



Test report no. : 224533-2

Item tested : EV3

Type of equipment : 2.4 GHz Bluetooth Transceiver

FCC ID : NPI95646

Client : Lego System A/S

FCC Part 15.247

Frequency Hopping Transmitters /
Digital Transmission System

RSS-210, Issue 8

Low Power Licence-Exempt
Radiocommunication Devices

9 September 2013

Authorized by : 

G. Suhanthakumar
Technical Verificator

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1 GENERAL INFORMATION

1.1 Testhouse Info

Name : Nemko AS
Address : Nemko Kjeller
 Instituttveien 6, Box 96
 NO-2027 Kjeller, NORWAY
Telephone : +47 64 84 57 00
Fax : +47 64 84 57 05
E-mail: comlab@nemko.com
FCC test firm : 994405
IC OATS : 2040D-1
Total Number of Pages: 74

1.2 Client Information

Name : Lego System A/S
Address : Aastvej 1, DK-9170 Billund, Denmark

Contact:

Name : Bjarke Pedersen
E-mail : bjarke.pedersen@lego.com
Telephone : +45 79505328

1.3 Manufacturer

Same as applicant.

2 Test Information

2.1 Test Item

Name :	Lego Mindstorm
FCC ID :	NPI95646
Industry Canada ID :	3072A-95646
Model/version :	EV3
Serial number :	/
Hardware identity and/or version:	Version 0.60
Software identity and/or version :	Version 1.00H
Frequency Range :	2402 – 2480 MHz
Number of Channels :	79
Operating Modes :	Bluetooth v2.1 +EDR, class 1.5
Type of Modulation :	Digital
User Frequency Adjustment :	None
Output Power :	13.3 mW (Peak, Conducted)
Power Source :	Primary Batteries (6x LR6 Alkaline Batteries)
Antenna Connector :	No (Integral Antenna)
Antenna Diversity Supported :	No
Desktop Charger :	N/A

Description of Test Item

The EUT is a Bluetooth Transceiver with Bluetooth v2.1 +EDR, class 1.5 with integral antenna.

Exposure Evaluation

The EUT is a mobile device and the user manual contains text that it shall be used with a separation distance of at least 20 cm from any persons, excluding extremities of hands, wrists and limbs. MPE Calculation at 20 cm satisfying FCC requirements is submitted as a separate document.

The EUT is exempted from RF Exposure Evaluation to Industry Canada requirements since the output power complies with the power levels of section 2.5.2 of RSS-102 Issue 4.

2.2 Test Environment

2.2.1 Normal test condition

Temperature:	19.1 – 21.6 °C
Relative humidity:	35.9 – 43.4 %
Normal test voltage:	10.0 V DC

All radiated tests were performed with new batteries (6xAA Alkaline batteries). A regulated power supply was used for the conducted tests.

The values are the limit registered during the test period.

2.3 Test Period

Item received date:	2012-11-01
Test period :	from 2012-11-07 to 2012-12-05

2.4 Test Engineer(s)

Frode Sveinsen

2.5 Test Equipment

See list of test equipment in clause 5.

3 TEST REPORT SUMMARY

3.1 General

All measurements are tracable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.247 and Industry Canada RSS-210 Issue 8.

Tests were performed in accordance with ANSI C63.4-2003 and DA 00-705 Filing and Guidelines for Frequency Hopping Spread Spectrum Systems.

Radiated tests were made in a semi-anechoic chamber at measuring distances of 3m and 10m.

A description of the test facility is on file with the FCC and Industry Canada.

- | | |
|---|---|
| <input checked="" type="checkbox"/> New Submission | <input checked="" type="checkbox"/> Production Unit |
| <input type="checkbox"/> Class II Permissive Change | <input type="checkbox"/> Pre-production Unit |
| DSS Equipment Code | <input type="checkbox"/> Family Listing |

THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".



TEST REPORT #: 224533-2

TESTED BY: Frode Sveinsen
Frode Sveinsen, Test engineer

DATE: 6 December 2012

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3.2 Test Summary

Name of test	FCC Part 15 reference	RSS-210 Issue 8 reference	Result
Supply Voltage Variations	15.31(e)	8 (RSS-GEN)	N/A ¹
Number of Operating Frequencies	15.31(m)	A8.1	Pass
Antenna Requirement	15.203	7.1.4 (RSS-GEN)	Pass
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2.2 (RSS-GEN)	N/A ¹
Channel Separation	15.247(a)(1)	A8.1	Pass
Pseudorandom Hopping Algorithm	15.247(a)(1)	A8.1	Pass
Time of Occupancy	15.247(a)(1)(iii)	A8.1	Pass
Occupied Bandwidth	15.247(a)(1)	A8.1	Pass
Peak Power Output	15.247(b)	A8.4	Pass
Spurious Emissions (Antenna Conducted)	15.247(c)	A8.5	Pass
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	A8.5	Pass

¹The EUT is powered from batteries

3.3 Description of modification for Modification Filing

Not applicable.

3.4 Comments

The EUT was rotated in 3 planes for all radiated tests.

3.5 Family List Rational

Not Applicable.

4 TEST RESULTS

4.1 Channel Separation

Para. No.: 15.247 (a)(1)

Test Performed By: Frode Sveinsen	Date of Test: 16 Nov 2012
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Test Results: **Complies**

Measurement Data:

Channel Separation:	1.0 MHz
Nominal value for Channel Separation	1.0 MHz

See attached plots

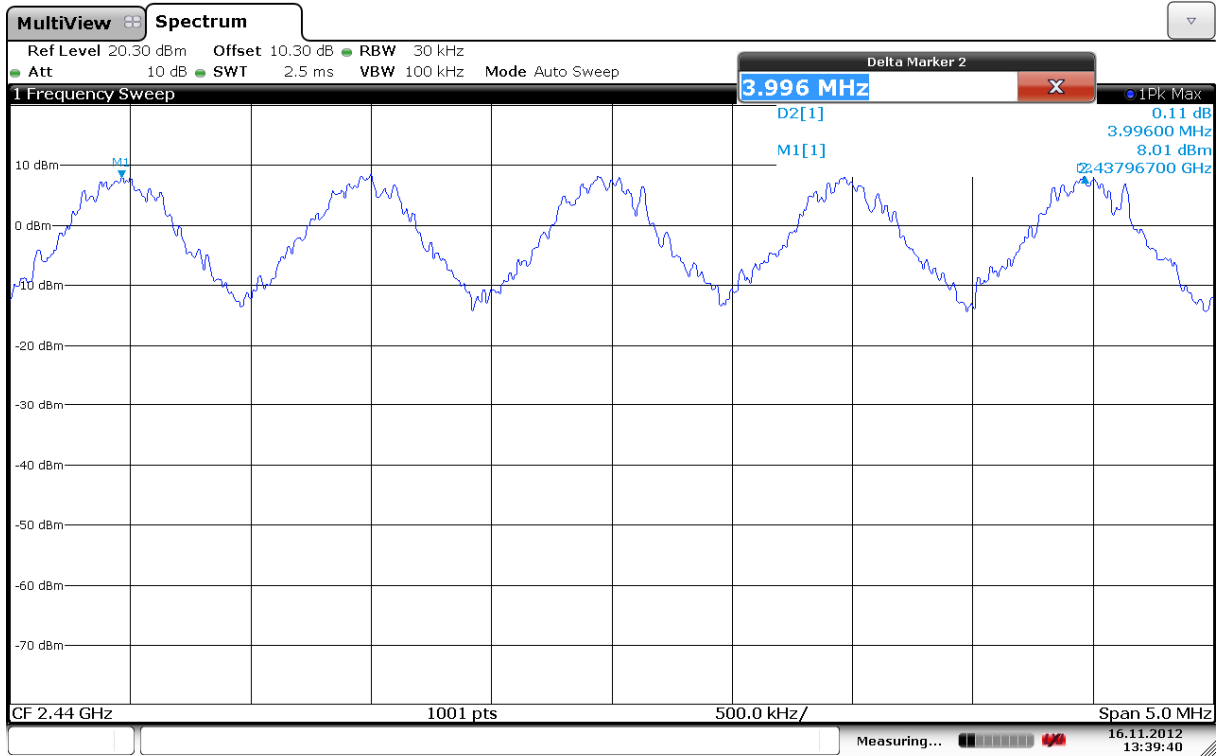
Requirement:

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

or:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the system operates with an output power no greater than 125 mW.

No requirements for Digital Transmission Systems.



Date: 16.NOV.2012 13:39:39

Channel Separation

4.2 Pseudorandom Hopping Algorithm

Para. No.: 15.247 (a)(1)

Test Results: **Complies**

Measurement Data: /

Requirements:

The channel frequencies shall be selected from a pseudorandom ordered list of hopping frequencies. Each frequency must be used equally by the transmitter.

No requirements for Digital Transmission Systems.

Base Table Hopping Sequence

The hopping sequence follows the Bluetooth standard.

4.3 Occupancy Time

Para. No.: 15.247 (a)(1)(iii)

Test Performed By: Frode Sveinsen	Date of Test: 16-22 Nov 2012
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Test Results: Complies

Measurement Data:

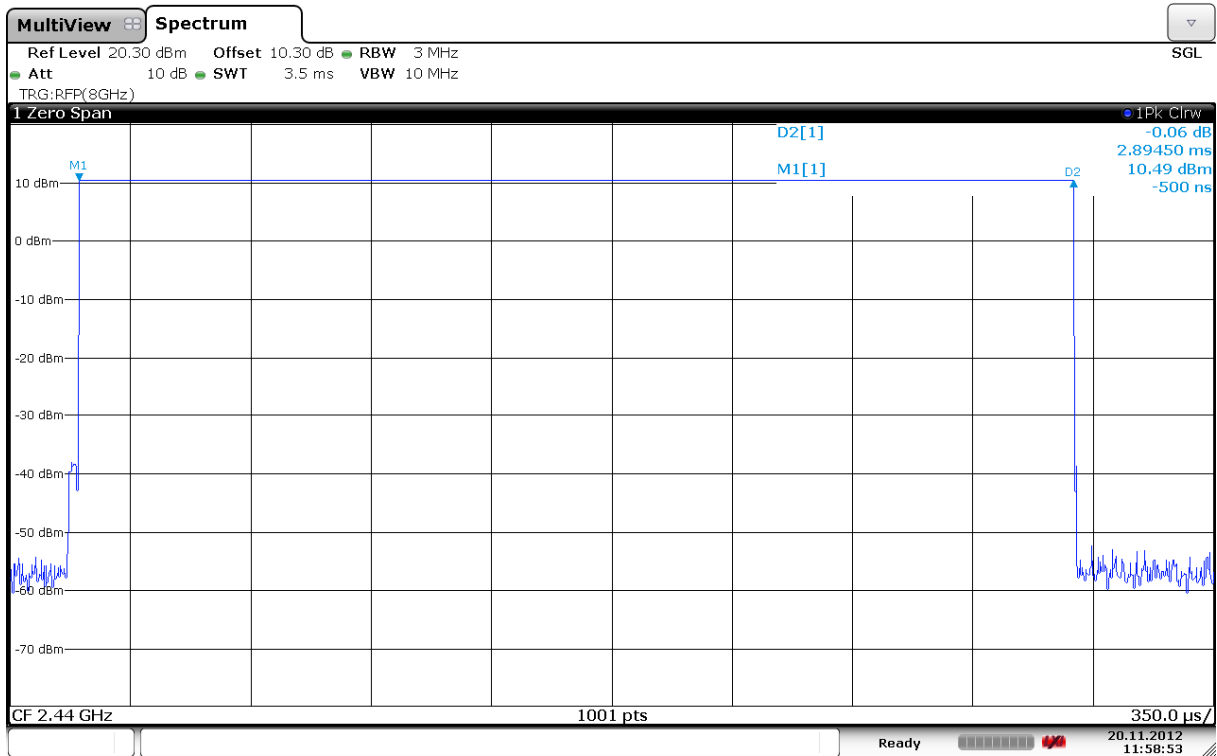
Number of RF Channels:	79		
	DH5	2DH5	3DH5
Length of RF Burst pr. Channel	2.90 ms	1.54 ms	1.08 ms
Time between RF Burst on same RF Channel	400 ms	382 ms	192 ms
Time of Occupancy	0.229 s	0.127 s	0.178 s

See attached plots.

Requirements:

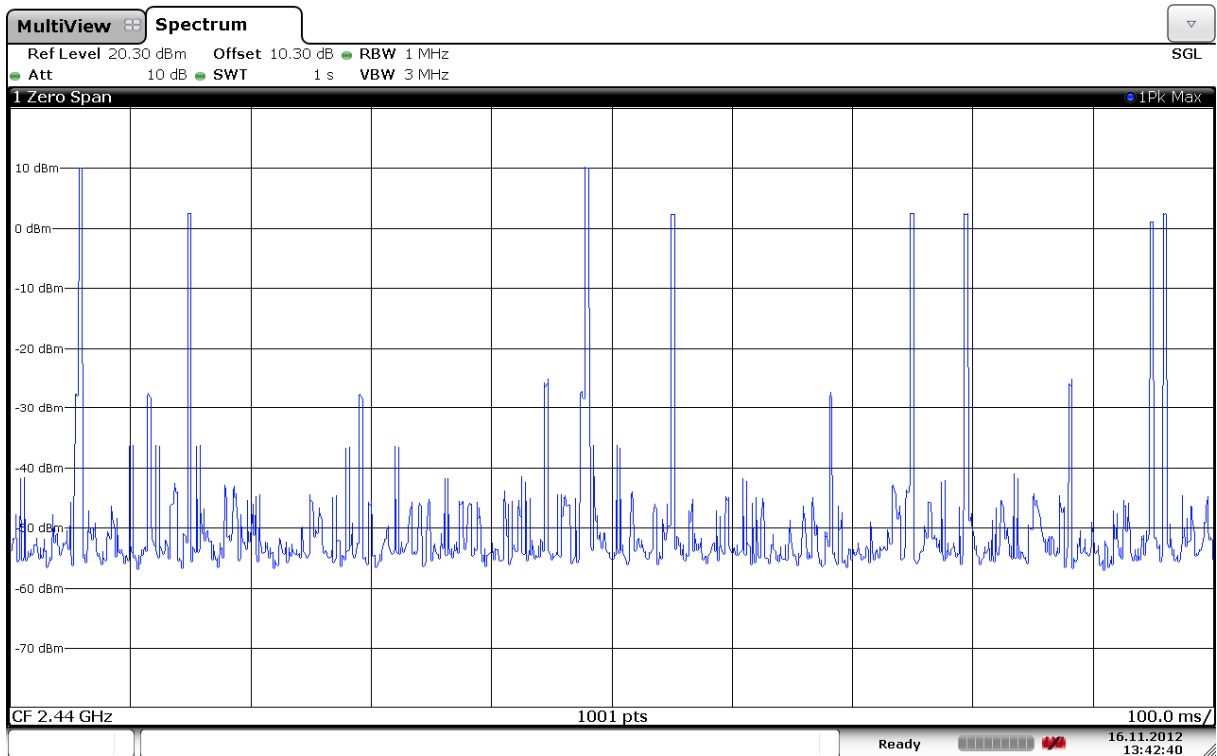
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

No requirements for Digital Transmission Systems.



