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Report On

FCC Testing of the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS
In accordance with FCC CFR 47 Part 15C (Bluetooth)

COMMERCIAL-IN-CONFIDENCE

FCC ID: APYHRO00215

Document 75928270 Report 07 Issue 1 January 2015

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REPORT ON

FCC Testing of the
Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS
In accordance with FCC CFR 47 Part 15C (Bluetooth)

Document 75928270 Report 07 Issue 1

January 2015

PREPARED FOR

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Inspired
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PREPARED BY

Natalie Bennett
Senior Administrator, Project Support

APPROVED BY

Simon Bennett
Authorised Signatory

DATED 14 January 2015

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);

J Tuckwell G Lawler M Russell

Product Service

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SECTION 1

REPORT SUMMARY

FCC Testing of the
Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM
(GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDDI, FDDV) & Tri-band LTE
(B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS
In accordance with FCC CFR 47 Part 15C (Bluetooth)

1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC Testing of the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) 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
Serial Number(s)	IMEI 004401115348464 IMEI 004401115346641
Number of Samples Tested	2
Test Specification/Issue/Date	FCC CFR 47 Part 15C (2013)
Incoming Release Date	Application Form 21 November 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	10330 20 October 2014
Start of Test	18 December 2014
Finish of Test	11 January 2015
Name of Engineer(s)	J Tuckwell G Lawler M Russell
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
Bluetooth				
2.1	15.207	AC Line Conducted Emissions	Pass	
2.2	15.247 (a)(1)	Frequency Hopping Systems - 20dB Bandwidth and Channel Separation	Pass	
2.3	15.247 (a)(1)(iii)	Frequency Hopping Systems - Channel Dwell Time and Number of Hopping Channels	Pass	
2.4	15.247 (b)(3)	Maximum Peak Conducted Output Power	Pass	
2.5	15.247 (b)(4)	EIRP Peak Power	Pass	
2.6	15.247 (d)	Spurious and Band Edge Emissions	Pass	

Product Service

1.3 APPLICATION FORM

EQUIPMENT DESCRIPTION	
Model Name/Number	See APYHRO00215 Model Description form
Part Number	CA287
FCC ID (if applicable)	APYHRO00215
Industry Canada ID (if applicable)	N/A
Technical Description (Please provide a brief description of the intended use of the equipment)	Penta-band LTE(B1/B3/B17/B26/B41), Dual-band WCDMA(FDD-I/V), Quad-band GSM(850/900/1800/1900), Multimode Smartphone with BT, ANT+, WLAN, SRD 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: N/A
In case of Adaptive Frequency Hopping Equipment:	
	Maximum number of Hopping Frequencies: Bluetooth(BR/EDR):79,LE:40
	Minimum number of Hopping Frequencies: 20
Dwell Time: 3.75ms	
Minimum Channel Occupation Time: 1.25ms (5.5ms maximum)	
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: 13 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: 34 µs	
The value q as referred to in clause 4.3.2.5.2.2.2 is: q = 32	
☐	The equipment has implemented an non-LBT based DAA mechanism
☐	The equipment can operate in more than one adaptive mode

Product Service

In case of non-adaptive Equipment:	
The maximum RF Output Power (e.i.r.p.): 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: Max:8dBm / Nominal:4dBm (Blutooth Power Class:1),Max:17dBm (IEEE802.11b)	
Power Spectral Density:	
Duty cycle, Tx-Sequence, Tx-gap:	
Dwell time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment): To be determined by test lab	
Hopping Frequency Separation (only for FHSS equipment): To be determined by test lab	
Medium Utilisation: To be determined by test lab	
Adaptivity & Receiver Blocking: To be determined by test lab	
Occupied Channel Bandwidth: To be determined by test lab	
Transmitter unwanted emissions in the OOB domain: To be determined by test lab	
Transmitter unwanted emissions in the spurious domain: To be determined by test lab	
Receiver spurious emissions: To be determined by test lab	
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.	

Product Service

Operating Frequency Range(s) of the equipment:	
Operating Frequency Range 1: 2402 MHz to 2480 MHz	Bluetooth (e.g Bluetooth for EU)
Operating Frequency Range 2: 2412 MHz to 2472 MHz	WLAN for EU (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: 1 MHz to 2(LE) MHz	
Occupied Channel Bandwidth2: 20 MHz to 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.			

Product Service

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 Ver4.0, 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.	

Product Service

	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: K. Kaidoh Name: Kiyoharu Kaidoh

Position held: Manager Date: 21st November, 2014

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) 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.

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

1.6 DEVIATIONS FROM THE STANDARD

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

1.7 MODIFICATION RECORD

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

Product Service

SECTION 2

TEST DETAILS

FCC Testing of the
Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM
(GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDDI, FDDV) & Tri-band LTE
(B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS
In accordance with FCC CFR 47 Part 15C (Bluetooth)

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

S/N: IMEI 004401115348464 - Modification State 0

2.1.3 Date of Test

11 January 2015

2.1.4 Test Equipment Used

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

2.1.5 Test Procedure

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

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

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

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

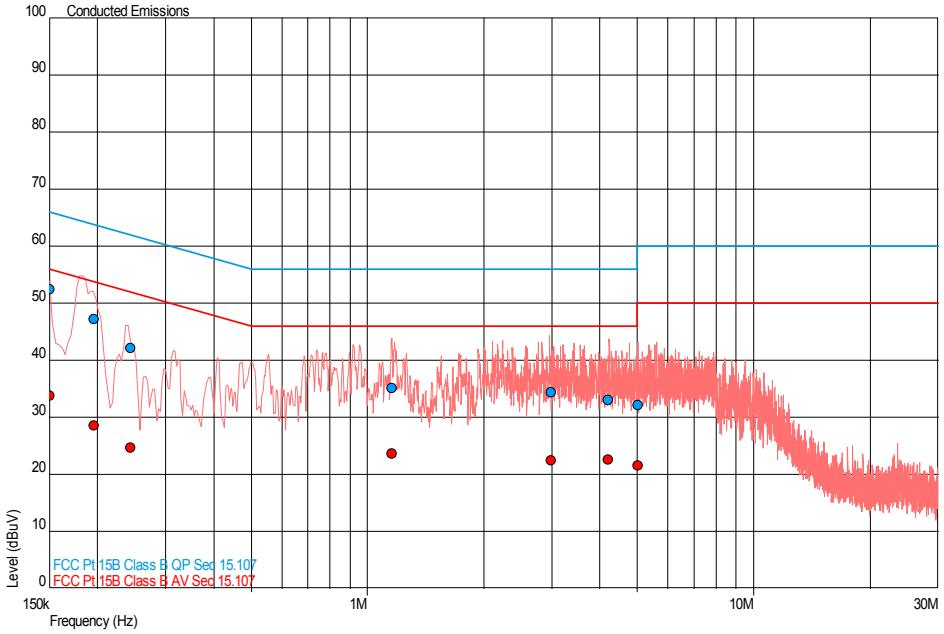
2.1.6 Environmental Conditions

Ambient Temperature	21.8°C
Relative Humidity	25.0%

Product Service

2.1.7 Test Results

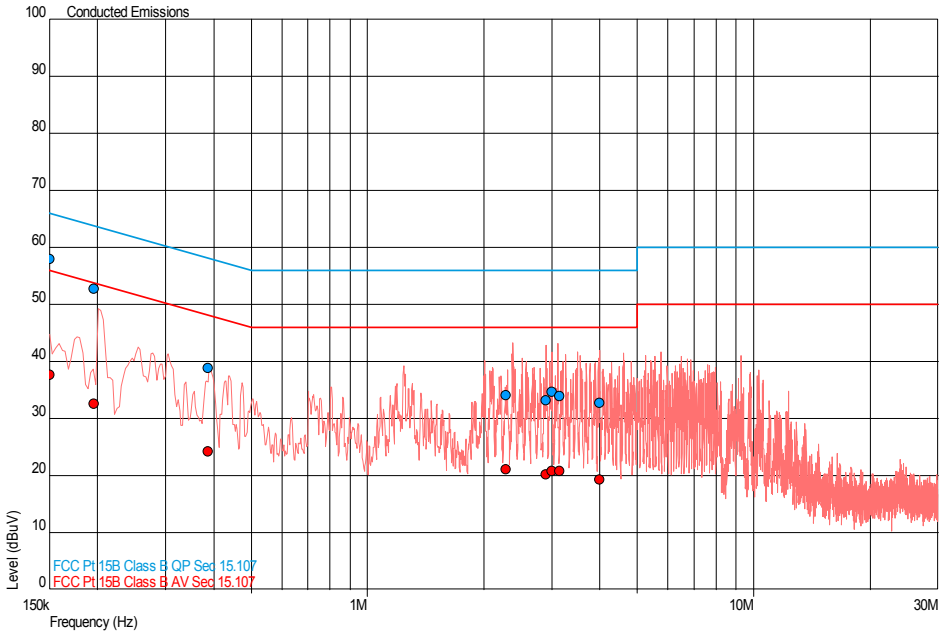
Live Line



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dBµV)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.150	52.5	66.0	-13.5	33.9	56.0	-22.1
0.196	47.3	63.8	-16.5	28.6	53.8	-25.2
0.243	42.1	62.0	-19.9	24.7	52.0	-27.2
1.157	35.1	56.0	-20.9	23.6	46.0	-22.4
2.989	34.5	56.0	-21.5	22.5	46.0	-23.5
4.193	33.0	56.0	-23.0	22.6	46.0	-23.4
5.010	32.1	60.0	-27.9	21.5	50.0	-28.5

Product Service

Neutral Line



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dBµV)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.150	58.0	66.0	-8.0	37.7	56.0	-18.3
0.196	52.8	63.8	-11.0	32.6	53.8	-21.2
0.387	38.9	58.1	-19.2	24.3	48.1	-23.8
2.283	34.0	56.0	-22.0	21.1	46.0	-24.9
2.904	33.3	56.0	-22.7	20.3	46.0	-25.7
3.005	34.6	56.0	-21.4	20.8	46.0	-25.2
3.142	34.0	56.0	-22.0	20.8	46.0	-25.2
3.998	32.7	56.0	-23.3	19.4	46.0	-26.6

2.2 FREQUENCY HOPPING SYSTEMS – 20 dB BANDWIDTH AND CHANNEL SEPARATION

2.2.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (a)(1)

2.2.2 Equipment Under Test and Modification State

S/N: IMEI 004401115346641 - Modification State 0

2.2.3 Date of Test

22 December 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

This test was performed using the test method requirements of ANSI C63.10 clause 6.9 and 7.7.

The EUT was connected to a spectrum analyser via a cable and attenuator. The spectrum analyser was configured with a 30 kHz RBW and 100 kHz VBW using a peak detector and trace set to max hold. The EUT was set to operate at maximum output power on bottom, middle and top channels on all supported modulation schemes. A peak marker was used to determine the peak point of the emission and a display line set at -20 dB of this value. The markers were then adjusted to the -20 dBc points and the delta value recorded in the tables below.

To determine the channel separation, the spectrum analyser centre frequency was adjusted to the midpoint between 2 hopping frequencies. For GFSK modulation the EUT was configured in a hopping mode and the below plots were taken to show the channel separation. For all other modulation schemes, two traces had to be taken, each with the EUT transmitting on a single static channel adjacent to one another. The markers were then used to determine the frequency separation.

2.2.6 Environmental Conditions

Ambient Temperature	22.4°C
Relative Humidity	39.6%

Product Service

2.2.7 Test Results

4.0 V DC Supply

20dB Bandwidth

2402 MHz

Modulation/Packet Type	20dB Bandwidth (kHz)
GFSK/DH5	974
pi/4 DQPSK/2DH5	1282
8-DPSK/3DH5	1278

DH5

Product Service

2DH5

3DH5

2441 MHz

Modulation/Packet Type	20dB Bandwidth (kHz)
GFSK/DH5	974
pi/4 DQPSK/2DH5	1280
8-DPSK/3DH5	1276

DH5

Product Service

2DH5

3DH5

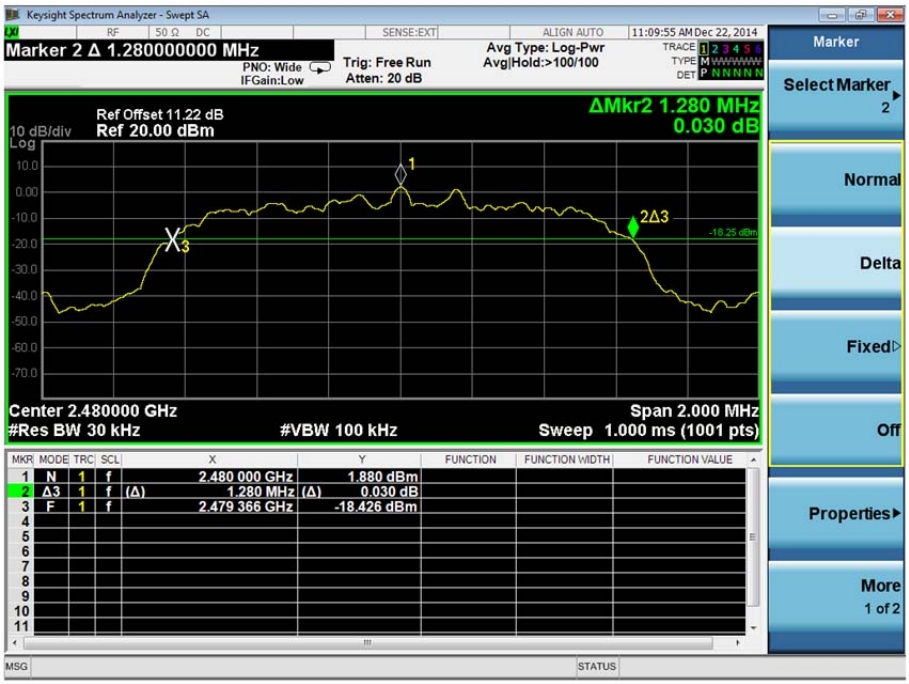
2480 MHz

Modulation/Packet Type	20dB Bandwidth (kHz)
GFSK/DH5	974
pi/4 DQPSK/2DH5	1280
8-DPSK/3DH5	1276

DH5

Product Service

2DH5



3DH5

Limit Clause

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

Channel Separation

Modulation/Packet Type	Channel Separation (MHz)
GMSK/DH3	1
GMSK/2DH5	1
GMSK/3DH5	1

DH3

Product Service

2DH5

3DH5

Limit Clause

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125 W.

The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

2.3 FREQUENCY HOPPING SYSTEMS - CHANNEL DWELL TIME AND NUMBER OF HOPPING CHANNELS

2.3.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (a)(1)(iii)

2.3.2 Equipment Under Test and Modification State

S/N: IMEI 004401115346641 - Modification State 0

2.3.3 Date of Test

23 December 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

This test was performed using the test method as described in ANSI C63.10 Clause 7.7.3 and 7.7.4.

The EUT was connected to a spectrum analyser via a cable and attenuator. The EUT was configured to operate on the maximum number of hopping channels with DH1/DH3/DH5 packet types. Using a reduced sweep time, the Tx on time was determined for each of these packet types and the results recorded in the table below. The sweep time was then adjusted as described in 15.247 a) and the number of transmissions were observed. The average dwell time was then calculated from the sum of the Tx on time and number of observed transmissions.

The analyser settings were then adjusted to show the entire operating band and using a DH5 packet type, the number of hopping frequencies were determined as shown by the plot below.

