

Test Report No.:		14081901.fcc01_Rev01		Page 1 of 39	
<i>Client:</i>	Tacx b.v. Rijksstraatweg 52, 2241BW Wassenaar, Netherlands				
<i>Test Item:</i>	Digital Transmission System (DTS) ANT				
<i>Identification:</i>	T2180 Vortex	<i>Serial Number:</i>	801407144 (conducted tests) and 801407091 (radiated tests)		
<i>Project No.:</i>	14081901	<i>Date of Receipt:</i>	October 07, 2014		
<i>Testing Location:</i>	TÜV Rheinland Nederland B.V. Eiberkamp 10 9351VT Leek				
<i>Test Specification:</i>	FCC 47 CFR Part 15, Subpart C, Section 15.247 (10-1-13 Edition) RSS-Gen (Issue 4, November 2014) an RSS-210 (Issue 8, December 2010) ANSI C63.10-2009 KDB Publication No. 558074 D01 V3.02: Measurement of Digital Transmission Systems Operating under Section 15.247 (06/05/14)				
<i>Test Result:</i>	<i>The test item passed the test specification(s).</i>				
<i>Testing Laboratory:</i>	TÜV Rheinland Nederland B.V. Eiberkamp 10 9351 VT Leek				
<i>Tested by:</i>			<i>Reviewed by:</i>		
2014-12-18	R. van der Meer / Inspector		2014-12-18	P. de Beer / Reviewer	
<i>Date</i>	<i>Name/Position</i>	<i>Signature</i>	<i>Date</i>	<i>Name/Position</i>	<i>Signature</i>
<i>Other Aspects:-.</i>					
<i>Abbreviations:</i> P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested					
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TEST SUMMARY

5.1.1 CONDUCTED MEASUREMENTS AT ANTENNA PORT

RESULT: PASS

5.1.2 6dB AND 99% BANDWIDTH

RESULT: PASS

5.1.3 PEAK POWER SPECTRAL DENSITY

RESULT: PASS

5.1.4 BAND EDGE CONDUCTED EMISSIONS

RESULT: Pass

5.1.5 RADIATED SPURIOUS EMISSIONS OF TRANSMITTER

RESULT: PASS

5.1.6 RADIATED SPURIOUS EMISSIONS OF TRANSMITTER IN RESTRICTED BANDS

RESULT: PASS

5.2.1 AC POWER LINE CONDUCTED EMISSION OF TRANSMITTER

RESULT: PASS

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1. General Remarks

1.1 Complementary Materials

There is no attachment to this test report.

2. Test Sites

2.1 Test Facilities

The Federal Communications Commission and Industry Canada has reviewed the technical characteristics of the test facilities at TÜV Rheinland Nederland B.V., located in Leek, 9351VT Eiberkamp 10, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948.

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 90828. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The description of the test facilities has been filed to Industry Canada under registration number 2932G-2. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

Normal test conditions:

Temperature (*) : +15°C to +35°C
Relative humidity(*) : 20 % to 75 %
Supply voltage : 120VAC/60Hz

When it was impracticable to carry out the tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests are stated separately.

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2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Model Name	Inventory number	Calibration date (mm/yyyy)	Calibration due date (mm/yyyy)
For Antenna Port Conducted Emissions					
Temperature-Humiditymeter	Extech	SD500	A00446/ 99857	03/2014	03/2015
Spectrum Analyzer	Rohde & Schwarz	FSV	A00337/ 99733	08/2014	08/2015
For Radiated Emissions					
Measurement Receiver	Rohde & Schwarz	ESCI	A00314/ 99699	03/2014	03/2015
RF Cable S-AR	Gigalink	APG0500	A00447/ 99858	01/2014	01/2015
Controller	Maturo	SCU/088/ 8090811	A00450/ 99861	N/A	N/A
Controller	EMCS	DOC202	A00257/ 99608	N/A	N/A
Test facility	Comtest	FCC listed: 90828 IC: 2932G-2	A00235/ 99580	04/2014	04/2017
Spectrum Analyzer	Rohde & Schwarz	FSV	A00337/ 99733	08/2014	08/2015
Antenna mast	EMCS	AP-4702C	A00258/ 99609	N/A	N/A
Temperature-Humiditymeter	Extech	SD500	A00444/ 99855	03/2014	03/2015
Guidehorn 1-18 GHz	EMCO	3115	A00009/ 12484	04/2014	04/2015
Guidehorn 18-40 GHz	EMCO	RA42-K-F-4B-C	A0012/ 12488	04/2014	04/2015
Biconilog Testantenna	Teseq	CBL 6111D	A00466/ 99877	06/2014	06/2015
2.4 GHz bandreject filter	BSC	XN-1783	A00065/ 14450	N/A	N/A
Bandpass filter 4-10 GHz	Reactel	7AS-7G-6G- 511	A00131/ 99076	N/A	N/A
Bandpass filter 10-26 GHz	Reactel	9HS- 10G/26.5G- S11	A00151/ 99136	N/A	N/A
Preamplifier 0.5 - 18 GHz	Miteq	AMF-5D- 005180-28- 13p	A00247/ 99596	N/A	N/A
Filterbox	EMCS	RFS06S	A00255/ 99606	08/2014	08/2015

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Kind of Equipment	Manufacturer	Model Name	Inventory number	Calibration date (mm/yyyy)	Calibration due date (mm/yyyy)
For AC Powerline Conducted Emissions					
Pulse limiter	R&S	ESH3-Z2	A00051/ 13313	01/2014	01/2015
Variac	RFT	LSS020	A00171/ 99220	NA	NA
LISN	EMCO	3625/2	A00022/ 12512	01/2014	01/2016
Measurement Receiver	Rohde & Schwarz	ESCS30	A00726	09/2014	09/2015
Shielded room for Conducted emissions	--	--	A00437/ 99848	NA	NA
Temperature-Humiditymeter	Extech	SD500	A00444/ 99855	03/2014	03/2015

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025:2005 has been confirmed before testing.

2.3 Measurement Uncertainty

Table 2: Emission Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.5dB
	> 1GHz	±0.7dB
Radiated Emission	150kHz - 30MHz	±5.0dB
	30MHz - 1GHz	±5.0dB
	> 1GHz	±5.5dB
AC Powerline conducted emissions	150kHz - 30MHz	±3.5dB

3. General Product Information

3.1 Product Function and Intended Use

The brand Tacx model T2180 Vortex, hereafter referred to as EUT, is a transmitter used in an interactive hometrainer system for bicycles to transmit performance data to PC, Tablet or smartphone. The transmitter will support and utilizes GFSK modulation techniques. Although the chip used is capable of multiple data-rates only 1 Mbps is used. The system also incorporates a BLE transceiver but both transmitters never transmit at the same time. The BLE transceiver is covered in a separate testreport.

The content of this report and measurement results have not been changed other than the way of presenting the data.

3.2 System Details

Details and an overview of the system and all of its components, as it has been tested, may be found below.

EUT	:	Digital Transmission System, ANT
Manufacturer	:	Tacx b.v.
Brand	:	Tacx
Model(s)	:	T2180 Vortex
Serial Number	:	801407144 (conducted tests) and 801407091 (radiated tests)
Voltage input rating	:	100 – 230 Vac
Voltage output rating	:	--
Current input rating	:	--
Antenna	:	Internal, integrated on the PCB
Antenna Gain	:	+ 2dBi (stated by the applicant)
Operating frequency	:	2403 MHz-2480 MHz.
Modulation	:	GFSK
Data-rate	:	1 Mbps
Remarks	:	n.a.



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Table 3: Interfaces present on the EUT

There are no interface ports present on the EUT.

3.3 Countermeasures to achieve EMC Compliance

No additional measures were employed to achieve compliance.

4. Test Set-up and Operation Modes

4.1 Test Methodology

The test methodology used is based on the requirements of RSS-GEN, RSS-210, 47 CFR Part 15, Sections 15.31, 15.33, 15.35, 15.205, 15.207, 15.209, 15.247.

The test methods, which have been used, are based on KDB 558074 D01 and ANSI C63.10-2009.

For details, see under each test item.

4.2 Operation Modes

Testing was performed at the lowest operating frequency (2403 MHz), at the operating frequency in the middle of the specified frequency band (2442 MHz) and at the highest operating frequency (2480 MHz). These operation modes were selected after review of the capabilities and characteristics of the EUT. The test software as mentioned in section 4.4 enabled the settings of these modes.

