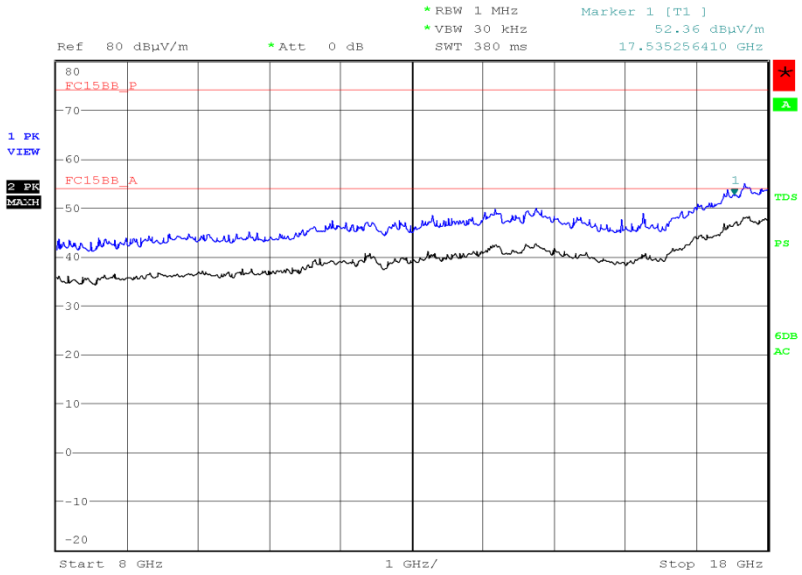
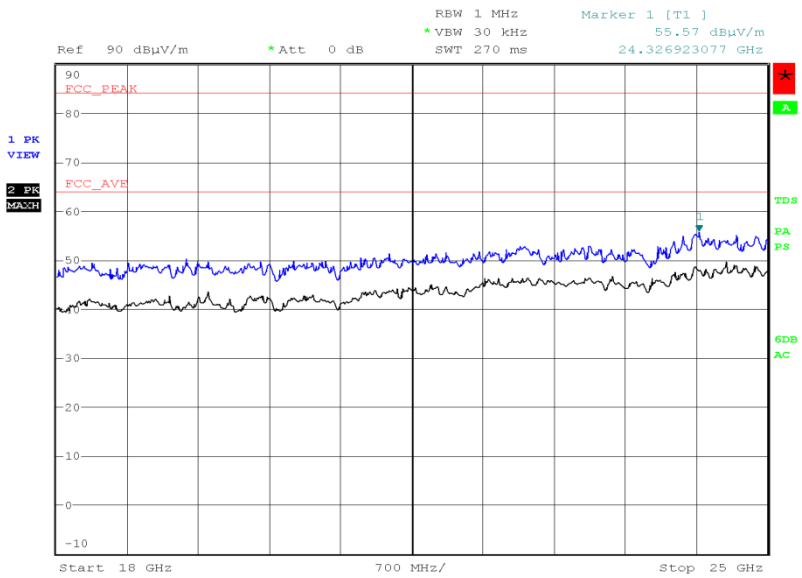
Product Service

8 GHz to 18 GHz



Date: 11.JAN.2015 02:32:30

18 GHz to 25 GHz

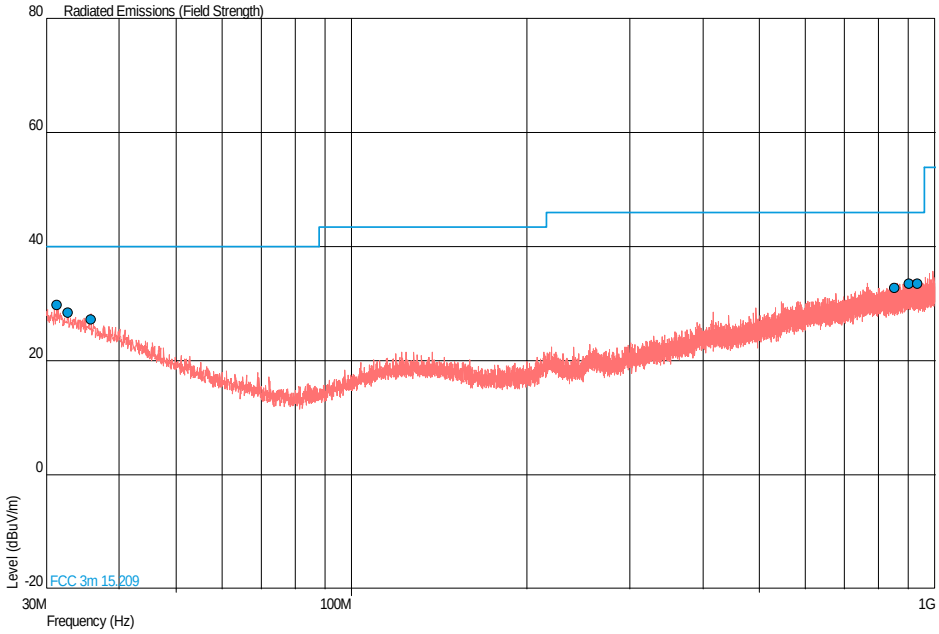


Date: 11.JAN.2015 08:54:00

Product Service

2462 MHz

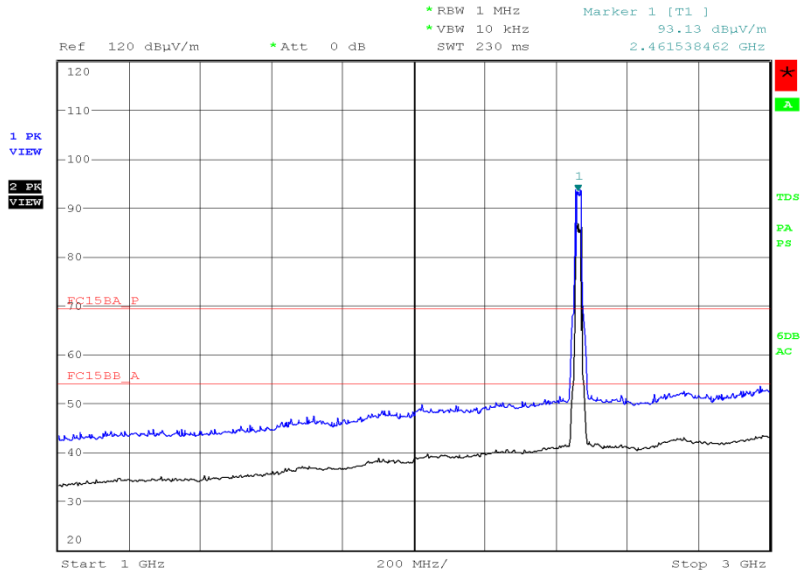
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
31.261	29.8	30.9	40.0	100	-10.2	-69.1	180	1.00	Vertical
32.716	28.5	26.6	40.0	100	-11.5	-73.4	180	1.00	Vertical
35.820	27.2	22.9	40.0	100	-12.8	-77.1	180	1.00	Vertical
852.665	32.8	43.7	46.0	200	-13.2	-156.3	180	1.00	Vertical
903.021	33.6	47.9	46.0	200	-12.4	-152.1	180	1.00	Vertical
932.272	33.5	47.3	46.0	200	-12.5	-152.7	180	1.00	Vertical

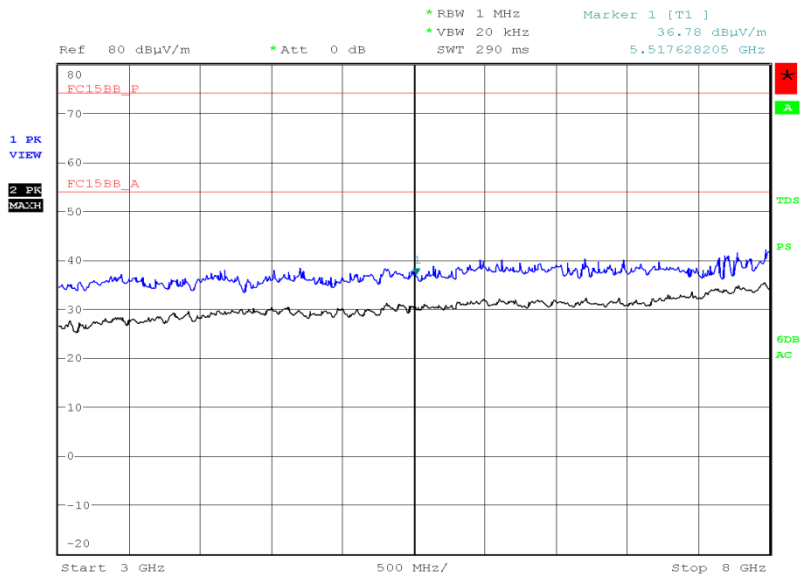
Product Service

1 GHz to 3 GHz



Date: 10.JAN.2015 22:27:12

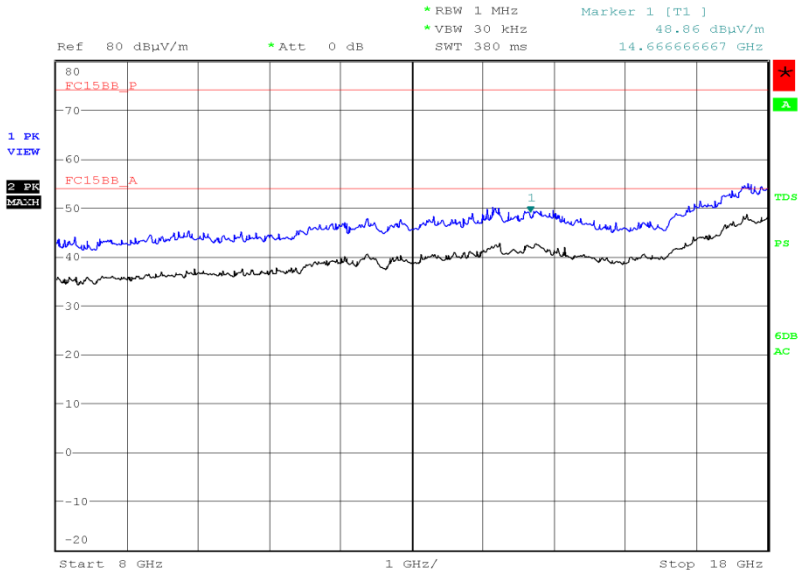
3 GHz to 8 GHz



Date: 11.JAN.2015 00:50:35

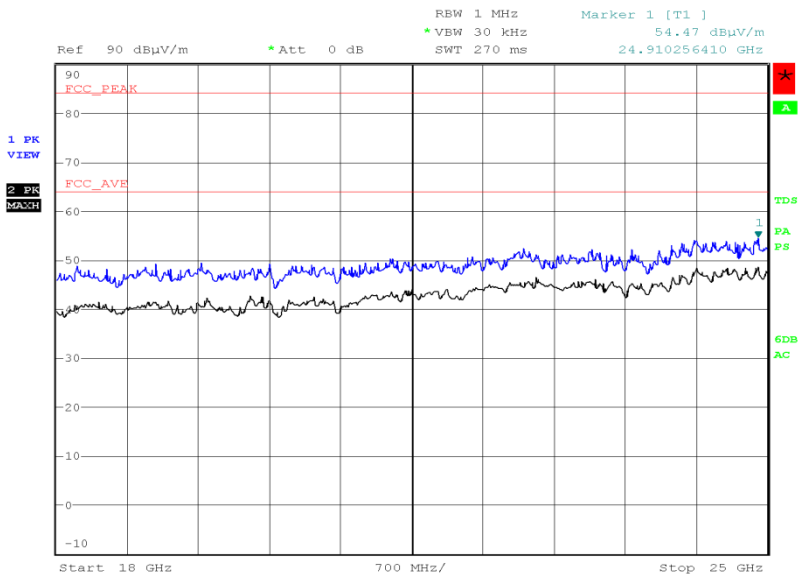
Product Service

8 GHz to 18 GHz



Date: 11.JAN.2015 02:40:03

18 GHz to 25 GHz



Date: 11.JAN.2015 09:01:18

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 interal, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

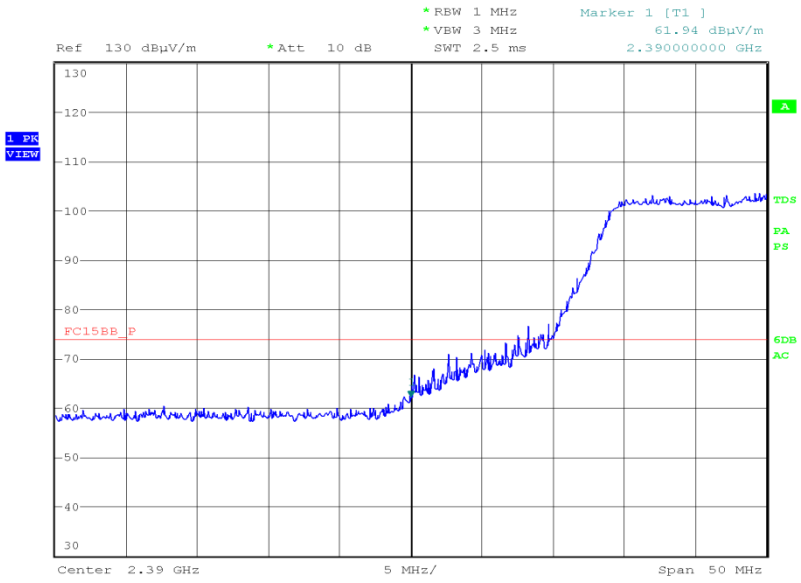
Band Edge Emissions

Modulation/Data Rate: OFDM/6 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	61.94	49.37
2483.50	65.61	50.32

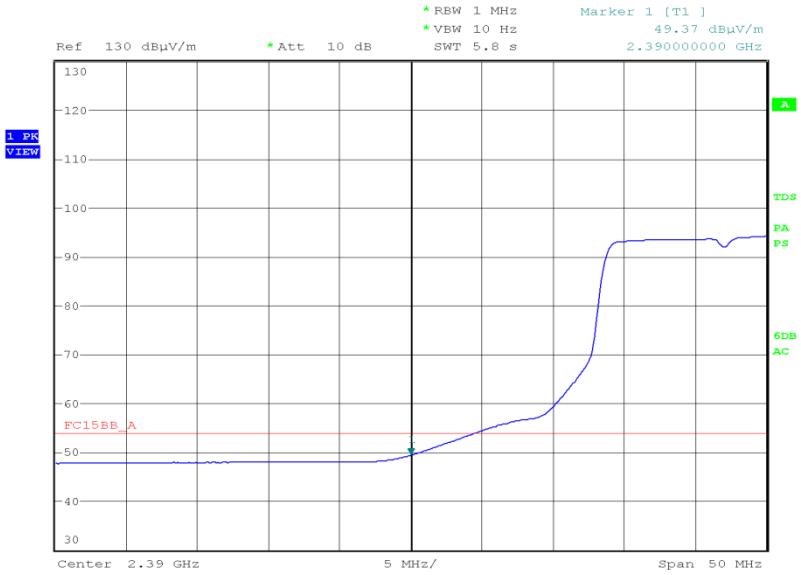
2390.00 MHz

Final Peak



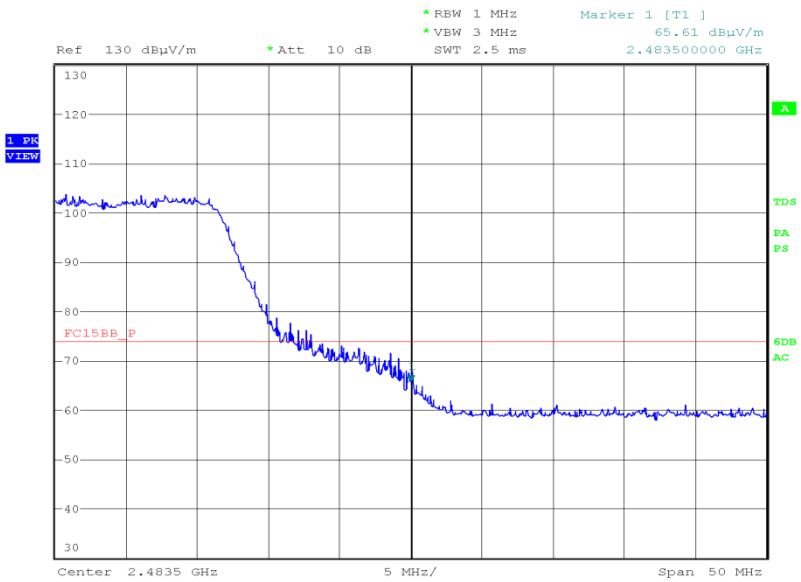
Product Service

Final Average



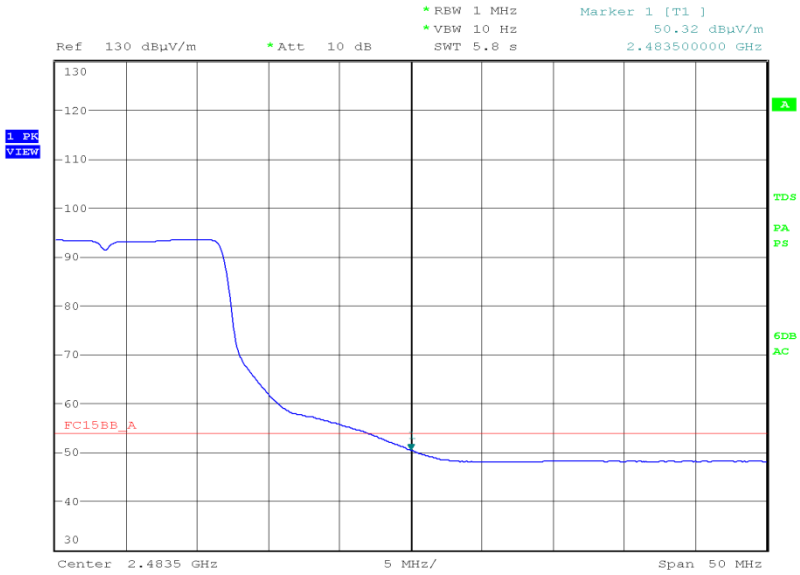
2483.50 MHz

Final Peak



Product Service

Final Average

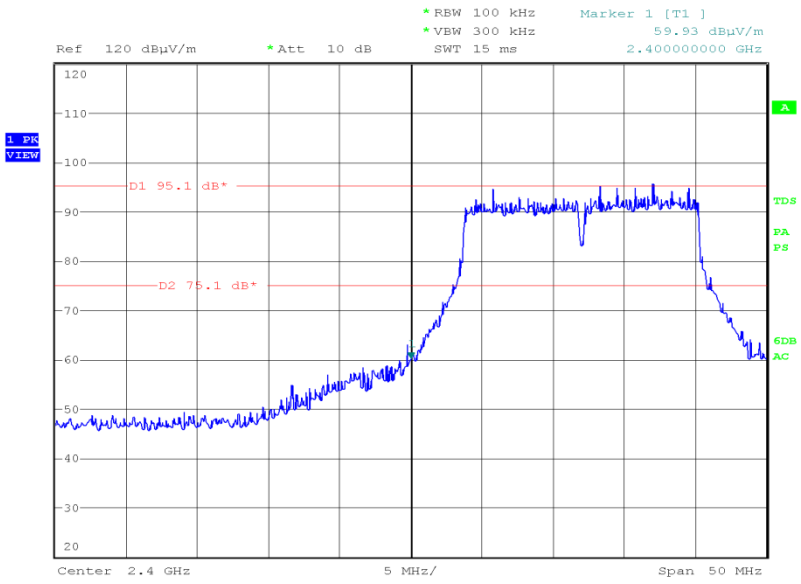


Date: 10.JAN.2015 21:15:56

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	59.93
2483.50	51.75

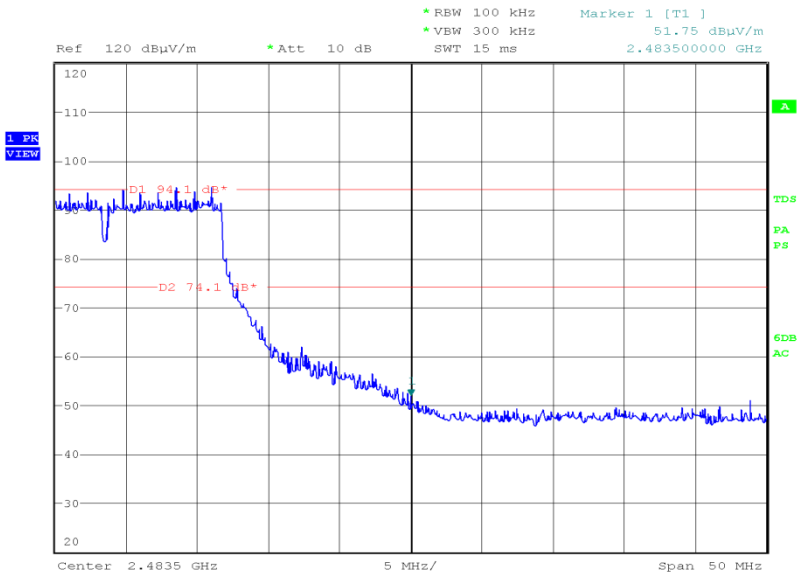
2400.00 MHz

Final Peak



2483.50 MHz

Final Peak

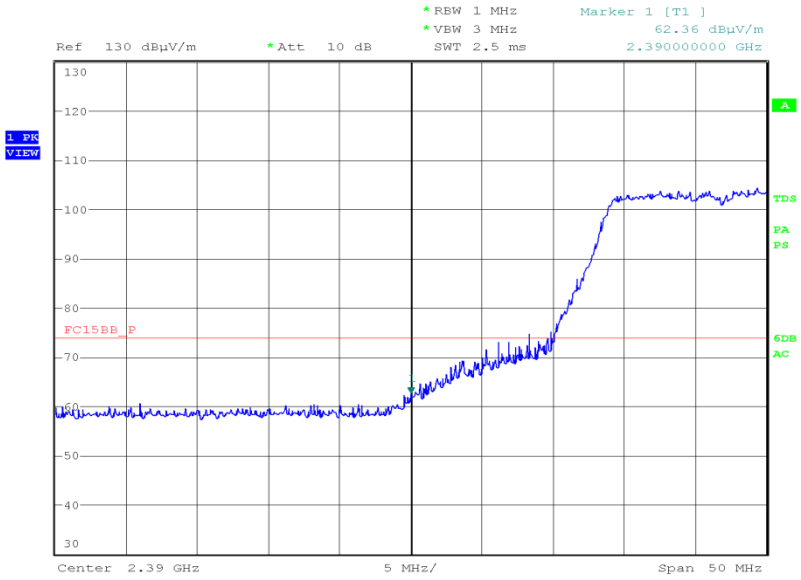


Modulation/Data Rate: OFDM/54 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	62.36	49.10
2483.50	64.51	50.18

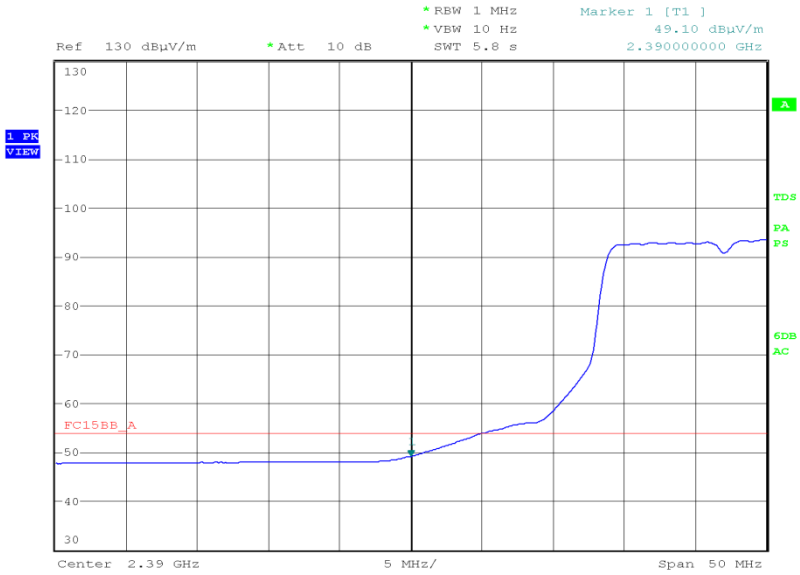
2390.00 MHz

Final Peak



Date: 10.JAN.2015 21:29:15

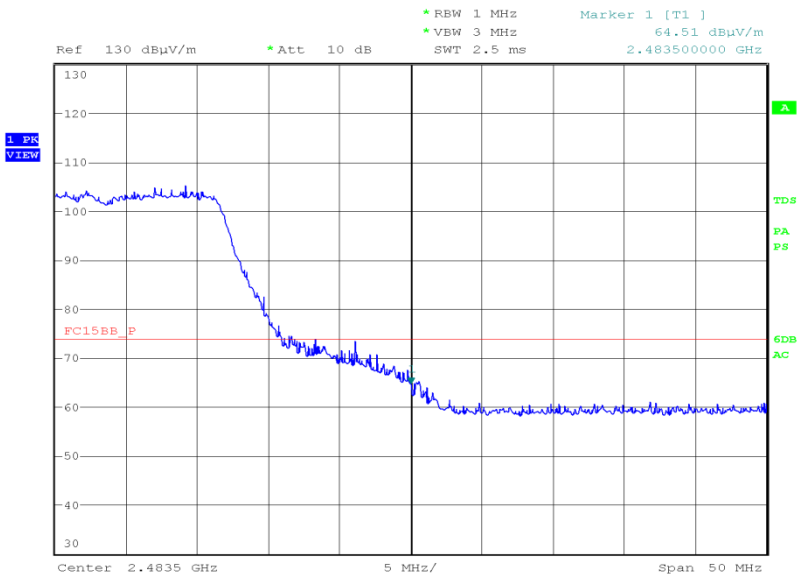
Final Average



Date: 10.JAN.2015 21:30:15

2483.50 MHz

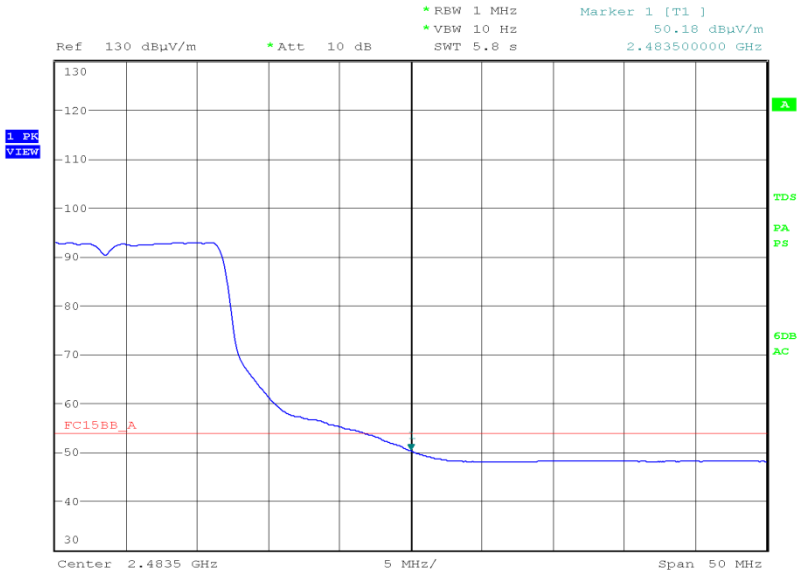
Final Peak



Date: 10.JAN.2015 21:20:25

Product Service

Final Average

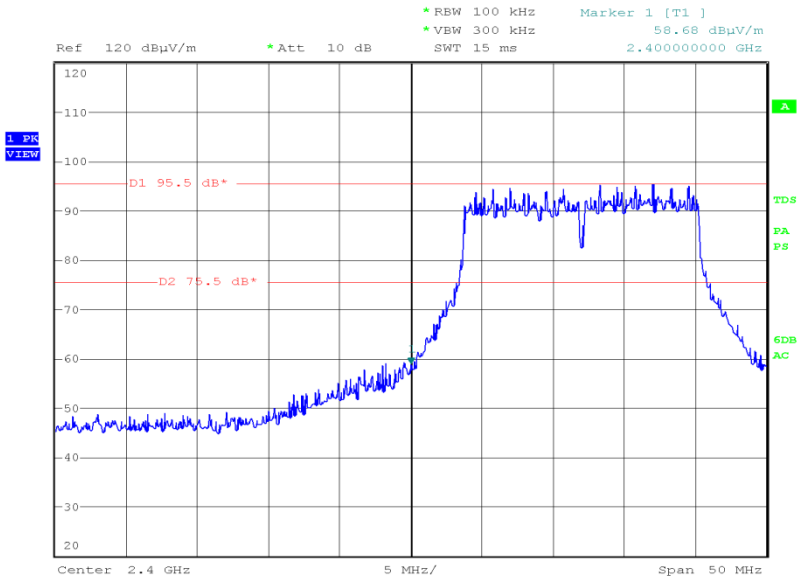


Date: 10.JAN.2015 21:22:17

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	58.68
2483.50	49.71

2400.00 MHz

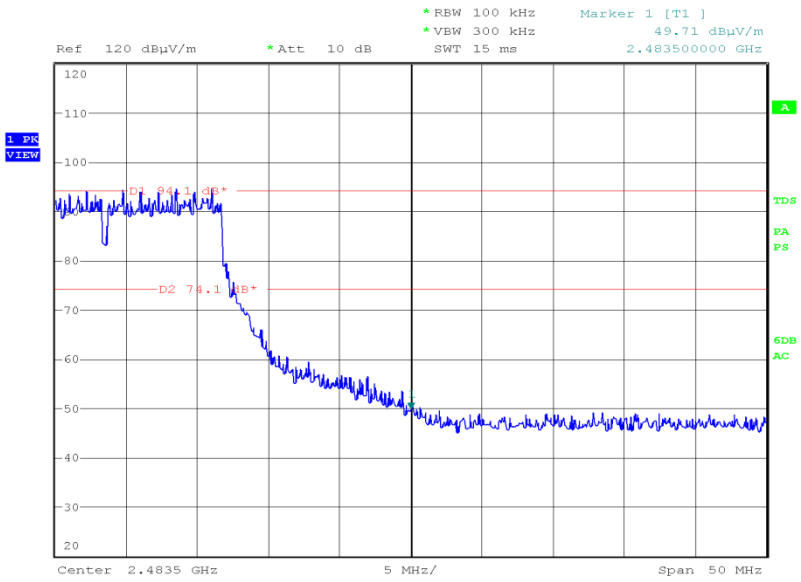
Final Peak



Date: 10.JAN.2015 21:27:10

2483.50 MHz

Final Peak



Remark

The test was performed on 54 Mbps because this was deemed the worst case data rate for 6 dB Bandwidth.

