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Report On

FCC and Industry Canada Testing of the
1066 Labs Limited Highfive Roombox
In accordance with FCC CFR 47 Part 15C, Industry Canada RSS-210
and Industry Canada RSS-GEN (WLAN)

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FCC ID: 2ACYQRB1
IC: 12326A-RB1

Document 75928172 Report 01 Issue 3

November 2014



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PREPARED FOR

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St Leonards-on-Sea
East Sussex
TN38 9UH

PREPARED BY

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Senior Administrator, Project Support

APPROVED BY

Simon Bennett
Authorised Signatory

DATED

11 November 2014

This report has been up-issued to Issue 3 to include additional measurements test results.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15C, Industry Canada RSS-210 and Industry Canada RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

T Guy
J Hurley
G Lawler
J Tuckwell



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SECTION 1

REPORT SUMMARY

FCC and Industry Canada Testing of the
1066 Labs Limited Highfive Roombox
In accordance with FCC CFR 47 Part 15C, Industry Canada RSS-210 and Industry Canada
RSS-GEN (WLAN)



1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC and Industry Canada Testing of the 1066 Labs Limited Highfive Roombox to the requirements of FCC CFR 47 Part 15C, Industry Canada RSS-210 and Industry Canada RSS-GEN.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	1066 Labs Limited
Model Number(s)	RBS1
Serial Number(s)	RB1431A078 RBM4310055
Number of Samples Tested	2
Test Specification/Issue/Date	FCC CFR 47 Part 15C (2013) Industry Canada RSS-210 (2010) Industry Canada RSS-GEN (2010)
Incoming Release Date	Application Form 16 October 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	Proforma Invoice 06 October 2014
Start of Test	6 October 2014
Finish of Test	7 November 2014
Name of Engineer(s)	T Guy J Hurley G Lawler J Tuckwell
Related Document(s)	ANSI C63.10: 2009 and KDB 558074 D01 V03 R02



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15C, Industry Canada RSS-210 and Industry Canada RSS-GEN is shown below.

Section	Spec Clause			Test Description	Result	Comments/Base Standard
	Pt 15C	RSS-210	RSS-GEN			
802.11(b)						
2.1	15.207	-	7.2.4	AC Line Conducted Emissions	Pass	
2.2	15.247 (b)(3)	A8.4 (4)	-	Maximum Peak Conducted Output Power	Pass	
2.3	15.247 (b)(4)	A8.4 (4)	4.8	EIRP Peak Power	Pass	
2.4	15.247 (e)	A8.2 (b)	-	Power Spectral Density	Pass	
2.5	15.247 (d)	A8.5	4.9	Spurious and Band Edge Emissions	Pass	
2.6	15.247 (a)(2)	A8.2 (a)	-	6dB Bandwidth	Pass	
802.11(g)						
2.2	15.247 (b)(3)	A8.4 (4)	-	Maximum Peak Conducted Output Power	Pass	
2.3	15.247 (b)(4)	A8.4 (4)	4.8	EIRP Peak Power	Pass	
2.4	15.247 (e)	A8.2 (b)	-	Power Spectral Density	Pass	
2.5	15.247 (d)	A8.5	4.9	Spurious and Band Edge Emissions	Pass	
2.6	15.247 (a)(2)	A8.2 (a)	-	6dB Bandwidth	Pass	



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Section	Spec Clause			Test Description	Result	Comments/Base Standard
	Pt 15C	RSS-210	RSS-GEN			
802.11(n) 20 MHz BW						
2.2	15.247 (b)(3)	A8.4 (4)	-	Maximum Peak Conducted Output Power	Pass	
2.3	15.247 (b)(4)	A8.4 (4)	4.8	EIRP Peak Power	Pass	
2.4	15.247 (e)	A8.2 (b)	-	Power Spectral Density	Pass	
2.5	15.247 (d)	A8.5	4.9	Spurious and Band Edge Emissions	Pass	
2.6	15.247 (a)(2)	A8.2 (a)	-	6dB Bandwidth	Pass	



1.3 APPLICATION FORM

APPLICANT'S DETAILS			
COMPANY NAME :	1066 Labs Ltd		
ADDRESS :	Innovation Centre, Highfield Drive, St Leonards-on-Sea..... East Sussex. TN38 9UH.....		
NAME FOR CONTACT PURPOSES :	Dave Williams.....		
TELEPHONE NO: 01424 858182.....	FAX NO:	E-MAIL: dave.williams@1066labs.com	

EQUIPMENT INFORMATION			
Model name/number	Highfive Roombox....	Identification/Part number	RB1.....
Hardware Version		Software Version	
Manufacturer	1066 Labs Ltd.	Country of Origin	
FCC ID	2ACYQRB1.....	Industry Canada ID	12326A-RB1.....
Technical description (a brief description of the intended use and operation)			
Video conferencing system, affixed to the top edge of a TV, or computer monitor, using its own integral clamping method.			
<u>Supply Voltage:</u>			
☐	AC mains	State AC voltage	and AC frequency
☒	DC (external)	State DC voltage 15.....	and DC current 1.0 A
☐	DC (internal)	State DC voltage	and Battery type
<u>Frequency characteristics:</u>			
Transmitter Frequency range	2.412 MHz to 2.462 MHz	Channel spacing 5 MHz	(if channelized)
Receiver Frequency range	2.412 MHz to 2.462 MHz	Channel spacing 5 MHz	(if channelized)
(if different)			
<u>Designated test frequencies:</u>			
Bottom: 2.412 MHz	Middle: 2.437 MHz	Top: 2.462 MHz	
Intermediate Frequencies :			
Highest Internally Generated Frequency : 25 MHz			
<u>Power characteristics:</u>			
Maximum transmitter power	16 dBm (11b)	Minimum transmitter power	 W
☐	Continuous transmission	(if variable)	
☒	Intermittent transmission	State duty cycle Variable	
If intermittent, can transmitter be set to continuous transmit test mode? YES			
<u>Antenna characteristics:</u>			
☐	Antenna connector	State impedance	ohm
☐	Temporary antenna connector	State impedance	ohm
☒	Integral antenna Type PCB	State gain 2.67.....	dBi
☐	External Antenna Type	State gain	dBi
<u>Modulation characteristics:</u>			
☒	Amplitude	☐ Other	
☐	Frequency	Details: DSSS/CCK (11b) & OFDM (11gn).	
☒	Phase	(QSPK 11b & PSK 11gn)	
Can the transmitter operate un-modulated? No			
ITU Class of emission:			
<u>Battery/Power Supply</u>			
Model name/number	AC/DC Adapter.	Identification/Part number	YLS0301A-T150160
Manufacturer	Dongguan Yinli Electronics	Country of Origin	China.....
<u>Ancillaries (if applicable)</u>			
Model name/number		Identification/Part number	
Manufacturer		Country of Origin	
<u>Extreme conditions:</u>			
Maximum temperature	 °C	Minimum temperature	 °C
Maximum supply voltage	 V	Minimum supply voltage	 V



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I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature : 

Name : Dave Williams

Position held : Testing and Laboratory Manager

Date : 16th October 2014



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1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a 1066 Labs Limited Highfive Roombox. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 110 V AC, 60 Hz supply.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

Industry Canada Company Address Code
IC2932B-1 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.



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SECTION 2

TEST DETAILS

FCC and Industry Canada Testing of the
1066 Labs Limited Highfive Roombox
In accordance with FCC CFR 47 Part 15C, Industry Canada RSS-210 and Industry Canada
RSS-GEN (WLAN)



2.1 AC LINE CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.207
Industry Canada RSS-GEN, Clause 7.2.4

2.1.2 Equipment Under Test and Modification State

RBS1 S/N: RB1431A078 - Modification State 0

2.1.3 Date of Test

18 October 2014

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

A test environment and testing arrangement meeting the specification of ANSI C63.4 was used during all testing. The Equipment Under Test (EUT) was set upon a non-conducting platform at an elevation of 80 cm above a horizontal reference ground plane. A vertical reference ground plane was situated 40 cm from the EUT and bonded to the horizontal reference ground plane.

The EUT was powered by a Line Impedance Stabilization Network (LISN), whereby emissions measurements of the current-carrying conductors were made through this LISN. The LISN was bonded to the horizontal reference ground plane with a separation distance greater than 80 cm from the EUT. A mains supply cable of 1 m length was used to supply mains power to the EUT from the LISN.

A preliminary emissions scan was conducted for each current-carrying conductor of the EUT, using a peak detector over a frequency range of 150 kHz to 30 MHz. At least six of the greatest peak emissions, frequency positions were selected from each preliminary emissions scan for further evaluation as final measuring points.

Final measurement points were measured using quasi-peak and average detectors. All final measurements were assessed against the emission limits in Clause 15.207 of FCC CFR 47 Part 15.

Testing was carried out in 802.11b - 11Mbps which was established as being the worst case, (highest output power), prior to commencement of testing.

2.1.6 Environmental Conditions

Ambient Temperature	20.3°C
Relative Humidity	59.0%



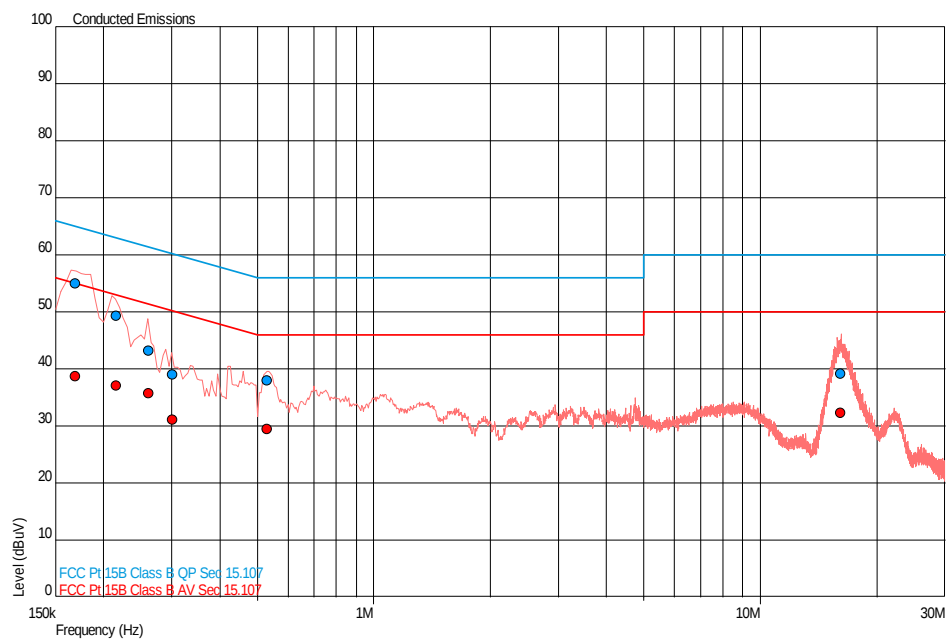
Product Service

2.1.7 Test Results

802.11(b)

Data Rate: 11 Mbps

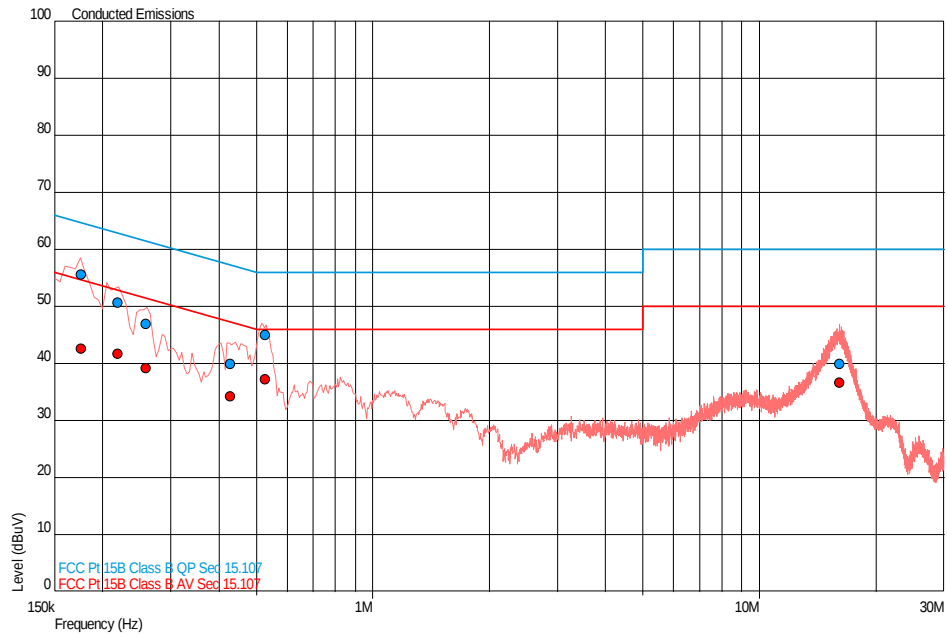
Live Line



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.169	55.0	65.0	-10.0	38.7	55.0	-16.3
0.216	49.3	63.0	-13.7	37.2	53.0	-15.8
0.262	43.2	61.4	-18.2	35.8	51.4	-15.5
0.301	39.1	60.2	-21.2	31.2	50.2	-19.0
0.530	38.0	56.0	-18.0	29.5	46.0	-16.5
16.144	39.2	60.0	-20.8	32.3	50.0	-17.7



Neutral Line



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.176	55.6	64.7	-9.0	42.6	54.7	-12.1
0.219	50.6	62.9	-12.2	41.7	52.9	-11.2
0.259	46.9	61.5	-14.6	39.2	51.5	-12.3
0.428	40.0	57.3	-17.3	34.3	47.3	-13.0
0.527	45.0	56.0	-11.0	37.3	46.0	-8.7
16.077	39.9	60.0	-20.1	36.6	50.0	-13.4



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2.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

2.2.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (b)(3)
Industry Canada RSS-210, Clause A8.4 (4)

2.2.2 Equipment Under Test and Modification State

RBS1 S/N: RBM4310055 - Modification State 0

2.2.3 Date of Test

7 October 2014 & 8 October 2014

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

The test was conducted in accordance with KDB 558074, Clause 9.1.2.

The EUT was connected to a broadband peak RF power meter via a cable and attenuator. The EUT was transmitting at maximum power, for bottom, middle and top channels on all supported data rates. The path loss between the EUT and sensor was measured and entered as a reference level offset. The peak power was recorded for measurements on the bottom, middle and top channels on all supported data rates.

2.2.6 Environmental Conditions

Ambient Temperature	20.1 - 22.4°C
Relative Humidity	55.8 - 55.9%



Product Service

2.2.7 Test Results

802.11(b)

110 V AC, 60 Hz supply

Modulation Data Rate (Mbps)	Maximum Peak Conducted Output Power					
	dBm			mW		
	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
1	9.96	10.20	7.78	9.91	10.47	6.00
2	9.96	10.29	7.76	9.91	10.69	5.97
5.5	9.77	10.41	8.09	9.48	10.99	6.44
11	10.08	10.37	7.81	10.19	10.89	6.04

Limit Clause

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

FCC

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

Industry Canada

For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4 (5), the e.i.r.p. shall not exceed 4 W.



Product Service

802.11(g)

110 V AC, 60 Hz supply

Modulation Data Rate (Mbps)	Maximum Peak Conducted Output Power					
	dBm			mW		
	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
6	12.68	10.63	10.24	18.54	11.56	10.57
9	12.75	10.45	10.04	18.84	11.09	10.09
12	12.77	10.72	10.23	18.92	11.80	10.54
18	12.78	10.92	10.45	18.97	12.36	11.09
24	14.73	11.24	10.79	29.72	13.30	11.99
36	14.71	11.09	10.66	29.58	12.85	11.64
48	14.67	12.55	12.01	29.31	17.99	15.89
54	14.75	12.48	12.04	29.85	17.70	16.00

Limit Clause

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

FCC

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

Industry Canada

For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4 (5), the e.i.r.p. shall not exceed 4 W.



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802.11(n) 20 MHz BW

110 V AC, 60 Hz supply

Modulation Data Rate (Mbps)	Maximum Peak Conducted Output Power					
	dBm			mW		
	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
6.5	14.59	10.80	10.20	28.77	12.02	10.47
13	14.61	10.61	10.33	28.91	11.51	10.79
19.5	14.57	10.82	10.42	28.64	12.08	11.02
26	14.57	11.25	10.44	28.64	13.34	11.07
39	14.50	12.23	10.47	28.18	16.71	11.14
52	14.92	12.61	11.83	31.05	18.24	15.24
58.5	14.73	12.32	11.78	29.72	17.06	15.07
65	14.74	12.32	11.86	29.79	17.06	15.35

Limit Clause

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

FCC

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

Industry Canada

For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4 (5), the e.i.r.p. shall not exceed 4 W.



Product Service

2.3 EIRP PEAK POWER

2.3.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (b)(4)
Industry Canada RSS-210, Clause A8.4 (4)
Industry Canada RSS-GEN, Clause 4.8

2.3.2 Equipment Under Test and Modification State

RBS1 S/N: RB1431A078 - Modification State 0

2.3.3 Date of Test

6 October 2014

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Procedure

A test environment and testing arrangement meeting the specification of ANSI C63.4 was used during all testing. The Equipment Under Test (EUT) was set upon a non-conducting platform during testing. The EUT elevation was 80 cm above the horizontal reference ground plane. The Analyser settings were adjusted to display the resultant trace on screen and a resolution bandwidth and video bandwidth of 1 MHz were used to perform the measurement. The level on the spectrum analyser was maximised by rotating the EUT through 360° and a height search of the measuring antenna. A substitution was then performed using a suitable calibrated antenna and signal generator.

This level was maximised by adjusting the height of the measuring antenna once more. The level from the signal generator was then adjusted to achieve the same raw result as with the EUT. This level was then corrected to account for cable loss and antenna factor. A peak power analyser was also used to obtain a correction factor for the wideband signal.

A calculation was then performed to obtain the final figure.

2.3.6 Environmental Conditions

Ambient Temperature	19.0°C
Relative Humidity	46.0%



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2.3.7 Test Results

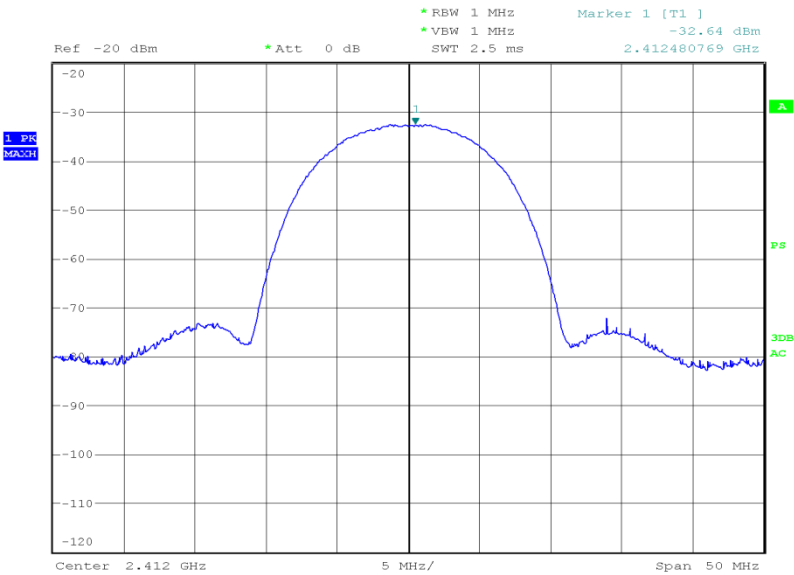
802.11(b)

Data Rate: 11 Mbps

110 V AC, 60 Hz supply

2412 MHz

EIRP (dBm)	EIRP (mW)
17.49	56.10



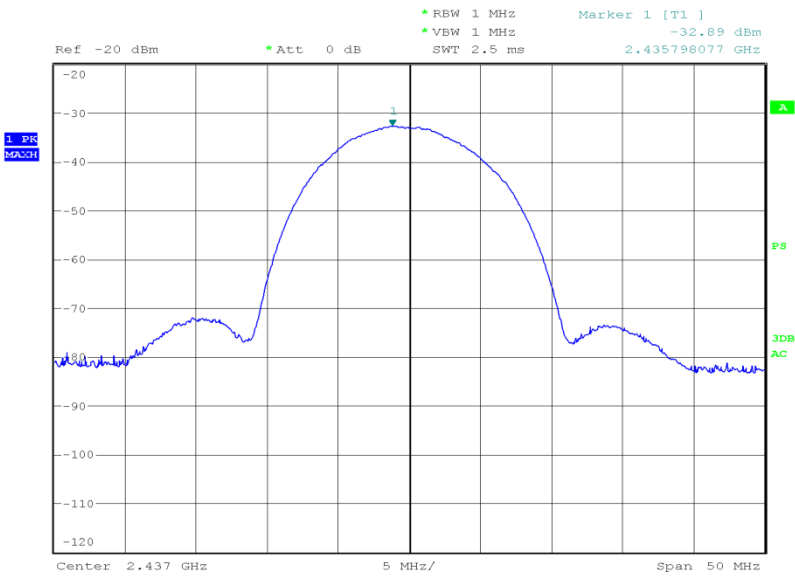
Date: 6.OCT.2014 17:57:32



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2437 MHz

EIRP (dBm)	EIRP (mW)
16.76	47.42



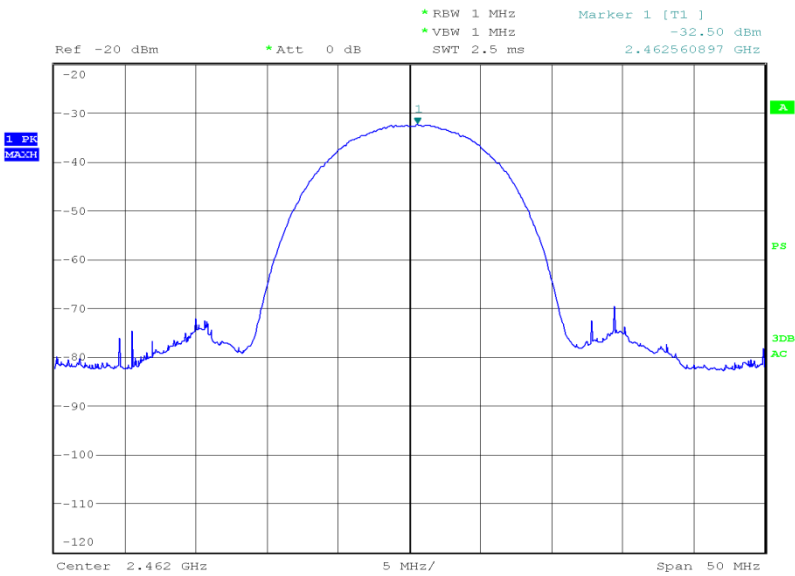
Date: 6.OCT.2014 18:48:15



Product Service

2462 MHz

EIRP (dBm)	EIRP (mW)
15.81	38.11



Date: 6.OCT.2014 18:56:21

Limit

Limit EIRP (dBm)	Limit EIRP(mW)
36.0	4000



Product Service

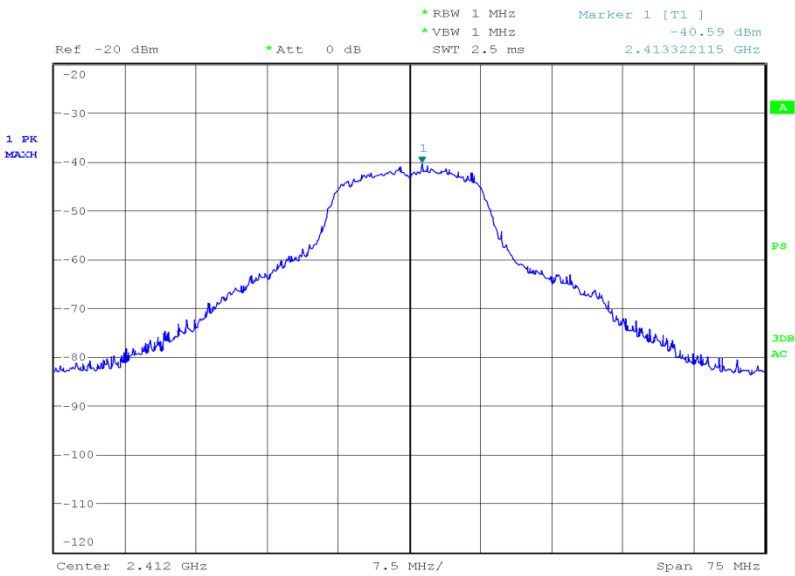
802.11(g)

Data Rate: 12 Mbps

110 V AC, 60 Hz supply

2412 MHz

EIRP (dBm)	EIRP (mW)
11.14	13.00



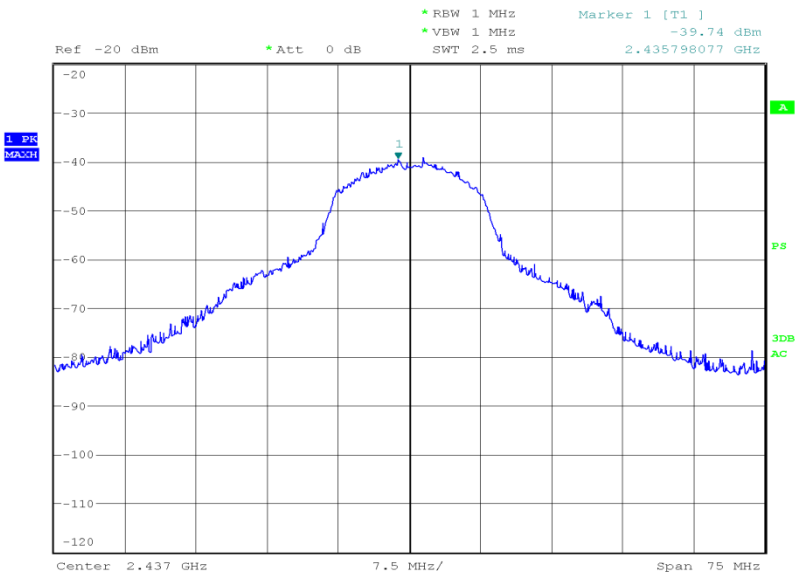
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Product Service

2437 MHz

EIRP (dBm)	EIRP (mW)
11.95	15.67



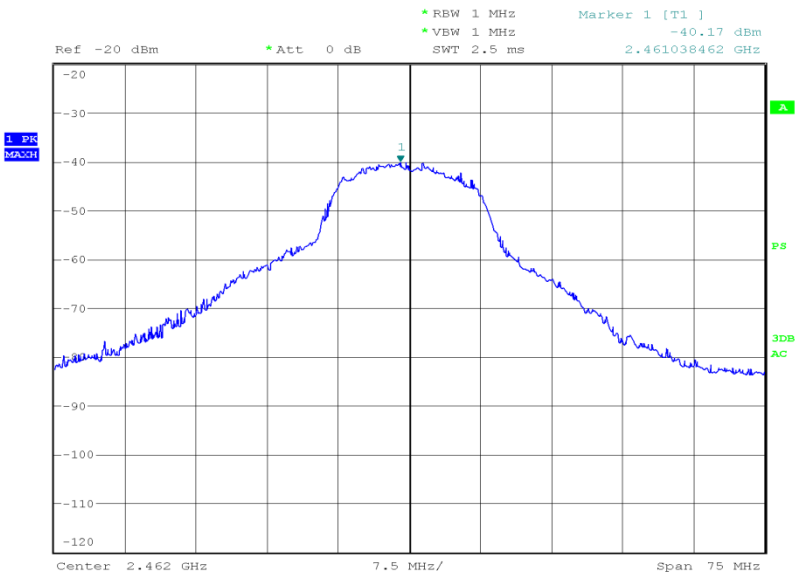
Date: 6.OCT.2014 20:56:27



Product Service

2462 MHz

EIRP (dBm)	EIRP (mW)
9.74	9.42



Date: 6.OCT.2014 21:03:04

Limit

Limit EIRP (dBm)	Limit EIRP(mW)
36.0	4000



Product Service

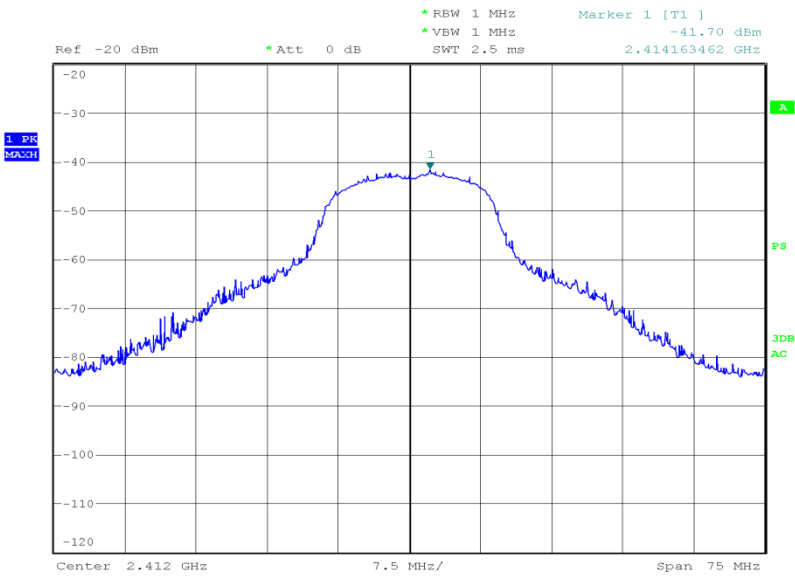
802.11(n) 20 MHz BW

Data Rate: 6.5 Mbps

110 V AC, 60 Hz supply

2412 MHz

EIRP (dBm)	EIRP (mW)
11.85	15.31



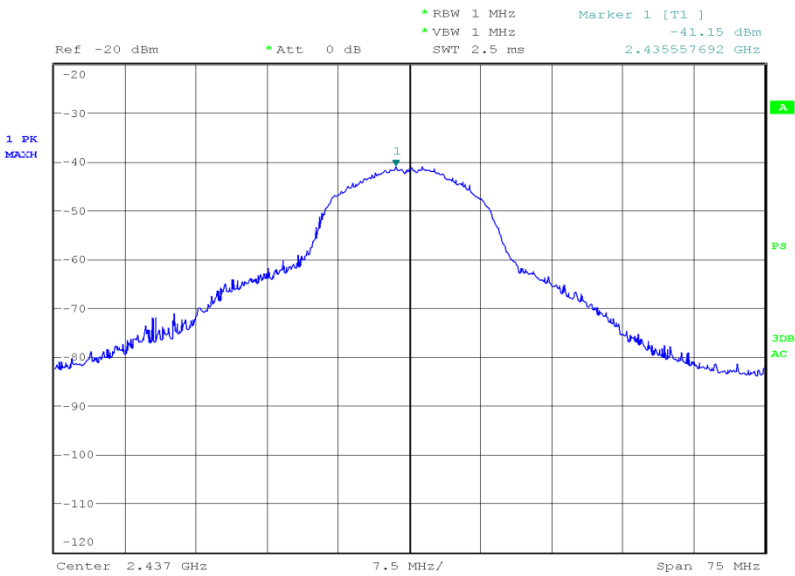
Date: 6.OCT.2014 21:43:10



Product Service

2437 MHz

EIRP (dBm)	EIRP (mW)
11.92	15.56



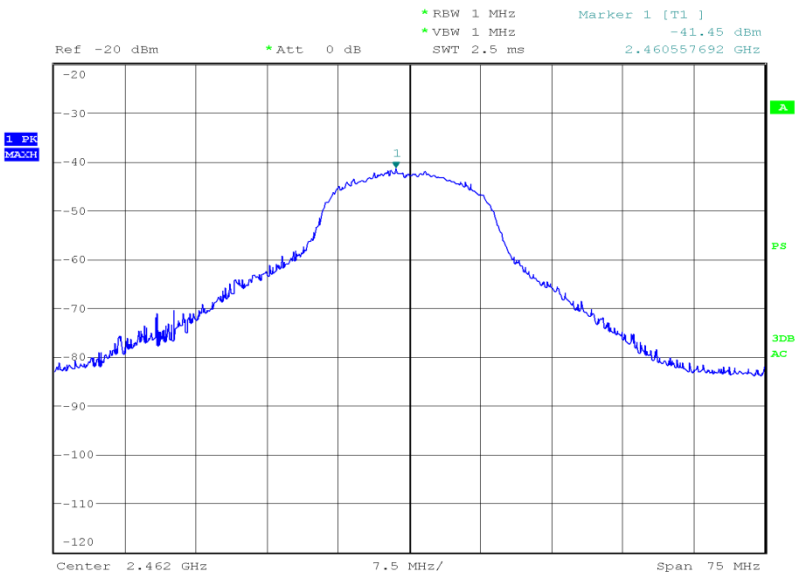
Date: 6.OCT.2014 21:48:26



Product Service

2462 MHz

EIRP (dBm)	EIRP (mW)
10.28	10.67



Date: 6.OCT.2014 22:09:39

Limit

Limit EIRP (dBm)	Limit EIRP(mW)
36.0	4000



Product Service

2.4 POWER SPECTRAL DENSITY

2.4.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (e)
Industry Canada RSS-210, Clause A8.2 (b)

2.4.2 Equipment Under Test and Modification State

RBS1 S/N: RBM4310055 - Modification State 0

2.4.3 Date of Test

7 October 2014 & 8 October 2014

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Procedure

The test was conducted in accordance with ANSI C63.10, Clause 6.11.2.3.

The EUT was connected to a spectrum analyser via a cable and attenuator. The EUT was transmitting at maximum power, for bottom, middle and top channels on all supported data rates. The path loss was measured between the EUT and the spectrum analyser and entered as a reference level offset. The trace was set to max hold and using a peak detector the maximum response was established with the spectrum analyser RBW at 3 kHz and VBW at 10 kHz, the power spectral density in a 3 kHz bandwidth was measured.

2.4.6 Environmental Conditions

Ambient Temperature	20.1°C
Relative Humidity	55.8%



Product Service

2.4.7 Test Results802.11(b)

110 V AC, 60 Hz supply

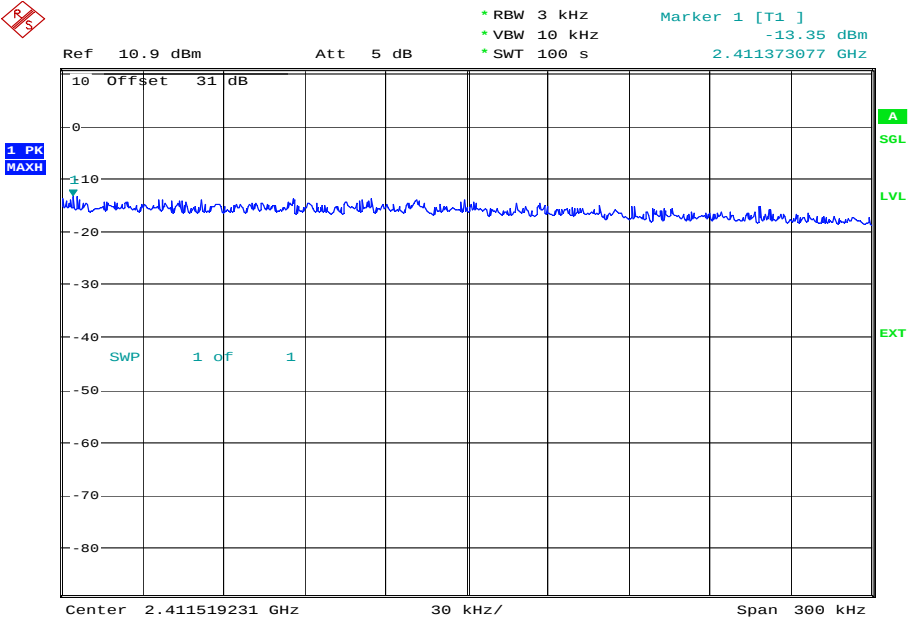
Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	1	-13.35
	2	-13.54
	5.5	-13.44
	11	-14.04
2437 MHz	1	-11.94
	2	-12.76
	5.5	-14.77
	11	-14.37
2462 MHz	1	-18.20
	2	-17.77
	5.5	-18.90
	11	-19.65



Product Service

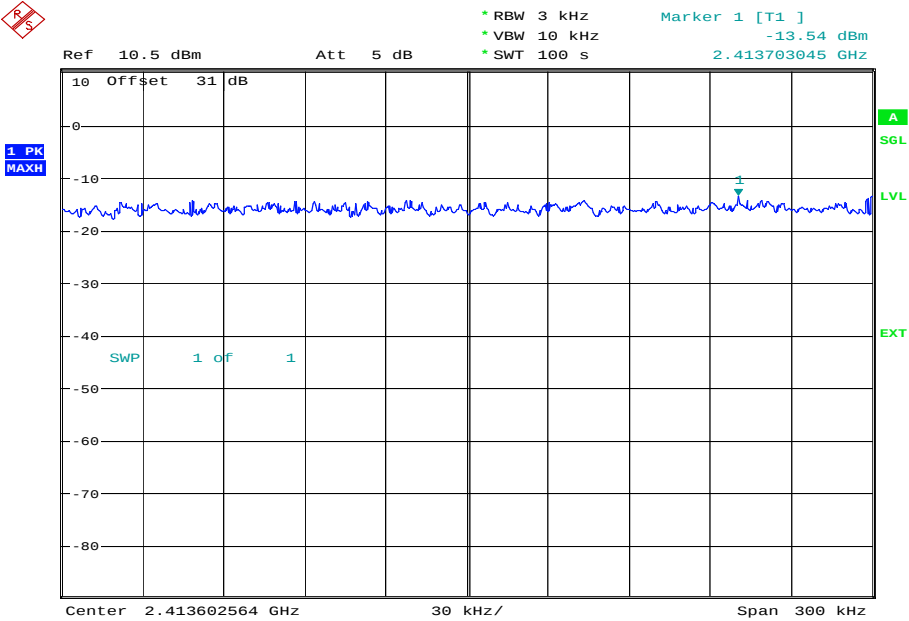
2412 MHz

1 Mbps



Date: 7.OCT.2014 13:41:16

2 Mbps

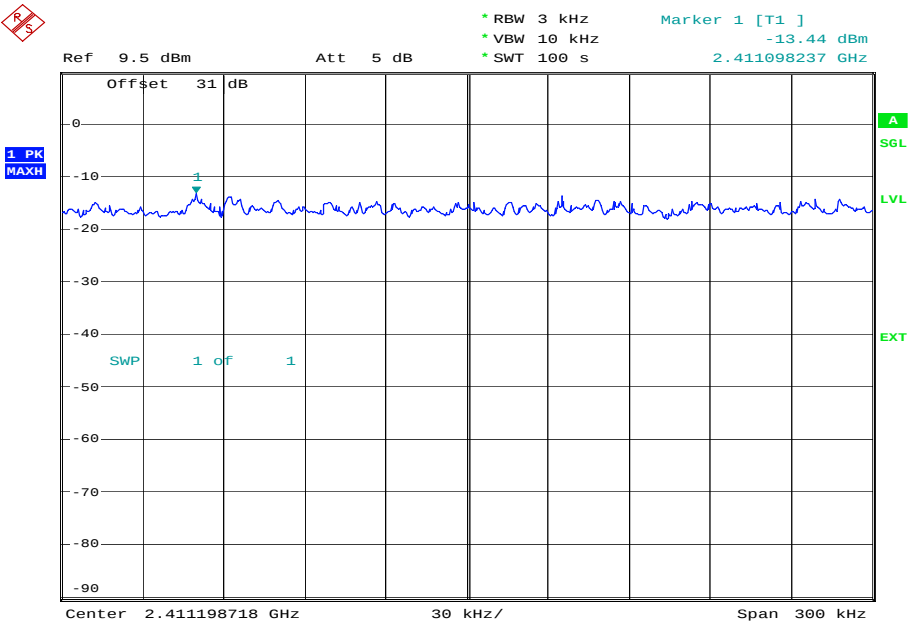


Date: 7.OCT.2014 13:46:31



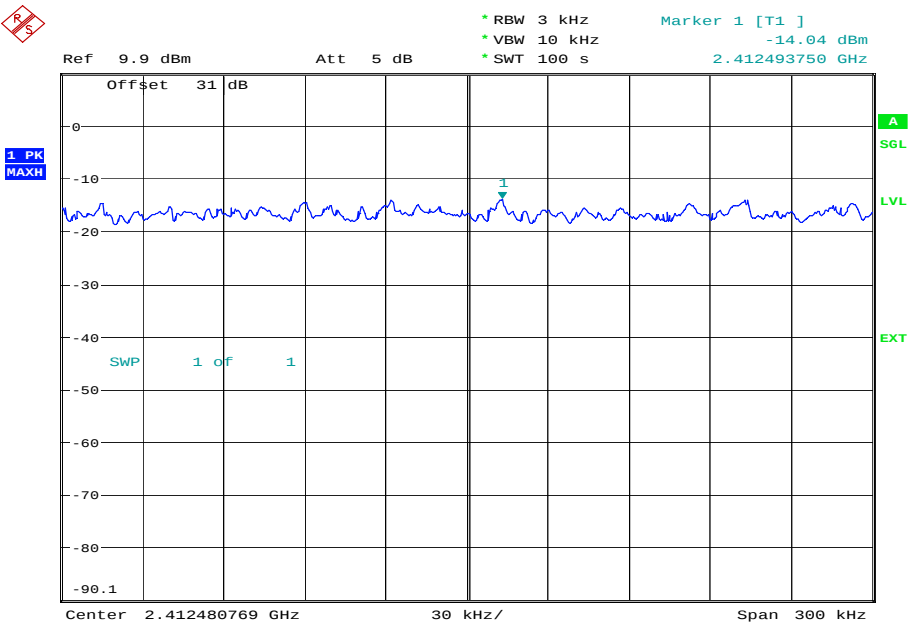
Product Service

5.5 Mbps



Date: 7.OCT.2014 13:51:27

11 Mbps



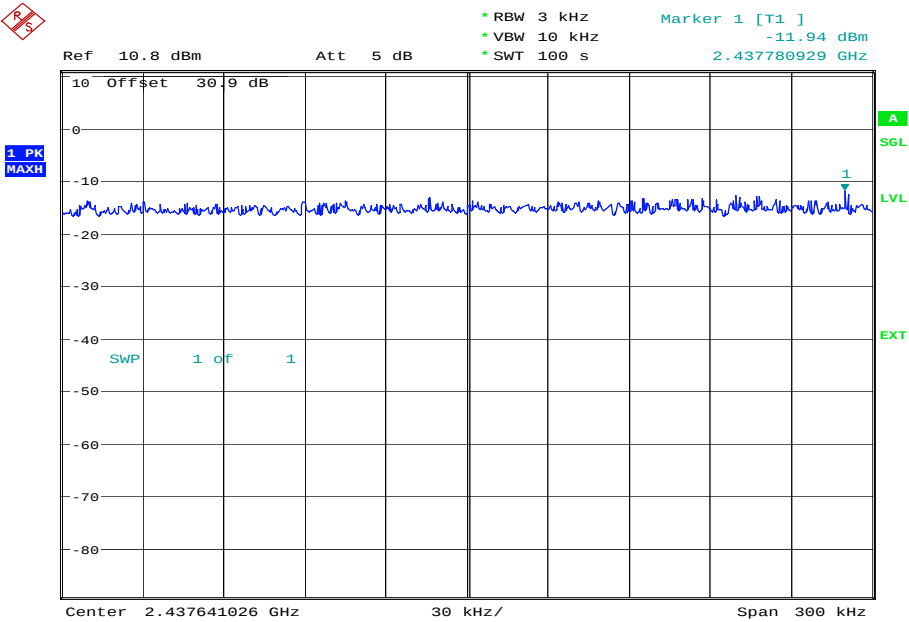
Date: 7.OCT.2014 13:34:44



Product Service

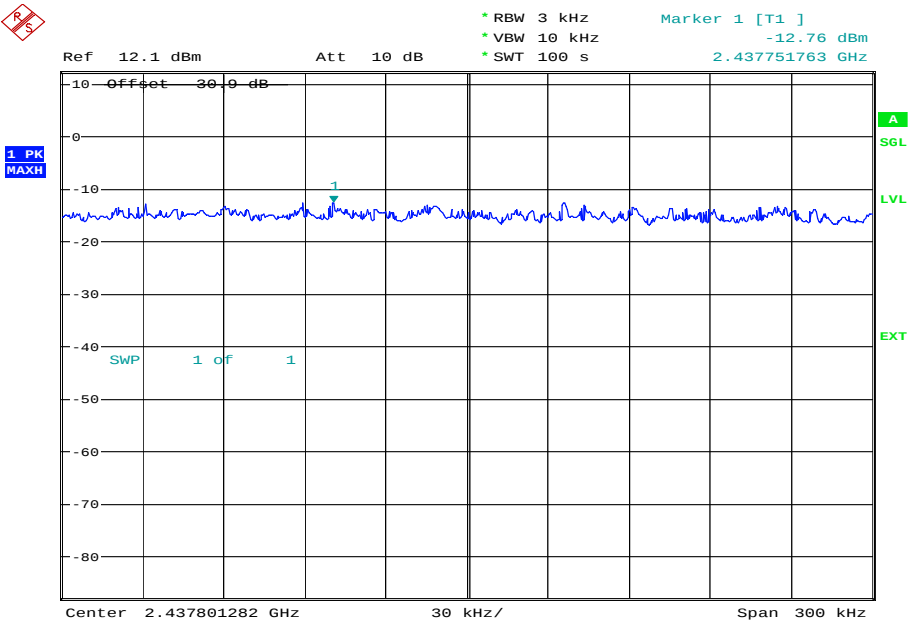
2437 MHz

1 Mbps



Date: 7.OCT.2014 15:36:29

2 Mbps

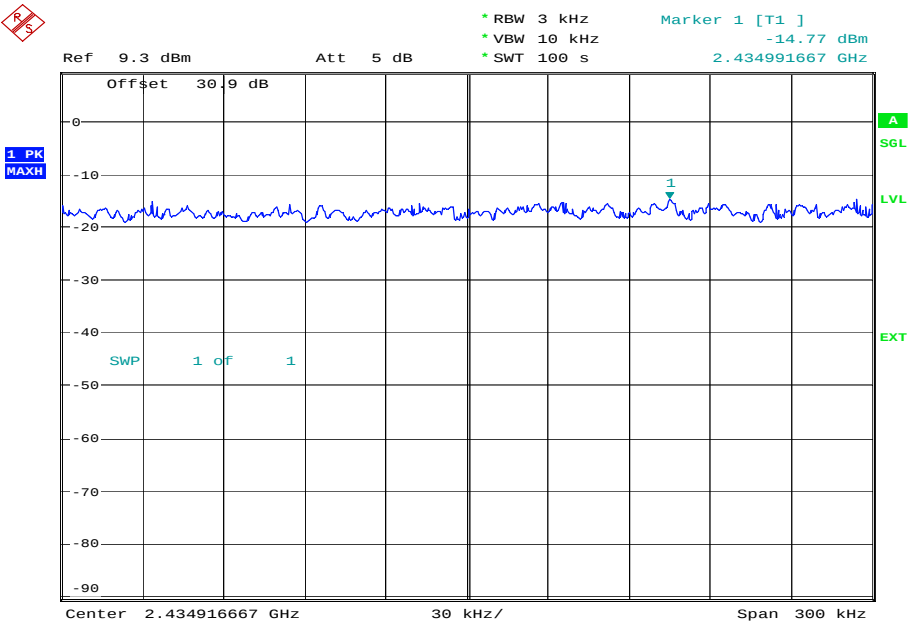


Date: 7.OCT.2014 15:41:22



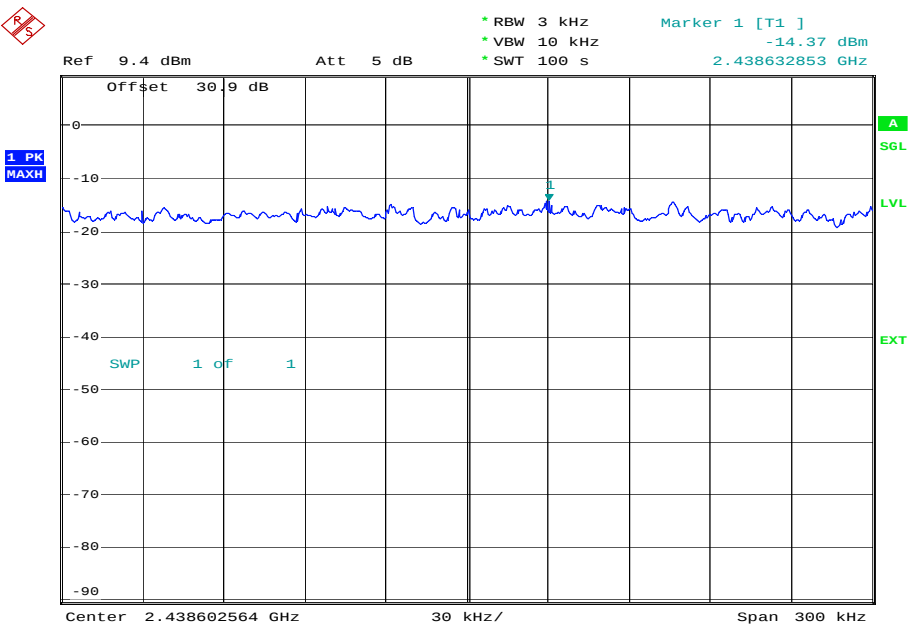
Product Service

5.5 Mbps



Date: 7.OCT.2014 15:46:57

11 Mbps



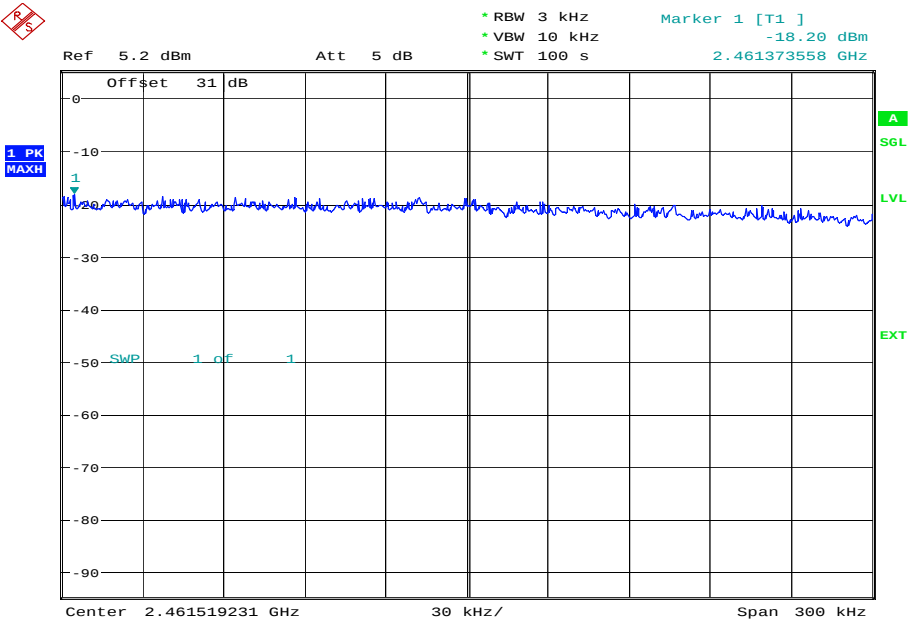
Date: 7.OCT.2014 15:54:47



Product Service

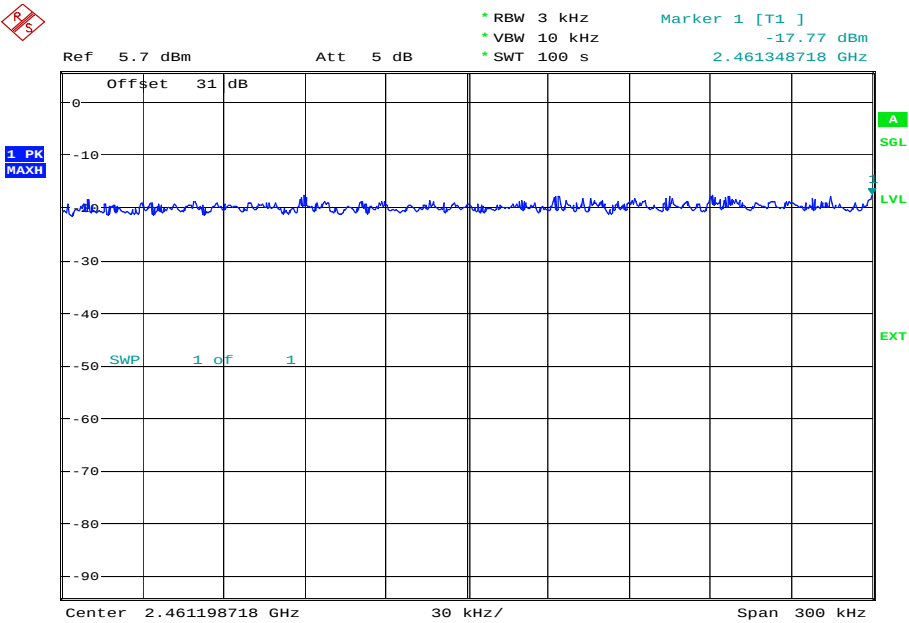
2462 MHz

1 Mbps



Date: 8.OCT.2014 13:52:09

2 Mbps

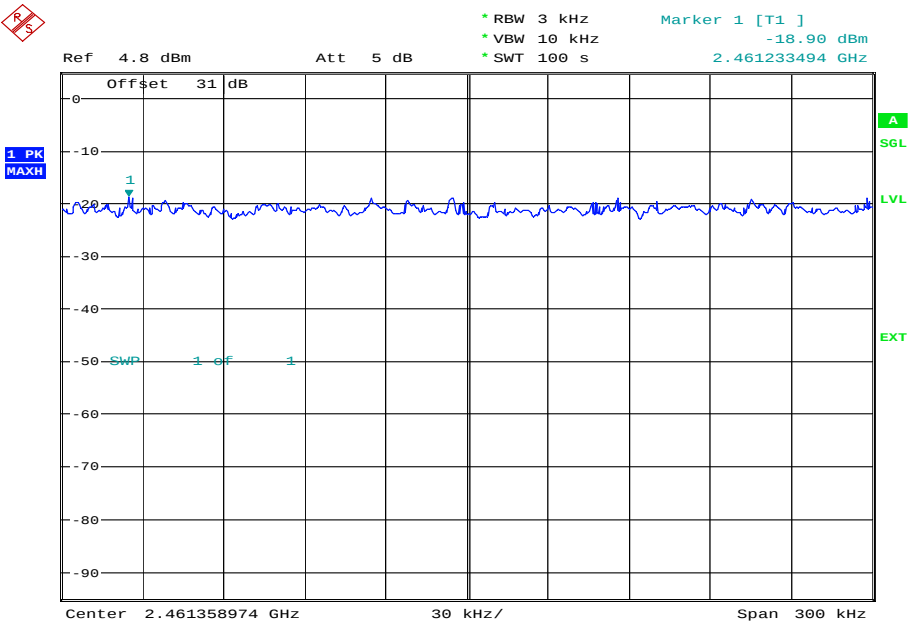


Date: 8.OCT.2014 13:56:26



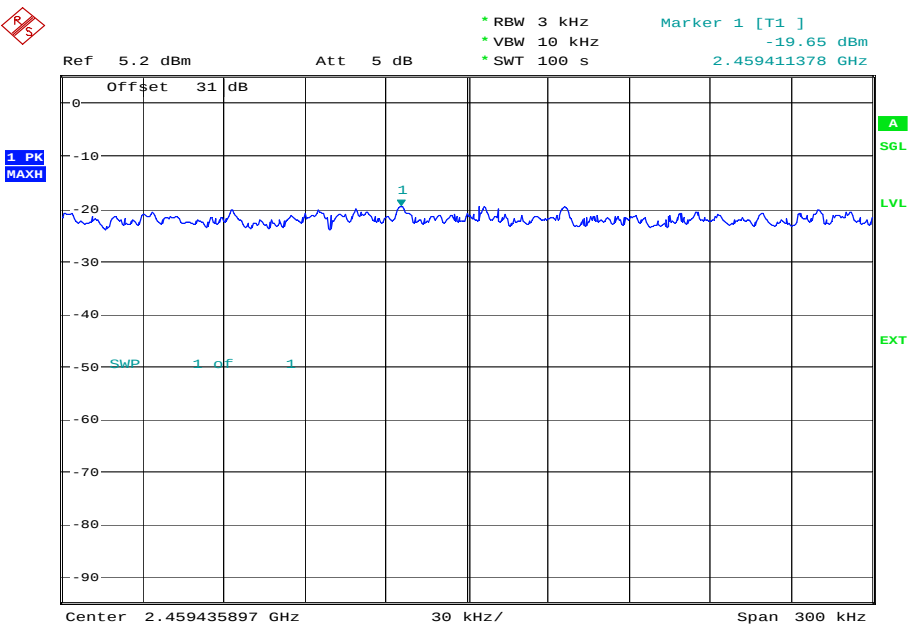
Product Service

5.5 Mbps



Date: 8.OCT.2014 14:00:53

11 Mbps



Date: 8.OCT.2014 14:05:43

Limit Clause

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

802.11(g)

