166 South Carter, Genoa City, WI 53128

Company:	Cambium Networks
Model Tested:	C050900C032A & C050900P032A
Report Number:	19075
DLS Project:	5942

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.

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name:	Avenger Station 5.7GHz Radio
Kind of Equipment:	Point-to-Point or Point-to-Multipoint Digital Transmission Transceiver
Frequency Range:	5740 to 5835 MHz (20 MHz bandwidth) 5750 to 5825 MHz (40 MHz bandwidth)
Test Configuration:	Stand-alone
Model Number(s):	Integrated model: C050900P032A Connectorized model: C050900C032A
Model(s) Tested:	Integrated model: C050900P032A Connectorized model: C050900C032A
Serial Number(s):	Integrated: 000456C00042 Connectorized: 000456C0000C
Date of Tests:	May 29th to June 5th, 2013
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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SIGNATURE PAGE

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Approved By:

Brian Mattson
General Manager

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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 determined that the Cambium Networks Avenger Station 5.7GHz Radio, Integrated model: C050900C00P032A, and Connectorized model: C050900C032A, complies with the requirements of CFR 47 Part 15 Subpart C Section 15.247.

Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
FCC 15.247(a)(2)	6 dB Emission Bandwidth - Conducted	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 8.1 Option 1	1	Yes
FCC 15.247(b)(3)	Fundamental Emission Output Power – Conducted	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 9.2.3.1-AVGPM	1	Yes
FCC 15.247(e)	Maximum Power Spectral Density - Conducted	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 10.3-AVGPSD-1	1	Yes
FCC 15.247(d)	Maximum Unwanted Emission Levels – Conducted	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Sections 11.0, 11.2, 11.3	1	Yes
FCC 15.247(d)	Band Edge Measurements - Radiated	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 11.0	2	Yes
FCC 15.247(d), FCC 15.205	Restricted Band Measurements - Radiated	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 12.0 & 12.1	2	Yes
FCC 15.35(c)	Duty Cycle of Test Unit	ANSI C63.10-2009 Section 7.5	1	NA
FCC 15.207(a)	AC Line Conducted Emissions	ANSI C63.10-2009 Section 6.2	3	Yes

Note 1: RF conducted measurement.
Note 2: Radiated emission measurement.
Note 3: AC line conducted measurement.

2.0 Introduction

From May 29th through June 5th Avenger Station 5.7GHz Radio, Models C050900C00P032A & C050900C032A, as provided from Cambium Networks, was tested to the requirements of CFR 47 Part 15 Subpart C Section 15.247. 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

4.0 Description of Test Sample

Description:

Point-to-Point or Point-to-Multipoint 5.7GHz 802.11 fixed outdoor transceiver with either 20 MHz or 40 MHz channel bandwidth. OFDM modulation. This is a software defined radio.

Type of Equipment

Stand-Alone

Frequency Range:

5740 to 5835 MHz (20 MHz bandwidth)
5750 to 5825 MHz (40 MHz bandwidth)

Physical Dimensions of Equipment Under Test:

Length: 4 in. Width: 2 in. Height: 10 in.

Power Source:

29 VDC (Power Over Ethernet to Radio)
120 Vac, 60 Hz using Phihong power supply model: 15R (for AC Line Conducted)

Internal Frequencies:

940 - 1000 kHz (Switching Power Supply Frequency)
40 MHz, 25 MHz, 4 MHz

Transmit Frequencies Used For Test Purpose:

20 MHz Channel Bandwidth:	Low channel: 5740 MHz Middle channel: 5775 MHz High channel: 5835 MHz
40 MHz Channel Bandwidth:	Low channel: 5750 MHz Middle channel: 5785 MHz High channel: 5825 MHz

Power Settings noted on the test data

Type of Modulations:

OFDM: 802.11n

Description of Circuit Board(s) / Part Number:

SM PC Board	84009653001
Antenna PC Board	P005135

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
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	7-23-12	7-23-13
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
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
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
20 dB attenuator	Aeroflex/weinschel	75A-20-12	1071	DC – 40 GHz	8-13-12	8-13-13
10 dB attenuator	narda	4768-10	0702	DC – 40 GHz	8-13-12	8-13-13
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	1-3-13	1-3-14
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

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 FCC KDB 558074 D01 DTS Meas Guidance v03r01 and ANSI C63.10-2009, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for 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

RF Conducted Emissions Measurement Arrangement:

All RF conducted emission measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 and ANSI C63.10-2009, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for photos of the test set up.

7.0 Test Conditions

Normal Test Conditions:

Temperature and Humidity:

67°F at 56% RH (or as noted)

Supply Voltage:

29 VDC (Power Over Ethernet to Radio)
120 Vac, 60 Hz using Phihong power supply model: 15R (for AC Line Conducted)

8.0 Modifications Made To EUT for Compliance

None noted at time of test.

9.0 Additional Descriptions

Testing was peformed at low, mid, and high channels over 2 modulation bandwidths (20MHz & 40MHz). The antenna ports were tested (Channel 0 & 1) using both an integrated & connectorized model. Worst case emissions were recorded. AC line conducted tested in transmit mode.

Emission Designators: 20M0x1D, 40M0x1D

Power Settings noted on the test data.

10.0 Results

Measurements were performed in accordance with FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 and ANSI C63.10-2009. Graphical and tabular data can be found in Appendix B at the end of this report.

11.0 Conclusion

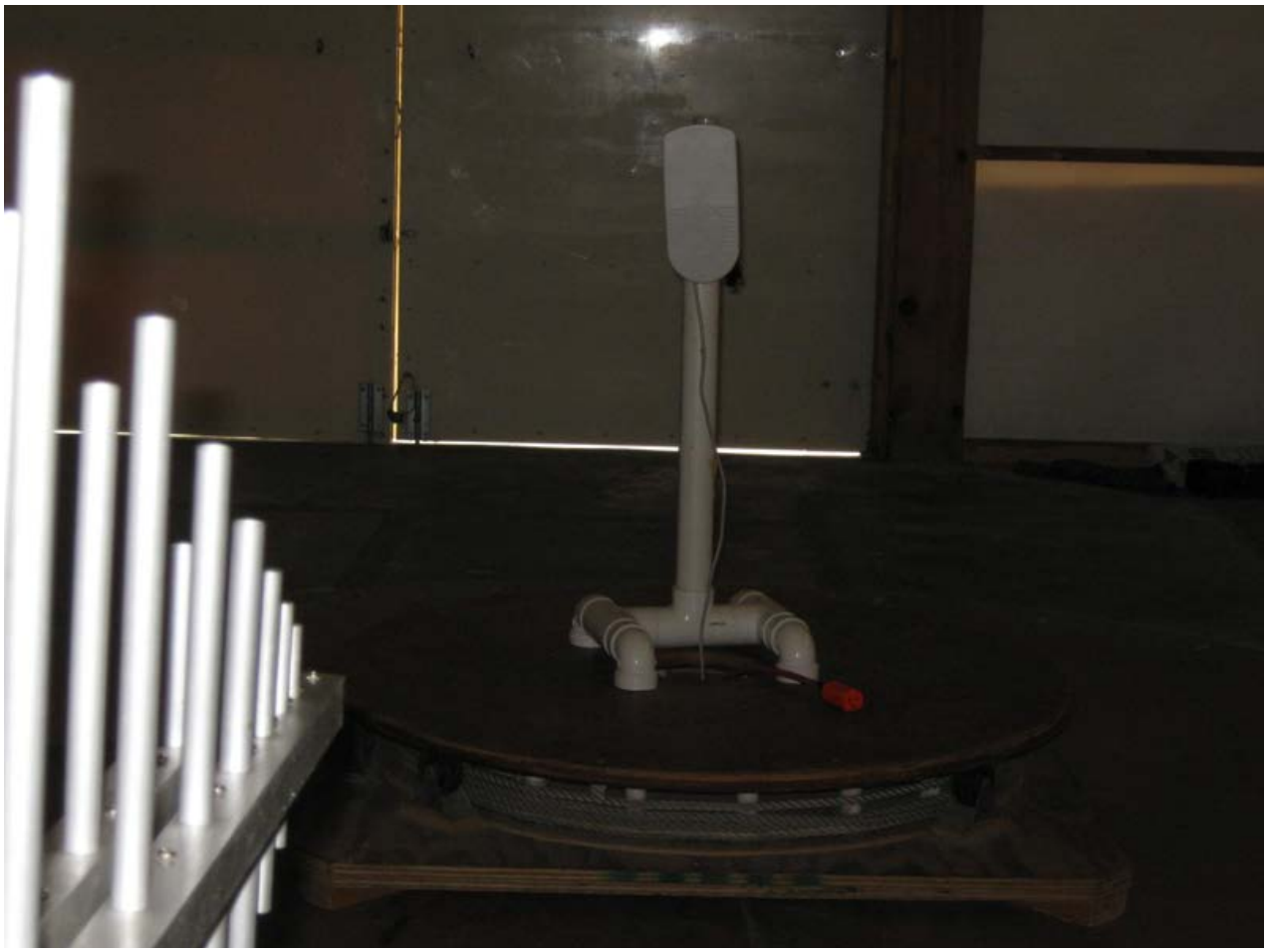
The Avenger Station 5.7GHz Radio, Models C050900P032A & C050900C032A, as provided from Cambium Networks tested from May 29th to June 5th **meets** the requirements of CFR 47 Part 15 Subpart C Section 15.247.

Appendix A – Test Photos

Photo Information and Test Setup:

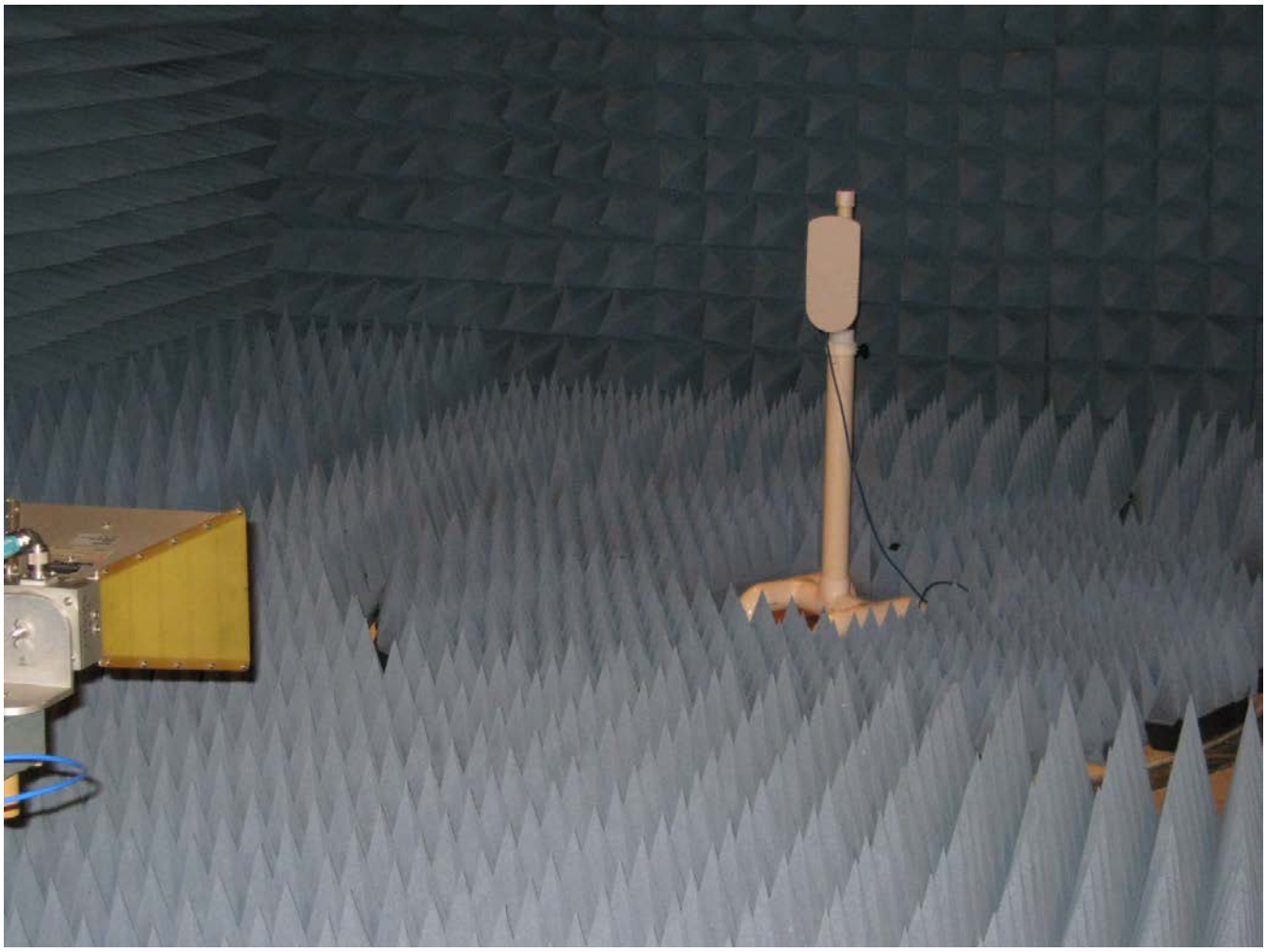
Item0: Avenger Station 5.7GHz Radio, Model C050900P032A or C050900C032A
Item1: Phihong Power Supply Model 15R
Item2: Unshielded Ethernet Cable - 2 meters long

Radiated - Below 1 GHz



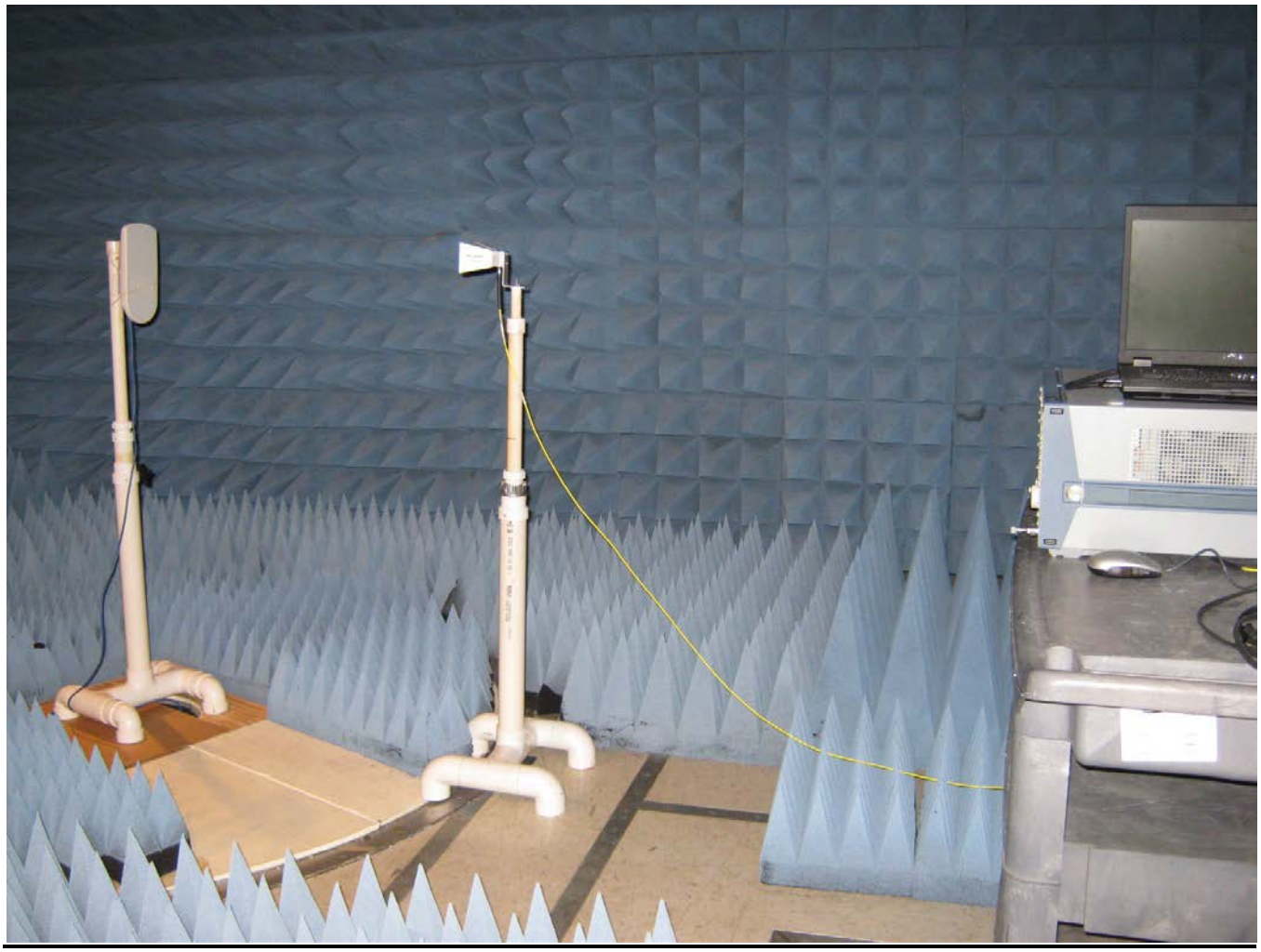
Appendix A – Test Photos

Radiated - 1 to 18 GHz



Appendix A – Test Photos

Radiated - Above 18 GHz



Appendix A – Test Photos

RF Conducted

Appendix A – Test Photos

AC Line Conducted

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Appendix B – Measurement Data

B1.0 DTS Bandwidth – 6 dB bandwidth - Conducted

Rule Section: Section 15.247(a)(2)

Test Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01 – *Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247*

Section 8.0 DTS Bandwidth
8.1 Option 1

Description:

RBW = 100kHz
VBW ≥ 3 x RBW
Detector = Peak
Trace mode = Max Hold
Sweep = Auto Couple

Allow the trace to stabilize. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Measure the maximum width of the emission between the lower and upper frequencies that measure 6 dB below the maximum level of the in-band emission.

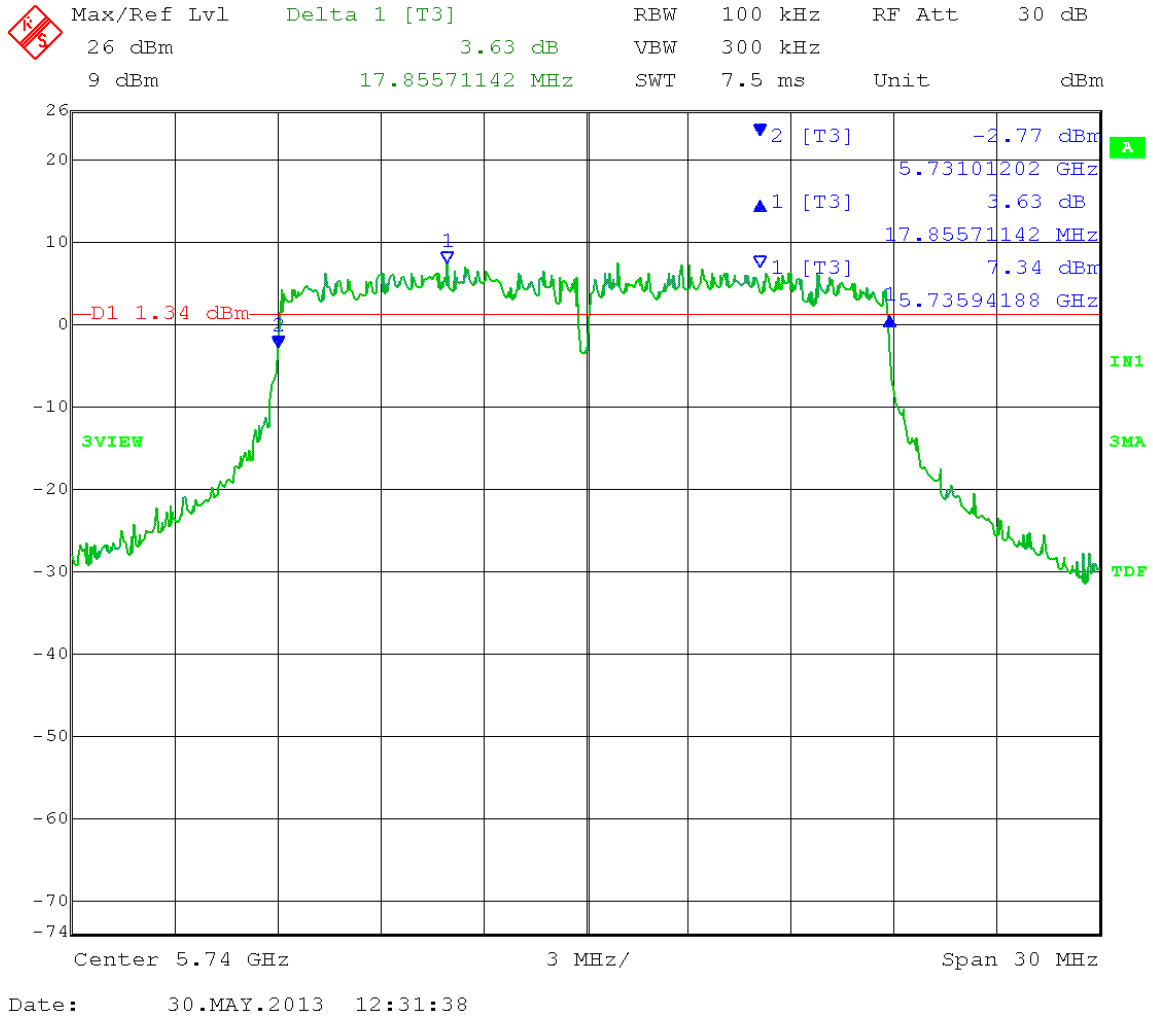
Measurements were taken for an OFDM modulation over a 20MHz and 40MHz modulation bandwidth at the low, mid and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings.

Limit: DTS Bandwidth shall be at least 500 kHz

Results: Passed

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Low Channel: Transmit = 5.740 GHz 20MHz BW
Output power setting: 20 Channel 0
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 17.86MHz



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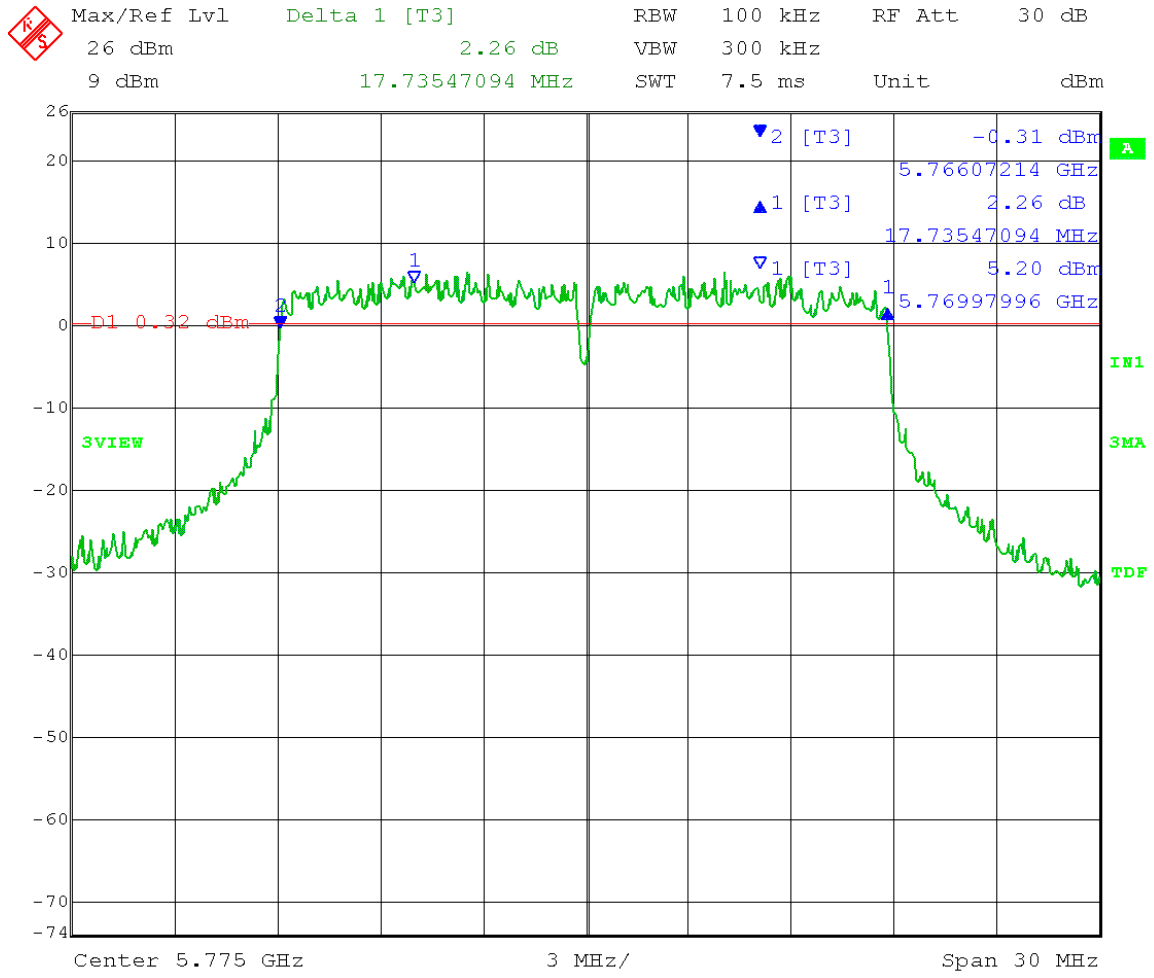
Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Mid Channel: Transmit = 5.775 GHz 20MHz BW
Output power setting: 20 Channel 0
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 17.74MHz



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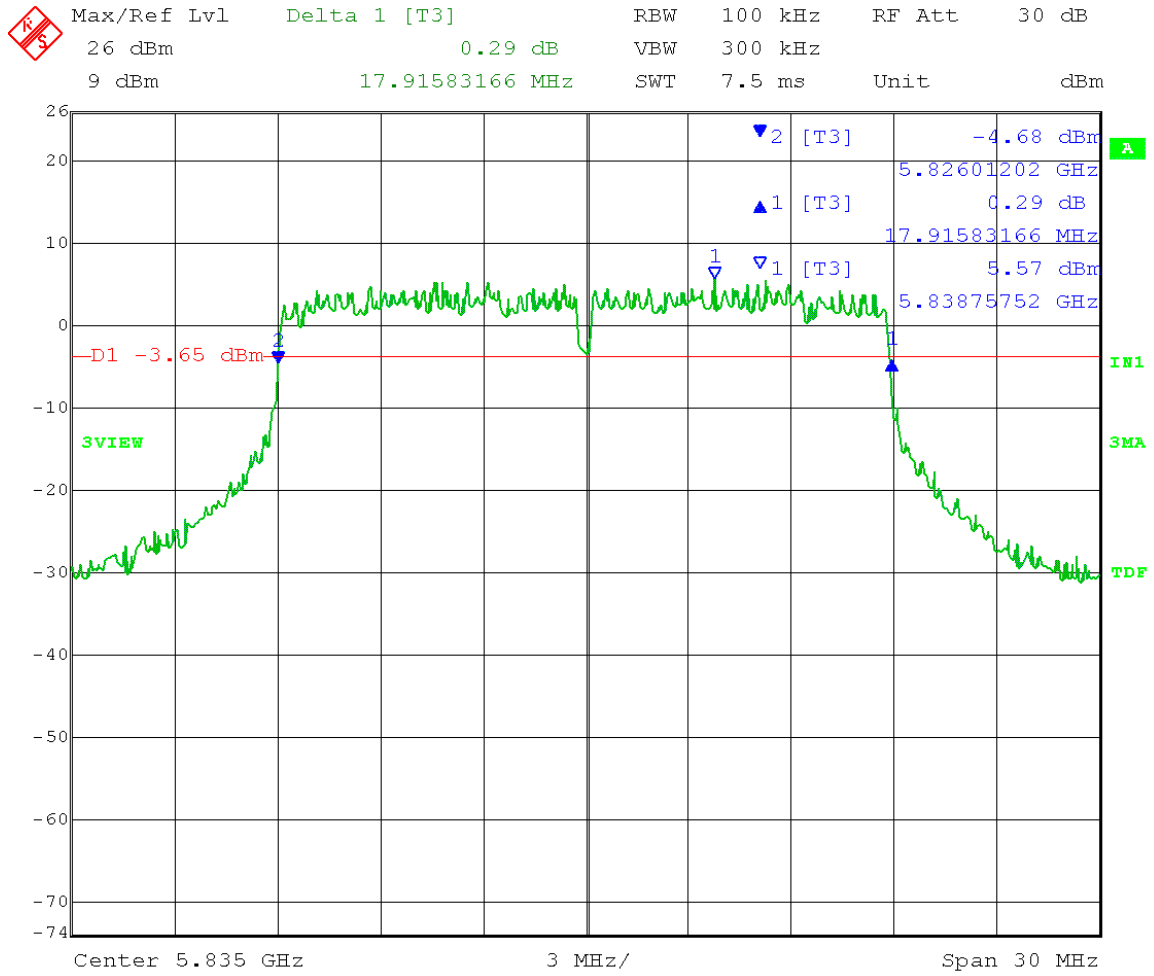
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
High Channel: Transmit = 5.835 GHz 20MHz BW
Output power setting: 20 Channel 0
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 17.92MHz



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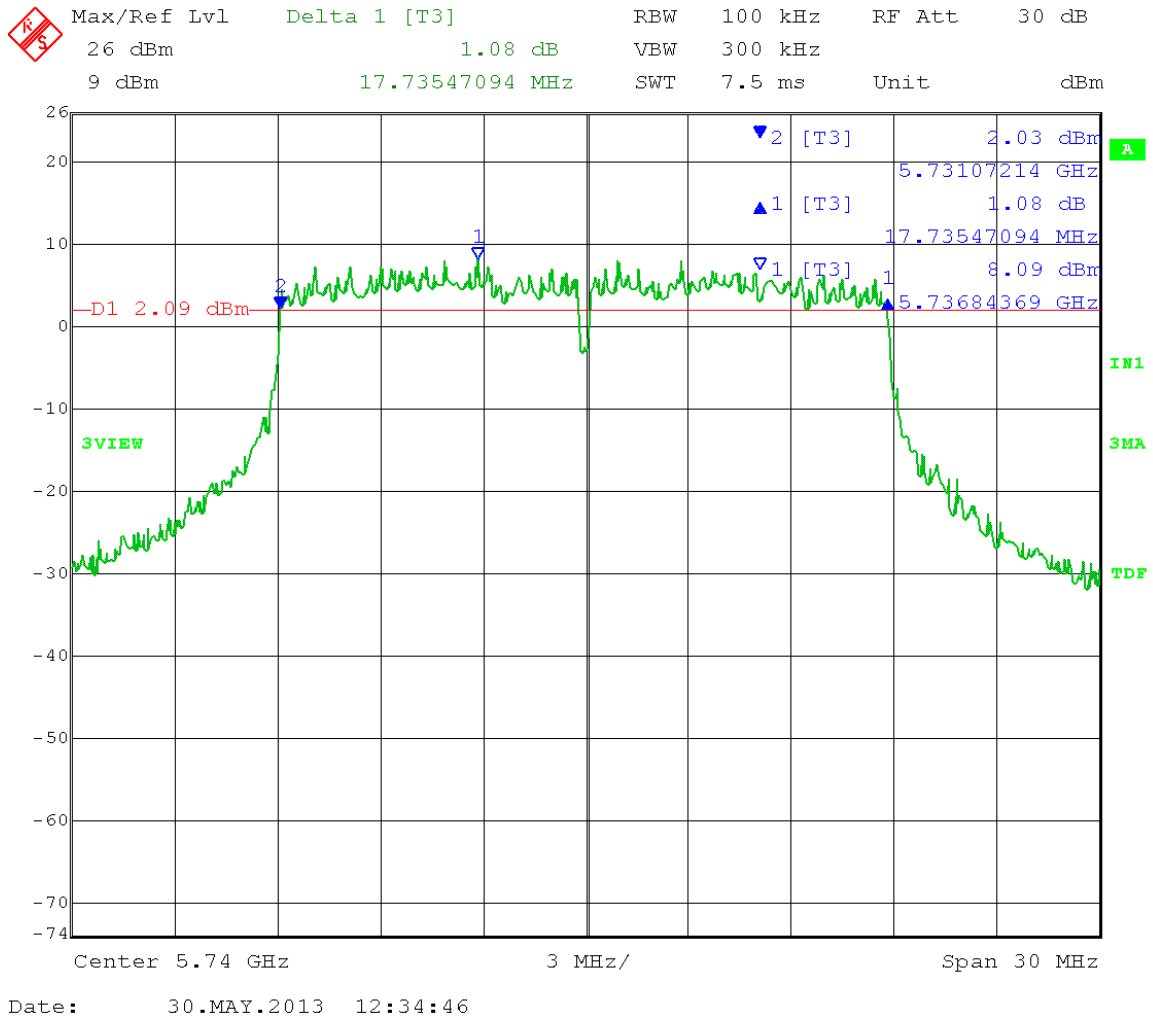
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Low Channel: Transmit = 5.740 GHz 20MHz BW
Output power setting: 20 Channel 1
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 17.74MHz



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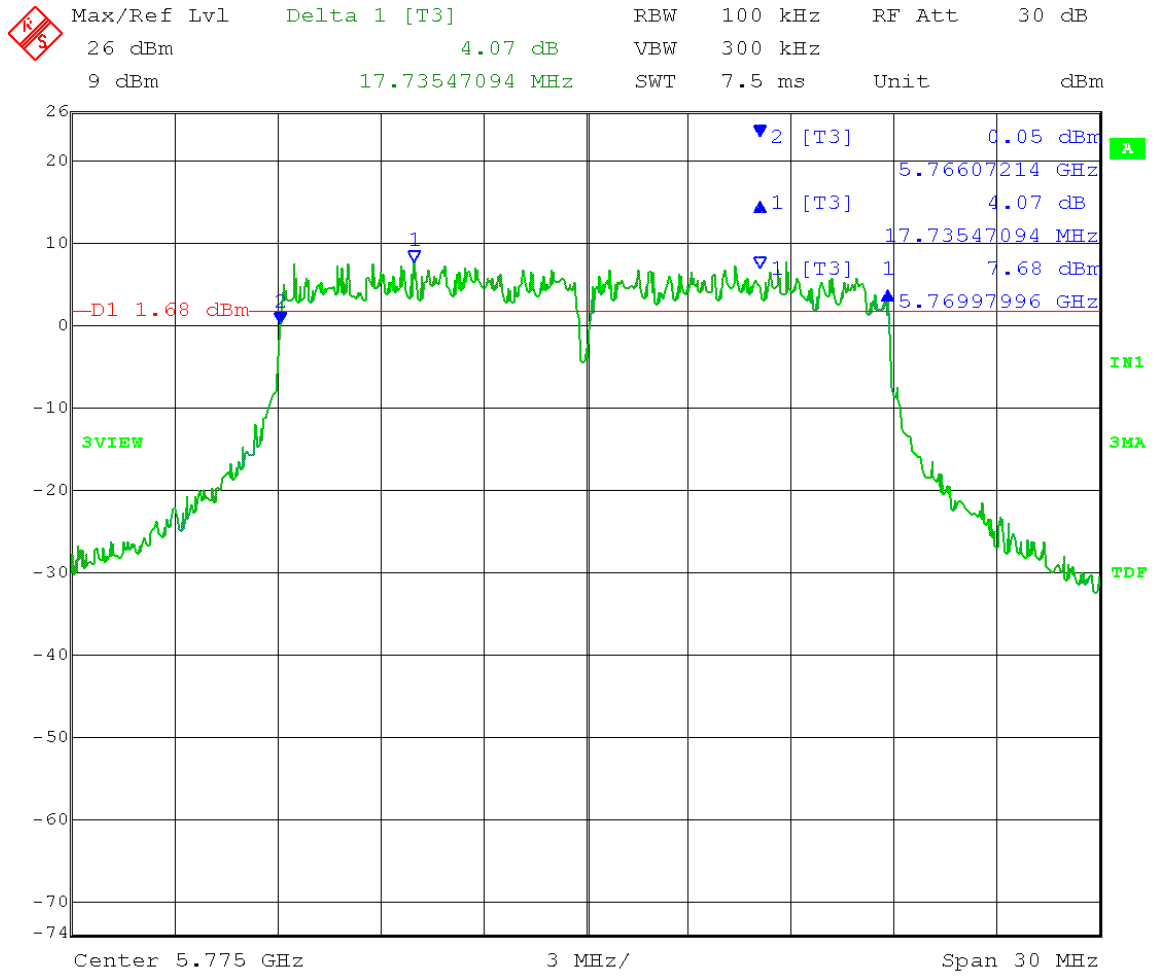
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Mid Channel: Transmit = 5.775 GHz 20MHz BW
Output power setting: 20 Channel 1
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 17.74MHz



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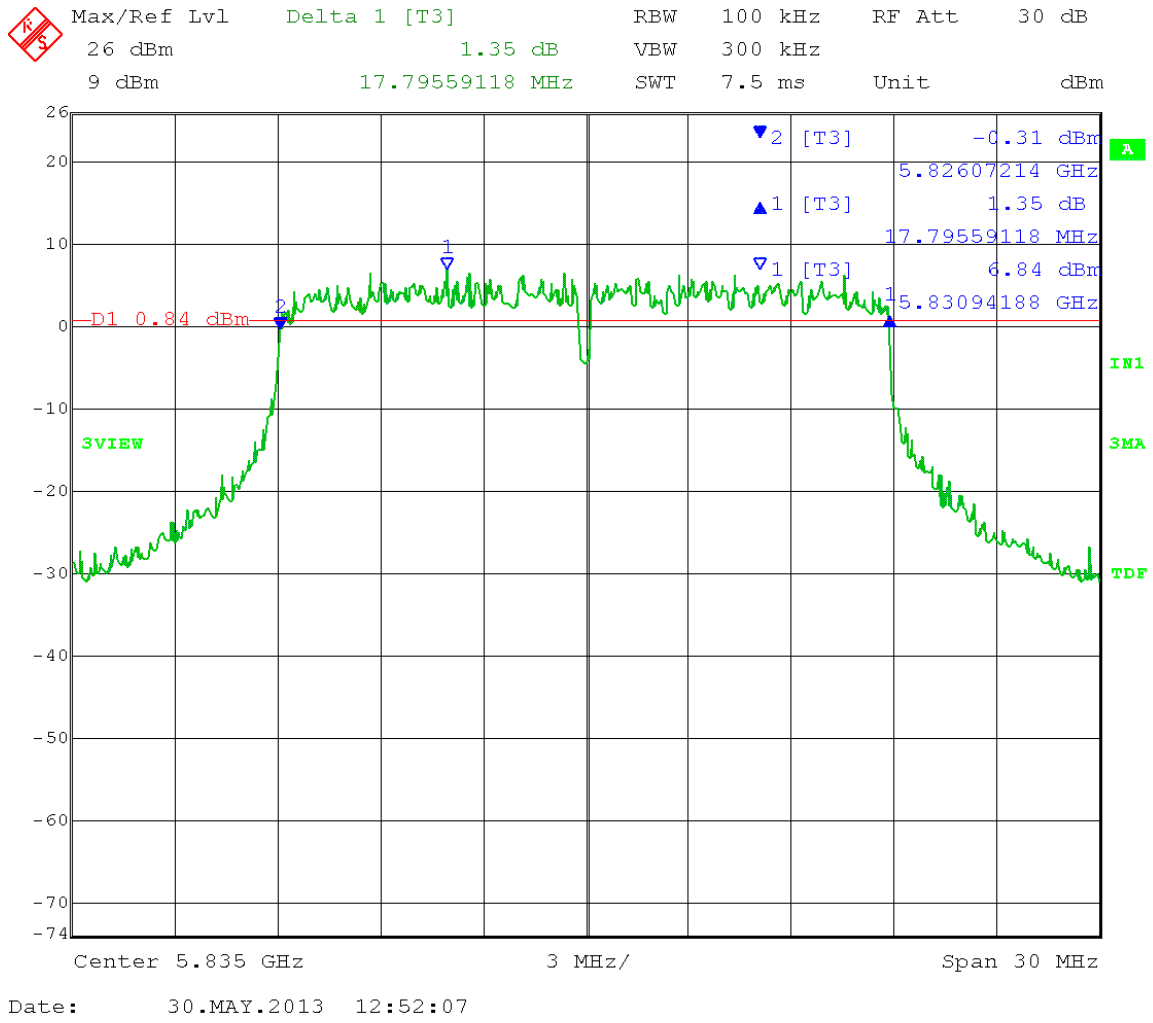
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
High Channel: Transmit = 5.835 GHz 20MHz BW
Output power setting: 20 Channel 1
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 17.80MHz



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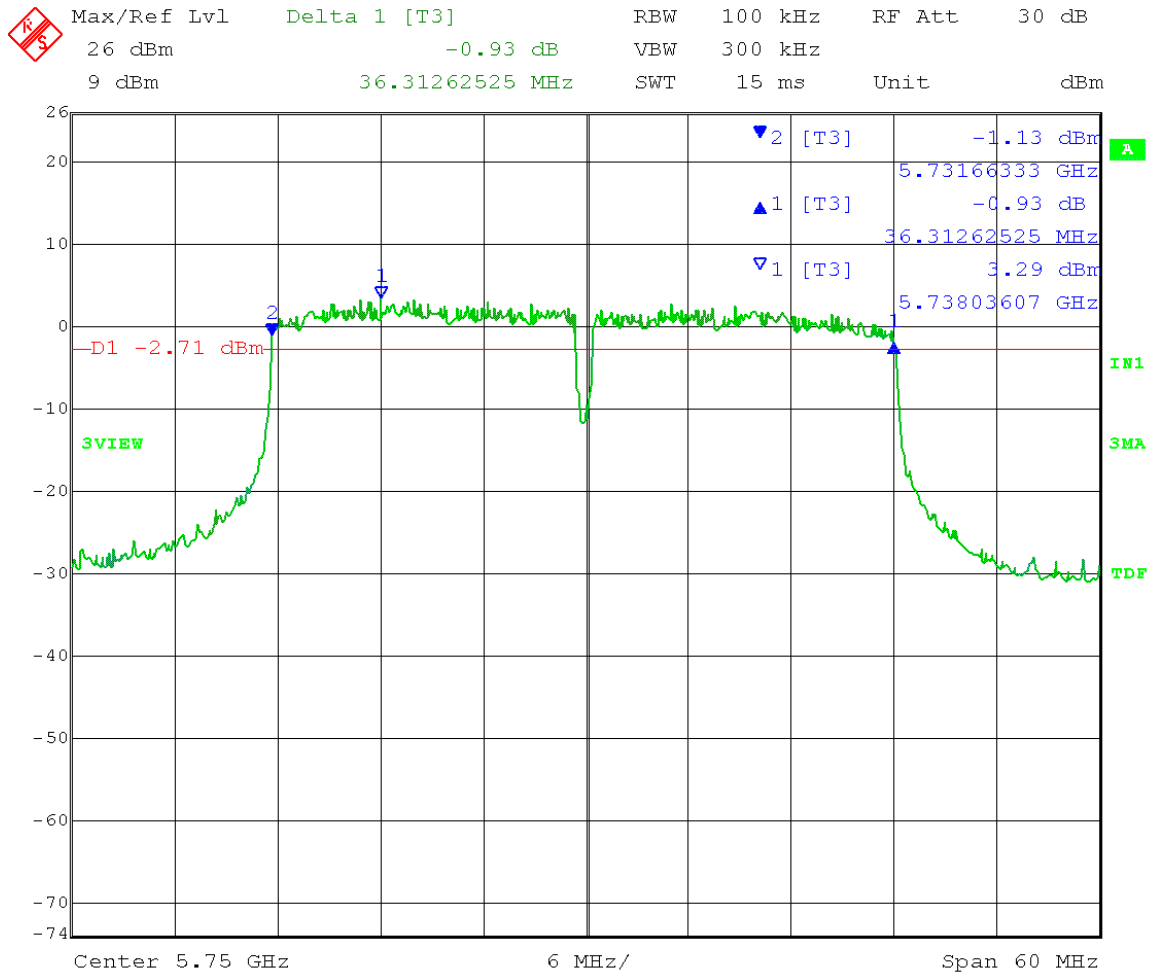
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Low Channel: Transmit = 5.750 GHz 40MHz BW
Output power setting: 20 Channel 0
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 36.31MHz



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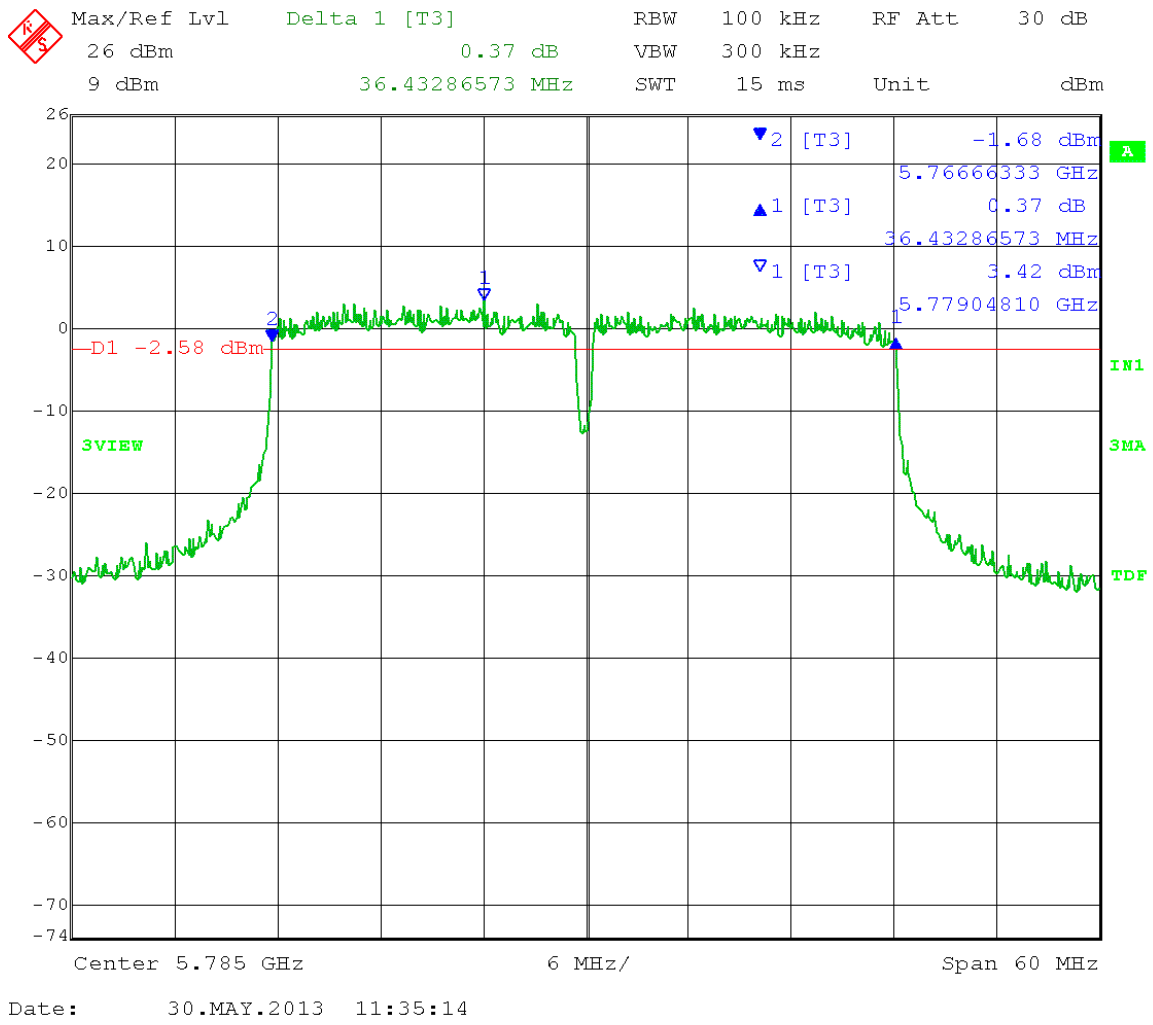
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Mid Channel: Transmit = 5.785 GHz 40MHz BW
Output power setting: 20 Channel 0
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 36.43MHz



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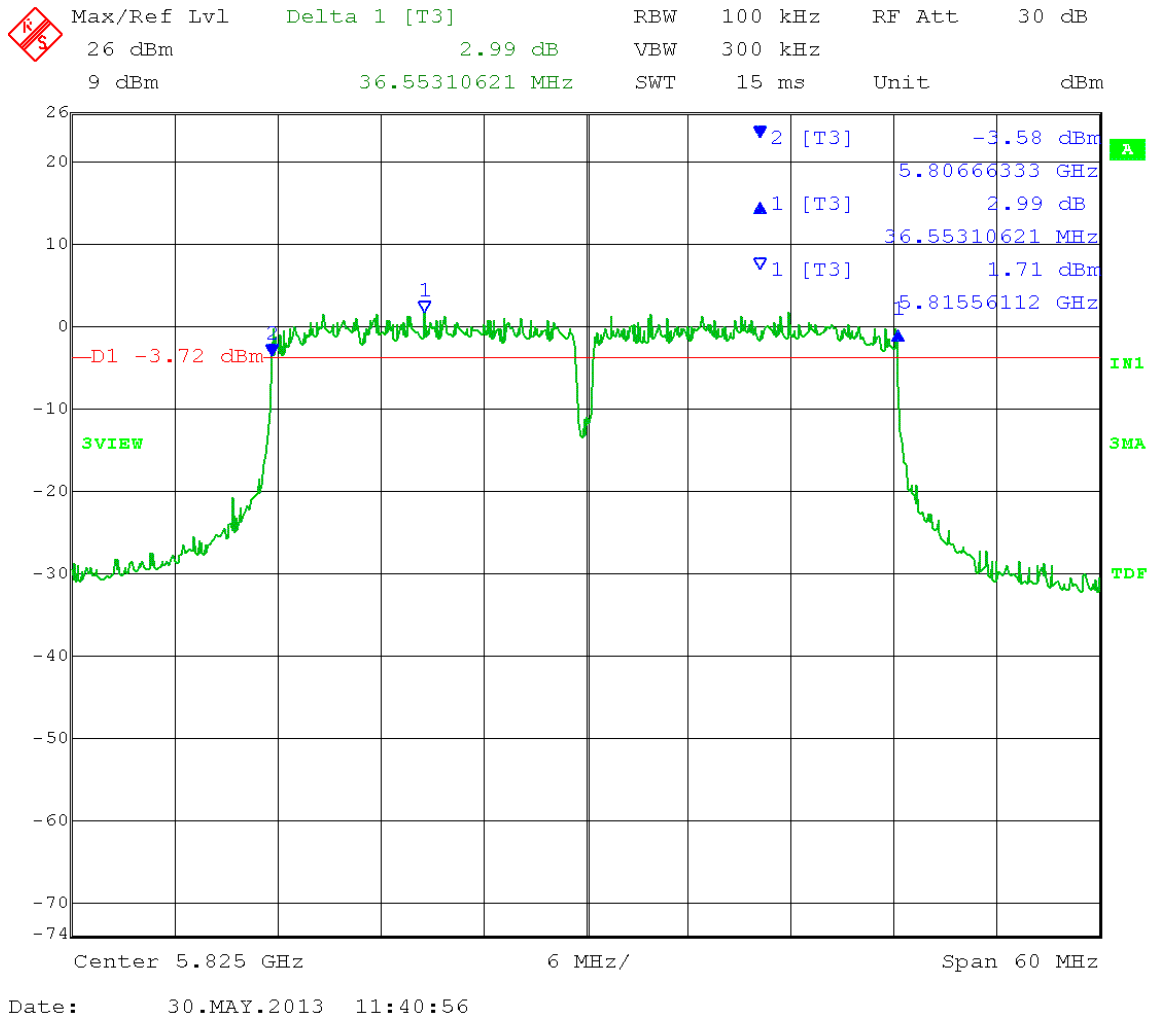
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
High Channel: Transmit = 5.825 GHz 40MHz BW
Output power setting: 20 Channel 0
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 36.55MHz



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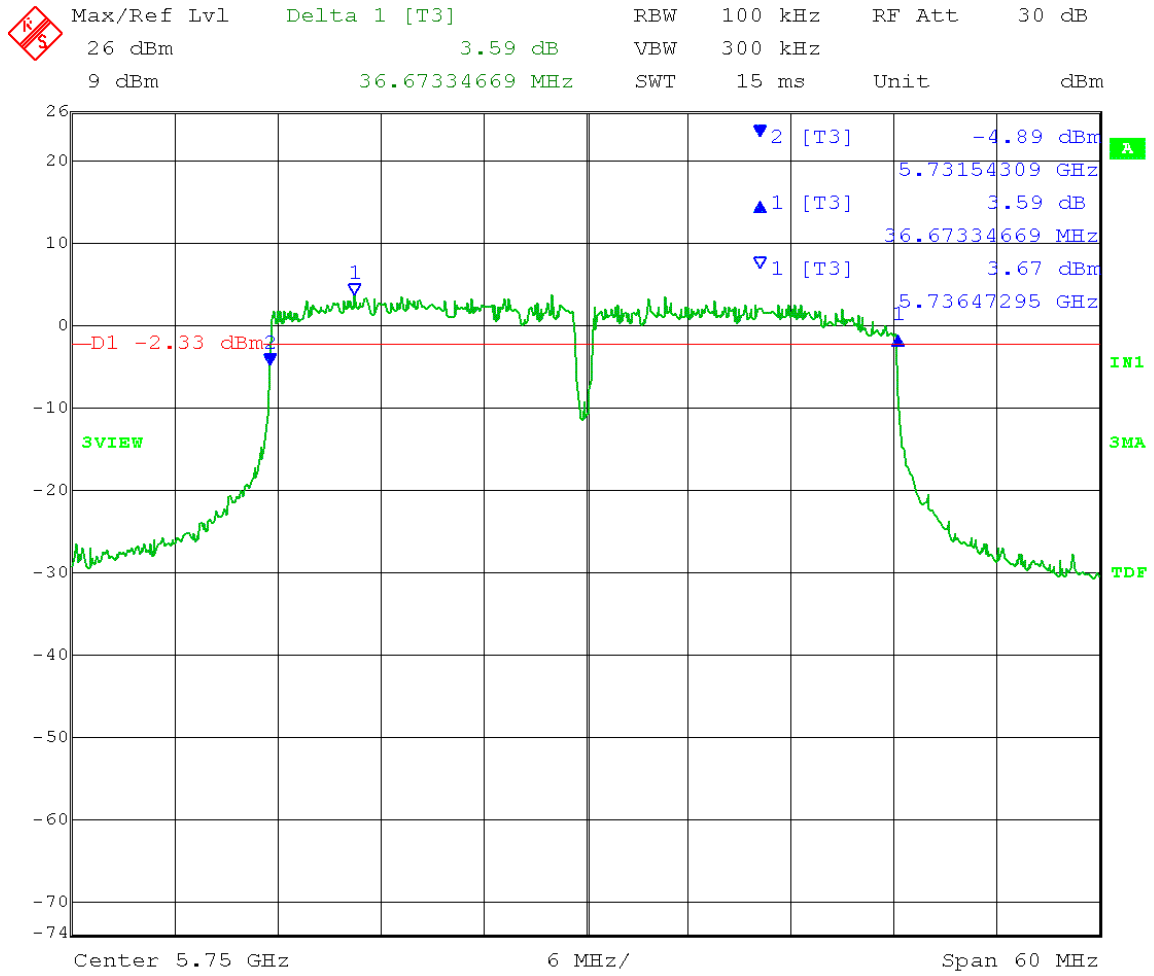
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Low Channel: Transmit = 5.750 GHz 40MHz BW
Output power setting: 20 Channel 1
6dB BW > 500kHz

6 dB (D1) DTS Bandwidth = 36.67MHz



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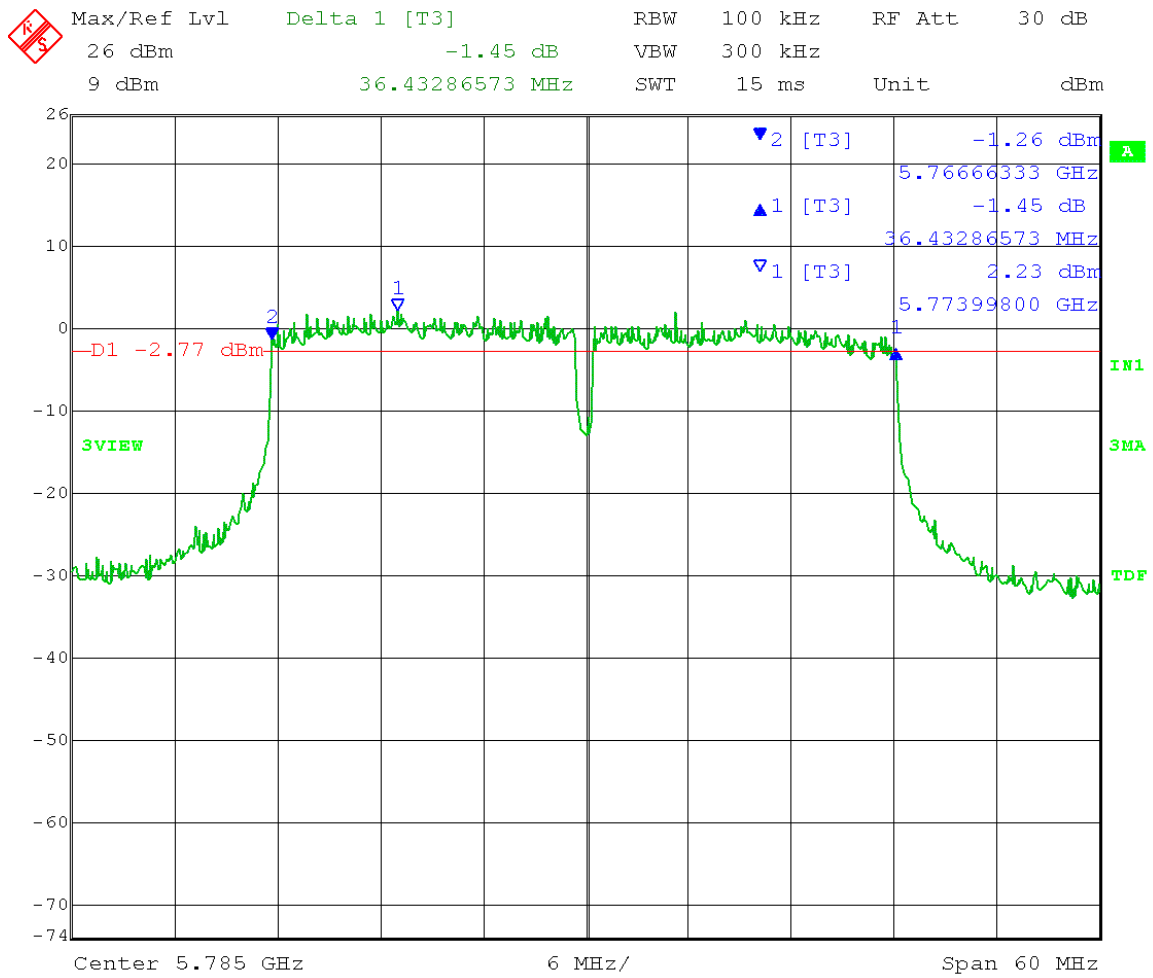
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
Mid Channel: Transmit = 5.785 GHz 40MHz BW
Output power setting: 20 Channel 1
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 36.43MHz



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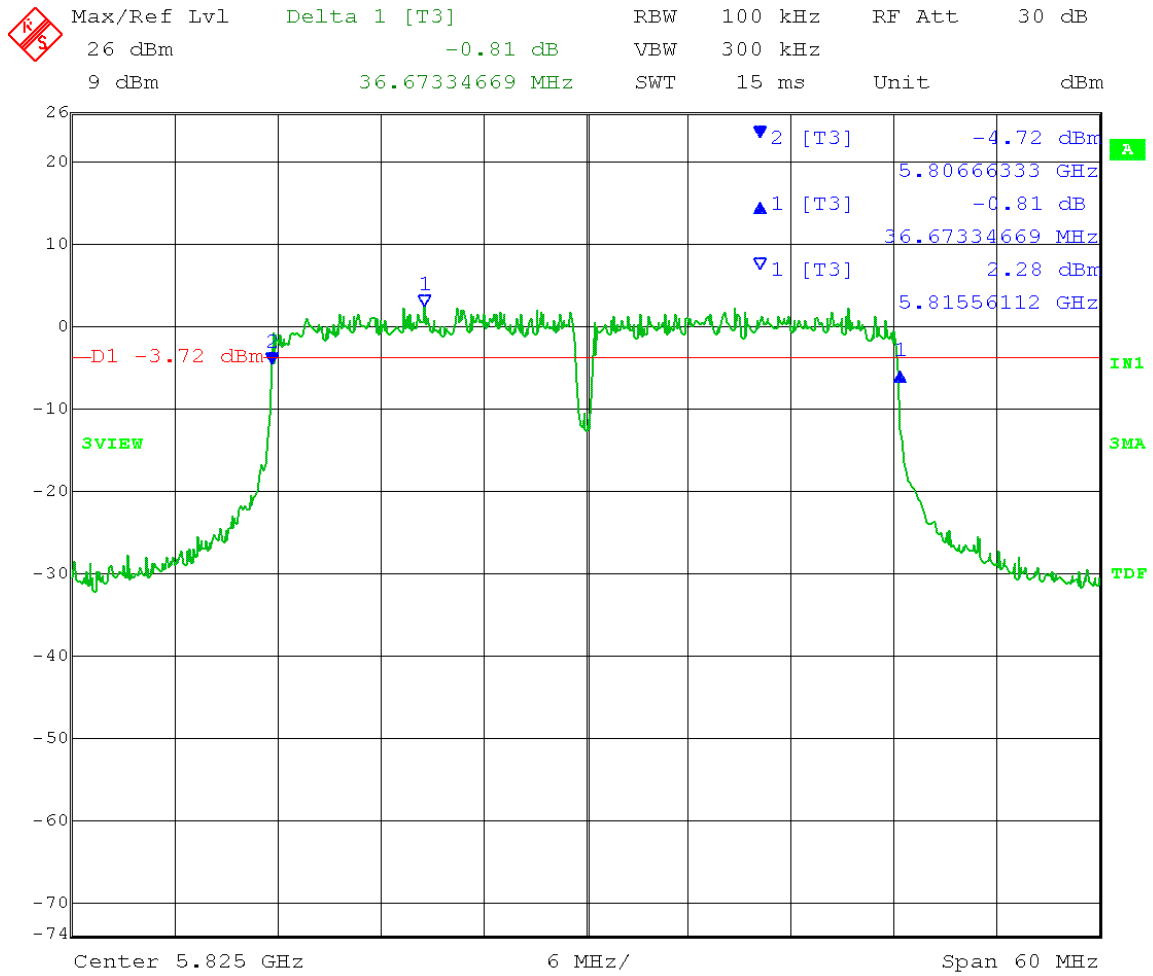
166 South Carter, Genoa City, WI 53128

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: DTS Bandwidth (6 dB) - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
8.0 DTS Bandwidth: Section 8.1 Option 1
RBW = 100 kHz VBW = 300 kHz
High Channel: Transmit = 5.825 GHz 40MHz BW
Output power setting: 20 Channel 1
6dB BW > 500 kHz

6 dB (D1) DTS Bandwidth = 36.67MHz



Date: 30.MAY.2013 11:39:09

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B2.0 Fundamental Emission Output Power - Conducted

Rule Section: Section 15.247(b)(3)

Test Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01 – *Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247*

Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)

Description: As an alternative to spectrum analyzer or EMI receiver measurements, measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent..

