



Test Report No.:		12121201.fcc03		Page 1 of 396	
<i>Client:</i>	Intel Corporation 100 Center Point Circle Suite 200 Columbia, SC 29210 USA				
<i>Test Item:</i>	Unlicensed National Information Infrastructure Devices (UNII) Wireless Network Adapter Module				
<i>Identification:</i>	7260NGW	<i>MAC address:</i>	001500B6698F		
<i>Project No.:</i>	12121201	<i>Date of Receipt:</i>	January 07, 2013		
<i>Testing Location:</i>	TÜV Rheinland EPS B.V. Eiberkamp 10 9351VT Leek				
<i>Test Specification:</i>	FCC 47 CFR Part 15, Subpart E, Section 15.407 (10-1-12 Edition) RSS-Gen (issue 3, December 2010) an RSS-210 (Issue 8, December 2010) ANSI C63.10-2009 KDB Publication No.789033 D01 v01r02 9/26/2012 KDB 644545 D01 and D01 Guidance for IEEE 802.11ac v01 dated 06/07/2012. KDB 662911 D01 Multiple Transmitter Output v01r02 dated 09/26/2012 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.				
<i>Test Result:</i>	The test item passed the test specification(s).				
<i>Testing Laboratory:</i>	TÜV Rheinland EPS B.V. Eiberkamp 10 9351 VT Leek				
<i>Tested by:</i>			<i>Reviewed by:</i>		
2013-04-17	R. van der Meer / Inspector		2013-04-17	O. Hoekstra / 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 VOLTAGE REQUIREMENTS

RESULT: PASS

5.1.2 ANTENNA REQUIREMENTS

RESULT: PASS

5.1.3 RESTRICTED BANDS OF OPERATION

RESULT: PASS

5.2.1 CONDUCTED MEASUREMENTS AT ANTENNA PORT

RESULT: PASS

5.2.2 6dB AND 99% BANDWIDTH

RESULT: PASS

5.2.3 PEAK POWER SPECTRAL DENSITY

RESULT: PASS

5.2.4 BAND EDGE CONDUCTED EMISSIONS

RESULT: Pass

5.2.5 RADIATED SPURIOUS EMISSIONS OF TRANSMITTER

RESULT: PASS

5.2.6 RADIATED SPURIOUS EMISSIONS OF TRANSMITTER IN RESTRICTED BANDS

RESULT: PASS

5.3.1 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 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.

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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 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
Climat chamber	Hereaus	--	12640	03/2012	03/2013
Voltage regulator	Variac	RFT LTS006	99161	03/2012	03/2013
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 facility	Comtest	FCC listed: 90828 IC: 2932G-2	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.

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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 - UNII
 Manufacturer : Intel Corporation
 Brand : Intel
 Model(s) : 7260NGW
 MAC address : 001500B6698F
 Voltage input rating : +3.3 V
 Voltage output rating : --
 Current input rating : --
 Antenna : AUX3
 Operating frequency : 5.15-5.25 MHz, 5.25-5.35 MHz and 5.47-5.725 MHz
 Modulation : OFDM
 Remarks : n.a.

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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, 15.407 and ANSI C63.10-2009

KDB Publication No.789033 D01 v01r02 9/26/2012 .

KDB Publication NO. 644545 D01 v01 6/7/2012 and

KDB Publication NO. 644545 D02 v01 6/7/2012

are used for guidance for 802.11ac testing.

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

For details, see under each test item.

4.2 Operation Modes

5.15-5.25 MHz band

Modulation	Antenna	Test frequencies (MHz)					
		Lowest	Power setting	Middle	Power setting	Highest	Power setting
6Mb OFDM	1	5180	14.0	5200	17.0	5240	16.5
6Mb OFDM	2	5180	14.5	5200	17.0	5240	17.0
HT4 20 MHz	1	5180	14.0	5200	17.0	5240	16.5
HT4 20 MHz	2	5180	15.0	5200	16.5	5240	17.0
HT8 20 MHz	1+2	5180	9.5 / 9.5	5200	11.0 / 11.0	5240	13.0 / 13.0
HT4 40 MHz	1	5190	11.0	--	--	5230	17.0
HT4 40 MHz	2	5190	10.5	--	--	5230	17.5
HT8 40MHz	1+2	5190	6.5 / 6.5	--	--	5230	12.0 / 12.0
VHT6 80 MHz	1	--	--	5210	8.0	--	--
VHT6 80 MHz	2	--	--	5210	8.0	--	--
VHT6 80 MHz	1+2	--	--	5210	4.0 / 4.0	--	--

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5.25-5.35 MHz band

Modulation	Antenna	Test frequencies (MHz)					
		Lowest	Power setting	Middle	Power setting	Highest	Power setting
6Mb OFDM	1	5260	13.5	5280	16.0	5320	13.5
6Mb OFDM	2	5260	14.0	5280	16.0	5320	12.0
HT4 20 MHz	1	5260	13.5	5280	16.5	5320	13.5
HT4 20 MHz	2	5260	14.0	5280	16.5	5320	12.0
HT8 20 MHz	1+2	5260	8.5 / 8.5	5280	11.5 / 11.5	5320	9.0 / 9.0
HT4 40 MHz	1	5270	10.5	--	--	5320	9.0
HT4 40 MHz	2	5270	9.5	--	--	5310	10.0
HT8 40MHz	1+2	5270	6.0 / 6.0	--	--	5310	6.5 / 6.5
VHT6 80 MHz	1	--	--	5290	10.5	--	--
VHT6 80 MHz	2	--	--	5290	10.0	--	--
VHT6 80 MHz	1+2	--	--	5290	5.5 / 5.5	--	--

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5.47-5.725 MHz band

Modulation	Antenna	Test frequencies (MHz)					
		Lowest	Power setting	Middle	Power setting	Highest	Power setting
6Mb OFDM	1	5500	13.5	5580	17.5	5700	13.0
6Mb OFDM	2	5500	13.0	5580	16.0	5700	12.5
HT4 20 MHz	1	5500	13.5	5580	17.5	5700	13.0
HT4 20 MHz	2	5500	13.0	5580	16.0	5700	13.0
HT8 20 MHz	1+2	5500	11.0 / 11.0	5580	14.0 / 14.0	5700	11.5 / 11.5
HT4 40 MHz	1	5510	10.5	5590	17.5	5670	17.0
HT4 40 MHz	2	5510	10.5	5590	16.0	5670	14.0
HT8 40MHz	1+2	5510	8.5 / 8.5	5590	14.5 / 14.5	5670	14.0 / 14.0
VHT6 80 MHz	1	5530	8.5	--	--	5610	14.0
VHT6 80 MHz	2	5530	8.0	--	--	5610	14.0
VHT6 80 MHz	1+2	5530	6.0 / 6.0	--	--	5610	13.5 / 13.5
VHT6 20 MHz	1	--	--	5720	18.5	--	--
VHT6 20 MHz	2	--	--	5720	18.5	--	--
VHT6 20 MHz	1+2	--	--	5720	14.0 / 14.0	--	--
VHT6 40 MHz	1	--	--	5710	17.0	--	--
VHT6 40 MHz	2	--	--	5710	17.0	--	--
VHT6 40 MHz	1+2	--	--	5710	13.5 / 13.5	--	--
VHT6 80 MHz	1	--	--	5690	14.5	--	--
VHT6 80 MHz	2	--	--	5690	14.0	--	--
VHT6 80 MHz	1+2	--	--	5690	14.0 / 14.0	--	--

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.

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.

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The test software (see section 4.4) was used to define the following two operational modes of the EUT:

- Operational mode 1: Continuous transmit a data pattern with a duty cycle less than 100%.
- Operational mode 2: Continuous receive.

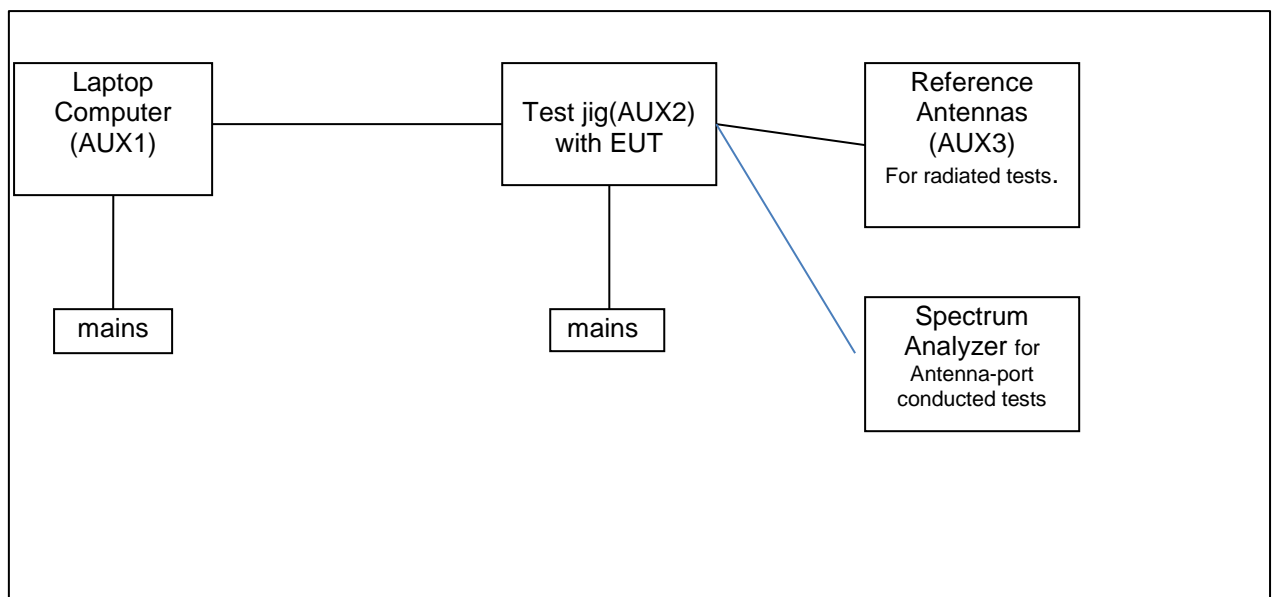
4.3 Physical Configuration for Testing

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 C63.10-2009.

Figure 1: Test Setup Diagram



Notes:

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

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4.4 Test Software

A continuous transmit or receive mode 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.

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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 5G: 5.0 dBi (declared by applicant)
Remarks: used for radiated tests

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Test results for 5.15 GHz – 5.25 GHz band

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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.

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5.2 Conducted Measurements at Antenna Port

5.2.1 Maximum Conducted Output Power and Peak Power Spectral Density

RESULT: Pass

Date of testing: 2013-03-22

Requirements:

FCC 15.407(a)(1)

For the 5.15 MHz to 5.25 MHz band, the maximum conducted output power shall not exceed the lesser of 50 mW (17dBm) or 4dBm +10logB, where B is the 26 dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW (23 dBm) or 10 + 10 log₁₀ B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

Within the emission bandwidth, when the peak spectral density per MHz over any continuous transmission exceeds the average (10 log₁₀ B) value by more than 3 dB, the permissible power spectral density shall be reduced by the excess amount.

Test procedure:

ANSI C63.10-2009

KDB Publication No.789033 D01 v01r02 9/26/2012 and KDB Publication No. 662911 D01

Multiple Transmitter Output v01r02.

KDB Publication No. 644545 D01 and D02.

The Maximum Conducted Output Power was measured using Method SA-2 in KDB 789033.

The maximum 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. An automated system corrects for duty cycle and cable losses.

The data rates of 6Mb/s for 802.11a, HT4 (SISO)/HT8 (MIMO) for 802.11n20/ac20 and n40/ac40, and VHT6 (SISO)/(MIMO) for 802.11 ac80 were selected based on preliminary testing that identified those rates corresponding to the worst cases for output power and spurious levels at the band edges.

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

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The peak power spectral density (PPSD) was measured using the method according to point E) (Method SA-1) of Guidance 789033 D01.

For MIMO mode, the *Measure and add 10 log(NANT) dB*, (where *NANT* is the number of outputs) technique was used according to the Guidance for Emission Testing of Transmitters with Multiple Outputs in the Same Band 662911 D01 Multiple Transmitter Output v01r02 dated 9/26/2012.

With this technique, spectrum measurements are performed at each output of the device, and the quantity *10 log(NANT) dB* is added to each spectrum value before comparing to the emission limit. Number of outputs = 2.

The e.i.r.p. levels are calculated by adding the declared maximum antenna gain (5.0 dBi).

For MIMO mode, the Guidance on directional Gain calculations according to the Guidance for Emission Testing of Transmitters with Multiple Outputs in the Same Band 662911 D01 Multiple Transmitter Output v01r02 dated 9/26/2012 was used. The number of transmit antennas (*NANT*) are 2 and the number of spatial streams (*Nss*) are 2 and therefore the Array Gain is 0 dB.

plots : Peak power plots,

Plots of the Maximum Conducted Output Power and Peak Power spectral Density are provided on the next pages, correction factors included in the reading.

Directional gain of the antennas used was 5.0 dBi so no reduction in maximum conducted output power and the peak power spectral density is required.

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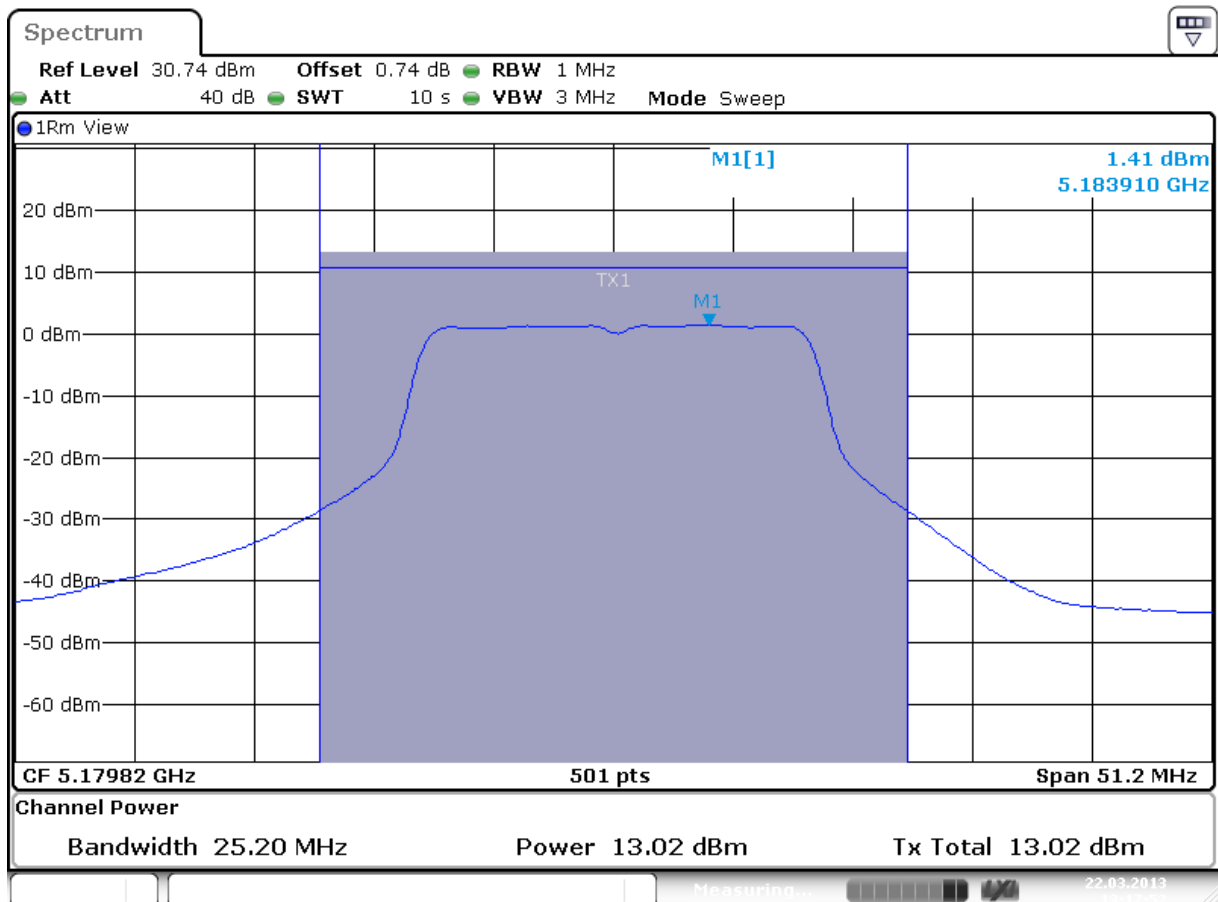
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Maximum Conducted Output Power

Operation mode: 6Mb OFDM, Antenna 1

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5180	13.0	18.0	1.41	6.41	A
5200	15.5	18.5	3.86	8.86	B
5240	15.4	18.4	3.83	8.83	C

Result: Pass



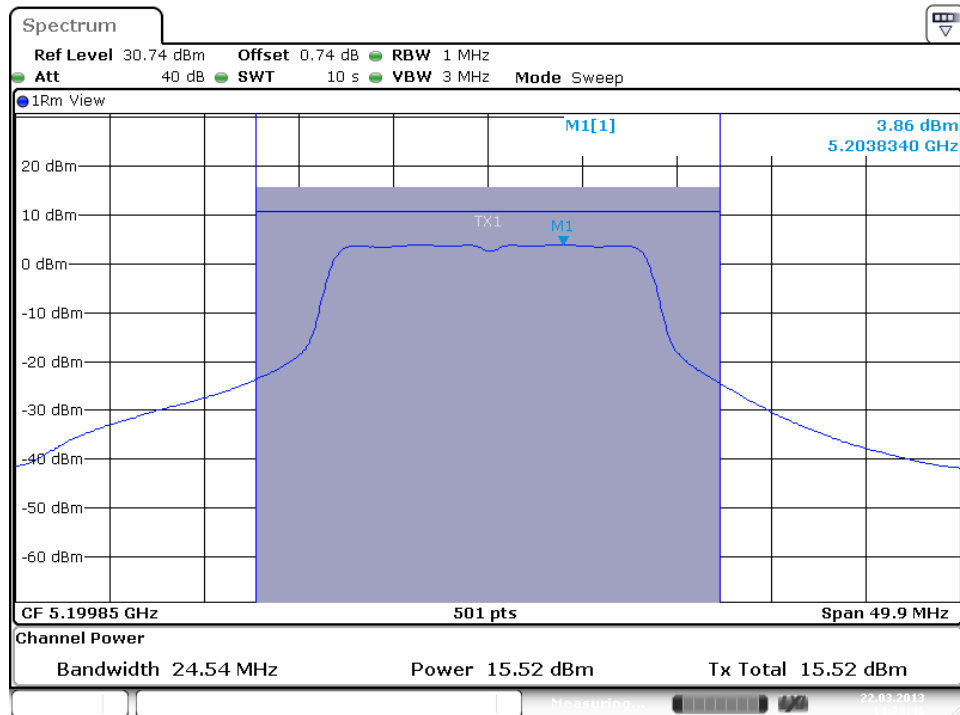
Date: 22.MAR.2013 13:17:52

Plot A

Test Report No.:

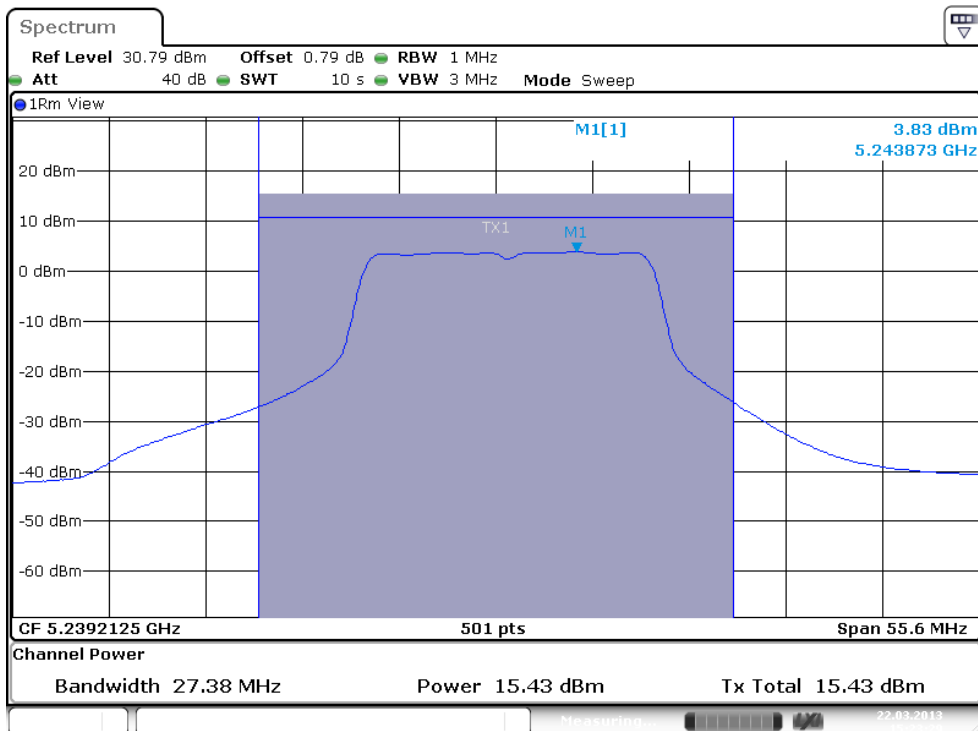
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Date: 22.MAR.2013 14:29:46

Plot B



Date: 22.MAR.2013 15:23:29

Plot C

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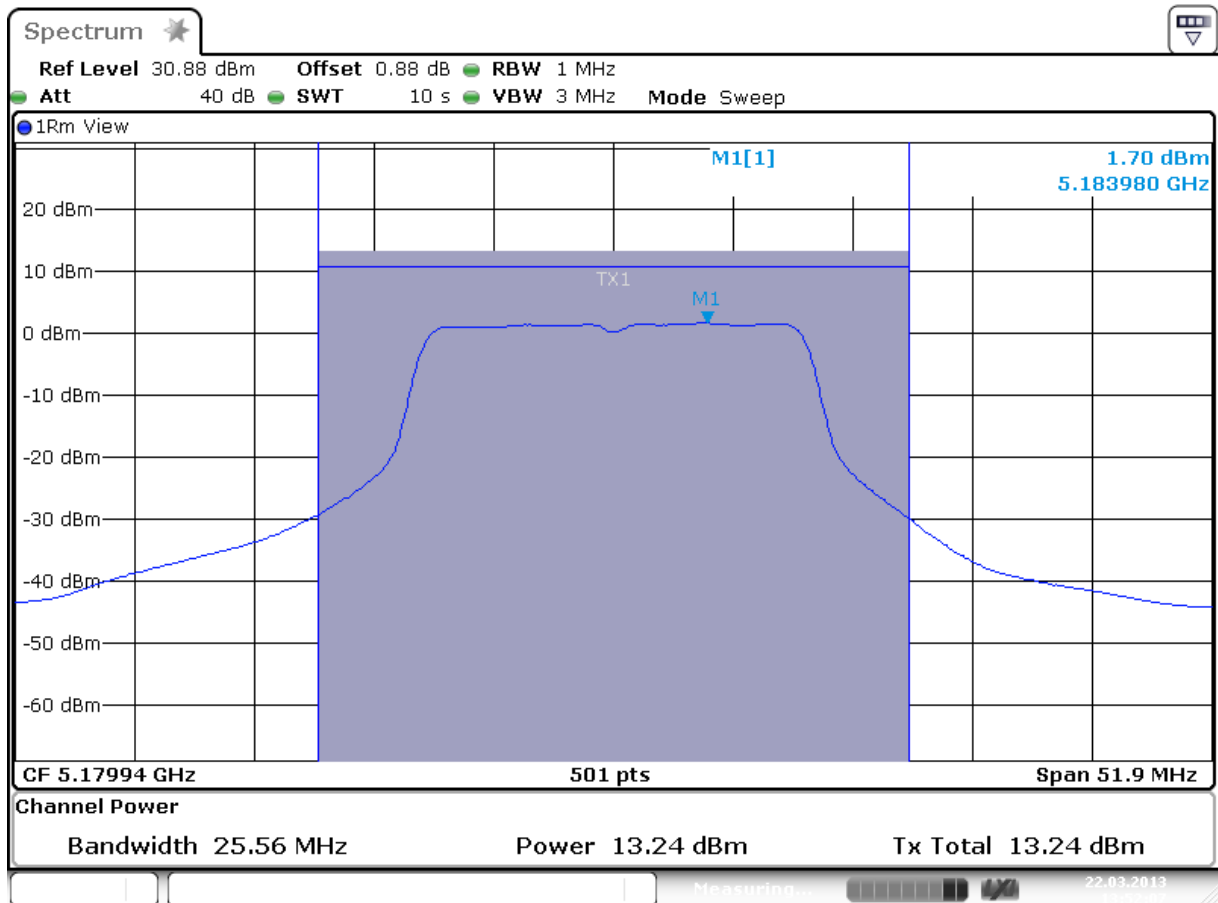
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Operation mode: 6Mb OFDM, Antenna 2

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5180	13.2	18.2	1.70	6.70	A
5200	15.5	20.5	3.95	8.95	B
5240	15.6	20.6	3.92	8.92	C

Result: Pass



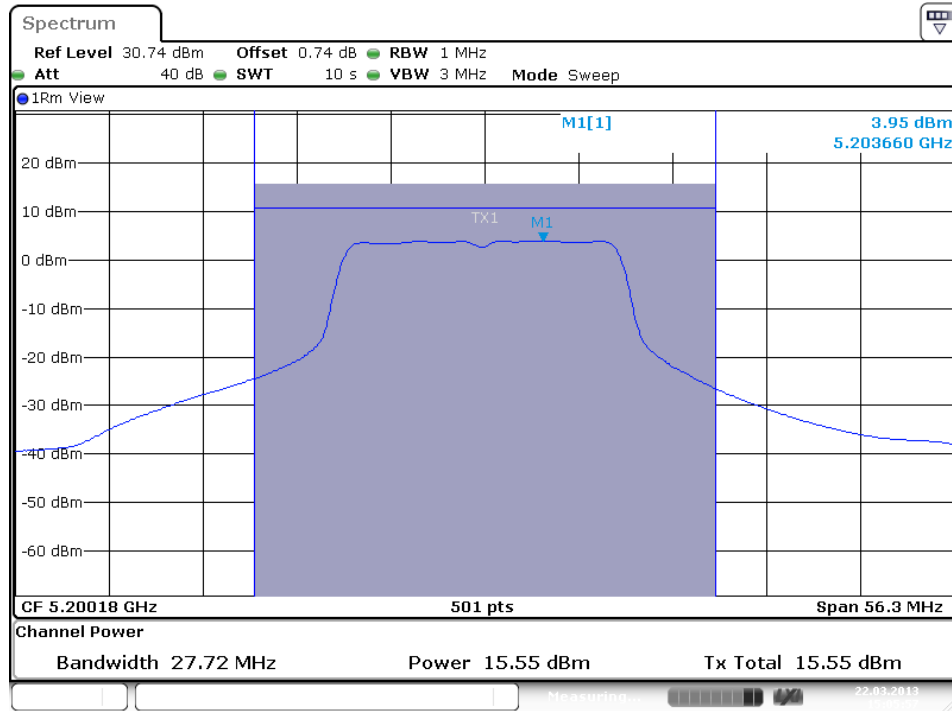
Date: 22.MAR.2013 13:52:08

Plot A

Test Report No.:

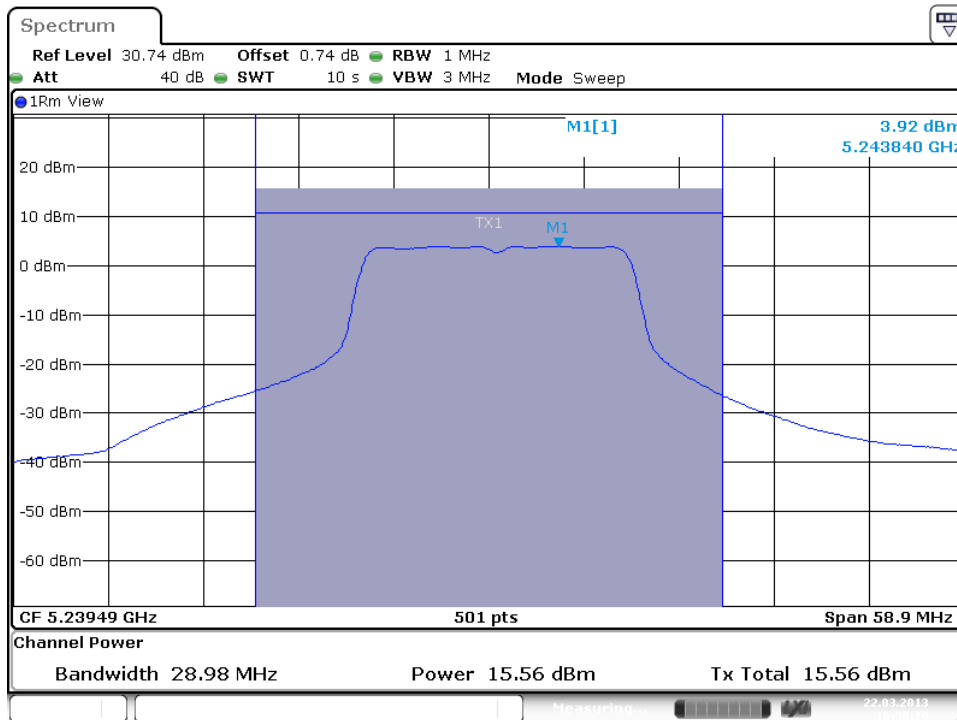
12121201.fcc03

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Date: 22.MAR.2013 15:05:58

Plot B



Date: 22.MAR.2013 16:50:10

Plot C

Test Report No.:

