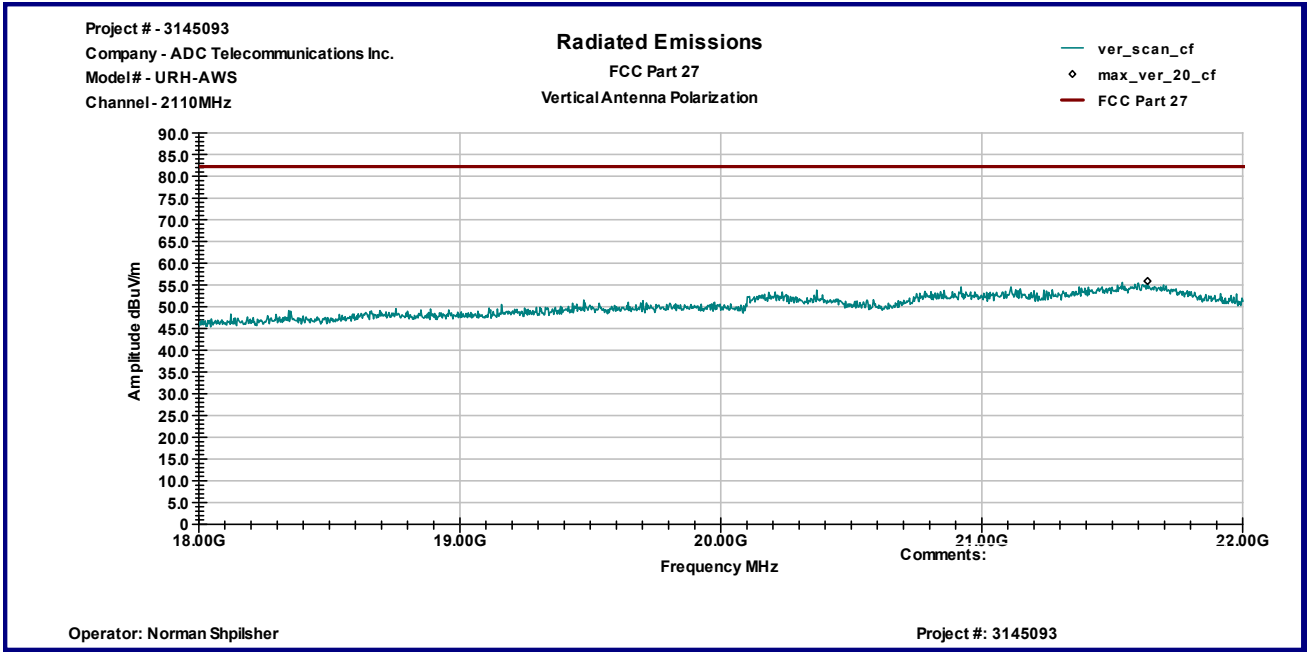
Graph 10



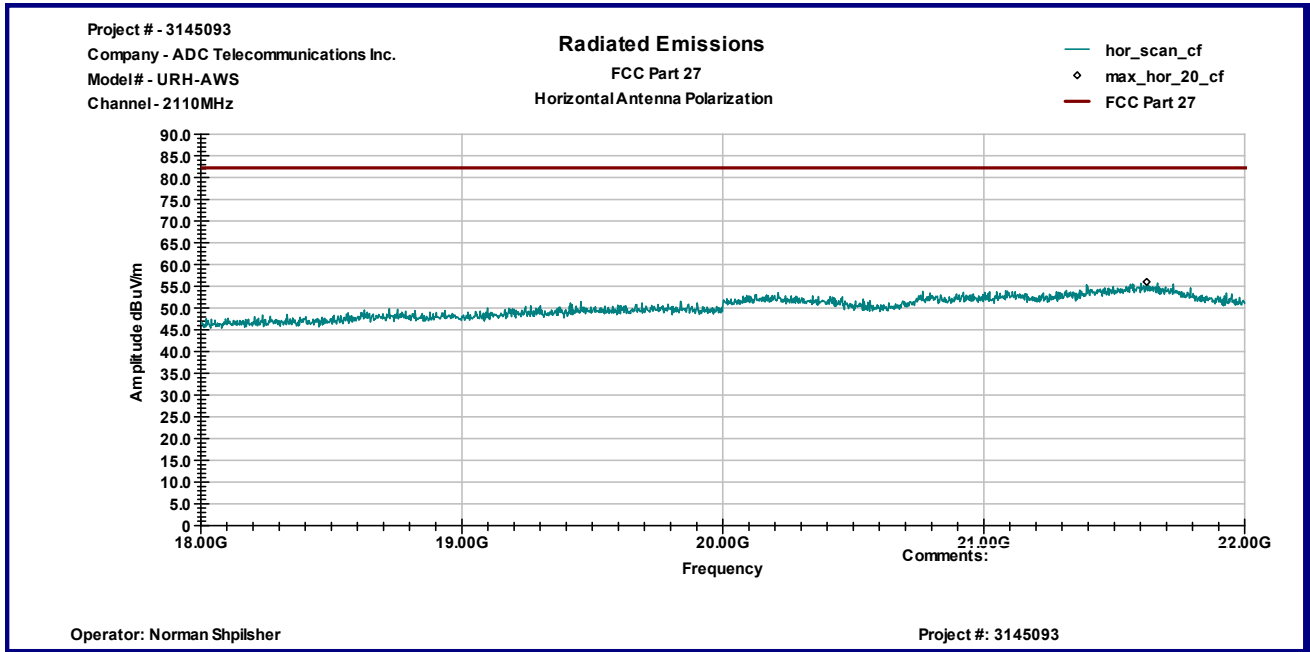
Graph 11



