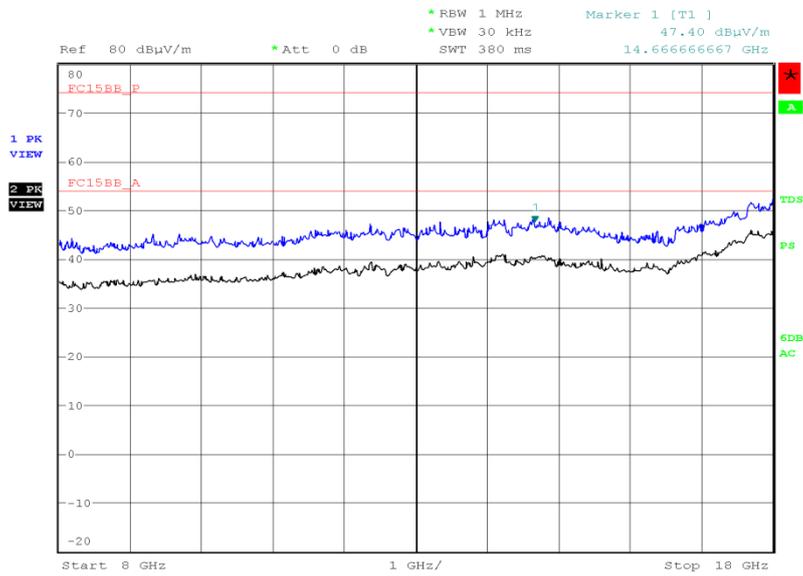




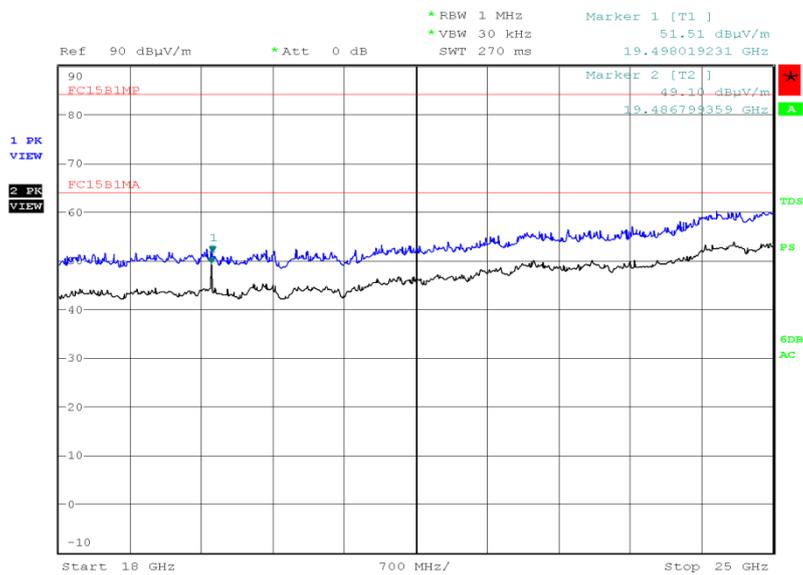
Product Service

8 GHz to 18 GHz



Date: 22.NOV.2014 04:16:46

18 GHz to 25 GHz

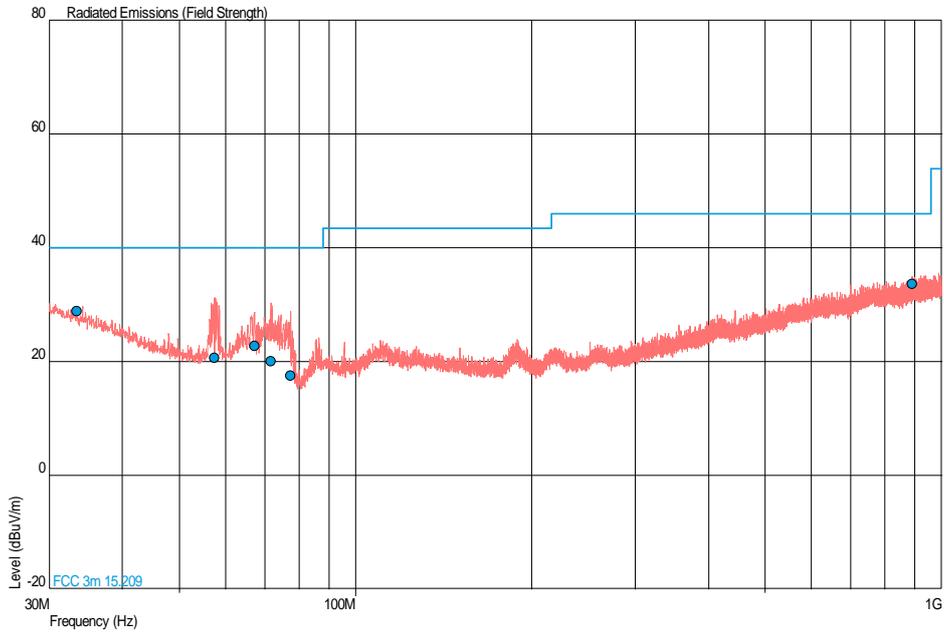


Date: 22.NOV.2014 21:51:45



2462 MHz

30 MHz to 1 GHz



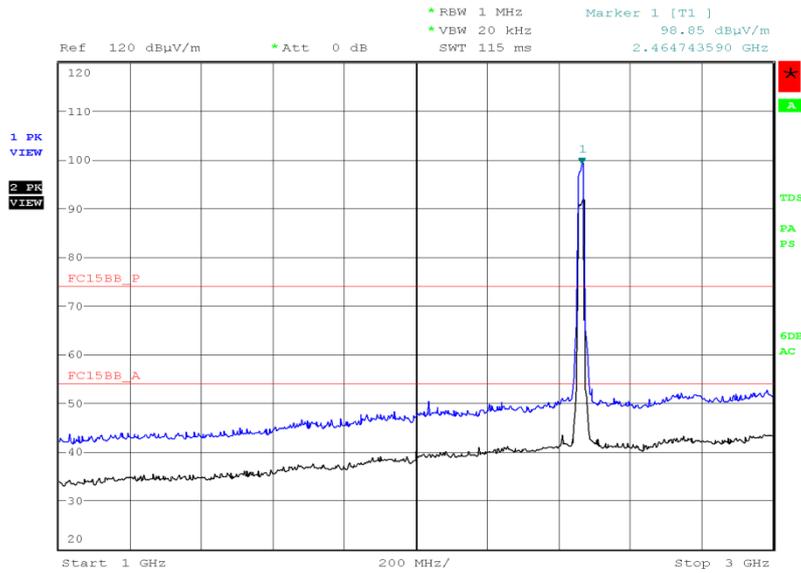
Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
33.446	28.9	27.9	40.0	100	-11.1	-72.1	354	1.00	Vertical
57.556	20.7	10.8	40.0	100	-19.3	-89.2	37	1.00	Vertical
67.196	22.7	13.6	40.0	100	-17.3	-86.4	177	1.08	Vertical
71.800	20.0	10.0	40.0	100	-20.0	-90.0	246	1.00	Vertical
77.521	17.5	7.5	40.0	100	-22.5	-92.5	0	1.00	Vertical
890.450	33.7	48.4	46.0	200	-12.3	-151.6	120	1.00	Horizontal



1 GHz to 25 GHz

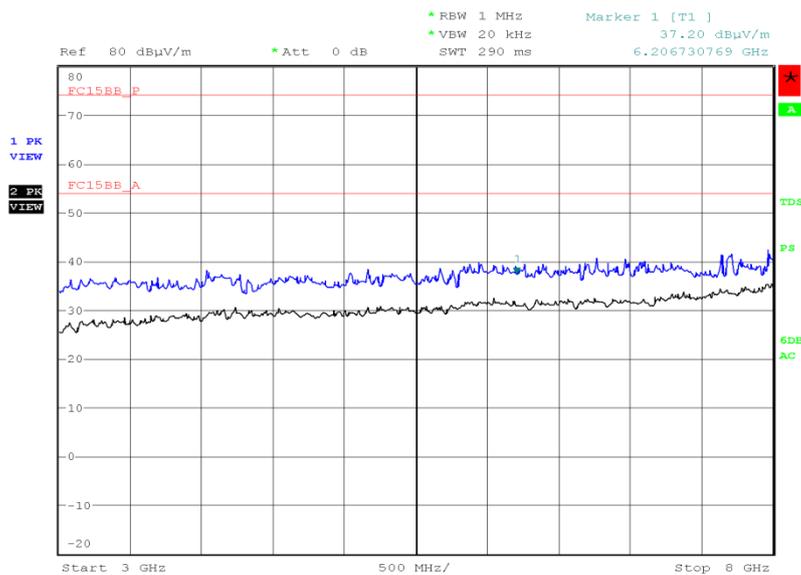
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
19.696	Horizontal	105	328	52.3	43.11

1 GHz to 3 GHz



Date: 22.NOV.2014 01:39:49

3 GHz to 8 GHz

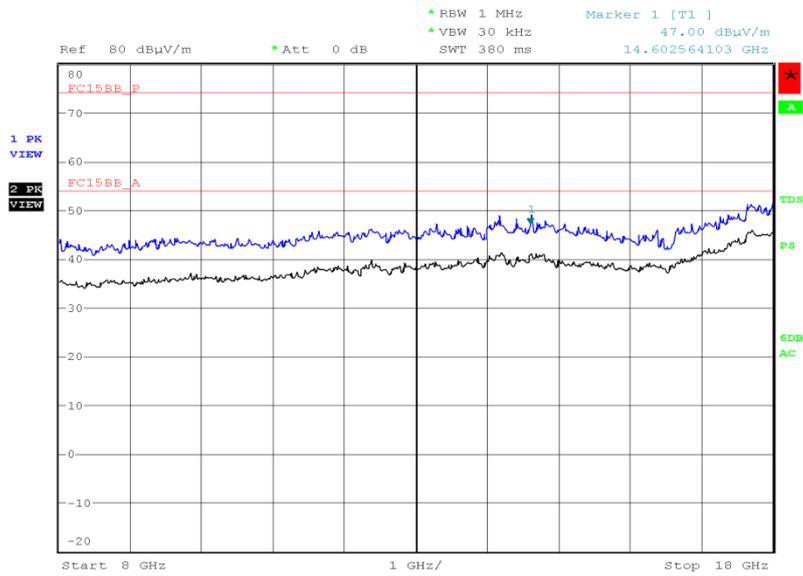


Date: 22.NOV.2014 03:05:35



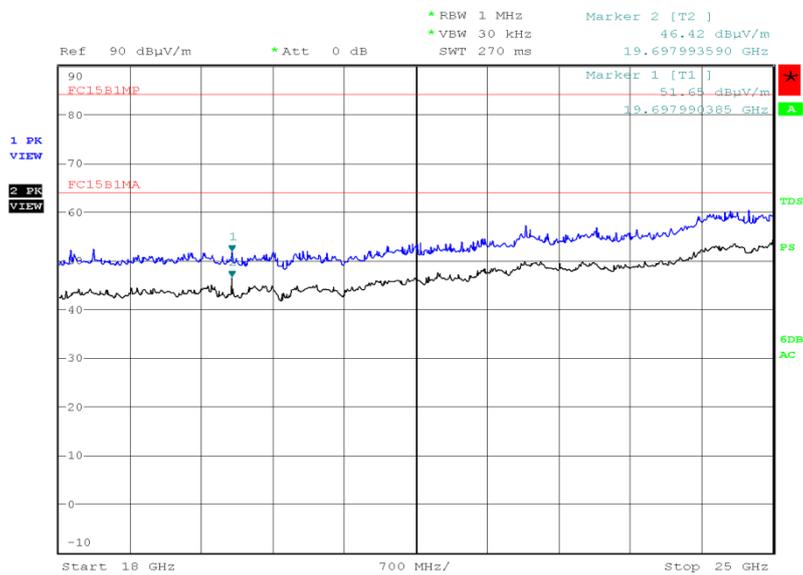
Product Service

8 GHz to 18 GHz



Date: 22.NOV.2014 04:06:42

18 GHz to 25 GHz



Date: 22.NOV.2014 21:58:43



Product Service

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	( $\mu$ V/m)	Average (dB $\mu$ V/m)	Peak (dB $\mu$ 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 transmitter 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.



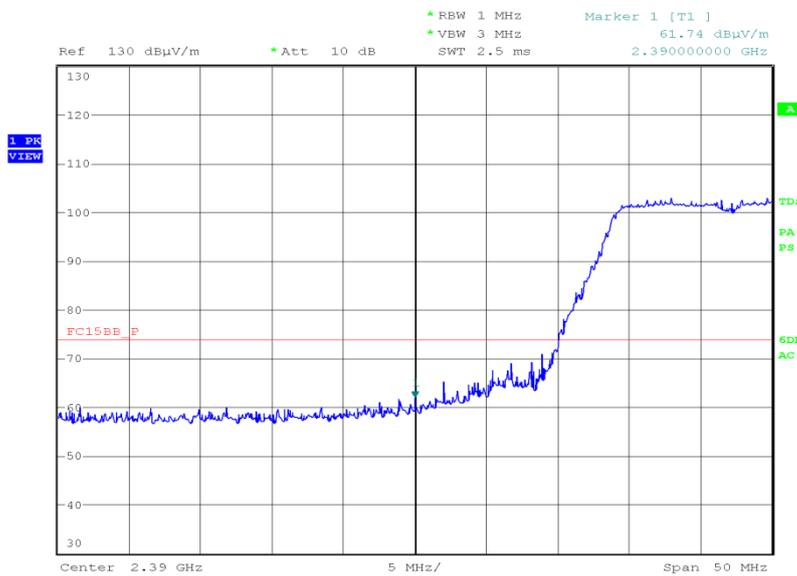
Band Edge Emissions

Modulation/Data Rate: OFDM/9 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2390.00	61.74	49.03
2483.50	61.37	49.15

2390.00 MHz

Final Peak

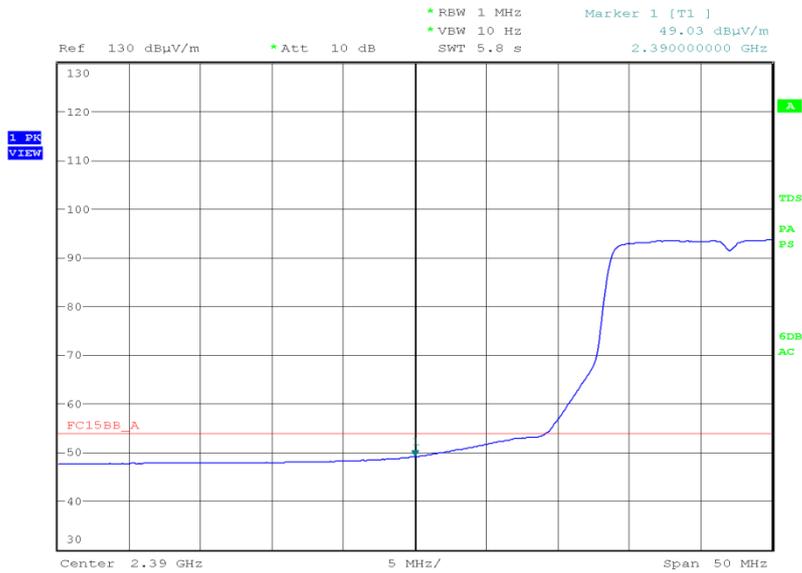


Date: 29.NOV.2014 03:31:31



Product Service

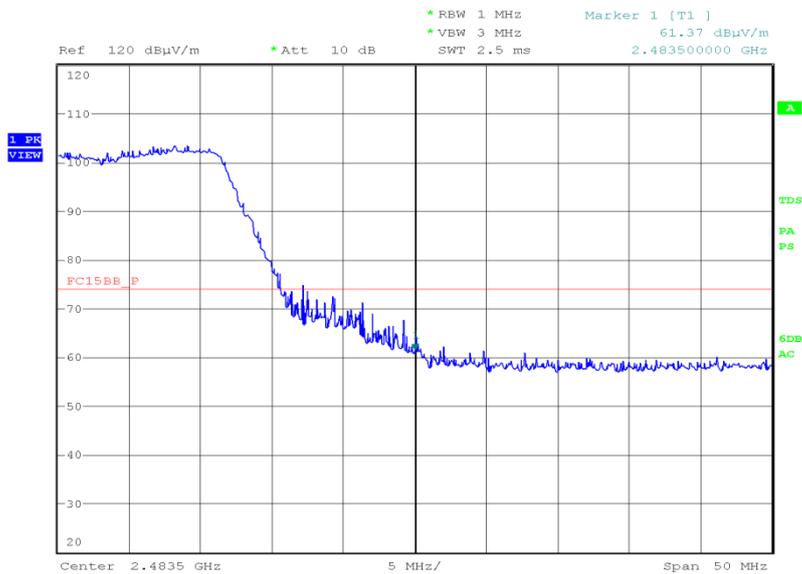
Final Average



Date: 29.NOV.2014 03:14:10

2483.50 MHz

Final Peak

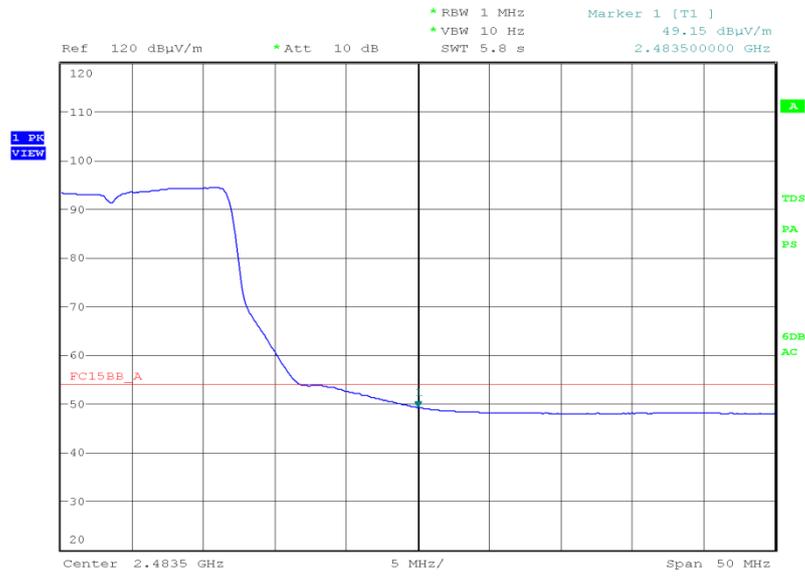


Date: 29.NOV.2014 04:32:09



Product Service

Final Average



Date: 29.NOV.2014 04:31:17

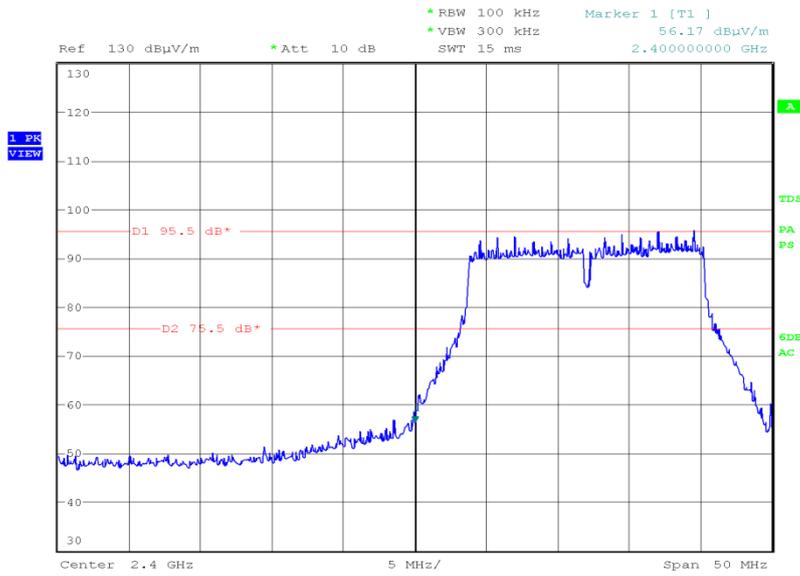


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2400.00	56.17
2483.50	47.72

2400.00 MHz

Final Peak



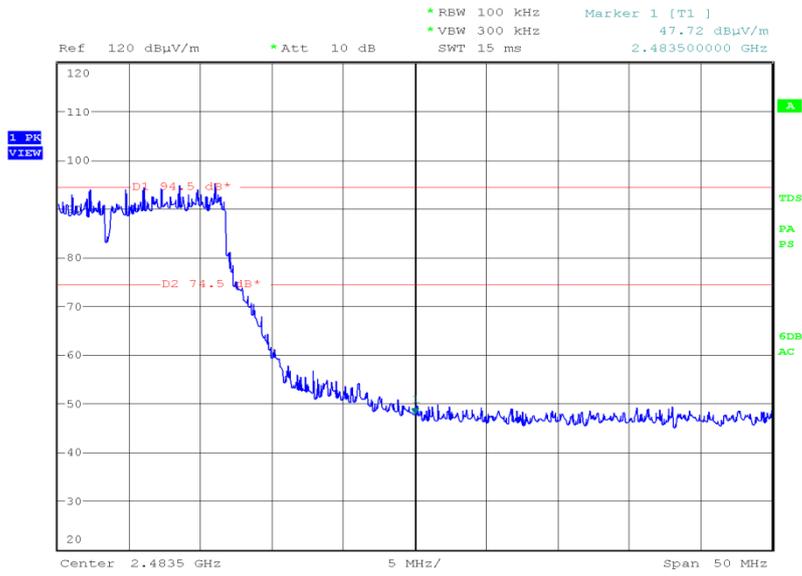
Date: 29.NOV.2014 03:19:01



Product Service

2483.50 MHz

Final Peak



Date: 29.NOV.2014 04:35:45



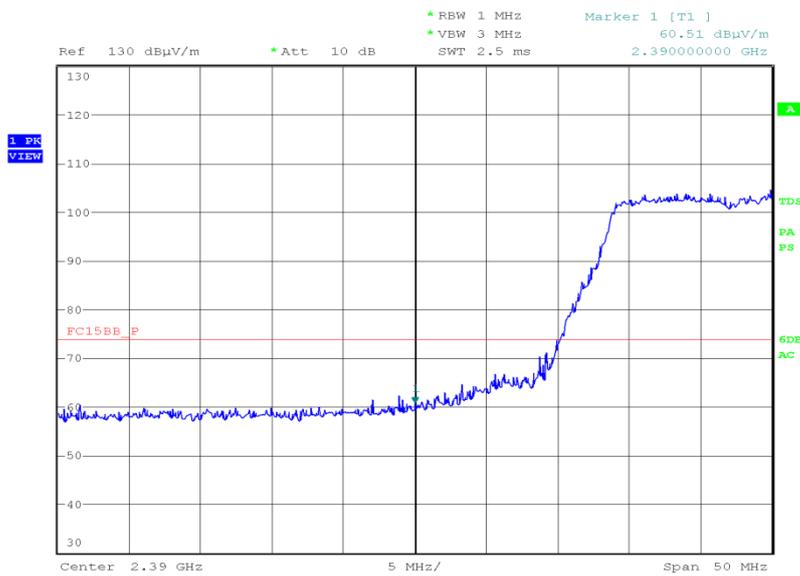
Product Service

Modulation/Data Rate: OFDM/54 Mbps

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2390.00	60.51	48.88
2483.50	60.33	48.58

2390.00 MHz

Final Peak

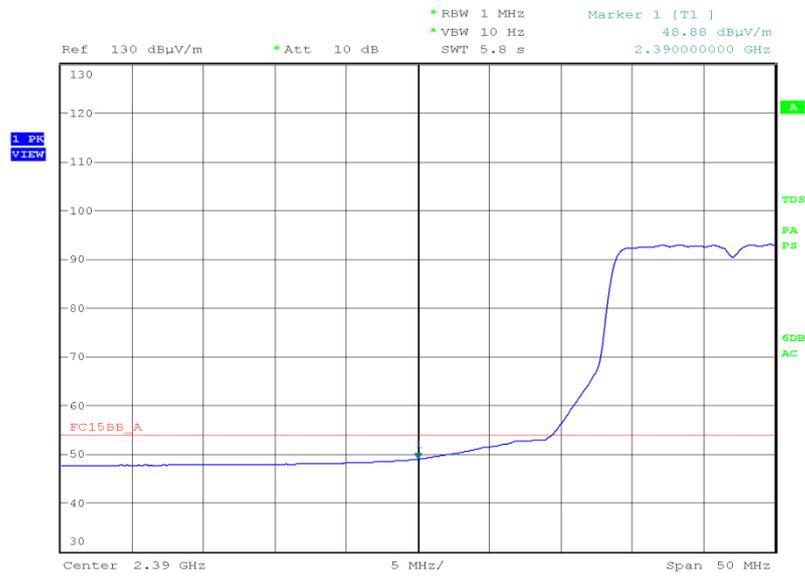


Date: 29.NOV.2014 03:30:29



Product Service

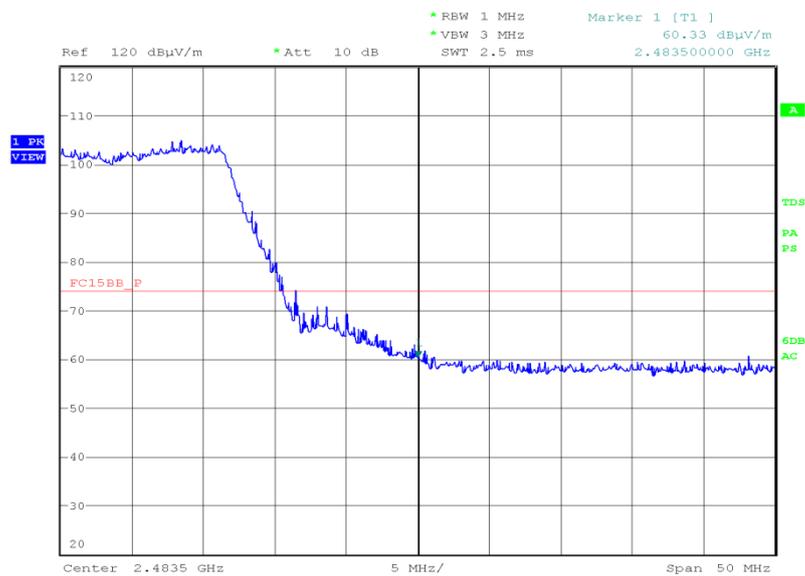
Final Average



Date: 29.NOV.2014 03:24:19

2483.50 MHz

Final Peak

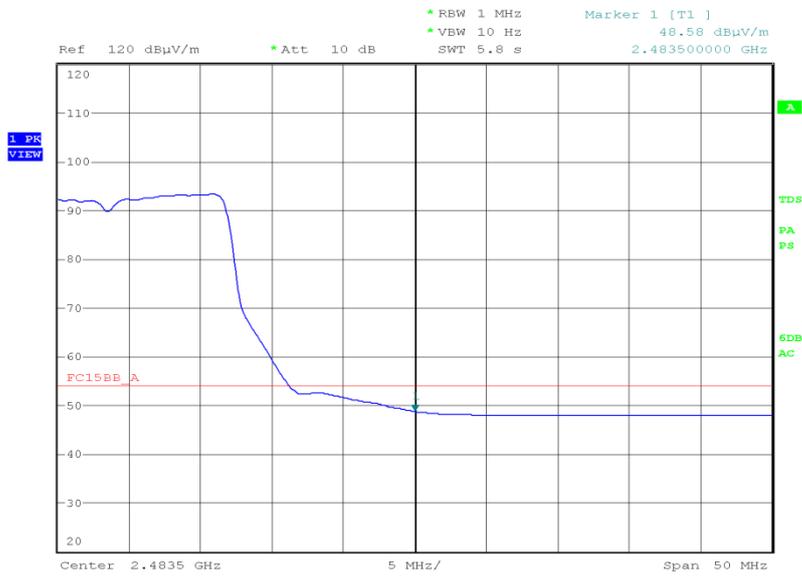


Date: 29.NOV.2014 04:59:32



Product Service

Final Average



Date: 29.NOV.2014 05:00:38

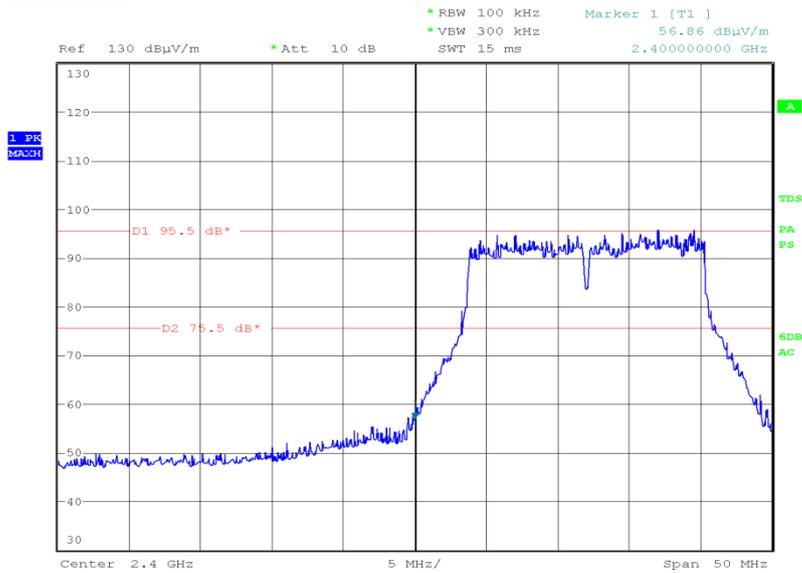


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2400.00	56.88
2483.50	49.30

2400.00 MHz

Final Peak



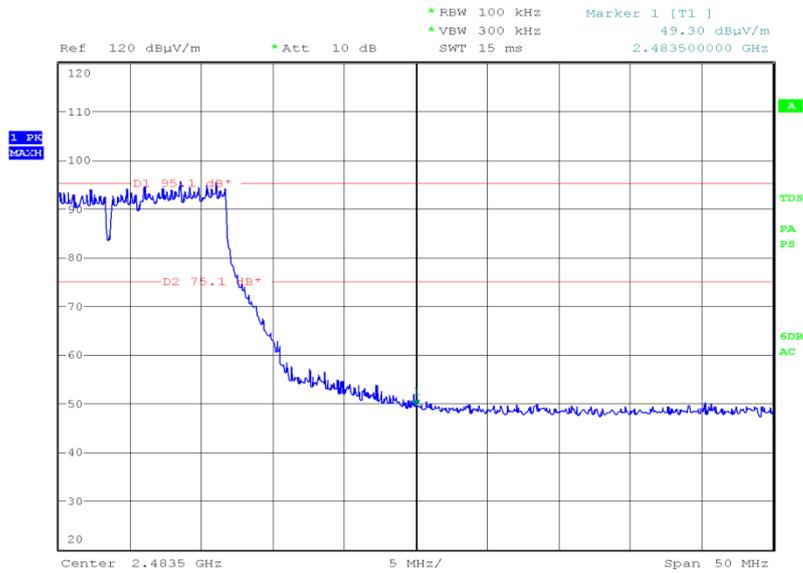
Date: 29.NOV.2014 03:20:50



Product Service

2483.50 MHz

Final Peak



Date: 29.NOV.2014 04:55:53

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 9 Mbps because this was deemed the worst case data rate for Conducted Output Power.



