



166 South Carter, Genoa City, WI 53128

Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

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: PMP450AP 2.4 GHz MIMO Radio
Kind of Equipment: Point-to-Multipoint Digital Transmission Transceiver
Frequency Range: 2402.5 to 2475 MHz (5 MHz bandwidth)
2405 to 2470 MHz (10 MHz bandwidth)
2417.5 to 2460 MHz (20 MHz bandwidth)
Test Configuration: Stand-alone
Model Number(s): C024045A001A
Model(s) Tested: C024045A001A
Serial Number(s): 0A003E47D0B3 (sample for radiated testing)
0A003E47D0BD (connectorized sample for RF conducted testing)
Date of Tests: April 16th to May 1st, 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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Company:
Model Tested:
Report Number:

Cambium Networks
C024045A001A
18998

SIGNATURE PAGE

Tested By:

A handwritten signature in black ink that reads "James R. Ochoa". The signature is written in a cursive style with a large initial "J".

James Ochoa
Test Engineer

Reviewed By:

A handwritten signature in black ink that reads "William Stumpf". The signature is written in a cursive style with a large initial "W".

William Stumpf
OATS Manager

Approved By:

A handwritten signature in black ink that reads "Brian J. Mattson". The signature is written in a cursive style with a large initial "B".

Brian Mattson
General Manager



Company: Cambium Networks
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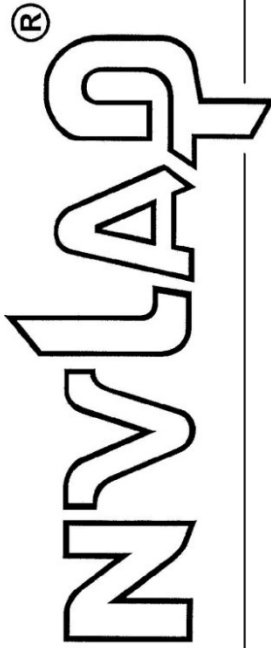


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United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

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

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

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

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



For the National Institute of Standards and Technology

2012-10-01 through 2013-09-30

Effective dates

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



Company: Cambium Networks
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1.0 Summary of Test Report

It was determined that the Cambium Networks PMP450AP 2.4 GHz MIMO Radio, Model C024045A001A, complies with the requirements of CFR 47 Part 15 Subpart C Section 15.247.

Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
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
15.247(b)(3)	Fundamental Emission Output Power – Average	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 9.2.3.1-AVGPM	1	Yes
15.247(e)	Maximum Power Spectral Density Level in the Fundamental Emission - Average	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 10.5-AVGPSD-2	1	Yes
15.247(d)	Maximum Unwanted Emission Levels – RF Conducted	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 11.0	1	Yes
15.247 (d), 15.205	Band-Edge Conducted Measurements for Radiated Restricted Band Compliance	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 12.1/	1	Yes
15.247(d), 15.205	Band Edge Measurements - Conducted	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 11.0	1	Yes
15.247(d), 15.205	Restricted Band Measurements - Radiated	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 12.0 & 12.1	2	
15.247(d), 15.205	Band Edge Measurements - Radiated with Cabinet	FCC Publication KDB 558074 D01 DTS Meas Guidance v03r01 Section 12.2.4 & 12.2.7	2	Yes
15.35(c)	Duty Cycle of Test Unit	ANSI C63.10-2009 Section 7.5	1	NA
15.207(a)	AC Line Conducted Emissions	ANSI C63.10-2009 Section 6.2		Yes

Note 1: RF conducted measurement.

Note 2: Radiated emission measurement.



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2.0 Introduction

From April 16th through May 1st, 2013 the PMP450AP 2.4 GHz MIMO Radio, Model C024045A001A, 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-Multipoint 2.4 GHz DTS Transceiver with Sector (17 dBi) external antenna with 5 MHz, 10 MHz or 20 MHz channel bandwidth. The 17 dBi antenna operates with OFDM modulation.

Type of Equipment / Frequency Range:

Stand-Alone / 2402.5 to 2475 MHz (5 MHz bandwidth)
2405 to 2470 MHz (10 MHz bandwidth)
2417.5 to 2460 MHz (20 MHz bandwidth)

Physical Dimensions of Equipment Under Test:

Length: 9 in. Width: 9 in. Height: 3 in.

Power Source:

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

Internal Frequencies:

150 kHz, 75 kHz (Switching Power Supply Frequencies)
40 MHz, 25 MHz, 20 MHz



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Transmit Frequencies Used For Test Purpose:

5 MHz Channel Bandwidth: Low channel: 2402.5 MHz (power setting 16)
 Middle channel: 2440 MHz (power setting 16)
 High channel: 2475 MHz (power setting 15)

10 MHz Channel Bandwidth: Low channel: 2405 MHz (power setting 15)
 Middle channel: 2440 MHz (power setting 16)
 High channel: 2470 MHz (power setting 14)

20 MHz Channel Bandwidth: Low channel: 2417.5 MHz (power setting 15)
 Middle channel: 2440 MHz (power setting 16)
 High channel: 2460 MHz (power setting 12)

Type of Modulations:

OFDM: QPSK, 16 QAM, 64 QAM, & 256 QAM

Description of Circuit Board(s) / Part Number:

Cambium Networks PC Board	PMP840002 ISS P2
18 dBi Dipole Sector antenna	SKS240045-18-CA1
Connector	09010084001
1 dB cable x 2	BT0564003



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5.0 Test Equipment

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

D.L.S. Wisconsin

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	1-3-13	1-3-14
LISN	Solar	9252-50-R-24-BNC	961019	9 kHz – 30 MHz	5-24-12	5-24-13
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	Ciao	CA118-4010	101	1GHz-18GHz	2-26-13	2-26-14
Horn Antenna	EMCO	3115	9502-4451	1-18GHz	3-18-13	3-18-15
Filter- High-Pass	Q-Microwave	100462	2	4.2GHz-18GHz	5-18-12	5-18-13
Signal Generator	Rhode & Schwarz	SMR40	100092	1-40 GHz	3-6-13	3-6-14
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



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6.0 Test Arrangements

Radiated Emissions Measurement Arrangement:

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

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

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

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 additional photos of the test set up.

7.0 Test Conditions

Normal Test Conditions:

Temperature and Humidity:

72°F at 31% RH

Supply Voltage:

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



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8.0 Modifications Made To EUT for Compliance

No modifications were needed for the OFDM transmitters.

9.0 Additional Descriptions

Mode of operation: Measurements were taken for QPSK modulation (as worst case) at the lowest, middle, and highest channels of operation. Channel A & Channel B were tested. 5, 10, and 20 MHz channel bandwidths were tested. EUT was set to transmit continuously (at various power settings) with approximately 94% duty cycle.

Emission Designators: 5M0X1D, 10M0X1D, 20M0X1D

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 PMP450AP 2.4 GHz MIMO Radio, Model C024045A001A, as provided from Cambium Networks tested from April 16th to May 1st, 2013 **meets** the requirements of CFR 47 Part 15 Subpart C Section 15.247.



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Appendix A – Test Photos

Photo Information and Test Setup:

Item0: Cambium Networks PMP450AP 2.4 GHz MIMO Radio, Model C024045A001A
Item1: Panel Antenna Model SKS240045-18-CA1
Item2: Unshielded Ethernet Cable - 20 meters long

Radiated - Front, below 1 GHz





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Appendix A – Test Photos

Radiated - Back, below 1 GHz



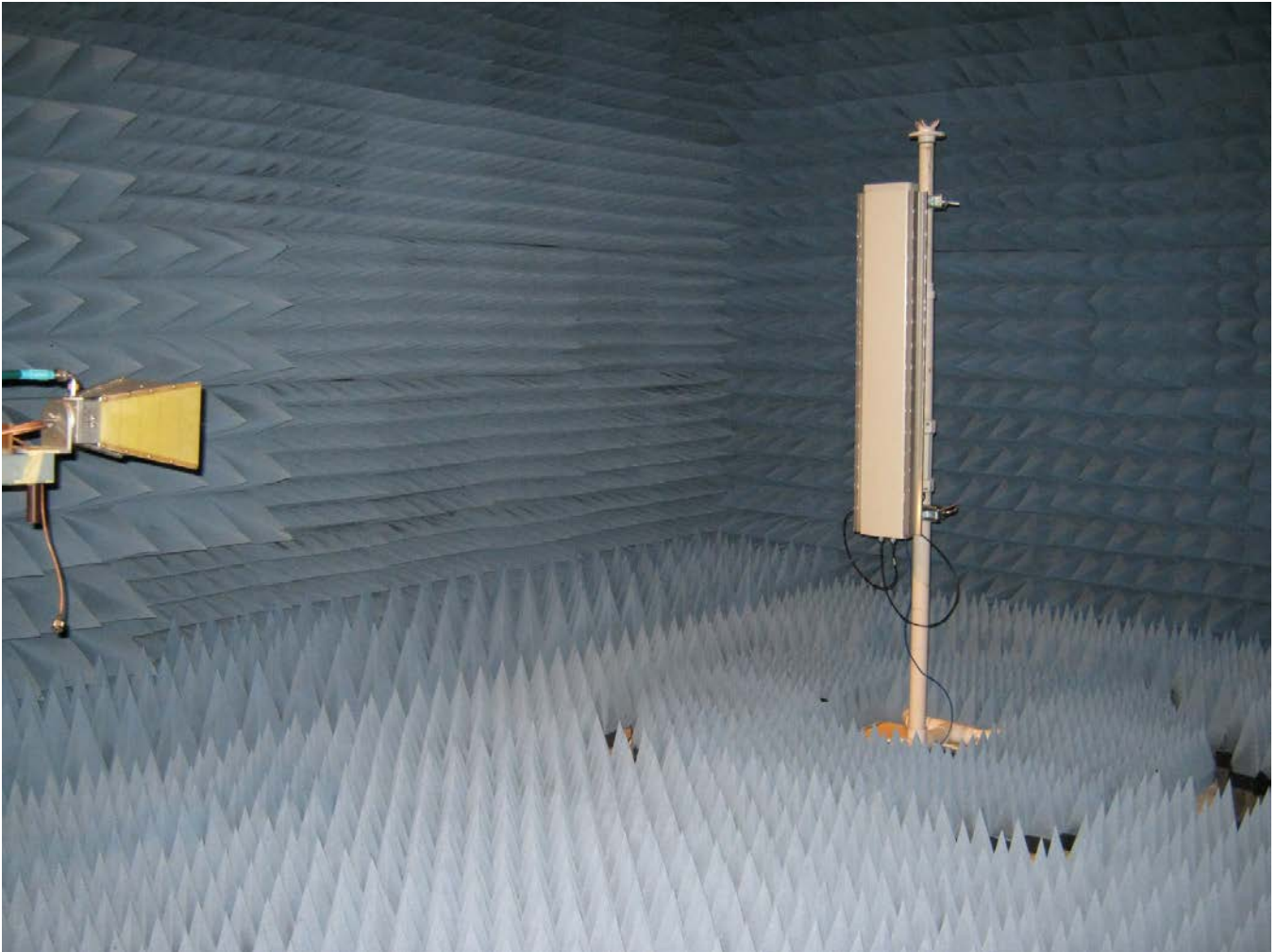


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Appendix A – Test Photos

Radiated - 1 to 18 GHz
(showing panel antenna in front of 2.4 GHz radio)



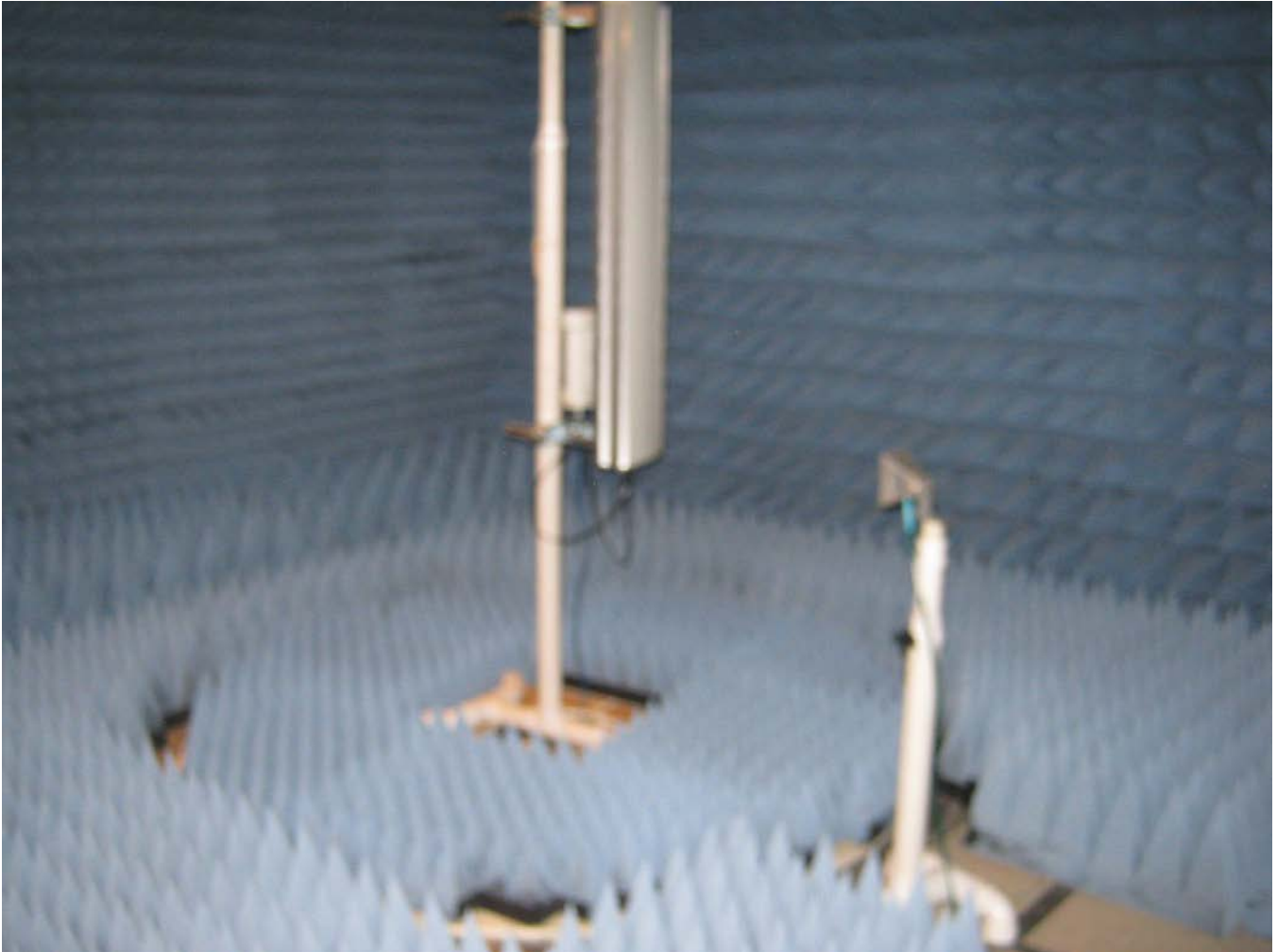


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Appendix A – Test Photos

Radiated - above 18 GHz
(showing pole, 2.4 GH radio, panel antenna)





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Appendix A – Test Photos

Radiated - Band-Edge testing with Cabinet



Appendix A – Test Photos

RF Conducted



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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 8.1 Option 1

Description: RBW = 100kHz
VBW \geq 3 x RBW
Detector = Peak
Trace mode = max hold
Sweep = auto couple

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 QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low, middle and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings with approximately a 94% duty cycle.

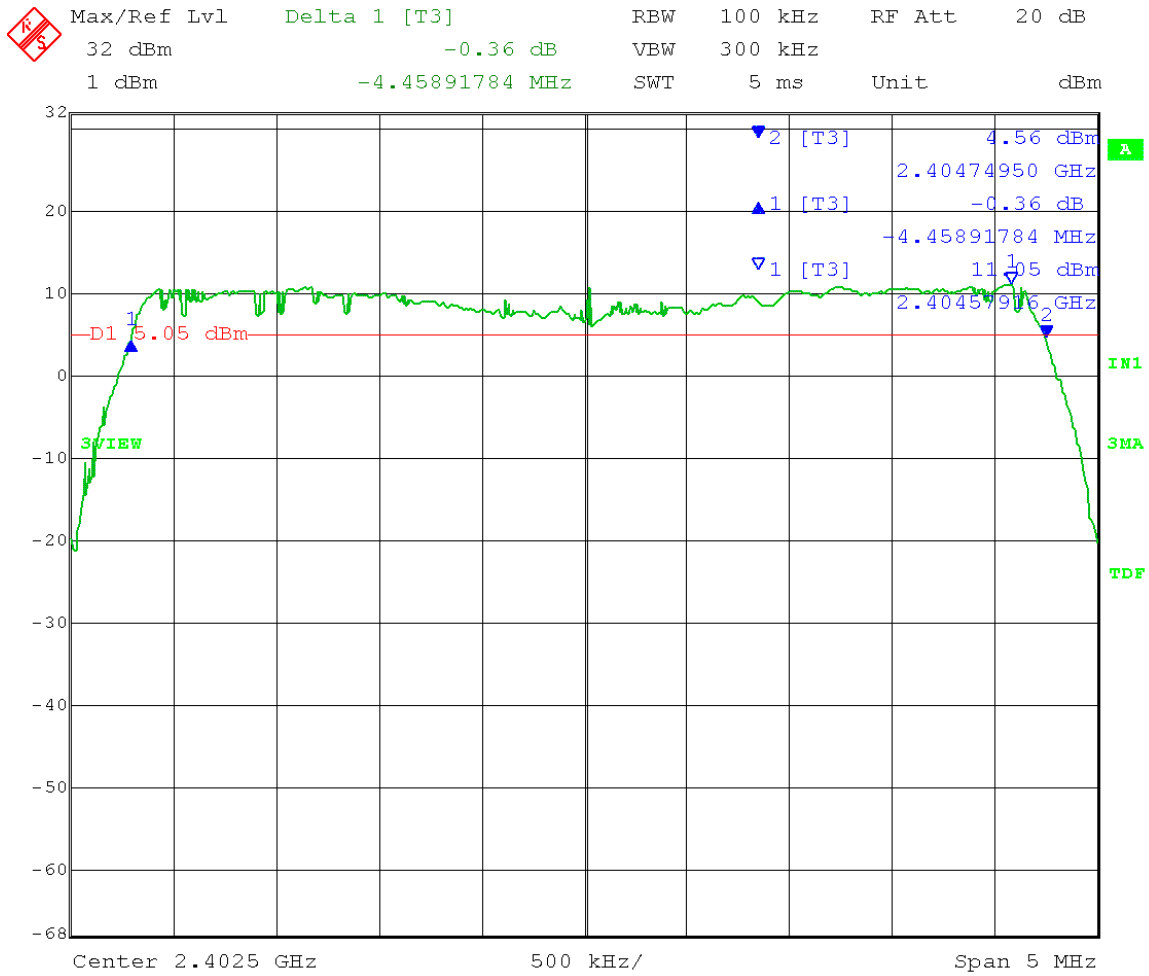
Limit: DTS Bandwidth shall be at least 500 kHz

Results: Passed

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: Low Channel: Transmit = 2.4025 GHz
 Output power setting: 16
 Channel A
 5MHz BW

6 dB Emission Bandwidth = 4.46 MHz

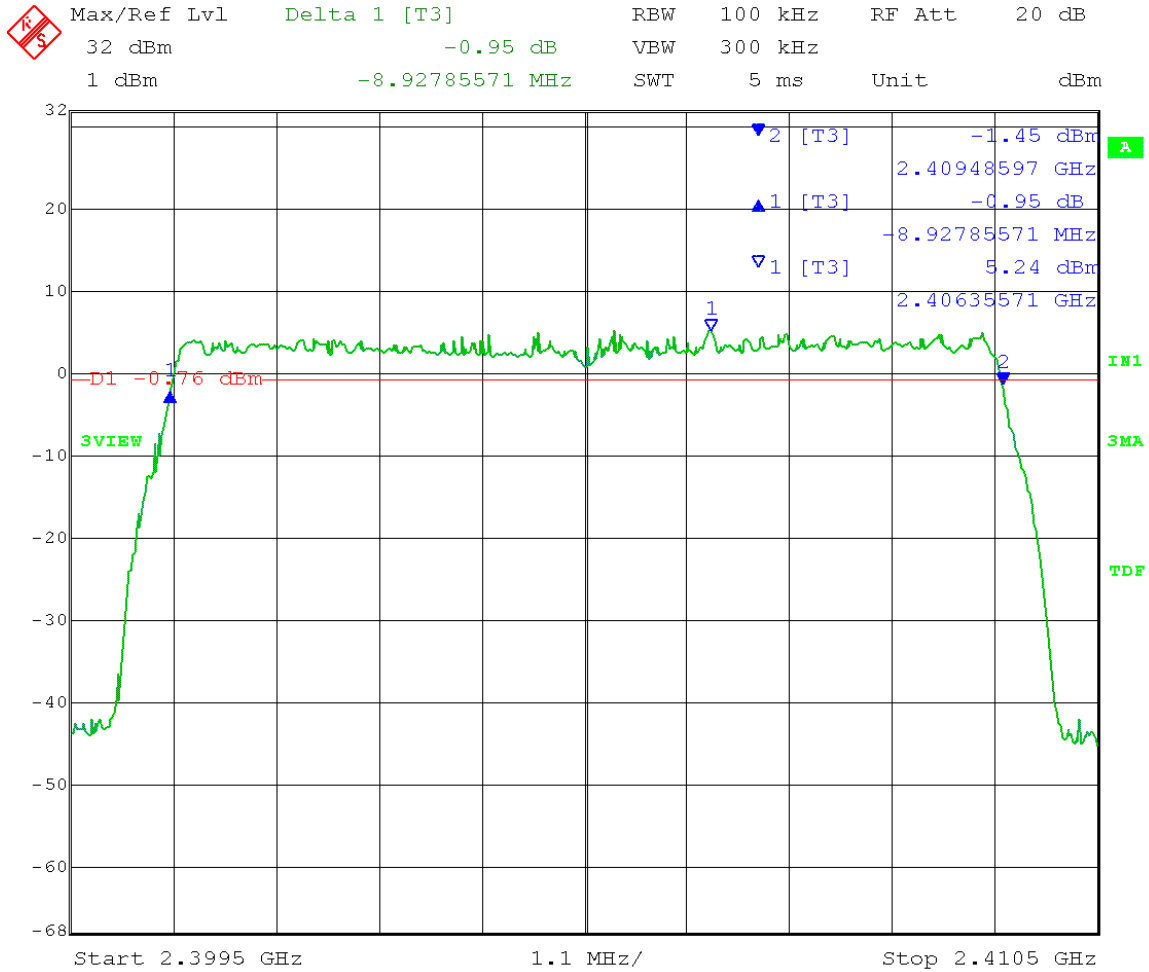


Date: 19.APR.2013 15:36:20

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: Low Channel: Transmit = 2.4025 GHz
 Output power setting: 15
 Channel A

6 dB Emission Bandwidth = 8.92 MHz

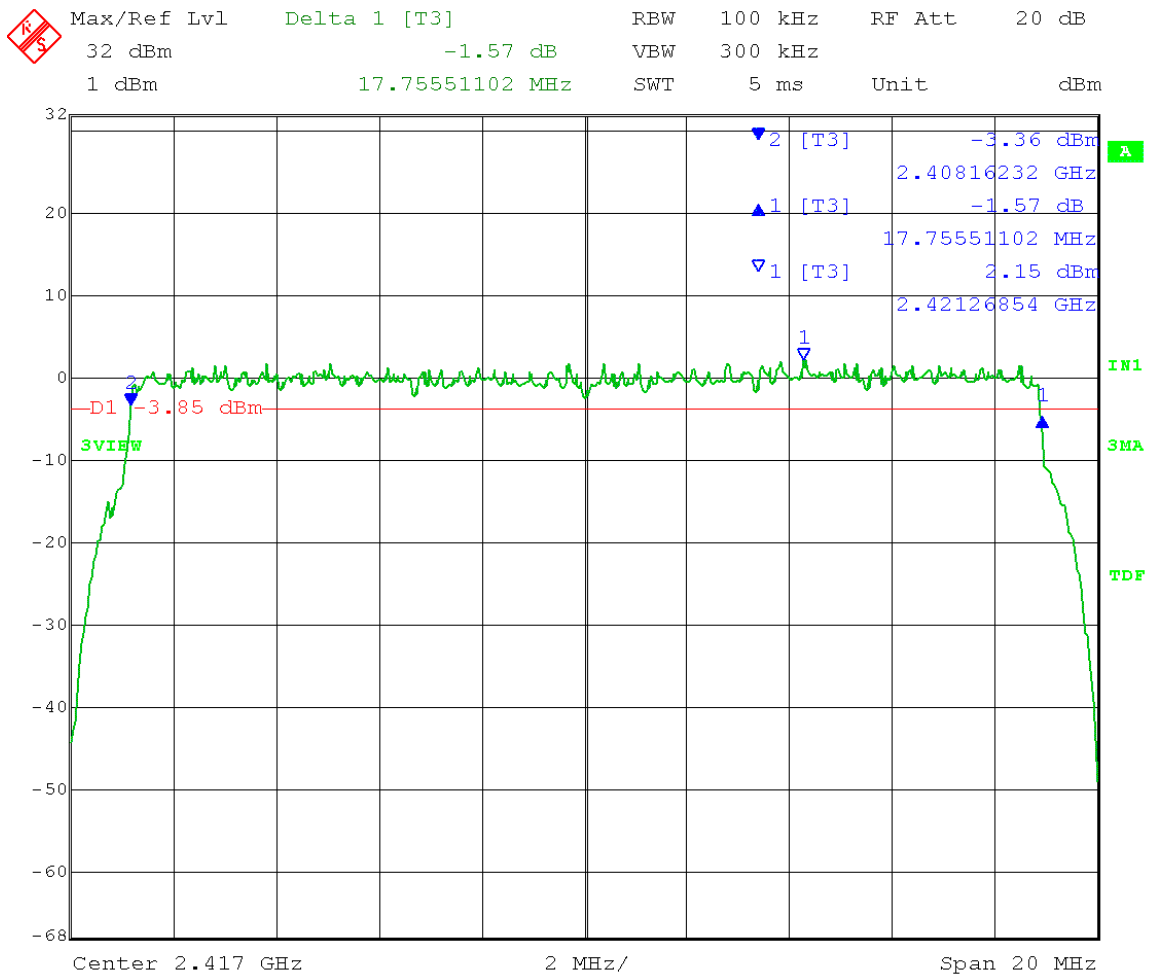


Date: 22.APR.2013 08:25:47

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O
 Comment: Low Channel: Transmit = 2.417 GHz
 Output power setting: 15
 Channel A

20MHz BW

6 dB Emission Bandwidth = 17.75 MHz

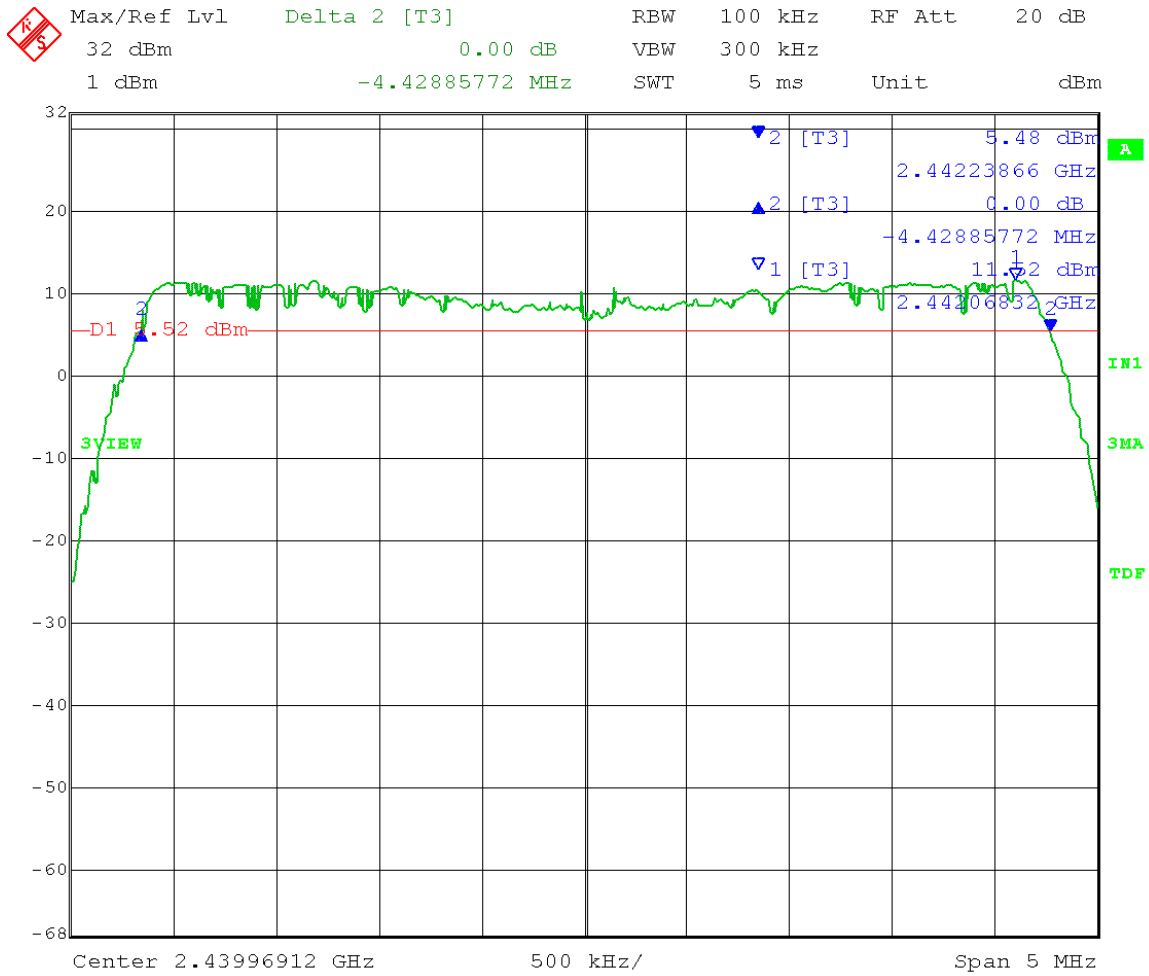


Date: 22.APR.2013 10:01:56

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: Mid Channel: Transmit = 2.440 GHz
 Output power setting: 16
 Channel A
 5MHz BW

6 dB Emission Bandwidth = 4.43 MHz

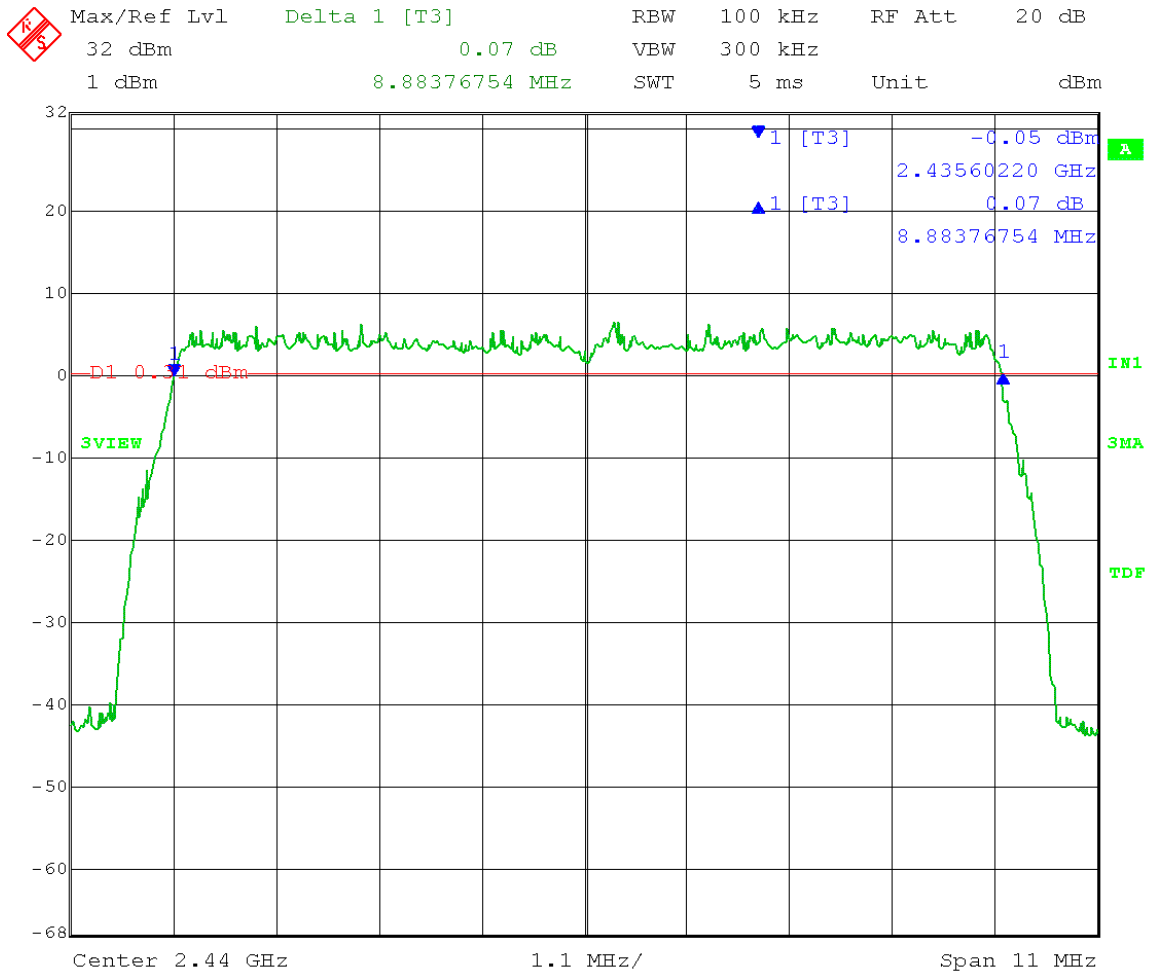


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Test Date: 04-22-2013
Company: Cambium Networks
EUT: PMP450AP (2.4GHz: OFDM)
Test: Emission Bandwidth (6 dB) - Conducted
Operator: Jim O

Comment: Mid Channel: Transmit = 2.44 GHz
Output power setting: 16
Channel A
10MHz BW

6 dB Emission Bandwidth = 8.88 MHz

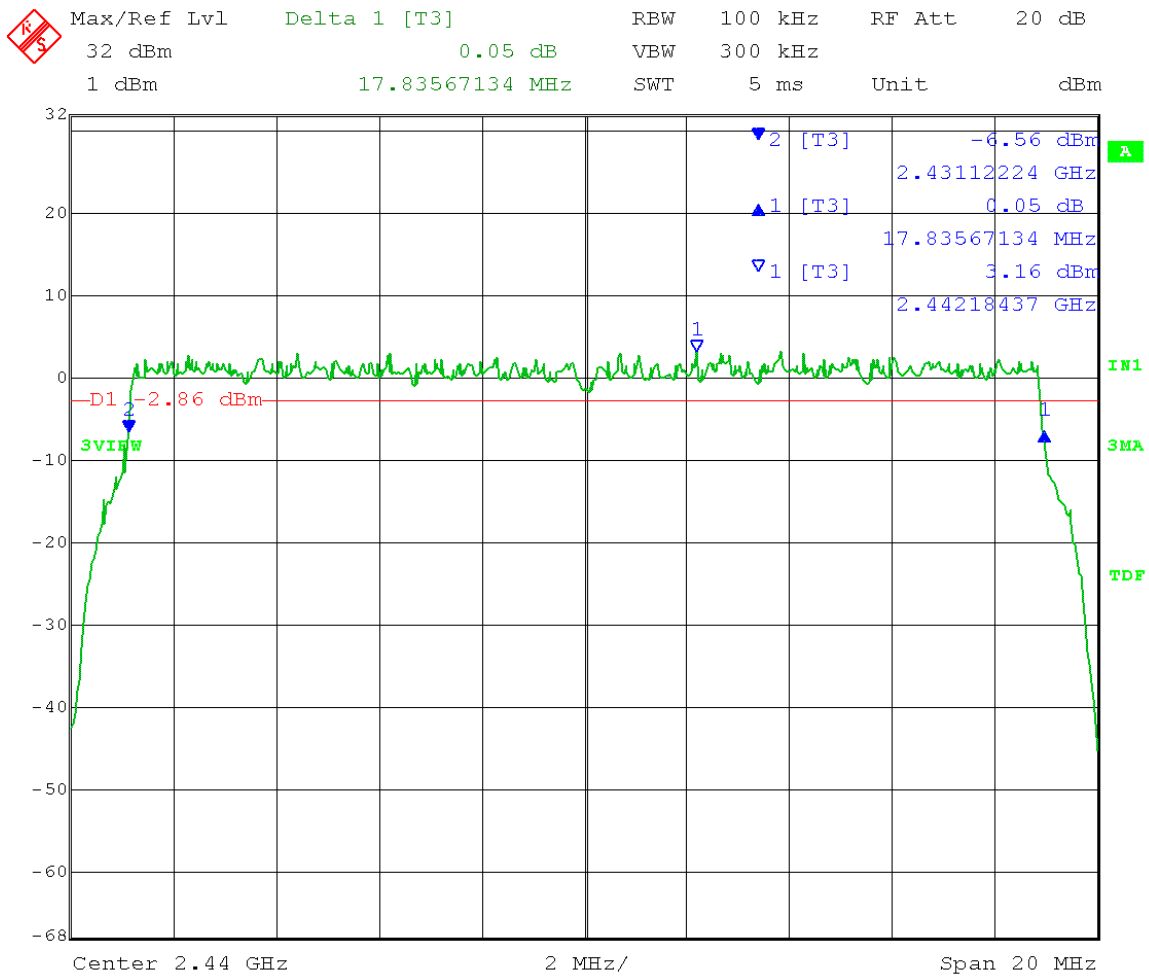


Date: 22.APR.2013 08:30:11

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O
 Comment: Mid Channel: Transmit = 2.44 GHz
 Output power setting: 16
 Channel A

20MHz BW

6 dB Emission Bandwidth = 17.85 MHz

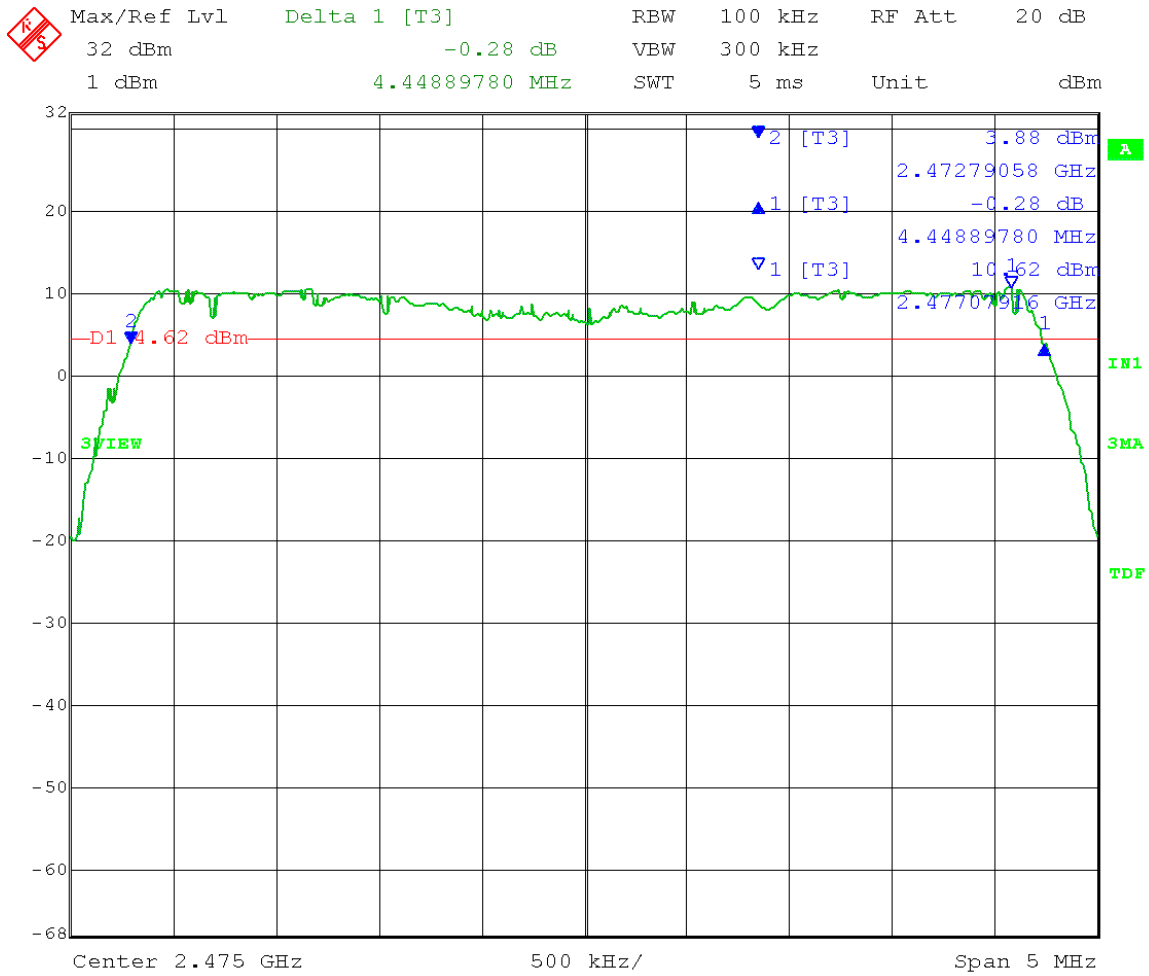


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Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: High Channel: Transmit = 2.475 GHz
 Output power setting: 15
 Channel A
 5MHz BW

6 dB Emission Bandwidth = 4.45 MHz



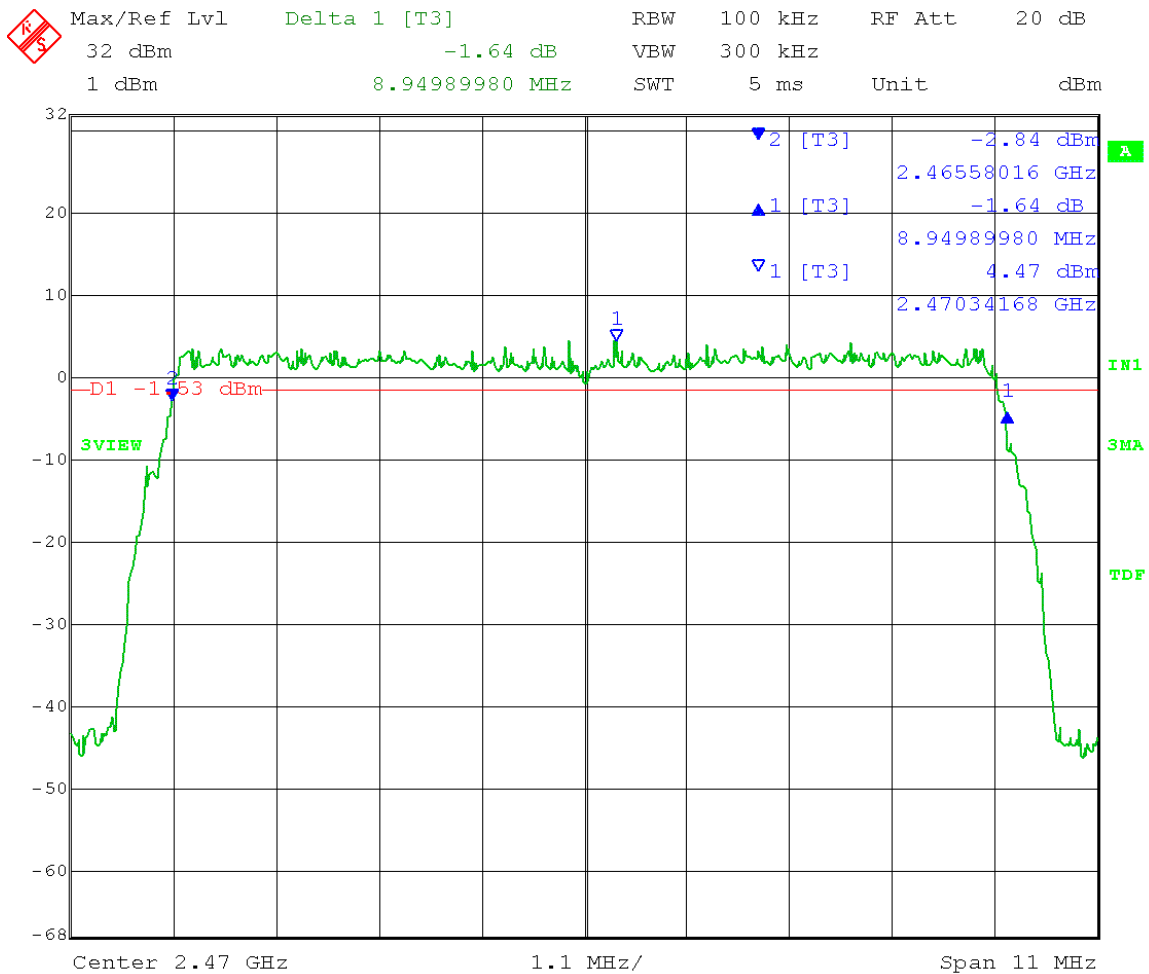
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Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: High Channel: Transmit = 2.470 GHz
 Output power setting: 14
 Channel A

10MHz BW

6 dB Emission Bandwidth = 8.95 MHz

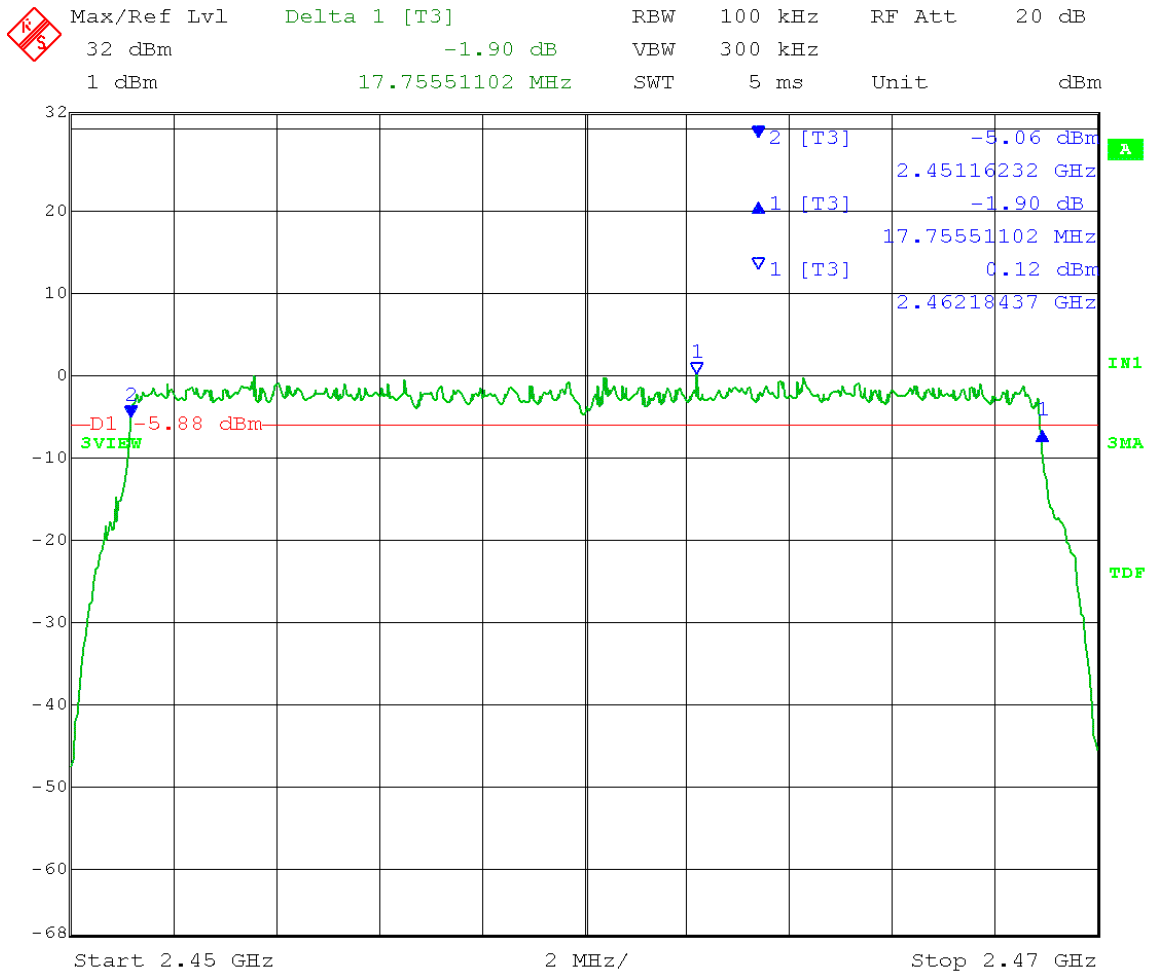


Date: 22.APR.2013 08:42:04

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: High Channel: Transmit = 2.460 GHz
 Output power setting: 12
 Channel A

6 dB Emission Bandwidth = 17.76MHz

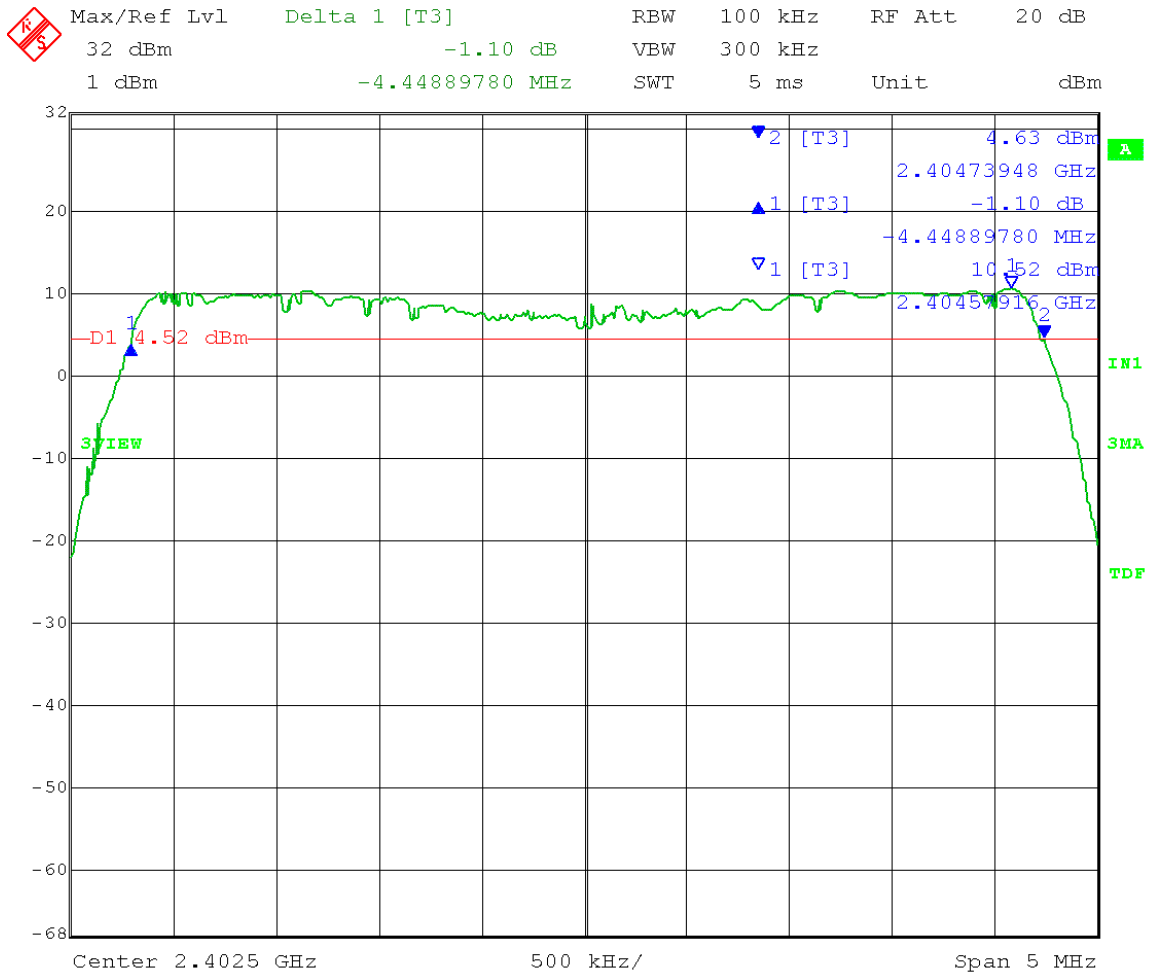


Date: 22.APR.2013 10:22:18

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: Low Channel: Transmit = 2.4025 GHz
 Output power setting: 16
 Channel B
 5MHz BW

6 dB Emission Bandwidth = 4.45 MHz

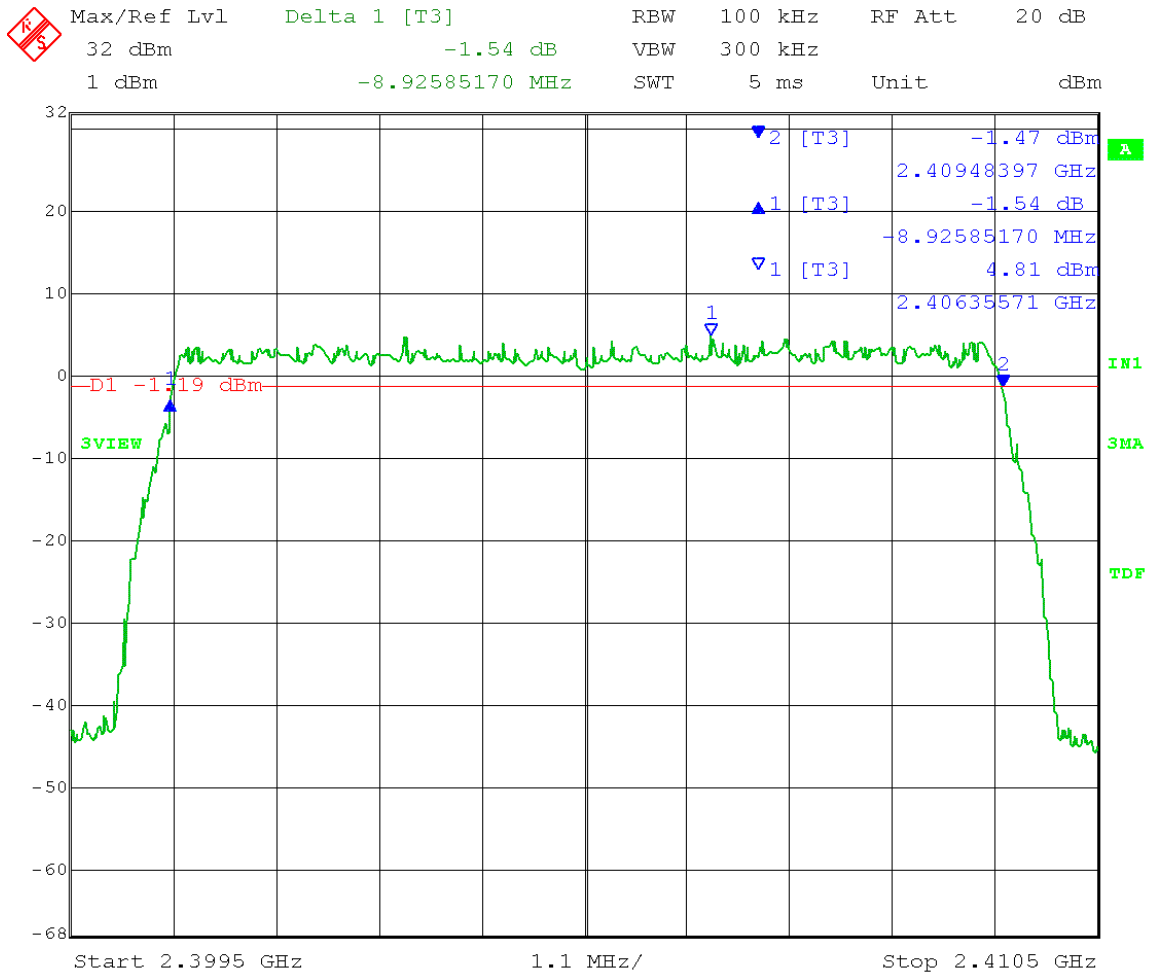


Date: 19.APR.2013 15:33:52

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: Low Channel: Transmit = 2.4025 GHz
 Output power setting: 15
 Channel B
 10MHz BW

6 dB Emission Bandwidth = 8.92 MHz

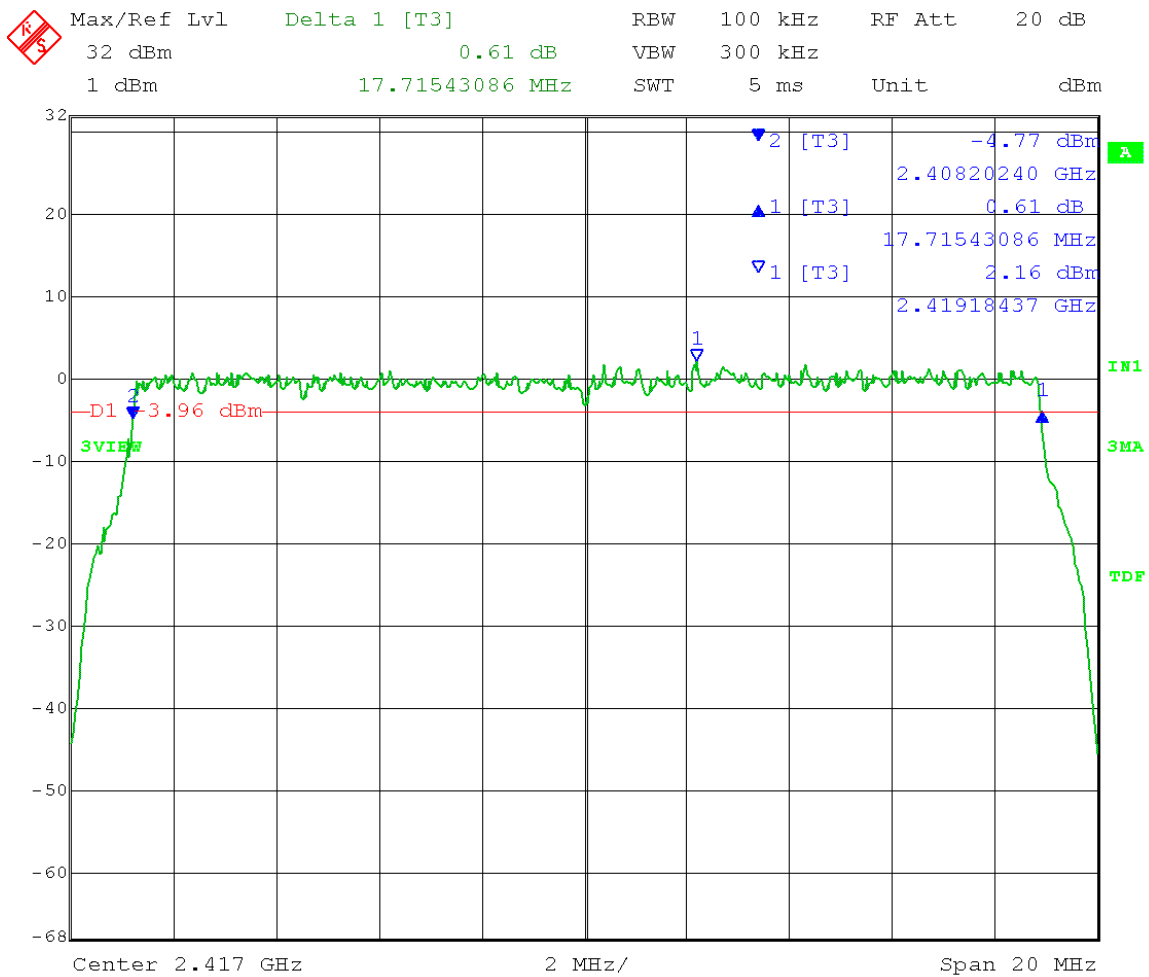


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Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O
 Comment: Low Channel: Transmit = 2.4175 GHz
 Output power setting: 15
 Channel B

20MHz BW

6 dB Emission Bandwidth = 17.72MHz

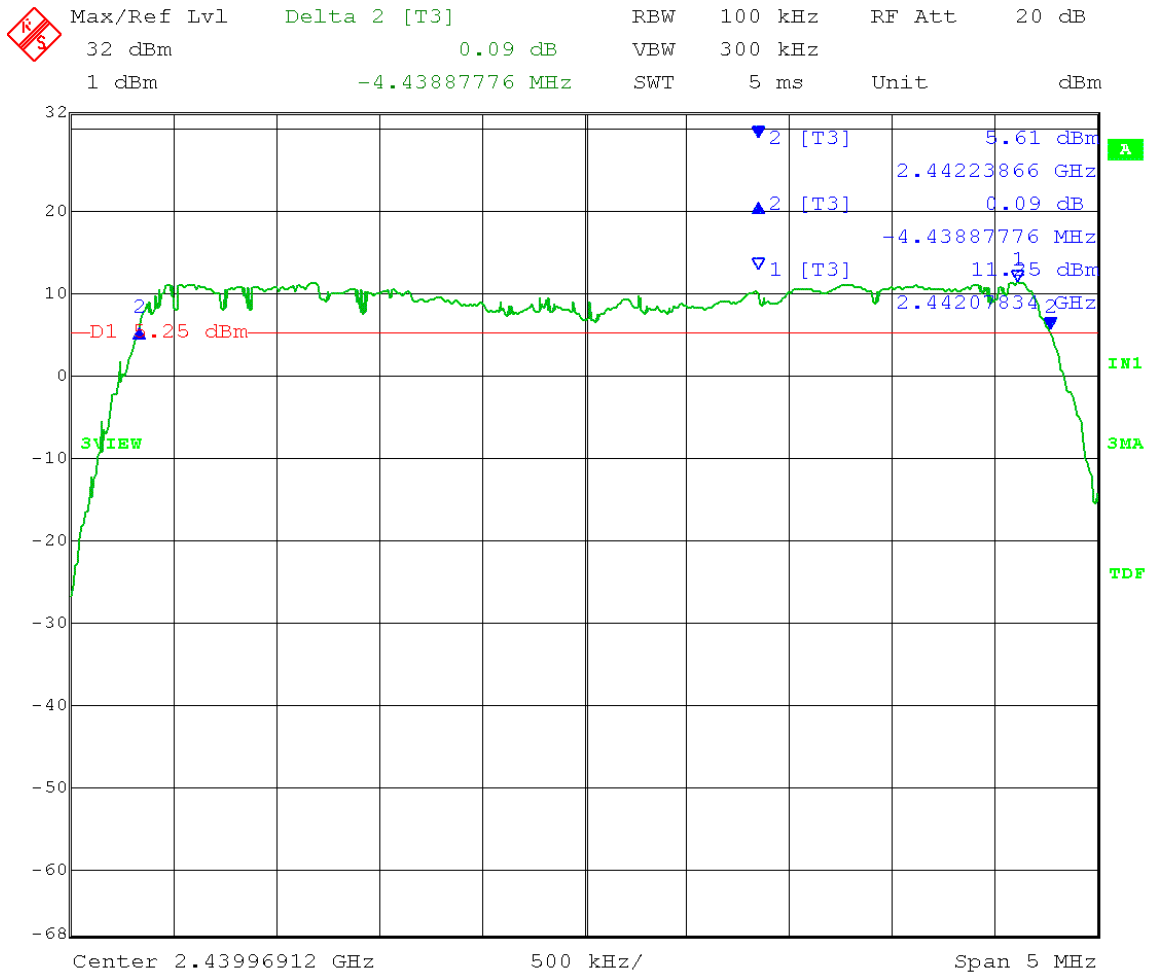


Date: 22.APR.2013 09:58:31

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: Mid Channel: Transmit = 2.440 GHz
 Output power setting: 16
 Channel B
 5MHz BW

6 dB Emission Bandwidth = 4.44 MHz



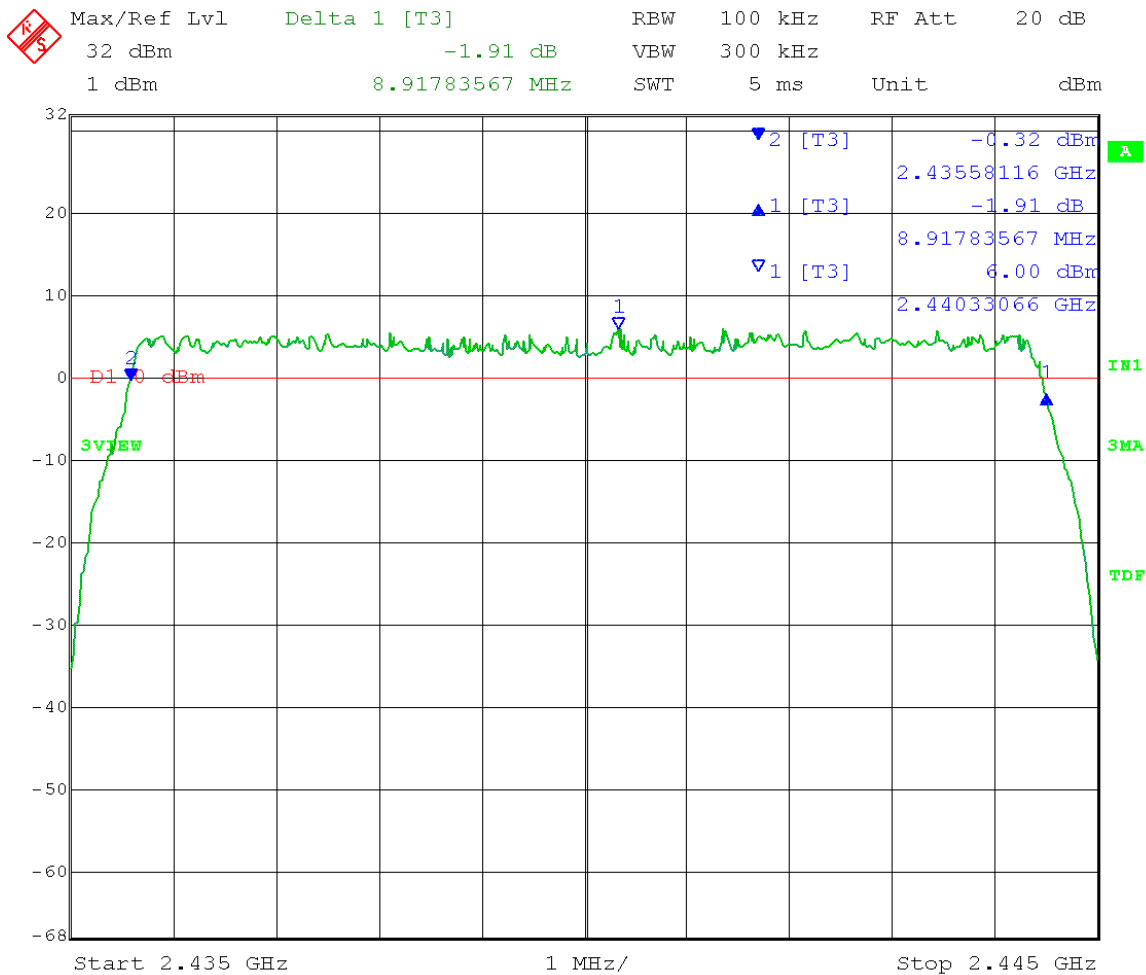
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Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: Mid Channel: Transmit = 2.44 GHz
 Output power setting: 16
 Channel B

10MHz BW

6 dB Emission Bandwidth = 8.92 MHz

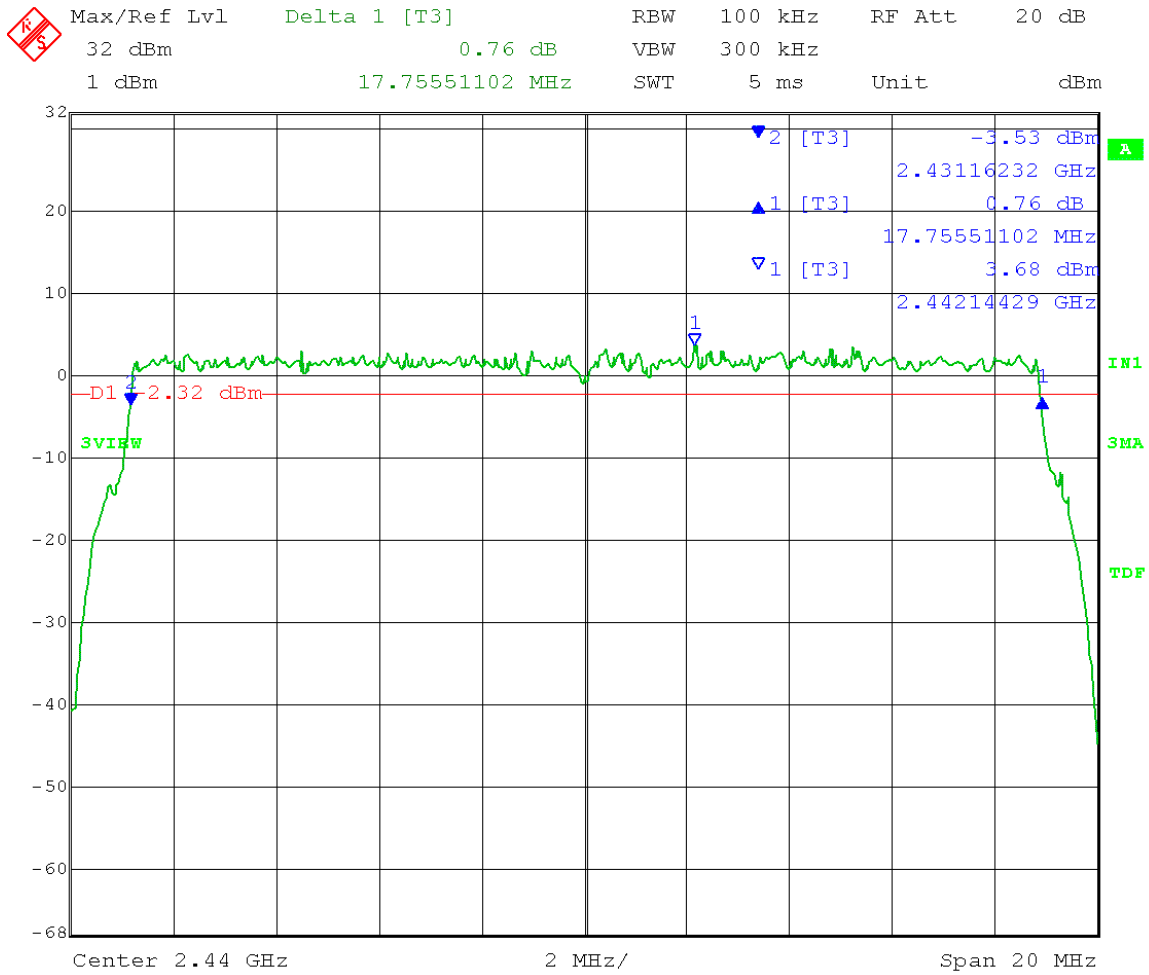


Date: 22.APR.2013 08:54:34

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O
 Comment: Mid Channel: Transmit = 2.44 GHz
 Output power setting: 16
 Channel B

20MHz BW

6 dB Emission Bandwidth = 17.76MHz

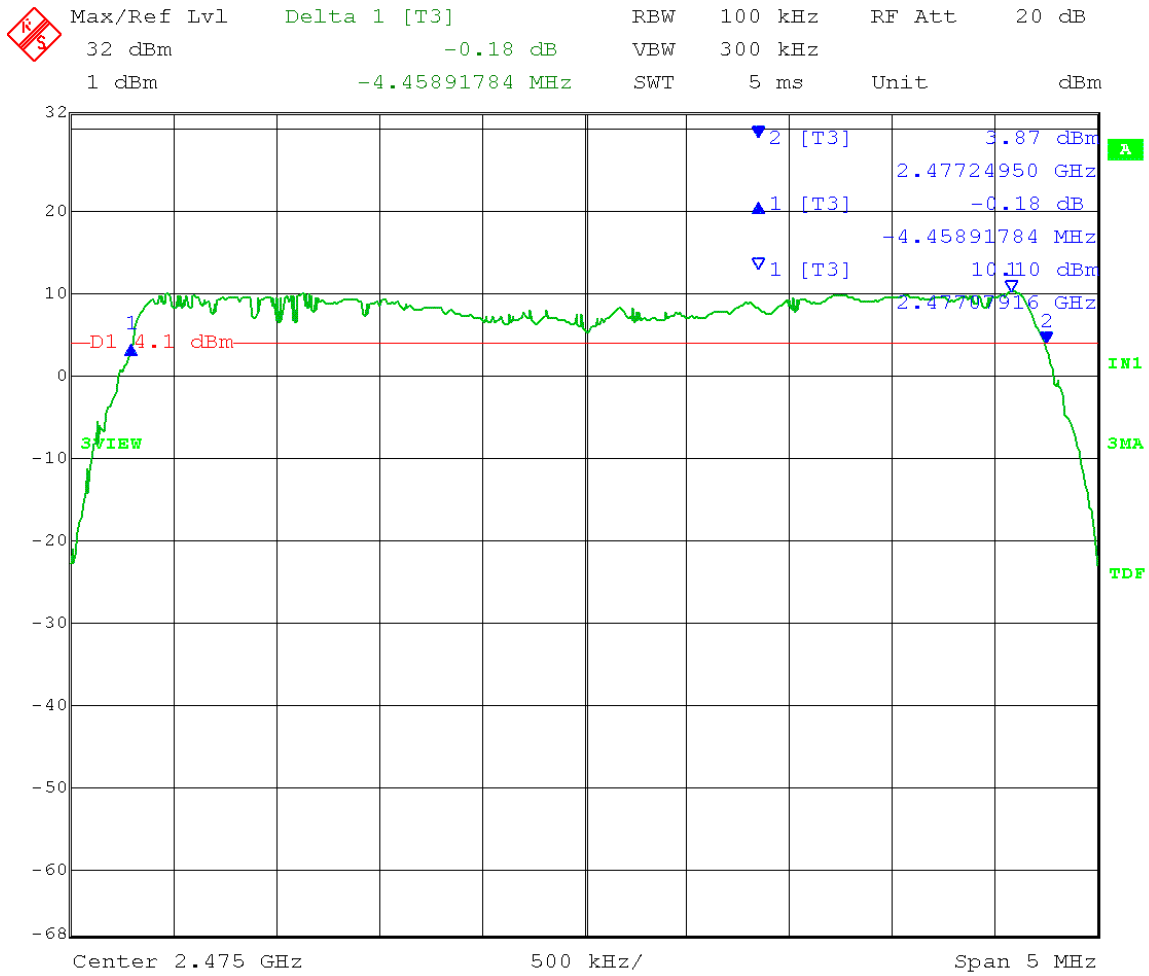


Date: 22.APR.2013 10:11:27

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: High Channel: Transmit = 2.475 GHz
 Output power setting: 15
 Channel B
 5MHz BW

6 dB Emission Bandwidth = 4.46 MHz

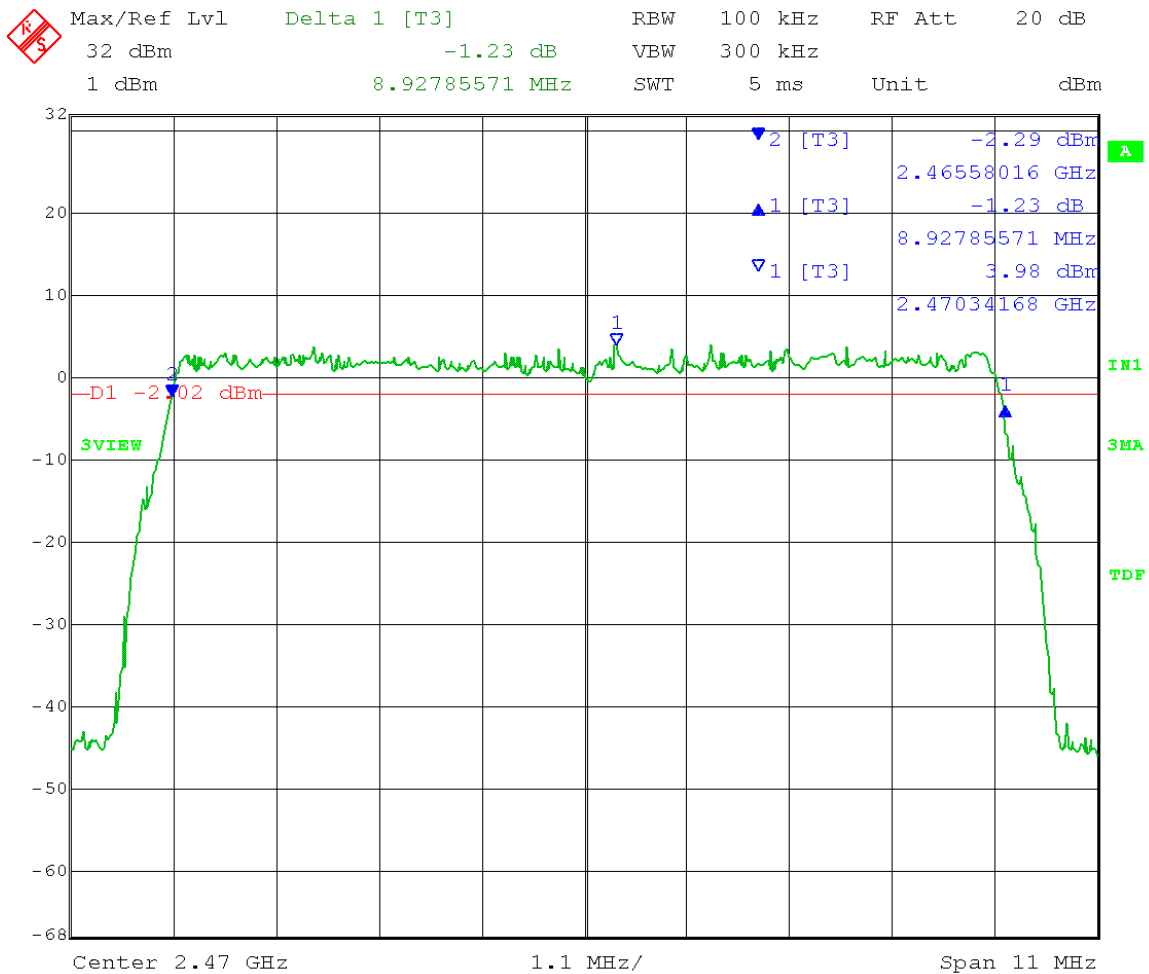


Date: 19.APR.2013 15:42:26

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O

Comment: High Channel: Transmit = 2.470 GHz
 Output power setting: 14
 Channel B
 10MHz BW

6 dB Emission Bandwidth = 8.93 MHz

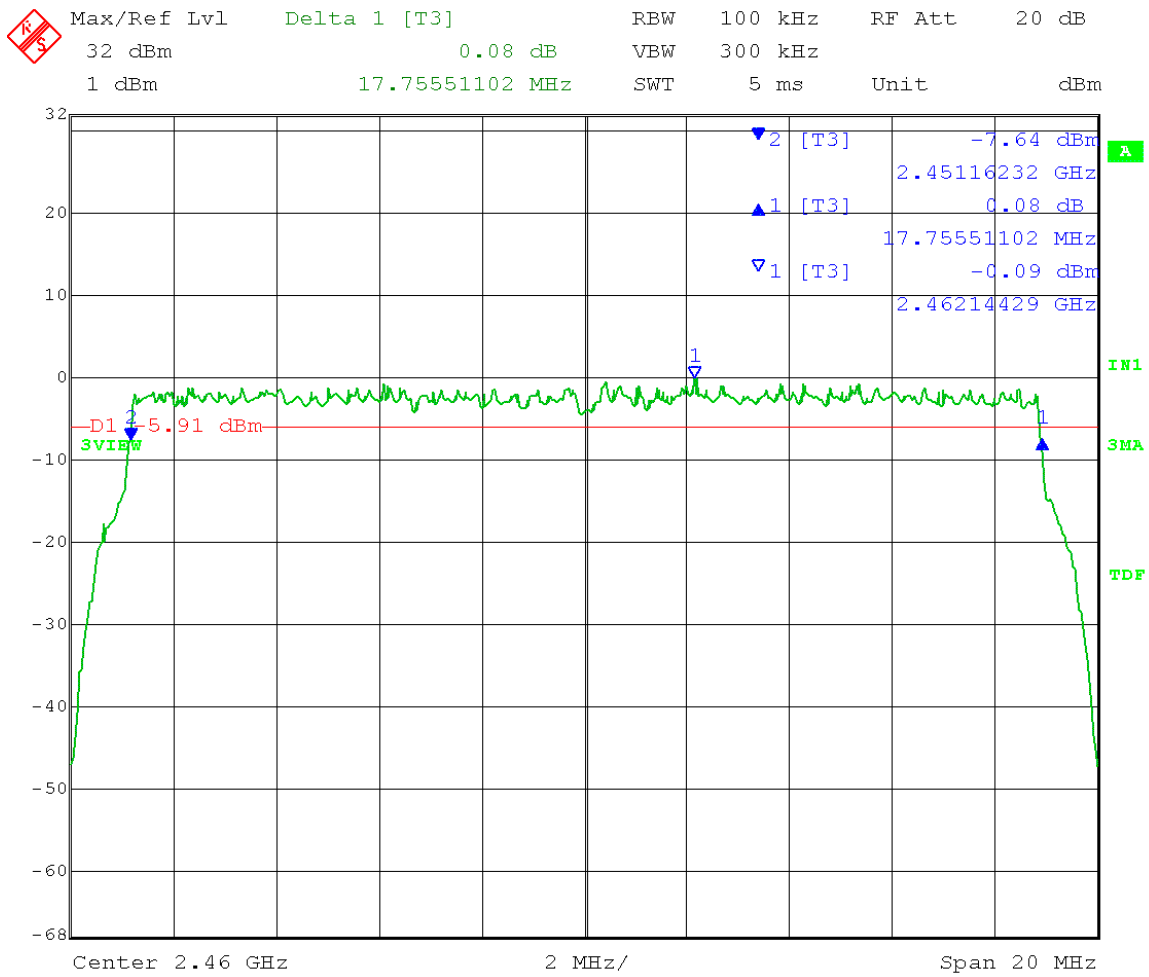


Date: 22.APR.2013 08:35:25

Test Date: 04-22-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4GHz: OFDM)
 Test: Emission Bandwidth (6 dB) - Conducted
 Operator: Jim O
 Comment: High Channel: Transmit = 2.460 GHz
 Output power setting: 12
 Channel B

20MHz BW

6 dB Emission Bandwidth = 17.76MHz



Date: 22.APR.2013 10:15:25



Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

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 if all of the conditions listed below are satisfied.

The EUT is configured to transmit continuously at a constant duty factor.

At all times when the EUT is transmitting, it is transmitting at its maximum power control level.

The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

The average power of the transmitter was measured. This measurement is an average over both the on and off periods of the transmitter.

The measurement was adjusted in dBm by adding $10\log(1/x)$, where x is the duty cycle, to the measurement result.

Measurements were taken for QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low, middle and high channels of operation. EUT was set to transmit continuously with approximately a 94% duty cycle.

Limit: 1 Watt (30dBm); 19dBm (see note below)

Results: Passed

Notes: Antenna gain is 17dBi. Therefore, the RF conducted power limit was reduced by 11 dB to 19dBm (the amount by which the antenna gain exceeds 6dBi).

Measurements were made for MIMO Matrix A mode.

Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

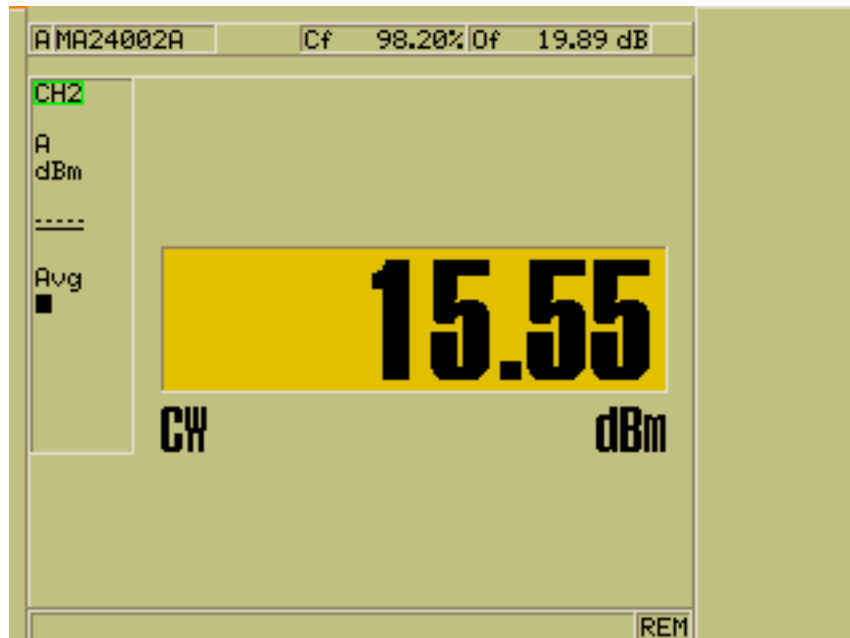
EUT nominal channel bandwidth: 5 MHz
Output port: Channel A; Low Channel Frequency: 2.4025 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.55 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 18.84 dBm = **77 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

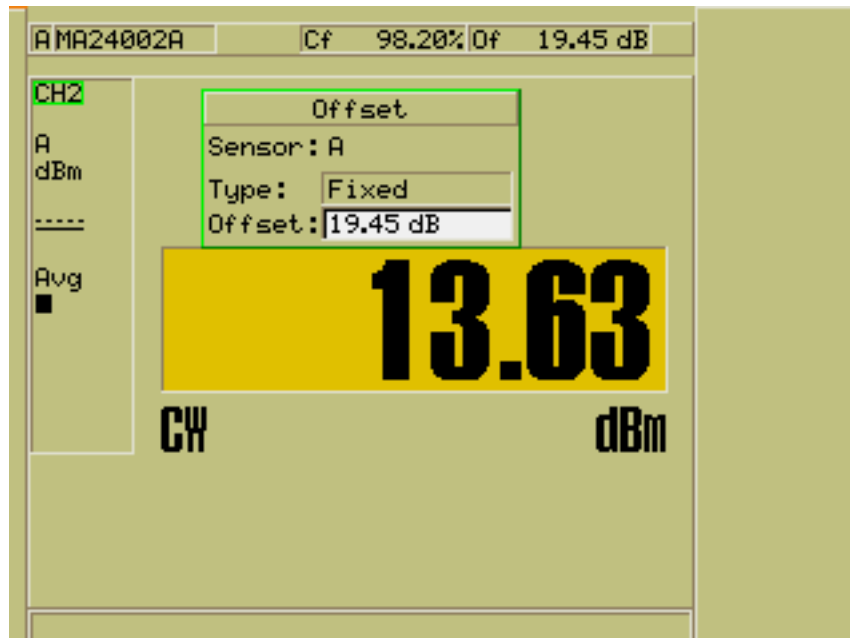
EUT nominal channel bandwidth: 10 MHz
Output port: Channel A; Low Channel Frequency: 2.405 GHz
Output power setting: 15; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 13.63 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 16.92 dBm = **49.2mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

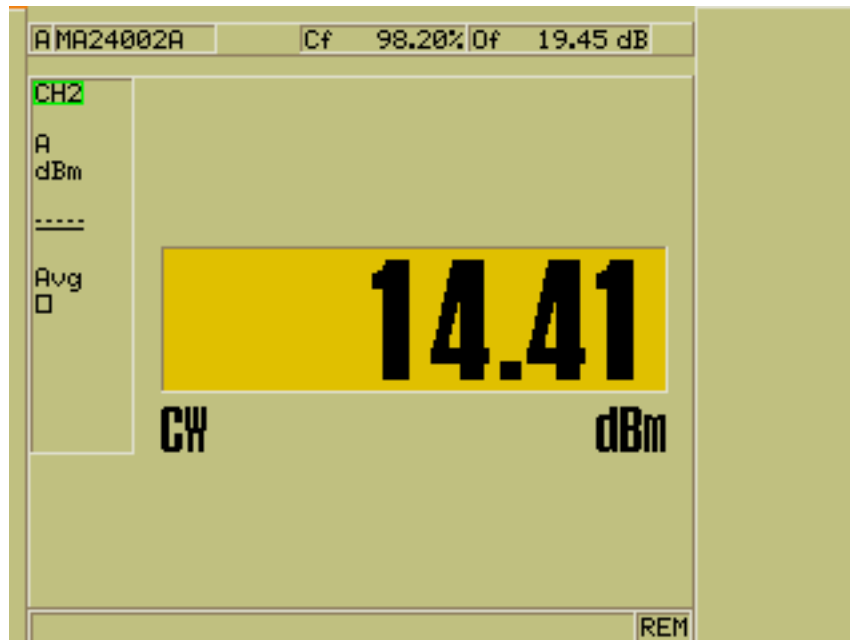
EUT nominal channel bandwidth: 20 MHz
Output port: Channel A; Low Channel Frequency: 2.4175 GHz
Output power setting: 15; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 14.41 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 17.70 dBm = **58.9 mW**



Test Date: 04-22-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

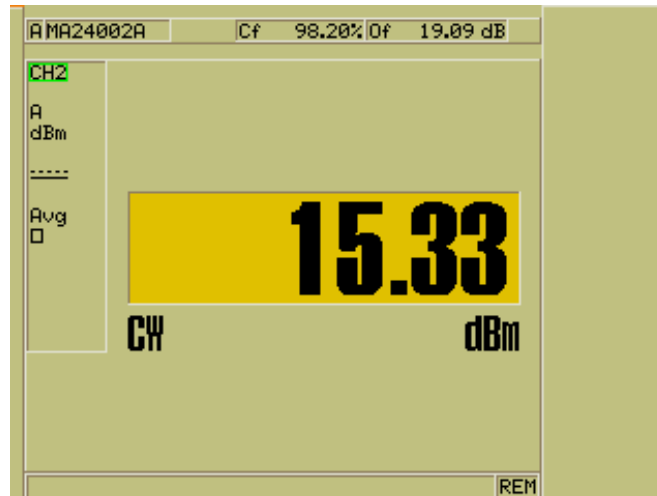
EUT nominal channel bandwidth: 5 MHz
Output port: Channel A; Middle Channel Frequency: 2.440 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.33 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 18.62 dBm = **73 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

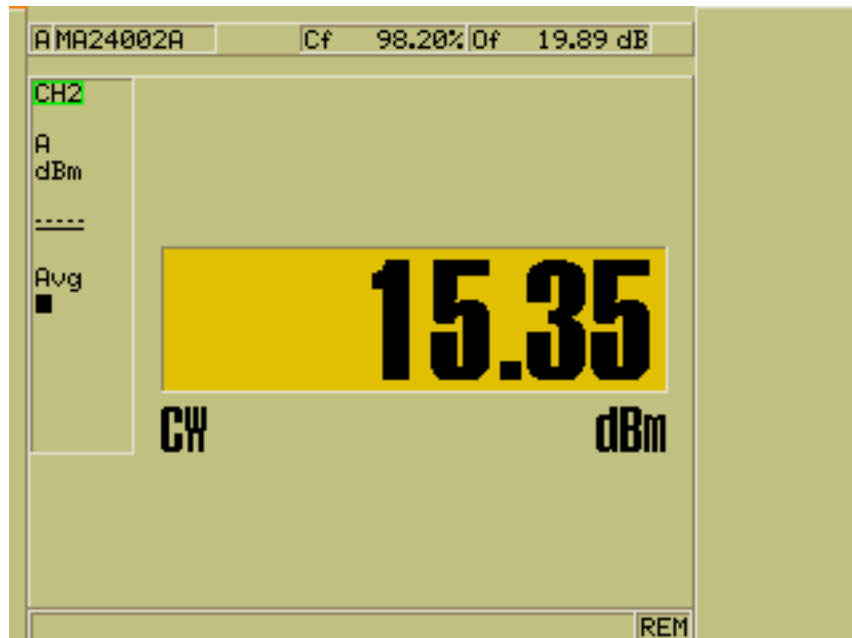
EUT nominal channel bandwidth: 10 MHz
Output port: Channel A; Mid Channel Frequency: 2.44 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.35 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 18.64 dBm = **73.1 mW**



Test Date: 05-01-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

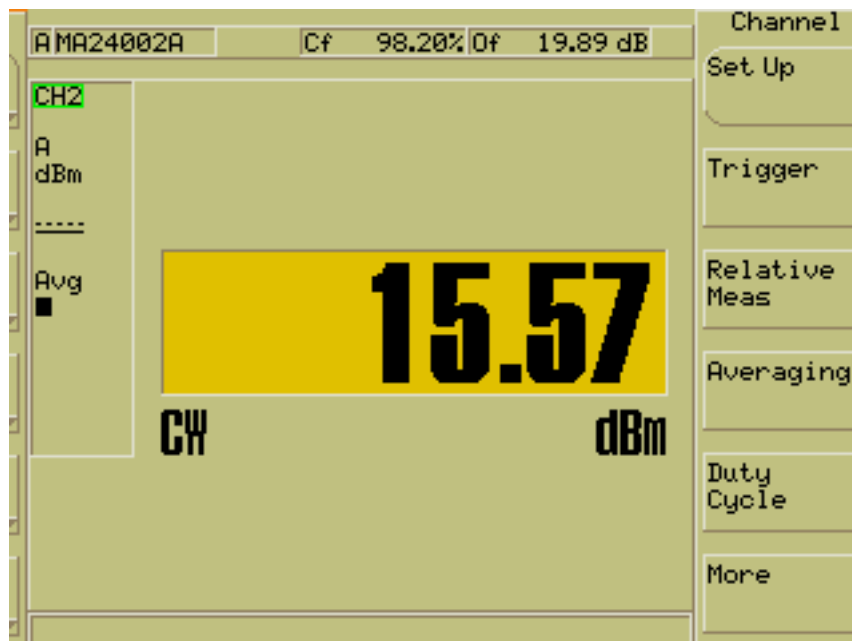
EUT nominal channel bandwidth: 20 MHz ADISPI 734A
Output port: Channel A; Mid Channel Frequency: 2.44 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.57 dBm + 0.29 dB (for duty cycle) + 3 dB (MIMO Cross-Pole) = 18.86dBm = **77mW**



Test Date: 05-01-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

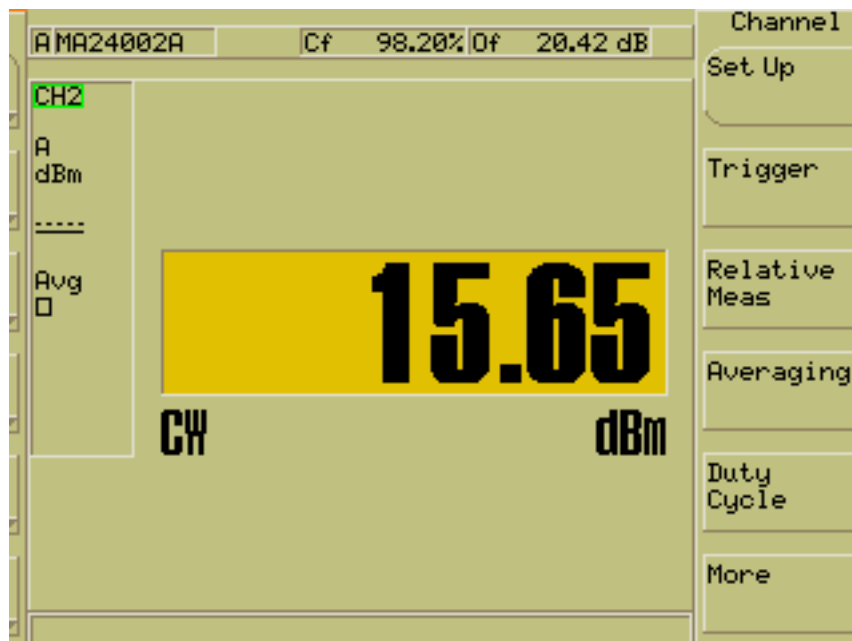
EUT nominal channel bandwidth: 5 MHz ADISPI 734c
Output port: Channel A; High Channel Frequency: 2.475 GHz
Output power setting: 15; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.65 dBm + 0.29 dB (for duty cycle) + 3 dB (MIMO Cross-Pol) = 18.94 dBm = **78.34 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

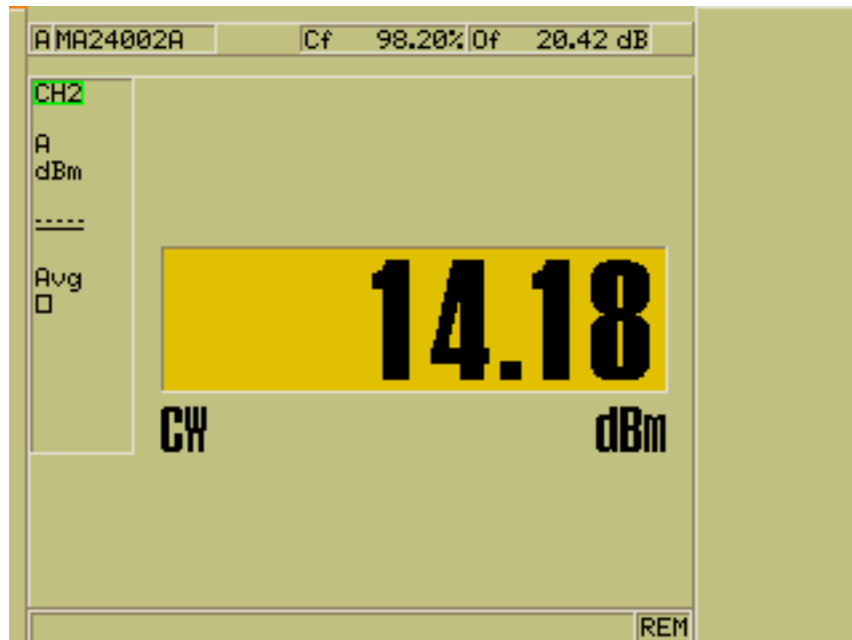
EUT nominal channel bandwidth: 10 MHz
Output port: Channel A; High Channel Frequency: 2.470 GHz
Output power setting: 14; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 14.18 dBm + 0.29 dB (for duty cycle) + 3 dB (MIMO Cross-Pol) = 17.47 dBm = **55.84 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

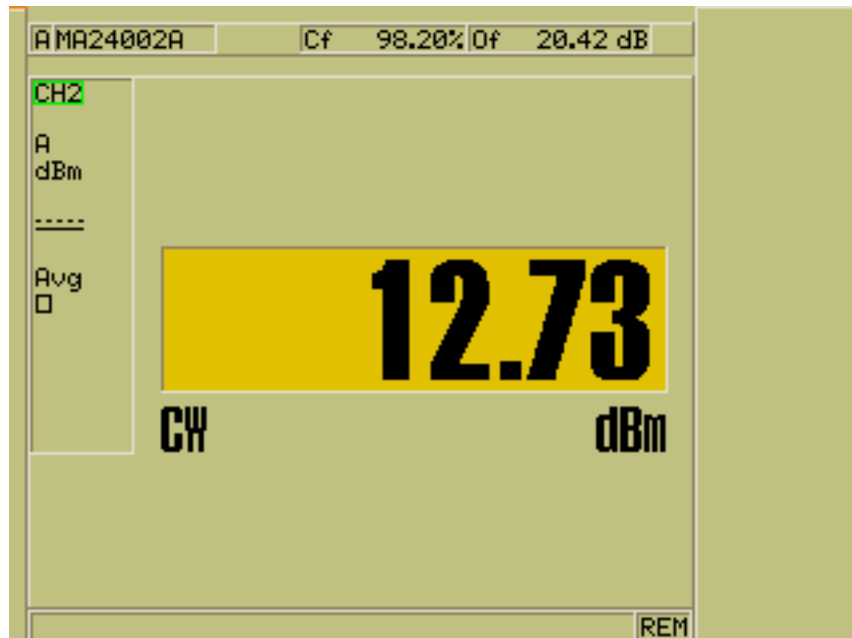
EUT nominal channel bandwidth: 20 MHz
Output port: Channel A; High Channel Frequency: 2.46 GHz
Output power setting: 12; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 12.73 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 14.02 dBm = **25.2 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

