Report On

FCC Testing of the Sharp SHT22 Dual-band CDMA (BC0, BC6), Tri-band LTE (B1, B11, B18). Dual mode Tablet PC with Bluetooth, WLAN, SRD(NFC) and GPS
In accordance with FCC CFR 47 Part 15C (WLAN and Bluetooth Low Energy)

COMMERCIAL-IN-CONFIDENCE

FCC ID: APYHRO00200

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REPORT ON

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Document 75924762 Report 10 Issue 1

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DATED 03 February 2014

ENGINEERING STATEMENT

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

Test Engineer(s);

G Lawler T Guy A Galpin

Product Service

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SECTION 1

REPORT SUMMARY

FCC Testing of the
Sharp SHT22 Dual-band CDMA (BC0, BC6), Tri-band LTE (B1, B11, B18). Dual mode Tablet PC with Bluetooth, WLAN, SRD(NFC) and GPS
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1.1 INTRODUCTION

The information contained in this report is intended to show verification of the FCC Testing of the Sharp SHT22 Dual-band CDMA (BC0, BC6), Tri-band LTE (B1, B11, B18). Dual mode Tablet PC with Bluetooth, WLAN, SRD(NFC) and GPS to the requirements of FCC CFR 47 Part 15C.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Sharp Corporation
Model Number(s)	SHT22
Serial Number(s)	IMEI 004401115013407 IMEI 004401115013514 IMEI 004401115013381
Number of Samples Tested	3
Test Specification/Issue/Date	FCC CFR 47 Part 15C (2012)
Incoming Release Date	Application Form 15 January 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	9947 18 December 2013
Start of Test	10 January 2014
Finish of Test	21 January 2014
Name of Engineer(s)	G Lawler T Guy A Galpin
Related Document(s)	ANSI C63.10: 2009

Product Service

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15C is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
802.11(b)				
2.1	15.207	AC Line Conducted Emissions	Pass	
2.2	15.247 (b)(3)	Maximum Peak Conducted Output Power	Pass	
2.3	15.247 (b)(4)	EIRP Peak Power	Pass	
2.4	15.247 (d)	Spurious and Band Edge Emissions	Pass	
2.5	15.247 (e)	Power Spectral Density	Pass	
2.6	15.247 (2)	6dB Bandwidth	Pass	
802.11(g)				
2.2	15.247 (b)(3)	Maximum Peak Conducted Output Power	Pass	
2.3	15.247 (b)(4)	EIRP Peak Power	Pass	
2.4	15.247 (d)	Spurious and Band Edge Emissions	Pass	
2.5	15.247 (e)	Power Spectral Density	Pass	
2.6	15.247 (2)	6dB Bandwidth	Pass	
802.11(n)				
2.2	15.247 (b)(3)	Maximum Peak Conducted Output Power	Pass	
2.3	15.247 (b)(4)	EIRP Peak Power	Pass	
2.4	15.247 (d)	Spurious and Band Edge Emissions	Pass	
2.5	15.247 (e)	Power Spectral Density	Pass	
2.6	15.247 (2)	6dB Bandwidth	Pass	

Section	Spec Clause	Test Description	Result	Comments/Base Standard
Bluetooth Low Energy				
2.2	15.247 (b)(3)	Maximum Peak Conducted Output Power	Pass	
2.3	15.247 (b)(4)	EIRP Peak Power	Pass	
2.4	15.247 (d)	Spurious and Band Edge Emissions	Pass	
2.5	15.247 (e)	Power Spectral Density	Pass	
2.6	15.247 (2)	6dB Bandwidth	Pass	

Product Service

1.3 APPLICATION FORM

EQUIPMENT DESCRIPTION	
Model Name/Number	SHT22
Part Number	
FCC ID (if applicable)	APYHRO00200
Industry Canada ID (if applicable)	N/A
Technical Description (Please provide a brief description of the intended use of the equipment)	Quad-band LTE(B1/B11/B18), Dual-band CDMA(BC0/BC6) Cellular Phone with Bluetooth, WLAN, NFC and GPS.

Types of Modulations used by the Equipment	
☒	FHSS
☒	Other forms of modulation
In case of FHSS Modulation	
In case of non-Adaptive Frequency Hopping equipment:	
	Number of Hopping Frequencies: 2402MHz～2480MHz
In case of Adaptive Frequency Hopping Equipment:	
	Maximum number of Hopping Frequencies: 2480MHz
	Minimum number of Hopping Frequencies: 2402MHz
Dwell Time:	
Minimum Channel Occupation Time:	
Adaptive / non-adaptive equipment:	
☐	non-adaptive Equipment
☒	adaptive Equipment without the possibility to switch to a non-adaptive mode
☐	adaptive Equipment which can also operate in a non-adaptive mode
In case of adaptive equipment:	
The Channel Occupancy Time implemented by the equipment: 260 ms	
☒	The equipment has implemented an LBT based DAA mechanism
In case of equipment using modulation different from FHSS:	
☐	The equipment is Frame Based equipment
☐	The equipment is Load Based equipment
☒	The equipment can switch dynamically between Frame Based and Load Based equipment
The CCA time implemented by the equipment: 4 µs	
The value q as referred to in clause 4.3.2.5.2.2.2 is:	
☐	The equipment has implemented an non-LBT based DAA mechanism
☐	The equipment can operate in more than one adaptive mode

In case of non-adaptive Equipment:	
The maximum RF Output Power (e.i.r.p.): 3.97 dBm	
The maximum (corresponding) Duty Cycle: %	
Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):	
The worst case operational mode for each of the following tests:	
RF Output Power:	
Power Spectral Density:	
Duty cycle, Tx-Sequence, Tx-gap:	
Dwell time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment):	
Hopping Frequency Separation (only for FHSS equipment):	
Medium Utilisation:	
Adaptivity & Receiver Blocking:	
Occupied Channel Bandwidth:	
Transmitter unwanted emissions in the OOB domain:	
Transmitter unwanted emissions in the spurious domain:	
Receiver spurious emissions:	
The different transmit operating modes (tick all that apply):	
☒	Operating mode 1: Single Antenna Equipment
☒	Equipment with only 1 antenna
☐	Equipment with 2 diversity antennas but only 1 antenna active at any moment in time
☐	Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)
☐	Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming
☐	Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)
☐	High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1
☐	High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2
NOTE: Add more lines if more channel bandwidths are supported.	
☐	Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming
☐	Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)
☐	High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1
☐	High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2
NOTE: Add more lines if more channel bandwidths are supported.	
In case of Smart Antenna Systems:	
The number of Receive chains:	
The number of Transmit chains:	
☐	symmetrical power distribution
☐	asymmetrical power distribution
In case of beam forming, the maximum beam forming gain:	
NOTE: Beam forming gain does not include the basic gain of a single antenna.	

Operating Frequency Range(s) of the equipment:	
Operating Frequency Range 1: 2402 MHz to 2480 MHz	(e.g Bluetooth for EU)
Operating Frequency Range 2: 2412 MHz to 2472 MHz	(e.g WLAN for EU)
Operating Frequency Range 3: MHz to MHz	(e.g Bluetooth for FCC and/or Industry Canada)
Operating Frequency Range 4: MHz to MHz	(e.g WLAN for FCC and/or Industry Canada)
NOTE: Add more lines if more Frequency Ranges are supported.	

Occupied Channel Bandwidth(s):
Occupied Channel Bandwidth1: 2401 MHz to 2481 MHz
Occupied Channel Bandwidth2: 2402 MHz to 2482 MHz
NOTE: Add more lines if more channel bandwidths are supported.

	Type of Equipment (stand-alone, combined, plug-in radio device, etc.):
☒	Stand-alone
☐	Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)
☐	Plug-in radio device (Equipment intended for a variety of host systems)
☐	Other

	The extreme operating conditions that apply to the equipment:		
Operating temperature range: -10 °C to 55 °C			
Operating voltage range: 3.7 V to 4.0 V		☐ AC	☒ DC
	Details provided are for the:		
☒	stand-alone equipment		
☐	combined (or host) equipment		
☐	test jig		

Product Service

The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:			
Antenna Type:			
☒ Integral Antenna			
Antenna Gain: 0 dBi			
If applicable, additional beamforming gain (excluding basic antenna gain): dB			
☒ Temporary RF connector provided			
☐ No temporary RF connector provided			
☐ Dedicated Antennas (equipment with antenna connector)			
☐ Single power level with corresponding antenna(s)			
☐ Multiple power settings and corresponding antenna(s)			
Number of different Power Levels:			
Power Level 1: dBm			
Power Level 2: dBm			
Power Level 3: dBm			
Power Level 4: dBm			
NOTE 1: Add more lines in case the equipment has more power levels.			
NOTE 2: These power levels are conducted power levels (at antenna connector).			
For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable			
Power Level 1: dBm			
Number of antenna assemblies provided for this power level:			
Assembly #	**Gain (dBi)**	**e.i.r.p (dBm)**	**Part number or model number**
1			
2			
3			
4			
NOTE: Add more rows in case more antenna assemblies are supported for this power level.			
Power Level 2: dBm			
Number of antenna assemblies provided for this power level:			
Assembly #	**Gain (dBi)**	**e.i.r.p (dBm)**	**Part number or model number**
1			
2			
3			
4			
NOTE: Add more rows in case more antenna assemblies are supported for this power level.			
Power Level 3: dBm			
Number of antenna assemblies provided for this power level:			
Assembly #	**Gain (dBi)**	**e.i.r.p (dBm)**	**Part number or model number**
1			
2			
3			
4			
NOTE: Add more rows in case more antenna assemblies are supported for this power level.			

The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:	
Details provided are for the: ☒ stand-alone equipment	
☐ combined (or host) equipment	
☐ test jig	
Supply Voltage ☐ AC mains State AC voltage	
☒ State DC voltage 4.0	
In case of DC, indicate the type of power source	
☐ Internal Power Supply	
☐ External Power Supply or AC/DC adapter	
☒ Battery	
☒ Other: Dummy battery from external DC supply (4.0V)	
Describe the test modes available which can facilitate testing:	
Teraterm	
The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], proprietary, etc.):	
Bluetooth, IEEE 802.11b/g/n	
Combination for testing (see clause 5.1.3.3 of EN 300 328 V1.8.1)	
From all combinations of conducted power settings and intended antenna assembly(ies) specified in clause 3.1 m), specify the combination resulting in the highest e.i.r.p. for the radio equipment. Unless otherwise specified in EN 300 328, this power setting is to be used for testing against the requirements of EN 300 328. In case there is more than one such conducted power setting resulting in the same (highest) e.i.r.p. level, the highest power setting is to be used for testing. See also EN 300 328, clause 5.1.3.3.	
Highest overall e.i.r.p. value: dBm	
Corresponding Antenna assembly gain: dBi	Antenna Assembly #:
Corresponding conducted power setting: dBm	Listed as Power Setting #:
(also the power level to be used for testing)	
Additional information provided by the applicant	
Modulation	
ITU Class(es) of emission:	
Can the transmitter operate unmodulated? ☐ Yes ☐ No	
Duty Cycle	
The transmitter is intended for:	
☐ Continuous duty	
☐ Intermittent duty	
☒ Continuous operation possible for testing purposes	
About the UUT	
☐ The equipment submitted are representative production models	
☐ If not, the equipment submitted are pre-production models ?	
☒ If pre-production equipment are submitted, the final production equipment will be identical in all respects with the equipment tested	
☐ If not, supply full details	
☐ The equipment submitted is CE marked	
☐ In addition to the CE mark, the Class-II identifier (Alert Sign) is affixed.	

	Additional items and/or supporting equipment provided
☐	Spare batteries (e.g. for portable equipment)
☒	Battery charging device
☐	External Power Supply or AC/DC adapter
☐	Test Jig or interface box
☐	RF test fixture (for equipment with integrated antennas)
☐	Host System
	Manufacturer
	Model
	Model Name
☐	Combined equipment
	Manufacturer
	Model
	Model Name
☐	User Manual
☐	Technical documentation (Handbook and circuit diagrams)

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

Signature:  Name: Hiroyuki Murakami

Position held: Supervisor Date: 15th January 2014

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Sharp SHT22 Dual-band CDMA (BC0, BC6), Tri-band LTE (B1, B11, B18). Dual mode Tablet PC with Bluetooth, WLAN, SRD(NFC) and GPS. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

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

The EUT was powered from a 4.0 V DC supply for lab tests and a fully charged internal battery for radiated tests.

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

1.6 DEVIATIONS FROM THE STANDARD

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

1.7 MODIFICATION RECORD

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

SECTION 2

TEST DETAILS

FCC Testing of the
Sharp SHT22 Dual-band CDMA (BC0, BC6), Tri-band LTE (B1, B11, B18). Dual mode Tablet PC with Bluetooth, WLAN, SRD(NFC) and GPS
In accordance with FCC CFR 47 Part 15C (WLAN and Bluetooth Low Energy)

2.1 AC LINE CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.207

2.1.2 Equipment Under Test and Modification State

SHT22 S/N: IMEI 004401115013381 - Modification State 0

2.1.3 Date of Test

21 January 2014

2.1.4 Test Equipment Used

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

2.1.5 Test Procedure

The EUT was set up on a test table 800mm above a horizontal ground plane. A vertical ground plane was also required and is placed 400mm from the EUT.

The EUT was powered through a Line Impedance Stabilisation Network (LISN) which was bonded to the ground plane. The EUT was located so that the distance between the EUT and the LISN was no less than 800mm. The cable between the mains input of the EUT and the LISN was 1m.

A preliminary profile of the Conducted Emissions is obtained over the frequency range 150kHz to 30MHz. Any points of interest were noted for formal measurements.

During formal measurements, the measuring receiver is tuned to the emission of interest where Quasi – Peak and Average measurements were performed in a 9kHz Video and Resolution Bandwidth.

2.1.6 Environmental Conditions

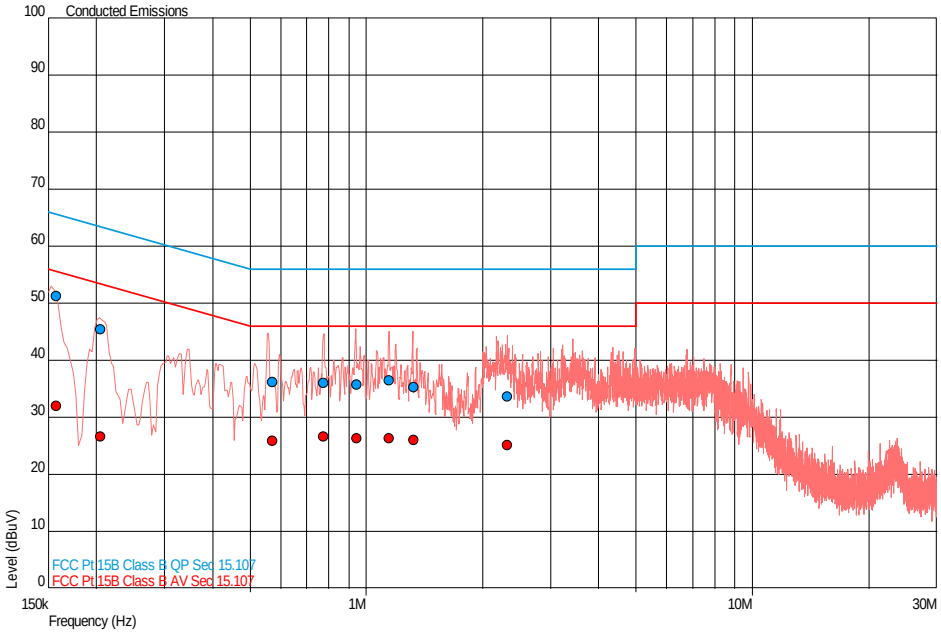
Ambient Temperature	22.9°C
Relative Humidity	26.0%

Product Service

2.1.7 Test Results

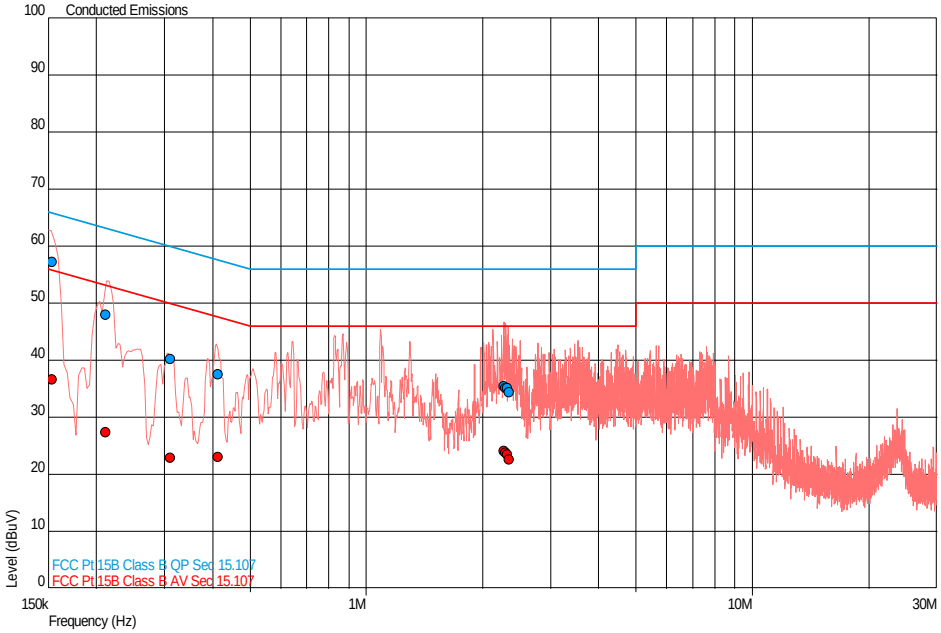
802.11(b)

Live Line



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dBµV)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.157	51.3	65.6	-14.3	32.0	55.6	-23.6
0.205	45.4	63.4	-18.0	26.6	53.4	-26.7
0.570	36.3	56.0	-19.7	25.8	46.0	-20.2
0.773	36.0	56.0	-20.0	26.7	46.0	-19.3
0.942	35.8	56.0	-20.2	26.3	46.0	-19.7
1.147	36.5	56.0	-19.5	26.4	46.0	-19.6
1.324	35.3	56.0	-20.7	26.1	46.0	-19.9
2.315	33.7	56.0	-22.3	25.1	46.0	-20.9

Neutral Line



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dBµV)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.154	57.2	65.8	-8.6	36.7	55.8	-19.1
0.211	48.0	63.2	-15.2	27.4	53.2	-25.8
0.311	40.2	59.9	-19.8	22.9	49.9	-27.0
0.413	37.6	57.6	-20.0	23.1	47.6	-24.5
2.270	35.4	56.0	-20.6	24.1	46.0	-21.9
2.290	35.1	56.0	-20.9	23.8	46.0	-22.2
2.320	35.1	56.0	-20.9	23.5	46.0	-22.5
2.344	34.3	56.0	-21.7	22.6	46.0	-23.4

2.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

2.2.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (b)(3)

2.2.2 Equipment Under Test and Modification State

SHT22 S/N: IMEI 004401115013514 - Modification State 0

2.2.3 Date of Test

10 January 2014, 17 January 2014, 19 January 2014 & 20 January 2014

2.2.4 Test Equipment Used

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

2.2.5 Test Procedure

The EUT was connected to a Peak Power Meter via a cable and attenuator. The path loss between the EUT and sensor was measured and entered as an offset. Measurements were made on the bottom, middle and top channels on all supported data rates.

2.2.6 Environmental Conditions

Ambient Temperature	20.7 - 24.2°C
Relative Humidity	33.1 - 37.1%

2.2.7 Test Results

802.11(b)

4.0 V DC Supply

Modulation Data Rate (Mbps)	Maximum Peak Conducted Output Power					
	dBm			mW		
	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
1	20.13	19.87	19.18	103.04	97.05	82.79
2	19.17	18.75	18.22	82.544	75.069	66.366
5.5	19.12	18.83	18.39	81.743	76.369	69.026
11	19.05	18.78	18.41	80.429	75.586	69.308

Limit Clause

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

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

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

802.11(g)

4.0 V DC Supply

Modulation Data Rate (Mbps)	Maximum Peak Conducted Output Power					
	dBm			mW		
	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
6	22.40	22.56	22.50	173.78	180.30	177.83
9	21.96	21.86	21.88	156.890	153.576	154.047
12	21.98	21.89	21.81	157.846	157.846	154.538
18	22.11	22.04	21.65	162.526	160.073	146.352
24	21.95	22.03	21.72	156.627	159.651	148.540
36	21.99	22.04	22.02	158.208	159.945	159.215
48	22.12	22.15	21.92	162.784	164.144	155.526
54	22.08	22.03	21.89	161.340	159.729	154.463

Limit Clause

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

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

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

802.11(n)

4.0 V DC Supply

Modulation Data Rate (Mbps)	Maximum Peak Conducted Output Power					
	dBm			mW		
	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
6.5	22.37	22.34	22.68	172.58	171.40	185.35
13	22.02	22.13	22.05	159.273	163.244	160.479
19.5	21.98	22.15	22.11	157.831	164.188	162.436
26	22.00	21.97	22.11	158.594	157.514	162.720
39	21.96	22.21	21.98	157.026	166.195	157.612
52	21.92	22.17	22.08	155.743	164.907	161.541
58.5	21.94	22.16	22.17	156.439	164.601	164.998
65	22.01	22.12	21.99	158.796	162.873	158.199

Limit Clause

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

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

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

Bluetooth Low Energy

4.0 V DC Supply

Packet Type	Maximum Peak Conducted Output Power					
	dBm			mW		
	2402 MHz	2441 MHz	2480 MHz	2402 MHz	2441 MHz	2480 MHz
37octet/prbs9	0.90	1.02	1.03	1.230	1.265	1.268

Limit Clause

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

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

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

2.3 EIRP PEAK POWER

2.3.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (b)(4)

2.3.2 Equipment Under Test and Modification State

SHT22 S/N: IMEI 004401115013381 - Modification State 0
SHT22 S/N: IMEI 004401115013407 - Modification State 0

2.3.3 Date of Test

17 January 2014 & 18 January 2014

2.3.4 Test Equipment Used

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

2.3.5 Test Procedure

The EUT was transmitted at maximum power via a cable to the Spectrum Analyser. The Analyser settings were adjusted to display the resultant trace on screen and a resolution bandwidth and video bandwidth of 1 MHz were used to perform the measurement. The level on the spectrum analyser was maximised by rotating the EUT through 360° and a height search of the measuring antenna. A substitution was then performed using a suitable calibrated antenna and signal generator.

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

A calculation was then performed to obtain the final figure.

2.3.6 Environmental Conditions

Ambient Temperature	21.0 - 22.6°C
Relative Humidity	31.0 - 35.0%

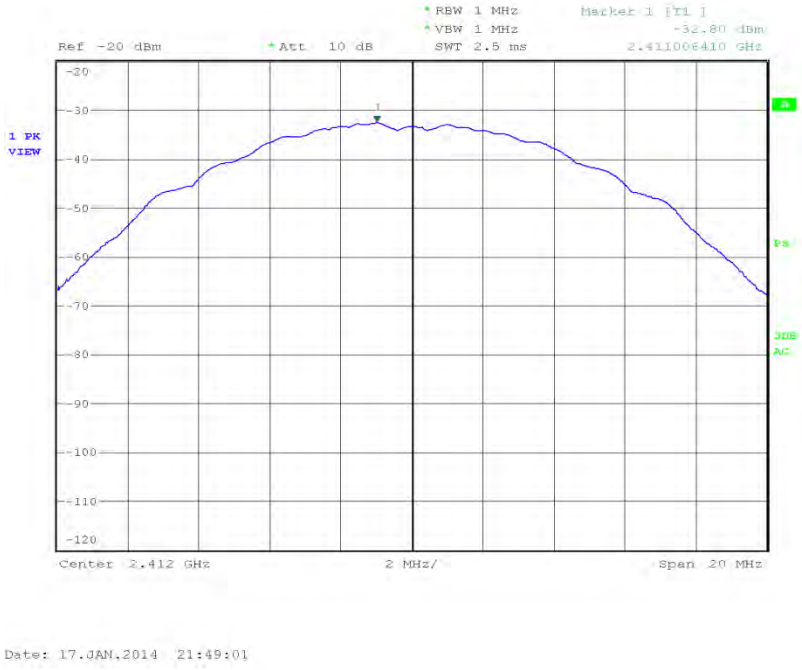
2.3.7 Test Results

802.11(b)

4.0 V DC Supply

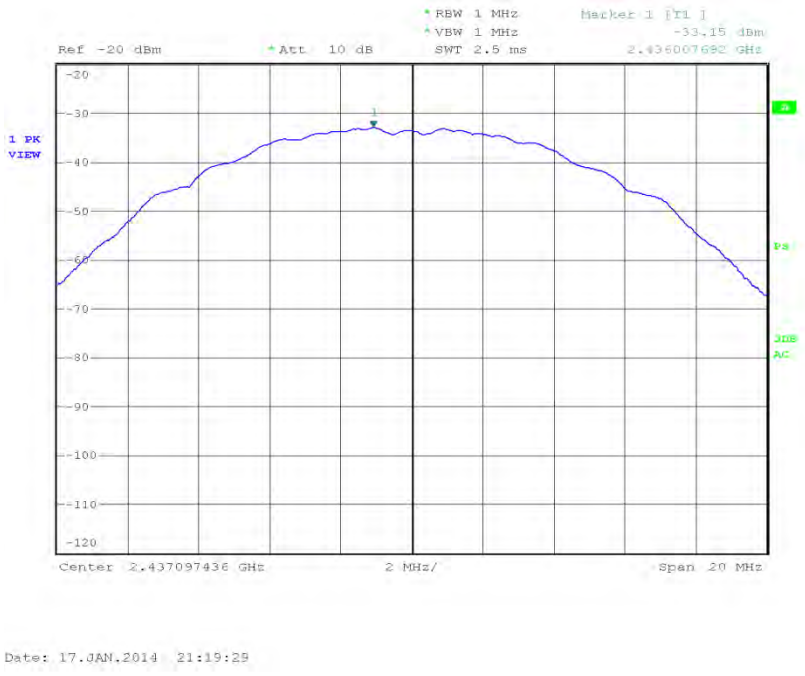
2412 MHz

EIRP (dBm)	EIRP (mW)
17.03	50.466



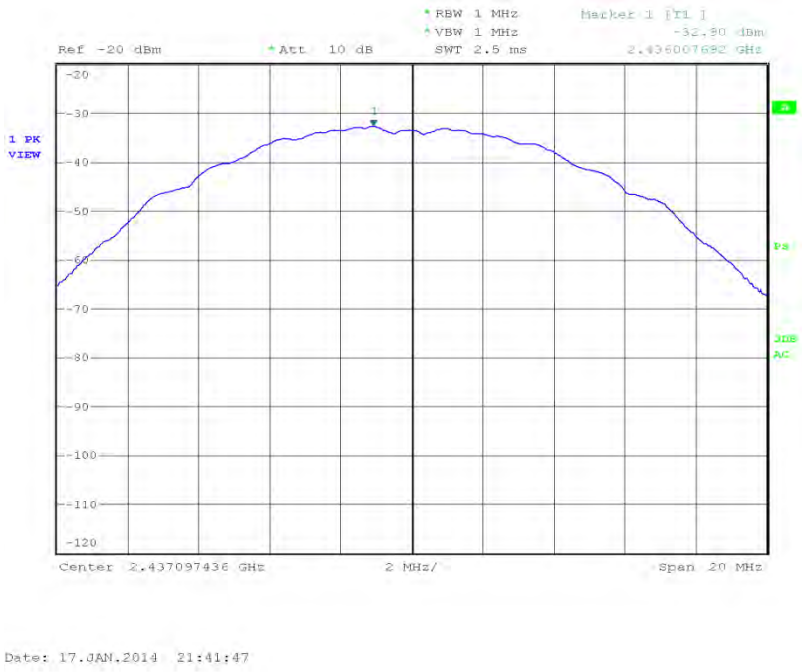
2437 MHz

EIRP (dBm)	EIRP (mW)
17.55	56.885



2462 MHz

EIRP (dBm)	EIRP (mW)
17.64	58.076



Limit

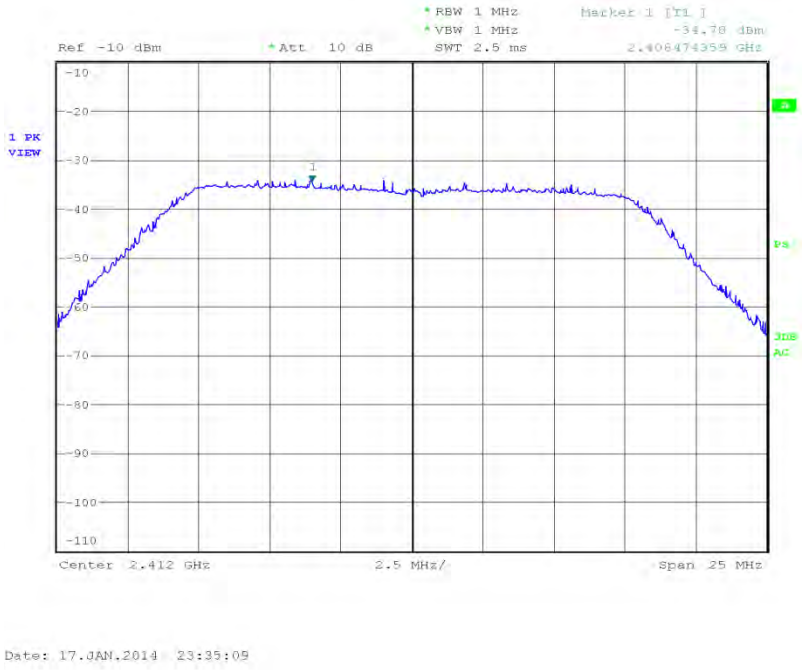
EIRP (dBm)	EIRP (mW)
36.0	4000

802.11(g)

4.0 V DC Supply

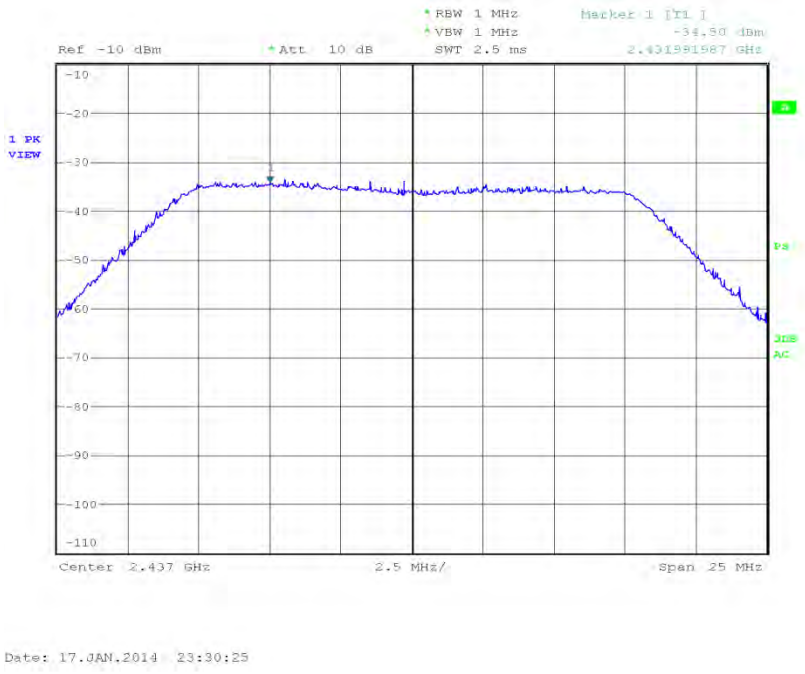
2412 MHz

EIRP (dBm)	EIRP (mW)
19.29	84.918



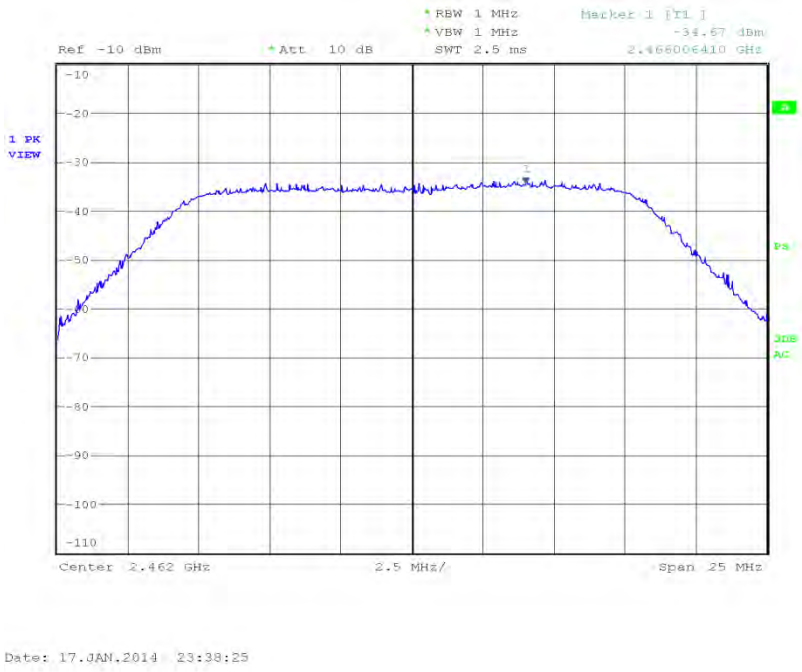
2437 MHz

EIRP (dBm)	EIRP (mW)
20.52	112.720



2462 MHz

EIRP (dBm)	EIRP (mW)
19.92	98.175



Limit

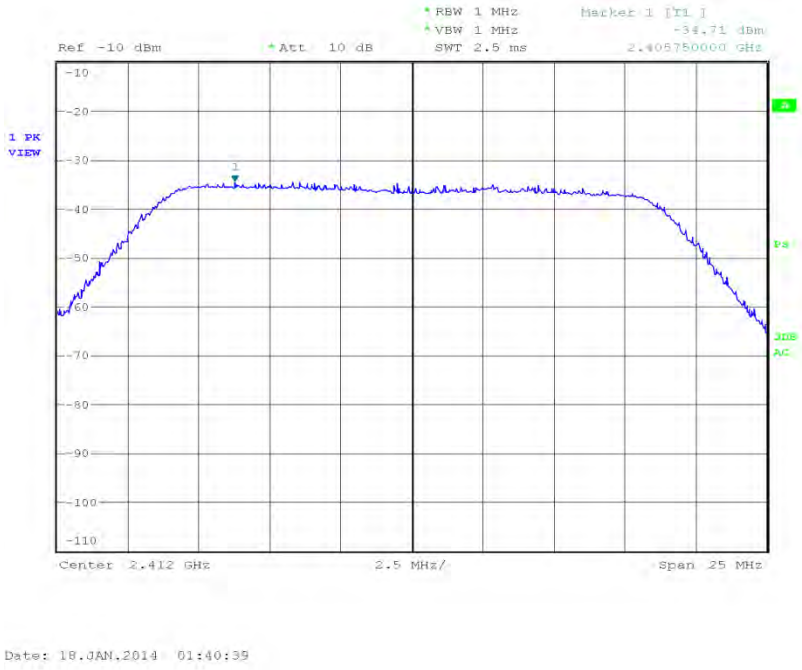
EIRP (dBm)	EIRP (mW)
36.0	4000

802.11(n)

4.0 V DC Supply

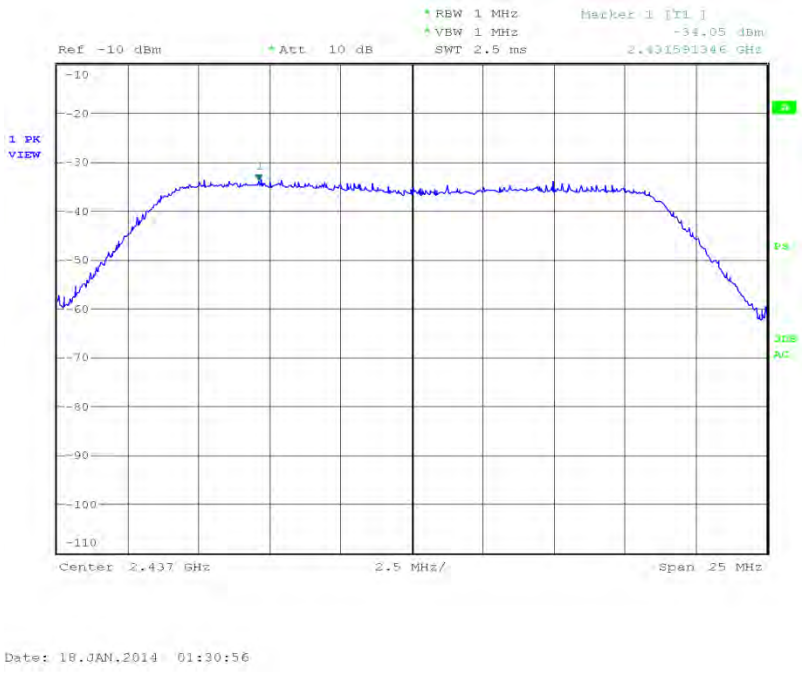
2412 MHz

EIRP (dBm)	EIRP (mW)
19.42	87.498



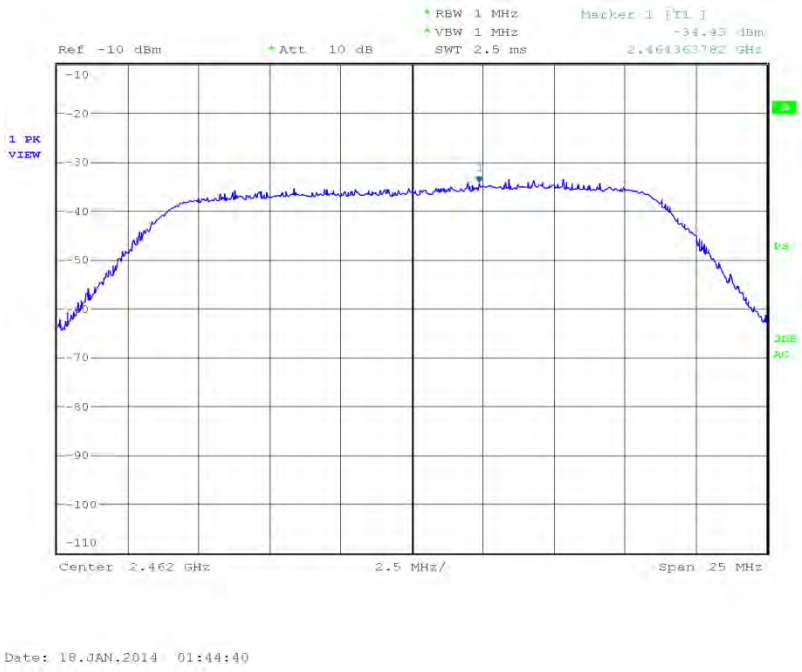
2437 MHz

EIRP (dBm)	EIRP (mW)
21.05	127.350



2462 MHz

EIRP (dBm)	EIRP (mW)
20.34	108.143



Limit

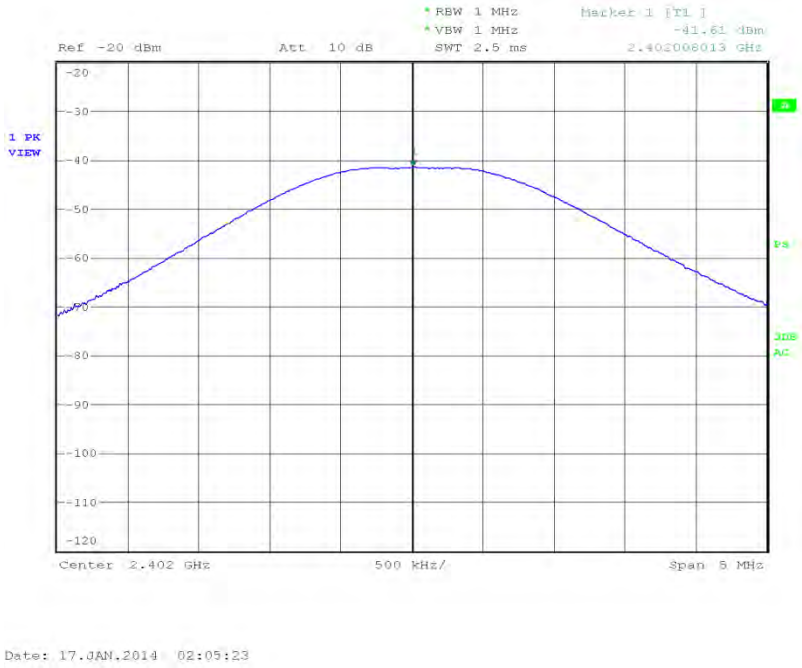
EIRP (dBm)	EIRP (mW)
36.0	4000

Bluetooth Low Energy

4.0 V DC Supply

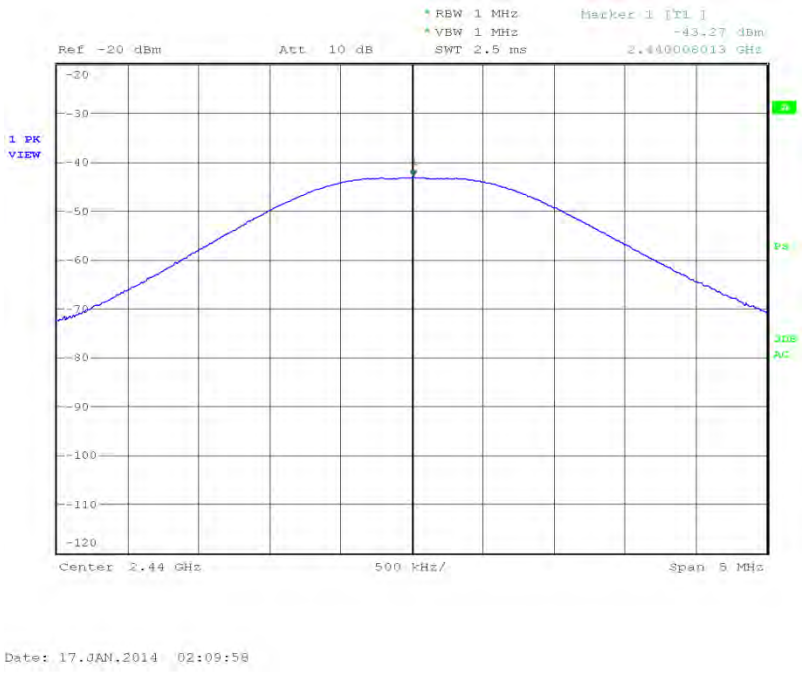
2402 MHz

EIRP (dBm)	EIRP (mW)
0.46	1.111



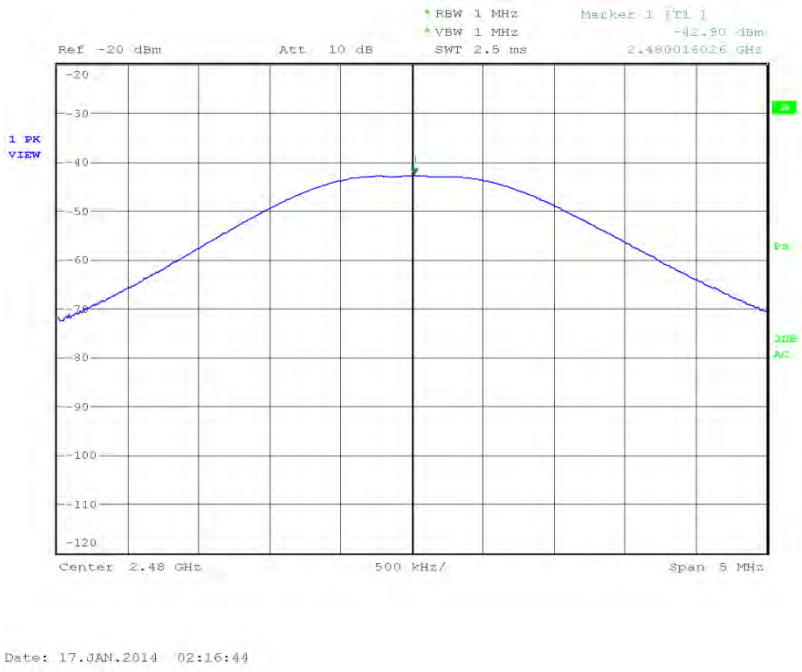
2441 MHz

EIRP (dBm)	EIRP (mW)
-0.23	0.948



2480 MHz

EIRP (dBm)	EIRP (mW)
-0.2	0.954



Limit

EIRP (dBm)	EIRP (mW)
36.0	4000

2.4 SPURIOUS AND BAND EDGE EMISSIONS

2.4.1 Specification Reference

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

2.4.2 Equipment Under Test and Modification State

SHT22 S/N: IMEI 004401115013514 - Modification State 0

2.4.3 Date of Test

16 January 2014, 17 January 2014, 18 January 2014 & 19 January 2014

2.4.4 Test Equipment Used

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

2.4.5 Test Procedure

For conducted emissions, the EUT was set to operate at maximum power on the worst case data rate. The test was performed on the bottom, middle and top channels. The test was performed from 9 kHz to 25 GHz. Firstly, the power of each fundamental frequency was measured in 100 kHz bandwidth and this was used to show a -20 dBc limit line on the trace. The measurement path loss in each relevant frequency band was measured and entered as a reference level offset.

For radiated emissions, the test method described above was also used. However, the measurement was performed from 30 MHz to 25 GHz and the path loss is incorporated as a transducer factor and entered into the spectrum analyser.

The band edge measurements were performed in accordance with ANSI C63.10, Clause 6.9.2. The results were analysed to ensure compliance with restricted bands. The EUT was set to the lowest and highest operating frequencies.

2.4.6 Environmental Conditions

Ambient Temperature	20.4 - 24.8°C
Relative Humidity	31.0 - 37.0%

2.4.7 Test Results

802.11(b)

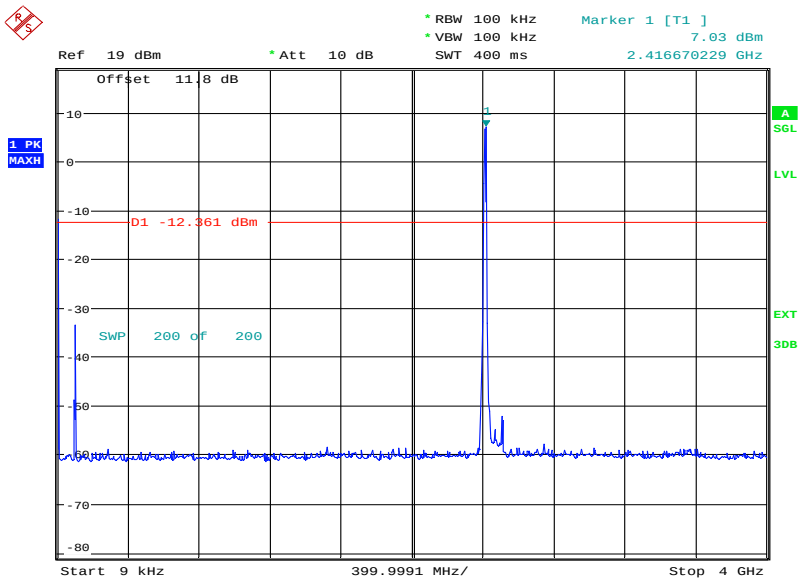
4.0 V DC Supply

Spurious Conducted Emissions

1 Mbps

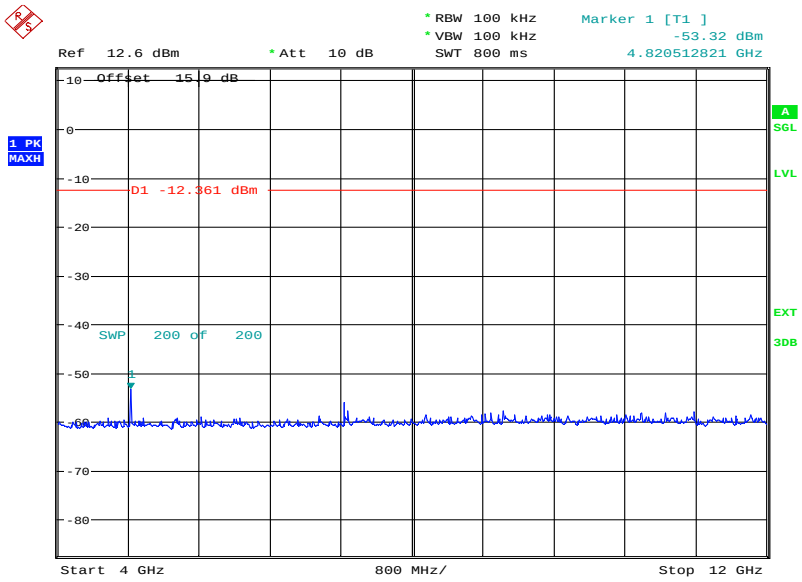
2412 MHz

9 kHz to 4 GHz



Date: 16.JAN.2014 12:14:09

4 GHz to 12 GHz



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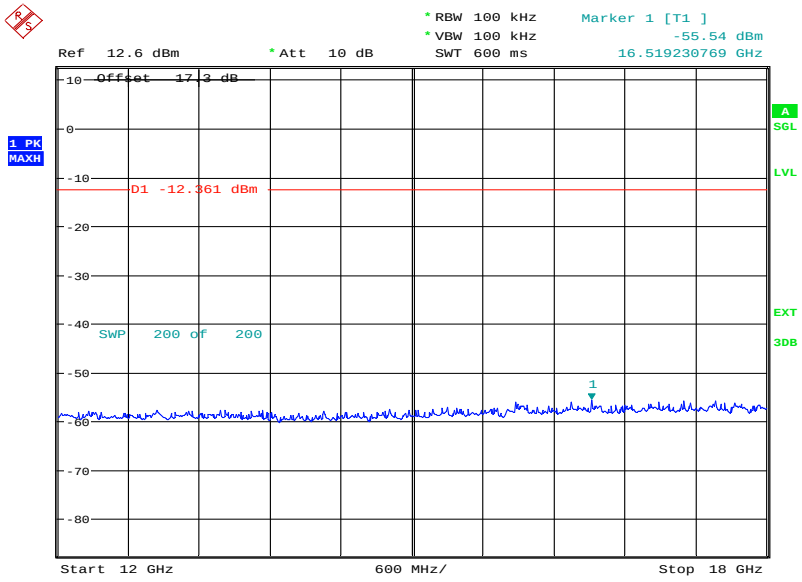
12 GHz to 18 GHz



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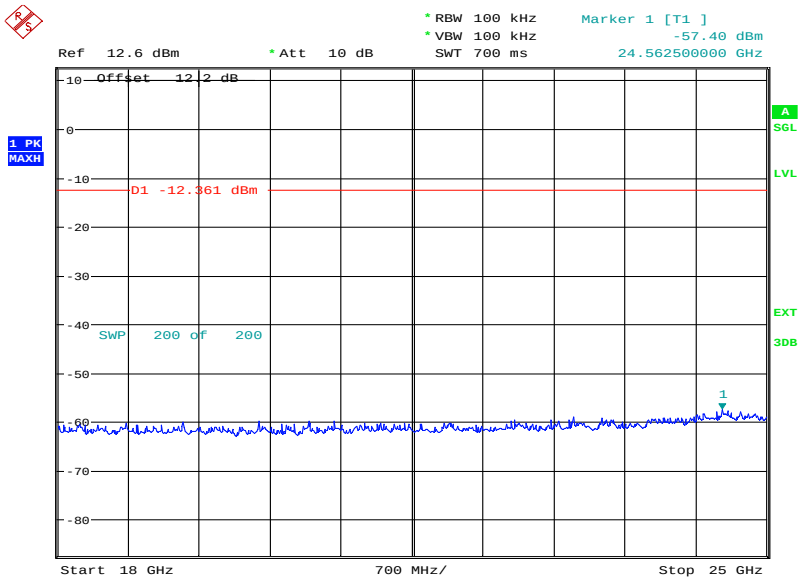
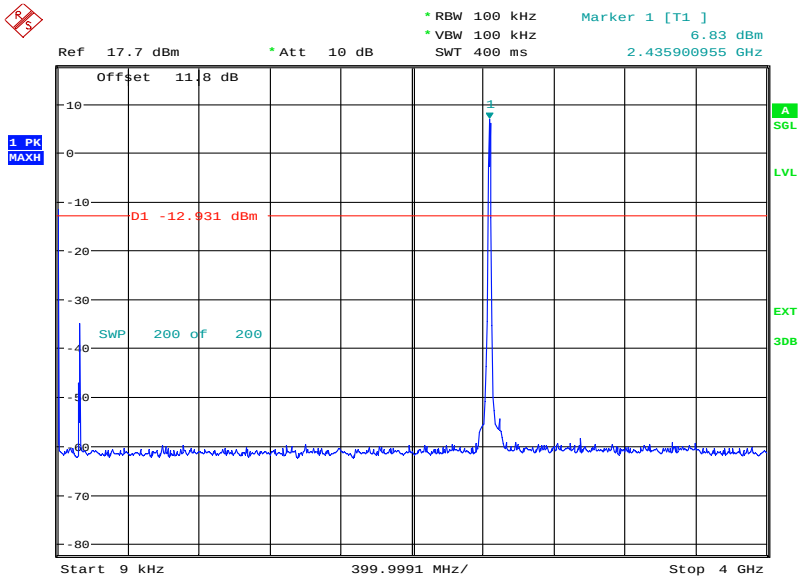
18 GHz to 25 GHz



Date: 17.JAN.2014 09:03:01

2437 MHz

9 kHz to 4 GHz



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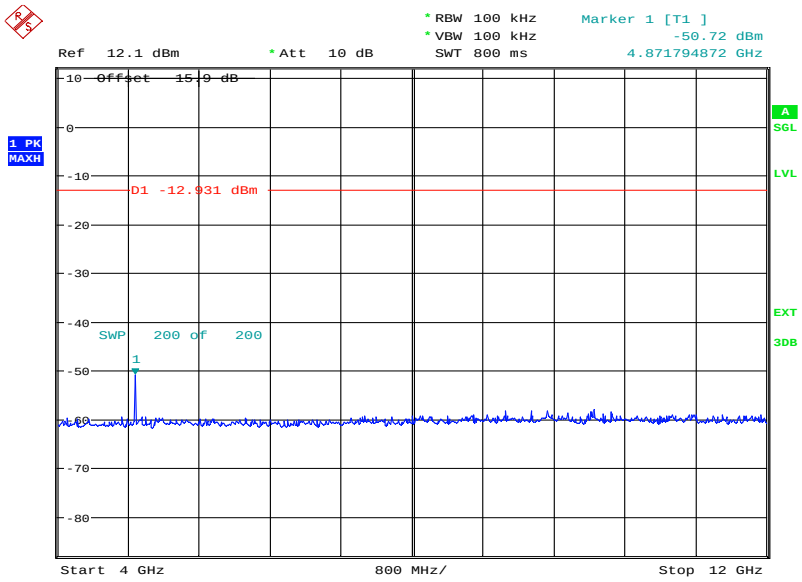
4 GHz to 12 GHz



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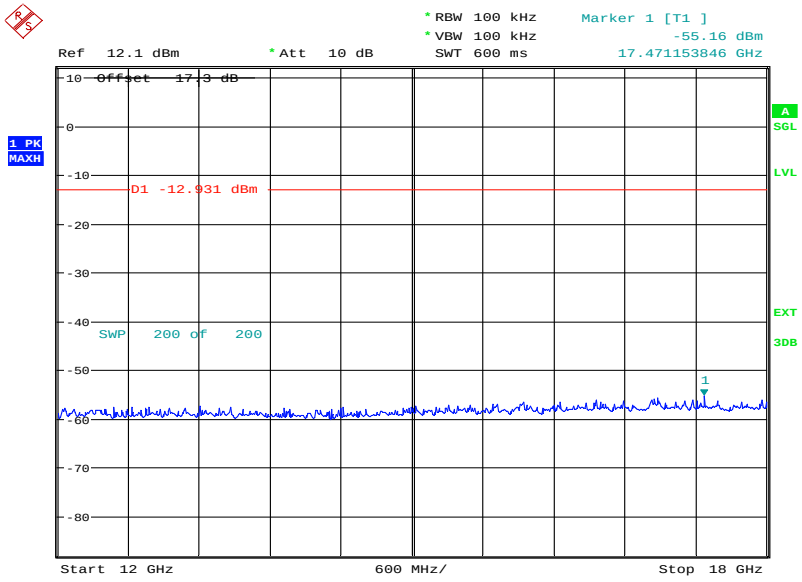
12 GHz to 18 GHz



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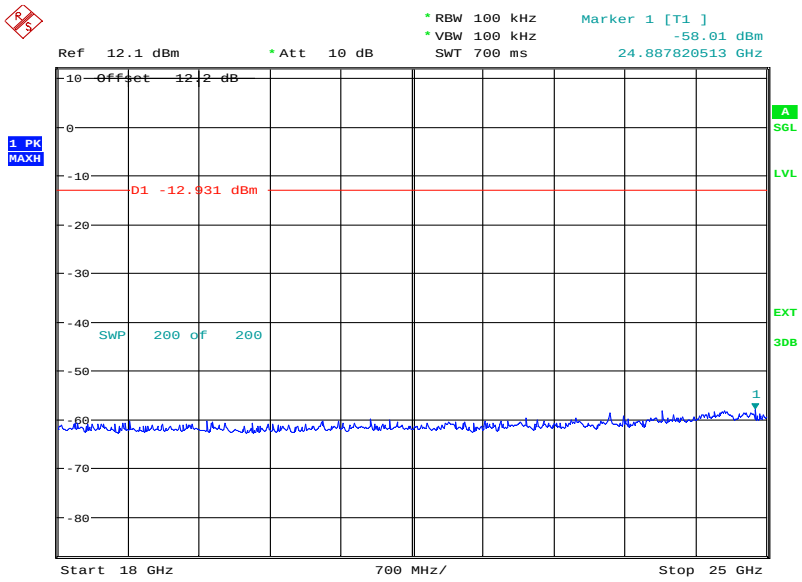
18 GHz to 25 GHz



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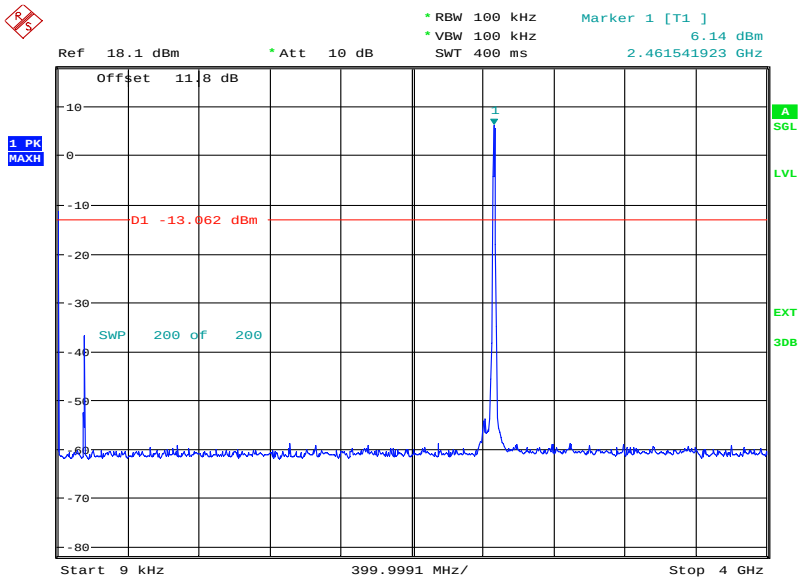
2462 MHz

9 kHz to 4 GHz



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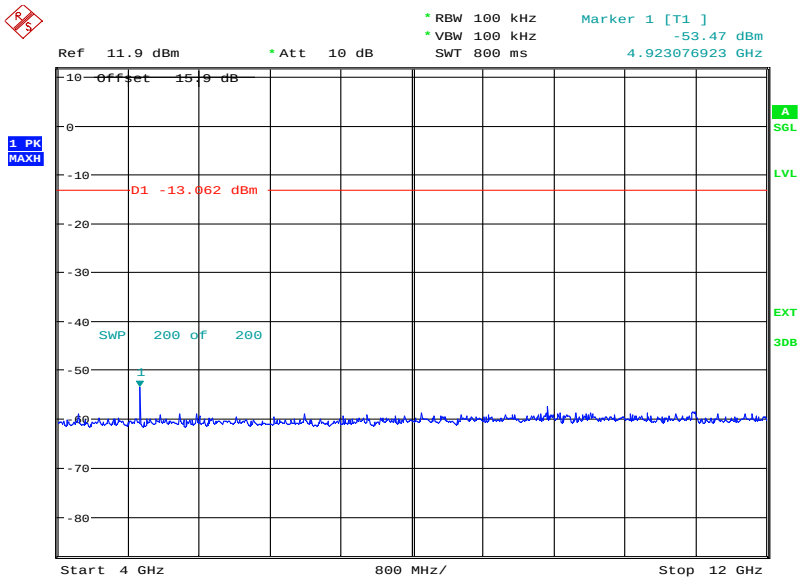
4 GHz to 12 GHz



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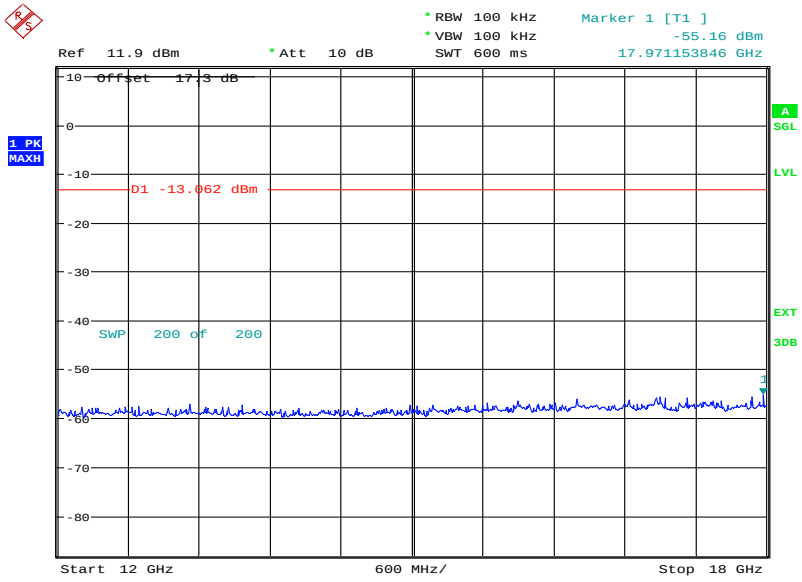
12 GHz to 18 GHz



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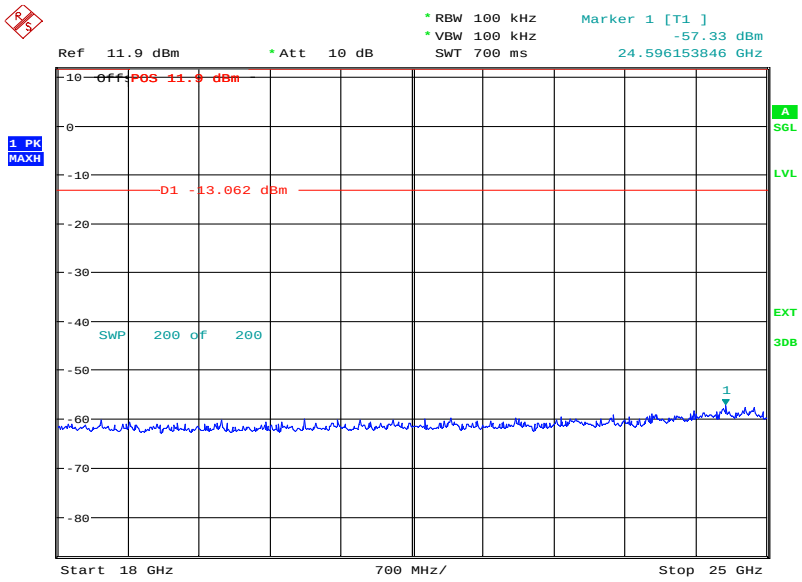
18 GHz to 25 GHz



Date: 16.JAN.2014 16:06:44

Limit Clause

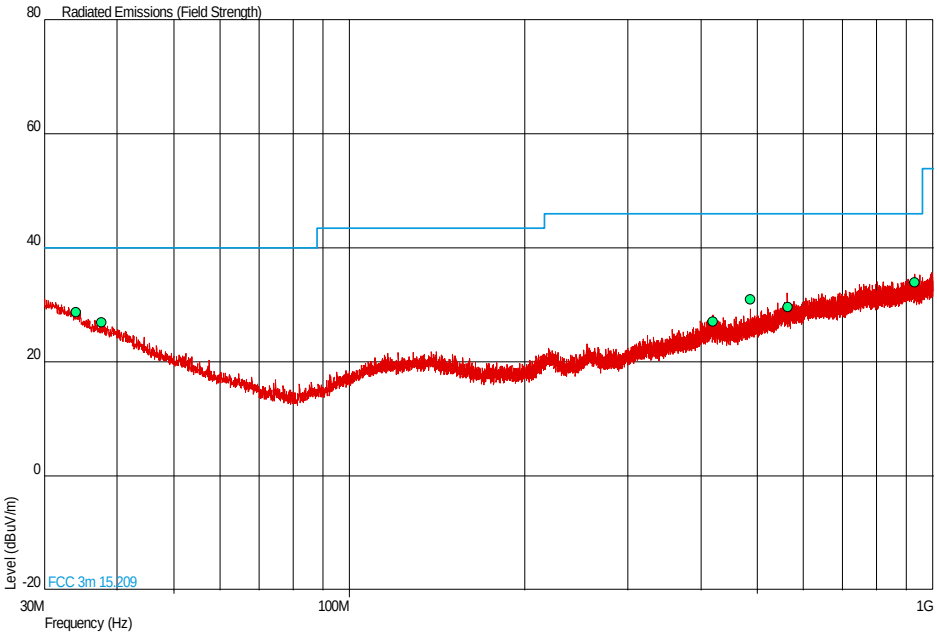
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval the attenuation required shall be 30 dB instead of 20 dB.