Product Service

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	( $\mu$ V/m)	Average (dB $\mu$ V/m)	Peak (dB $\mu$ 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 transmitter 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

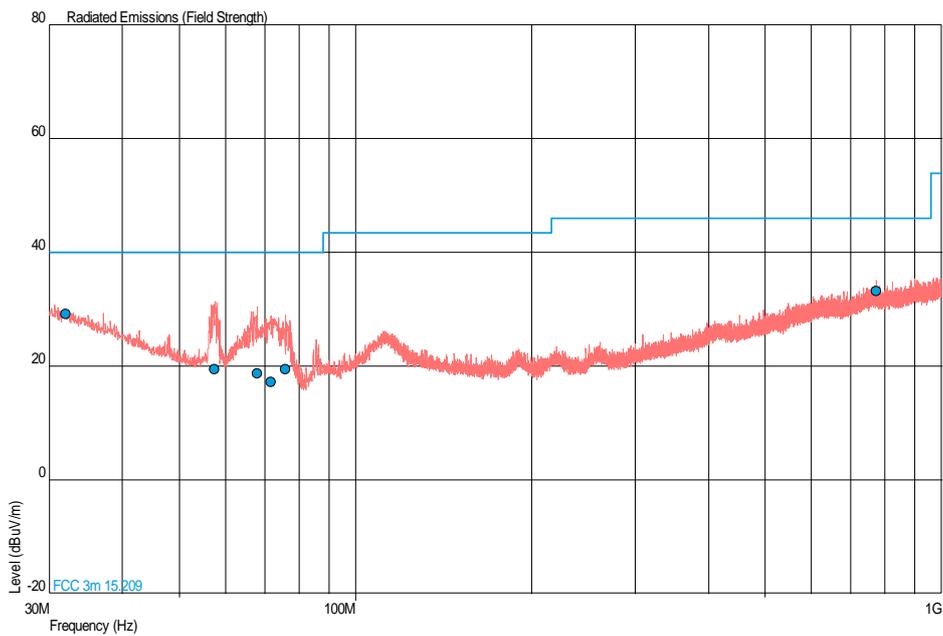
802.11(n)

4.0 V DC Supply

Spurious Radiated Emissions

2412 MHz

30 MHz to 1 GHz



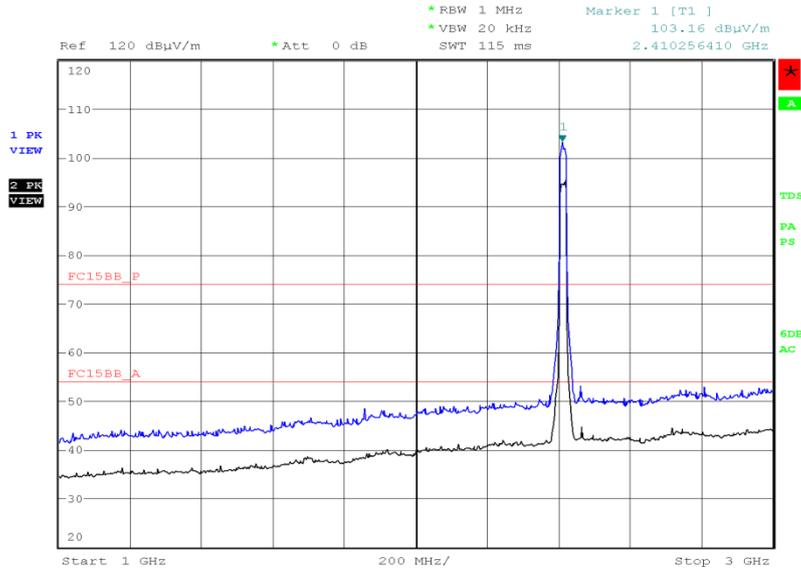
Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
32.082	29.1	28.5	40.0	100	-10.9	-71.5	149	2.32	Vertical
57.542	19.5	9.4	40.0	100	-20.5	-90.6	71	1.00	Vertical
68.058	18.7	8.6	40.0	100	-21.3	-91.4	67	1.00	Vertical
71.655	17.3	7.3	40.0	100	-22.7	-92.7	153	1.00	Vertical
76.028	19.4	9.3	40.0	100	-20.6	-90.7	253	1.00	Vertical
773.249	33.1	45.2	46.0	200	-12.9	-154.8	0	1.00	Vertical



1 GHz to 25 GHz

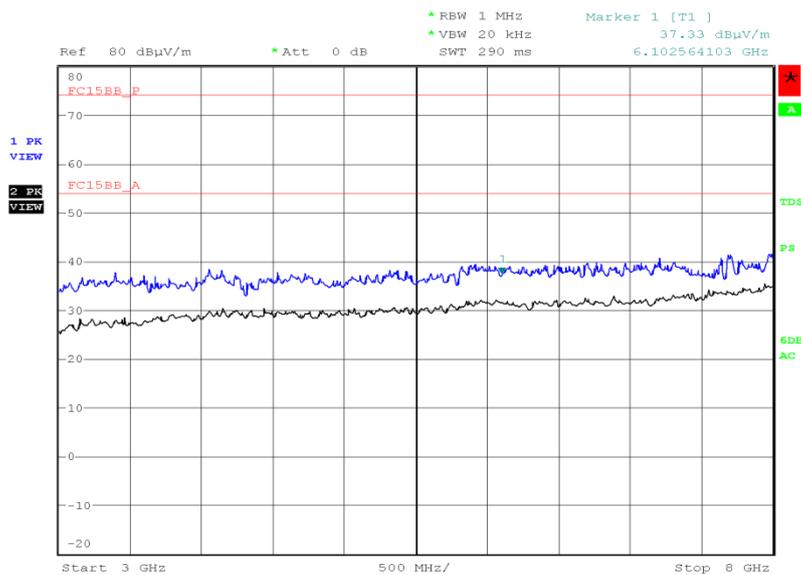
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
19.296	Horizontal	110	317	54.05	46.71

1 GHz to 3 GHz



Date: 22.NOV.2014 02:09:22

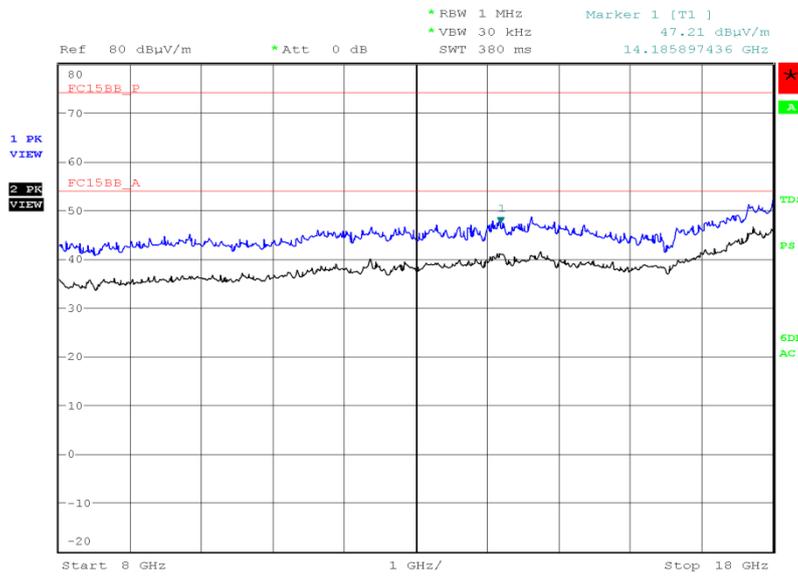
3 GHz to 8 GHz



Date: 22.NOV.2014 03:11:02

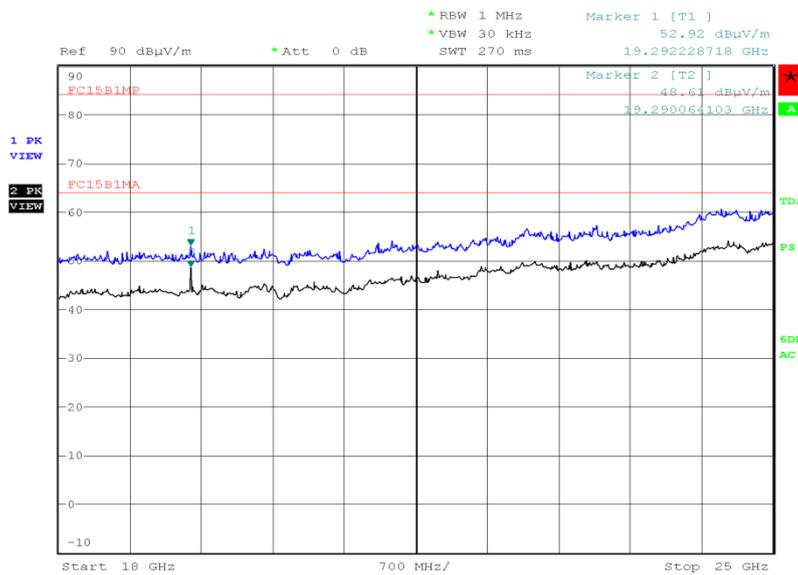


8 GHz to 18 GHz



Date: 22.NOV.2014 04:01:59

18 GHz to 25 GHz

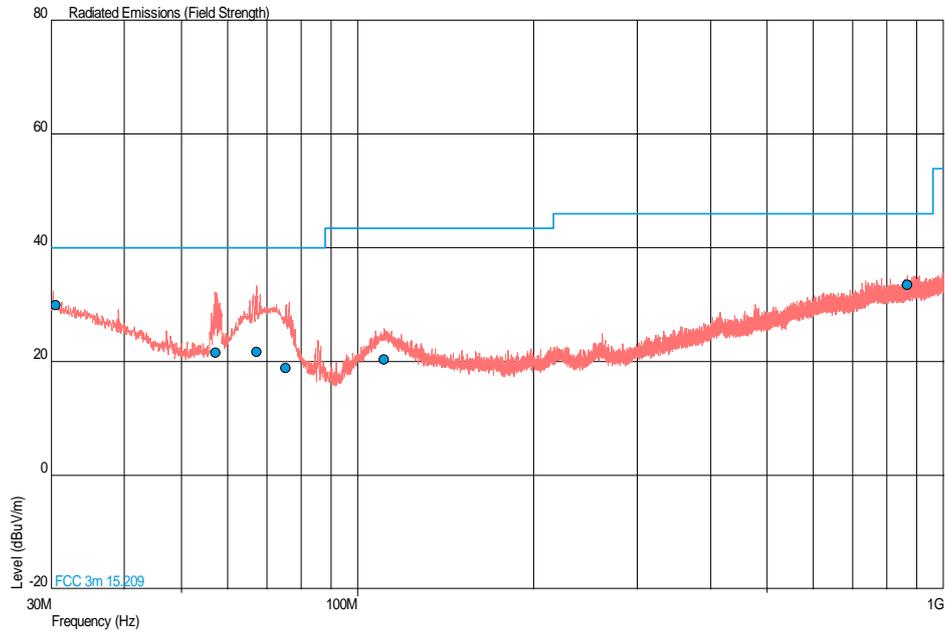


Date: 22.NOV.2014 22:05:31



2437 MHz

30 MHz to 1 GHz



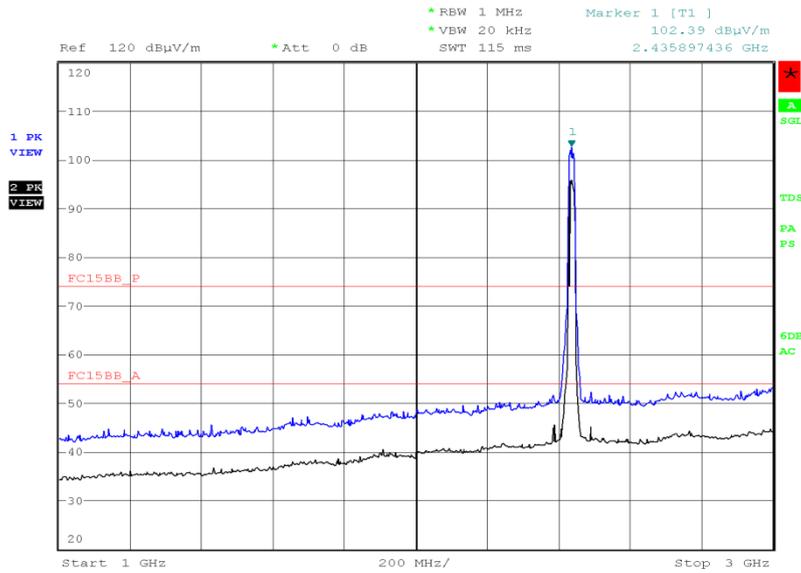
Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
30.578	29.9	31.3	40.0	100	-10.1	-68.7	64	2.73	Vertical
57.176	21.6	12.0	40.0	100	-18.4	-88.0	347	1.00	Vertical
67.244	21.8	12.3	40.0	100	-18.2	-87.7	0	2.10	Vertical
75.413	18.8	8.7	40.0	100	-21.2	-91.3	89	1.00	Vertical
111.092	20.4	10.5	43.5	150	-23.1	-139.5	360	1.00	Vertical
865.606	33.6	47.9	46.0	200	-12.4	-152.1	314	1.00	Horizontal



1 GHz to 25 GHz

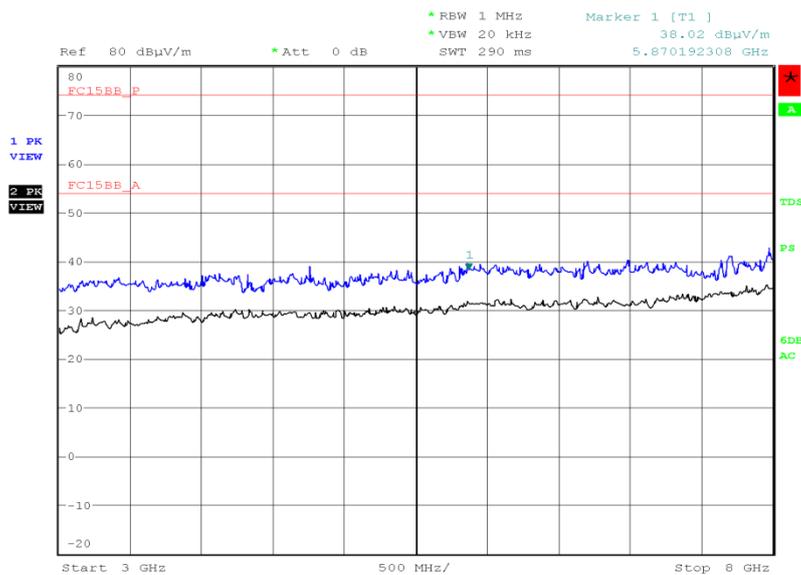
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
19.496	Horizontal	110	320	55.07	47.51

1 GHz to 3 GHz



Date: 22.NOV.2014 01:57:23

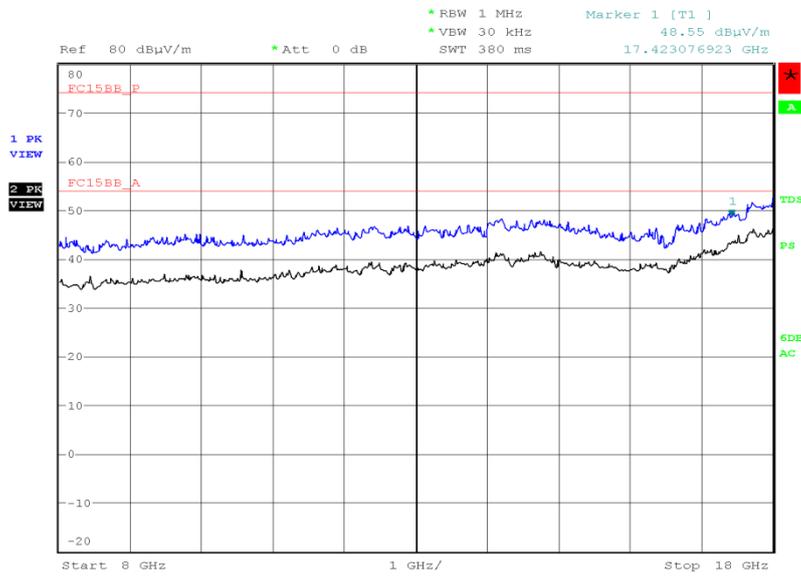
3 GHz to 8 GHz



Date: 22.NOV.2014 03:15:21

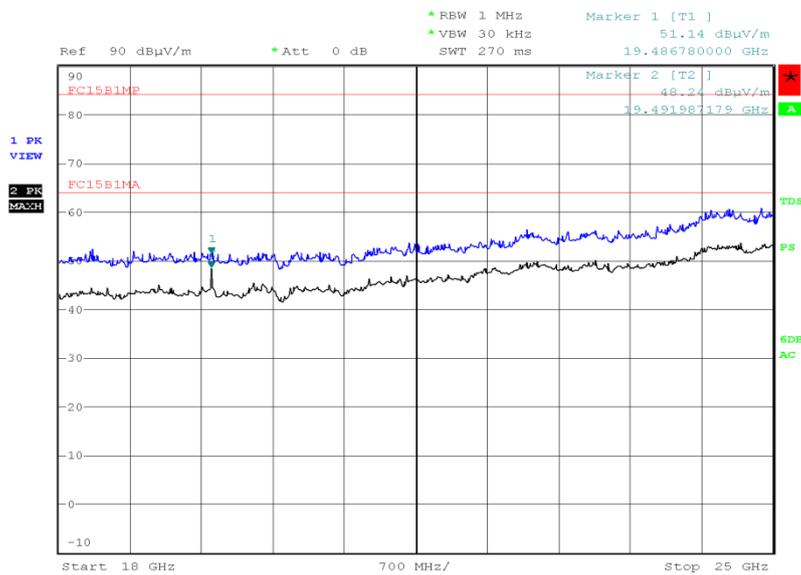


8 GHz to 18 GHz



Date: 22.NOV.2014 03:56:54

18 GHz to 25 GHz



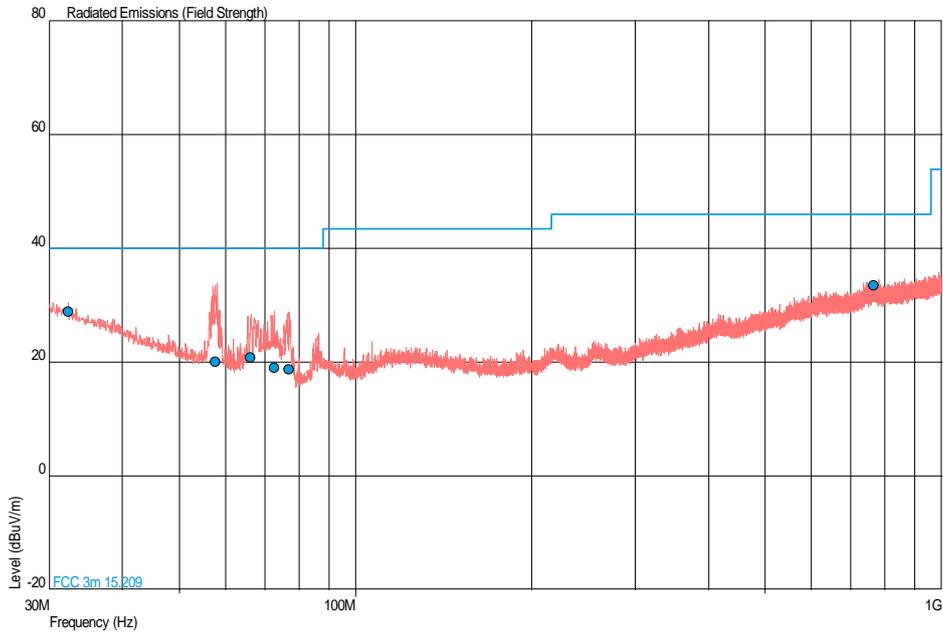
Date: 22.NOV.2014 22:12:41



Product Service

2462 MHz

30 MHz to 1 GHz



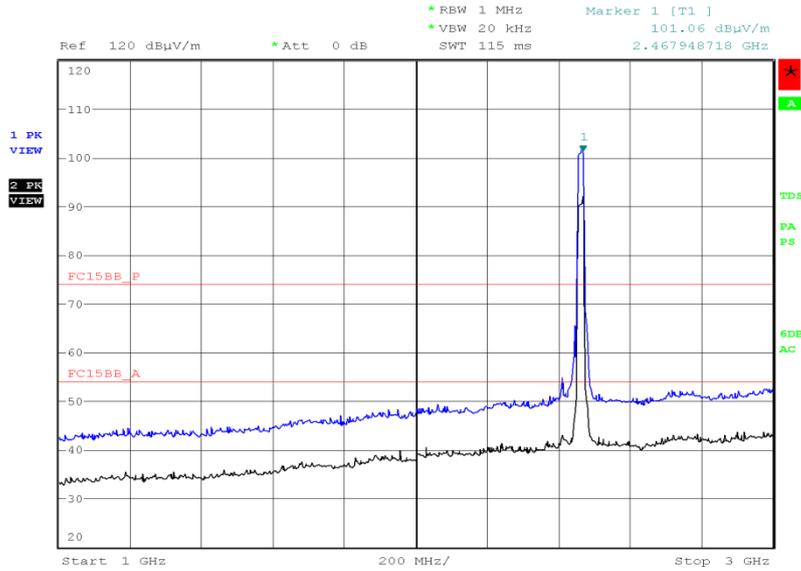
Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
32.387	28.9	27.9	40.0	100	-11.1	-72.1	331	1.00	Horizontal
57.664	20.1	10.1	40.0	100	-19.9	-89.9	73	1.00	Vertical
66.234	20.8	11.0	40.0	100	-19.2	-89.0	131	1.00	Vertical
72.679	19.0	8.9	40.0	100	-21.0	-91.1	61	1.00	Vertical
76.937	18.7	8.6	40.0	100	-21.3	-91.4	72	1.00	Vertical
765.030	33.5	47.3	46.0	200	-12.5	-152.7	360	1.04	Vertical



1 GHz to 25 GHz

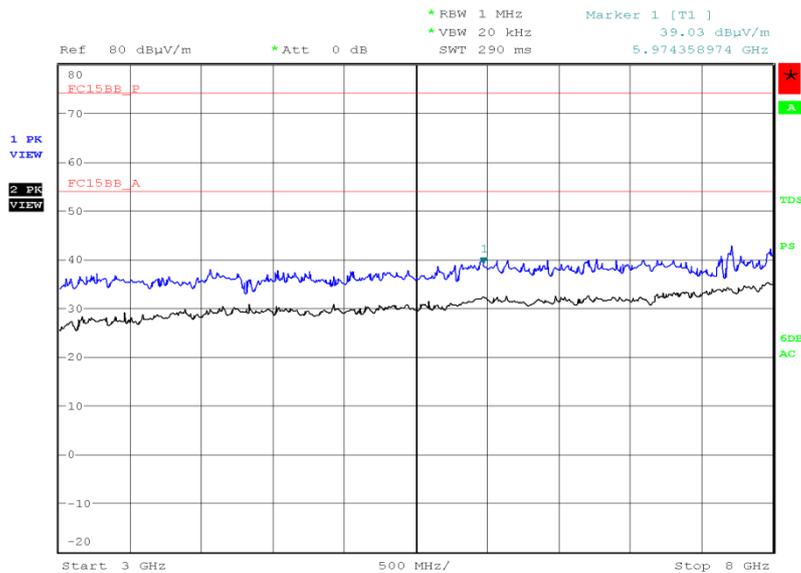
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
19.696	Horizontal	100	326	52.68	43.40

1 GHz to 3 GHz



Date: 22.NOV.2014 02:05:00

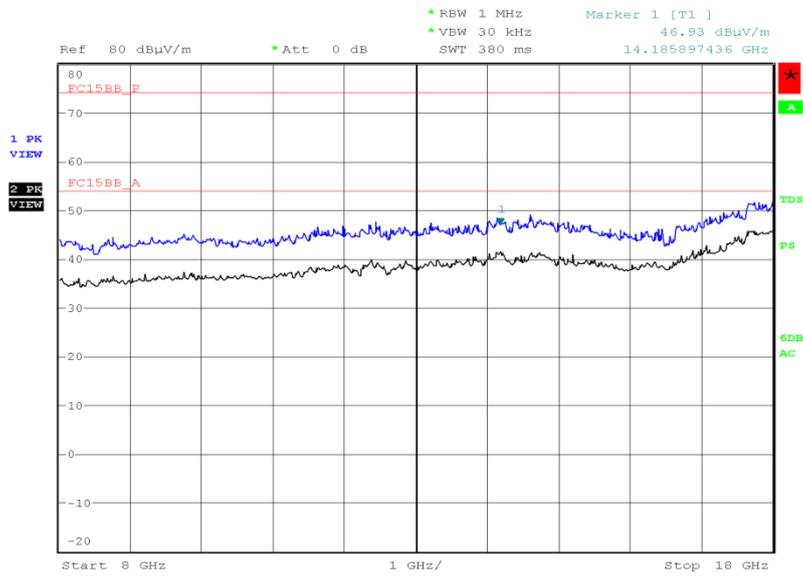
3 GHz to 8 GHz



Date: 22.NOV.2014 03:21:37

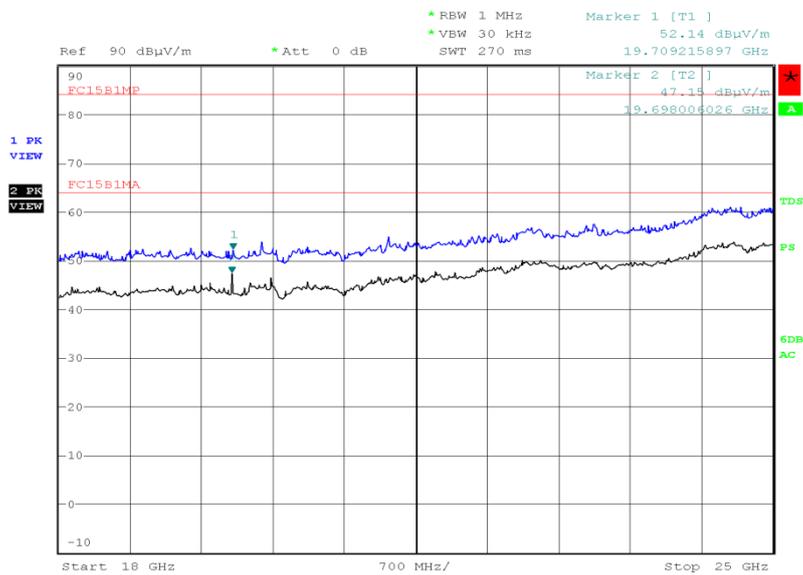


8 GHz to 18 GHz



Date: 22.NOV.2014 03:49:46

18 GHz to 25 GHz



Date: 22.NOV.2014 22:25:16



Product Service

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	( $\mu$ V/m)	Average (dB $\mu$ V/m)	Peak (dB $\mu$ 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 transmitter 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

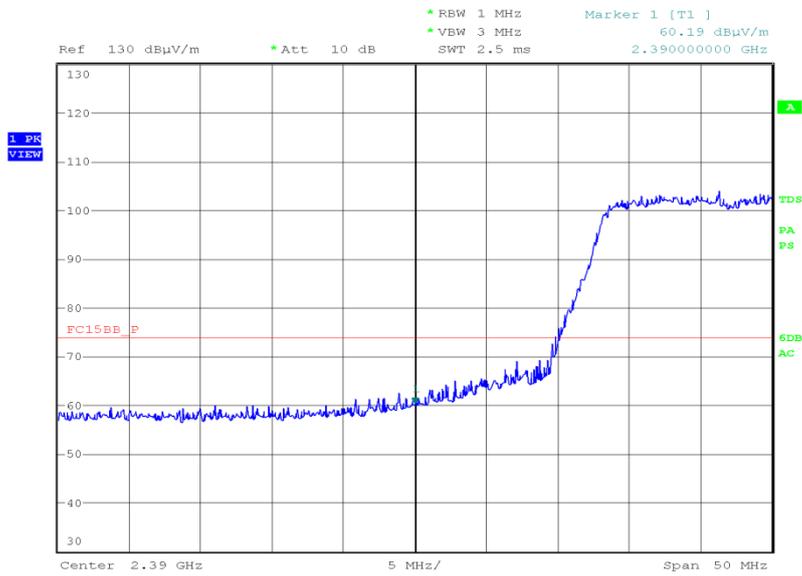
Band Edge Emissions

Modulation/Data Rate: OFDM/MCS2

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2390.00	60.19	49.53
2483.50	62.59	49.92

