1250 Peterson Dr., Wheeling, IL 60090

Company:	Cambium Networks
Model Tested:	C050900C032A (connectorized) & C050900P032A (integrated)
Report Number:	19076
Project No.	5942

FCC Rules and Regulations / Unintentional Radiators

Class B Digital Devices

Part 15, Subpart B, Sections 15.107a & 15.109a

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name:	Avenger Station
Kind of Equipment:	Transceiver
Test Configuration:	Stand-alone (Tested at 120 Vac, 60 Hz)
Model Numbers:	C050900C032A (connectorized) & C050900P032A (integrated)
Models Tested:	C050900C032A (connectorized) & C050900P032A (integrated)
Serial Numbers:	000456C00042 (integrated)
Date of Tests:	June 3, 4 & 5, 2013
Test Conducted For:	Cambium Networks 3800 Golf Road, Suite 360 Rolling Meadows, IL 60008

NOTICE: "This test report relates only to the items tested and must not be used by the client to claim product endorsement by NVLAP, NIST, or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report.

SIGNATURE PAGE

Report Written By:

Arnom C. Rowe
Test Engineer
EMC-001375-NE

Report Reviewed By:

William Stumpf
OATS Manager

Report Approved By:

Brian Mattson
General Manager

TABLE OF CONTENTS

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.
Wheeling, IL

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2012-10-01 through 2013-09-30
Effective dates

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

1.0 SUMMARY OF TEST REPORT

It was found that the Avenger Station, Models C050900C032A (connectorized) & C050900P032A (integrated) **meets** the radio interference Power Line Conducted and Radiated emission requirements of FCC "Rules and Regulations", Part 15, Subpart B, Sections 15.107a & 15.109a for Unintentional Radiators, Class B digital devices.

2.0 INTRODUCTION

On June 3, 4 and 5, 2013, a series of radio frequency interference measurements was performed on Avenger Station, Model C050900C032A (connectorized) and C050900P032A (integrated), Serial No. 000456C00042 (integrated). All tests were performed according to the procedures of the FCC as stated in the American National Standards Institute, ANSI C63.4-2009. These test procedures were performed by personnel of D.L.S. Electronic Systems, Inc.

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency emission requirements of the FCC Rules and Regulations, Part 15, Subpart B, Sections 15.107a & 15.109a for Unintentional Radiators, Class B digital devices.

4.0 TEST FACILITY

All emission tests were performed at D.L.S. Electronic Systems, Inc. according to the American National Standards Institute, ANSI C63.4-2009.

D.L.S. Electronic Systems, Inc. is a full service EMC Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at http://www.dlsemc.com/certificate. Our facilities are registered with the FCC, Industry Canada, and VCCI.

5.0 TEST EQUIPMENT

A list of the test equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

6.0 POWER LINE CONDUCTED EMISSION MEASUREMENTS

Power Line Conducted emissions were measured in accordance with the American National Standards Institute, ANSI C63.4-2009. Plots and tabular data can be viewed in Appendix A of this test report.

Line Conducted emissions: Emissions measurements include all system transducers and are compared against the appropriate limit requirement as per the sample calculation below.

Equations: Level(dBµV) = Raw Level(dBµV) + System Loss(dB) + LISN Factor(dB)
Sample: 30.14 = 18.44 + 11.24 + 0.46

Margin(dB) = Limit(dBµV/m) - Level(dBµV/m)
15.86 = 46 - 30.14

7.0 RADIATED EMISSION MEASUREMENTS

All tests were performed according to the procedures of ANSI C63.4-2009. Plots and tabular data can be viewed in Appendix B of this test report.

FCC Part 15.33b states that measurements shall be made up to the 5th harmonic of the highest clock or timing frequency of the EUT. The highest timing frequency in the Avenger Station is 5835 MHz. Therefore measurements were made up to 30000 MHz.

Radiated emissions: Emissions measurements include all system transducers and are compared against the appropriate limit requirement as per the sample calculation below.

Equation: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
Sample: 24.6 = 35.51 + (-22.1) + 11.20

Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

8.0 DESCRIPTION OF TEST SAMPLE:

8.1 DESCRIPTION: 802.11 fixed outdoor transceiver.

8.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 4" x Width: 2" x Height: 10"

8.3 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies: 940 - 1000 kHz

Clock Frequencies: 40, 25 and 4 MHz

8.4 LINE FILTER: NA

8.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

SM PCB	84009653001
Antenna PCB	P005135

9.0 MODIFICATIONS MADE TO EUT FOR EMC COMPLIANCE:

There were no additional descriptions noted at the time of test.

10.0 CONCLUSION

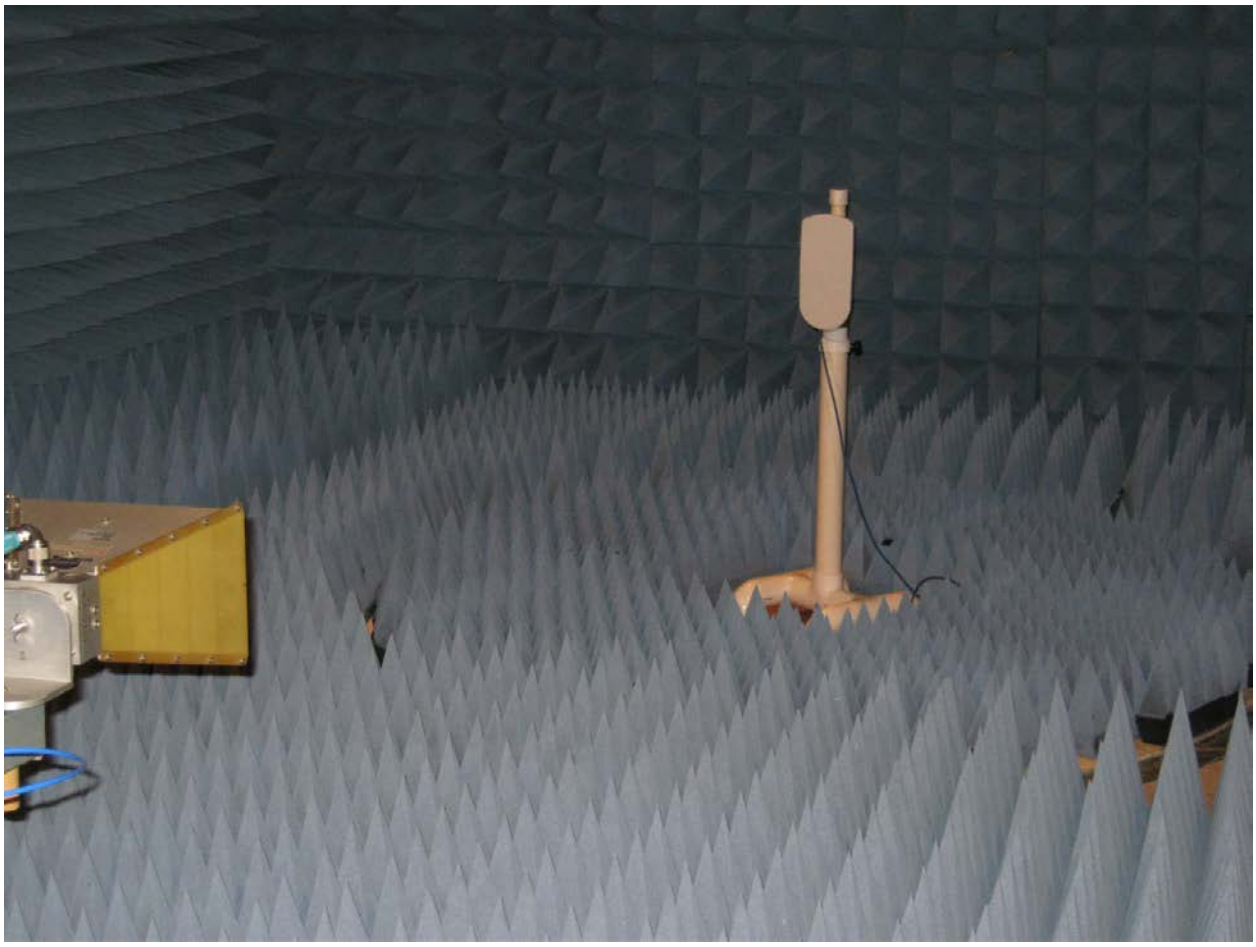
It was found that the Avenger Station, Model Number(s) C050900C032A (connectorized) and C050900P032A (integrated) **meets** the radio interference Power Line Conducted and Radiated emission requirements of FCC Rules and Regulations, Part 15, Subpart B, Sections 15.107a & 15.109a for Unintentional Radiators, Class B digital devices.

