



166 South Carter, Genoa City, WI 53128

Company: Cambium Networks
Model Tested: Canopy 5700 with Omni antenna
Report Number: 18338

Code of Federal Regulations 47 Part 15 – Radio Frequency Devices
Subpart C – Intentional Radiators
Section 15.247
Operation within the bands 902 - 928 MHz,
2400 - 2483.5 MHz, 5725 - 5875 MHz,
and 24.0 - 24.25 GHz.

Class II Permissive Change

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name: Canopy 5700 with Omni antenna
Kind of Equipment: Wireless Digital 5.7 GHz FSK xcvr connectorized with Omni antenna
Frequency Range: 5735 to 5840 MHz
Test Configuration: Stand-alone
Model Number(s): 5700AP, 5700SMC, 5701SMC, 5750SMC, 5751SMC, 5700APC, 5700APCUS, 5701APC, 5701APCUS, 5750APC, 5750APCUS, 5751APC, 5751APCUS, 5760APC, 5760APCUS, 5761APC, 5761APCUS
Model(s) Tested: 5700APCUS
Serial Number(s): 0A003EDD9F91
Date of Tests: 9/24 to 9/27/2012
Test Conducted For: Cambium Networks
3800 Golf Road, Suite 360
Rolling Meadows, IL 60008, USA

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

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Canopy 5700 with Omni antenna
18338

SIGNATURE PAGE

Tested By:

A handwritten signature in black ink that reads "Craig Brandt". The signature is written in a cursive style with a long horizontal stroke at the end.

Craig Brandt
Test Engineer

Reviewed By:

A handwritten signature in black ink that reads "William Stumpf". The signature is written in a cursive style with a long horizontal stroke at the end.

William Stumpf
OATS Manager

Approved By:

A handwritten signature in black ink that reads "Brian J. Mattson". The signature is written in a cursive style with a long horizontal stroke at the end.

Brian Mattson
General Manager



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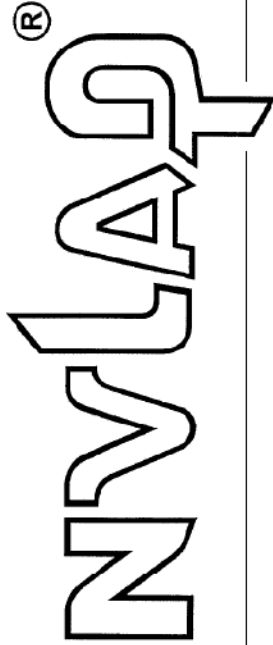


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United States Department of Commerce
National Institute of Standards and Technology



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 Communiqué dated January 2009).*



Dolly S. Buser
For the National Institute of Standards and Technology

2011-10-01 through 2012-09-30

Effective dates

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



Company:
 Model Tested:
 Report Number:

Cambium Networks
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 18338

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1.0 Summary of Test Report

It was determined that the Cambium Networks Canopy 5700 with Omni antenna, Model 5700APCUS, complies with the requirements of CFR 47 Part 15 Subpart C Section 15.247 for a Class II Permissive Change for FCC ID: Z8H89FC5804.

Applicable Technical Requirements Tested:

| Section | Description | Procedure | Note | Compliant? |
|------------|---|---|------|------------|
| 15.247 (d) | Unwanted Emissions into Restricted Frequency Bands - Radiated | FCC KDB 558074 D01 DTS Meas Guidance v01/ ANSI C63.10-2009 Sections 6.5 & 6.6 | 1 | Yes |

Note 1: Radiated emission measurement.

2.0 Introduction

From September 24th to 27th, 2012 the Canopy 5700 with Omni antenna, Model 5700APCUS, as provided from Cambium Networks, was tested to the requirements of CFR 47 Part 15 Subpart C Section 15.247 for an FCC Class II Permissive Change for FCC ID: Z8H89FC5804. To meet these requirements, the procedures contained within this report were performed by personnel of D.L.S. Electronic Systems, Inc.

3.0 Test Facilities

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety 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.

Wisconsin Test Facility:

D.L.S. Electronic Systems, Inc.
 166 S. Carter Street
 Genoa City, Wisconsin 53128

Wheeling Test Facility:

D.L.S. Electronic Systems, Inc.
 1250 Peterson Drive
 Wheeling, IL 60090



Company:
Model Tested:
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Canopy 5700 with Omni antenna
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4.0 Description of Test Sample

Description:

The Canopy 5700 Super Advanced Logic Wireless Digital FSK Radio is designed for use in the 5.8 GHz Band (5735 MHz - 5840 MHz) with 6 separate 20 MHz channels. The radio works in conjunction with a 24 VDC power supply. It has an adjustable output power based on the gain of the antenna that is connected to it. Canopy is a point to multi-point wireless Ethernet distribution system. The back hauls (BH) are point to point links used for connecting multi-point access points to wired Ethernet feeds (Internet Service Providers points of presence, ISP POP). An external 10.5 dBi OMNI antenna is being added in this Class II Permissive Change for FCC ID: Z8H89FC5804.

Type of Equipment / Frequency Range:

Stand-Alone / 5735 to 5840 MHz

Physical Dimensions of Equipment Under Test:

Length: 2.75 in. Width: 8 in. Height: 0.6 in.

Power Source:

29 VDC (Power Over Ethernet to Radio)

Internal Frequencies:

150 kHz, 132 kHz (Switching Power Supply Frequency)
160 MHz, 125 MHz, 80 MHz, 62.5 MHz, 40 MHz, 25 MHz, 20 MHz (Clock Frequencies)

Transmit Frequencies Used For Test Purpose:

Low channel: 5735 MHz
Middle channel: 5800 MHz,
High channel: 5840 MHz

Type of Modulations:

2-Level & 4-Level

Description of Circuit Board(s), Antennas / Part Number:

| | |
|----------------------------|--------------------------|
| Radio DUSAL 5.7 GHz | 8415114A02 Issue B |
| Wireless Edge Omni Antenna | MT-482015/N/A, SN: 03202 |



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5.0 Test Equipment

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

D.L.S. Wisconsin

| Description | Manufacturer | Model Number | Serial Number | Frequency Range | Cal Dates | Cal Due Dates |
|---------------------------------|-------------------|--------------------------|---------------|------------------|-----------|---------------|
| 30 – 1000 MHz | | | | | | |
| Receiver | Rohde & Schwarz | ESI 26 | 837491/010 | 20 Hz – 26 GHz | 1-11-12 | 1-11-13 |
| Preamplifier | Rohde & Schwarz | TS-PR10 | 032001/005 | 9 kHz – 1 GHz | 1-11-12 | 1-11-13 |
| 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 |
| Low Pass Filter | Mini-Circuits | VLFX-1125 | MUU9260 | DC – 1 GHz | 8-13-12 | 8-13-13 |
| Additional for 1-18 GHz | | | | | | |
| Preamp | Ciao | CA118-4010 | 101 | 1GHz-18GHz | 2-27-12 | 2-27-13 |
| Horn Antenna | EMCO | 3115 | 6204 | 1-18GHz | 6-16-11 | 6-16-13 |
| High Pass Filter | Planar Filter Co. | HP8G-7Q8-CD-SFF | PF1225/0728 | 7.5 – 18GHz | 8-13-12 | 8-13-13 |
| Additional for 18-26 GHz | | | | | | |
| Preamp | Miteq | AMF-8B-180265-40-10P-H/S | 438727 | 18GHz-26GHz | 8-13-12 | 8-13-13 |
| Horn Antenna | ETS-Lindgren | 3116 | 62917 | 18 – 40GHz | 10-4-11 | 10-4-13 |
| High Pass Filter | Planar Filter Co. | CL22600-9000-CD-SS | PF1230/0728 | 18 - 40GHz | 8-13-12 | 8-13-13 |
| Additional for 26-40 GHz | | | | | | |
| Preamp | Rohde & Schwarz | TS-PR40 | 052002/025 | 26GHz-40GHz | 5-23-12 | 5-23-13 |



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6.0 Test Arrangements

Radiated Emissions Measurement Arrangement:

All radiated emission measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to ANSI C63.10-2009, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for additional photos of the test set up.