2390.00 MHz

Final Peak

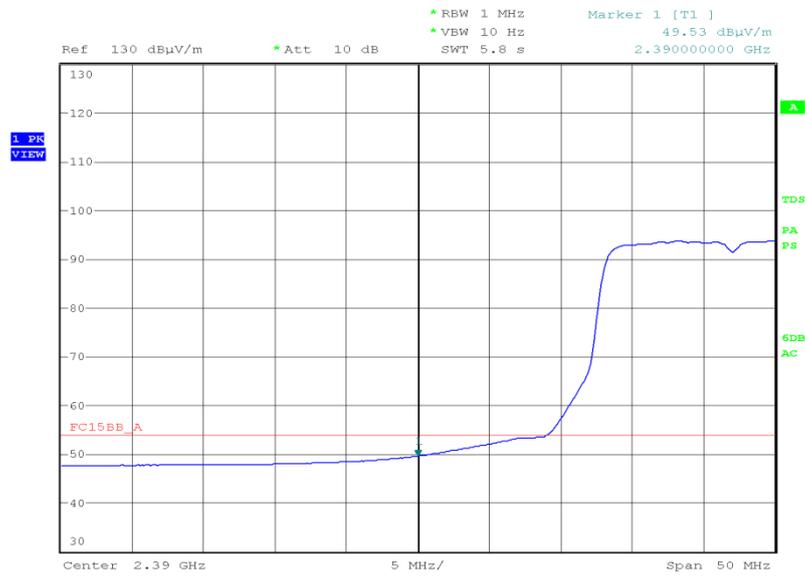


Date: 29.NOV.2014 03:34:33



Product Service

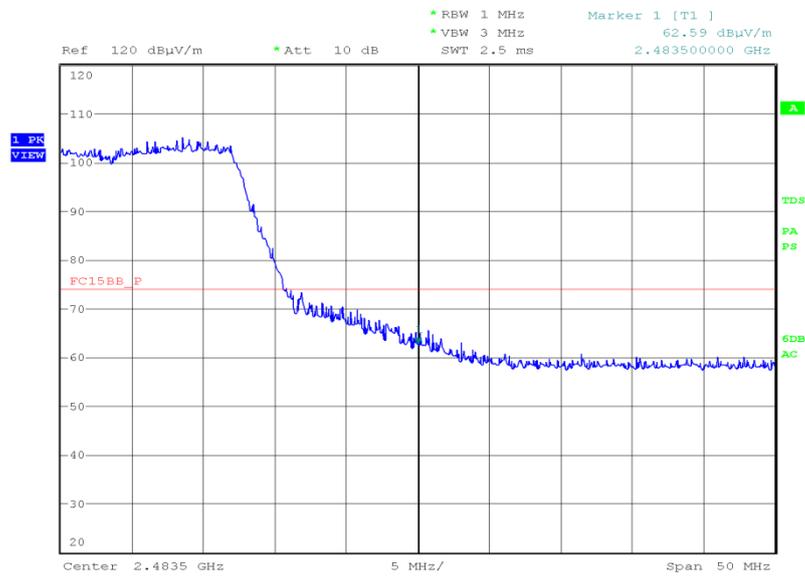
Final Average



Date: 29.NOV.2014 03:35:28

2483.50 MHz

Final Peak

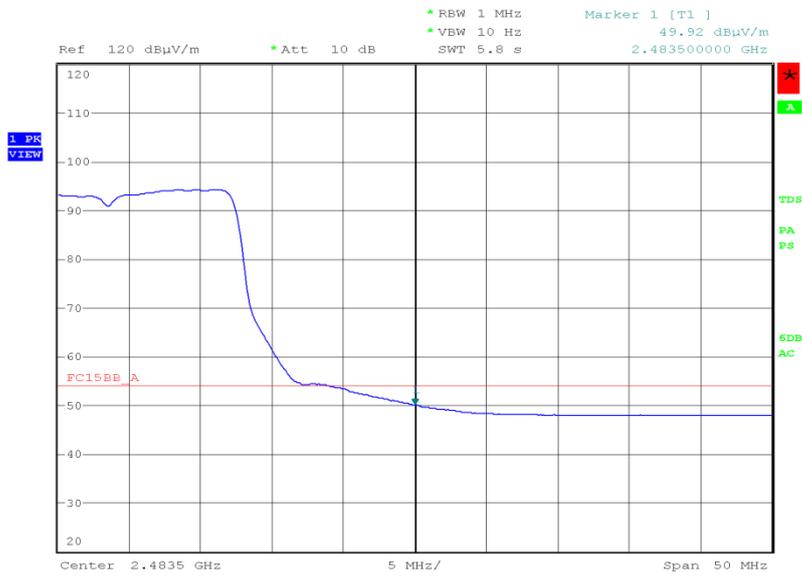


Date: 29.NOV.2014 05:04:00



Product Service

Final Average



Date: 29.NOV.2014 05:03:11

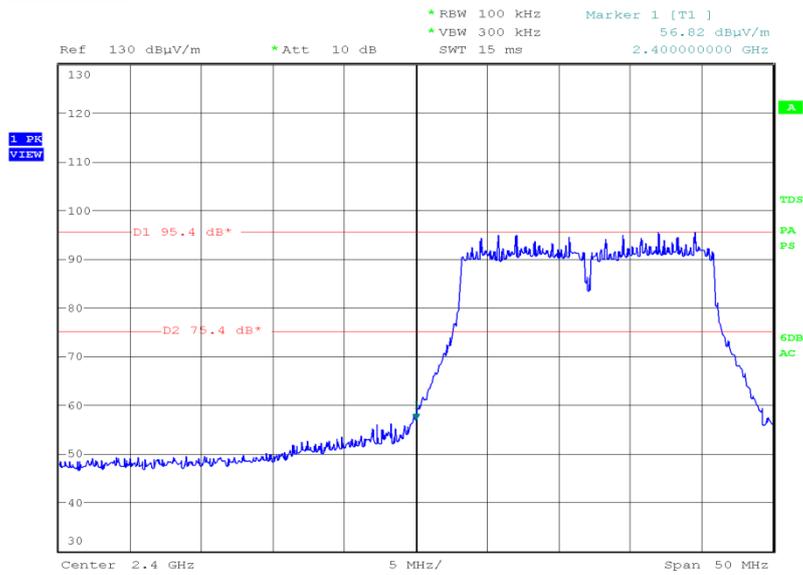


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dB $\mu$ V/m)
2400.00	56.82
2483.50	50.55

2400.00 MHz

Final Peak



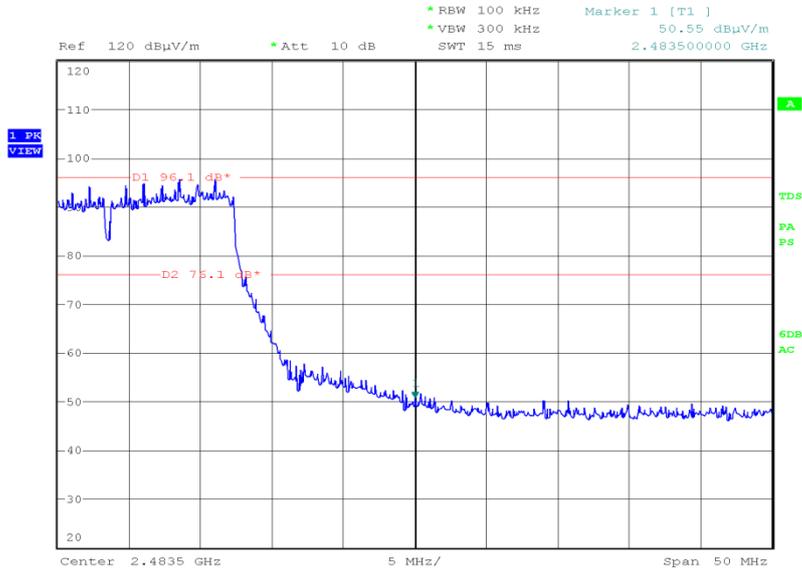
Date: 29.NOV.2014 03:40:12



Product Service

2483.50 MHz

Final Peak



Date: 29.NOV.2014 05:08:24



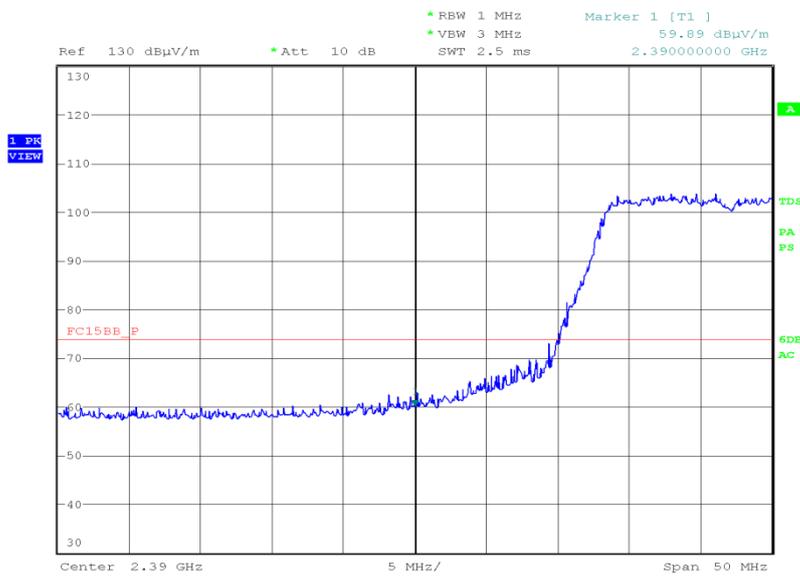
Product Service

Modulation/Data Rate: OFDM/MCS7

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBμV/m)	Final Average (dBμV/m)
2390.00	59.89	49.08
2483.50	62.06	49.59

2390.00 MHz

Final Peak

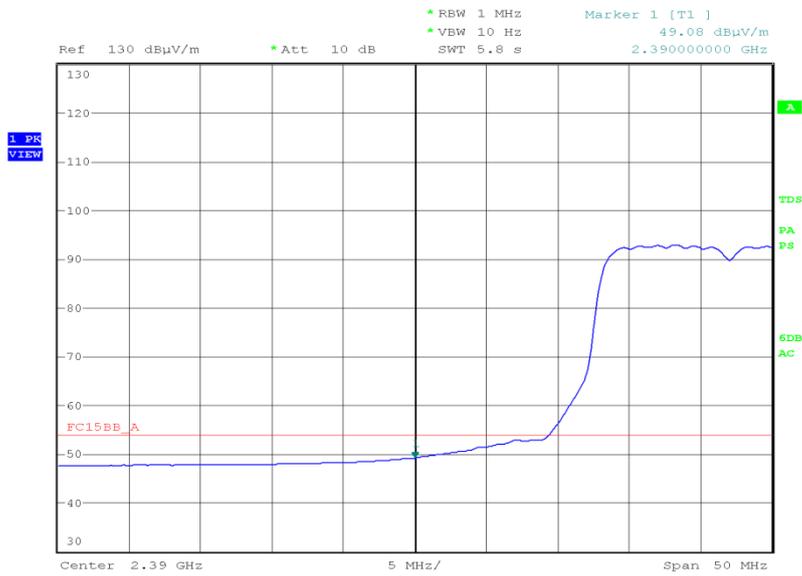


Date: 29.NOV.2014 03:46:03



Product Service

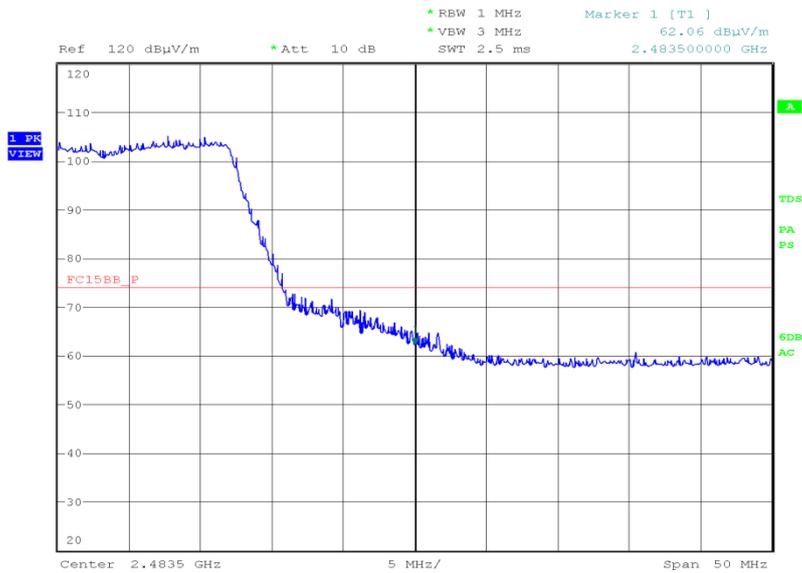
Final Average



Date: 29.NOV.2014 03:46:51

2483.50 MHz

Final Peak

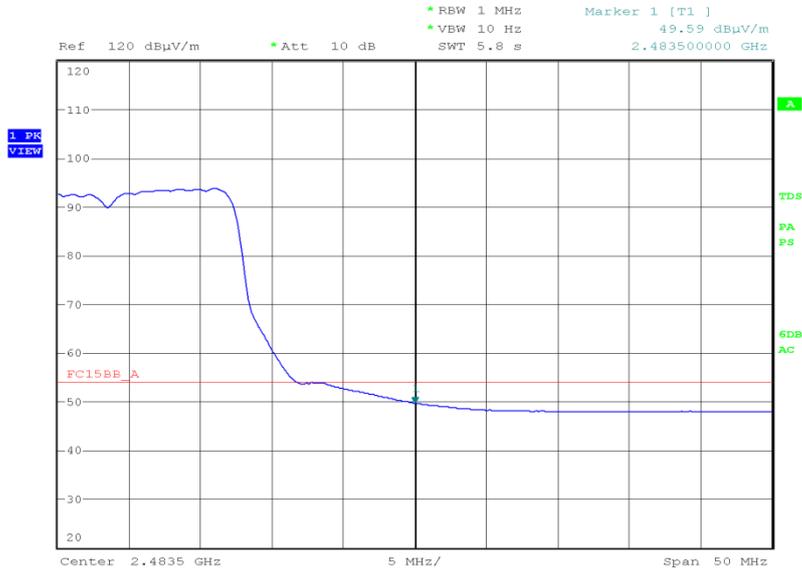


Date: 29.NOV.2014 05:11:49



Product Service

Final Average



Date: 29.NOV.2014 05:13:05

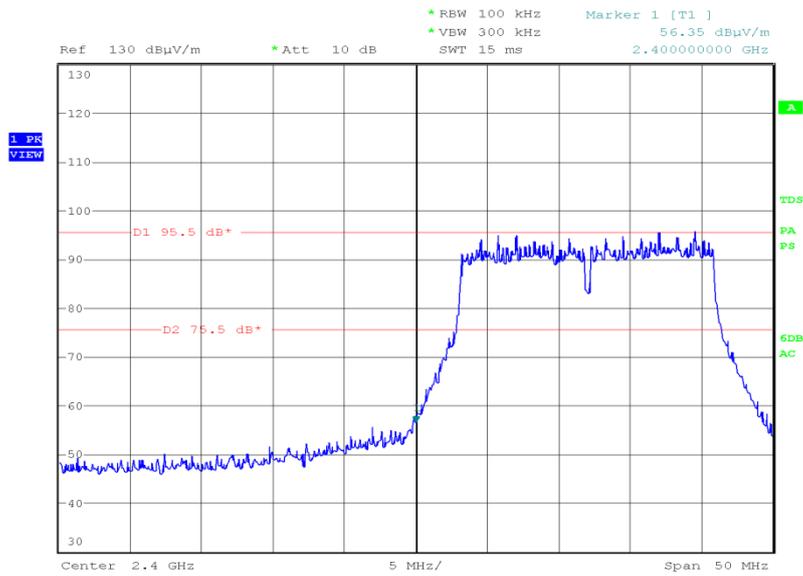


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2400.00	56.35
2483.50	48.80

2400.00 MHz

Final Peak

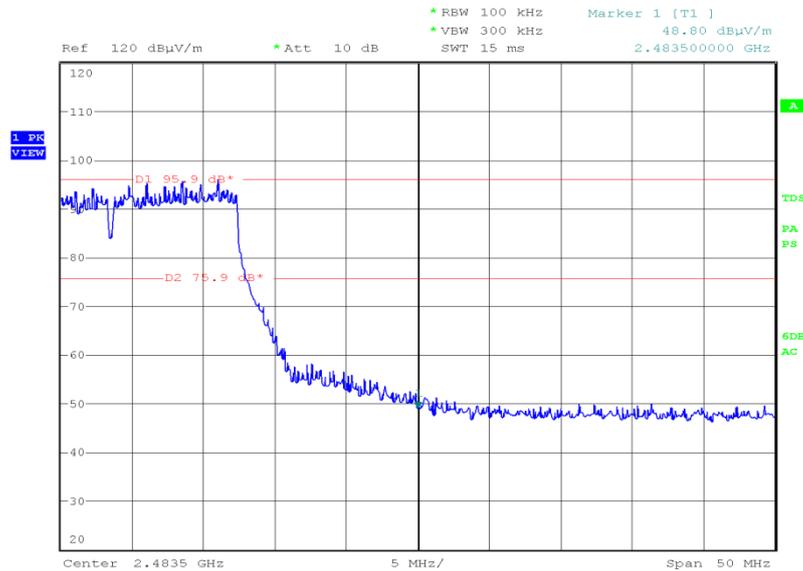


Date: 29.NOV.2014 03:42:01



2483.50 MHz

Final Peak



Date: 29.NOV.2014 05:09:57

Remark

The test was performed on MCS7 because this was deemed the worst case data rate for 6 dB Bandwidth.

The test was performed on MCS2 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 transmitter 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

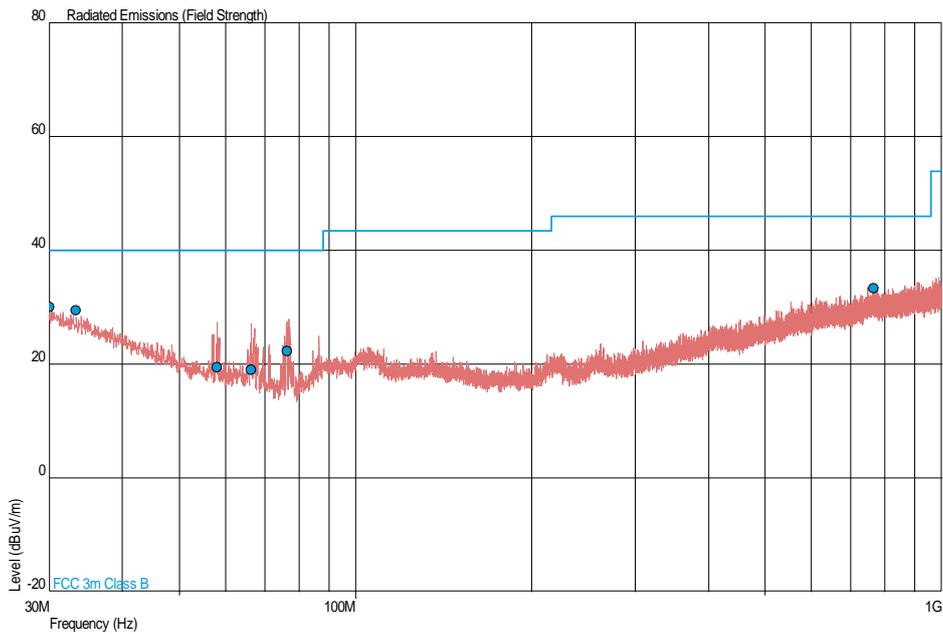
Bluetooth Low Energy

4.0 V DC Supply

Spurious Radiated Emissions

2402 MHz

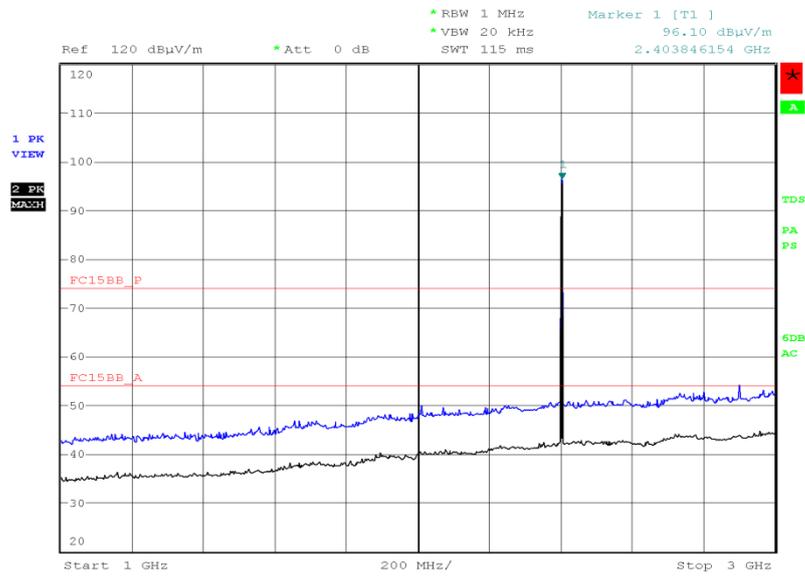
30 MHz to 1 GHz



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
30.097	30.1	32.0	40.0	100	-9.9	-68.0	270	1.00	Vertical
33.395	29.4	29.5	40.0	100	-10.6	-70.5	341	3.46	Horizontal
58.032	19.5	9.4	40.0	100	-20.5	-90.6	0	1.02	Vertical
66.472	19.1	9.0	40.0	100	-20.9	-91.0	326	1.00	Vertical
76.368	22.3	13.0	40.0	100	-17.7	-87.0	109	1.00	Vertical
765.093	33.3	46.2	46.0	200	-12.7	-153.8	134	1.00	Vertical

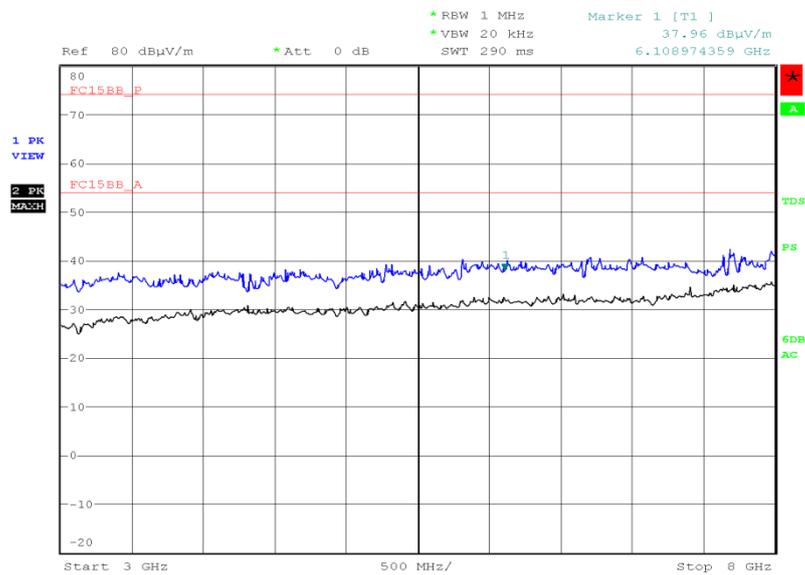


1 GHz to 3 GHz



Date: 27.NOV.2014 04:55:30

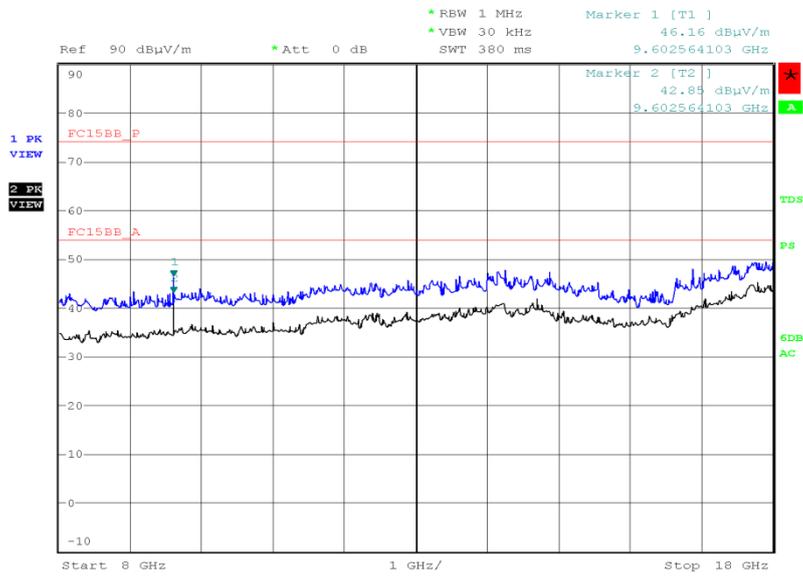
3 GHz to 8 GHz



Date: 27.NOV.2014 03:09:38

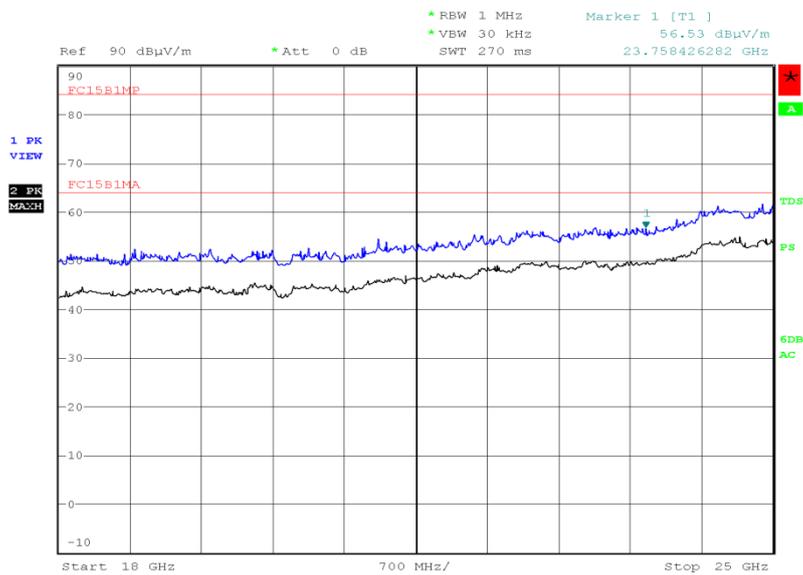


8 GHz to 18 GHz



Date: 27.NOV.2014 03:33:03

18 GHz to 25 GHz

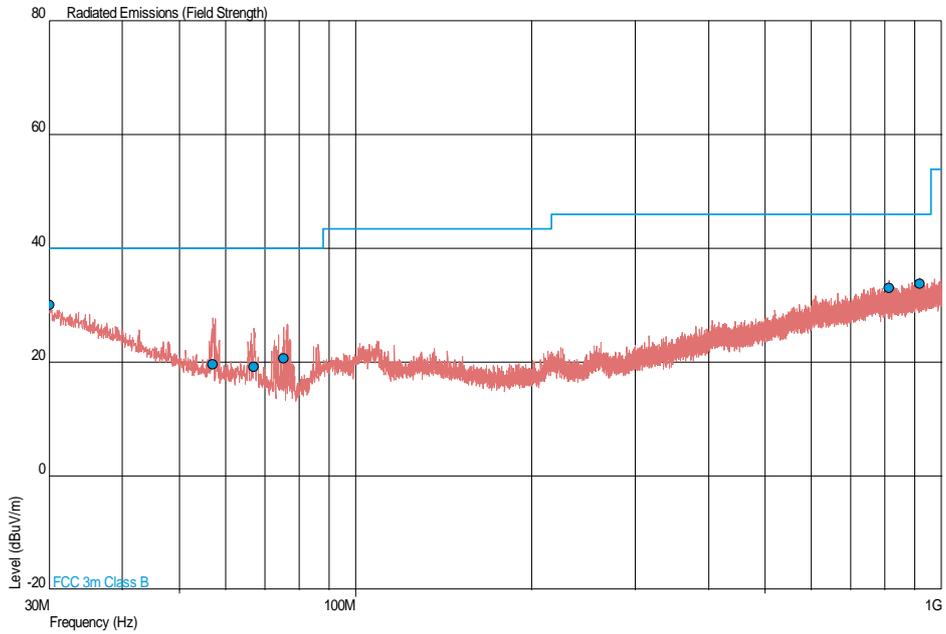


Date: 27.NOV.2014 04:35:57



2441 MHz

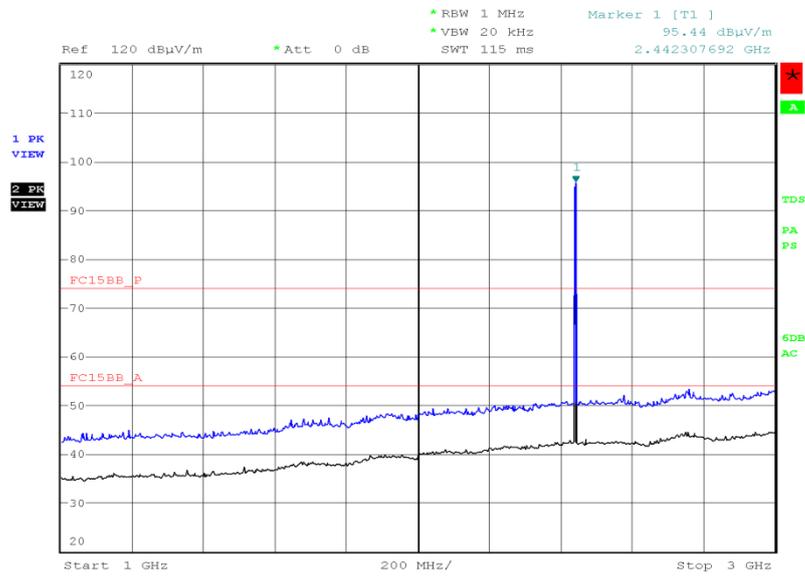
30 MHz to 1 GHz



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
30.000	30.1	32.0	40.0	100	-9.9	-68.0	353	1.00	Vertical
57.111	19.7	9.7	40.0	100	-20.3	-90.3	50	1.02	Vertical
67.103	19.1	9.0	40.0	100	-20.9	-91.0	360	1.00	Vertical
75.446	20.6	10.7	40.0	100	-19.4	-89.3	131	1.02	Vertical
812.644	33.1	45.2	46.0	200	-12.9	-154.8	65	1.00	Vertical
917.259	33.7	48.4	46.0	200	-12.3	-151.6	360	3.40	Vertical