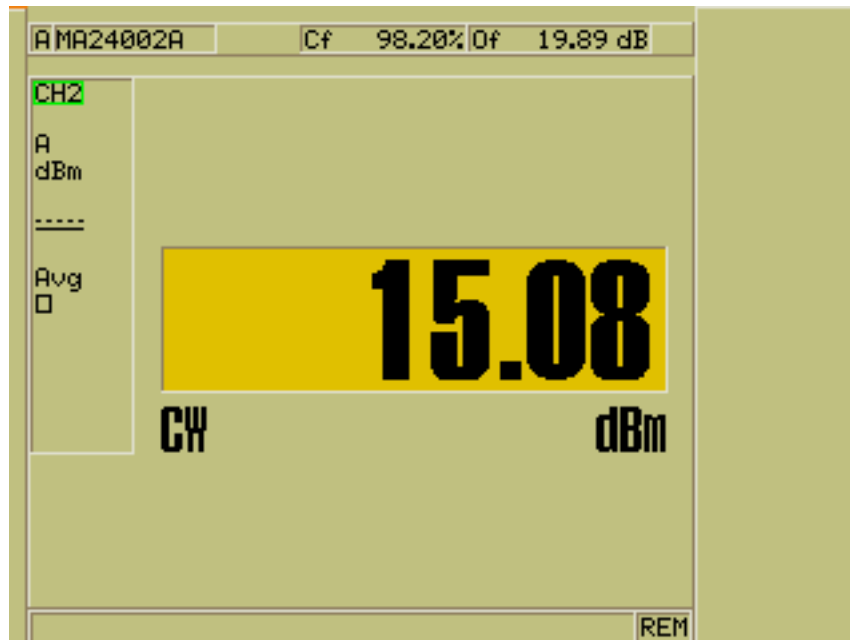
EUT nominal channel bandwidth: 5 MHz
Output port: Channel B; Low Channel Frequency: 2.4025 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.08 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 18.37 dBm = **69 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

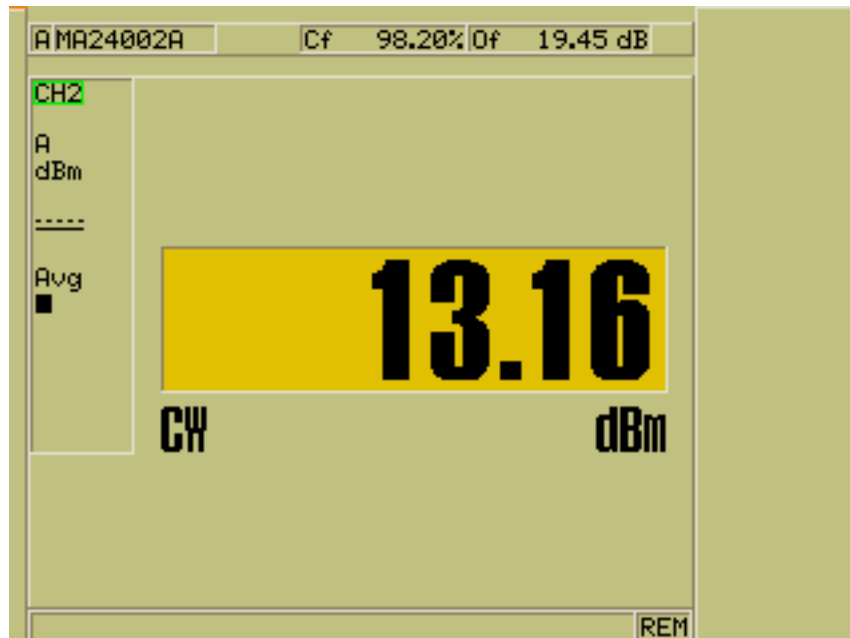
EUT nominal channel bandwidth: 10 MHz
Output port: Channel B; Low Channel Frequency: 2.405 GHz
Output power setting: 15; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 13.16 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 16.45 dBm = **44.2 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

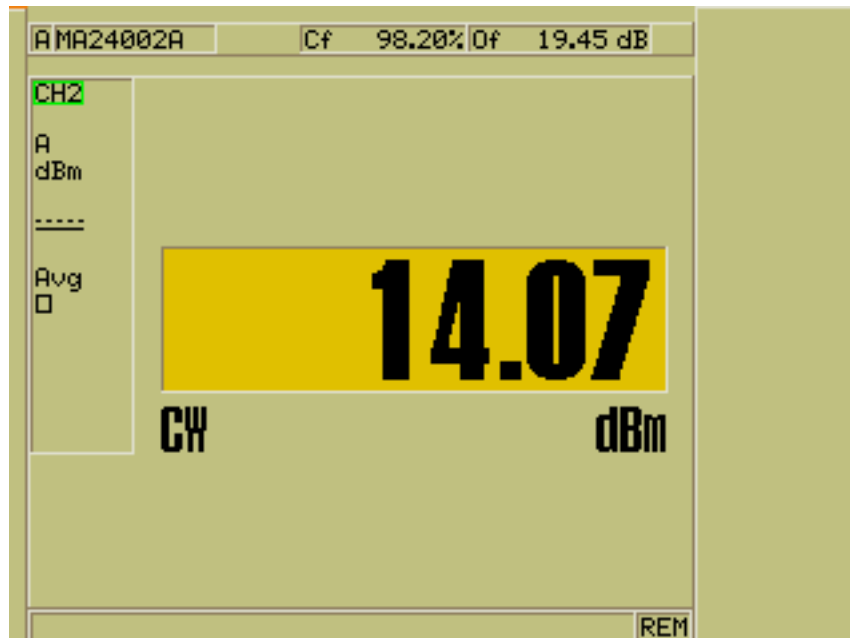
EUT nominal channel bandwidth: 20 MHz
Output port: Channel B; Low Channel Frequency: 2.4175 GHz
Output power setting: 15; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 14.07 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 17.36 dBm = **54.5 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

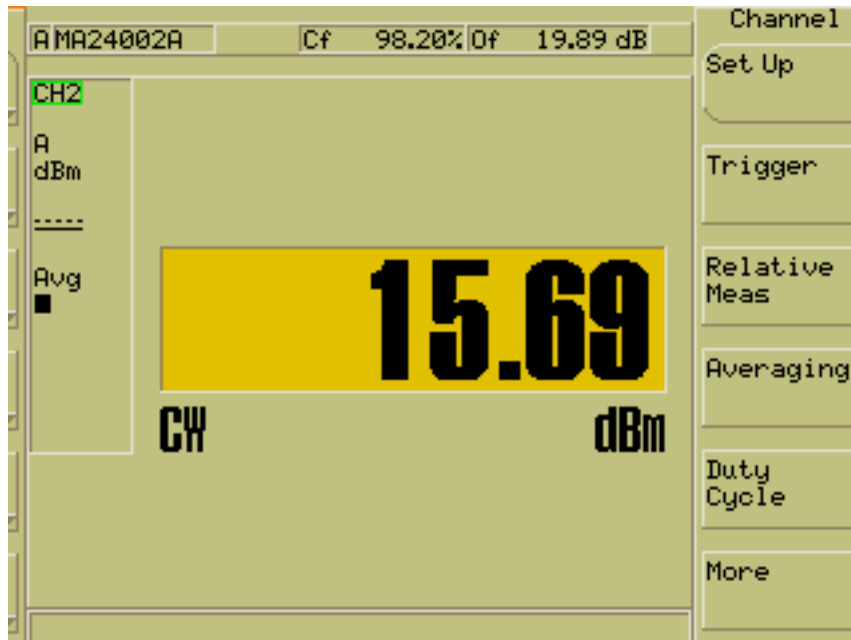
EUT nominal channel bandwidth: 5 MHz ADISPR 754E
Output port: Channel B; Mid Channel Frequency: 2.440 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.69 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 18.98 dBm = **79mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

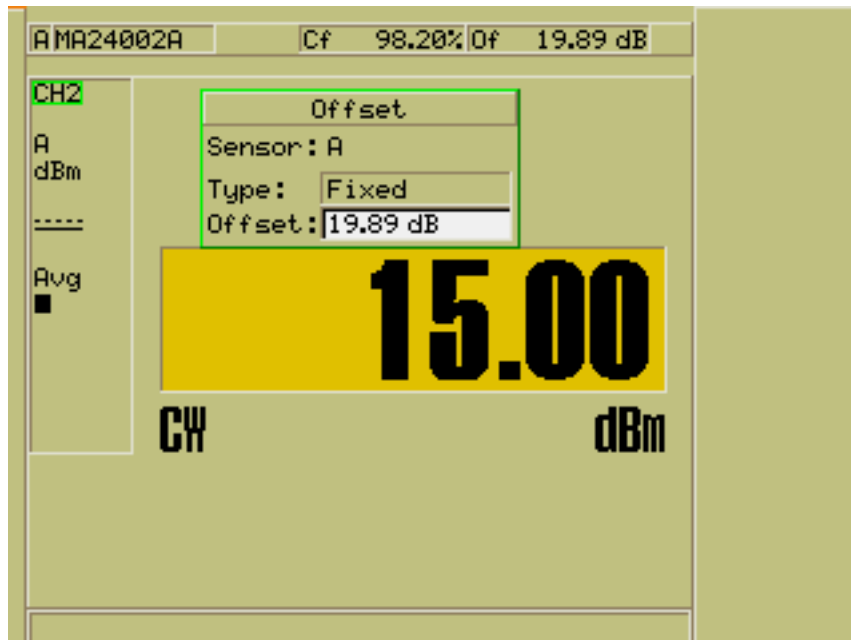
EUT nominal channel bandwidth: 10 MHz
Output port: Channel B; Mid Channel Frequency: 2.44 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.00dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 18.29dBm = **67.5mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

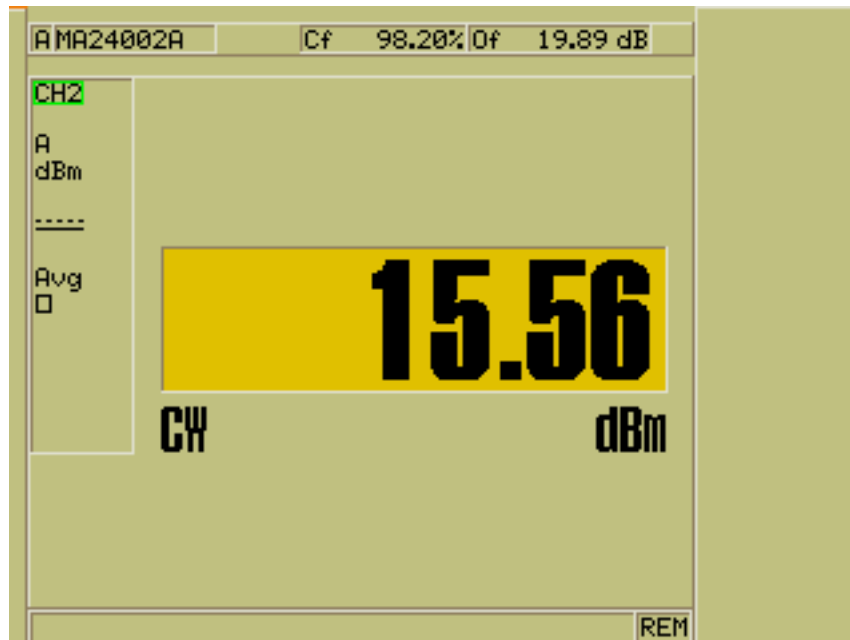
EUT nominal channel bandwidth: 20 MHz
Output port: Channel B; Mid Channel Frequency: 2.44 GHz
Output power setting: 16; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.56dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pole) = 18.85dBm = **76.8mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

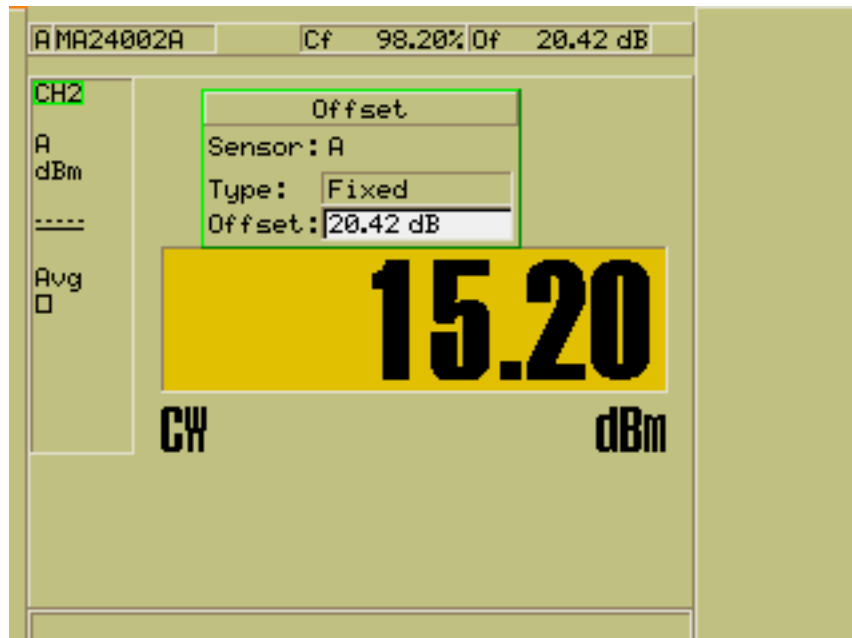
EUT nominal channel bandwidth: 5 MHz
Output port: Channel B; High Channel Frequency: 2.475 GHz
Output power setting: 15; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 15.20 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 18.49 dBm = **71 mW**



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

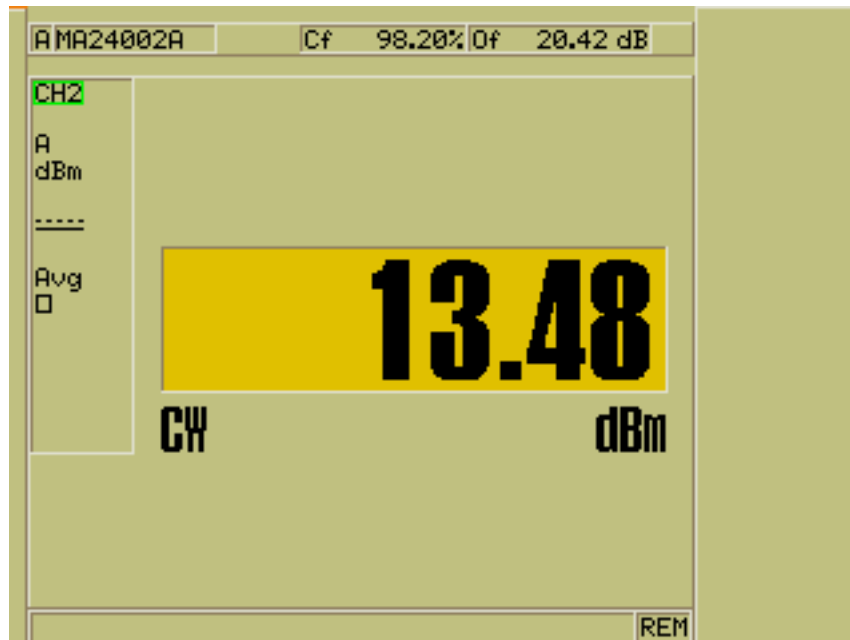
EUT nominal channel bandwidth: 10 MHz
Output port: Channel B; High Channel Frequency: 2.47 GHz
Output power setting: 14; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 13.48 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 16.77 dBm = 47.5 mW



Test Date: 04-26-2013
Company: Cambium Networks
EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
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

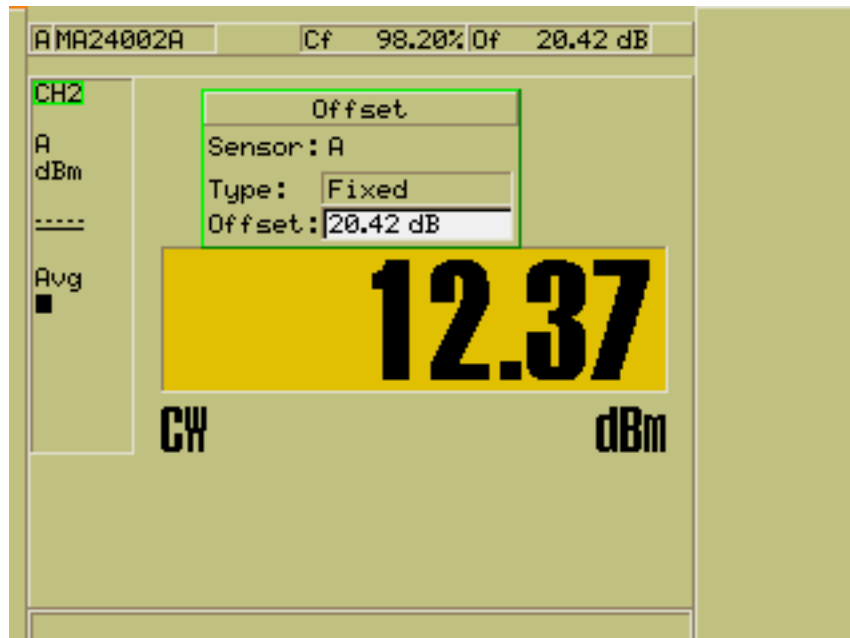
EUT nominal channel bandwidth: 20 MHz
Output port: Channel B; High Channel Frequency: 2.46 GHz
Output power setting: 12; Modulation Type: QPSK

Limit: [15.247(b)(3)]: 30 dBm (1 Watt) – 11 dB (antenna gain is 11 dB greater than the 6 dB allowed) = 19 dBm 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

Correction for duty cycle = 10 log (7.034067 ms / 7.515 ms) = 0.29 dB

Fundamental Emission AVERAGE Output Power = 12.37 dBm + 0.29 dB (for duty cycle) + 3 dB
(MIMO Cross-Pol) = 15.66 dBm = **36.8 mW**





Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

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*

10.5 Method AVGPSD-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction)

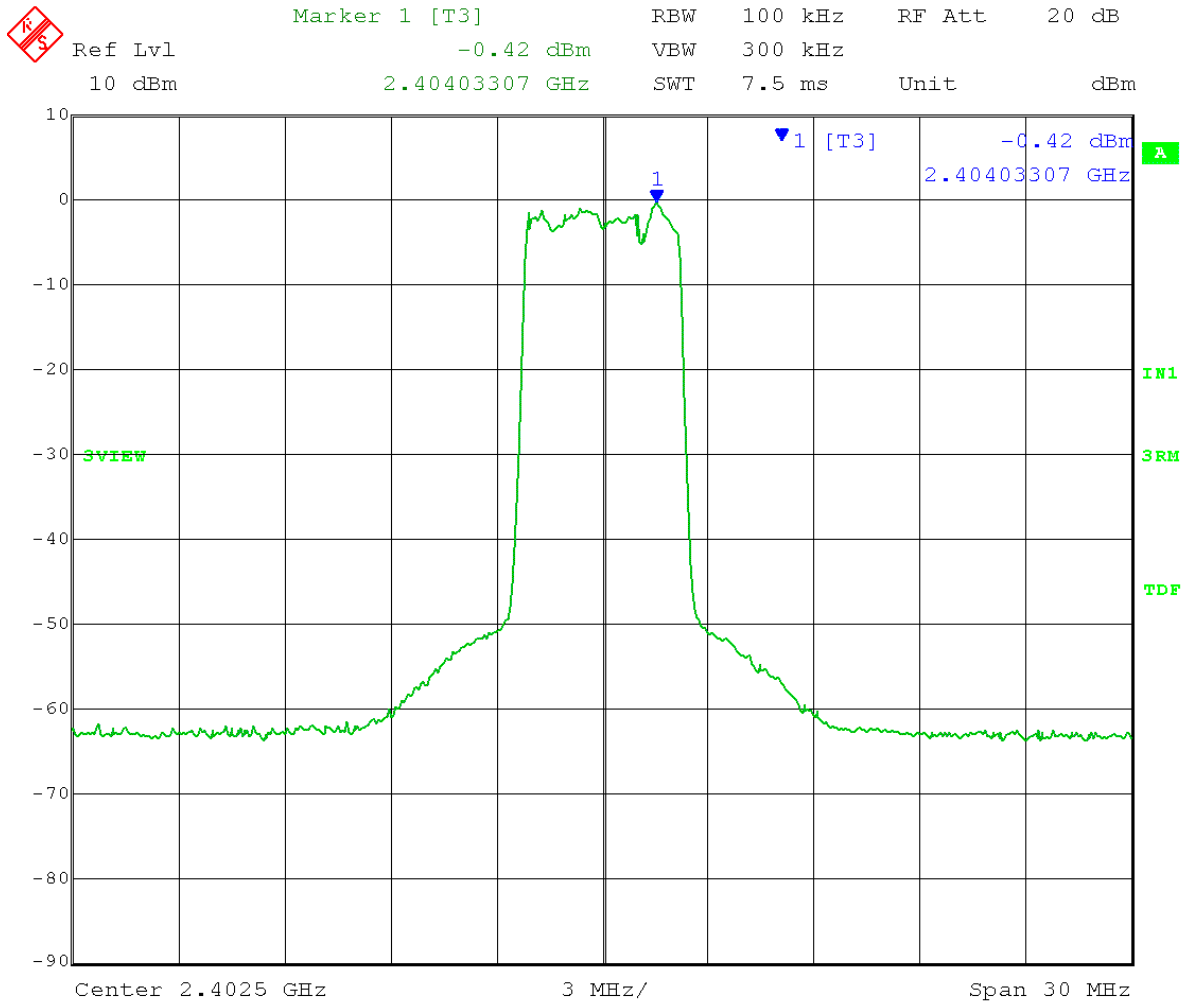
Description: Measure the duty cycle (x) of the transmitter output signal as described in 6.0. Set instrument center frequency to DTS channel center frequency. Set span to at least 1.5 times the OBW. Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. Set VBW $\geq 3 \times \text{RBW}$. Detector = power averaging (RMS). Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span/RBW}$. Sweep time = auto couple. Do not use sweep triggering. Allow sweep to “free run”. Employ trace averaging (RMS) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum amplitude level. Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

Measurements were taken for QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low, middle and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings with approximately a 94% duty cycle.

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

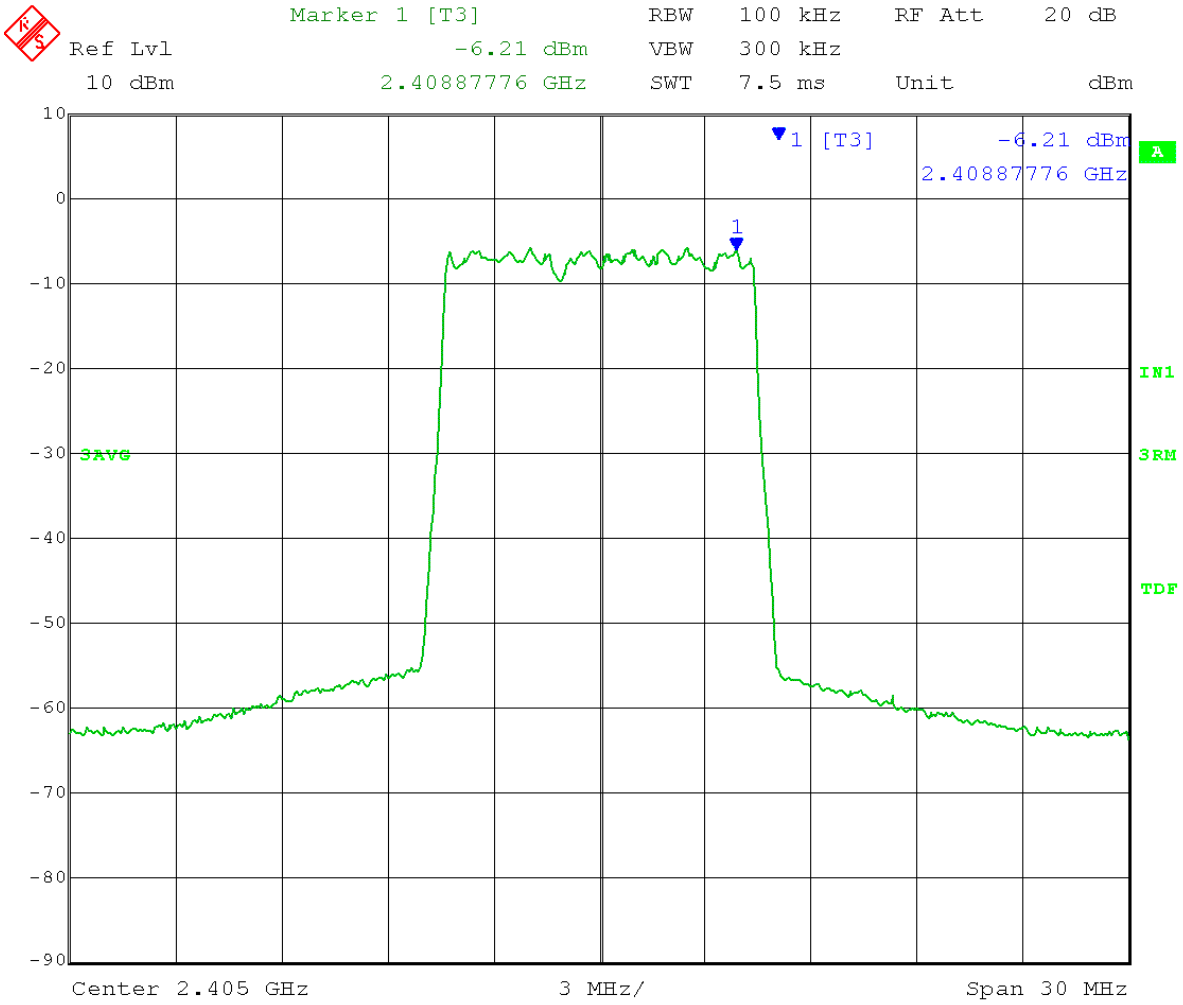
Results: Passed

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Low Channel: Frequency = 2.4025 GHz
 TX Output Power Setting = 16dBm 5MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT
 transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = -0.42 + 10log (1/.93) = -0.105 dBm/100kHz



Date: 19.APR.2013 13:14:36

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Low Channel: Frequency = 2.405 GHz
 TX Output Power Setting = 15dBm 10MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Limit: +8 dBm
 Measurement (dBm) + duty cycle correction = PSD
 PSD = -6.21 + 10log (1/.936) = -5.92 dBm/100kHz

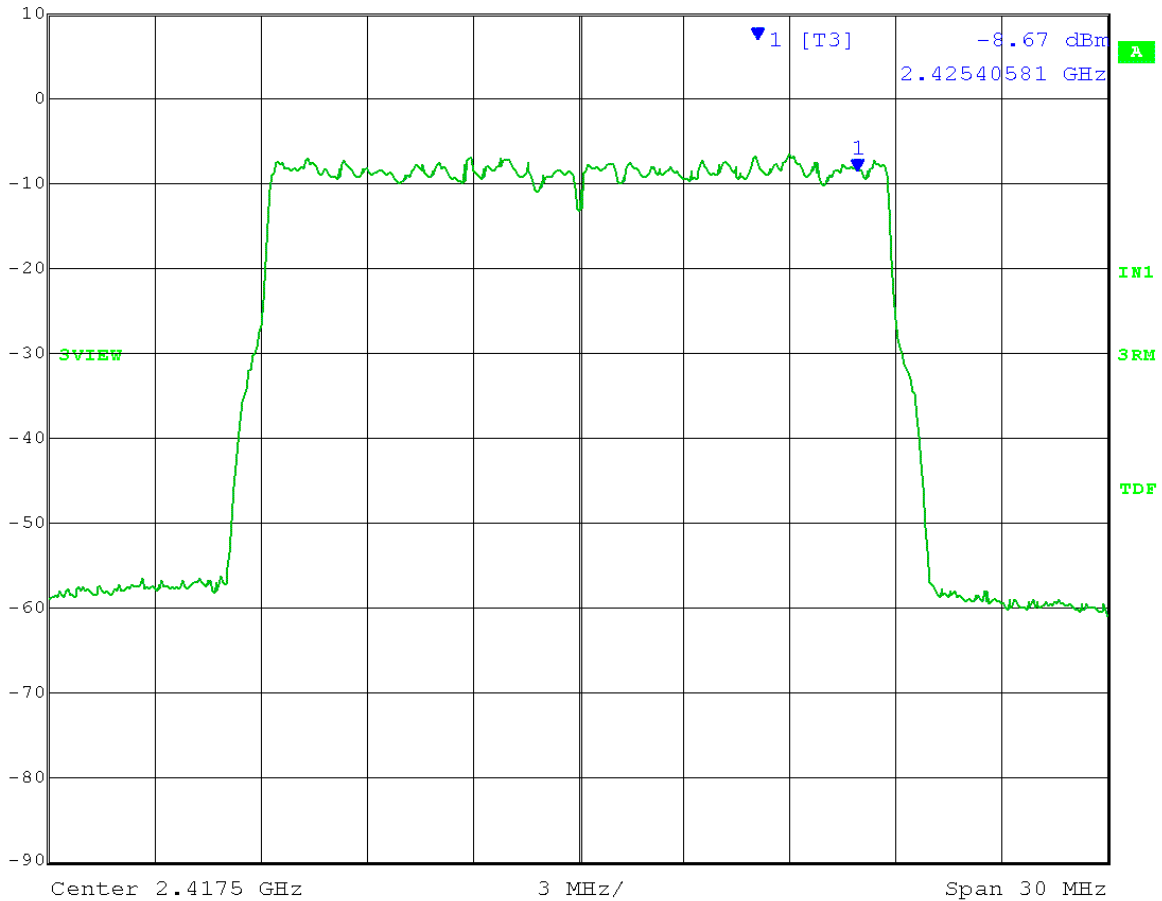


Date: 19.APR.2013 12:47:20

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Low Channel: Frequency = 2.4175 GHz
 TX Output Power Setting = 15dBm 20MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-8.67 + 10\log(1/.955) = -8.47$ dBm/100kHz

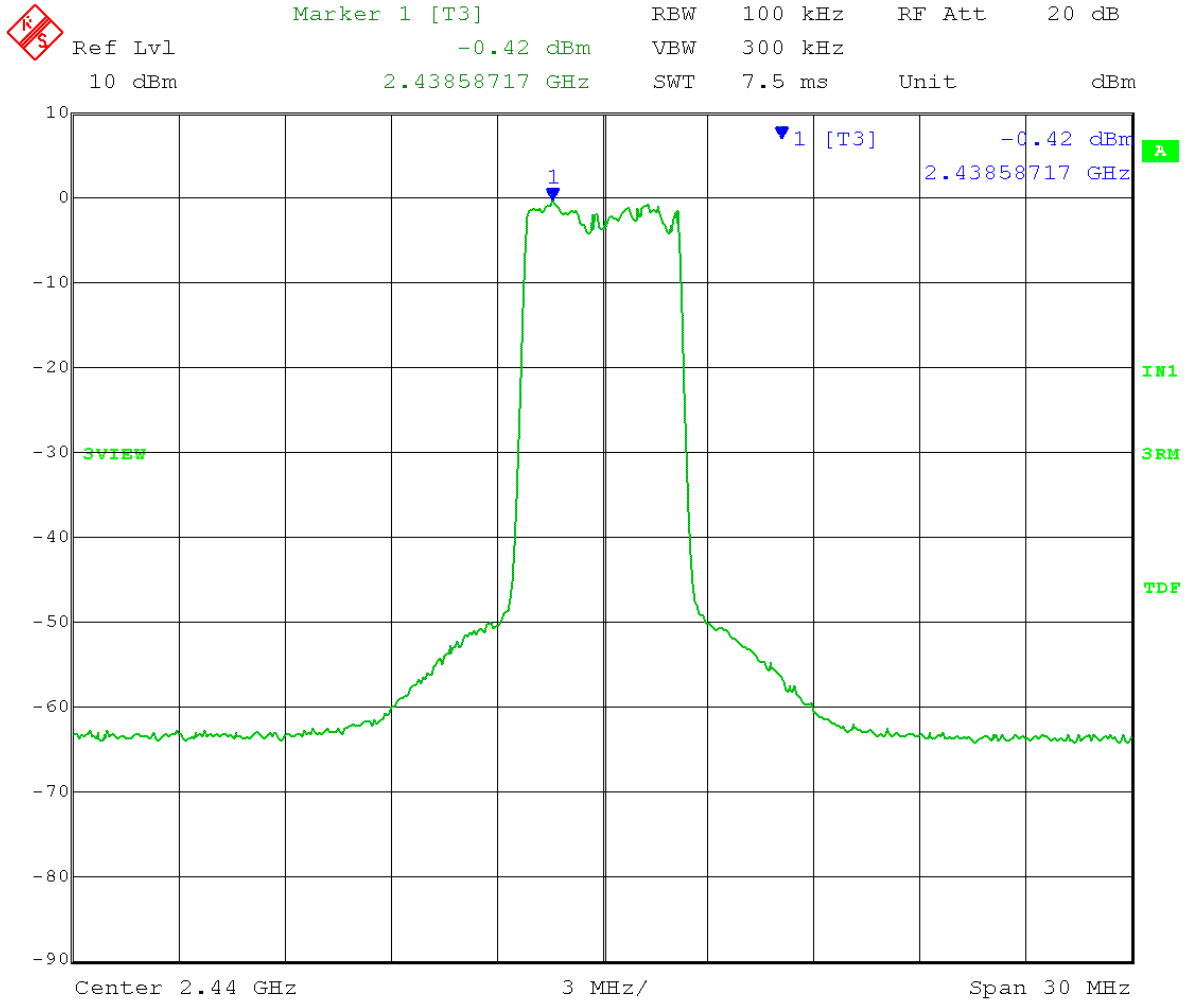


Ref Lvl	Marker 1 [T3]	RBW	100 kHz	RF Att	20 dB
10 dBm	-8.67 dBm	VBW	300 kHz		
	2.42540581 GHz	SWT	7.5 ms	Unit	dBm



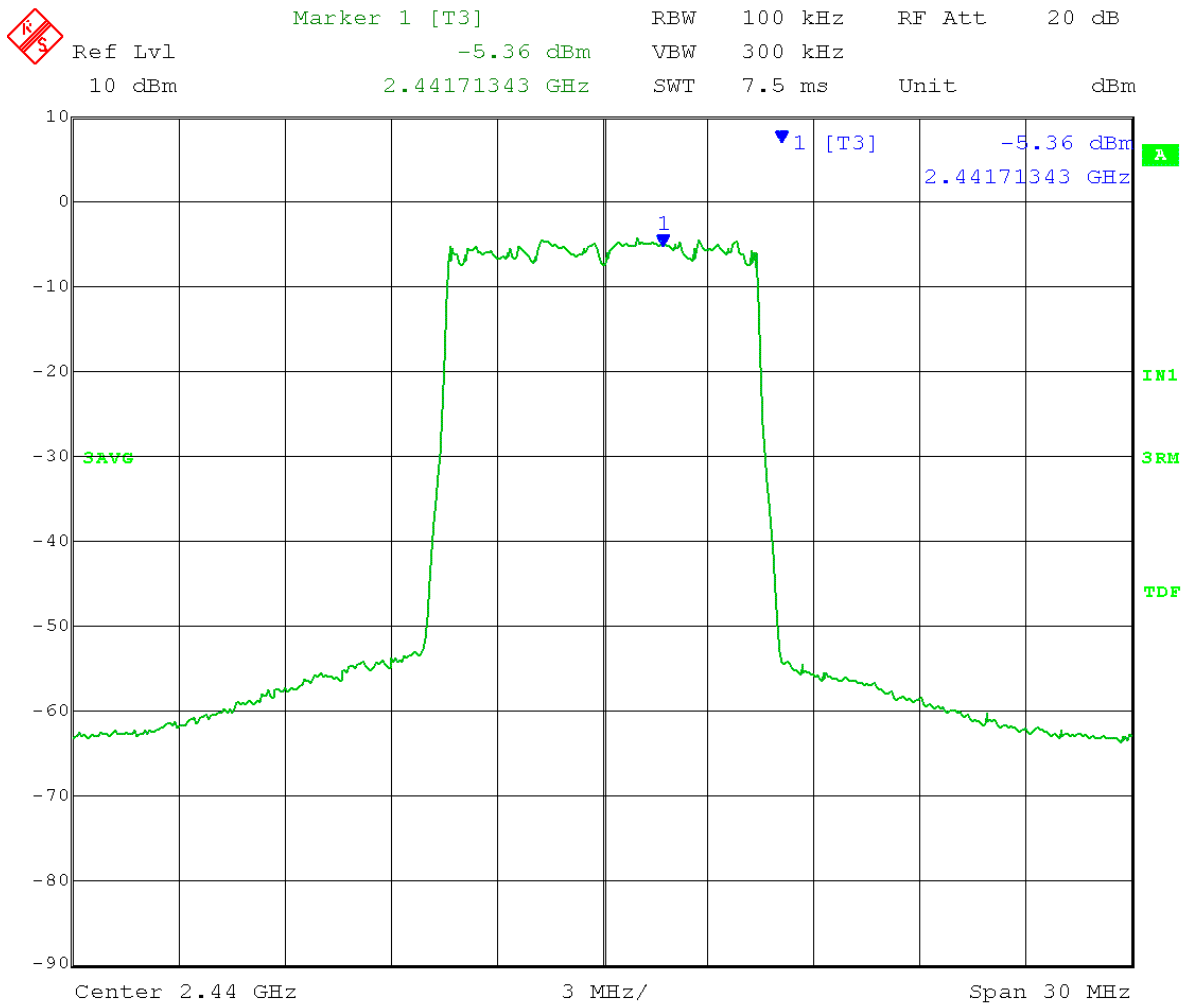
Date: 19.APR.2013 13:50:53

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Mid Channel: Frequency = 2.440 GHz
 TX Output Power Setting = 16dBm 5MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction). Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-0.42 + 10\log(1/93) = -0.105\text{dBm}/100\text{kHz}$



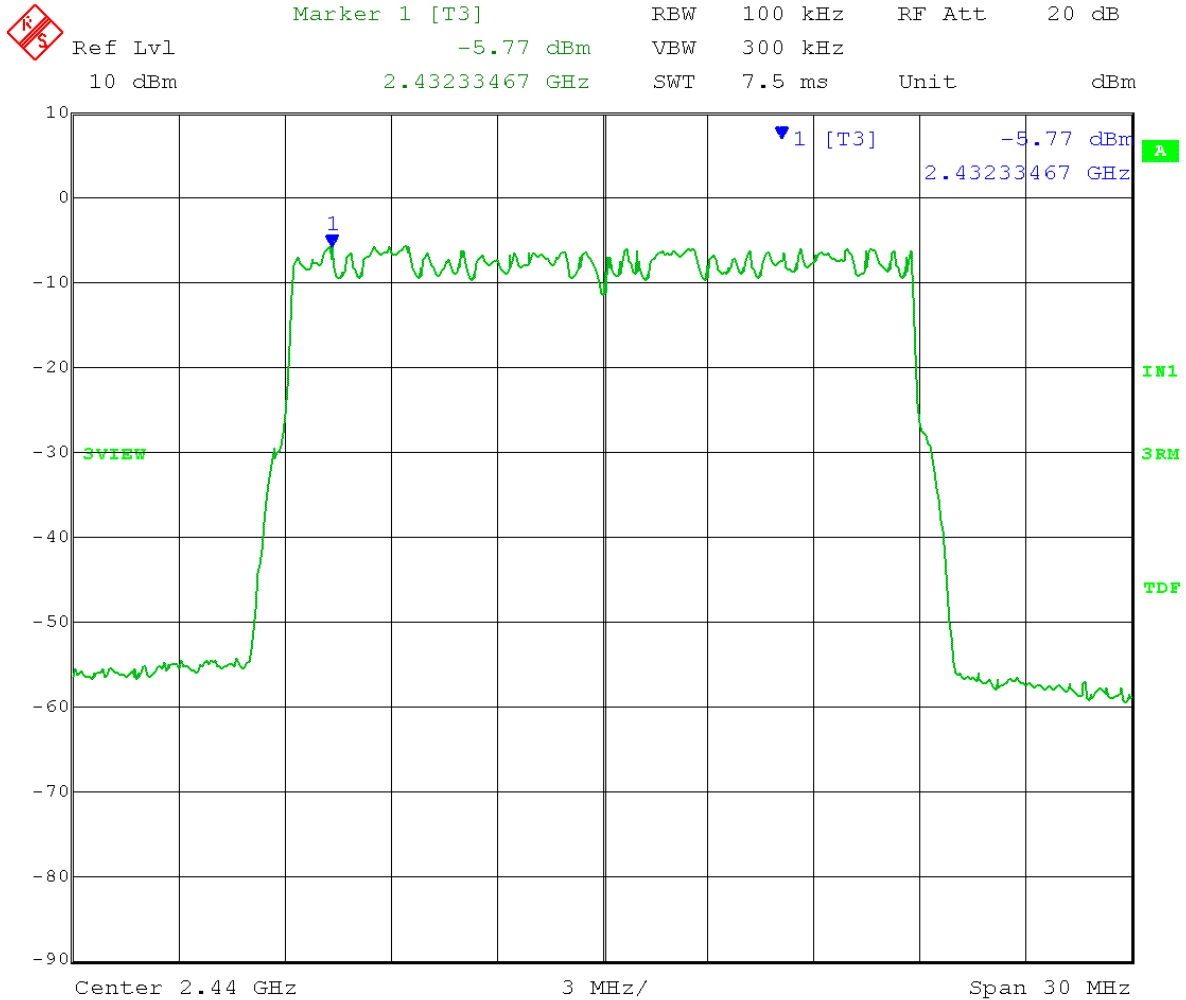
Date: 19.APR.2013 13:28:56

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Mid Channel: Frequency = 2.440 GHz
 TX Output Power Setting = 16dBm
 RBW = 100 kHz
 Span = 1.5 x EBW
 Sweep = auto couple
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-5.36 + 10\log(1/936) = -5.07$ dBm/100kHz



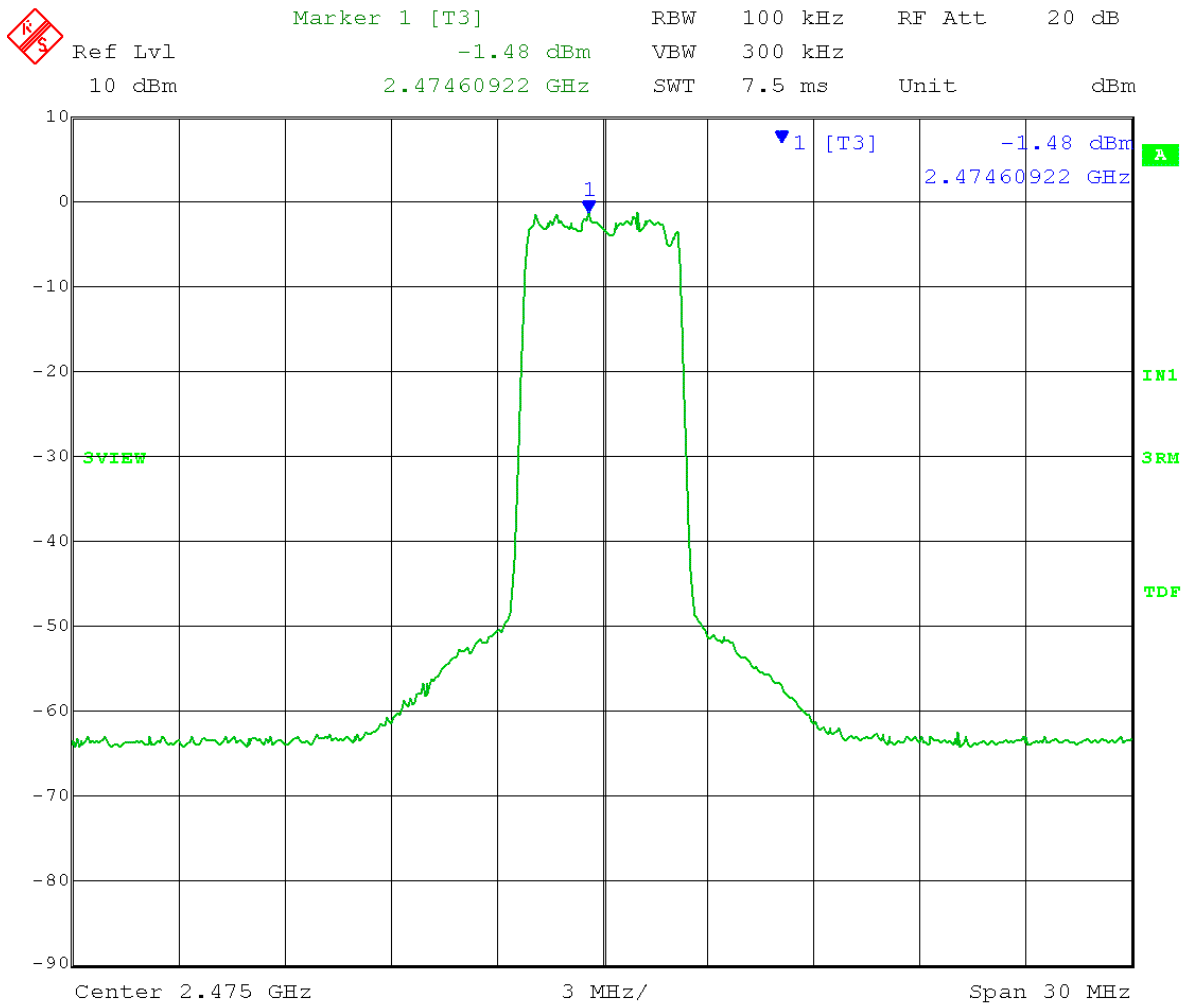
Date: 19.APR.2013 12:51:21

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Mid Channel: Frequency = 2.440 GHz
 TX Output Power Setting = 16dBm 20MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-5.77 + 10\log(1/955) = -5.57 \text{ dBm}/100\text{kHz}$



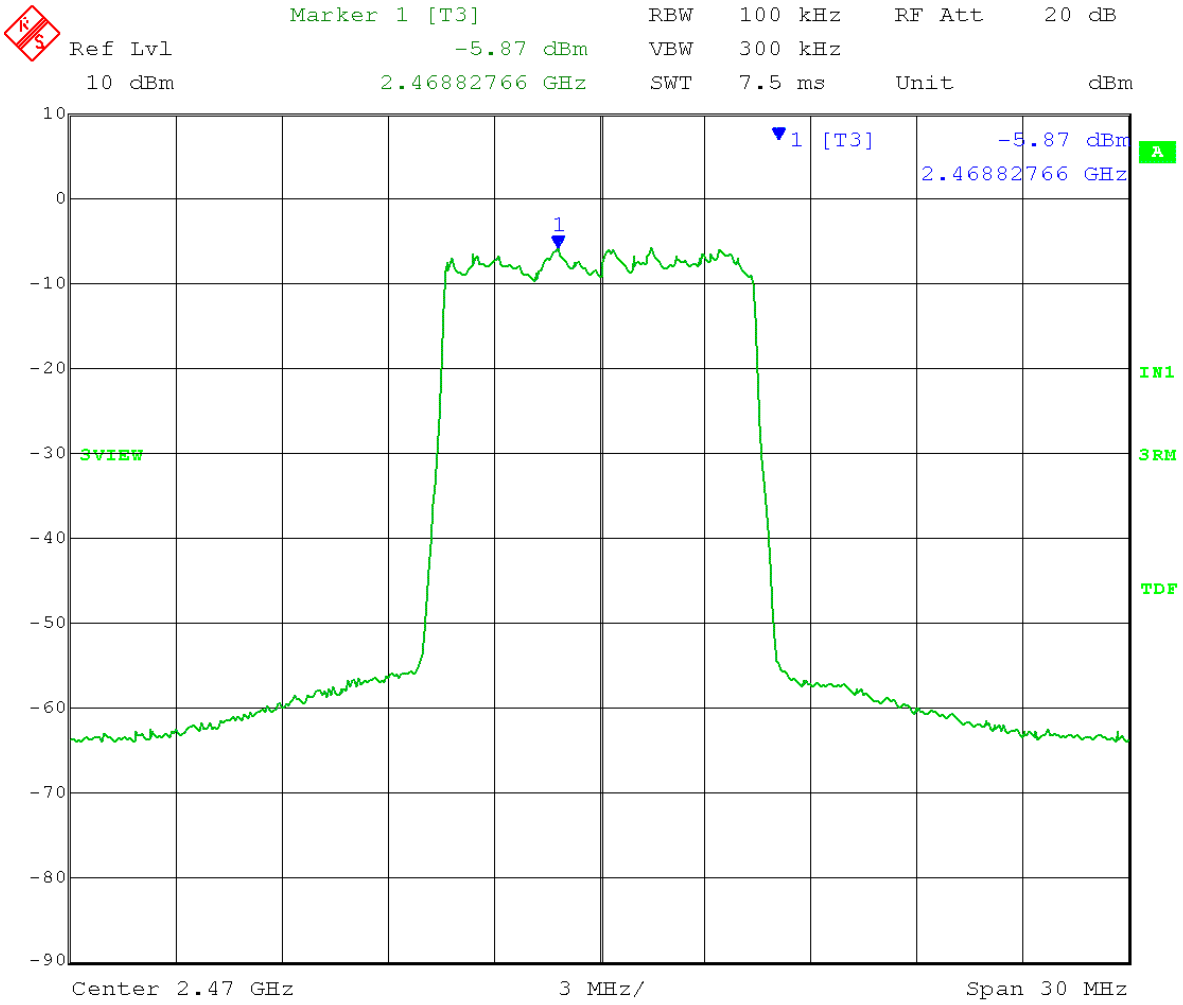
Date: 19.APR.2013 13:54:27

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: High Channel: Frequency = 2.475 GHz
 TX Output Power Setting = 15dBm
 RBW = 100 kHz
 Span = 1.5 x EBW
 Sweep = auto couple
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-1.48 + 10\log(1/93) = -1.16$ dBm/100kHz



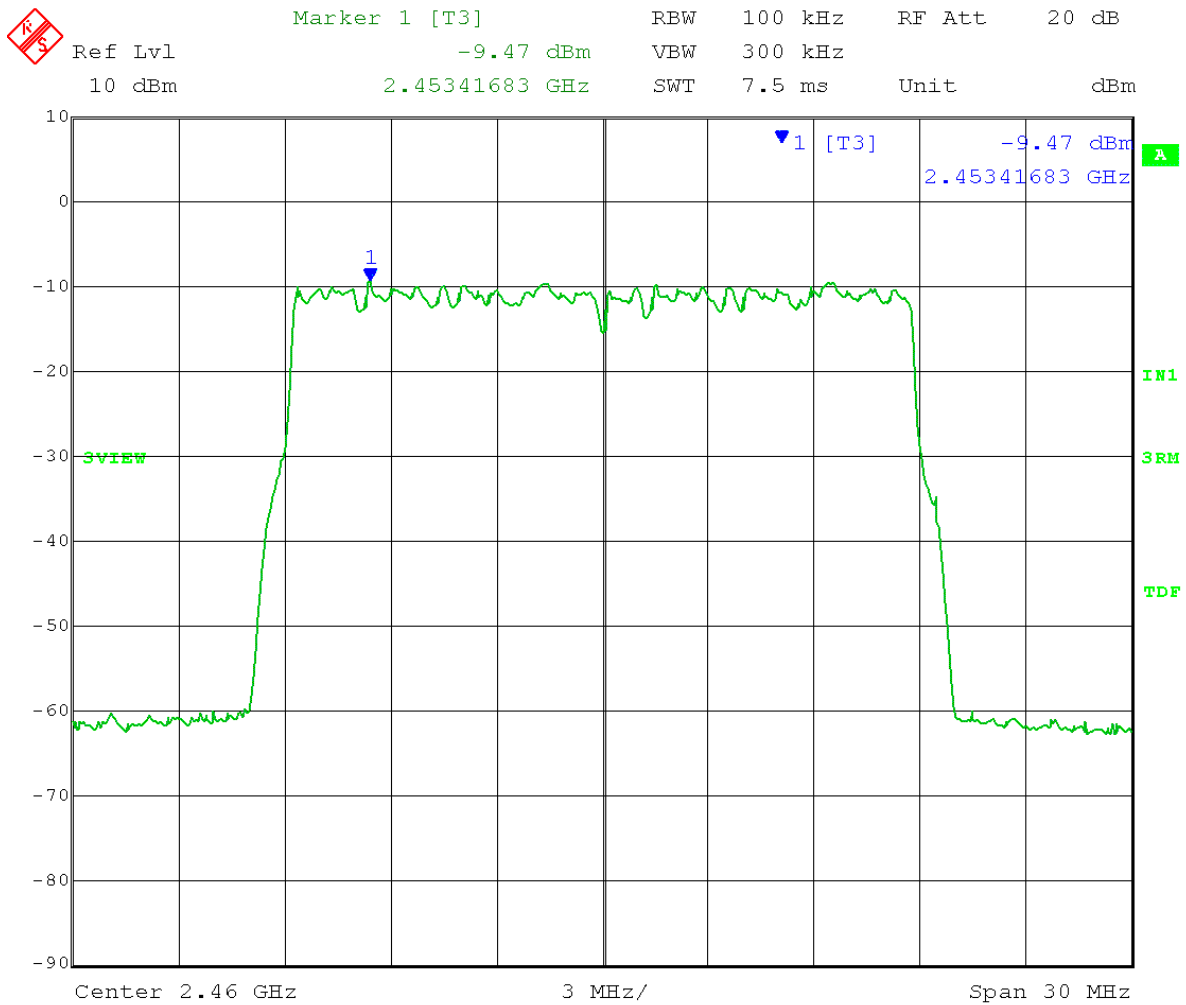
Date: 19.APR.2013 13:39:23

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: High Channel: Frequency = 2.470 GHz
 TX Output Power Setting = 14dBm
 RBW = 100 kHz
 Span = 1.5 x EBW
 Sweep = auto couple
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-5.87 + 10\log(1/936) = -5.58$ dBm/100kHz



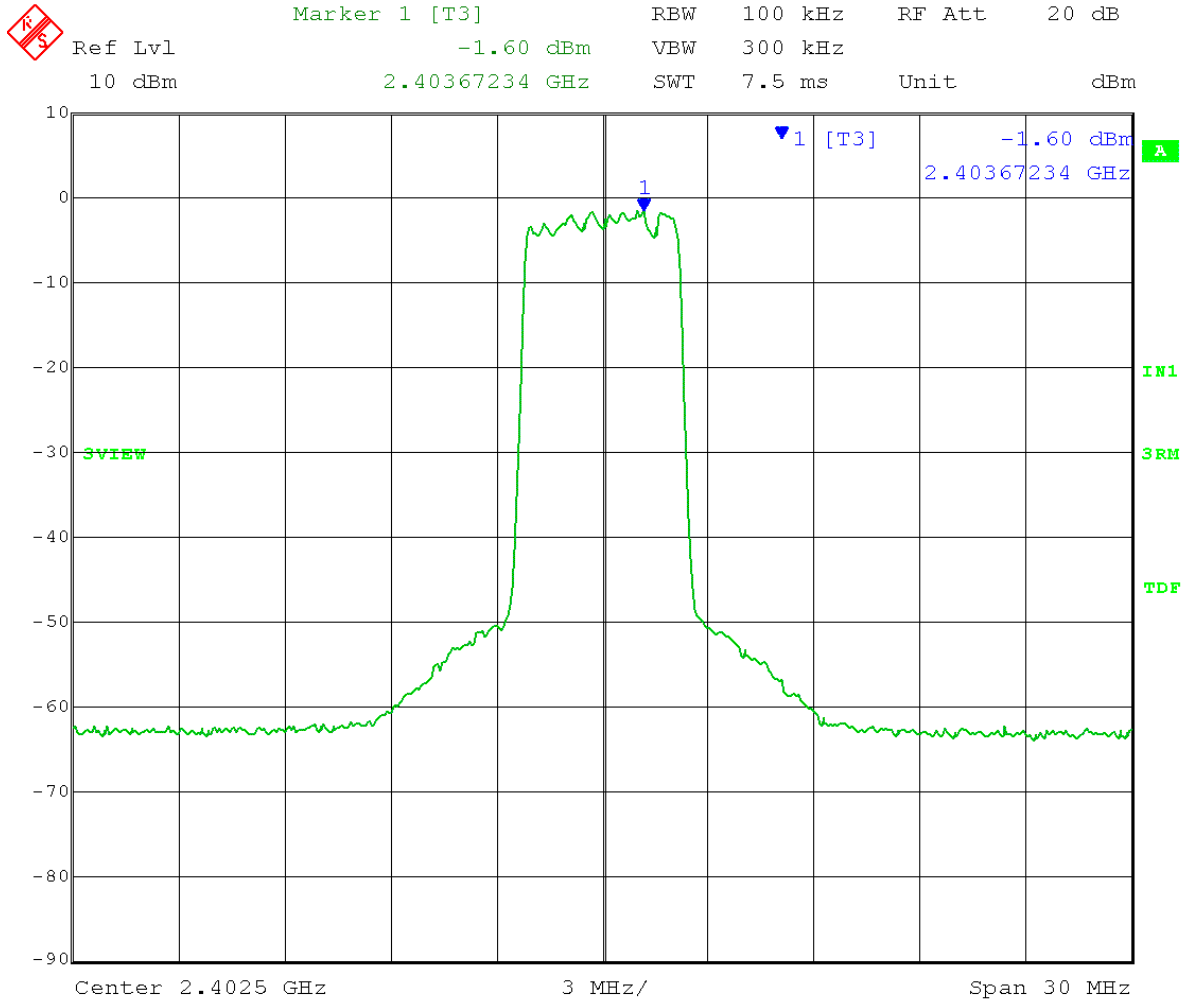
Date: 19.APR.2013 13:01:45

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: High Channel: Frequency = 2.460 GHz
 TX Output Power Setting = 12dBm 20MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel A
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-9.47 + 10\log(1/1.955) = -9.27$ dBm/100kHz



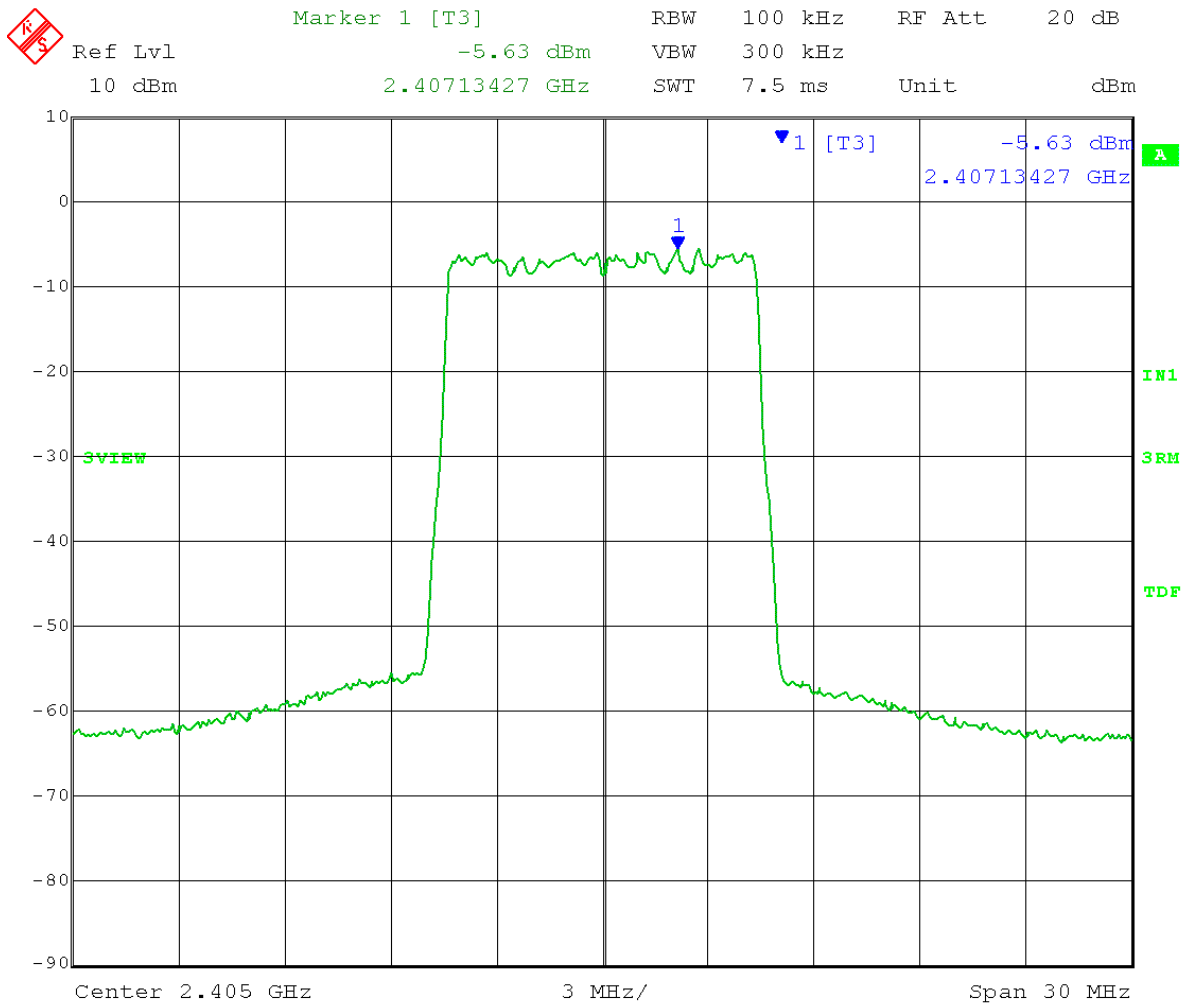
Date: 19.APR.2013 14:01:51

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Low Channel: Frequency = 2.4025 GHz
 TX Output Power Setting = 16dBm 5MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-1.60 + 10\log(1/.936) = -1.29$ dBm/100kHz



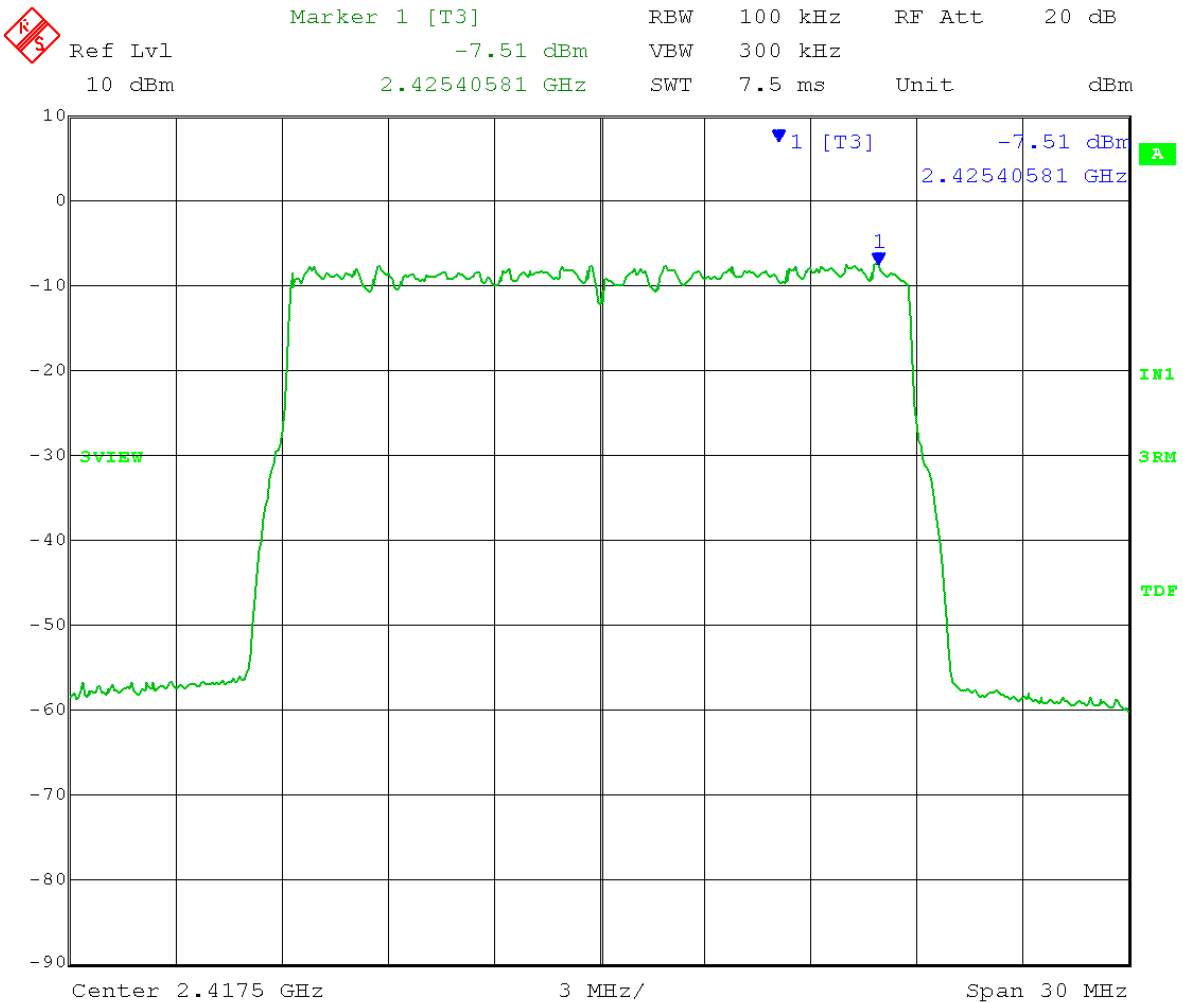
Date: 19.APR.2013 13:19:26

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Low Channel: Frequency = 2.405 GHz
 TX Output Power Setting = 15dBm
 RBW = 100 kHz
 Span = 1.5 x EBW
 Sweep = auto couple
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction). Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = -5.63 + 10log (1/.936) = -5.34 dBm/100kHz



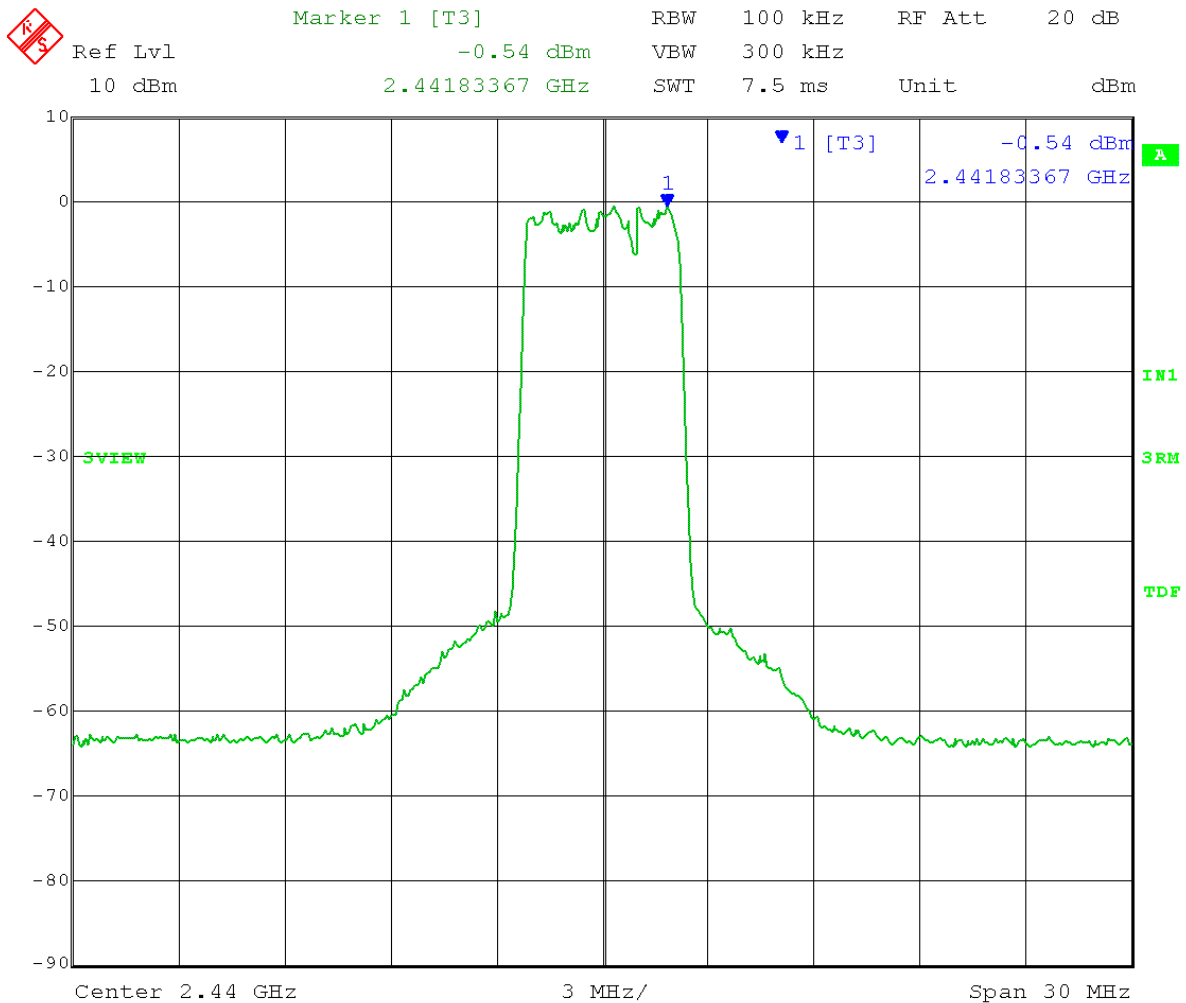
Date: 19.APR.2013 11:02:26

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Low Channel: Frequency = 2.4175 GHz
 TX Output Power Setting = 15dBm 20MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-7.51 + 10\log(1/.955) = -7.31$ dBm/100kHz



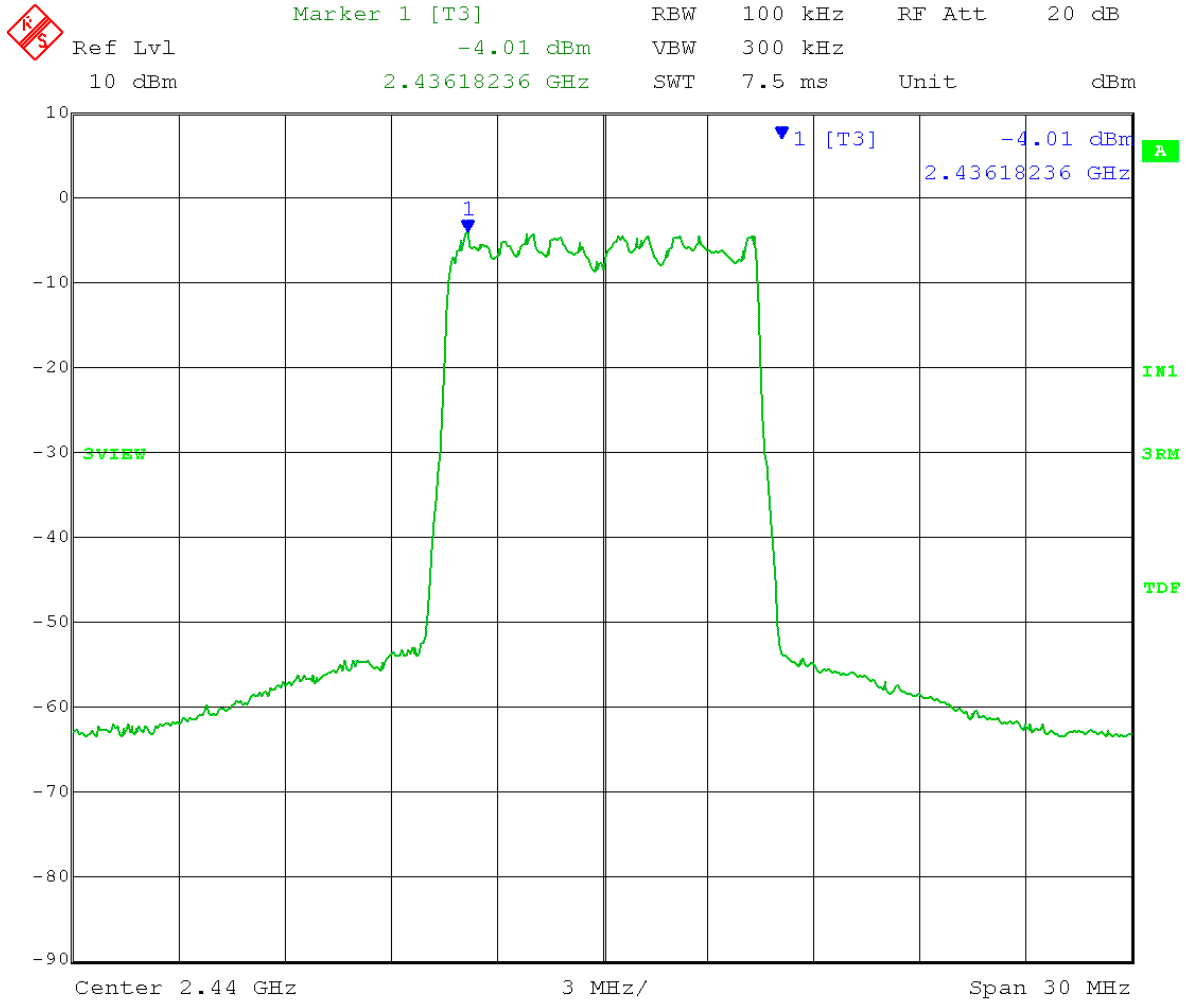
Date: 19.APR.2013 13:49:30

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Mid Channel: Frequency = 2.440 GHz
 TX Output Power Setting = 16dBm
 RBW = 100 kHz
 Span = 1.5 x EBW
 Sweep = auto couple
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-0.54 + 10\log(1/936) = -0.23$ dBm/100kHz



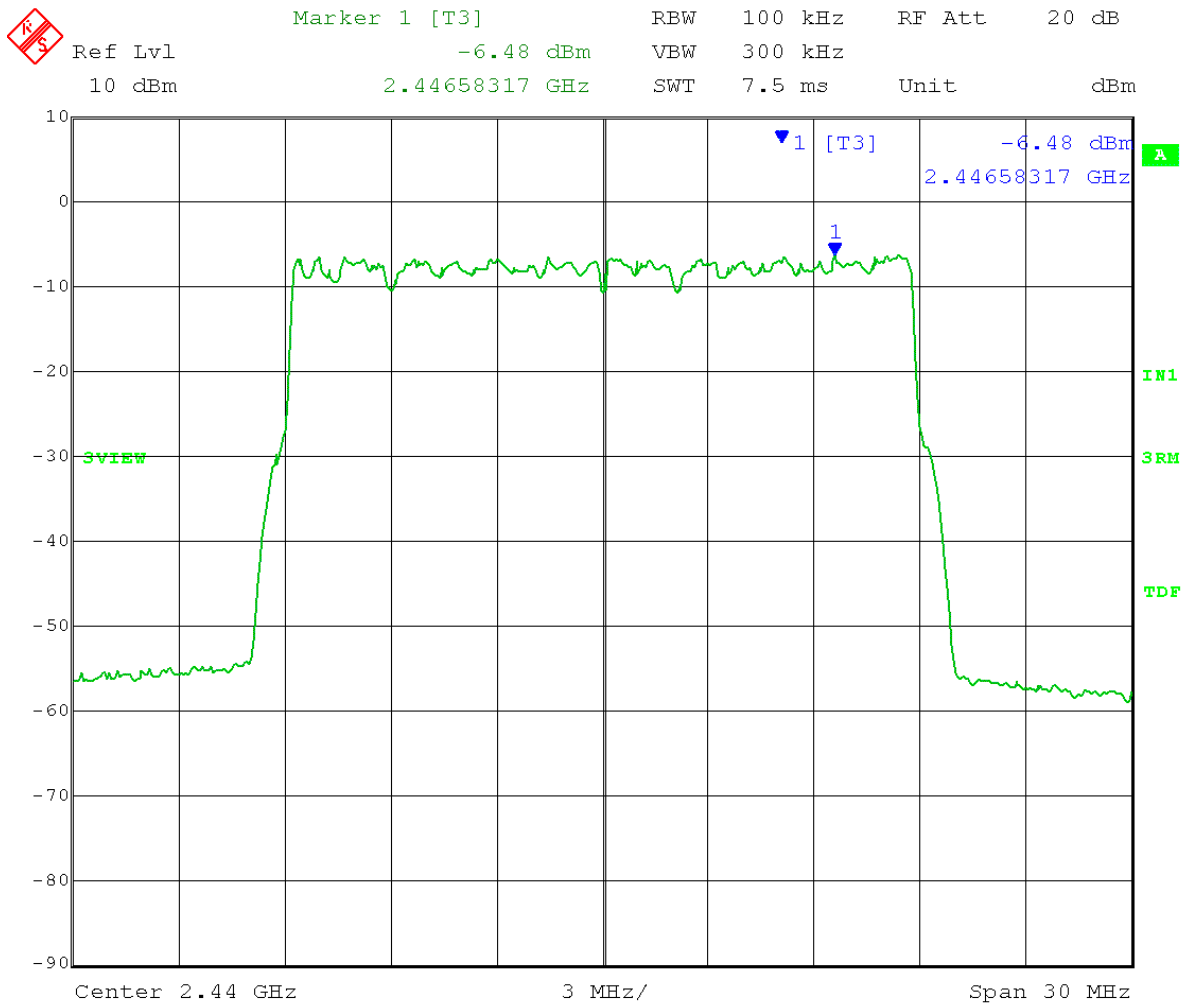
Date: 19.APR.2013 13:25:51

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Mid Channel: Frequency = 2.440 GHz
 TX Output Power Setting = 16dBm 10MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-4.01 + 10\log(1/936) = -3.72$ dBm/100kHz



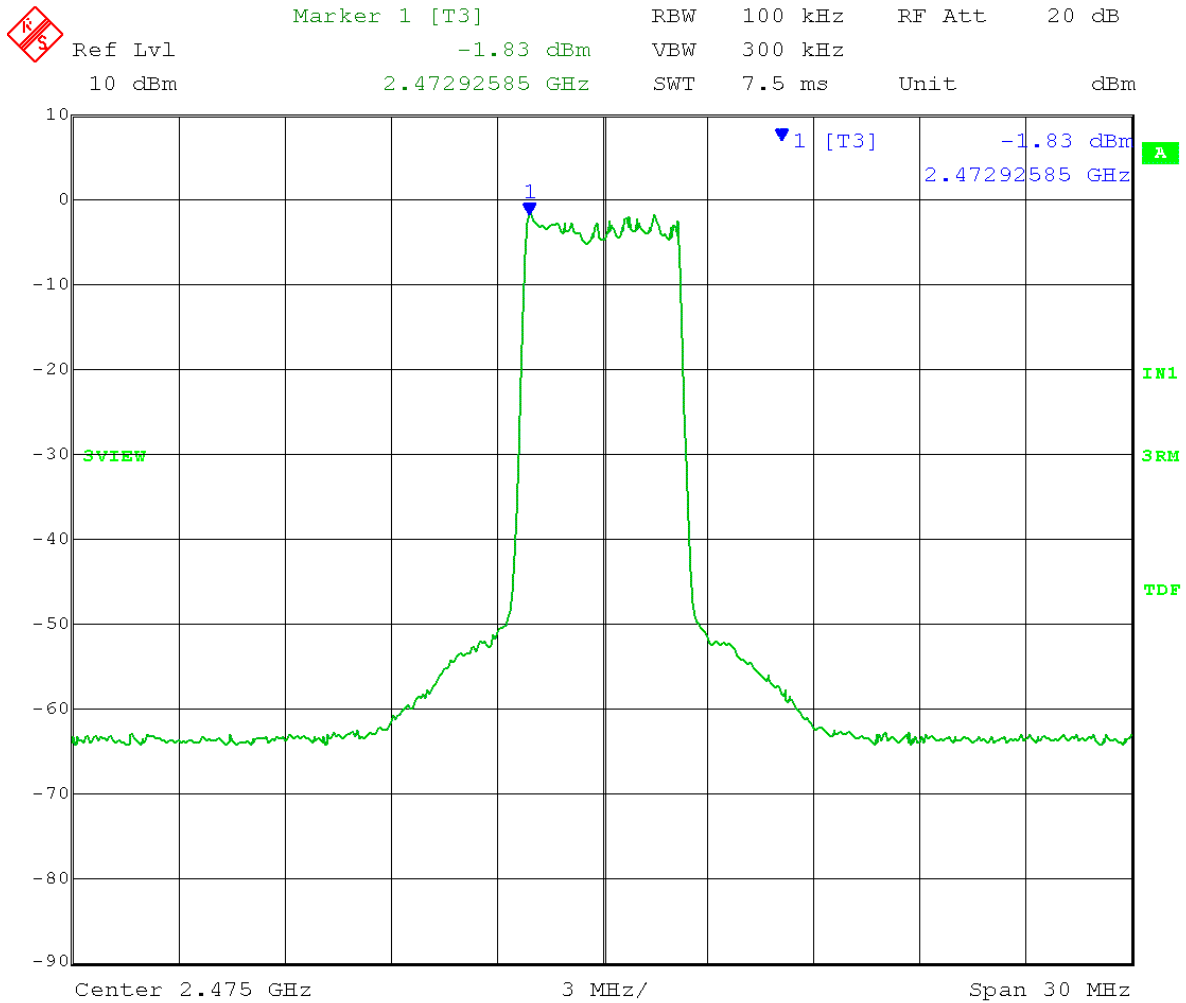
Date: 19.APR.2013 12:53:41

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: Mid Channel: Frequency = 2.440 GHz
 TX Output Power Setting = 16dBm
 RBW = 100 kHz
 Span = 1.5 x EBW
 Sweep = auto couple
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-6.48 + 10\log(1/.955) = -6.28$ dBm/100kHz



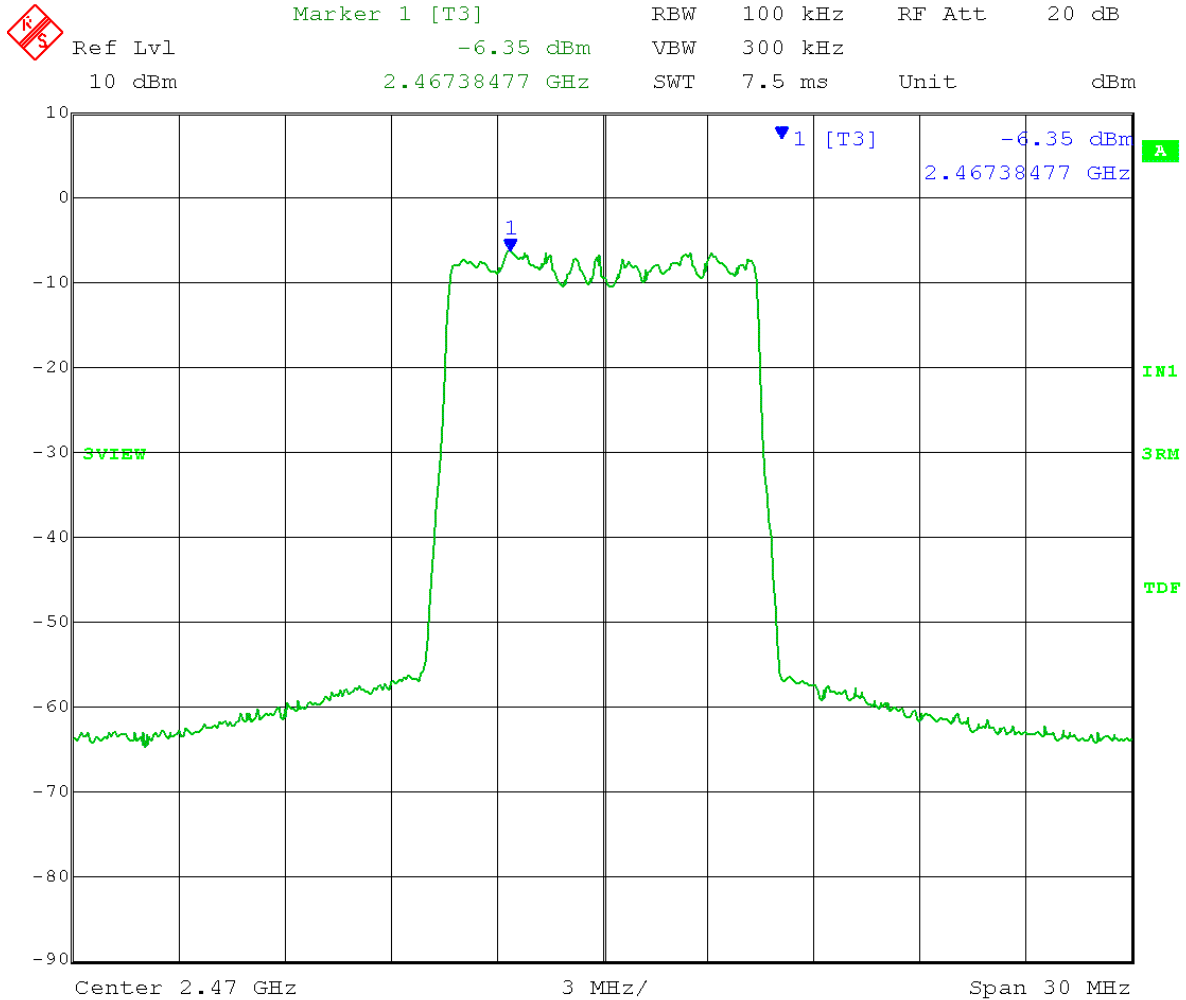
Date: 19.APR.2013 13:55:48

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: High Channel: Frequency = 2.475 GHz
 TX Output Power Setting = 15dBm
 RBW = 100 kHz
 Span = 1.5 x EBW
 Sweep = auto couple
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-1.83 + 10\log(1/936) = -1.512$ dBm/100kHz
 5MHz BW
 VBW = 300 kHz
 Detector = RMS
 Trace = max hold



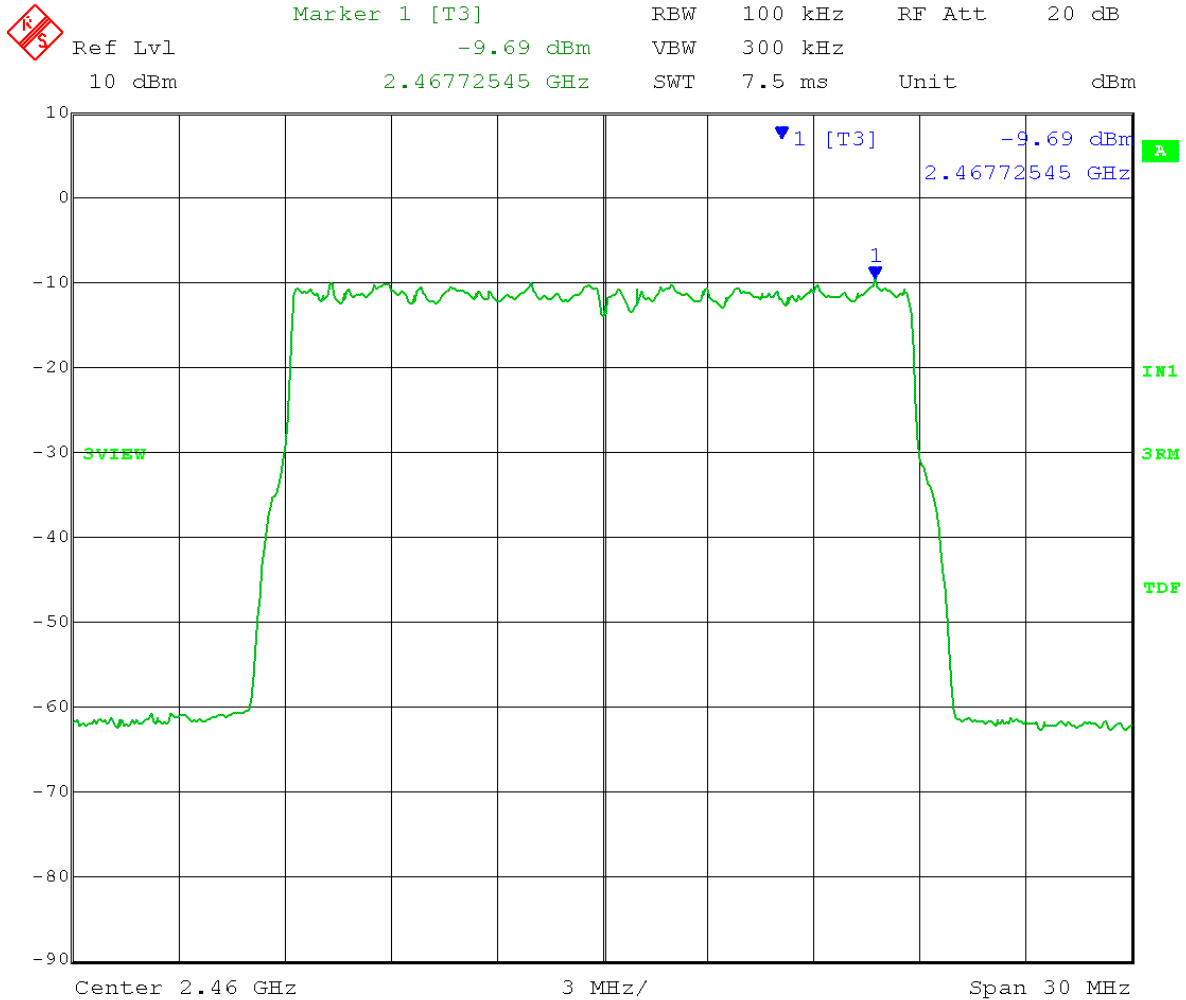
Date: 19.APR.2013 13:41:26

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: High Channel: Frequency = 2.470 GHz
 TX Output Power Setting = 14dBm 10MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-6.35 + 10\log(1/936) = -6.06$ dBm/100kHz



Date: 19.APR.2013 12:57:44

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4GHz OFDM
 Test: Maximum Peak Power Spectral Density - Conducted
 Operator: Jim O
 Comment: High Channel: Frequency = 2.460 GHz
 TX Output Power Setting = 12dBm 20MHz BW
 RBW = 100 kHz VBW = 300 kHz
 Span = 1.5 x EBW Detector = RMS
 Sweep = auto couple Trace = max hold
 Channel B
 Method 10.5 AVGPSD-2 (trace averaging across on and off times of the EUT transmission, followed by the duty cycle correction).
 Measurement (dBm) + duty cycle correction
 Limit: +8 dBm
 PSD = $-9.69 + 10\log(1/.955) = -9.49$ dBm/100kHz



Date: 19.APR.2013 14:00:17



Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

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 - 11.3 Emissions in non-restricted frequency bands

Description: RBW = 100 kHz
VBW \geq 300 kHz
Span to \geq 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

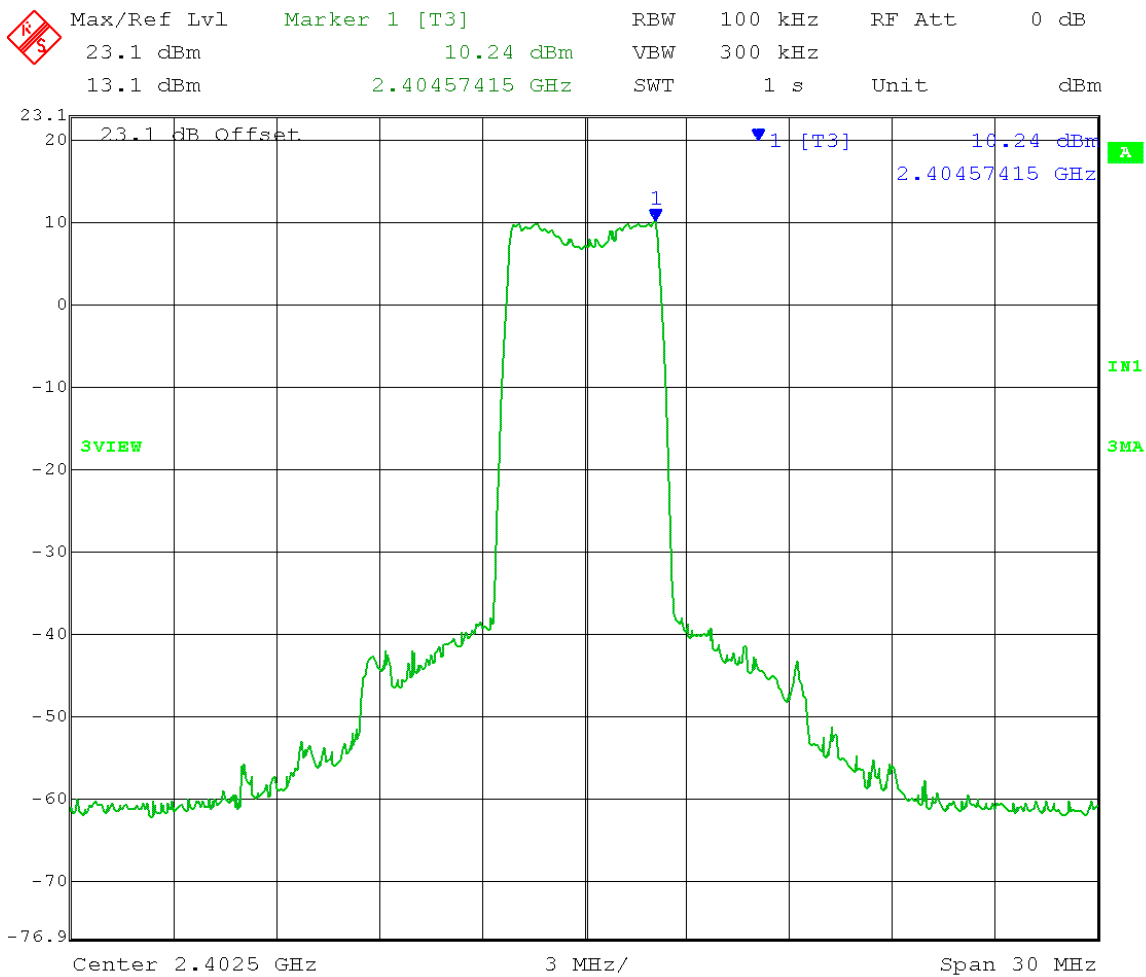
Measurements were taken for QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low, middle and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings with approximately a 94% duty cycle.