2.3.6 Environmental Conditions

Ambient Temperature	24.7°C
Relative Humidity	34.0%

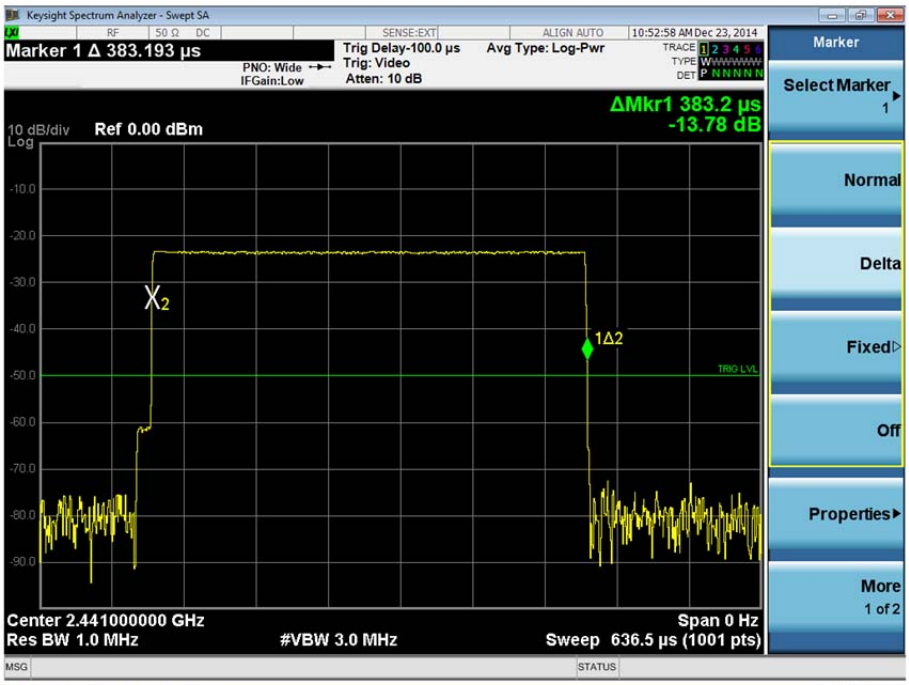
Product Service

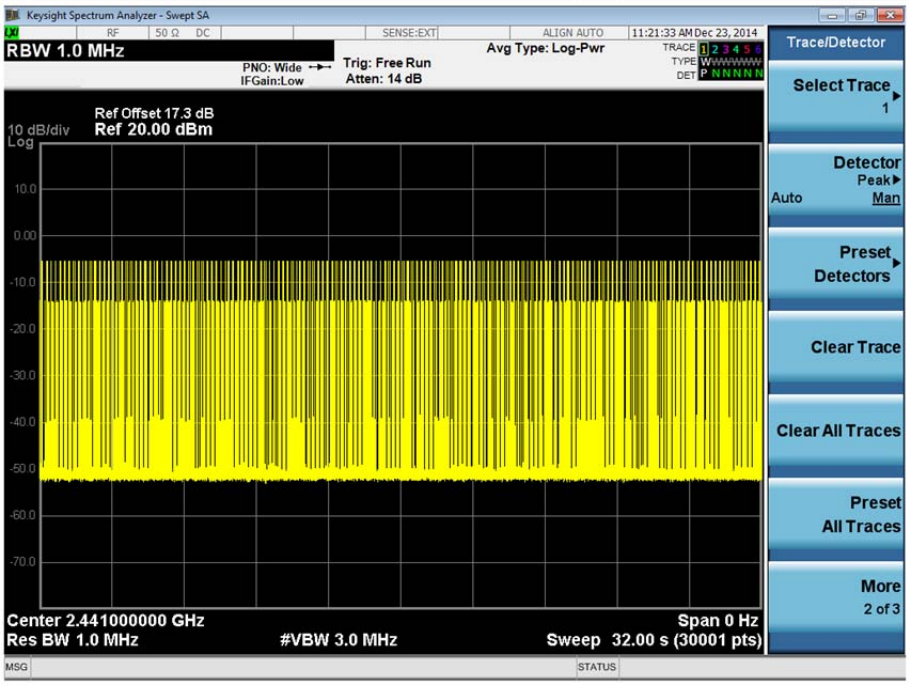
2.3.7 Test Results

Channel Dwell Time

DH1

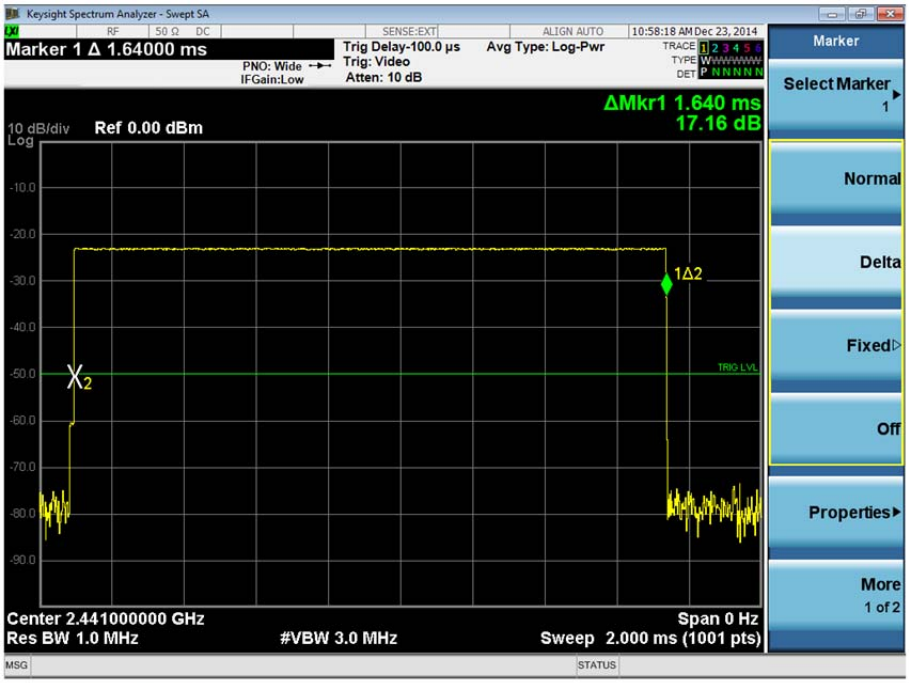
Dwell Time (ms)	Number of Transmissions	Average Occupancy Time (ms)
0.383	322	123.326

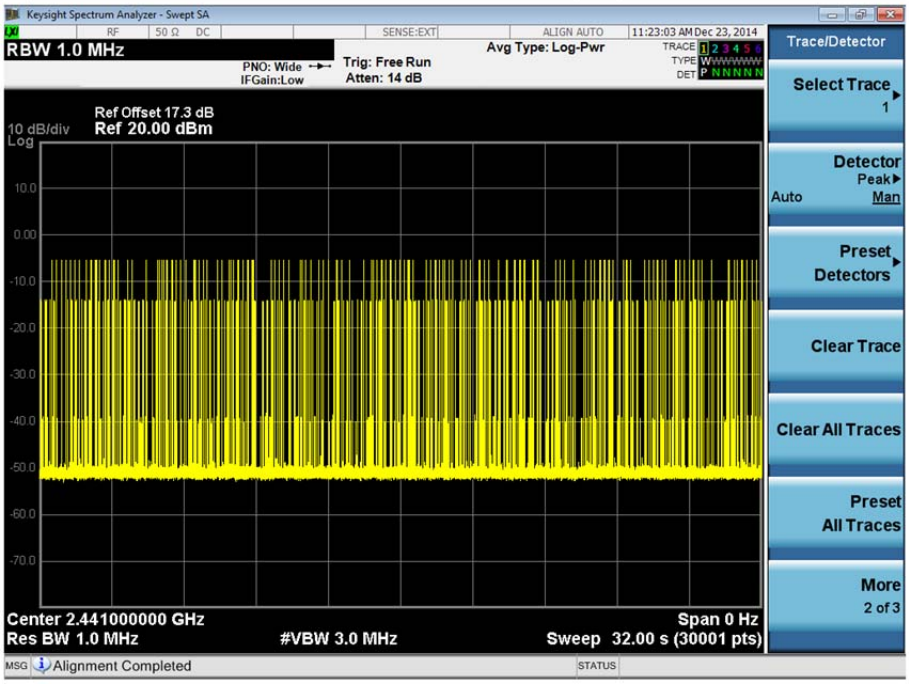




DH3

Dwell Time (ms)	Number of Transmissions	Average Occupancy Time (ms)
1.640	152	249.280

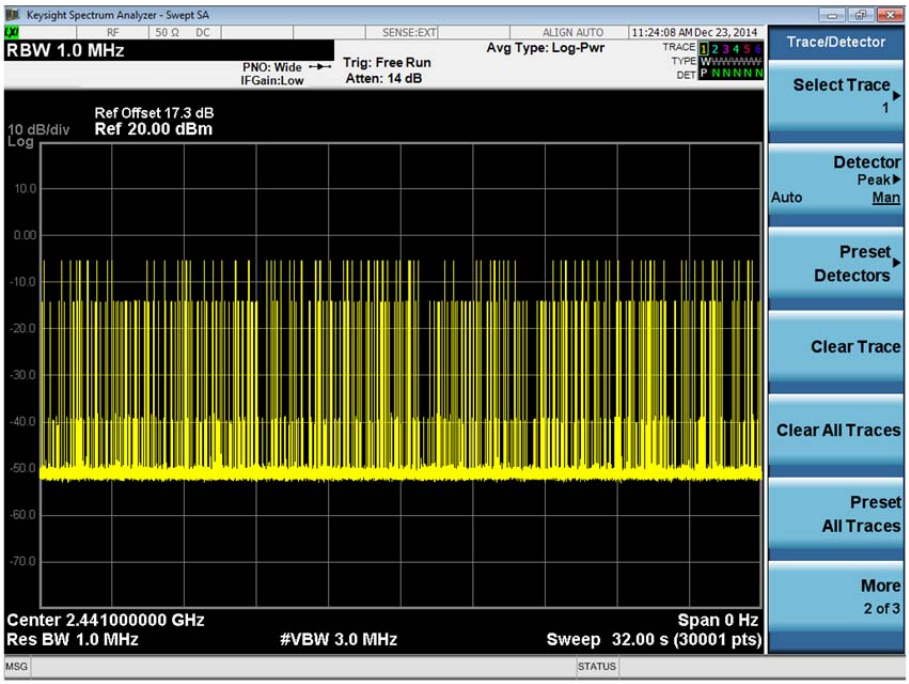


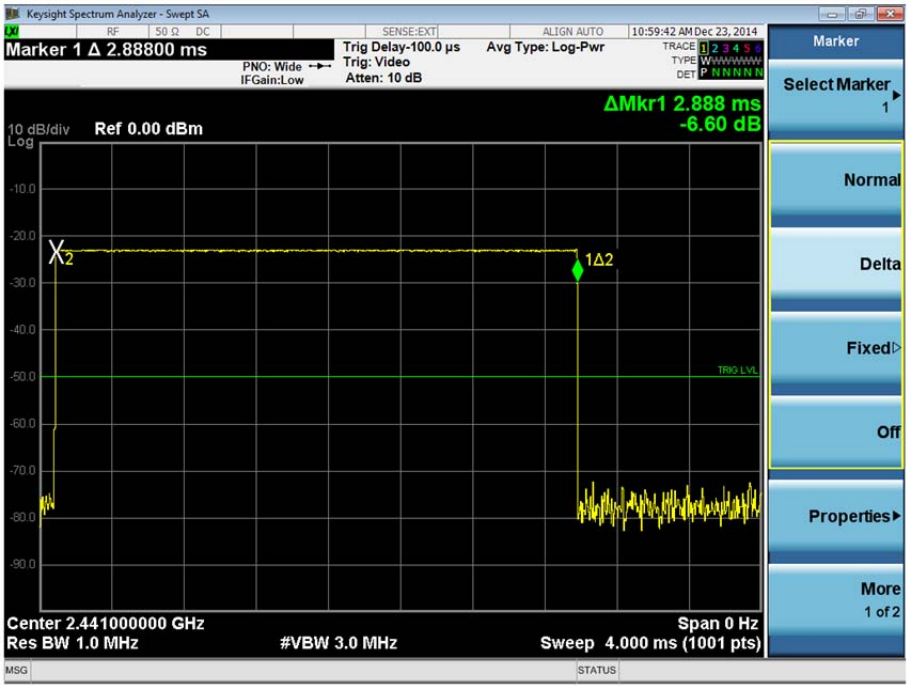


Product Service

DH5

Dwell Time (ms)	Number of Transmissions	Average Occupancy Time (ms)
2.888	95	274.360





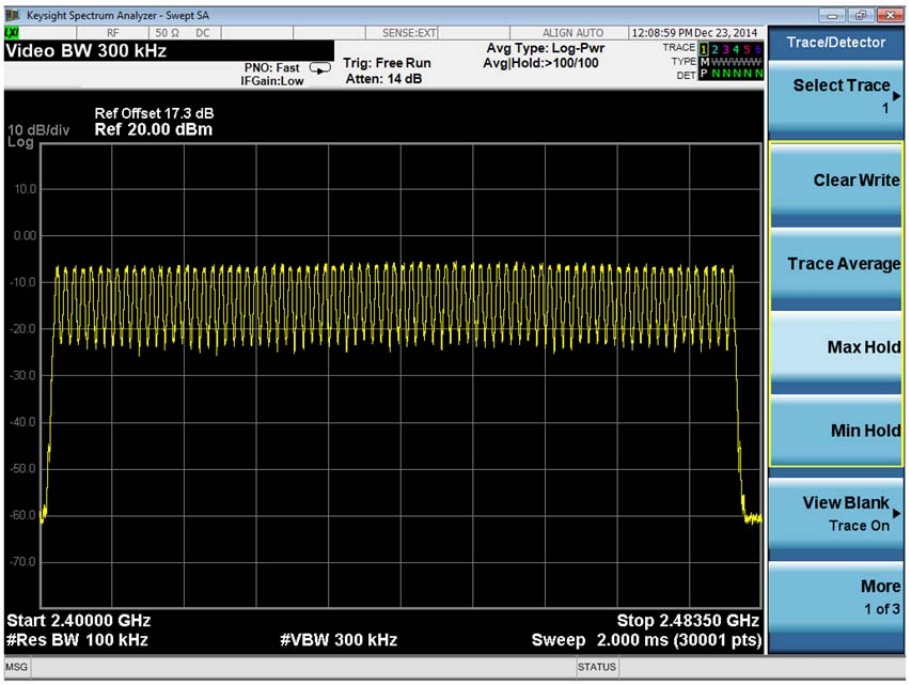
Limit

Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

Product Service

Number of Hopping Channels

79



Limit

≥ 15 channels

2.4 MAXIMUM PEAK CONDUCTED OUTPUT POWER

2.4.1 Specification Reference

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

2.4.2 Equipment Under Test and Modification State

S/N: IMEI 004401115346641 - Modification State 0

2.4.3 Date of Test

23 December 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

This test was performed using the test method as described in ANSI C63.10 Clause 6.10.1.

The EUT was connected to a broadband peak power meter via a cable and attenuator. The path loss was measured using a network analyser and was entered as a reference offset in the power meter. The EUT was configured to operate at maximum output power for all packet types for GFSK modulation as this was identified as resulting in the highest power prior to testing. Testing was performed on bottom, middle and top static channels with the power meter set to free run.

2.4.6 Environmental Conditions

Ambient Temperature	25.5°C
Relative Humidity	35.0%

Product Service

2.4.7 Test Results

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
DH1	6.53	6.69	6.44	4.50	4.67	4.41
DH3	6.50	6.68	6.44	4.47	4.66	4.41
DH5	6.48	6.67	6.45	4.45	4.65	4.42

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.

2.5 EIRP PEAK POWER

2.5.1 Specification Reference

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

2.5.2 Equipment Under Test and Modification State

S/N: IMEI 004401115348464 - Modification State 0

2.5.3 Date of Test

21 December 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

A test environment and testing arrangement meeting the specification of ANSI C63.4 was used during all testing. The Equipment Under Test (EUT) was set upon a non-conducting platform during testing. The EUT elevation was 80 cm above the horizontal reference ground plane. A spectrum analyser was used to display the resultant trace on the screen and the level was maximised by rotating the EUT through 360° and a height search of the measuring antenna. A wideband power meter was used to perform the peak measurement. 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 to obtain the final result.