11.0 PHOTO INFORMATION AND TEST SET-UP

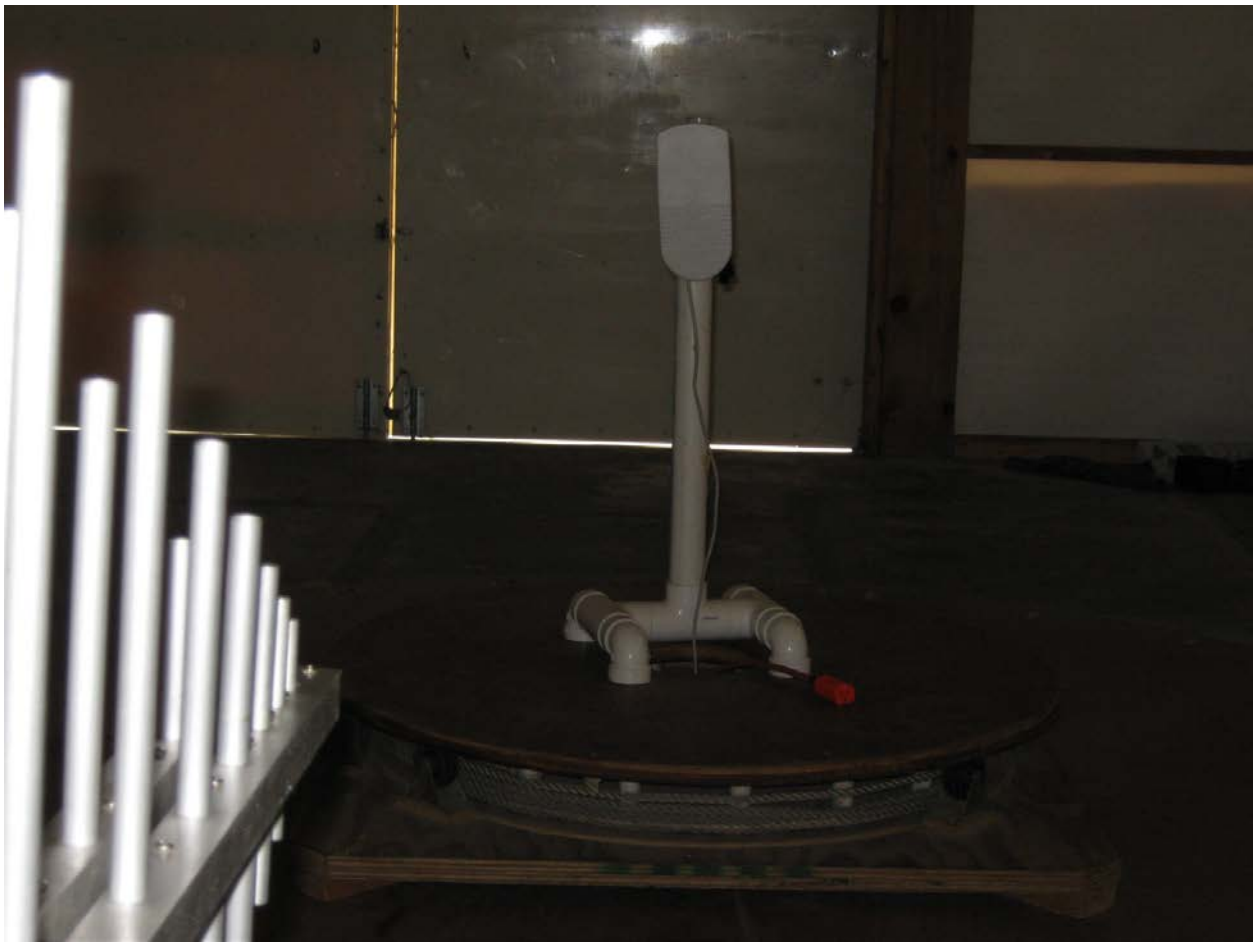
Item 0 Avenger Station
Models C050900C032A (connectorized) and C050900P032A (integrated)
Serial No. 000456C00042 (integrated)

Item 1 Phihong power supply, Model 15R

12.0 RADIATED PHOTO TAKEN DURING TESTING: Above 1 GHz



12.0 RADIATED PHOTO TAKEN DURING TESTING: Below 1 GHz



13.0 POWER LINE CONDUCTED PHOTO TAKEN DURING TESTING

Table 1 – Equipment List

TEST EQUIPMENT LIST

AC LINE CONDUCTED TEST (Screen Room)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	1-3-13	1-3-14
LISN	Solar	9252-50-R-24-BNC	961019	9 kHz – 30 MHz	5-24-13	5-24-14
Filter- High-Pass	SOLAR	7930-120	090702	120 kHz – 30 MHz	1-7-13	1-7-14
Limiter	Electro-Metrics	EM-7600	706	9 kHz – 30 MHz	1-7-13	1-7-14

30 – 1000 MHz (Site 3)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	**Rohde & Schwarz**	**ESI 40**	**837808/005**	**20 Hz – 40 GHz**	**7-23-12**	**7-23-13**
Preamplifier	Rohde & Schwarz	TS-PR10	032001/005	9 kHz – 1 GHz	1-10-13	1-10-14
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	8-22-12	8-22-14
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	9-6-12	9-6-14

1-18 GHz (G1)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Preamp	Miteq	AMF-7D-01001800-22-10P	1809602	1GHz-18GHz	5-29-13	5-29-14
Horn Antenna	EMCO	3115	9502-4451	1-18GHz	3-18-13	3-18-15
Filter- High-Pass	Q-Microwave	100462	2	4.2GHz-18GHz	5-28-13	5-28-14

18-30 GHz (G1)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Preamp	Miteq	AMF-8B-180265-40-10P-H/S	438727	18GHz-26GHz	8-13-12	8-13-13
Horn Antenna	ETS Lindgren	3116	00062917	18 – 40GHz	10-4-11	9-23-13
High Pass Filter	Planar	CL22500-9000-CD-SS	PF1229/0728	15-40 GHz	8-13-12	8-13-13

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.

APPENDIX A

CONDUCTED EMISSIONS DATA

AND

CHARTS TAKEN DURING TESTING

FCC Part 15 Class B

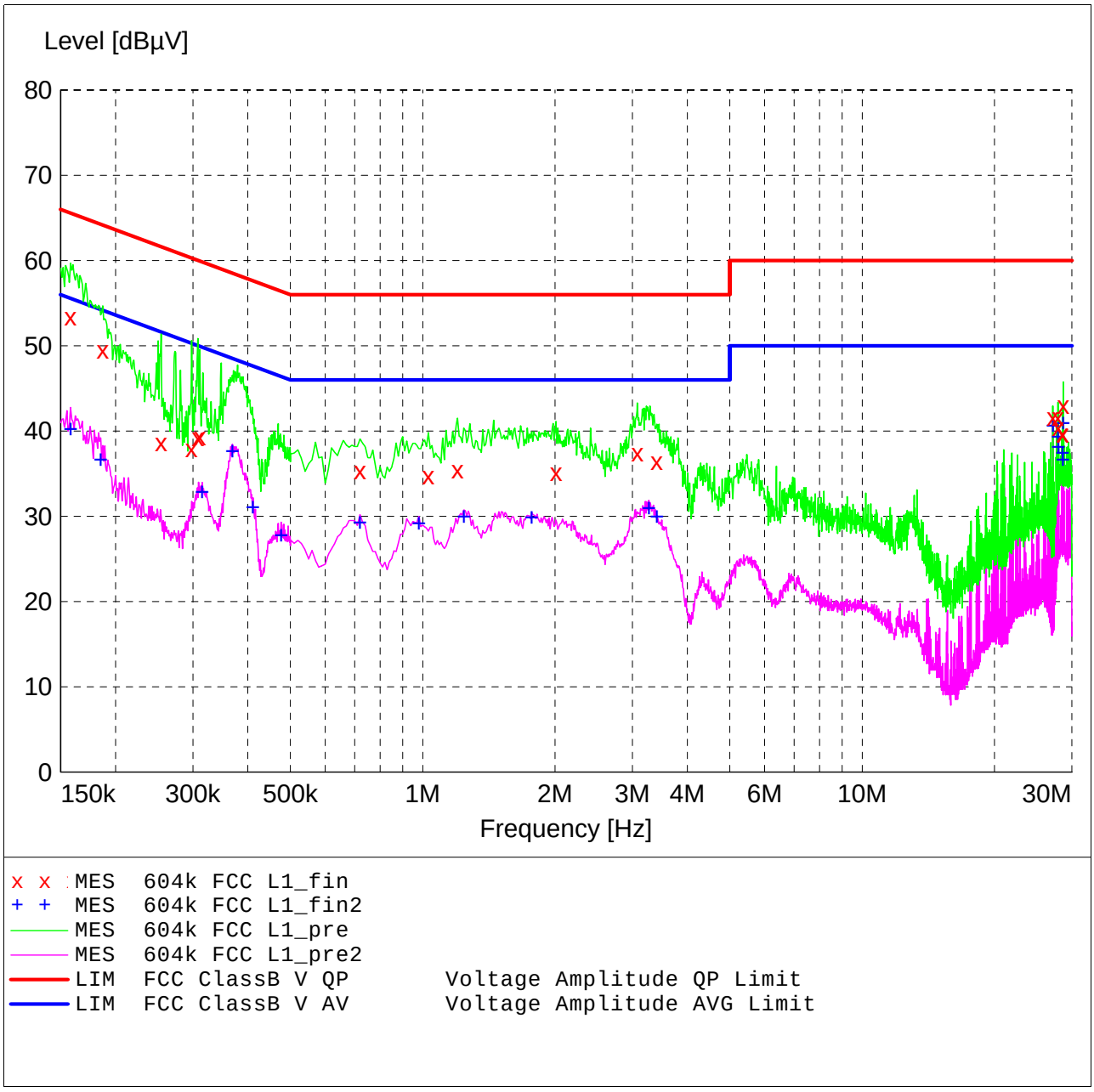
Voltage Mains Test

EUT:	Avenger Station Radio 5.7GHz
Manufacturer:	Cambium
Operating Condition:	70 deg. F, 34% R.H.
Test Site:	DLS O.F. Screen Room
Operator:	Jim O
Test Specification:	120V, 60Hz
Comment:	Continious TX; Line 1
	6-04-2013