110 V AC, 60 Hz supply

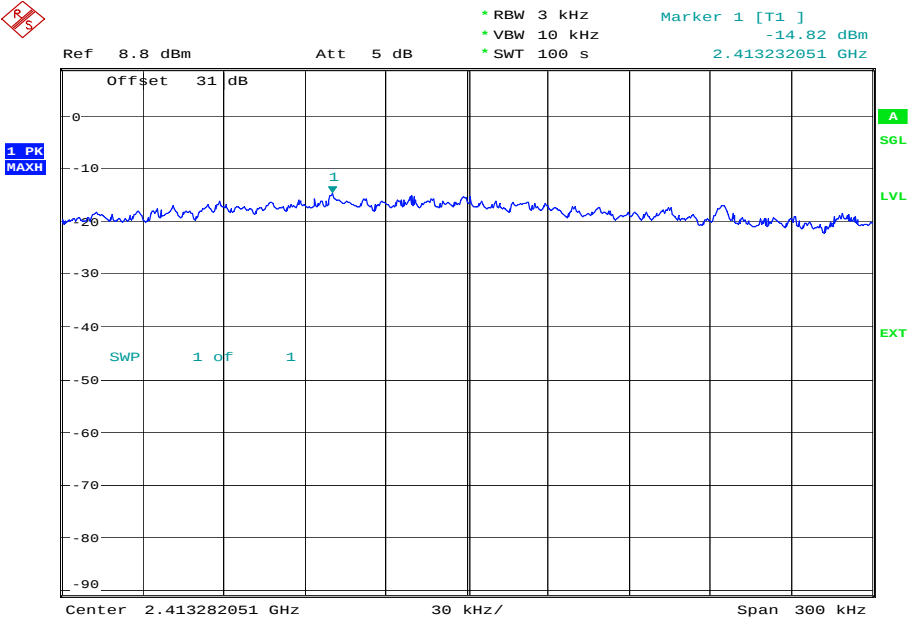
Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6	-14.82
	9	-14.82
	12	-15.00
	18	-14.53
	24	-15.53
	36	-15.08
	48	-16.65
	54	-16.39
2437 MHz	6	-20.89
	9	-19.43
	12	-19.73
	18	-19.09
	24	-19.95
	36	-20.33
	48	-20.61
	54	-20.81
2462 MHz	6	-20.67
	9	-19.12
	12	-19.97
	18	-20.09
	24	-20.26
	36	-20.51
	48	-21.44
	54	-21.13



Product Service

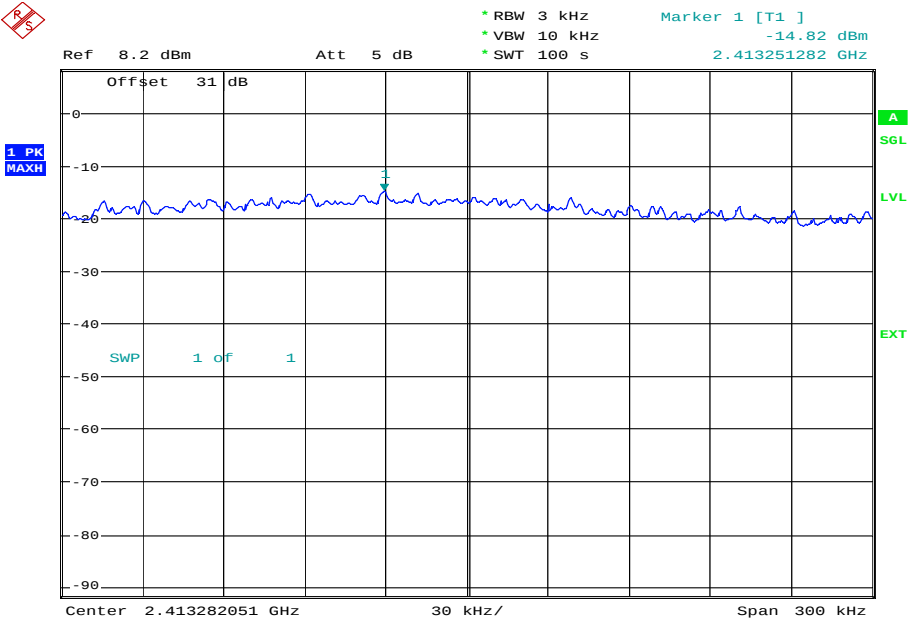
2412 MHz

6 Mbps



Date: 7.OCT.2014 13:57:29

9 Mbps

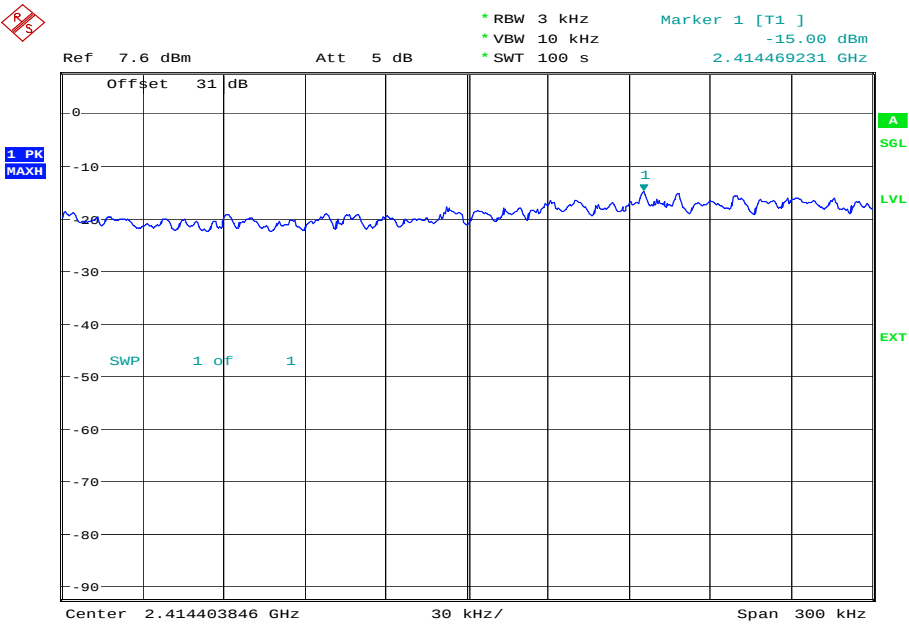


Date: 7.OCT.2014 14:02:58



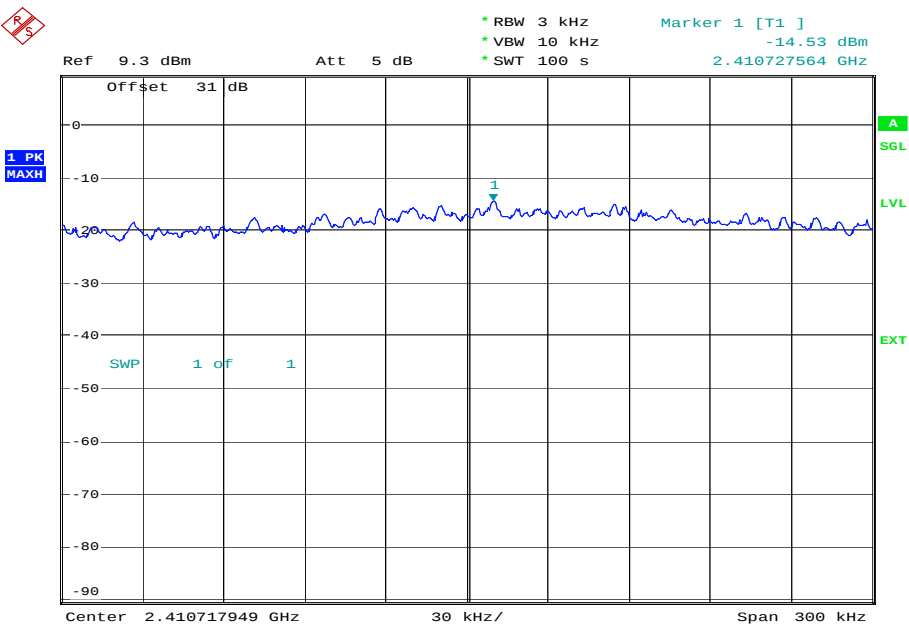
Product Service

12 Mbps



Date: 7.OCT.2014 14:07:49

18 Mbps

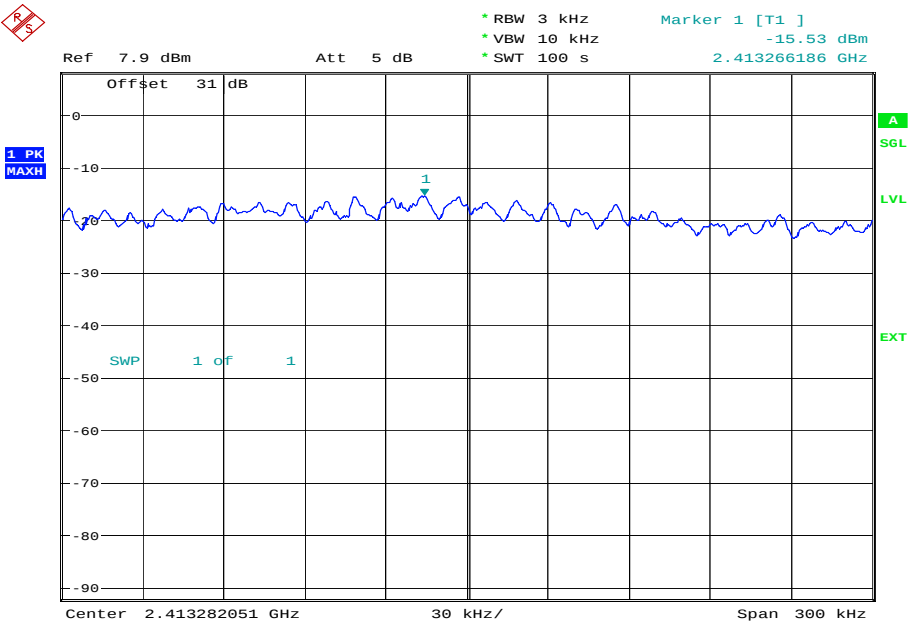


Date: 7.OCT.2014 14:12:58



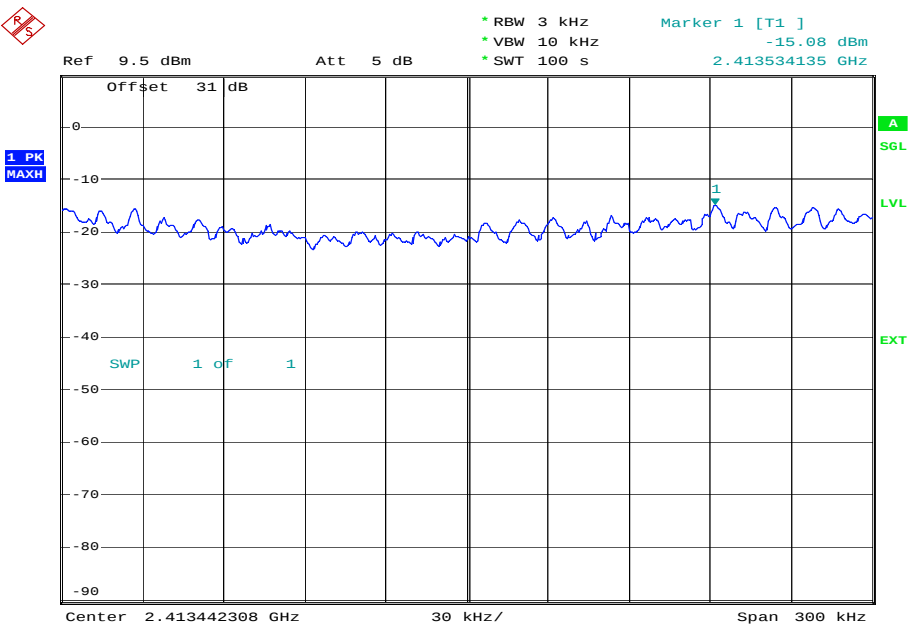
Product Service

24 Mbps



Date: 7.OCT.2014 14:17:46

36 Mbps

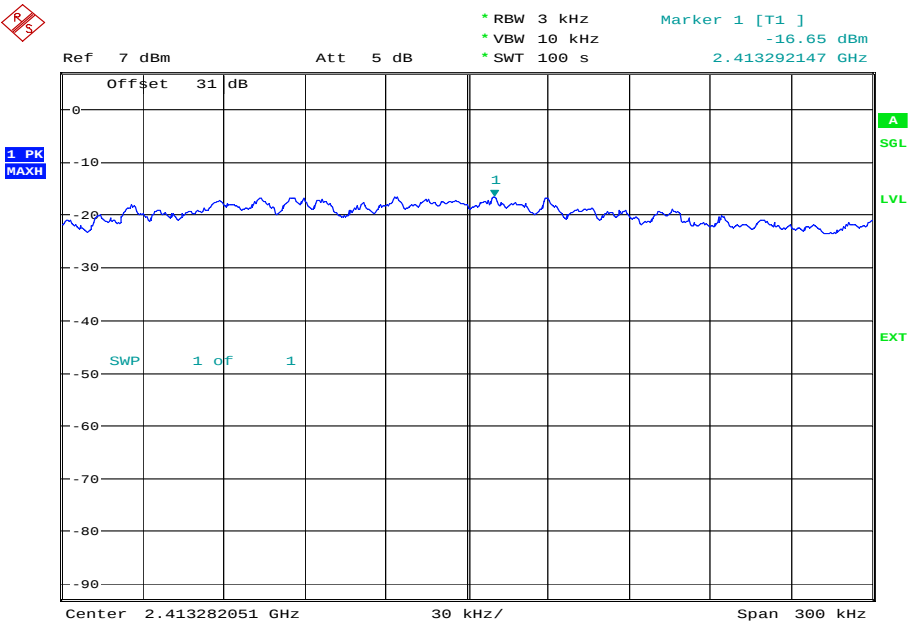


Date: 7.OCT.2014 14:22:45



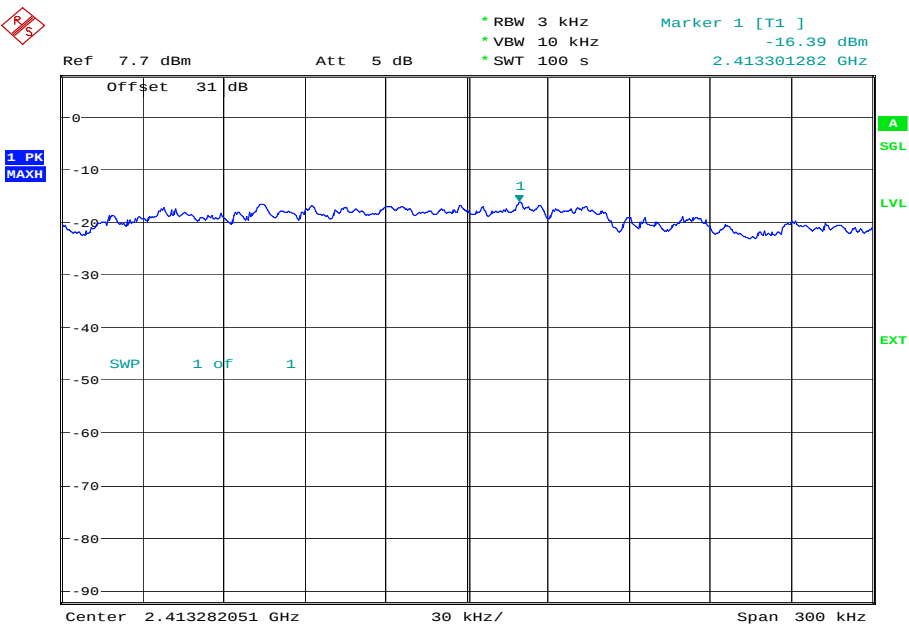
Product Service

48 Mbps



Date: 7.OCT.2014 14:27:33

54 Mbps



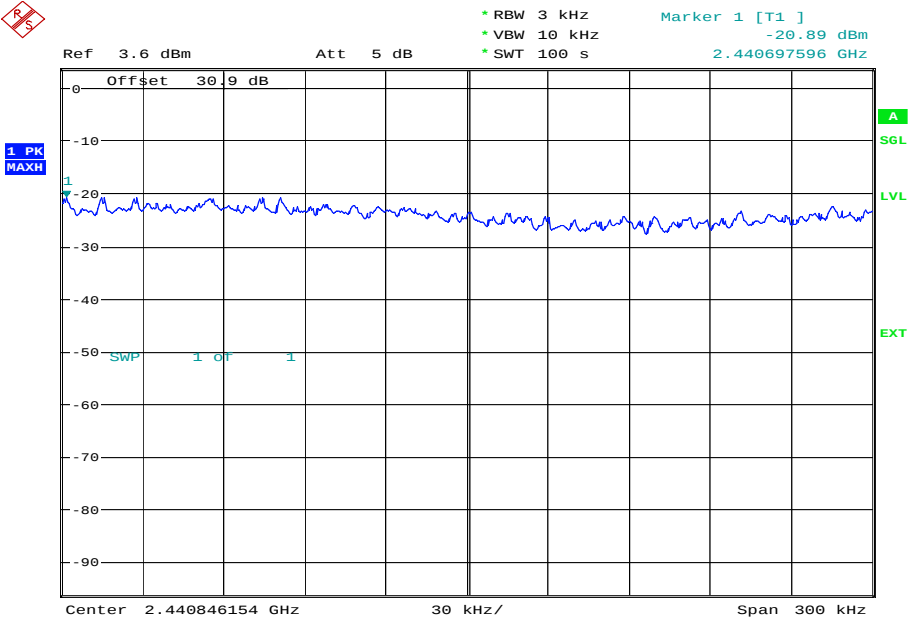
Date: 7.OCT.2014 14:33:08



Product Service

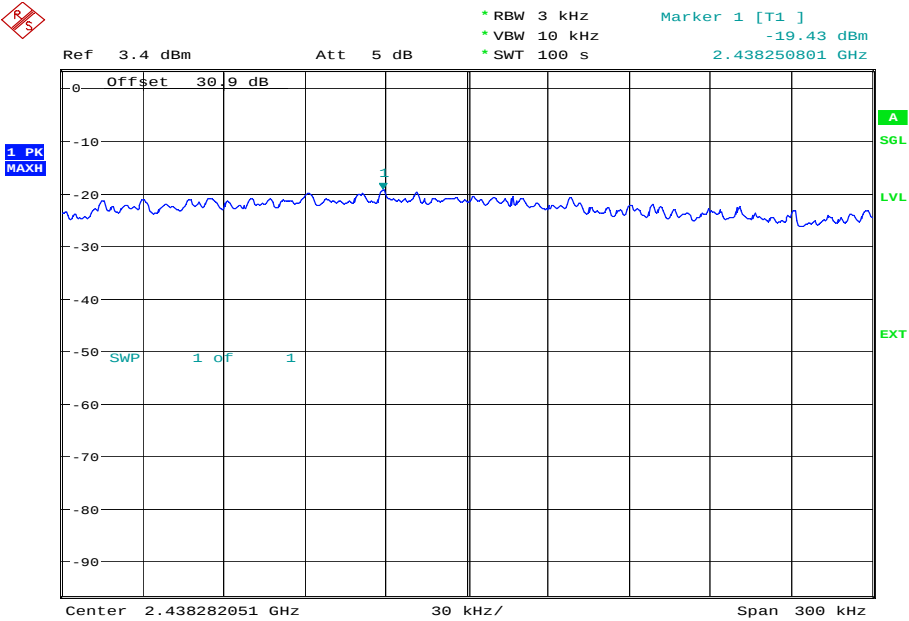
2437 MHz

6 Mbps



Date: 8.OCT.2014 10:02:34

9 Mbps

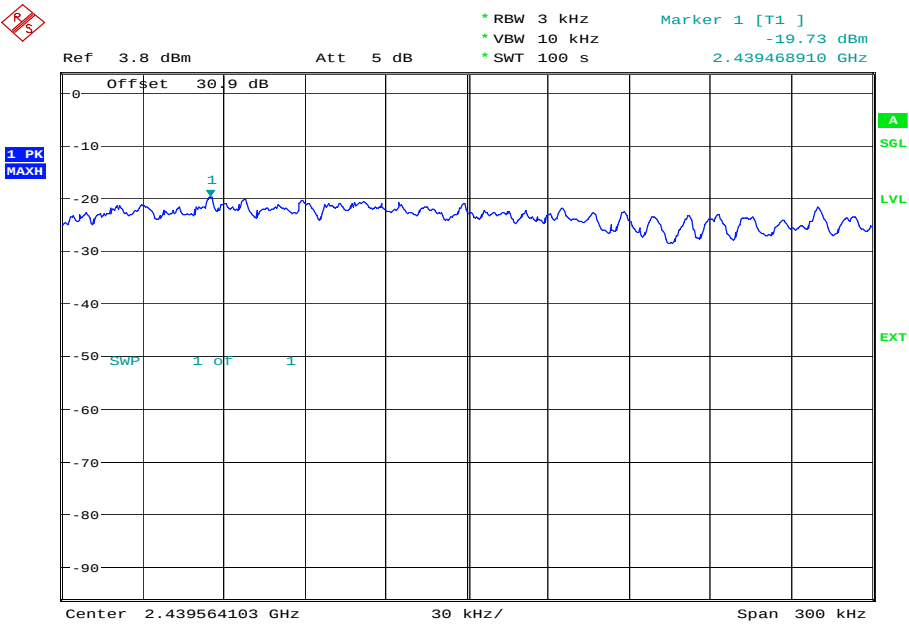


Date: 8.OCT.2014 10:07:36



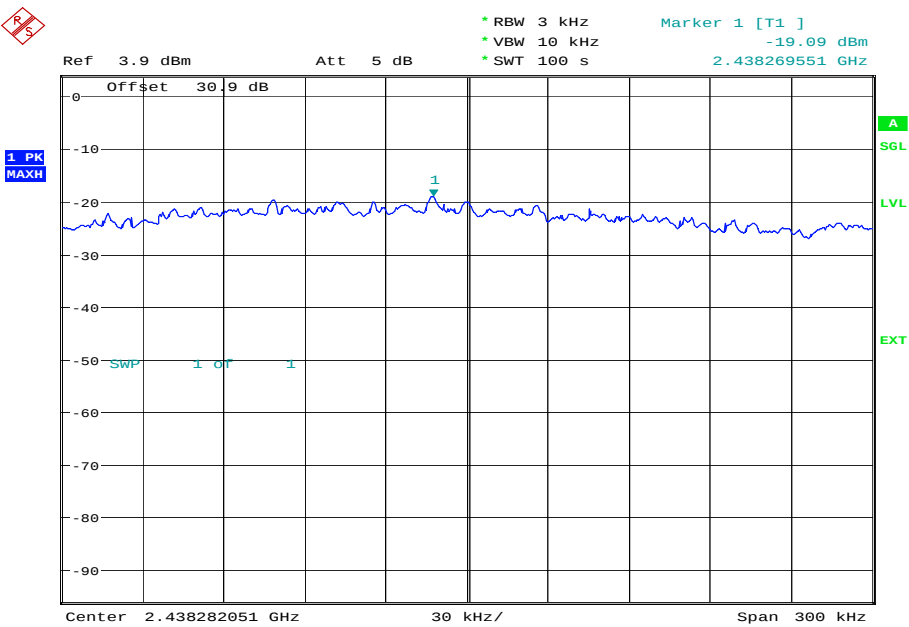
Product Service

12 Mbps



Date: 8.OCT.2014 10:12:09

18 Mbps

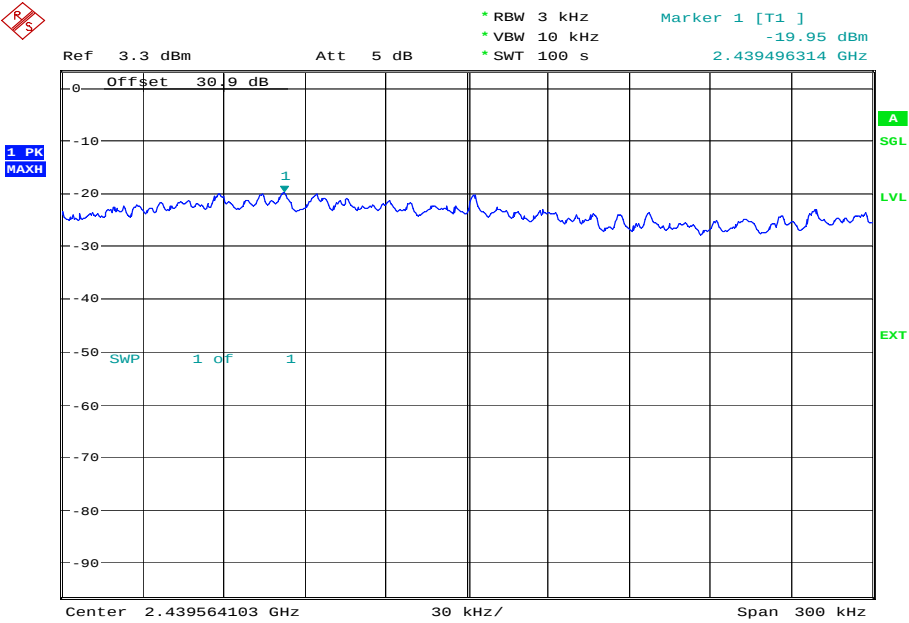


Date: 8.OCT.2014 10:18:55



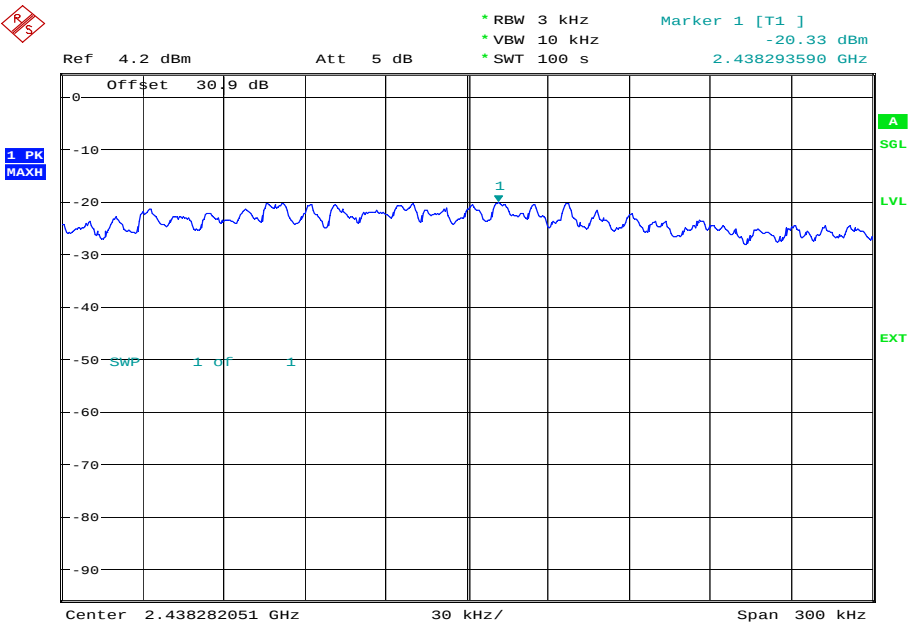
Product Service

24 Mbps



Date: 8.OCT.2014 10:23:58

36 Mbps

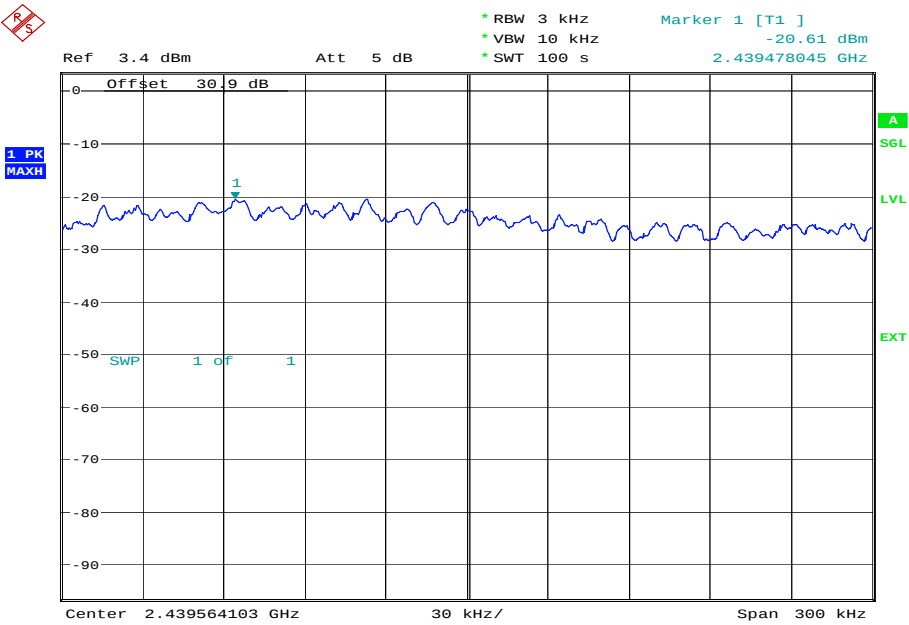


Date: 8.OCT.2014 10:29:04



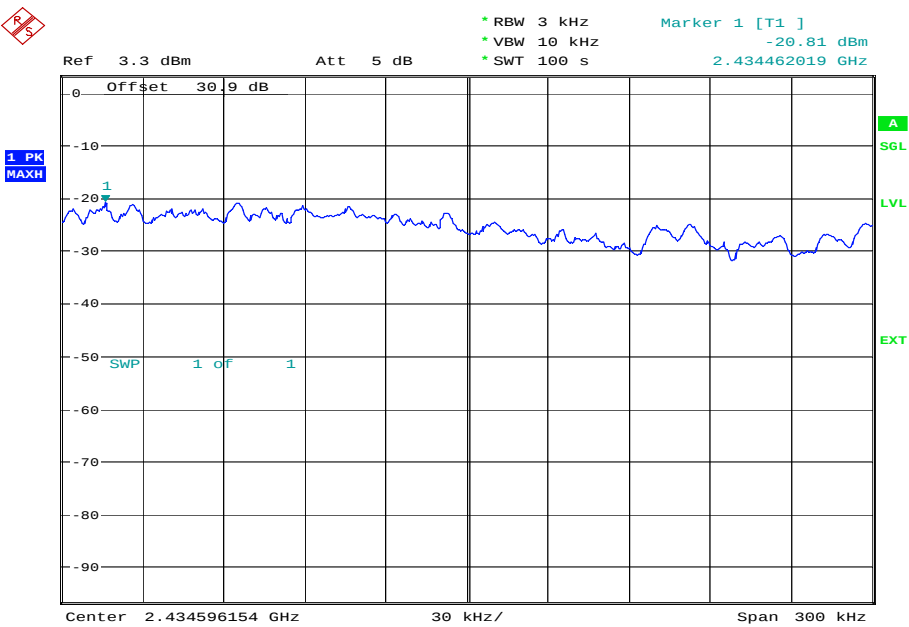
Product Service

48 Mbps



Date: 8.OCT.2014 10:35:28

54 Mbps



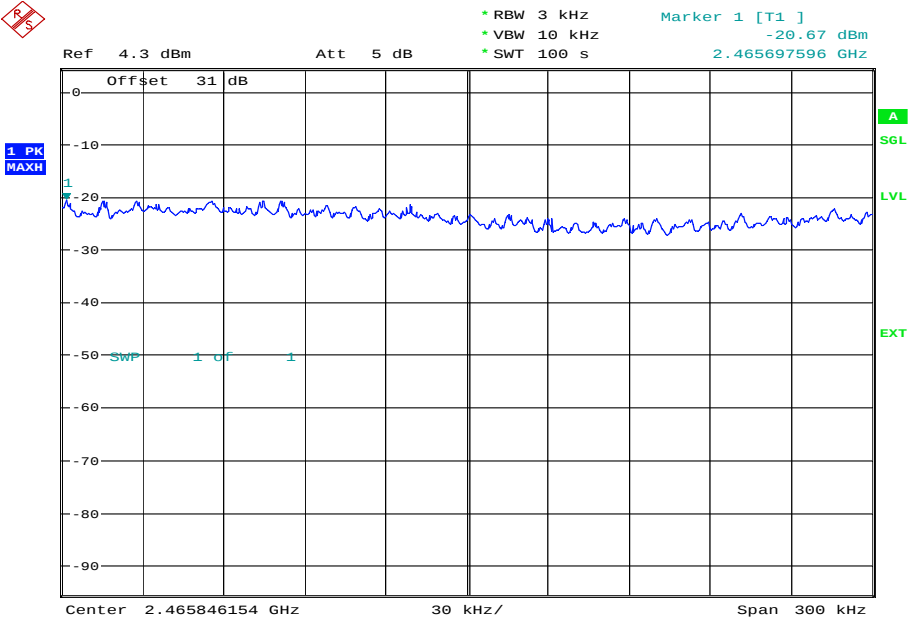
Date: 8.OCT.2014 10:40:01



Product Service

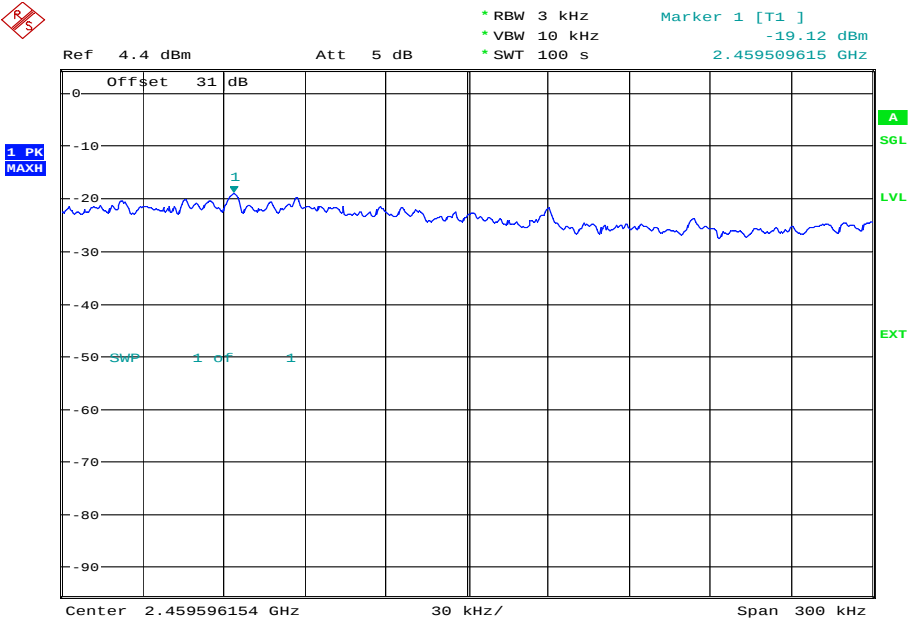
2462 MHz

6 Mbps



Date: 8.OCT.2014 14:13:12

9 Mbps

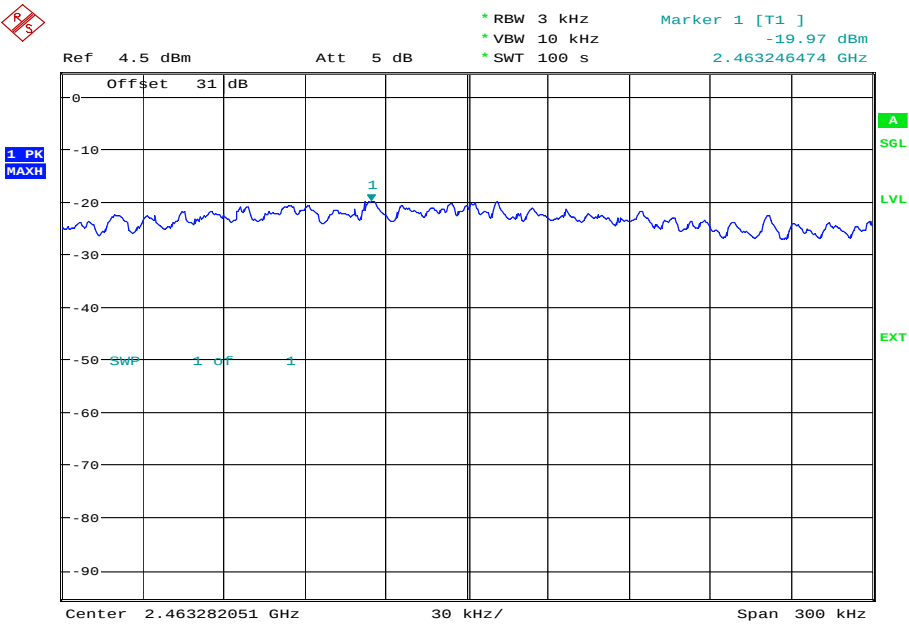


Date: 8.OCT.2014 14:18:50



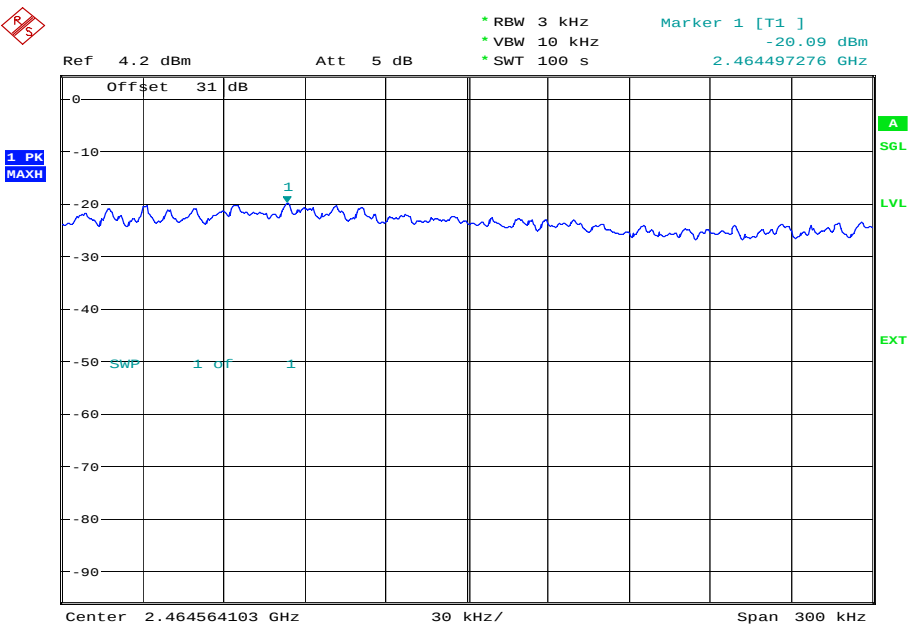
Product Service

12 Mbps



Date: 8.OCT.2014 14:24:20

18 Mbps

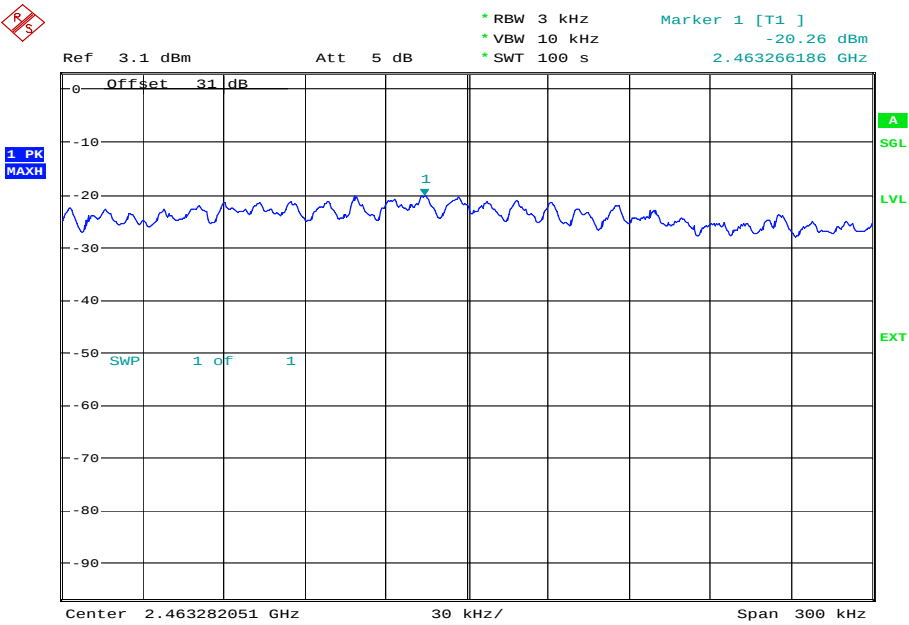


Date: 8.OCT.2014 14:30:09



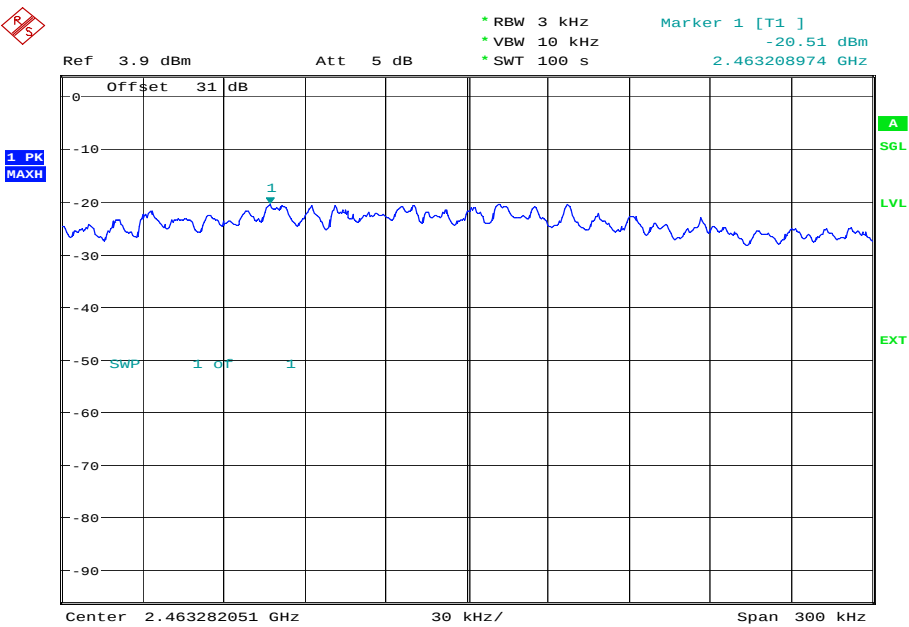
Product Service

24 Mbps



Date: 8.OCT.2014 14:36:25

36 Mbps

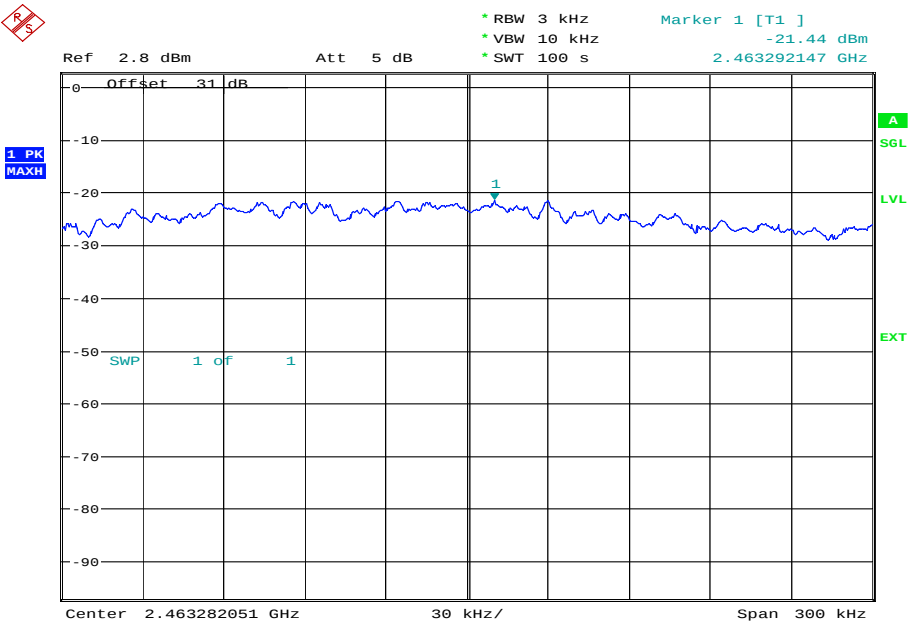


Date: 8.OCT.2014 14:41:36



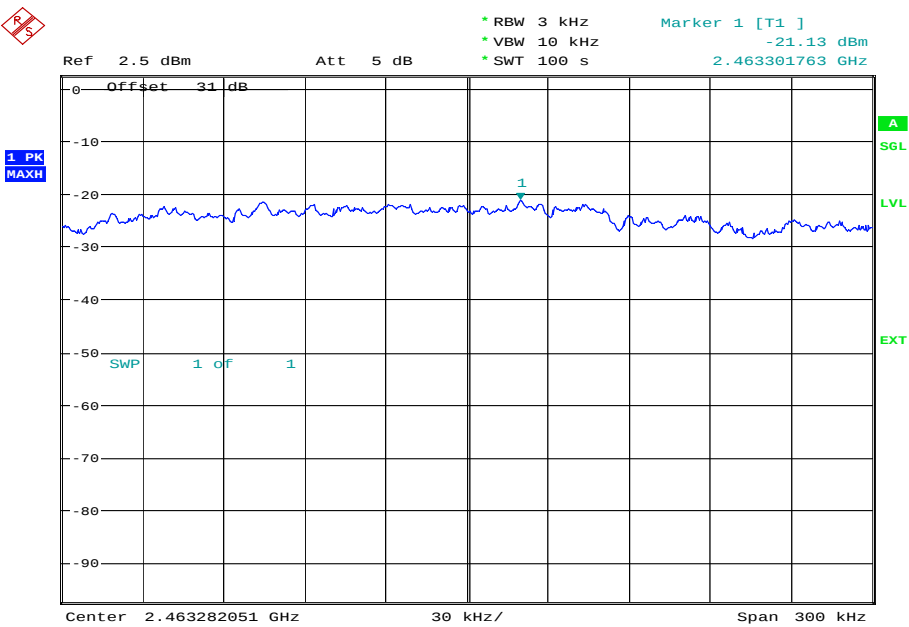
Product Service

48 Mbps



Date: 8.OCT.2014 14:46:17

54 Mbps



Date: 8.OCT.2014 14:50:41

Limit Clause

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

802.11(n) 20 MHz BW

110 V AC, 60 Hz supply

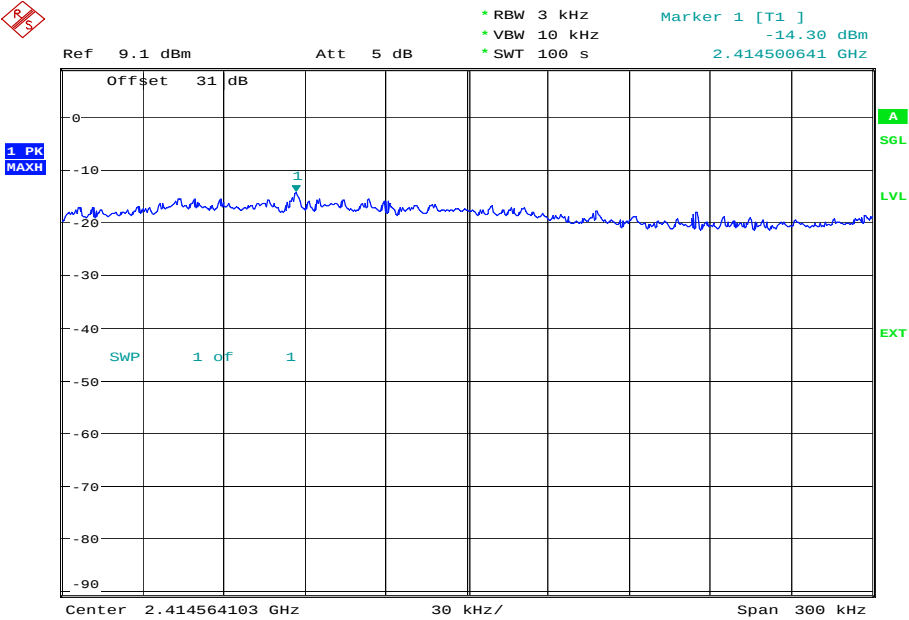
Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6.5	-14.30
	13	-14.26
	19.5	-15.14
	26	-15.05
	39	-15.59
	52	-14.67
	58.5	-15.02
	65	-15.50
2437 MHz	6.5	-19.63
	13	-19.91
	19.5	-19.69
	26	-20.84
	39	-20.15
	52	-19.64
	58.5	-19.74
	65	-20.15
2462 MHz	6.5	-19.12
	13	-19.32
	19.5	-19.72
	26	-19.45
	39	-20.48
	52	-20.13
	58.5	-20.38
	65	-20.46