The test was performed on 6 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 interal, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

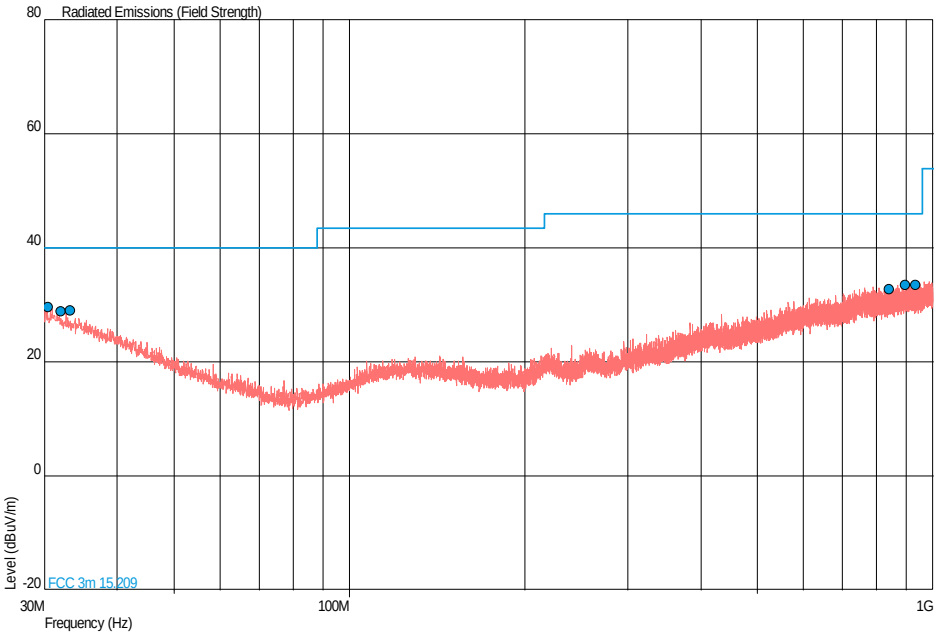
802.11(n)

4.0 V DC Supply

Spurious Radiated Emissions

2412 MHz

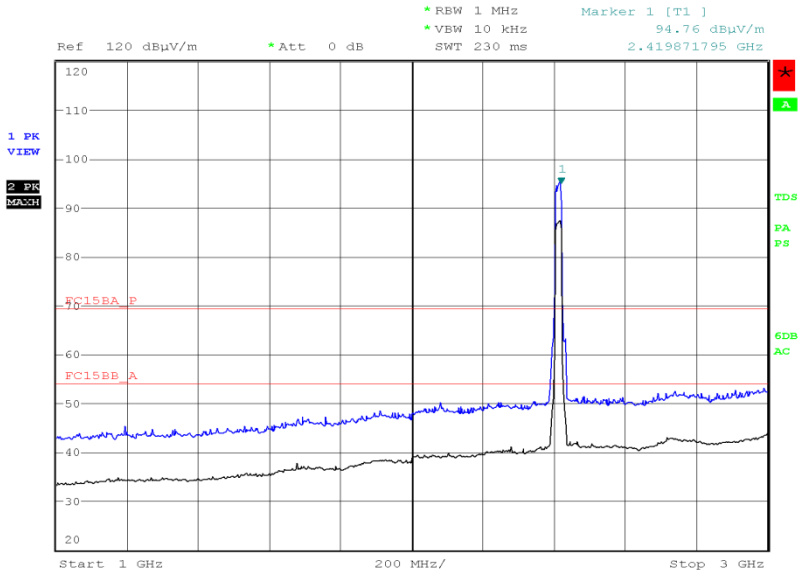
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
30.437	29.6	30.2	40.0	100	-10.4	-69.8	0	1.00	Vertical
31.989	28.9	27.9	40.0	100	-11.1	-72.1	180	1.00	Vertical
33.250	29.0	28.2	40.0	100	-11.0	-71.8	180	1.00	Vertical
839.853	32.7	43.2	46.0	200	-13.3	-156.8	0	1.00	Vertical
895.192	33.5	47.3	46.0	200	-12.5	-152.7	0	1.00	Vertical
934.768	33.5	47.3	46.0	200	-12.5	-152.7	180	1.00	Vertical

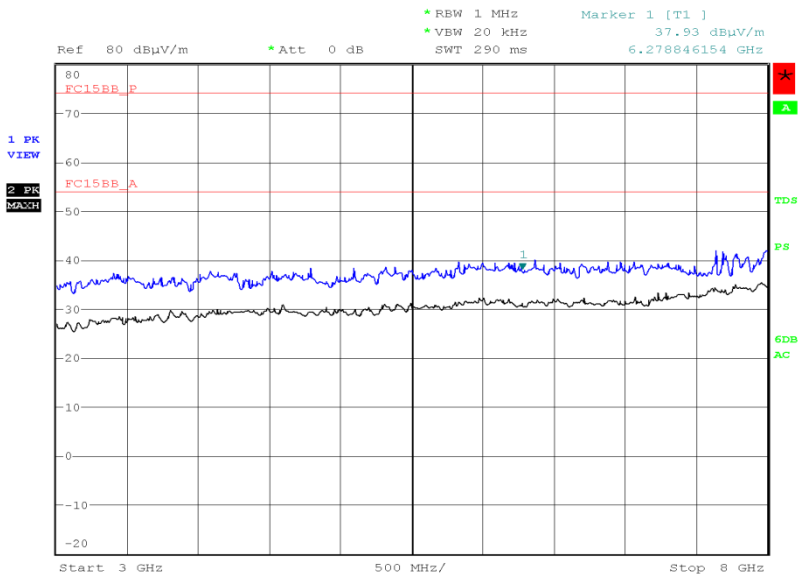
Product Service

1 GHz to 3 GHz



Date: 10.JAN.2015 22:36:18

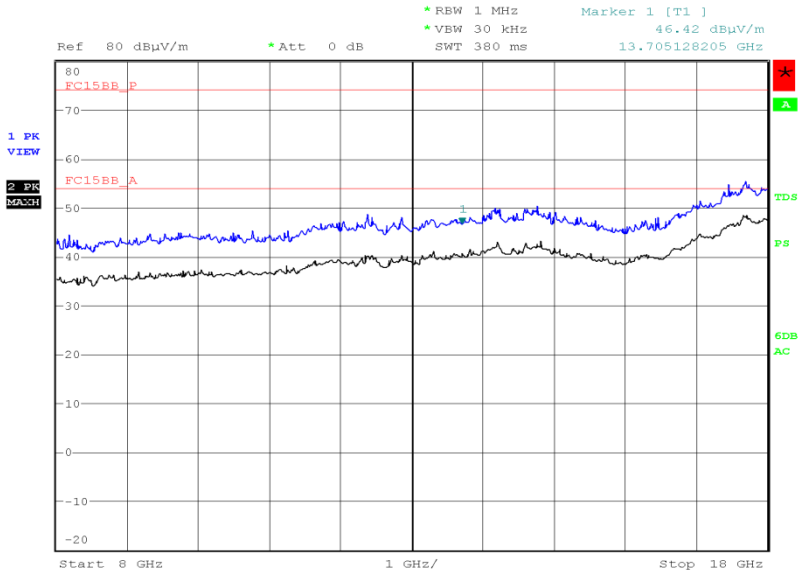
3 GHz to 8 GHz



Date: 11.JAN.2015 01:00:13

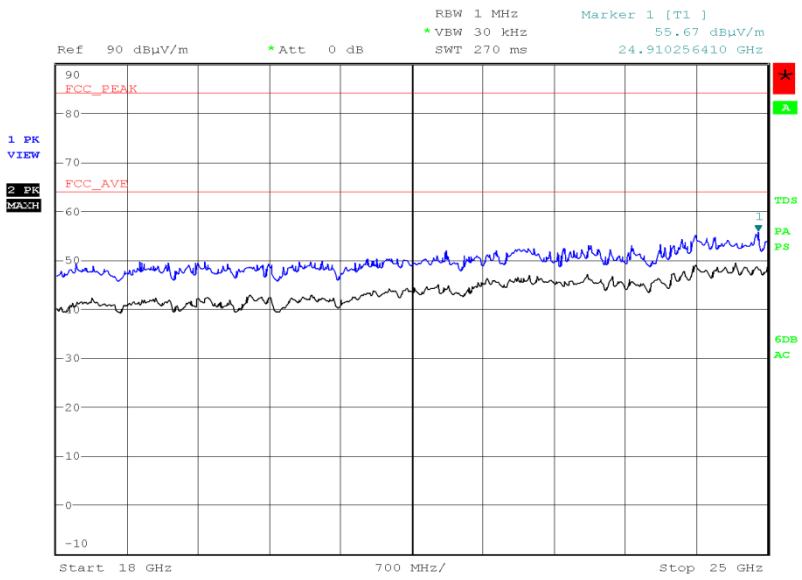
Product Service

8 GHz to 18 GHz



Date: 11.JAN.2015 02:47:07

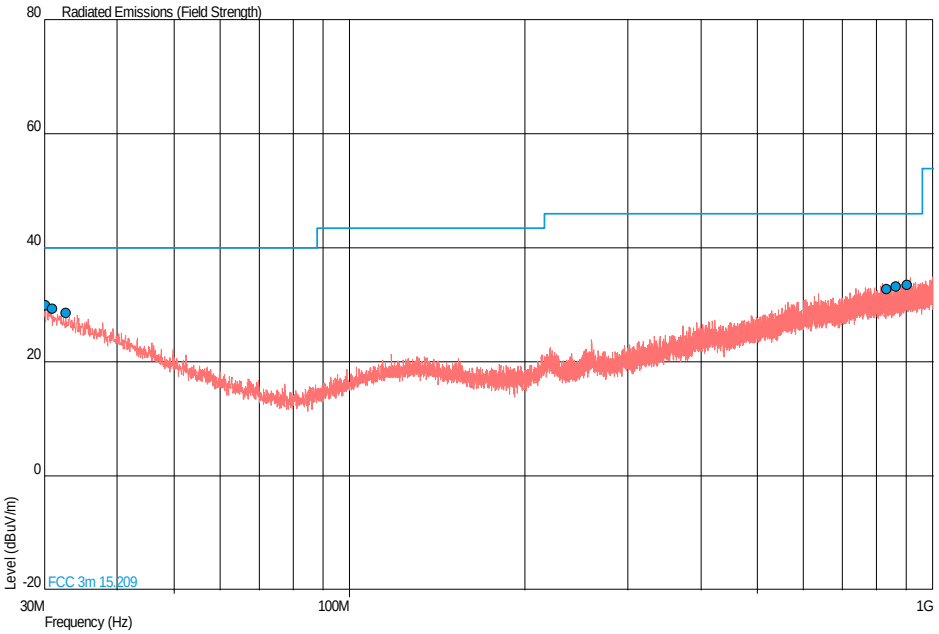
18 GHz to 25 GHz



Date: 11.JAN.2015 09:07:46

2437 MHz

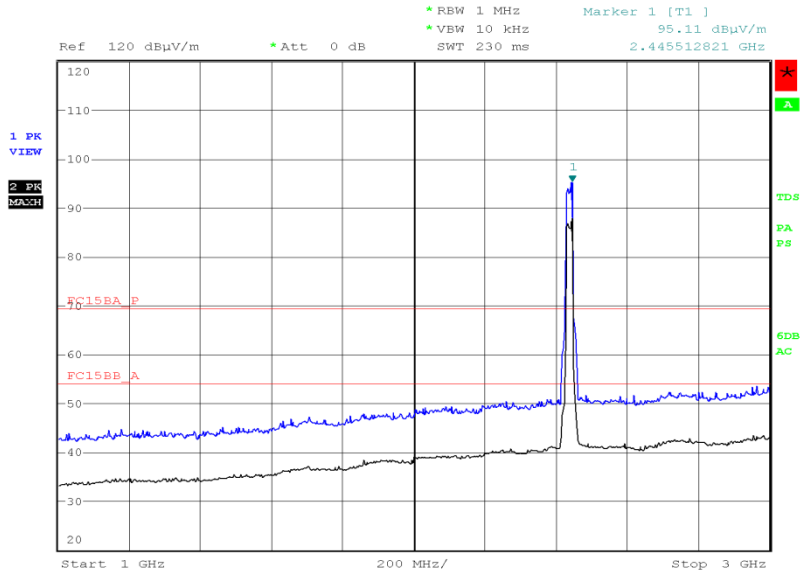
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
30.194	29.9	31.3	40.0	100	-10.1	-68.7	0	1.00	Vertical
31.019	29.3	29.2	40.0	100	-10.7	-70.8	0	1.00	Vertical
32.668	28.5	26.6	40.0	100	-11.5	-73.4	180	1.00	Vertical
832.336	32.8	43.7	46.0	200	-13.2	-156.3	0	1.00	Vertical
864.346	33.2	45.7	46.0	200	-12.8	-154.3	180	1.00	Vertical
903.021	33.6	47.9	46.0	200	-12.4	-152.1	180	1.00	Vertical

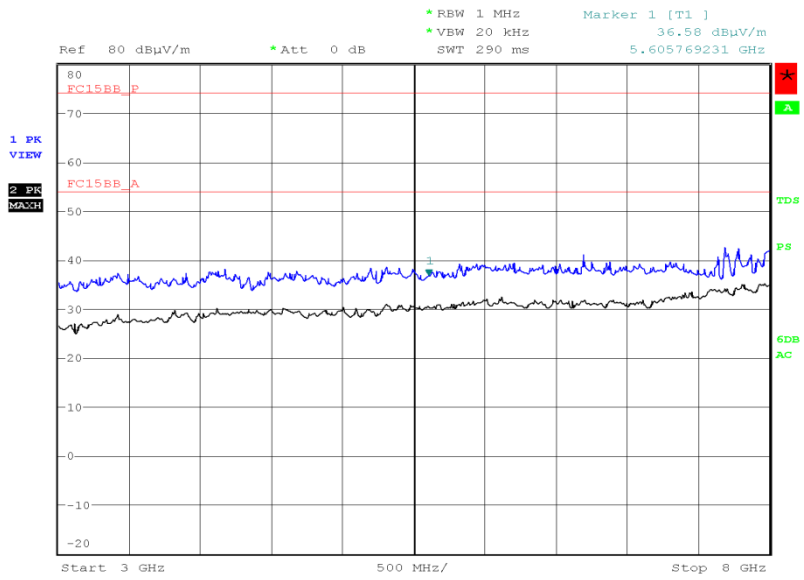
Product Service

1 GHz to 3 GHz



Date: 10.JAN.2015 22:43:33

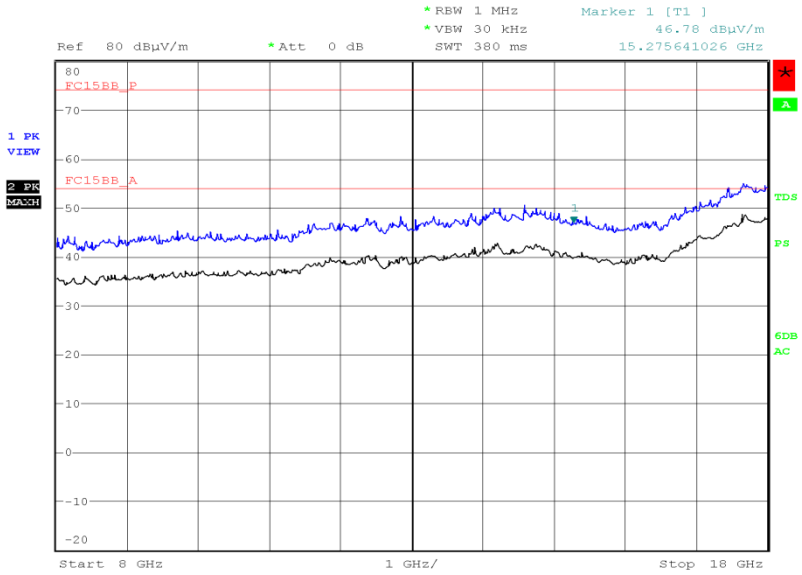
3 GHz to 8 GHz



Date: 11.JAN.2015 01:07:28

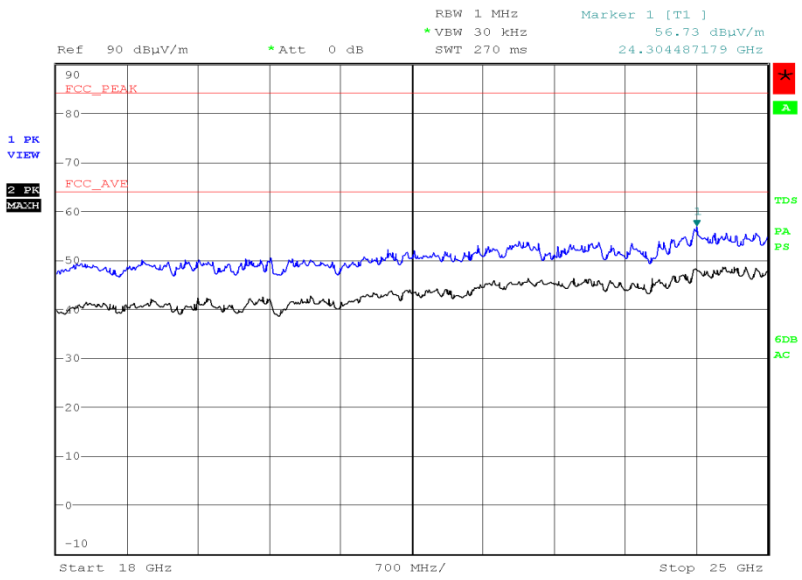
Product Service

8 GHz to 18 GHz



Date: 11.JAN.2015 02:54:34

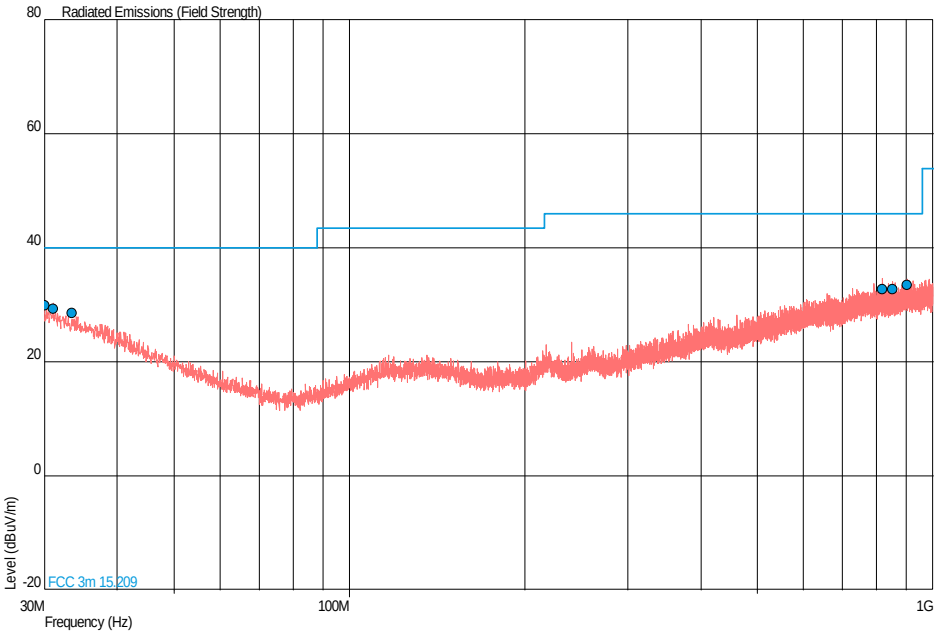
18 GHz to 25 GHz



Date: 11.JAN.2015 09:15:29

2462 MHz

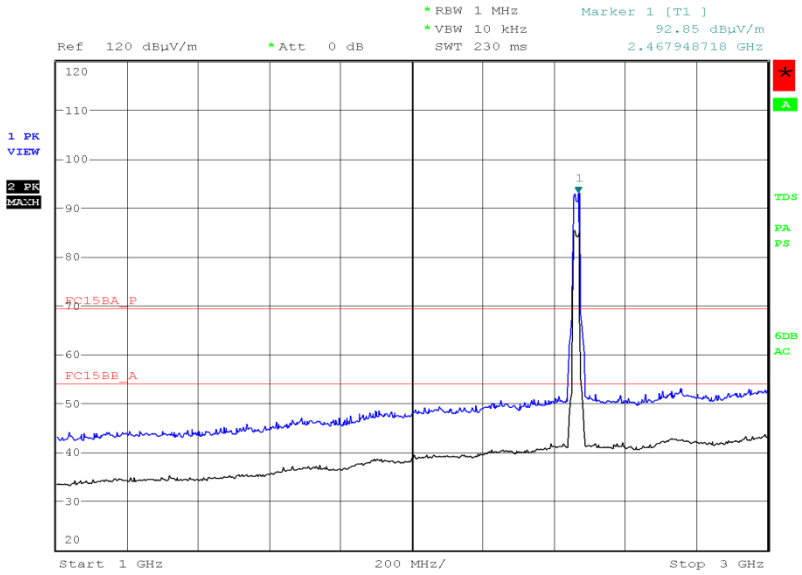
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
30.049	29.9	31.3	40.0	100	-10.1	-68.7	180	1.00	Vertical
31.116	29.4	29.5	40.0	100	-10.6	-70.5	180	1.00	Vertical
33.444	28.6	26.9	40.0	100	-11.4	-73.1	180	1.00	Vertical
819.968	32.8	43.7	46.0	200	-13.2	-156.3	180	1.00	Vertical
851.493	32.8	43.7	46.0	200	-13.2	-156.3	180	1.00	Vertical
903.021	33.6	47.9	46.0	200	-12.4	-152.1	180	1.00	Vertical

Product Service

1 GHz to 3 GHz



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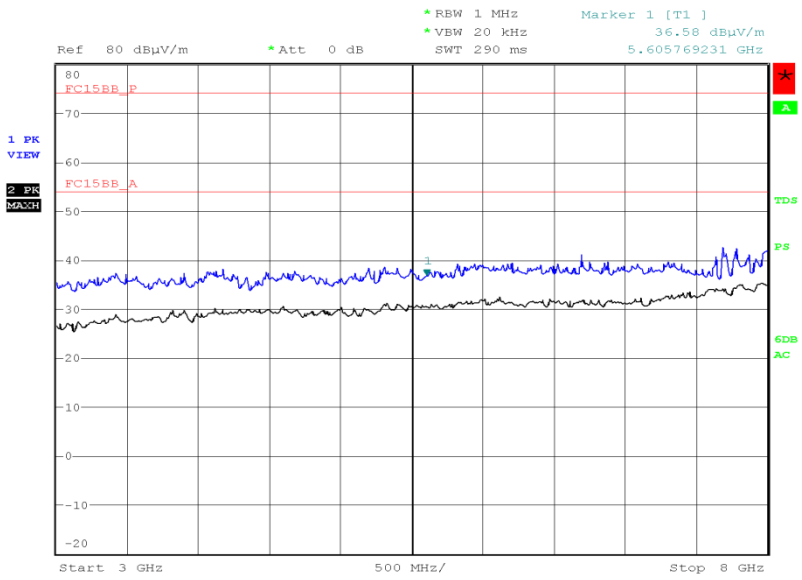
3 GHz to 8 GHz