Spurious Radiated Emissions

2412 MHz

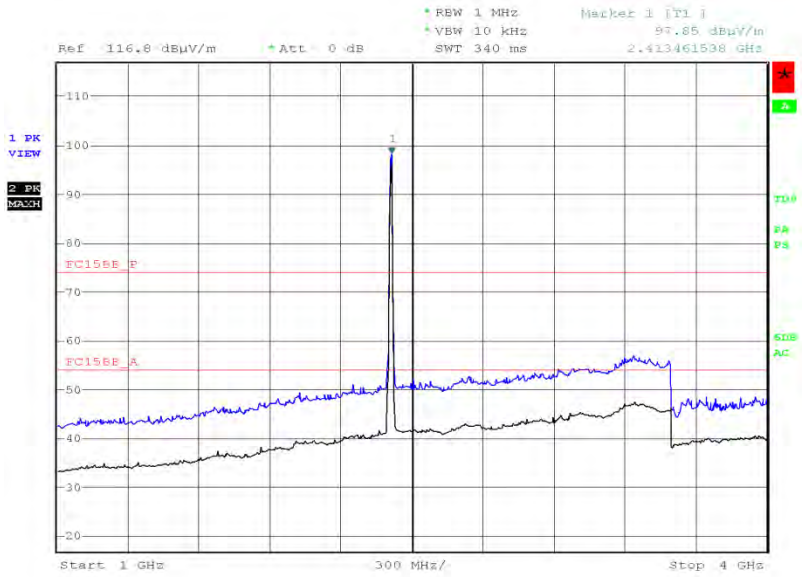
30 MHz to 1 GHz



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
33.977	28.7	27.2	40.0	100	-11.3	72.8	89	1.00	Horizontal
37.605	26.9	22.1	40.0	100	-13.1	77.9	236	1.00	Vertical
419.455	27.1	22.6	46.0	200	-18.9	177.4	317	1.00	Horizontal
486.191	31.0	35.5	46.0	200	-15.0	164.5	348	1.00	Vertical
563.250	29.6	30.2	46.0	200	-16.4	169.8	0	1.00	Horizontal
929.600	33.9	49.5	46.0	200	-12.1	150.5	343	1.00	Vertical

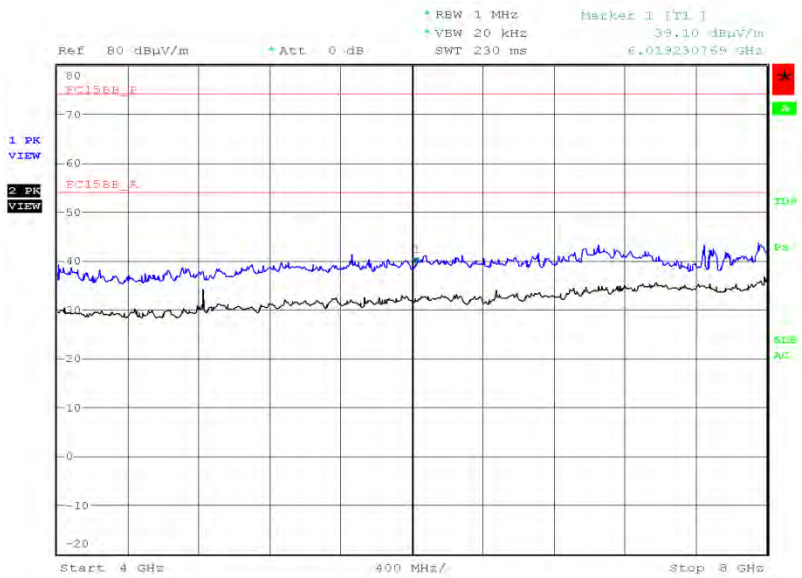
Product Service

1 GHz to 3 GHz



Date: 17.JAN.2014 22:37:36

3 GHz to 8 GHz



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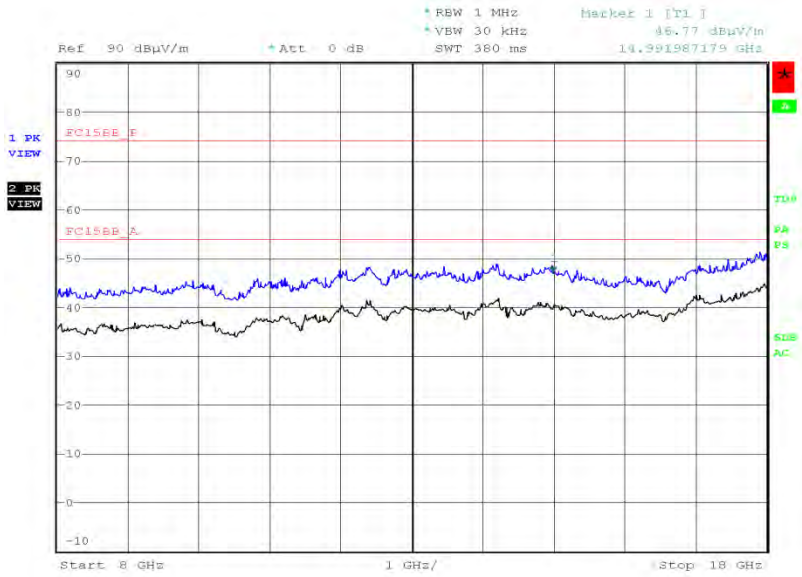
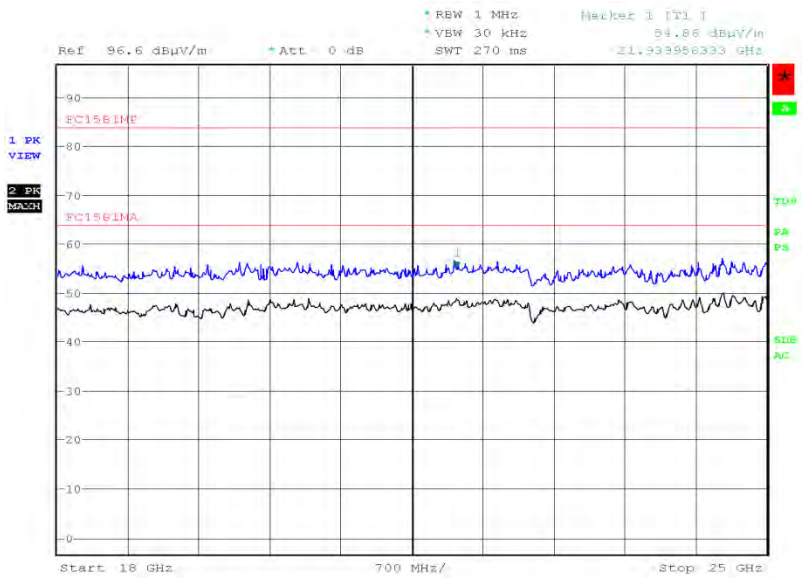
Product Service

8 GHz to 18 GHz



Date: 19.JAN.2014 01:20:43

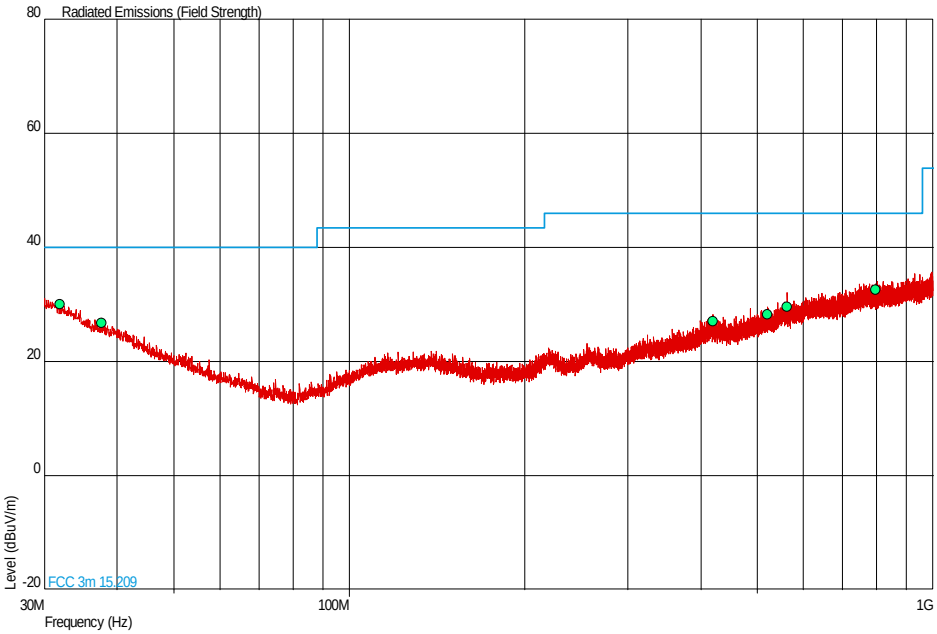
18 GHz to 25 GHz



Date: 19.JAN.2014 04:11:48

2437 MHz

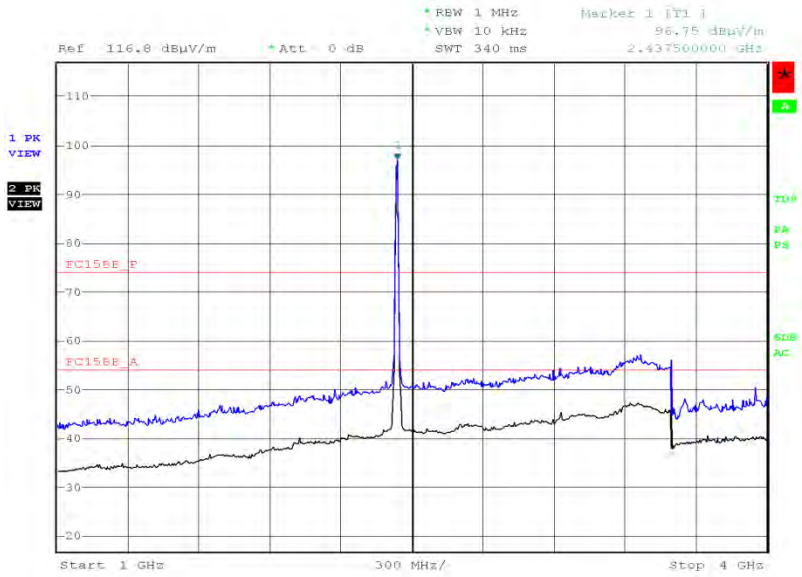
30 MHz to 1 GHz



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
31.972	30.0	31.6	40.0	100	-10.0	68.4	19	4.00	Horizontal
37.615	26.8	21.9	40.0	100	-13.2	78.1	340	1.00	Vertical
419.314	27.1	22.6	46.0	200	-18.9	177.4	189	1.24	Horizontal
520.885	28.3	26.0	46.0	200	-17.7	174.0	131	1.00	Vertical
563.015	29.7	30.5	46.0	200	-16.3	169.5	207	1.00	Horizontal
796.152	32.7	43.2	46.0	200	-13.3	156.8	204	3.80	Horizontal

Product Service

1 GHz to 3 GHz



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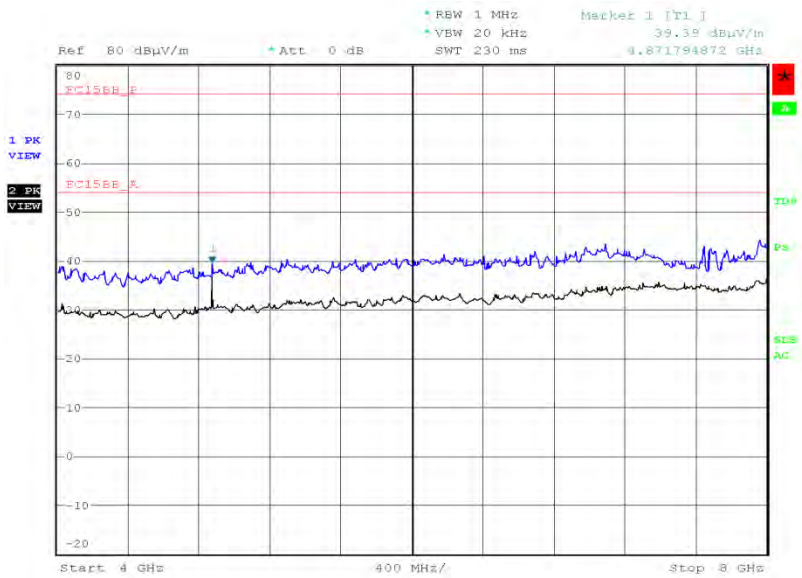
3 GHz to 8 GHz



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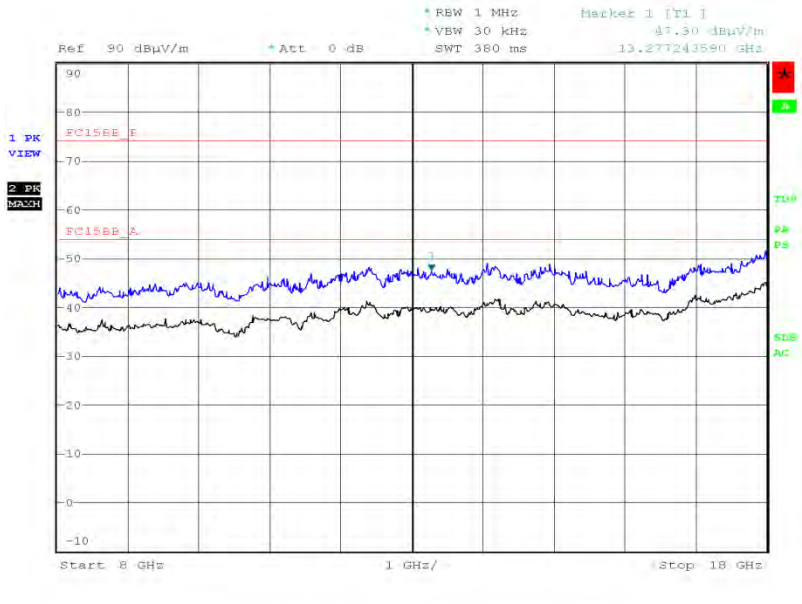
Product Service

8 GHz to 18 GHz



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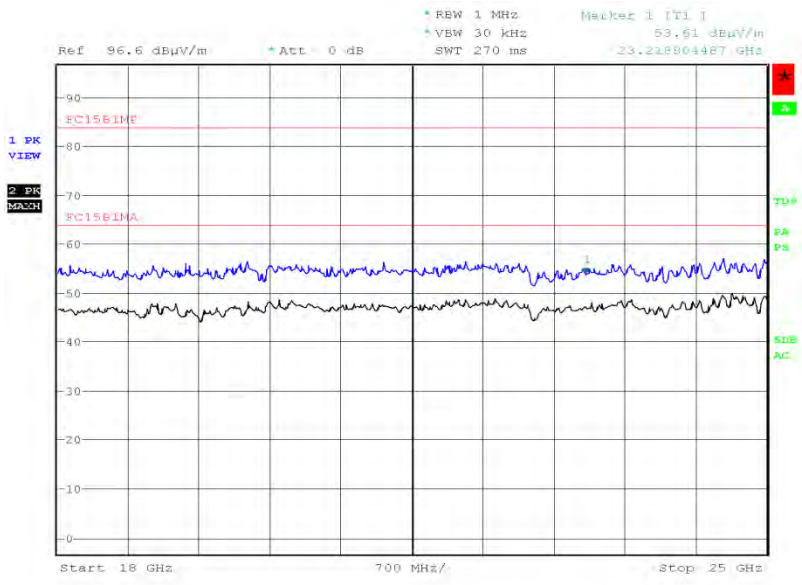
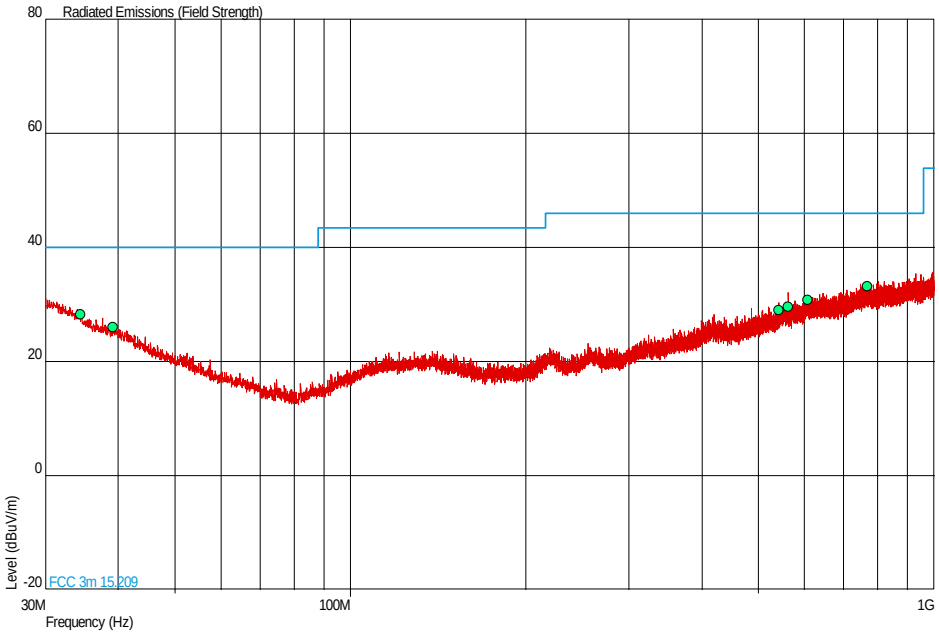
18 GHz to 25 GHz



Date: 19.JAN.2014 04:22:02

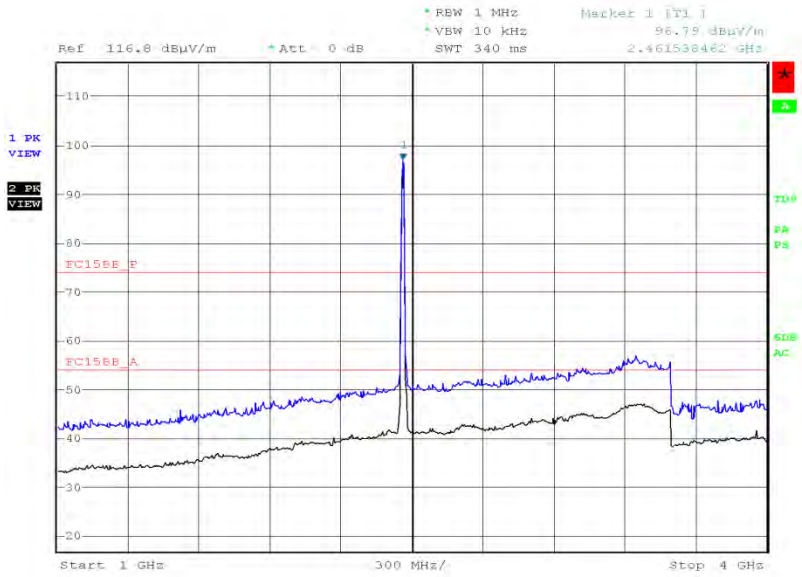
2462 MHz

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
34.516	28.3	26.0	40.0	100	-11.7	74.0	174	1.00	Horizontal
39.218	26.0	20.0	40.0	100	-14.0	80.0	161	1.00	Horizontal
541.524	29.0	28.2	46.0	200	-17.0	171.8	360	1.00	Horizontal
563.015	29.6	30.2	46.0	200	-16.4	169.8	62	1.00	Horizontal
606.773	30.8	34.7	46.0	200	-15.2	165.3	77	1.00	Horizontal
767.063	33.2	45.7	46.0	200	-12.8	154.3	263	1.00	Vertical

1 GHz to 3 GHz



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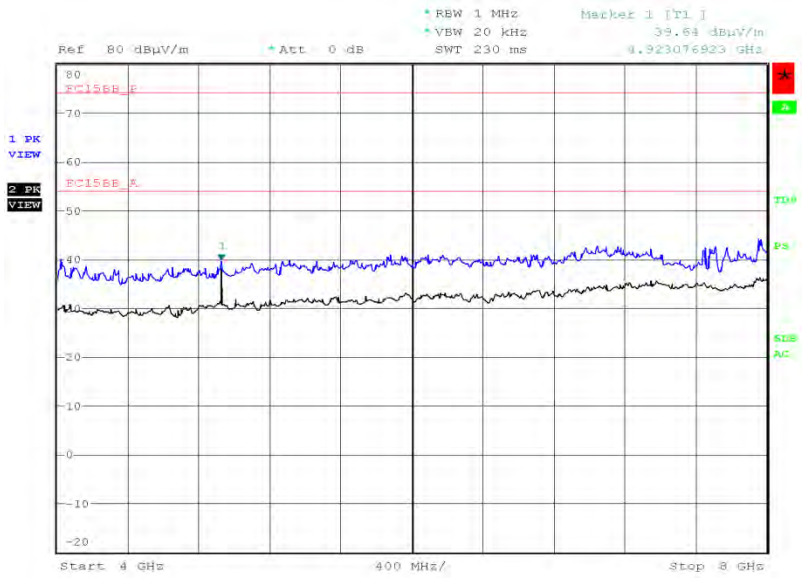
3 GHz to 8 GHz



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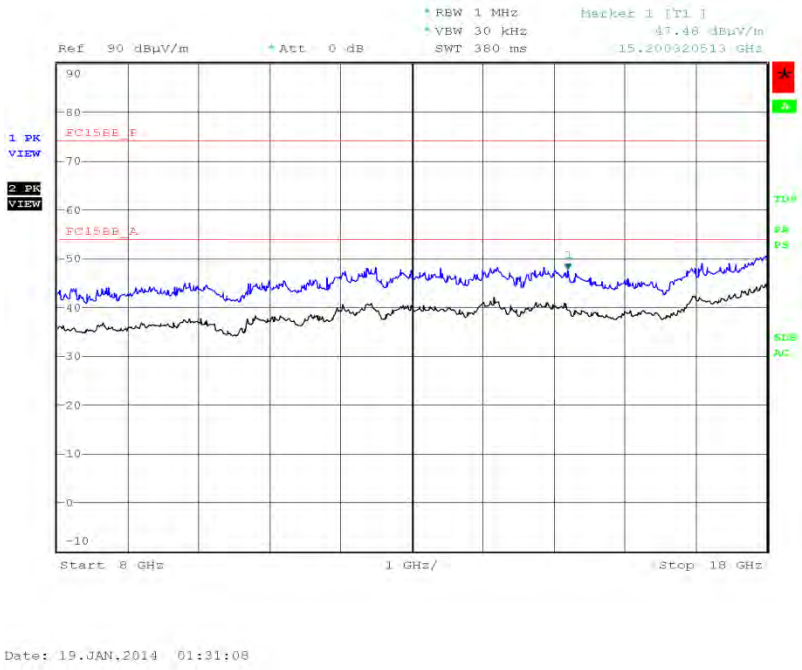
8 GHz to 18 GHz



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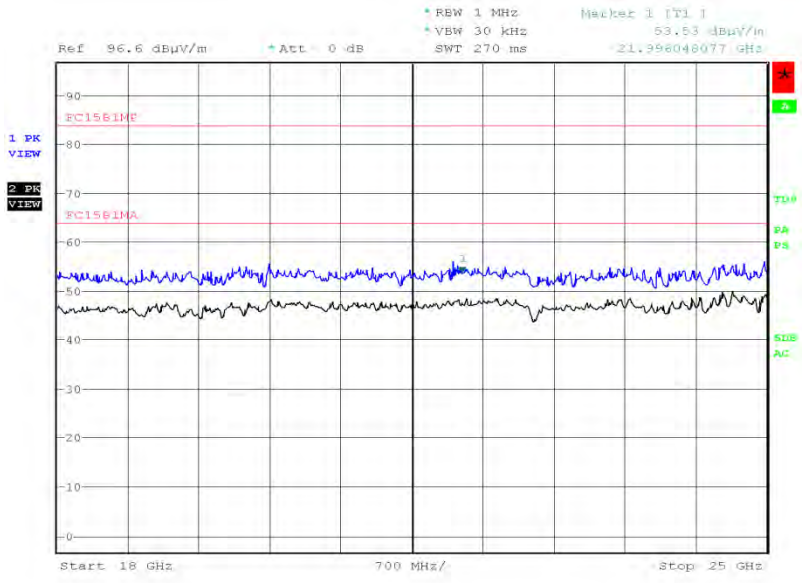
18 GHz to 25 GHz



Date: 19.JAN.2014 04:27:13

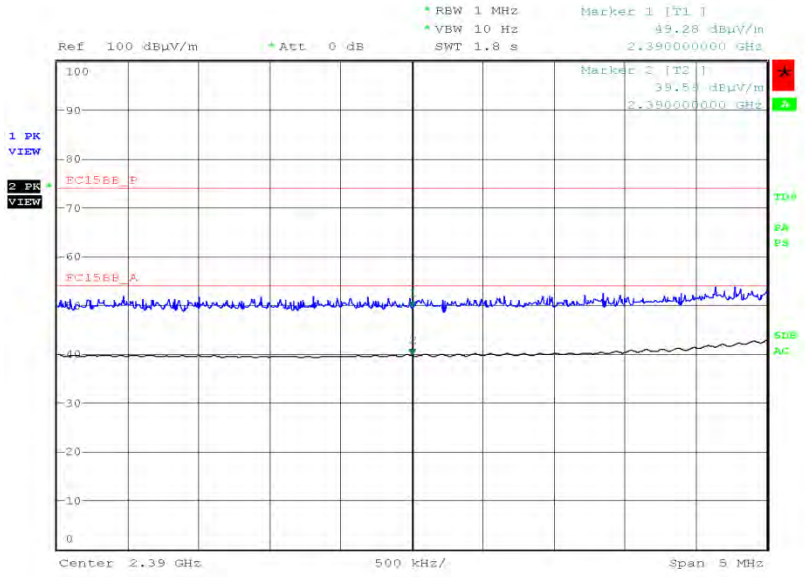
Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

Band Edge Emissions

2412 MHz

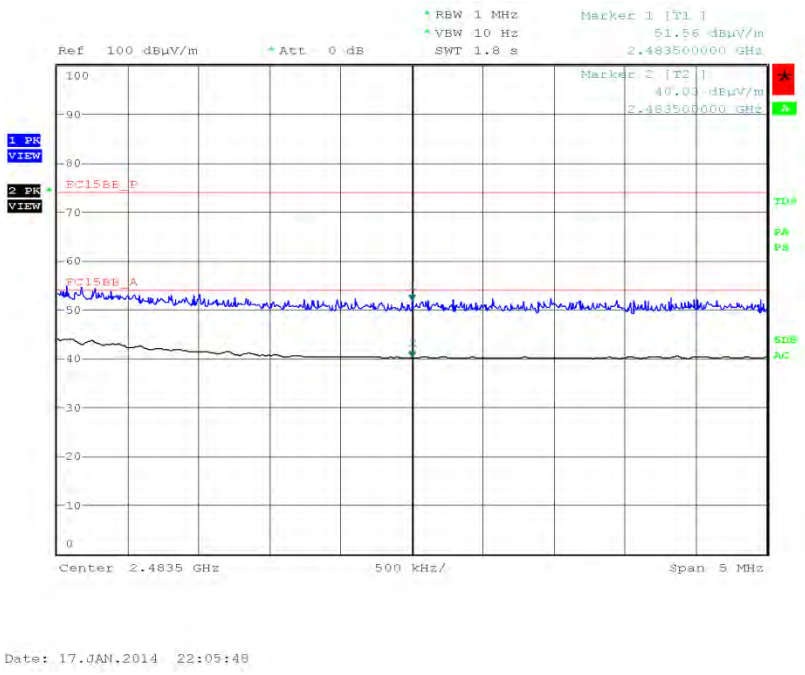
Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	49.28	39.59



Date: 17.JAN.2014 21:59:20

2462 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	51.56	40.03



Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

802.11(g)

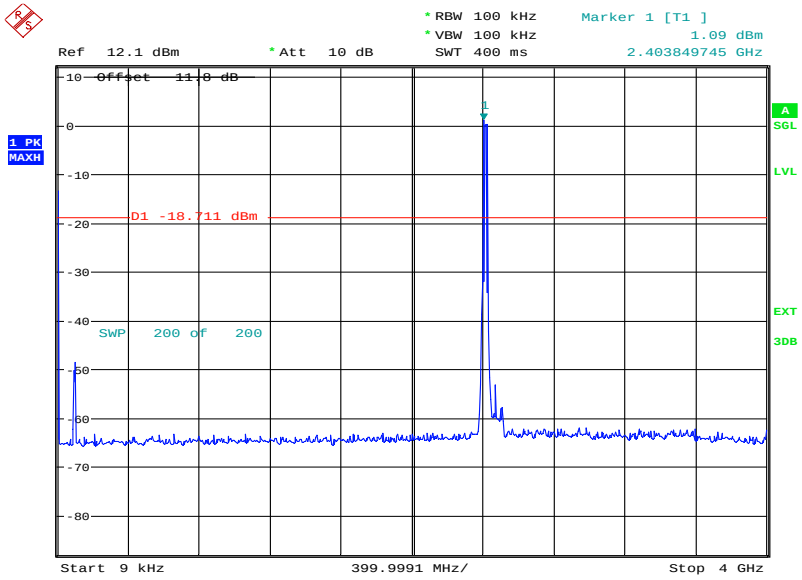
4.0 V DC Supply

Spurious Conducted Emissions

6 Mbps

2412 MHz

9 kHz to 4 GHz



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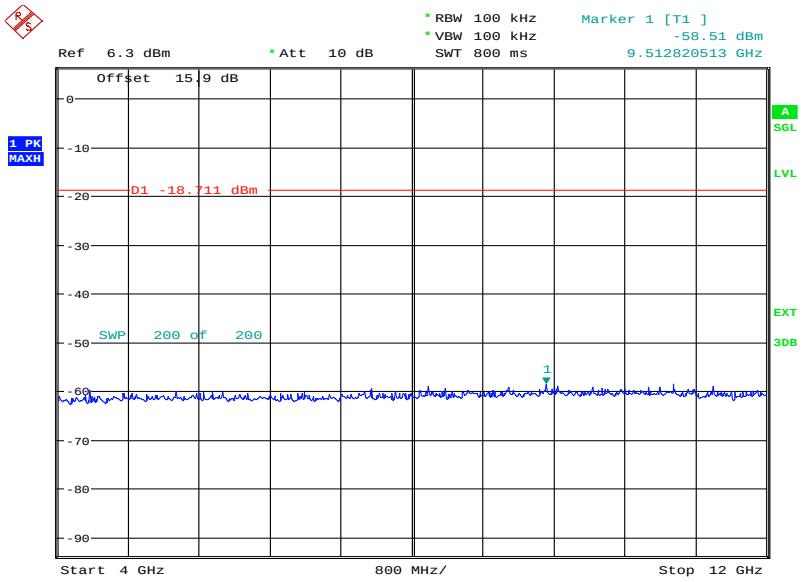
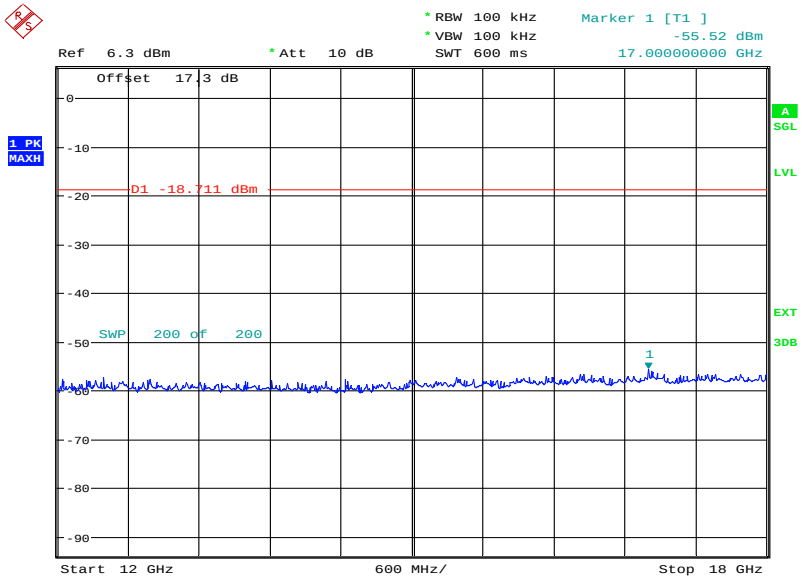
4 GHz to 12 GHz



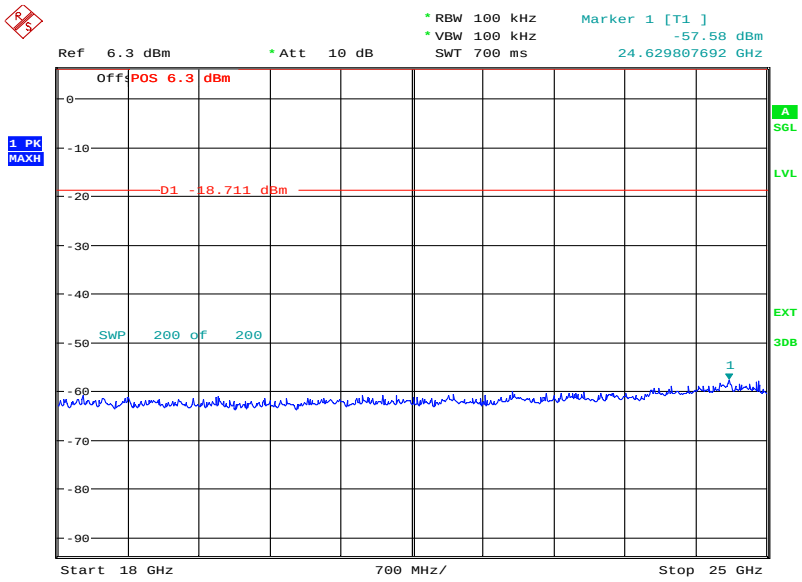
Date: 16.JAN.2014 15:11:10

12 GHz to 18 GHz



Date: 16.JAN.2014 15:13:38

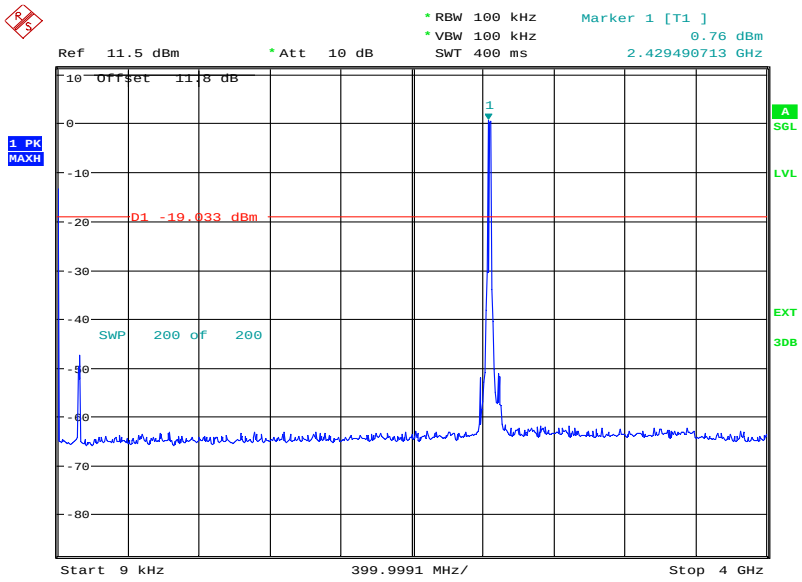
18 GHz to 25 GHz



Date: 17.JAN.2014 08:57:02

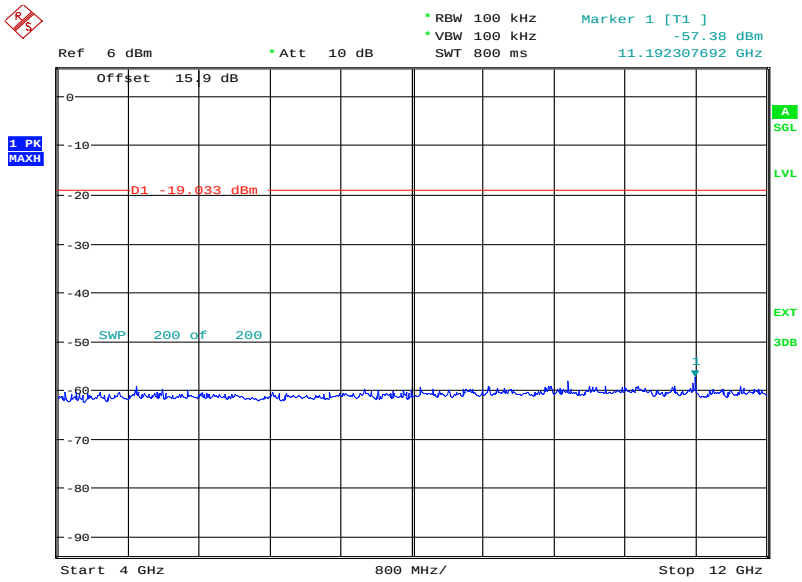
2437 MHz

9 kHz to 4 GHz



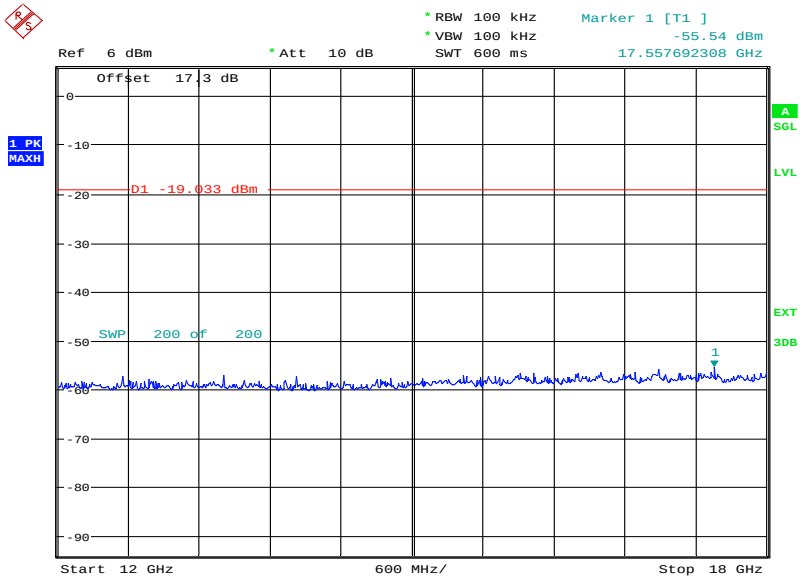
Date: 16.JAN.2014 12:58:25

4 GHz to 12 GHz



Date: 16.JAN.2014 15:17:24

12 GHz to 18 GHz



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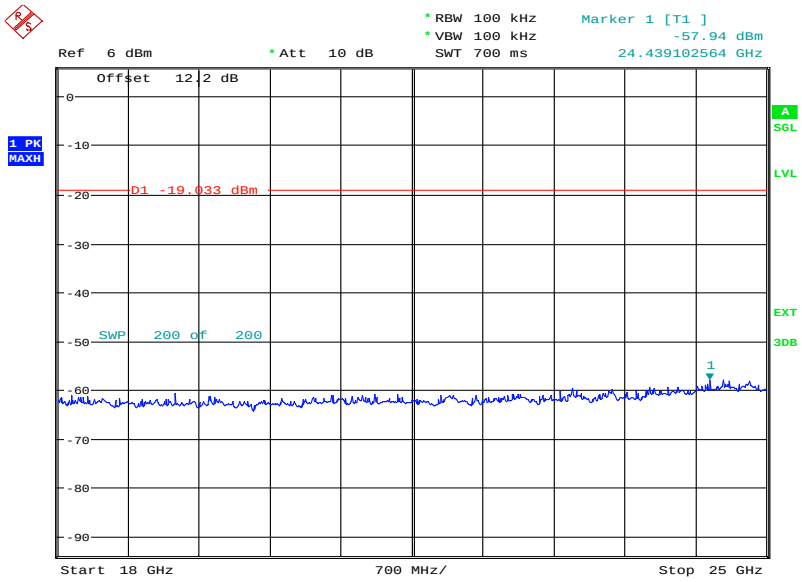
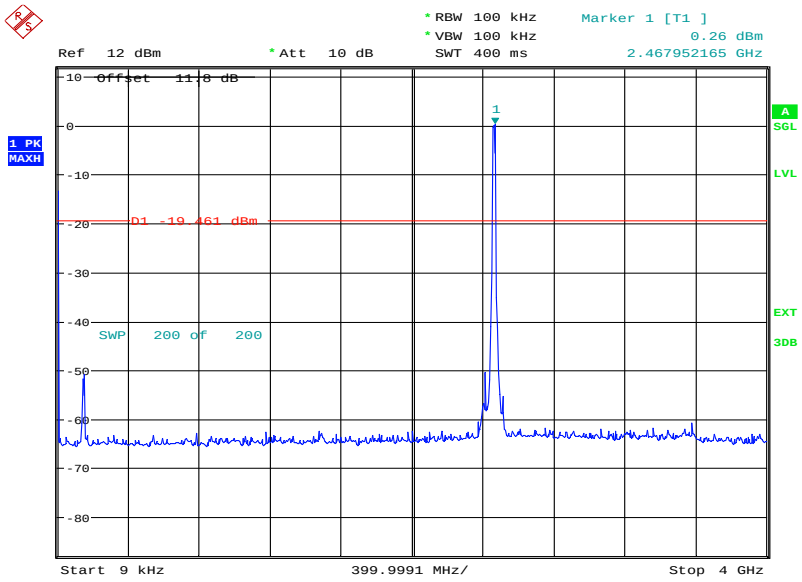
18 GHz to 25 GHz



Date: 16.JAN.2014 16:14:37

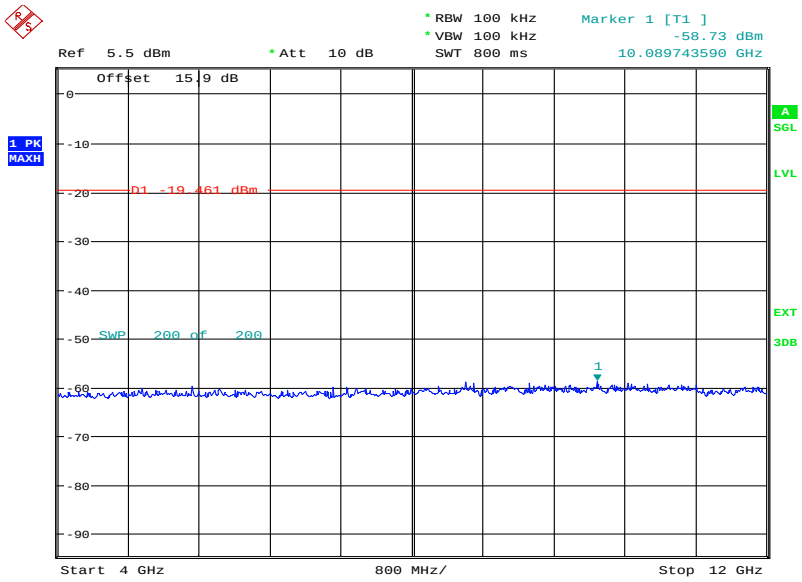
2462 MHz

9 kHz to 4 GHz



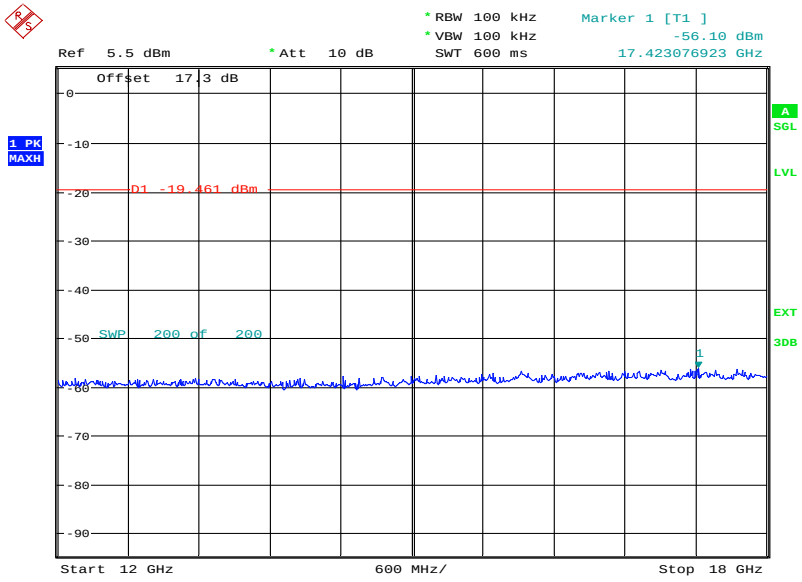
Date: 16.JAN.2014 13:01:27

4 GHz to 12 GHz



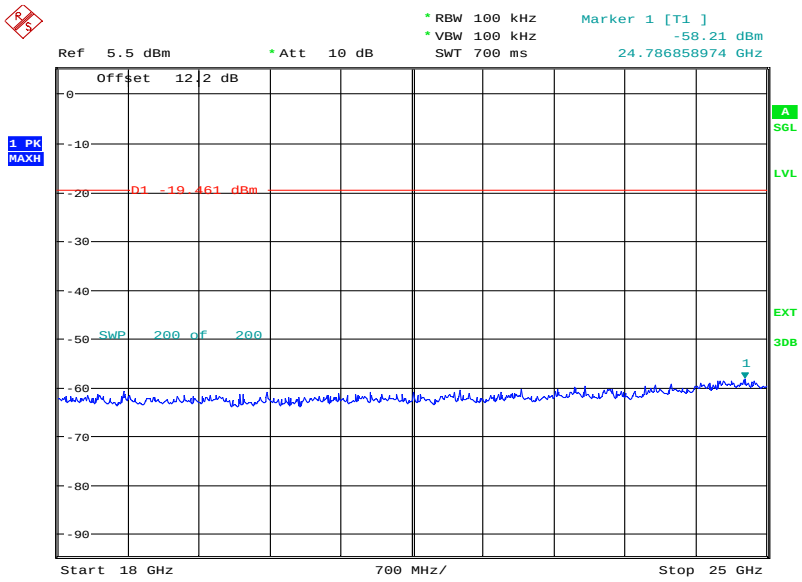
Date: 16.JAN.2014 15:23:35

12 GHz to 18 GHz



Date: 16.JAN.2014 15:26:01

18 GHz to 25 GHz



Date: 16.JAN.2014 16:31:36

Limit Clause

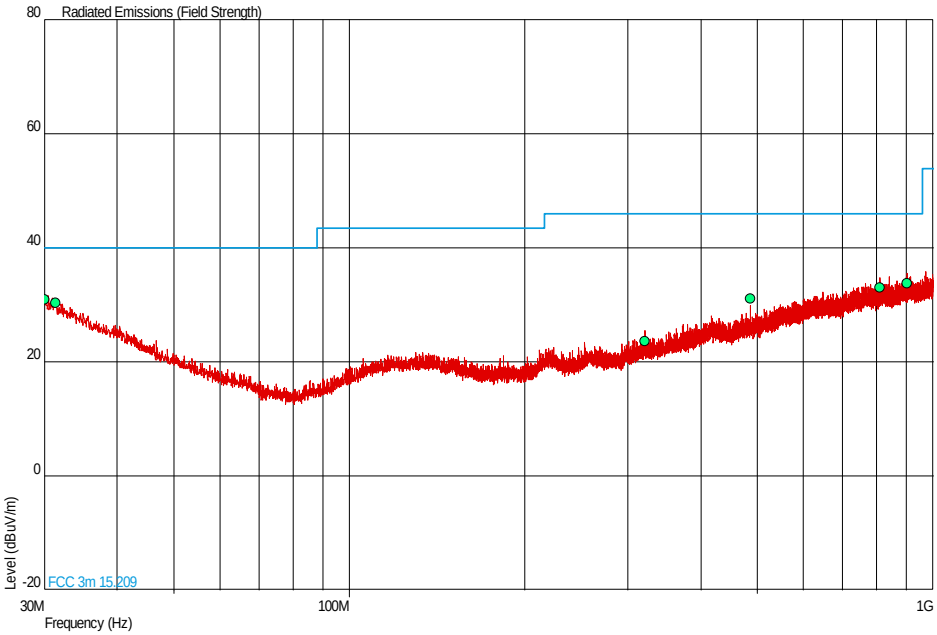
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval the attenuation required shall be 30 dB instead of 20 dB.