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

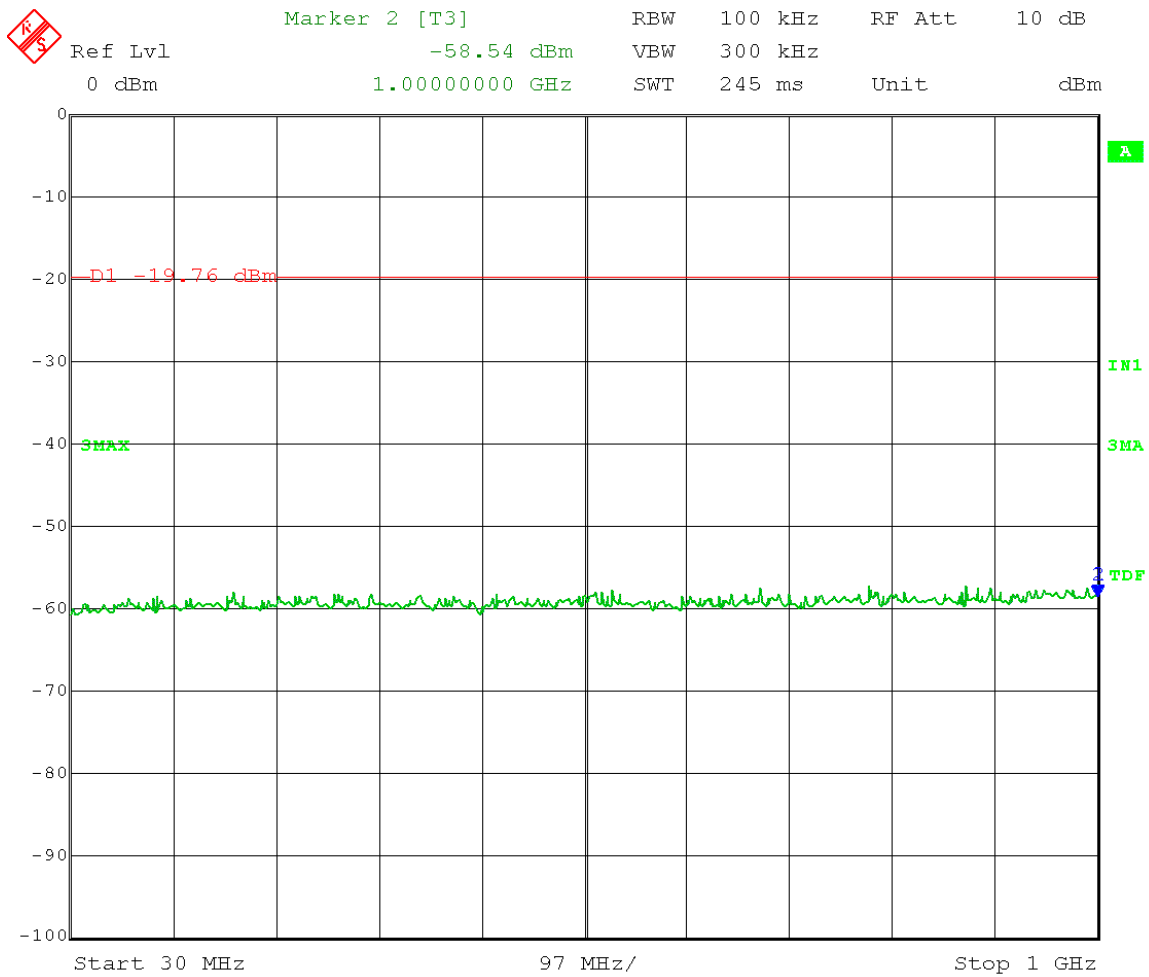
Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold **Low Channel Transmit = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel A

Reference Level measurement
 Limit = 10.24Bm – 30 dB = -19.76 dBm



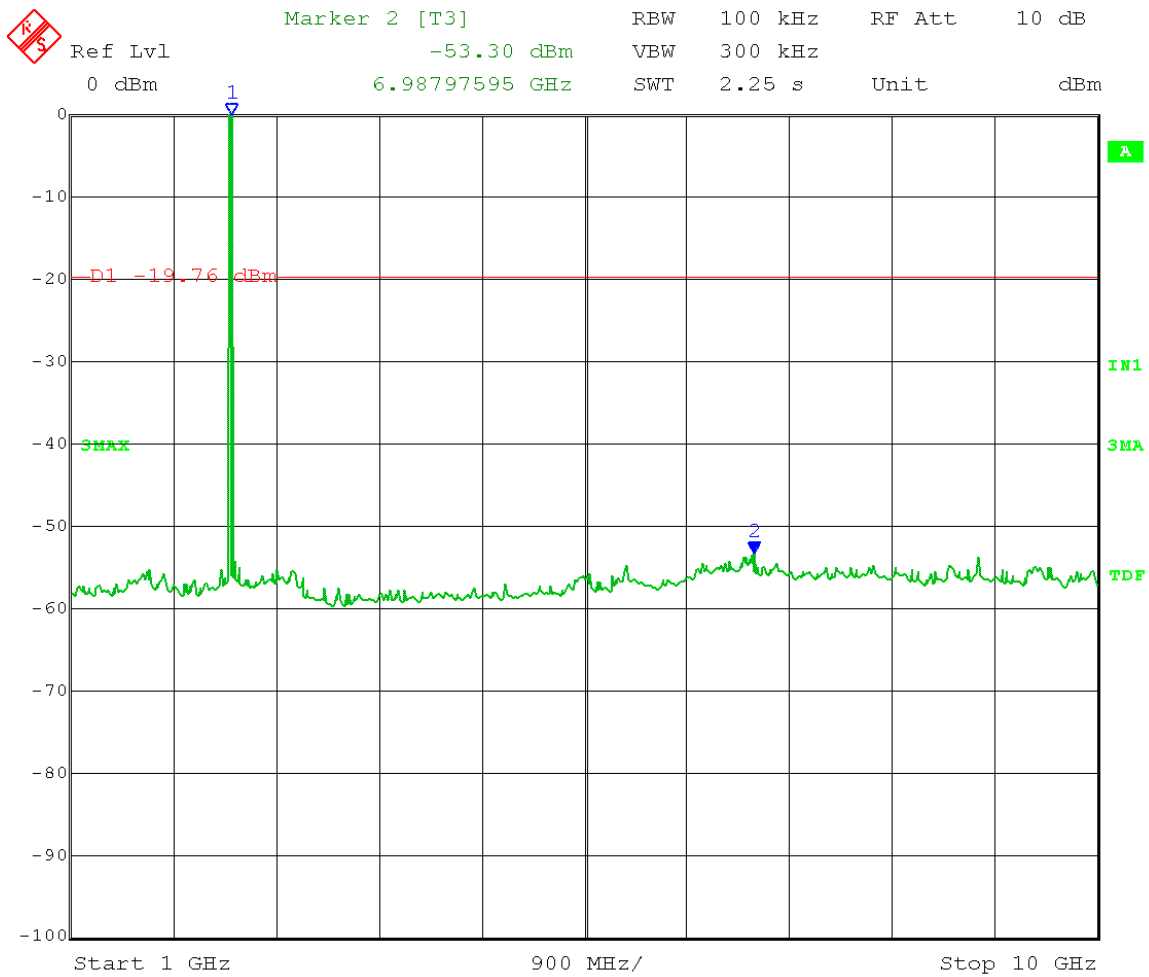
Date: 18.APR.2013 12:30:54

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold **Low Channel Transmit = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range 30M-1GHz
Go kkkqp Level measurement
 Limit (D1) = 10.24Bm - 30 dB = -19.76 dBm



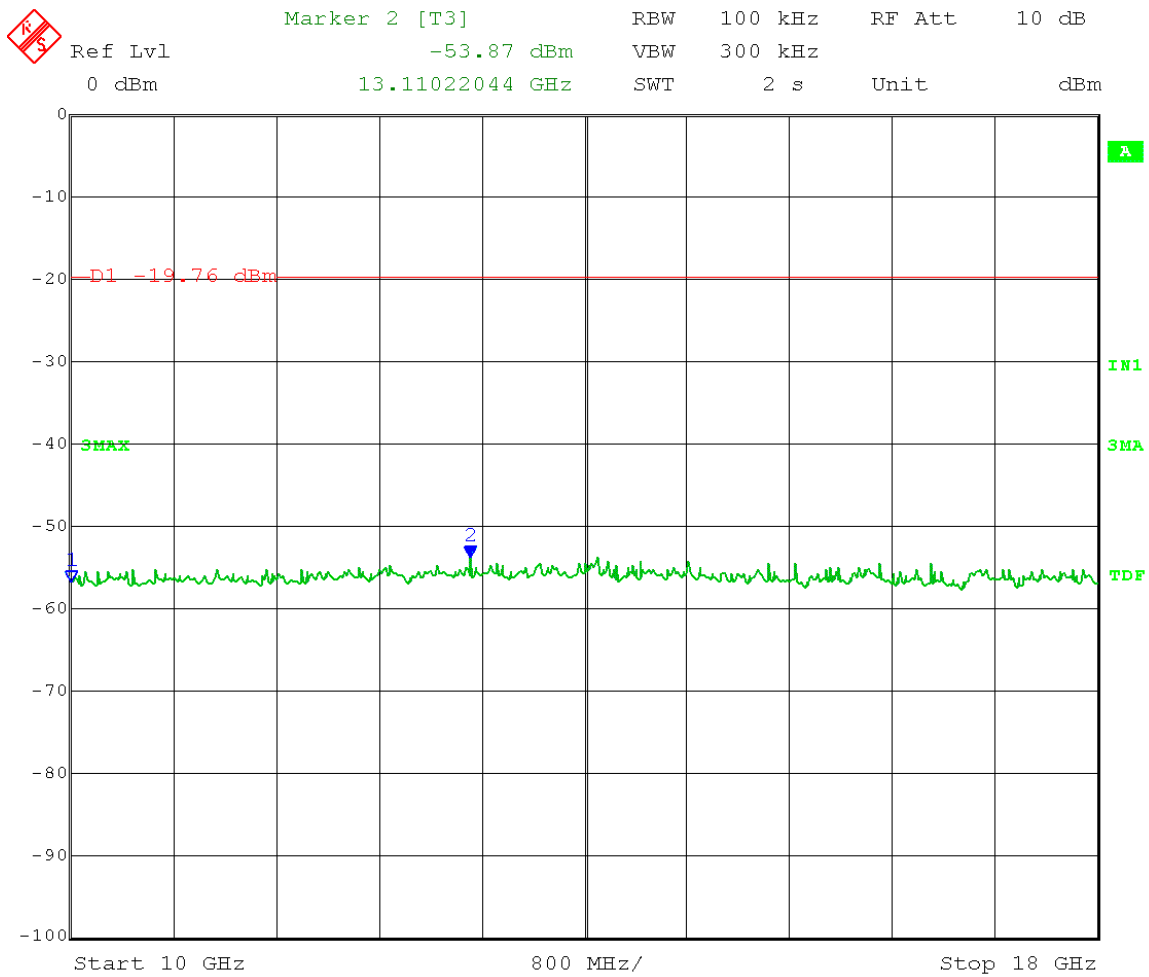
Date: 19.APR.2013 08:40:33

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold **Low Channel Transmit = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range 1-10GHz
Go kkkqp"Level measurement
 Limit (D1) = 10.24Bm – 30 dB = -19.76 dBm



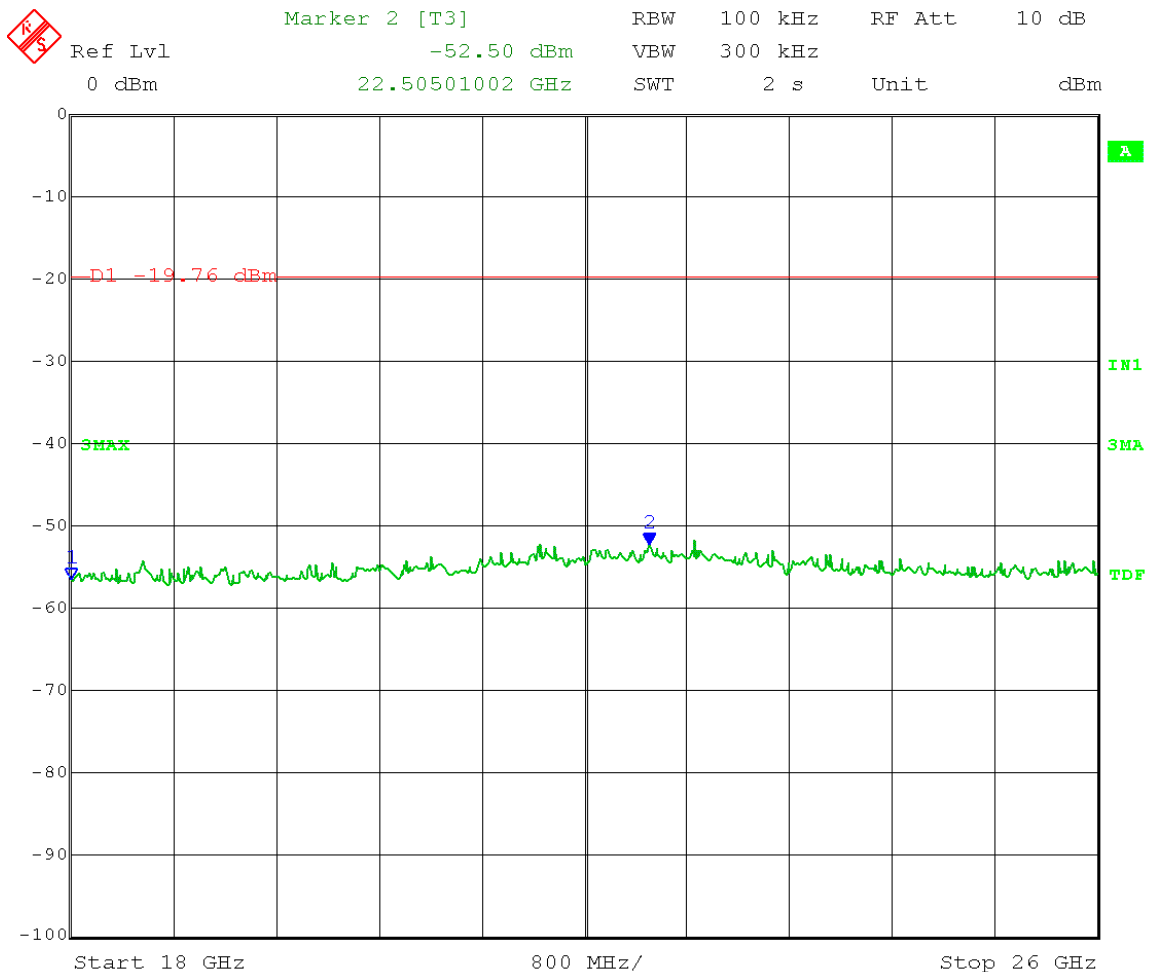
Date: 19.APR.2013 08:37:31

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range 10-18GHz
 Go ~~kkqp~~"Level measurement
 Limit (D1) = 10.24Bm – 30 dB = -19.76 dBm



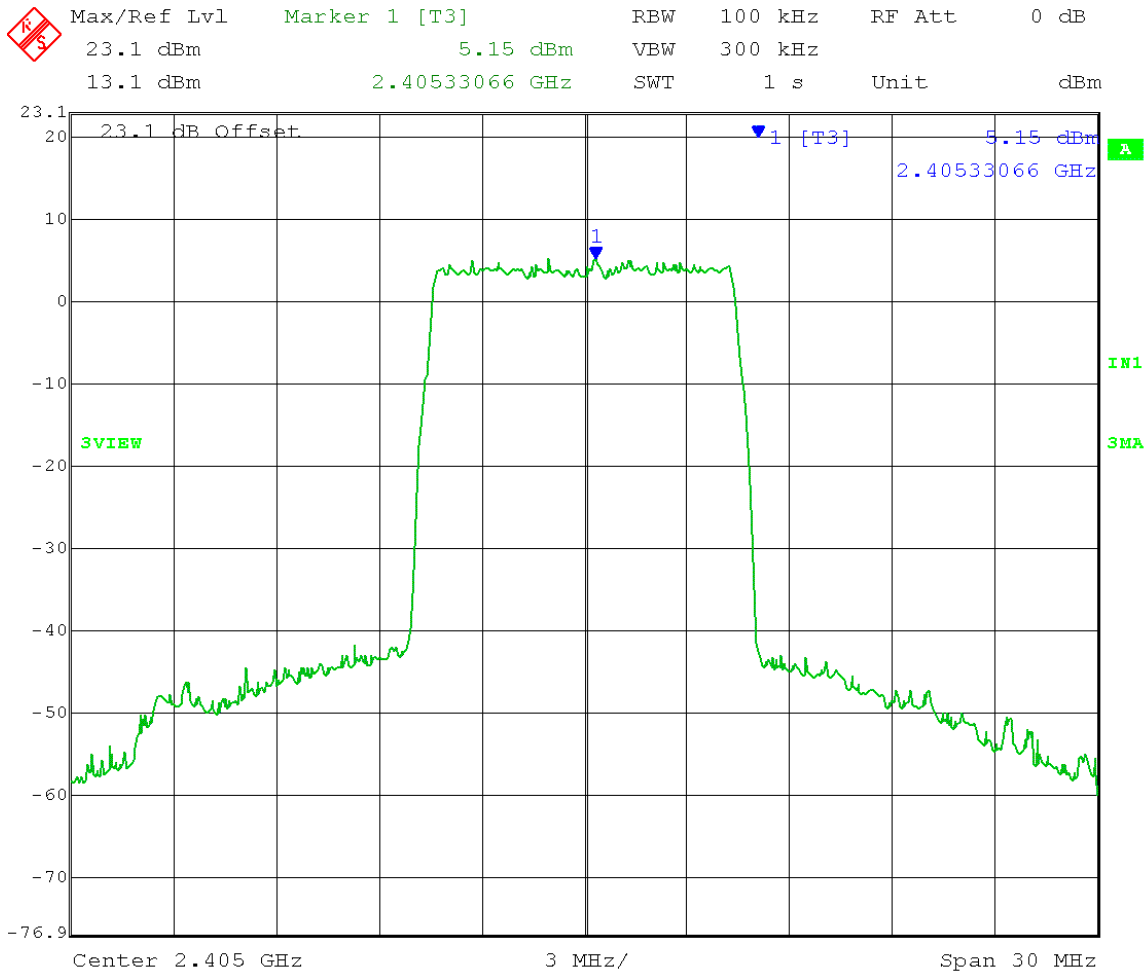
Date: 19.APR.2013 08:42:30

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold **Low Channel Transmit = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range 18-26GHz
Go kkkqp''Level measurement
 Limit (D1) = 10.24Bm - 30 dB = -19.76 dBm



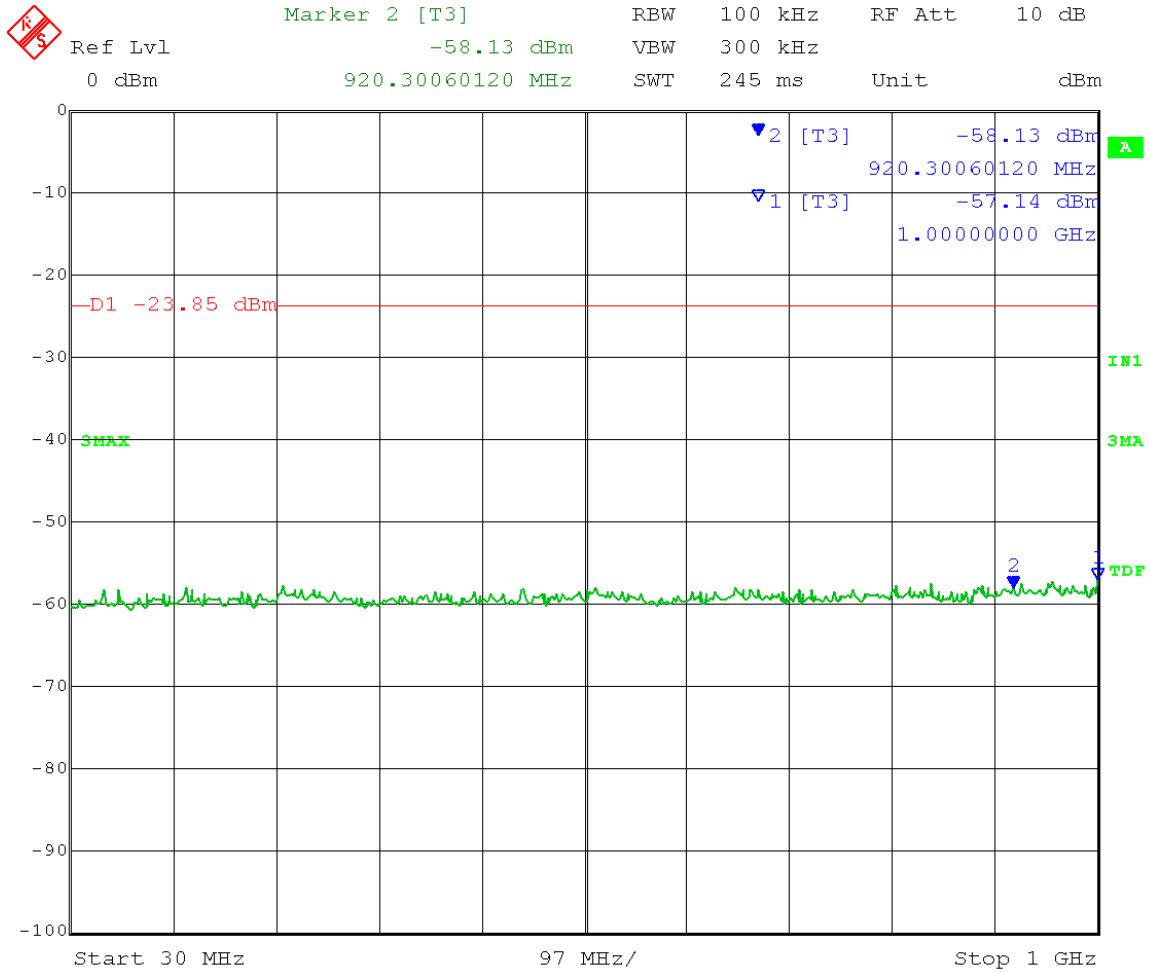
Date: 19.APR.2013 08:43:36

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel A
 Reference Level measurement
 Limit = 5.15dBm – 30 dB = -23.85dBm



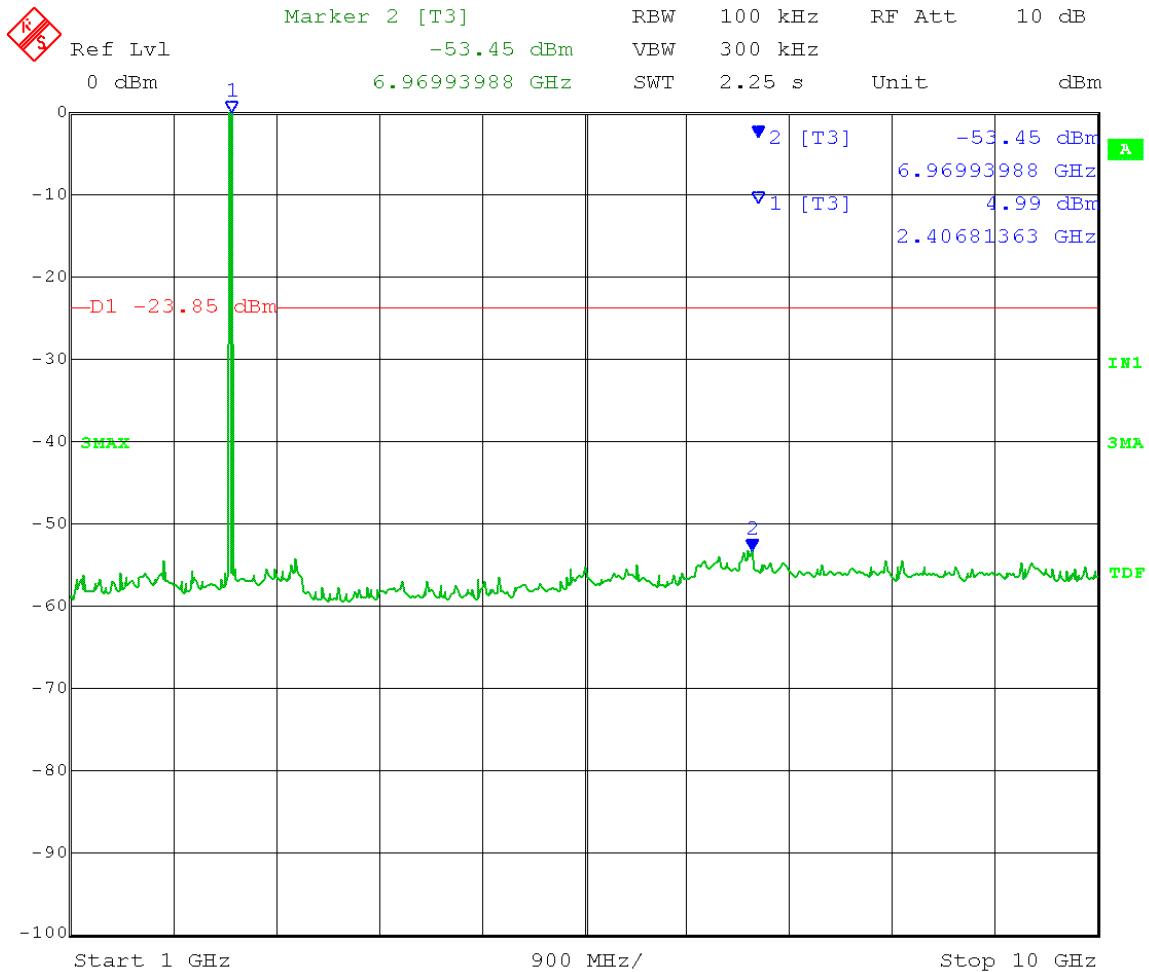
Date: 18.APR.2013 12:59:21

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel A
 Frequency Range = 30M-1 GHz
Go kulp"Level measurement
 Limit (D1) = 5.15dBm – 30 dB = -23.85dBm



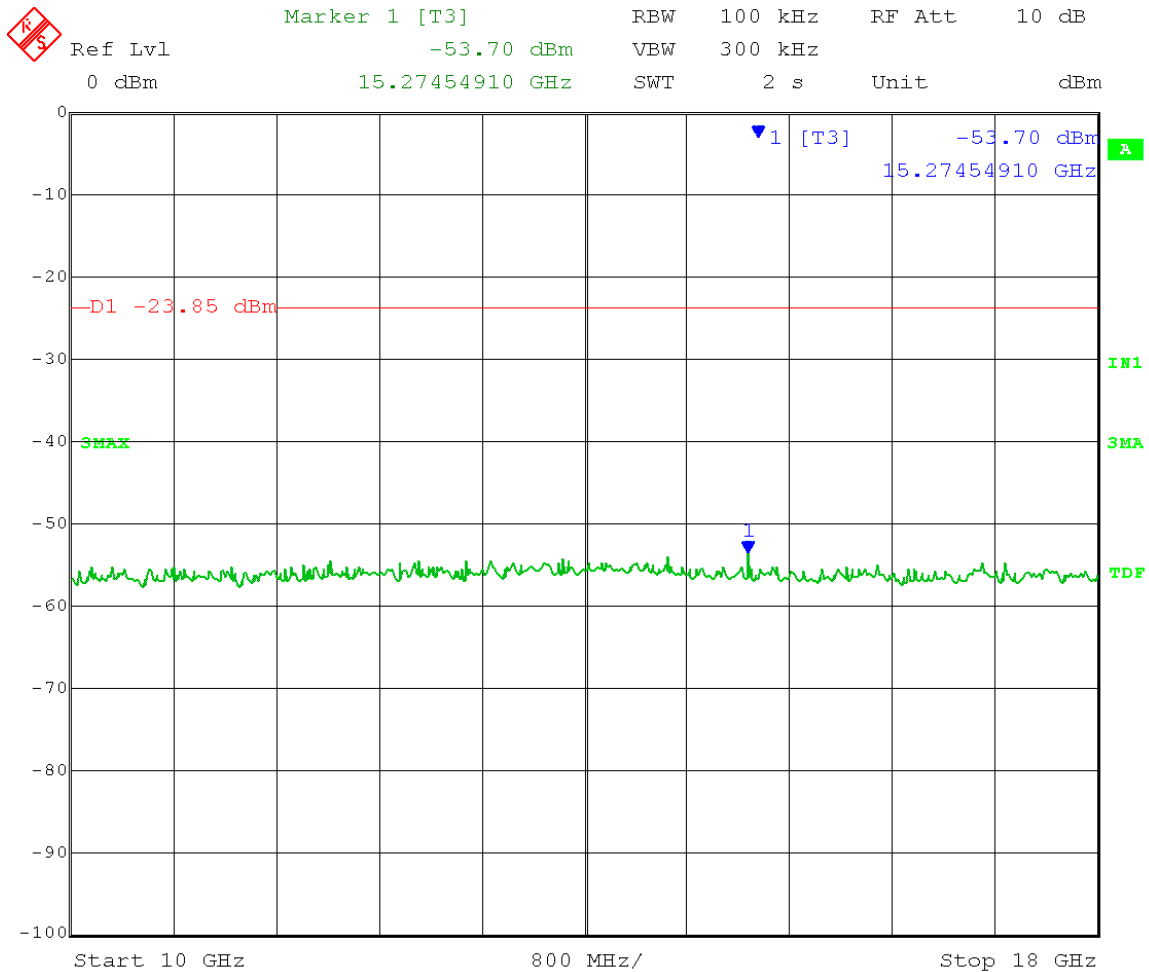
Date: 19.APR.2013 10:19:35

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel A
 Frequency Range = 1-10 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 5.15dBm – 30 dB = -23.85dBm



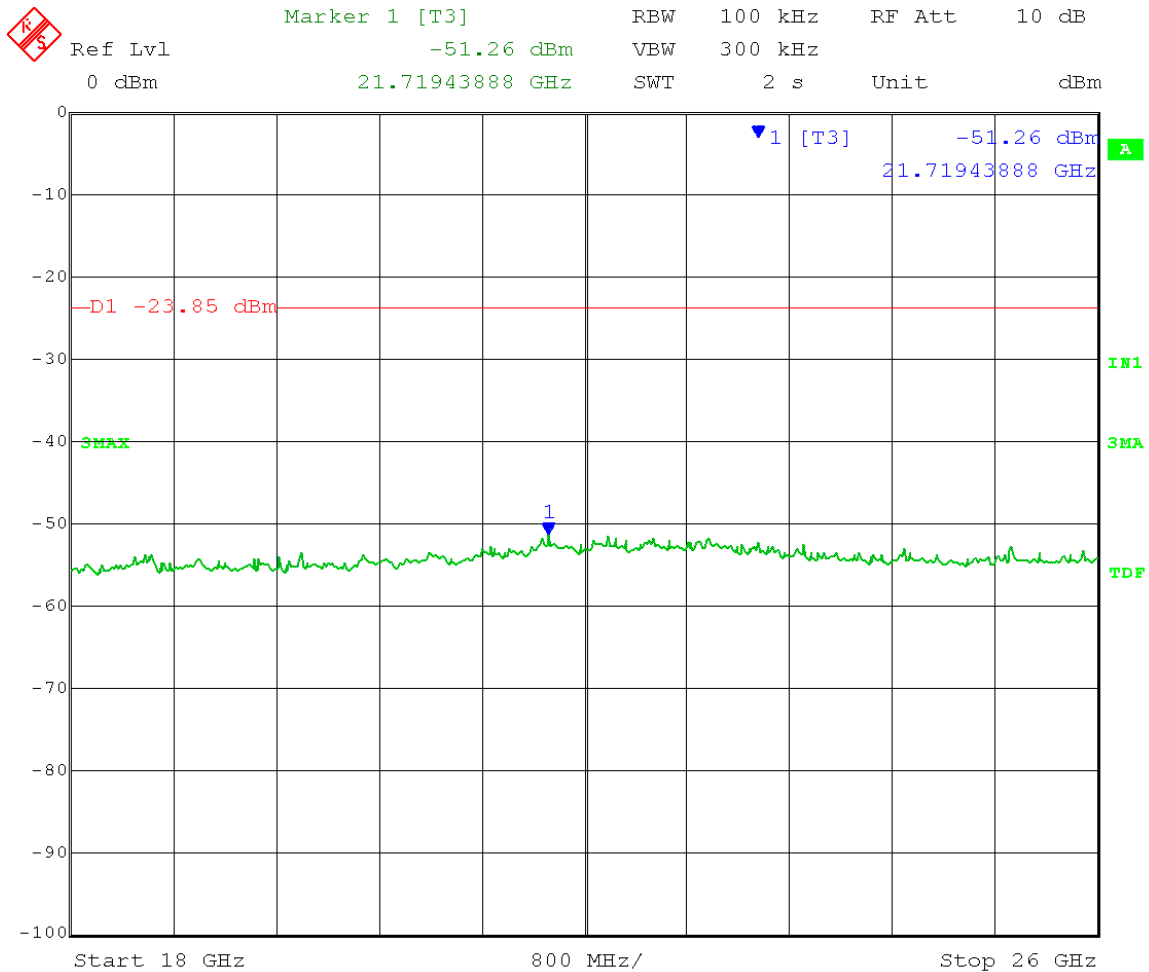
Date: 19.APR.2013 10:17:06

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel A
 Frequency Range = 10-18 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 5.15dBm – 30 dB = -23.85dBm



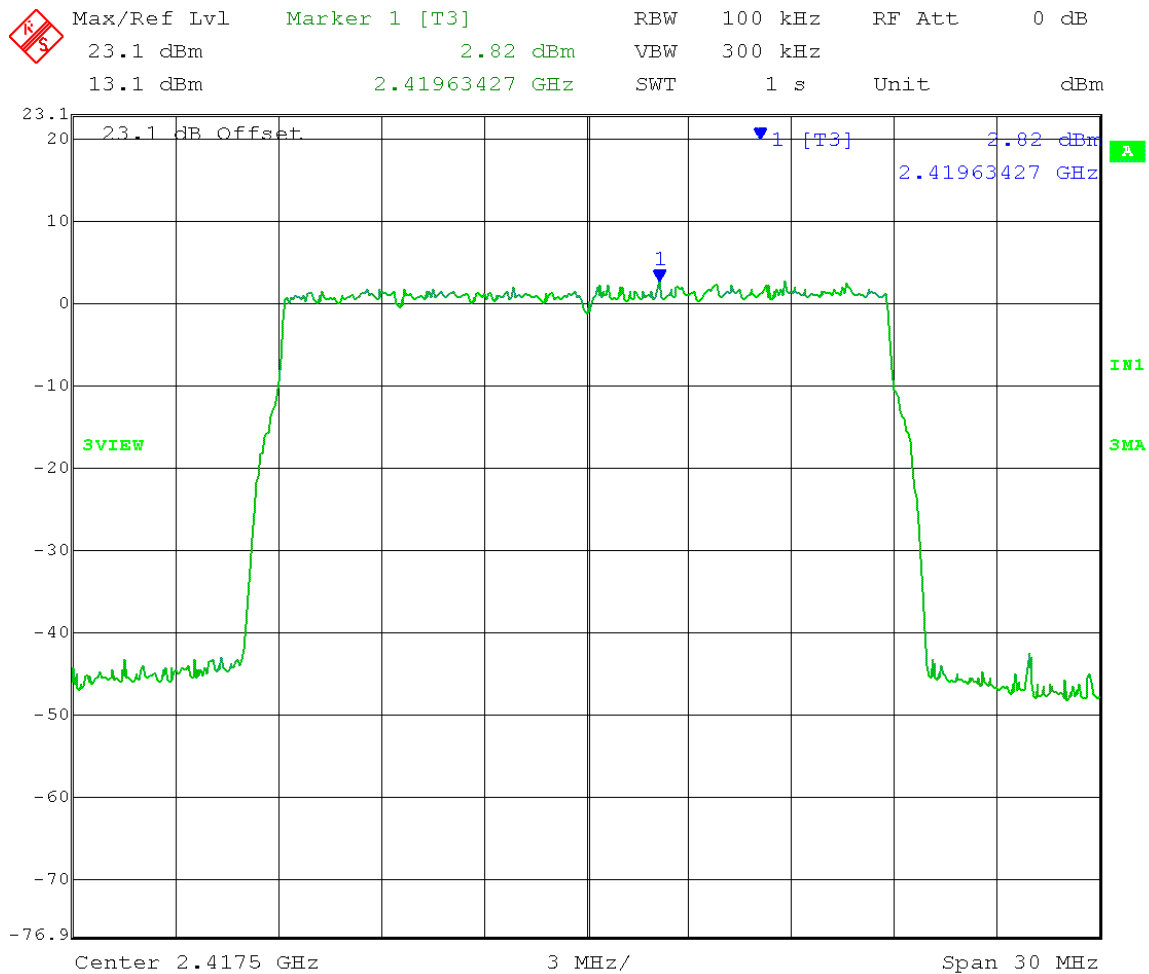
Date: 19.APR.2013 10:15:47

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel A
 Frequency Range = 18-26 GHz
 Go ~~klkqp~~"Level measurement
 Limit (**D1**) = 5.15dBm – 30 dB = -23.85dBm



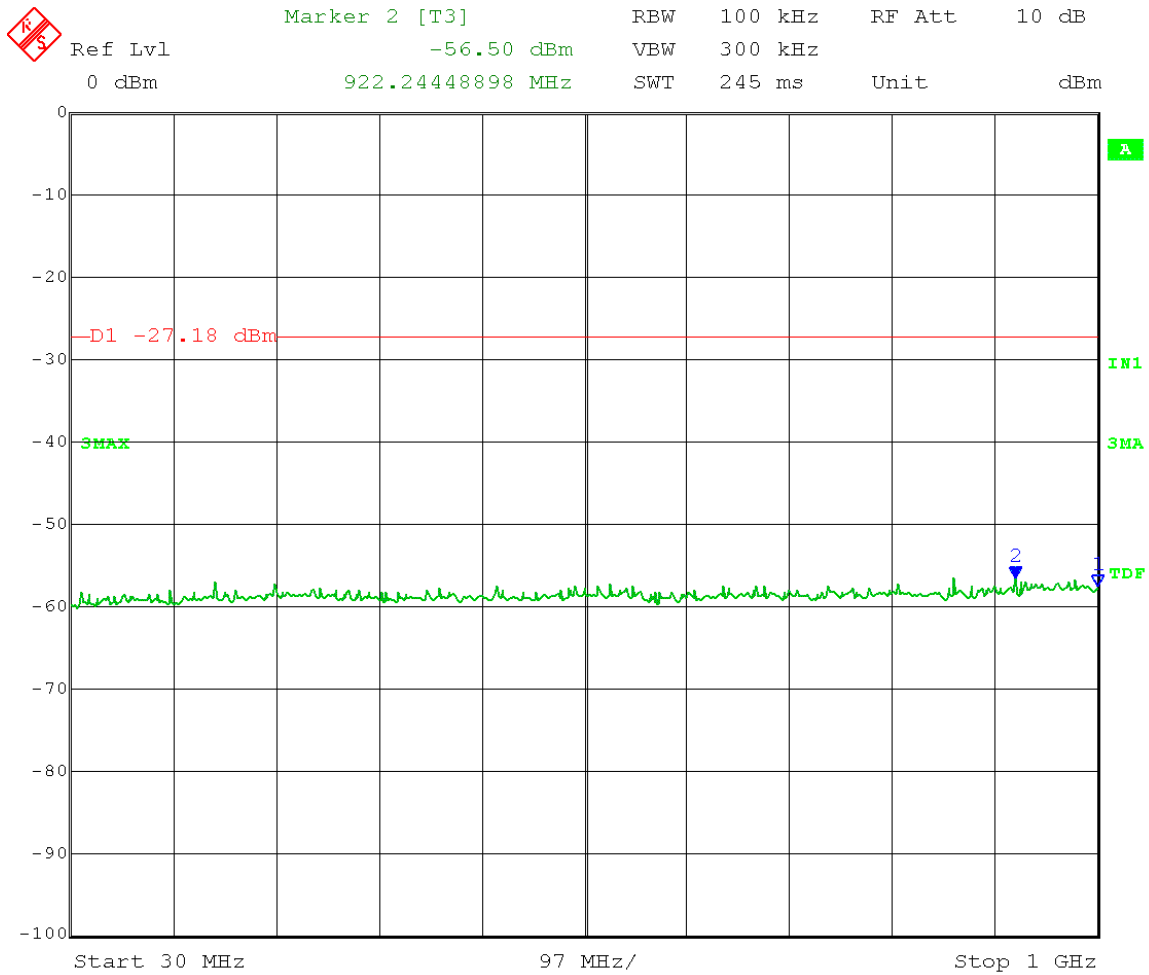
Date: 19.APR.2013 10:14:49

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold **Low Channel Transmit = 2.417.5GHz**
 Output power setting 15dBm @ 20 MHz BW
 Channel A
Reference Level measurement
 Limit = 2.82dBm – 30 dB = -27.18dBm



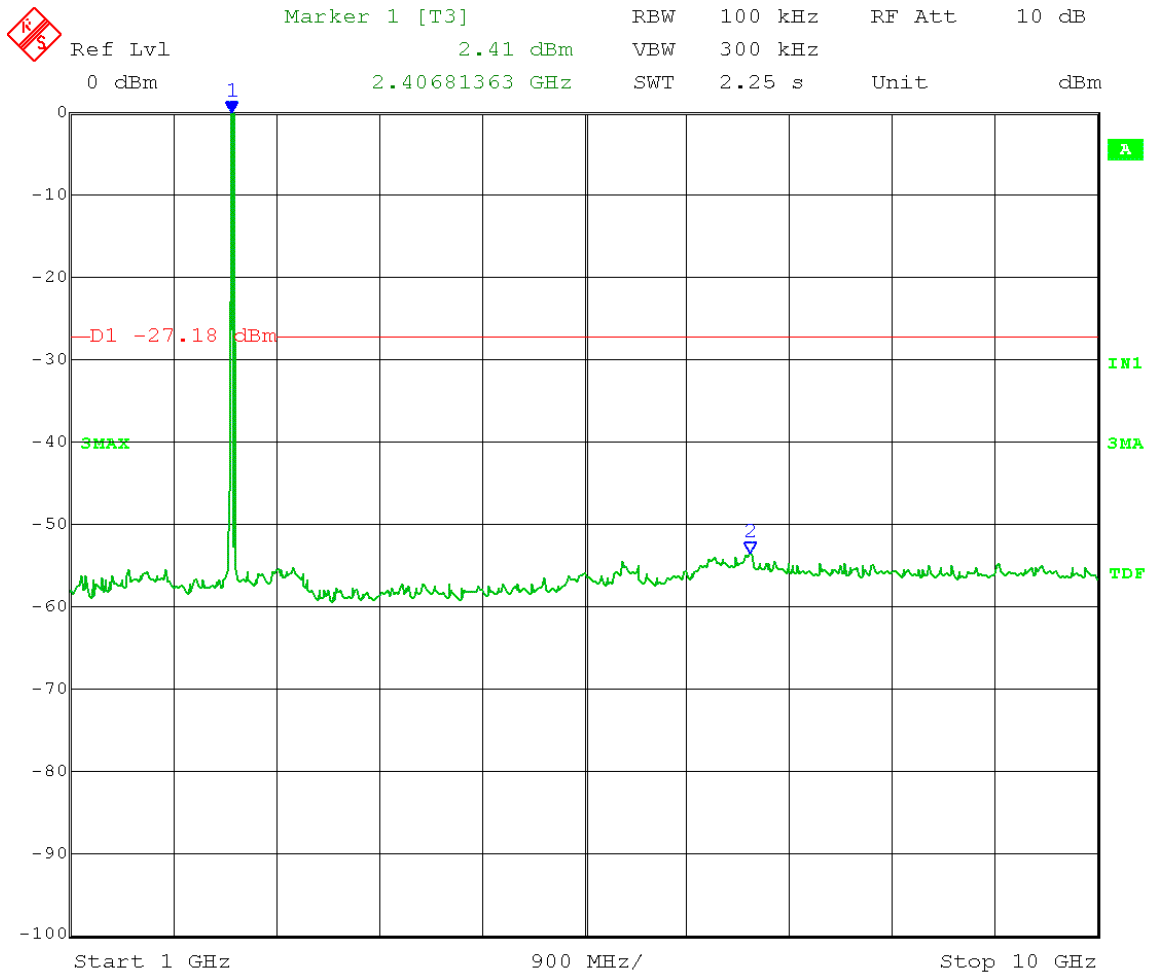
Date: 18.APR.2013 13:20:45

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Low Channel Transmit = 2.417.5GHz
 Output power setting 15dBm @ 20 MHz BW
 Channel A
 Frequency Range = 30M - 1GHz
Go ~~kukp~~"Level measurement
 Limit = 2.82dBm - 30 dB = -27.18dBm



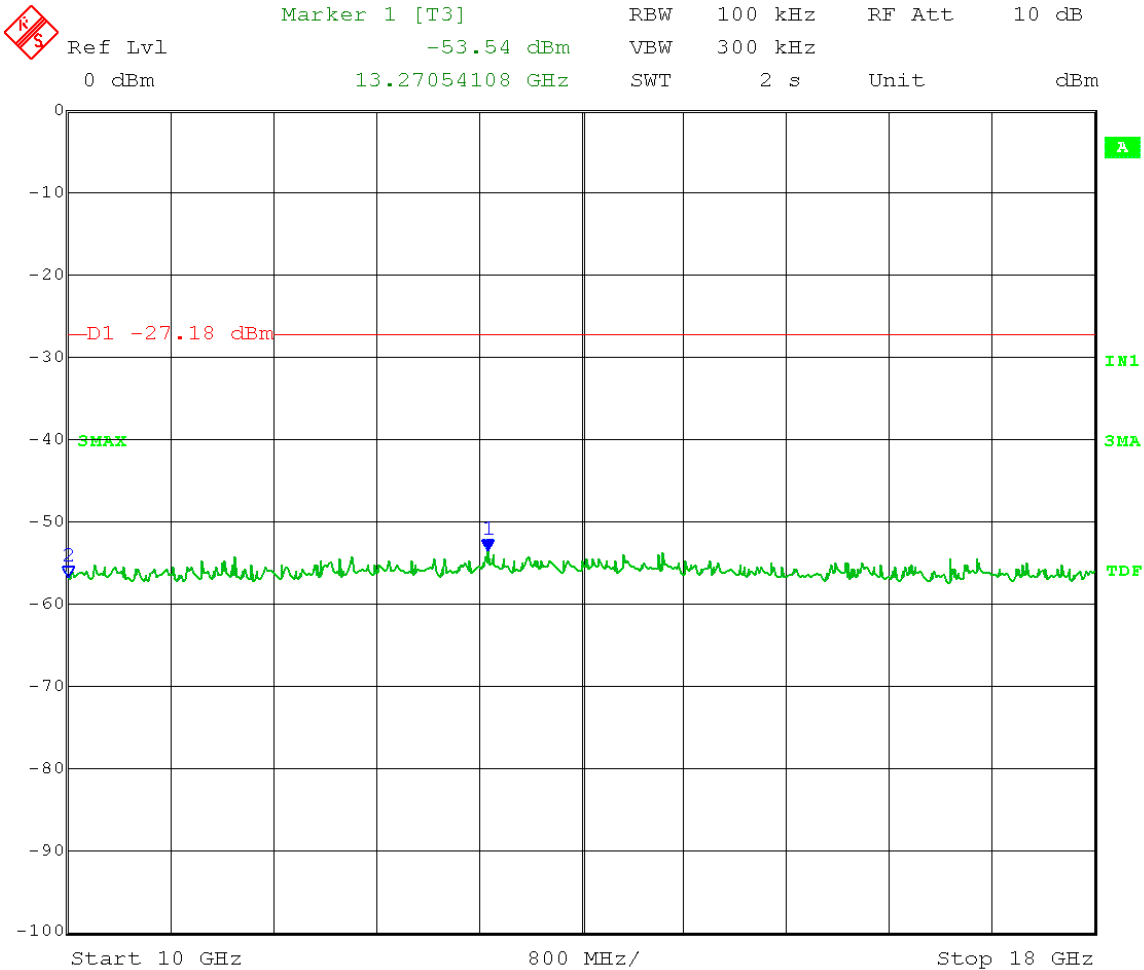
Date: 18.APR.2013 14:59:00

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Low Channel Transmit = 2.417.5GHz
 Output power setting 15dBm @ 20 MHz BW
 Channel A
 Frequency Range = 1 – 10GHz
Go ~~kukqp~~"Level measurement
 Limit = 2.82dBm – 30 dB = -27.18dBm



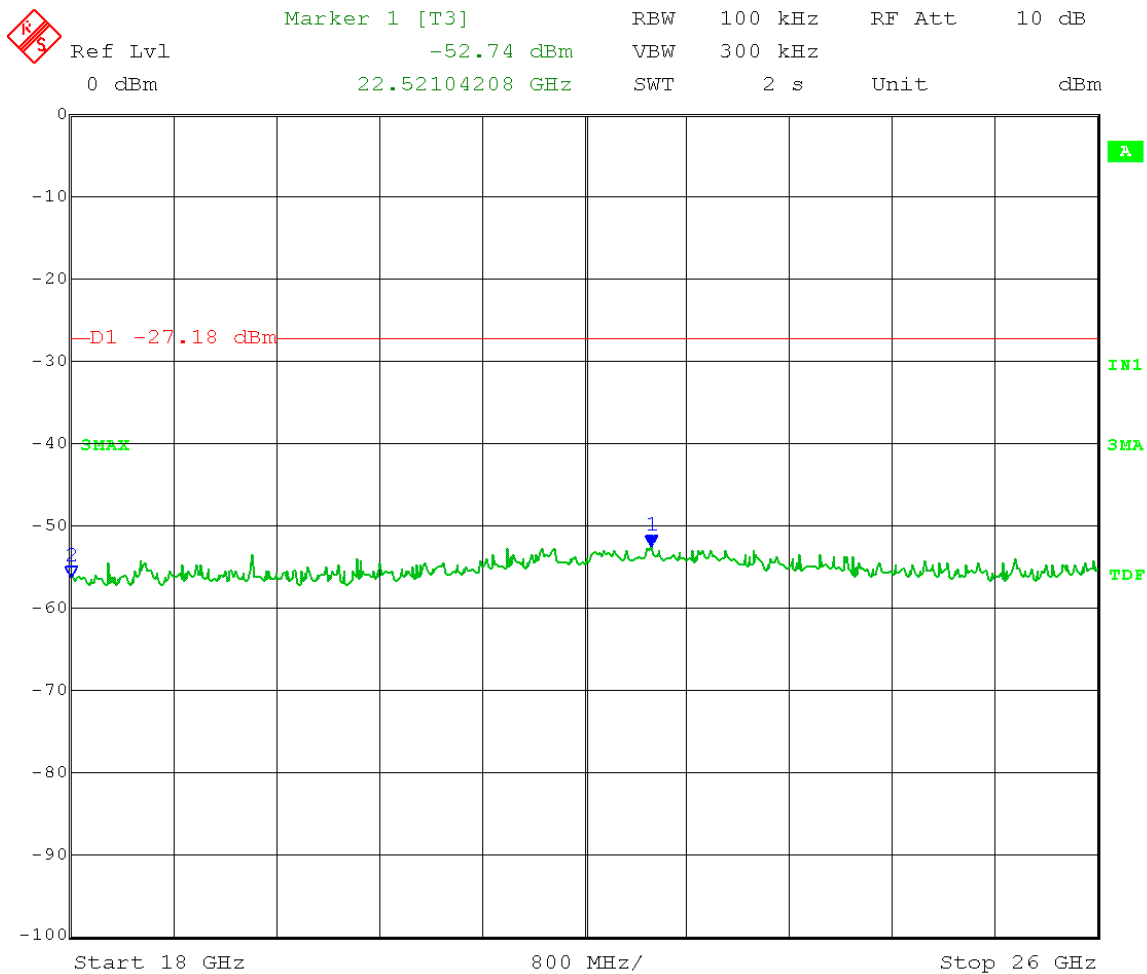
Date: 18.APR.2013 15:01:52

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.417.5GHz
 Output power setting 15dBm @ 20 MHz BW
 Channel A
 Frequency Range = 10-18GHz
Go kkkqp''Level measurement
 Limit = 2.82dBm – 30 dB = -27.18dBm



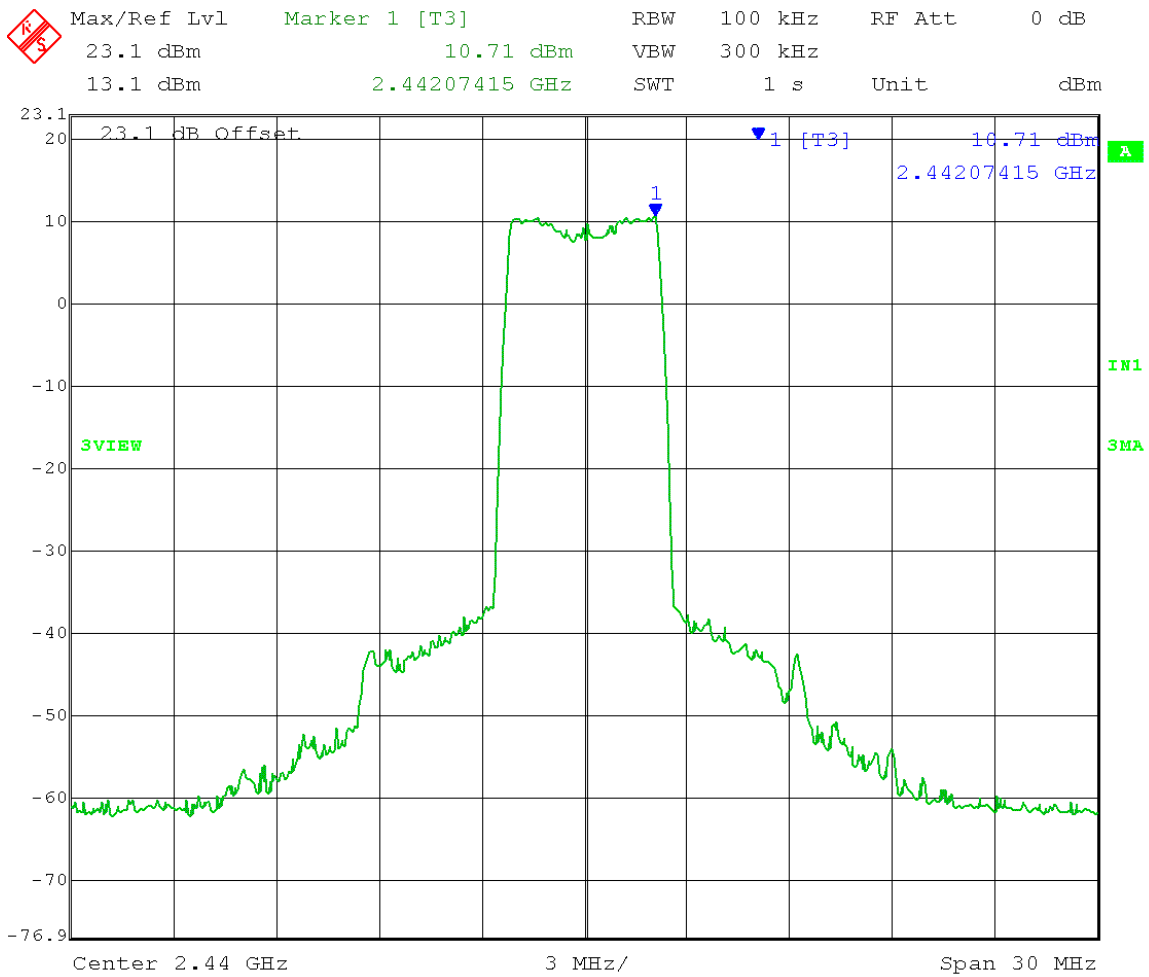
Date: 18.APR.2013 15:05:06

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.417.5GHz**
 Output power setting 15dBm @ 20 MHz BW
 Channel A
 Frequency Range = 18-26GHz
 Go ~~kkqp~~"Level Measurement
 Limit = 2.82dBm – 30 dB = -27.18dBm



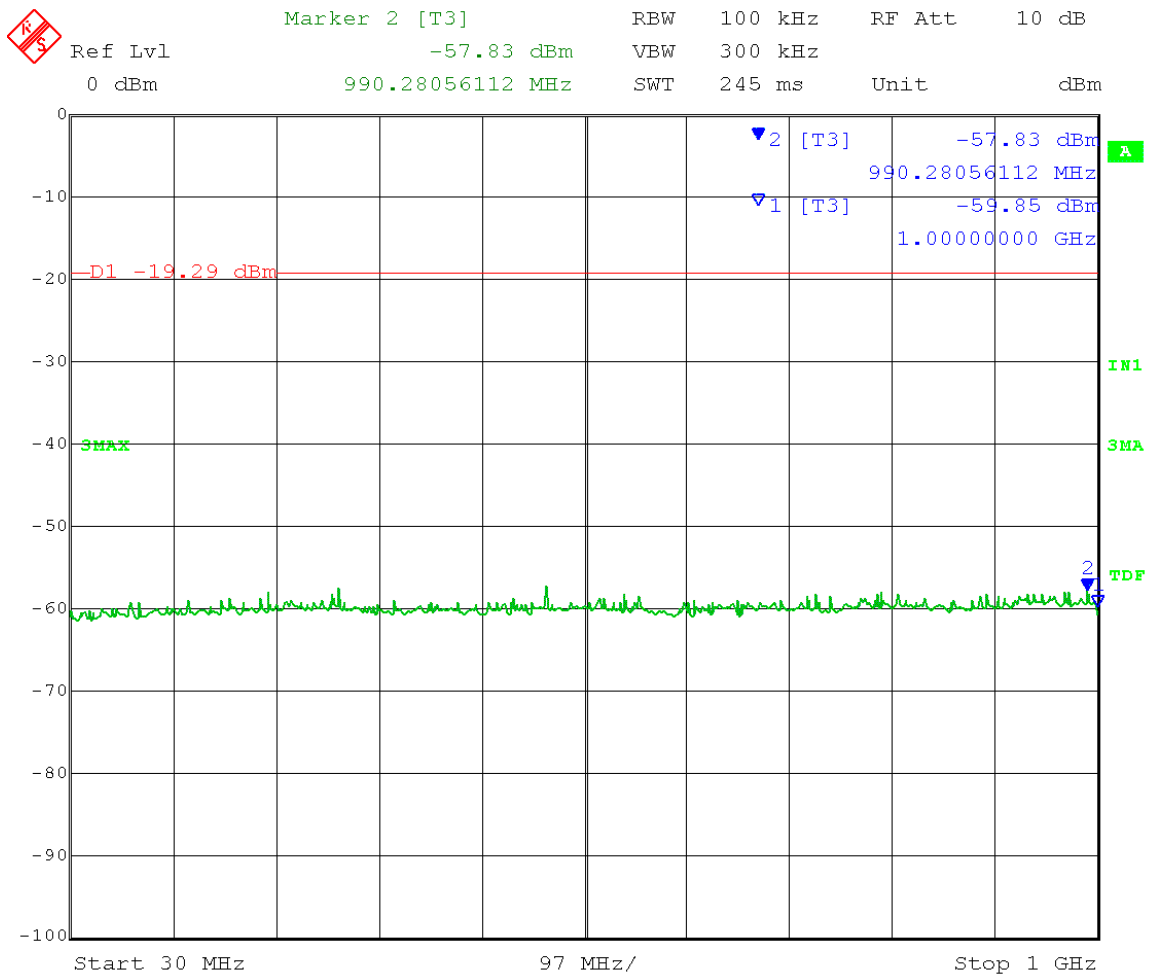
Date: 18.APR.2013 15:06:12

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel A
Reference Level measurement
 Limit = 10.71Bm – 30 dB = -19.29 dBm



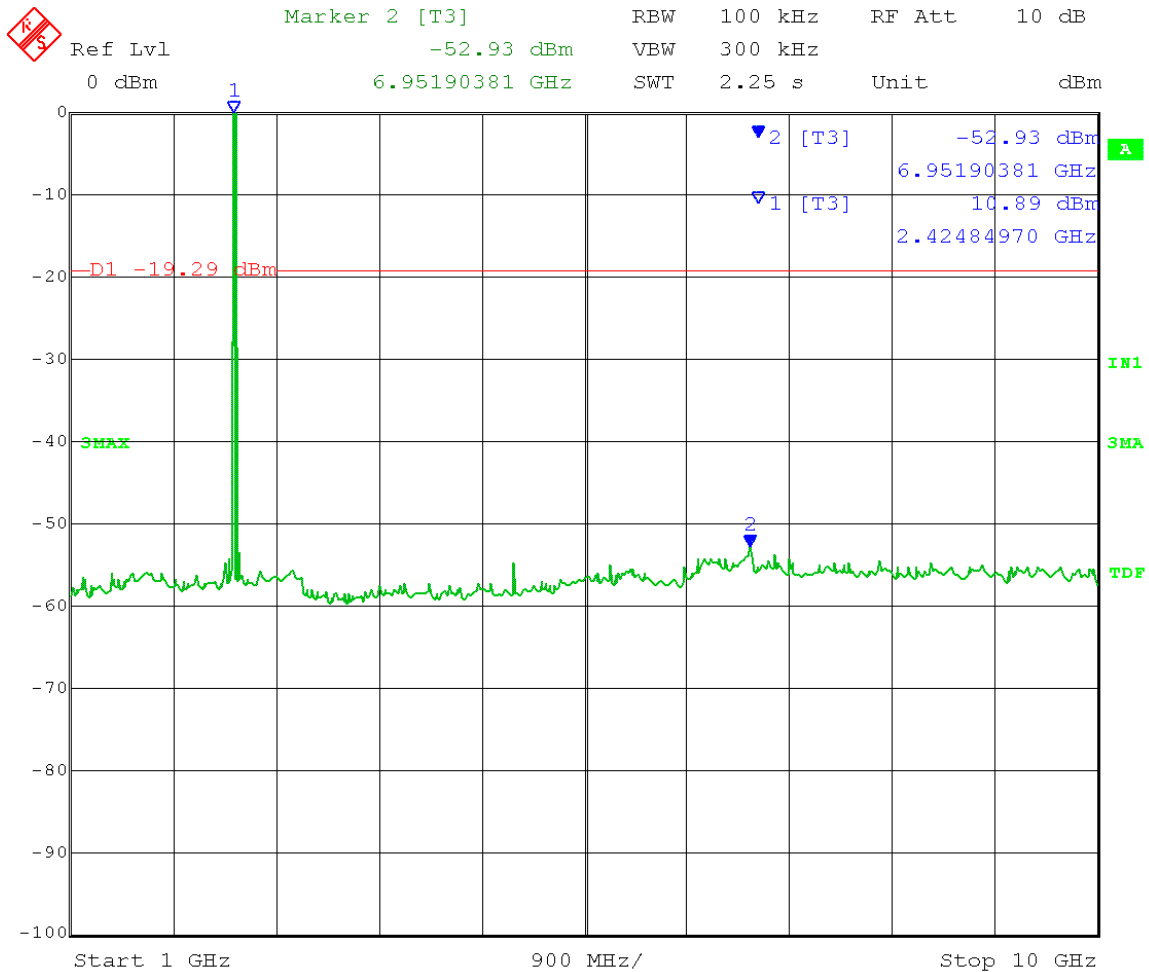
Date: 18.APR.2013 12:27:17

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range = 30M-1 GHz
Go kulp''Level measurement
 Limit (D1) = 10.71Bm – 30 dB = -19.29 dBm



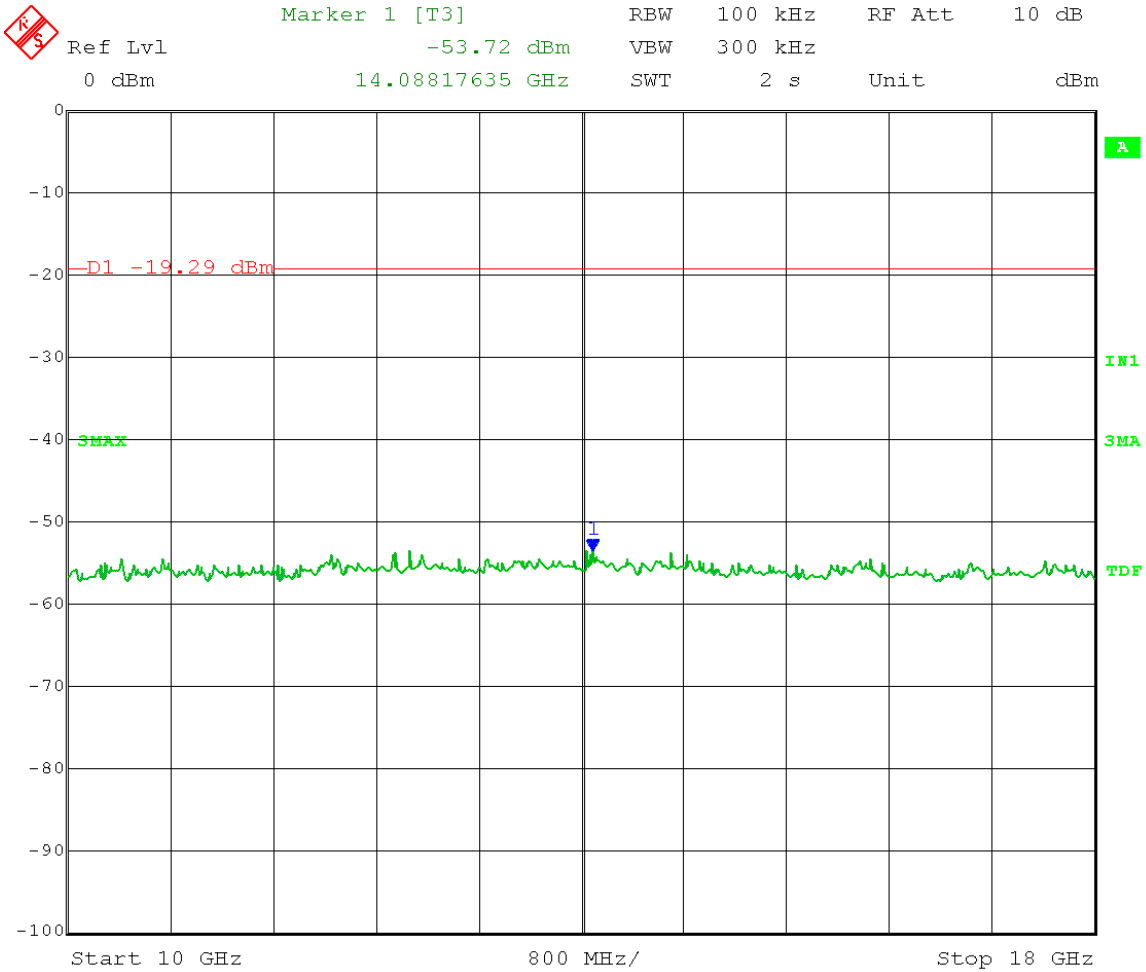
Date: 19.APR.2013 09:08:20

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range 1-10 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 10.71Bm – 30 dB = -19.29 dBm



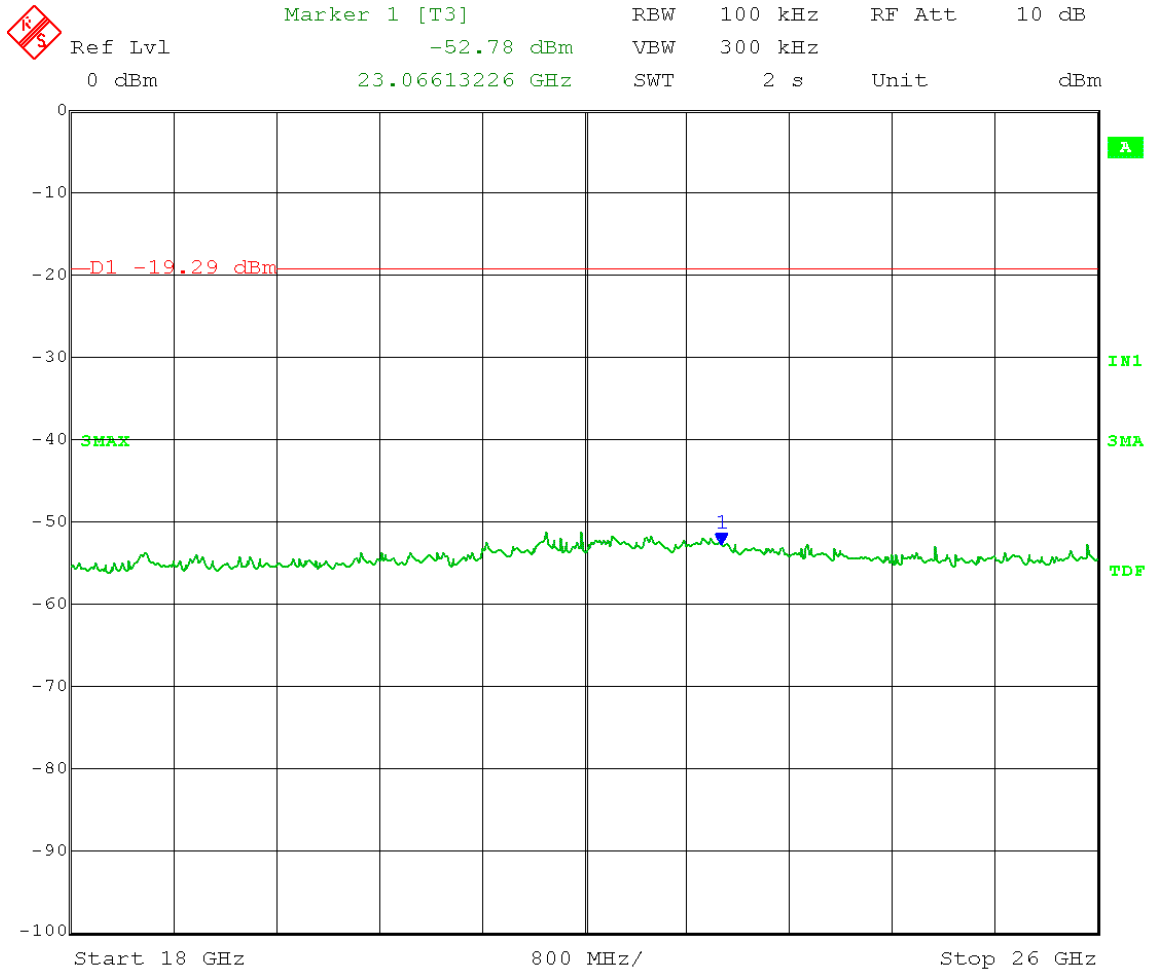
Date: 19.APR.2013 09:05:49

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Mid Channel Transmit = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range 10-18GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 10.71Bm - 30 dB = -19.29 dBm



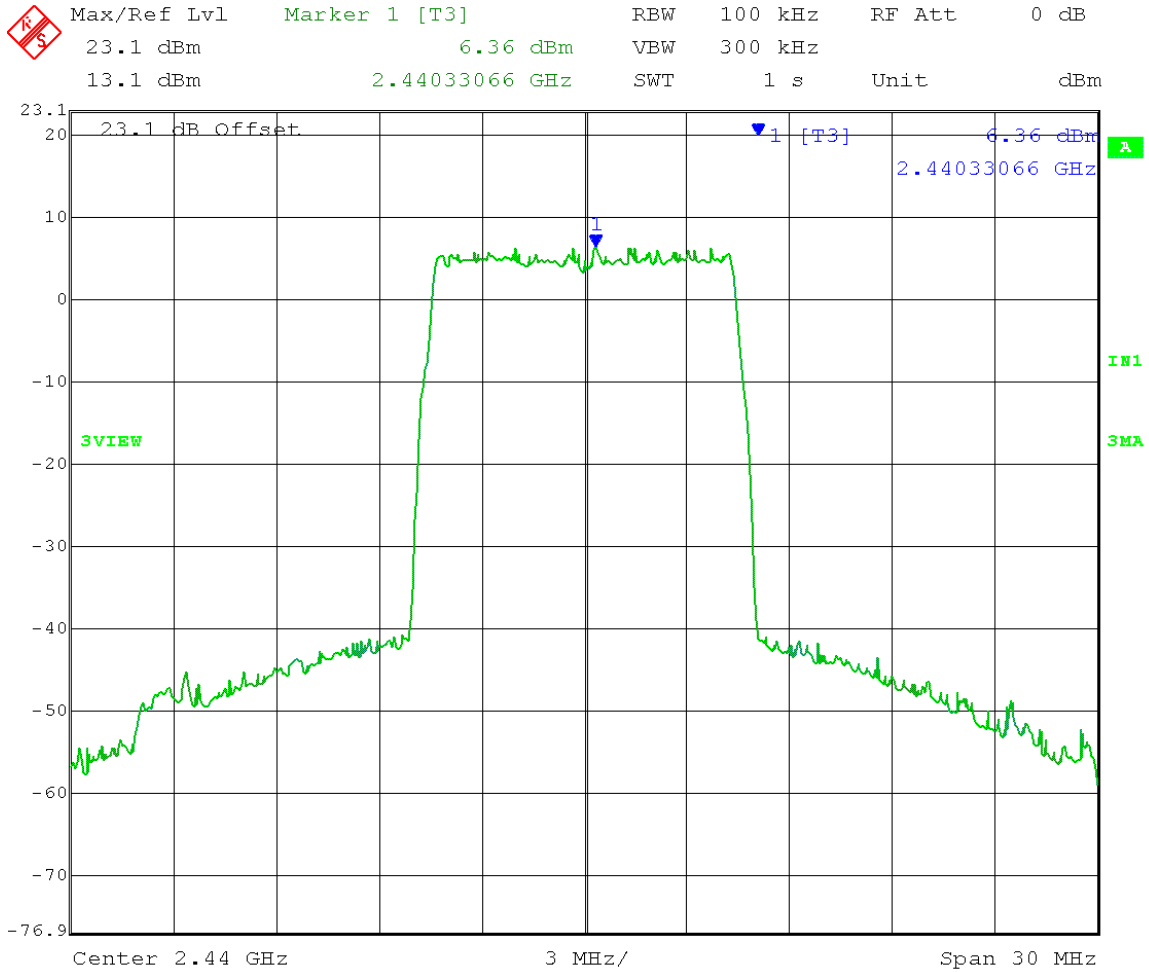
Date: 19.APR.2013 09:04:24

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Mid Channel Transmit = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel A
 Frequency Range 18-26GHz
Go ~~kulqp~~"Level measurement
 Limit (D1) = 10.71Bm - 30 dB = -19.29 dBm



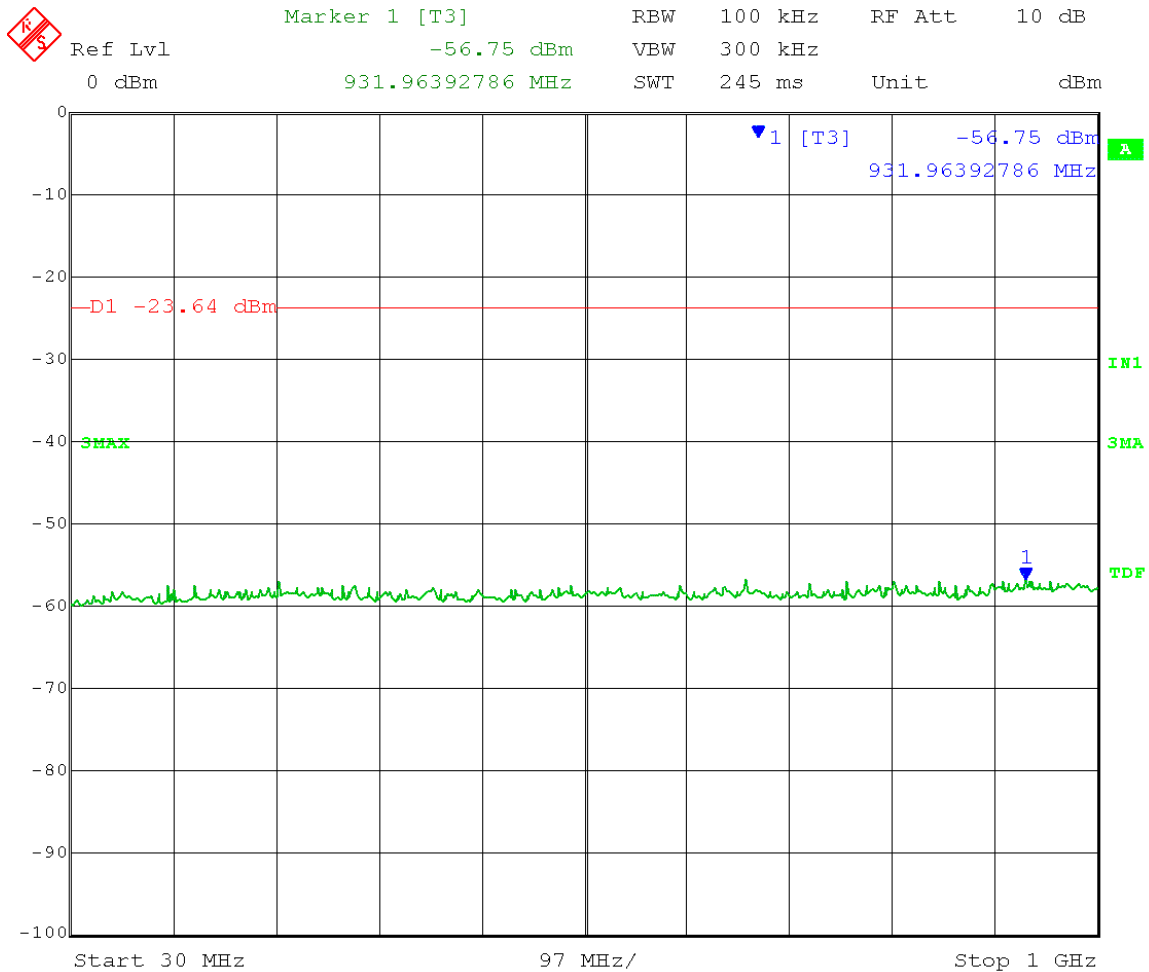
Date: 19.APR.2013 09:02:20

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz**
 Output power setting 16dBm @ 10 MHz BW
 Channel A
Reference Level measurement
 Limit = 6.36dBm – 30 dB = -23.64dBm



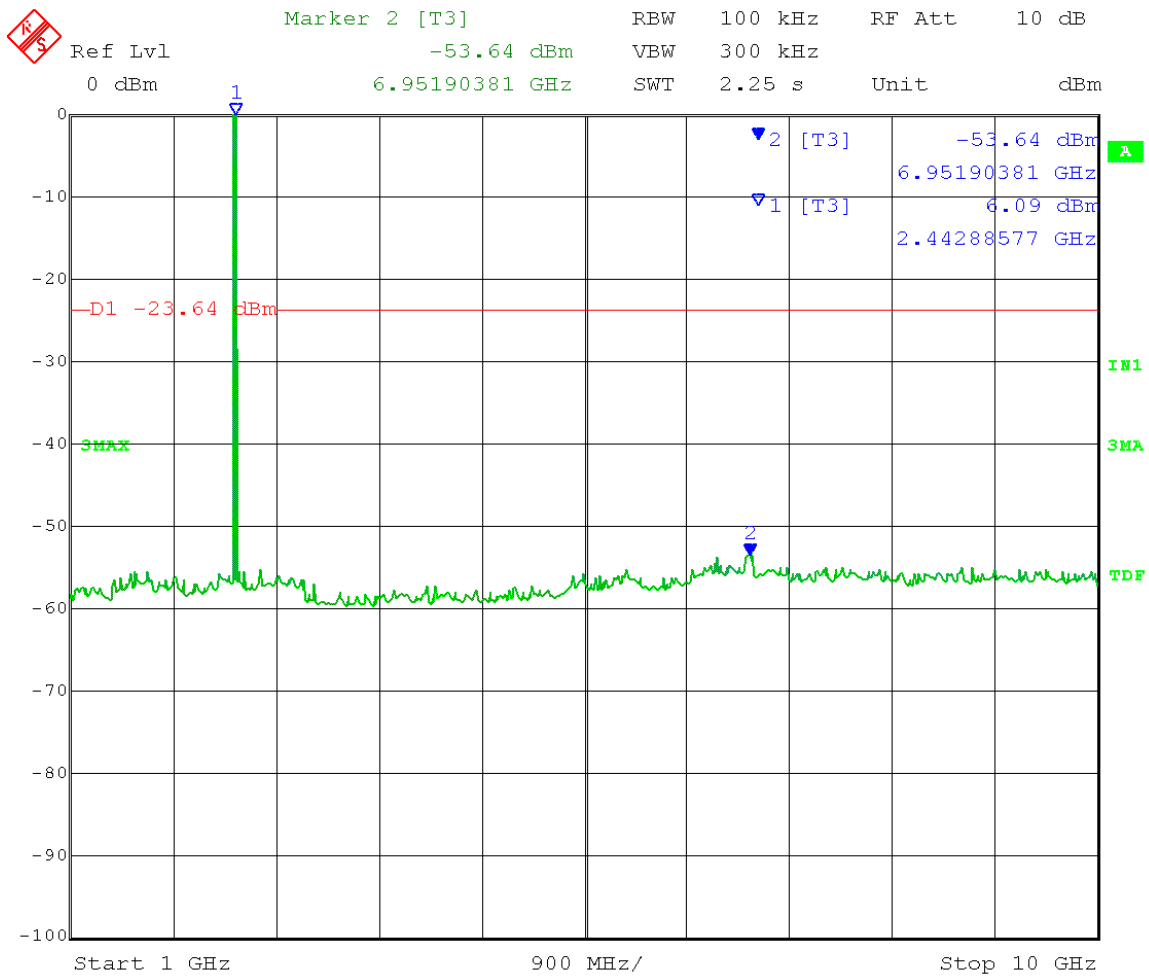
Date: 18.APR.2013 13:01:20

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz**
 Output power setting 16dBm @ 10 MHz BW
 Channel A
 Frequency Range = 30M-1GHz
 Go ~~klkq~~"Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



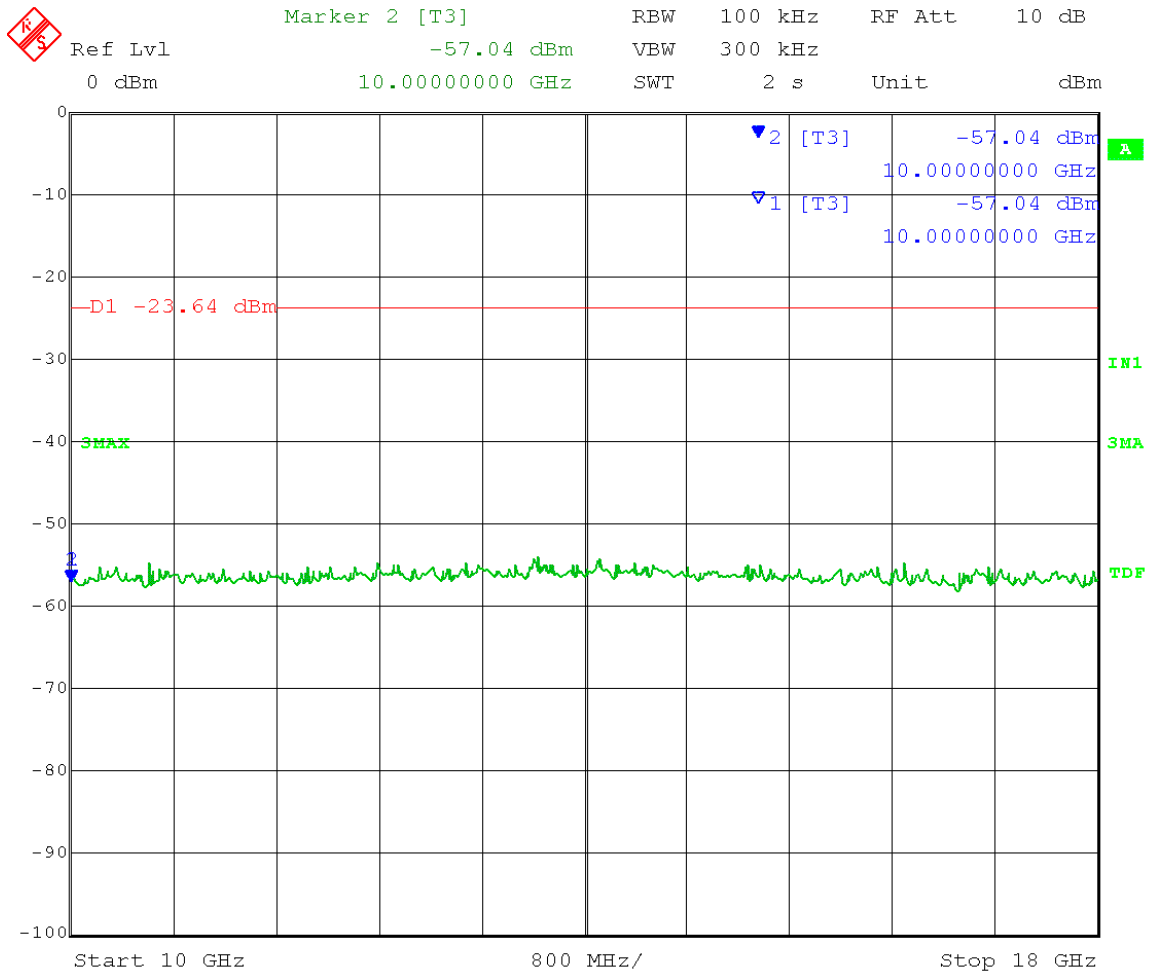
Date: 19.APR.2013 09:49:56

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 10 MHz BW
 Channel A
 Frequency Range = 1-10 GHz
Go kulp''Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



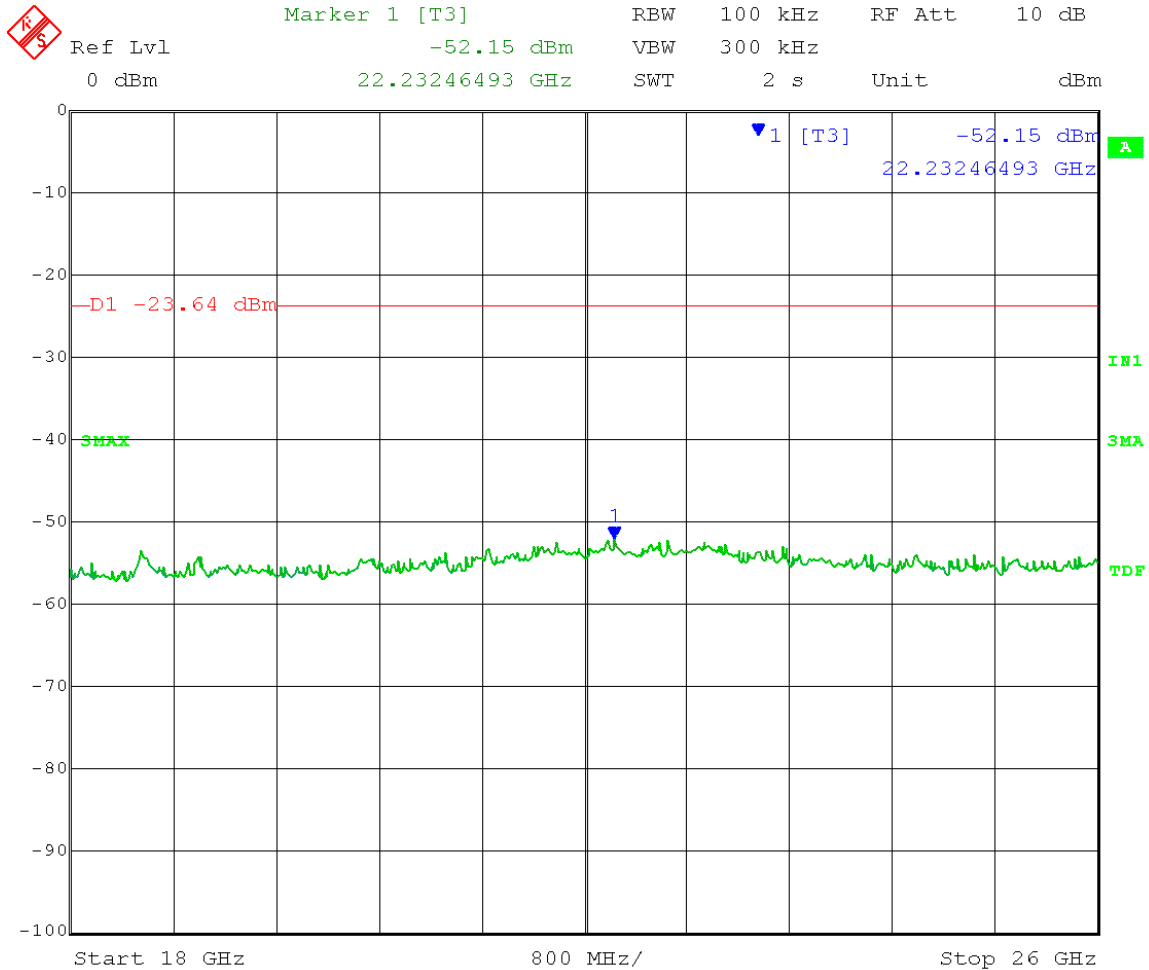
Date: 19.APR.2013 09:51:39

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 10 MHz BW
 Channel A
 Frequency Range = 10-18 GHz
Go ~~klqp~~ Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



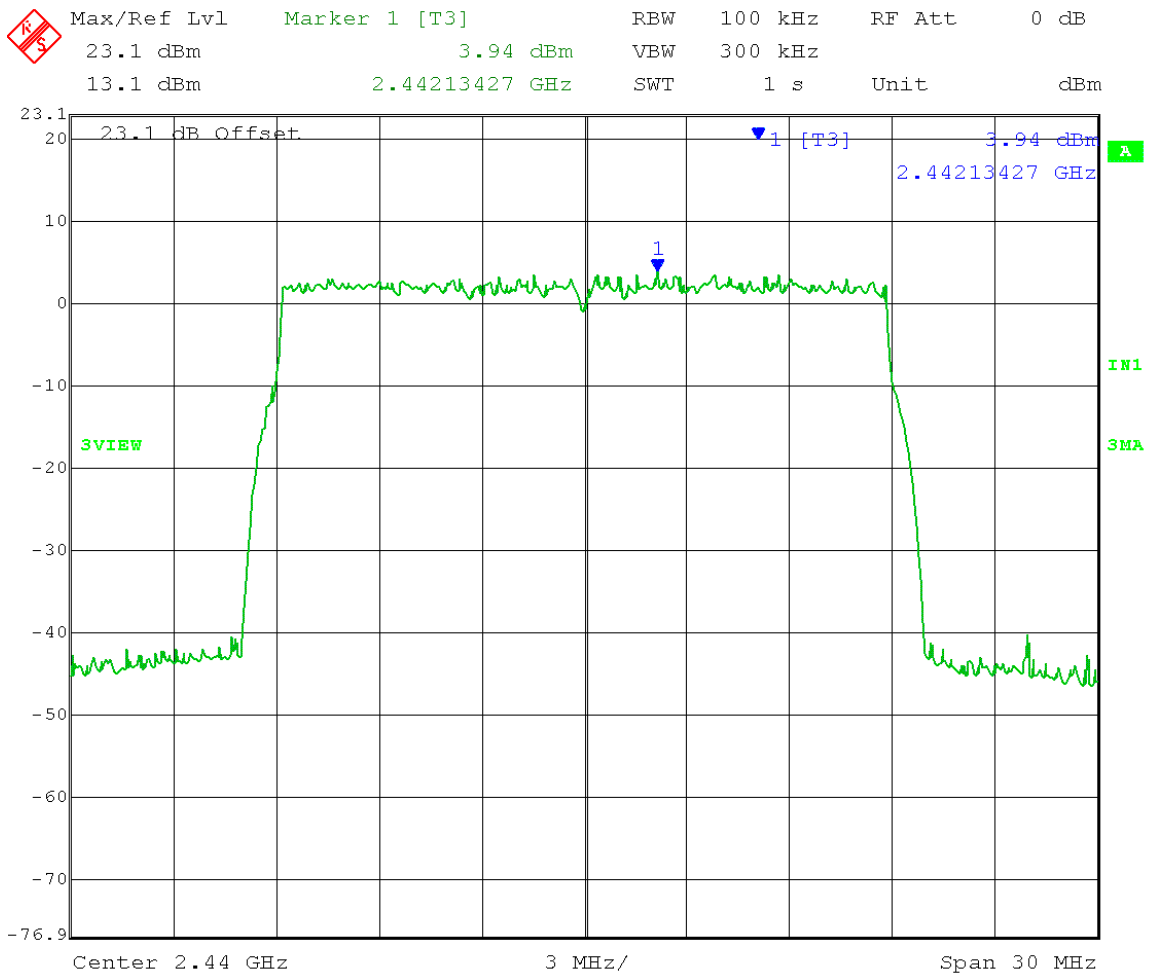
Date: 19.APR.2013 09:52:42

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 10 MHz BW
 Channel A
 Frequency Range = 18-26 GHz
 Go ~~klqp~~"Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



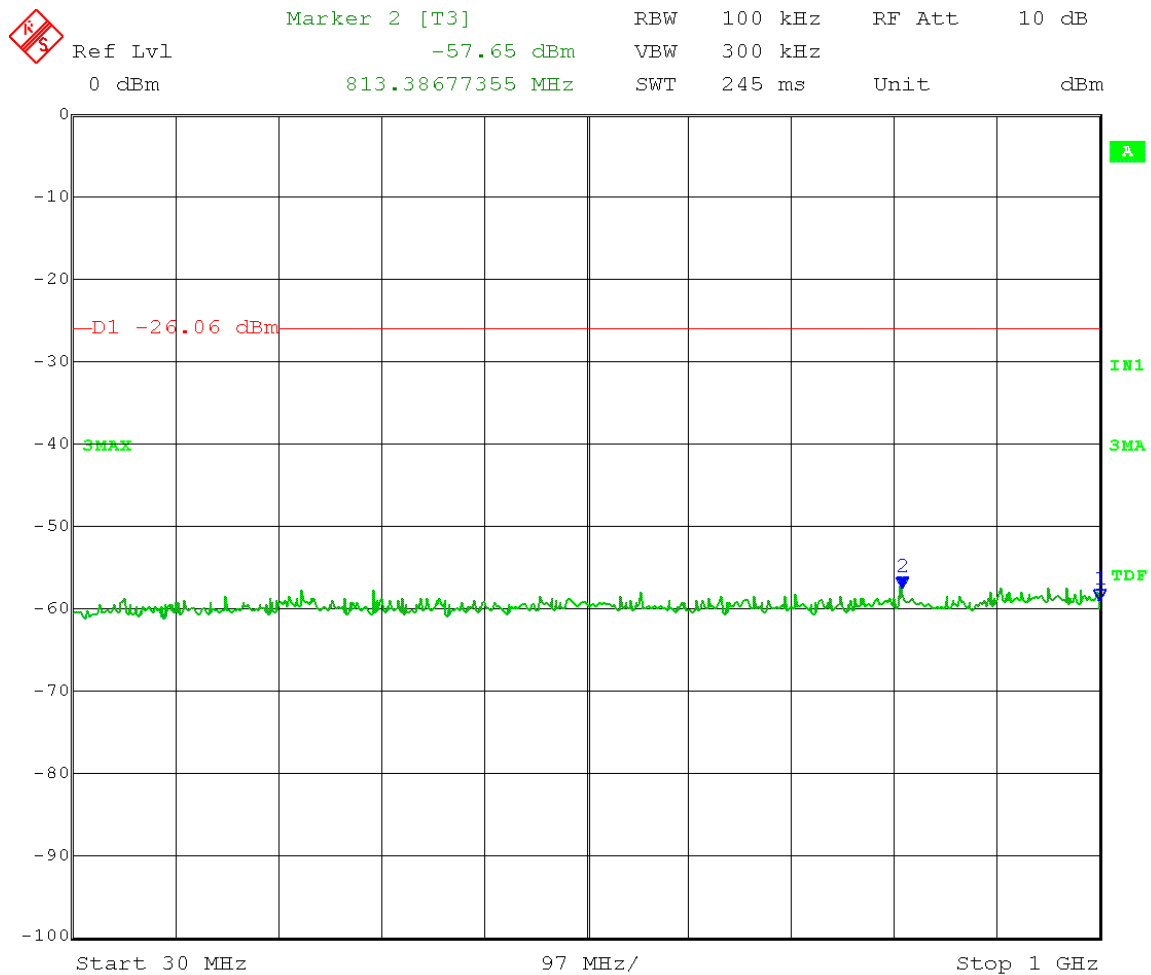
Date: 19.APR.2013 09:54:01

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel A
 Reference Level measurement
 Limit = 3.94dBm – 30 dB = -26.06dBm



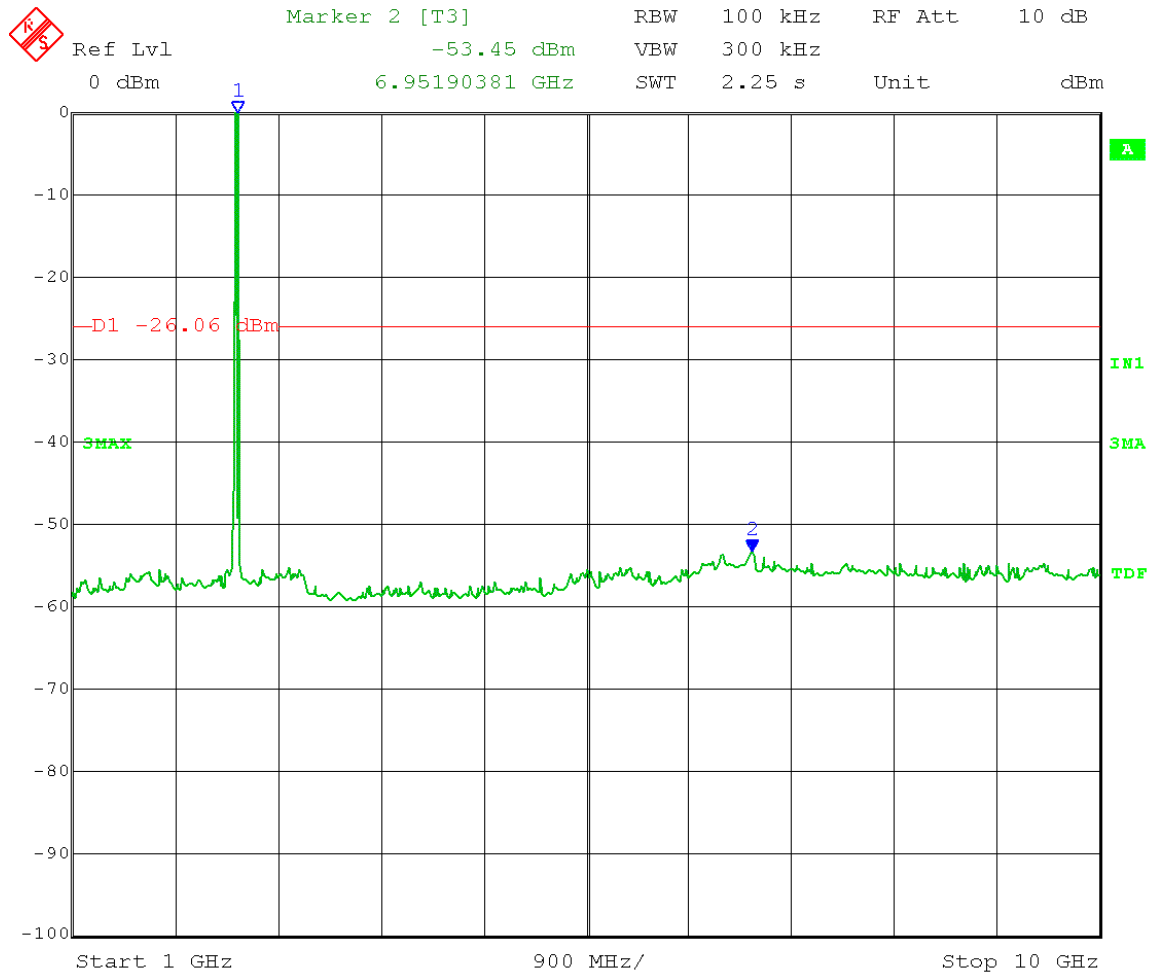
Date: 18.APR.2013 13:17:39

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel A
 Frequency Range 30M-1GHz
 Go **kukqp**"Level measurement
 Limit = 3.94dBm – 30 dB = -26.06dBm



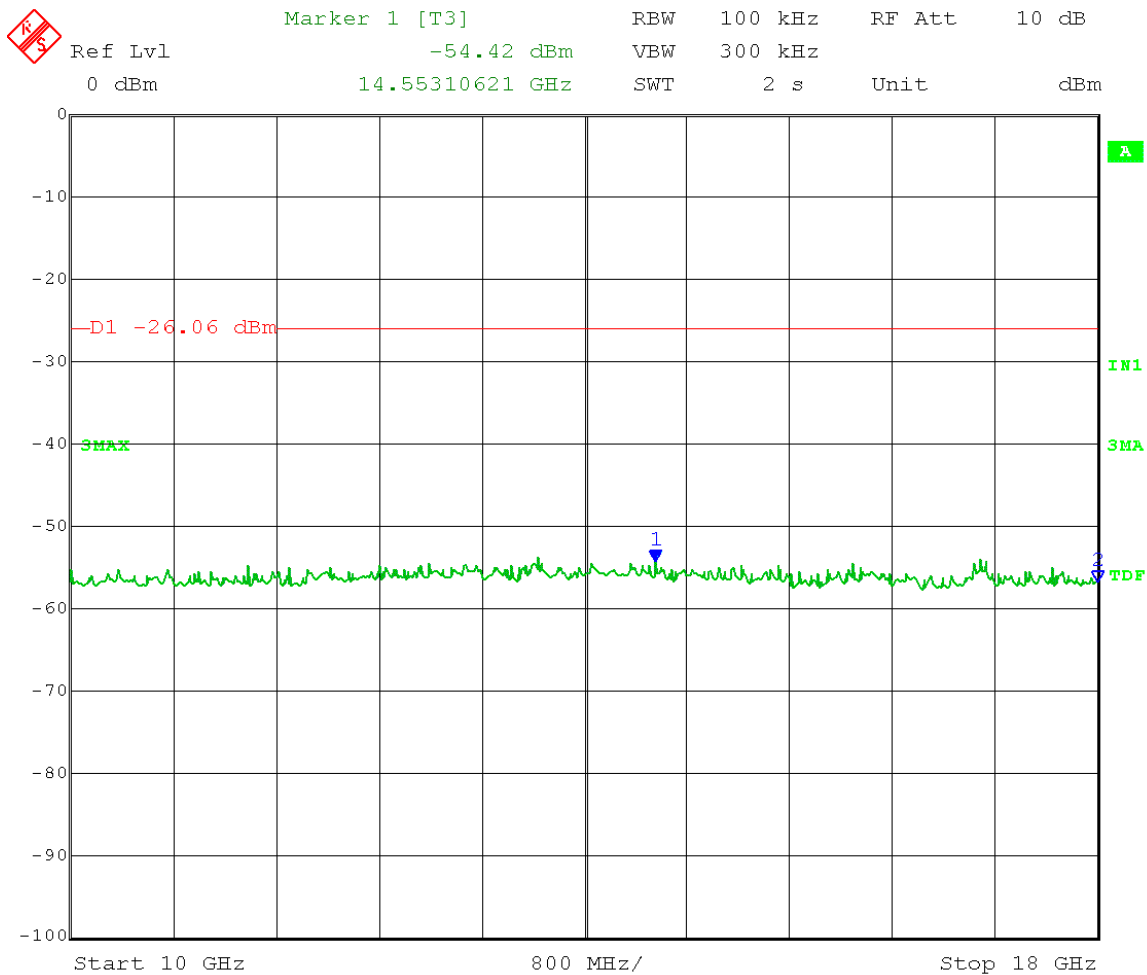
Date: 18.APR.2013 15:18:30

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel A
 Frequency Range 1-10GHz
 Go **kukqp**"Level measurement
 Limit = 3.94dBm – 30 dB = -26.06dBm



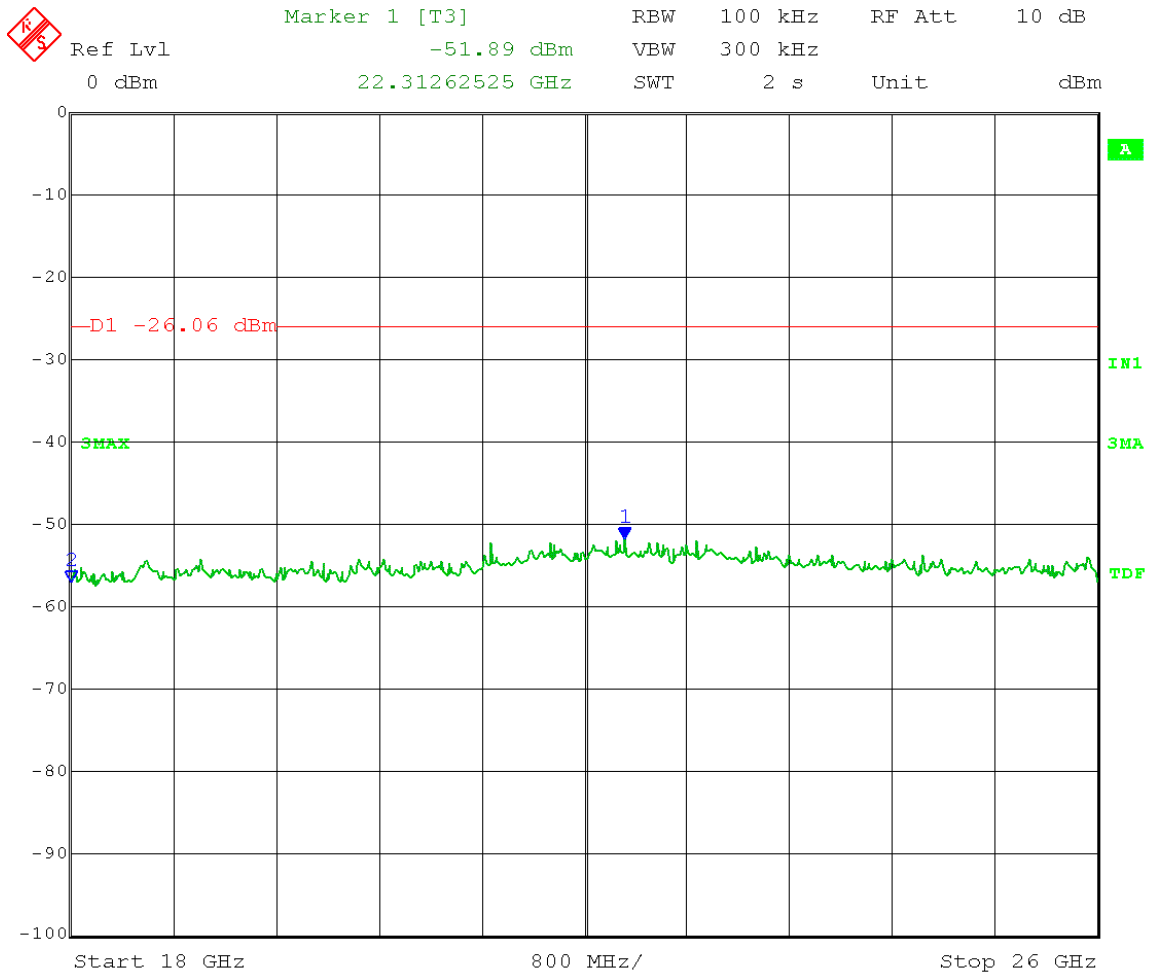
Date: 18.APR.2013 15:16:43

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = Max Hold Mid Channel Transmit = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel A
 Frequency Range 10-18GHz
 Go kkkqp"Level measurement
 Limit = 3.94dBm - 30 dB = -26.06dBm