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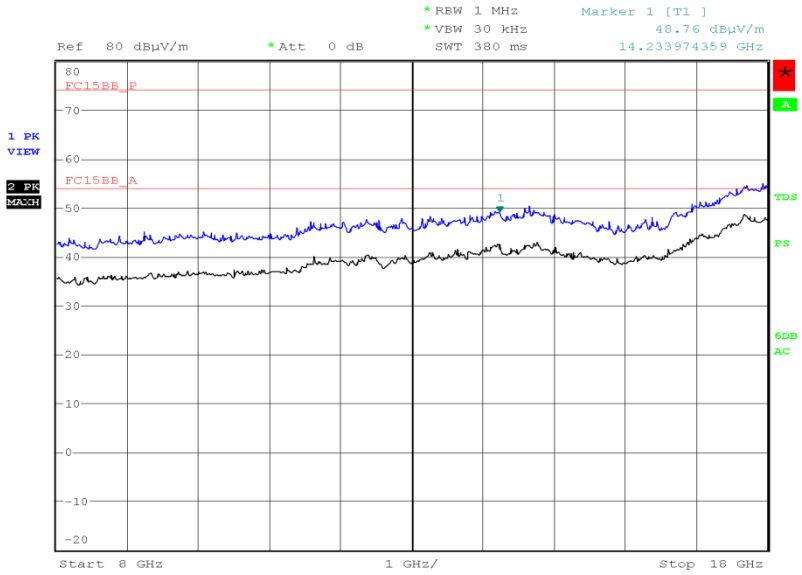
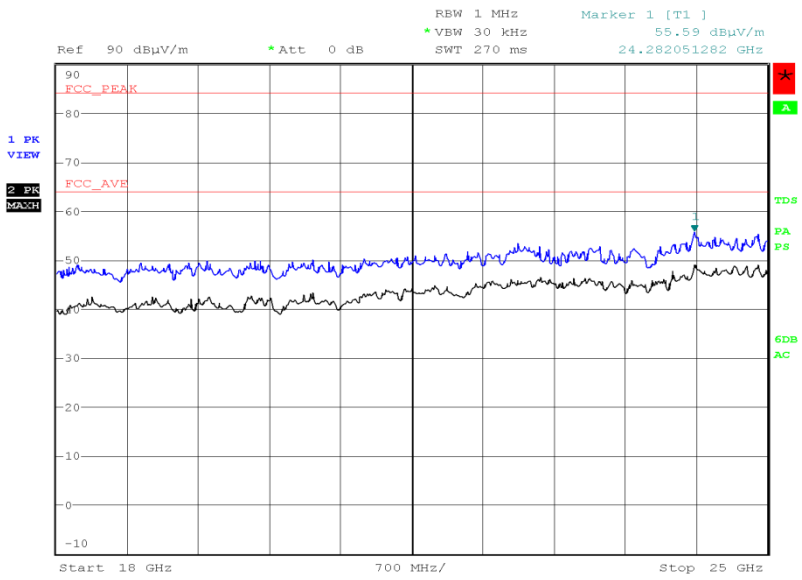
Product Service

8 GHz to 18 GHz



Date: 11.JAN.2015 03:03:08

18 GHz to 25 GHz



Date: 11.JAN.2015 09:17:52

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 interal, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

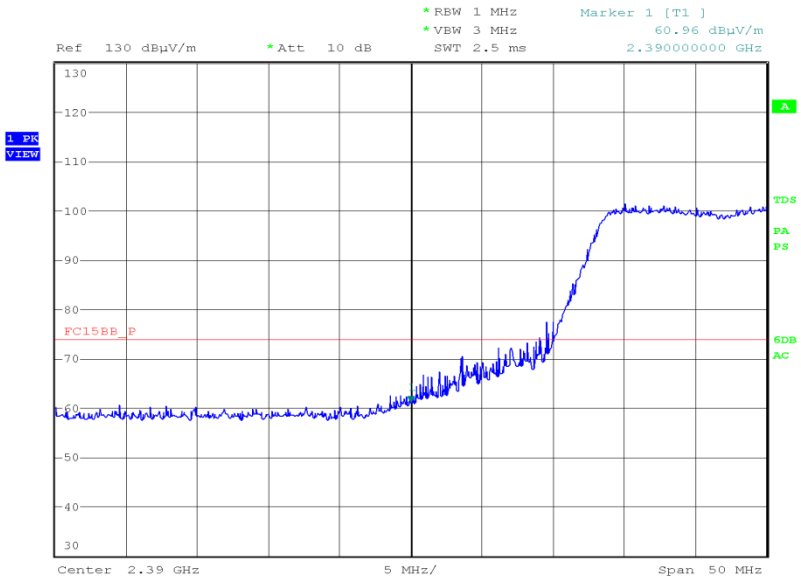
Band Edge Emissions

Modulation/Data Rate: BPSK/MCS0

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	60.96	49.10
2483.50	65.39	50.38

2390.00 MHz

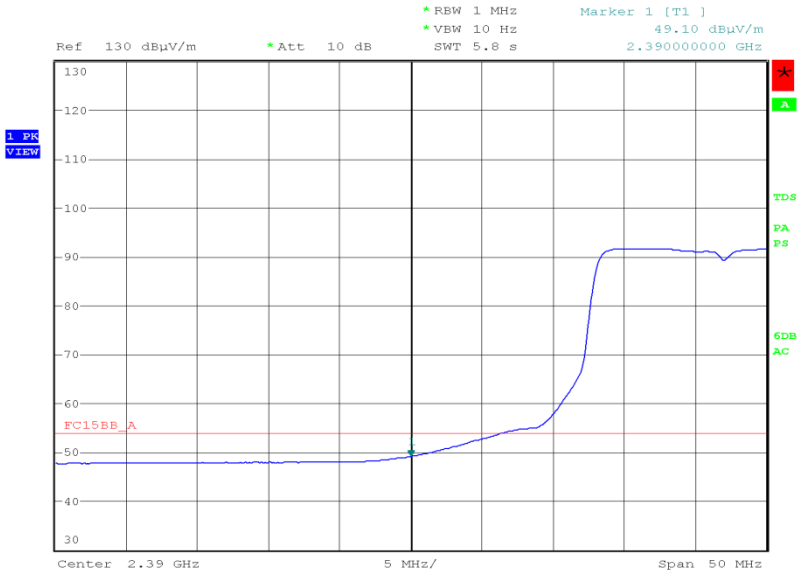
Final Peak



Date: 10.JAN.2015 20:17:23

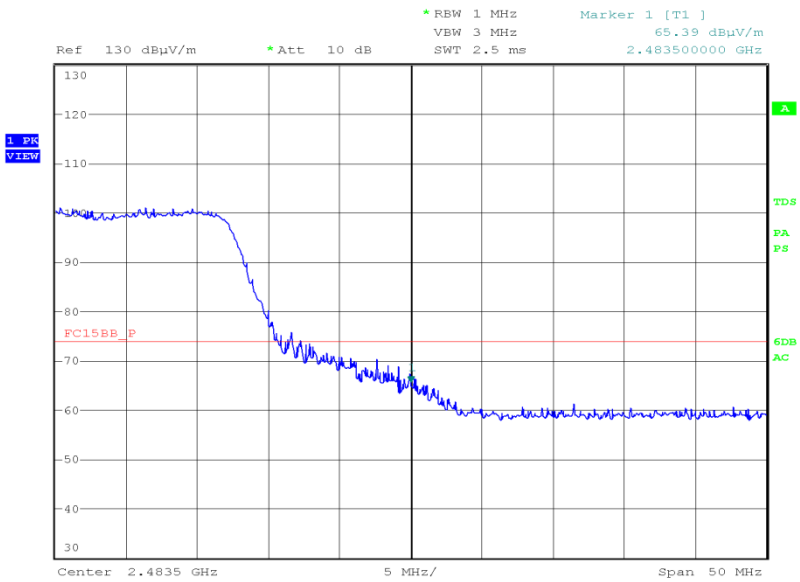
Product Service

Final Average



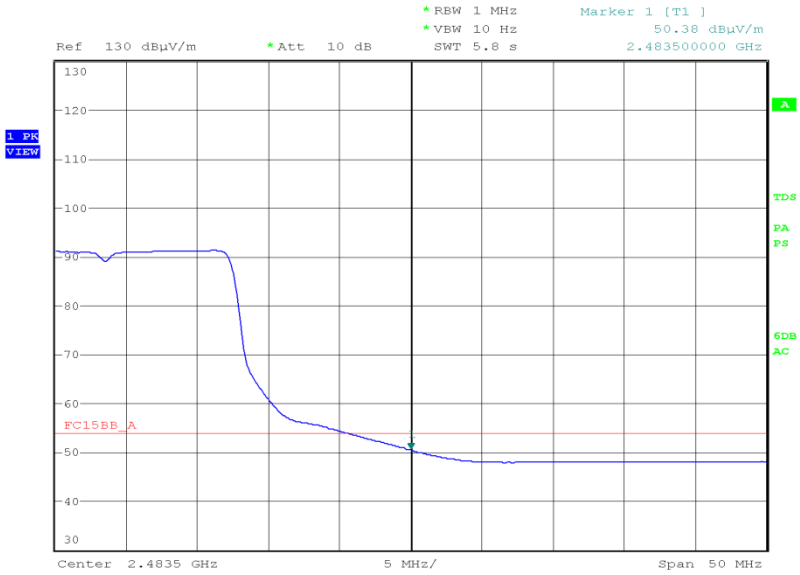
2483.50 MHz

Final Peak



Product Service

Final Average

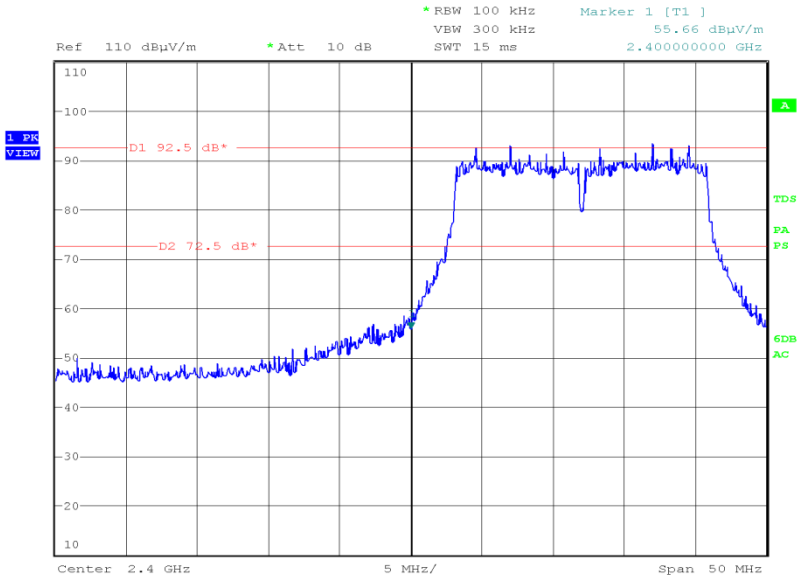


Date: 10.JAN.2015 20:42:47

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	55.66
2483.50	49.84

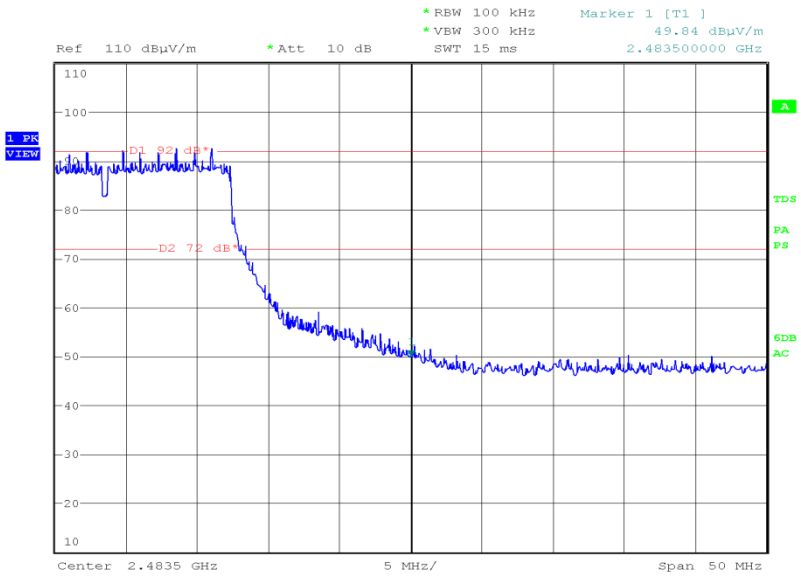
2400.00 MHz

Final Peak



2483.50 MHz

Final Peak



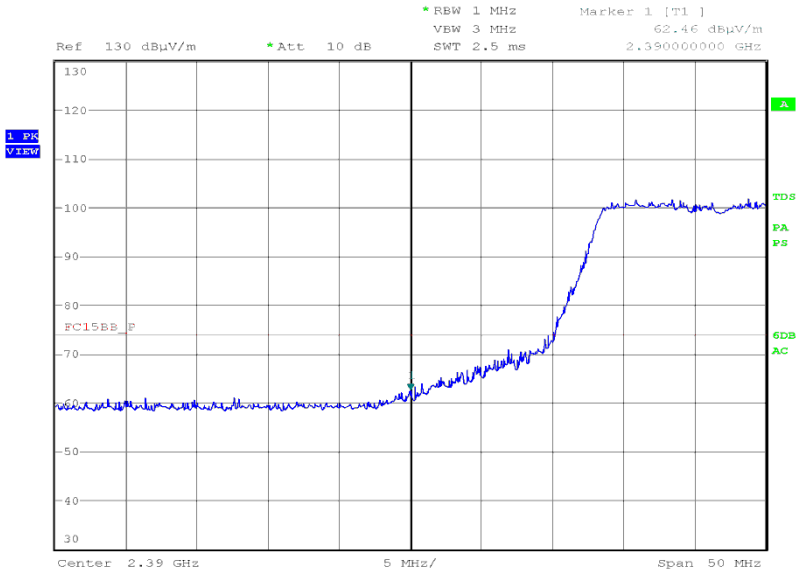
Date: 10.JAN.2015 20:39:36

Modulation/Data Rate: 64-QAM/MCS6

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	62.46	49.53
2483.50	62.61	50.69

2390.00 MHz

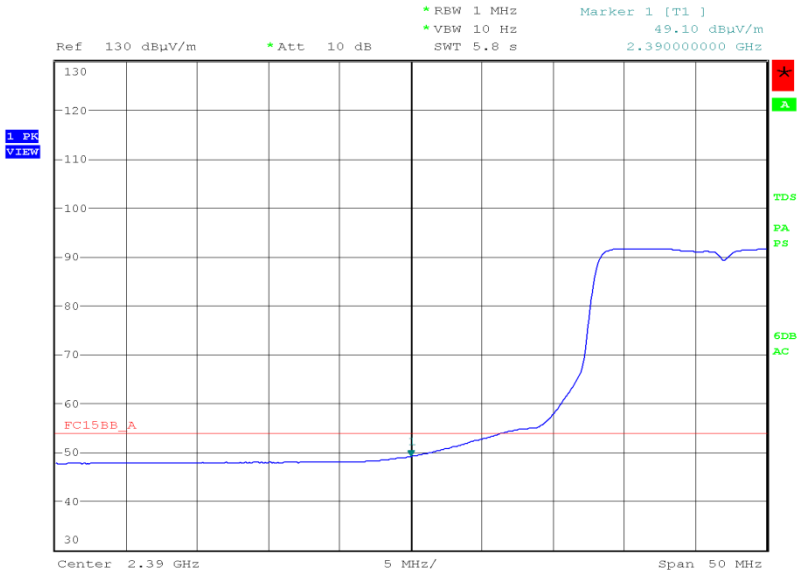
Final Peak



Date: 10.JAN.2015 20:28:27

Product Service

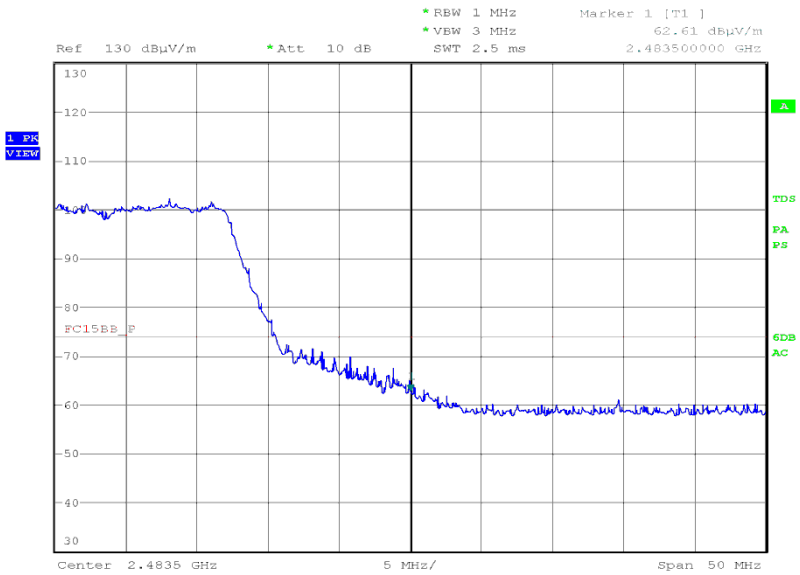
Final Average



Date: 10.JAN.2015 20:20:55

2483.50 MHz

Final Peak



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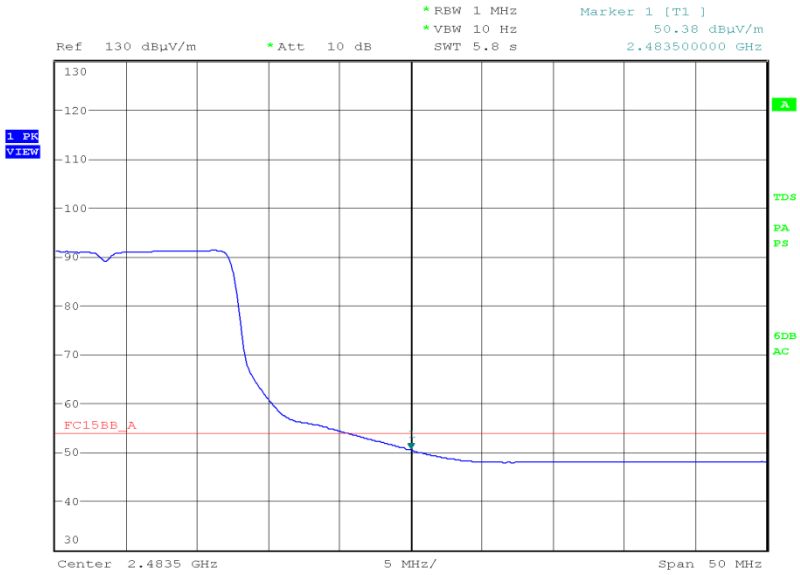
Product Service

Final Average

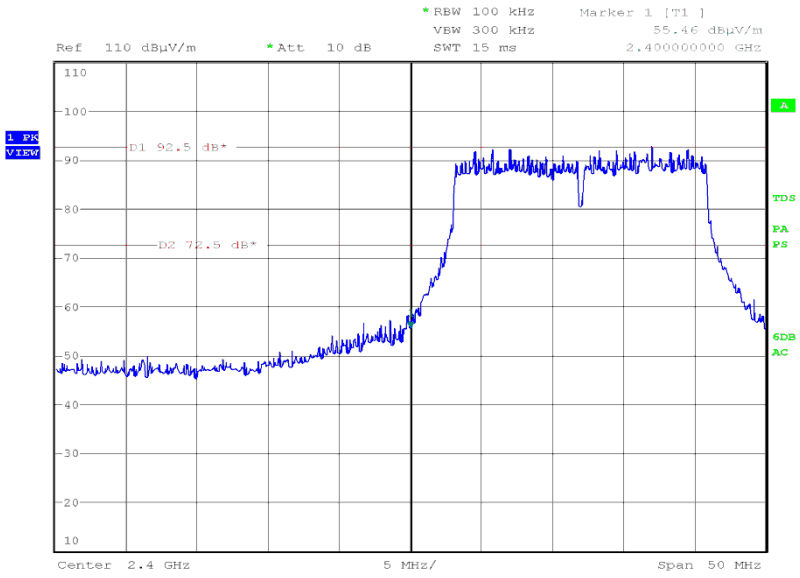


Date: 10.JAN.2015 20:42:47

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	55.46
2483.50	49.10

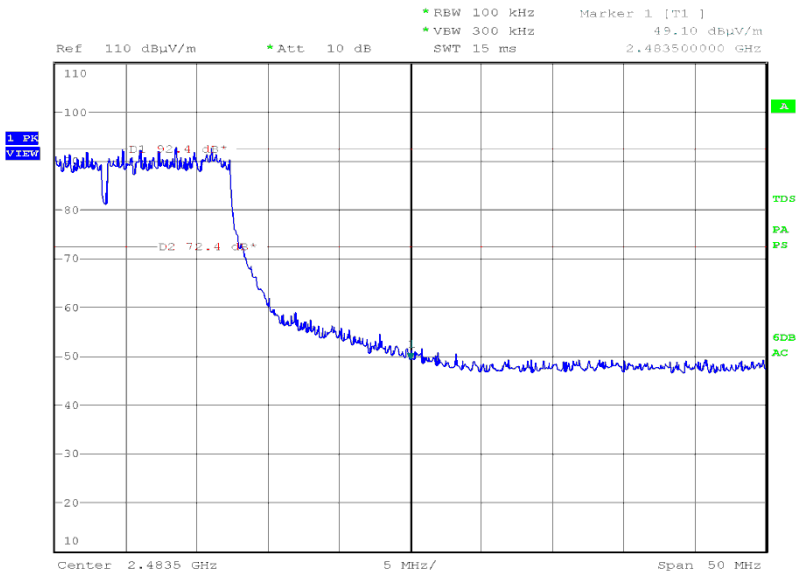
2400.00 MHz

Final Peak



2483.50 MHz

Final Peak



Remark

The test was performed on MCS6 because this was deemed the worst case data rate for 6 dB Bandwidth.

The test was performed on MCS0 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 interal, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

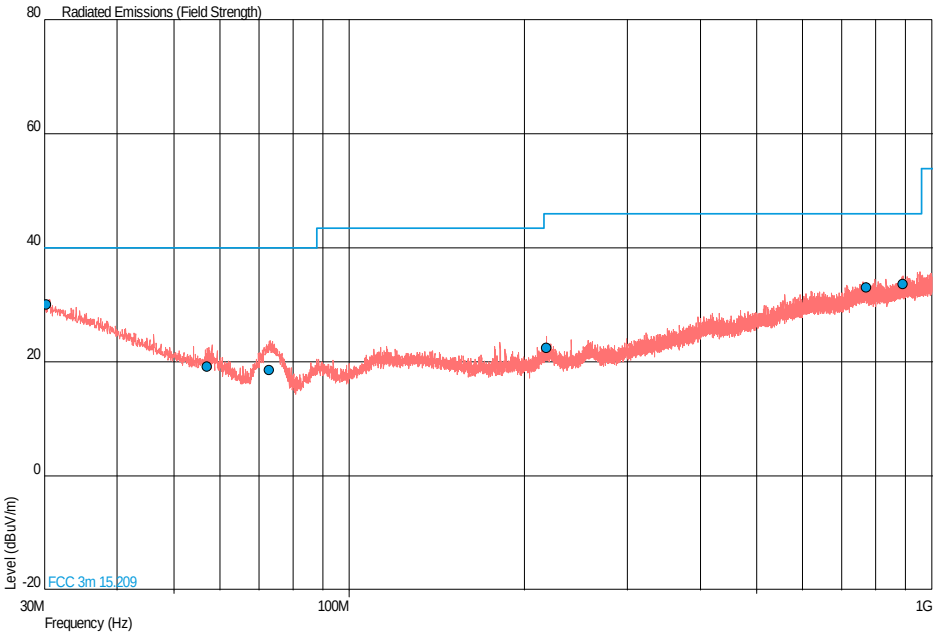
Bluetooth Low Energy

4.0 V DC Supply

Spurious Radiated Emissions

2402 MHz

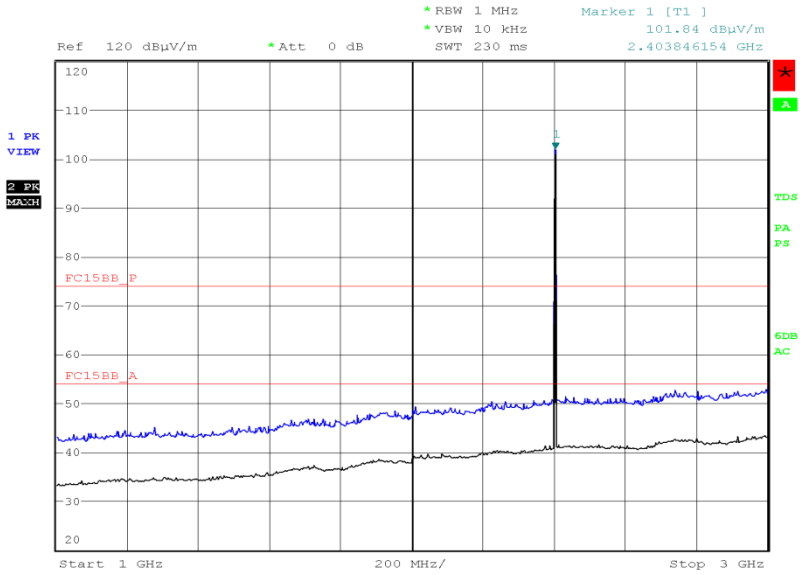
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
30.291	30.1	32.0	40.0	100	-9.9	-68.0	360	1.35	Horizontal
57.063	19.2	9.1	40.0	100	-20.8	-90.9	199	1.00	Vertical
72.878	18.6	8.5	40.0	100	-21.4	-91.5	223	1.00	Vertical
218.327	22.5	13.3	46.0	200	-23.5	-186.7	341	3.46	Vertical
771.346	33.1	45.2	46.0	200	-12.9	-154.8	0	1.00	Vertical
891.548	33.6	47.9	46.0	200	-12.4	-152.1	187	3.00	Horizontal