Spurious Radiated Emissions

2412 MHz

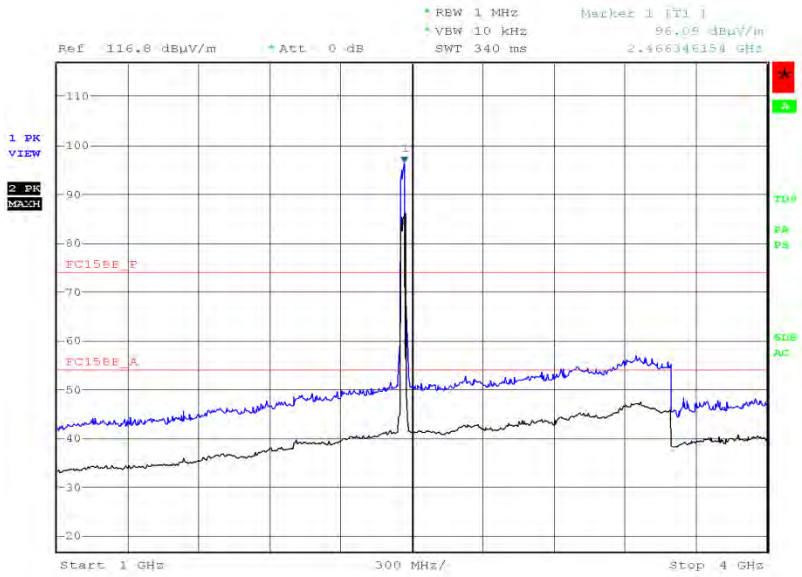
30 MHz to 1 GHz



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
30.045	31.0	35.5	40.0	100	-9.0	64.5	352	1.00	Vertical
31.408	30.3	32.7	40.0	100	-9.7	67.3	70	1.00	Horizontal
321.051	23.6	15.1	46.0	200	-22.4	184.9	71	1.00	Vertical
486.199	31.2	36.3	46.0	200	-14.8	163.7	9	1.09	Vertical
811.789	33.1	45.2	46.0	200	-12.9	154.8	287	1.00	Horizontal
903.824	33.8	49.0	46.0	200	-12.2	151.0	15	1.00	Vertical

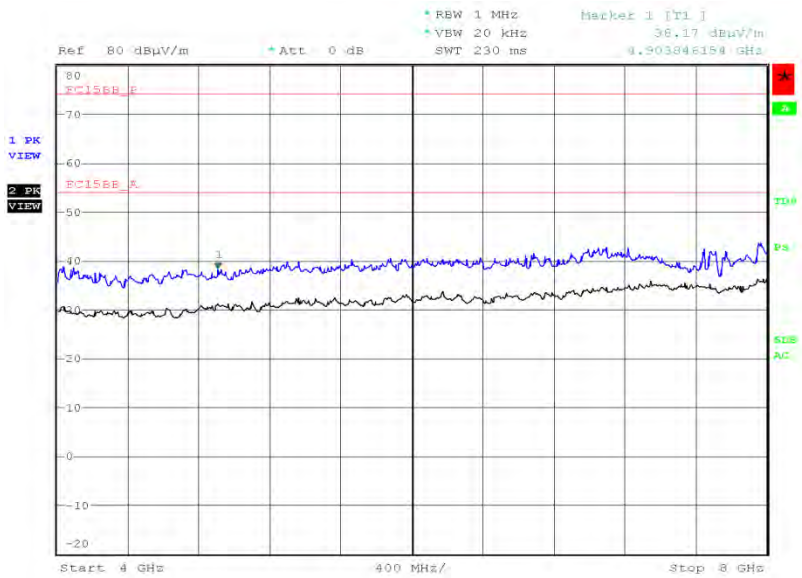
Product Service

1 GHz to 3 GHz



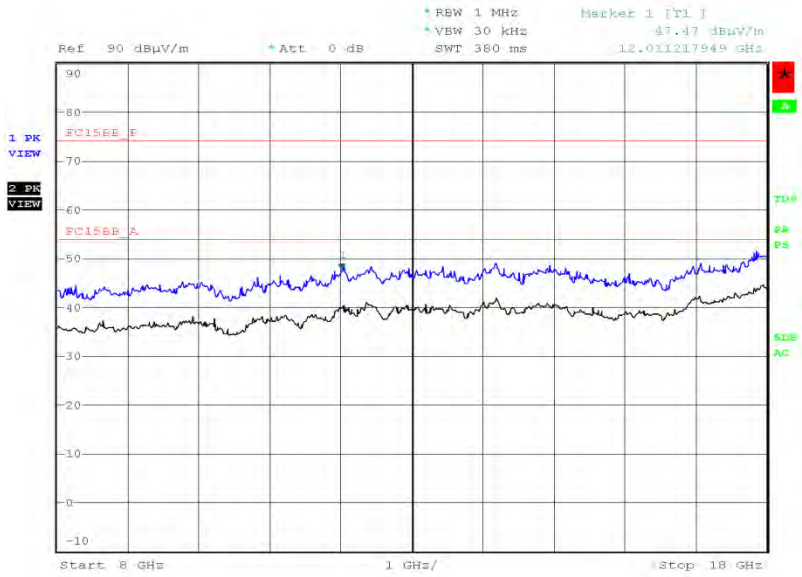
Date: 17.JAN.2014 23:51:00

3 GHz to 8 GHz



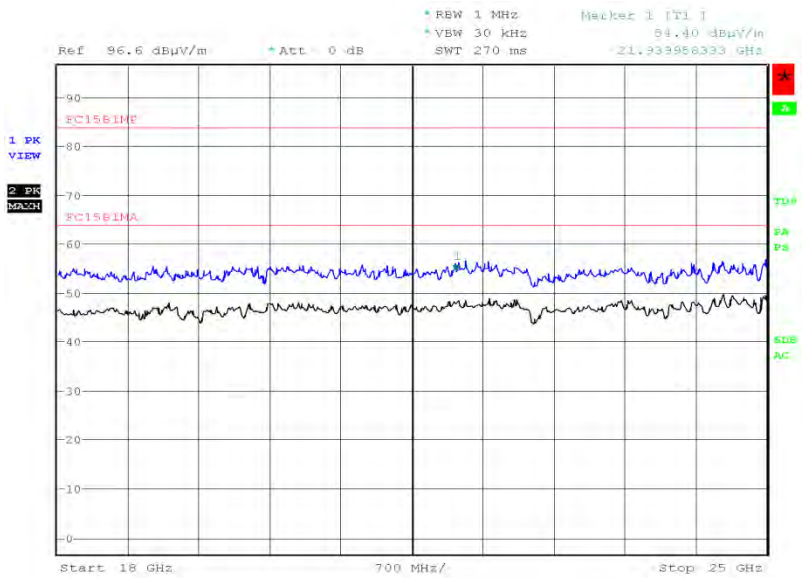
Date: 18.JAN.2014 22:21:51

8 GHz to 18 GHz



Date: 19.JAN.2014 01:37:10

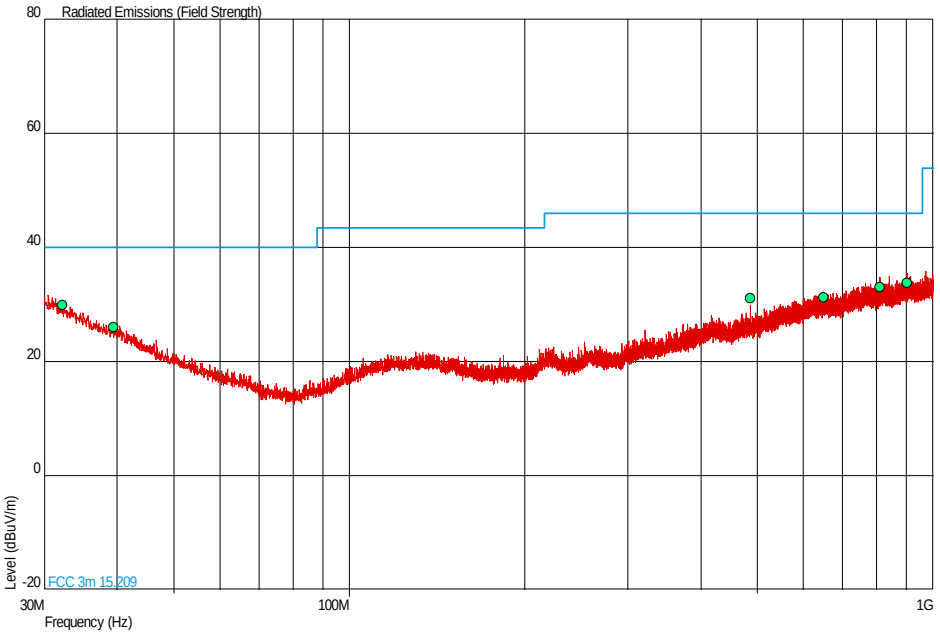
18 GHz to 25 GHz



Date: 19.JAN.2014 04:38:29

2437 MHz

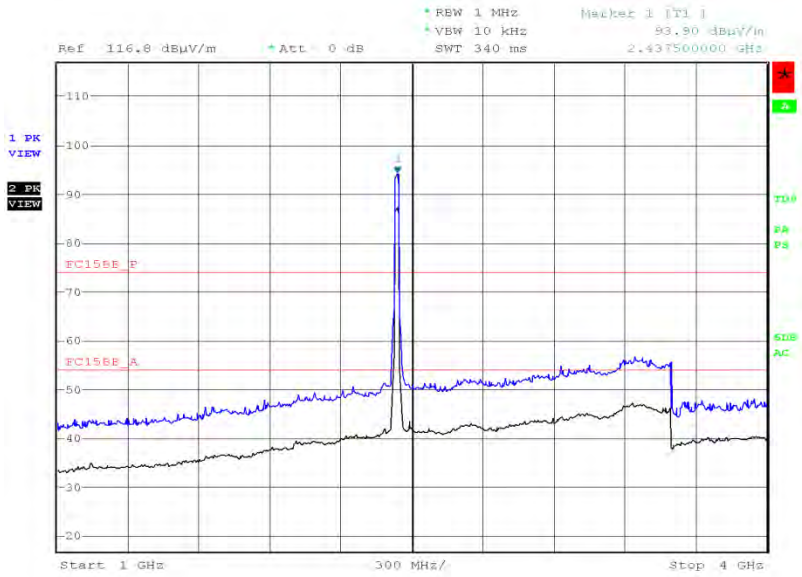
30 MHz to 1 GHz



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
32.284	30.0	31.6	40.0	100	-10.0	68.4	264	1.00	Horizontal
39.454	26.0	20.0	40.0	100	-14.0	80.0	9	1.41	Horizontal
486.199	31.2	36.3	46.0	200	-14.8	163.7	360	1.00	Vertical
648.441	31.2	36.3	46.0	200	-14.8	163.7	74	1.99	Vertical
811.724	33.0	44.7	46.0	200	-13.0	155.3	75	1.48	Horizontal
903.867	33.9	49.5	46.0	200	-12.1	150.5	229	1.00	Vertical

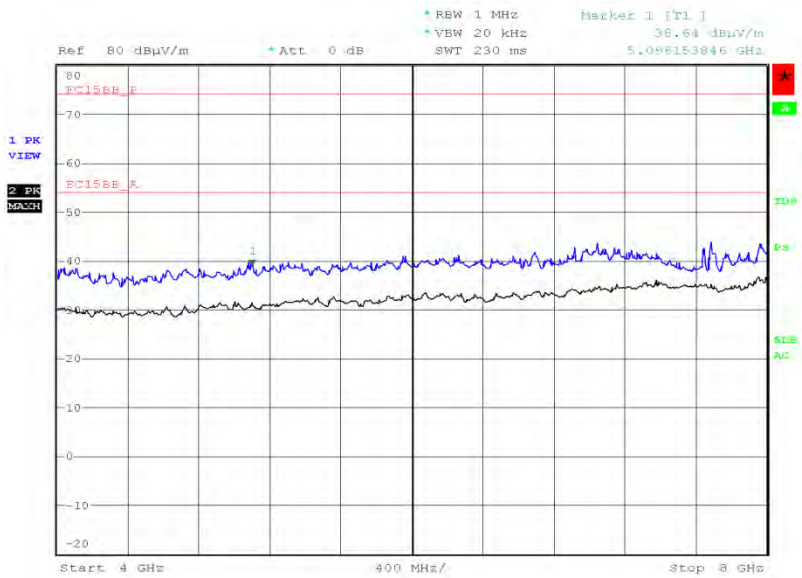
Product Service

1 GHz to 3 GHz



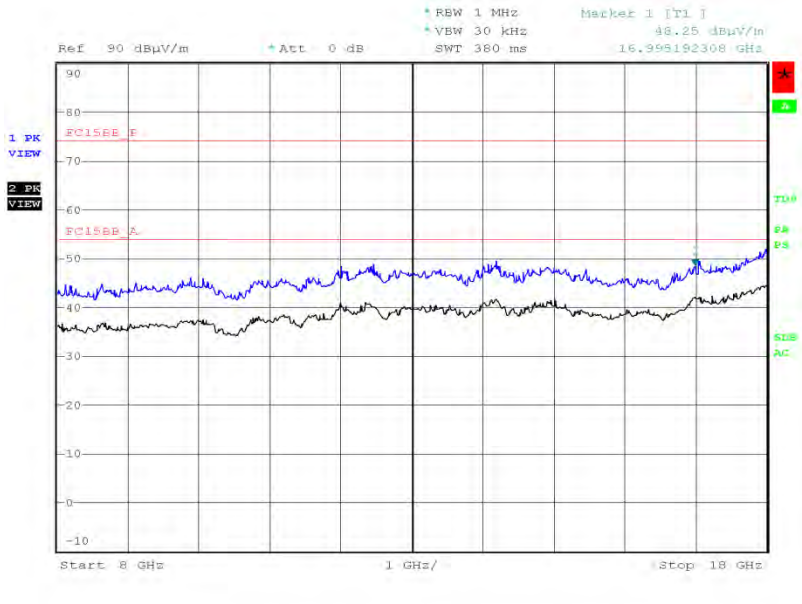
Date: 18.JAN.2014 00:12:14

3 GHz to 8 GHz



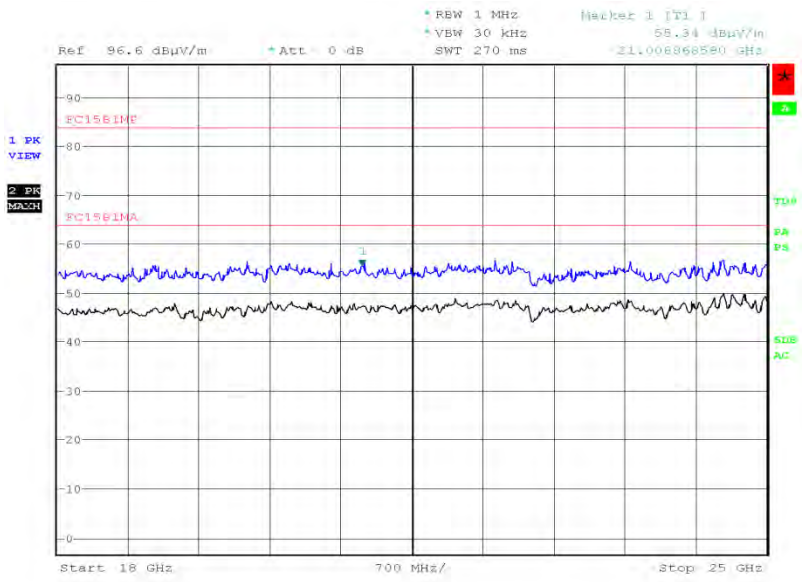
Date: 18.JAN.2014 22:33:34

8 GHz to 18 GHz



Date: 19.JAN.2014 01:43:13

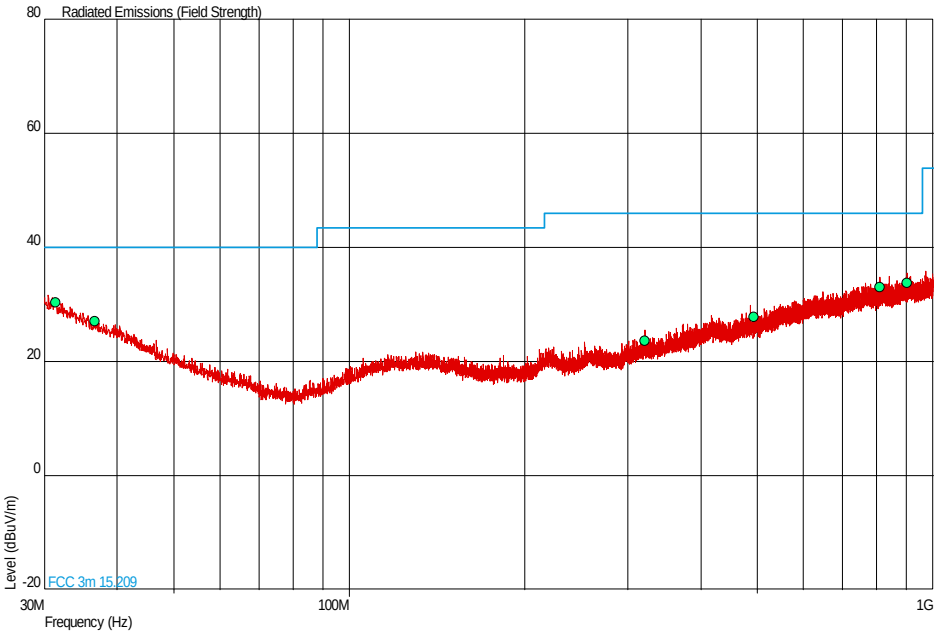
18 GHz to 25 GHz



Date: 19.JAN.2014 04:33:29

2462 MHz

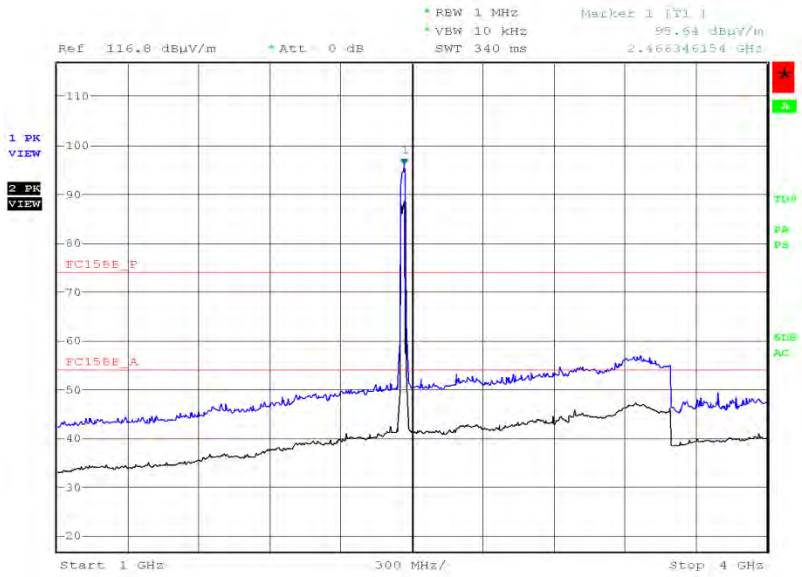
30 MHz to 1 GHz



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
31.358	30.4	33.1	40.0	100	-9.6	66.9	53	1.00	Vertical
36.598	27.0	22.4	40.0	100	-13.0	77.6	306	1.00	Vertical
320.913	23.6	15.1	46.0	200	-22.4	184.9	59	1.00	Vertical
492.688	27.8	24.5	46.0	200	-18.2	175.5	131	1.00	Vertical
811.594	33.1	45.2	46.0	200	-12.9	154.8	182	1.00	Horizontal
903.534	33.9	49.5	46.0	200	-12.1	150.5	99	1.00	Vertical

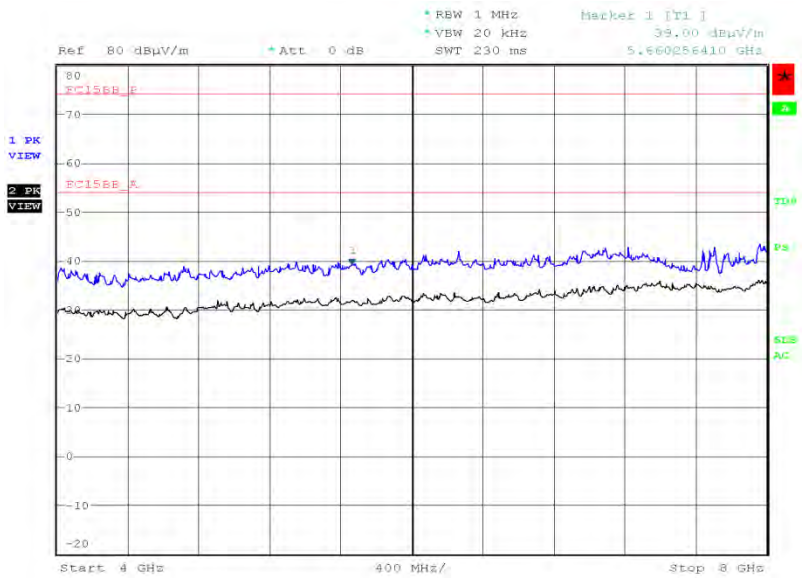
Product Service

1 GHz to 3 GHz



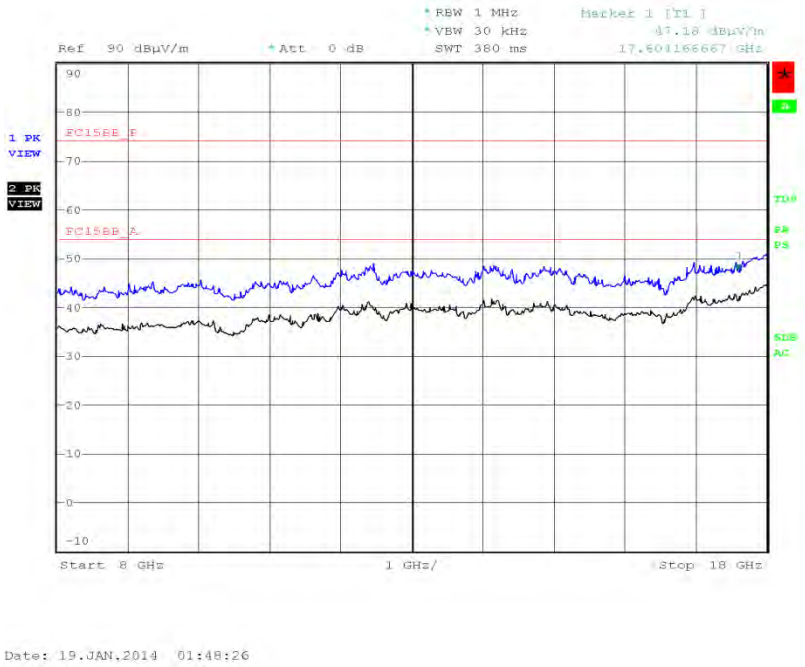
Date: 18.JAN.2014 00:06:27

3 GHz to 8 GHz



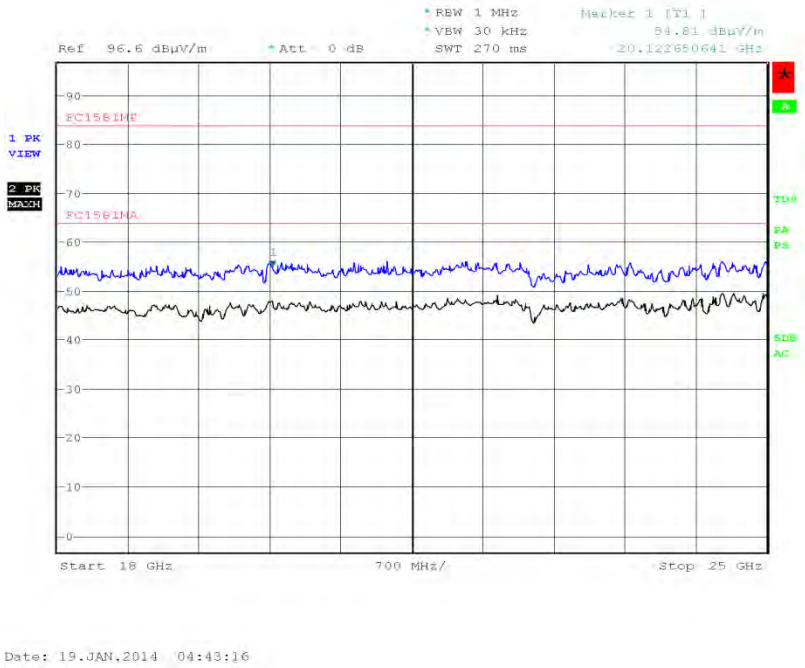
Date: 18.JAN.2014 22:41:22

8 GHz to 18 GHz



Date: 19.JAN.2014 01:48:26

18 GHz to 25 GHz



Date: 19.JAN.2014 04:43:16

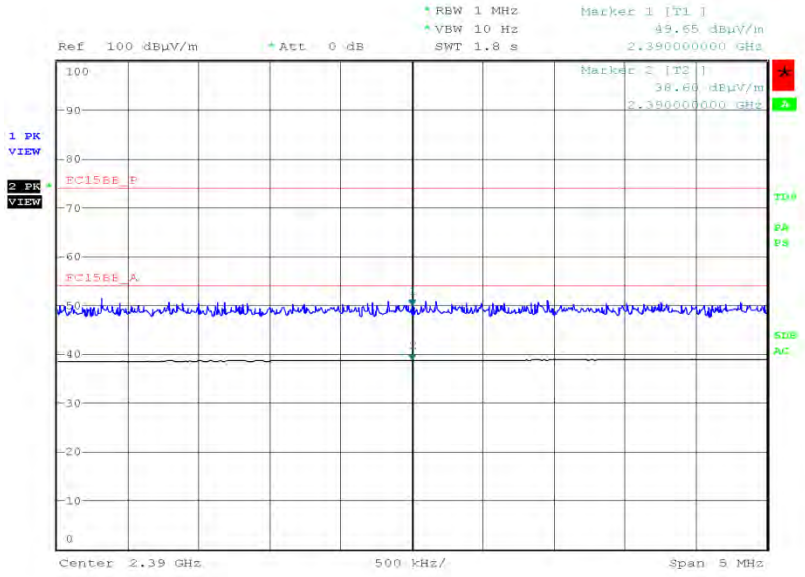
Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

Band Edge Emissions

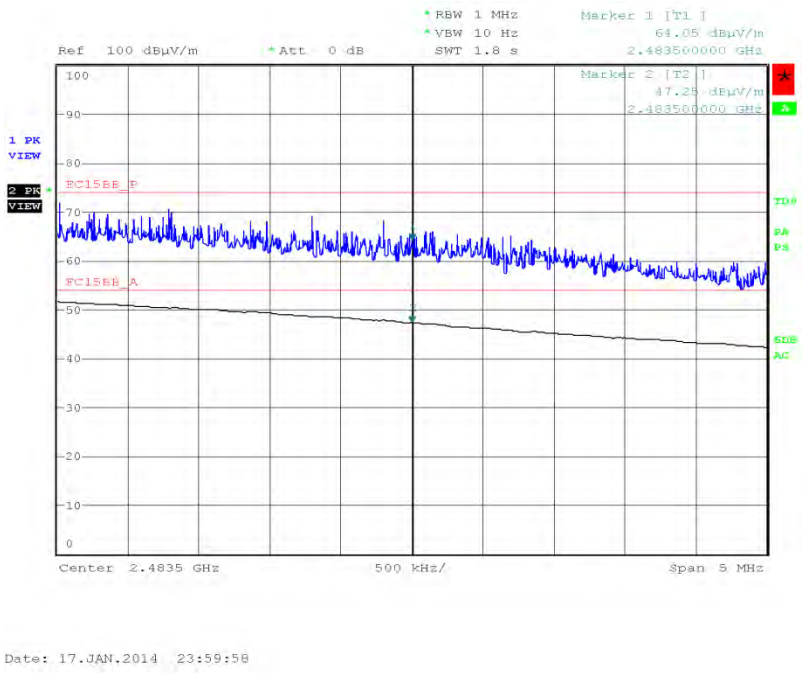
2412 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	49.65	38.60



2462 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	64.05	47.25



Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

802.11(n)

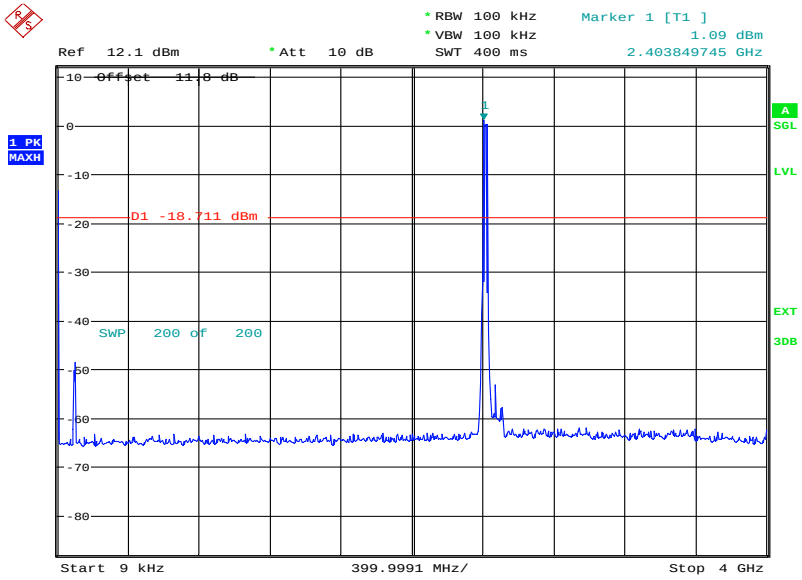
4.0 V DC Supply

Spurious Conducted Emissions

6 Mbps

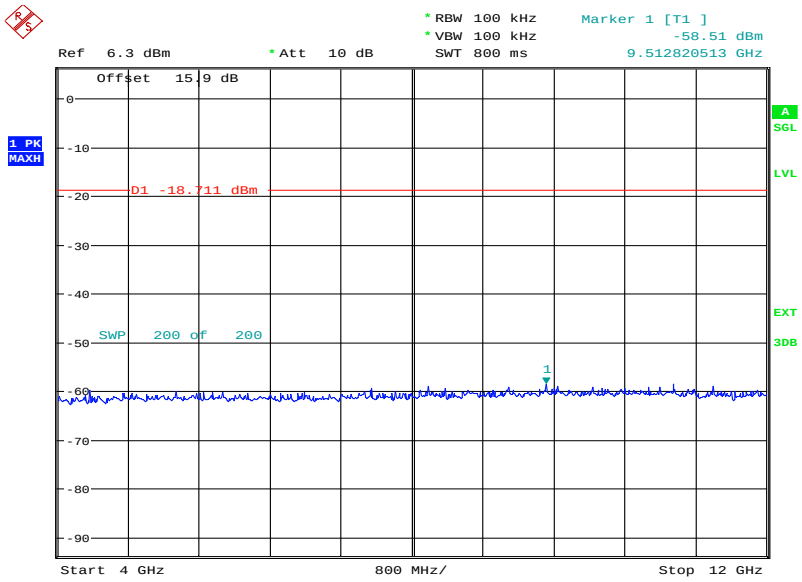
2412 MHz

9 kHz to 4 GHz



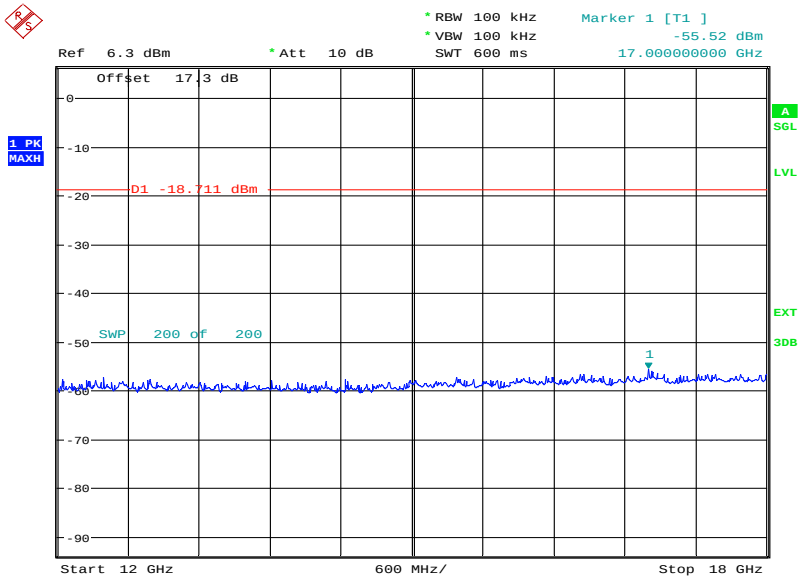
Date: 16.JAN.2014 12:52:40

4 GHz to 12 GHz



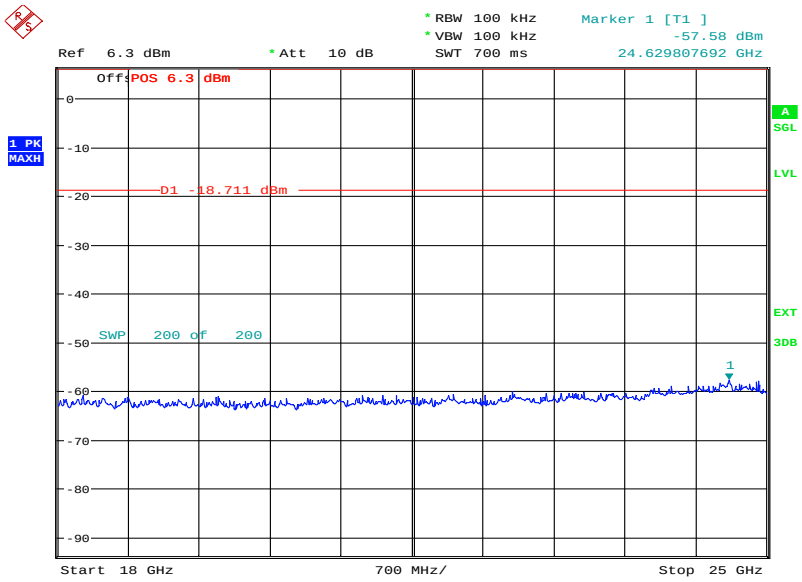
Date: 16.JAN.2014 15:11:10

12 GHz to 18 GHz



Date: 16.JAN.2014 15:13:38

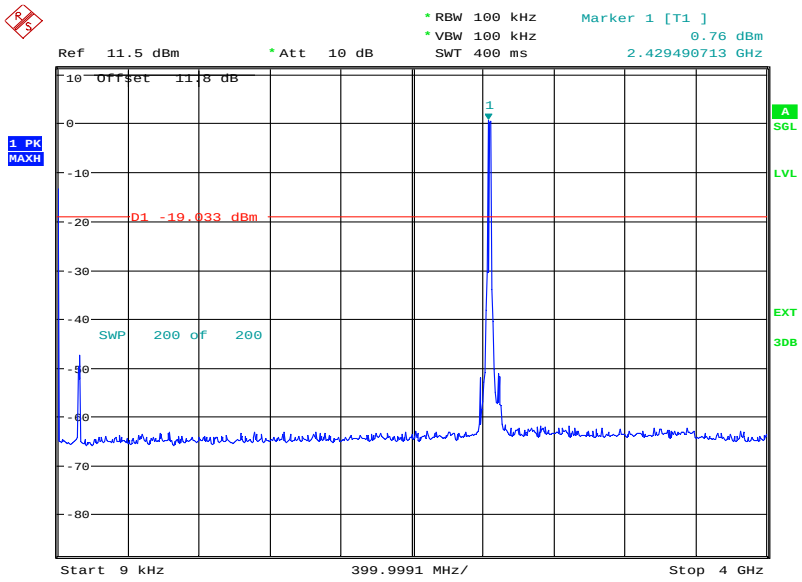
18 GHz to 25 GHz



Date: 17.JAN.2014 08:57:02

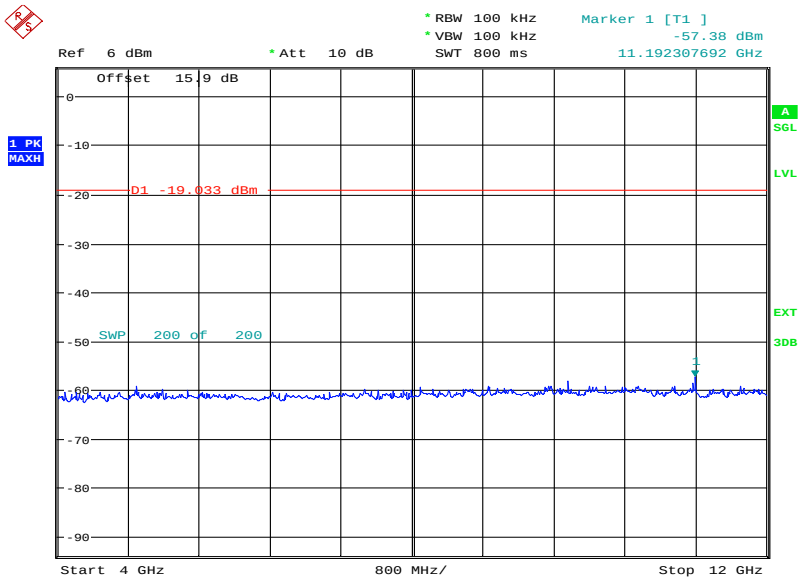
2437 MHz

9 kHz to 4 GHz



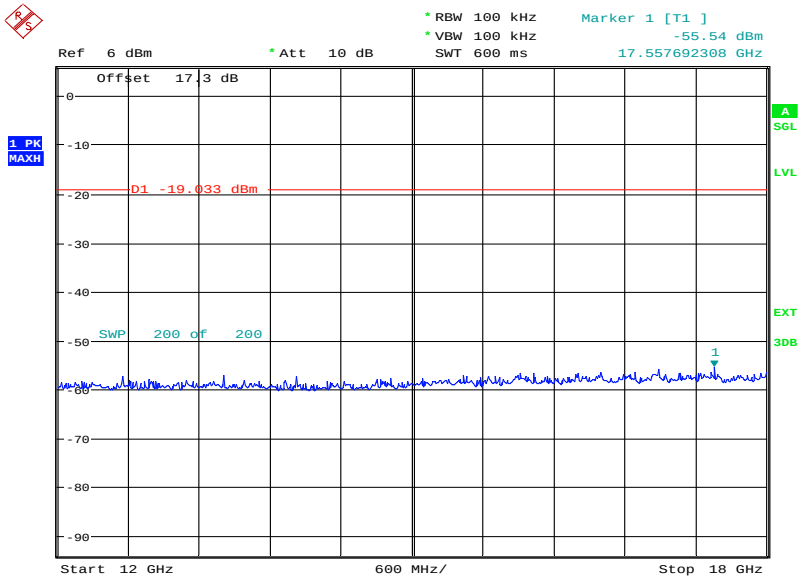
Date: 16.JAN.2014 12:58:25

4 GHz to 12 GHz



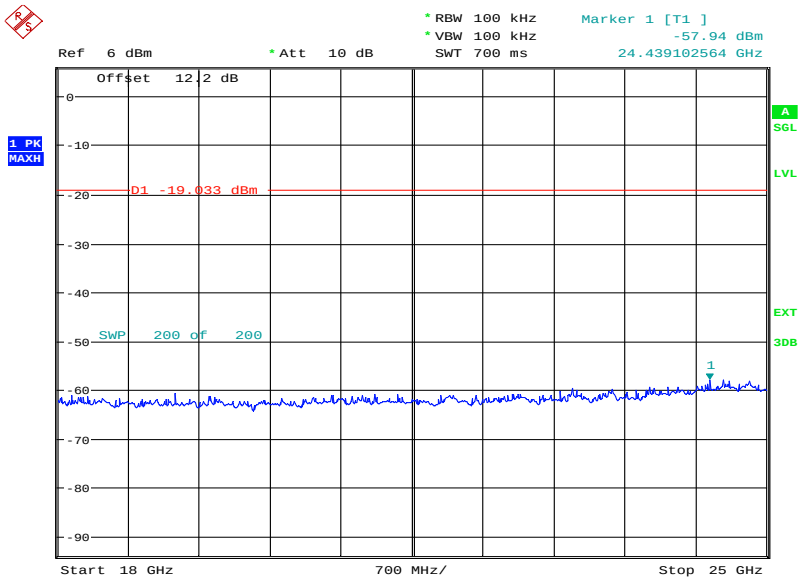
Date: 16.JAN.2014 15:17:24

12 GHz to 18 GHz



Date: 16.JAN.2014 15:20:00

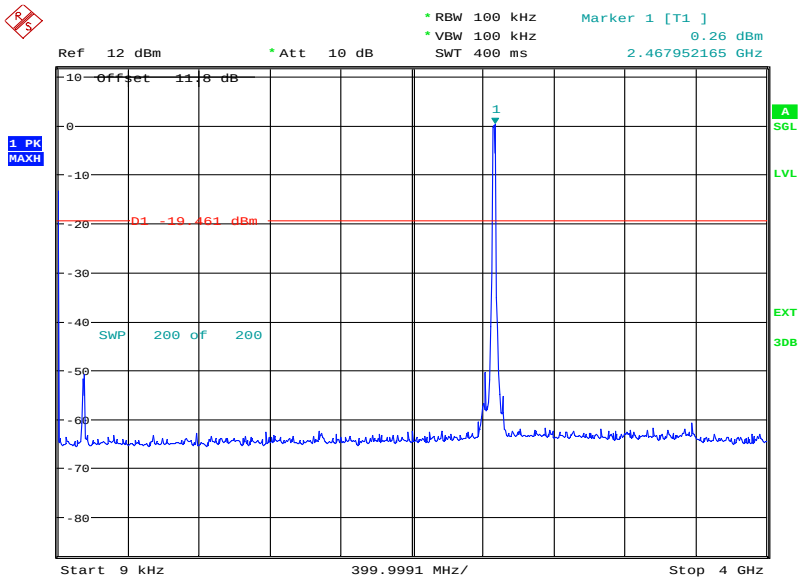
18 GHz to 25 GHz



Date: 16.JAN.2014 16:14:37

2462 MHz

9 kHz to 4 GHz



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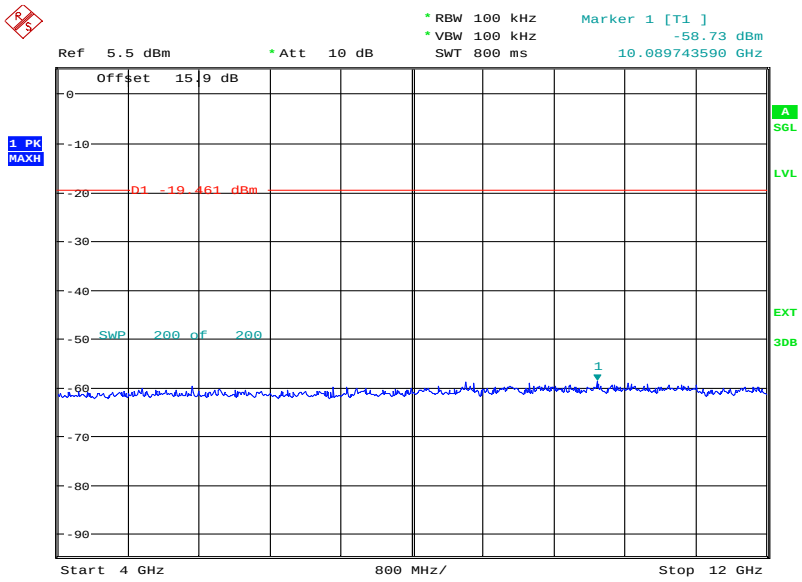
4 GHz to 12 GHz



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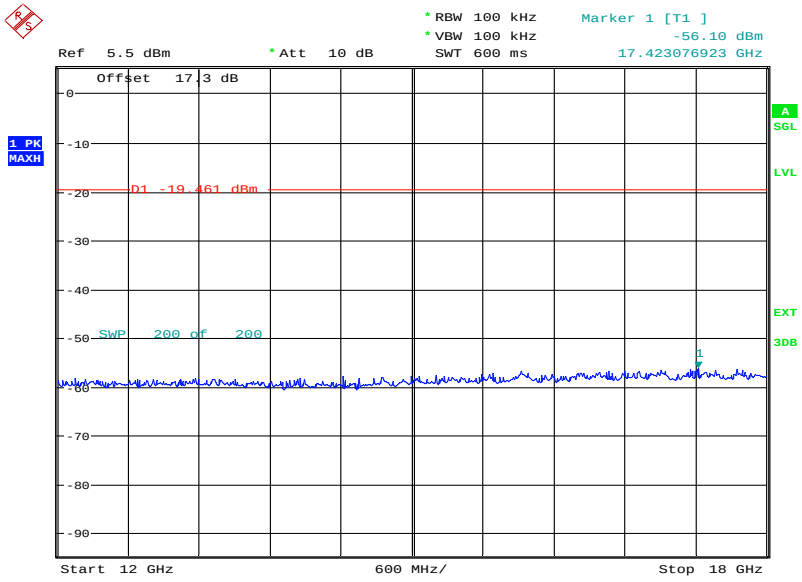
12 GHz to 18 GHz



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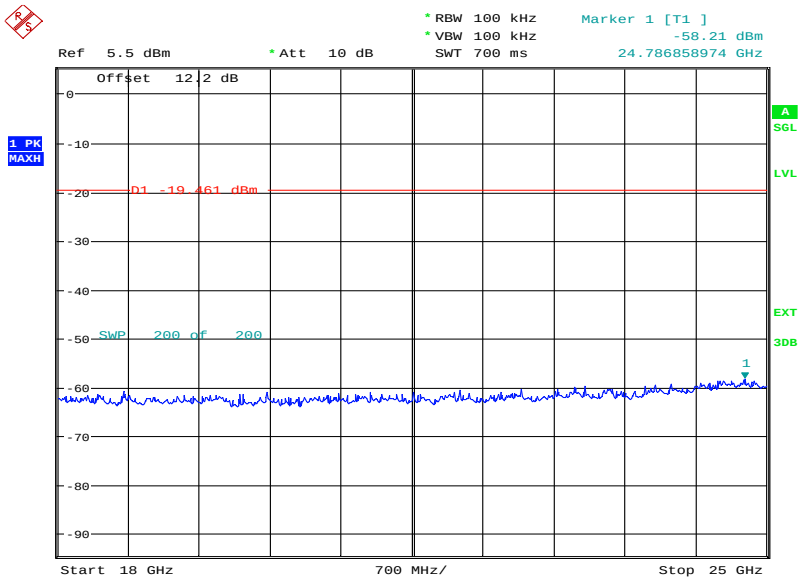
18 GHz to 25 GHz



Date: 16.JAN.2014 16:31:36

Limit Clause

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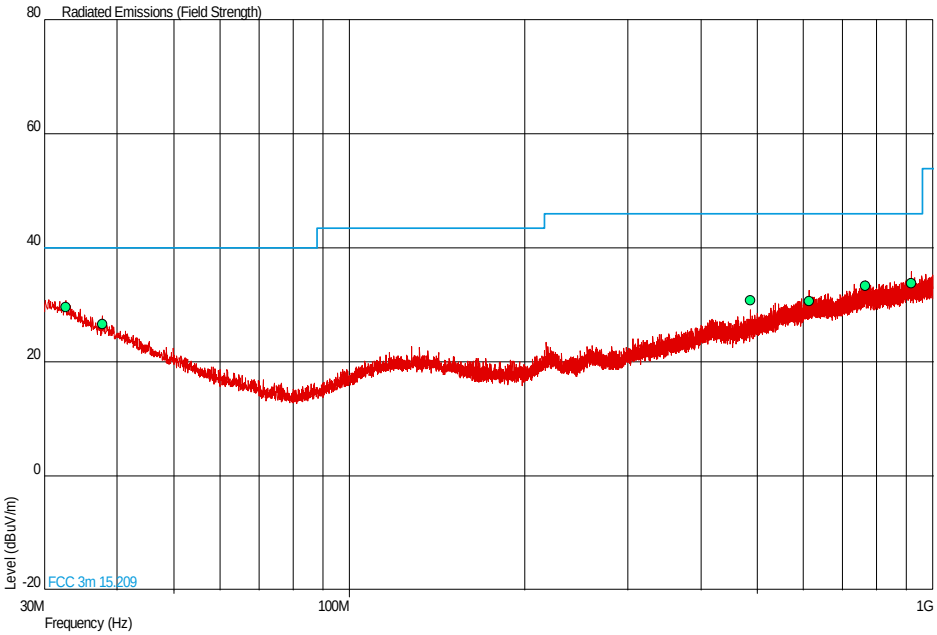
If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval the attenuation required shall be 30 dB instead of 20 dB.

Spurious Radiated Emissions

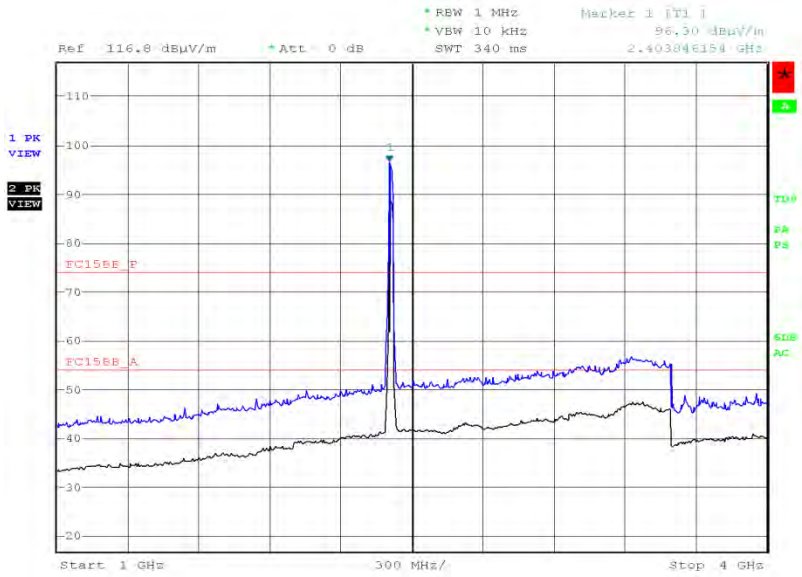
2412 MHz

30 MHz to 1 GHz



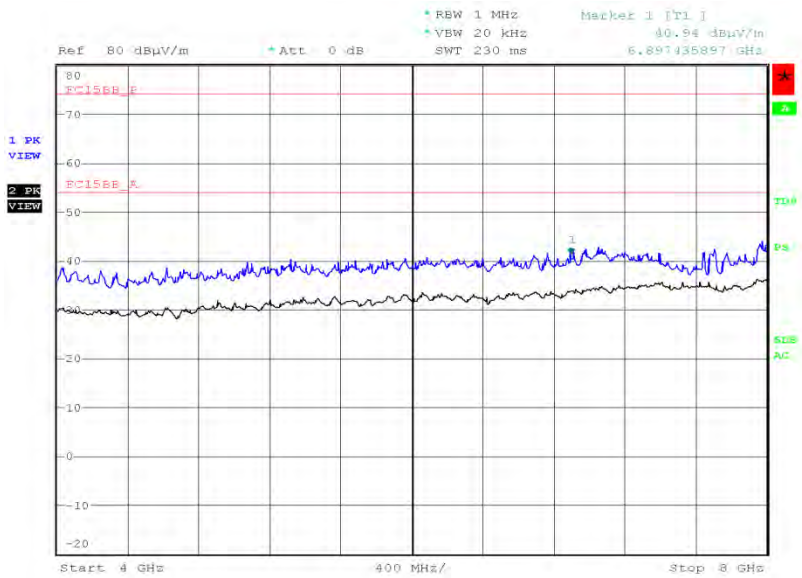
Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
32.671	29.7	30.5	40.0	100	-10.3	69.5	295	1.00	Vertical
37.720	26.6	21.4	40.0	100	-13.4	78.6	48	1.00	Horizontal
486.199	30.9	35.1	46.0	200	-15.1	164.9	360	1.25	Vertical
612.778	30.7	34.3	46.0	200	-15.3	165.7	63	1.69	Horizontal
764.679	33.3	46.2	46.0	200	-12.7	153.8	145	1.00	Vertical
917.125	33.9	49.5	46.0	200	-12.1	150.5	119	1.00	Horizontal

1 GHz to 3 GHz



Date: 18.JAN.2014 02:17:16

3 GHz to 8 GHz



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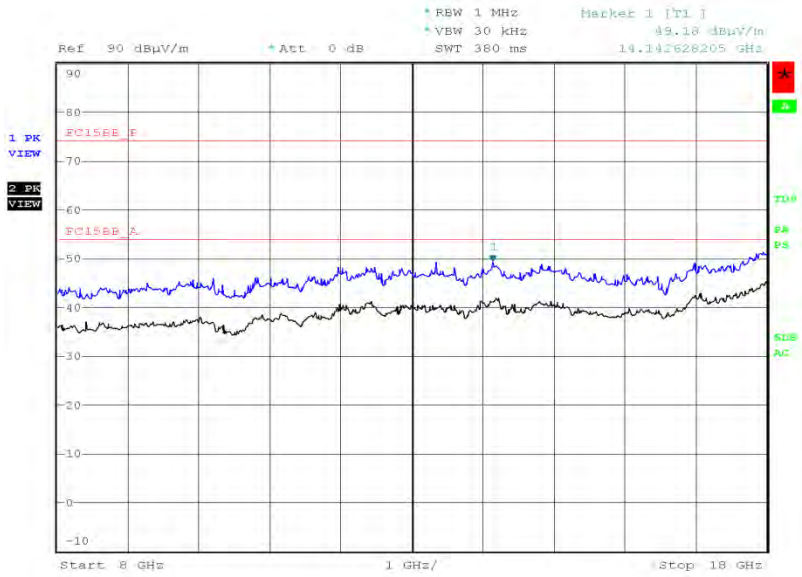
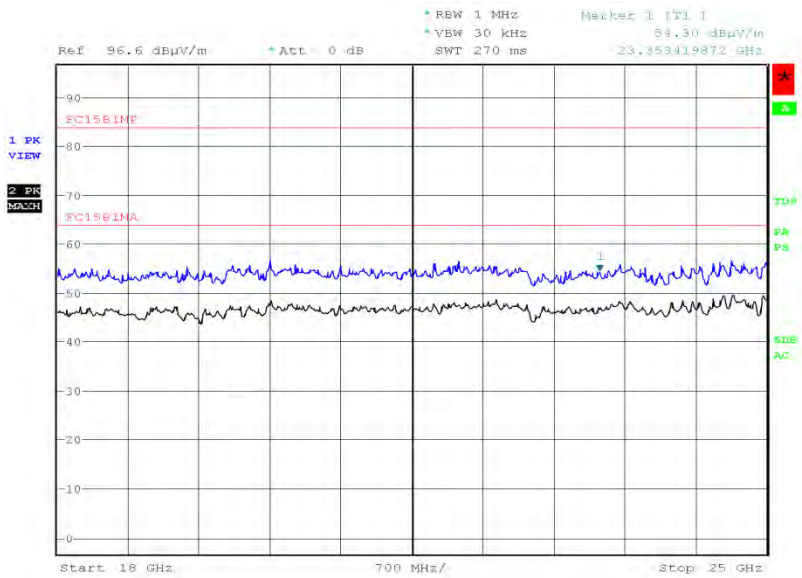
8 GHz to 18 GHz



Date: 19.JAN.2014 01:57:52

18 GHz to 25 GHz



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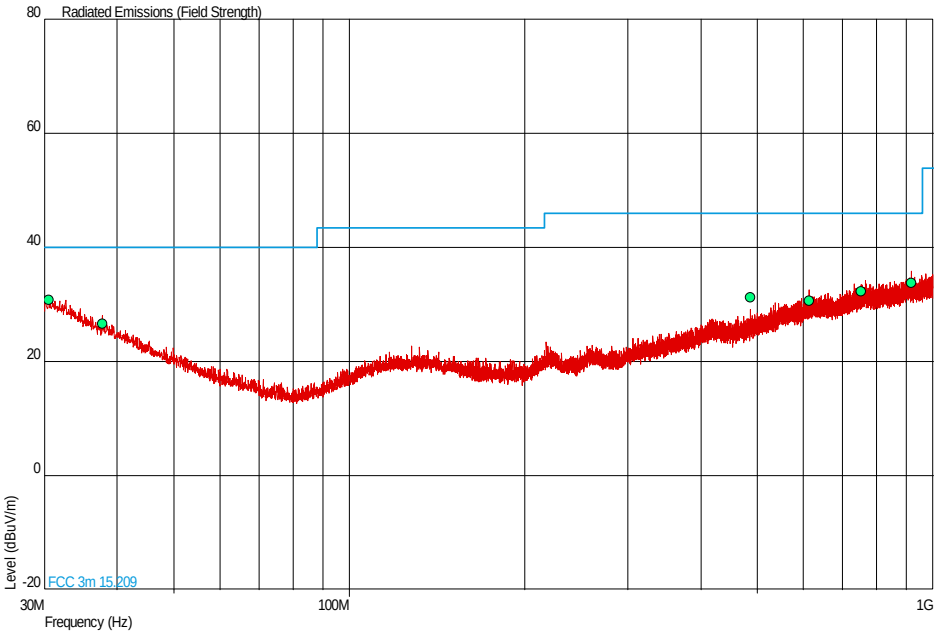
2437 MHz

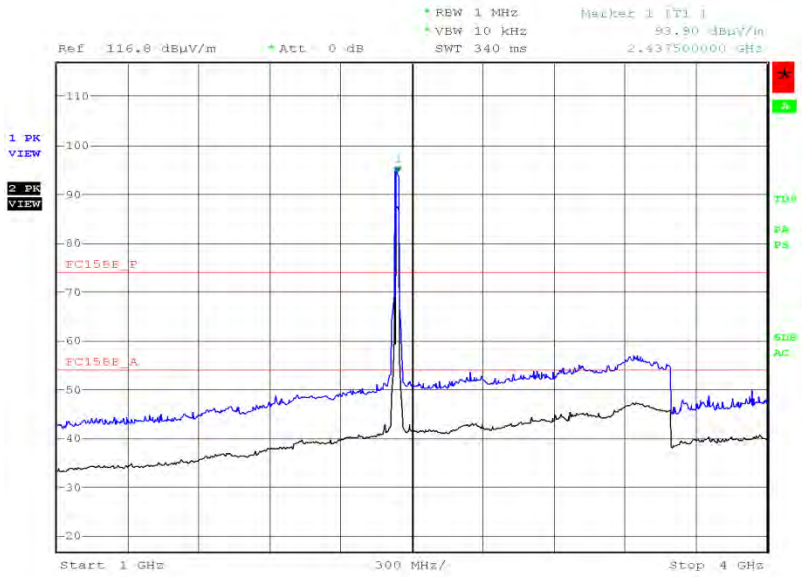
30 MHz to 1 GHz



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
30.580	30.8	34.7	40.0	100	-9.2	65.3	73	1.00	Vertical
37.700	26.6	21.4	40.0	100	-13.4	78.6	194	3.34	Horizontal
486.197	31.2	36.3	46.0	200	-14.8	163.7	0	1.11	Vertical
612.445	30.7	34.3	46.0	200	-15.3	165.7	7	1.00	Horizontal
752.007	32.4	41.7	46.0	200	-13.6	158.3	154	1.36	Horizontal
916.993	33.9	49.5	46.0	200	-12.1	150.5	48	1.00	Horizontal