2.5.6 Environmental Conditions

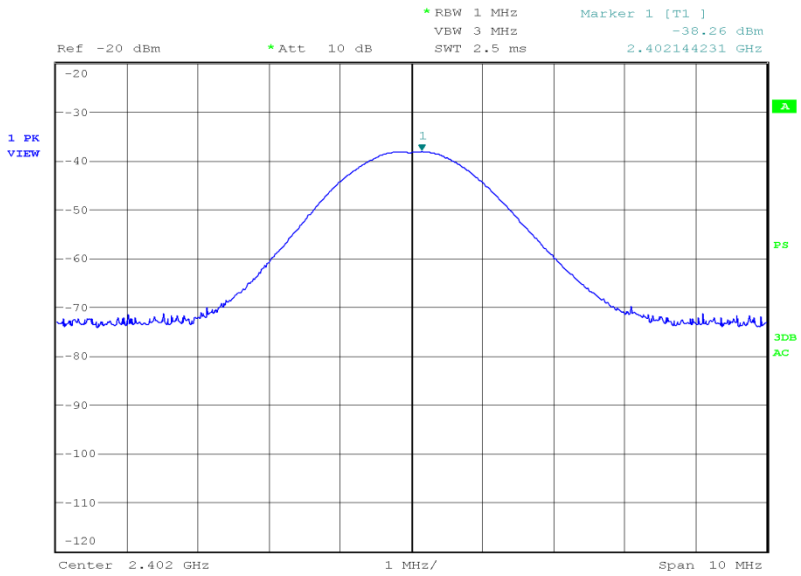
Ambient Temperature	19.4°C
Relative Humidity	29.0%

Product Service

2.5.7 Test Results

2402 MHz

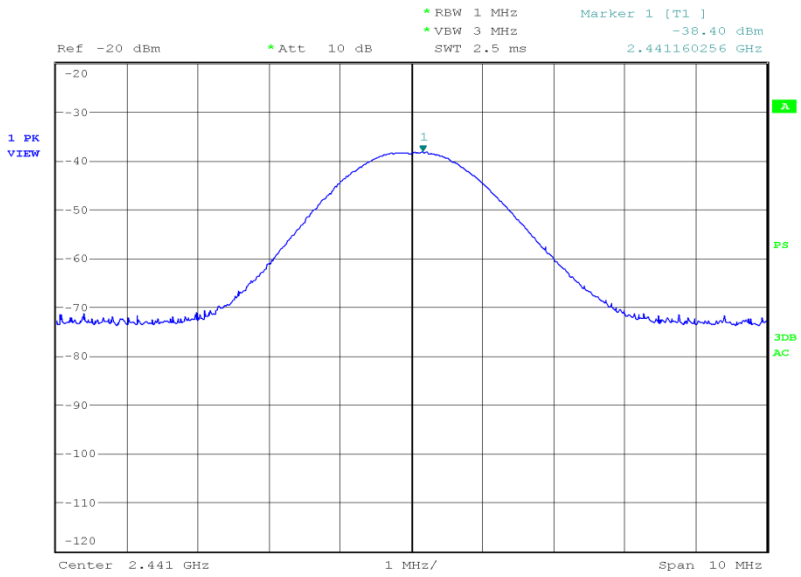
EIRP (dBm)	EIRP (mW)
4.87	3.07



Date: 21.DEC.2014 02:20:44

2441 MHz

EIRP (dBm)	EIRP (mW)
5.12	3.25

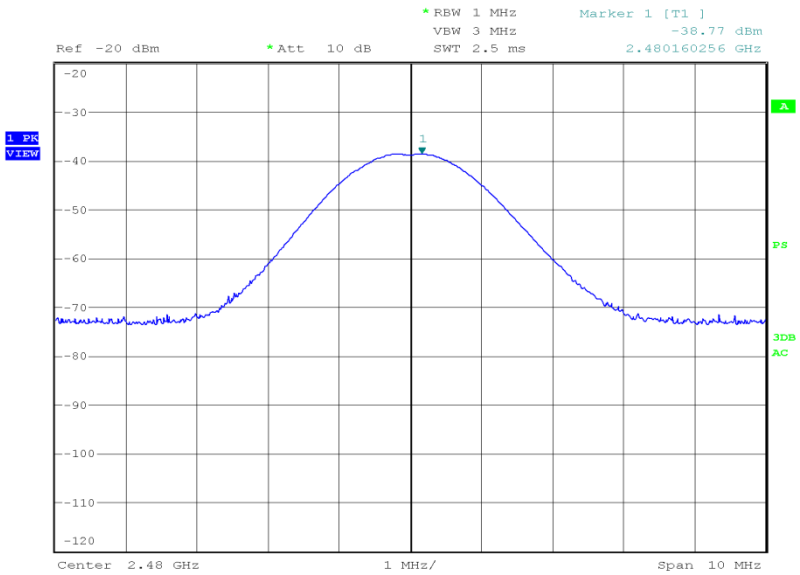


Date: 21.DEC.2014 02:03:25

Product Service

2480 MHz

EIRP (dBm)	EIRP (mW)
4.71	2.96



Date: 21.DEC.2014 02:26:30

Limit

EIRP (dBm)	EIRP (mW)
36.0	4000

Product Service

2.6 SPURIOUS AND BAND EDGE EMISSIONS

2.6.1 Specification Reference

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

2.6.2 Equipment Under Test and Modification State

S/N: IMEI 004401115348464 - Modification State 0

2.6.3 Date of Test

20 December 2014, 21 December 2014 & 22 December 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

When frequencies less than 18 GHz were measured; the EUT elevation was 80 cm above the horizontal reference ground plane. When frequencies greater than 18 GHz were measured; the EUT elevation was 1 m above the horizontal reference ground plane to ensure adequate vertical beam width coverage of the measuring antenna with respect to the EUT.

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

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

Spurious Emissions

The EUT was set to operate at maximum power on the bottom, middle and top channels for the data rate which resulted in the highest conducted average output power. The power of each fundamental frequency was measured in 100 kHz RBW, the resultant limit line on the trace was set at -20 dBc of this value. Measurements were performed from 30 MHz to 25 GHz and the path loss is incorporated as a transducer factor and entered into the spectrum analyser.

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

Final measurement points over the frequency range of 30 MHz to 1 GHz were measured using a quasi-peak detector. Final measurement points over the frequency range of 1 GHz and 25

GHz were measured using peak and average methods. Peak measurements were made using a peak detector with 1 MHz resolution and video bandwidths. Average measurements were made using a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

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

Band Edge

Measurements were performed with the EUT operating in hopping and static modes for the modulation/packet type determined to give the highest conducted average output power and the modulation/packet type determined to result in the widest 20 dB bandwidth.
Measurements at the authorized band edges have been made in accordance with ANSI C63.10 clause 7.7.9. Measurements have also been performed at the restricted band edges where peak measurements have used an RBW of 1MHz and with peak detector/max hold. The VBW was reduced to 10 Hz for average measurements.

2.6.6 Environmental Conditions

Ambient Temperature	19.6 - 20.9°C
Relative Humidity	29.0 - 42.0%

Product Service

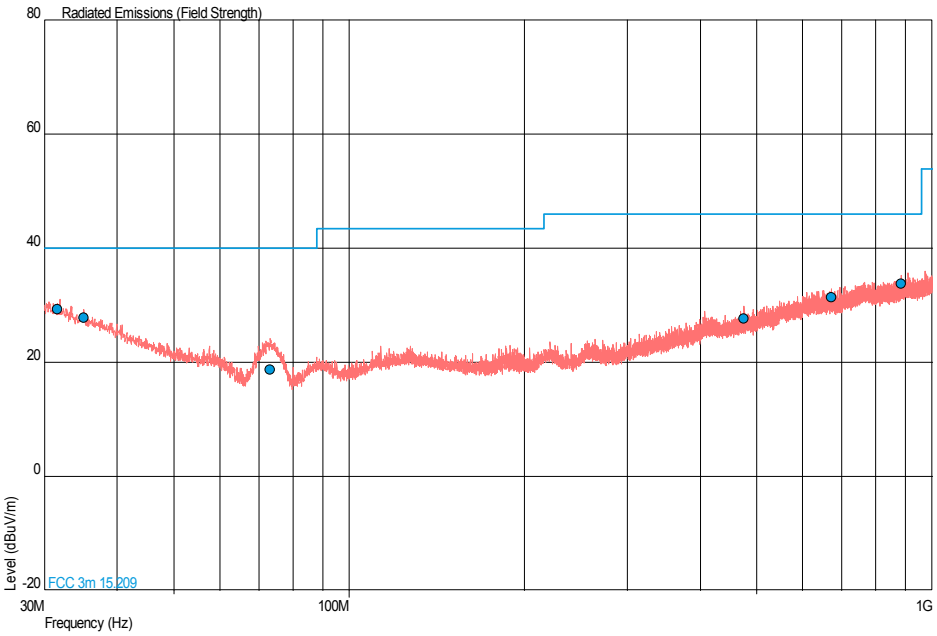
2.6.7 Test Results

4.0 V DC Supply

Spurious Radiated Emissions

2402 MHz

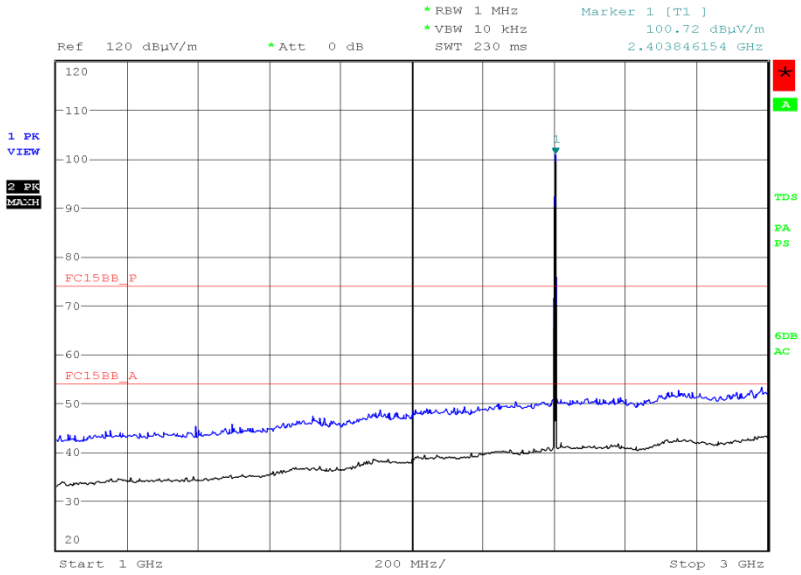
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
31.647	29.3	29.2	40.0	100	-10.7	-70.8	85	2.81	Horizontal
35.093	27.8	24.5	40.0	100	-12.2	-75.5	350	1.00	Vertical
73.166	18.8	8.7	40.0	100	-21.2	-91.3	171	1.00	Vertical
475.230	27.8	24.5	46.0	200	-18.2	-175.5	232	3.91	Horizontal
670.884	31.5	37.6	46.0	200	-14.5	-162.4	175	1.00	Vertical
883.246	33.8	49.0	46.0	200	-12.2	-151.0	358	1.00	Vertical

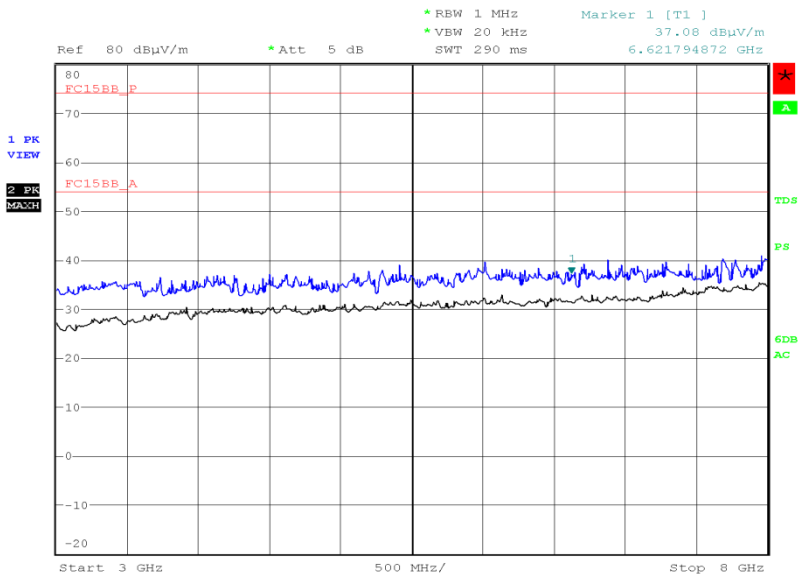
Product Service

1 GHz to 3 GHz



Date: 21.DEC.2014 00:43:48

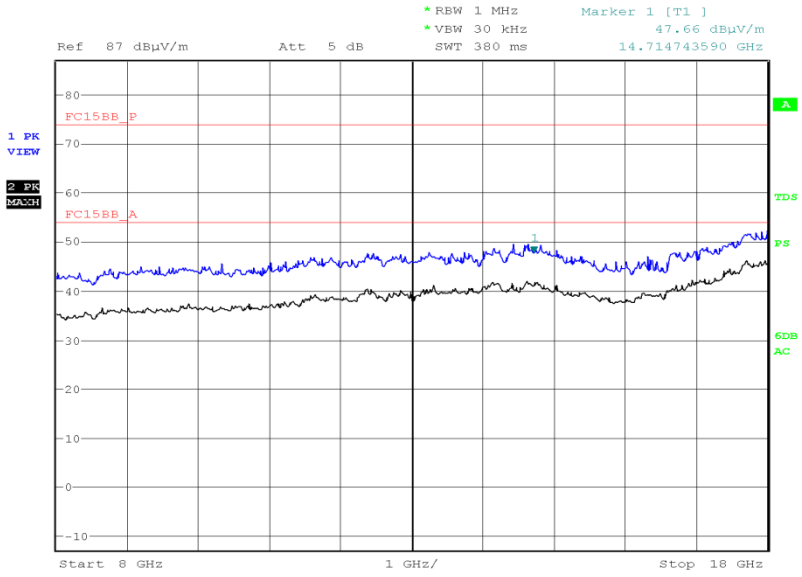
3 GHz to 8 GHz



Date: 21.DEC.2014 00:11:08

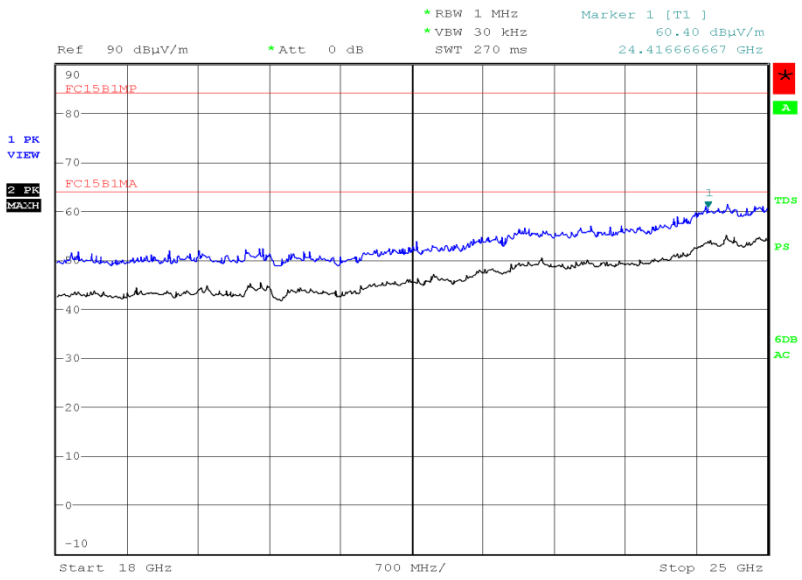
Product Service

8 GHz to 18 GHz



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

18 GHz to 25 GHz



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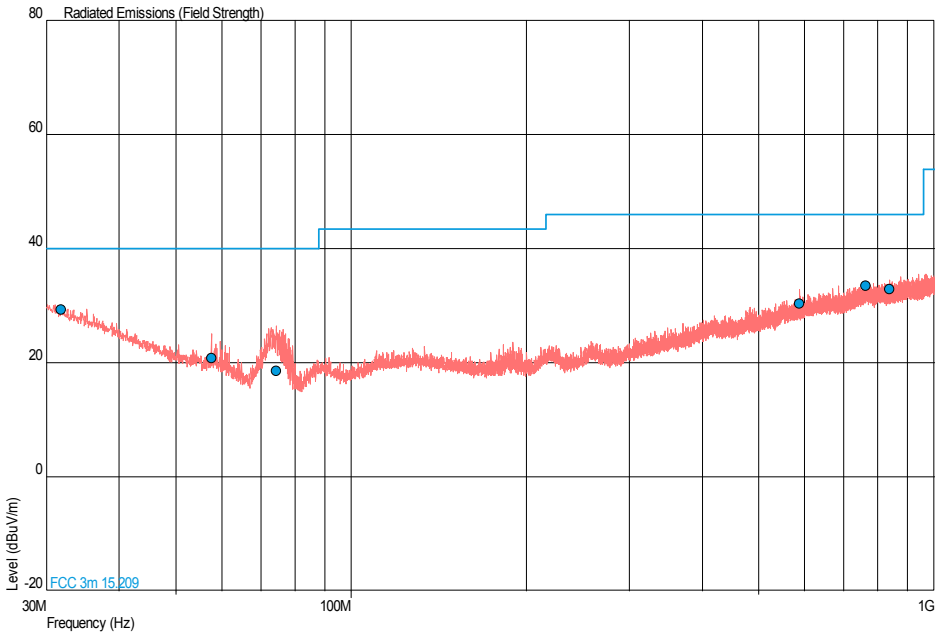
2441 MHz