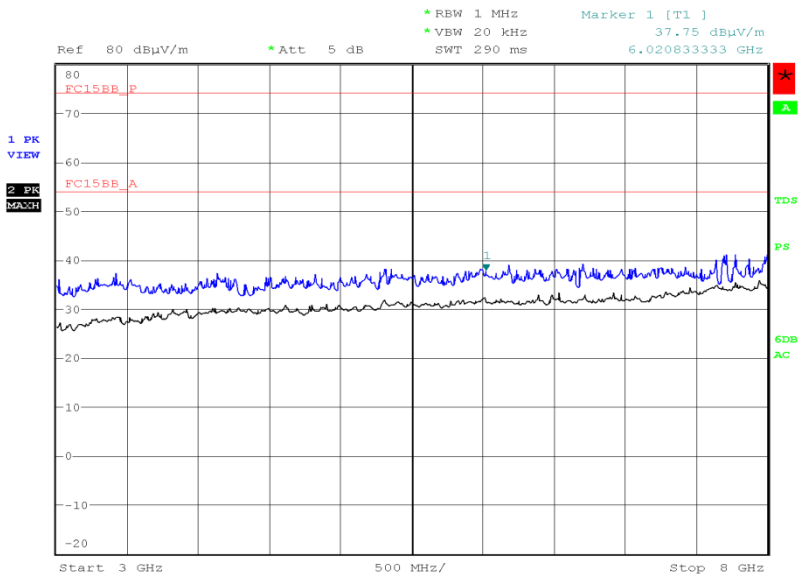
Product Service

1 GHz to 3 GHz



Date: 21.DEC.2014 00:49:52

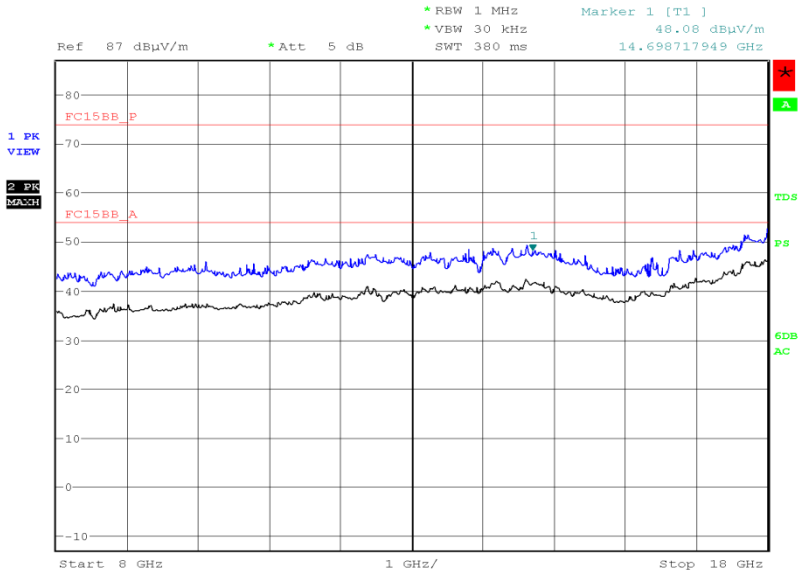
3 GHz to 8 GHz



Date: 21.DEC.2014 00:05:22

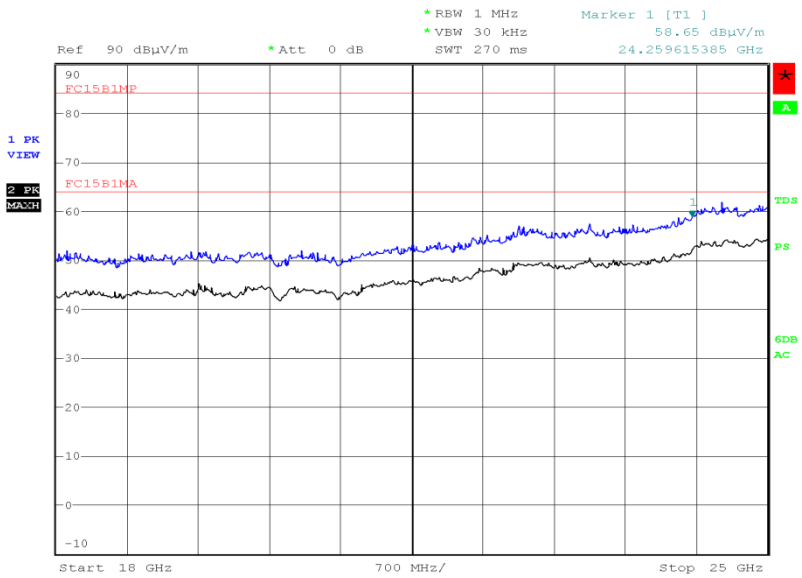
Product Service

8 GHz to 18 GHz



Date: 20.DEC.2014 21:36:18

18 GHz to 25 GHz

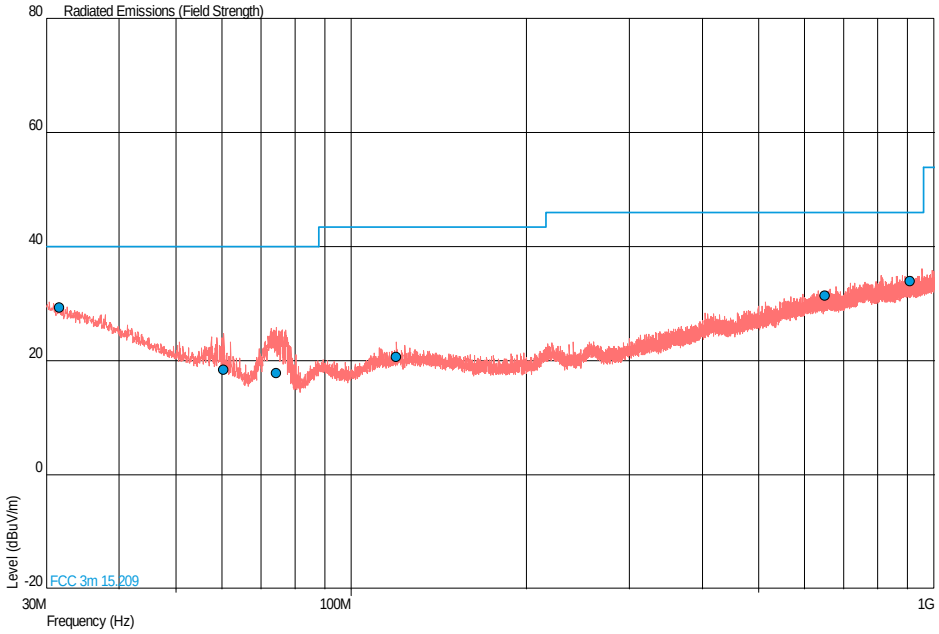


Date: 20.DEC.2014 23:05:03

Product Service

2441 MHz

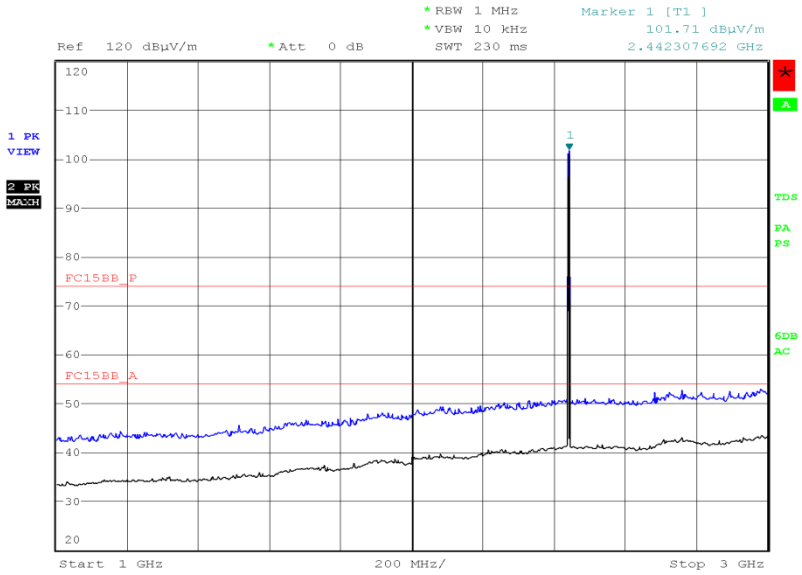
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
31.601	29.3	29.2	40.0	100	-10.7	-70.8	79	1.00	Vertical
60.521	18.4	8.3	40.0	100	-21.6	-91.7	12	1.00	Vertical
74.391	17.9	7.9	40.0	100	-22.1	-92.1	327	1.00	Vertical
119.537	20.7	10.8	43.5	150	-22.8	-139.2	0	1.00	Vertical
648.687	31.5	37.6	46.0	200	-14.5	-162.4	348	1.00	Horizontal
908.914	33.9	49.5	46.0	200	-12.1	-150.5	139	3.66	Horizontal

Product Service

1 GHz to 3 GHz



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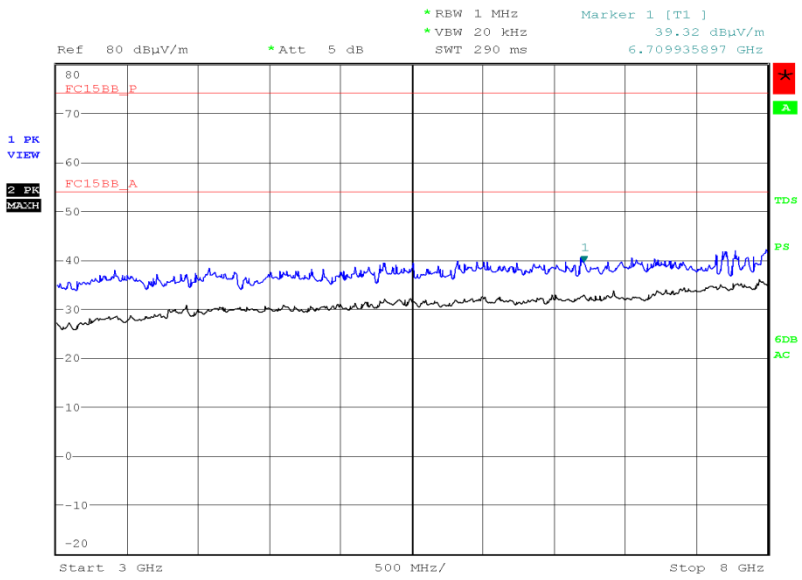
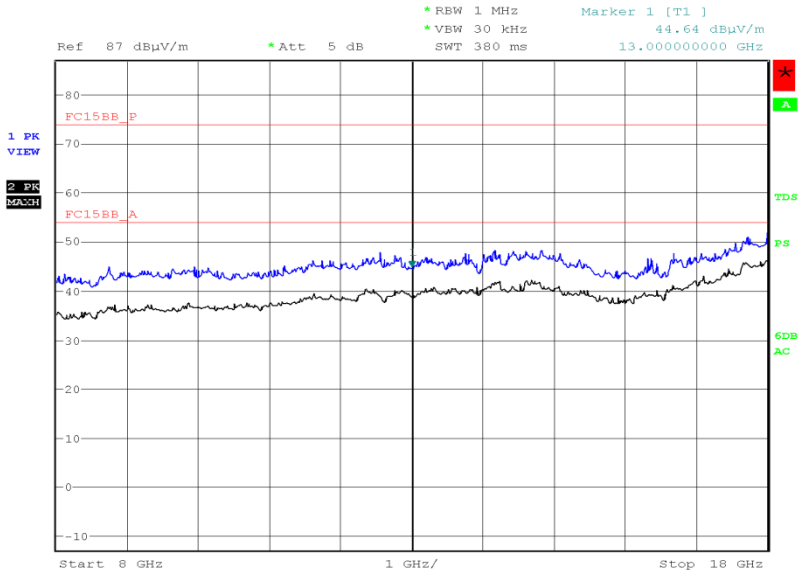
3 GHz to 8 GHz



Date: 20.DEC.2014 23:58:56

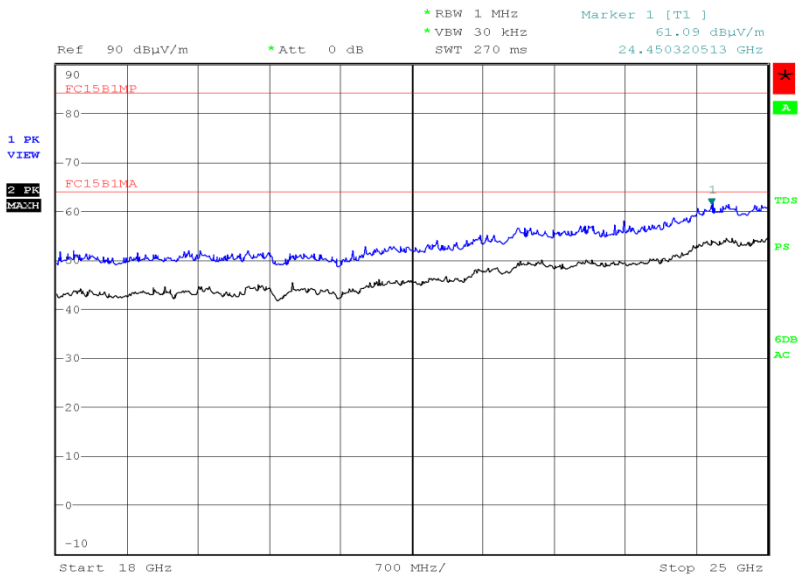
Product Service

8 GHz to 18 GHz



Date: 20.DEC.2014 21:48:23

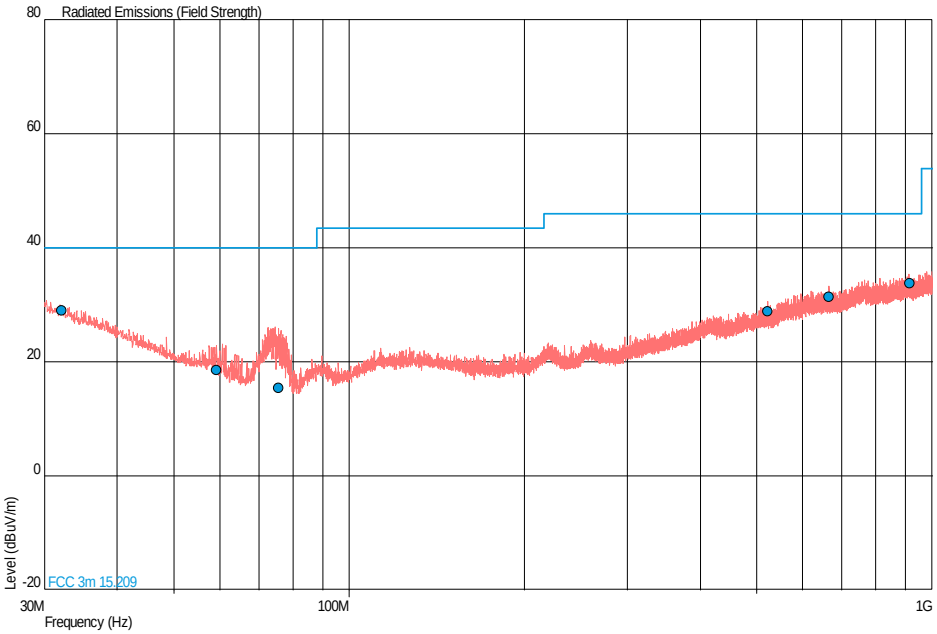
18 GHz to 25 GHz



Date: 20.DEC.2014 23:00:06

2480 MHz

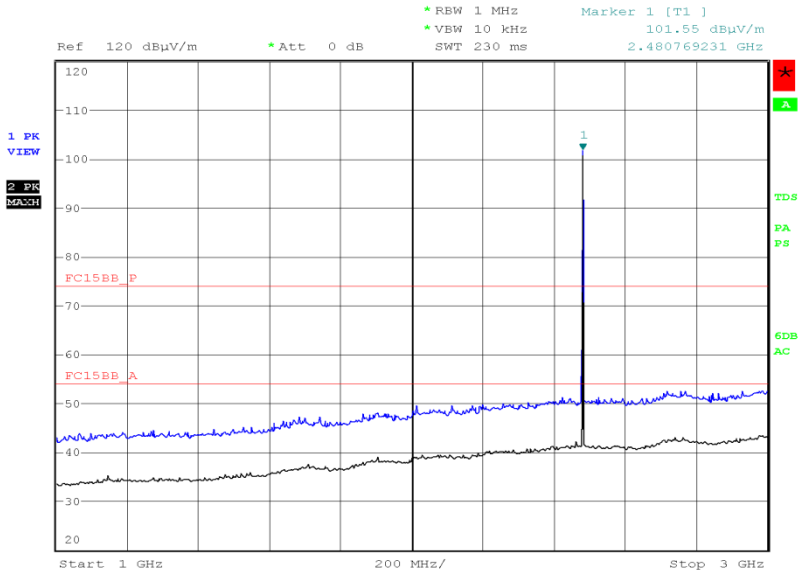
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
32.183	29.1	28.5	40.0	100	-10.9	-71.5	360	1.00	Horizontal
59.288	18.5	8.4	40.0	100	-21.5	-91.6	52	1.00	Vertical
75.606	15.5	6.0	40.0	100	-24.5	-94.0	25	1.00	Horizontal
521.659	28.8	27.5	46.0	200	-17.2	-172.5	360	1.00	Horizontal
665.341	31.4	37.2	46.0	200	-14.6	-162.8	205	2.89	Vertical
915.386	33.9	49.5	46.0	200	-12.1	-150.5	24	1.00	Vertical

Product Service

1 GHz to 3 GHz



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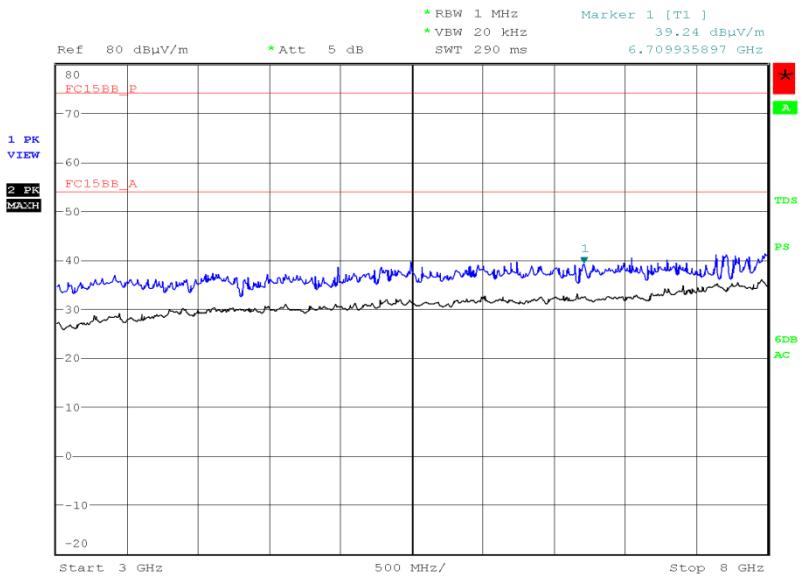
3 GHz to 8 GHz



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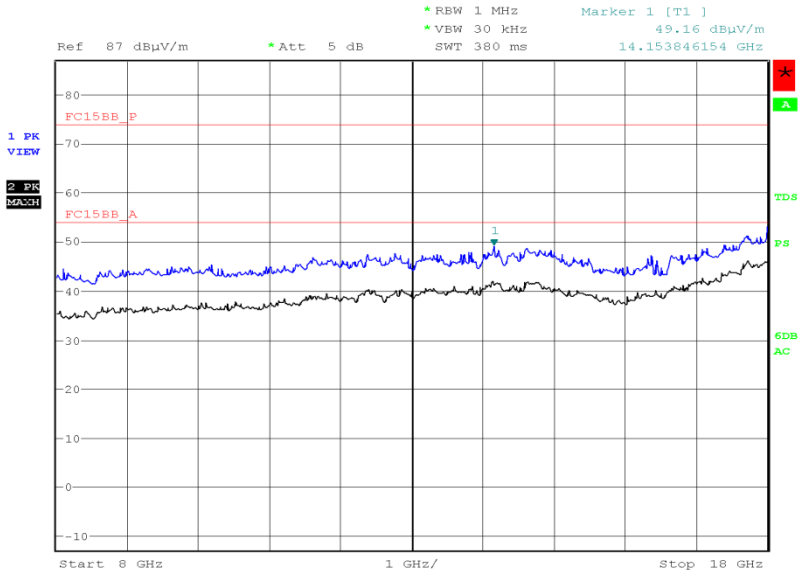
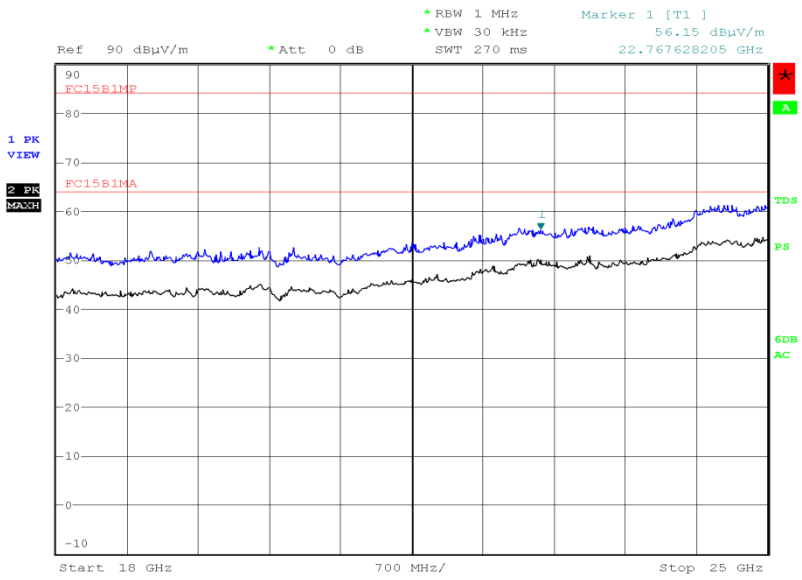
Product Service

8 GHz to 18 GHz



Date: 20.DEC.2014 22:01:44

18 GHz to 25 GHz



Date: 20.DEC.2014 22:54:33

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 interal, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

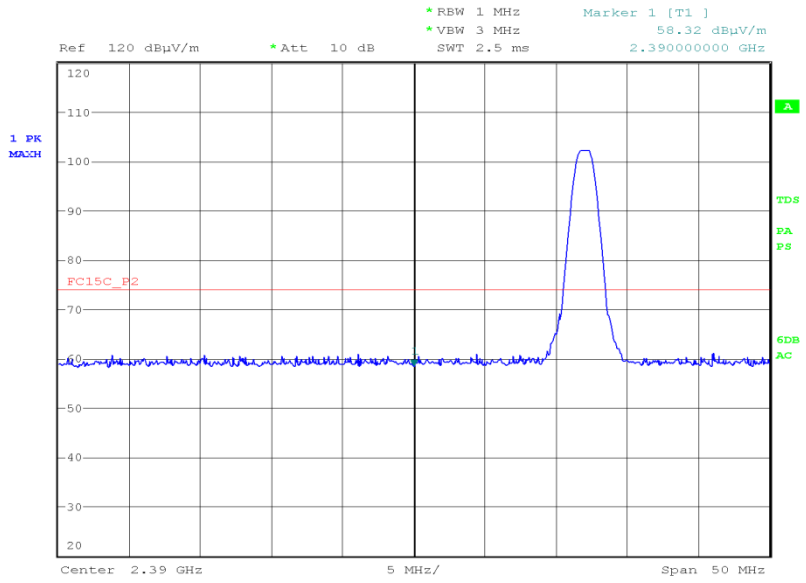
Band Edge Emissions

Modulation/Packet Type: GFSK/DH1

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	58.32	47.85
2483.50	58.45	47.84

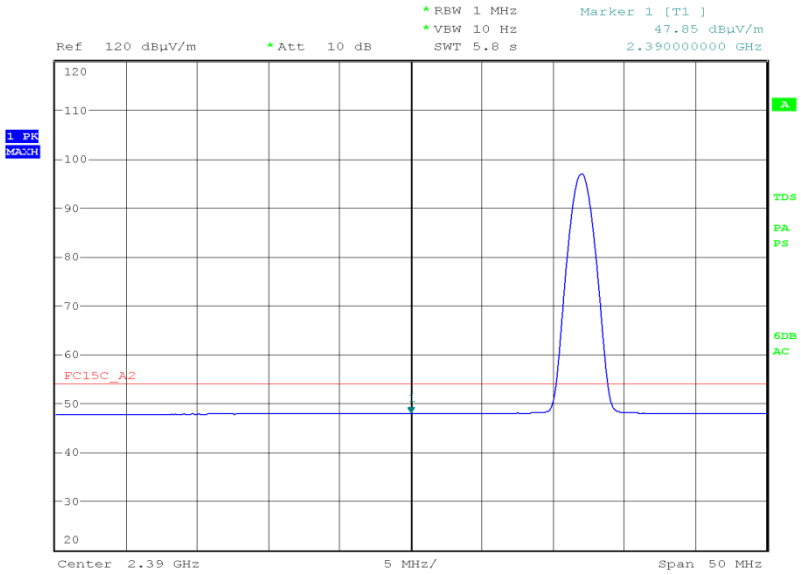
2390.00 MHz

Final Peak



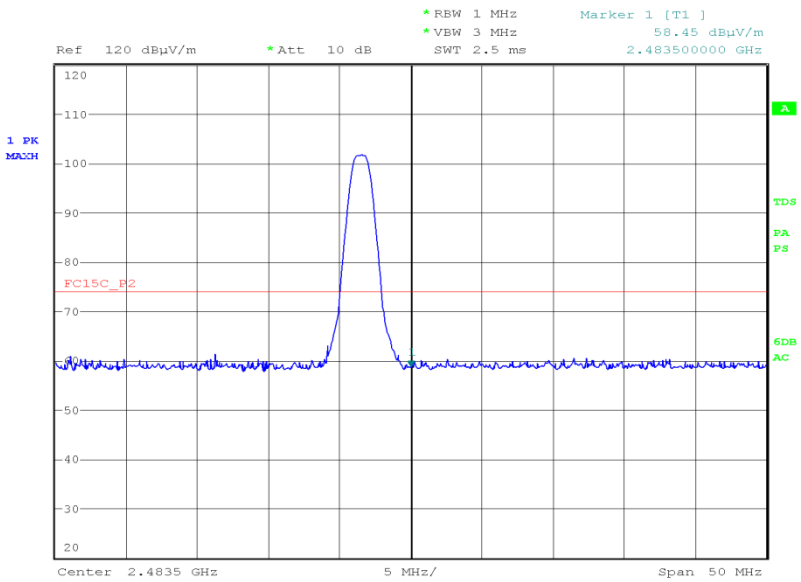
Product Service

Final Average



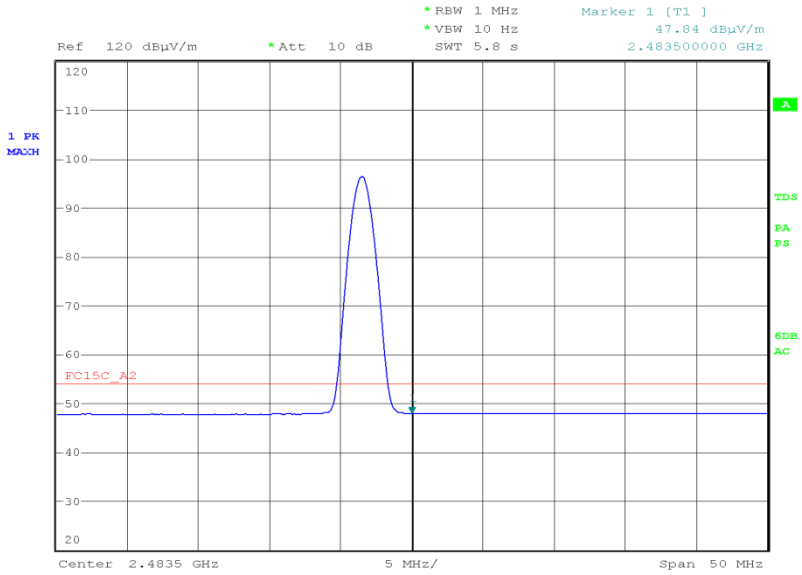
2483.50 MHz

Final Peak



Product Service

Final Average

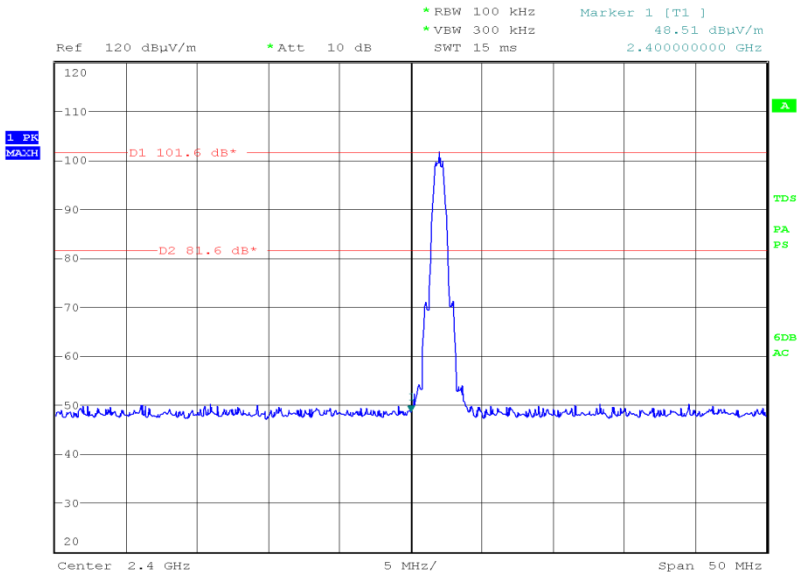


Date: 22.DEC.2014 20:59:23

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	48.51
2483.50	47.53

2400.00 MHz

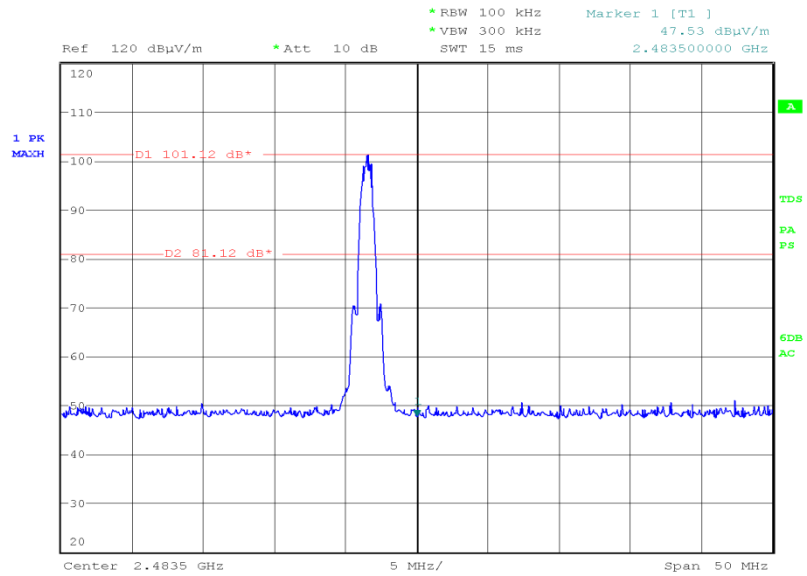
Final Peak



Date: 22.DEC.2014 20:48:23

2483.50 MHz

Final Peak



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 interal, the attenuator required shall be 30 dB below the fundamental instead on 20 dB.