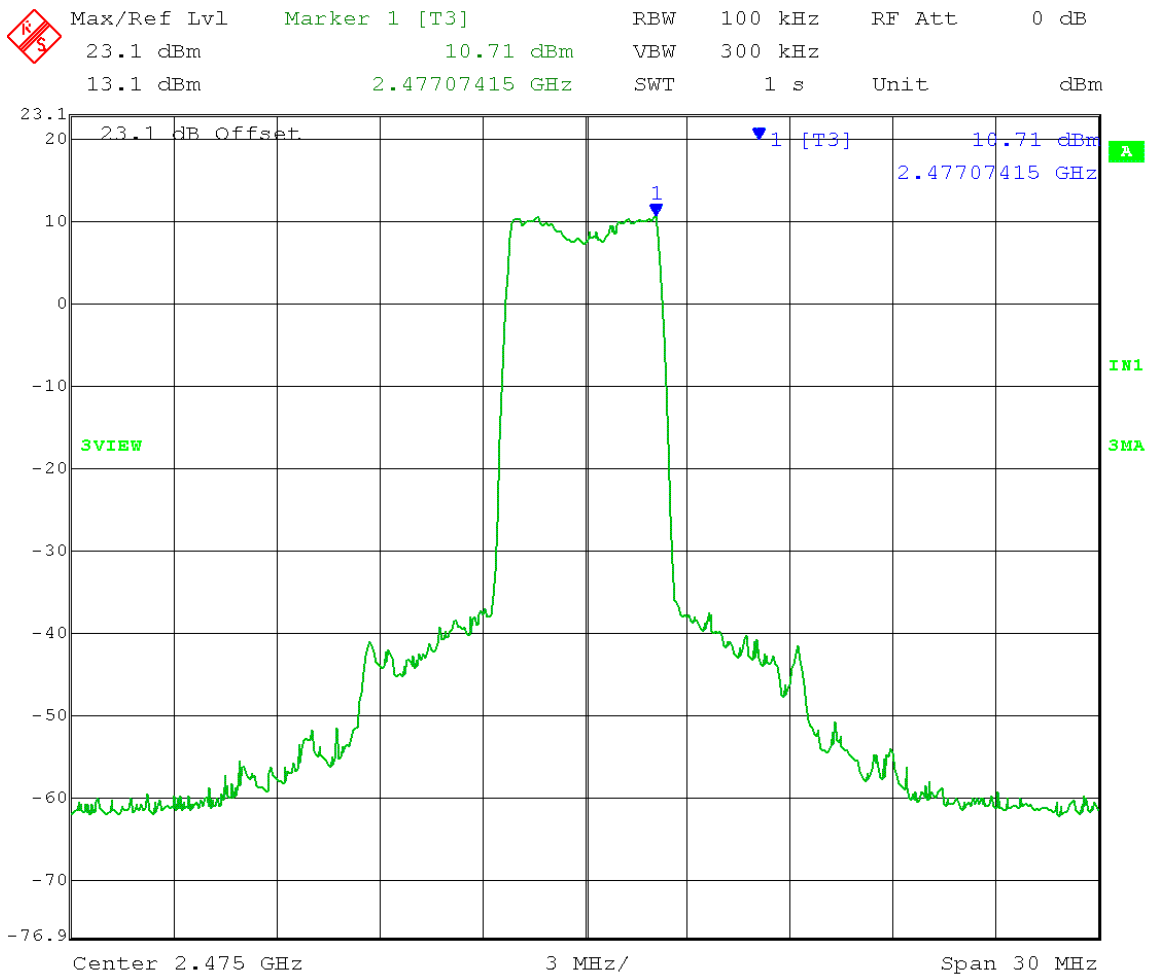
Date: 18.APR.2013 15:14:16

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Mid Channel Transmit = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel A
 Frequency Range 18-26GHz
Go ~~kukp~~"Level measurement
 Limit = 3.94dBm - 30 dB = -26.06dBm



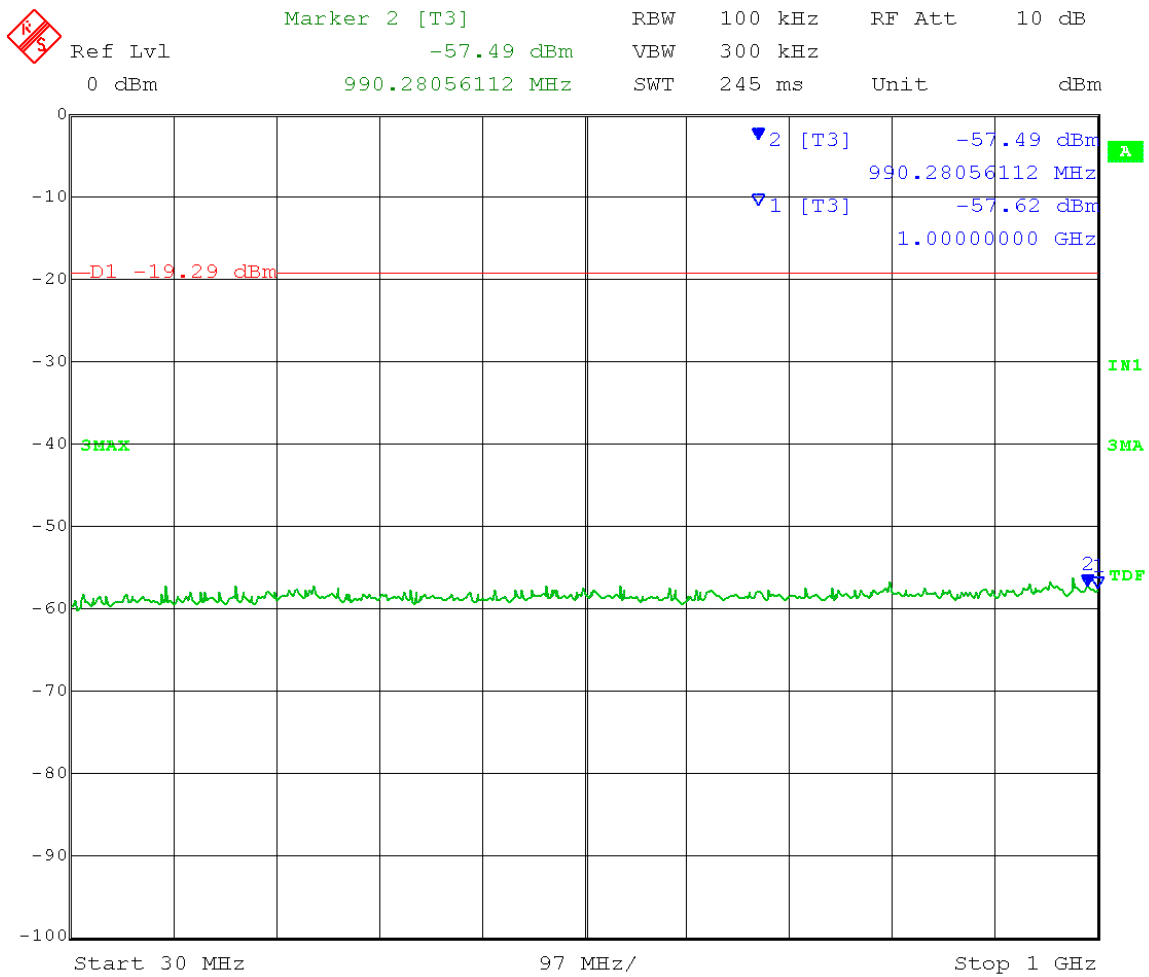
Date: 18.APR.2013 15:12:43

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold High Channel Transmit = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel A
Reference Level measurement
 Limit = 10.71Bm - 30 dB = -19.29 dBm



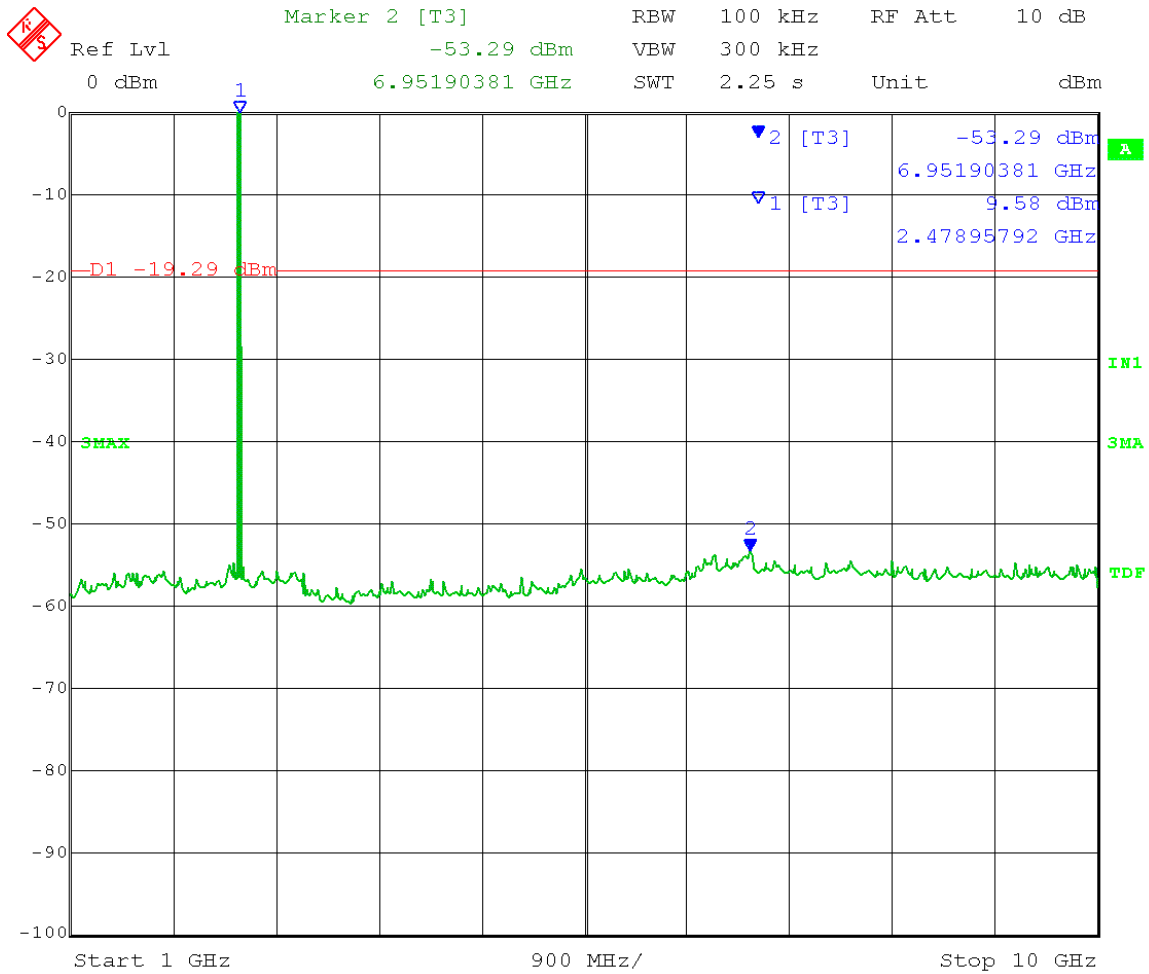
Date: 18.APR.2013 11:50:56

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel A
 Frequency Range = 30MHz-1 GHz
Go kulp''Level measurement
 Limit (D1) = 10.71Bm – 30 dB = -19.29 dBm



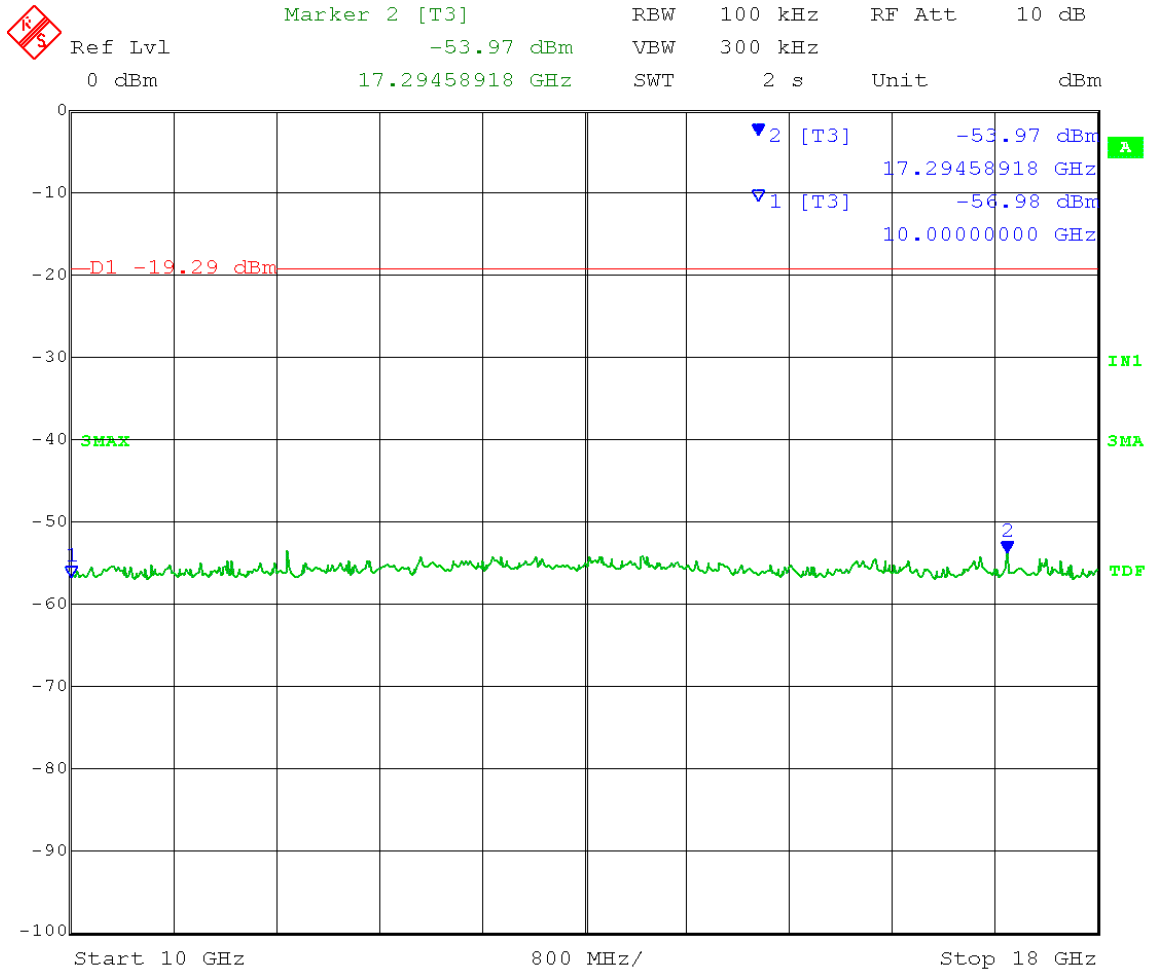
Date: 19.APR.2013 09:13:03

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel A
 Frequency Range = 1-10 GHz
Go kkkpp''Level measurement
 Limit (D1) = 10.71Bm – 30 dB = -19.29 dBm



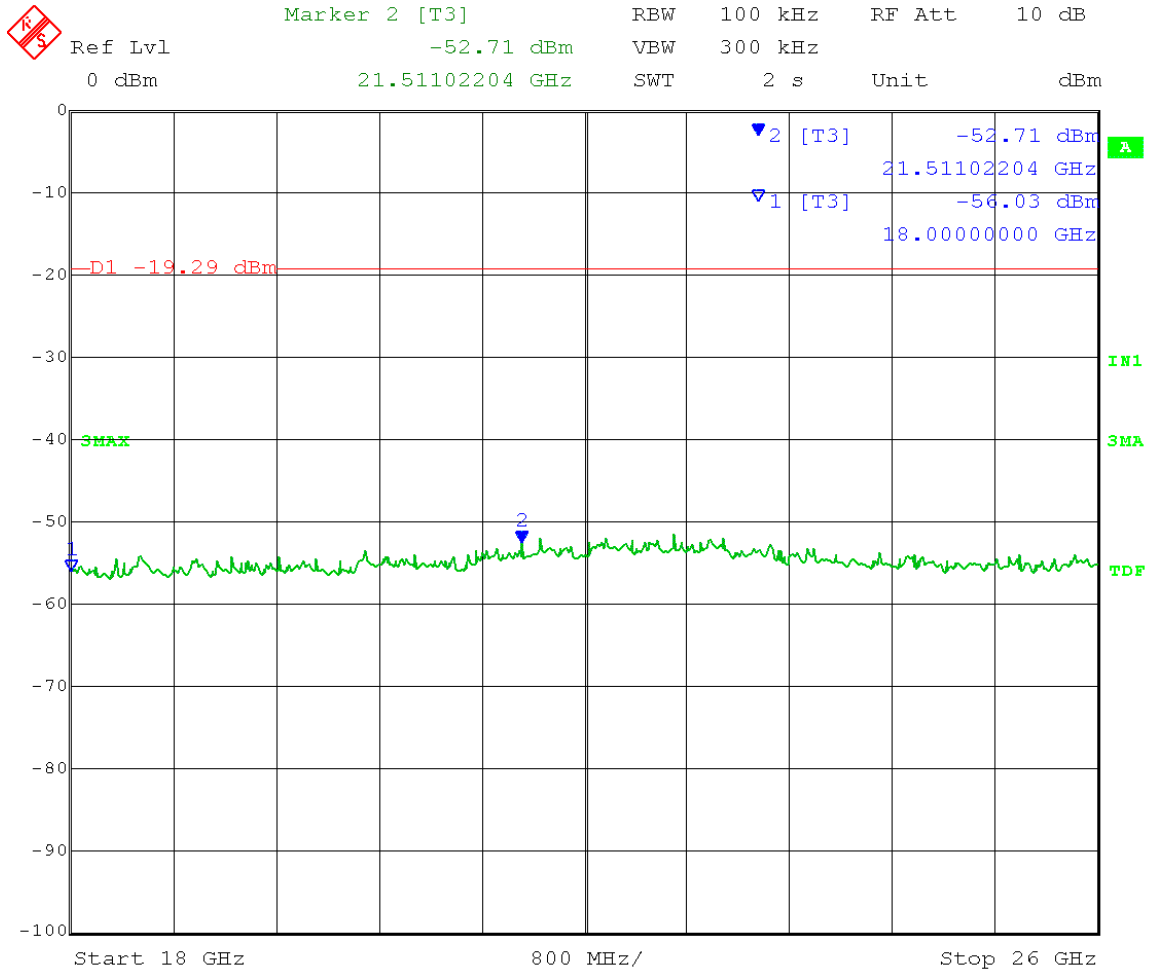
Date: 19.APR.2013 09:15:12

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel A
 Frequency Range = 10-18 GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 10.71Bm – 30 dB = -19.29 dBm



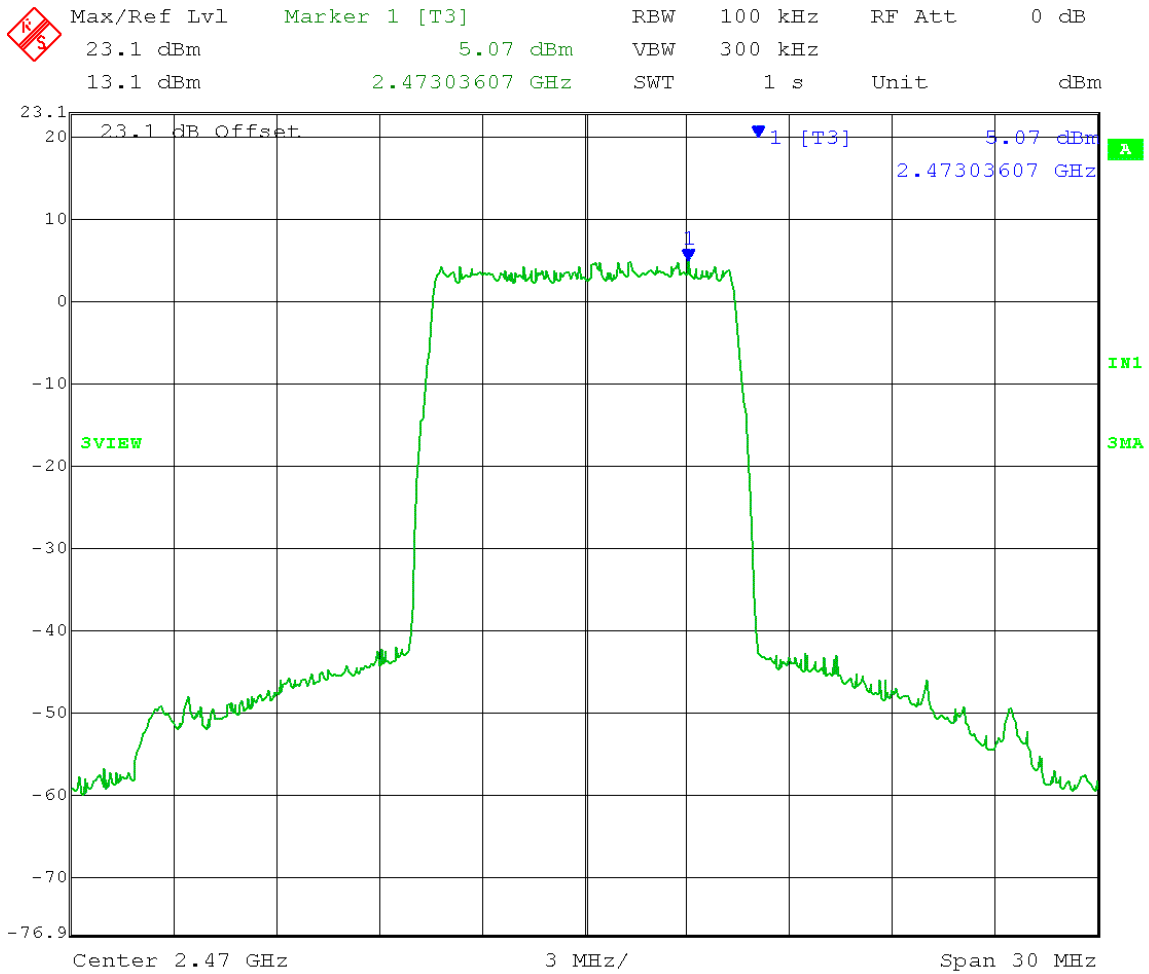
Date: 19.APR.2013 09:16:55

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel A
 Frequency Range = 18-26 GHz
Go kulp''Level measurement
 Limit (D1) = 10.71Bm – 30 dB = -19.29 dBm



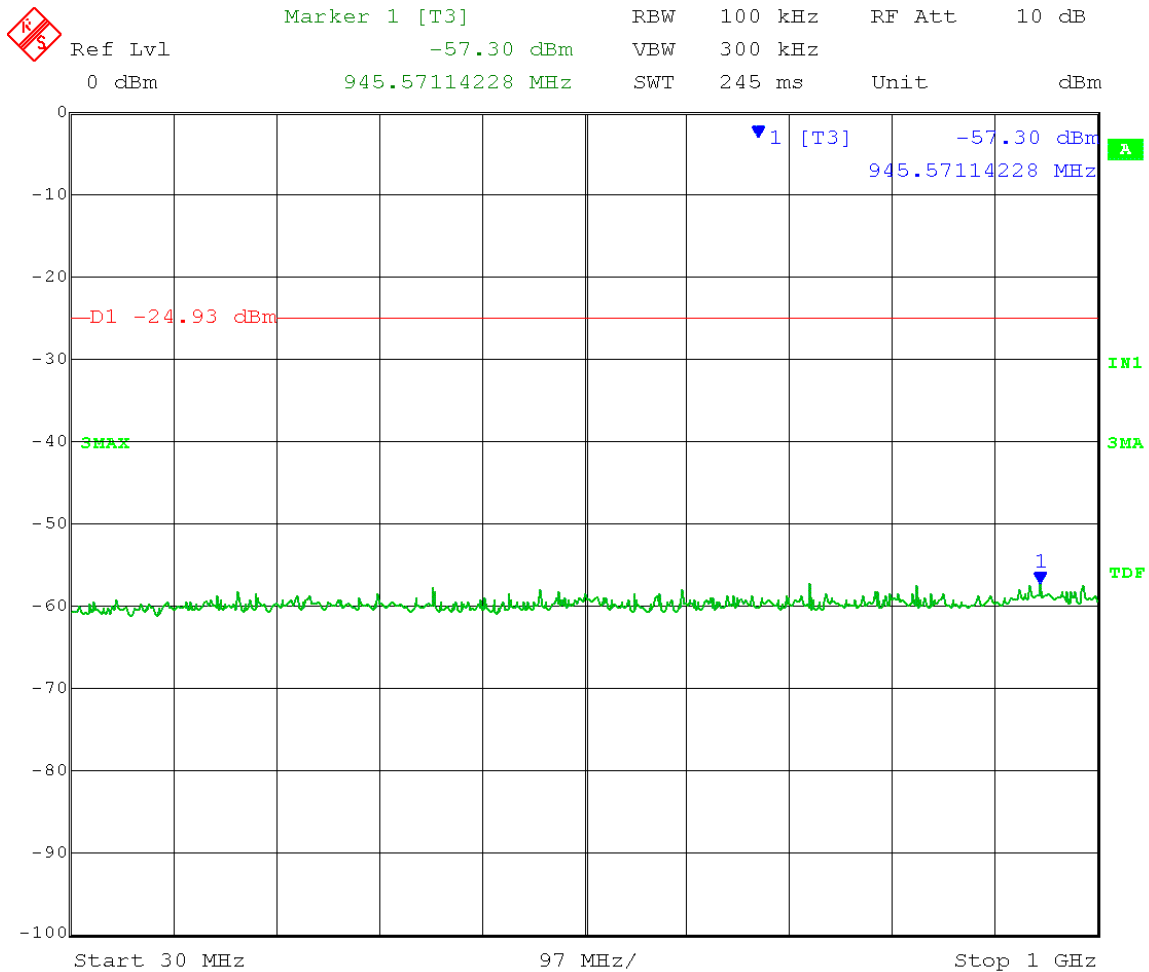
Date: 19.APR.2013 09:18:34

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel A
 Reference Level measurement
 Limit = 5.07dBm – 30 dB = -24.93dBm



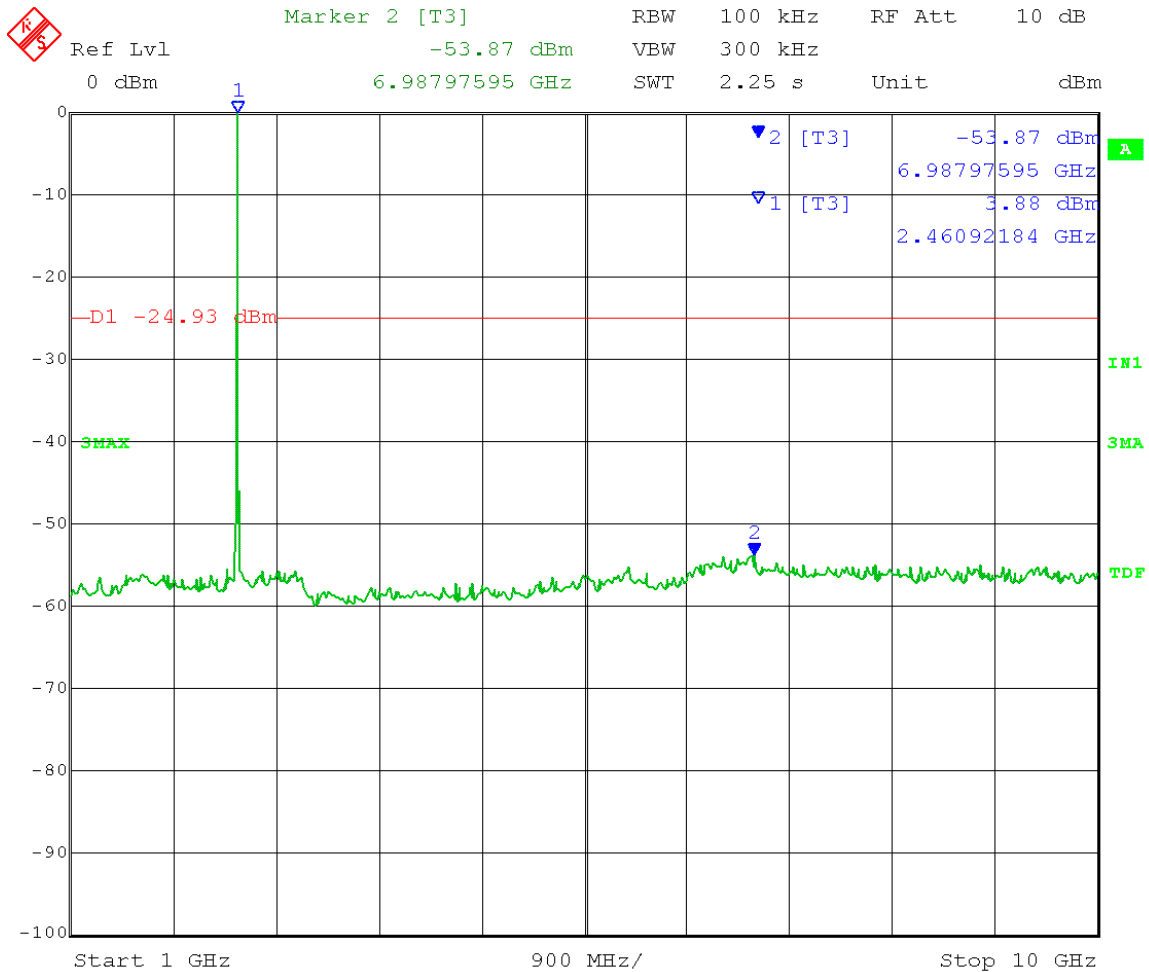
Date: 18.APR.2013 13:04:32

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel A
 Frequency Range = 30M-1 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 5.07dBm – 30 dB = -24.93dBm



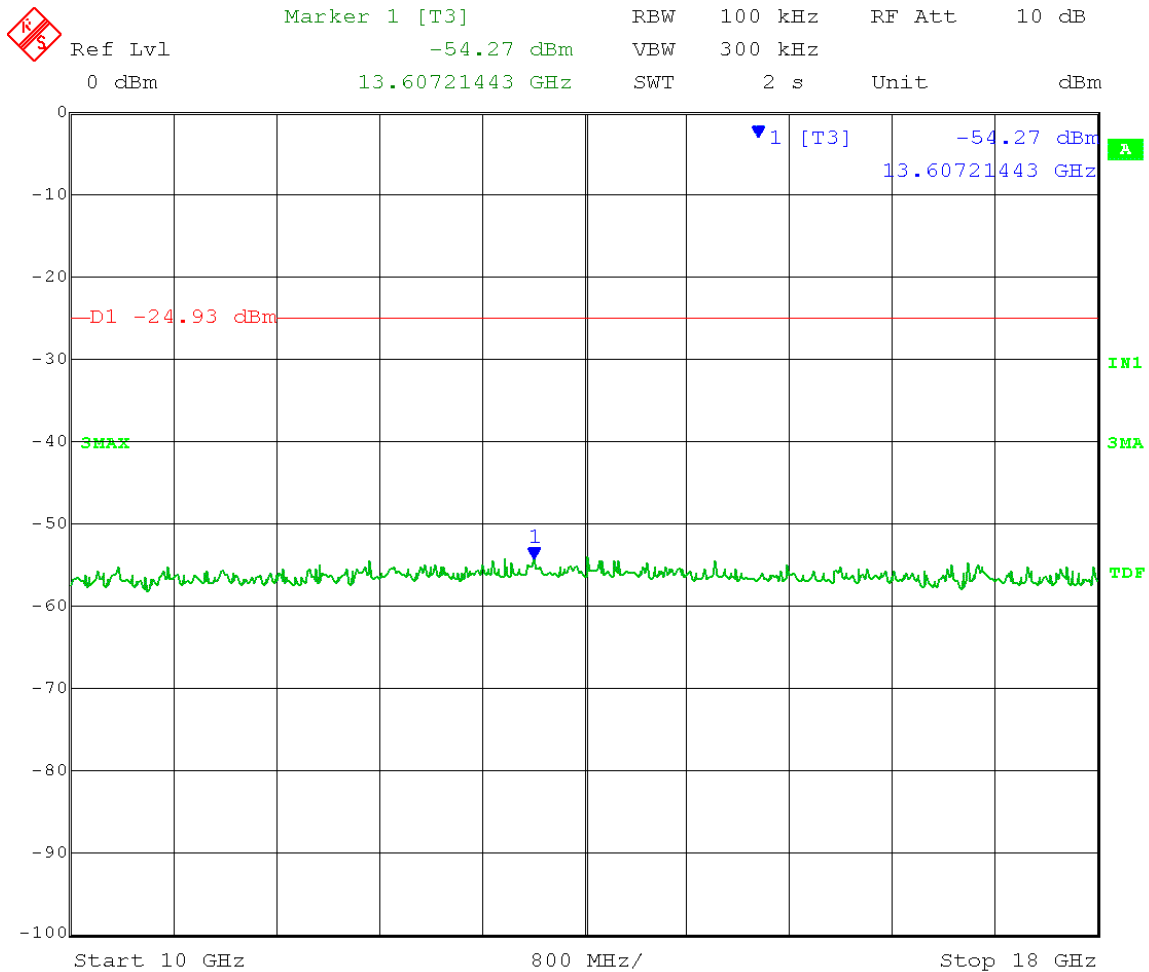
Date: 19.APR.2013 09:45:52

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel A
 Frequency Range = 1-10 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 5.07dBm – 30 dB = -24.93dBm



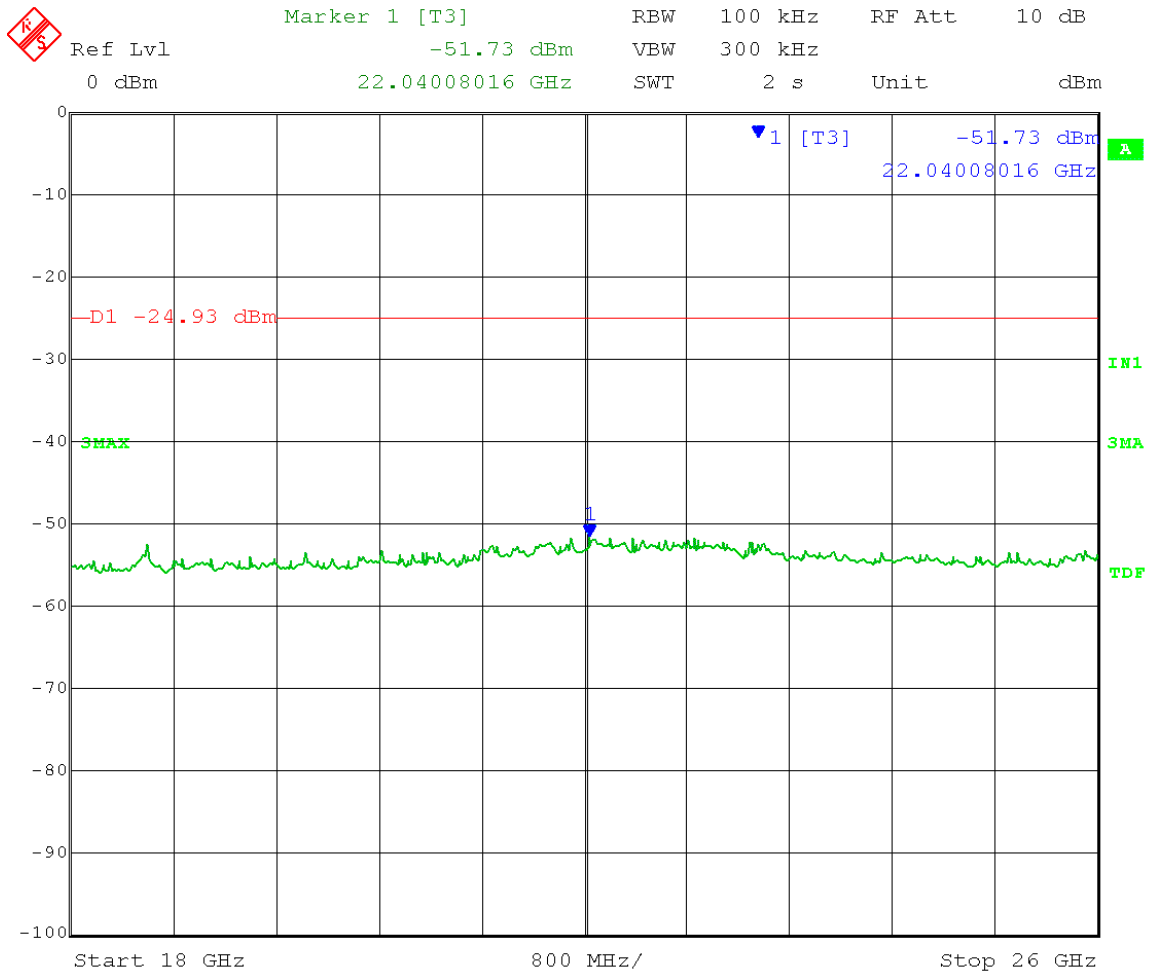
Date: 19.APR.2013 09:44:55

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz**
 Output power setting 14dBm @ 10 MHz BW
 Channel A
 Frequency Range = 10-18 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 5.07dBm – 30 dB = -24.93dBm



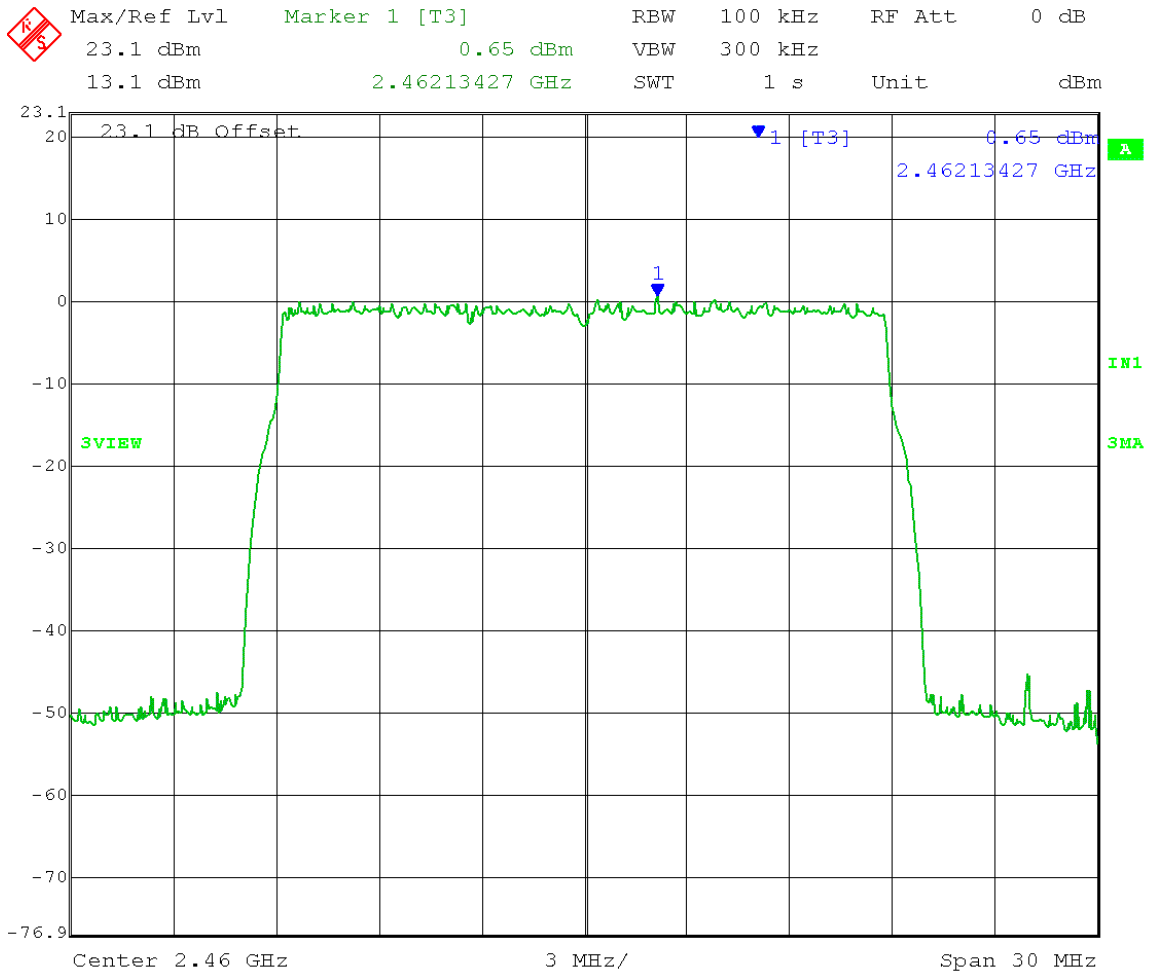
Date: 19.APR.2013 09:43:42

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel A
 Frequency Range = 18-26 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 5.07dBm – 30 dB = -24.93dBm



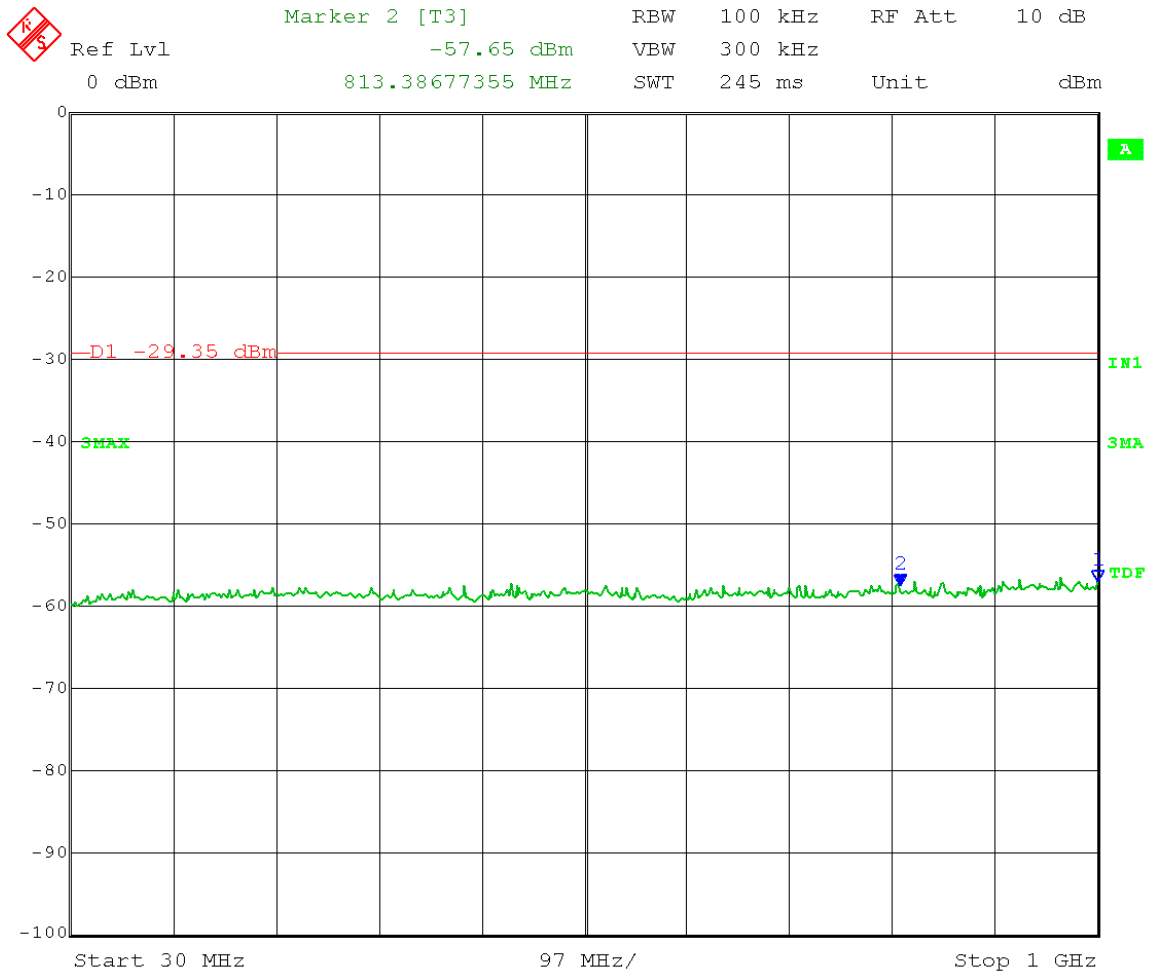
Date: 19.APR.2013 09:42:42

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel A
Reference Level measurement
 Limit = 0.65dBm – 30 dB = -29.35dBm



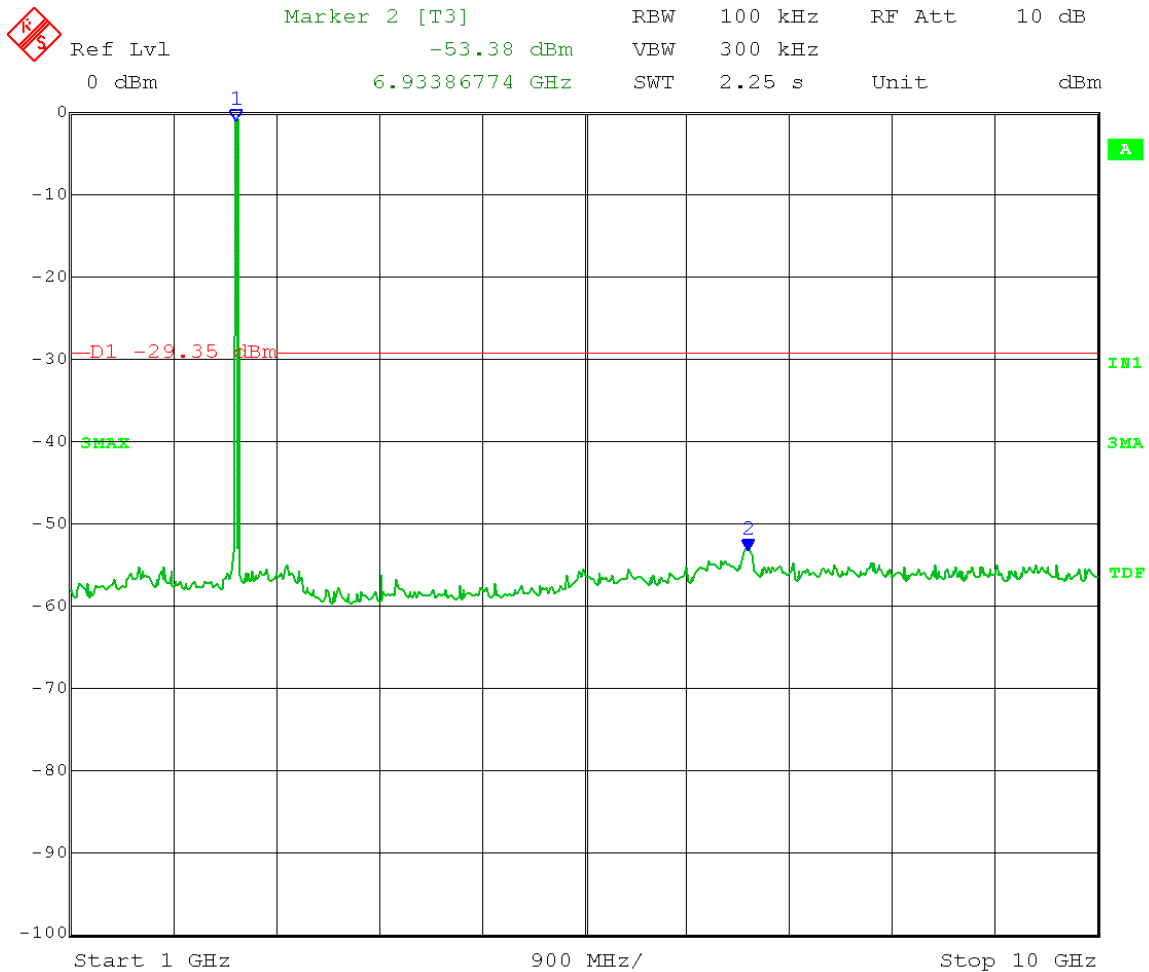
Date: 18.APR.2013 13:15:27

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel A
 Frequency Range 30M-1GHz
Go ~~klqp~~'Level measurement
 Limit = 0.65dBm – 30 dB = -29.35dBm



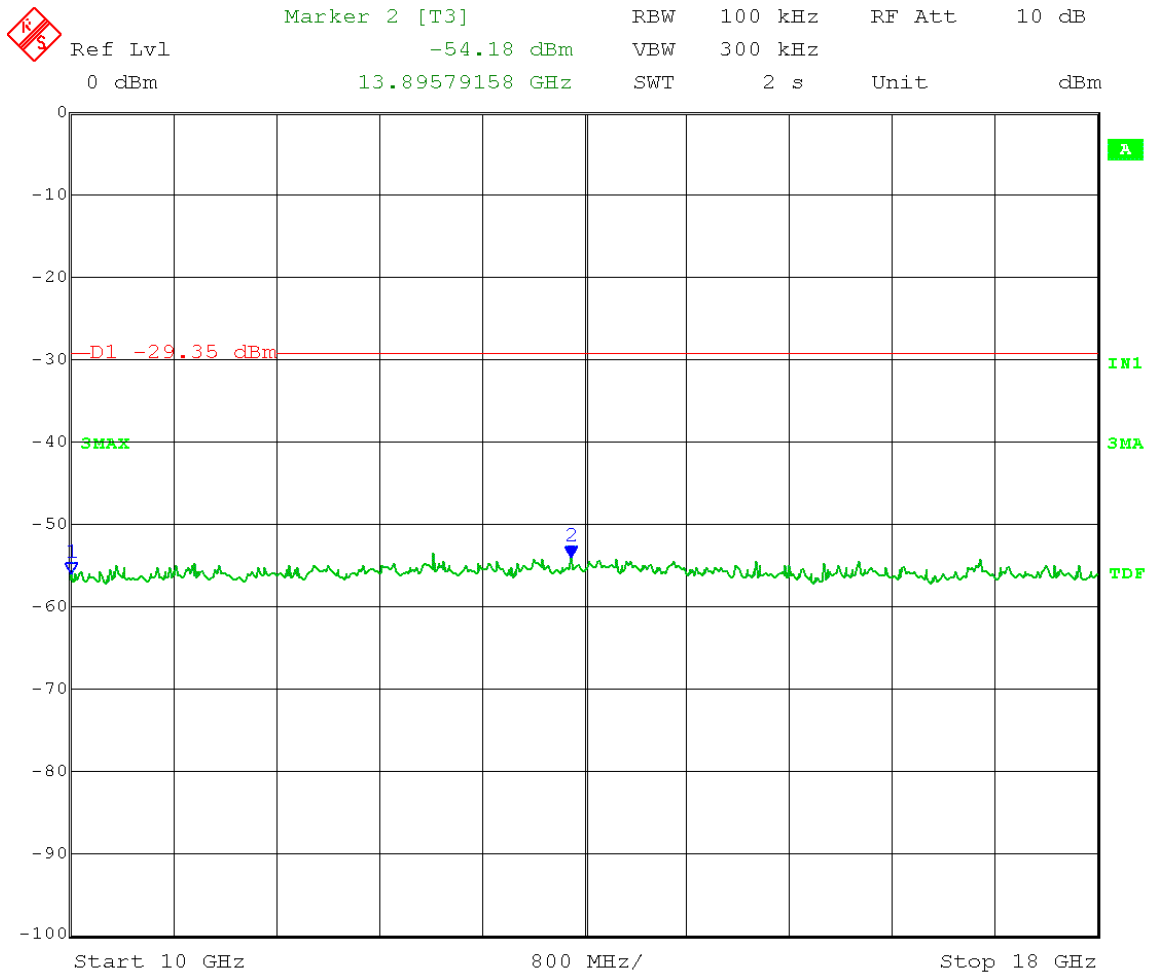
Date: 18.APR.2013 15:23:38

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel A
 Frequency Range 1-10GHz
 Go ~~klkqp~~ Level measurement
 Limit = 0.65dBm – 30 dB = -29.35dBm



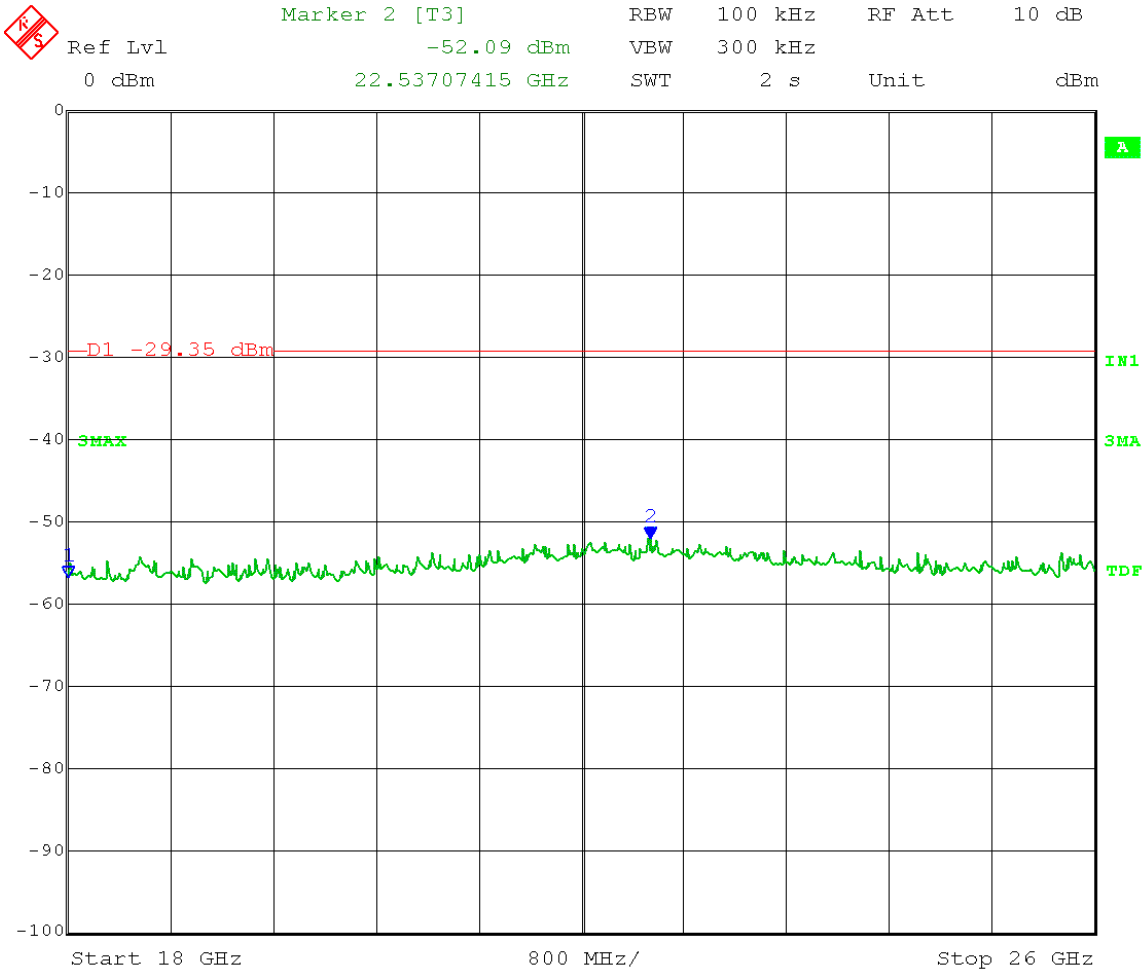
Date: 18.APR.2013 15:25:26

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel A
 Frequency Range 10-18GHz
 Go ~~kukqp~~"Level measurement
 Limit = 0.65dBm – 30 dB = -29.35dBm



Date: 18.APR.2013 15:26:53

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold High Channel Transmit = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel A
 Frequency Range 18-26GHz
Go ~~kukqp~~'Level measurement
 Limit = 0.65dBm - 30 dB = -29.35dBm

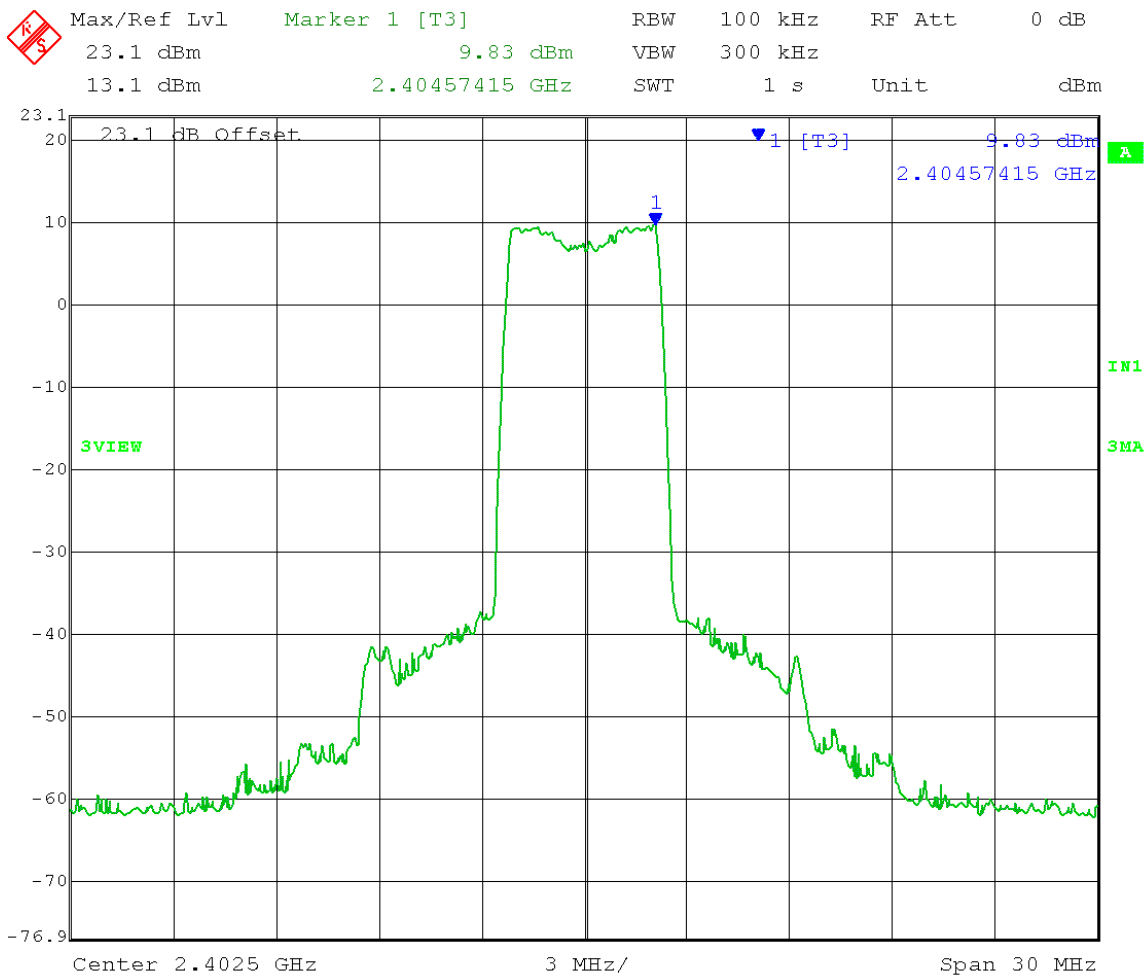


Date: 18.APR.2013 15:31:09

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel B

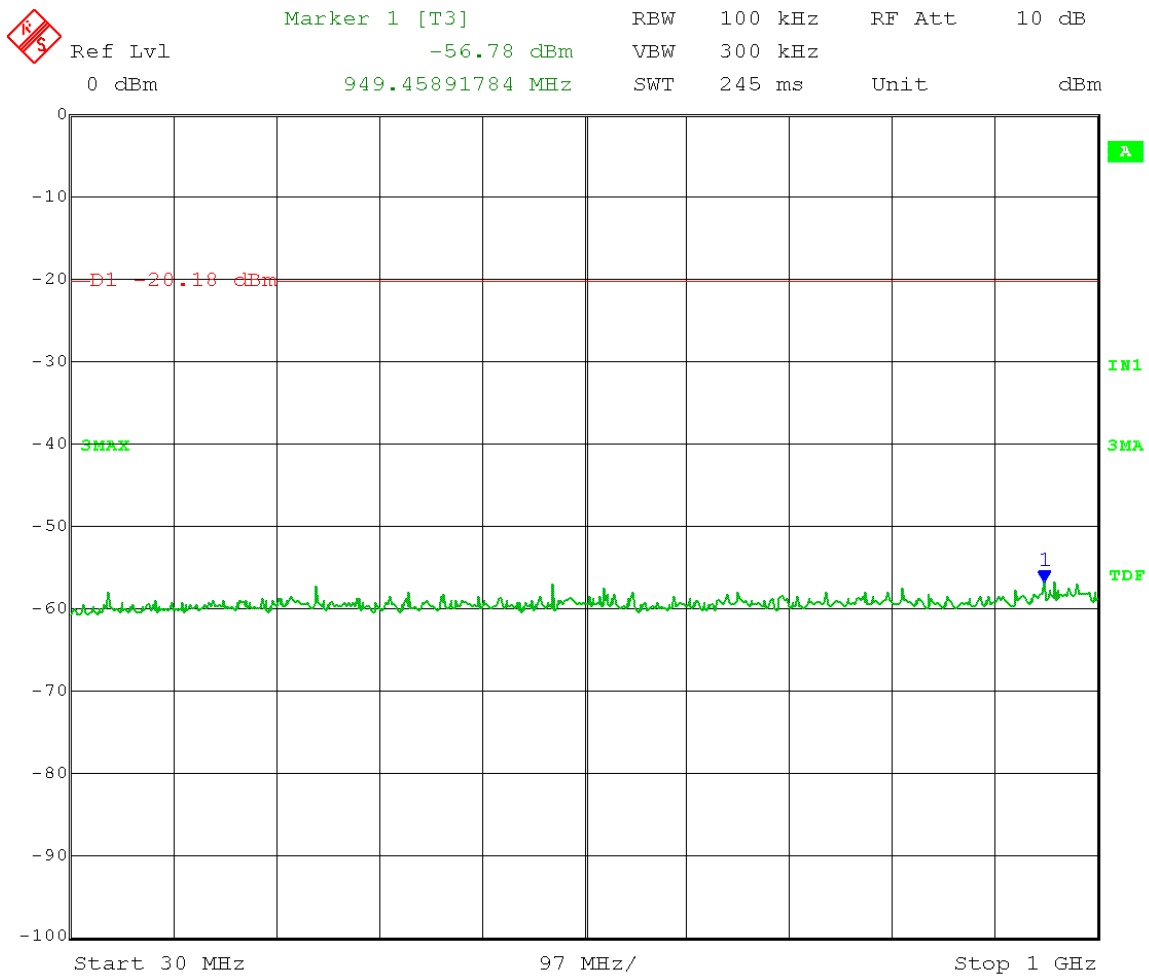
Reference Level measurement

Limit = 9.82dBm – 30 dB = -20.18dBm



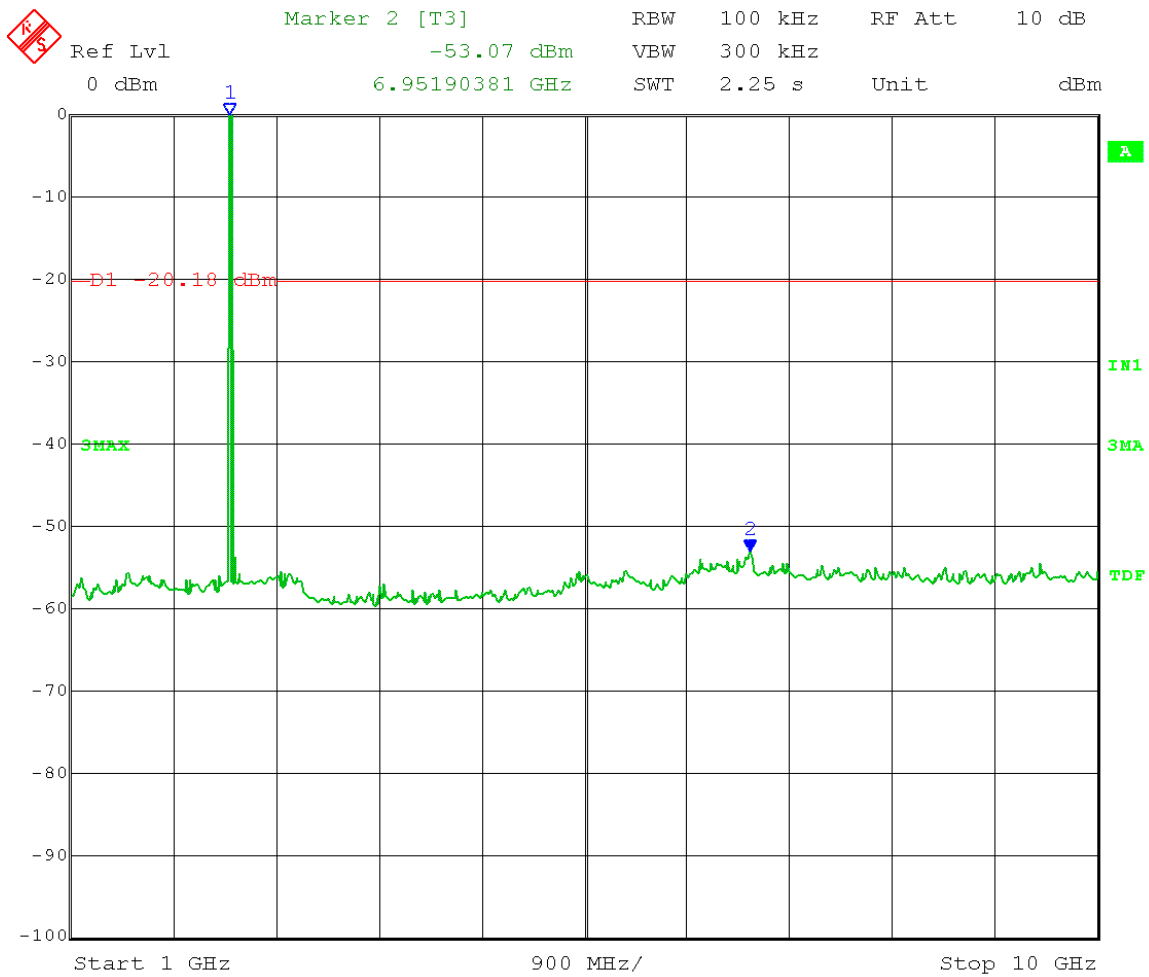
Date: 18.APR.2013 12:33:47

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 30M-1GHz
Go kulp'Level measurement
 Limit (D1) = 9.82dBm – 30 dB = -20.18dBm



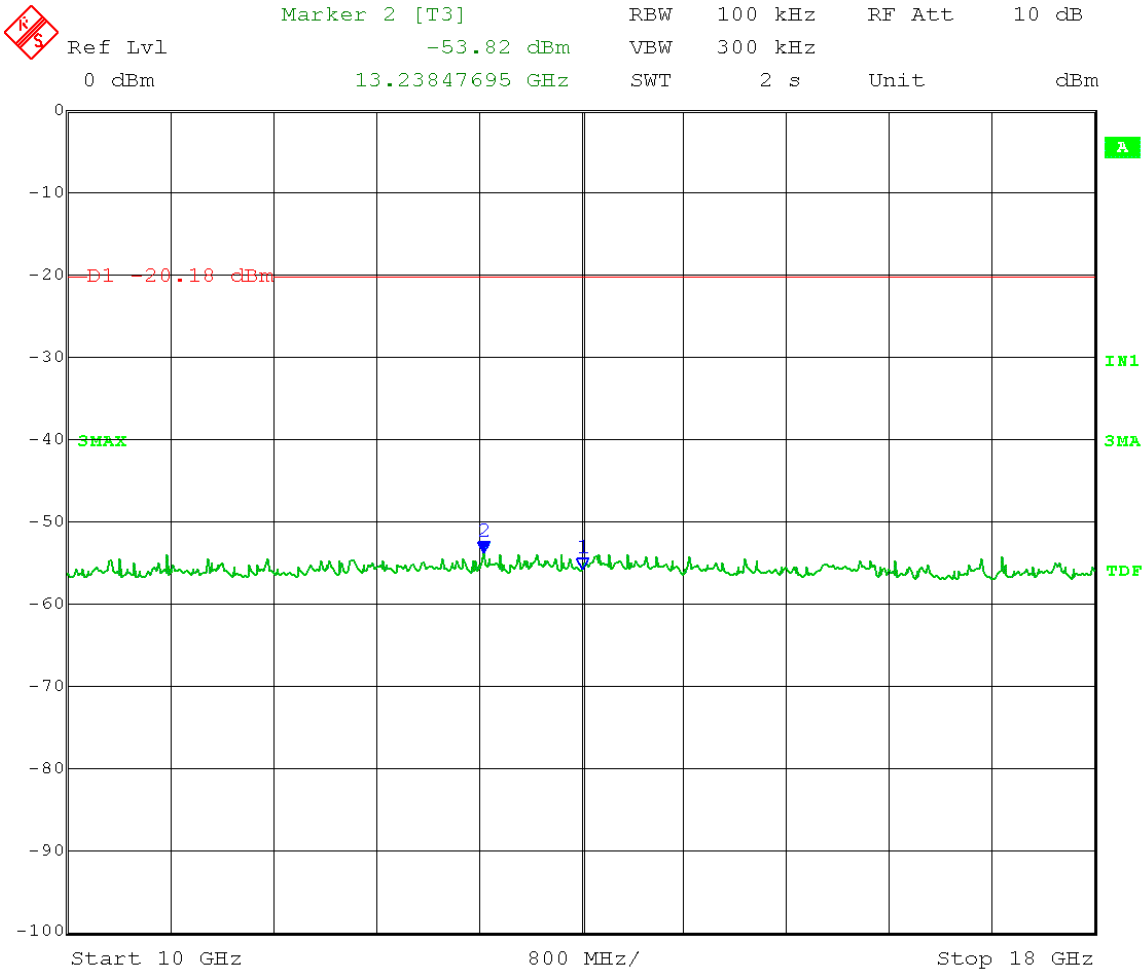
Date: 19.APR.2013 08:52:08

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 1-10GHz
Go ~~kukp~~'Level measurement
 Limit (D1) = 9.82dBm – 30 dB = -20.18dBm



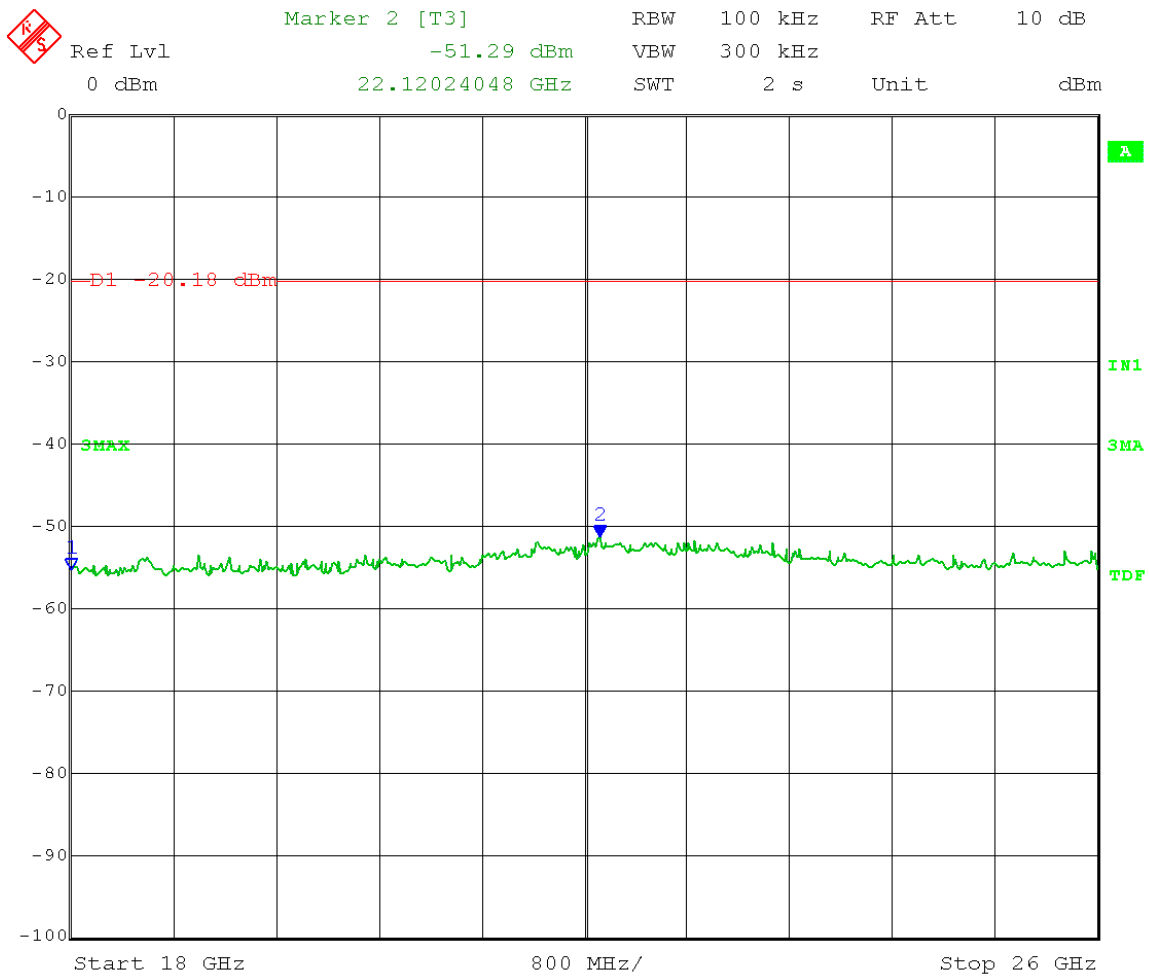
Date: 19.APR.2013 08:50:27

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 10-18GHz
Go kulp''Level measurement
 Limit (D1) = 9.82dBm – 30 dB = -20.18dBm



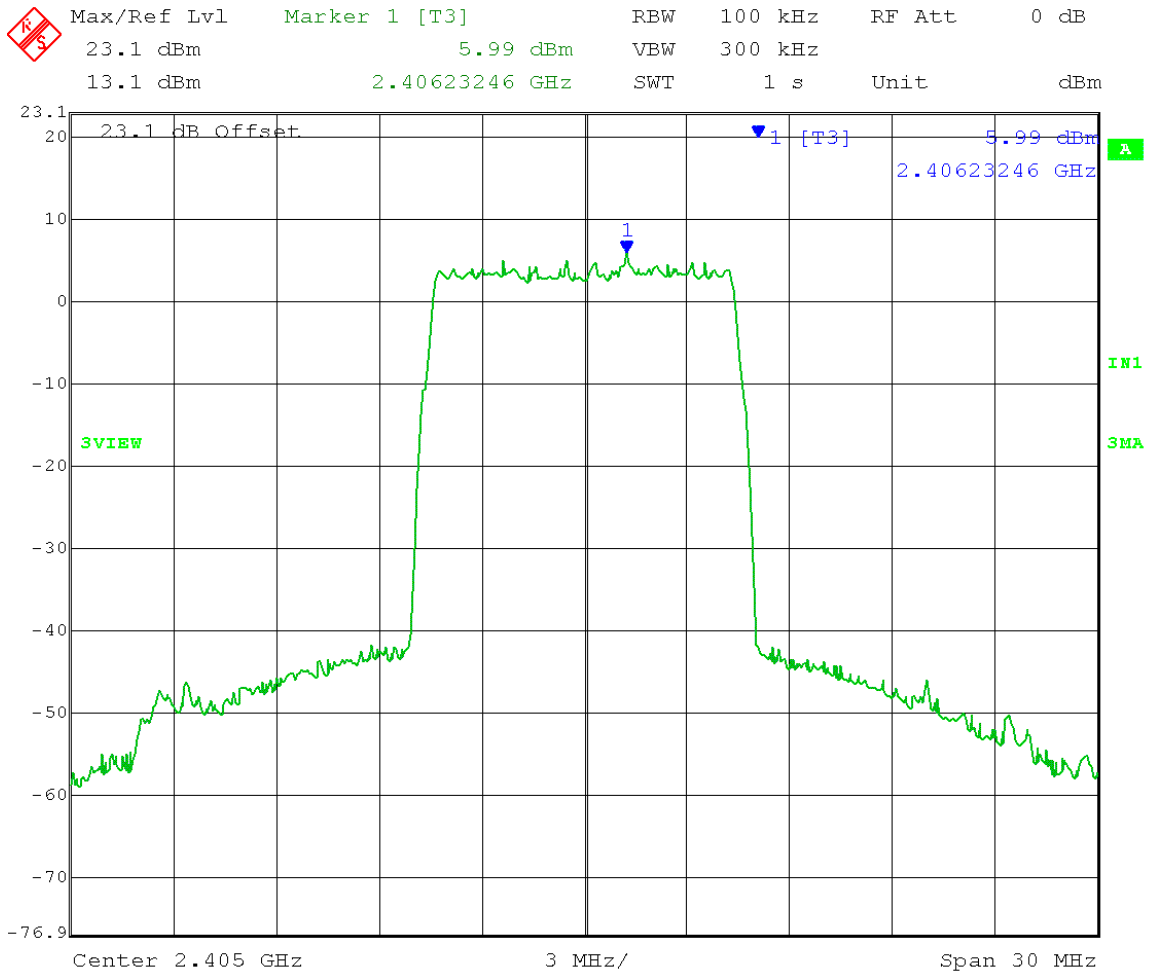
Date: 19.APR.2013 08:48:34

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.4025GHz**
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 18-26GHz
Go kulp'Level measurement
 Limit (D1) = 9.82dBm – 30 dB = -20.18dBm



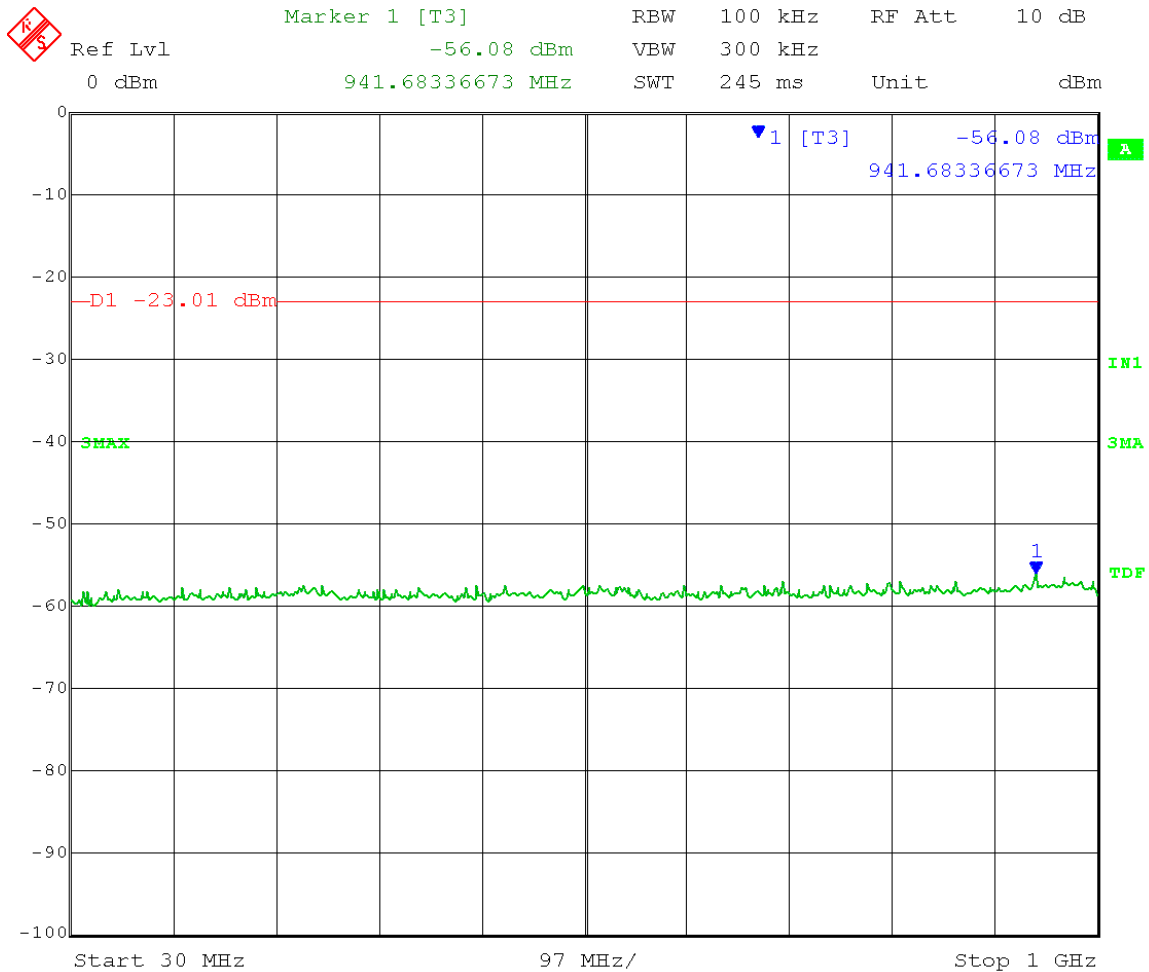
Date: 19.APR.2013 08:46:30

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel B
 Reference Level measurement
 Limit = 5.99dBm – 30 dB = -23.01dBm



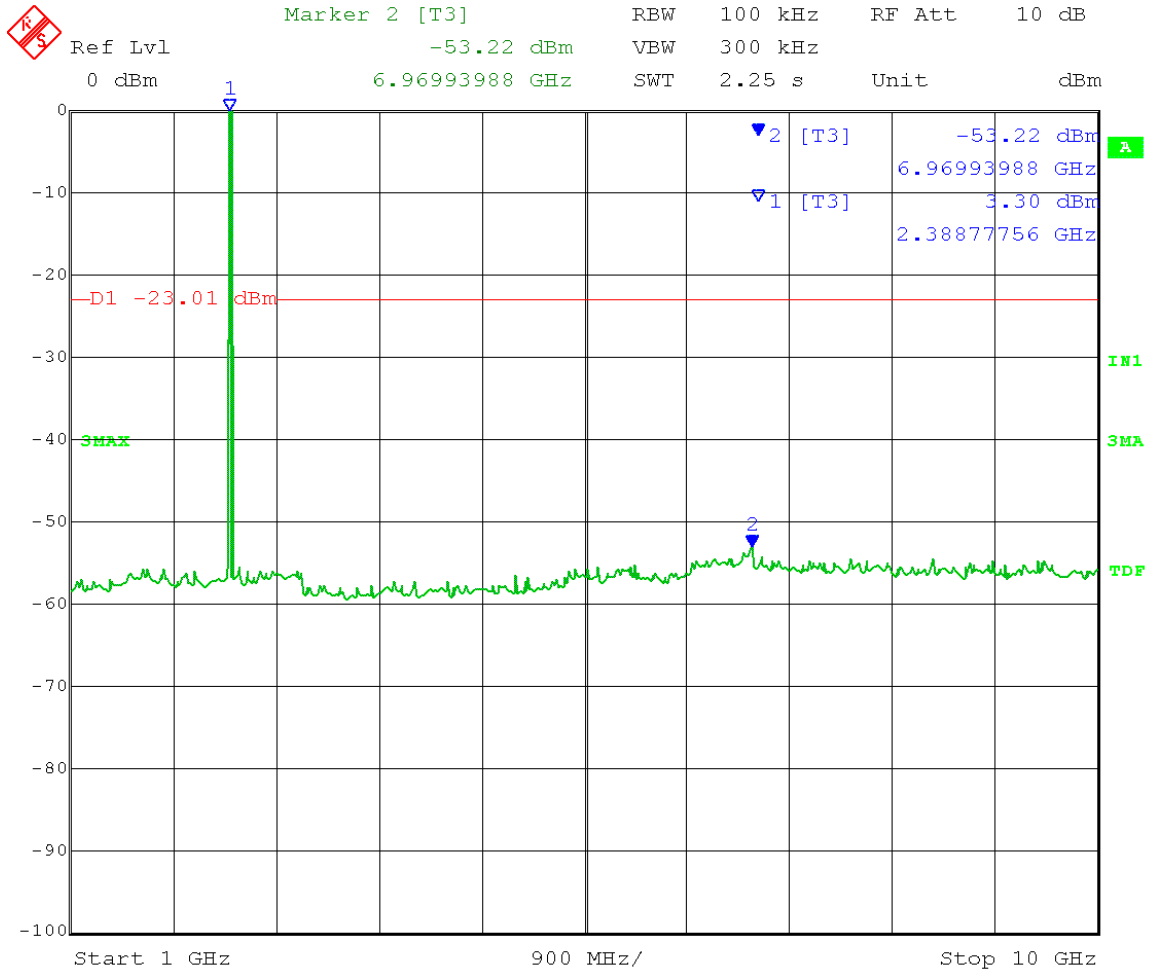
Date: 18.APR.2013 12:56:55

Test Date: 4-19-2013
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel B
 Frequency Range = 30M-1 GHz
Go ~~klqp~~'Level measurement
 Limit (D1) = 5.99dBm – 30 dB = -23.01dBm



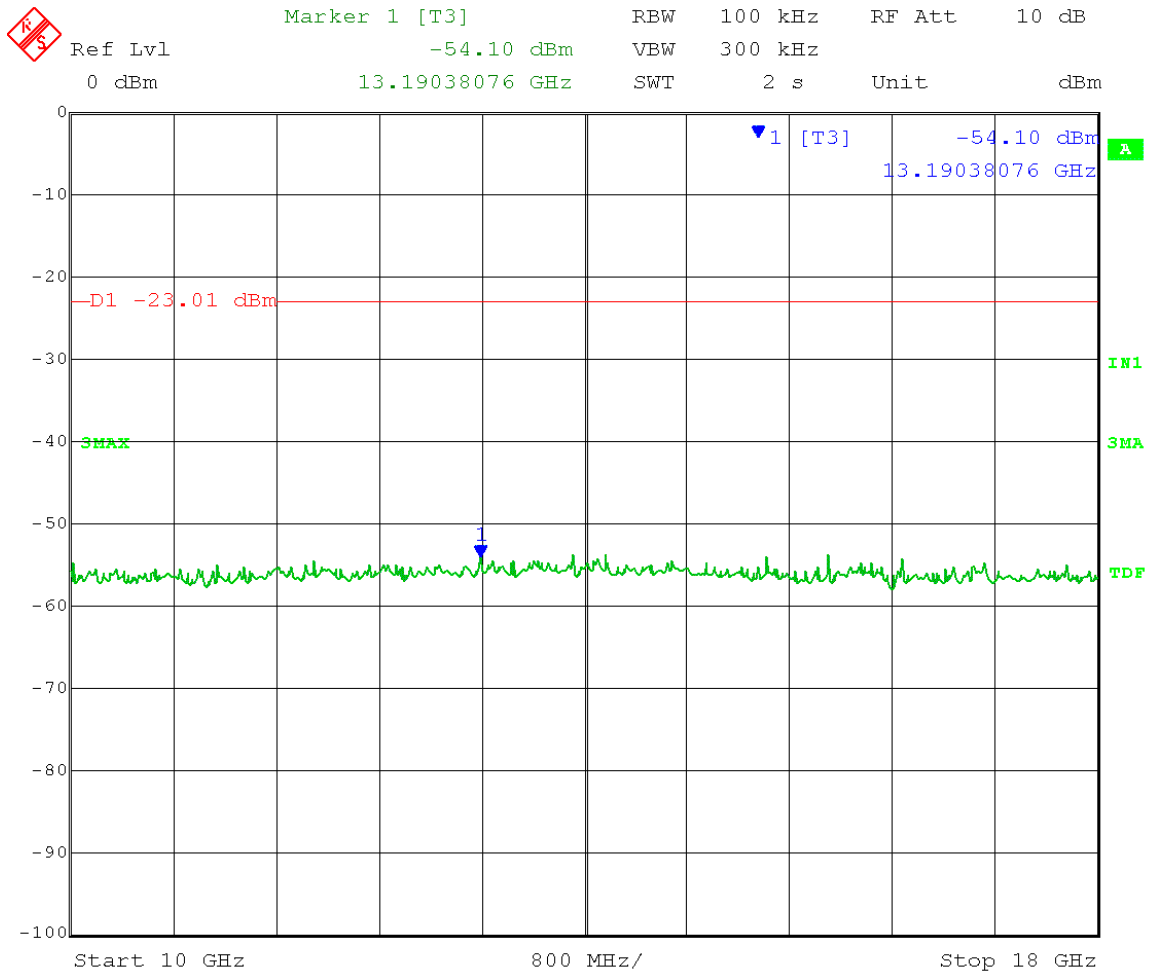
Date: 19.APR.2013 10:07:51

Test Date: 4-19-2013
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel B
 Frequency Range = 1-10 GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 5.99dBm – 30 dB = -23.01dBm



Date: 19.APR.2013 10:09:35

Test Date: 4-19-2013
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel B
 Frequency Range = 10-18 GHz
Go kkkp''Level measurement
 Limit (D1) = 5.99dBm – 30 dB = -23.01dBm



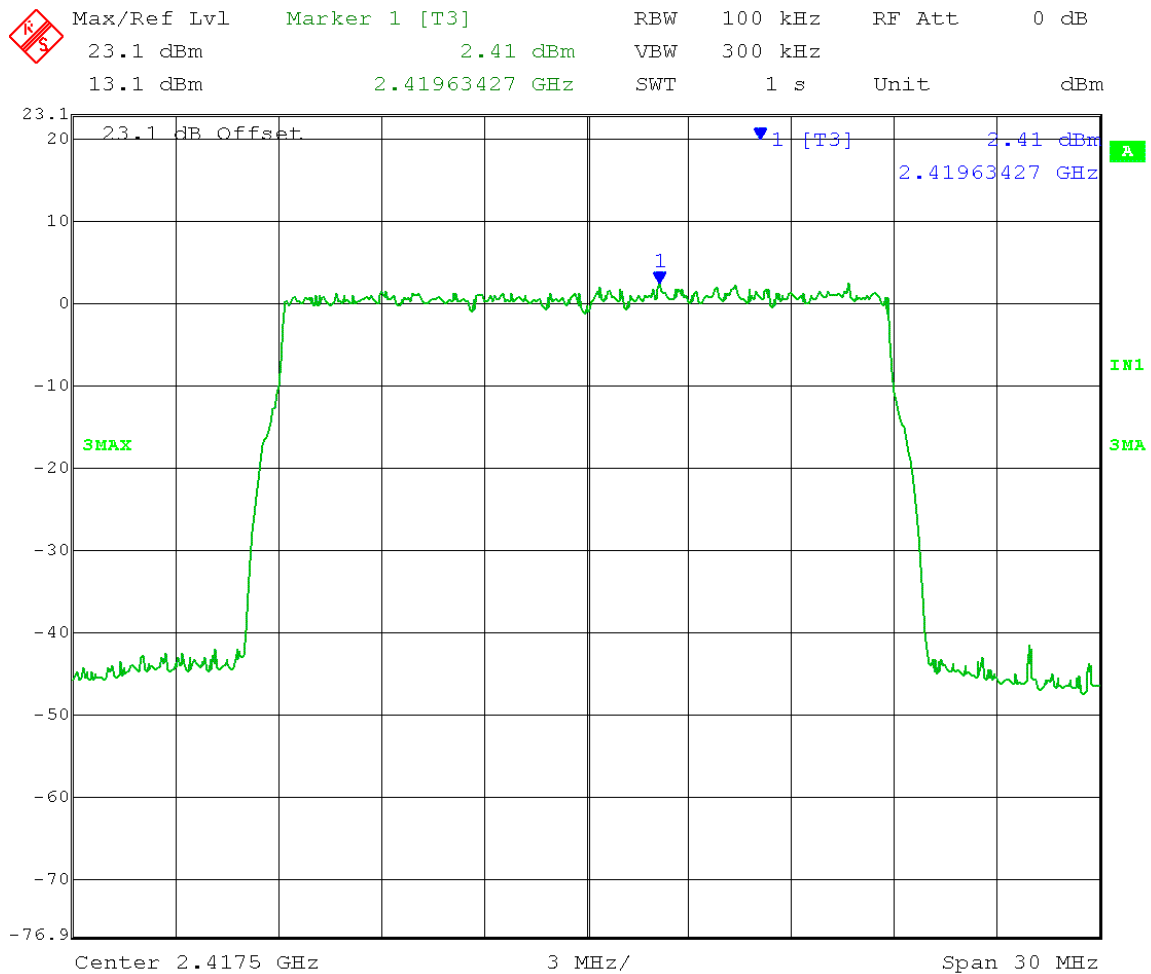
Date: 19.APR.2013 10:10:46

Test Date: 4-19-2013
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.405GHz**
 Output power setting 15dBm @ 10 MHz BW
 Channel B
 Frequency Range = 18-26 GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 5.99dBm – 30 dB = -23.01dBm



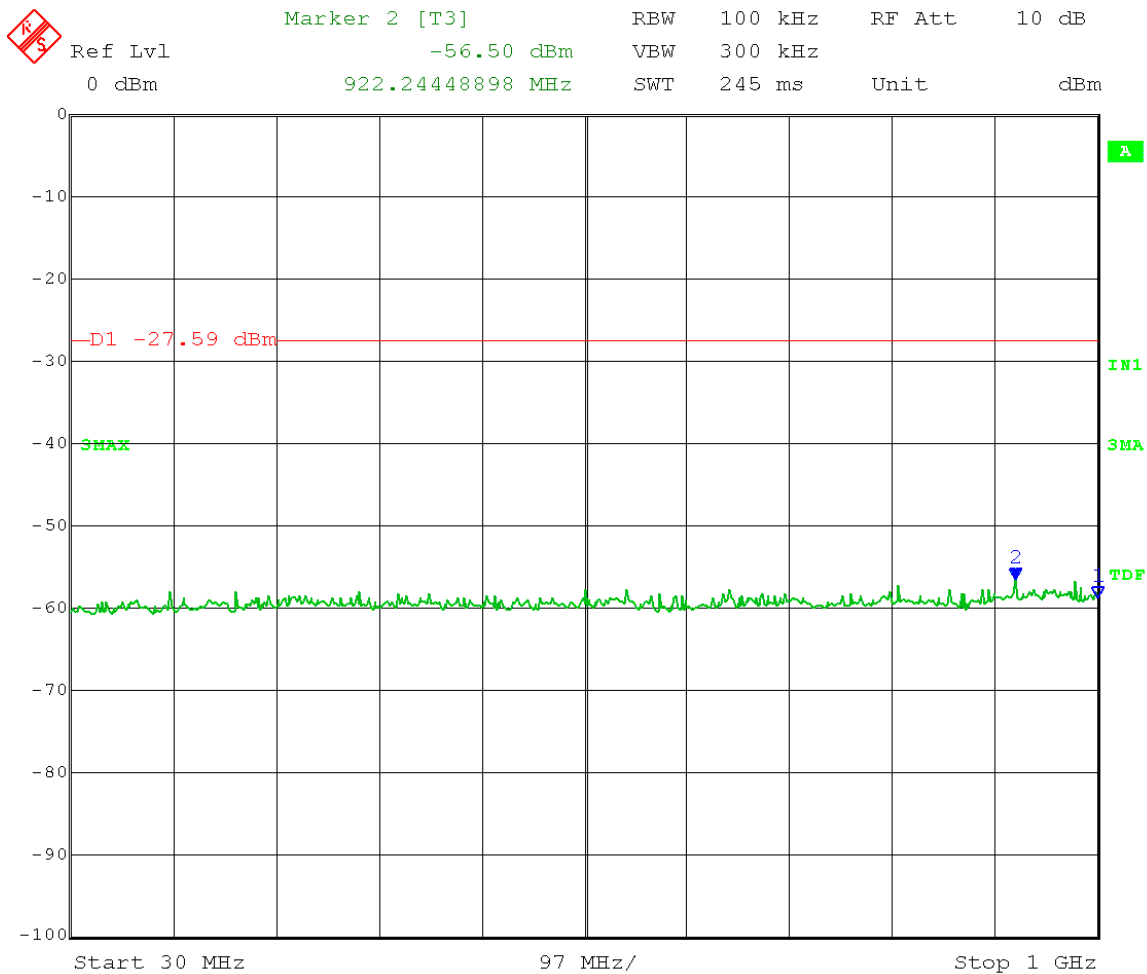
Date: 19.APR.2013 10:11:53

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Low Channel Transmit = 2.417.5GHz
 Output power setting 15dBm @ 20 MHz BW
 Channel B
 Reference Level measurement
 Limit = 2.41dBm – 30 dB = -27.59dBm



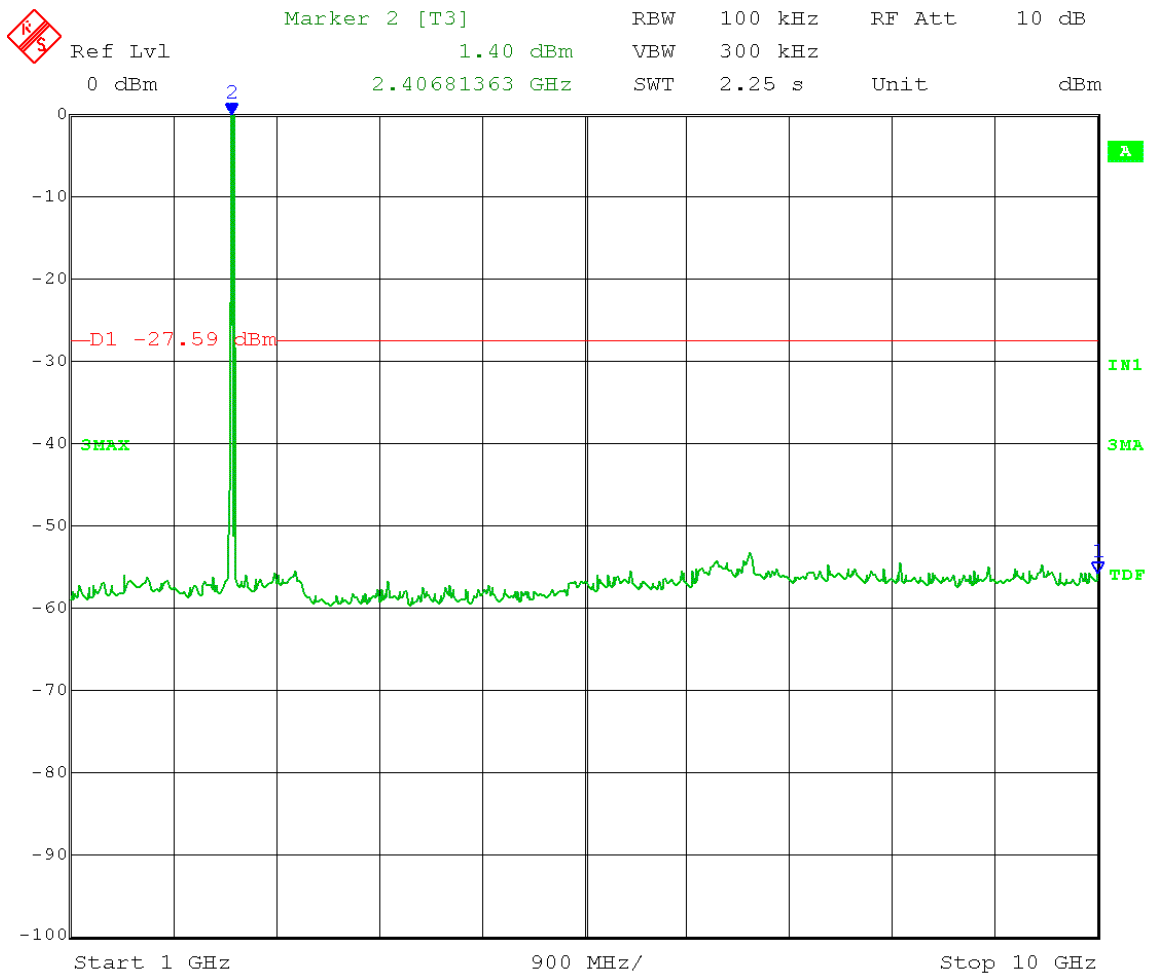
Date: 18.APR.2013 13:24:04

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.417.5GHz
 Output power setting 15dBm @ 20 MHz BW
 Channel B
 Frequency Range = 30M-1GHz
Go ~~kukp~~"Level measurement
 Limit (D1) = 2.41dBm – 30 dB = -27.59dBm