Measurements were taken for an OFDM modulation over a 20MHz and 40MHz modulation bandwidth at the low, mid and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings. A duty cycle measurement of greater than 98% was confirmed.

Limit: 1 Watt (30dBm) for Point-to-Point mode
1 Watt (30dBm); 20dBm for Point-to-Multipoint mode. (see note below)

Results: Passed

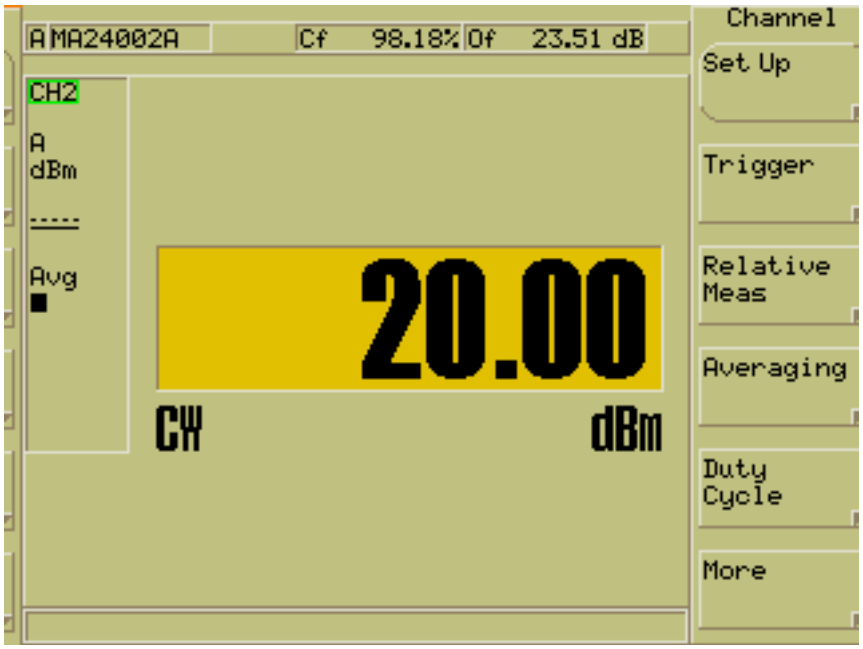
Notes: Antenna gain is 16dBi. Therefore, the RF conducted power limit was reduced by 10 dB to 20dBm (the amount by which the antenna gain exceeds 6dBi) for Point-to-Multipoint mode.

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; Low Channel Frequency: 5.740 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 20dBm + 3 dB (MIMO)
= 23.0dBm = 199.5**mW**



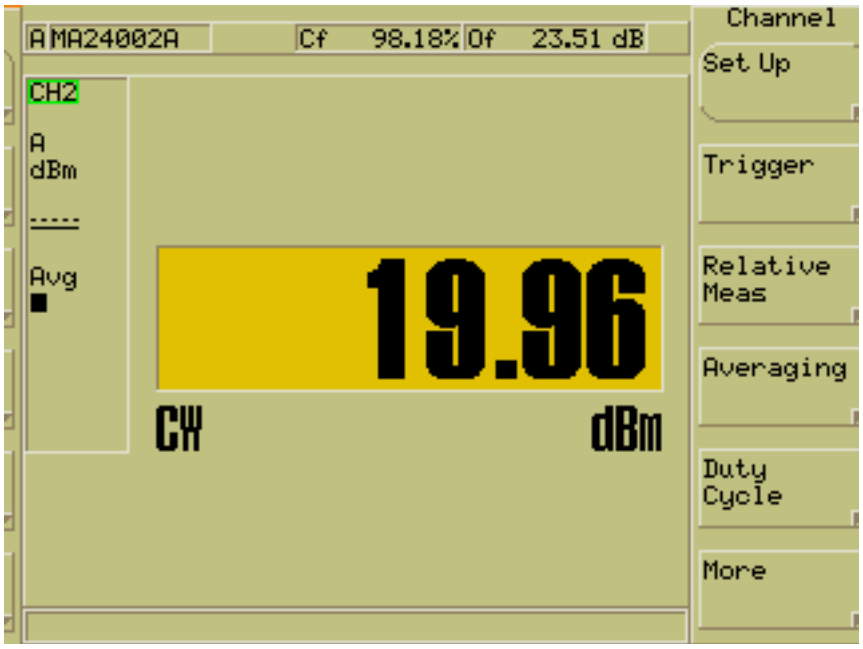
166 South Carter, Genoa City, WI 53128

Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; Mid Channel Frequency: 5.775 GHz
Output power setting: 20dBm Modulation BW: 20MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.96dBm + 3 dB (MIMO)
= 22.96dBm = 197.7**mW**

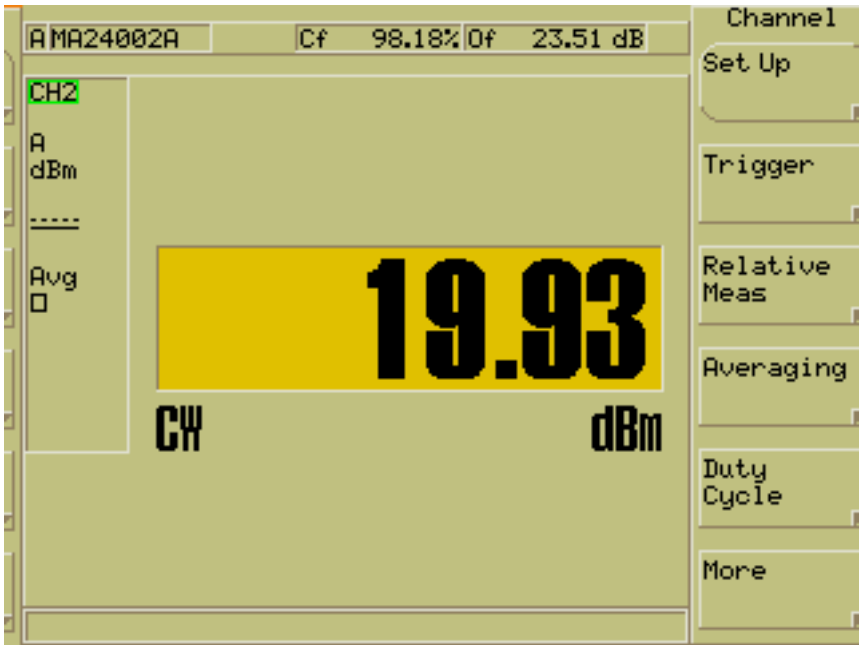


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; High Channel Frequency: 5.835 GHz
Output power setting: 20dBm Modulation BW: 20MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.93dBm + 3 dB (MIMO)
= 22.93dBm = 196.3**mW**

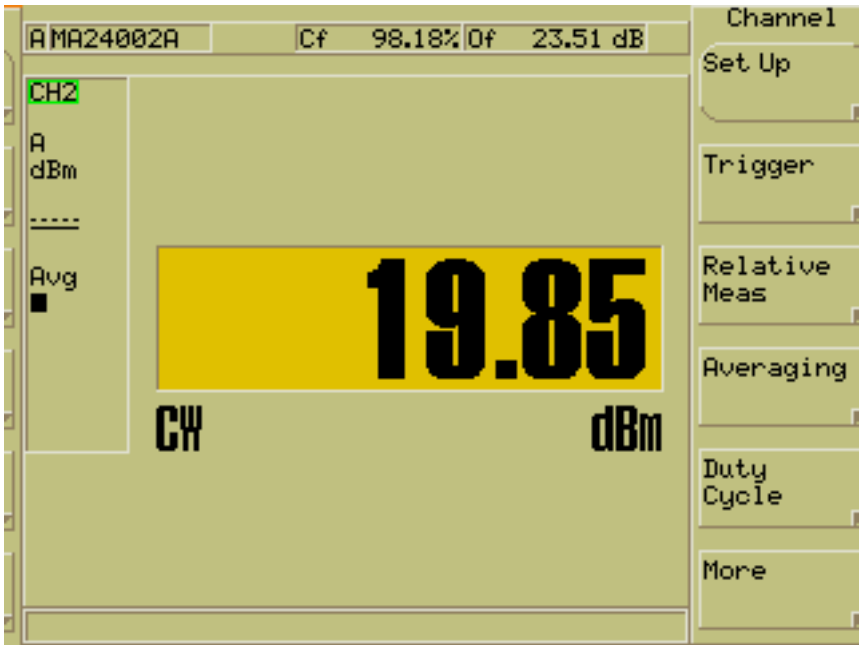


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; Low Channel Frequency: 5.740 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.85dBm + 3 dB (MIMO)
= 22.85dBm = 192.8**mW**

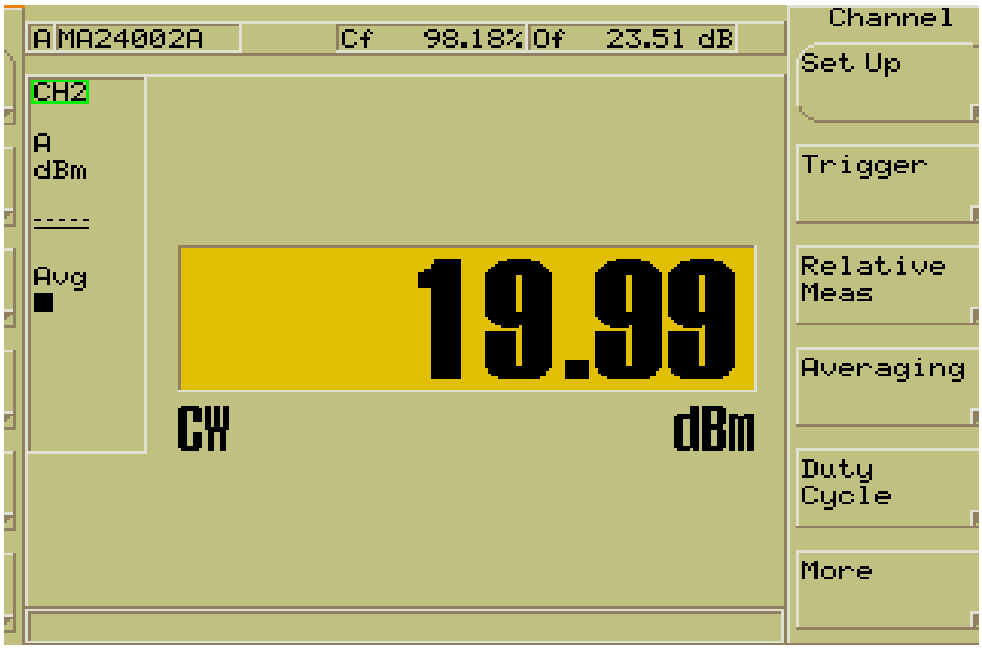


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; Mid Channel Frequency: 5.775 GHz
Output power setting: 20dBm Modulation BW: 20MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.99dBm + 3 dB (MIMO)
= 22.99dBm = 199.1**mW**

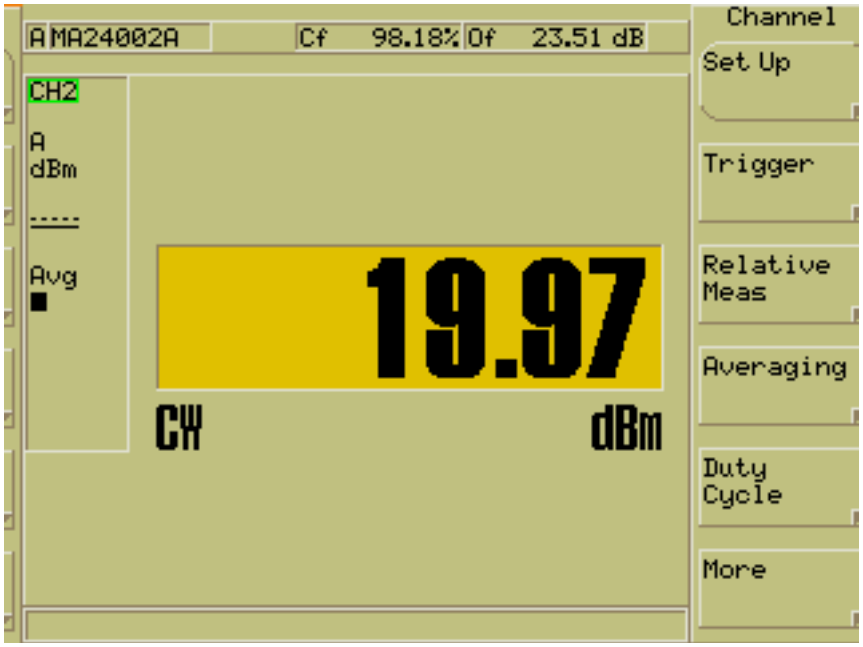


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; High Channel Frequency: 5.835 GHz
Output power setting: 20dBm Modulation BW: 20MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.97dBm + 3 dB (MIMO)
= 22.97dBm = 198.2**mW**

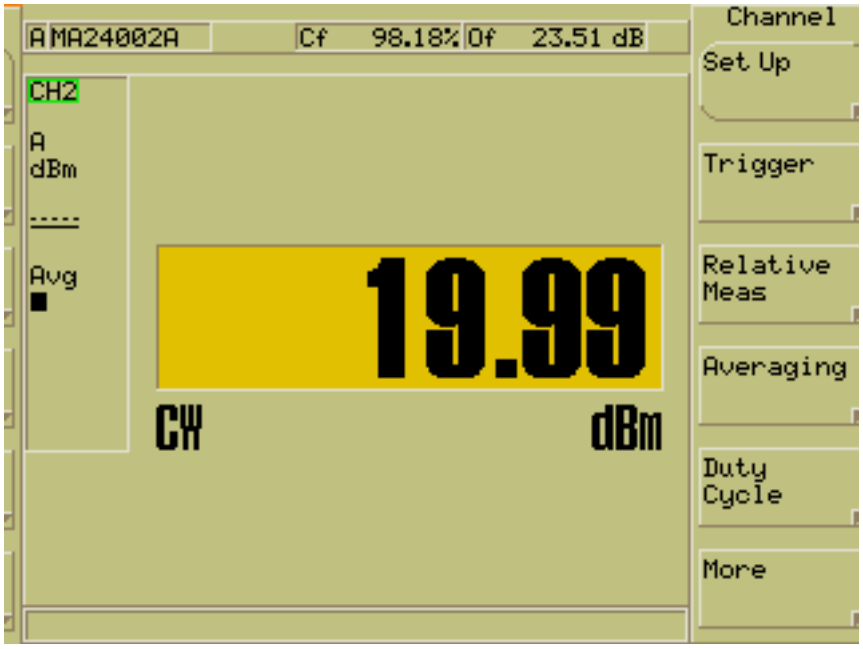


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0 Low Channel Frequency: 5.750 GHz
Output power setting: 20dBm Modulation BW: 40MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.99dBm + 3 dB (MIMO)
= 22.99dBm = 199.1**mW**

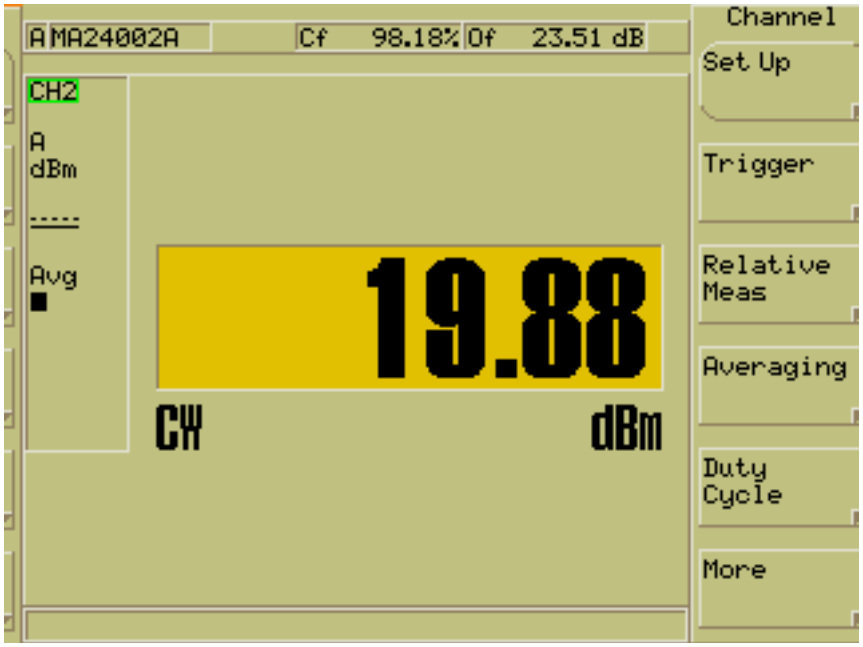


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; Mid Channel Frequency: 5.785 GHz
Output power setting: 20dBm Modulation BW: 40MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.88dBm + 3 dB (MIMO)
= 22.88dBm = 194.1**mW**

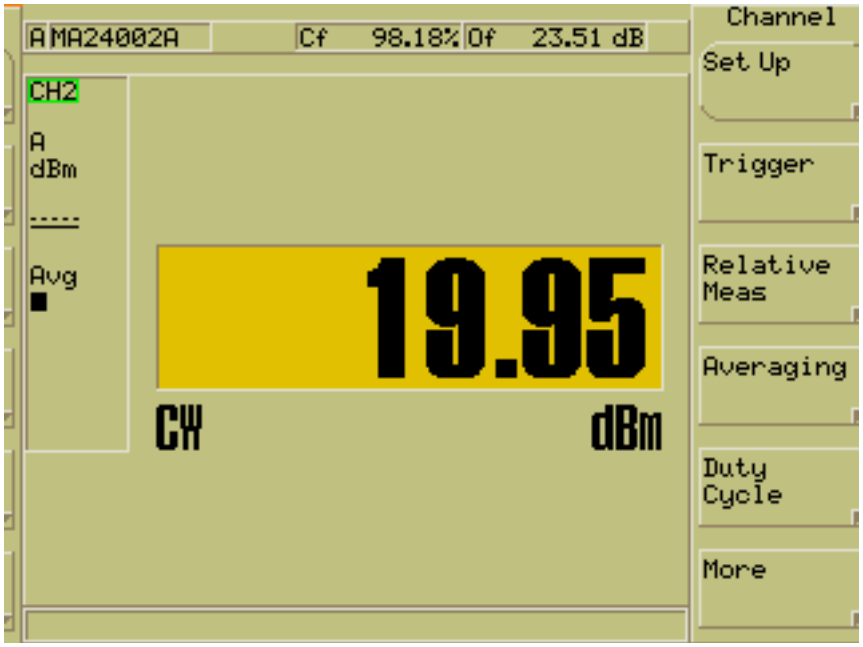


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; High Channel Frequency: 5.825 GHz
Output power setting: 20dBm Modulation BW: 40MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.95dBm + 3 dB (MIMO)
= 22.95dBm = 197.2**mW**

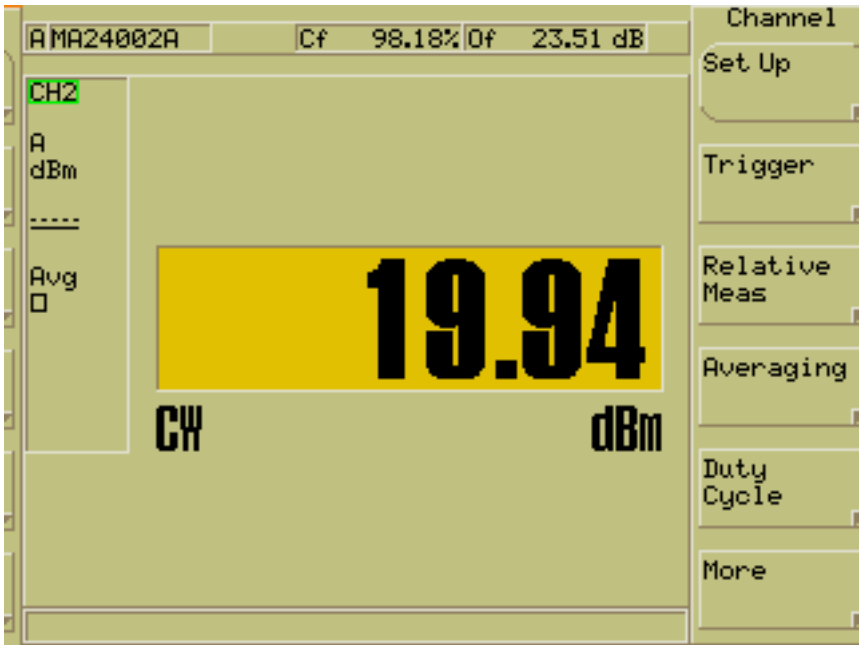


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1 Low Channel Frequency: 5.750 GHz
Output power setting: 20dBm Modulation BW: 40MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.94dBm + 3 dB (MIMO)
= 22.94dBm = 196.8**mW**

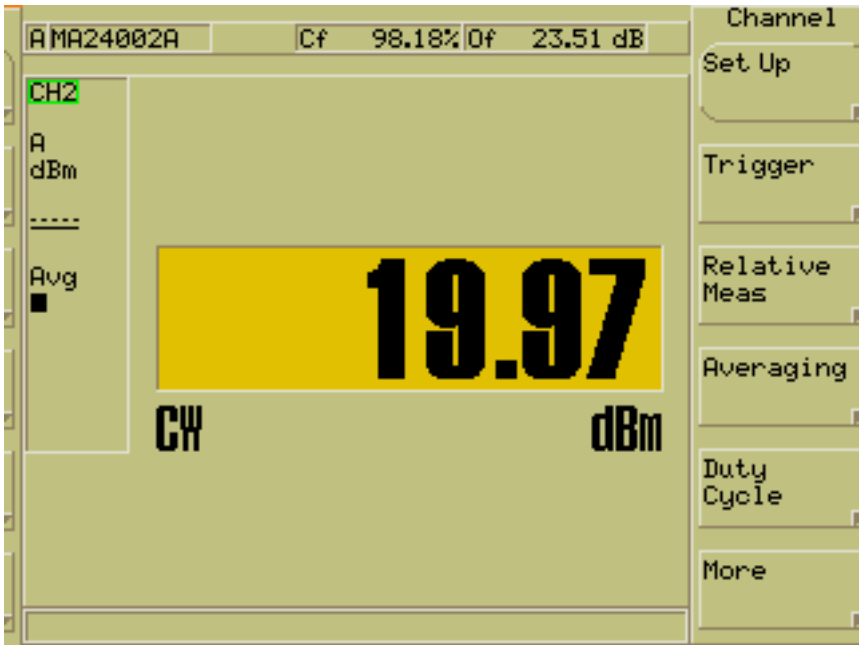


Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; Mid Channel Frequency: 5.785 GHz
Output power setting: 20dBm Modulation BW: 40MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.97dBm + 3 dB (MIMO)
= 22.97dBm = 198.2**mW**



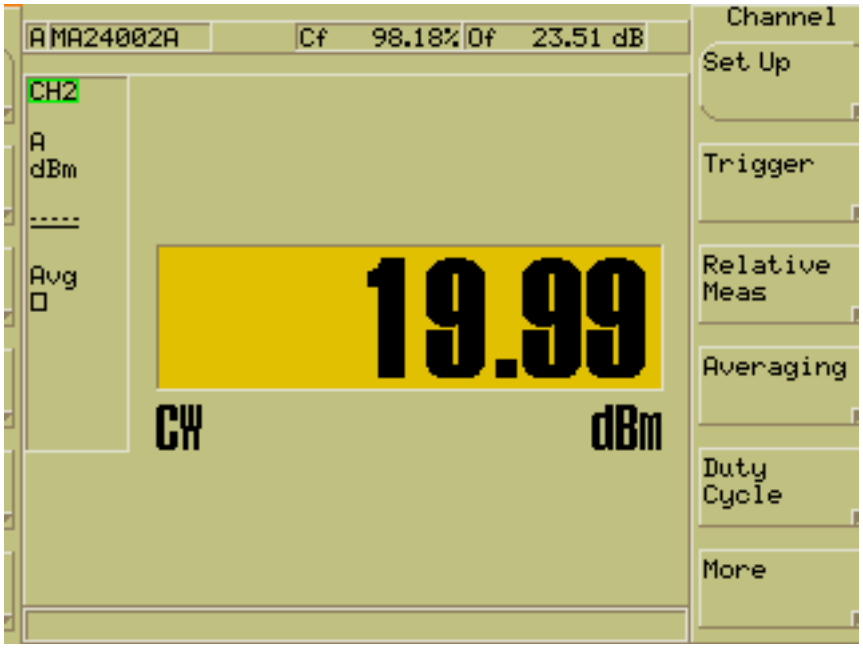
166 South Carter, Genoa City, WI 53128

Test Date: 6-03-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; High Channel Frequency: 5.825 GHz
Output power setting: 20dBm Modulation BW: 40MHz
Operating Mode: Point-to-Point Antenna Gain = 16dBi

Limit: [15.247]: 30dBm (1 Watt) conducted

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna:
Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 19.99dBm + 3 dB (MIMO)
= 22.99dBm = 199.1**mW**

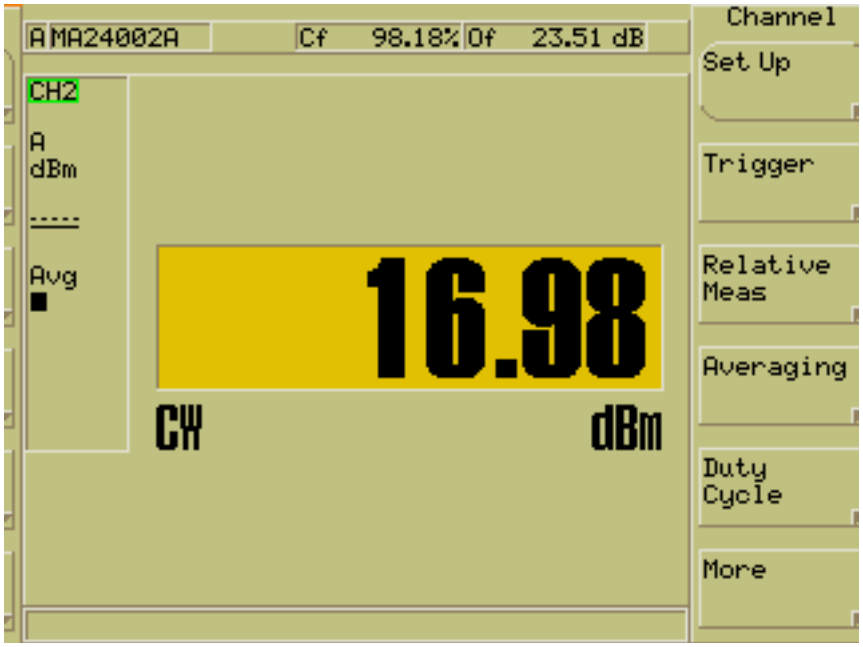


Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; Low Channel Frequency: 5.740 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.98dBm + 3 dB (MIMO) = 19.98dBm = 99.5**mW**



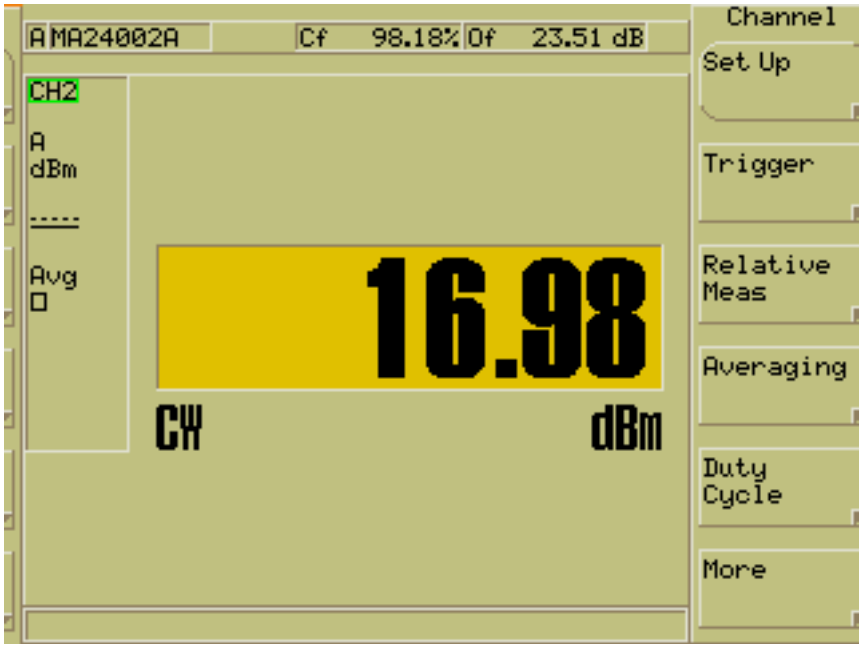
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; Mid Channel Frequency: 5.775 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.98dBm + 3 dB (MIMO) = 19.98dBm = 99.5**mW**



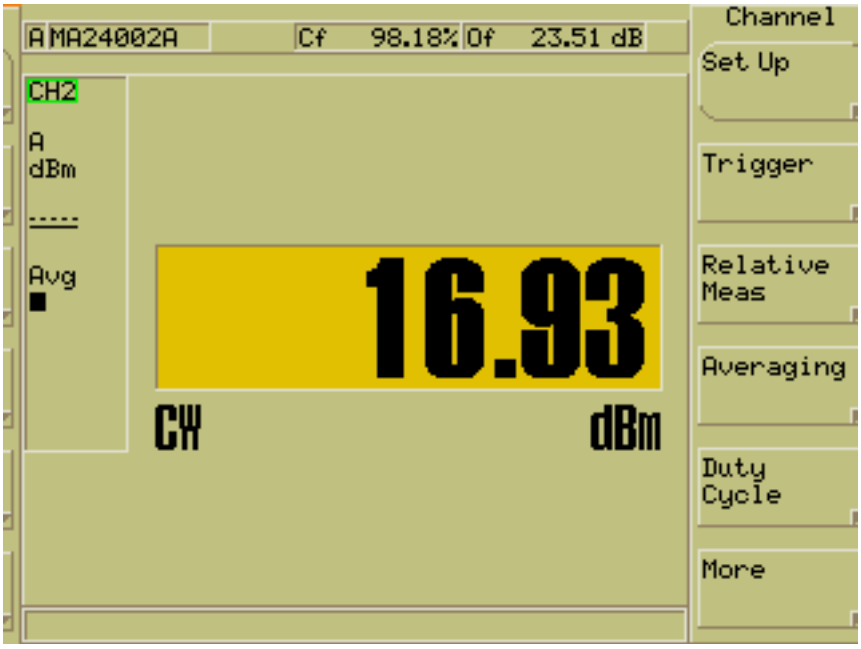
166 South Carter, Genoa City, WI 53128

Test Date: 05-29-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; High Channel Frequency: 5.835 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.93dBm + 3 dB (MIMO) = 19.93dBm = 98.4**mW**



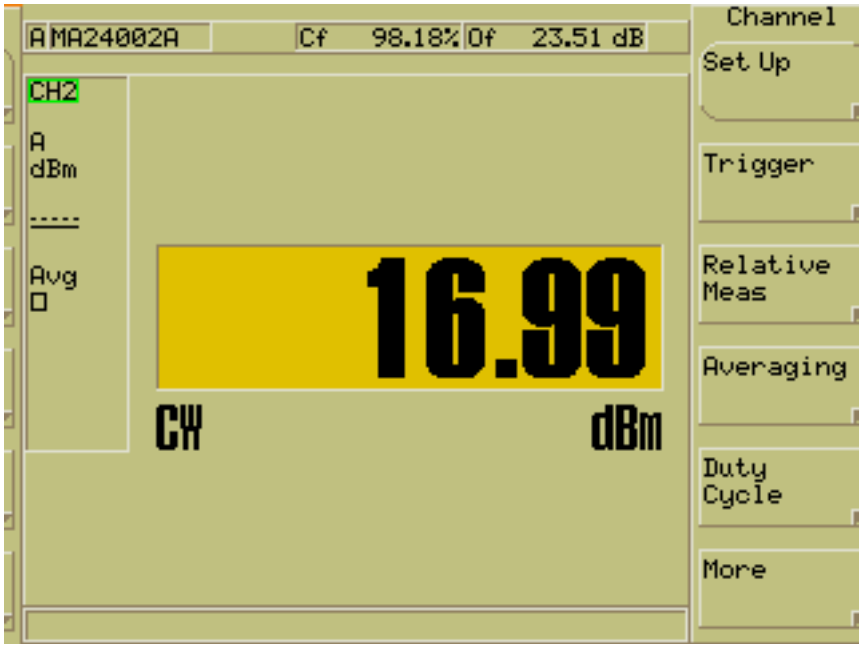
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; Low Channel Frequency: 5.740 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.99dBm + 3 dB (MIMO) = 19.99dBm = 99.7**mW**



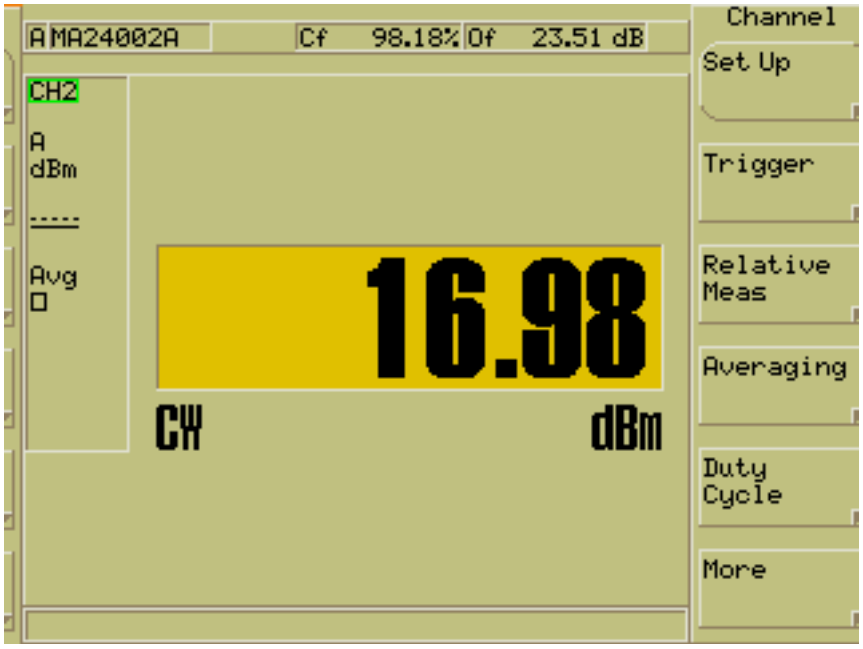
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; Mid Channel Frequency: 5.775 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.98dBm + 3 dB (MIMO) = 19.98dBm = 99.5**mW**



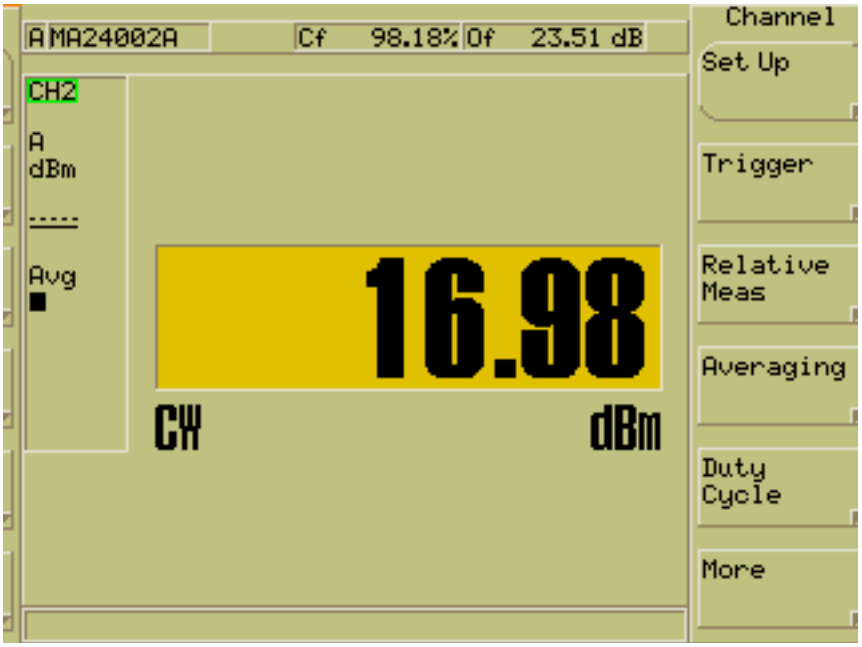
166 South Carter, Genoa City, WI 53128

Test Date: 05-29-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; High Channel Frequency: 5.835 GHz
Output power setting: 17; Modulation BW: 20MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.98dBm + 3 dB (MIMO) = 19.98dBm = 99.5**mW**

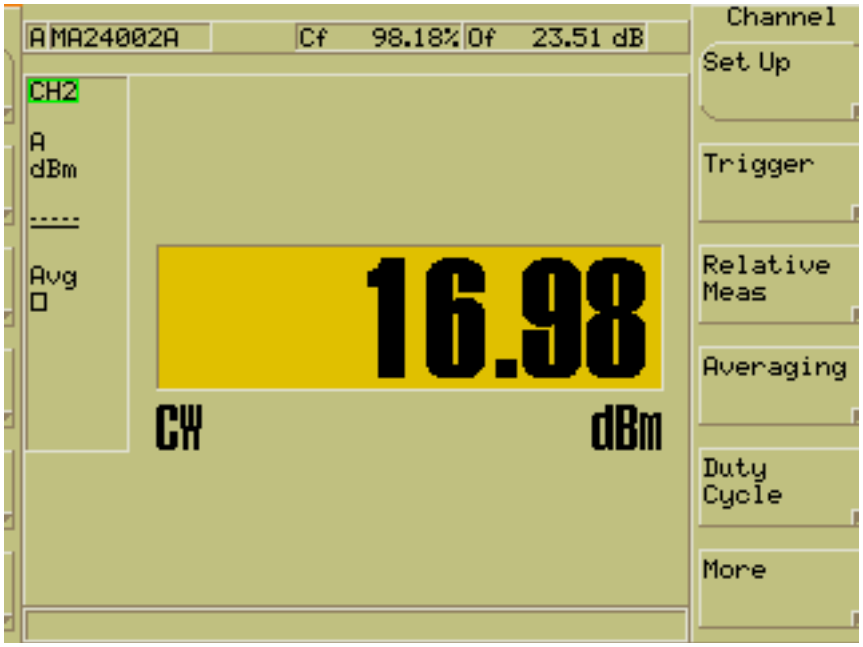


Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; Low Channel Frequency: 5.750 GHz
Output power setting: 17; Modulation BW: 40MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.98dBm + 3 dB (MIMO) = 19.98dBm = 99.5**mW**



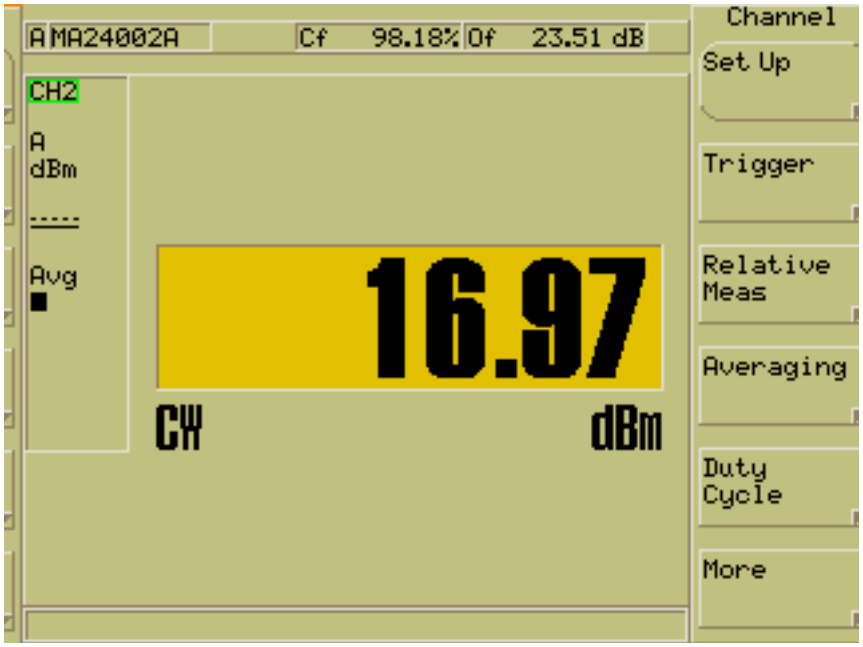
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; Mid Channel Frequency: 5.785 GHz
Output power setting: 17; Modulation BW: 40MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.97dBm + 3 dB (MIMO) = 19.97dBm = 99.3**mW**



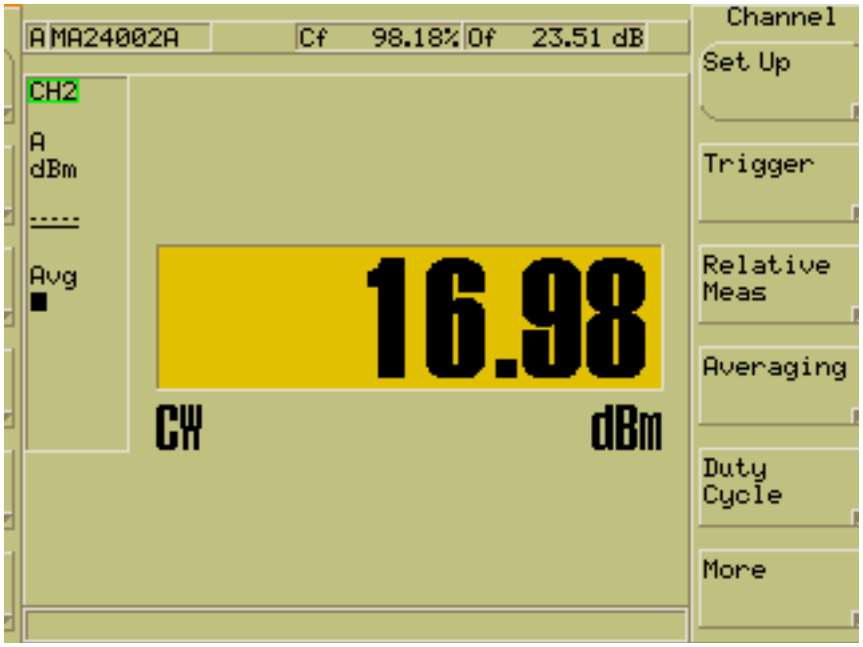
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 0; High Channel Frequency: 5.825 GHz
Output power setting: 17; Modulation BW: 40MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.98dBm + 3 dB (MIMO) = 19.98dBm = 99.5**mW**



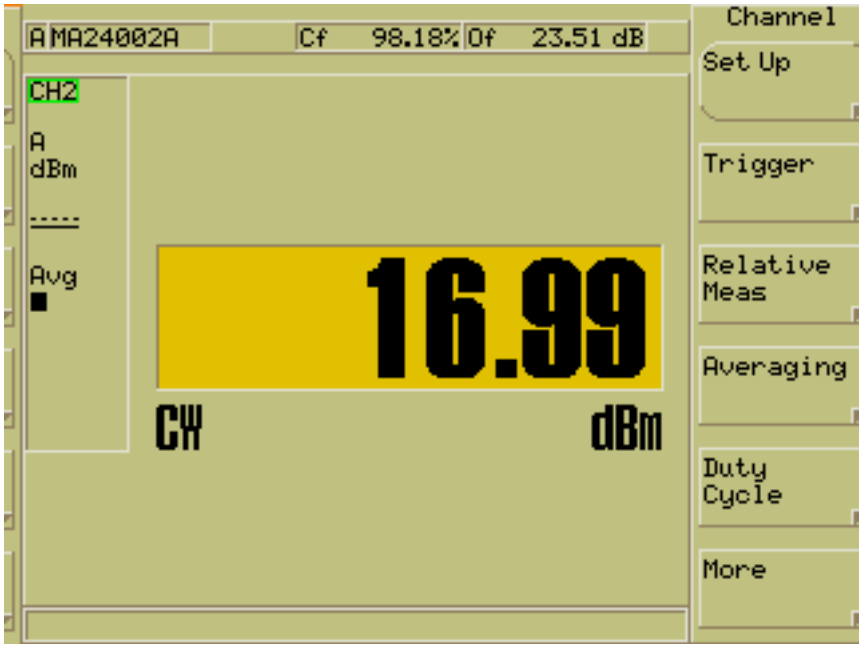
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; Low Channel Frequency: 5.750 GHz
Output power setting: 17; Modulation BW: 40MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.99dBm + 3 dB (MIMO) = 19.9dBm = 99.7**mW**



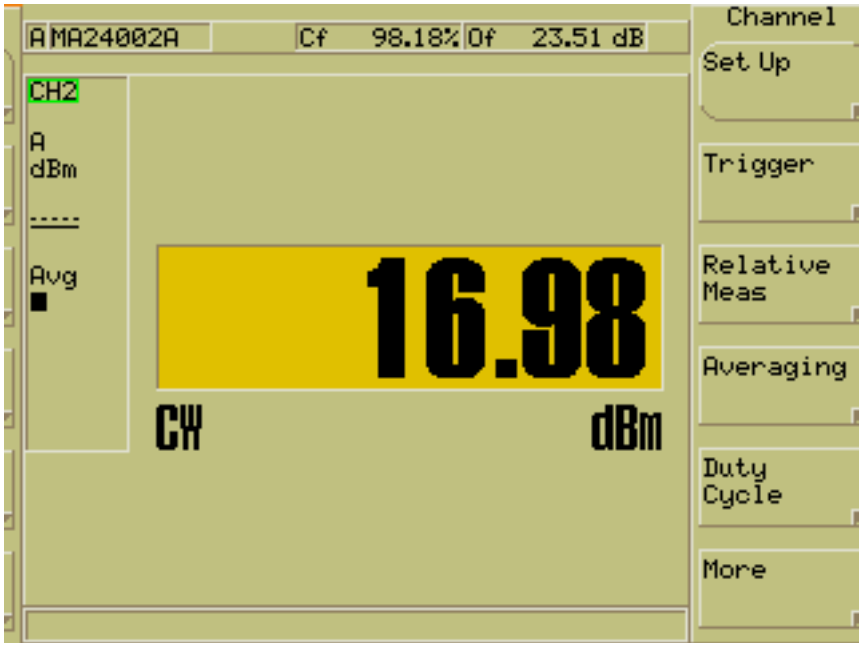
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; Mid Channel Frequency: 5.785 GHz
Output power setting: 17; Modulation BW: 40MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.98dBm + 3 dB (MIMO) = 19.98dBm = 99.5**mW**



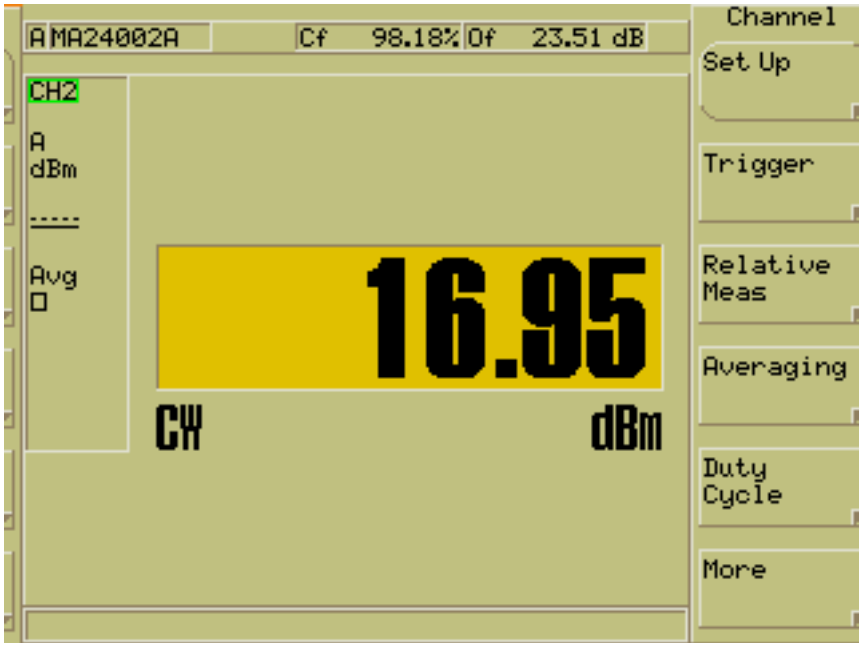
166 South Carter, Genoa City, WI 53128

Test Date: 05-31-2013
Company: Cambium Networks
EUT: Avenger Station 5.7 GHz OFDM ESN: 000456C0000C
Test: AVERAGE Fundamental Emission Output Power – Conducted
Procedure: FCC KDB D01 DTS Meas Guidance v03r01
Section 9.2.3.1 – AVGPM (Measurement using an RF average power meter with a thermocouple detector)
Operator: Jim O
Comments: Output port: Channel 1; High Channel Frequency: 5.825 GHz
Output power setting: 17; Modulation BW: 40MHz
Operating Mode: Point-to-Multipoint Antenna Gain = 16dBi

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 10 dB (antenna gain is 10 dB greater than the 6 dB allowed) = 20dBm conducted.

MIMO MATRIX A: Measure-and-sum technique for MIMO with Cross-Polarized antenna: Measure and add 10 log (N) dB, where N is the number of outputs. = 10 log (2) = 3 dB

Fundamental Emission AVERAGE Output Power = 16.95dBm + 3 dB (MIMO) = 19.95dBm = 98.9**mW**



166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B3.0 Maximum Power Spectral Density – Conducted

Rule Section: Section 15.247(e)

Test Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01 – *Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247*

10.3 Method AVGPSD-1 (trace averaging with EUT transmitting at full (power throughout each sweep)

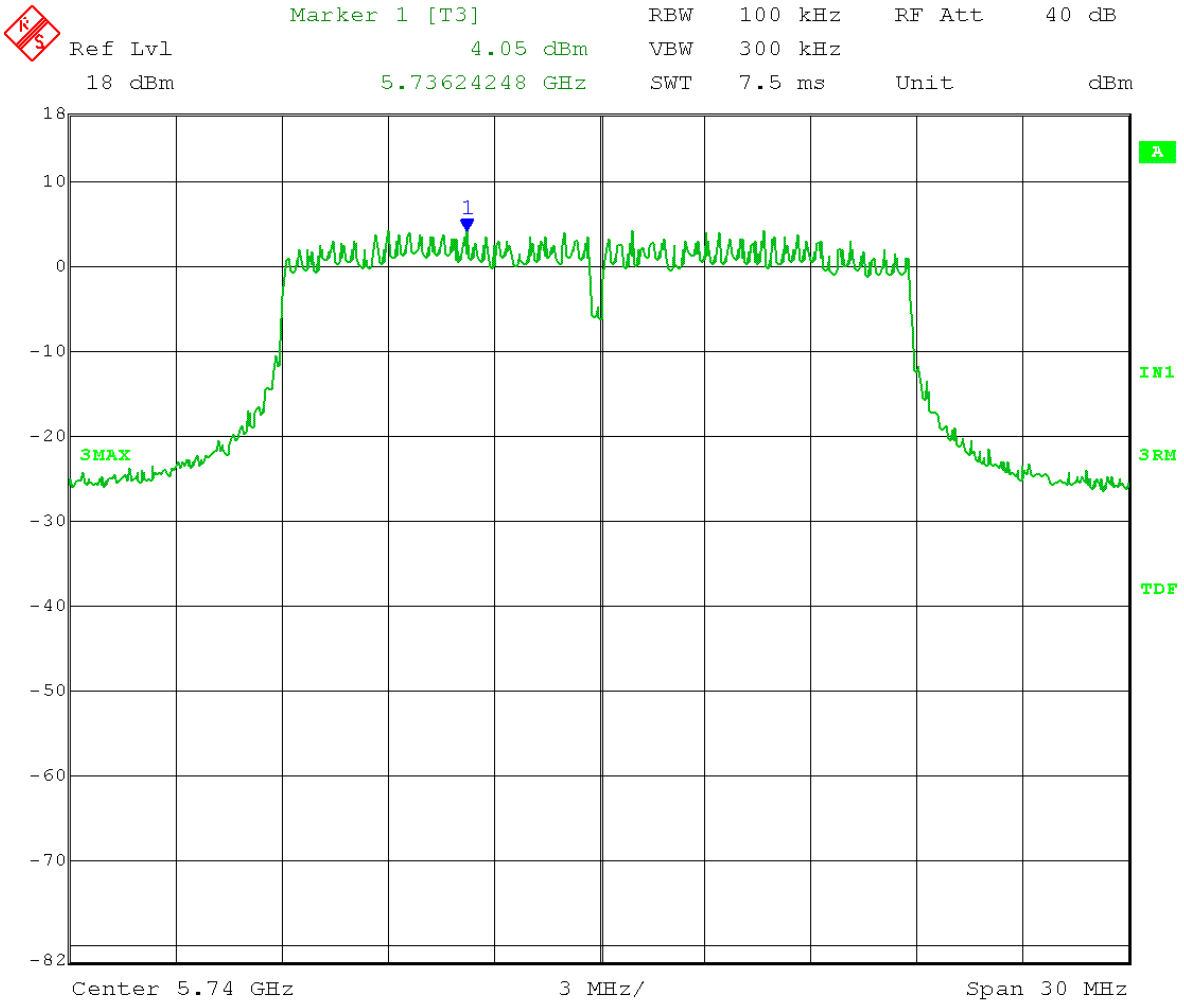
Description: Set instrument center frequency to DTS channel center frequency.
Set span to at least 1.5 times the OBW.
Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz. .
Set VBW ≥3 x RBW.
Detector = power averaging (RMS) or sample detector (when RMS not available).
Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
Sweep time = auto couple.
Employ trace averaging (RMS) mode over a minimum of 100 traces.
Use the peak marker function to determine the maximum amplitude level.

Measurements were taken for an OFDM modulation over a 20MHz and 40MHz modulation bandwidth at the low, mid and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings. A duty cycle measurement of greater than 98% was confirmed.

Limit: 8 dBm in any 3 kHz band segment within the fundamental EBW during any time interval of continuous transmission.