The EUT has been tested in the modes as described in table below

Operation Mode	EUT Status	Frequency (MHz)	TX power
Transmit (Tx)	On	2403	4 (=max)
Transmit (Tx)	On	2442	4 (=max)
Transmit (Tx)	On	2480	4 (=max)

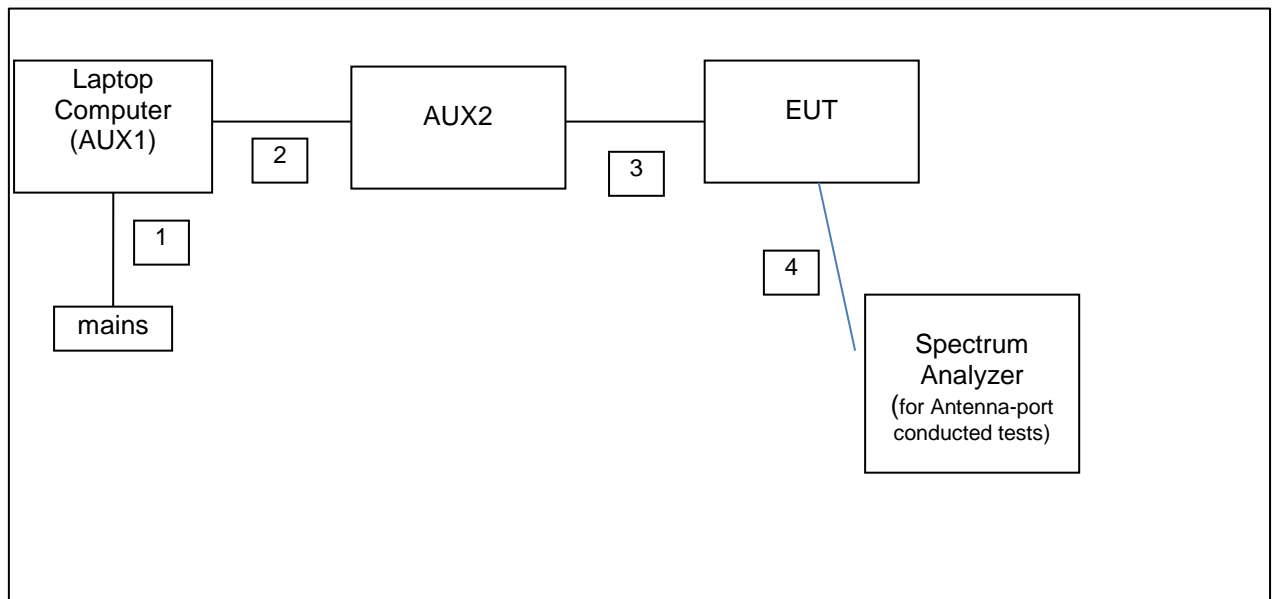
4.3 Physical Configuration for Testing

For programming purposes only the EUT was connected to the usb port of a laptop computer. The laptop computer was used to configure the EUT to continuously transmit at a specified output power and channel as specified in the testdata. See section 4.5 for Auxiliary details.

The EUT was tested on a stand-alone basis and the test system was configured in a typical fashion (as a customer would normally use it).

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.10-2009 and KDB 558074 D01.

Figure 1: Test Setup Diagram



Notes:

For more details, refer to the document: Test Set-Up Photographs document.

No.	Port	From	To	Remarks
1.	Mains	Mains	Laptop (AUX1)	Through a AC/DC power supply
2.	Data com.	Laptop USB	AUX2	--
3.	Data com.	AUX2	EUT	--
4.	Antenna port	EUT	Spectrum analyzer	Conducted tests

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4.4 Test Software

A continuous transmit mode could be initiated by using test software as supplied by the applicant. The test software was used to define various different operational modes of the EUT for the purpose of compliance testing. The version of the test software, as supplied by the applicant and used during all tests is:

Test software : ANTware2 v 3.1.0

Batch files programmed by the applicant are used to make the required settings.

This software was running on a laptop computer (AUX1). It was used to enable the test operation modes listed in section 4.2 as appropriate.

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4.5 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

The auxiliary items were not used during testing, but instead are only used to make the required settings for testing. For setting the transmit frequency, enable hopping etc.

1. AUX1

Product: Laptop Computer
Brand: HP
Model: Compaq 6710b
Serial Number: CNU8150MD3
Remark: host for testsoftware, property applicant

2. AUX2

Product: Programming interface
Brand: Segger
Model: J-Link v 9.2
Serial Number: 59200824
Remark: property applicant

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5. Test Results

5.1 Conducted Measurements at Antenna Port

5.1.1 Conducted Output Power

RESULT: PASS

Date of testing: 2014-10-29

Requirements:

FCC 15.247(b)(3)

For systems using digital modulation in the 2400-2483.5 MHz band, the maximum peak output power is 1W (+30dBm).

RSS-210 section A8.4(4): the e.i.r.p. shall not exceed 4 W (+36 dBm).

Test procedure:

The Peak Conducted Output Power was measured using the method according to section 9.1.1 in KDB 558074 D01.

The maximum peak output power (conducted) was measured at the antenna connector with a spectrum analyzer. The final measurement takes into account the loss generated by all the involved cables.

Notes: $mW = 10^{(dBm/10)}$
 $dBm = 10 \times \log(mW)$

plots : Peak power plots,

Figures 1a, 1b and 1c show plots of the Peak Power outputs, correction factors (= 0.6dB Cableloss) included in the reading.

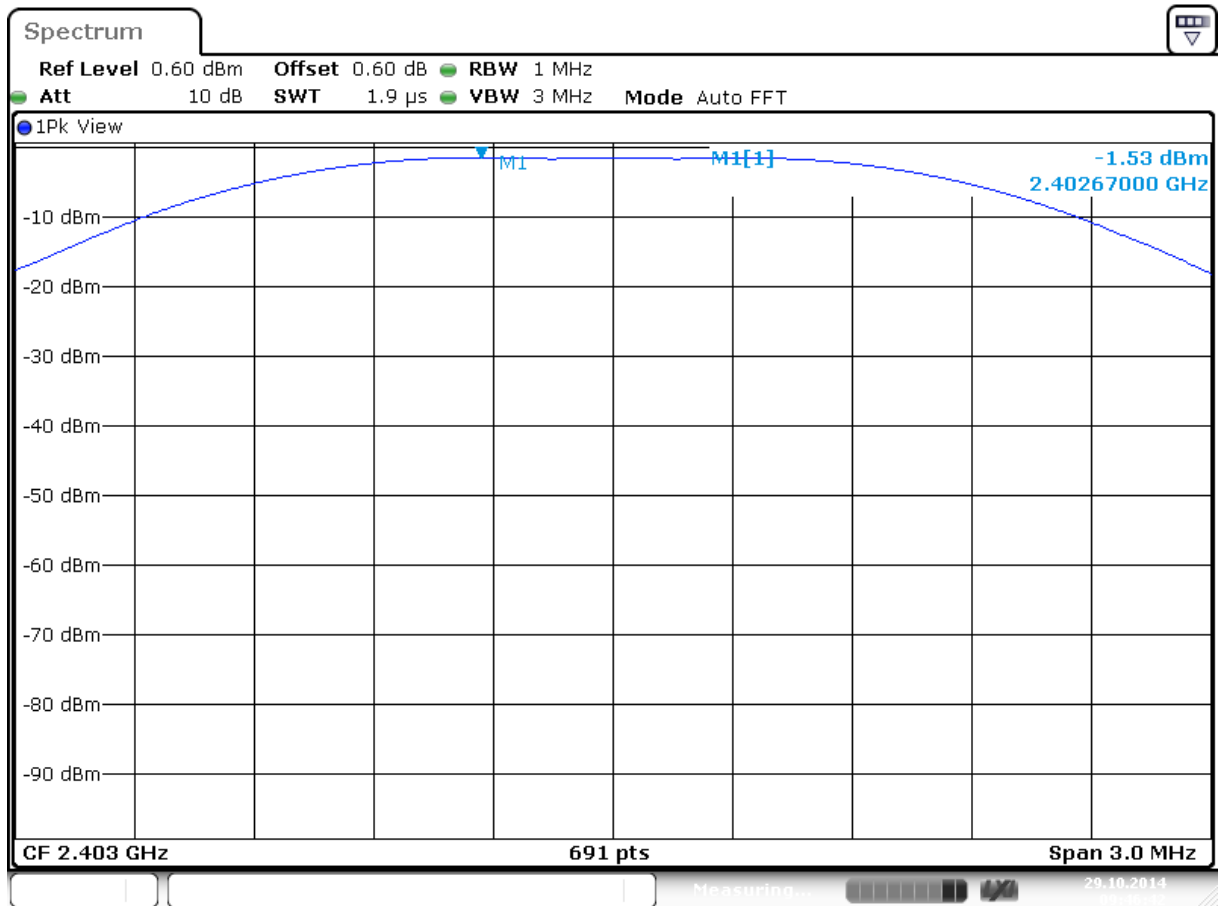
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Conducted Output Power

Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Verdict [Pass/Fail]	Antenna Gain [dBi]	EIRP [dBm]	EIRP [mW]	Plot number
2403	-1.53	+30	Pass	+2.0	+0.47	1.10	1A
2440	-2.09	+30	Pass	+2.0	-0.09	1.00	1B
2480	-2.97	+30	Pass	+2.0	-0.97	0.08	1C



