TÜVRheinland®
Electronic Products and Services (EPS) B.V.

Test Report No.:	**12121201.fcc04**	*Page 1 of 43*

Client:	**Intel Corporation** 100 Center Point Circle Suite 200 Columbia, SC 29210 USA		
Test Item:	**Bluetooth (DSS)** **Wireless Network Adapter Module**		
Identification:	**7260NGW**	*MAC address:*	**001500B6698F**
Project No.:	**12121201**	*Date of Receipt:*	**January 07, 2013**
Testing Location:	**TÜV Rheinland EPS B.V.** Eiberkamp 10 9351VT Leek		
Test Specification:	**FCC 47 CFR Part 15, Subpart C, Section 15.209 and15.247 (10-1-12 Edition)** **RSS-Gen (issue 3, December 2010) an RSS-210 (Issue 8, December 2010)** **ANSI C63.10-2009**		
Test Result:	*The test item **passed** the test specification(s).*		
Testing Laboratory:	**TÜV Rheinland EPS B.V.** Eiberkamp 10 9351 VT Leek		

Tested by:			*Reviewed by:*		
2013-03-18	R. van der Meer / Inspector		2013-03-18	O. Hoekstra / Reviewer	
Date	*Name/Position*	*Signature*	*Date*	*Name/Position*	*Signature*

Other Aspects:--

Abbreviations:

P(ass)	=	***passed***
F(ail)	=	***failed***
N/A	=	***not applicable***
N/T	=	***not tested***

TEST SUMMARY

5.1.1 VOLTAGE REQUIREMENTS
RESULT: PASS

5.1.2 ANTENNA REQUIREMENTS
RESULT: PASS

5.2.1 CONDUCTED MEASUREMENTS AT ANTENNA PORT
RESULT: PASS

5.2.2 20DB AND 99% BANDWIDTH
RESULT: PASS

5.2.3 NUMBER OF CHANNELS AND OCCUPANCY TIME
RESULT: PASS

5.2.4 CARRIER FREQUENCY SEPARATION
RESULT: PASS

5.2.5 BAND EDGE CONDUCTED EMISSIONS
RESULT: Pass

5.2.6 RADIATED SPURIOUS EMISSIONS OF TRANSMITTER
RESULT: PASS

5.2.7 RADIATED SPURIOUS EMISSIONS OF TRANSMITTER IN RESTRICTED BANDS
RESULT: PASS

5.4.1 AC POWER LINE CONDUCTED EMISSION OF TRANSMITTER
RESULT: PASS

Contents

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 EPS 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
Air pressure : 950 – 1050 hPa

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.

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 Emission					
Spectrum Analyzer	Rohde & Schwarz	FSP40	99538	11/2012	11/2013
Temperature-Humiditymeter	Extech	SD500	99857	02/2012	02/2014
Spectrum Analyzer	Rohde & Schwarz	FSV	99733	05/2012	05/2013
For Radiated Emission					
Measurement Receiver	Rohde & Schwarz	ESCI	99699	03-26/2012	03-26/2013
RF Cable S-AR	Gigalink	APG0500	99858	02/2013	02/2014
Controller	Maturo	SCU/088/ 8090811	99861	N/A	N/A
Controller	EMCS	DOC202	99608	N/A	N/A
Controller	Heinrich Deisel	4630-100	99107	N/A	N/A
Test fascility	Comtest	FCC listed: 90828	99580	12/2011	12/2014
Spectrum Analyzer	Rohde & Schwarz	FSP40	99538	11/2012	11/2013
Controller	EMCS	DOC202	99608	N/A	N/A
Antenna mast	EMCS	AP-4702C	99609	N/A	N/A
Temperature-Humiditymeter	Extech	SD500	99855	02/2012	02/2014
Guidehorn 1-18 GHz	EMCO	3115	12484	04/2012	04/2013
Guidehorn 18-40 GHz	EMCO	RA42-K-F-4B-C	12488	04/2012	04/2013
Biconilog Testantenna	Chase	CBL 6111B	15633	01/2013	01/2014
2.4 GHz bandreject filter	BSC	XN-1783	14450	N/A	N/A
Bandpass filter 4-10 GHz	Reactel	7AS-7G-6G-511	99076	N/A	N/A
Bandpass filter 10-26 GHz	Reactel	9HS-10G/26.5G-S11	99136	N/A	N/A
Preamplifier 0.5 - 18 GHz	Miteq	AMF-5D-005180-28-13p	99596	N/A	N/A
Filterbox	EMCS	RFS06S	99606	10/2012	10/2013

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

3. General Product Information

3.1 Product Function and Intended Use

The brand Intel model 7260NGW, hereafter referred to as EUT, is a PCIe small form factor IEEE 802.11a/b/g/n/ac + Bluetooth wireless network adapter module. The module will support MIMO (2x2) for 802.11n/ac modes and MISO (1x2) for 802.11a/b/g modes and utilizes DSSS and OFDM modulation techniques. Bluetooth operates with basic, EDR and BLE modes as SISO (1x1). When Bluetooth is operational wifi operates as SISO (1x1).

The module is sold under two different FCC ID numbers under the same model number (see table below). The FCC ID ending in "U" is intended to allow user installation conditions and host systems must be provided with a BiOS locking feature to provide mutual authentication between module and host devices.

Brand	Model Number	Description	FCC/IC IDs
Intel	7260NGW	802.11a/b/g/n/ac + BT wireless network adapter module	PD97260NG PD97260NGU 1000M-7260NG

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	:	Wireless Network Adapter Module (DSS)
Manufacturer	:	Intel Corporation
Brand	:	Intel
Model(s)	:	7260NGW
MAC address (BT)	:	00:15:00:B6:69:93
Voltage input rating	:	+3.3 V
Voltage output rating	:	--
Current input rating	:	--
Antenna	:	AUX3
Operating frequency	:	2402 – 2480 MHz for Bluetooth
Modulation	:	GFSK, PSK
Remarks	:	n.a.

Table 3: Interfaces present on the EUT

No.	Port	From	To	Remarks
1.	Mains	Mains	Laptop (AUX1)	Through a AC/DC power supply
2.	Mains	Mains	Test jig (AUX2)	Through a AC/DC power supply
3.	Data com.	Laptop USB	Fixture USB	--
4.	Antenna port	EUT	Reference antennas (AUX3)	--

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 (DSS).

The test methods, which have been used, are based on **Error! Reference source not found.**.

For details, see under each test item.

4.2 Operation Modes

Modulation	**Duty cycle**	**Antenna**			**Test frequencies (MHz)**			
			Lowest	**Gain control setting**	**Middle**	**Gain control setting**	**Highest**	**Gain control setting**
DH5	0.75	1	2402	10	2440	10	2480	10
3DH5	0.75	1	2402	10	2440	10	2480	10

Testing was performed at the lowest operating frequency, at the operating frequency in the middle of the specified frequency band and at the highest operating frequency. These operation modes were selected after review of the capabilities and characteristics of the EUT. Bluetooth operation was evaluated at both 1Mb/s and 3Mb/s data rates. 2Mb/s data rate was found , through pre-testing, to produce emissions similar to those for 3Mb/s.
Antenna ports are also referred to as Chain A and Chain B, where chain A refers to Antenna-port 2 and Chain B refers to Antenna-port 1. Bluetooth is only available on Antenna 1 (Chain B).

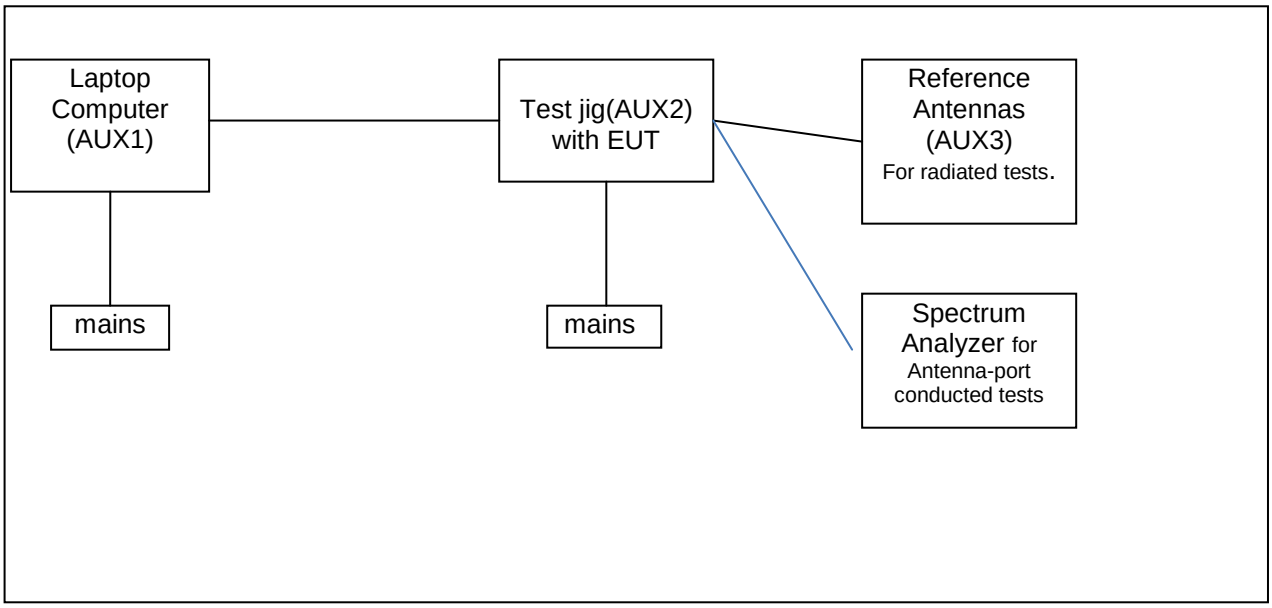
4.3 Physical Configuration for Testing

The EUT was installed into a test-fixture that interfaced to a laptop computer and dc power supply. The laptop computer was used to configure the EUT to continuously transmit at a specified output power and channel or continuously receive on the channel as specified in the testdata. See section 4.5 for Auxiliary details.

The EUT was tested on a stand-alone basis (only attached to the test jig) 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 C63.4:2009.

Figure 1: Test Setup Diagram



Notes:

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

4.4 Test Software

The operation modes could be initiated by using test software as supplied by Intel Corporation. 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 Intel Corporation and used during all tests is:

Test software : DRTU 1.6.0-0510
Driver : 16.0.0.17

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.

4.5 Special Accessories and Auxiliary Equipment

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

1. AUX1
   - Product: Laptop Computer
   - Brand: Lenovo
   - Model: 9456-HTG
   - Serial Number: L3-BF847 07/02
   - Remark: property applicant, host for testsoftware and AUX2

2. AUX2
   - Product: Test Jig
   - Brand: Intel
   - Model: NGFF Extension Rev. 01
   - Rated Voltage: 3.3 Vdc
   - Antenna: Internal, integrated on the PCB
   - Remarks: used for Antenna-port conducted tests

3. AUX3
   - Product: Reference antennas
   - Manufacturer: SkyCross Electronics (Shenzhen) Co.,Ltd
   - Brand: SkyCross Electronics (Shenzhen) Co.,Ltd
   - Gain at 2G4: 3.0 dBi (declared by applicant)
   - Remarks: used for radiated tests

5. Test Results

5.1 Technical Requirements

5.1.1 Voltage Requirements

RESULT: PASS

Requirements:

FCC 15.31(e)

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Verdict:

The EUT has an internal voltage regulator to supply the RF circuit. Hence it complies with the power supply requirements.