2.6 POWER SPECTRAL DENSITY

2.6.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (e)

2.6.2 Equipment Under Test and Modification State

S/N: IMEI 004401115346633 - Modification State 0
S/N: IMEI 004401115346641 - Modification State 0

2.6.3 Date of Test

23 December 2014 & 9 January 2015

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 method requirements of FCC CFR 47 Part 15.247 (e) and 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 initial span was set to >1.5 times the OBW and the peak point in a 1 MHz RBW was determined. The span was then reduced to 300 kHz about this point to obtain the measurement point resolution required by ANSI C63.10. 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.

2.6.6 Environmental Conditions

Ambient Temperature	22.4 - 24.7°C
Relative Humidity	43.0 - 46.1%

2.6.7 Test Results

802.11(b)

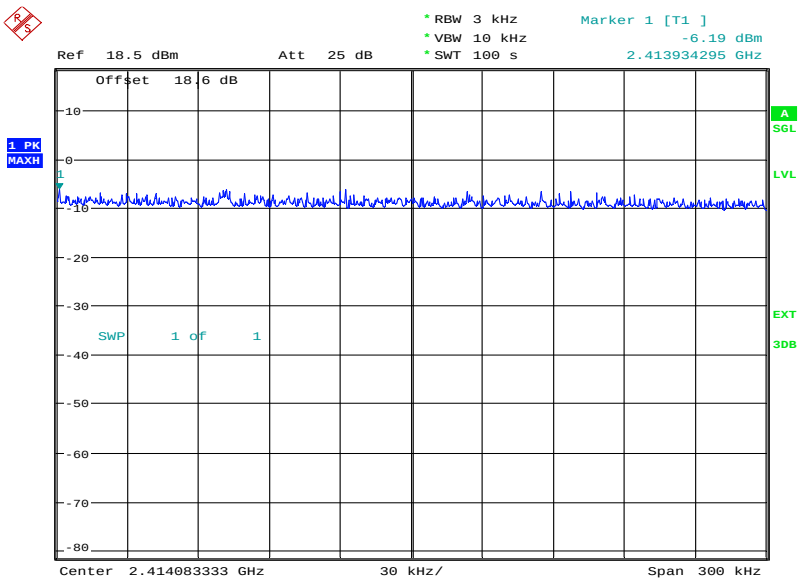
4.0 V DC Supply

Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	1	-6.19
	2	-4.68
	5.5	-6.46
	11	-5.21
2437 MHz	1	-4.42
	2	-4.69
	5.5	-5.51
	11	-5.70
2462 MHz	1	-5.64
	2	-4.77
	5.5	-5.06
	11	-5.23

Product Service

2412 MHz

1 Mbps



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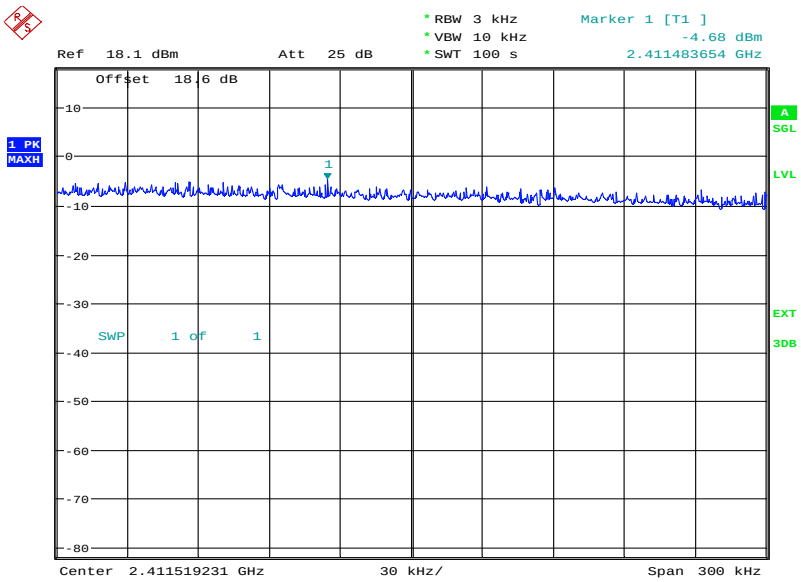
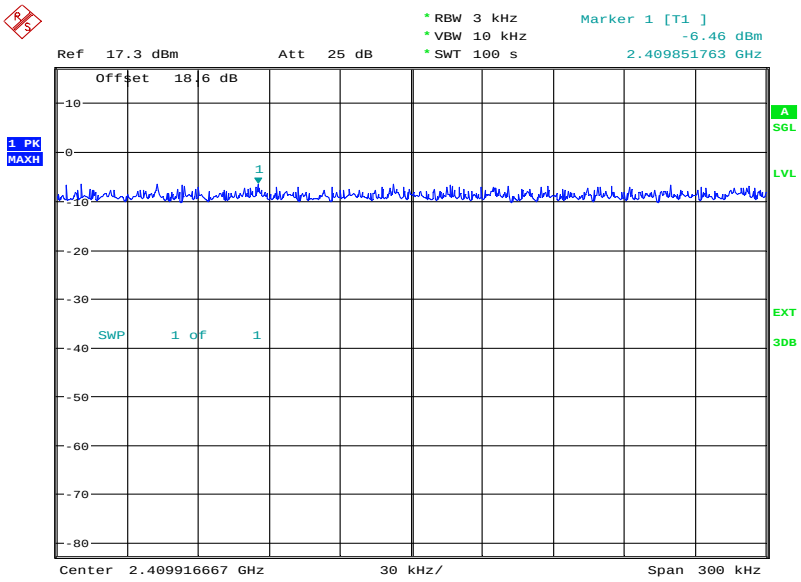
2 Mbps



Date: 23.DEC.2014 10:24:54

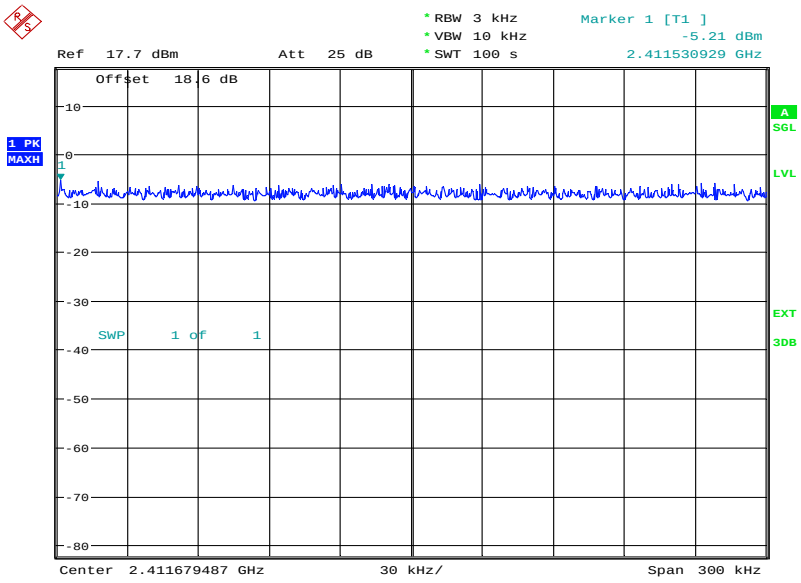
Product Service

5.5 Mbps



Date: 23.DEC.2014 10:39:04

11 Mbps

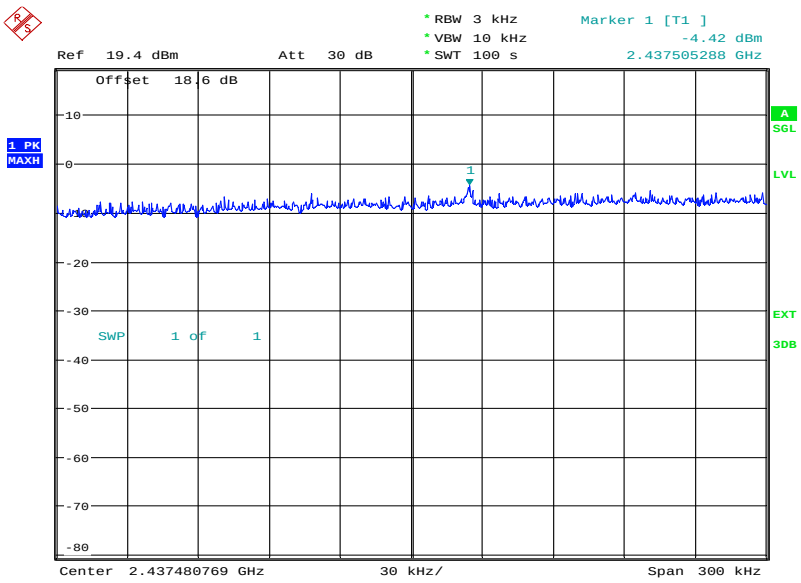


Date: 23.DEC.2014 10:52:42

Product Service

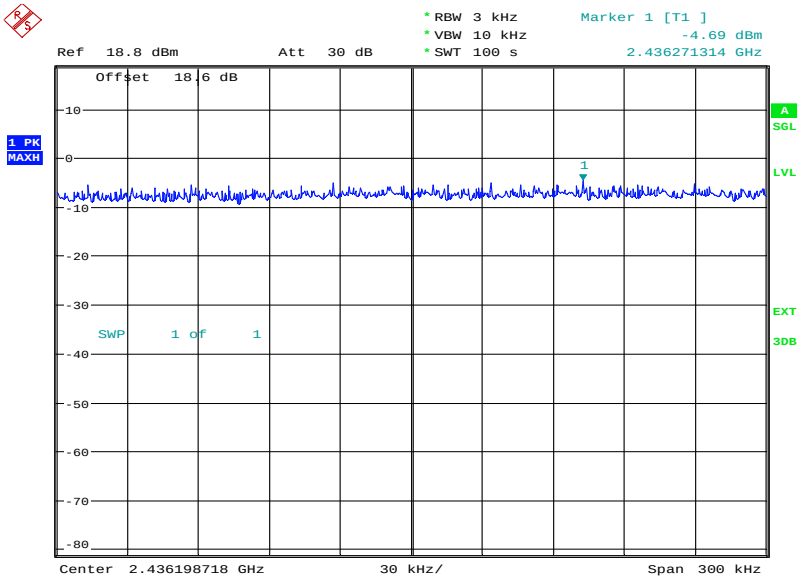
2437 MHz

1 Mbps



Date: 23.DEC.2014 10:15:02

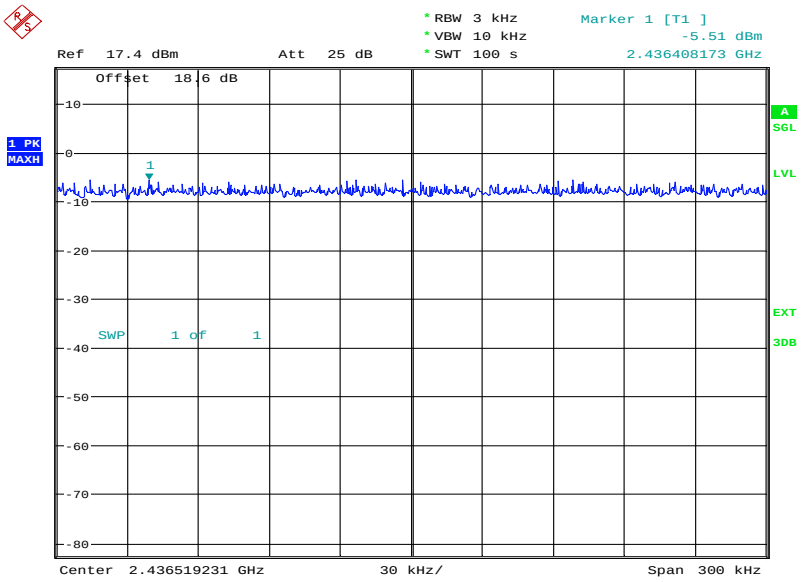
2 Mbps



Date: 23.DEC.2014 10:29:27

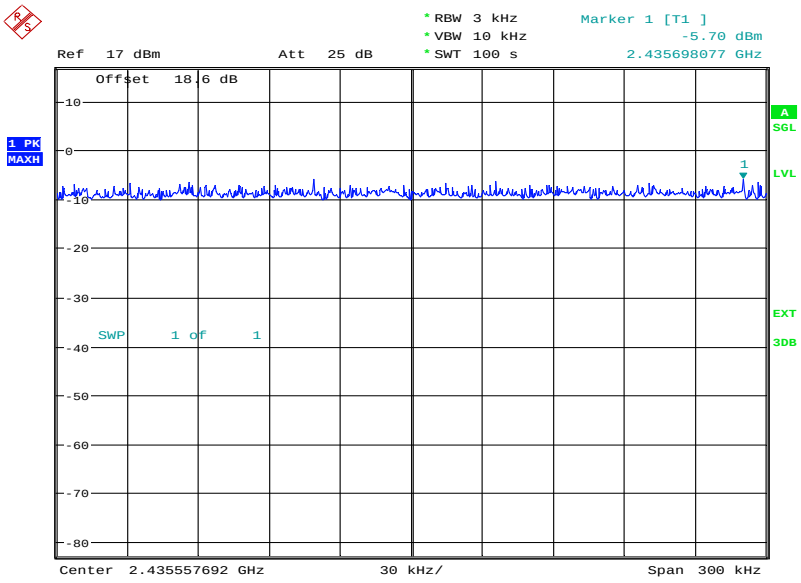
Product Service

5.5 Mbps



Date: 23.DEC.2014 10:43:27

11 Mbps

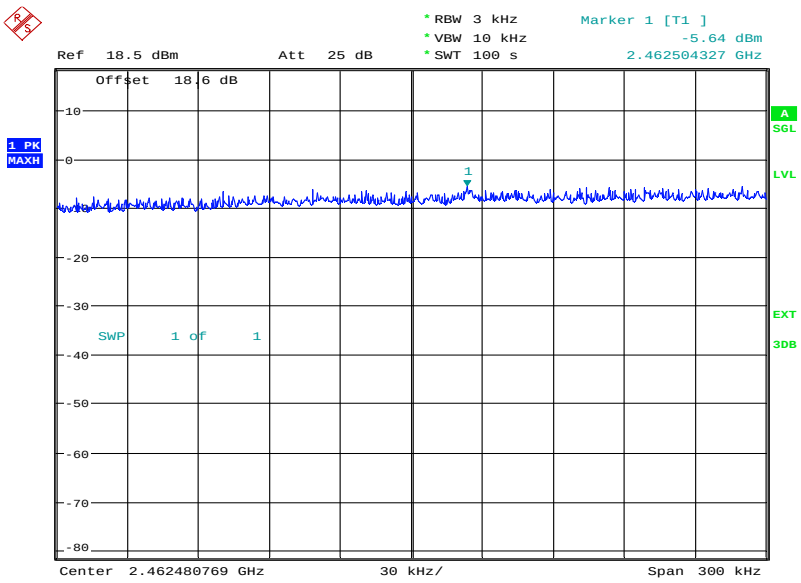


Date: 23.DEC.2014 10:56:53

Product Service

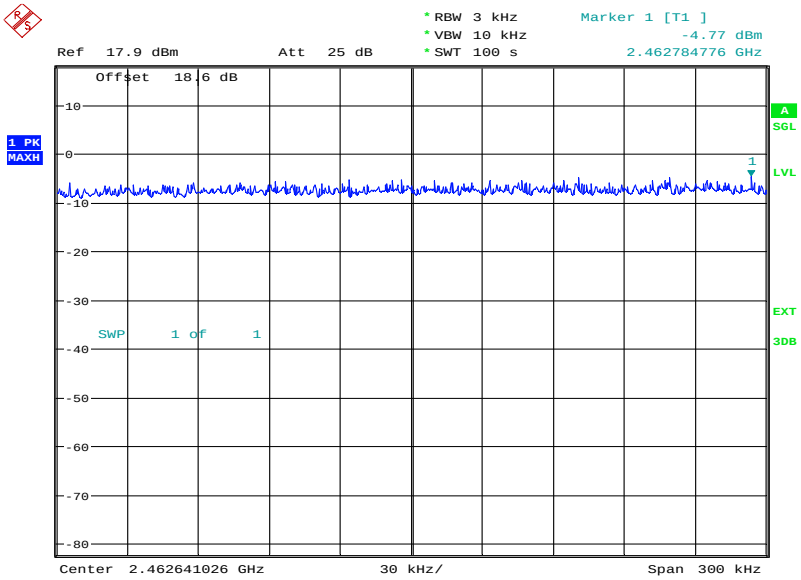
2462 MHz

1 Mbps



Date: 23.DEC.2014 10:19:25

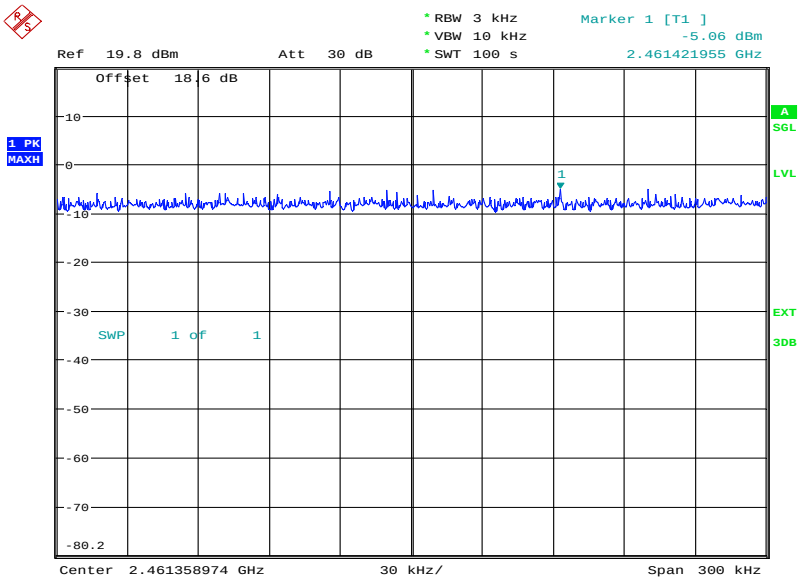
2 Mbps



Date: 23.DEC.2014 10:33:47

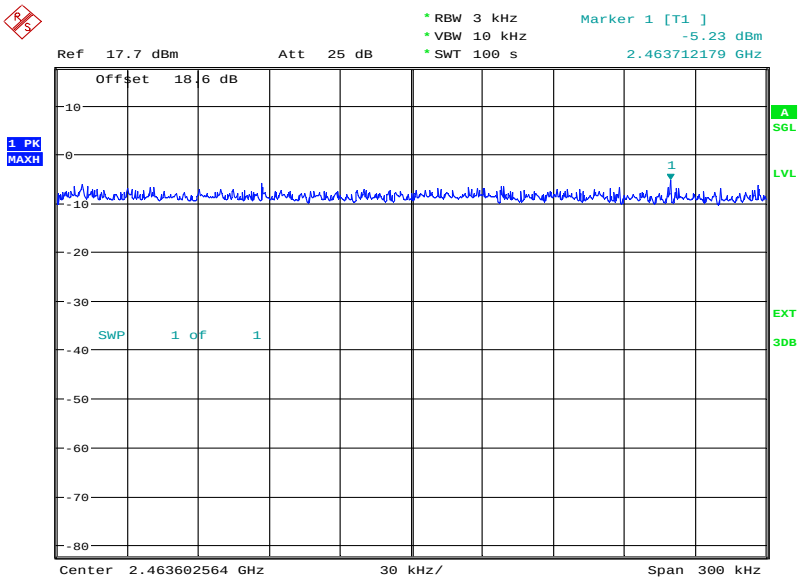
Product Service

5.5 Mbps



Date: 23.DEC.2014 10:47:47

11 Mbps



Date: 23.DEC.2014 11:01:15

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)

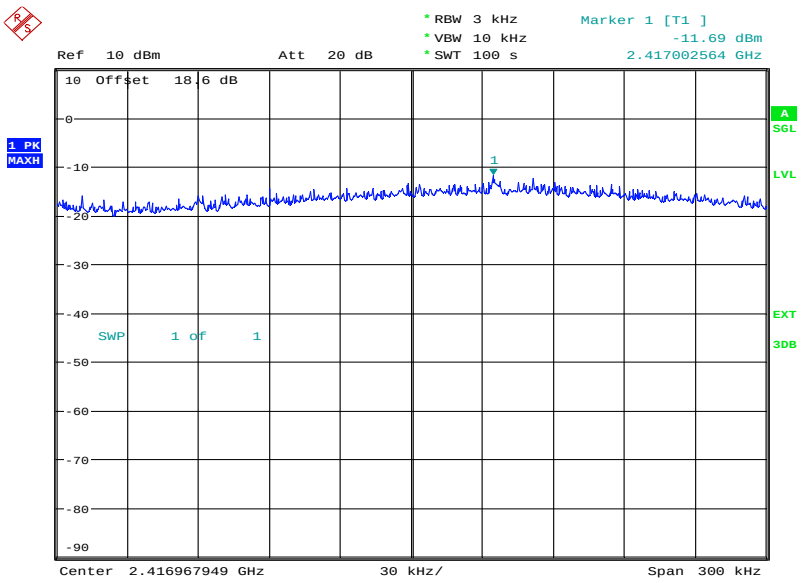
4.0 V DC Supply

Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6	-11.69
	9	-11.66
	12	-13.24
	18	-12.96
	24	-11.91
	36	-13.13
	48	-12.62
	54	-12.35
2437 MHz	6	-13.23
	9	-12.51
	12	-13.63
	18	-13.66
	24	-12.43
	36	-13.02
	48	-12.94
	54	-12.40
2462 MHz	6	-13.75
	9	-14.15
	12	-13.09
	18	-14.47
	24	-14.63
	36	-14.17
	48	-13.10
	54	-13.61