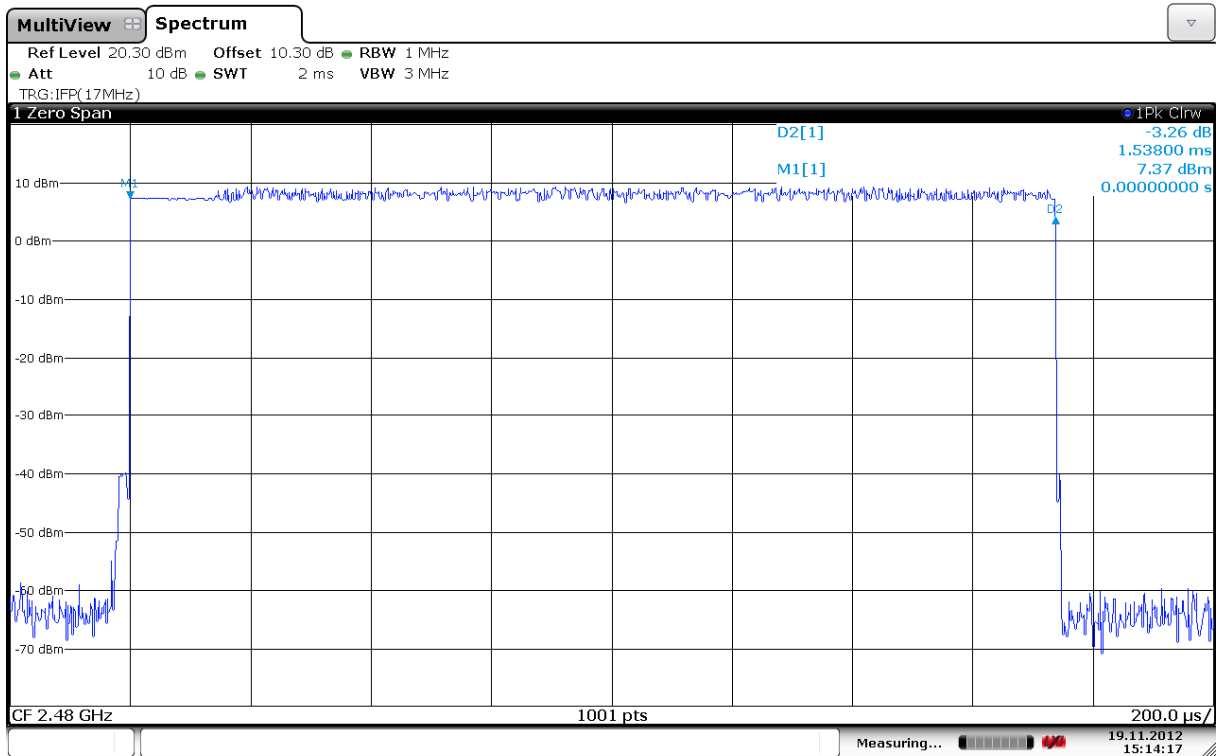
Date: 20.NOV.2012 11:58:52

Dwell Time - DH5



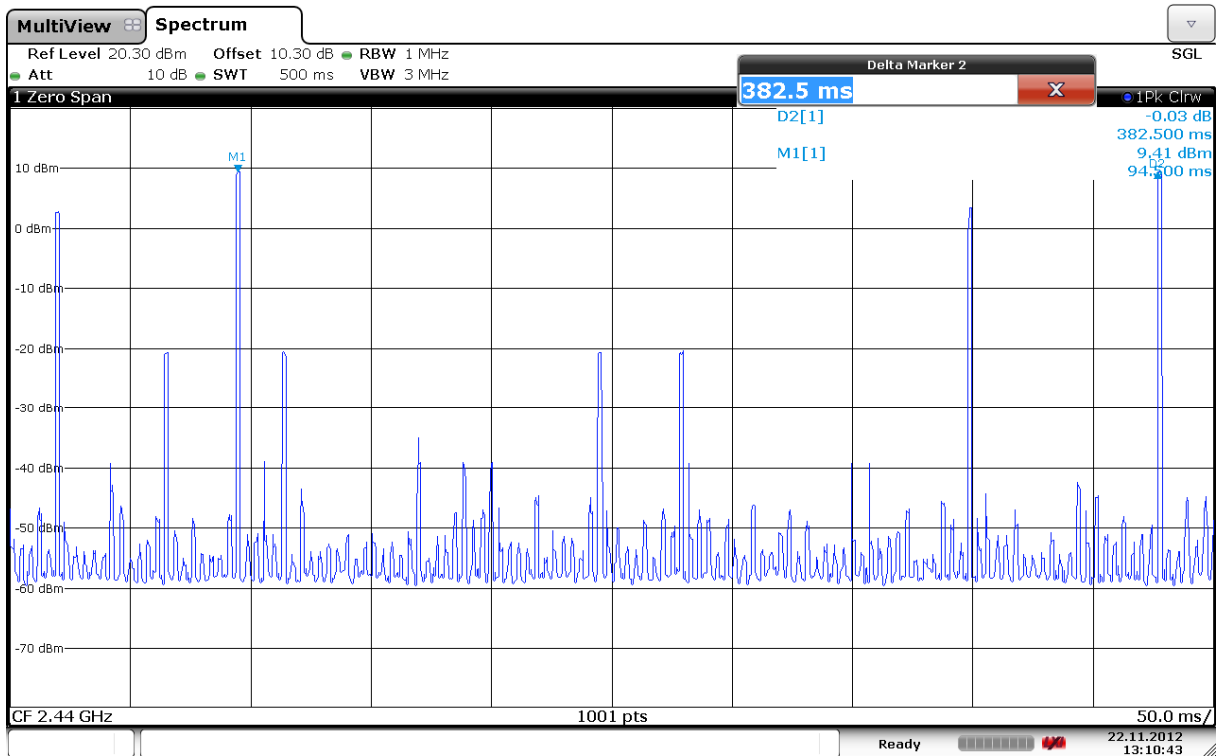
Date: 16.NOV.2012 13:42:40

Occupancy Time - DH5



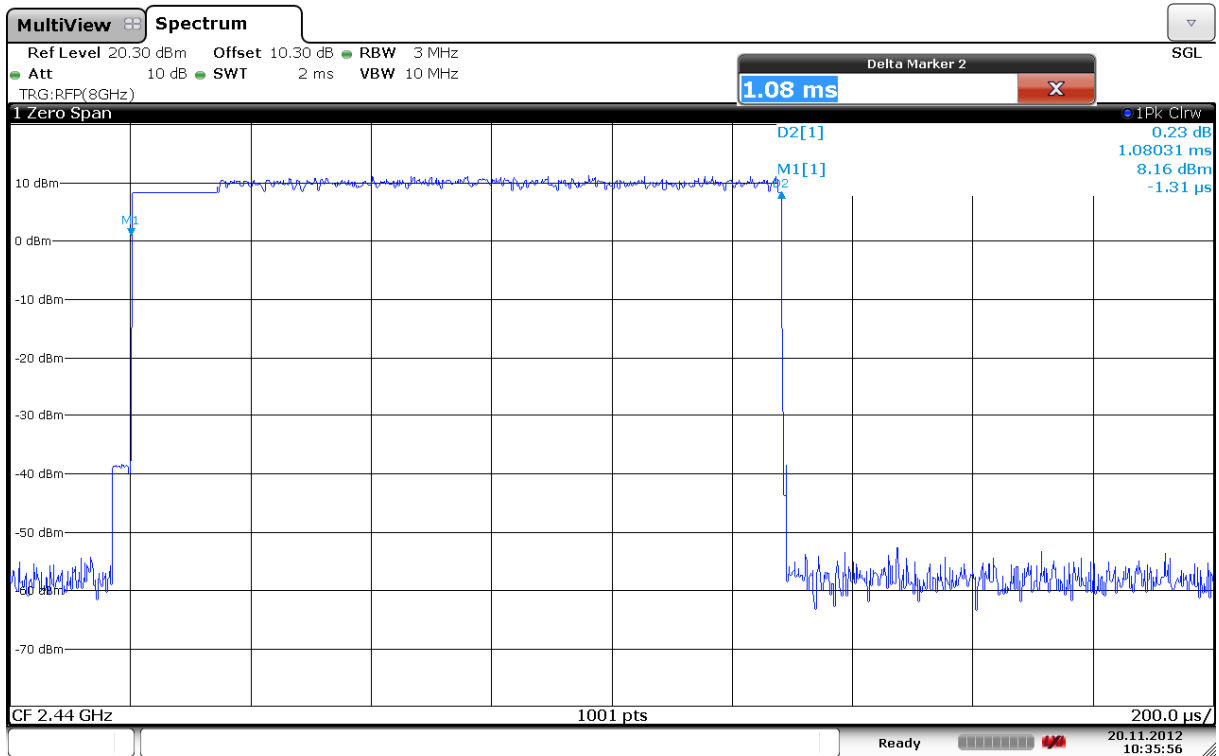
Date: 19.NOV.2012 15:14:18

Dwell Time – 2DH5



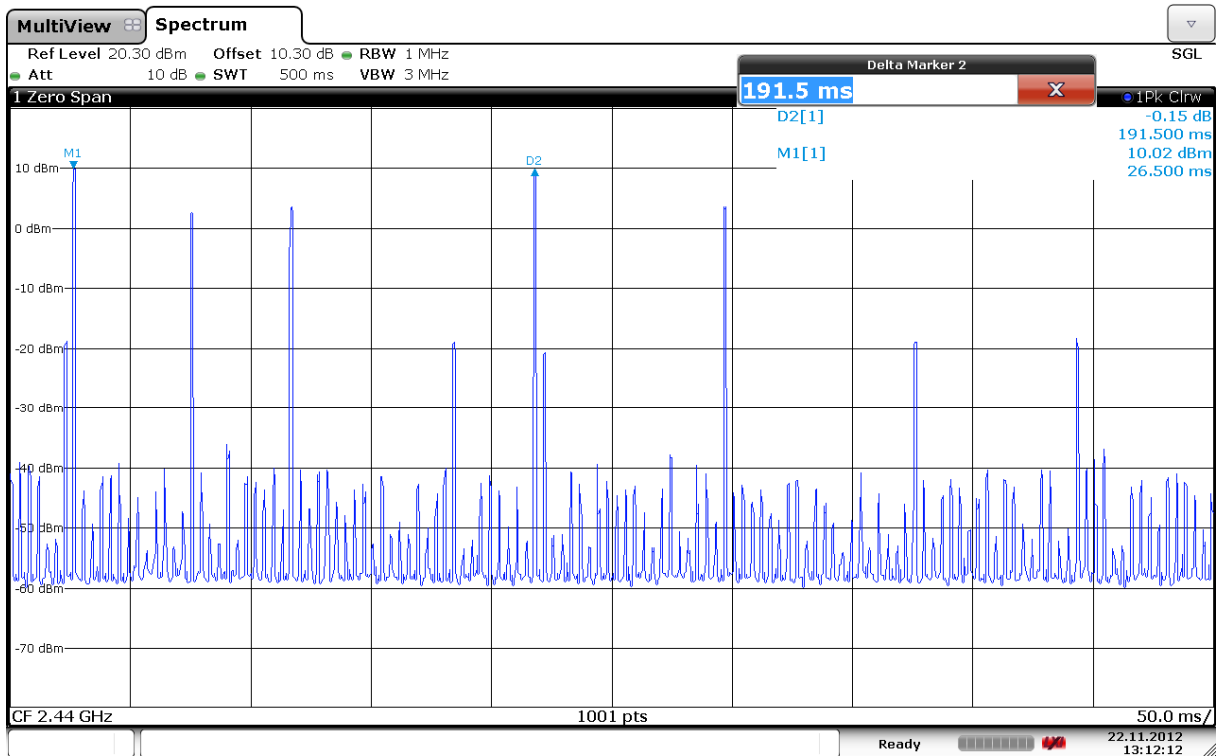
Date: 22.NOV.2012 13:10:43

Occupancy Time – 2DH5



Date: 20.NOV.2012 10:35:56

Dwell Time – 3DH5



Date: 22.NOV.2012 13:12:13

Occupancy Time – 3DH5

4.4 Occupied Bandwidth

Para. No.: 15.247 (a)(1)(iii)

Test Performed By: Frode Sveinsen	Date of Test: 16-22 Nov 2012
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Test Results: Complies

Measurement Data:

Number of RF Channels in use:	79
Channel Centre Frequencies:	2402 to 2480 MHz
99% BW Measured on Centre Channel (GFSK)	0.875 MHz
99% BW Measured on Centre Channel (2-EDR)	1.205 MHz
99% BW Measured on Centre Channel (3-EDR)	1.223 MHz

RF channel has no influence on 20 dB bandwidth.

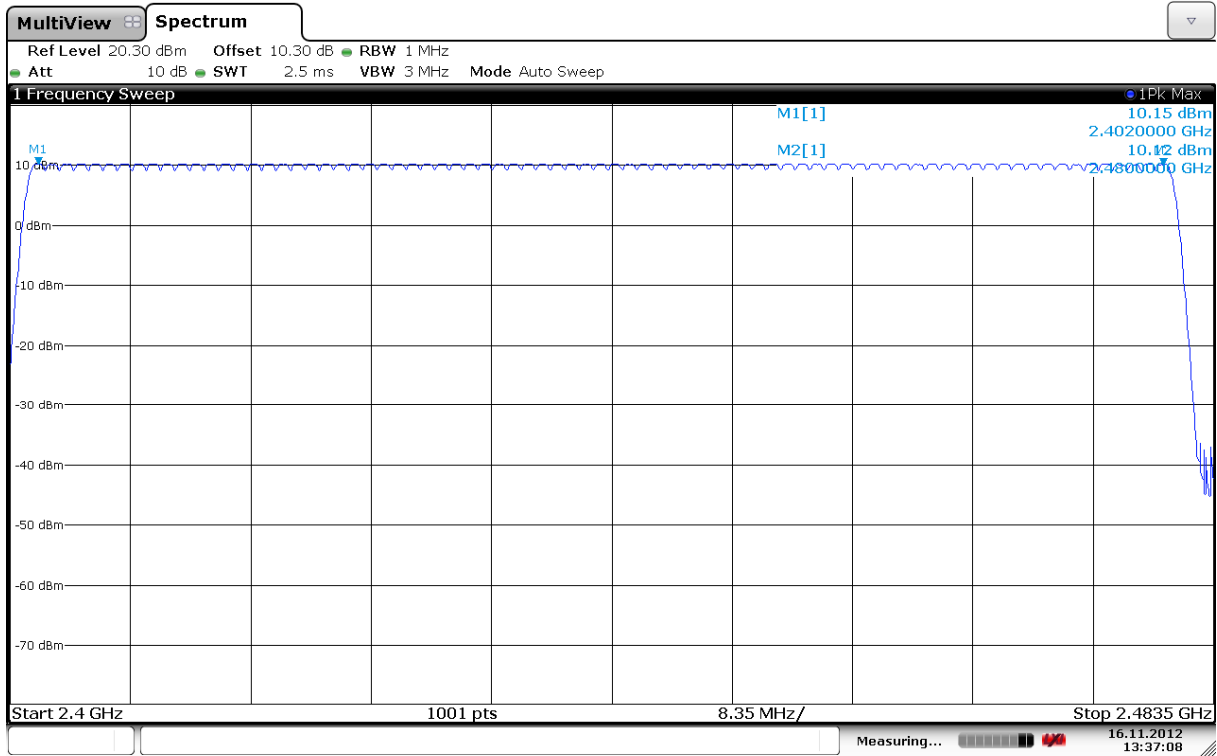
See attached plots.

Requirements:

Frequency hopping systems in the 2400 - 2483.5 MHz band shall use at least 15 non-overlapping channels. No requirements for bandwidth for this frequency band.

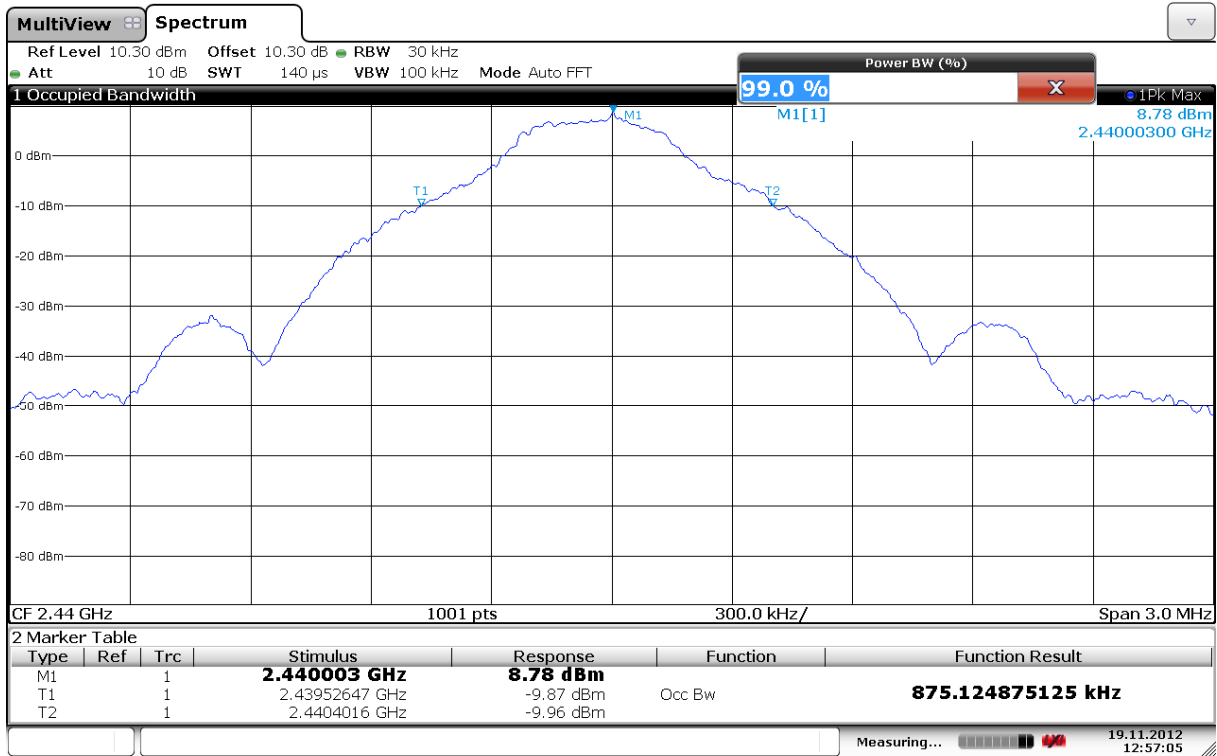
No requirements for Digital Transmission Systems.

No requirement for 99% BW, reported for information only.



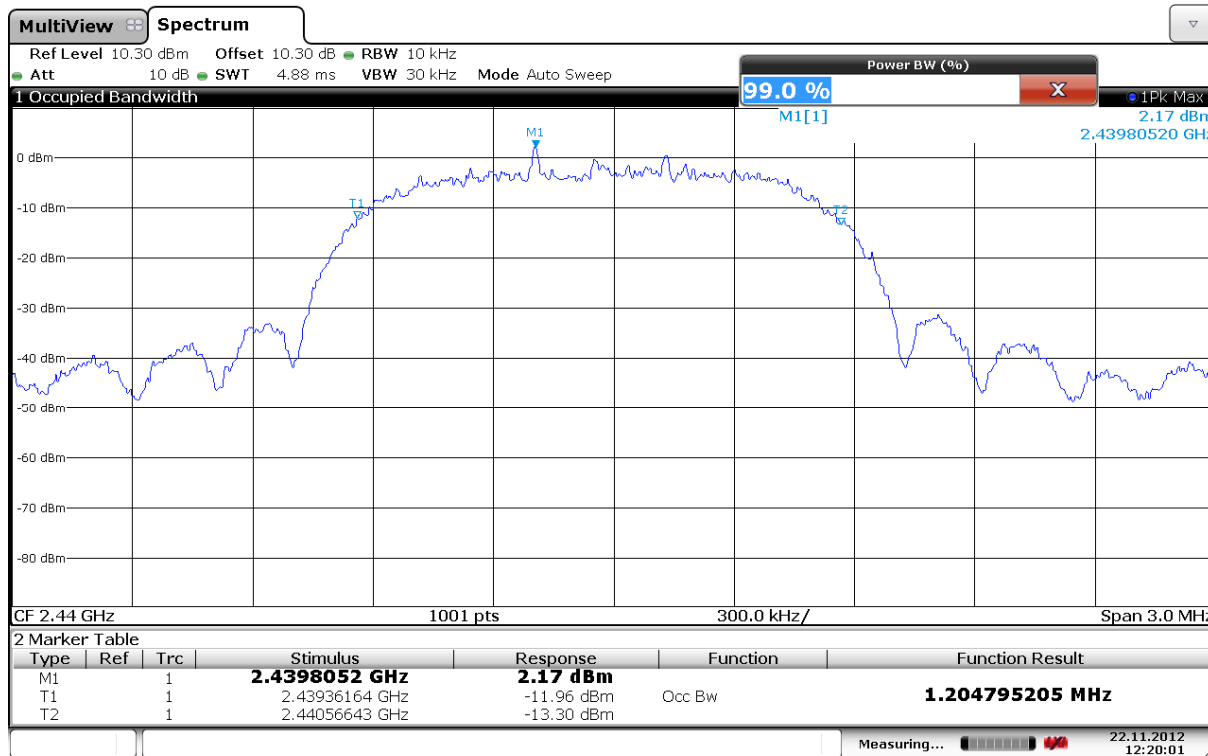
Date: 16.NOV.2012 13:37:08

Number of RF Channels in Use



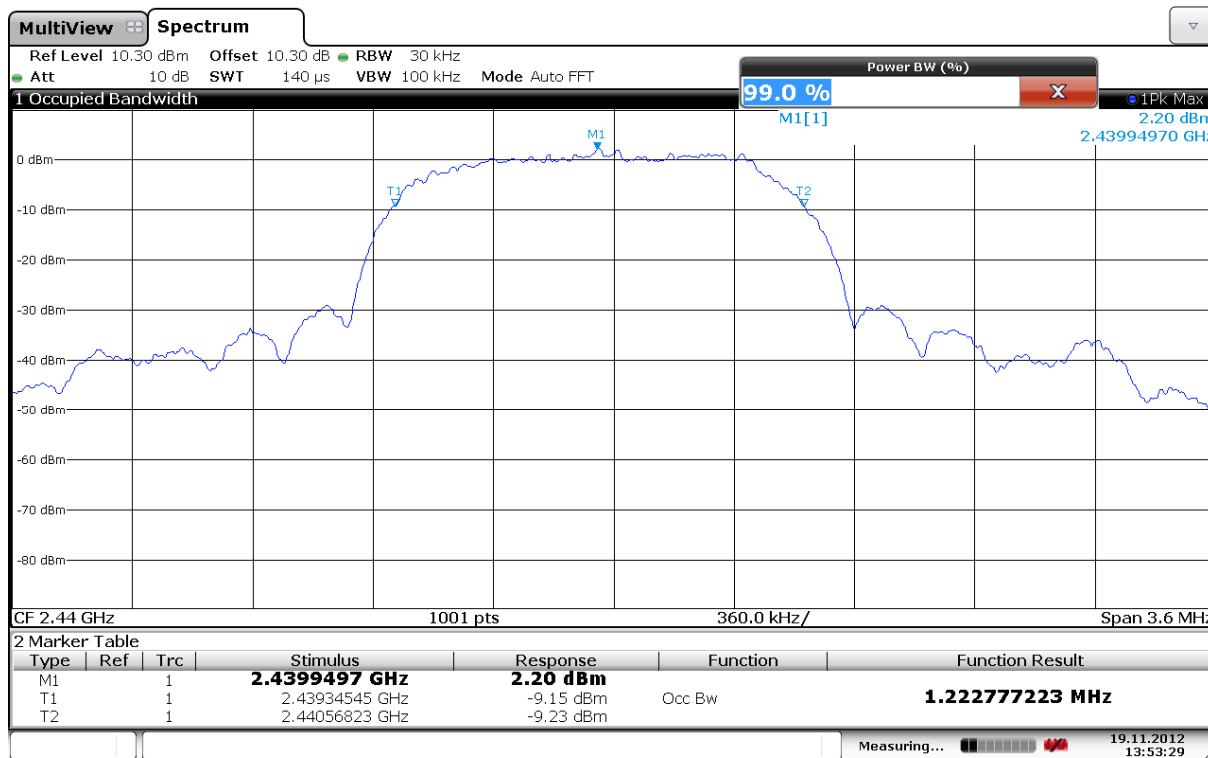
Date: 19.NOV.2012 12:57:04

99% Bandwidth GFSK



Date: 22.NOV.2012 12:20:01

99% Bandwidth 2-EDR



Date: 19.NOV.2012 13:53:29

99% Bandwidth 3-EDR

4.5 Peak Power Output

Para. No.: 15.247 (b)

Test Results: Complies

Measurement Data:

Modulation Scheme	Carrier Frequency	Maximum Conducted Output Power (W)	Maximum EIRP (W)	Maximum Antenna Gain (dBi)
GFSK	2402 MHz	0.0111	0.0032	-5.4
	2440 MHz	0.0112	0.0042	-4.2
	2480 MHz	0.0110	0.0092	-0.8
2-EDR	2402 MHz	0.0112	0.0027	-6.1
	2440 MHz	0.0112	0.0041	-4.3
	2480 MHz	0.0111	0.0092	-0.8
3-EDR	2402 MHz	0.0131	0.0029	-6.5
	2440 MHz	0.0133	0.0049	-4.3
	2480 MHz	0.0133	0.0089	-1.7

Antenna gain = 10*log(EIRP/Conducted power) dBi

EIRP is calculated from measured field strength by the formulas in KDB 412172 D01 Determining ERP and EIRP v01.