5.1.2 Antenna Requirements

RESULT: PASS

Requirements:

FCC 15.203 and IC RSS-Gen section 7.1.2

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Verdict:

The EUT has two non standard PIFA antenna connectors which complies with the requirements.

.

5.2 Conducted Measurements at Antenna Port

5.2.1 Conducted Output Power

RESULT: PASS

Date of testing: 2013-01-14 & 2013-02-14

Requirements:

FCC 15.247(b)(3)

For systems using frequency hopping using at least 15 channels in the 2400-2483.5MHz band, the maximum peak output power is 1W (+30dBm).

Test procedure:

ANSI C63.10-2009 and KDB 558074 D01.

The Peak Conducted Output Power was measured using the channel integration method according to option 2 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. Declared maximum antenna gain: 3 dBi.
The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

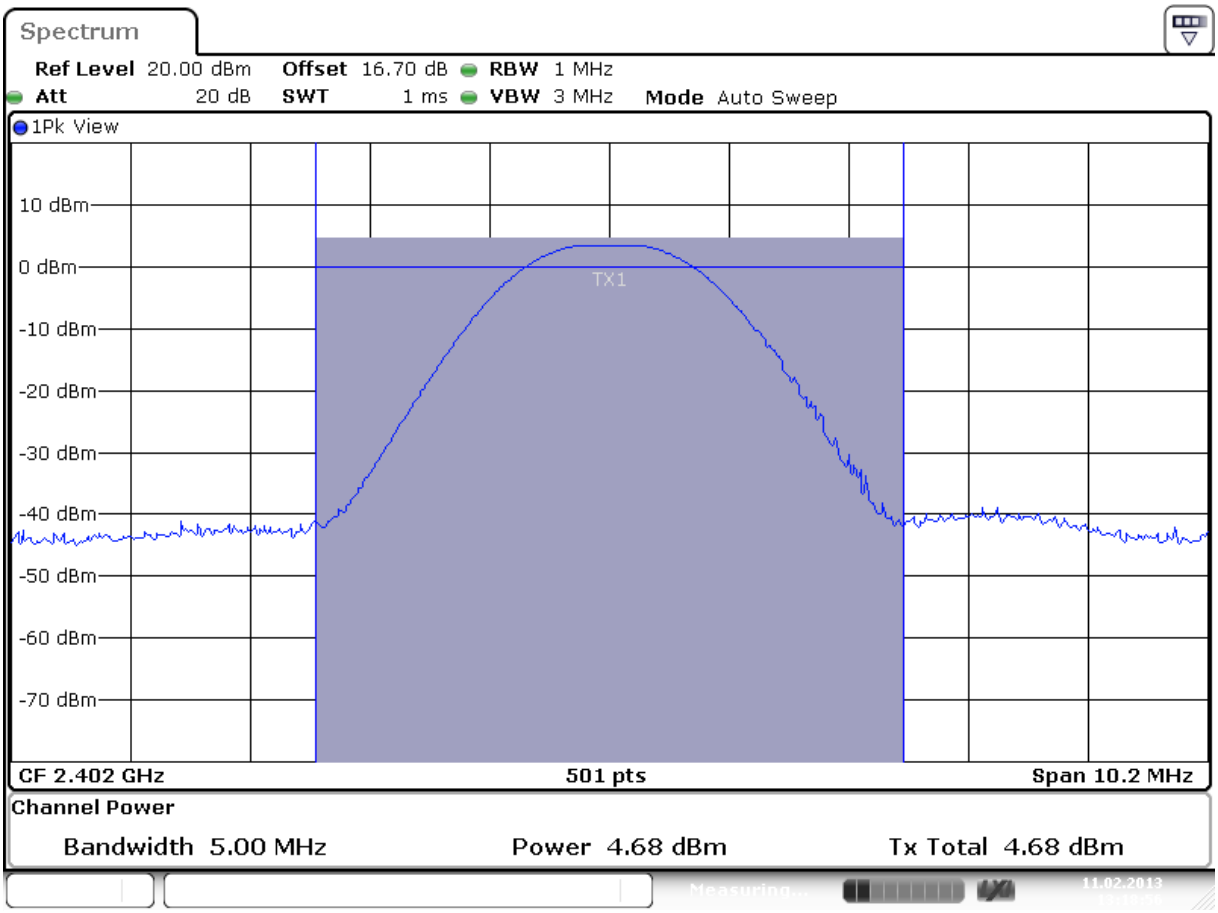
Notes: mW = 10 ^ (dBm/10)
dBm = 10 x log(mW)

plots : Peak power plots,
Plots of the Peak Power outputs are given on the next pages, correction factors included in the reading.

Table 4: Conducted Output Power

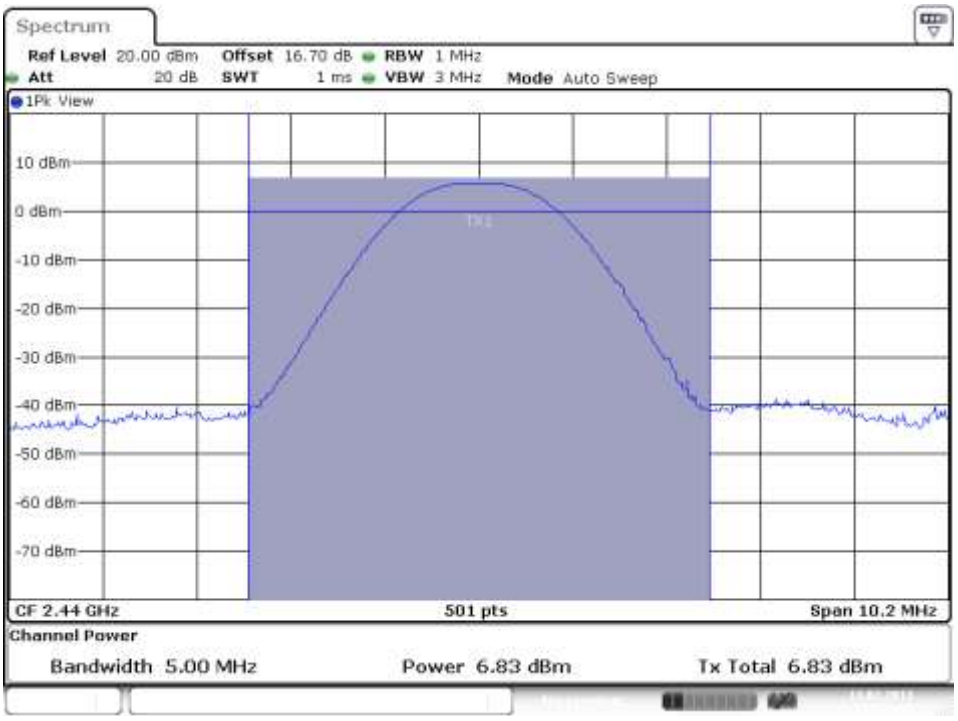
Operation mode: DH5, Antenna 1

Frequency [MHz]	Gain control setting (dB)	Output Power [dBm]	Limit [dBm]	Maximum EIRP Power (dBm)	Plot number
2402	10	+4.68	+30	+7.69	1a
2440	10	+6.83	+30	+9.83	1b
2480	10	+7.24	+30	+10.24	1c