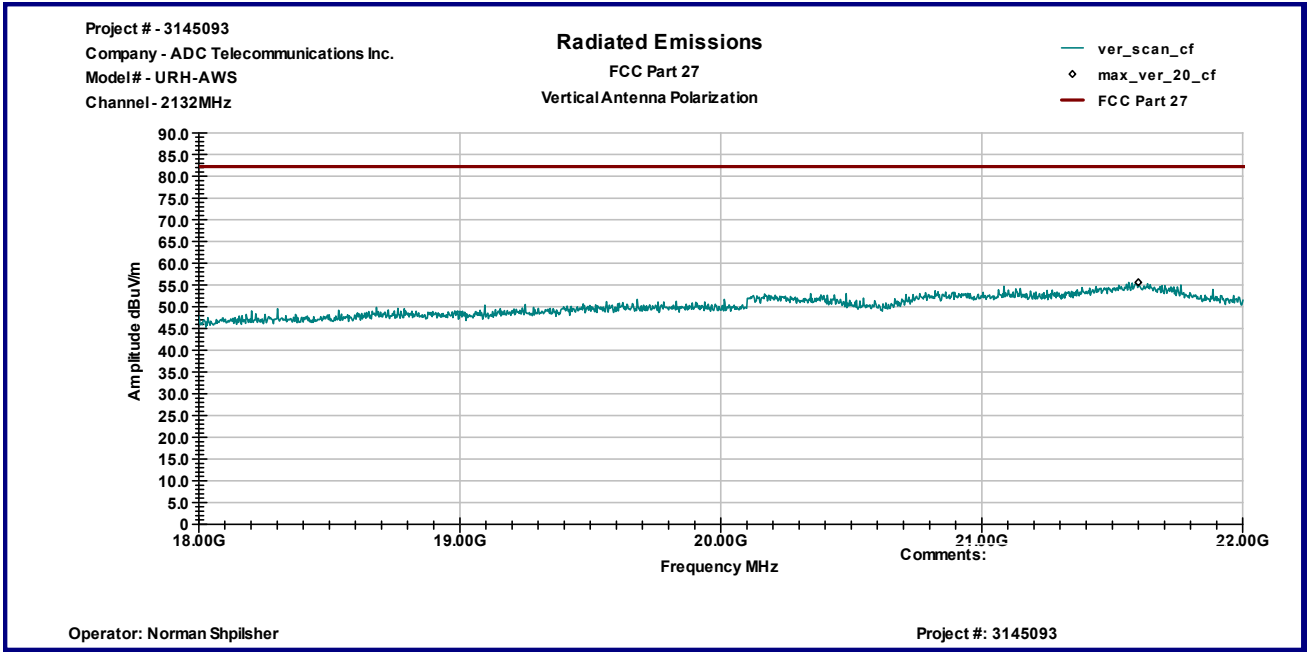
Graph 12



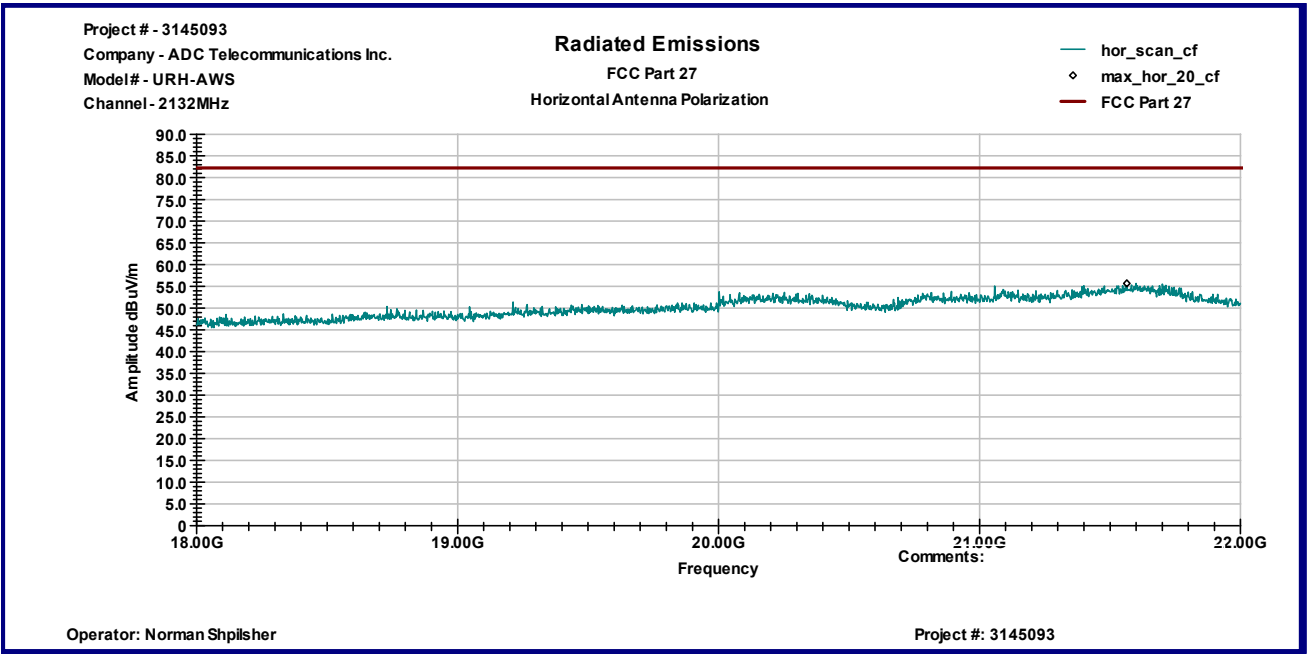
Graph 13