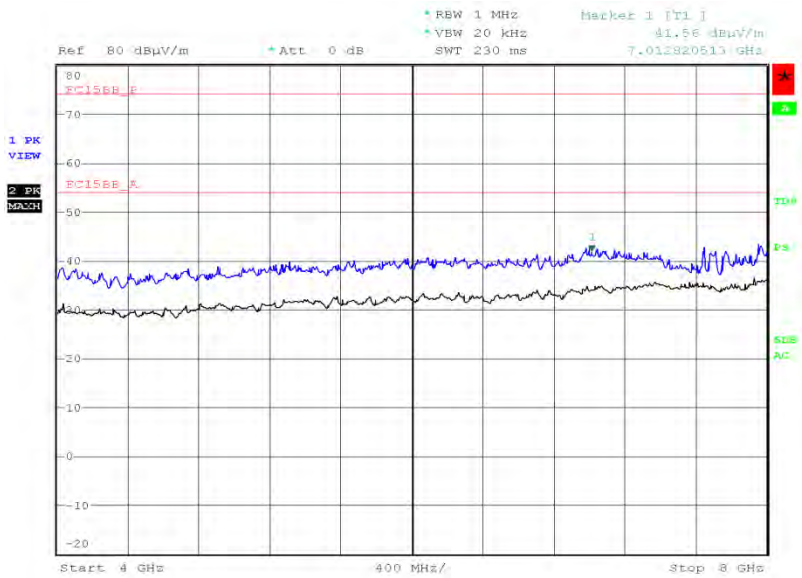
Product Service

1 GHz to 3 GHz



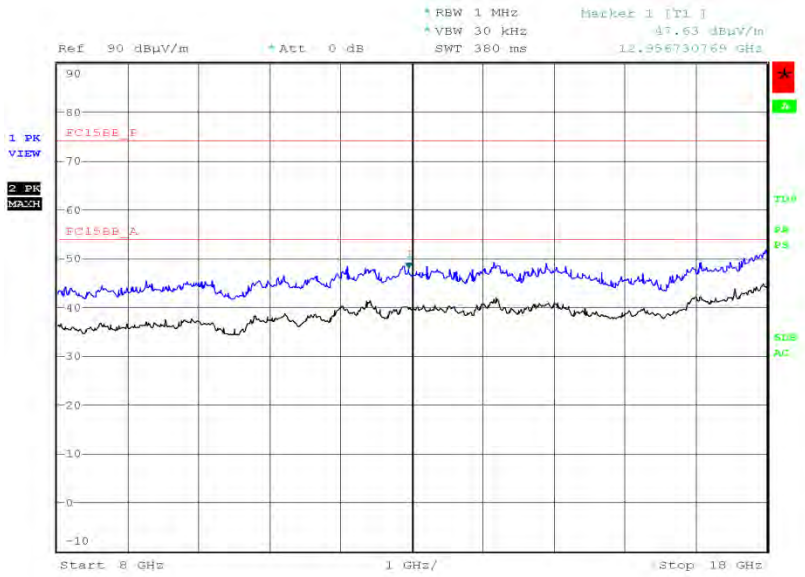
Date: 18.JAN.2014 02:05:25

3 GHz to 8 GHz



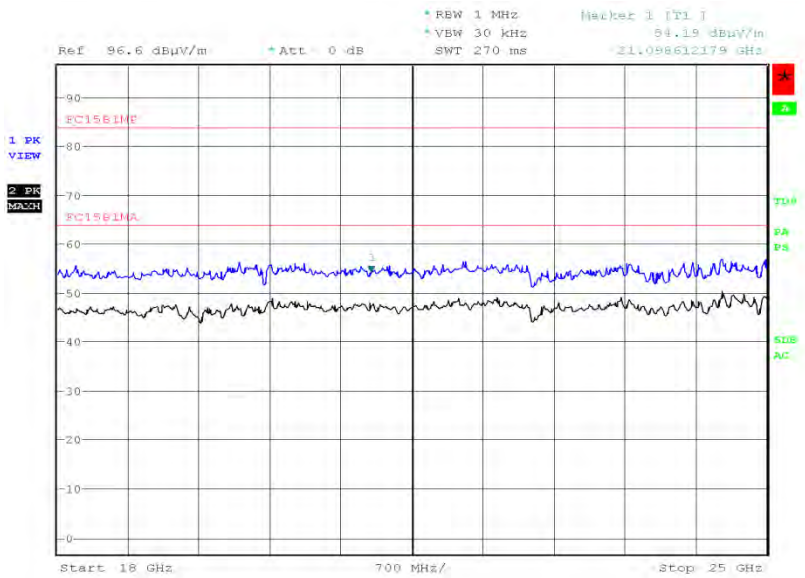
Date: 18.JAN.2014 23:00:10

8 GHz to 18 GHz



Date: 19.JAN.2014 02:05:32

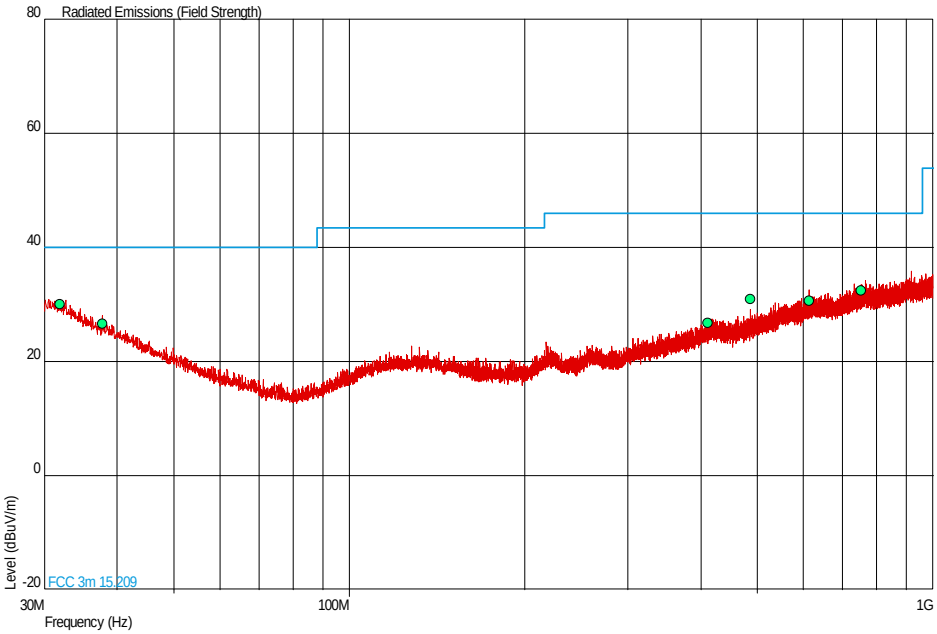
18 GHz to 25 GHz



Date: 19.JAN.2014 04:52:32

2462 MHz

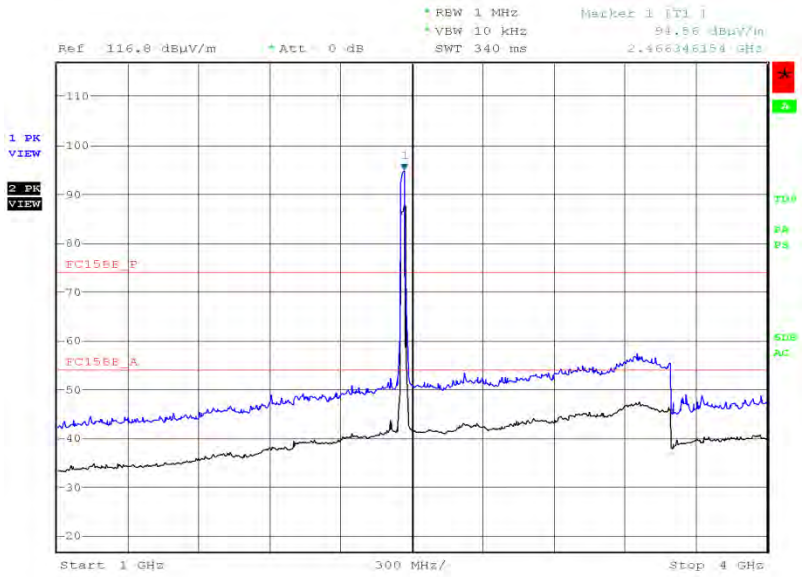
30 MHz to 1 GHz



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
31.889	30.1	32.0	40.0	100	-9.9	68.0	246	1.00	Vertical
37.708	26.7	21.6	40.0	100	-13.3	78.4	131	1.00	Horizontal
411.394	26.8	21.9	46.0	200	-19.2	178.1	330	1.00	Horizontal
486.207	30.9	35.1	46.0	200	-15.1	164.9	11	1.20	Vertical
612.543	30.7	34.3	46.0	200	-15.3	165.7	54	1.09	Horizontal
752.175	32.4	41.7	46.0	200	-13.6	158.3	253	1.43	Horizontal

Product Service

1 GHz to 3 GHz



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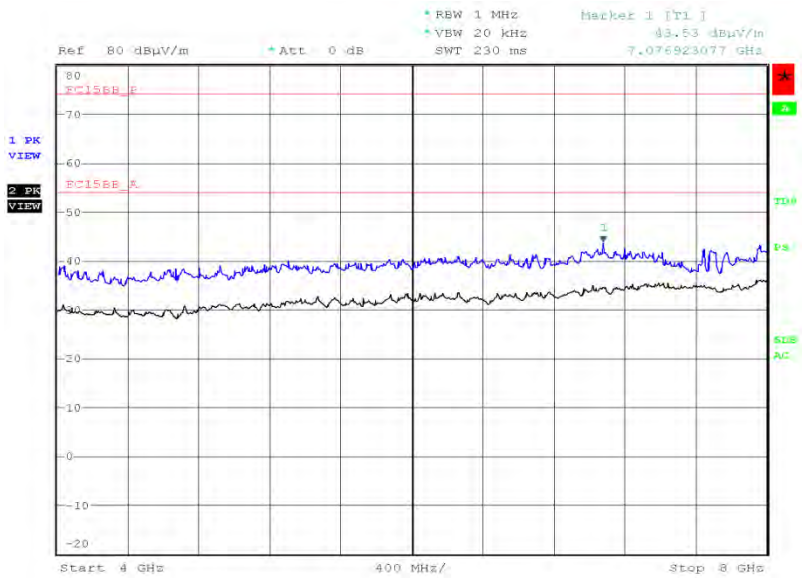
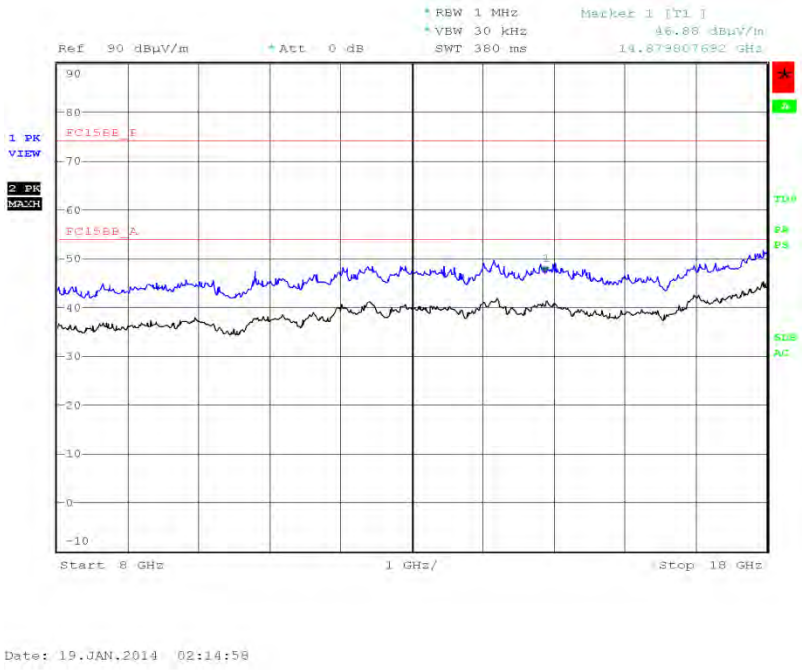
3 GHz to 8 GHz



Date: 18.JAN.2014 23:08:19

8 GHz to 18 GHz



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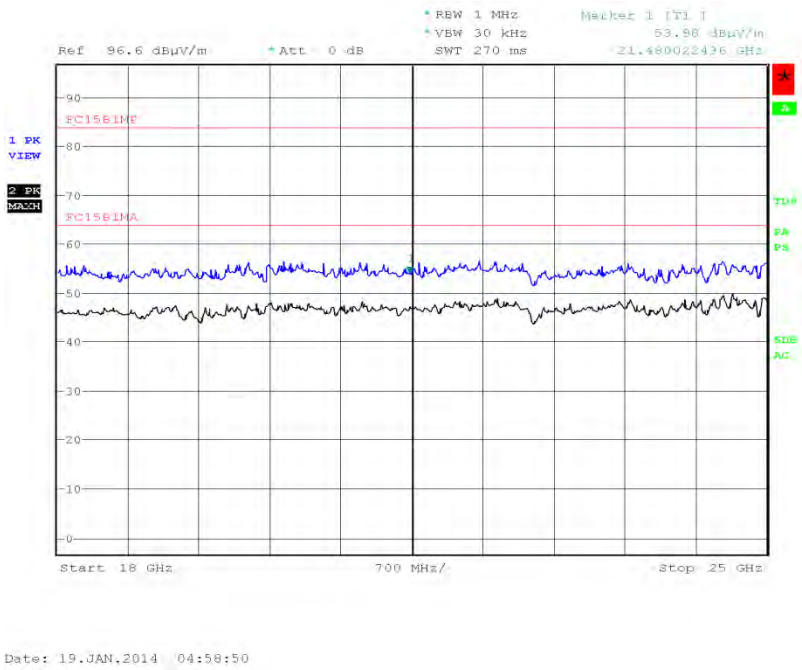
18 GHz to 25 GHz



Date: 19.JAN.2014 04:58:50

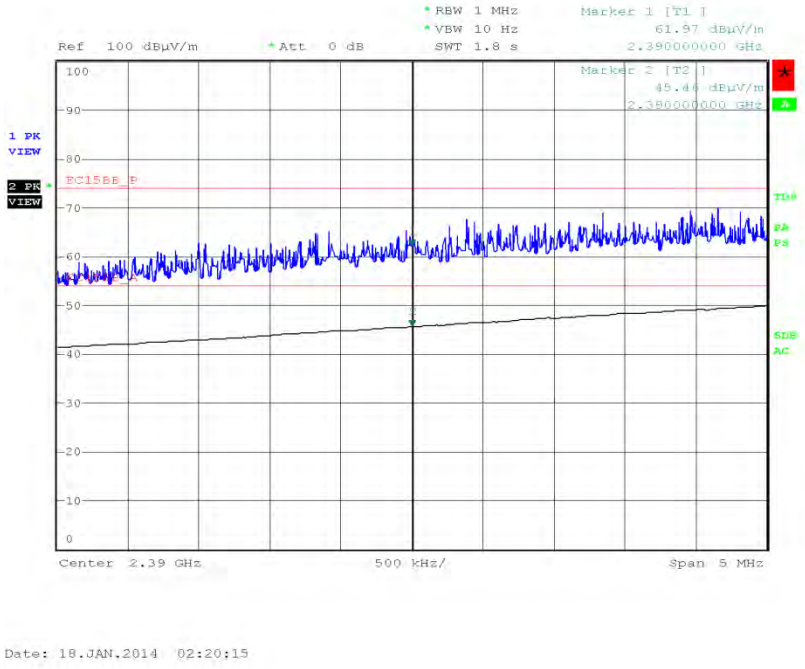
Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

Band Edge Emissions

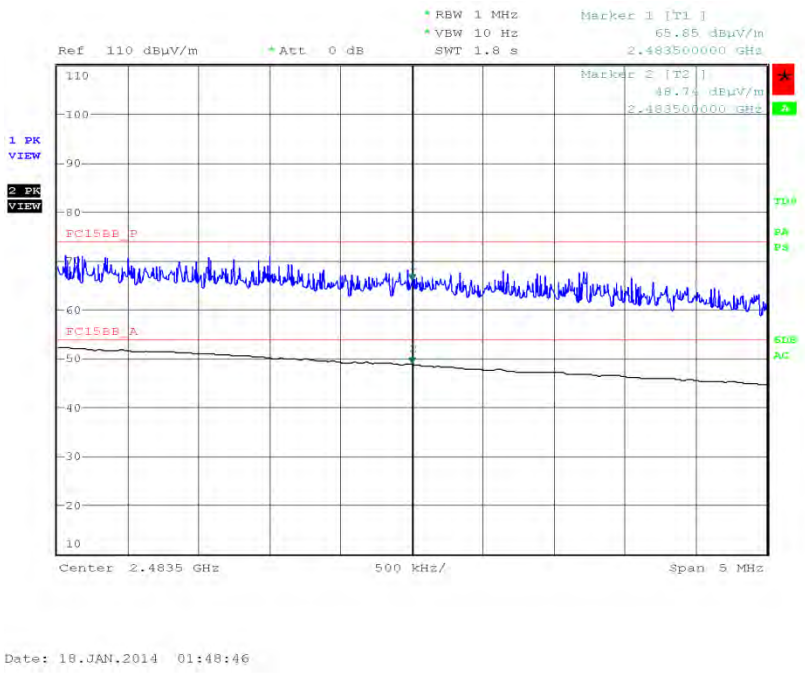
2412 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	61.97	45.46



2462 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	65.85	48.74



Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

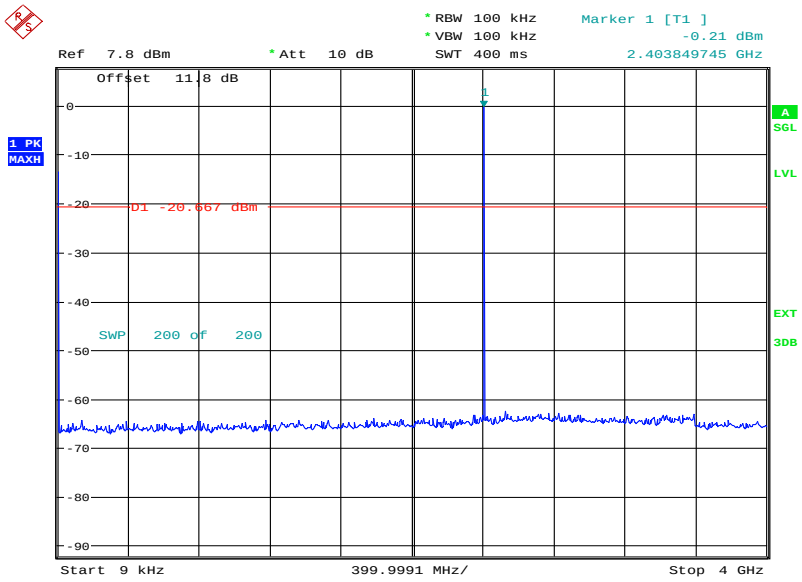
Bluetooth Low Energy

4.0 V DC Supply

Spurious Conducted Emissions

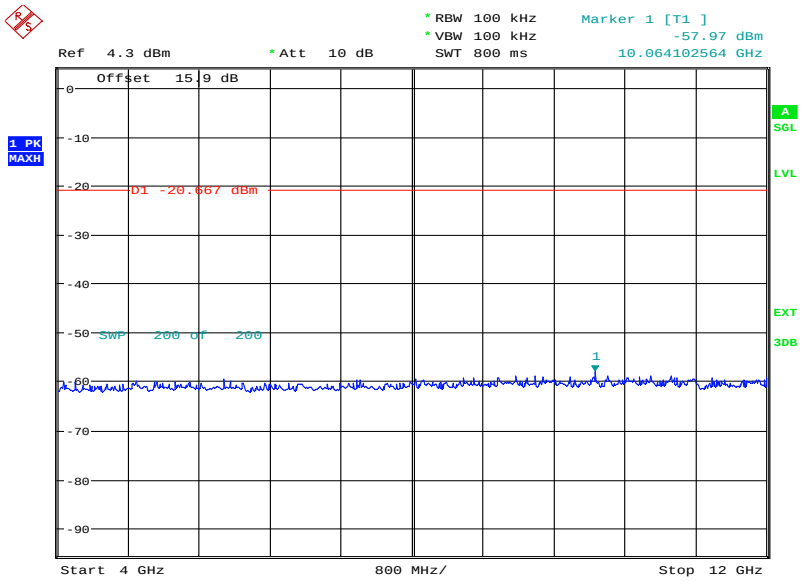
2402 MHz

9 kHz to 4 GHz



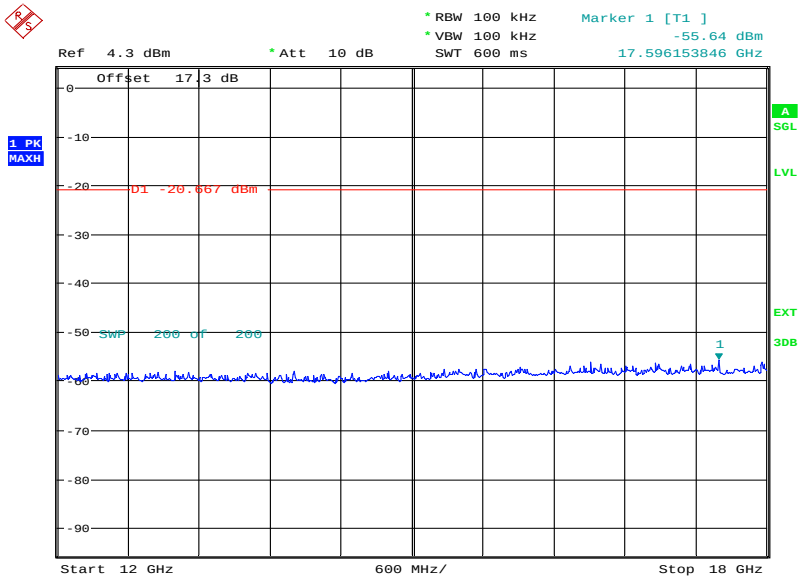
Date: 16.JAN.2014 13:30:46

4 GHz to 12 GHz



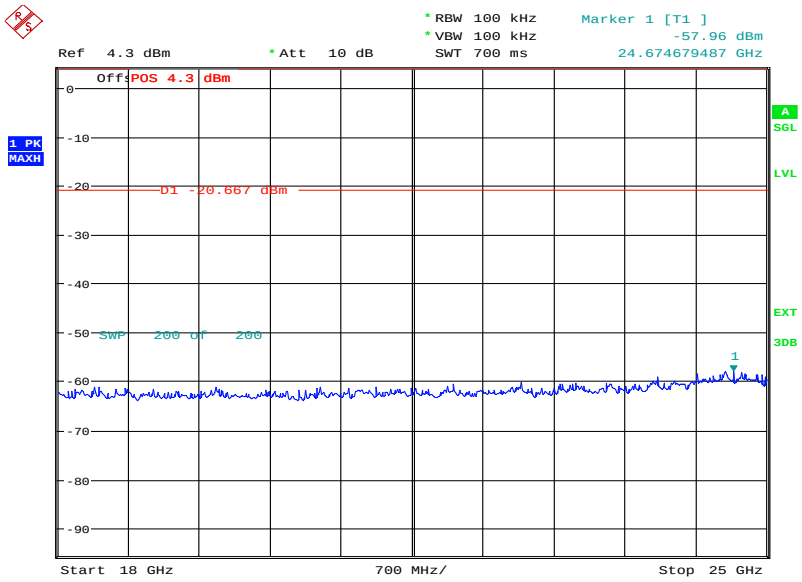
Date: 17.JAN.2014 09:33:17

12 GHz to 18 GHz



Date: 16.JAN.2014 14:17:32

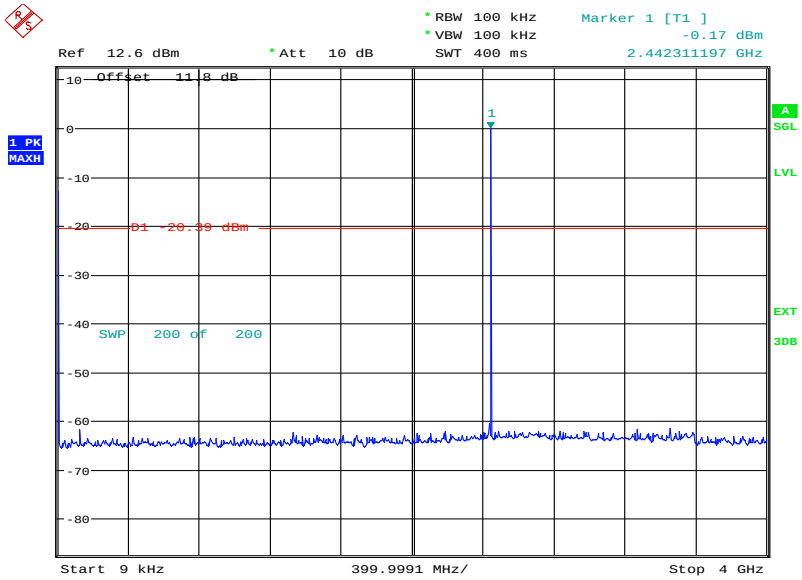
18 GHz to 25 GHz



Date: 16.JAN.2014 16:52:00

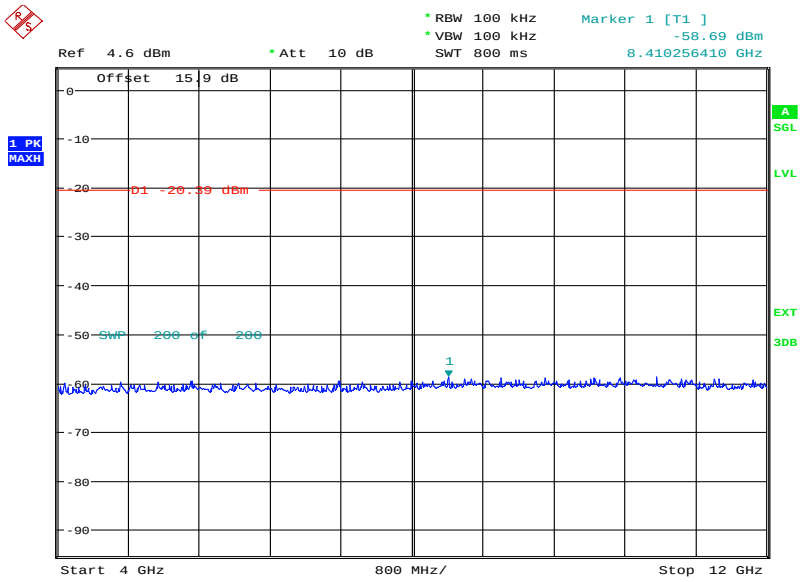
2441 MHz

9 kHz to 4 GHz



Date: 16.JAN.2014 13:27:11

4 GHz to 12 GHz



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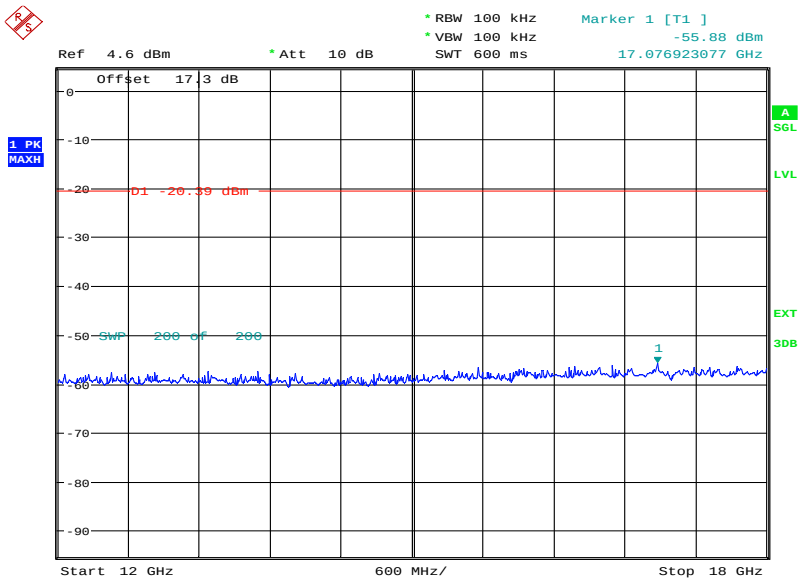
12 GHz to 18 GHz



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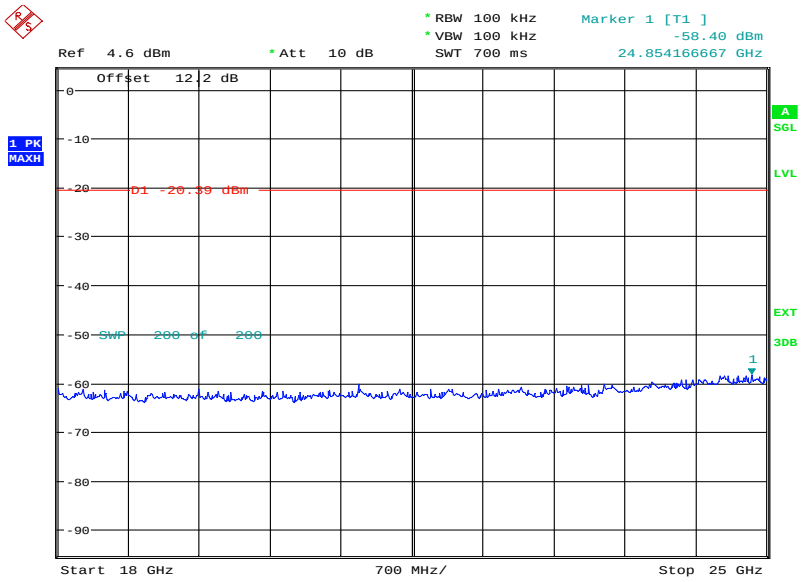
18 GHz to 25 GHz



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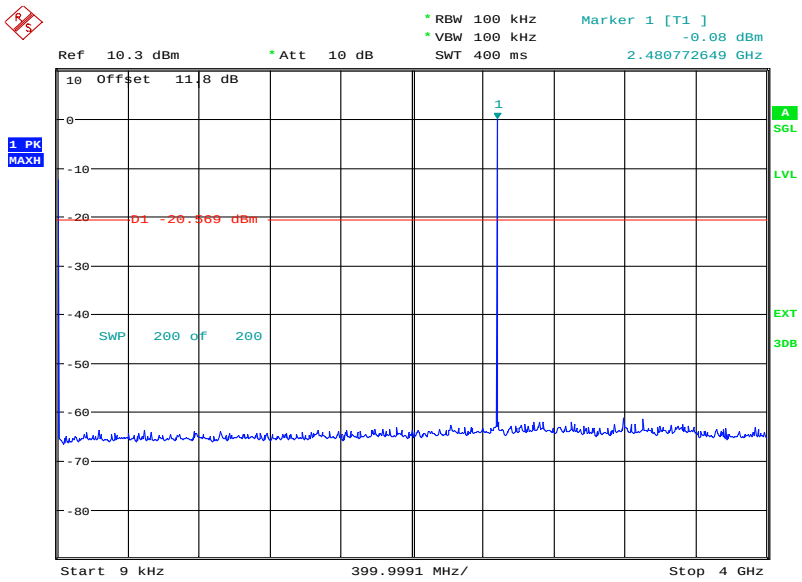
2480 MHz

9 kHz to 4 GHz



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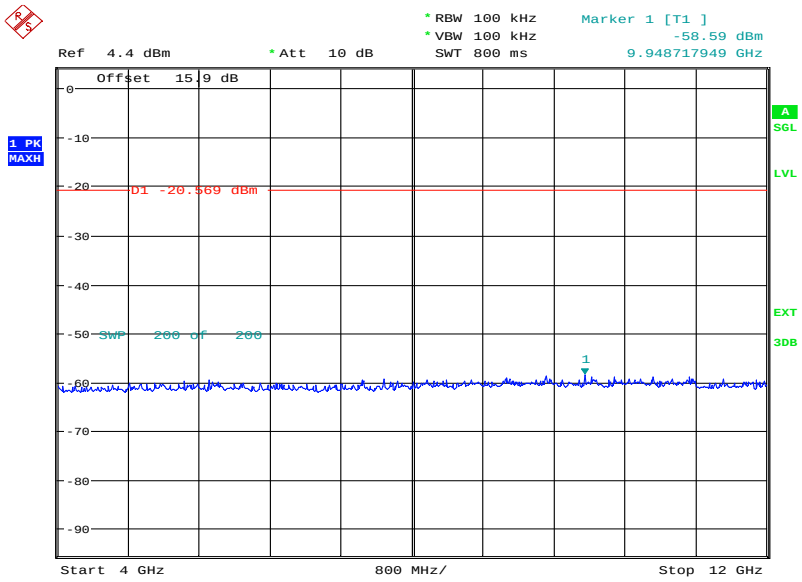
4 GHz to 12 GHz



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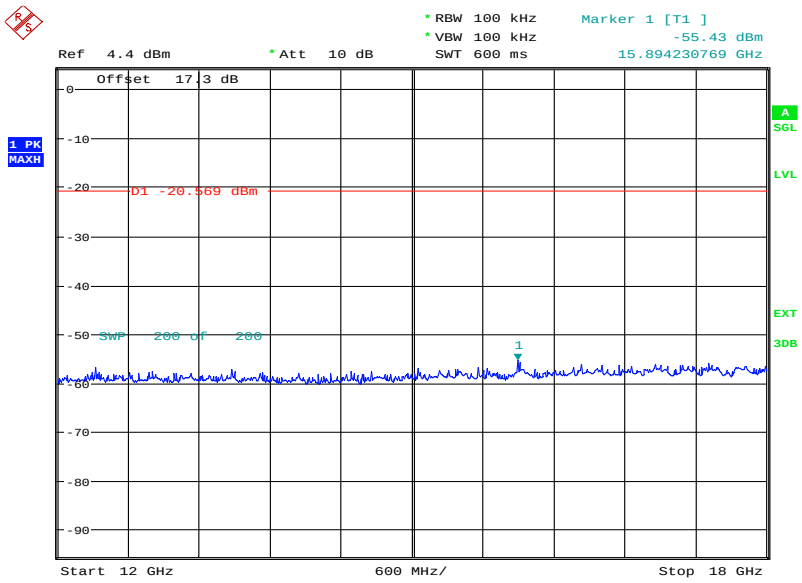
12 GHz to 18 GHz



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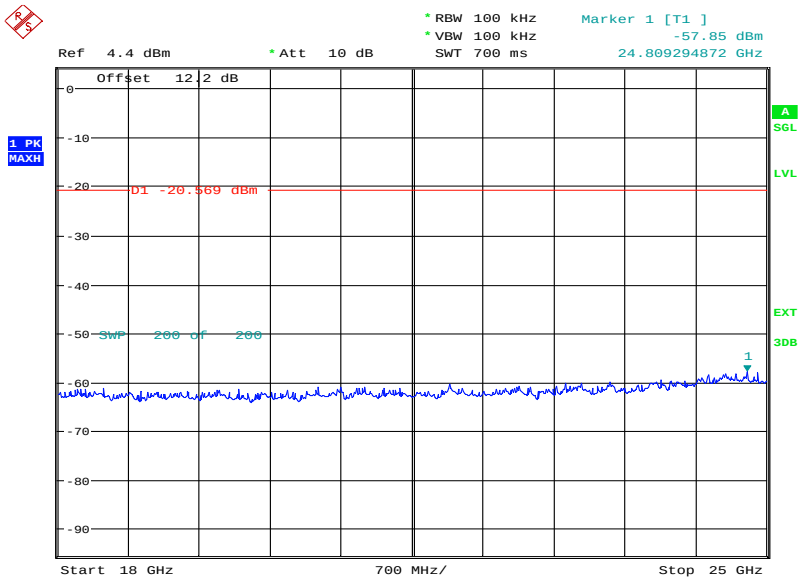
18 GHz to 25 GHz



Limit Clause

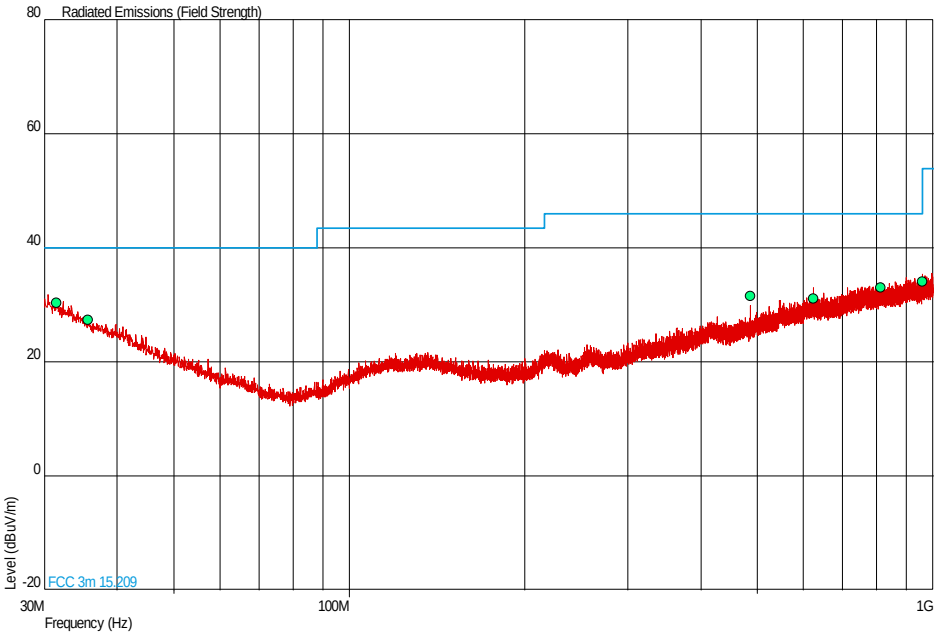
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval the attenuation required shall be 30 dB instead of 20 dB.

Spurious Radiated Emissions

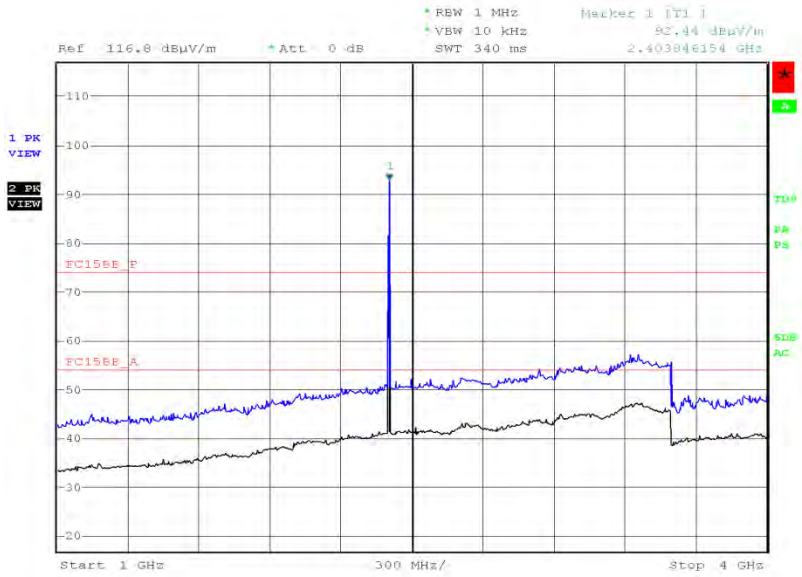
2402 MHz

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
31.455	30.4	33.1	40.0	100	-9.6	66.9	43	1.00	Horizontal
35.716	27.4	23.4	40.0	100	-12.6	76.6	360	1.00	Vertical
486.197	31.6	38.0	46.0	200	-14.4	162.0	0	1.00	Vertical
623.310	31.1	35.9	46.0	200	-14.9	164.1	224	3.03	Vertical
813.117	33.0	44.7	46.0	200	-13.0	155.3	340	1.00	Vertical
957.830	34.0	50.1	46.0	200	-12.0	149.9	212	1.00	Vertical

1 GHz to 3 GHz



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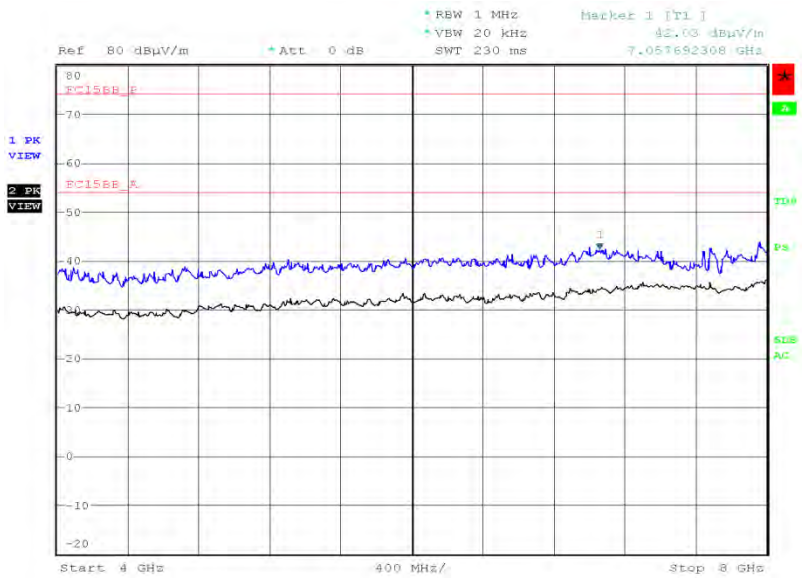
3 GHz to 8 GHz



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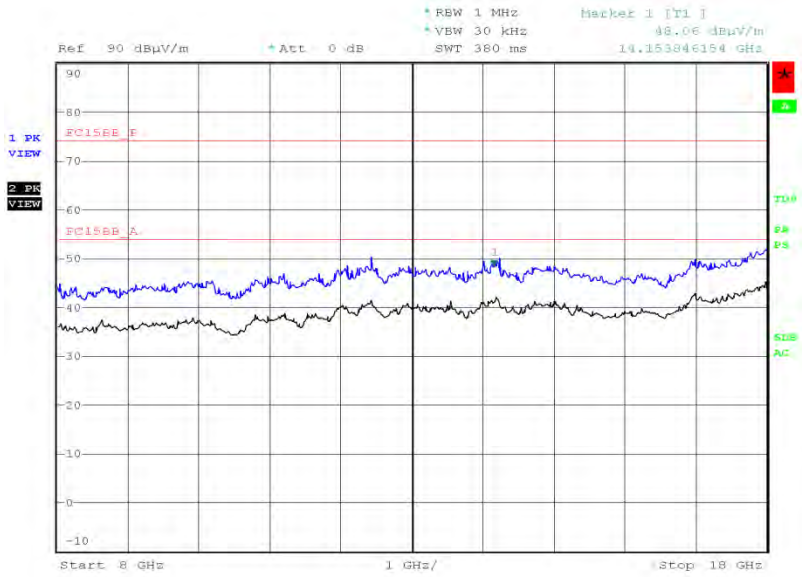
8 GHz to 18 GHz



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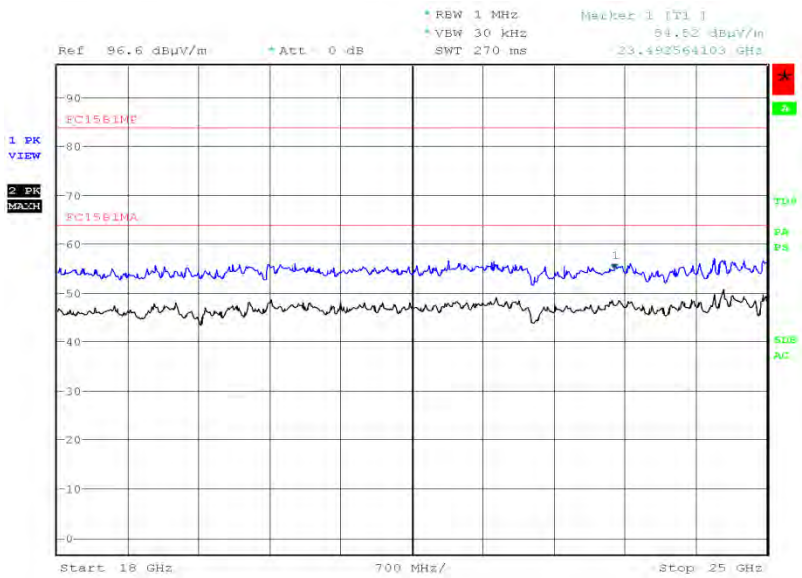
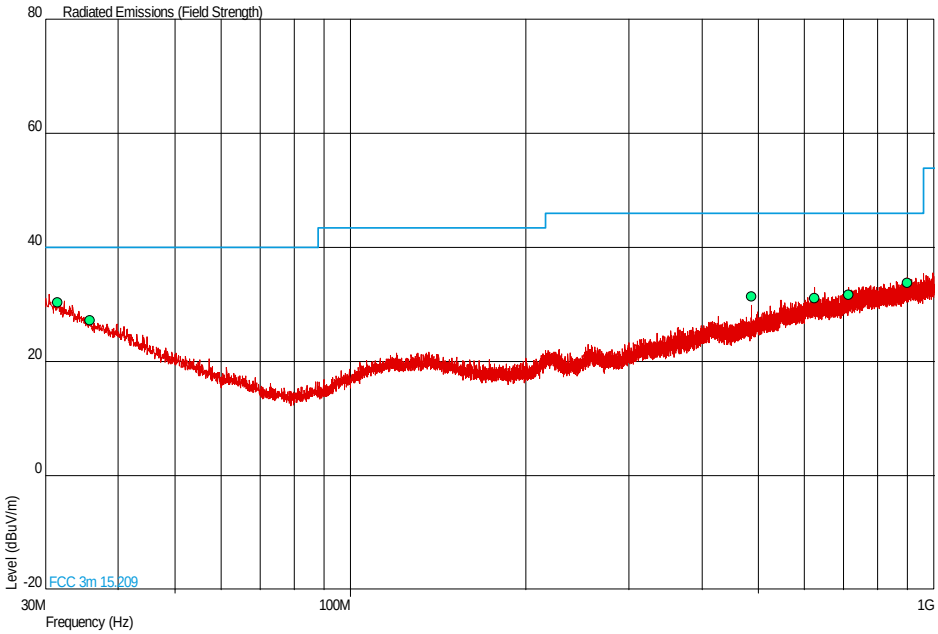
18 GHz to 25 GHz



Date: 19.JAN.2014 05:44:29

2441 MHz

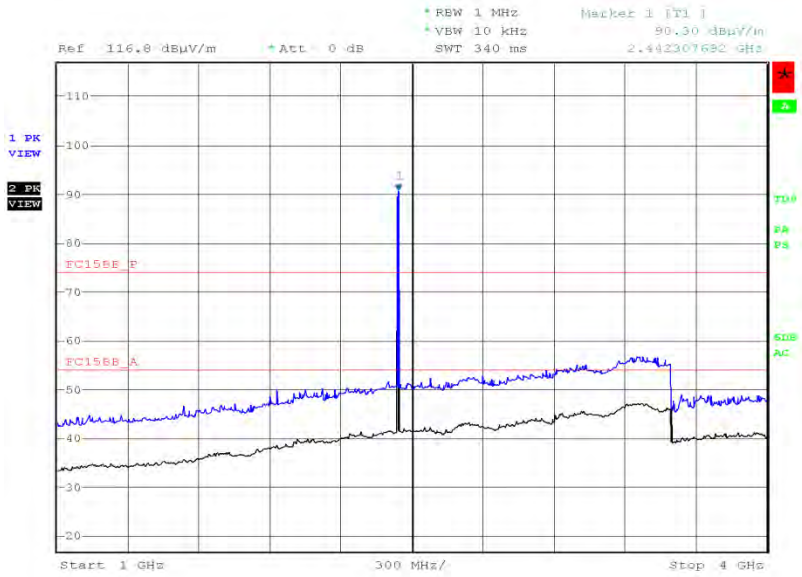
30 MHz to 1 GHz



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
31.454	30.3	32.7	40.0	100	-9.7	67.3	347	2.59	Horizontal
35.829	27.3	23.2	40.0	100	-12.7	76.8	146	1.00	Vertical
486.207	31.5	37.6	46.0	200	-14.5	162.4	360	1.00	Vertical
622.961	31.1	35.9	46.0	200	-14.9	164.1	248	1.00	Vertical
713.562	31.7	38.5	46.0	200	-14.3	161.5	205	1.00	Horizontal
900.201	33.8	49.0	46.0	200	-12.2	151.0	199	1.11	Horizontal

Product Service

1 GHz to 3 GHz



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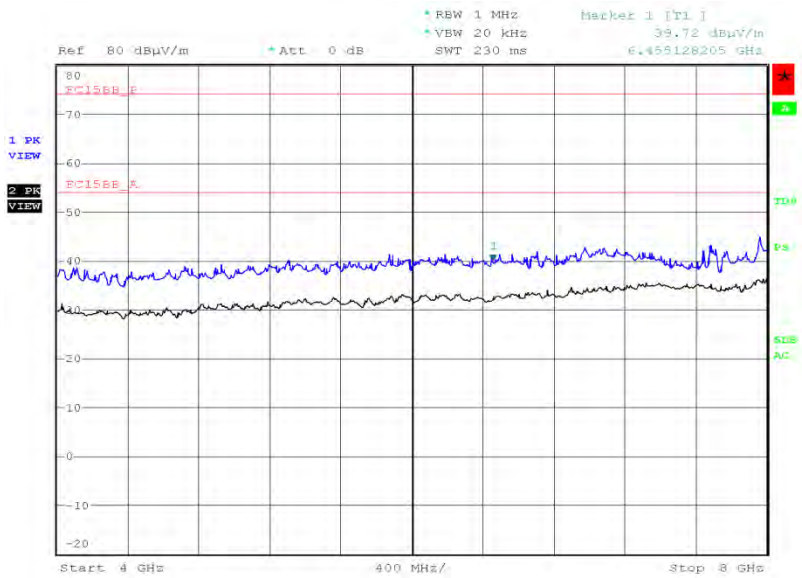
3 GHz to 8 GHz



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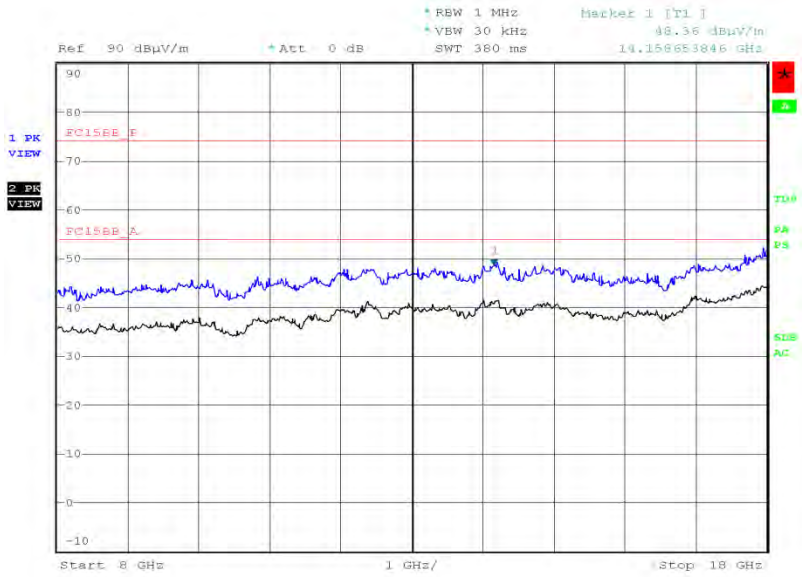
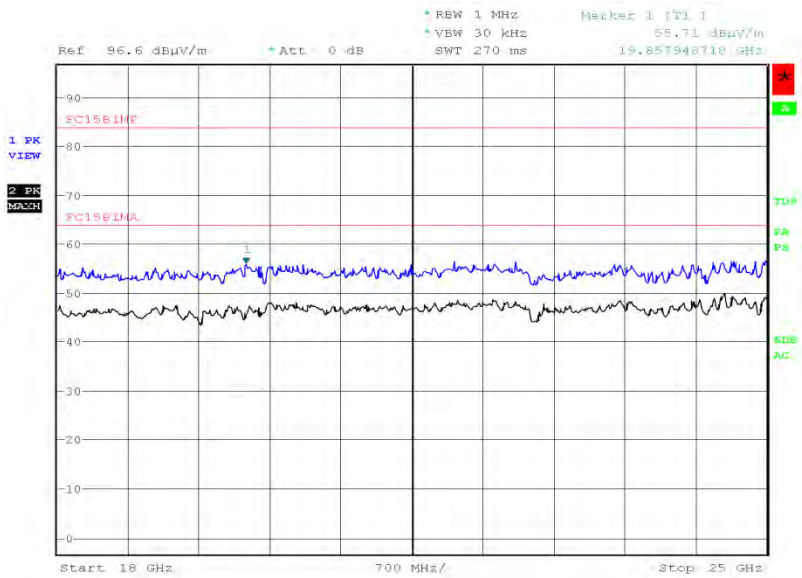
8 GHz to 18 GHz



Date: 19.JAN.2014 00:51:46

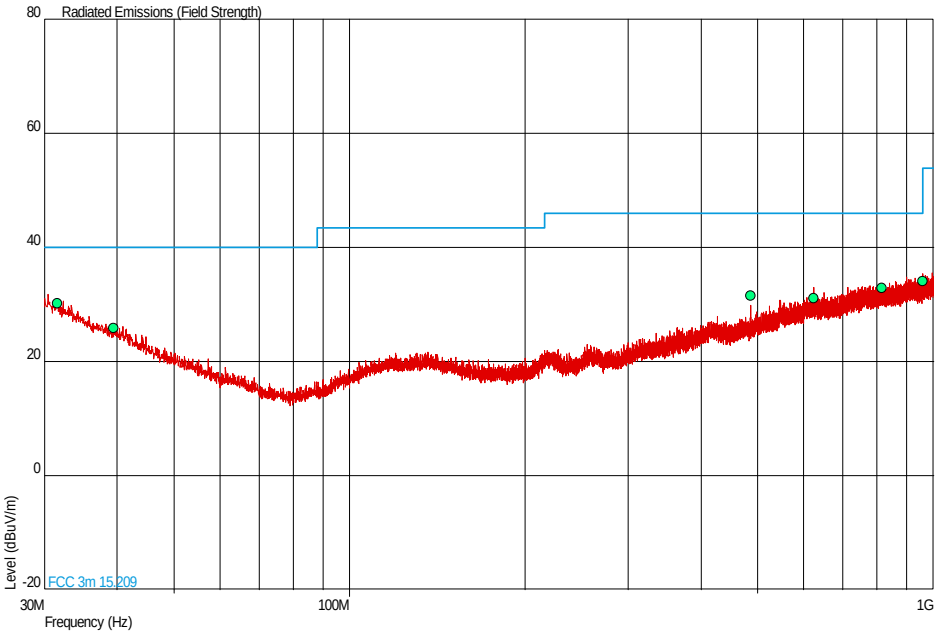
18 GHz to 25 GHz



Date: 19.JAN.2014 05:35:19

2480 MHz

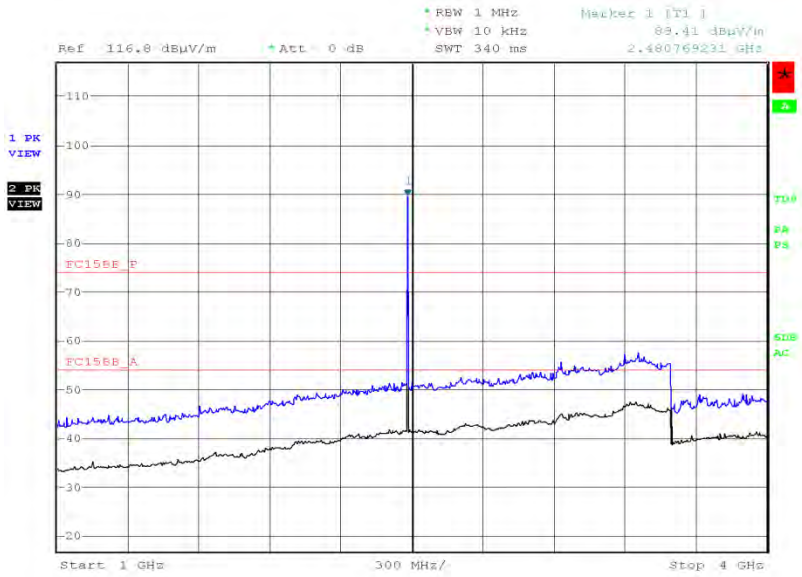
30 MHz to 1 GHz



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
31.580	30.3	32.7	40.0	100	-9.7	67.3	360	1.00	Horizontal
39.457	26.0	20.0	40.0	100	-14.0	80.0	178	1.00	Horizontal
486.191	31.6	38.0	46.0	200	-14.4	162.0	8	1.00	Vertical
622.911	31.1	35.9	46.0	200	-14.9	164.1	19	1.00	Vertical
815.278	33.0	44.7	46.0	200	-13.0	155.3	119	1.00	Vertical
958.245	34.1	50.7	46.0	200	-11.9	149.3	360	3.62	Vertical