See attached graph.

Detachable antenna?

Yes No

If detachable, is the antenna connector non-standard?

Yes No

Type of antenna connector: None

Requirements:

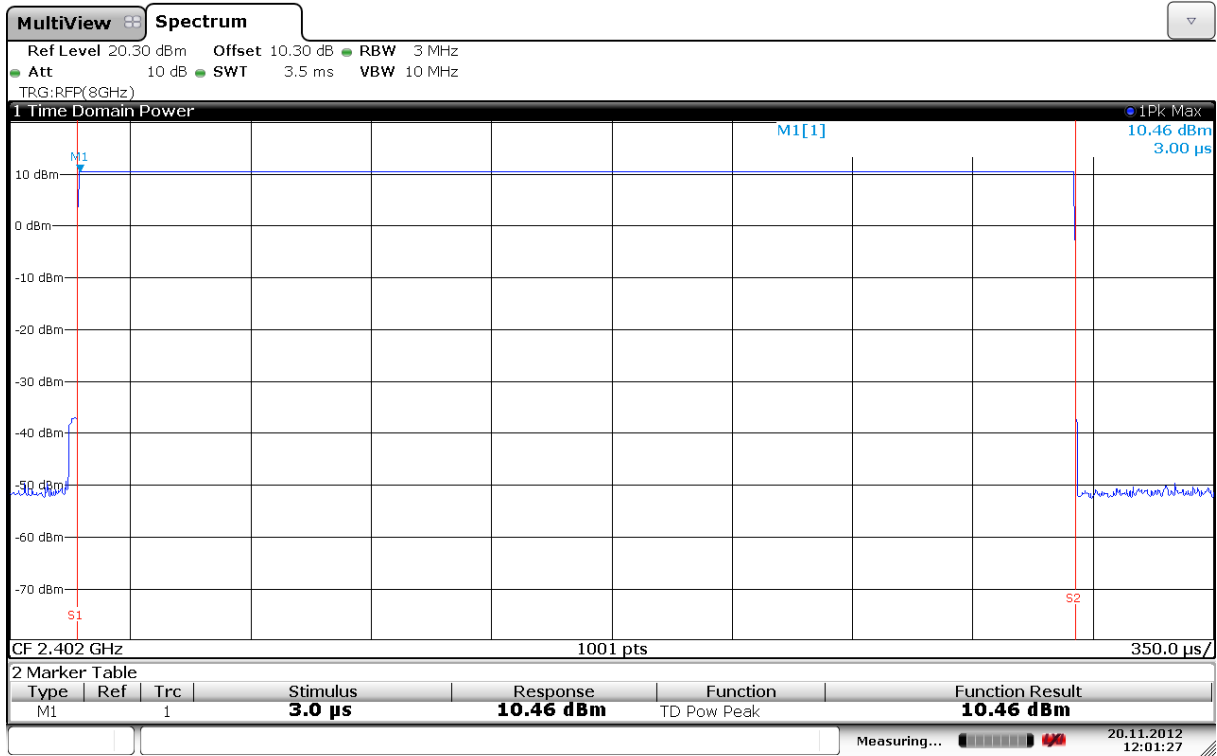
The maximum peak output power shall not exceed the following limits:

For frequency hopping systems employing at least 75 hopping channels: 1 Watt

For all other frequency hopping systems in the 2400 - 2483.5 MHz band: 0.125 Watts

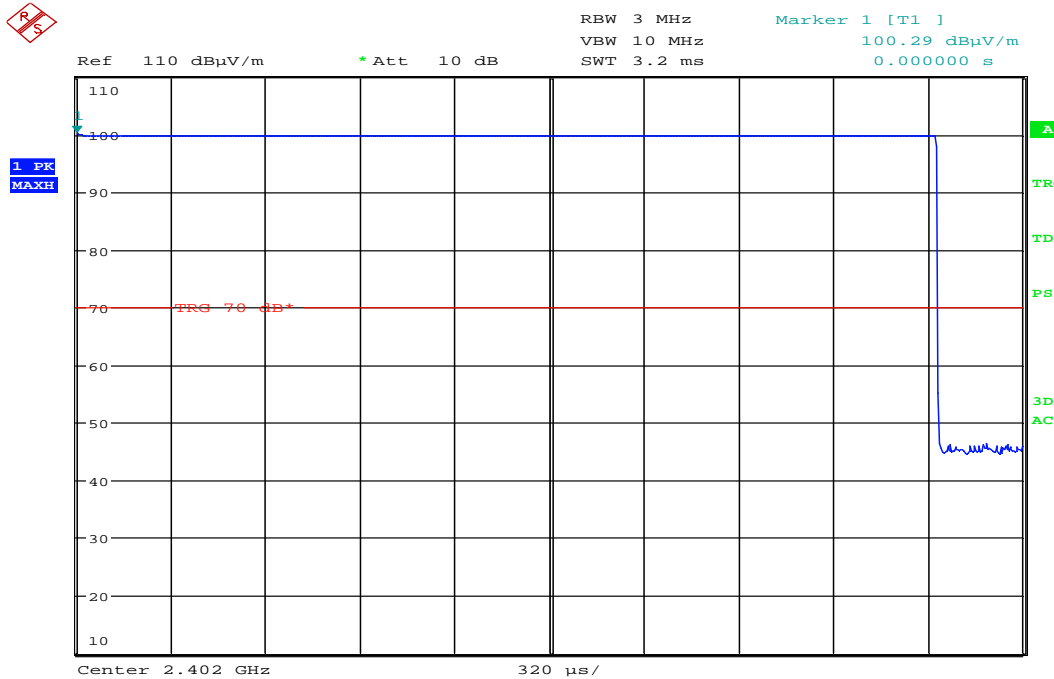
For Digital Transmission Systems in the 2400 - 2483.5 MHz band: 1 Watt

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced below the stated value above by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