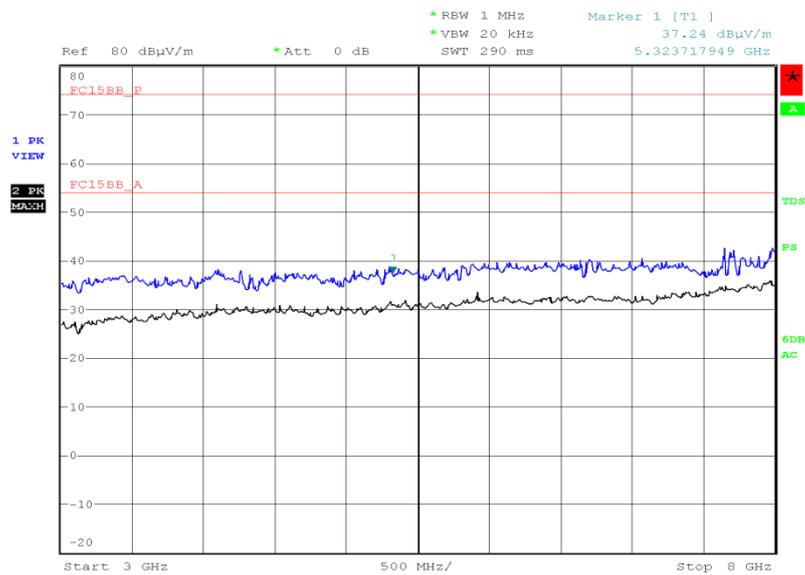


1 GHz to 3 GHz



Date: 27.NOV.2014 02:28:23

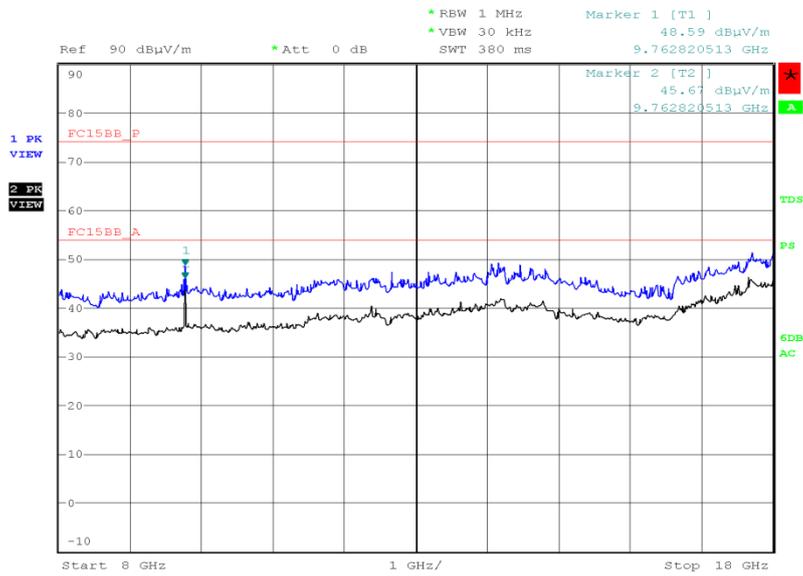
3 GHz to 8 GHz



Date: 27.NOV.2014 03:03:57

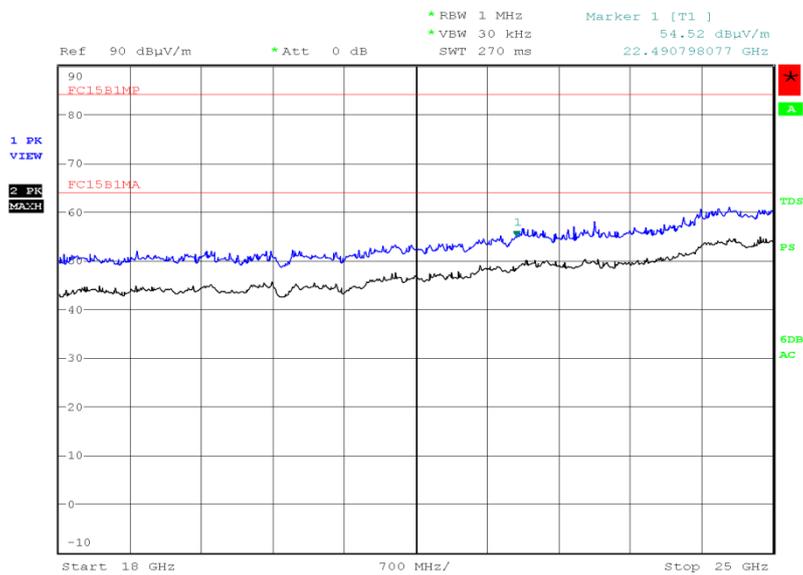


8 GHz to 18 GHz



Date: 27.NOV.2014 03:31:39

18 GHz to 25 GHz

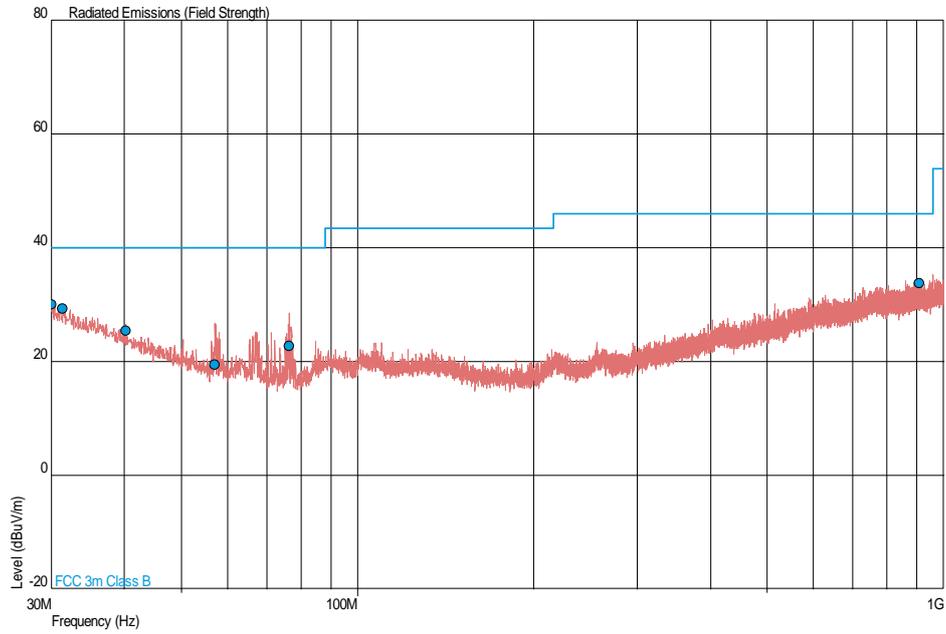


Date: 27.NOV.2014 04:30:38



2480 MHz

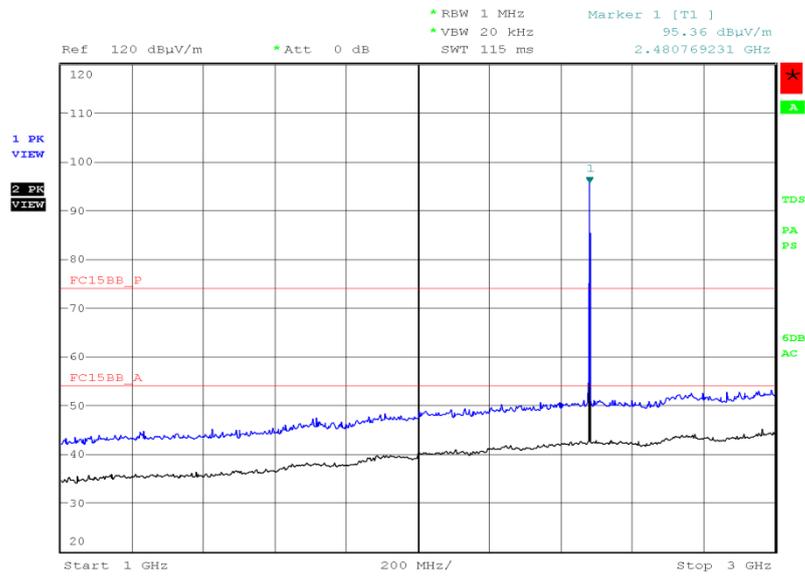
30 MHz to 1 GHz



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
30.049	30.1	32.0	40.0	100	-9.9	-68.0	259	1.00	Vertical
31.407	29.3	29.2	40.0	100	-10.7	-70.8	160	2.59	Horizontal
40.283	25.4	18.6	40.0	100	-14.6	-81.4	258	2.12	Vertical
57.161	19.5	9.4	40.0	100	-20.5	-90.6	81	1.00	Vertical
76.513	22.7	13.6	40.0	100	-17.3	-86.4	101	1.00	Vertical
907.399	33.8	49.0	46.0	200	-12.2	-151.0	42	1.00	Vertical

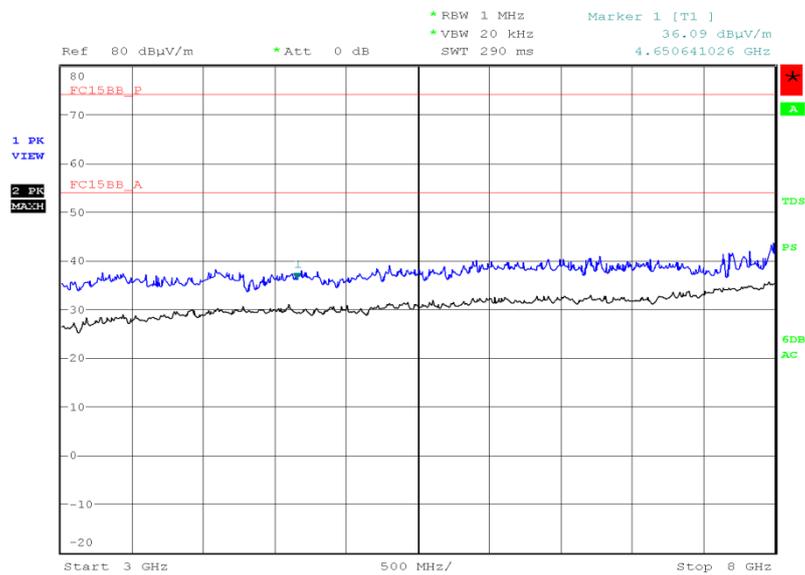


1 GHz to 3 GHz



Date: 27.NOV.2014 02:40:09

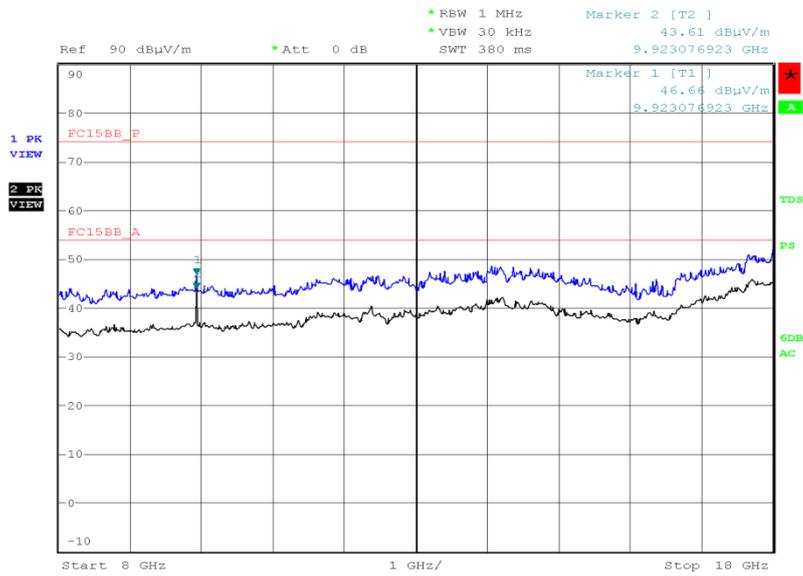
3 GHz to 8 GHz



Date: 27.NOV.2014 02:57:17

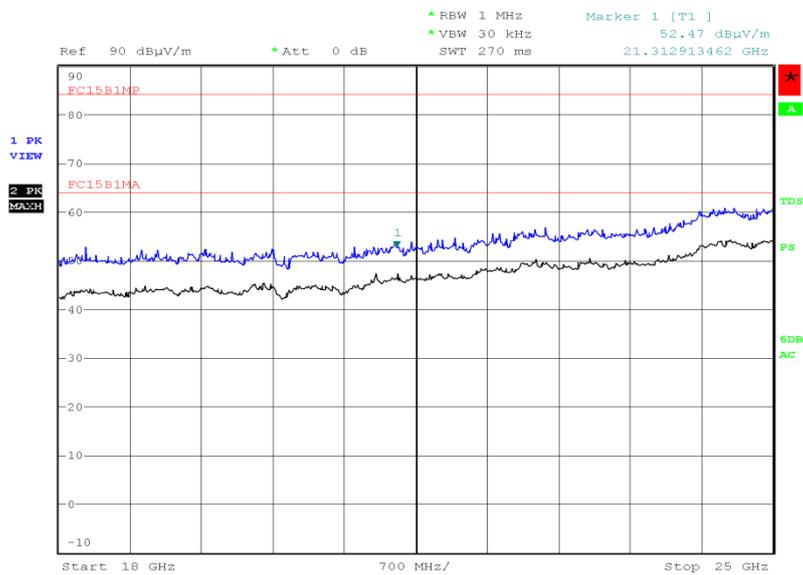


8 GHz to 18 GHz



Date: 27.NOV.2014 03:37:43

18 GHz to 25 GHz



Date: 27.NOV.2014 04:40:19



Product Service

Limit

Frequency (MHz)	Field Strength			Measurement Distance (m)
	( $\mu$ V/m)	Average (dB $\mu$ V/m)	Peak (dB $\mu$ 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 transmitter 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

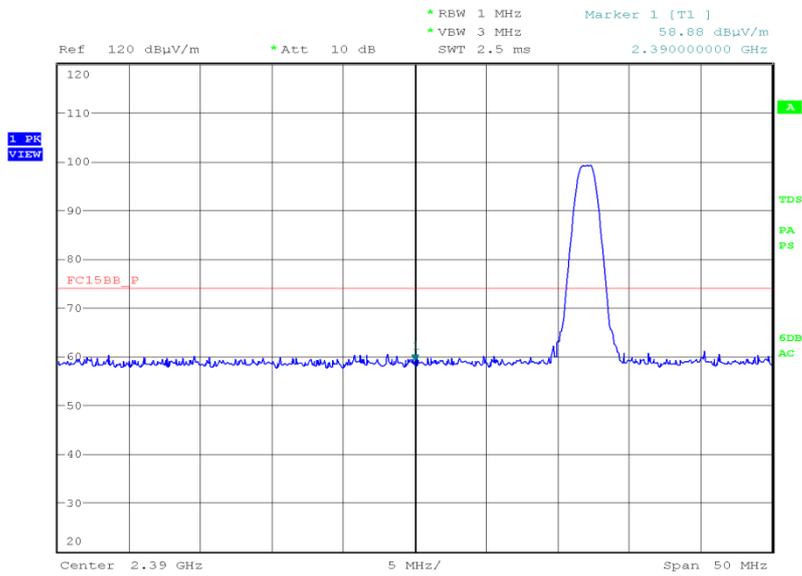
Band Edge Emissions

Modulation/Packet Type: GFSK/DH1

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	58.88	47.57
2483.50	57.87	47.65

2390.00 MHz

Final Peak

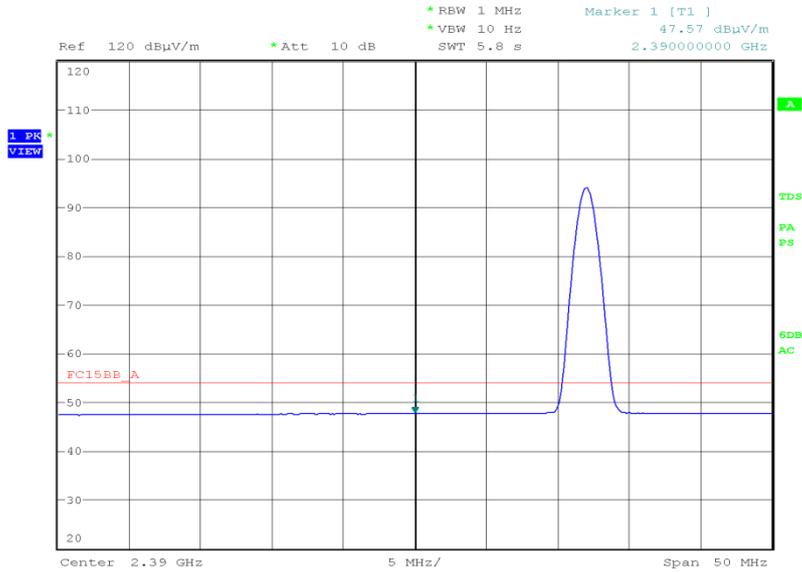


Date: 27.NOV.2014 02:12:49



Product Service

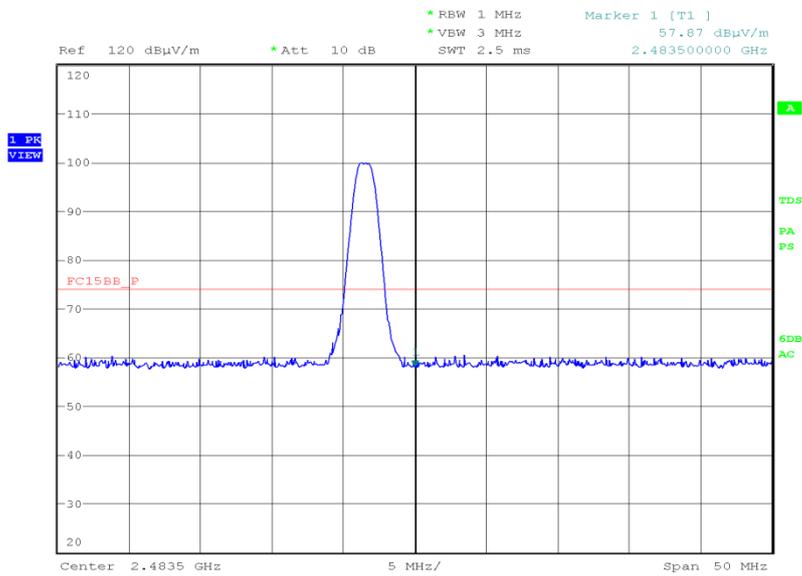
Final Average



Date: 27.NOV.2014 02:13:43

2483.50 MHz

Final Peak

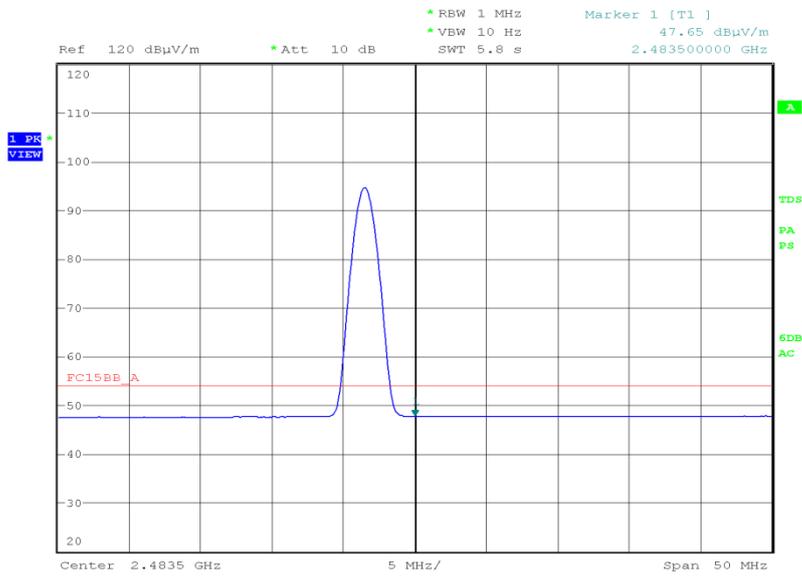


Date: 27.NOV.2014 01:47:49



Product Service

Final Average



Date: 27.NOV.2014 01:48:57

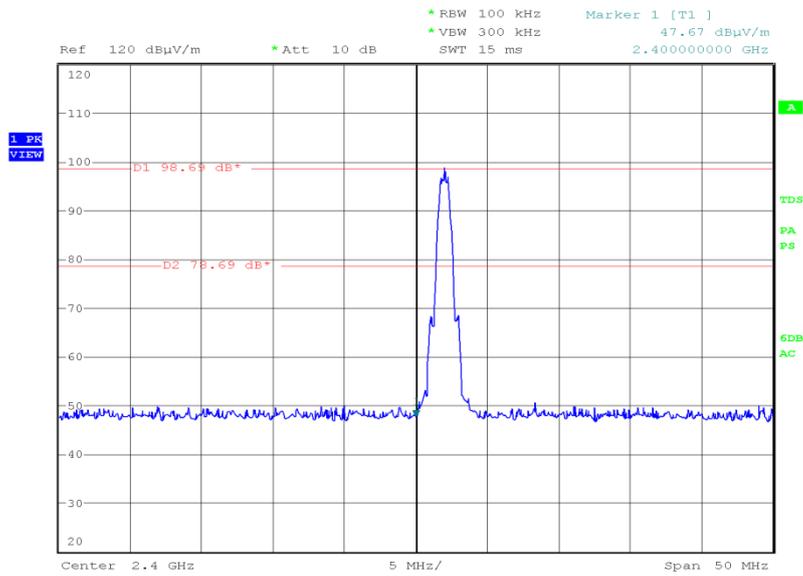


Product Service

Band Edge	
Frequency (MHz)	Final Peak (dBμV/m)
2400.00	47.67
2483.50	47.76

2400.00 MHz

Final Peak



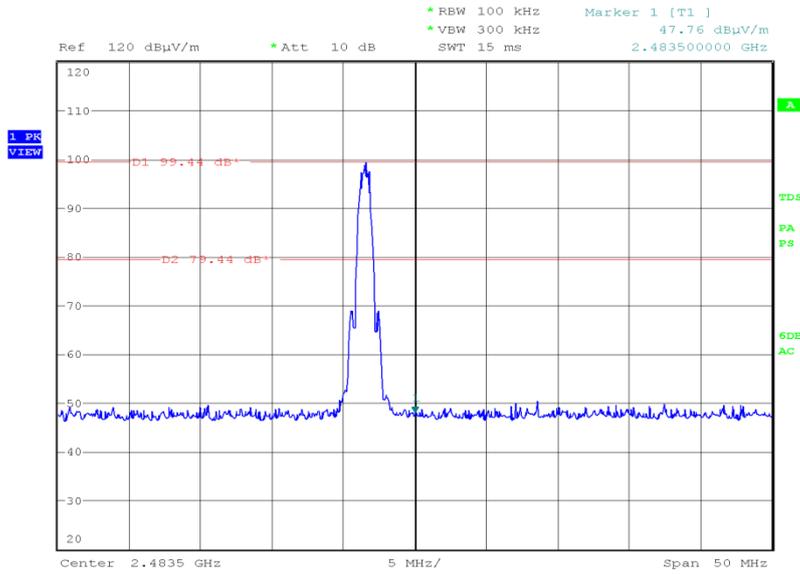
Date: 27.NOV.2014 02:11:04



Product Service

2483.50 MHz

Final Peak



Date: 27.NOV.2014 01:45:59

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 transmitter 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.



## 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 004401115303360 - Modification State 0

S/N: IMEI 004401115303444 - Modification State 0

### 2.6.3 Date of Test

26 November 2014 & 27 November 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 method requirements of FCC CFR 47 Part 15.247 (e) and FCC KDB 558074 D01 DTS Meas Guidance v03r02 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 20.7 - 22.4°C

Relative Humidity 31.5 - 42.1%



Product Service

**2.6.7 Test Results**

802.11(b)

4.0 V DC Supply

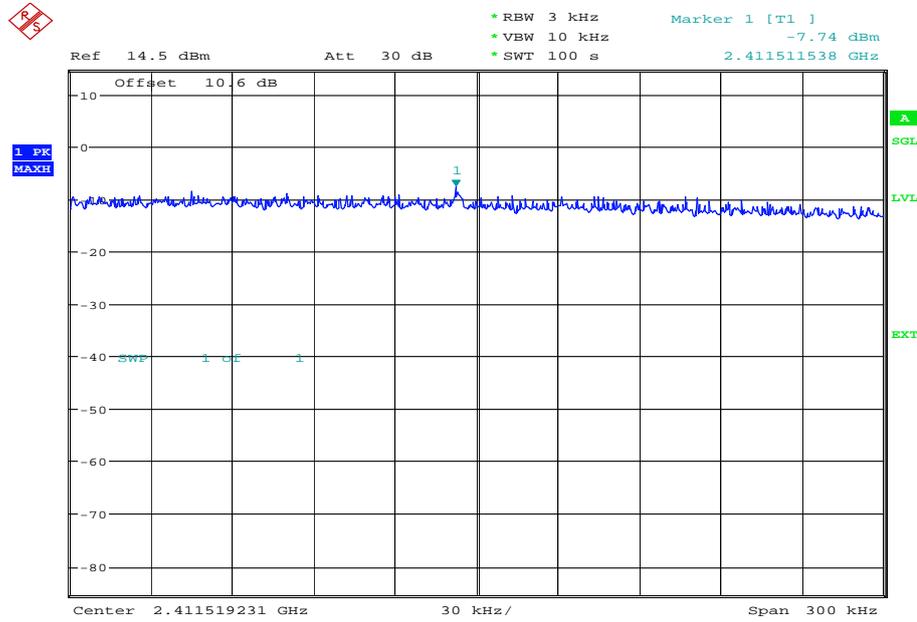
Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	1	-7.74
	2	-8.06
	5.5	-8.63
	11	-9.13
2437 MHz	1	-7.91
	2	-7.63
	5.5	-9.09
	11	-8.40
2462 MHz	1	-6.30
	2	-7.51
	5.5	-7.85
	11	-9.03