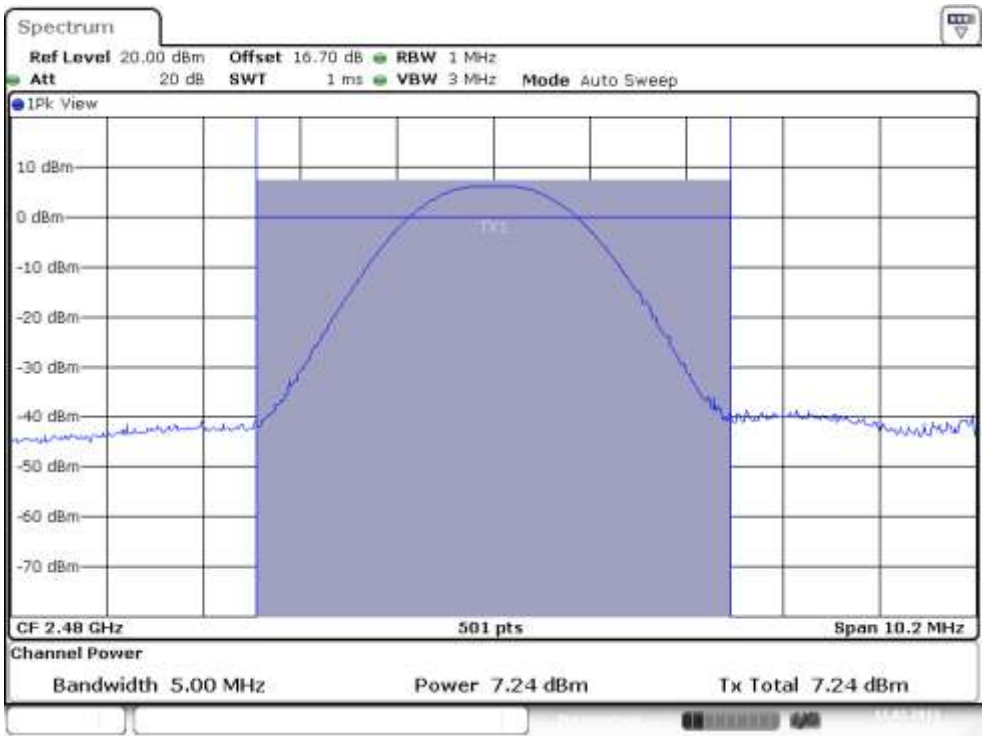
Date: 11.FEB.2013 13:18:56

Plot 1a



Date: 11.FEB.2013 13:28:30

Plot 1b

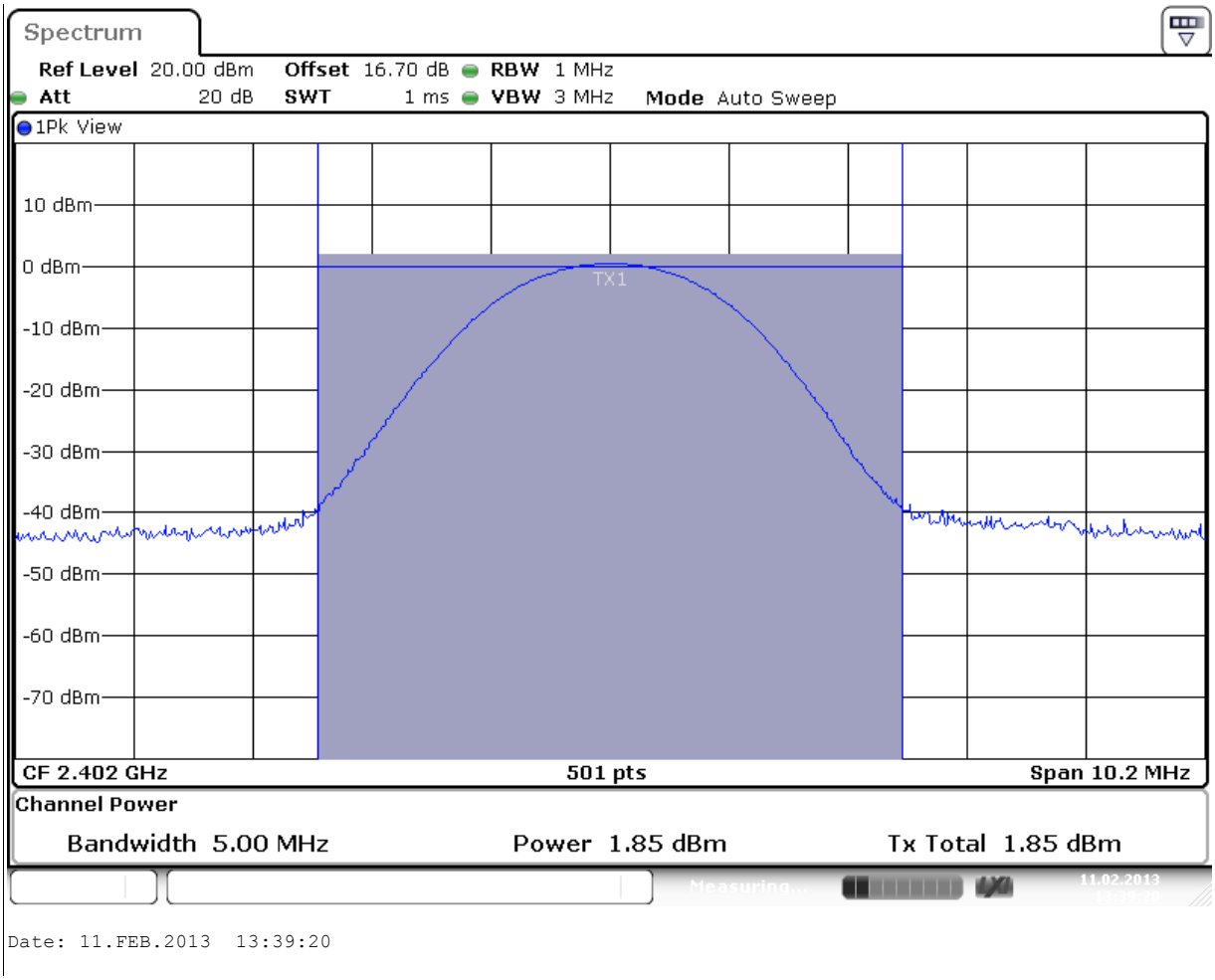


Date: 11.FEB.2013 13:32:18

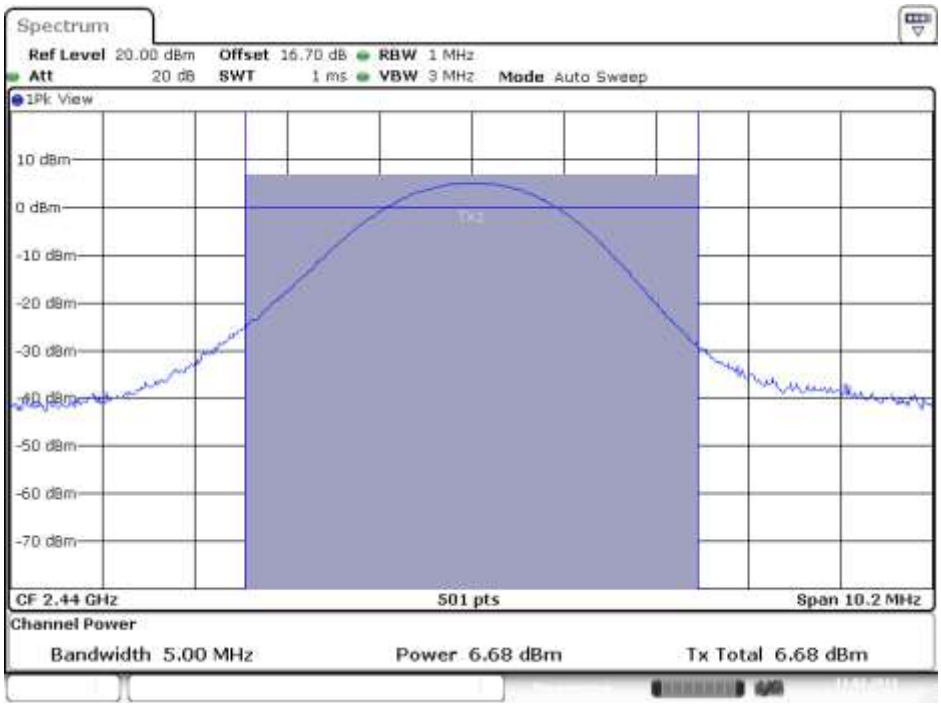
Plot 1c

Operation mode: 3DH5, Antenna 1

Frequency [MHz]	Gain control setting (dB)	Output Power [dBm]	Limit [dBm]	Maximum EIRP Power (dBm)	Plot number
2402	10	+1.85	+30	+4.85	2a
2440	10	+6.68	+30	+9.68	2b
2480	10	+7.23	+30	+10.23	2c

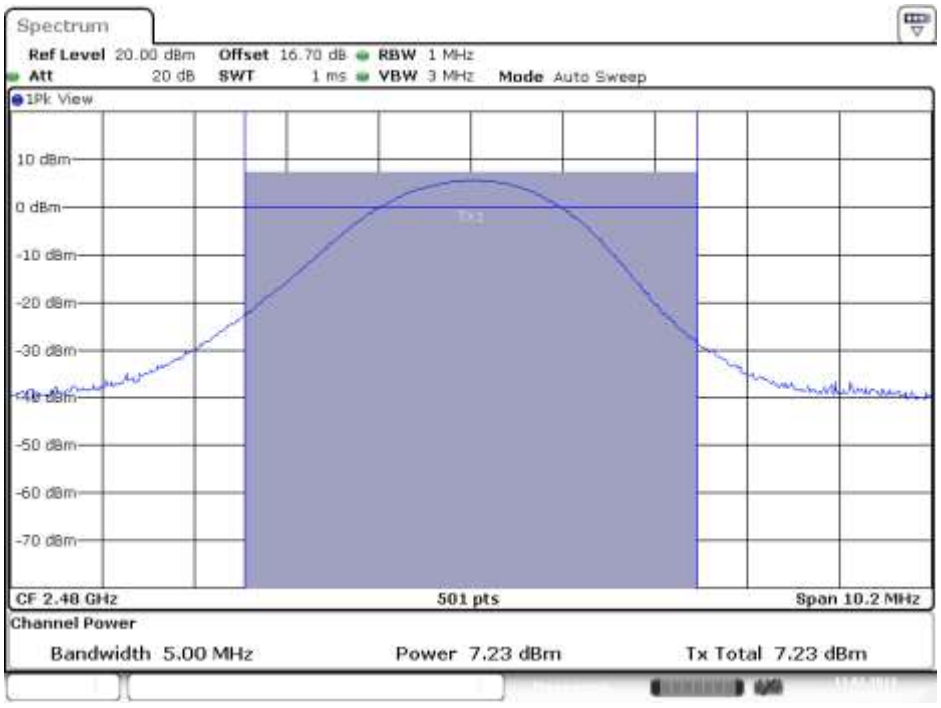


Plot 2a



Date: 11.FEB.2013 13:45:04

Plot 2b



Date: 11.FEB.2013 13:48:25

Plot 2c

5.2.2 20dB and 99% Bandwidth

RESULT: PASS

Date of testing: 2013-02-11

Requirements:

FCC 15.247(a)(2) an RSS-210 Section A8.2(a)
For systems using hopping technology in the 2400-2483.5MHz band, the 20dB bandwidth is not limited.

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

Test procedure 20dB bandwidth: ANSI C63.10-2009

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:

ANSI C63.10-2009 and RSS-Gen.

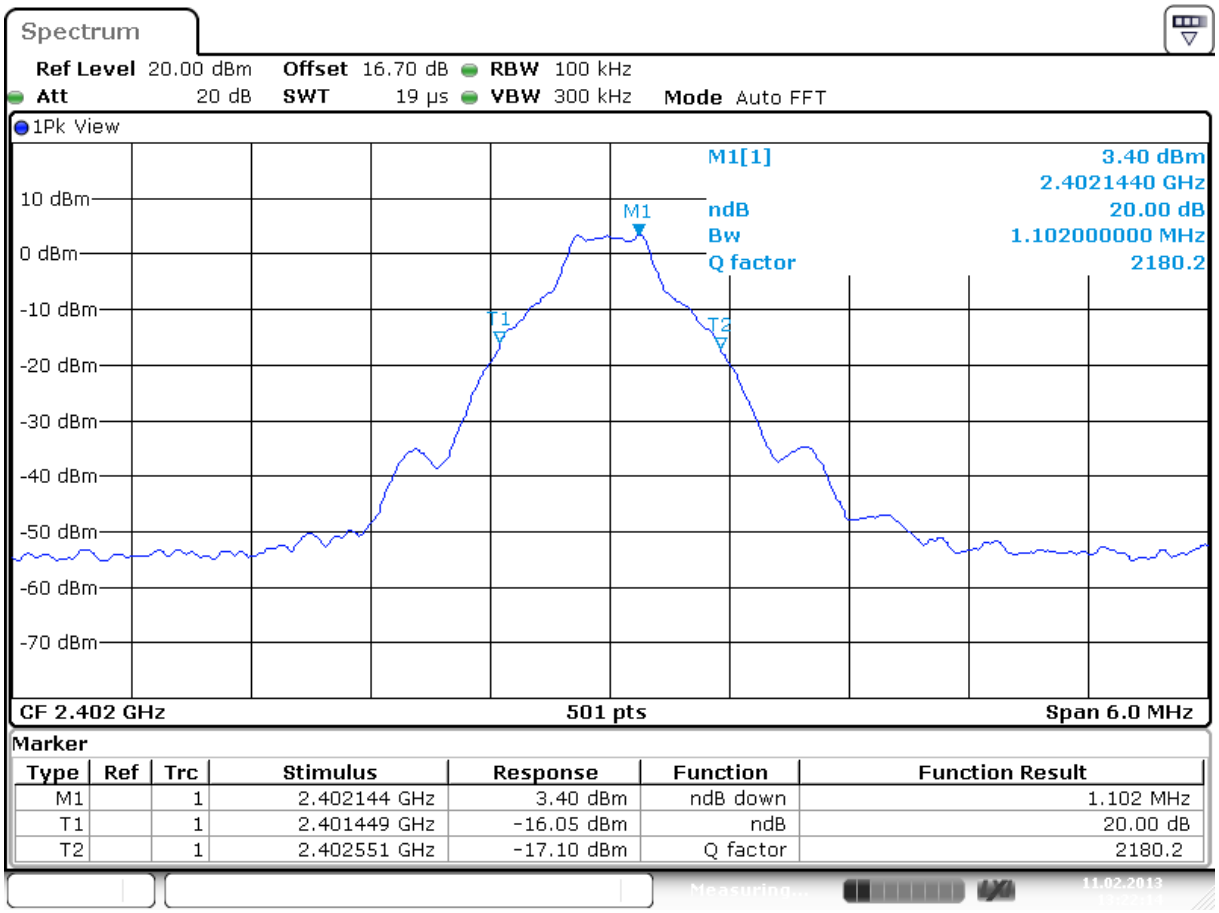
The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission sideskirts. The resolution bandwidth shall be set as close to 1% of the selected span as 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.