Product Service

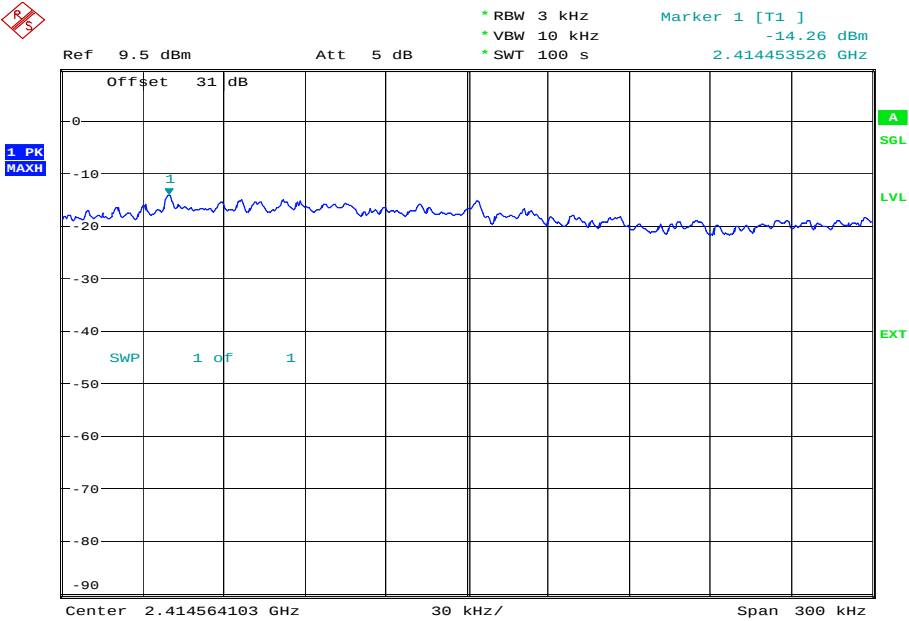
2412 MHz

6.5 Mbps



Date: 7.OCT.2014 14:44:07

13 Mbps

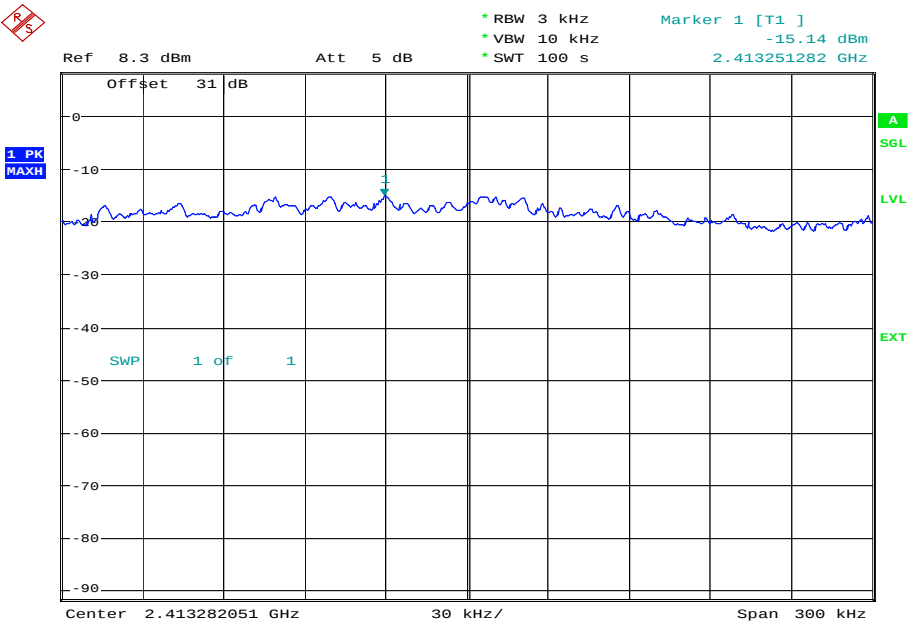


Date: 7.OCT.2014 14:49:05



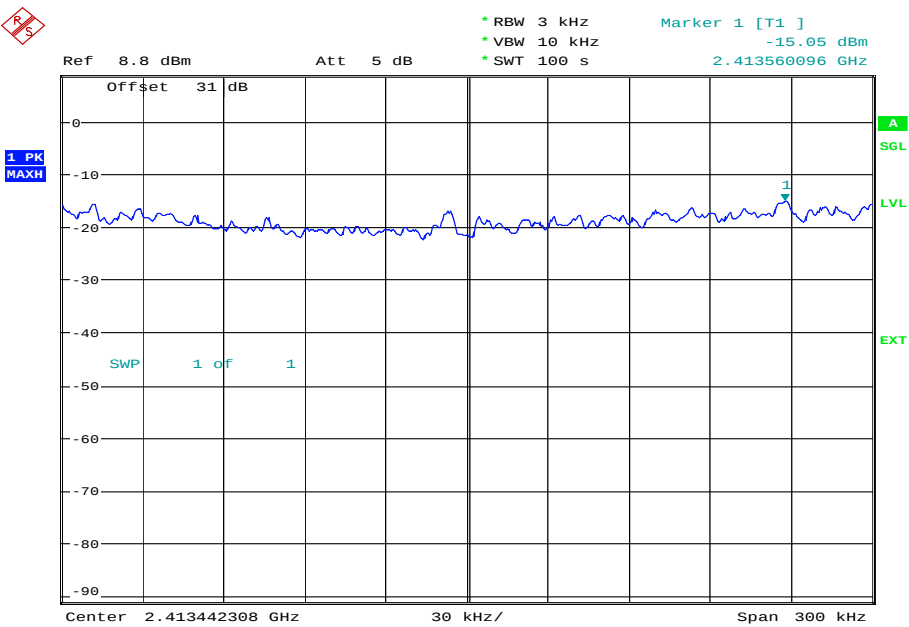
Product Service

19.5 Mbps



Date: 7.OCT.2014 14:54:37

26 Mbps

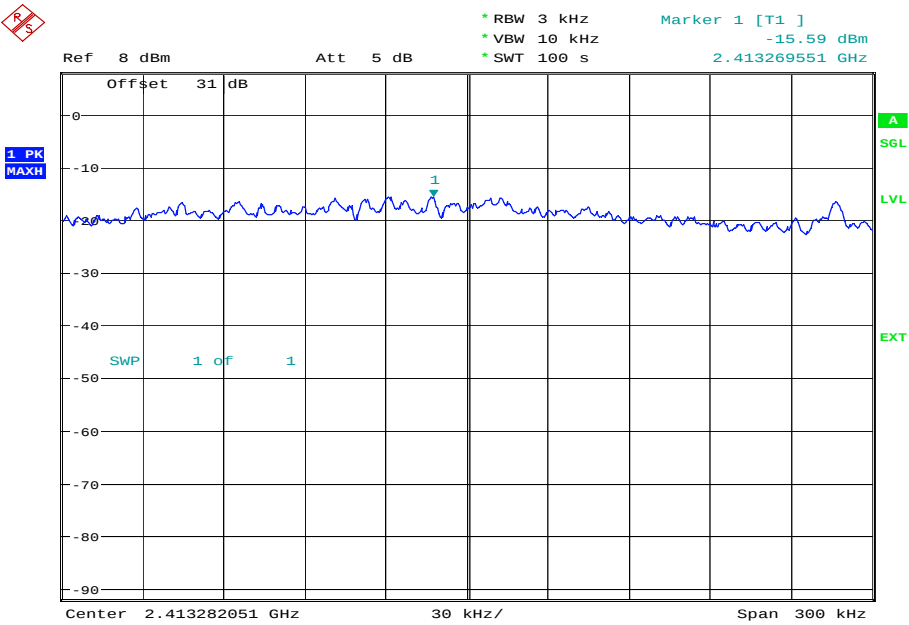


Date: 7.OCT.2014 14:59:36



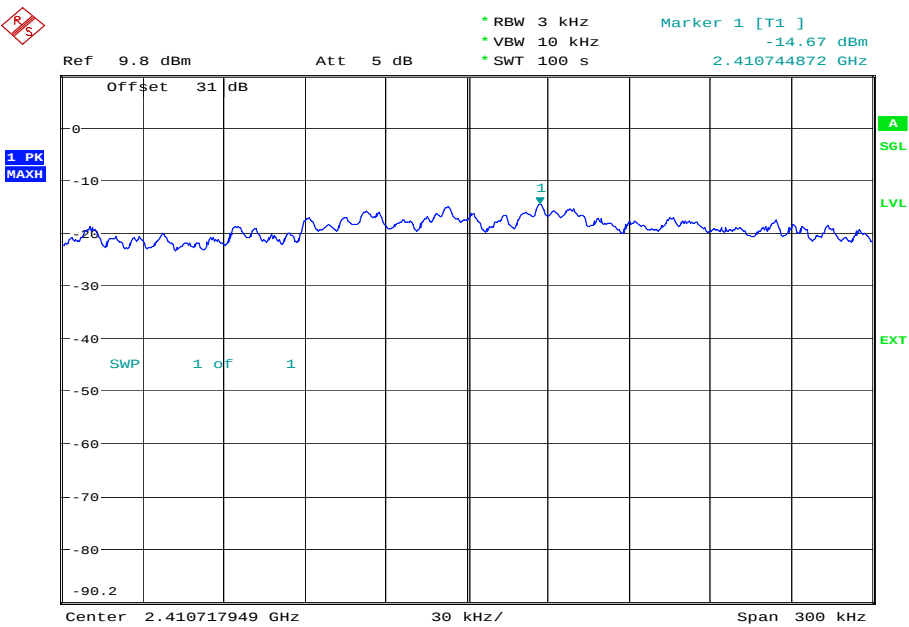
Product Service

39 Mbps



Date: 7.OCT.2014 15:04:45

52 Mbps

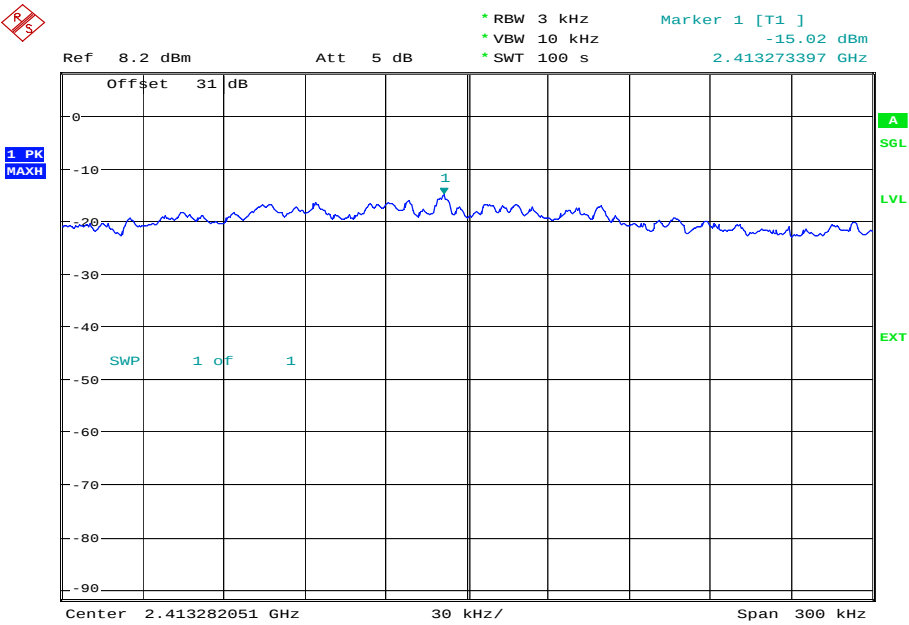


Date: 7.OCT.2014 15:13:08



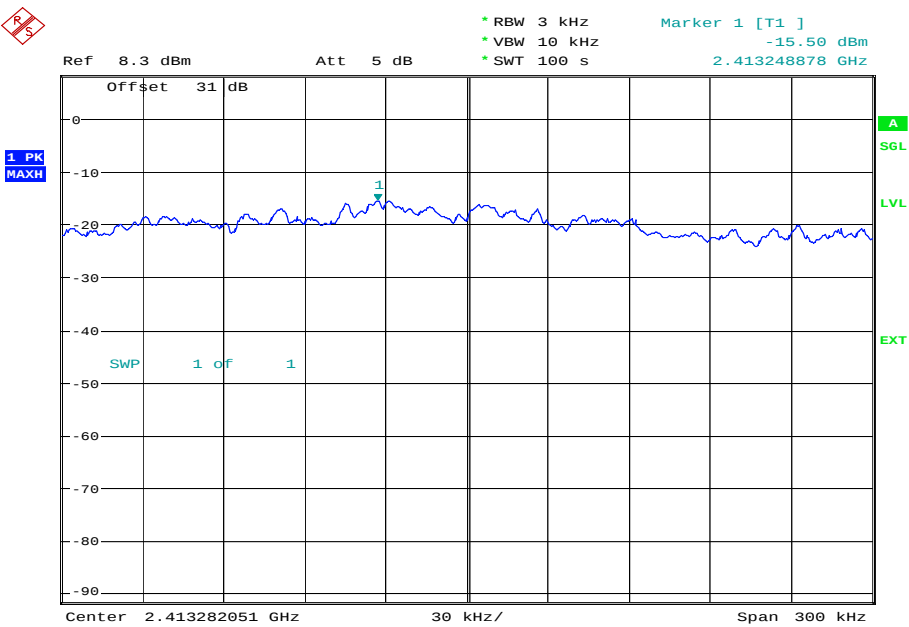
Product Service

58.5 Mbps



Date: 7.OCT.2014 15:18:29

65 Mbps



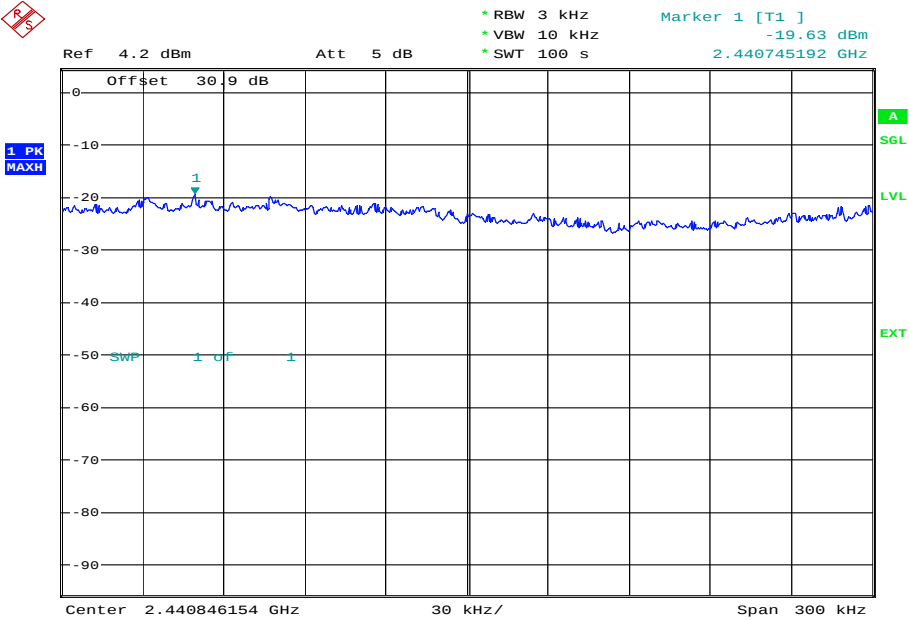
Date: 7.OCT.2014 15:24:18



Product Service

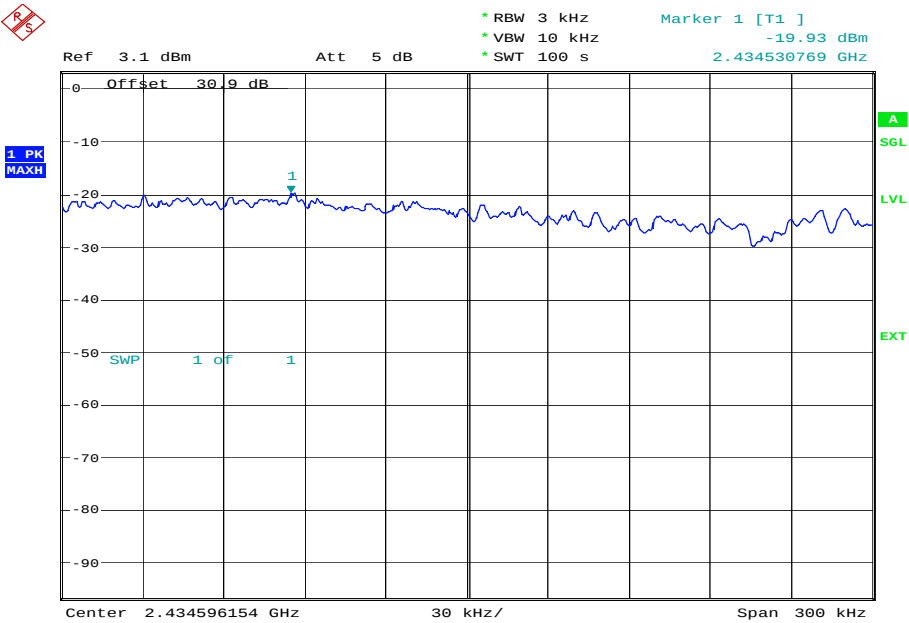
2437 MHz

6.5 Mbps



Date: 8.OCT.2014 10:46:13

13 Mbps

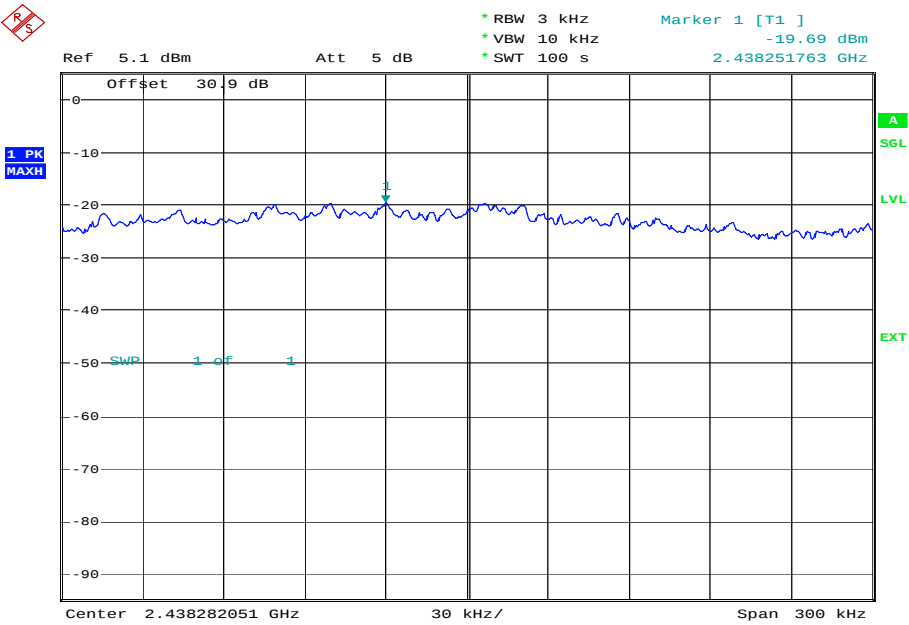


Date: 8.OCT.2014 10:55:18



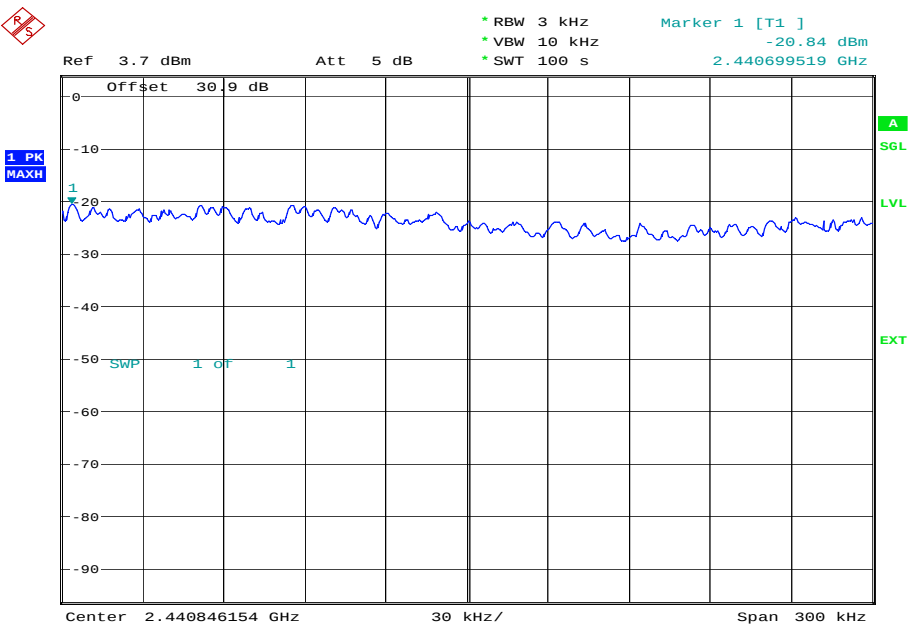
Product Service

19.5 Mbps



Date: 8.OCT.2014 11:08:00

26 Mbps

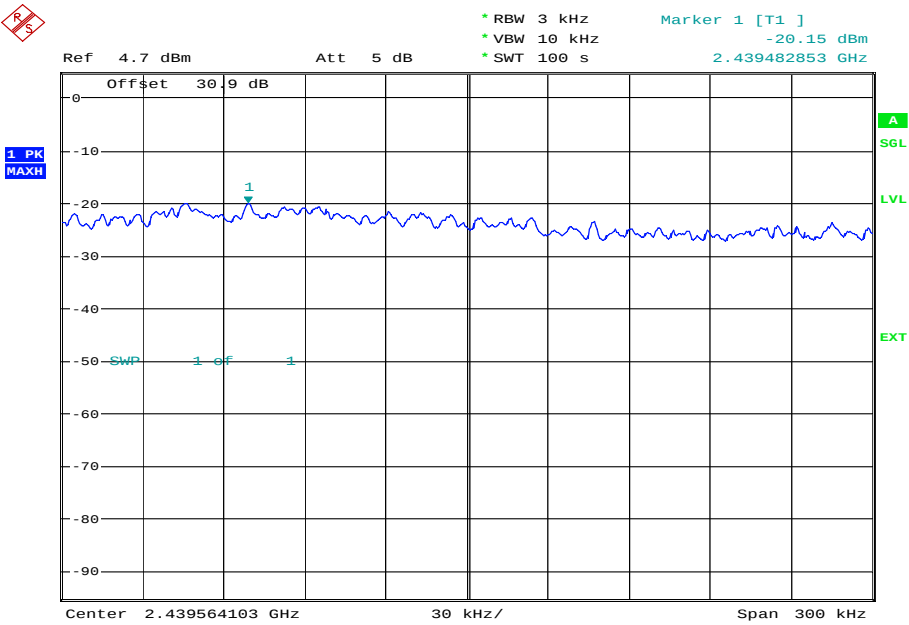


Date: 8.OCT.2014 11:26:29



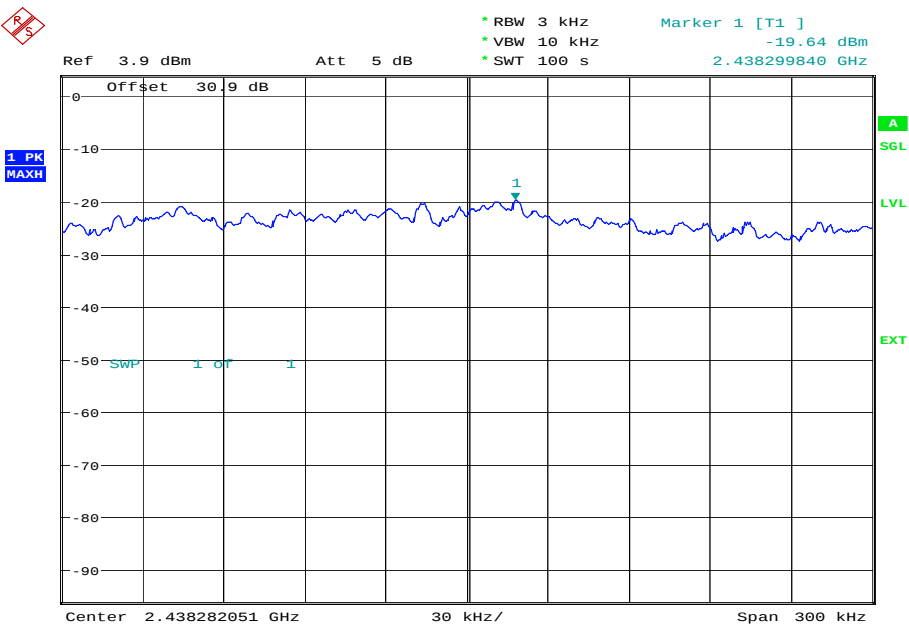
Product Service

39 Mbps



Date: 8.OCT.2014 11:39:05

52 Mbps

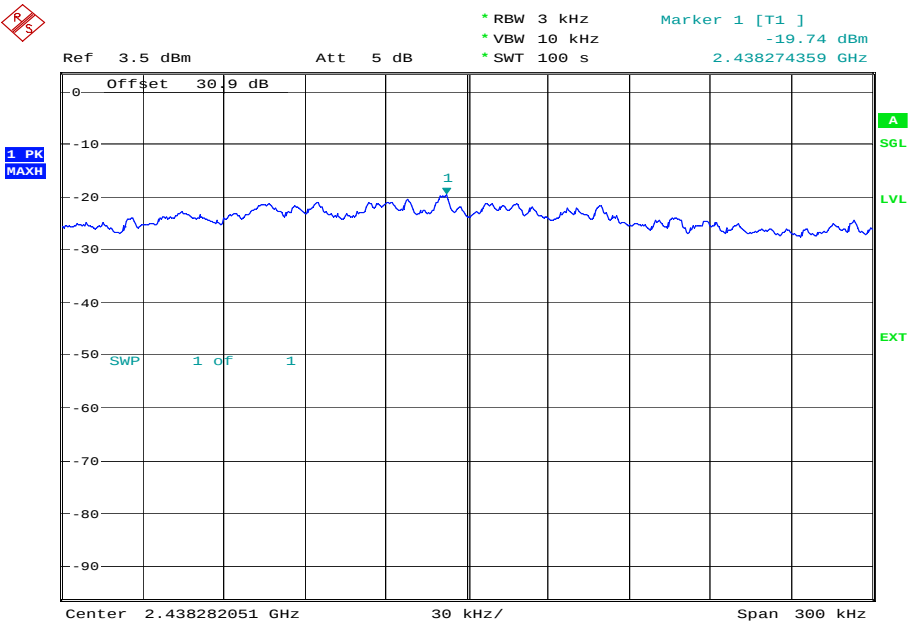


Date: 8.OCT.2014 11:55:53



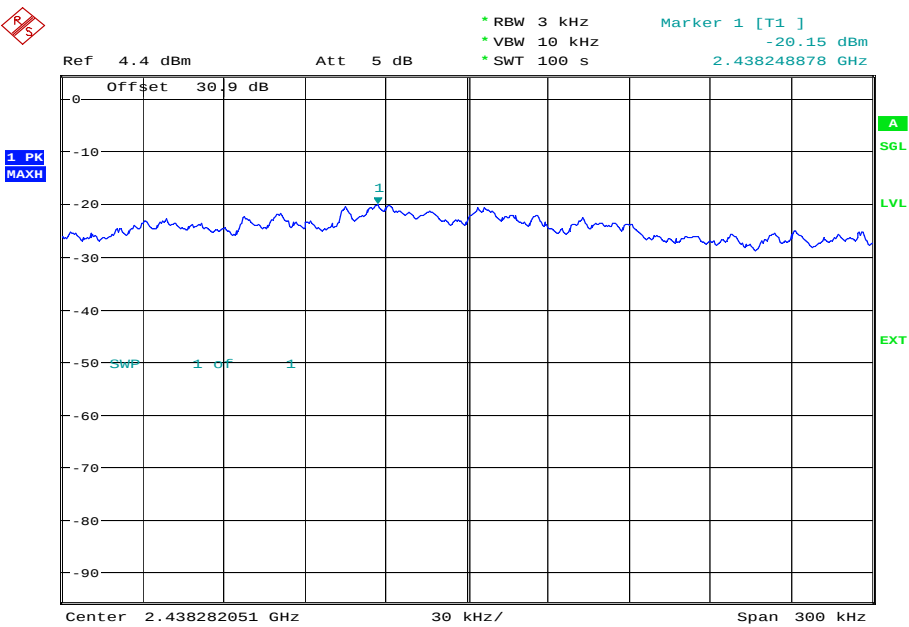
Product Service

58.5 Mbps



Date: 8.OCT.2014 12:00:29

65 Mbps



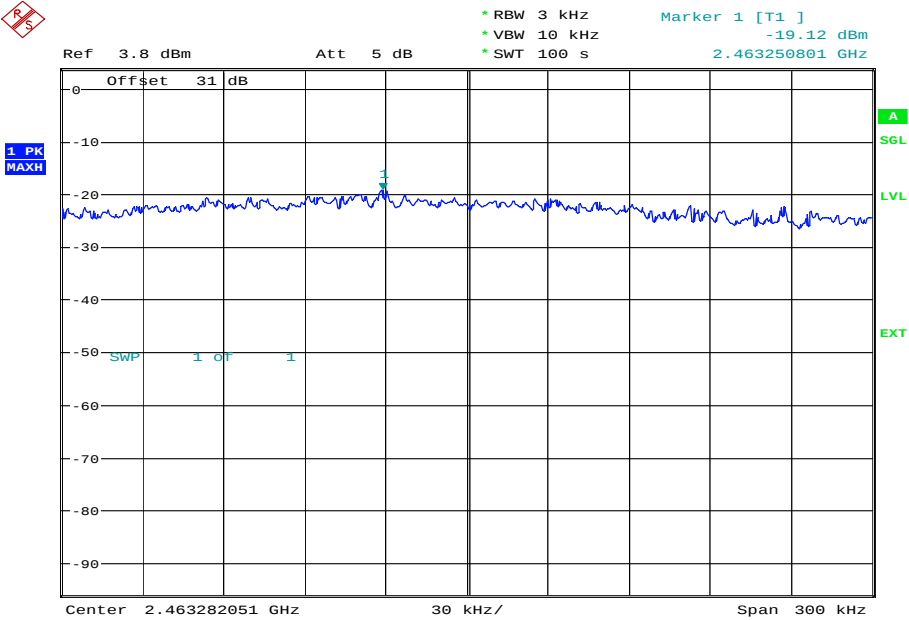
Date: 8.OCT.2014 12:04:50



Product Service

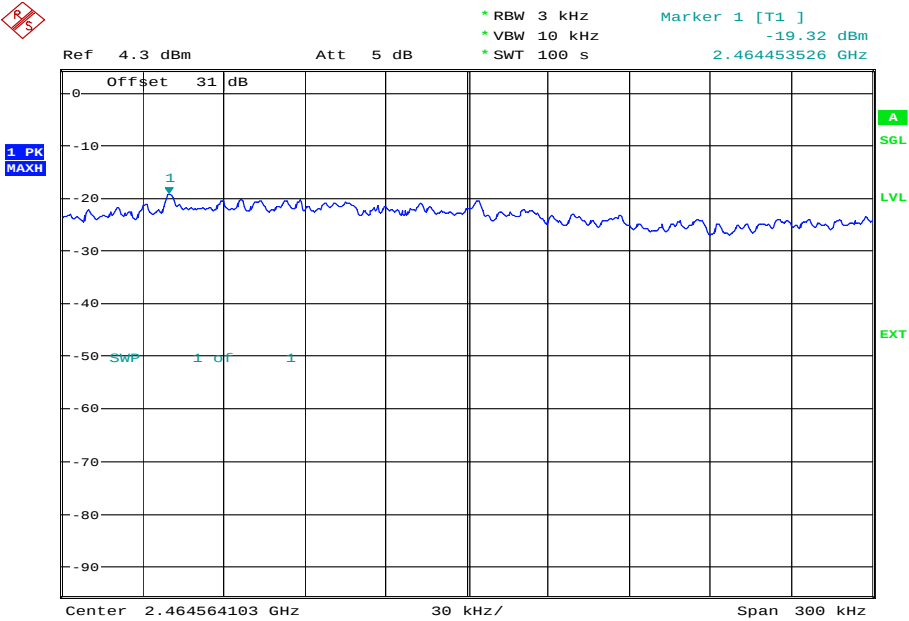
2462 MHz

6.5 Mbps



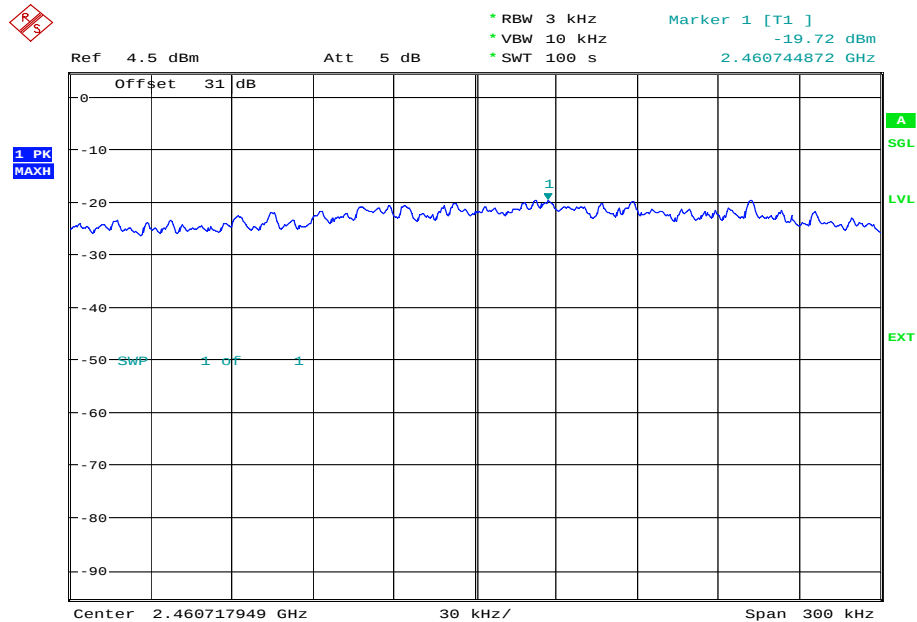
Date: 8.OCT.2014 14:57:22

13 Mbps



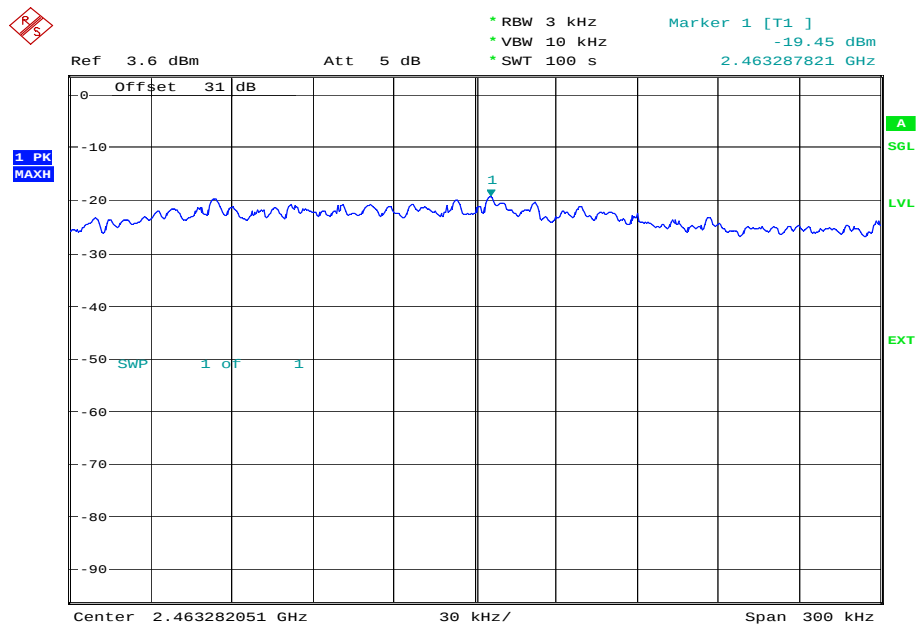
Date: 8.OCT.2014 15:02:03

19.5 Mbps



Date: 8.OCT.2014 15:08:13

26 Mbps

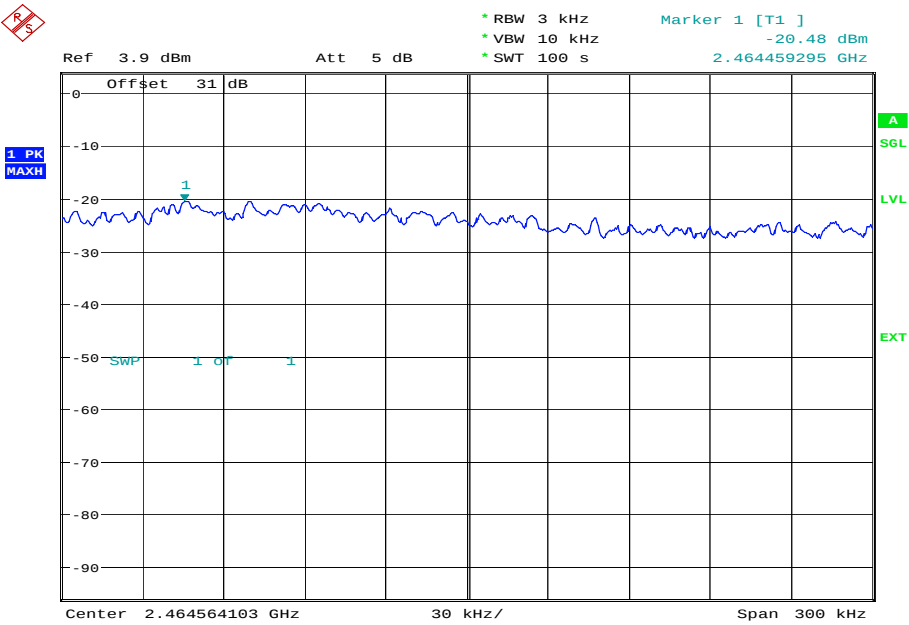


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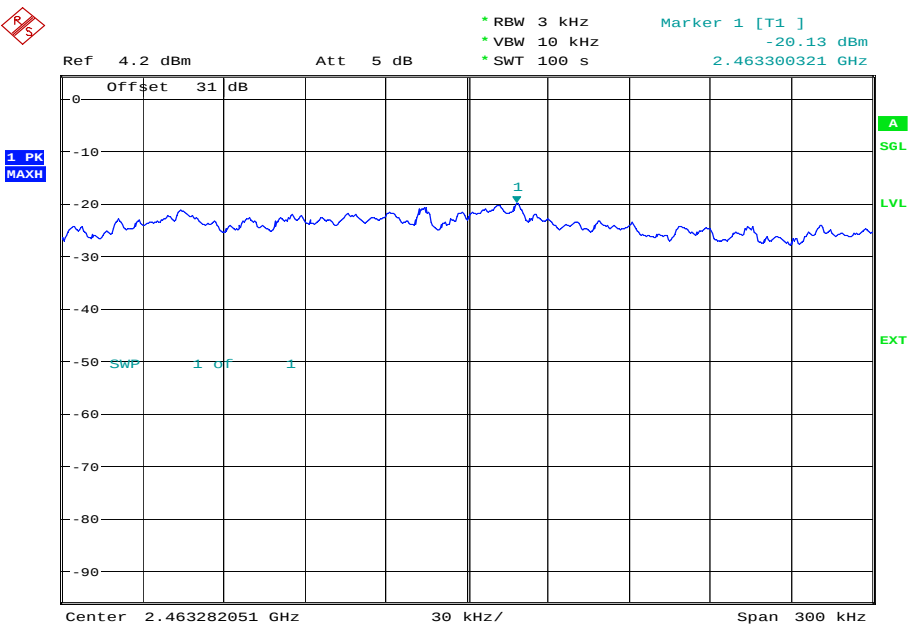
Product Service

39 Mbps



Date: 8.OCT.2014 15:20:08

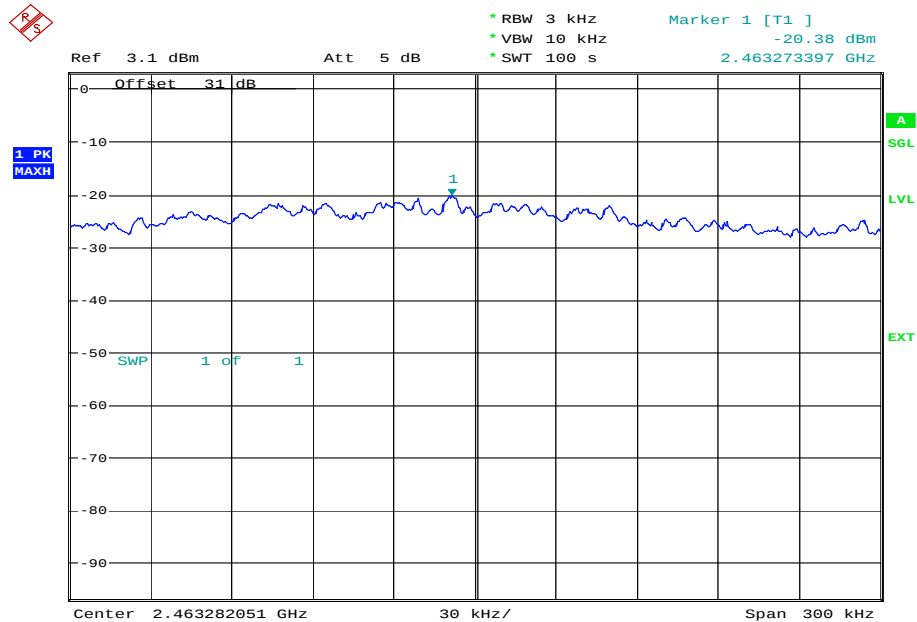
52 Mbps



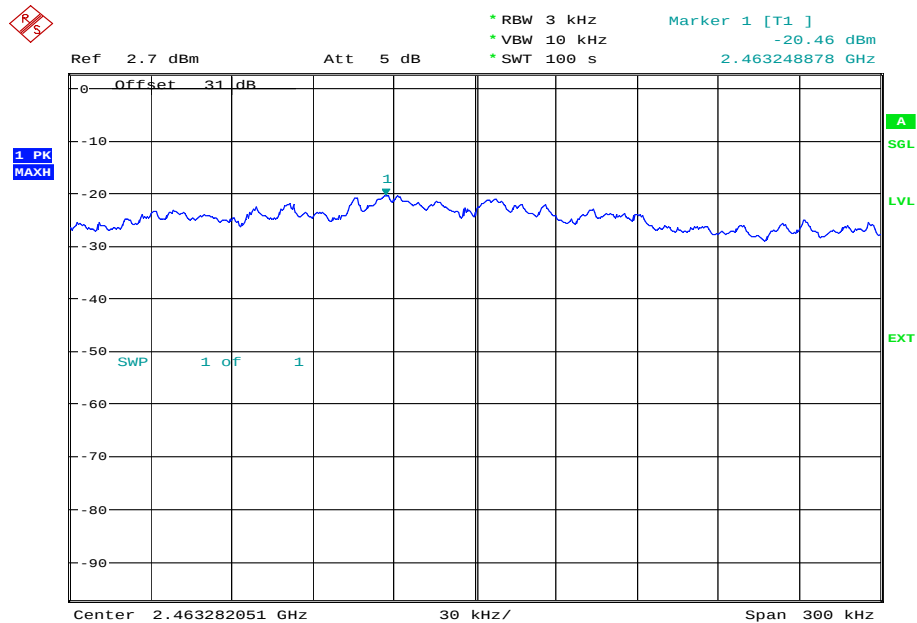
Date: 8.OCT.2014 15:27:45



Product Service

58.5 Mbps

Date: 8.OCT.2014 15:36:17

65 Mbps

Date: 8.OCT.2014 15:50:34

Limit Clause

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.



2.5 SPURIOUS AND BAND EDGE EMISSIONS

2.5.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (d)
Industry Canada RSS-210, Clause A8.5
Industry Canada RSS-GEN, Clause 4.9

2.5.2 Equipment Under Test and Modification State

RBS1 S/N: RB1431A078 - Modification State 0

2.5.3 Date of Test

6 October 2014, 11 October 2014, 12 October 2014 & 7 November 2014

2.5.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.5 Test Procedure

The test was conducted in accordance with ANSI C63.10 Clauses 6.3, 6.5 and 6.6.

The EUT was set to operate at maximum power on the bottom, middle and top channels for the data rate which resulted in the highest conducted average output power. The power of each fundamental frequency was measured in 100 kHz RBW, the resultant limit line on the trace was set at -20 dBc of this value.

Measurements were performed from 30 MHz to 25 GHz and the path loss is incorporated as a transducer factor and entered into the spectrum analyser.

Band Edge measurements were performed using ANSI C63.10 Clause 6.9.2, however, a reduced span was used. Measurements were performed using an RBW of 1MHz with a VBW of 3MHz for Peak measurements and a VBW of 10Hz for Average measurements. Measurements were made with the EUT configured at the highest and lowest operating frequencies and measurements performed at the restricted bands.

A test environment and testing arrangement meeting the specification of ANSI C63.4 was used during all testing. The Equipment Under Test (EUT) was set upon a non-conducting platform at an elevation of 80 cm above a horizontal reference ground plane. The EUT was set upon a non-conducting platform during testing. When frequencies less than 18 GHz were measured; the EUT elevation was 80 cm above the horizontal reference ground plane. When frequencies greater than 18 GHz were measured; the EUT elevation was 1 m above the horizontal reference ground plane to ensure adequate vertical beam width coverage of the measuring antenna with respect to the EUT.

The horizontal reference ground plane encompasses a turntable which is used to adjust the azimuth of the EUT. An antenna positioner is used to elevate the measuring antenna above the horizontal reference ground plane whereby the antenna elevation is adjustable between 1 m and 4 m.



Product Service

Exploratory radiated emissions measurements were made by azimuth emissions searches over a range of 0° and 360°. These exploratory radiated emissions measurements were made using a peak detector over a frequency range of 30 MHz to 25 GHz, with the measuring antenna in both vertical and horizontal polarizations.

At least six of the greatest peak emissions, frequency positions were selected from the exploratory radiated emissions measurements for further evaluation as final measuring points.

To ascertain the azimuth and measuring antenna polarization that yields the highest peak emission level, each final measurement frequency was investigated by continuous azimuth emissions searching with the measuring antenna in both vertical and horizontal polarizations. For each final measurement frequency, the respective peak emission azimuth and measuring antenna polarization was used during a measuring antenna elevation search from 1 m to 4 m. Each final measurement frequency was then measured with the EUT azimuth, measuring antenna height and polarization that yielded the greatest peak emission level.