Product Service

1 GHz to 3 GHz



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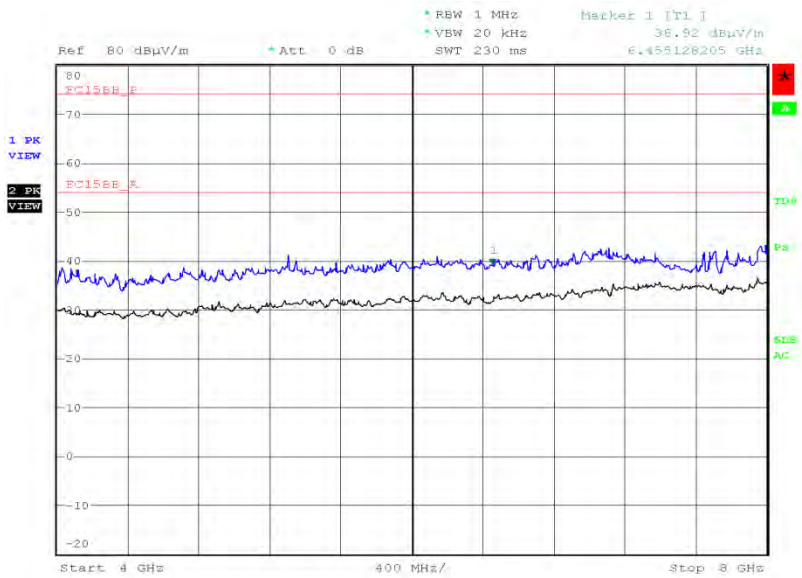
3 GHz to 8 GHz



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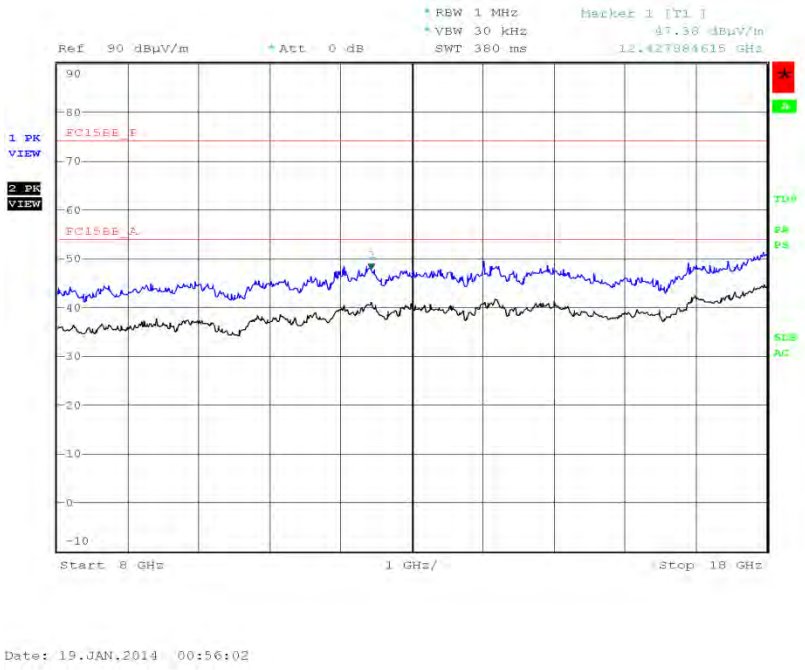
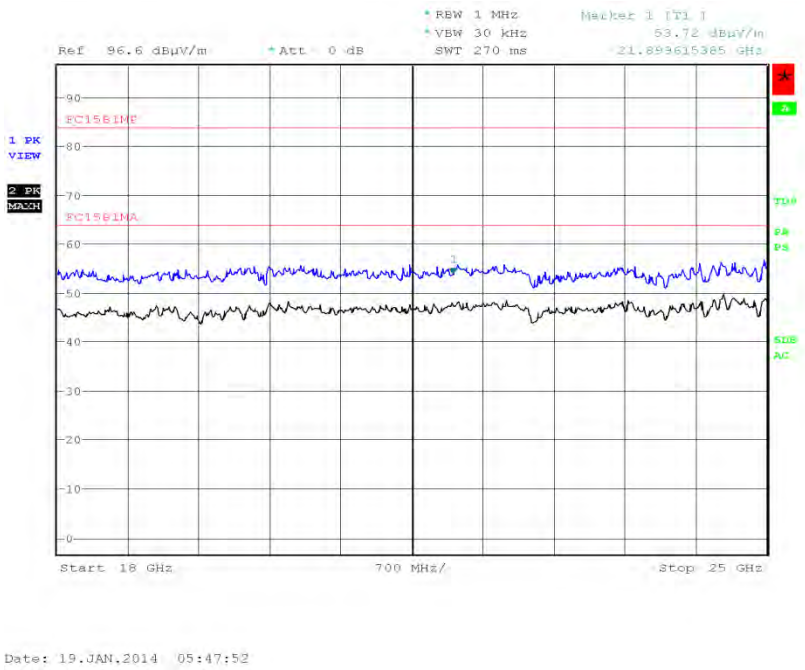
8 GHz to 18 GHz



Date: 19.JAN.2014 00:56:02

18 GHz to 25 GHz



Date: 19.JAN.2014 05:47:52

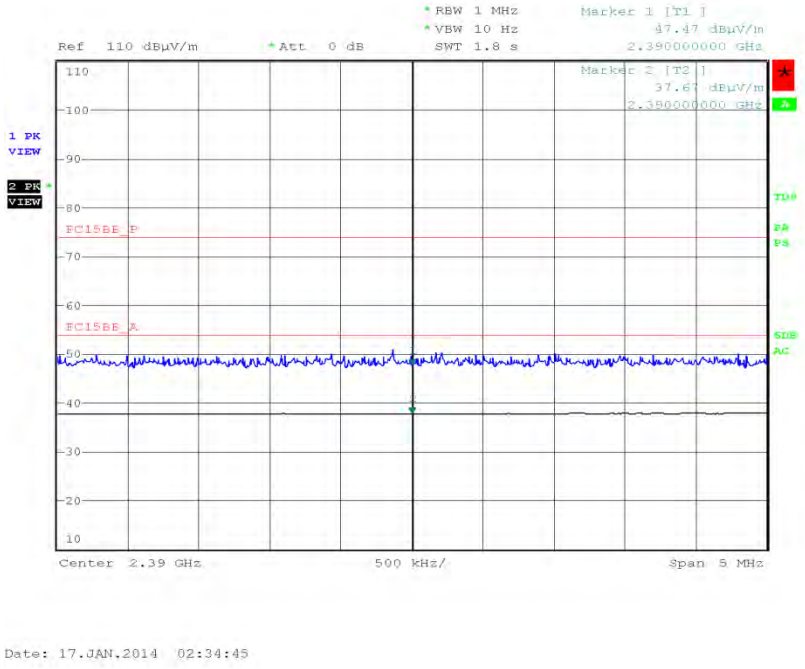
Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

Band Edge Emissions

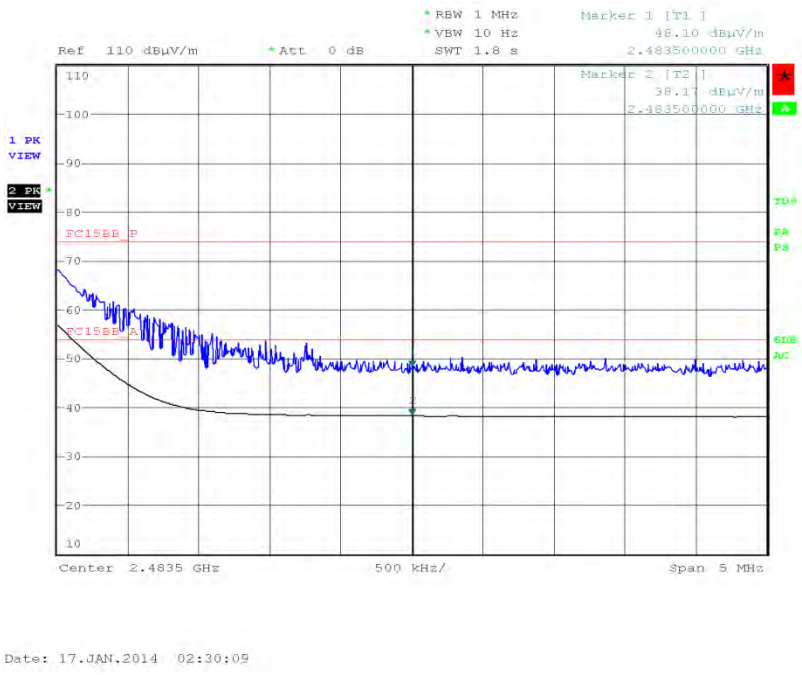
2402 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	47.47	37.67



2480 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	48.10	38.17



Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

2.5 POWER SPECTRAL DENSITY

2.5.1 Specification Reference

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

2.5.2 Equipment Under Test and Modification State

SHT22 S/N: IMEI 004401115013514 - Modification State 0

2.5.3 Date of Test

16 January 2014, 17 January 2014 & 20 January 2014

2.5.4 Test Equipment Used

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

2.5.5 Test Procedure

The EUT was connected to a spectrum analyser via a 10 dB attenuator. The path loss was measured between the EUT and the spectrum analyser and entered as a reference level offset. The trace was set to max hold and using a peak detector the maximum response was established. With the spectrum analyser RBW at 3 kHz and VBW at 10 kHz, the power spectral density in a 3 kHz bandwidth was measured.

2.5.6 Environmental Conditions

Ambient Temperature	20.7 - 24.8°C
Relative Humidity	33.1 - 35.2%

2.5.7 Test Results

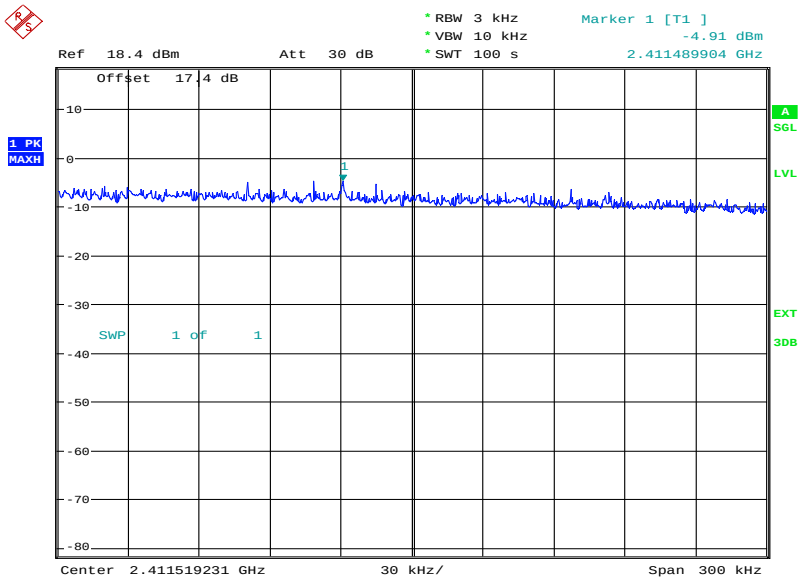
802.11(b)

4.0 V DC Supply

Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	1	-4.91
	2	-5.31
	5.5	-5.59
	11	-6.00
2437 MHz	1	-5.53
	2	-6.00
	5.5	-6.38
	11	-6.58
2462 MHz	1	-6.42
	2	-7.62
	5.5	-6.11
	11	-6.95

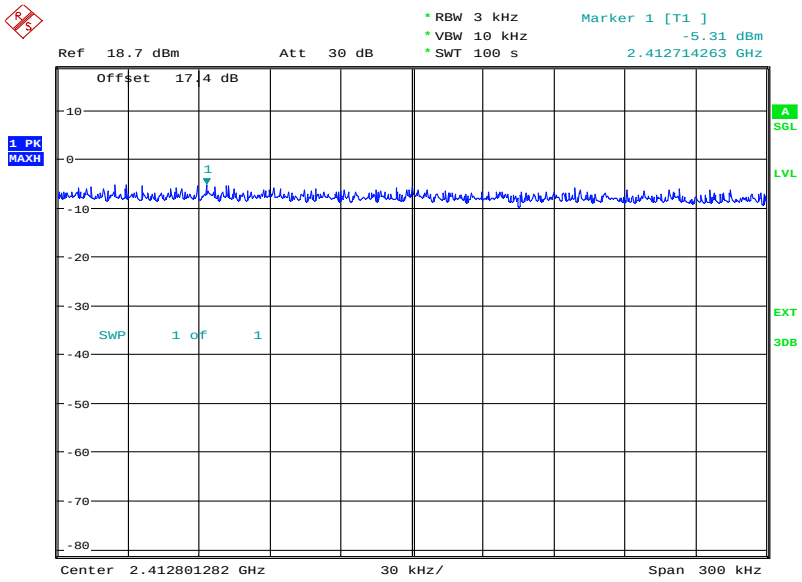
2412 MHz

1 Mbps



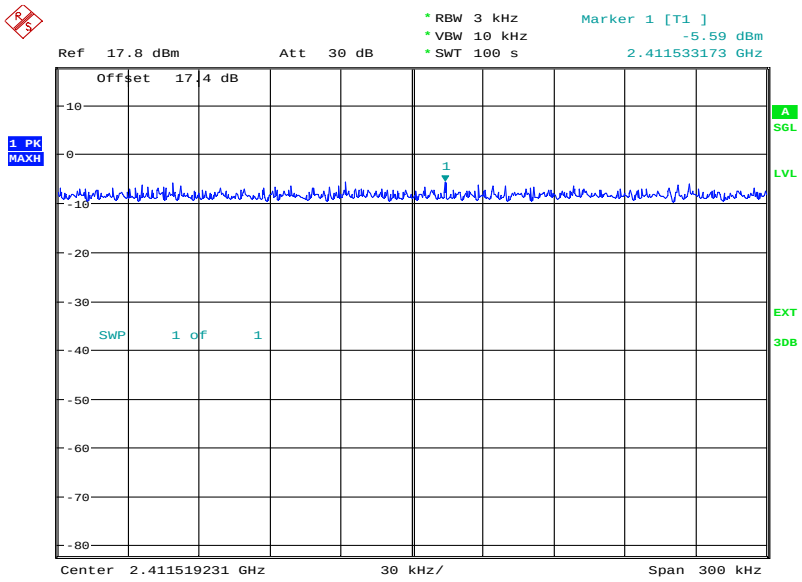
Date: 17.JAN.2014 10:34:36

2 Mbps



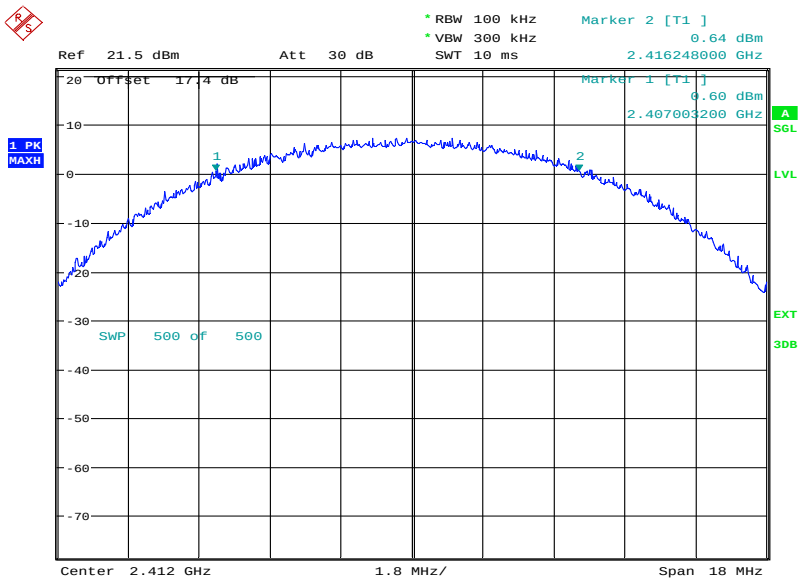
Date: 17.JAN.2014 10:52:54

5.5 Mbps



Date: 17.JAN.2014 11:18:35

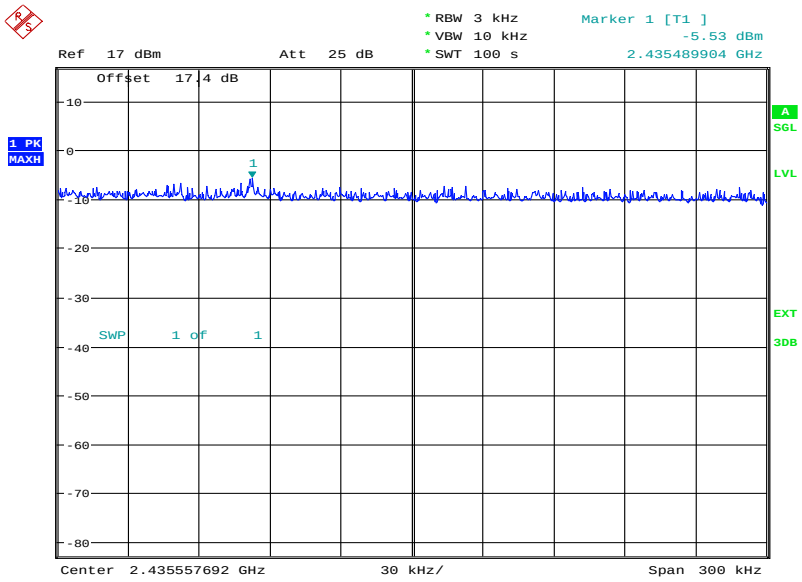
11 Mbps



Date: 17.JAN.2014 11:29:42

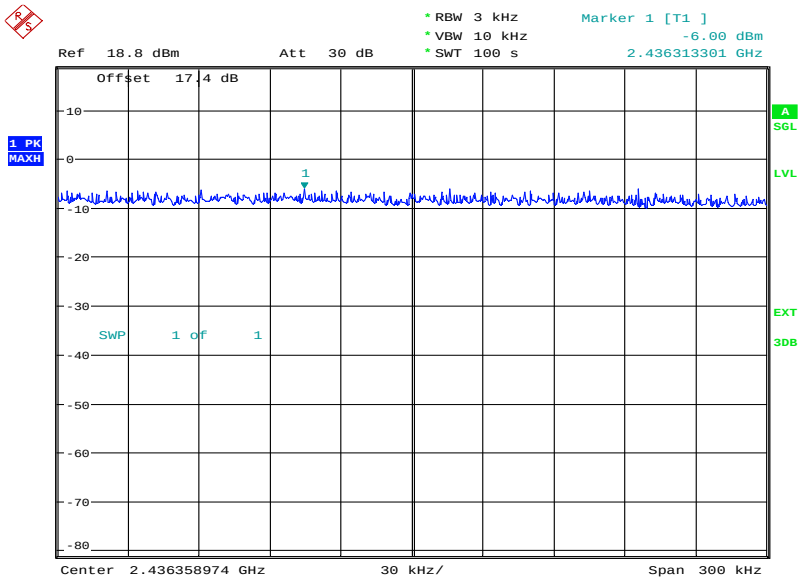
2437 MHz

1 Mbps



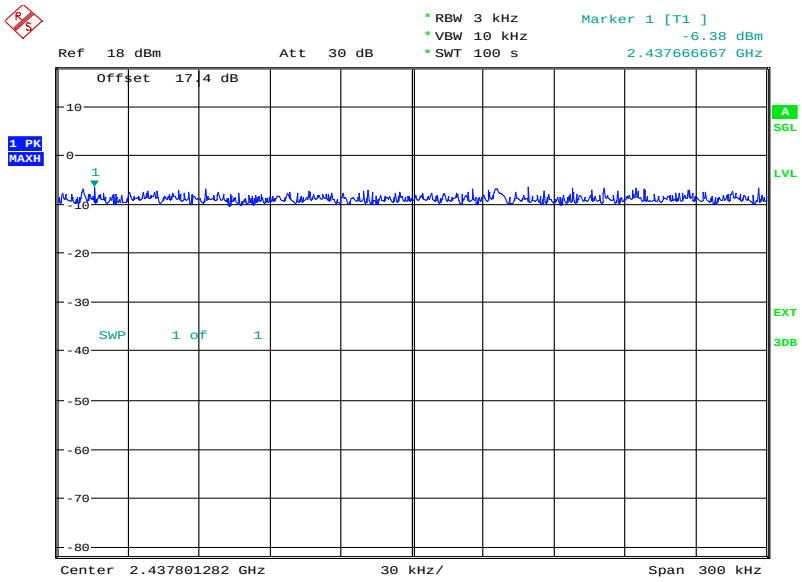
Date: 17.JAN.2014 10:43:03

2 Mbps



Date: 17.JAN.2014 11:09:16

5.5 Mbps



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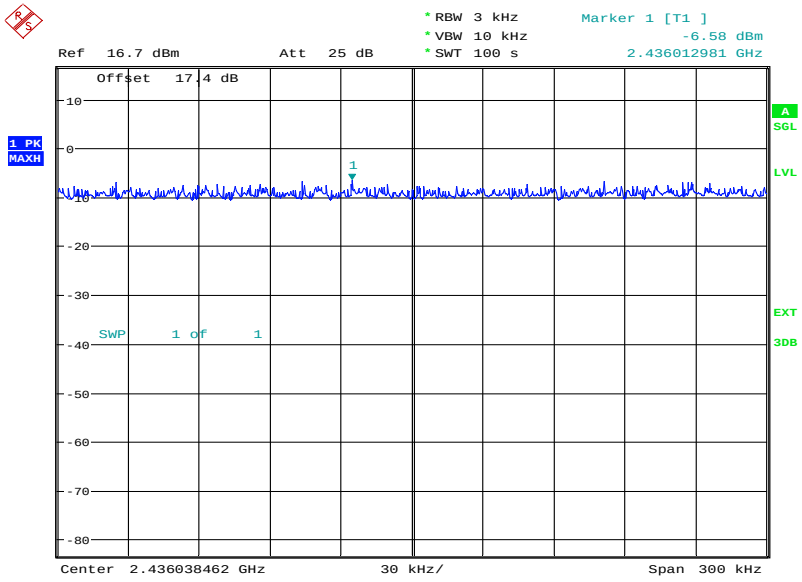
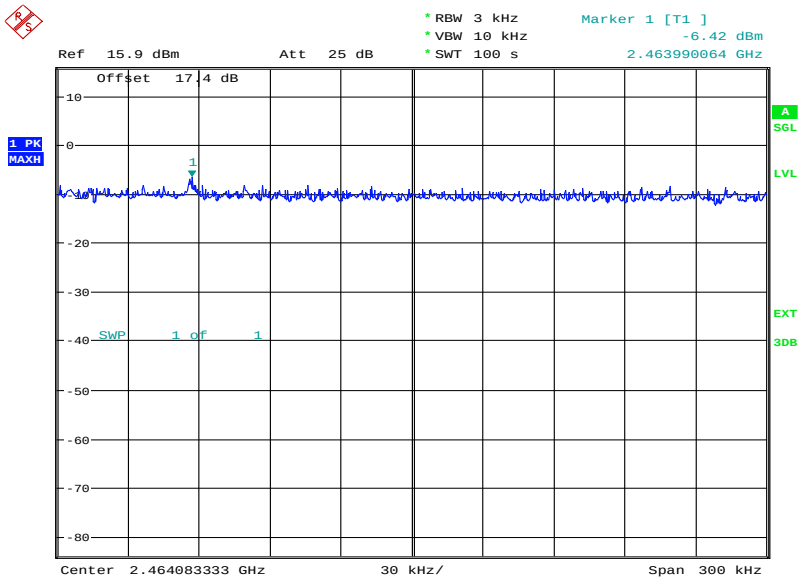
11 Mbps



Date: 17.JAN.2014 11:38:15

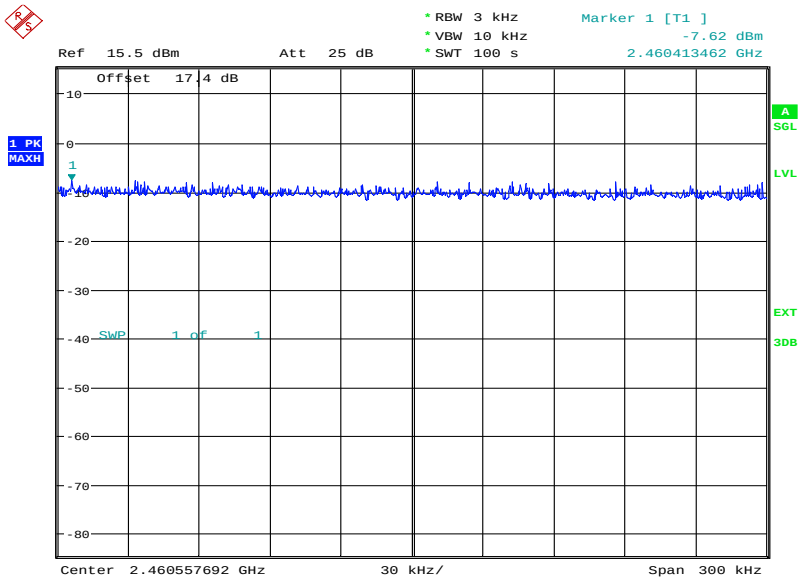
2462 MHz

1 Mbps



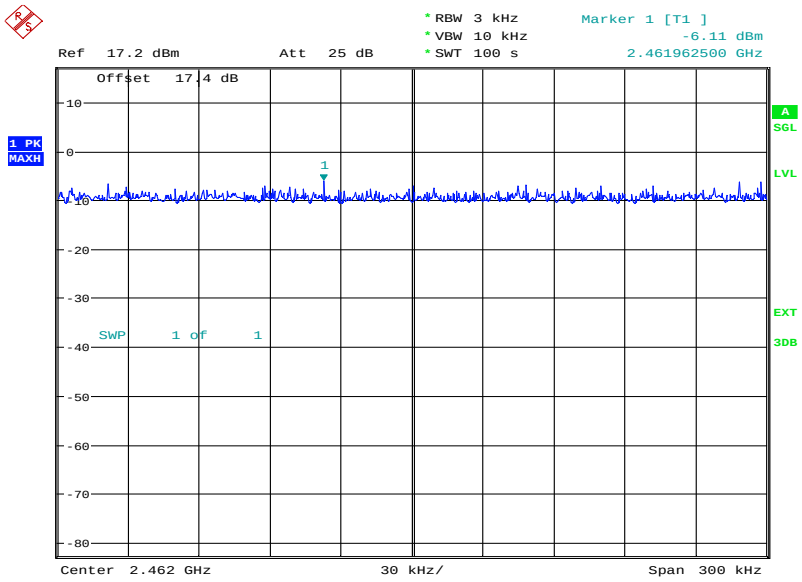
Date: 17.JAN.2014 10:48:12

2 Mbps



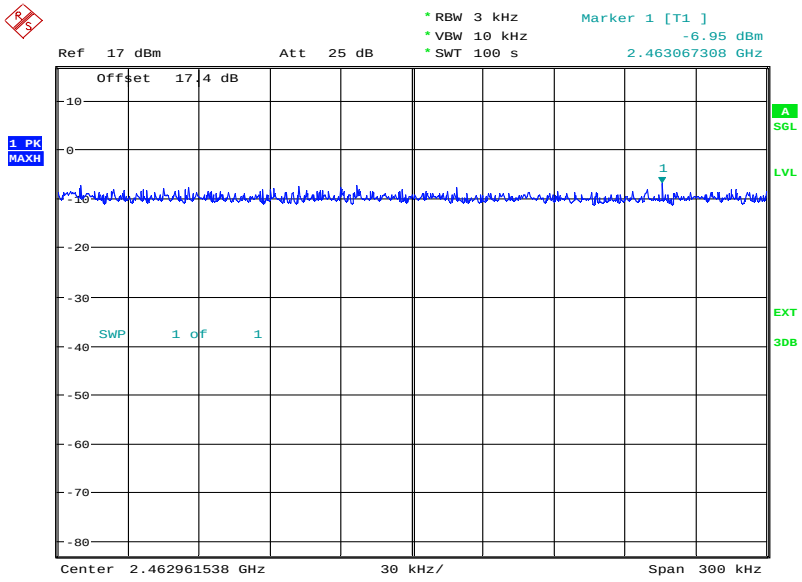
Date: 17.JAN.2014 11:13:38

5.5 Mbps



Date: 17.JAN.2014 11:27:21

11 Mbps



Date: 17.JAN.2014 11:44:50

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.

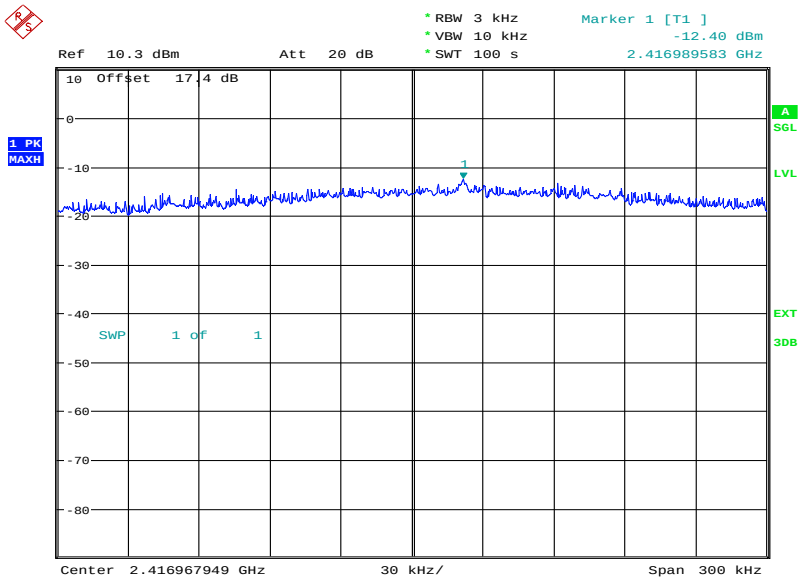
802.11(g)

4.0 V DC Supply

Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6	-12.40
	9	-10.94
	12	-11.67
	18	-12.08
	24	-10.96
	36	-11.04
	48	-12.00
	54	-10.82
2437 MHz	6	-11.61
	9	-11.32
	12	-12.84
	18	-11.63
	24	-11.50
	36	-11.28
	48	-11.96
	54	-11.90
2462 MHz	6	-11.64
	9	-12.25
	12	-13.01
	18	-13.01
	24	-13.01
	36	-13.28
	48	-11.47
	54	-11.24

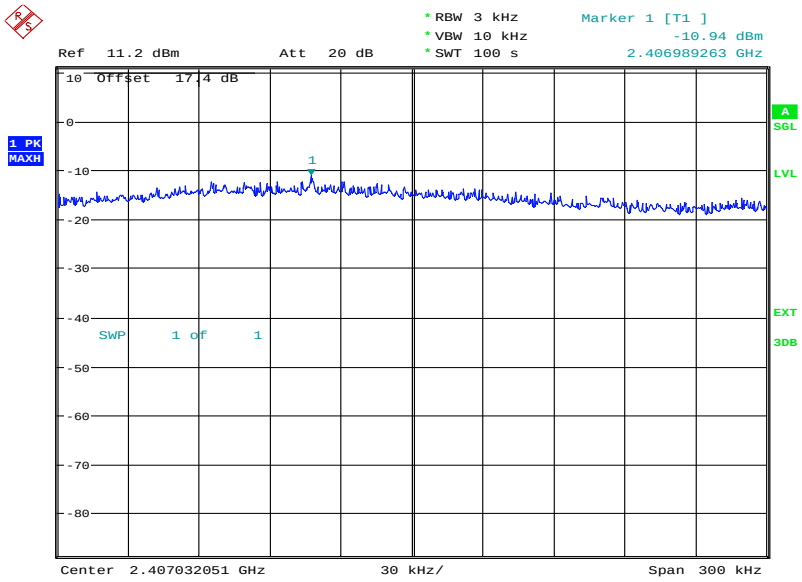
2412 MHz

6 Mbps



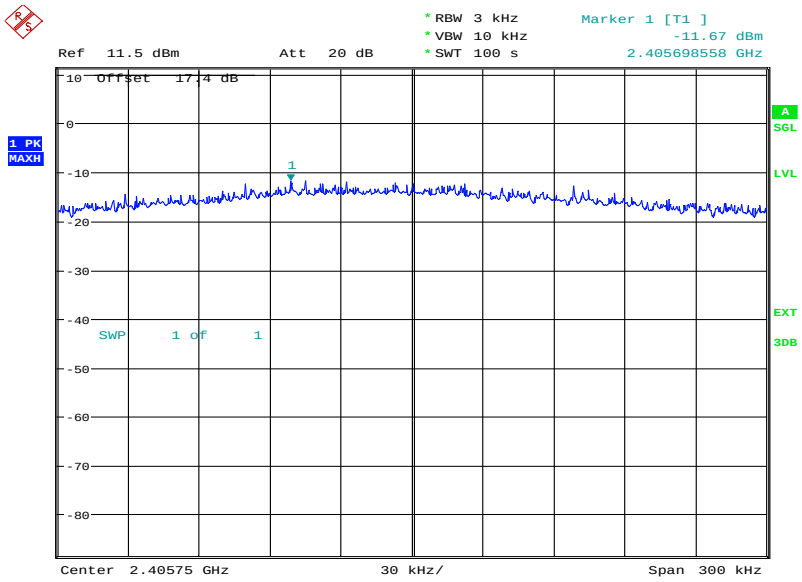
Date: 17.JAN.2014 11:49:31

9 Mbps



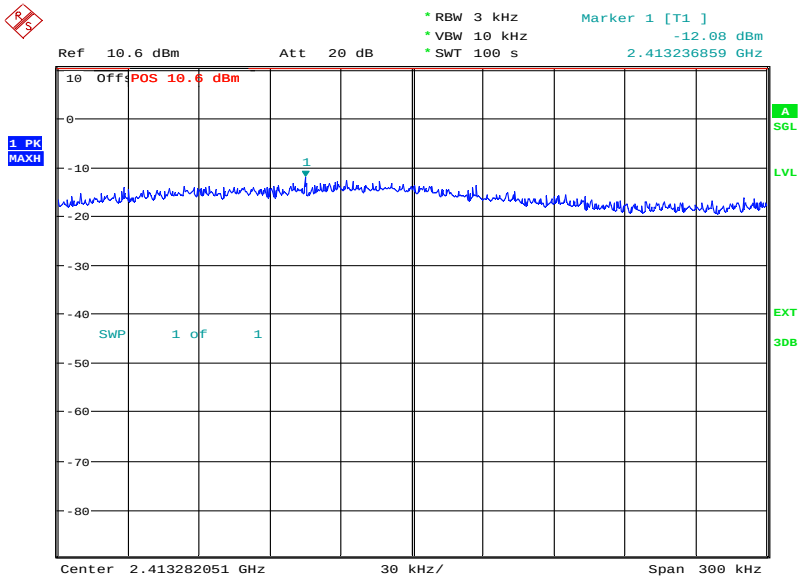
Date: 17.JAN.2014 12:03:11

12 Mbps



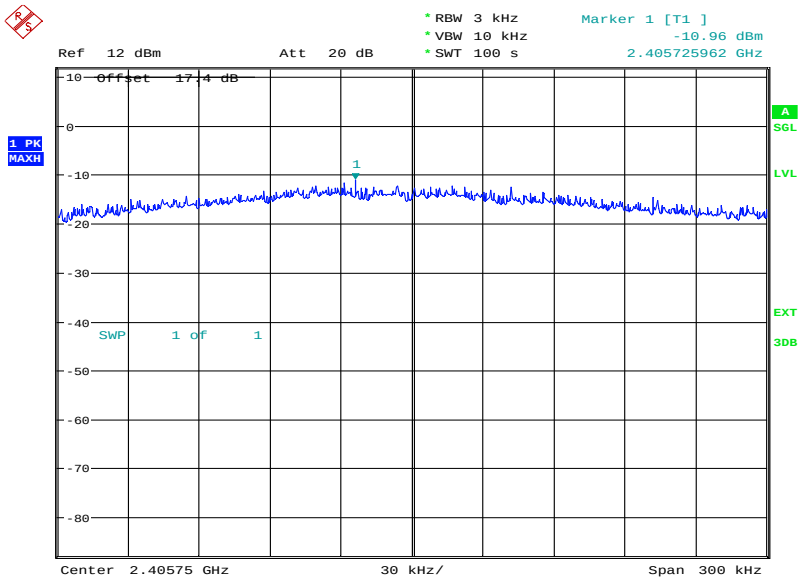
Date: 17.JAN.2014 12:17:04

18 Mbps



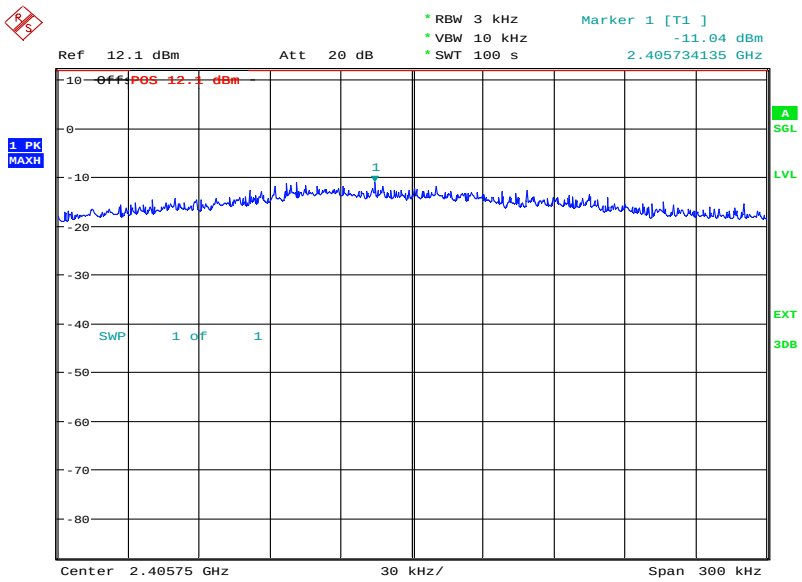
Date: 17.JAN.2014 13:51:14

24 Mbps



Date: 17.JAN.2014 14:04:09

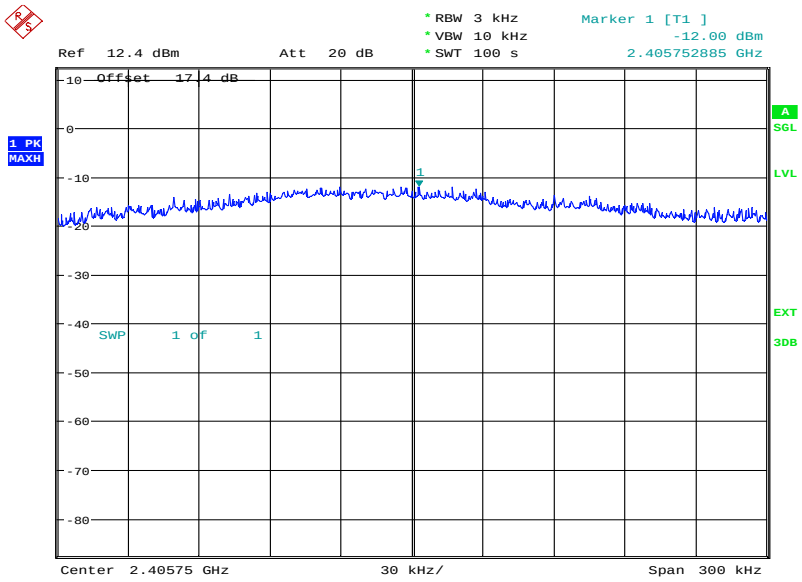
36 Mbps



Date: 17.JAN.2014 14:17:15

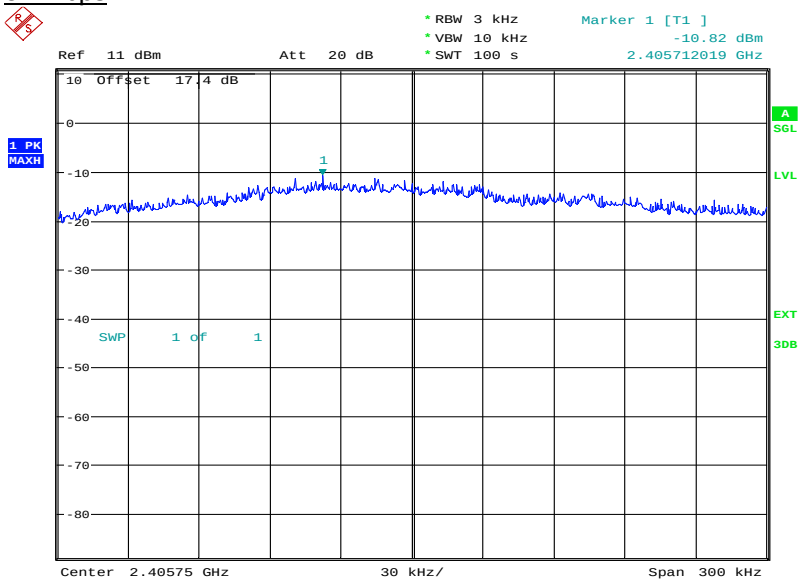
Product Service

48 Mbps



Date: 17.JAN.2014 14:32:37

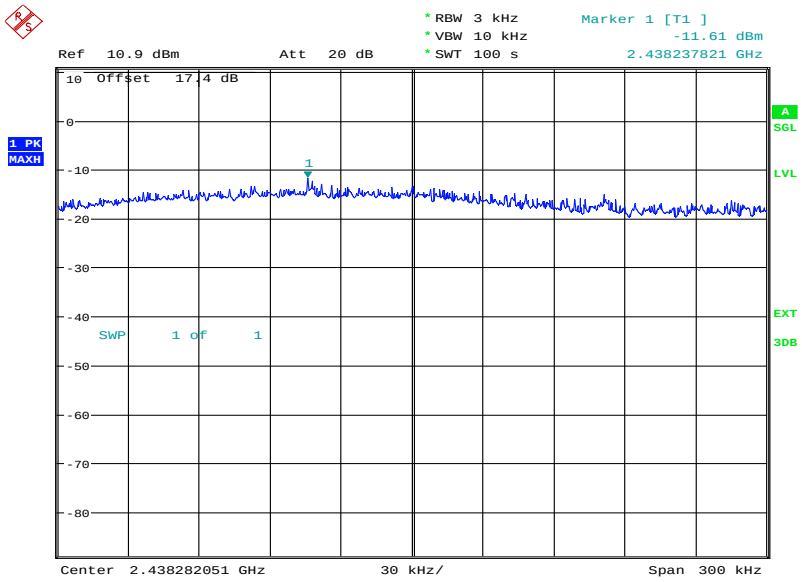
54 Mbps



Date: 17.JAN.2014 14:47:20

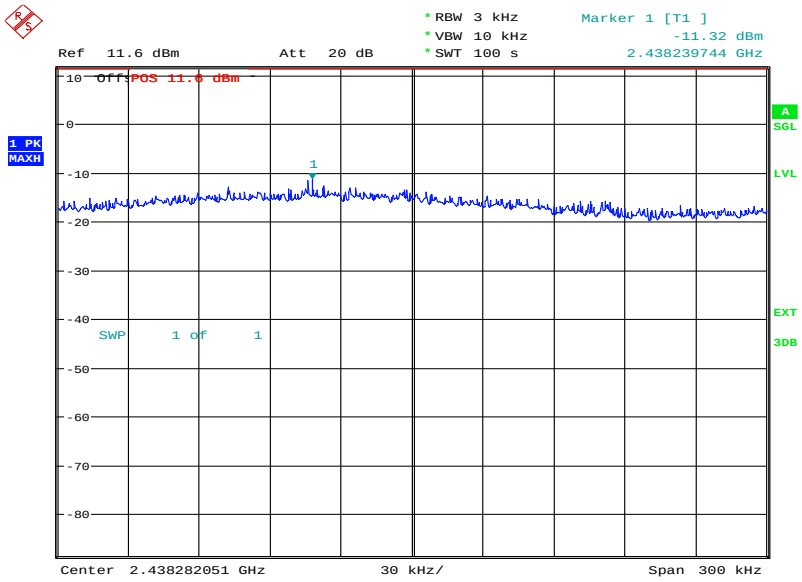
2437 MHz

6 Mbps



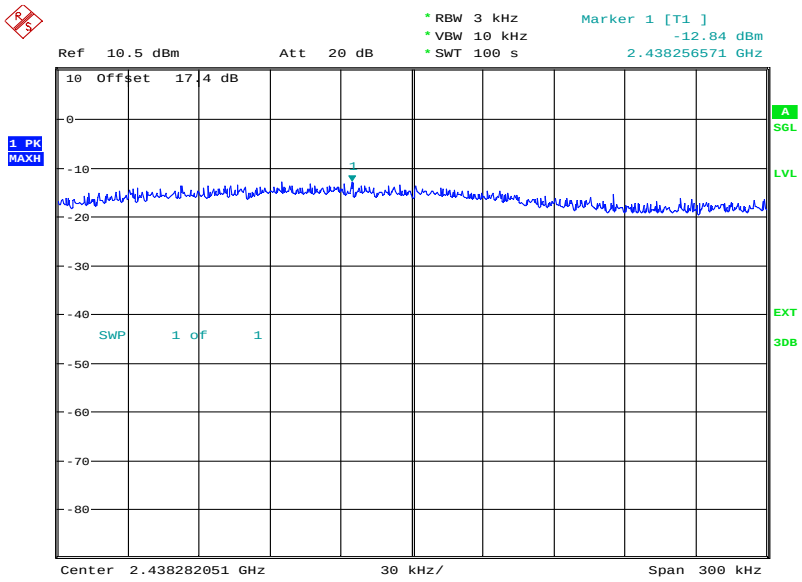
Date: 17.JAN.2014 11:53:32

9 Mbps



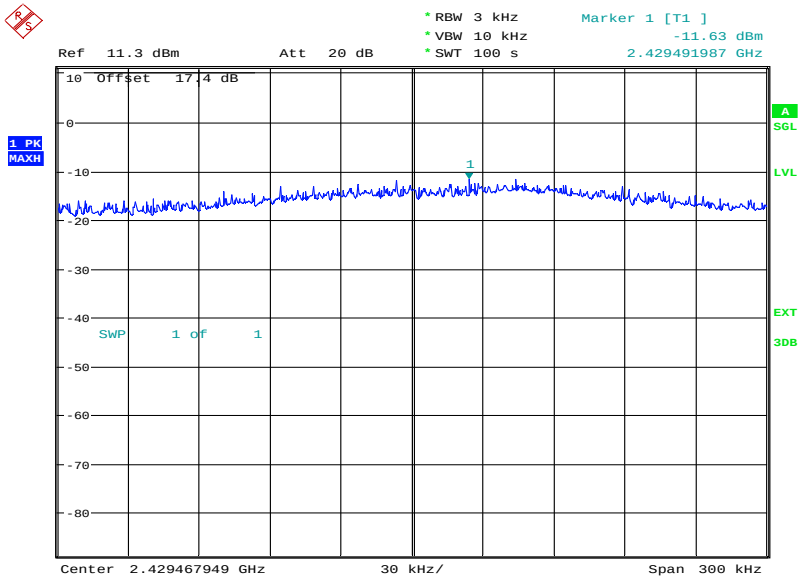
Date: 17.JAN.2014 12:07:38

12 Mbps



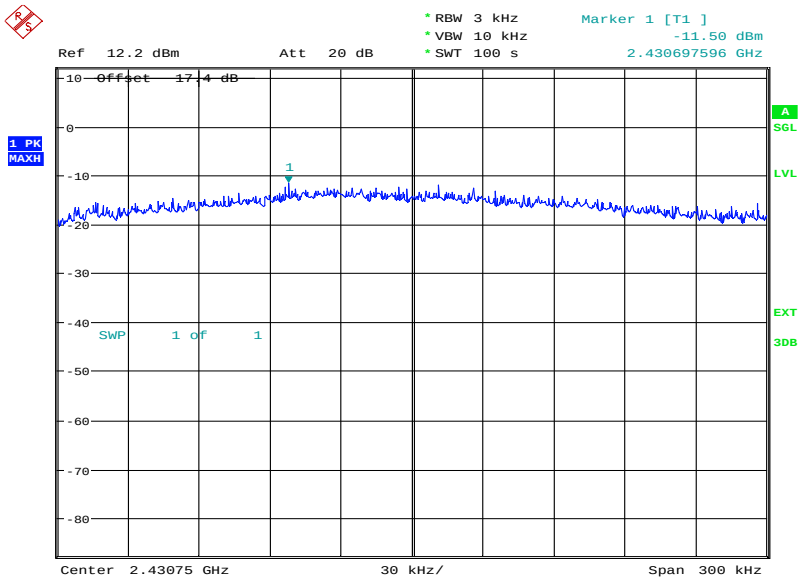
Date: 17.JAN.2014 13:41:52

18 Mbps



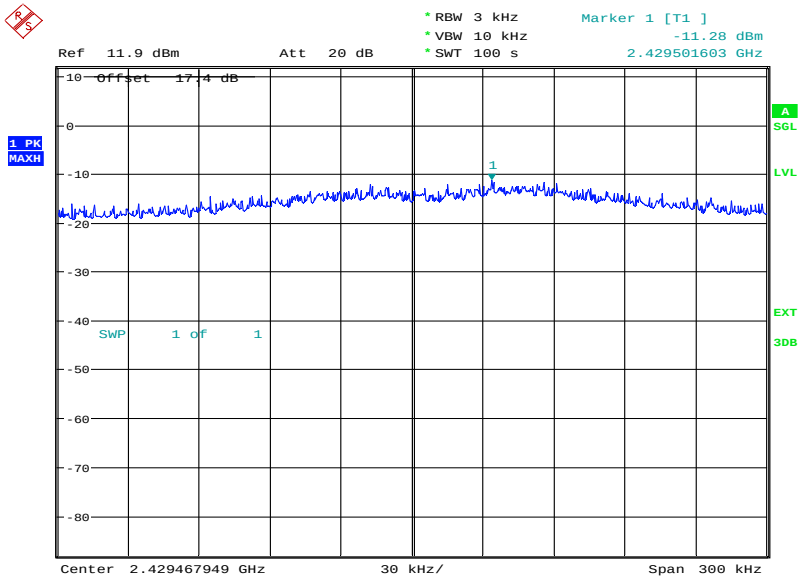
Date: 17.JAN.2014 13:55:21

24 Mbps



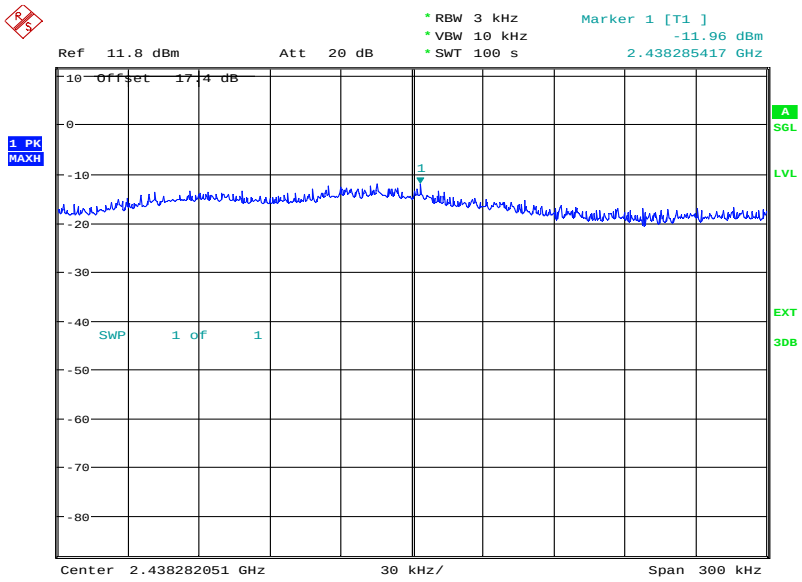
Date: 17.JAN.2014 14:08:13

36 Mbps



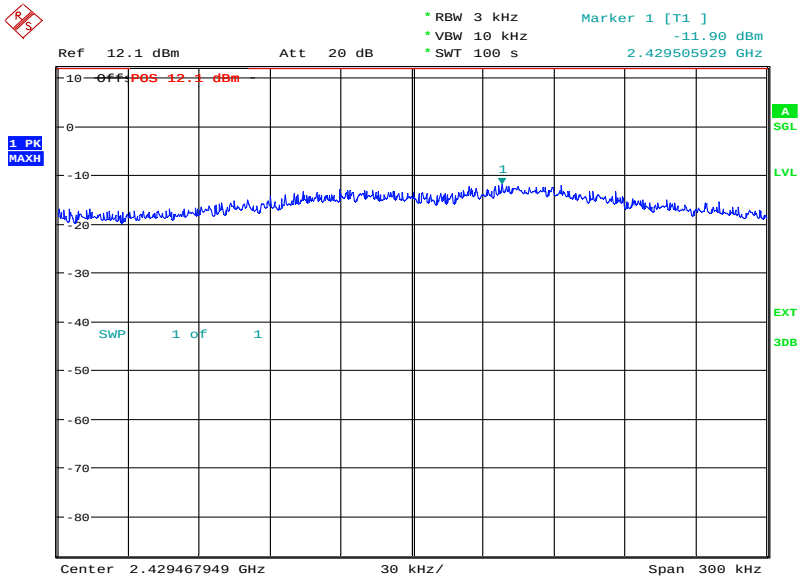
Date: 17.JAN.2014 14:21:47

48 Mbps



Date: 17.JAN.2014 14:36:31

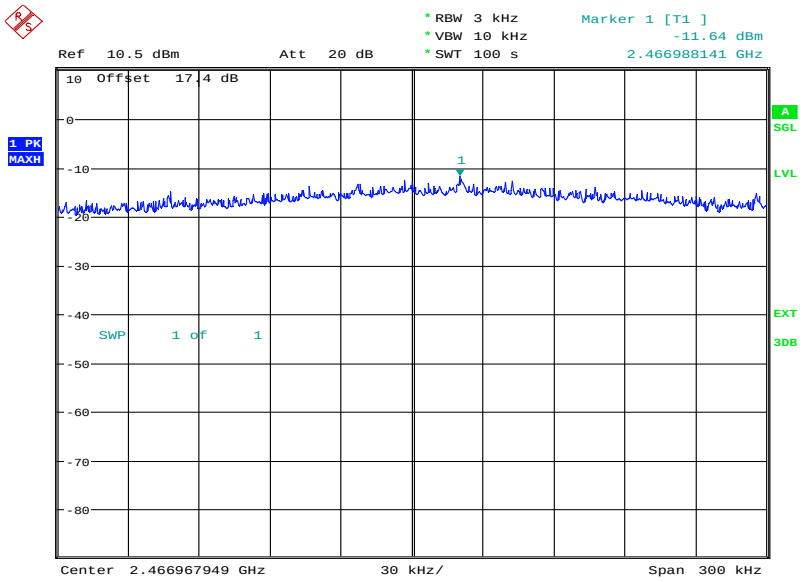
54 Mbps



Date: 17.JAN.2014 14:51:15

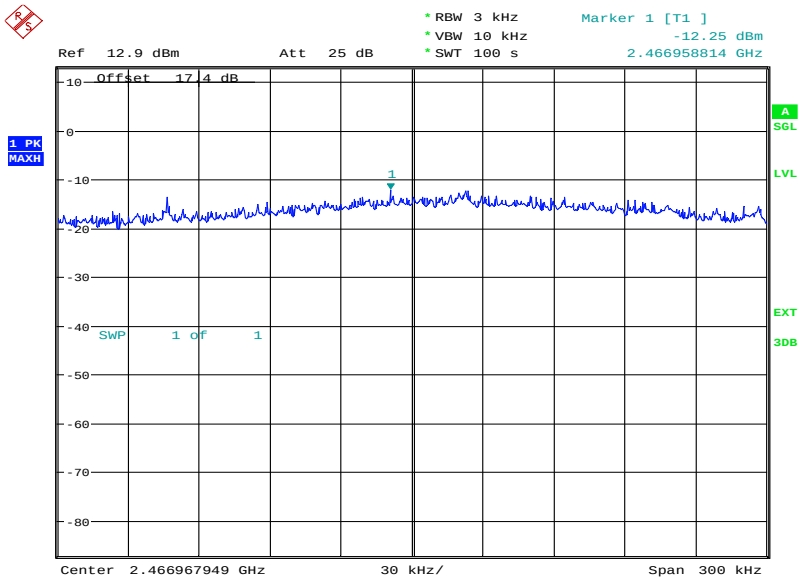
2462 MHz

6 Mbps



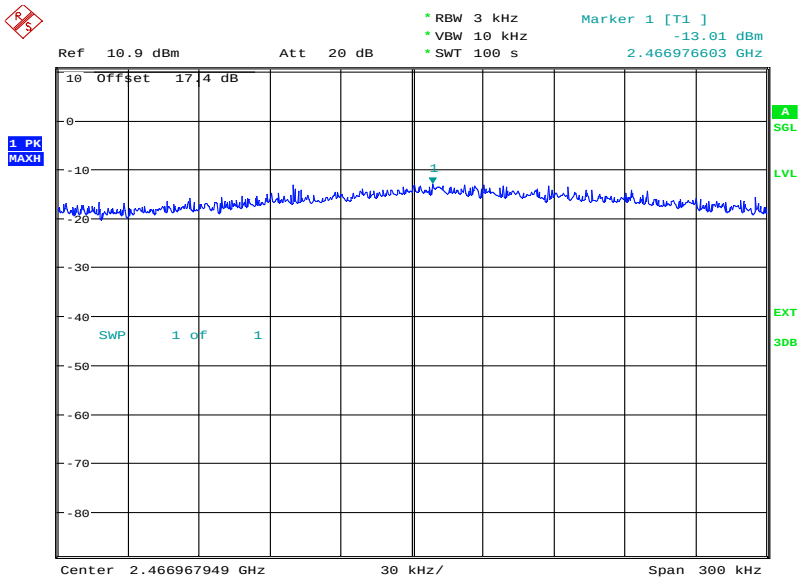
Date: 17.JAN.2014 11:58:25

9 Mbps



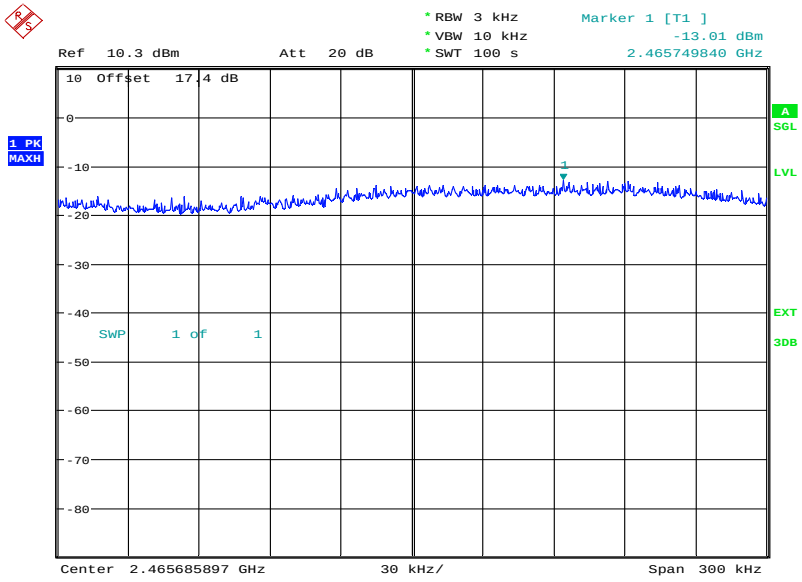
Date: 17.JAN.2014 12:12:22

12 Mbps



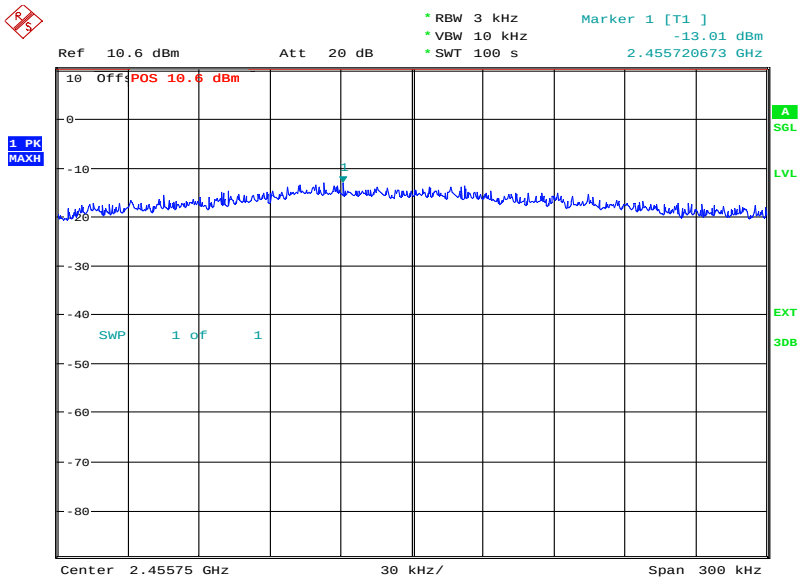
Date: 17.JAN.2014 13:45:53

18 Mbps



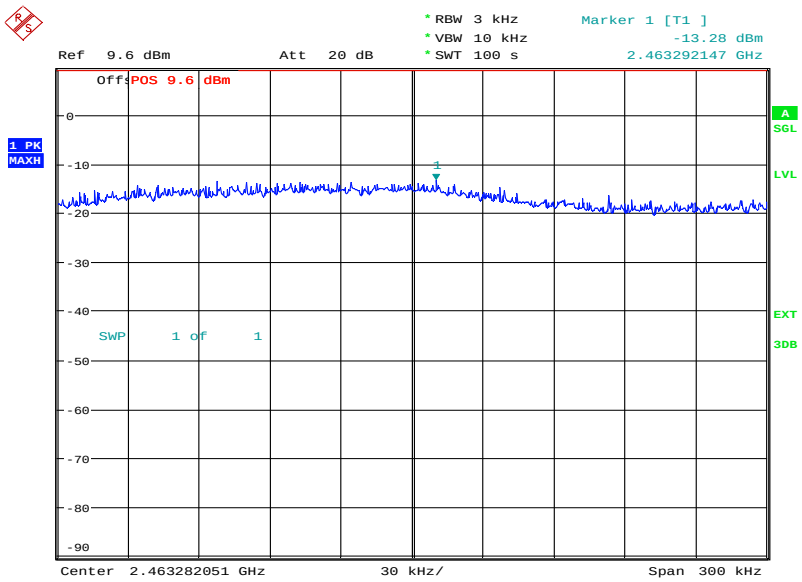
Date: 17.JAN.2014 13:59:25

24 Mbps



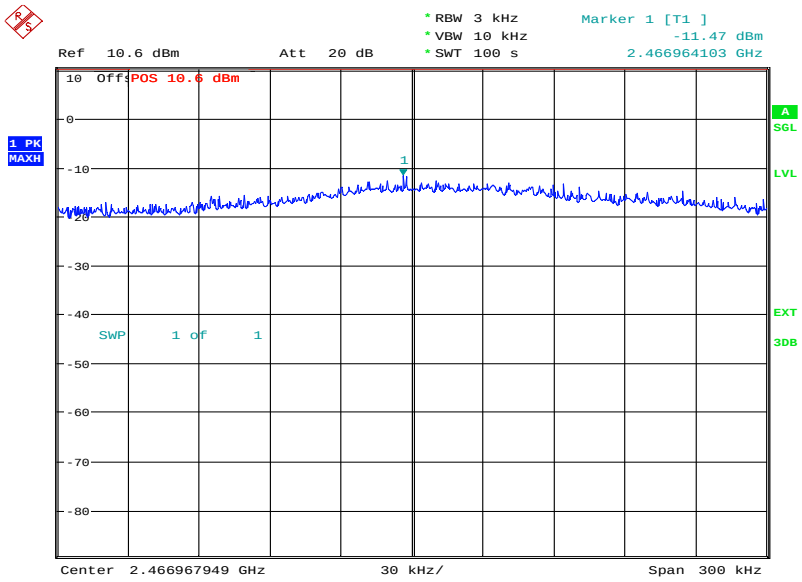
Date: 17.JAN.2014 14:12:14

36 Mbps



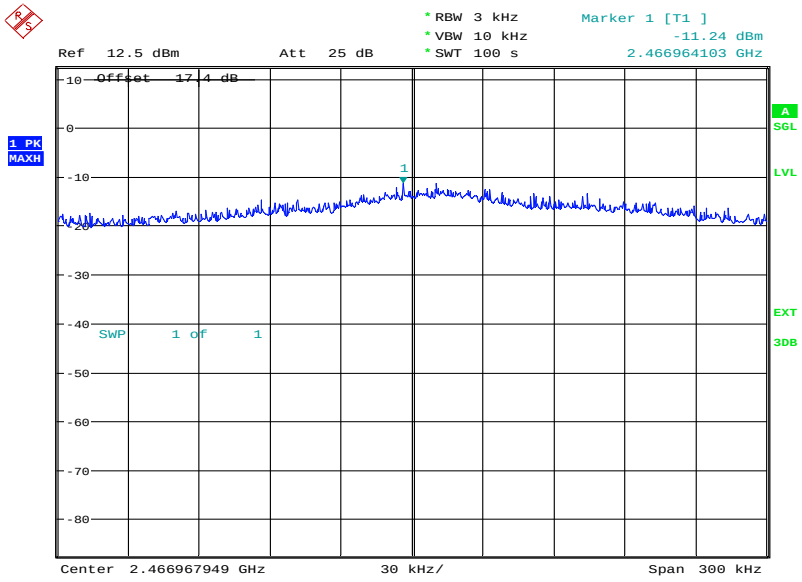
Date: 17.JAN.2014 14:25:48

48 Mbps



Date: 17.JAN.2014 14:41:02

54 Mbps



Date: 17.JAN.2014 14:55:24

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.