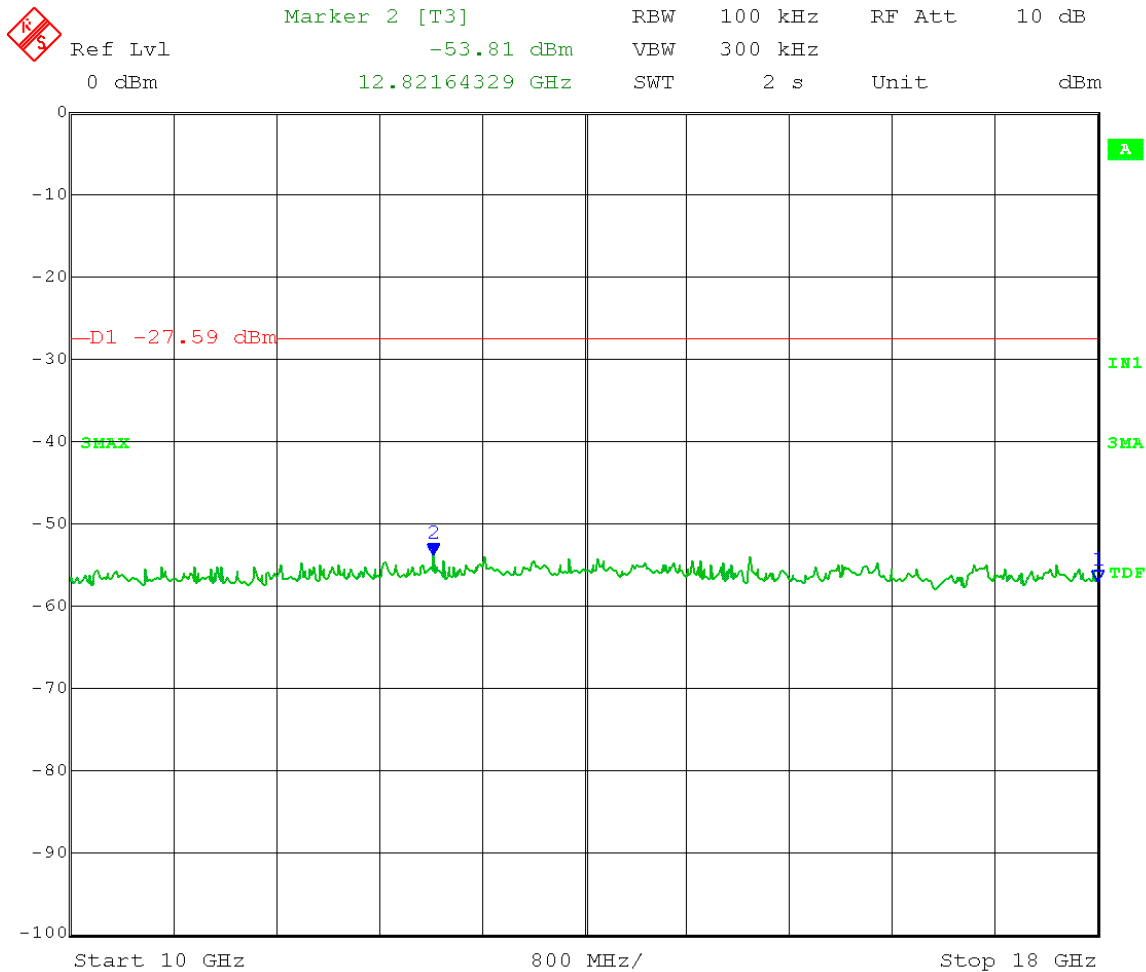
Date: 18.APR.2013 14:56:04

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold **Low Channel Transmit = 2.417.5GHz**
 Output power setting 15dBm @ 20 MHz BW
 Channel B
 Frequency Range = 1-10GHz
 Go ~~klkp~~"Level measurement
 Limit (**D1**) = 2.41dBm - 30 dB = -27.59dBm



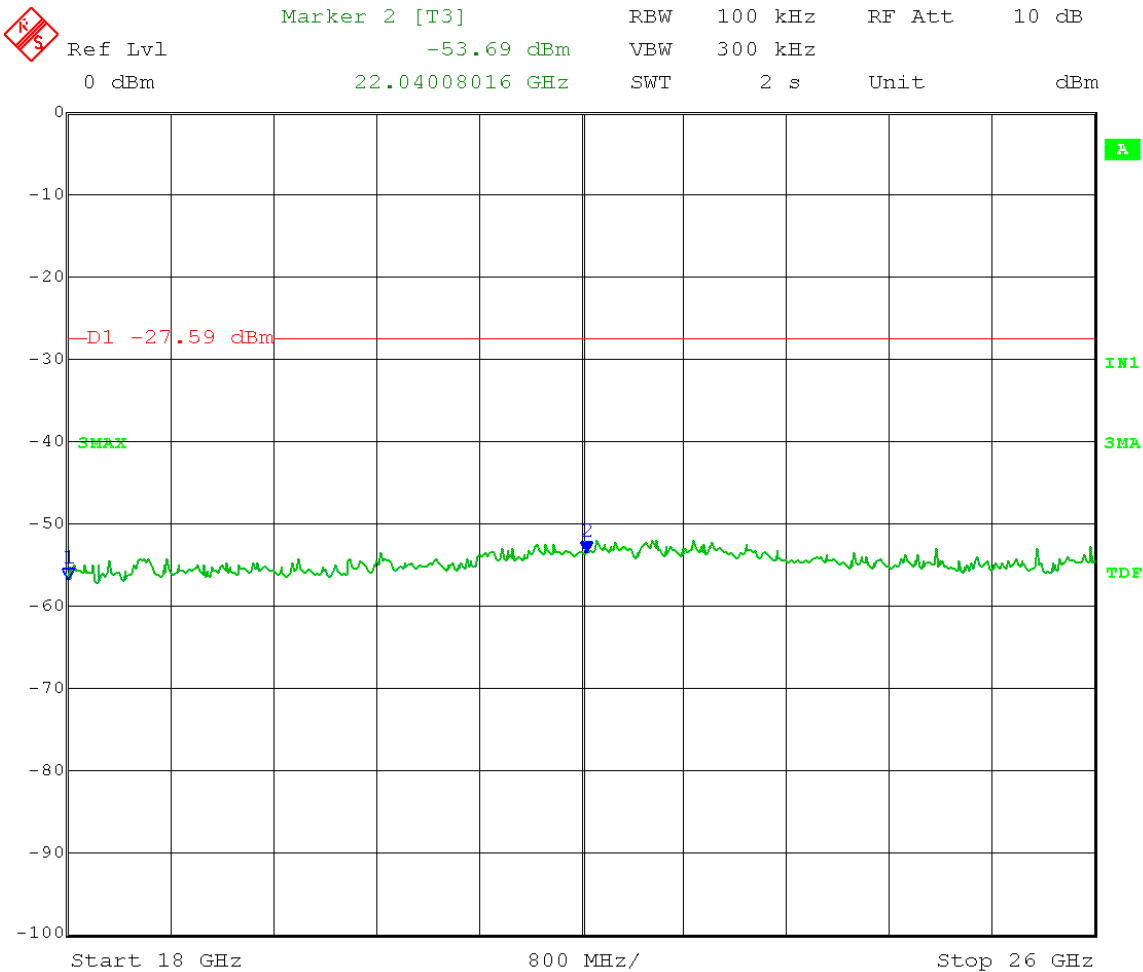
Date: 18.APR.2013 14:54:51

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.417.5GHz
 Output power setting 15dBm @ 20 MHz BW
 Channel B
 Frequency Range = 10-18GHz
 Go **klkqp**"Level measurement
 Limit (D1) = 2.41dBm – 30 dB = -27.59dBm



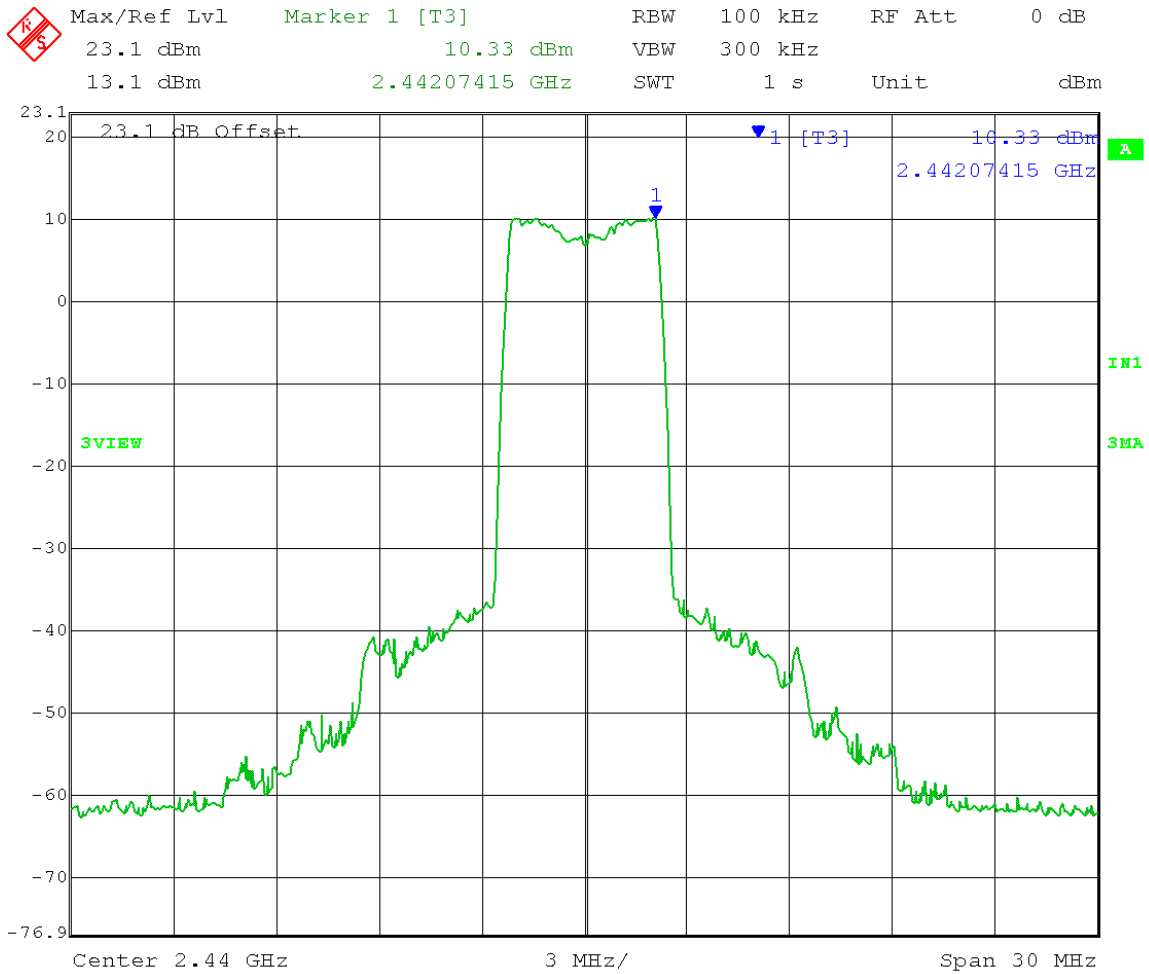
Date: 18.APR.2013 14:50:05

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.417.5GHz**
 Output power setting 15dBm @ 20 MHz BW
 Channel B
 Frequency Range = 18 – 26GHz
 Go kkkqp''Level measurement
 Limit (D1) = 2.41dBm – 30 dB = -27.59dBm



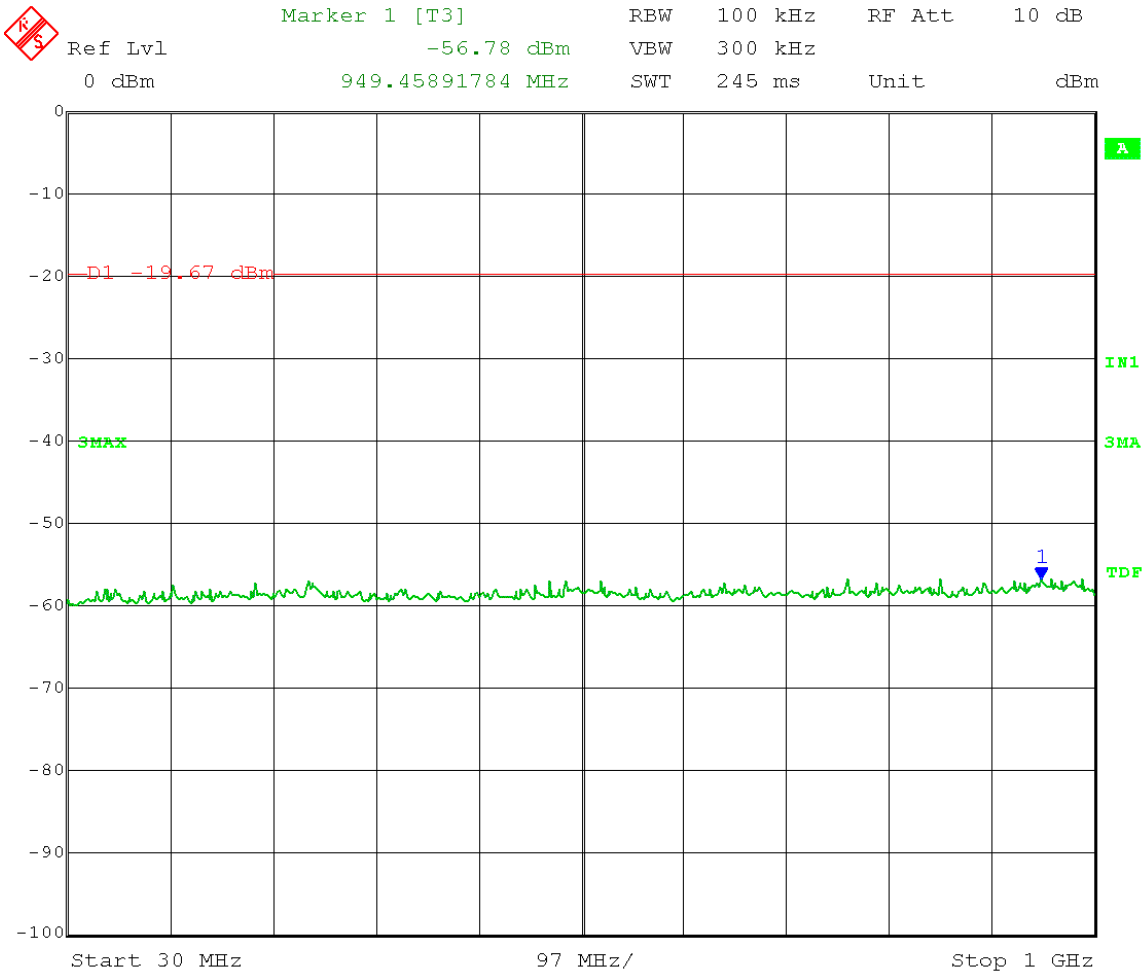
Date: 18.APR.2013 14:47:57

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel B
Reference Level measurement
 Limit = 10.33dBm – 30 dB = -19.67dBm



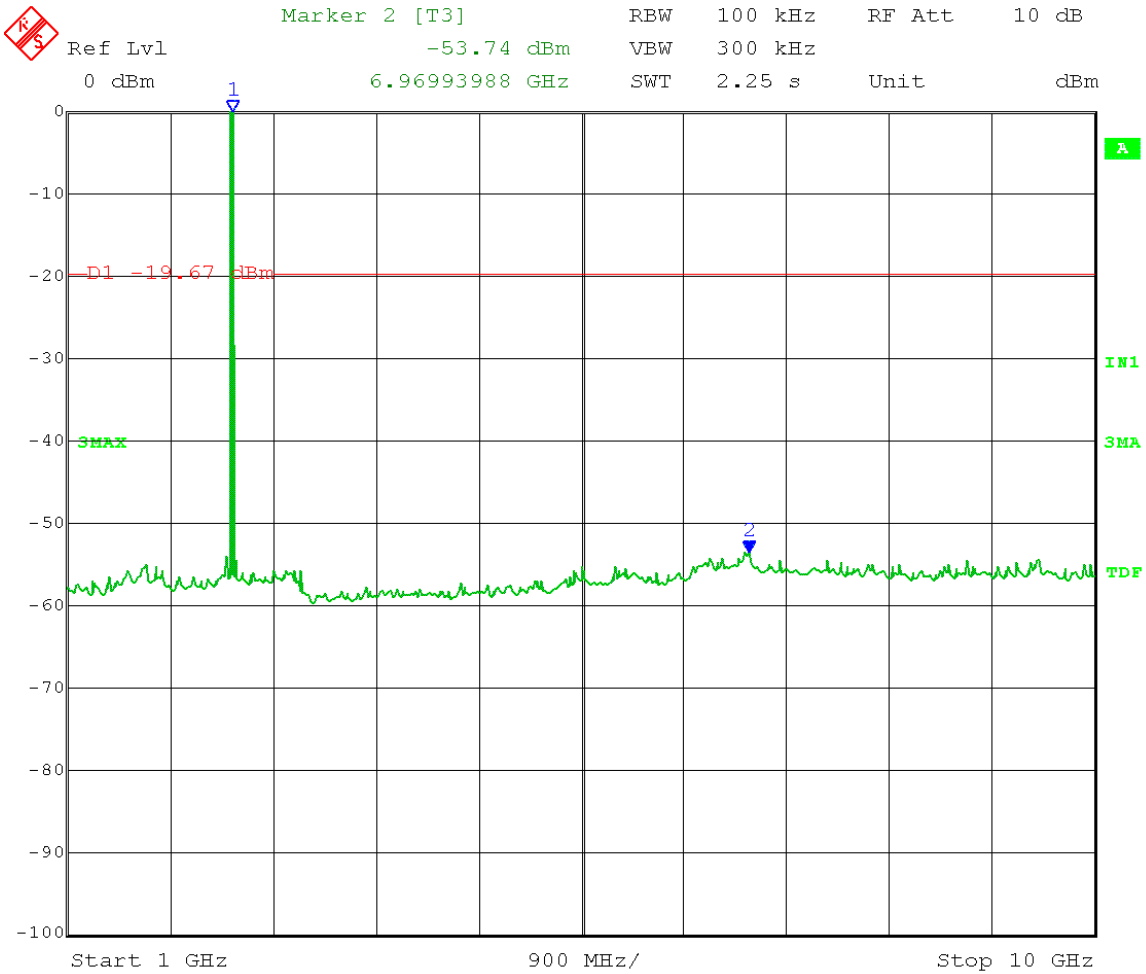
Date: 18.APR.2013 12:37:41

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 30M-1Ghz
Go kulp'Level measurement
 Limit (D1) = 10.33dBm – 30 dB = -19.67dBm



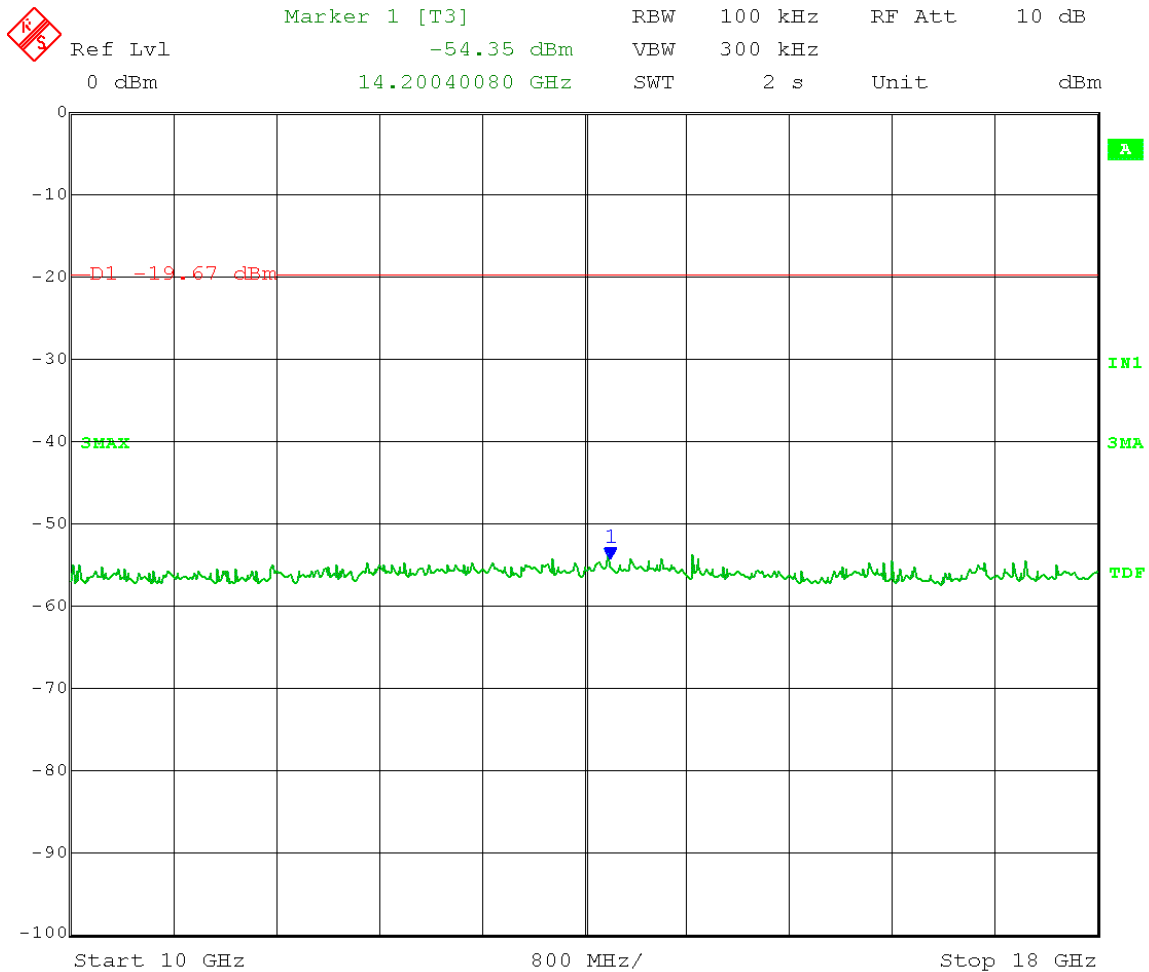
Date: 19.APR.2013 08:55:35

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Mid Channel Transmit = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 1-10 GHz
Go ~~klqp~~'Level measurement
 Limit (D1) = 10.33dBm - 30 dB = -19.67dBm



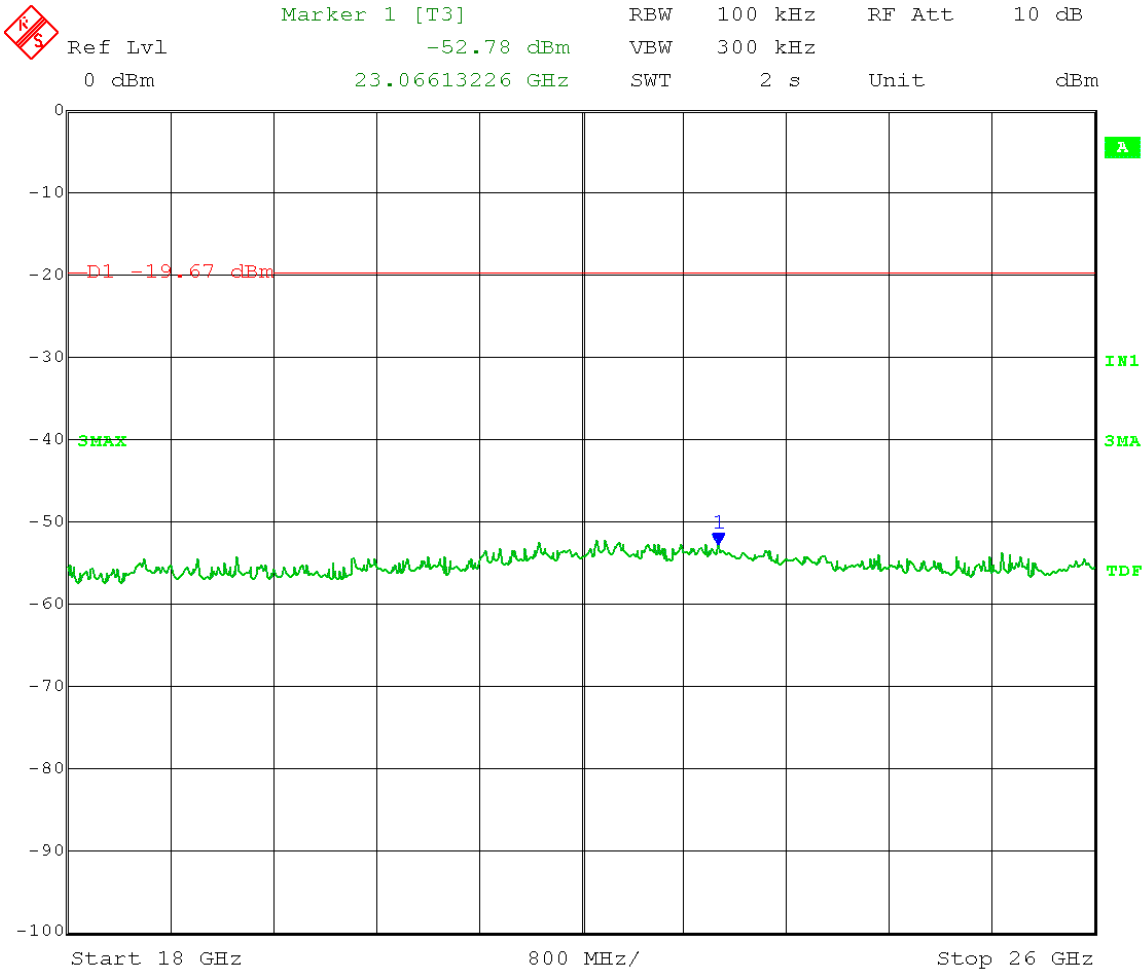
Date: 19.APR.2013 08:57:38

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 10-18 GHz
 Go ~~klqp~~'Level measurement
 Limit (D1) = 10.33dBm – 30 dB = -19.67dBm



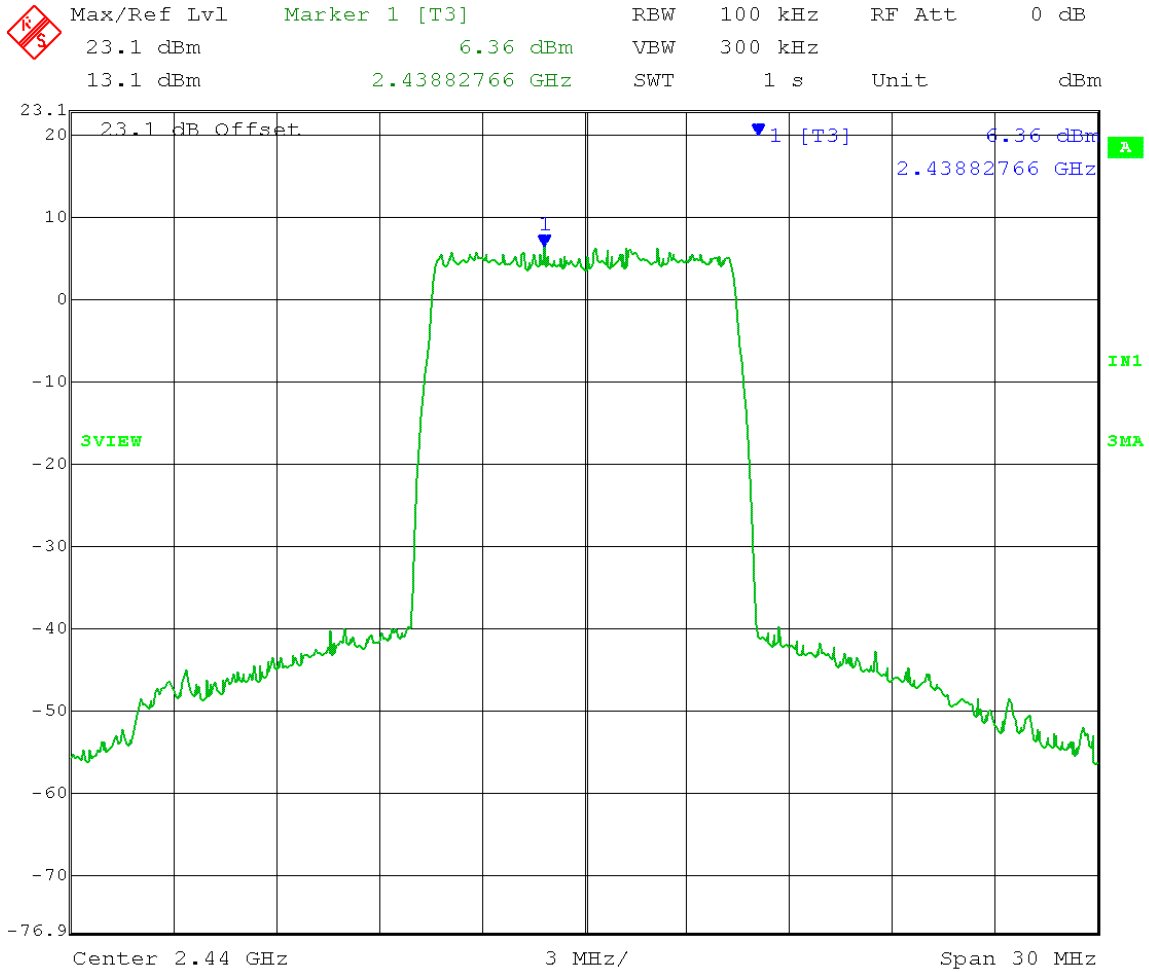
Date: 19.APR.2013 08:58:55

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold Mid Channel Transmit = 2.44GHz
 Output power setting 16dBm @ 5 MHz BW
 Channel B
 Frequency Range 18-26 GHz
Go ~~kulqp~~ Level measurement
 Limit (D1) = 10.33dBm - 30 dB = -19.67dBm



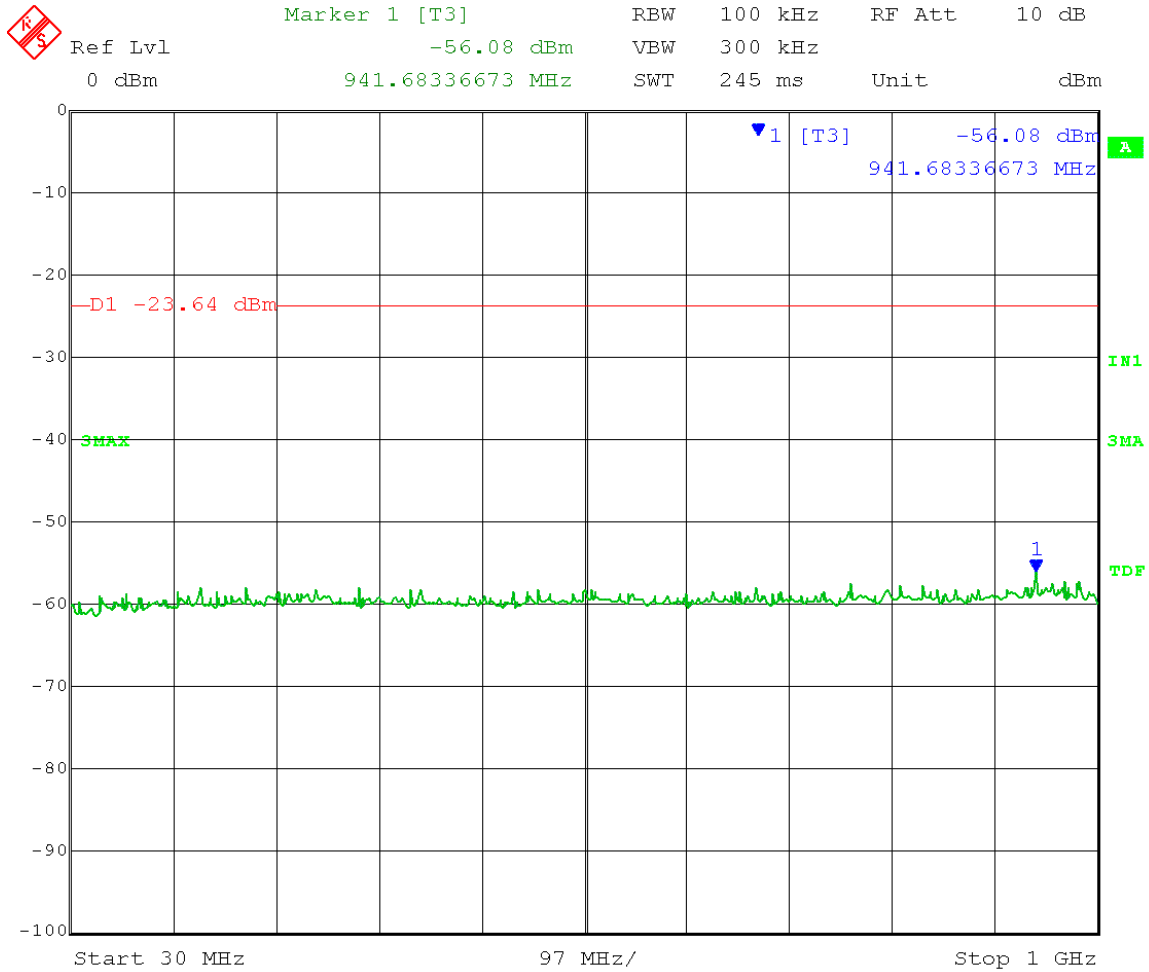
Date: 19.APR.2013 09:00:05

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz**
 Output power setting 16dBm @ 10 MHz BW
 Channel B
Reference Level measurement
 Limit = 6.36dBm – 30 dB = -23.64dBm



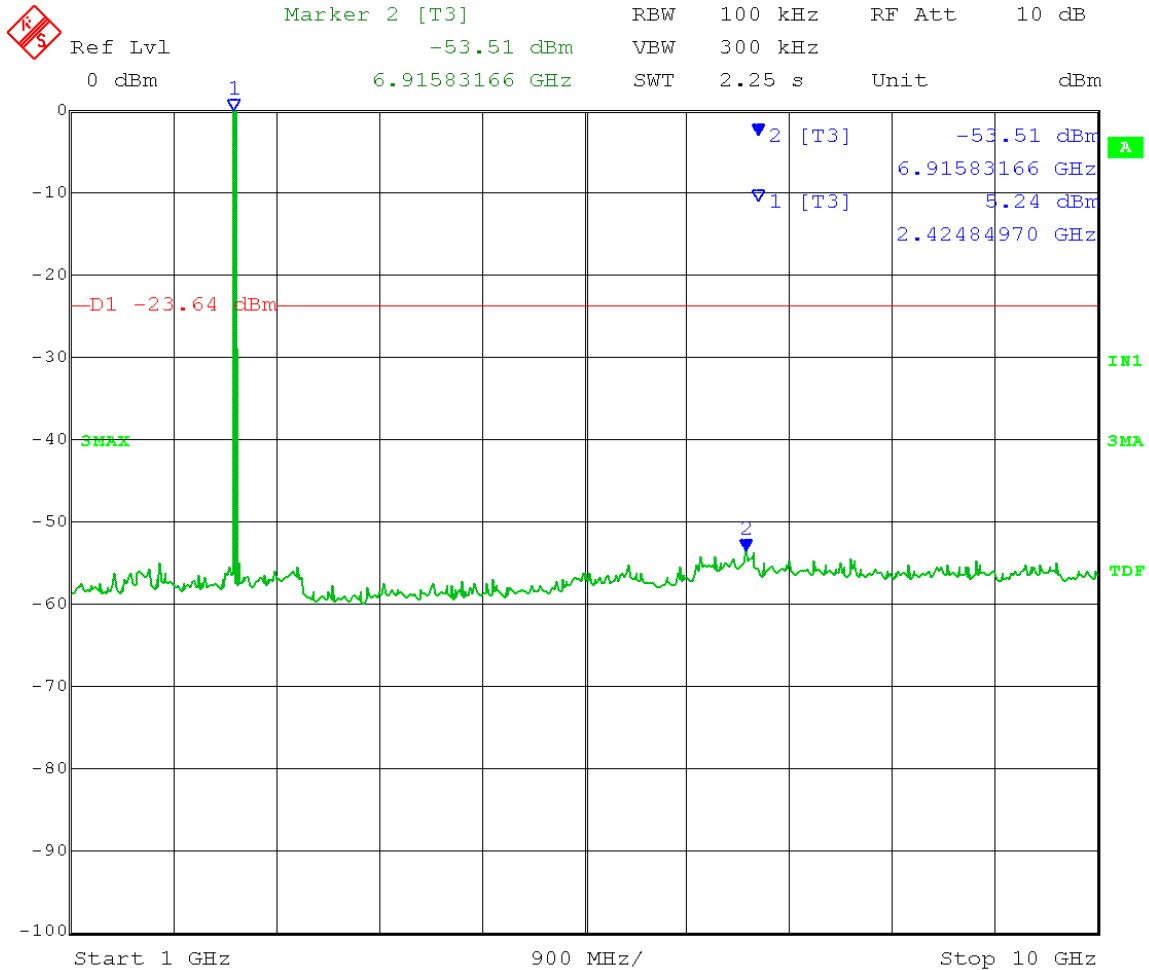
Date: 18.APR.2013 12:53:01

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz**
 Output power setting 16dBm @ 10 MHz BW
 Channel B
 Frequency Range = 30M-1 GHz
 Go ~~klqp~~"Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



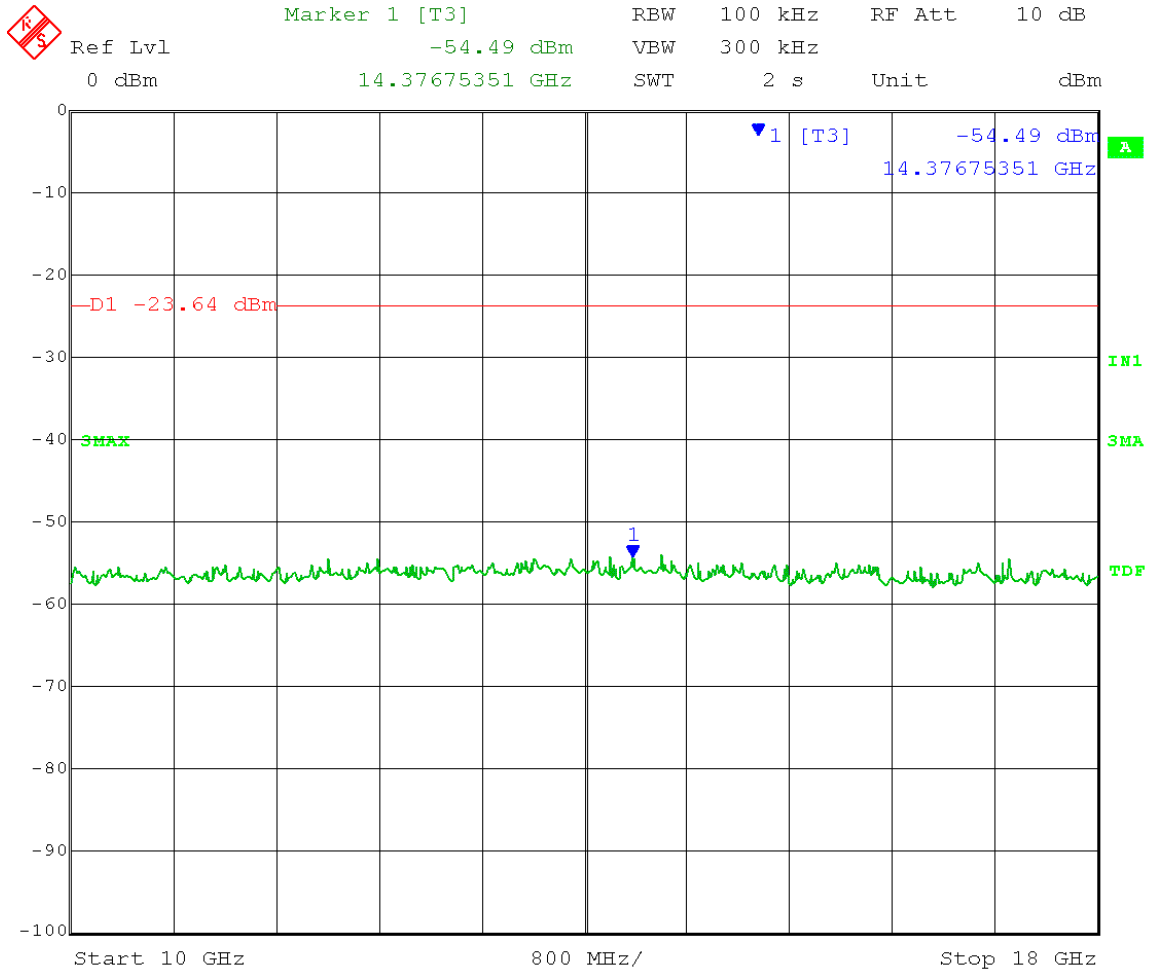
Date: 19.APR.2013 10:02:59

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 10 MHz BW
 Channel B
 Frequency Range = 1-10 GHz
Go ~~klkqp~~ Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



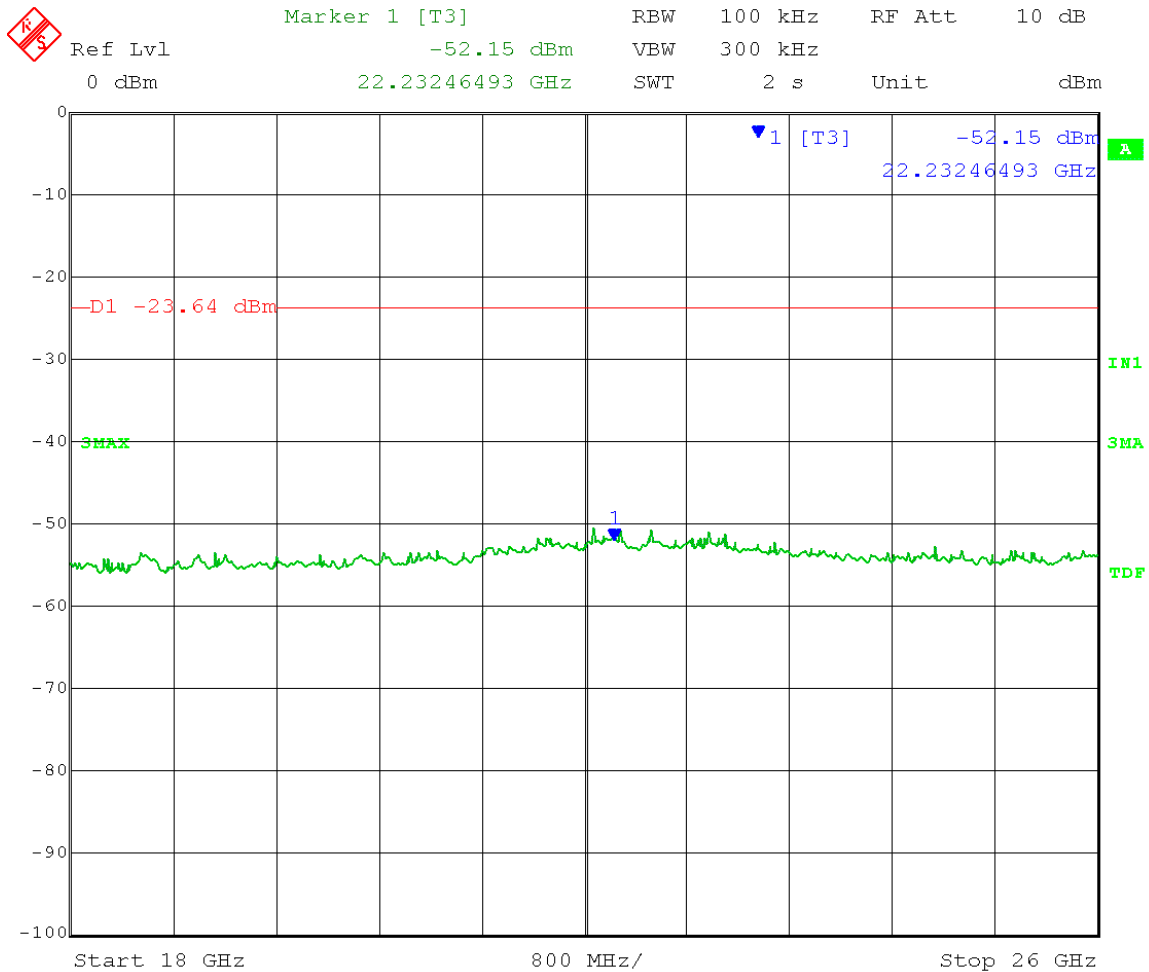
Date: 19.APR.2013 10:01:41

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz**
 Output power setting 16dBm @ 10 MHz BW
 Channel B
 Frequency Range = 10-18 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



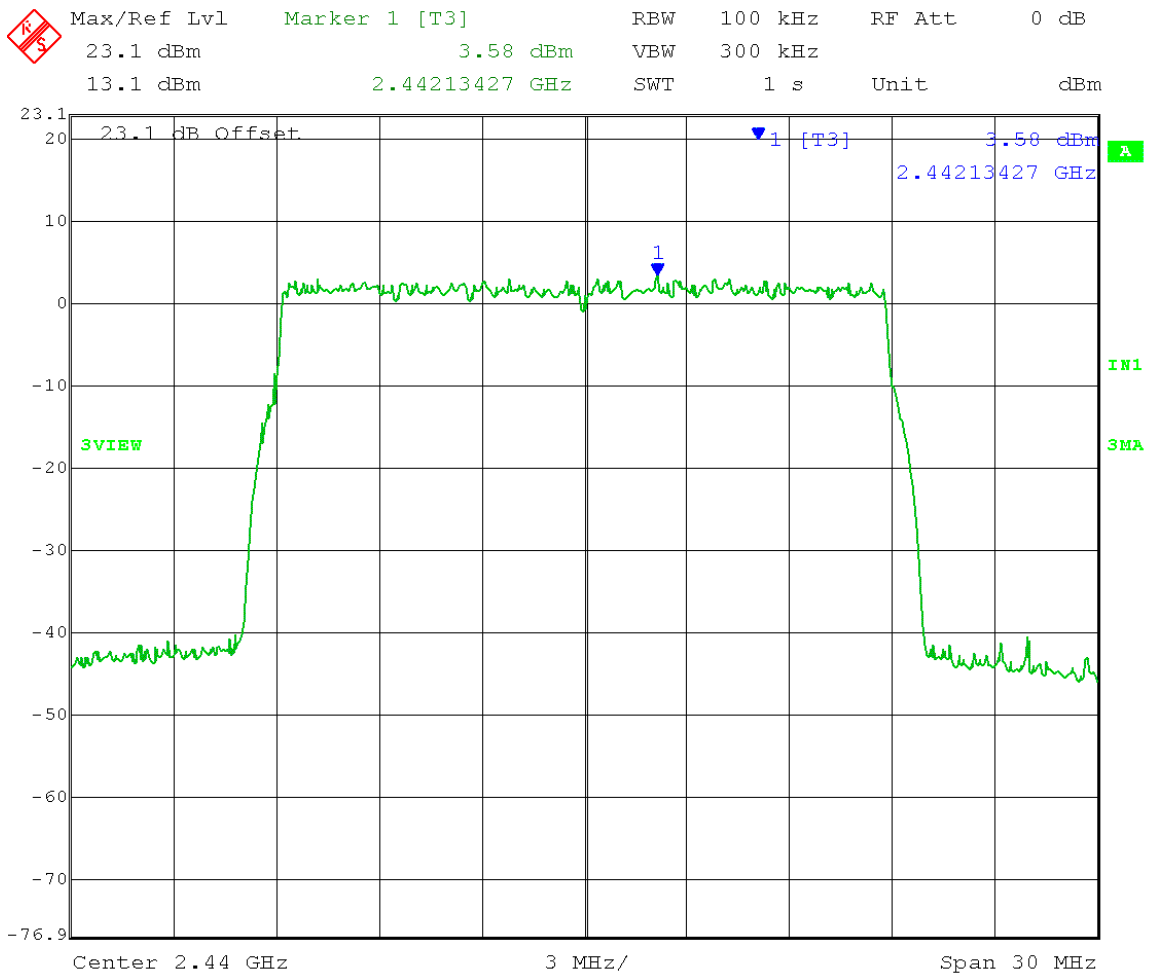
Date: 19.APR.2013 10:00:34

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.44GHz
 Output power setting 16dBm @ 10 MHz BW
 Channel B
 Frequency Range = 18-26 GHz
 Go ~~klkqp~~"Level measurement
 Limit (D1) = 6.36dBm – 30 dB = -23.64dBm



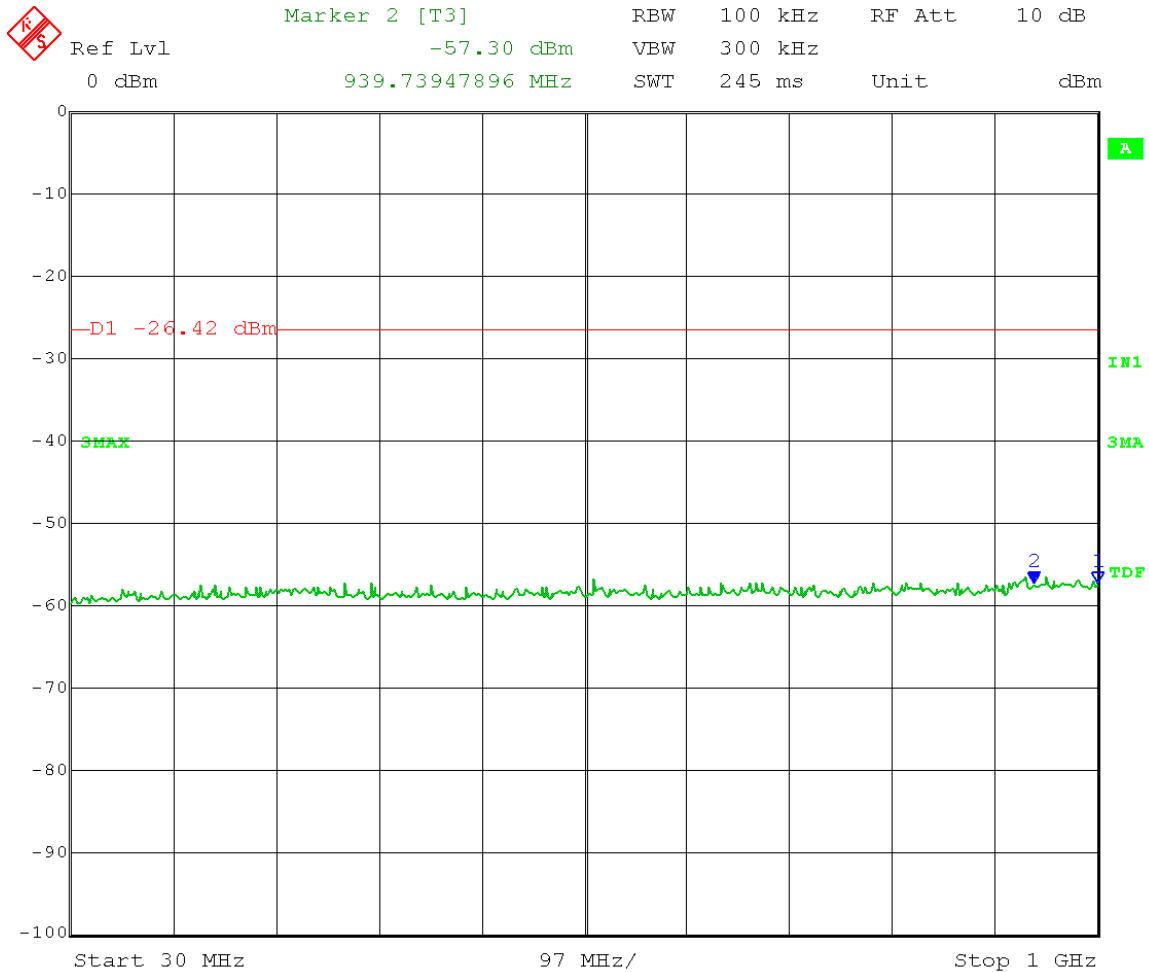
Date: 19.APR.2013 09:59:30

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel B
Reference Level measurement
 Limit = 3.58dBm – 30 dB = -26.42dBm



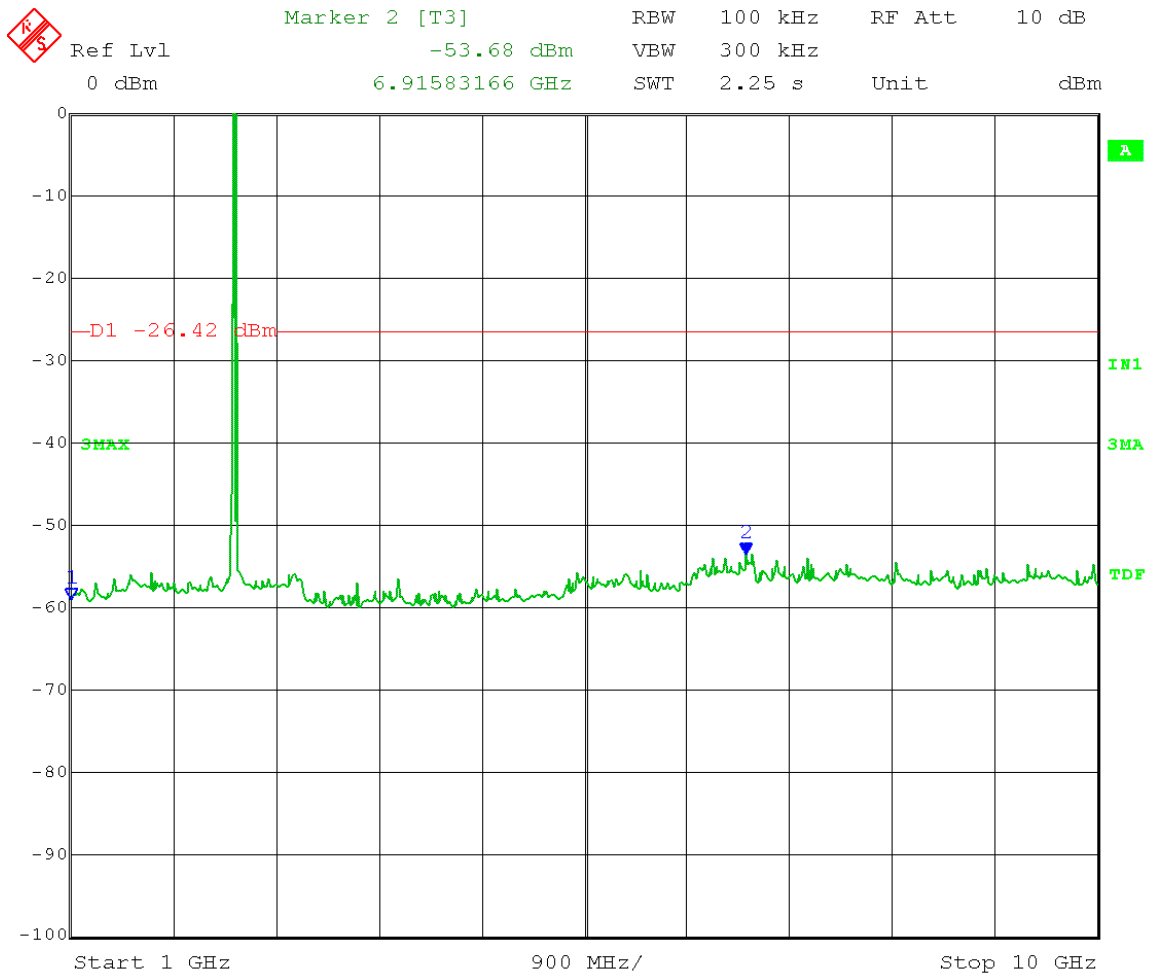
Date: 18.APR.2013 13:26:54

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP (2.4GHz)
 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 = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel B
Frequency Range: 30M – 1GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 3.58dBm – 30 dB = -26.42dBm



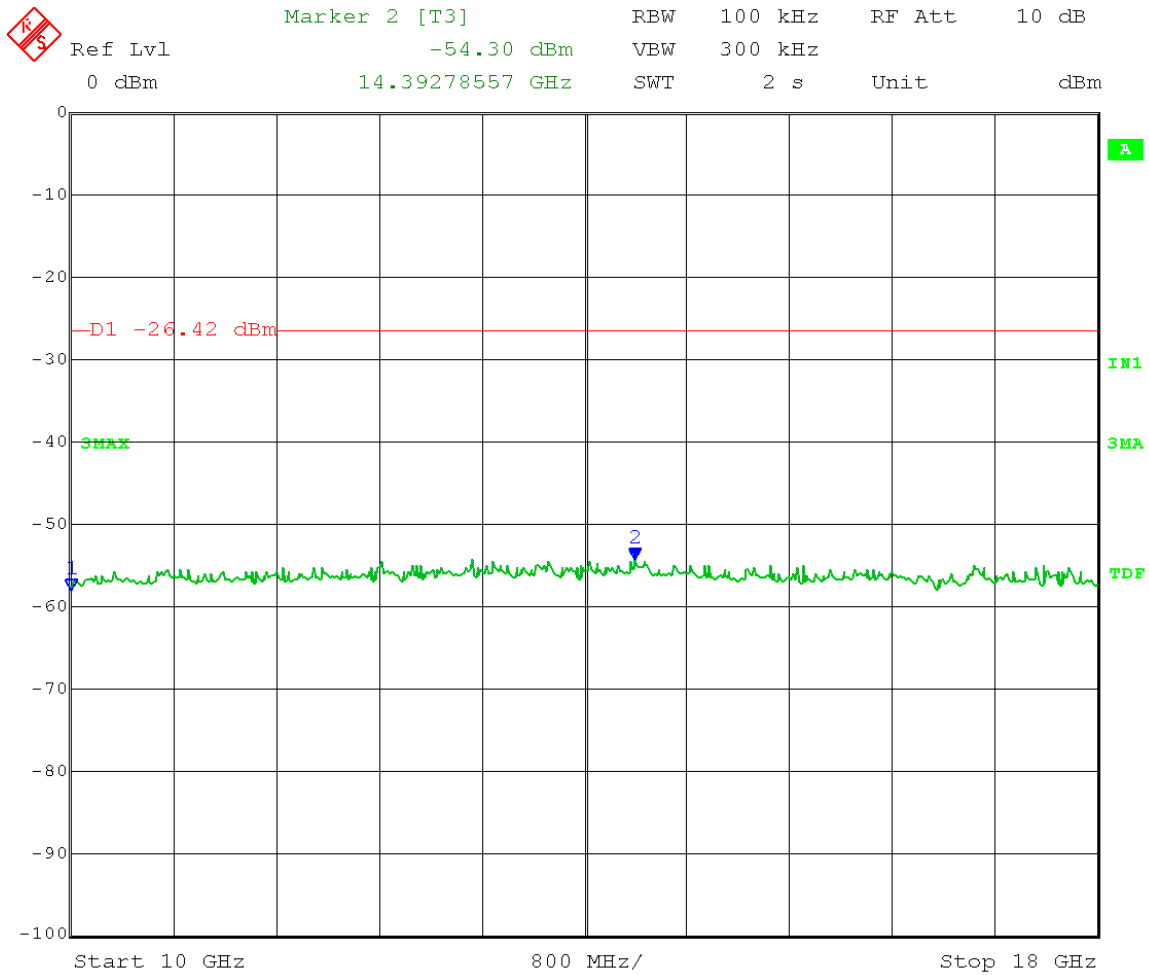
Date: 18.APR.2013 14:36:50

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP (2.4GHz)
 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 = 2.440GHz**
 Output power setting 16dBm @ 20 MHz BW
 Channel B
Frequency Range: 1 - 10GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 3.58dBm – 30 dB = -26.42dBm



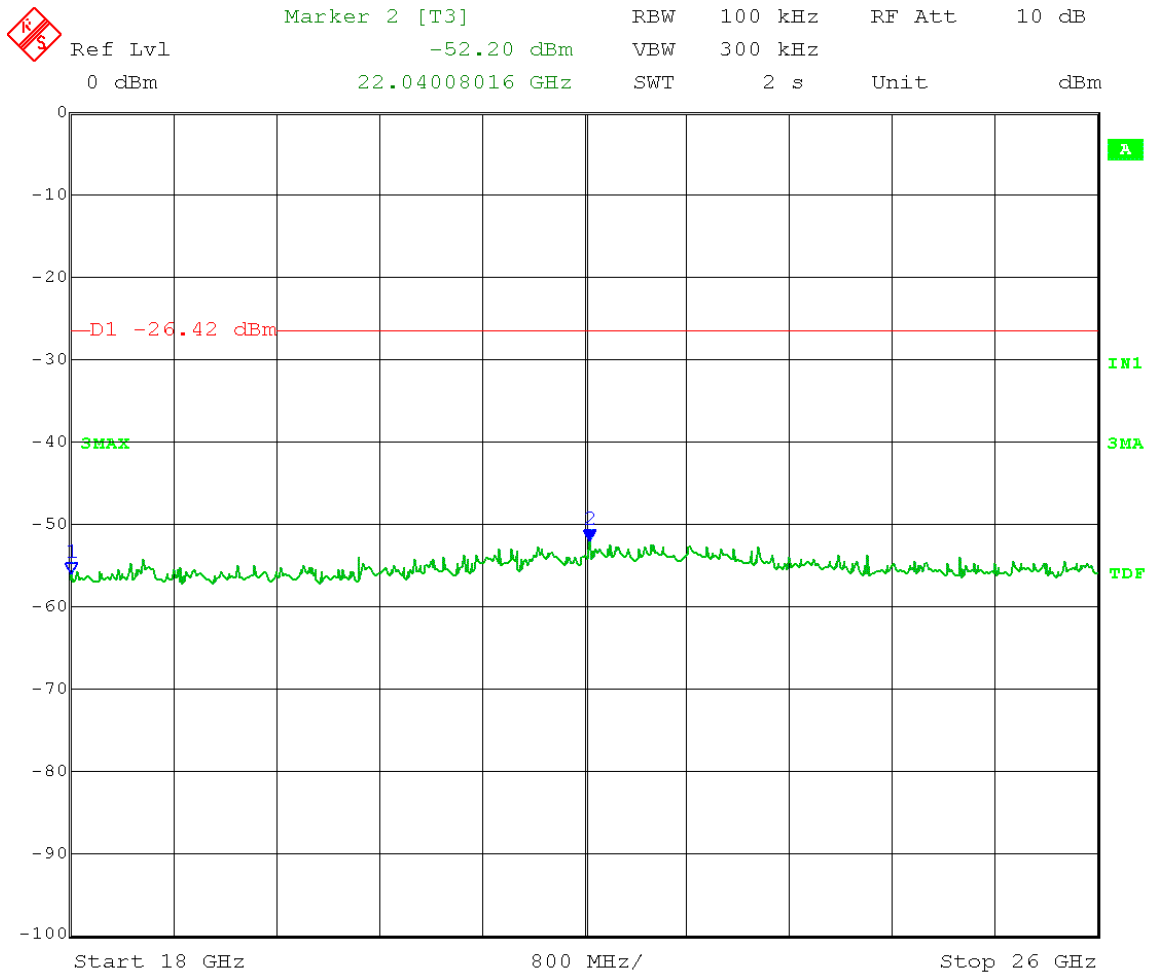
Date: 18.APR.2013 14:38:20

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP (2.4GHz)
 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 = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel B
 Frequency Range: 10 -18GHz
 Go ~~klqp~~"Level measurement
 Limit (D1) = 3.58dBm – 30 dB = -26.42dBm



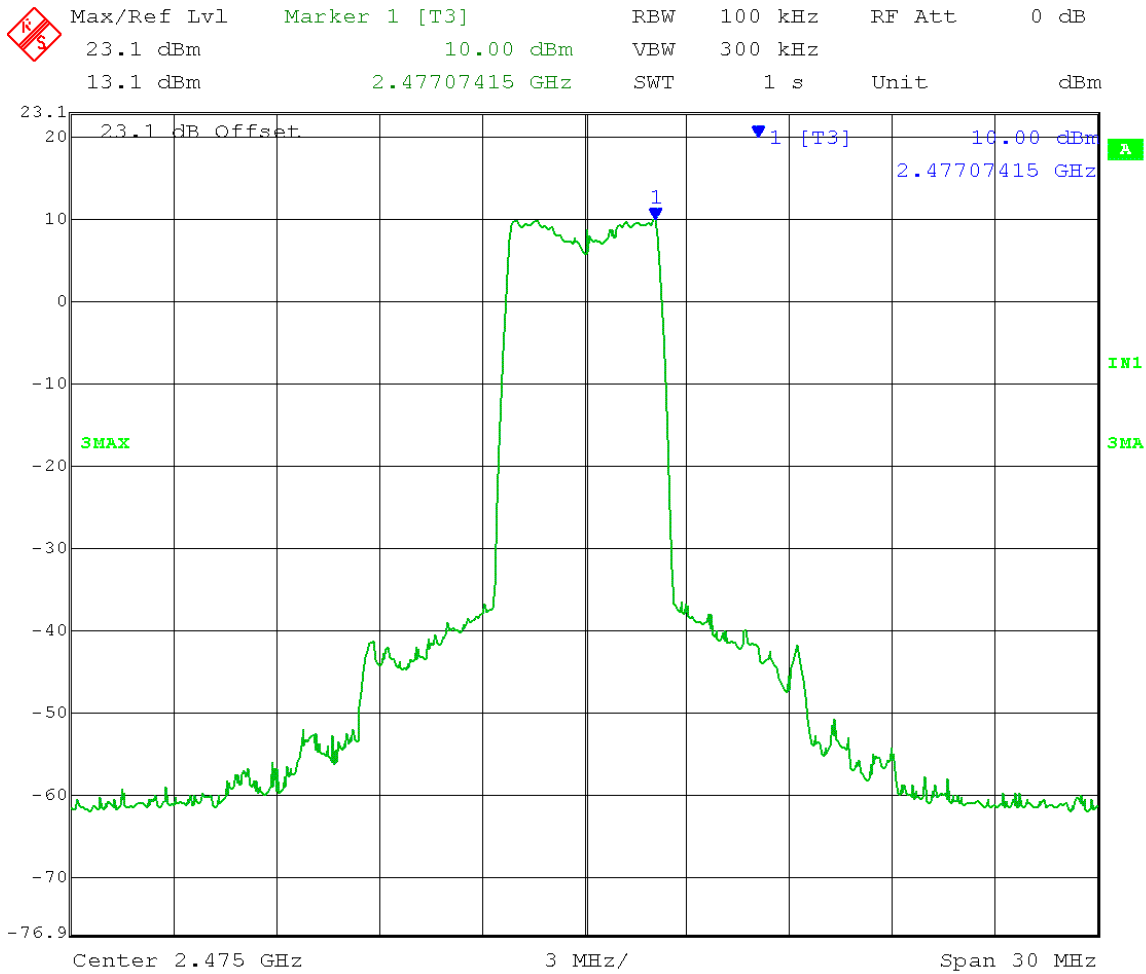
Date: 18.APR.2013 14:40:15

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP (2.4GHz)
 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 = 2.440GHz
 Output power setting 16dBm @ 20 MHz BW
 Channel B
 Frequency Range: 18-26GHz
 Go ~~klqp~~"Level measurement
 Limit (D1) = 3.58dBm – 30 dB = -26.42dBm



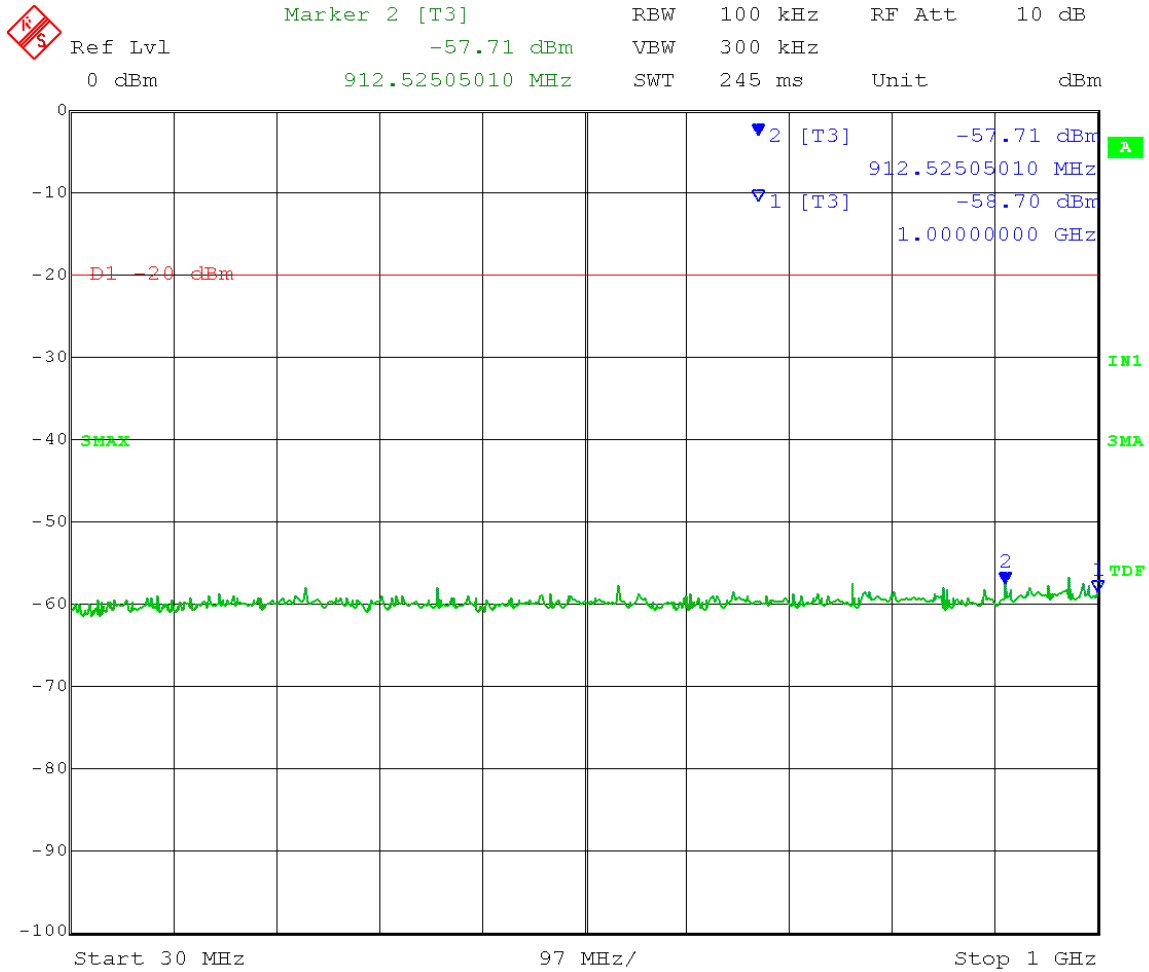
Date: 18.APR.2013 14:41:36

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel B
Reference Level measurement
 Limit = 10.00dBm – 30 dB = -20.00dBm



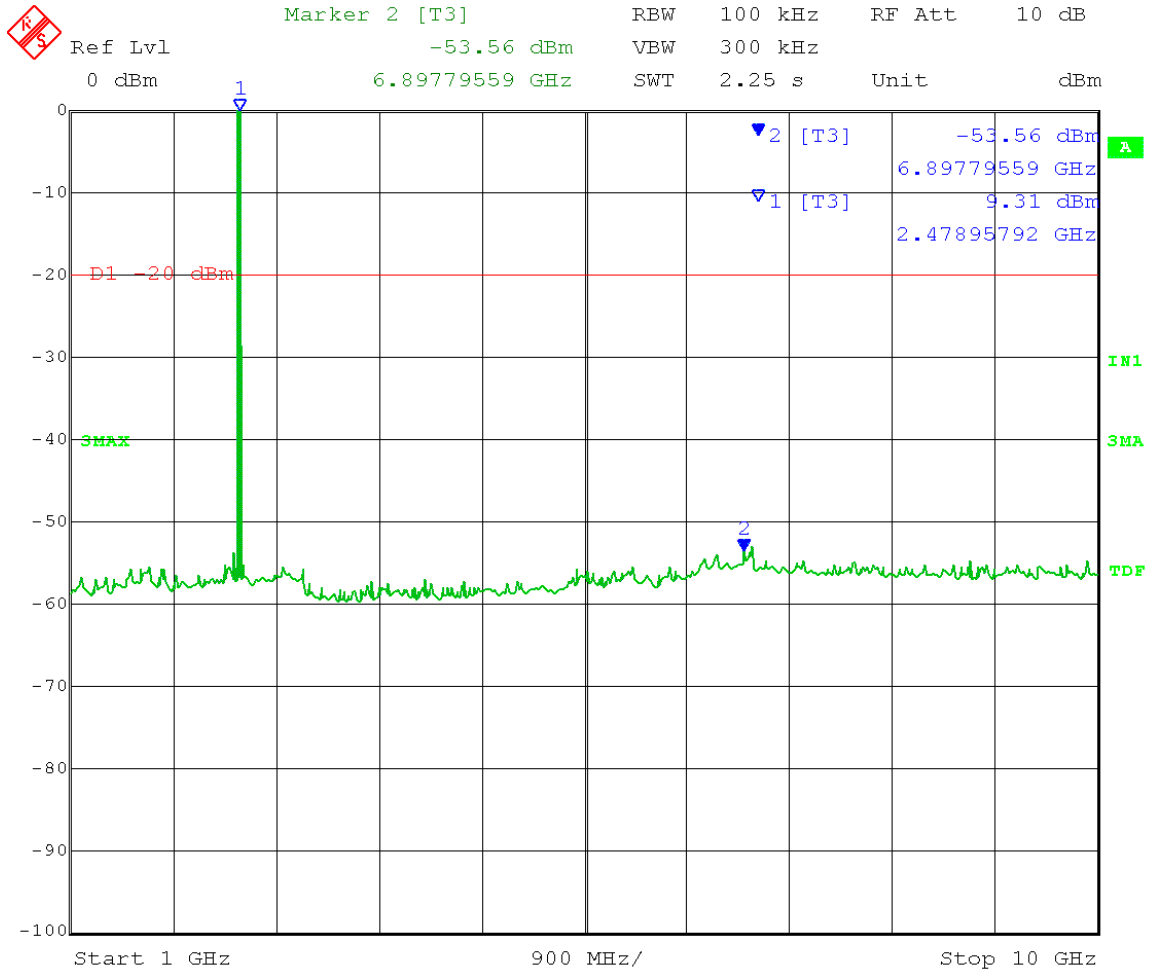
Date: 18.APR.2013 12:40:51

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel B
 Frequency Range 30M-1 GHz
Go ~~kulqp~~"Level measurement
 Limit (D1) = 10.00dBm – 30 dB = -20.00dBm



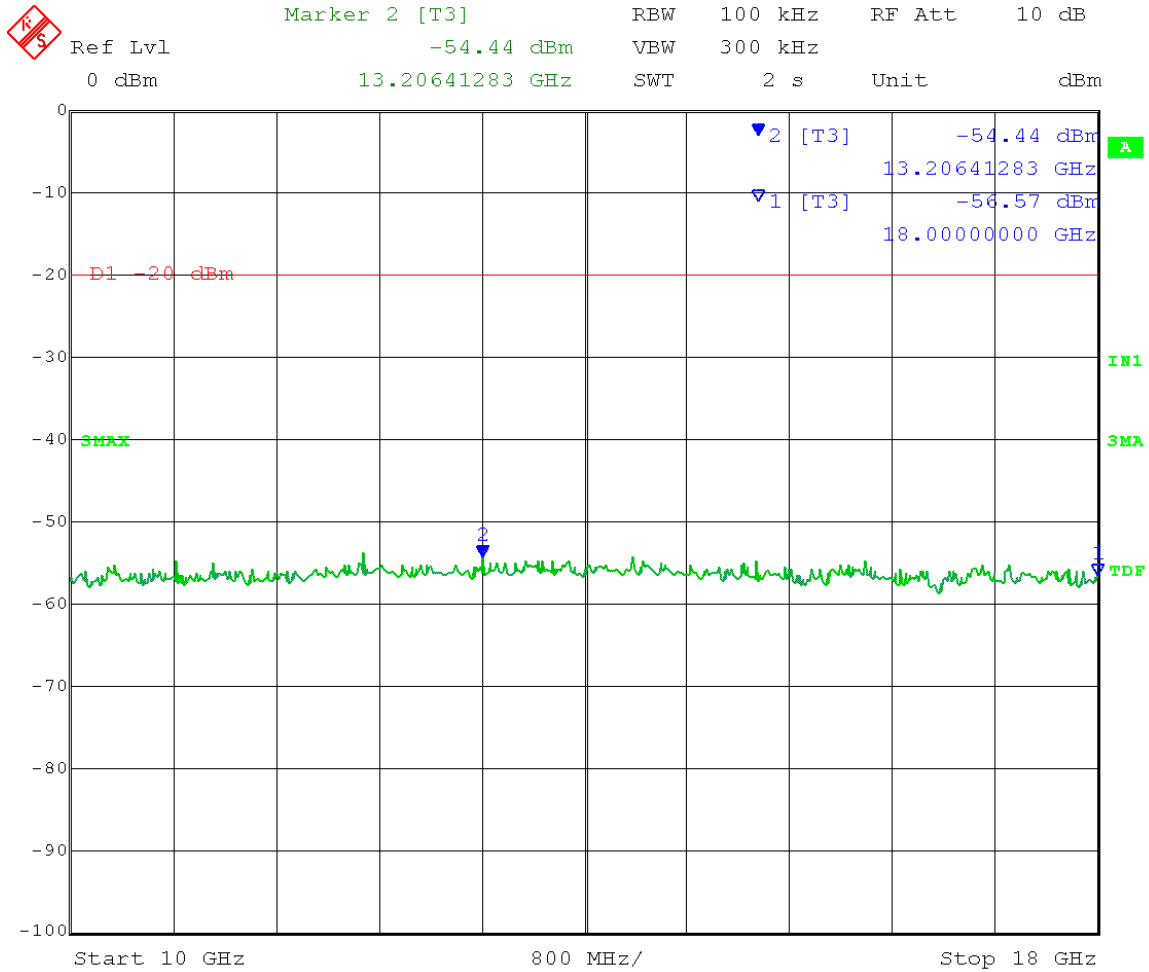
Date: 19.APR.2013 09:27:06

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel B
 Frequency Range 1-10 GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 10.00dBm – 30 dB = -20.00dBm



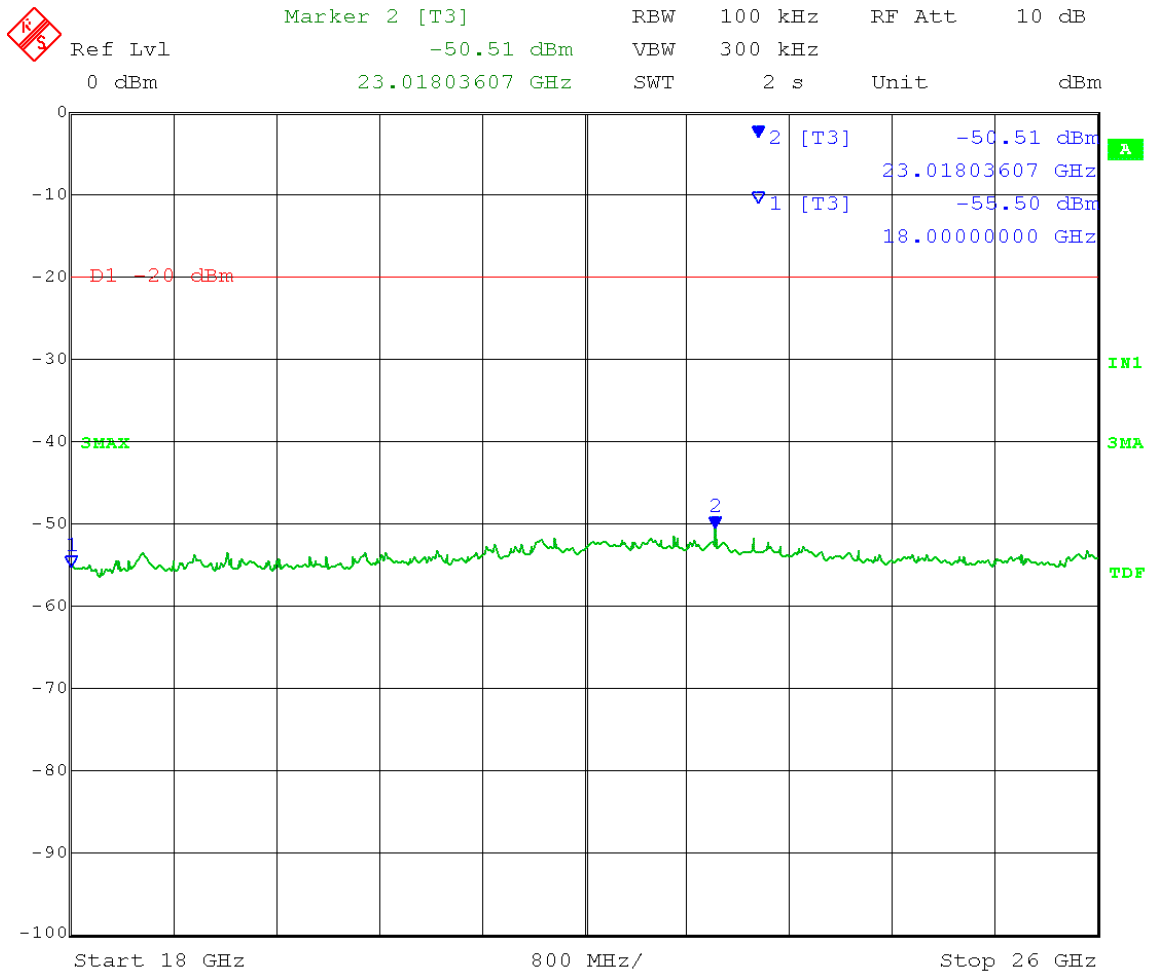
Date: 19.APR.2013 09:25:56

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel B
 Frequency Range 10-18 GHz
Go ~~klqp~~"Level measurement
 Limit (D1) = 10.00dBm – 30 dB = -20.00dBm



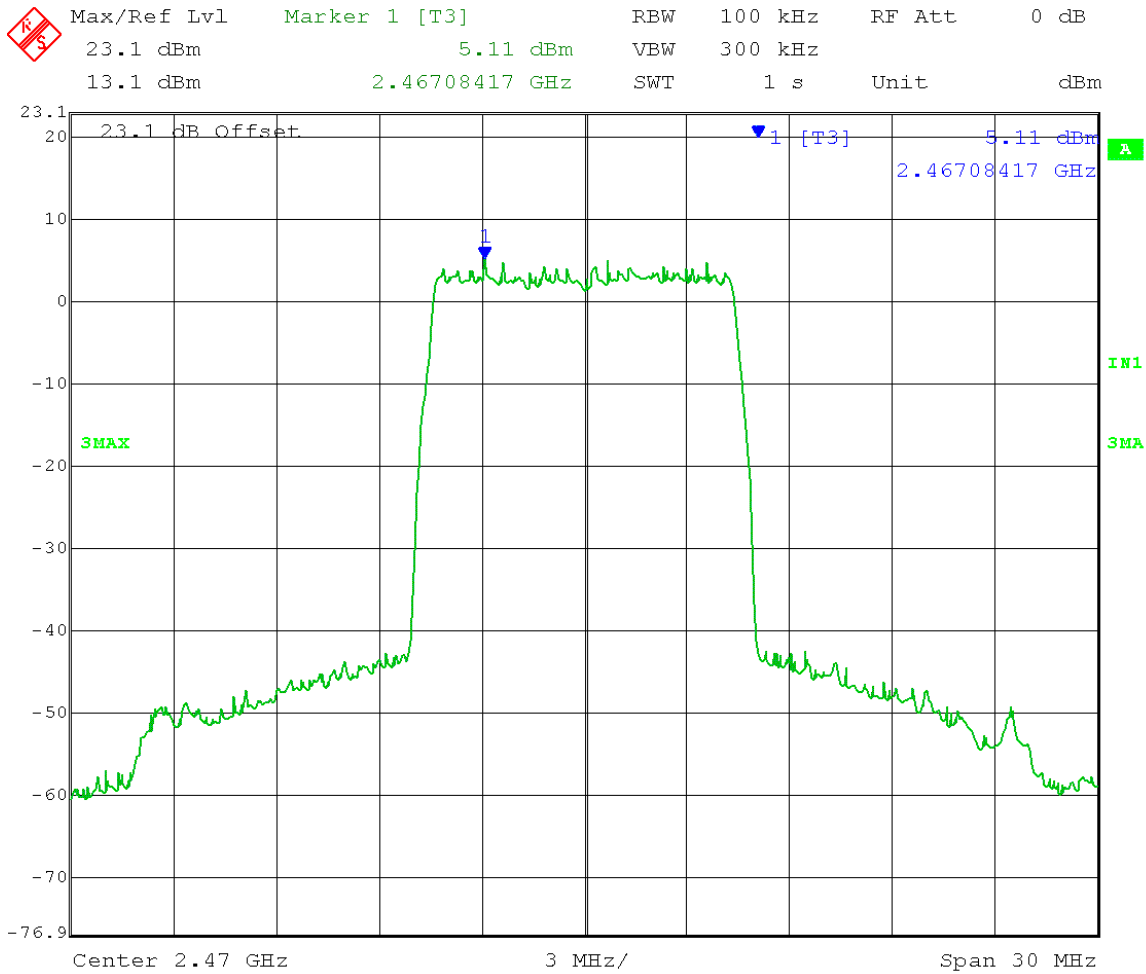
Date: 19.APR.2013 09:24:19

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.475GHz
 Output power setting 15dBm @ 5 MHz BW
 Channel B
 Frequency Range 18-26 GHz
 Go ~~klkqp~~ Level measurement
 Limit (D1) = 10.00dBm - 30 dB = -20.00dBm



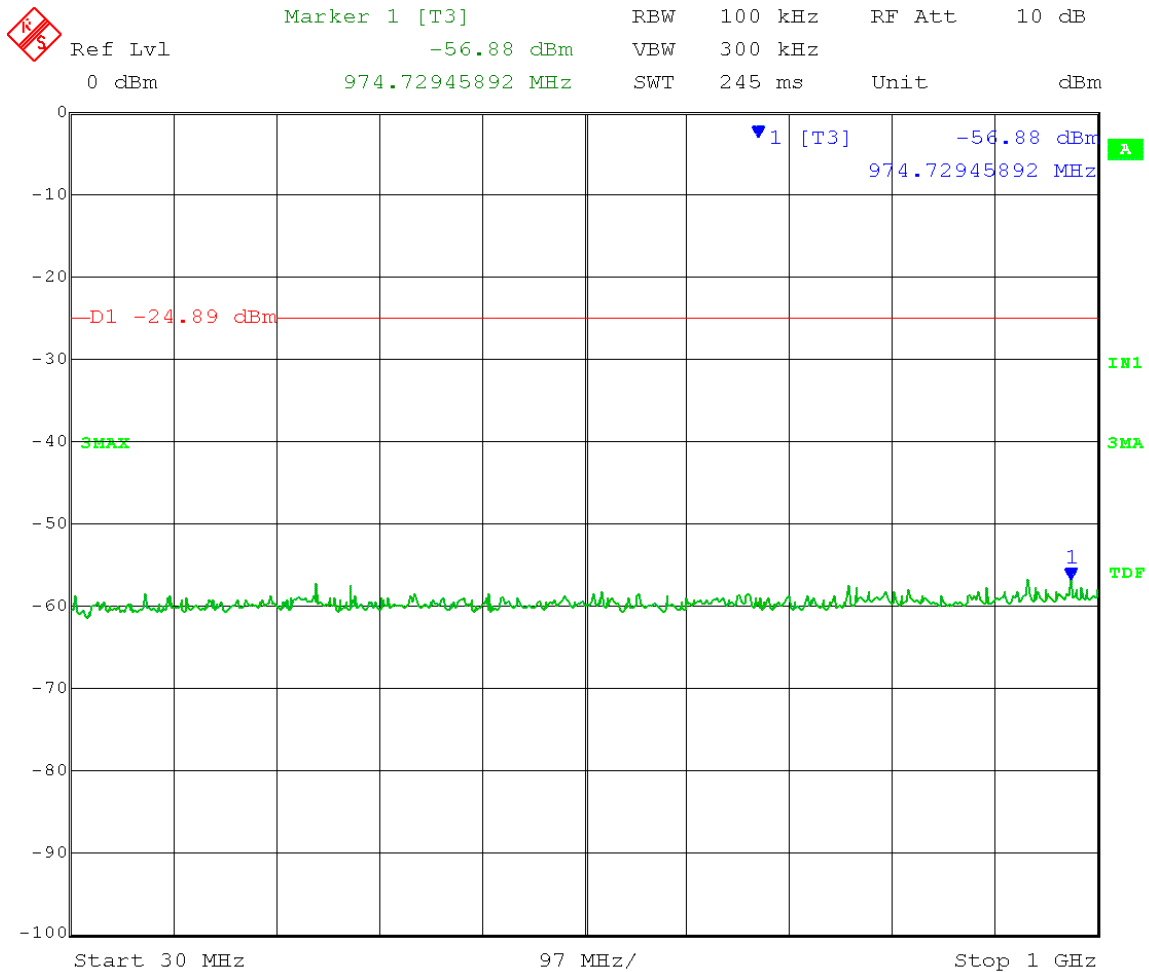
Date: 19.APR.2013 09:21:46

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel B
 Reference Level measurement
 Limit = 5.11dBm – 30 dB = -24.89dBm



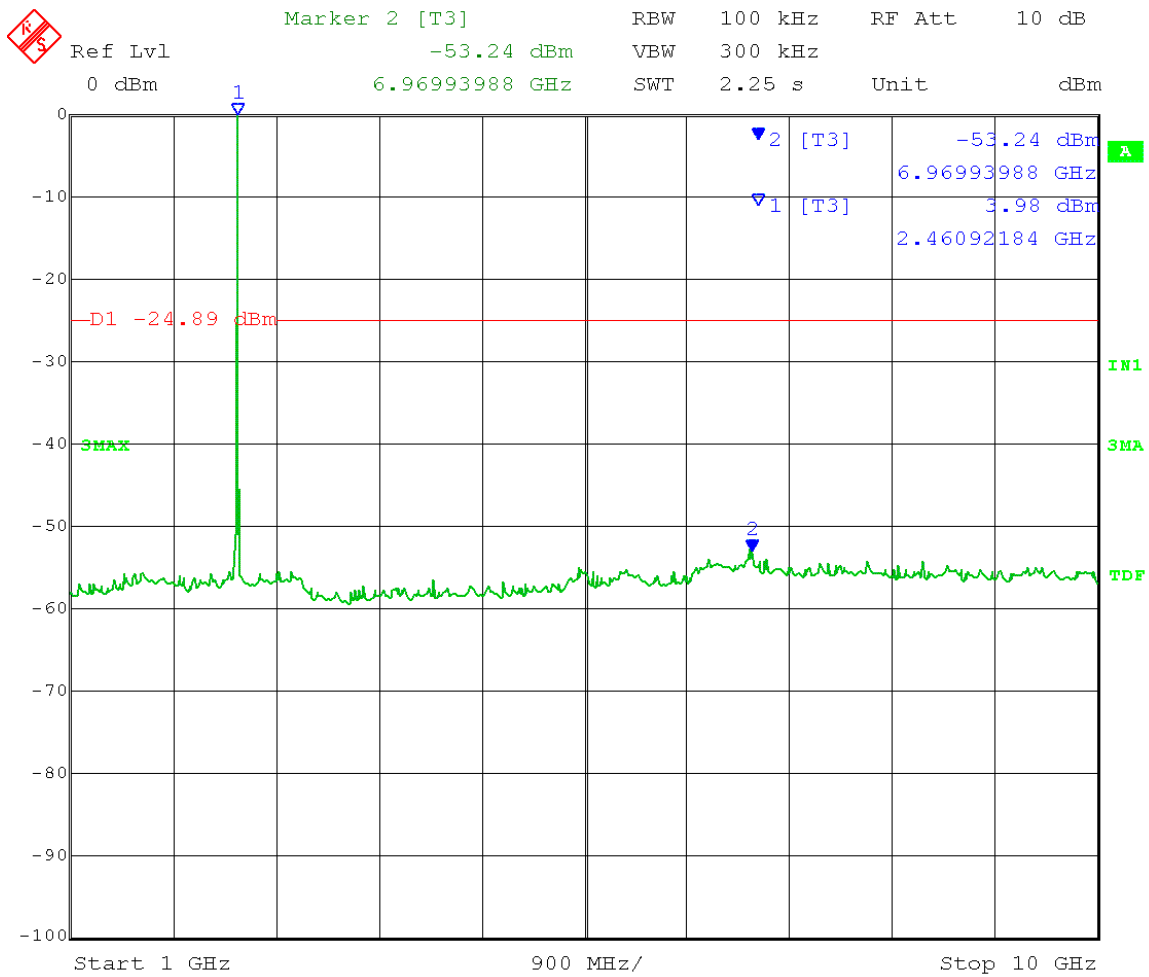
Date: 18.APR.2013 12:49:55

Test Date: 4-18-13
Company: Cambium Networks
EUT: PMP 450AP 2.4GHz
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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel B
 Frequency Range = 30M-1GHz
Emission Level measurement
Limit (D1) = 5.11dBm – 30 dB = -24.89dBm



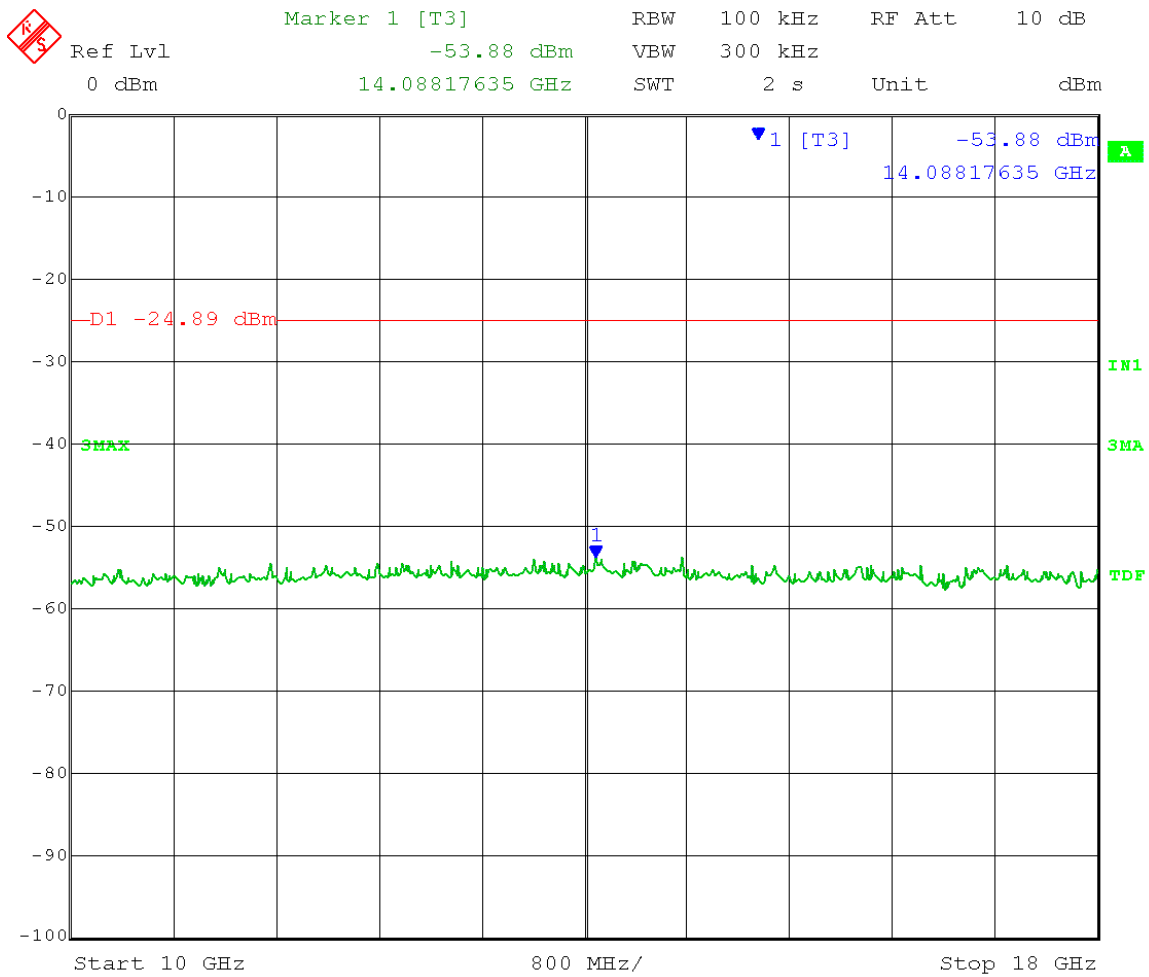
Date: 19.APR.2013 09:32:13

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel B
 Frequency Range = 1-10 GHz
Emission Level measurement
 Limit (D1) = 5.11dBm – 30 dB = -24.89dBm



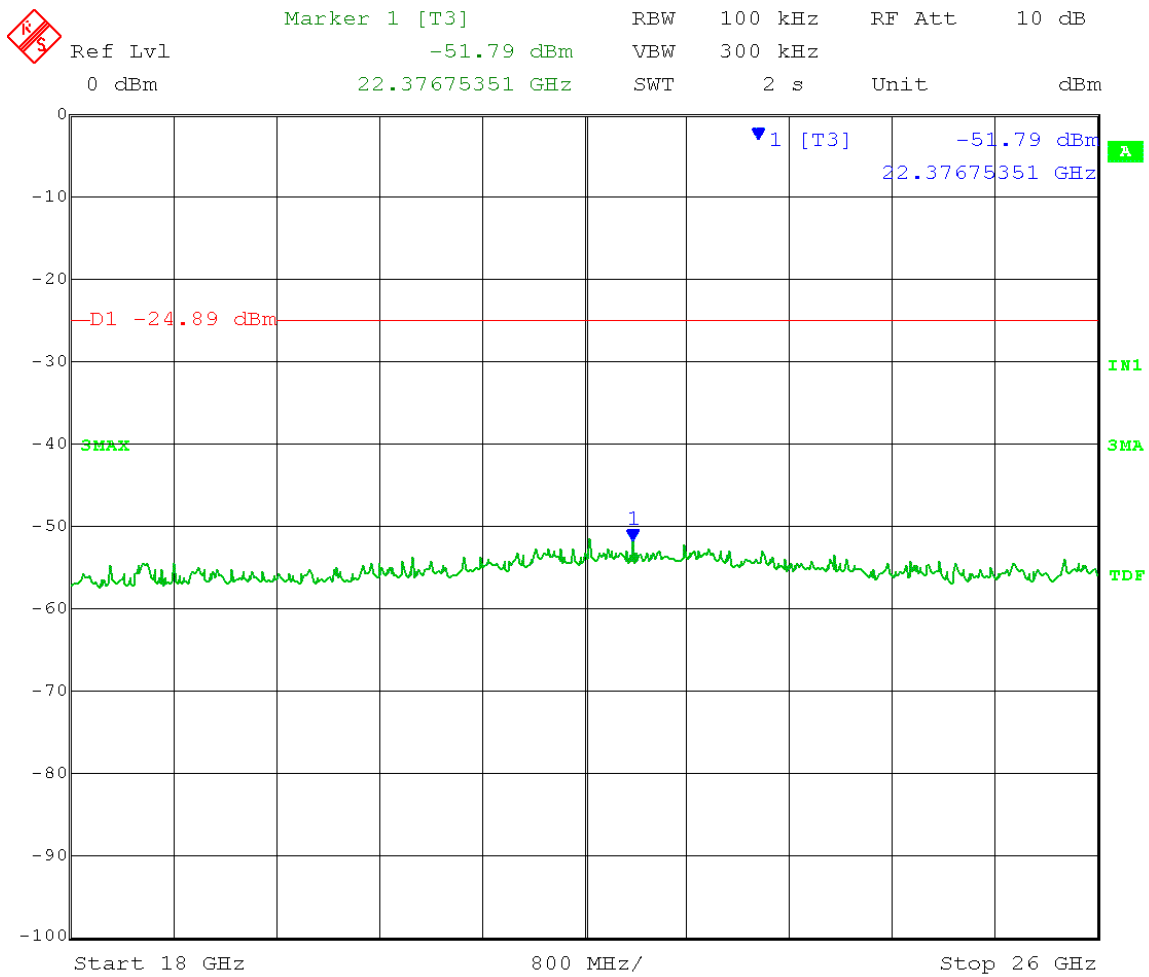
Date: 19.APR.2013 09:36:59

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 Test: Maximum Unwanted Emission Levels - Conducted
 Operator: Jim O
 Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold High Channel Transmit = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel B
 Frequency Range = 10-18 GHz
Emission Level measurement
 Limit (D1) = 5.11dBm - 30 dB = -24.89dBm