Product Service

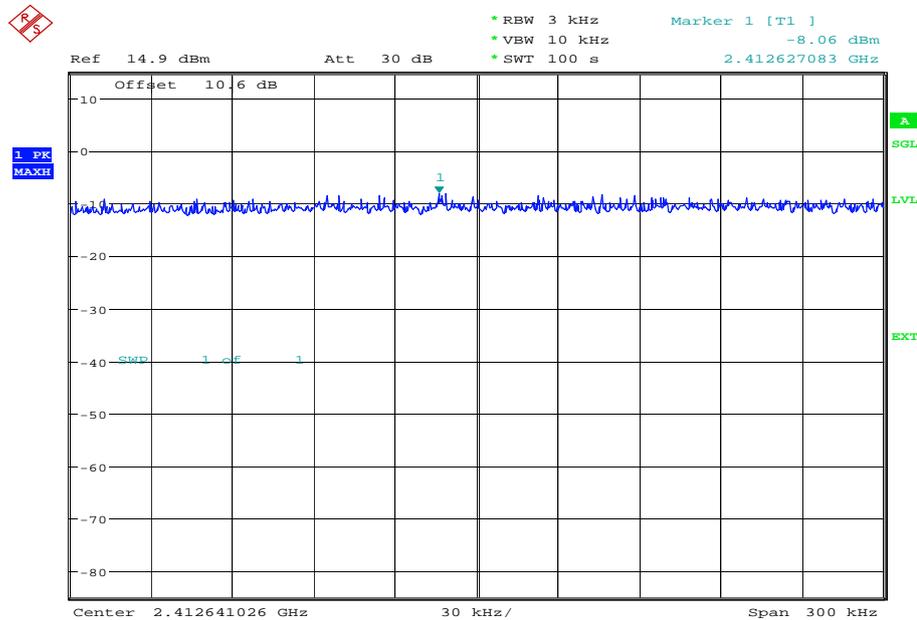
2412 MHz

1 Mbps



Date: 24.NOV.2014 15:48:14

2 Mbps

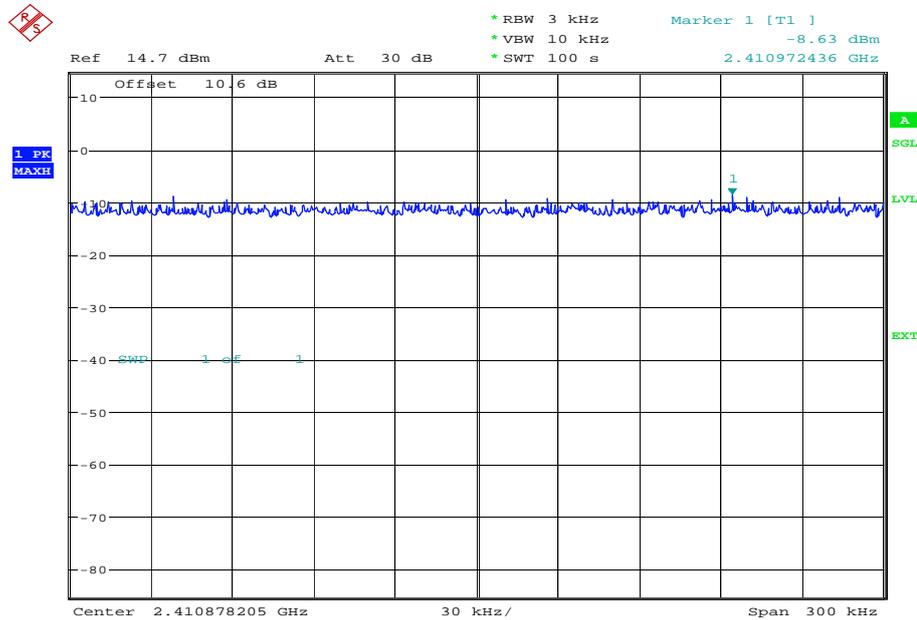


Date: 24.NOV.2014 16:09:23



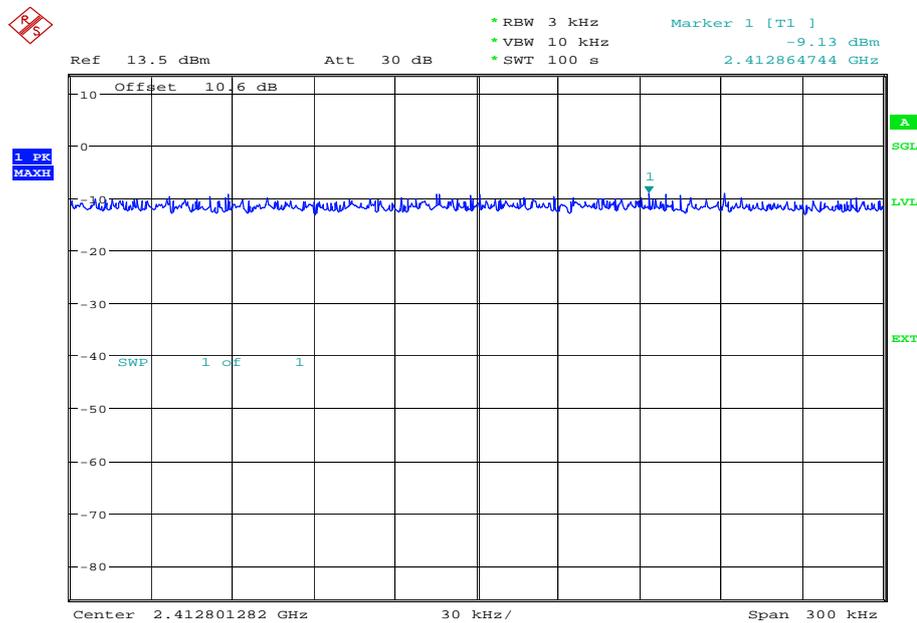
Product Service

### 5.5 Mbps



Date: 24.NOV.2014 16:29:39

### 11 Mbps



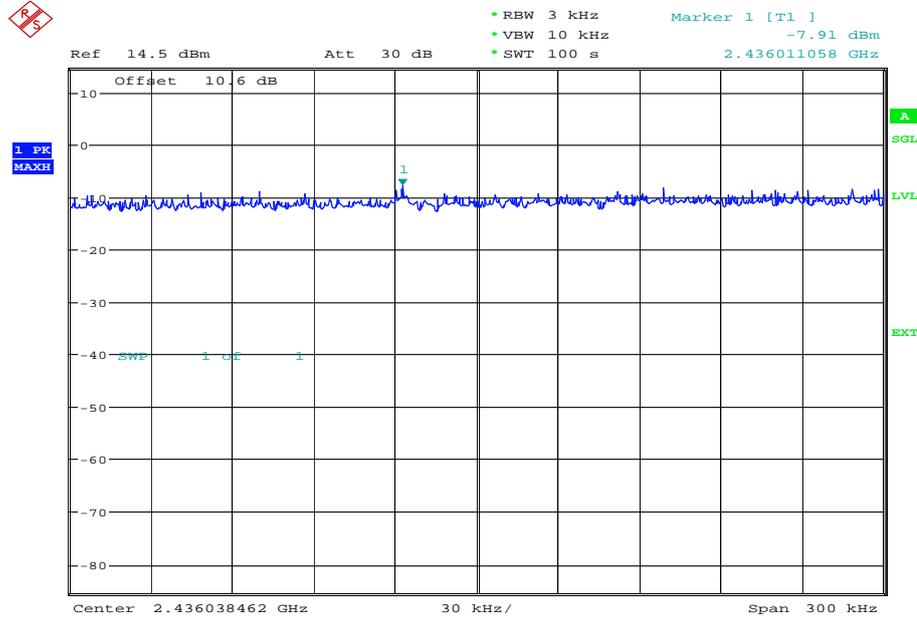
Date: 24.NOV.2014 16:46:16



Product Service

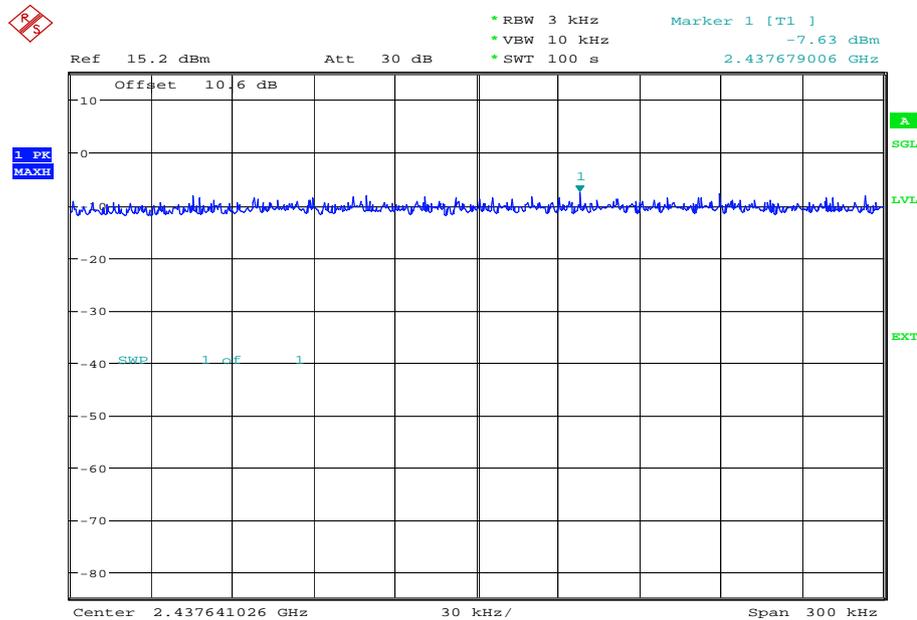
2437 MHz

1 Mbps



Date: 24.NOV.2014 15:59:07

2 Mbps

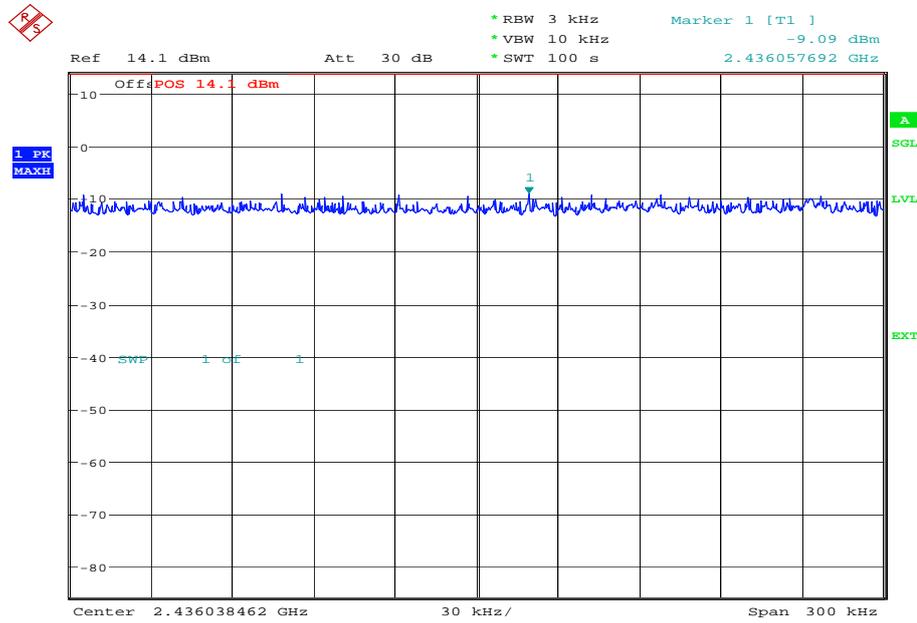


Date: 24.NOV.2014 16:14:30



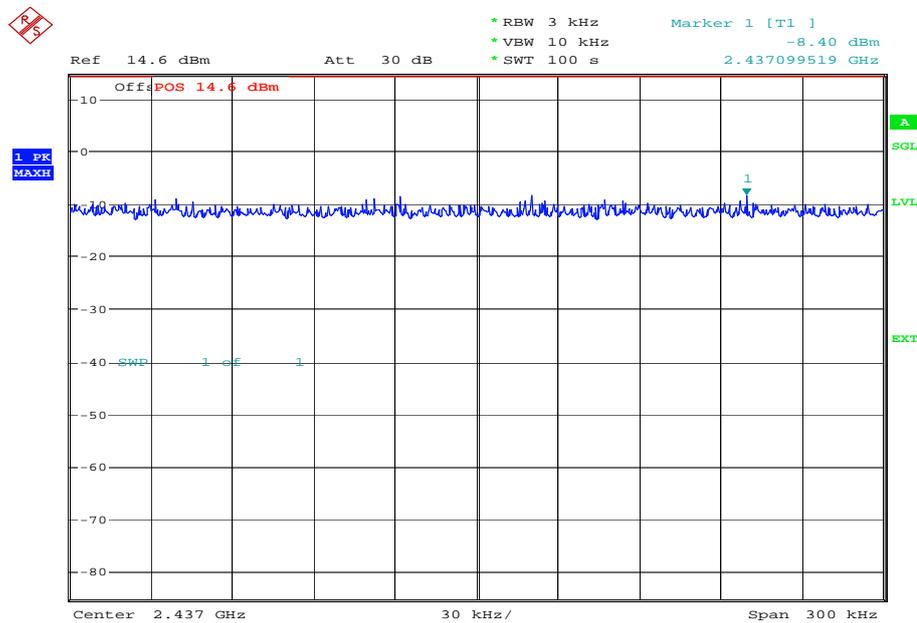
Product Service

### 5.5 Mbps



Date: 24.NOV.2014 16:33:49

### 11 Mbps



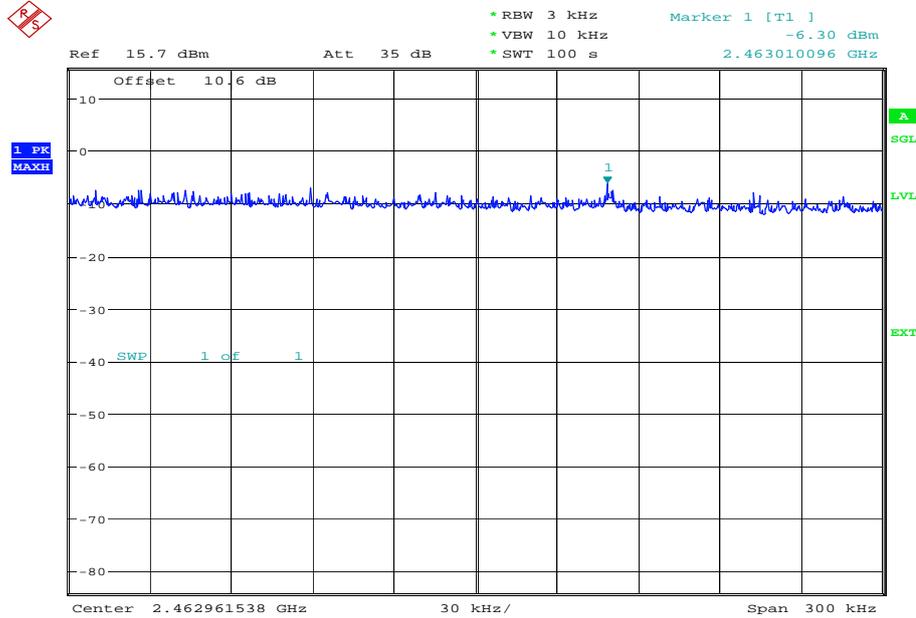
Date: 24.NOV.2014 17:00:00



Product Service

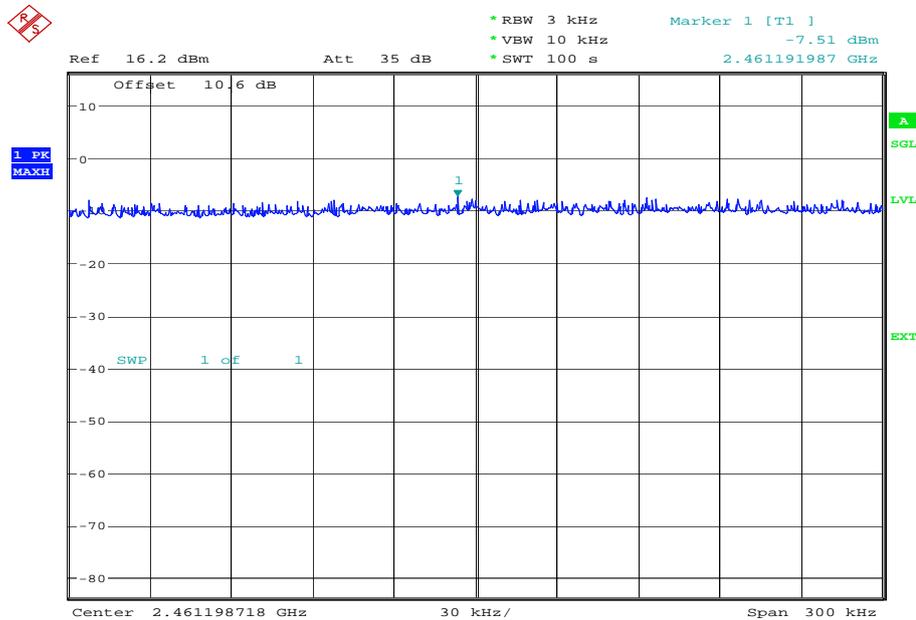
2462 MHz

1 Mbps



Date: 24.NOV.2014 16:04:18

2 Mbps

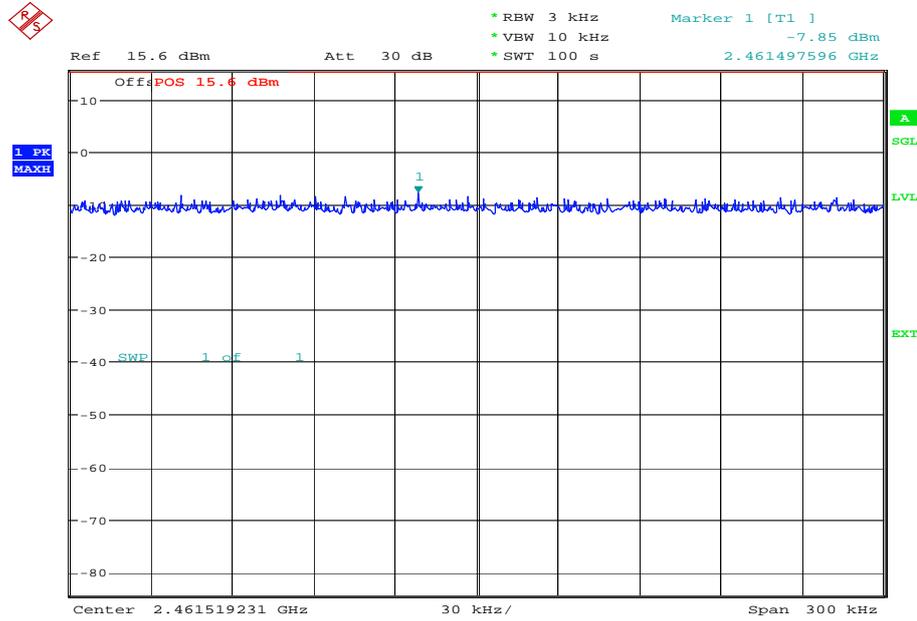


Date: 26.NOV.2014 15:40:31



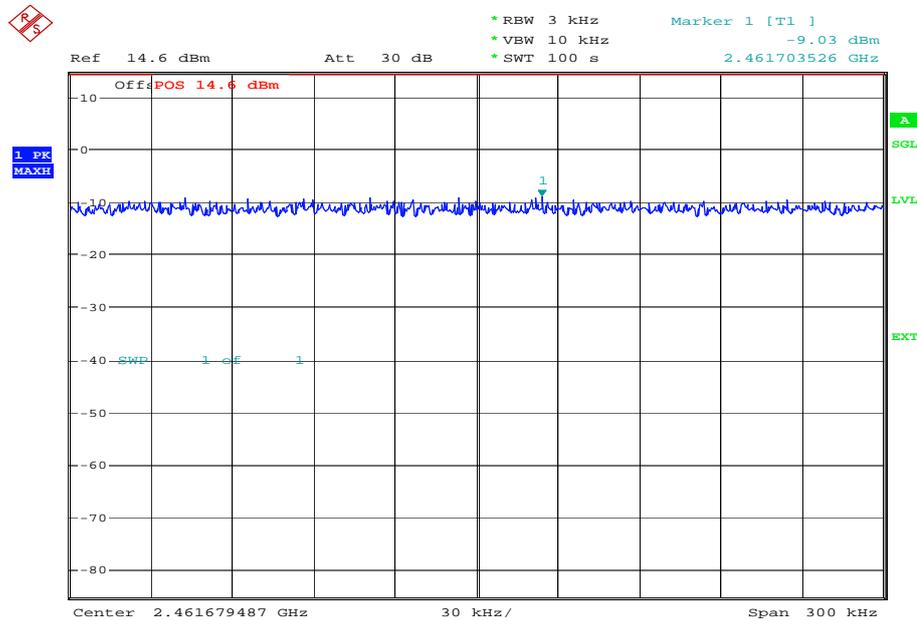
Product Service

5.5 Mbps



Date: 24.NOV.2014 16:39:30

11 Mbps



Date: 24.NOV.2014 17:19:06

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

802.11(g)

4.0 V DC Supply

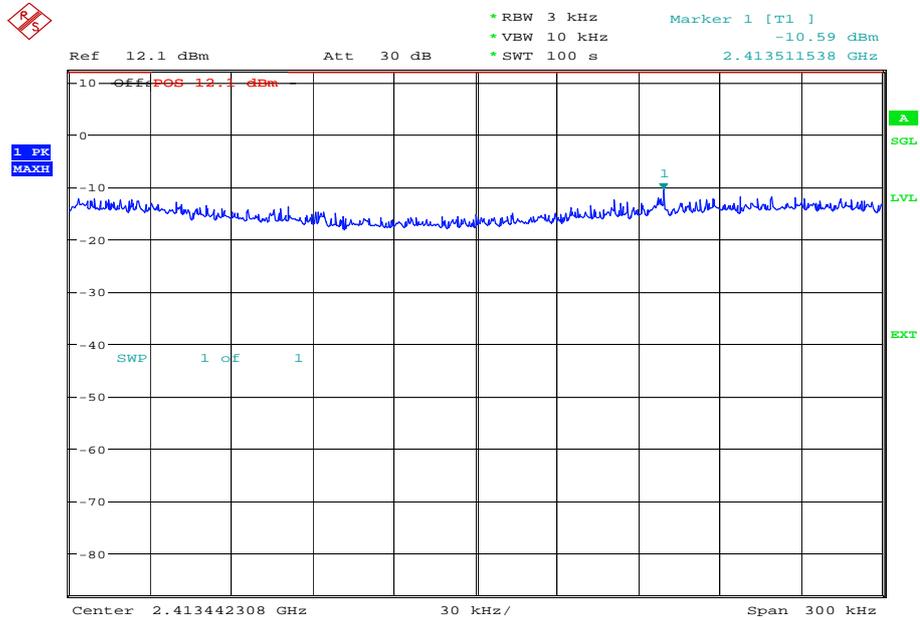
Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6	-10.59
	9	-10.39
	12	-11.87
	18	-11.59
	24	-11.45
	36	-10.92
	48	-11.25
	54	-11.68
2437 MHz	6	-11.69
	9	-10.67
	12	-10.98
	18	-10.16
	24	-10.65
	36	-10.71
	48	-10.58
	54	-10.60
2462 MHz	6	-10.38
	9	-10.03
	12	-10.86
	18	-9.51
	24	-9.25
	36	-10.16
	48	-10.45
	54	-9.56