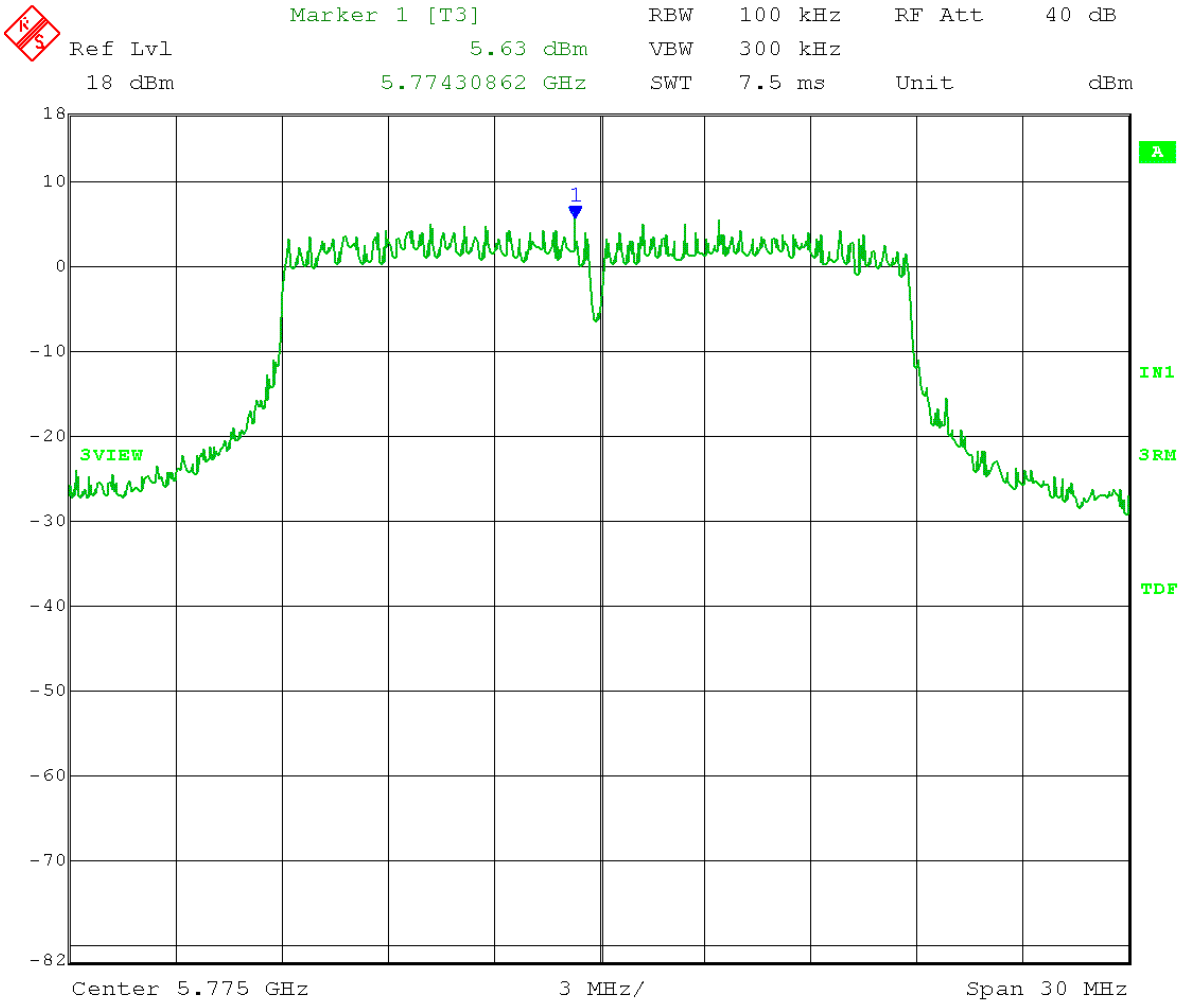
Results: Passed

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Low Channel: Frequency = 5.740GHz
TX Output Power Setting = 20dBm 20MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 0
Limit: +8 dBm
PSD = 4.05dBm = Pass



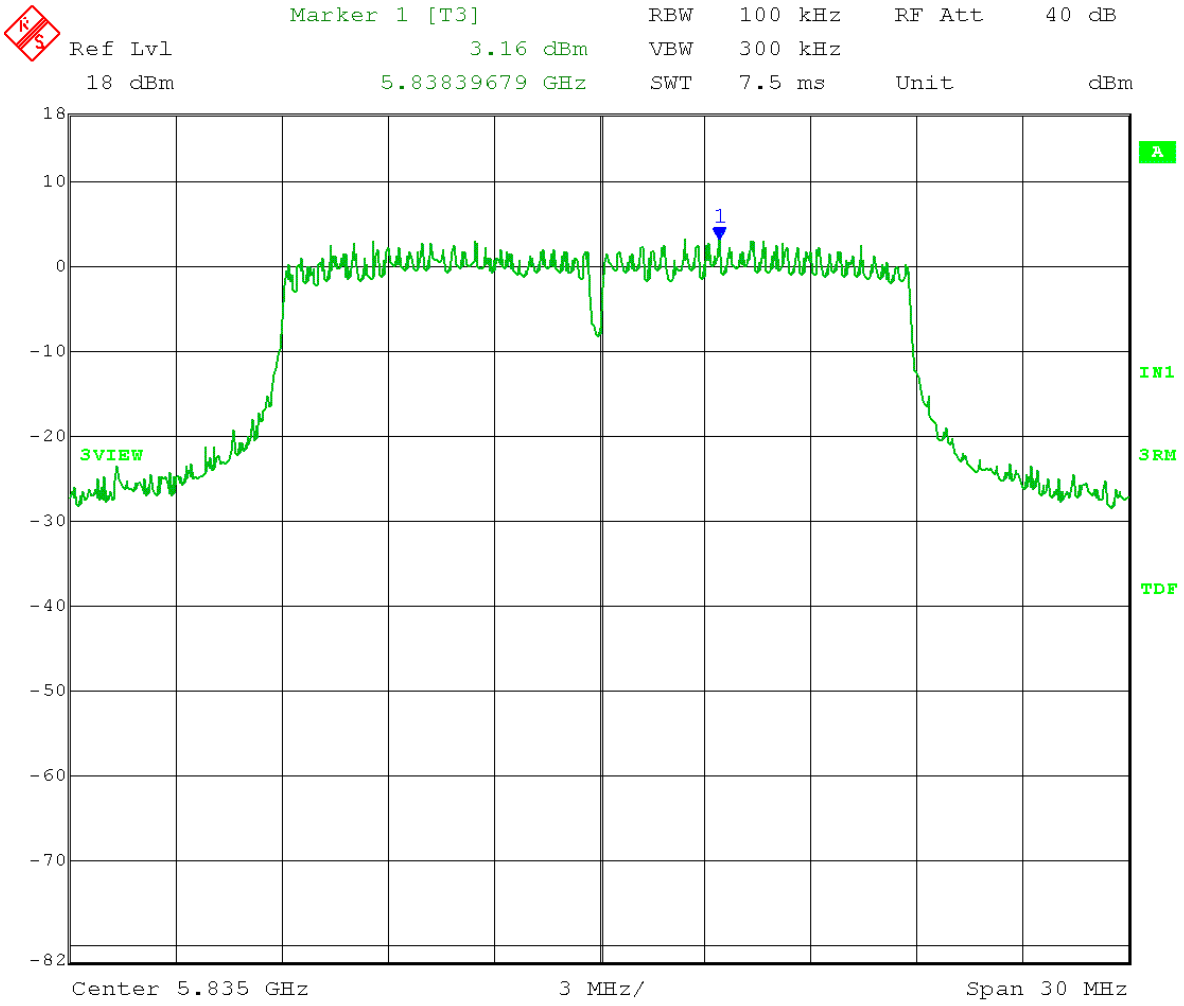
Date: 30.MAY.2013 09:24:28

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Mid Channel: Frequency = 5.775GHz
TX Output Power Setting = 20dBm 20MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 0
Limit: +8 dBm
PSD = 5.63dBm = Pass



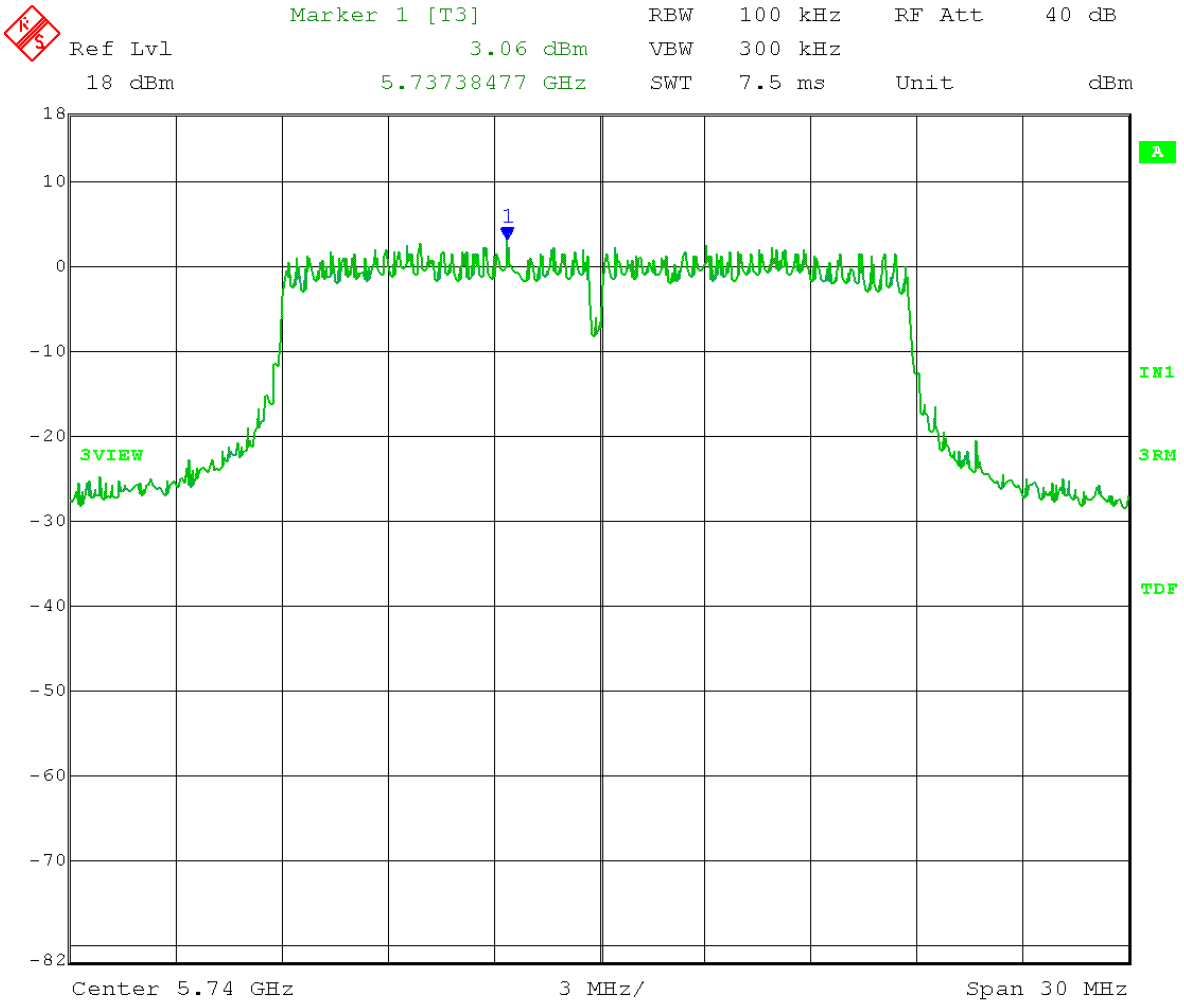
Date: 30.MAY.2013 09:43:47

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
High Channel: Frequency = 5.835GHz
TX Output Power Setting = 20dBm 20MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 0
Limit: +8 dBm
PSD = 3.16dBm = Pass



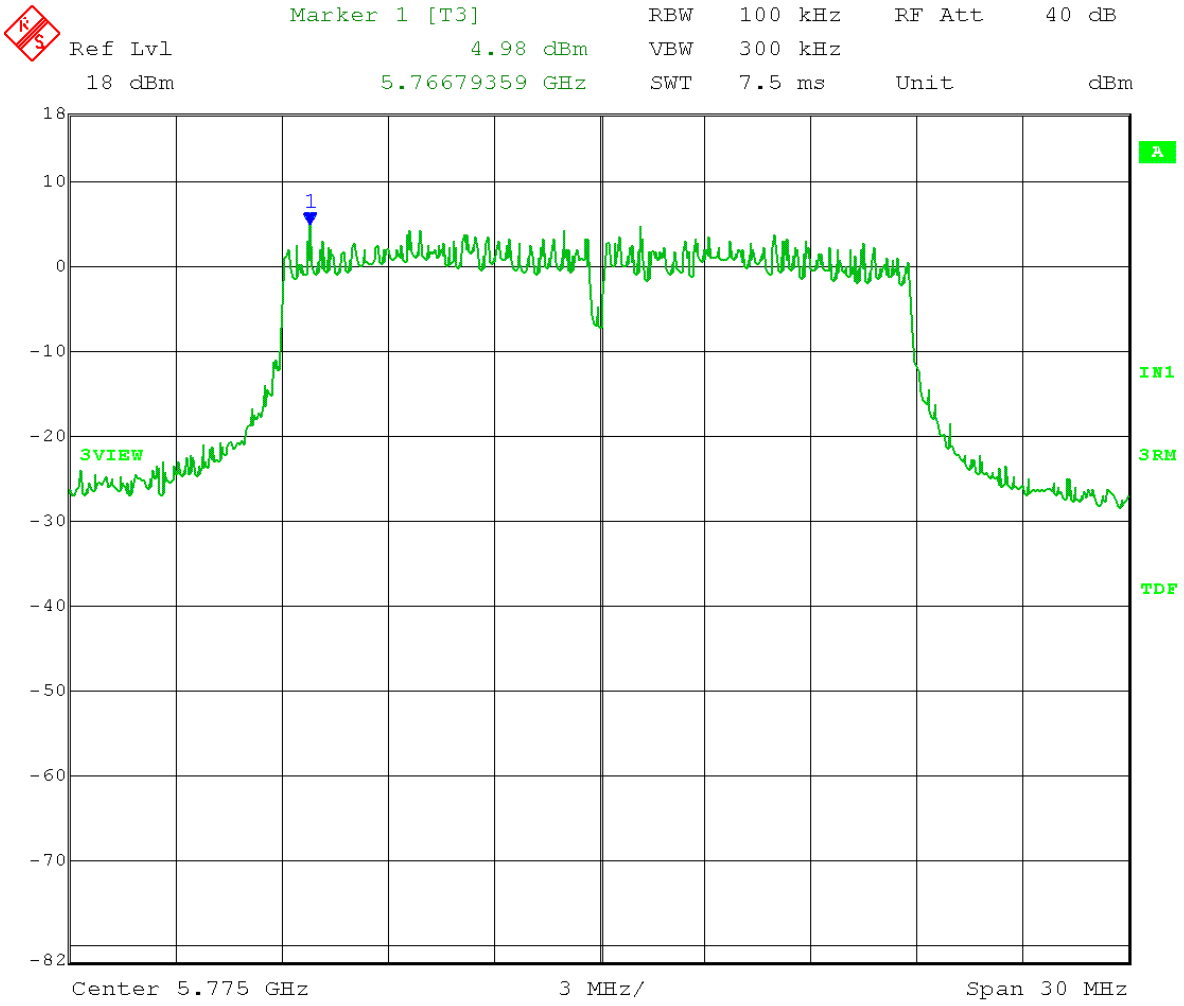
Date: 30.MAY.2013 09:52:31

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Low Channel: Frequency = 5.740GHz
TX Output Power Setting = 20dBm 20MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 1
Limit: +8 dBm
PSD = 3.06dBm = Pass



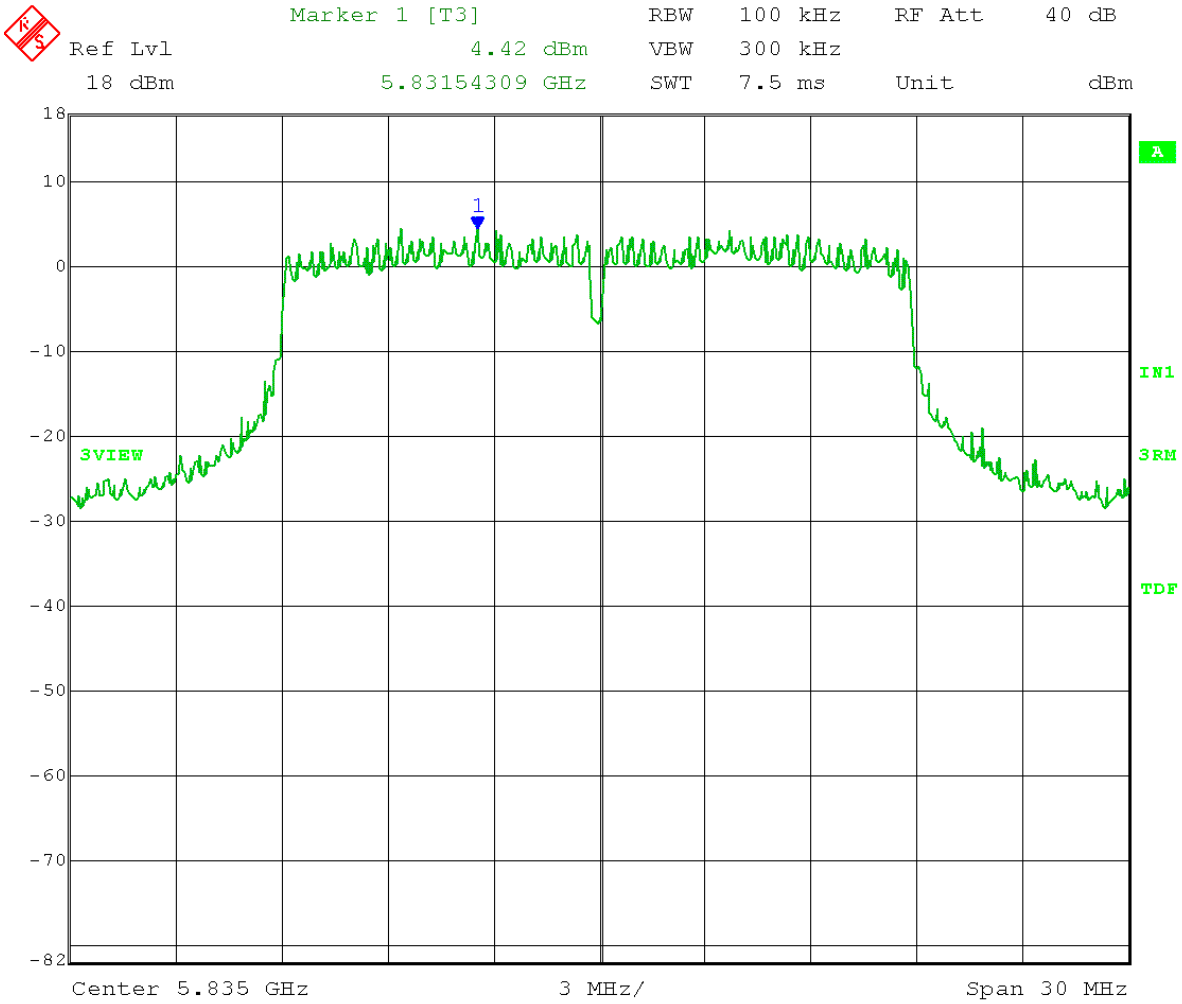
Date: 30.MAY.2013 09:34:52

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Mid Channel: Frequency = 5.775GHz
TX Output Power Setting = 20dBm 20MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 1
Limit: +8 dBm
PSD = 4.98dBm = Pass



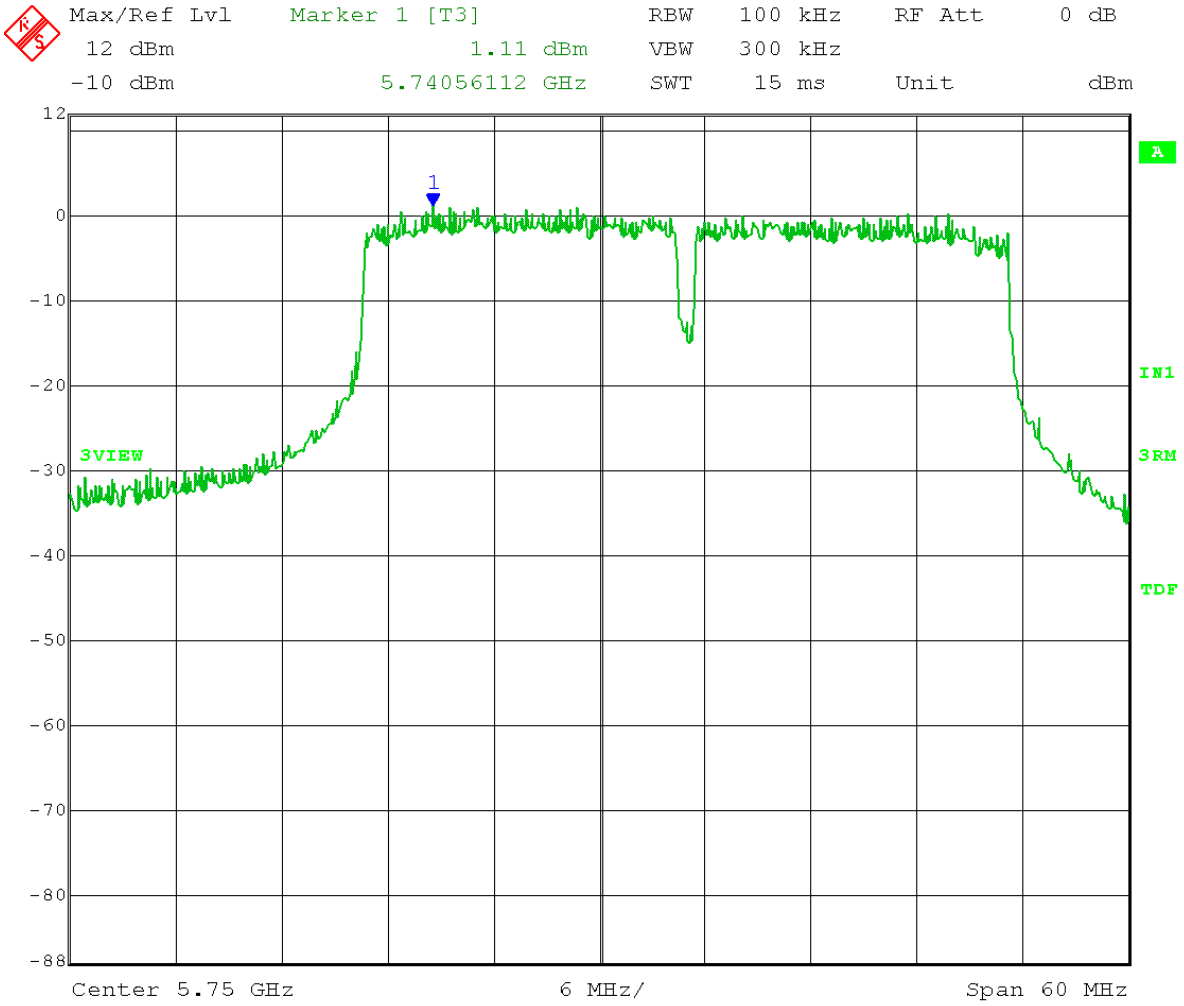
Date: 30.MAY.2013 09:41:30

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
High Channel: Frequency = 5.835GHz
TX Output Power Setting = 20dBm 20MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 1
Limit: +8 dBm
PSD = 4.42dBm = Pass



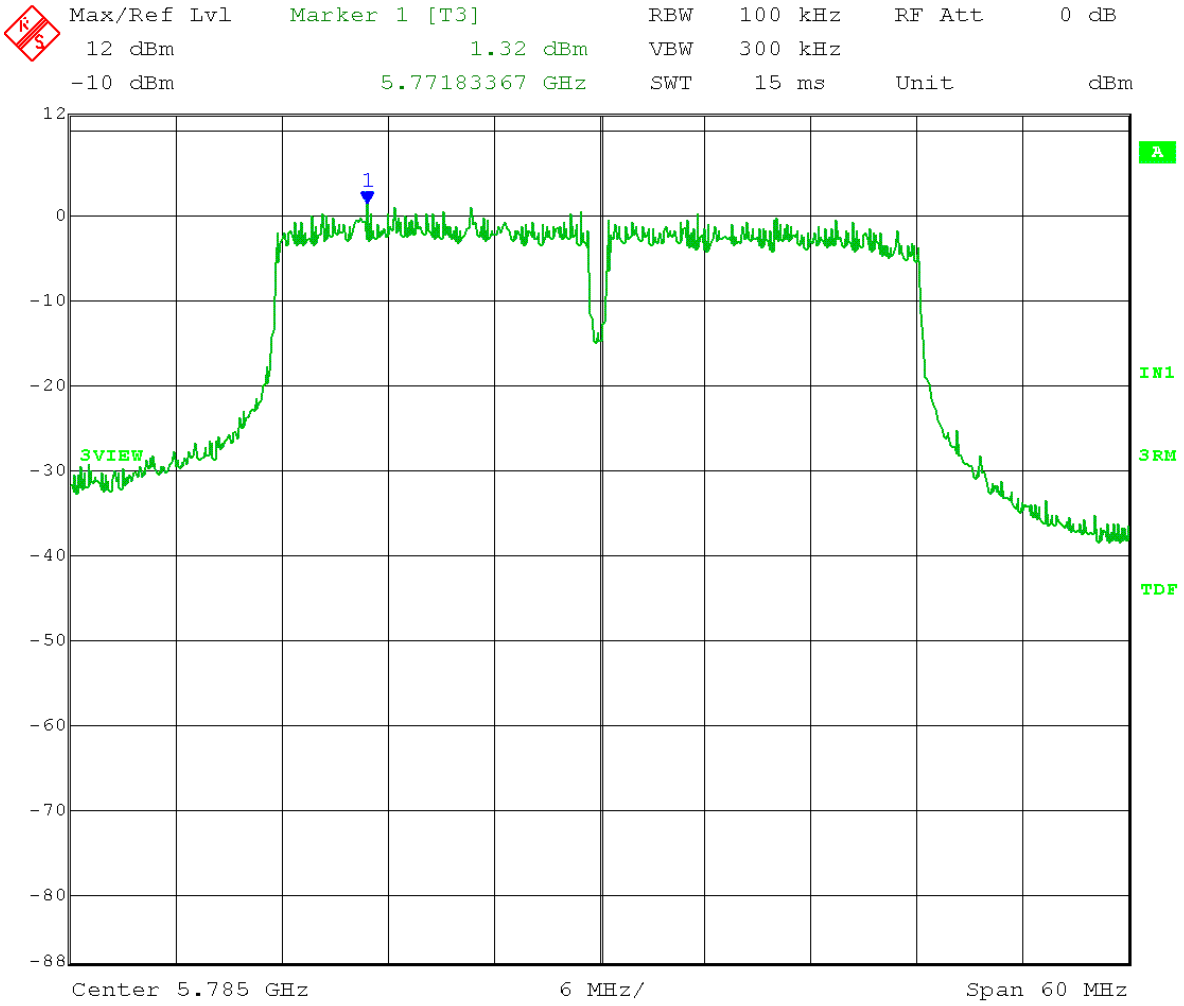
Date: 30.MAY.2013 09:49:48

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Low Channel: Frequency = 5.750GHz
TX Output Power Setting = 20dBm 40MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 0 Limit: +8 dBm
PSD = 1.11dBm = Pass



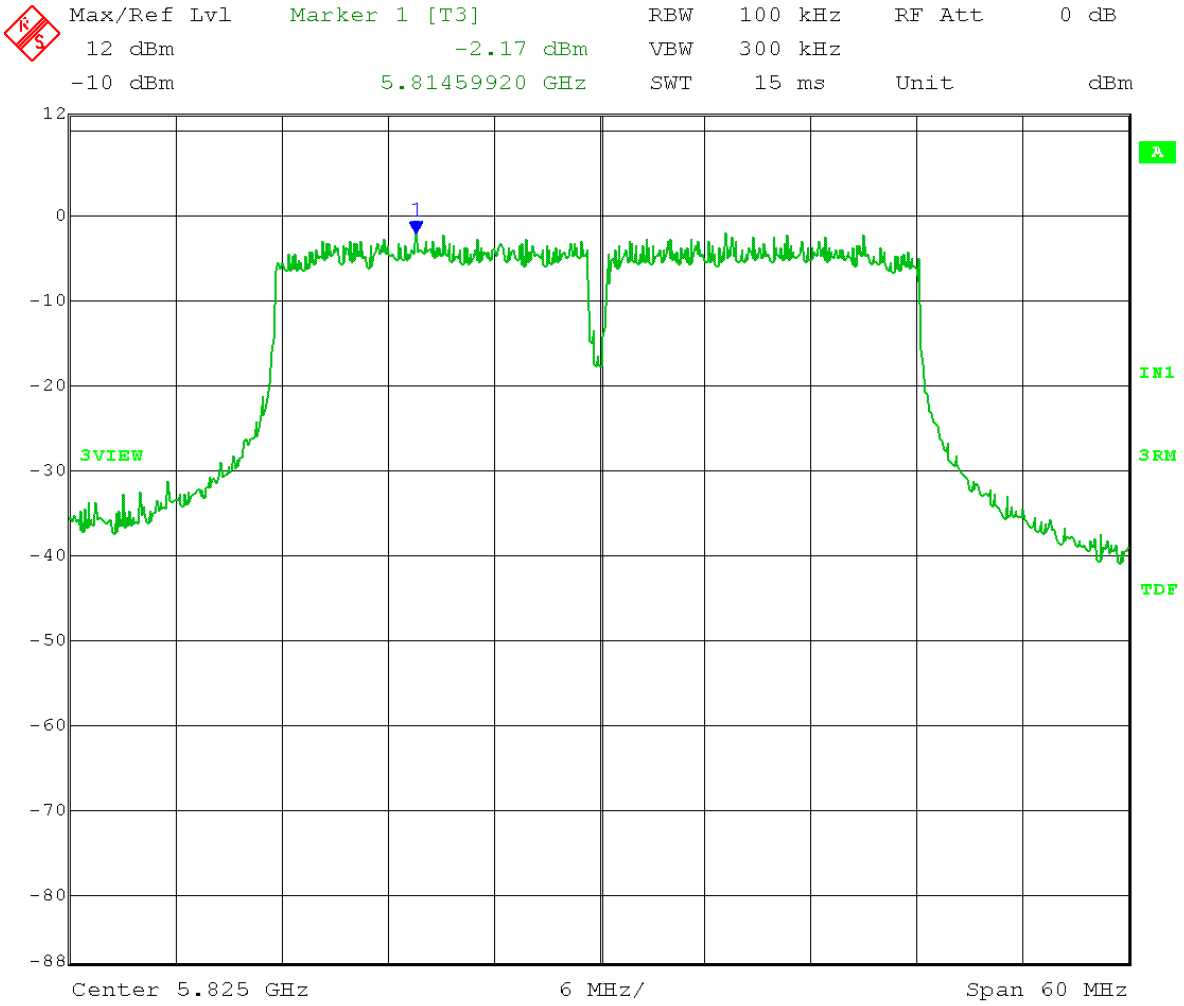
Date: 30.MAY.2013 10:24:43

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Mid Channel: Frequency = 5.785GHz
TX Output Power Setting = 20dBm 40MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 0 Limit: +8 dBm
PSD = 1.32dBm = Pass



Date: 30.MAY.2013 10:18:41

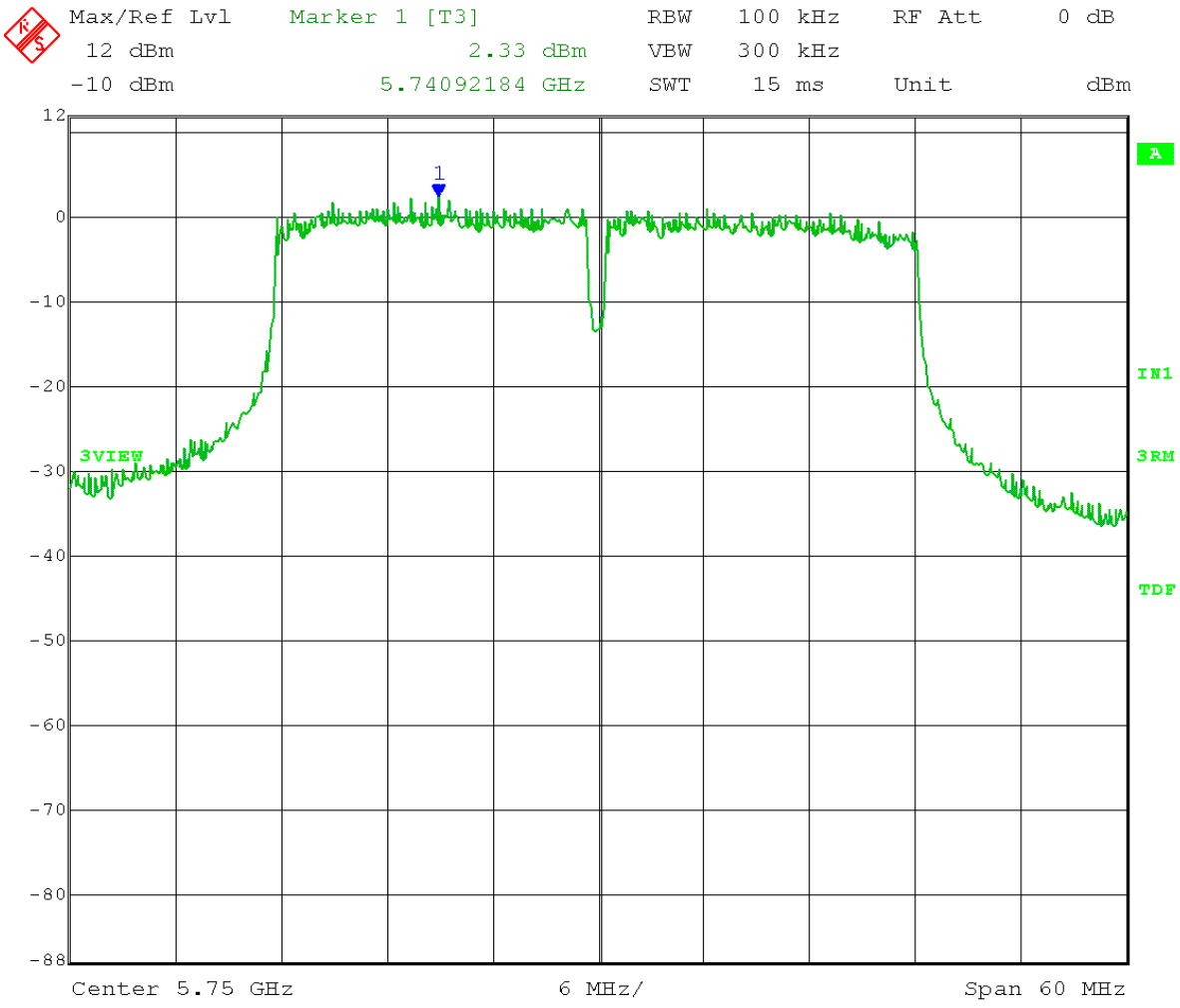
Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
High Channel: Frequency = 5.825GHz
TX Output Power Setting = 20dBm 40MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 0 Limit: +8 dBm
PSD = -2.17dBm = Pass



Date: 30.MAY.2013 10:06:58

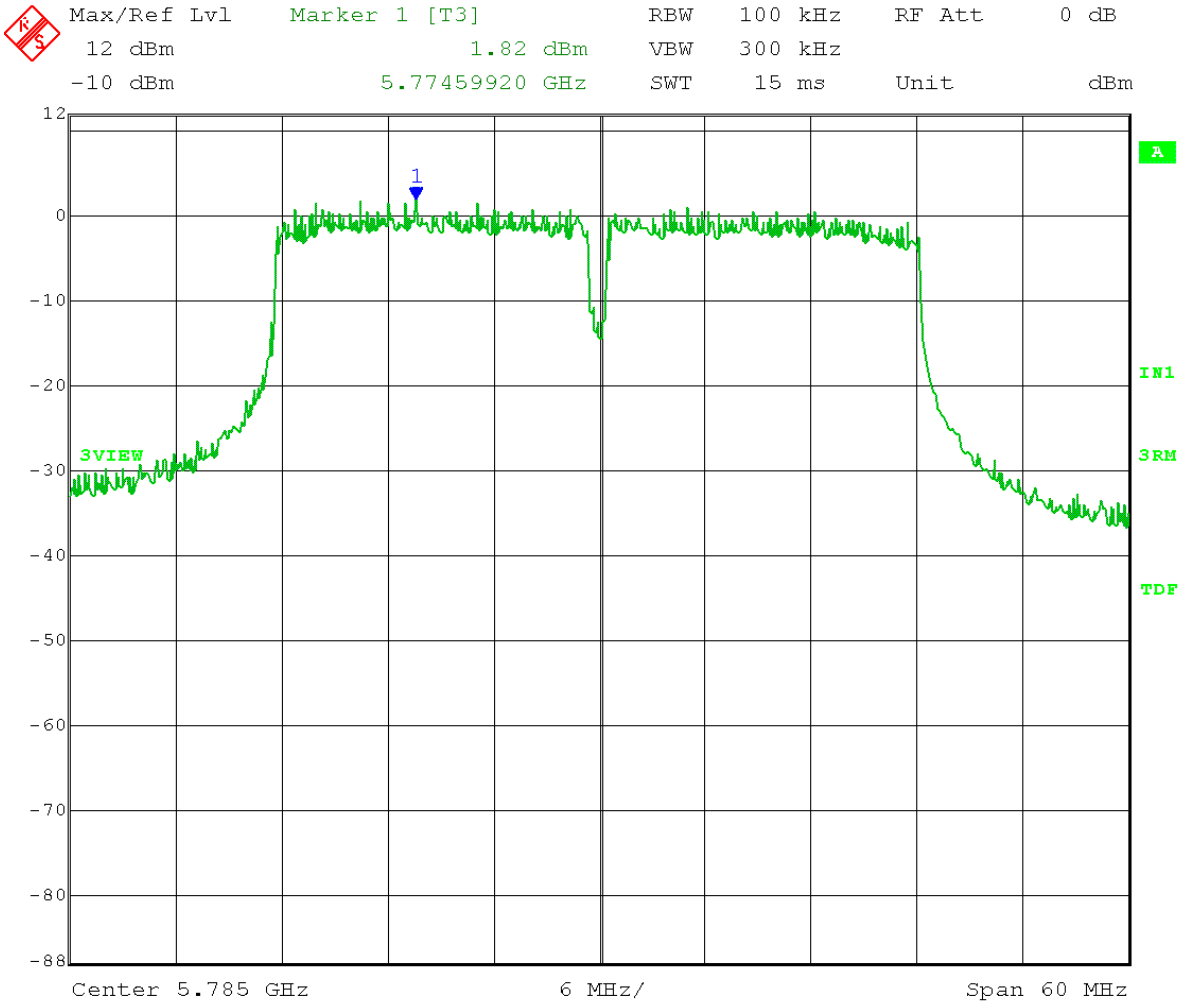
Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Low Channel: Frequency = 5.750GHz

TX Output Power Setting = 20dBm	40MHz BW
RBW = 100 kHz	VBW = 300 kHz
Span = 1.5 x EBW	Detector = RMS
Sweep = Auto Couple	Trace = Max Hold
Channel 1	Limit: +8 dBm
PSD = 2.33dBm = Pass	



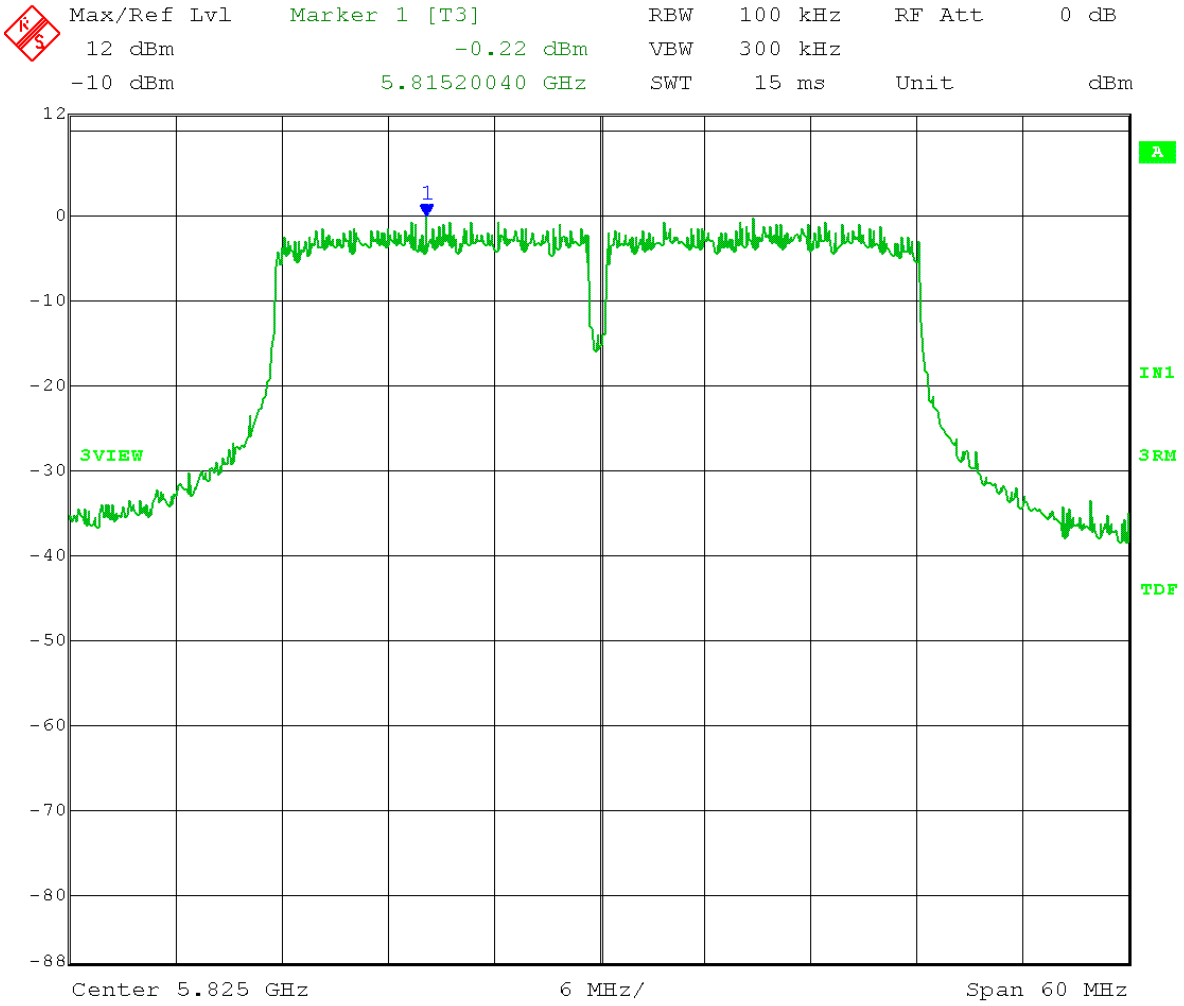
Date: 30.MAY.2013 10:29:18

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
Mid Channel: Frequency = 5.785GHz
TX Output Power Setting = 20dBm 40MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 1 Limit: +8 dBm
PSD = 1.82dBm = Pass



Date: 30.MAY.2013 10:14:53

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station 5.7GHz OFDM
Test: Maximum Power Spectral Density - Conducted
Operator: Jim O
Comment: FCC DTS operating under 15.247 – OET 4/9/2013
10.3 Method AVGPSD-1
High Channel: Frequency = 5.825GHz
TX Output Power Setting = 20dBm 40MHz BW
RBW = 100 kHz VBW = 300 kHz
Span = 1.5 x EBW Detector = RMS
Sweep = Auto Couple Trace = Max Hold
Channel 1 Limit: +8 dBm
PSD = -0.22dBm = Pass



Date: 30.MAY.2013 10:10:23

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B4.0 Maximum Unwanted Emission Levels – Conducted

Rule Section: Section 15.247(d)

Test Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01 – *Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247*

11.0 -Emissions in non-restricted frequency bands
11.2 - Reference level measurement
11.3 - Emission level measurement

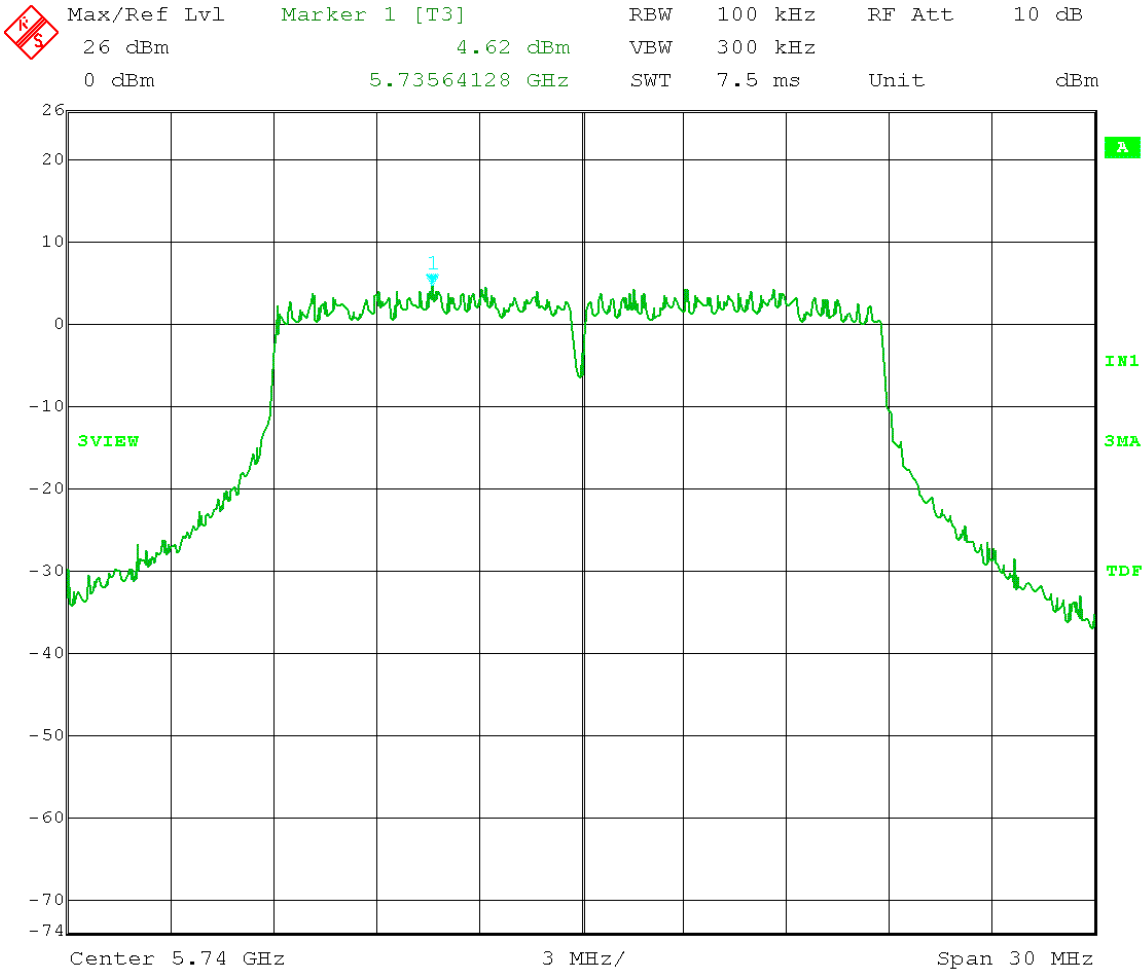
Description: RBW = 100 kHz
VBW ≥ 300 kHz
Span to ≥ 1.5 times the *DTS bandwidth* (Reference Level)
Set the center frequency and span to encompass frequency range to be measured. (Emission Level)
Detector = peak
Sweep = auto couple
Trace mode = max hold

Measurements were taken for an OFDM modulation over a 20MHz and 40MHz modulation bandwidth at the low, mid and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings.

Limit: 30 dB below maximum in-band average PSD level (maximum level in any 100 kHz band). Average output power procedure was used to measure the fundamental emission power

Results: Passed

Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — Low Channel Transmit = 5.740GHz
	Output power setting 20dBm — 20MHz BW
	Channel 0
	Reference Level measurement
	Limit = 4.62dBm – 30 dB = -25.38dBm

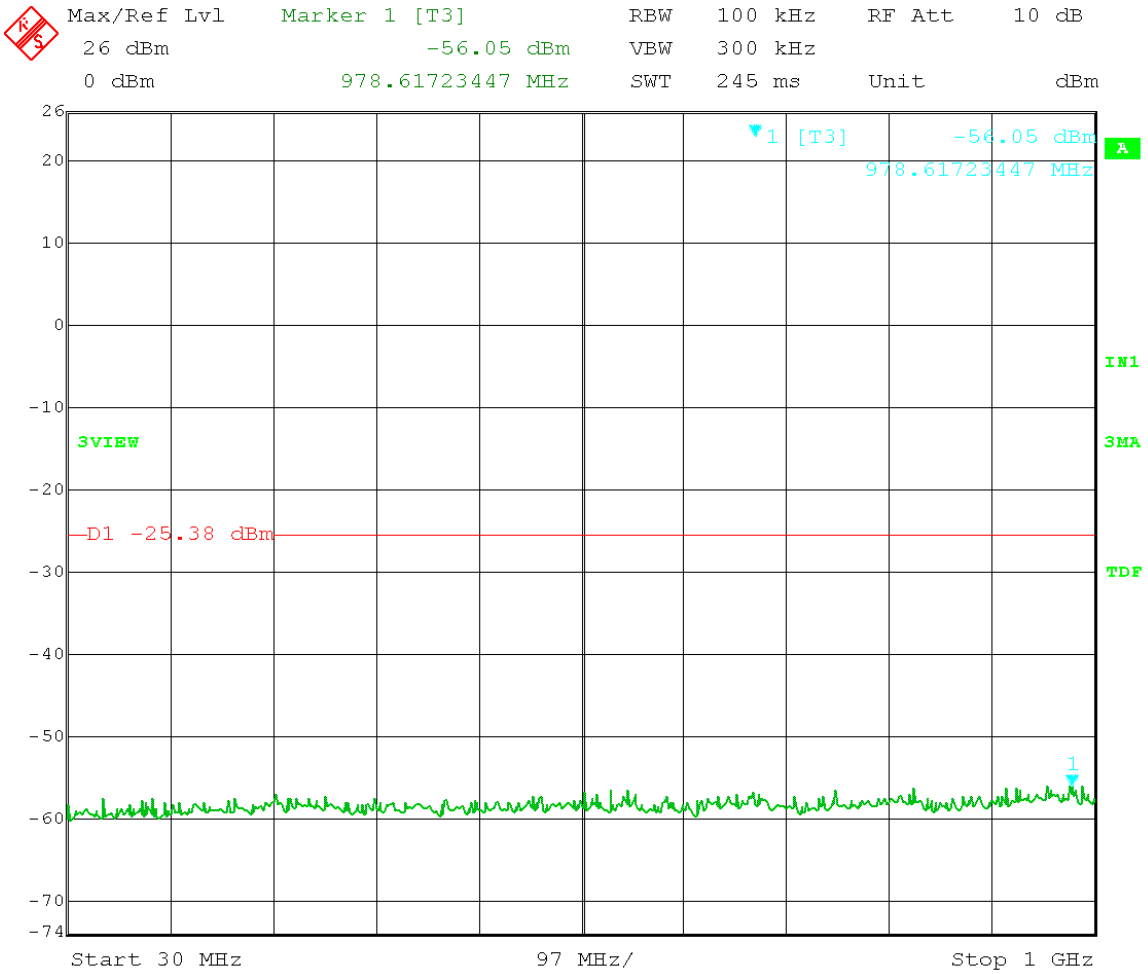


Date: 30.MAY.2013 14:16:25

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 0
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -25.38dBm

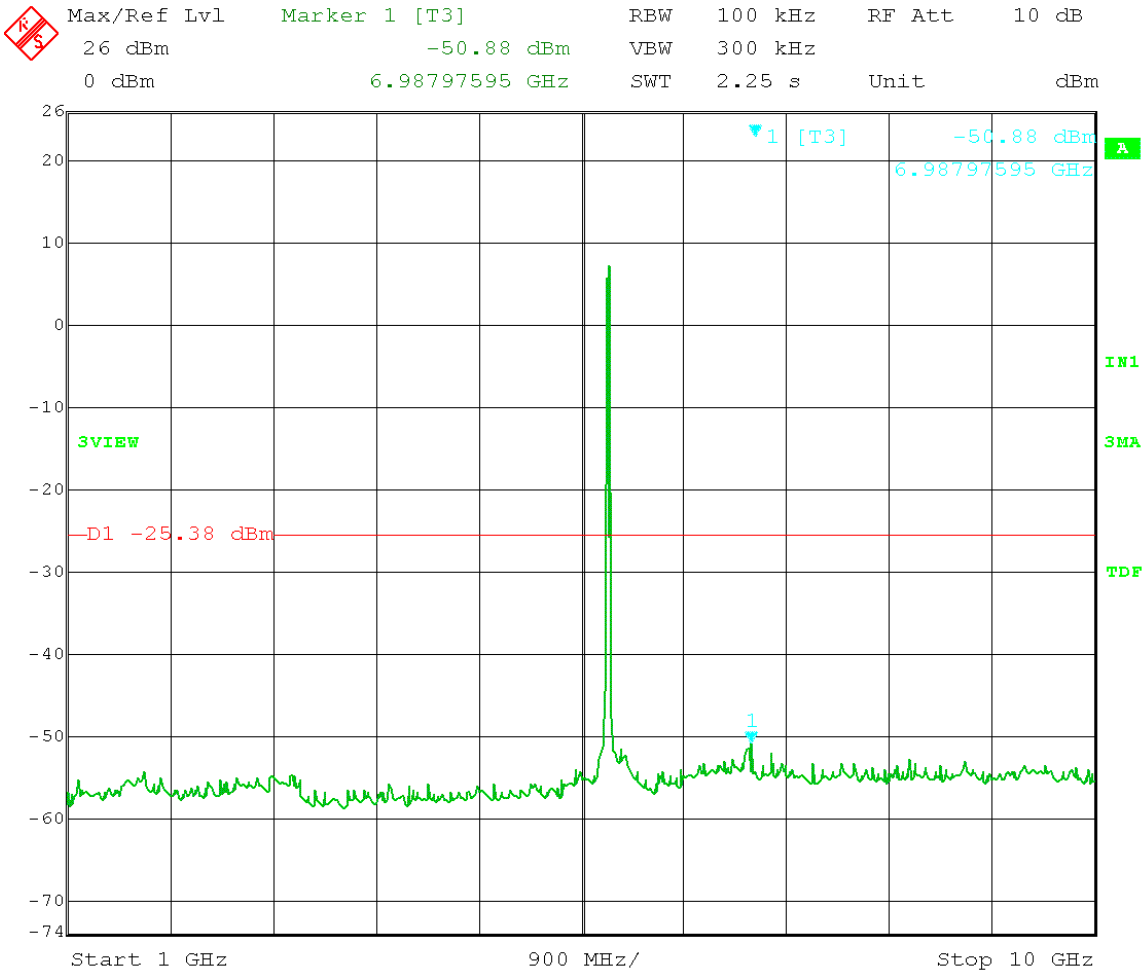
VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.740GHz
20 MHz BW



Date: 31.MAY.2013 15:25:11

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

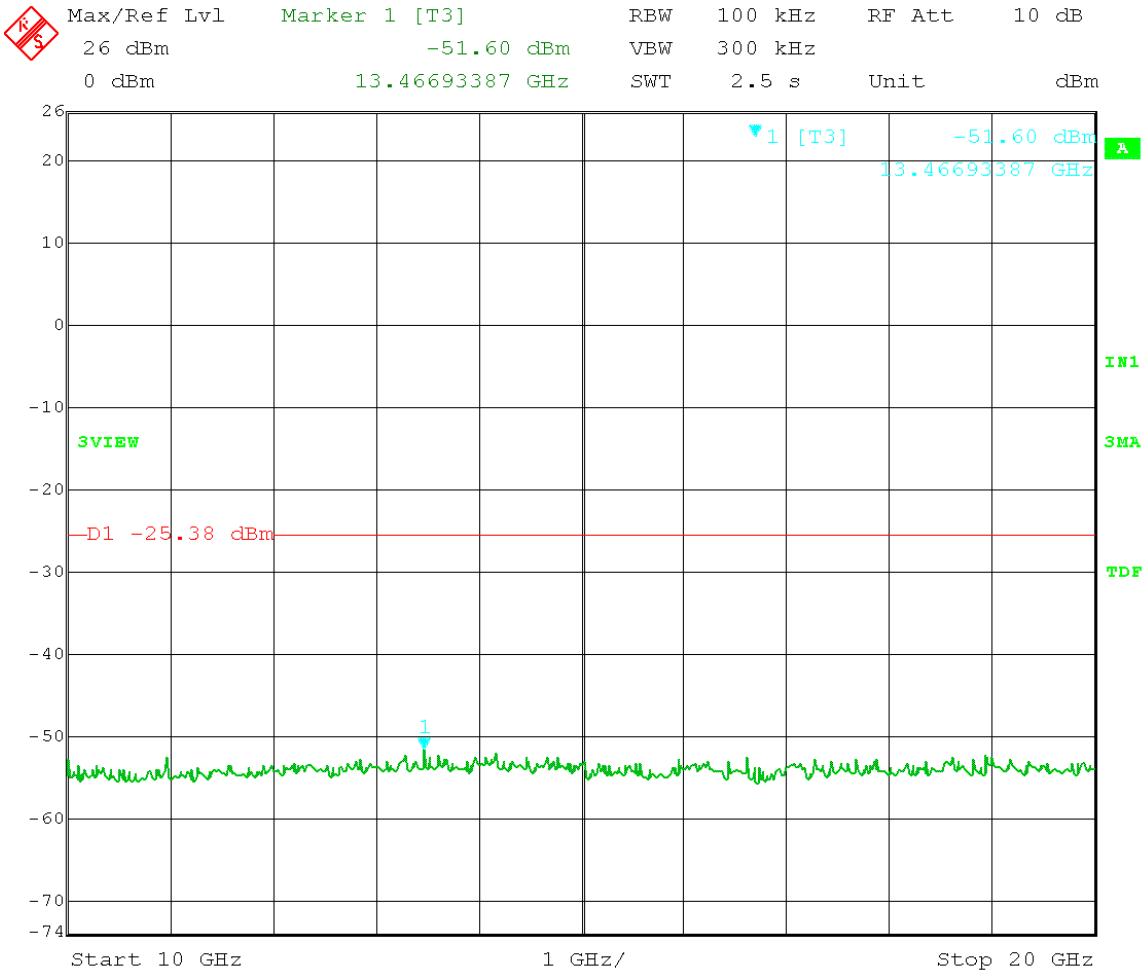
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -25.38dBm



Date: 31.MAY.2013 15:27:28

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -25.38dBm



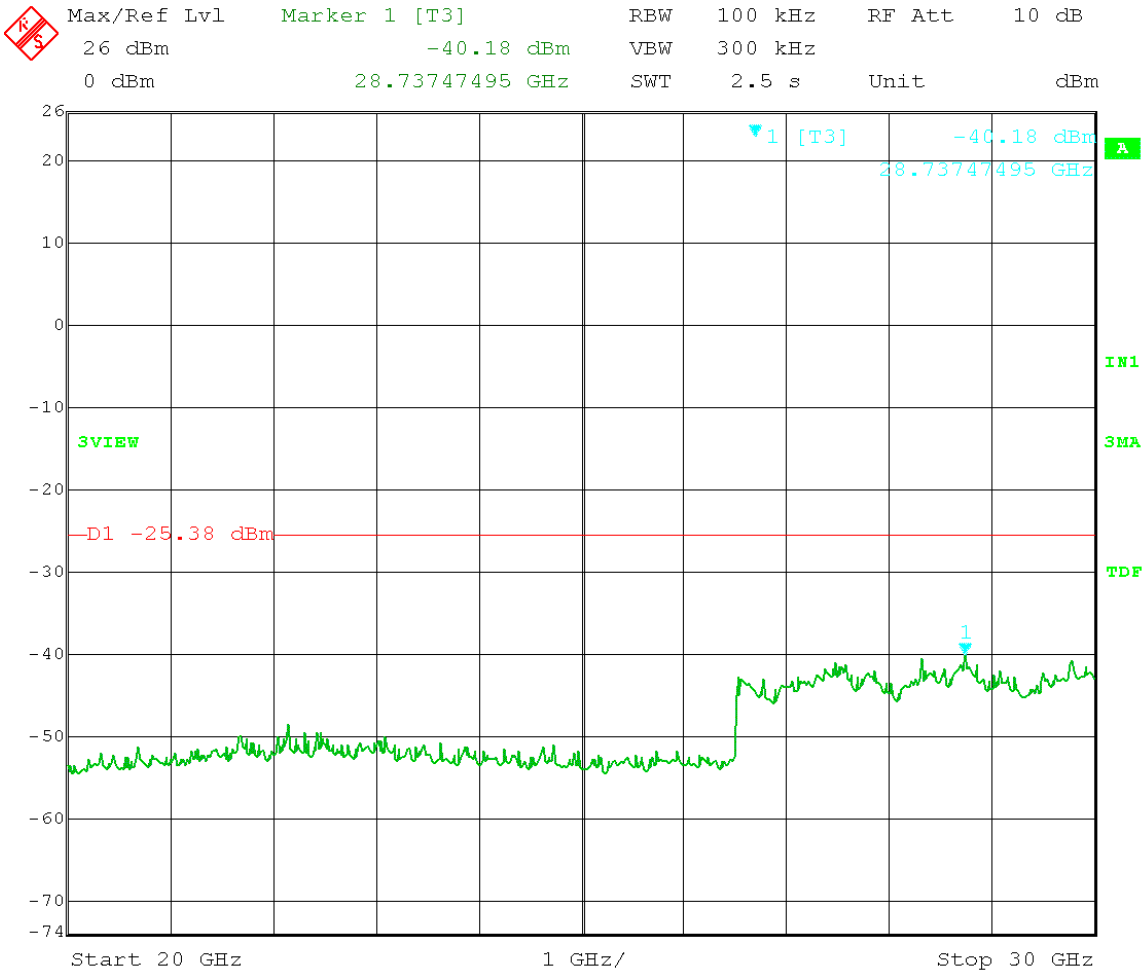
Date: 31.MAY.2013 15:29:07

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 20-30GHz

Emission Level Measurement

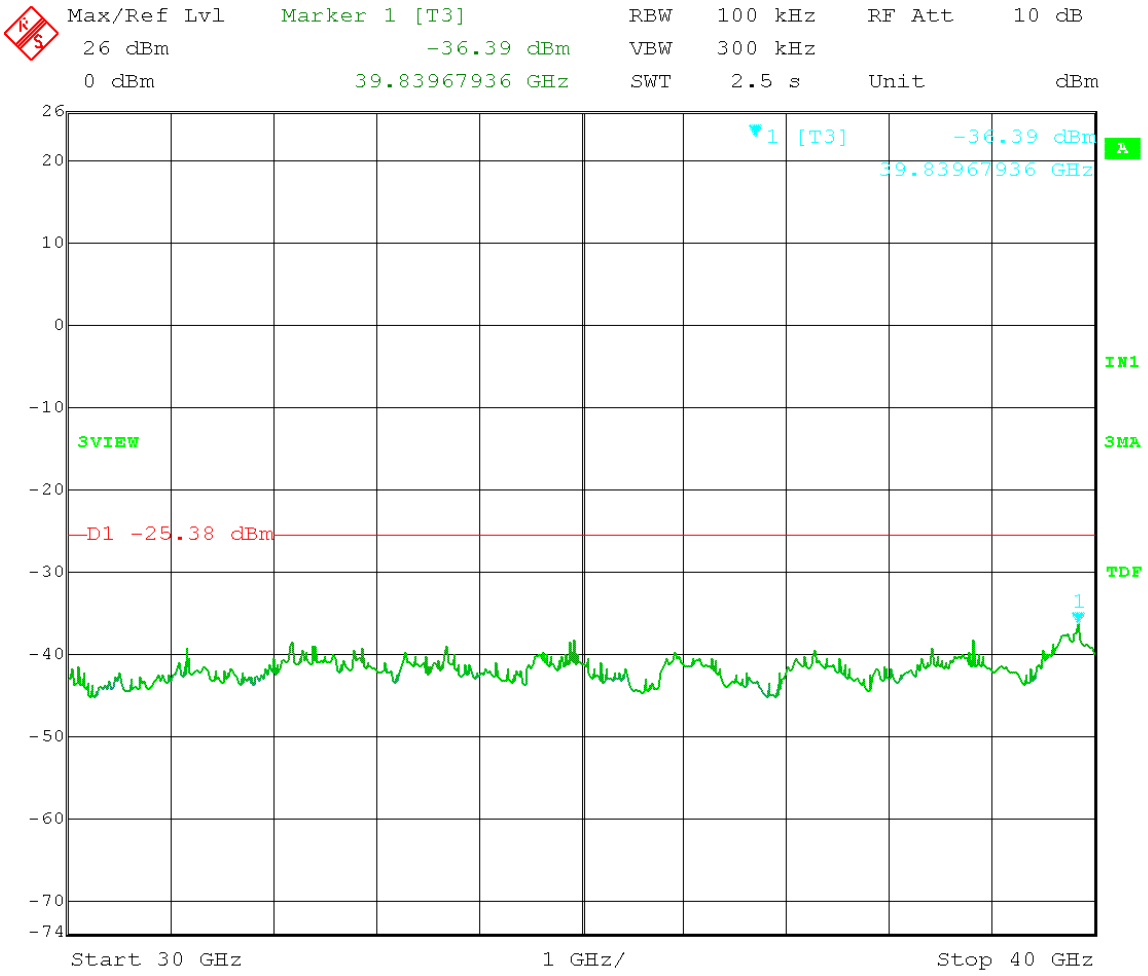
Limit = -25.38dBm



Date: 31.MAY.2013 15:30:43

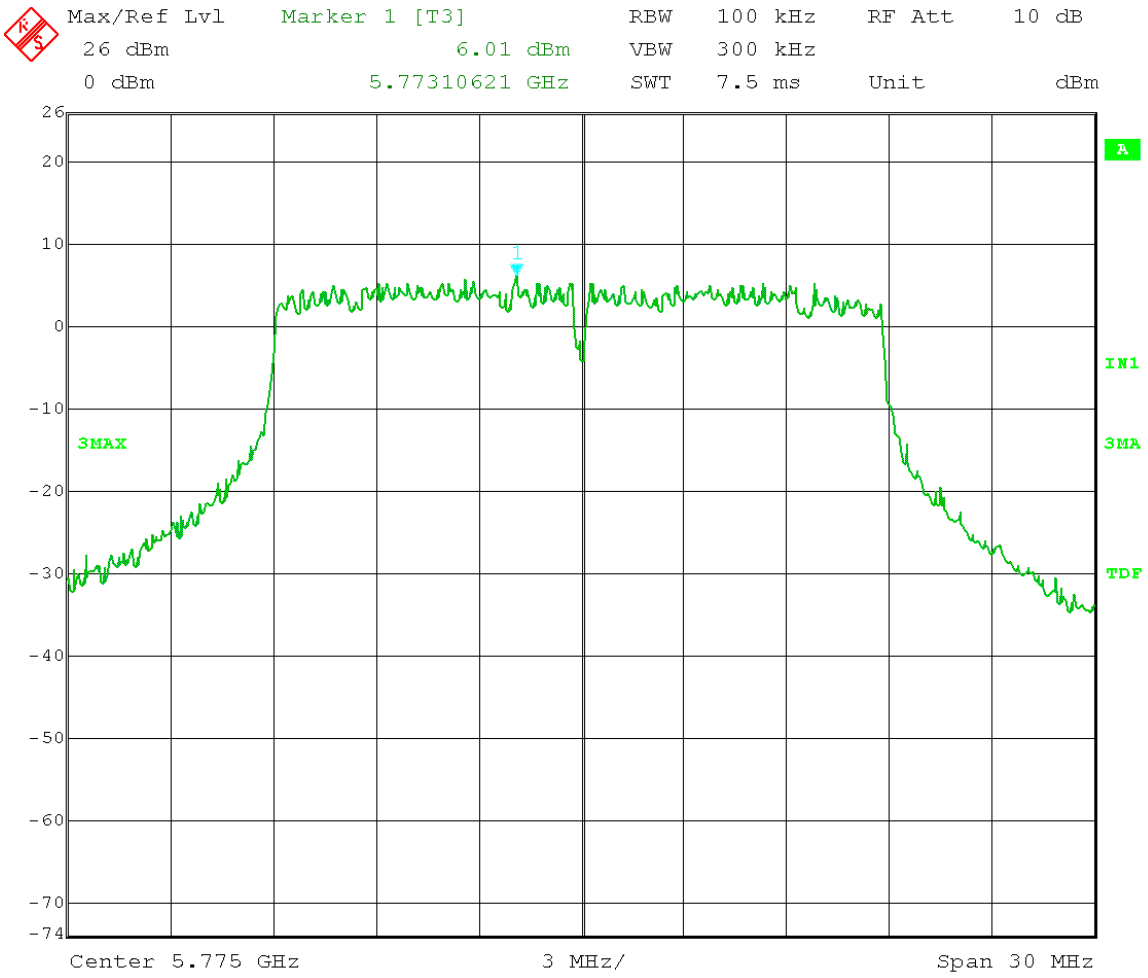
Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -25.38dBm