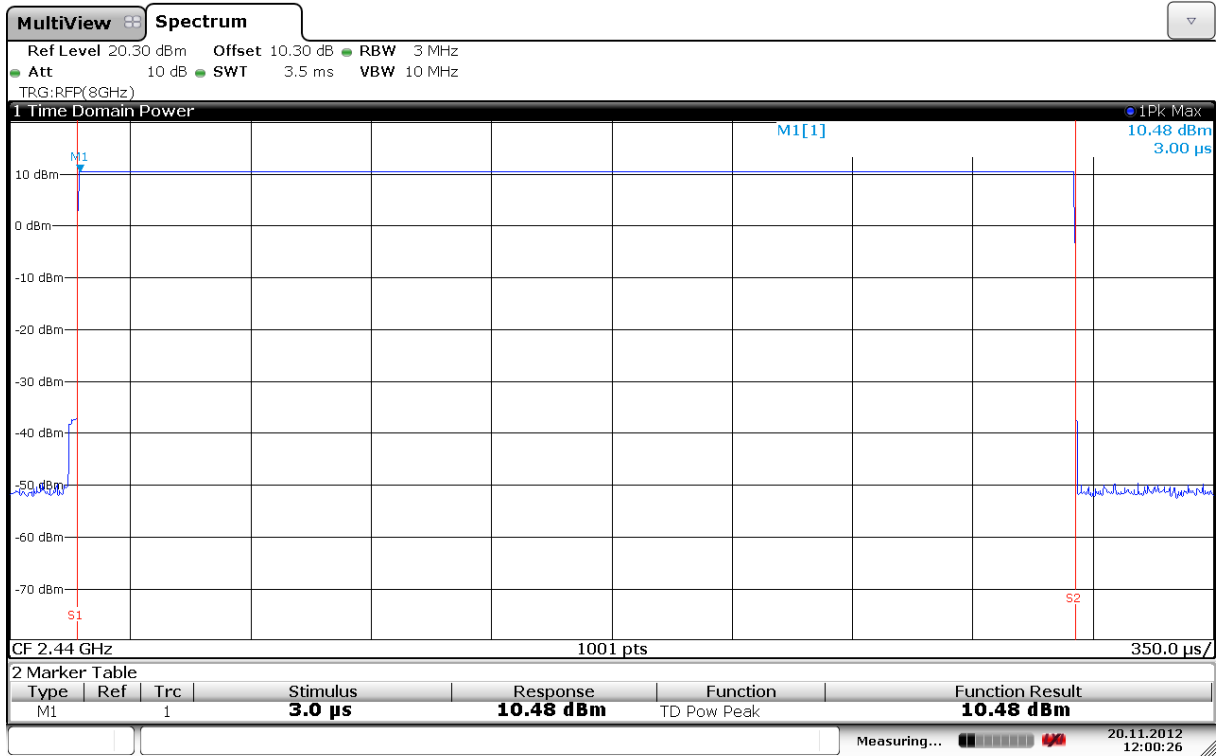
Date: 20.NOV.2012 12:01:27

Conducted Output Power, 2402 MHz, GFSK



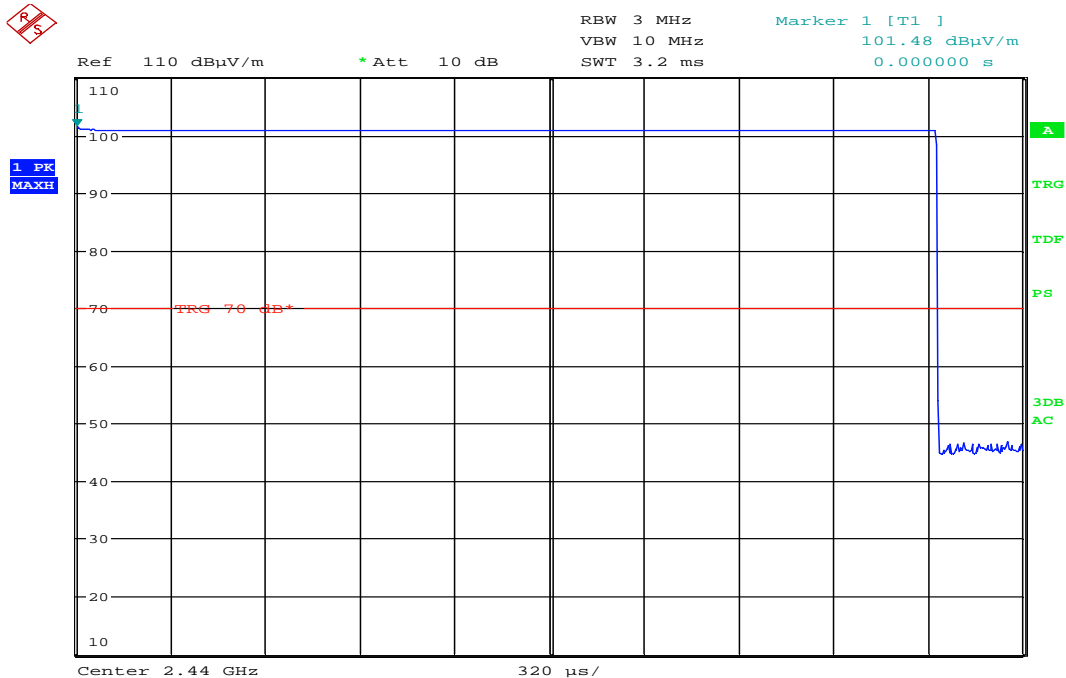
Date: 5.DEC.2012 15:09:17

Radiated Output Power, 2402 MHz, GFSK



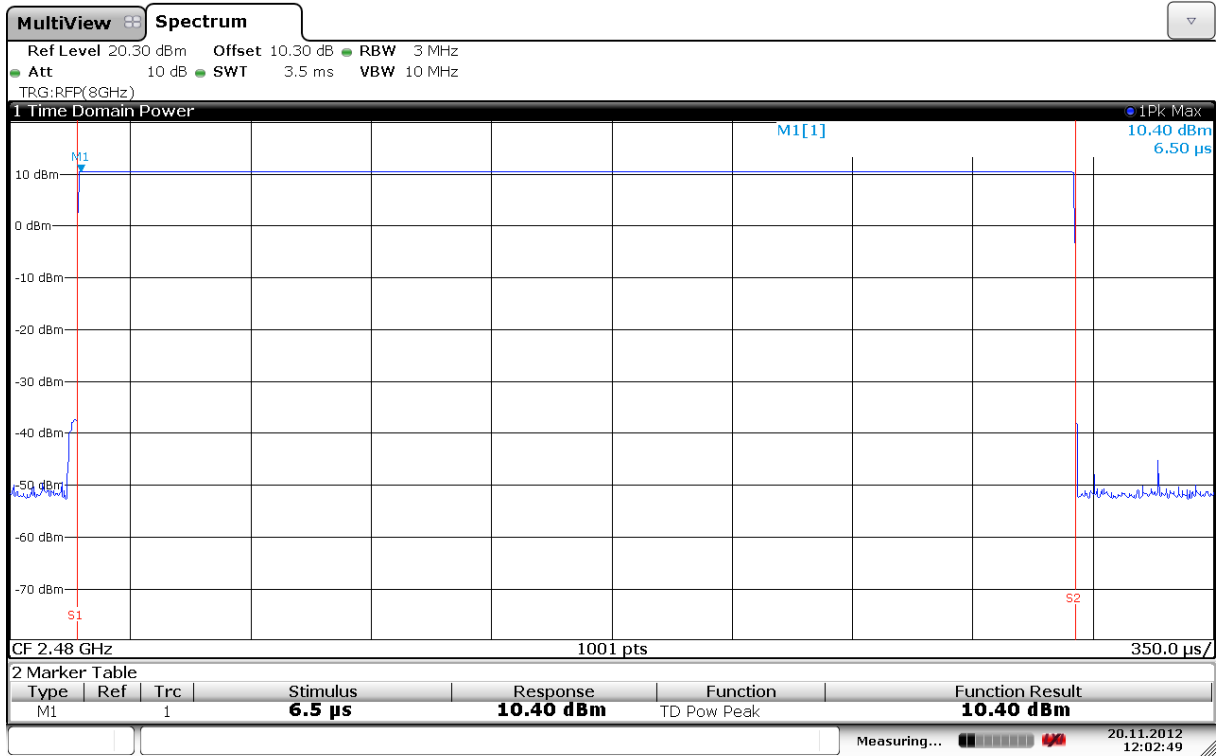
Date: 20.NOV.2012 12:00:26

Conducted Output Power, 2440 MHz, GFSK



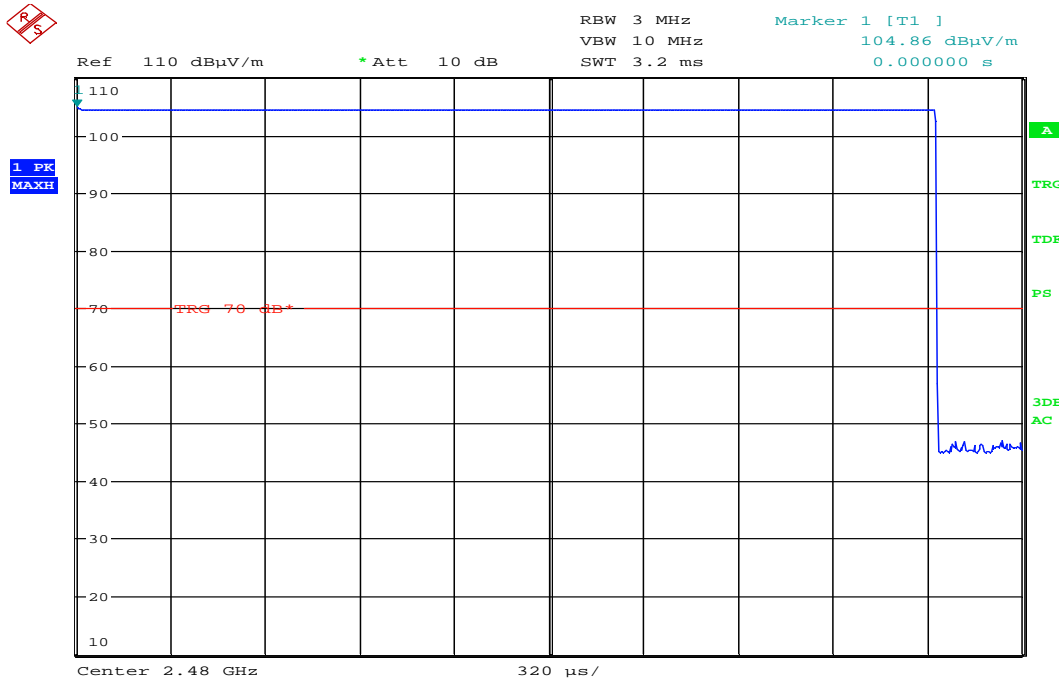
Date: 5.DEC.2012 15:05:06

Radiated Output Power, 2440 MHz, GFSK



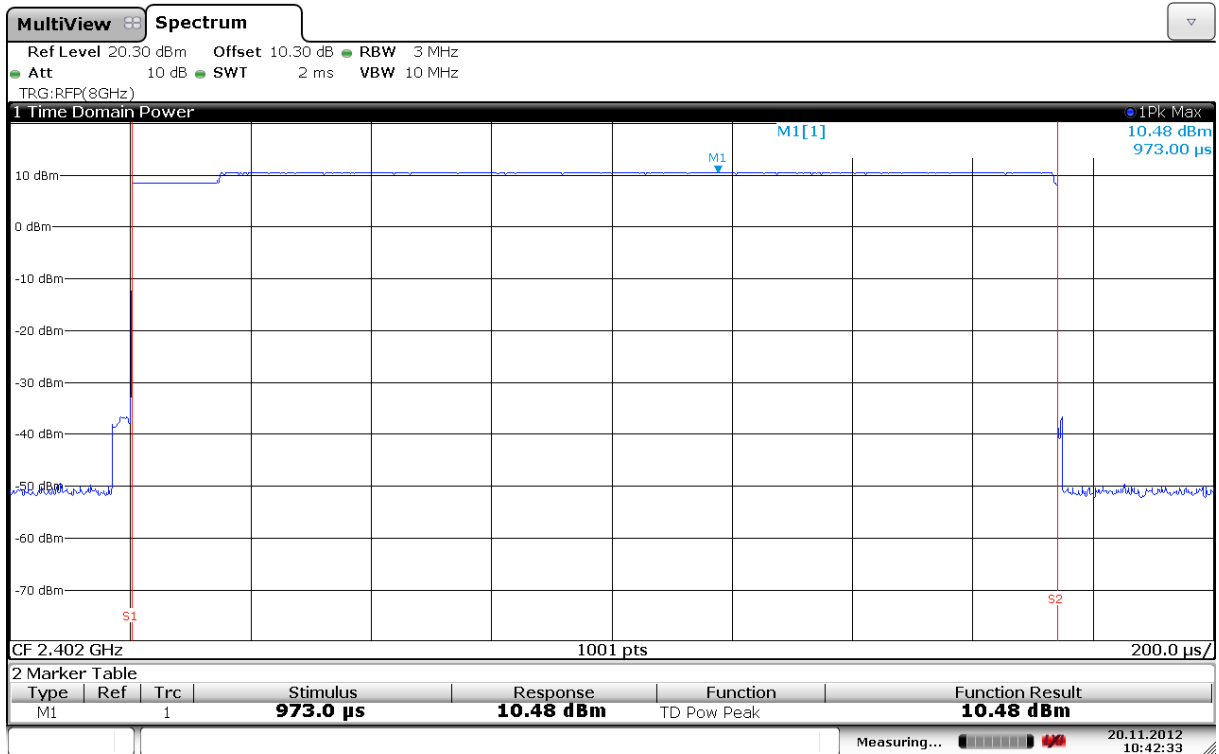
Date: 20.NOV.2012 12:02:49

Conducted Output Power, 2480 MHz, GFSK



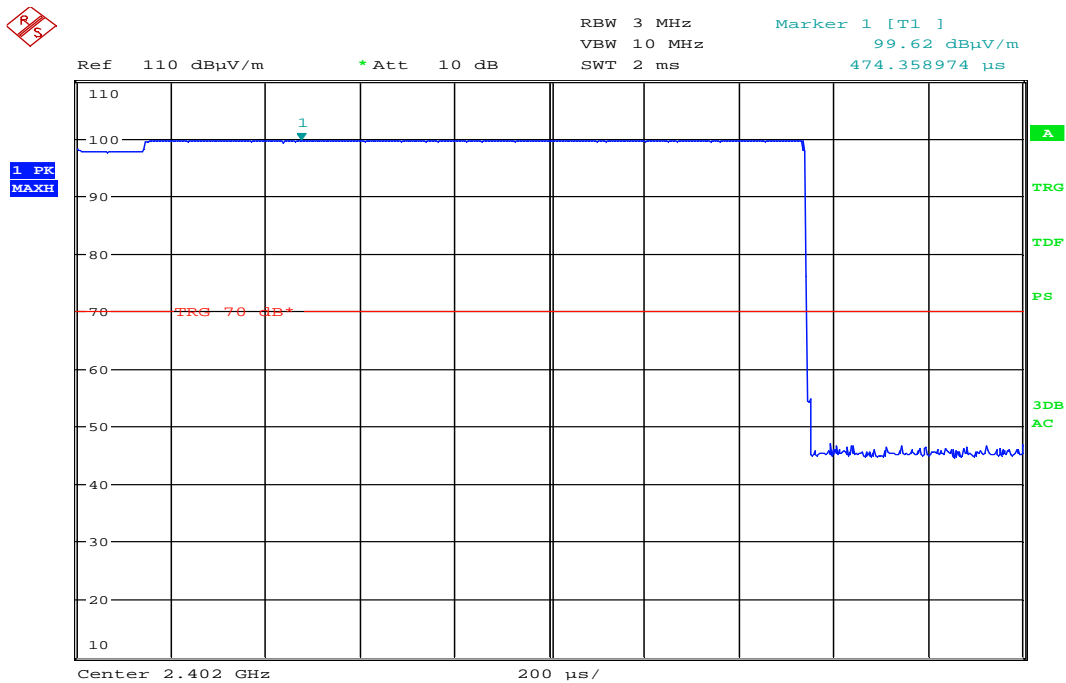
Date: 5.DEC.2012 14:59:53

Radiated Output Power, 2480 MHz, GFSK



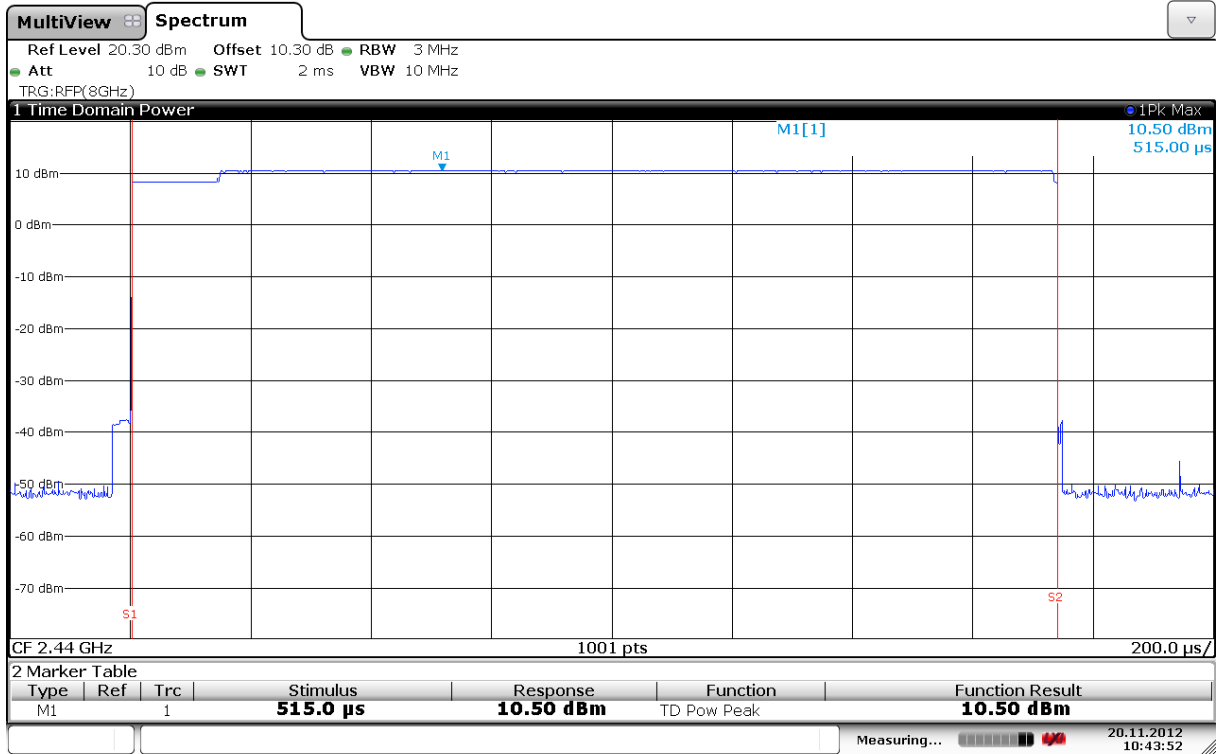
Date: 20.NOV.2012 10:42:33

Conducted Output Power, 2402 MHz, 2-EDR



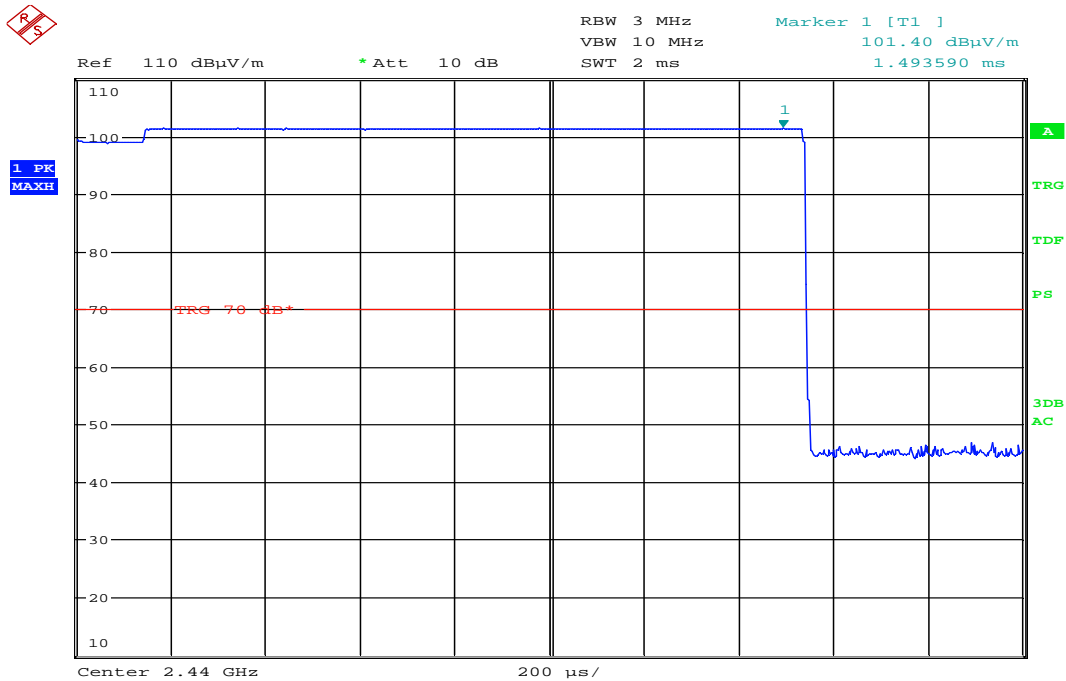
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Radiated Output Power, 2402 MHz, 2-EDR



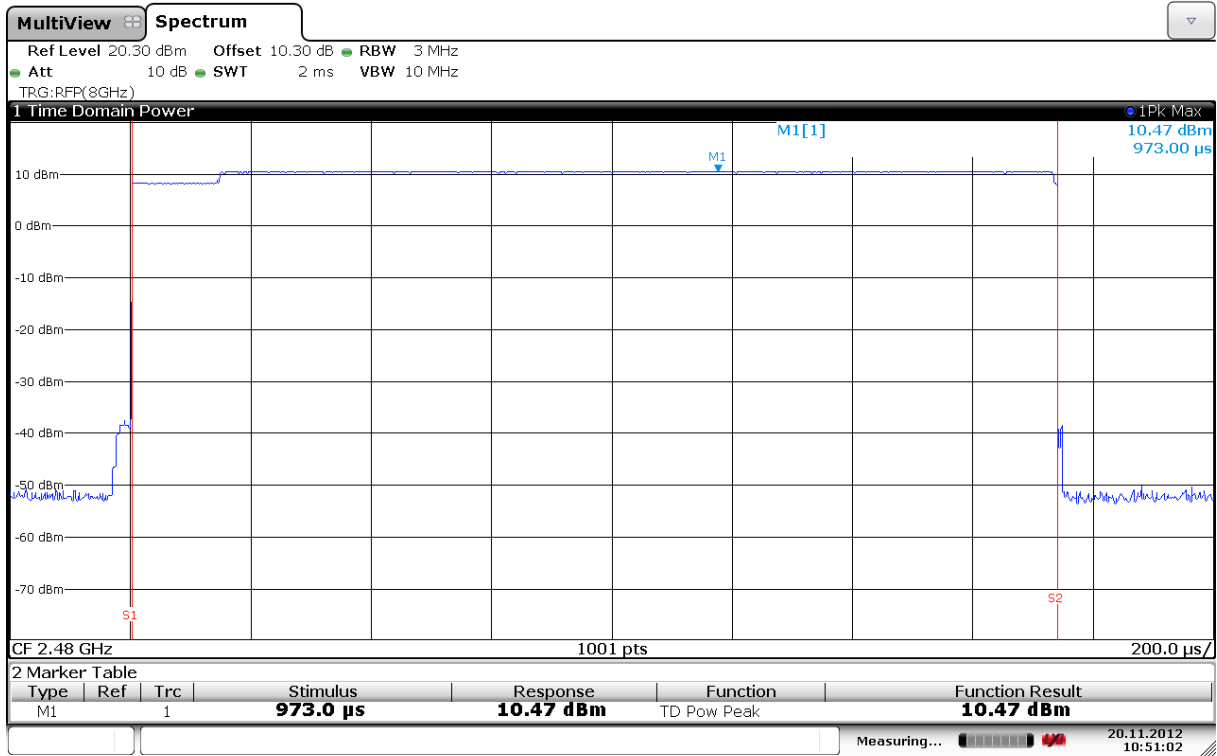
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Conducted Output Power, 2440 MHz, 2-EDR