Final measurement points over the frequency range of 30 MHz to 1 GHz were measured using a quasi-peak detector. Final measurement points over the frequency range of 1 GHz and 25 GHz were measured using peak and average methods. Peak measurements were made using a peak detector with 1 MHz resolution and video bandwidths. Average measurements were made using a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

All final measurements were assessed against the Class B emission limits in Clause 15.209 of FCC CFR 47 FCC Part 15.

Testing was carried out using the data rate which was established as being the worst case, (highest output power), prior to commencement of testing for each operating mode.

2.5.6 Environmental Conditions

Ambient Temperature	19.0 - 20.1°C
Relative Humidity	45.9 - 47.9%



Product Service

2.5.7 Test Results

802.11(b)

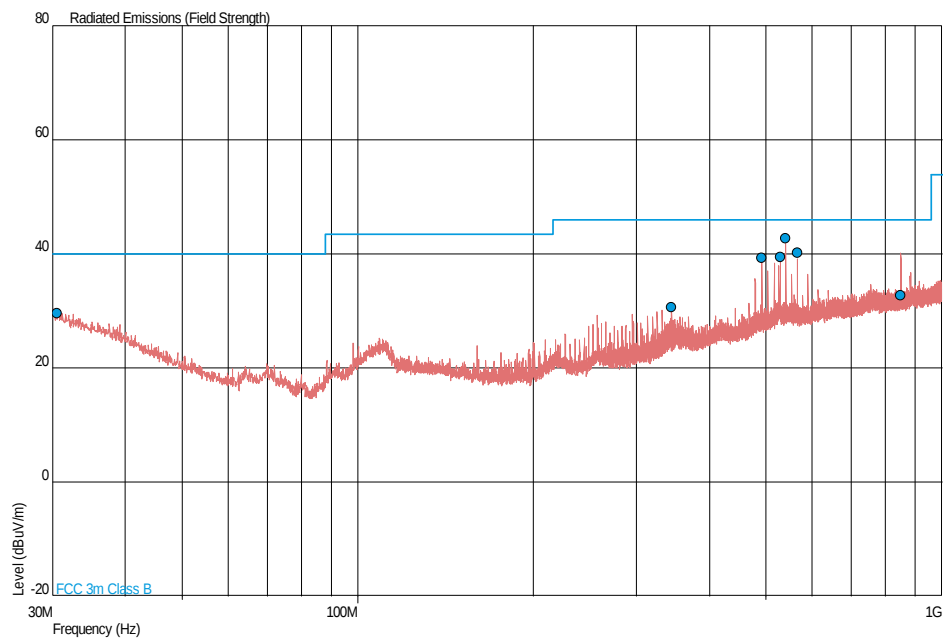
Data Rate: 11 Mbps

110 V AC, 60 Hz supply

Spurious Radiated Emissions

2412 MHz

30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.582	29.6	30.2	40.0	100	-10.4	-69.8	356	2.73	Vertical
344.060	30.7	34.3	46.0	200	-15.3	-165.7	0	1.00	Horizontal
491.518	39.3	92.3	46.0	200	-6.7	-107.7	226	1.04	Vertical
528.394	39.5	94.4	46.0	200	-6.5	-105.6	122	1.00	Vertical
540.665	42.7	136.5	46.0	200	-3.3	-63.5	113	1.00	Vertical
565.249	40.2	102.3	46.0	200	-5.8	-97.7	115	1.04	Vertical
850.876	32.7	43.2	46.0	200	-13.3	-156.8	317	1.00	Horizontal

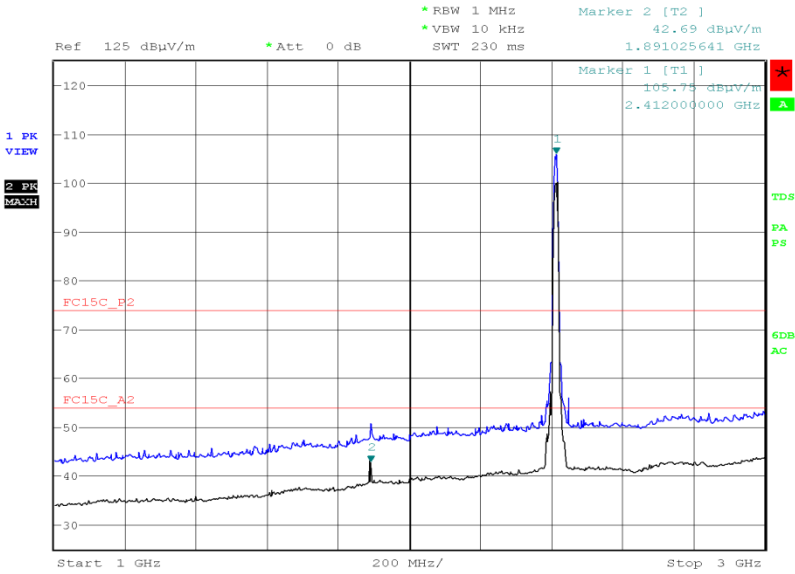


Product Service

1 GHz to 25 GHz

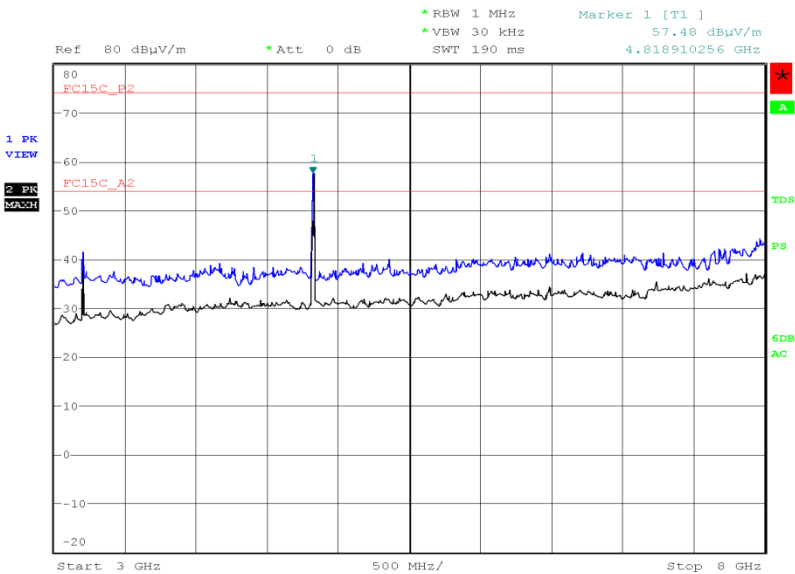
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.824	Vertical	100	025	59.71	47.82

1 GHz to 3 GHz



Date: 6.OCT.2014 18:13:05

3 GHz to 8 GHz

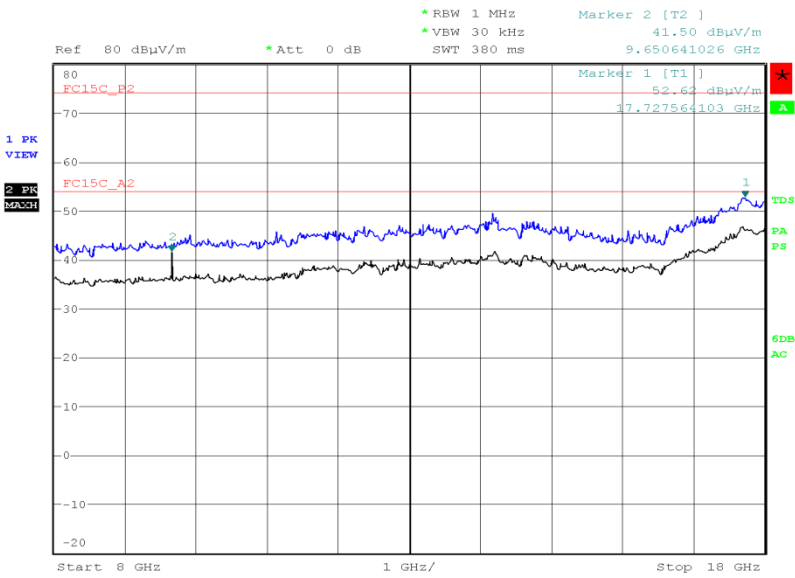


Date: 7.OCT.2014 19:56:57



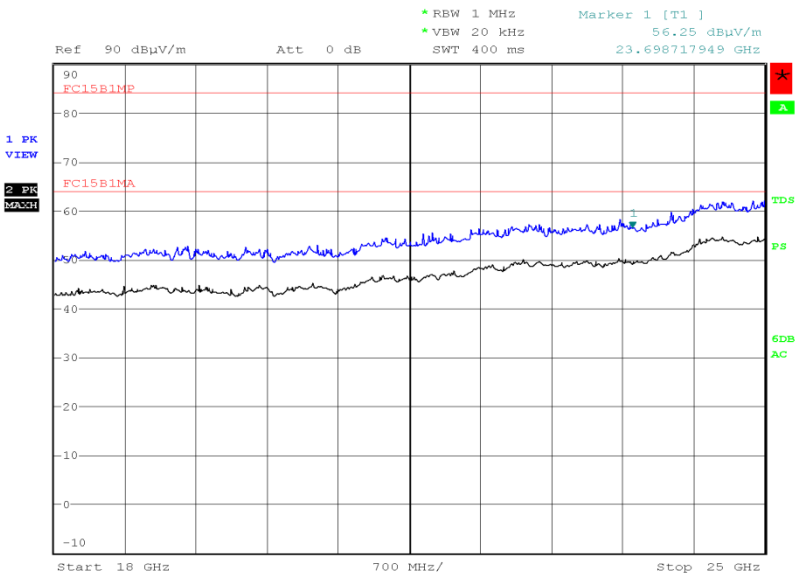
Product Service

8 GHz to 18 GHz



Date: 7.OCT.2014 22:34:20

18 GHz to 25 GHz



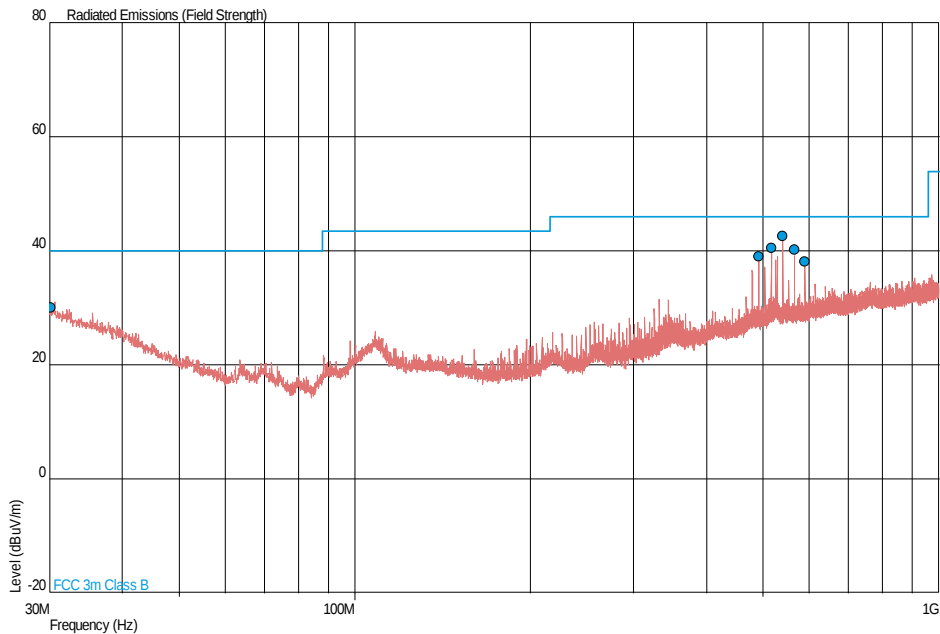
Date: 10.OCT.2014 23:29:16



Product Service

2437 MHz

30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.146	30.1	32.0	40.0	100	-9.9	-68.0	54	1.00	Horizontal
491.523	39.1	90.2	46.0	200	-6.9	-109.8	264	1.00	Vertical
516.092	40.6	107.2	46.0	200	-5.4	-92.8	103	1.00	Vertical
540.668	42.6	134.9	46.0	200	-3.4	-65.1	132	1.00	Vertical
565.246	40.3	103.5	46.0	200	-5.7	-96.5	122	1.16	Horizontal
589.824	38.2	81.3	46.0	200	-7.8	-118.7	122	1.26	Horizontal

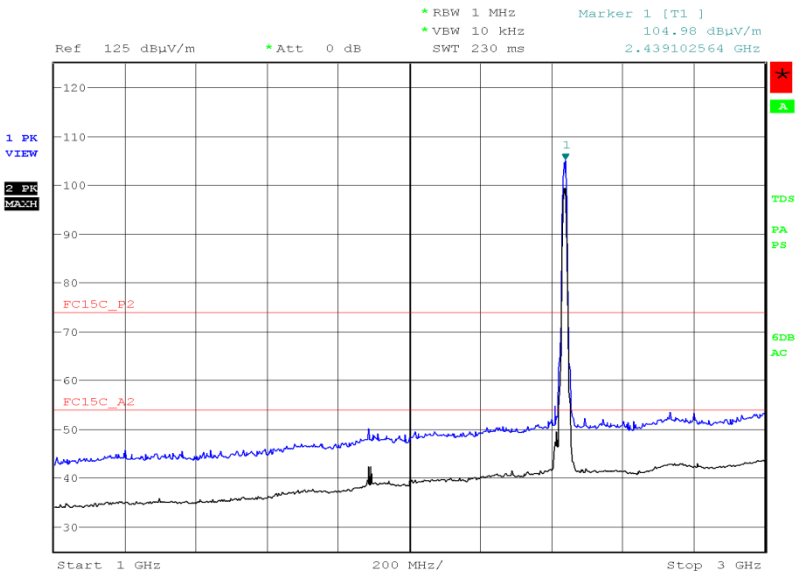


Product Service

1 GHz to 25 GHz

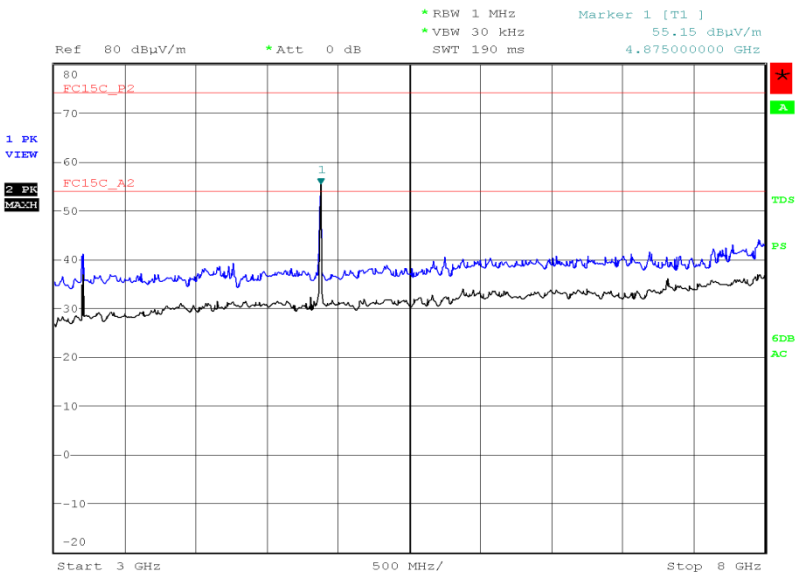
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.875	Vertical	152	048	59.52	47.94

1 GHz to 3 GHz



Date: 6.OCT.2014 18:43:12

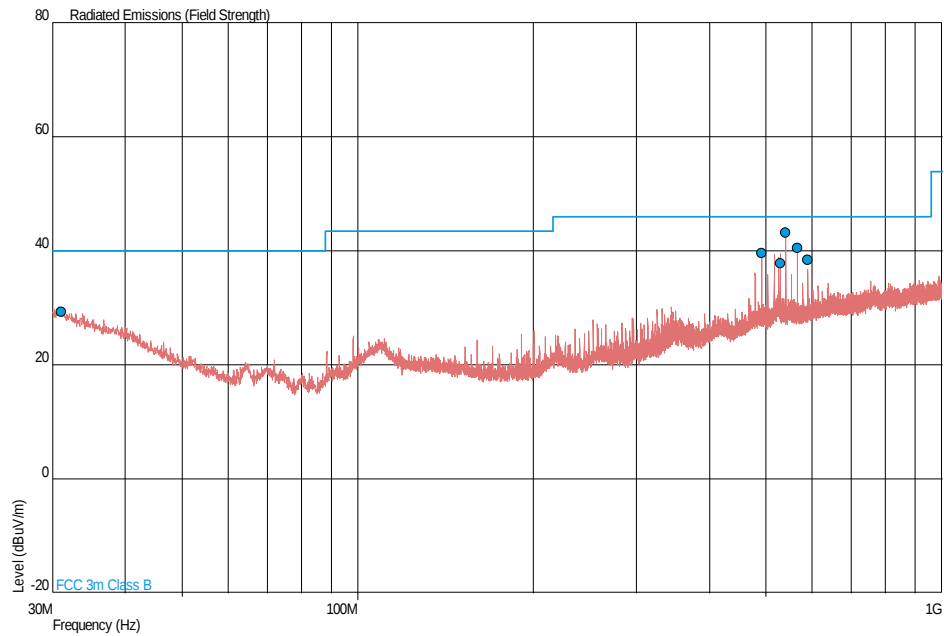
3 GHz to 8 GHz



Date: 7.OCT.2014 20:16:59



Product Service

2462 MHz30 MHz to 1 GHz

Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
31.069	29.4	29.5	40.0	100	-10.6	-70.5	199	1.82	Horizontal
491.518	39.6	95.5	46.0	200	-6.4	-104.5	210	1.00	Vertical
528.337	37.8	77.6	46.0	200	-8.2	-122.4	106	1.06	Vertical
540.668	43.2	144.5	46.0	200	-2.8	-55.5	129	1.00	Vertical
565.249	40.5	105.9	46.0	200	-5.5	-94.1	120	1.04	Vertical
589.826	38.5	84.1	46.0	200	-7.5	-115.9	130	1.32	Horizontal

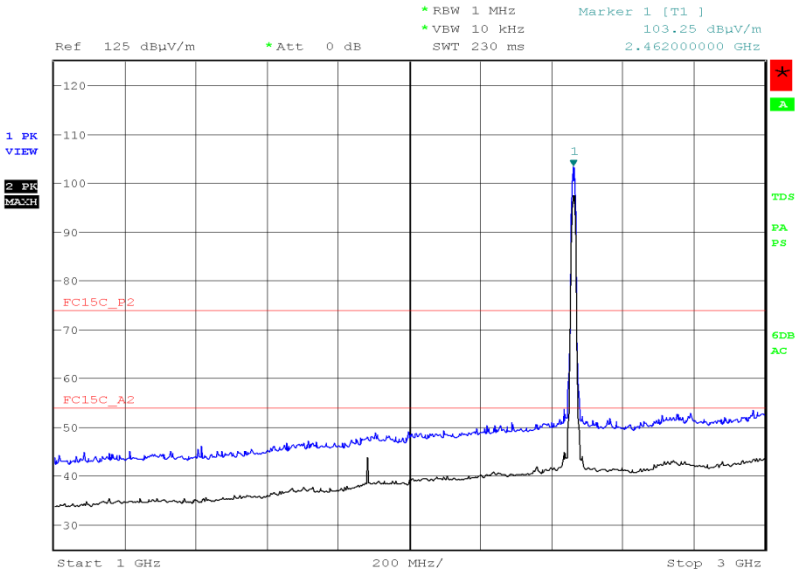


Product Service

1 GHz to 25 GHz

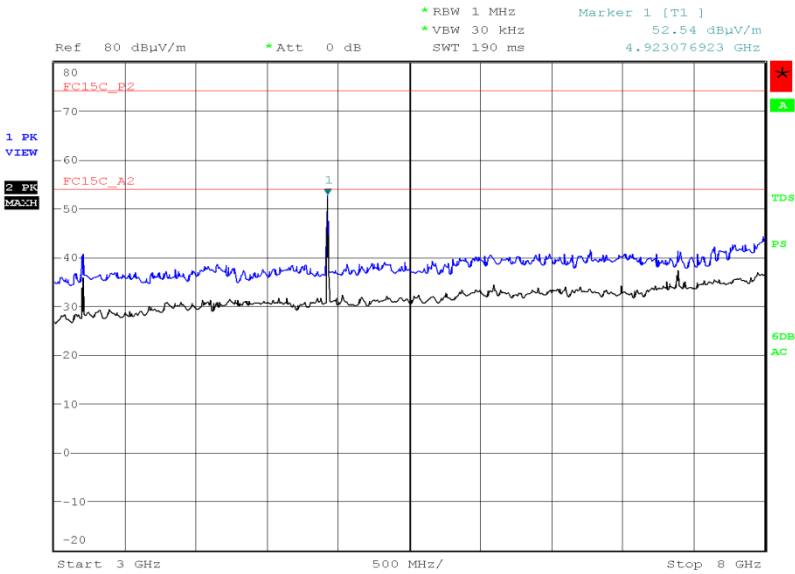
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBμV/m)	Final Average (dBμV/m)
4.924	Vertical	113	314	59.22	47.27

1 GHz to 3 GHz



Date: 6.OCT.2014 19:14:11

3 GHz to 8 GHz

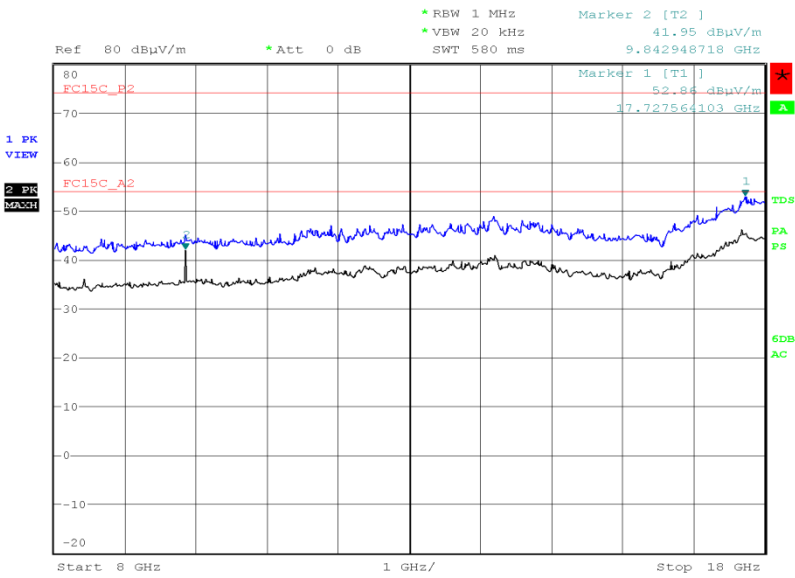


Date: 7.OCT.2014 20:39:52



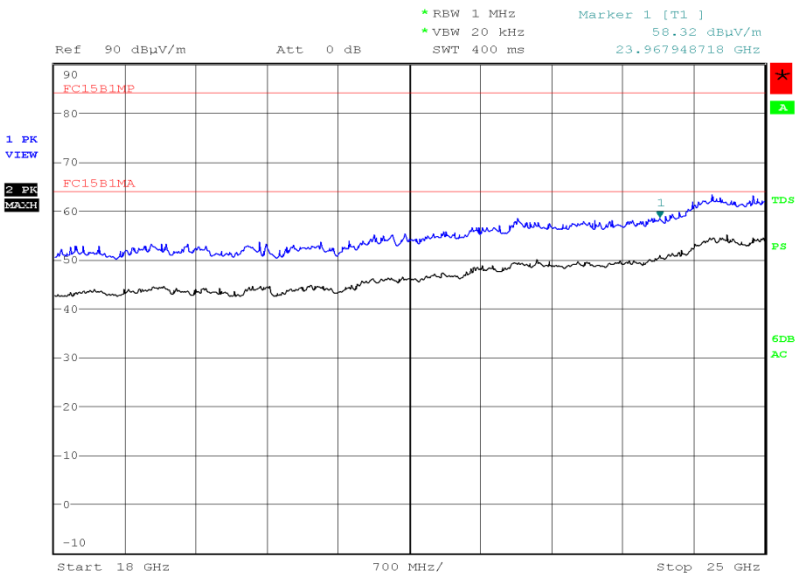
Product Service

8 GHz to 18 GHz



Date: 7.OCT.2014 22:58:11

18 GHz to 25 GHz



Date: 10.OCT.2014 23:42:04

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	(μ V/m)	Average (dB μ V/m)	Peak (dB μ V/m)	
30-88	100	40.0	60.0	3
88-216	150	43.5	63.5	3
216-960	200	46.0	66.0	3
Above 960	500	54.0	74.0	3

Radiated Emissions which fall only in the restricted bands as defined in 15.205 must also comply with the limits in the table above. The table above does not apply for Radiated Emissions which fall outside the restricted bands as defined in 15.205. These emissions outside the restricted bands shall be at least 20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitted complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.



Product Service

Band Edge Emissions

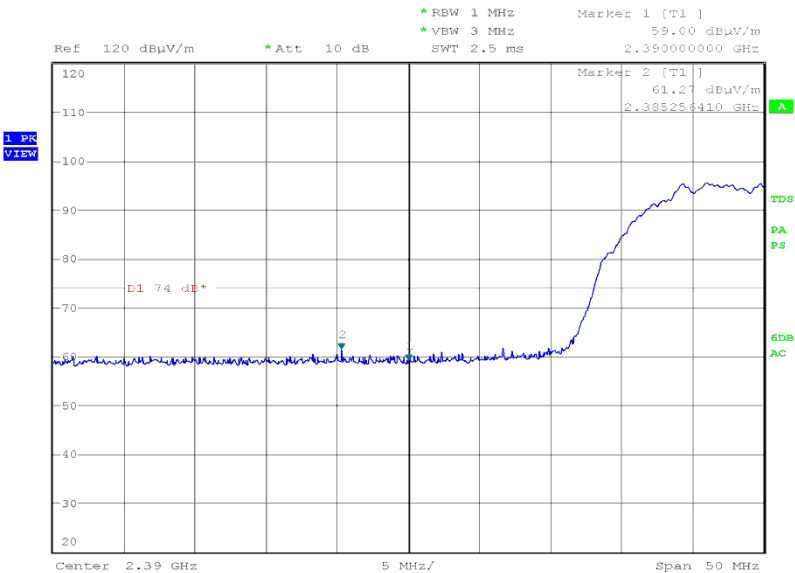
Date Rate: 5.5 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2390.00	59.00	47.80
2385.25	61.27	-
2483.50	*	*

* See remarks.

2390.0 MHz

Final Peak

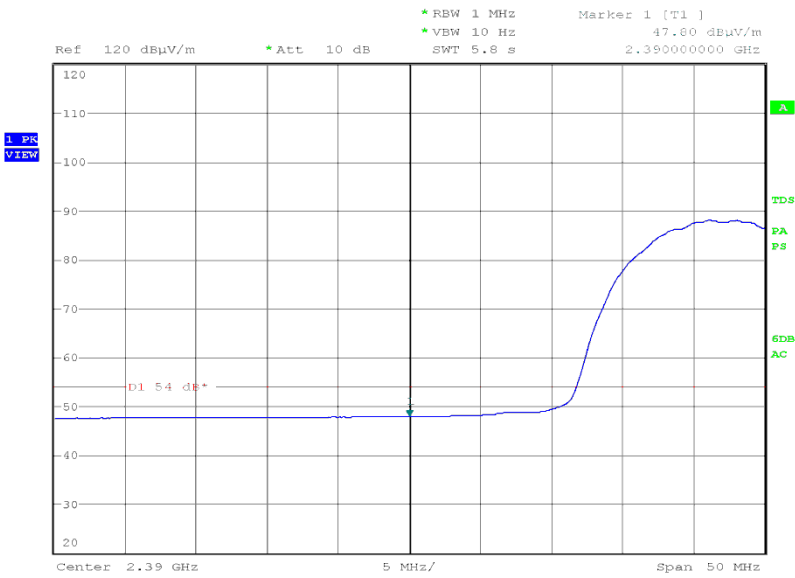


Date: 6.NOV.2014 20:21:29



Product Service

Final Average



Date: 6.NOV.2014 20:23:29

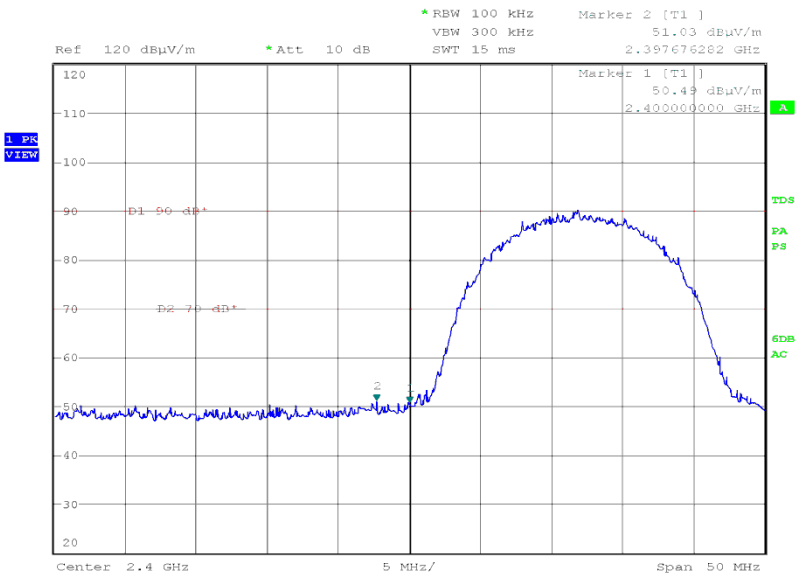


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2400.00	50.49
2397.68	51.03

2400.0 MHz

Final Peak



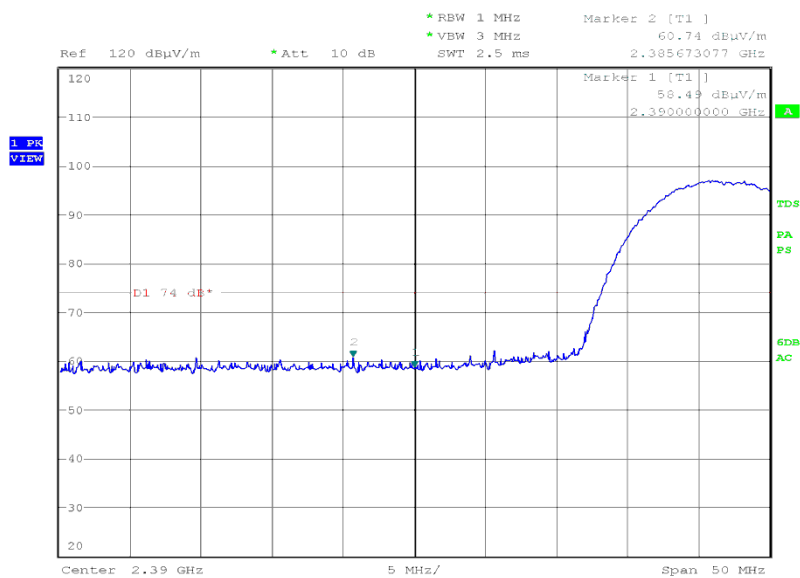
Date: 6.NOV.2014 20:19:41



Product Service

Date Rate: 11 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dB μ V/m)	Final Average (dB μ V/m)
2385.67	60.74	-
2390.00	58.49	47.84
2483.50	59.65	47.63
2485.18	60.65	-

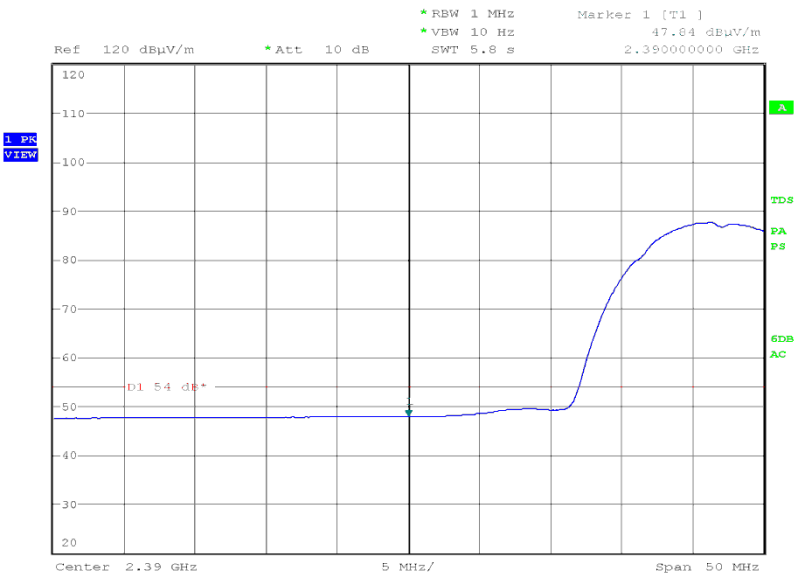
2390.0 MHzFinal Peak

Date: 6.NOV.2014 21:00:36



Product Service

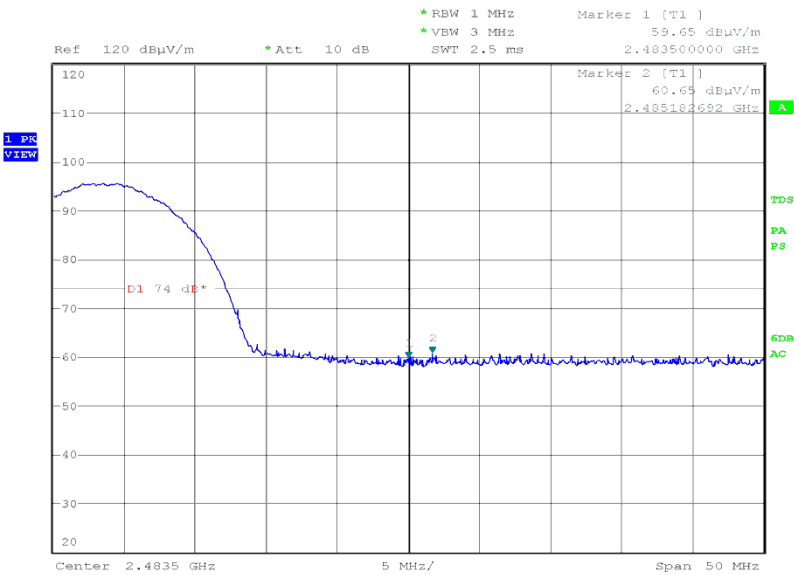
Final Average



Date: 6.NOV.2014 21:03:52

2483.5.0 MHz

Final Peak

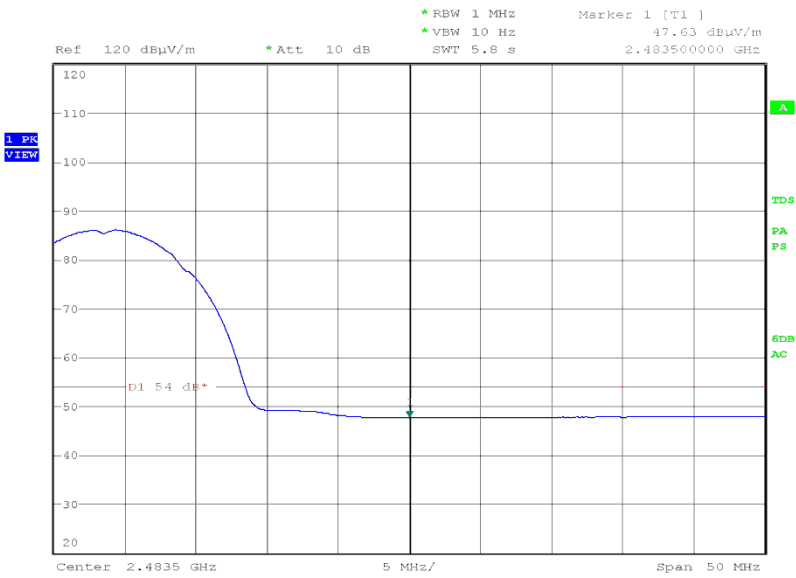


Date: 6.NOV.2014 21:24:27



Product Service

Final Average

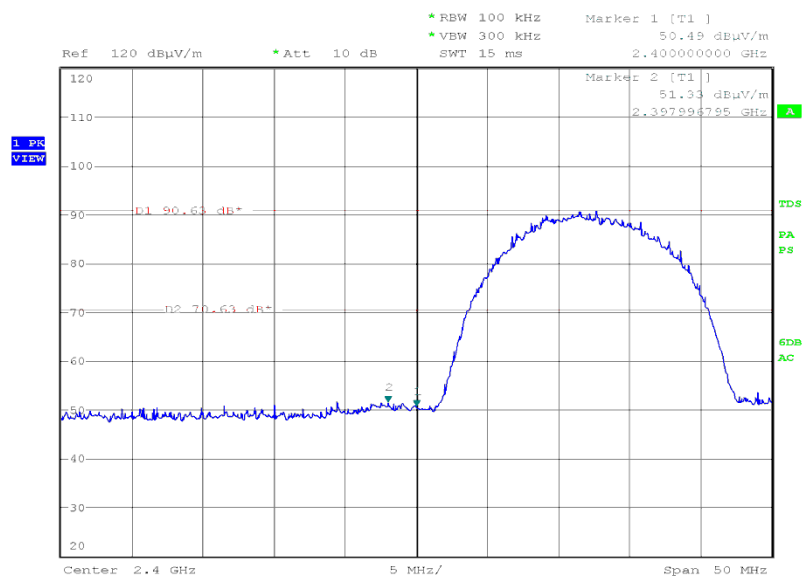


Date: 6.NOV.2014 21:27:41



Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2398.00	51.33
2400.00	50.49
2483.50	47.53
2489.43	50.61

2400.0 MHzFinal Peak

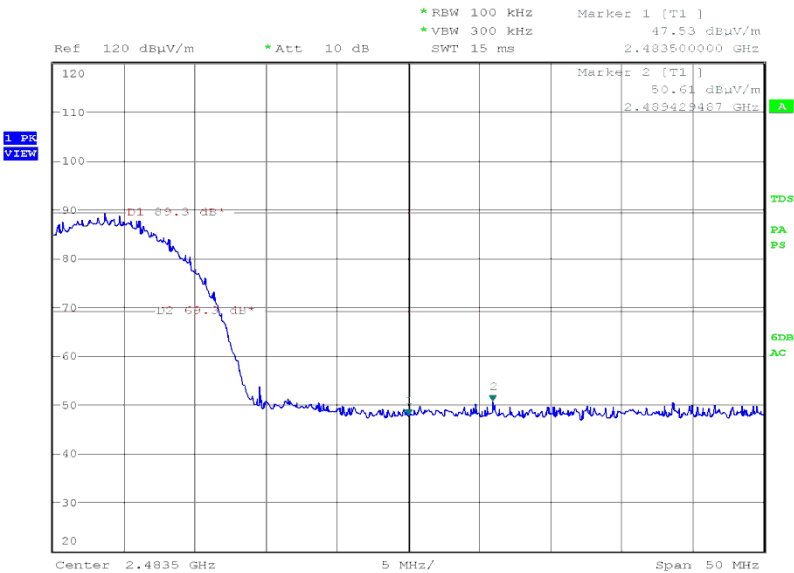
Date: 6.NOV.2014 20:54:30



Product Service

2483.5 MHz

Final Peak



Date: 6.NOV.2014 21:21:36

Remark

The test was performed on 5.5 Mbps because this was deemed the worst case data rate for 6 dB Bandwidth.

The test was performed on 11 Mbps because this was deemed the worst case data rate for Conducted Output Power.

Note: For 2412 MHz, the highest output power and bandwidth were the same data rate – 5.5 Mbps.

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	($\mu\text{V/m}$)	Average (dB $\mu\text{V/m}$)	Peak (dB $\mu\text{V/m}$)	
30-88	100	40.0	60.0	3
88-216	150	43.5	63.5	3
216-960	200	46.0	66.0	3
Above 960	500	54.0	74.0	3

Radiated Emissions which fall only in the restricted bands as defined in 15.205 must also comply with the limits in the table above. The table above does not apply for Radiated Emissions which fall outside the restricted bands as defined in 15.205. These emissions outside the restricted bands shall be at least 20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitted complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

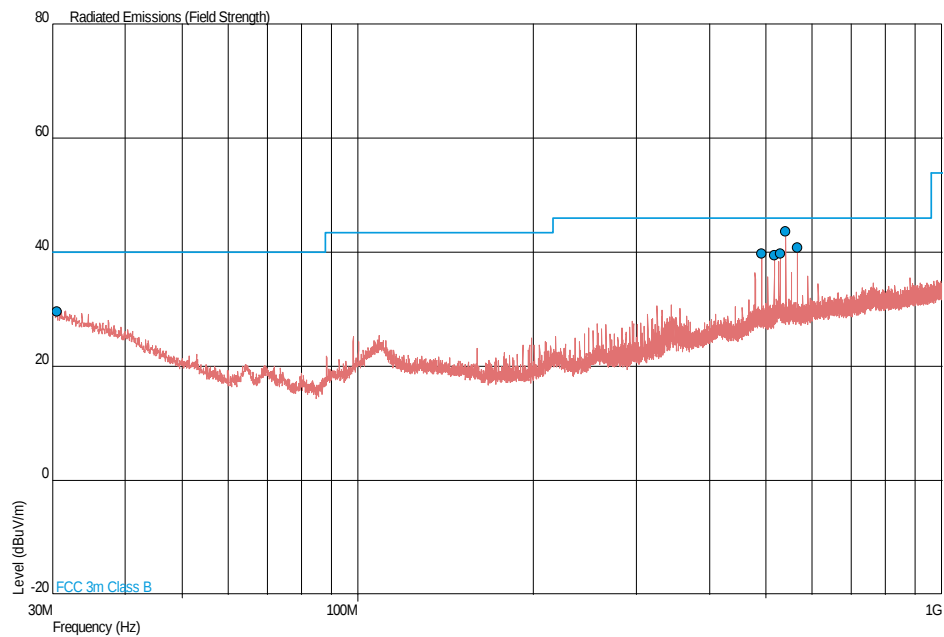


Product Service

802.11(g)

Data Rate: 12 Mbps

110 V AC, 60 Hz supply

Spurious Radiated Emissions2412 MHz30 MHz to 1 GHz

Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.590	29.6	30.2	40.0	100	-10.4	-69.8	32	1.00	Horizontal
491.523	39.8	97.7	46.0	200	-6.2	-102.3	227	1.05	Vertical
516.075	39.4	93.3	46.0	200	-6.6	-106.7	117	1.16	Vertical
528.386	39.8	97.7	46.0	200	-6.2	-102.3	132	1.00	Vertical
540.666	43.6	151.4	46.0	200	-2.4	-48.6	117	1.20	Vertical
565.241	40.9	110.9	46.0	200	-5.1	-89.1	118	1.00	Vertical

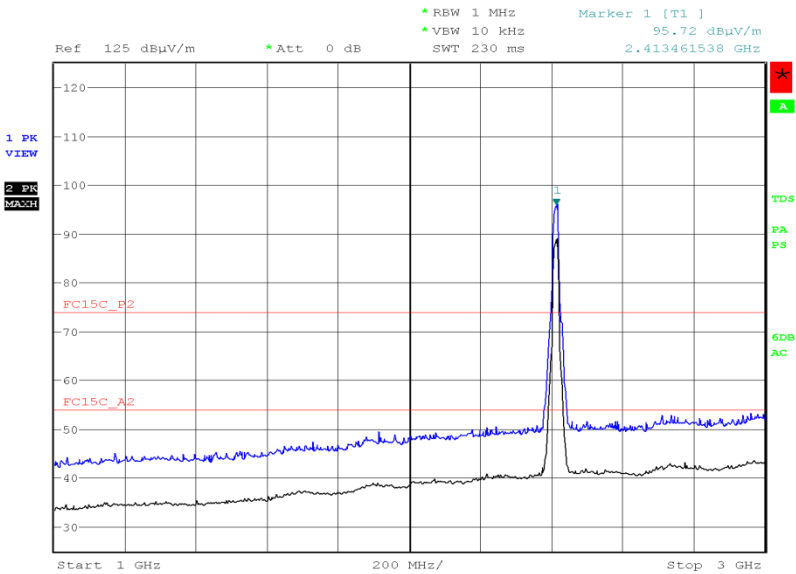


Product Service

1 GHz to 25 GHz

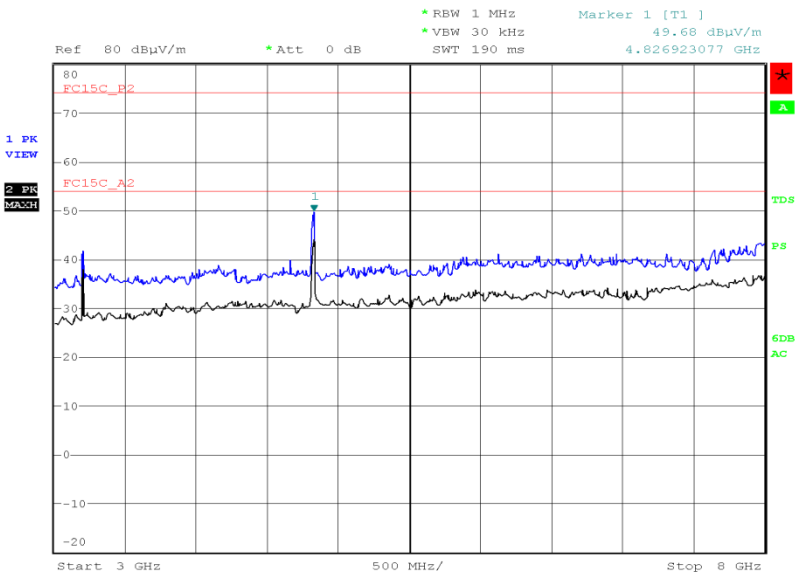
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.824	Vertical	115	043	54.17	40.36

1 GHz to 3 GHz



Date: 6.OCT.2014 20:42:03

3 GHz to 8 GHz

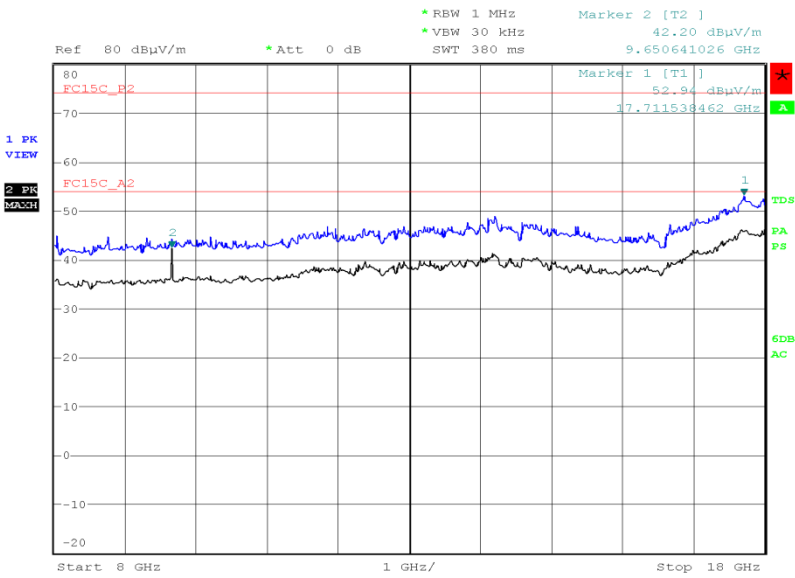


Date: 7.OCT.2014 21:04:10



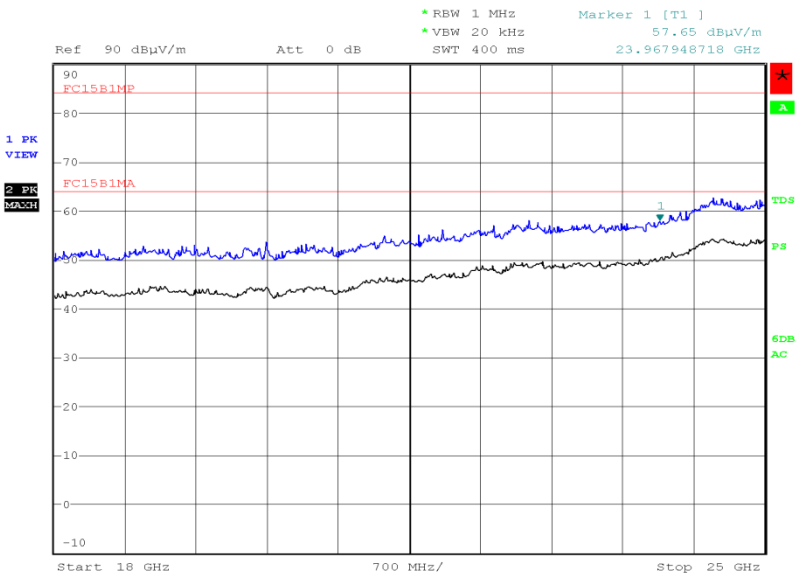
Product Service

8 GHz to 18 GHz



Date: 7.OCT.2014 23:12:49

18 GHz to 25 GHz



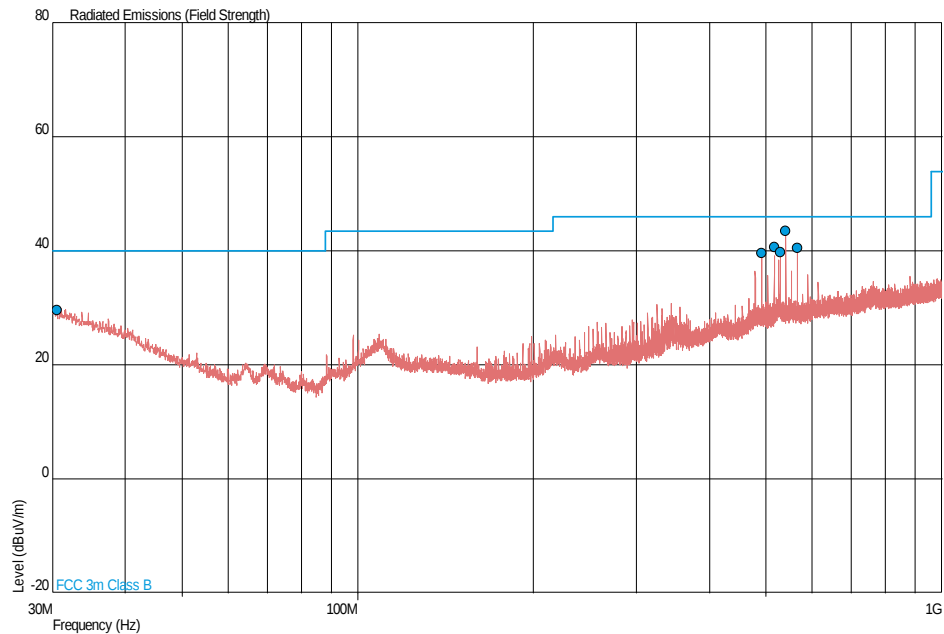
Date: 10.OCT.2014 23:46:07



Product Service

2437 MHz

30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.582	29.6	30.2	40.0	100	-10.4	-69.8	229	1.00	Horizontal
491.520	39.6	95.5	46.0	200	-6.4	-104.5	213	1.00	Vertical
516.088	40.6	107.2	46.0	200	-5.4	-92.8	110	1.00	Vertical
528.386	39.8	97.7	46.0	200	-6.2	-102.3	132	1.00	Vertical
540.668	43.4	147.9	46.0	200	-2.6	-52.1	125	1.00	Vertical
565.246	40.5	105.9	46.0	200	-5.5	-94.1	124	1.00	Vertical