Unless otherwise noted, the bandwidth of the measuring receiver / analyzer used during testing is shown below.

| Frequency Range | Bandwidth (-6 dB) |
|-------------------|-------------------|
| 10 to 150 kHz | 200 Hz |
| 150 kHz to 30 MHz | 9 kHz |
| 30 MHz to 1 GHz | 120 kHz |
| Above 1 GHz | 1 MHz |

7.0 Test Conditions

Normal Test Conditions:

Temperature and Humidity:

71°F at 38% RH

Supply Voltage:

29 VDC (Power Over Ethernet to Radio)

8.0 Modifications Made To EUT for Compliance

No modifications made at time of test.

9.0 Additional Descriptions

Tested in continuous transmit mode. Tested with both 2 and 4 level modulation. Tested at the highest output power setting (FC).



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10.0 Results

Measurements were performed in accordance with ANSI C63.10-2009. Graphical and tabular data can be found in Appendix B at the end of this report.

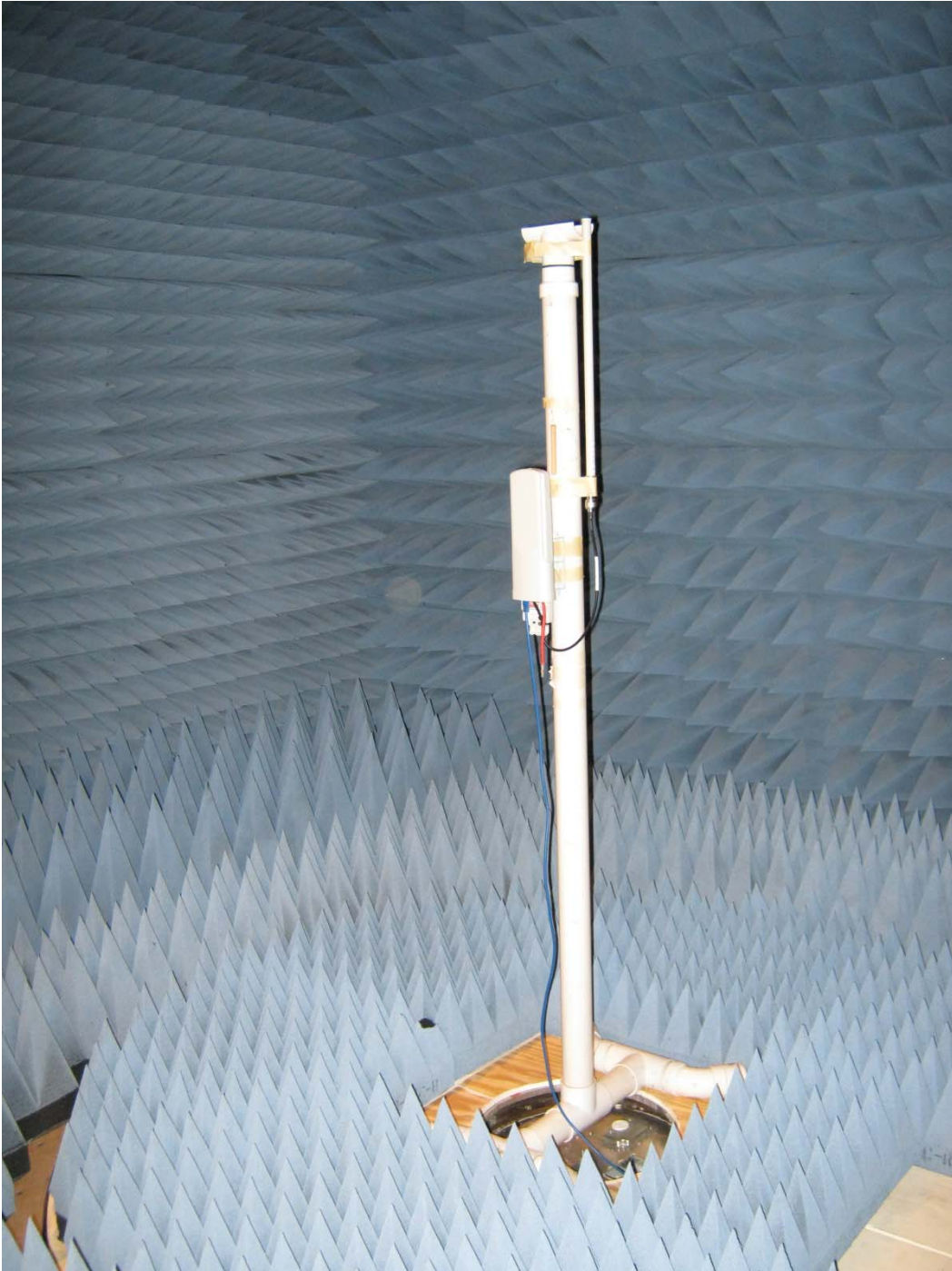
11.0 Conclusion

The Canopy 5700 with Omni antenna, Model 5700APCUS, as provided from Cambium Networks tested from September 24th to September 27th, 2012 **meets** the requirements of CFR 47 Part 15 Subpart C Section 15.247 for an FCC Class II Permissive Change for FCC ID: Z8H89FC5804.

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Appendix A

Radiated Emissions above 1 GHz





Company:
Model Tested:
Report Number:

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Appendix B – Measurement Data

A1.0 Maximum Unwanted Emission Levels into Restricted Frequency Bands – Radiated

Rule Section: Section 15.247(d)

Test Procedure: FCC KDB 558074 D01 DTS Meas Guidance v01 – *Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247*

Section 5.4.2 – Unwanted Emissions into Restricted Frequency Bands

ANSI C63.10:2009 – Sections 6.5 and 6.6

Description: This test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205.

Measurements were taken for 2-level and 4-level modulation types, and at the lowest, middle, and highest channels of operation. EUT was set to transmit continuously with 98% duty cycle at maximum output power setting (FC).

Limit: FCC Part 15.209

Results: Passed

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 70 deg. F; 34% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig B
Test Specification: Transmitter Spurious Emissions
Comment: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Date: 09-27-2012