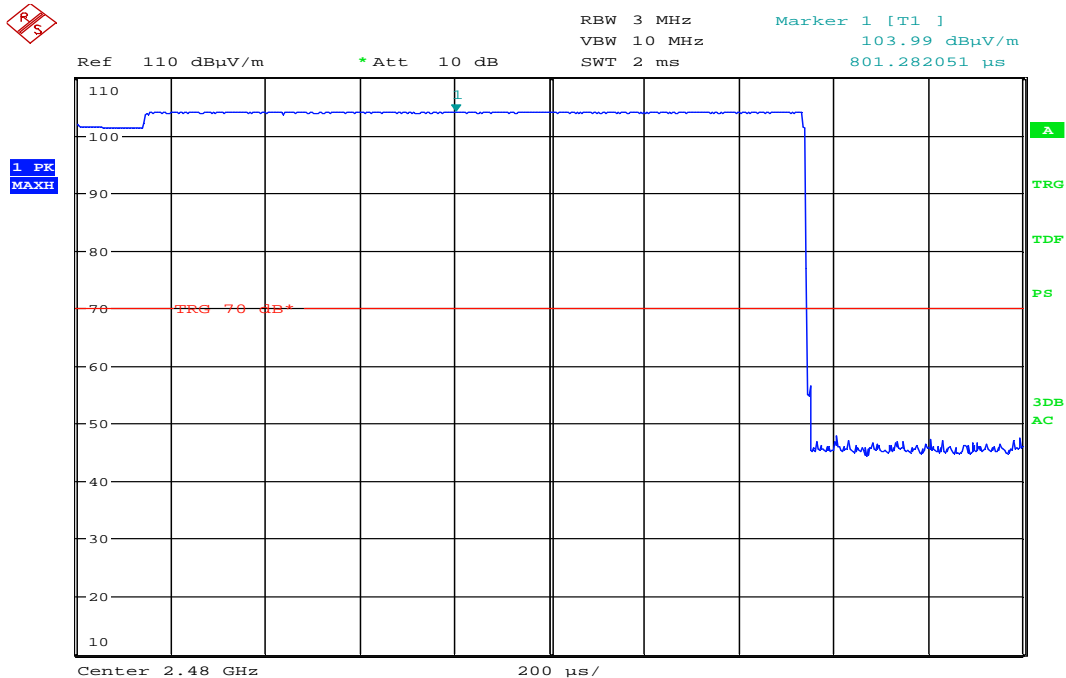
Date: 5.DEC.2012 15:15:15

Radiated Output Power, 2440 MHz, 2-EDR



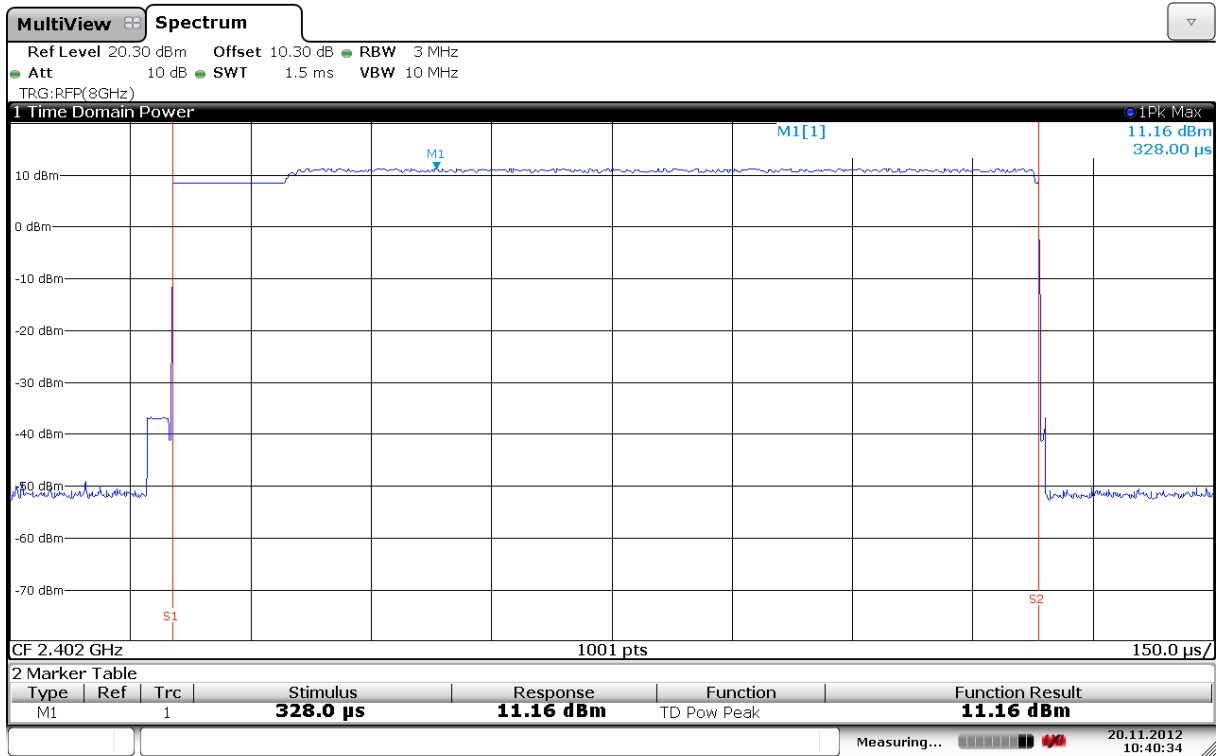
Date: 20.NOV.2012 10:51:03

Conducted Output Power, 2480 MHz, 2-EDR



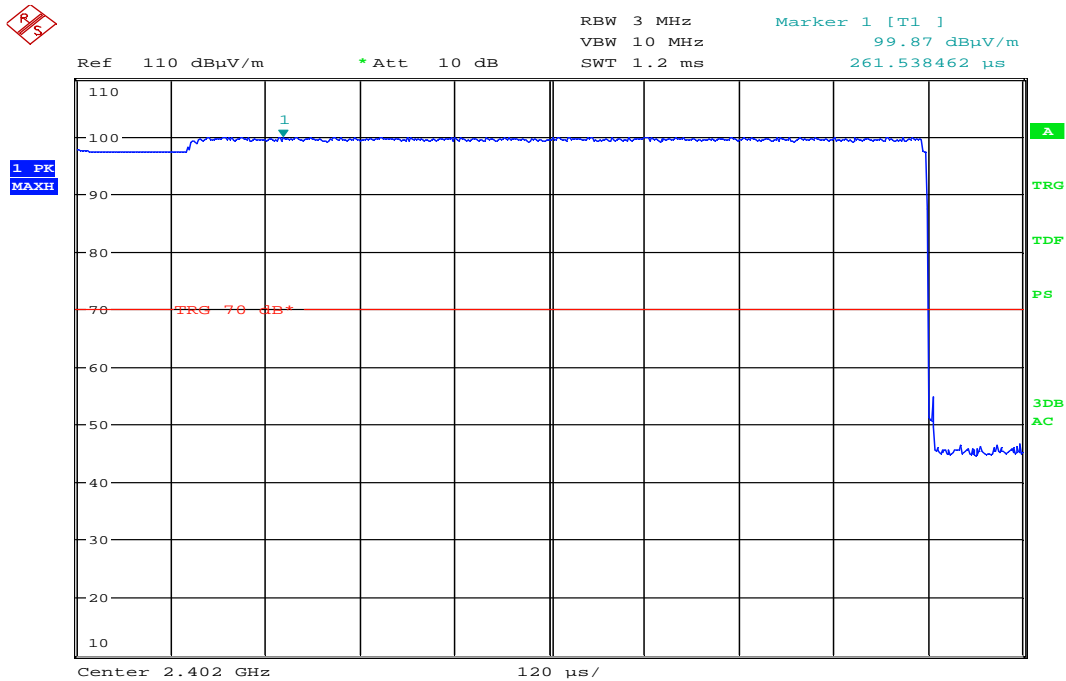
Date: 5.DEC.2012 15:20:13

Radiated Output Power, 2480 MHz, 2-EDR



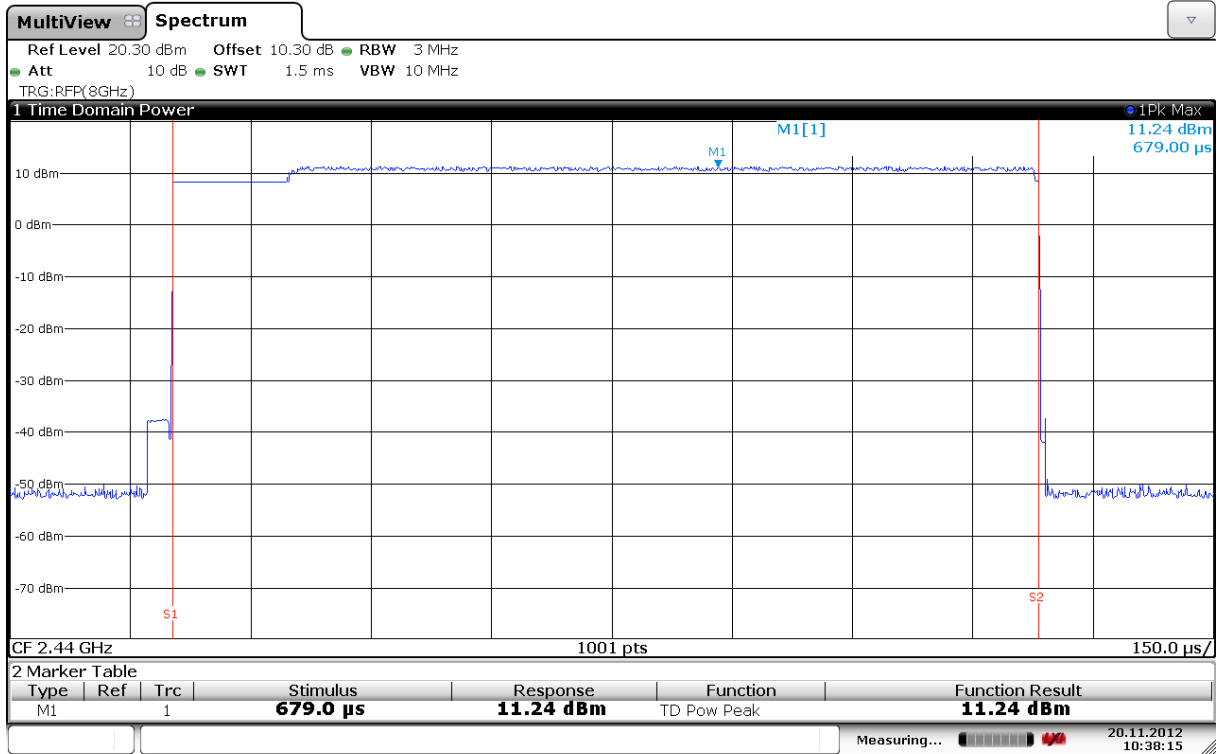
Date: 20.NOV.2012 10:40:34

Conducted Output Power, 2402 MHz, 3-EDR



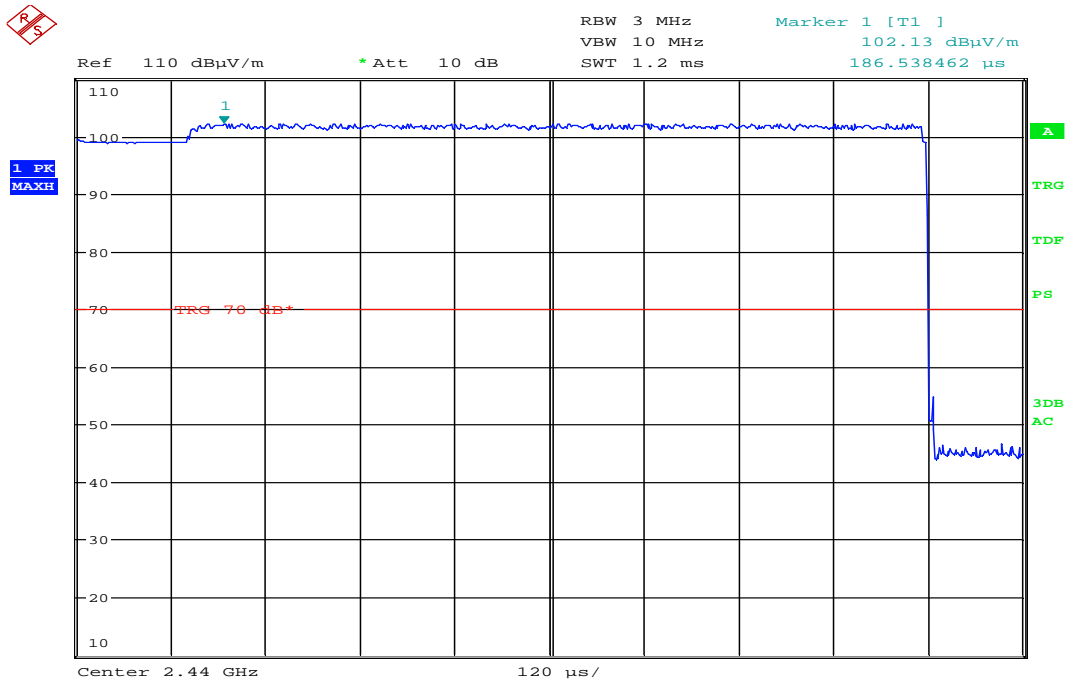
Date: 5.DEC.2012 15:12:42

Radiated Output Power, 2402 MHz, 3-EDR



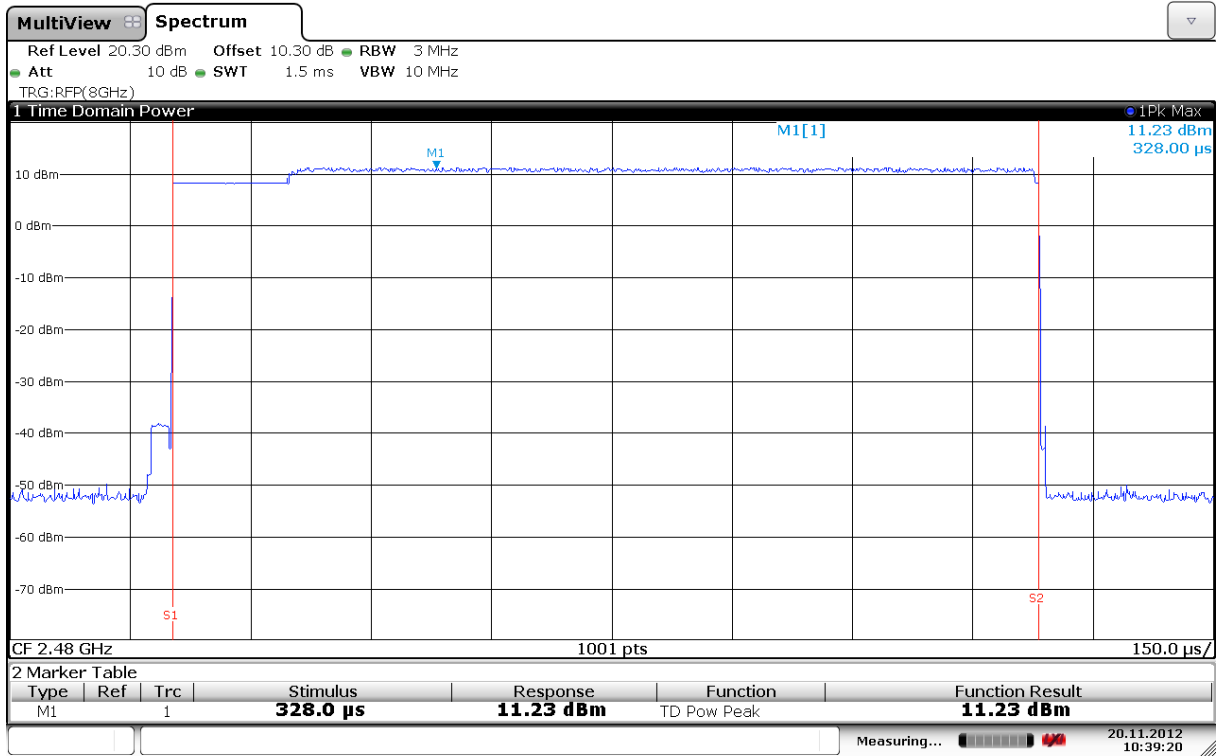
Date: 20.NOV.2012 10:38:15

Conducted Output Power, 2440 MHz, 3-EDR



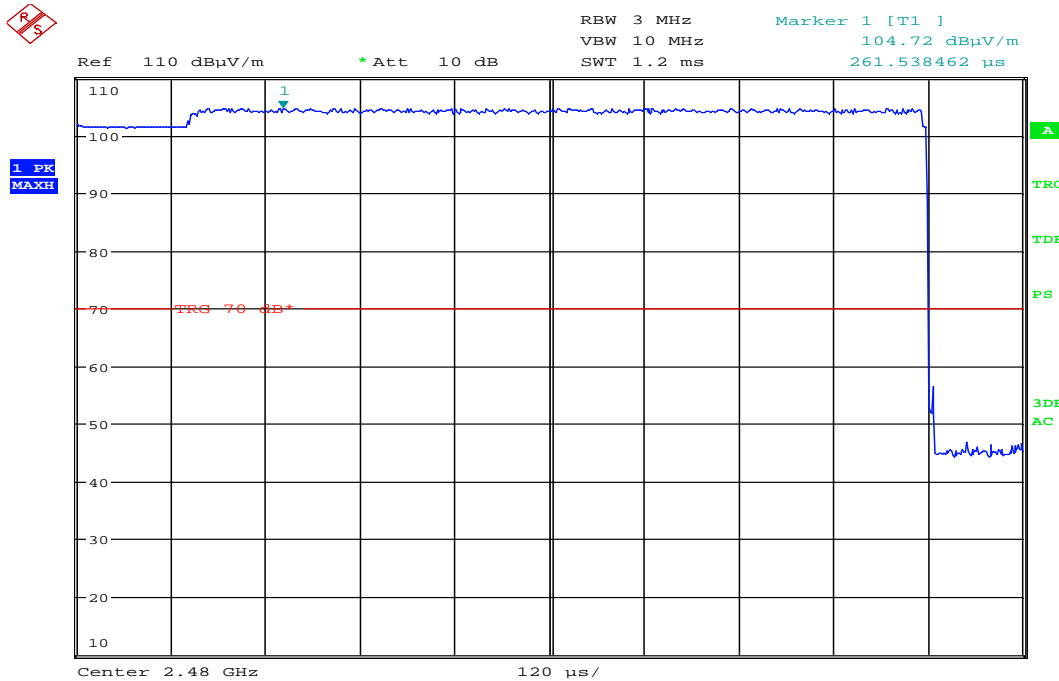
Date: 5.DEC.2012 15:17:23

Radiated Output Power, 2440 MHz, 3-EDR



Date: 20.NOV.2012 10:39:20

Conducted Output Power, 2480 MHz, 3-EDR



Date: 5.DEC.2012 15:21:47

Radiated Output Power, 2480 MHz, 3-EDR

4.6 Spurious Emissions (Radiated)

Para. No.: 15.247 (c)

Test Results: Complies

Measurement Data:

Band-edge conducted power, Hopping Off

Modulation Scheme	Detector	Measured field strength (dB μ V/m)		Limit dB μ V/m	Margin	
		2390 MHz	2483.5 MHz		dB	
GFSK	Peak Detector	53.7	62.3	74	20.3	11.7
	Average Detector	33.7	42.3	54	20.3	11.7
2-EDR	Peak Detector	53.5	62.1	74	20.5	11.9
	Average Detector	33.5	42.1	54	20.5	11.9
3-EDR	Peak Detector	54.2	62.3	74	19.8	11.7
	Average Detector	34.2	42.3	54	19.8	11.7

Band-edge conducted power, Hopping Active

Modulation Scheme	Detector	Measured field strength (dB μ V/m)		Limit dB μ V/m	Margin	
		2390 MHz	2483.5 MHz		dB	
GFSK	Peak Detector	53.4	58.1	74	20.6	15.9
	Average Detector	33.4	38.1	54	20.6	15.9
2-EDR	Peak Detector	52.7	58.6	74	21.3	15.4
	Average Detector	32.7	38.6	54	21.3	15.4
3-EDR	Peak Detector	52.8	58.3	74	21.2	15.7
	Average Detector	32.8	38.3	54	21.2	15.7

Average Detector values are measured with Peak Detector and corrected for Duty Cycle.

See attached plots.

Duty Cycle Correction Factor Calculation:

Duty Cycle = slot length / (frame length x hopping channels)

Duty Cycle Correction factor = $-20 \times \log(2.90 / 100) = 30.8$ dB

Maximum Duty Cycle Correction Factor according to Para 15.35 (b): 20 dB

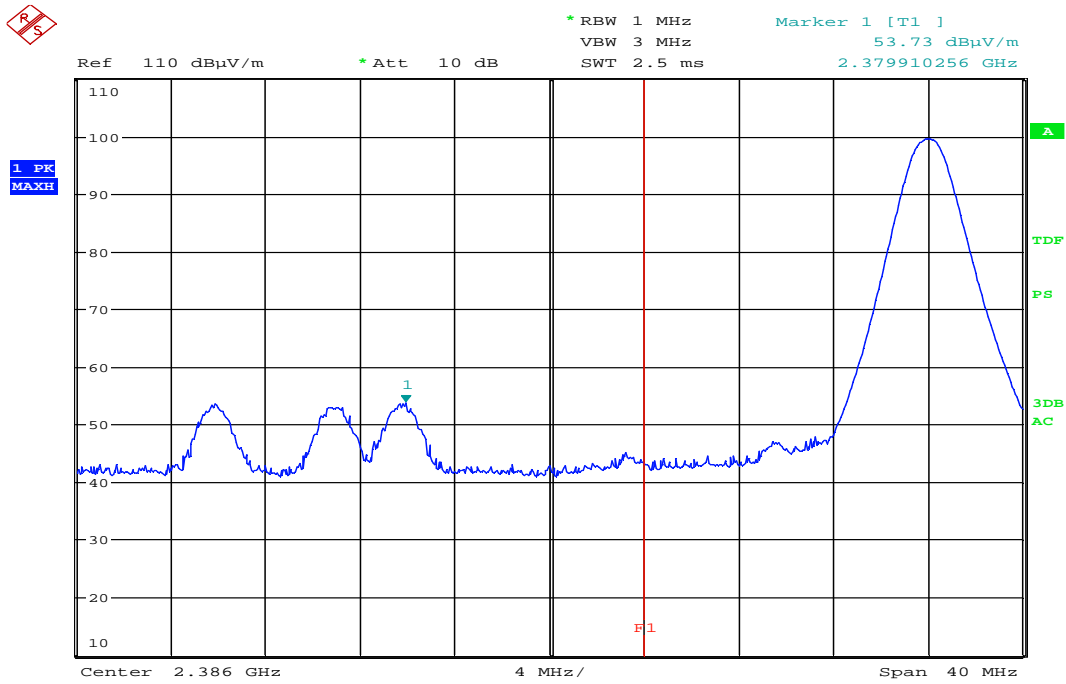
RF conducted power to 25 GHz see attached graph.

Maximum RF level outside operating band:

RF ch 1: >40 dB/C, margin >20 dB

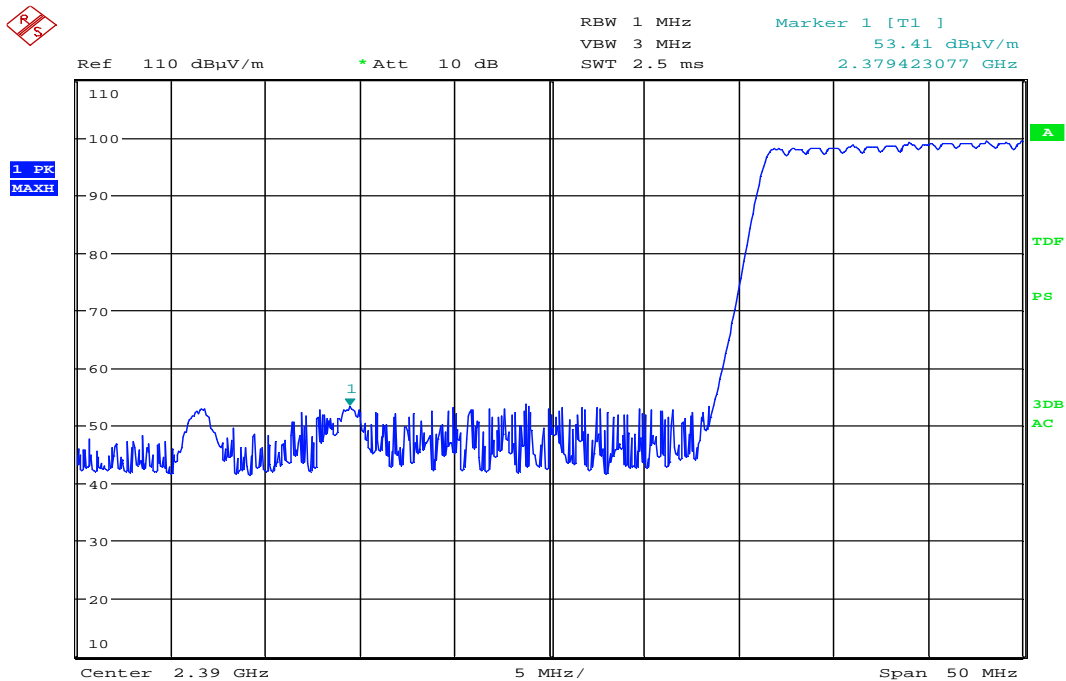
RF ch 39: >40 dB/C, margin >20 dB

RF ch 79: >40 dB/C, margin >20 dB



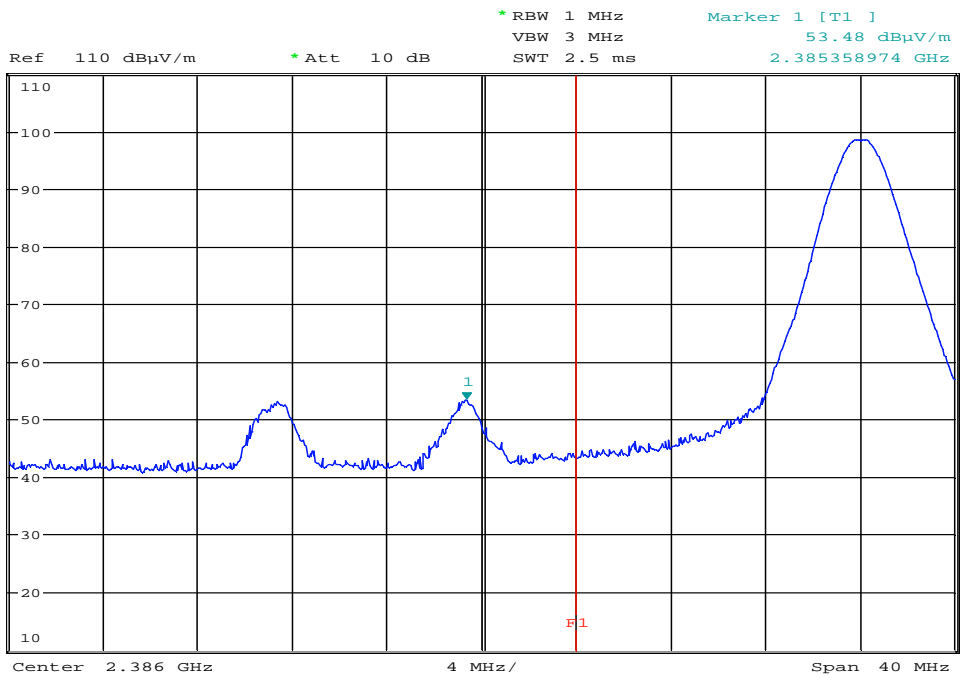
Date: 5.DEC.2012 15:36:11

Lower Band Edge, 2402 MHz, GFSK, Peak Det



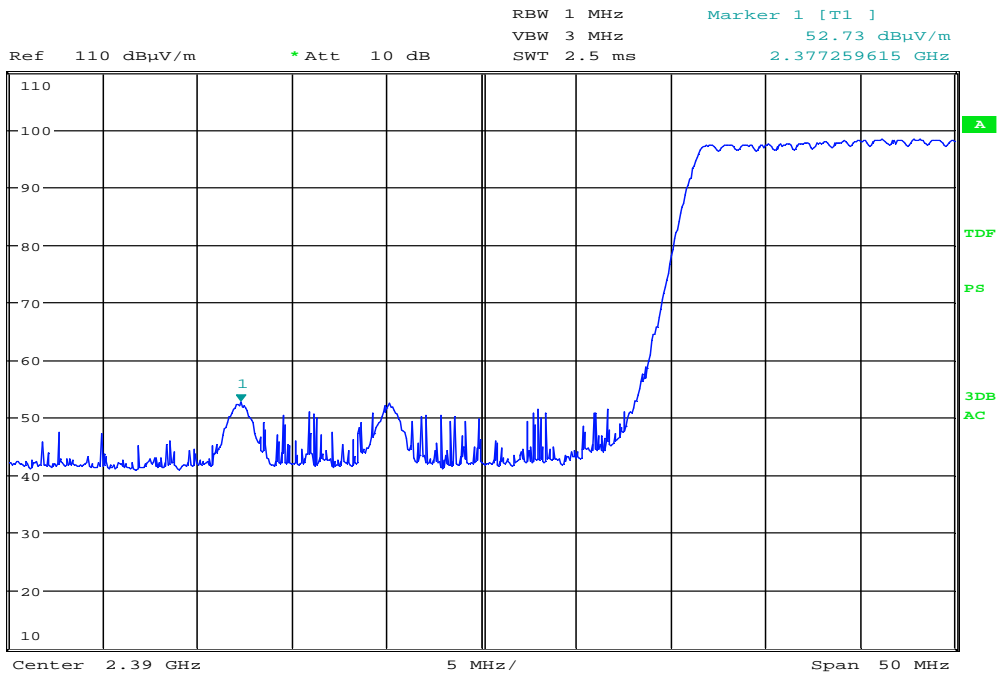
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Lower Band Edge, Hopping, GFSK, Peak Det