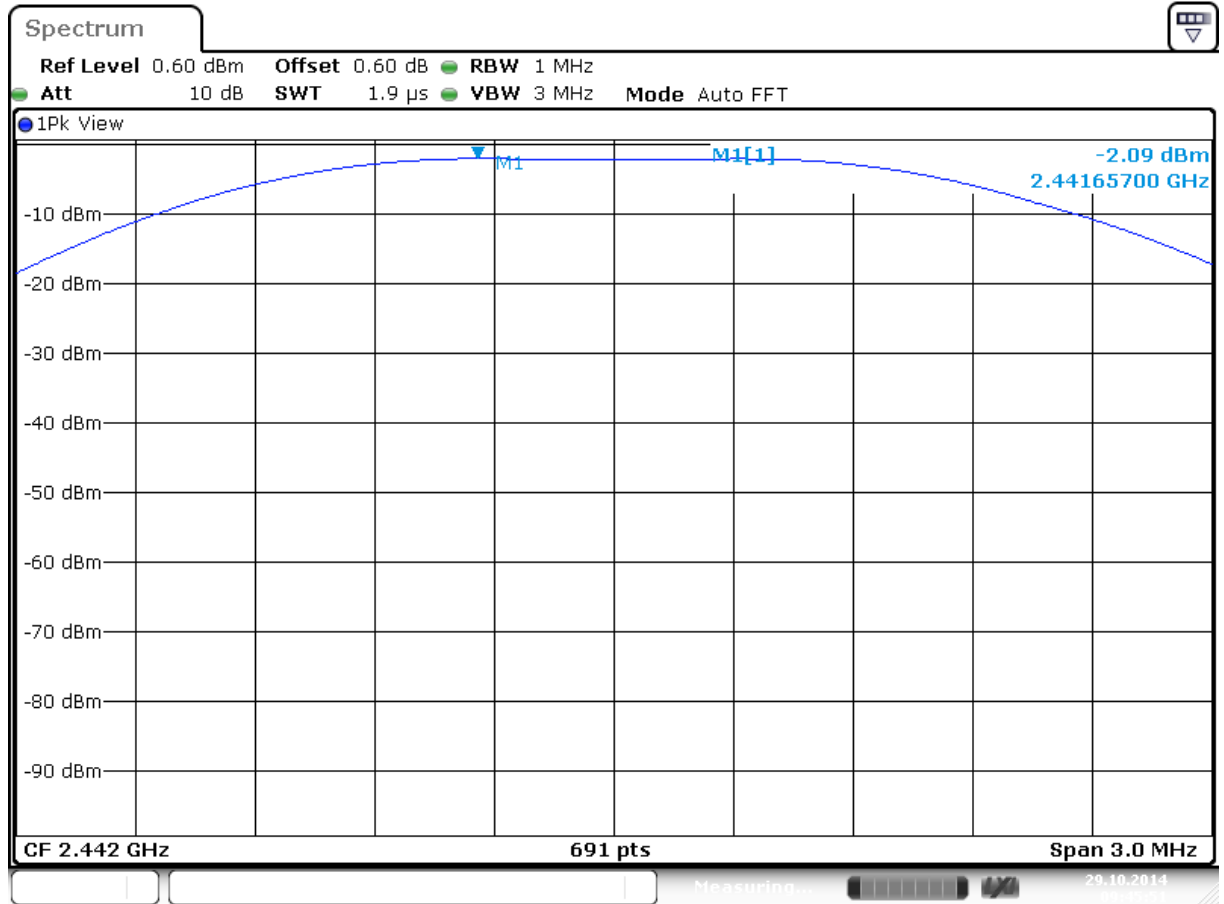
Date: 29.OCT.2014 09:46:42

Plot A

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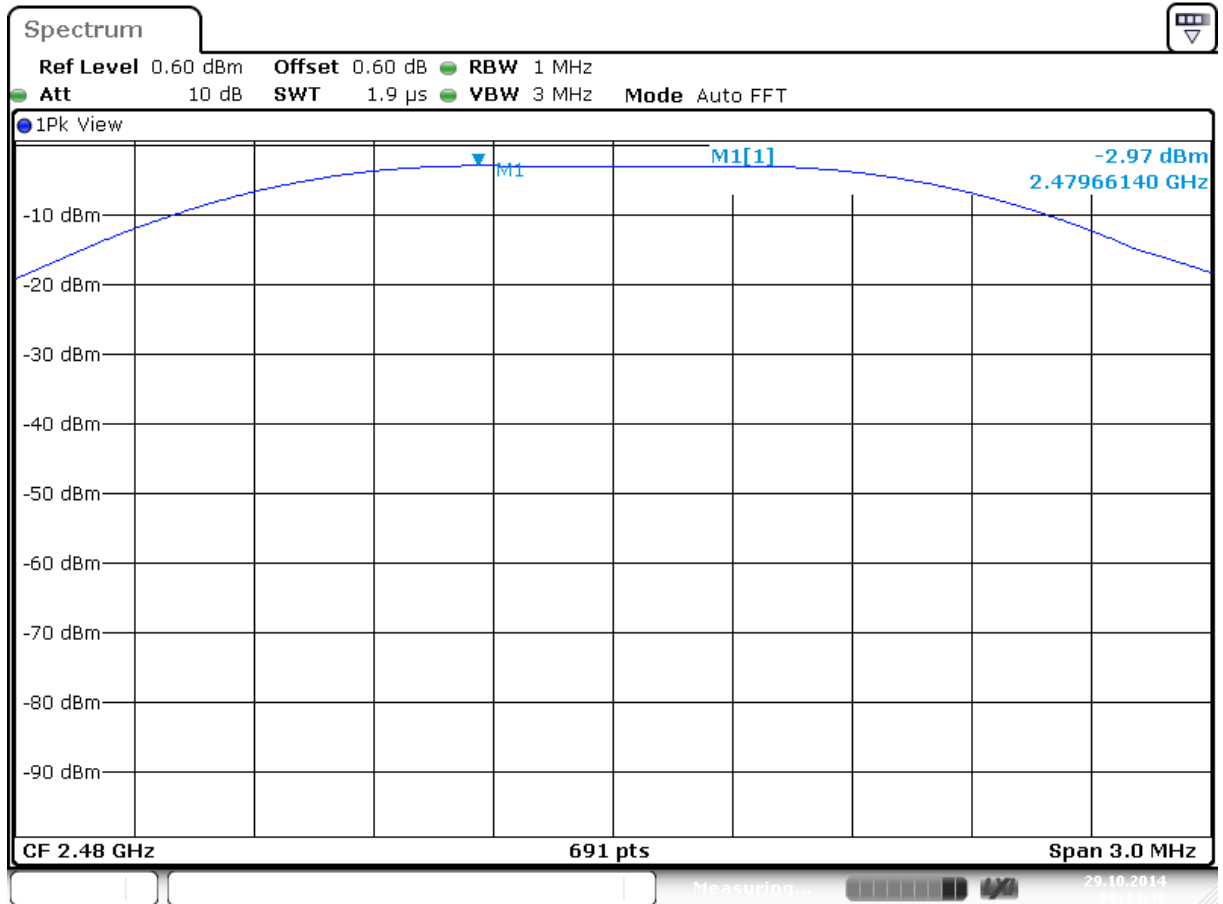
Date: 29.OCT.2014 09:45:51

Plot B

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Date: 29.OCT.2014 09:44:46

Plot C

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5.1.2 6dB and 99% Bandwidth

RESULT: Pass

Date of testing: 2014-10-29

Requirements:

FCC 15.247(a)(2) and RSS-210 Section A8.2(a)

For systems using digital modulation in the 2400-2483.5MHz band, the 6dB bandwidth shall be at least 500kHz.

For 99% Bandwidth: RSS-Gen Section 4.6.1: No requirement is given.

Test procedure 6dB bandwidth:

KDB 558074 D01 section 8.1 Option 1

A spectrum analyzer was connected to the antenna port of the EUT. The spectrum analyzer resolution bandwidth was set to 100kHz, video bandwidth to 300kHz and the span wide enough to capture the modulated carrier.

For 99% Bandwidth:

RSS-Gen.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

A spectrum analyzer was connected to the antenna port of the EUT. The spectrum analyzer resolution bandwidth was set to 1% of the selected span, Video bandwidth was set to 3 times the resolution bandwidth. The span was set to capture the whole modulation process. The Spectrum analyzers automated function for 99% BW was used.

Plots A1,B1 and C1 shown on the next pages are of the 6 dB bandwidth.