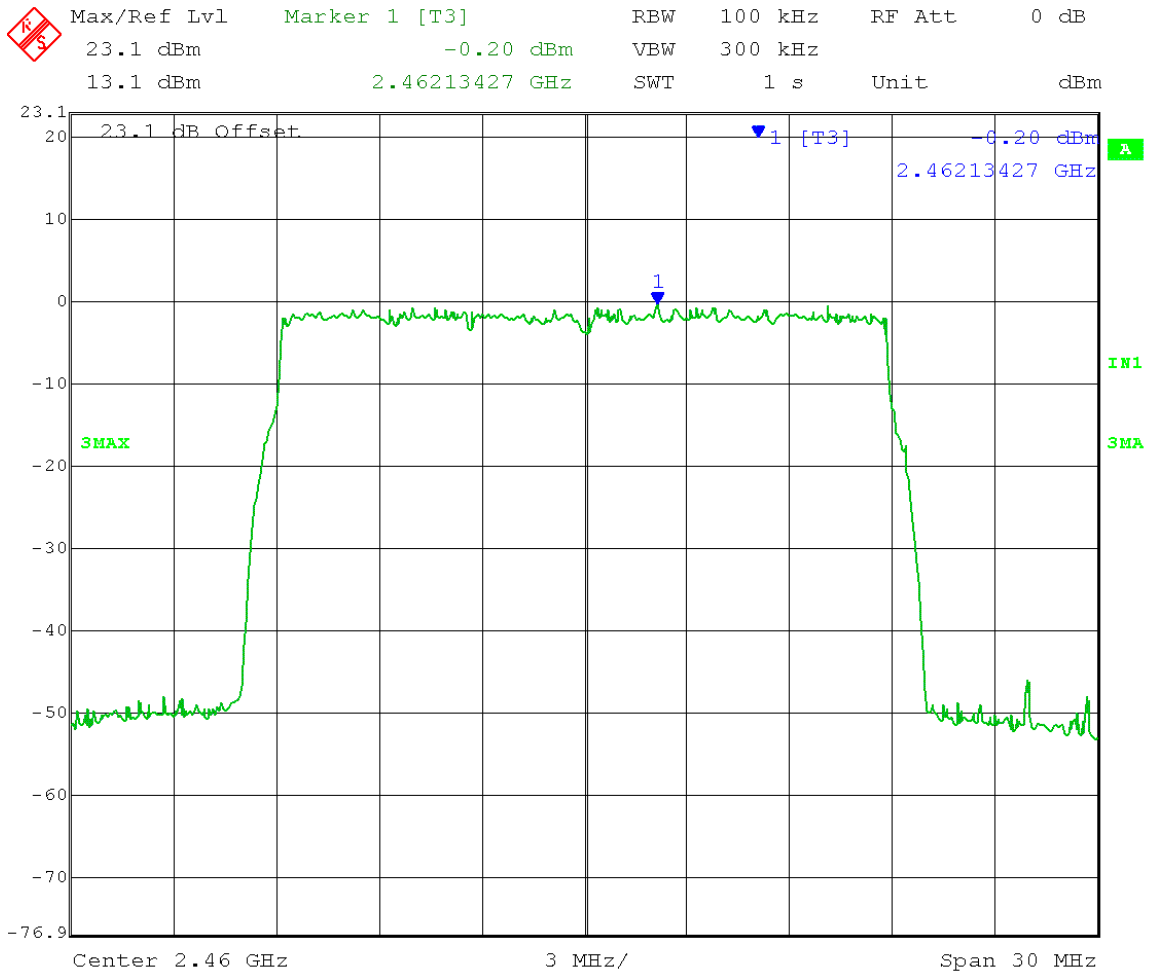
Date: 19.APR.2013 09:38:38

Test Date: 4-19-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.470GHz
 Output power setting 14dBm @ 10 MHz BW
 Channel B
 Frequency Range = 18-26 GHz
Emission Level measurement
 Limit (D1) = 5.11dBm – 30 dB = -24.89dBm



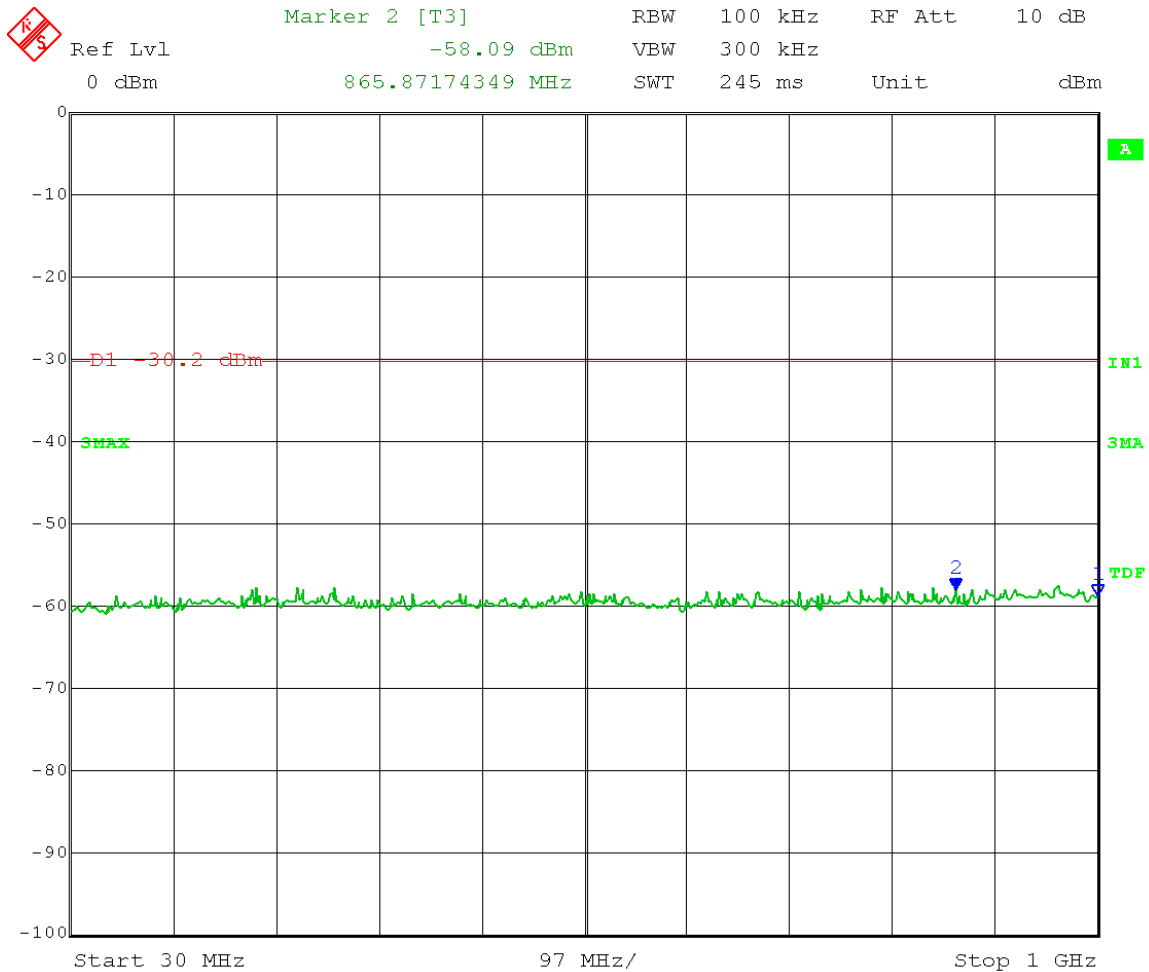
Date: 19.APR.2013 09:39:36

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel B
Reference Level measurement
 Limit = -0.20dBm – 30 dB = -30.20dBm



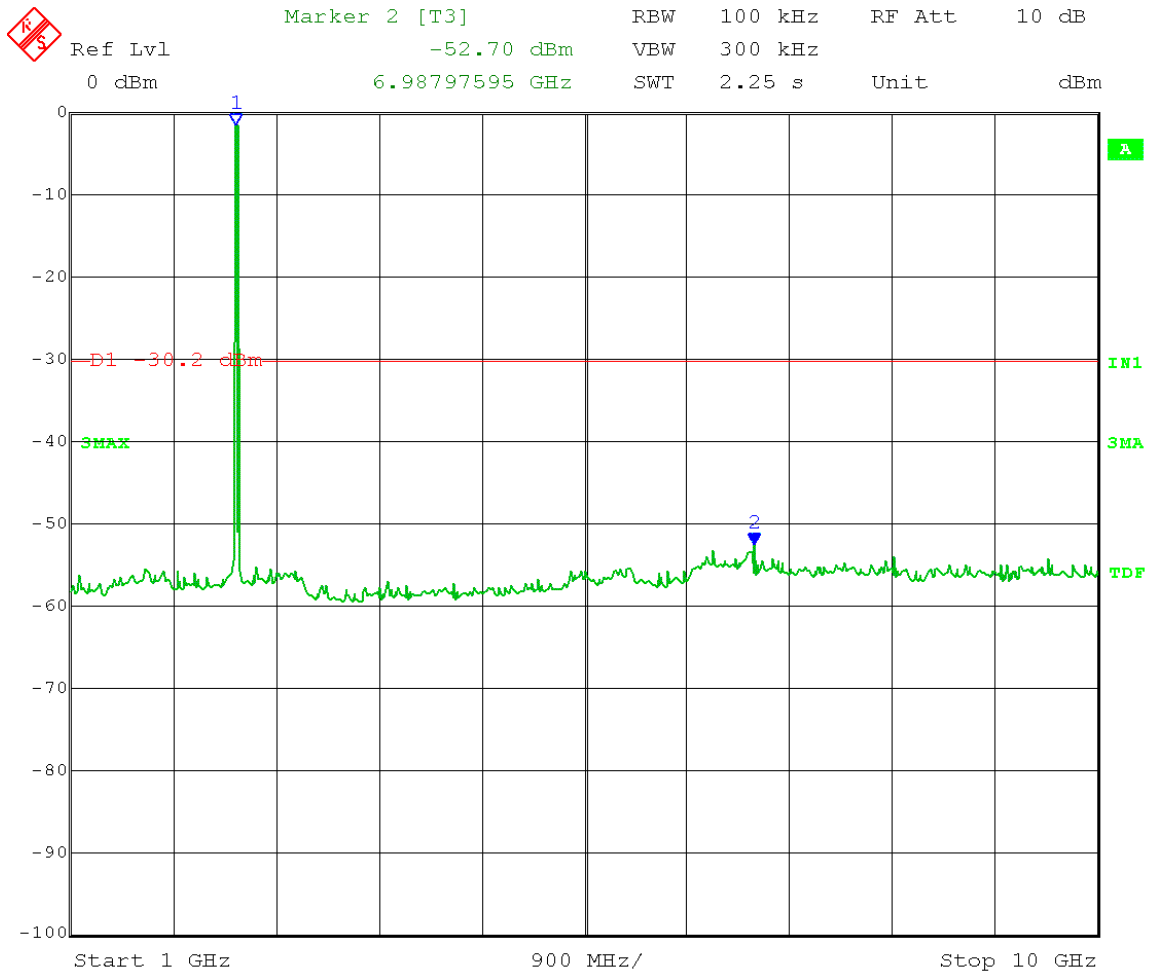
Date: 18.APR.2013 13:30:05

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel B
 Frequency Range: 30M - 1 GHz
 Emission Level measurement
 Limit (D1) = -0.20dBm – 30 dB = -30.20dBm



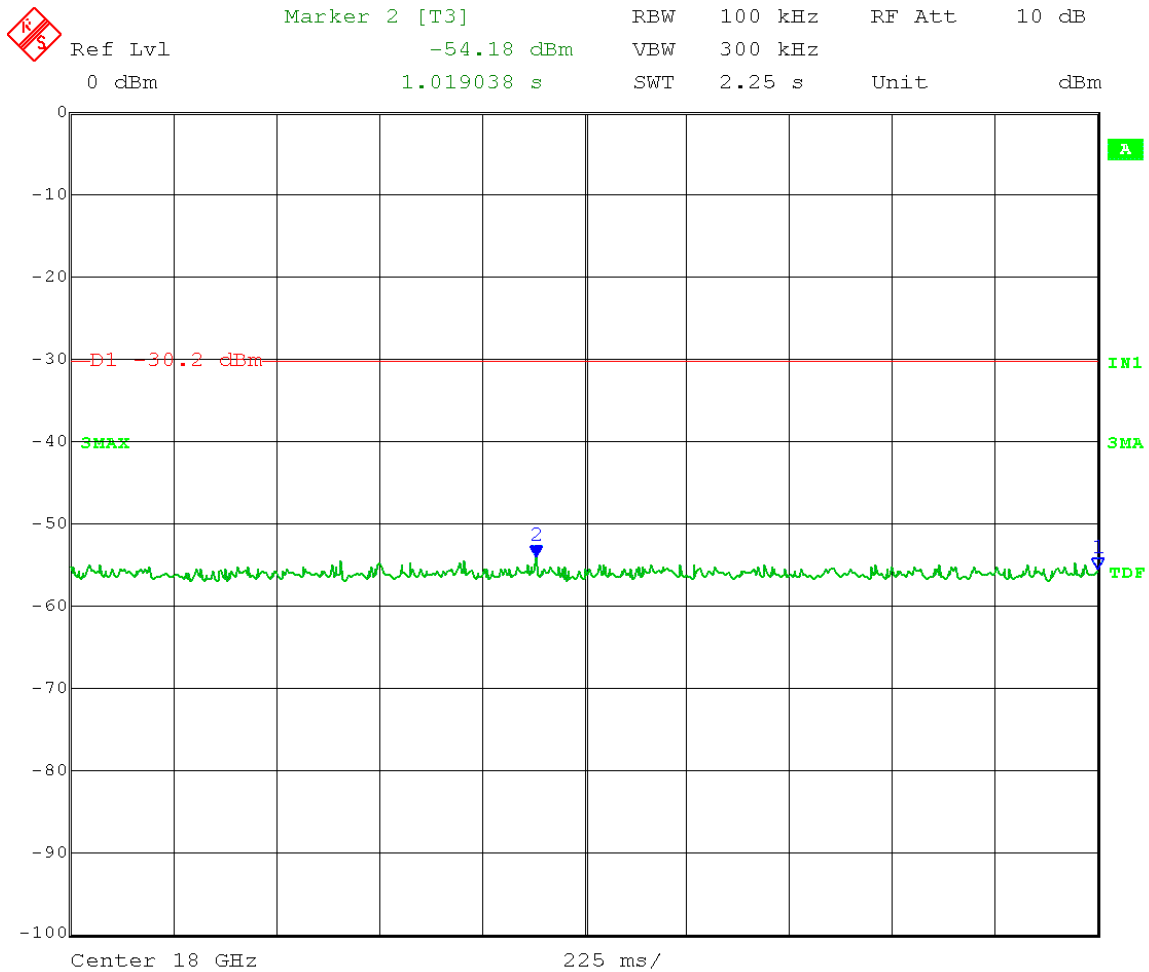
Date: 18.APR.2013 14:28:07

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel B
Frequency Range: 1 – 10 GHz
Emission Level measurement
 Limit (D1) = -0.20dBm – 30 dB = -30.20dBm



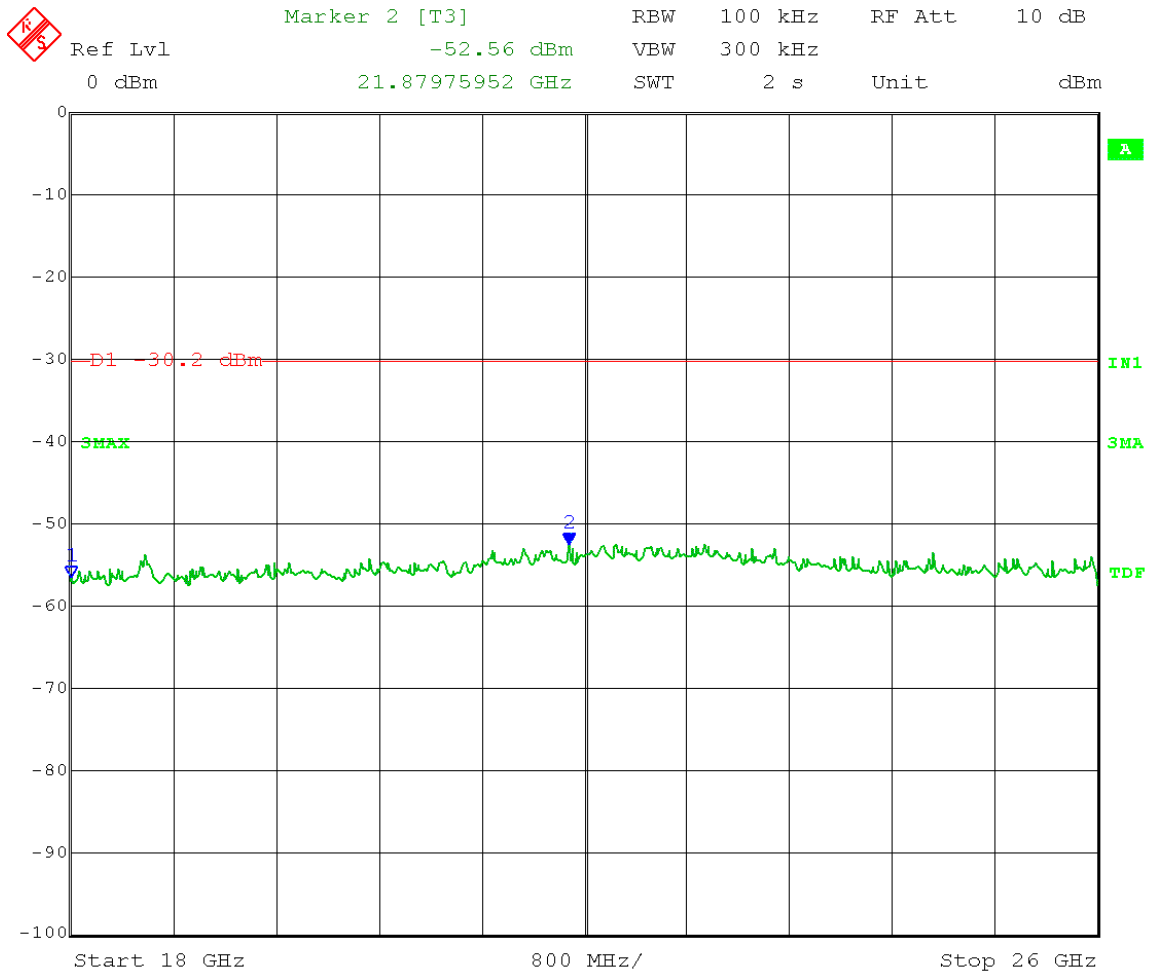
Date: 18.APR.2013 14:22:16

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel B
Frequency Range: 1 – 18 GHz
Emission Level measurement
 Limit (D1) = -0.20dBm – 30 dB = -30.20dBm



Date: 18.APR.2013 14:24:28

Test Date: 4-18-13
 Company: Cambium Networks
 EUT: PMP 450AP 2.4GHz
 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 = 2.460GHz
 Output power setting 12dBm @ 20 MHz BW
 Channel B
Frequency Range: 18 - 26 GHz
Emission Level measurement
 Limit (D1) = -0.20dBm – 30 dB = -30.20dBm



Date: 18.APR.2013 14:26:00



Company: Cambium Networks
 Model Tested: C024045A001A
 Report Number: 18998

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B5.0 Band-Edge Conducted Measurements for Radiated Restricted Band Compliance

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

12.1 Emissions in restricted frequency bands

12.2.2 General Procedure for conducted measurements in restricted bands

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

Description: Measure the conducted output power (in dBm) using the detector specified (see 12.2.2, 12.2.3, and 12.2.4 for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).

Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)

Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).

Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20\log D + 104.8$$

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

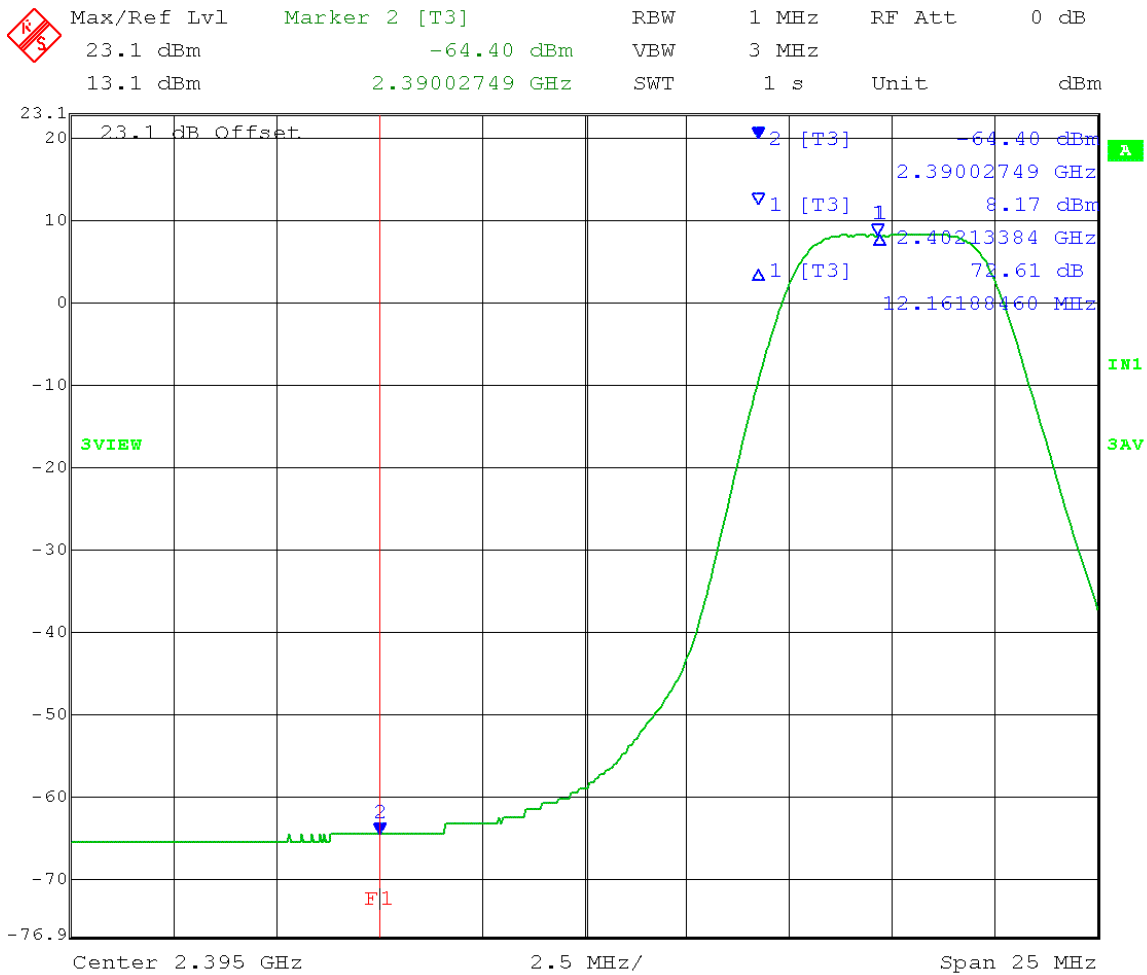
Compare the resultant electric field strength level to the applicable limit. Perform radiated spurious emission test

Measurements were taken for QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low, middle and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings with approximately a 94% duty cycle.

Limit: Average Limit = 54dBuV/m @ 3 meters
 Peak Limit = 74dBuV/m @ 3 meters

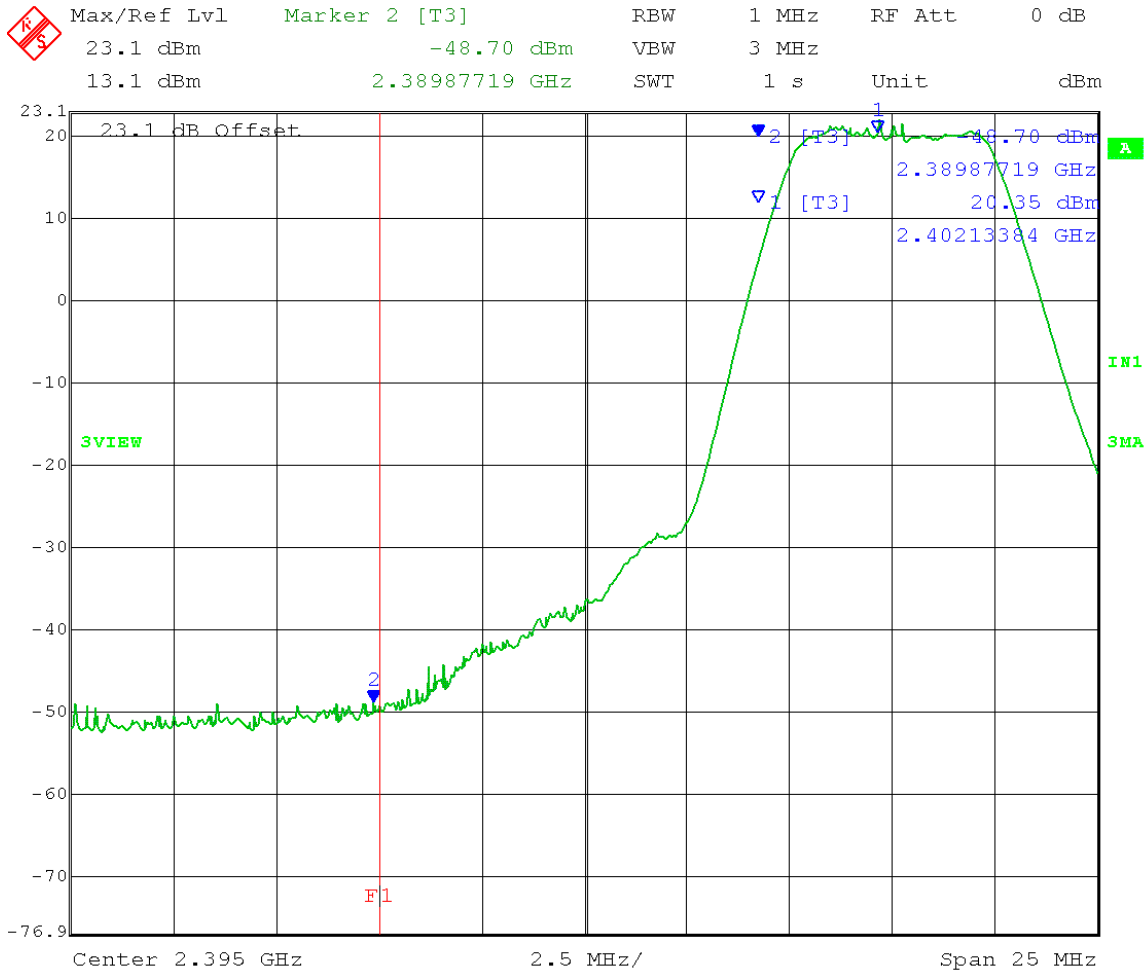
Results: Passed

Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 Low Channel Frequency = 2.4025MHz
 Output power setting: 16 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Average Limit = 54dBuV/m @ 3 meters Conducted measurement (CH A)
 $-64.40\text{Bm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $50.86\text{dBuV/m @ 3 meters}$



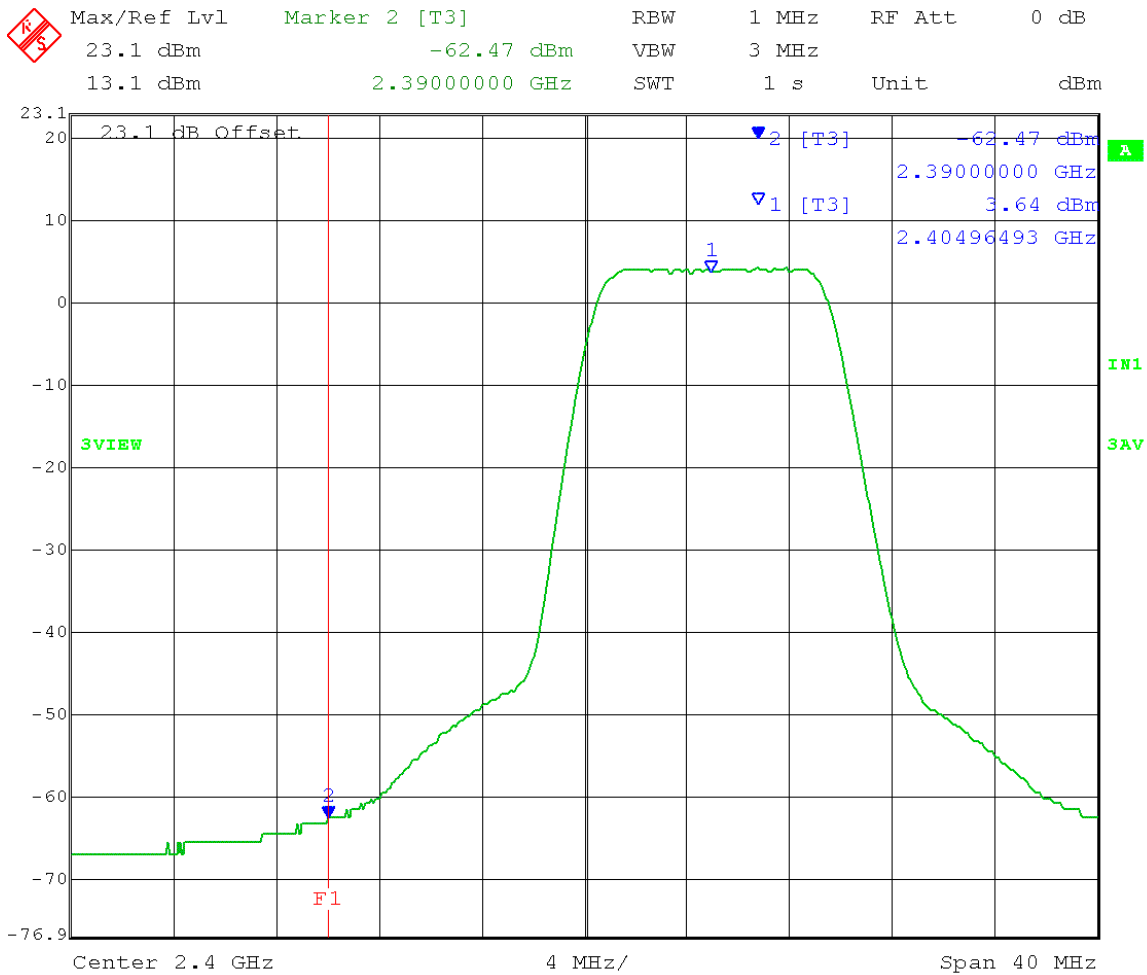
Date: 18.APR.2013 11:10:14

Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 Low Channel Frequency = 24025 MHz
 Output power setting: 16 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Peak Limit = 74dBuV/m @ 3 meters
 Conducted measurement (CH A)
 -48.70dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20 log (3m) + 104.8 =
 66.56BuV/m @ 3 meters

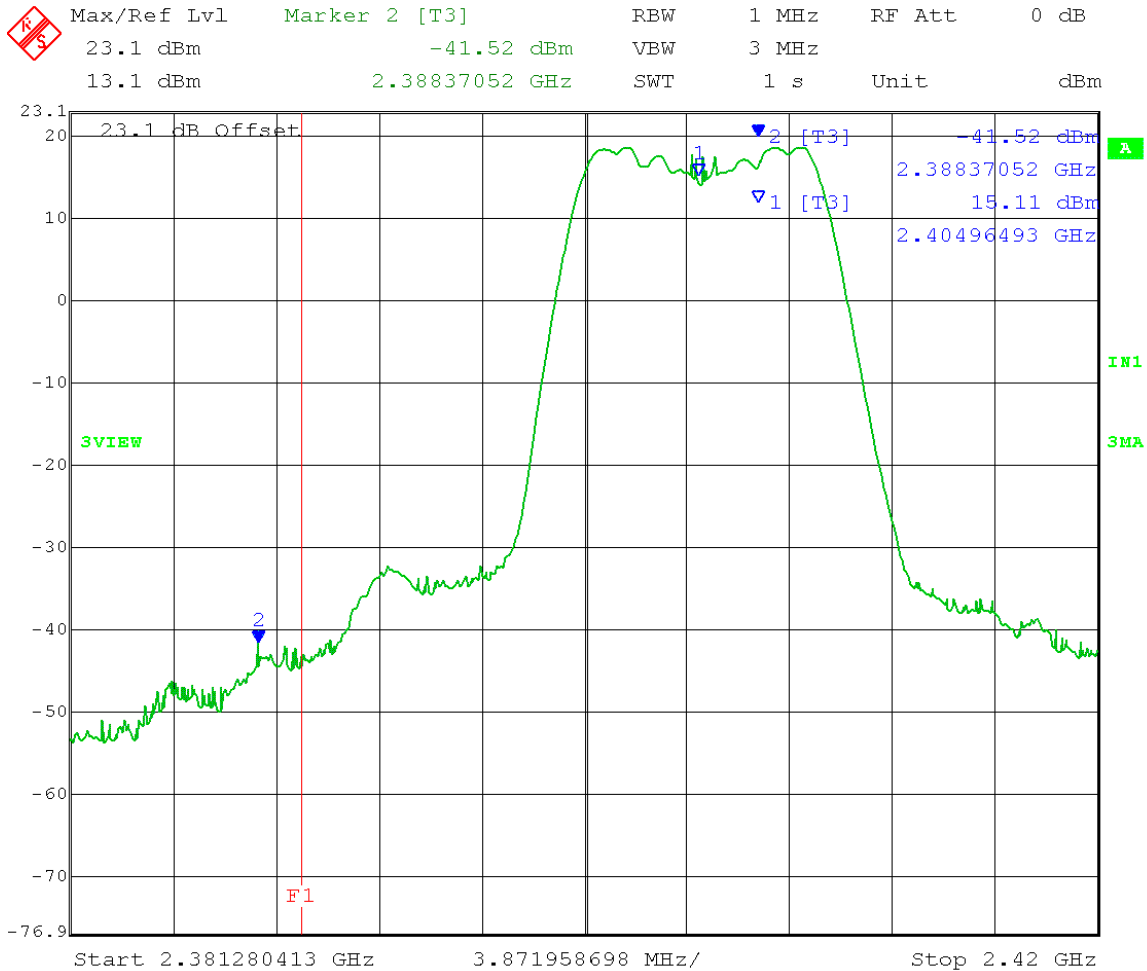


Date: 18.APR.2013 11:07:37

Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz Both Output Ports on
 Low Channel Frequency = 2405MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Average Limit = 54dBuV/m @ 3 meters Conducted measurement (CH A)
 $-62.47\text{Bm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $52.79\text{dBuV/m @ 3 meters}$

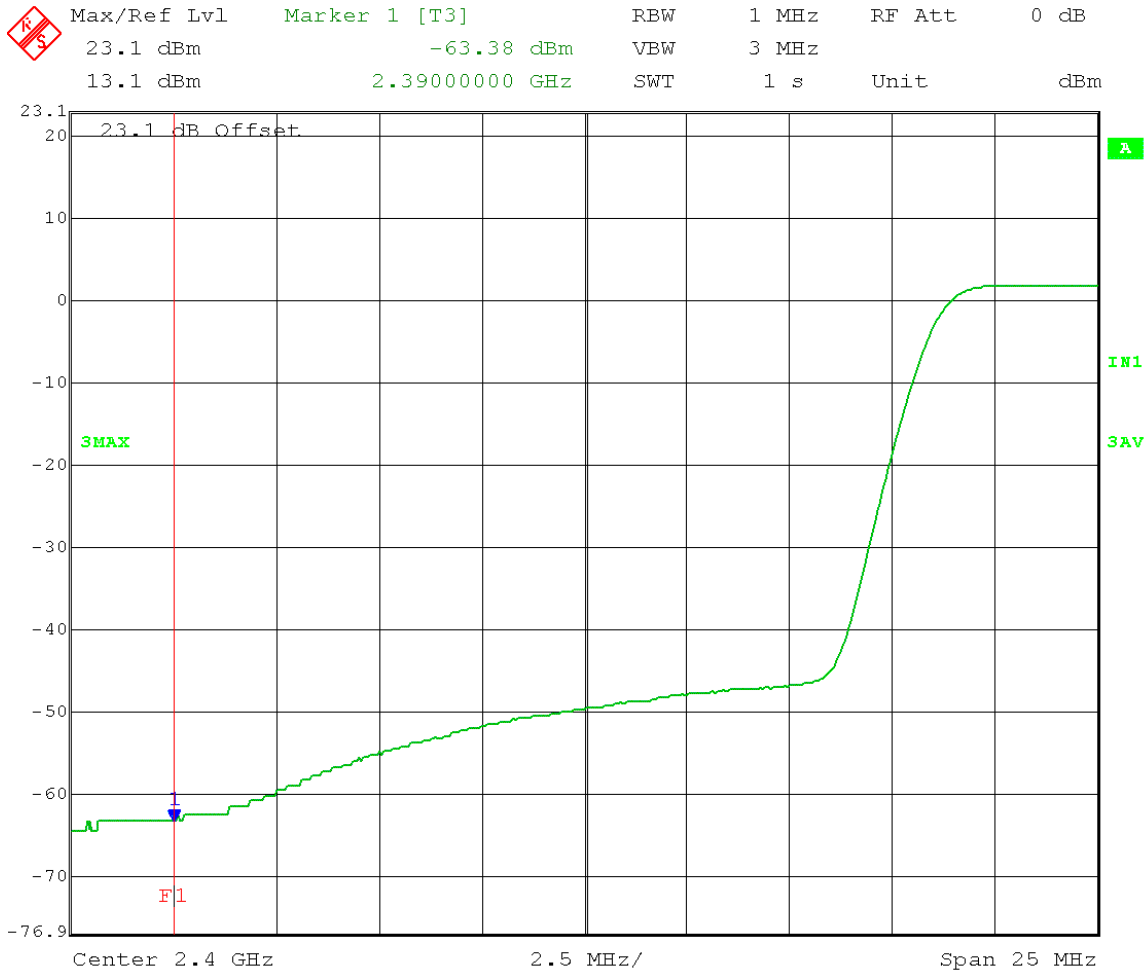


Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz Both Output Ports on
 Low Channel Frequency = 2405 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Peak Limit = 74dBuV/m @ 3 meters
 Conducted measurement (CH A)
 $-41.52\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $73.74\text{dBuV/m @ 3 meters}$

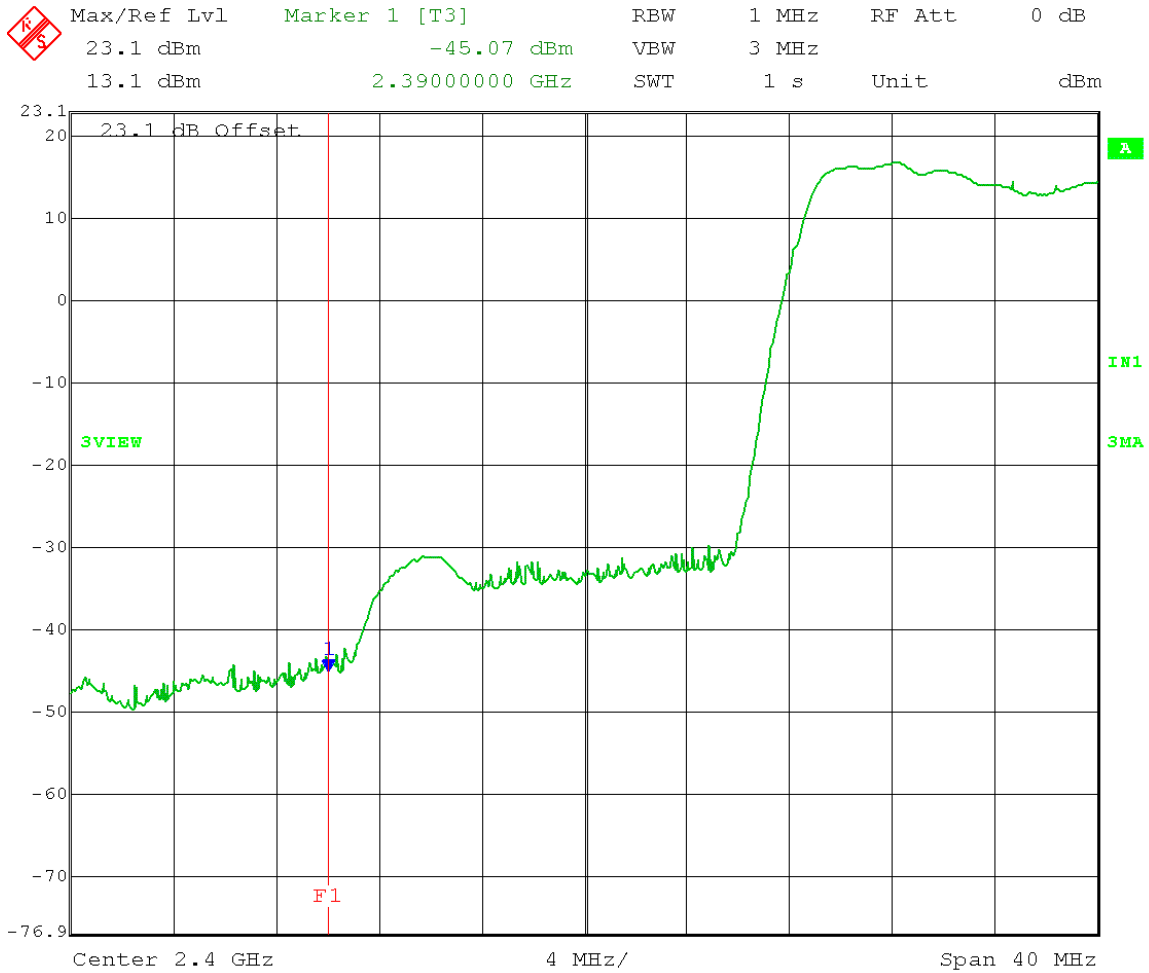


Date: 18.APR.2013 10:49:04

Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz Both Output Ports on
 Low Channel Frequency = 2417.5MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Average Limit = 54dBuV/m @ 3 meters
 Conducted measurement (CH A)
 $-63.38\text{Bm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $51.88\text{dBuV/m @ 3 meters}$

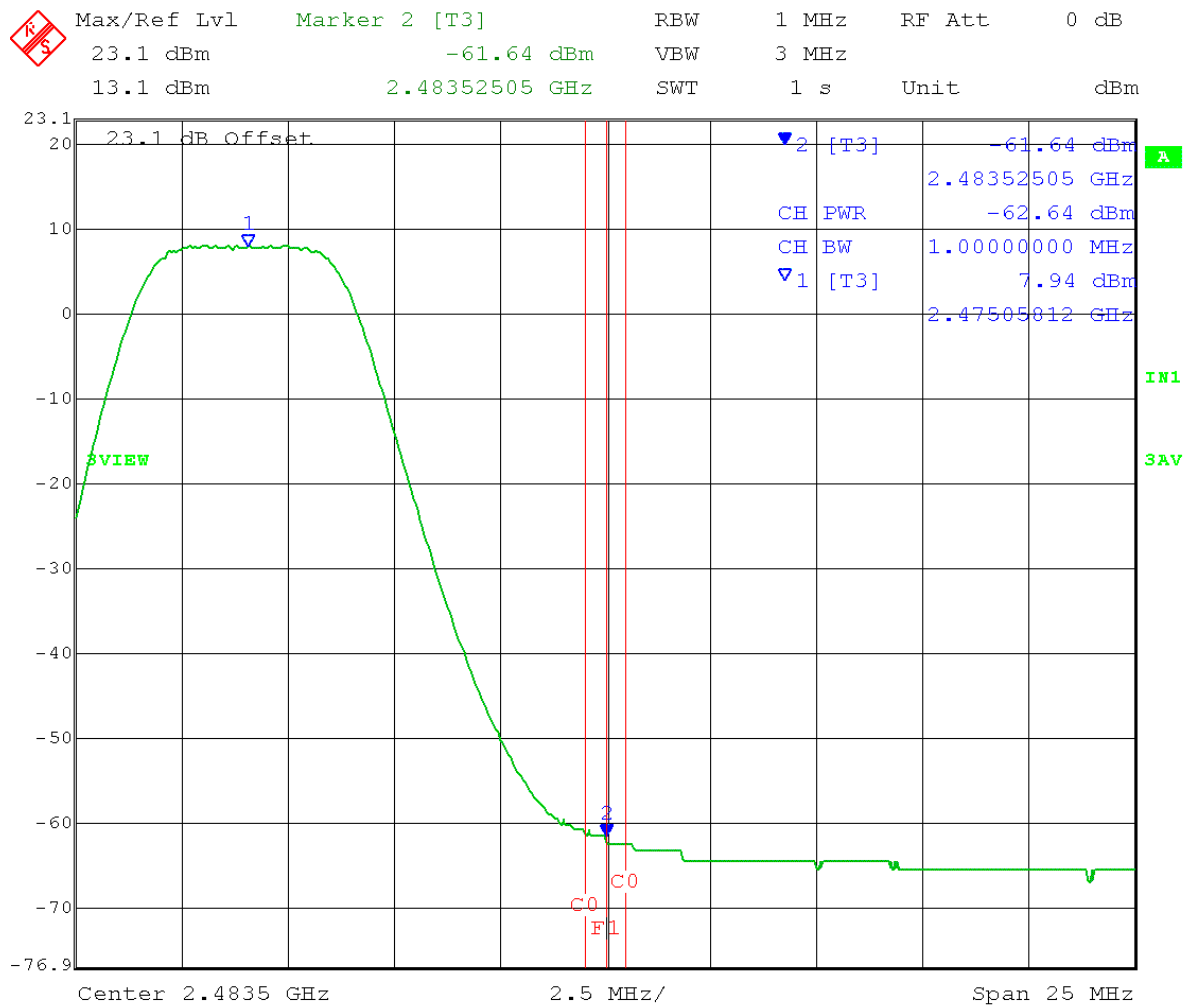


Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz Both Output Ports on
 Low Channel Frequency = 2417.5 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Peak Limit (D1) = 74dBuV/m @ 3 meters
 Conducted measurement (CH A)
 $-45.07\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $70.19\text{dBuV/m @ 3 meters}$



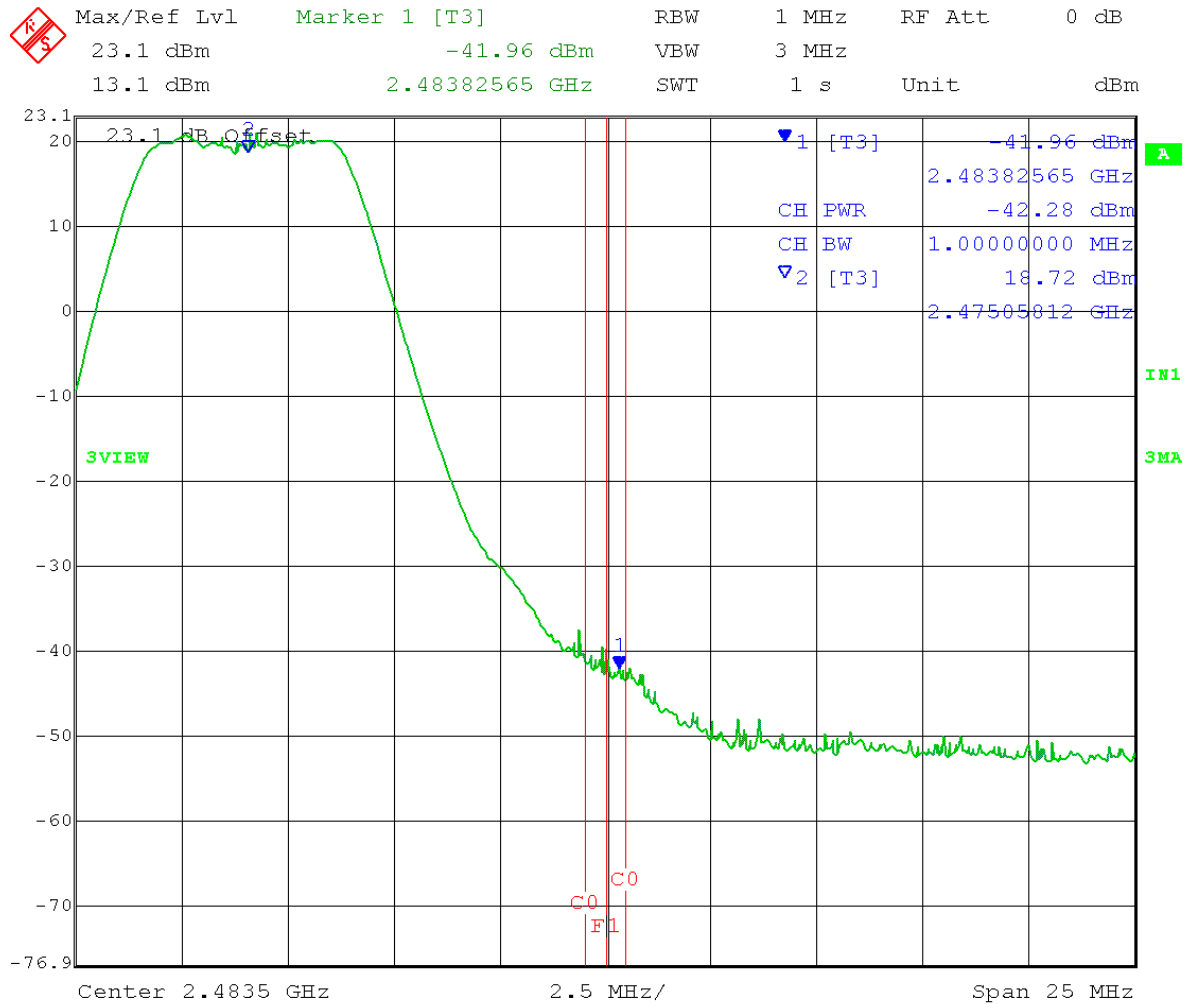
Date: 18.APR.2013 09:25:46

Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 High Channel Frequency = 2475 MHz
 Output power setting = 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.4835 GHz
 Average Limit = 54dBuV/m @ 3 meters Conducted measurement (CH A)
 -61.64dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20 log (3m) + 104.8 =
 53.62dBuV/m @ 3 meters



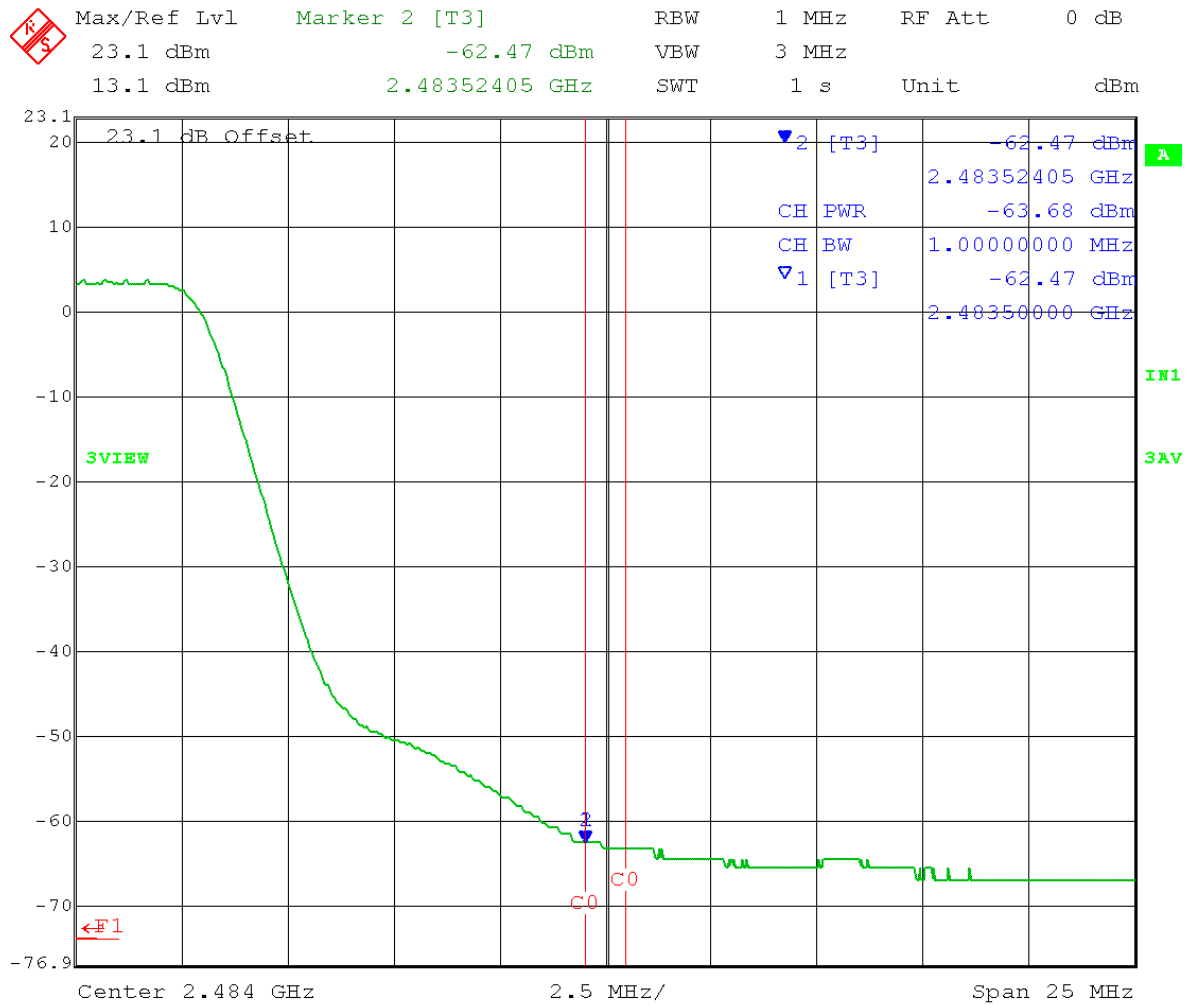
Date: 18.APR.2013 11:20:13

Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 High Channel Frequency = 2475 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.4835 GHz
 Peak Limit = 74dBuV/m @ 3 meters Conducted measurement (CH A)
 -41.96dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20 log (3m) + 104.8 =
 73.3dBuV/m @ 3 meters



Date: 18.APR.2013 11:27:11

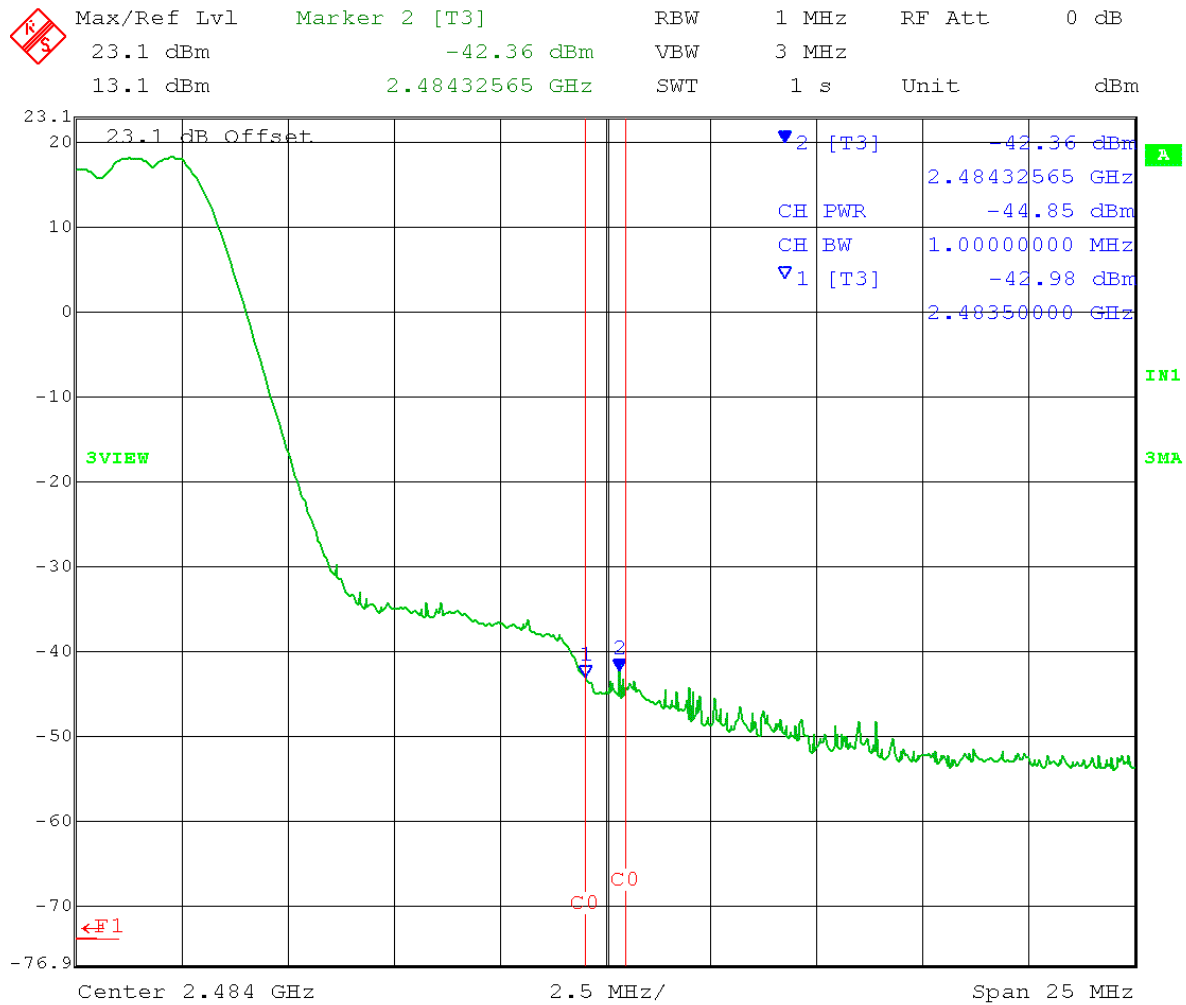
Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz Both Output Ports on
 High Channel Frequency = 2470 MHz
 Output power setting = 14 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.4835 GHz
 Average Limit = 54dBuV/m @ 3 meters Conducted measurement (CH A)
 -62.47dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20 log (3m) + 104.8 =
 52.79dBuV/m @ 3 meters



Date: 18.APR.2013 10:26:45

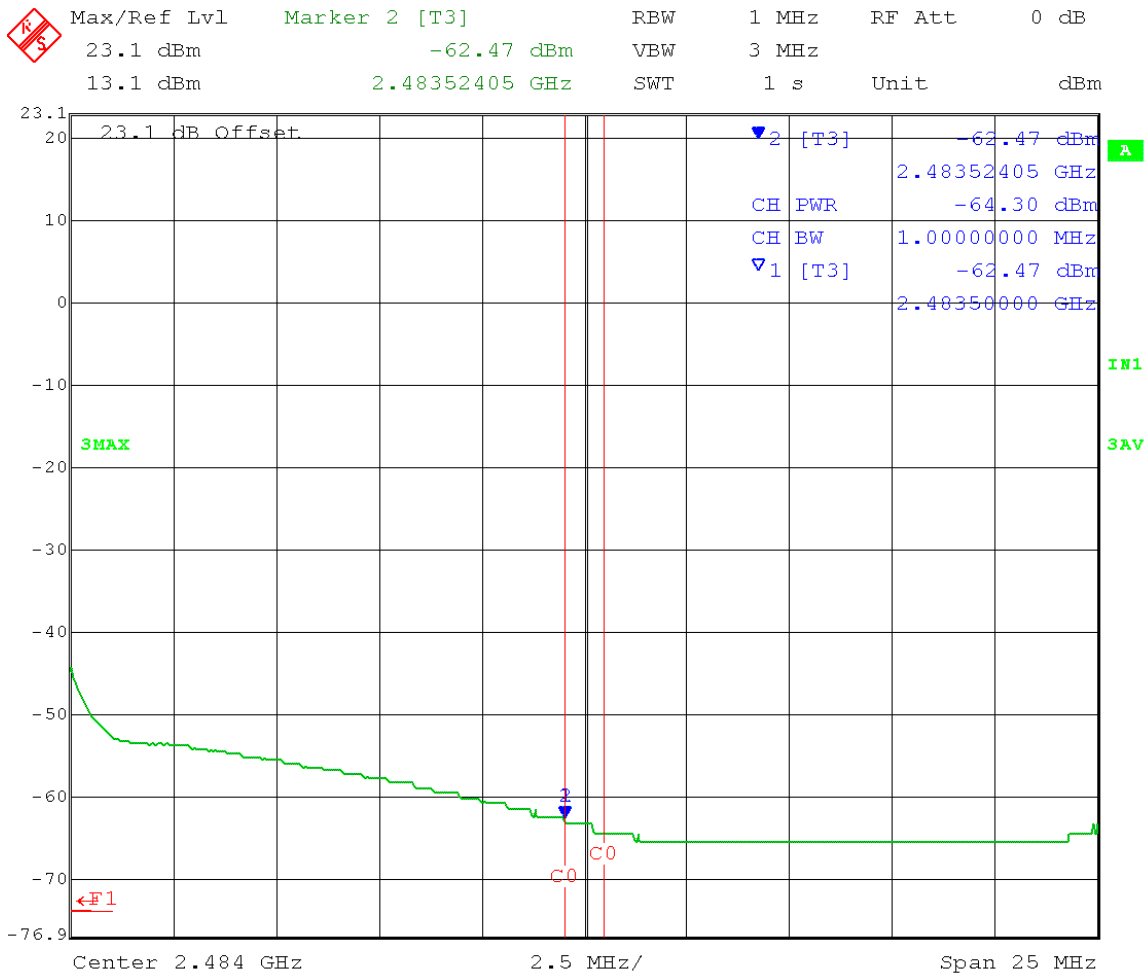
Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands

Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz Both Output Ports on
 High Channel Frequency = 2470 MHz
 Output power setting: 14 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.4835 GHz
 Peak Limit = 74dBuV/m @ 3 meters Conducted measurement (CH A)
 -42.36dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20 log (3m) + 104.8 =
 72.9dBuV/m @ 3 meters



Date: 18.APR.2013 10:30:46

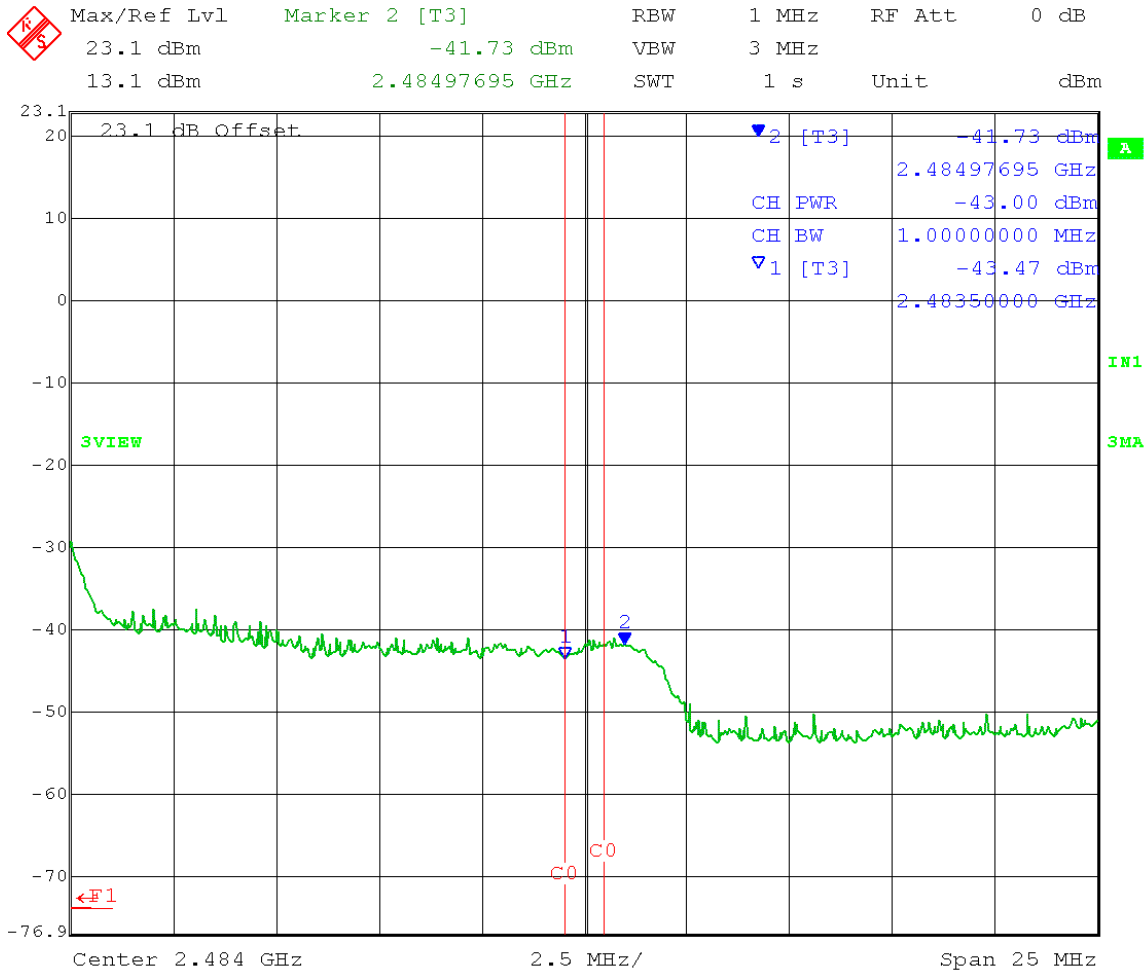
Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz
 High Channel Frequency = 2460 MHz Both ports on
 Output power setting: 12 Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Average Limit = 54dBuV/m @ 3 meters
 Conducted measurement (CH A)
 -62.47dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20 log (3m) + 104.8 =
 52.79dBuV/m @ 3 meters



Date: 18.APR.2013 09:48:09

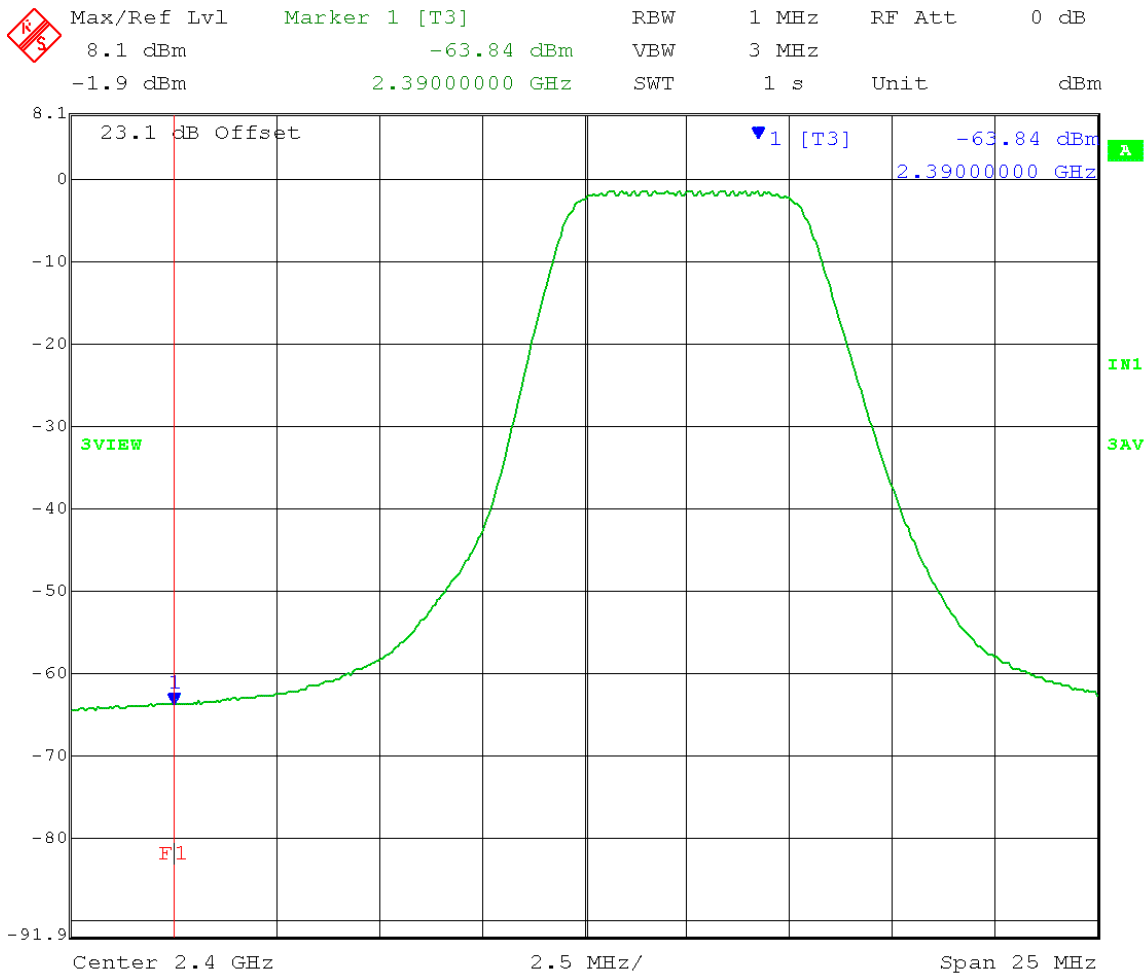
Test Date: 04-18-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands

Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz
 High Channel Frequency = 2460 MHz Both ports on
 Output power setting: 12 Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Peak Limit = 74dBuV/m @ 3 meters
 Conducted measurement (CH A)
 $-41.73\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $73.53\text{dBuV/m @ 3 meters}$



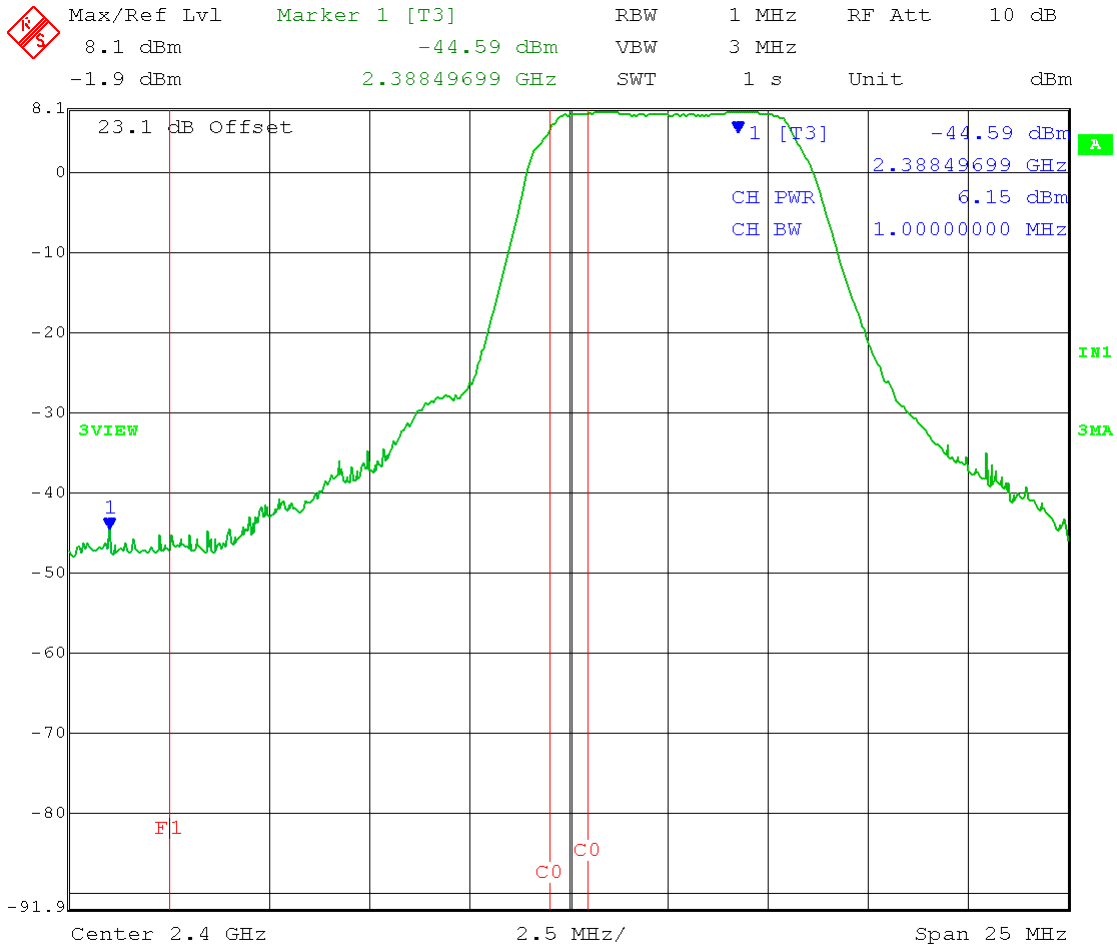
Date: 18.APR.2013 09:42:34

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 Low Channel Frequency = 2402.5 MHz
 Output power setting: 16 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Average Limit = 54dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-63.84\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20\log(3\text{m}) + 104.8 =$
 $51.42\text{dBuV/m @ 3 meters}$



Date: 17.APR.2013 15:27:42

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 Low Channel Frequency = 2402.5 MHz
 Output power setting: 16 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Peak Limit (D1) = 74dBuV/m @ 3 meters
 Conducted measurement (CH B)
 -44.59dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20log (3m) + 104.8 =
 70.67dBuV/m @ 3 meters



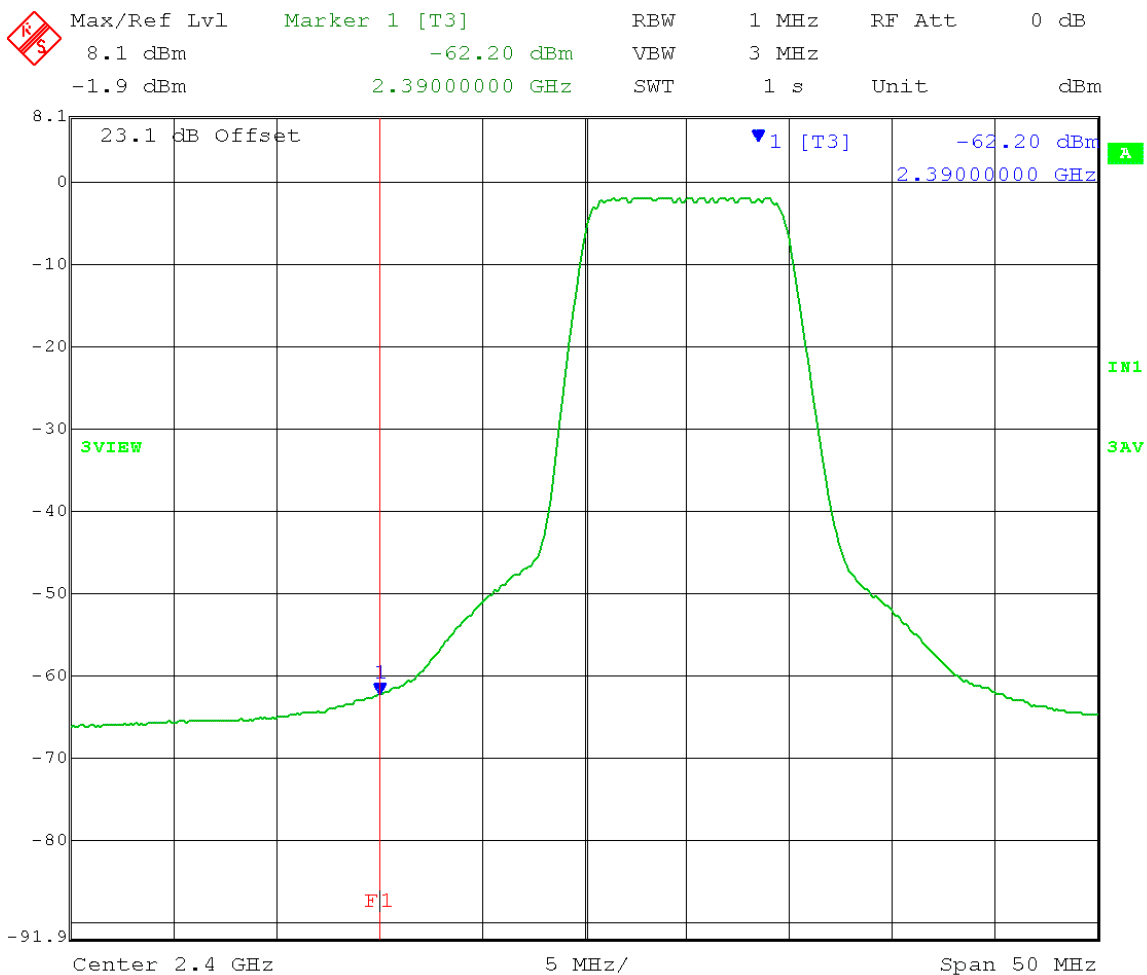
Date: 17.APR.2013 15:29:56

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands

Operator: Jim O

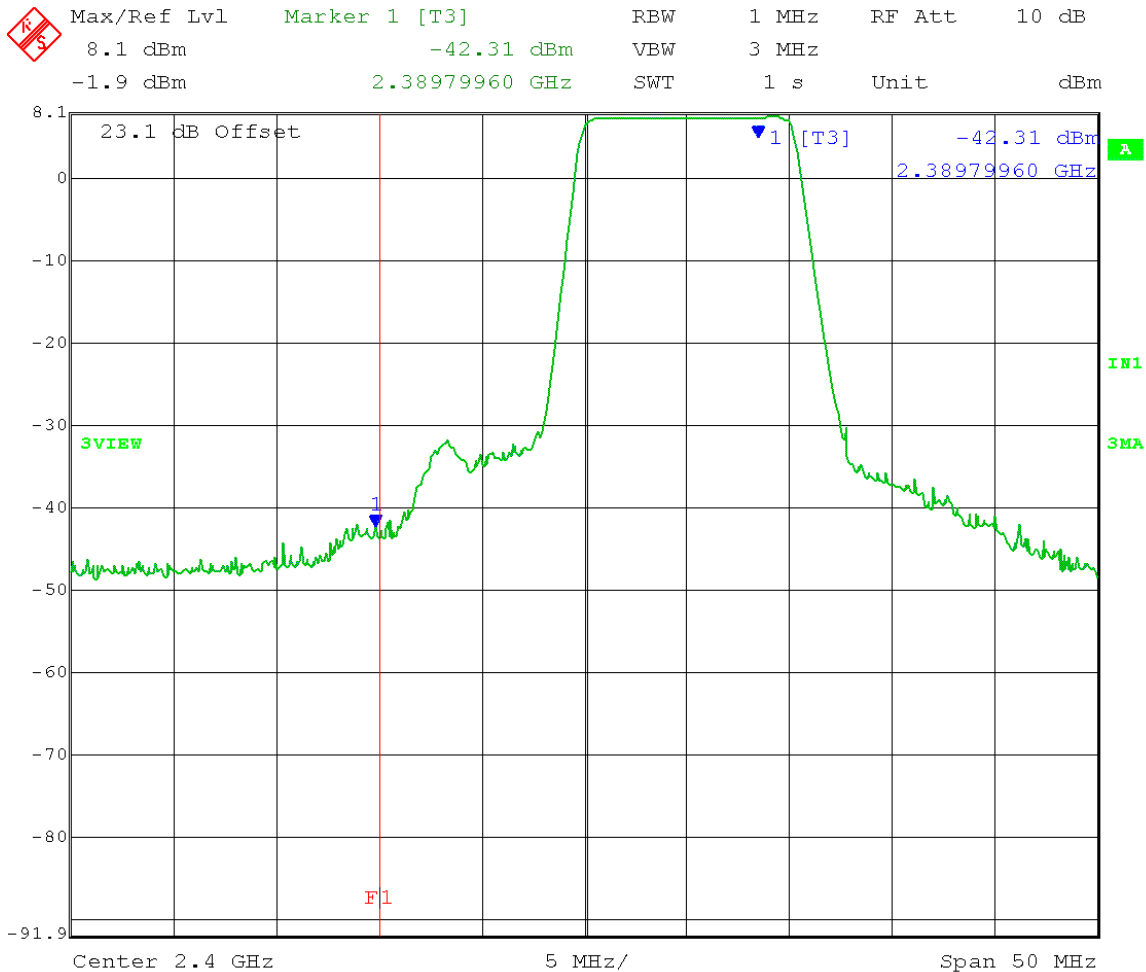
Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz Both Output Ports on
 Low Channel Frequency = 2405 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Average Limit = 54dBuV/m @ 3 meters
 Conducted measurement (CH B)

$$-62.20\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log(3\text{m}) + 104.8 = 53.06\text{dBuV/m @ 3 meters}$$



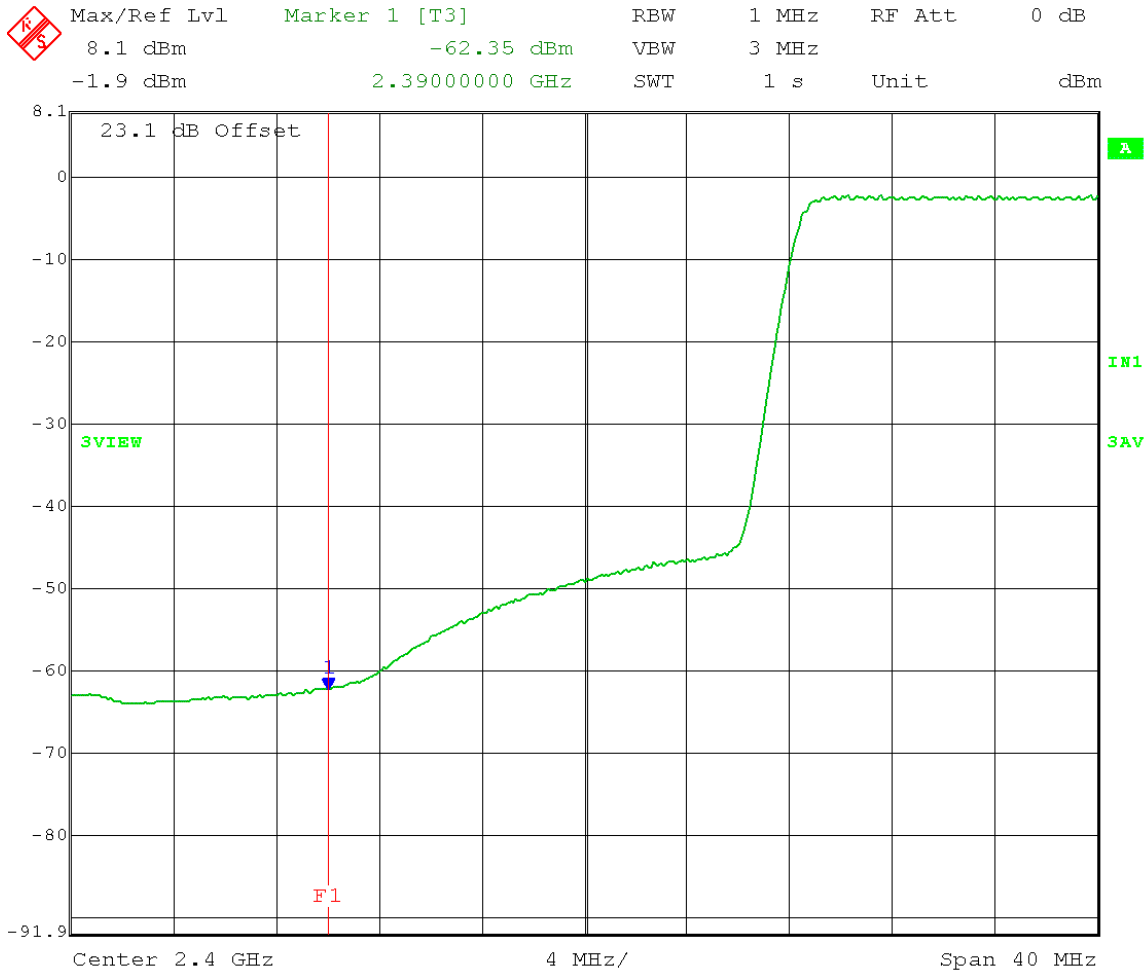
Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands

Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz Both Output Ports on
 Low Channel Frequency = 2405 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Peak Limit = 74dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-42.31\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log(3\text{m}) + 104.8 = 72.95\text{dBuV/m @ 3 meters}$



Date: 17.APR.2013 14:44:50

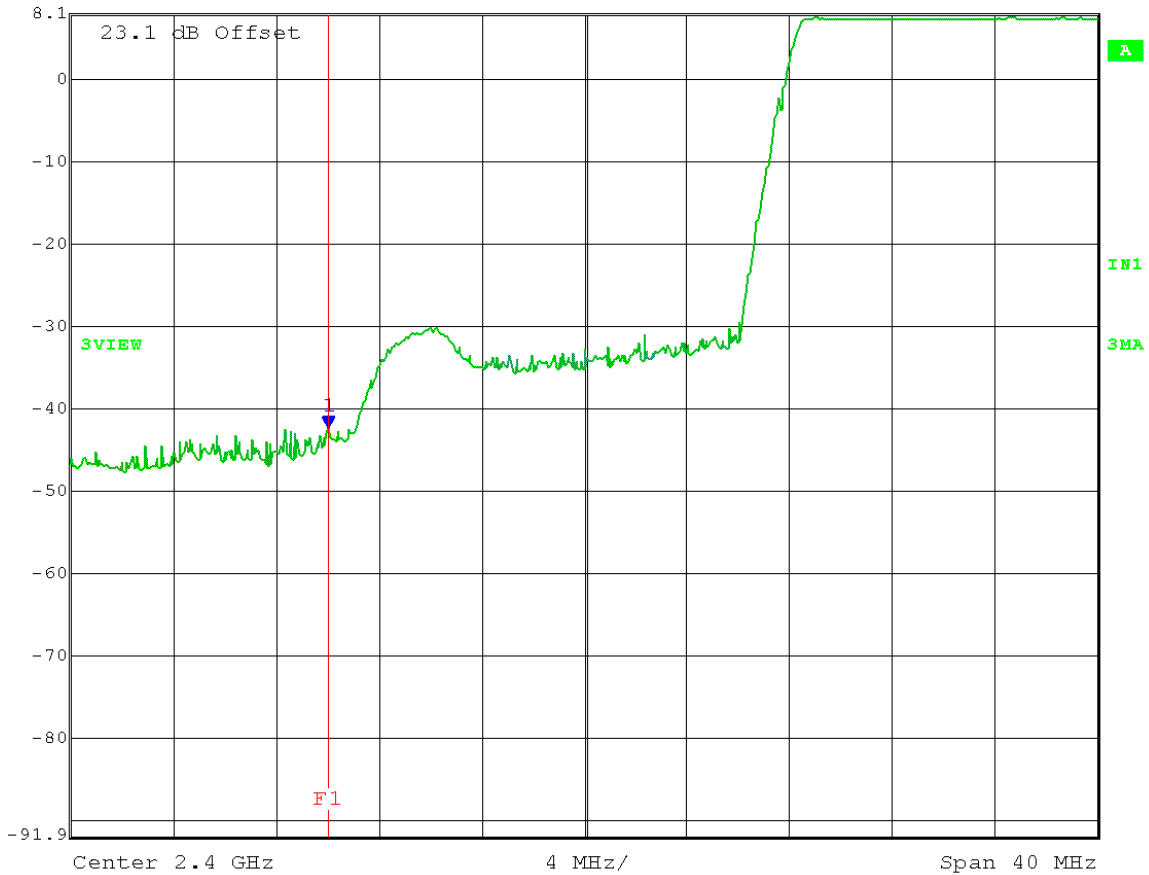
Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated Lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz Both Output Ports on
 Low Channel Frequency = 2417.5 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Average Limit = 54dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-62.35\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $52.90\text{dBuV/m @ 3 meters}$



Date: 17.APR.2013 15:47:59

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated lower Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz Both Output Ports on
 Low Channel Frequency = 2417.5 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Restricted Band-edge frequency (F1) = 2.39 GHz
 Peak Limit (D1) = 74dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-42.29\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $72.97\text{dBuV/m @ 3 meters}$

	Max/Ref Lvl	Marker 1 [T3]	RBW	1 MHz	RF Att	10 dB
	8.1 dBm	-42.29 dBm	VBW	3 MHz		
	-1.9 dBm	2.39000000 GHz	SWT	1 s	Unit	dBm

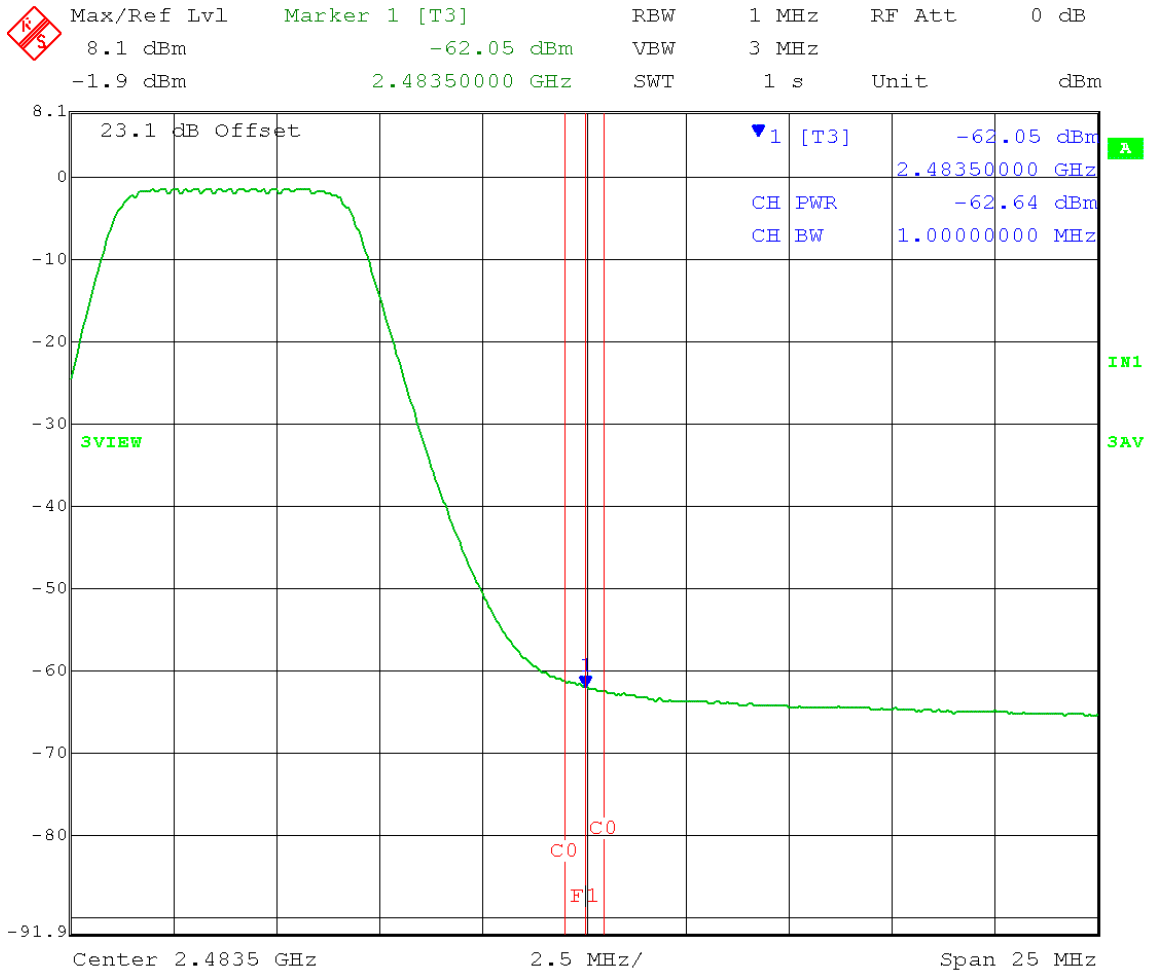


Date: 17.APR.2013 15:46:32

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands

Operator: Jim O

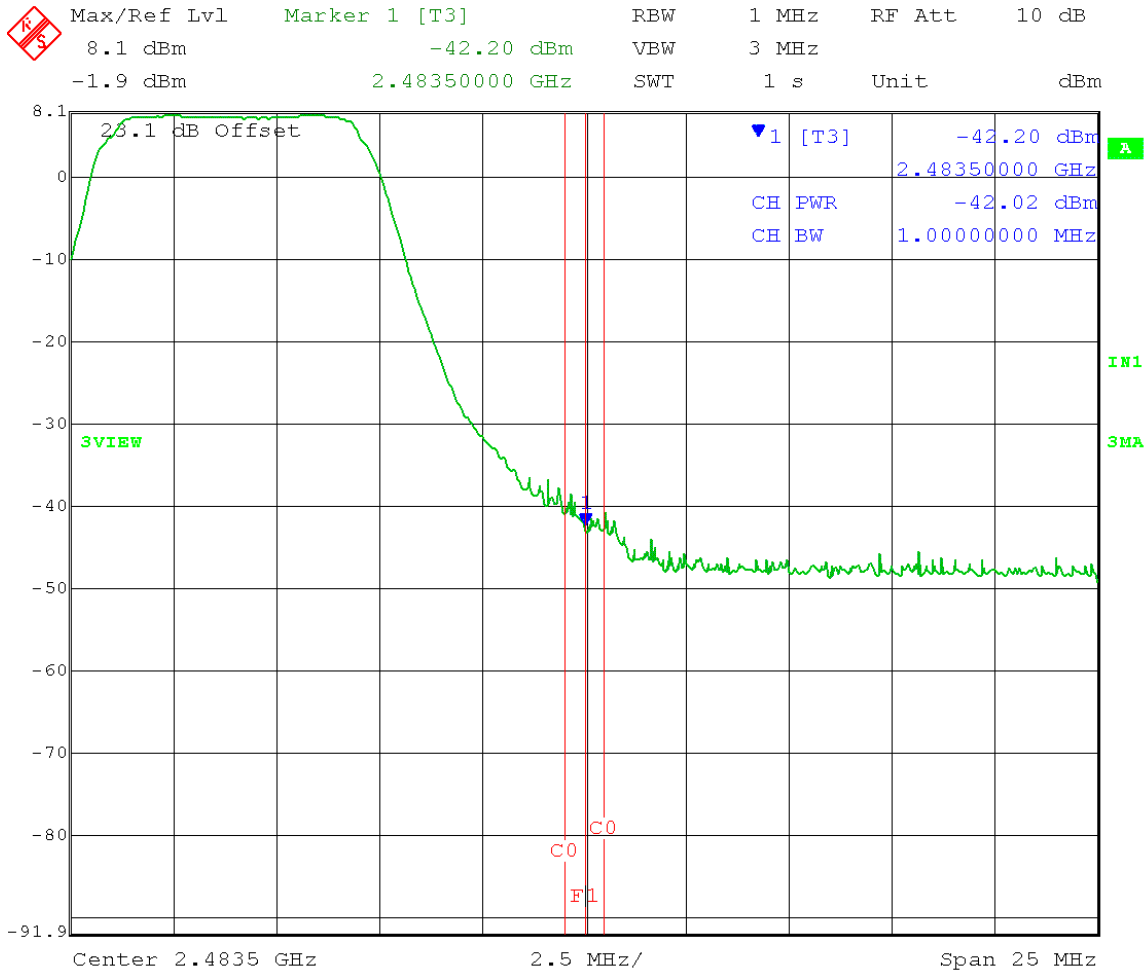
Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 High Channel Frequency = 2475 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Average Limit (D1) = 54dBuV/m @ 3 meters
 Conducted measurement (CH B)
-62.05+ 17dBi (Ant Gain) + 3dB (MIMO) – 20log (3m) + 104.8 = 53.20dBuV/m
 @ 3 meters



Date: 17.APR.2013 13:51:49

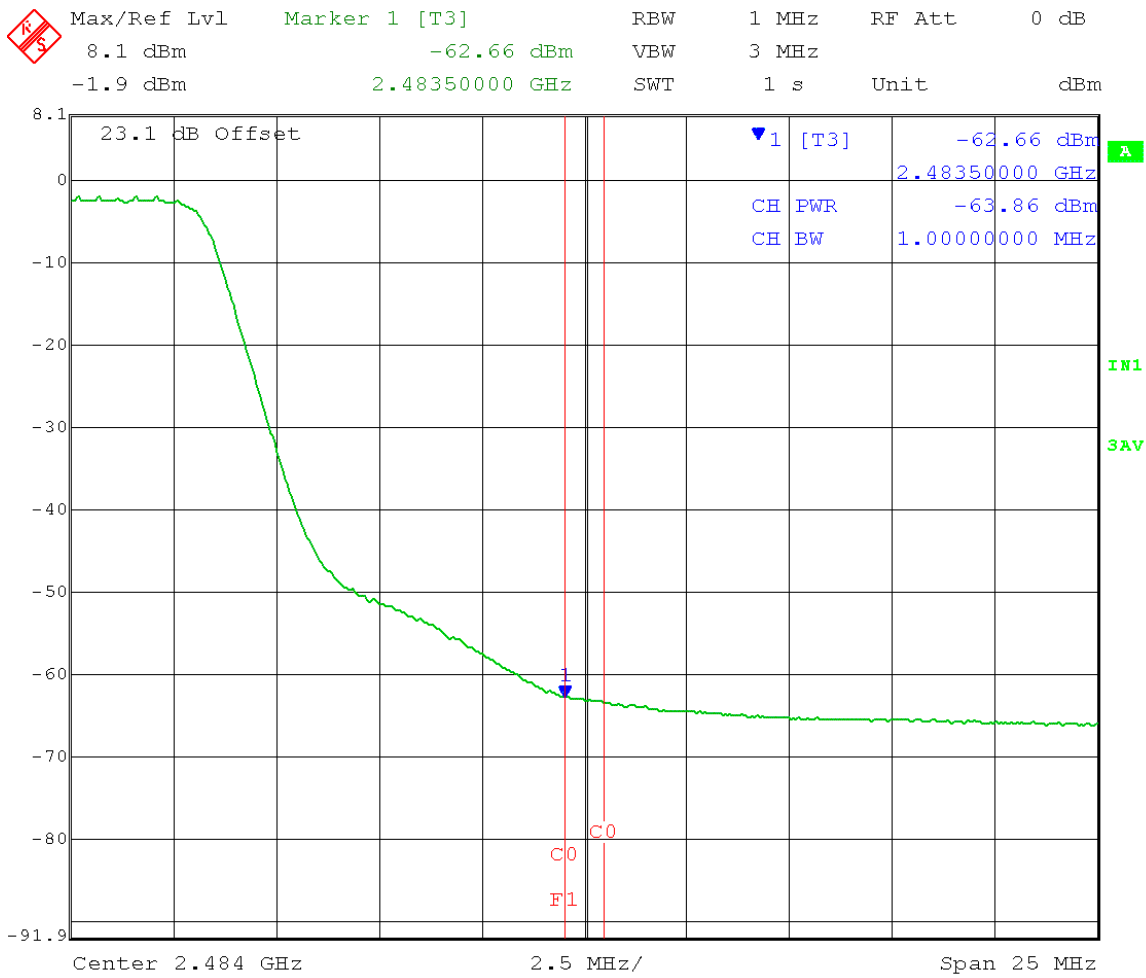
Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands

Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 5 MHz Both Output Ports on
 High Channel Frequency = 2475 MHz
 Output power setting: 15 (CH A&B) Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Peak Limit (D1) = 74dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-42.20\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $73.06\text{dBuV/m @ 3 meters}$



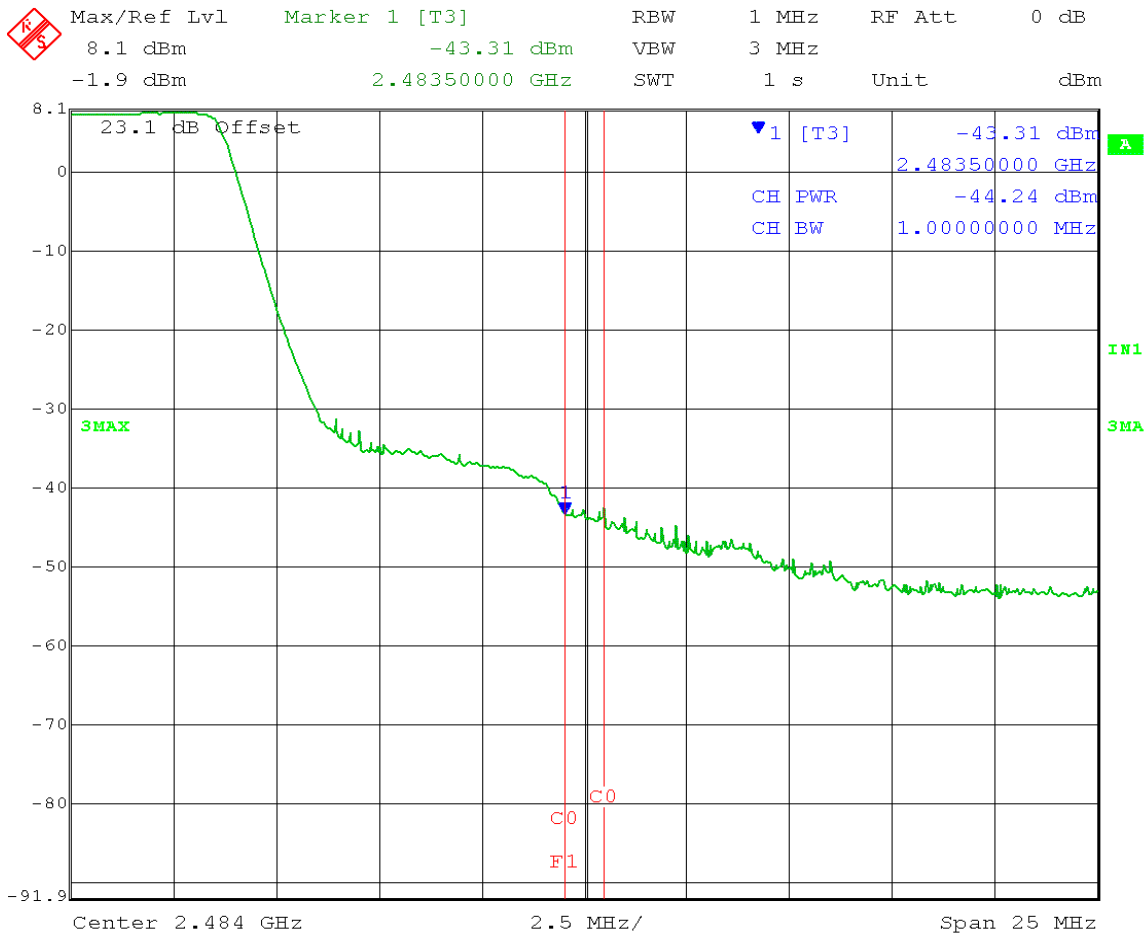
Date: 17.APR.2013 14:06:24

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MkHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz
 High Channel Frequency = 2470 MHz Both ports on
 Output power setting: 14 Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Average Limit (D1) = 54dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-62.66 + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $52.59\text{dBuV/m @ 3 meters}$



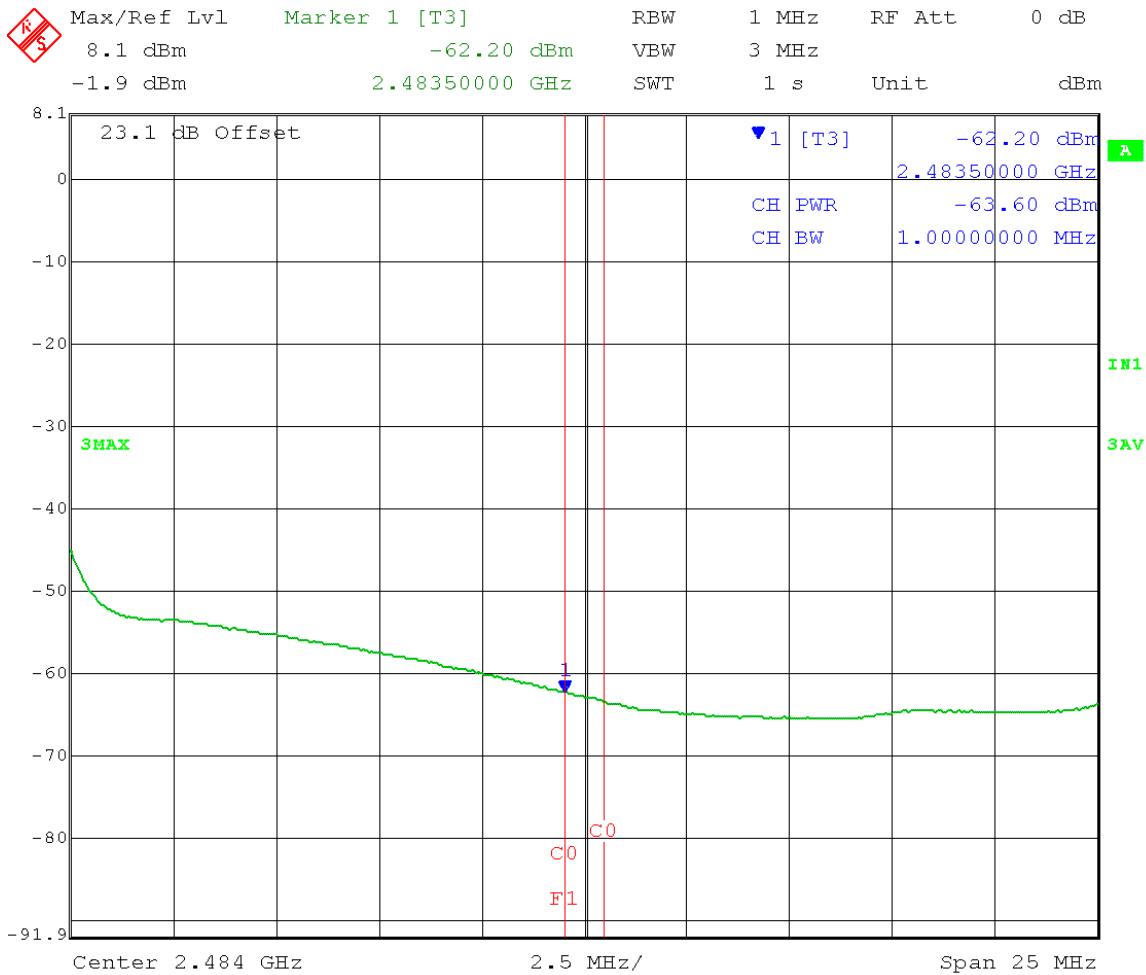
Date: 17.APR.2013 13:03:34

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0B3
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz; VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 10 MHz Both Output Ports on
 High Channel Frequency = 2470 MHz
 Output power setting = 14 Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Peak Limit (D1) = 74dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-43.31\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $71.94\text{dBuV/m @ 3 meters}$



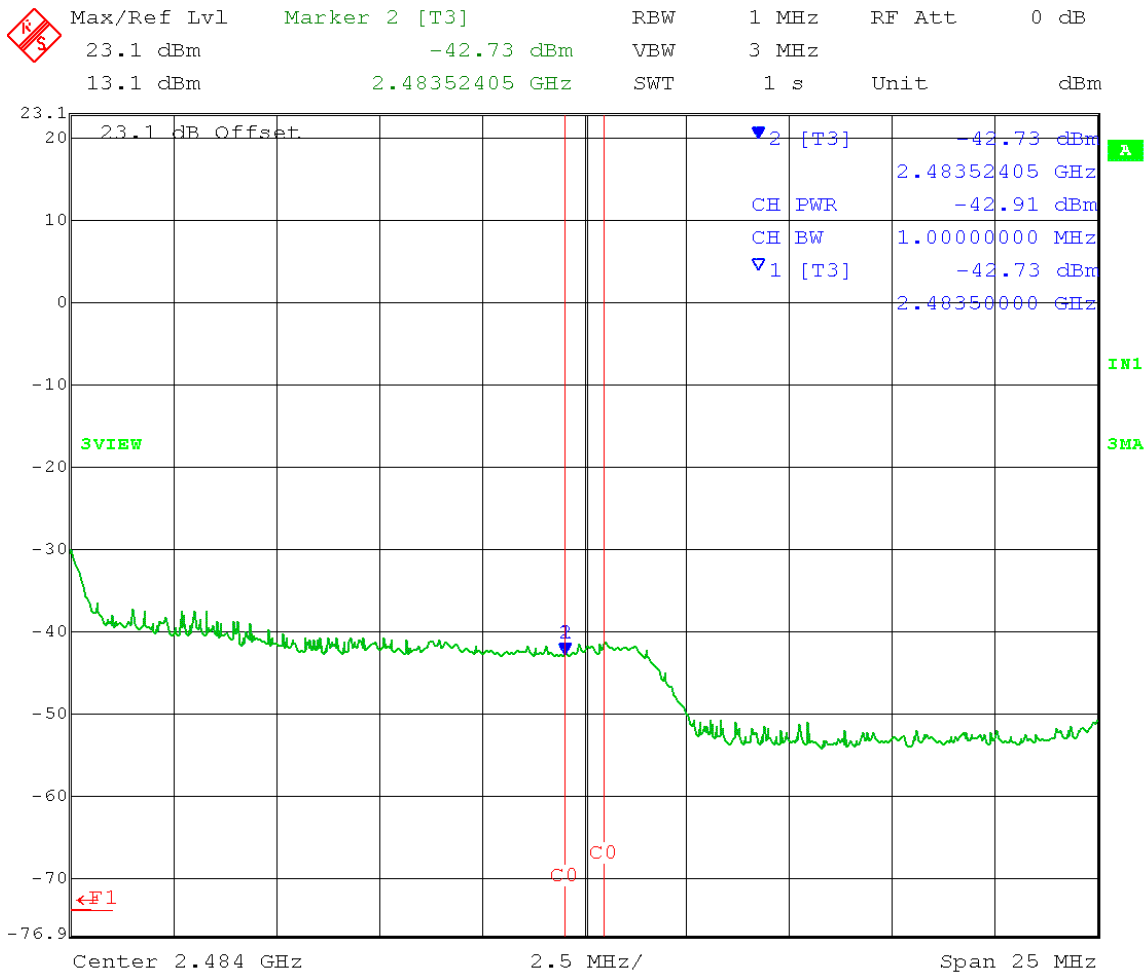
Date: 17.APR.2013 13:07:12

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Average Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz
 High Channel Frequency = 2460 MHz Both ports on
 Output power setting: 12 Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Average Limit (D1) = 54dBuV/m @ 3 meters
 Conducted measurement (CH B)
 -62.20dBm + 17dBi (Ant Gain) + 3dB (MIMO) – 20 log (3m) + 104.8 =
 53.09dBuV/m @ 3 meters



Date: 17.APR.2013 13:25:49

Test Date: 04-17-2013
 Company: Cambium Networks
 EUT: PMP450AP 2.4 GHz OFDM SN: 0A003E47D0BD
 Test: Maximum Unwanted Emission Levels – Radiated Upper Band-Edge
 Procedure: FCC KDB 558074 D01 DTS Meas Guidance v03r01
 Section 12.1 Radiated Emission Measurements in Restricted Frequency Bands
 Operator: Jim O
 Comments: RBW = 1MHz VBW ≥ 3MHz
 Detector = Peak Trace mode = max hold
 EUT nominal channel bandwidth = 20 MHz Both Output Ports on
 High Channel Frequency = 2460 MHz
 Output power setting = 12 Modulation Type = OFDM/QPSK
 Band-edge frequency (F1) = 2.4835 GHz
 Peak Limit = 74dBuV/m @ 3 meters
 Conducted measurement (CH B)
 $-42.73\text{dBm} + 17\text{dBi (Ant Gain)} + 3\text{dB (MIMO)} - 20 \log (3\text{m}) + 104.8 =$
 $72.53\text{dBuV/m @ 3 meters}$



Date: 18.APR.2013 09:55:57



Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B6.0 Maximum Unwanted Emission Levels – Conducted Band-Edge

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*

11.0 Emissions in non-restricted frequency bands

Description: RBW = 100 kHz
VBW \geq 300 kHz
Span = spectrum to be examined
Detector = peak
Sweep = auto couple
Trace mode = max hold

Measurements were taken for QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low, middle and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings with approximately a 94% duty cycle.