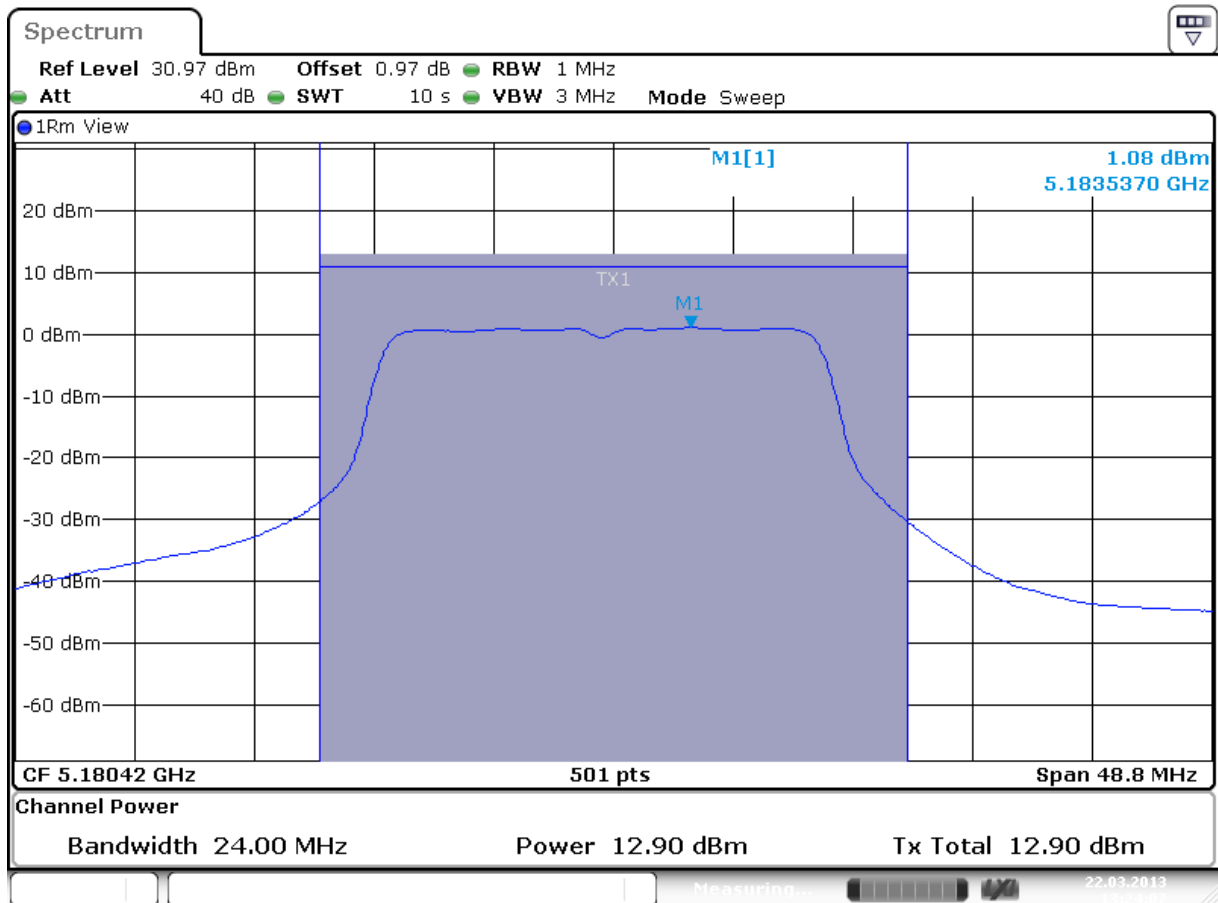
12121201.fcc03

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Operation mode: HT4 20 MHz, Antenna 1

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5180	12.9	17.9	1.08	6.08	A
5200	15.6	20.6	3.72	8.72	B
5240	15.5	20.5	3.69	8.69	C

Result: Pass



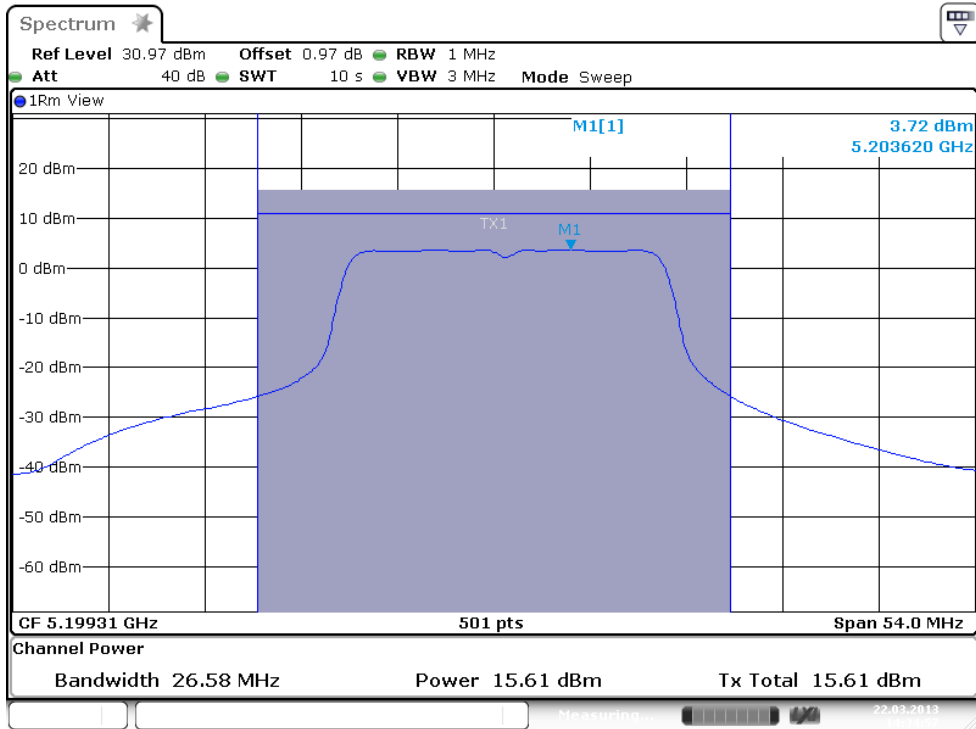
Date: 22.MAR.2013 13:24:06

Plot A

Test Report No.:

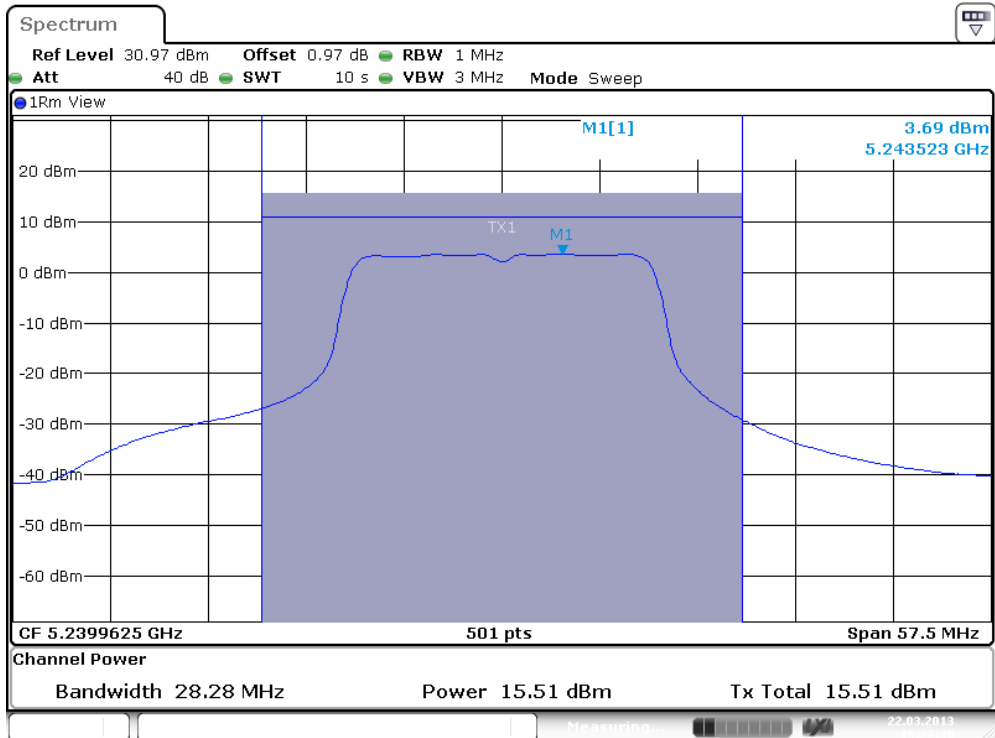
12121201.fcc03

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Date: 22.MAR.2013 14:34:57

Plot B



Date: 22.MAR.2013 15:27:30

Plot C

Test Report No.:

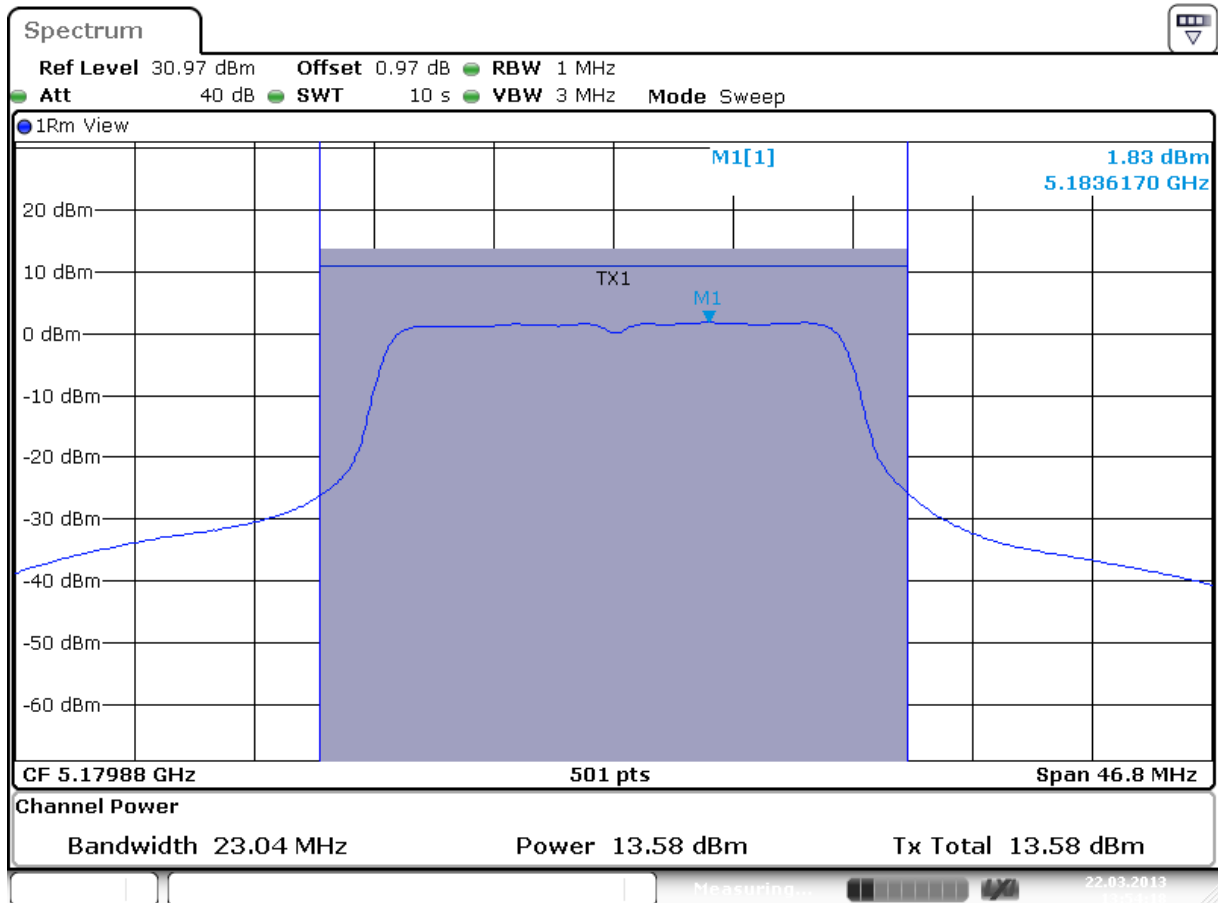
12121201.fcc03

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Operation mode: HT4 20 MHz, Antenna 2

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5180	13.6	18.6	1.83	6.83	A
5200	15.5	20.5	3.71	8.71	B
5240	15.6	20.6	3.78	8.78	C

Result: Pass



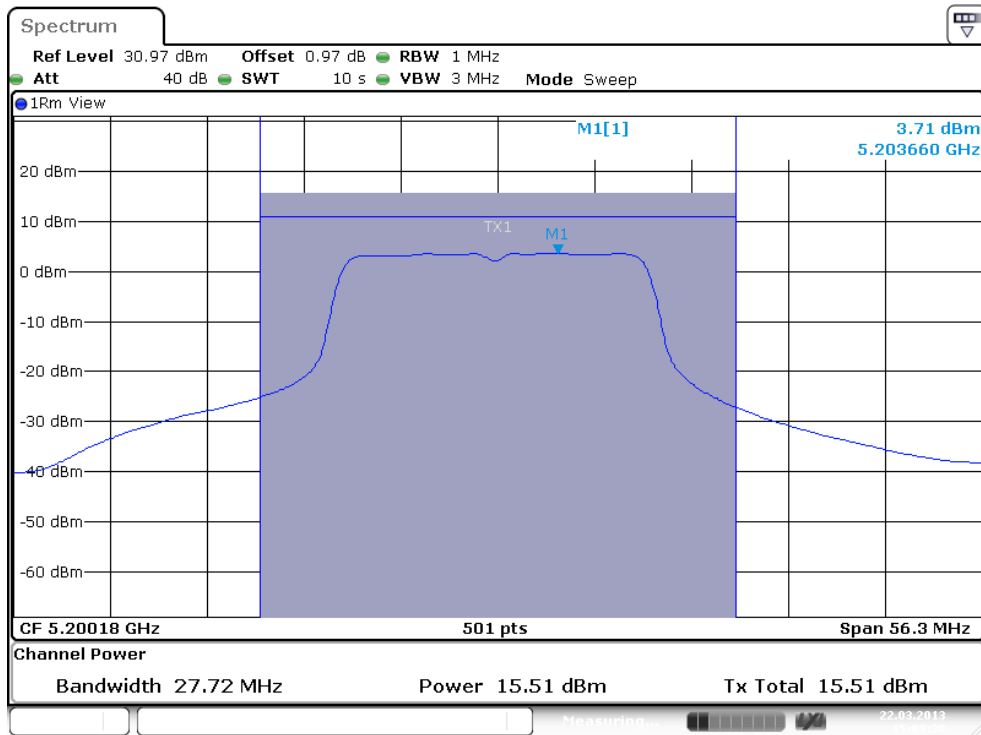
Date: 22.MAR.2013 13:54:18

Plot A

Test Report No.:

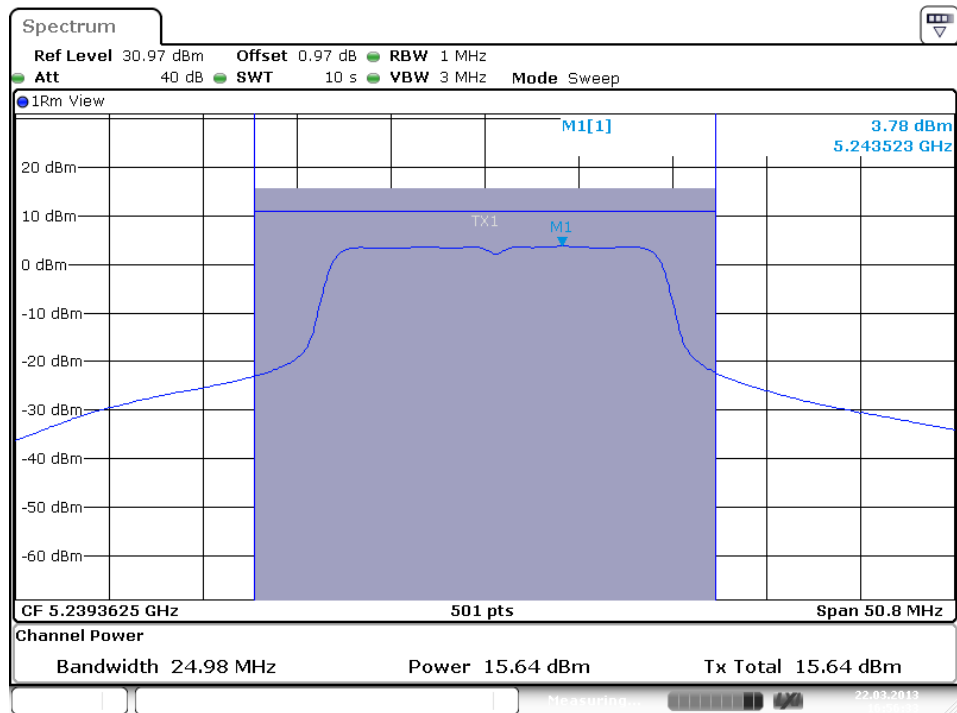
12121201.fcc03

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Date: 22.MAR.2013 15:09:38

Plot B



Date: 22.MAR.2013 16:56:33

Plot C

Test Report No.:

12121201.fcc03

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Operation mode: HT8 20 MHz, Antenna 1+2

Frequency [MHz]	Maximum conducted output power Ant1 / Ant2 [dBm]	Maximum conducted output power Ant1 + Ant2 [mW]	Maximum conducted output power Ant1+Ant2 e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5180	8.7 / 8.2	14.0	16.5	-0.2	4.8	A1 / A2
5200	9.9 / 9.9	19.5	17.9	1.0	6.0	B1 / B2
5240	10.3 / 10.2	21.2	18.3	1.5	6.5	C1 / C2

Result: Pass

Note1: see plot A1 (on next page) and add 3dB.

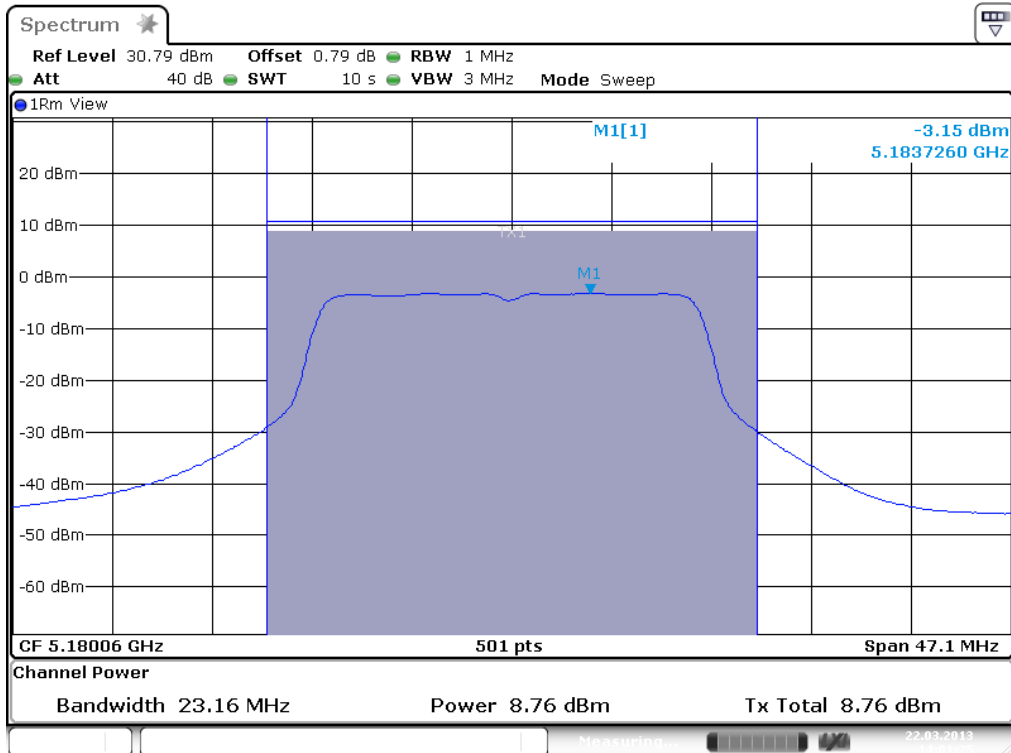
Note2: see plot B1 (on page 29) and add 3dB.

Note3: see plot C1 (on page 30) and add 3dB.

Test Report No.:

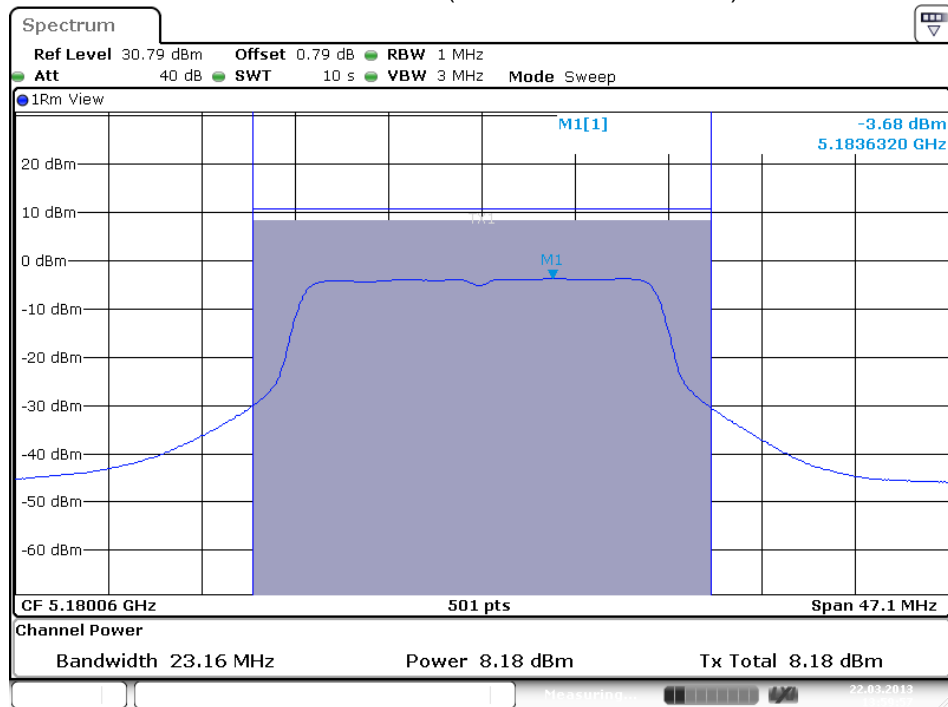
12121201.fcc03

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Date: 22.MAR.2013 14:01:25

Plot A1 Antenna 1 (add 3dB for max PPSD)



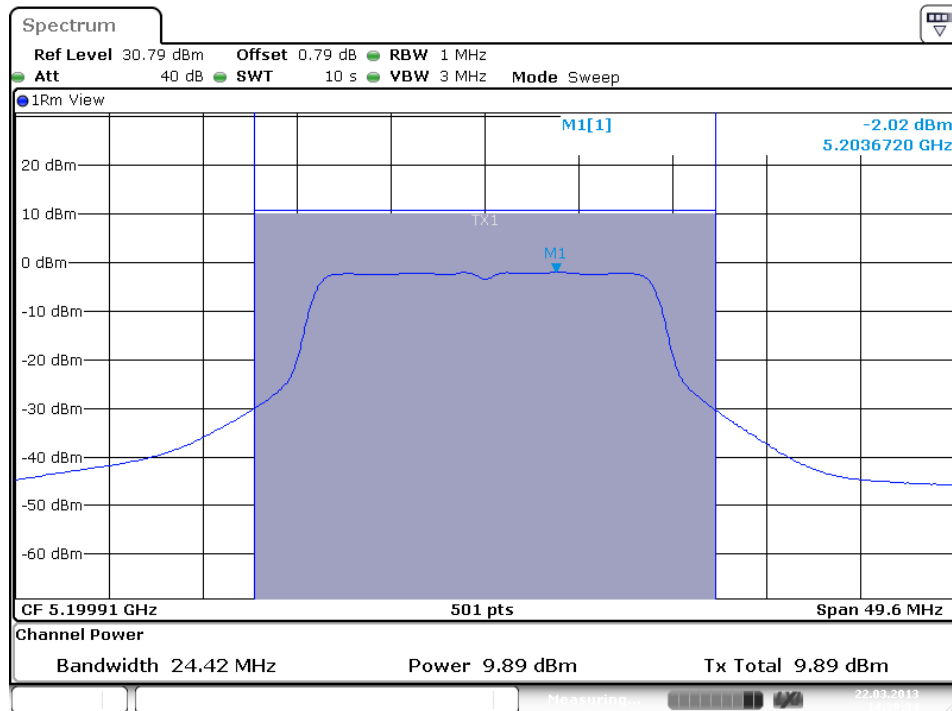
Date: 22.MAR.2013 13:59:57

Plot A2 Antenna2

Test Report No.:

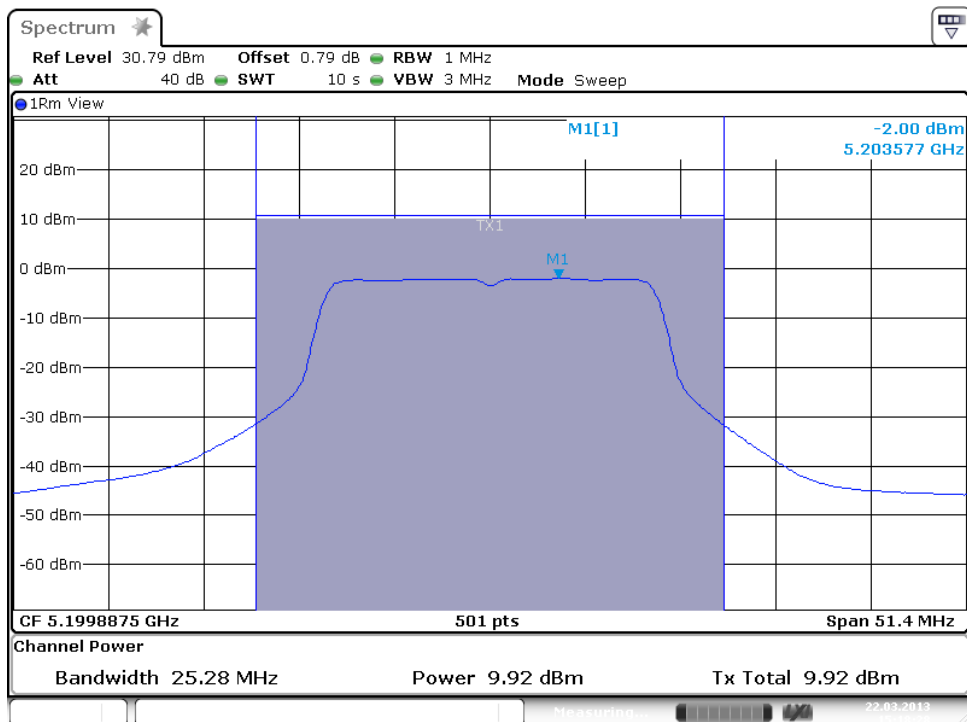
12121201.fcc03

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Date: 22.MAR.2013 14:39:34

Plot B1 Antenna1 (add 3dB for max PPSD)



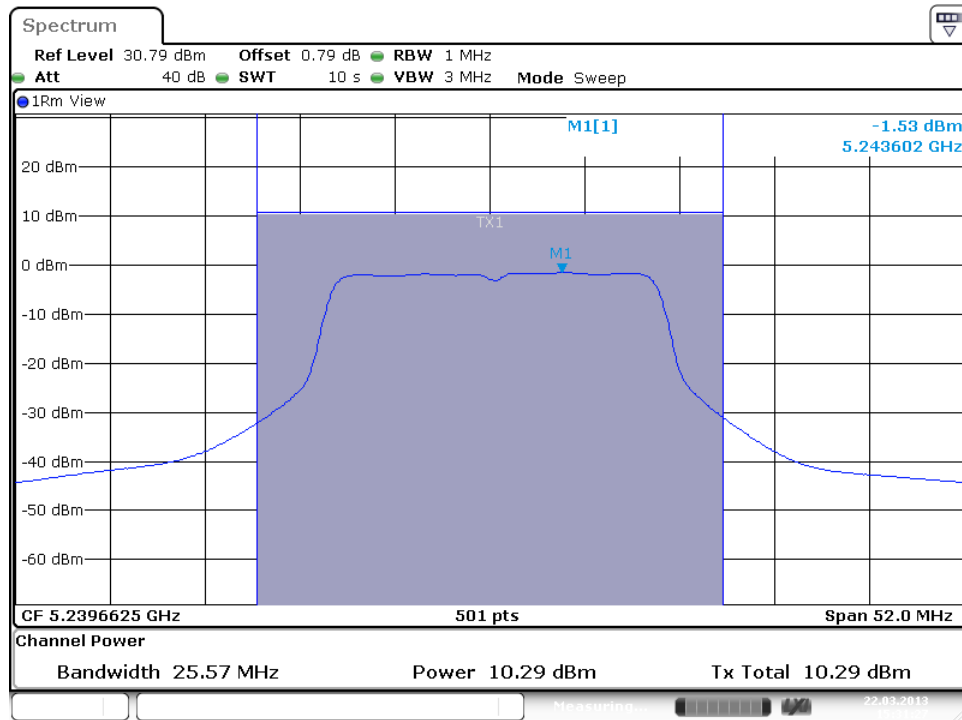
Date: 22.MAR.2013 15:18:28

Plot B2 Antenna2

Test Report No.:

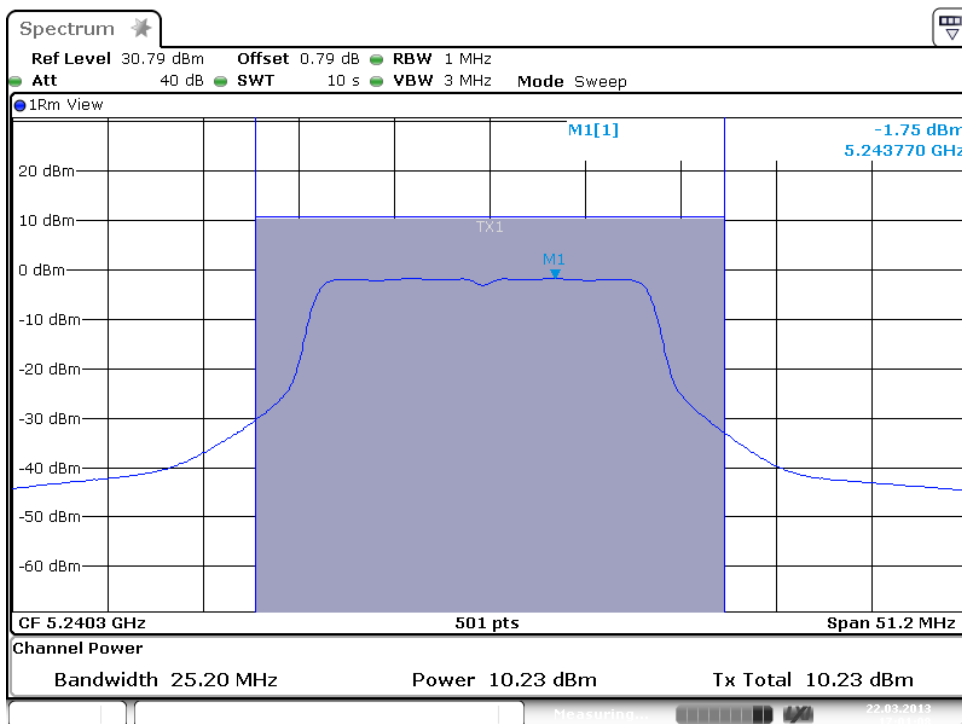
12121201.fcc03

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Date: 22.MAR.2013 15:31:27

Plot C1 Antenna1 (add 3dB for max PPSD)



Date: 22.MAR.2013 17:01:07

Plot C2 Antenna2

Test Report No.:

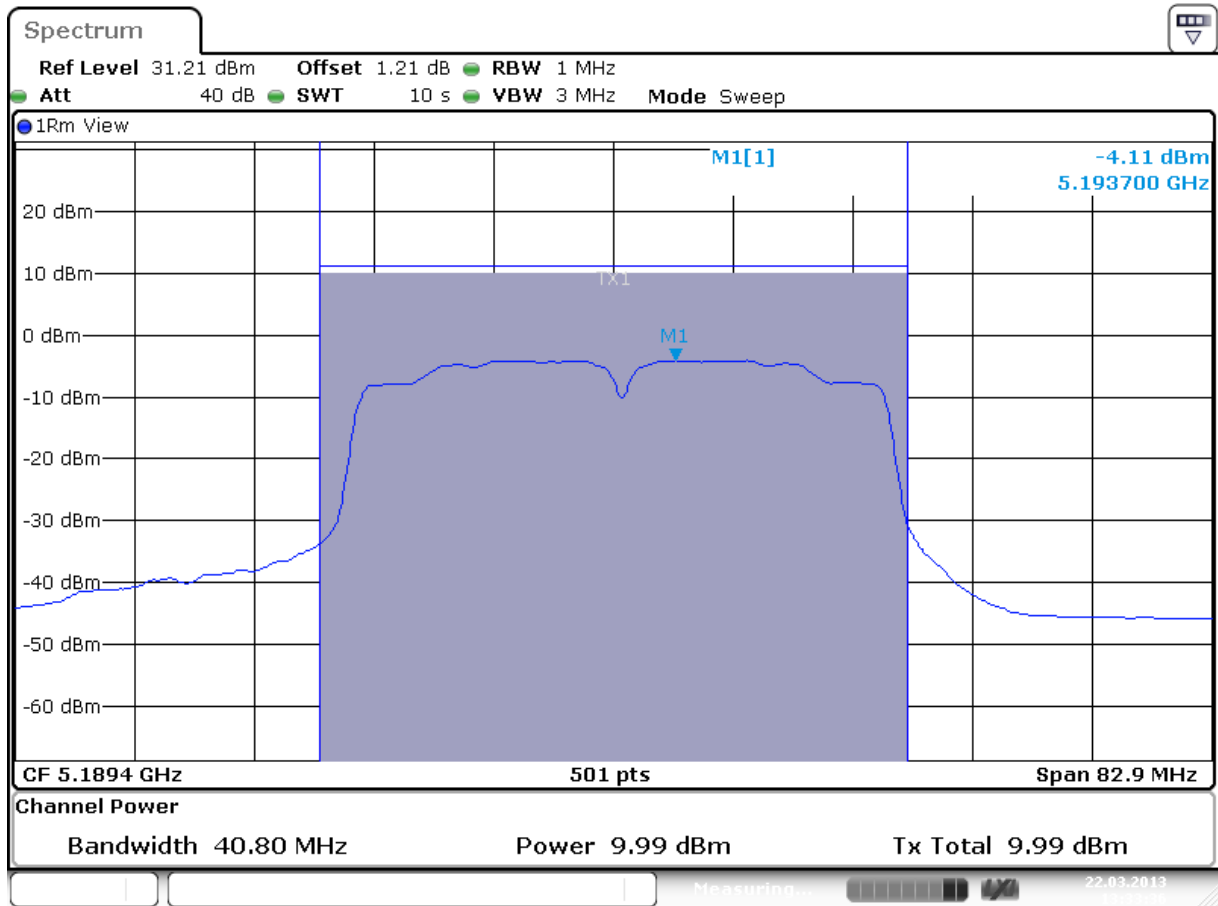
12121201.fcc03

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Operation mode: HT4 40 MHz, Antenna 1

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5190	10.0	15.0	-4.11	0.89	A
5230	15.5	20.5	1.45	6.45	B

Result: Pass



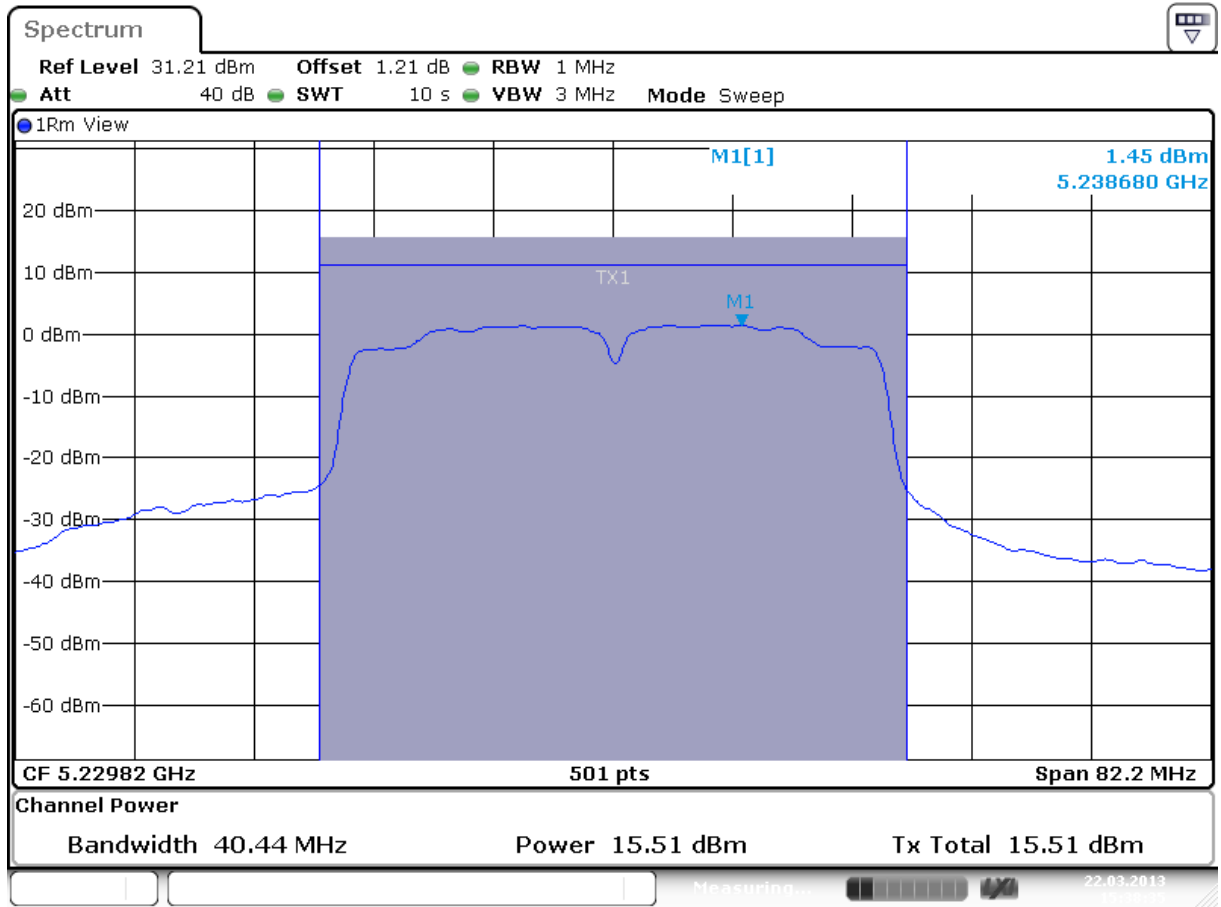
Date: 22.MAR.2013 13:33:36

Plot A

Test Report No.:

12121201.fcc03

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Date: 22.MAR.2013 15:38:35

Plot B

Test Report No.:

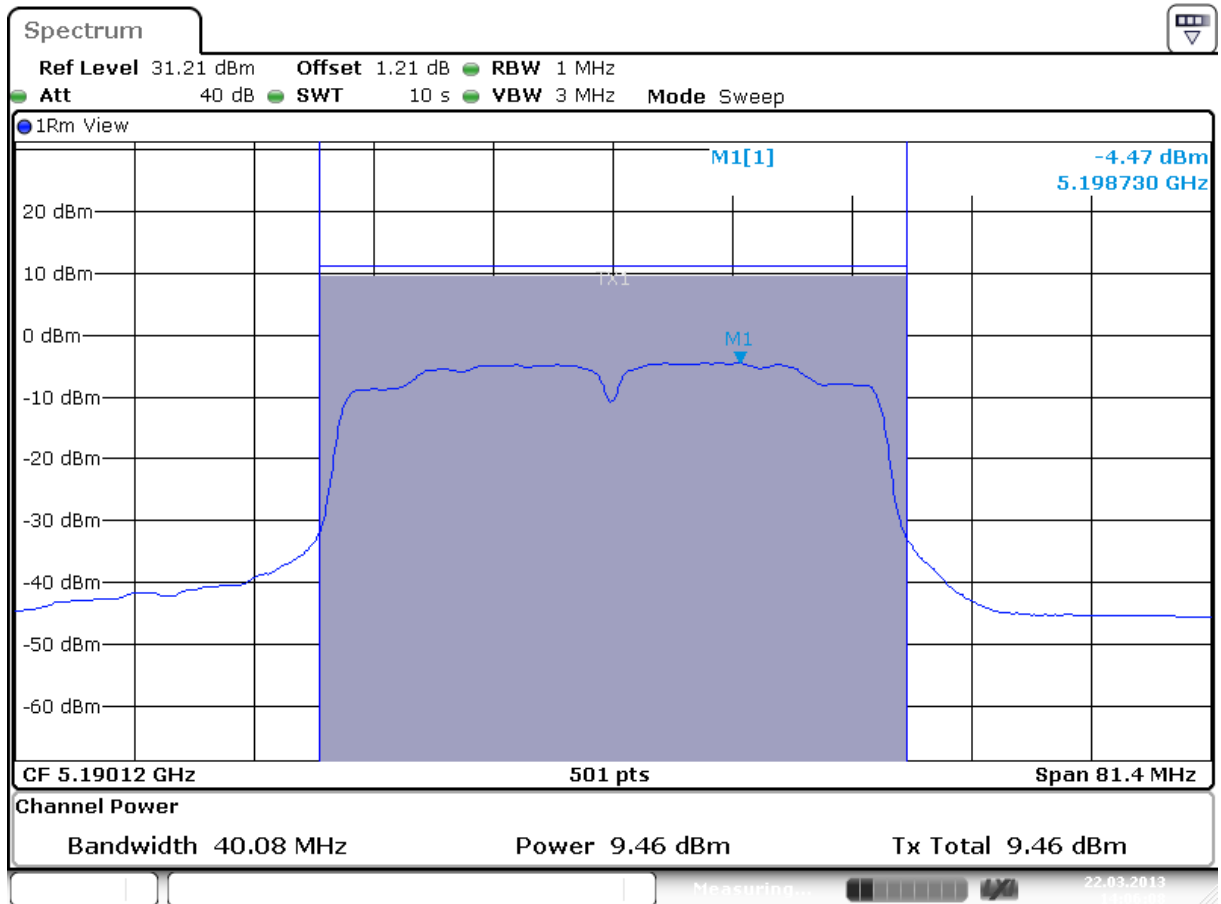
12121201.fcc03

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Operation mode: HT4 40 MHz, Antenna 2

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5190	9.5	14.5	-4.47	0.53	A
5230	15.7	20.7	1.59	6.59	B

Result: Pass



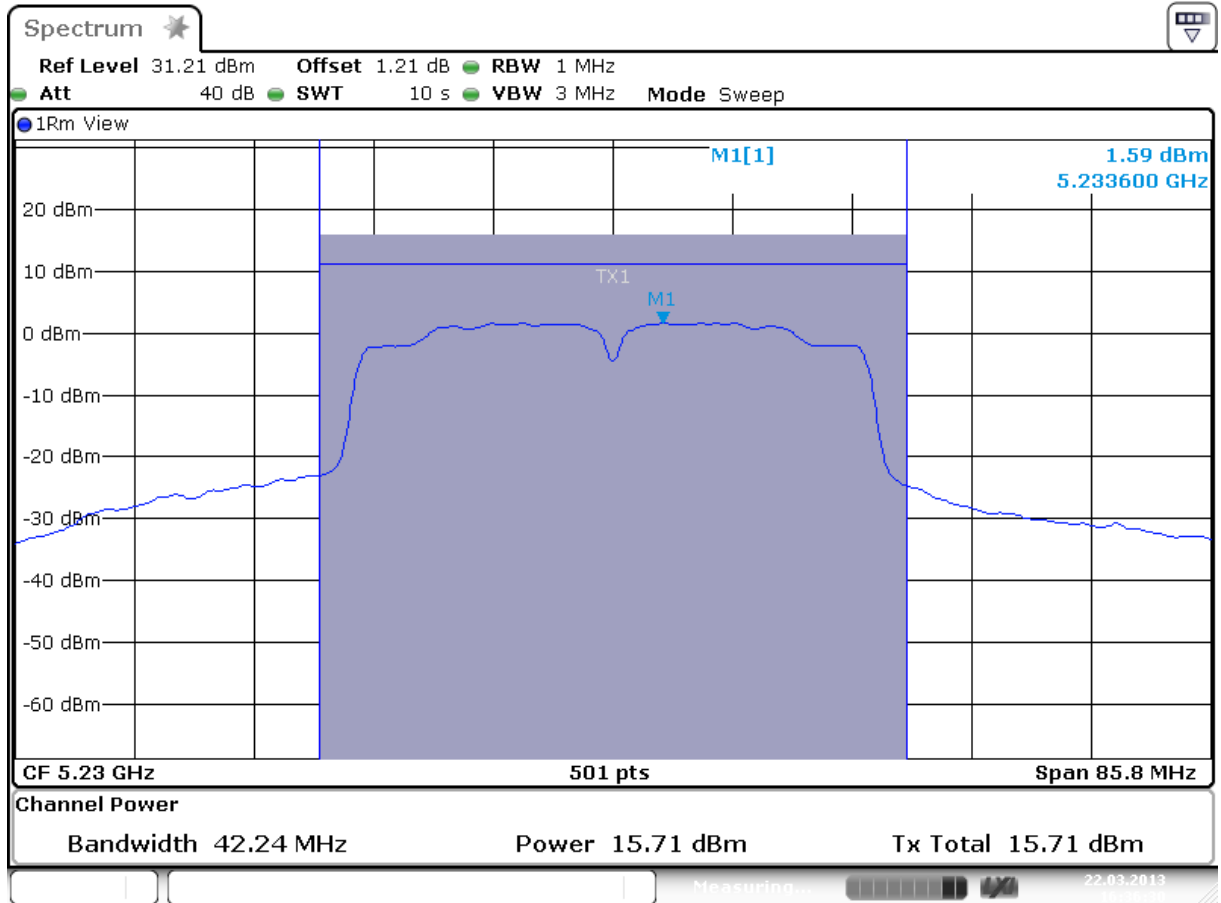
Date: 22.MAR.2013 14:06:09

Plot A

Test Report No.:

12121201.fcc03

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Date: 22.MAR.2013 16:36:30

Plot B

Test Report No.:

12121201.fcc03

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Operation mode: HT8 40 MHz, Antenna 1+2

Frequency [MHz]	Maximum conducted output power Ant1 / Ant2 [dBm]	Maximum conducted output power Ant1 + Ant2 [mW]	Maximum conducted output power Ant1+Ant2 e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5190	5.5 / 5.5	7.1	13.5	-5.7 (note1)	-0.7	A1 / A2
5230	9.4 / 9.1	17.0	17.3	-2.1 (note2)	2.9	B1 / B2

Result: Pass

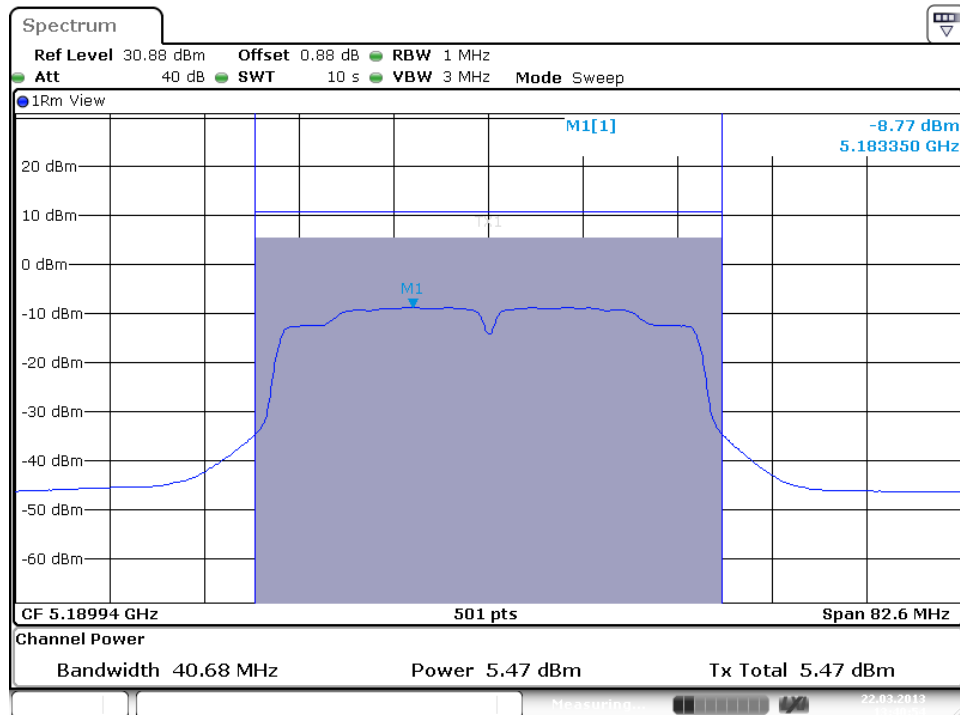
Note1: see plot A2 (on next page) and add 3dB.

Note2: see plot B1 (on page 37) and add 3dB.

Test Report No.:

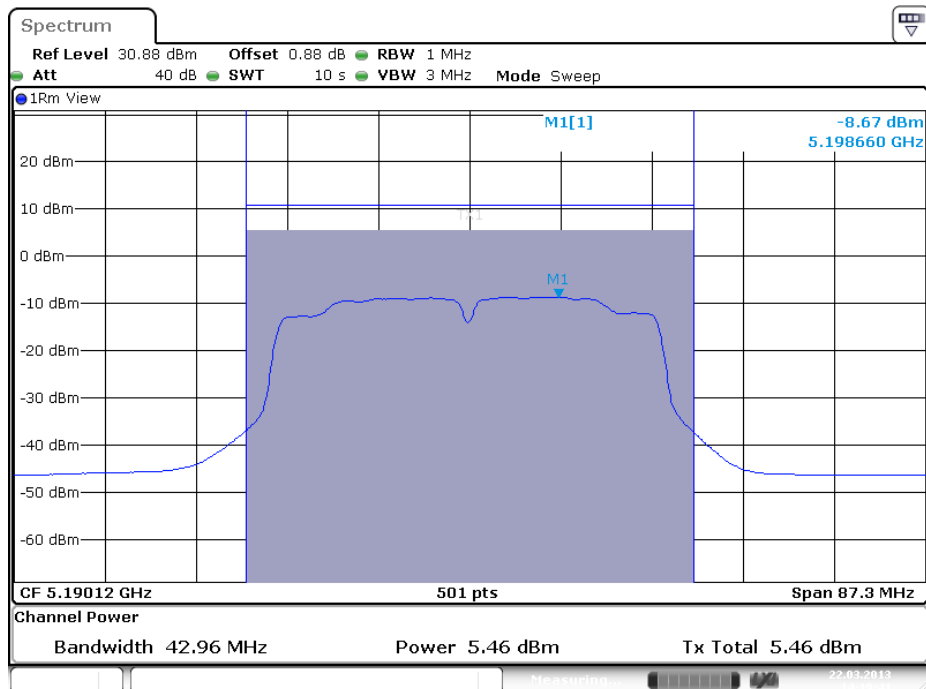
12121201.fcc03

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Date: 22.MAR.2013 13:40:54

Plot A1 Antenna1



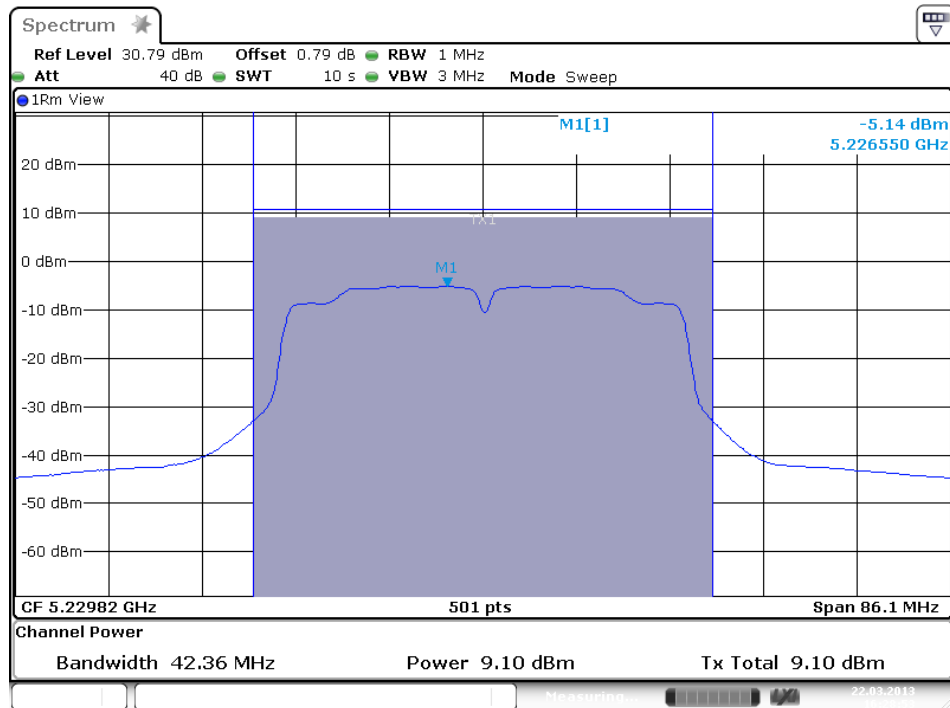
Date: 22.MAR.2013 14:19:41

Plot A2 Antenna2 add 3dB for

Test Report No.:

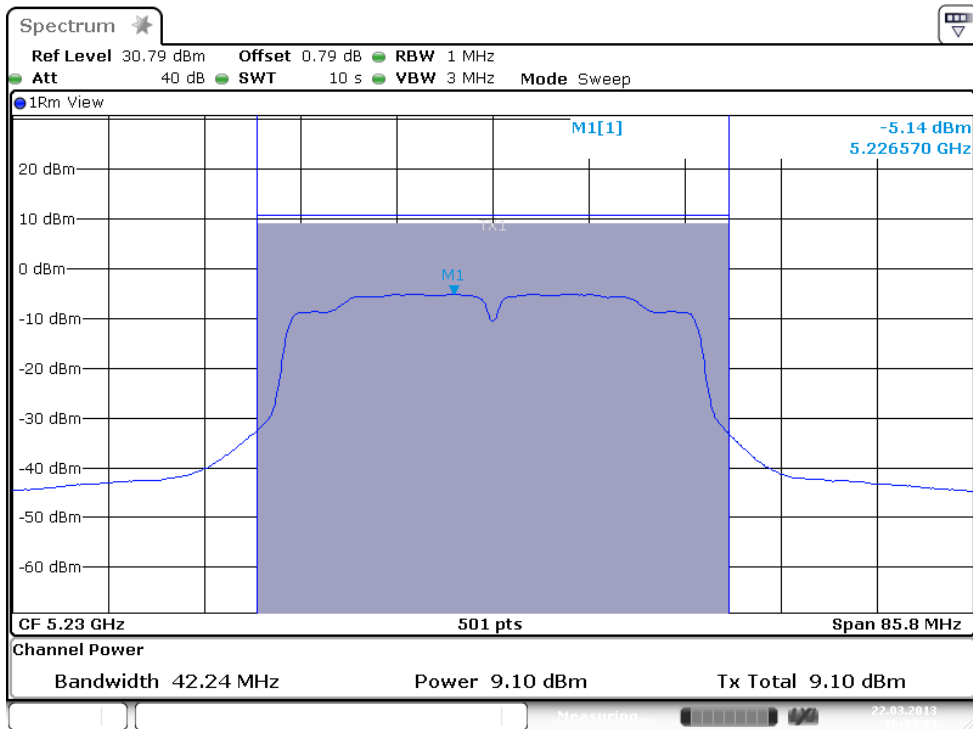
12121201.fcc03

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Date: 22.MAR.2013 16:28:53

Plot B1 Antenna1



Date: 22.MAR.2013 16:34:03

Plot B2 Antenna2

Test Report No.:

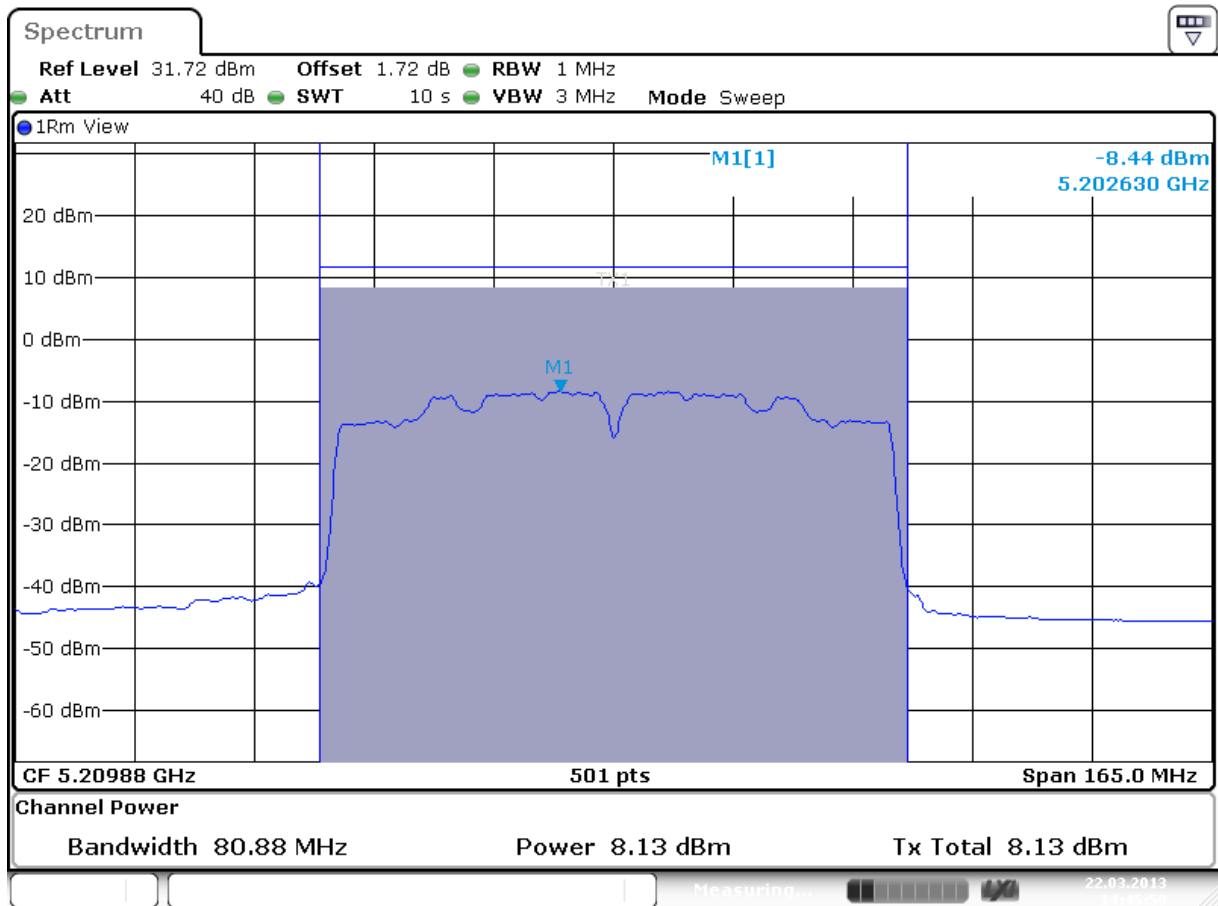
12121201.fcc03

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Operation mode: VHT6 80 MHz, Antenna 1

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5210	8.1	13.1	-8.44	-3.44	A

Result: Pass



Date: 22.MAR.2013 14:45:50

Plot A

Test Report No.:

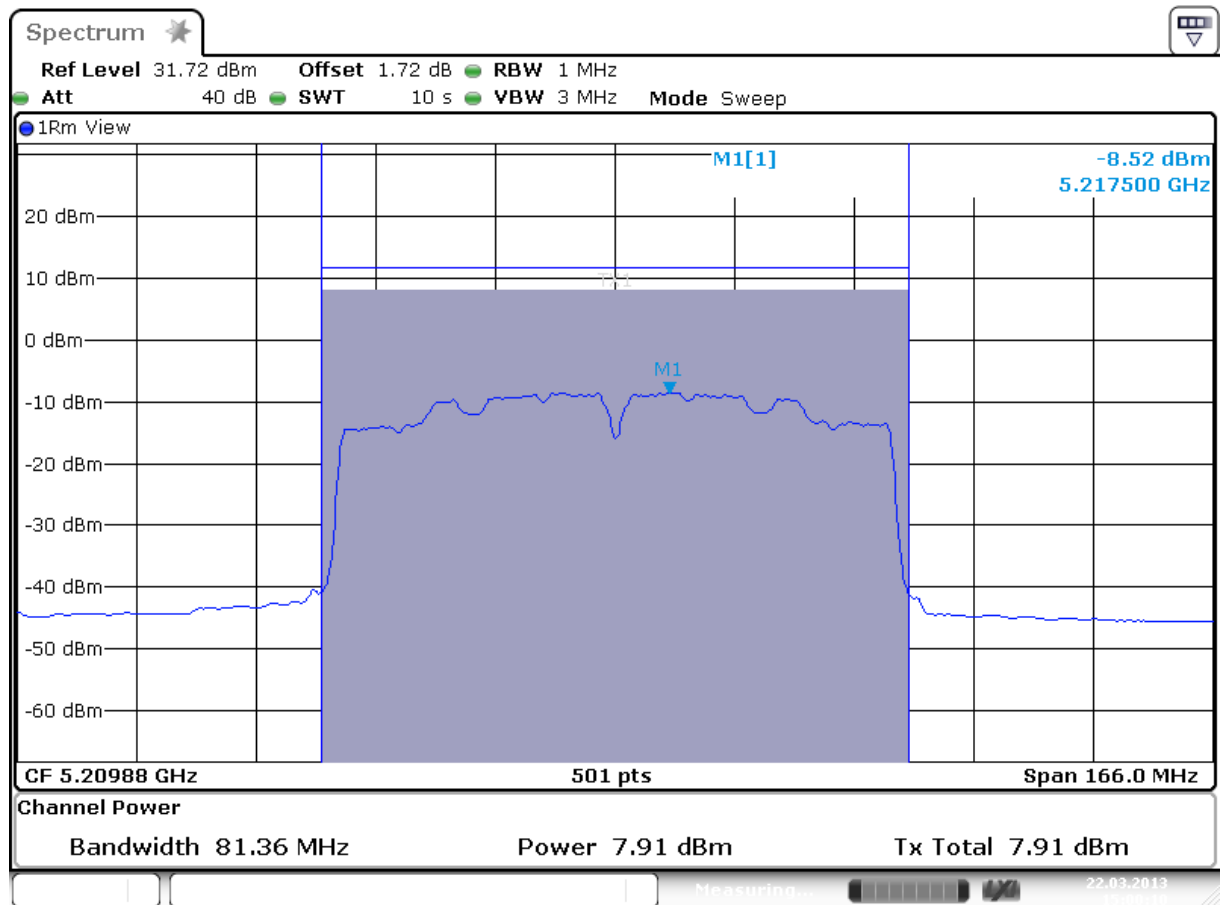
12121201.fcc03

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Operation mode: VHT6 80 MHz, Antenna 2

Frequency [MHz]	Maximum conducted output power [dBm]	Maximum conducted output power e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5210	7.9	12.9	-8.52	-3.52	A