SCAN TABLE: "Line Cond SR Final"

Short Description: Line Conducted Emissions

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak CISPR AV	5.0 s	9 kHz	LISN DLS#128



MEASUREMENT RESULT: "604k FCC L1_fin"

6/4/2013 2:23PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.158000	53.40	13.6	66	12.2	QP
0.187000	49.50	12.9	64	14.7	QP
0.254000	38.70	12.1	62	22.9	QP
0.298000	38.00	11.9	60	22.3	QP
0.308000	39.20	11.8	60	20.8	QP
0.311000	39.40	11.8	60	20.5	QP
0.720000	35.40	10.8	56	20.6	QP
1.030000	34.80	10.7	56	21.2	QP
1.200000	35.50	10.6	56	20.5	QP
2.010000	35.20	10.6	56	20.8	QP
3.080000	37.50	10.7	56	18.5	QP
3.410000	36.50	10.7	56	19.5	QP
27.155000	41.70	11.5	60	18.3	QP
27.890000	41.70	11.6	60	18.3	QP
27.950000	40.50	11.6	60	19.5	QP
28.565000	39.80	11.7	60	20.2	QP
28.625000	39.60	11.7	60	20.4	QP
28.685000	43.00	11.7	60	17.0	QP

MEASUREMENT RESULT: "604k FCC L1_fin2"

6/4/2013 2:23PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.158000	40.20	13.6	56	15.4	CAV
0.185000	36.70	12.9	54	17.6	CAV
0.315000	32.90	11.8	50	16.9	CAV
0.369000	37.70	11.5	49	10.8	CAV
0.411000	31.10	11.4	48	16.5	CAV
0.476000	27.80	11.3	46	18.6	CAV
0.720000	29.30	10.8	46	16.7	CAV
0.980000	29.20	10.7	46	16.8	CAV
1.240000	30.00	10.6	46	16.0	CAV
1.770000	29.90	10.6	46	16.1	CAV
3.270000	31.00	10.7	46	15.0	CAV
3.410000	30.00	10.7	46	16.0	CAV
27.155000	40.60	11.5	50	9.4	CAV
27.890000	39.30	11.6	50	10.7	CAV
27.950000	38.10	11.6	50	11.9	CAV
28.565000	37.50	11.7	50	12.5	CAV
28.625000	36.70	11.7	50	13.3	CAV
28.685000	41.00	11.7	50	9.0	CAV

FCC Part 15 Class B

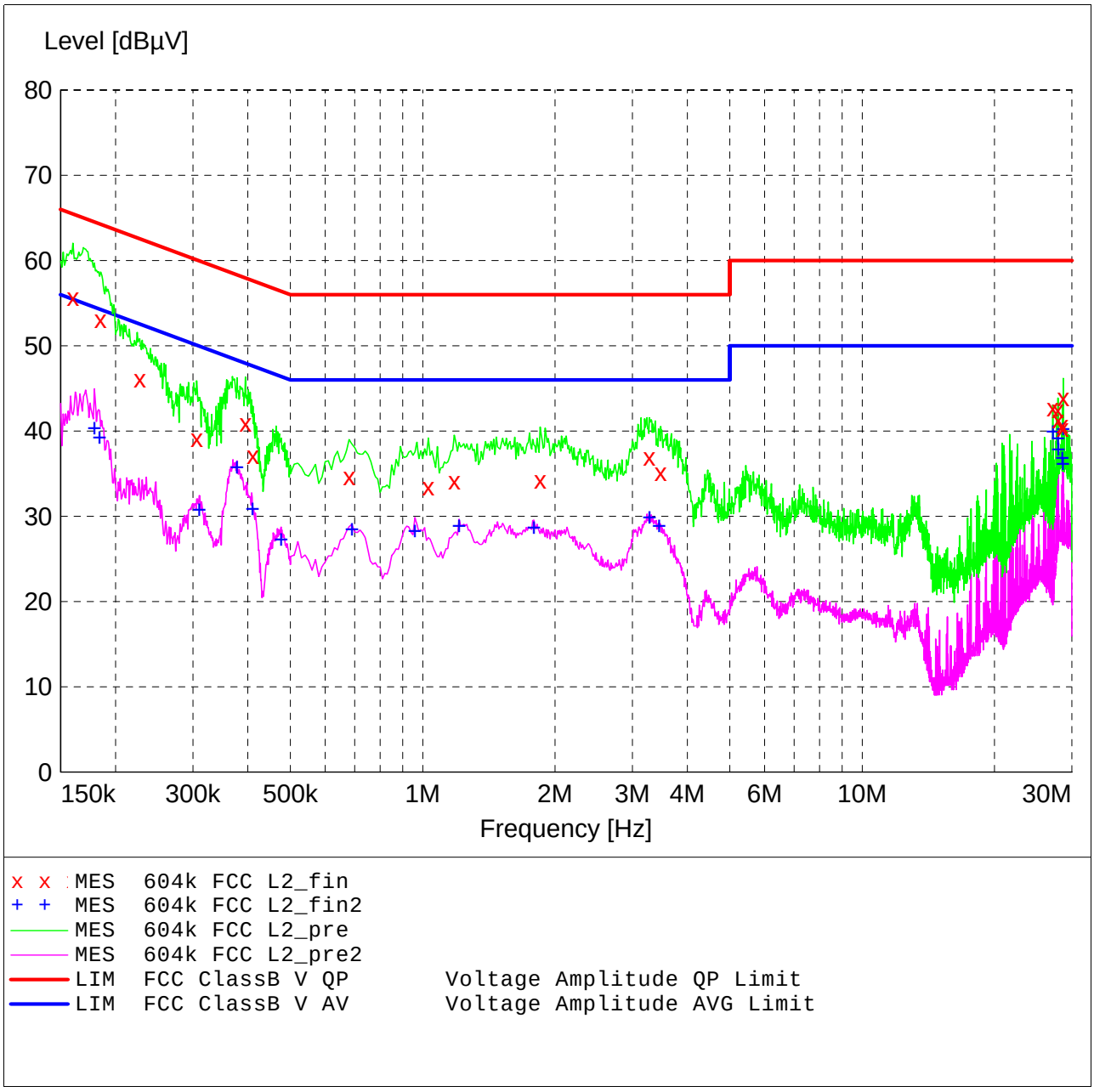
Voltage Mains Test

EUT:	Avenger Station Radio 5.7GHz
Manufacturer:	Cambium
Operating Condition:	70 deg. F, 34% R.H.
Test Site:	DLS O.F. Screen Room
Operator:	Jim O
Test Specification:	120V, 60Hz
Comment:	Continious TX; Line 2
	6-04-2013

SCAN TABLE: "Line Cond SR Final"

Short Description: Line Conducted Emissions

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak CISPR AV	5.0 s	9 kHz	LISN DLS#128



MEASUREMENT RESULT: "604k FCC L2_fin"

6/4/2013 2:12PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.160000	55.70	13.5	66	9.8	QP
0.185000	53.10	12.9	64	11.2	QP
0.227000	46.10	12.4	63	16.5	QP
0.306000	39.20	11.8	60	20.9	QP
0.395000	41.00	11.4	58	17.0	QP
0.411000	37.20	11.4	58	20.4	QP
0.680000	34.70	10.8	56	21.3	QP
1.030000	33.50	10.7	56	22.5	QP
1.180000	34.20	10.6	56	21.8	QP
1.850000	34.30	10.6	56	21.7	QP
3.280000	37.00	10.7	56	19.0	QP
3.480000	35.20	10.7	56	20.8	QP
27.155000	42.70	11.5	60	17.3	QP
27.890000	42.50	11.6	60	17.5	QP
27.950000	41.30	11.6	60	18.7	QP
28.565000	40.80	11.7	60	19.2	QP
28.625000	40.40	11.7	60	19.6	QP
28.685000	43.90	11.7	60	16.1	QP

MEASUREMENT RESULT: "604k FCC L2_fin2"