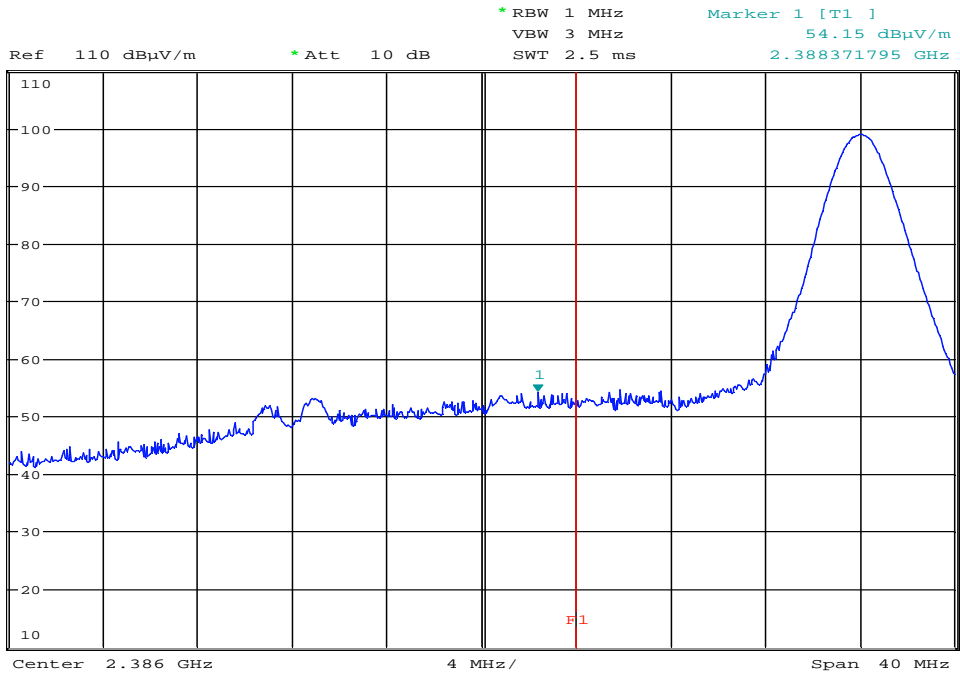
Date: 5.DEC.2012 15:34:10

Lower Band Edge, 2402 MHz, 2-EDR, Peak Det



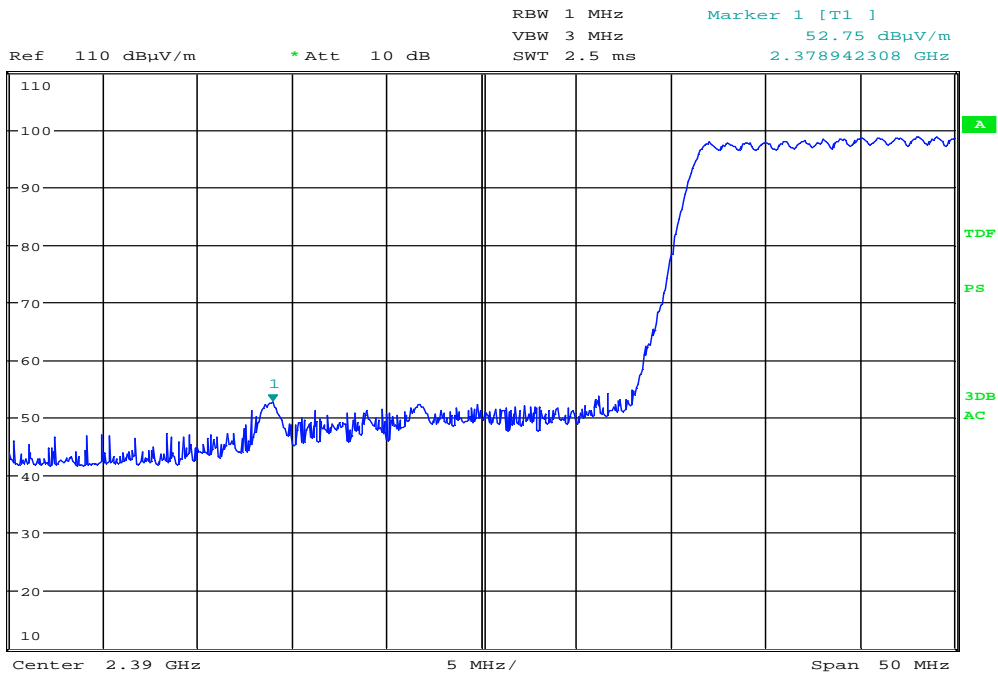
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Lower Band Edge, Hopping, 2-EDR, Peak Det



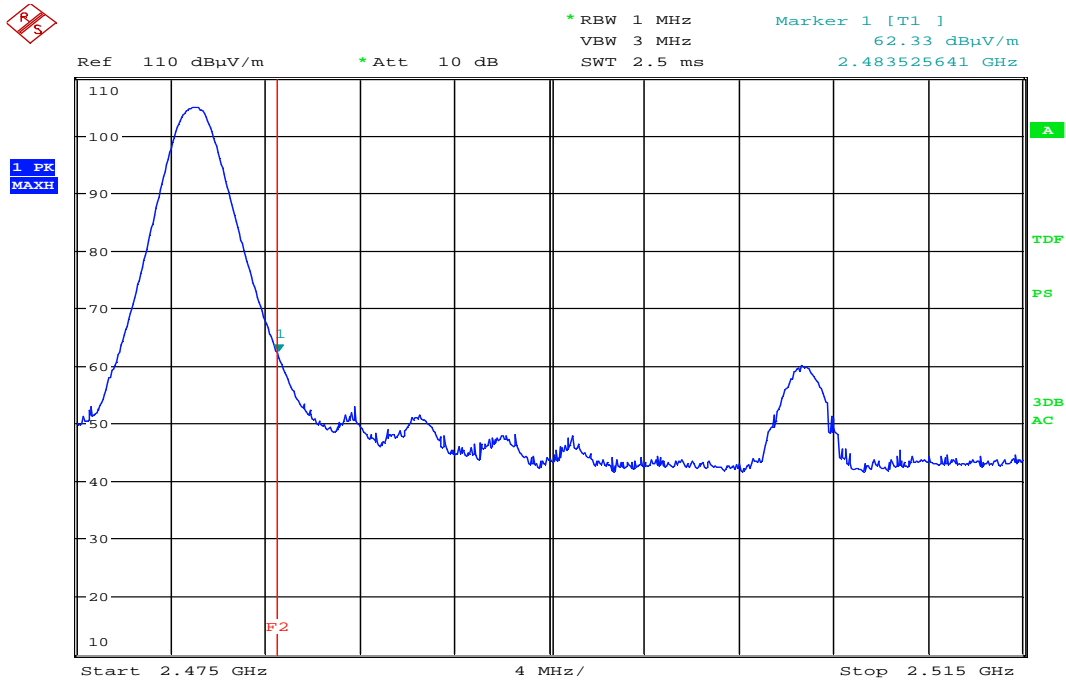
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Lower Band Edge, 2402 MHz, 3-EDR, Peak Det



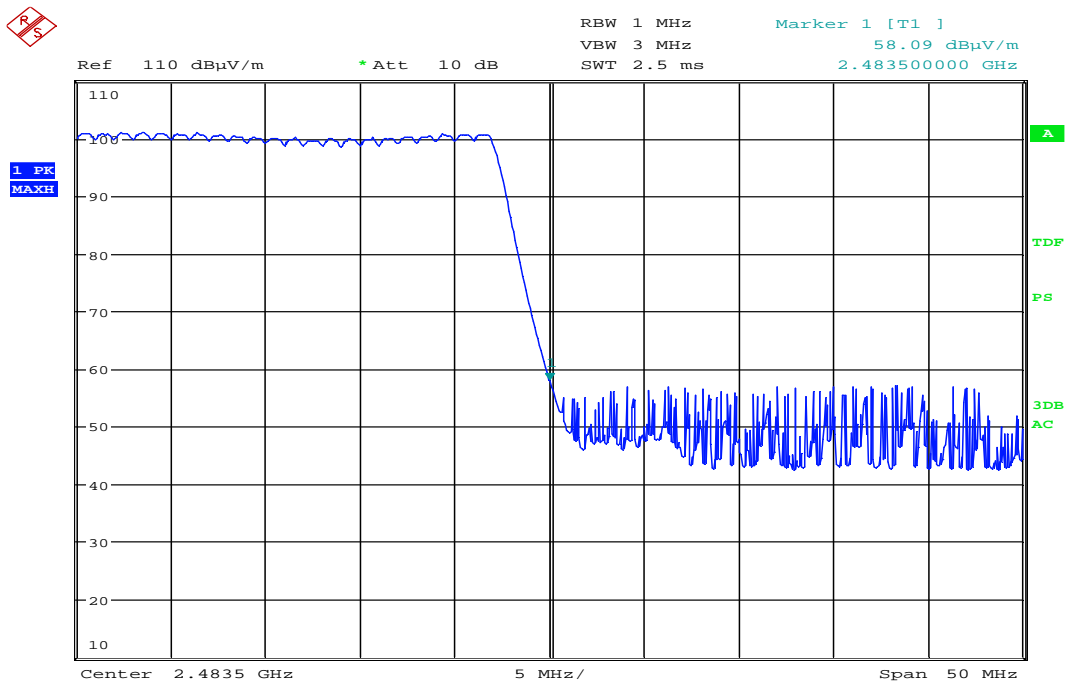
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Lower Band Edge, Hopping, 3-EDR, Peak Det