Result: Pass



Date: 22.MAR.2013 15:00:10

Plot A

Test Report No.:

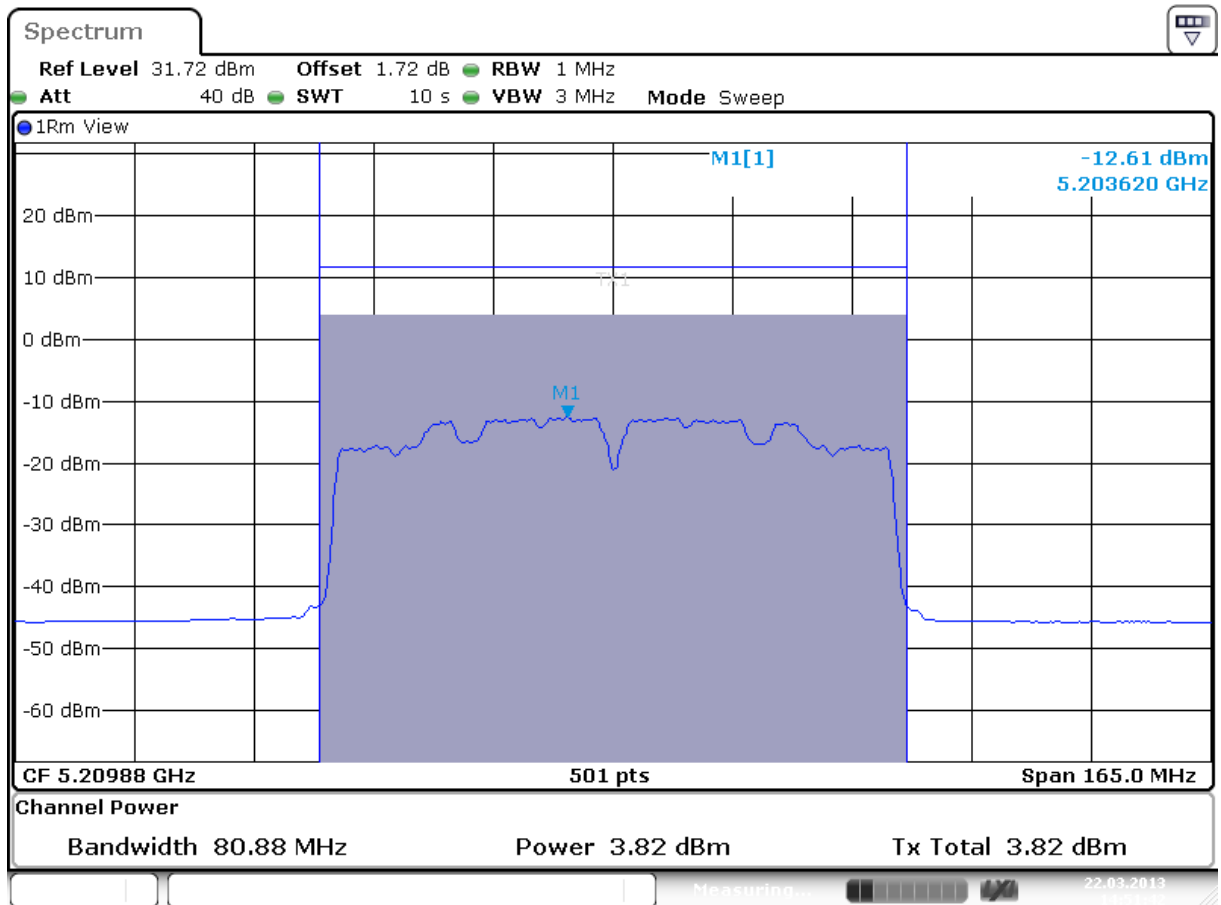
12121201.fcc03

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Operation mode: VHT6 80 MHz, Antenna 1+2

Frequency [MHz]	Maximum conducted output power Ant1 / Ant2 [dBm]	Maximum conducted output power Ant1 + Ant2 [mW]	Maximum conducted output power Ant1+Ant2 e.i.r.p. [dBm]	PPSD/MHz [dBm]	PPSD/MHz e.i.r.p. [dBm]	Plot number
5210	3.8 / 3.1	4.5	11.5	-9.61	-4.61	A1 / A2

Result: Pass



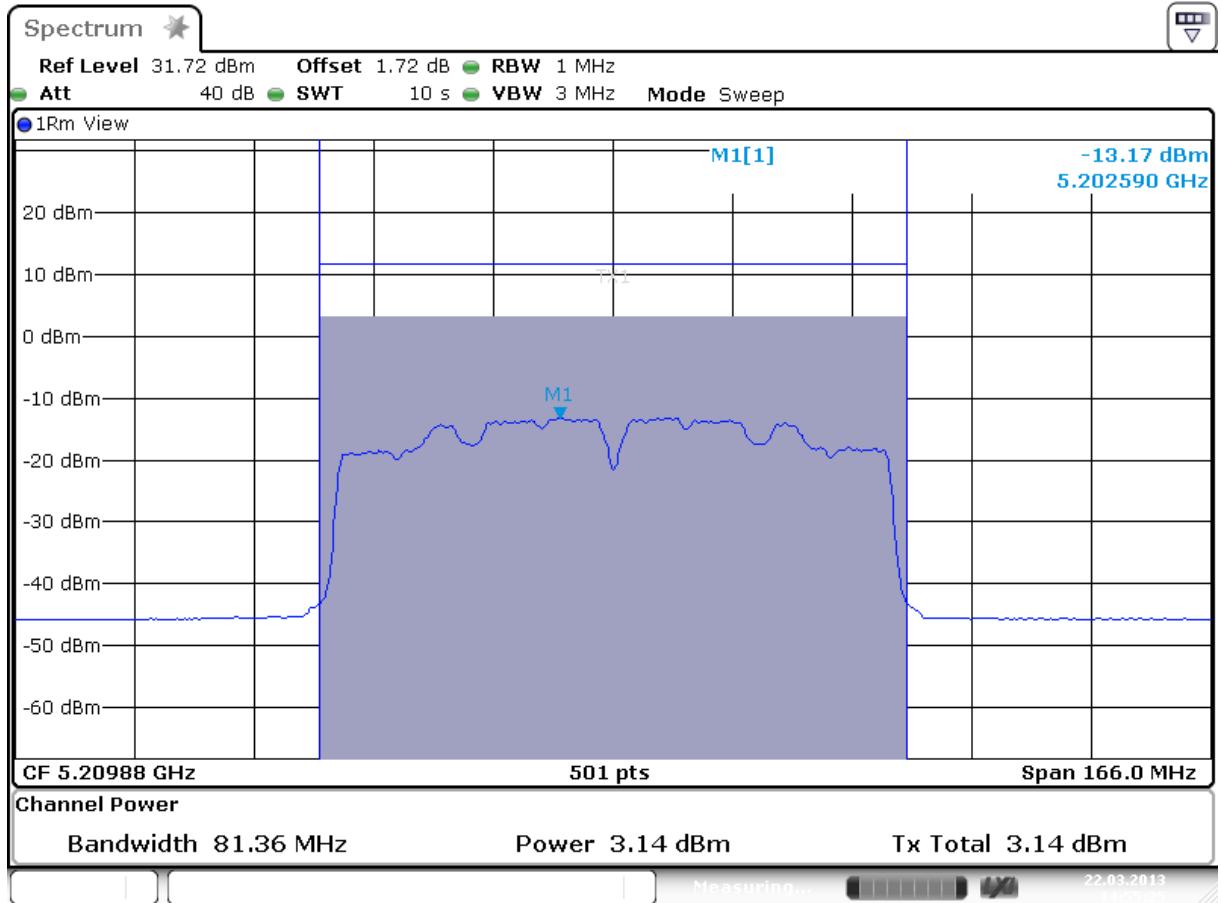
Date: 22.MAR.2013 14:51:42

Plot A1 Antenna 1 (add 3dB for max PPSD)

Test Report No.:

12121201.fcc03

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Date: 22.MAR.2013 14:55:26

Plot A2 Antenna 2

Test Report No.:

12121201.fcc03

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5.2.2 26dB and 99% Bandwidth

RESULT: Pass

Date of testing: 2013-03-22

Requirements:

FCC 15.407 and RSS-210

For FCC 26 dB bandwidth: No requirement is given.

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

Test procedure 26dB bandwidth:

ANSI C63.10-2009

KDB Publication No.789033 D01 v01r02 9/26/2012 .

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.

Plots included are of the 26 dB bandwidth.

Test Report No.:

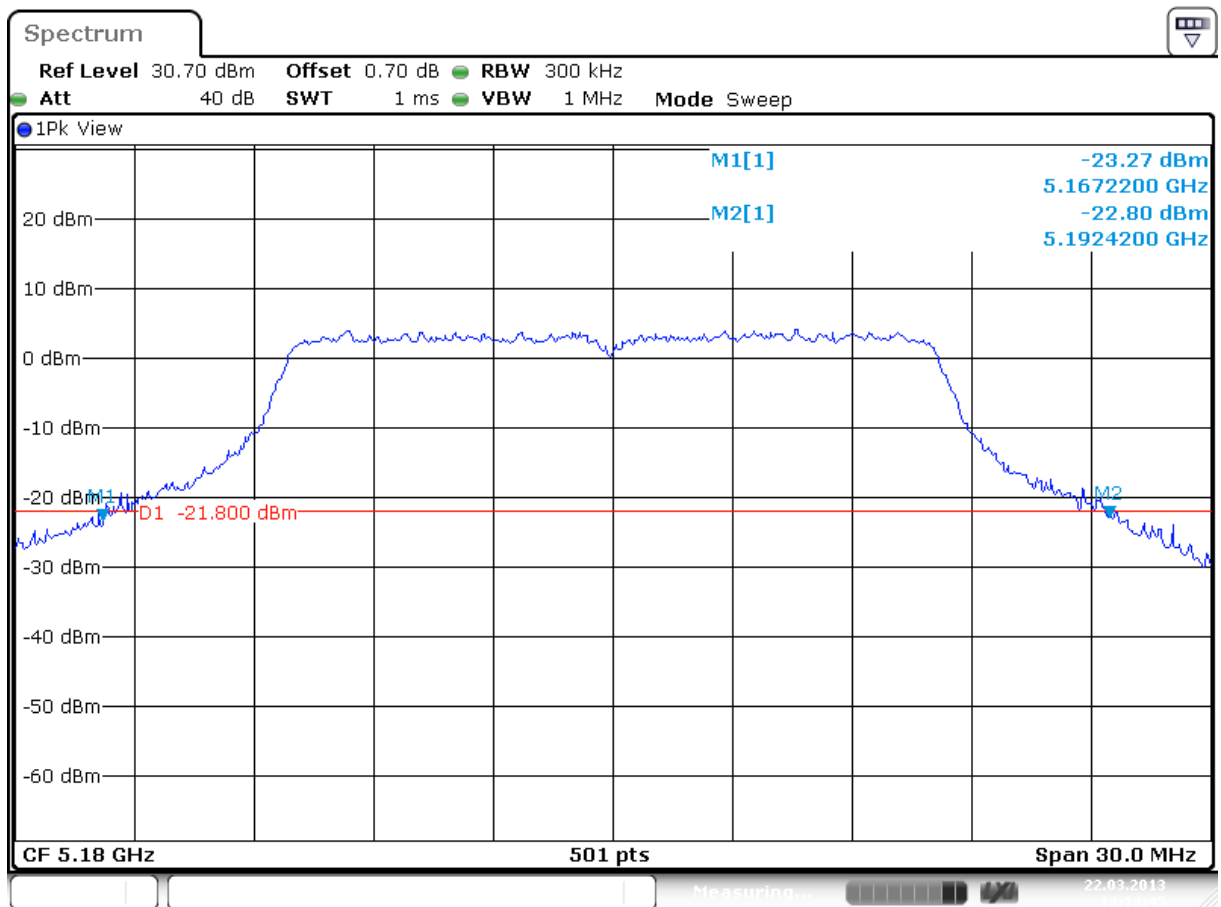
12121201.fcc03

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Table 4: 26dB Bandwidth

Operation mode: 6Mb OFDM, Antenna 1

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5180	17005	25200	Not Applicable	A
5200	17185	26580	Not Applicable	B
5240	17290	28275	Not Applicable	C



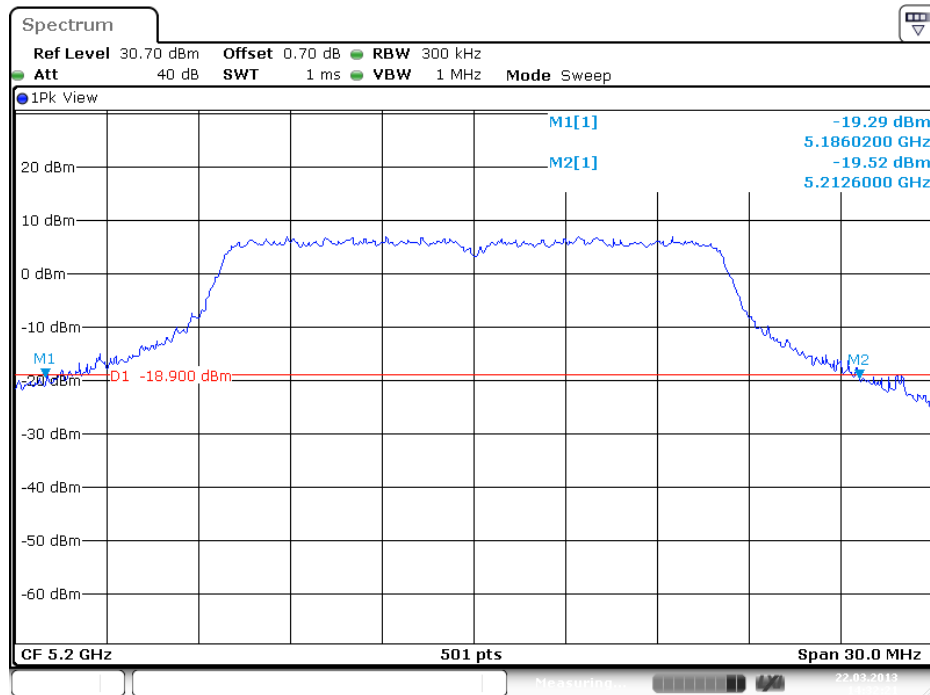
Date: 22.MAR.2013 13:13:46

Plot A

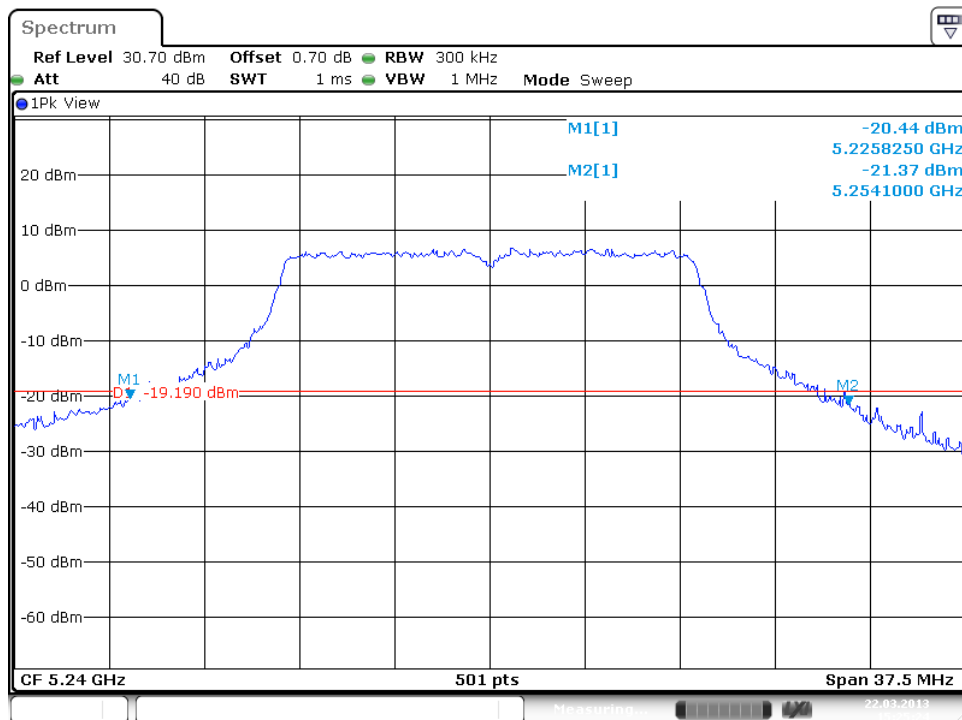
Test Report No.:

12121201.fcc03

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Plot B



Plot C

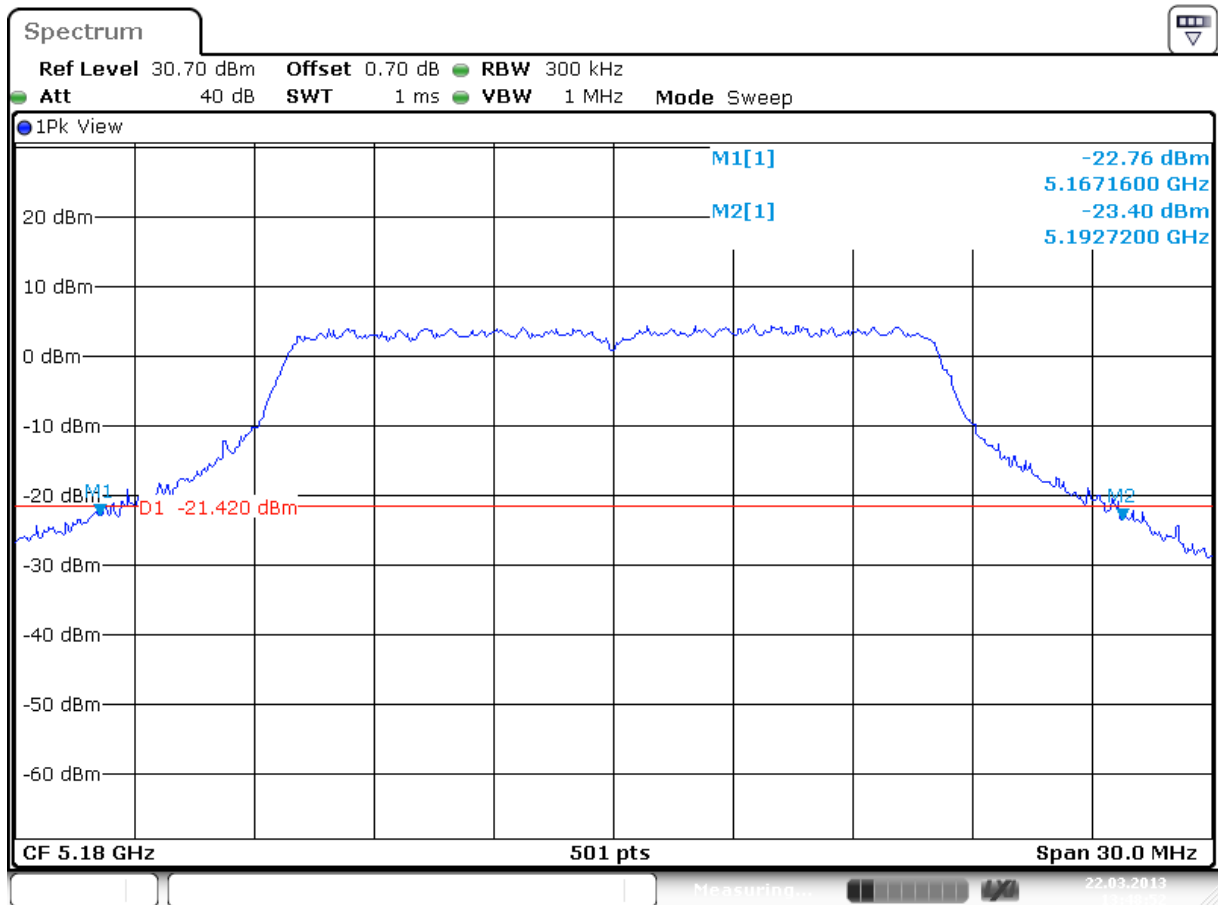
Test Report No.:

12121201.fcc03

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Operation mode: 6Mb OFDM, Antenna 2

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5180	17126	25560	Not Applicable	A
5200	17365	28200	Not Applicable	B
5240	17365	27450	Not Applicable	C



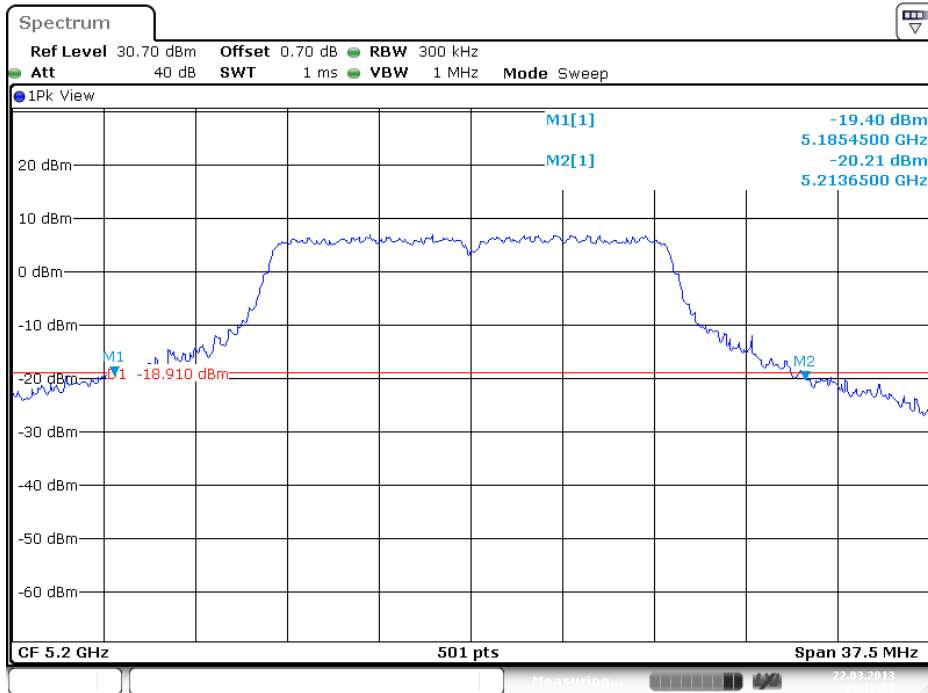
Date: 22.MAR.2013 13:48:53

Plot A

Test Report No.:

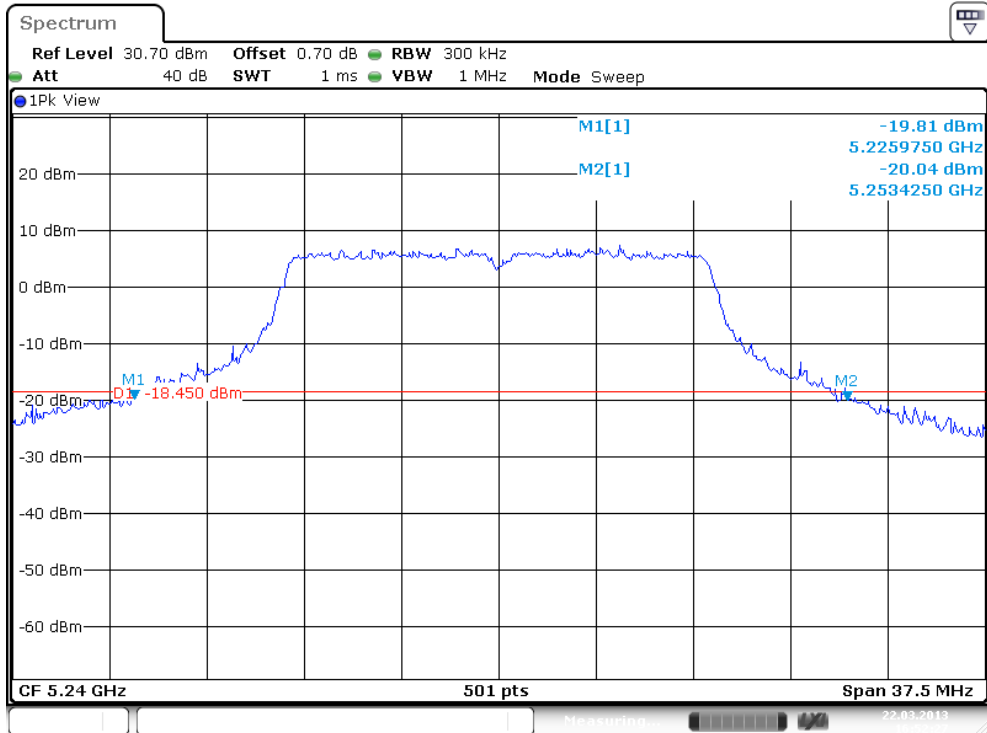
12121201.fcc03

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Date: 22.MAR.2013 15:12:57

Plot B



Date: 22.MAR.2013 16:52:28

Plot C

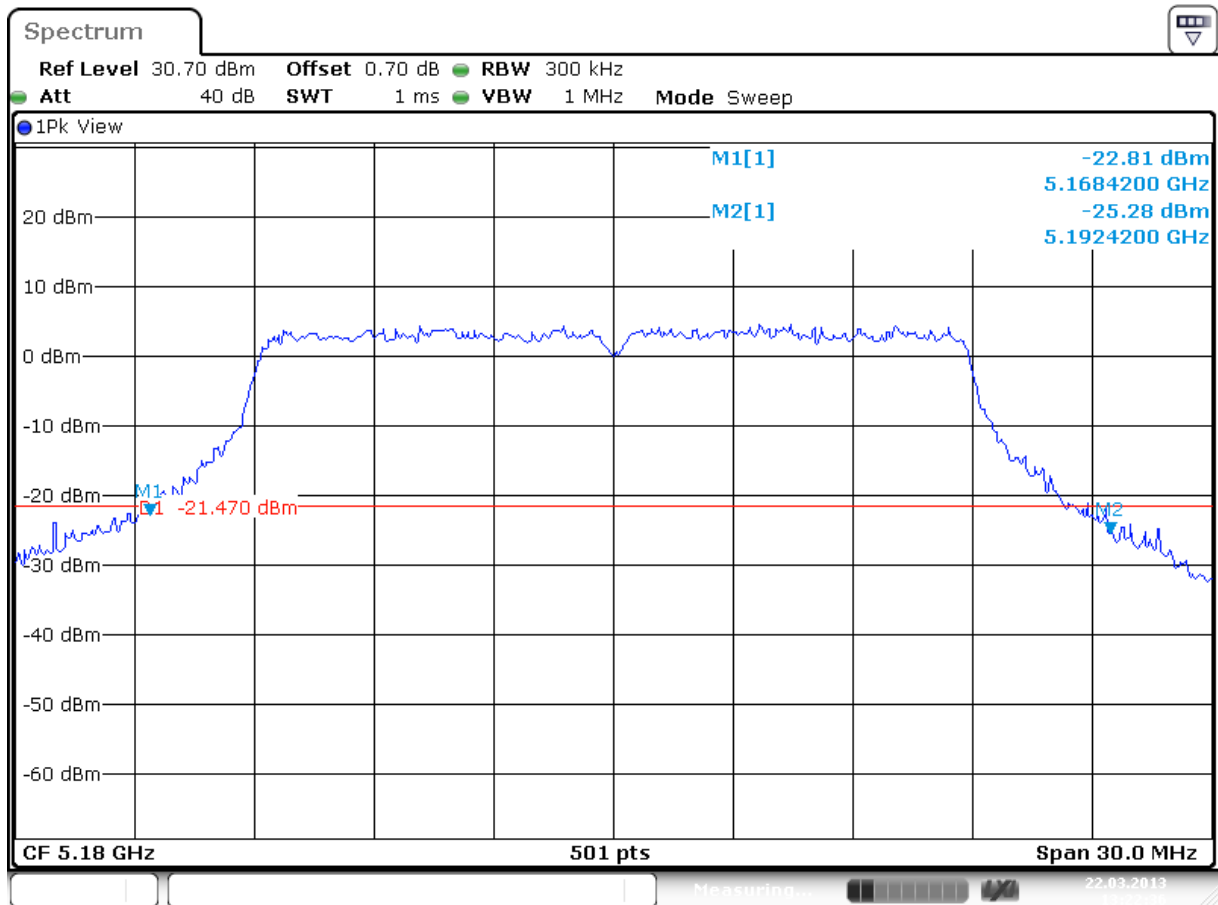
Test Report No.:

12121201.fcc03

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Operation mode: HT4 20 MHz, Antenna 1

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5180	17964	24000	Not Applicable	A
5200	18083	24420	Not Applicable	B
5240	18113	25575	Not Applicable	C



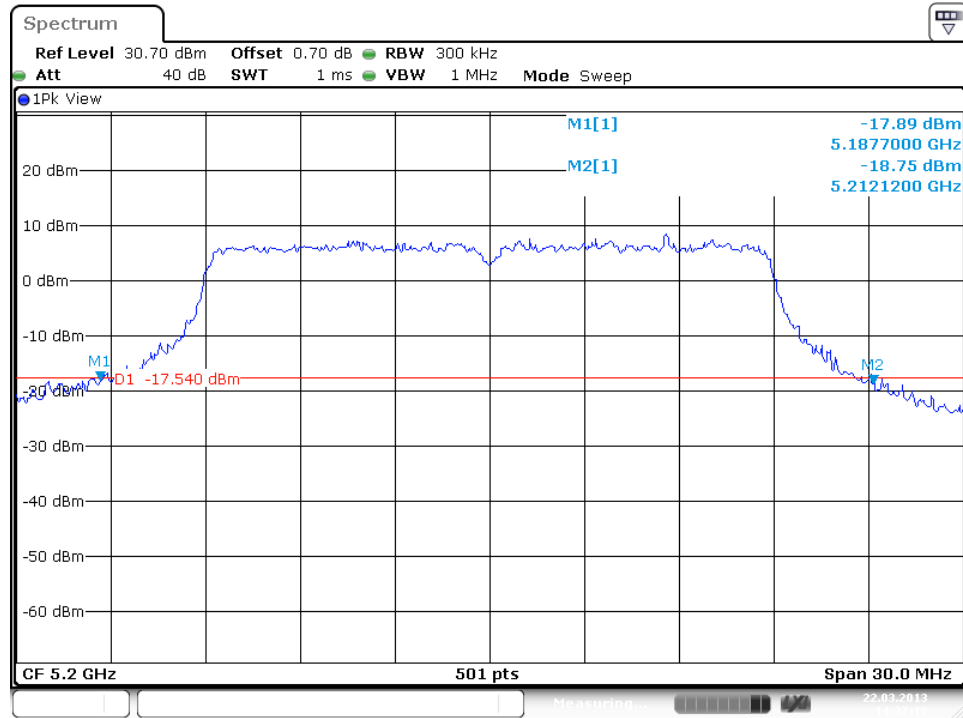
Date: 22.MAR.2013 13:22:36

Plot A

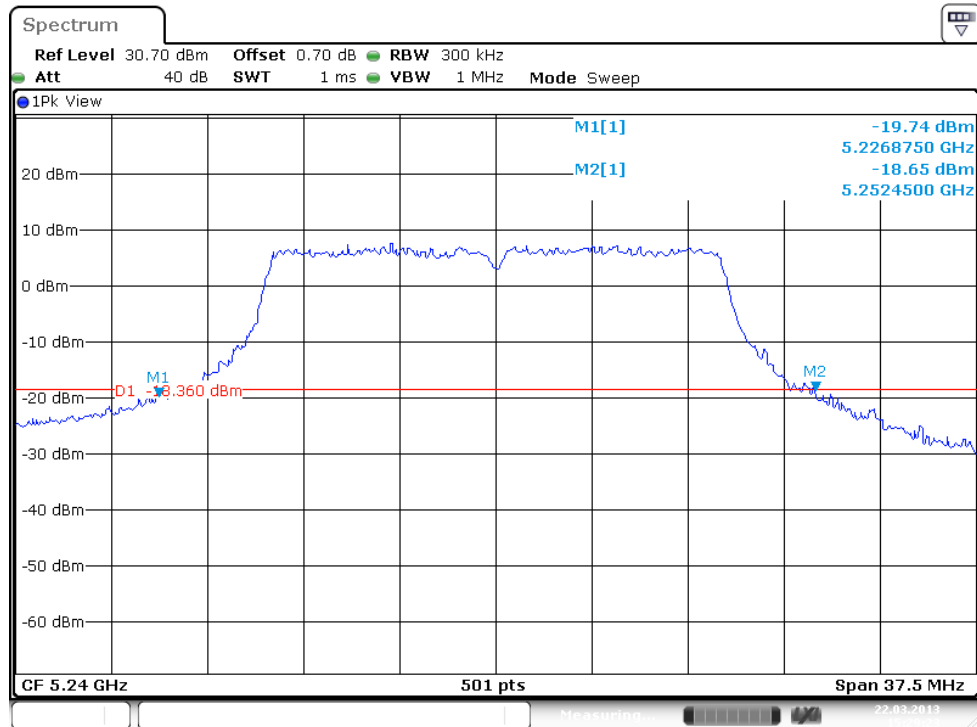
Test Report No.:

12121201.fcc03

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Plot B



Plot C

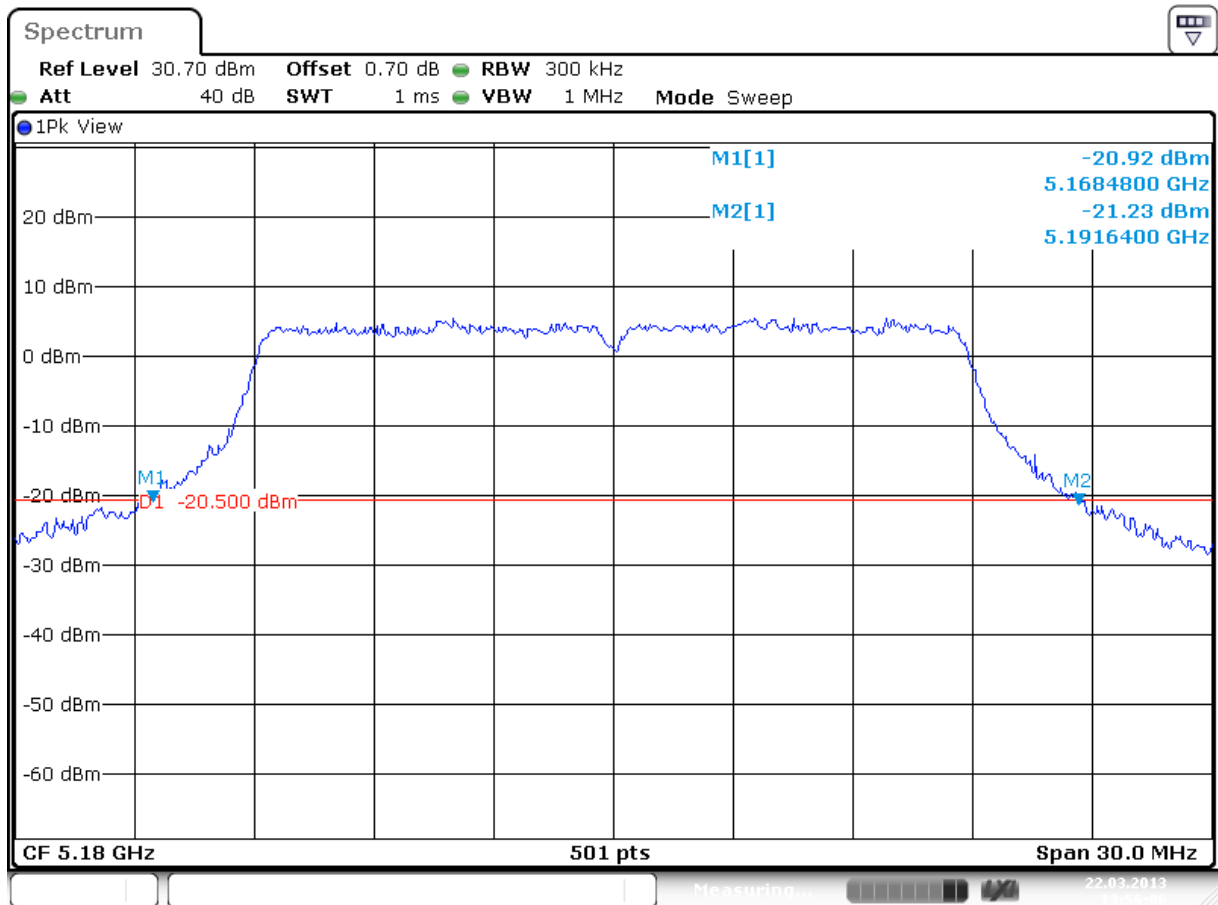
Test Report No.:

12121201.fcc03

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Operation mode: HT4 20 MHz, Antenna 2

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5180	18084	23160	Not Applicable	A
5200	18113	26700	Not Applicable	B
5240	18263	26850	Not Applicable	C



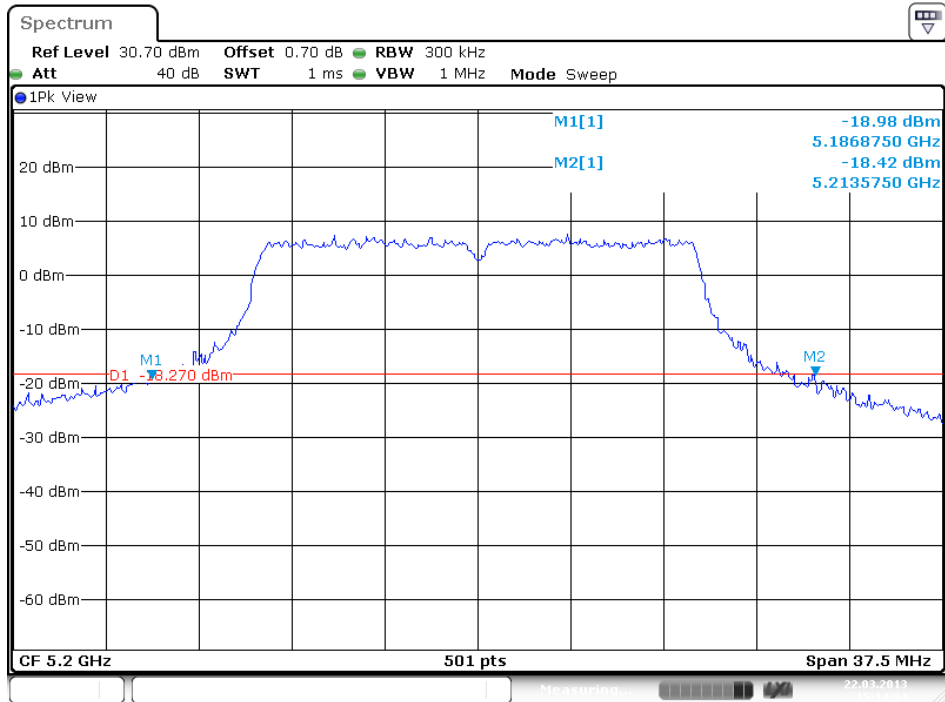
Date: 22.MAR.2013 13:56:06

Plot A

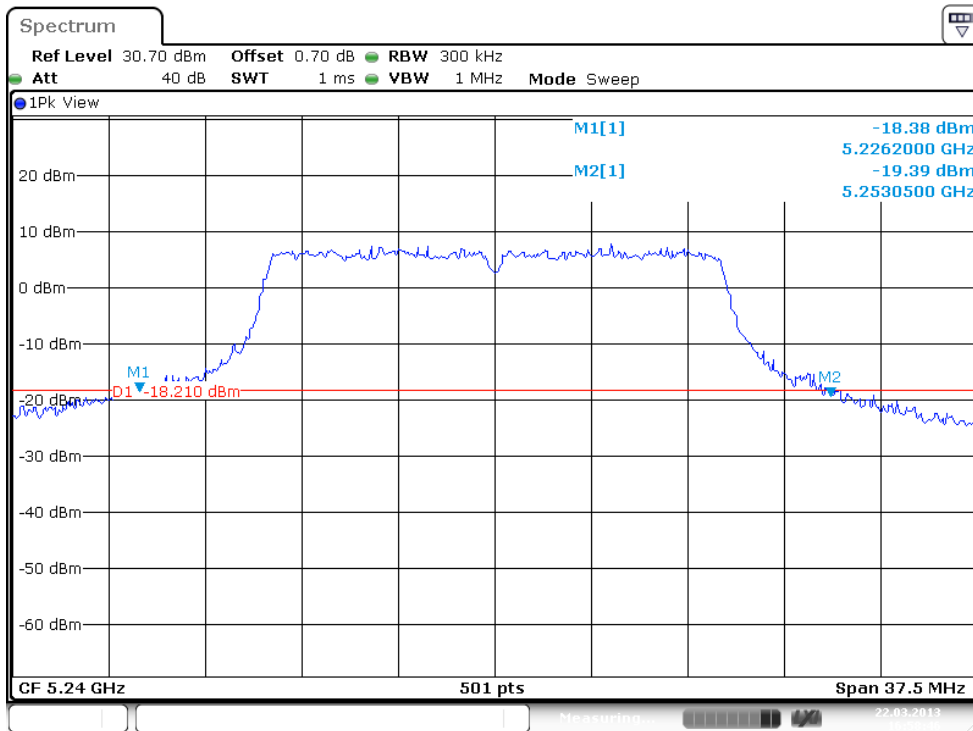
Test Report No.:

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Plot B



Plot C

Test Report No.:

12121201.fcc03

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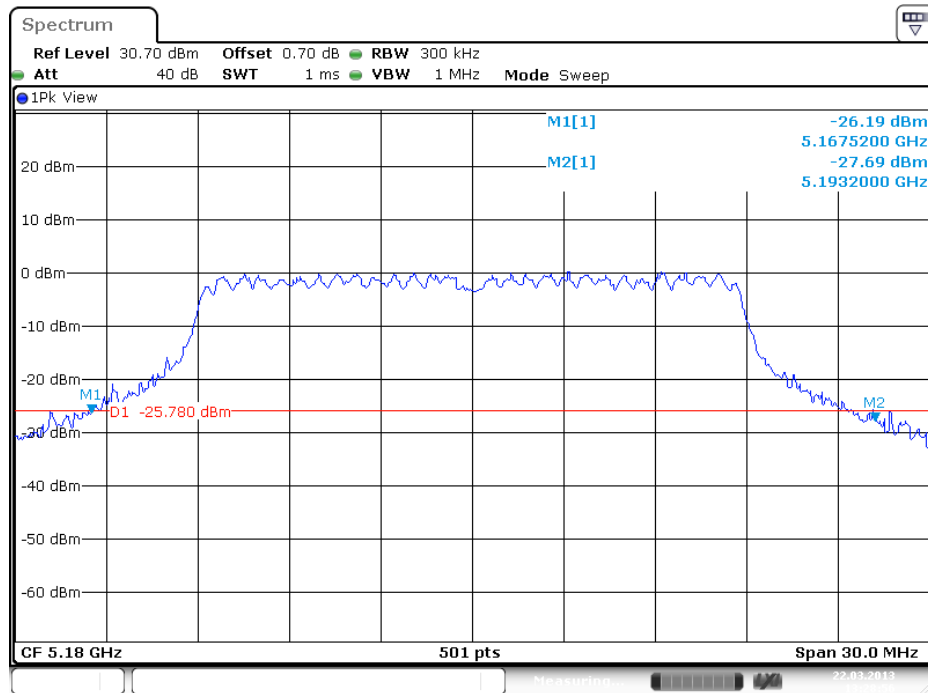
Operation mode: HT8 20 MHz, Antenna 1+2

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5180	18144	26280	Not Applicable	A1 / A2
5200	18188	25860	Not Applicable	B1 / B2
5240	18188	25575	Not Applicable	C1 / C2

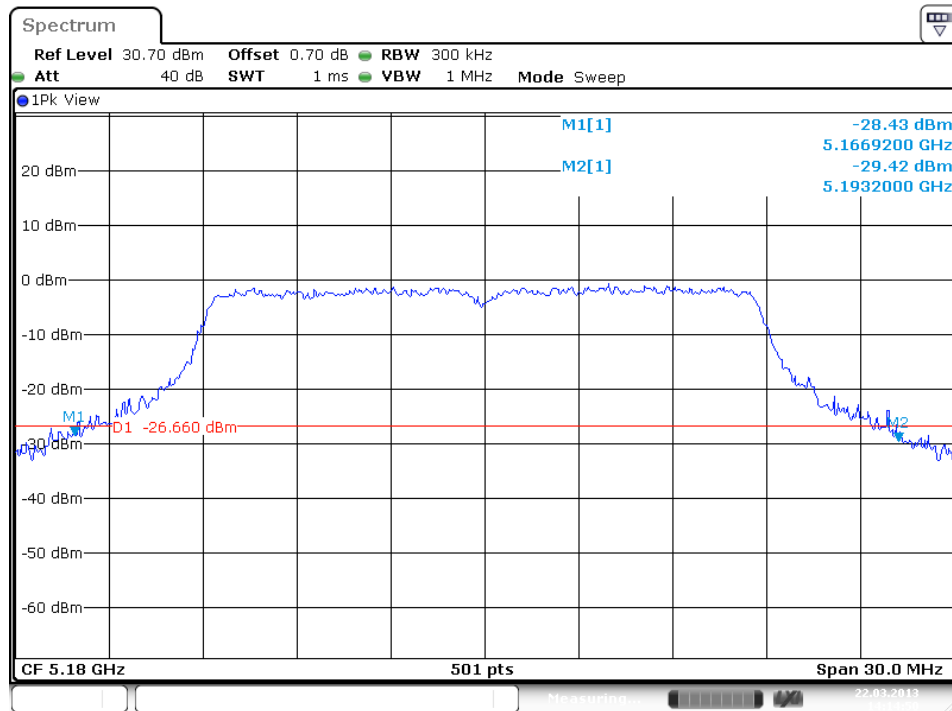
Test Report No.:

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Plot A1 Antenna1

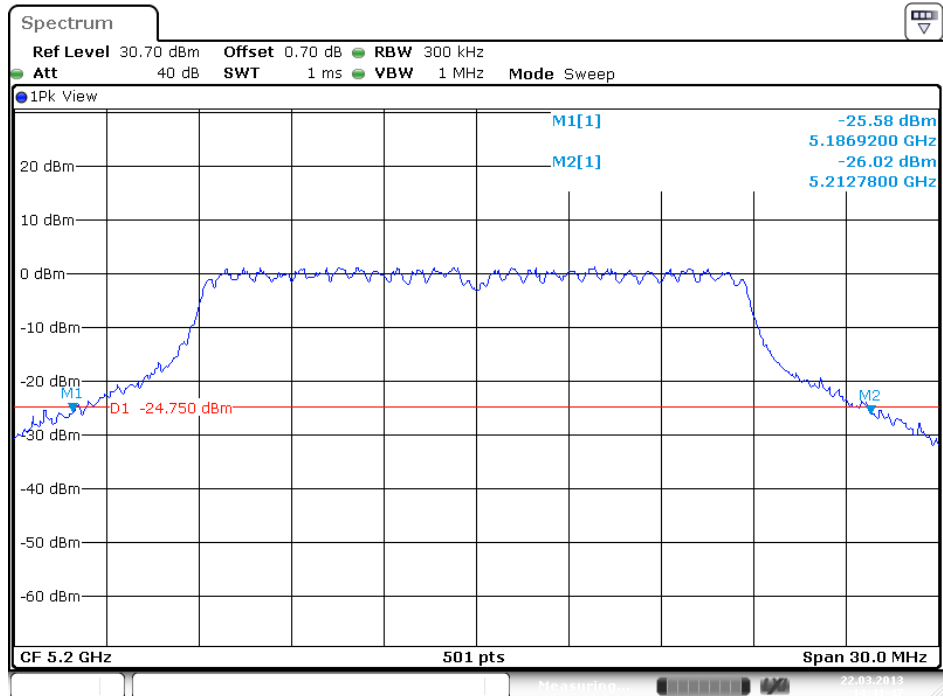


Plot A2 Antenna2

Test Report No.:

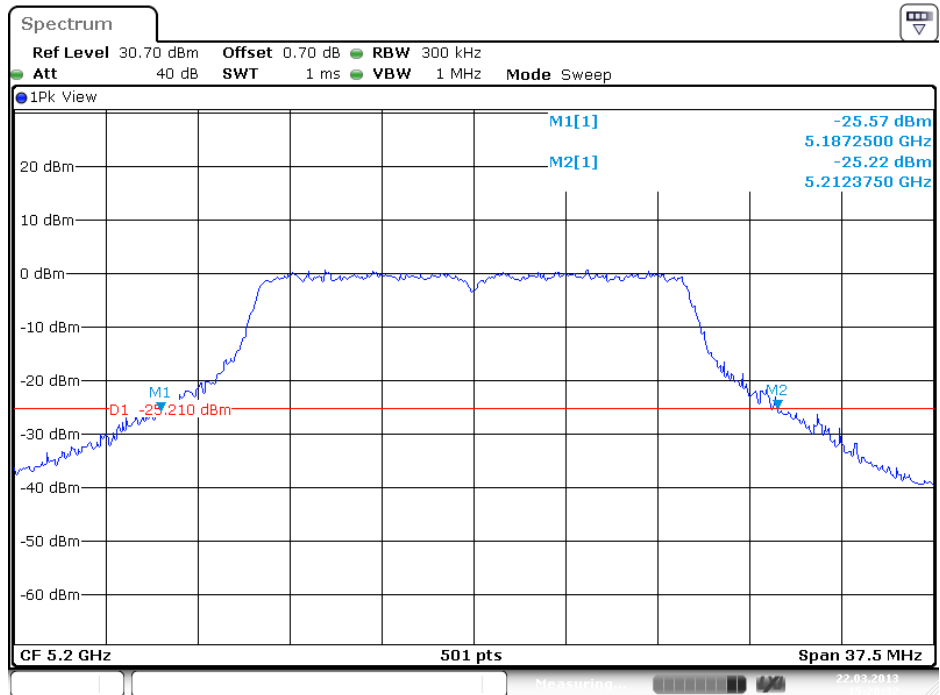
12121201.fcc03

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Date: 22.MAR.2013 14:41:47

Plot B1 Antenna1



Date: 22.MAR.2013 15:20:31

Plot B2 Antenna2

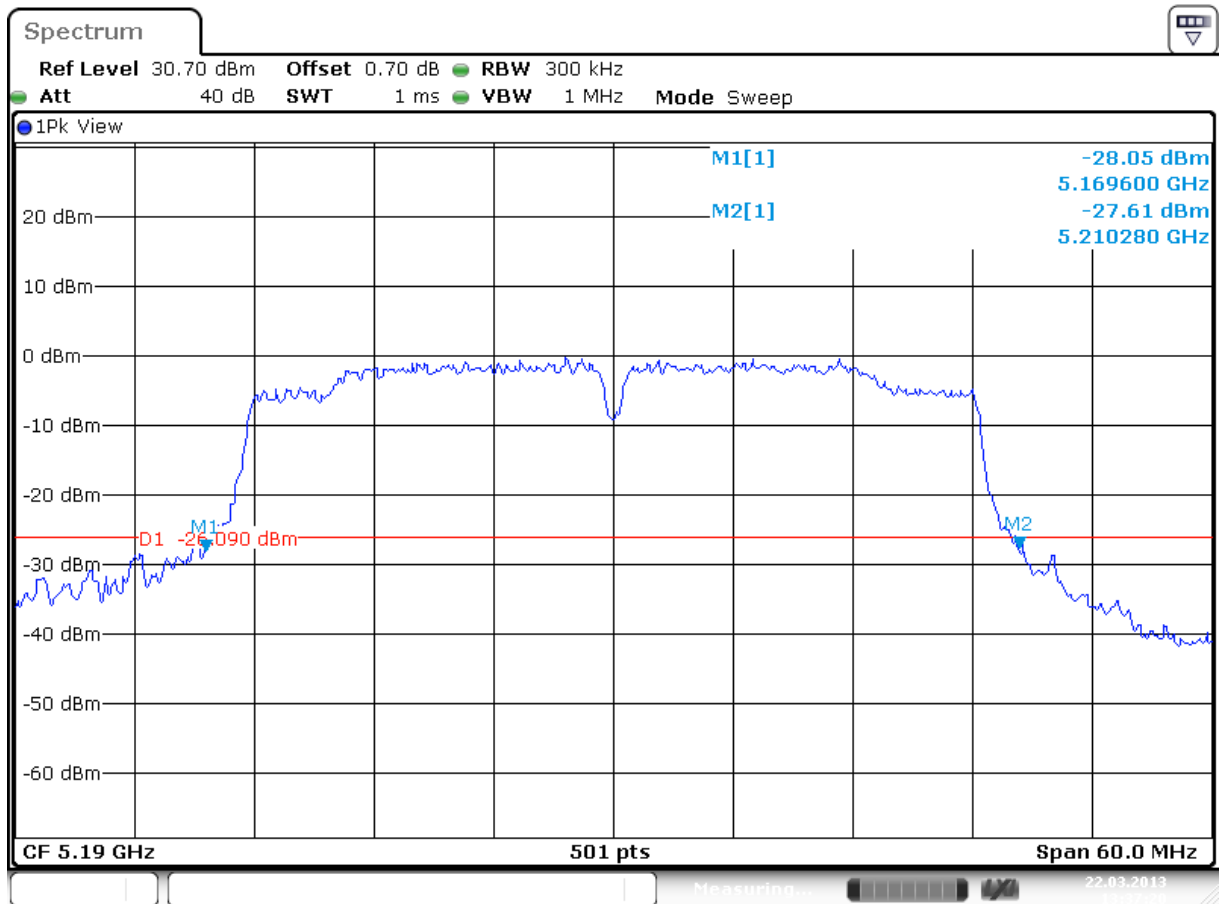
Test Report No.:

12121201.fcc03

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Operation mode: HT4 40 MHz, Antenna 1

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5190	35928	40680	Not Applicable	A
5230	36048	46560	Not Applicable	B



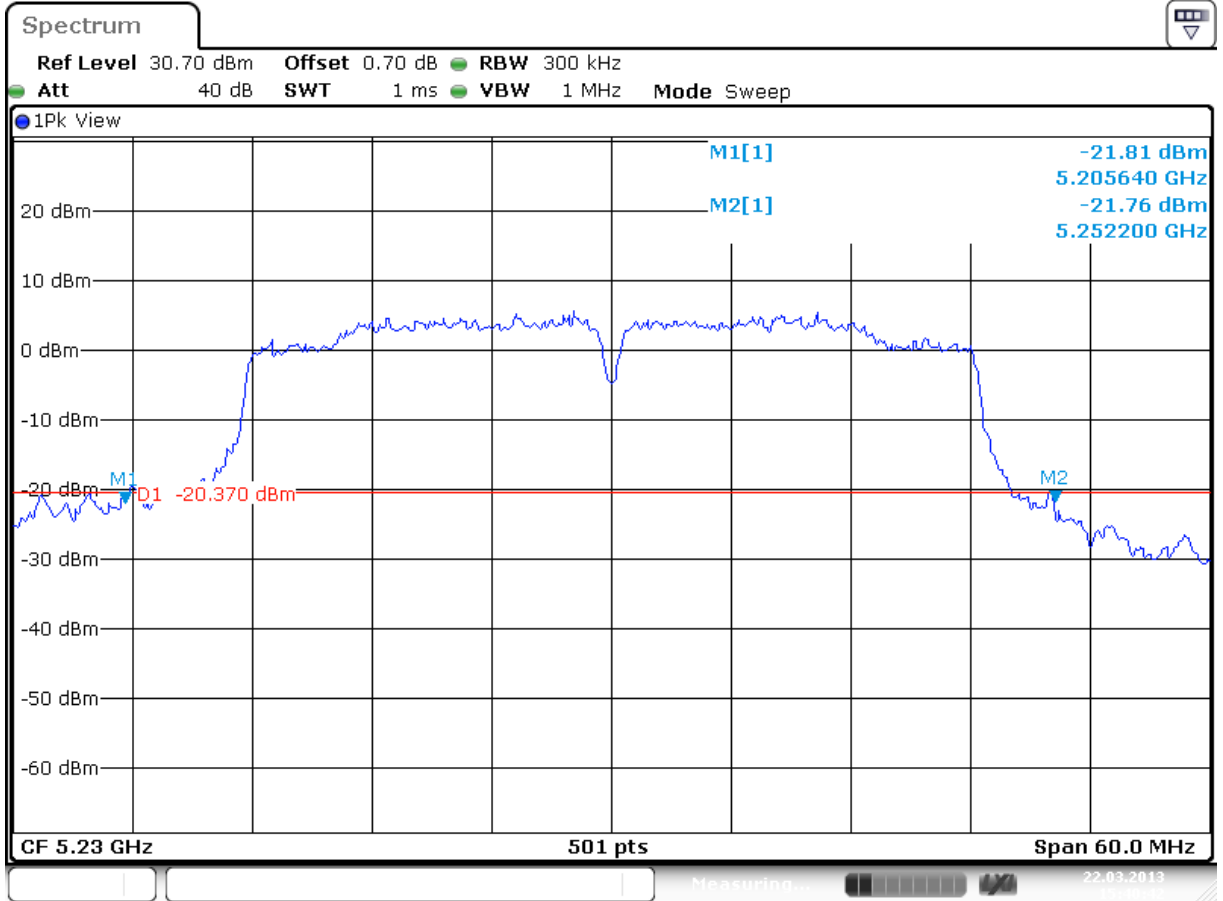
Date: 22.MAR.2013 13:37:20

Plot A

Test Report No.:

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Date: 22.MAR.2013 15:40:42

Plot B

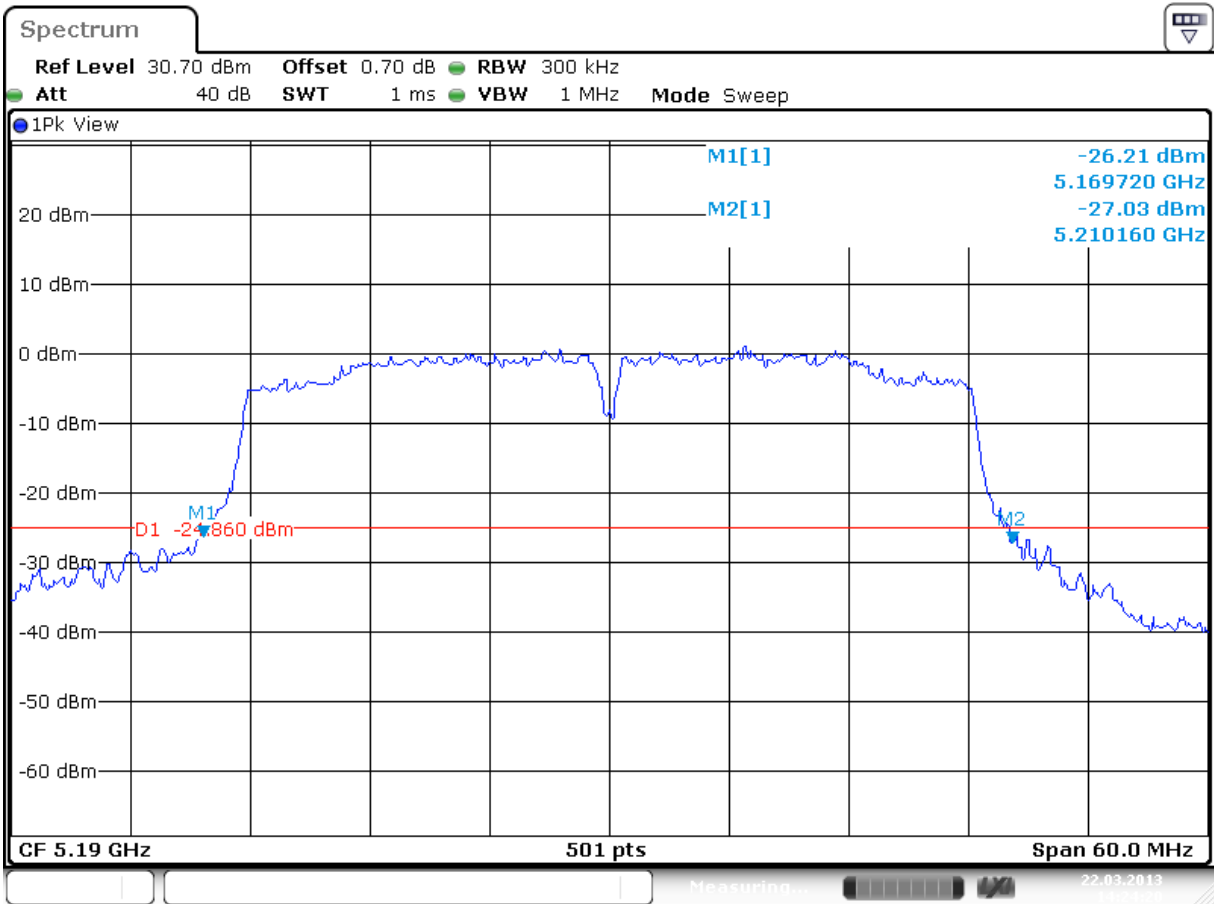
Test Report No.:

12121201.fcc03

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Operation mode: HT4 40 MHz, Antenna 2

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5190	35928	40440	Not Applicable	A
5230	36167	52320	Not Applicable	B