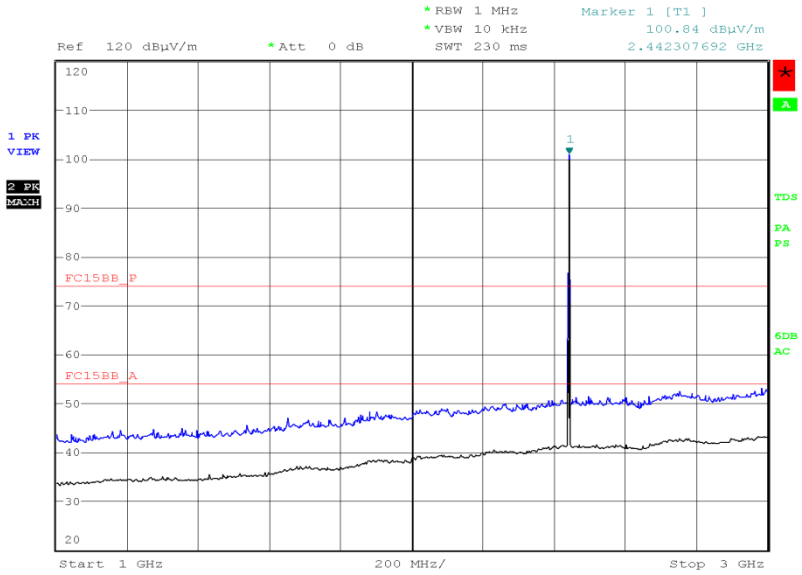
30 MHz to 1 GHz



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
31.789	29.3	29.2	40.0	100	-10.7	-70.8	214	1.00	Vertical
57.587	20.8	11.0	40.0	100	-19.2	-89.0	0	1.56	Vertical
74.416	18.6	8.5	40.0	100	-21.4	-91.5	252	1.00	Vertical
587.403	30.4	33.1	46.0	200	-15.6	-166.9	241	1.00	Horizontal
763.852	33.6	47.9	46.0	200	-12.4	-152.1	229	3.27	Horizontal
838.470	32.9	44.2	46.0	200	-13.1	-155.8	5	2.40	Horizontal

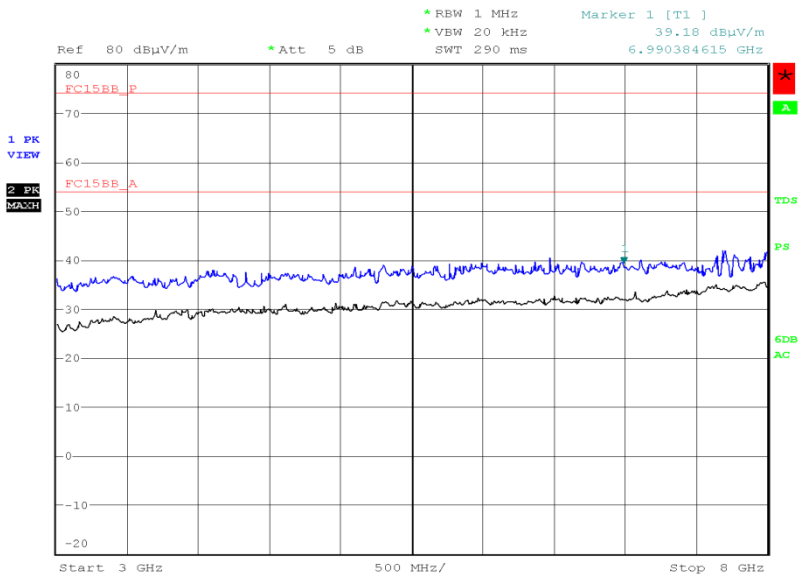
Product Service

1 GHz to 3 GHz



Date: 21.DEC.2014 00:39:01

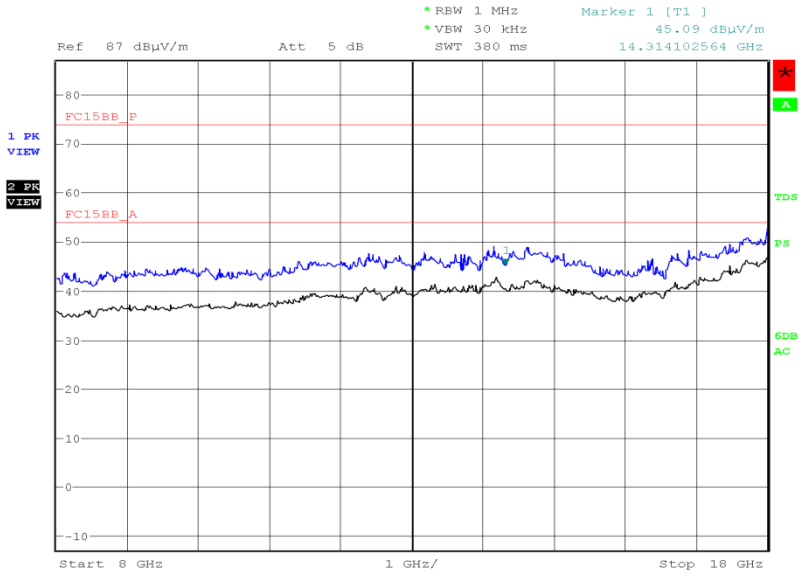
3 GHz to 8 GHz



Date: 21.DEC.2014 00:16:28

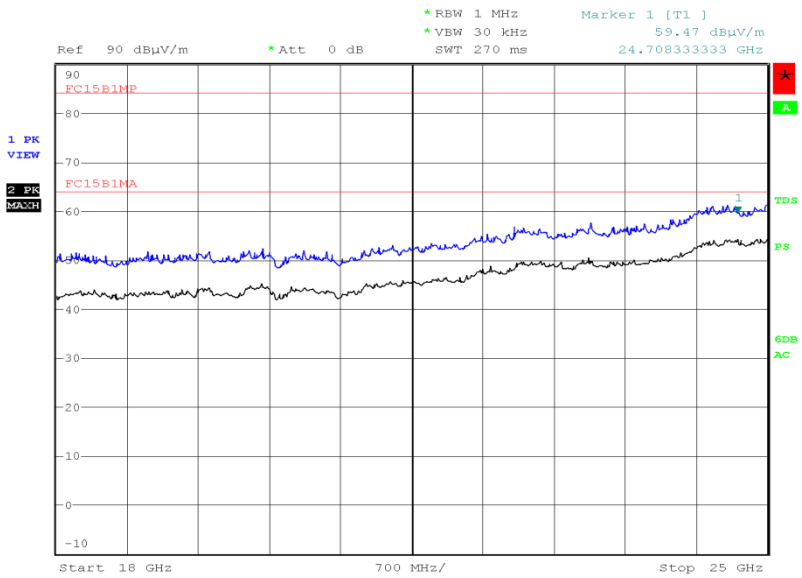
Product Service

8 GHz to 18 GHz



Date: 20.DEC.2014 20:57:34

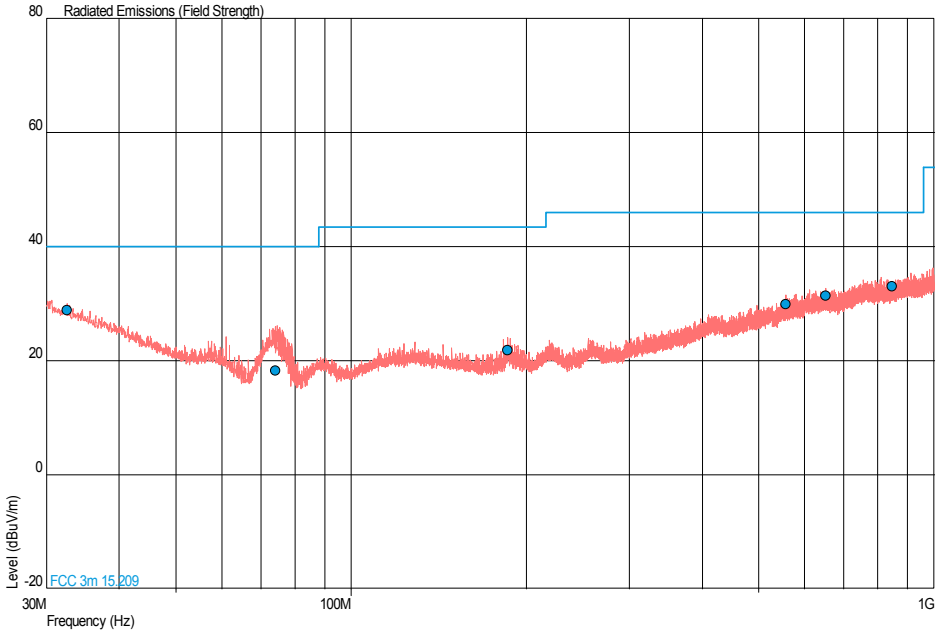
18 GHz to 25 GHz



Date: 20.DEC.2014 23:14:29

2480 MHz

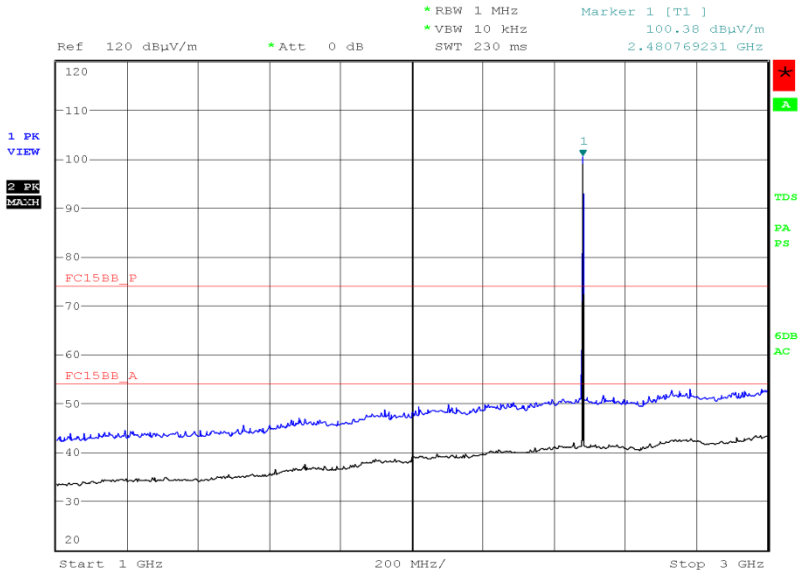
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBµV/m)	QP Level (µV/m)	QP Limit (dBµV/m)	QP Limit (µV/m)	QP Margin (dBµV/m)	QP Margin (µV/m)	Angle (Deg)	Height (m)	Polarity
32.610	28.8	27.5	40.0	100	-11.2	-72.5	65	1.00	Vertical
74.095	18.2	8.1	40.0	100	-21.8	-91.9	282	1.00	Vertical
185.606	21.9	12.4	43.5	150	-21.6	-137.6	221	1.00	Vertical
555.803	29.9	31.3	46.0	200	-16.1	-168.7	269	2.22	Horizontal
651.828	31.4	37.2	46.0	200	-14.6	-162.8	187	1.00	Horizontal
847.205	33.1	45.2	46.0	200	-12.9	-154.8	118	3.93	Vertical