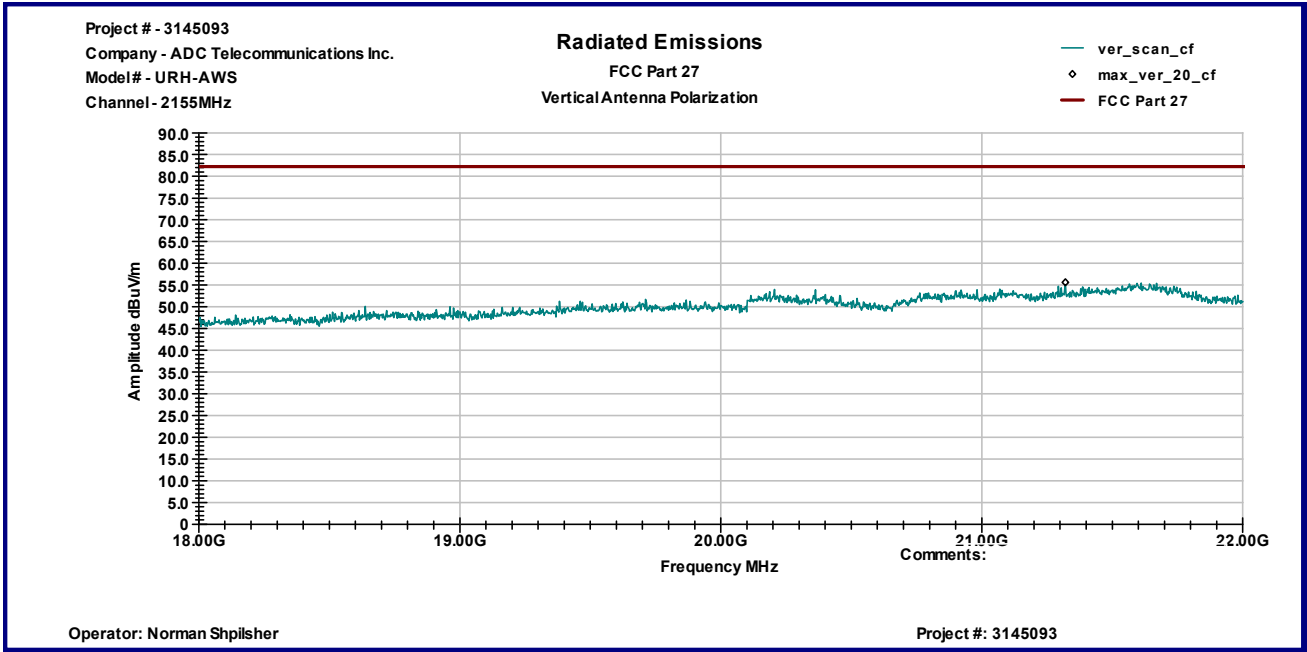
Graph 14



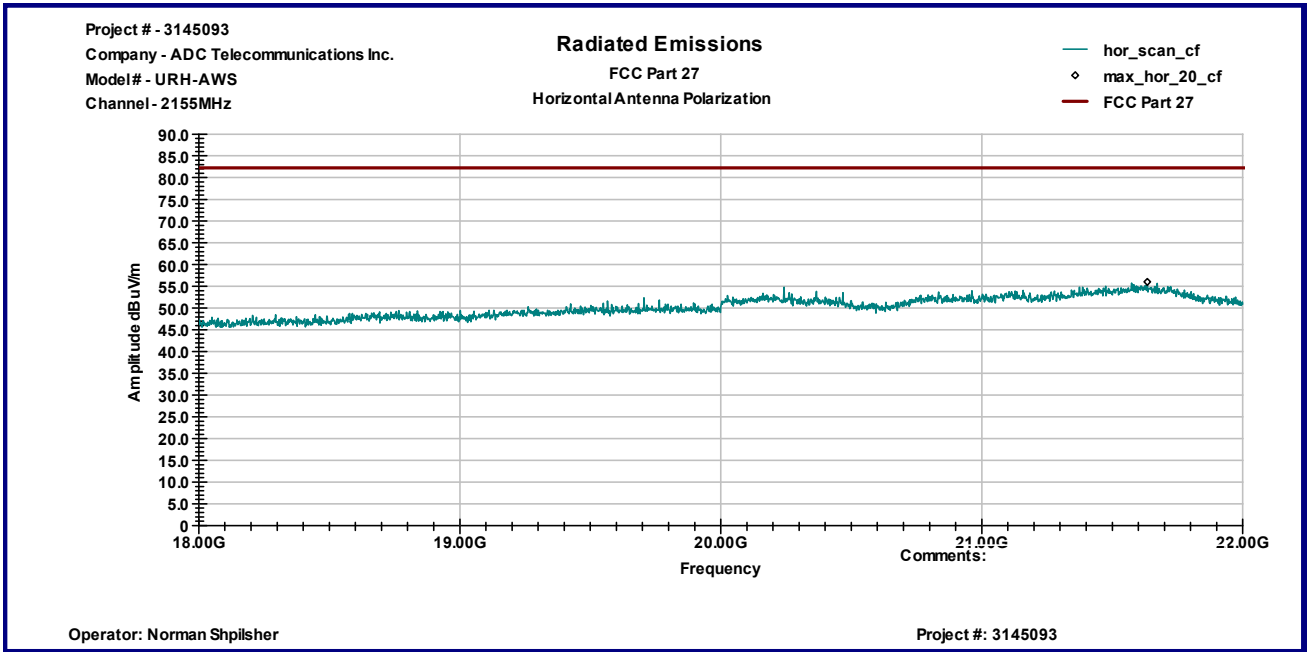
Graph 15



Graph 16