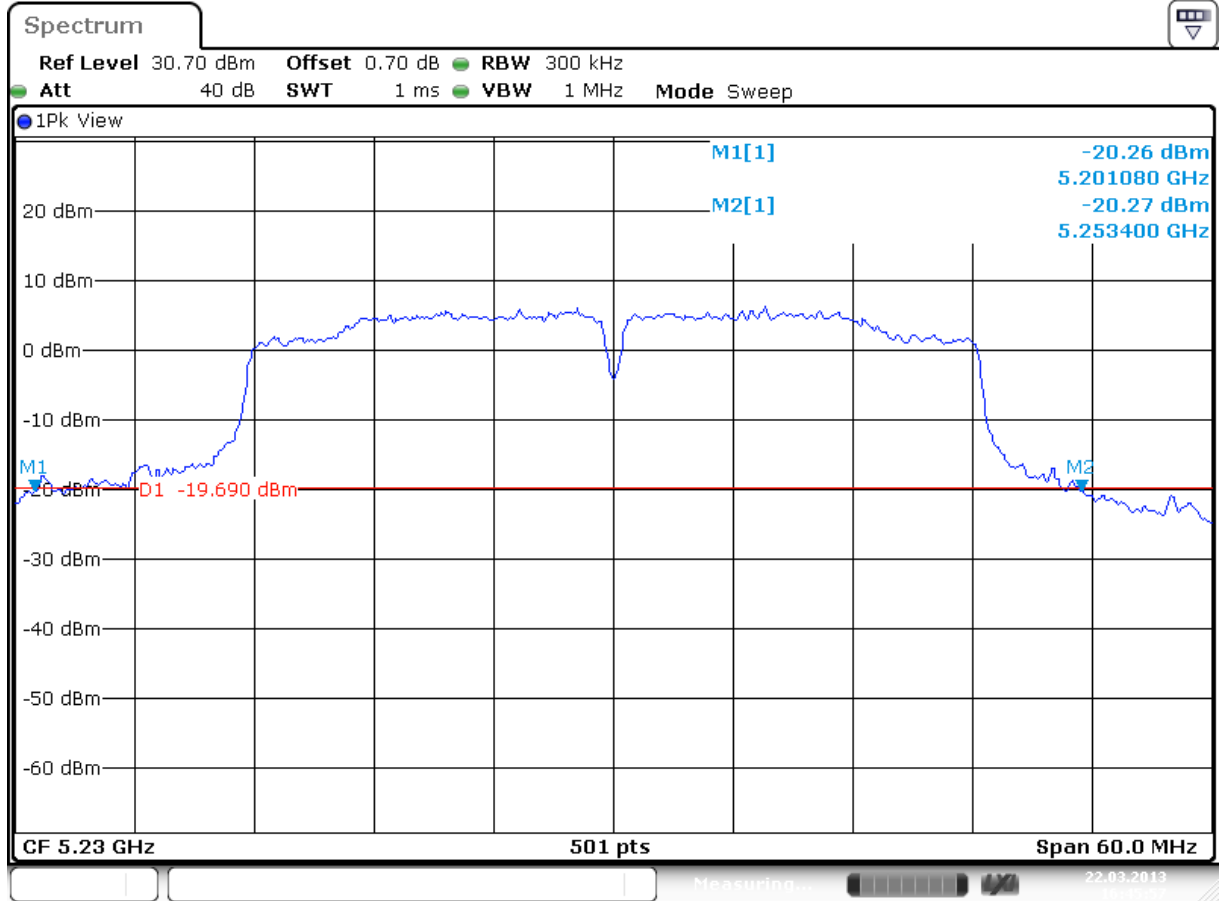
Date: 22.MAR.2013 14:24:20

Plot A

Test Report No.:

12121201.fcc03

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Date: 22.MAR.2013 16:45:57

Plot B

Test Report No.:

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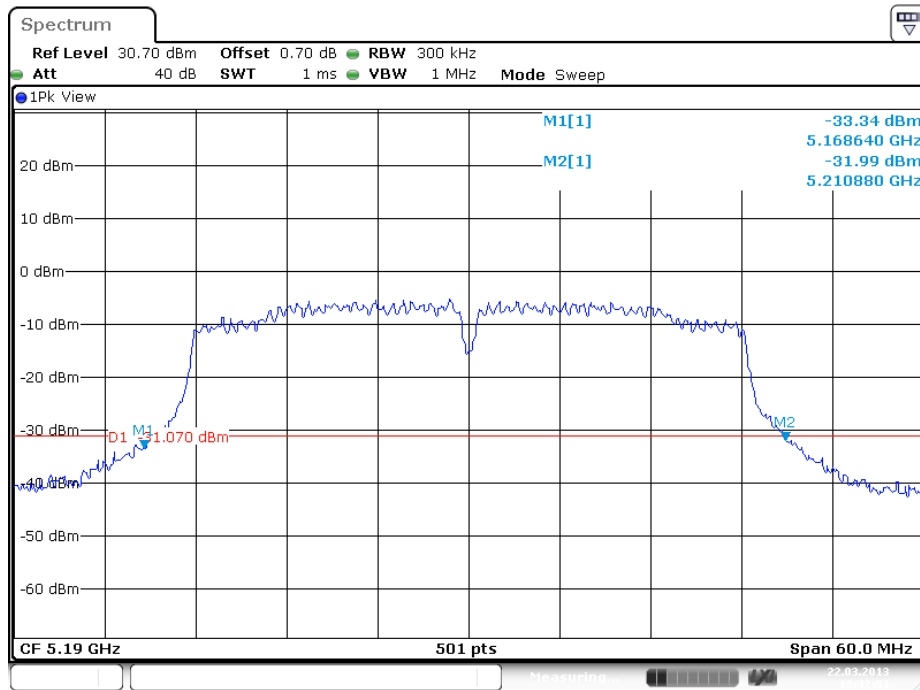
Operation mode: HT8 40 MHz, Antenna 1+2

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5190	43080	35928	Not Applicable	A1 / A2
5230	42360	35928	Not Applicable	B1 / B2

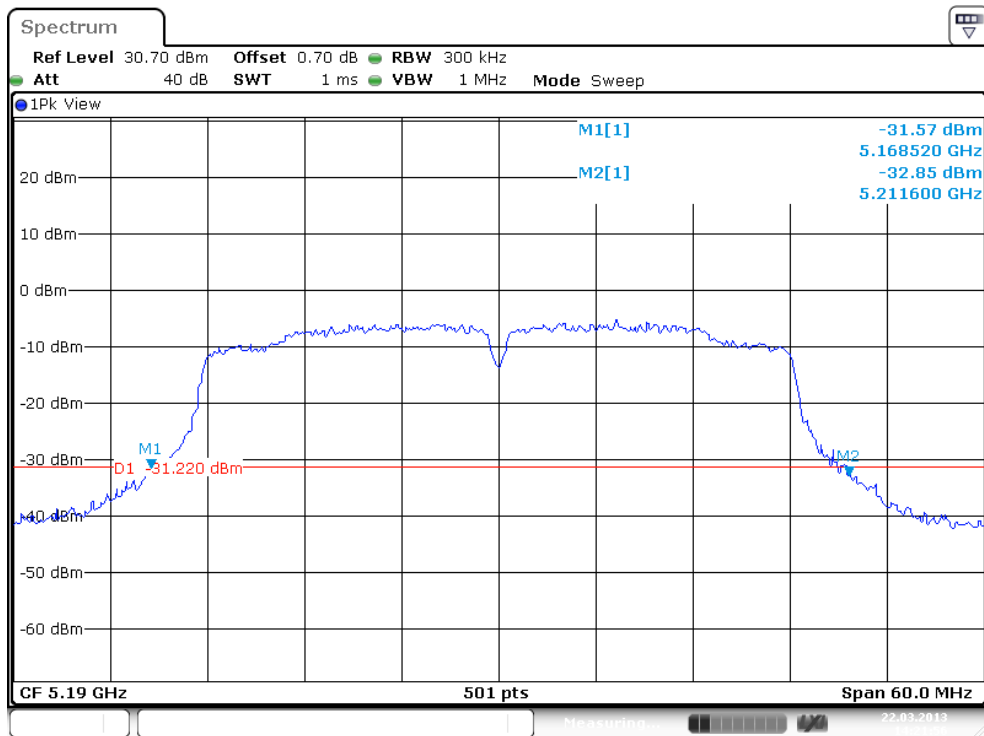
Test Report No.:

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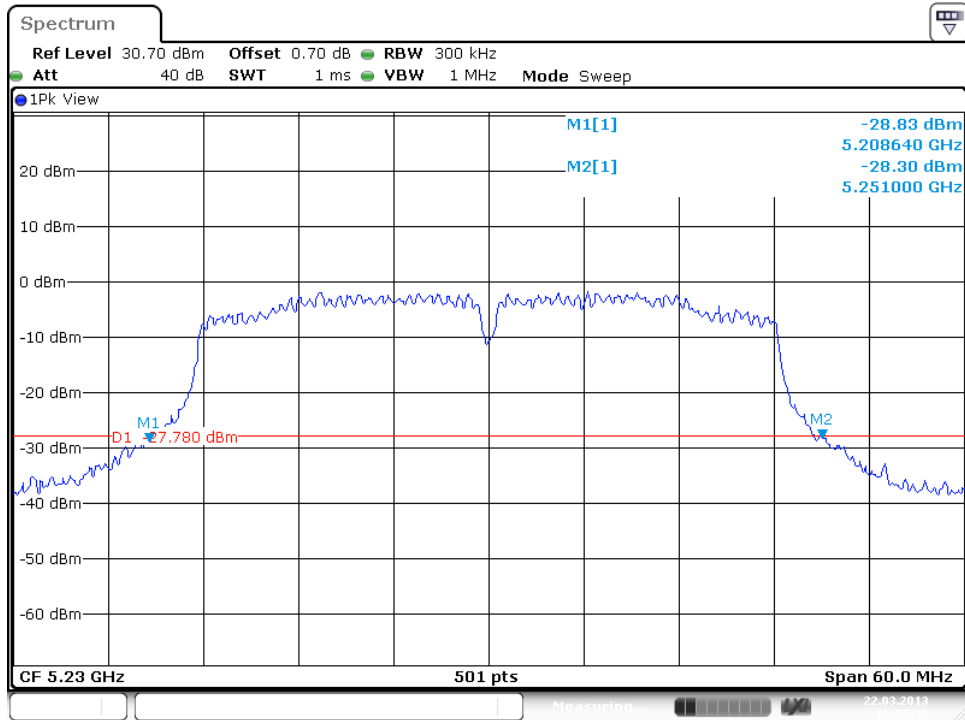
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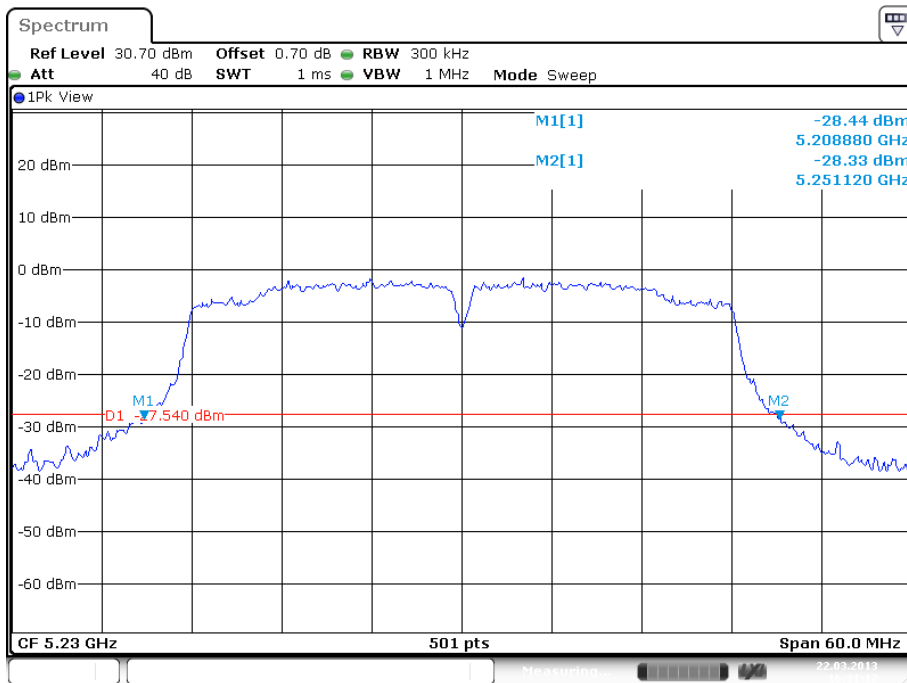
Plot A1 Antenna1



Plot A2 Antenna2



Plot B1 Antenna1



Plot B2 Antenna2

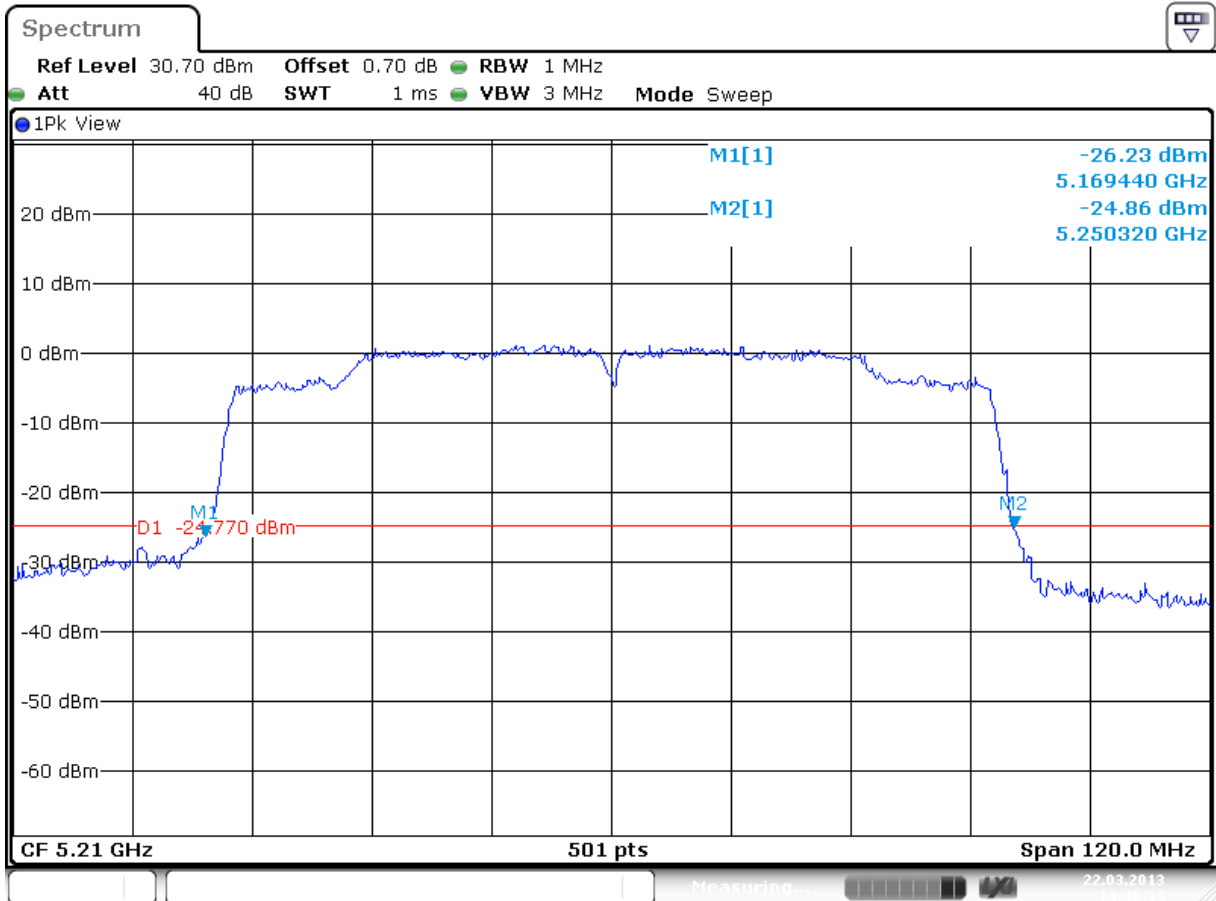
Test Report No.:

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Operation mode: VHT6 80 MHz, Antenna 1

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5210	74730	80880	Not Applicable	A



Date: 22.MAR.2013 14:48:34

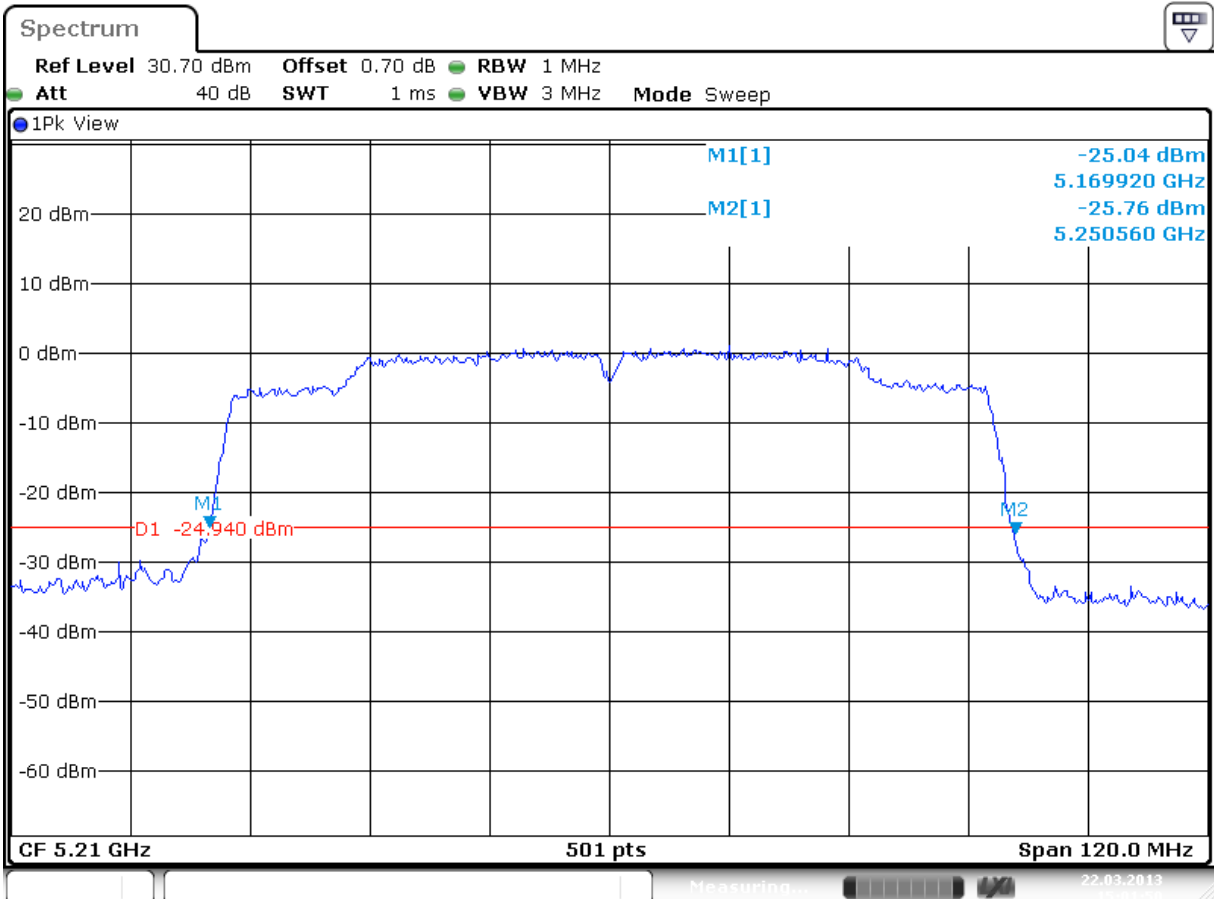
Test Report No.:

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Operation mode: VHT6 80 MHz, Antenna 2

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5210	74970	80640	Not Applicable	A



Date: 22.MAR.2013 15:01:50

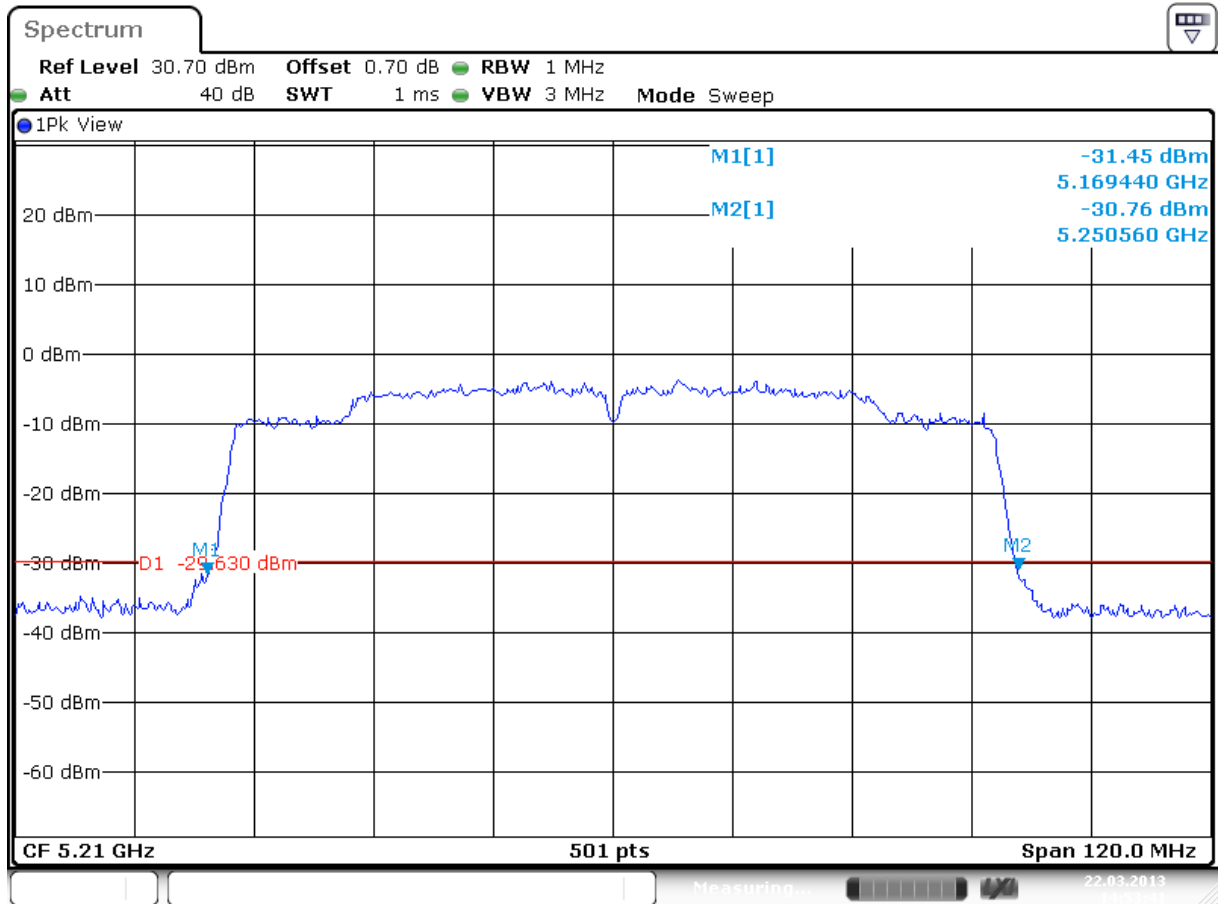
Test Report No.:

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Operation mode: VHT6 80 MHz, Antenna 1+2

Operating Frequency [MHz]	99% Bandwidth [kHz]	26dB Bandwidth [kHz]	Limit [kHz]	Plot number
5210	74970	81360	Not Applicable	A1 / A2



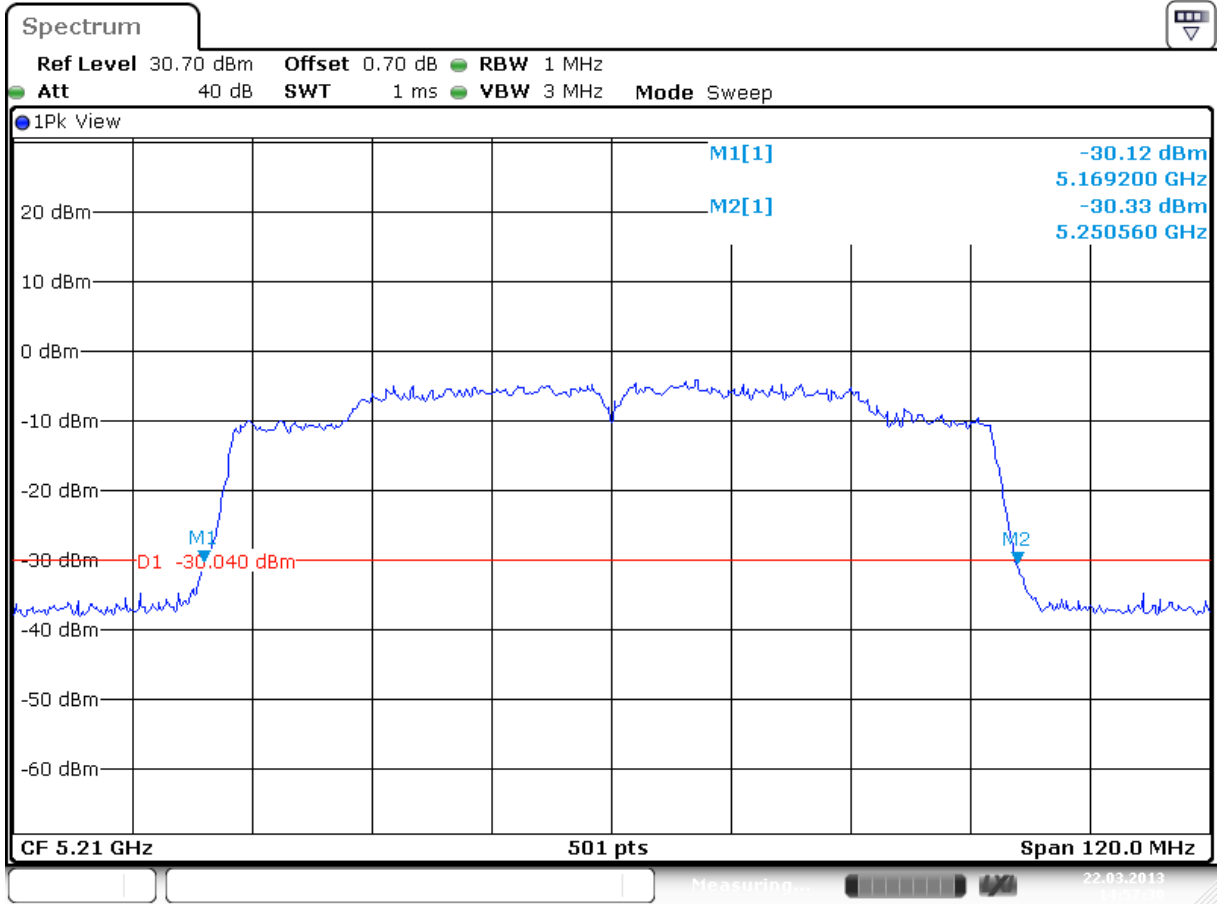
Date: 22.MAR.2013 14:53:41

Plot A1 Antenna 1

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Date: 22.MAR.2013 14:57:31

Plot A2 Antenna2

Test Report No.:

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5.2.3 Peak excursion ratio of the modulation envelope

RESULT: Pass

Date of testing: 2013-03-22

Requirements:

FCC 15.247(a)(6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Test procedure:

ANSI C63.10-2009

KDB Publication No.789033 D01 v01r02 9/26/2012 .

KDB Publication No. 644545 D01 and D02.

Compliance with the peak excursion requirement of Section 15.407(a)(6) is demonstrated by confirming that the ratio of the maximum of the peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission did not exceed 13 dB.

Testing each modulation mode on a single channel is sufficient to demonstrate compliance with the peak excursion requirement.

A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 1 MHz and the video bandwidth was set to 3MHz. 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.

The Peak marker value is compared with the PPSD value found in section 5.2.1 and the difference is calculated. The resulting difference may not exceed 13 dB. The limit line D1 in the plots shown on the next pages show the actual limit based on PPSD value + 13.