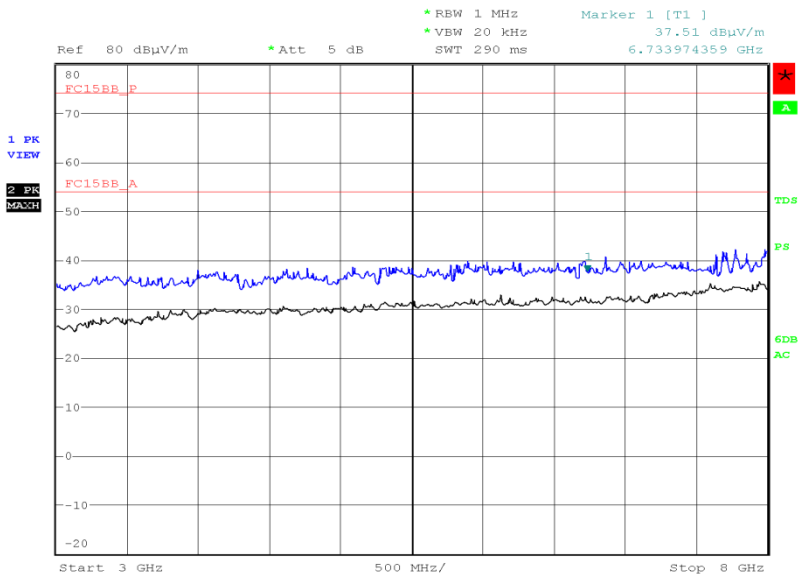
Product Service

1 GHz to 3 GHz



Date: 21.DEC.2014 00:31:10

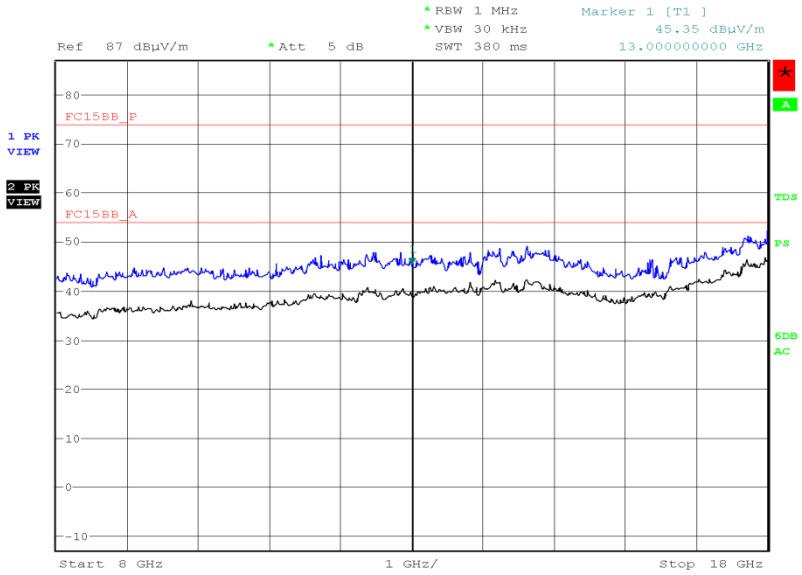
3 GHz to 8 GHz



Date: 21.DEC.2014 00:21:11

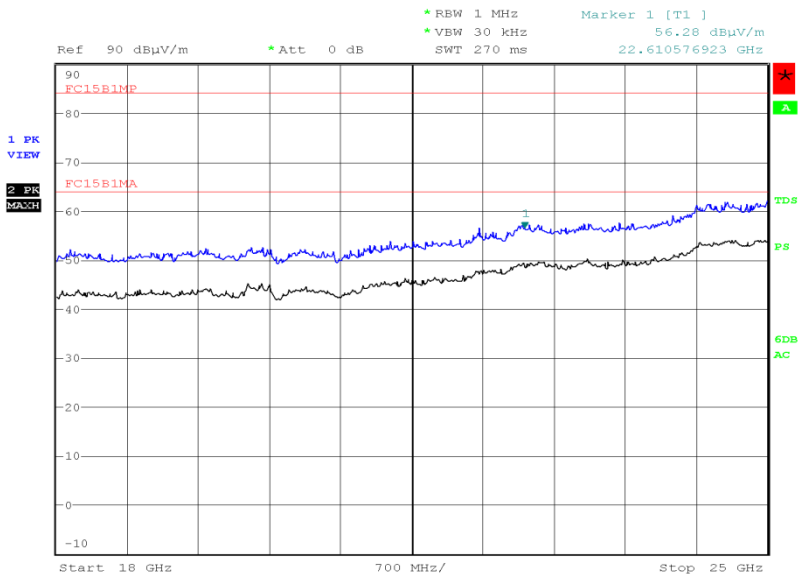
Product Service

8 GHz to 18 GHz



Date: 20.DEC.2014 21:18:29

18 GHz to 25 GHz



Date: 20.DEC.2014 23:26:11

Limit

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

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

Band Edge Emissions

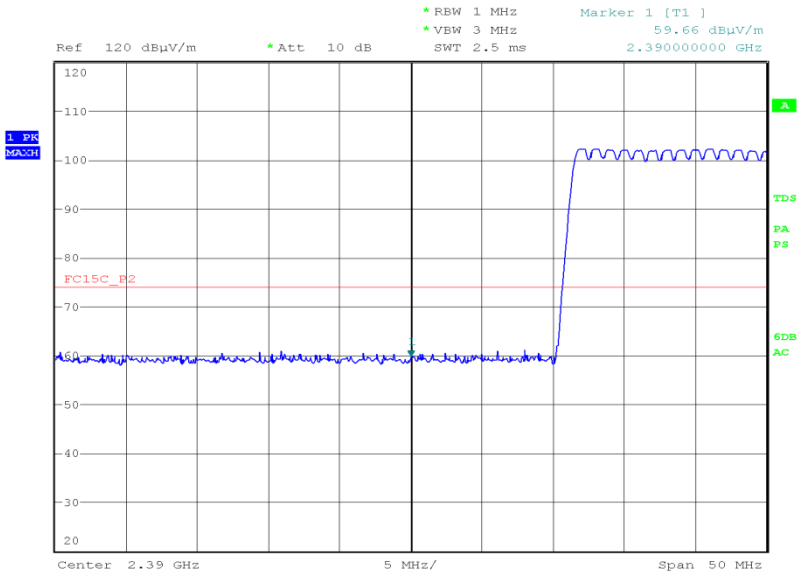
Hopping Mode

Modulation/Packet Type: GFSK/DH5

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	59.66	47.84
2483.50	59.32	47.76

2390.00 MHz

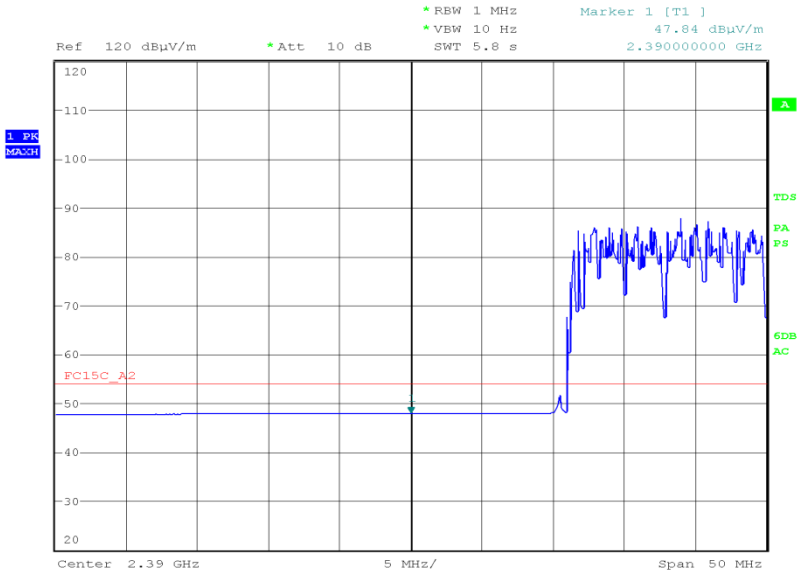
Final Peak



Date: 22.DEC.2014 20:07:38

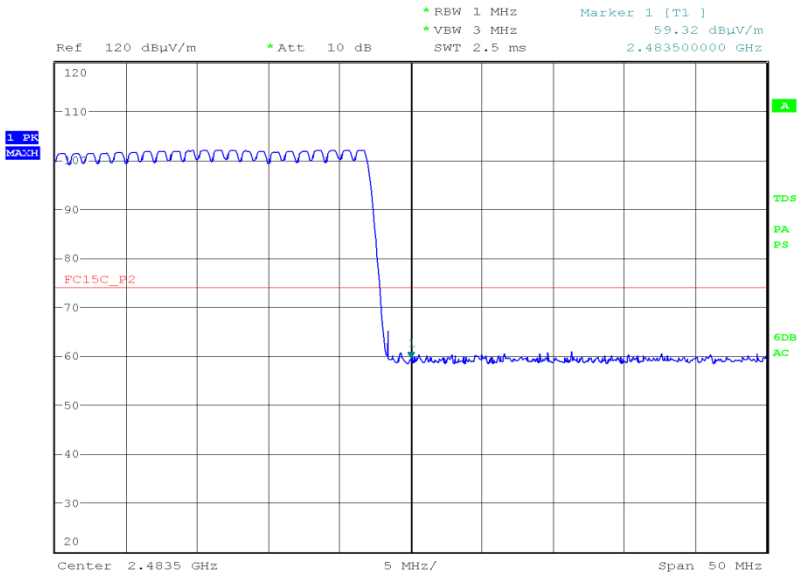
Product Service

Final Average



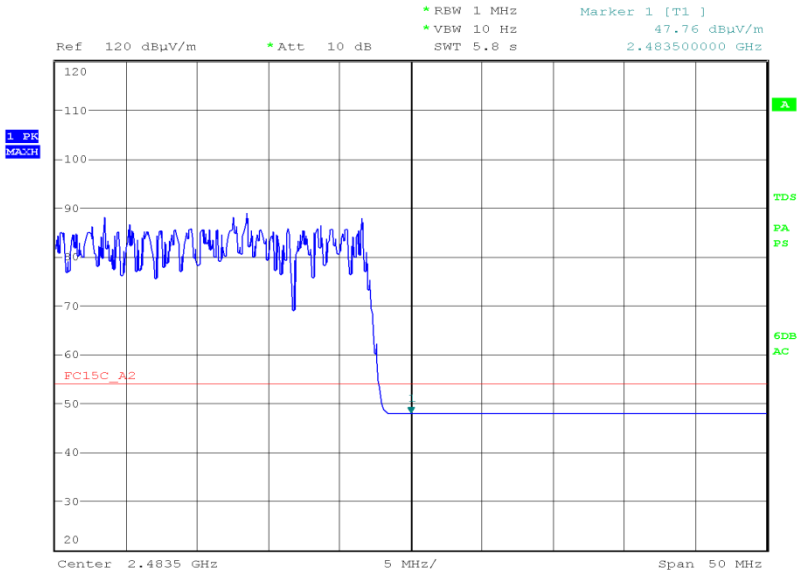
2483.50 MHz

Final Peak



Product Service

Final Average

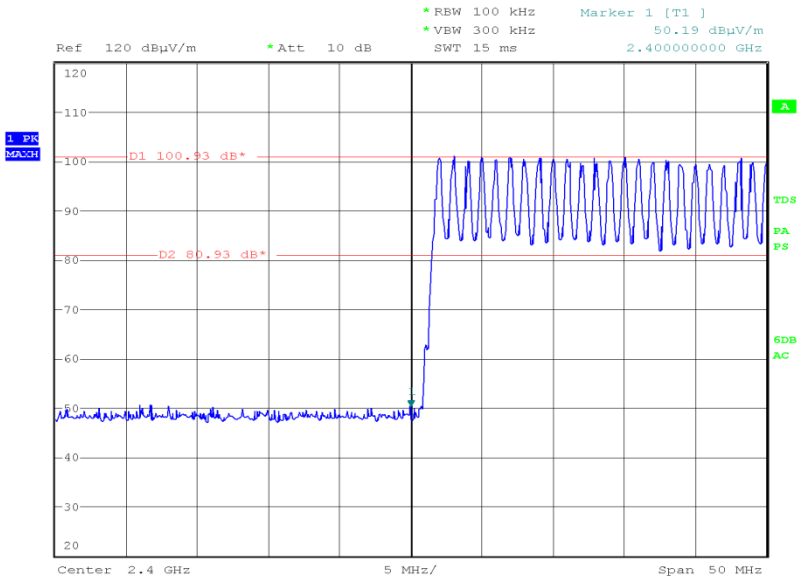


Date: 22.DEC.2014 20:16:14

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	50.19
2483.50	48.36

2400.00 MHz

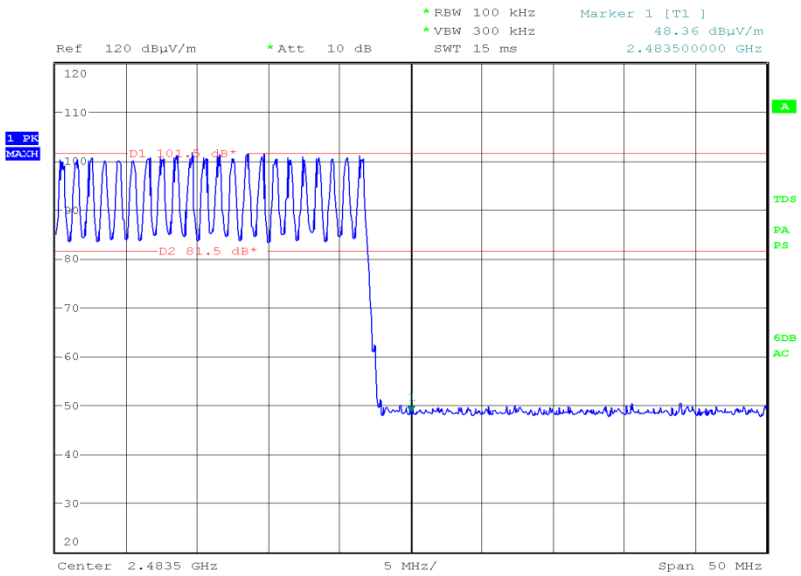
Final Peak



Product Service

2483.50 MHz

Final Peak



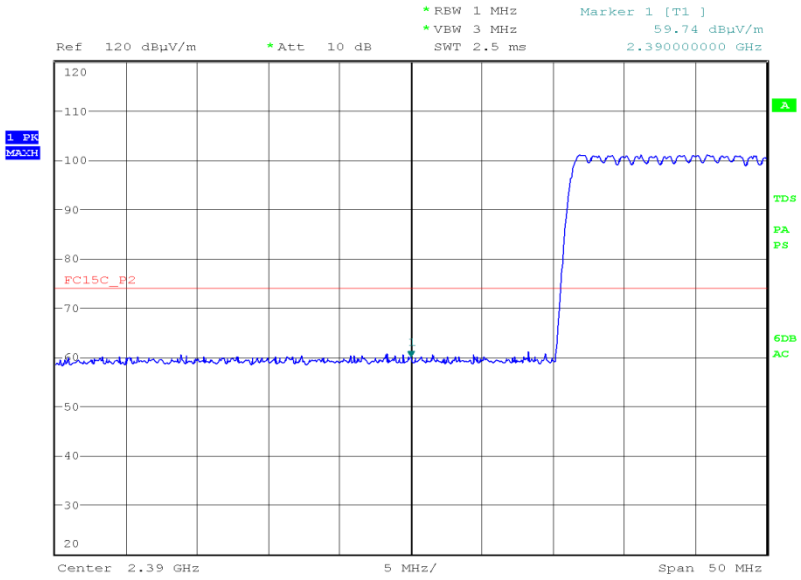
Date: 22.DEC.2014 20:11:54

Modulation/Packet Type: pi/4 DQPSK/2DH5

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	59.74	47.87
2483.50	59.47	47.76