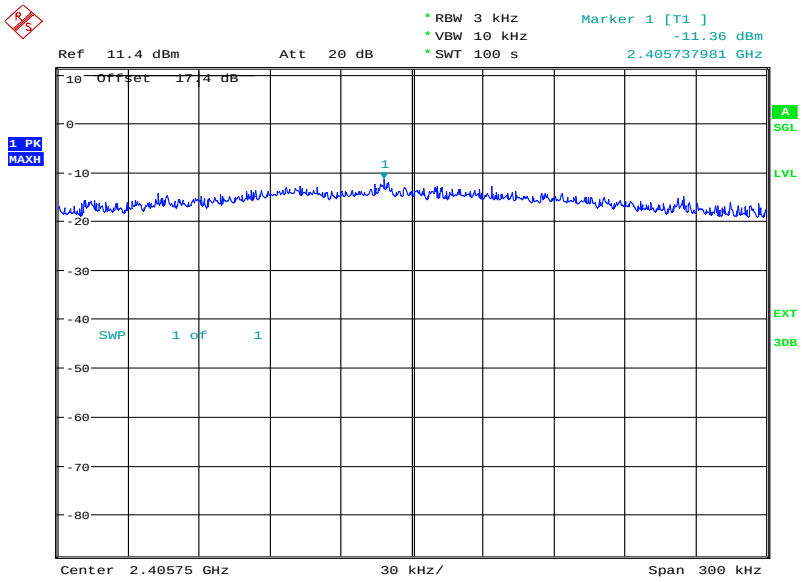
802.11(n)

4.0 V DC Supply

Frequency	Data Rate (Mbps)	Power Spectral Density in 3 kHz Bands (dBm)
2412 MHz	6.5	-11.36
	13	-11.02
	19.5	-11.94
	26	-11.73
	39	-11.46
	52	-11.30
	58.5	-10.85
	65	-11.62
2437 MHz	6.5	-10.12
	13	-11.86
	19.5	-12.91
	26	-11.76
	39	-12.60
	52	-11.82
	58.5	-11.54
	65	-11.31
2462 MHz	6.5	-12.29
	13	-13.13
	19.5	-11.79
	26	-12.22
	39	-11.61
	52	-12.63
	58.5	-11.77
	65	-12.12

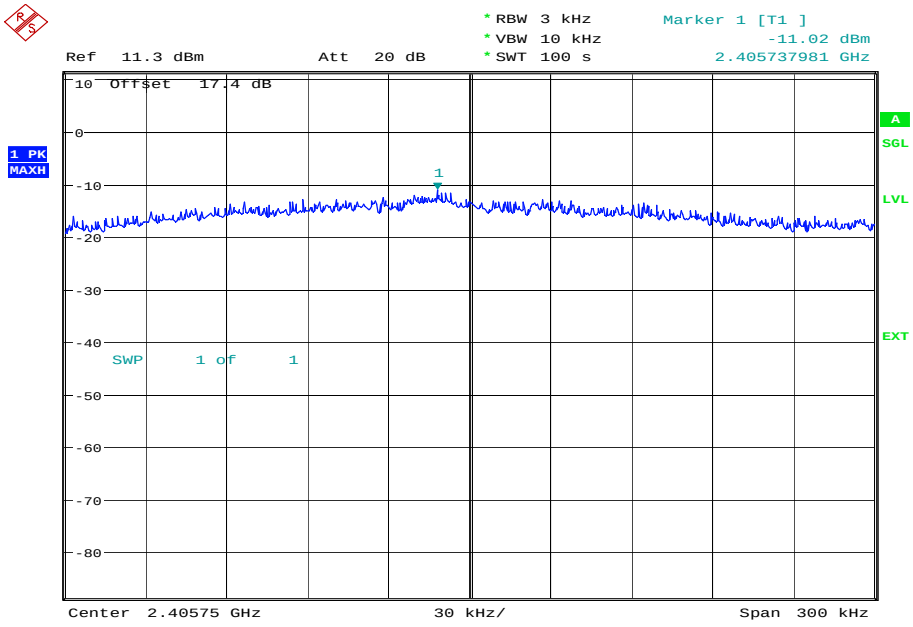
2412 MHz

6.5 Mbps



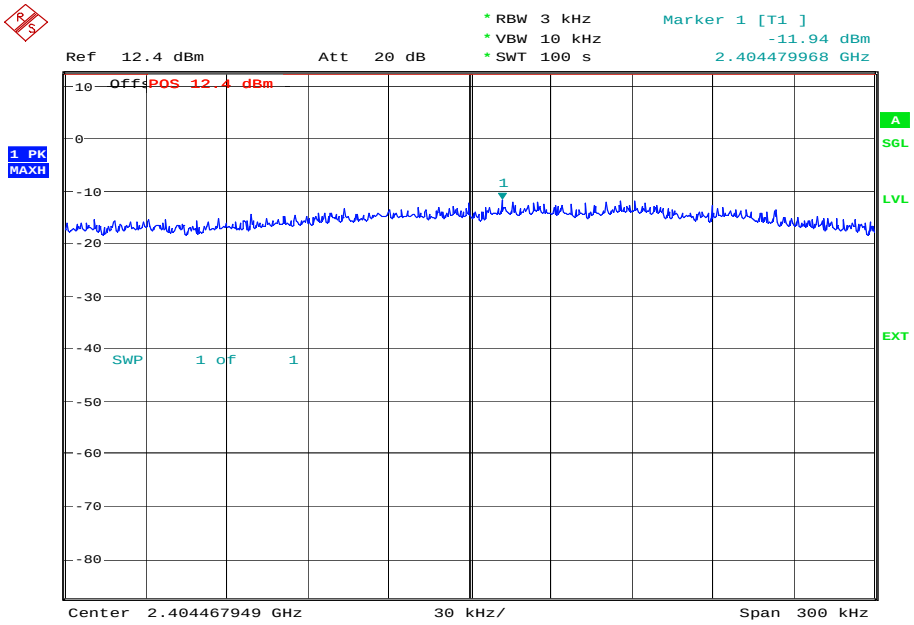
Date: 17.JAN.2014 14:59:58

13 Mbps



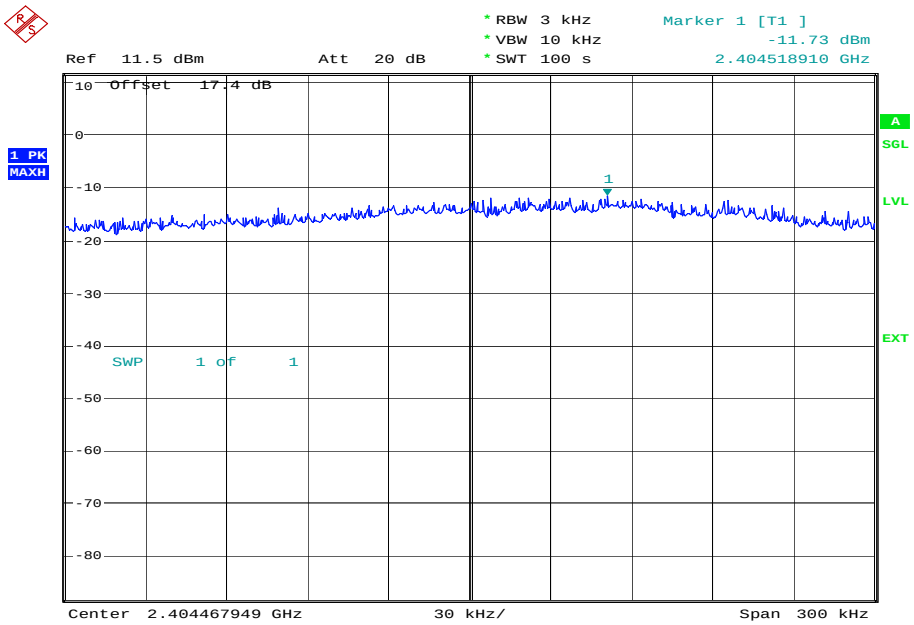
Date: 17.JAN.2014 16:35:24

19.5 Mbps



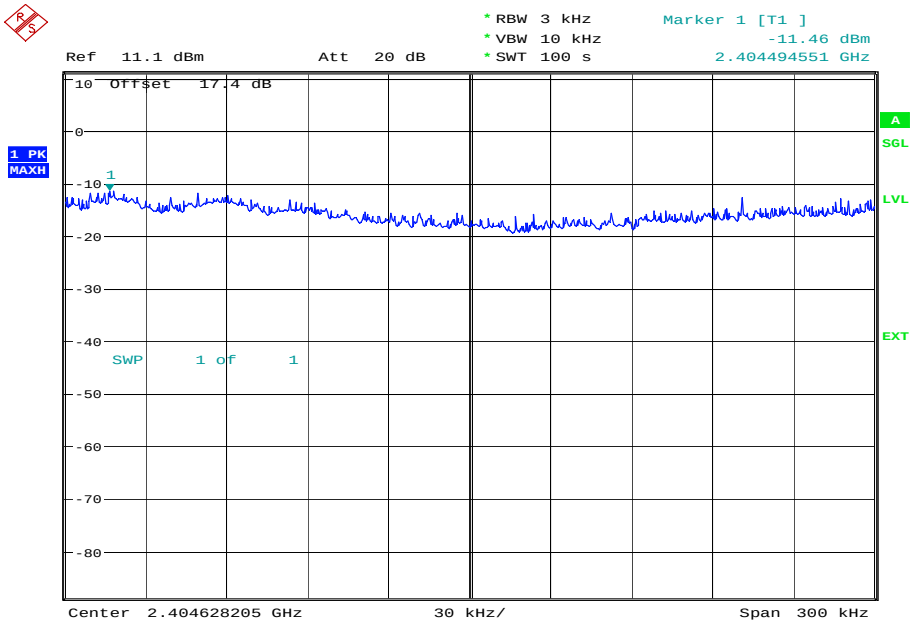
Date: 17.JAN.2014 16:54:21

26 Mbps



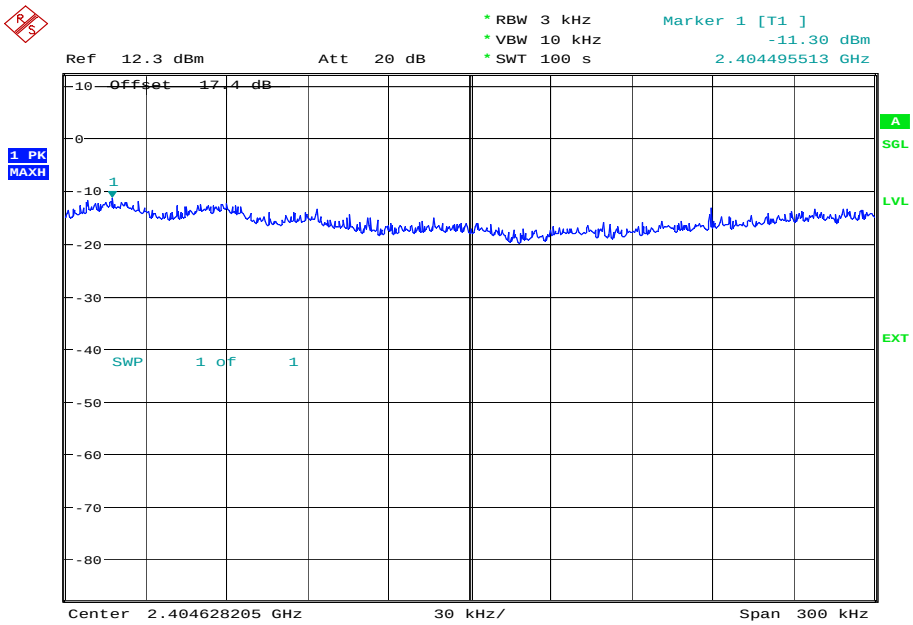
Date: 20.JAN.2014 09:46:36

39 Mbps



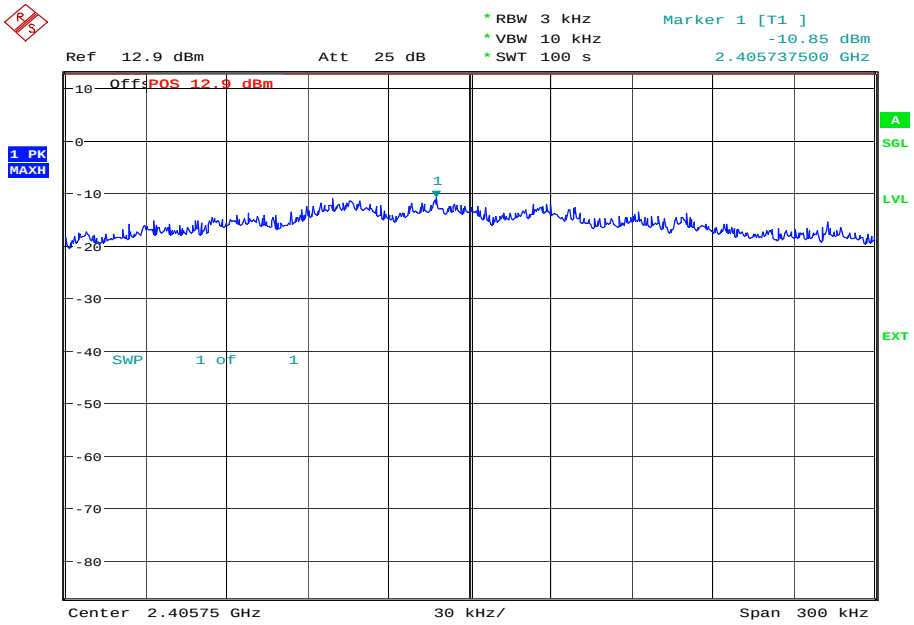
Date: 20.JAN.2014 10:03:23

52 Mbps



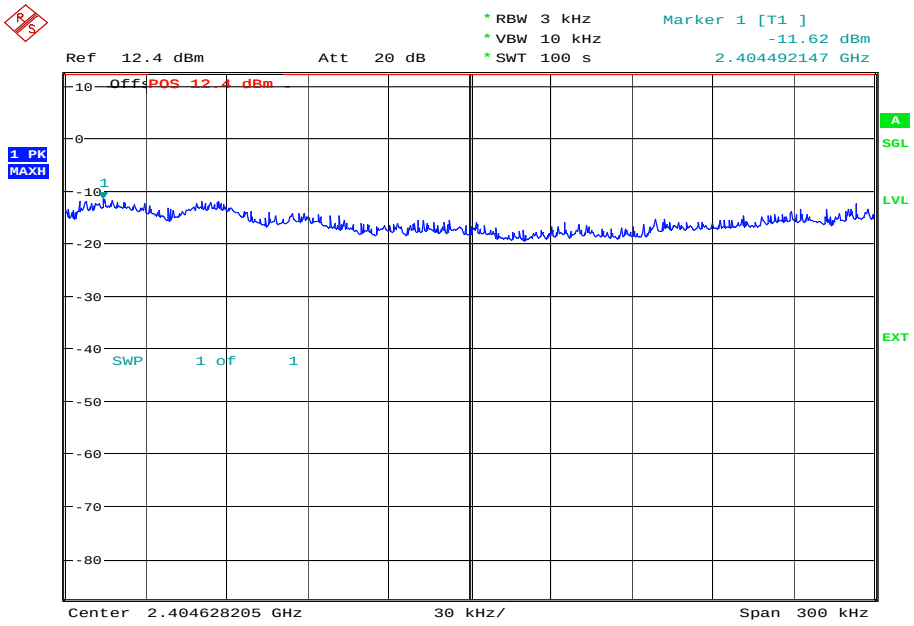
Date: 20.JAN.2014 10:19:33

58.5 Mbps



Date: 20.JAN.2014 10:41:24

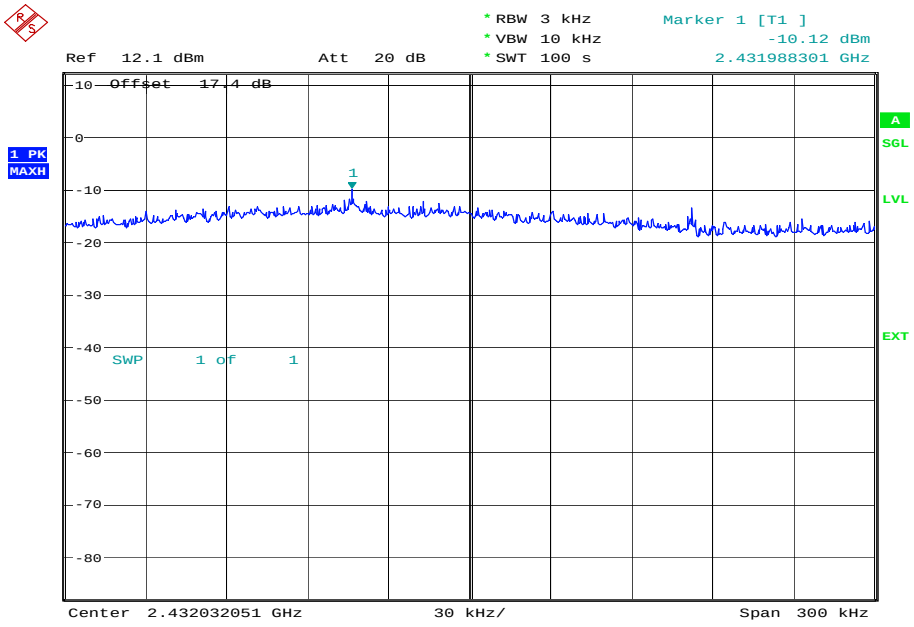
65 Mbps



Date: 20.JAN.2014 10:59:10

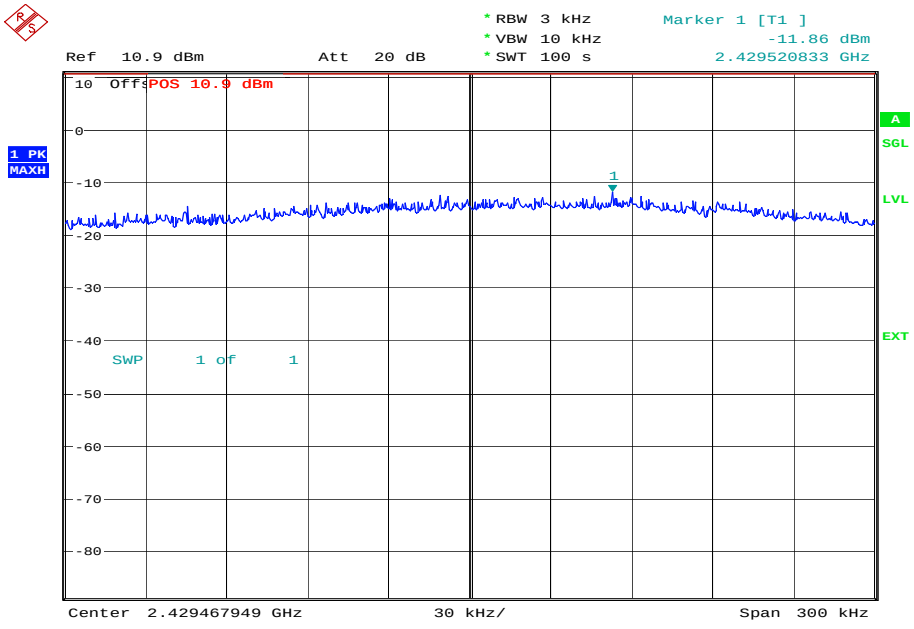
2437 MHz

6.5 Mbps



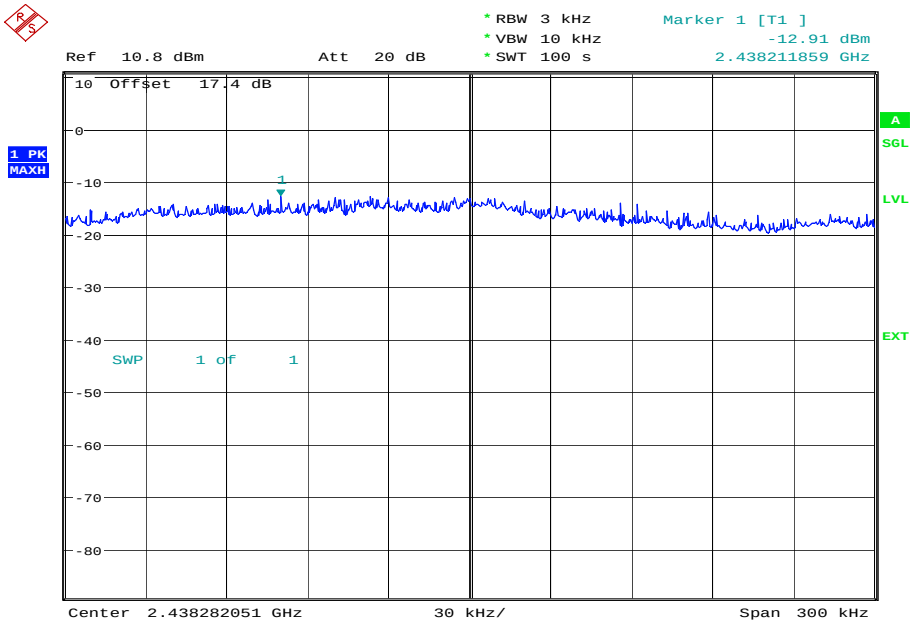
Date: 17.JAN.2014 16:24:24

13 Mbps



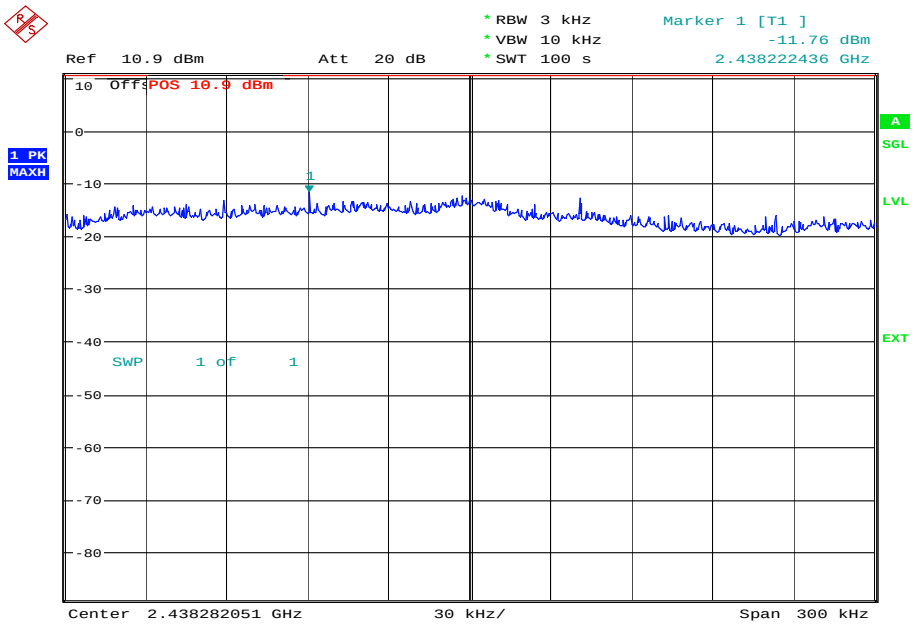
Date: 17.JAN.2014 16:39:49

19.5 Mbps



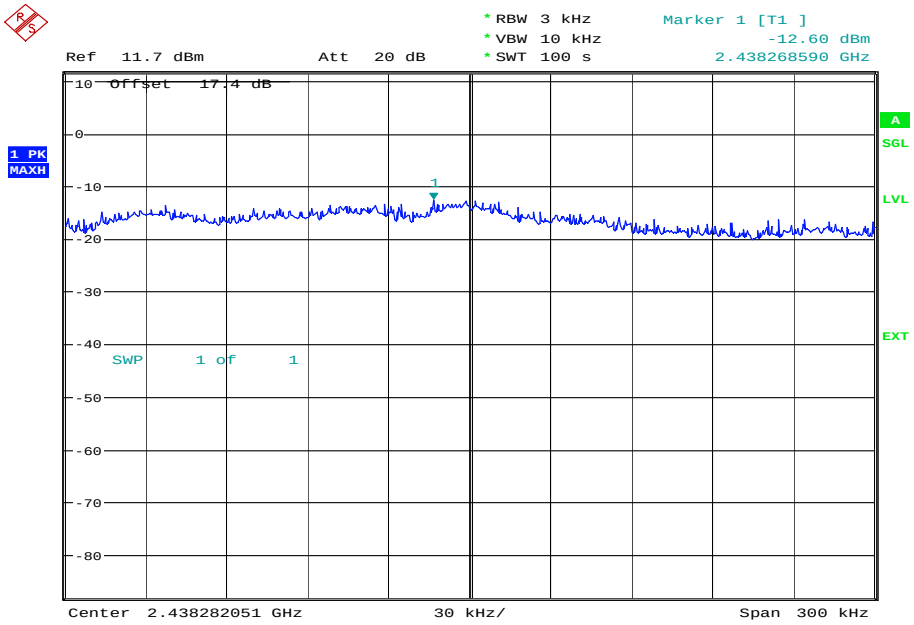
Date: 20.JAN.2014 09:34:28

26 Mbps



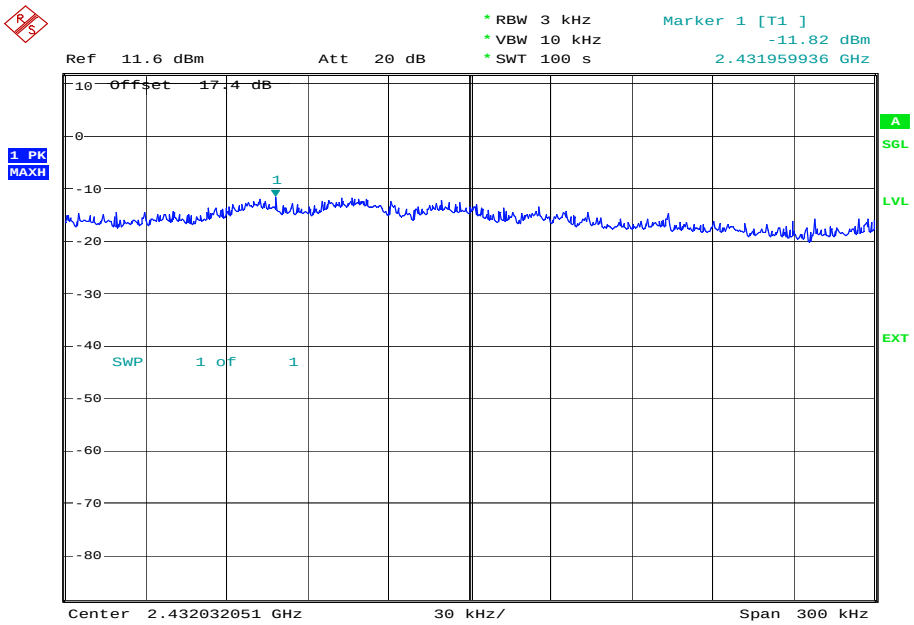
Date: 20.JAN.2014 09:52:16

39 Mbps



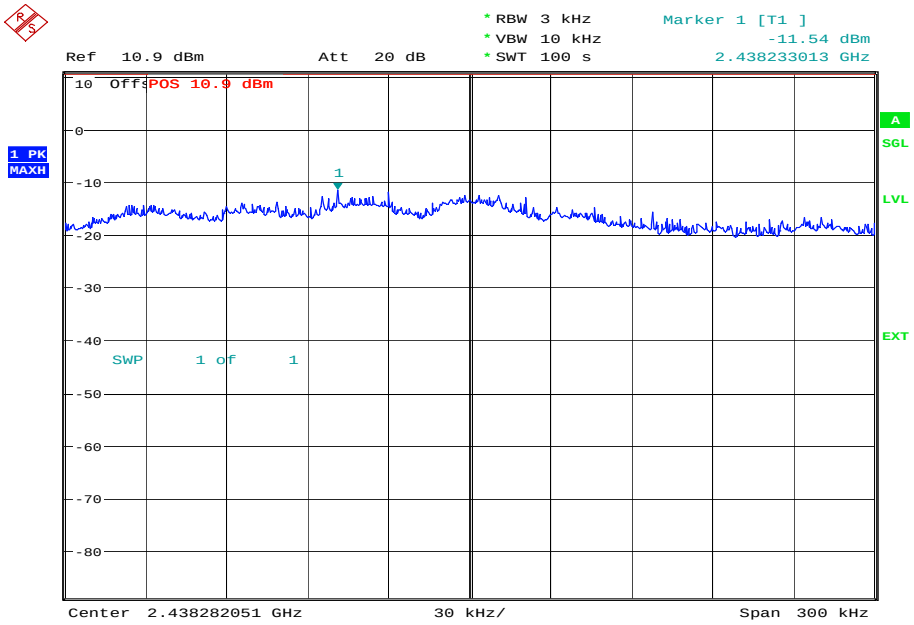
Date: 20.JAN.2014 10:09:19

52 Mbps



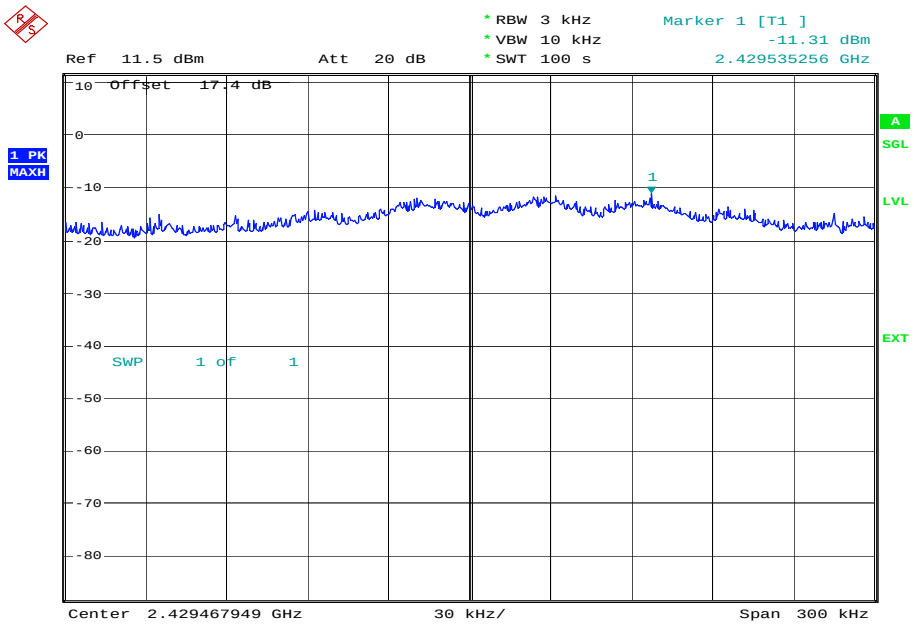
Date: 20.JAN.2014 10:30:24

58.5 Mbps



Date: 20.JAN.2014 10:46:18

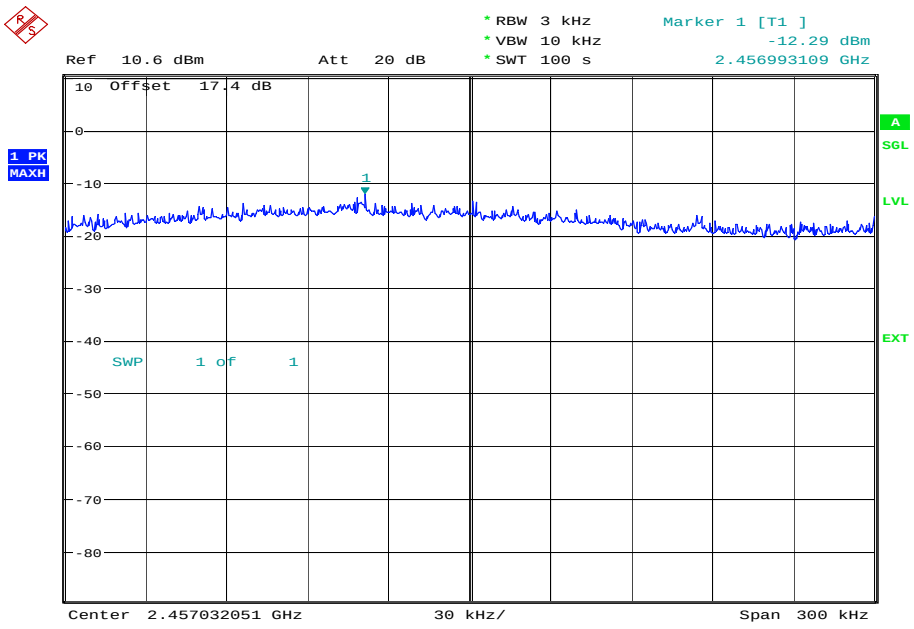
65 Mbps



Date: 20.JAN.2014 11:11:05

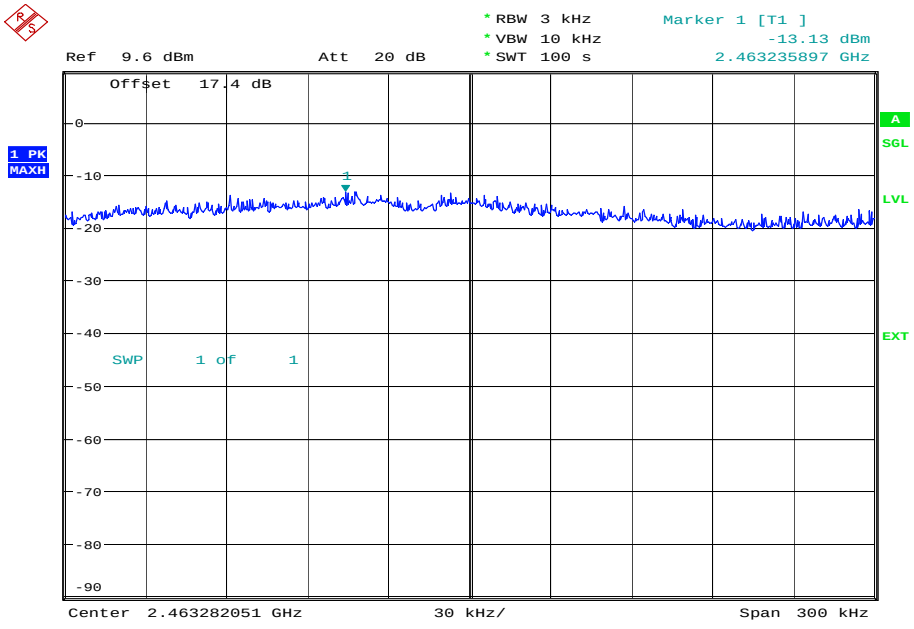
2462 MHz

6.5 Mbps



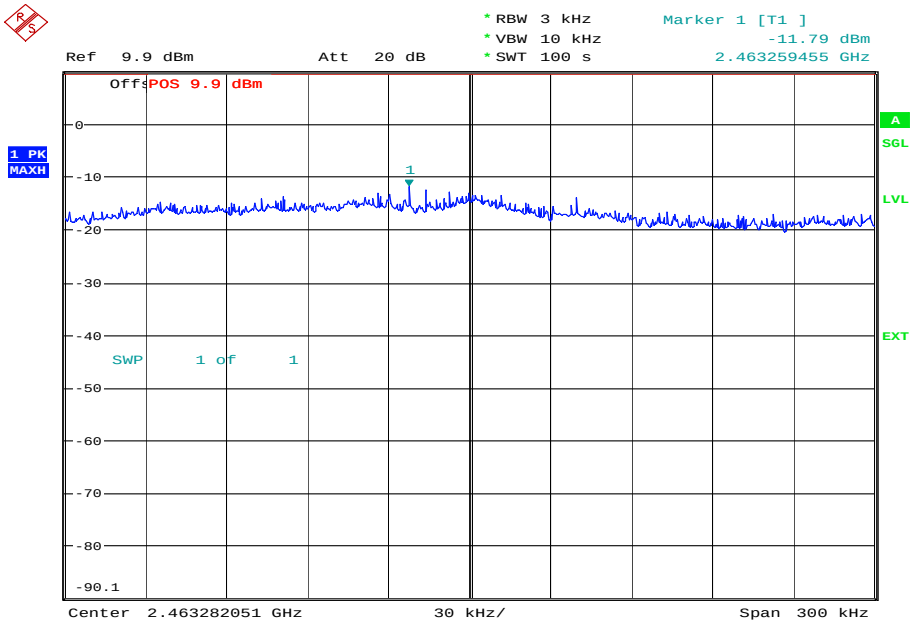
Date: 20.JAN.2014 16:25:33

13 Mbps



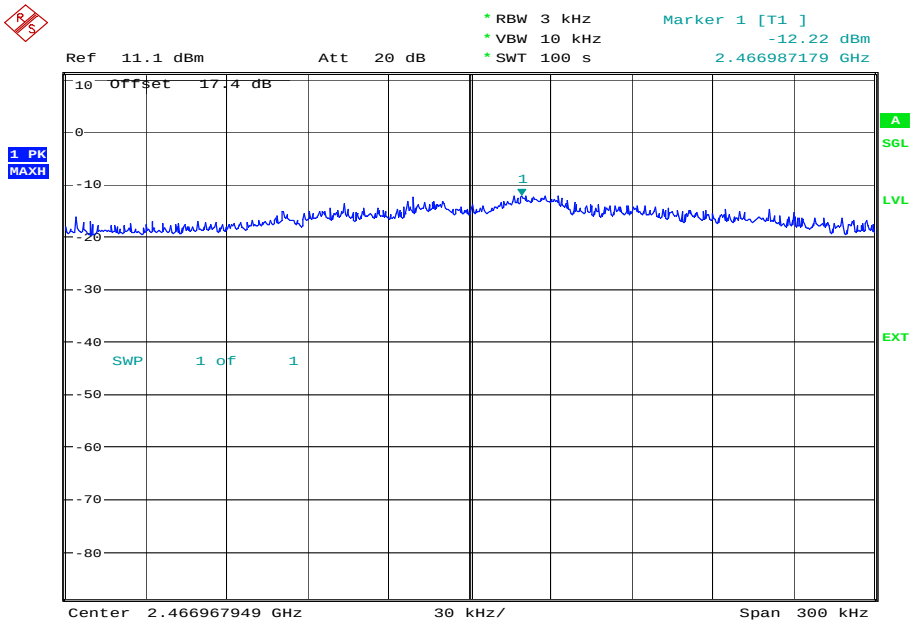
Date: 17.JAN.2014 16:48:05

19.5 Mbps



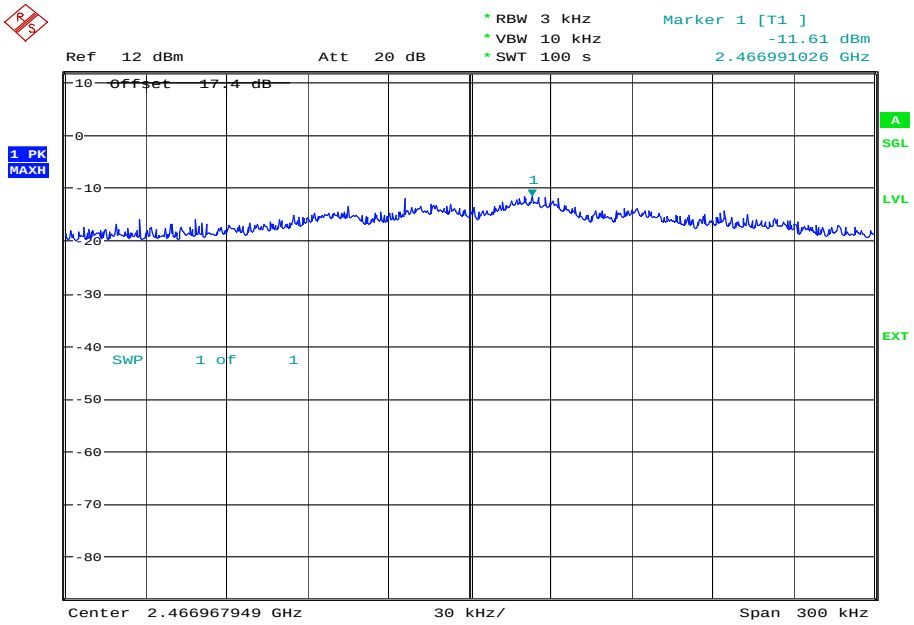
Date: 20.JAN.2014 09:39:21

26 Mbps



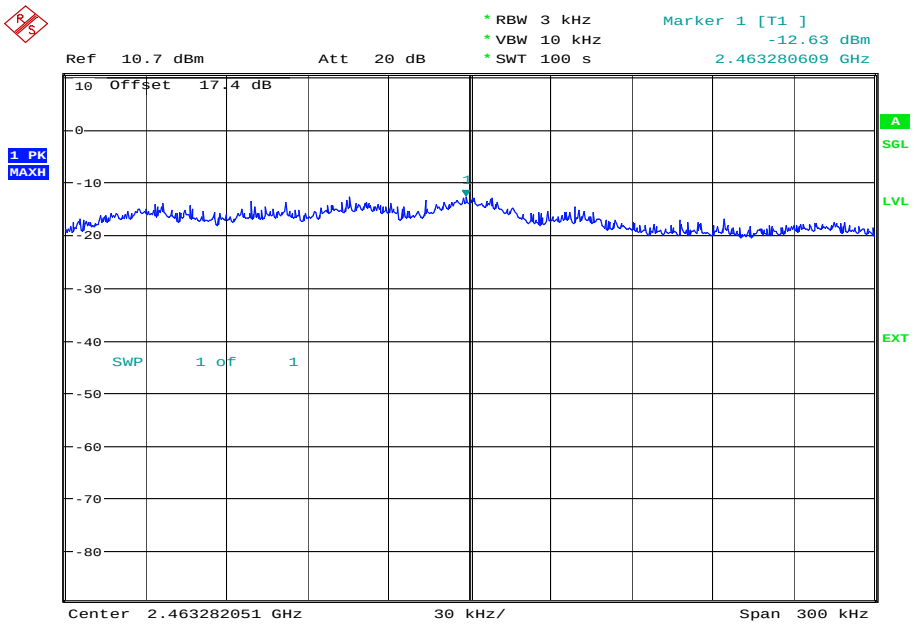
Date: 20.JAN.2014 09:57:12

39 Mbps



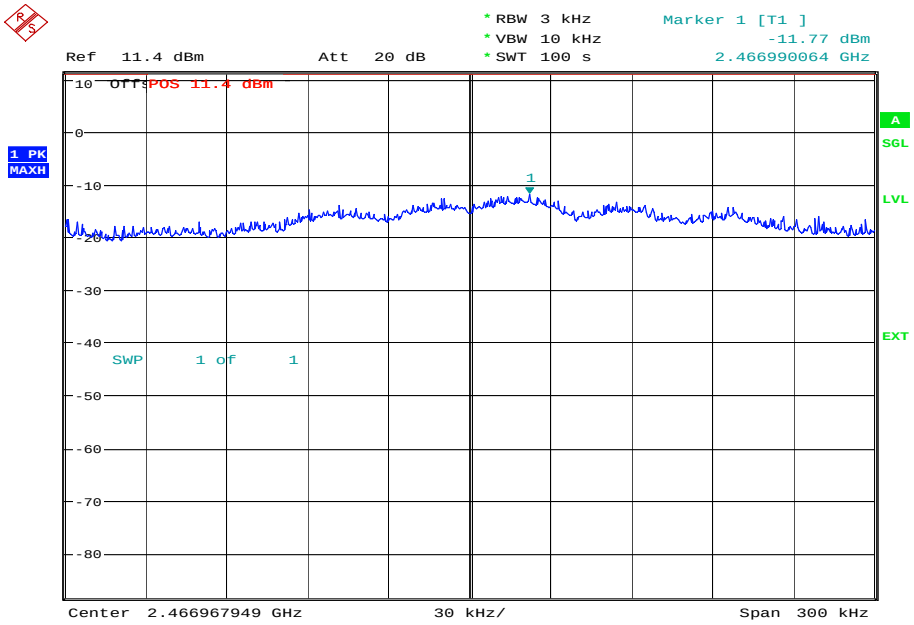
Date: 20.JAN.2014 10:14:18

52 Mbps



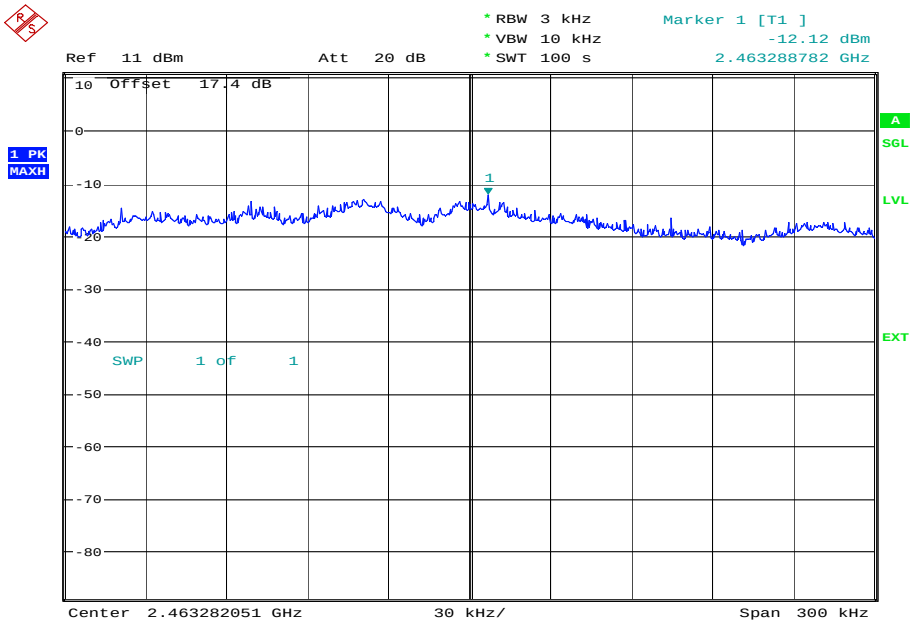
Date: 20.JAN.2014 10:35:18

58.5 Mbps



Date: 20.JAN.2014 10:51:27

65 Mbps



Date: 20.JAN.2014 11:15:50

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.