Peak excursion (dB) = Peak of spectrum (dBm) – PPSD(dBm)

Test Report No.:

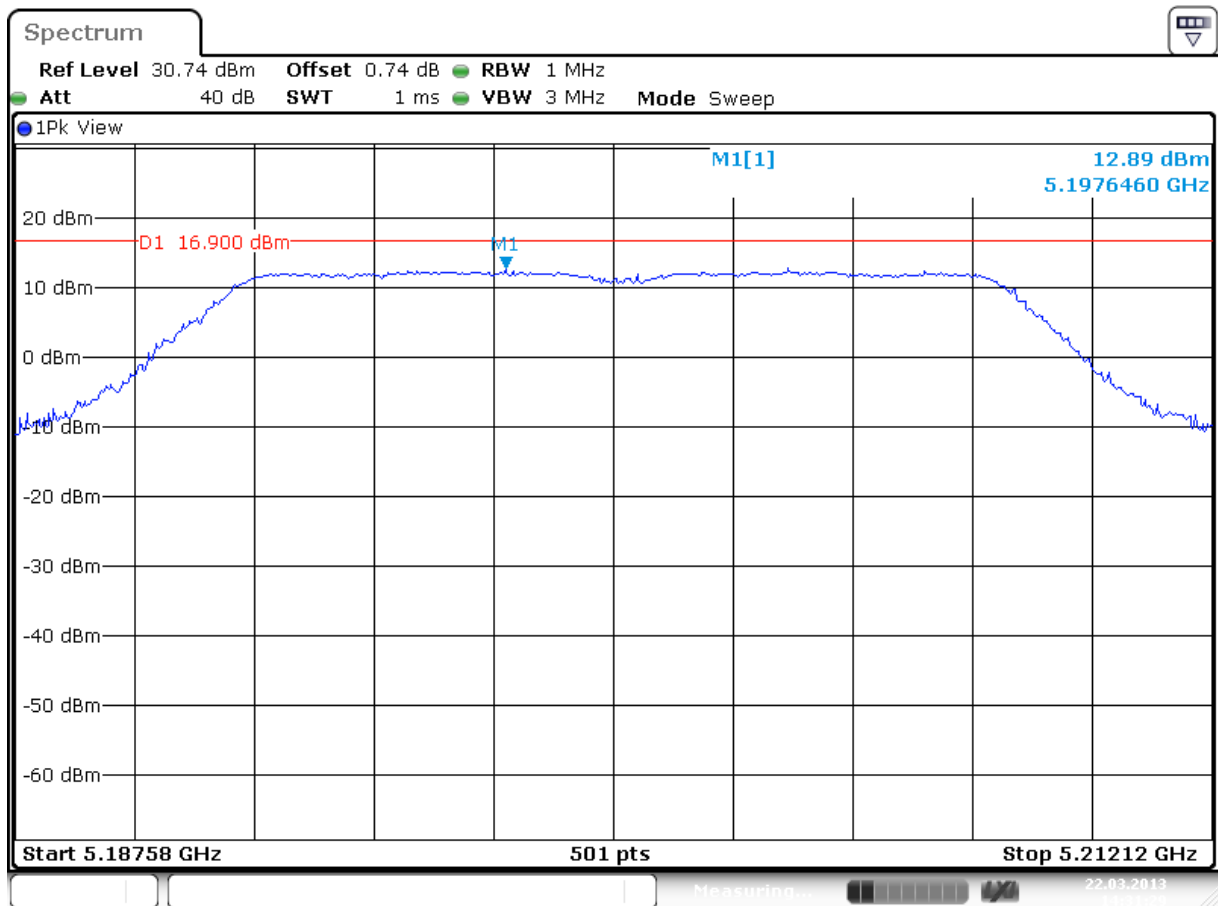
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Peak excursion of the modulation envelope

Operation mode: 6Mb OFDM, Antenna 1

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5200	12.89	3.86	9.0	13	Pass



Date: 22.MAR.2013 14:31:29

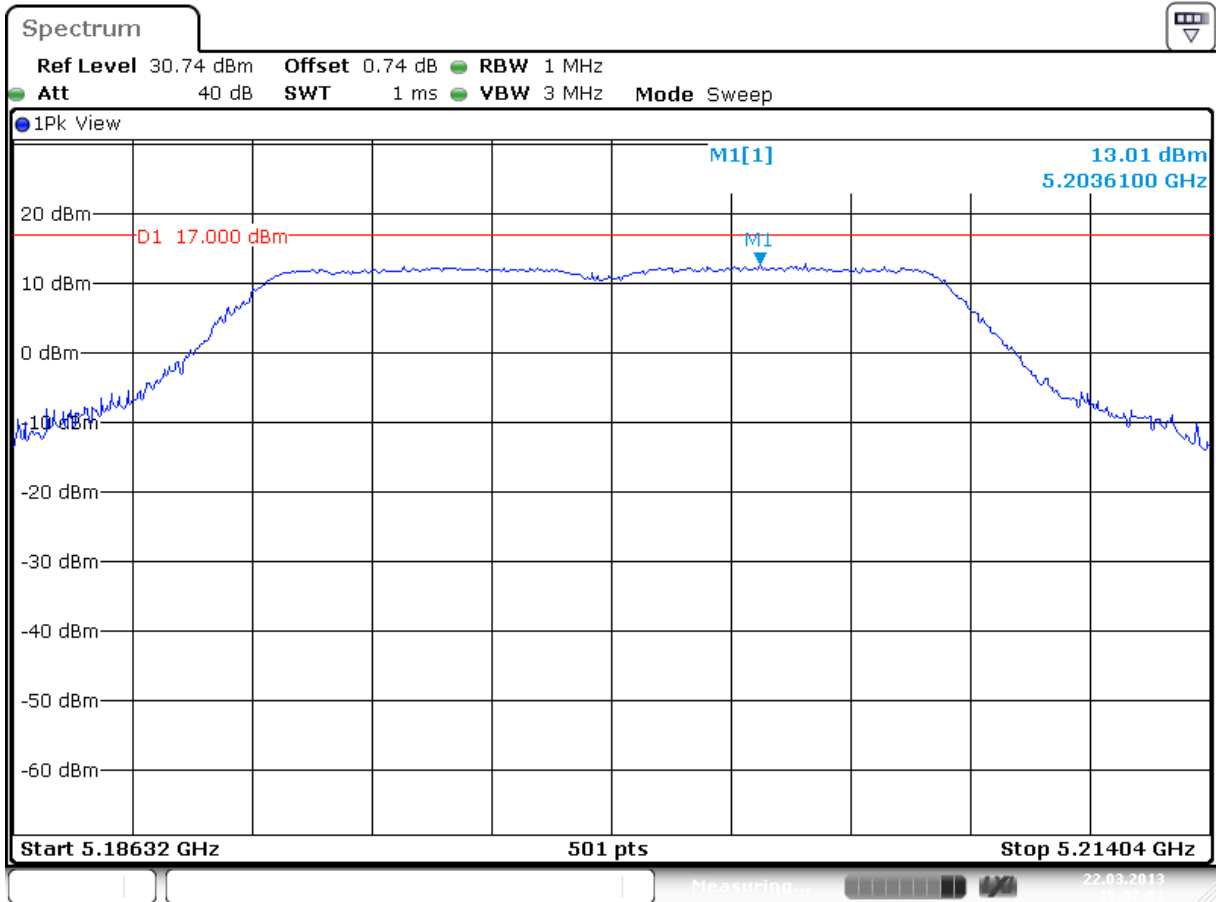
Test Report No.:

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Operation mode: 6Mb OFDM, Antenna 2

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5200	13.01	3.95	9.06	13	Pass



Date: 22.MAR.2013 15:07:01

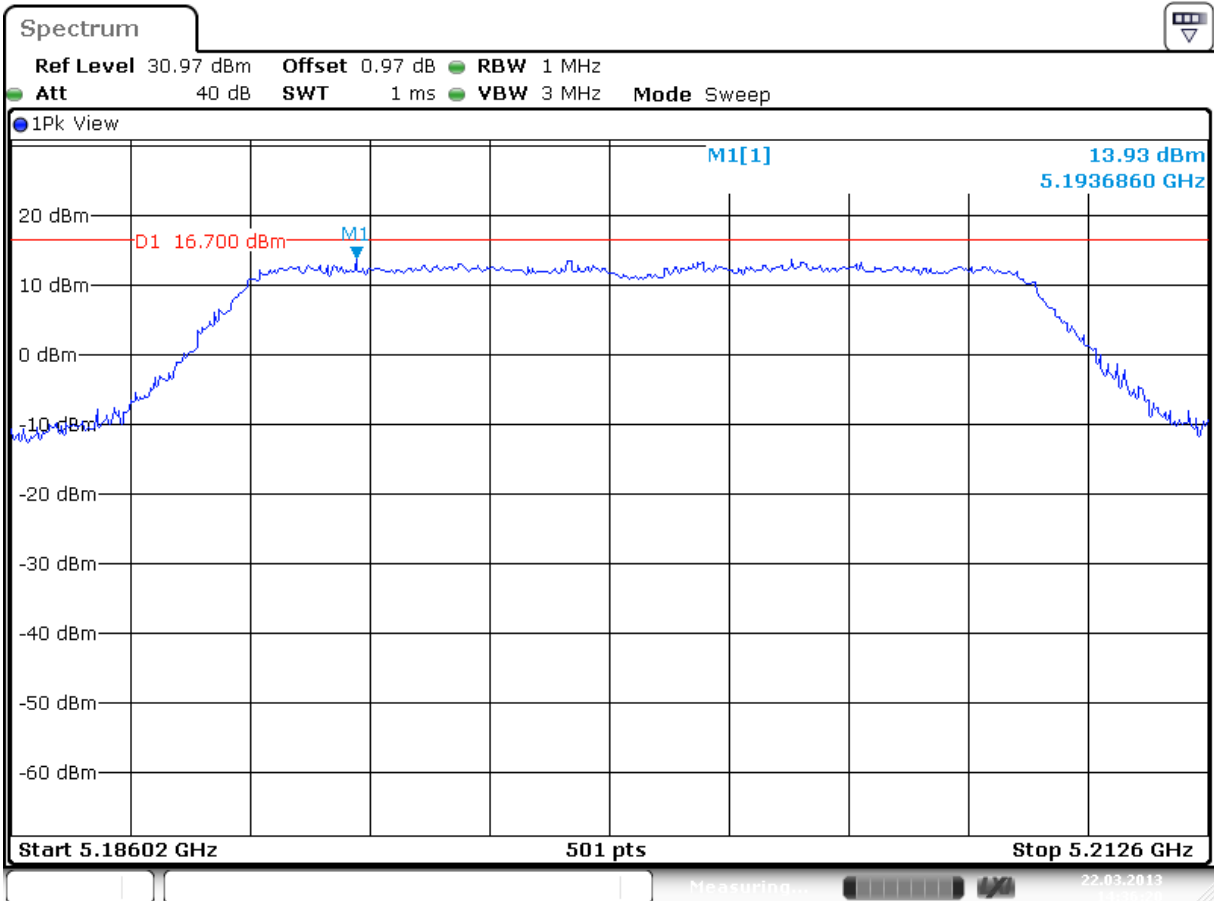
Test Report No.:

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Operation mode: HT4 20 MHz, Antenna 1

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5200	13.93	3.72	10.21	13	Pass



Date: 22.MAR.2013 14:36:20

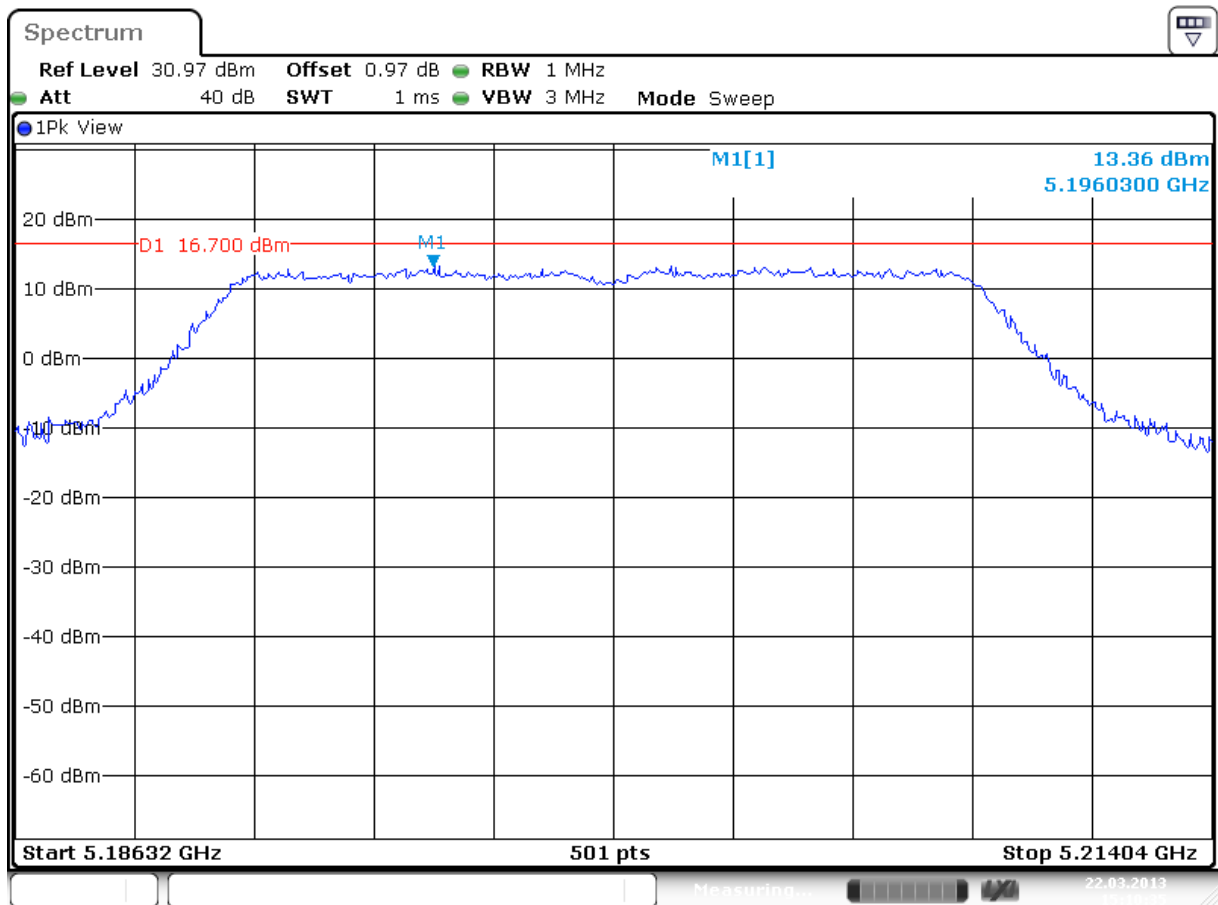
Test Report No.:

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Operation mode: HT4 20 MHz, Antenna 2

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5200	13.36	3.71	9.65	13	Pass



Date: 22.MAR.2013 15:10:36

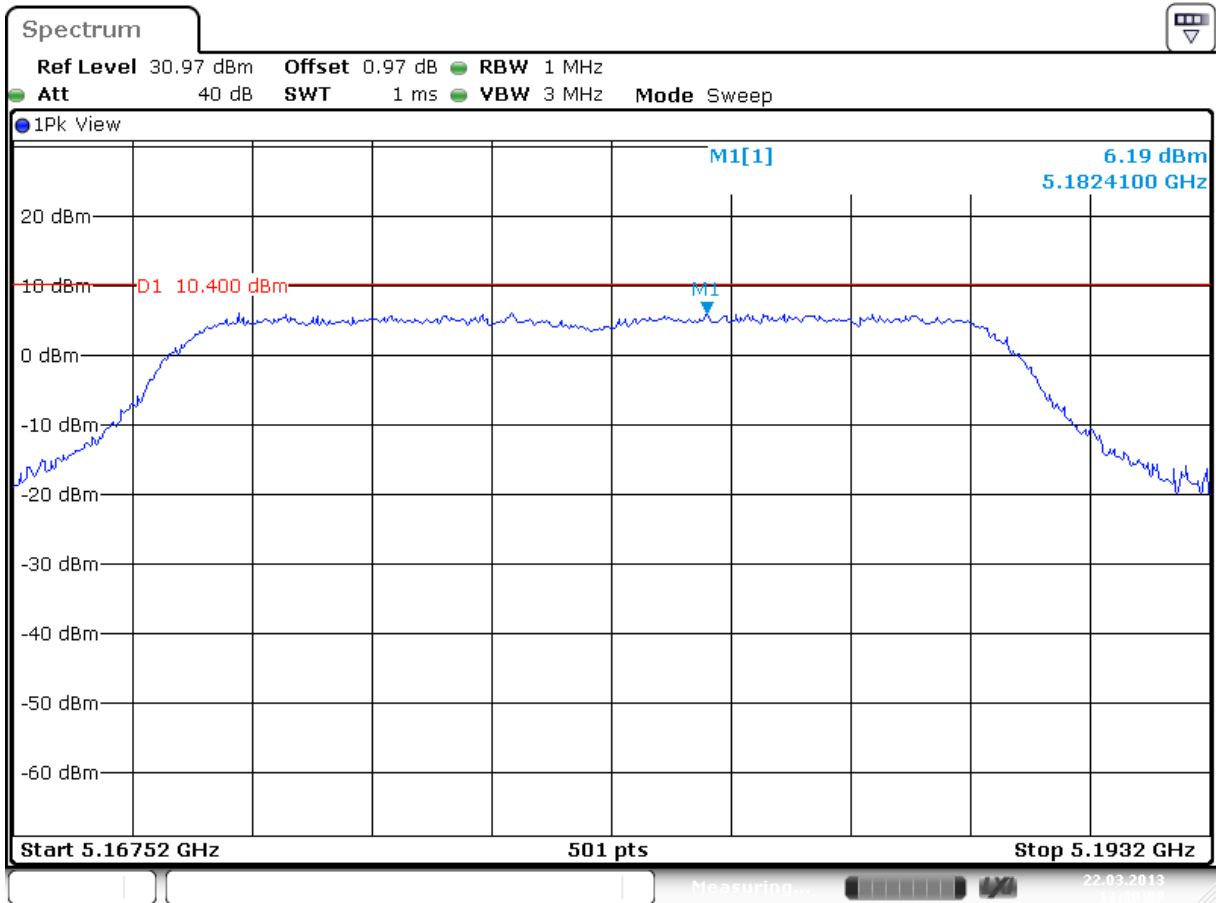
Test Report No.:

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Operation mode: HT8 20 MHz, Antenna 1+2

Frequency [MHz]	Peak of spectrum Ant1 / Ant2 [dBm]	PPSD/MHz [dBm]	Peak excursion Ant1 / Ant2 [dB]	Limit [dB]	Result
5200	6.19 / 4.83	-0.2	6.39 / 5.03	13	Pass



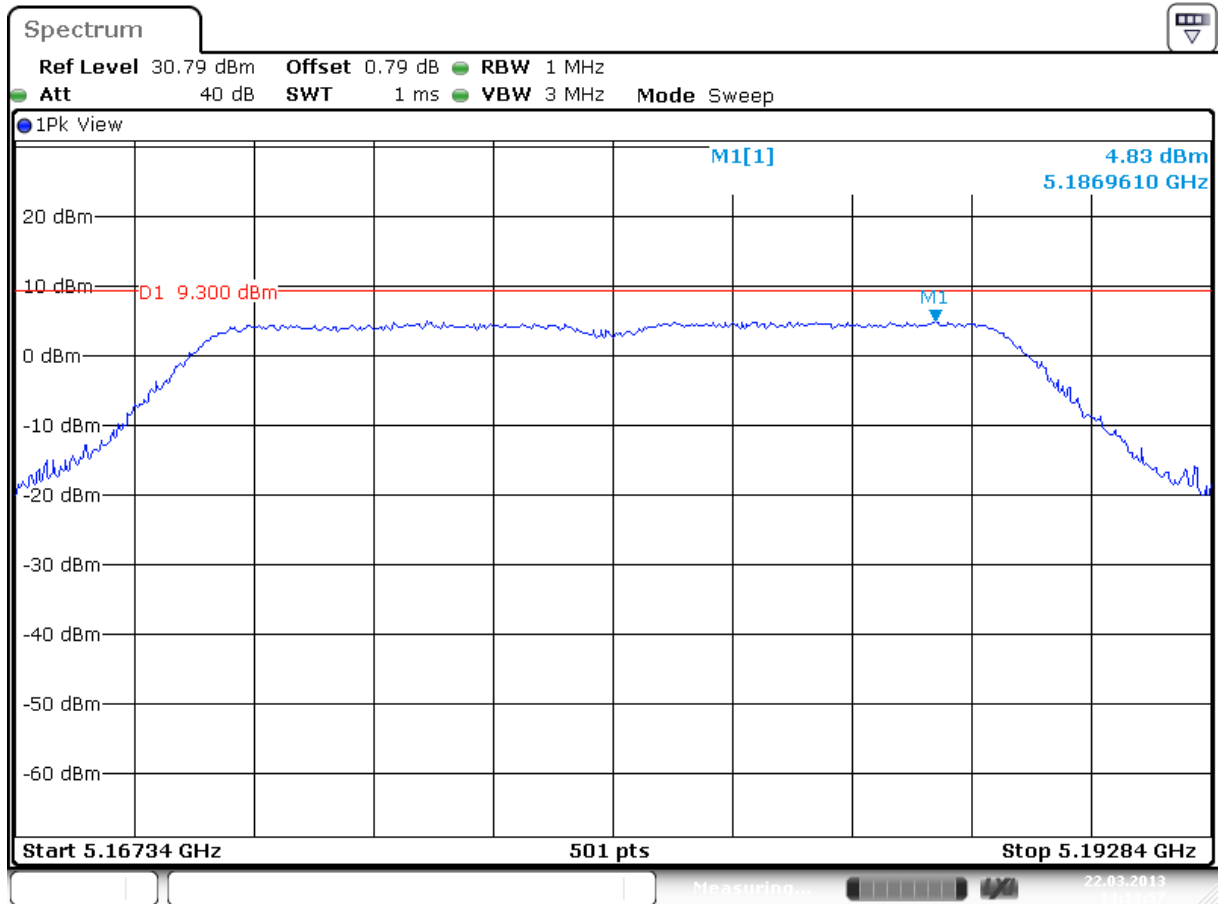
Date: 22.MAR.2013 13:30:07

Plot A1 Antenna1 (Ant1)

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Date: 22.MAR.2013 14:13:57

Plot A2 Antenna2 (Ant2)

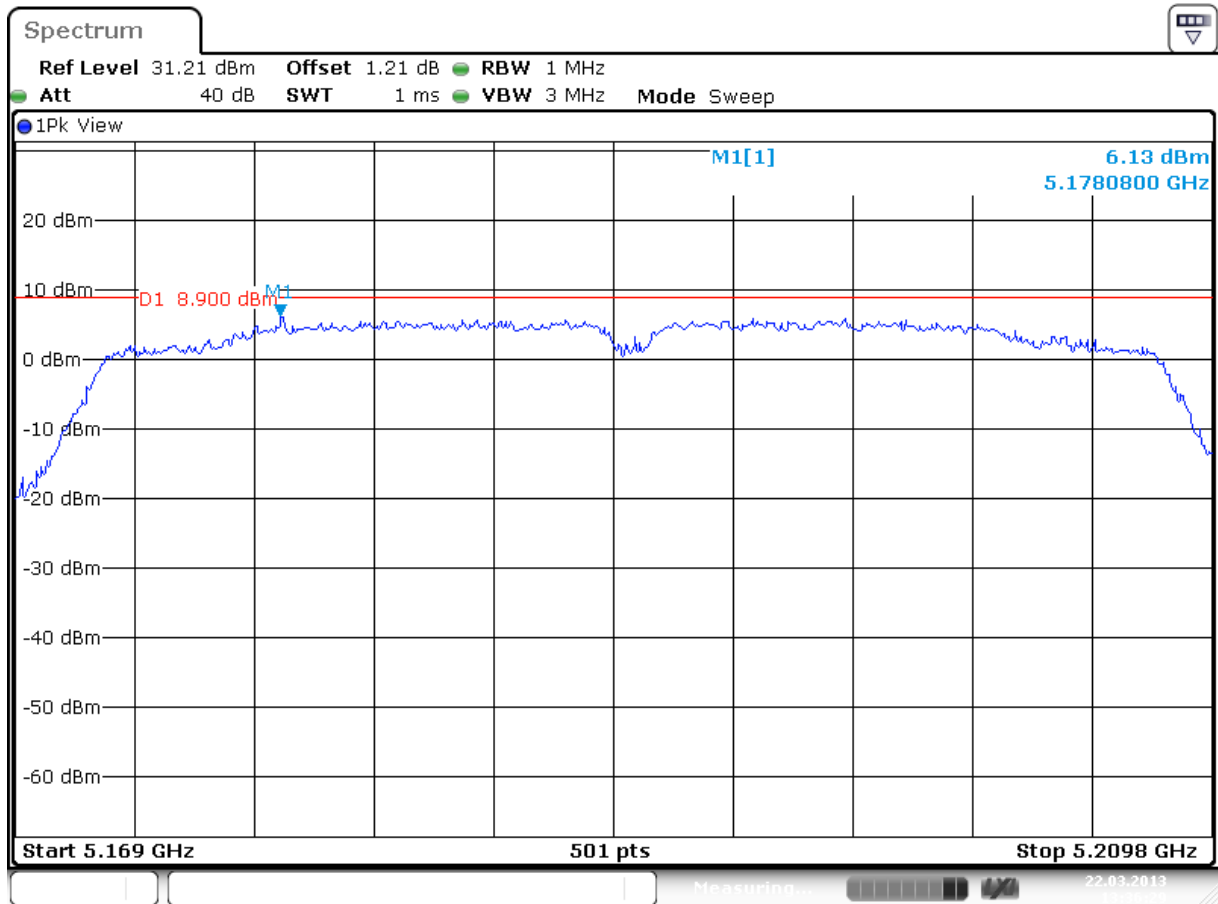
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Operation mode: HT4 40 MHz, Antenna 1

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5240	6.13	-4.11	10.24	13	Pass



Date: 22.MAR.2013 13:36:29

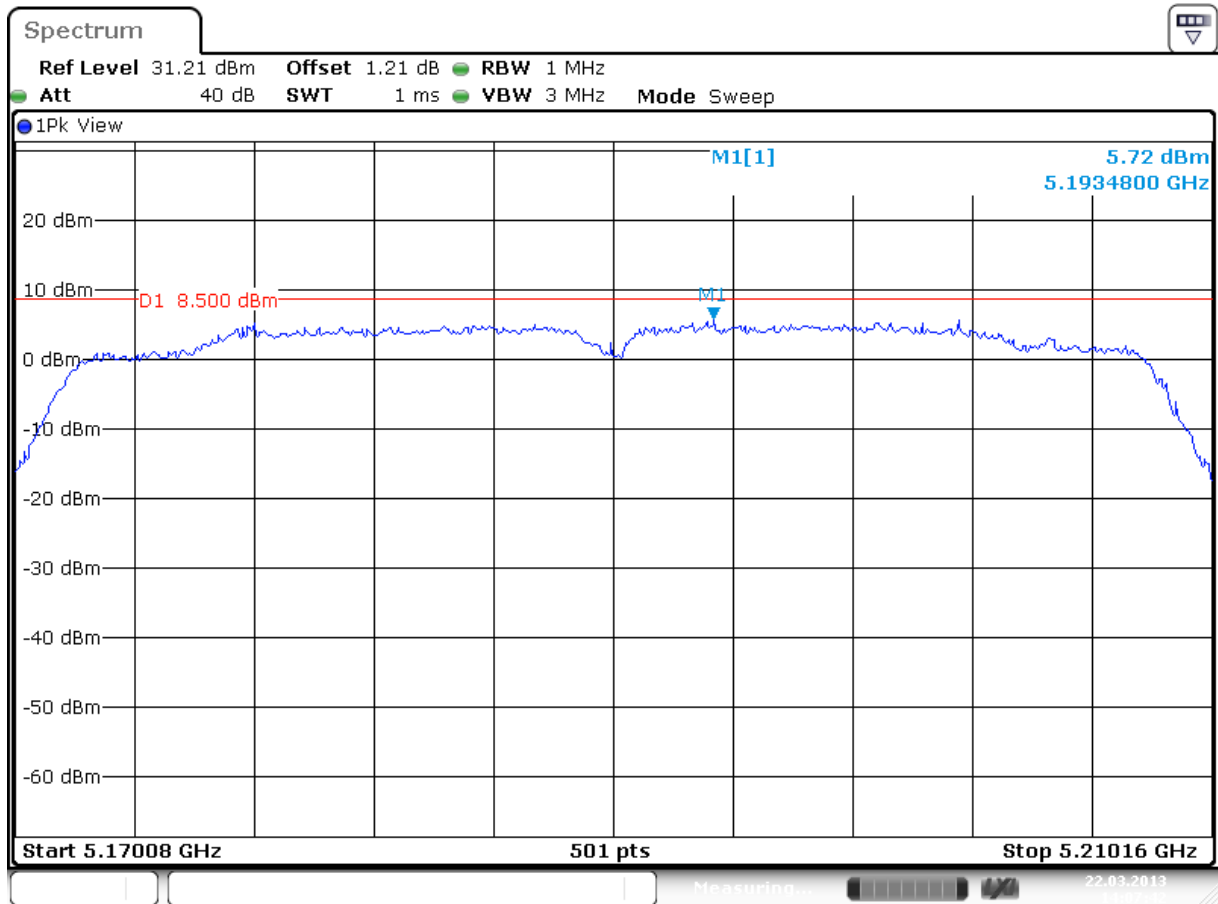
Test Report No.:

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Operation mode: HT4 40 MHz, Antenna 2

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5190	5.72	-4.47	10.19	13	Pass



Date: 22.MAR.2013 14:07:42

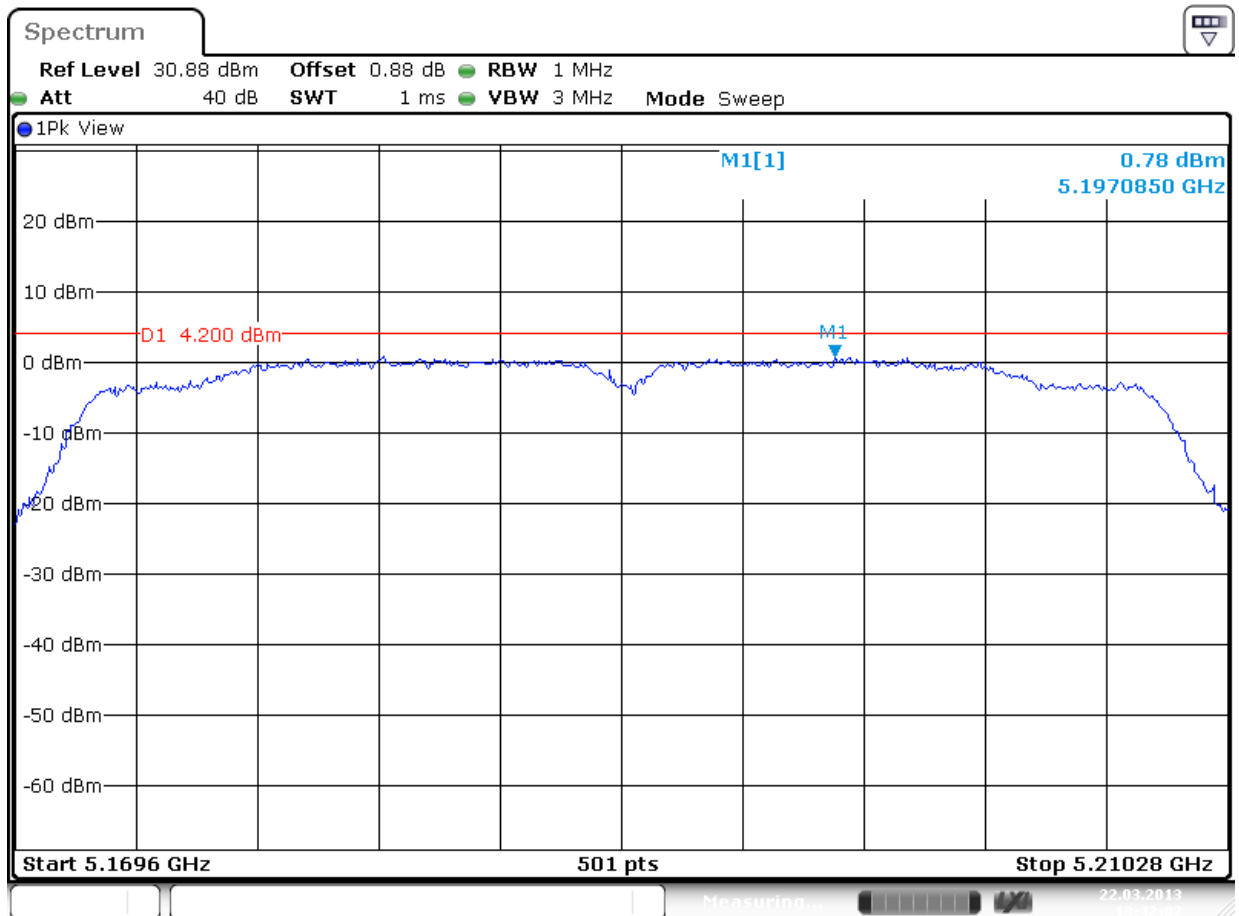
Test Report No.:

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Operation mode: HT8 40 MHz, Antenna 1+2

Frequency [MHz]	Peak of spectrum Ant1 / Ant2 [dBm]	PPSD/MHz [dBm]	Peak excursion Ant1 / Ant2 [dB]	Limit [dB]	Result
5190	0.78 / 0.37	-5.7	6.48 / 6.07	13	Pass