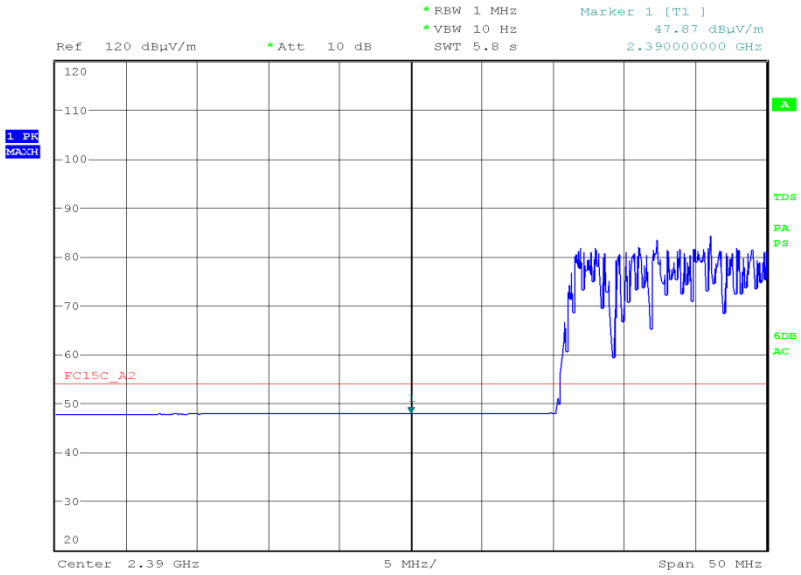
2390.00 MHz

Final Peak



Product Service

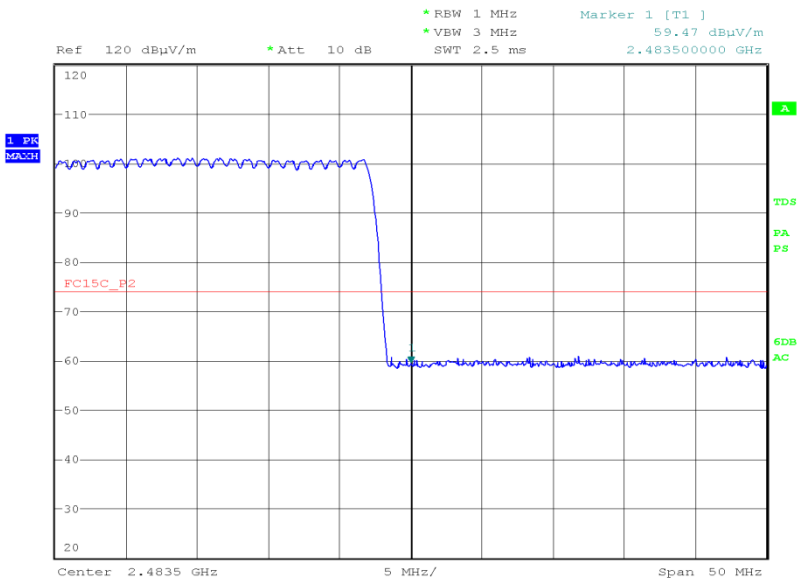
Final Average



Date: 22.DEC.2014 19:49:15

2483.50 MHz

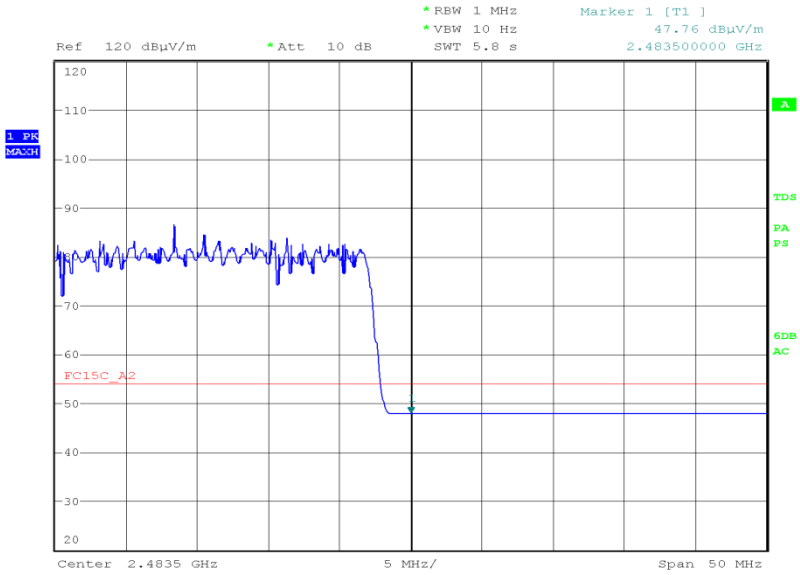
Final Peak



Date: 22.DEC.2014 19:56:47

Product Service

Final Average

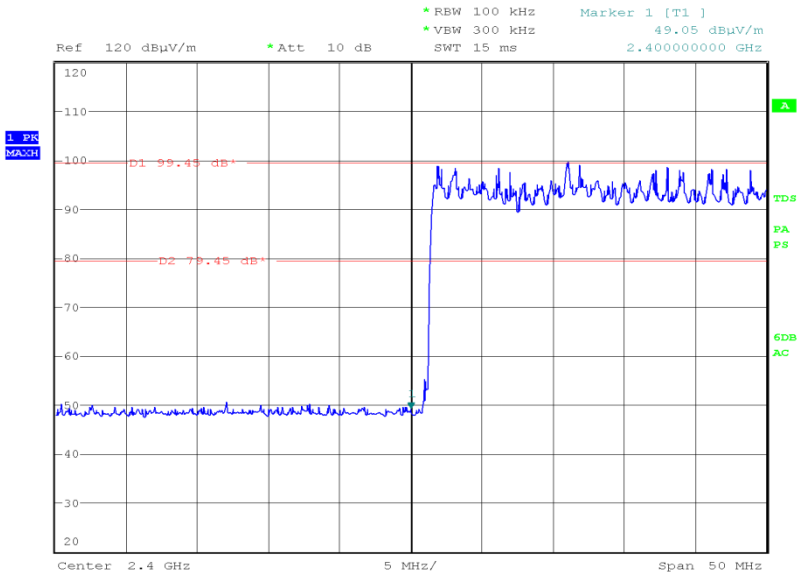


Date: 22.DEC.2014 20:02:30

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	49.05
2483.50	48.27

2400.00 MHz

Final Peak

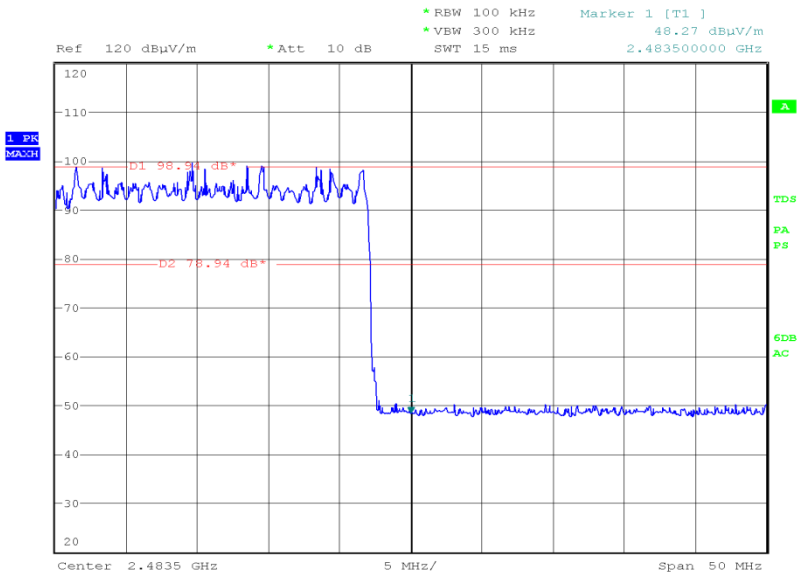


Date: 22.DEC.2014 19:52:18

Product Service

2483.50 MHz

Final Peak



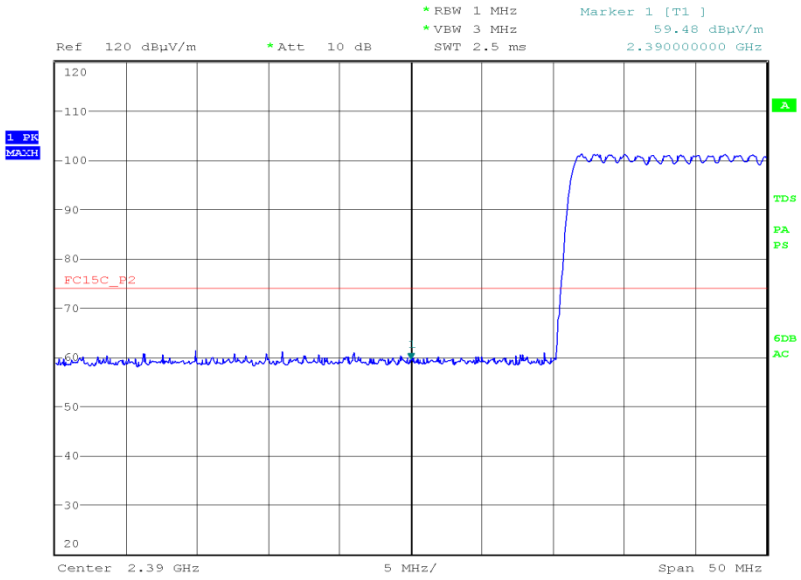
Date: 22.DEC.2014 19:55:40

Modulation/Packet Type: 8-DPSK/3DH5

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	59.48	47.84
2483.50	59.53	47.78

2390.00 MHz

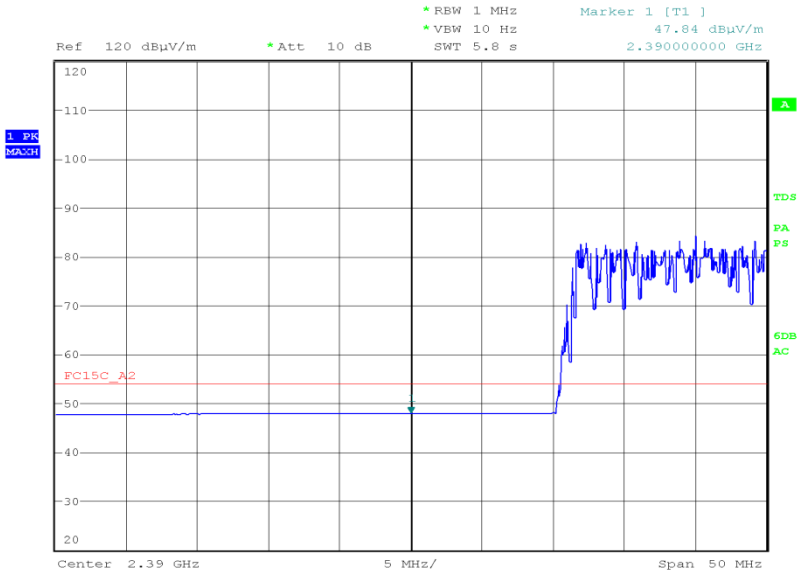
Final Peak



Date: 22.DEC.2014 19:40:48

Product Service

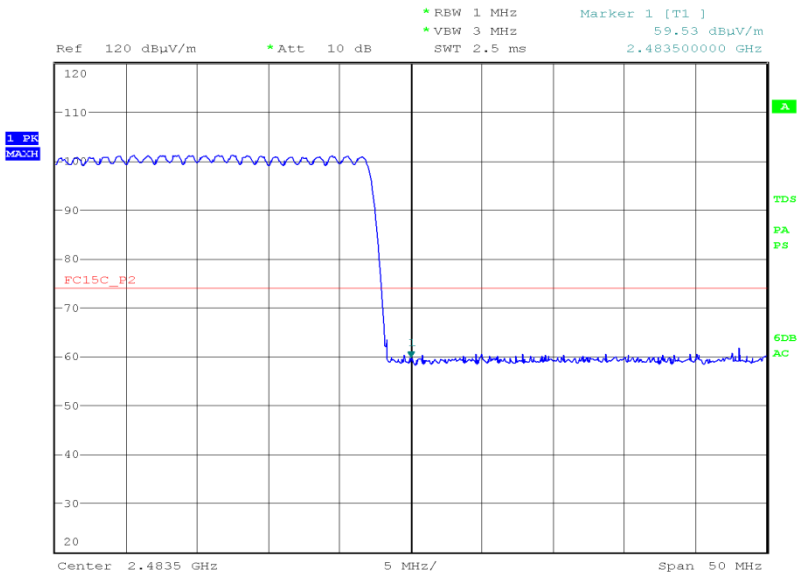
Final Average



Date: 22.DEC.2014 19:43:37

2483.50 MHz

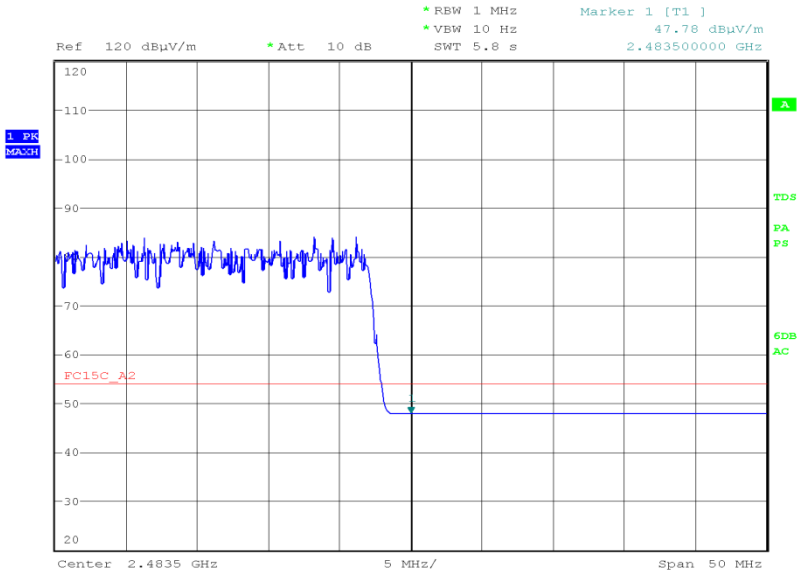
Final Peak



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

Product Service

Final Average

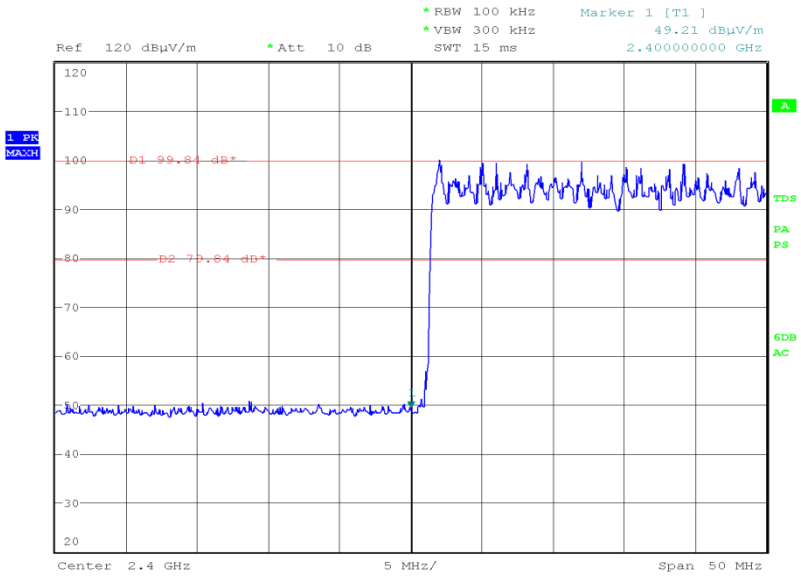


Date: 22.DEC.2014 19:34:34

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	49.21
2483.50	48.21

2400.00 MHz

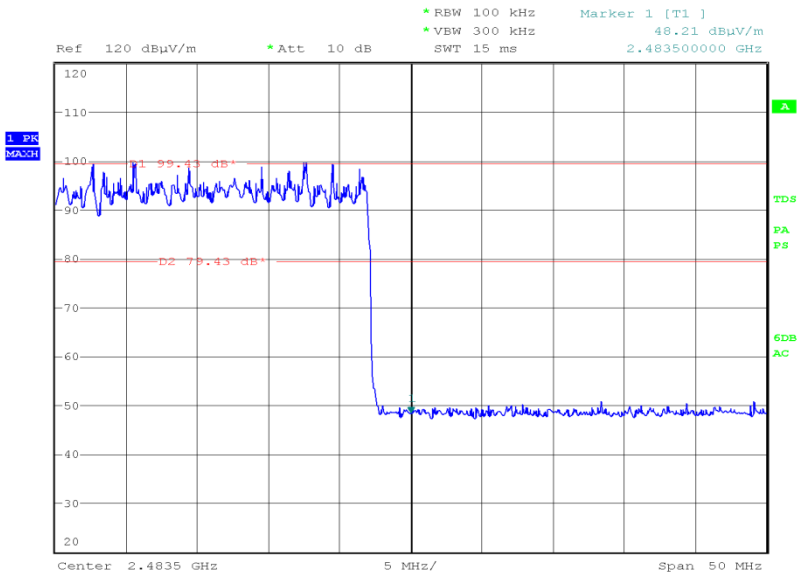
Final Peak



Product Service

2483.50 MHz

Final Peak



Date: 22.DEC.2014 19:37:26

Band Edge Emissions

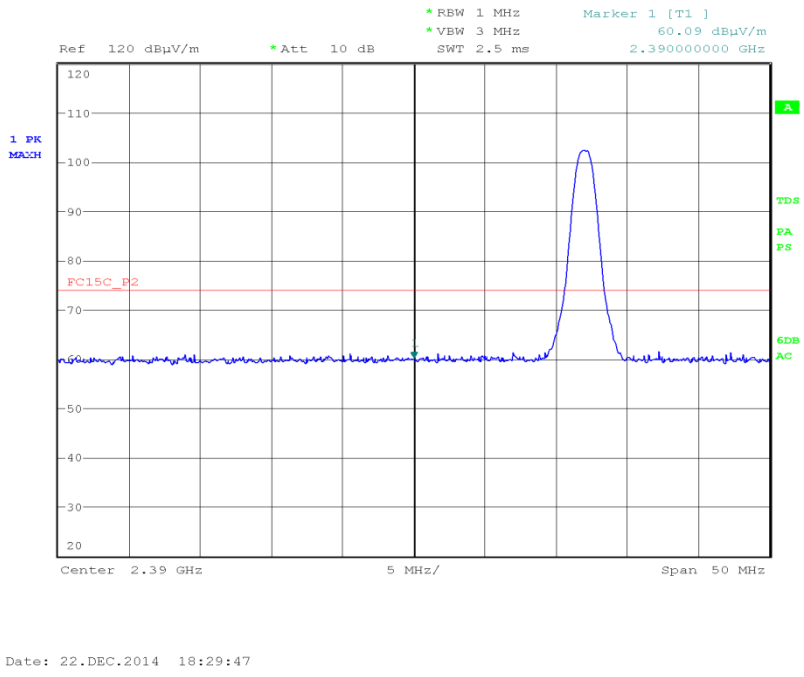
Static Mode

Modulation/Packet Type: GFSK / DH5

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	60.09	47.87
2483.50	59.23	47.82