Product Service

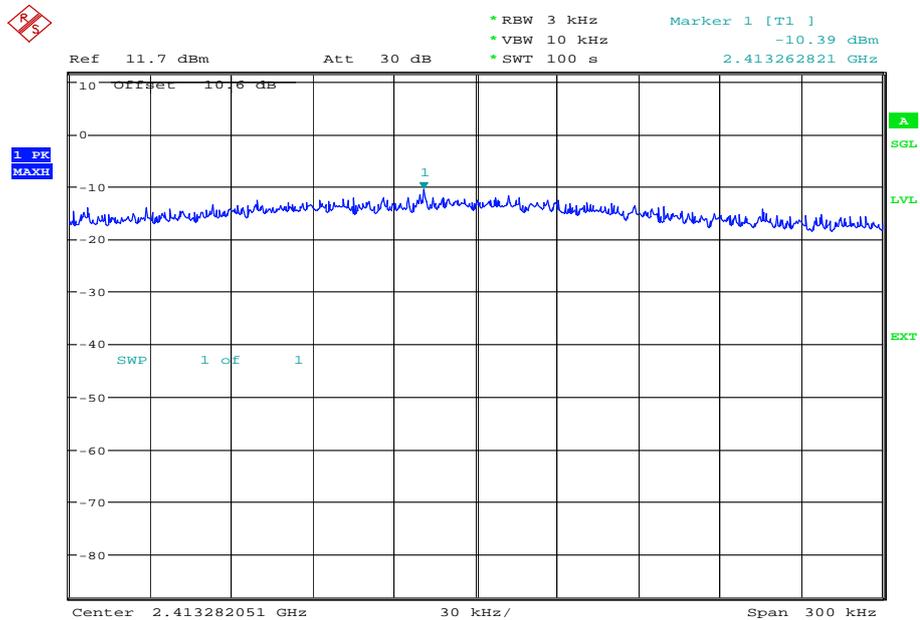
2412 MHz

6 Mbps



Date: 24.NOV.2014 17:25:16

9 Mbps

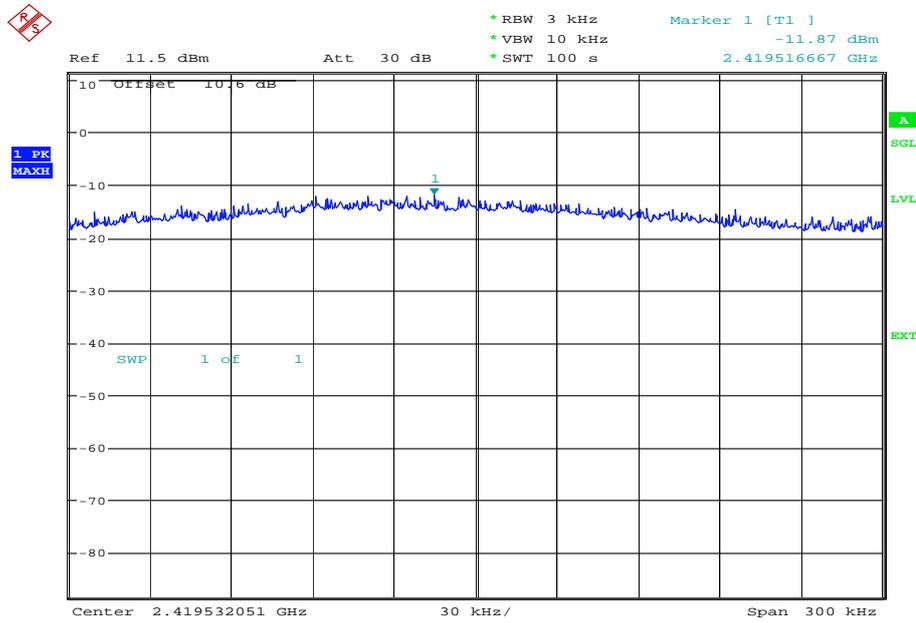


Date: 25.NOV.2014 10:57:18



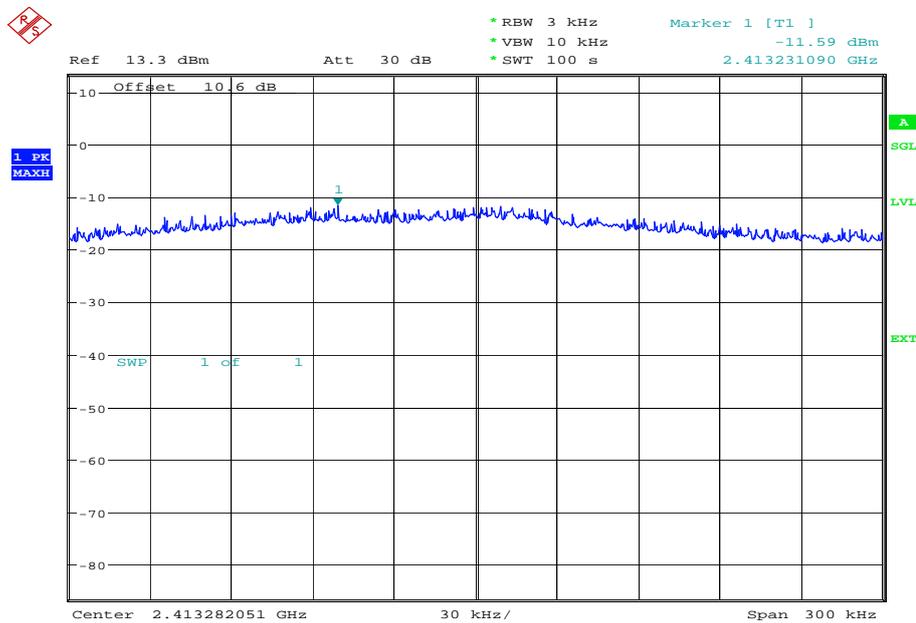
Product Service

12 Mbps



Date: 25.NOV.2014 11:22:53

18 Mbps

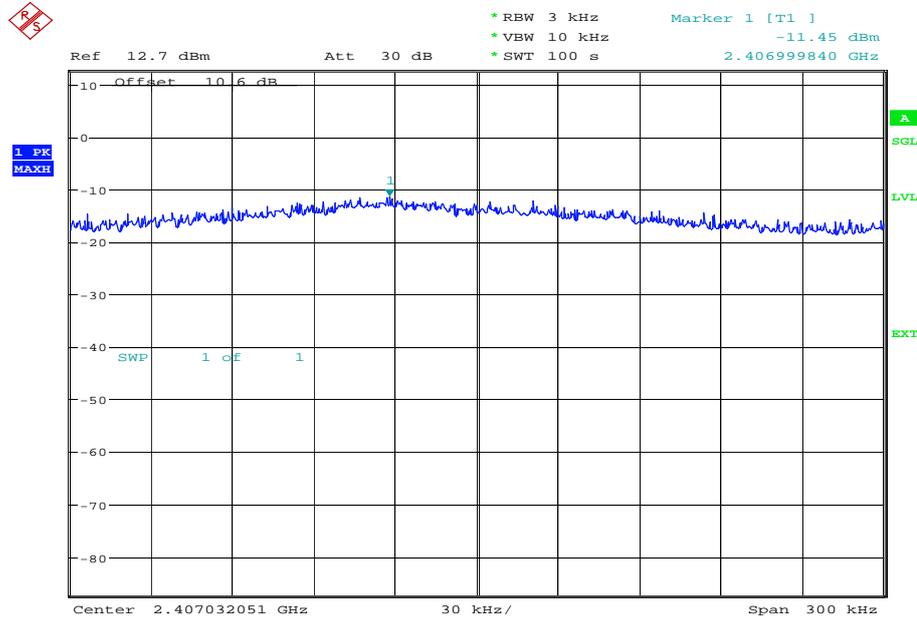


Date: 25.NOV.2014 11:59:24



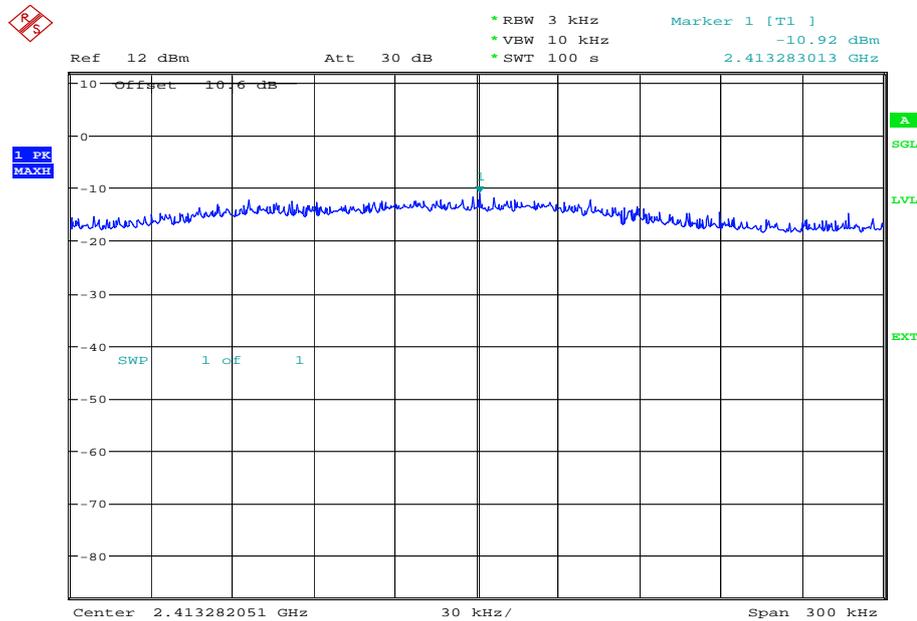
Product Service

24 Mbps



Date: 25.NOV.2014 12:23:33

36 Mbps

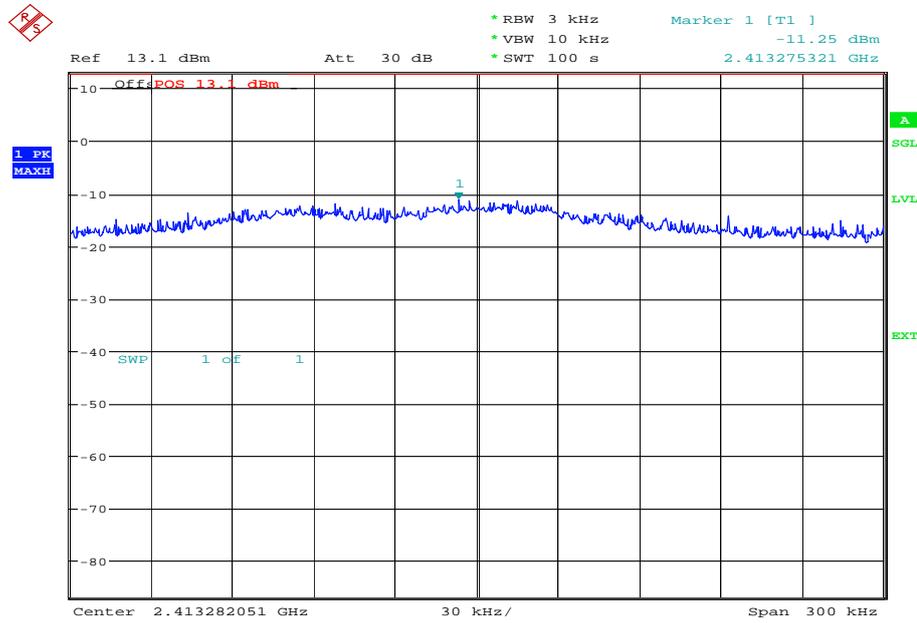


Date: 25.NOV.2014 12:52:32



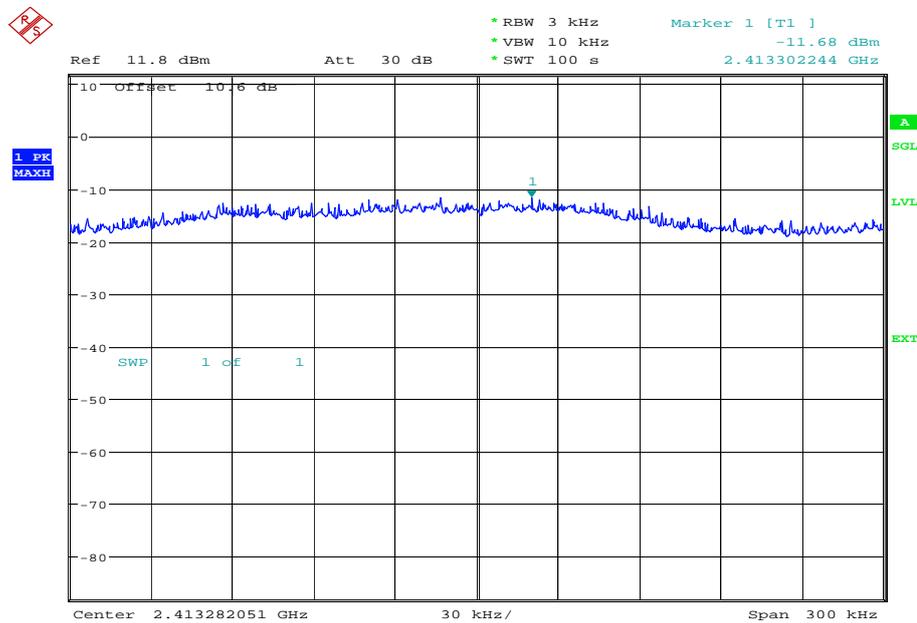
Product Service

### 48 Mbps



Date: 25.NOV.2014 13:29:03

### 54 Mbps



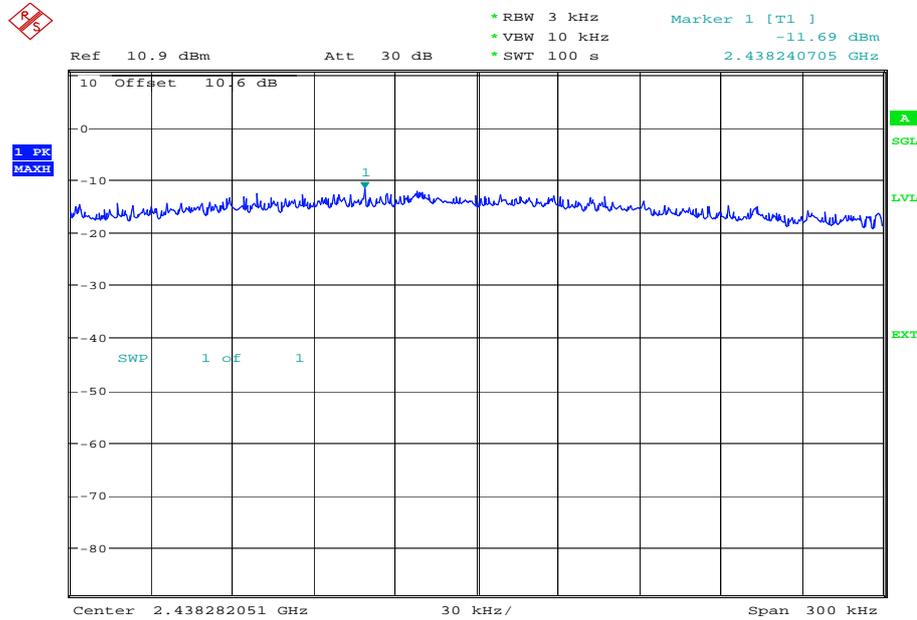
Date: 25.NOV.2014 14:02:39



Product Service

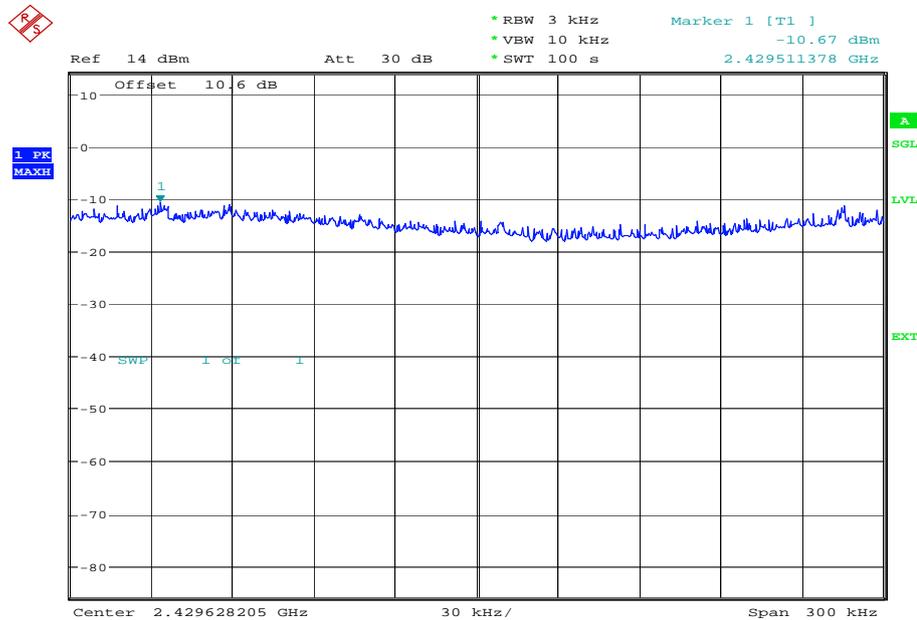
2437 MHz

6 Mbps



Date: 24.NOV.2014 17:31:56

9 Mbps

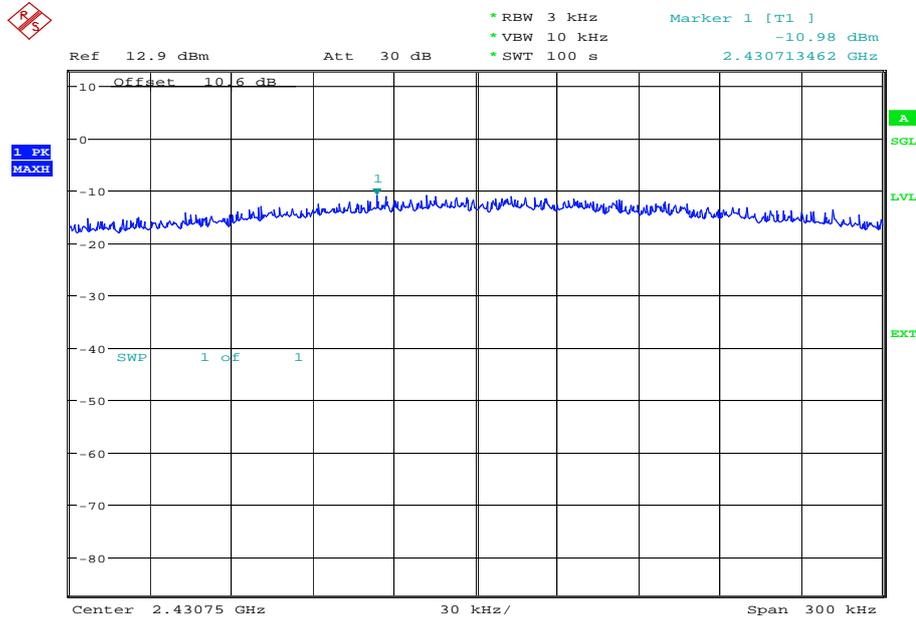


Date: 25.NOV.2014 11:03:46



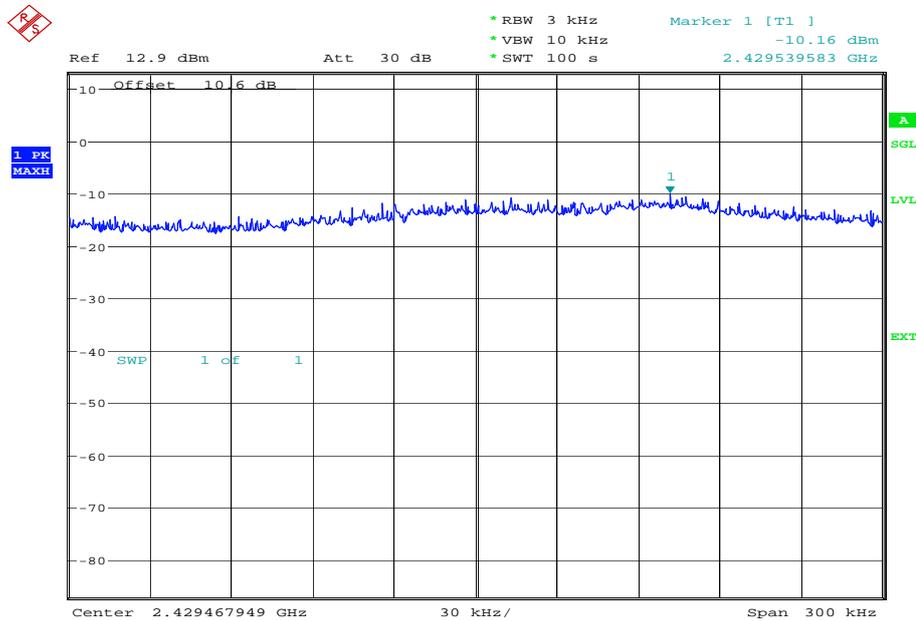
Product Service

12 Mbps



Date: 25.NOV.2014 11:27:11

18 Mbps

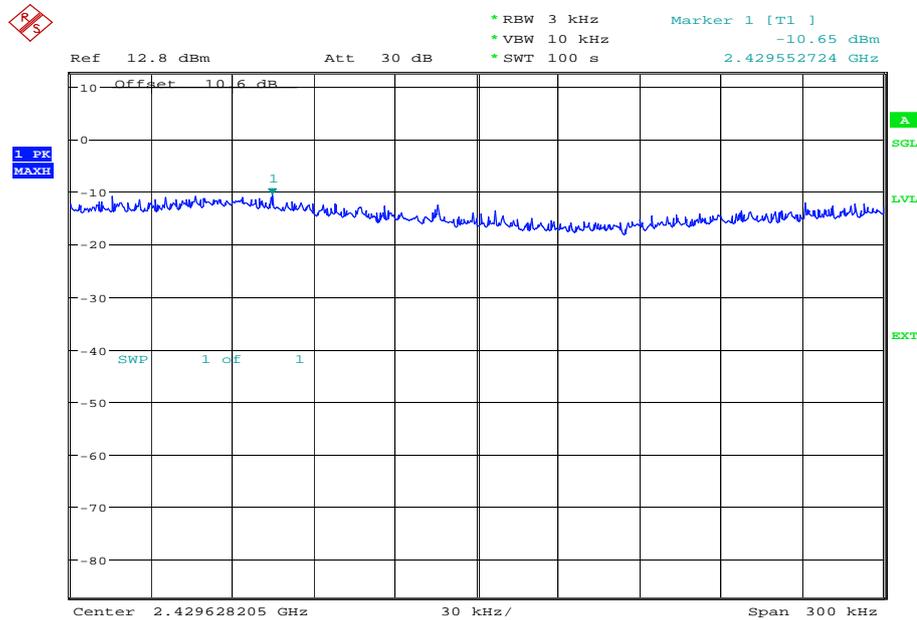


Date: 25.NOV.2014 12:10:53



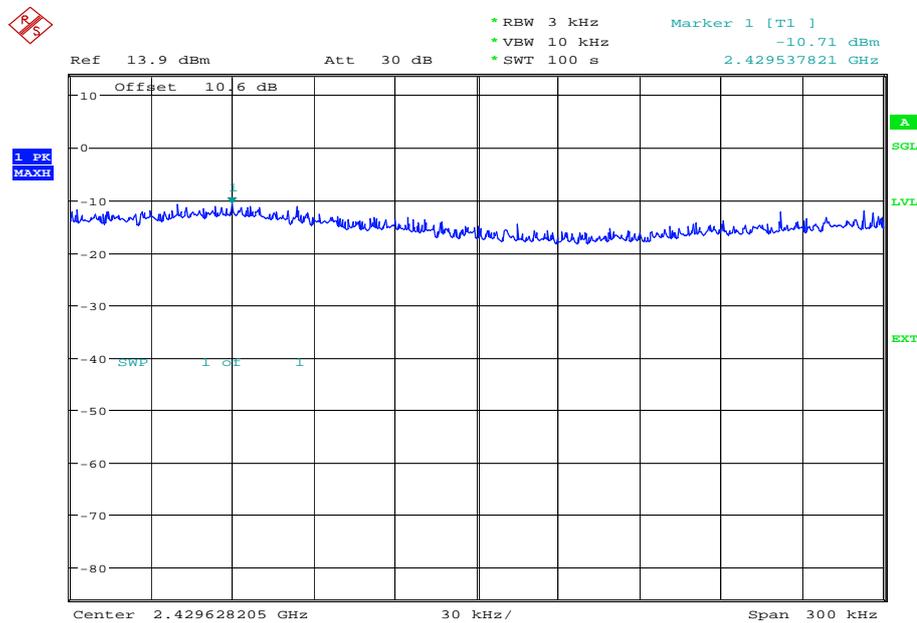
Product Service

24 Mbps



Date: 25.NOV.2014 12:30:48

36 Mbps

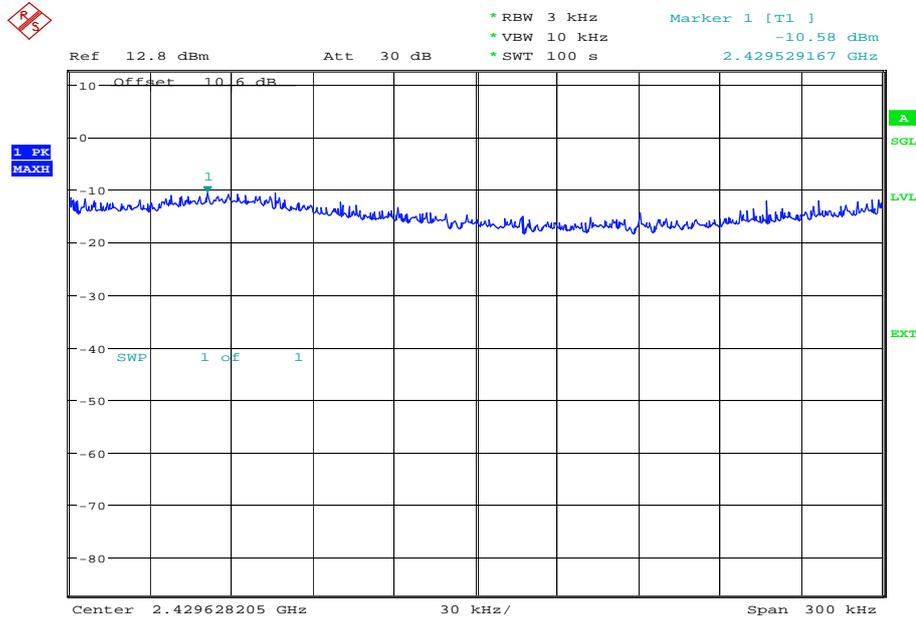


Date: 25.NOV.2014 13:05:56



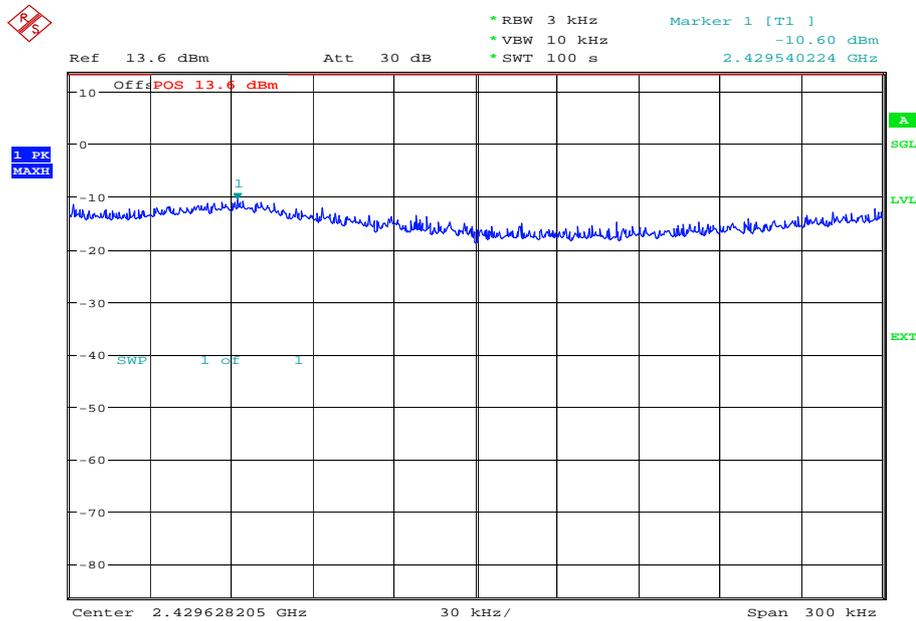
Product Service

48 Mbps



Date: 26.NOV.2014 15:46:36

54 Mbps



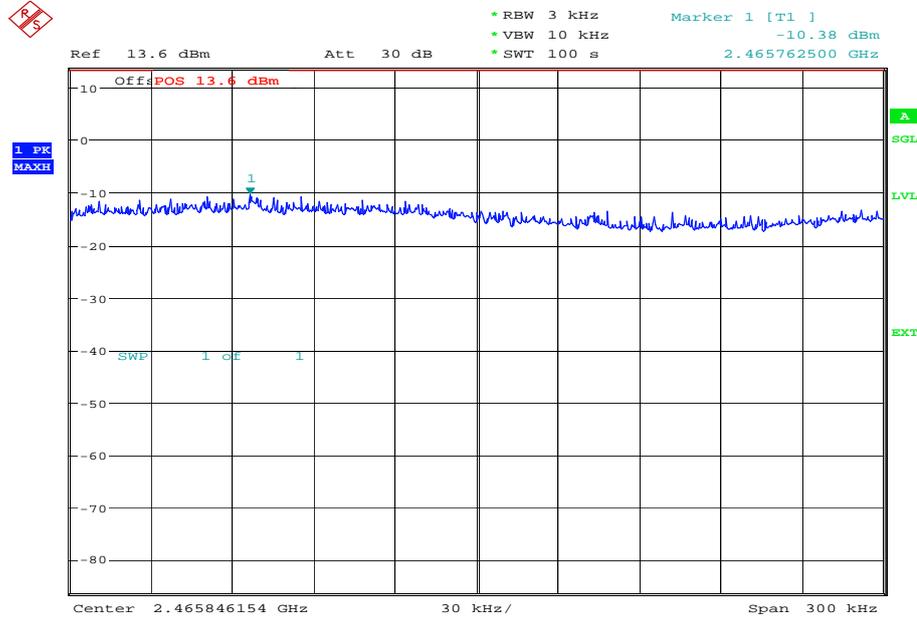
Date: 25.NOV.2014 14:19:18



Product Service

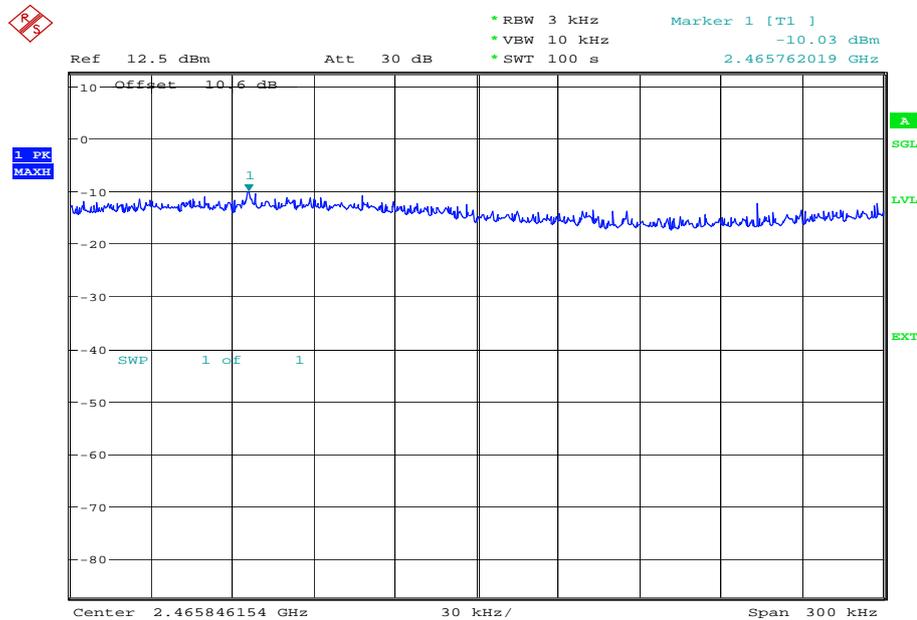
2462 MHz

6 Mbps



Date: 25.NOV.2014 10:48:40

9 Mbps

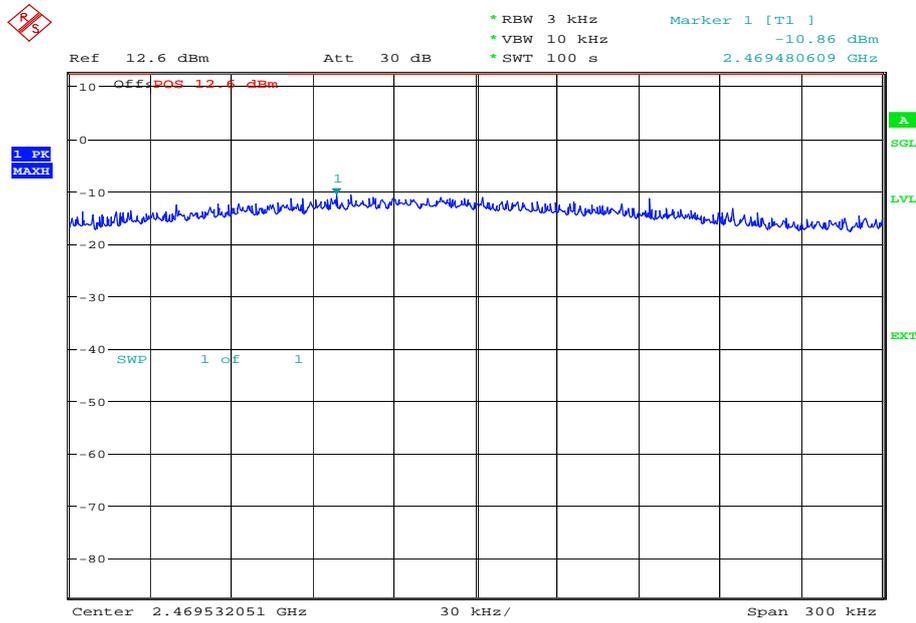


Date: 25.NOV.2014 11:15:13



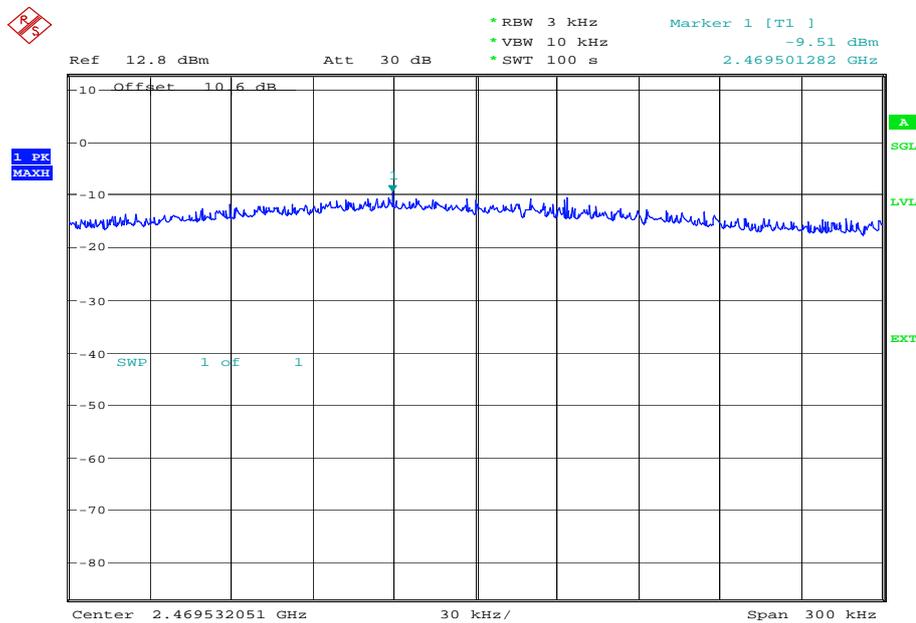
Product Service

12 Mbps



Date: 25.NOV.2014 11:35:24

18 Mbps

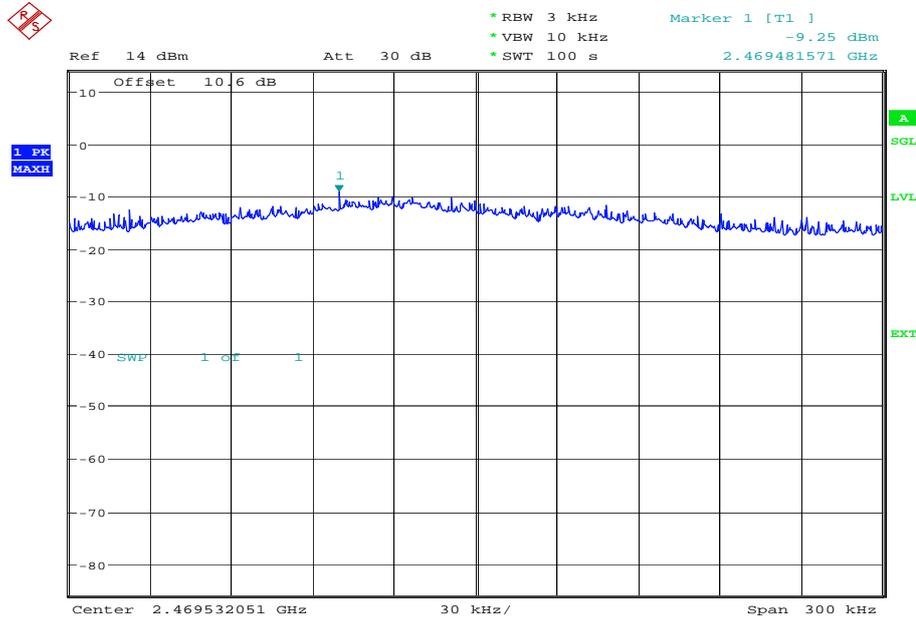


Date: 25.NOV.2014 12:17:20



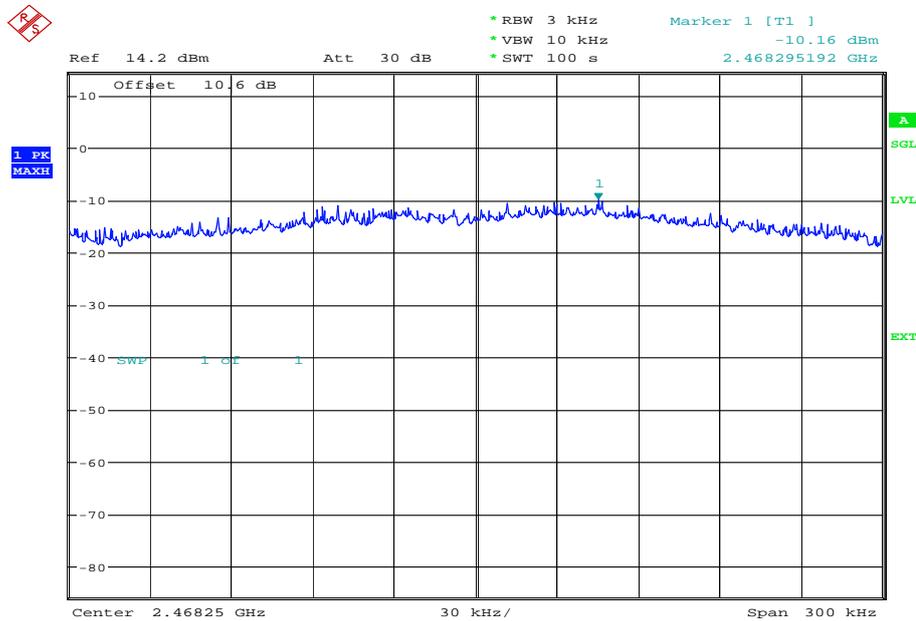
Product Service

24 Mbps



Date: 25.NOV.2014 12:39:52

36 Mbps

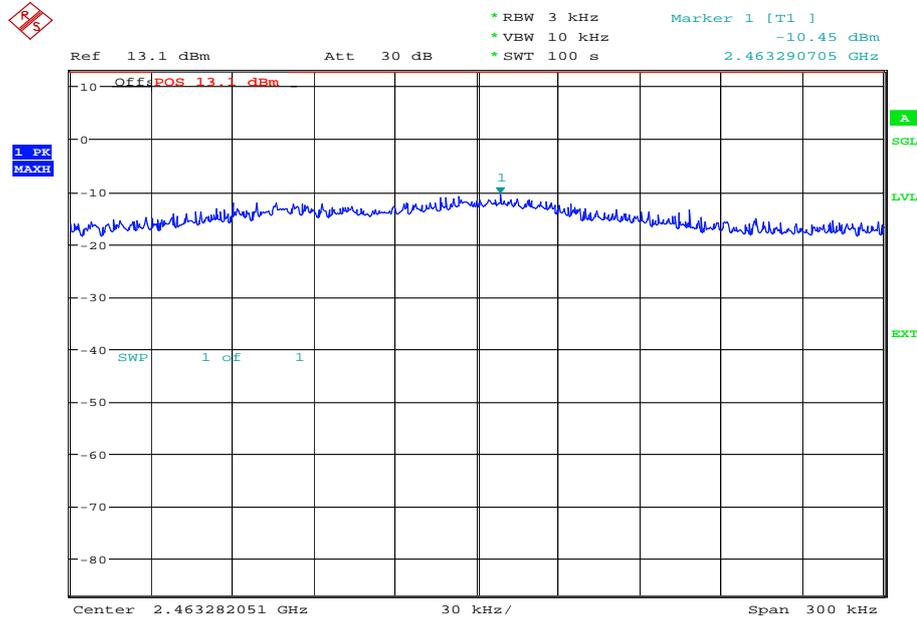


Date: 25.NOV.2014 13:16:35



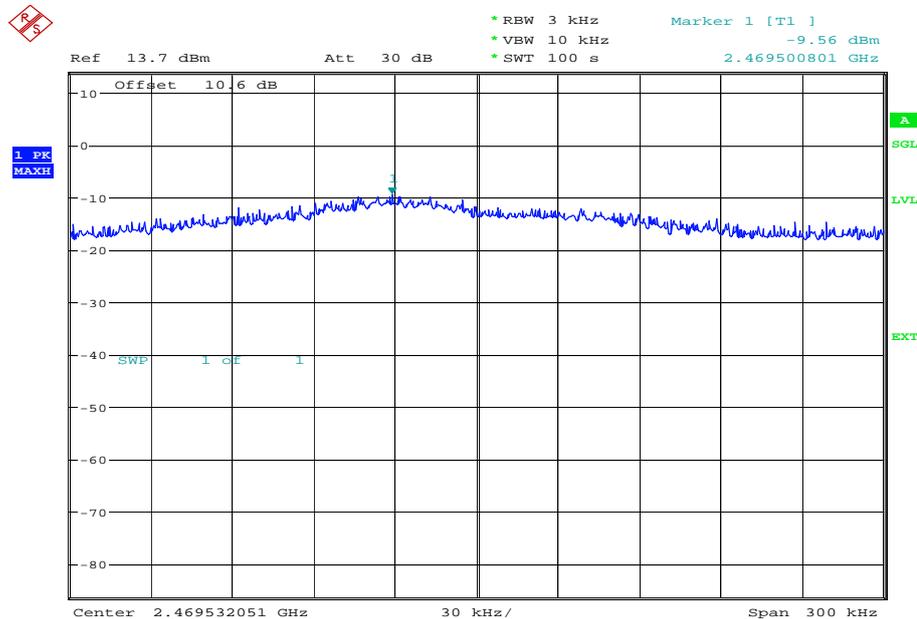
Product Service

48 Mbps



Date: 25.NOV.2014 13:42:43

54 Mbps



Date: 25.NOV.2014 14:25:27

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

802.11(n)

4.0 V DC Supply

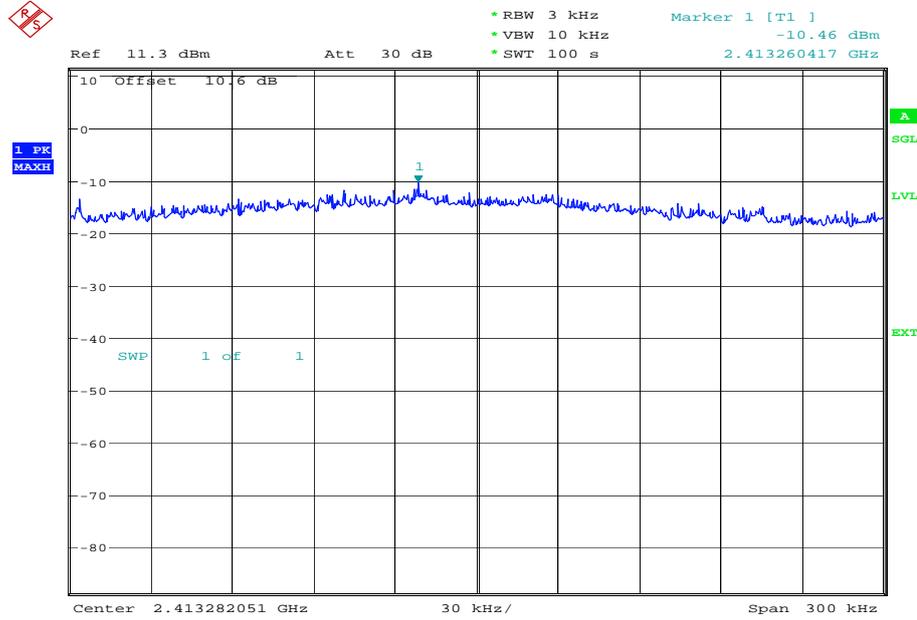
Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6.5	-10.46
	13	-11.66
	19.5	-11.40
	26	-11.10
	39	-11.45
	52	-9.88
	58.5	-10.94
	65	-10.56
2437 MHz	6.5	-10.89
	13	-10.92
	19.5	-10.71
	26	-11.13
	39	-9.95
	52	-10.61
	58.5	-10.55
	65	-10.38
2462 MHz	6.5	-9.57
	13	-10.67
	19.5	-10.61
	26	-10.00
	39	-9.82
	52	-9.78
	58.5	-9.67
	65	-9.68