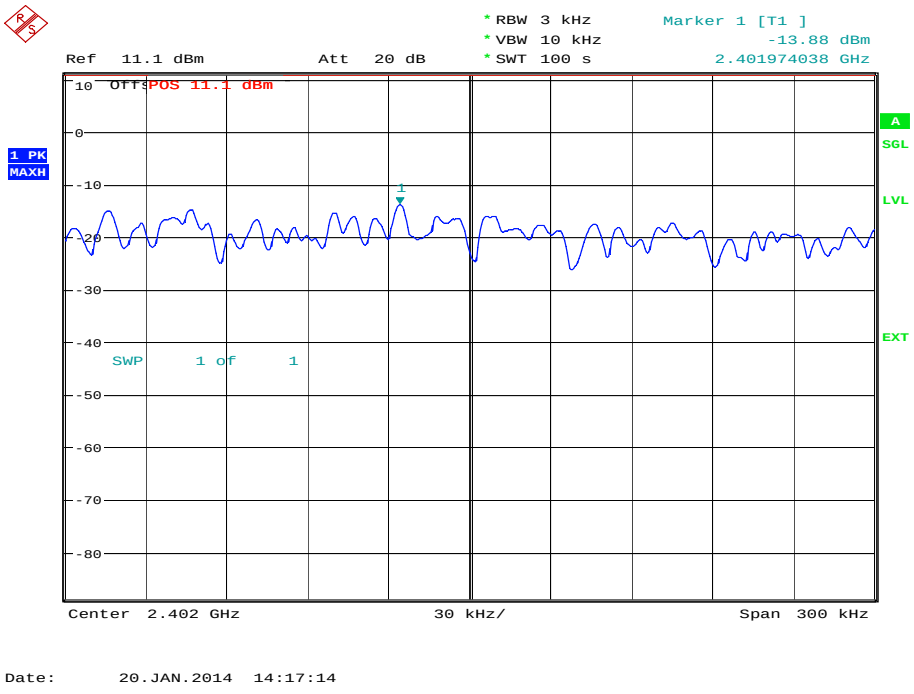
Bluetooth Low Energy

4.0 V DC Supply

Frequency	Packet Type	Power Spectral Density in 3 kHz Bands (dBm)
2402 MHz	37octet/prbs9	-13.88
2441 MHz	37octet/prbs9	-13.68
2480 MHz	37octet/prbs9	-13.76

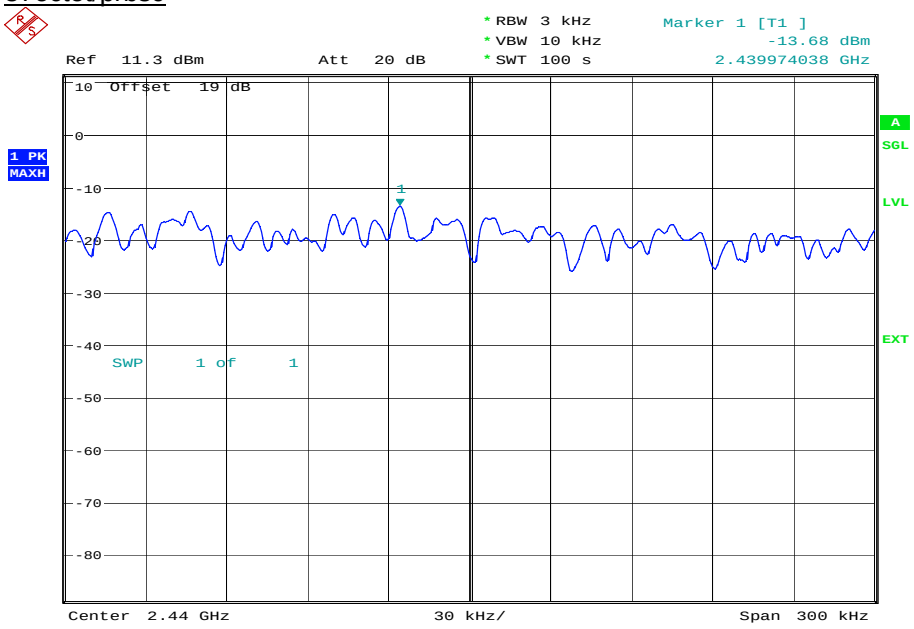
2402 MHz

37octet/prbs9



2441 MHz

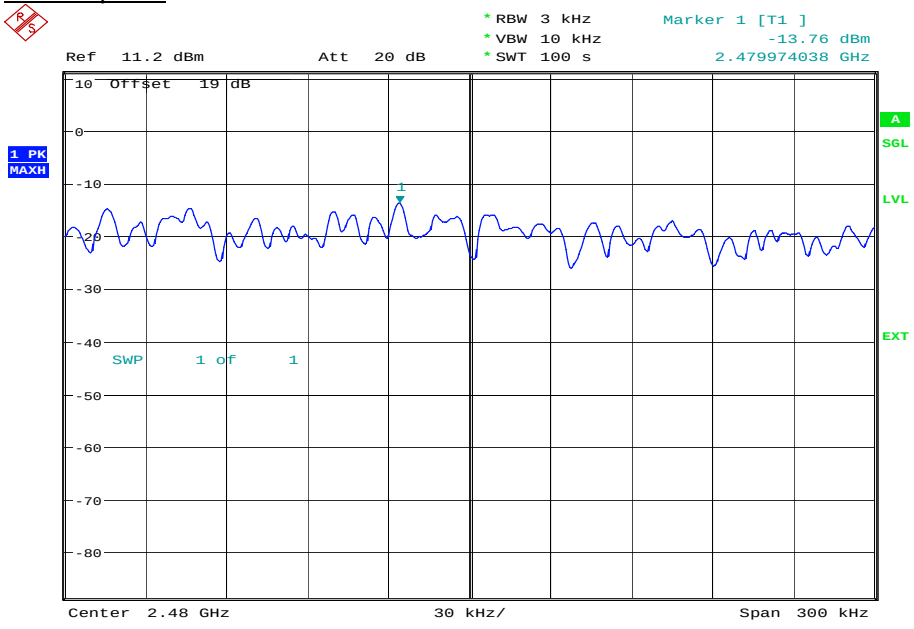
37octet/prbs9



Date: 20.JAN.2014 14:21:27

2480 MHz

37octet/prbs9



Date: 20.JAN.2014 14:25:17

Limit Clause

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

2.6 6dB BANDWIDTH

2.6.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (2)

2.6.2 Equipment Under Test and Modification State

SHT22 S/N: IMEI 004401115013514 - Modification State 0

2.6.3 Date of Test

17 January 2014 & 20 January 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 EUT was transmitted at maximum power via a cable to the Spectrum Analyser. The Analyser settings were adjusted to display the resultant trace using a 100 kHz resolution bandwidth and 300 kHz video bandwidth. Using a peak detector and max hold trace the peak point of the trace was measured and the markers positioned to give the -6dBc points of the displayed spectrum as in accordance with KDB 558074.

2.6.6 Environmental Conditions

Ambient Temperature	20.7 - 24.2°C
Relative Humidity	33.1 - 33.7%

2.6.7 Test Results

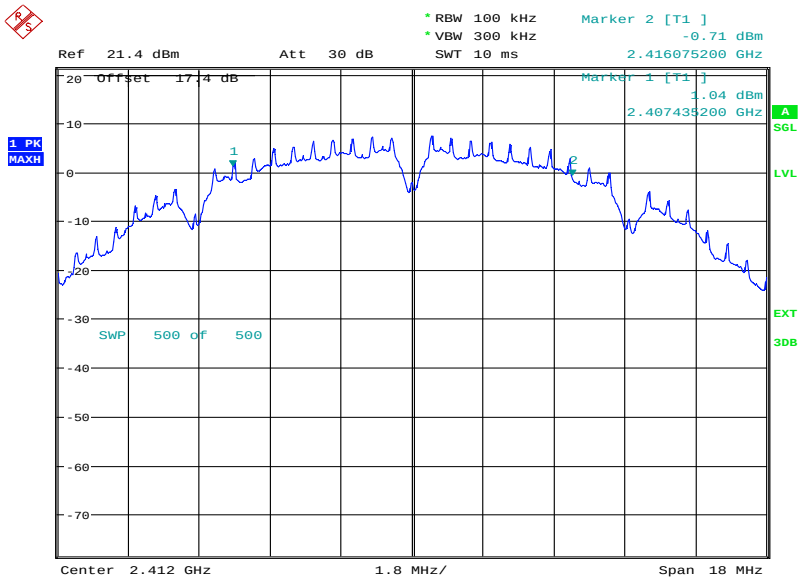
802.11(b)

4.0 V DC Supply

Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (kHz)
2412 MHz	1	8640.0
	2	8870.4
	5.5	8726.4
	11	9244.8
2437 MHz	1	8150.4
	2	8064.0
	5.5	8582.4
	11	8553.6
2462 MHz	1	8150.4
	2	8755.2
	5.5	8352.0
	11	8668.8

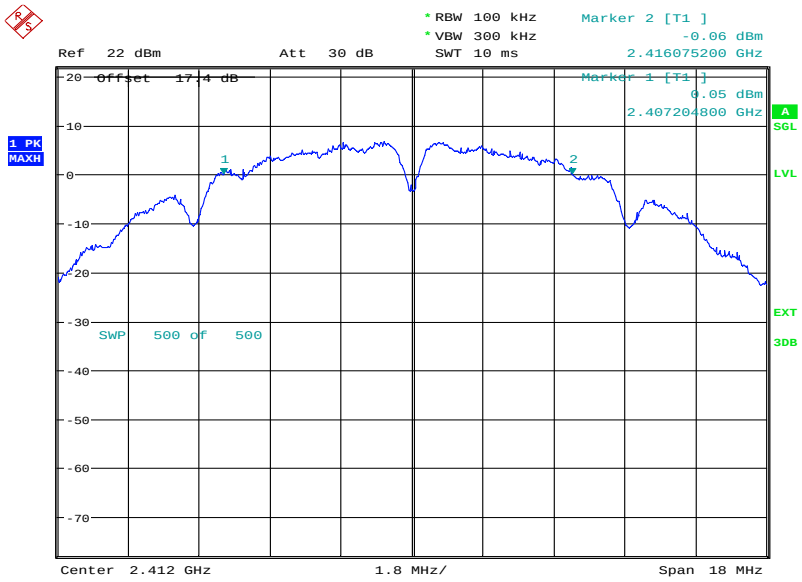
2412 MHz

1 Mbps



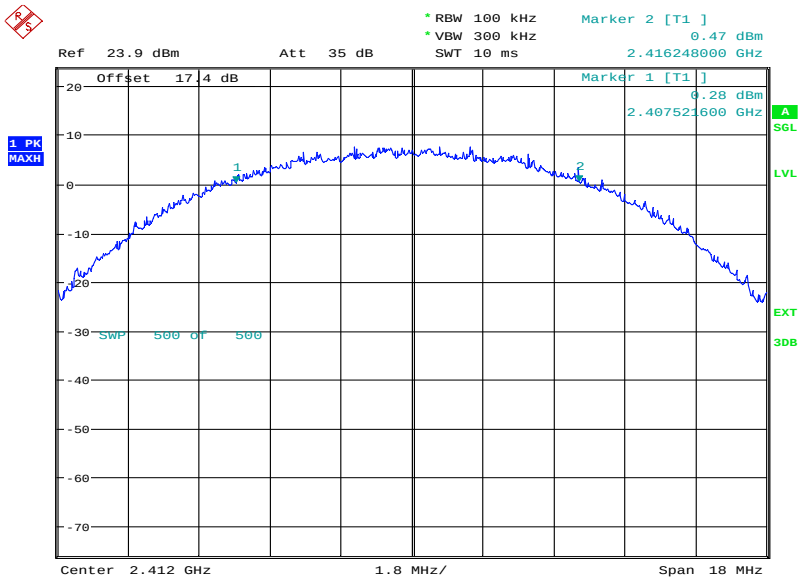
Date: 17.JAN.2014 10:32:23

2 Mbps



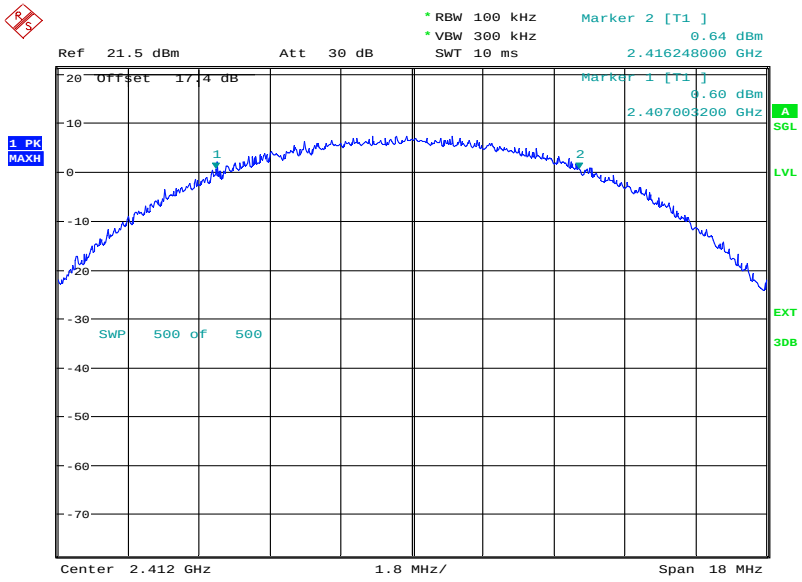
Date: 17.JAN.2014 10:50:47

5.5 Mbps



Date: 17.JAN.2014 11:16:29

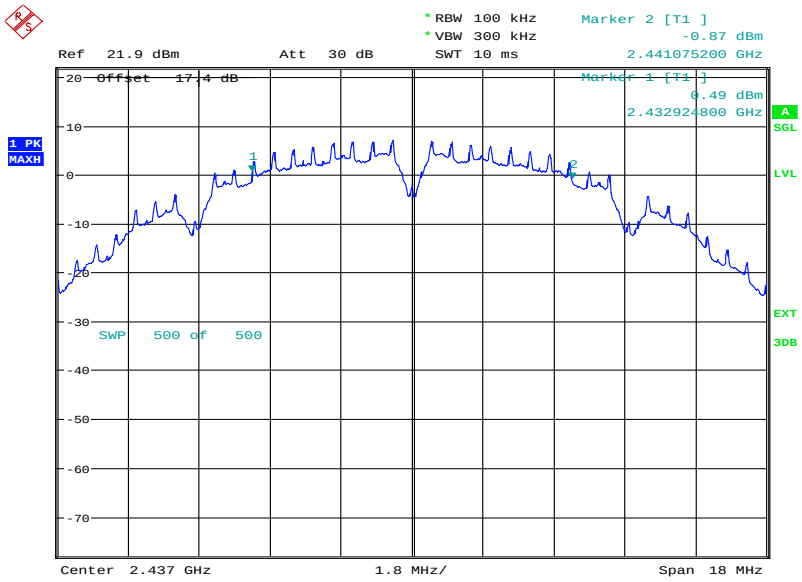
11 Mbps



Date: 17.JAN.2014 11:29:42

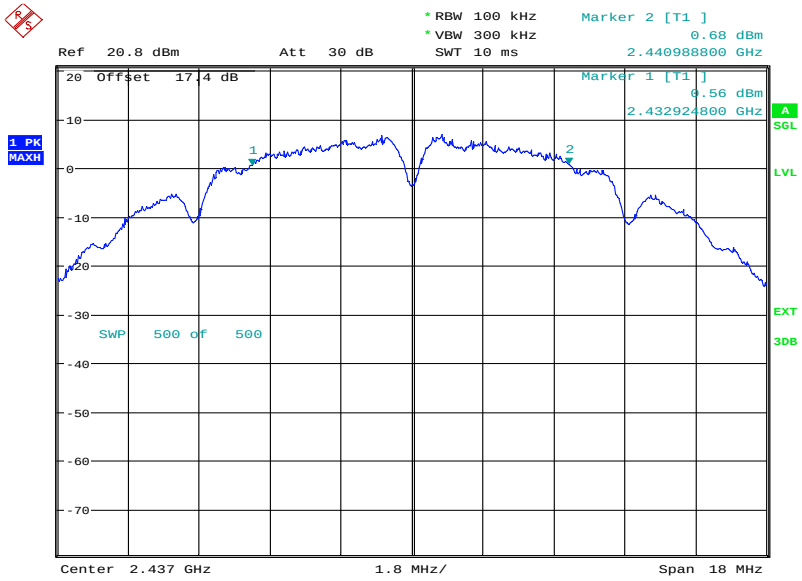
2437 MHz

1 Mbps



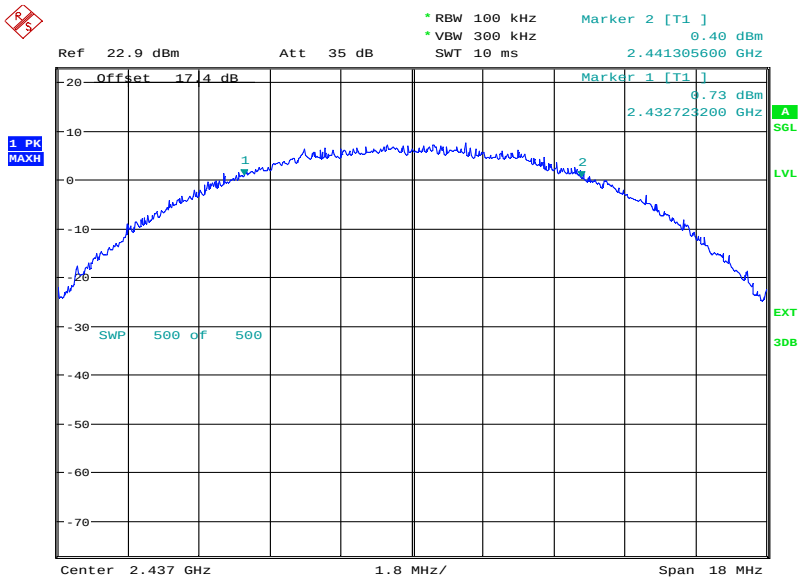
Date: 17.JAN.2014 10:40:47

2 Mbps



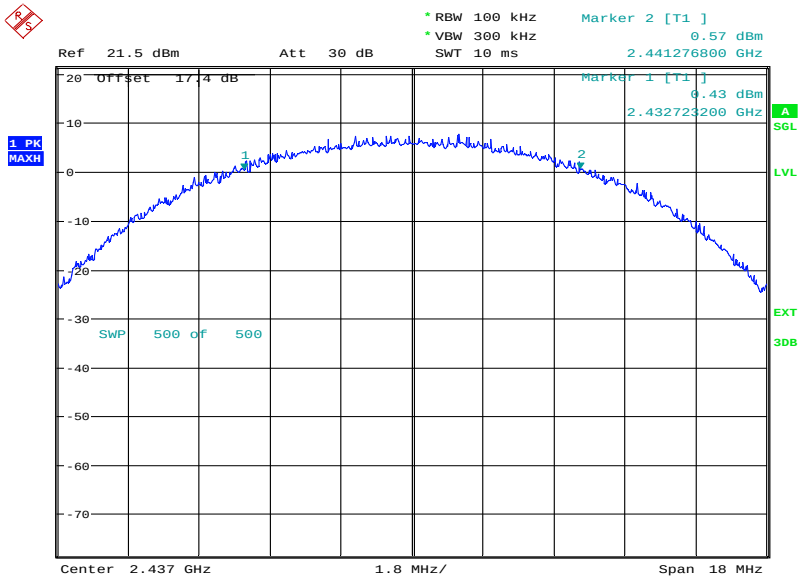
Date: 17.JAN.2014 11:07:03

5.5 Mbps



Date: 17.JAN.2014 11:20:54

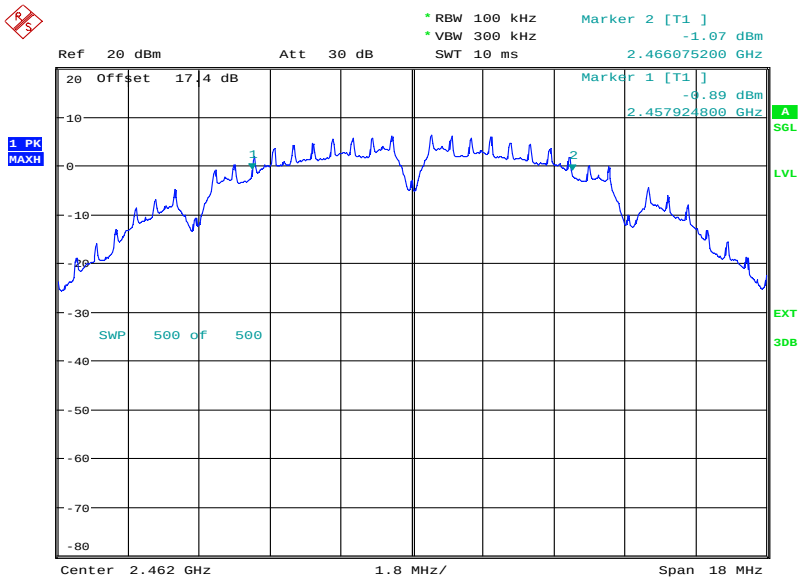
11 Mbps



Date: 17.JAN.2014 11:35:20

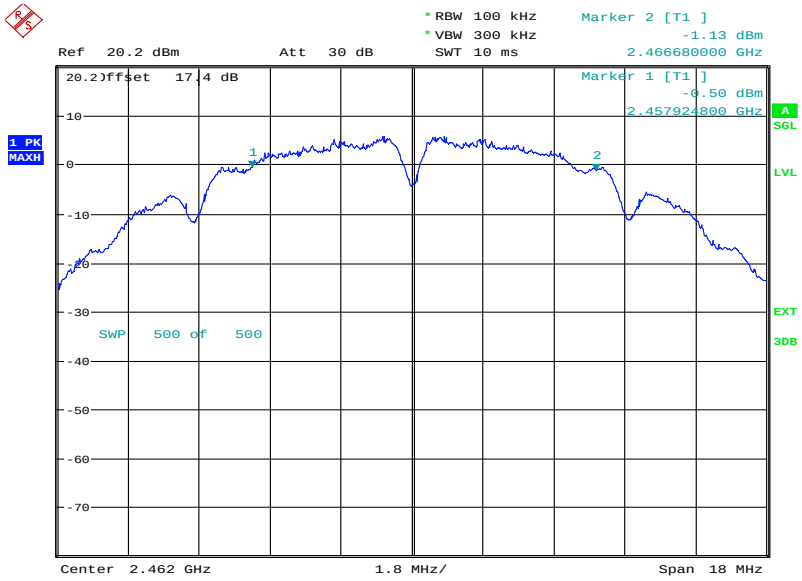
2462 MHz

1 Mbps



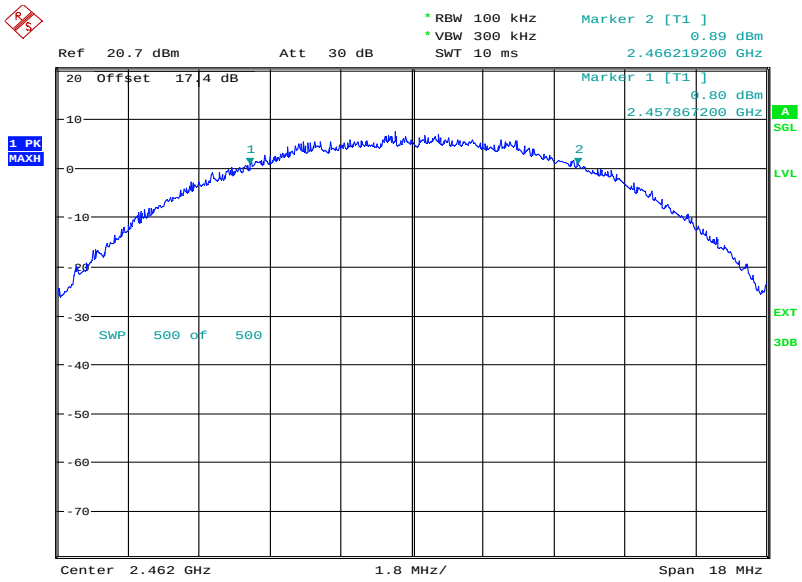
Date: 17.JAN.2014 10:45:55

2 Mbps



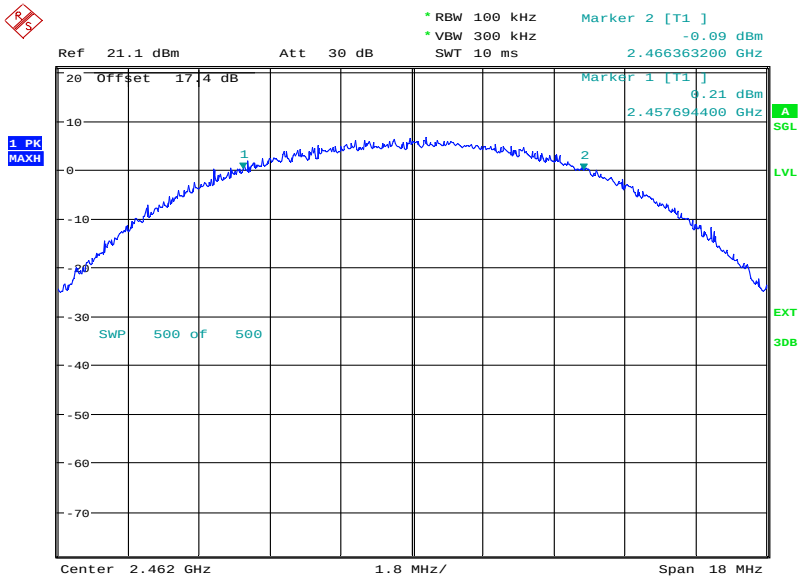
Date: 17.JAN.2014 11:11:31

5.5 Mbps



Date: 17.JAN.2014 11:25:13

11 Mbps



Date: 17.JAN.2014 11:40:55

Limit Clause

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

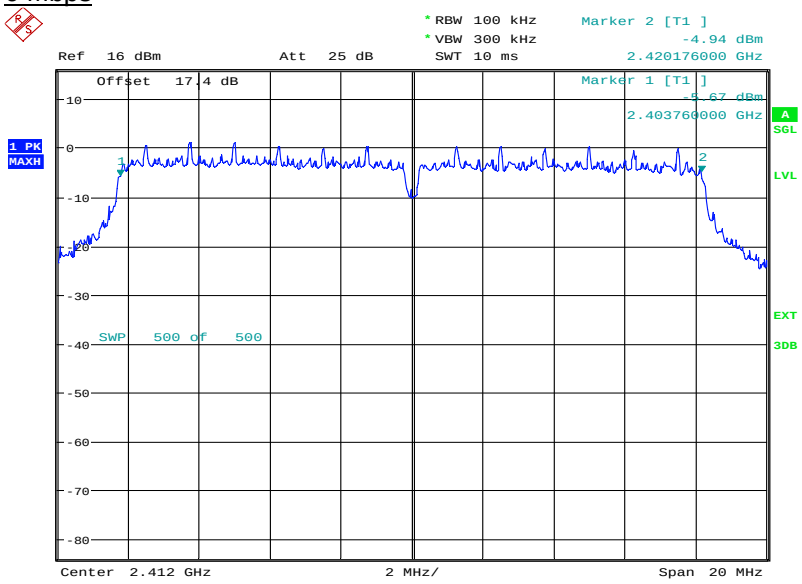
802.11(g)

4.0 V DC Supply

Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (kHz)
2412 MHz	6	16416.0
	9	16384.0
	12	16512.0
	18	16480.0
	24	16512.0
	36	16576.0
	48	16576.0
	54	16576.0
2437 MHz	6	16448.0
	9	16448.0
	12	16576.0
	18	16512.0
	24	16576.0
	36	16576.0
	48	16608.0
	54	16576.0
2462 MHz	6	16416.0
	9	16416.0
	12	16512.0
	18	16480.0
	24	16544.0
	36	16544.0
	48	16608.0
	54	16576.0

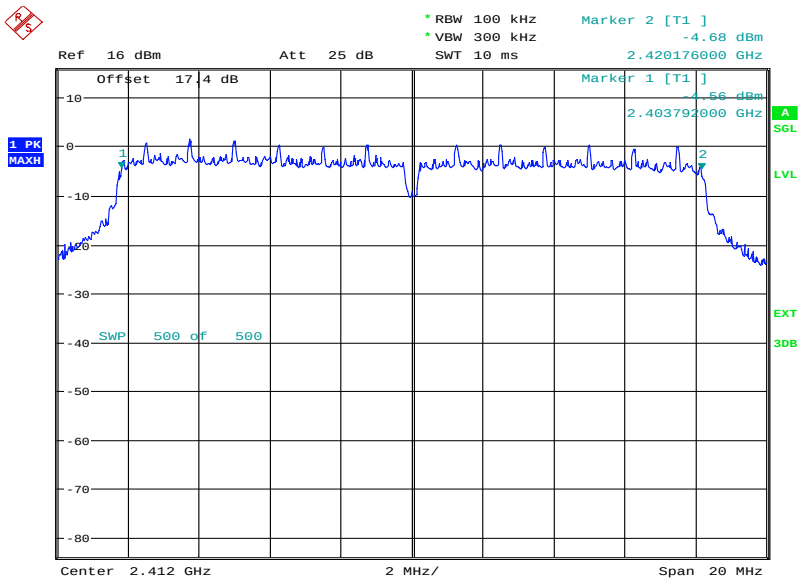
2412 MHz

6 Mbps



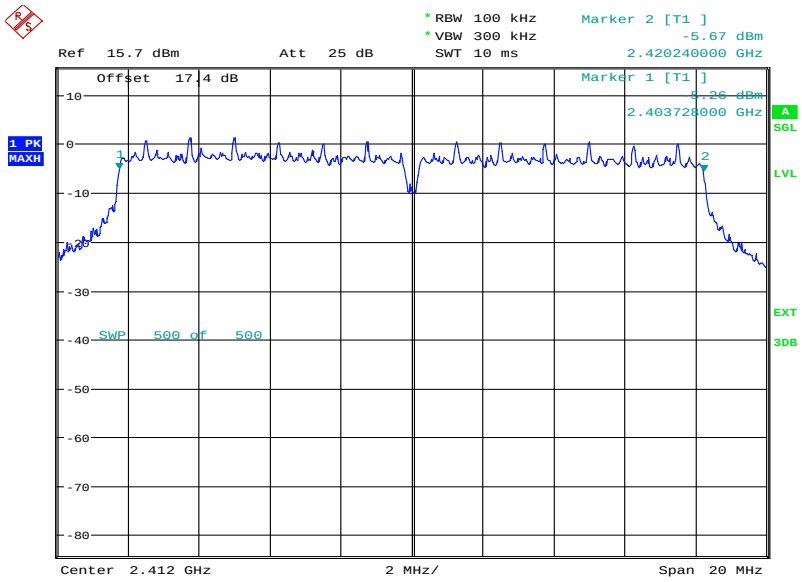
Date: 17.JAN.2014 11:47:16

9 Mbps



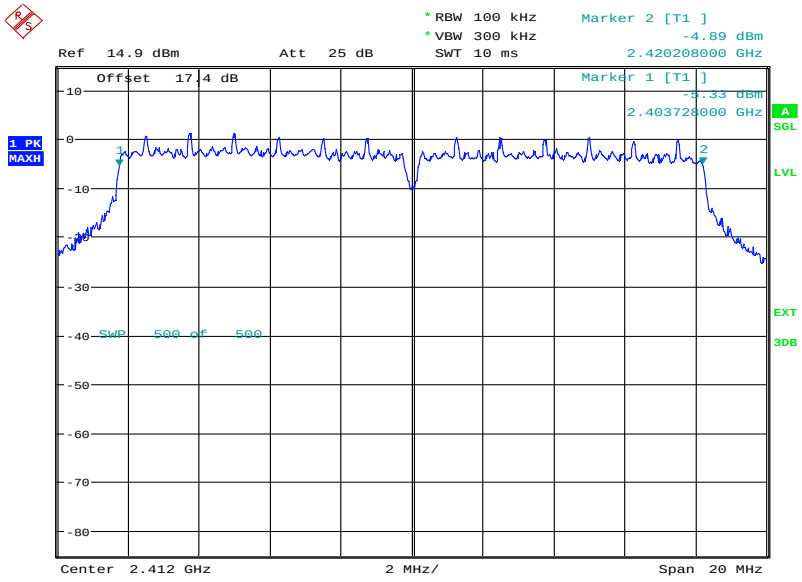
Date: 17.JAN.2014 12:01:06

12 Mbps



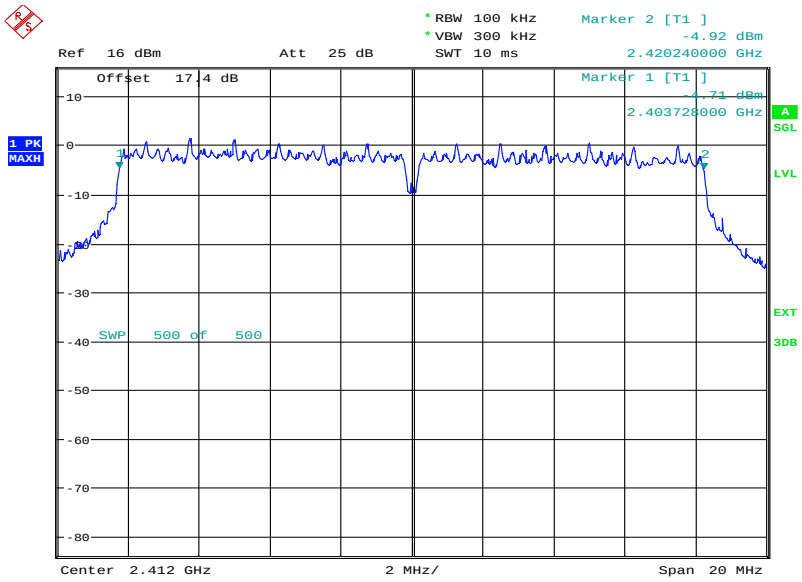
Date: 17.JAN.2014 12:14:58

18 Mbps



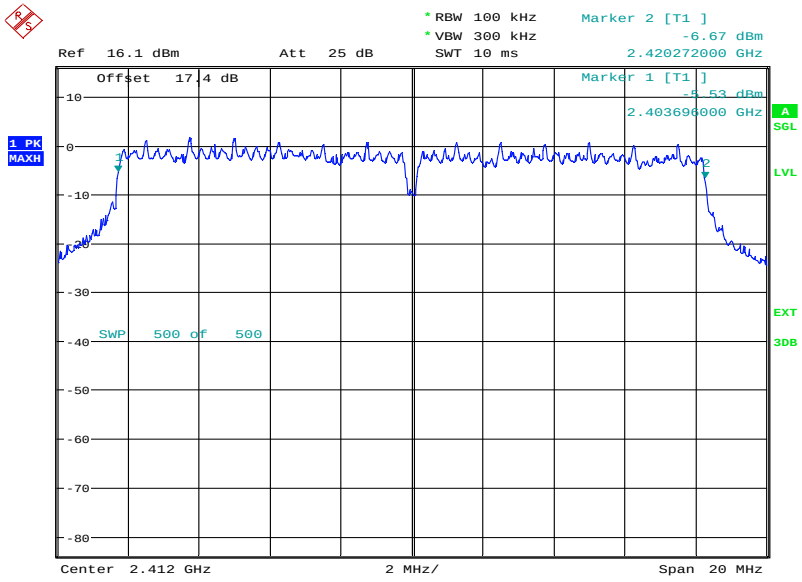
Date: 17.JAN.2014 13:48:46

24 Mbps



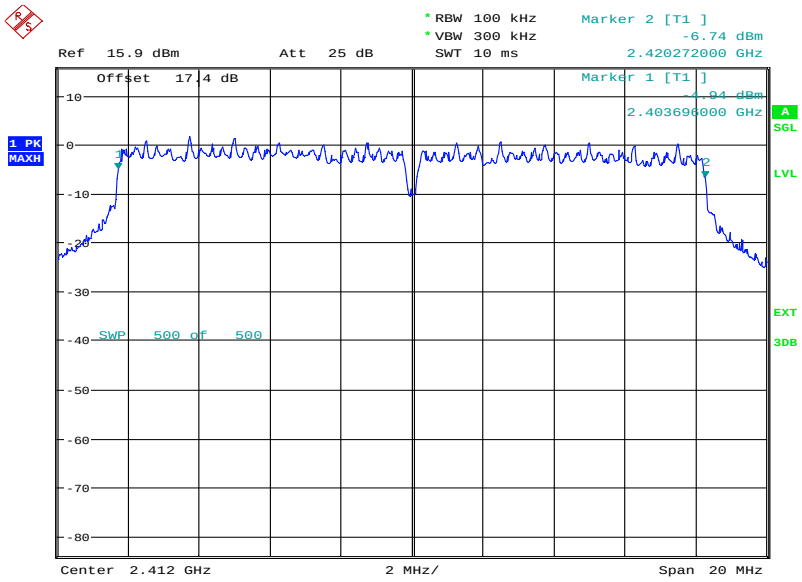
Date: 17.JAN.2014 14:01:54

36 Mbps



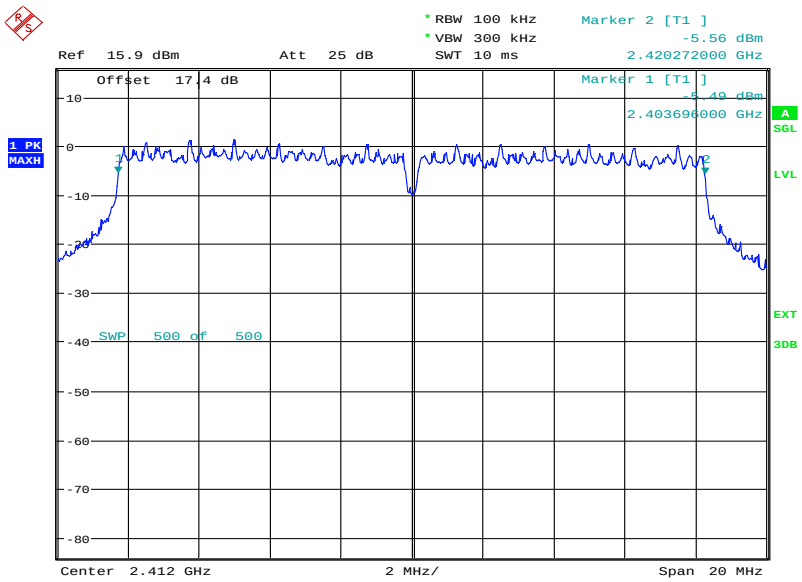
Date: 17.JAN.2014 14:15:08

48 Mbps



Date: 17.JAN.2014 14:30:29

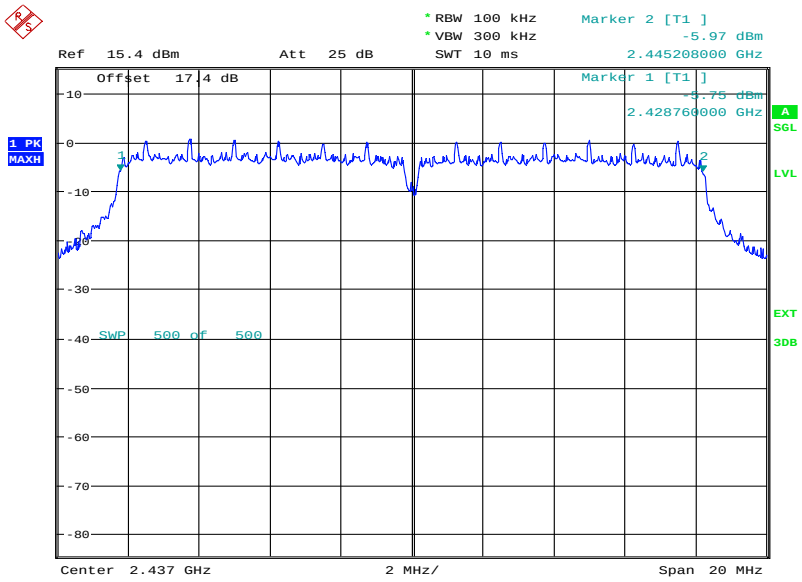
54 Mbps



Date: 17.JAN.2014 14:44:29

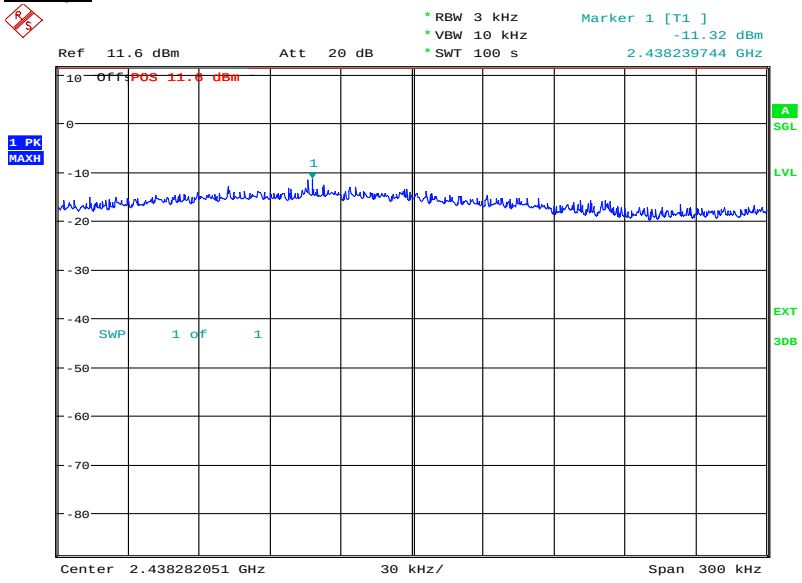
2437 MHz

6 Mbps



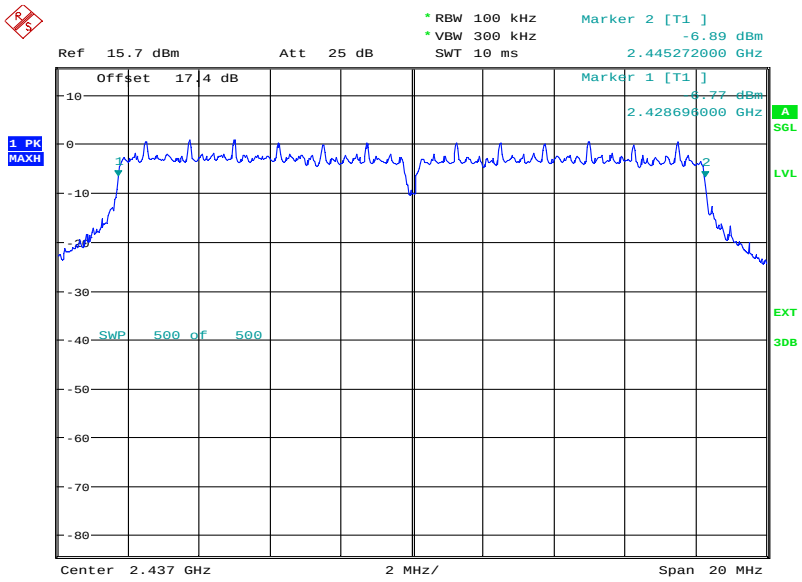
Date: 17.JAN.2014 11:51:13

9 Mbps



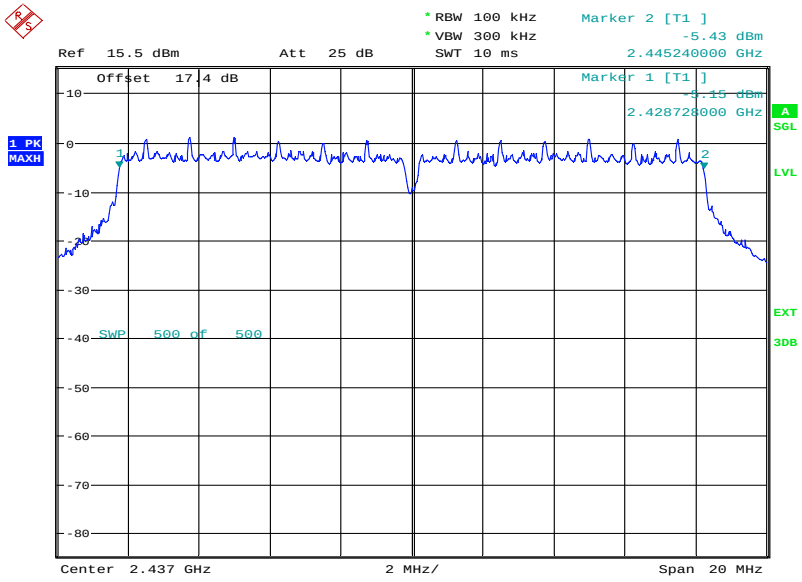
Date: 17.JAN.2014 12:07:38

12 Mbps



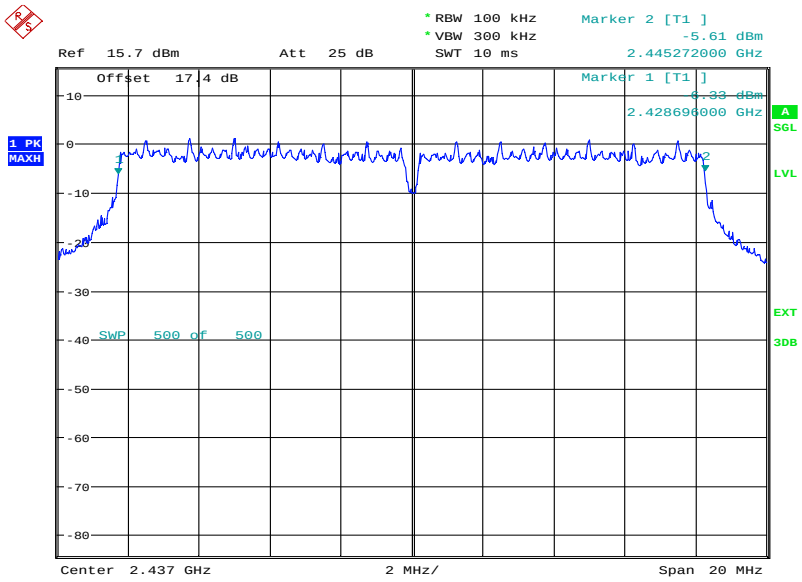
Date: 17.JAN.2014 13:37:23

18 Mbps



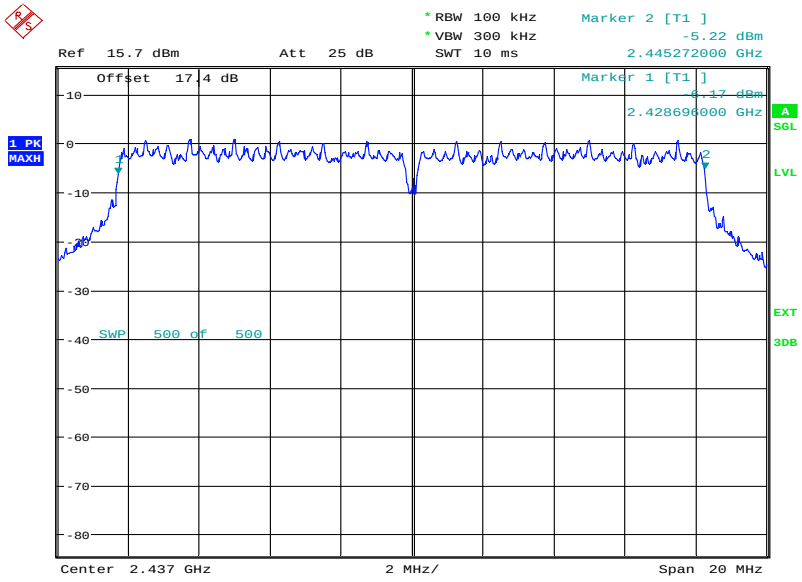
Date: 17.JAN.2014 13:53:15

24 Mbps



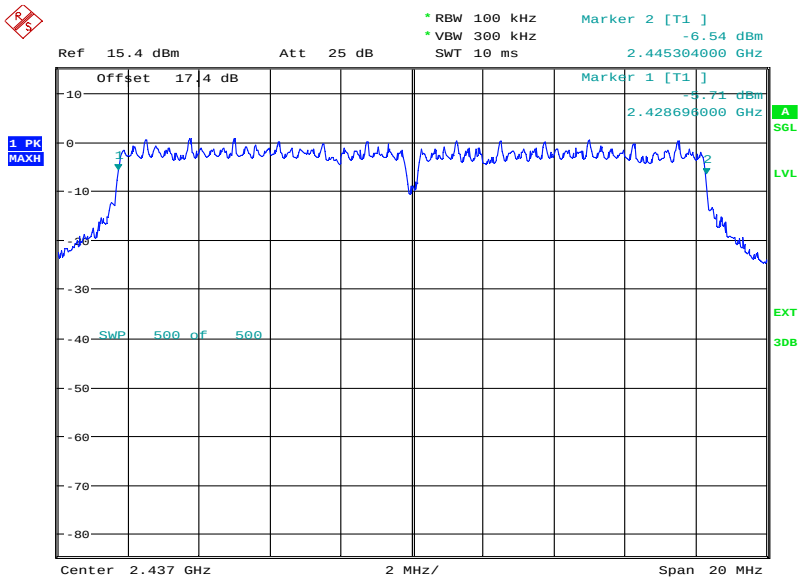
Date: 17.JAN.2014 14:06:09

36 Mbps



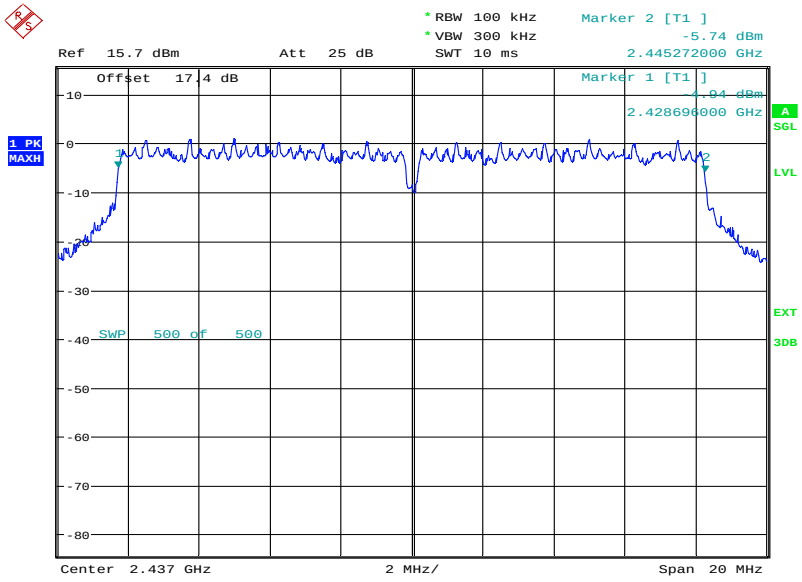
Date: 17.JAN.2014 14:19:43

48 Mbps



Date: 17.JAN.2014 14:34:27

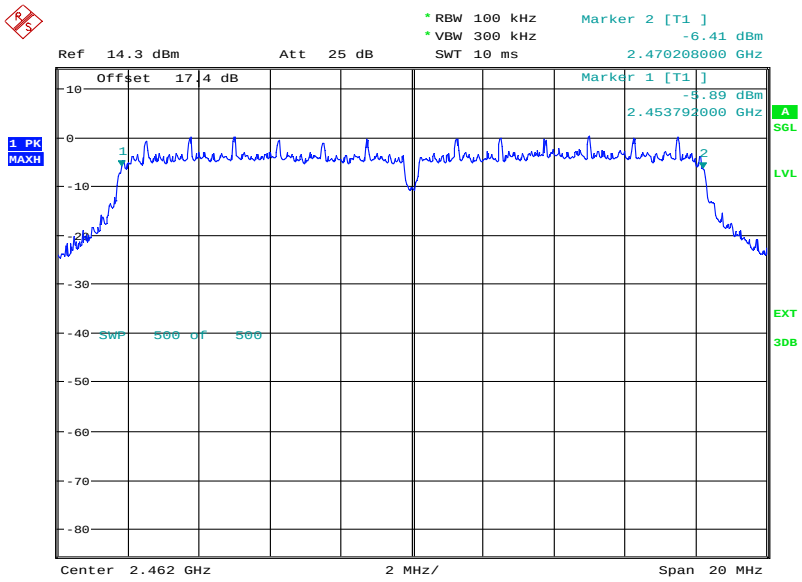
54 Mbps



Date: 17.JAN.2014 14:49:11

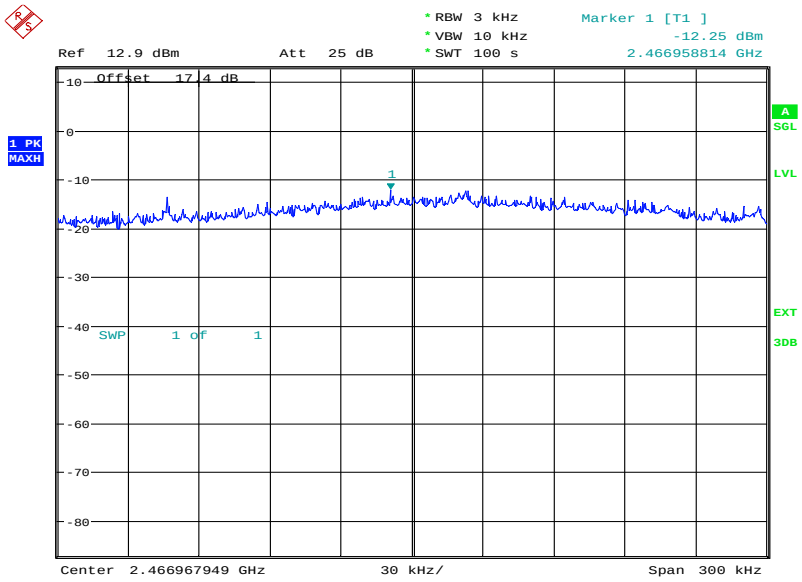
2462 MHz

6 Mbps



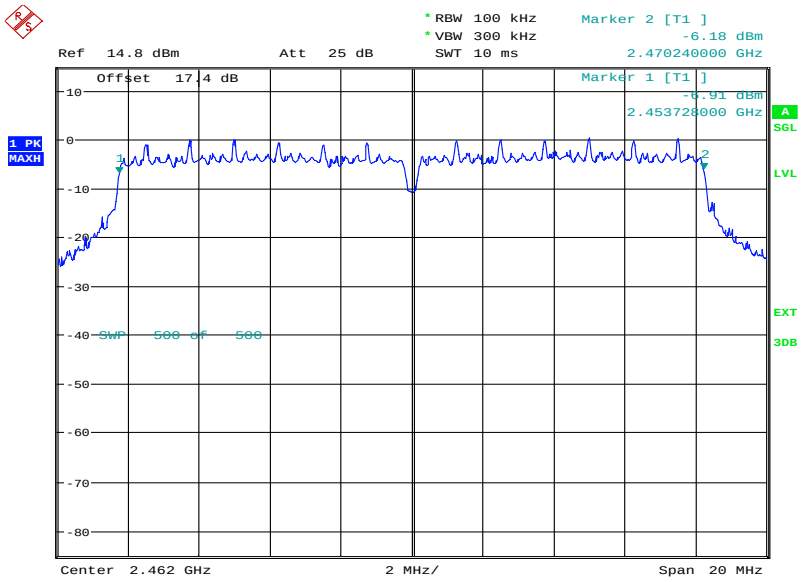
Date: 17.JAN.2014 11:56:19

9 Mbps



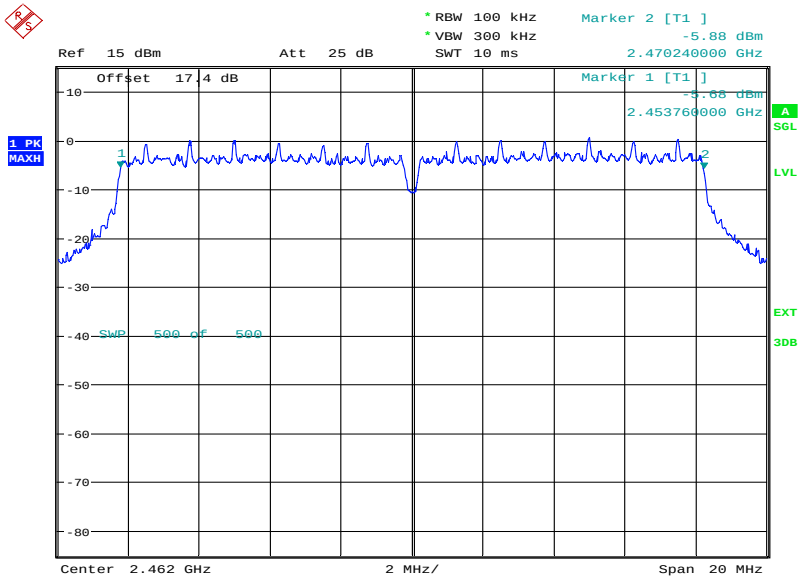
Date: 17.JAN.2014 12:12:22

12 Mbps



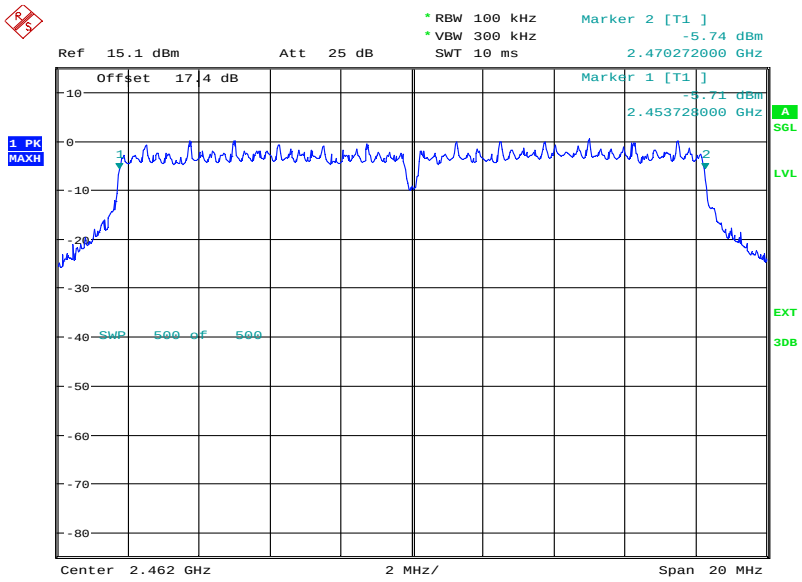
Date: 17.JAN.2014 13:43:48

18 Mbps



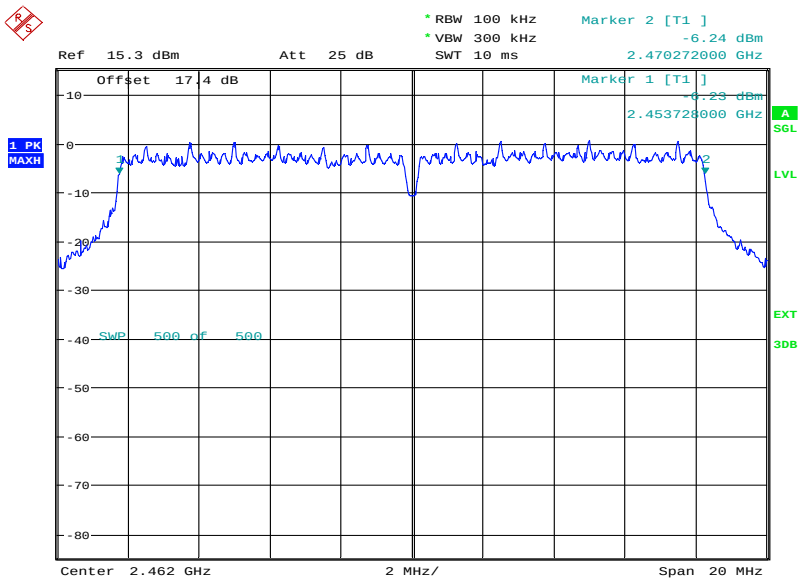
Date: 17.JAN.2014 13:57:20

24 Mbps



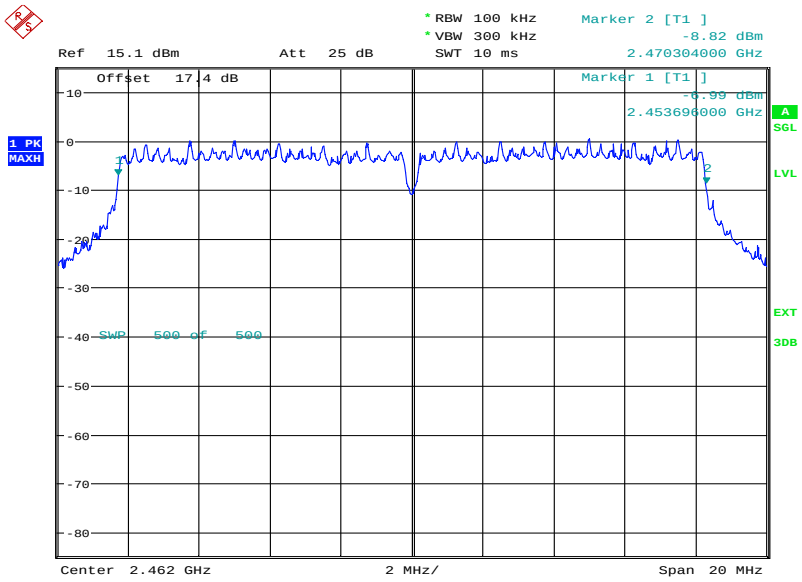
Date: 17.JAN.2014 14:10:10

36 Mbps



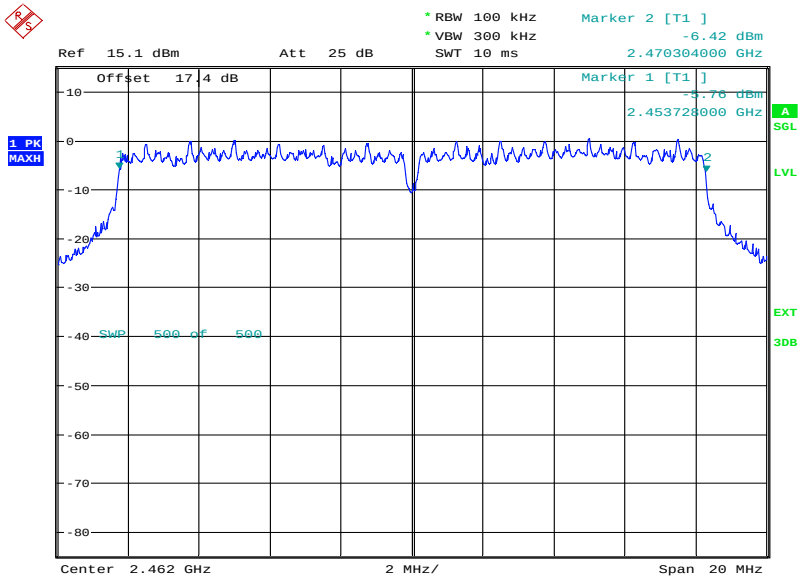
Date: 17.JAN.2014 14:23:45

48 Mbps



Date: 17.JAN.2014 14:38:27

54 Mbps



Date: 17.JAN.2014 14:53:20

Limit Clause

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

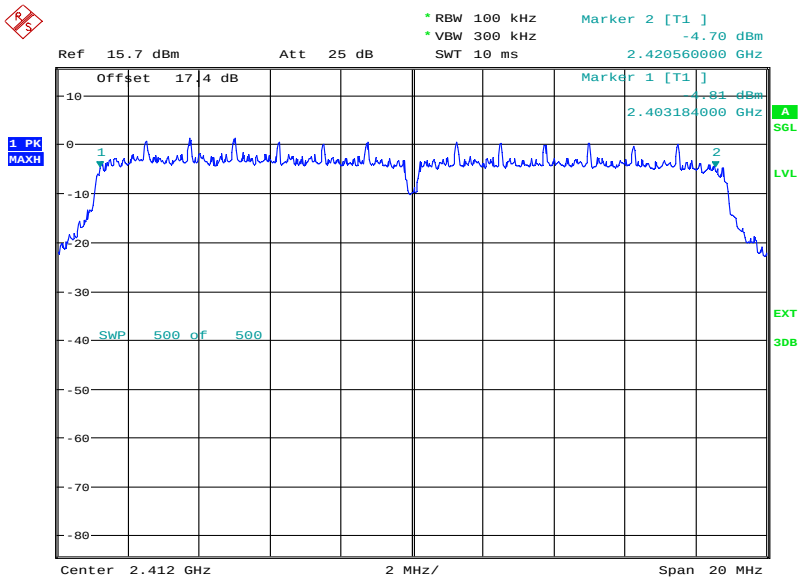
802.11(n)