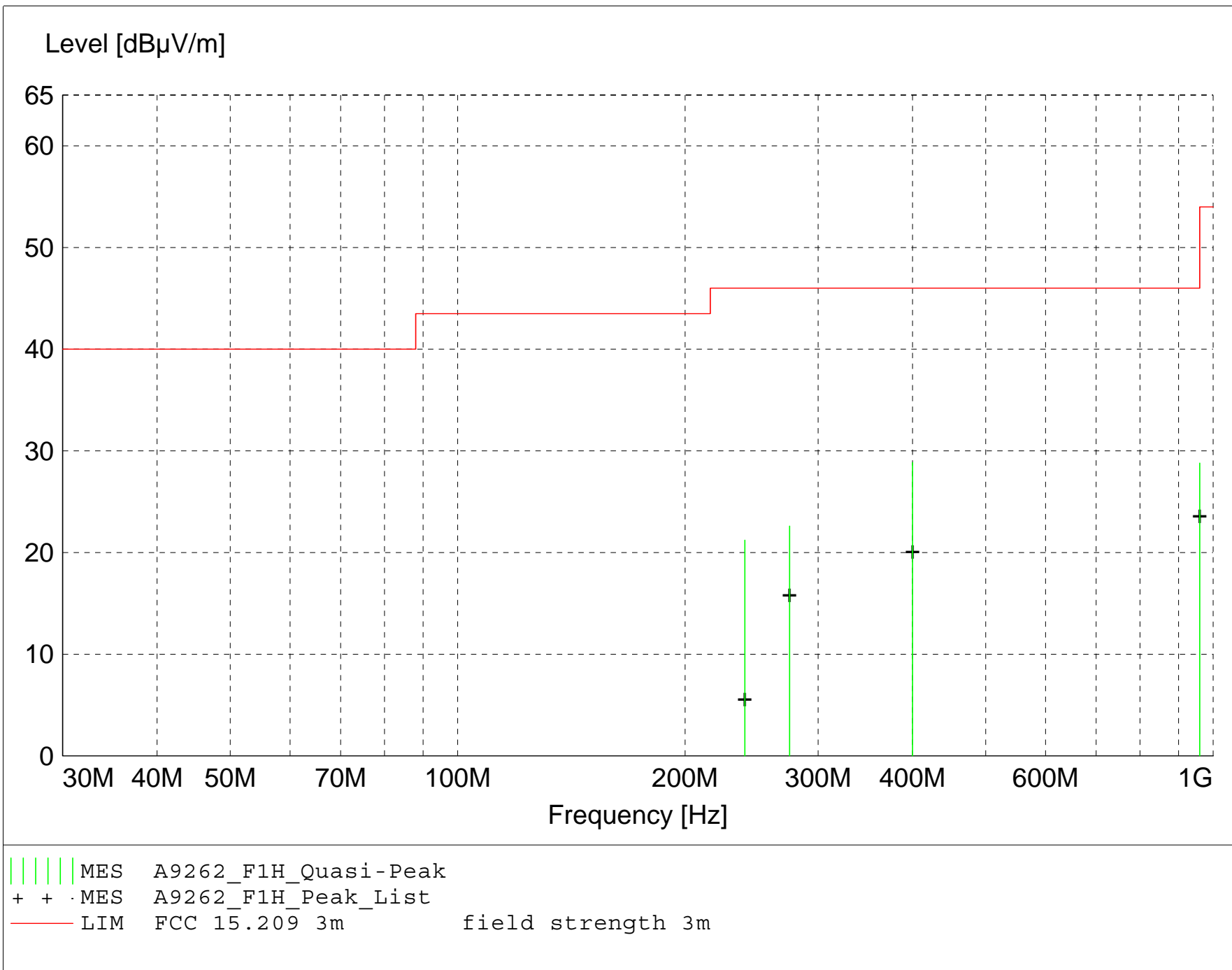
TEXT: "Horz 3 meters"

Short Description: Test Set-up

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

Equations: $\text{Total Level (dB}\mu\text{V/m)} = \text{Level (dB}\mu\text{V)} + \text{System Loss (dB)} + \text{Antenna Factor (dB}\mu\text{V/m)}$
 $\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$

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 detector
Final maximized level using Peak detector



MEASUREMENT RESULT: "A9262_F1H_Final"

9/27/2012 9:27AM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|------------|------------|--------------|--------|--------------|--------------|--------|--------|-------|------------|---------|
| MHz | dB μ V | Factor | Loss | Level | dB μ V/m | dB | Ant. | Angle | Detector | |
| | | dB μ V/m | dB | dB μ V/m | | | m | deg | | |
| 400.000000 | 33.48 | 16.10 | -20.7 | 28.9 | 46.0 | 17.1 | 2.00 | 240 | QUASI-PEAK | None |
| 960.000000 | 21.30 | 23.90 | -16.4 | 28.8 | 46.0 | 17.2 | 1.00 | 180 | QUASI-PEAK | None |
| 275.000000 | 30.66 | 13.40 | -21.5 | 22.6 | 46.0 | 23.4 | 1.00 | 260 | QUASI-PEAK | None |
| 240.000000 | 30.91 | 12.00 | -21.7 | 21.2 | 46.0 | 24.8 | 1.00 | 45 | QUASI-PEAK | None |

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 70 deg. F; 34% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig B
Test Specification: Transmitter Spurious Emissions
Comment: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Date: 09-27-2012

TEXT: "Vert 3 meters"

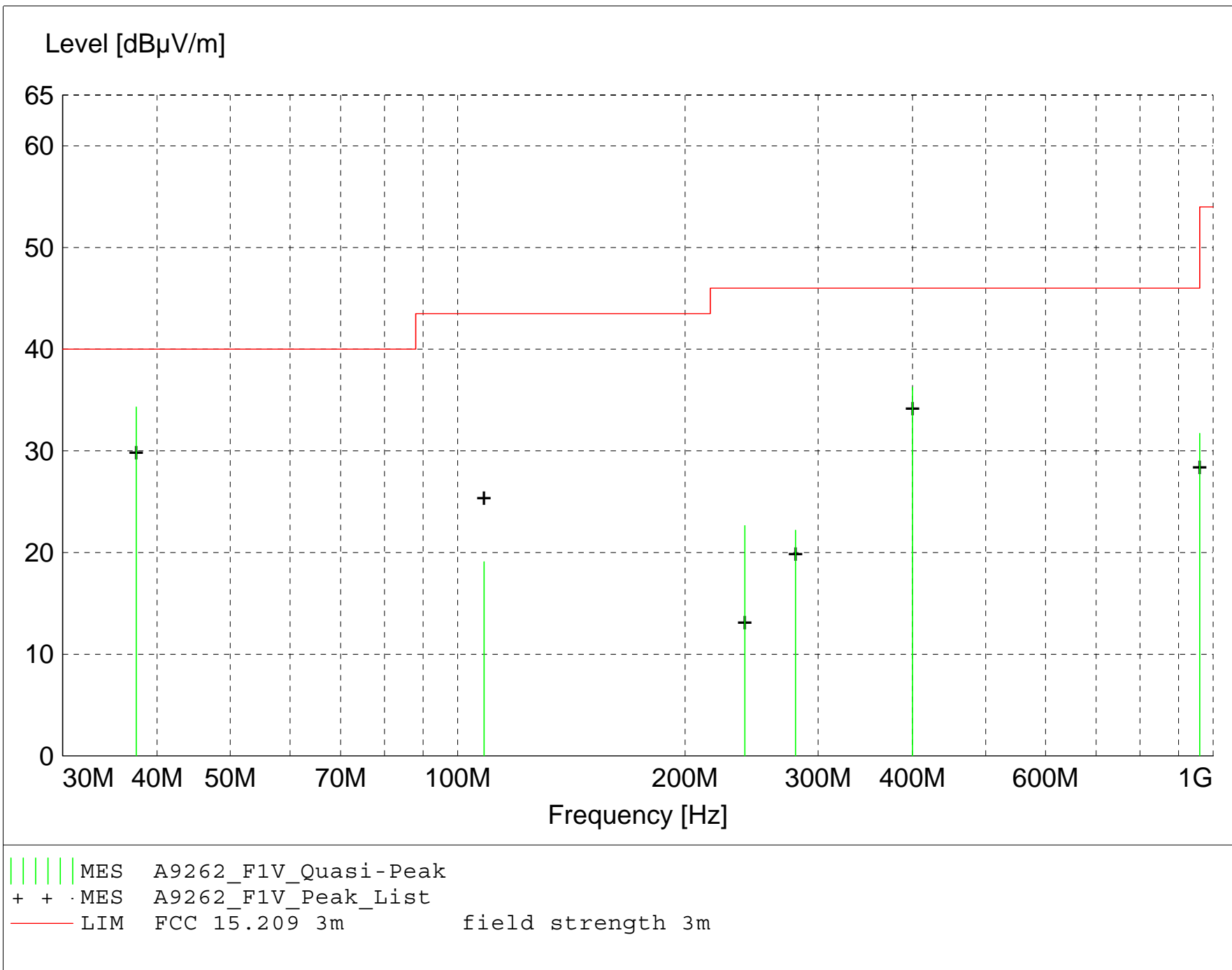
Short Description: Test Set-up

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 detector
Final maximized level using Peak detector