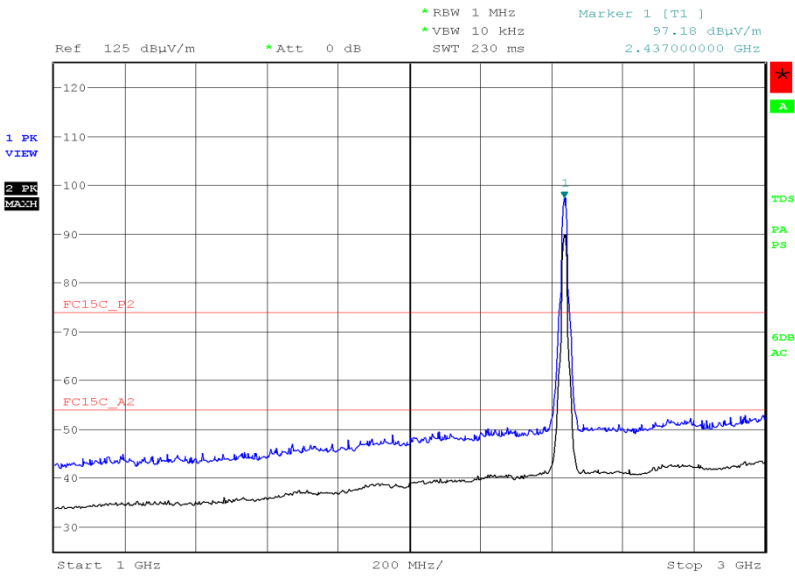


Product Service

1 GHz to 25 GHz

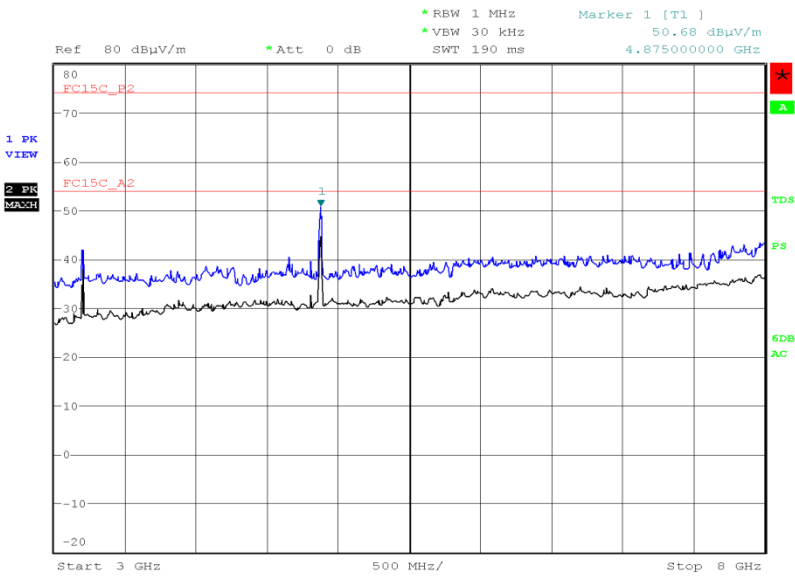
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.875	Vertical	100	043	54.22	39.84

1 GHz to 3 GHz



Date: 6.OCT.2014 21:17:34

3 GHz to 8 GHz

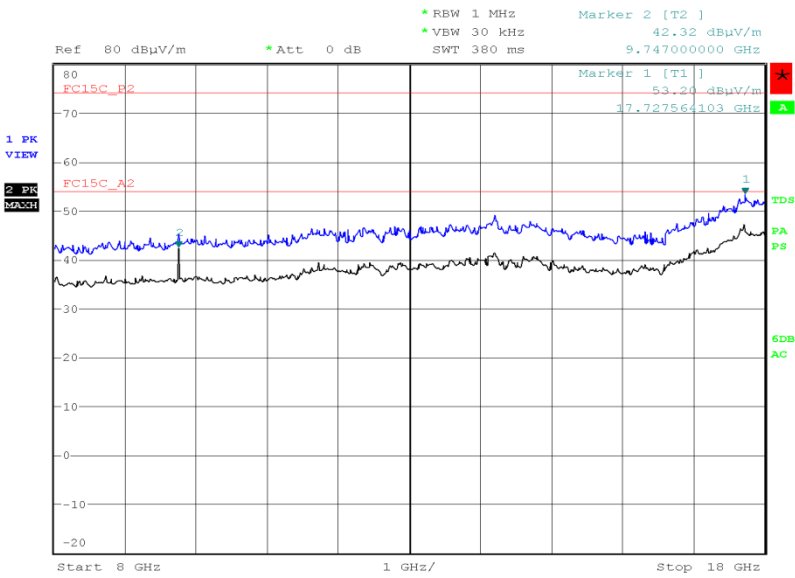


Date: 7.OCT.2014 21:14:28



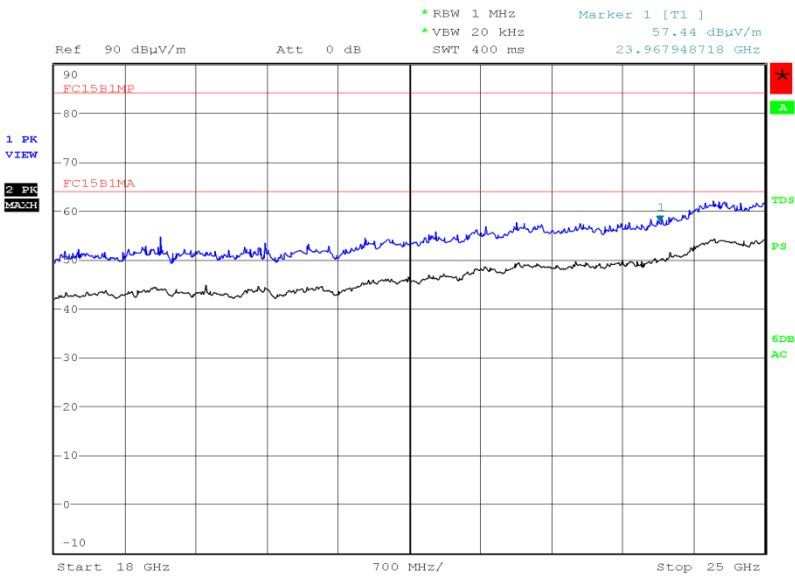
Product Service

8 GHz to 18 GHz



Date: 7.OCT.2014 23:21:08

18 GHz to 25 GHz



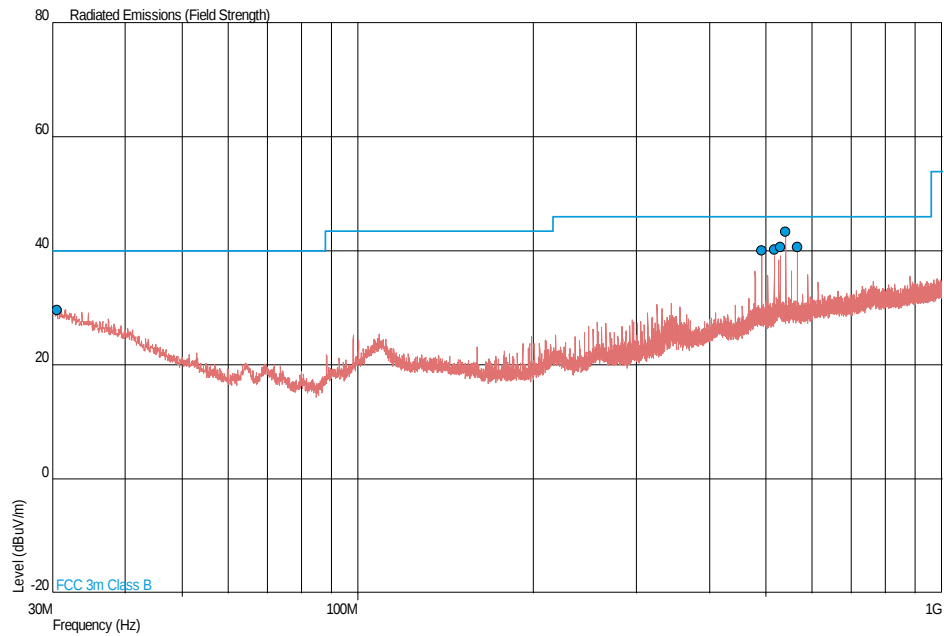
Date: 10.OCT.2014 23:55:38



Product Service

2462 MHz

30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.572	29.6	30.2	40.0	100	-10.4	-69.8	360	2.03	Horizontal
491.513	40.0	100.0	46.0	200	-6.0	-100.0	222	1.09	Vertical
516.094	40.2	102.3	46.0	200	-5.8	-97.7	104	1.00	Vertical
528.381	40.6	107.2	46.0	200	-5.4	-92.8	112	1.00	Vertical
540.663	43.4	147.9	46.0	200	-2.6	-52.1	124	1.00	Vertical
565.243	40.7	108.4	46.0	200	-5.3	-91.6	124	1.00	Vertical

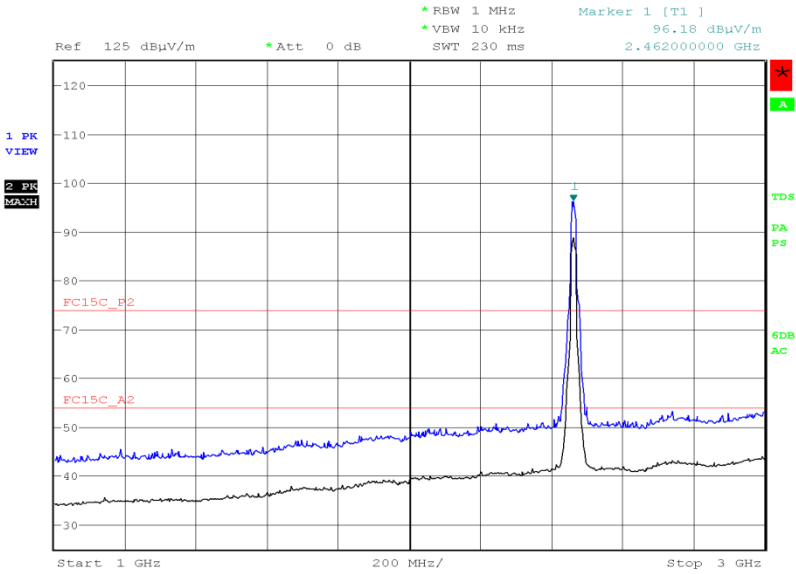


Product Service

1 GHz to 25 GHz

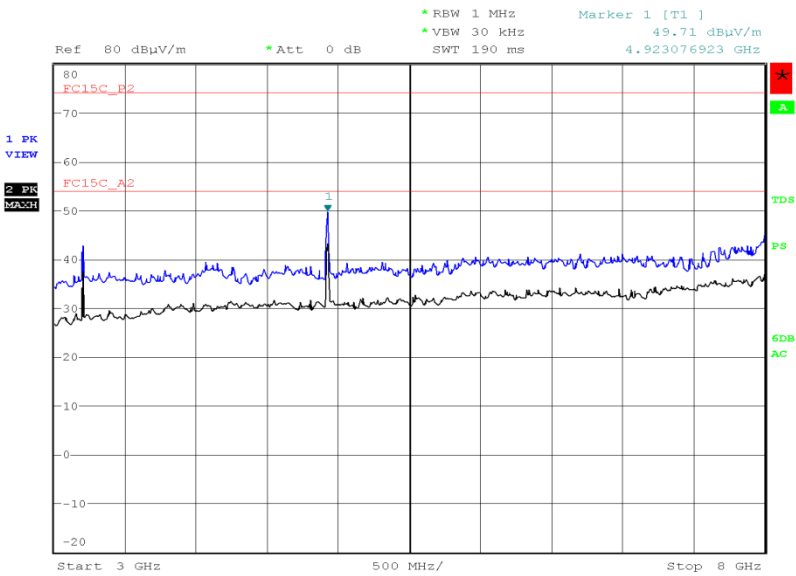
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.923	Vertical	150	039	55.45	40.56

1 GHz to 3 GHz



Date: 6.OCT.2014 21:11:44

3 GHz to 8 GHz

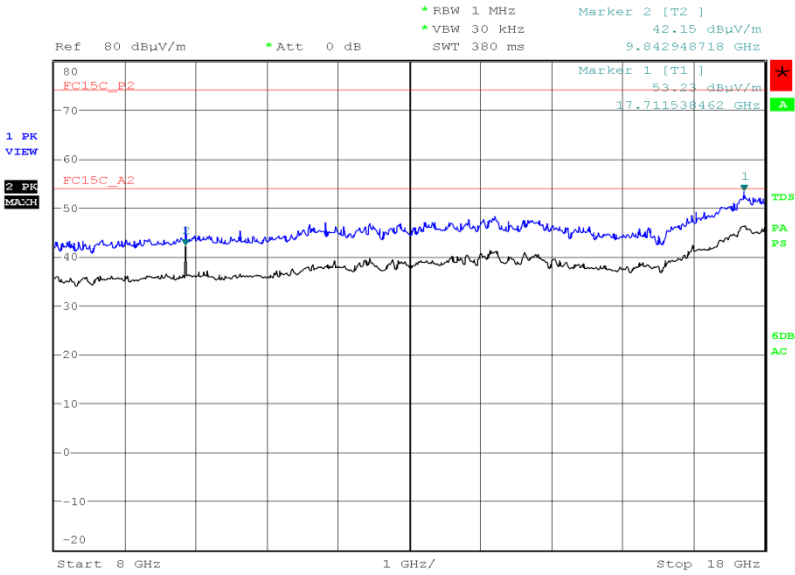


Date: 7.OCT.2014 21:22:42



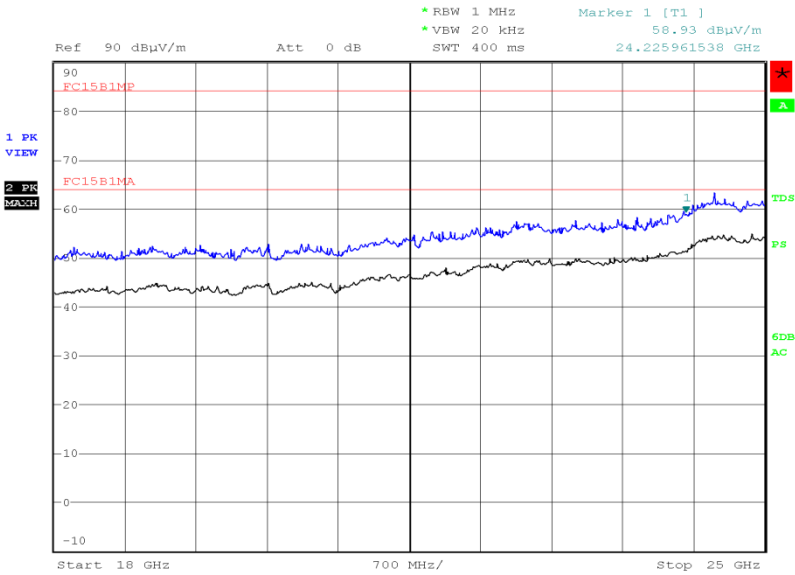
Product Service

8 GHz to 18 GHz



Date: 7.OCT.2014 23:25:38

18 GHz to 25 GHz



Date: 10.OCT.2014 23:52:21

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	(μ V/m)	Average (dB μ V/m)	Peak (dB μ V/m)	
30-88	100	40.0	60.0	3
88-216	150	43.5	63.5	3
216-960	200	46.0	66.0	3
Above 960	500	54.0	74.0	3

Radiated Emissions which fall only in the restricted bands as defined in 15.205 must also comply with the limits in the table above. The table above does not apply for Radiated Emissions which fall outside the restricted bands as defined in 15.205. These emissions outside the restricted bands shall be at least 20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitted complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.



Product Service

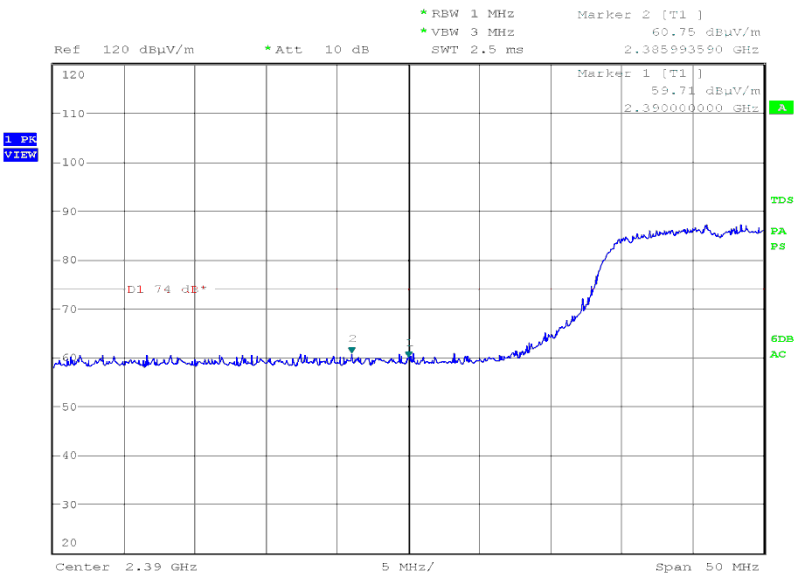
Band Edge Emissions

Date Rate: 12 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2386.00	60.75	-
2390.00	59.71	47.78
2483.50	57.75	47.67
2487.67	60.06	-

2390.0 MHz

Final Peak

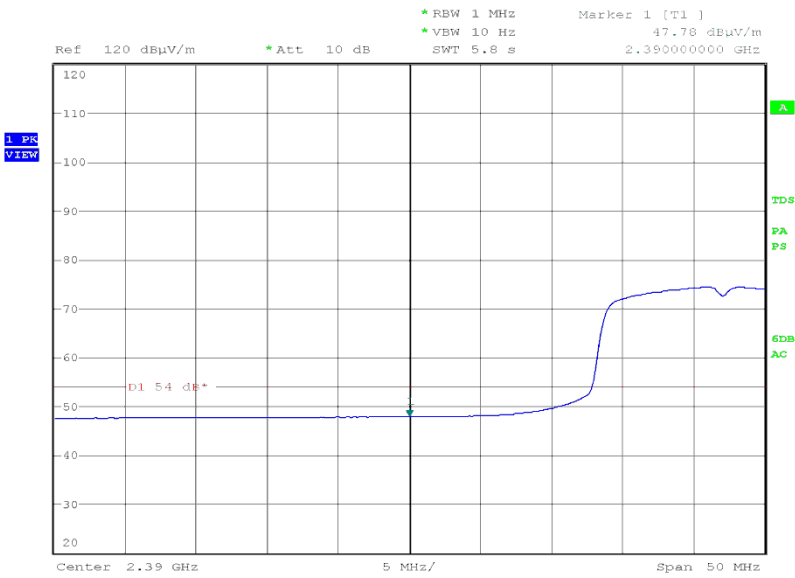


Date: 6.NOV.2014 22:20:54



Product Service

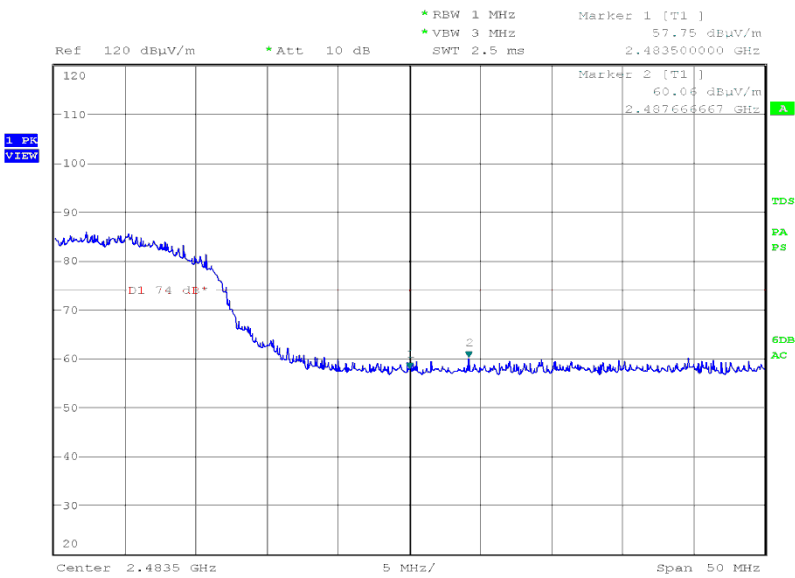
Final Average



Date: 6.NOV.2014 22:22:46

2486.5 MHz

Final Peak

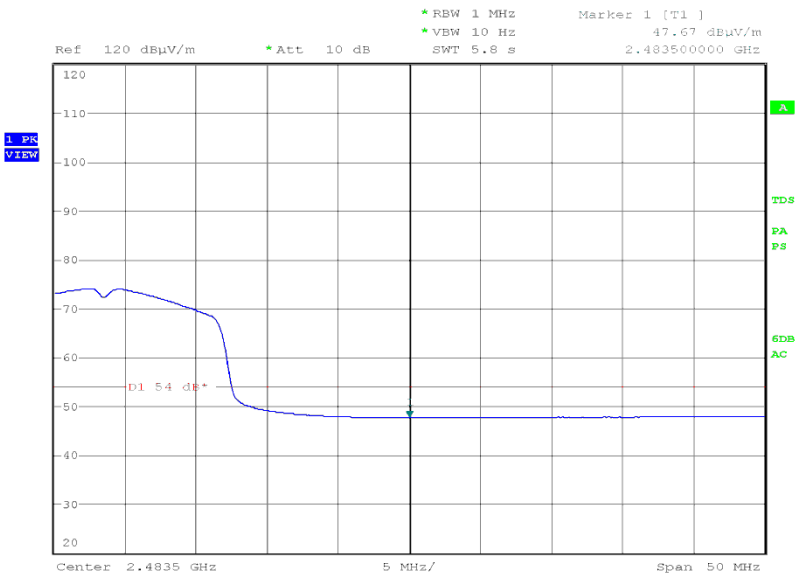


Date: 6.NOV.2014 23:06:31



Product Service

Final Average



Date: 6.NOV.2014 23:07:34

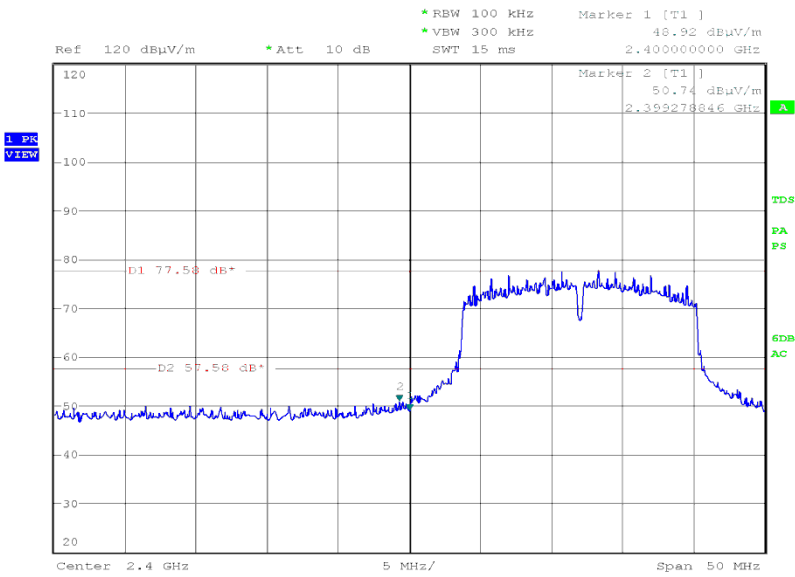


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2399.28	50.74
2400.00	48.92
2483.50	48.33
2499.21	49.87

2400.0 MHz

Final Peak



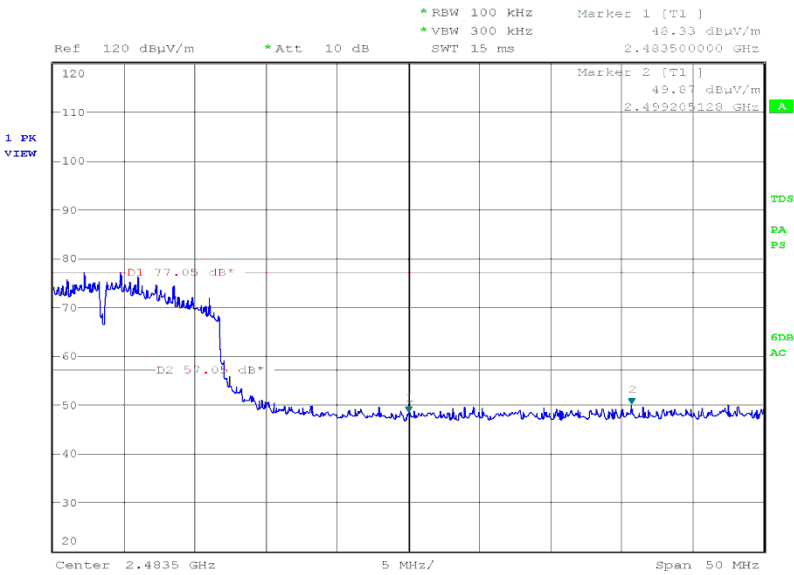
Date: 6.NOV.2014 22:17:19



Product Service

2483.5 MHz

Final Peak



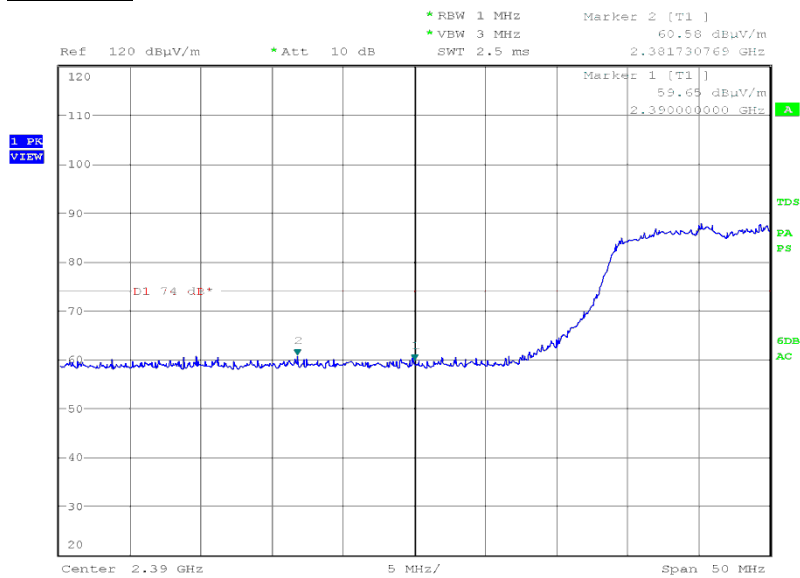
Date: 6.NOV.2014 23:03:58



Product Service

Data Rate: 48 Mbps

Restricted Band Of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2381.73	60.58	-
2390.00	59.65	47.78
2483.50	58.76	47.61
2485.42	60.55	-

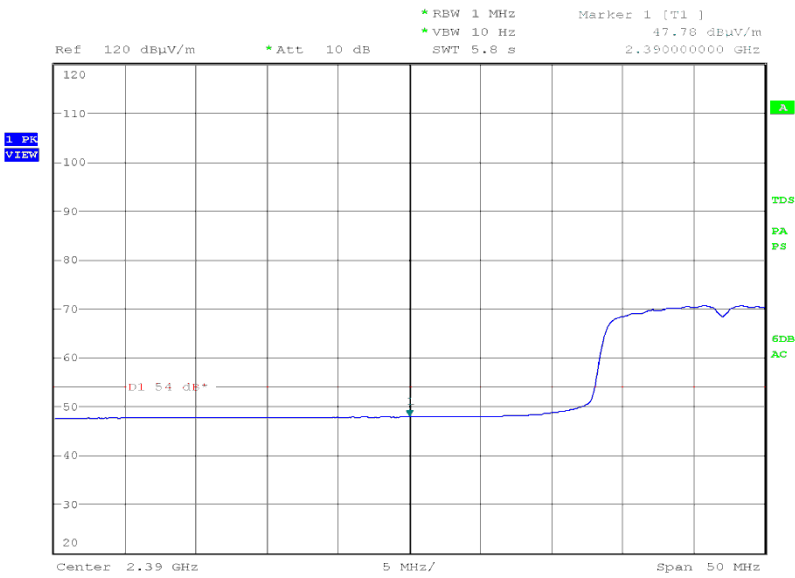
2390.0 MHzFinal Peak

Date: 6.NOV.2014 21:52:33



Product Service

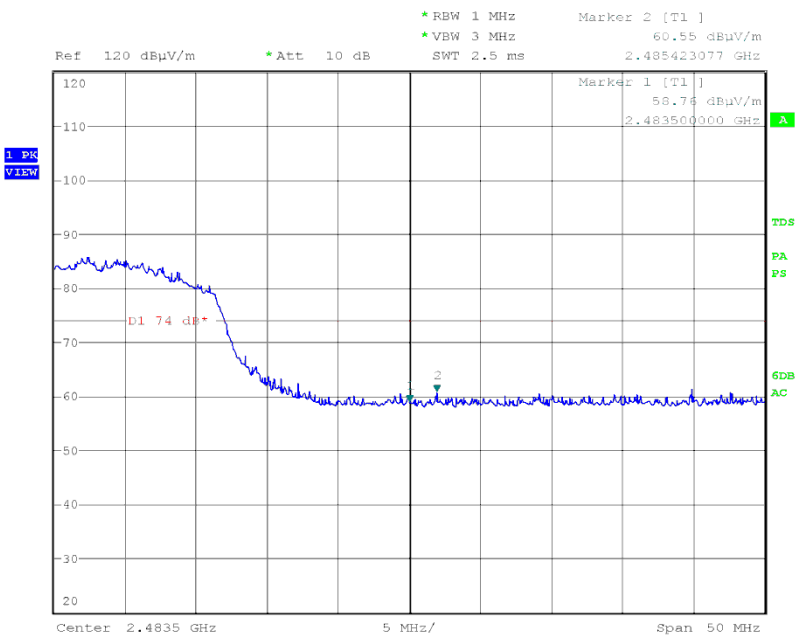
Final Average



Date: 6.NOV.2014 21:54:22

2486.5 MHz

Final Peak

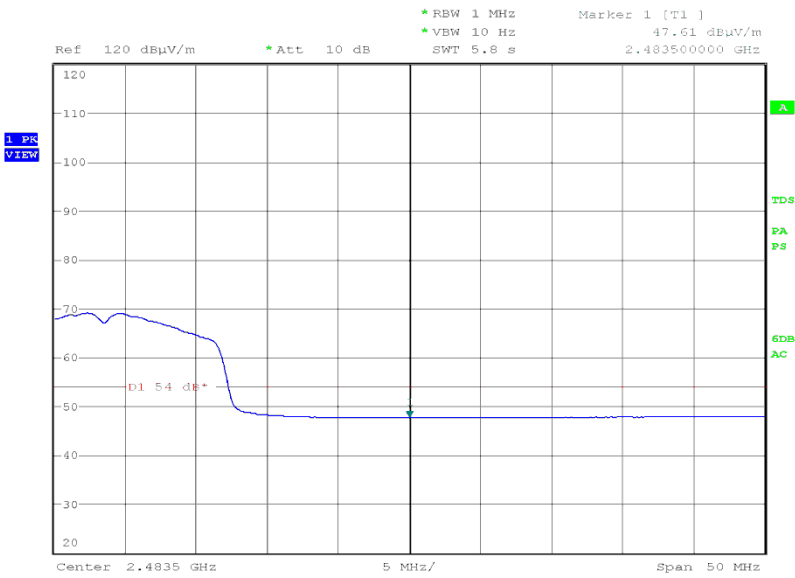


Date: 6.NOV.2014 22:43:17



Product Service

Final Average



Date: 6.NOV.2014 22:48:28

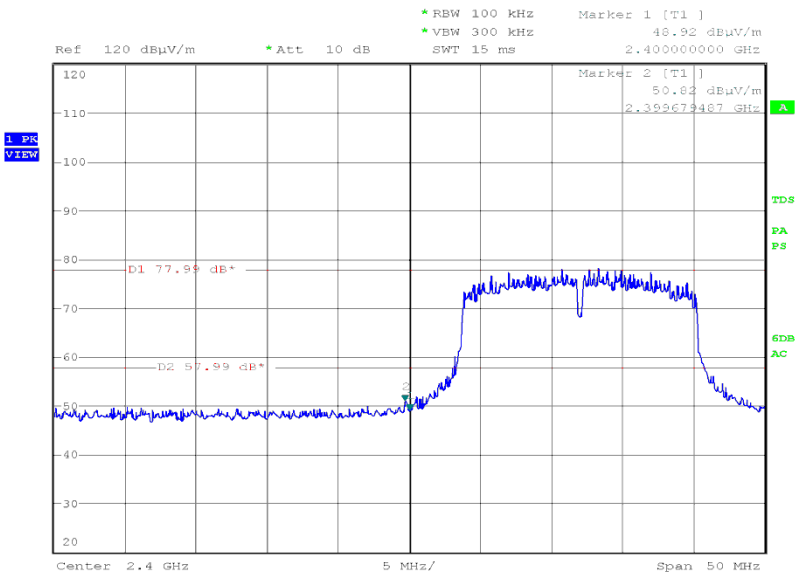


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2399.68	50.82
2400.00	48.92
2483.50	47.29
2486.06	50.67

2400.0 MHz

Final Peak



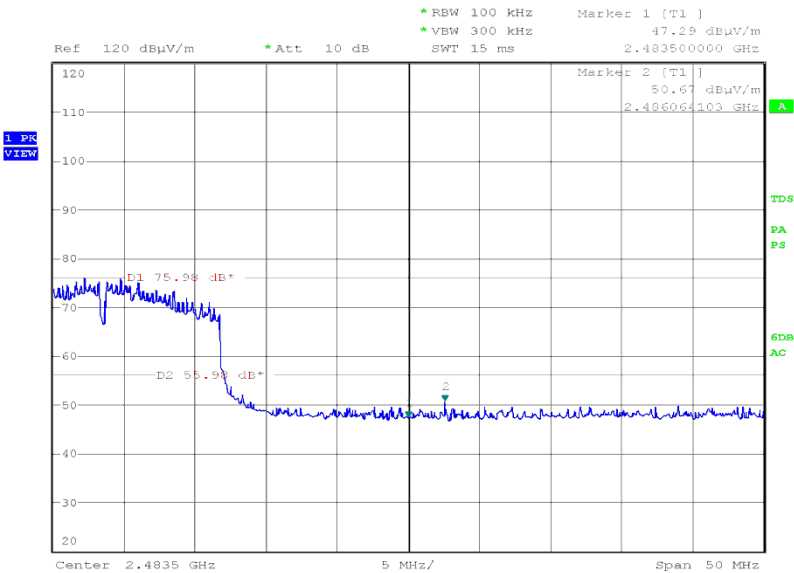
Date: 6.NOV.2014 21:47:29



Product Service

2483.5 MHz

Final Peak



Date: 6.NOV.2014 22:42:16

Remark

The test was performed on 48 Mbps because this was deemed the worst case data rate for 6 dB Bandwidth.

The test was performed on 12 Mbps because this was deemed the worst case data rate for Conducted Output Power.

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	(μV/m)	Average (dBμV/m)	Peak (dBμV/m)	
30-88	100	40.0	60.0	3
88-216	150	43.5	63.5	3
216-960	200	46.0	66.0	3
Above 960	500	54.0	74.0	3

Radiated Emissions which fall only in the restricted bands as defined in 15.205 must also comply with the limits in the table above. The table above does not apply for Radiated Emissions which fall outside the restricted bands as defined in 15.205. These emissions outside the restricted bands shall be at least 20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitted complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

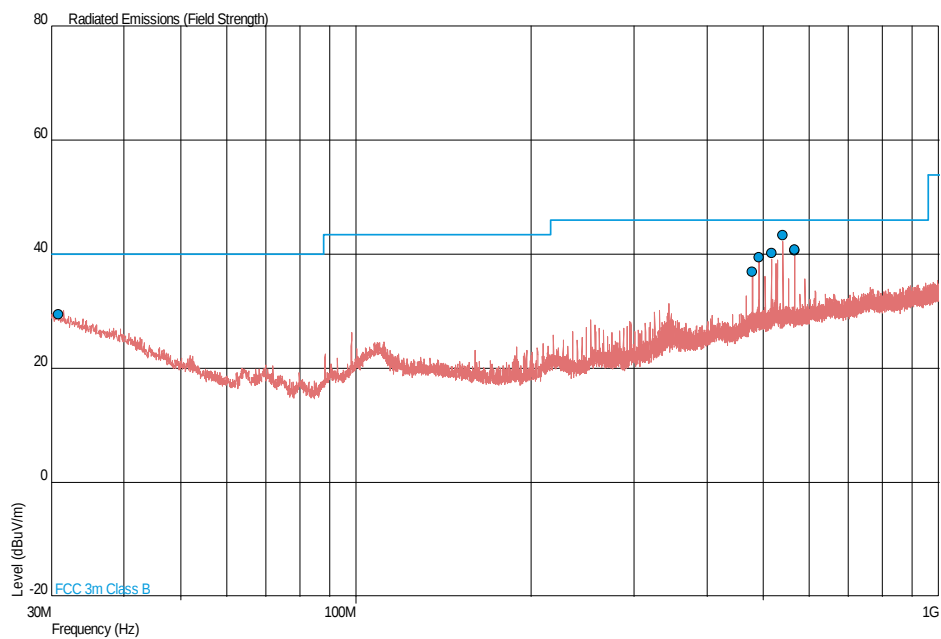


Product Service

802.11(n) 20 MHz BW

Data Rate: 6.5 Mbps

110 V AC, 60 Hz supply

Spurious Radiated Emissions2412 MHz30 MHz to 1 GHz

Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.868	29.5	29.9	40.0	100	-10.5	-70.1	344	1.02	Vertical
479.229	37.0	70.8	46.0	200	-9.0	-129.2	205	1.03	Vertical
491.516	39.5	94.4	46.0	200	-6.5	-105.6	203	1.08	Vertical
516.099	40.2	102.3	46.0	200	-5.8	-97.7	103	1.04	Vertical
540.670	43.4	147.9	46.0	200	-2.6	-52.1	125	1.00	Vertical
565.235	40.8	109.6	46.0	200	-5.2	-90.4	133	1.27	Horizontal
565.248	40.7	108.4	46.0	200	-5.3	-91.6	104	1.00	Vertical

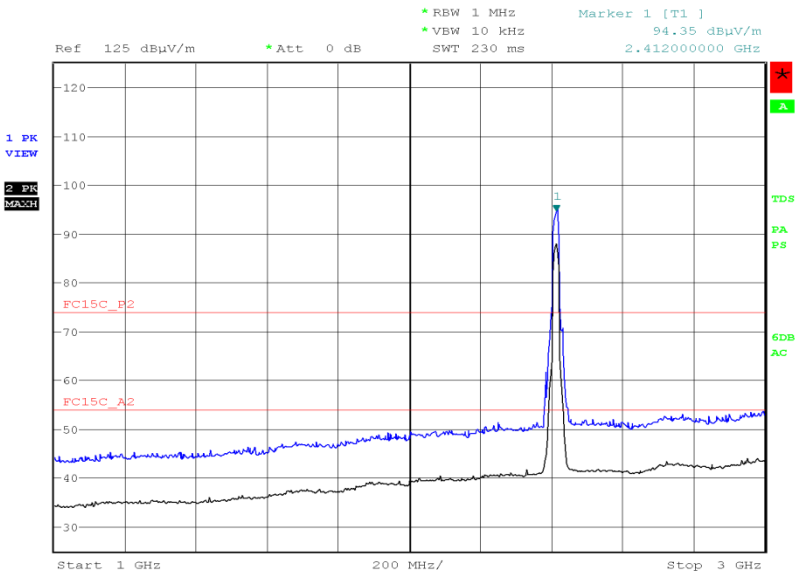


Product Service

1 GHz to 25 GHz

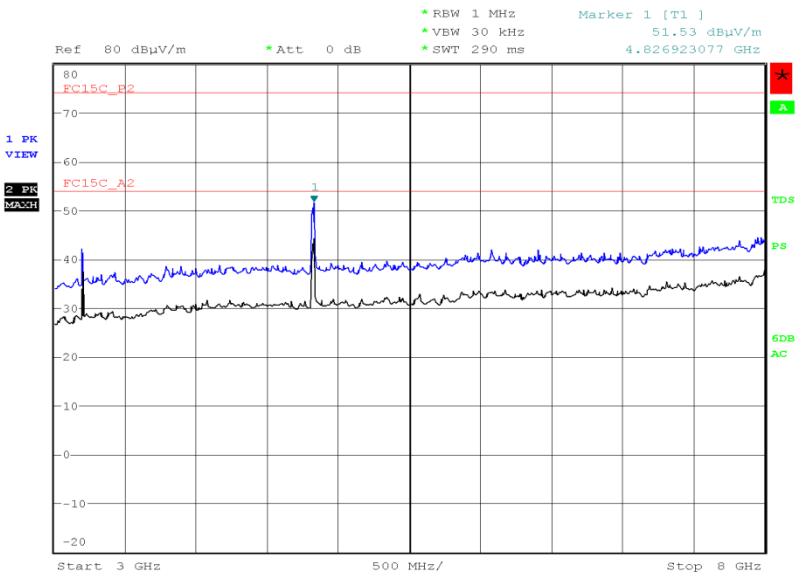
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.824	Vertical	100	036	55.63	39.68

1 GHz to 3 GHz



Date: 6.OCT.2014 21:27:50

3 GHz to 8 GHz

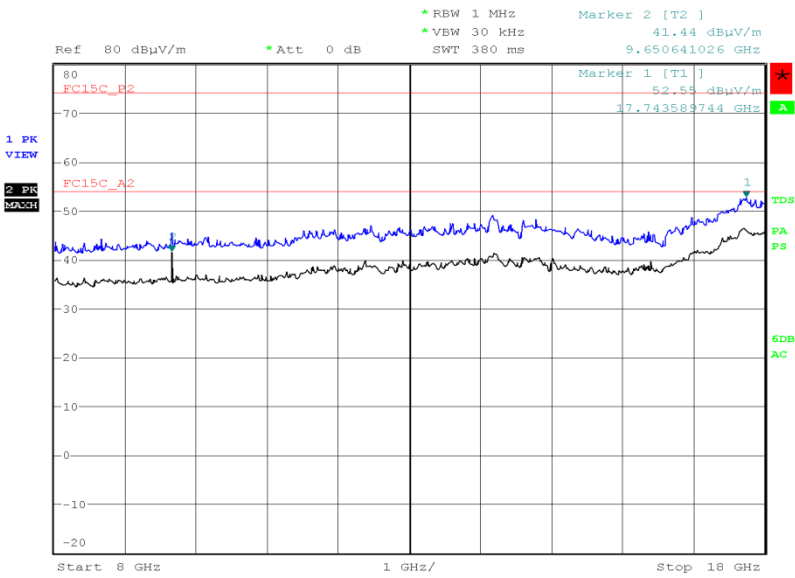


Date: 7.OCT.2014 21:43:06



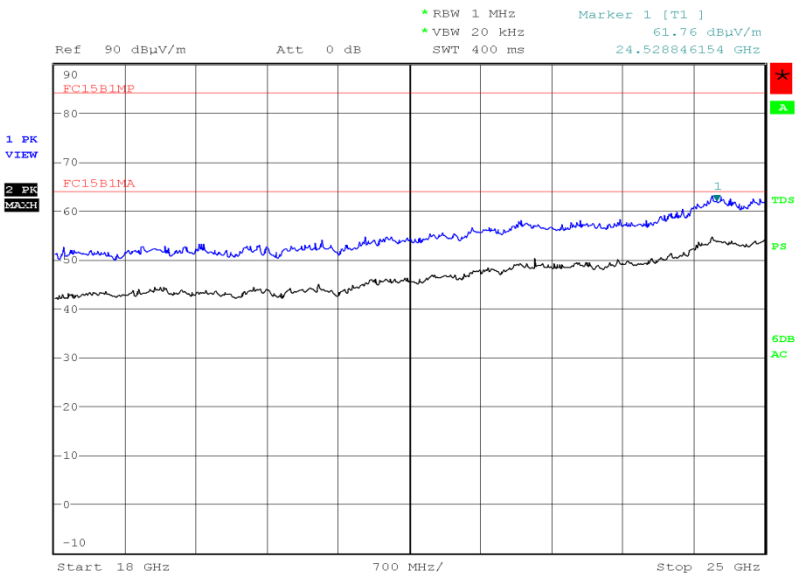
Product Service

8 GHz to 18 GHz



Date: 7.OCT.2014 23:29:55

18 GHz to 25 GHz



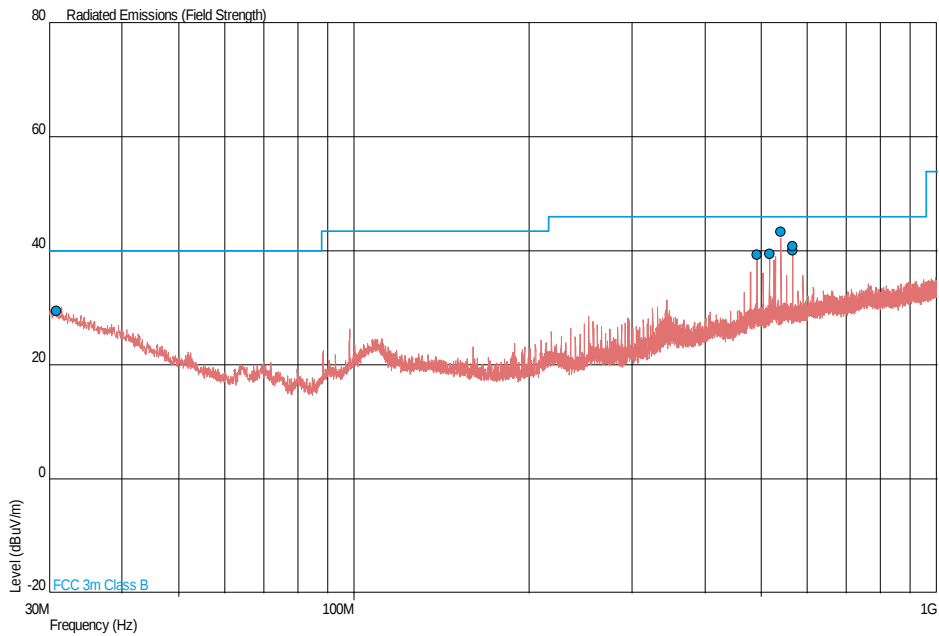
Date: 11.OCT.2014 00:03:43



Product Service

2437 MHz

30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.872	29.5	29.9	40.0	100	-10.5	-70.1	326	1.25	Vertical
491.520	39.4	93.3	46.0	200	-6.6	-106.7	204	1.00	Vertical
516.099	39.4	93.3	46.0	200	-6.6	-106.7	99	1.15	Vertical
540.670	43.3	146.2	46.0	200	-2.7	-53.8	123	1.00	Vertical
565.244	40.1	101.2	46.0	200	-5.9	-98.8	125	1.00	Vertical
565.246	40.9	110.9	46.0	200	-5.1	-89.1	132	1.39	Horizontal

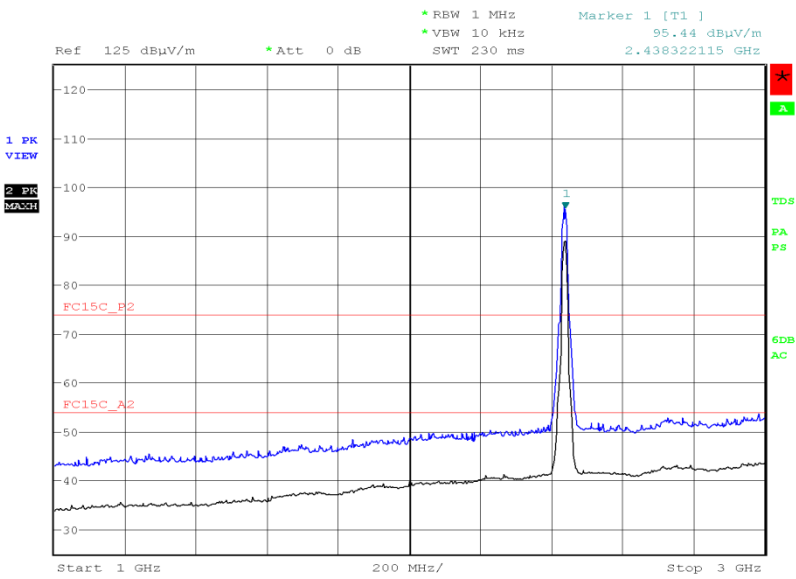


Product Service

1 GHz to 25 GHz

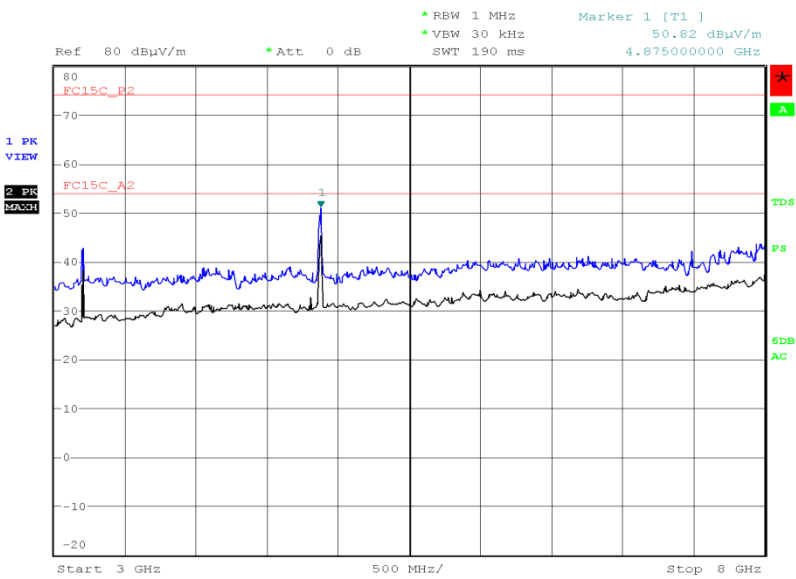
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.875	Vertical	100	047	55.79	39.76