Graph 17



Graph 18

3.1 Environmental conditions

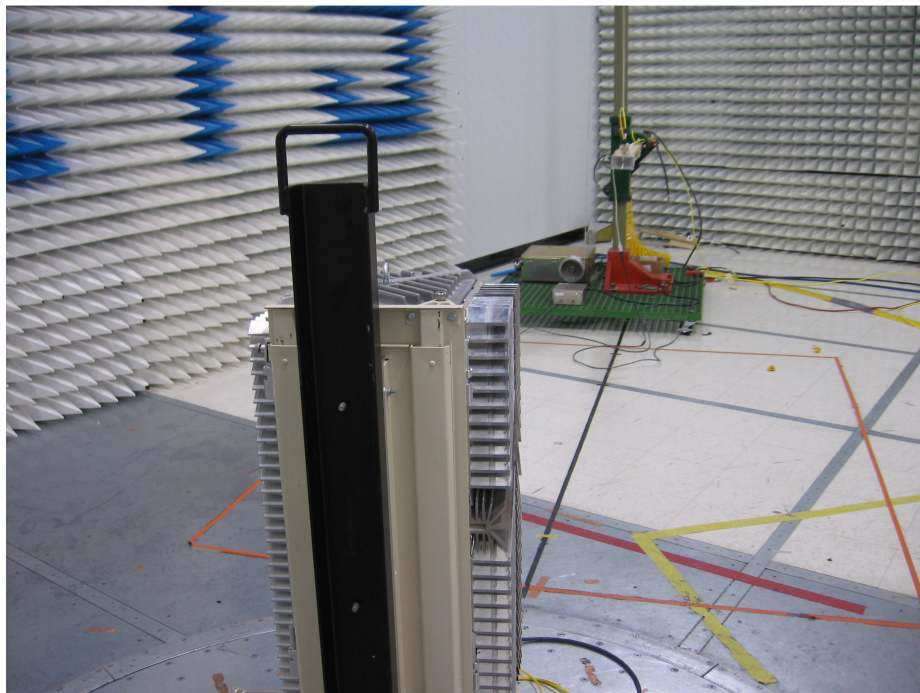