MEASUREMENT RESULT: "A9262_F1V_Final"

9/27/2012 9:31AM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|------------|------------|--------------|--------|--------------|--------------|--------|--------|-------|------------|---------|
| MHz | dB μ V | Factor | Loss | Level | dB μ V/m | dB | Ant. | Angle | Detector | |
| | | dB μ V/m | dB | dB μ V/m | | | m | deg | | |
| 37.540000 | 46.65 | 11.85 | -24.2 | 34.3 | 40.0 | 5.7 | 1.00 | 0 | QUASI-PEAK | None |
| 400.000000 | 40.87 | 16.10 | -20.7 | 36.3 | 46.0 | 9.7 | 1.10 | 260 | QUASI-PEAK | None |
| 960.000000 | 24.21 | 23.90 | -16.4 | 31.7 | 46.0 | 14.3 | 1.00 | 225 | QUASI-PEAK | None |
| 240.000000 | 32.33 | 12.00 | -21.7 | 22.6 | 46.0 | 23.4 | 2.10 | 350 | QUASI-PEAK | None |
| 280.000000 | 29.94 | 13.60 | -21.3 | 22.2 | 46.0 | 23.8 | 1.20 | 180 | QUASI-PEAK | None |
| 108.355000 | 30.07 | 12.06 | -23.0 | 19.1 | 43.5 | 24.4 | 1.00 | 250 | QUASI-PEAK | None |

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 72 deg C 34% R.H.
Test Site: DLS O.F. G1
Operator: Craig B
Test Specification: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Comment: Date: 09-24-2012

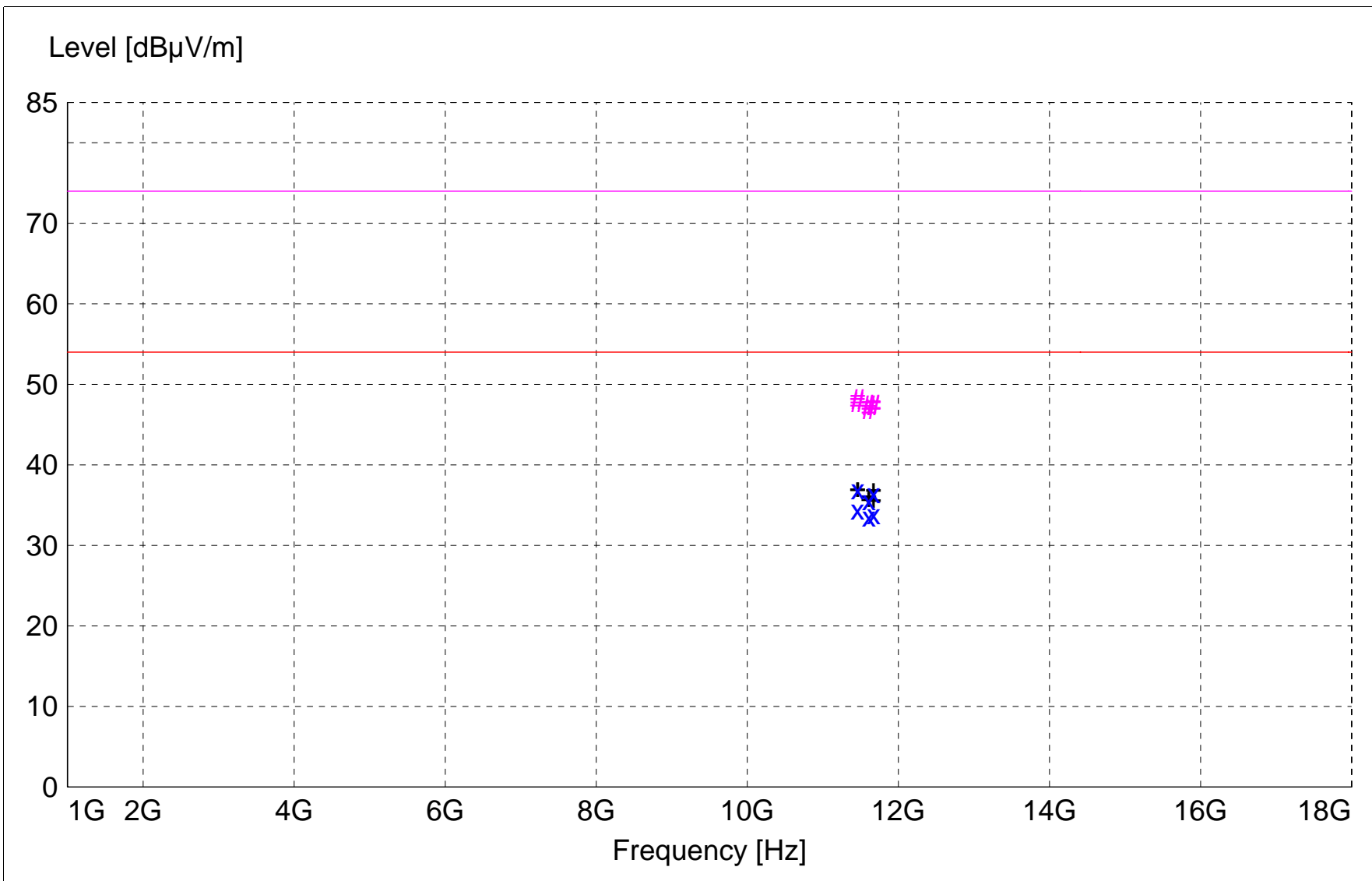
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Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

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 detector
Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)



```

x x xMES  A9242_sh_Average
# # #MES  A9242_sh_Peak
+ + +MES  A9242_sh_Peak_List
— LIM  FCC 15.209 3m AVG  Field Strength AVG Limit 3m
— LIM  FCC 15.209 3m PK  Field Strength PEAK Limit 3m

```

MEASUREMENT RESULT: "A9242_sh_Final"

9/24/2012 3:13PM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|--------------|-------|---------|--------|--------|--------|--------|--------|-------|----------|----------------|
| MHz | dBμV | Factor | Loss | Level | dBμV/m | dB | Ant. | Angle | Detector | |
| | | dBμV/m | dB | dBμV/m | dBμV/m | | m | deg | | |
| 11460.360000 | 39.54 | 39.00 | -41.7 | 36.9 | 54.0 | 17.1 | 1.00 | 329 | AVERAGE | Low ch; 2-lvl |
| 11670.220000 | 39.44 | 39.05 | -42.1 | 36.4 | 54.0 | 17.6 | 1.66 | 341 | AVERAGE | High ch; 2-lvl |
| 11610.100000 | 38.41 | 39.05 | -41.9 | 35.5 | 54.0 | 18.5 | 1.00 | 335 | AVERAGE | Mid ch; 2-lvl |
| 11460.240000 | 37.11 | 39.00 | -41.7 | 34.5 | 54.0 | 19.5 | 1.00 | 329 | AVERAGE | Low ch; 4-lvl |
| 11670.600000 | 36.85 | 39.05 | -42.1 | 33.8 | 54.0 | 20.2 | 1.66 | 341 | AVERAGE | High ch; 4-lvl |
| 11610.060000 | 36.37 | 39.05 | -41.9 | 33.5 | 54.0 | 20.5 | 1.00 | 335 | AVERAGE | Mid ch; 4-lvl |
| 11460.360000 | 50.78 | 39.00 | -41.7 | 48.1 | 74.0 | 25.9 | 1.00 | 329 | MAX PEAK | Low ch; 2-lvl |
| 11460.240000 | 50.39 | 39.00 | -41.7 | 47.7 | 74.0 | 26.3 | 1.00 | 329 | MAX PEAK | Low ch; 4-lvl |
| 11670.220000 | 50.52 | 39.05 | -42.1 | 47.5 | 74.0 | 26.5 | 1.66 | 341 | MAX PEAK | High ch; 2-lvl |
| 11610.100000 | 50.26 | 39.05 | -41.9 | 47.4 | 74.0 | 26.6 | 1.00 | 335 | MAX PEAK | Mid ch; 2-lvl |
| 11670.600000 | 50.39 | 39.05 | -42.1 | 47.4 | 74.0 | 26.6 | 1.66 | 341 | MAX PEAK | High ch; 4-lvl |
| 11610.060000 | 49.73 | 39.05 | -41.9 | 46.9 | 74.0 | 27.1 | 1.00 | 335 | MAX PEAK | Mid ch; 4-lvl |