1 GHz to 3 GHz



Date: 6.OCT.2014 21:56:14

3 GHz to 8 GHz

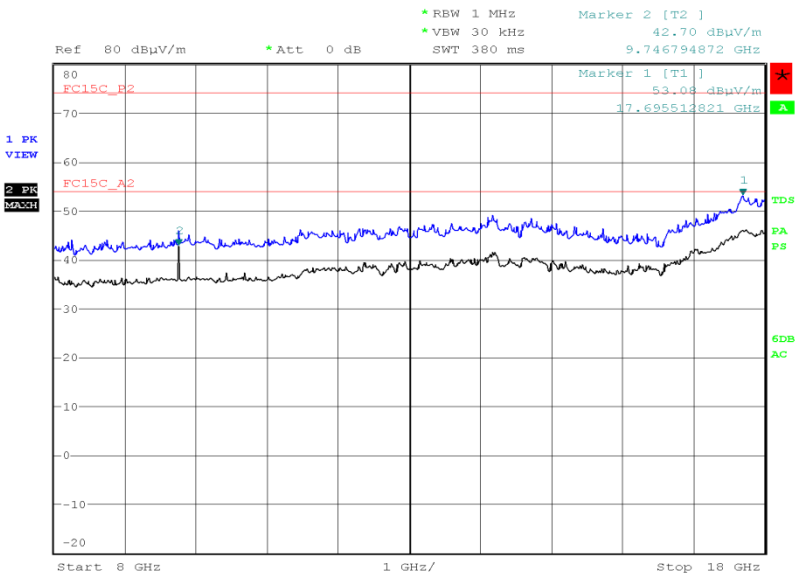


Date: 7.OCT.2014 21:55:23



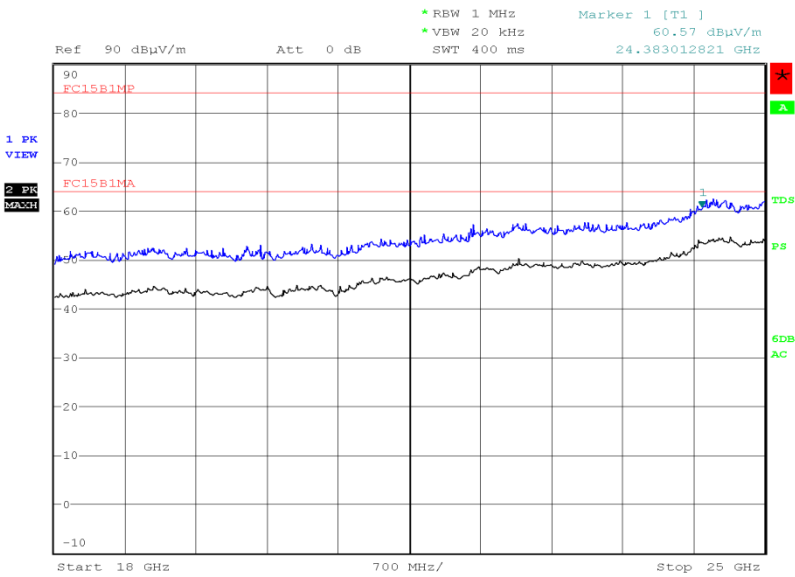
Product Service

8 GHz to 18 GHz



Date: 7.OCT.2014 23:35:02

18 GHz to 25 GHz

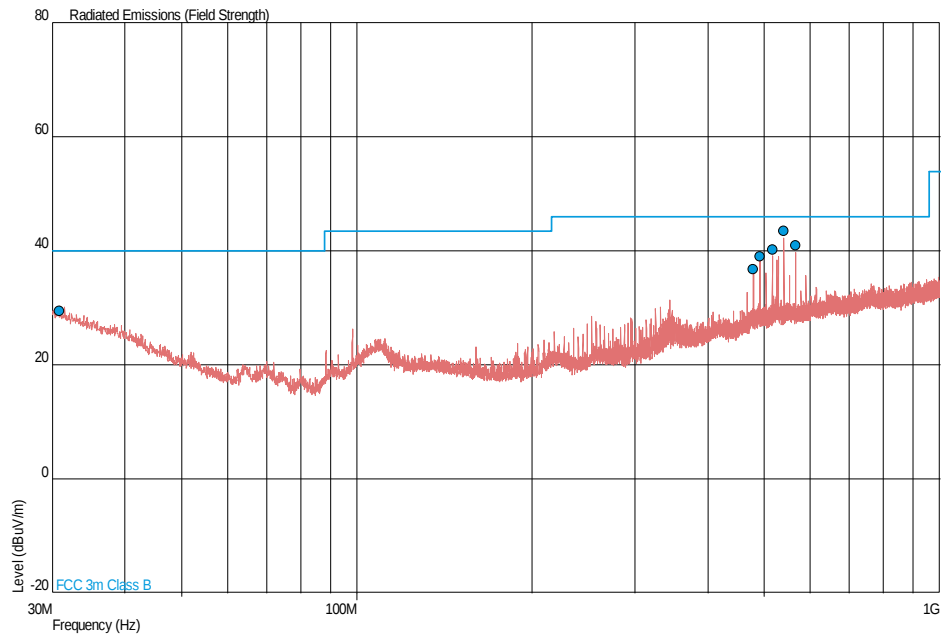


Date: 11.OCT.2014 00:08:03



2462 MHz

30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.871	29.5	29.9	40.0	100	-10.5	-70.1	360	1.00	Vertical
479.229	36.9	70.0	46.0	200	-9.1	-130.0	201	1.00	Vertical
491.523	39.1	90.2	46.0	200	-6.9	-109.8	105	1.00	Vertical
516.107	40.2	102.3	46.0	200	-5.8	-97.7	113	1.00	Vertical
540.668	43.5	149.6	46.0	200	-2.5	-50.4	118	1.00	Vertical
565.246	40.9	110.9	46.0	200	-5.1	-89.1	140	1.33	Horizontal

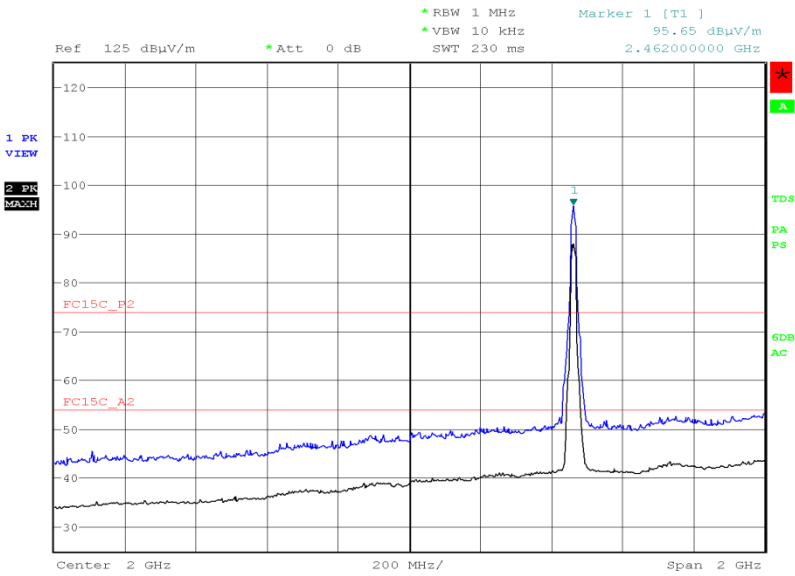


Product Service

1 GHz to 25 GHz

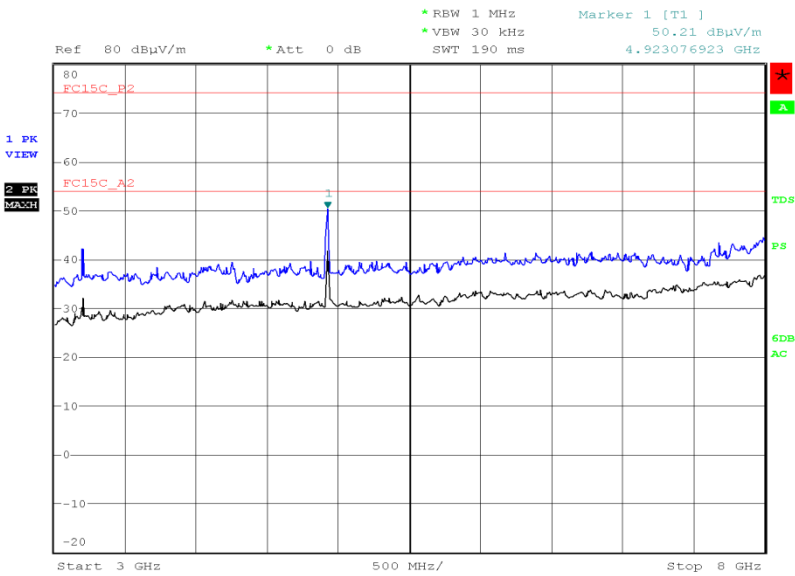
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.923	Vertical	100	040	56.25	40.54

1 GHz to 3 GHz



Date: 6.OCT.2014 22:00:20

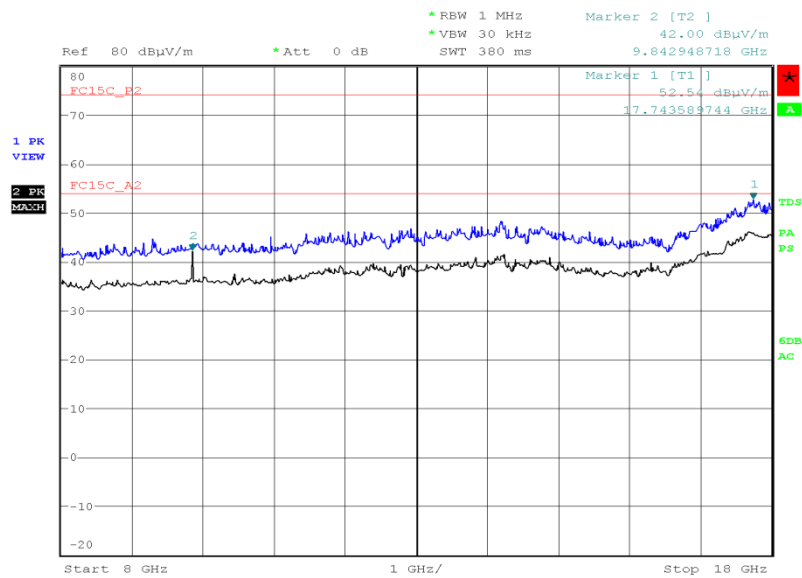
3 GHz to 8 GHz



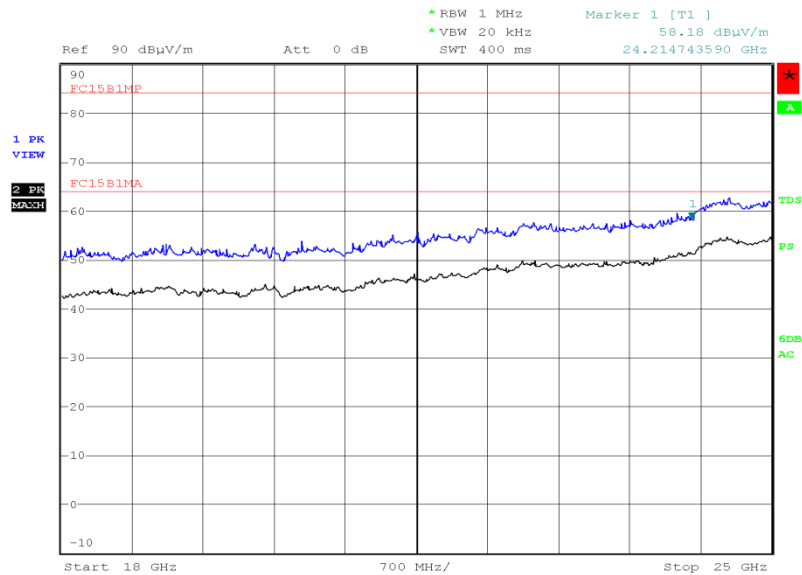
Date: 7.OCT.2014 22:09:17



Product Service

8 GHz to 18 GHz

Date: 7.OCT.2014 23:42:42

18 GHz to 25 GHz

Date: 11.OCT.2014 00:15:49

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	(μ V/m)	Average (dB μ V/m)	Peak (dB μ V/m)	
30-88	100	40.0	60.0	3
88-216	150	43.5	63.5	3
216-960	200	46.0	66.0	3
Above 960	500	54.0	74.0	3

Radiated Emissions which fall only in the restricted bands as defined in 15.205 must also comply with the limits in the table above. The table above does not apply for Radiated Emissions which fall outside the restricted bands as defined in 15.205. These emissions outside the restricted bands shall be at least 20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitted complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

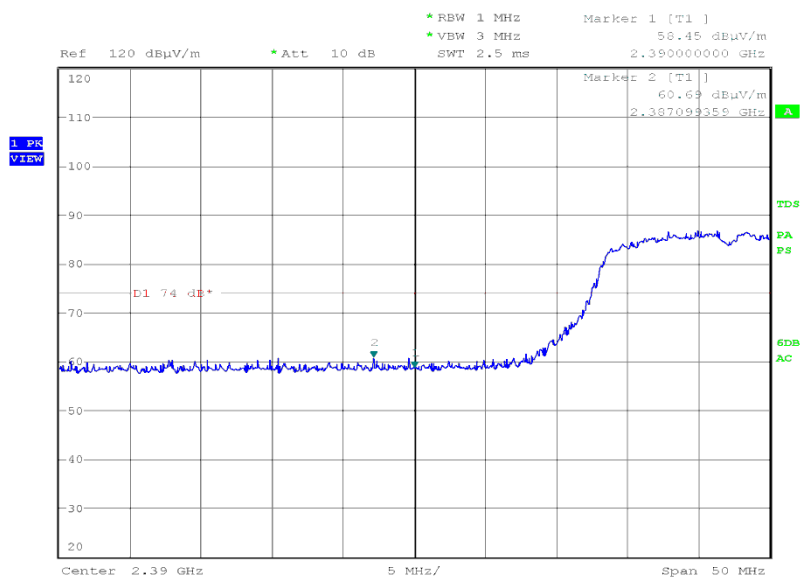


Product Service

Band Edge Emissions

Date Rate: 6.5 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2387.10	60.69	-
2390.0	58.45	47.77
2483.5	57.20	47.65
2485.98	60.70	-

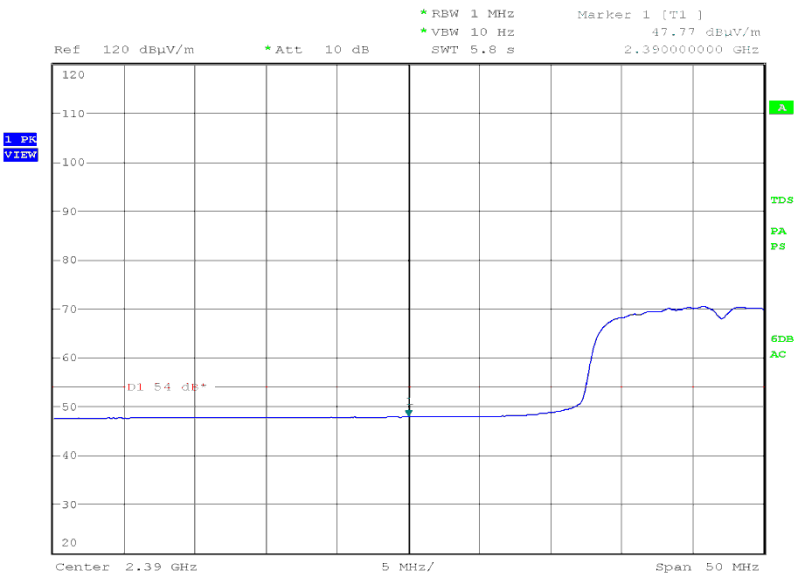
2390.0 MHzFinal Peak

Date: 6.NOV.2014 23:42:04



Product Service

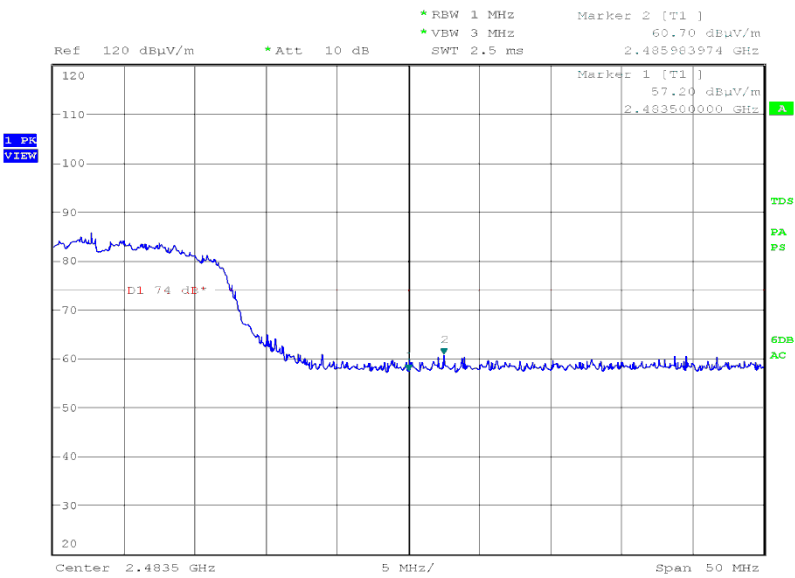
Final Average



Date: 6.NOV.2014 23:43:08

2486.5 MHz

Final Peak

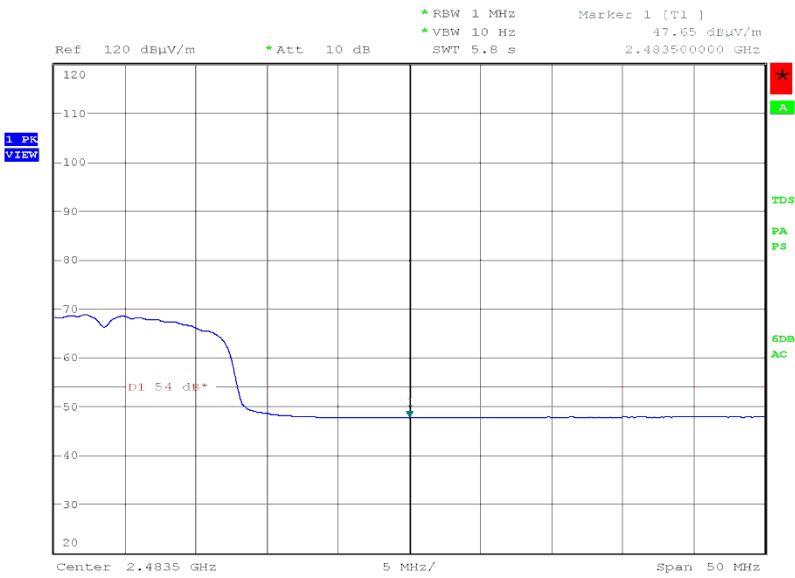


Date: 7.NOV.2014 00:09:54



Product Service

Final Average



Date: 7.NOV.2014 00:10:32

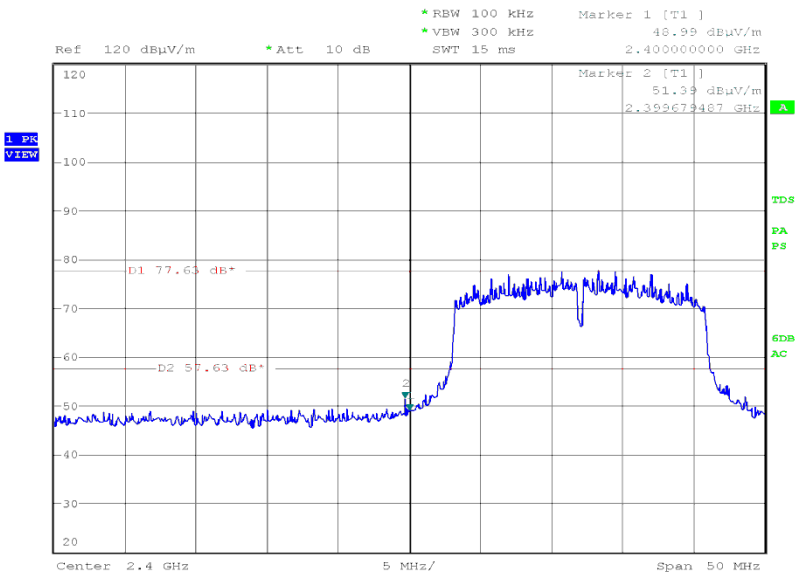


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2399.68	51.39
2400.00	48.99
2483.50	47.48
2492.47	50.19

2400.0 MHz

Final Peak



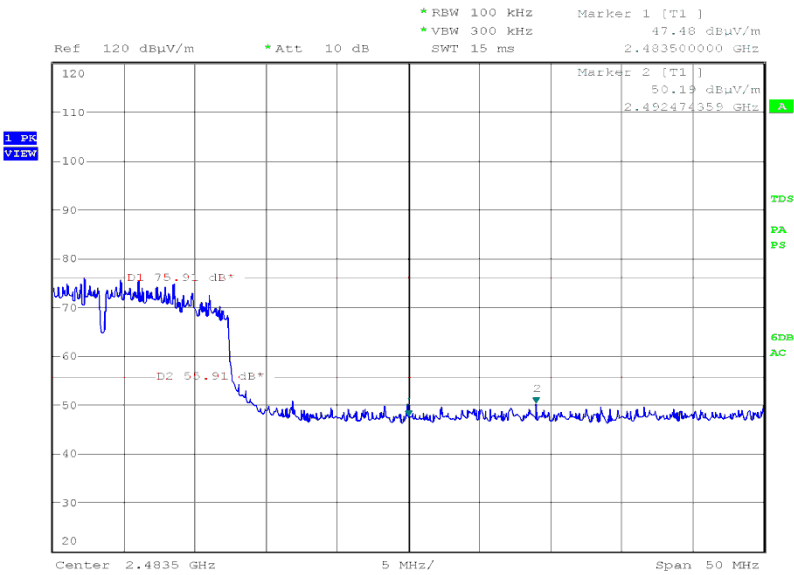
Date: 6.NOV.2014 23:39:00



Product Service

2483.5 MHz

Final Peak



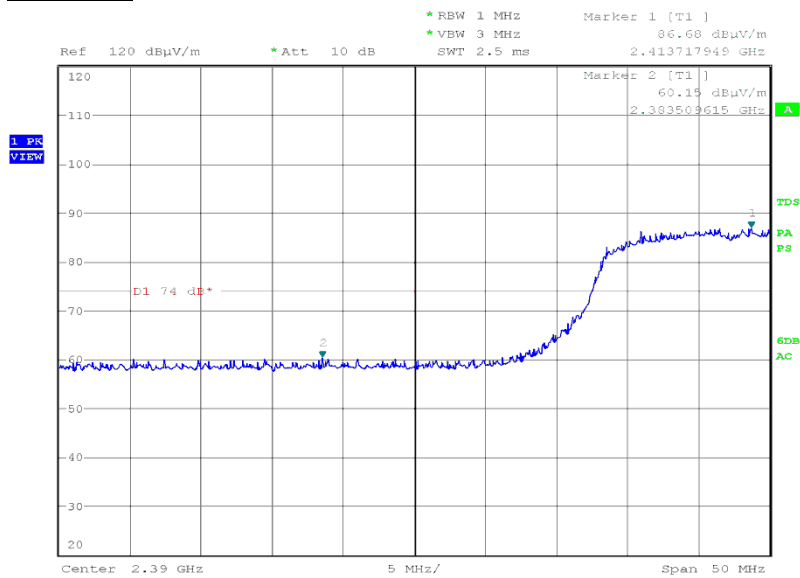
Date: 7.NOV.2014 00:08:45



Product Service

Date Rate: 52 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2383.51	60.15	-
2390.00	59.99	47.79
2483.50	58.50	47.65
2492.23	60.57	-

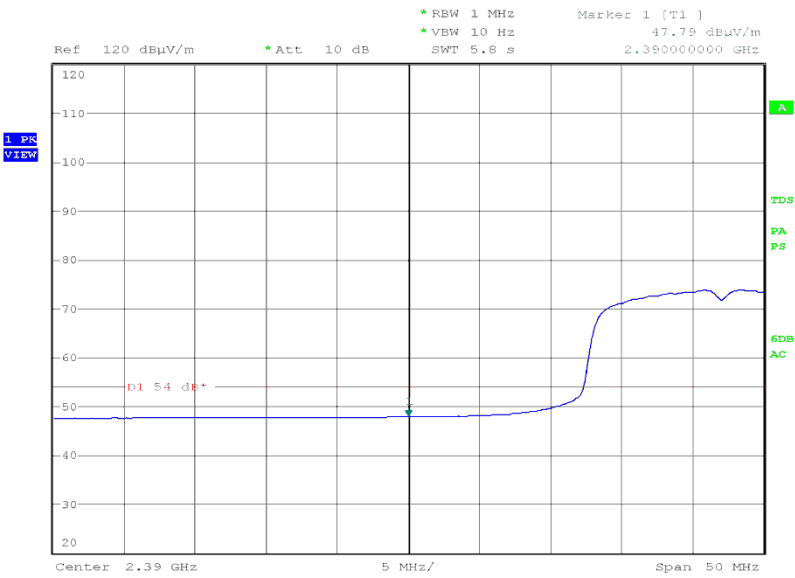
2390.0 MHzFinal Peak

Date: 6.NOV.2014 23:23:17



Product Service

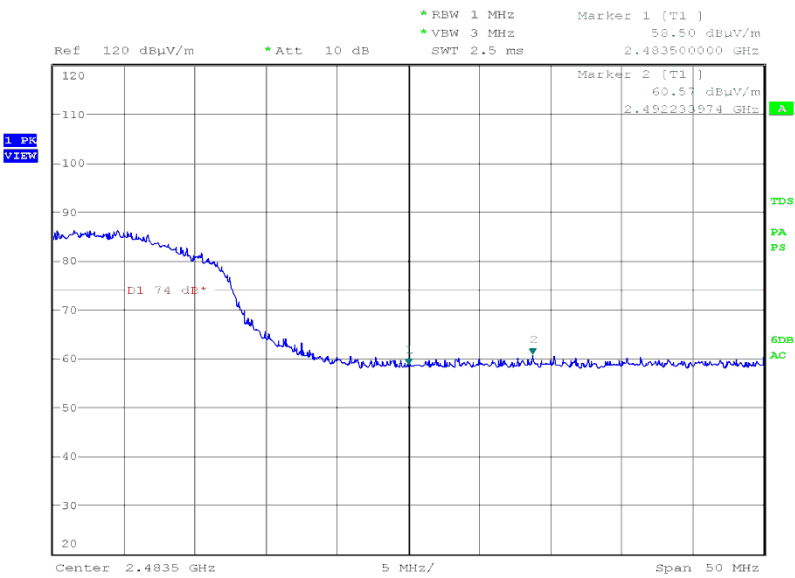
Final Average



Date: 6.NOV.2014 23:23:59

2483.5 MHz

Final Peak

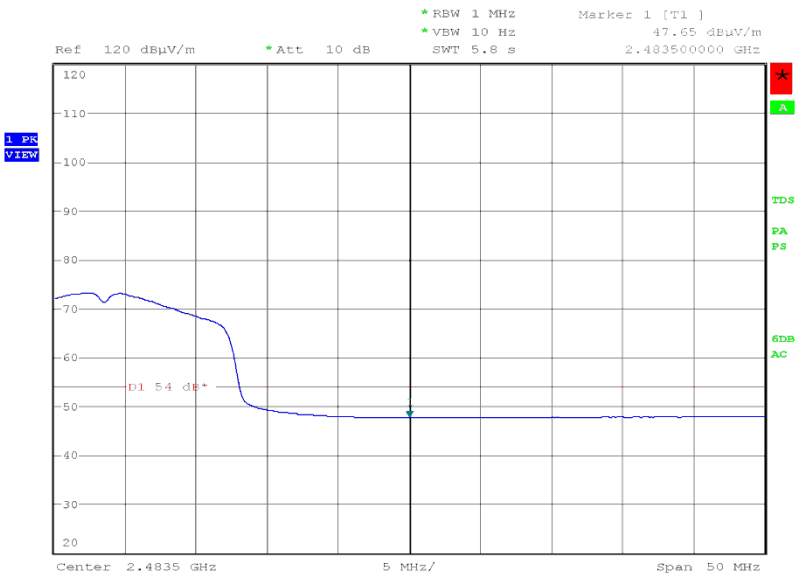


Date: 6.NOV.2014 23:53:55



Product Service

Final Average



Date: 6.NOV.2014 23:55:43

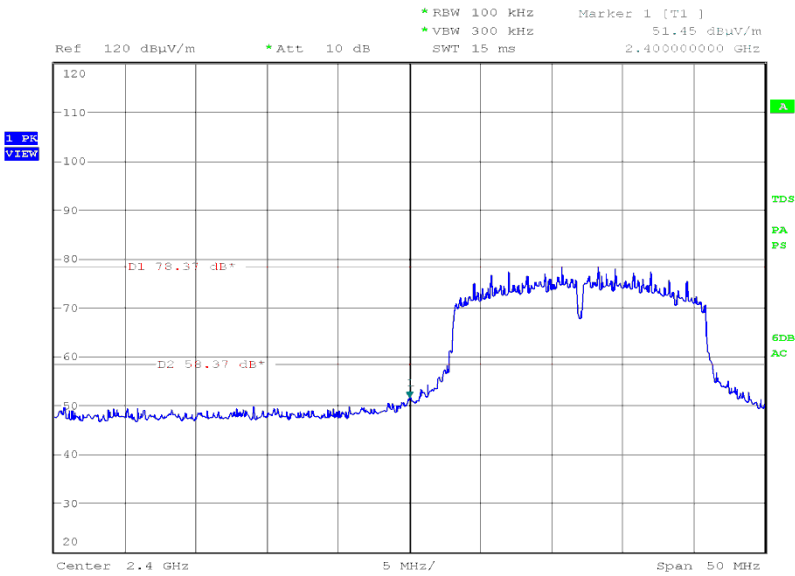


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2400.00	51.45
2483.50	47.59
2491.03	50.14

2400.0 MHz

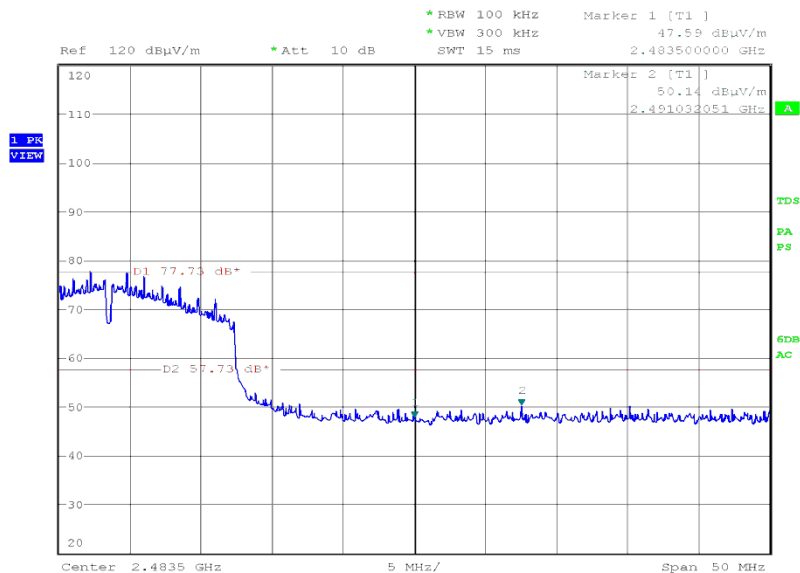
Final Peak



Date: 6.NOV.2014 23:21:09



Product Service

2483.5 MHzFinal Peak

Date: 6.NOV.2014 23:52:07

Remark

The test was performed on 6.5 Mbps because this was deemed the worst case data rate for 6 dB Bandwidth.

The test was performed on 52 Mbps because this was deemed the worst case data rate for Conducted Output Power.

A conducted band edge measurement was made on all three modes (802.11 (b, g and n) and all supported modulation schemes/data rates. It was determined that there was negligible difference between these results, therefore the formal radiated test was only performed on the specified data rate.

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	(μ V/m)	Average (dB μ V/m)	Peak (dB μ V/m)	
30-88	100	40.0	60.0	3
88-216	150	43.5	63.5	3
216-960	200	46.0	66.0	3
Above 960	500	54.0	74.0	3

Radiated Emissions which fall only in the restricted bands as defined in 15.205 must also comply with the limits in the table above. The table above does not apply for Radiated Emissions which fall outside the restricted bands as defined in 15.205. These emissions outside the restricted bands shall be at least 20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitted complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.



Product Service

2.6 6 dB BANDWIDTH**2.6.1 Specification Reference**

FCC CFR 47 Part 15C, Clause 15.247 (a)(2)
Industry Canada RSS-210, Clause A8.2 (a)

2.6.2 Equipment Under Test and Modification State

RBS1 S/N: RBM4310055 - Modification State 0

2.6.3 Date of Test

7 October 2014 & 8 October 2014

2.6.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.5 Test Procedure

The test was applied in accordance with the test requirements of FCC CFR 47 Part 15.247 (a) and test method KDB 558074, Clause 8.1 option 1.

The EUT was transmitting at maximum power, for bottom, middle and top channels on all supported data rates. The EUT was connected to a spectrum analyser via a cable and attenuator. The Analyser settings were adjusted to an RBW of 100 kHz, video bandwidth of 3 x RBW with peak detector and trace set to max hold. The peak point of the trace was measured and the markers positioned to give the -6 dBc points of the displayed spectrum.

The plots on the following pages show the resultant display from the Spectrum Analyser.

2.6.6 Environmental Conditions

Ambient Temperature	20.1°C
Relative Humidity	55.8%



Product Service

2.6.7 Test Results802.11(b)

110 V AC, 60 Hz supply

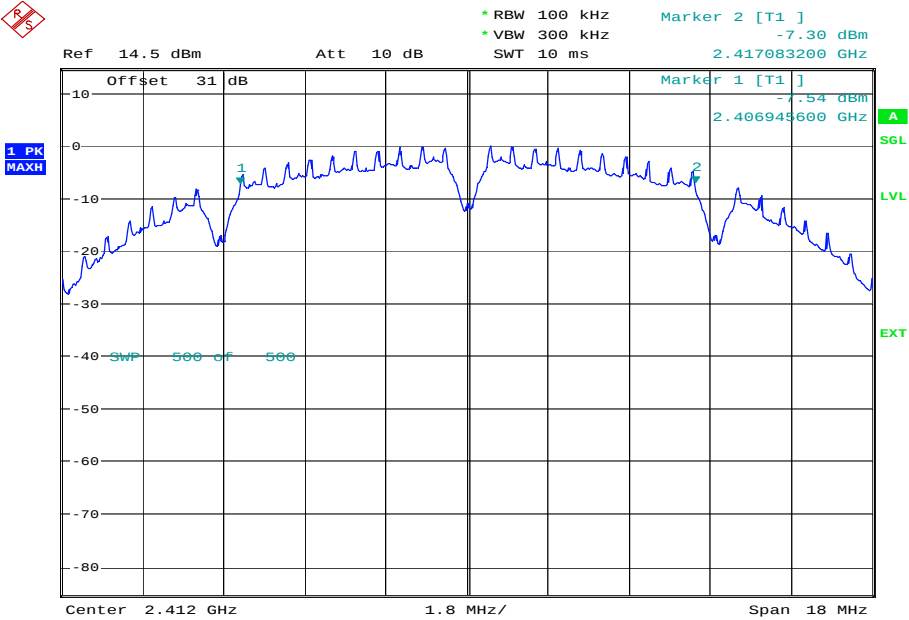
Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (MHz)
2412 MHz	1	10.138
	2	10.051
	5.5	10.224
	11	9.965
2437 MHz	1	10.138
	2	9.994
	5.5	10.195
	11	9.821
2462 MHz	1	10.138
	2	10.051
	5.5	10.426
	11	10.512



Product Service

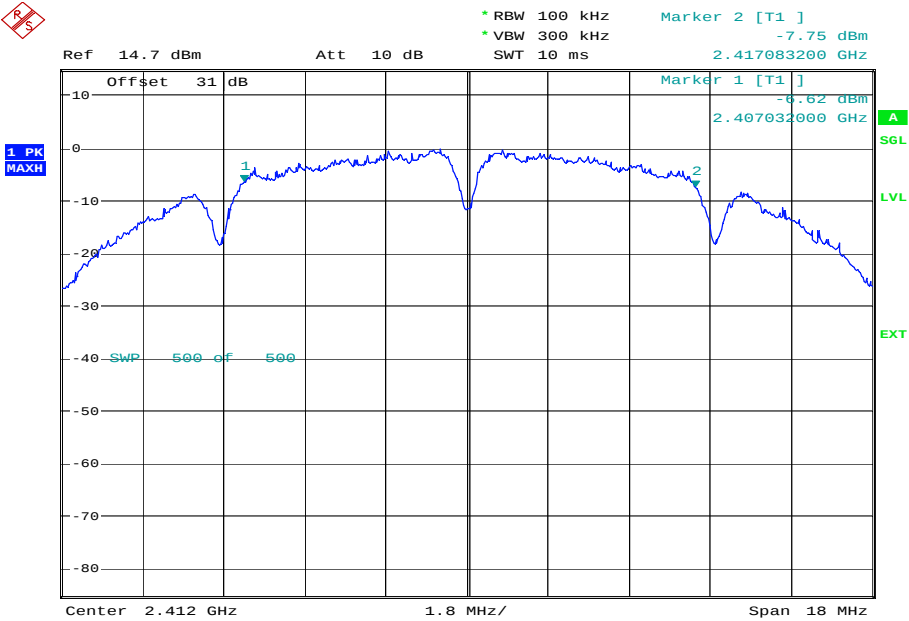
2412 MHz

1 Mbps



Date: 7.OCT.2014 13:38:51

2 Mbps

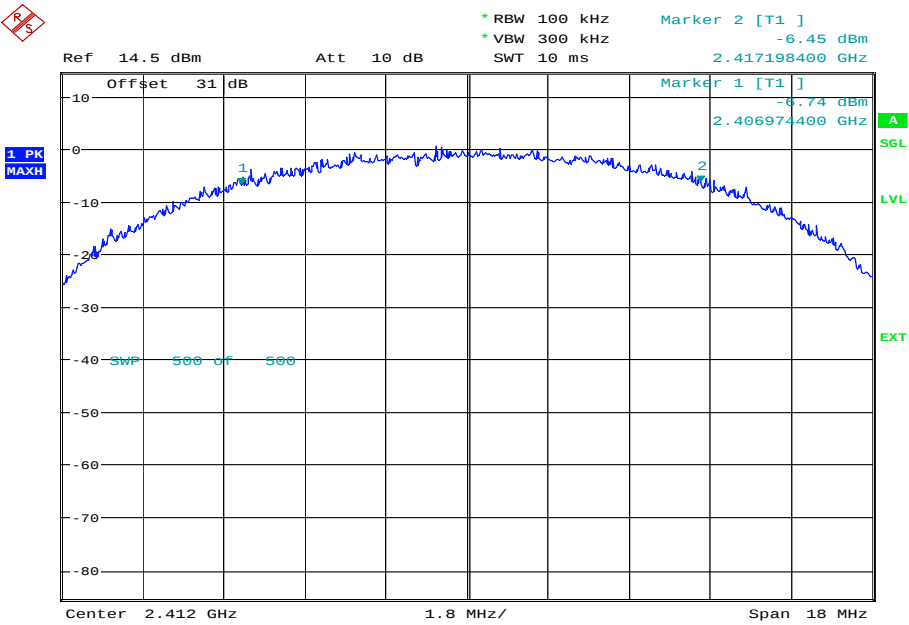


Date: 7.OCT.2014 13:43:56



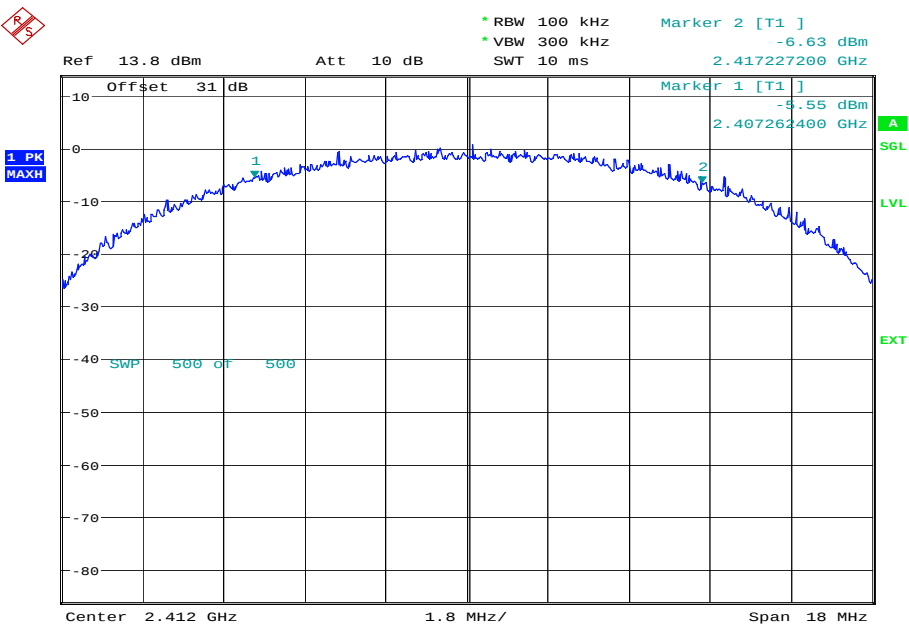
Product Service

5.5 Mbps



Date: 7.OCT.2014 13:49:07

11 Mbps



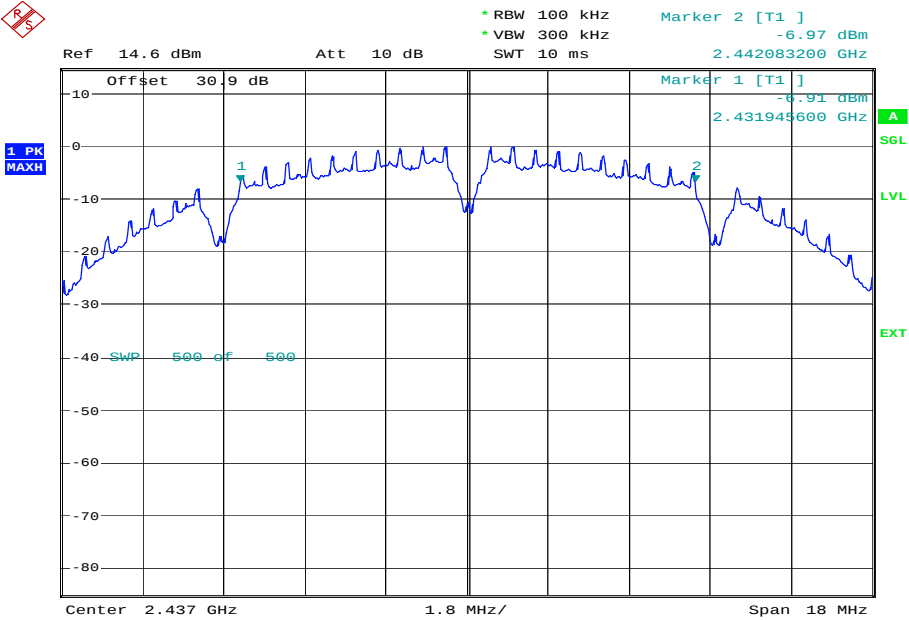
Date: 7.OCT.2014 13:31:45



Product Service

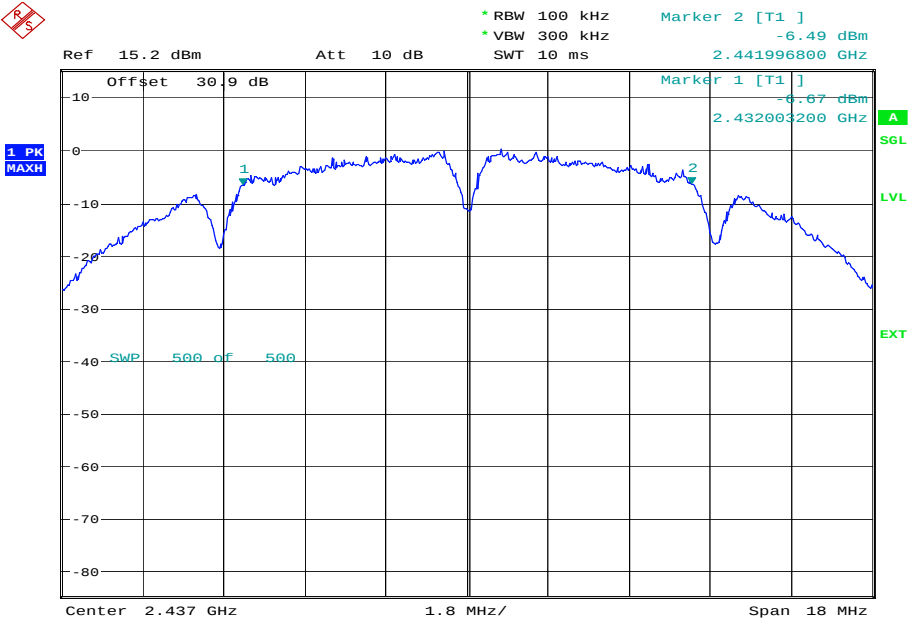
2437 MHz

1 Mbps



Date: 7.OCT.2014 15:34:09

2 Mbps

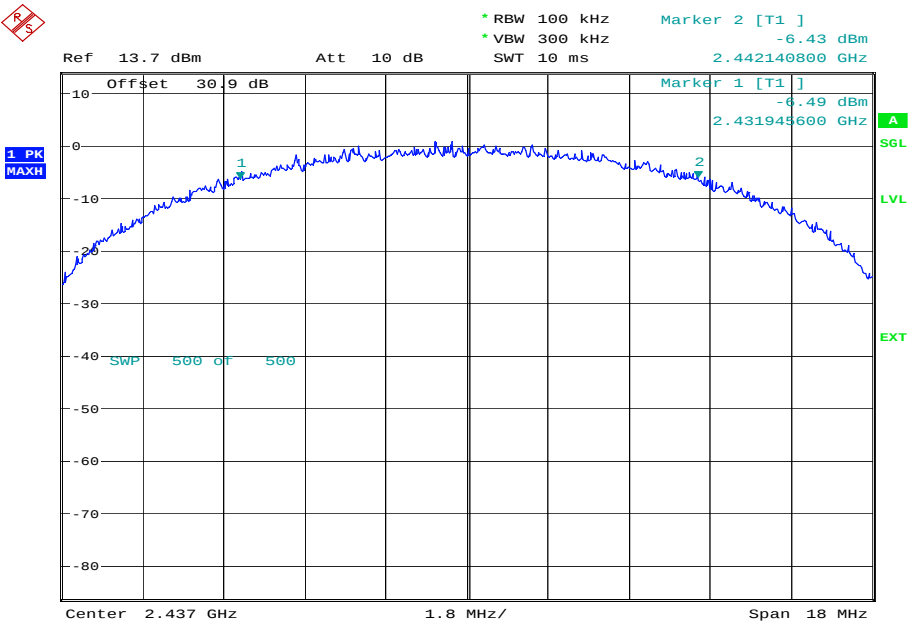


Date: 7.OCT.2014 15:38:41



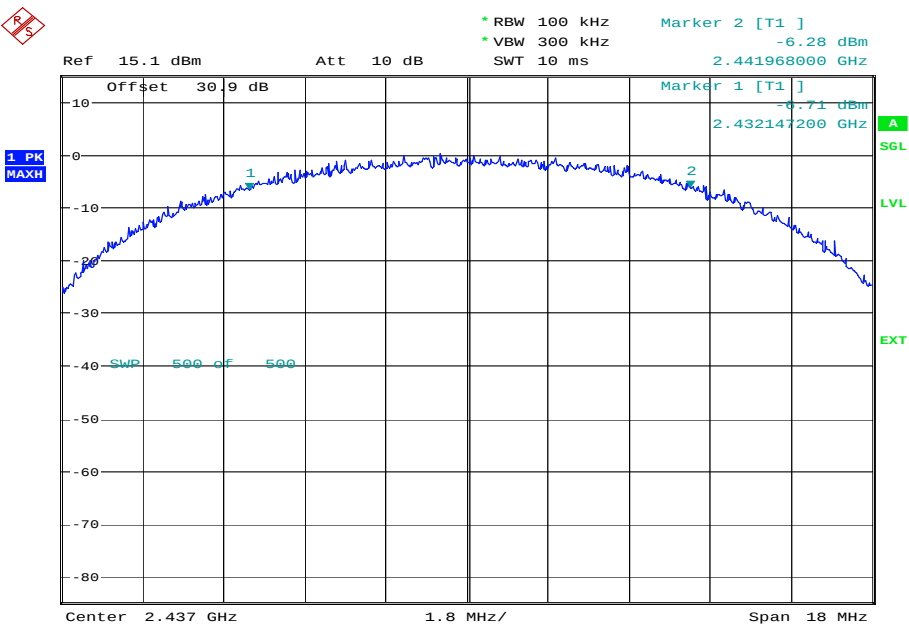
Product Service

5.5 Mbps



Date: 7.OCT.2014 15:44:27

11 Mbps



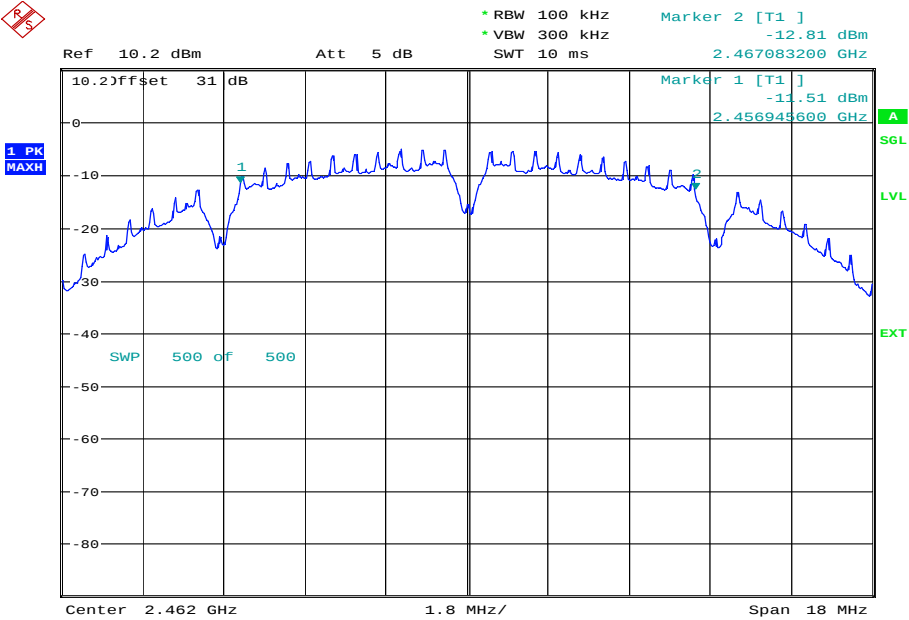
Date: 7.OCT.2014 15:52:18



Product Service

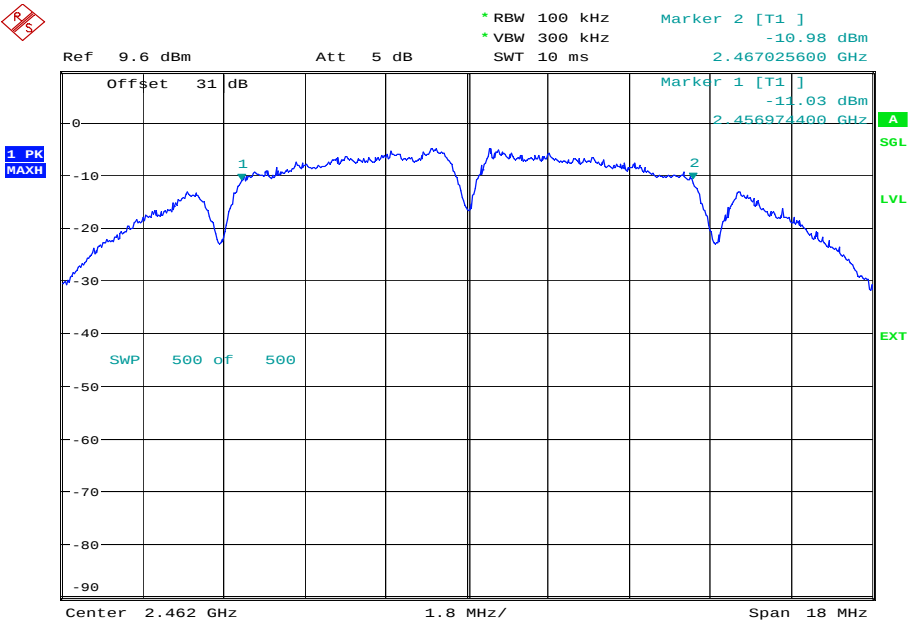
2462 MHz

1 Mbps



Date: 8.OCT.2014 13:49:54

2 Mbps

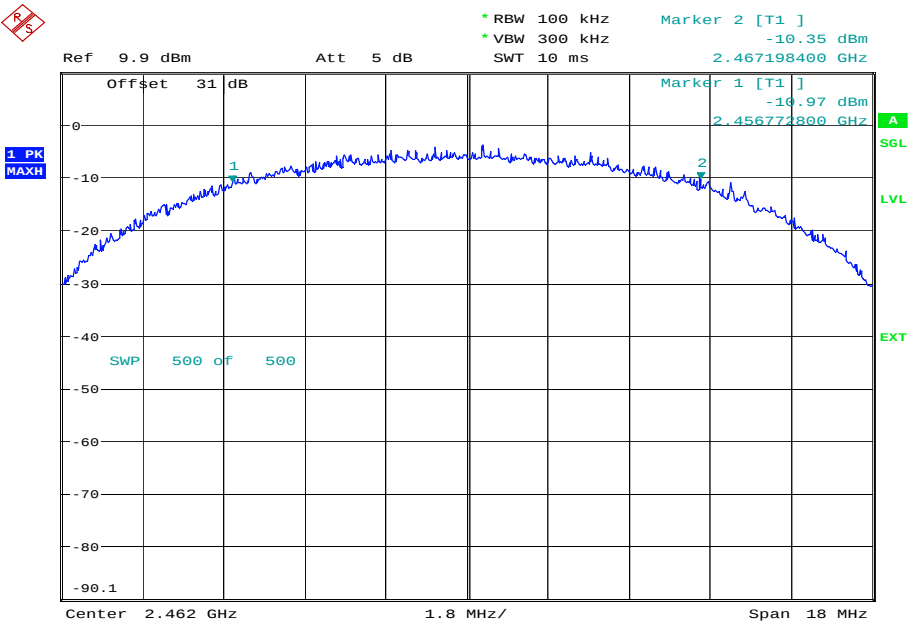


Date: 8.OCT.2014 13:54:12



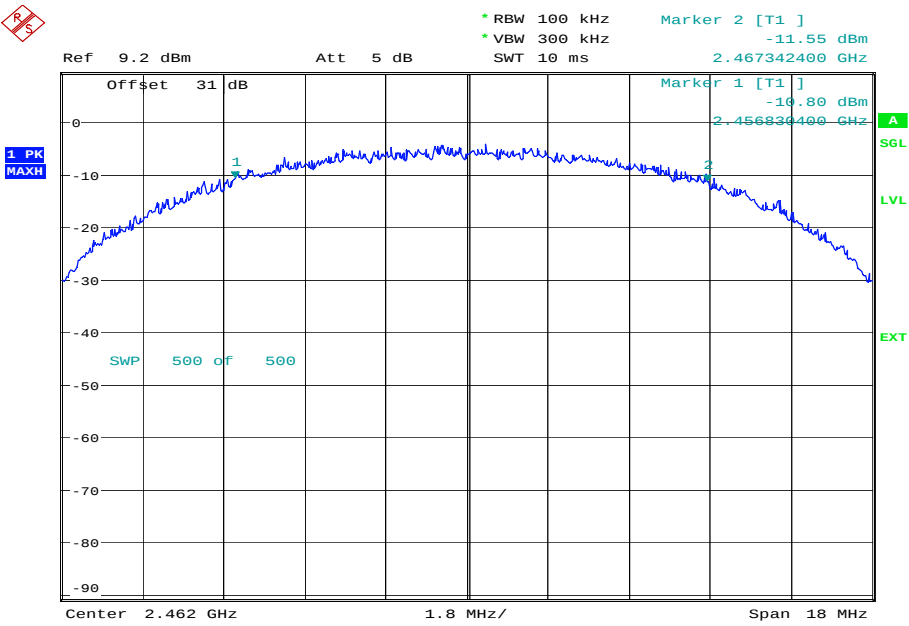
Product Service

5.5 Mbps



Date: 8.OCT.2014 13:58:38

11 Mbps



Date: 8.OCT.2014 14:03:28

Limit Clause

The minimum 6 dB Bandwidth shall be at least 500 kHz.