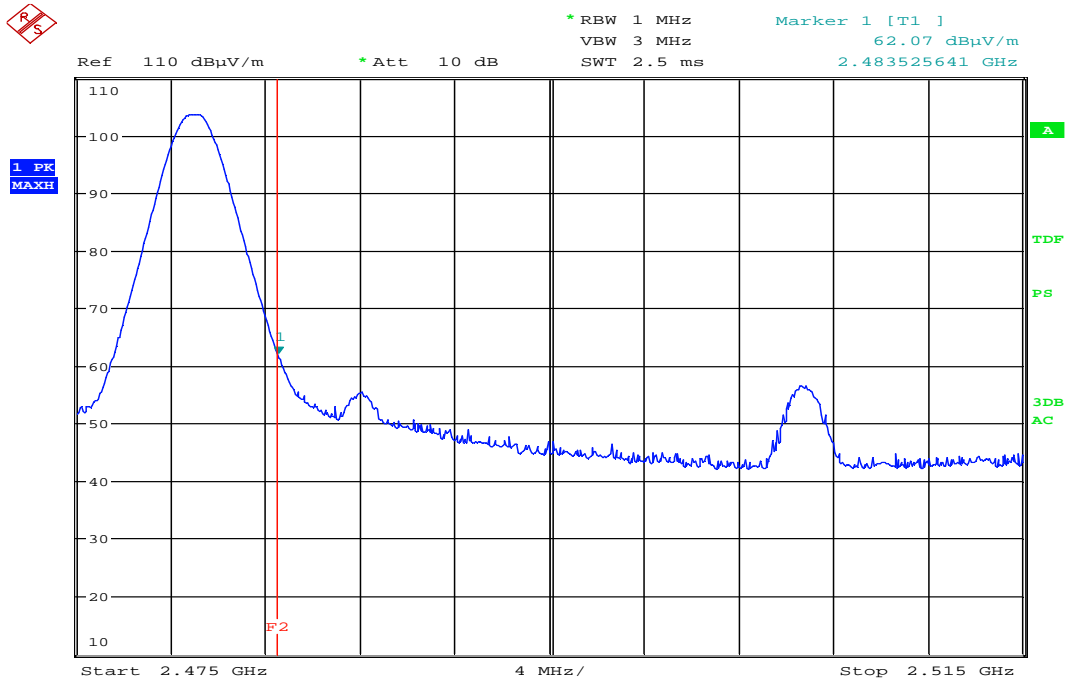
Date: 5.DEC.2012 15:28:12

Upper Band Edge, 2402 MHz, GFSK, Peak Det



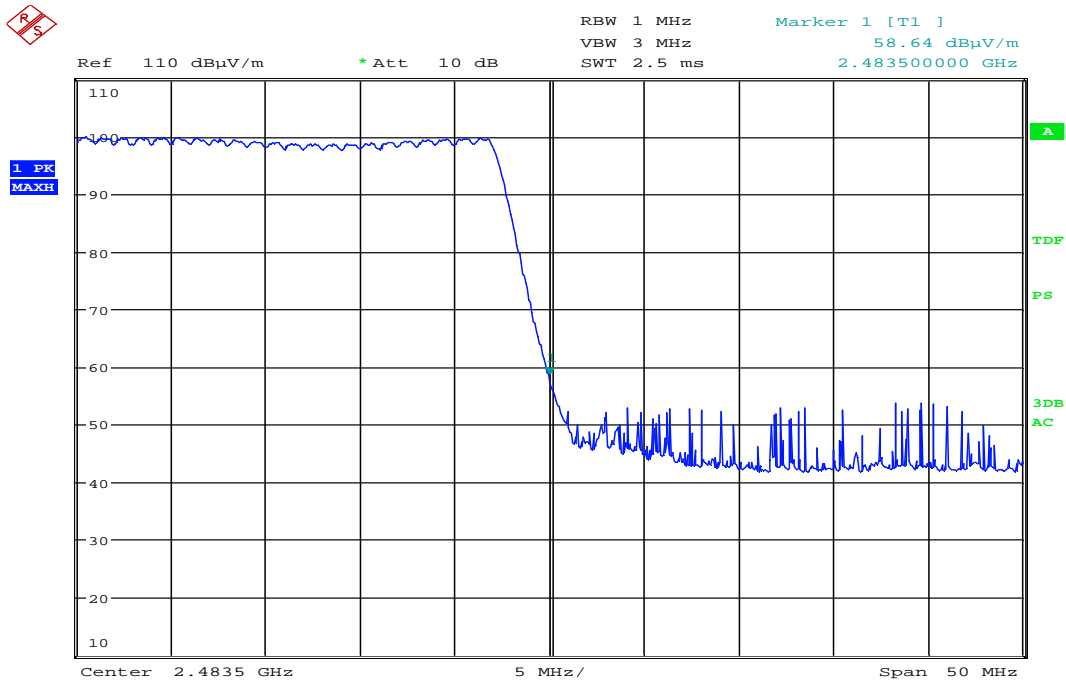
Date: 5.DEC.2012 14:43:39

Upper Band Edge, Hopping, GFSK, Peak Det



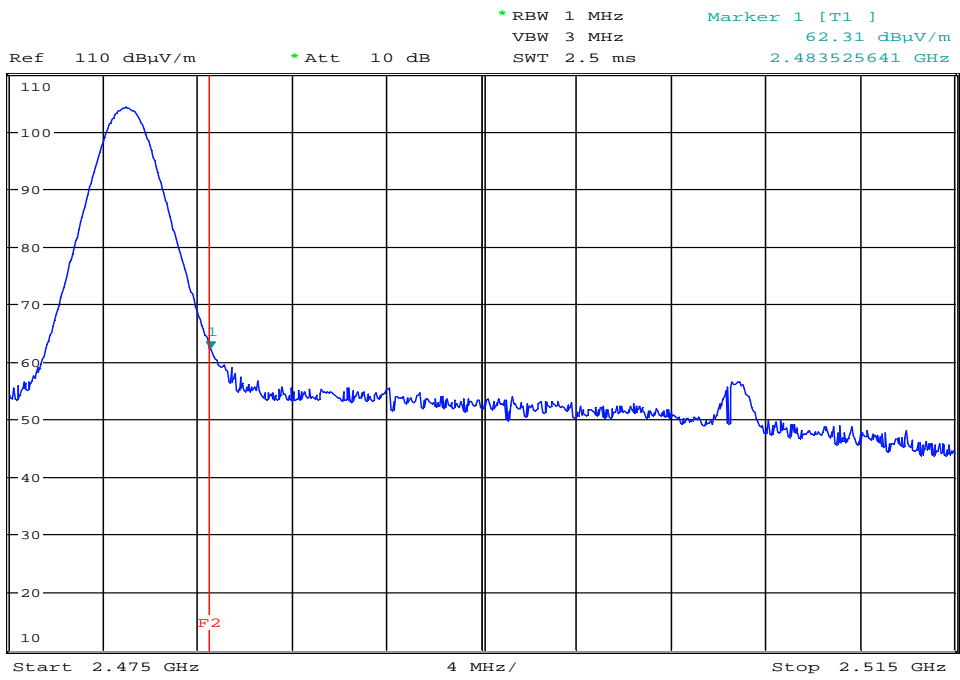
Date: 5.DEC.2012 15:26:51

Upper Band Edge, 2402 MHz, 2-EDR, Peak Det



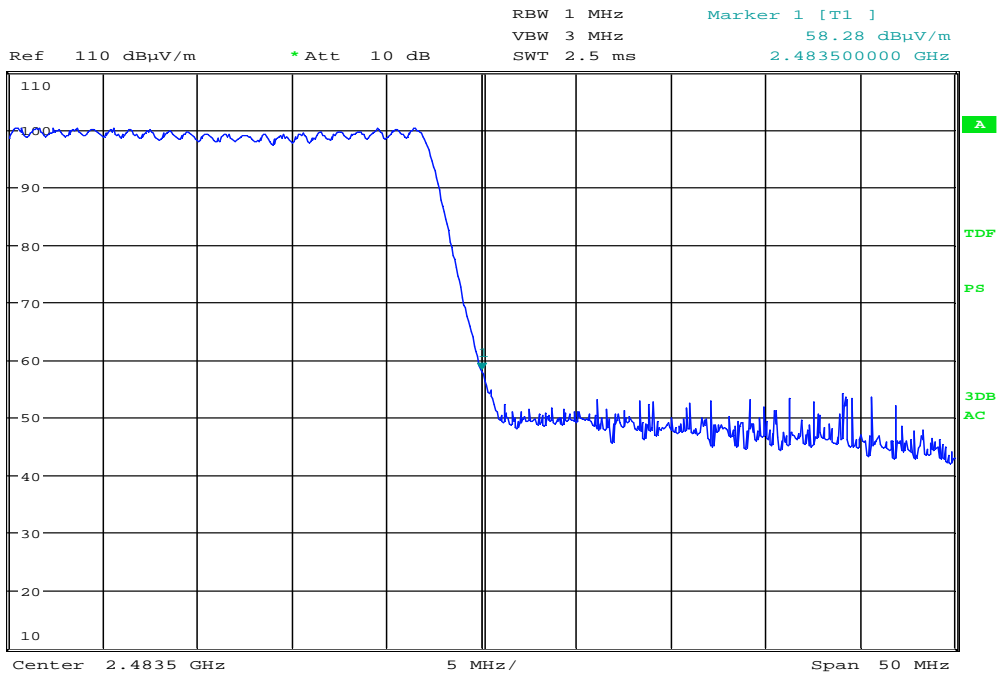
Date: 5.DEC.2012 14:45:45

Upper Band Edge, Hopping, 2-EDR, Peak Det



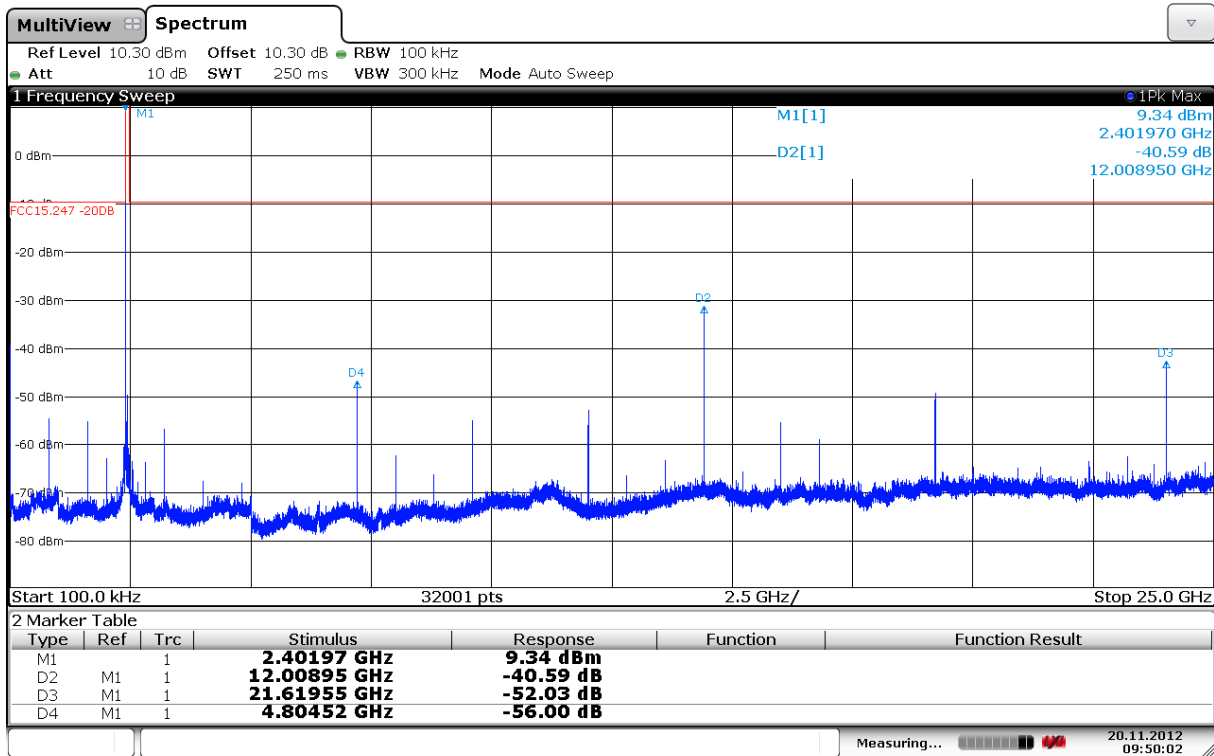
Date: 5.DEC.2012 15:24:39

Upper Band Edge, 2402 MHz, 3-EDR, Peak Det



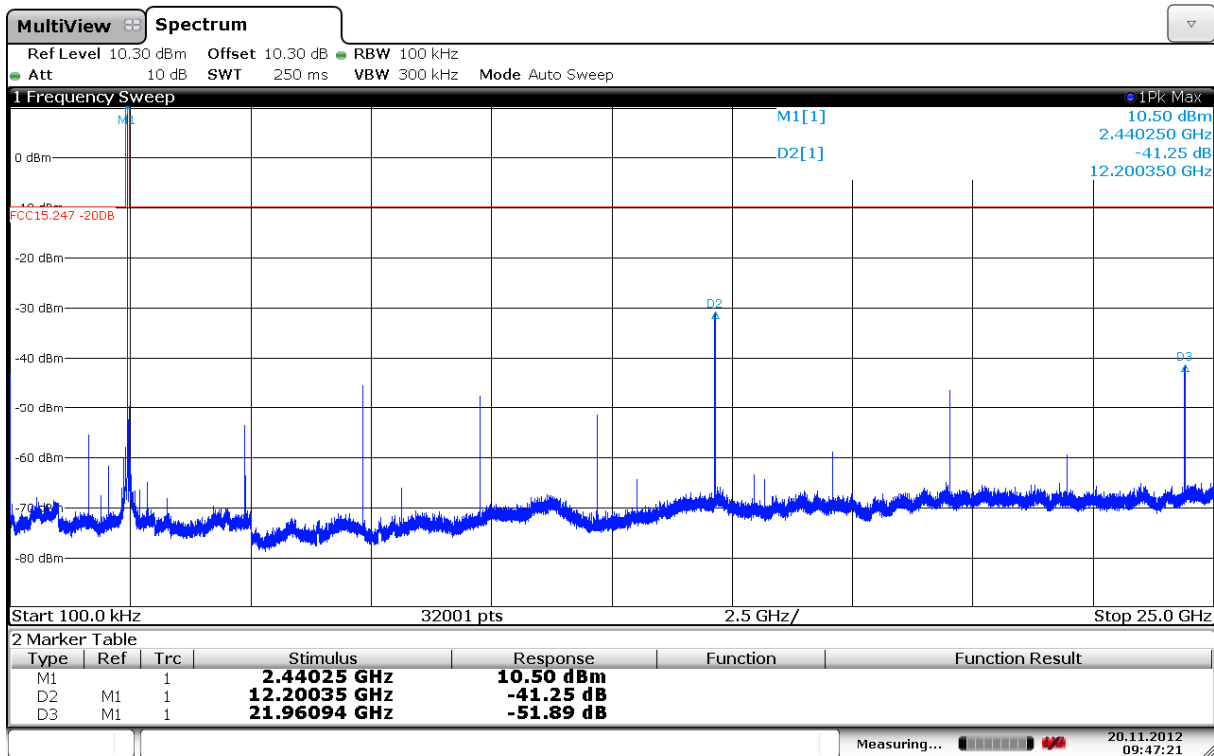
Date: 5.DEC.2012 14:51:06

Upper Band Edge, Hopping, 3-EDR, Peak Det



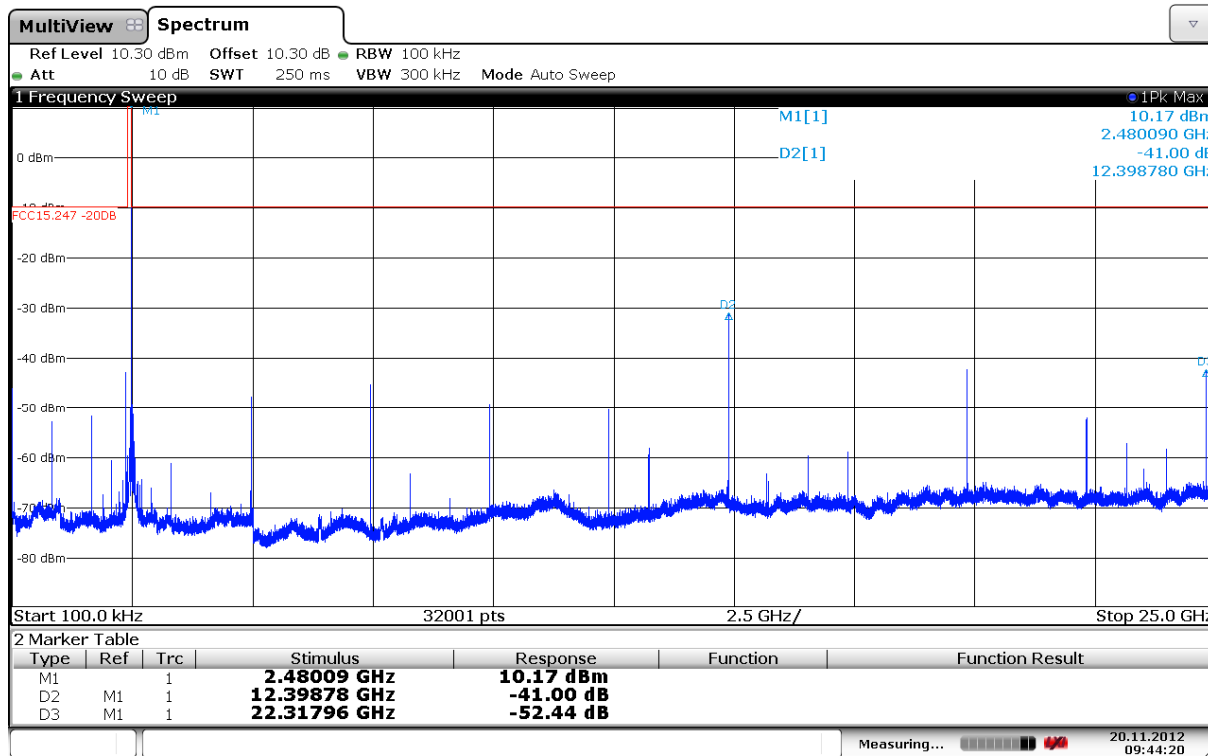
Date: 20.NOV.2012 09:50:01

Conducted Emissions, 100kHz – 25GHz, 2402 MHz, GFSK



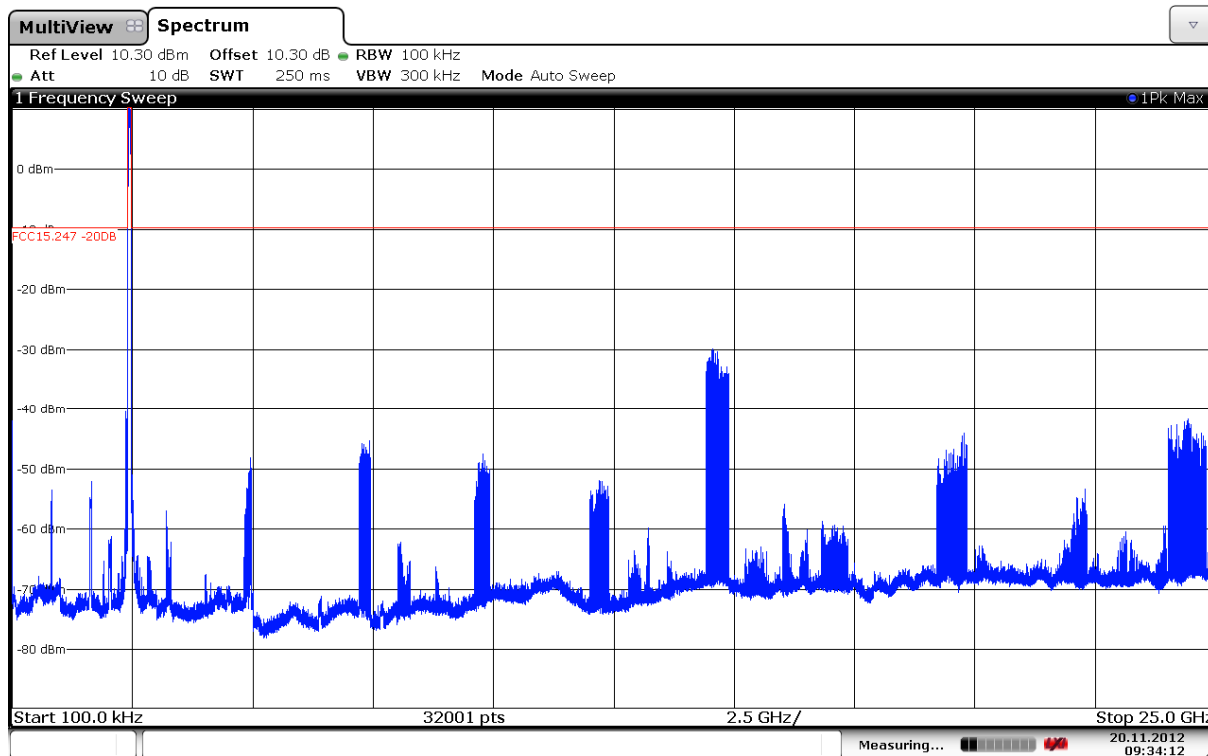
Date: 20.NOV.2012 09:47:20

Conducted Emissions, 100kHz – 25GHz, 2440 MHz, GFSK



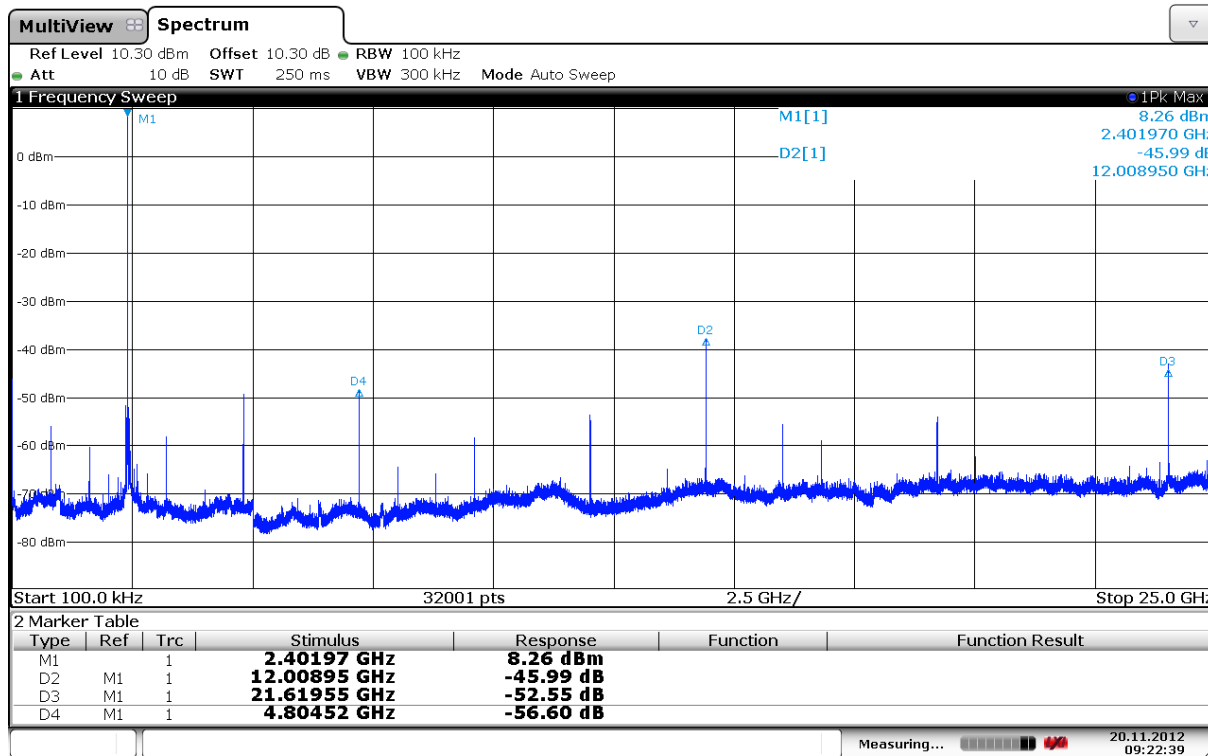
Date: 20.NOV.2012 09:44:21

Conducted Emissions, 100kHz – 25GHz, 2480 MHz, GFSK



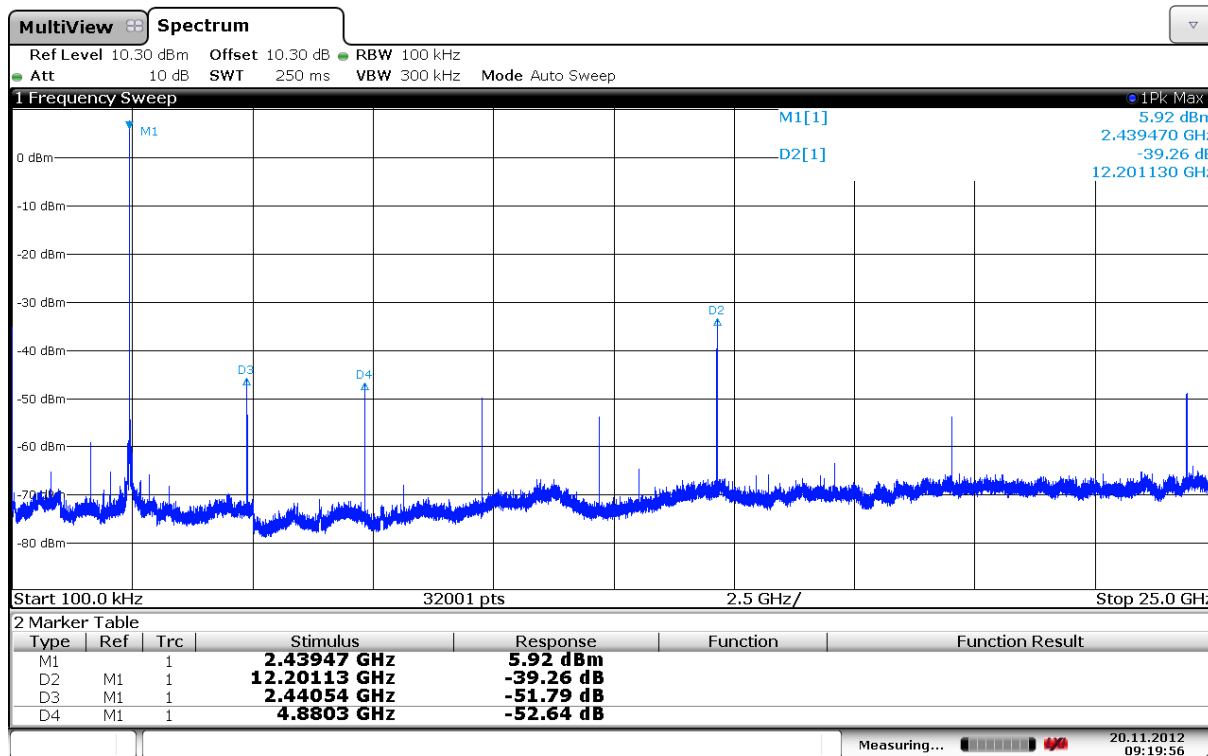
Date: 20.NOV.2012 09:34:11

Conducted Emissions, 100kHz – 25GHz, Hopping, GFSK



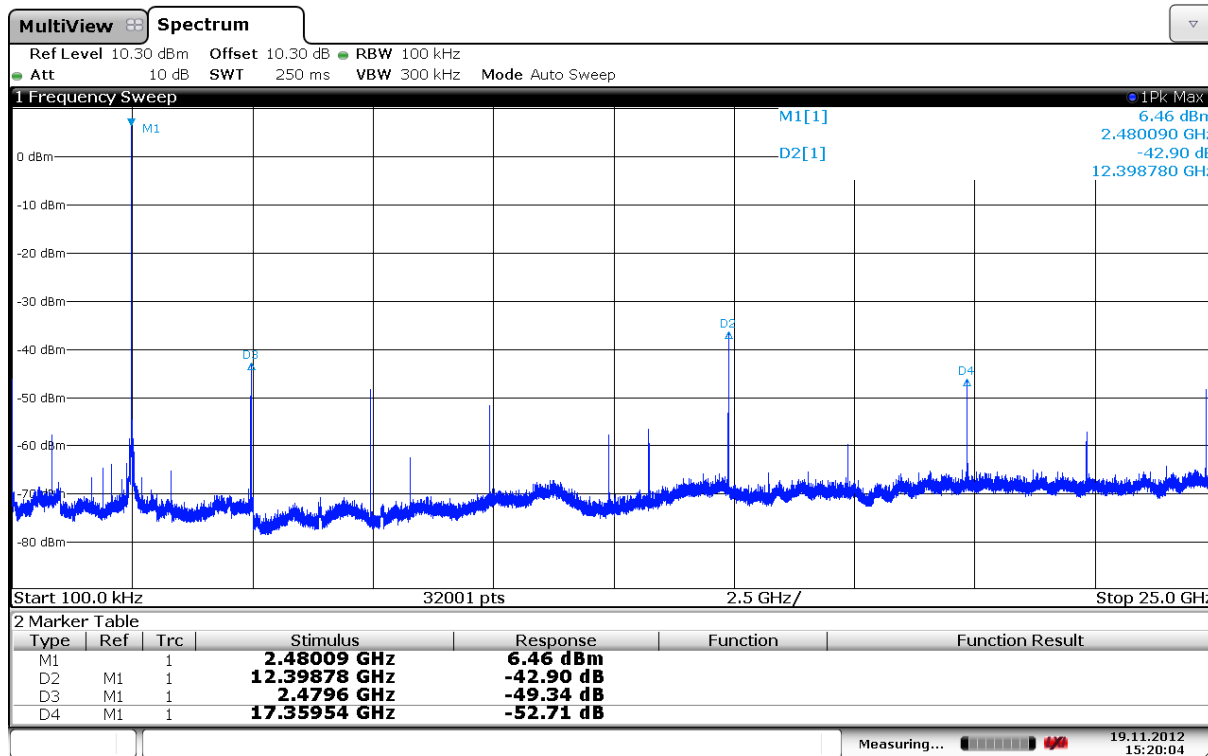