4.0 V DC Supply

Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (kHz)
2412 MHz	6.5	17376.0
	13	17728.0
	19.5	17696.0
	26	17792.0
	39	17760.0
	52	17792.0
	58.5	17760.0
	65	17728.0
2437 MHz	6.5	17664.0
	13	17728.0
	19.5	17728.0
	26	17792.0
	39	17792.0
	52	17792.0
	58.5	17792.0
	65	17760.0
2462 MHz	6.5	17632.0
	13	17760.0
	19.5	17728.0
	26	17824.0
	39	17760.0
	52	17792.0
	58.5	17824.0
	65	17760.0

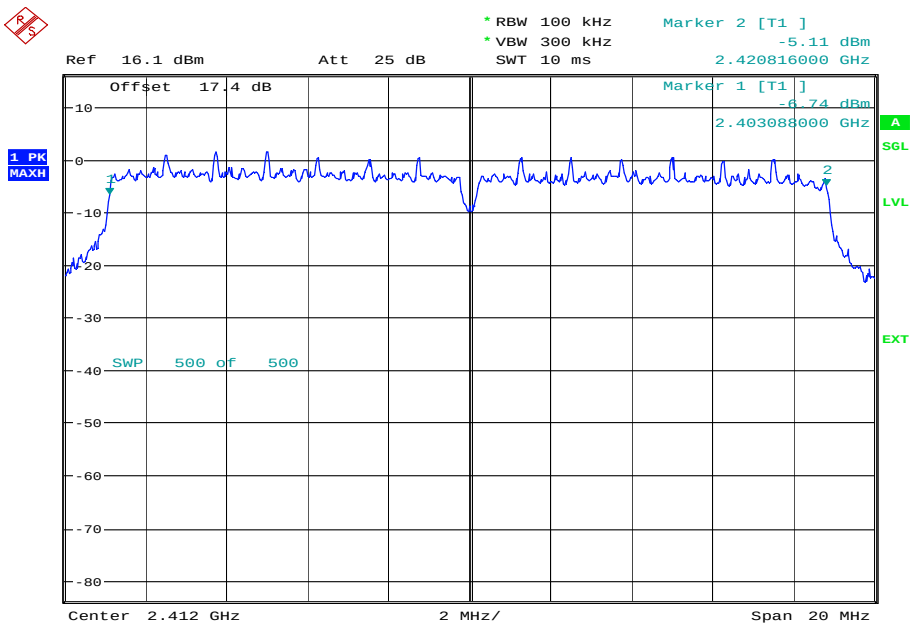
2412 MHz

6.5 Mbps



Date: 17.JAN.2014 14:57:51

13 Mbps



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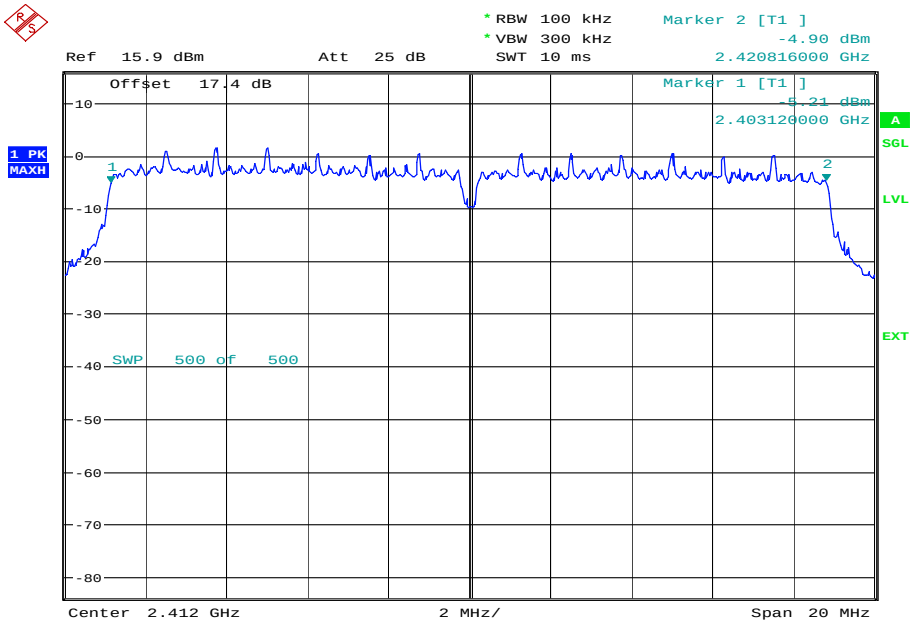
19.5 Mbps



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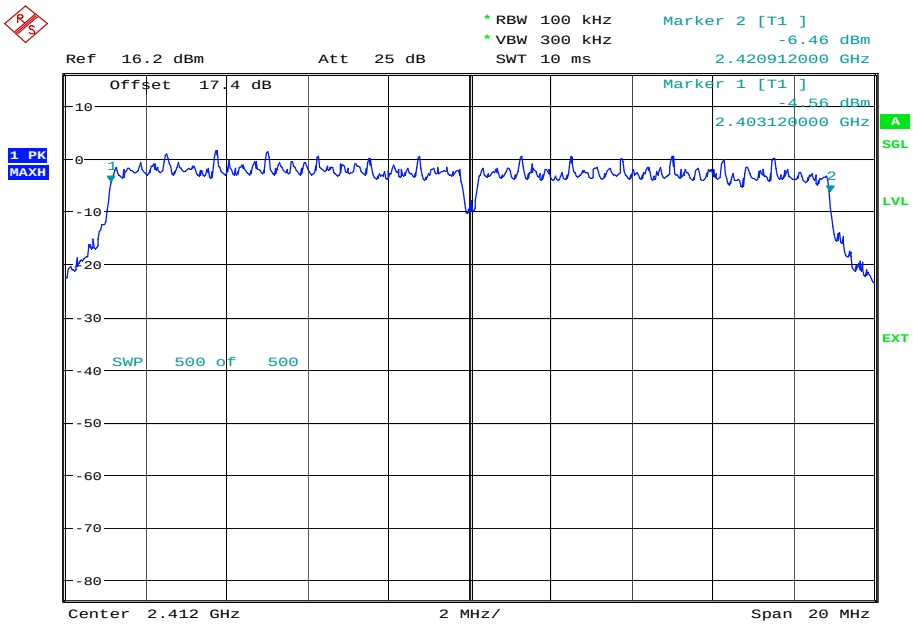
26 Mbps



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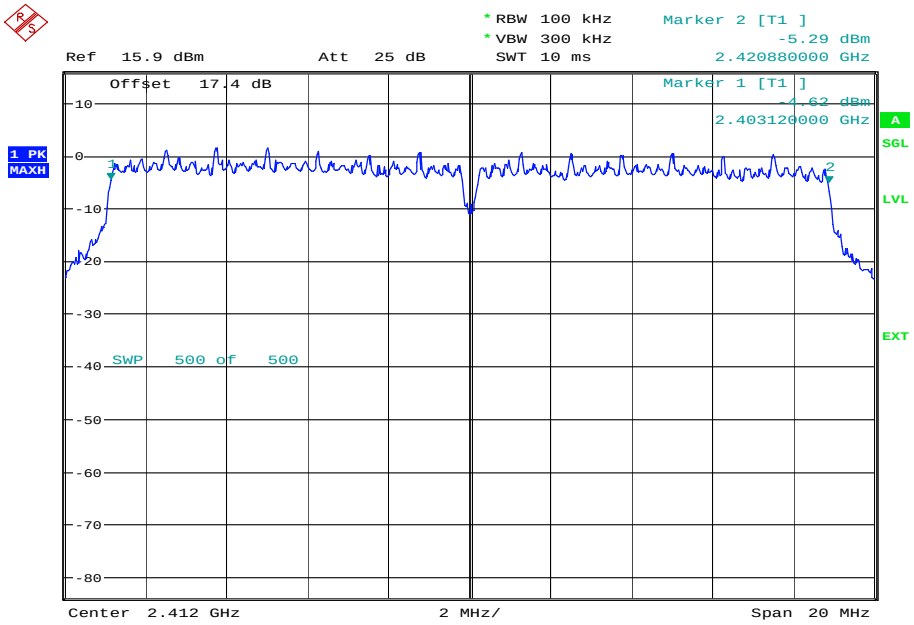
39 Mbps



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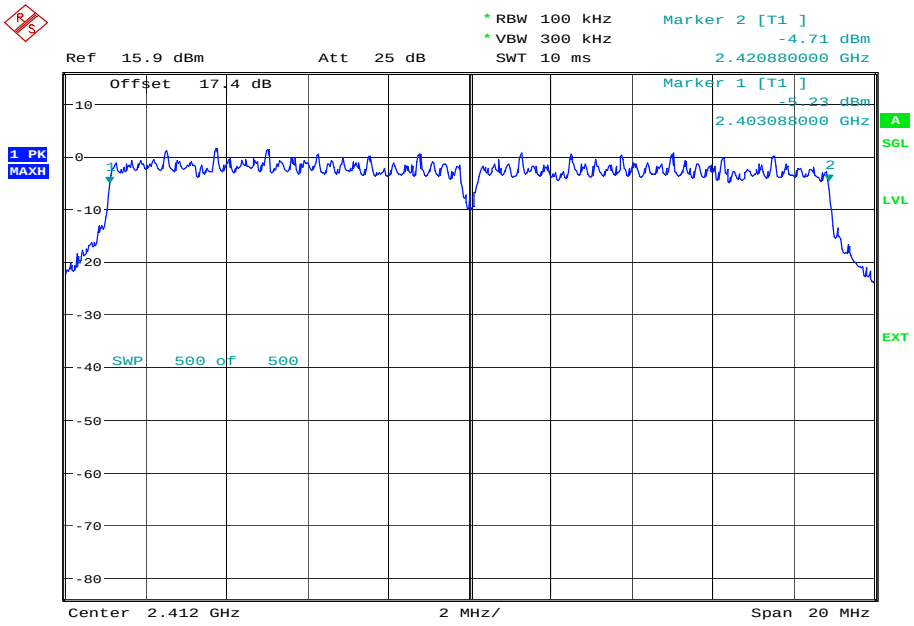
52 Mbps



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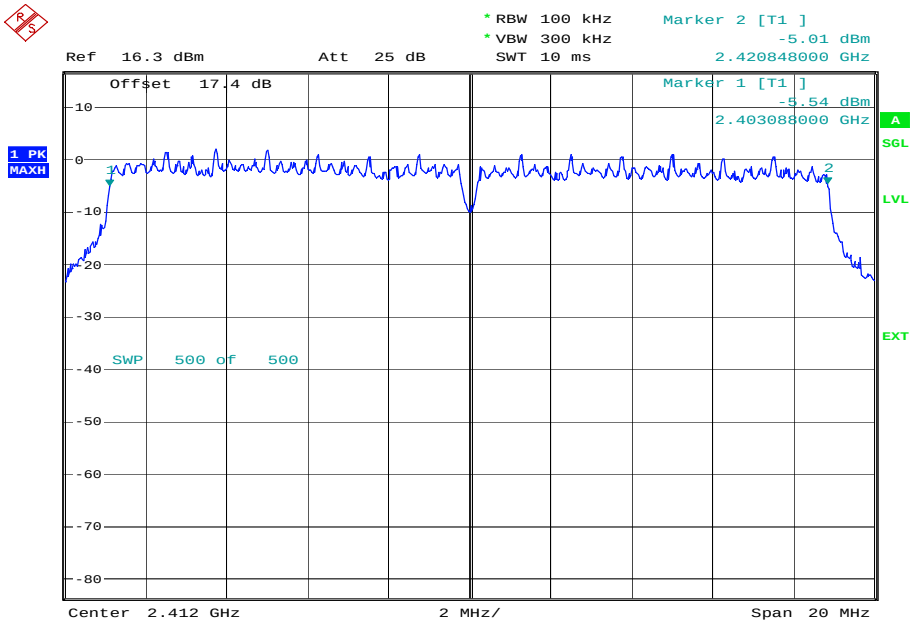
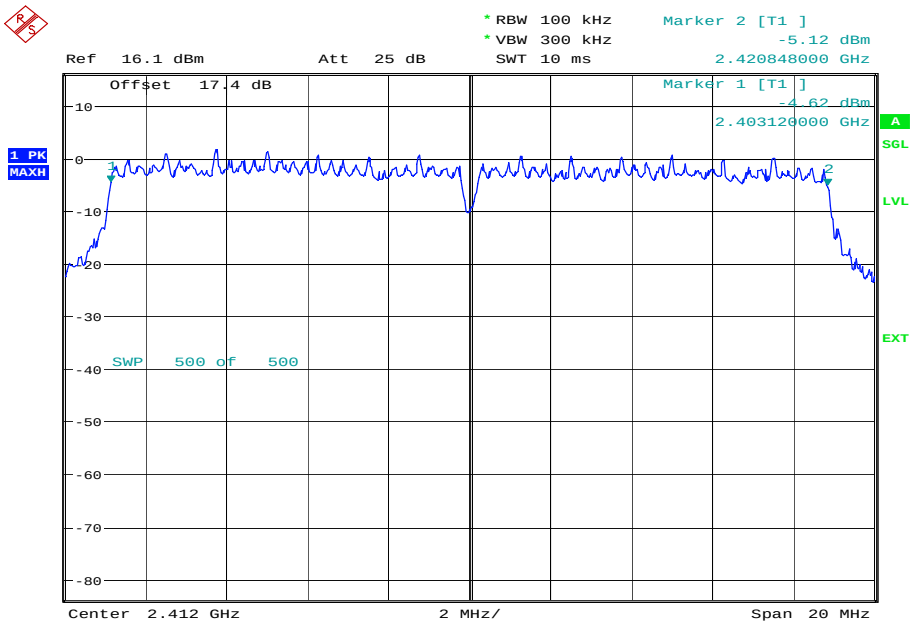
58.5 Mbps



Date: 20.JAN.2014 10:38:30

65 Mbps



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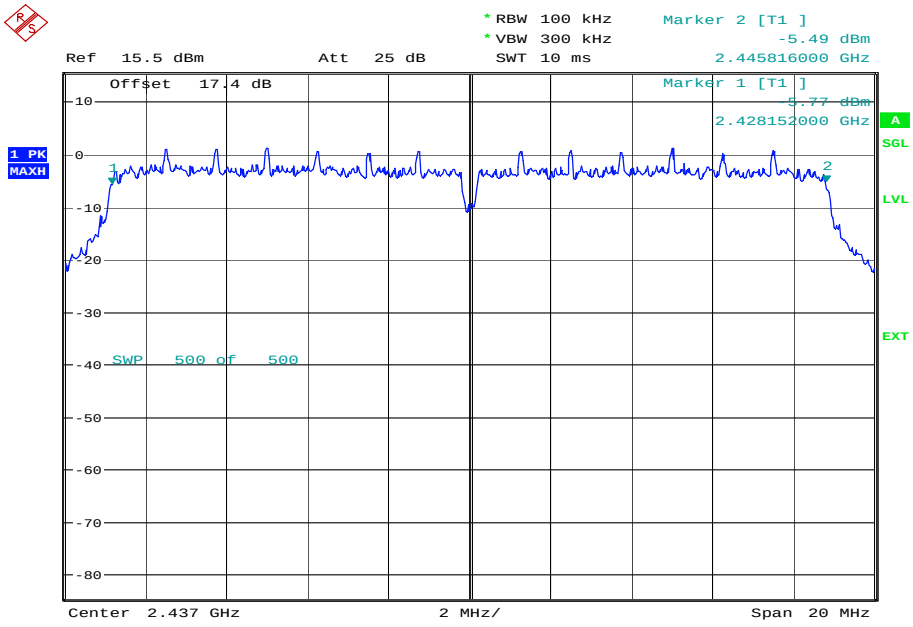
2437 MHz

6.5 Mbps



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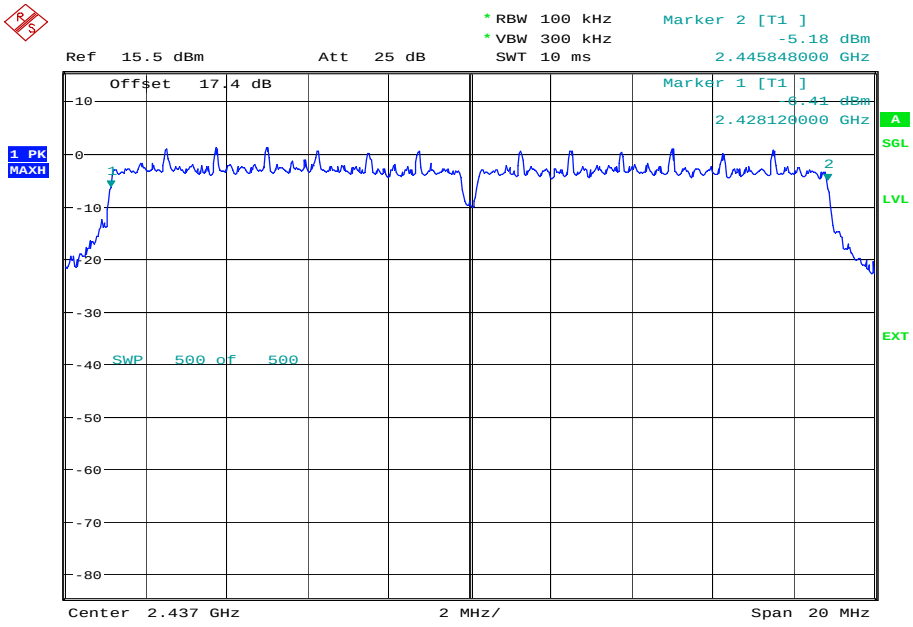
13 Mbps



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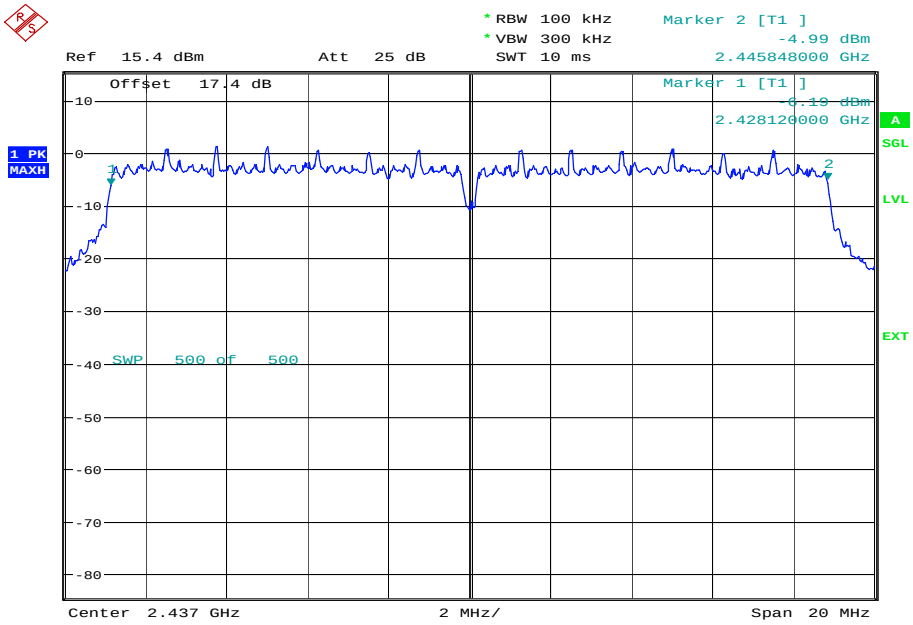
19.5 Mbps



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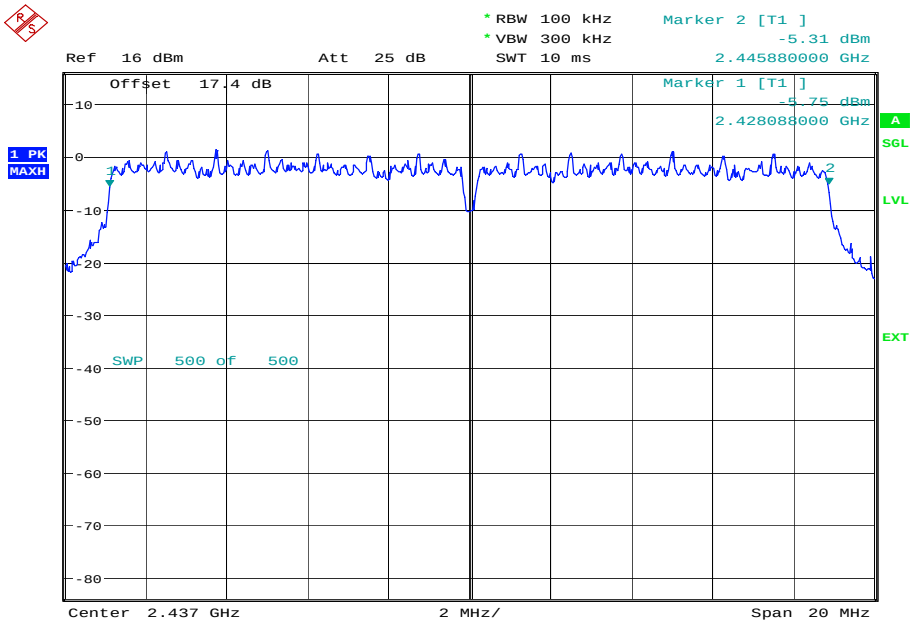
26 Mbps



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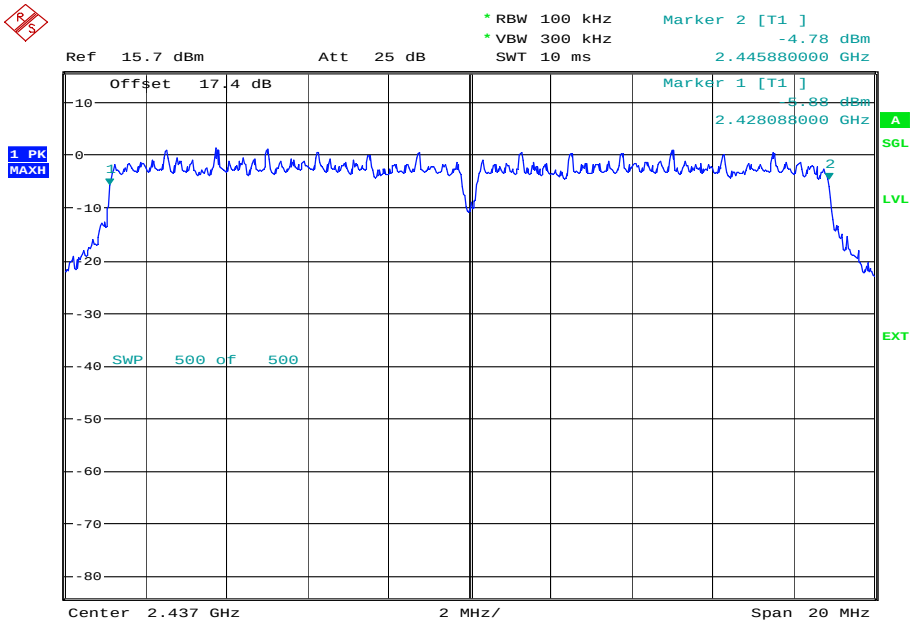
39 Mbps



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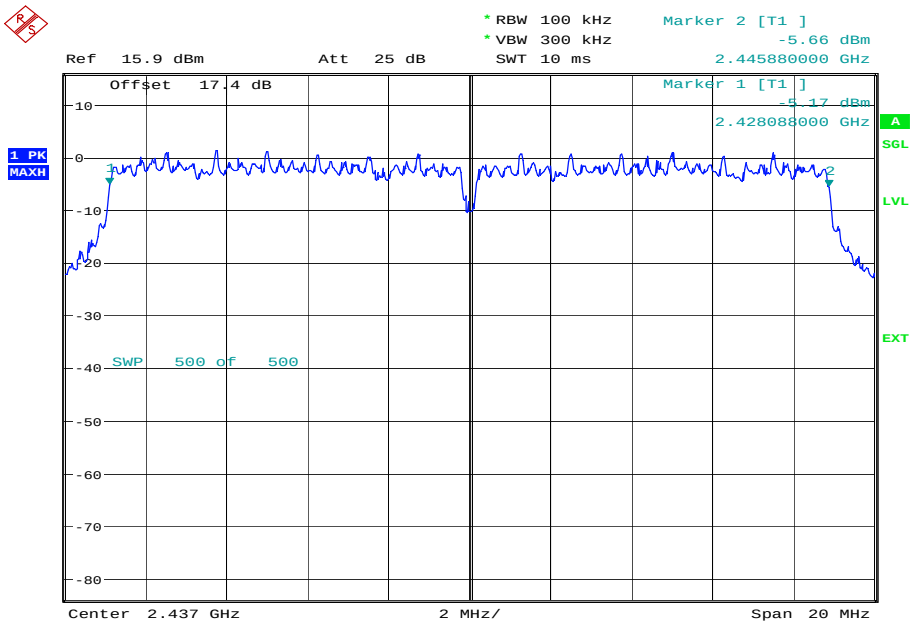
52 Mbps



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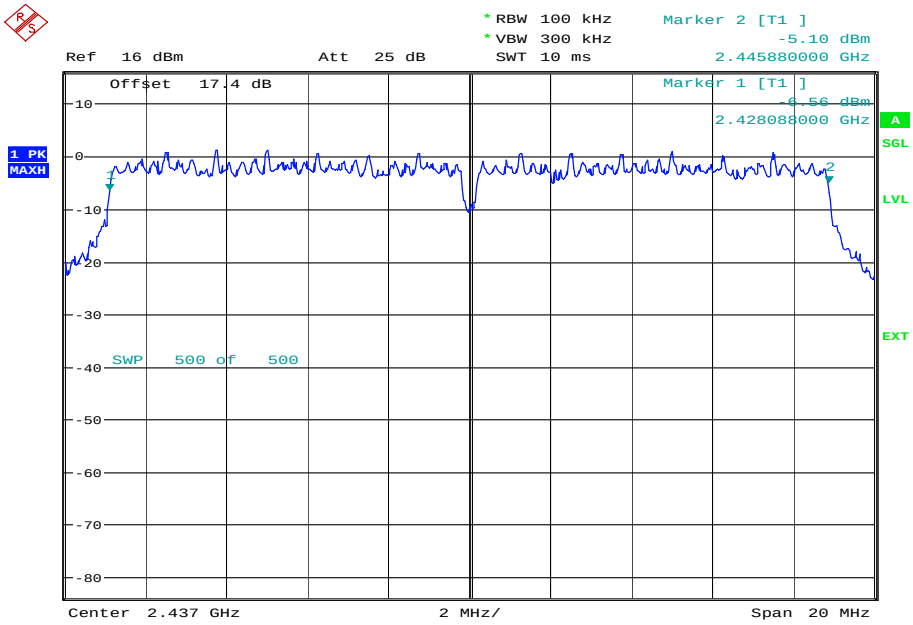
58.5 Mbps



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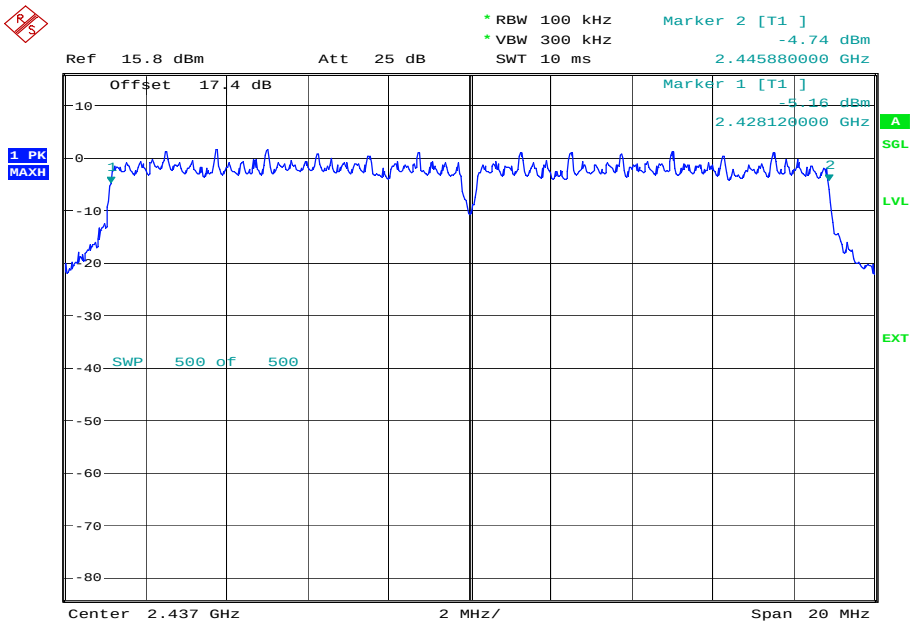
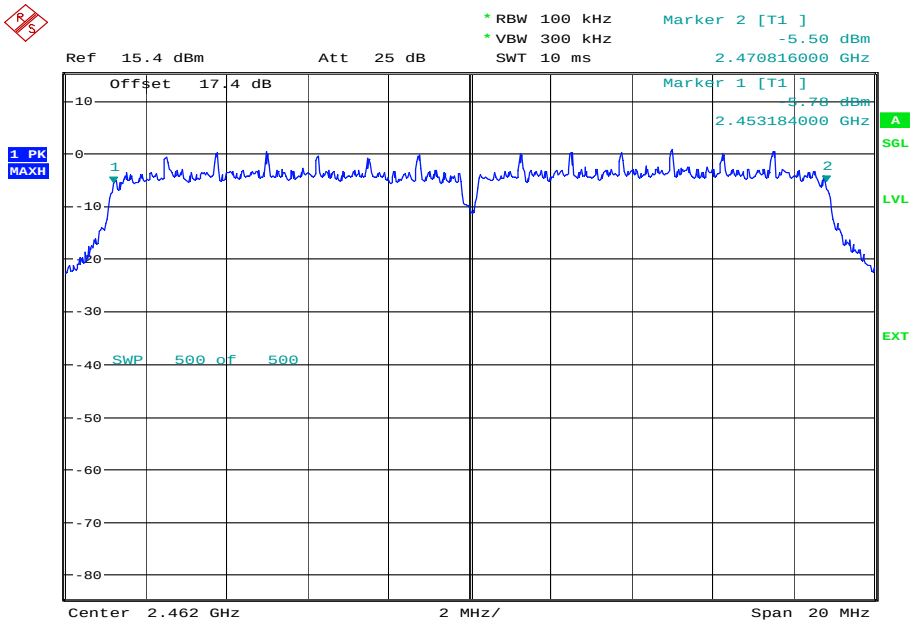
65 Mbps



Date: 20.JAN.2014 11:08:45

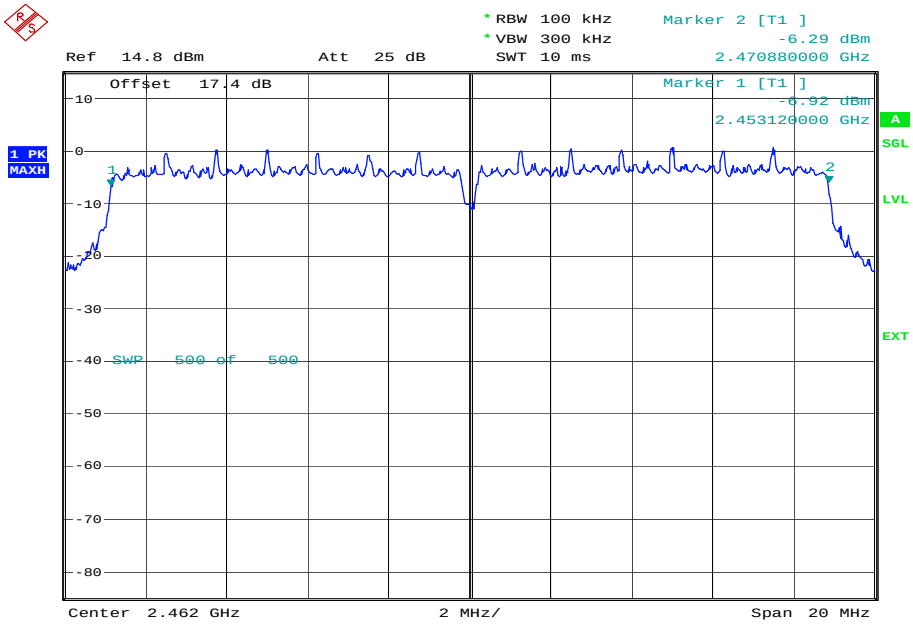
2462 MHz

6.5 Mbps



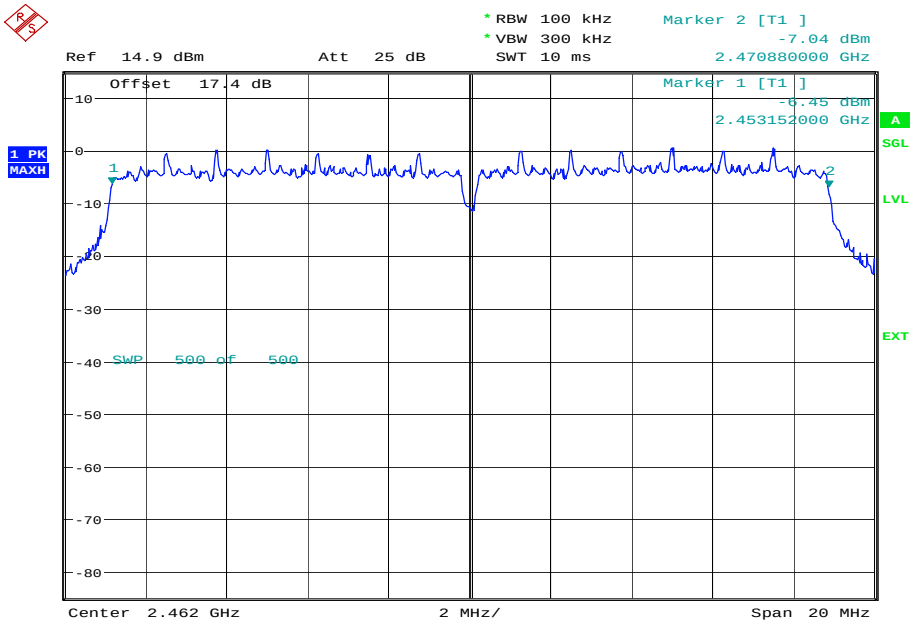
Date: 17.JAN.2014 16:26:34

13 Mbps



Date: 17.JAN.2014 16:45:49

19.5 Mbps



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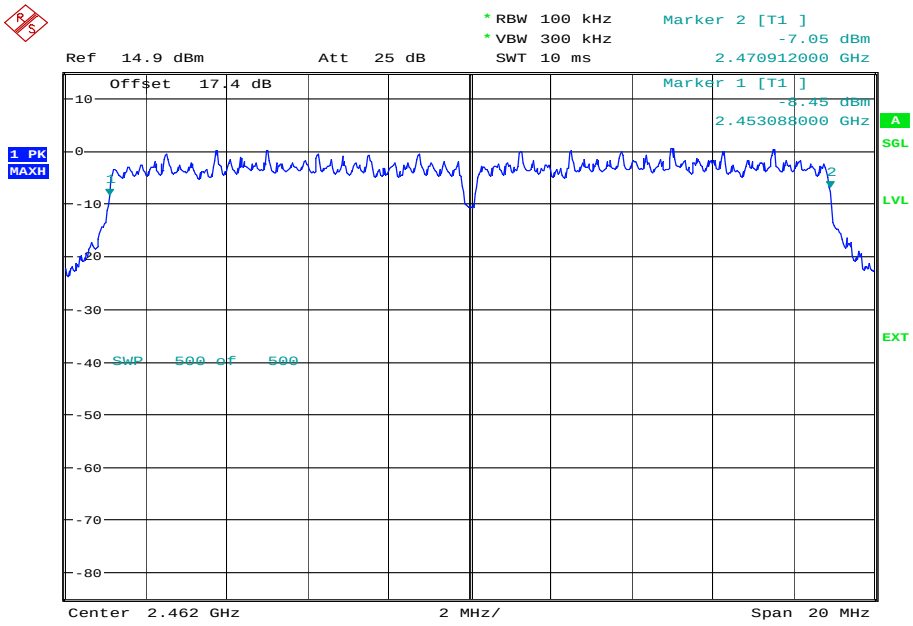
26 Mbps



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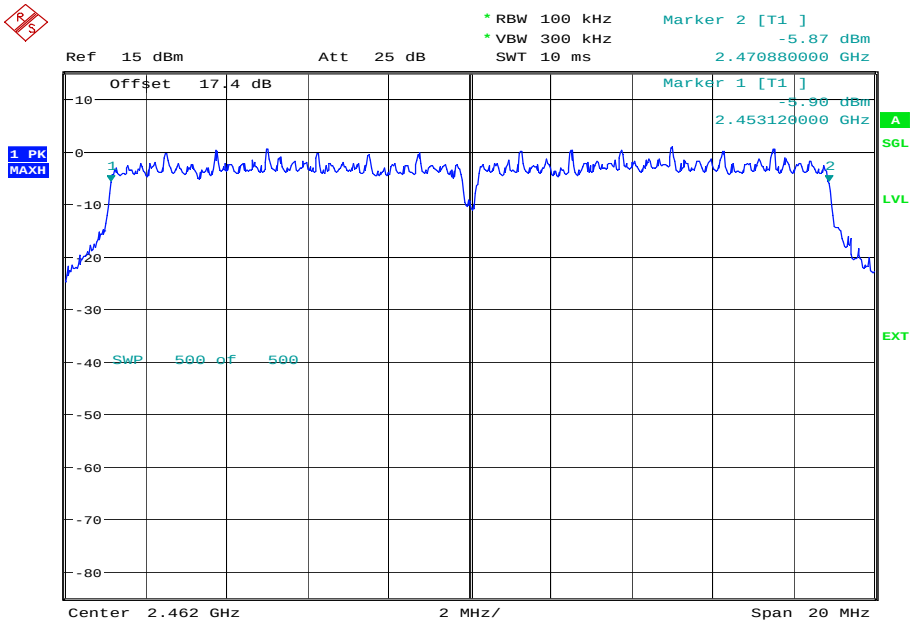
39 Mbps



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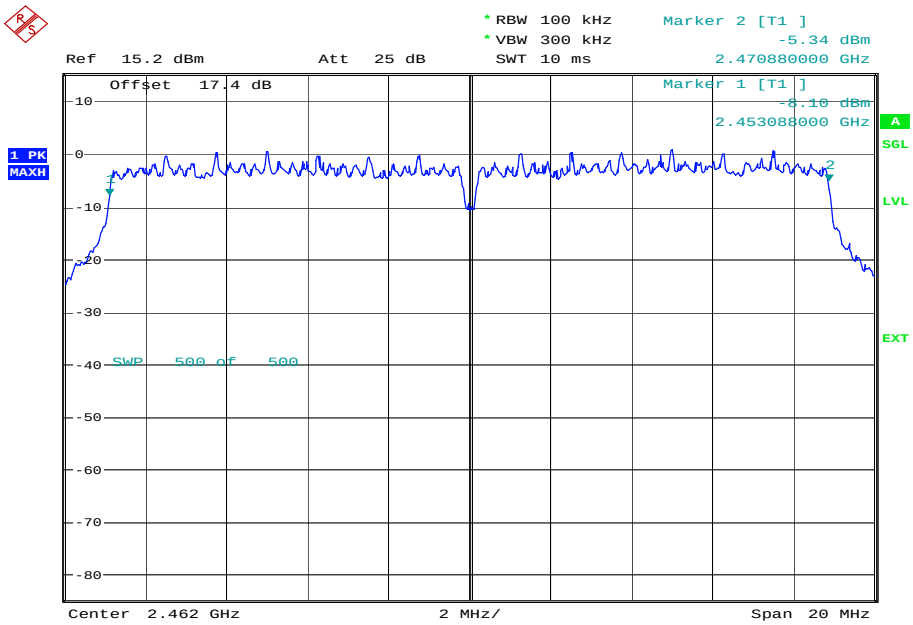
52 Mbps



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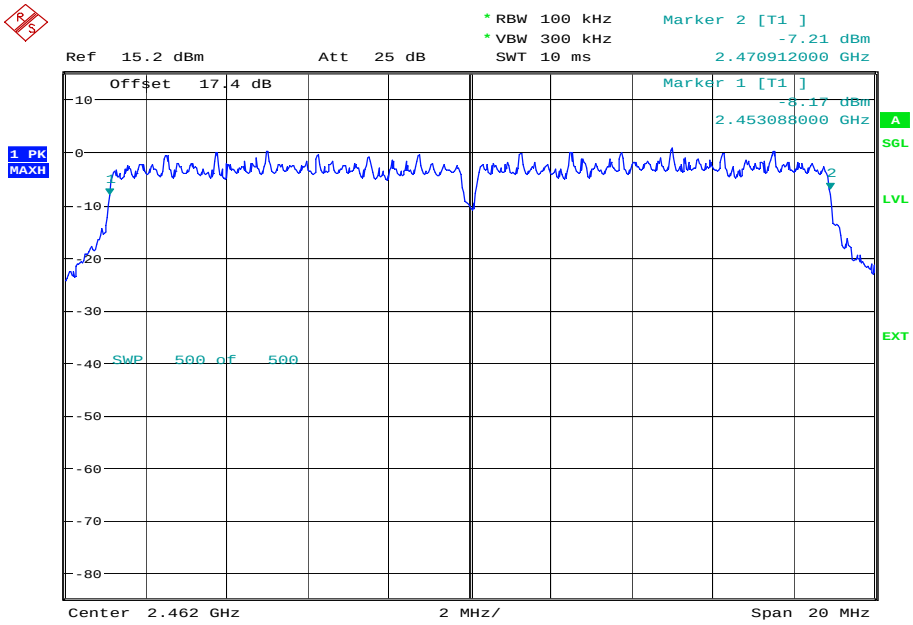
58.5 Mbps



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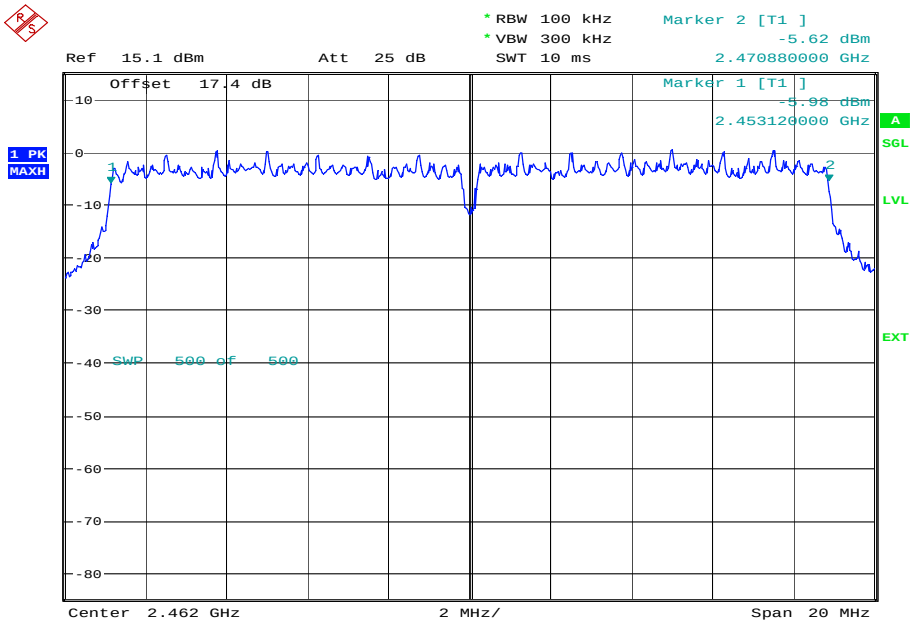
65 Mbps



Date: 20.JAN.2014 11:13:34

Limit Clause

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

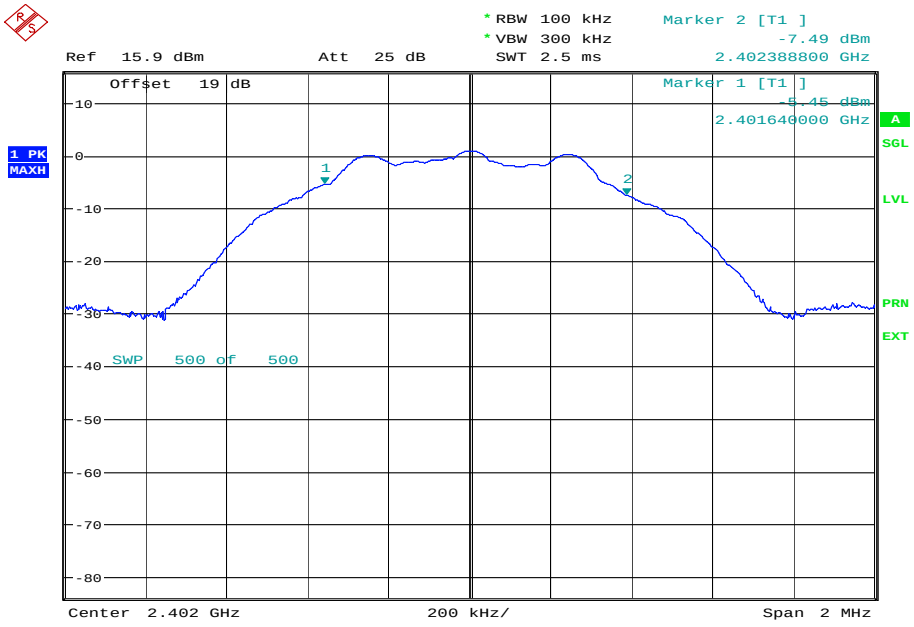
Bluetooth Low Energy

4.0 V DC Supply

Frequency (MHz)	Packet Type	6dB Bandwidth (kHz)
2402 MHz	37octet/prbs9	748.8
2441 MHz	37octet/prbs9	748.8
2480 MHz	37octet/prbs9	748.8

2402 MHz

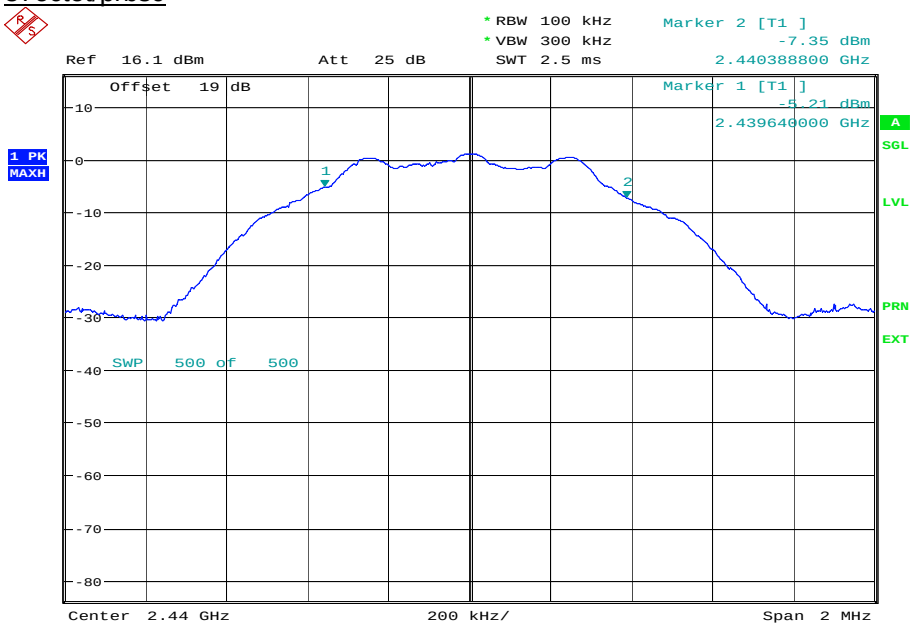
37octet/prbs9



Date: 20.JAN.2014 14:13:05

2441 MHz

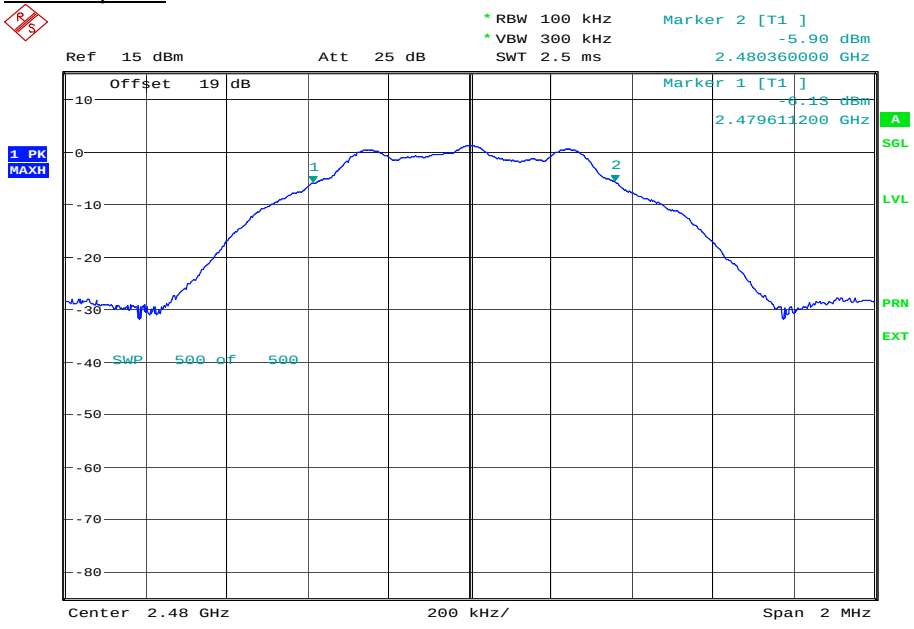
37octet/prbs9



Date: 20.JAN.2014 13:16:48

2480 MHz

37octet/prbs9



Date: 20.JAN.2014 14:10:00

Limit Clause

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

SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 – AC Line Conducted Emissions					
LISN (1 Phase)	Chase	MN 2050	336	12	28-Mar-2014
Screened Room (5)	Rainford	Rainford	1545	36	25-Jan-2014
Transient Limiter	Hewlett Packard	11947A	2377	12	13-Feb-2014
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
Section 2.2 - Maximum Peak Conducted Output Power					
Power Supply Unit	Farnell	LT-30-2	41	-	O/P Mon
Multimeter	White Gold	WG022	190	12	28-Oct-2014
RF Coupler	TUV SUD Product Service	RFC1	414	-	TU
Spectrum Analyser	Agilent Technologies	E4407B	1154	12	13-Aug-2014
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	24-Jan-2014
Multimeter	Iso-tech	IDM101	2424	12	12-Sep-2014
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	12	15-Nov-2014
Hygrometer	Rotronic	I-1000	3220	12	16-Jul-2014
Power Divider (N) 1W	Weinschel	1506A	3344	12	28-Jun-2014
Power Divider	Weinschel	1506A	3345	12	23-May-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2014
DC - 12.4 GHz 10 dB Attenuator	Suhner	6810.17.A	3965	12	17-Oct-2014
P-Series Power Meter	Agilent Technologies	N1911A	3980	12	18-Sep-2014
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	18-Sep-2014
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3982	12	18-Sep-2014
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3983	12	18-Sep-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Section 2.3 - EIRP Peak Power					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	3-Apr-2014
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	8-Nov-2014
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	3171	12	10-Sep-2014
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.4 - Spurious and Band Edge Emissions					
Power Supply Unit	Farnell	LT-30-2	41	-	O/P Mon
Multimeter	White Gold	WG022	190	12	28-Oct-2014
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	3-Apr-2014
Antenna (Bilog)	Schaffner	CBL6143	287	24	18-Jan-2014
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	24-Jan-2014
Antenna (Double Ridge Guide)	Q-Par Angus Ltd	QSH 180K	1511	24	7-Nov-2014
Pre-Amplifier	Phase One	PS04-0086	1533	12	19-Dec-2014
Pre-Amplifier	Phase One	PSO4-0087	1534	12	30-Sep-2014
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
High Pass Filter (4GHz)	RLC Electronics	F-100-4000-5-R	2773	12	1-Feb-2014
Hygrometer	Rotronic	I-1000	3220	12	16-Jul-2014
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
DC - 12.4 GHz 10 dB Attenuator	Suhner	6810.17.A	3965	12	17-Oct-2014
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	1-Oct-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Section 2.5 - Power Spectral Density					
Power Supply Unit	Farnell	LT-30-2	41	-	O/P Mon
Multimeter	White Gold	WG022	190	12	28-Oct-2014
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	24-Jan-2014
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	12	15-Nov-2014
Hygrometer	Rotronic	I-1000	3220	12	16-Jul-2014
Power Divider	Weinschel	1506A	3345	12	23-May-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 12.4 GHz 10 dB Attenuator	Suhner	6810.17.A	3965	12	17-Oct-2014
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	18-Sep-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Section 2.6 - 6dB Bandwidth					
Power Supply Unit	Farnell	LT-30-2	41	-	O/P Mon
Multimeter	White Gold	WG022	190	12	28-Oct-2014
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	24-Jan-2014
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	12	15-Nov-2014
Hygrometer	Rotronic	I-1000	3220	12	16-Jul-2014
Power Divider	Weinschel	1506A	3345	12	23-May-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 12.4 GHz 10 dB Attenuator	Suhner	6810.17.A	3965	12	17-Oct-2014
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	18-Sep-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014

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
6dB 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	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
Power Spectral Density	± 3.0 dB
AC Line Conducted Emissions	± 3.2 dB

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).