802.11(g)

110 V AC, 60 Hz supply

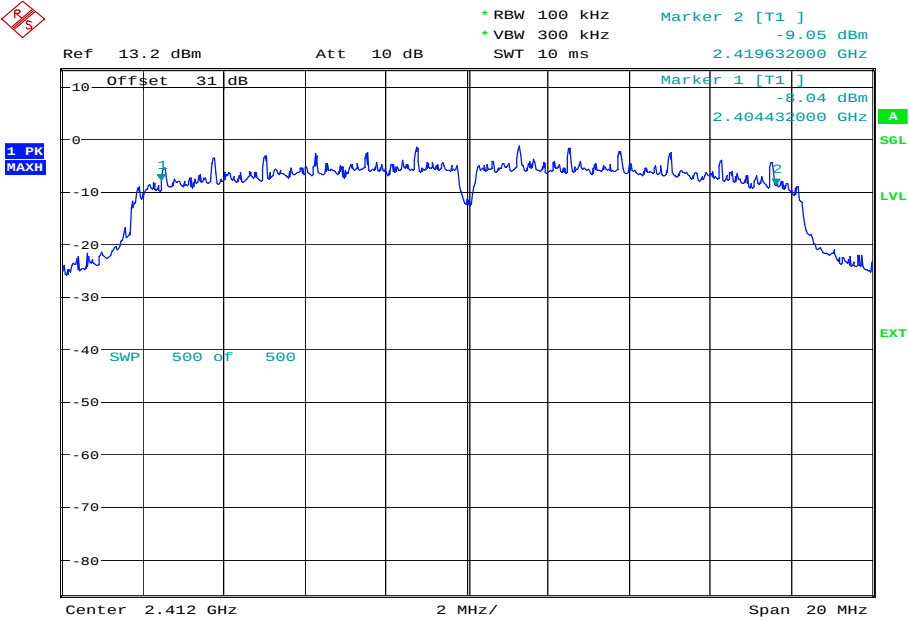
Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (MHz)
2412 MHz	6	15.200
	9	15.200
	12	15.232
	18	15.200
	24	16.032
	36	15.744
	48	16.384
	54	15.995
2437 MHz	6	15.200
	9	15.200
	12	15.200
	18	15.200
	24	15.488
	36	15.200
	48	15.520
	54	15.552
2462 MHz	6	15.206
	9	15.206
	12	15.206
	18	15.206
	24	15.725
	36	16.013
	48	16.384
	54	16.032



Product Service

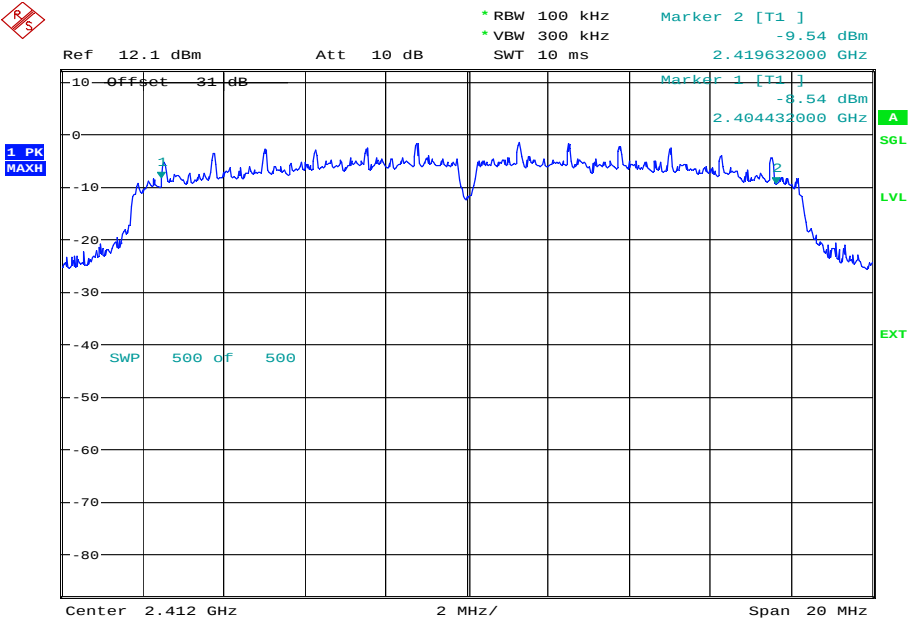
2412 MHz

6 Mbps



Date: 7.OCT.2014 13:55:04

9 Mbps

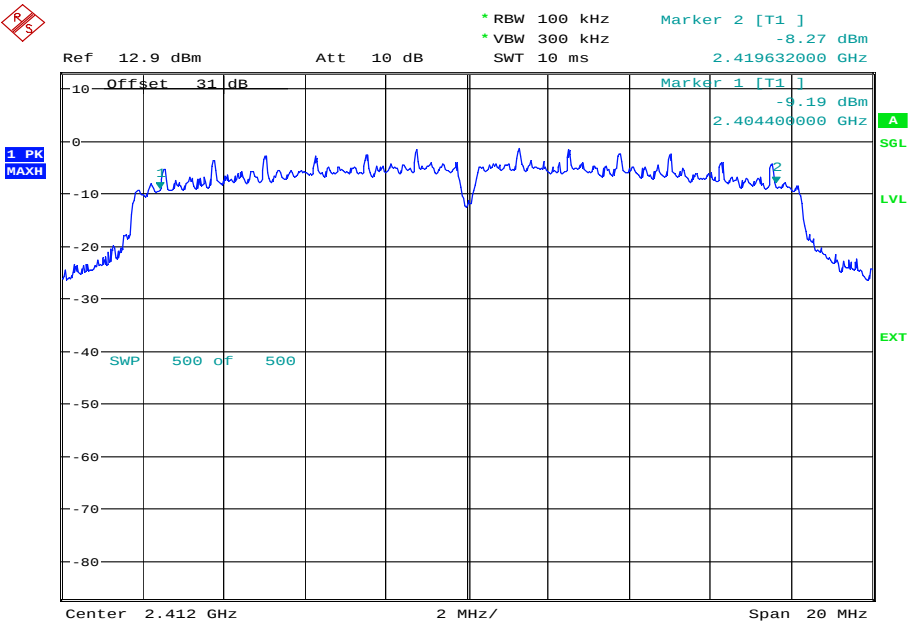


Date: 7.OCT.2014 14:00:39



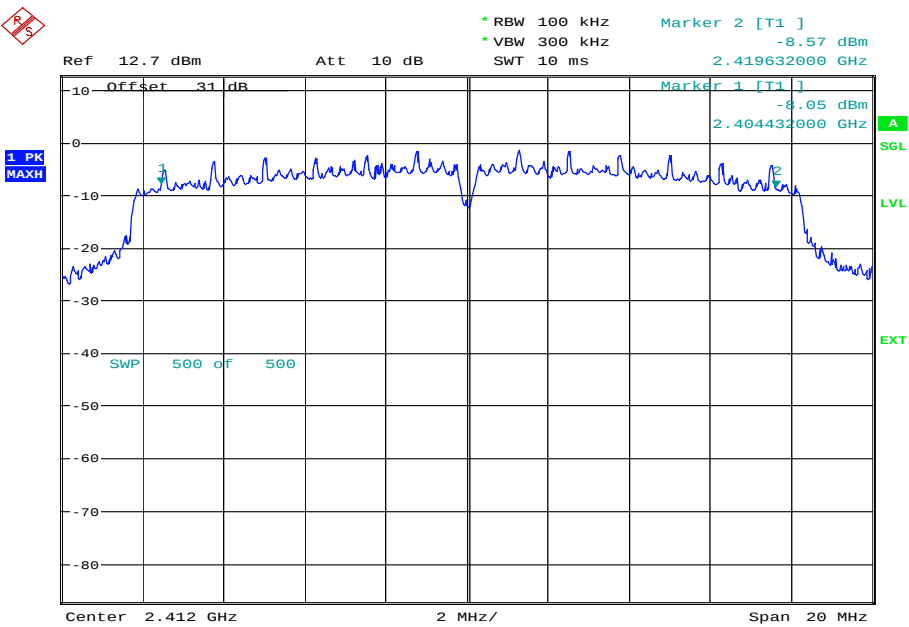
Product Service

12 Mbps



Date: 7.OCT.2014 14:05:30

18 Mbps

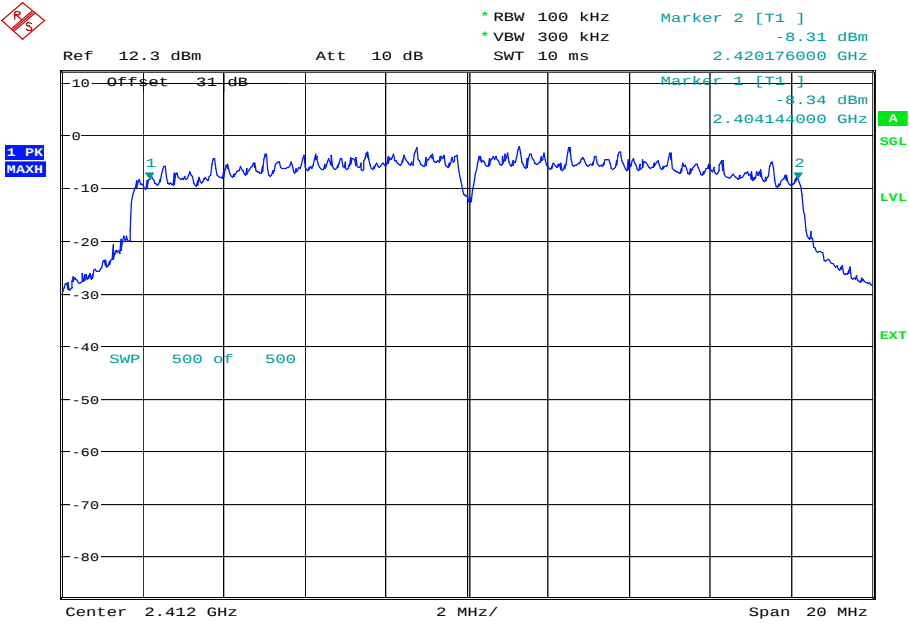


Date: 7.OCT.2014 14:10:17



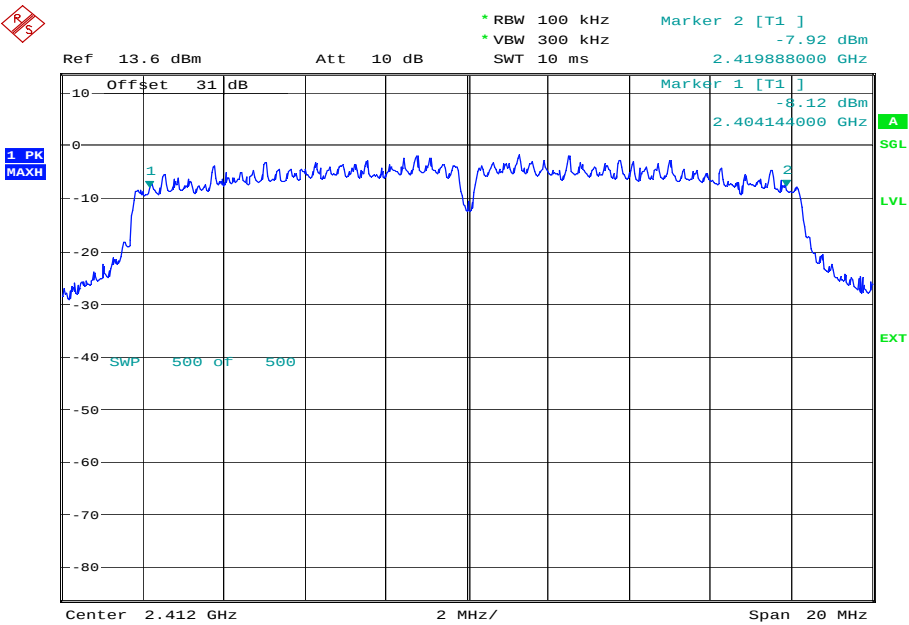
Product Service

24 Mbps



Date: 7.OCT.2014 14:15:27

36 Mbps

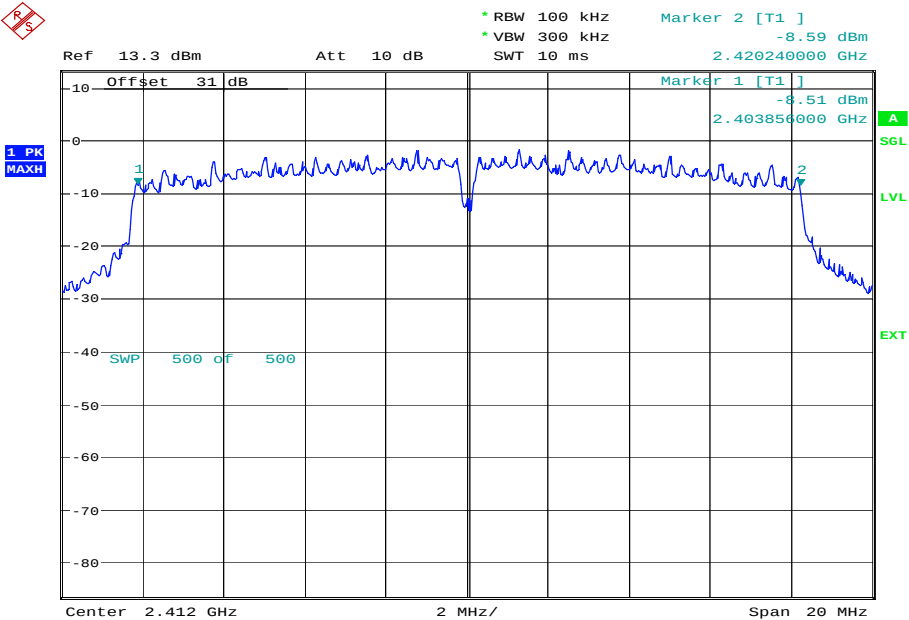


Date: 7.OCT.2014 14:20:26



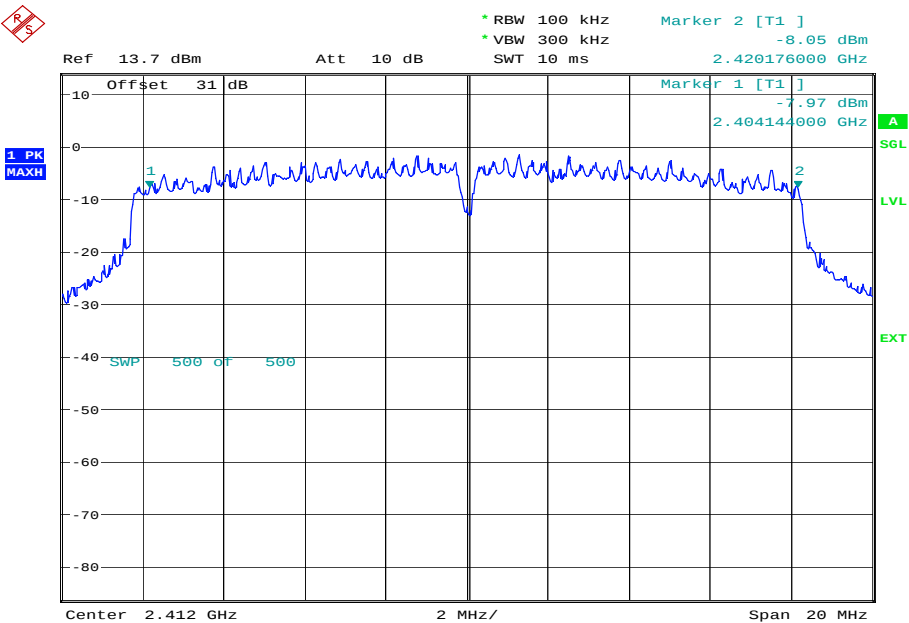
Product Service

48 Mbps



Date: 7.OCT.2014 14:25:13

54 Mbps



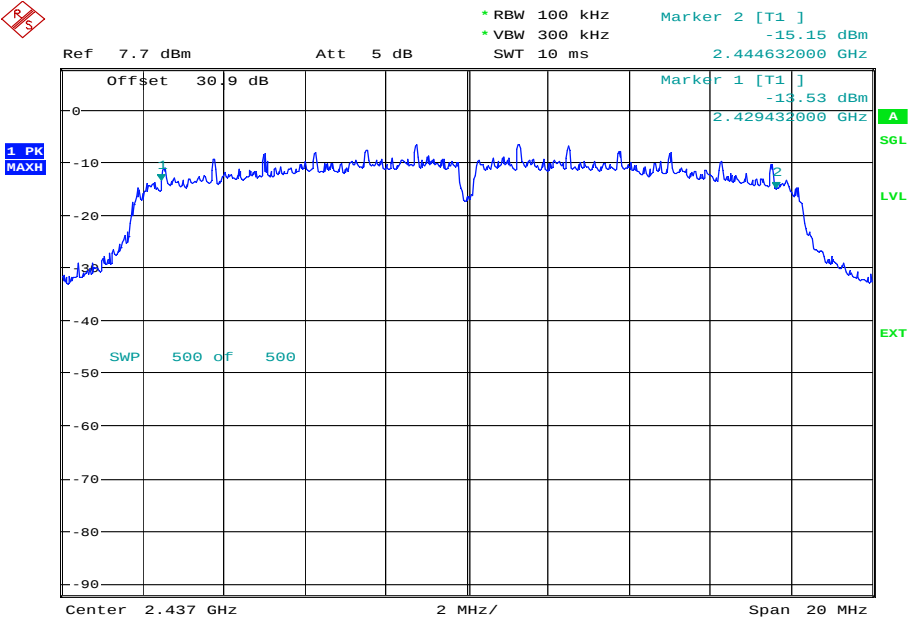
Date: 7.OCT.2014 14:30:49



Product Service

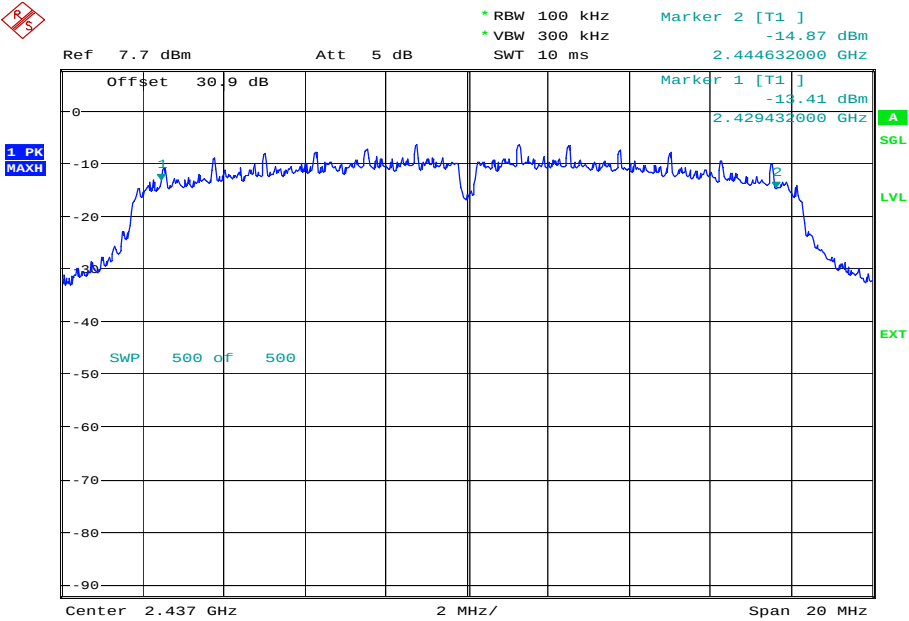
2437 MHz

6 Mbps



Date: 8.OCT.2014 10:00:00

9 Mbps

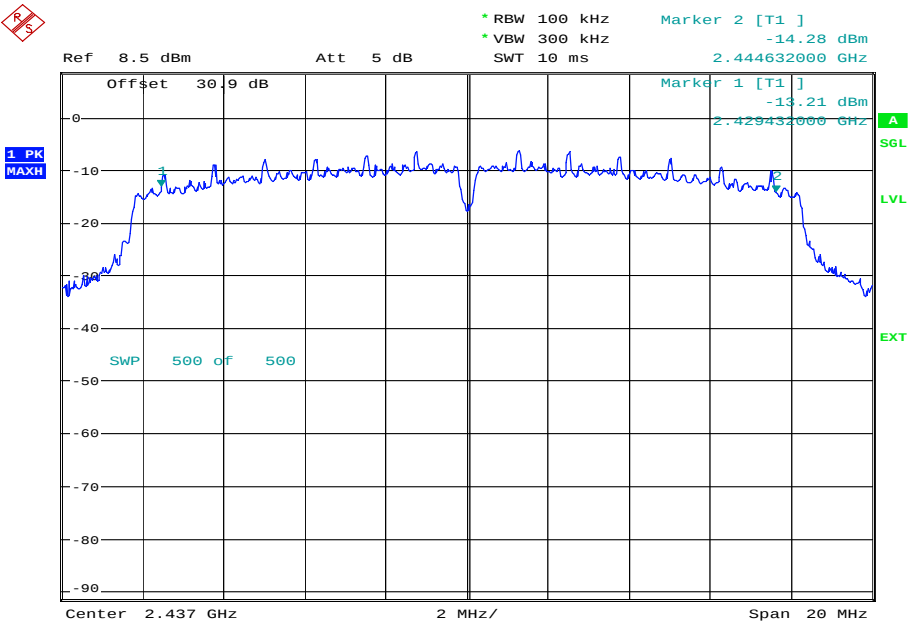


Date: 8.OCT.2014 10:05:15



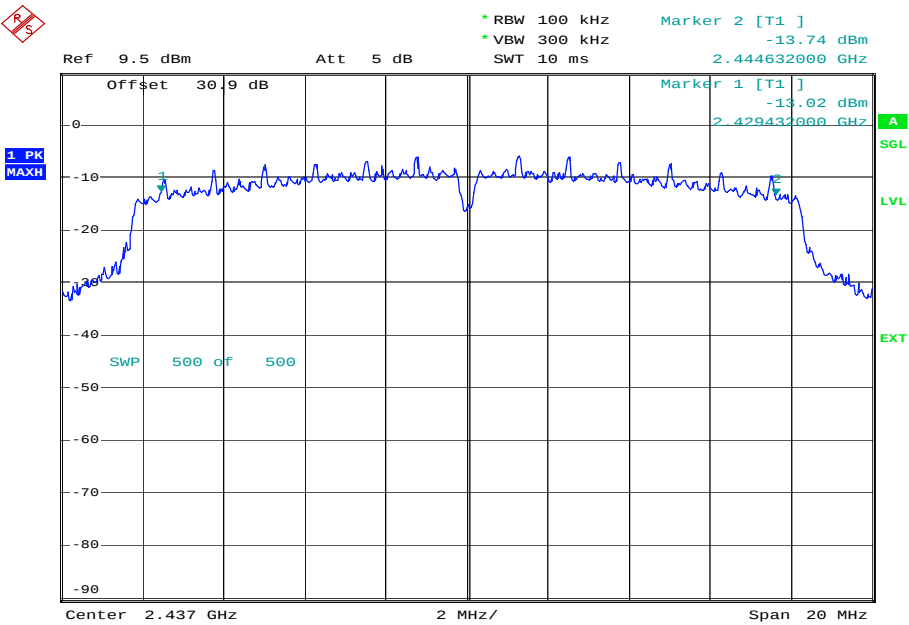
Product Service

12 Mbps



Date: 8.OCT.2014 10:09:48

18 Mbps

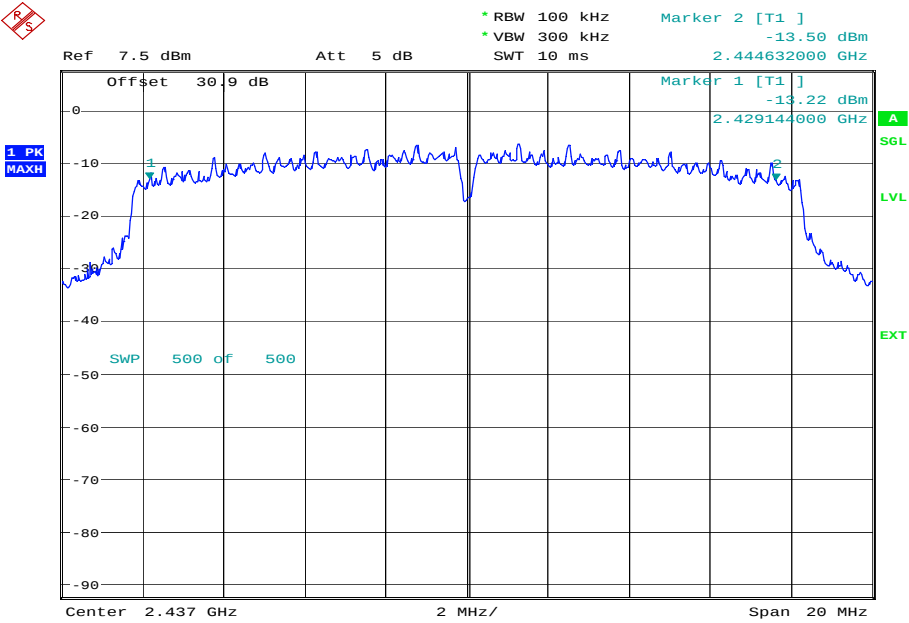


Date: 8.OCT.2014 10:16:35



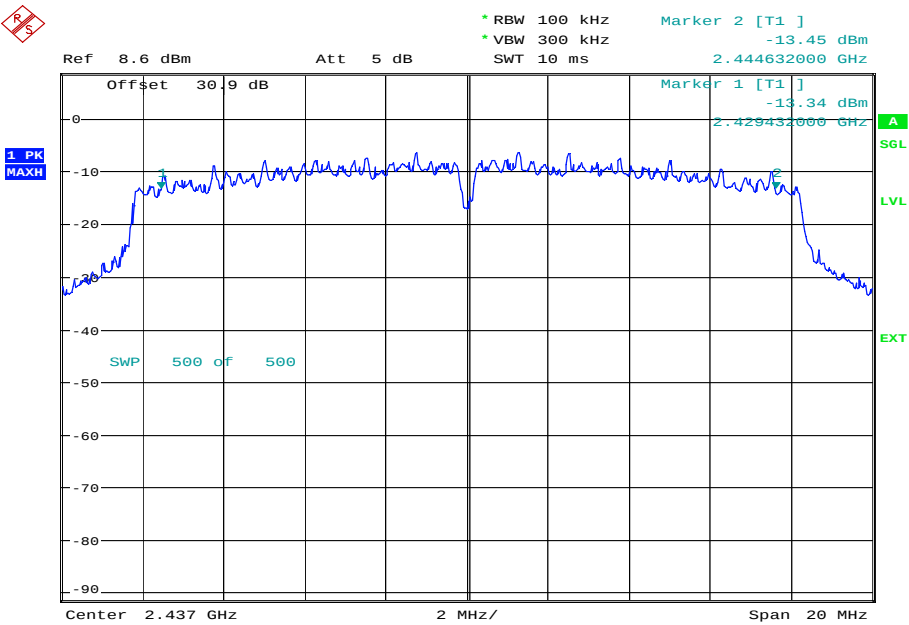
Product Service

24 Mbps



Date: 8.OCT.2014 10:21:18

36 Mbps

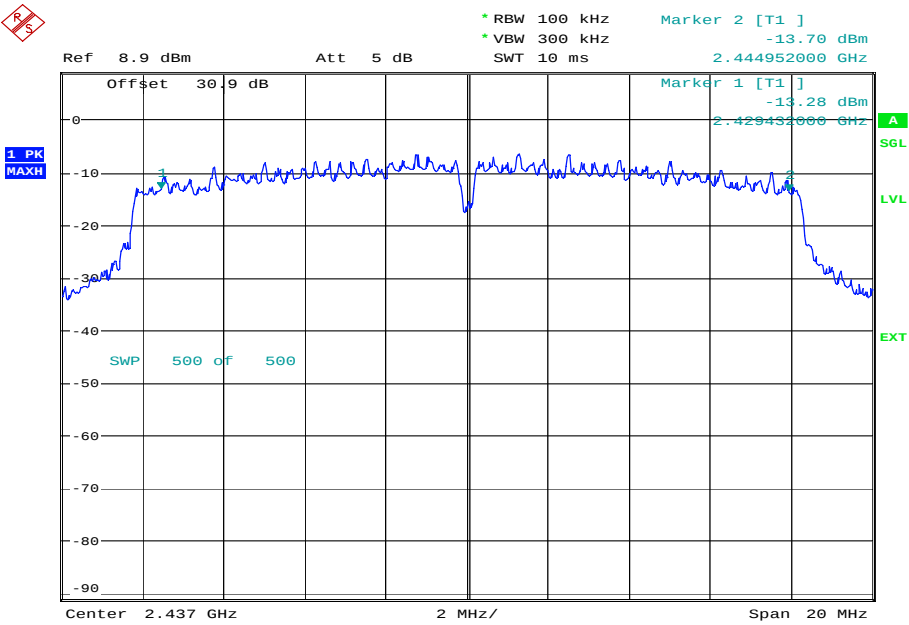


Date: 8.OCT.2014 10:26:36



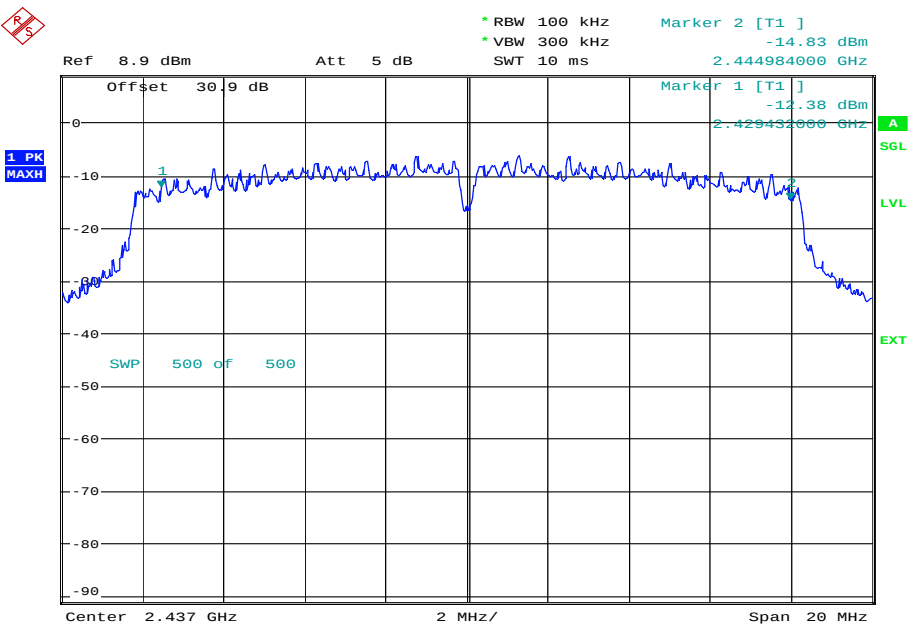
Product Service

48 Mbps



Date: 8.OCT.2014 10:32:46

54 Mbps



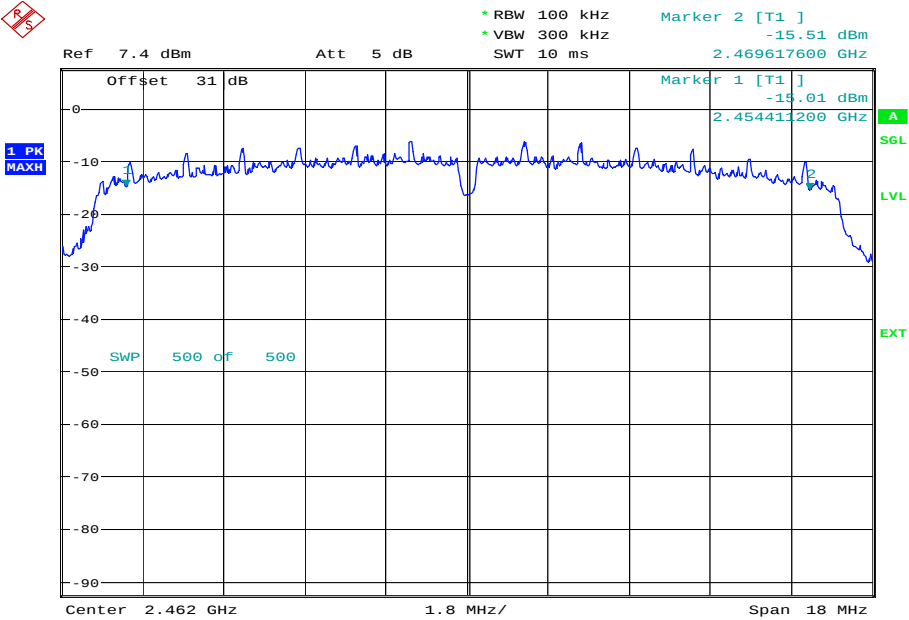
Date: 8.OCT.2014 10:37:44



Product Service

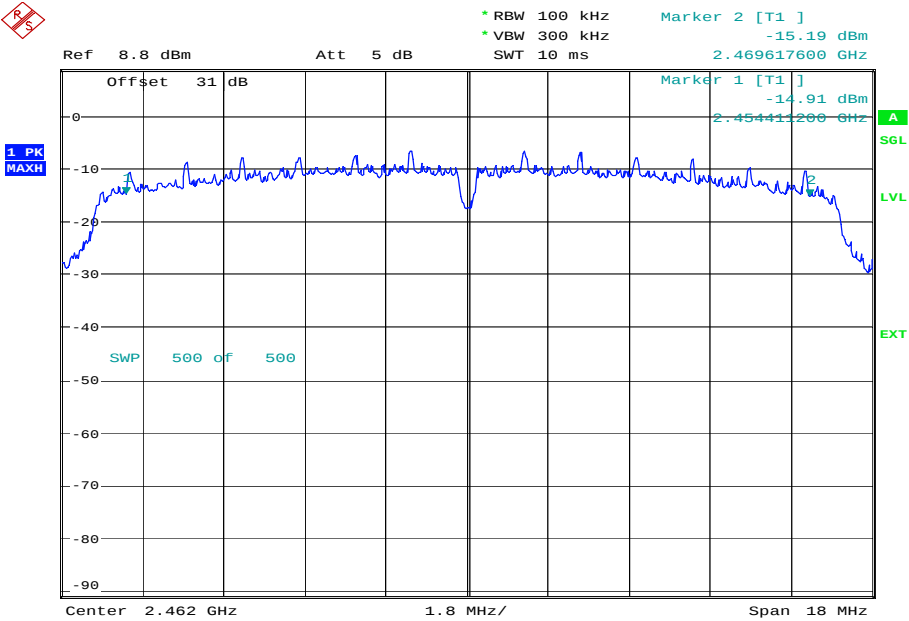
2462 MHz

6 Mbps



Date: 8.OCT.2014 14:10:57

9 Mbps

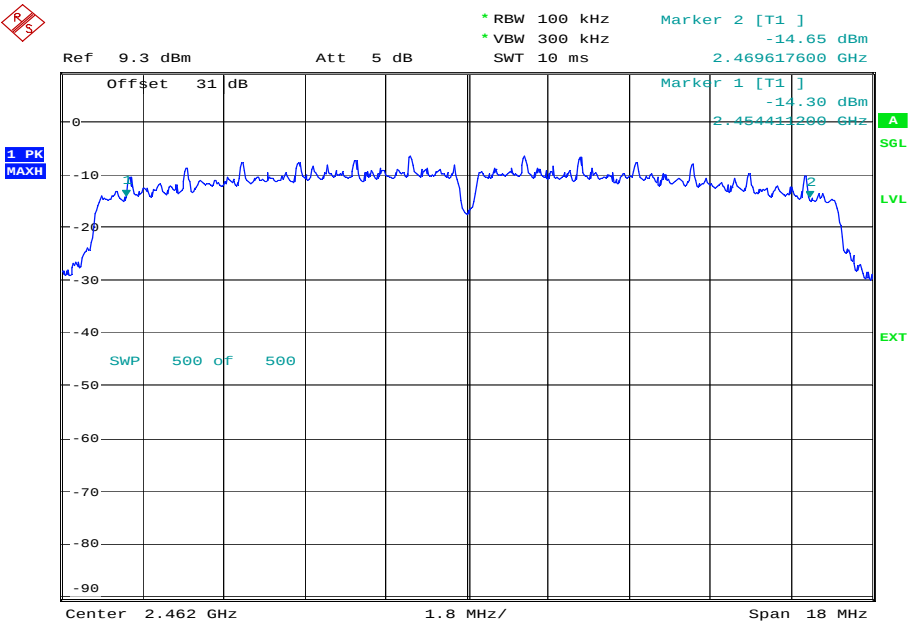


Date: 8.OCT.2014 14:15:37



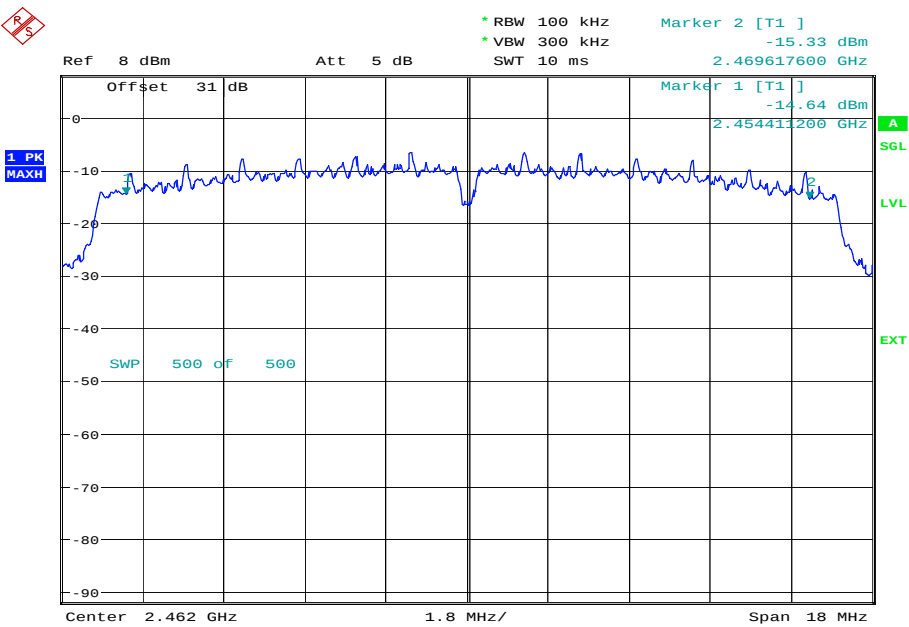
Product Service

12 Mbps



Date: 8.OCT.2014 14:21:58

18 Mbps

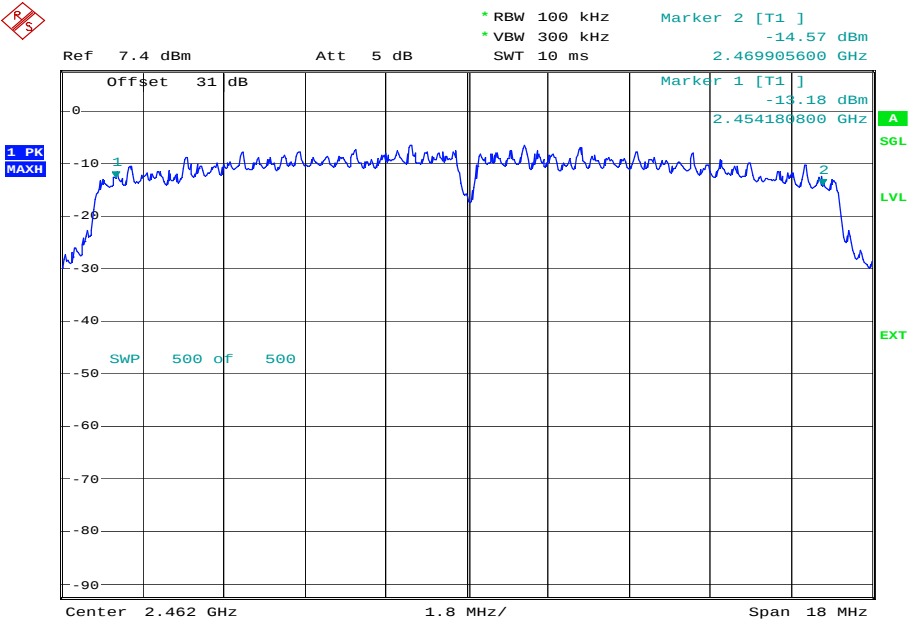


Date: 8.OCT.2014 14:26:49



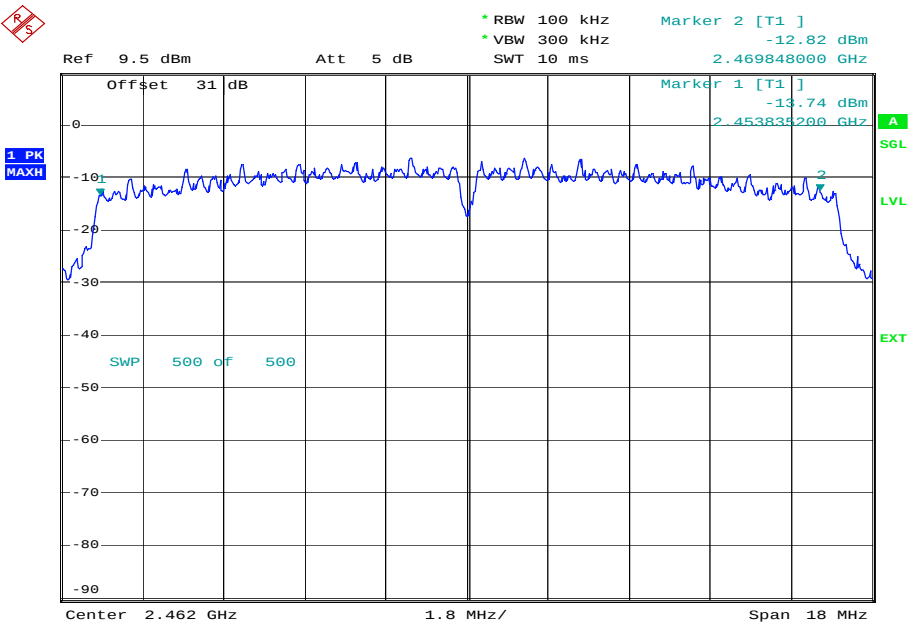
Product Service

24 Mbps



Date: 8.OCT.2014 14:34:06

36 Mbps

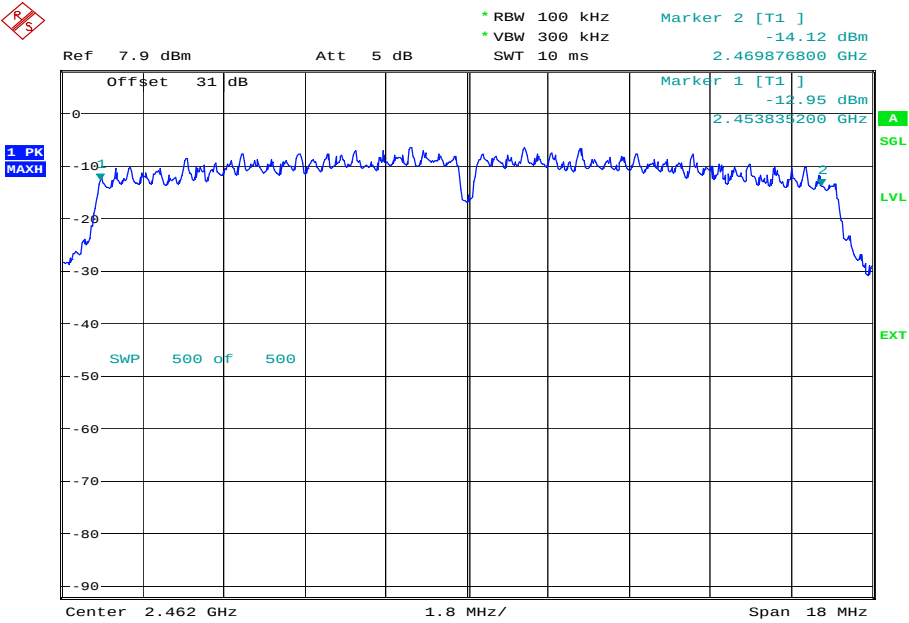


Date: 8.OCT.2014 14:39:10



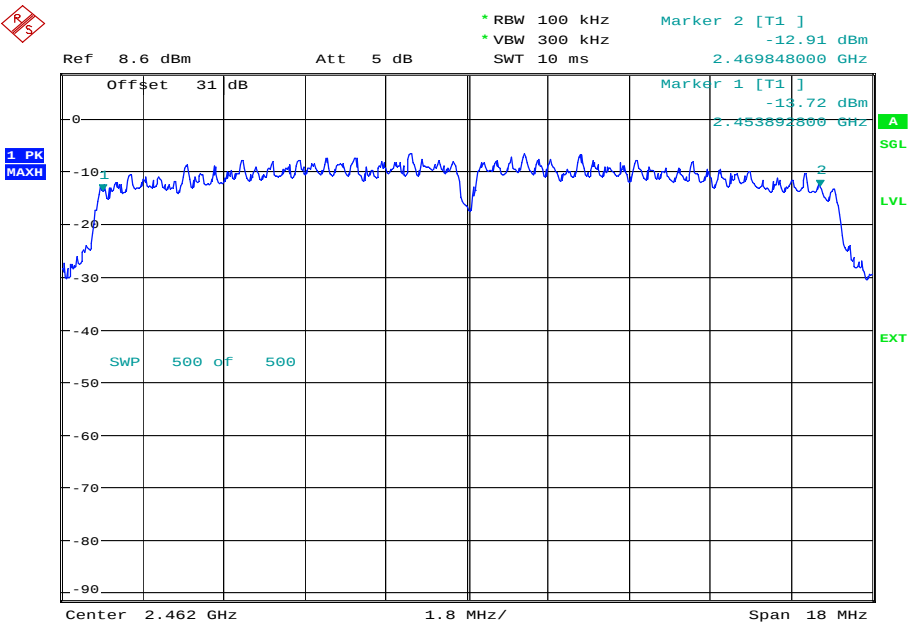
Product Service

48 Mbps



Date: 8.OCT.2014 14:43:55

54 Mbps



Date: 8.OCT.2014 14:48:22

Limit Clause

The minimum 6 dB Bandwidth shall be at least 500 kHz.