Plots A2,B2 and C2 shown on the next pages are of the 99% bandwidth

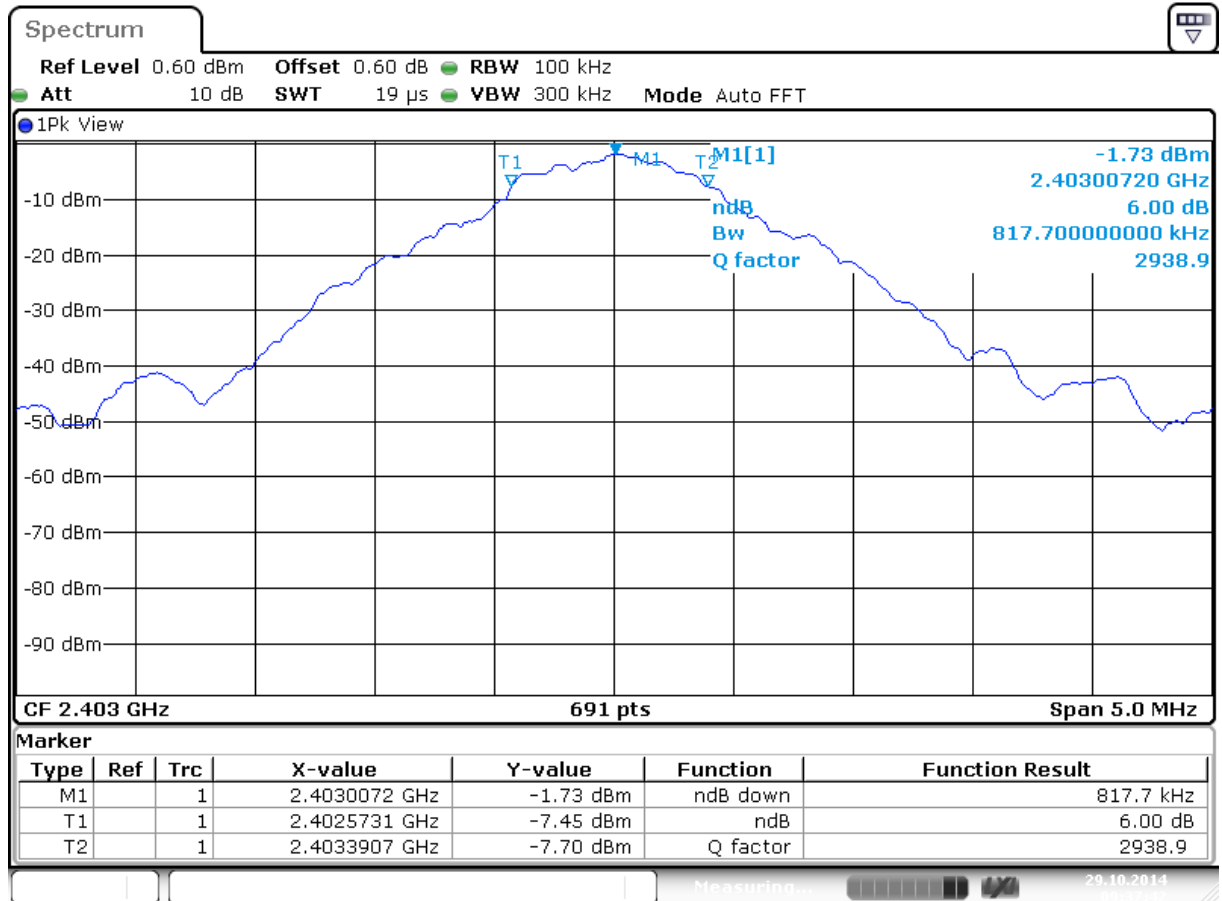
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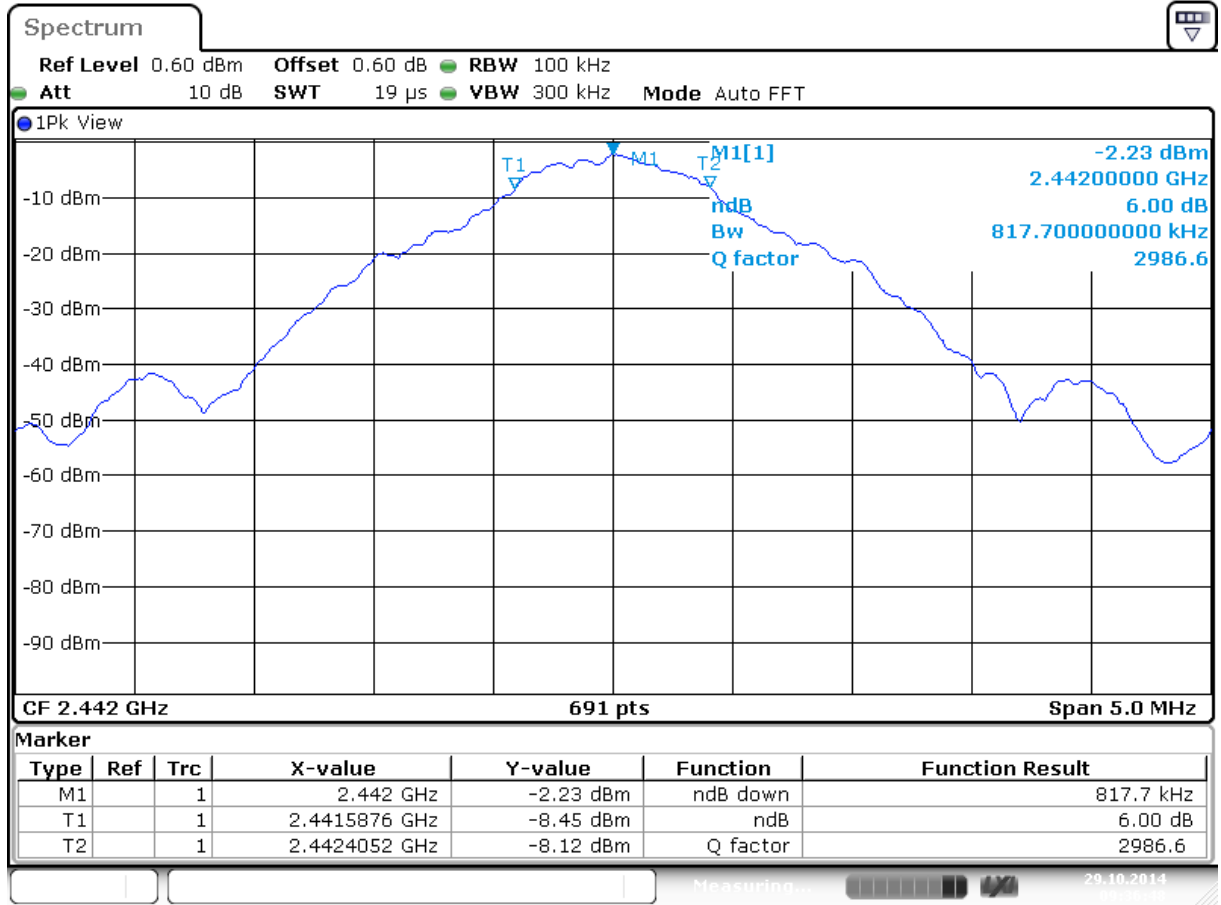
6dB Bandwidth

Operating Frequency [MHz]	99% Bandwidth [kHz]	6dB Bandwidth [kHz]	Limit [kHz]	Verdict [Pass/Fail]	Plot number
2403	1787.3	817.7	>500	Pass	A1/A2
2440	1794.5	817.7	>500	Pass	B1/B2
2480	1823.4	788.7	>500	Pass	C1/C2