Product Service

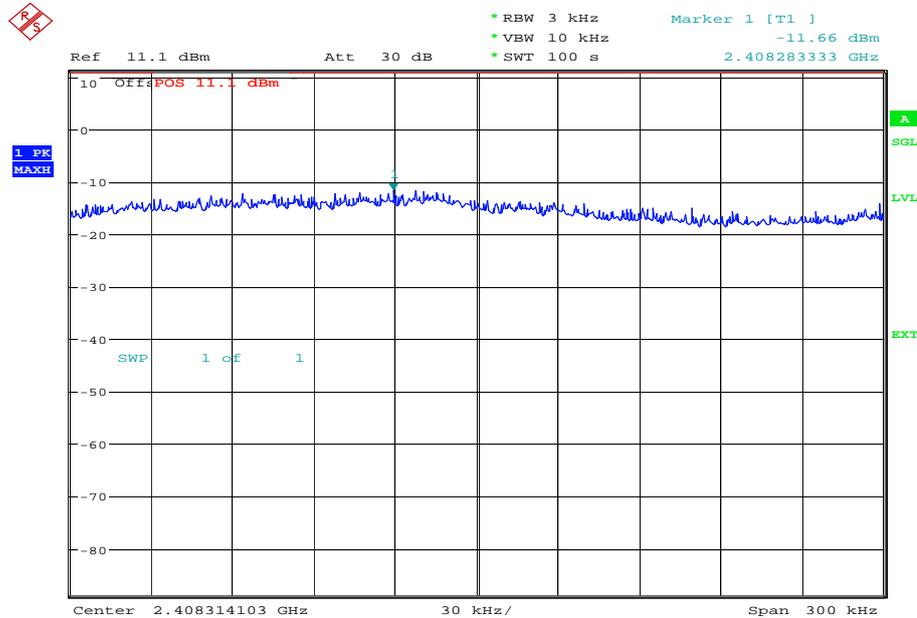
2412 MHz

6.5 Mbps



Date: 25.NOV.2014 14:39:29

13 Mbps

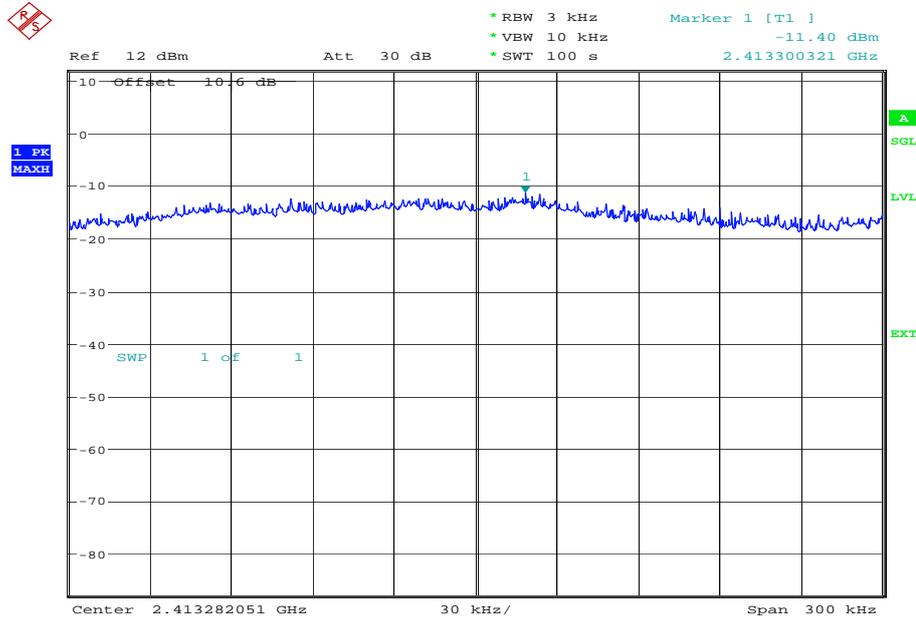


Date: 25.NOV.2014 15:04:27



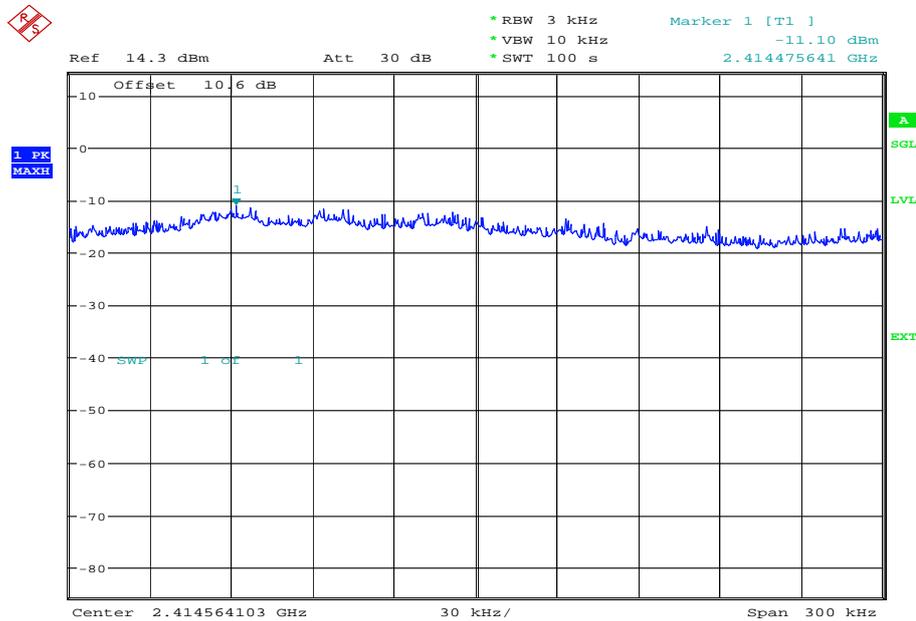
Product Service

19.5 Mbps



Date: 25.NOV.2014 16:05:27

26 Mbps

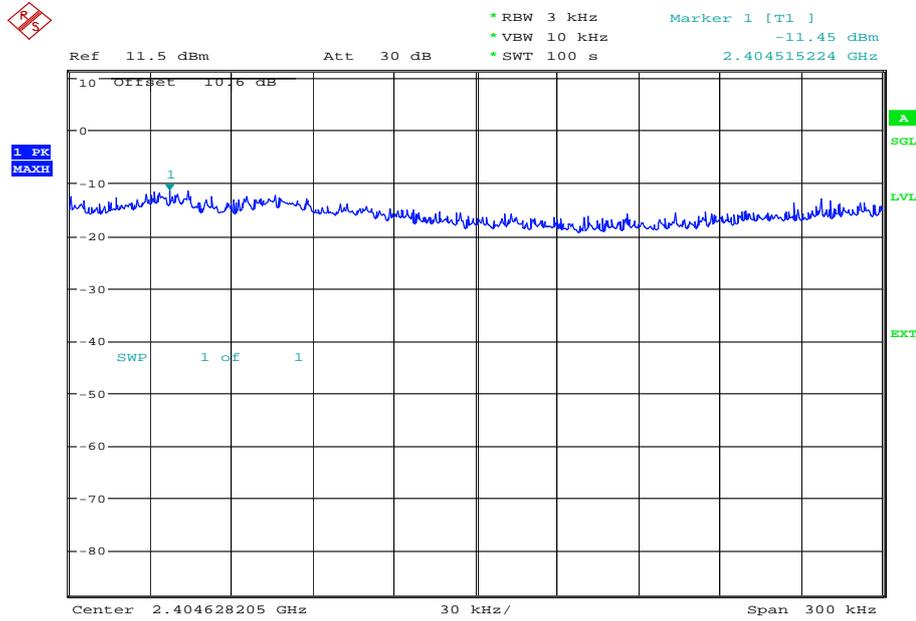


Date: 25.NOV.2014 16:33:12



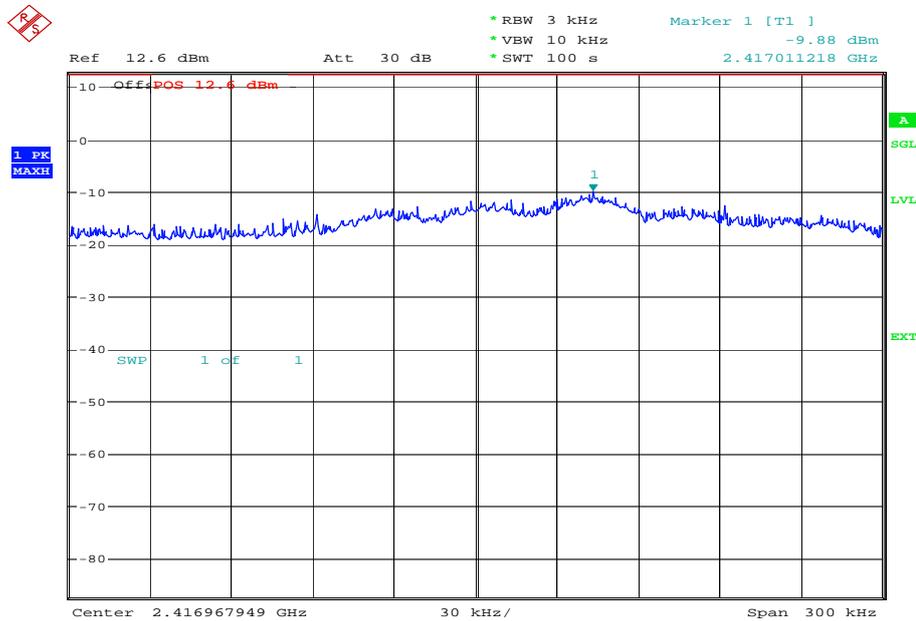
Product Service

39 Mbps



Date: 25.NOV.2014 17:20:58

52 Mbps

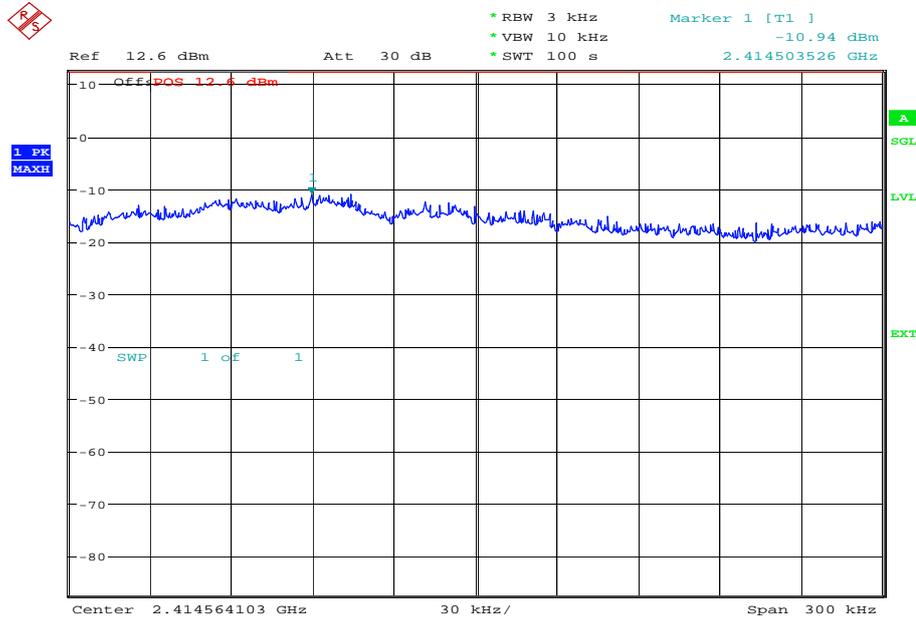


Date: 25.NOV.2014 17:47:01



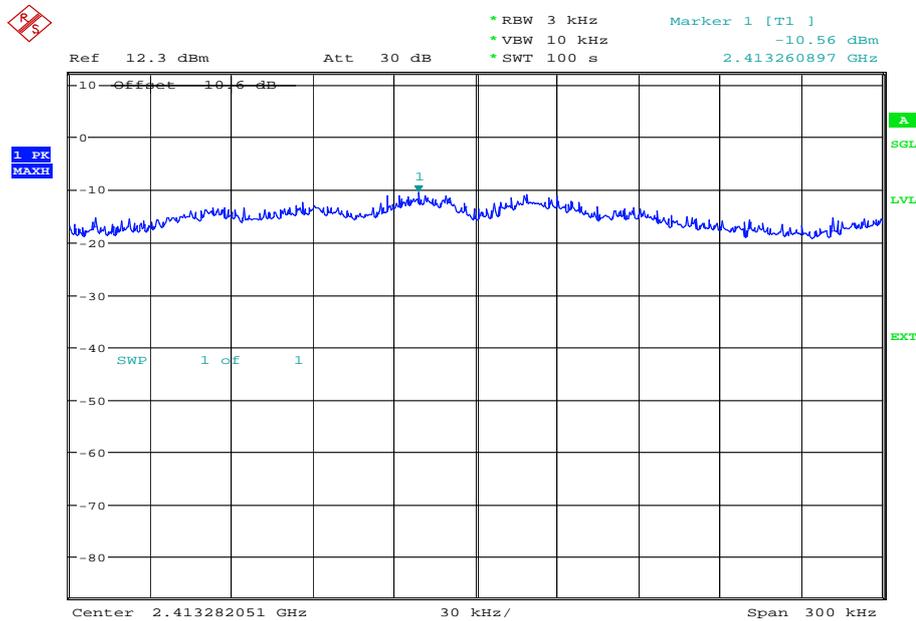
Product Service

58.5 Mbps



Date: 26.NOV.2014 15:01:32

65 Mbps



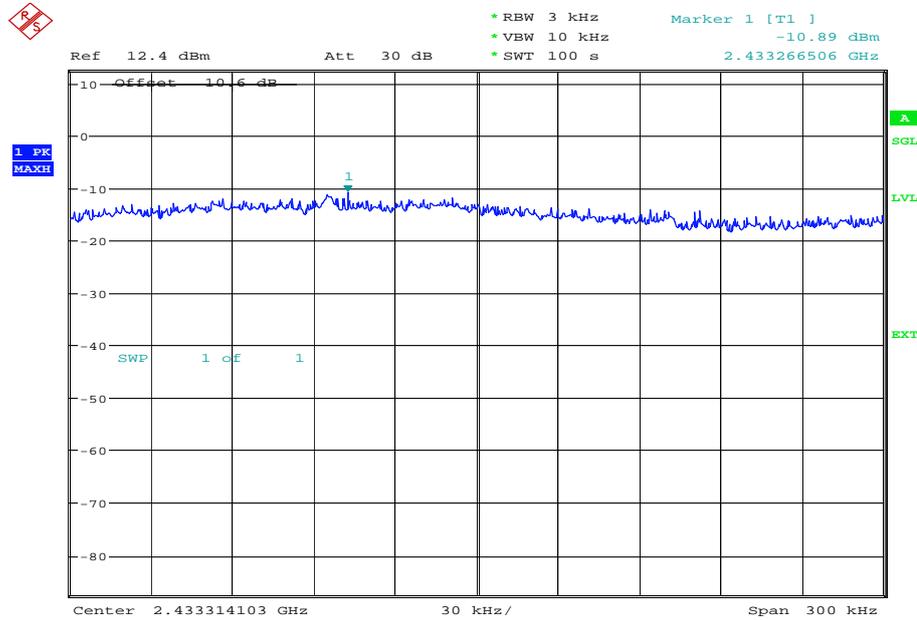
Date: 26.NOV.2014 15:20:59



Product Service

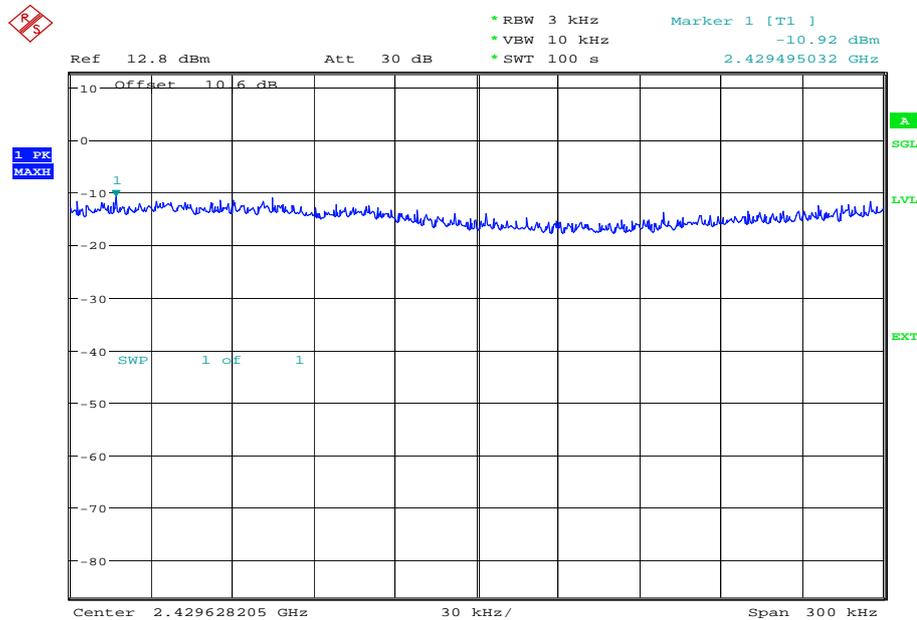
2437 MHz

6.5 Mbps



Date: 25.NOV.2014 14:45:11

13 Mbps

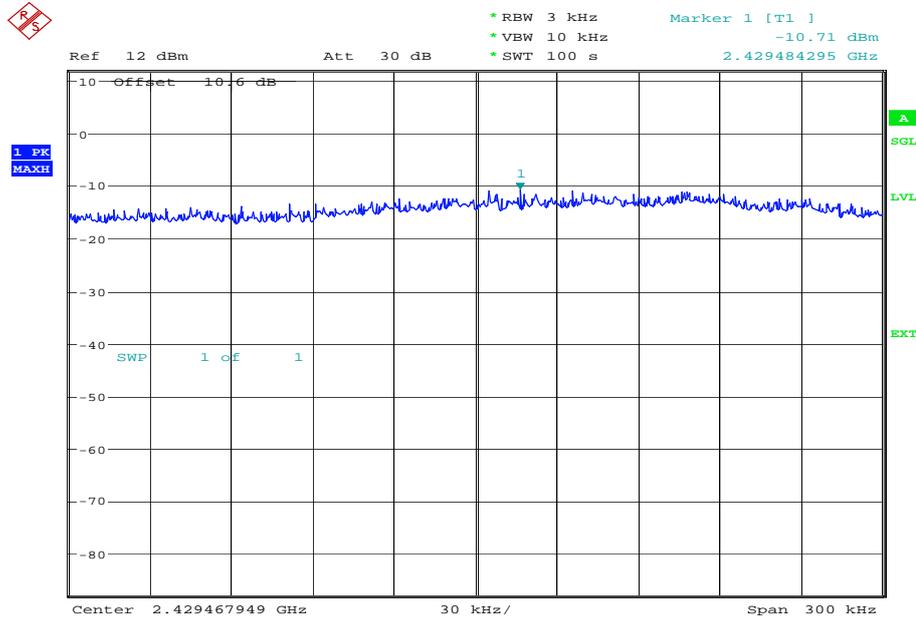


Date: 25.NOV.2014 15:21:39



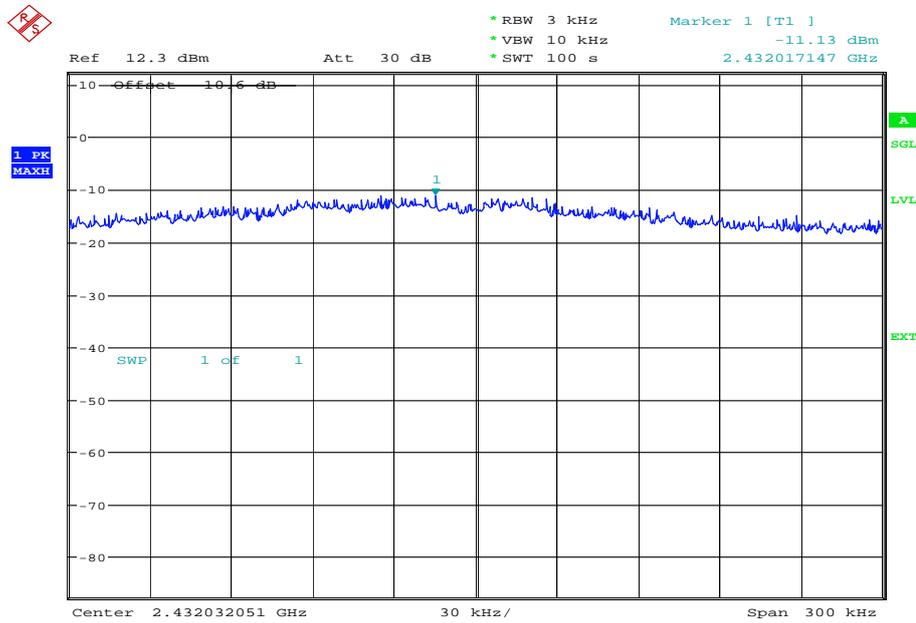
Product Service

### 19.5 Mbps



Date: 25.NOV.2014 16:09:26

### 26 Mbps

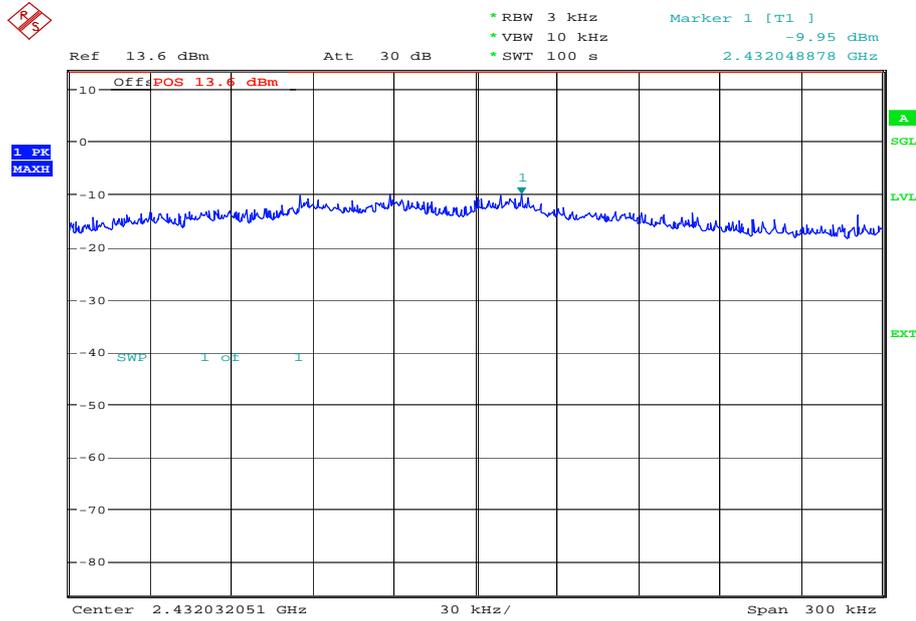


Date: 25.NOV.2014 16:56:35



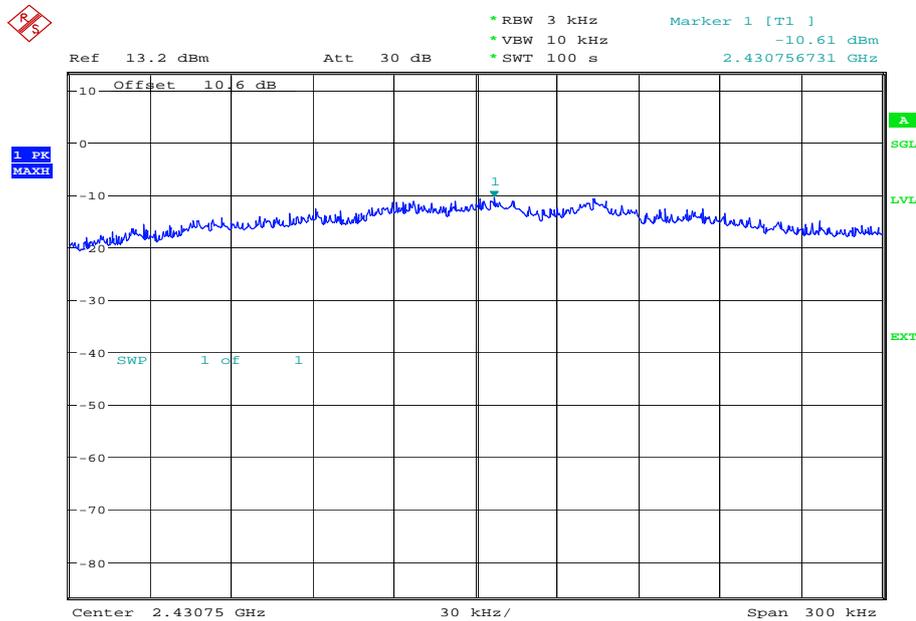
Product Service

39 Mbps



Date: 25.NOV.2014 17:33:04

52 Mbps

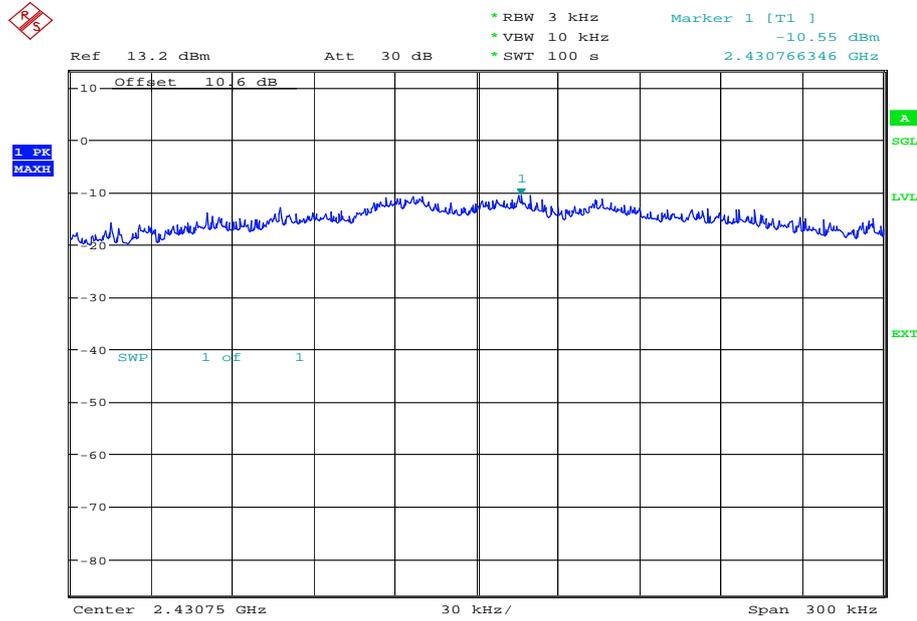


Date: 25.NOV.2014 17:51:21



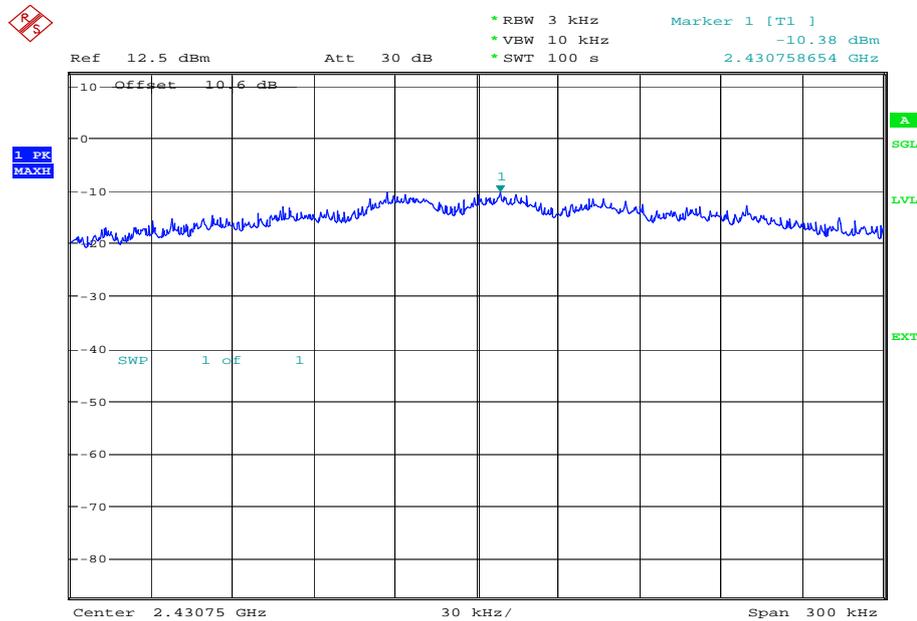
Product Service

58.5 Mbps



Date: 26.NOV.2014 15:07:59

65 Mbps



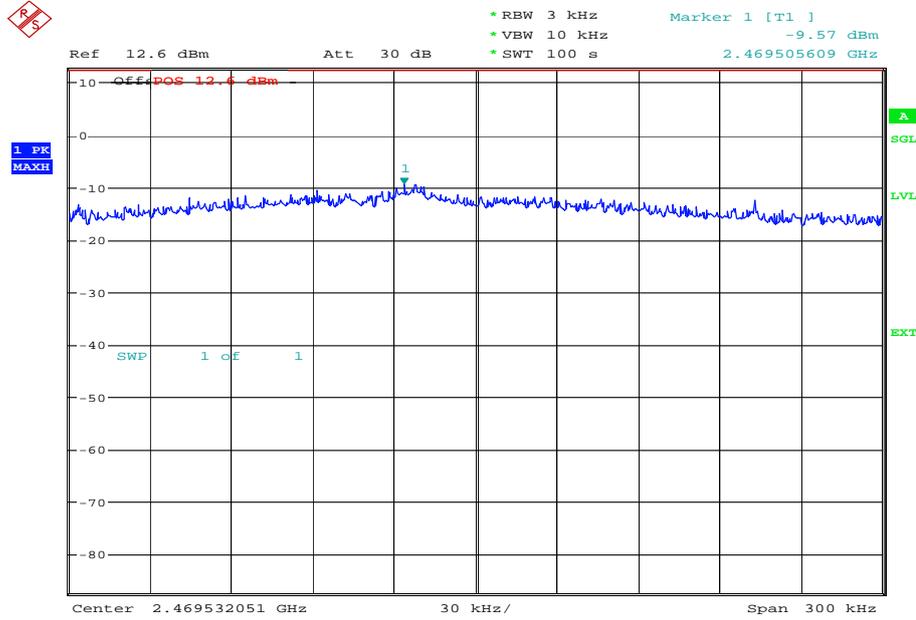
Date: 26.NOV.2014 15:24:33



Product Service

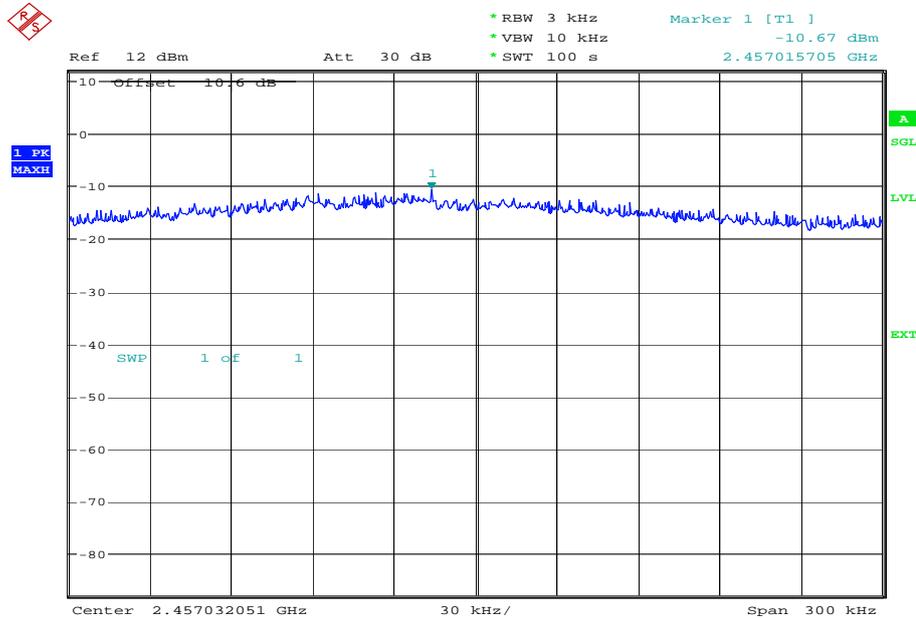
2462 MHz

6.5 Mbps



Date: 25.NOV.2014 14:49:11

13 Mbps

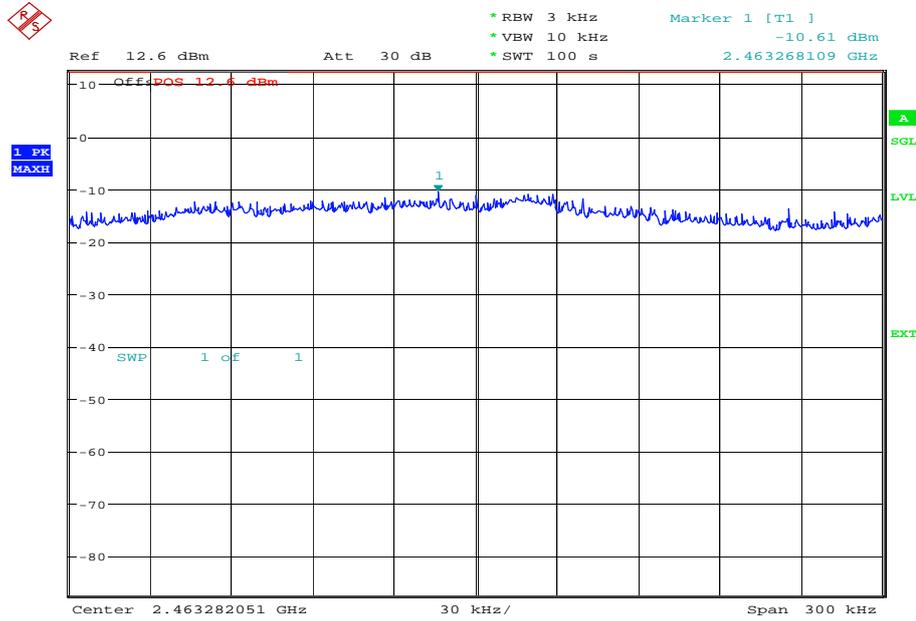


Date: 25.NOV.2014 15:43:40



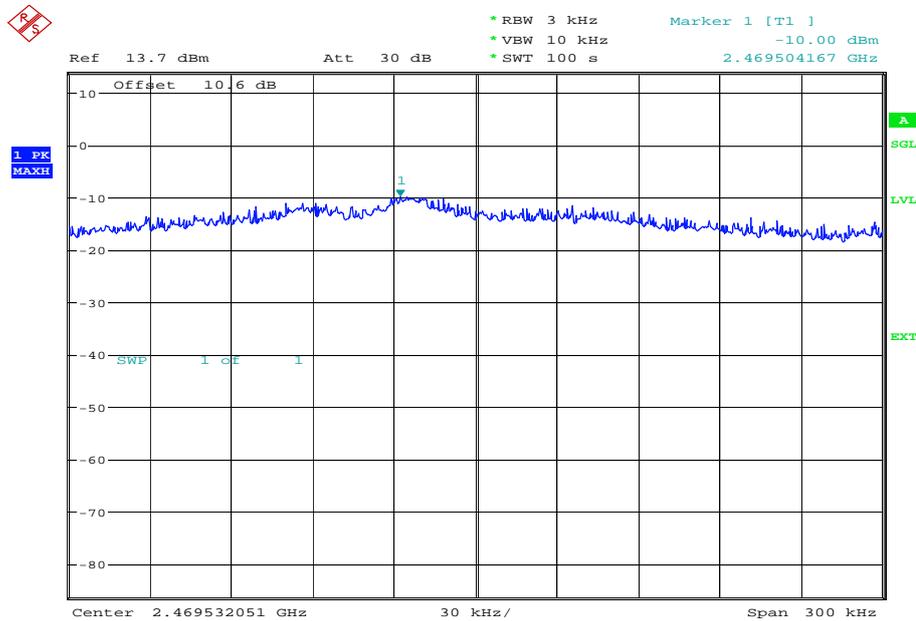
Product Service

19.5 Mbps



Date: 25.NOV.2014 16:14:54

26 Mbps

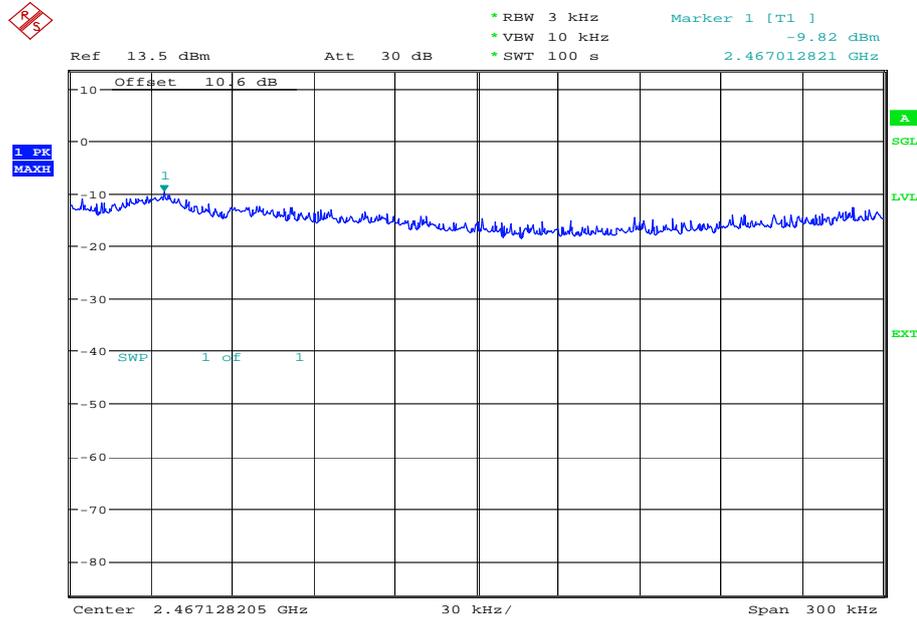


Date: 25.NOV.2014 17:12:08



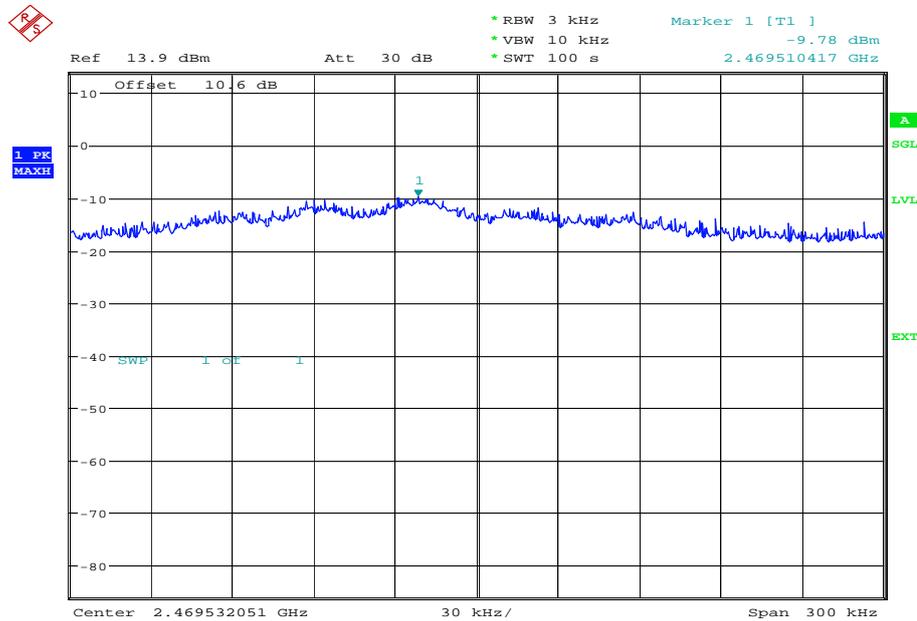
Product Service

39 Mbps



Date: 25.NOV.2014 17:41:31

52 Mbps

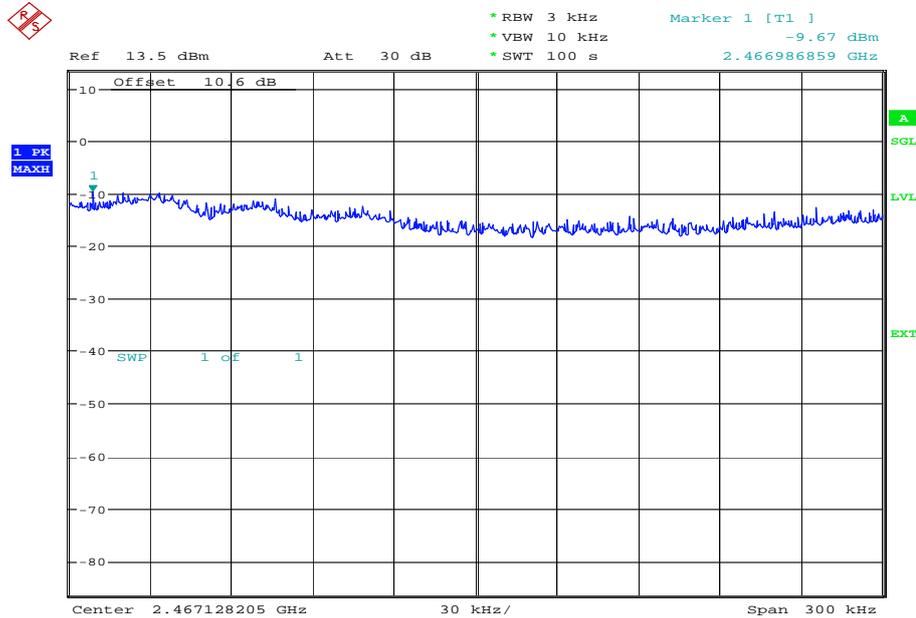


Date: 26.NOV.2014 14:54:32



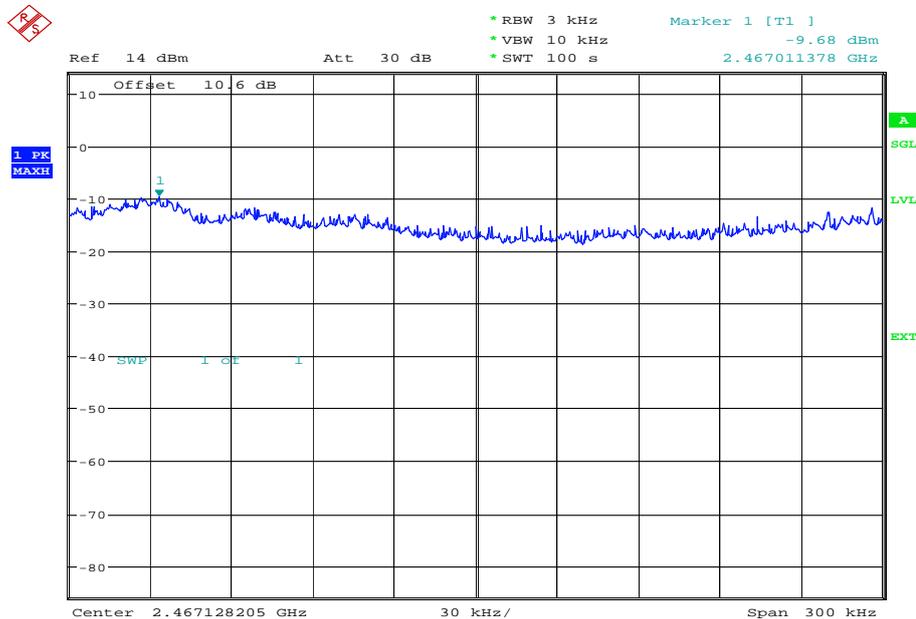
Product Service

58.5 Mbps



Date: 26.NOV.2014 15:16:33

65 Mbps



Date: 26.NOV.2014 15:34:12

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

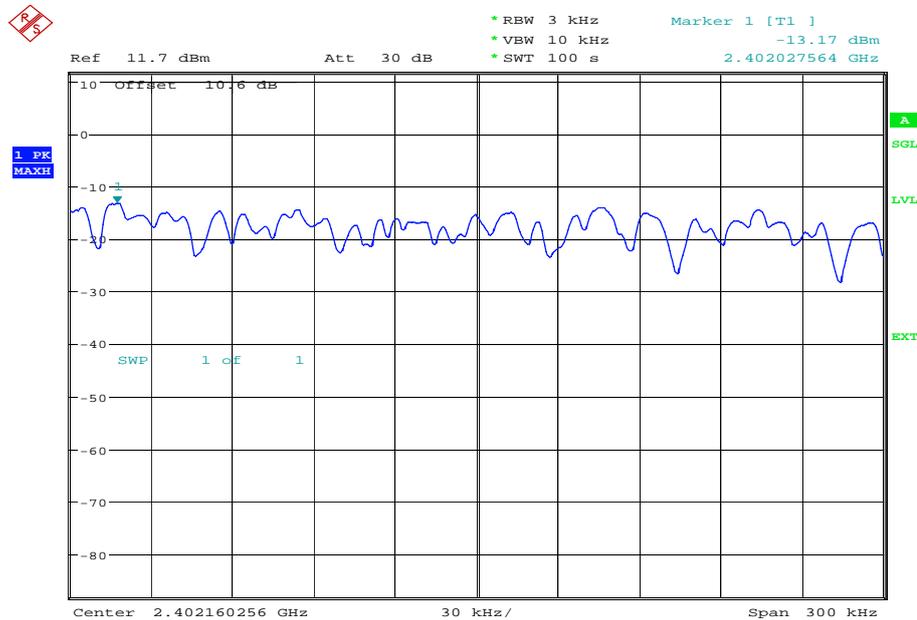
Bluetooth Low Energy

4.0 V DC Supply

Frequency	Packet Type	Power Spectral Density in 3 kHz Bands (dBm)
2402 MHz	DH1	-13.17
2441 MHz	DH1	-10.82
2480 MHz	DH1	-10.63

2402 MHz

DH1



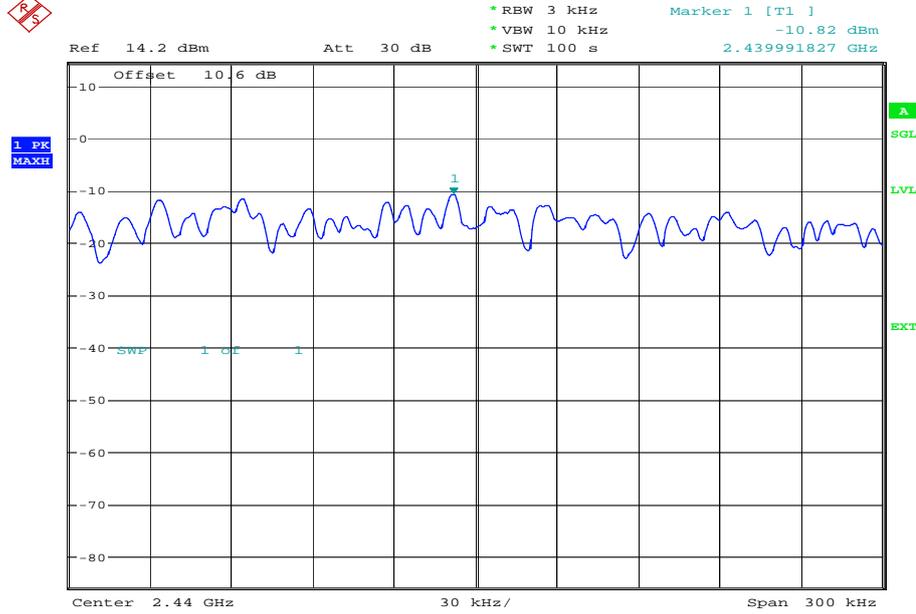
Date: 27.NOV.2014 14:16:57



Product Service

2441 MHz

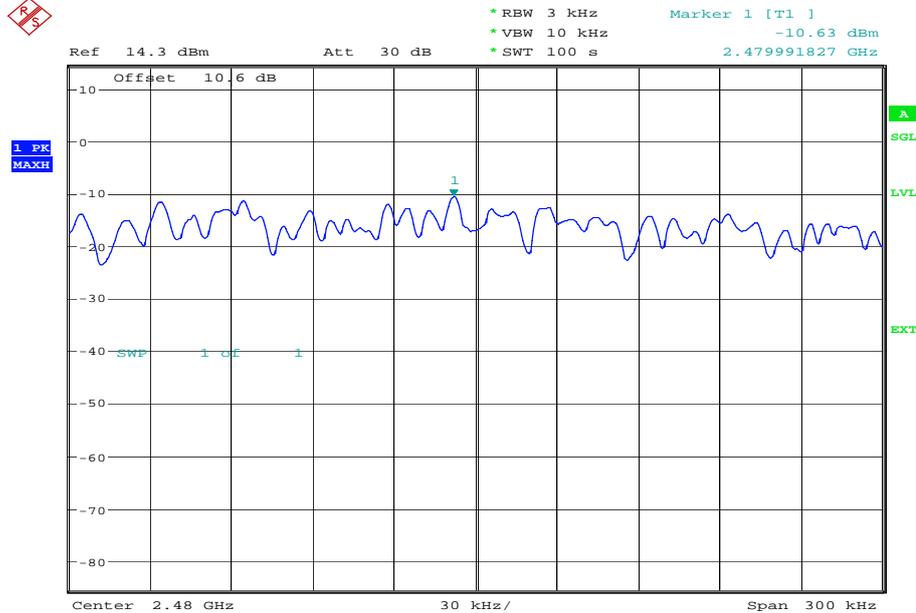
DH1



Date: 27.NOV.2014 16:11:31

2480 MHz

DH1



Date: 27.NOV.2014 16:15:13

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**



### 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
<b>Section 2.1 – AC Line Conducted Emissions</b>					
Transient Limiter	Hewlett Packard	11947A	15	12	10-Dec-2014