6/4/2013 2:12PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.179000	40.30	13.0	55	14.2	CAV
0.184000	39.30	12.9	54	15.0	CAV
0.310000	30.80	11.8	50	19.2	CAV
0.378000	35.80	11.5	48	12.5	CAV
0.410000	30.90	11.4	48	16.7	CAV
0.476000	27.30	11.3	46	19.1	CAV
0.690000	28.50	10.8	46	17.5	CAV
0.960000	28.30	10.7	46	17.7	CAV
1.210000	28.90	10.6	46	17.1	CAV
1.790000	28.70	10.6	46	17.3	CAV
3.280000	29.90	10.7	46	16.1	CAV
3.450000	28.90	10.7	46	17.1	CAV
27.155000	40.00	11.5	50	10.0	CAV
27.890000	39.20	11.6	50	10.8	CAV
27.950000	37.90	11.6	50	12.1	CAV
28.565000	36.90	11.7	50	13.1	CAV
28.625000	36.20	11.7	50	13.8	CAV
28.685000	40.20	11.7	50	9.8	CAV

APPENDIX B

RADIATED EMISSIONS DATA

AND

CHARTS TAKEN DURING TESTING

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station 5.7GHz
Manufacturer: Cambium Networks
Operating Condition: 67 deg. F; 56% R.H.
Test Site: DLS O.F. Site 3
Operator: Jim O
Test Specification: 120V 60Hz POE
Comment: Continuous TX
Date: 06-05-2013

TEXT: "Horz 3 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)

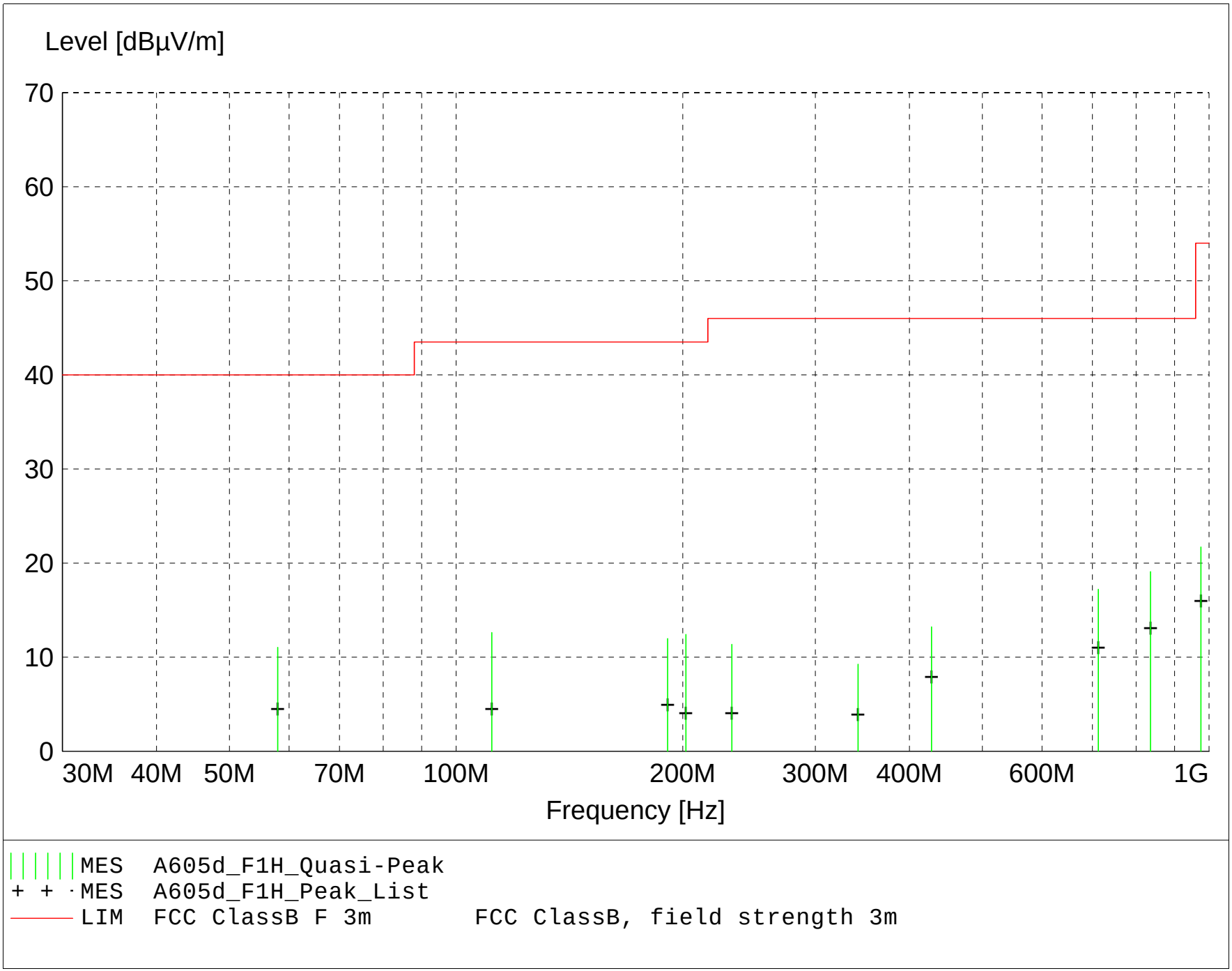
Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)

Graph Markers: + Frequency marker (Level of marker not related to final level)

| Final maximized level using Quasi-Peak detector

X Final maximized level using Average dector

Final maximized level using Peak detector


Level [dBµV/m]
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60
50
40
30
20
10
0
30M
40M
50M
70M
100M
200M
300M
400M
600M
1G
Frequency [Hz]
MES A605d_F1H_Quasi-Peak
MES A605d_F1H_Peak_List
LIM FCC ClassB F 3m
FCC ClassB, field strength 3m

MEASUREMENT RESULT: "A605d_F1H_Final"

6/5/2013 10:34AM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
836.060000	15.49	22.42	-18.8	19.1	46.0	26.9	2.00	0	QUASI-PEAK	NF
712.940000	15.68	20.96	-19.4	17.2	46.0	28.8	2.00	0	QUASI-PEAK	NF
57.960000	24.37	10.61	-23.9	11.0	40.0	29.0	1.00	0	QUASI-PEAK	NF
111.540000	23.19	12.46	-23.0	12.6	43.5	30.9	1.00	350	QUASI-PEAK	None
201.920000	22.49	12.18	-22.2	12.4	43.5	31.1	2.00	90	QUASI-PEAK	None
190.980000	16.84	17.40	-22.3	12.0	43.5	31.5	1.00	0	QUASI-PEAK	NF
975.440000	14.80	24.11	-17.2	21.7	54.0	32.3	2.00	0	QUASI-PEAK	NF
428.000000	17.58	16.58	-20.9	13.2	46.0	32.8	2.00	200	QUASI-PEAK	None
232.340000	21.68	11.59	-21.9	11.4	46.0	34.6	2.00	170	QUASI-PEAK	None
341.840000	15.70	14.90	-21.3	9.3	46.0	36.7	2.00	0	QUASI-PEAK	NF

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station 5.7GHz
Manufacturer: Cambium Networks
Operating Condition: 67 deg. F; 56% R.H.
Test Site: DLS O.F. Site 3
Operator: Jim O
Test Specification: 120V 60Hz POE
Comment: Continuous TX
Date: 06-05-2013

TEXT: "Vert 3 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20

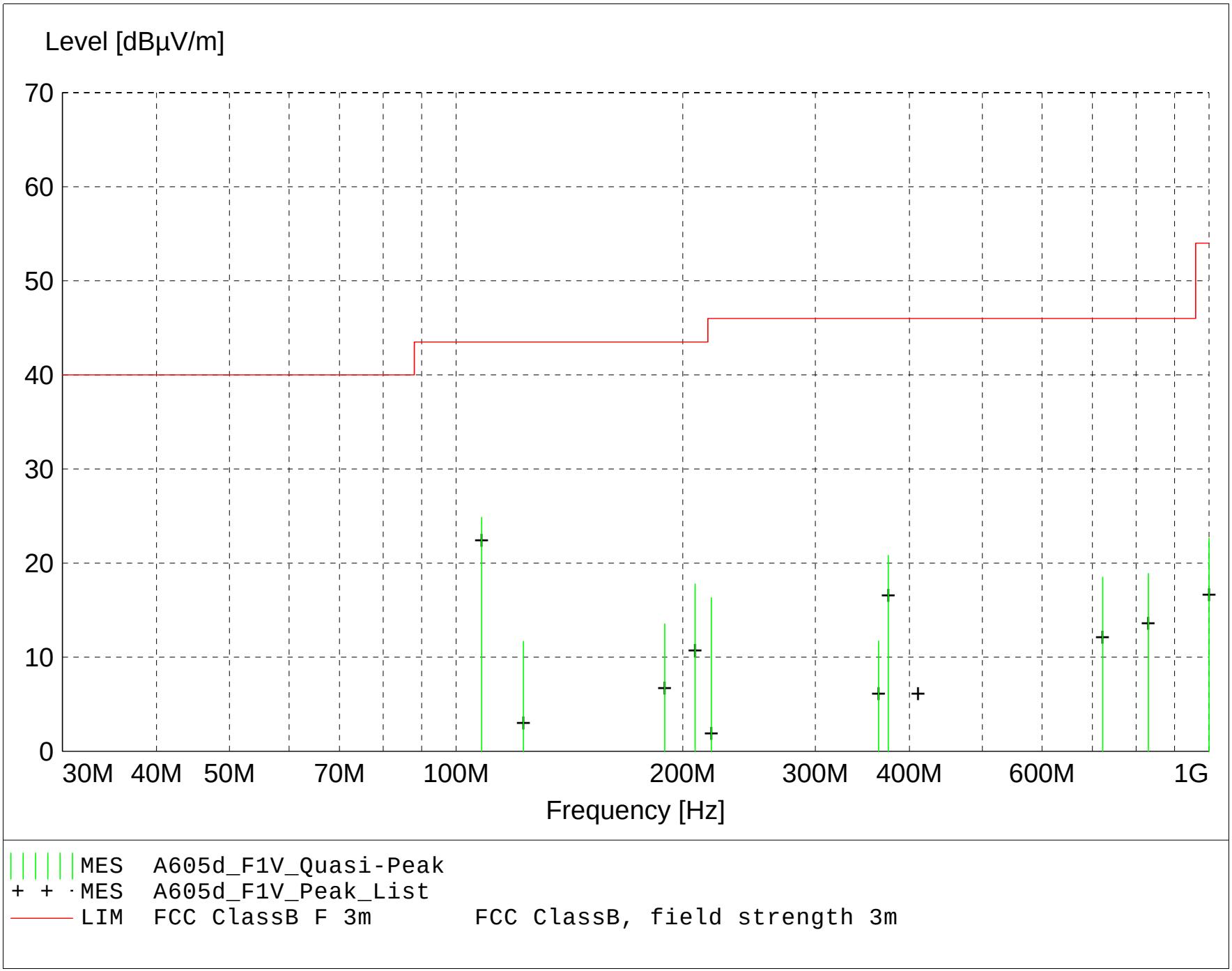
Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