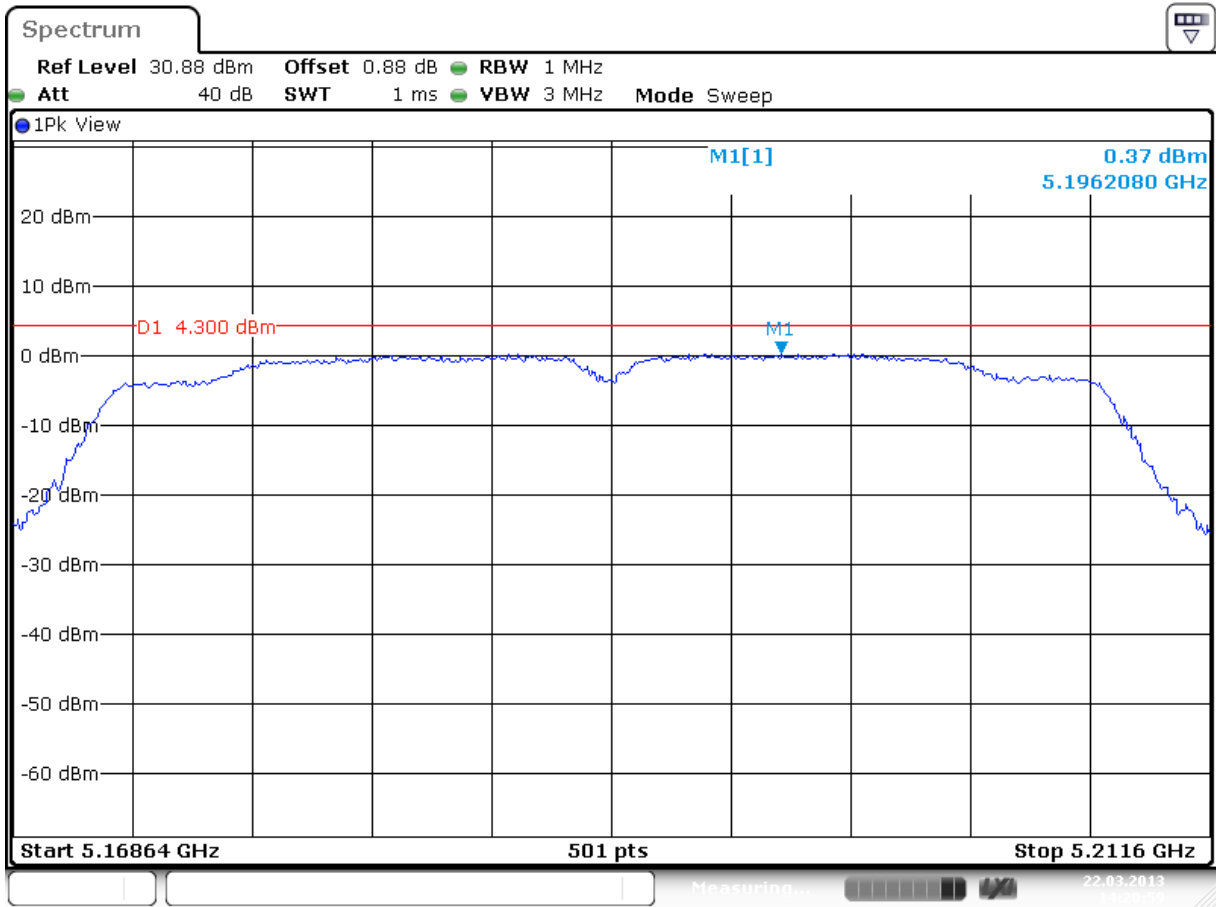
Date: 22.MAR.2013 13:42:03

Plot A1 Antenna1 (Ant1)

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Date: 22.MAR.2013 14:20:59

Plot A2 Antenna2 (Ant2)

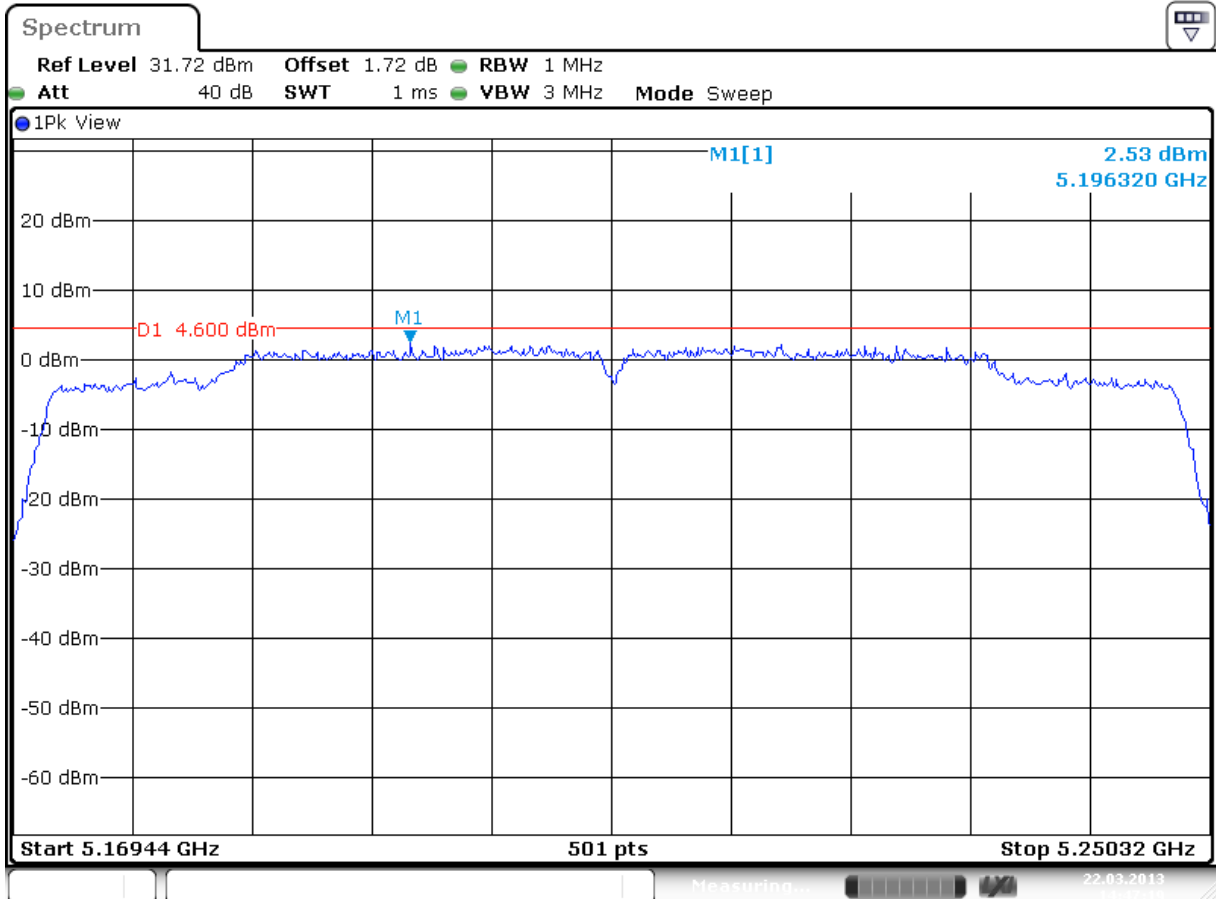
Test Report No.:

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Operation mode: VHT6 80 MHz, Antenna 1

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5210	2.53	-8.44	10.97	13	Pass



Date: 22.MAR.2013 14:47:19

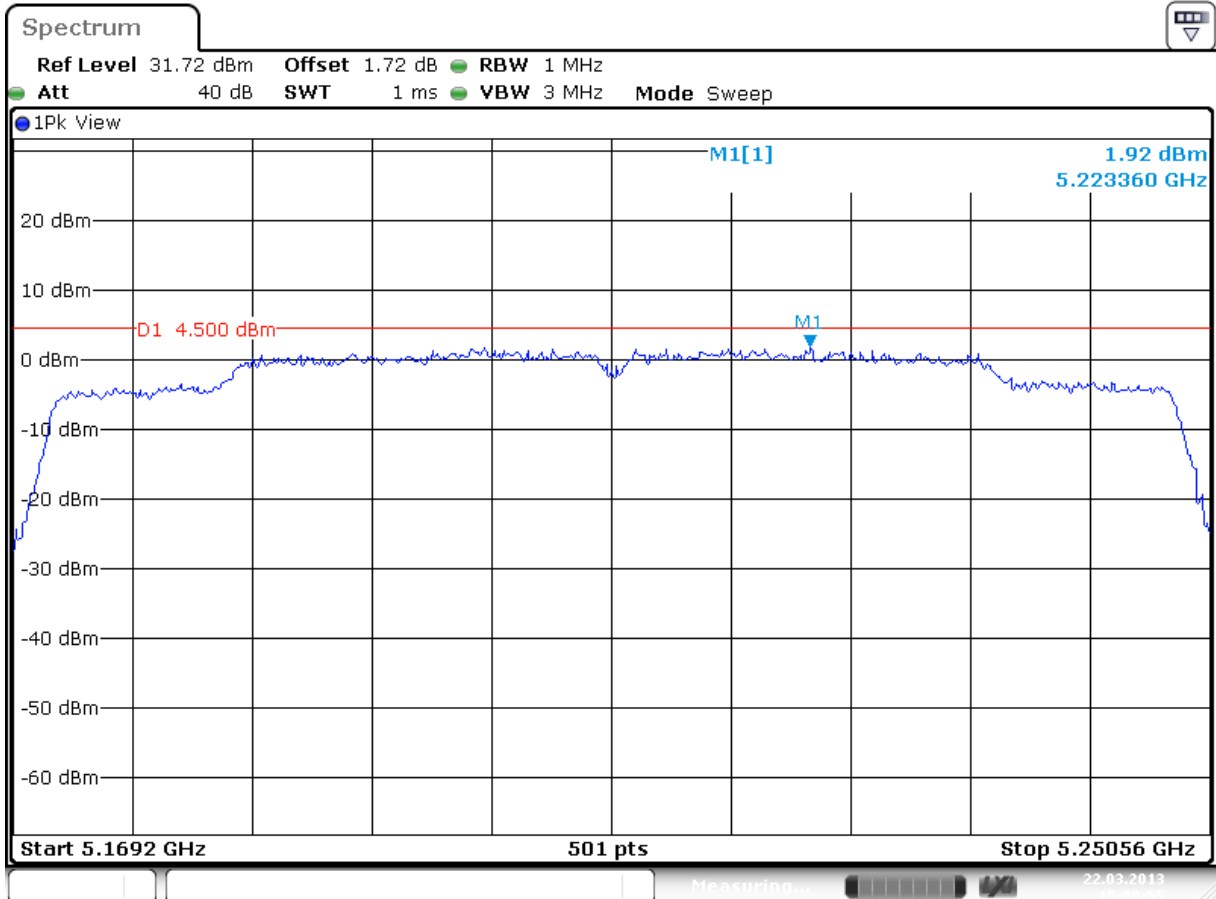
Test Report No.:

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Operation mode: VHT6 80 MHz, Antenna 2

Frequency [MHz]	Peak of spectrum [dBm]	PPSD/MHz [dBm]	Peak excursion [dB]	Limit [dB]	Result
5210	1.92	-8.52	10.44	13	Pass



Date: 22.MAR.2013 15:00:56

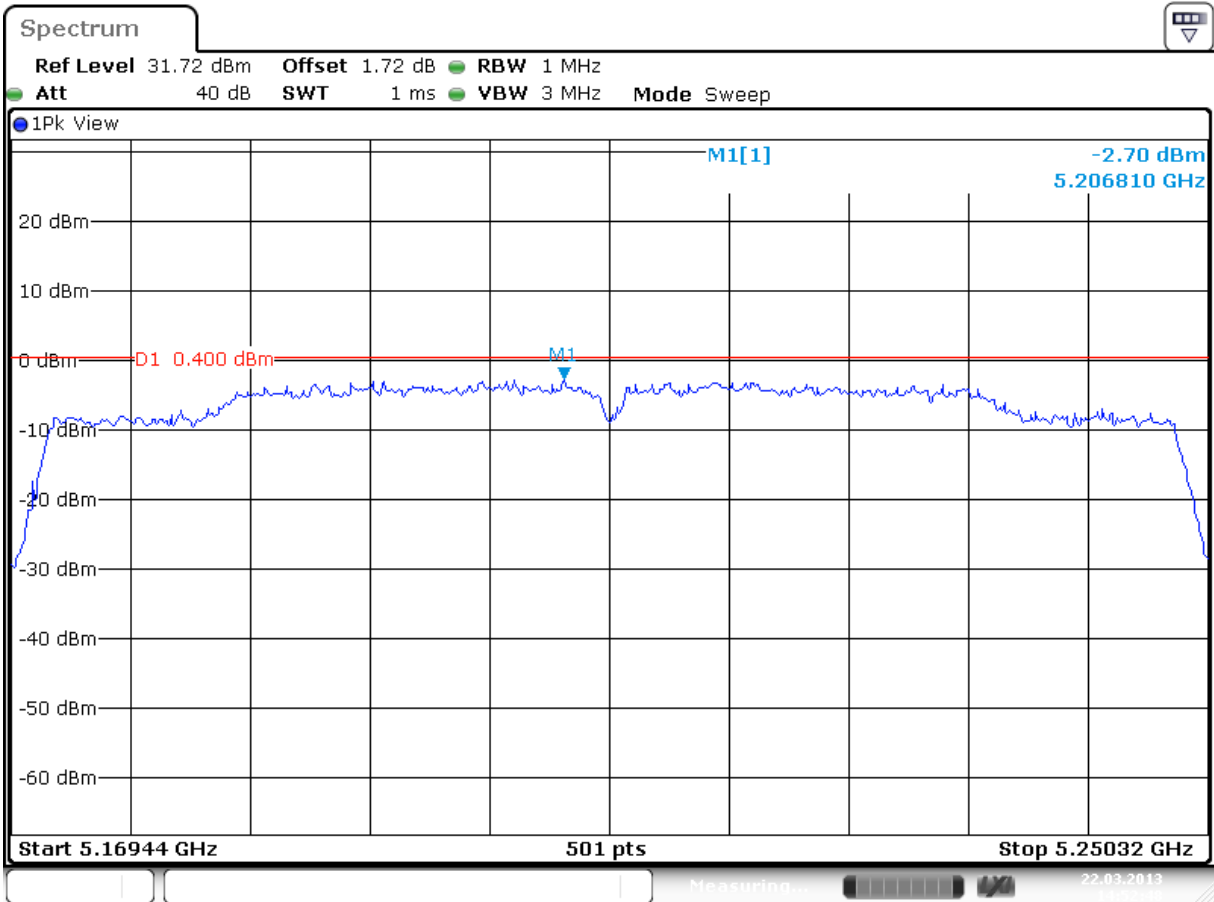
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Operation mode: VHT6 80 MHz, Antenna 1+2

Frequency [MHz]	Peak of spectrum Ant1 / Ant2 [dBm]	PPSD/MHz [dBm]	Peak excursion Ant1 / Ant2 [dB]	Limit [dB]	Result
5210	-2.70 / -2.99	-9.61	6.91 / 6.62	13	Pass



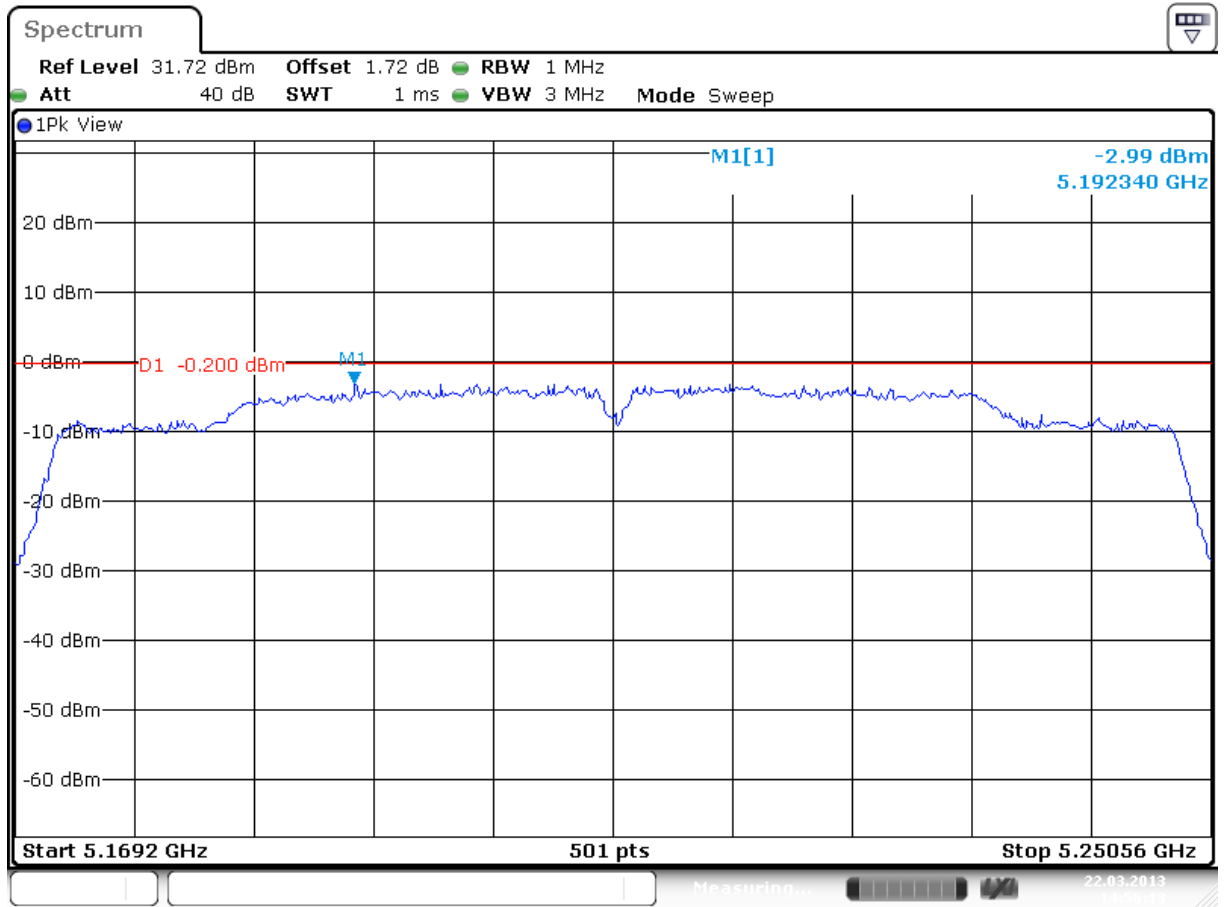
Date: 22.MAR.2013 14:52:48

Plot A1 Antenna1

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Date: 22.MAR.2013 14:56:13

Plot A2 Antenna2

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5.2.4 Undesirable Emissions

RESULT: Pass

Date of testing:

2013-01-12 / 2013-03-22

Requirements:

Section 15.407 Subclause (b) (1) / RSS-210 A.9.2. (1).

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz (68.23 dBμV/m at 3 m distance).

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

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 - 40000	500	54.0	Average	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Test procedure:

ANSI C63.10-2009 and ANSI C63.10-2009
 KDB Publication No.789033 D01 v01r02 9/26/2012 .
 KDB Publication No. 644545 D01 and D02.

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.

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The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° to find the maximum radiated emission. Measurements were made in both horizontal and vertical planes of polarization. All tests were performed in a semi-anechoic chamber at a distance of 3m for the frequency range 1 GHz-40 GHz. The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

The equipment transmits continuously in the selected channel so it is not necessary a duty cycle correction factor. Measurements were performed using a spectrum analyzer with a suitable span and using the following settings: RBW = 1MHz, VBW = 3MHz (smaller if required for near band edge measurements).

The highest emission amplitudes relative to the appropriate limit were measured and 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.

Results:

See the tables on the following pages.

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Frequency range 30 MHz-1 GHz

The spurious signals detected do not depend on either the operating channel or the modulation mode.

Freq. [MHz]	Antenna Orientation	Level QP [dBµV/m]	Limit [dBµV/m]	Margin QP [dB]
66.86	Vertical	20.5	40.0	19.5
111.48	Vertical	25.0	43.5	18.5
253.10	Vertical	27.9	46.0	18.1
774.96	Vertical	39.5	46.0	6.5
844.80	Vertical	41.4	46.0	4.6
922.40	Vertical	43.0	46.0	3.0

Notes:

1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is ± 5.0 dB.
3. The EUT was varied in three positions, the measuring antenna was varied in horizontal and vertical orientations and also around it's axis and height. The reported value is the worst case found at the reported frequency.
4. Preliminary measurements indicated that the radiated emissions from EUT were not affected by the EUT's operating frequency or mode.
5. Tested with EUT in operation modes as described in section 4.2, worst case values noted.
6. A Quasi-peak detector was used with a bandwidth of 120 kHz.

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Frequency range 1 GHz-40 GHz

The results in the next tables show the maximum measured levels in the 1-40 GHz range. For OFDM modulation modes (802.11g, 802.11n20, 802.11n40 and 802.11ac80), a preliminary measurement in the central channel in the range 1-18 GHz was performed to determine the worst case.

The lowest and highest channels were measured for out-of-band emissions for the worst case (802.11a). The field strength at the band edges was evaluated for each mode and on each chain individually on the lowest and highest channels at the rated power for the channel under test. Where the power at the edge channels was lower than the power at the center channels additional measurements were made at the adjacent channels. Single transmission at each chain and simultaneous transmission at both chains modes were fully evaluated.

Spurious signals with peak levels above the average limit (54 dB μ V/m at 3 m) are measured with average detector for checking compliance with the average limit, where applicable.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 6 Mb OFDM – Antenna 1 at 5180 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dB μ V/m]	Limit [dB μ V/m]
10360	Vertical	Pk	48.20	68.23
15540	Horizontal	Pk	45.20	68.23
18459	Vertical	Pk	36.54	68.23
19139	Vertical	Pk	35.88	68.23
22573	Vertical	Pk	39.13	68.23
19326	Vertical	Pk	33.91	68.23
23814	Vertical	Pk	42.83	68.23
23967	Vertical	Pk	43.64	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 6 Mb OFDM – Antenna 2 at 5180 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dB μ V/m]	Limit [dB μ V/m]
10360	Vertical	Pk	44.30	68.23
15540	Horizontal	Pk	40.80	68.23
18629	Vertical	Pk	36.15	68.23
21417	Vertical	Pk	37.87	68.23
21706	Vertical	Pk	38.55	68.23
24103	Vertical	Pk	43.57	68.23
25463	Vertical	Pk	40.97	68.23
25701	Vertical	Pk	43.04	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 6 Mb OFDM – Antenna 1 at 5200 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10400	Vertical	Pk	36.44	68.23
15780	Horizontal	Pk	39.68	68.23
18595	Vertical	Pk	36.15	68.23
20533	Vertical	Pk	36.25	68.23
22114	Vertical	Pk	40.76	68.23
23576	Vertical	Pk	42.05	68.23
24069	Vertical	Pk	43.58	68.23
24562	Vertical	Pk	39.85	68.23

- Note:
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 6 Mb OFDM – Antenna 2 at 5200 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10400	Vertical	Pk	35.72	68.23
15780	Horizontal	Pk	40.13	68.23
18595	Vertical	Pk	34.91	68.23
21196	Vertical	Pk	36.55	68.23
21230	Vertical	Pk	37.03	68.23
24018	Vertical	Pk	43.66	68.23
25905	Vertical	Pk	41.87	68.23
26262	Vertical	Pk	38.68	68.23

- Note:
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 6 Mb OFDM – Antenna 1 at 5240 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10480	Vertical	Pk	43.00	68.23
15720	Vertical	Pk	45.90	68.23
18595	Vertical	Pk	34.91	68.23
21162	Vertical	Pk	36.55	68.23
22199	Vertical	Pk	37.03	68.23
24103	Vertical	Pk	43.66	68.23
25803	Vertical	Pk	41.87	68.23
26177	Vertical	Pk	38.68	68.23

- Note:
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 6 Mb OFDM – Antenna 2 at 5240 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10480	Vertical	Pk	42.63	68.23
15720	Vertical	Pk	45.77	68.23
18595	Vertical	Pk	35.83	68.23
21162	Vertical	Pk	37.11	68.23
22199	Vertical	Pk	41.07	68.23
24103	Vertical	Pk	43.76	68.23
25803	Vertical	Pk	42.37	68.23
26177	Vertical	Pk	39.79	68.23

- Note:
- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT4 20 MHz – Antenna 1 at 5180 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10360	Vertical	Pk	47.00	68.23
15540	Horizontal	Pk	43.30	68.23
18510	Vertical	Pk	36.73	68.23
21281	Vertical	Pk	36.84	68.23
21961	Vertical	Pk	40.92	68.23
23355	Vertical	Pk	41.00	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT4 20 MHz – Antenna 2 at 5180 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10360	Vertical	Pk	46.42	68.23
15540	Horizontal	Pk	43.15	68.23
18816	Vertical	Pk	36.10	68.23
20465	Vertical	Pk	36.59	68.23
21859	Vertical	Pk	40.41	68.23
24069	Vertical	Pk	43.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT4 20 MHz – Antenna 1 at 5200 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10520	Vertical	Pk	47.50	68.23
15780	Horizontal	Pk	50.00	68.23
18782	Vertical	Pk	36.40	68.23
21451	Vertical	Pk	37.37	68.23
22216	Vertical	Pk	41.65	68.23
24086	Vertical	Pk	43.47	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT4 20 MHz – Antenna 2 at 5200 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10520	Vertical	Pk	45.59	68.23
15780	Horizontal	Pk	48.81	68.23
18510	Vertical	Pk	36.72	68.23
20584	Vertical	Pk	35.86	68.23
21281	Vertical	Pk	36.83	68.23
25718	Vertical	Pk	43.04	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT4 20 MHz – Antenna 1 at 5240 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10480	Vertical	Pk	47.70	68.23
15720	Horizontal	Pk	42.80	68.23
18561	Vertical	Pk	36.02	68.23
21213	Vertical	Pk	36.52	68.23
21927	Vertical	Pk	41.92	68.23
24341	Vertical	Pk	41.28	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT4 20 MHz – Antenna 2 at 5240 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10480	Vertical	Pk	45.54	68.23
15720	Horizontal	Pk	42.78	68.23
18493	Vertical	Pk	36.30	68.23
19139	Vertical	Pk	35.40	68.23
24052	Vertical	Pk	44.07	68.23
25514	Vertical	Pk	41.87	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT8 20 MHz – Antenna 1+2 at 5180 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10360	Vertical	Pk	42.50	68.23
15540	Horizontal	Pk	43.25	68.23
18510	Vertical	Pk	44.25	68.23
21281	Vertical	Pk	36.60	68.23
21961	Vertical	Pk	43.50	68.23
23355	Vertical	Pk	41.00	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT8 20 MHz – Antenna 1+2 at 5180 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10360	Vertical	Pk	44.25	68.23
15540	Horizontal	Pk	43.50	68.23
18816	Vertical	Pk	44.00	68.23
20465	Vertical	Pk	35.50	68.23
21859	Vertical	Pk	42.50	68.23
24069	Vertical	Pk	43.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT8 20 MHz – Antenna 1+2 at 5200 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10520	Vertical	Pk	47.50	68.23
15780	Horizontal	Pk	50.00	68.23
18782	Vertical	Pk	46.50	68.23
21451	Vertical	Pk	44.40	68.23
22216	Vertical	Pk	45.50	68.23
24086	Vertical	Pk	43.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT8 20 MHz – Antenna 1+2 at 5200 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10520	Vertical	Pk	46.25	68.23
15780	Horizontal	Pk	45.25	68.23
18510	Vertical	Pk	44.50	68.23
20584	Vertical	Pk	41.50	68.23
21281	Vertical	Pk	42.75	68.23
25718	Vertical	Pk	43.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT8 20 MHz – Antenna 1+2 at 5240 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10480	Vertical	Pk	47.50	68.23
15720	Horizontal	Pk	45.40	68.23
18561	Vertical	Pk	36.50	68.23
21213	Vertical	Pk	36.00	68.23
21927	Vertical	Pk	43.50	68.23
24341	Vertical	Pk	44.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT8 20 MHz – Antenna 1+2 at 5240 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10480	Vertical	Pk	45.50	68.23
15720	Horizontal	Pk	45.50	68.23
18493	Vertical	Pk	37.10	68.23
19139	Vertical	Pk	36.50	68.23
24052	Vertical	Pk	44.75	68.23
25514	Vertical	Pk	43.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT4 40 MHz – Antenna 1 at 5190 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10380	Vertical	Pk	50.40	68.23
15570	Vertical	Pk	40.25	68.23
18680	Vertical	Pk	36.75	68.23
21077	Vertical	Pk	36.88	68.23
24052	Vertical	Pk	44.30	68.23
25684	Vertical	Pk	42.46	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT4 40 MHz – Antenna 2 at 5190 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10380	Vertical	Pk	49.69	68.23
15570	Vertical	Pk	40.11	68.23
19938	Vertical	Pk	32.83	68.23
22199	Vertical	Pk	41.78	68.23
24307	Vertical	Pk	42.39	68.23
25667	Vertical	Pk	43.43	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT4 40 MHz – Antenna 1 at 5230 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10460	Vertical	Pk	44.91	68.23
15690	Vertical	Pk	38.12	68.23
18629	Vertical	Pk	35.75	68.23
20159	Vertical	Pk	36.88	68.23
24069	Vertical	Pk	44.30	68.23
25684	Vertical	Pk	42.46	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT4 40 MHz – Antenna 2 at 5230 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10460	Vertical	Pk	42.24	68.23
15690	Vertical	Pk	38.07	68.23
18646	Vertical	Pk	36.14	68.23
22097	Vertical	Pk	40.08	68.23
24154	Vertical	Pk	43.36	68.23
25582	Vertical	Pk	42.20	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT8 40 MHz – Antenna 1+2 at 5190 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10380	Vertical	Pk	48.50	68.23
15570	Vertical	Pk	42.10	68.23
18680	Vertical	Pk	38.50	68.23
21077	Vertical	Pk	39.75	68.23
24052	Vertical	Pk	42.50	68.23
25684	Vertical	Pk	42.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT8 40 MHz – Antenna 1+2 at 5190 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10380	Vertical	Pk	50.50	68.23
15570	Vertical	Pk	48.50	68.23
19938	Vertical	Pk	42.25	68.23
22199	Vertical	Pk	40.50	68.23
24307	Vertical	Pk	42.50	68.23
25667	Vertical	Pk	42.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 - 40GHz, Horizontal and Vertical Antenna Orientations,
 HT8 40 MHz – Antenna 1+2 at 5230 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10460	Vertical	Pk	44.75	68.23
15690	Vertical	Pk	42.50	68.23
18629	Vertical	Pk	40.50	68.23
20159	Vertical	Pk	42.50	68.23
24069	Vertical	Pk	43.50	68.23
25684	Vertical	Pk	42.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak values also noted as Av value to show compliance with Av limit.
 - Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 HT8 40 MHz – Antenna 1+2 at 5230 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10460	Vertical	Pk	43.50	68.23
15690	Vertical	Pk	42.00	68.23
18646	Vertical	Pk	40.00	68.23
22097	Vertical	Pk	43.25	68.23
24154	Vertical	Pk	43.25	68.23
25582	Vertical	Pk	42.50	68.23

Note: - Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
 - Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 VHT6 80 MHz – Antenna 1 at 5210 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10420	Vertical	Pk	42.50	68.23
15630	Horizontal	Pk	37.75	68.23
18391	Vertical	Pk	38.50	68.23
20108	Vertical	Pk	33.75	68.23
24171	Vertical	Pk	43.50	68.23
26143	Vertical	Pk	43.50	68.23

Note:

- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
 VHT6 80 MHz – Antenna 2 at 5210 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Limit [dBµV/m]
10420	Vertical	Pk	44.50	68.23
15630	Horizontal	Pk	40.50	68.23
18391	Vertical	Pk	36.25	68.23
20108	Vertical	Pk	34.50	68.23
24171	Vertical	Pk	42.75	68.23
26143	Vertical	Pk	42.50	68.23

Note:

- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.

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**Radiated Emission, 1 – 40 GHz, Horizontal and Vertical Antenna Orientations,
VHT6 80 MHz – Antenna 1+2 at 5210 MHz.**

Freq. [MHz]	Antenna Orientation	Detector	Level [dBμV/m]	Limit [dBμV/m]
10420	Vertical	Pk	44.00	68.23
15630	Horizontal	Pk	39.60	68.23
18391	Vertical	Pk	35.76	68.23
20108	Vertical	Pk	34.87	68.23
24171	Vertical	Pk	43.37	68.23
26143	Vertical	Pk	39.55	68.23

Note:

- Peak (Pk) value already within Average (Av) limits, therefor Av not retested.
- Peak detector used with a bandwidth of 1 MHz.