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 72 deg C 34% R.H.
Test Site: DLS O.F. G1
Operator: Craig B
Test Specification: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Comment: Date: 09-24-2012

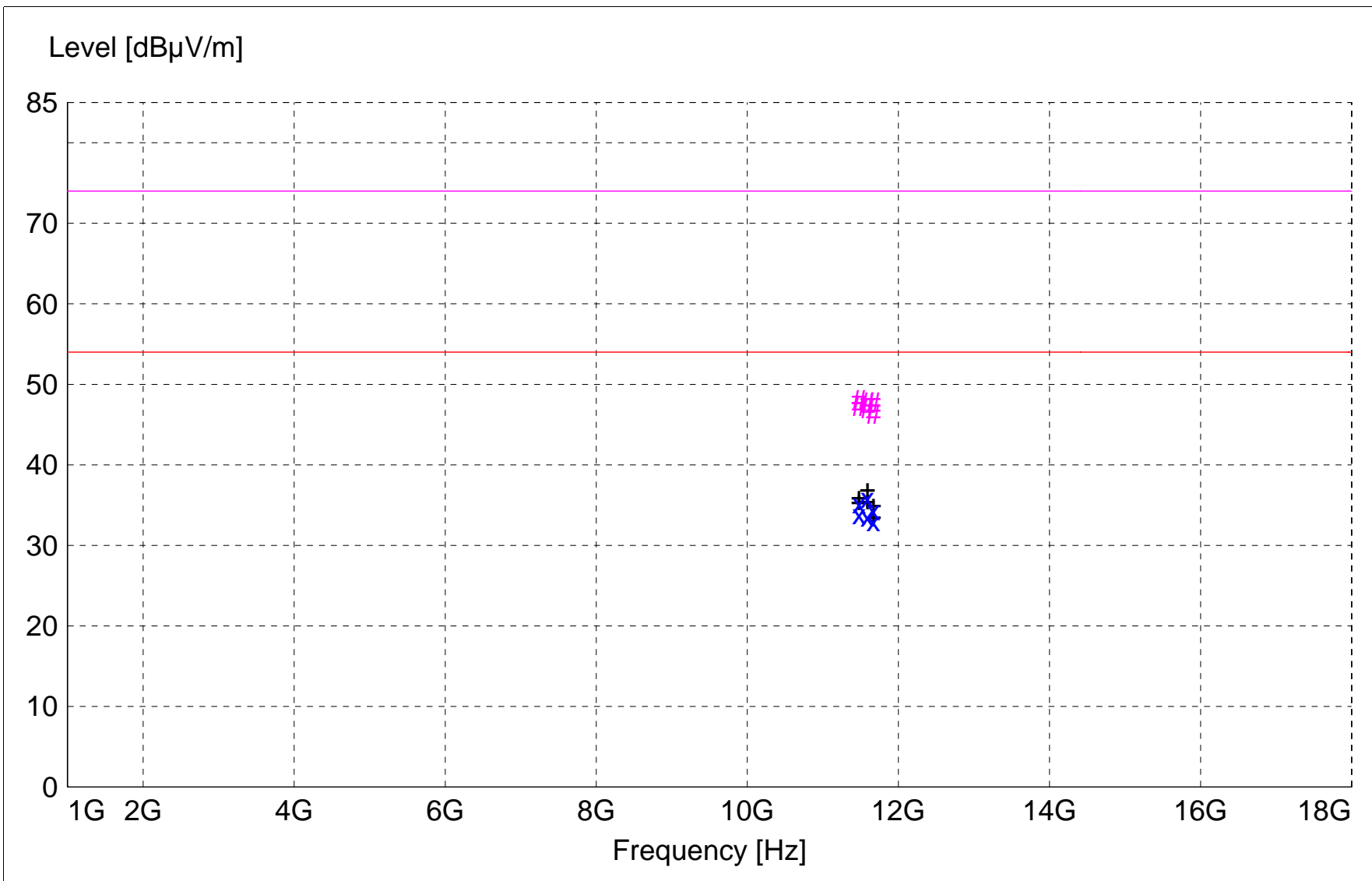
TEXT: "Vert 3 meters"

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 detector
Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)



```

x x xMES A9242_sv_Average
# # #MES A9242_sv_Peak
+ + +MES A9242_sv_Peak_List
— LIM FCC 15.209 3m AVG Field Strength AVG Limit 3m
— LIM FCC 15.209 3m PK Field Strength PEAK Limit 3m

```

MEASUREMENT RESULT: "A9242_sv_Final"

9/24/2012 3:21PM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|--------------|-------|---------|--------|--------|--------|--------|--------|-------|----------|----------------|
| MHz | dBµV | Factor | Loss | Level | dBµV/m | dB | Ant. | Angle | Detector | |
| | | dBµV/m | dB | dBµV/m | dBµV/m | | m | deg | | |
| 11590.300000 | 38.78 | 39.05 | -42.0 | 35.9 | 54.0 | 18.1 | 1.80 | 225 | AVERAGE | Mid ch; 2-lvl |
| 11479.850000 | 37.78 | 39.03 | -41.6 | 35.2 | 54.0 | 18.8 | 1.75 | 0 | AVERAGE | Low ch; 2-lvl |
| 11670.380000 | 37.36 | 39.05 | -42.1 | 34.3 | 54.0 | 19.7 | 1.00 | 0 | AVERAGE | High ch; 2-lvl |
| 11480.100000 | 36.44 | 39.03 | -41.6 | 33.9 | 54.0 | 20.1 | 1.75 | 0 | AVERAGE | Low ch; 4-lvl |
| 11590.400000 | 36.44 | 39.05 | -42.0 | 33.5 | 54.0 | 20.5 | 1.80 | 225 | AVERAGE | Mid ch; 4-lvl |
| 11670.400000 | 36.02 | 39.05 | -42.1 | 33.0 | 54.0 | 21.0 | 1.00 | 0 | AVERAGE | High ch; 4-lvl |
| 11480.100000 | 50.65 | 39.03 | -41.6 | 48.1 | 74.0 | 25.9 | 1.75 | 0 | MAX PEAK | Low ch; 4-lvl |
| 11670.380000 | 50.78 | 39.05 | -42.1 | 47.8 | 74.0 | 26.2 | 1.00 | 0 | MAX PEAK | High ch; 2-lvl |
| 11590.300000 | 50.65 | 39.05 | -42.0 | 47.7 | 74.0 | 26.3 | 1.80 | 225 | MAX PEAK | Mid ch; 2-lvl |
| 11479.850000 | 49.87 | 39.03 | -41.6 | 47.3 | 74.0 | 26.7 | 1.75 | 0 | MAX PEAK | Low ch; 2-lvl |
| 11590.400000 | 49.87 | 39.05 | -42.0 | 47.0 | 74.0 | 27.0 | 1.80 | 225 | MAX PEAK | Mid ch; 4-lvl |
| 11670.400000 | 49.33 | 39.05 | -42.1 | 46.3 | 74.0 | 27.7 | 1.00 | 0 | MAX PEAK | High ch; 4-lvl |

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 75 deg. F; 35% R.H.
Test Site: DLS Site G1
Operator: Craig B
Test Specification: Transmitter Spurious Emissions
Comment: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Date: 09-25-2012