3 phase LISN	Rohde & Schwarz	ESH2-Z5	323	12	16-Jan-2015
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Compliance 5 Emissions	Schaffner	C5e Software V.5.00.00	3275	-	N/A - Software
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
<b>Section 2.2 – 6 dB Bandwidth</b>					
Power Supply Unit	Hewlett Packard	6282A	132	-	TU
Multimeter	Fluke	75 Mk3	455	12	23-Jul-2015
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	12	9-Jan-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Attenuator (10dB, 20W)	Lucas Weinschel	1	3225	12	12-Dec-2014
<b>Section 2.3 - Maximum Peak Conducted Output Power</b>					
Power Supply Unit	Hewlett Packard	6282A	132	-	TU
Multimeter	Fluke	75 Mk3	455	12	23-Jul-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Attenuator (10dB, 20W)	Lucas Weinschel	1	3225	12	12-Dec-2014
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
<b>Section 2.4 - EIRP Peak Power</b>					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	2-May-2015
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	1002	12	19-Sep-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (DRG Horn)	ETS-LINDGREN	3115	3125	12	16-Jul-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
Tilt Antenna Mast	matureo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	matureo GmbH	NCD	3917	-	TU
<b>Section 2.5 - Spurious and Band Edge Emissions</b>					
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
Turntable Controller	Heinrich Diesel	HD 050	280	-	TU
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	1002	12	19-Sep-2015
Pre-Amplifier	Phase One	PSO4-0087	1534	12	1-Oct-2015
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Filter (Hi Pass)	Lorch	9HP7-7000-SR	2833	12	4-Feb-2015
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
Amplifier (8 - 18GHz)	Phase One	PS06-0061	3176	12	11-Aug-2015
Compliance 5 Emissions	Schaffner	C5e Software V.5.00.00	3275	-	N/A - Software
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
Tilt Antenna Mast	matureo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	matureo 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



Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
<b>Section 2.6 - Peak Power Spectral Density</b>					
20dB/2W Attenuator	Narda	4772-20	462	-	TU
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	18-Jan-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
True RMS Multimeter	Fluke	179	4007	12	31-Jul-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	$\pm 212.114$ kHz
EIRP Peak Power	30MHz to 1GHz: $\pm 5.1$ dB 1GHz to 40GHz: $\pm 6.3$ dB
Maximum Peak Conducted Output Power	$\pm 0.70$ dB
Spurious and Band Edge Emissions	Conducted: $\pm 3.08$ dB Radiated: 30 MHz to 1 GHz: $\pm 5.1$ dB Radiated: 1 GHz to 40 GHz: $\pm 6.3$ dB
Power Spectral Density	$\pm 3.0$ dB
AC Line Conducted Emissions	$\pm 3.2$ dB



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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