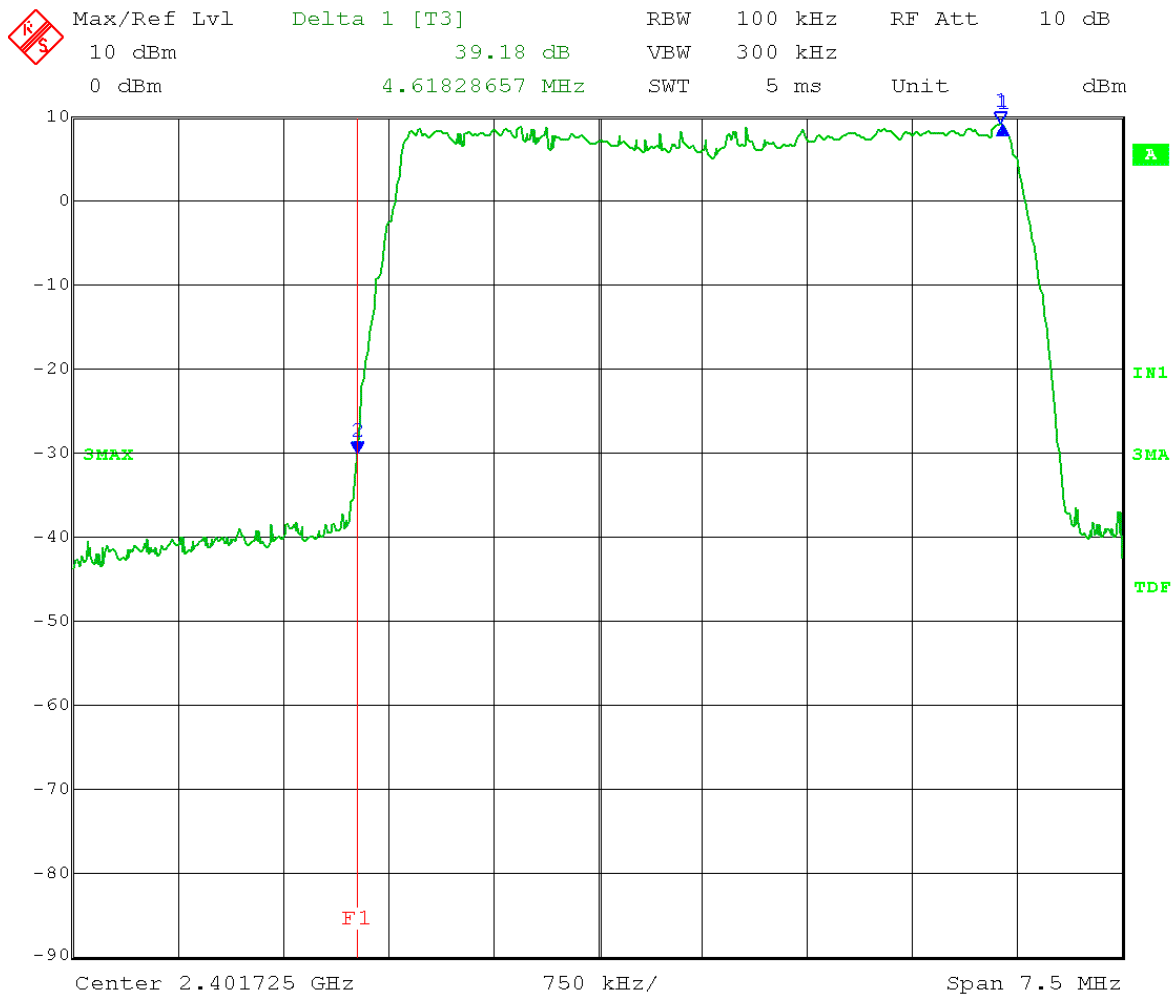
Limit: 30 dB below maximum in-band average PSD level (maximum level in any 100 kHz band). Average output power procedure was used to measure the fundamental emission power.

Results: Passed

Test Date: 04-24-2013
Company: Cambium Networks
EUT: PMP450AP (2.4 GHz: OFDM) with Panel antenna
Test: Lower Band-Edge Measurements - Conducted
Operator: Jim O

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

Low Channel: Transmit = 2.4025 GHz Output power setting: 16
5MHz BW Channel A
Band-Edge Frequency (F1) = 2.4 GHz
Limit: Band-Edge > 30 dB below Peak In-Band Emission = 39.18dBm

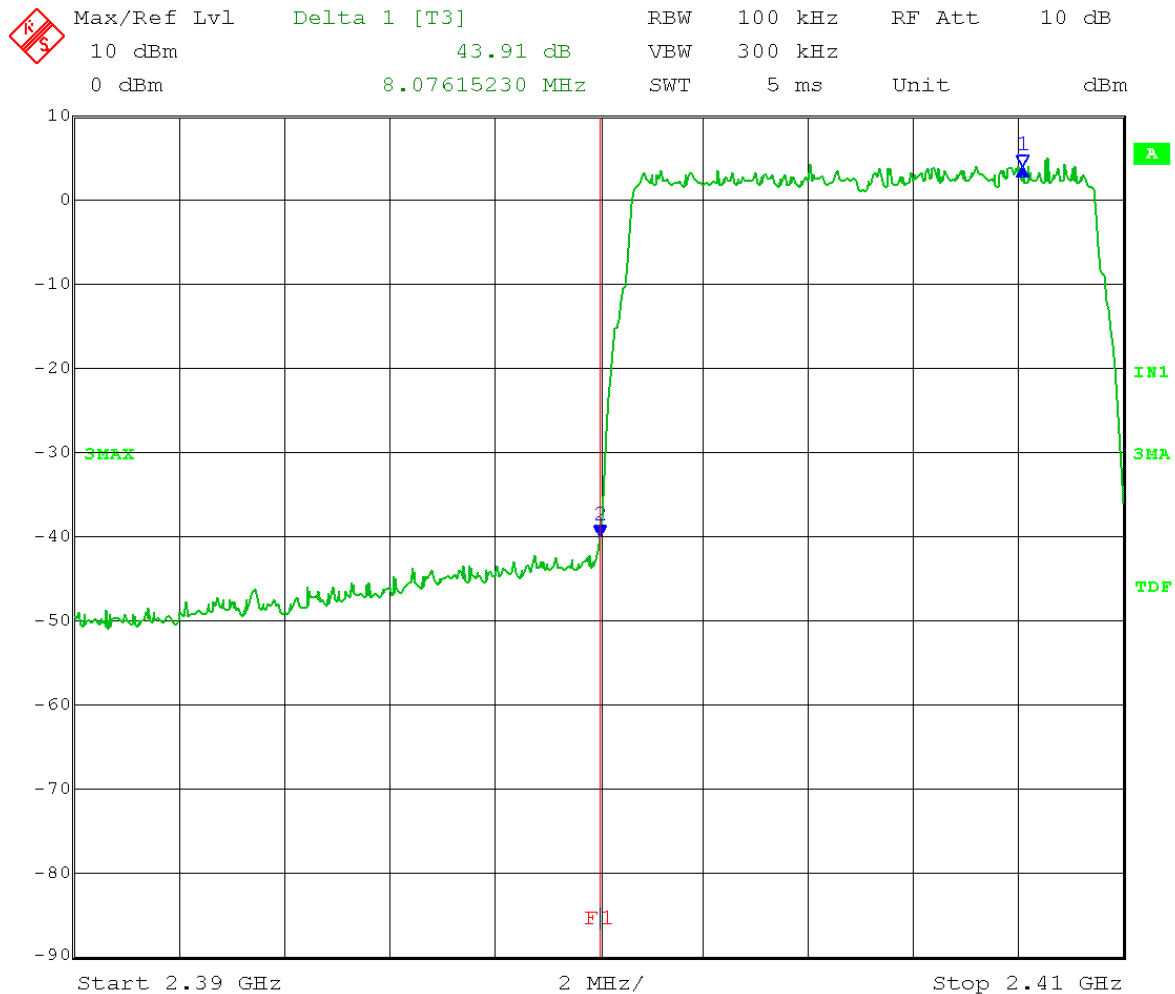


Date: 24.APR.2013 15:50:30

Test Date: 04-24-2013
Company: Cambium Networks
EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
Test: Lower Band-Edge Measurements - Conducted
Operator: Jim O

Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

Low Channel: Transmit = 2.405 GHz Output power setting: 15
10MHz BW Channel A
Band-Edge Frequency (F1) = 2.4 GHz
Limit: Band-Edge > 30 dB below Peak In-Band Emission = 43.91dBm

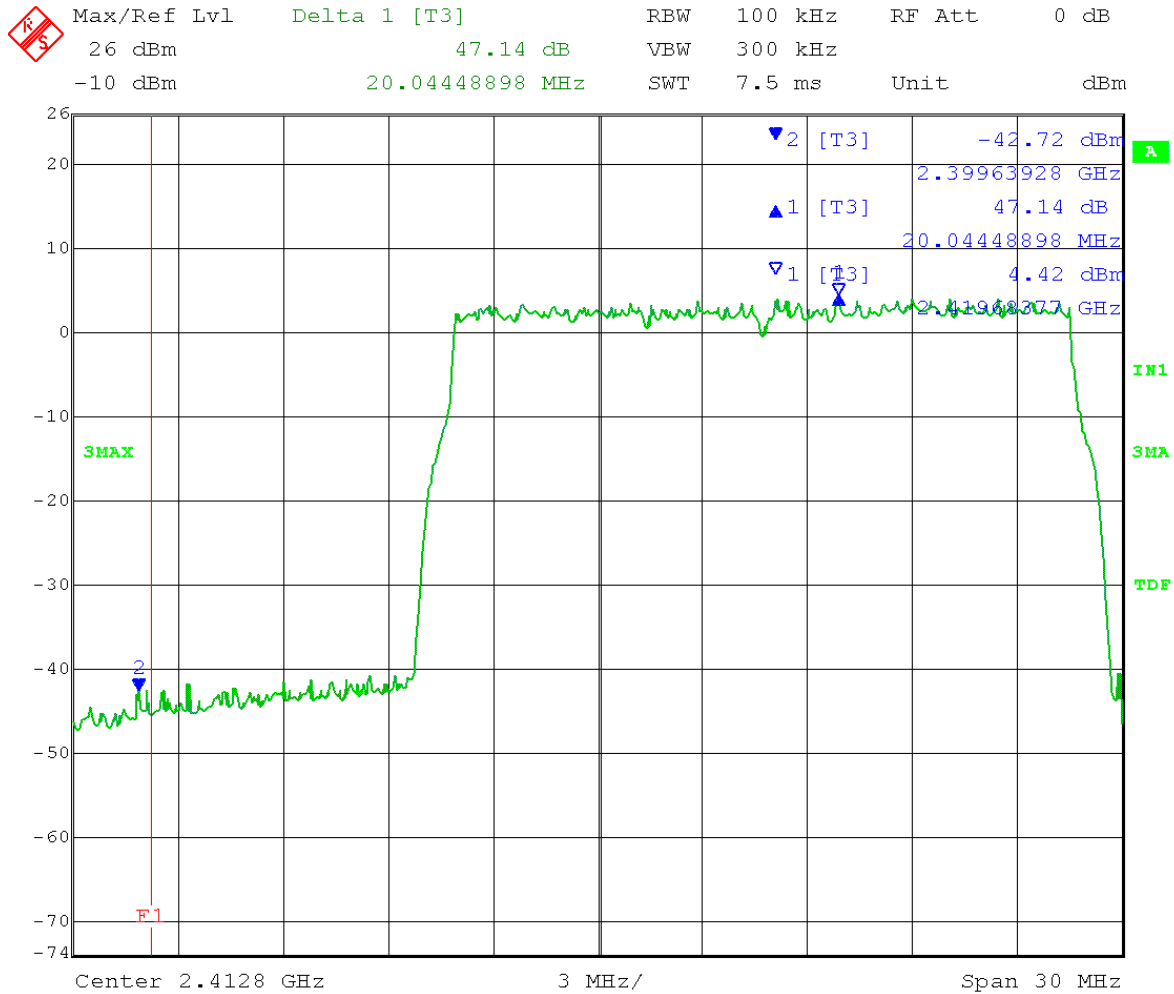


Date: 24.APR.2013 15:25:07

Test Date: 04-24-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
 Test: Lower Band-Edge Measurements - Conducted
 Operator: Jim O

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

Low Channel: Transmit = 2.4175 GHz Output power setting: 15
 20MHz BW Channel A
 Band-Edge Frequency (F1) = 2.4 GHz
 Limit: Band-Edge > 30 dB below Peak In-Band Emission = 47.14dBm

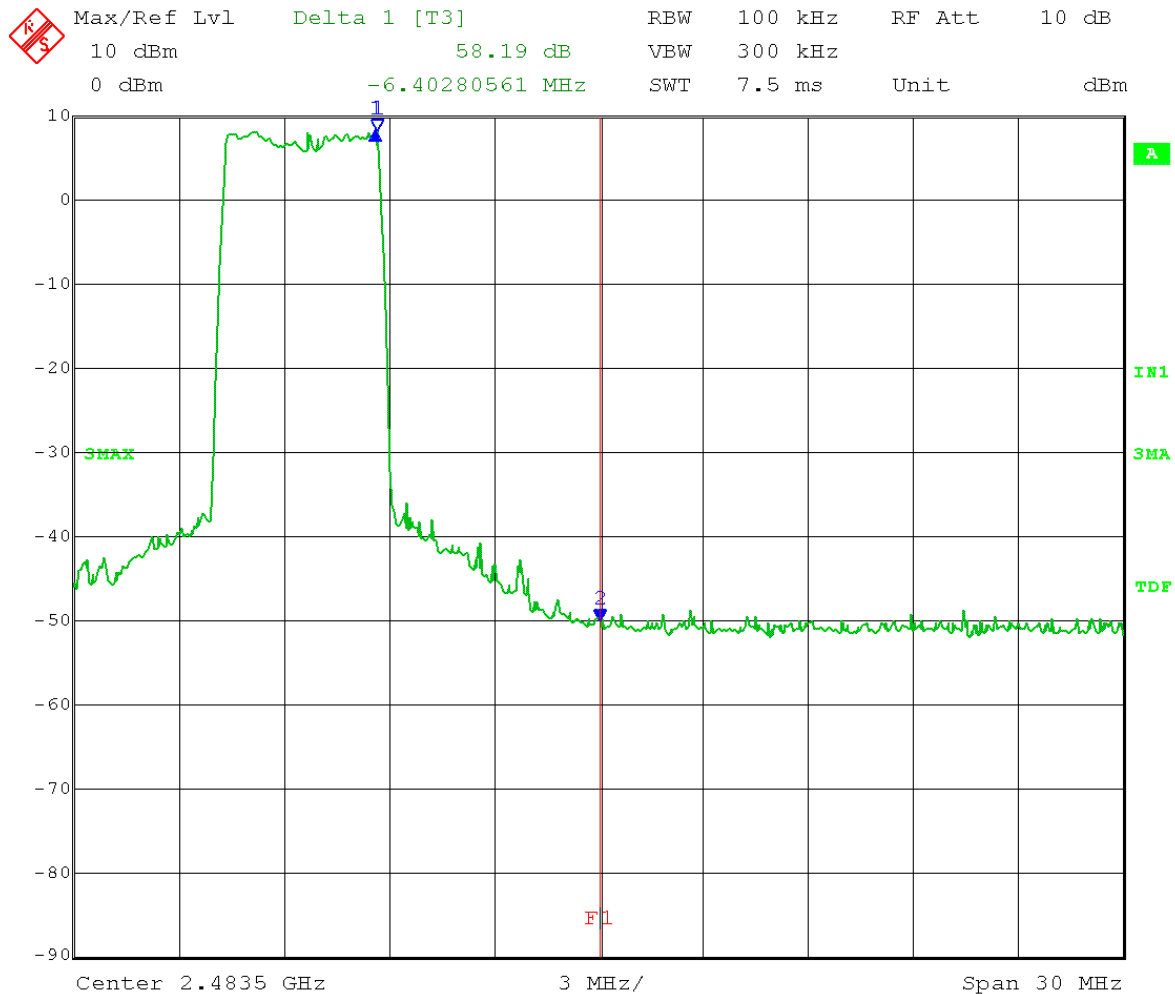


Date: 24.APR.2013 14:40:12

Test Date: 04-24-2013
Company: Cambium Networks
EUT: PMP450AP (2.4 GHz: OFDM) with Panel antenna
Test: Upper Band-Edge Measurements - Conducted
Operator: Jim O

Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

High Channel: Transmit = 2.475 GHz Output power setting: 15
5MHz BW Channel A
Band-Edge Frequency (F1) = 2.4835 GHz
Limit: Band-Edge > 30 dB below Peak In-Band Emission = 58.19dBm

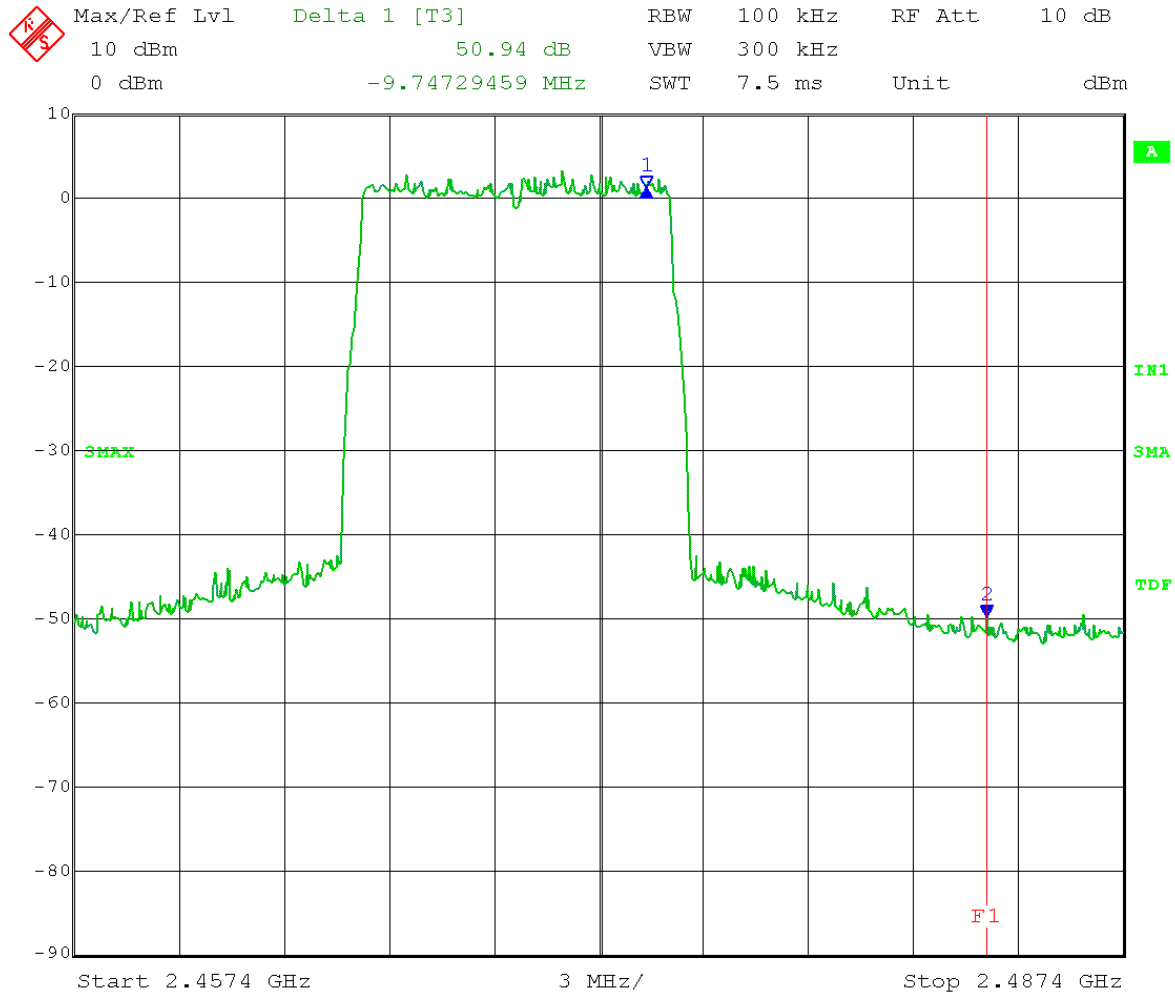


Date: 24.APR.2013 15:40:08

Test Date: 04-24-2013
Company: Cambium Networks
EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
Test: Upper Band-Edge Measurements - Conducted
Operator: Jim O

Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

High Channel: Transmit = 2.470 GHz Output power setting: 14
10MHz BW Channel A
Band-Edge Frequency (F1) = 2.4835 GHz
Limit: Band-Edge > 30 dB below Peak In-Band Emission = 50.94dBm

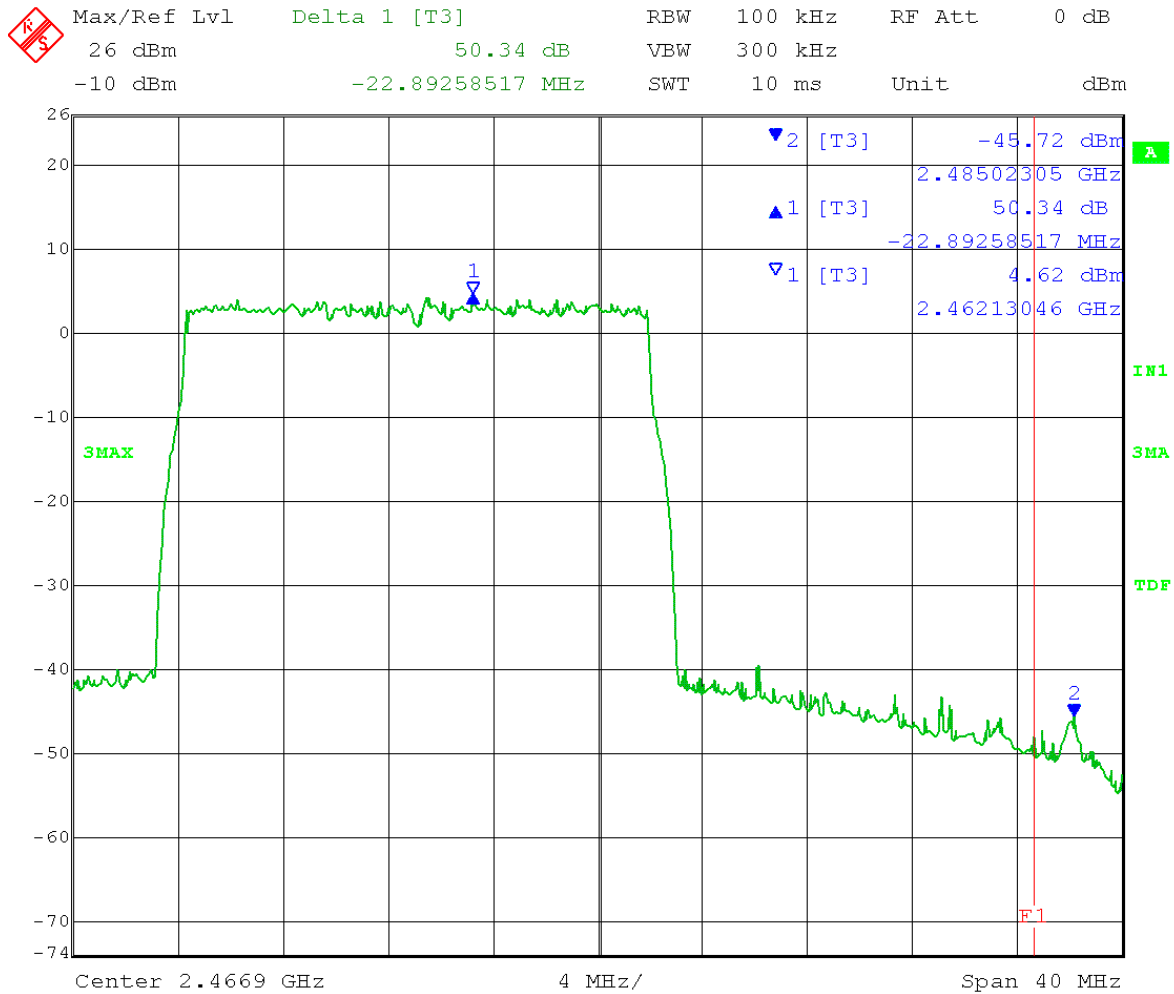


Date: 24.APR.2013 15:33:44

Test Date: 04-24-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
 Test: Upper Band-Edge Measurements - Conducted
 Operator: Jim O

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

High Channel: Transmit = 2.460GHz Output power setting: 12
 20MHz BW Channel A
 Band-Edge Frequency (F1) = 2.4835 GHz
 Limit: Band-Edge > 30 dB below Peak In-Band Emission = **50.34dBm**

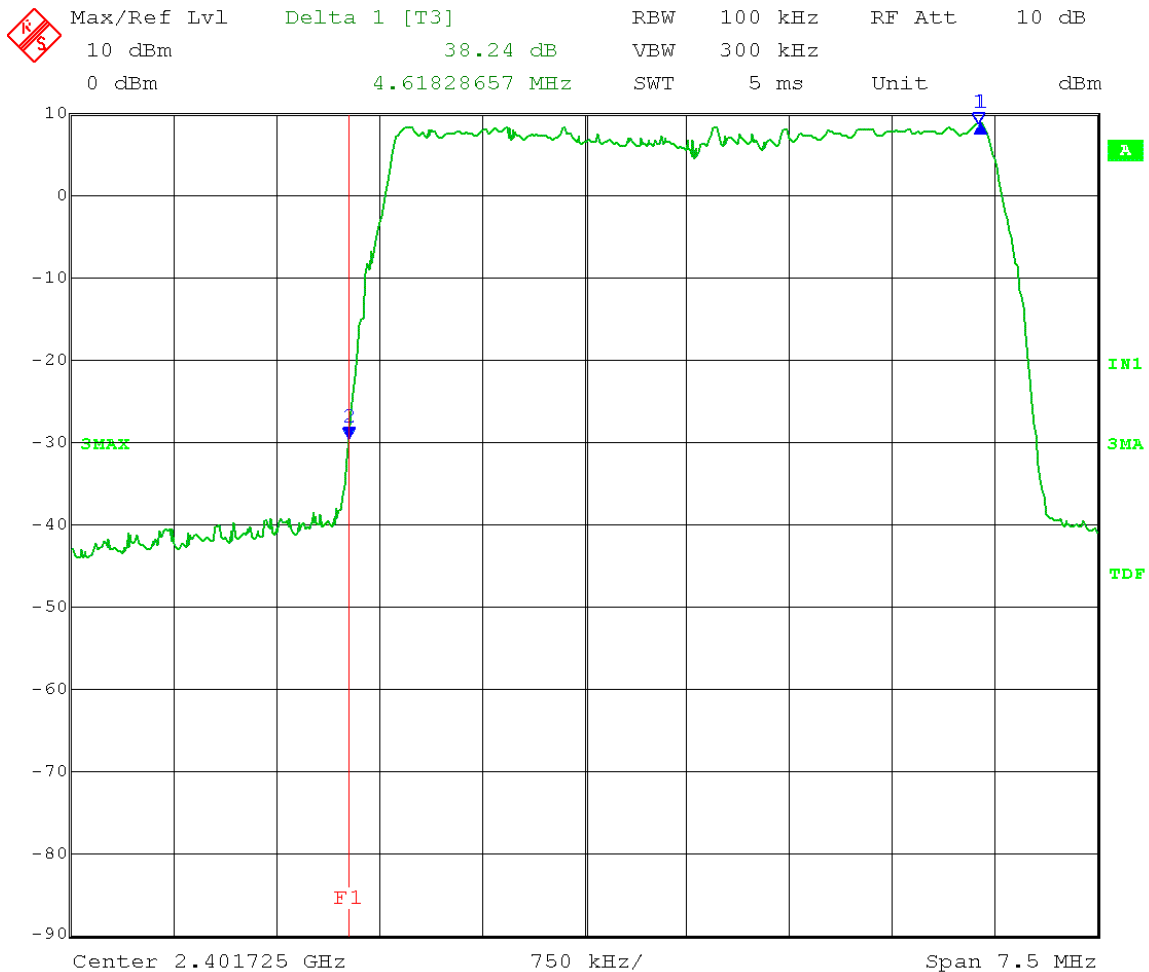


Date: 24.APR.2013 14:49:32

Test Date: 04-24-2013
Company: Cambium Networks
EUT: PMP450AP (2.4 GHz: OFDM) with Panel antenna
Test: Lower Band-Edge Measurements - Conducted
Operator: Jim O

Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

Low Channel: Transmit = 2.4025 GHz Output power setting: 16
5MHz BW Channel B
Limit: Band-Edge > 30 dB below Peak In-Band Emission = 38.24dBm
Band-Edge Frequency (F1) = 2.4 GHz

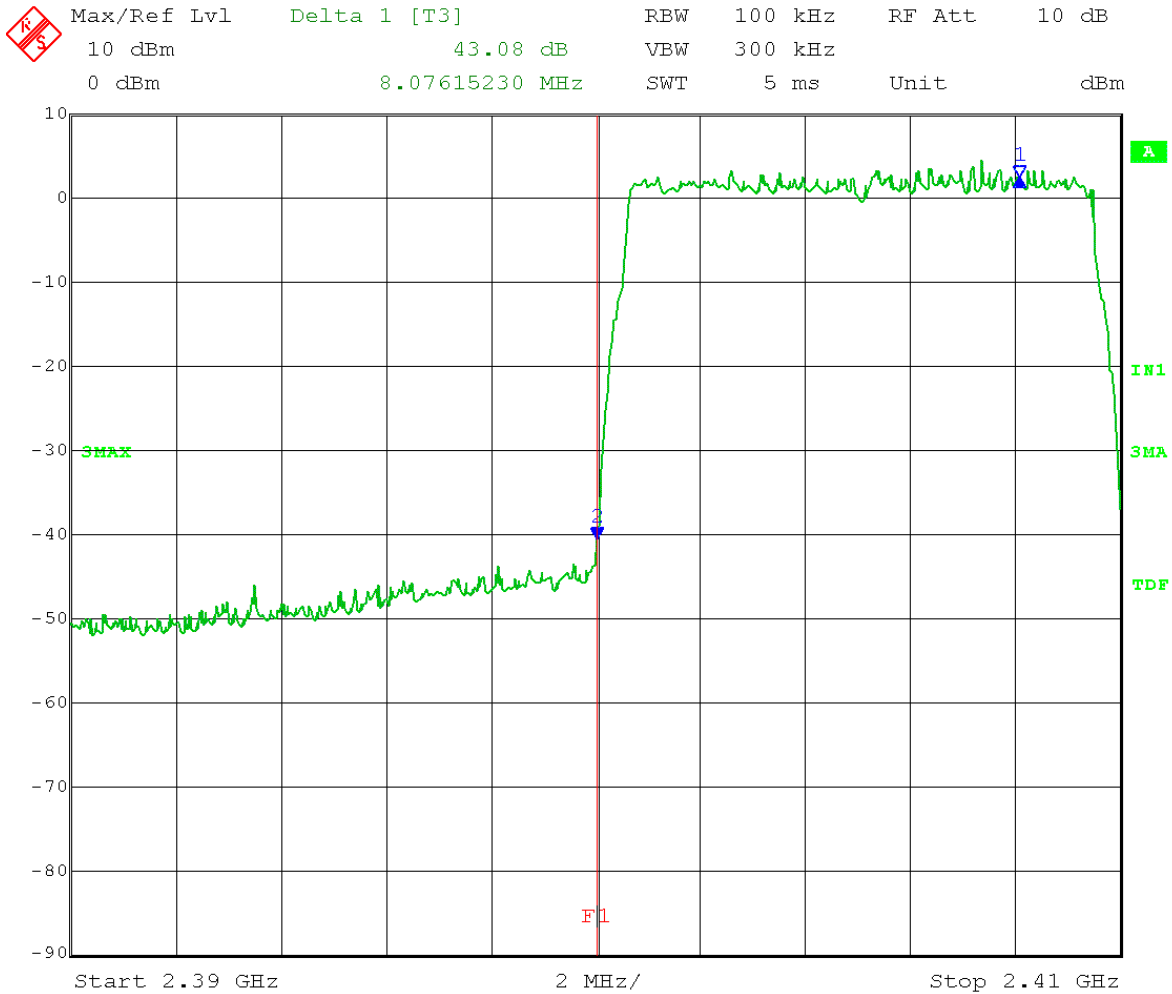


Date: 24.APR.2013 15:47:42

Test Date: 04-24-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
 Test: Lower Band-Edge Measurements - Conducted
 Operator: Jim O

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

Low Channel: Transmit = 2.405 GHz Output power setting: 14
 10MHz BW Channel B
 Band-Edge Frequency (F1) = 2.4 GHz
 Limit: Band-Edge > 30 dB below Peak In-Band Emission = 43.06dBm

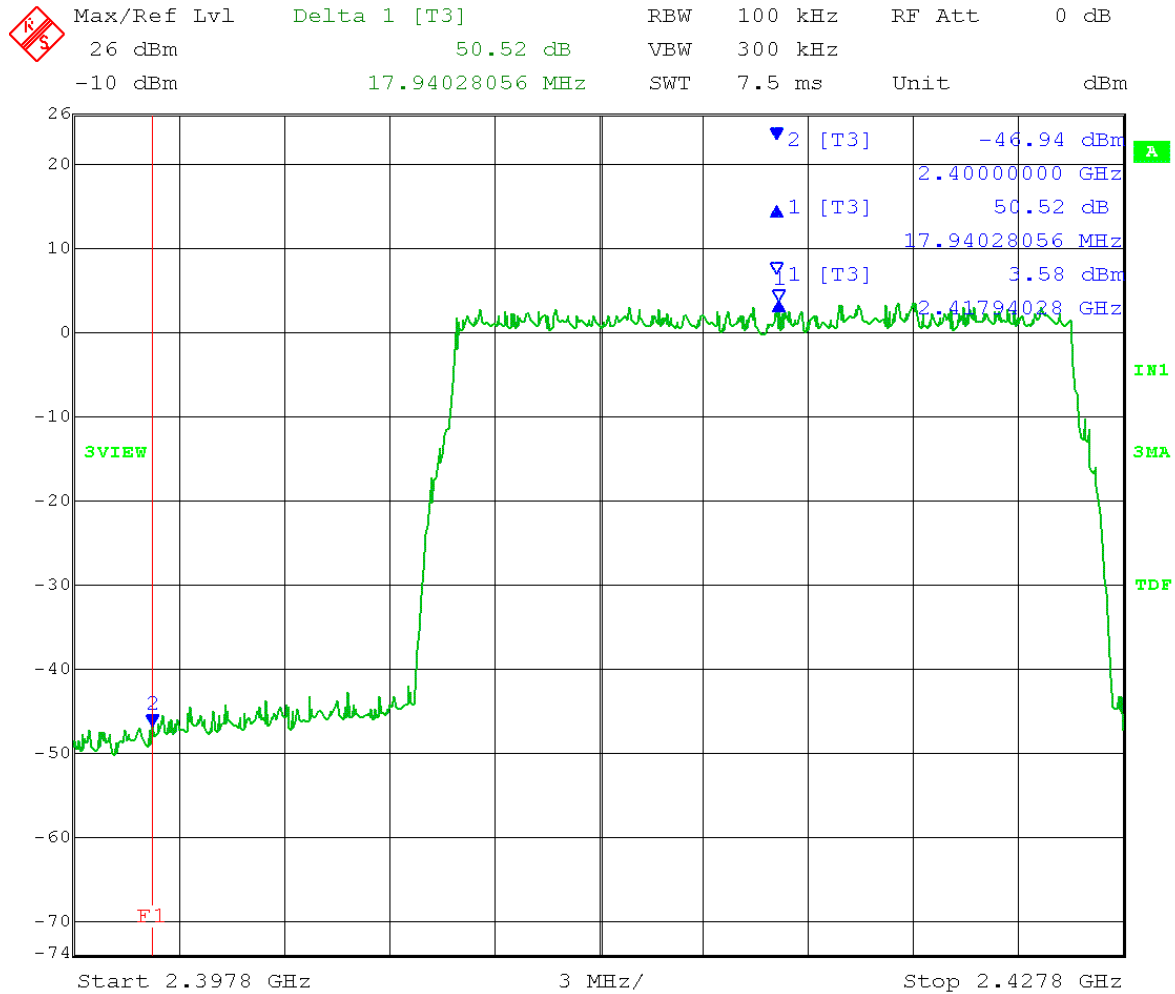


Date: 24.APR.2013 15:26:36

Test Date: 04-24-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
 Test: Lower Band-Edge Measurements - Conducted
 Operator: Jim O

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

Low Channel: Transmit = 2.4175 GHz Output power setting: 15
 20MHz BW Channel B
 Band-Edge Frequency (F1) = 2.4 GHz
 Limit: Band-Edge > 30 dB below Peak In-Band Emission = **50.52dBm**

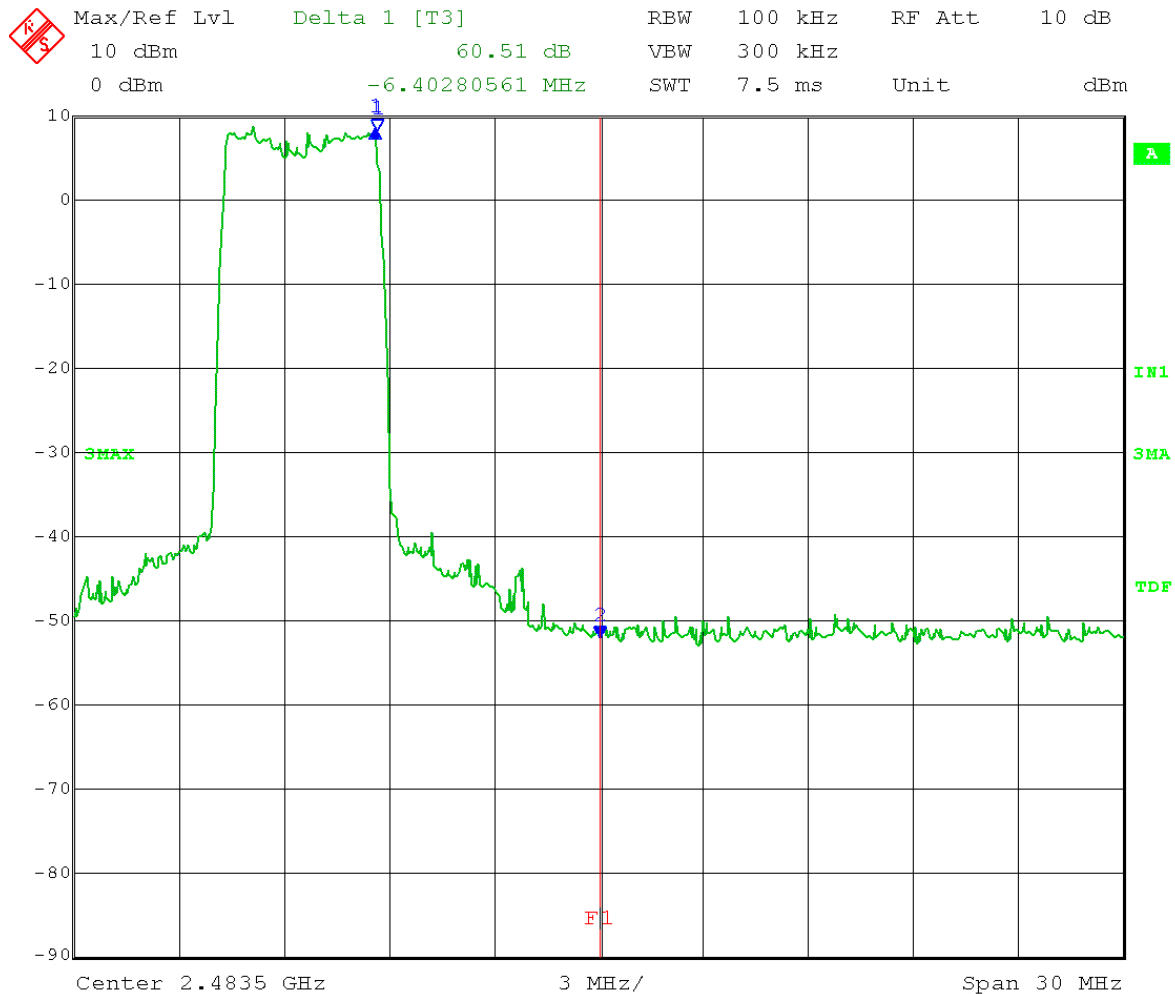


Date: 24.APR.2013 14:42:20

Test Date: 04-24-2013
Company: Cambium Networks
EUT: PMP450AP (2.4 GHz: OFDM) with Panel antenna
Test: Upper Band-Edge Measurements - Conducted
Operator: Jim O

Comment: RBW = 100 kHz VBW \geq 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

High Channel: Transmit = 2.475 GHz Output power setting: 15
5MHz BW Channel B
Band-Edge Frequency (F1) = 2.4835 GHz
Limit: Band-Edge > 30 dB below Peak In-Band Emission = 60.51dBm

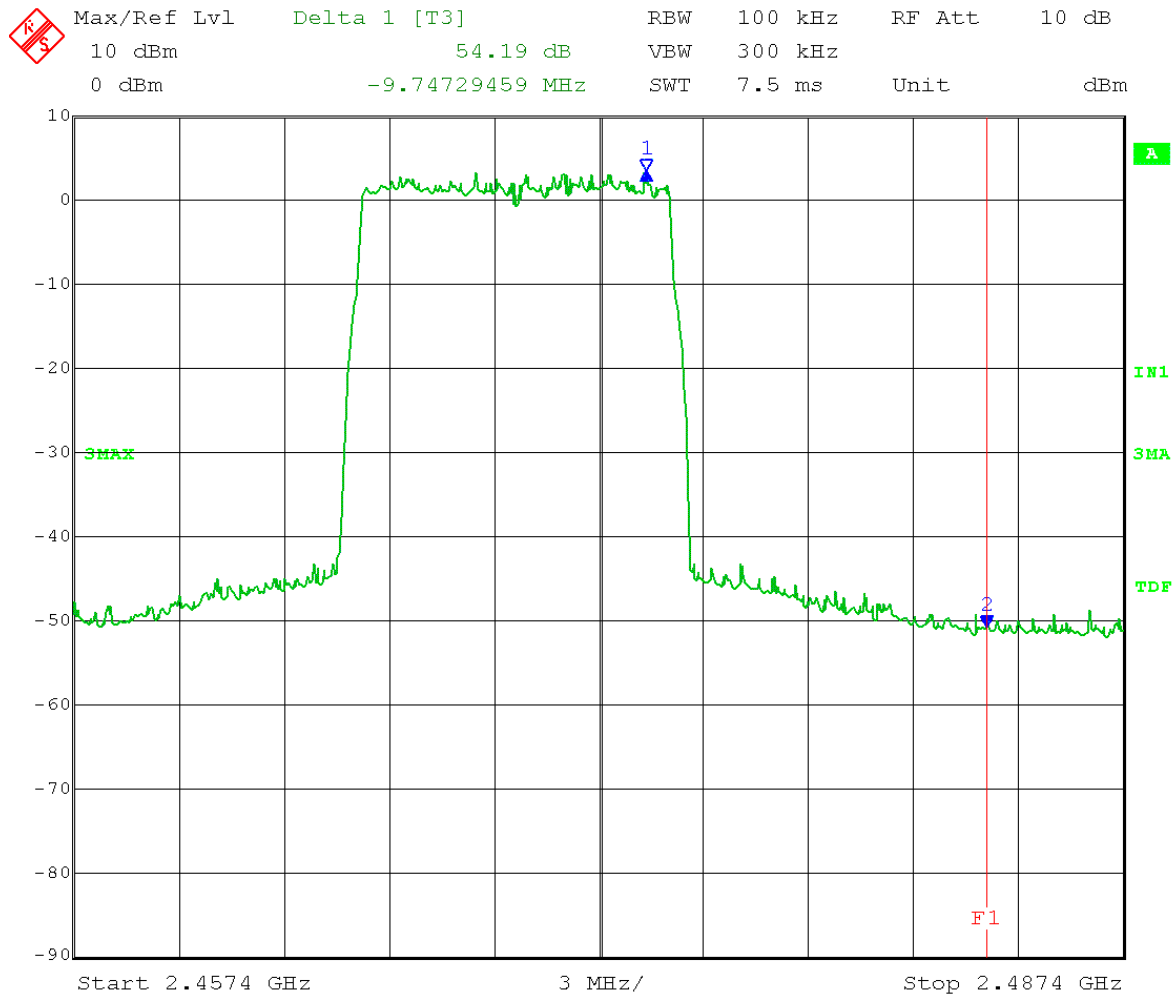


Date: 24.APR.2013 15:41:27

Test Date: 04-24-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
 Test: Upper Band-Edge Measurements - Conducted
 Operator: Jim O

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

High Channel: Transmit = 2.470 GHz Output power setting: 14
 10MHz BW Channel B
 Band-Edge Frequency (F1) = 2.4835 GHz
 Limit: Band-Edge > 30 dB below Peak In-Band Emission = **54.19dBm**

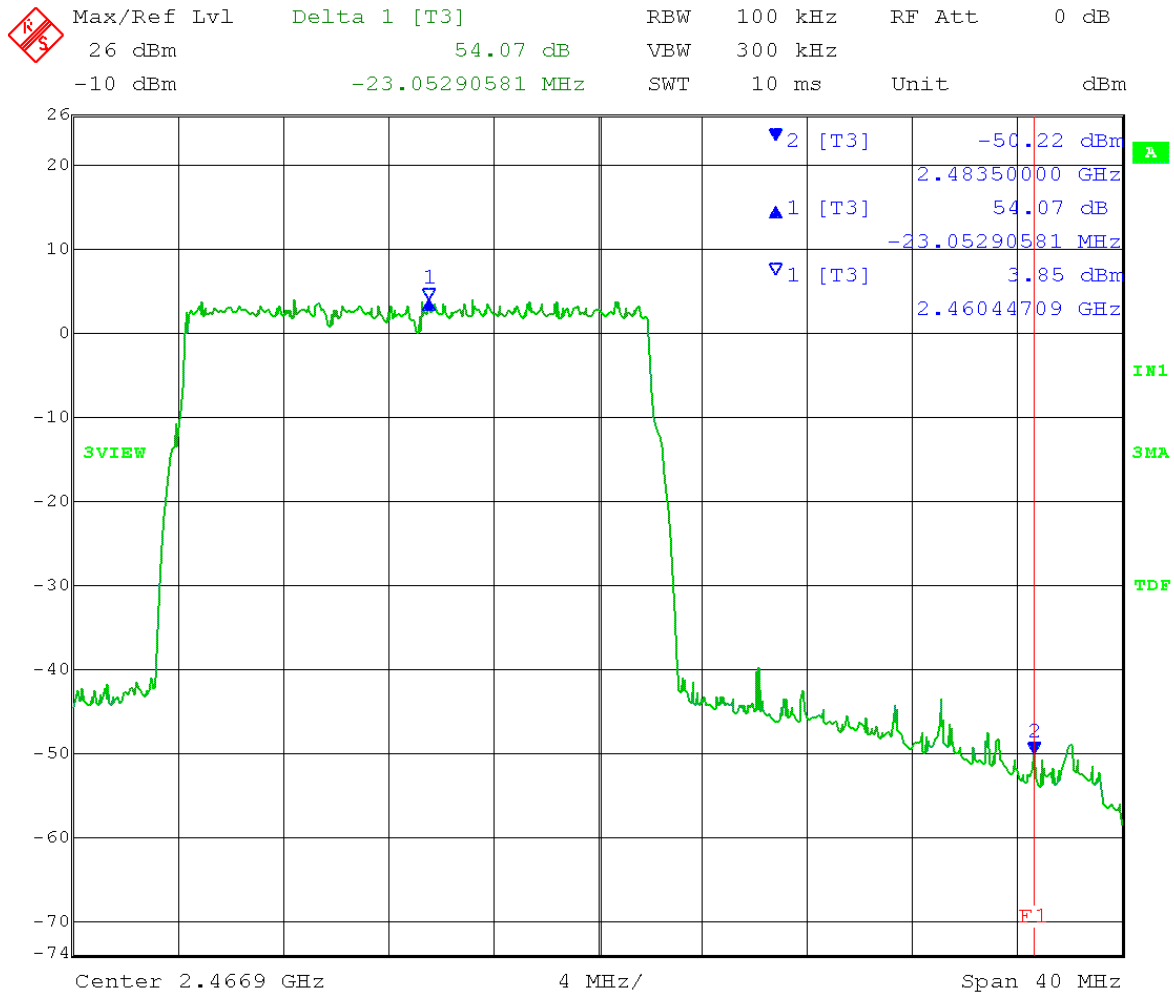


Date: 24.APR.2013 15:31:59

Test Date: 04-24-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM) with Panel Antenna
 Test: Upper Band-Edge Measurements - Conducted
 Operator: Jim O

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Detector = Peak Sweep = auto couple
 Trace = max hold

High Channel: Transmit = 2.460GHz Output power setting: 12
 20MHz BW Channel B
 Band-Edge Frequency (F1) = 2.4835 GHz
 Limit: Band-Edge > 30 dB below Peak In-Band Emission = **54.07dBm**



Date: 24.APR.2013 14:46:48



Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B7.0 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 QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings with approximately a 94% duty cycle.

Limit: FCC Part 15.209

Results: Passed

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450AP 2.4GHz OFDM
Manufacturer: Cambium Networks
Operating Condition: 68 deg. F; 34% R.H.
Test Site: DLS O.F. Site 2
Operator: Jim O
Test Specification:
Comment: Continuous Transmit Mode
Date: 04-23-2013

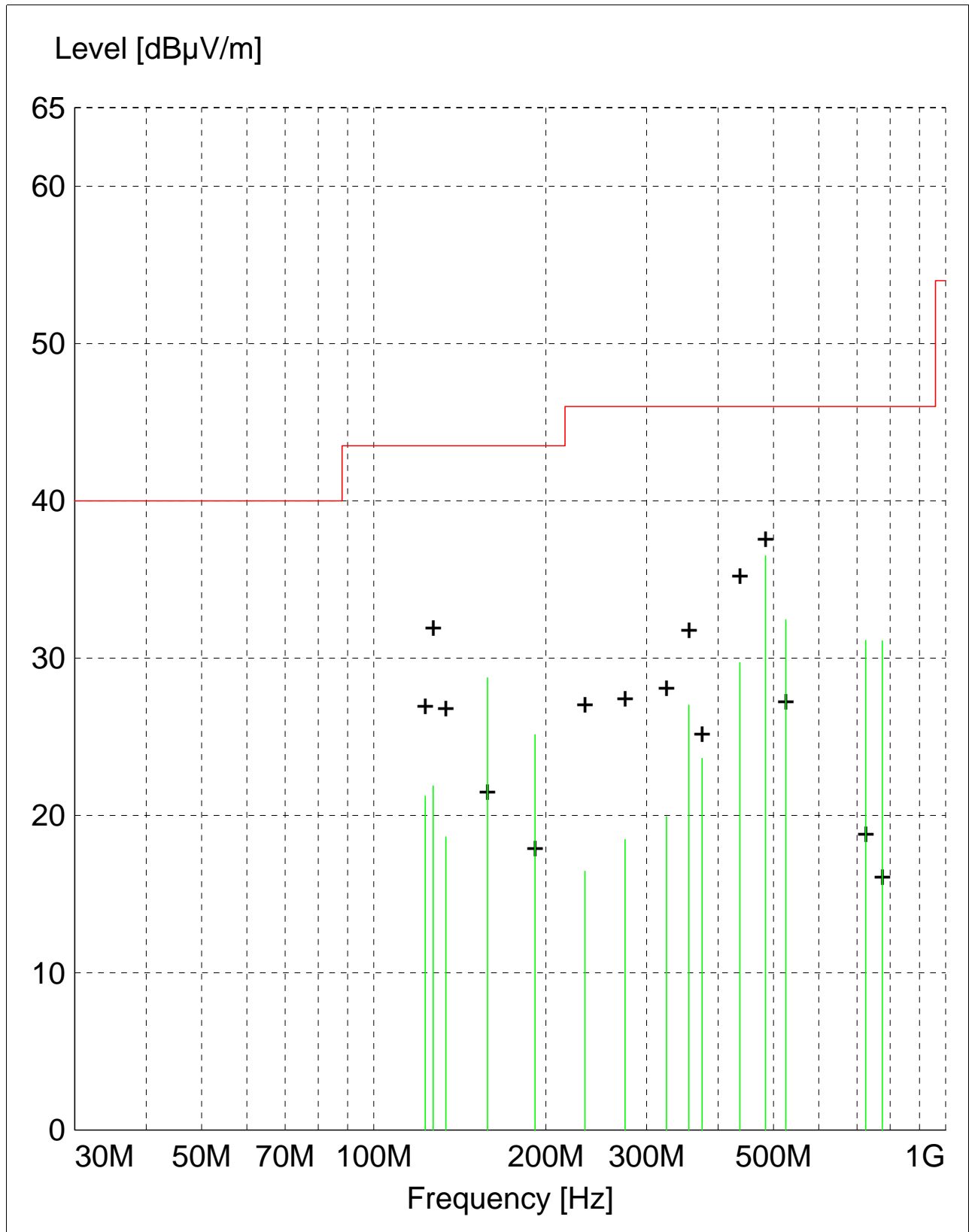
TEXT: "Horz 3 meters"

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 detector
Final maximized level using Peak detector



||||| MES A423a_F1H_Quasi-Peak
 + + MES A423a_F1H_Peak_List
 — LIM FCC 15.209 F 3m FCC 15.209, field strength 3m

MEASUREMENT RESULT: "A423a_F1H_Final"

4/23/2013 1:46PM

Frequency MHz	Level dB μ V	Antenna Factor dB μ V/m	System Loss dB	Total Level dB μ V/m	Limit dB μ V/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector
484.220000	39.46	17.40	-20.3	36.5	46.0	9.5	3.50	270	QUASI-PEAK
525.260000	34.04	18.40	-20.0	32.4	46.0	13.6	3.00	190	QUASI-PEAK
158.100000	38.26	12.61	-22.1	28.8	43.5	14.7	2.50	310	QUASI-PEAK
725.000000	28.93	21.40	-19.2	31.1	46.0	14.9	3.00	180	QUASI-PEAK
774.980000	27.81	21.60	-18.3	31.1	46.0	14.9	3.00	180	QUASI-PEAK
436.820000	33.85	16.63	-20.8	29.7	46.0	16.3	3.50	180	QUASI-PEAK
191.400000	29.71	17.34	-21.9	25.1	43.5	18.4	2.50	240	QUASI-PEAK
355.700000	33.00	14.90	-20.9	27.0	46.0	19.0	3.50	10	QUASI-PEAK
127.080000	31.40	12.79	-22.3	21.9	43.5	21.6	2.50	270	QUASI-PEAK
123.060000	30.74	12.80	-22.3	21.2	43.5	22.3	2.50	280	QUASI-PEAK
375.020000	29.46	15.20	-21.0	23.6	46.0	22.4	3.50	210	QUASI-PEAK
133.620000	28.36	12.60	-22.3	18.6	43.5	24.9	2.50	270	QUASI-PEAK
324.980000	26.60	14.60	-21.3	19.9	46.0	26.1	3.50	190	QUASI-PEAK
275.000000	26.60	13.40	-21.5	18.5	46.0	27.5	3.50	190	QUASI-PEAK
234.020000	26.55	11.56	-21.7	16.5	46.0	29.5	3.50	180	QUASI-PEAK

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450AP 2.4GHz OFDM
Manufacturer: Cambium Networks
Operating Condition: 68 deg. F; 34% R.H.
Test Site: DLS O.F. Site 2
Operator: Jim O
Test Specification:
Comment: Continuous Transmit Mode
Date: 04-23-2013

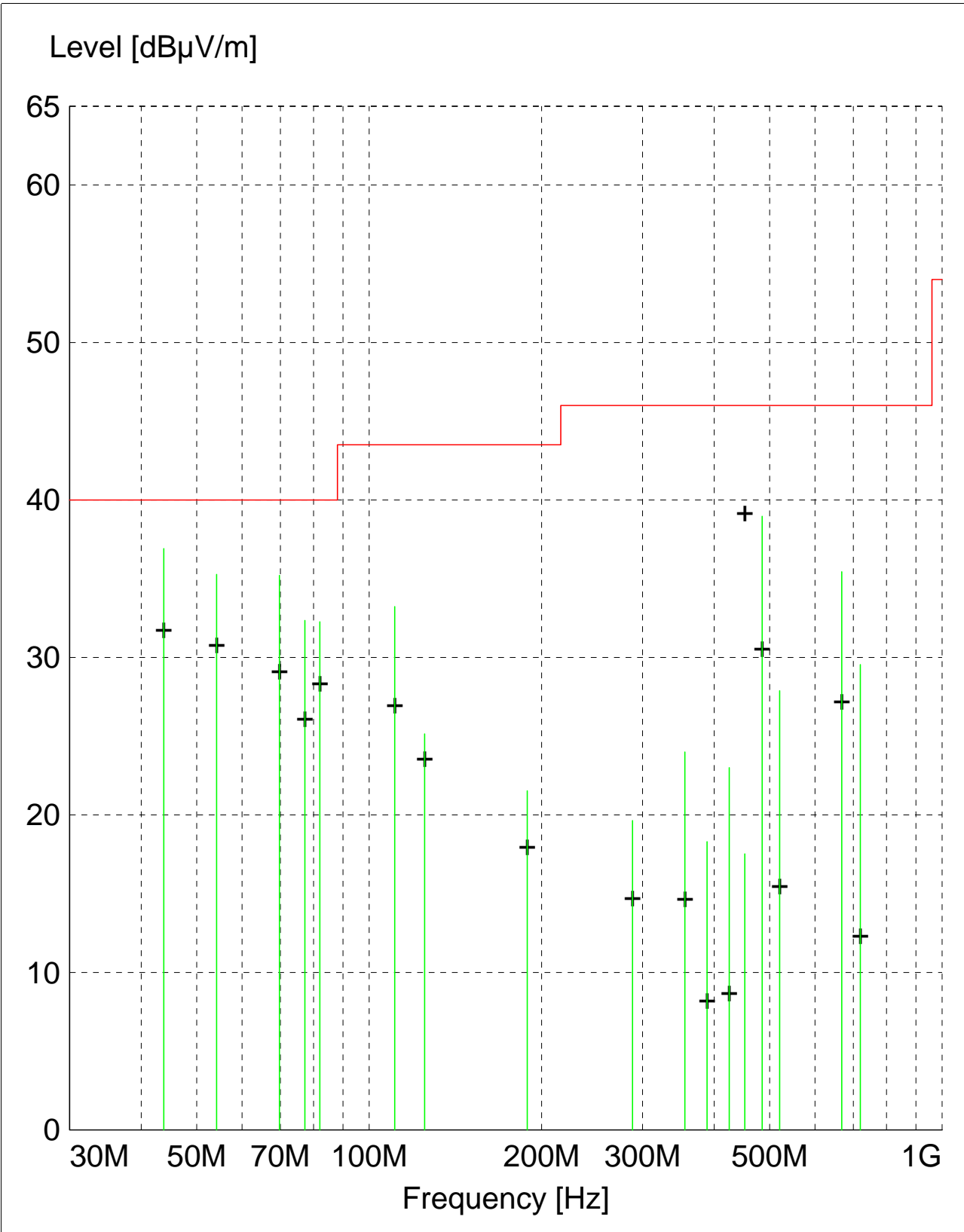
TEXT: "Vert 3 meters"

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 detector
Final maximized level using Peak detector



||||| MES A423a_F1V_Quasi-Peak
 + + MES A423a_F1V_Peak_List
 — LIM FCC 15.209 F 3m FCC 15.209, field strength 3m

MEASUREMENT RESULT: "A423a_F1V_Final"

4/23/2013 1:28PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector
		dB μ V/m	dB	dB μ V/m			m	deg	
43.800000	48.11	11.98	-23.2	36.9	40.0	3.1	1.00	30	QUASI-PEAK
54.180000	47.12	11.18	-23.0	35.3	40.0	4.7	1.00	30	QUASI-PEAK
69.720000	50.81	7.31	-22.9	35.2	40.0	4.8	1.50	120	QUASI-PEAK
485.240000	41.90	17.41	-20.3	39.0	46.0	7.0	1.00	190	QUASI-PEAK
77.220000	49.29	5.90	-22.8	32.3	40.0	7.7	1.50	10	QUASI-PEAK
82.020000	48.62	6.40	-22.8	32.3	40.0	7.7	1.50	0	QUASI-PEAK
110.820000	43.59	11.98	-22.3	33.2	43.5	10.3	1.50	0	QUASI-PEAK
668.300000	34.19	20.57	-19.3	35.4	46.0	10.6	1.00	190	QUASI-PEAK
720.020000	27.35	21.40	-19.2	29.6	46.0	16.4	1.00	150	QUASI-PEAK
520.580000	29.25	18.67	-20.0	27.9	46.0	18.1	1.00	190	QUASI-PEAK
124.980000	34.57	12.90	-22.3	25.1	43.5	18.4	1.50	110	QUASI-PEAK
188.760000	26.13	17.32	-21.9	21.5	43.5	22.0	1.50	110	QUASI-PEAK
355.700000	29.99	14.90	-20.9	24.0	46.0	22.0	1.20	0	QUASI-PEAK
425.000000	27.16	16.50	-20.7	23.0	46.0	23.0	1.20	180	QUASI-PEAK
288.080000	27.19	13.82	-21.4	19.6	46.0	26.4	1.20	20	QUASI-PEAK
388.820000	23.58	15.63	-20.9	18.3	46.0	27.7	1.20	180	QUASI-PEAK
452.480000	21.22	16.85	-20.5	17.5	46.0	28.5	1.00	200	QUASI-PEAK

FCC 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450 AP (2.4GHz OFDM) w/Dual polarized slant antenna
Manufacturer: Cambium Networks
Operating Condition: 70 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Cont TX QPSK 5MHz BW 19dBm CH A&B
Comment: Low, Mid and High Channel
Date: 04-16-2013

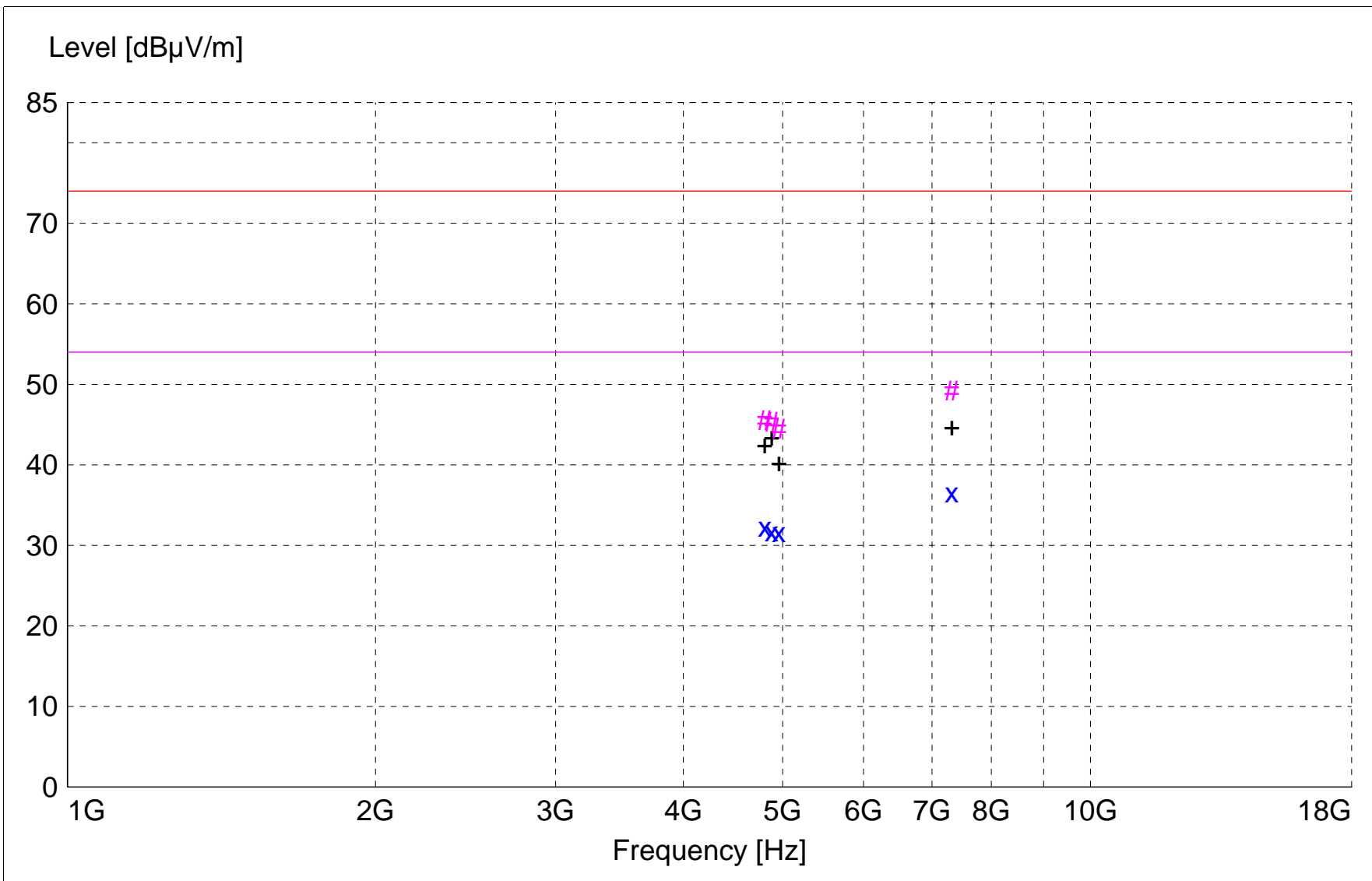
TEXT: "Horz 3 meters"

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  B4161_sh_Average
# # :MES  B4161_sh_Peak
+ + :MES  B4161_sh_Peak_List
— LIM  FCC 15.209 F 3m PK   Field Strength PEAK Limit 3m
— LIM  FCC 15.209 F 3m AVG  Field Strength AVG Limit 3m

```

MEASUREMENT RESULT: "B4161_sh_Final"

4/26/2013 8:30AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
7320.000000	54.75	36.52	-54.7	36.6	54.0	17.4	1.20	0	AVERAGE	Mid CH 3rd NF
4804.800000	55.01	32.89	-55.6	32.3	54.0	21.7	1.20	0	AVERAGE	Low CH 2nd NF
4880.000000	54.37	32.95	-55.6	31.7	54.0	22.3	1.20	0	AVERAGE	Mid CH 2nd NF
4960.000000	54.13	33.06	-55.6	31.6	54.0	22.4	1.20	0	AVERAGE	Hi CH 2nd NF
7320.000000	67.37	36.52	-54.7	49.2	74.0	24.8	1.20	0	MAX PEAK	Mid CH 3rd NF
4804.800000	68.22	32.89	-55.6	45.6	74.0	28.4	1.20	0	MAX PEAK	Low CH 2nd NF
4880.000000	67.98	32.95	-55.6	45.3	74.0	28.7	1.20	0	MAX PEAK	Mid CH 2nd NF
4960.000000	67.00	33.06	-55.6	44.5	74.0	29.5	1.20	0	MAX PEAK	Hi CH 2nd NF

FCC 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450 AP (2.4GHz OFDM) w/Dual polarized slant antenna
Manufacturer: Cambium Networks
Operating Condition: 70 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Cont TX QPSK 5MHz BW 19dBm CH A&B
Comment: Low, Mid and High Channel
Date: 04-16-2013

TEXT: "Vert 3 meters"

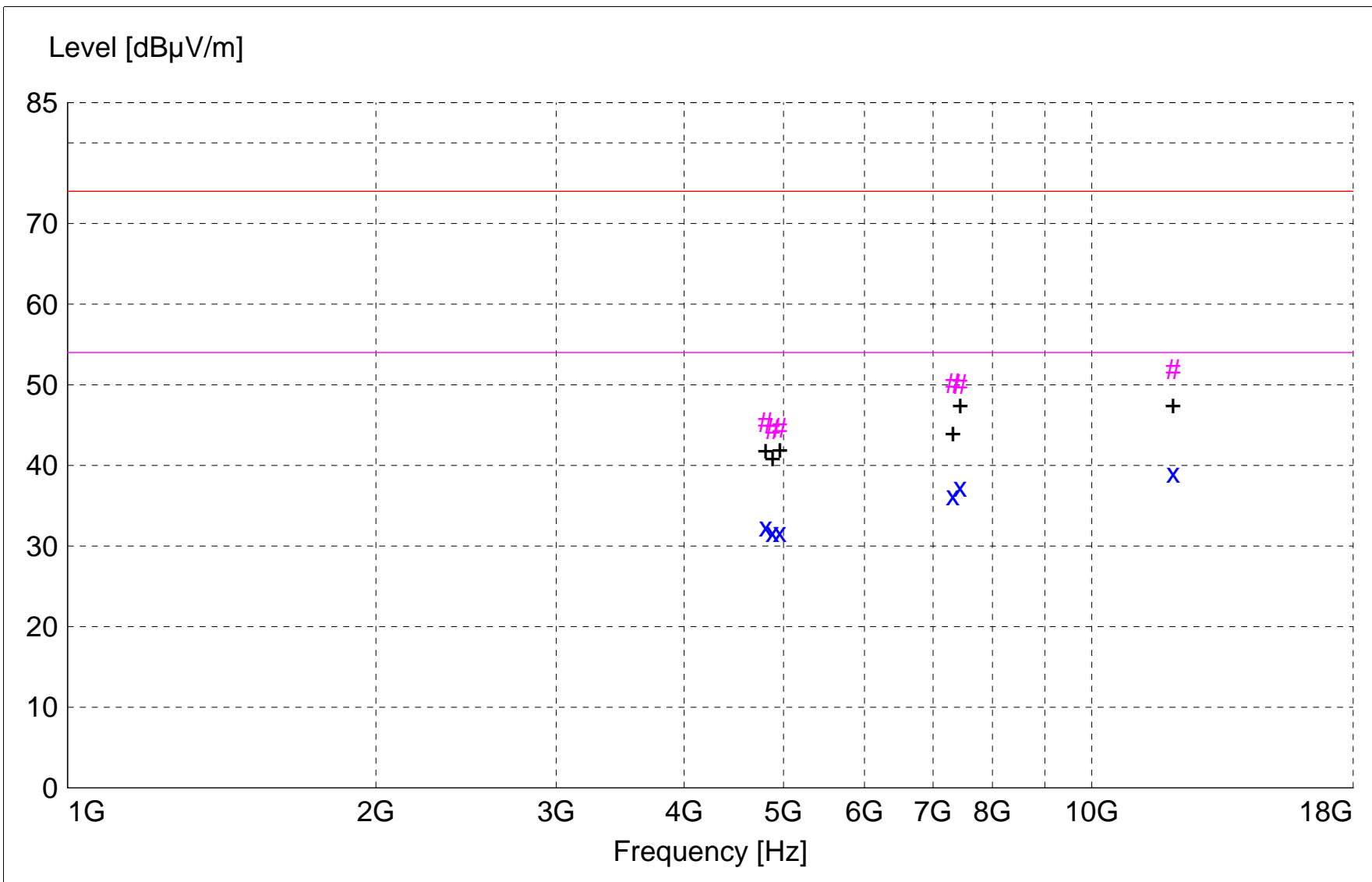
Short Description: Test Set-up

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



x x :MES B4161_sv_Average
 # # :MES B4161_sv_Peak
 + + :MES B4161_sv_Peak_List
 — LIM FCC 15.209 F 3m PK Field Strength PEAK Limit 3m
 — LIM FCC 15.209 F 3m AVG Field Strength AVG Limit 3m

MEASUREMENT RESULT: "B4161_sv_Final"

4/26/2013 8:29AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
12009.600000	52.09	39.08	-52.1	39.1	54.0	14.9	1.40	0	AVERAGE	NF
7440.000000	54.75	36.64	-54.1	37.3	54.0	16.7	1.40	0	AVERAGE	hi ch 3rd NF
7319.600000	54.50	36.52	-54.7	36.3	54.0	17.7	1.40	0	AVERAGE	NF
4804.800000	55.08	32.89	-55.6	32.4	54.0	21.6	1.40	0	AVERAGE	NF
12009.600000	64.99	39.08	-52.1	52.0	74.0	22.0	1.40	0	MAX PEAK	NF
4880.000000	54.41	32.95	-55.6	31.7	54.0	22.3	1.40	0	AVERAGE	NF
4959.600000	54.20	33.06	-55.6	31.7	54.0	22.3	1.40	0	AVERAGE	hi ch 2nd NF
7319.600000	68.35	36.52	-54.7	50.2	74.0	23.8	1.40	0	MAX PEAK	NF
7440.000000	67.49	36.64	-54.1	50.1	74.0	23.9	1.40	0	MAX PEAK	hi ch 3rd NF
4804.800000	67.98	32.89	-55.6	45.3	74.0	28.7	1.40	0	MAX PEAK	NF
4959.600000	67.12	33.06	-55.6	44.6	74.0	29.4	1.40	0	MAX PEAK	hi ch 2nd NF
4880.000000	67.12	32.95	-55.6	44.5	74.0	29.5	1.40	0	MAX PEAK	NF

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450 AP (2.4GHz OFDM) w/Dual polarized slant antenna
Manufacturer: Cambium Networks
Operating Condition: 70 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Cont TX QPSK 10MHz BW 19dBm CH A&B
Comment: Low, Mid and High Channel
Date: 04-16-2013

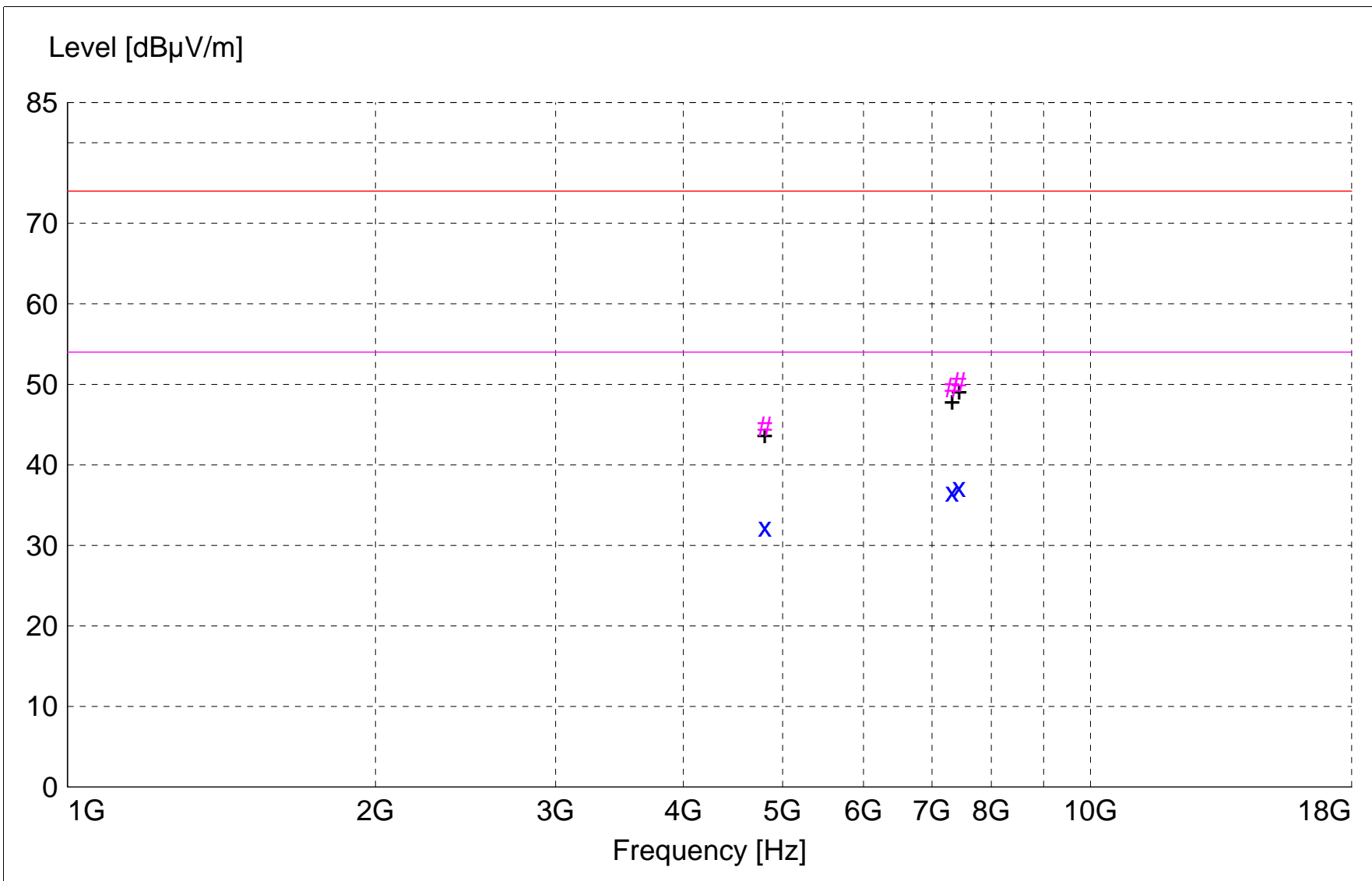
TEXT: "Horz 3 meters"

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 B4162_sh_Average
# # :MES B4162_sh_Peak
+ + :MES B4162_sh_Peak_List
— LIM FCC 15.209 F 3m PK Field Strength PEAK Limit 3m
— LIM FCC 15.209 F 3m AVG Field Strength AVG Limit 3m

```

MEASUREMENT RESULT: "B4162_sh_Final"

4/26/2013 8:32AM

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
7440.700000	54.67	36.64	-54.1	37.3	54.0	16.7	1.40	0	AVERAGE	Hi CH 3rd NF
7322.500000	54.80	36.52	-54.7	36.6	54.0	17.4	1.40	0	AVERAGE	Mid CH 3rd NF
4804.500000	54.97	32.89	-55.6	32.3	54.0	21.7	1.40	0	AVERAGE	Low CH 2nd NF
7440.700000	67.73	36.64	-54.1	50.3	74.0	23.7	1.40	0	MAX PEAK	Hi CH 3rd NF
7322.500000	67.73	36.52	-54.7	49.6	74.0	24.4	1.40	0	MAX PEAK	Mid CH 3rd NF
4804.500000	67.49	32.89	-55.6	44.8	74.0	29.2	1.40	0	MAX PEAK	Low CH 2nd NF

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450 AP (2.4GHz OFDM) w/Dual polarized slant antenna
Manufacturer: Cambium Networks
Operating Condition: 70 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Cont TX QPSK 10MHz BW 19dBm CH A&B
Comment: Low, Mid and High Channel
Date: 04-16-2013

TEXT: "Vert 3 meters"

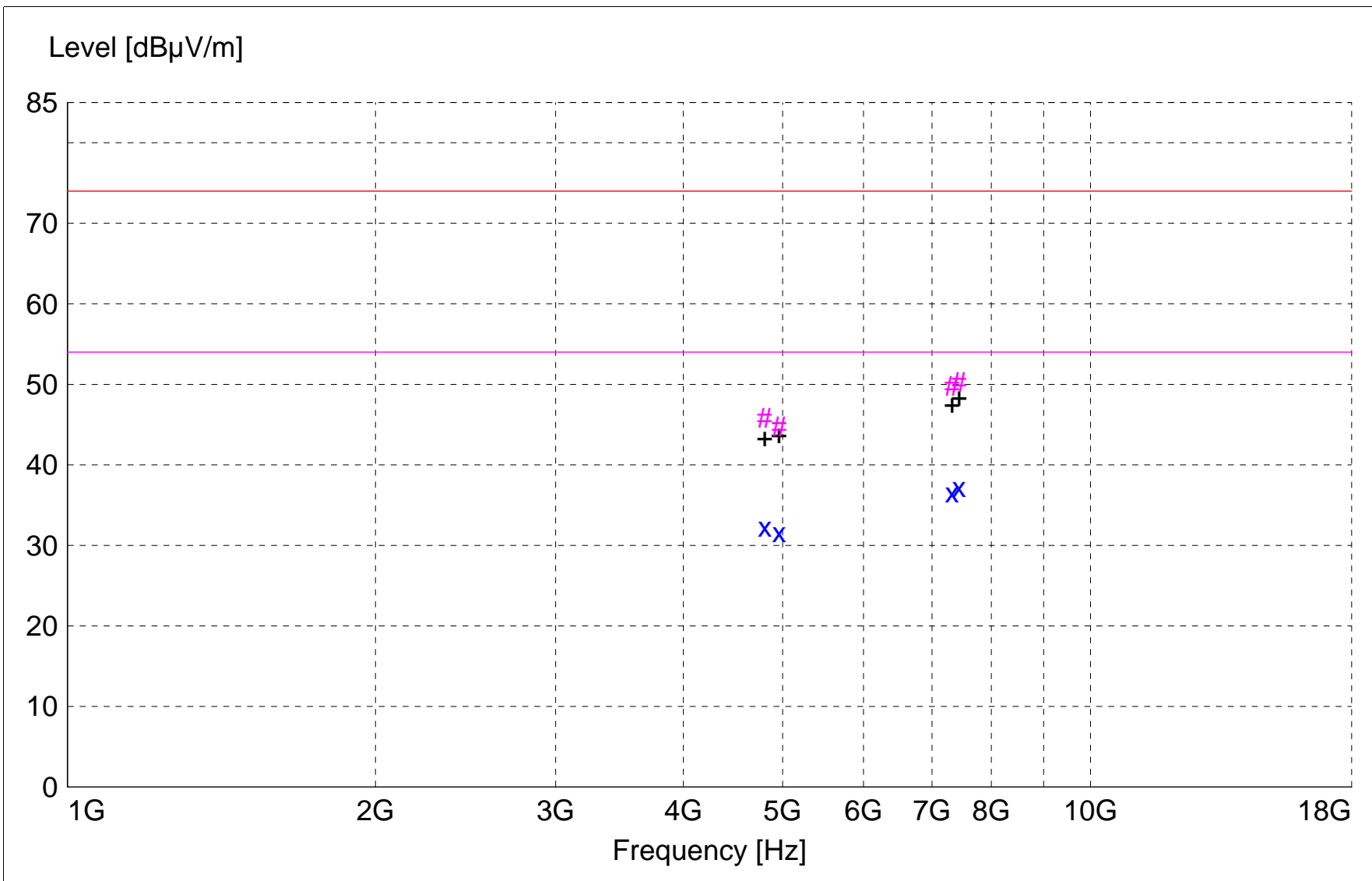
Short Description: Test Set-up

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



x x :MES B4162_sv_Average
 # # :MES B4162_sv_Peak
 + + :MES B4162_sv_Peak_List
 — LIM FCC 15.209 F 3m PK Field Strength PEAK Limit 3m
 — LIM FCC 15.209 F 3m AVG Field Strength AVG Limit 3m

MEASUREMENT RESULT: "B4162_sv_Final"

4/26/2013 8:32AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
7439.200000	54.63	36.64	-54.1	37.2	54.0	16.8	1.40	0	AVERAGE	Hi CH 3rd NF
7320.800000	54.73	36.52	-54.7	36.5	54.0	17.5	1.40	0	AVERAGE	Mid CH 3rd NF
4803.200000	54.96	32.89	-55.6	32.3	54.0	21.7	1.40	0	AVERAGE	Lo CH 2nd NF
4960.850000	54.13	33.06	-55.6	31.6	54.0	22.4	1.40	0	AVERAGE	Hi CH 3rd NF
7439.200000	67.73	36.64	-54.1	50.3	74.0	23.7	1.40	0	MAX PEAK	Hi CH 3rd NF
7320.800000	67.98	36.52	-54.7	49.8	74.0	24.2	1.40	0	MAX PEAK	Mid CH 3rd NF
4803.200000	68.47	32.89	-55.6	45.8	74.0	28.2	1.40	0	MAX PEAK	Lo CH 2nd NF
4960.850000	67.25	33.06	-55.6	44.8	74.0	29.2	1.40	0	MAX PEAK	Hi CH 3rd NF

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450 AP (2.4GHz OFDM) w/Dual polarized slant antenna
Manufacturer: Cambium Networks
Operating Condition: 70 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Cont TX QPSK 20MHz BW 19dBm CH A&B
Comment: Low, Mid and High Channel
Date: 04-16-2013

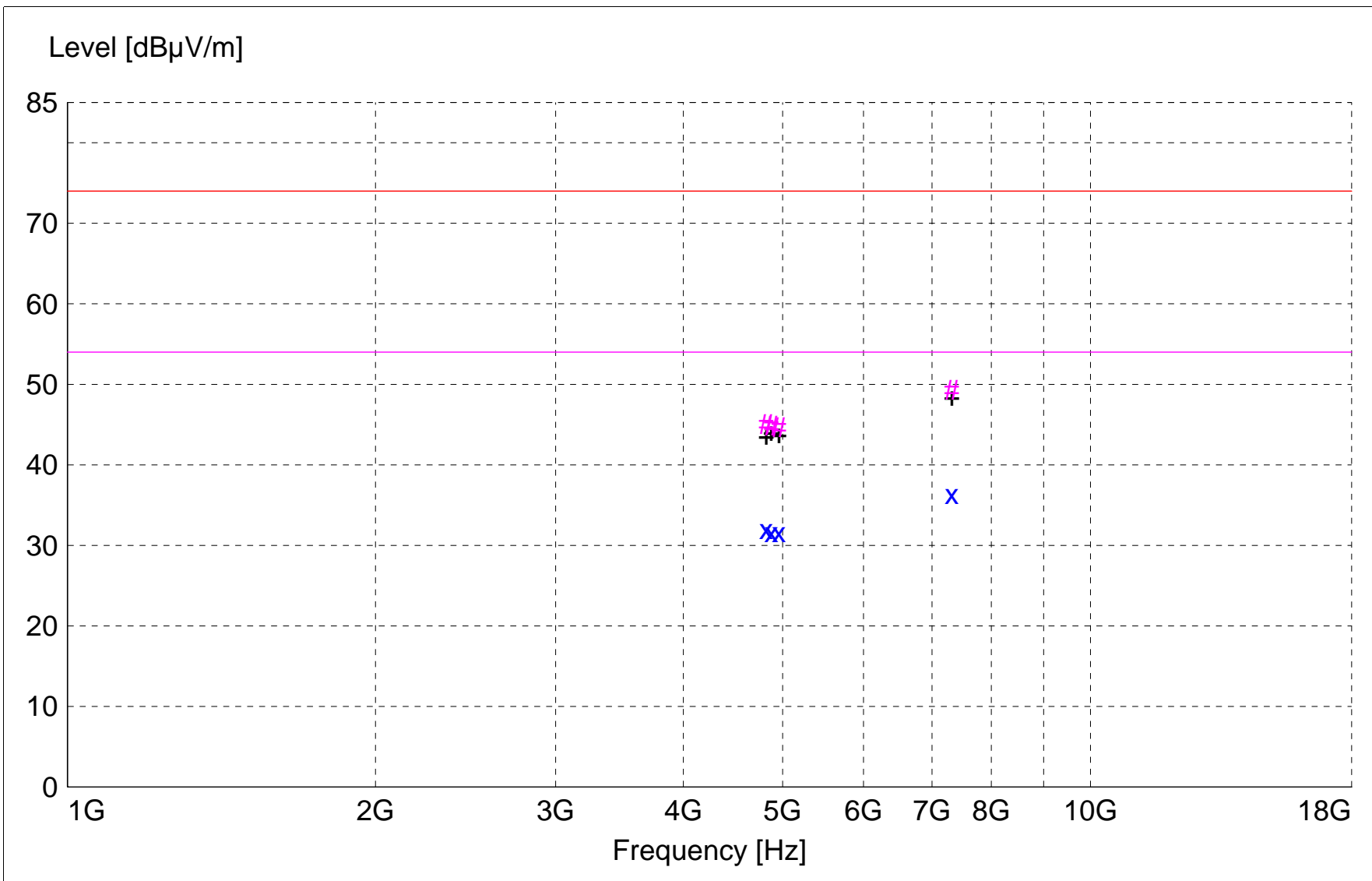
TEXT: "Horz 3 meters"

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 B4163_sh_Average
 # # :MES B4163_sh_Peak
 + + :MES B4163_sh_Peak_List
 — LIM FCC 15.209 F 3m PK Field Strength PEAK Limit 3m
 — LIM FCC 15.209 F 3m AVG Field Strength AVG Limit 3m

MEASUREMENT RESULT: "B4163_sh_Final"

4/26/2013 8:35AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector	
		dB μ V/m	dB	dB μ V/m	dB μ V/m		m	deg		
7319.380000	54.60	36.52	-54.7	36.4	54.0	17.6	1.40	0	AVERAGE	Mid Ch 3rd NF
4819.500000	54.67	32.90	-55.6	32.0	54.0	22.0	1.40	0	AVERAGE	Lo Ch 2nd NF
4875.860000	54.28	32.94	-55.6	31.6	54.0	22.4	1.40	0	AVERAGE	Mid Ch 2nd NF
4959.540000	54.08	33.06	-55.6	31.6	54.0	22.4	1.40	0	AVERAGE	Hi Ch 2nd NF
7319.380000	67.49	36.52	-54.7	49.3	74.0	24.7	1.40	0	MAX PEAK	Mid Ch 3rd NF
4819.500000	67.73	32.90	-55.6	45.1	74.0	28.9	1.40	0	MAX PEAK	Lo Ch 2nd NF
4875.860000	67.49	32.94	-55.6	44.8	74.0	29.2	1.40	0	MAX PEAK	Mid Ch 2nd NF
4959.540000	67.12	33.06	-55.6	44.6	74.0	29.4	1.40	0	MAX PEAK	Hi Ch 2nd NF

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450 AP (2.4GHz OFDM) w/Dual polarized slant antenna
Manufacturer: Cambium Networks
Operating Condition: 70 deg C 27% R.H.
Test Site: DLS O.F. G1
Operator: Jim O
Test Specification: Cont TX QPSK 20MHz BW 19dBm CH A&B
Comment: Low, Mid and High Channel
Date: 04-16-2013

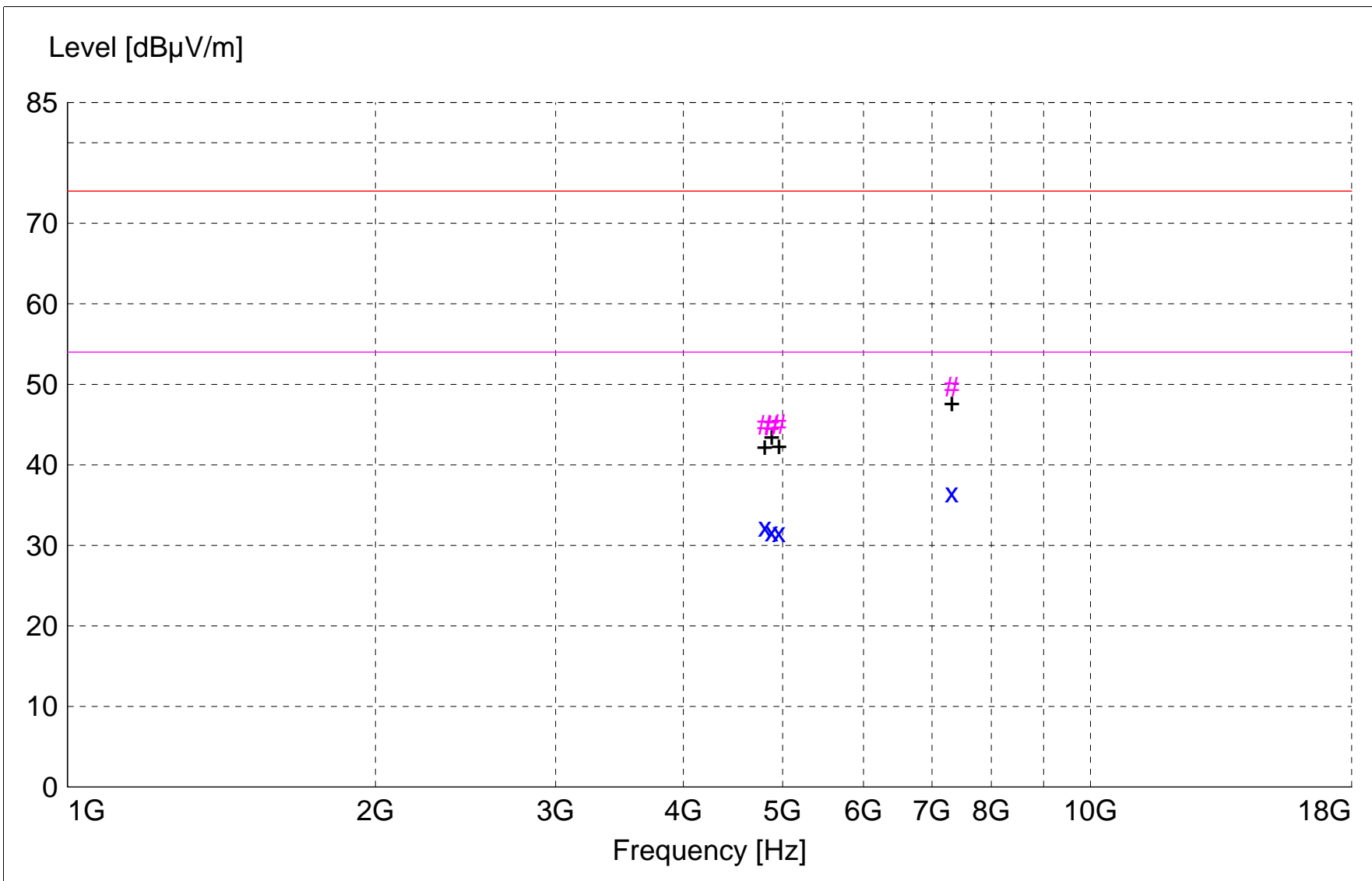
TEXT: "Vert 3 meters"