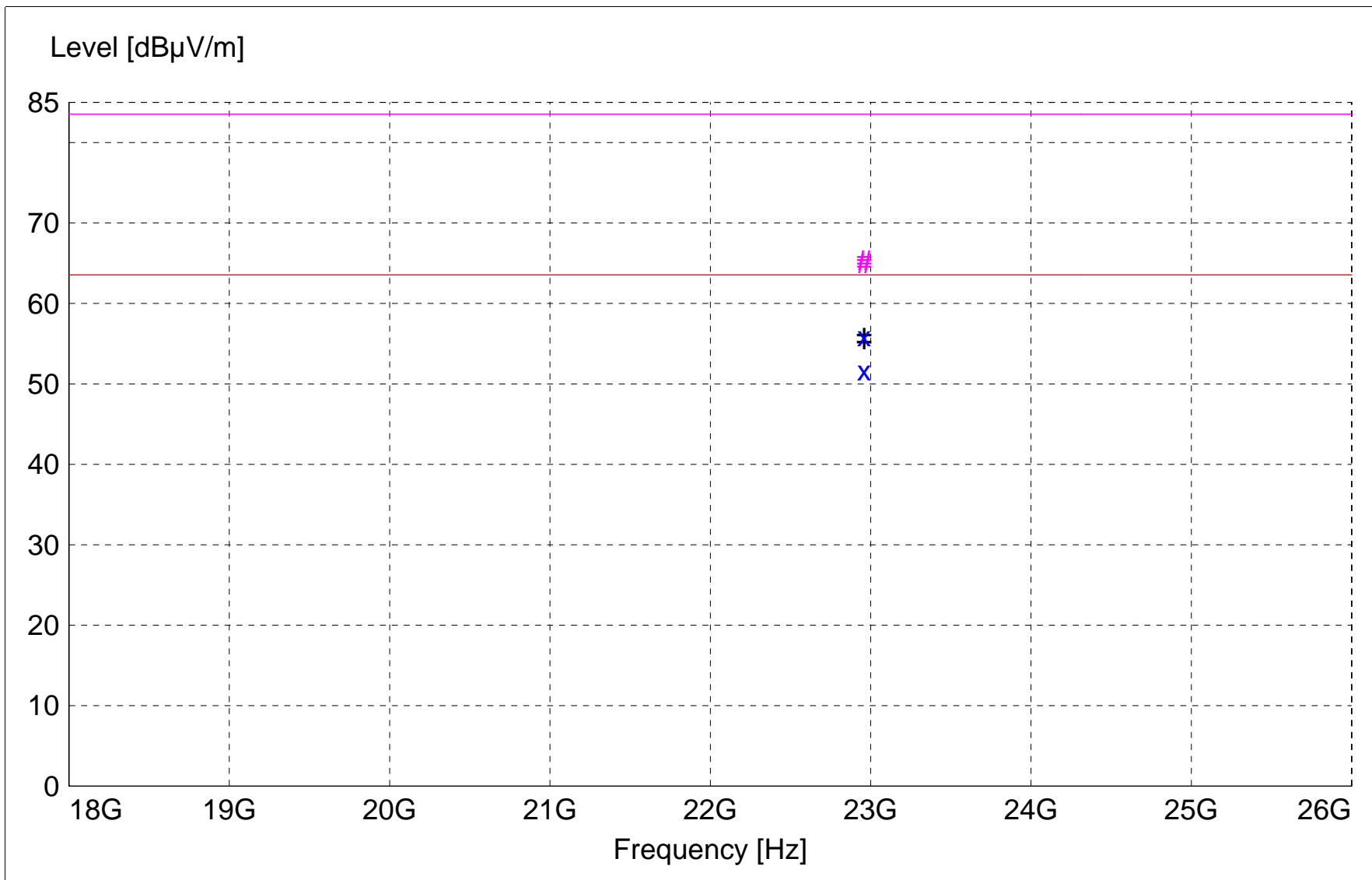
TEXT: "Horz 1 meters"

Short Description: Test Set-up

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

Equations:
$$\text{Total Level (dB}\mu\text{V/m)} = \text{Level (dB}\mu\text{V)} + \text{System Loss (dB)} + \text{Antenna Factor (dB}\mu\text{V/m)}$$
$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

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 detector
Final maximized level using Peak detector



```

x x :MES  A9247_sh_Average
# # :MES  A9247_sh_Peak
+ + :MES  A9247_sh_Peak_List
— — :LIM  FCC 15.209 1m AVG  Field Strength AVG Limit
— — :LIM  FCC 15.209 1m PK   Field Strength AVG Limit

```

MEASUREMENT RESULT: "A9247_sh_Final"

9/25/2012 3:26PM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|--------------|------------|--------------|--------|--------------|--------------|--------|--------|-------|----------|---------------|
| MHz | dB μ V | Factor | Loss | Level | dB μ V/m | dB | Ant. | Angle | Detector | |
| | | dB μ V/m | dB | dB μ V/m | dB μ V/m | | m | deg | | |
| 22960.140000 | 50.41 | 46.79 | -41.3 | 55.9 | 63.5 | 7.7 | 1.30 | 0 | AVERAGE | Low ch; 2-lvl |
| 22960.240000 | 46.17 | 46.79 | -41.3 | 51.6 | 63.5 | 11.9 | 1.30 | 0 | AVERAGE | Low ch; 4-lvl |
| 22960.140000 | 59.96 | 46.79 | -41.3 | 65.4 | 83.5 | 18.1 | 1.30 | 0 | MAX PEAK | Low ch; 2-lvl |
| 22960.240000 | 59.55 | 46.79 | -41.3 | 65.0 | 83.5 | 18.5 | 1.30 | 0 | MAX PEAK | Low ch; 4-lvl |

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 75 deg. F; 35% R.H.
Test Site: DLS Site G1
Operator: Craig B
Test Specification: Transmitter Spurious Emissions
Comment: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Date: 09-25-2012