Product Service

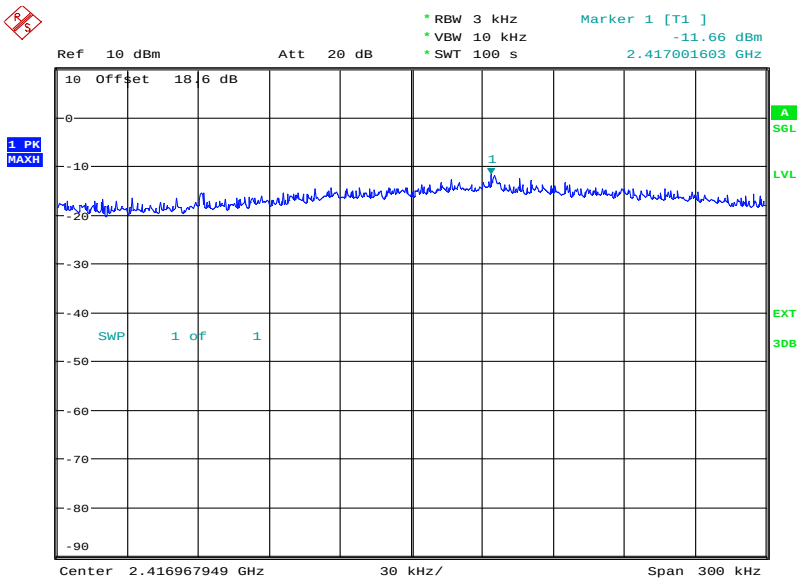
2412 MHz

6 Mbps



Date: 23.DEC.2014 11:06:58

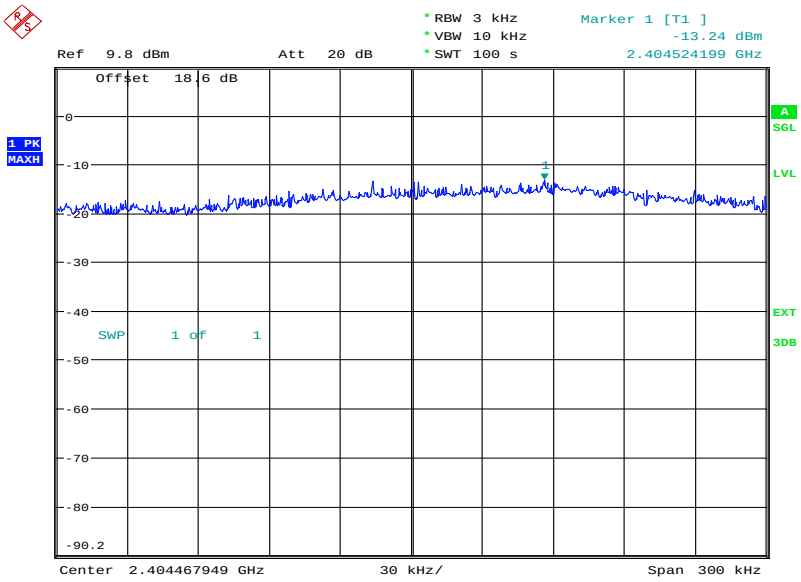
9 Mbps



Date: 23.DEC.2014 11:18:27

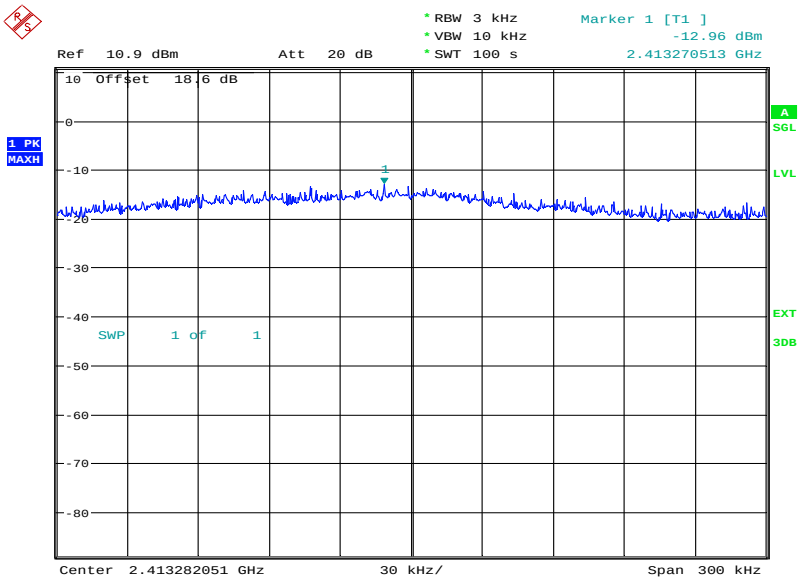
Product Service

12 Mbps



Date: 23.DEC.2014 11:27:26

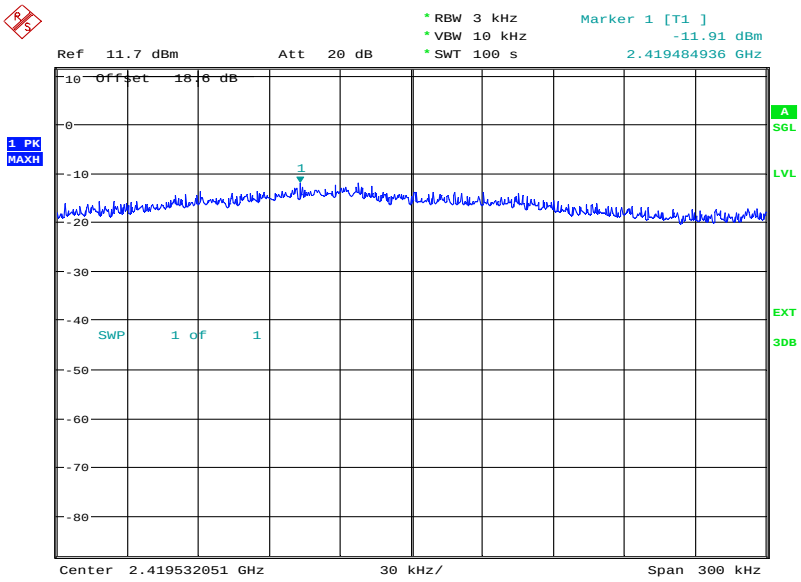
18 Mbps



Date: 23.DEC.2014 11:38:08

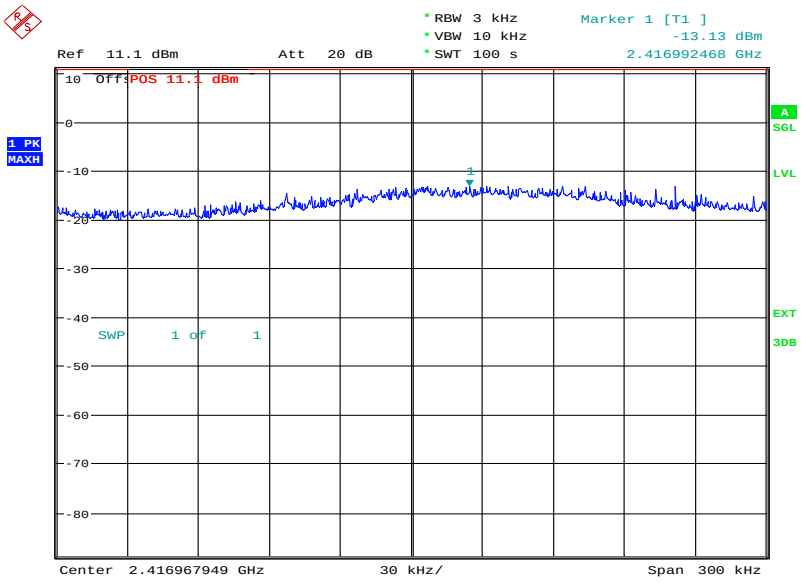
Product Service

24 Mbps



Date: 23.DEC.2014 11:47:06

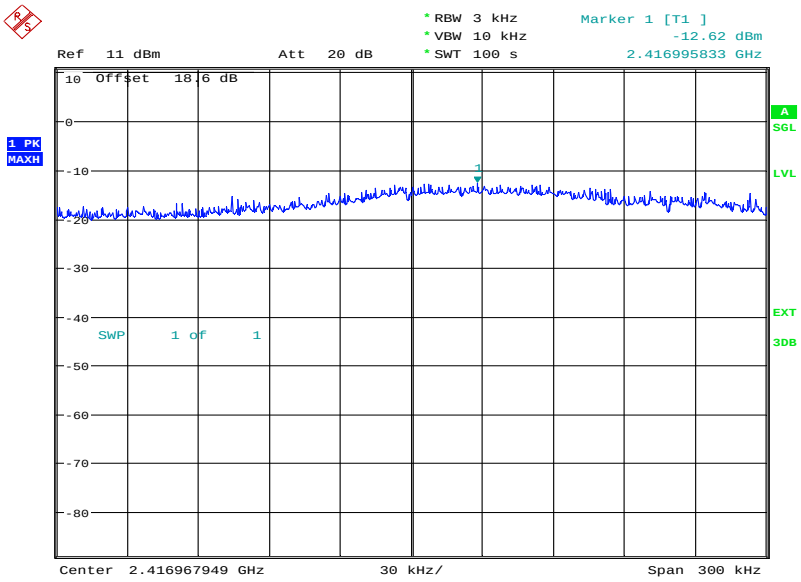
36 Mbps



Date: 23.DEC.2014 11:59:55

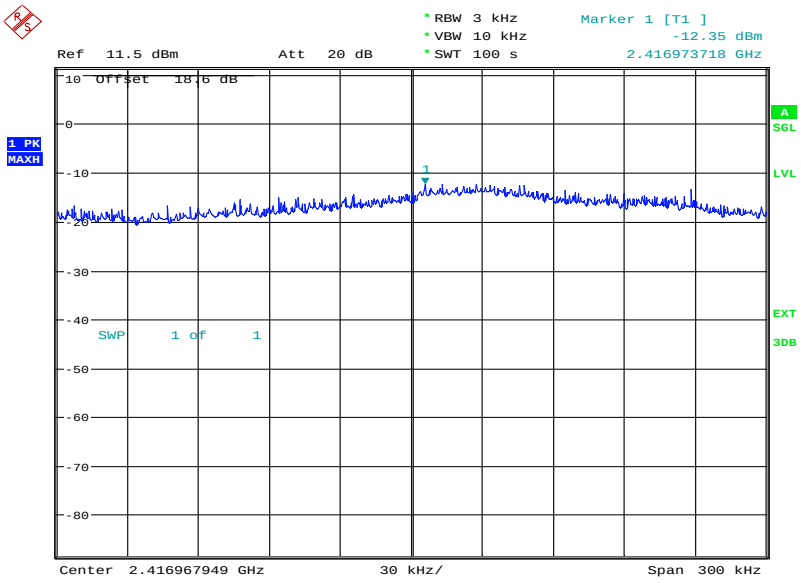
Product Service

48 Mbps



Date: 23.DEC.2014 12:12:15

54 Mbps

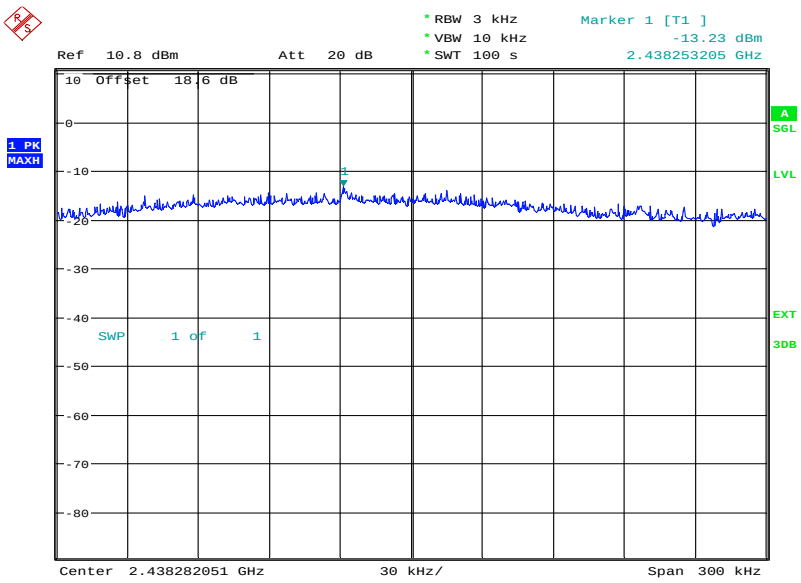


Date: 23.DEC.2014 12:23:11

Product Service

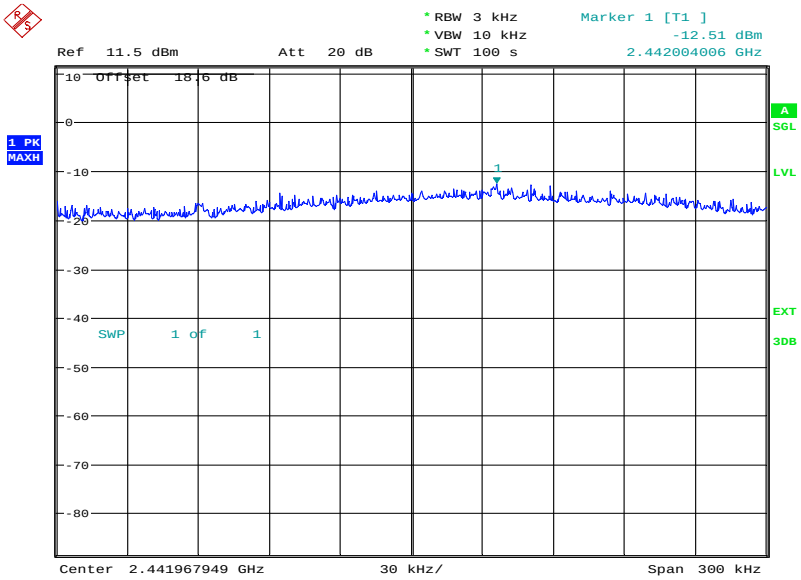
2437 MHz

6 Mbps



Date: 23.DEC.2014 11:12:49

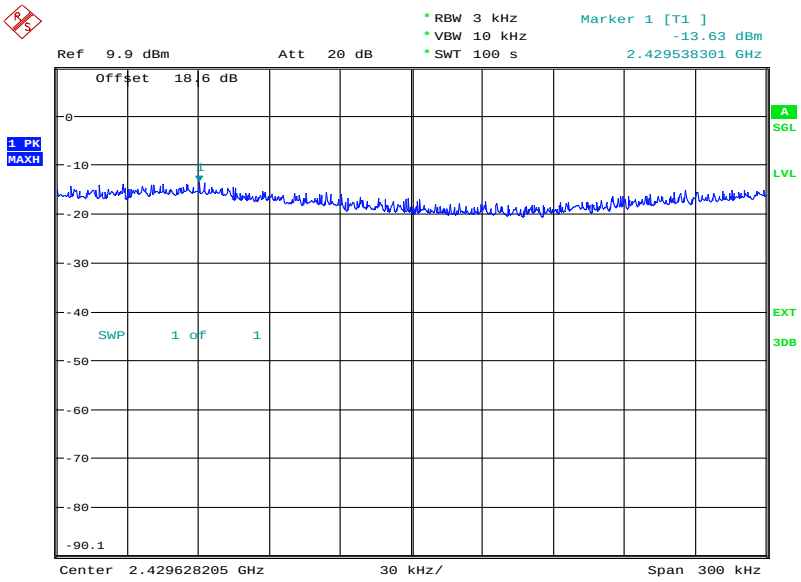
9 Mbps



Date: 23.DEC.2014 11:22:59

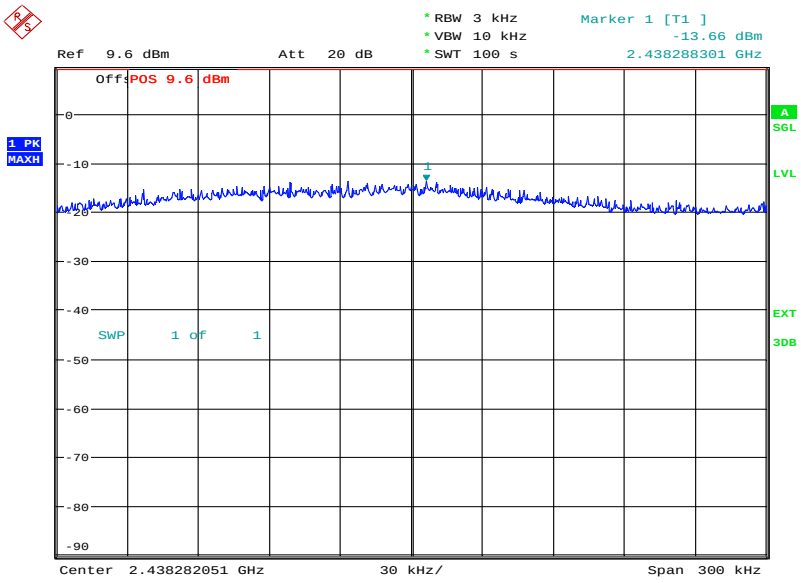
Product Service

12 Mbps



Date: 23.DEC.2014 11:32:18

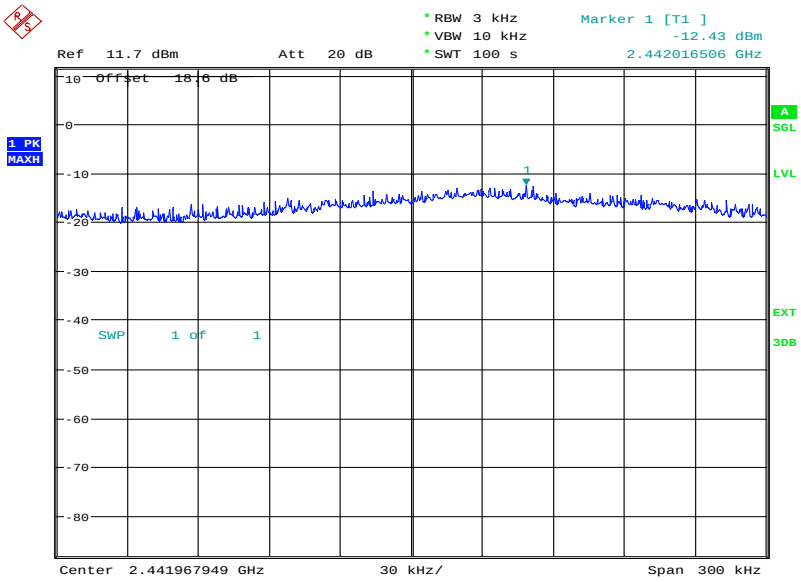
18 Mbps



Date: 23.DEC.2014 11:42:21

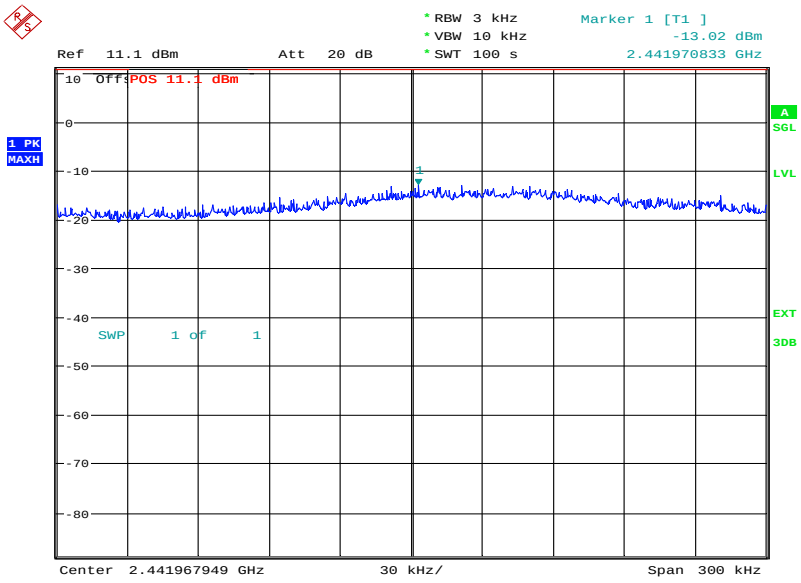
Product Service

24 Mbps



Date: 23.DEC.2014 11:53:21

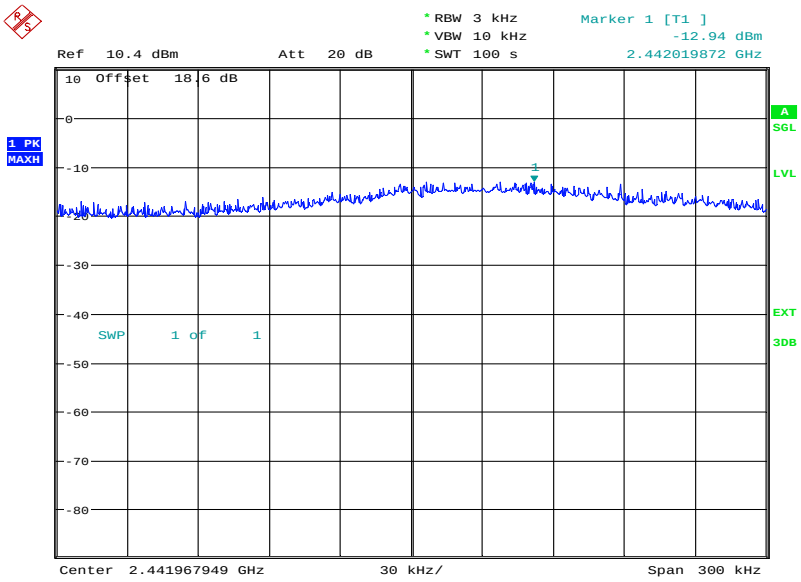
36 Mbps



Date: 23.DEC.2014 12:05:27

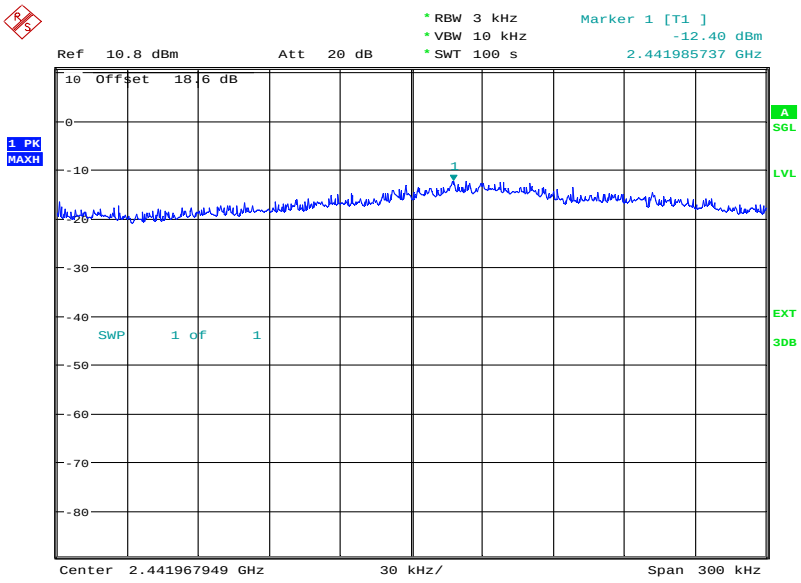
Product Service

48 Mbps



Date: 23.DEC.2014 12:17:58

54 Mbps

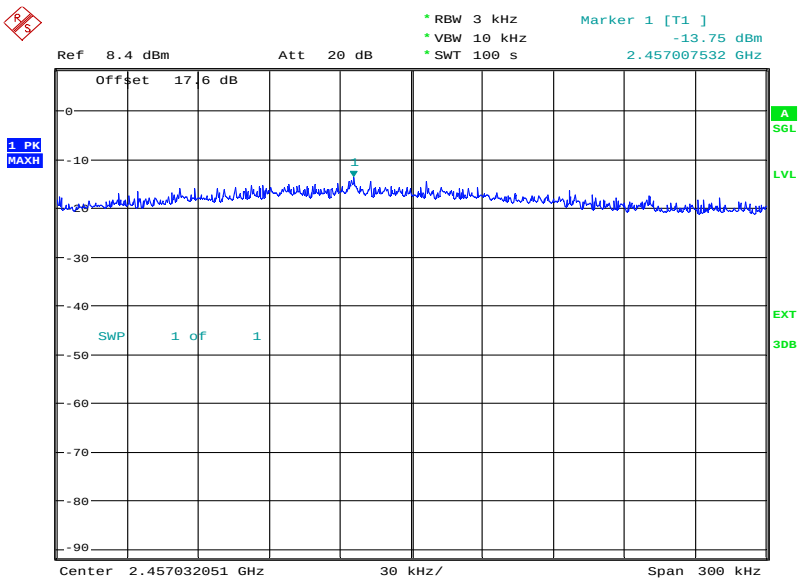


Date: 23.DEC.2014 12:28:05

Product Service

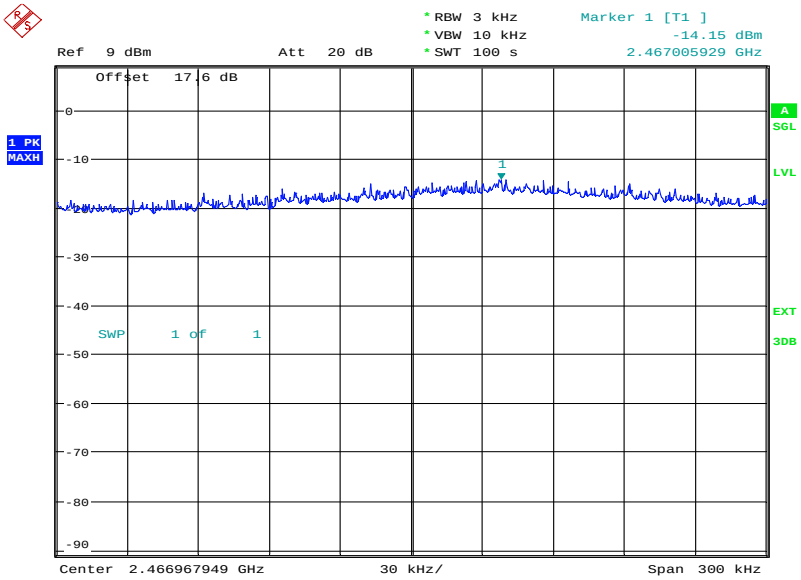
2462 MHz

6 Mbps



Date: 19.DEC.2014 09:07:39

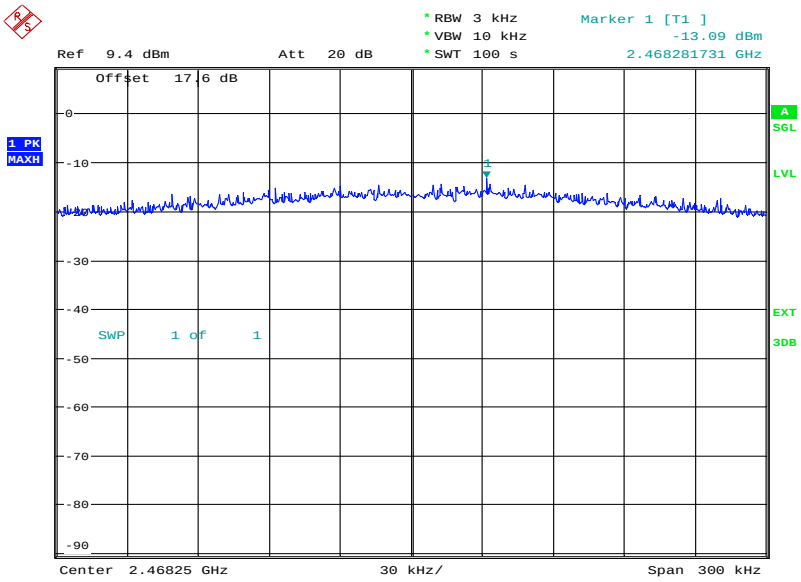
9 Mbps



Date: 19.DEC.2014 09:13:08

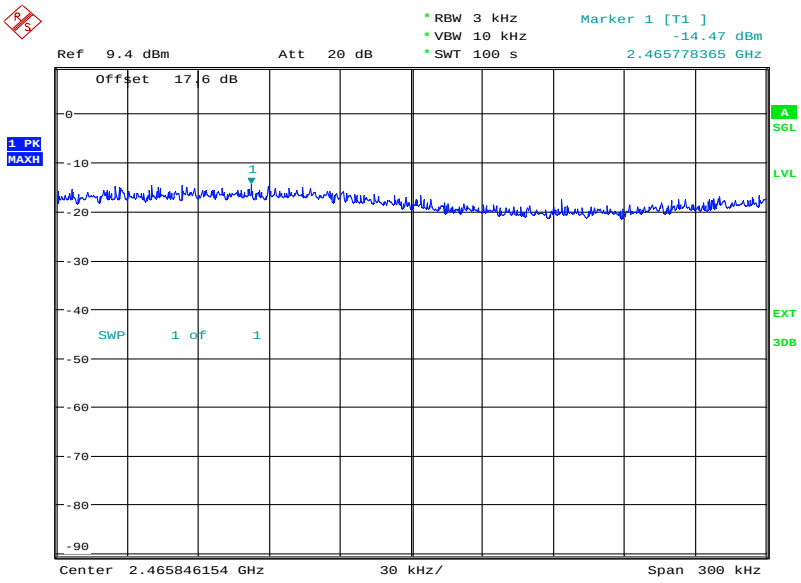
Product Service

12 Mbps



Date: 19.DEC.2014 09:18:26

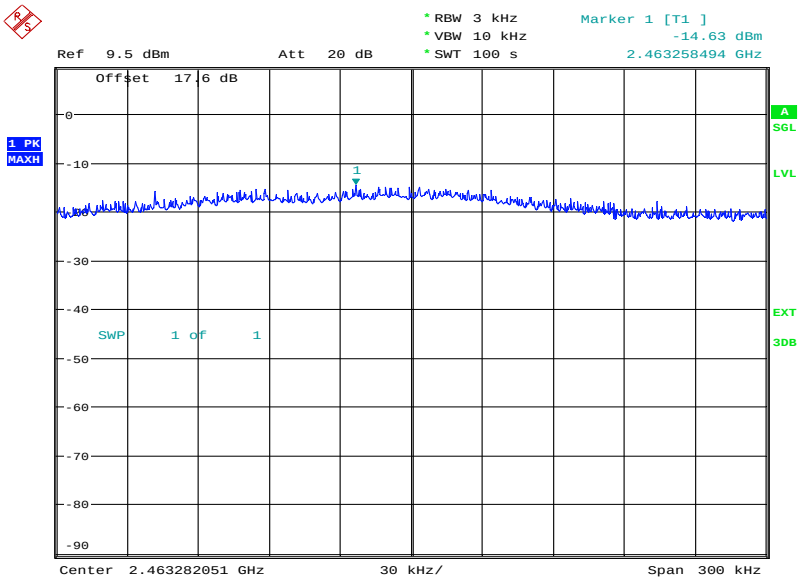
18 Mbps



Date: 19.DEC.2014 09:24:39

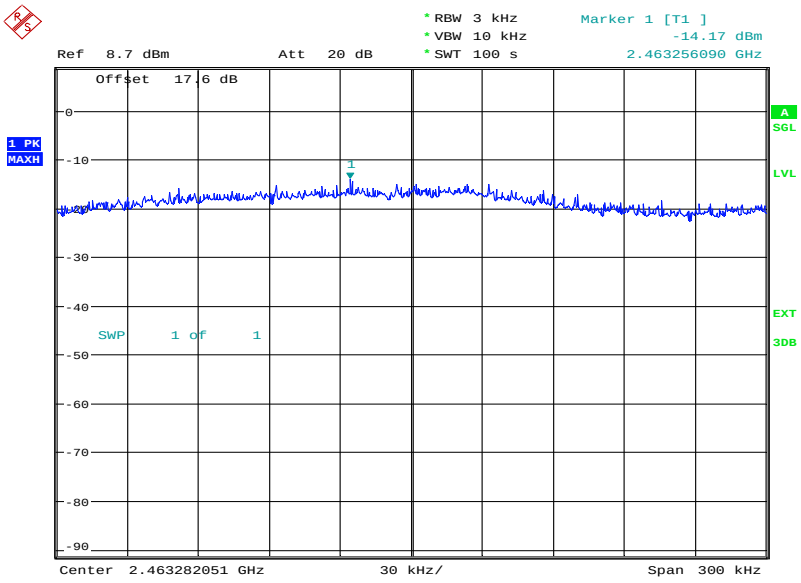
Product Service

24 Mbps



Date: 19.DEC.2014 09:30:34

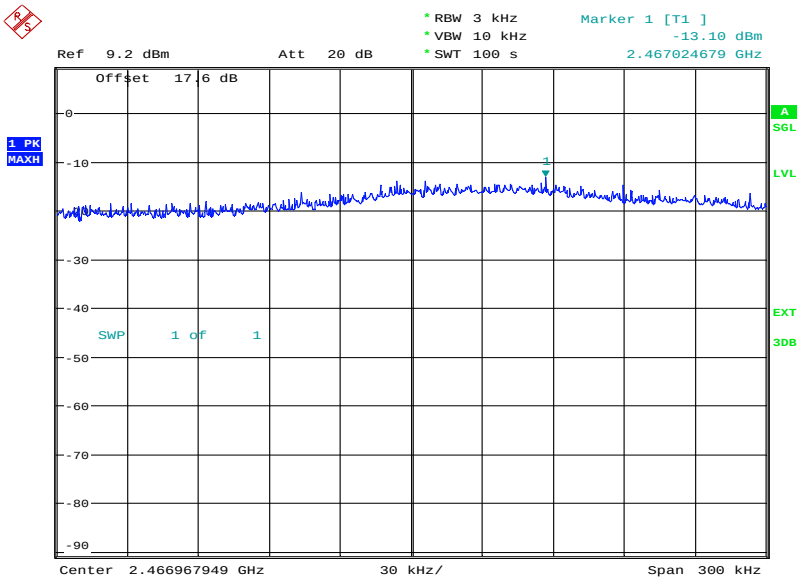
36 Mbps



Date: 19.DEC.2014 09:35:22

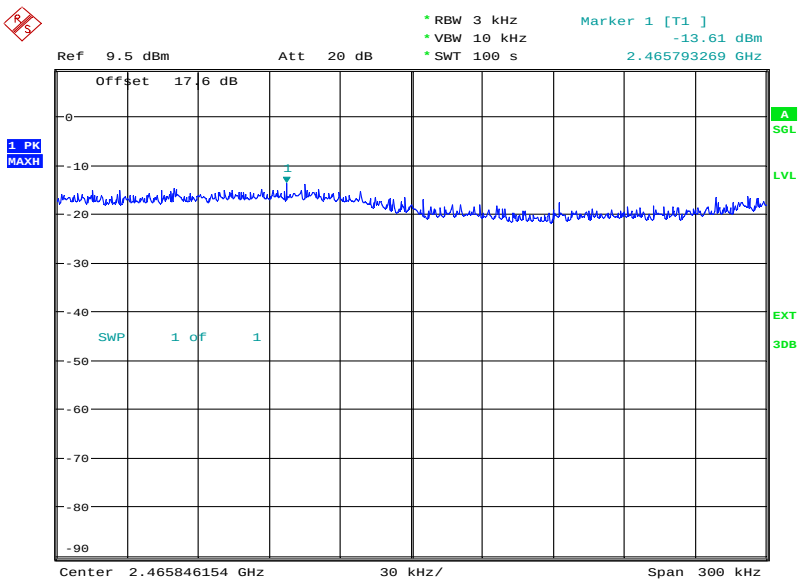
Product Service

48 Mbps



Date: 19.DEC.2014 09:42:20

54 Mbps



Date: 19.DEC.2014 09:48:41

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)

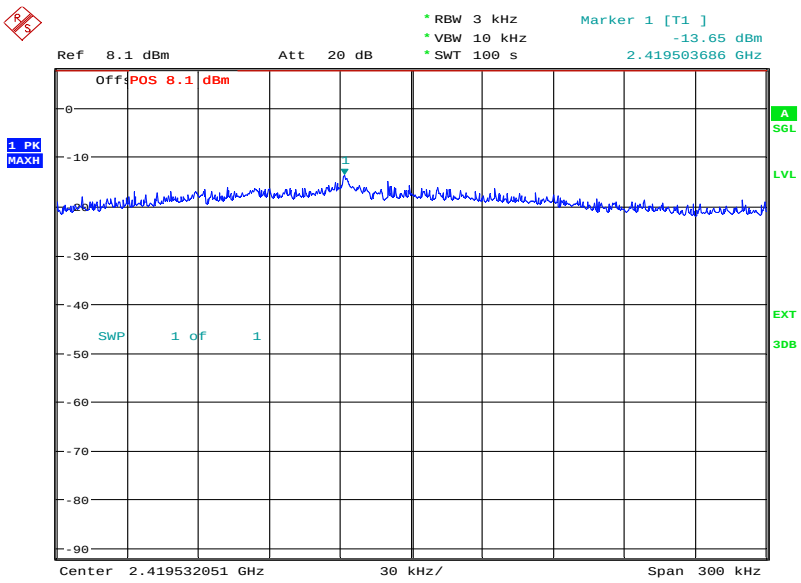
4.0 V DC Supply

Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6.5	-13.65
	13	-14.73
	19.5	-14.85
	26	-15.49
	39	-13.51
	52	-14.10
	58.5	-14.16
	65	-13.92
2437 MHz	6.5	-13.84
	13	-14.51
	19.5	-14.04
	26	-13.22
	39	-13.25
	52	-14.22
	58.5	-13.30
	65	-13.47
2462 MHz	6.5	-14.17
	13	-14.63
	19.5	-13.56
	26	-15.10
	39	-14.79
	52	-12.93
	58.5	-14.86
	65	-14.46