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  B4163_sv_Average
# # :MES  B4163_sv_Peak
+ + :MES  B4163_sv_Peak_List
— LIM  FCC 15.209 F 3m PK   Field Strength PEAK Limit 3m
— LIM  FCC 15.209 F 3m AVG  Field Strength AVG Limit 3m

```

MEASUREMENT RESULT: "B4163_sv_Final"

4/26/2013 8:35AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
7320.000000	54.77	36.52	-54.7	36.6	54.0	17.4	1.40	0	AVERAGE	Mid CH 3rd NF
4804.960000	55.00	32.89	-55.6	32.3	54.0	21.7	1.40	0	AVERAGE	Lo CH 2nd NF
4879.680000	54.37	32.95	-55.6	31.7	54.0	22.3	1.40	0	AVERAGE	Mid CH 2nd NF
4959.600000	54.13	33.06	-55.6	31.6	54.0	22.4	1.40	0	AVERAGE	Hi CH 2nd NF
7320.000000	67.85	36.52	-54.7	49.7	74.0	24.3	1.40	0	MAX PEAK	Mid CH 3rd NF
4959.600000	67.61	33.06	-55.6	45.1	74.0	28.9	1.40	0	MAX PEAK	Hi CH 2nd NF
4804.960000	67.61	32.89	-55.6	45.0	74.0	29.0	1.40	0	MAX PEAK	Lo CH 2nd NF
4879.680000	67.49	32.95	-55.6	44.8	74.0	29.2	1.40	0	MAX PEAK	Mid CH 2nd NF

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450AP 2.4GHz: OFDM
Manufacturer: Cambium Networks
Operating Condition: 75 deg F; 46% R.H.
Test Site: DLS Site G1
Operator: Jim O
Test Specification: 5, 10, & 20 MHz bandwidths
Comment: Max output power, ch A and B both ON
Date: 4-26-2013

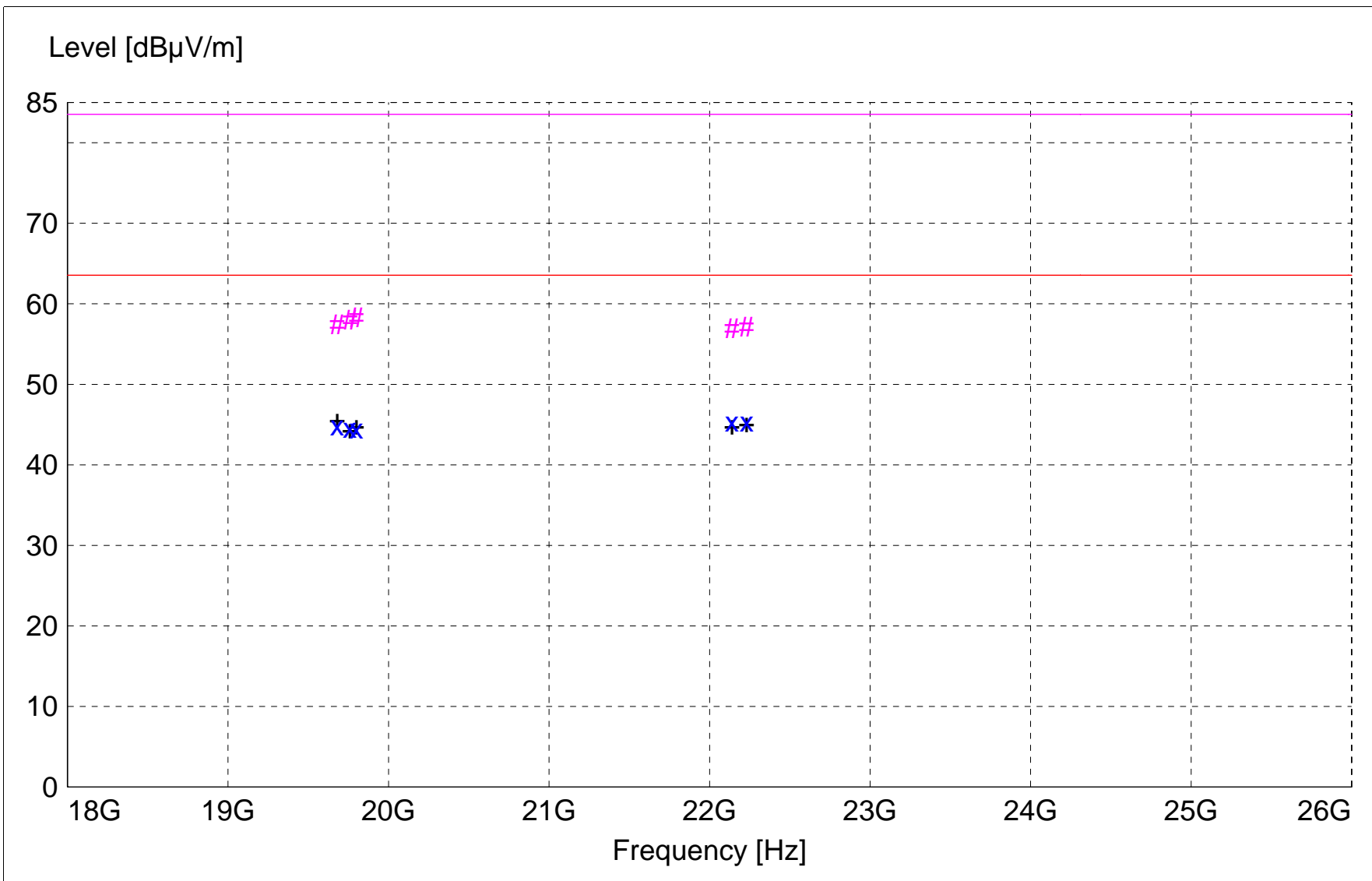
TEXT: "Horz 1 meters"

Short Description: Test Set-up

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

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

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



x x :MES A422a_sh_Average
 # # :MES A422a_sh_Peak
 + + :MES A422a_sh_Peak_List
 — (Red) LIM FCC 15.209 F 1m AVG Field Strength AVG Limit 3m
 — (Magenta) LIM FCC 15.209 F 1m PK Field Strength PEAK Limit 3m

MEASUREMENT RESULT: "A422a_sh_Final"

4/26/2013 10:34AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
22139.800000	41.05	46.39	-42.1	45.3	63.5	18.2	1.00	0	AVERAGE	hi ch 20mhz NF
22230.400000	41.21	46.41	-42.3	45.3	63.5	18.2	1.00	0	AVERAGE	hi ch 10mhz NF
19680.000000	39.52	46.15	-40.8	44.9	63.5	18.6	1.00	0	AVERAGE	hi ch 20mhz NF
19760.000000	38.99	46.23	-40.6	44.6	63.5	18.9	1.00	0	AVERAGE	hi ch 10mhz NF
19799.800000	38.79	46.25	-40.5	44.5	63.5	19.0	1.00	0	AVERAGE	hi ch 5mhz NF
19799.800000	52.64	46.25	-40.5	58.4	83.5	25.2	1.00	0	MAX PEAK	hi ch 5mhz NF
19760.000000	52.38	46.23	-40.6	58.0	83.5	25.6	1.00	0	MAX PEAK	hi ch 10mhz NF
19680.000000	52.12	46.15	-40.8	57.5	83.5	26.0	1.00	0	MAX PEAK	hi ch 20mhz NF
22230.400000	53.08	46.41	-42.3	57.2	83.5	26.4	1.00	0	MAX PEAK	hi ch 10mhz NF
22139.800000	52.72	46.39	-42.1	57.0	83.5	26.6	1.00	0	MAX PEAK	hi ch 20mhz NF

FCC Part 15.205/15.209 Spurious Emissions in Restricted Bands

Electric Field Strength

EUT: PMP450AP 2.4GHz: OFDM
Manufacturer: Cambium Networks
Operating Condition: 75 deg F; 46% R.H.
Test Site: DLS Site G1
Operator: Jim O
Test Specification: 5, 10, & 20 MHz bandwidths
Comment: Max output power, ch A and B both ON
Date: 4-26-2013

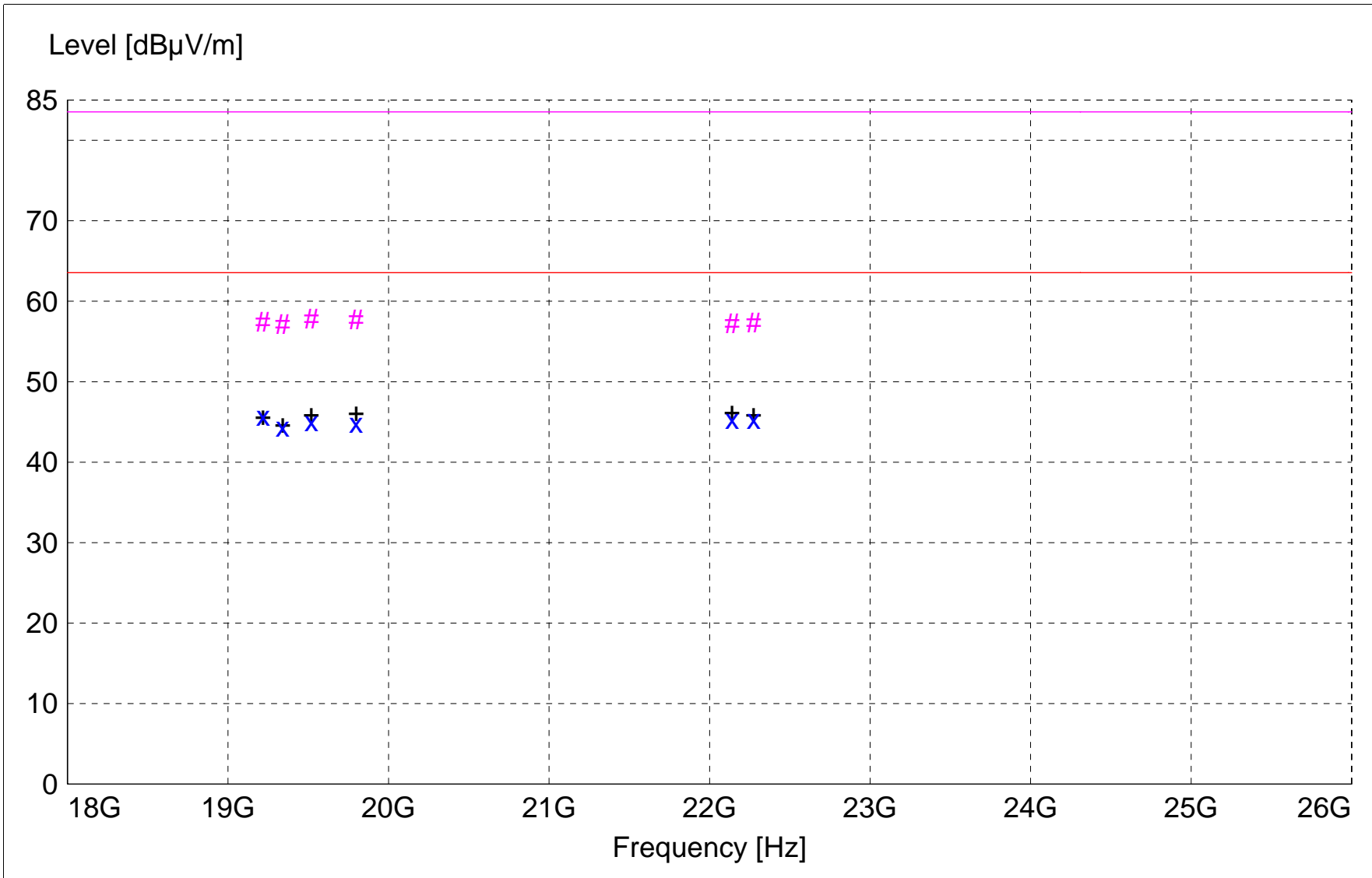
TEXT: "Vert 1 meters"

Short Description: Test Set-up

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

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

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



```

x x :MES  A422a_sv_Average
# # :MES  A422a_sv_Peak
+ + :MES  A422a_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: "A422a_sv_Final"

4/26/2013 10:35AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
19217.550000	41.46	45.57	-41.3	45.7	63.5	17.8	1.00	0	AVERAGE	lo ch 5mhz NF
22140.470000	41.15	46.39	-42.1	45.4	63.5	18.1	1.00	0	AVERAGE	hi 9th 10mhz NF
22274.940000	41.39	46.40	-42.4	45.4	63.5	18.1	1.00	0	AVERAGE	hi 9th 5mhz NF
19520.010000	40.13	45.97	-41.0	45.1	63.5	18.4	1.00	0	AVERAGE	8th mid ch NF
19797.880000	39.20	46.25	-40.5	44.9	63.5	18.6	1.00	0	AVERAGE	hi ch 5mhz NF
19339.860000	39.93	45.73	-41.3	44.4	63.5	19.1	1.00	0	AVERAGE	8th lo ch NF
19520.010000	52.85	45.97	-41.0	57.8	83.5	25.7	1.00	0	MAX PEAK	8th mid ch NF
19797.880000	52.03	46.25	-40.5	57.7	83.5	25.8	1.00	0	MAX PEAK	hi ch 5mhz NF
19217.550000	53.18	45.57	-41.3	57.4	83.5	26.1	1.00	0	MAX PEAK	lo ch 5mhz NF
19217.550000	53.18	45.57	-41.3	57.4	83.5	26.1	1.00	0	MAX PEAK	lo ch 5mhz NF
22274.940000	53.36	46.40	-42.4	57.4	83.5	26.2	1.00	0	MAX PEAK	hi 9th 5mhz NF
22140.470000	53.00	46.39	-42.1	57.3	83.5	26.3	1.00	0	MAX PEAK	hi 9th 10mhz NF
19339.860000	52.66	45.73	-41.3	57.1	83.5	26.4	1.00	0	MAX PEAK	8th lo ch NF



Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B8.0 Maximum Unwanted Emission Levels – Radiated Band-Edge with Cabinet

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

12.2.4 Peak power measurement procedure **12.2.7 Radiated spurious emission test**

Description: RBW = 1MHz
VBW \geq 3MHz
Span = spectrum to be examined – (Unwanted Emissions)
Detector = peak
Sweep = auto couple
Trace mode = max hold

Measurements were taken for QPSK over a 5MHz, 10MHz and 20MHz modulation bandwidths at the low and high channels of operation. EUT was set to transmit continuously over various frequencies and power settings with approximately a 94% duty cycle.


Limit: In this case (worst case), a Max Peak measurement was taken and compared to the more stringent Average limit of 54dBuV/m both vertically and horizontally. The Max Peak measurement complied with the Average limit.

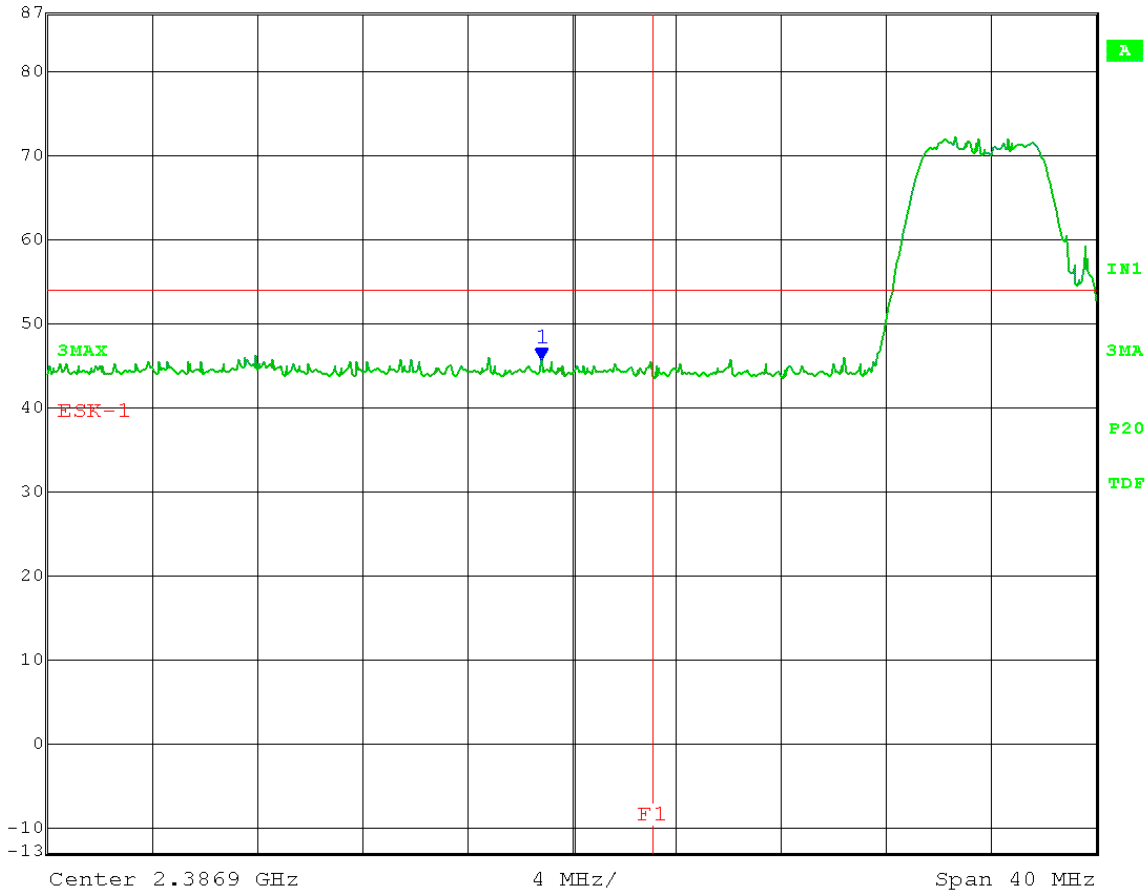
Results: Passed

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 Low Channel: Transmit = 2.4025 GHz
 5MHz BW
 Restricted Band-Edge Frequency (F1) = 2.39 GHz
 Average Limit (D1) = 54dBuV/m

VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Horizontal
 Output power setting: 16
 Channel A&B terminated

	Max/Ref Lvl	Marker 1 [T3]	RBW	1 MHz	RF Att	0 dB
	87 dB*	45.52 dBμV/m	VBW	3 MHz		
	71 dB*	2.38576653 GHz	SWT	5 ms	Unit	dBμV/m

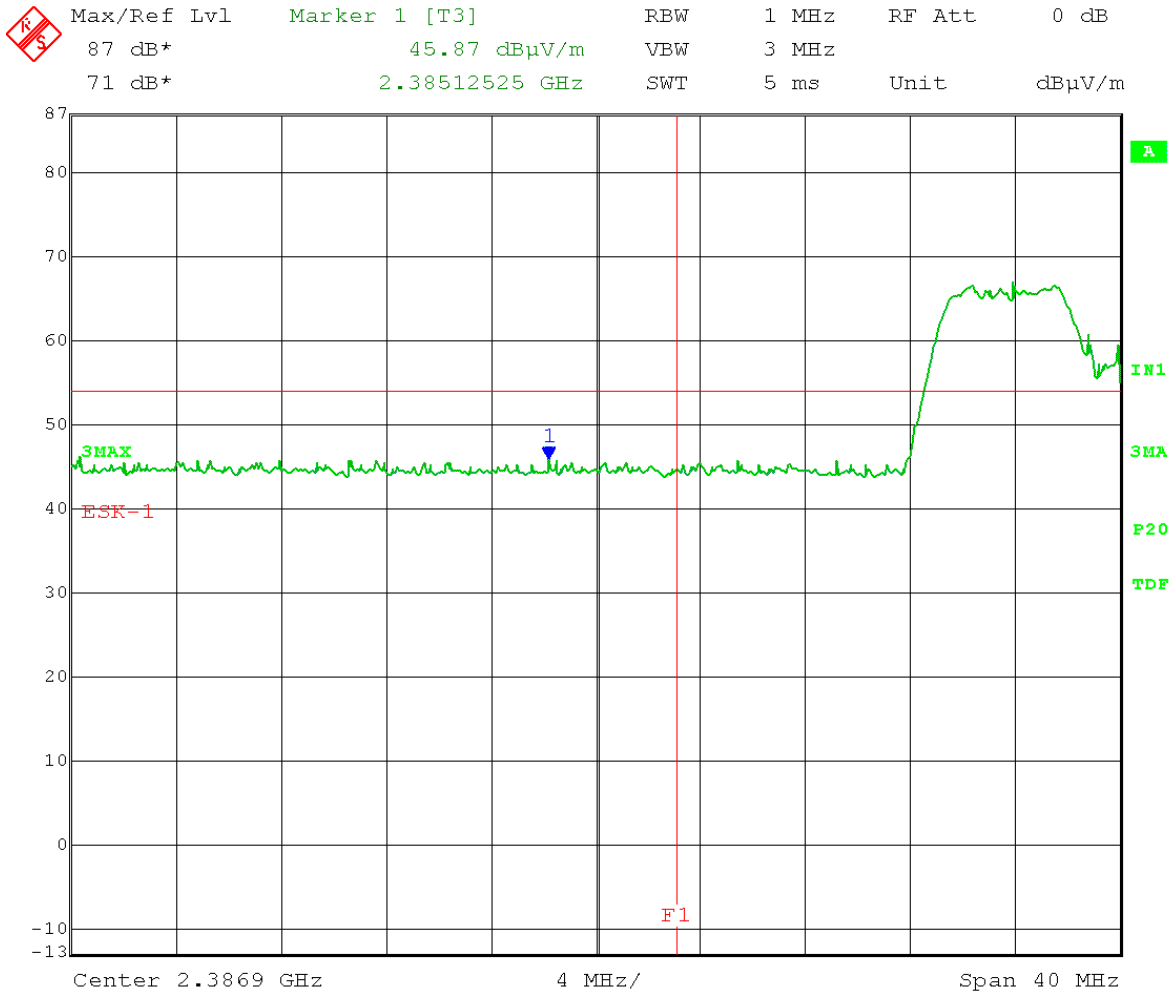


Date: 25.APR.2013 15:21:32

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 Low Channel: Transmit = 2.4025 GHz
 5MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.39 GHz
 Average Limit (**D1**) = 54dBuV/m

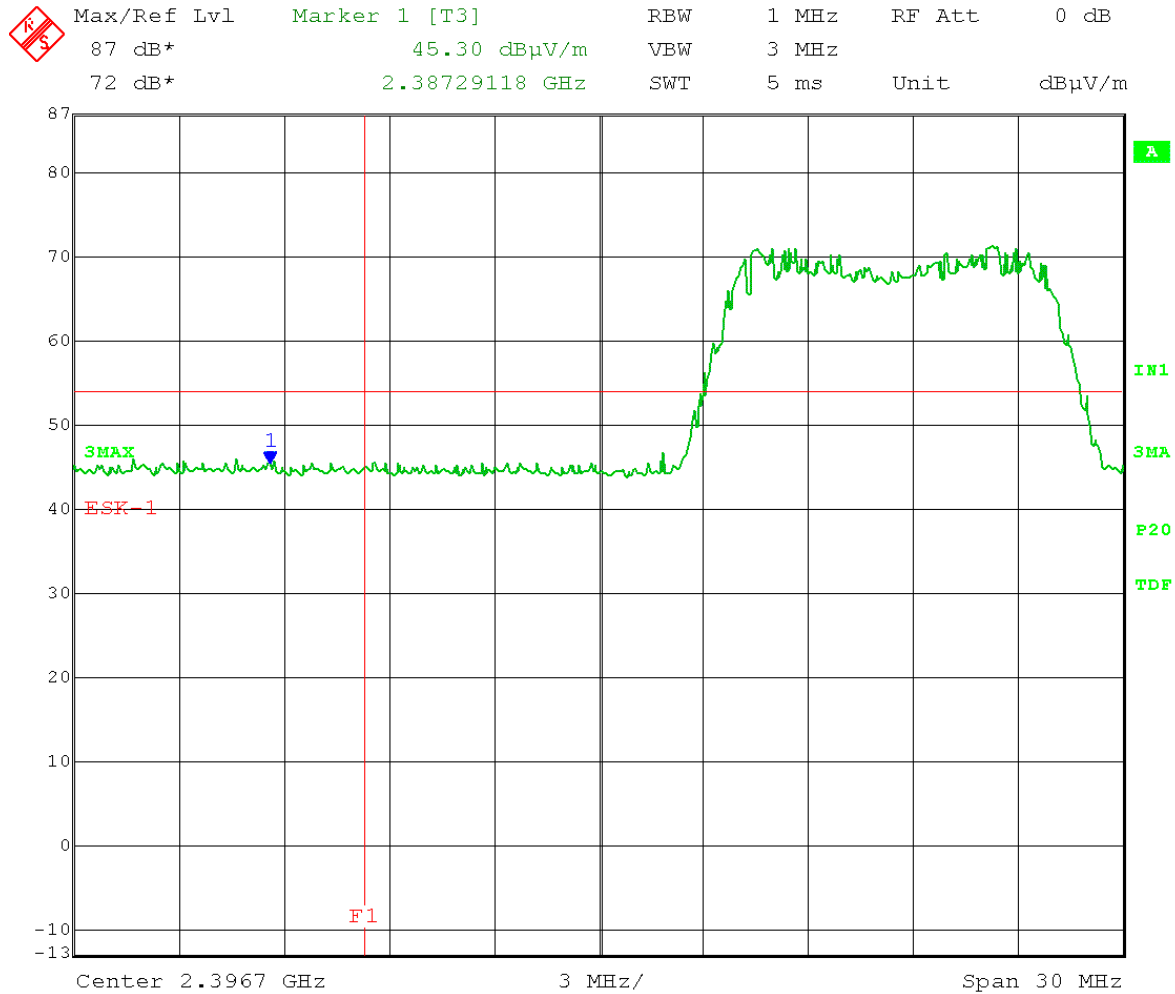
VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Vertical
 Output power setting: 16
 Channel A&B Terminated



Date: 25.APR.2013 15:15:28

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 Low Channel: Transmit = 2.405 GHz
 10MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.39 GHz
 Average Limit (**D1**) = 54dBuV/m
 VBW \geq 3MHz
 Sweep = auto couple
 Polarization = Horizontal
 Output power setting: 15
 Channel A&B Terminated

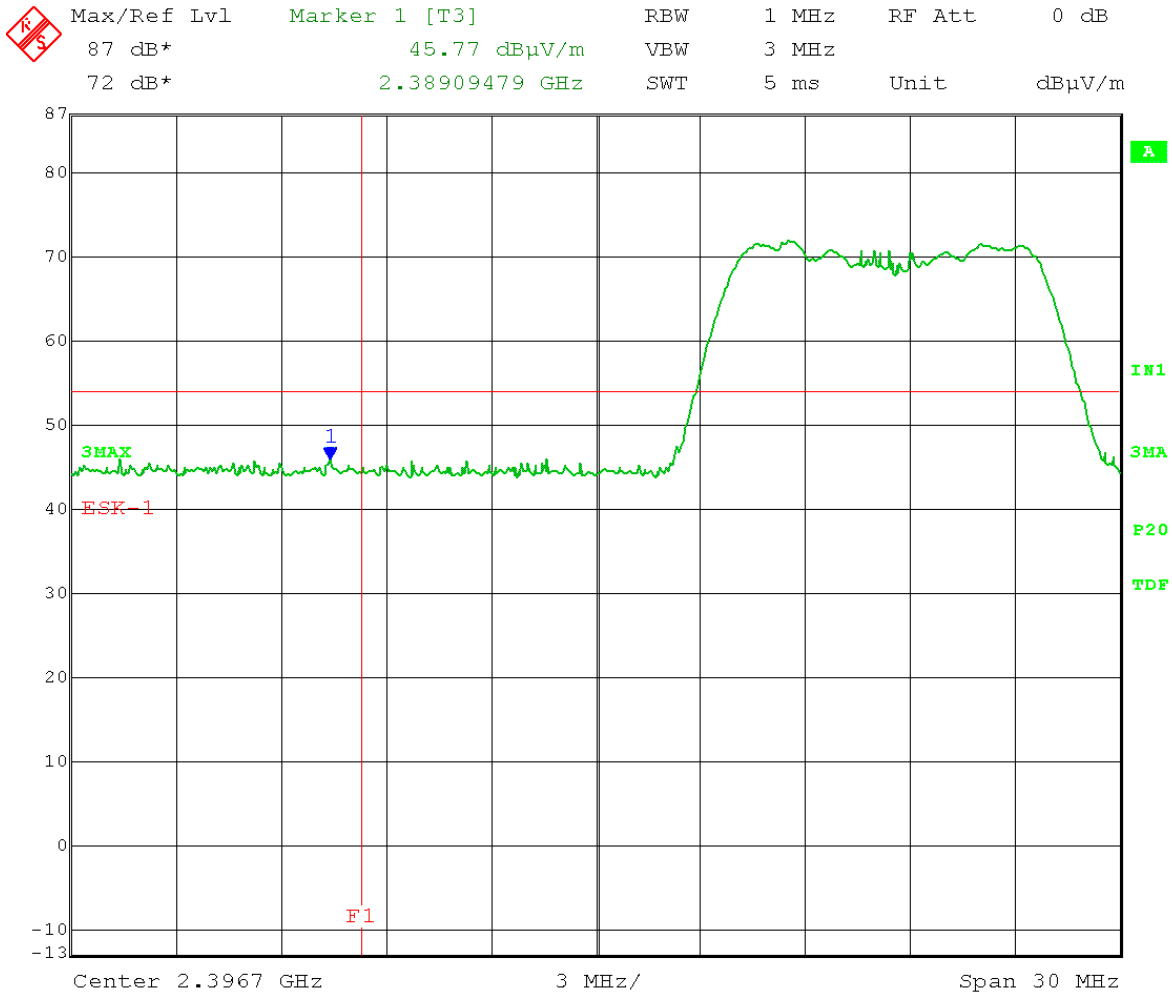


Date: 26.APR.2013 10:28:14

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 Low Channel: Transmit = 2.405 GHz
 10MHz BW
 Restricted Band-Edge Frequency (F1) = 2.39 GHz
 Average Limit (D1) = 54dBuV/m

VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Vertical
 Output power setting: 15
 Channel A&B Terminated

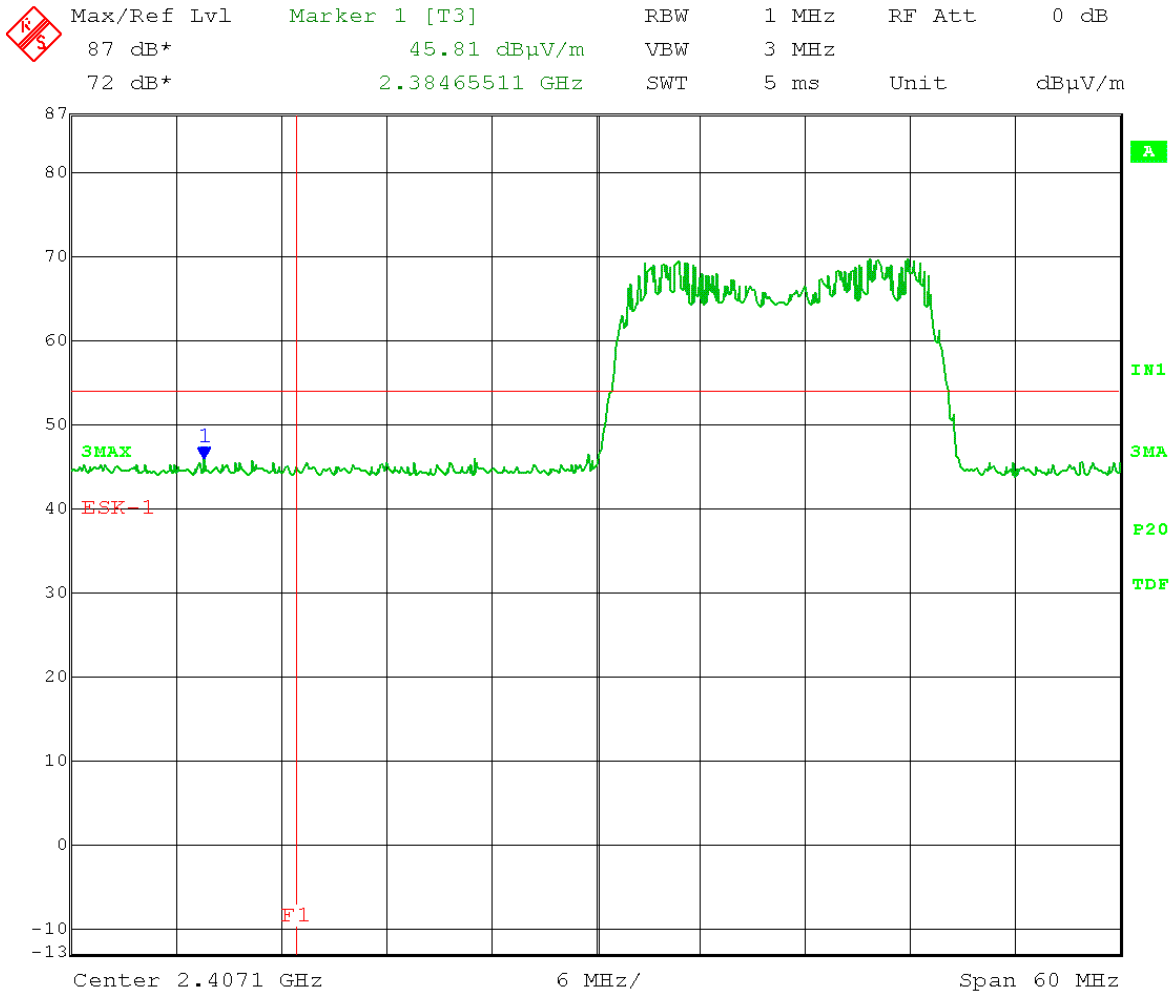


Date: 26.APR.2013 10:22:20

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 Low Channel: Transmit = 2.4175 GHz
 20MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.39 GHz
 Average Limit (**D1**) = 54dBuV/m

VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Horizontal
 Output power setting: 16
 Channel A&B Terminated

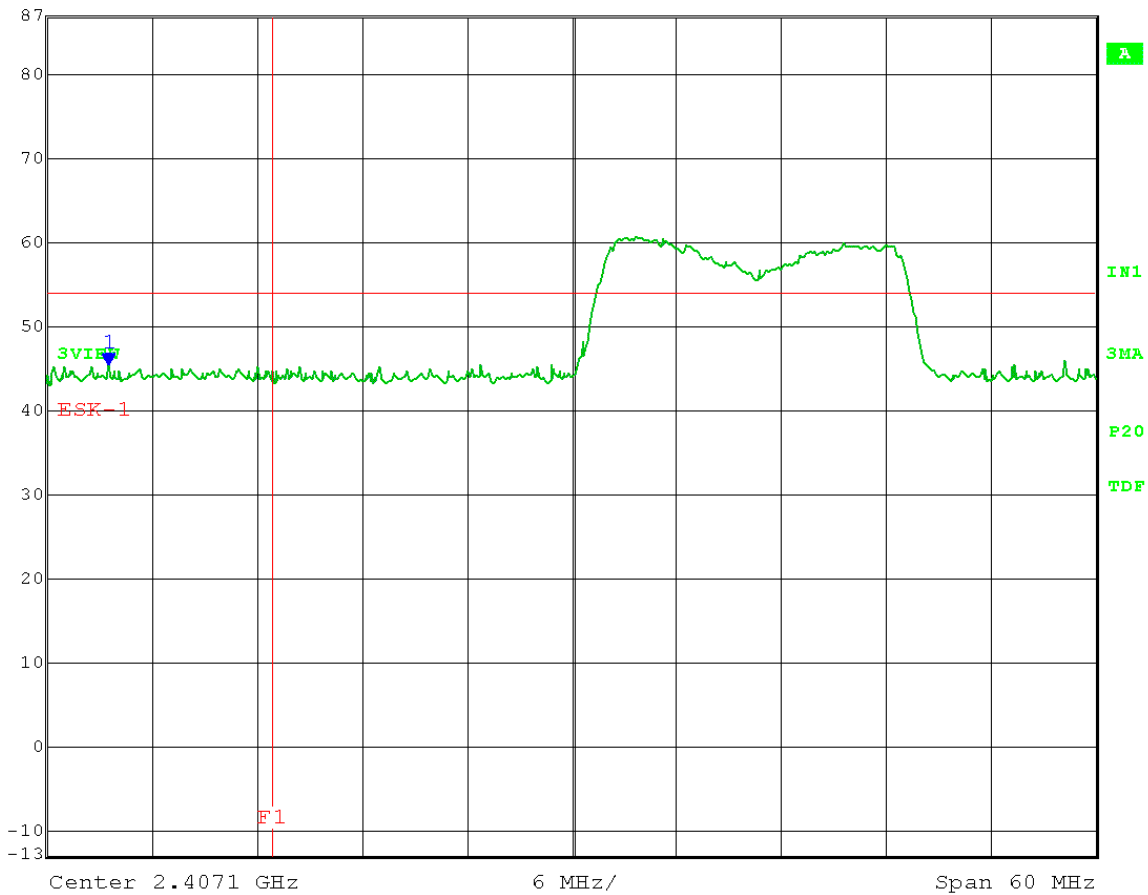


Date: 26.APR.2013 09:59:14

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurement - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 Low Channel: Transmit = 2.4175 GHz
 20MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.39 GHz
 Average Limit (**D1**) = 54dBuV/m
 VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Vertical
 Output power setting: 15
 Channel A&B Terminated

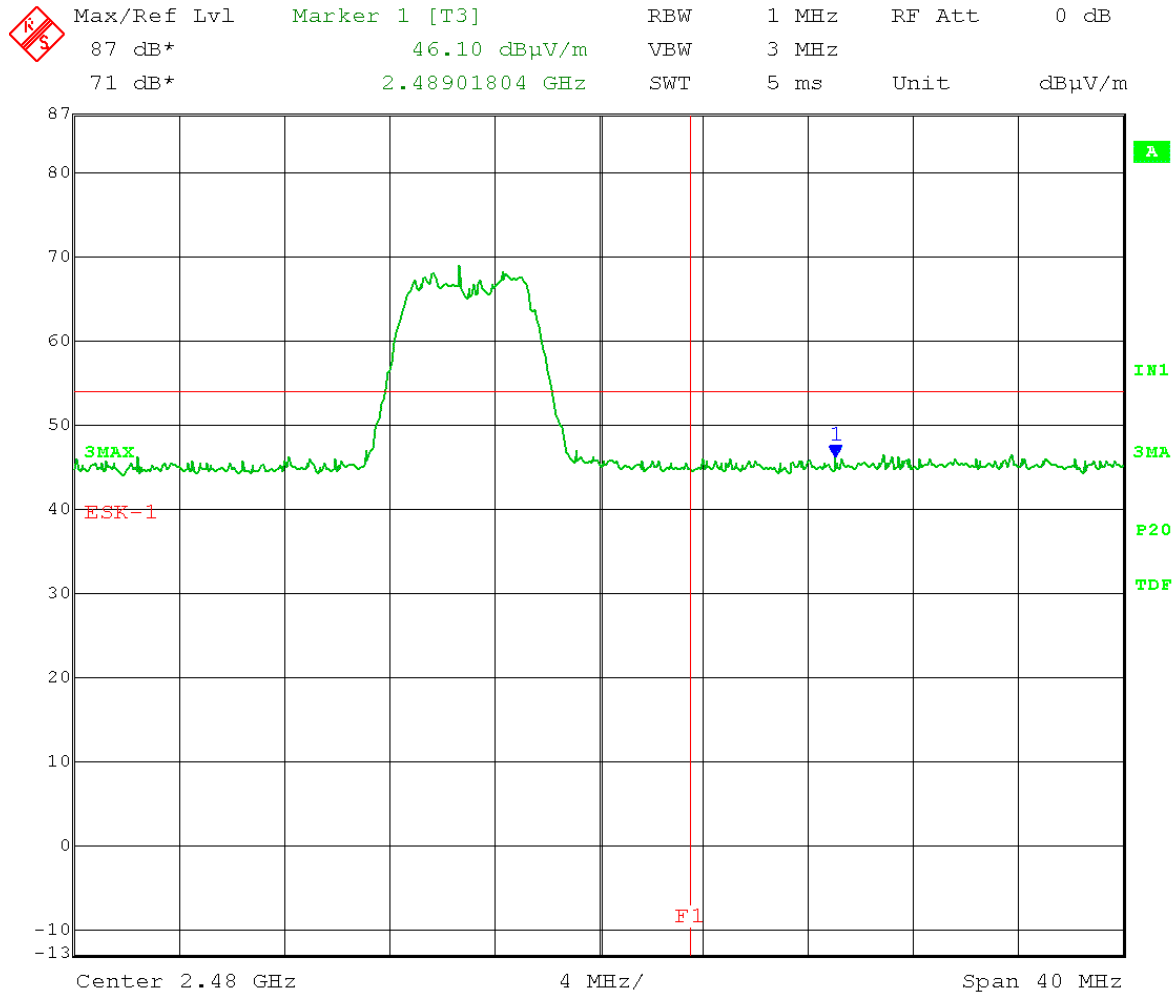
	Max/Ref Lvl	Marker 1 [T3]	RBW	1 MHz	RF Att	0 dB
	87 dB*	45.29 dBuV/m	VBW	3 MHz		
	72 dB*	2.38056693 GHz	SWT	5 ms	Unit	dBuV/m



Date: 26.APR.2013 09:55:31

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

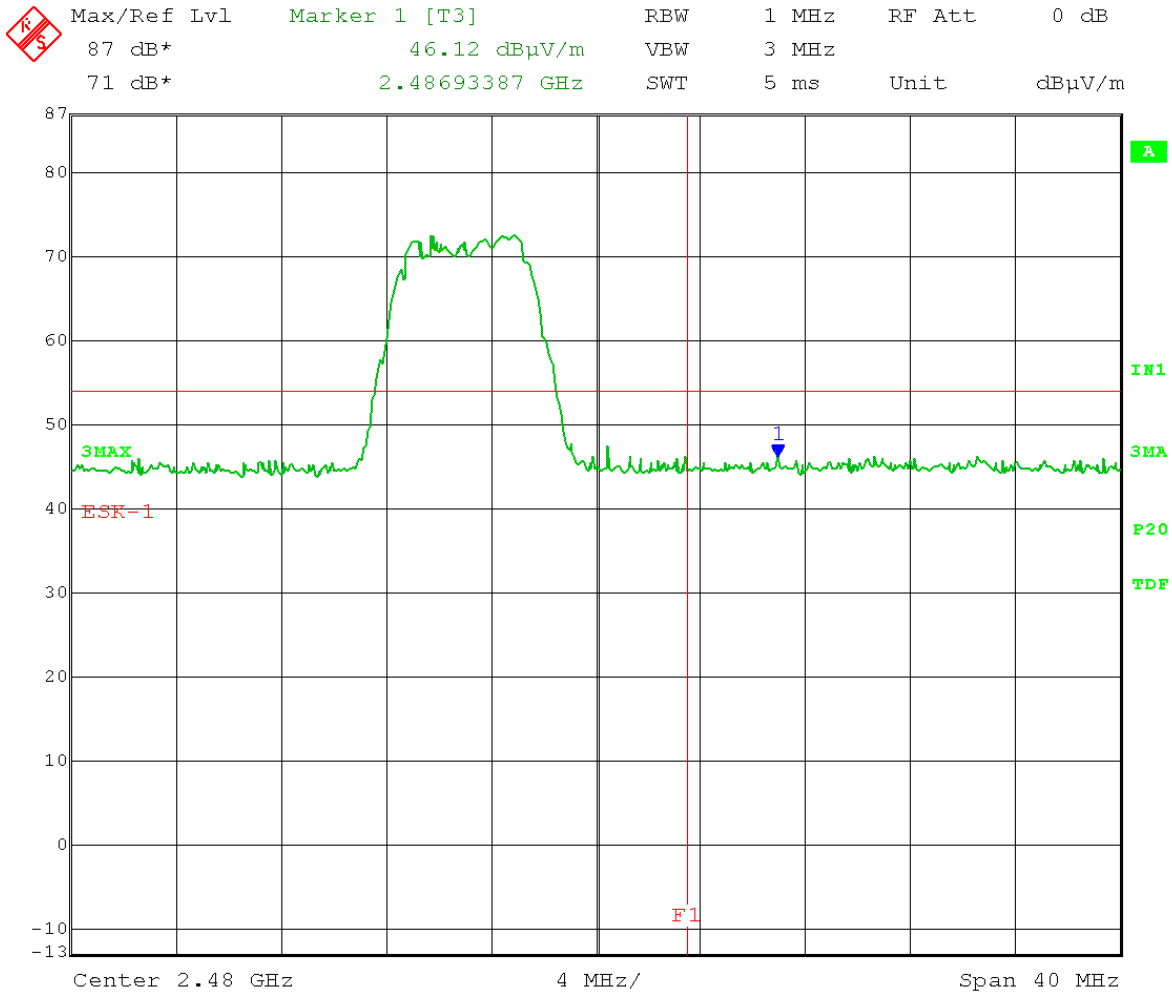
Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 High Channel: Transmit = 2.475 GHz
 5MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.4835 GHz
 Average Limit (**D1**) = 54dBuV/m
 VBW \geq 3MHz
 Sweep = auto couple
 Polarization = Horizontal
 Output power setting: 15
 Channel A&B Terminated



Date: 25.APR.2013 15:31:07

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 High Channel: Transmit = 2.475 GHz
 5MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.4835 GHz
 Average Limit (**D1**) = 54dBuV/m
 VBW \geq 3MHz
 Sweep = auto couple
 Polarization = Vertical
 Output power setting: 15
 Channel A&B

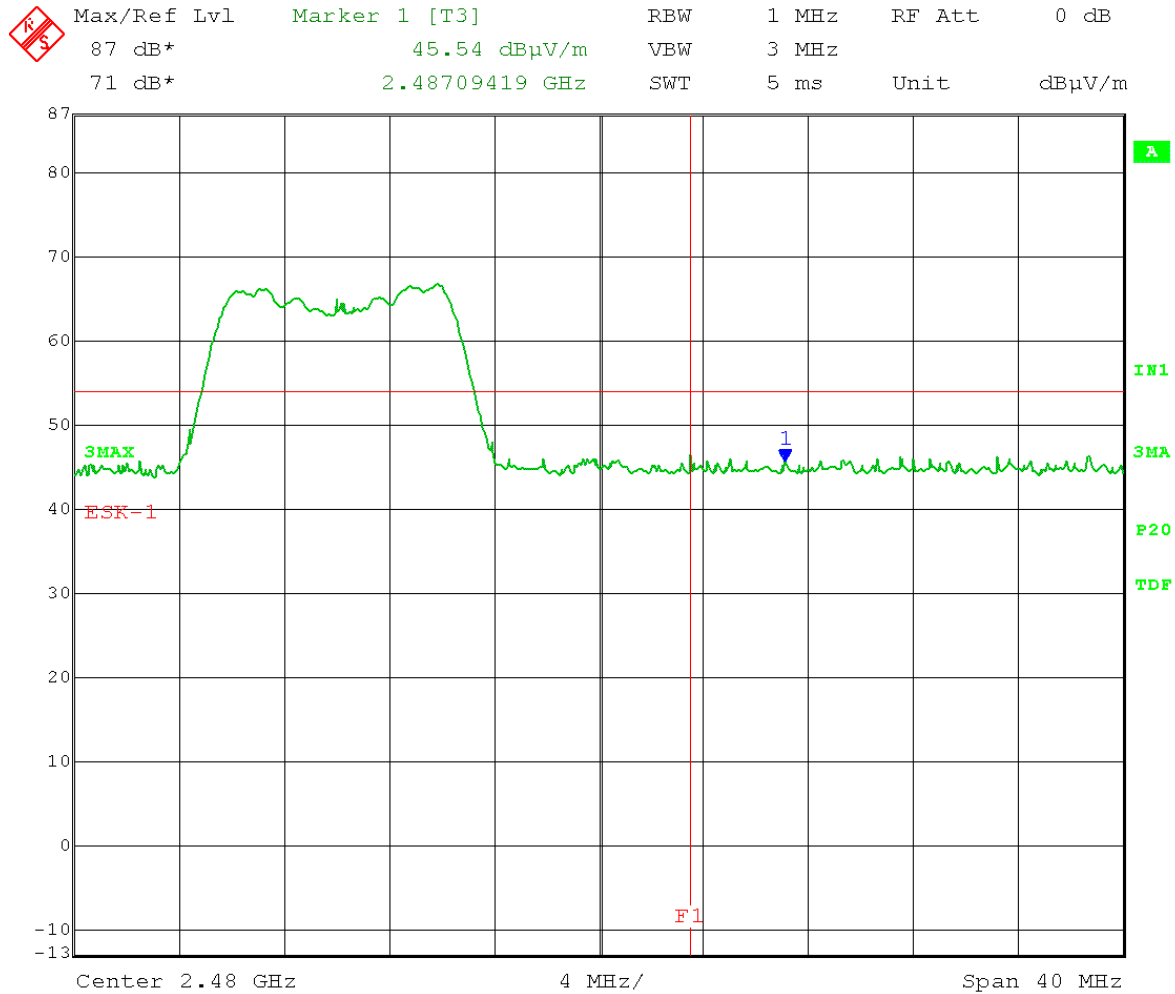


Date: 25.APR.2013 15:33:33

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurement - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 High Channel: Transmit = 2.470 GHz
 10MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.4835 GHz
 Average Limit (**D1**) = 54dBuV/m

VBW \geq 3MHz
 Sweep = auto couple
 Polarization = Horizontal
 Output power setting: 14
 Channel A&B Terminated

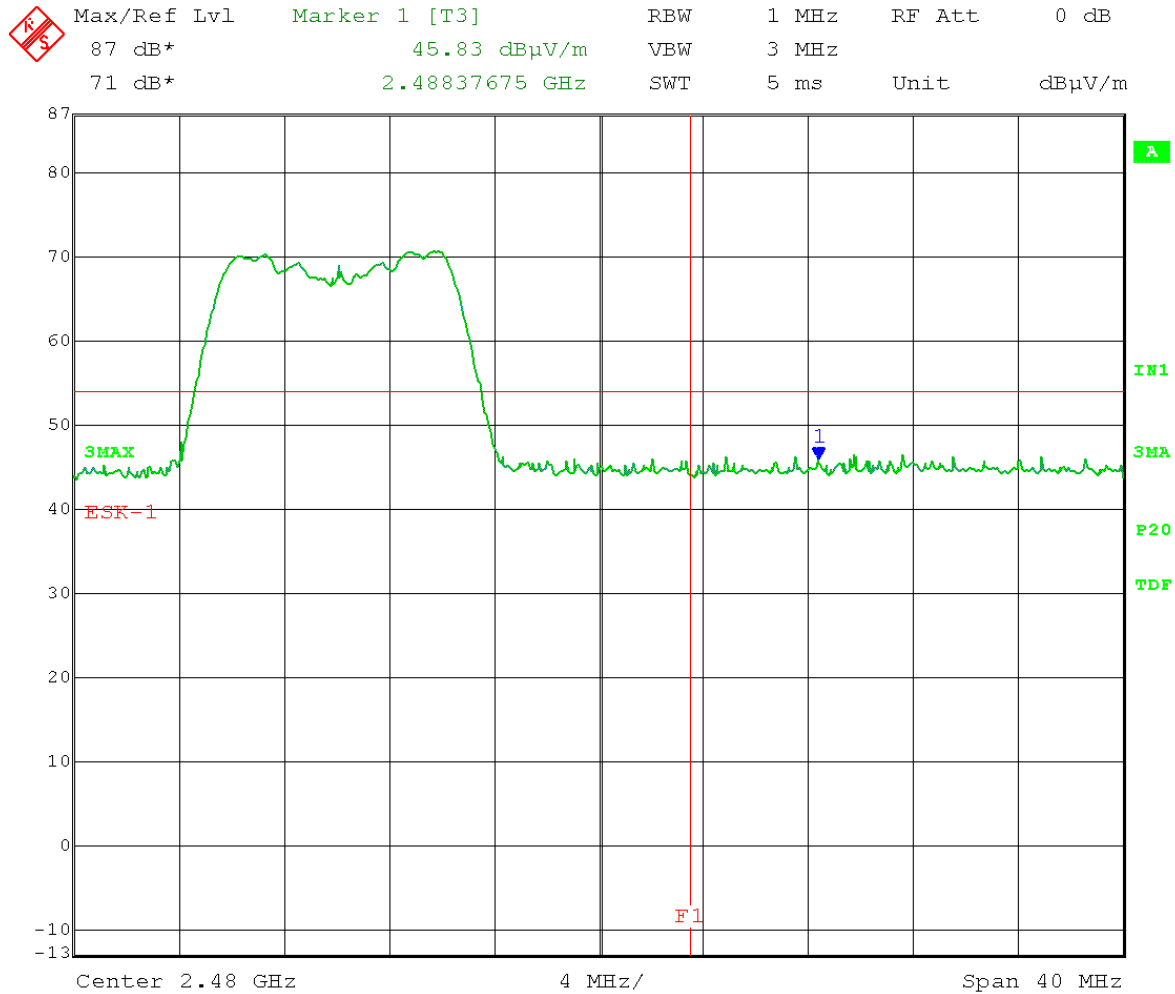


Date: 25.APR.2013 15:42:52

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurement - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 High Channel: Transmit = 2.470 GHz
 10MHz BW
 Restricted Band-Edge Frequency (F1) = 2.4835 GHz
 Average Limit (D1) = 54dBuV/m

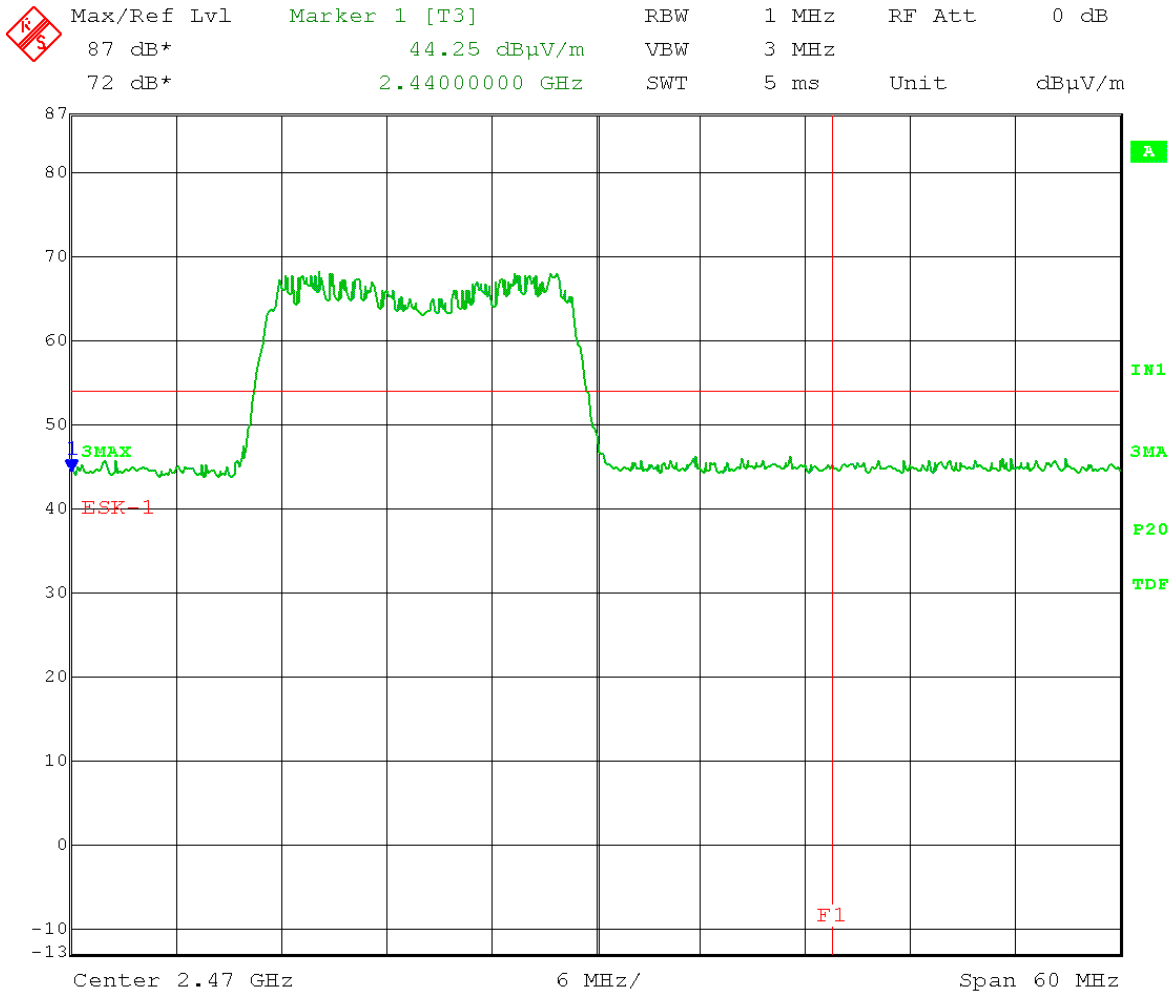
VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Vertical
 Output power setting: 14
 Channel A&B Terminated



Date: 25.APR.2013 15:45:44

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurements - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 High Channel: Transmit = 2.460 GHz
 20MHz BW
 Restricted Band-Edge Frequency (F1) = 2.4835 GHz
 Average Limit (D1) = 54dBuV/m
 VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Horizontal
 Output power setting: 12
 Channel A&B Terminated

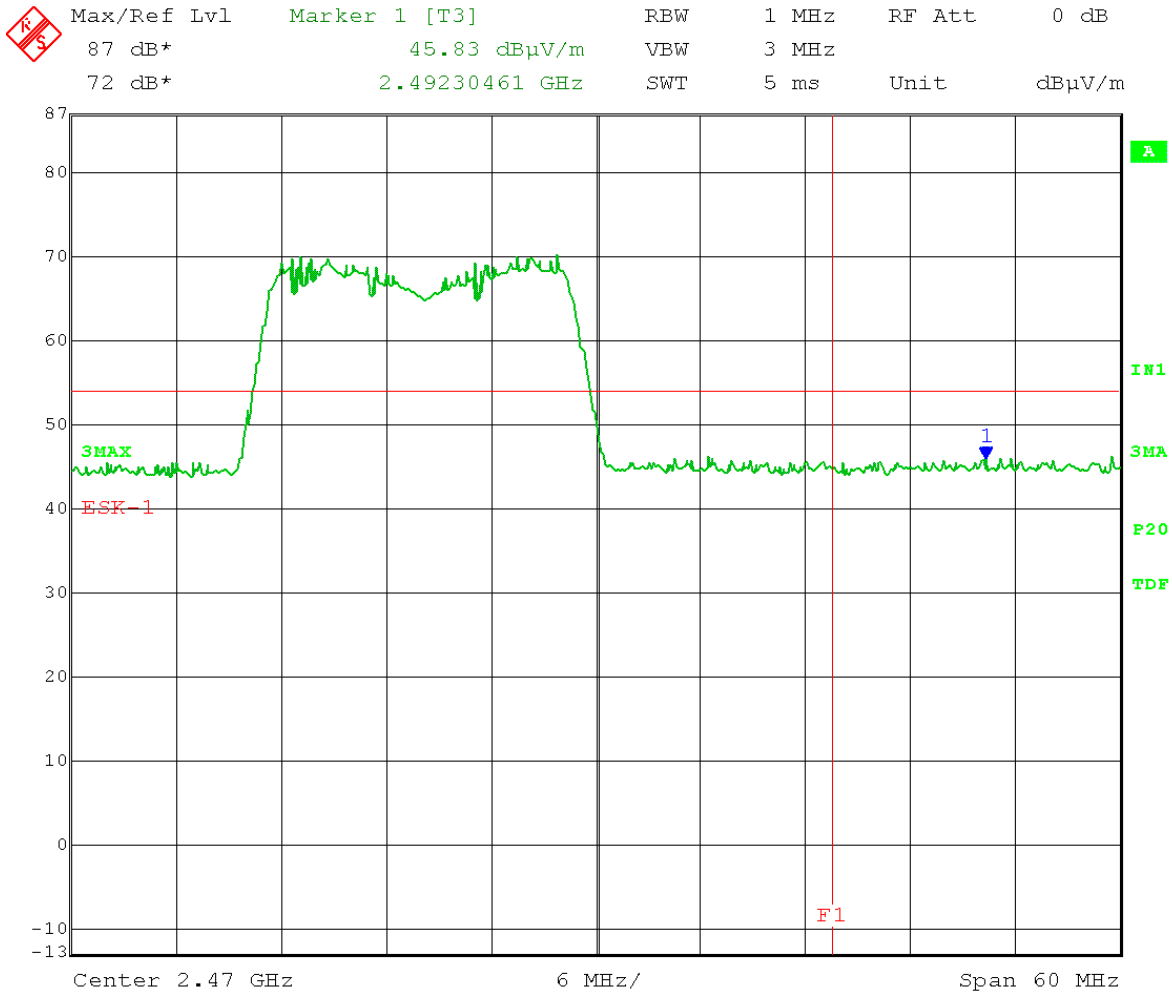


Date: 26.APR.2013 10:06:04

Test Date: 04-25-2013
 Company: Cambium Networks
 EUT: PMP450AP (2.4 GHz: OFDM)
 Test: Band-Edge Measurement - Radiated
 Operator: Jim O

Comment: RBW = 1MHz
 Detector = Peak
 Trace = max hold
 High Channel: Transmit = 2.460 GHz
 20MHz BW
 Restricted Band-Edge Frequency (**F1**) = 2.4835 GHz
 Average Limit (**D1**) = 54dBuV/m

VBW ≥ 3MHz
 Sweep = auto couple
 Polarization = Vertical
 Output power setting: 12
 Channel A&B Terminated



Date: 26.APR.2013 10:09:45



166 South Carter, Genoa City, WI 53128

Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

Appendix B – Measurement Data

B9.0 Duty Cycle of Test Unit

Rule Part: FCC Section 15.35(c)

Test Procedure: **6.0 Duty cycle, transmission duration and maximum power control level**
ANSI C63.10-2009 Section 7.5

Limits: Informative

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

Sample Equations: None

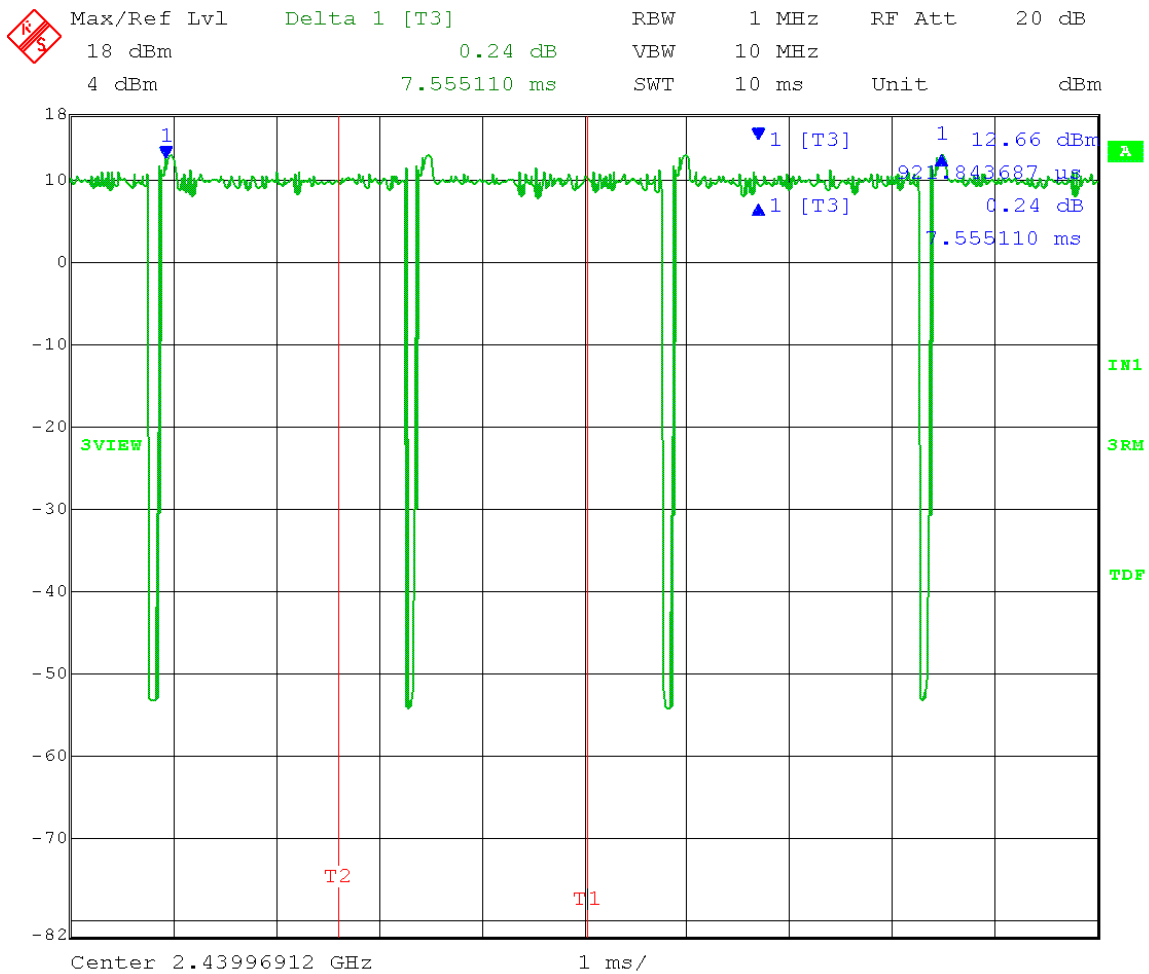
Notes: Duty cycle correction factor was applied to measurements for this device.
The EUT was transmitting below the minimum duty cycle of 98%.

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450 AP 2.4 OFDM
 Test: Duty Cycle during testing
 Operator: Craig B / Jim O

5 MHz channel bandwidth; QPSK

Comment: Comment: Total on Time = 2.344689 ms x 3 times = 7.034067 ms
 during 7.555 ms sweep
 $X = 7.034067 / 7.515$
Duty cycle factor x = 0.930

ON + OFF time = 7.515 ms



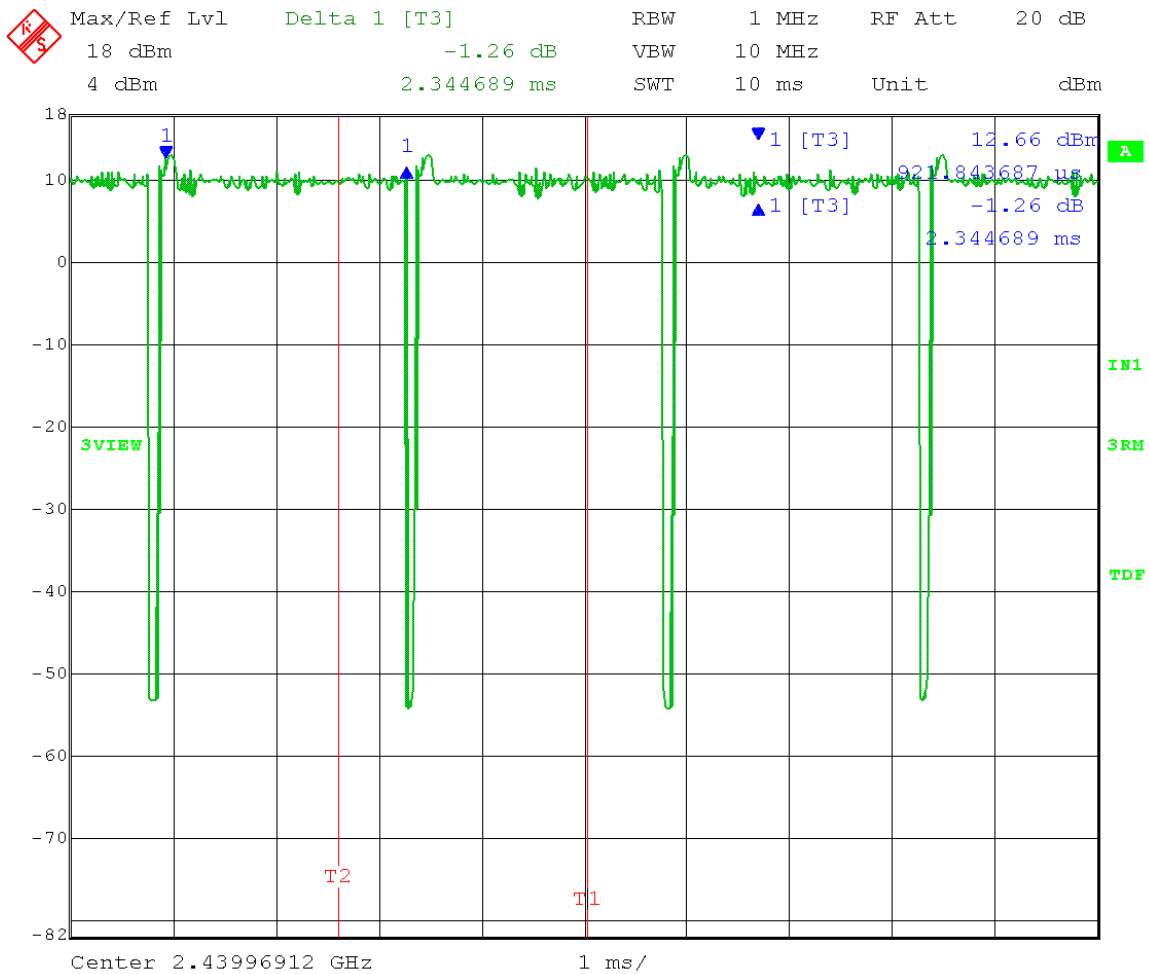
Date: 19.APR.2013 14:26:59

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450 AP 2.4 OFDM
 Test: Duty Cycle during testing
 Operator: Craig B / Jim O

5 MHz channel bandwidth; QPSK

Comment: Total on Time = 2.344689 ms x 3 times = 7.034067 ms during 7.555 ms sweep
 $X = 7.034067 / 7.515$
Duty cycle factor x = 0.930

Duration of one pulse: 2.344689 ms



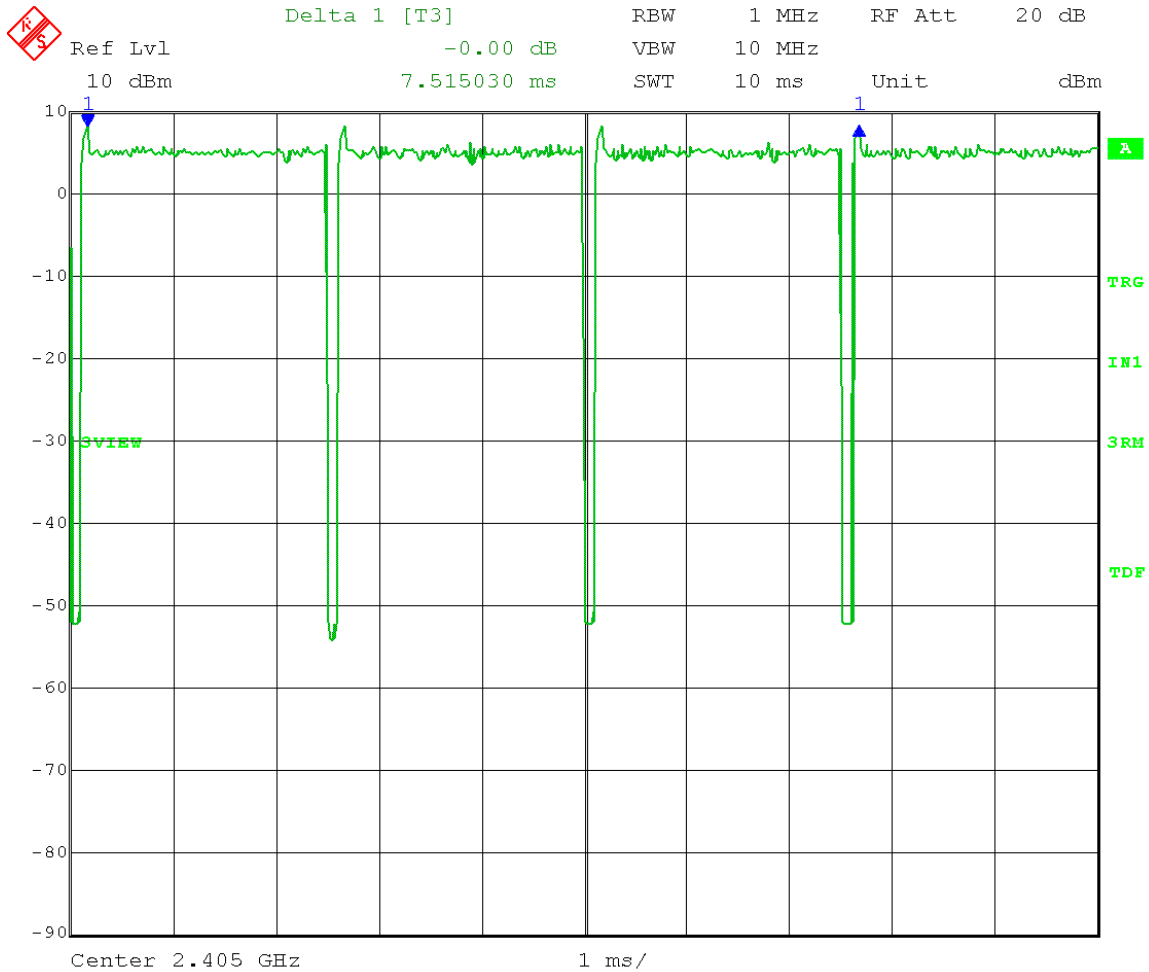
Date: 19.APR.2013 14:27:55

Test Date: 04-19-2013
Company: Cambium Networks
EUT: PMP450 AP 2.4 OFDM
Test: Duty Cycle during testing
Operator: Craig B / Jim O

10 MHz channel bandwidth; QPSK

Comment: Comment: Total on Time = 2.344689 ms x 3 times = 7.034067 ms
during 7.515 ms sweep
 $X = 7.034067 / 7.515$
Duty cycle factor x = 0.936

ON + OFF time = 7.515 ms



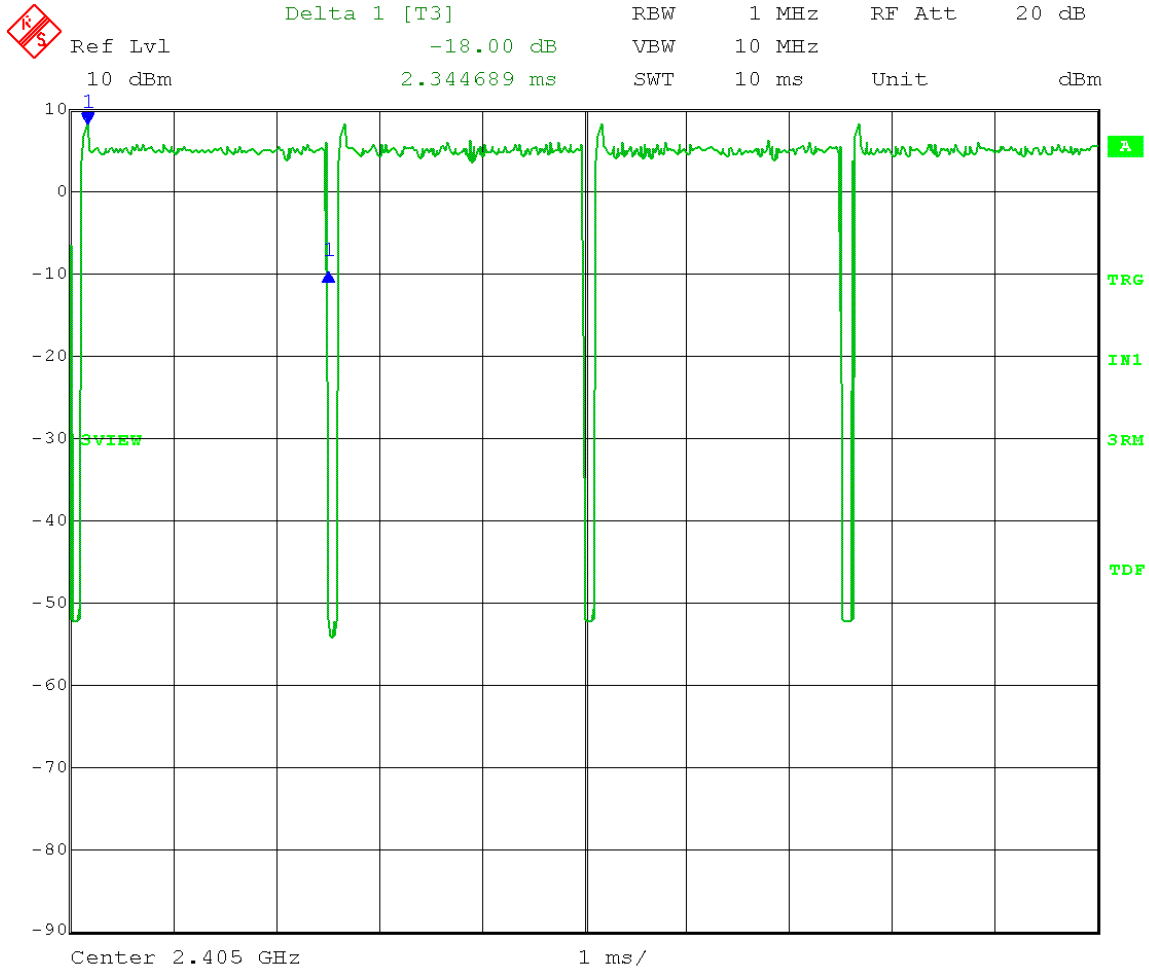
Date: 19.APR.2013 11:14:10

Test Date: 04-19-2013
Company: Cambium Networks
EUT: PMP450 AP 2.4 OFDM
Test: Duty Cycle during testing
Operator: Craig B / Jim O

10 MHz channel bandwidth; QPSK

Comment: Total on Time = 2.344689 ms x 3 times = 7.034067 ms during 7.515 ms sweep
X = 7.034067 / 7.515
Duty cycle factor x = 0.936

Duration of one pulse: 2.344689 ms



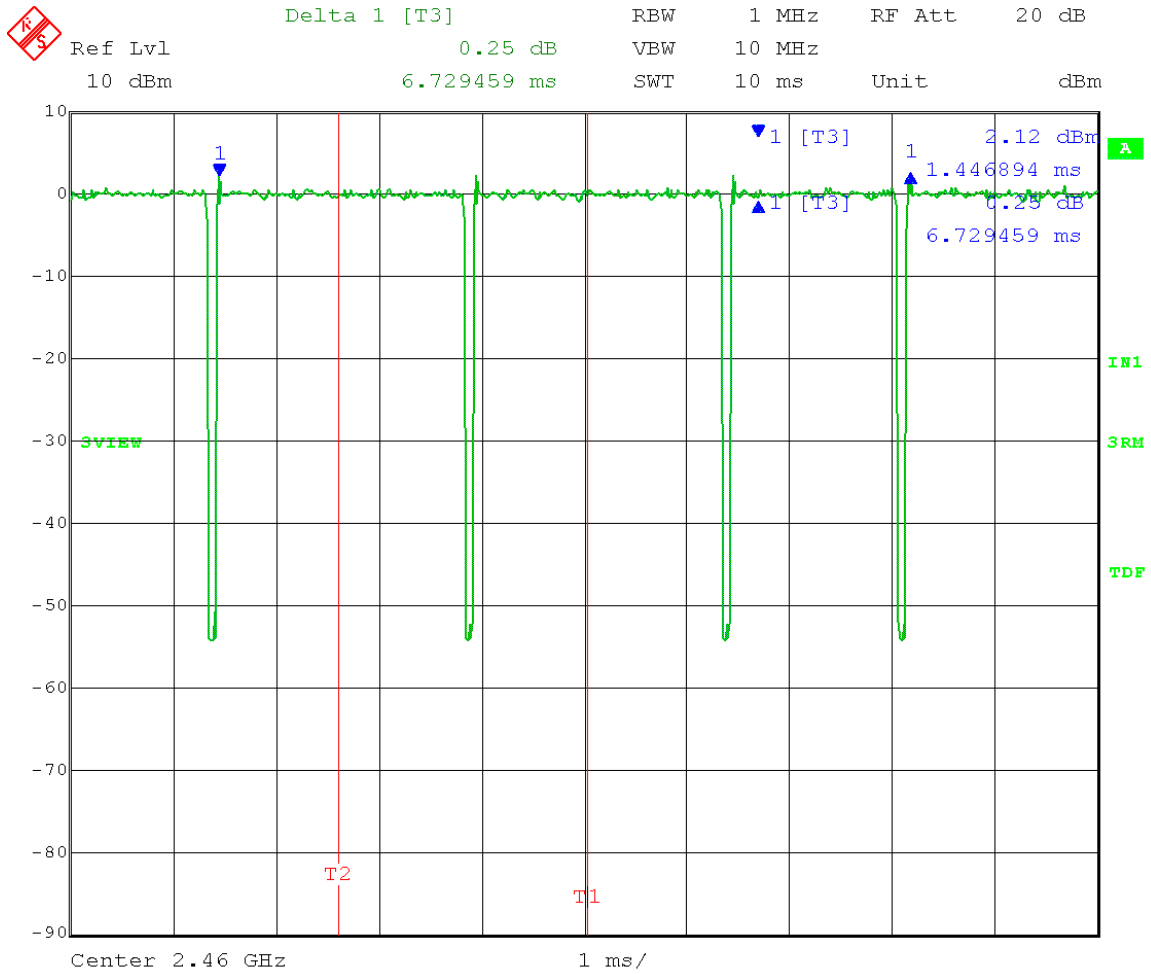
Date: 19.APR.2013 11:15:30

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450 AP 2.4 OFDM
 Test: Duty Cycle during testing
 Operator: Craig B / Jim O

20 MHz channel bandwidth; QPSK

Comment: Comment: Total on Time = 2.344689 ms x 3 times = 7.034067 ms
 during 7.515 ms sweep
 $X = 7.034067 / 7.515$
Duty cycle factor x = 0.936

ON + OFF time = 7.515 ms



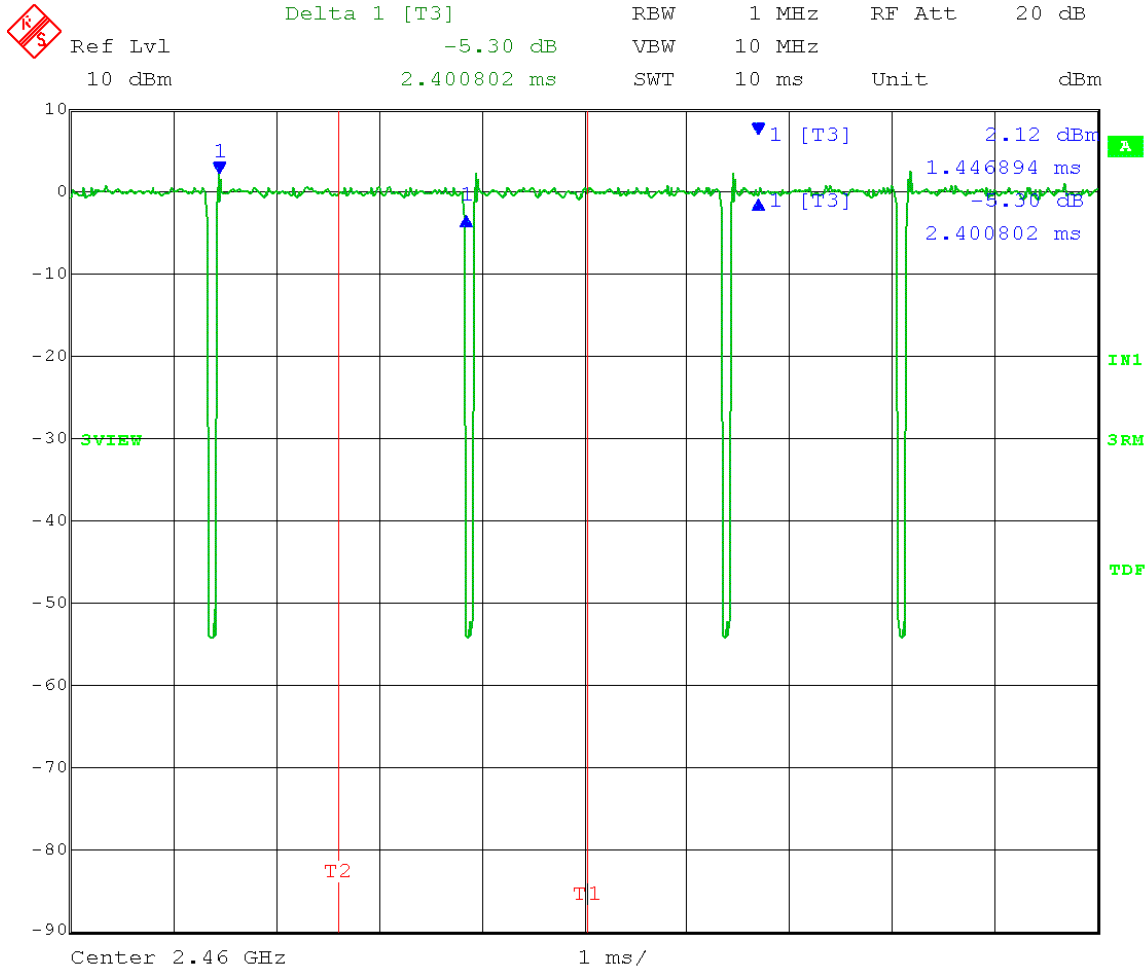
Date: 19.APR.2013 14:06:37

Test Date: 04-19-2013
 Company: Cambium Networks
 EUT: PMP450 AP 2.4 OFDM
 Test: Duty Cycle during testing
 Operator: Craig B / Jim O

20 MHz channel bandwidth; QPSK

Comment: Total on Time = 2.344689 ms x 3 times = 7.034067 ms during 7.515 ms sweep
 X = 7.034067 / 7.515
Duty cycle factor x = 0.936

Duration of one pulse: 2.344689 ms



Date: 19.APR.2013 14:07:54



Company:
Model Tested:
Report Number:

Cambium Networks
C024045A001A
18998

166 South Carter, Genoa City, WI 53128

Appendix B – Measurement Data

B10.0 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

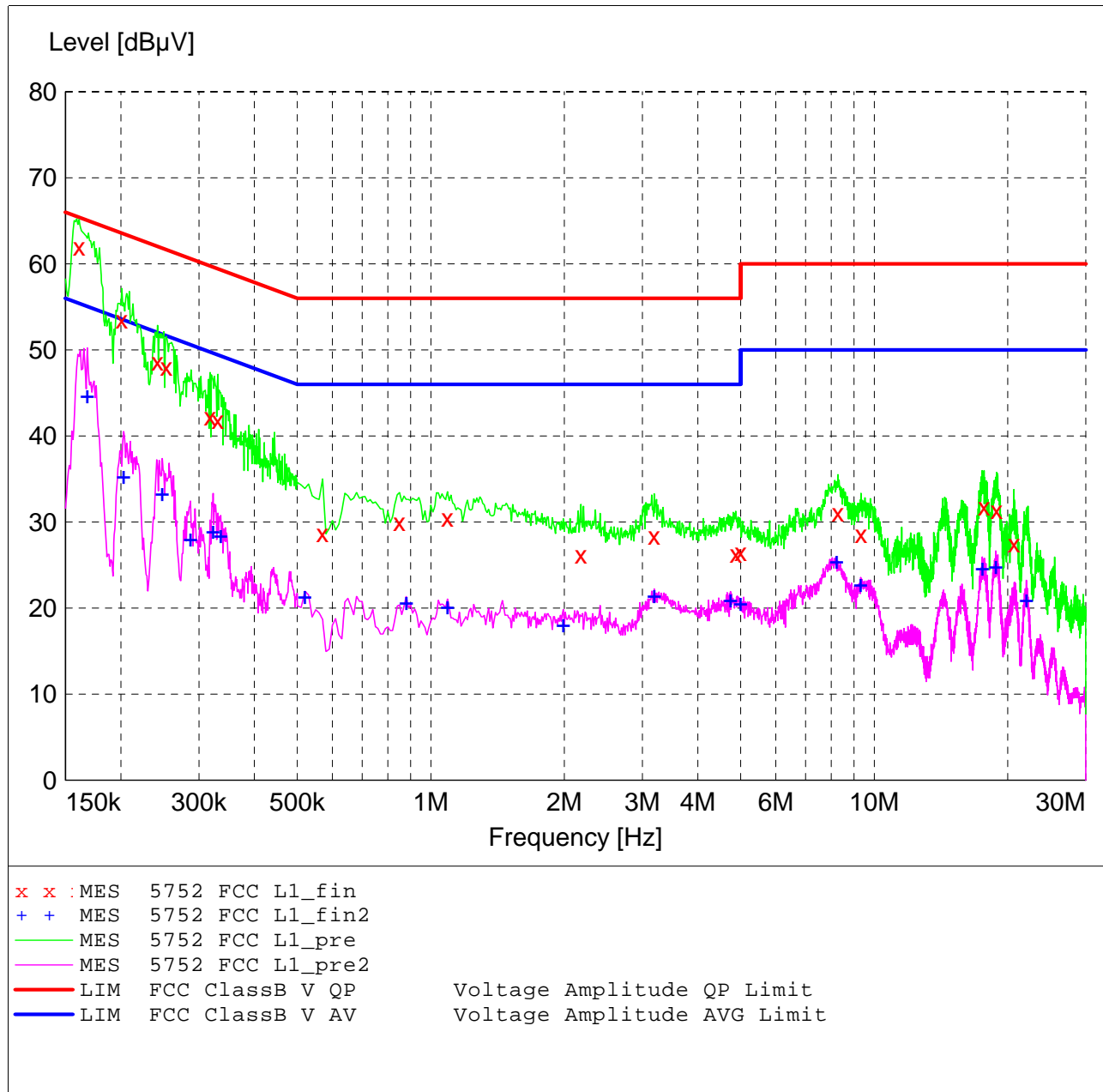
Notes: This was an AC Conducted emissions measurement.
The EUT was powered from a representative AC Adapter with an input of
120 VAC 60 Hz.

Voltage Mains Test

EUT: PMP450AP 2.4GHz OFDM
 Manufacturer: Cambium Networks
 Operating Condition: 72 deg. F, 31% R.H.
 Test Site: DLS O.F. Screen Room
 Operator: Jim O
 Test Specification: 120 V 60 Hz
 Comment: Line 1; continuous transmit mode
 Date: 04-23-2013

SCAN TABLE: "Line Cond SR Final"

Short Description:		Line Conducted Emissions					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak	5.0 s	9 kHz	LISN DLS#128	
CISPR AV							



MEASUREMENT RESULT: "5752 FCC L1_fin"

4/24/2013 12:51PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.161000	62.00	13.4	65	3.4	QP
0.201000	53.50	12.7	64	10.1	QP
0.242000	48.60	12.1	62	13.4	QP
0.253000	48.00	12.1	62	13.7	QP
0.318000	42.20	11.7	60	17.6	QP
0.331000	41.80	11.6	59	17.6	QP
0.570000	28.70	11.0	56	27.3	QP
0.850000	30.00	10.7	56	26.0	QP
1.090000	30.50	10.6	56	25.5	QP
2.180000	26.20	10.6	56	29.8	QP
3.190000	28.40	10.7	56	27.6	QP
4.870000	26.30	10.6	56	29.7	QP
5.000000	26.50	10.6	56	29.5	QP
8.285000	31.10	10.9	60	28.9	QP
9.335000	28.60	10.9	60	31.4	QP
17.690000	31.80	11.2	60	28.2	QP
18.875000	31.40	11.2	60	28.6	QP
20.660000	27.50	11.3	60	32.5	QP

MEASUREMENT RESULT: "5752 FCC L1_fin2"

4/24/2013 12:51PM

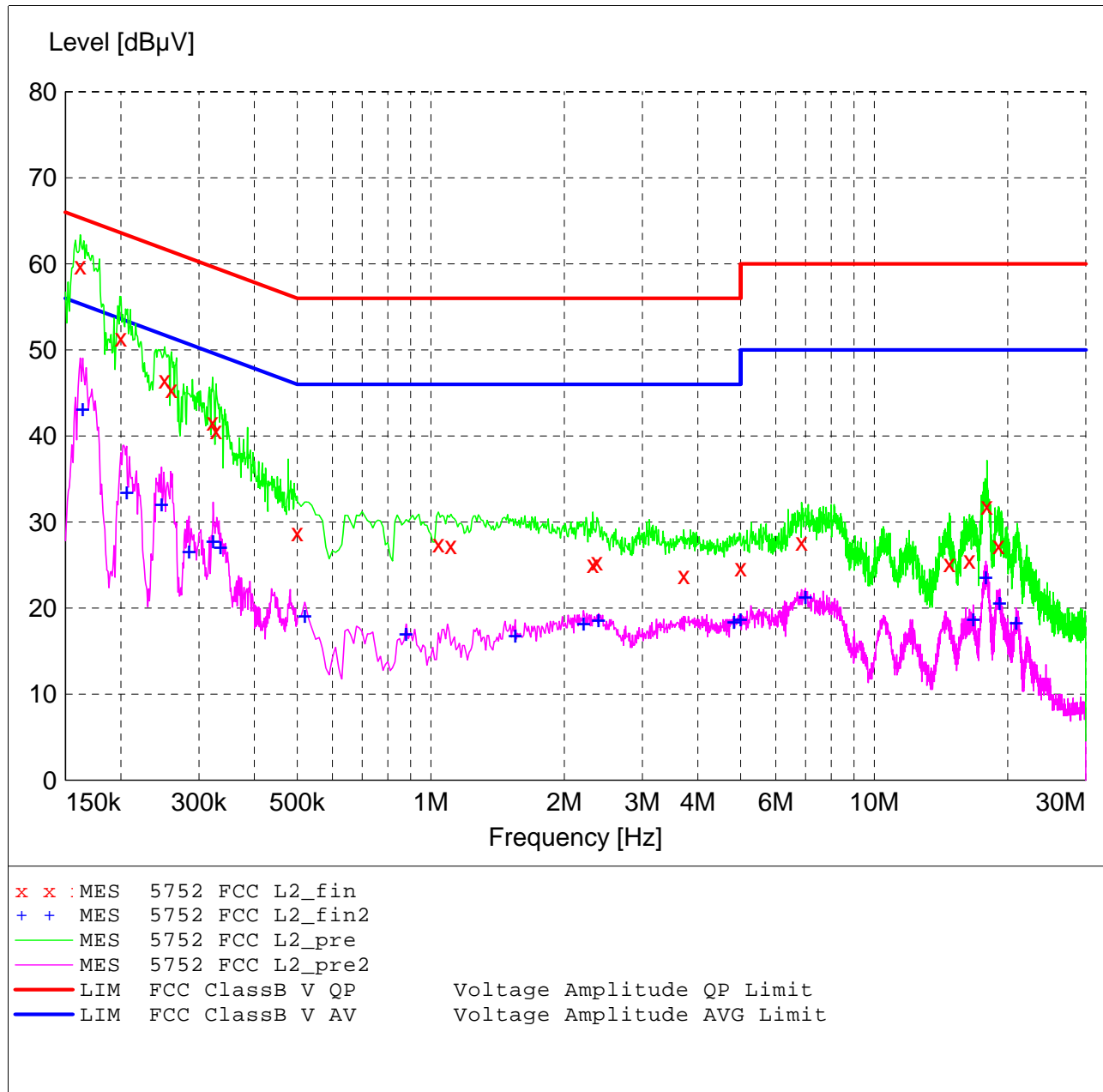
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.168000	44.70	13.2	55	10.4	CAV
0.203000	35.40	12.6	54	18.1	CAV
0.248000	33.40	12.1	52	18.4	CAV
0.287000	28.10	11.9	51	22.5	CAV
0.323000	29.00	11.7	50	20.6	CAV
0.336000	28.50	11.6	49	20.8	CAV
0.520000	21.40	11.1	46	24.6	CAV
0.880000	20.70	10.7	46	25.3	CAV
1.090000	20.20	10.6	46	25.8	CAV
1.990000	18.10	10.6	46	27.9	CAV
3.190000	21.50	10.7	46	24.5	CAV
4.740000	21.00	10.6	46	25.0	CAV
5.000000	20.60	10.6	46	25.4	CAV
8.225000	25.50	10.9	50	24.5	CAV
9.320000	22.80	10.9	50	27.2	CAV
17.540000	24.70	11.2	50	25.3	CAV
18.800000	24.90	11.2	50	25.1	CAV
22.025000	21.00	11.3	50	29.0	CAV

Voltage Mains Test

EUT: PMP450AP 2.4GHz OFDM
 Manufacturer: Cambium Networks
 Operating Condition: 72 deg. F, 31% R.H.
 Test Site: DLS O.F. Screen Room
 Operator: Jim O
 Test Specification: 120 V 60 Hz
 Comment: Line 2; continuous transmit mode
 Date: 04-23-2013

SCAN TABLE: "Line Cond SR Final"

Short Description:		Line Conducted Emissions					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak	5.0 s	9 kHz	LISN DLS#128	
CISPR AV							



MEASUREMENT RESULT: "5752 FCC L2_fin"

4/24/2013 12:59PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.162000	59.80	13.4	65	5.6	QP
0.200000	51.40	12.7	64	12.2	QP
0.251000	46.50	12.1	62	15.2	QP
0.260000	45.40	12.0	61	16.0	QP
0.322000	41.60	11.7	60	18.1	QP
0.328000	40.60	11.7	60	18.9	QP
0.500000	28.80	11.2	56	27.2	QP
1.040000	27.50	10.6	56	28.5	QP
1.110000	27.30	10.6	56	28.7	QP
2.320000	25.10	10.6	56	30.9	QP
2.370000	25.40	10.6	56	30.6	QP
3.720000	23.80	10.6	56	32.2	QP
5.000000	24.70	10.6	56	31.3	QP
6.860000	27.70	10.7	60	32.3	QP
14.765000	25.20	11.0	60	34.8	QP
16.400000	25.60	11.1	60	34.4	QP
17.960000	31.90	11.2	60	28.1	QP
19.070000	27.30	11.3	60	32.7	QP

MEASUREMENT RESULT: "5752 FCC L2_fin2"

4/24/2013 12:59PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector
0.164000	43.20	13.3	55	12.1	CAV
0.206000	33.60	12.6	53	19.8	CAV
0.247000	32.20	12.1	52	19.7	CAV
0.285000	26.70	11.9	51	24.0	CAV
0.323000	27.90	11.7	50	21.7	CAV
0.336000	27.20	11.6	49	22.1	CAV
0.520000	19.20	11.1	46	26.8	CAV
0.880000	17.10	10.7	46	28.9	CAV
1.550000	16.90	10.6	46	29.1	CAV
2.210000	18.30	10.6	46	27.7	CAV
2.390000	18.70	10.6	46	27.3	CAV
4.830000	18.50	10.6	46	27.5	CAV
5.000000	18.80	10.6	46	27.2	CAV
6.995000	21.40	10.7	50	28.6	CAV
16.715000	18.80	11.1	50	31.2	CAV
17.855000	23.70	11.2	50	26.3	CAV
19.190000	20.70	11.3	50	29.3	CAV
20.885000	18.40	11.3	50	31.6	CAV



166 South Carter, Genoa City, WI 53128

Company: Cambium Networks
Model Tested: C024045A001A
Report Number: 18998

END OF REPORT

Revision #	Date	Comments	By
1.0	05-02-2013	Preliminary Release	JS
1.1	05-07-2013	Added Section 8 data & photo	JS
1.2	05-09-2013	Added Section 7 data & photos	JS
1.3	05-13-2013	Minor edits - pgs 5, 187, 188 & section 8	JS