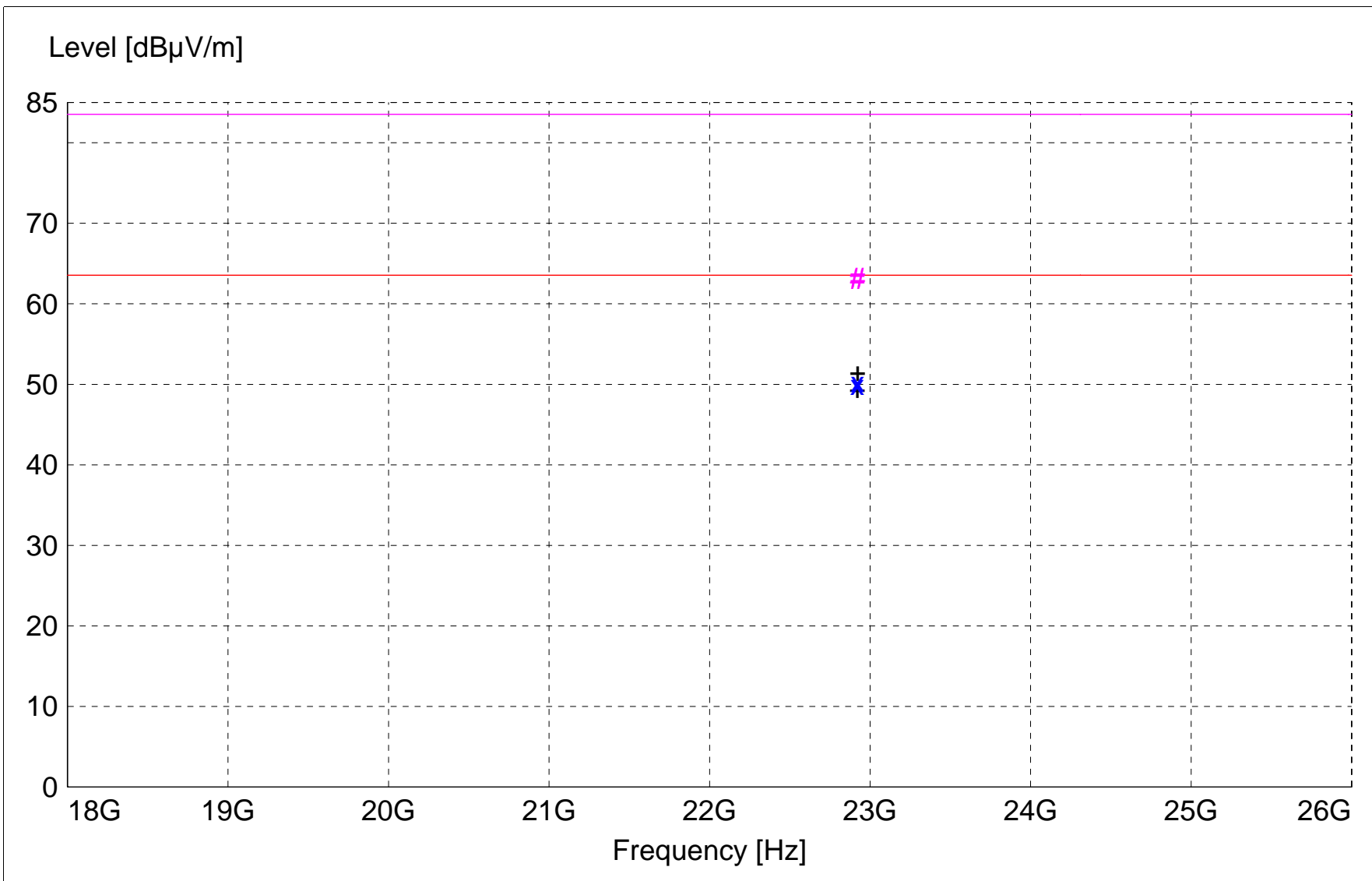
TEXT: "Vert 1 meters"

Short Description: Test Set-up

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

Equations:
$$\text{Total Level (dB}\mu\text{V/m)} = \text{Level (dB}\mu\text{V)} + \text{System Loss (dB)} + \text{Antenna Factor (dB}\mu\text{V/m)}$$
$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

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 detector
Final maximized level using Peak detector



```

x x :MES  A9247_sv_Average
# # :MES  A9247_sv_Peak
+ + :MES  A9247_sv_Peak_List
— — :LIM  FCC 15.209 1m AVG  Field Strength AVG Limit
— — :LIM  FCC 15.209 1m PK   Field Strength AVG Limit

```

MEASUREMENT RESULT: "A9247_sv_Final"

9/25/2012 2:32PM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|--------------|------------|--------------|--------|--------------|--------------|--------|--------|-------|----------|---------------|
| MHz | dB μ V | Factor | Loss | Level | dB μ V/m | dB | Ant. | Angle | Detector | |
| | | dB μ V/m | dB | dB μ V/m | dB μ V/m | | m | deg | | |
| 22922.920000 | 44.83 | 46.77 | -41.3 | 50.3 | 63.5 | 13.3 | 1.10 | 320 | AVERAGE | Low ch; 2-lvl |
| 22920.500000 | 44.43 | 46.77 | -41.3 | 49.9 | 63.5 | 13.7 | 1.10 | 320 | AVERAGE | Low ch; 4-lvl |
| 22922.920000 | 57.81 | 46.77 | -41.3 | 63.3 | 83.5 | 20.3 | 1.10 | 320 | MAX PEAK | Low ch; 2-lvl |
| 22920.500000 | 57.56 | 46.77 | -41.3 | 63.0 | 83.5 | 20.5 | 1.10 | 320 | MAX PEAK | Low ch; 4-lvl |

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 71 deg. F; 38% R.H.
Test Site: DLS Site G1
Operator: Craig B
Test Specification: Transmitter Spurious Emissions
Comment: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Date: 09-26-2012

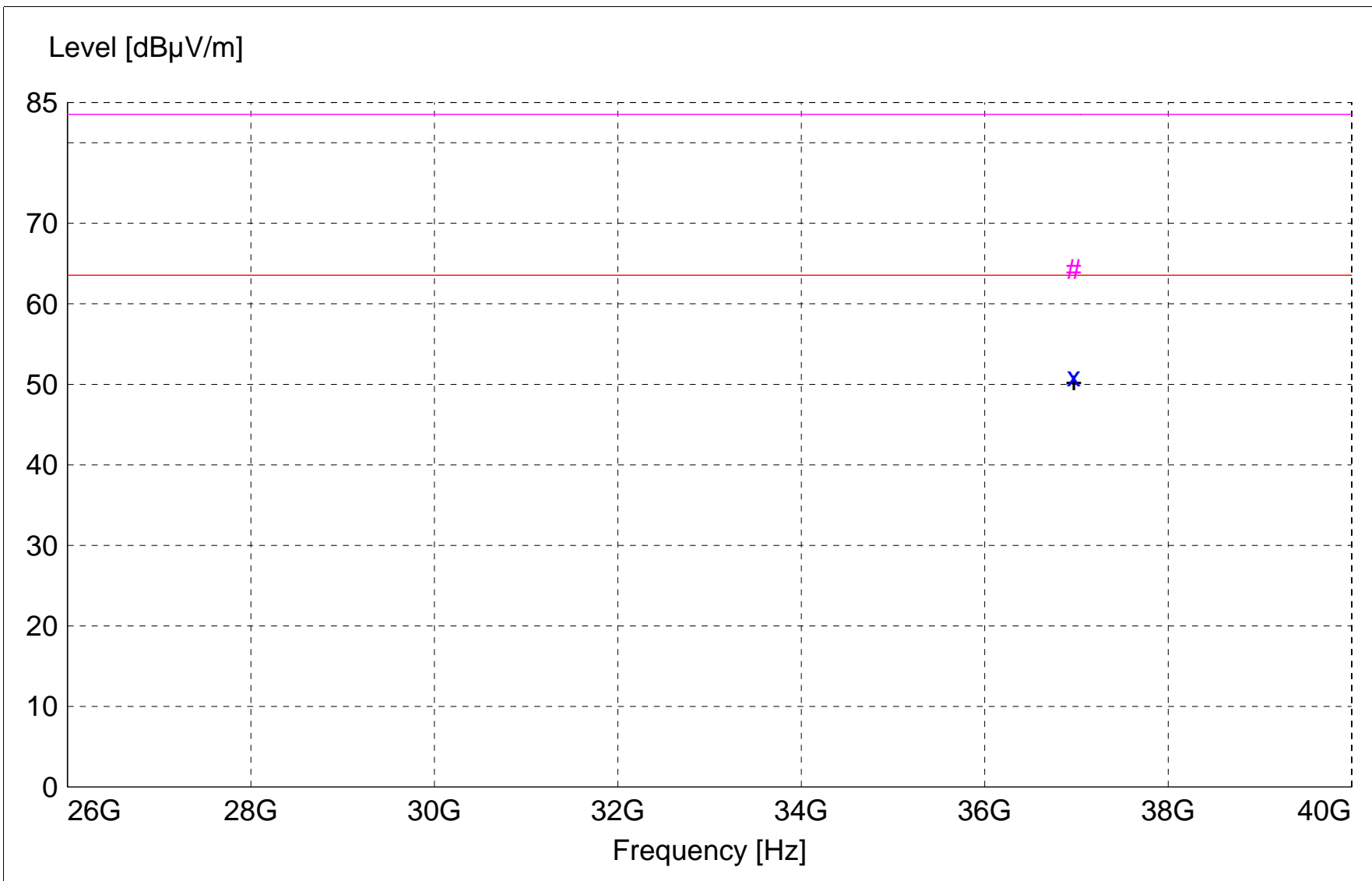
TEXT: "Horz 1 meters"