Table 5: 20dB and 99% Bandwidth

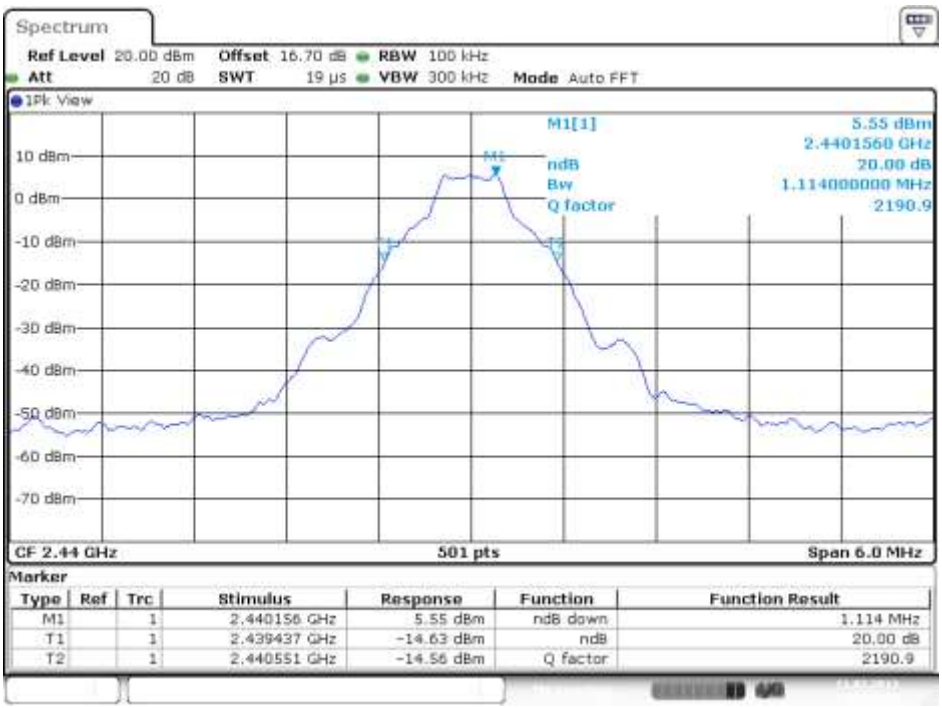
Operation mode: DH5, Antenna 1

Operating Frequency [MHz]	99% Bandwidth [kHz]	20dB Bandwidth [kHz]	Limit [kHz]	Plot number
2402	946	1102	Not applicable	A
2440	946	1114	Not applicable	B
2480	946	1114	Not applicable	C



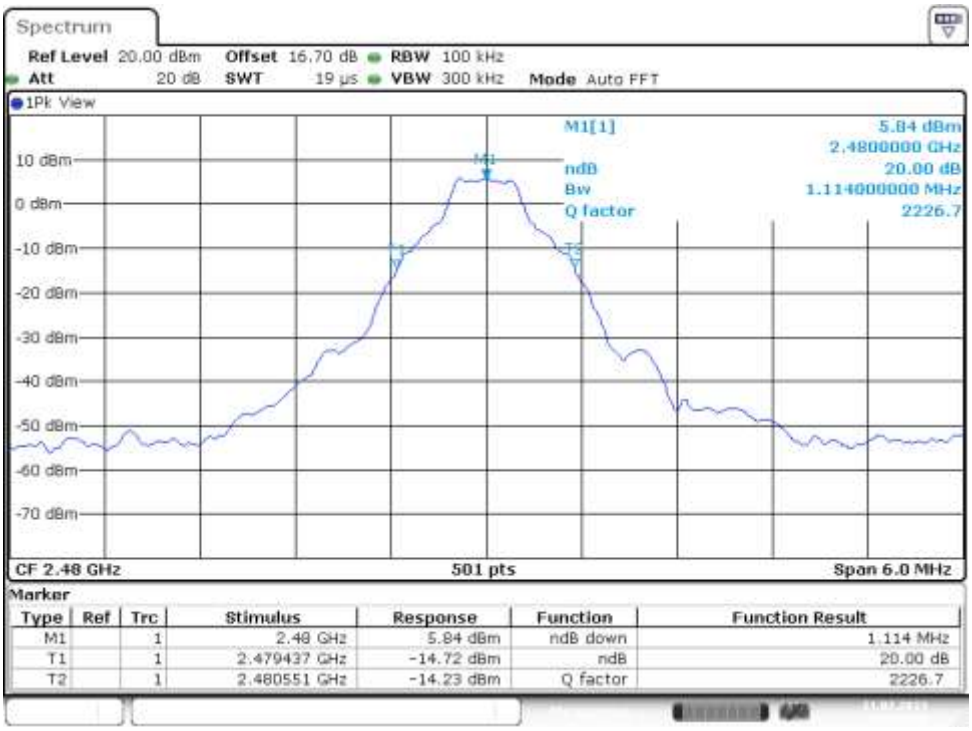
Date: 11.FEB.2013 13:22:14

Plot A



Date: 11.FEB.2013 13:29:33

Plot B

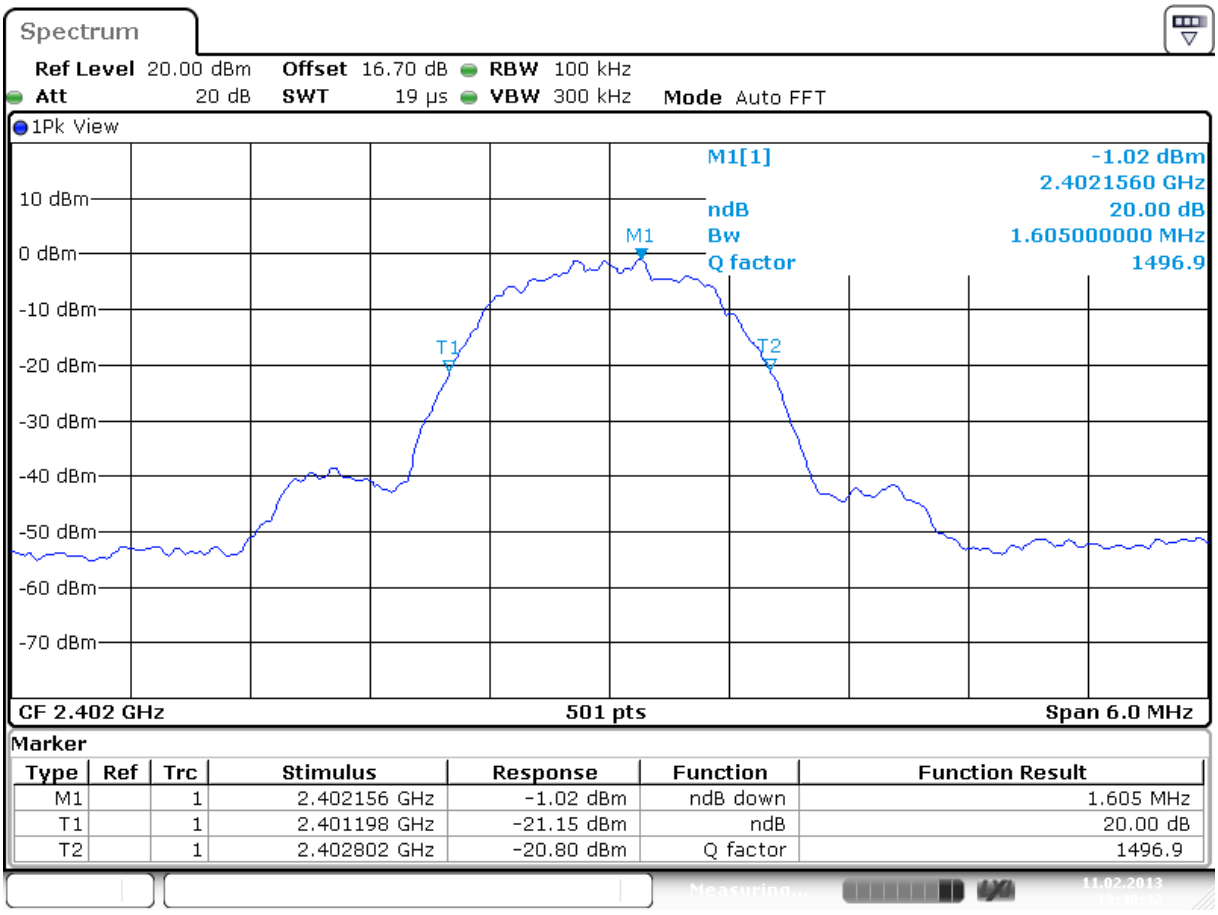


Date: 11.FEB.2013 13:33:11

Plot C

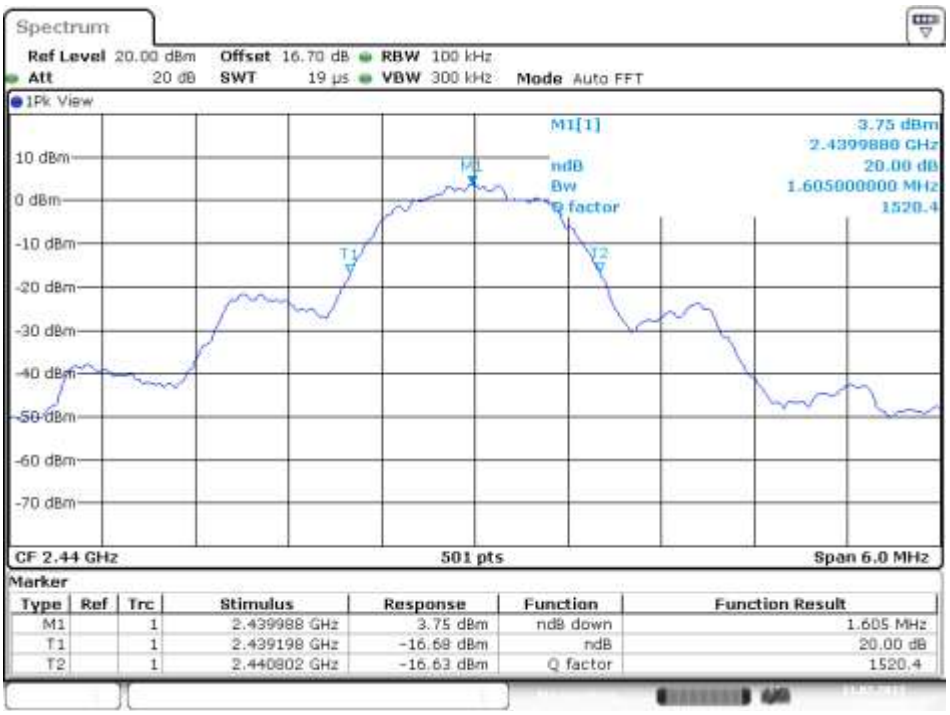
Operation mode: 3DH5, Antenna 1

Operating Frequency [MHz]	99% Bandwidth [kHz]	20dB Bandwidth [kHz]	Limit [kHz]	Plot number
2402	1389	1605	Not applicable	A
2440	1425	1605	Not applicable	B
2480	1449	1581	Not applicable	C