Graph Markers: + Frequency marker (Level of marker not related to final level)

| Final maximized level using Quasi-Peak detector

X Final maximized level using Average dector

Final maximized level using Peak detector


Level [dBµV/m]
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60
50
40
30
20
10
0
30M
40M
50M
70M
100M
200M
300M
400M
600M
1G
Frequency [Hz]
MES A605d_F1V_Quasi-Peak
MES A605d_F1V_Peak_List
LIM FCC ClassB F 3m
FCC ClassB, field strength 3m

MEASUREMENT RESULT: "A605d_F1V_Final"

6/5/2013 10:23AM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
108.120000	35.87	12.09	-23.1	24.9	43.5	18.6	1.00	350	QUASI-PEAK	None
374.960000	26.69	15.30	-21.2	20.8	46.0	25.2	1.00	0	QUASI-PEAK	NF
207.740000	28.10	11.89	-22.2	17.8	43.5	25.7	1.00	0	QUASI-PEAK	NF
830.780000	15.56	22.32	-19.0	18.9	46.0	27.1	1.00	0	QUASI-PEAK	NF
722.300000	16.52	21.20	-19.2	18.5	46.0	27.5	1.00	0	QUASI-PEAK	NF
218.300000	26.79	11.53	-22.0	16.3	46.0	29.7	1.00	180	QUASI-PEAK	None
189.240000	18.38	17.42	-22.3	13.5	43.5	30.0	1.00	0	QUASI-PEAK	NF
999.980000	14.96	24.70	-17.0	22.7	54.0	31.3	1.00	0	QUASI-PEAK	NF
122.880000	21.58	13.01	-22.9	11.7	43.5	31.8	1.00	0	QUASI-PEAK	NF
364.040000	17.91	15.06	-21.2	11.7	46.0	34.3	1.00	0	QUASI-PEAK	NF

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station (5.7GHz OFDM)
Manufacturer: Cambium Networks
Operating Condition: 68 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Continuous TX : 20MHz BW
Comment: Low, Mid and High Channel
Date: 06-03-2013

TEXT: "Horz 3 meters"

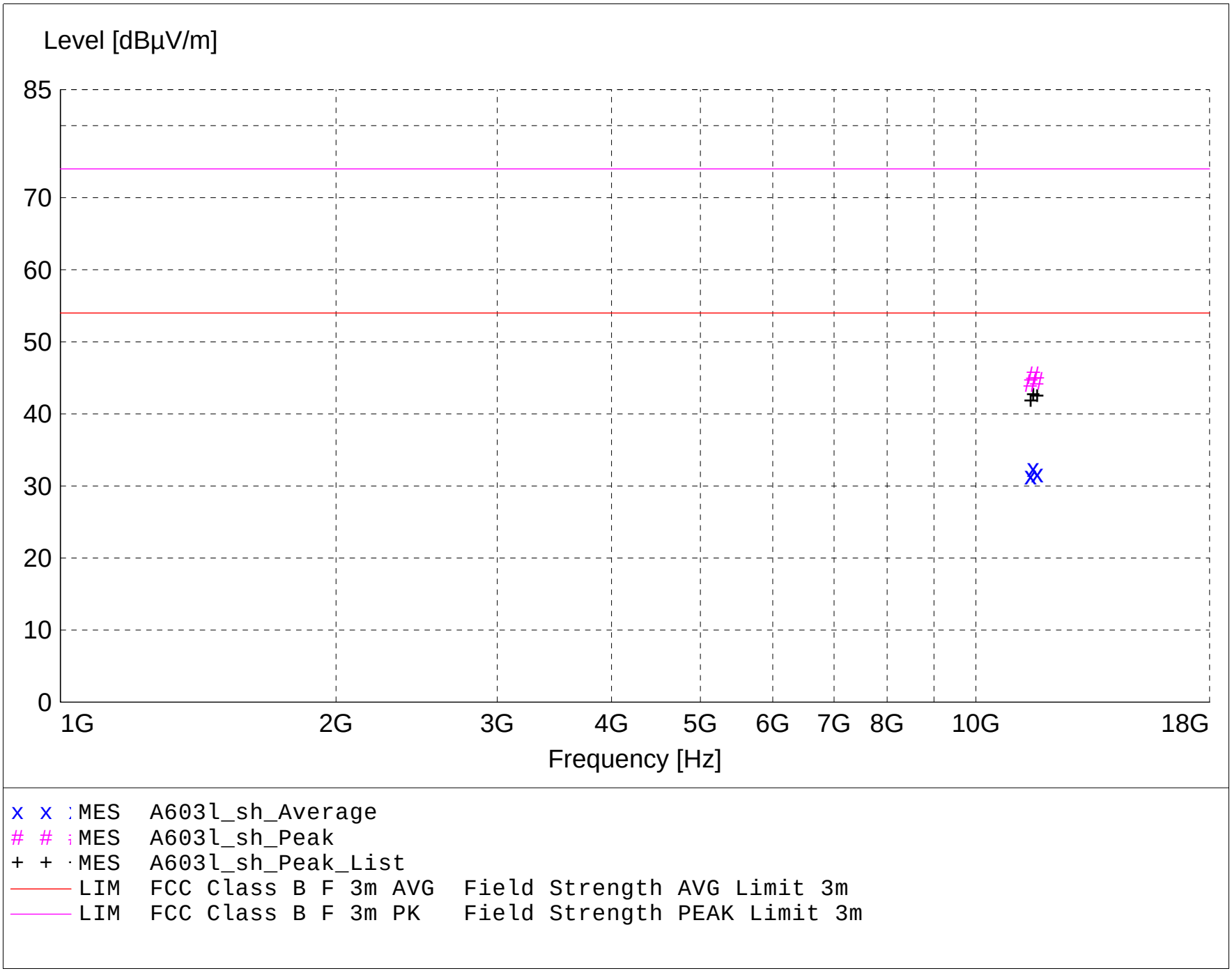
Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20

Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

Graph Markers:
+ Frequency marker (Level of marker not related to final level)
| Final maximized level using Quasi-Peak detector
X Final maximized level using Average dector
Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)