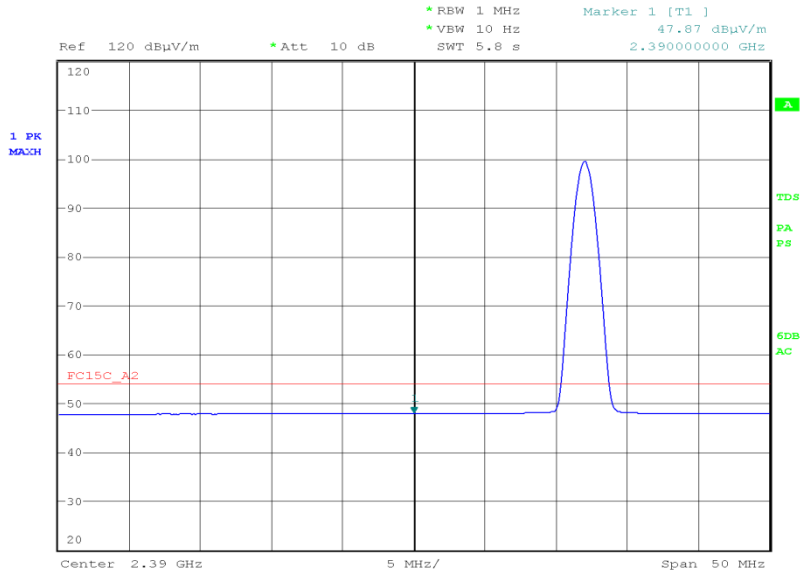
2390.00 MHz

Final Peak



Product Service

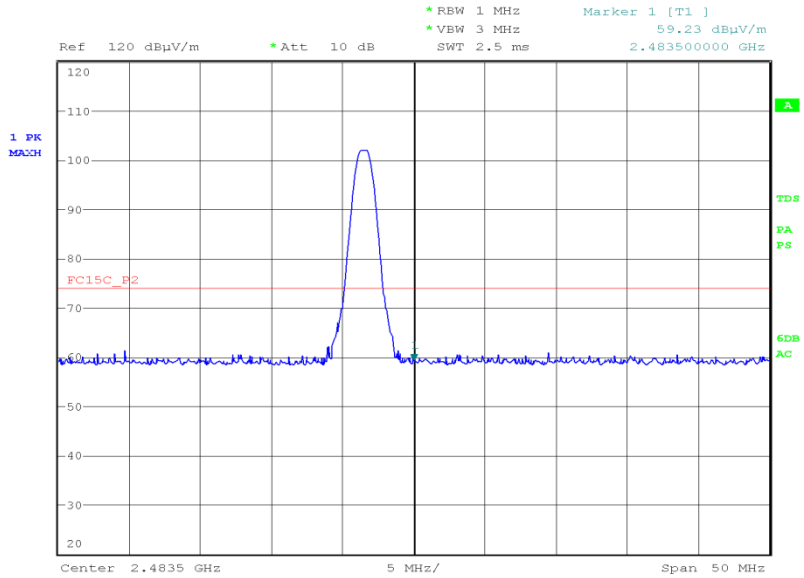
Final Average



Date: 22.DEC.2014 18:30:30

2483.50 MHz

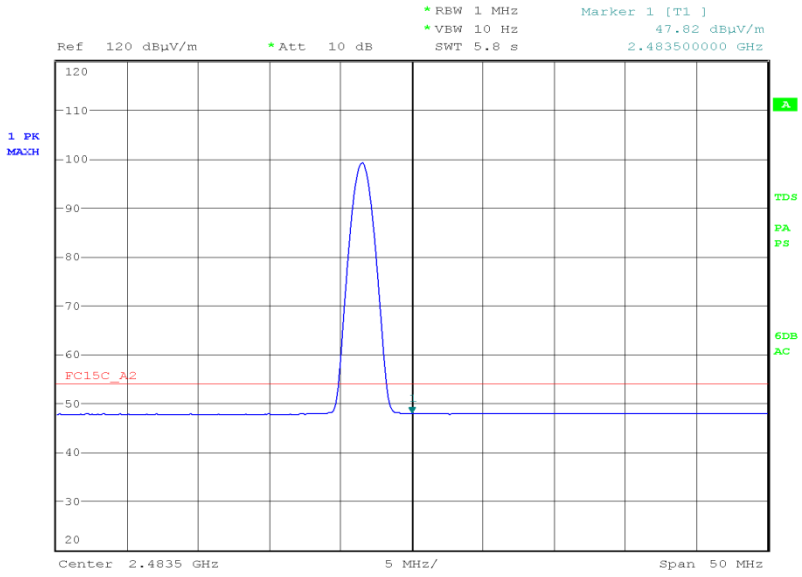
Final Peak



Date: 22.DEC.2014 18:41:14

Product Service

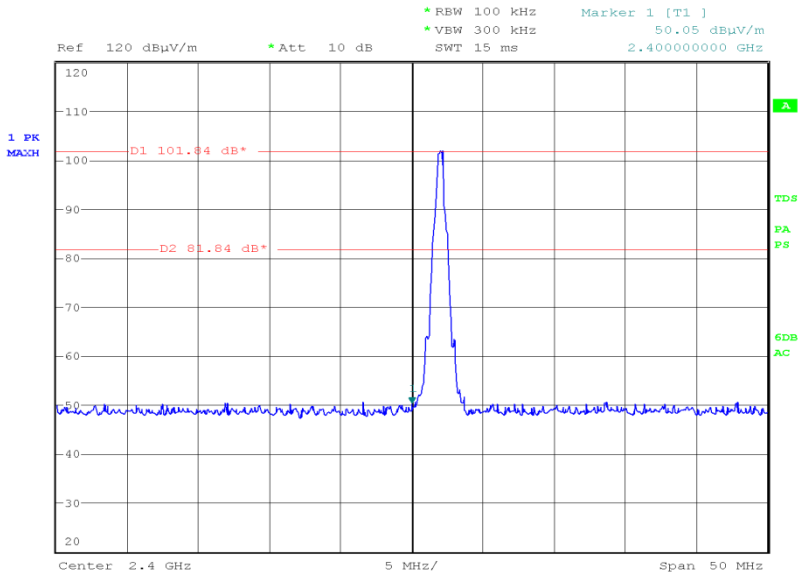
Final Average



Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	50.05
2483.50	48.19

2400.00 MHz

Final Peak

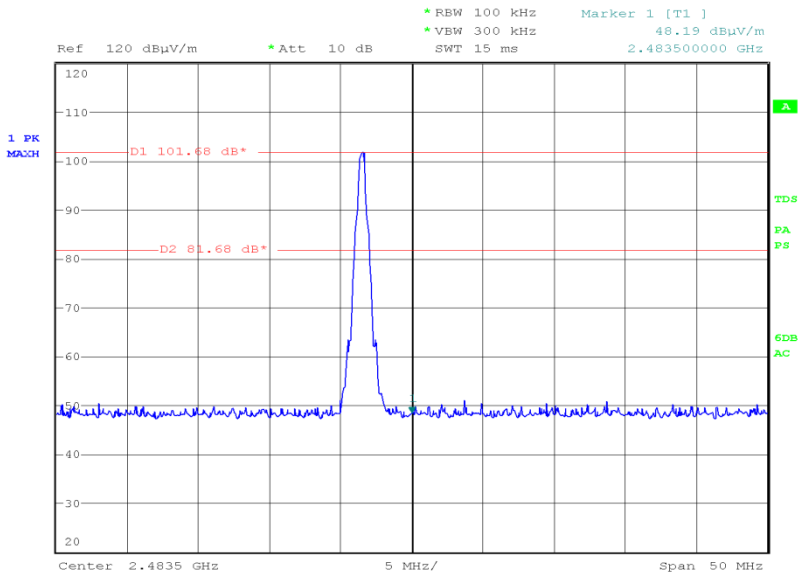


Date: 22.DEC.2014 18:33:26

Product Service

2483.50 MHz

Final Peak



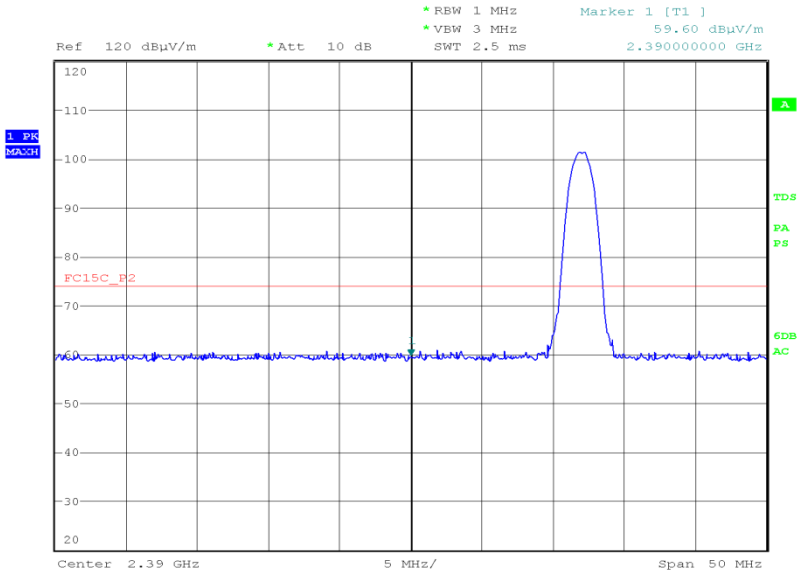
Date: 22.DEC.2014 18:40:26

Modulation/Packet Type: pi/4 DQPSK/2DH5

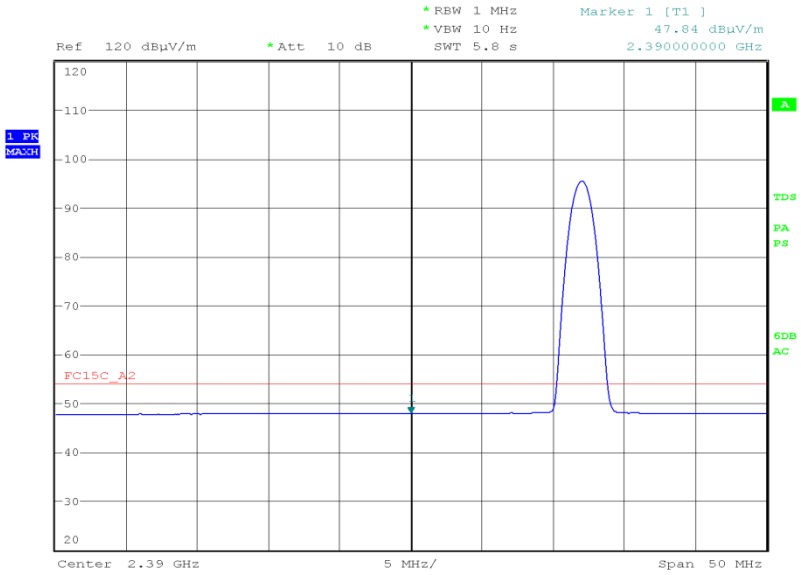
Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	59.60	47.84
2483.50	58.69	47.80