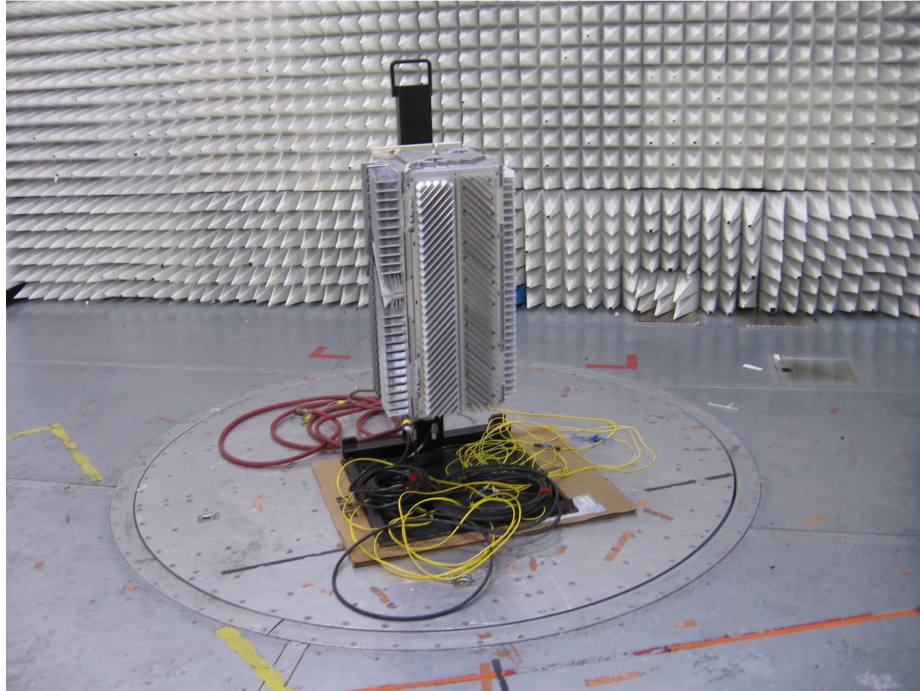
During the measurement the environmental conditions were within the listed ranges:

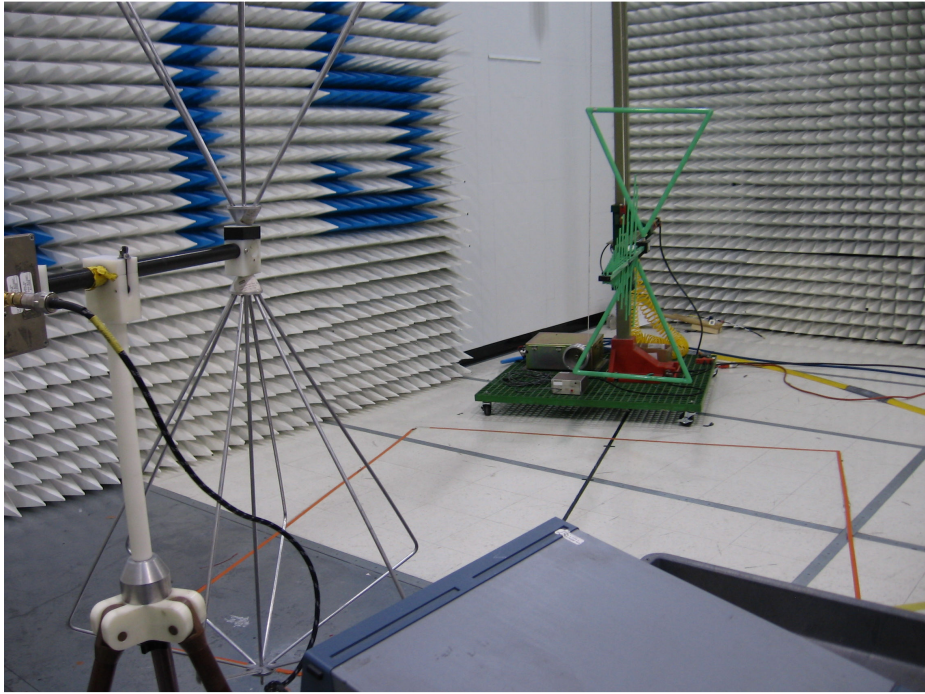
Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.0 PHOTOS







5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	CAL DUE	USED
Spectrum Analyzer	R & S	FSP 40	100024	08/23/2008	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESCI	100358	04/27/2008	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	07/30/2008	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	6579	03/06/2008	<input checked="" type="checkbox"/>
Waveguide Horn Antenna	EMCO	3116	9904-2423	07/20/2008	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1122951	04/24/2008	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	11/05/2008	<input checked="" type="checkbox"/>
System	TILE! Instrument Control		Ver. 3.4.K.29	VBU	<input checked="" type="checkbox"/>
Signal Generator	R & S	SMT 03	DE12157	8/13/2008	<input checked="" type="checkbox"/>
Biconical Antenna	CDI	B100	00632	08/01/2008	<input checked="" type="checkbox"/>
Waveguide Horn Antenna	EMCO	3116	9904-2423	07/20/2008	<input checked="" type="checkbox"/>

8.0

APPENDIX C

Measurement Protocol

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Measurement Protocol

Environmental conditions of the lab, (ADC)

Temperature: 21 - 26° C

Relative Humidity: 21 - 24 %

Atmospheric Pressure: 97.8 - 100.0 kPa

Test Methodology:

Emission testing is performed according to the procedures in ANSI C63.4-2003.

Measurement Uncertainty

The test system for conducted emissions is defined as the signal generator(s), the power meter, the spectrum analyzer and the coaxial cable. The equipment comprising the test systems is calibrated prior to testing the EUT.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left un-terminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

Radiated Emissions

The final level, in dBuV/m, equals the reading from the spectrum analyzer (Level dBuV), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Appendix B.

Example:

FREQ (MHz)	LEVEL (dBuV)	CABLE/ANT/PREAMP (dB)	FINAL (dB/m) (dB) (dBuV/m)	POL/HGT/AZ (m) (deg)	DELTA1
60.80	42.5Qp +	1.2 + 10.9 - 25.5 =	29.1	V 1.0 0.0	-10.9

Substitution Method

A cabinet (or enclosure) radiated emission scan was also made, at Intertek, with the EUT's antenna replaced with a termination to demonstrate case radiation compliance to the -13 dBm requirement. Radiated emissions from the EUT are measured in the frequency range of 30 to 20,000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. The field strength levels were measured per ANSI C63.4. The EUT is then replaced with a tuned dipole antenna (below 1GHz) or horn antenna (above 1 GHz). The substitute antenna was placed in the same polarization as the test antenna. A signal generator was used to generate a signal level that matched the highest level measured from the EUT. The signal generator level minus the cable loss from the signal generator to the substitute antenna plus the substitute antenna gain equals the spurious power level.

Test Equipment

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.