Date: 31.MAY.2013 15:32:26

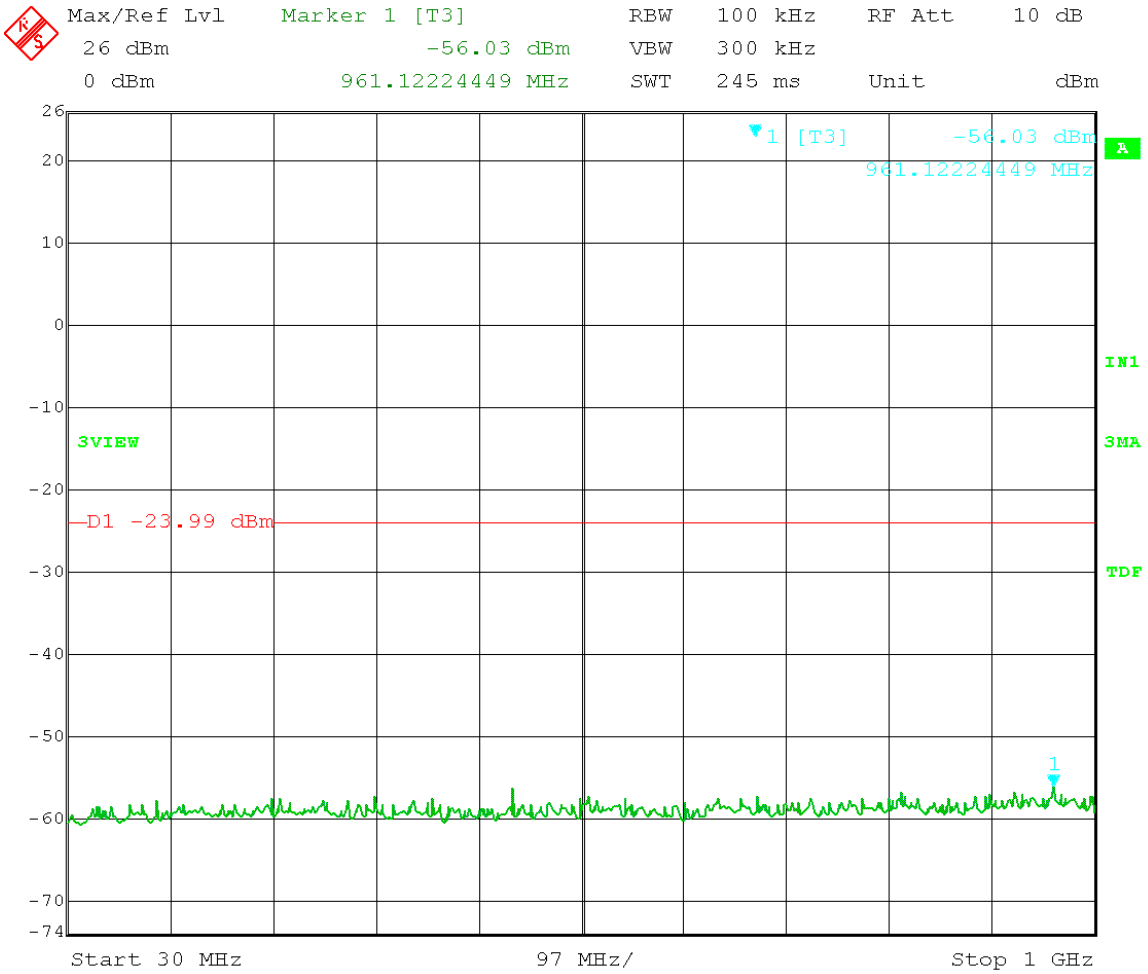
Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — Mid Channel Transmit = 5.775GHz
	Output power setting 20dBm — 20MHz BW
	Channel 0
	Reference Level measurement
	Limit = 6.01dBm – 30 dB = -23.99dBm



Date: 30.MAY.2013 14:23:27

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

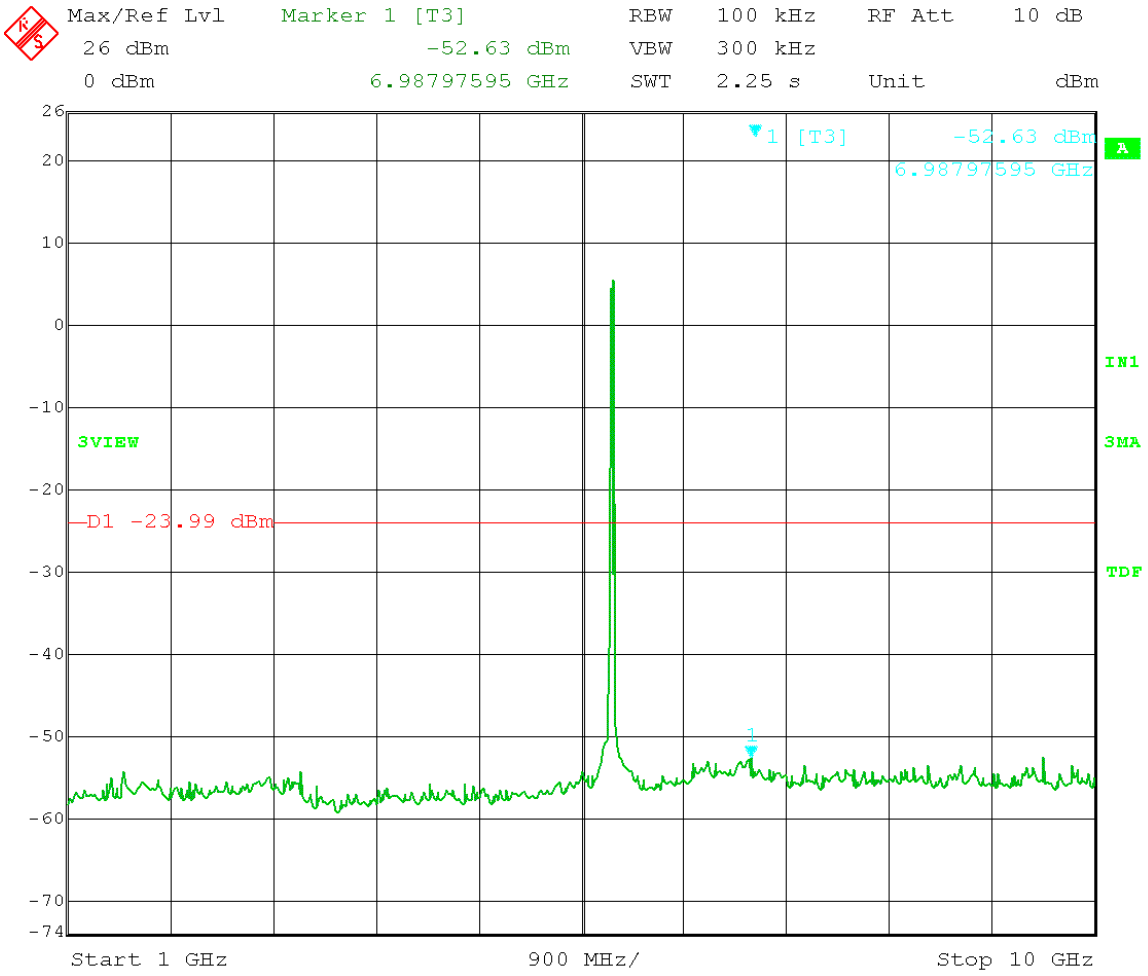
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -23.99dBm



Date: 3.JUN.2013 09:19:48

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

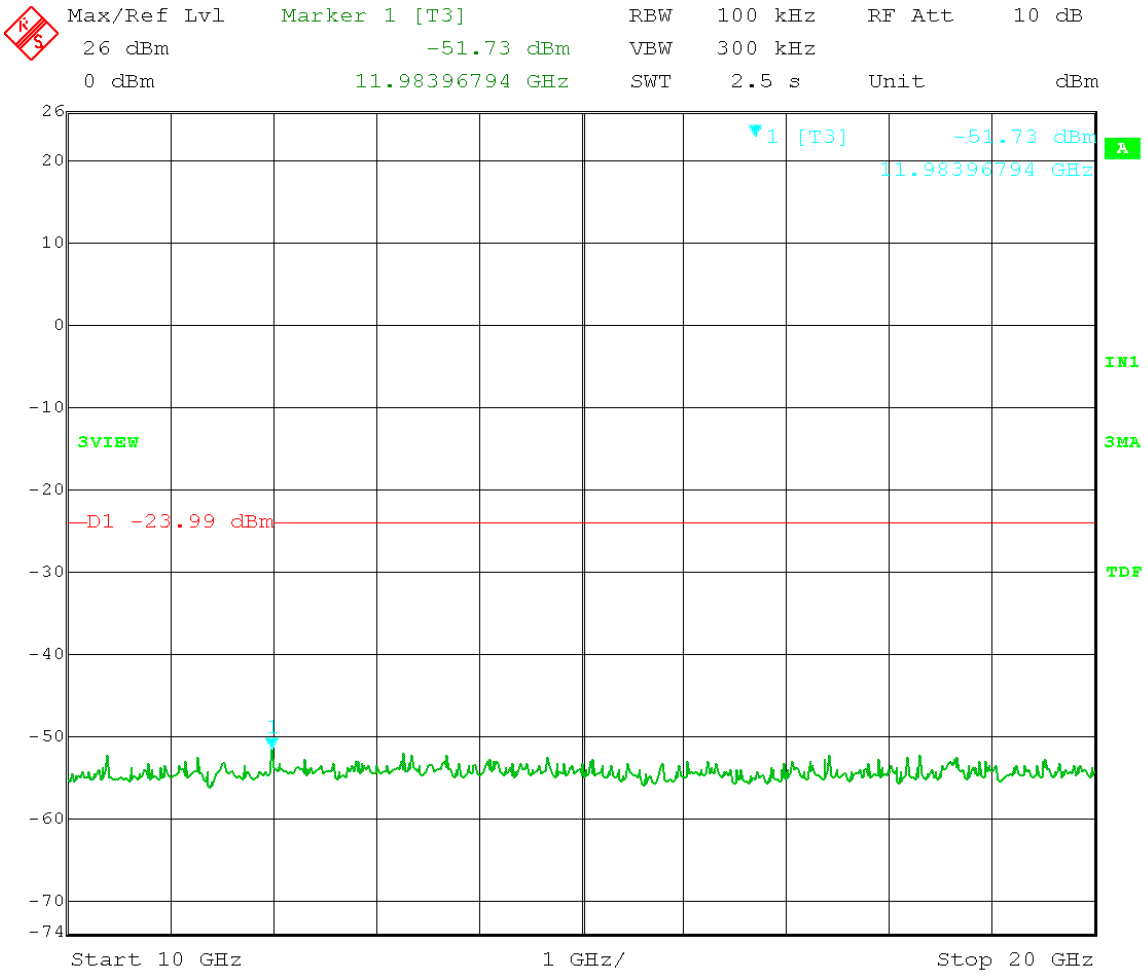
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -23.99dBm



Date: 3.JUN.2013 09:22:23

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

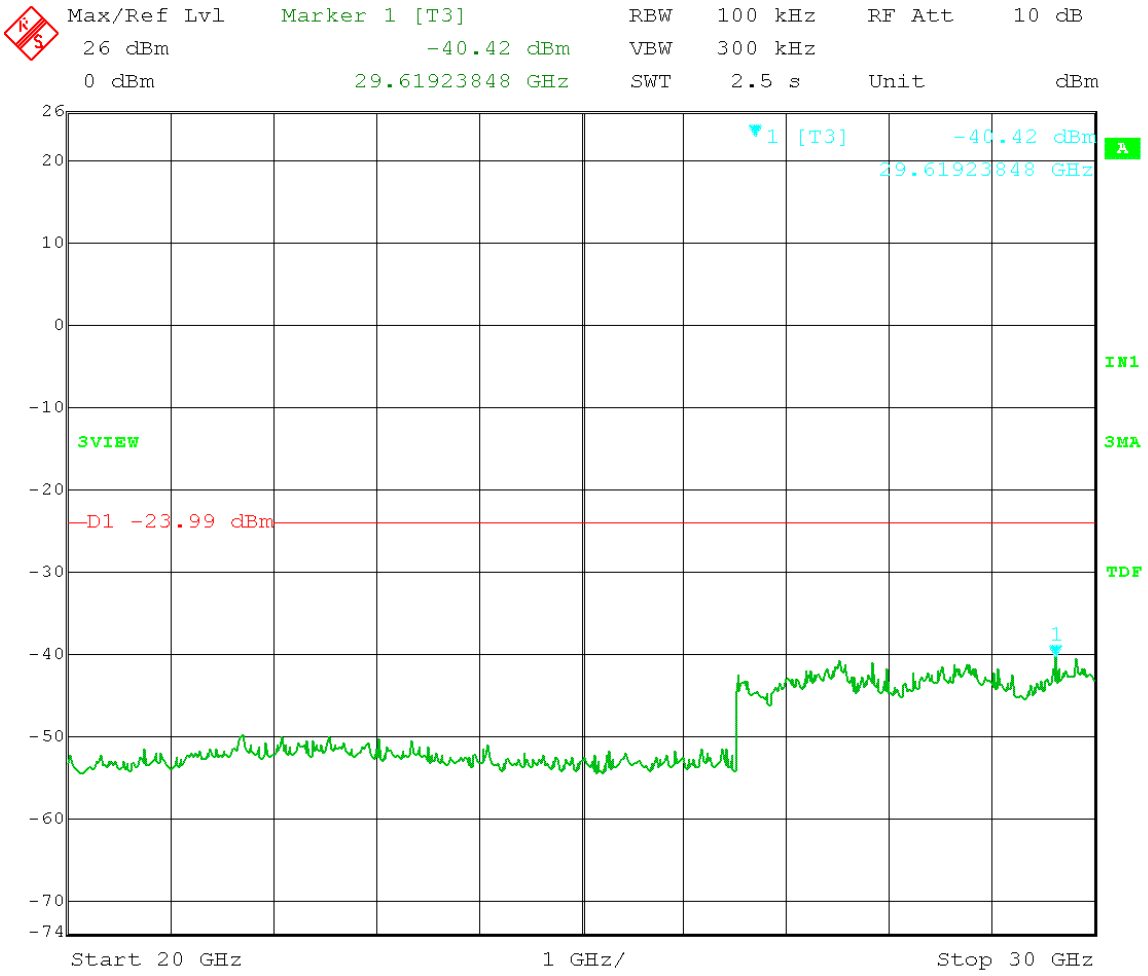
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -23.99dBm



Date: 3.JUN.2013 09:23:48

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

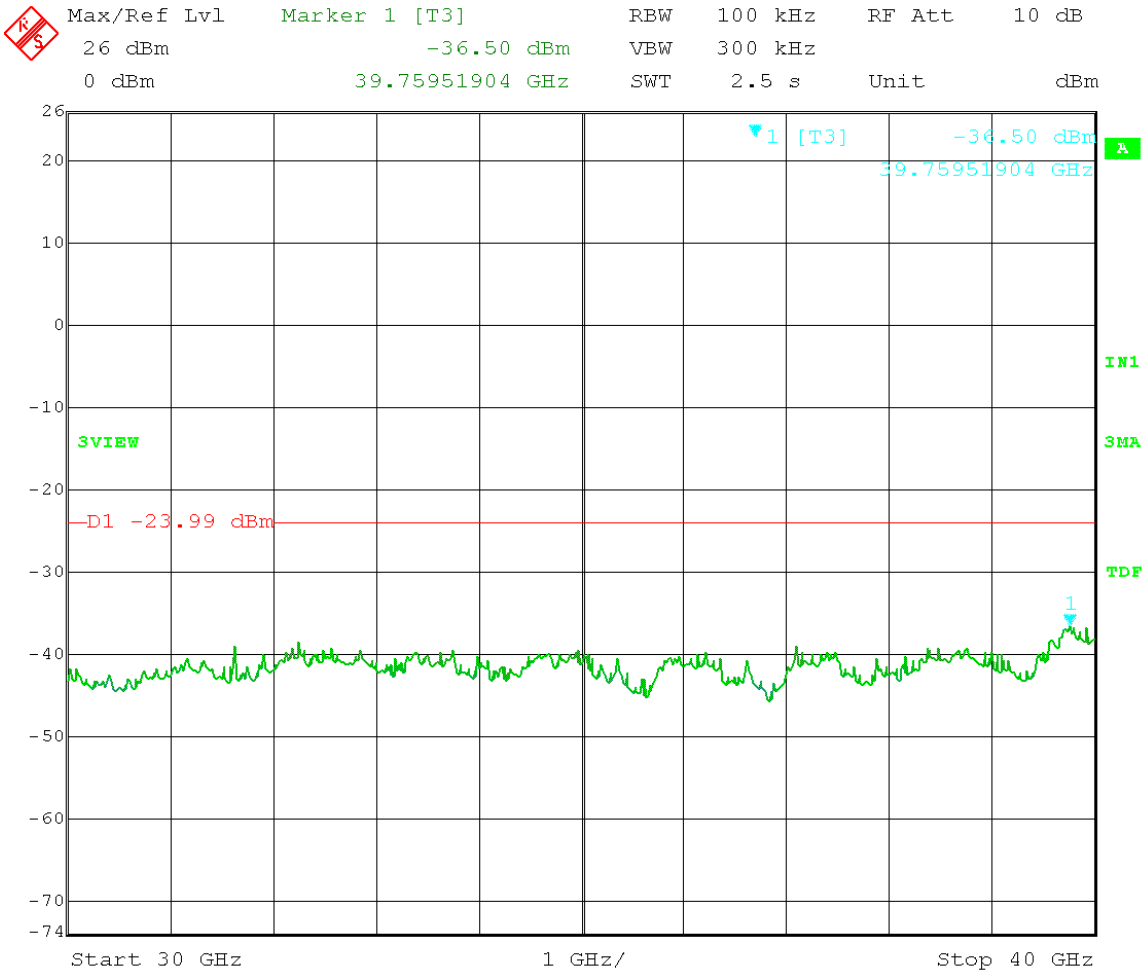
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -23.99dBm



Date: 3.JUN.2013 09:25:10

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

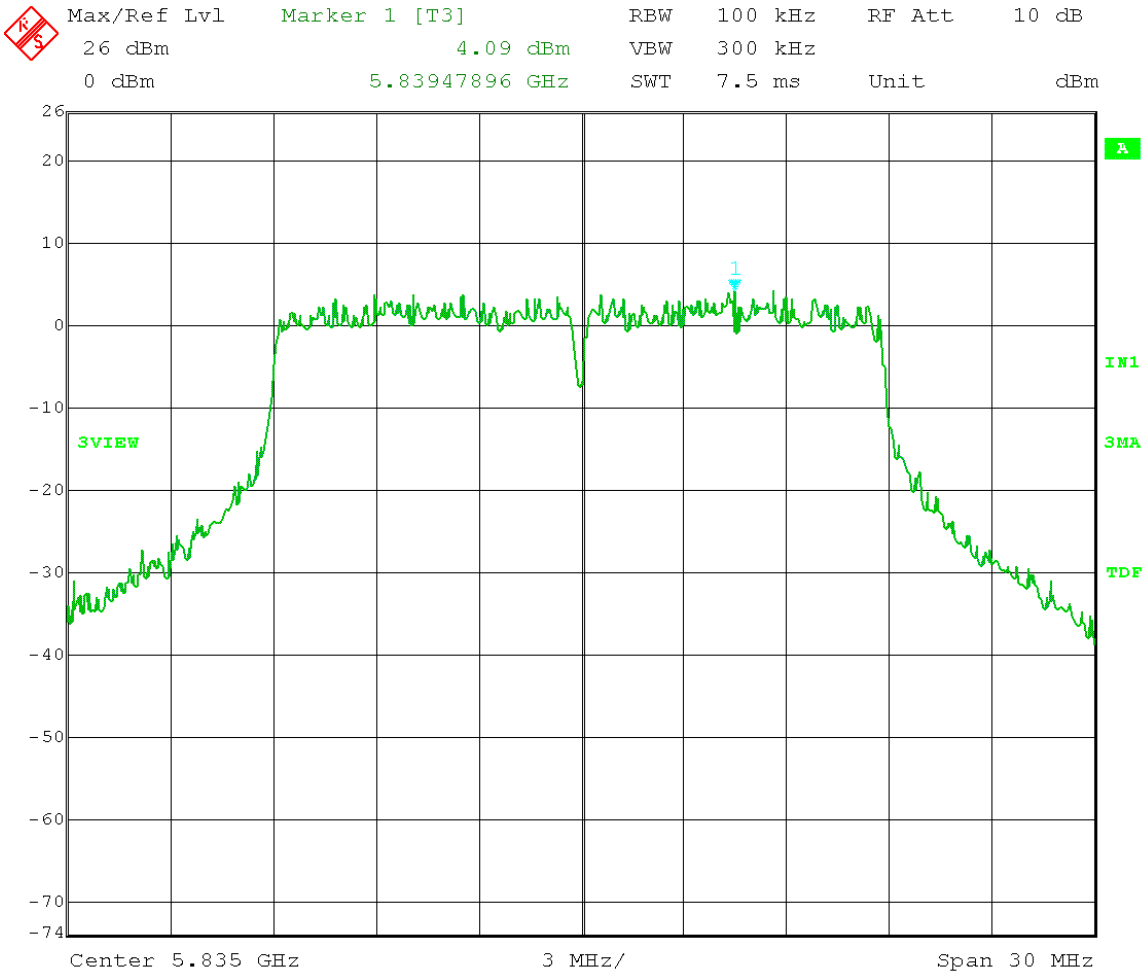
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -23.99dBm



Date: 3.JUN.2013 09:26:27

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station (5.7GHz: OFDM)
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.2 Reference Level Measurement

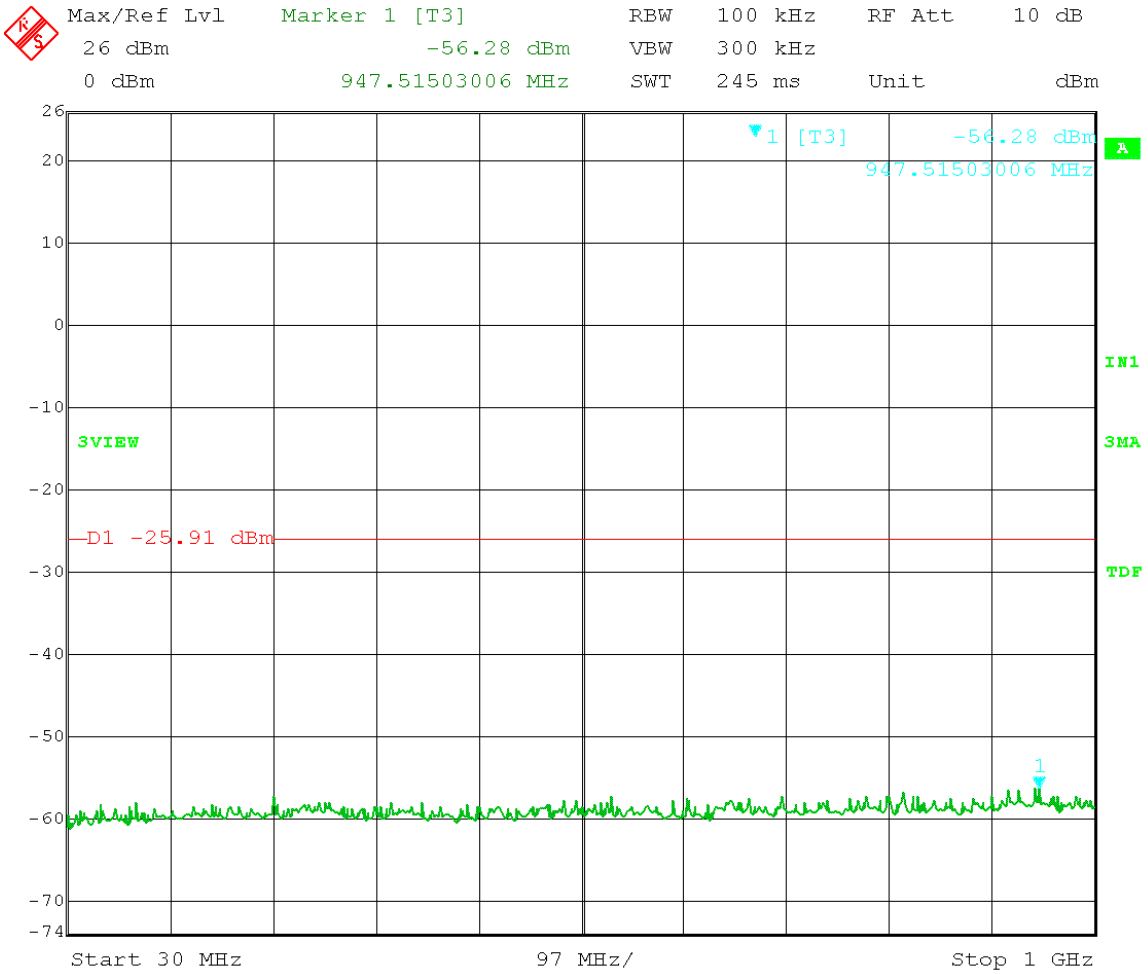
RBW = 100 kHz | VBW ≥ 300 kHz
Detector = Peak | Sweep = Auto Couple
Trace = Max Hold | High Channel Transmit = 5.835GHz
Output power setting 20dBm | 20MHz BW
Channel 0
Reference Level measurement
Limit = 4.09dBm – 30 dB = -25.91dBm



Date: 30.MAY.2013 14:25:26

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

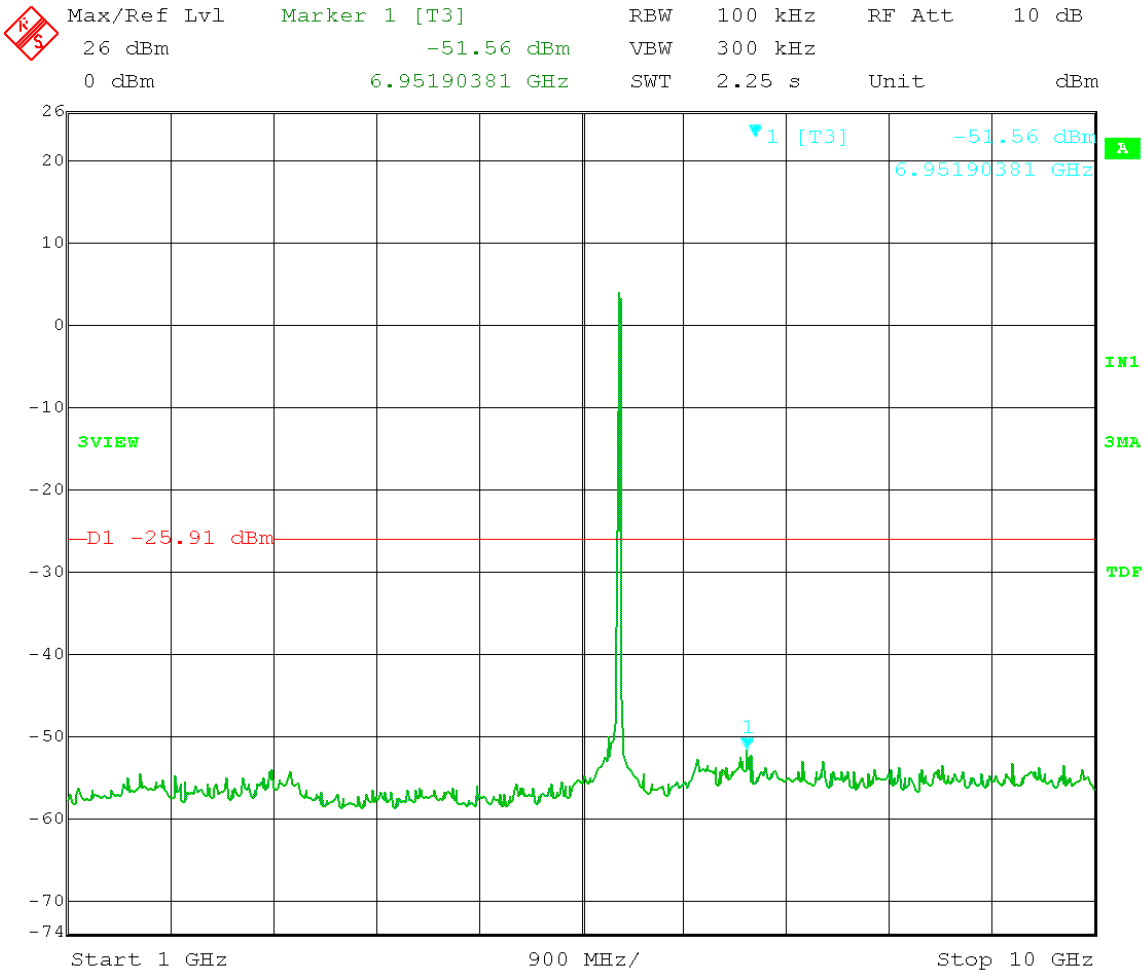
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -25.91dBm



Date: 3.JUN.2013 09:36:31

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

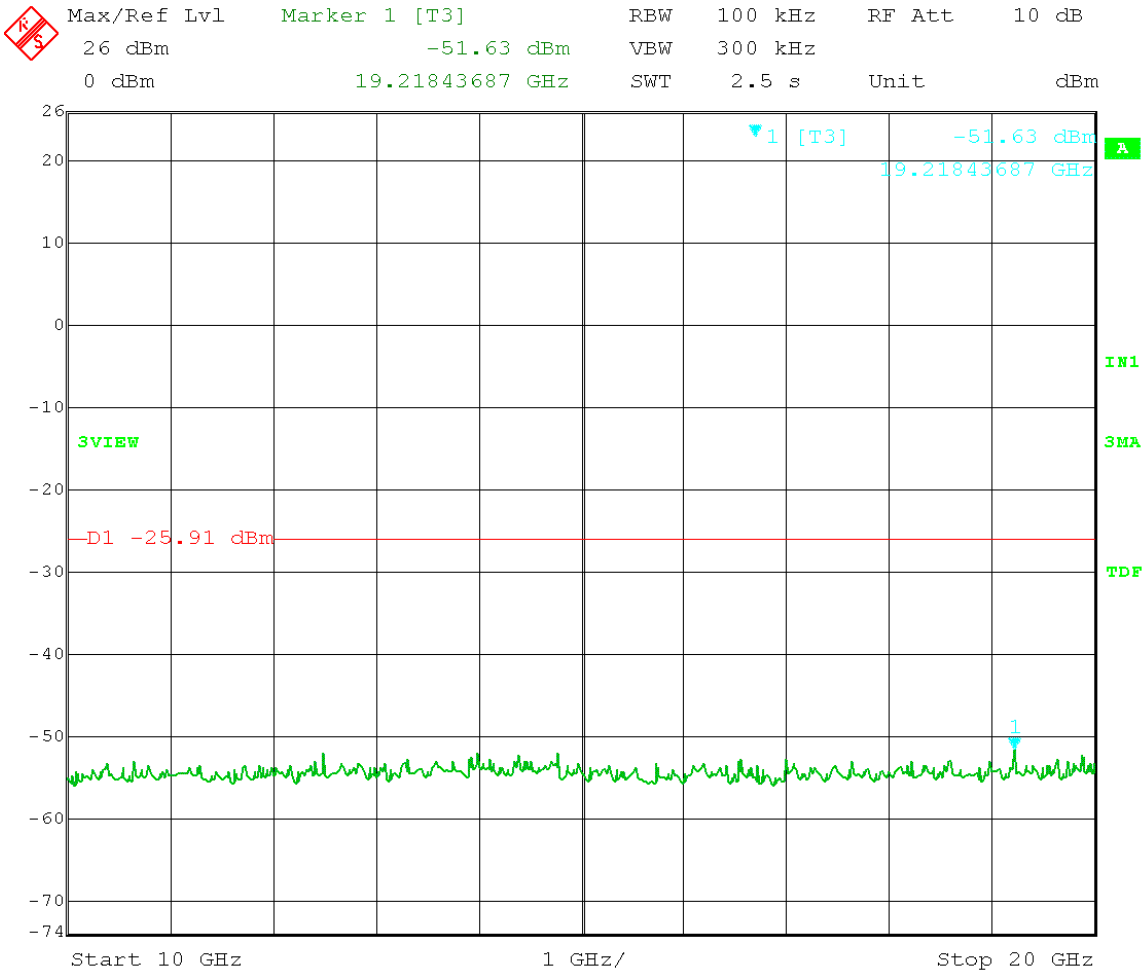
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -25.91dBm



Date: 3.JUN.2013 09:35:11

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

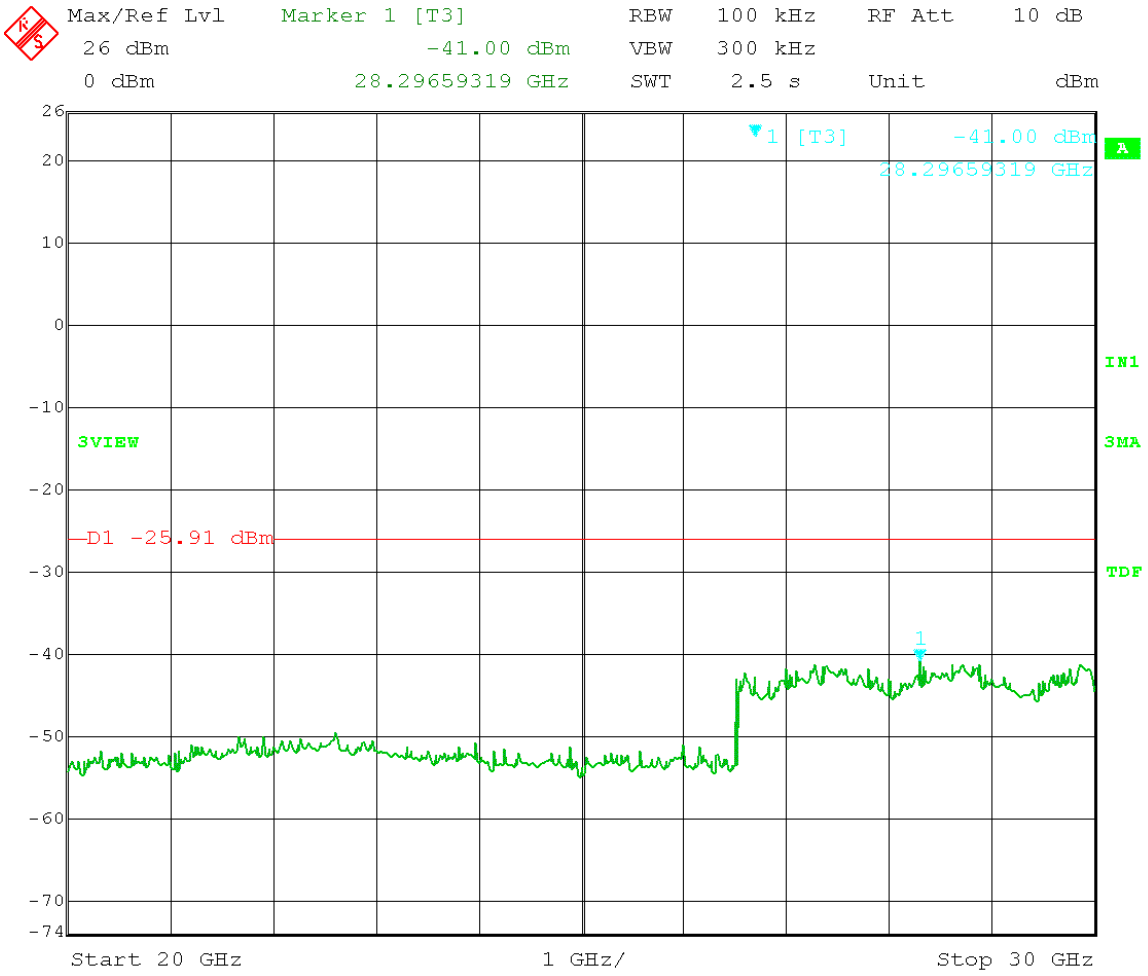
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -25.91dBm



Date: 3.JUN.2013 09:33:07

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

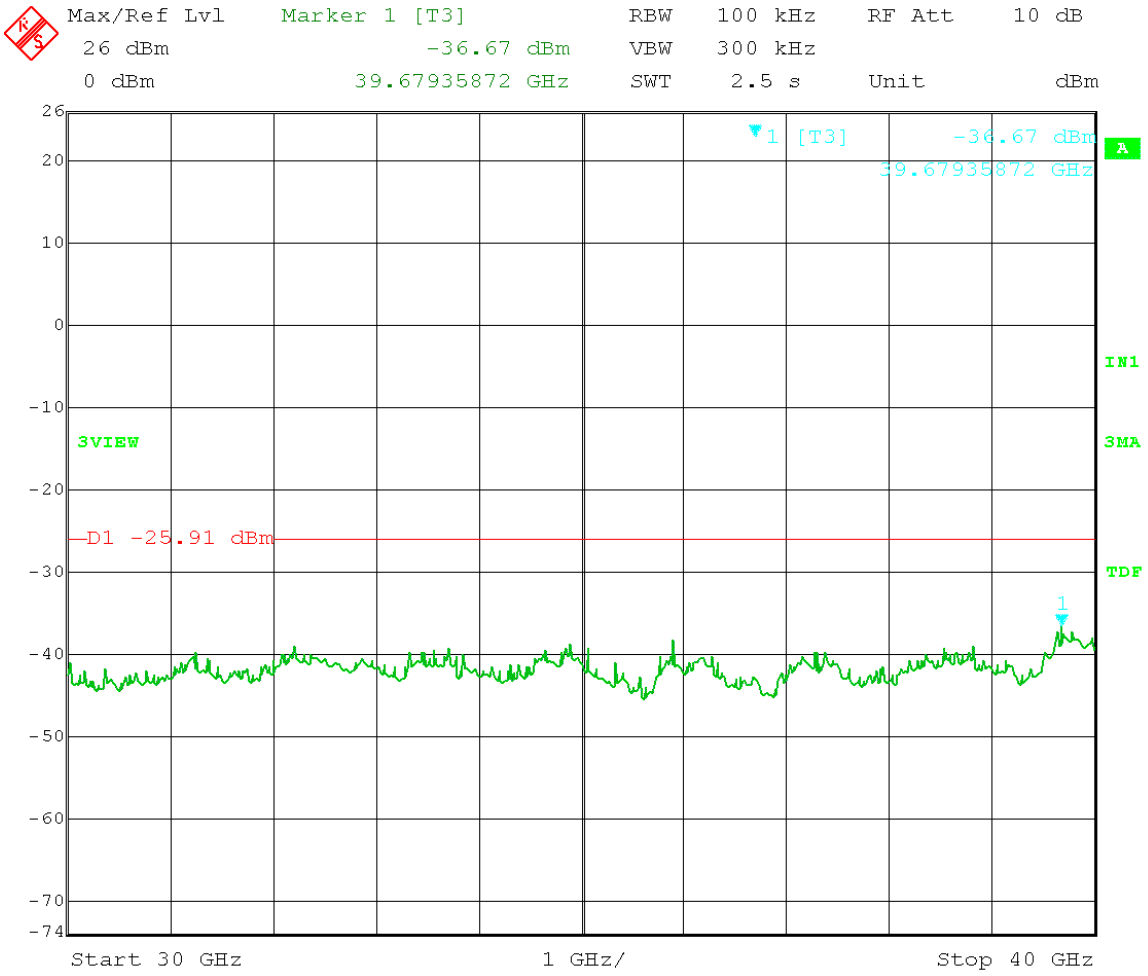
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -25.91dBm



Date: 3.JUN.2013 09:31:40

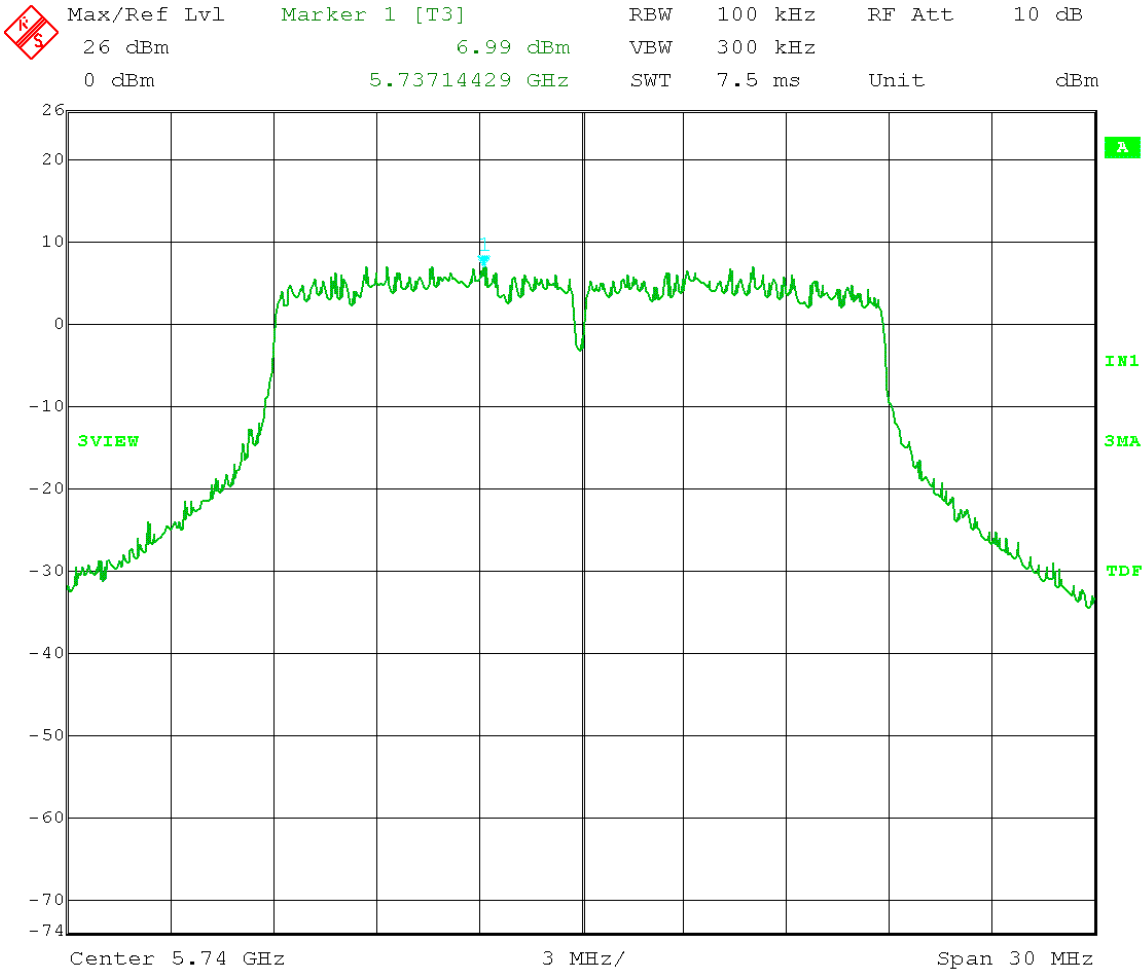
Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 0
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -25.91dBm



Date: 3.JUN.2013 09:29:43

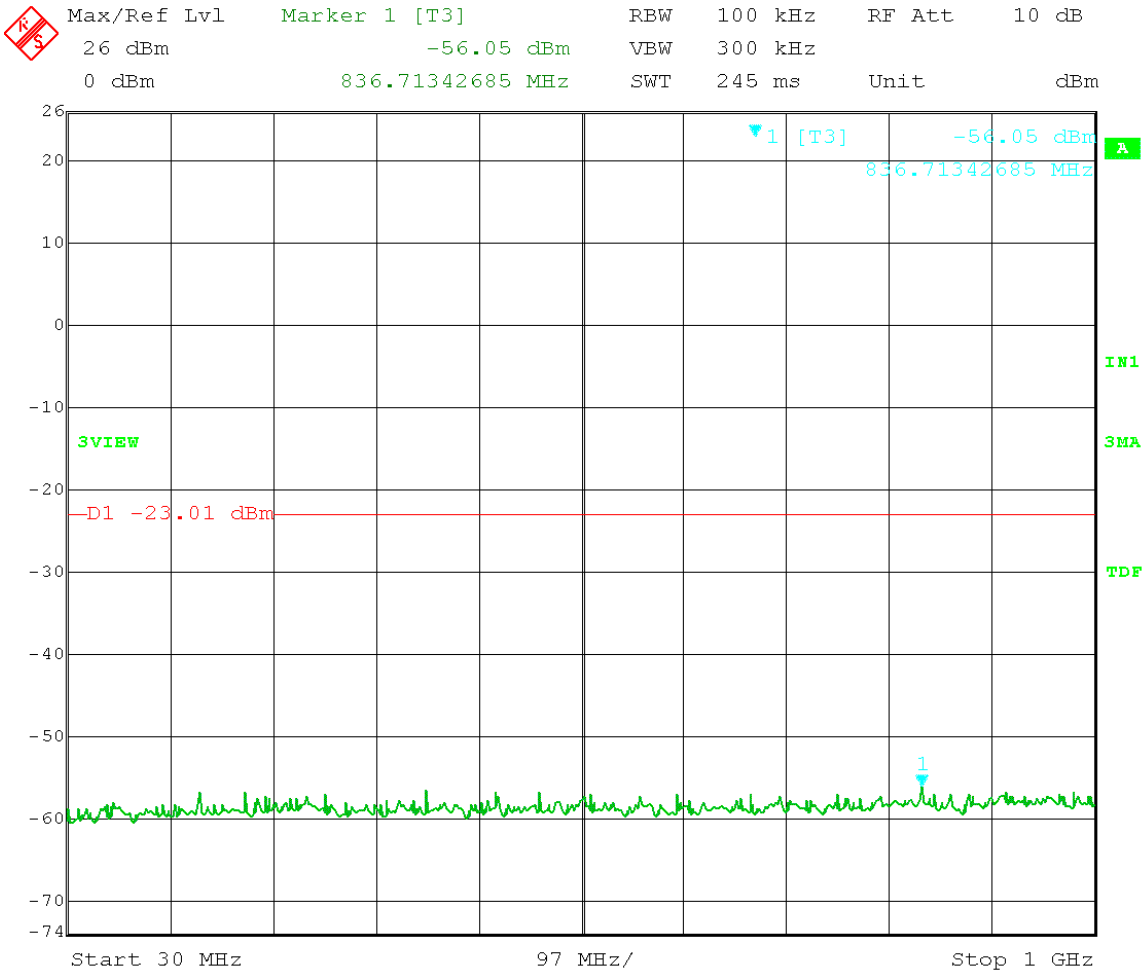
Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — Low Channel Transmit = 5.740GHz
	Output power setting 20dBm — 20MHz BW
	Channel 1
	Reference Level measurement
	Limit = 6.99dBm – 30 dB = -23.01dBm



Date: 30.MAY.2013 14:10:04

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

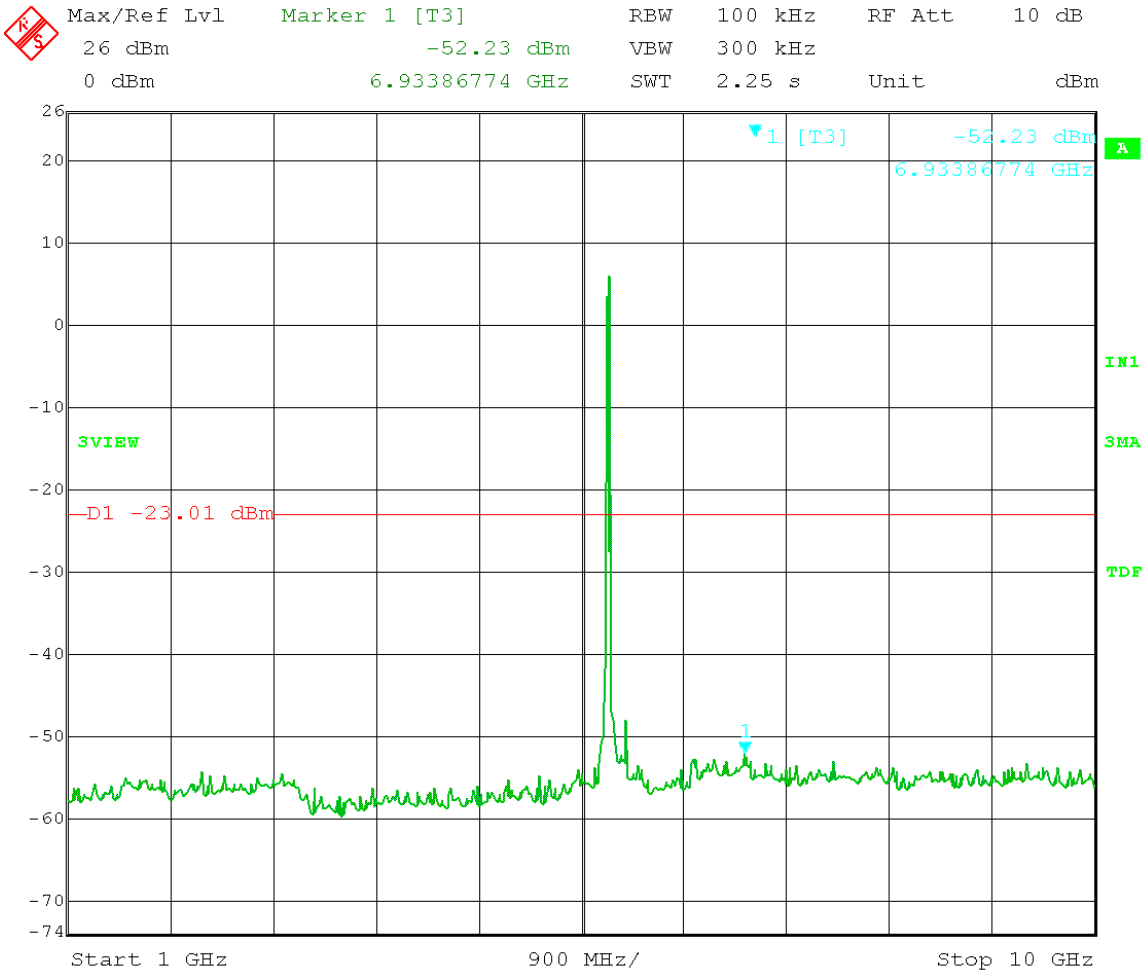
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -23.01dBm



Date: 31.MAY.2013 15:42:01

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

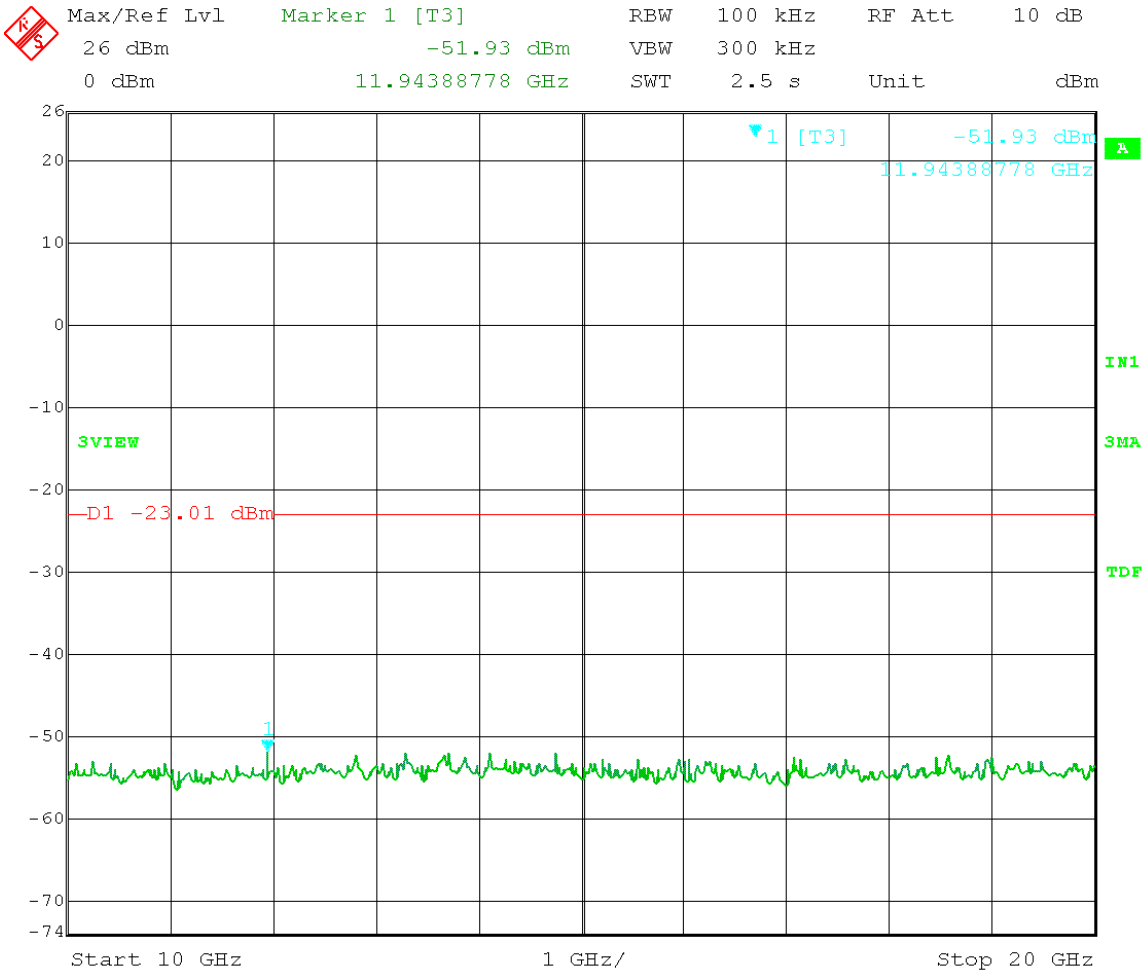
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -23.01dBm



Date: 31.MAY.2013 15:40:03

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

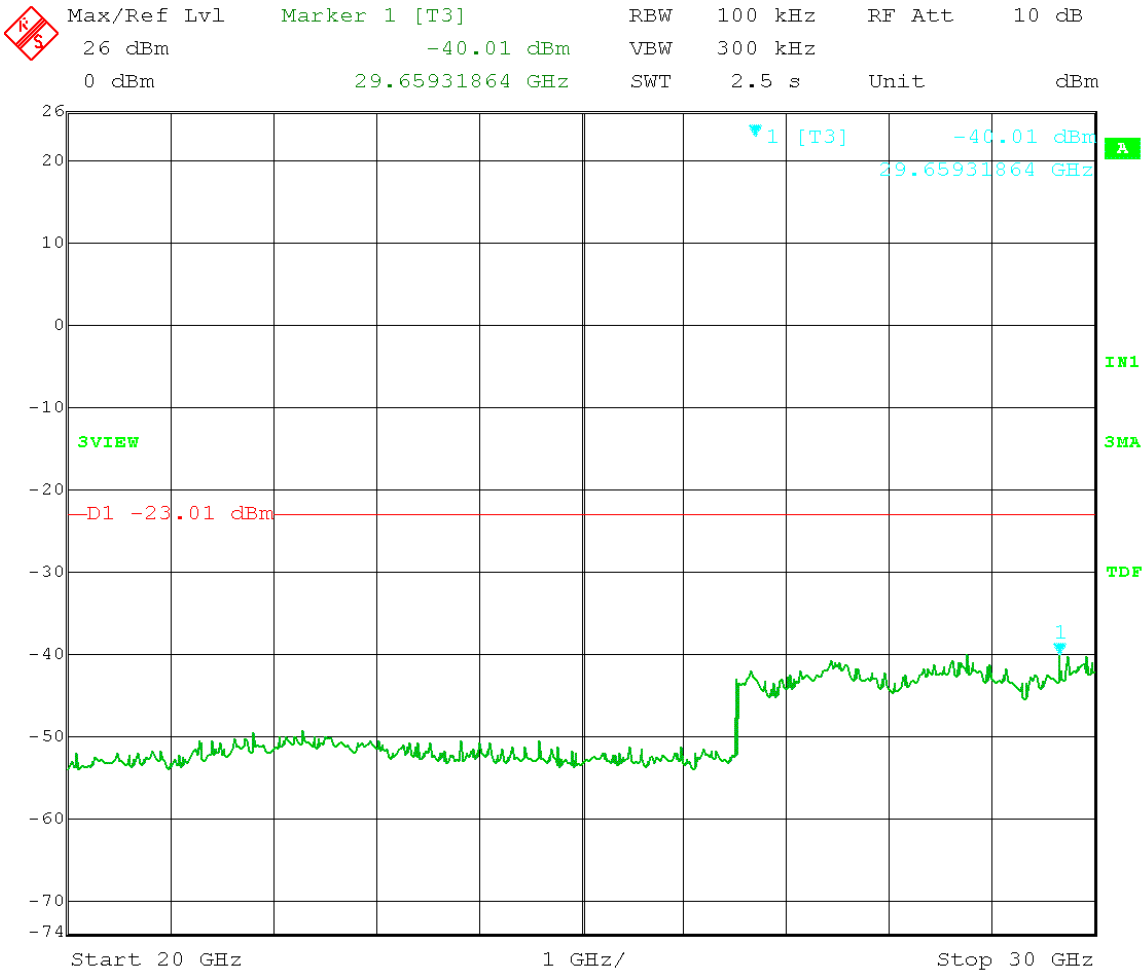
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -23.01dBm



Date: 31.MAY.2013 15:38:37

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -23.01dBm



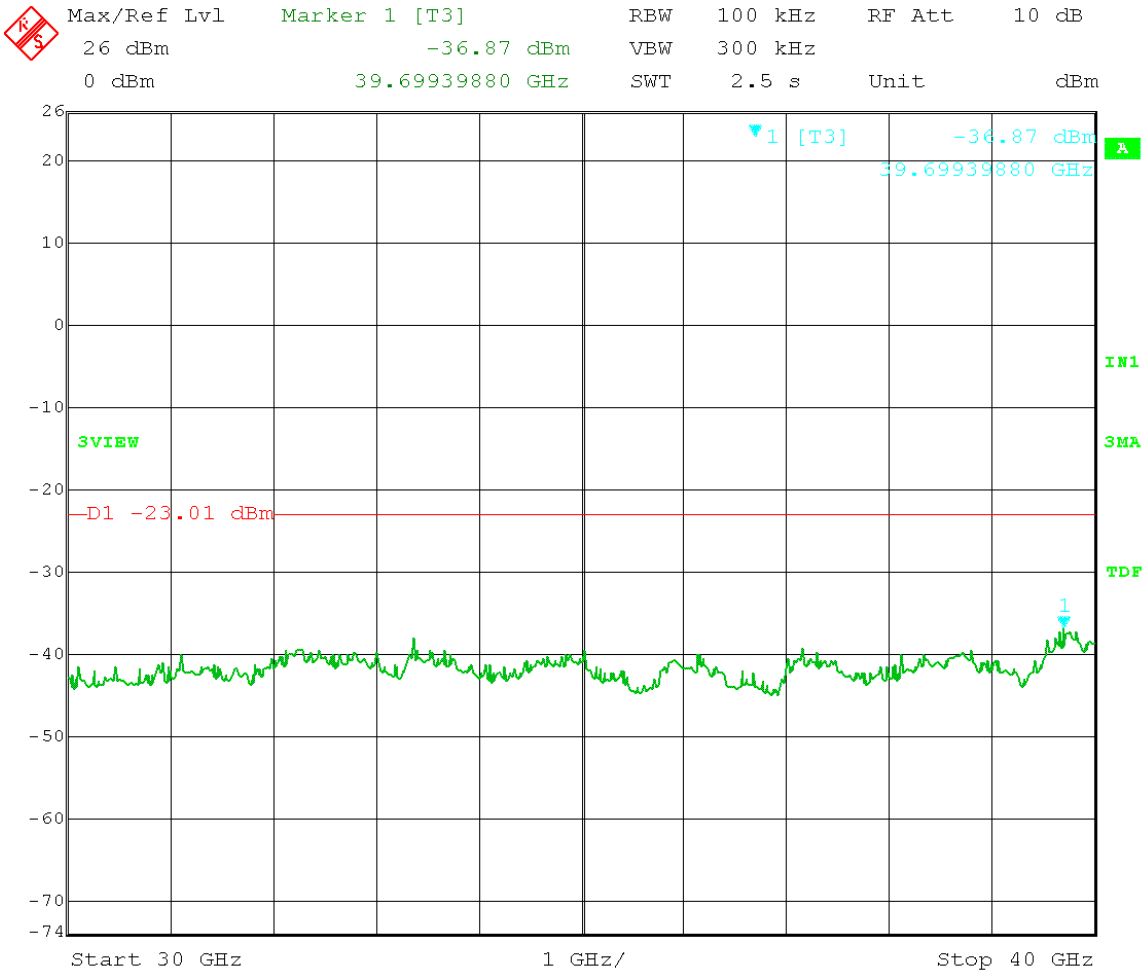
Date: 31.MAY.2013 15:37:14

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Low Channel Transmit = 5.740GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 30-40GHz

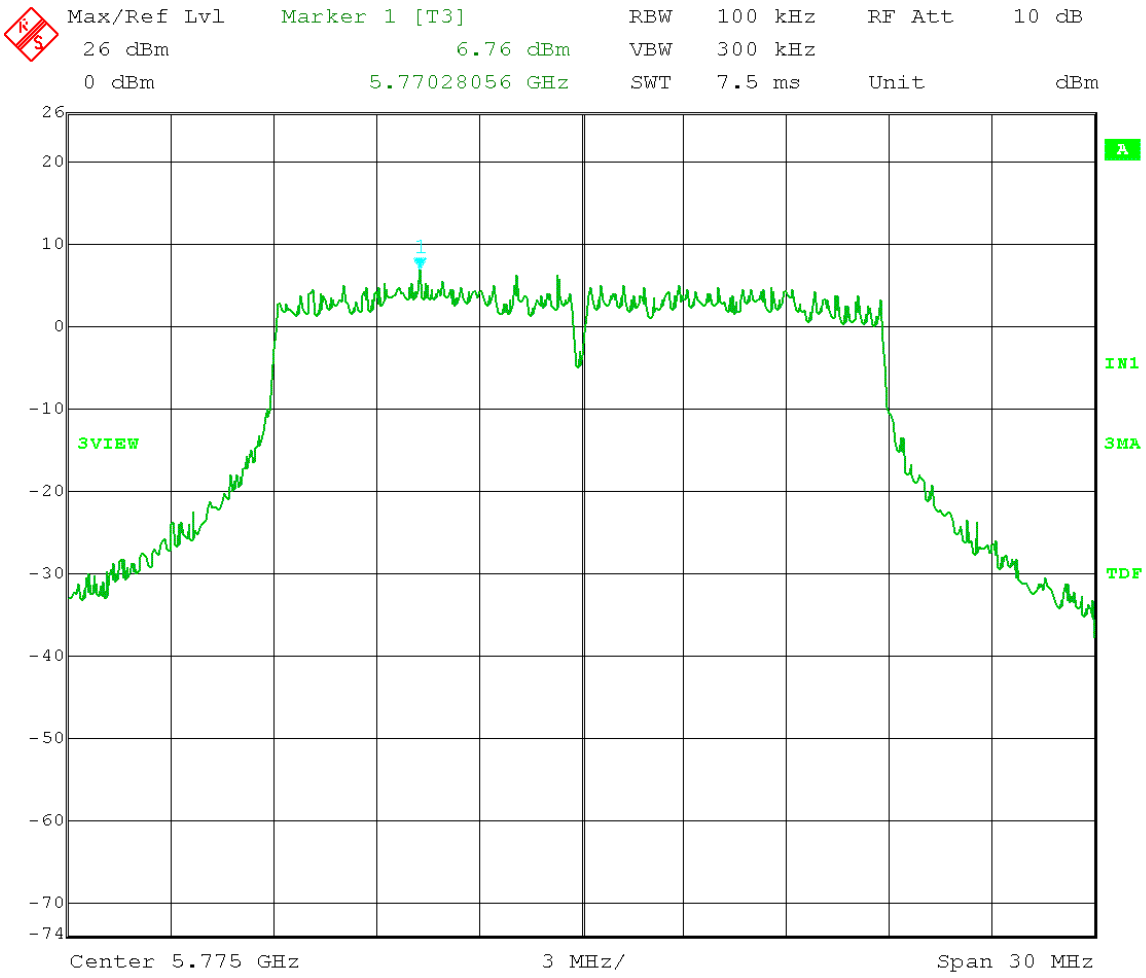
Emission Level Measurement

Limit = -23.01dBm



Date: 31.MAY.2013 15:35:42

Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — Mid Channel Transmit = 5.775GHz
	Output power setting 20dBm — 20MHz BW
	Channel 1
	Reference Level measurement
	Limit = 6.76dBm – 30 dB = -23.24dBm