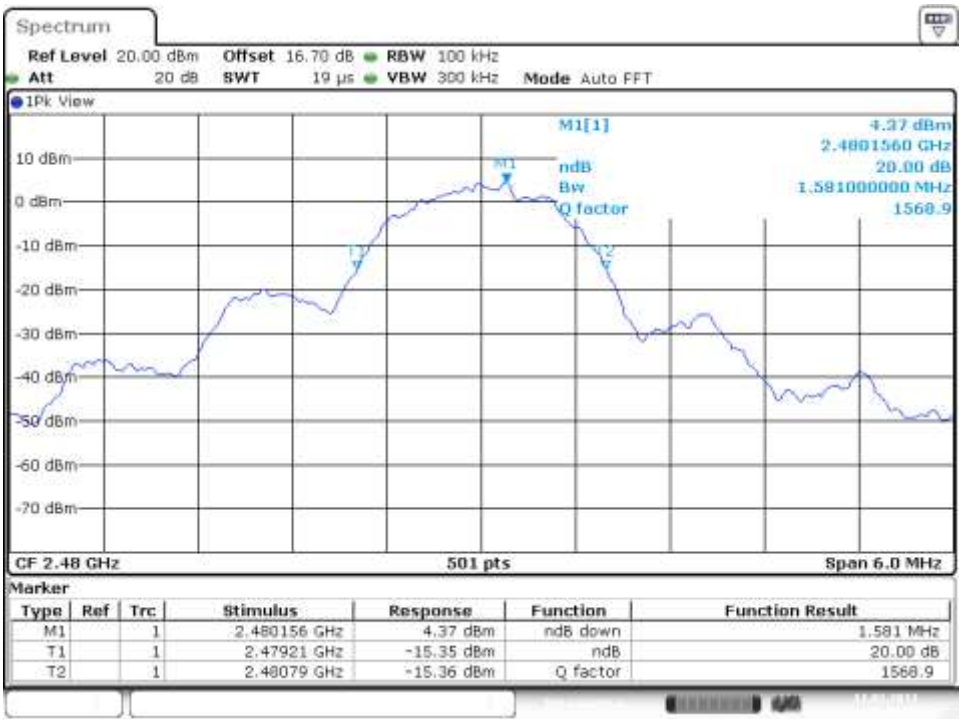
Date: 11.FEB.2013 13:40:42

Plot A



Date: 11.FEB.2013 13:46:03

Plot B



Date: 11.FEB.2013 13:49:17

Plot C

5.2.3 Number of hopping channels and Channel Occupancy

RESULT: PASS

Date of testing: 2013-01-24 / 2013-02-11

Requirements:

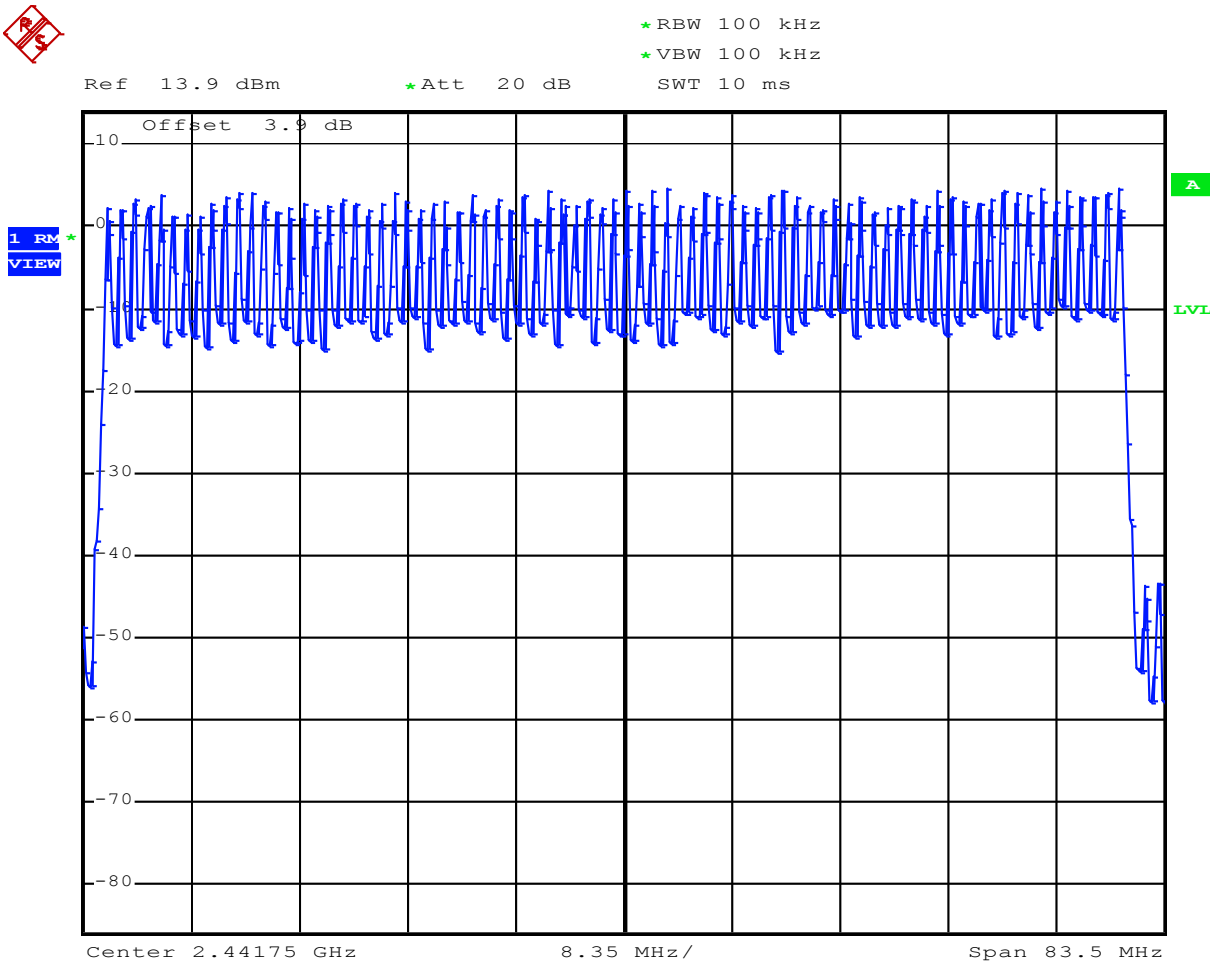
FCC 15.247(a)(1)(iii) and RSS-210 section A8.1d

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 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.

Test procedure: ANSI C63.10-2009.

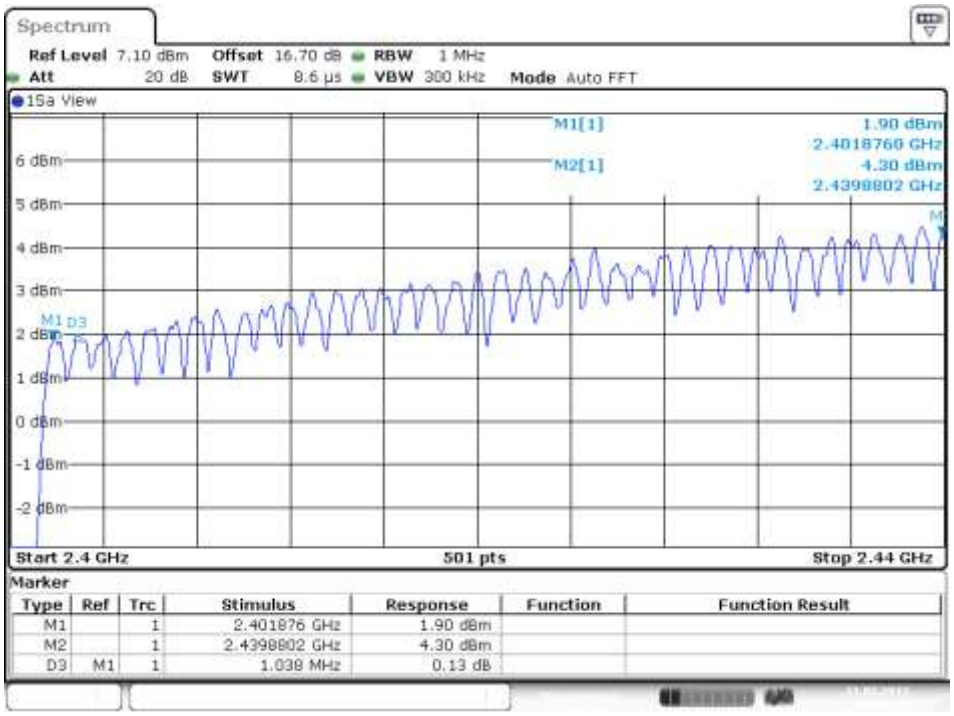
A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to and the video bandwidth was set to . The sweep time was set to auto couple and the trace was allowed to stabilize before making the final measurement.