Product Service

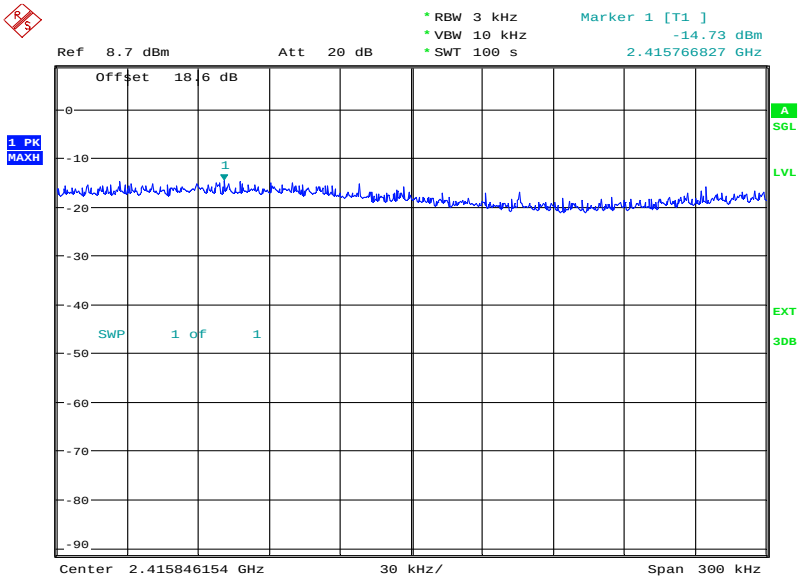
2412 MHz

6.5 Mbps



Date: 19.DEC.2014 10:08:21

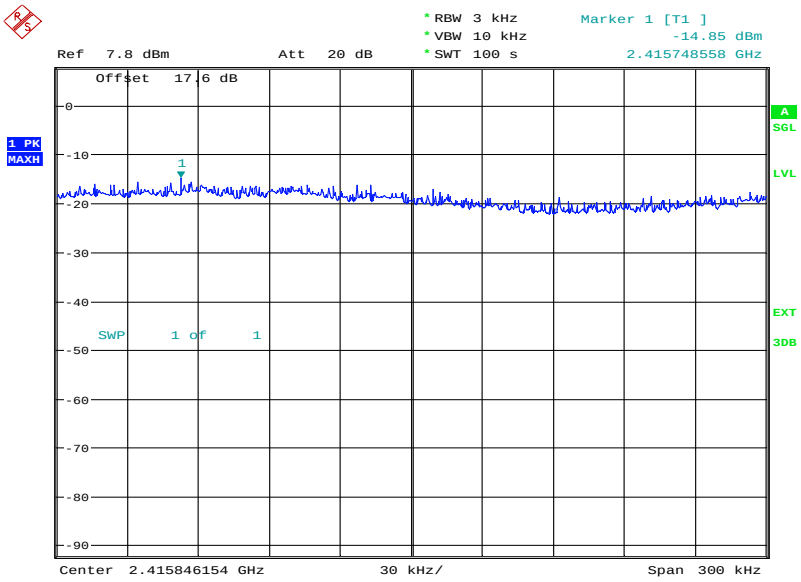
13 Mbps



Date: 23.DEC.2014 14:46:45

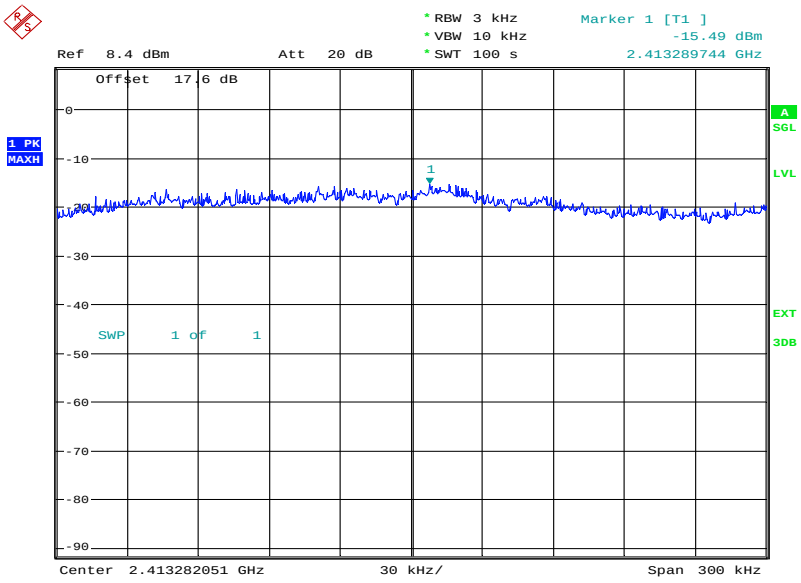
Product Service

19.5 Mbps



Date: 19.DEC.2014 11:01:44

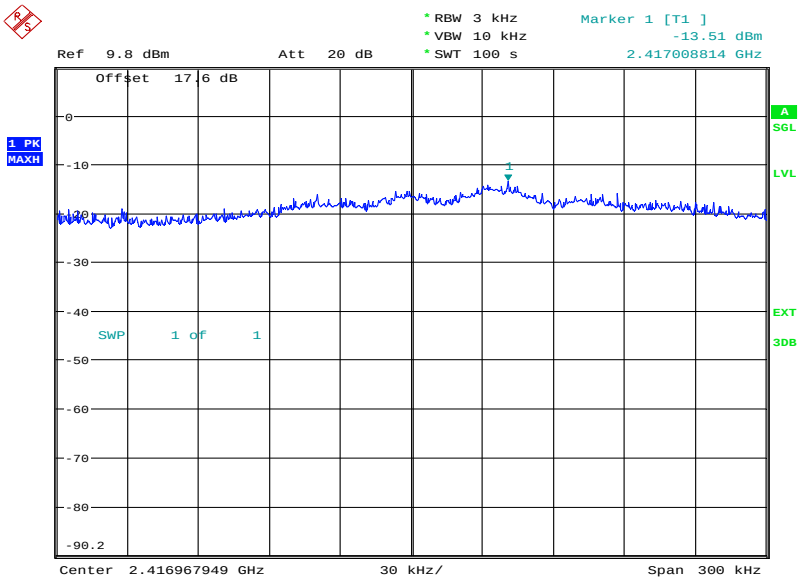
26 Mbps



Date: 19.DEC.2014 11:07:07

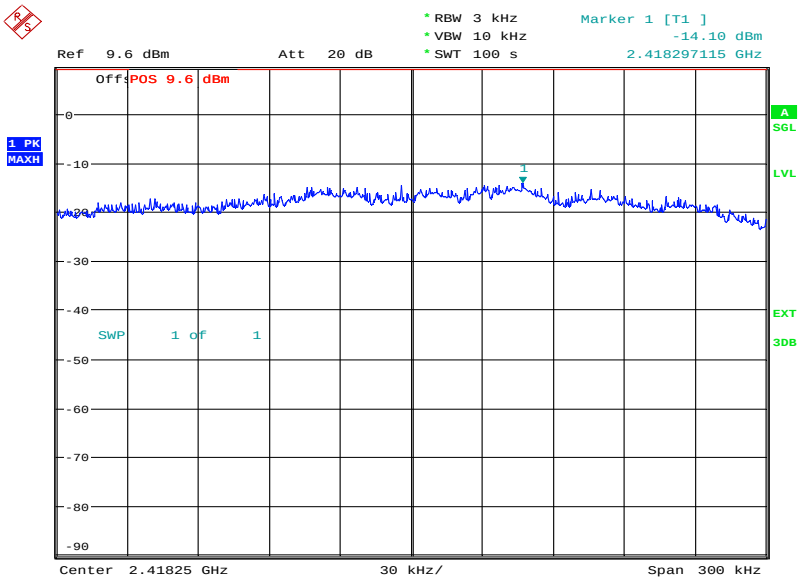
Product Service

39 Mbps



Date: 19.DEC.2014 11:12:27

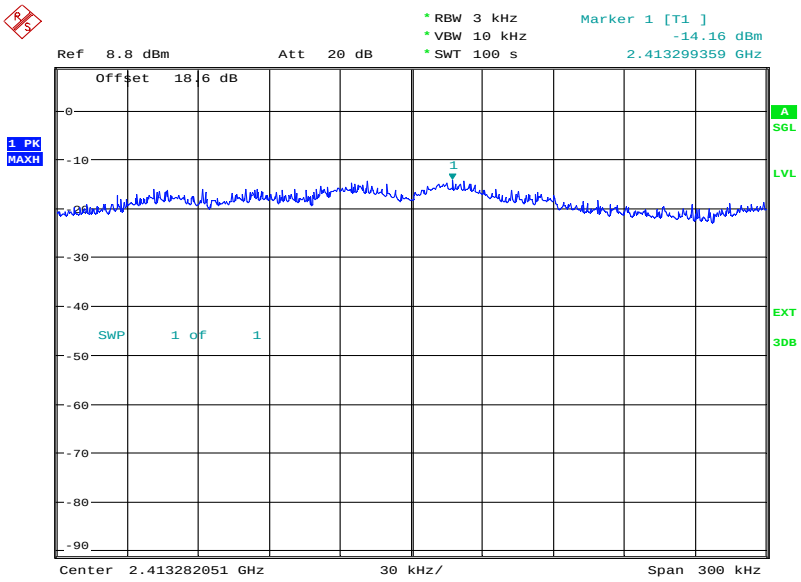
52 Mbps



Date: 22.DEC.2014 14:20:07

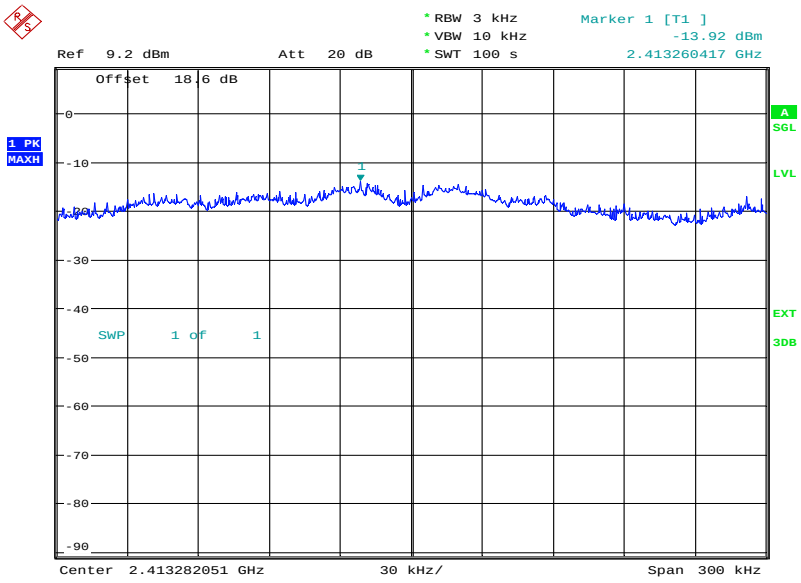
Product Service

58.5 Mbps



Date: 22.DEC.2014 14:27:10

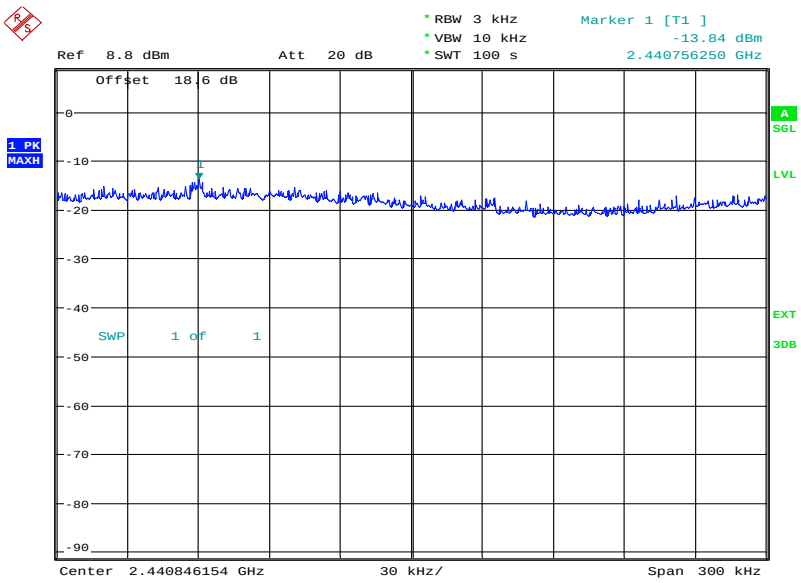
65 Mbps



Date: 22.DEC.2014 14:39:56

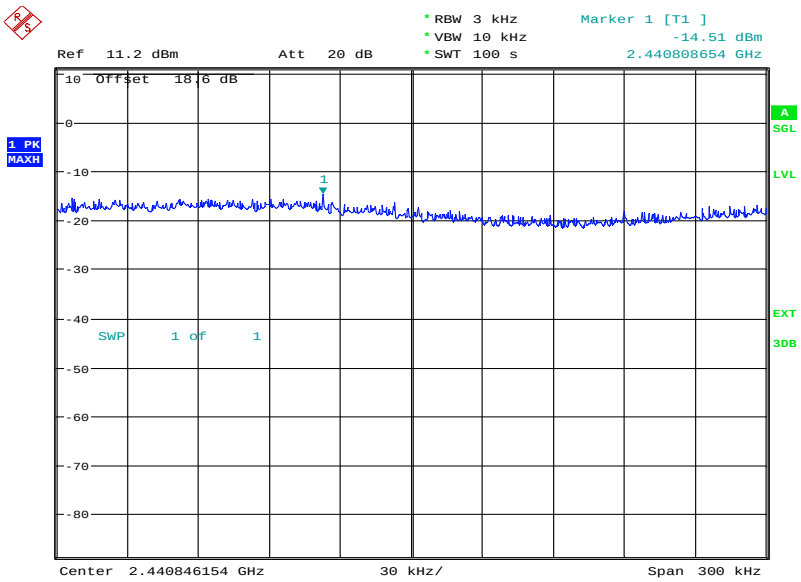
2437 MHz

6.5 Mbps



Date: 22.DEC.2014 14:45:13

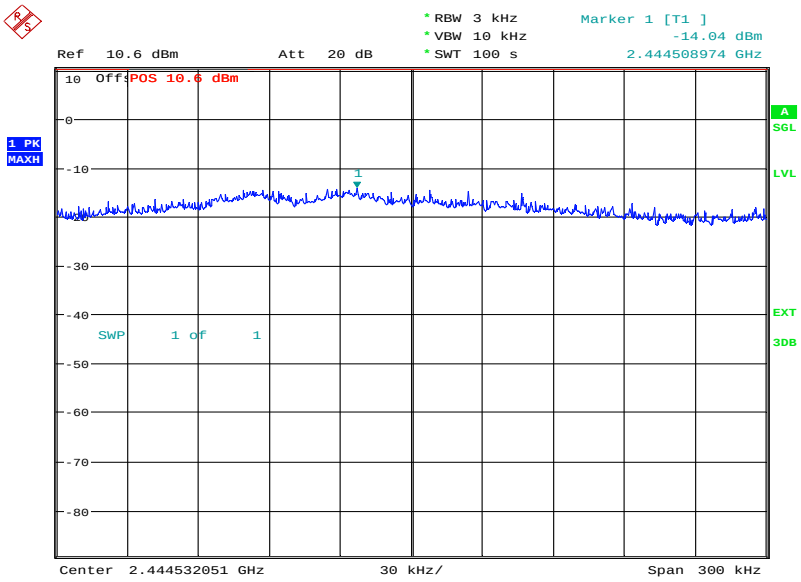
13 Mbps



Date: 22.DEC.2014 16:45:55

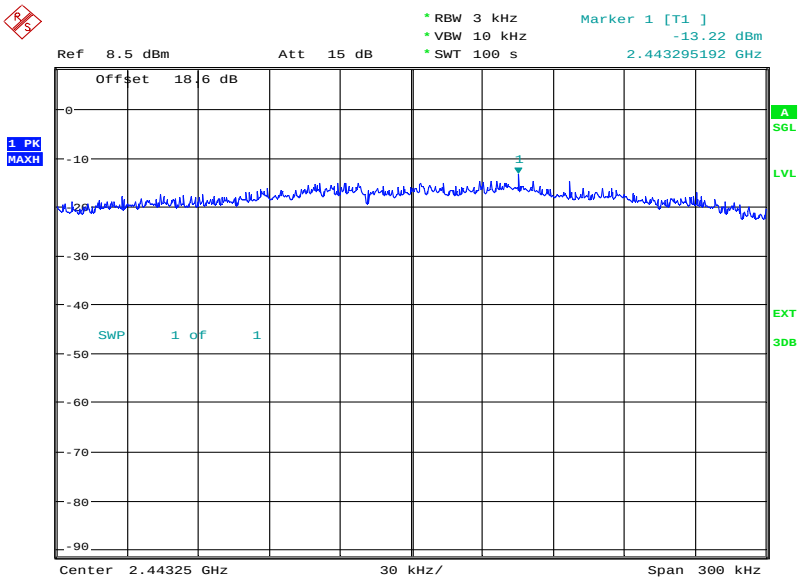
Product Service

19.5 Mbps



Date: 22.DEC.2014 16:53:55

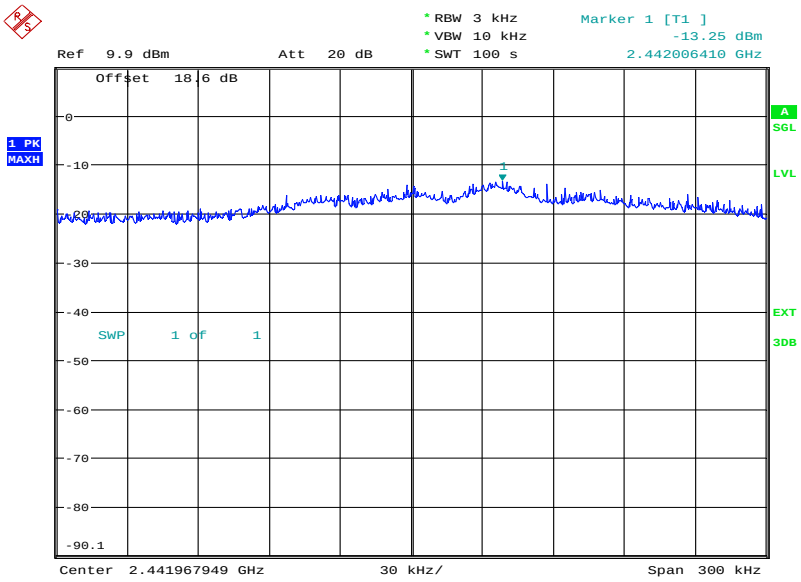
26 Mbps



Date: 22.DEC.2014 17:06:02

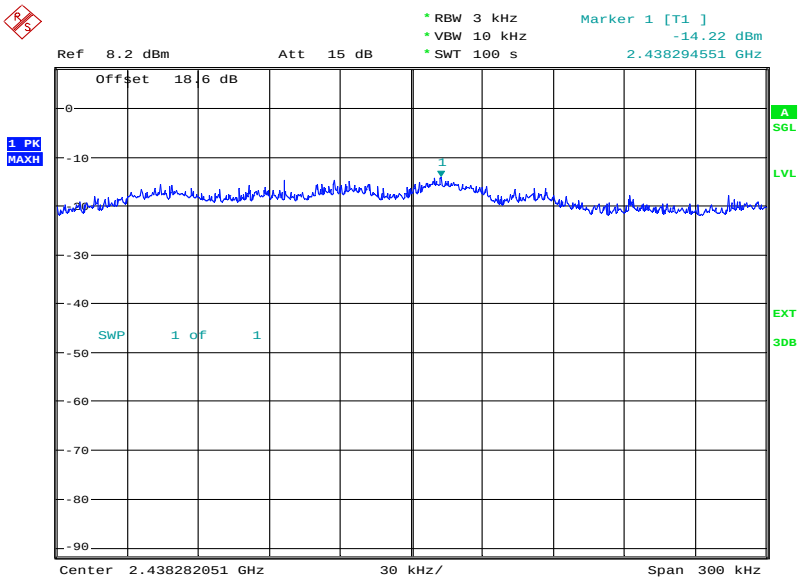
Product Service

39 Mbps



Date: 22.DEC.2014 17:11:26

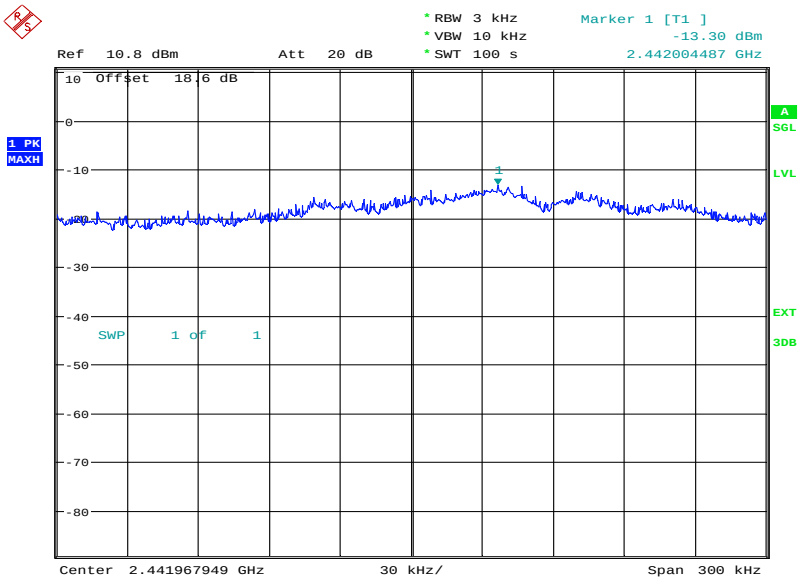
52 Mbps



Date: 22.DEC.2014 17:16:46

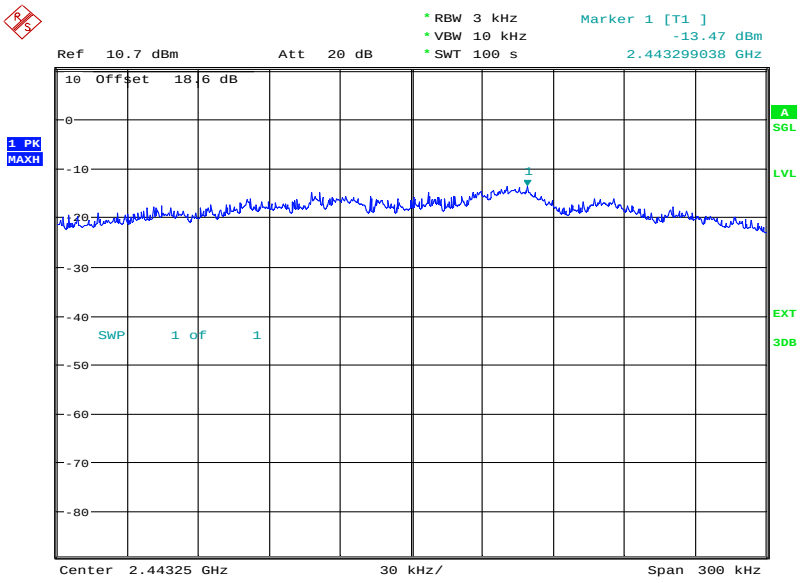
Product Service

58.5 Mbps



Date: 23.DEC.2014 08:52:23

65 Mbps

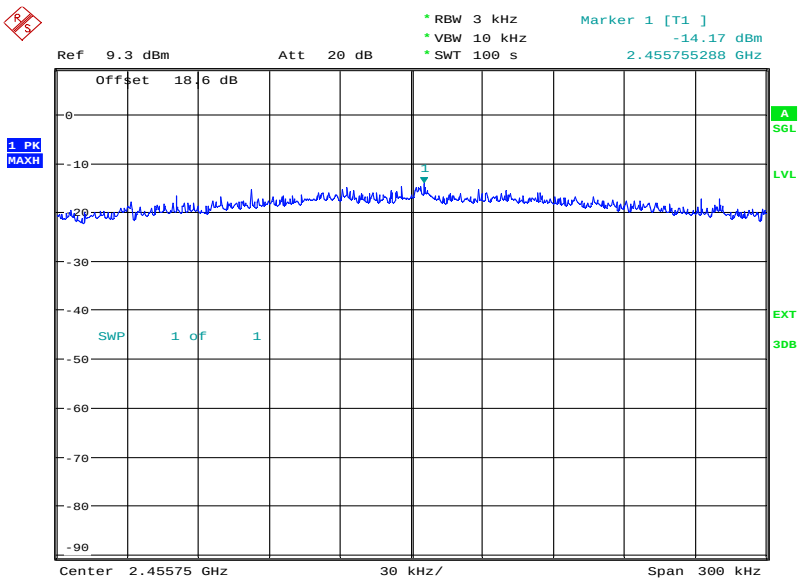


Date: 23.DEC.2014 09:05:27

Product Service

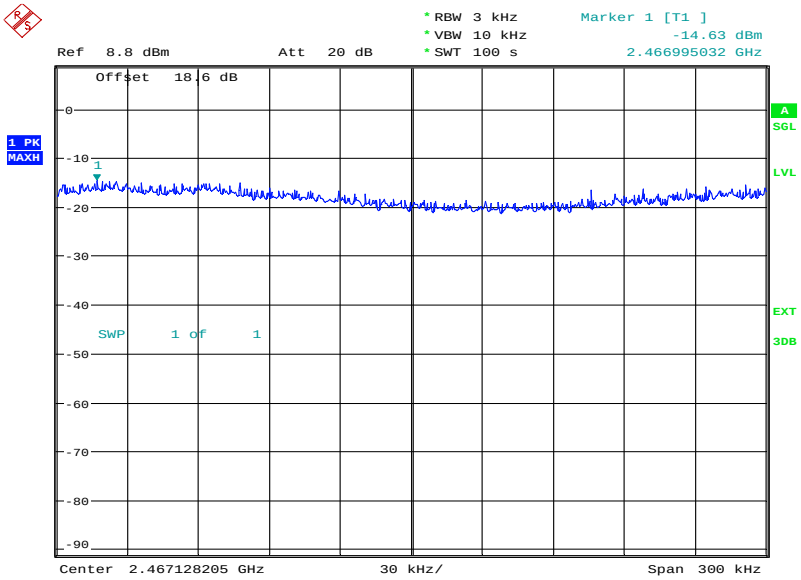
2462 MHz

6.5 Mbps



Date: 23.DEC.2014 09:11:31

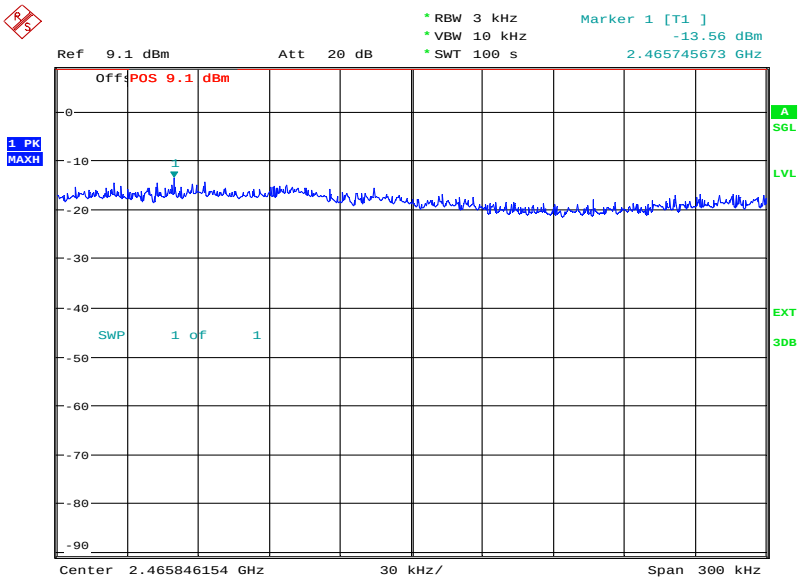
13 Mbps



Date: 23.DEC.2014 09:16:32

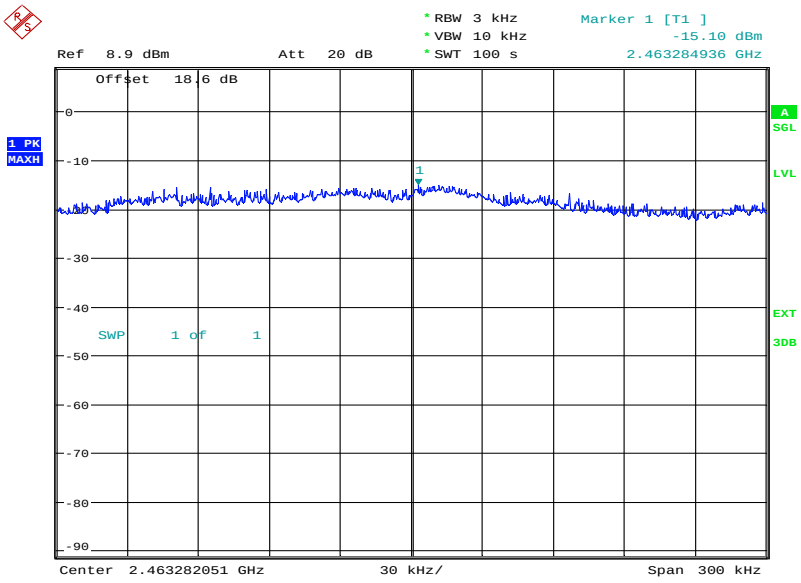
Product Service

19.5 Mbps



Date: 23.DEC.2014 09:20:56

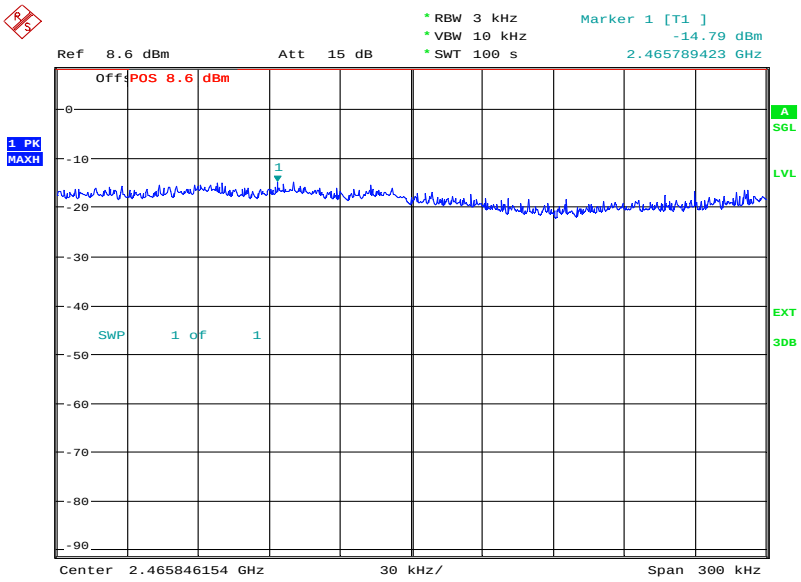
26 Mbps



Date: 23.DEC.2014 09:33:12

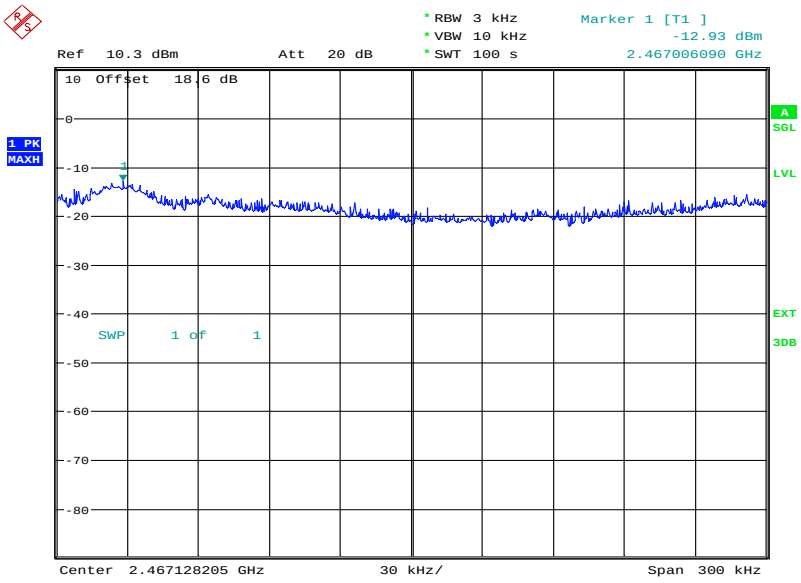
Product Service

39 Mbps



Date: 23.DEC.2014 09:38:56

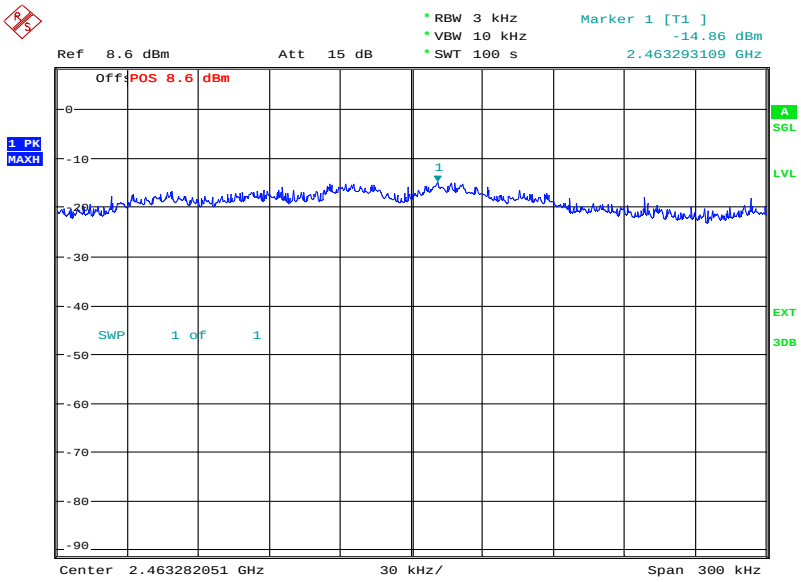
52 Mbps



Date: 23.DEC.2014 09:43:03

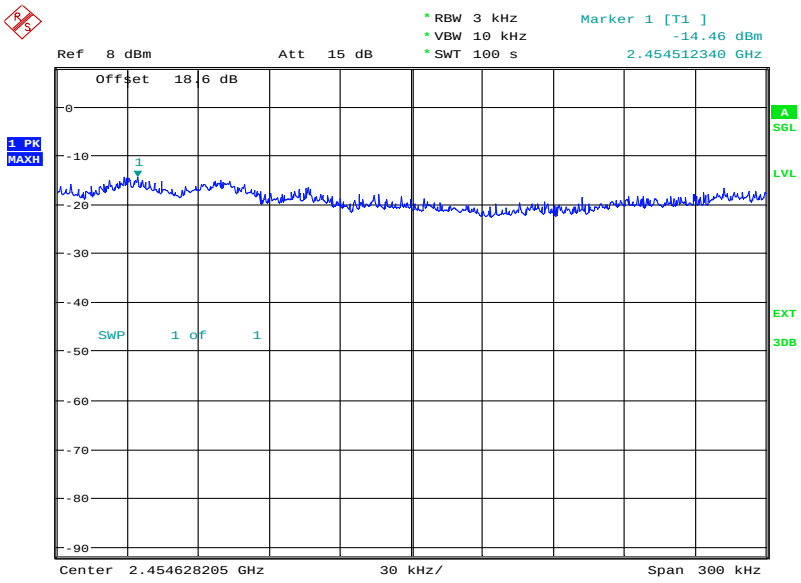
Product Service

58.5 Mbps



Date: 23.DEC.2014 09:47:50

65 Mbps



Date: 23.DEC.2014 09:55:19

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.

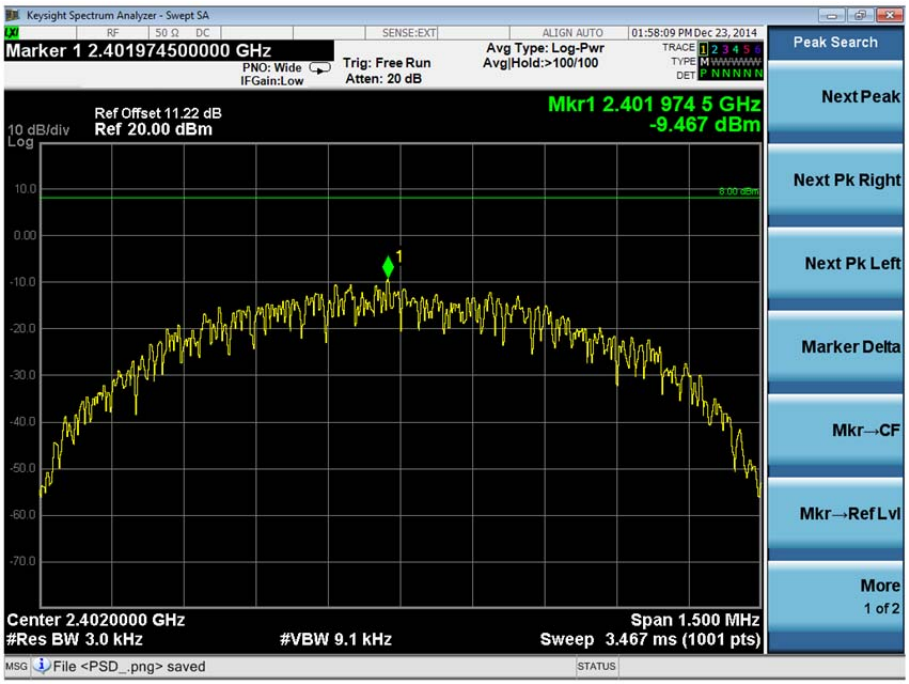
Bluetooth Low Energy

4.0 V DC Supply

Frequency	Packet Type	Power Spectral Density in 3 kHz Bands (dBm)
2402 MHz	DH1	-9.467
2441 MHz	DH1	-9.320
2480 MHz	DH1	-9.700

2402 MHz

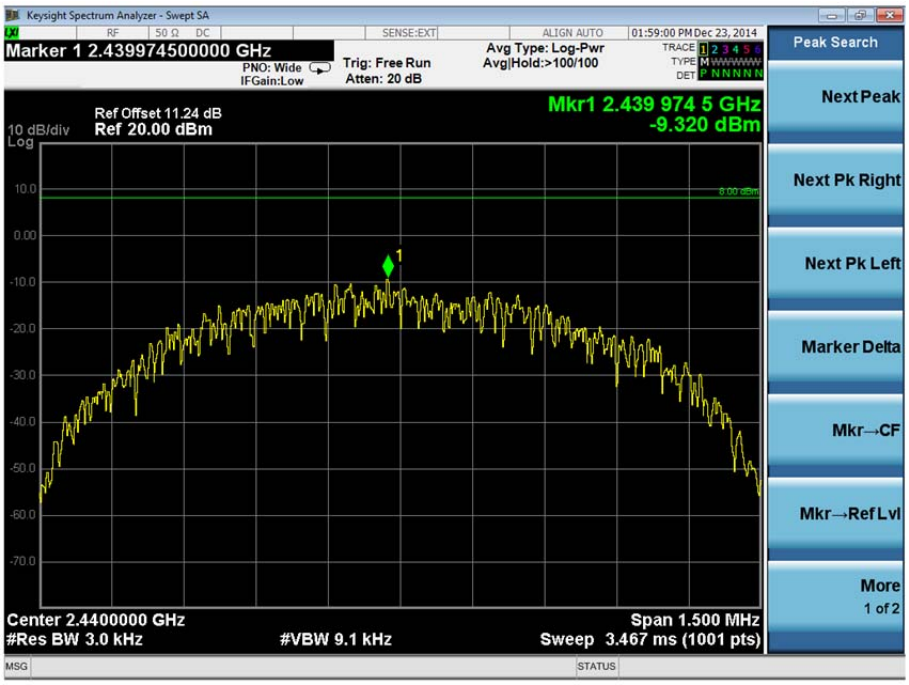
DH1



Product Service

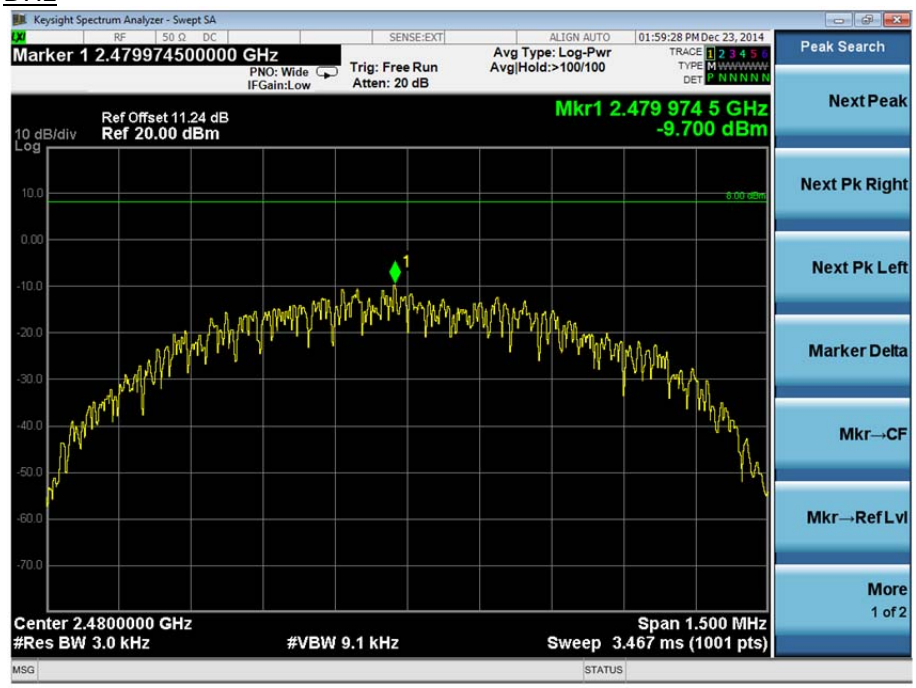
2441 MHz

DH1



2480 MHz

DH1



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.

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

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					
Transient Limiter	Hewlett Packard	11947A	15	12	16-Dec-2015
LISN (1 Phase)	Chase	MN 2050	336	12	28-Mar-2015
Screened Room (5)	Rainford	Rainford	1545	24	06-Jan-2017
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
Sectio 2.2– 6 dB Bandwidth					