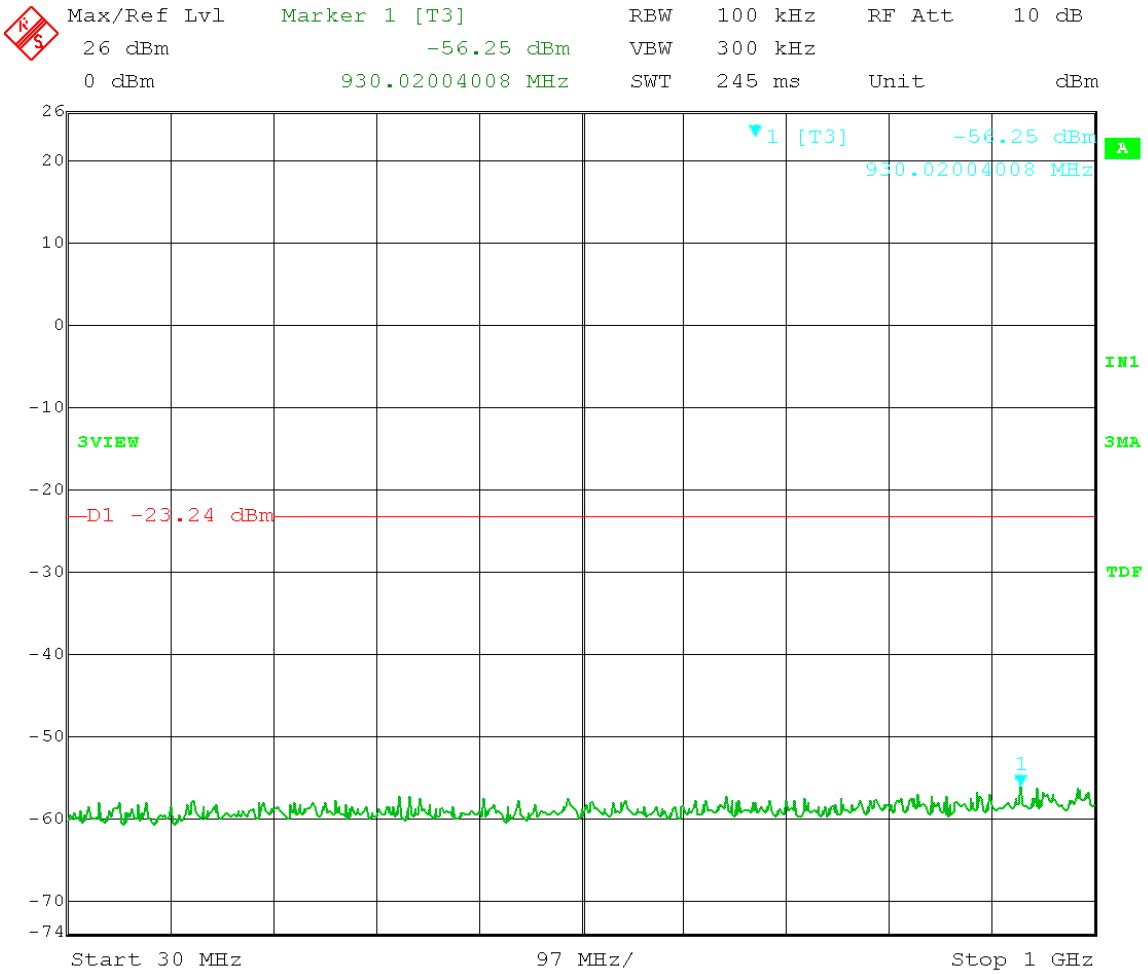


Date: 30.MAY.2013 14:22:17

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 1
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -23.24dBm

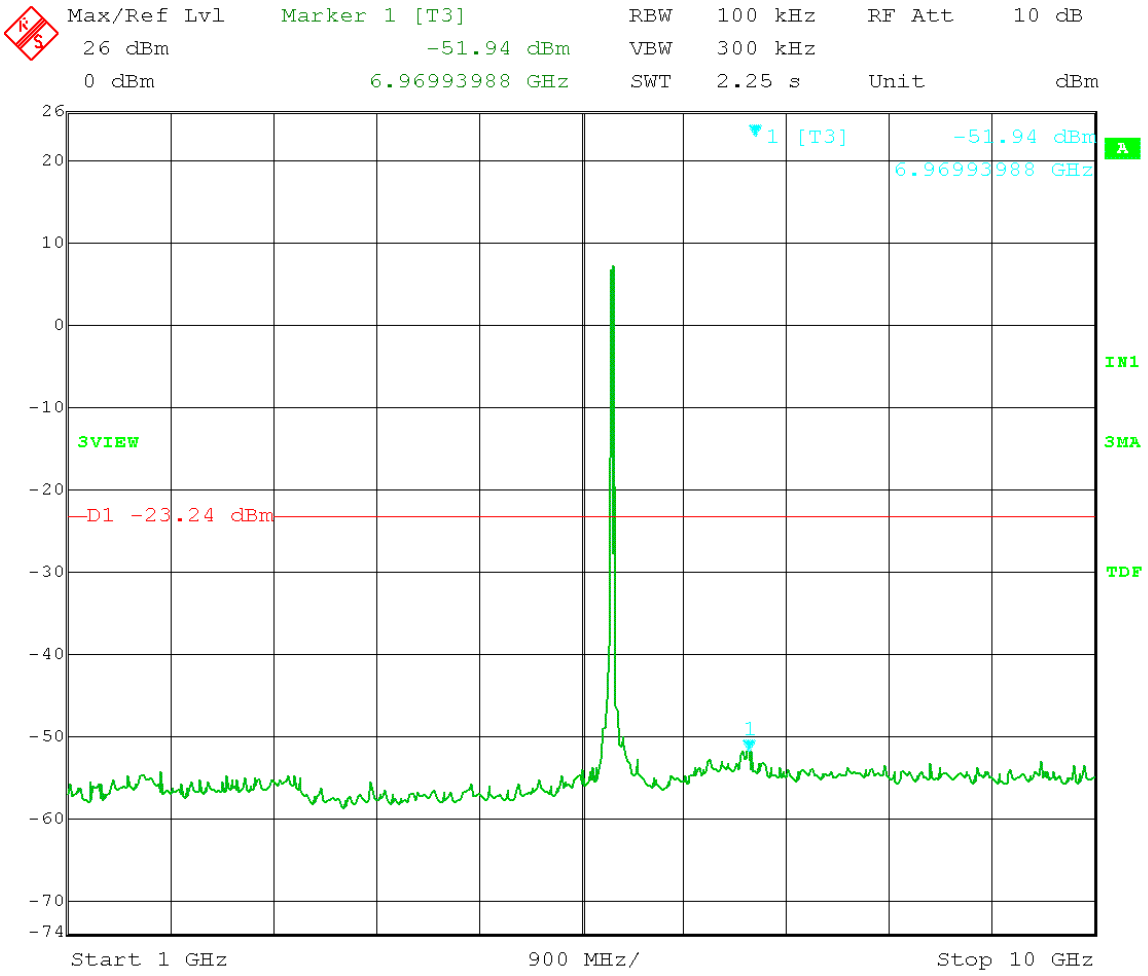
VBW ≥ 300 kHz
Sweep = Auto Couple
Mid Channel Transmit = 5.775GHz
20 MHz BW



Date: 3.JUN.2013 09:17:17

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

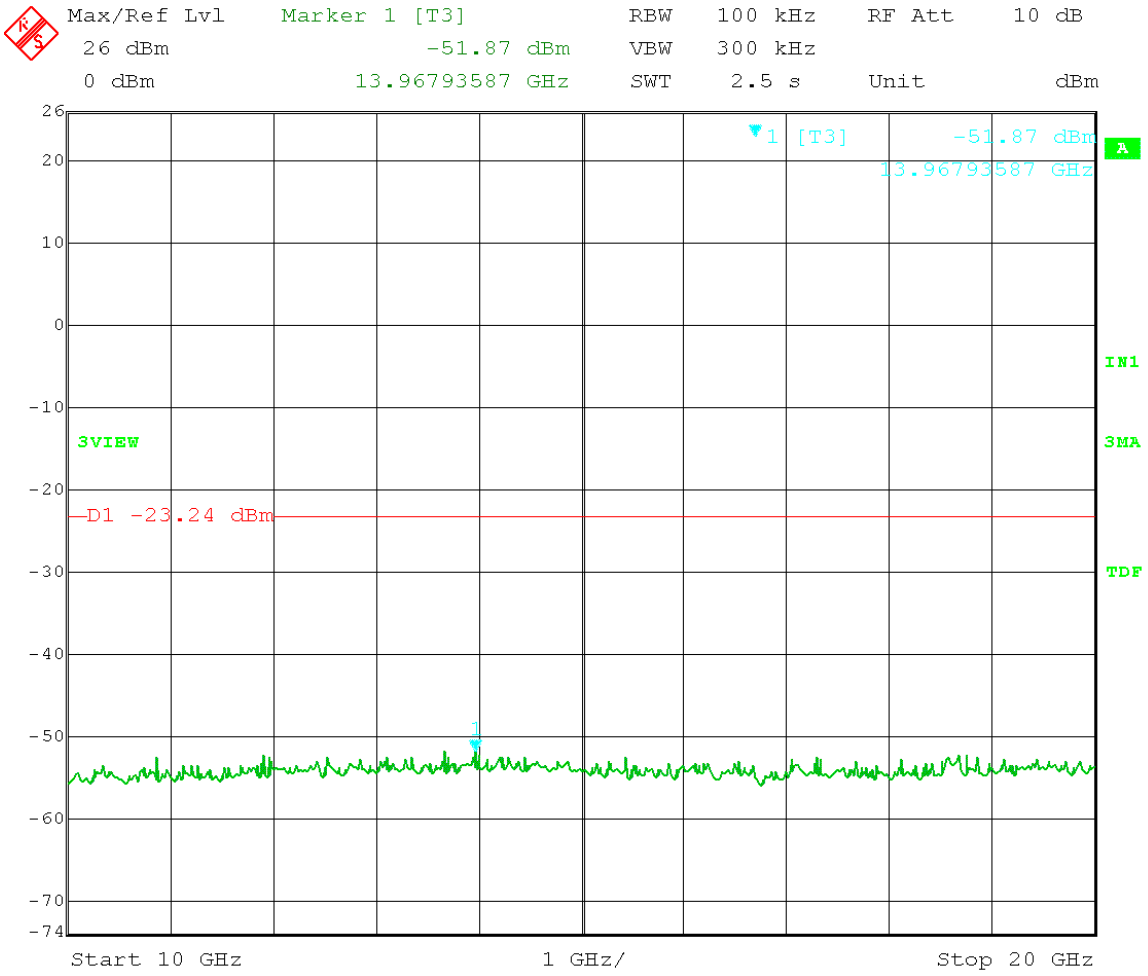
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -23.24dBm



Date: 3.JUN.2013 09:07:01

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

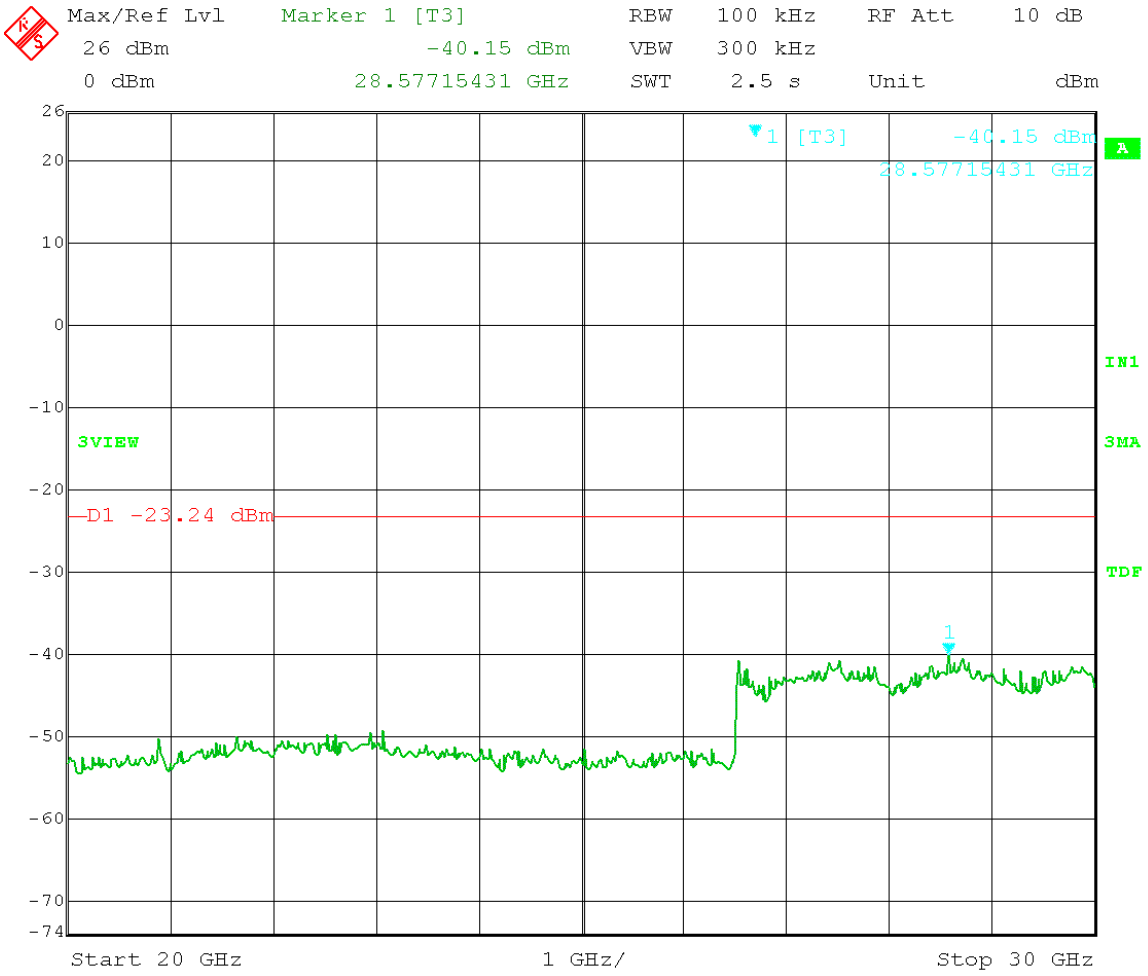
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -23.24dBm



Date: 3.JUN.2013 09:11:21

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

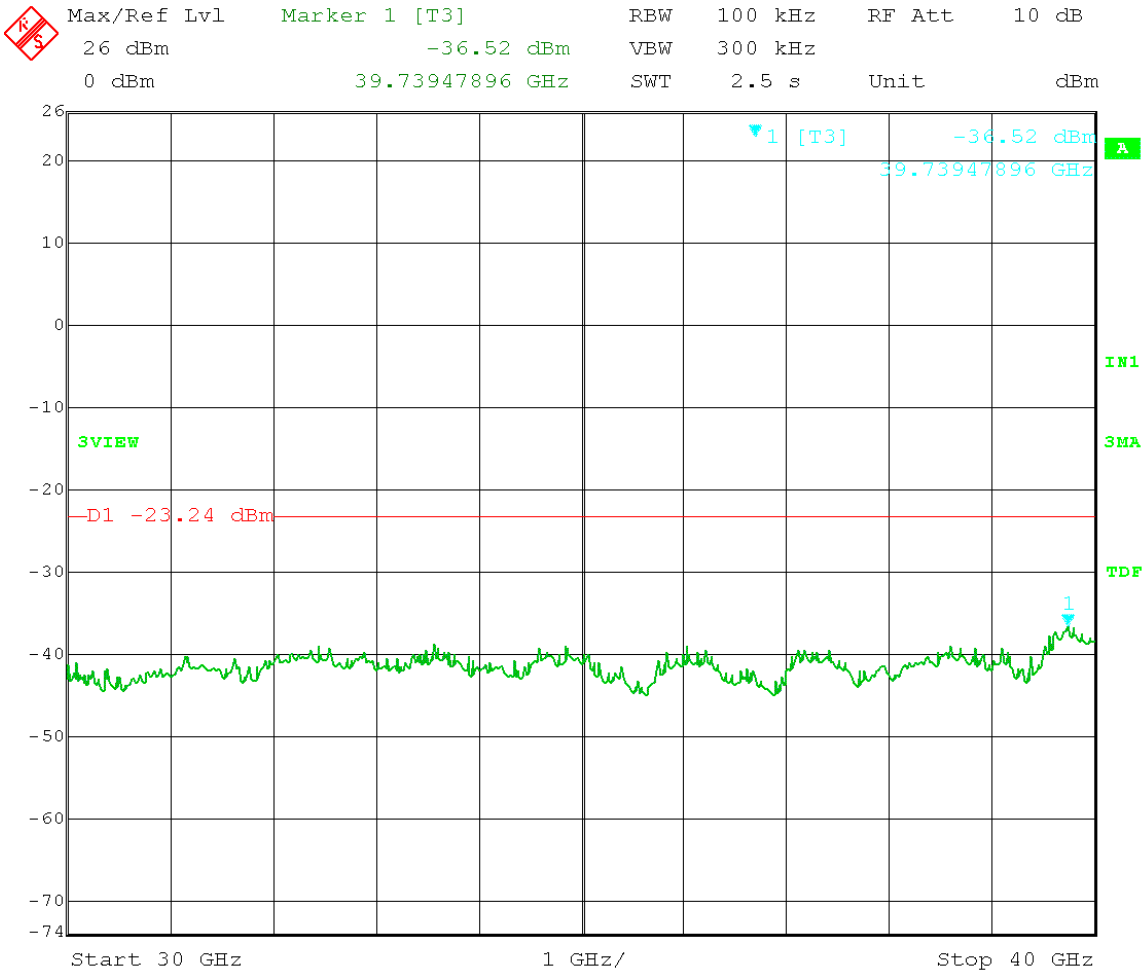
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -23.24dBm



Date: 3.JUN.2013 09:13:14

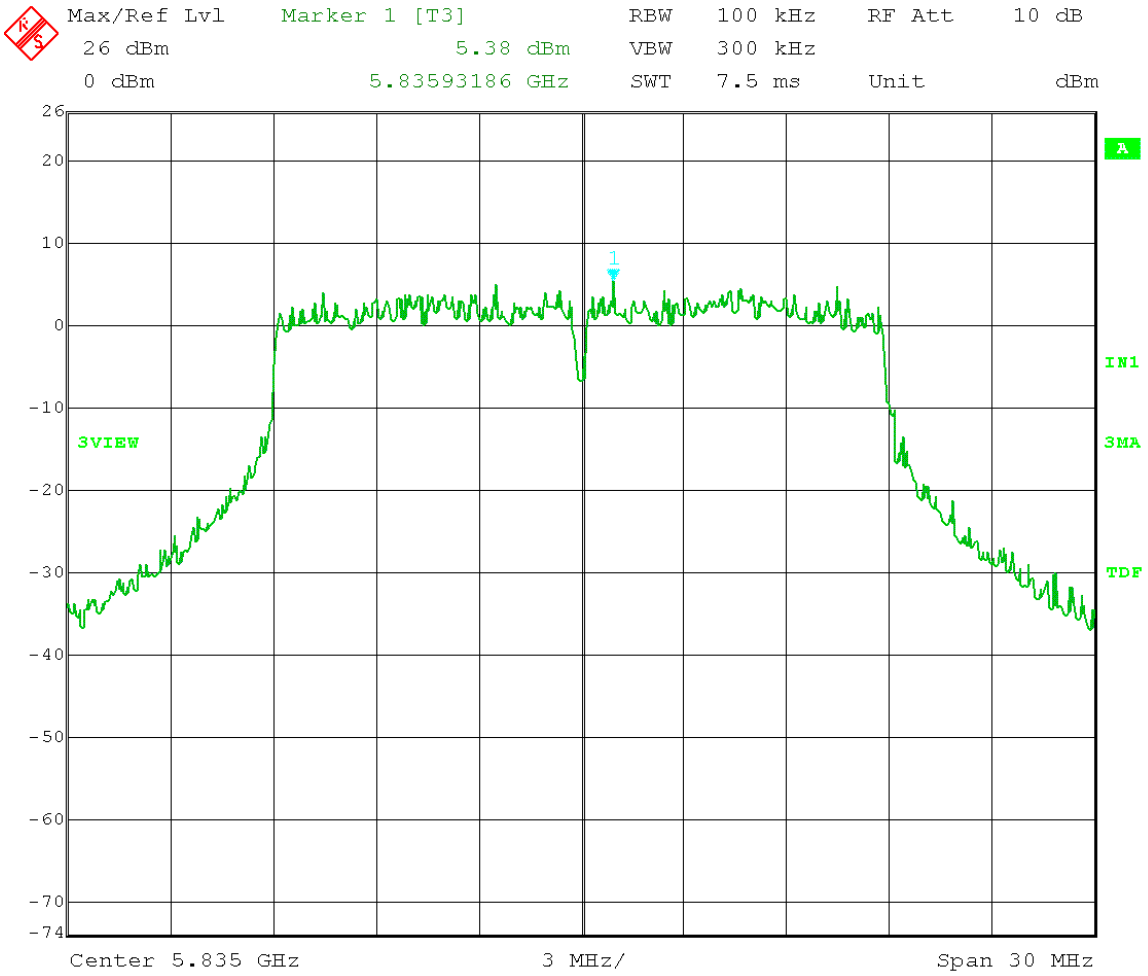
Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.775GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -23.24dBm



Date: 3.JUN.2013 09:15:35

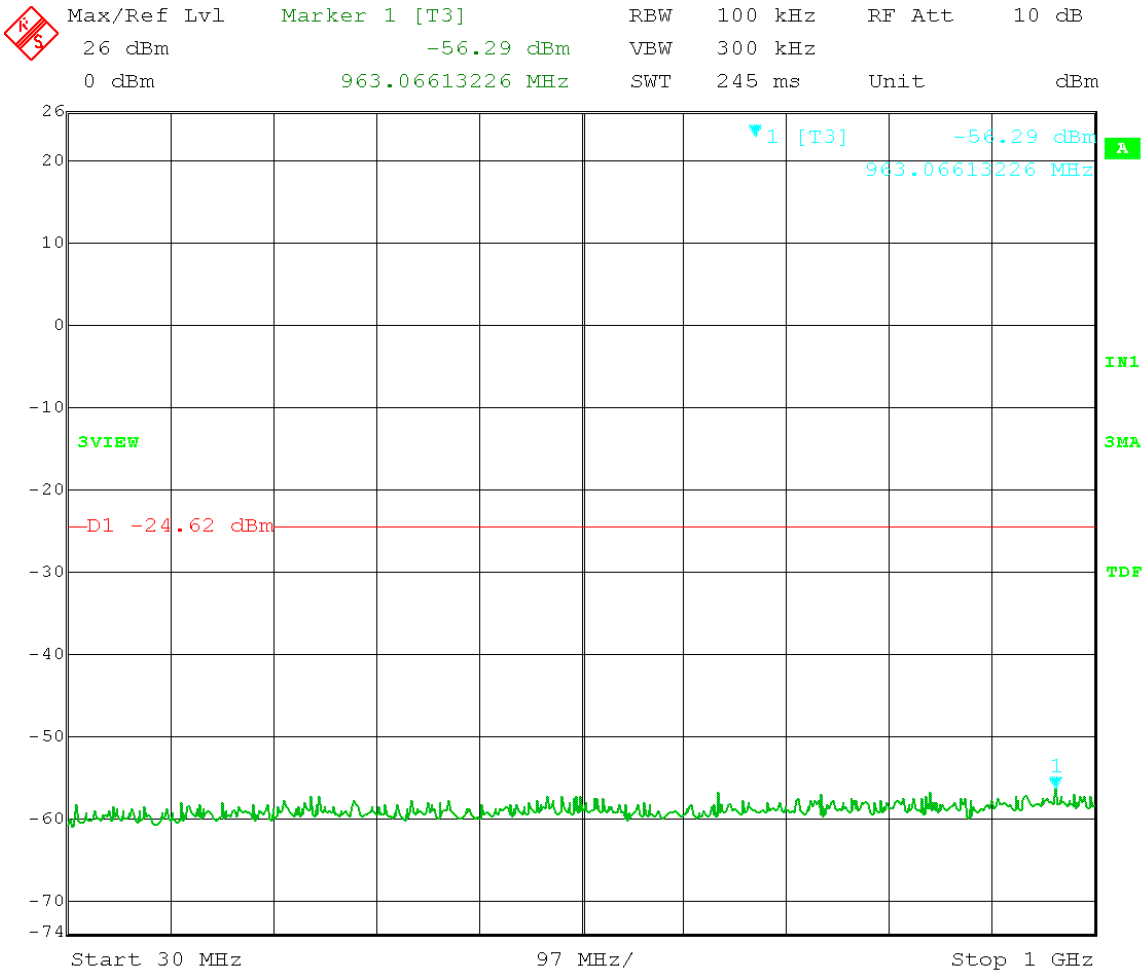
Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — High Channel Transmit = 5.835GHz
	Output power setting 20dBm — 20MHz BW
	Channel 1
	Reference Level measurement
	Limit = 5.38dBm – 30 dB = -24.62dBm



Date: 30.MAY.2013 14:27:12

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

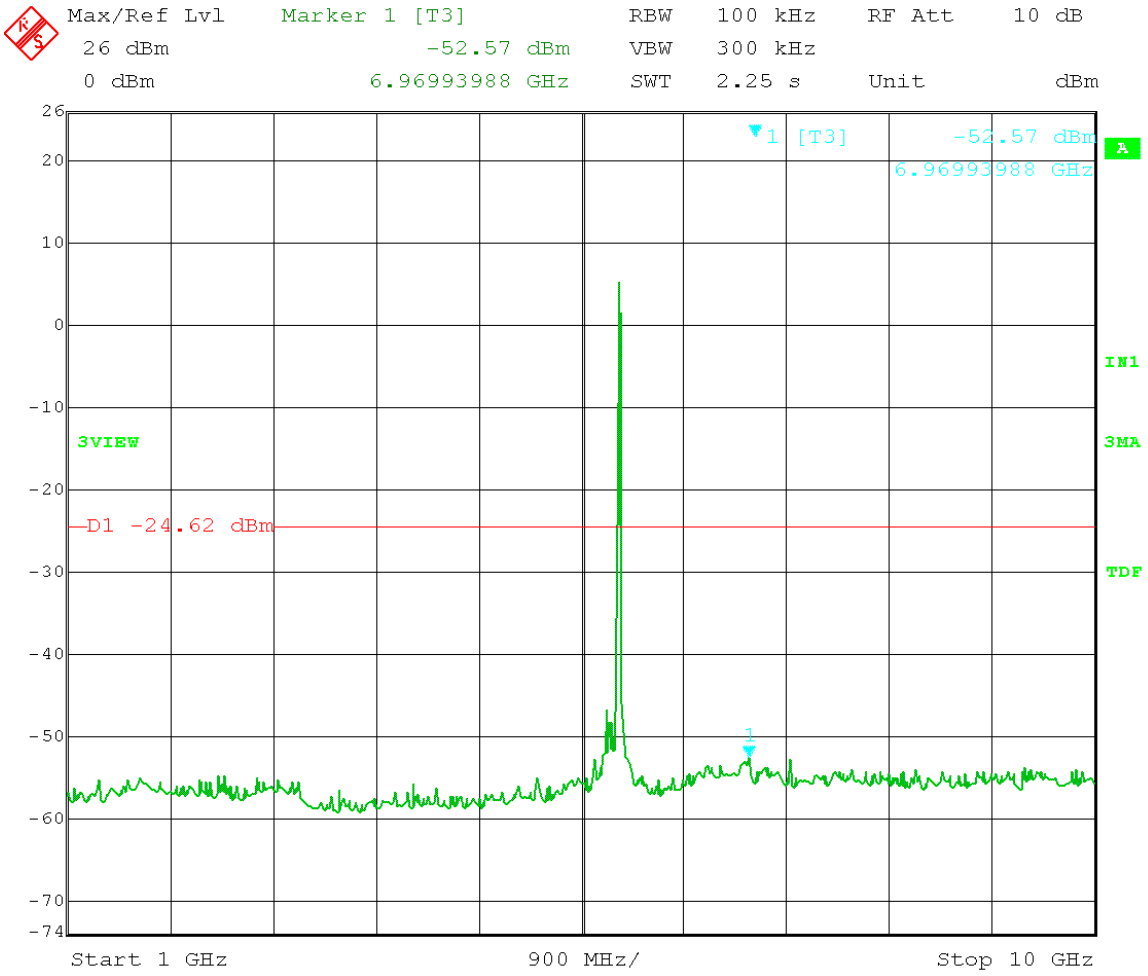
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -24.62dBm



Date: 3.JUN.2013 09:39:12

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

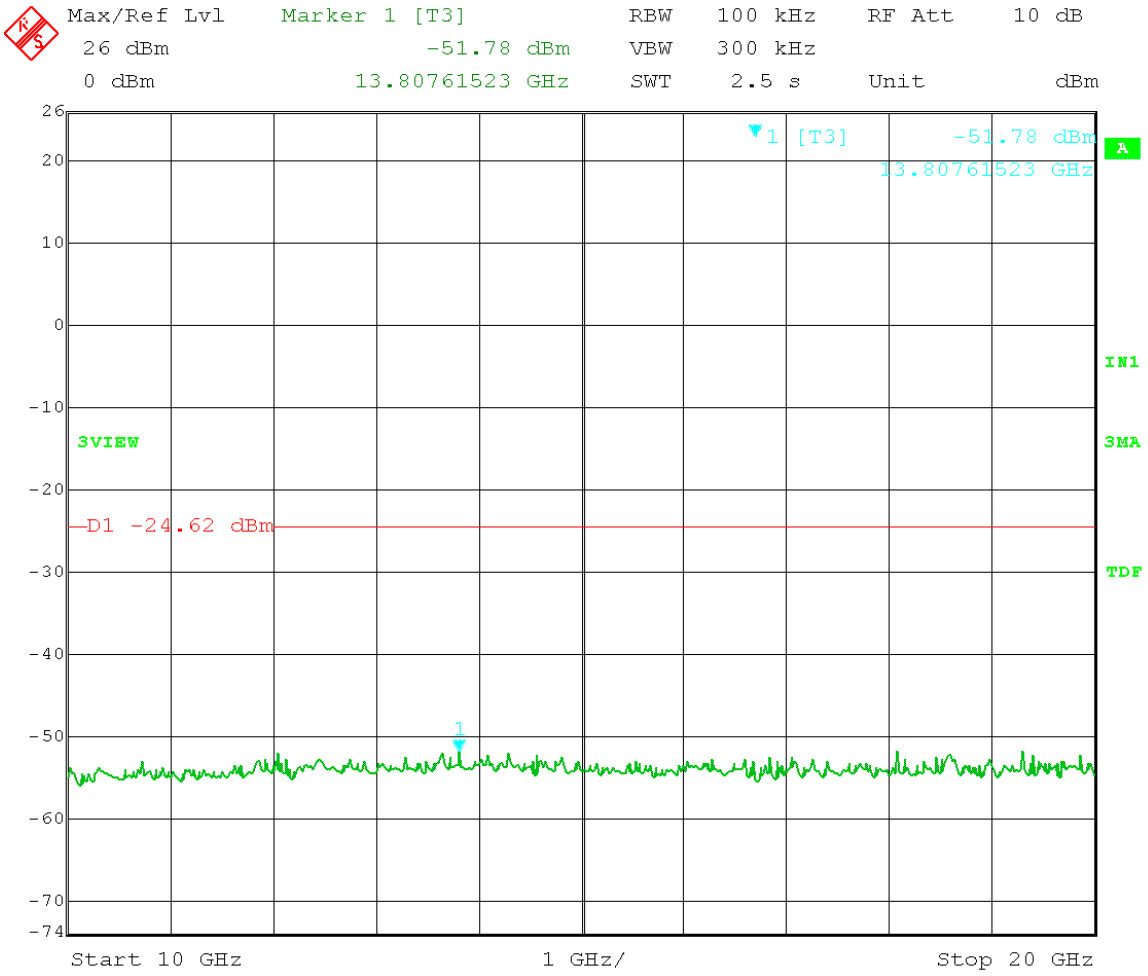
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -24.62dBm



Date: 3.JUN.2013 09:41:24

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

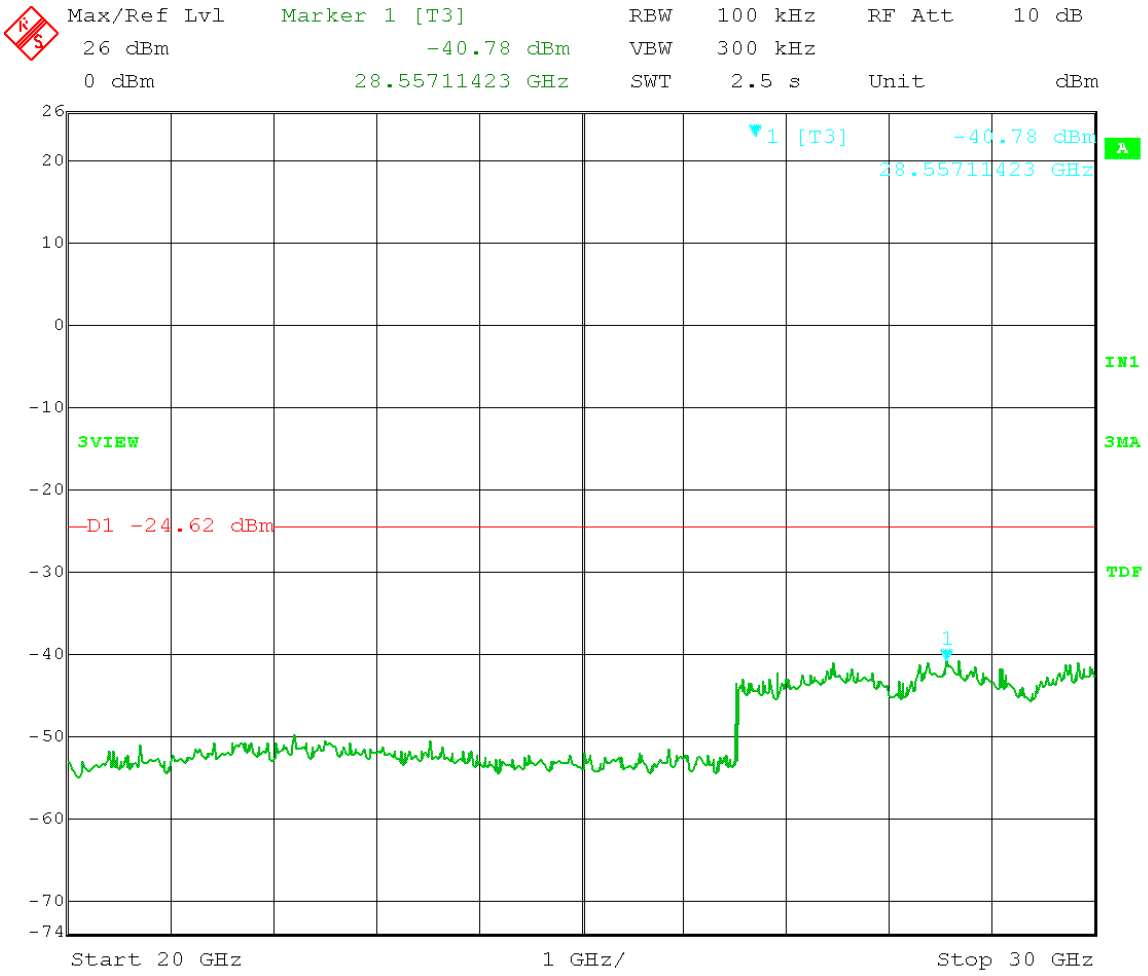
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -24.62dBm



Date: 3.JUN.2013 09:43:00

Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

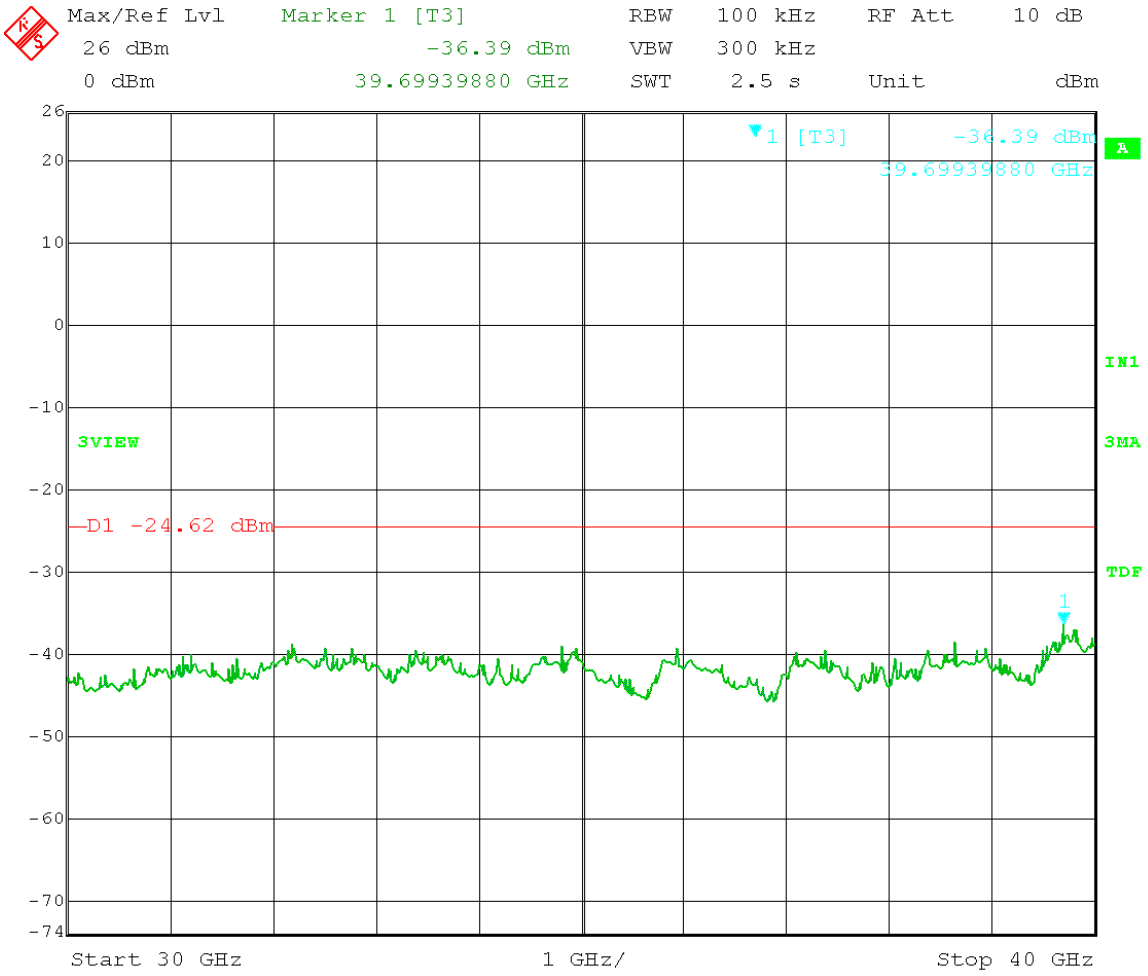
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -24.62dBm



Date: 3.JUN.2013 09:44:30

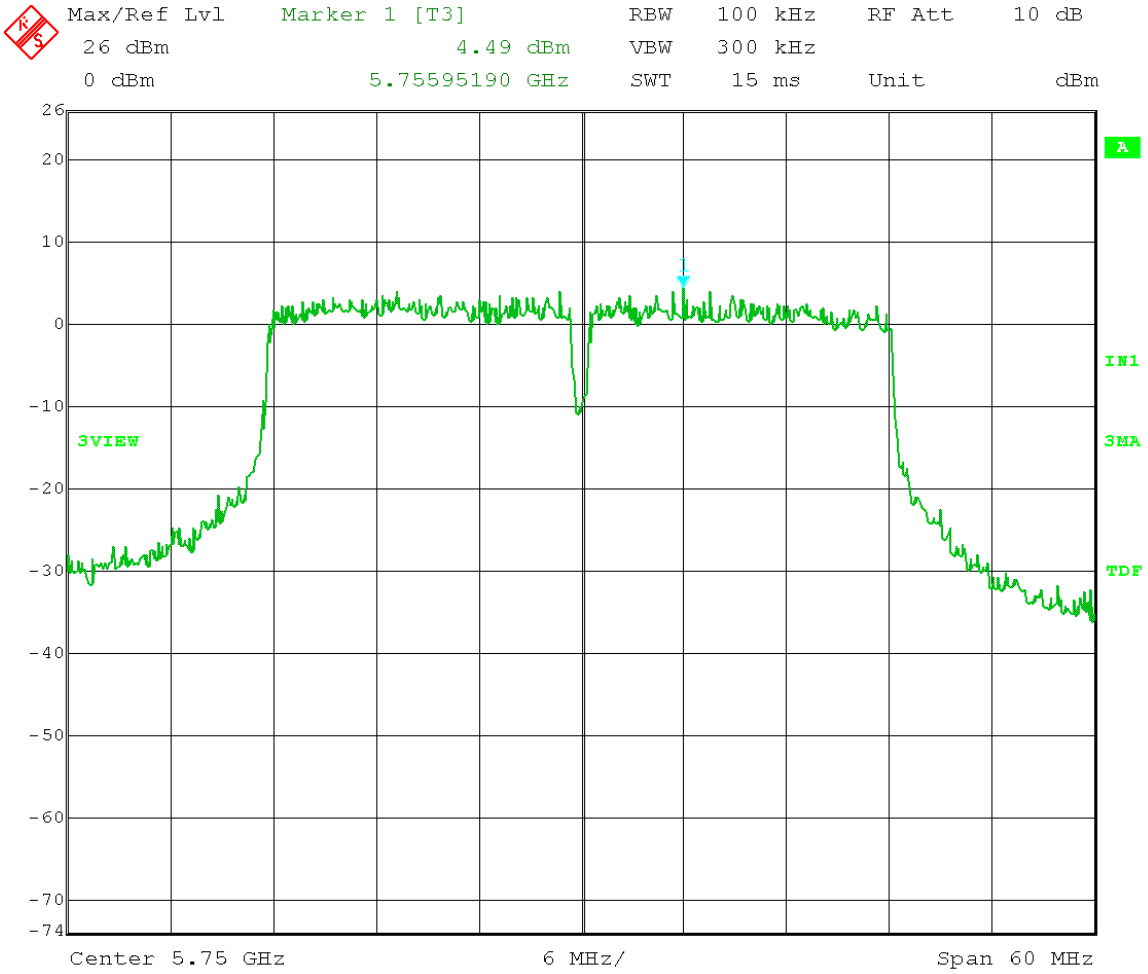
Test Date: 6-3-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.835GHz
Output Power Setting 20dBm
20 MHz BW
Channel 1
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -24.62dBm



Date: 3.JUN.2013 09:45:50

Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — Low Channel Transmit = 5.750GHz
	Output power setting 20dBm — 40MHz BW
	Channel 0
	Reference Level measurement
	Limit = 4.49dBm – 30 dB = -25.51dBm

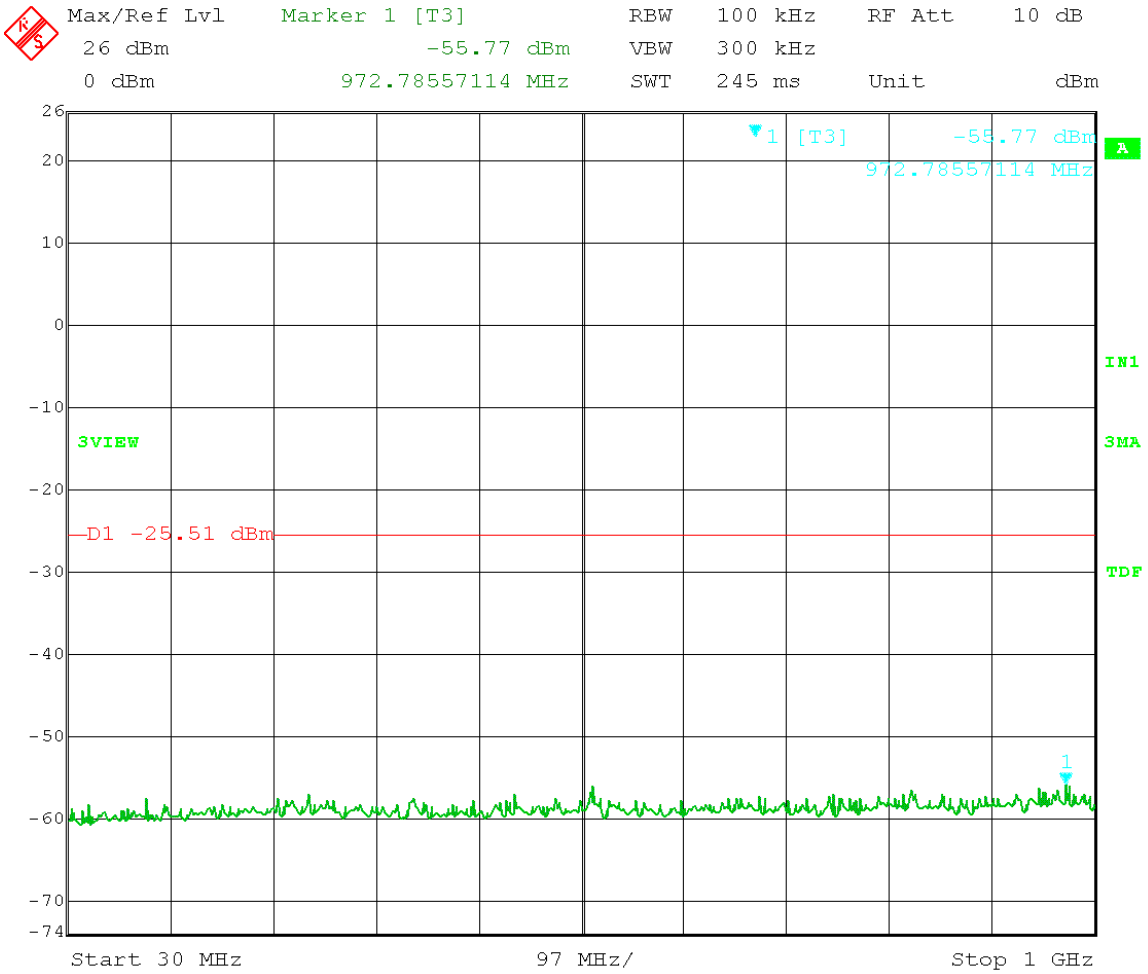


Date: 30.MAY.2013 14:43:42

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 0
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -25.51dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

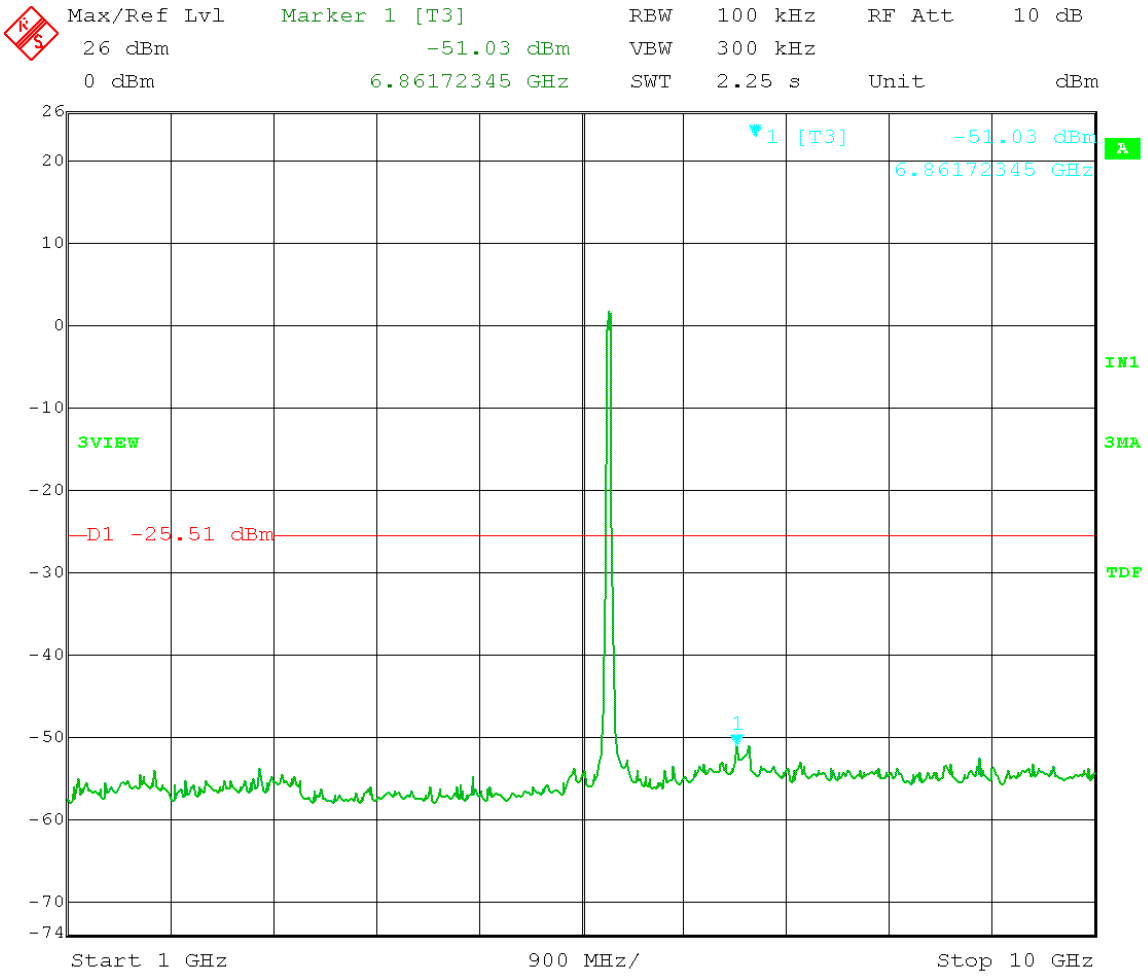


Date: 31.MAY.2013 15:20:46

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 0
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -25.51dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

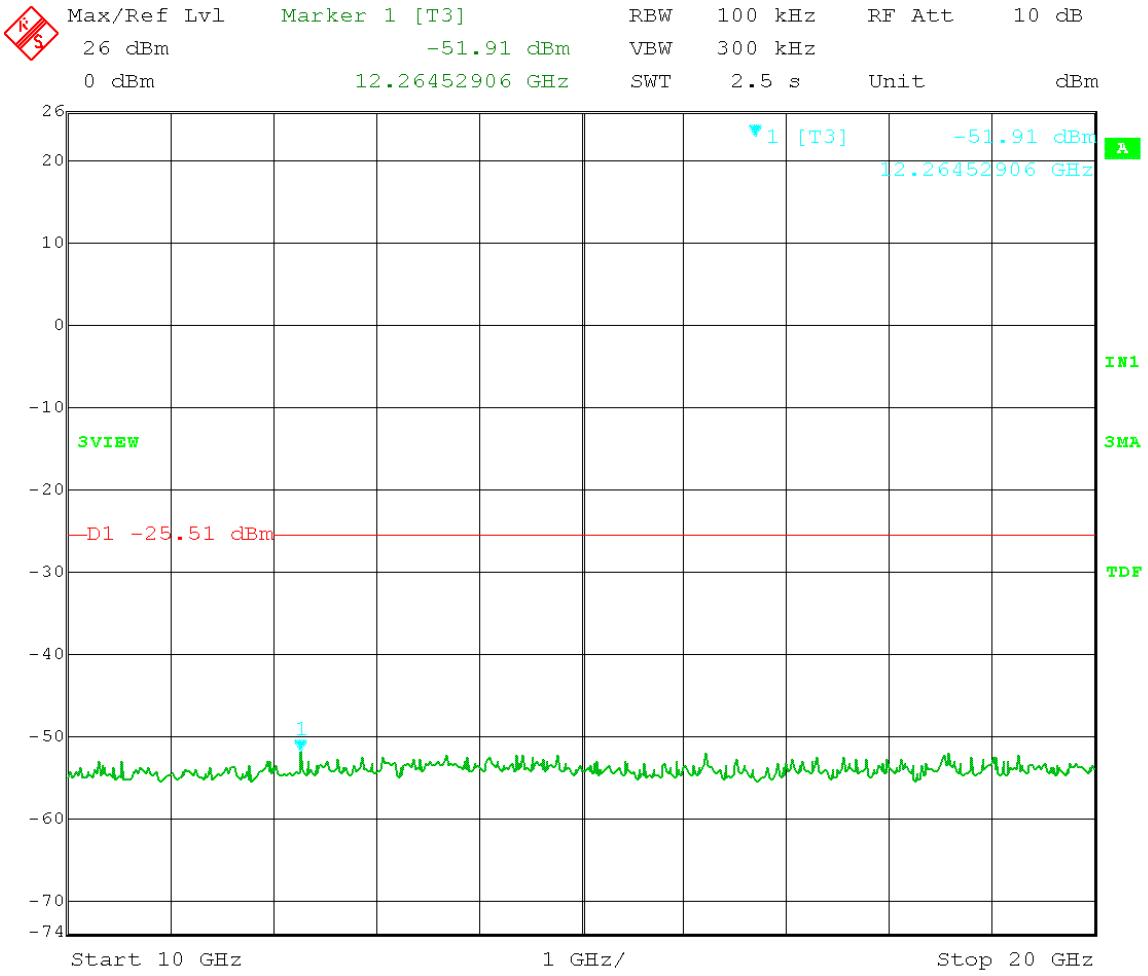


Date: 30.MAY.2013 15:24:57

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 0
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -25.51dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

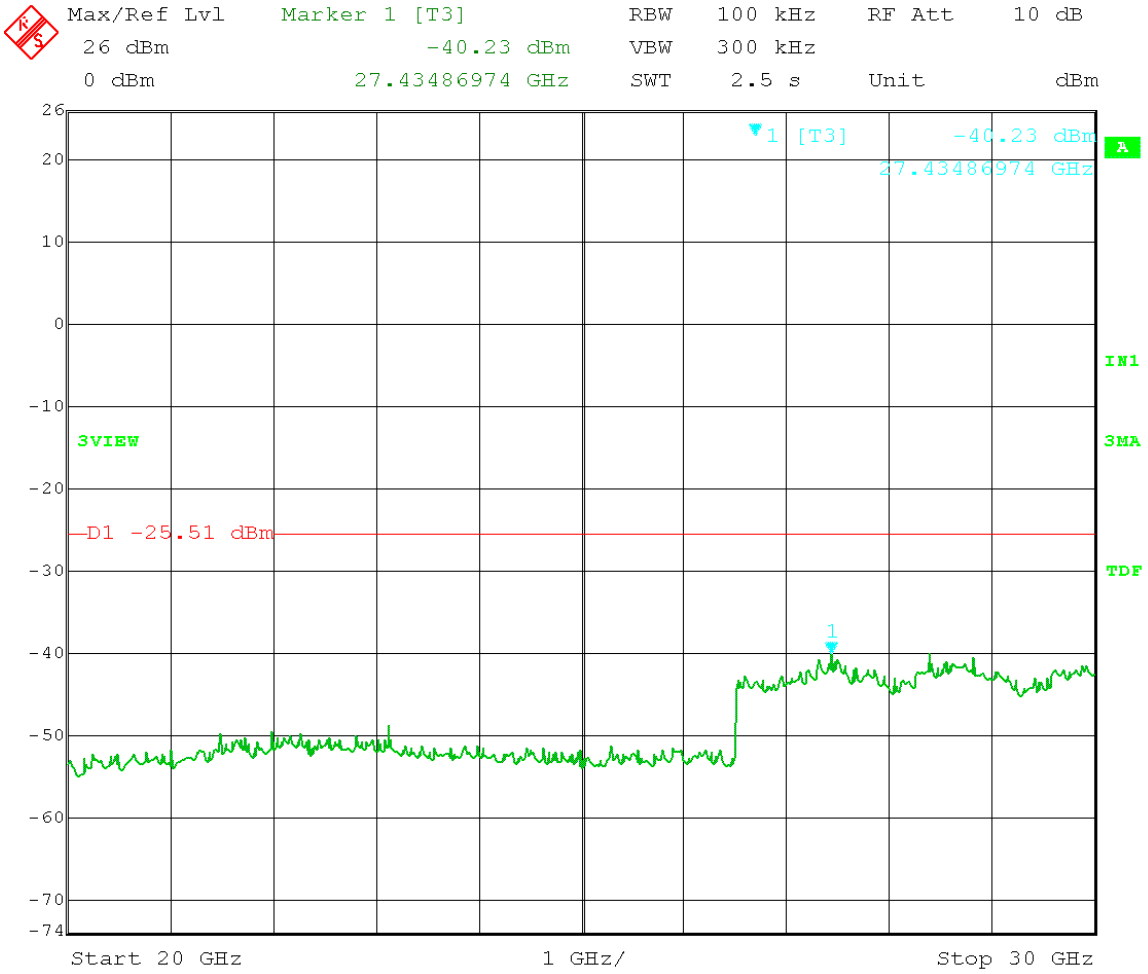


Date: 30.MAY.2013 15:17:09

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 0
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -25.51dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

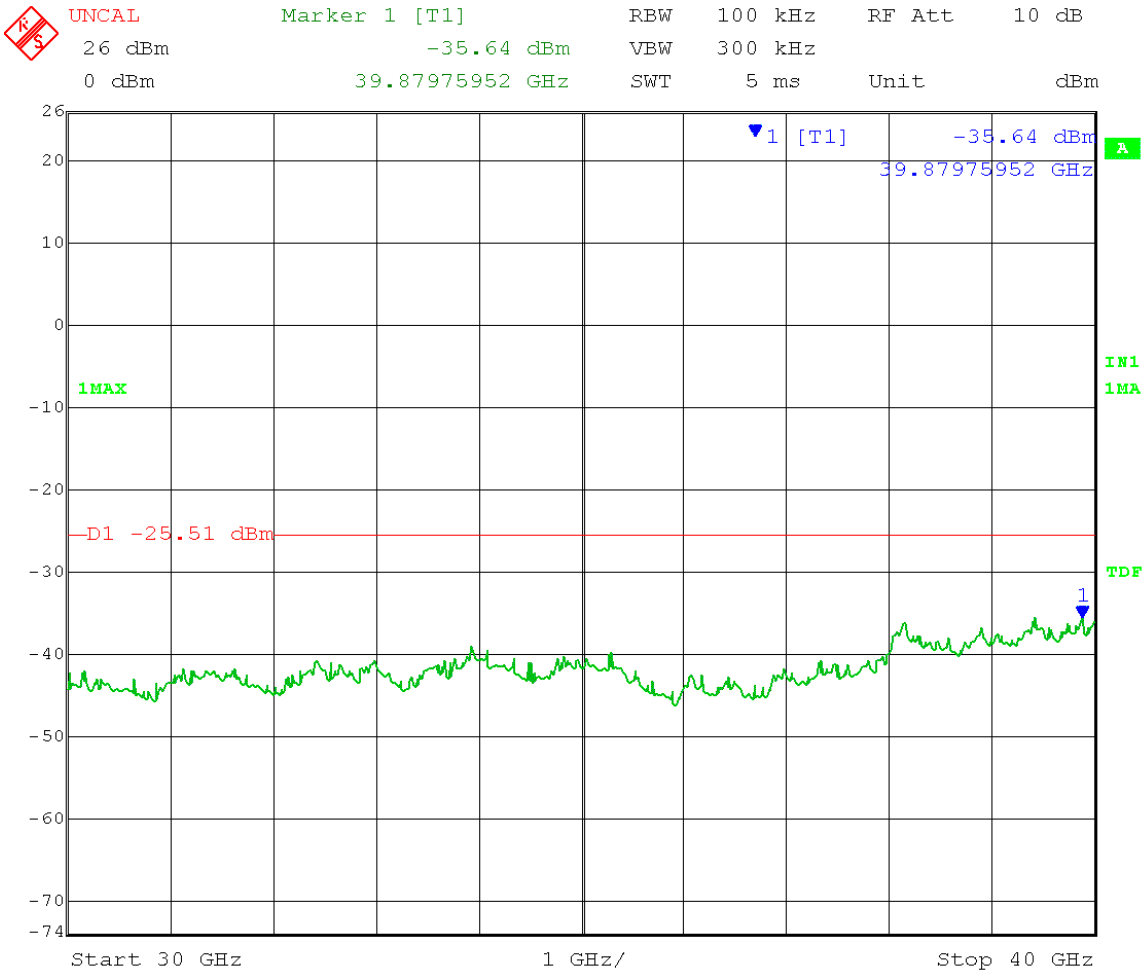


Date: 30.MAY.2013 15:18:24

Test Date: 6-18-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

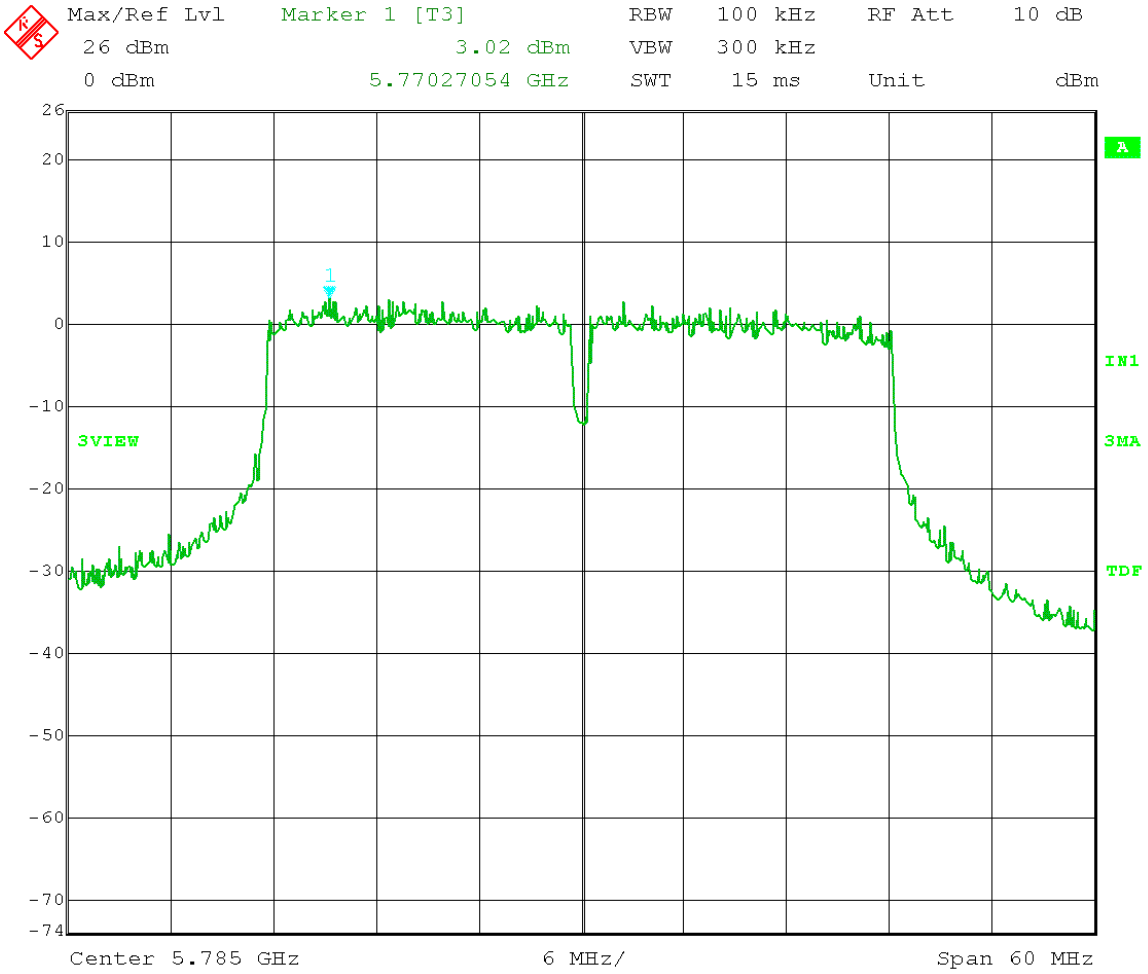
RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 0
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -25.51dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW



Date: 18.JUN.2013 14:12:22

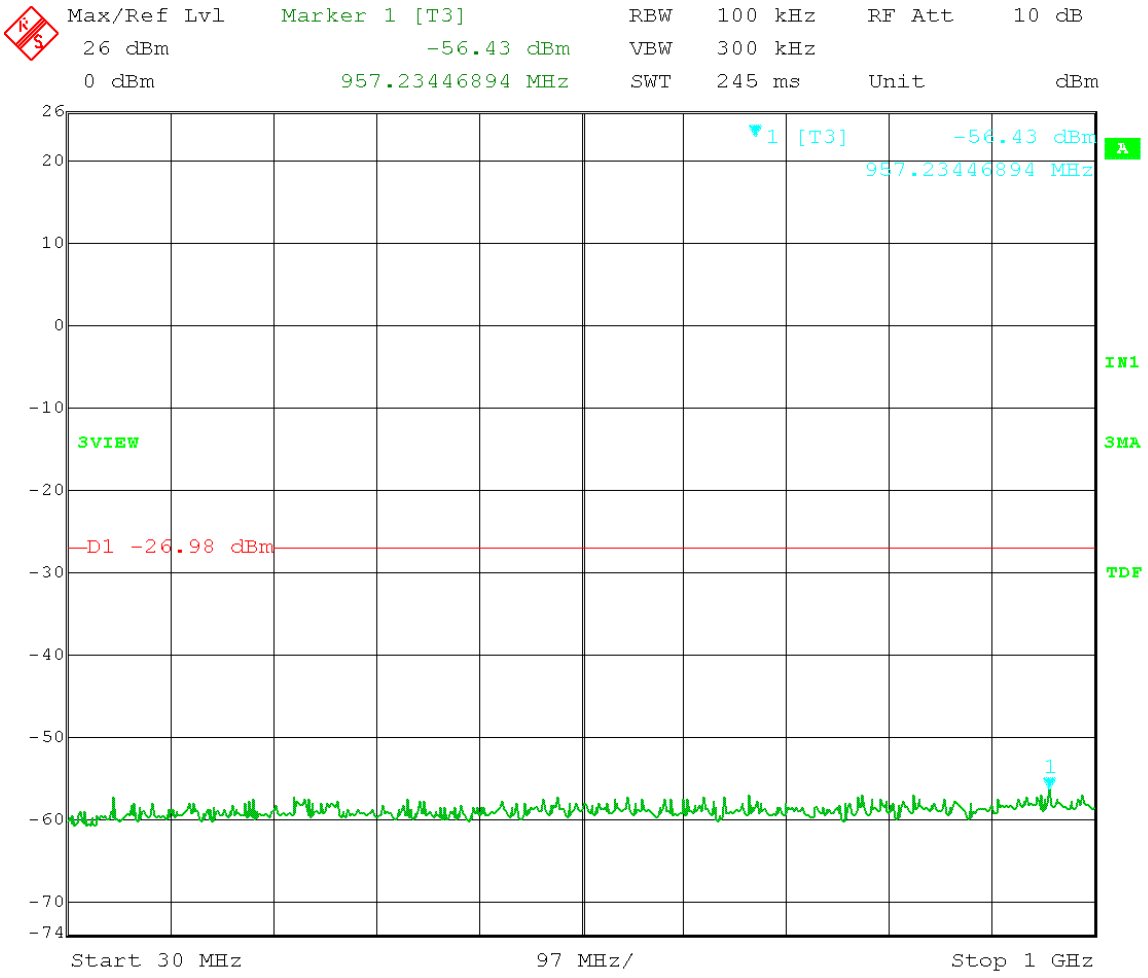
Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — Mid Channel Transmit = 5.785GHz
	Output power setting 20dBm — 40MHz BW
	Channel 0
	Reference Level measurement
	Limit = 3.02dBm – 30 dB = -26.98dBm



Date: 30.MAY.2013 14:42:16

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

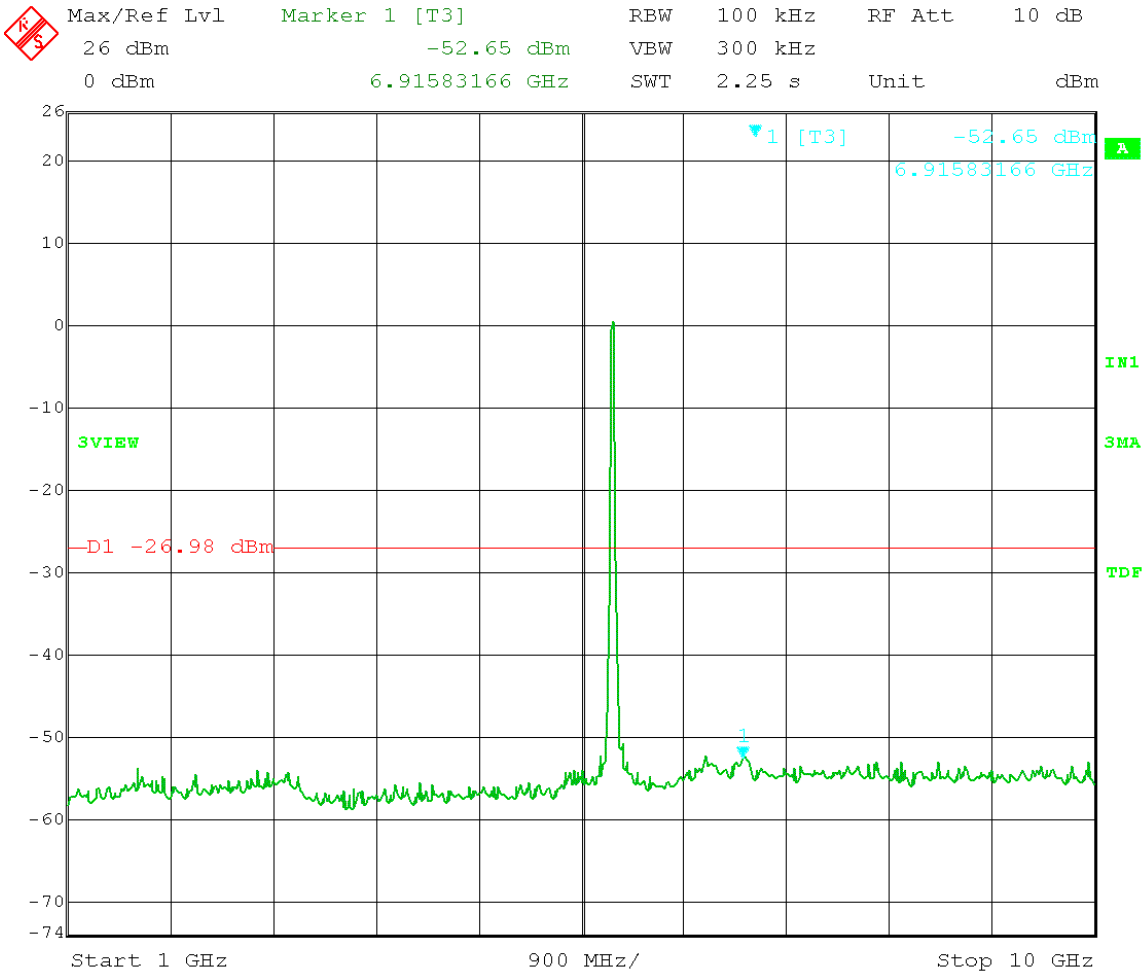
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 30MHz-1GHz
Emission Level Measurement
Limit = -26.98dBm



Date: 31.MAY.2013 14:32:11

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

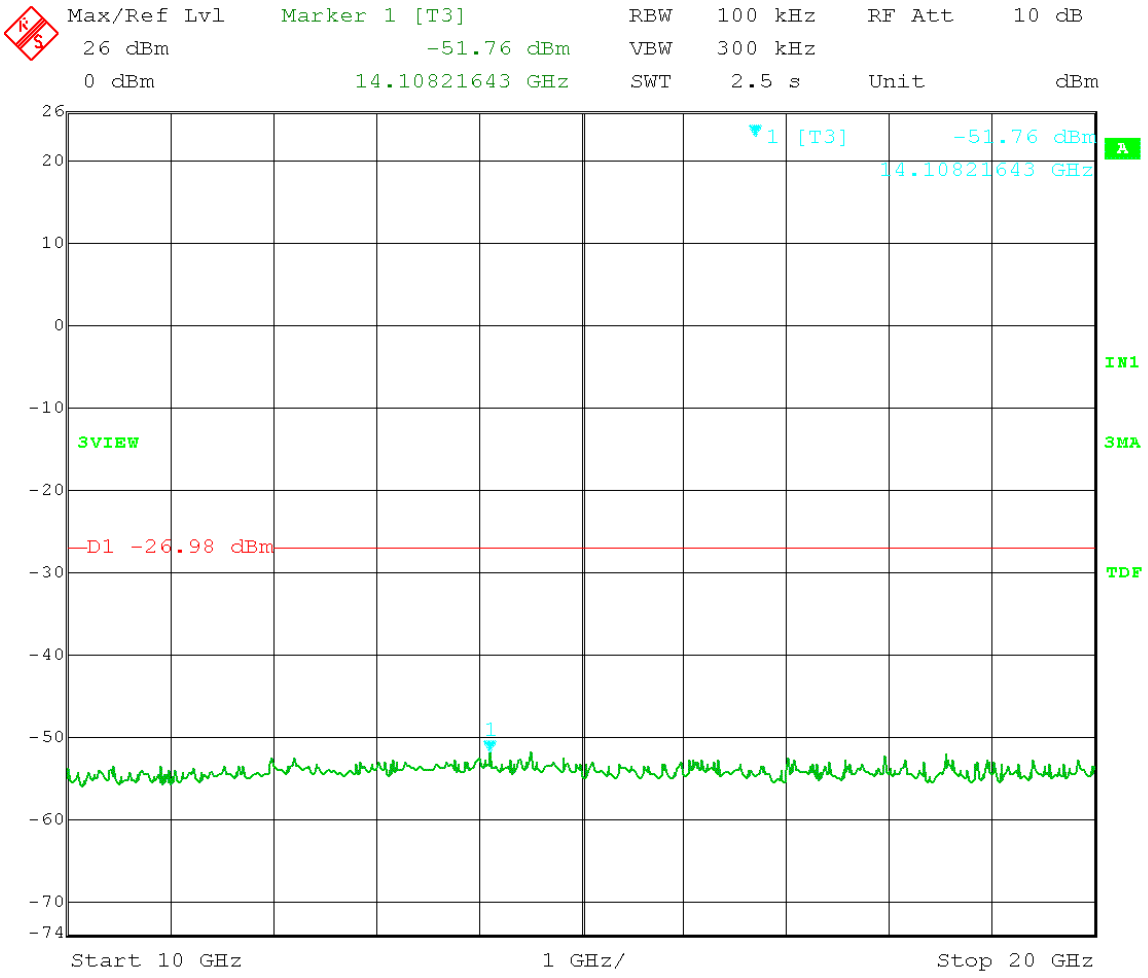
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -26.98dBm



Date: 31.MAY.2013 11:18:59

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

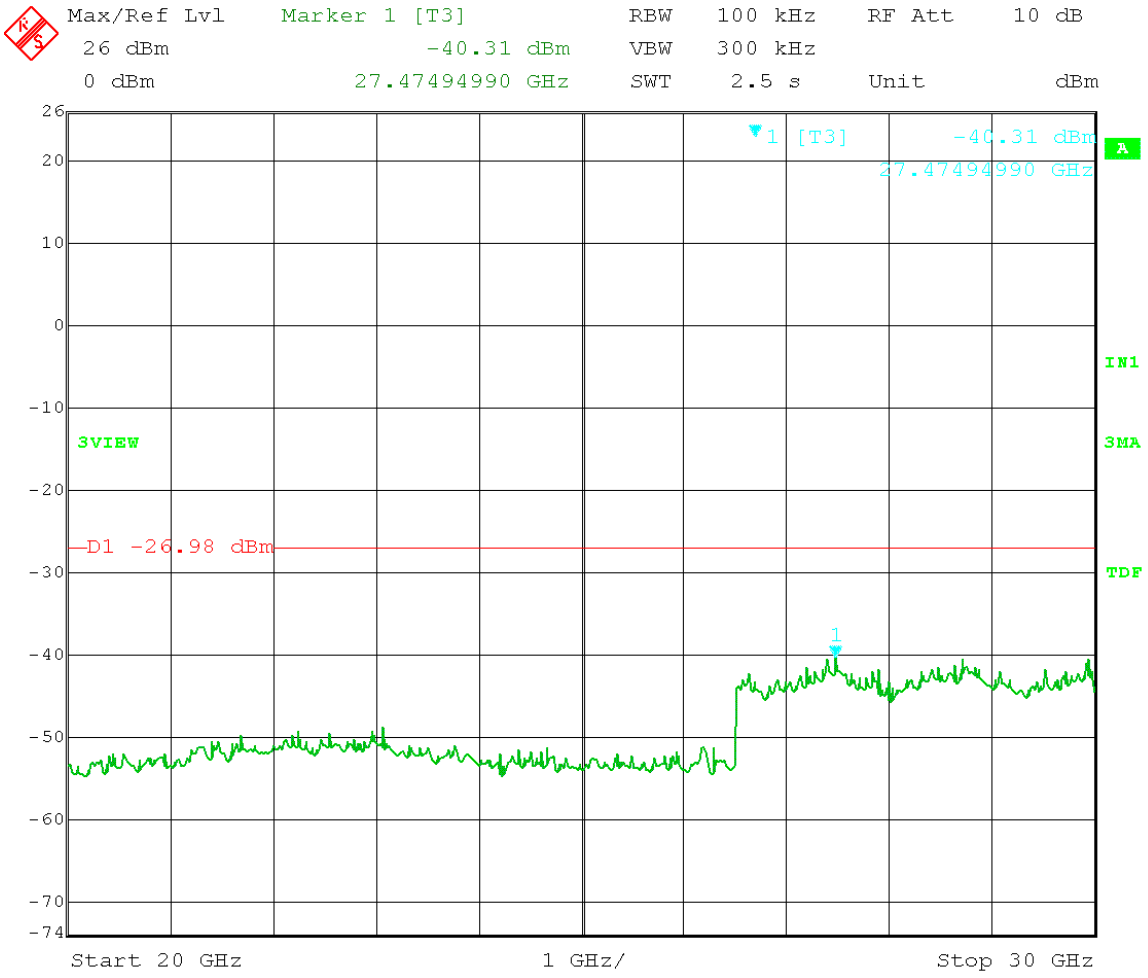
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -26.98dBm



Date: 31.MAY.2013 14:25:31

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

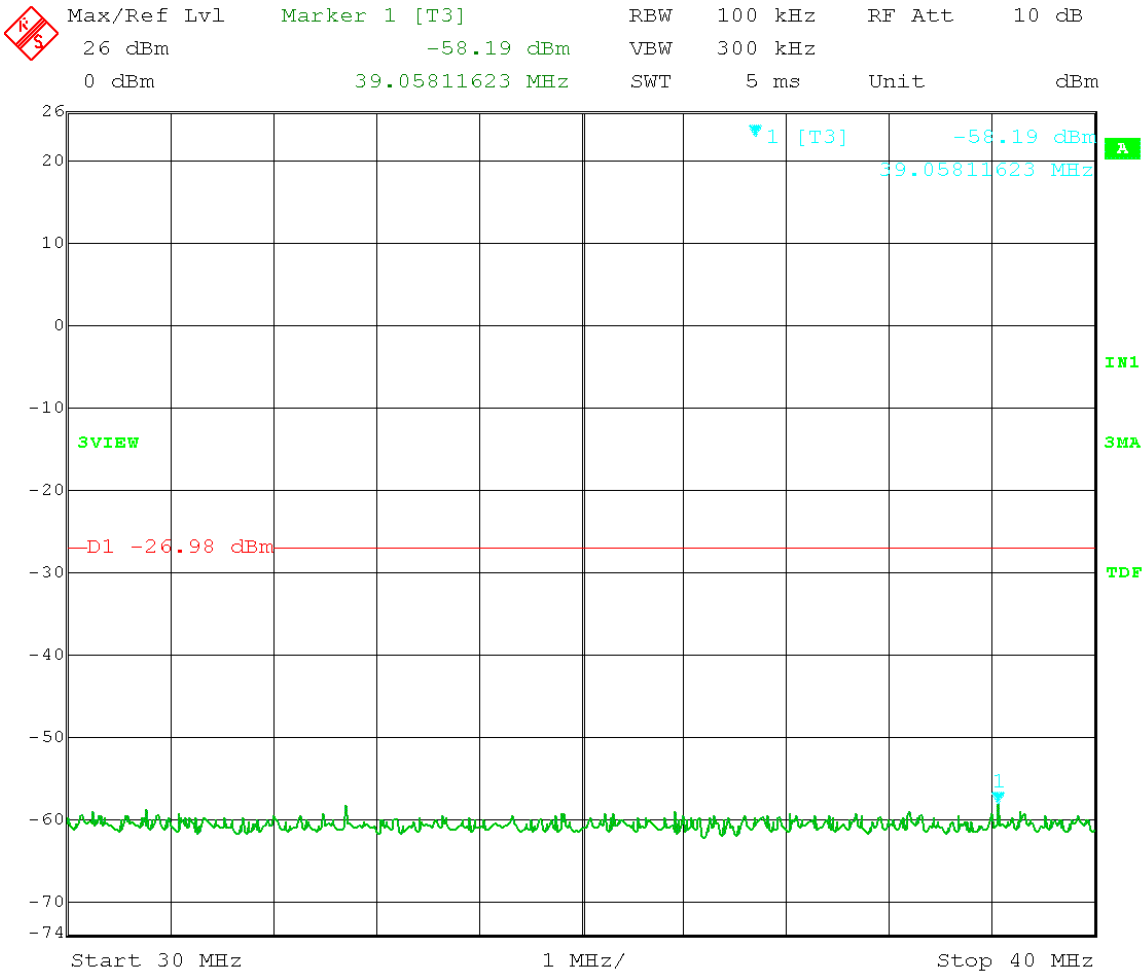
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -26.98dBm



Date: 31.MAY.2013 14:28:10

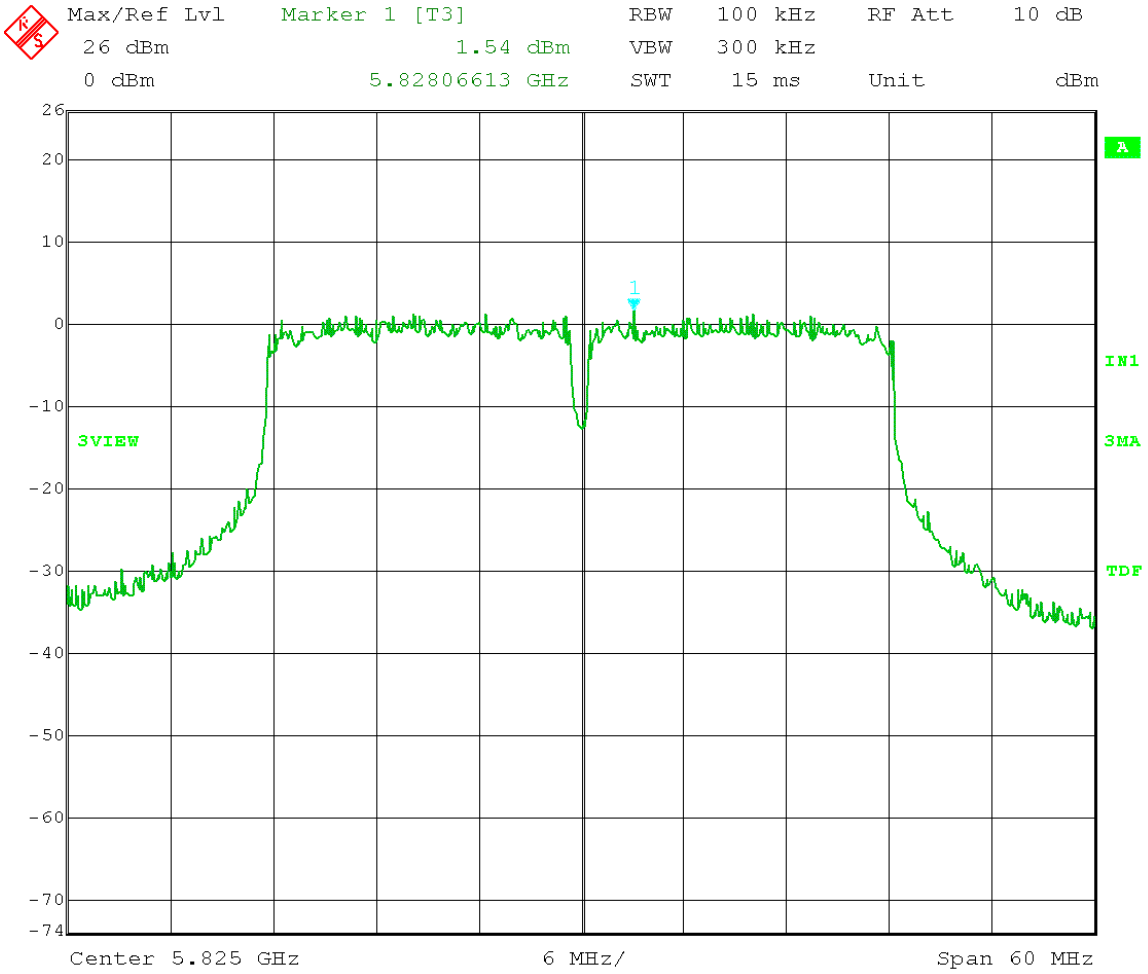
Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -26.98dBm



Date: 31.MAY.2013 14:22:11

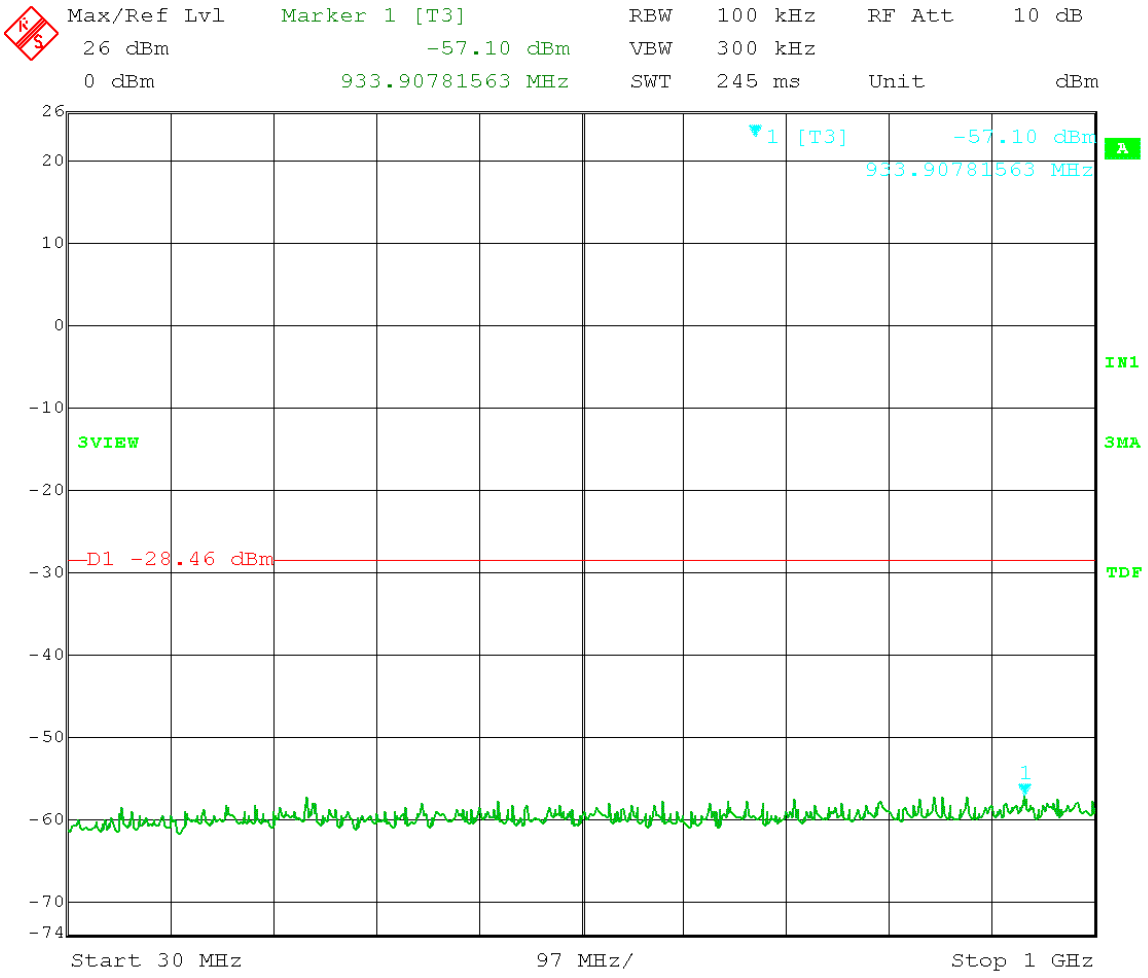
Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — High Channel Transmit = 5.835GHz
	Output power setting 20dBm — 40MHz BW
	Channel 0
	Reference Level measurement
	Limit = 1.54dBm – 30 dB = -28.46dBm



Date: 30.MAY.2013 14:31:55

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

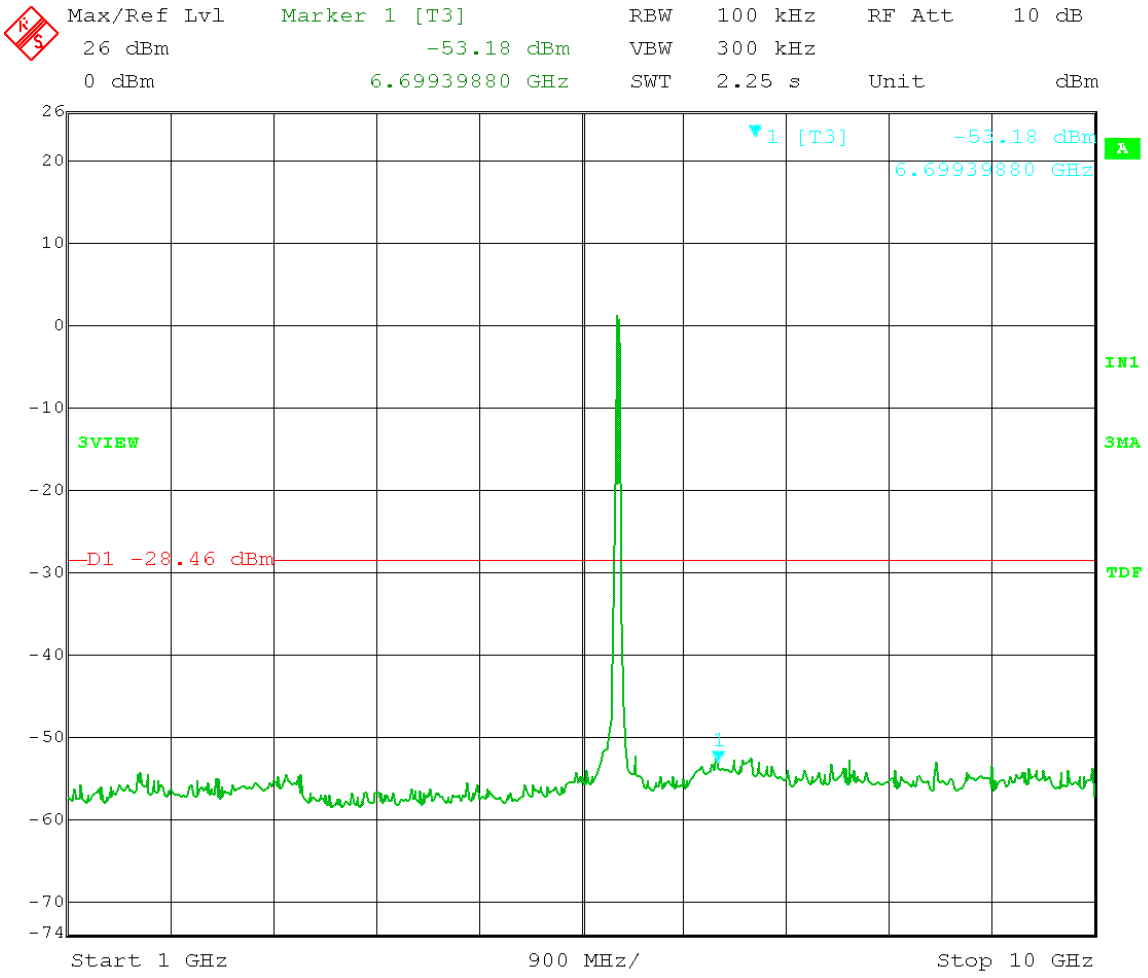
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 30MHz-1GHz
Emission Level Measurement
Limit = -28.46dBm



Date: 31.MAY.2013 15:07:44

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

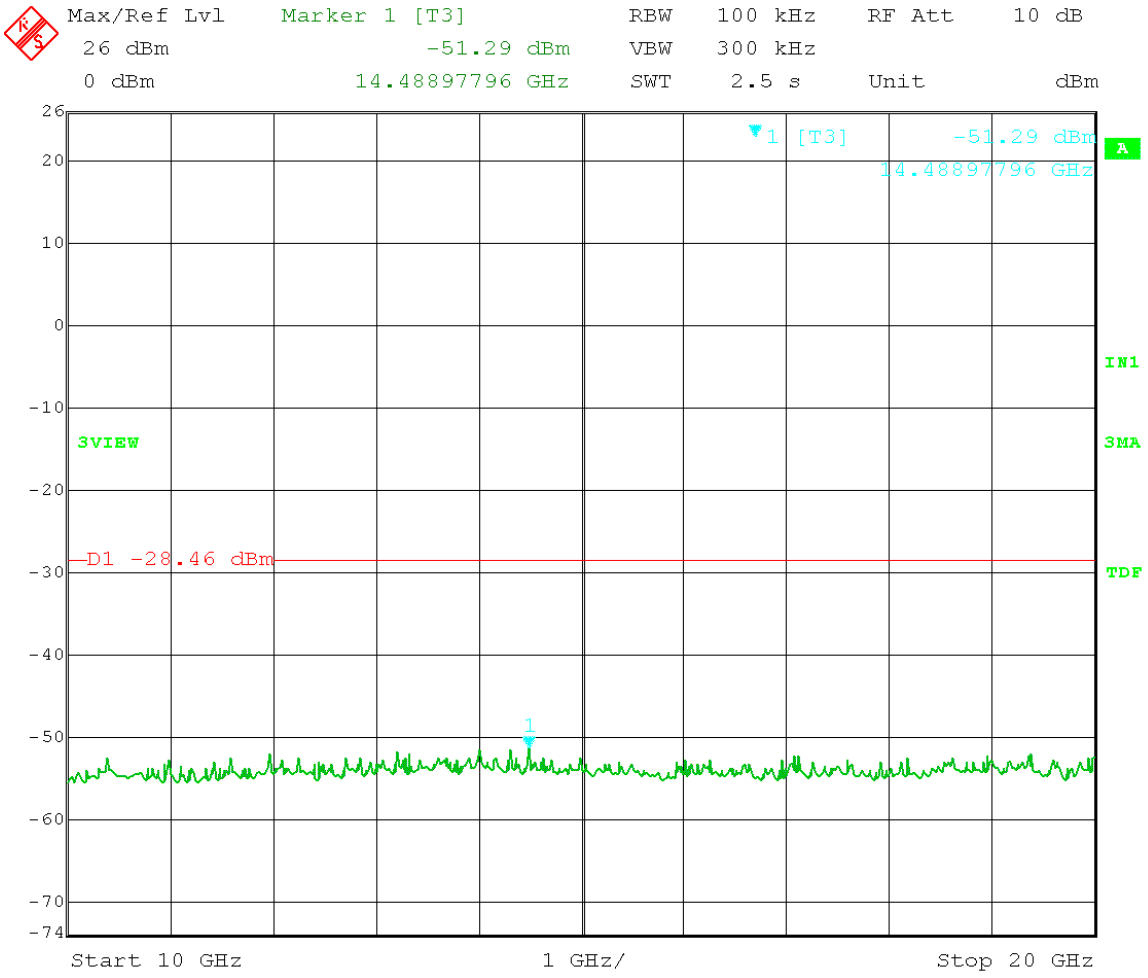
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 1-10GHz
Emissione Level Measurement
Limit = -28.46dBm



Date: 31.MAY.2013 15:10:20

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

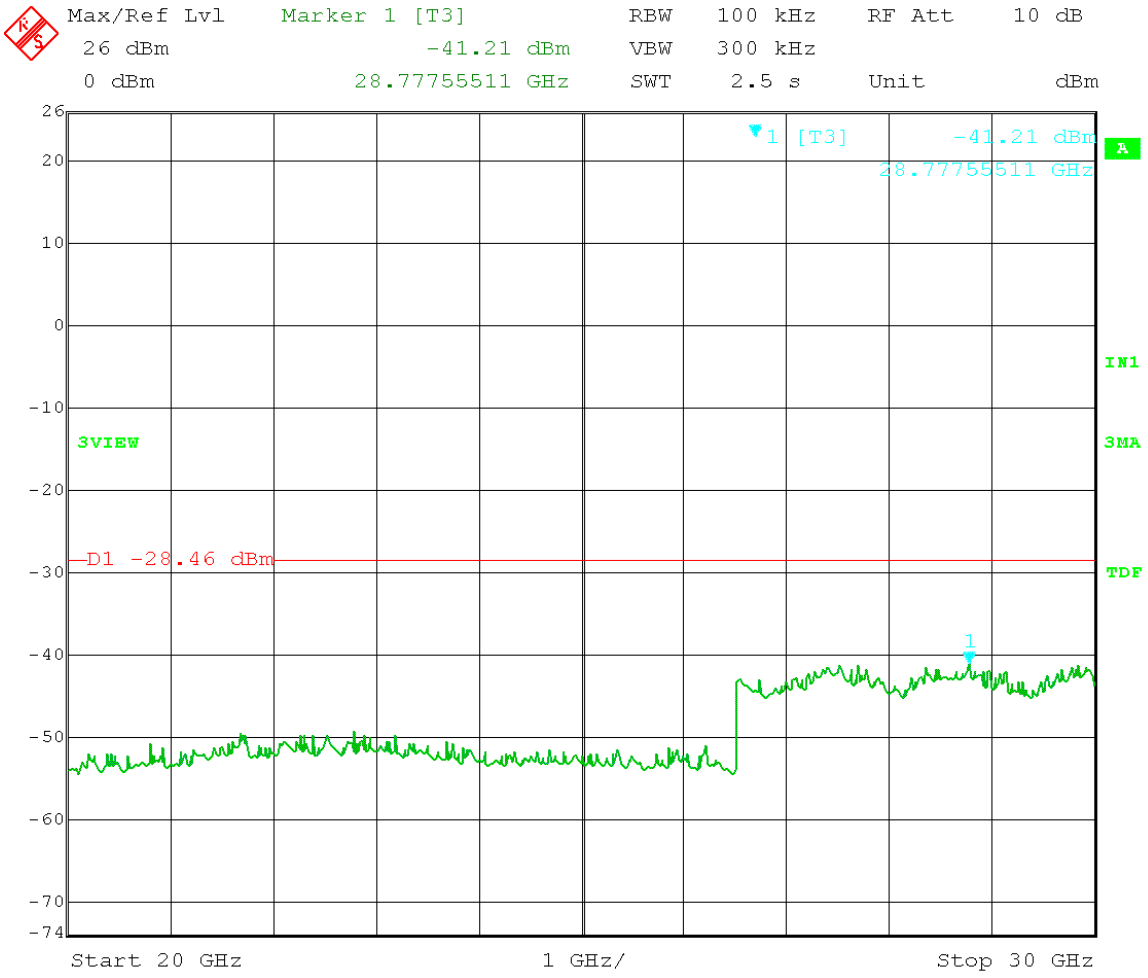
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -28.46dBm



Date: 31.MAY.2013 15:11:59

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

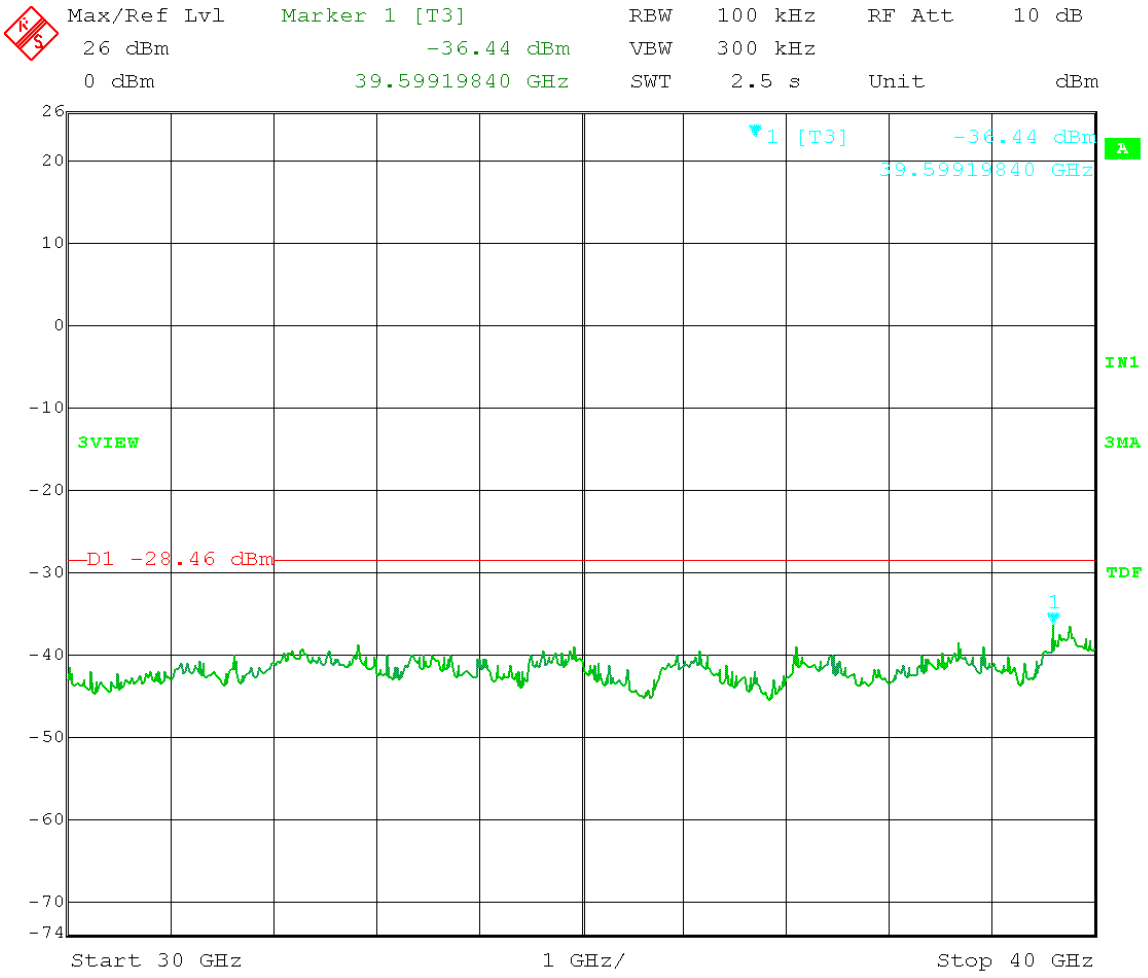
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -28.46dBm



Date: 31.MAY.2013 15:13:22

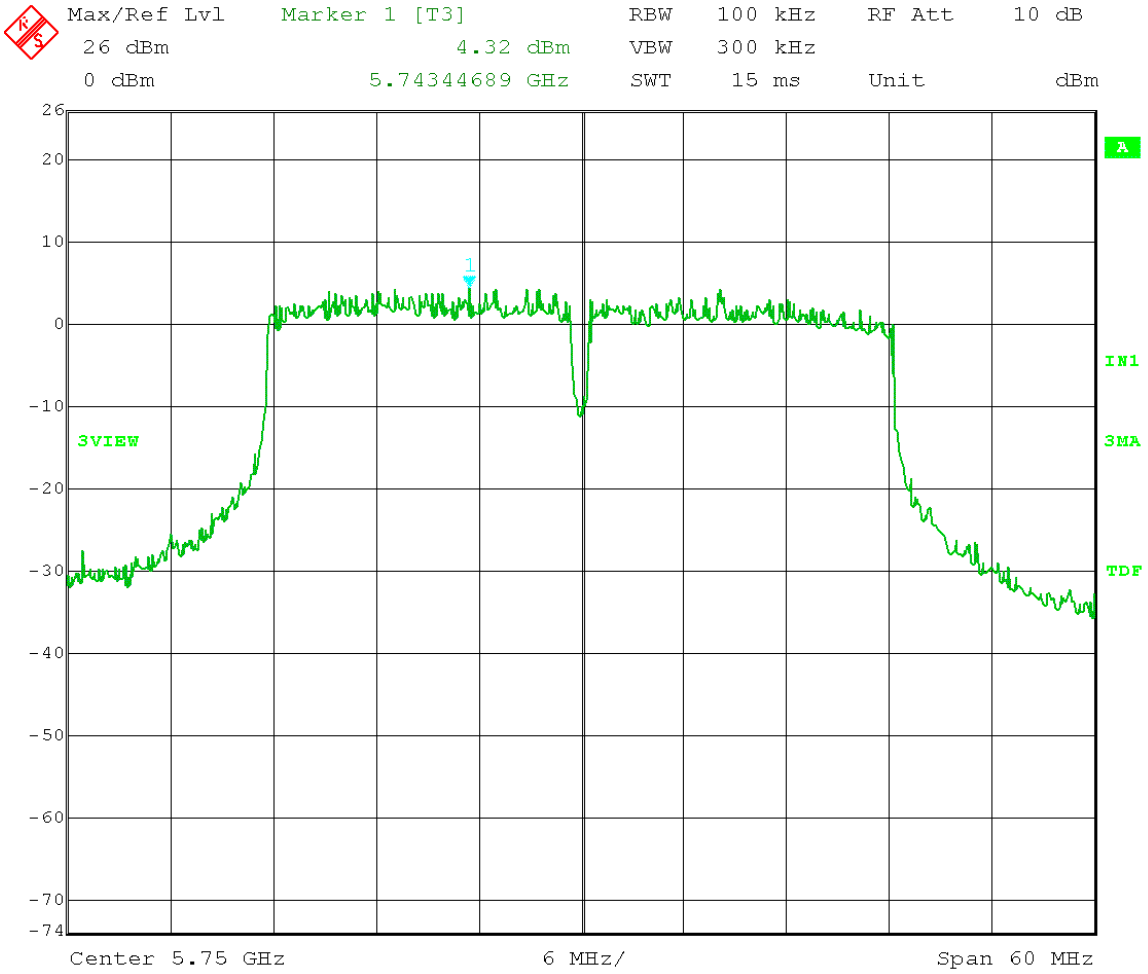
Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 0
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -28.46dBm



Date: 31.MAY.2013 15:14:54

Test Date: 05-30-2013
Company: Cambium Networks
EUT: Avenger Station (5.7GHz: OFDM)
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: RBW = 100 kHz VBW ≥ 300 kHz
Detector = Peak Sweep = Auto Couple
Trace = Max Hold Low Channel Transmit = 5.750GHz
Output power setting 20dBm 40MHz BW
Channel 1
Reference Level measurement
Limit = 4.32dBm – 30 dB = -25.68dBm

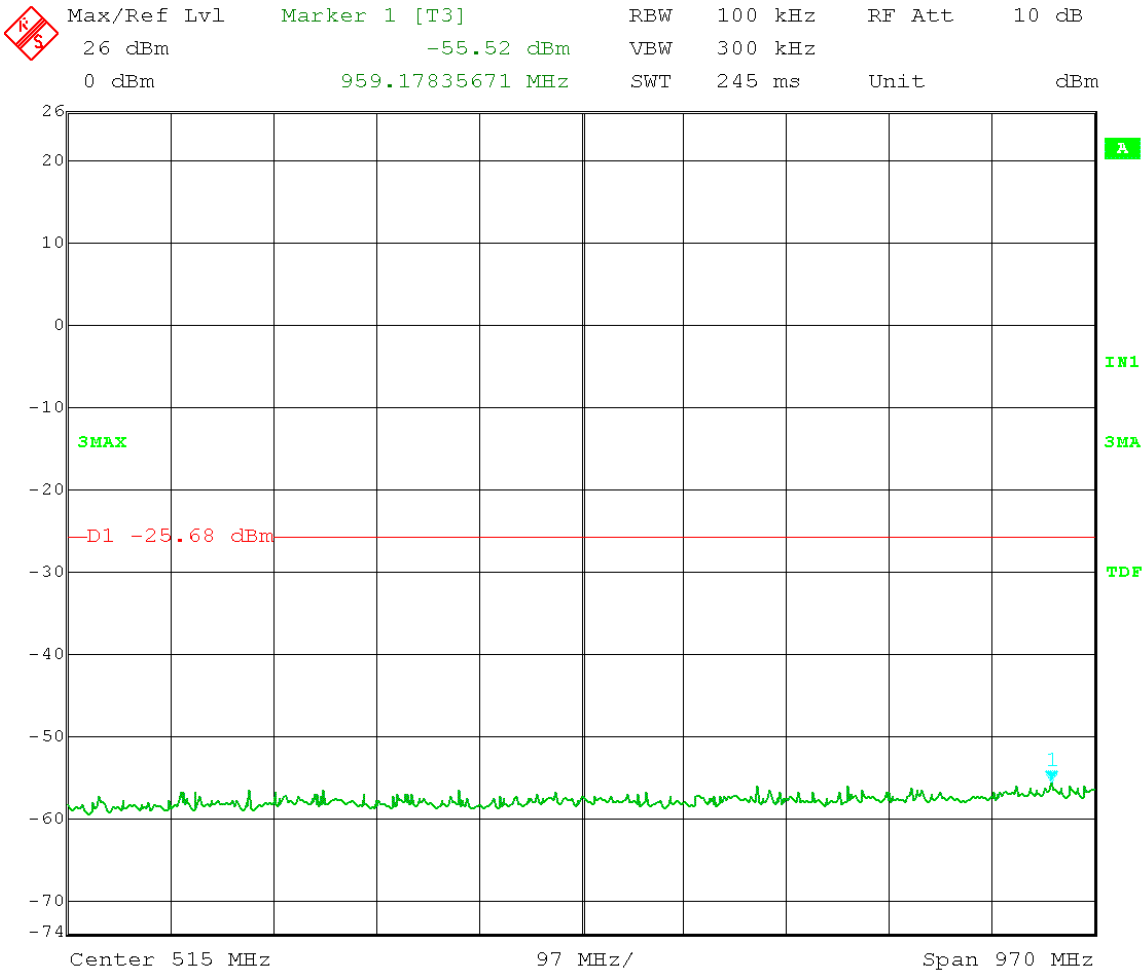


Date: 30.MAY.2013 14:45:55

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 1
Frequency Range 30M-1GHz
Emission Level Measurement
Limit = -25.68dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

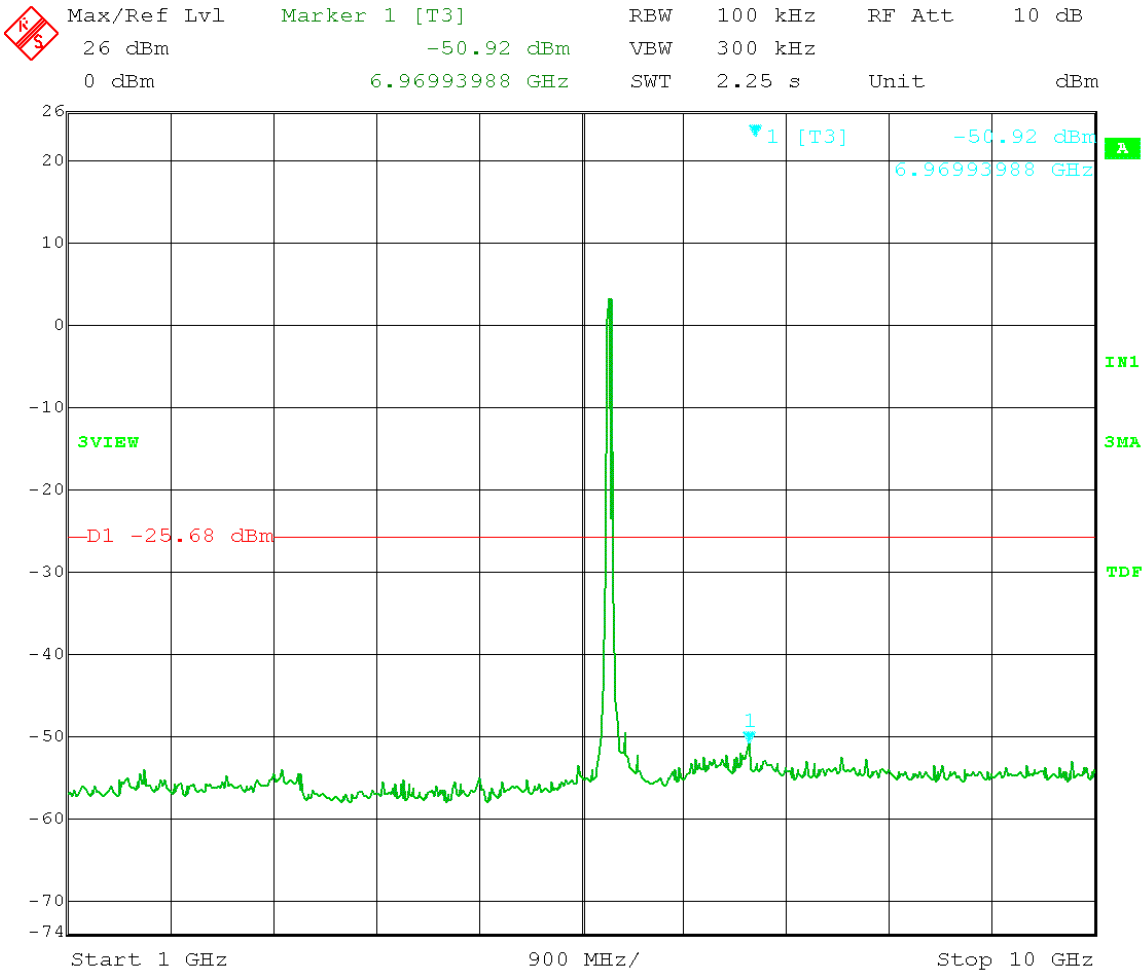


Date: 30.MAY.2013 15:00:42

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 1
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -25.68dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

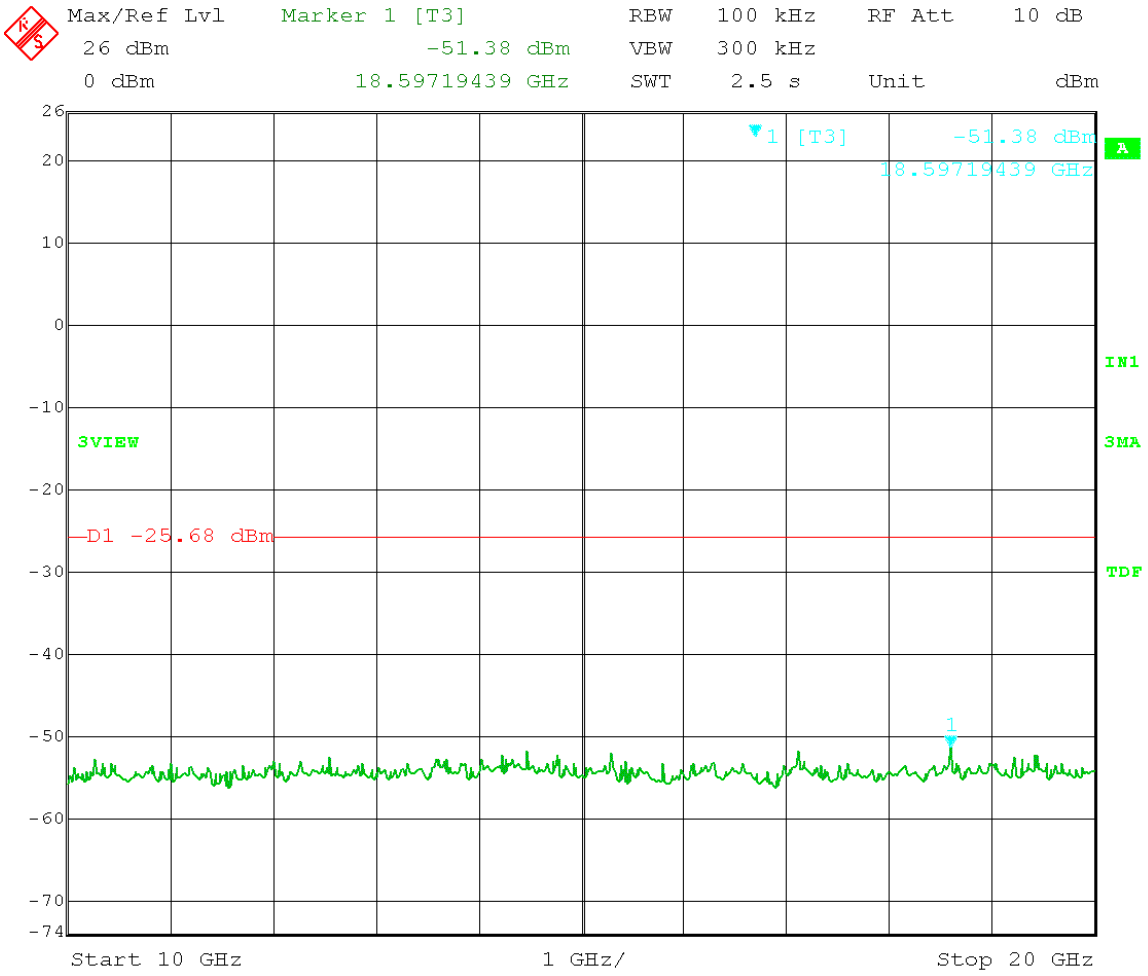


Date: 30.MAY.2013 15:06:31

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 1
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -25.68dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

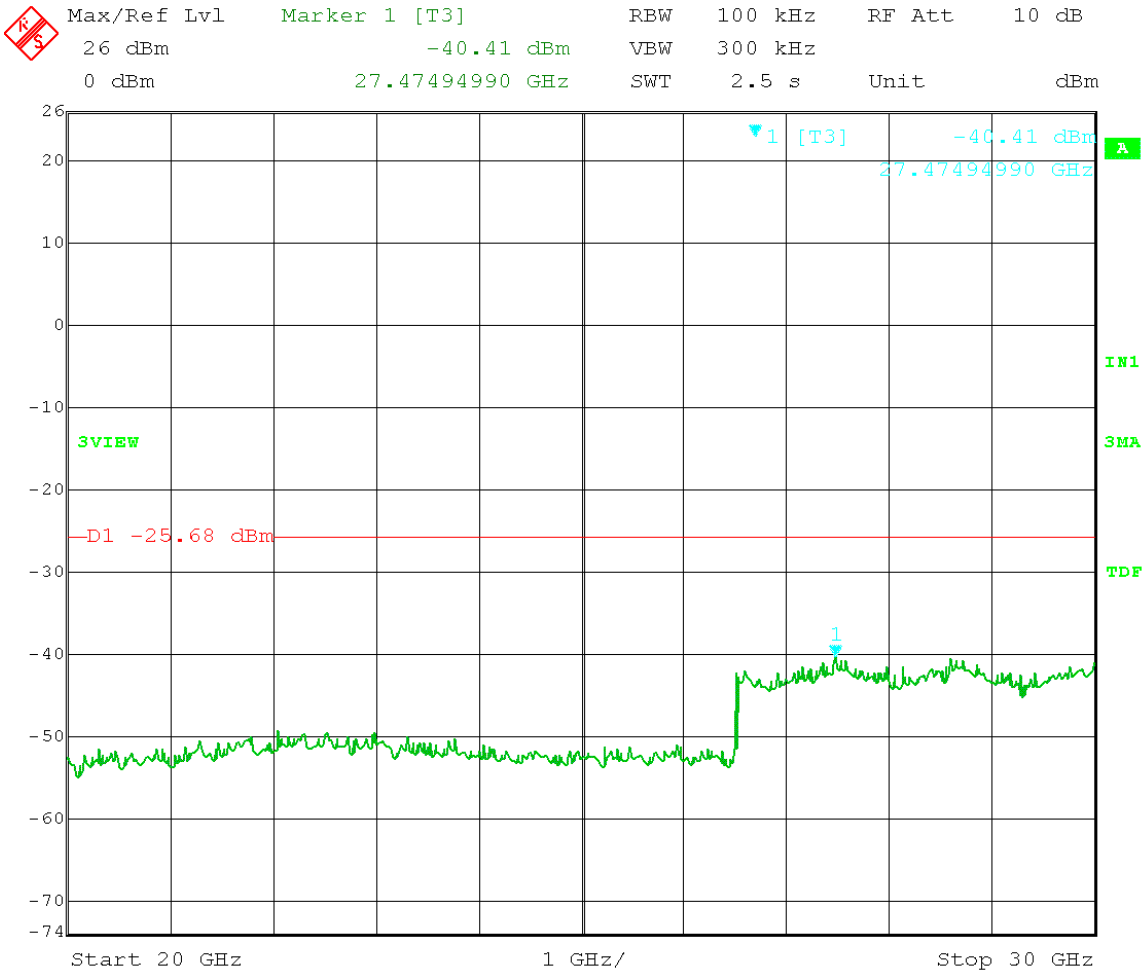


Date: 30.MAY.2013 15:15:11

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 1
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -25.68dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW

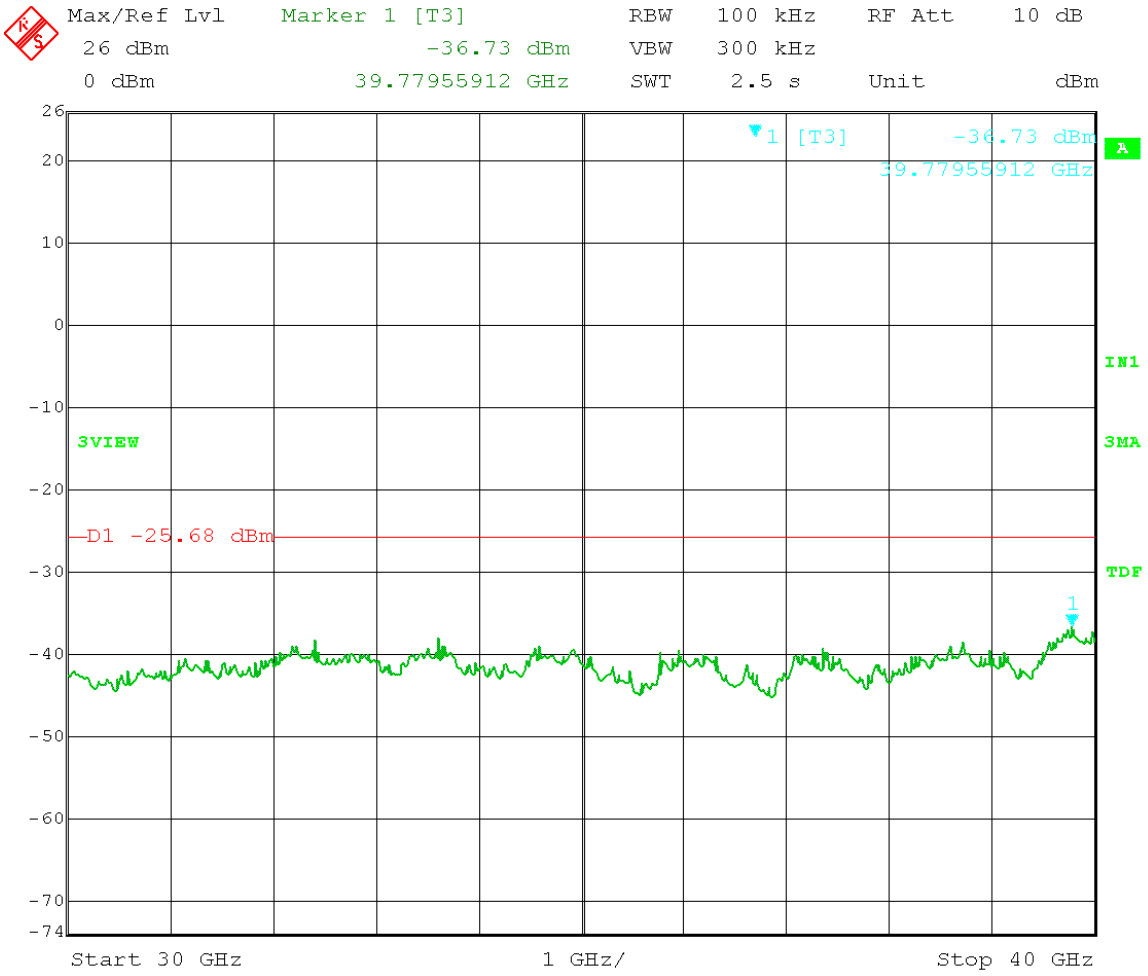


Date: 30.MAY.2013 15:12:25

Test Date: 5-30-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

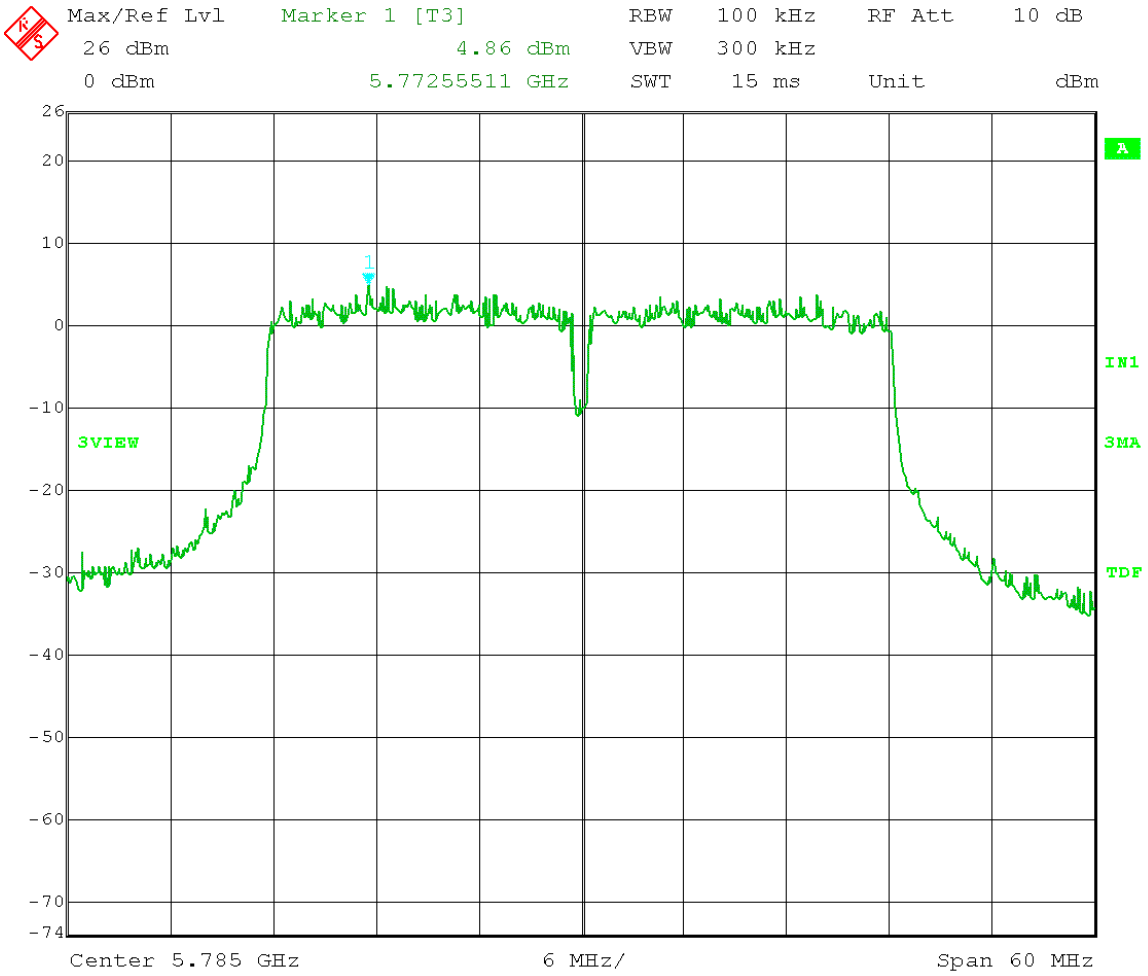
RBW = 100 kHz
Detector = Peak
Trace = Max Hold
Output Power Setting 20dBm
Channel 1
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -25.68dBm

VBW ≥ 300 kHz
Sweep = Auto Couple
Low Channel Transmit = 5.750GHz
40 MHz BW



Date: 30.MAY.2013 15:13:55

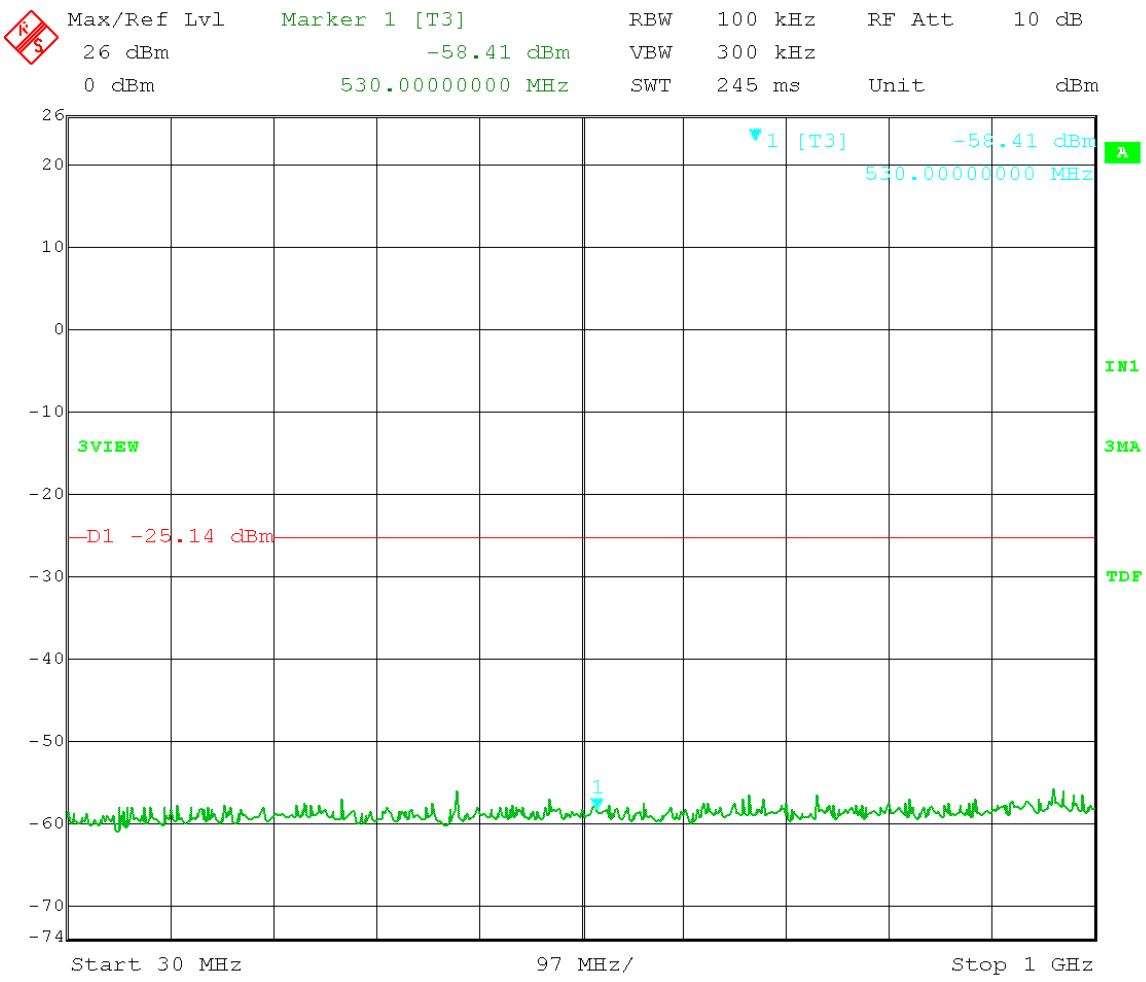
Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — Mid Channel Transmit = 5.785GHz
	Output power setting 20dBm — 40MHz BW
	Channel 1
	Reference Level measurement
	Limit = 4.86dBm – 30 dB = -25.14dBm



Date: 30.MAY.2013 14:40:28

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

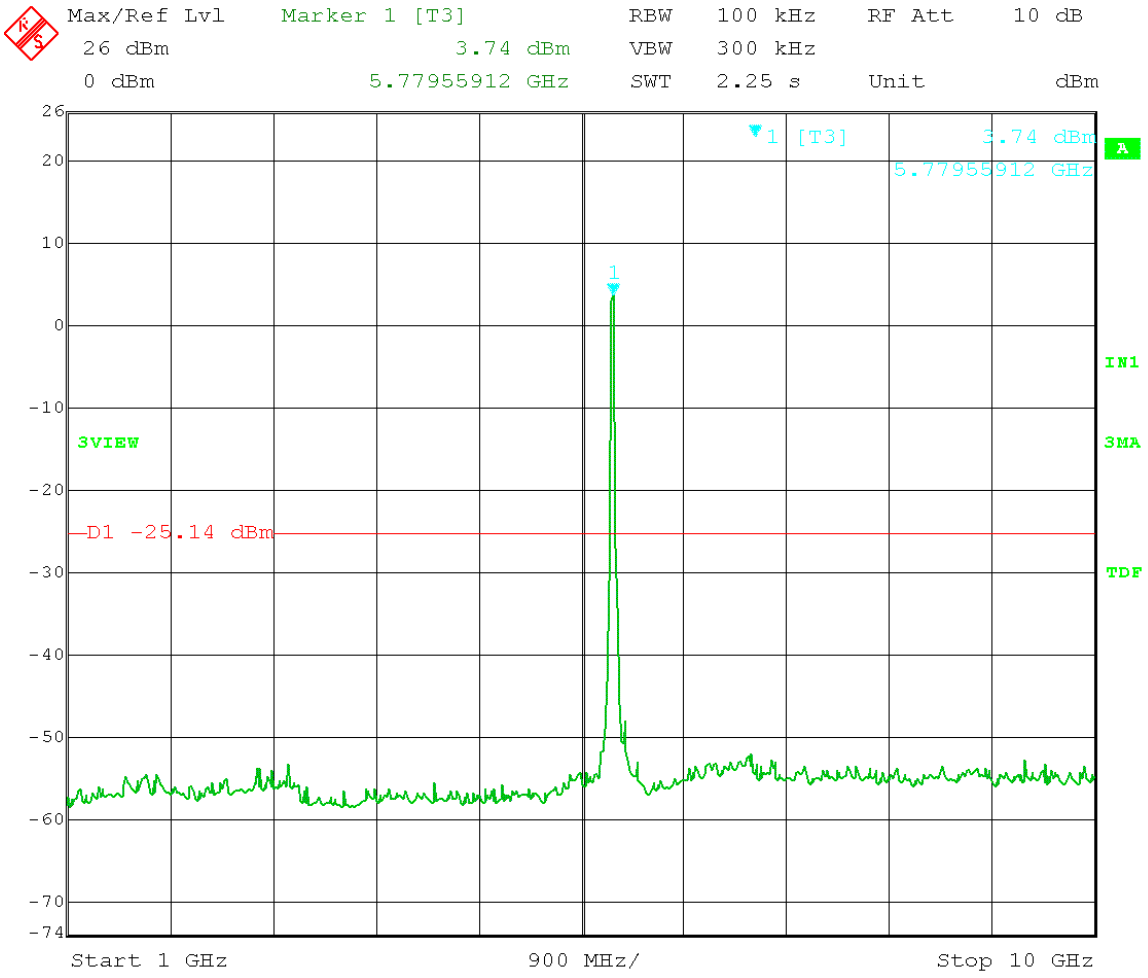
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 30MHz-1GHz
Emission Level Measurement
Limit = -25.14dBm



Date: 31.MAY.2013 14:37:06

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

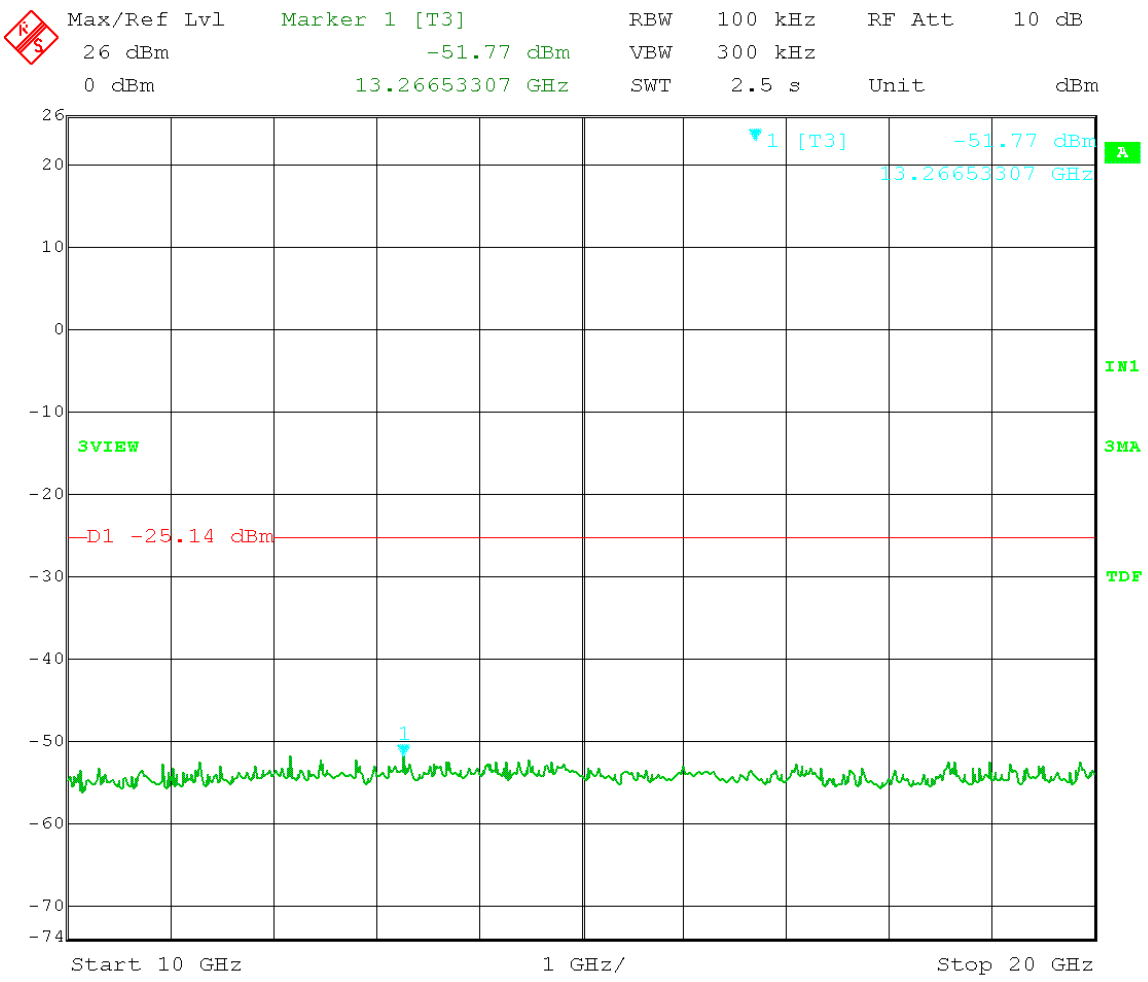
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -25.14dBm



Date: 31.MAY.2013 14:41:17

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

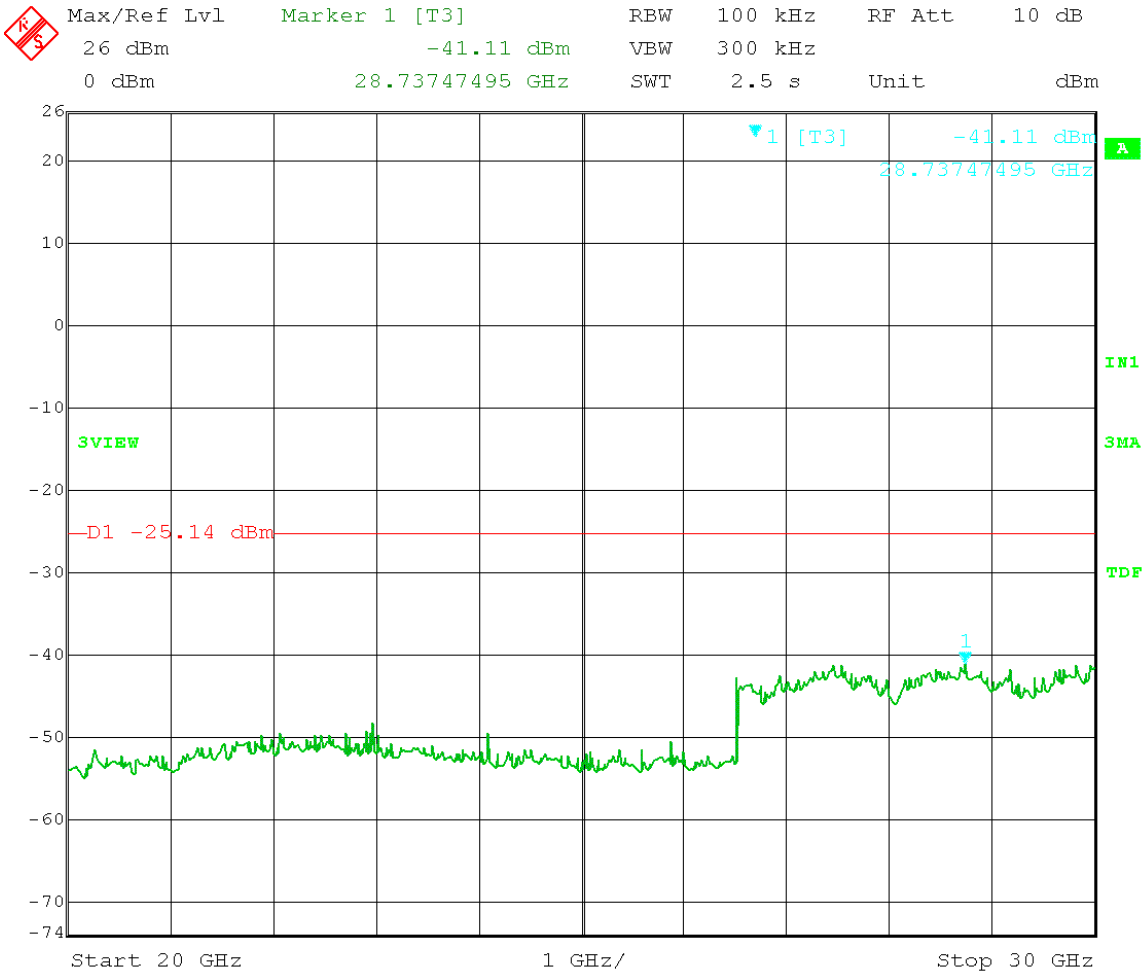
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -25.14dBm



Date: 31.MAY.2013 14:43:25

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

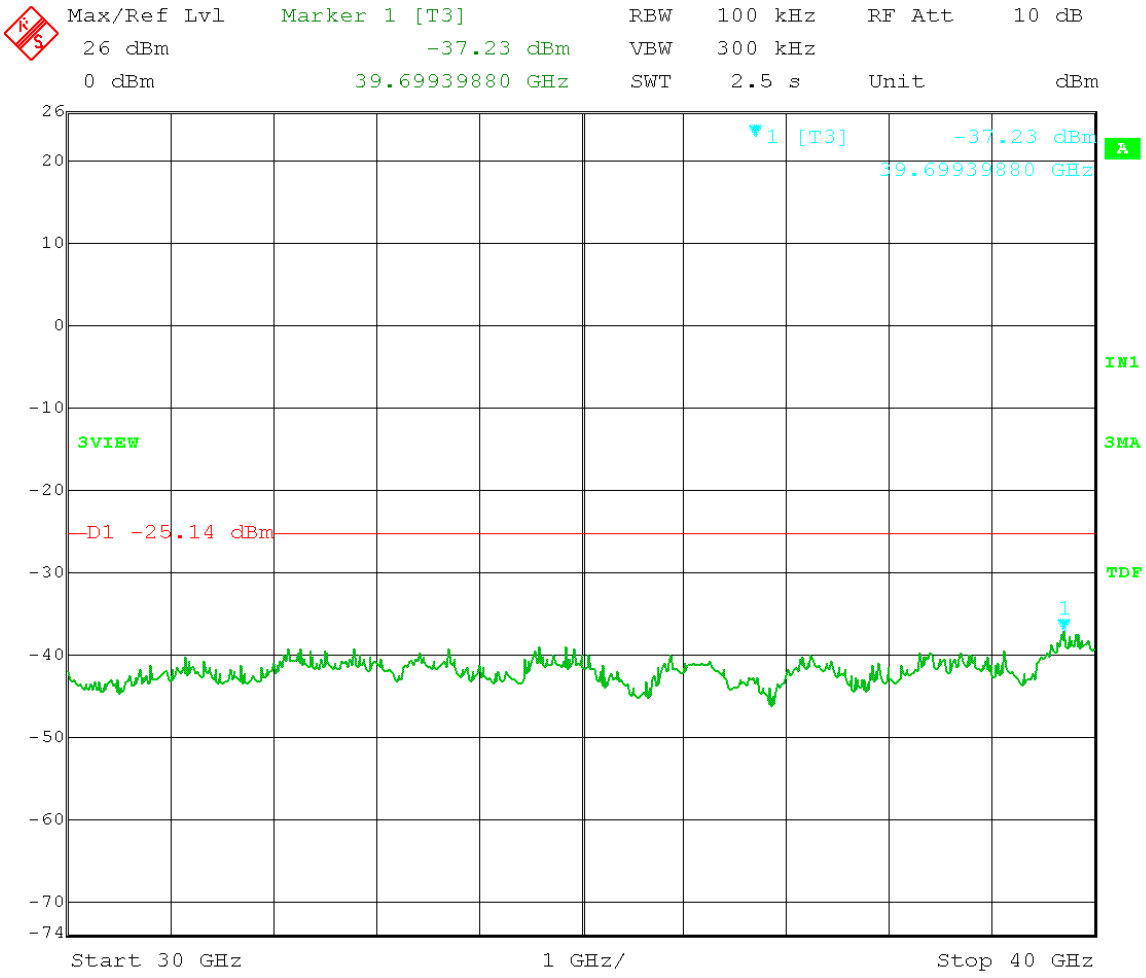
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -25.14dBm



Date: 31.MAY.2013 14:47:07

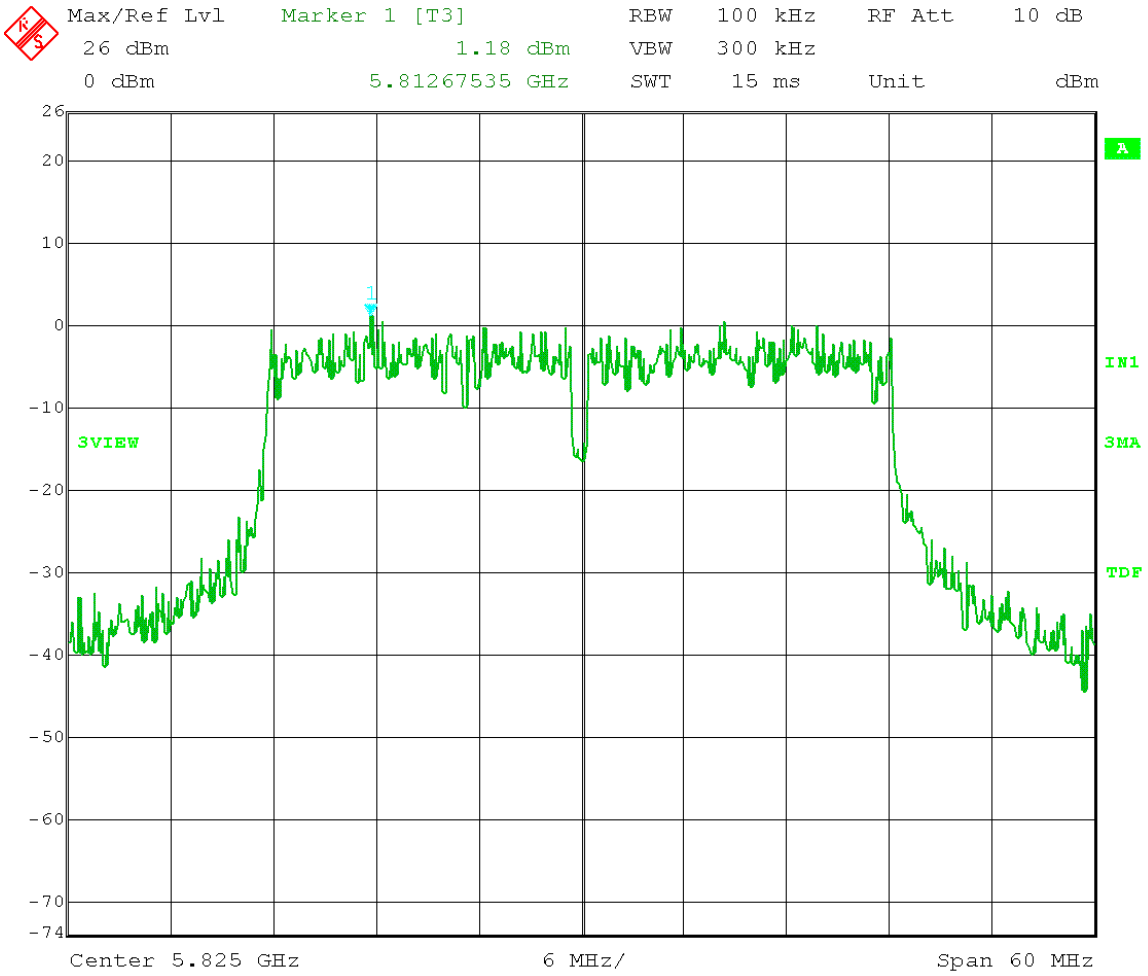
Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
Mid Channel Transmit = 5.785GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -25.14dBm



Date: 31.MAY.2013 14:45:39

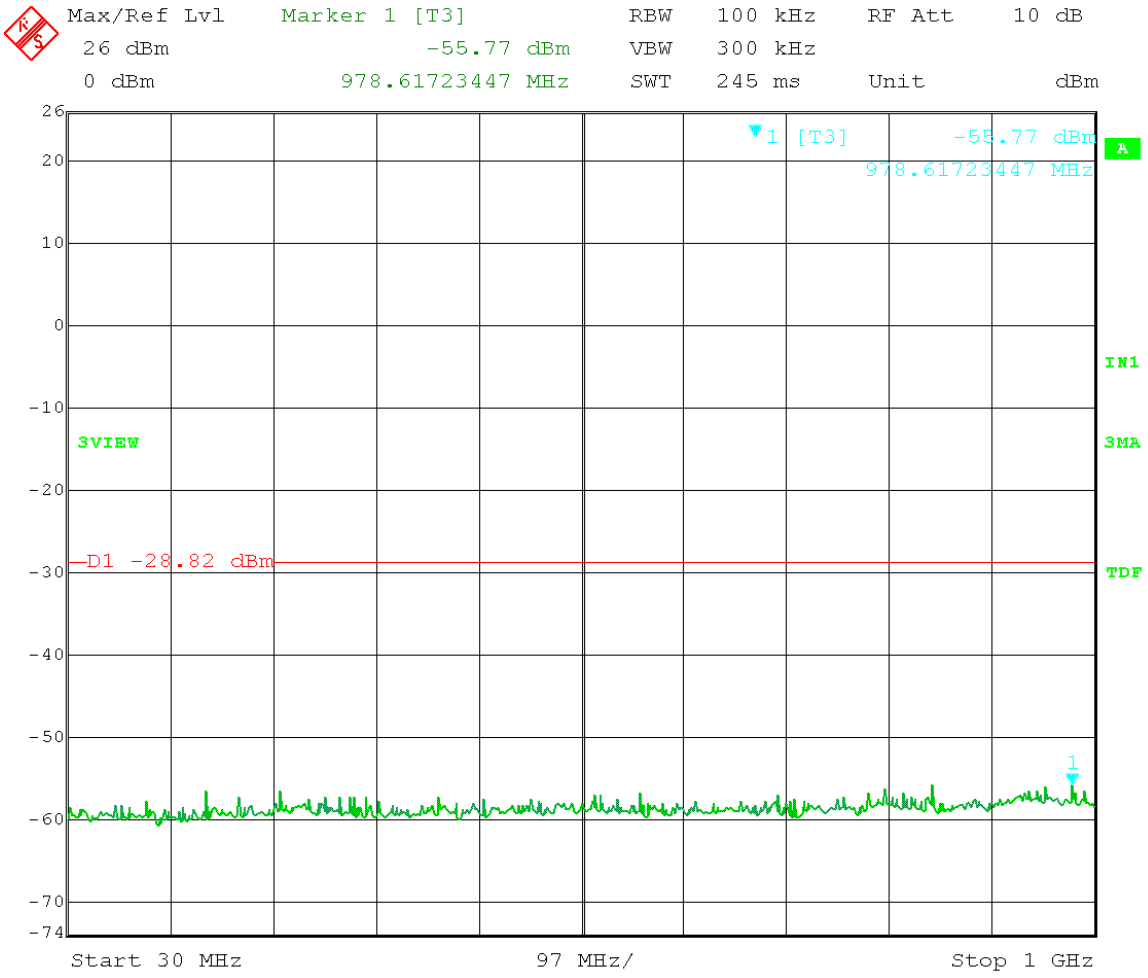
Test Date:	05-30-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7GHz: OFDM)
Test:	Maximum Unwanted Emission Levels - Conducted
Operator:	Jim O
Comment:	RBW = 100 kHz — VBW ≥ 300 kHz
	Detector = Peak — Sweep = Auto Couple
	Trace = Max Hold — High Channel Transmit = 5.835GHz
	Output power setting 20dBm — 40MHz BW
	Channel 1
	Reference Level measurement
	Limit = 1.18dBm – 30 dB = -28.82dBm



Date: 30.MAY.2013 14:30:34

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

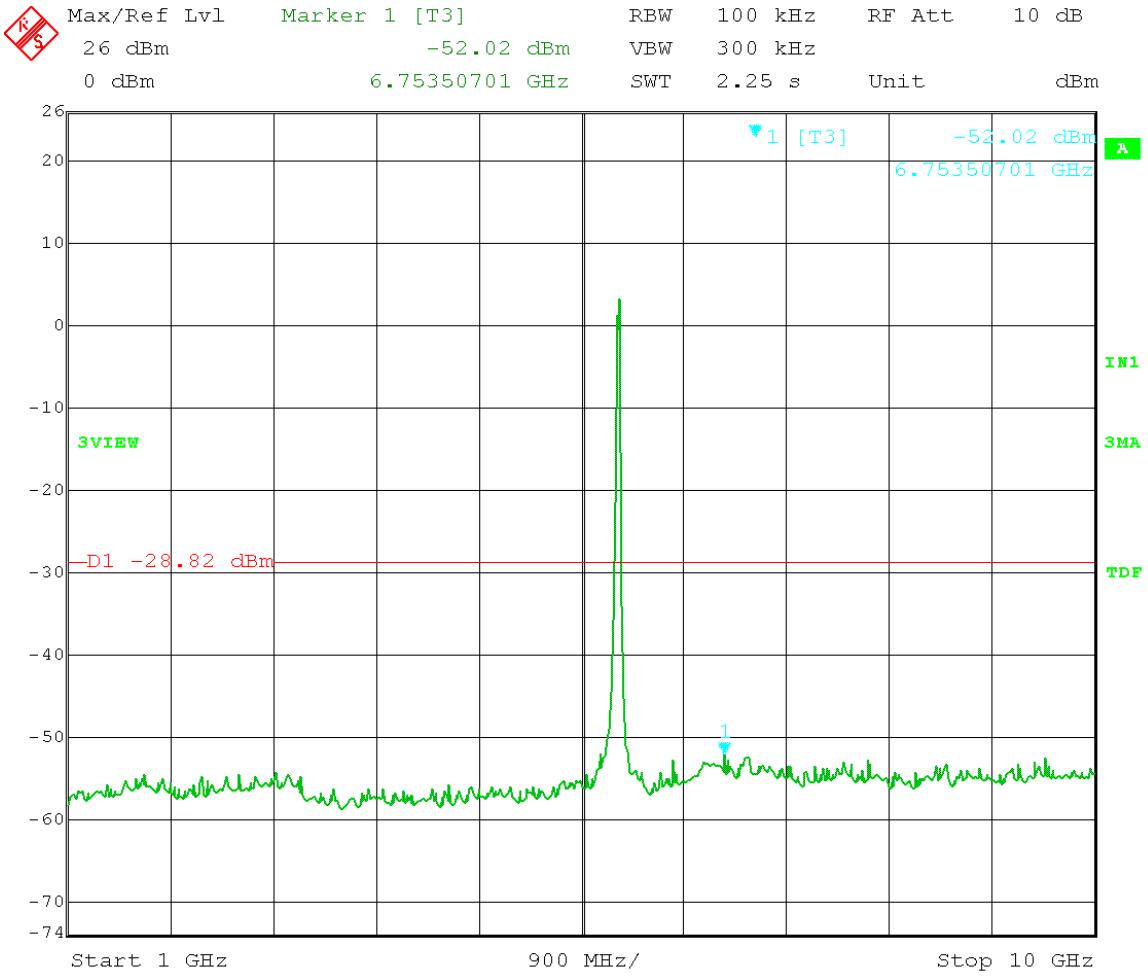
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 30MHz-1GHz
Emission Level Measurement
Limit = -28.82dBm



Date: 31.MAY.2013 15:03:44

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

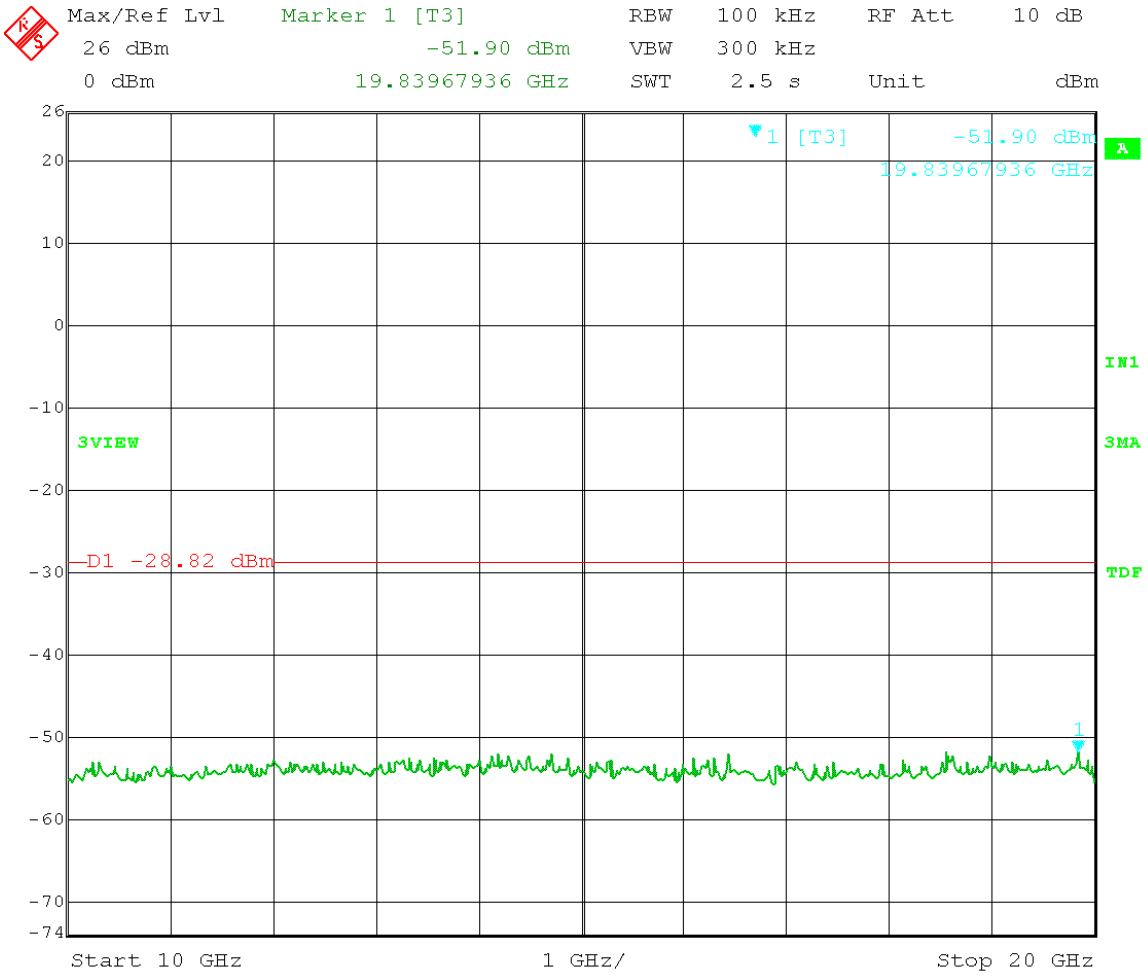
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 1-10GHz
Emission Level Measurement
Limit = -28.82dBm



Date: 31.MAY.2013 15:01:55

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

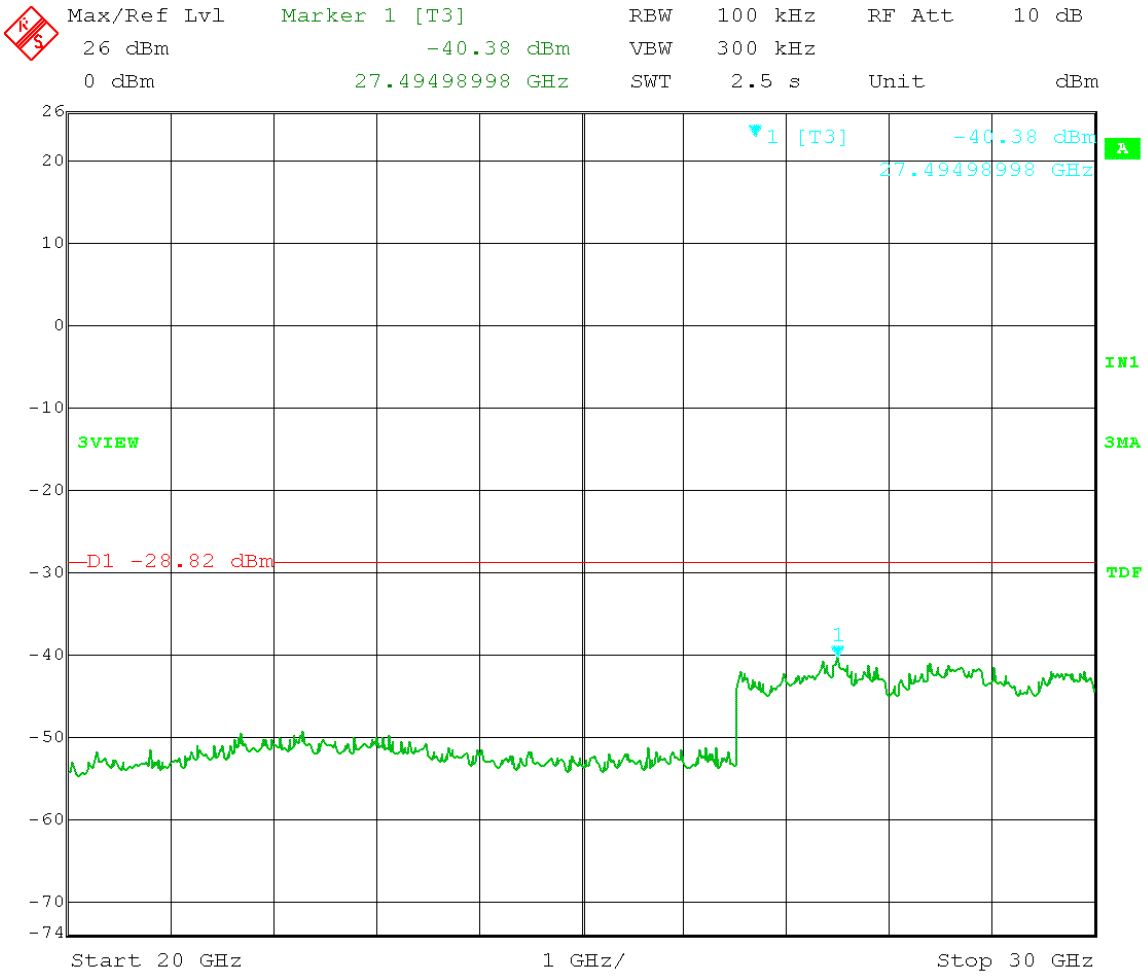
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 10-20GHz
Emission Level Measurement
Limit = -28.82dBm



Date: 31.MAY.2013 14:59:53

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

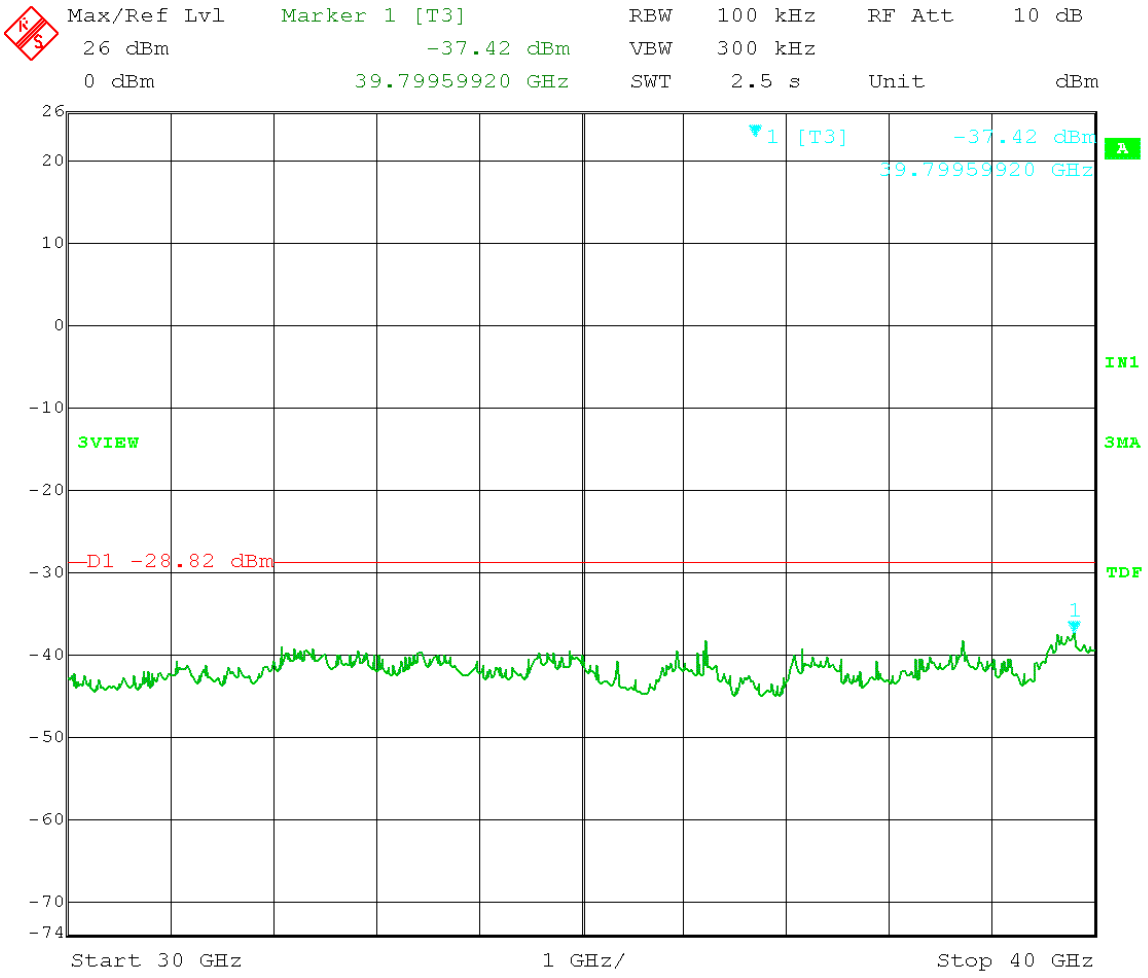
RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 20-30GHz
Emission Level Measurement
Limit = -28.82dBm



Date: 31.MAY.2013 14:54:56

Test Date: 5-31-13
Company: Cambium Networks
EUT: Avenger Station 5.7GHz: OFDM
Test: Maximum Unwanted Emission Levels - Conducted
Operator: Jim O
Comment: 11.3 Emission Level Measurements

RBW = 100 kHz
VBW ≥ 300 kHz
Detector = Peak
Sweep = Auto Couple
Trace = Max Hold
High Channel Transmit = 5.825GHz
Output Power Setting 20dBm
40 MHz BW
Channel 1
Frequency Range 30-40GHz
Emission Level Measurement
Limit = -28.82dBm



Date: 31.MAY.2013 14:57:42

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B5.0 Band-Edge Measurements - Radiated

Rule Section: Section 15.247(d)

FCC KDB 558074 D01 DTS Meas Guidance v03r01 – *Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247*

11.0 Emissions in non-restricted frequency bands

Test Procedure:
RBW = 100 kHz
VBW ≥ 300 kHz
Span = spectrum to be examined
Detector = peak
Sweep = auto couple
Trace mode = max hold

Measurements were taken for an OFDM modulation over a 20MHz and 40MHz modulation bandwidth at the low and high channels and on outputs of CH0 and CH1 of operation. EUT was set to transmit continuously over various low and high channel frequencies and maximum power settings.

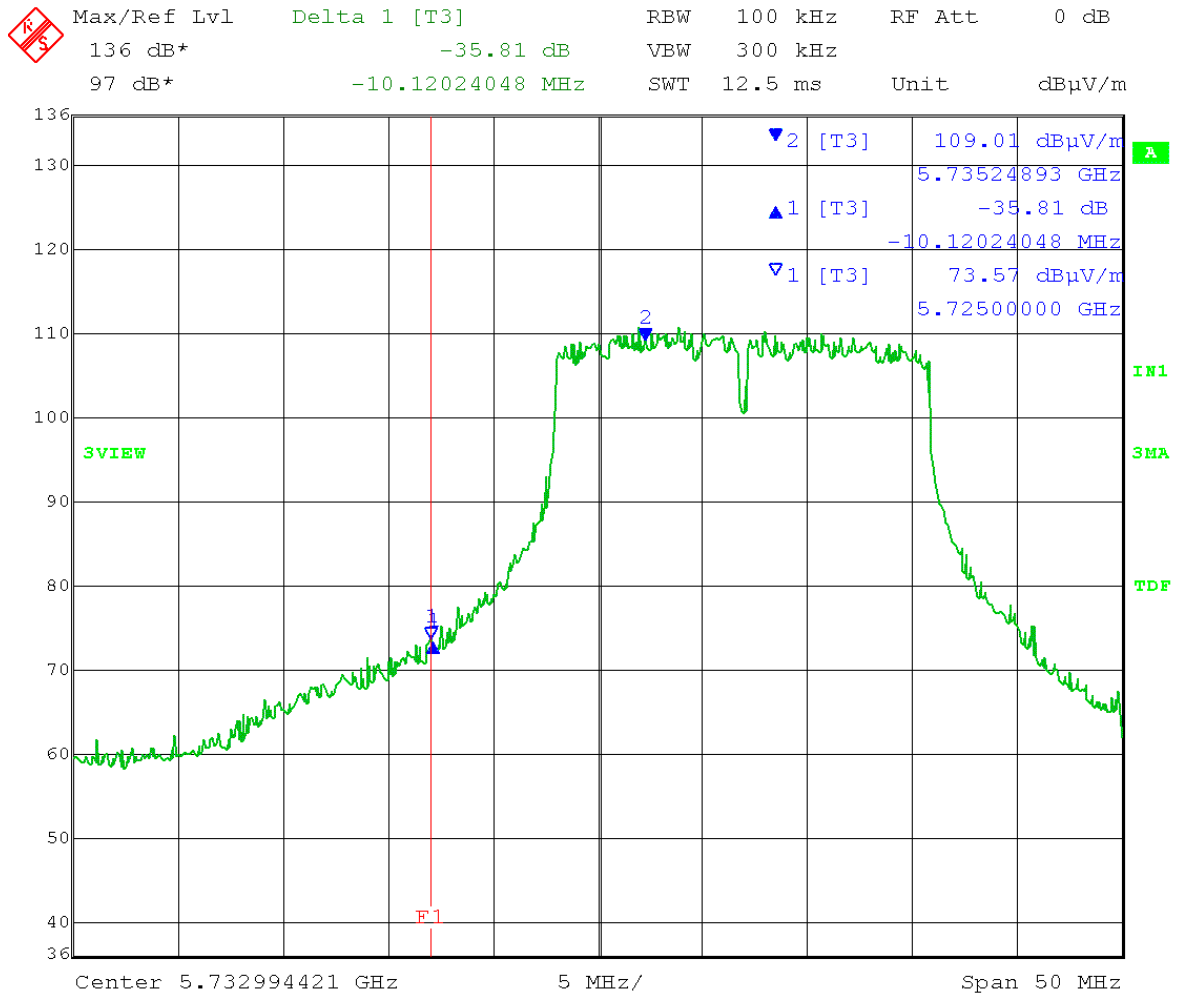
Limit: 30 dB below maximum in-band average PSD level (maximum level in any 100 kHz band). Average output power procedure was used to measure the fundamental emission power.

Results: Passed

DLS ELECTRONIC SYSTEMS, INC.
166 South Carter, Genoa City, WI 53128

Company:	Cambium Networks
Model Tested:	C050900C032A & C050900P032A
Report Number:	19075
DLS Project:	5942

Test Date:	05-29-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7 GHz: OFDM)
Test:	Band-Edge Measurements - Radiated
Operator:	Jim O
Comment:	Peak Delta Method
	RBW = 100 kHz
	VBW ≥ 300 kHz
	Detector = Peak
	Trace = Max Hold
	Low Channel Transmit = 5.740GHz
	20MHz BW
	Marker Delta Limit > 30dB
	Polarization = Vertical
	Output power setting: 20
	Band-edge (**F1**) = 5.725GHz
	Measurement: 35.81dB = Pass



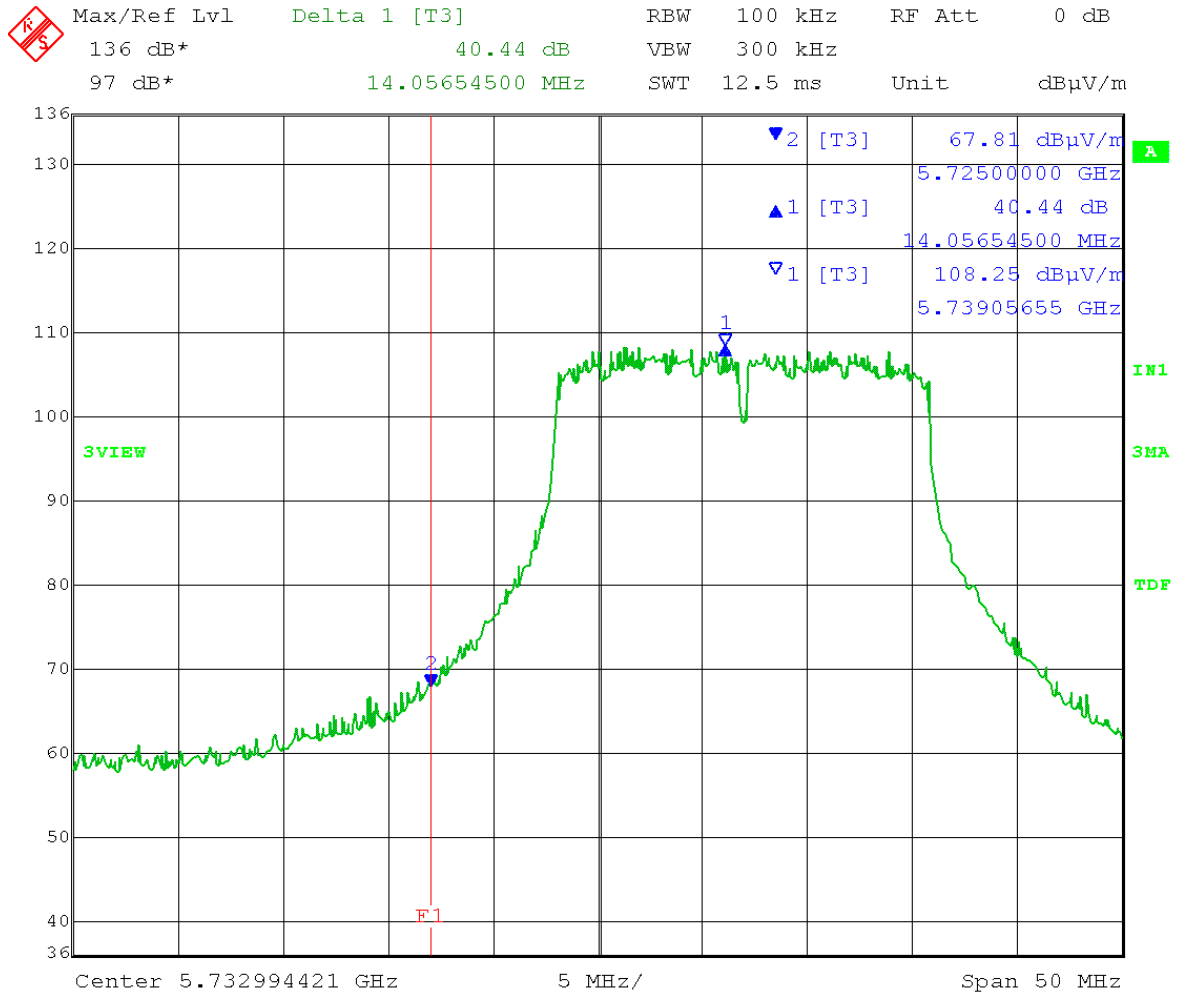
Date: 29.MAY.2013 10:14:27

Company:	Cambium Networks
Model Tested:	C050900C032A & C050900P032A
Report Number:	19075
DLS Project:	5942

166 South Carter, Genoa City, WI 53128

Test Date:	05-29-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7 GHz: OFDM)
Test:	Band-Edge Measurements - Radiated
Operator:	Jim O
Comment:	Peak Delta Method
	RBW = 100 kHz
	VBW ≥ 300 kHz
	Detector = Peak
	Trace = Max Hold
	Low Channel Transmit = 5.740GHz
	20MHz BW
	Marker Delta Limit > 30dB

Polarization = Horizontal
Output power setting: 20
Band-edge (**F1**) = 5.725GHz
Measurement: 40.44dB = Pass



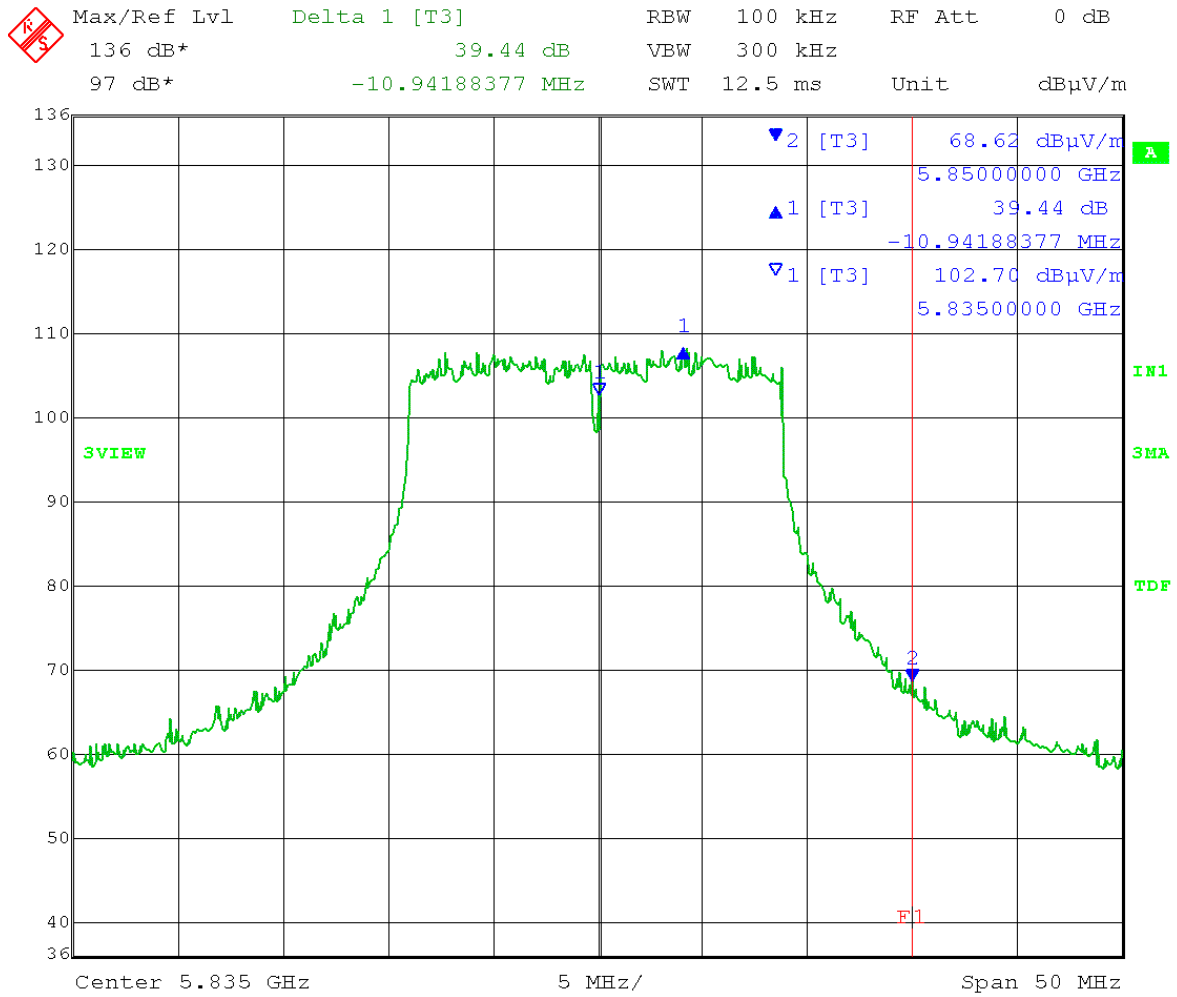
Date: 29.MAY.2013 10:19:21

Company:	Cambium Networks
Model Tested:	C050900C032A & C050900P032A
Report Number:	19075
DLS Project:	5942

166 South Carter, Genoa City, WI 53128

Test Date:	05-29-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7 GHz: OFDM)
Test:	Band-Edge Measurements - Radiated
Operator:	Jim O
Comment:	Peak Delta Method
	RBW = 100 kHz
	VBW ≥ 300 kHz
	Detector = Peak
	Trace = Max Hold
	High Channel Transmit = 5.835GHz
	20MHz BW
	Marker Delta Limit > 30dB

Vertical
Output power setting: 20
Band-edge (**F1**) = 5.850GHz
Measurement: 39.44dB = Pass



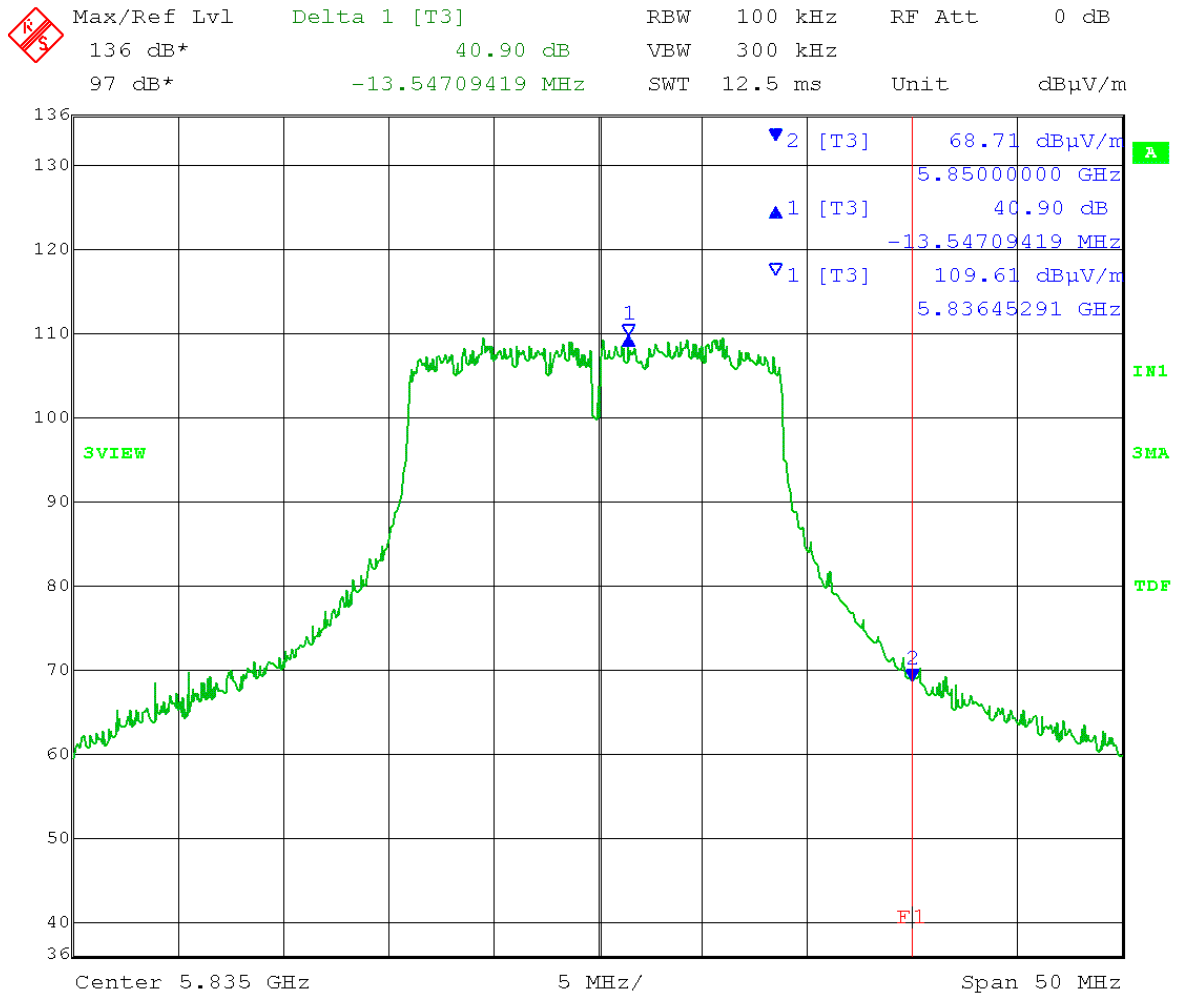
Date: 29.MAY.2013 10:41:48

Company:	Cambium Networks
Model Tested:	C050900C032A & C050900P032A
Report Number:	19075
DLS Project:	5942