Short Description: Test Set-up

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

Equations:
$$\text{Total Level (dB}\mu\text{V/m)} = \text{Level (dB}\mu\text{V)} + \text{System Loss (dB)} + \text{Antenna Factor (dB}\mu\text{V/m)}$$
$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

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 detector
Final maximized level using Peak detector



```

x x :MES  A9248_sh_Average
# # :MES  A9248_sh_Peak
+ + :MES  A9248_sh_Peak_List
— LIM  FCC 15.209 1m AVG  Field Strength AVG Limit
— LIM  FCC 15.209 1m PK   Field Strength AVG Limit

```


MEASUREMENT RESULT: "A9248_sh_Final"

9/26/2012 9:39AM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|--------------|------------|--------------|--------|--------------|--------------|--------|--------|-------|----------|-------------|
| MHz | dB μ V | Factor | Loss | Level | dB μ V/m | dB | Ant. | Angle | Detector | |
| | | dB μ V/m | dB | dB μ V/m | dB μ V/m | | m | deg | | |
| 36971.200000 | 50.42 | 47.03 | -46.4 | 51.0 | 63.5 | 12.5 | 1.00 | 0 | AVERAGE | noise floor |
| 36971.200000 | 63.74 | 47.03 | -46.4 | 64.3 | 83.5 | 19.2 | 1.00 | 0 | MAX PEAK | noise floor |

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: 5.7 GHz FSK Transceiver (connectorized with Omni antenna)
Manufacturer: Cambium Networks
Operating Condition: 71 deg. F; 38% R.H.
Test Site: DLS Site G1
Operator: Craig B
Test Specification: Transmitter Spurious Emissions
Comment: Low, Mid, High channels; Max output power; 2 & 4 level modulation
Date: 09-26-2012

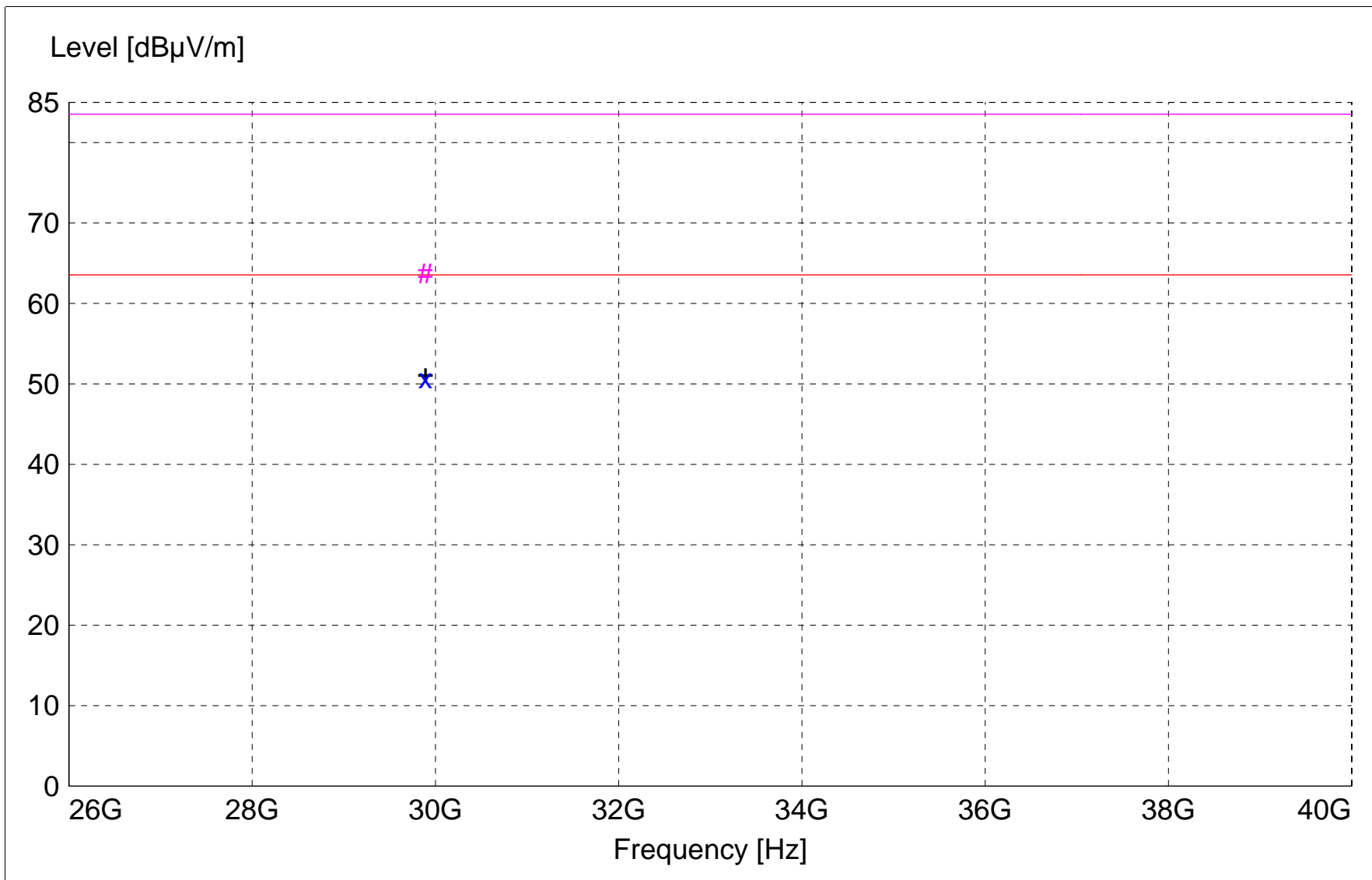
TEXT: "Vert 1 meters"

Short Description: Test Set-up

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

Equations:
$$\text{Total Level (dB}\mu\text{V/m)} = \text{Level (dB}\mu\text{V)} + \text{System Loss (dB)} + \text{Antenna Factor (dB}\mu\text{V/m)}$$
$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

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 detector
Final maximized level using Peak detector



```

x x :MES  A9248_sv_Average
# # :MES  A9248_sv_Peak
+ + :MES  A9248_sv_Peak_List
— — :LIM  FCC 15.209 1m AVG  Field Strength AVG Limit
— — :LIM  FCC 15.209 1m PK   Field Strength AVG Limit

```

MEASUREMENT RESULT: "A9248_sv_Final"

9/26/2012 9:37AM

| Frequency | Level | Antenna | System | Total | Limit | Margin | Height | EuT | Final | Comment |
|--------------|-------|---------|--------|--------|--------|--------|--------|-------|----------|-------------|
| MHz | dBµV | Factor | Loss | Level | dBµV/m | dB | Ant. | Angle | Detector | |
| | | dBµV/m | dB | dBµV/m | dBµV/m | | m | deg | | |
| 29890.400000 | 50.80 | 47.58 | -47.7 | 50.7 | 63.5 | 12.9 | 1.00 | 0 | AVERAGE | noise floor |
| 29890.400000 | 63.88 | 47.58 | -47.7 | 63.7 | 83.5 | 19.8 | 1.00 | 0 | MAX PEAK | noise floor |



166 South Carter, Genoa City, WI 53128

Company:
Model Tested:
Report Number:

Cambium Networks
Canopy 5700 with Omni antenna
18338

END OF REPORT

| Revision # | Date | Comments | By |
|-------------------|-------------|---------------------|-----------|
| 1.0 | 10-19-2012 | Preliminary Release | JS |
| 1.1 | 11-6-2012 | Model numbers added | JS |
| 1.2 | 11-12-2012 | Added FCC ID info | JS |
| | | | |
| | | | |
| | | | |