Date: 29.OCT.2014 09:37:42

Plot A1



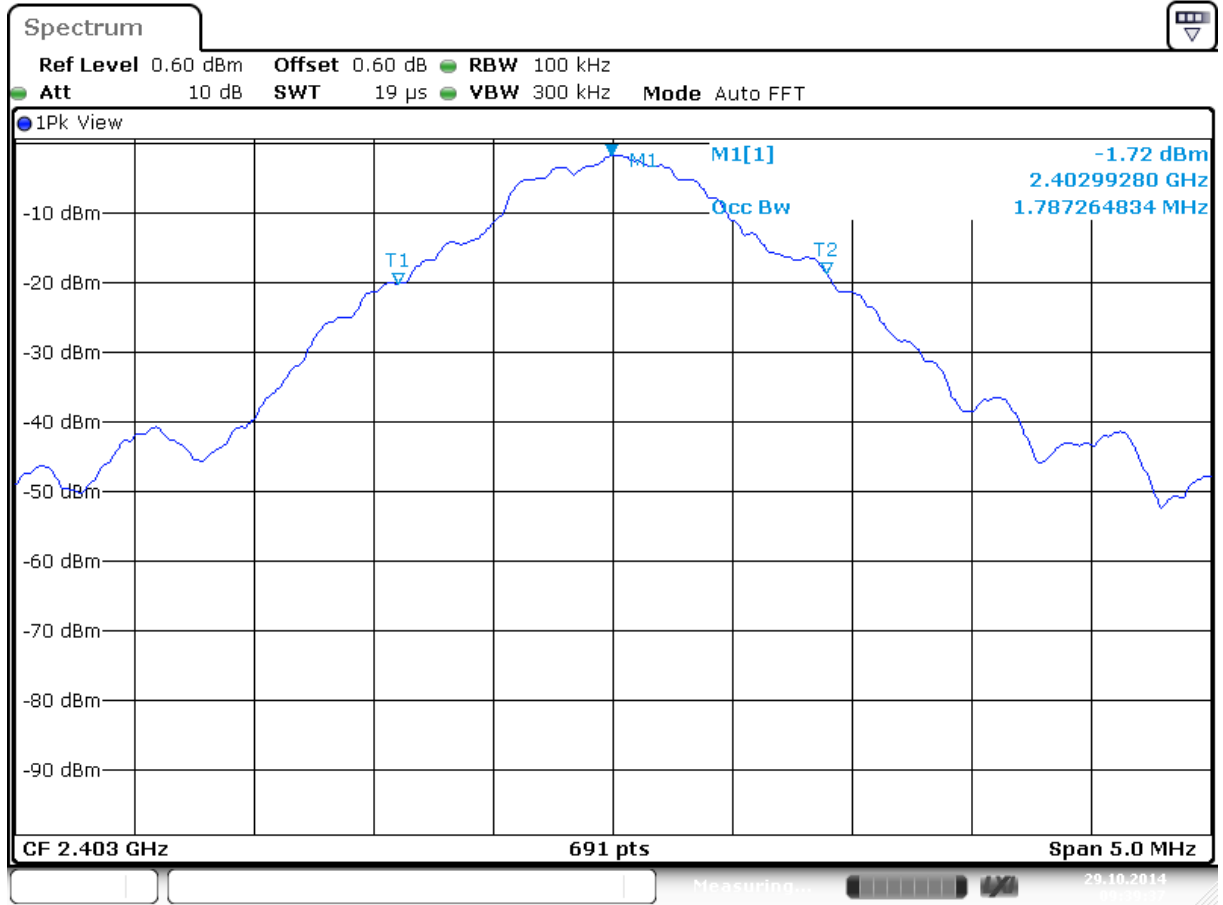
Date: 29.OCT.2014 09:36:48

Plot B1

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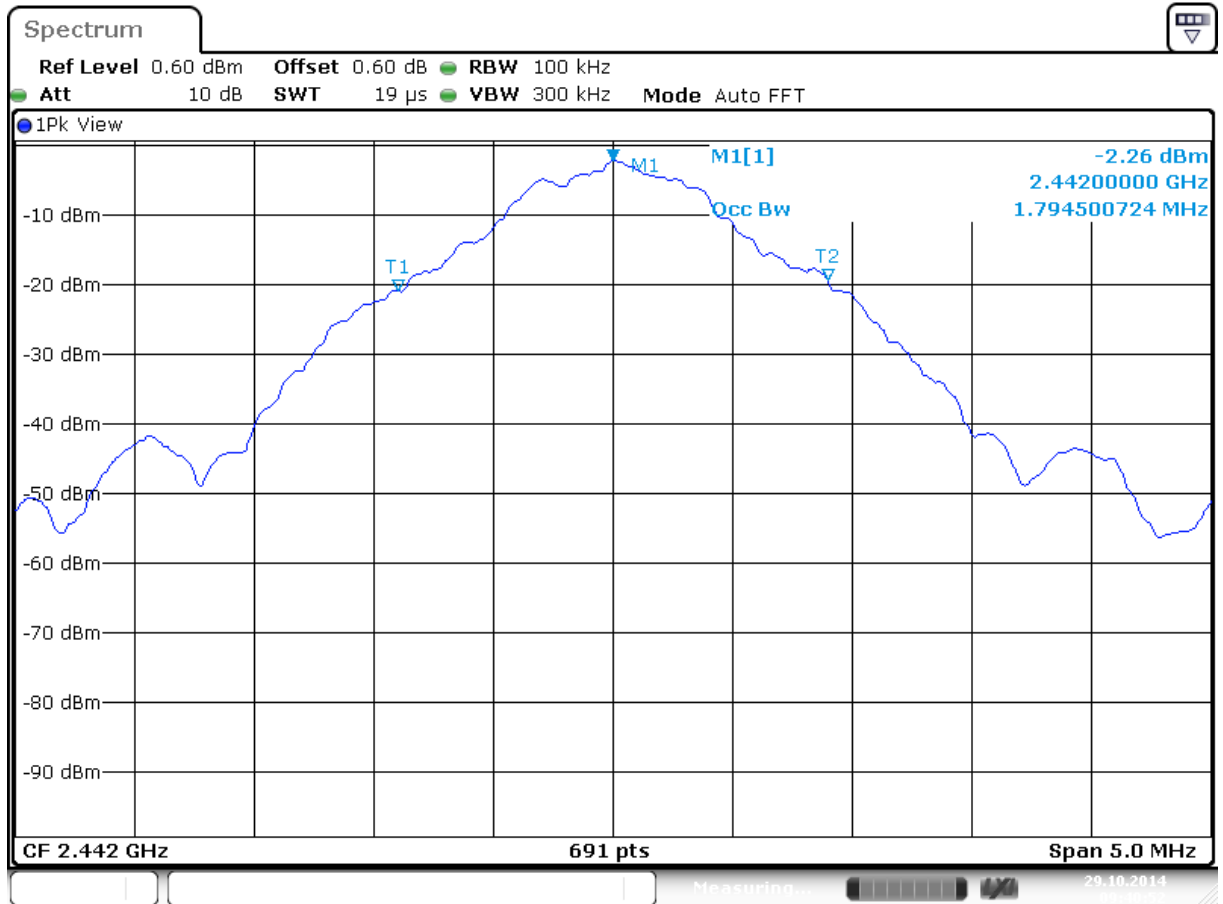
Date: 29.OCT.2014 09:39:37

Plot A2

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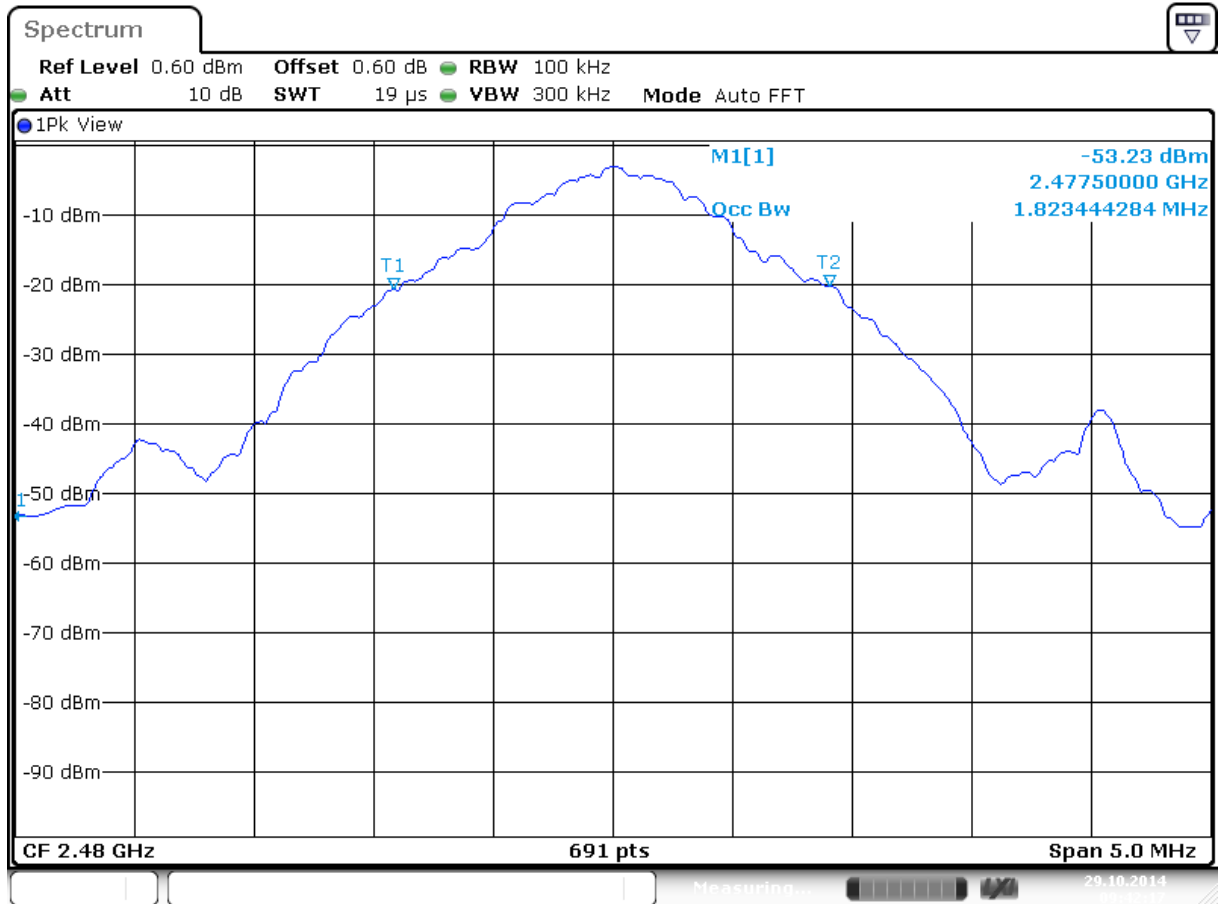
Date: 29.OCT.2014 09:40:52

Plot B2

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Date: 29.OCT.2014 09:42:17

Plot C2

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5.1.3 Peak Power Spectral Density

RESULT: Pass

Date of testing: 2014-10-29

Requirements:

FCC 15.247(e) and RSS-210 section A8.2(b)

For digitally modulated systems, the power spectral density (PSD) conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

Test procedure:

KDB 558074 D01

The section 10.2 PKPSD peak PSD procedure was used. A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 3kHz and the video bandwidth was set to 10kHz. The sweep time was set to auto couple and the trace was allowed to stabilize before making the final measurement. By using the Peak marker function the maximum amplitude was determined. The final measurement takes into account the loss generated by all the involved cables (0.6 dB).

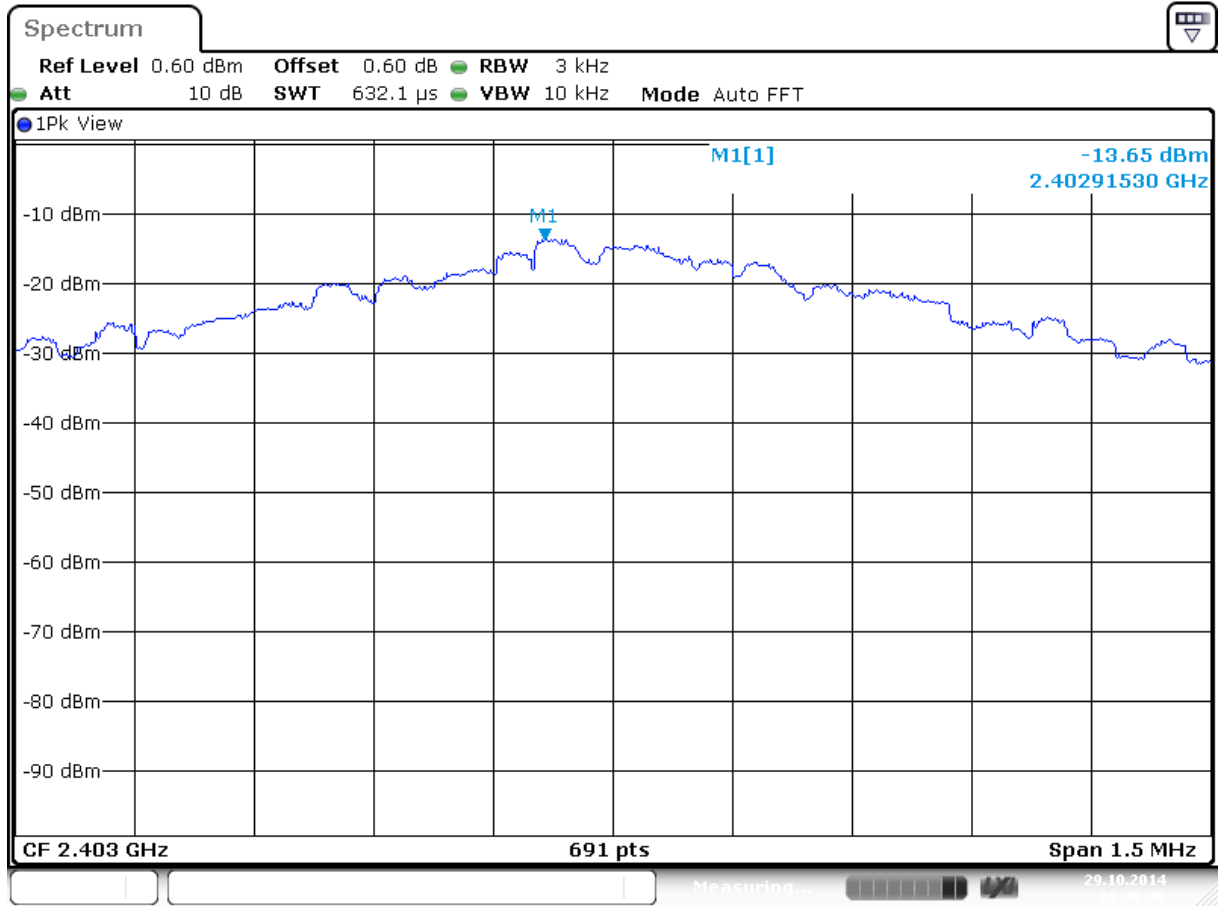
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Peak Power Spectral Density