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+ + :MES  A603l_sh_Peak_List
———— LIM  FCC Class B F 3m AVG  Field Strength AVG Limit 3m
———— LIM  FCC Class B F 3m PK   Field Strength PEAK Limit 3m
```

MEASUREMENT RESULT: "A603l_sh_Final"

6/3/2013 2:28PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
11550.200000	47.10	38.78	-53.4	32.4	54.0	21.6	1.00	0	AVERAGE	20M MCH 2nd NF
11667.080000	46.34	38.91	-53.5	31.8	54.0	22.2	1.00	0	AVERAGE	20M HCH 2nd NF
11479.800000	46.45	38.67	-53.7	31.5	54.0	22.5	1.00	0	AVERAGE	20M LCH 2nd NF
11550.200000	59.96	38.78	-53.4	45.3	74.0	28.7	1.00	0	MAX PEAK	20M MCH 2nd NF
11667.080000	59.18	38.91	-53.5	44.6	74.0	29.4	1.00	0	MAX PEAK	20M HCH 2nd NF
11479.800000	59.31	38.67	-53.7	44.3	74.0	29.7	1.00	0	MAX PEAK	20M LCH 2nd NF

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station (5.7GHz OFDM)
Manufacturer: Cambium Networks
Operating Condition: 68 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Continuous TX : 20MHz BW
Comment: Low, Mid and High Channel
Date: 06-03-2013

TEXT: "Vert 3 meters"

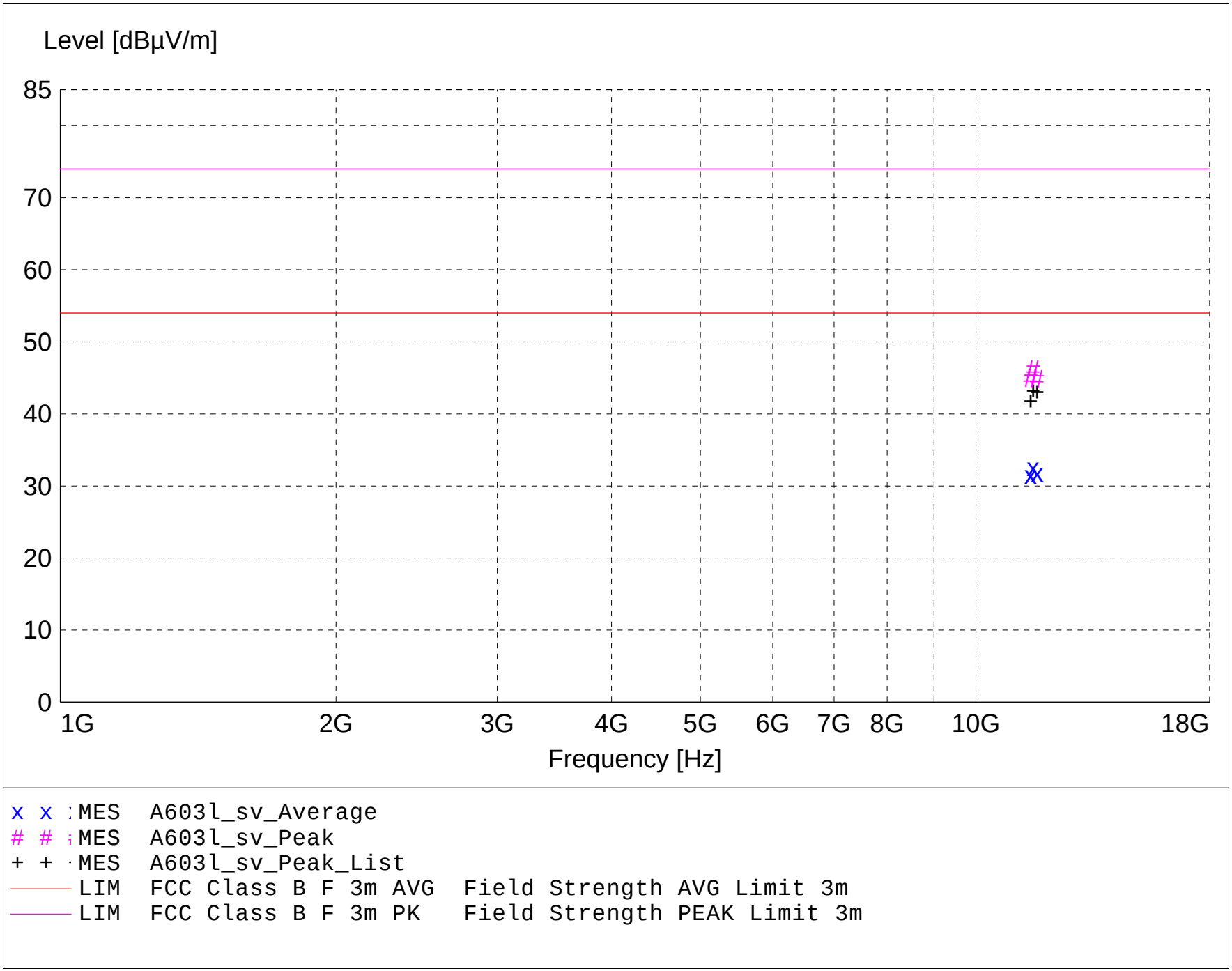
Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20

Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

Graph Markers:
+ Frequency marker (Level of marker not related to final level)
| Final maximized level using Quasi-Peak detector
X Final maximized level using Average dector
Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)



x x x MES A603l_sv_Average
MES A603l_sv_Peak
+ + + MES A603l_sv_Peak_List
——— LIM FCC Class B F 3m AVG Field Strength AVG Limit 3m
——— LIM FCC Class B F 3m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A603l_sv_Final"

6/3/2013 2:16PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
11550.000000	47.26	38.78	-53.4	32.6	54.0	21.4	1.00	0	AVERAGE	20MHz MCH 2nd
11666.700000	46.43	38.91	-53.5	31.9	54.0	22.1	1.00	0	AVERAGE	20M HCH 2nd NF
11479.280000	46.54	38.67	-53.7	31.5	54.0	22.5	1.70	0	AVERAGE	20MHz Lch 2nd
11550.000000	60.87	38.78	-53.4	46.2	74.0	27.8	1.00	0	MAX PEAK	20MHz MCH 2nd
11479.280000	59.96	38.67	-53.7	45.0	74.0	29.0	1.70	0	MAX PEAK	20MHz Lch 2nd
11666.700000	59.44	38.91	-53.5	44.9	74.0	29.1	1.00	0	MAX PEAK	20M HCH 2nd NF

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station (5.7GHz OFDM)
Manufacturer: Cambium Networks
Operating Condition: 68 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Continuous TX : 40MHz BW
Comment: Low, Mid and High Channel
Date: 06-03-2013

TEXT: "Horz 3 meters"

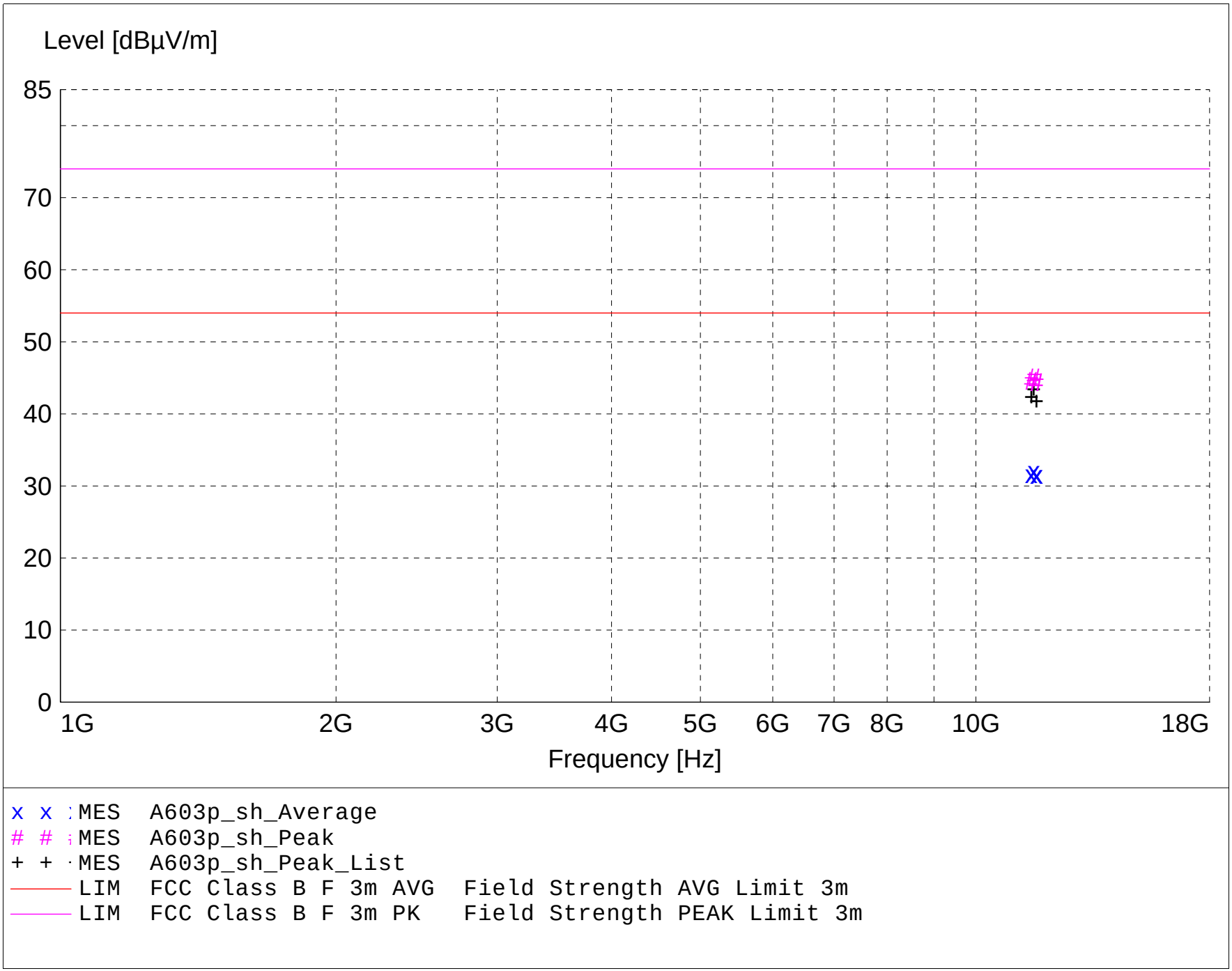
Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20

Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

Graph Markers:
+ Frequency marker (Level of marker not related to final level)
| Final maximized level using Quasi-Peak detector
X Final maximized level using Average dector
Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)



x x x MES A603p_sh_Average
MES A603p_sh_Peak
+ + + MES A603p_sh_Peak_List
——— LIM FCC Class B F 3m AVG Field Strength AVG Limit 3m
——— LIM FCC Class B F 3m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A603p_sh_Final"

6/3/2013 3:16PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
11570.140000	46.65	38.80	-53.3	32.1	54.0	21.9	1.00	0	AVERAGE	40M MCH 2nd NF
11500.080000	46.58	38.71	-53.7	31.6	54.0	22.4	1.00	0	AVERAGE	40M LCH 2nd NF
11649.590000	46.05	38.89	-53.4	31.5	54.0	22.5	1.00	0	AVERAGE	40M HCH 2nd NF
11649.590000	46.03	38.89	-53.4	31.5	54.0	22.5	1.00	0	AVERAGE	40M MCH 2nd NF
11570.140000	59.57	38.80	-53.3	45.0	74.0	29.0	1.00	0	MAX PEAK	40M MCH 2nd NF
11500.080000	59.57	38.71	-53.7	44.6	74.0	29.4	1.00	0	MAX PEAK	40M LCH 2nd NF
11649.590000	58.92	38.89	-53.4	44.4	74.0	29.6	1.00	0	MAX PEAK	40M HCH 2nd NF
11649.590000	58.92	38.89	-53.4	44.4	74.0	29.6	1.00	0	MAX PEAK	40M MCH 2nd NF

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station (5.7GHz OFDM)
Manufacturer: Cambium Networks
Operating Condition: 68 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Continuous TX : 40MHz BW
Comment: Low, Mid and High Channel
Date: 06-03-2013

TEXT: "Vert 3 meters"

Short Description: Test Set-up

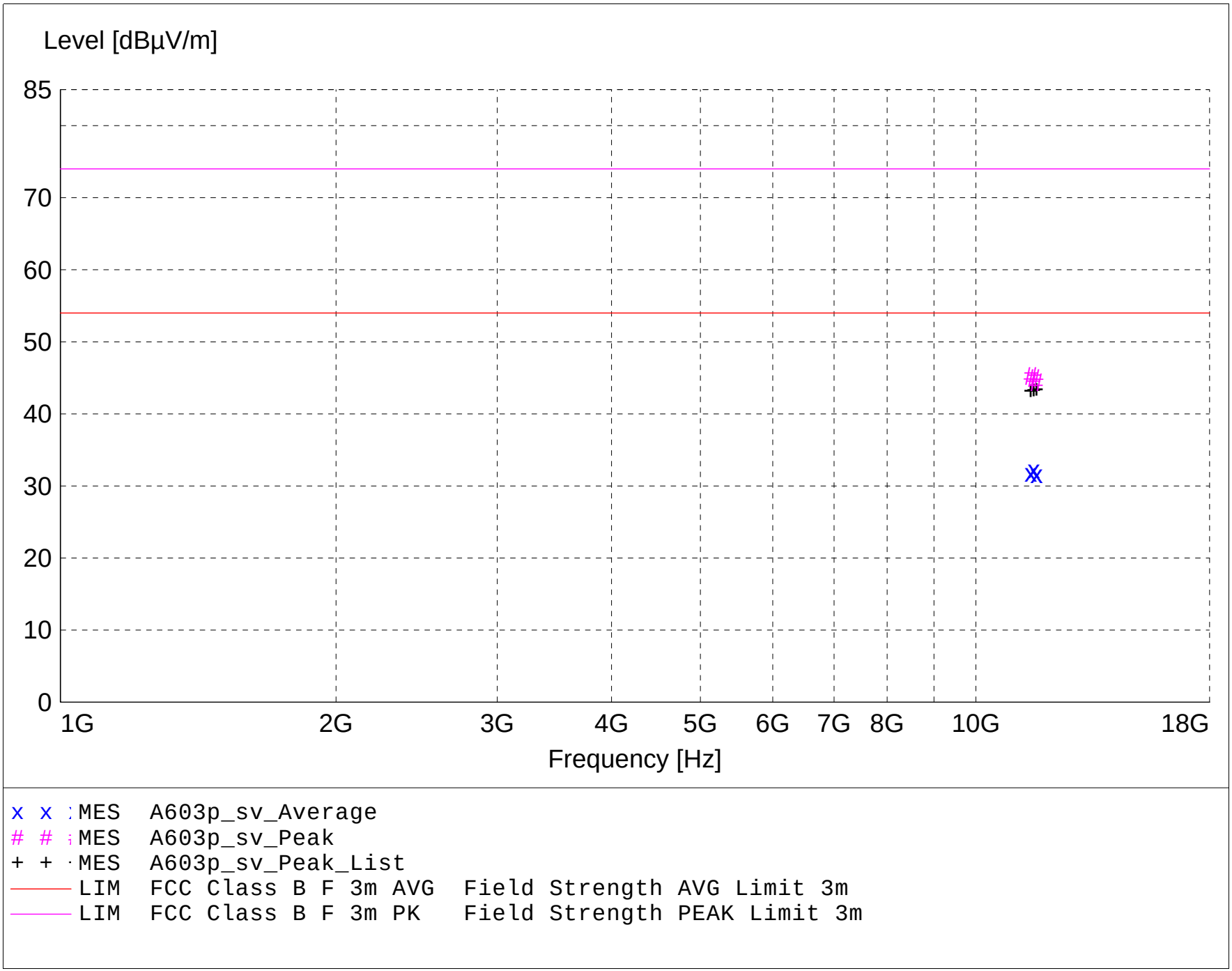
Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20

Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

Graph Markers:

+	Frequency marker (Level of marker not related to final level)
|	Final maximized level using Quasi-Peak detector
X	Final maximized level using Average dector
#	Final maximized level using Peak detector
-	Background Scan Peak Detector (Optional)
-	Background Scan Average Detector (Optional)



x x MES A603p_sv_Average
MES A603p_sv_Peak
+ + MES A603p_sv_Peak_List
——— LIM FCC Class B F 3m AVG Field Strength AVG Limit 3m
——— LIM FCC Class B F 3m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A603p_sv_Final"

6/3/2013 3:05PM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
11569.600000	46.86	38.80	-53.4	32.3	54.0	21.7	1.00	0	AVERAGE	40M MCH 2nd NF
11479.960000	46.80	38.67	-53.7	31.8	54.0	22.2	1.00	0	AVERAGE	40M LCH 2nd NF
11649.890000	46.12	38.89	-53.4	31.6	54.0	22.4	1.00	0	AVERAGE	None
11479.960000	60.22	38.67	-53.7	45.2	74.0	28.8	1.00	0	MAX PEAK	40M LCH 2nd NF
11569.600000	59.57	38.80	-53.4	45.0	74.0	29.0	1.00	0	MAX PEAK	40M MCH 2nd NF
11649.890000	58.92	38.89	-53.4	44.4	74.0	29.6	1.00	0	MAX PEAK	40M HCH 2nd NF

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station: 5.7GHz: OFDM
Manufacturer: Cambium Networks
Operating Condition: 75 deg F; 46% R.H.
Test Site: DLS Site G1
Operator: Jim O
Test Specification: 20 & 40MHz Bandwidths
Comment:
Date: 6-04-2013