166 South Carter, Genoa City, WI 53128

Test Date:	05-29-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7 GHz: OFDM)
Test:	Band-Edge Measurements - Conducted
Operator:	Jim O
Comment:	Peak Delta Method
	RBW = 100 kHz
	VBW ≥ 300 kHz
	Detector = Peak
	Trace = Max Hold
	High Channel Transmit = 5.835GHz
	20MHz BW
	Marker Delta Limit > 30dB

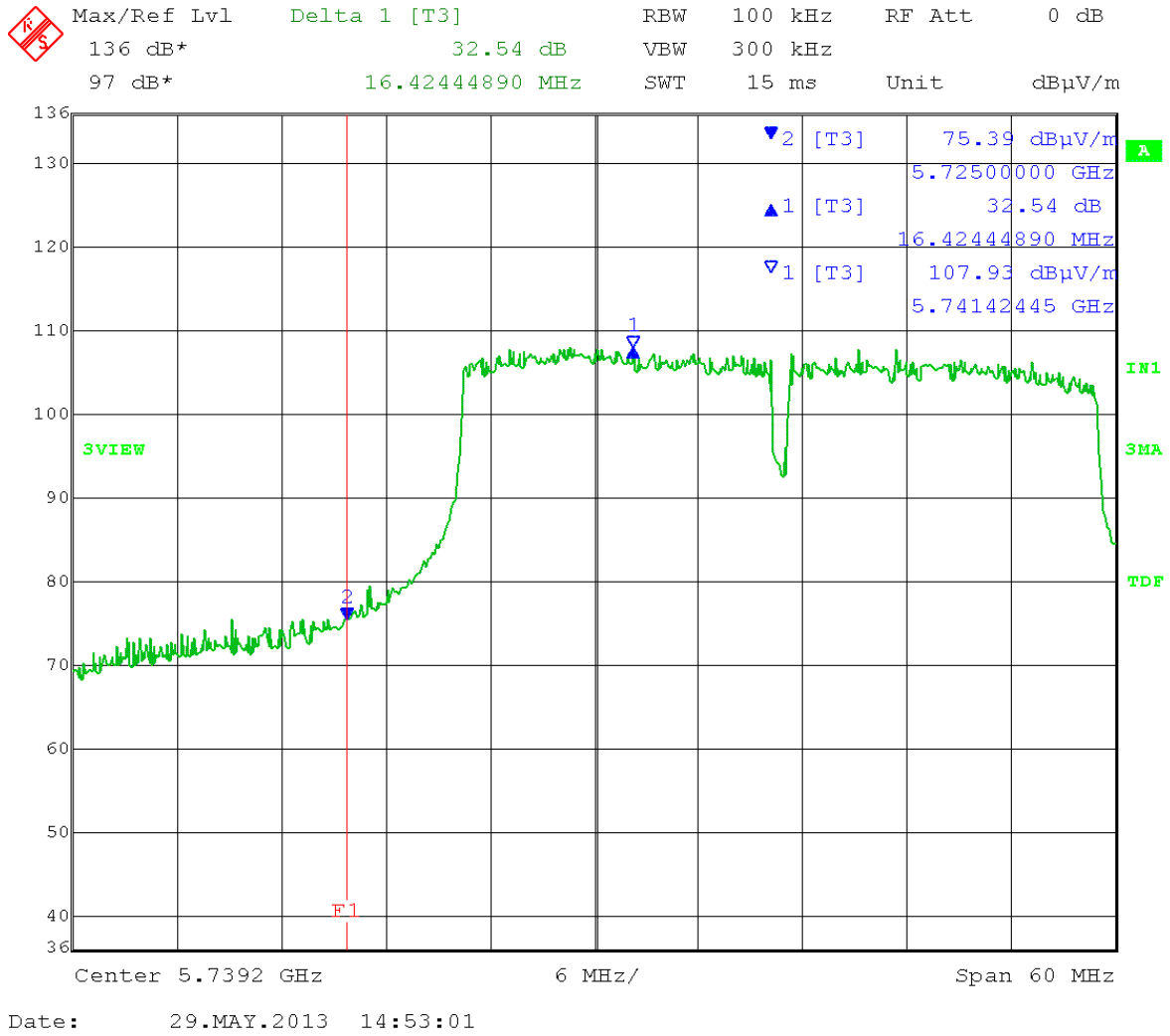
Horizontal
Output power setting: 20
Band-edge (**F1**) = 5.850GHz
Measurement: 40.90dB = Pass



Date: 29.MAY.2013 10:48:02

Test Date: 05-29-2013
Company: Cambium Networks
EUT: Avenger Station (5.7 GHz: OFDM)
Test: Band-Edge Measurements - Radiated
Operator: Jim O
Comment: Peak Delta Method
VBW ≥ 300 kHz
Trace = Max Hold
Low Channel Transmit = 5.750GHz
40MHz BW
Marker Delta Limit > 30dB

RBW = 100 kHz
Detector = Peak
Polarization = Vertical
Output power setting: 20
Band-edge (**F1**) = 5.725GHz
Measurement: 32.54dB = Pass

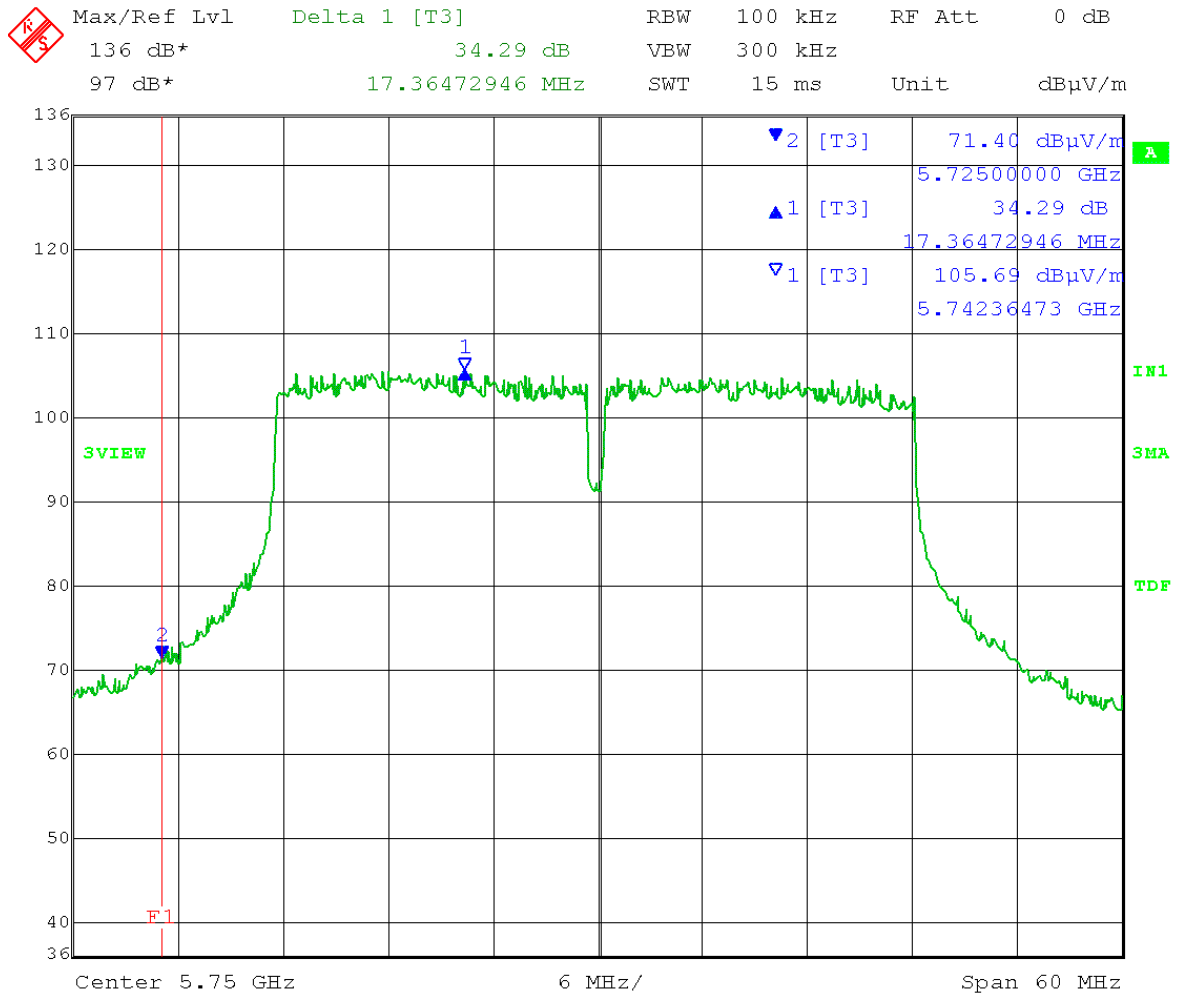


Date: 29.MAY.2013 14:53:01

Company:	Cambium Networks
Model Tested:	C050900C032A & C050900P032A
Report Number:	19075
DLS Project:	5942

166 South Carter, Genoa City, WI 53128

Test Date:	05-29-2013
Company:	Cambium Networks
EUT:	Avenger Station (5.7 GHz: OFDM)
Test:	Band-Edge Measurements - Radiated
Operator:	Jim O
Comment:	Peak Delta Method
	VBW ≥ 300 kHz
	Trace = Max Hold
	Low Channel Transmit = 5.750GHz
	40MHz BW
	Marker Delta Limit > 30dB
	RBW = 100 kHz
	Detector = Peak
	Polarization = Horizontal
	Output power setting: 20
	Band-edge (**F1**) = 5.725GHz
	Measurement: 34.29dB = Pass

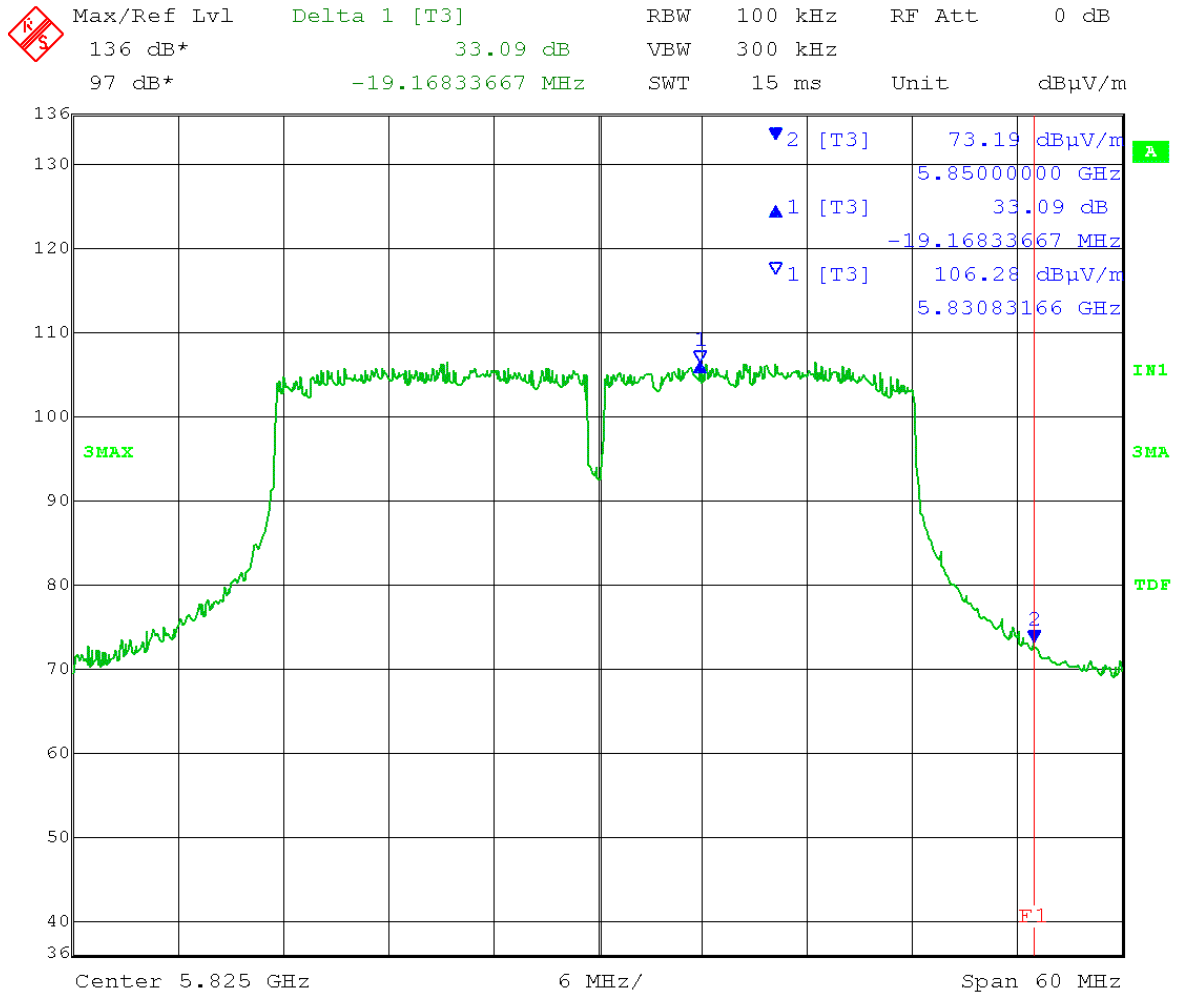


Date: 29.MAY.2013 15:00:32

166 South Carter, Genoa City, WI 53128

Test Date: 05-29-2013
Company: Cambium Networks
EUT: Avenger Station (5.7 GHz: OFDM)
Test: Band-Edge Measurements - Radiated
Operator: Jim O
Comment: Peak Delta Method
VBW ≥ 300 kHz
Trace = Max Hold
High Channel Transmit = 5.825GHz
40MHz BW
Marker Delta Limit > 30dB

RBW = 100 kHz
Detector = Peak
Polarization = Vertical
Output power setting: 20
Band-edge (**F1**) = 5.850GHz
Measurement: 33.09dB = Pass

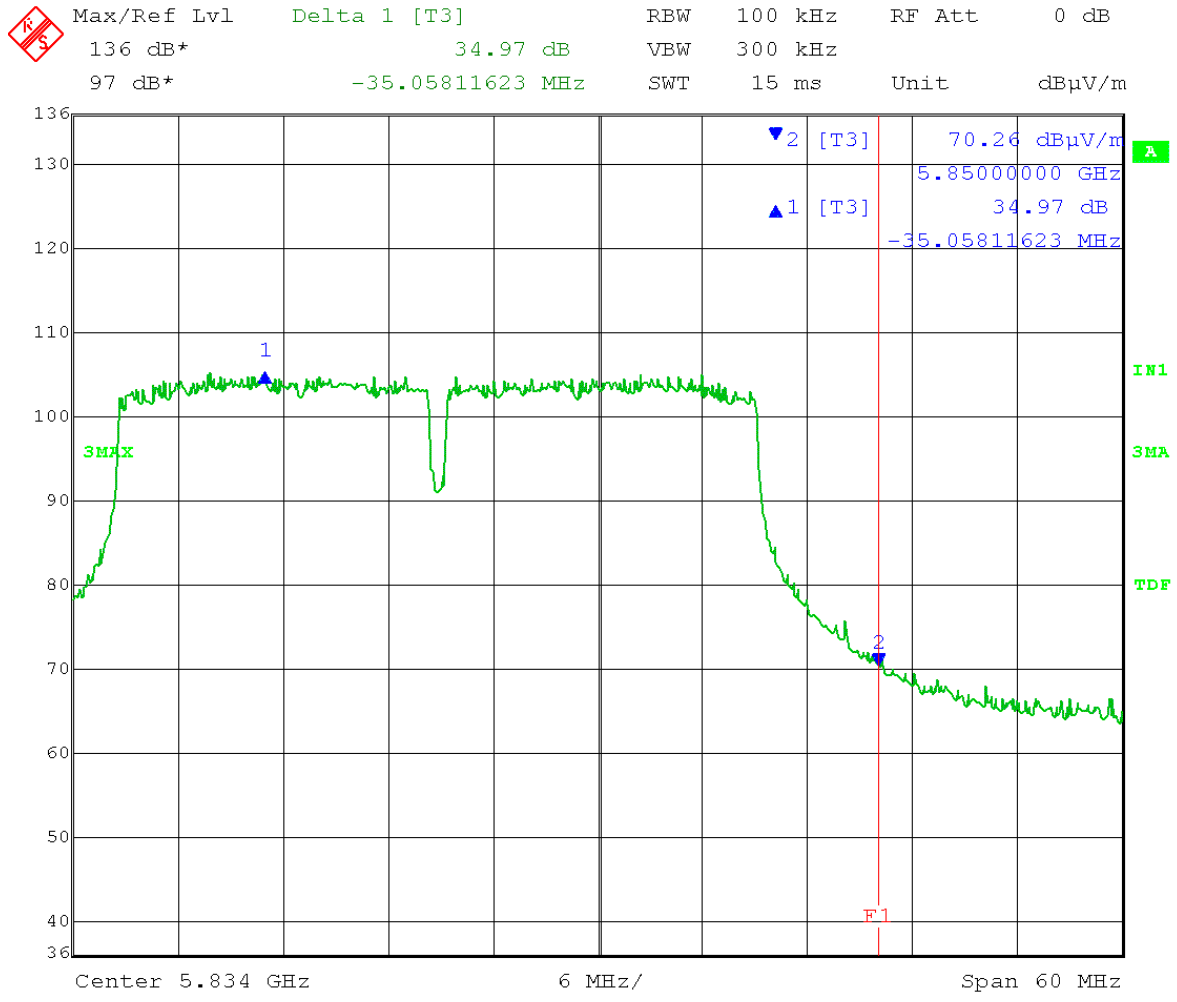


Date: 29.MAY.2013 15:11:48

166 South Carter, Genoa City, WI 53128

Test Date: 05-29-2013
Company: Cambium Networks
EUT: Avenger Station (5.7 GHz: OFDM)
Test: Band-Edge Measurements - Radiated
Operator: Jim O
Comment: Peak Delta Method
VBW ≥ 300 kHz
Trace = Max Hold
High Channel Transmit = 5.825GHz
40MHz BW
Marker Delta Limit > 30dB

RBW = 100 kHz
Detector = Peak
Polarization = Horizontal
Output power setting: 20
Band-edge (**F1**) = 5.850GHz
Measurement: 34.97dB = Pass



Date: 29.MAY.2013 15:08:22

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B6.0 Maximum Unwanted Emission Levels into Restricted Frequency Bands - Radiated

Rule Section: Section 15.247(d)
Section 15.205

Test Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01 – *Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247*

ANSI C63.10:2009 – Sections 6.5 and 6.6

12.0 Emissions in restricted frequency bands
12.1 Radiated emission measurements

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

Measurements were taken for an OFDM modulation over a 20MHz and 40MHz modulation bandwidth at the low, mid and high channels. EUT was set to transmit continuously at their maximum power settings. Radiated measurements were taken both vertically and horizontally. All other restricted band emissions were at least 20 dB under the limit. No emissions were found between 26GHz and 40GHz.

Limit: FCC Part 15.209

Results: Passed

Results: Passed

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

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

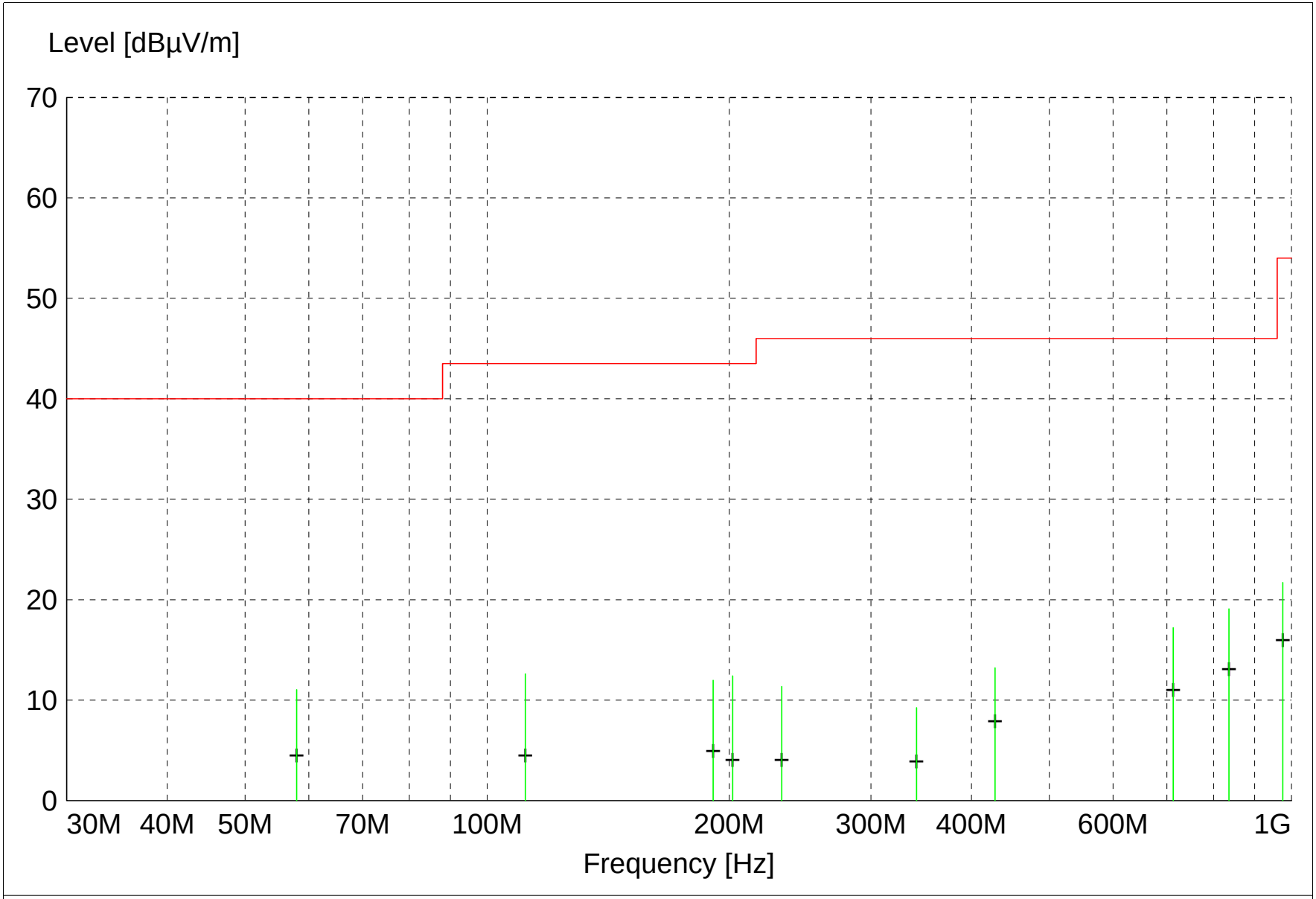
Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

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



MES A605d_F1H_Quasi-Peak
MES A605d_F1H_Peak_List
LIM FCC 15.209 F 3m FCC 15.209, field strength 3m

MEASUREMENT RESULT: "A605d_F1H_Final"

6/5/2013 10:34AM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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 15.205/15.209 Spurious Emissions in Restricted Bands

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

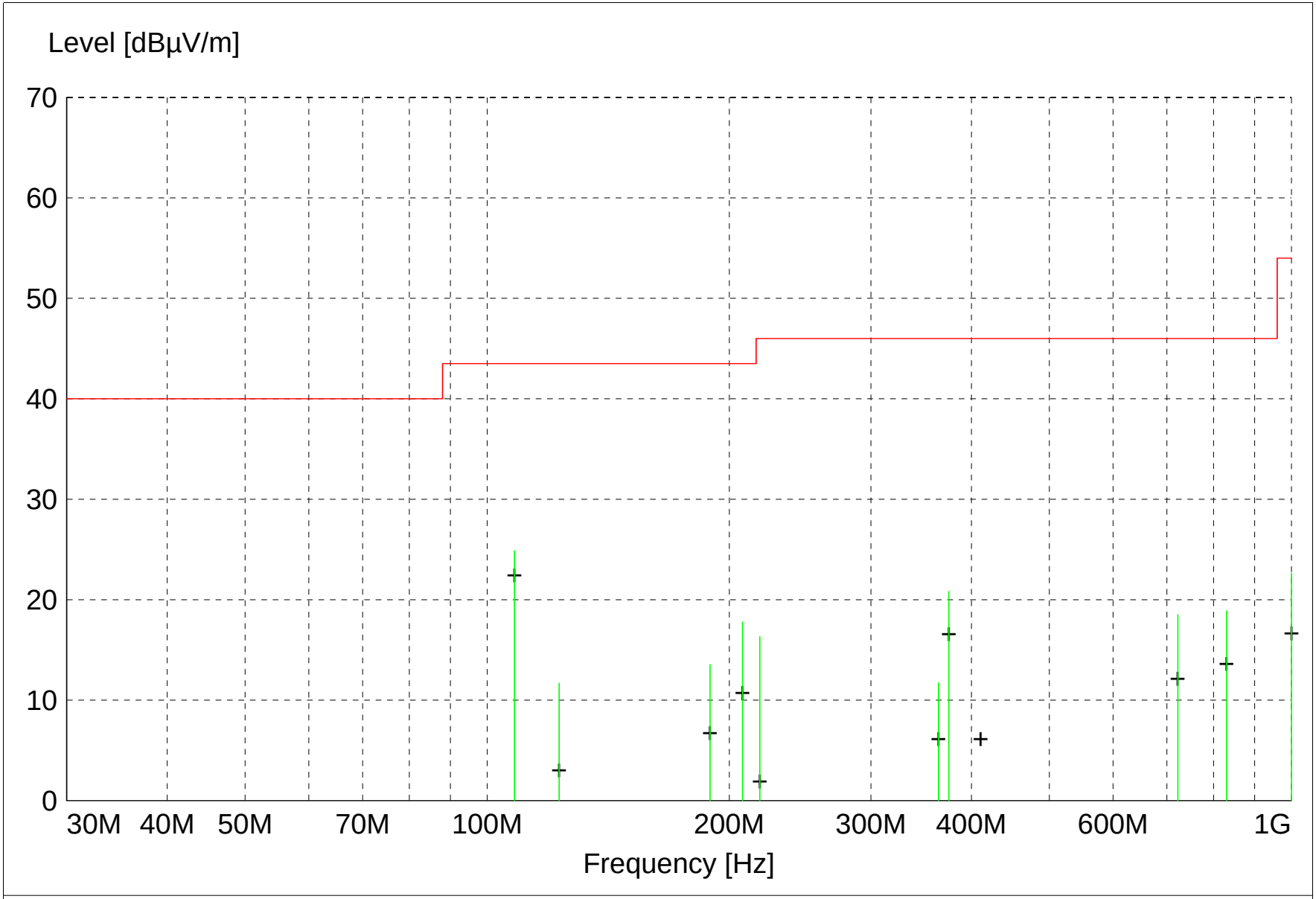
Sample Equations:

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



MES A605d_F1V_Quasi-Peak
MES A605d_F1V_Peak_List
LIM FCC 15.209 F 3m FCC 15.209, field strength 3m

MEASUREMENT RESULT: "A605d_F1V_Final"

6/5/2013 10:23AM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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 15.205/15.209 Spurious Emissions in Restricted Bands

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

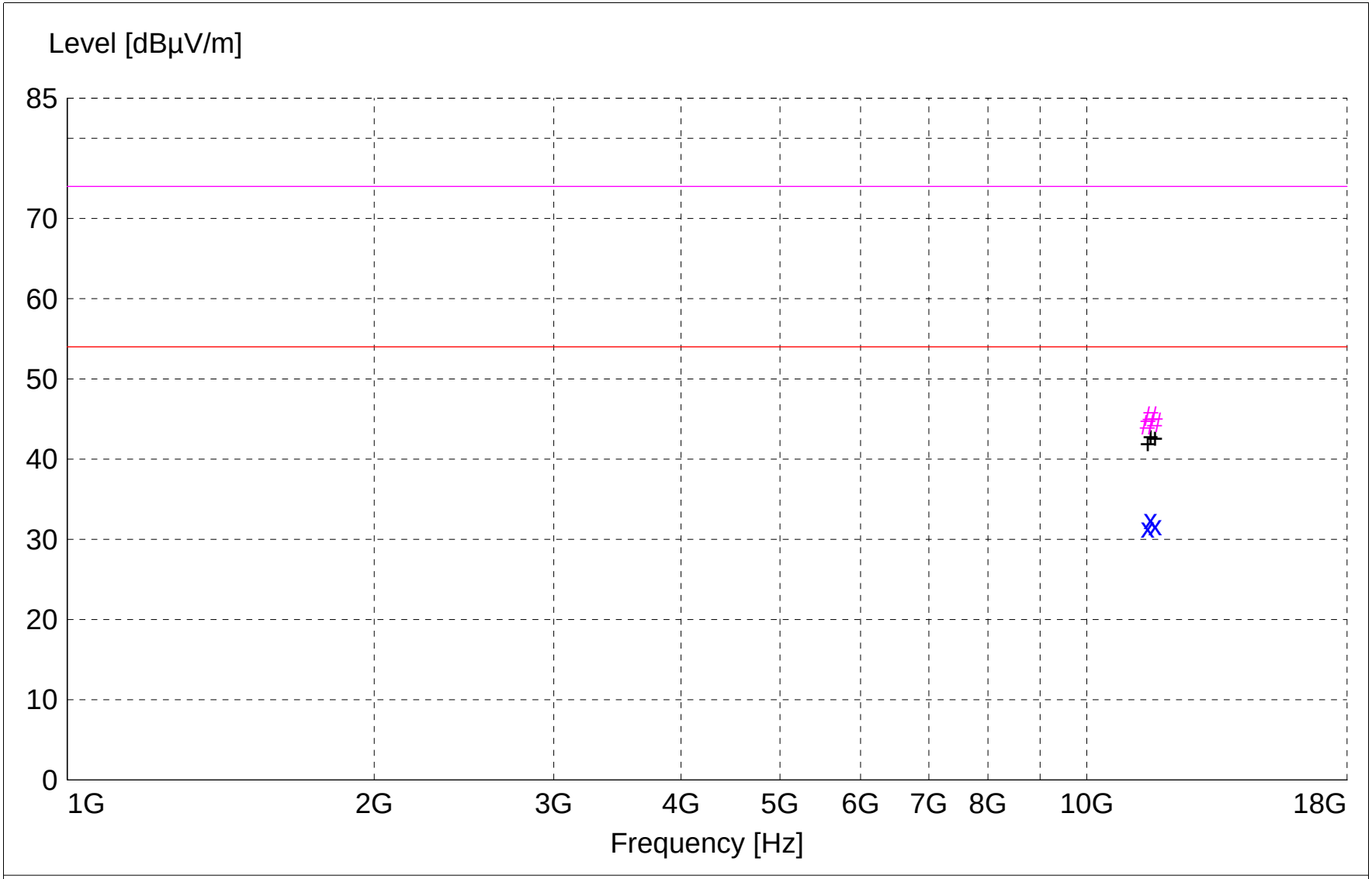
Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

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)



x x : MES A603l_sh_Average
: MES A603l_sh_Peak
+ + : MES A603l_sh_Peak_List
——— LIM FCC 15.209 F 3m AVG Field Strength AVG Limit 3m
——— LIM FCC 15.209 F 3m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A603l_sh_Final"

6/3/2013 2:28PM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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 15.205/15.209 Spurious Emissions in Restricted Bands

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

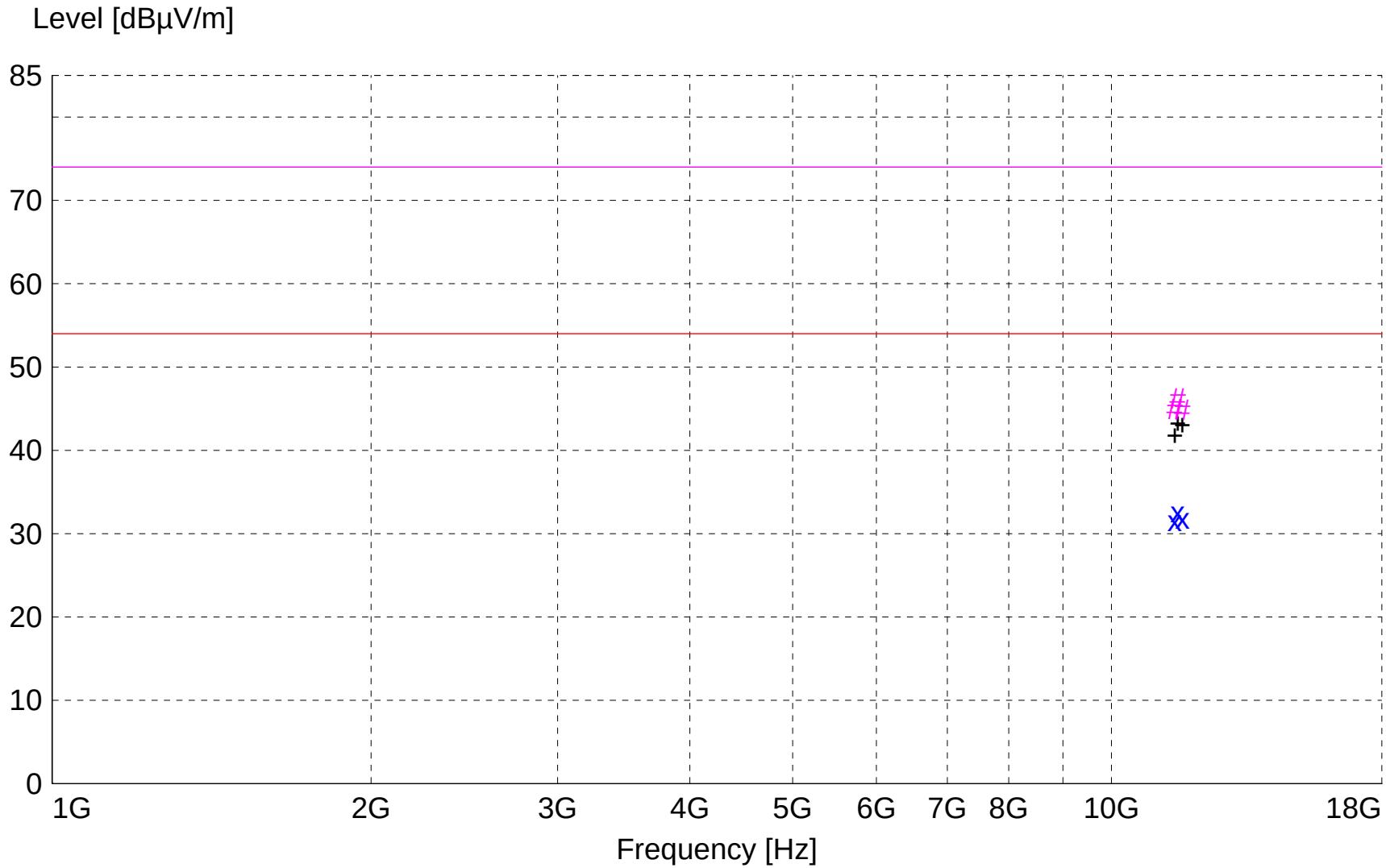
Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

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 : MES A603l_sv_Average
: MES A603l_sv_Peak
+ + : MES A603l_sv_Peak_List
——— LIM FCC 15.209 F 3m AVG Field Strength AVG Limit 3m
——— LIM FCC 15.209 F 3m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A603l_sv_Final"

6/3/2013 2:16PM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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 15.205/15.209 Spurious Emissions in Restricted Bands

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

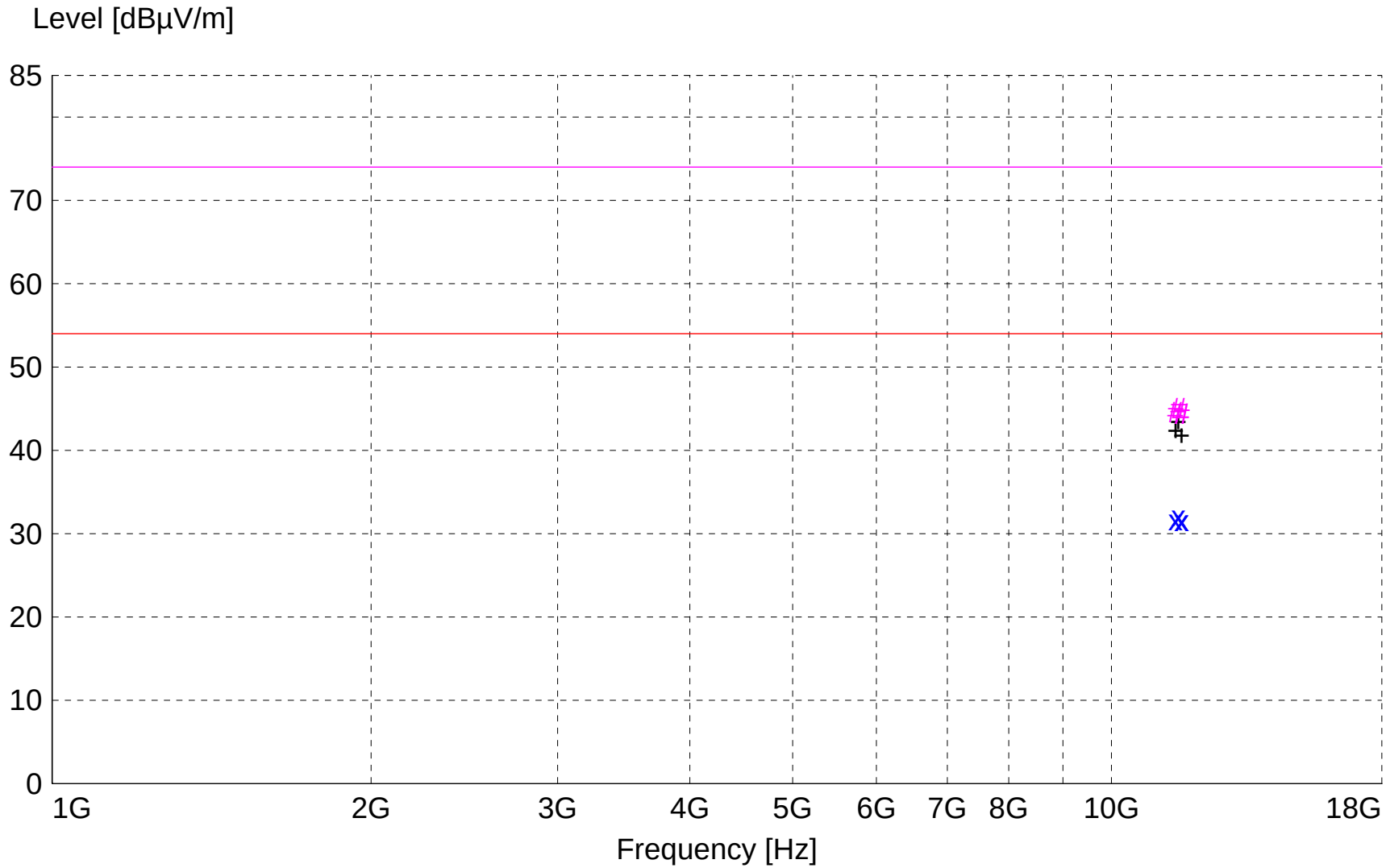
Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

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 : MES A603p_sh_Average
: MES A603p_sh_Peak
+ + : MES A603p_sh_Peak_List
——— LIM FCC 15.209 F 3m AVG Field Strength AVG Limit 3m
——— LIM FCC 15.209 F 3m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A603p_sh_Final"

6/3/2013 3:16PM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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 15.205/15.209 Spurious Emissions in Restricted Bands

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

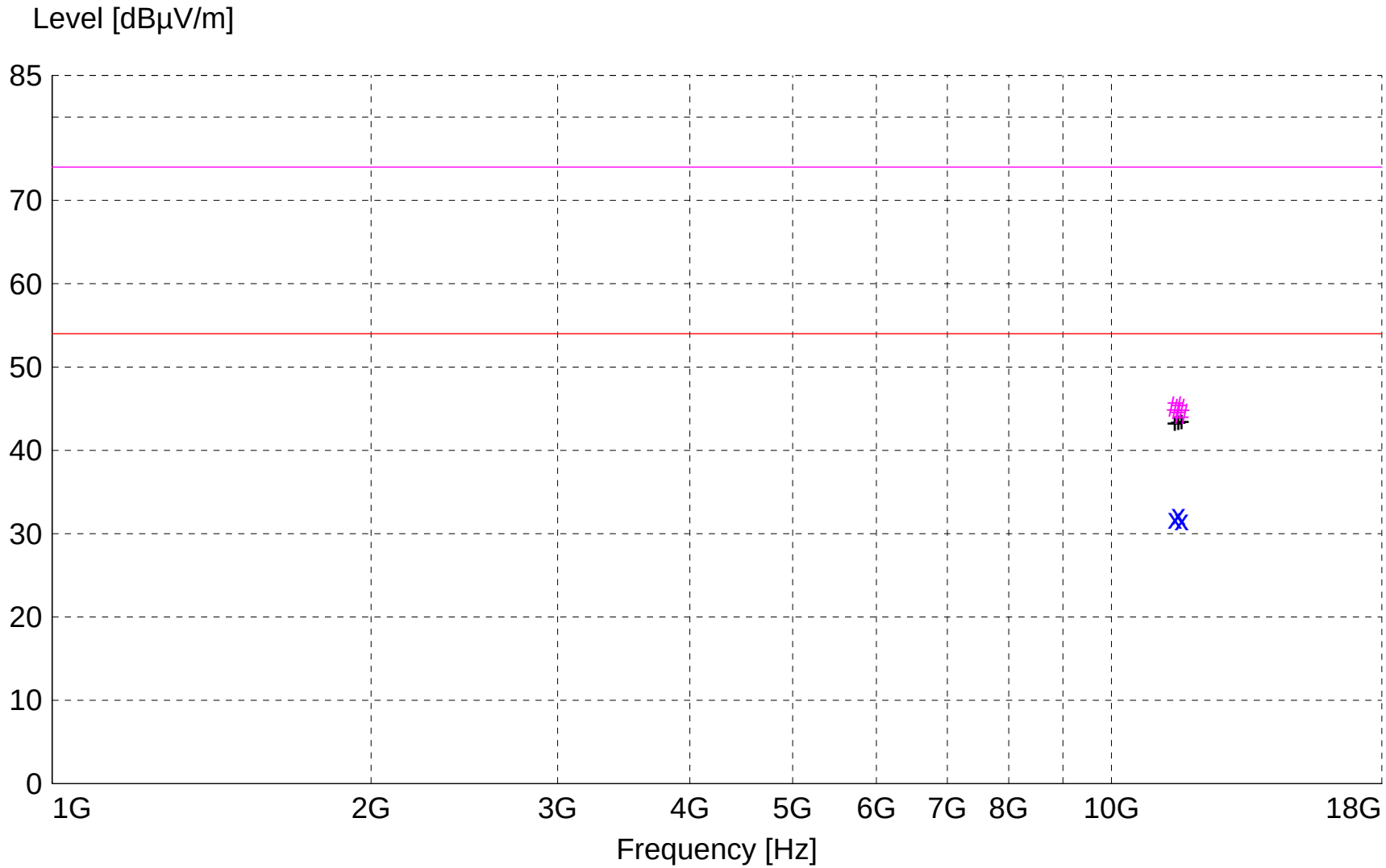
Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

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 15.209 F 3m AVG Field Strength AVG Limit 3m
——— LIM 15.209 F 3m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A603p_sv_Final"

6/3/2013 3:05PM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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 15.205/15.209 Spurious Emissions in Restricted Bands

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

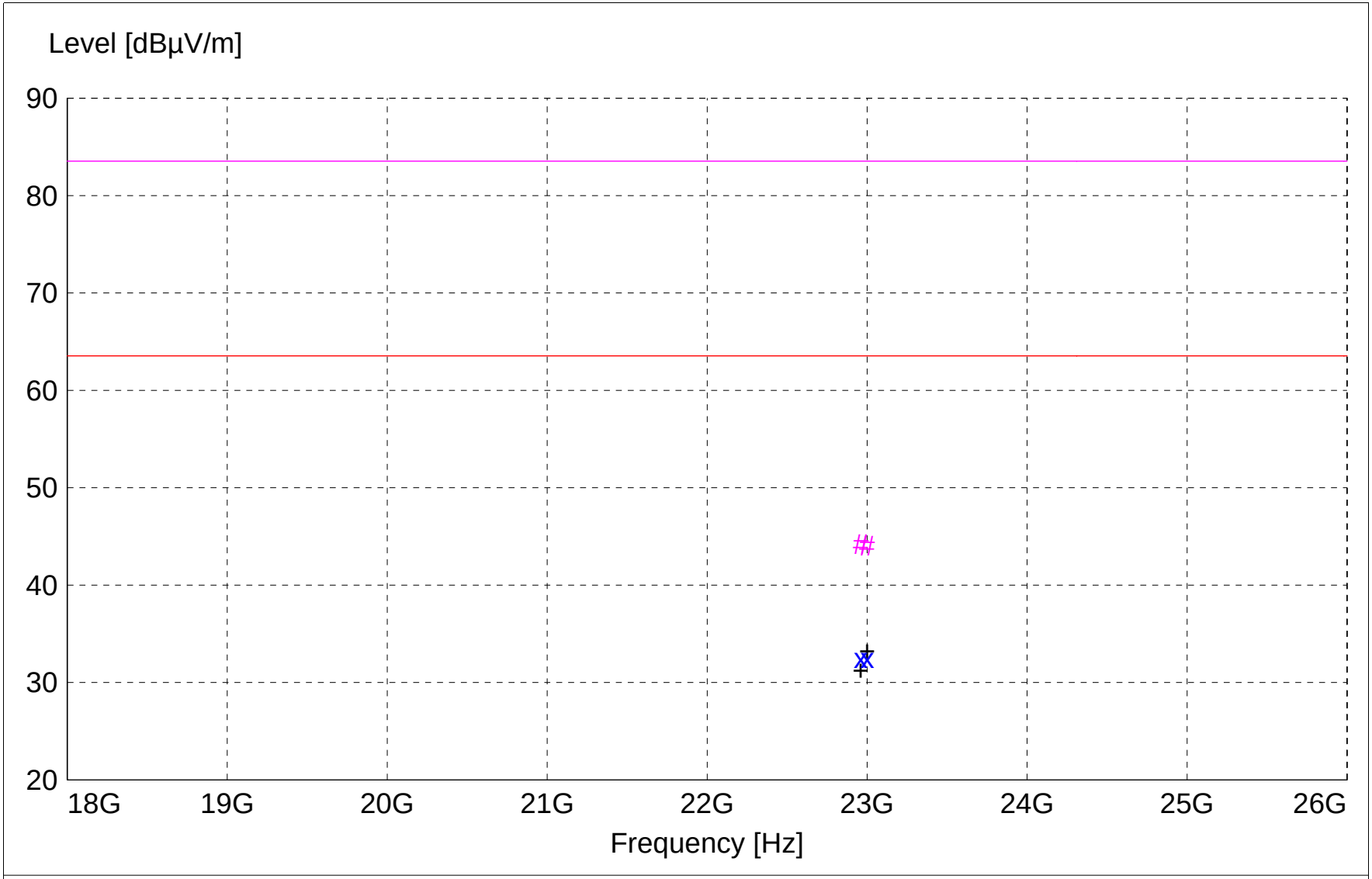
Test Set-up: EUT Measured at 1 Meters with HORIZONTAL Antenna Polarization

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

Radiated emissions testing was performed up to 40GHz. The only emissions found in this range are recorded here.



x x : MES A604c_sh_Average
: MES A604c_sh_Peak
+ + : MES A604c_sh_Peak_List
——— LIM FCC 15.209 F 1m AVG Field Strength AVG Limit 3m
——— LIM FCC 15.209 F 1m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A604c_sh_Final"

6/4/2013 10:58AM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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 15.205/15.209 Spurious Emissions in Restricted Bands

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

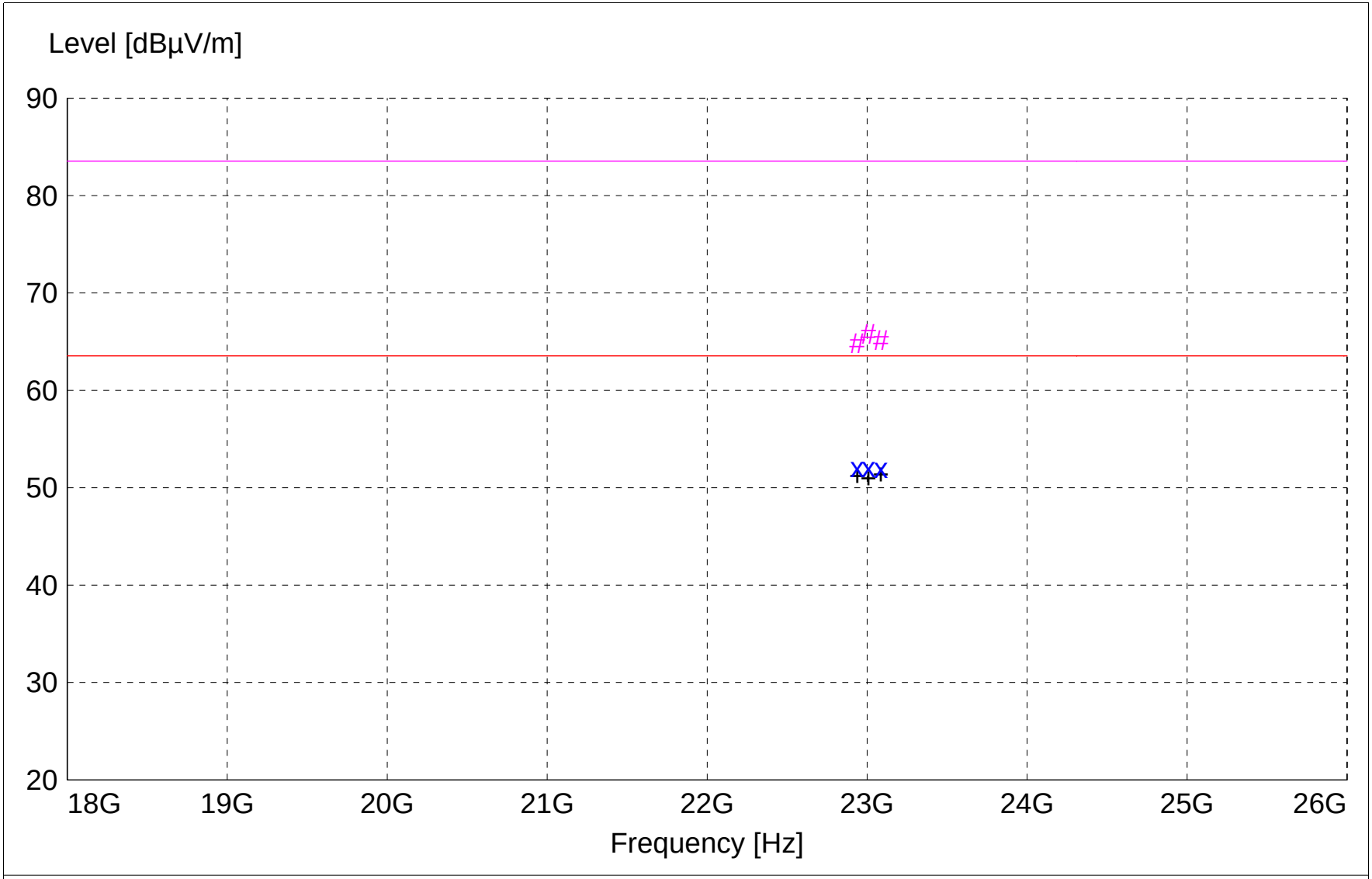
Test Set-up: EUT Measured at 1 Meters with VERTICAL Antenna Polarization

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

Radiated emissions testing was performed up to 40GHz. The only emissions found in this range are recorded here.



x x : MES A604c_sv_Average
: MES A604c_sv_Peak
+ + : MES A604c_sv_Peak_List
——— LIM FCC 15.209 F 1m AVG Field Strength AVG Limit 3m
——— LIM FCC 15.209 F 1m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A604c_sv_Final"

6/4/2013 10:39AM

Frequency MHz	Level dBµV	Antenna Factor dBµV/m	System Loss dB	Total Level dBµV/m	Limit dBµV/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
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

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B7.0 Duty Cycle of Test Unit

Rule Part: FCC Section 15.35(c)

Test Procedure: **6.0 Duty cycle, transmission duration**

ANSI C63.10-2009 Section 7.5

Limits: Informative

Results: EUT is continuously transmitting (duty cycle > 98%).

Sample Equations: None

Notes: No Duty cycle correction factor was applied to measurements for this device.

The EUT was transmitting above the minimum duty cycle of 98%.

Appendix B – Measurement Data

B8.0 AC Line Conducted Emissions

Rule Part: FCC Part 15.207

Test Procedure: ANSI C63.10-2009
Section 6.2

Limit: FCC Part 15.207(a)

Results: Compliant

Notes: This was an AC Conducted emissions measurement.
The EUT was powered from a representative AC Adapter with an input of 120 VAC 60 Hz.

FCC Part 15.207

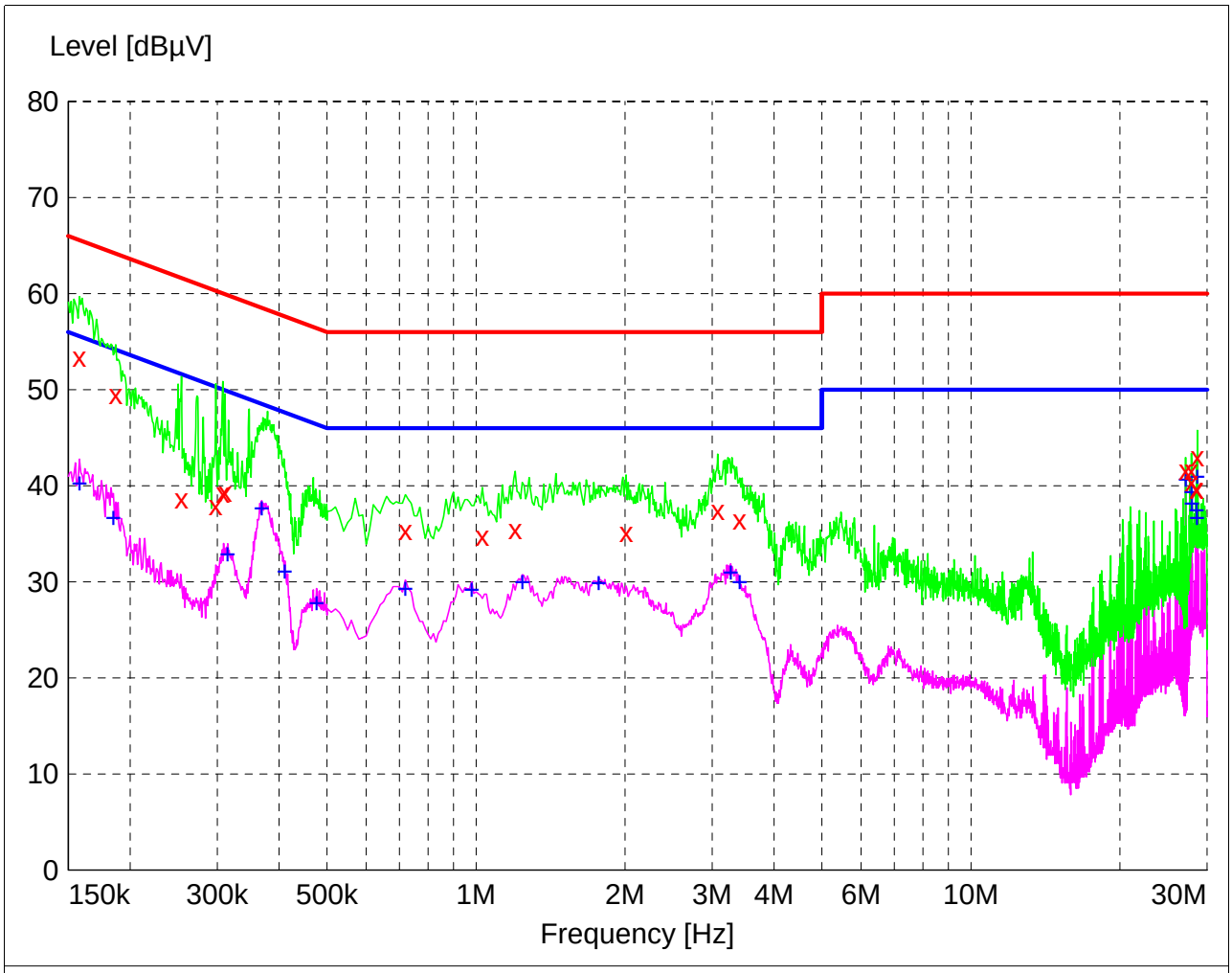
Voltage Mains Test

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



x x : MES 604k FCC L1_fin
+ + MES 604k FCC L1_fin2
MES 604k FCC L1_pre
MES 604k FCC L1_pre2
LIM FCC ClassB V QP Voltage Amplitude QP Limit
LIM FCC ClassB V AV Voltage Amplitude AVG Limit

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 15.207

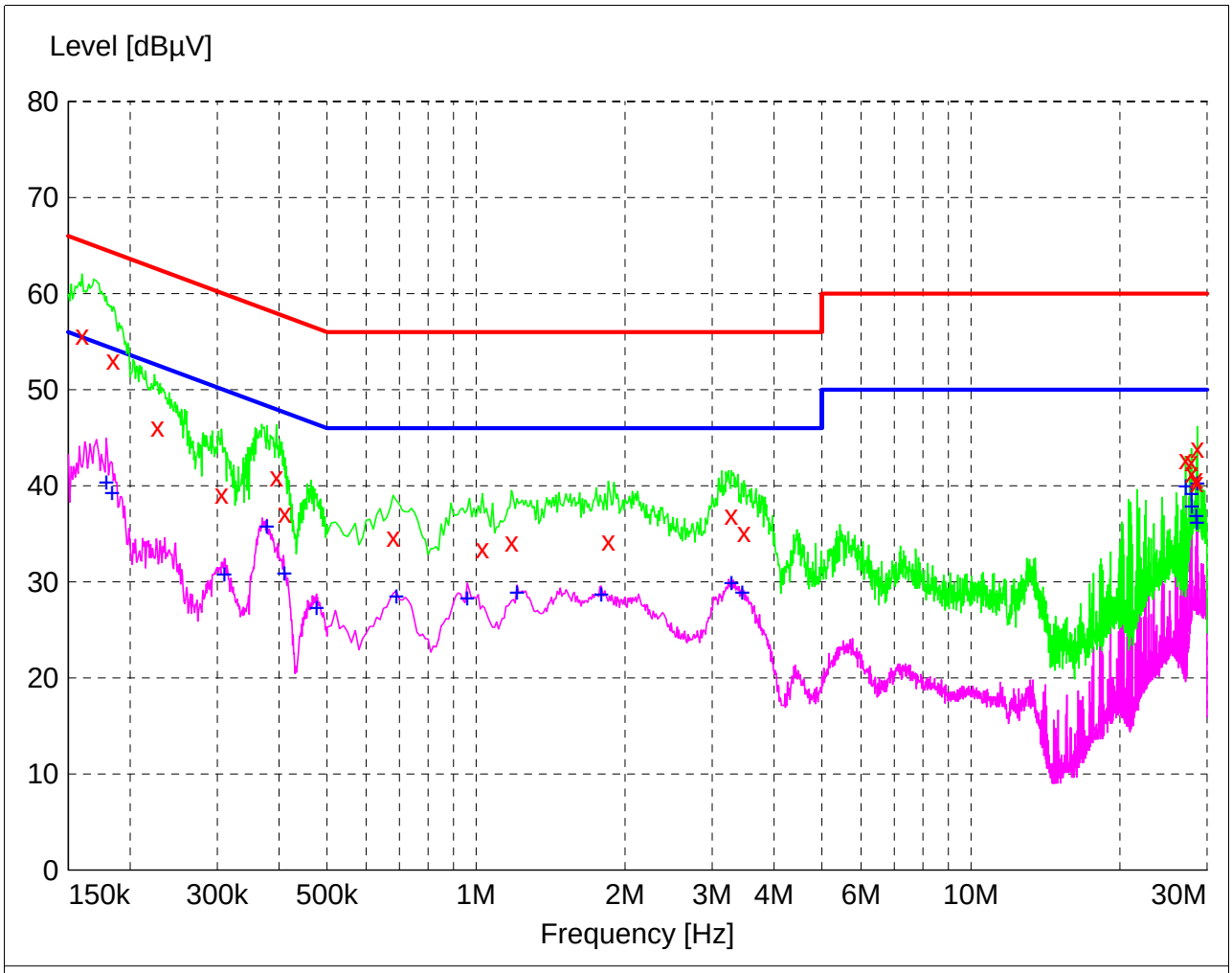
Voltage Mains Test

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



x x : MES 604k FCC L2_fin
+ + MES 604k FCC L2_fin2
MES 604k FCC L2_pre
MES 604k FCC L2_pre2
LIM FCC ClassB V QP Voltage Amplitude QP Limit
LIM FCC ClassB V AV Voltage Amplitude AVG Limit

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

END OF REPORT

Revision #	Date	Comments	By
1.0	06-18-2013	Preliminary Release	JS
1.1	06-19-2013	Edits pgs 6, 30, 141, 150, 175	JS