Operating Frequency [MHz]	Max PSD [dBm]	Limit [dBm]	Verdict [Pass/Fail]	Plot
2403	-13.65	8	Pass	A
2442	-14.50	8	Pass	B
2480	-14.92	8	Pass	C



Date: 29.OCT.2014 09:49:46

Plot A

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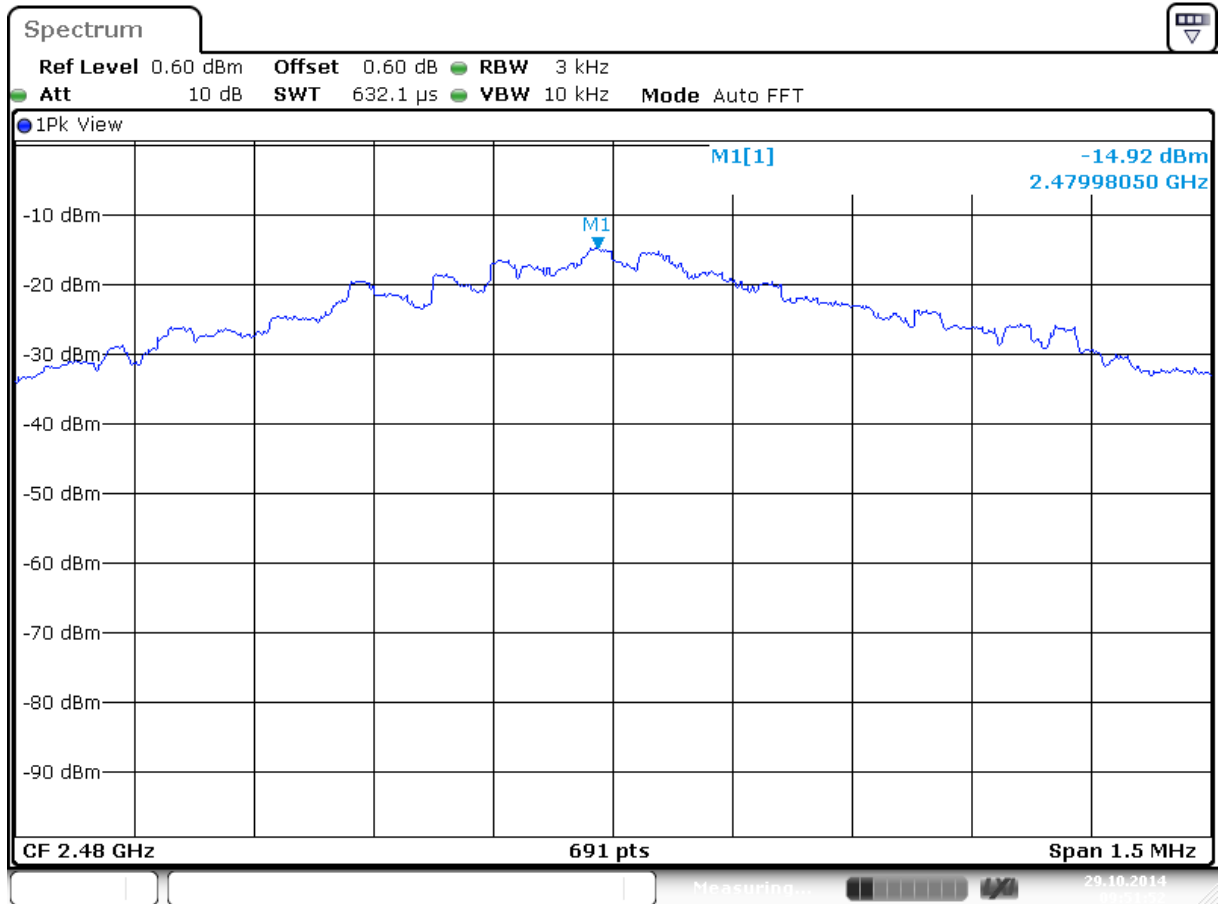
Date: 29.OCT.2014 09:51:06

Plot B

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Date: 29.OCT.2014 09:51:52

Plot C

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5.1.4 Band Edge Conducted Emissions

RESULT: Pass

Date of testing: 2014-10-29

Requirements:

FCC 15.205, FCC 15.209, FCC 15.247(d) and RSS-210 section A8.5

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.

Test procedure:

KDB 558074 D01 Section 13.2 and ANSI C63.10-2009

The marker-delta method, as described in ANSI C63.10 was used.

Measurements were performed using a spectrum analyzer with a suitable span to encompass the peak of the fundamental and using the following settings:
RBW = 100kHz, VBW = 300kHz.

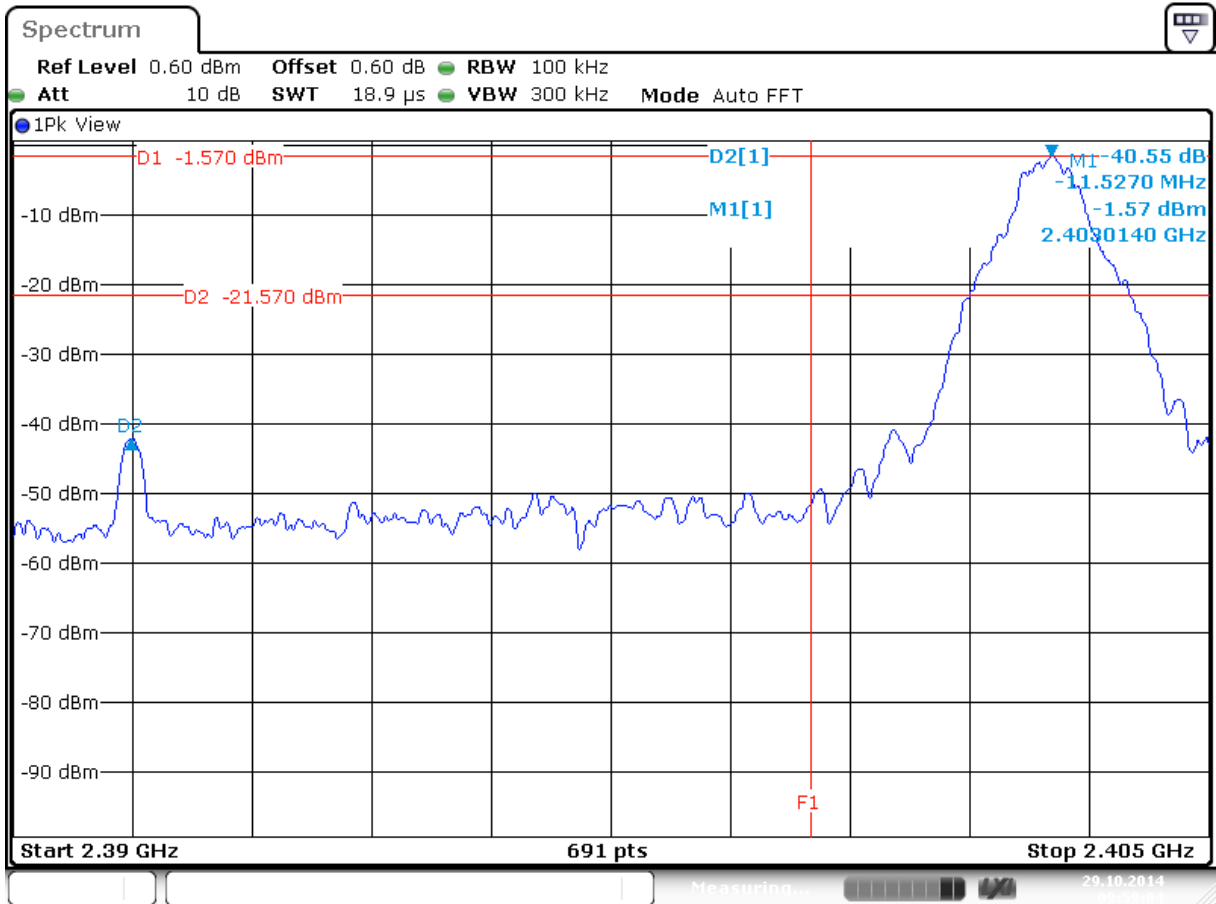
The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Results: All out of band spurious emissions are more than 20 dB below the fundamental. See the figures on the following pages.