Number of hopping channels



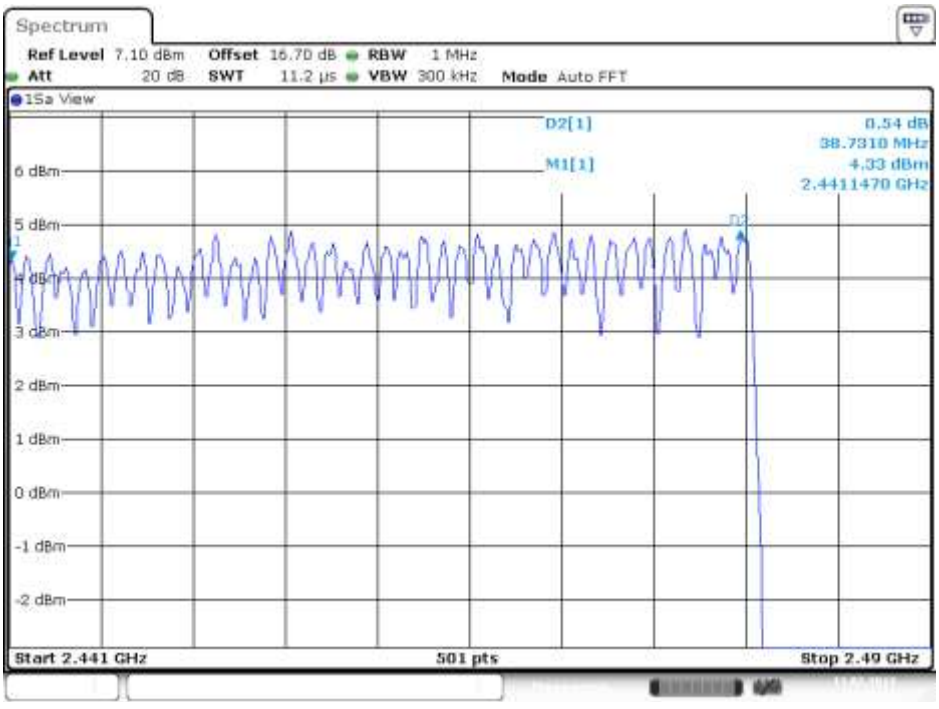
Date: 24.JAN.2013 14:49:51

Plot A: DH5 number of hopping channels is 79



Date: 11.FEB.2013 14:55:18

Plot B: 3DH5 number of hopping channels is 39



Date: 11.FEB.2013 14:58:11

Plot C: 3DH5 number of hopping channels is 40

Channel Occupancy

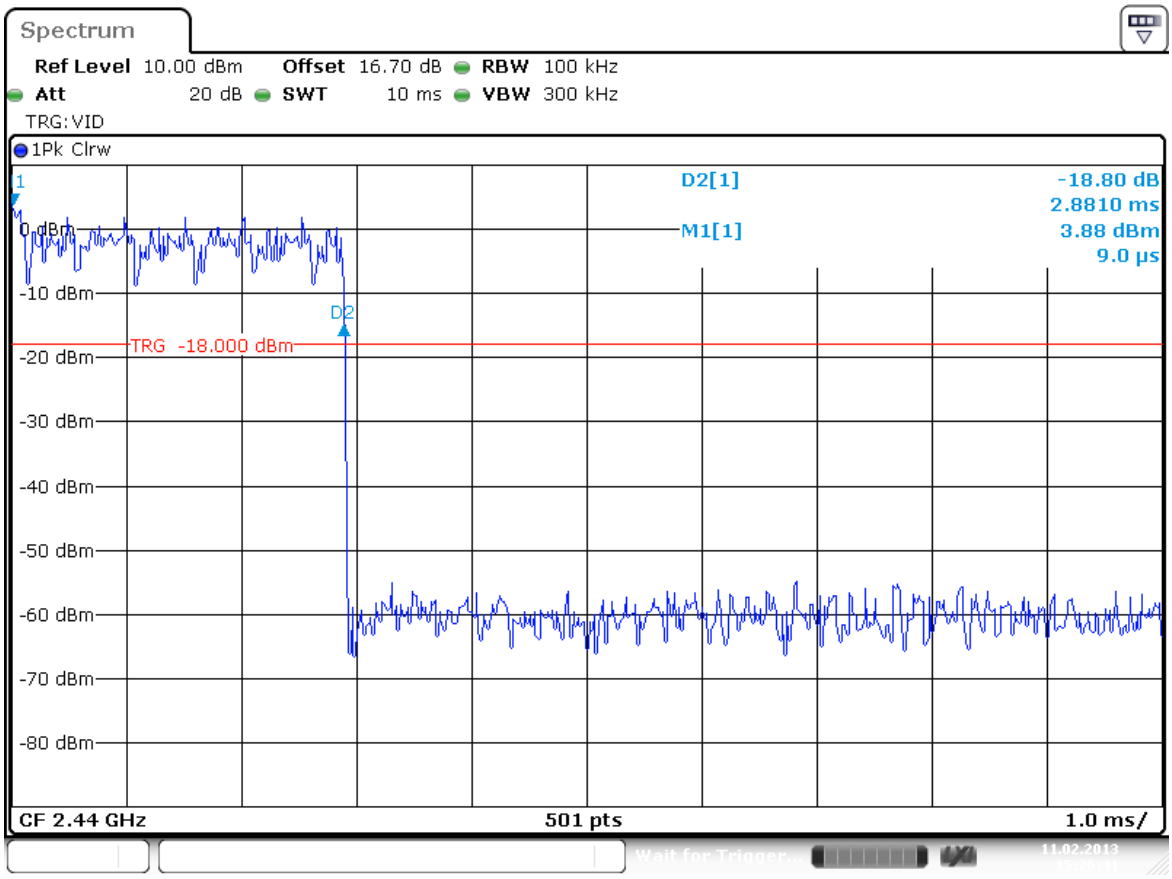
Specification

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400 ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed = 0.4 x 79= 31.6 seconds.

Results

1. TIME OF OCCUPANCY (DWELL TIME) FOR PACKET TYPE DH5.

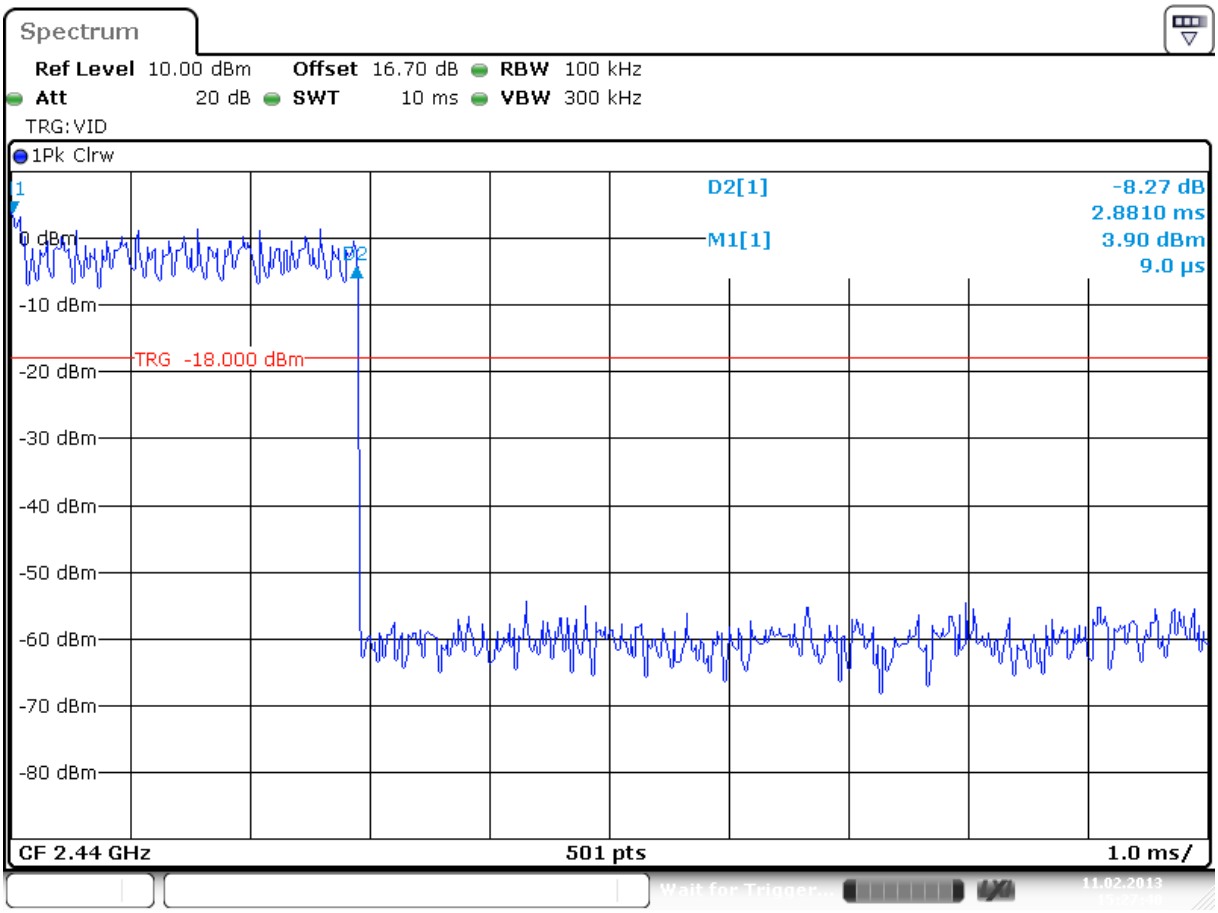
The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 Packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/2 = 800 hops per second with 79 channels. So you have each channel 800/79 = 10.127 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 10.127 x 31.6 = 320.0132 times of appearance.
Each Tx-time per appearance is 2.881 ms (see next plot).
So we have 320.0132 x 2.881 ms = 921.96 ms per 30.4 seconds.



Date: 11.FEB.2013 15:26:42

2. TIME OF OCCUPANCY (DWELL TIME) FOR PACKET TYPE 3DH5.

The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A 3DH5 Packet need 5 time slots for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/5 = 266.67 hops per second with 79 channels. So you have each channel 266.67/79 =3.38 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 3.38 x 31.6 = 106.808 times of appearance.
Each Tx-time per appearance is 2.881 ms (see next plot).
So we have 106.808 x 2.881 ms = 307.71 ms per 30.4 seconds.



Date: 11.FEB.2013 15:27:41

5.2.4 Carrier Frequency Separation

RESULT: PASS

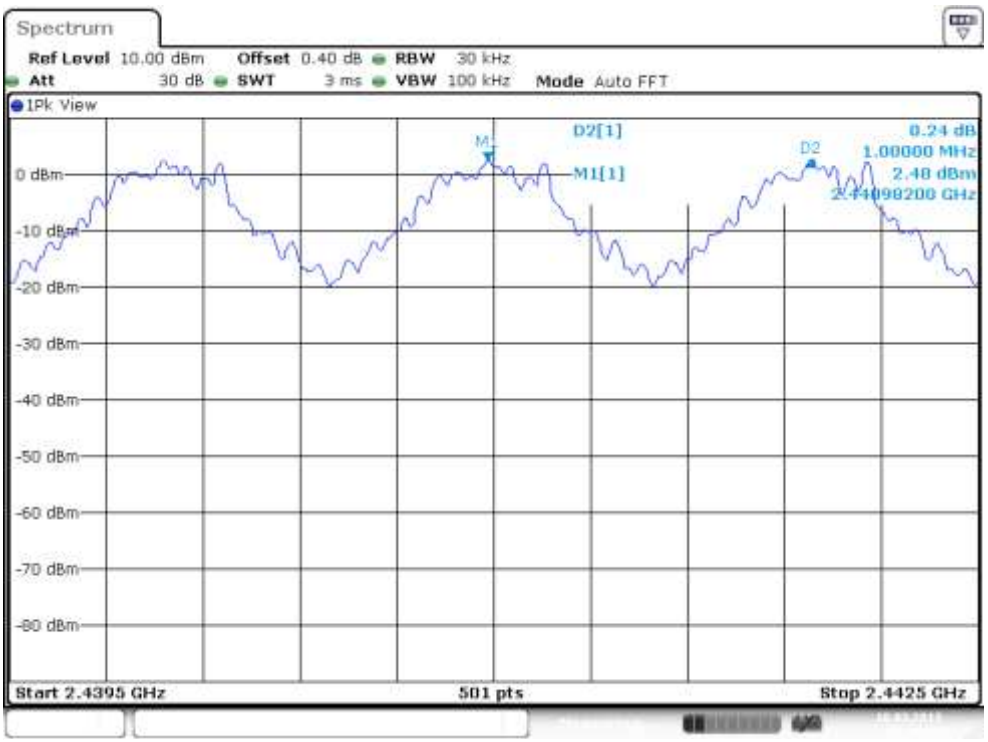
Date of testing: 2013-03-18

Requirements: FCC 15.247(a)(1) and RSS-210 A8.1(b)