TEXT: "Horz 1 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 1 Meters with HORIZONTAL Antenna Polarization

Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)

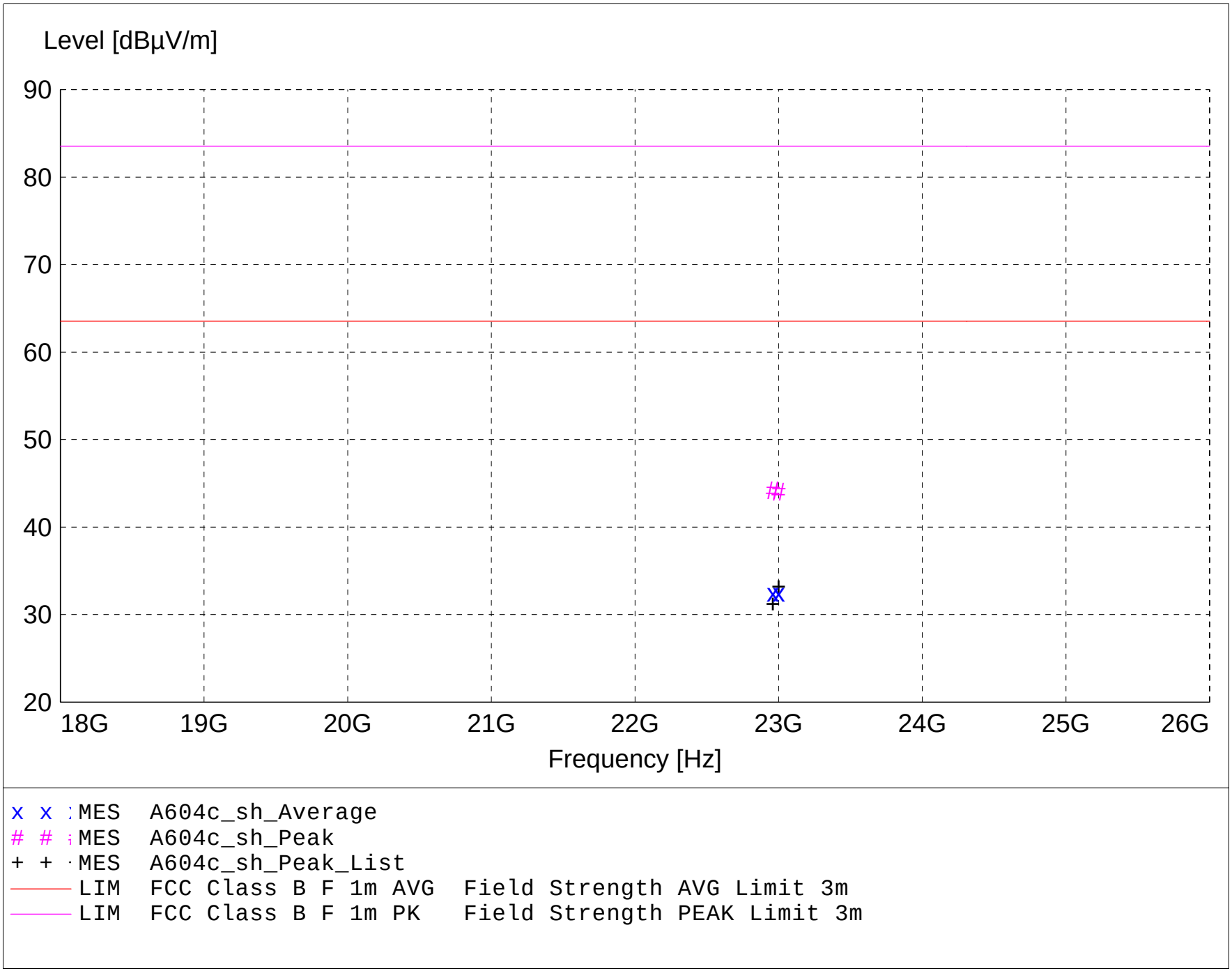
Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)

Graph Markers: + Frequency marker (Level of marker not related to final level)

| Final maximized level using Quasi-Peak detector

X Final maximized level using Average dector

Final maximized level using Peak detector


Level [dBµV/m]
90
80
70
60
50
40
30
20
18G
19G
20G
21G
22G
23G
24G
25G
26G
Frequency [Hz]
x x x MES A604c_sh_Average
MES A604c_sh_Peak
+ + + MES A604c_sh_Peak_List
LIM FCC Class B F 1m AVG Field Strength AVG Limit 3m
LIM FCC Class B F 1m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A604c_sh_Final"

6/4/2013 10:58AM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
22960.200000	31.30	46.79	-45.6	32.5	63.5	31.0	1.00	0	AVERAGE	20M LO CH 4th N
23000.200000	31.16	46.81	-45.5	32.5	63.5	31.1	1.00	0	AVERAGE	40M LO CH 4th N
22960.200000	43.03	46.79	-45.6	44.2	83.5	39.3	1.00	0	MAX PEAK	20M LO CH 4th N
23000.200000	42.75	46.81	-45.5	44.1	83.5	39.5	1.00	0	MAX PEAK	40M LO CH 4th N

FCC Part 15 Class B

Electric Field Strength

EUT: Avenger Station: 5.7GHz: OFDM
Manufacturer: Cambium Networks
Operating Condition: 75 deg F; 46% R.H.
Test Site: DLS Site G1
Operator: Jim O
Test Specification: 20 & 40MHz Bandwidths
Comment:
Date: 6-04-2013

TEXT: "Vert 1 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 1 Meters with VERTICAL Antenna Polarization

Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)

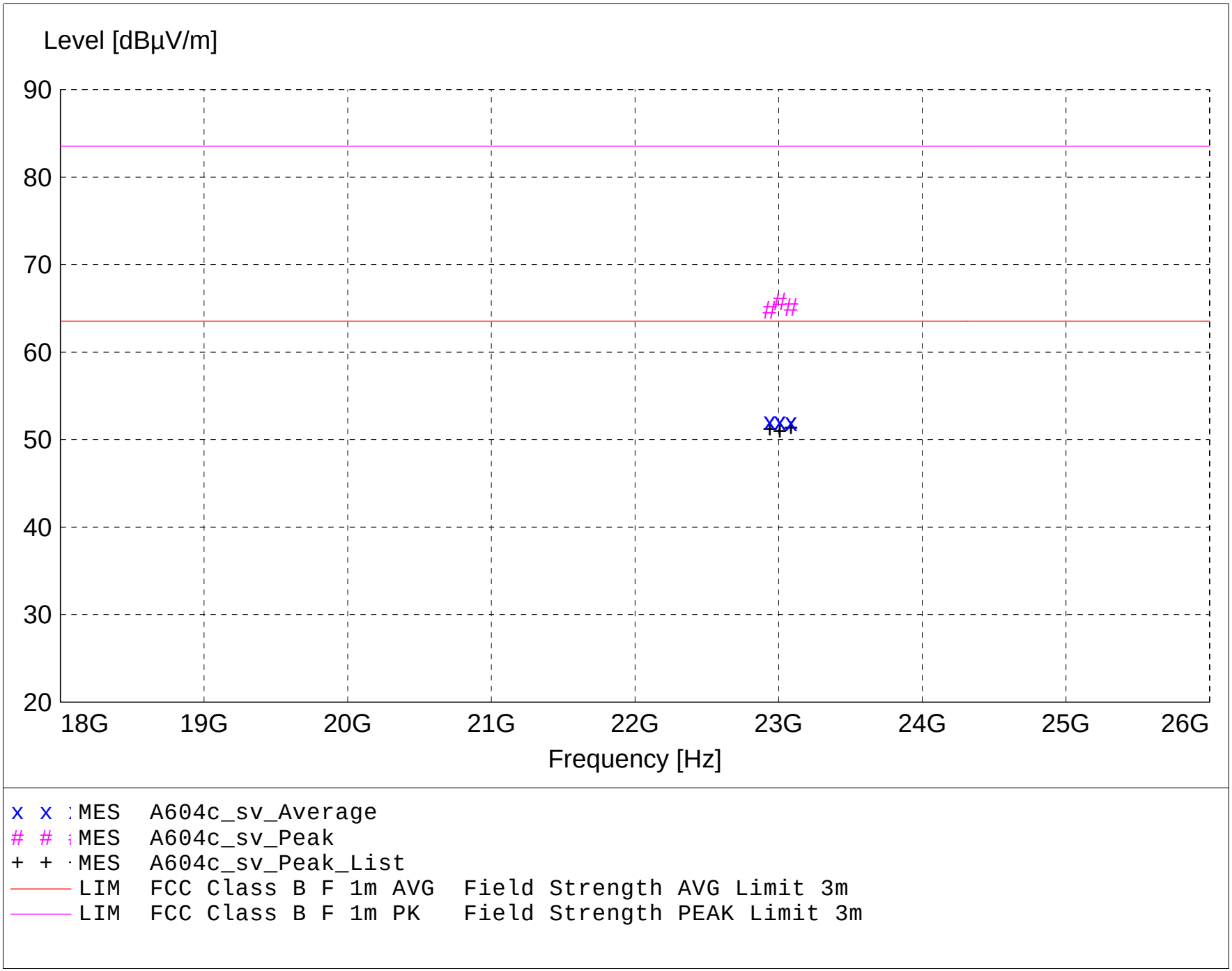
Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)

Graph Markers: + Frequency marker (Level of marker not related to final level)

| Final maximized level using Quasi-Peak detector

X Final maximized level using Average dector

Final maximized level using Peak detector



x x x MES A604c_sv_Average
MES A604c_sv_Peak
+ + + MES A604c_sv_Peak_List
——— LIM FCC Class B F 1m AVG Field Strength AVG Limit 3m
——— LIM FCC Class B F 1m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A604c_sv_Final"

6/4/2013 10:39AM

Frequency	Level	Antenna Factor	System Loss	Total Level	Limit	Margin	Height Ant.	EuT Angle	Final Detector	Comment
MHz	dBµV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
22938.400000	50.96	46.78	-45.6	52.1	63.5	11.4	1.00	0	AVERAGE	20M LO ch 4th N
23008.800000	50.76	46.82	-45.5	52.1	63.5	11.5	1.00	0	AVERAGE	40M LO ch 4th N
23086.600000	50.80	46.85	-45.6	52.0	63.5	11.5	1.00	0	AVERAGE	20M Mid ch 4th
23008.800000	64.47	46.82	-45.5	65.8	83.5	17.8	1.00	0	MAX PEAK	40M LO ch 4th N
23086.600000	63.94	46.85	-45.6	65.2	83.5	18.4	1.00	0	MAX PEAK	20M Mid ch 4th
22938.400000	63.67	46.78	-45.6	64.8	83.5	18.7	1.00	0	MAX PEAK	20M LO ch 4th N