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Date: 29.OCT.2014 09:59:04

Plot: Band Edge Conducted Emission, Spectral Diagram, 2403 MHz

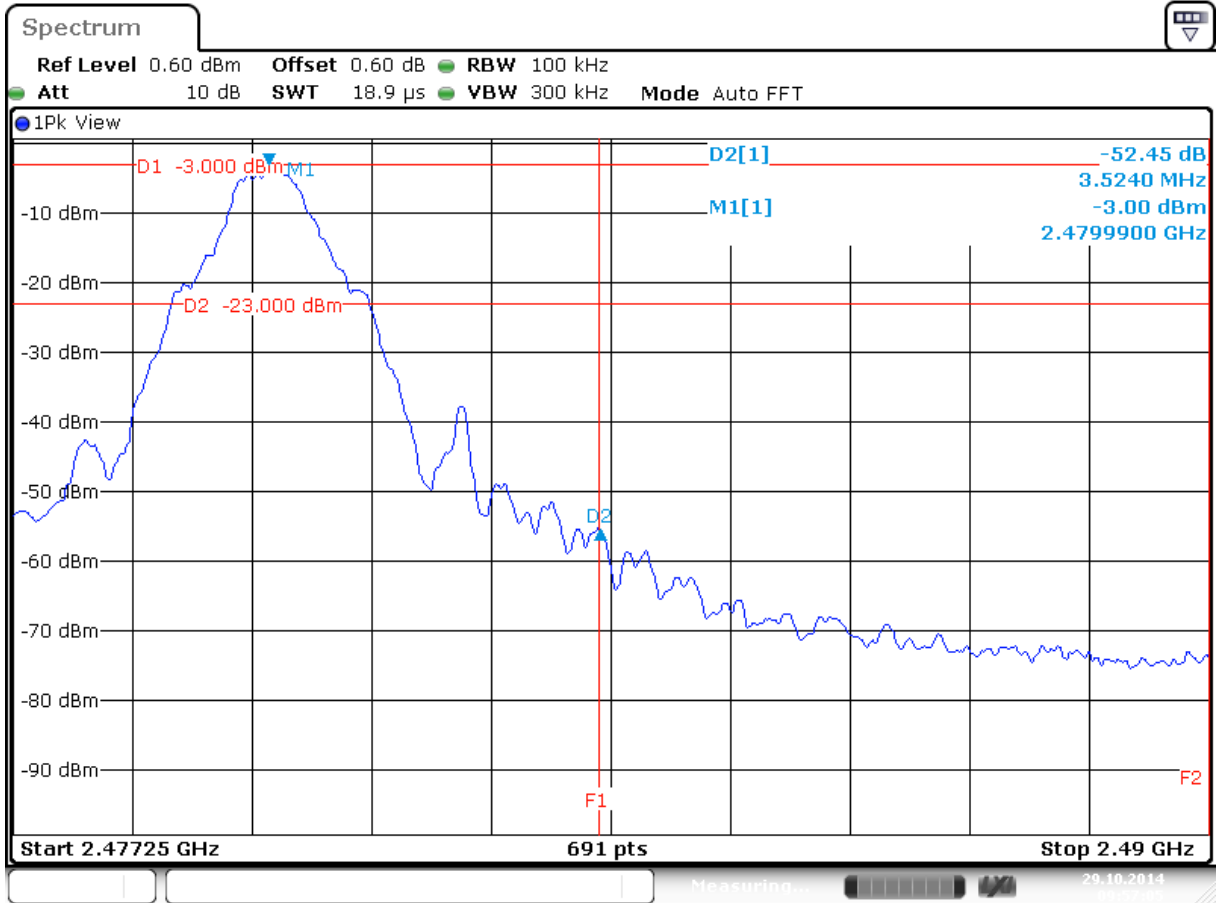
Plot showing more than 20 dB band edge attenuation.

F1 shows the band edge frequency of 2400 MHz.

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

Plot: Band Edge Conducted Emission, Spectral Diagram, 2480 MHz.
Plot showing more than 20 dB band edge attenuation.
F1 shows the band edge frequency of 2483,5 MHz.

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5.1.5 Radiated Spurious Emissions of Transmitter

RESULT: Pass

Date of testing: 2014-11-07

Frequency range: 30MHz - 25GHz

Requirements:

FCC 15.209 and FCC 15.247(d) and RSS-Gen

Radiated emissions which fall outside the operation frequency band and outside restricted bands shall either meet the limit specified in FCC 15.209(a) or be attenuated at least 20dB below the power level in the 100kHz bandwidth within the band that contains the highest level of the desired power (the less severe limit applies).

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-Gen Table 6, must comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Gen Table 4.

Test procedure:

ANSI C63.10-2009

The EUT is considered as floor-standing equipment not typically installed with its base in direct electrical contact with, or connected to, a metal floor or grid. The EUT was placed on the test site turntable with insulation material in-between of up to 12mm thickness to prevent electric contact.

Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling and the EUT orientation (X, Y, Z) were varied in order to ensure that maximum emission amplitudes were attained.

The spectrum was examined from 30MHz to the 10th harmonic of the highest fundamental transmitter frequency (25GHz). Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Field strength values of radiated emissions at frequencies not listed in the tables are more than 20 dB below the applicable limit. The levels are expressed in dBm which are derived from $\text{dBm} = E(\text{dB}\mu\text{V}/\text{m}) - 95.2\text{dB}$. Where Peak (Pk) values were at least 6 dB under the Average (Av) limits, Av value was not tested. Where Average values were tested, Average values were measured using a 10Hz Video Bandwidth.

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Radiated Emissions, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations

Frequency [MHz]	Antenna Orientation	Level QP [dB μ V/m]	Limit [dB μ V/m]	Verdict [Pass/Fail]
55.22	Horizontal	15.4	40.0	Pass
72.68	Vertical	18.6	40.0	Pass
78.50	Horizontal	18.0	40.0	Pass
353.98	Vertical	21.9	46.0	Pass
606.18	Vertical	29.1	46.0	Pass
949.56	Vertical	35.4	46.0	Pass

Note: - Level QP = Reading QP + Factor
- Tested in modes as described in section 4.2, the 6 highest values noted.
Preliminary measurements indicated that the radiated emissions from EUT were not affected by the EUT's operating mode or frequency.
- Quasi Peak detector used with a bandwidth of 120 kHz

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Radiated Emissions, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, 2403 MHz.

Frequency [MHz]	Antenna Orientation	Detector	Bandwidth (MHz)	Level [dBm]	Limit [dBm]
1072.2 ^{*R}	Horizontal	Pk	1	-59.9	-41.2 (Av) -21.2 (Pk)
1891.0	Vertical	Pk	1	-61.3	-41.2 (Av) -21.2 (Pk)
2397.0 ^{*R}	Horizontal	Pk	1	-52.5	-41.2 (Av) -21.2 (Pk)
4806.0 ^{*H^R}	Vertical	Pk	1	-49.9	-41.2 (Av) -21.2 (Pk)
7212.1 ^{*H}	Vertical	Pk	1	-57.0	-41.2 (Av) -21.2 (Pk)
9608.8 ^{*H}	Vertical	Pk	1	-61.5	-41.2 (Av) -21.2 (Pk)

Radiated Emissions, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, 2442 MHz.

Frequency [MHz]	Antenna Orientation	Detector	Bandwidth (MHz)	Level [dBm]	Limit [dBm]
1204.0 ^{*R}	Horizontal	Pk	1	-52.0	-41.2 (Av) -21.2 (Pk)
4884.0 ^{*H^R}	Vertical	Pk	1	-53.3	-41.2 (Av) -21.2 (Pk)
7344.0 ^{*R}	Vertical	Pk	1	-55.8	-41.2 (Av) -21.2 (Pk)
9768.0	Vertical	Pk	1	-60.6	-41.2 (Av) -21.2 (Pk)

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Radiated Emissions, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, 2480 MHz.

Frequency [MHz]	Antenna Orientation	Detector	Bandwidth (MHz)	Level [dBm]	Limit [dBm]
1241.0	Horizontal	Pk	1	-51.7	-41.2 (Av) -21.2 (Pk)
1891.0	Horizontal	Pk	1	-51.8	-41.2 (Av) -21.2 (Pk)
4960 ^{*H*R}	Vertical	Pk	1	-47.3	-41.2 (Av) -21.2 (Pk)
7452.0 ^{*H*R}	Vertical	Pk	1	-56.8	-41.2 (Av) -21.2 (Pk)
9920.2 ^{*H}	Vertical	Pk	1	-58.0	-41.2 (Av) -21.2 (Pk)

- Notes:
- *R refers to a frequency in a restricted band,
 - *H refers to a frequency which is a harmonic of the fundamental.
 - Both transmitters were transmitting at the same time.
 - Field strength values of radiated emissions not listed in the tables above are more than 20 dB below the applicable limit.

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5.2 AC Power Line Conducted Measurements

RESULT: Pass.

Date of testing:

2014-11-12

Requirements: for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency of Emission (MHz)	Conducted Limit (dB μ V) Quasi-Peak	Conducted Limit (dB μ V) Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 - 30	46	50

*Decreases with the logarithm of the frequency.