Power Supply Unit	Farnell	LT30-2	41	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	18-Jan-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Attenuator (10dB, 20W)	Lucas Weinschel	1	3225	12	12-Dec-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	18-Jan-2015
PXA Signal Analyser	Agilent Technologies	N9030A PXA	4409	12	27-Feb-2015
Section 2.3 - Maximum Peak Conducted Output Power					
Power Supply Unit	Farnell	LT30-2	41	-	O/P Mon
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Attenuator (10dB, 50W)	Aeroflex / Weinschel	47-10-34	3166	12	16-Sep-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	6-Aug-2015
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	3-Sep-2015
P-Series Power Meter	Agilent Technologies	N1911A	3980	12	22-Sep-2015
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	22-Sep-2015
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3982	12	22-Sep-2015
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3983	12	22-Sep-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	24-Sep-2015
Section 2.4 - EIRP Peak Power					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	2-May-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (DRG Horn)	ETS-LINDGREN	3115	3125	12	16-Jul-2015
Signal Generator: 10MHz to 20GHz	Rohde & Schwarz	SMR20	3475	12	10-Feb-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	22-Sep-2015
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3983	12	22-Sep-2015

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
Filter (High Pass)	Lorch	SHP7-7000-SR	566	12	24-Feb-2015
Pre-Amplifier	Phase One	PS04-0086	1533	12	23-Dec-2015
Pre-Amplifier	Phase One	PSO4-0087	1534	12	23-Dec-2015
Screened Room (5)	Rainford	Rainford	1545	24	06-Jan-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
Amplifier (8 - 18GHz)	Phase One	PS06-0061	3176	12	11-Aug-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 - Power Spectral Density					
Power Supply Unit	Farnell	LT30-2	41	-	O/P Mon
20dB Attenuator	Narda	4772-20	456	-	TU
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	18-Jan-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Attenuator (10dB, 20W)	Lucas Weinschel	1	3225	12	12-Dec-2015
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	6-Aug-2015
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	3-Sep-2015
True RMS Multimeter	Fluke	179	4007	12	31-Jul-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	24-Sep-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	18-Jan-2015
PXA Signal Analyser	Agilent Technologies	N9030A PXA	4409	12	27-Feb-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
6 dB Bandwidth	± 212.114 kHz
EIRP Peak Power	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
Maximum Peak Conducted Output Power	± 0.70 dB
Spurious and Band Edge Emissions	Radiated: 30 MHz to 1 GHz: ± 5.1 dB Radiated: 1 GHz to 40 GHz: ± 6.3 dB
Power Spectral Density	± 3.0 dB
AC Line Conducted Emissions	± 3.2 dB

Product Service

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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).