2390.00 MHz

Final Peak

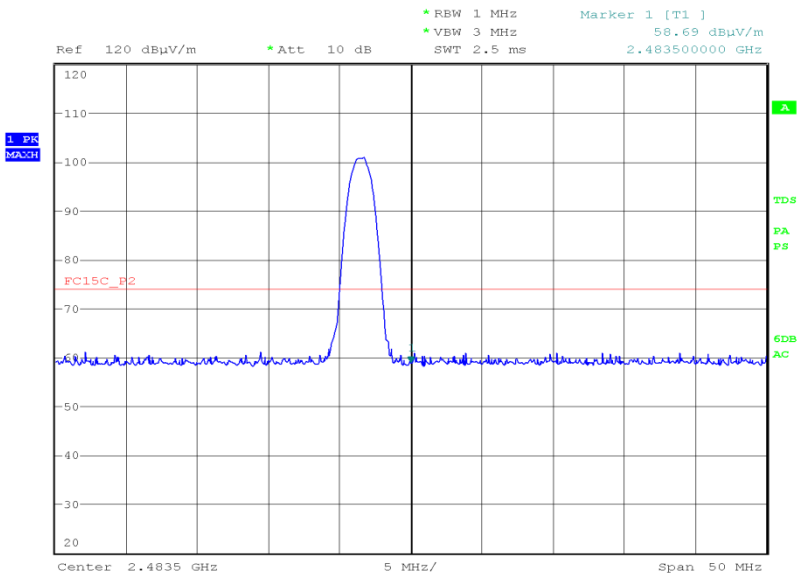


Final Average



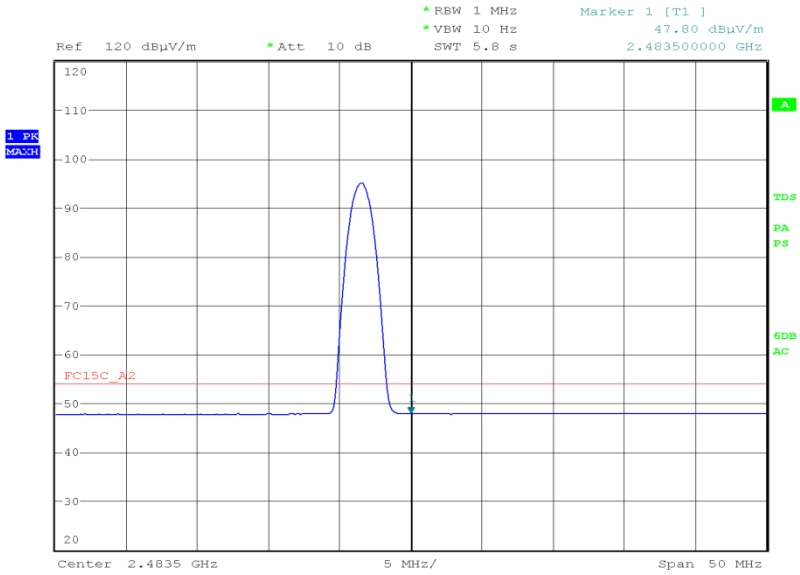
2483.50 MHz

Final Peak



Product Service

Final Average

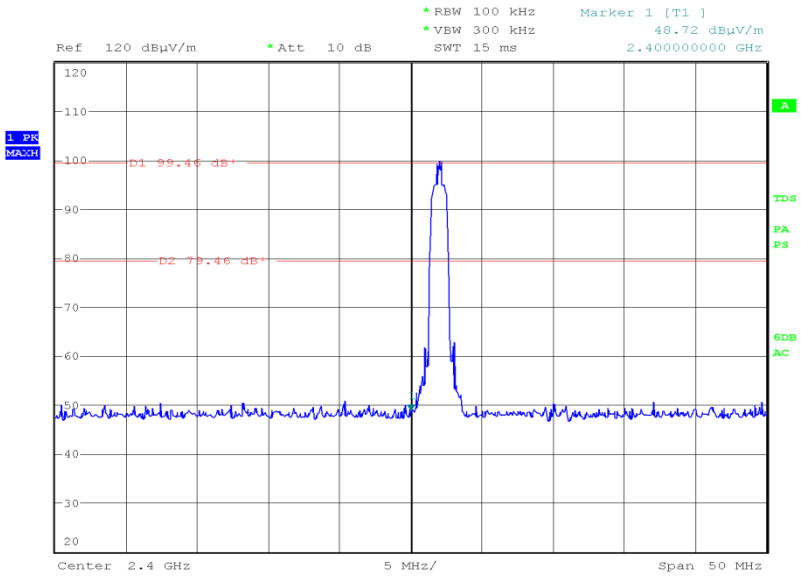


Date: 22.DEC.2014 19:07:09

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	48.72
2483.50	48.44

2400.00 MHz

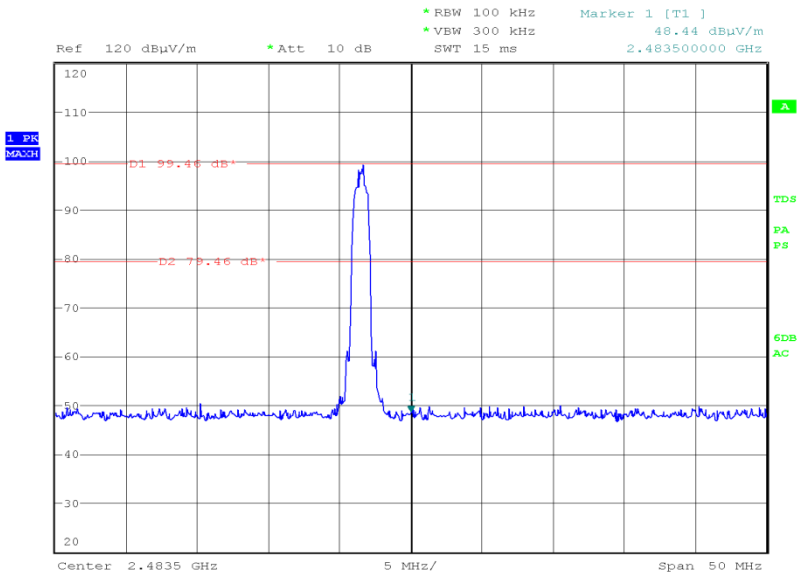
Final Peak



Date: 22.DEC.2014 18:56:29

2483.50 MHz

Final Peak



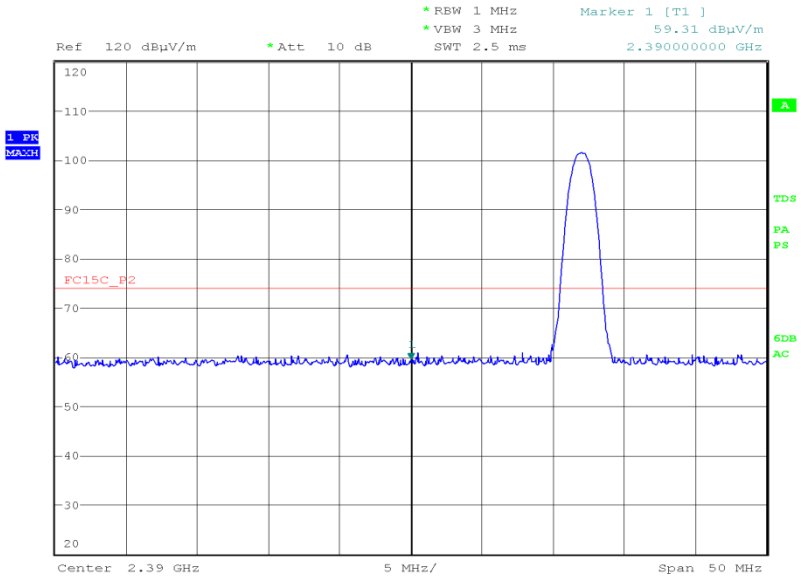
Date: 22.DEC.2014 19:05:55

Modulation/Packet Type: 8-DPSK/3DH5

Restricted Bands of Operation		
Frequency (MHz)	Final Peak (dBµV/m)	Final Average (dBµV/m)
2390.00	59.31	47.86
2483.50	58.81	47.78

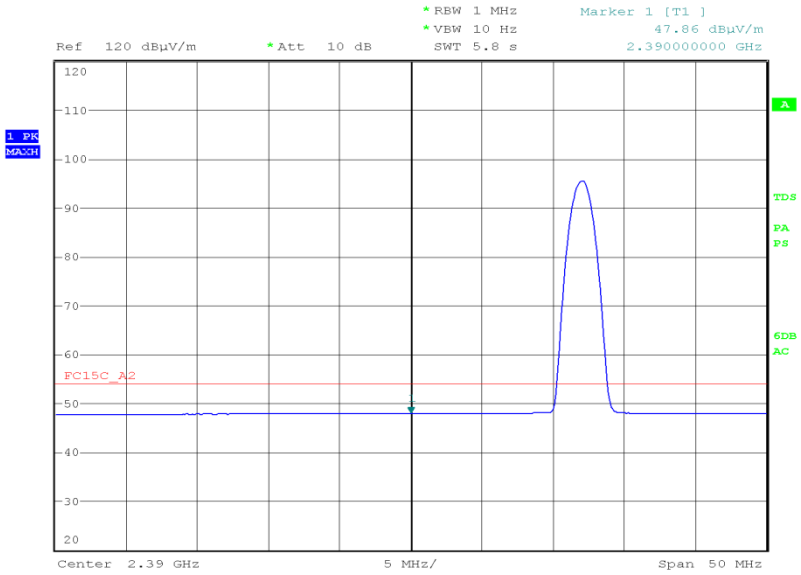
2390.00 MHz

Final Peak



Product Service

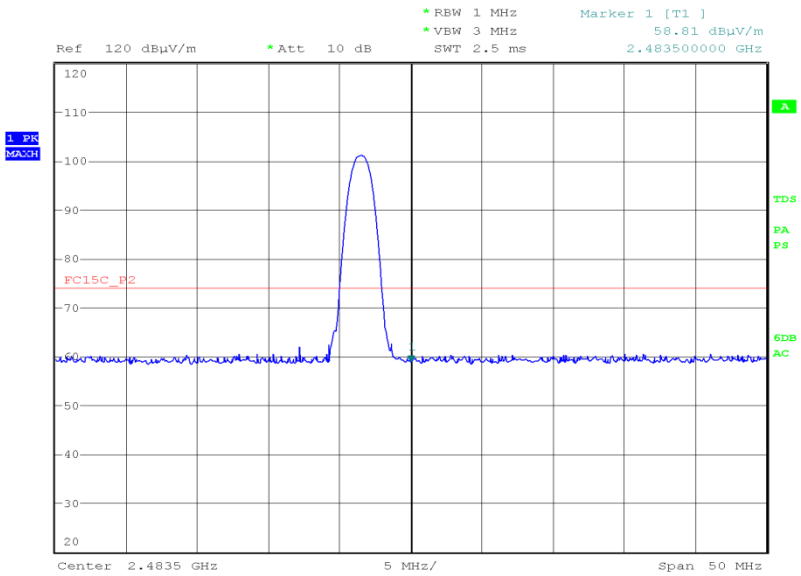
Final Average



Date: 22.DEC.2014 19:18:28

2483.50 MHz

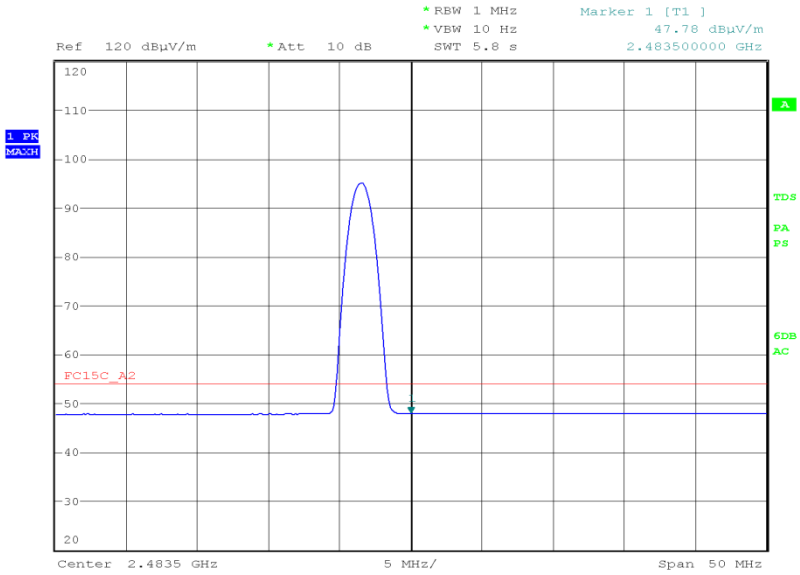
Final Peak



Date: 22.DEC.2014 19:27:15

Product Service

Final Average

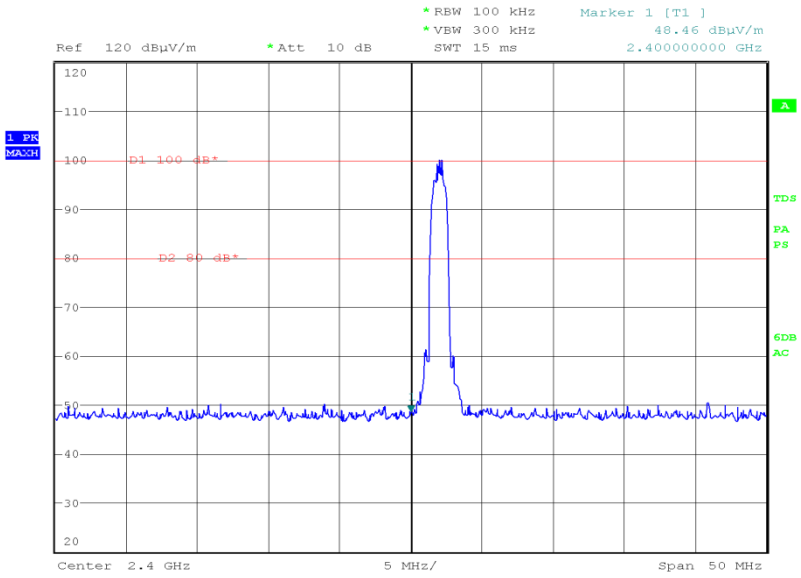


Date: 22.DEC.2014 19:27:53

Band Edge	
Frequency (MHz)	Final Peak (dBµV/m)
2400.00	48.46
2483.50	48.35

2400.00 MHz

Final Peak

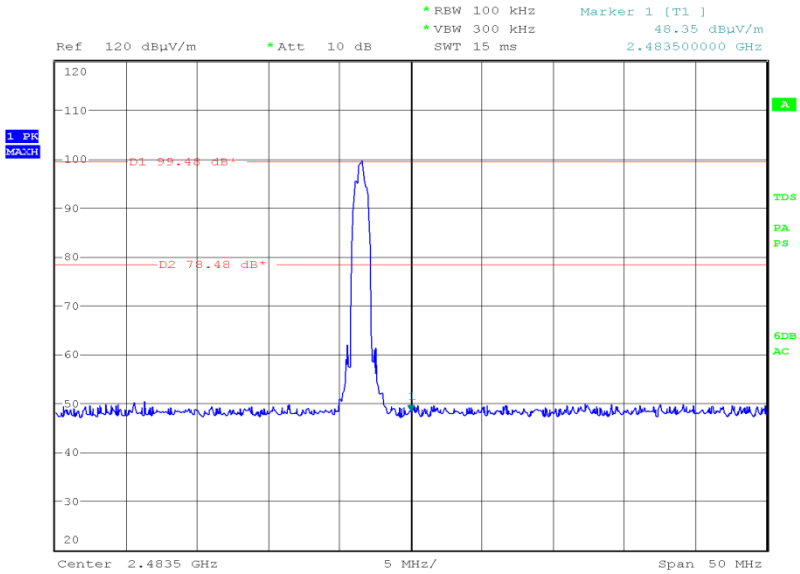


Date: 22.DEC.2014 19:19:32

Product Service

2483.50 MHz

Final Peak



Date: 22.DEC.2014 19:26:08

Limit

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

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

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1– AC Line Conducted Emissions					
Transient Limiter	Hewlett Packard	11947A	15	12	16-Dec-2015
LISN (1 Phase)	Chase	MN 2050	336	12	28-Mar-2015
Screened Room (5)	Rainford	Rainford	1545	24	06-Jan-2017
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
Section 2.2 - Frequency Hopping Systems - 20dB Bandwidth and Channel Separation					
Power Supply Unit	Farnell	LT30-2	41	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	18-Jan-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Attenuator (10dB, 20W)	Lucas Weinschel	1	3225	12	12-Dec-2015
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	18-Jan-2015
PXA Signal Analyser	Agilent Technologies	N9030A PXA	4409	12	27-Feb-2015
Section 2.3 - Frequency Hopping Systems - Channel Dwell Time and Number of Hopping Channels					
Power Supply Unit	Farnell	LT30-2	41	-	O/P Mon
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Attenuator (10dB, 20W)	Lucas Weinschel	1	3225	12	12-Dec-2015
PXA Signal Analyser	Agilent Technologies	N9030A PXA	4409	12	27-Feb-2015
Section 2.4 - Maximum Peak Conducted Output Power					
Power Supply Unit	Farnell	LT30-2	41	-	O/P Mon
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Multimeter	Fluke	79 Series III	611	12	1-Sep-2015
Attenuator (10dB, 50W)	Aeroflex / Weinschel	47-10-34	3166	12	16-Sep-2015
Hygrometer	Rotronic	I-1000	3220	12	24-Jul-2015
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	6-Aug-2015
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	3-Sep-2015
P-Series Power Meter	Agilent Technologies	N1911A	3980	12	22-Sep-2015
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	22-Sep-2015
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3982	12	22-Sep-2015
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3983	12	22-Sep-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	24-Sep-2015
Section 2.5 - EIRP Peak Power					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	2-May-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (DRG Horn)	ETS-LINDGREN	3115	3125	12	16-Jul-2015
Signal Generator: 10MHz to 20GHz	Rohde & Schwarz	SMR20	3475	12	10-Feb-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	22-Sep-2015
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3983	12	22-Sep-2015

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.5 - Spurious and Band Edge Emissions					
Antenna (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	26-Nov-2015
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	2-May-2015
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
Filter (High Pass)	Lorch	SHP7-7000-SR	566	12	24-Feb-2015
Pre-Amplifier	Phase One	PS04-0086	1533	12	23-Dec-2015
Pre-Amplifier	Phase One	PSO4-0087	1534	12	23-Dec-2015
Screened Room (5)	Rainford	Rainford	1545	24	06-Jan-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
Amplifier (8 - 18GHz)	Phase One	PS06-0061	3176	12	11-Aug-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	27-Oct-2015
'3.5mm' - '3.5mm' RF Cable (1m)	Rhophase	3PS-1803-1000-3PS	3697	12	28-Feb-2015
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	1-Oct-2015
Suspended Substrate Highpass Filter	Advance Power Components	11SH10-3000/X18000-O/O	4411	12	21-Mar-2015
Suspended Substrate Highpass Filter	Advance Power Components	11SH10-3000/X18000-O/O	4412	12	21-Mar-2015

TU – Traceability Unscheduled
O/P MON – Output Monitored with Calibrated Equipment

Product Service

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	MU
Frequency Hopping Systems - 20dB Bandwidth and Channel Separation	± 16.74 kHz
Frequency Hopping Systems - Channel Dwell Time and Number of Hopping Channels	-
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	Conducted: ± 3.08 dB Radiated: 30 MHz to 1 GHz: ± 5.1 dB Radiated: 1 GHz to 40 GHz: ± 6.3 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).