Test procedure:

ANSI C63.10-2009.

Each phase and neutral of the AC power line were measured with respect to ground. Measurements were performed using a 50 μ H / 50 Ω LISN. The frequency range from 150kHz to 30MHz was searched. The six highest EUT emissions relative to the limit were noted. The EUT is considered a floor-standing device. The EUT is placed on a non-conductive plate of 5mm thick above the ground plane, so to isolate it from the ground plane because the EUT normally does not make electrical contact with a ground plane. The EUT was positioned at least 80cm from the LISN. The power cable was routed over the non-conductive plate to the LISN.

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5.2.1 AC Power Line Conducted Emission of Transmitter

Frequency (MHz)	Measurement results (dBµV) L1		Measurement results (dBµV) L2/Neutral		Limits (dBµV)		Verdict (Pass/Fail)
	QP	AV	QP	AV	QP	AV	
0.150	54.4	22.1	54.1	22.2	66.0	56.0	Pass
0.160	52.9	20.3	52.7	20.2	65.5	55.5	Pass
0.170	51.5	23.2	51.3	22.6	65.0	55.0	Pass
0.180	50.1	17.2	49.9	15.9	64.5	54.5	Pass
0.190	48.8	16.2	48.7	16.7	64.0	54.0	Pass
0.200	47.4	15.3	47.4	15.1	63.6	53.6	Pass

The results of the conducted emission tests, carried out in accordance with 47 CFR Part 15 section 15.207(a) and RS-Gen section 8.8, at the 120 Volts/ 60 Hz AC mains connection terminals of the EUT, are depicted in the table above.

Notes:

1. The resolution bandwidth used was 9 kHz.
2. From pre-test the worst case configuration proved to be the normal operation mode wherein both DTS transmitter and Bluetooth were operational. Worst case values noted.
3. Plots are provided on the next pages.

Test Report No.:

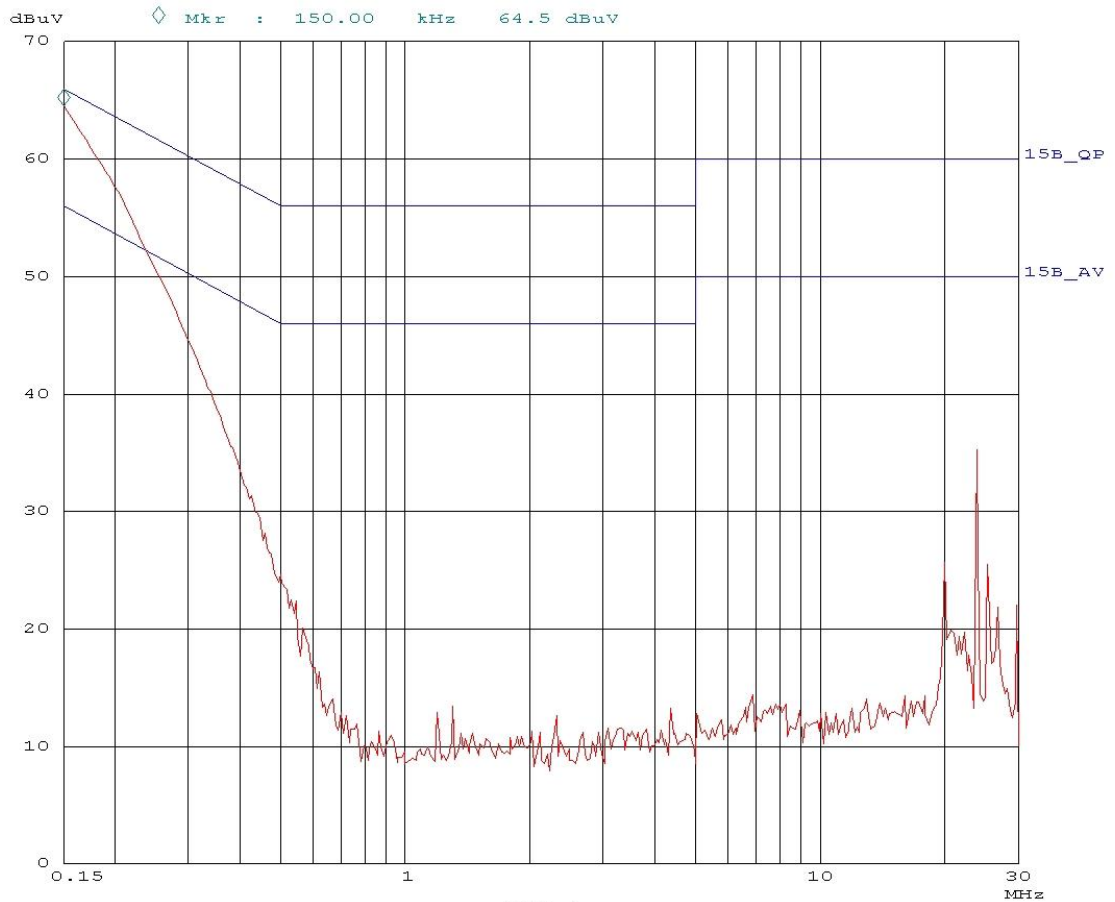
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5.2.2 Plots of the AC Power-line Conducted Emissions

12. Nov 14 15:21

```
Scan Settings (1 Range)
|----- Freqencies -----|----- Receiver Settings -----|
Start      Stop      Step      IF BW  Detector  M-Time  Atten  Preamp
150k      30M      5k        9k     PK        20ms   0dBIN  OFF
```



Plot of the AC Power-line Conducted emissions on L1

Test Report No.:

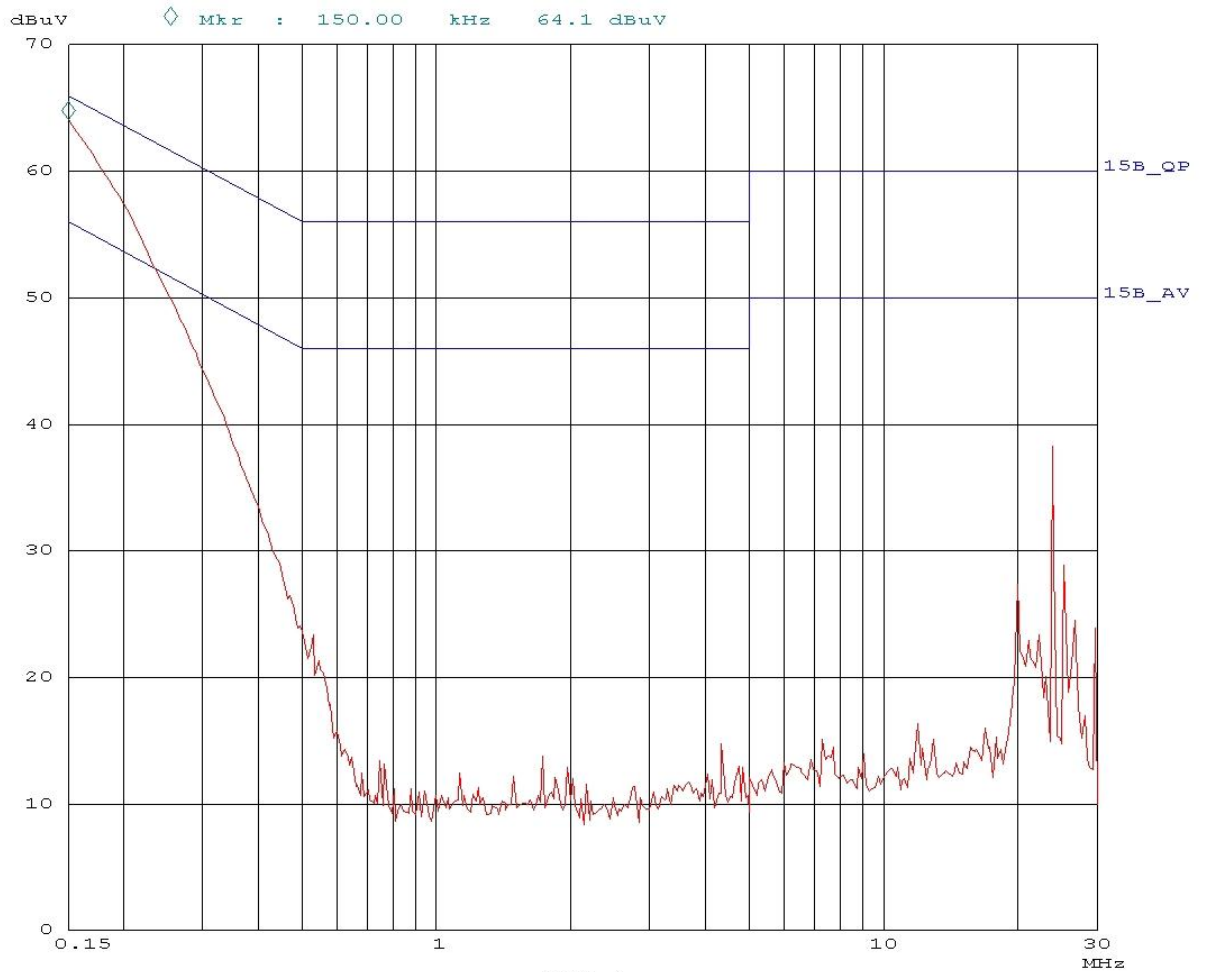
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12. Nov 14 15:50

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK	20ms	0dB	LN OFF



Plot of the AC Power-line Conducted emissions on L2

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End of report