Frequency hopping systems operating in the 2400-2483.5MHz band shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. In case of an output power less than 125mW, the frequency hopping system may have channels separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

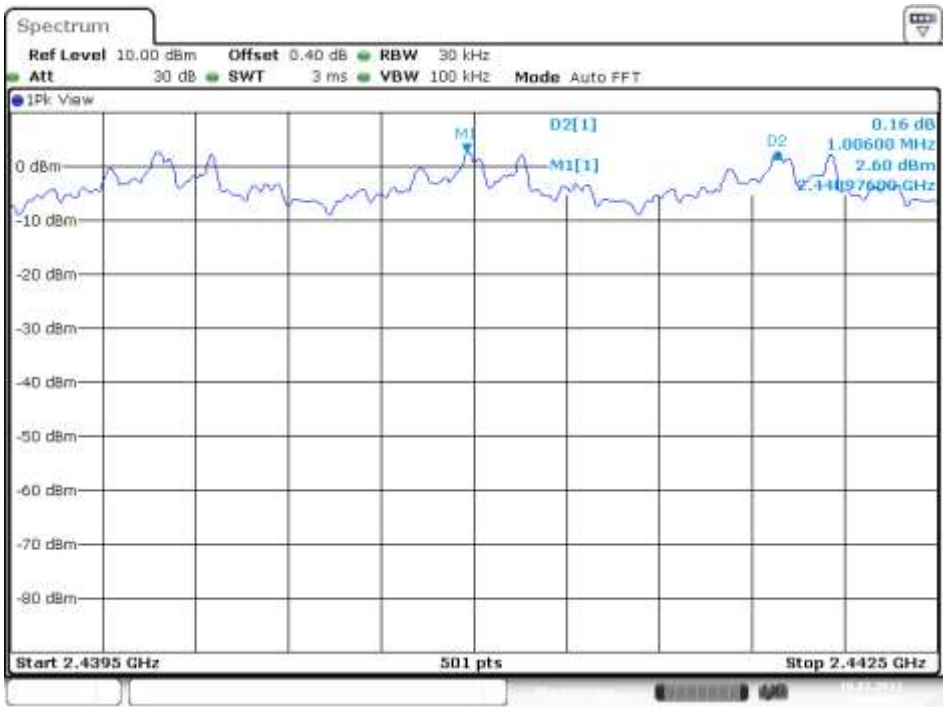
Test procedure: ANSI C63.10-2009.

A spectrum analyzer was connected to the antenna port of the EUT. The Delta Marker function was used to determine the separation between the peaks of two adjacent channels.



Date: 18.MAR.2013 15:46:16

Plot showing DH5 Carrier Frequency Separation of 1.000 MHz (limit= 25kHz or more).



Date: 18.MAR.2013 15:44:25

Plot showing 3DH5 Carrier Frequency Separation of 1.006 MHz (limit= 25kHz or more).

5.2.5 Band Edge Conducted Emissions

RESULT: Pass

Date of testing: 2013-02-11

Requirements:

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

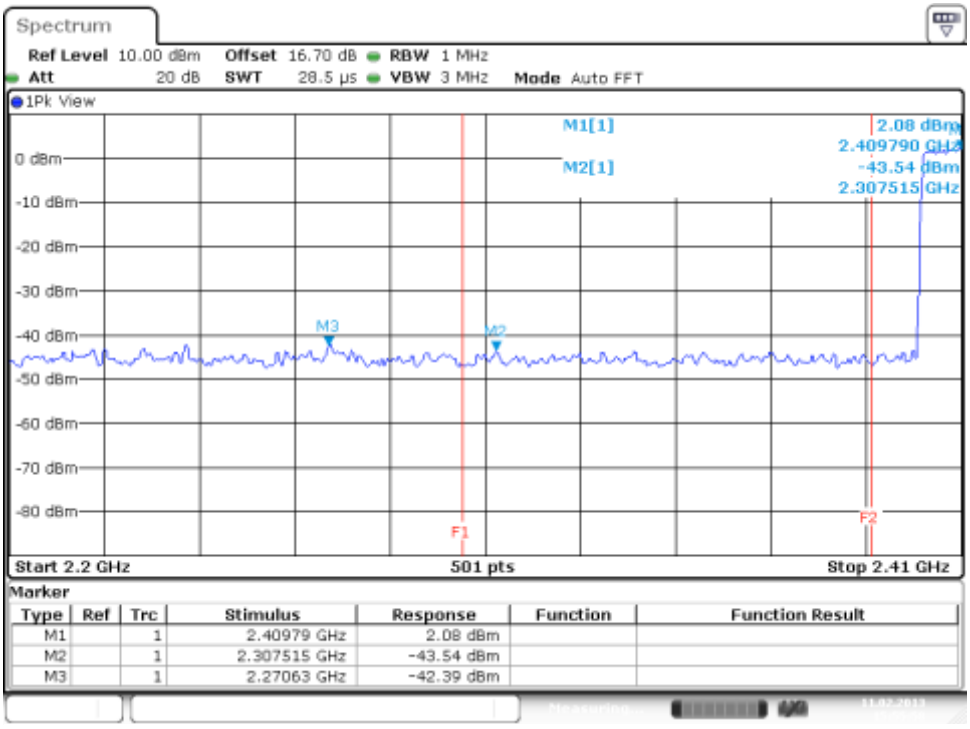
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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: ANSI C63.10-2009

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.

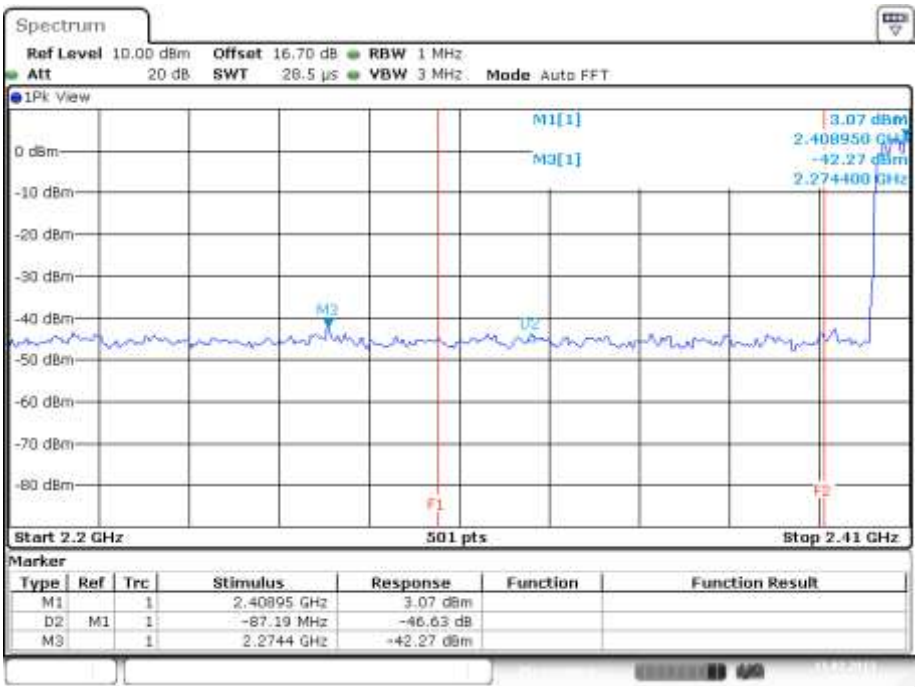
The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

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



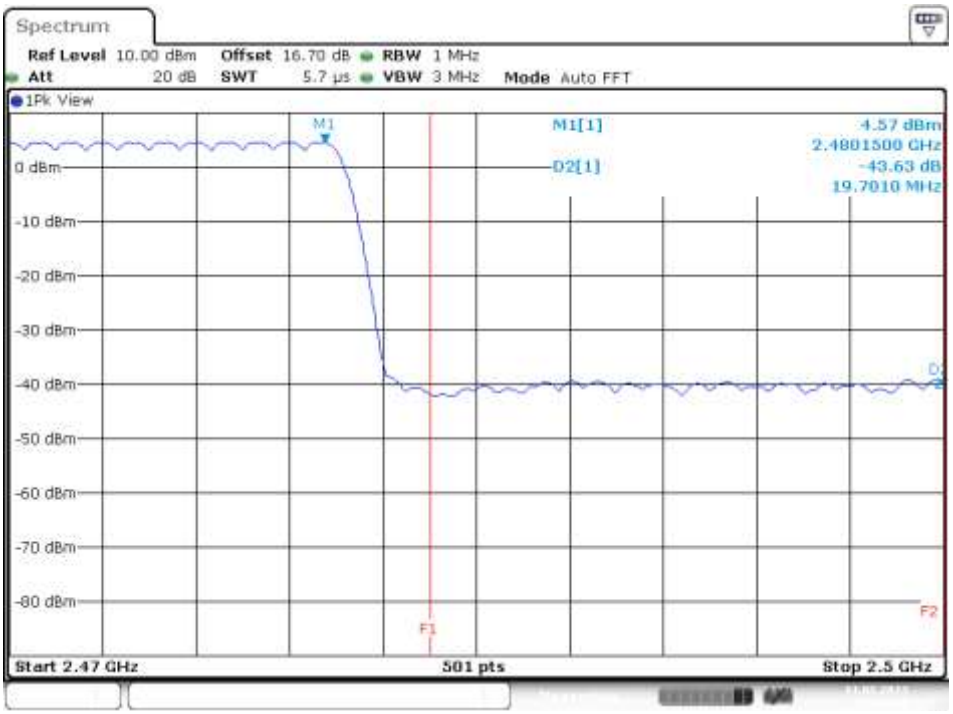
Date: 11.FEB.2013 15:55:58

Band Edge Conducted Emission- Lower band edge, Spectral Diagram, 2402 MHz- DH5- Antenna 1