802.11(n) 20 MHz BW

110 V AC, 60 Hz supply

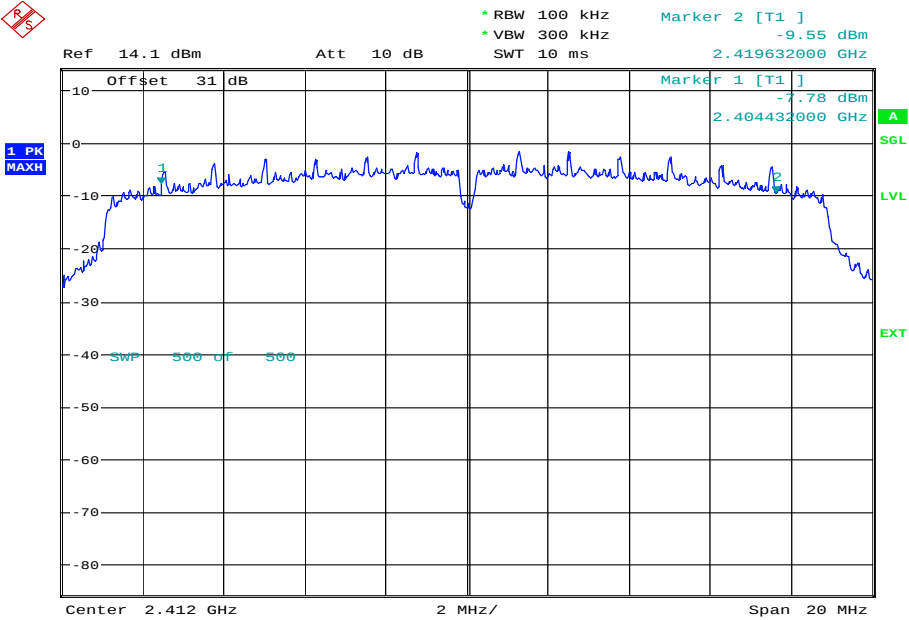
Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (MHz)
2412 MHz	6.5	15.200
	13	15.232
	19.5	15.232
	26	15.808
	39	16.416
	52	17.312
	58.5	16.672
	65	16.800
2437 MHz	6.5	15.168
	13	15.200
	19.5	15.200
	26	15.456
	39	15.456
	52	15.456
	58.5	15.392
	65	15.456
2462 MHz	6.5	15.168
	13	15.200
	19.5	15.200
	26	15.488
	39	15.200
	52	15.712
	58.5	15.584
	65	15.712



Product Service

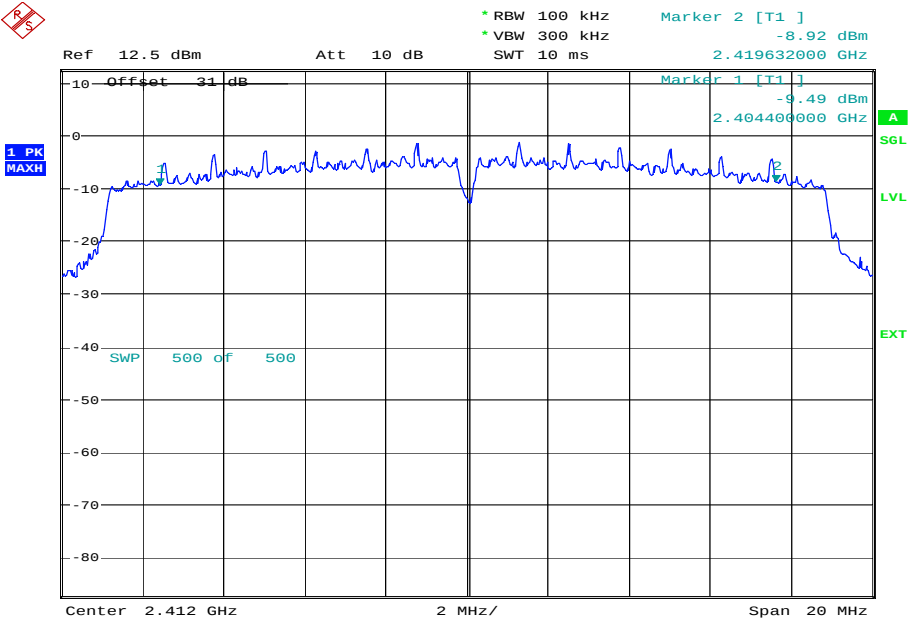
2412 MHz

6.5 Mbps



Date: 7.OCT.2014 14:41:45

13 Mbps

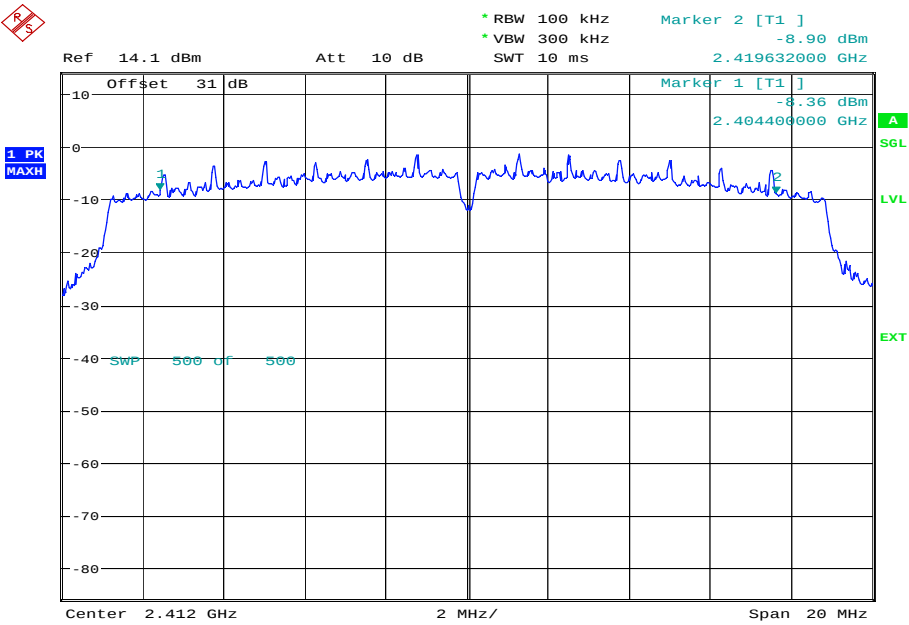


Date: 7.OCT.2014 14:46:46



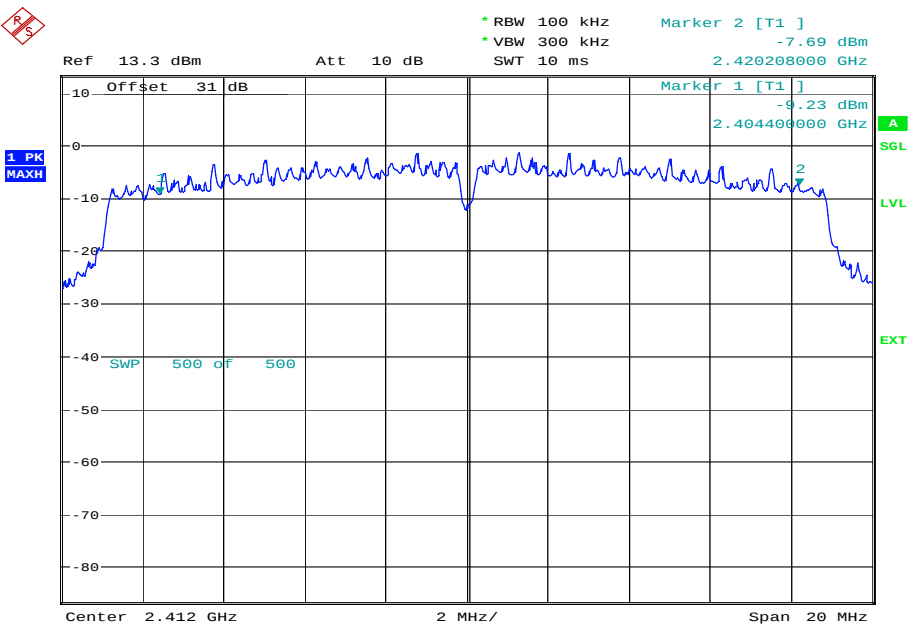
Product Service

19.5 Mbps



Date: 7.OCT.2014 14:52:16

26 Mbps

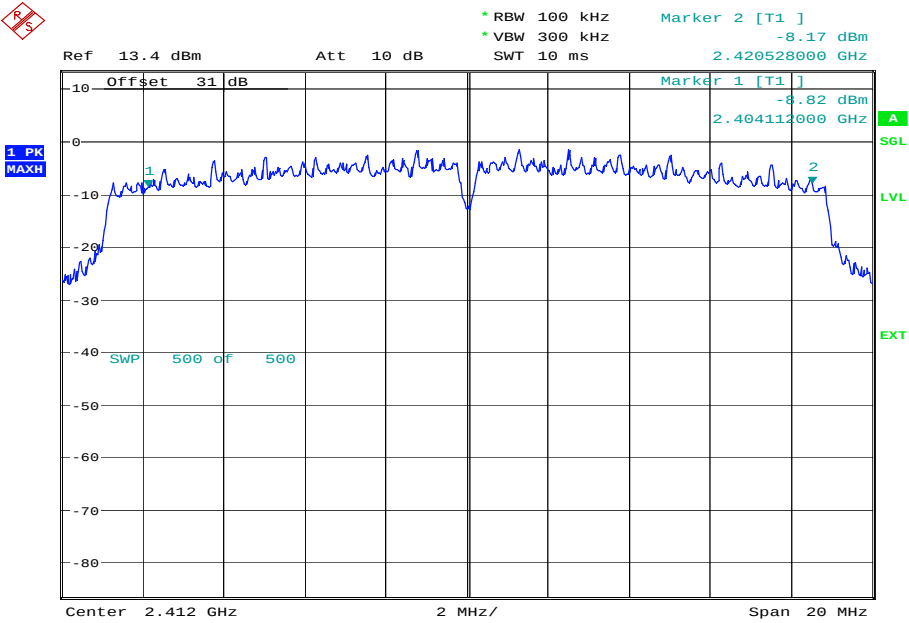


Date: 7.OCT.2014 14:57:16



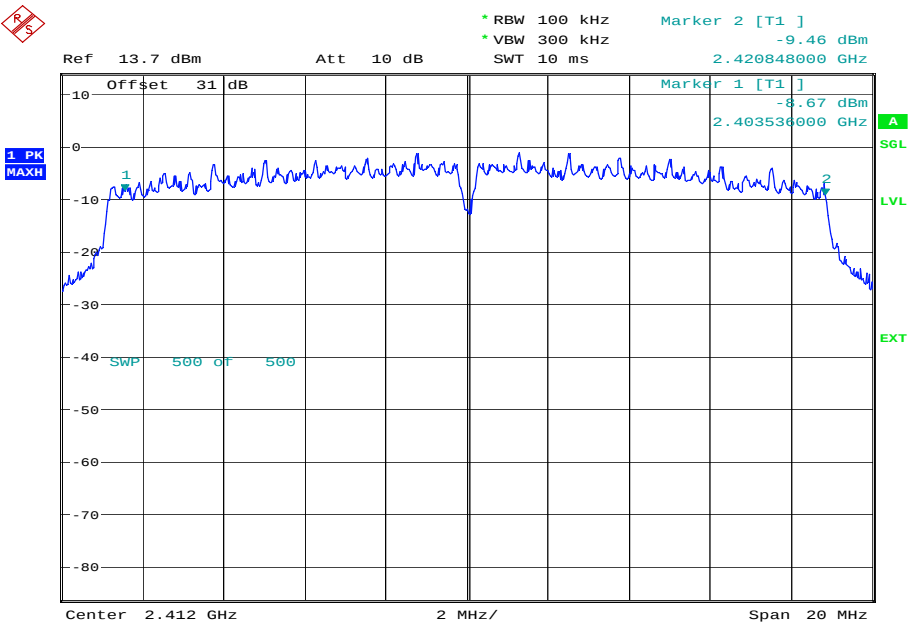
Product Service

39 Mbps



Date: 7.OCT.2014 15:02:26

52 Mbps

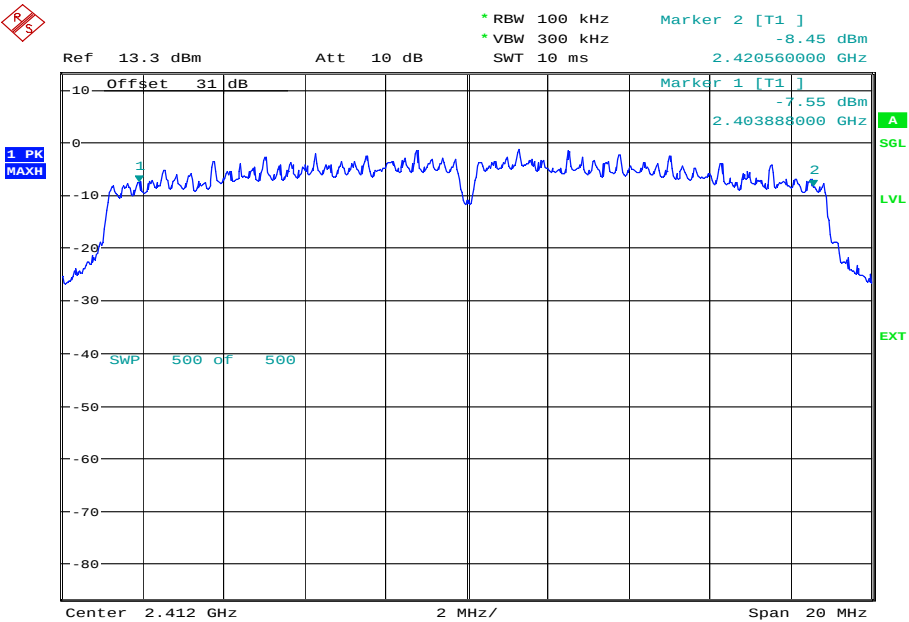


Date: 7.OCT.2014 15:10:49



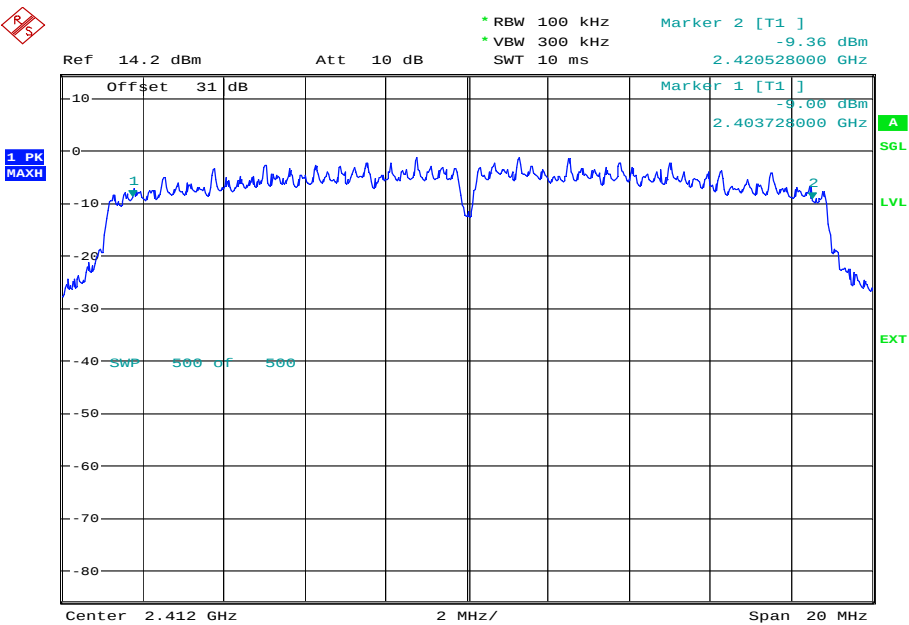
Product Service

58.5 Mbps



Date: 7.OCT.2014 15:15:58

65 Mbps



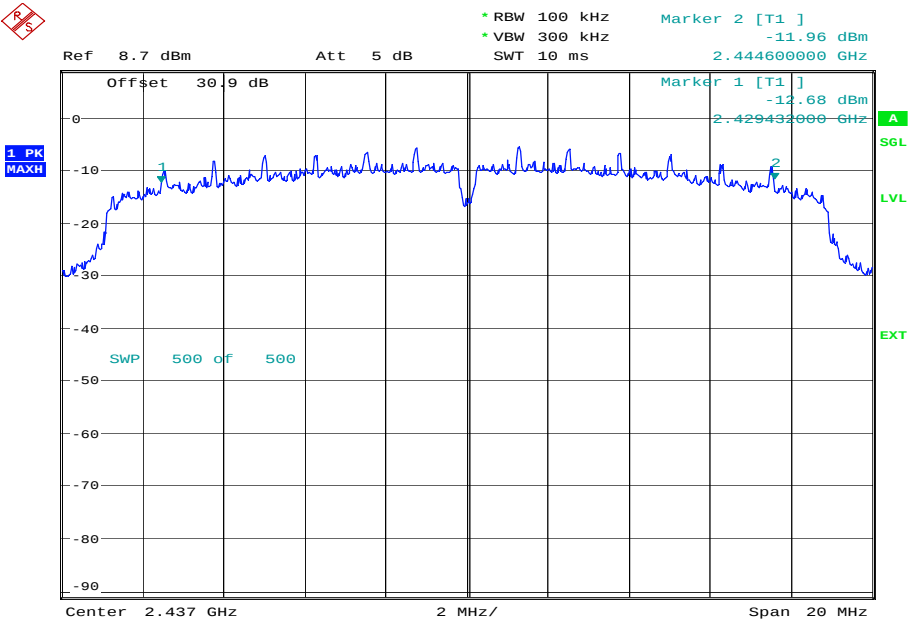
Date: 7.OCT.2014 15:21:59



Product Service

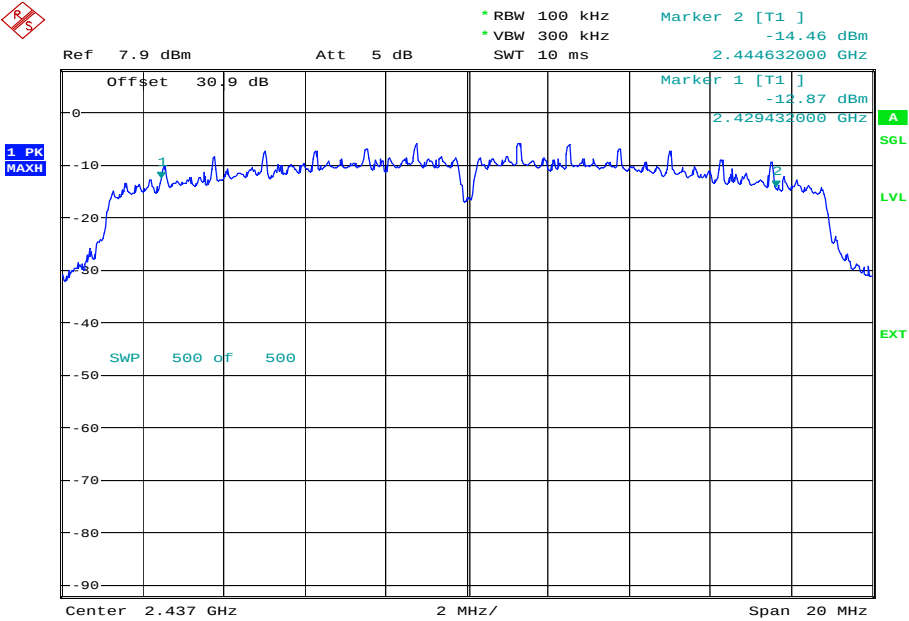
2437 MHz

6.5 Mbps



Date: 8.OCT.2014 10:43:56

13 Mbps

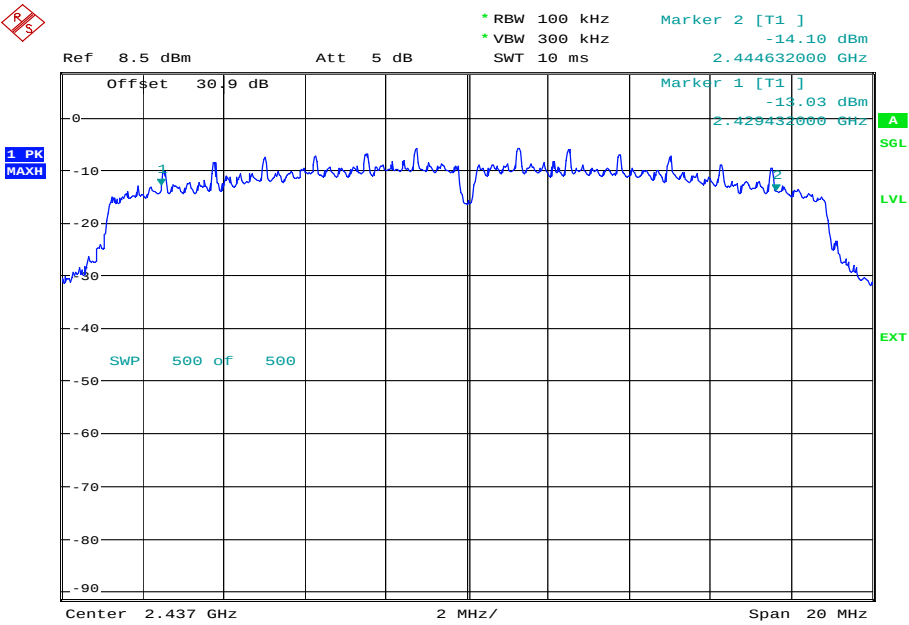


Date: 8.OCT.2014 10:50:13



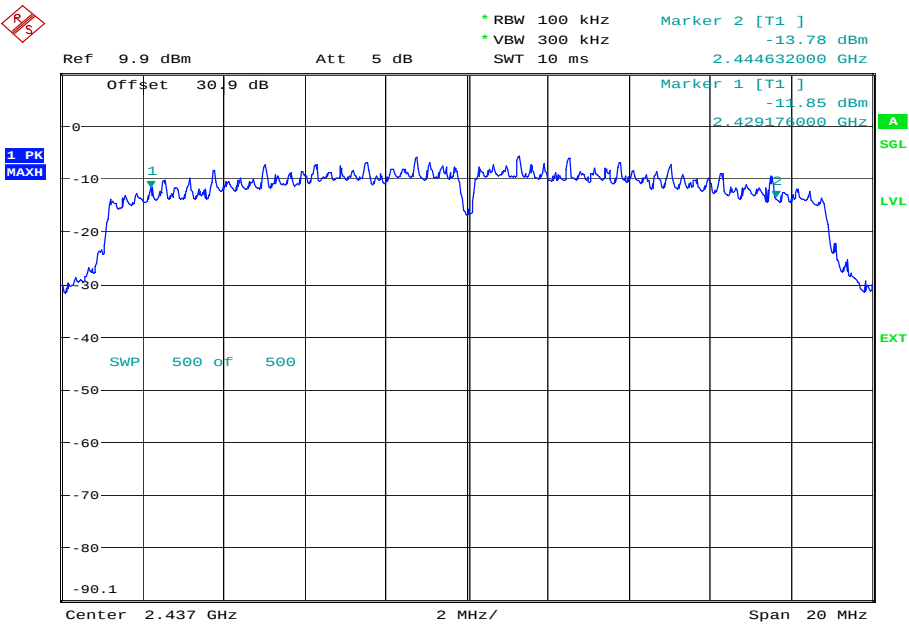
Product Service

19.5 Mbps



Date: 8.OCT.2014 11:00:59

26 Mbps

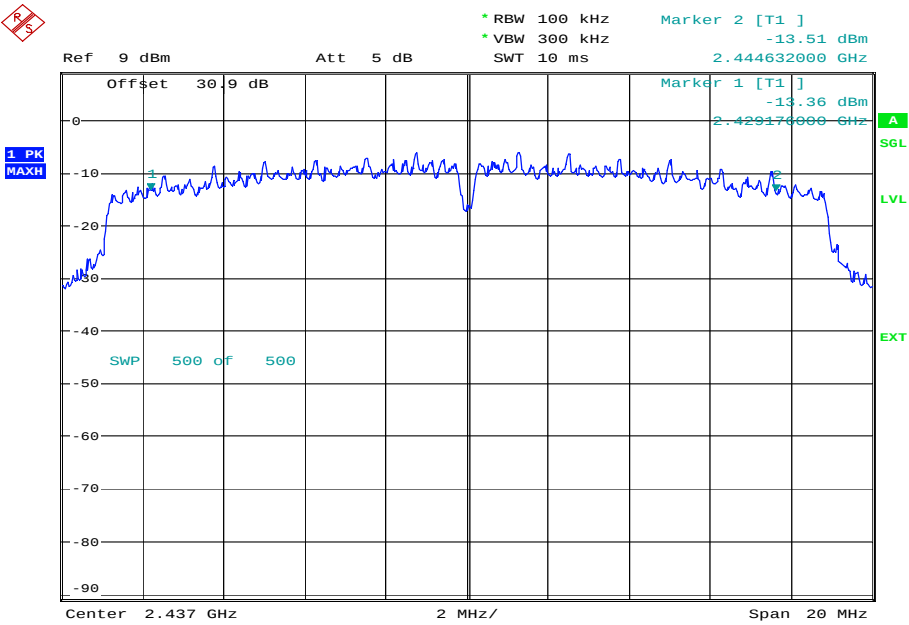


Date: 8.OCT.2014 11:24:07



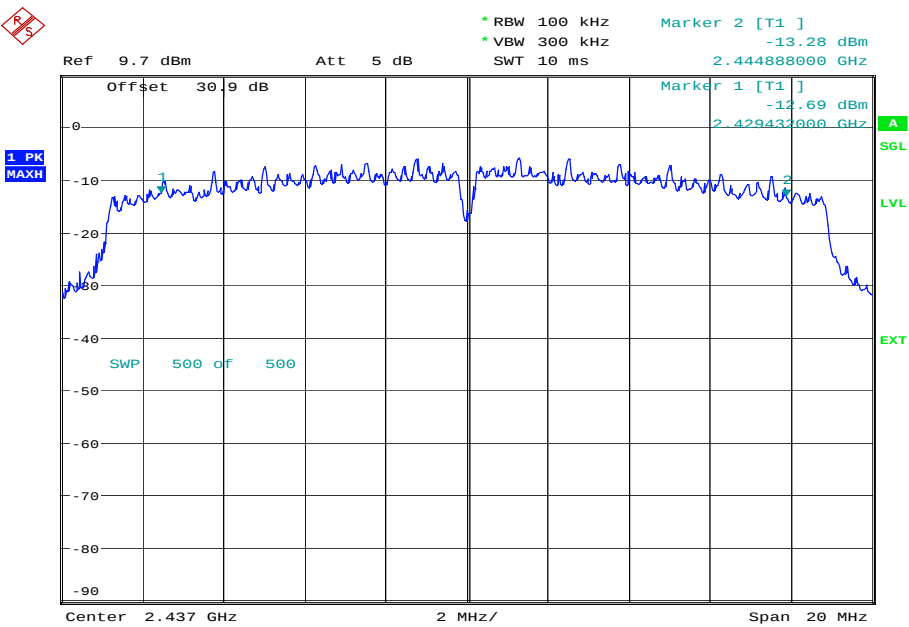
Product Service

39 Mbps



Date: 8.OCT.2014 11:33:11

52 Mbps

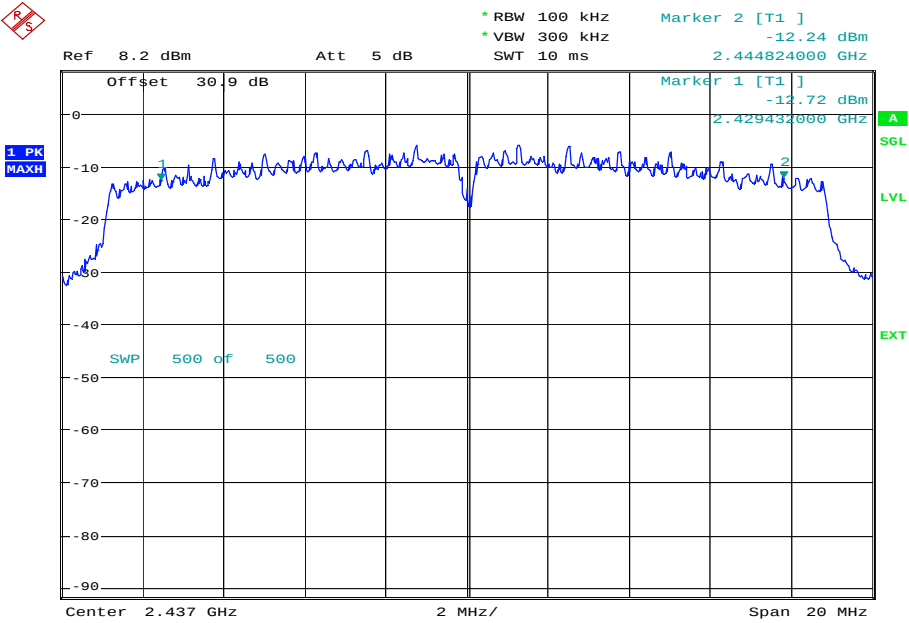


Date: 8.OCT.2014 11:53:37



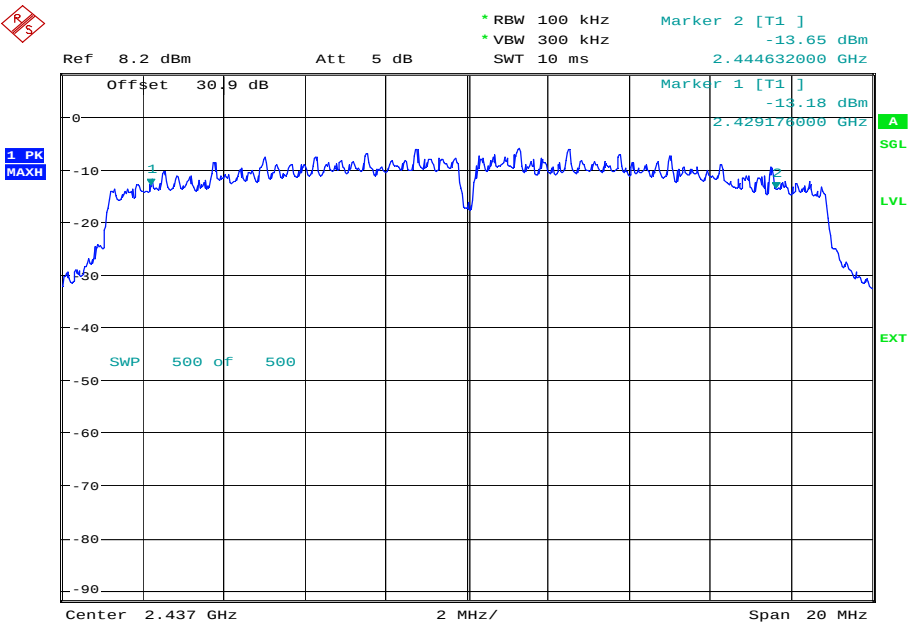
Product Service

58.5 Mbps



Date: 8.OCT.2014 11:58:08

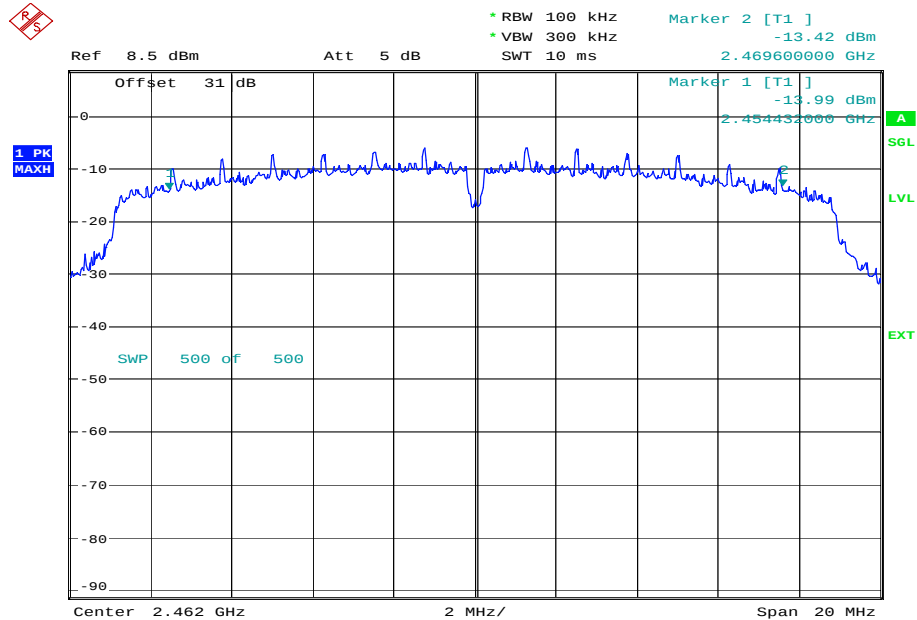
65 Mbps



Date: 8.OCT.2014 12:02:33

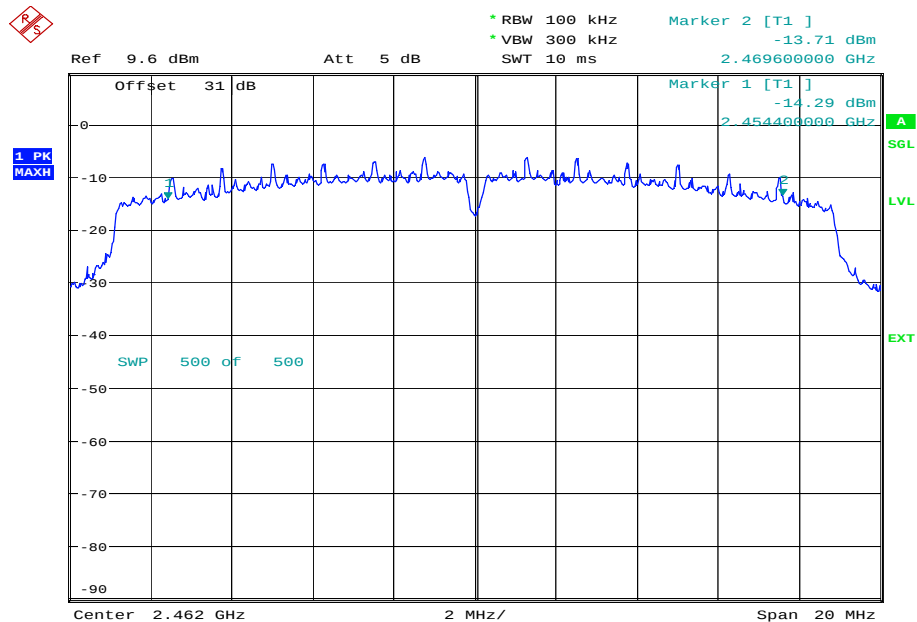


2462 MHz

6.5 Mbps

Date: 8.OCT.2014 14:53:05

13 Mbps

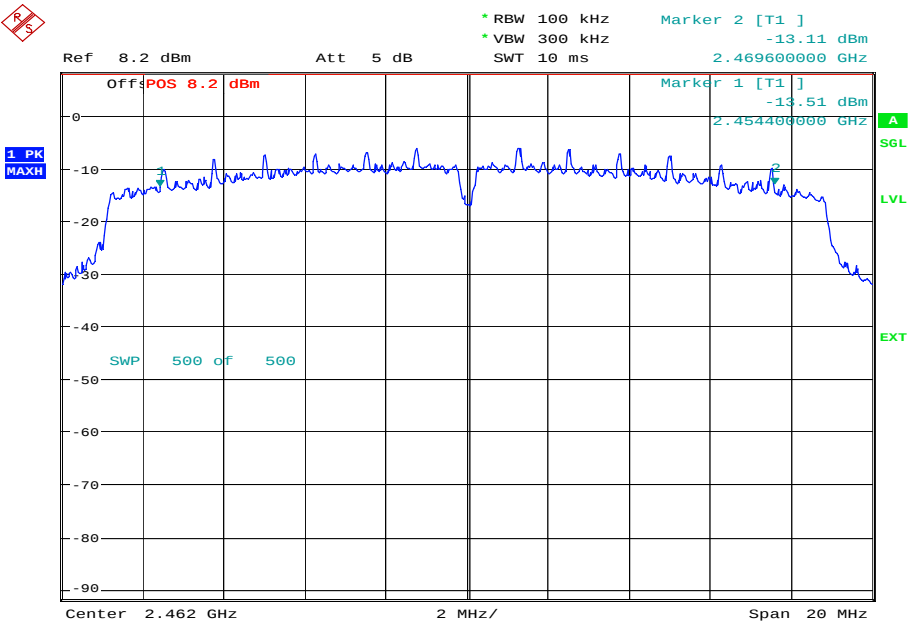


Date: 8.OCT.2014 14:59:47



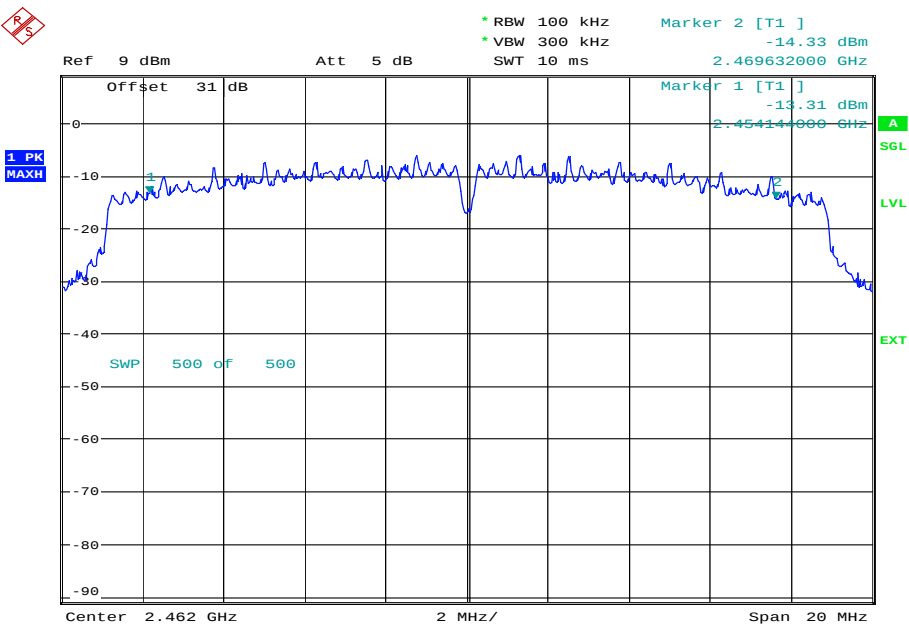
Product Service

19.5 Mbps



Date: 8.OCT.2014 15:05:33

26 Mbps

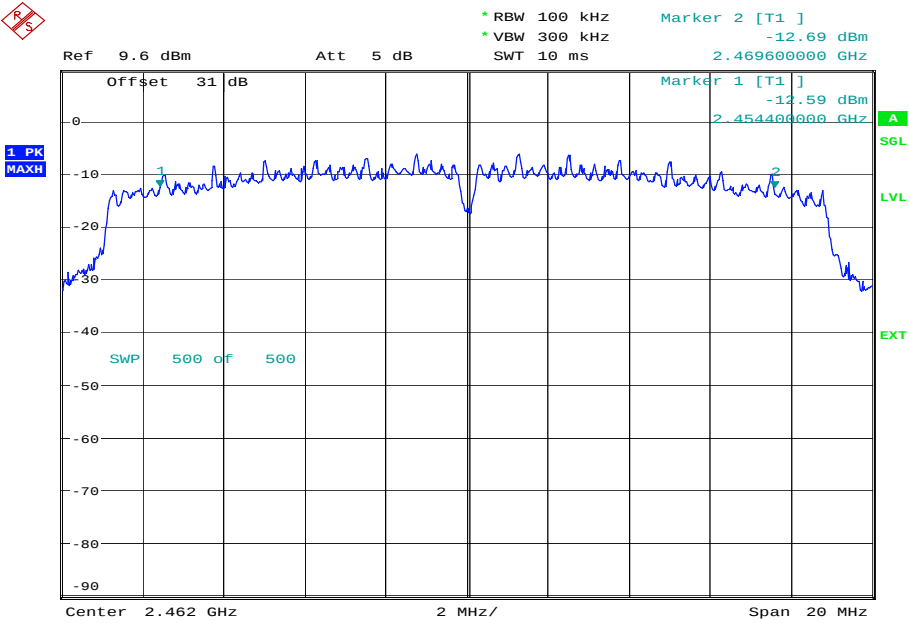


Date: 8.OCT.2014 15:11:03



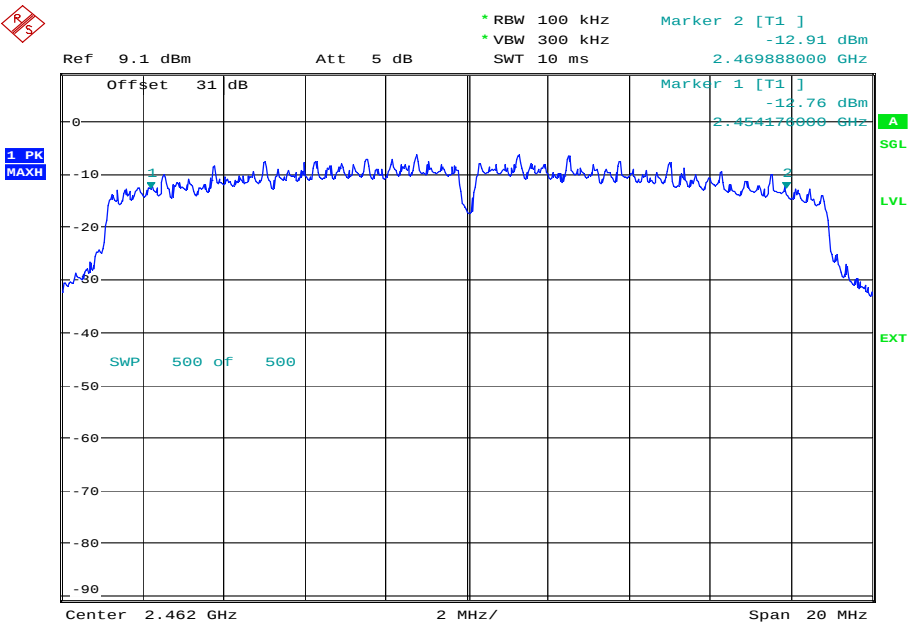
Product Service

39 Mbps



Date: 8.OCT.2014 15:17:53

52 Mbps

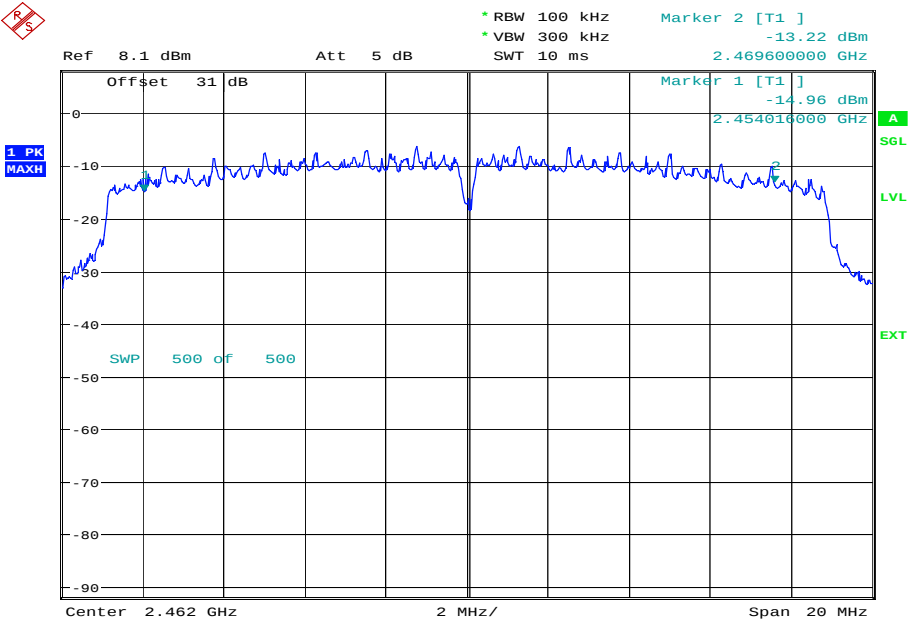


Date: 8.OCT.2014 15:23:30



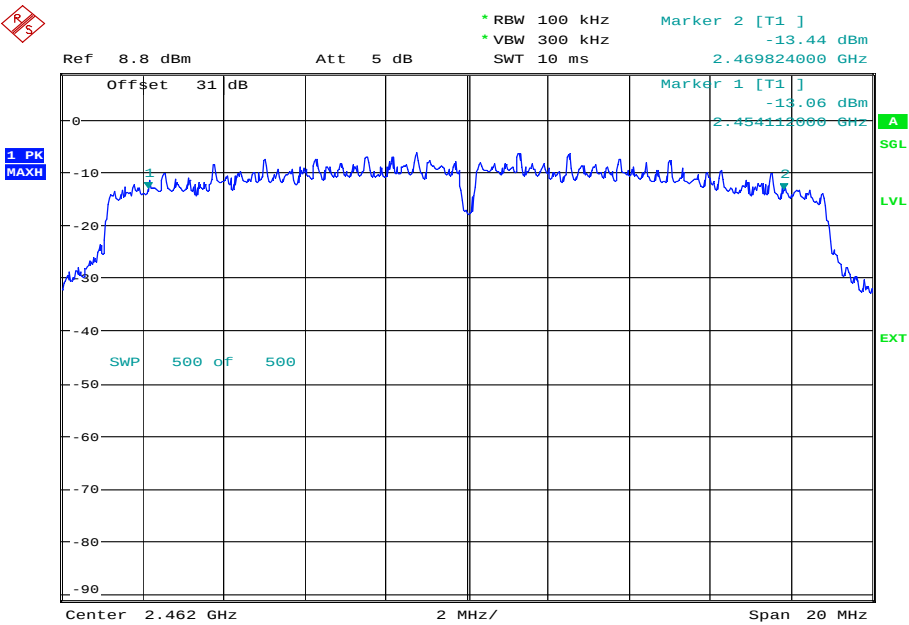
Product Service

58.5 Mbps



Date: 8.OCT.2014 15:33:54

65 Mbps



Date: 8.OCT.2014 15:43:11

Limit Clause

The minimum 6 dB Bandwidth shall be at least 500 kHz.



Product Service

SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 – AC Line Conducted Emissions					
LISN (1 Phase)	Chase	MN 2050	336	12	28-Mar-2015
Transient Limiter	Hewlett Packard	11947A	2378	12	1-Jul-2015
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
EMI Test Receiver	Rohde & Schwarz	ESIB26	3763	12	3-Jul-2015
Section 2.2 - Maximum Peak Conducted Output Power					
Power Splitter	Weinschel	1506A	606	12	14-Jan-2015
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
Attenuator (20dB, 2W)	Pasternack	PE7004-20	2943	12	28-Mar-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
P-Series Power Meter	Agilent Technologies	N1911A	3980	12	22-Sep-2015
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3982	12	22-Sep-2015
Section 2.3 - EIRP Peak Power					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	2-May-2015
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	8-Nov-2014
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	1002	12	19-Sep-2015
Rubidium Standard	Rohde & Schwarz	XRSM	1316	12	18-Jan-2015
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
Charge Amplifier	Endevco	133	2506	12	27-Nov-2014
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
Section 2.4 - Power Spectral Density					
Power Splitter	Weinschel	1506A	606	12	14-Jan-2015
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	12	15-Nov-2014
Attenuator (20dB, 2W)	Pasternack	PE7004-20	2943	12	28-Mar-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015



Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.5 - Spurious and Band Edge Emissions					
Antenna (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	26-Nov-2015
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	2-May-2015
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
Pre-Amplifier	Phase One	PS04-0086	1533	12	19-Dec-2014
Pre-Amplifier	Phase One	PS04-0087	1534	12	1-Oct-2015
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
'3.5mm' - '3.5mm' RF Cable (1m)	Rhophase	3PS-1803-1000-3PS	3697	12	28-Feb-2015
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	1-Oct-2015
Suspended Substrate Highpass Filter	Advance Power Components	11SH10-3000/X18000-O/O	4411	12	21-Mar-2015
Suspended Substrate Highpass Filter	Advance Power Components	11SH10-3000/X18000-O/O	4412	12	21-Mar-2015
Section 2.6 - 6dB Bandwidth					
Power Splitter	Weinschel	1506A	606	12	14-Jan-2015
Rubidium Standard	Rohde & Schwarz	XRSM	1316	12	18-Jan-2015
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2424	12	26-Sep-2015
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	12	15-Nov-2014
Attenuator (20dB, 2W)	Pasternack	PE7004-20	2943	12	28-Mar-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015

TU – Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Spurious and Band Edge Emissions	Conducted: ± 3.08 dB Radiated: 30 MHz to 1 GHz: ± 5.1 dB Radiated: 1 GHz to 40 GHz: ± 6.3 dB
EIRP Peak Power	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
Maximum Peak Conducted Output Power	± 0.70 dB
AC Line Conducted Emissions	± 3.2 dB
Power Spectral Density	± 3.0 dB
6dB Bandwidth	± 212.114 kHz



Product Service

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA
(Not UKAS Accredited).

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TÜV SÜD Product Service

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