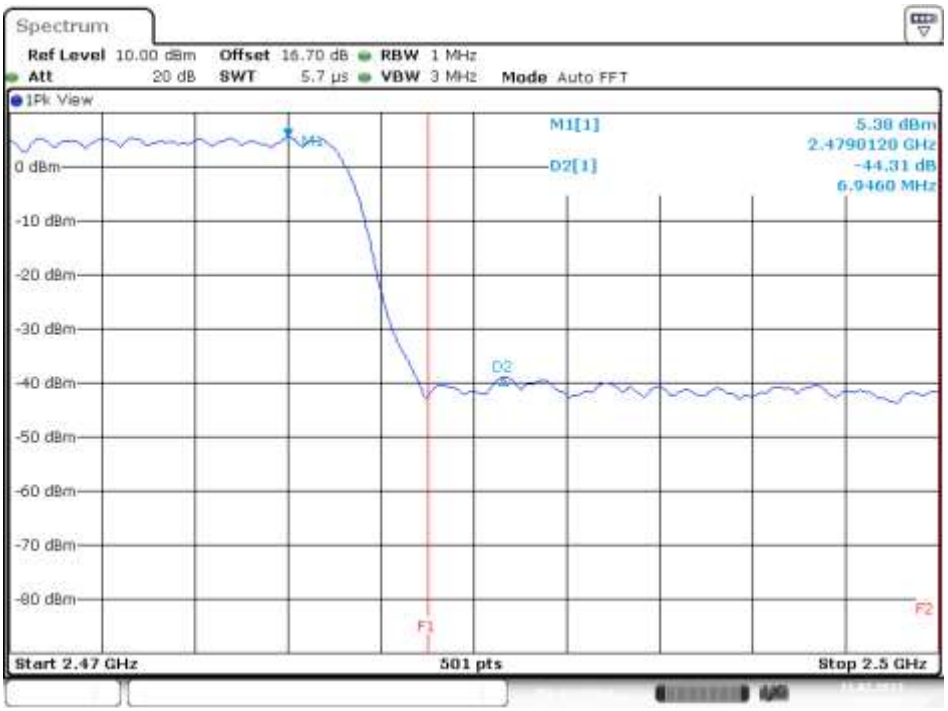
Date: 11.FEB.2013 15:52:35

Band Edge Conducted Emission- Lower band edge, Spectral Diagram, 2402 MHz-3DH5- Antenna 1



Date: 11.FEB.2013 15:58:09

Band Edge Conducted Emission- Higher band edge, Spectral Diagram, 2480 MHz-DH5-Antenna 1



Date: 11.FEB.2013 16:00:38

Band Edge Conducted Emission- Higher band edge, Spectral Diagram, 2480 MHz-3DH5-Antenna 1

5.2.6 Radiated Spurious Emissions of Transmitter

RESULT: PASS

Date of testing: 2012-01-10

Frequency range: 30MHz - 25GHz

Requirements:

FCC 15.205, FCC 15.209 and FCC 15.247(d) and RSS-Gen

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a), must comply with the radiated emission limits specified in FCC 15.209(a).

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).

Test procedure: ANSI C63.10-2009.

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. 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.

Correction factors are incorporated in the spectrum analyzers as an automated function.
Refer to section 4.2 for the power settings and modes.
Correction factors includes: antenna factor, cable loss and pre-amplifier gain.

Radiated Emission, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations

Freq. [MHz]	Antenna Orientation	Reading QP [dBµV]	Factor [dB(1/m)]	Level QP [dBµV/m]	Limit [dBµV/m]	Margin QP [dB]
66.86	Vertical	15.1	5.4	20.5	40.0	19.5
111.48	Vertical	13.6	11.4	25.0	43.5	18.5
253.10	Vertical	13.7	14.2	27.9	46.0	18.1
774.96	Vertical	14.7	24.8	39.5	46.0	6.5
844.80	Vertical	15.3	26.1	41.4	46.0	4.6
922.40	Vertical	15.4	27.6	43.0	46.0	3.0

Note: - Level QP = Reading QP + Factor
- Tested in modes as described in section 4.2, highest values noted.
- Quasi Peak detector used with a bandwidth of 120 kHz

Radiated Emission, 30 MHz - 25GHz, Horizontal and Vertical Antenna Orientations, 2402 MHz – DH5 – Antenna 1

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
220.7	Vertical	Qp	35.7	43.5	-7.8
708.6	Vertical	Qp	37.2	46.0	-8.8
848.0	Vertical	Qp	36.6	46.0	-9.4
952.6	Vertical	Qp	37.1	46.0	-8.9
4804	Vertical	Pk	28.2	54.0	-25.8
12750	Vertical	Pk	25.2	54.0	-28.8

Note: - Quasi Peak detector used with a bandwidth of 120 kHz for frequencies below 1 GHz
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

Radiated Emission, 30 MHz - 25GHz, Horizontal and Vertical Antenna Orientations, 2440 MHz – DH5 – Antenna 1

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
222.5	Vertical	Qp	34.6	43.5	-8.9
433.5	Vertical	Qp	34.9	46.0	-11.1
710.5	Vertical	Qp	37.1	46.0	-8.9
848.0	Vertical	Qp	36.2	46.0	-9.8
4880	Vertical	Pk	31.3	54.0	-22.7
12750	Vertical	Pk	25.5	54.0	-28.8

Note:
- Quasi Peak detector used with a bandwidth of 120 kHz for frequencies below 1 GHz
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

Radiated Emission, 30 MHz - 25GHz, Horizontal and Vertical Antenna Orientations, 2480 MHz – DH5 – Antenna 1

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
242.0	Vertical	Qp	34.9	43.5	-8.6
532.4	Vertical	Qp	36.1	46.0	-9.9
710.5	Vertical	Qp	36.1	46.0	-9.9
846.1	Vertical	Qp	36.3	46.0	-9.7
4960	Vertical	Pk	22.3	54.0	-31.7
12750	Vertical	Pk	25.2	54.0	-28.8

Note: - Quasi Peak detector used with a bandwidth of 120 kHz for frequencies below 1 GHz
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

Radiated Emission, 30 MHz - 25GHz, Horizontal and Vertical Antenna Orientations, 2402 MHz – 3DH5 – Antenna 1

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]	Margin 48[dB]
120.0	Vertical	Qp	35.7	43.5	-7.8
528.6	Horizontal	Qp	35.8	46.0	-10.2
710.5	Vertical	Qp	37.5	46.0	-8.5
846.1	Vertical	Qp	37.6	46.0	-8.4
4804	Horizontal	Pk	39.8	54.0	-14.2
12750	Vertical	Pk	25.2	54.0	-28.8

Note: - Quasi Peak detector used with a bandwidth of 120 kHz for frequencies below 1 GHz
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

Radiated Emission, 30 MHz - 25GHz, Horizontal and Vertical Antenna Orientations, 2440 MHz – 3DH5 – Antenna 1

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
47.1	Vertical	Qp	23.4	43.5	-20.1
237.5	Vertical	Qp	21.3	46.0	-24.7
371.0	Vertical	Qp	19.3	46.0	-26.7
850.0	Horizontal	Qp	27.5	46.0	-18.5
4880	Vertical	Pk	32.0	54.0	-22.0
12750	Vertical	Pk	25.2	54.0	-28.8

Note: - Quasi Peak detector used with a bandwidth of 120 kHz for frequencies below 1 GHz
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

Radiated Emission, 30 MHz - 25GHz, Horizontal and Vertical Antenna Orientations, 2480 MHz – 3DH5 – Antenna 1

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
47.1	Vertical	Qp	23.3	43.5	-20.2
237.5	Vertical	Qp	21.5	46.0	-24.5
371.0	Vertical	Qp	19.9	46.0	-26.1
848.5	Horizontal	Qp	28.1	46.0	-17.9
4960	Vertical	Pk	28.6	54.0	-25.4
12249	Vertical	Pk	25.2	54.0	-28.8

Note: - Quasi Peak detector used with a bandwidth of 120 kHz for frequencies below 1 GHz
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

5.2.7 Radiated Spurious Emissions of Transmitter in restricted bands

RESULT: PASS

Date of testing: 2013-01-10 and 2013-02-04

Requirements:

FCC 15.205, FCC 15.209 and FCC 15.247(d) and RSS-Gen

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a), must comply with the radiated emission limits specified in FCC 15.209(a).

Test procedure: ANSI C63.10-2009.

Frequency Range (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Detector	Measurement distance (m)
0.009-0.490	2400/F(kHz)	43.5 > 13.8	Average	300
0.490-1.705	24000/F(kHz)	33.8 > 22.9	Average	300
1.705 - 30.0	30	29.5	Quasi peak	30
30 - 88	100	40.0	Quasi peak	3
88 - 216	150	43.5	Quasi peak	3
216 - 960	200	46.0	Quasi peak	3
960 - 25000	500	54.0	Average	3

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. 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 4.5-5.15 GHz and 5.35-5.46 GHz. 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.

Correction factors are incorporated in the spectrum analyzers as an automated function.
Refer to section 4.2 for the power settings and modes.
Correction factors includes: antenna factor, cable loss and pre-amplifier gain.

Correction factors are incorporated in the spectrum analyzers as an automated function.
Refer to section 4.2 for the power settings and modes.
Correction factors includes: antenna factor, cable loss and pre-amplifier gain.

Operating frequency [GHz]	Operation mode	Restricted frequency band [GHz]	Antenna Orientation	Frequency of the highest peak in the restricted band [GHz]	Level Pk of the highest peak in the restricted band [dBµV/m]	Limit [dBµV/m]
2.402	DH5	2.31 – 2.39	Vertical	2.3720	43.6	54
2.440	DH5	2.31 – 2.39	Vertical	2.3729	43.5	54
2.480	DH5	2.31 – 2.39	Vertical	2.3835	45.6	54
2.402	3DH5	2.4835-2.5	Vertical	2.3598	45.9	54
2.440	3DH5	2.4835-2.5	Vertical	2.3604	43.1	54
2.480	3DH5	2.4835-2.5	Vertical	2.4920	48.4	54

The highest peak in the restricted band is noted for each operating frequency.

5.3 Spurious emissions in receive mode

RESULT: Pass

Date of testing: 2013-01-10

Requirements: RSS-Gen

Radiated emissions from receiver shall not exceed the radiated limits in the table below.

Freq. [MHz]	Detector	Measurement Bandwidth	Limit [dBµV/m]
30 – 88	Qp	120 kHz	40.0
88 – 216	Qp	120 kHz	43.5
216 – 960	Qp	120 kHz	46.0
Above 916	Av	1 MHz	54.0

Test procedure: **Error! Reference source not found.**ANSI C63.10-2009, RSS-Gen section 4.10

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. 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 30 MHz to 7500 MHz. 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 6 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.
Correction factors are incorporated in the spectrum analyzers as an automated function.
Correction factors includes: antenna factor, cable loss and pre-amplifier gain.

Results:

Freq. [MHz]	Antenna Orientation	Detector/ Bandwidth	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
47.1	Vertical	Qp / 120 kHz	37.4	40.0	-2.6
64.9	Vertical	Qp / 120 kHz	36.7	43.5	-6.8
237.5	Vertical	Qp / 120 kHz	32.4	46.0	-13.6
466.0	Vertical	Qp / 120 kHz	35.2	46.0	-10.8
4824	Vertical	Av / 1 MHz	38.9	54.0	-15.1
6436	Vertical	Av / 1 MHz	36.4	54.0	-17.6

Note: - tested up to 3 times highest tunable frequency (which is 2480 MHz), up to 7.5 GHz.
- the EUT was tested in receive mode, set at center frequency of 2440 MHz.
- tested with DH5 and 3DH5, worst case values noted

5.4 AC Power Line Conducted Measurements

5.4.1 AC Power Line Conducted Emission of Transmitter

AC power line conducted emissions are included in the Part 15B/ICES-003 testreport.
Refer to documentnumber 13e_PD97260NGW_Testreport_FCC-15B-ICES003.pdf

End of report