Date: 20.NOV.2012 09:22:40

Conducted Emissions, 100kHz – 25GHz, 2402 MHz, 2-EDR



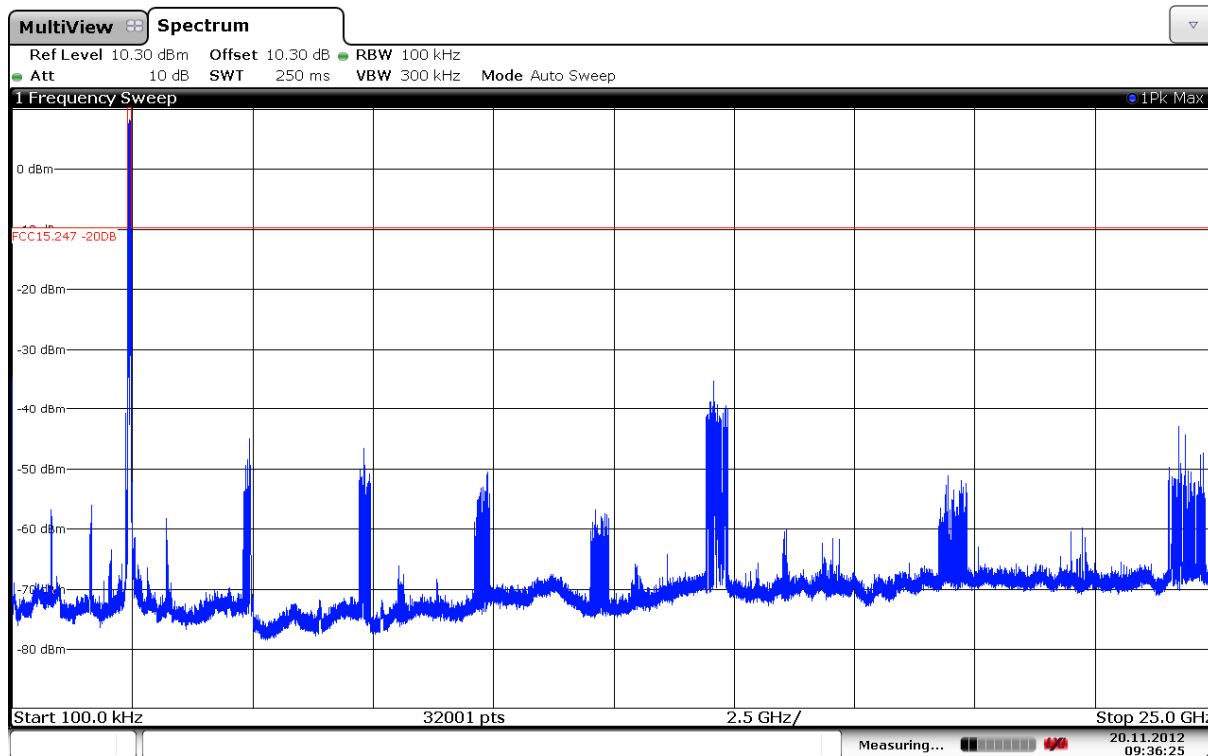
Date: 20.NOV.2012 09:19:56

Conducted Emissions, 100kHz – 25GHz, 2440 MHz, 2-EDR



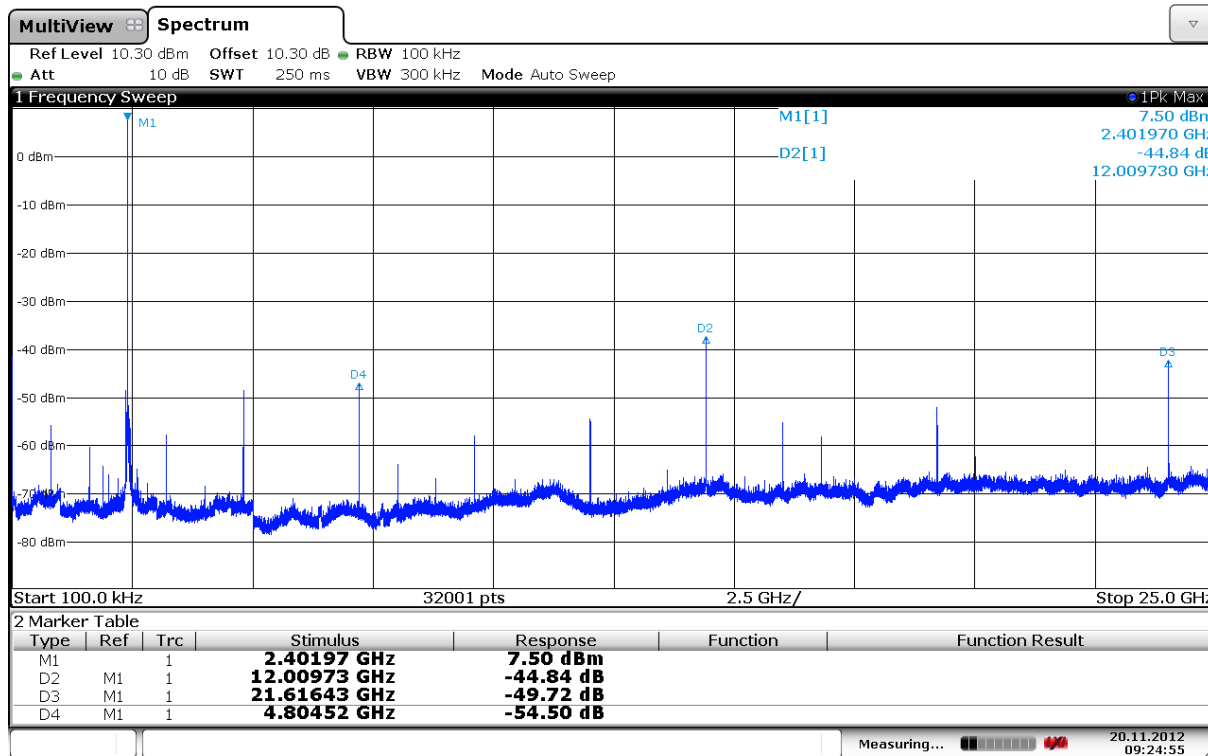
Date: 19.NOV.2012 15:20:04

Conducted Emissions, 100kHz – 25GHz, 2480 MHz, 2-EDR



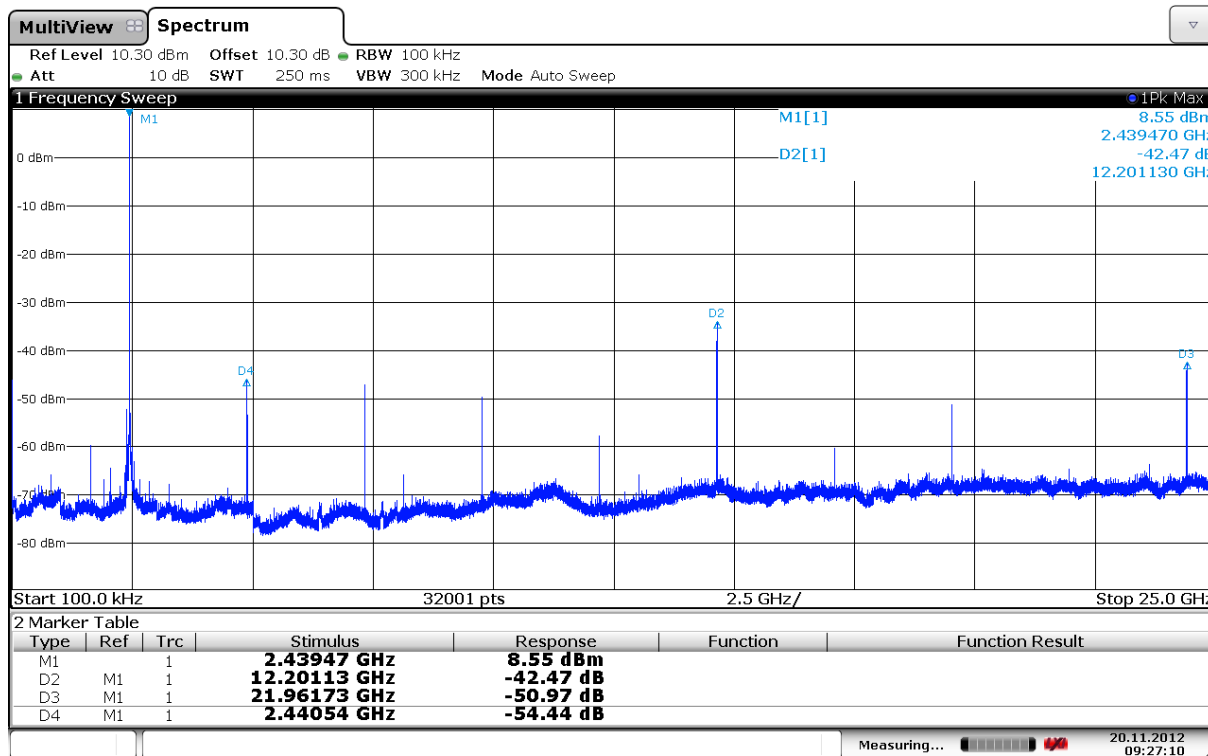
Date: 20.NOV.2012 09:36:24

Conducted Emissions, 100kHz – 25GHz, Hopping, 2-EDR



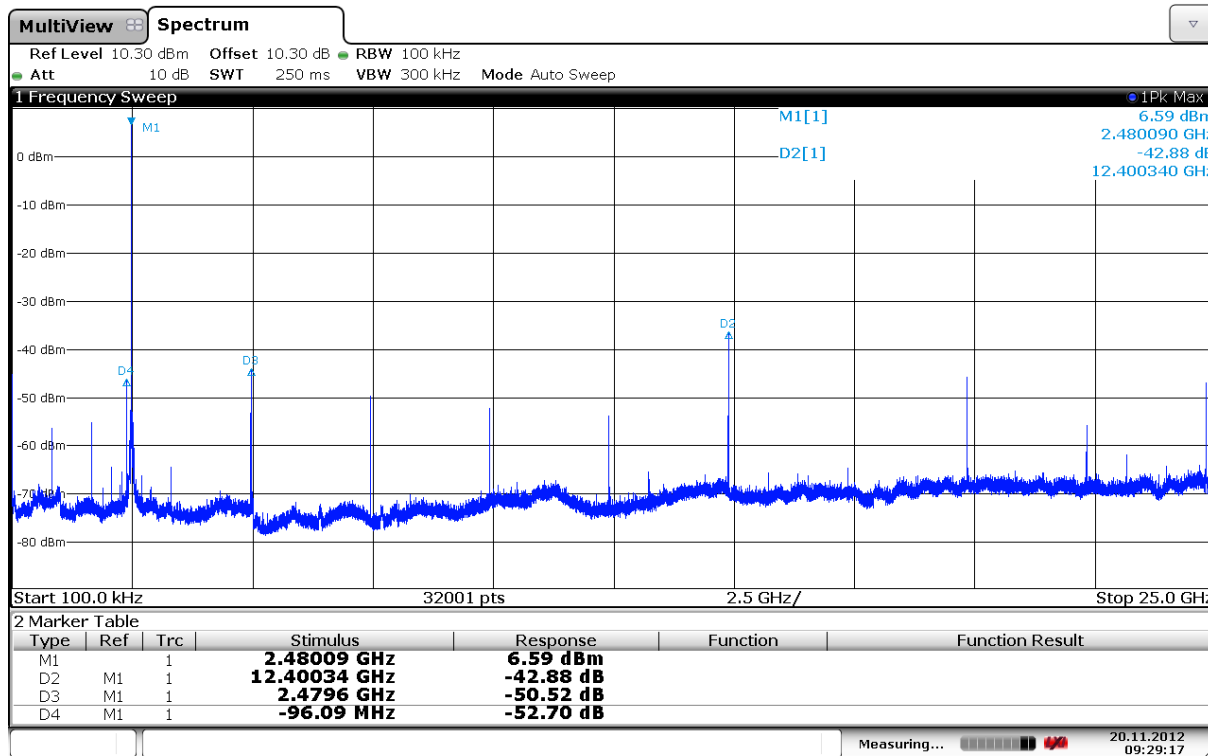
Date: 20.NOV.2012 09:24:55

Conducted Emissions, 100kHz – 25GHz, 2402 MHz, 3-EDR



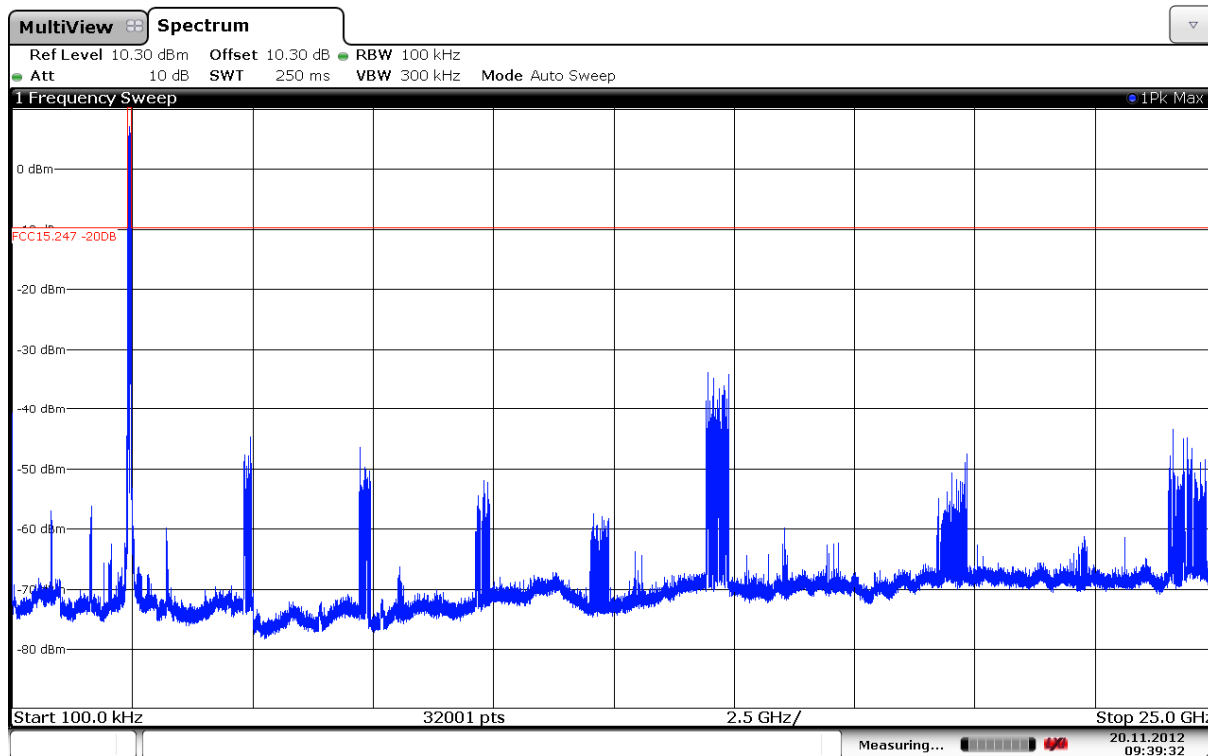
Date: 20.NOV.2012 09:27:10

Conducted Emissions, 100kHz – 25GHz, 2440 MHz, 3-EDR



Date: 20.NOV.2012 09:29:17

Conducted Emissions, 100kHz – 25GHz, 2480 MHz, 3-EDR



Date: 20.NOV.2012 09:39:32

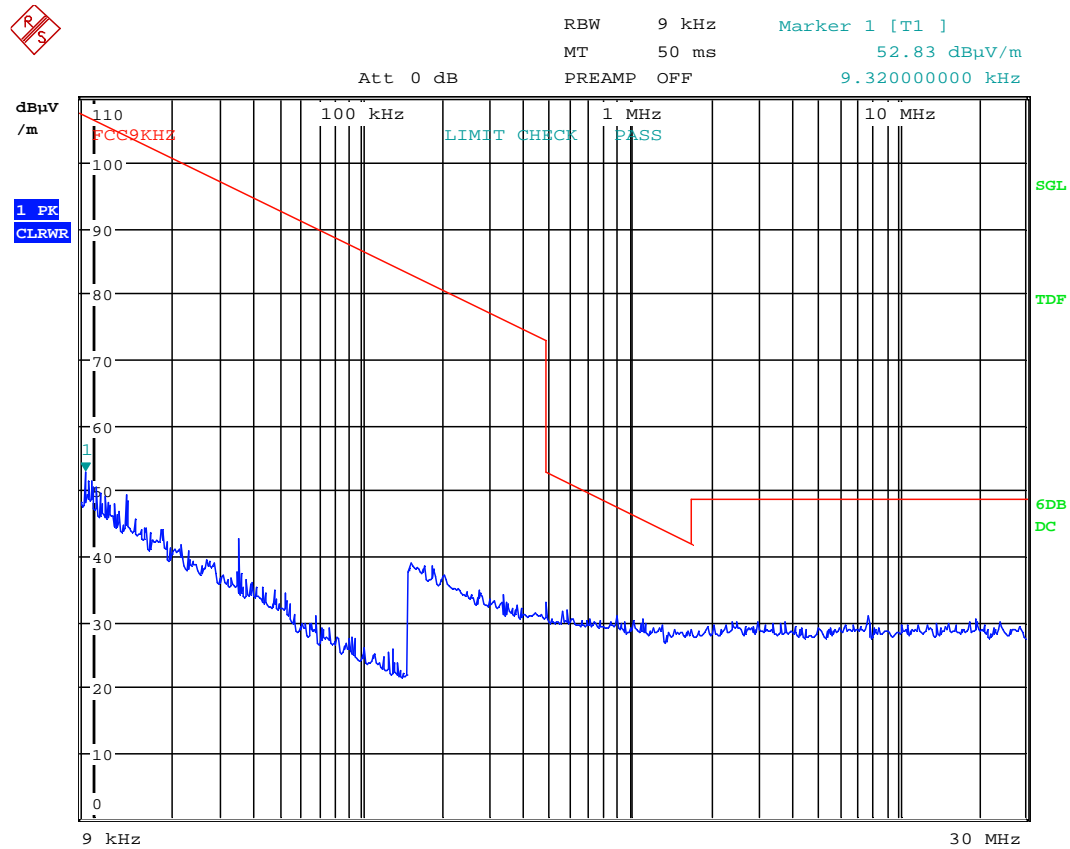
Conducted Emissions, 100kHz – 25GHz, Hopping, 3-EDR

Radiated emissions 10 kHz-30 MHz.

Measuring distance 10m, measured with Peak detector.

No component detected, see plot.

Limit is converted to 10m using 40 dB/decade according to 15.31 (f) (2).



Date: 8.NOV.2012 10:43:23

Radiated Emissions 9kHz – 30MHz

Radiated emission 30 – 1000 MHz.

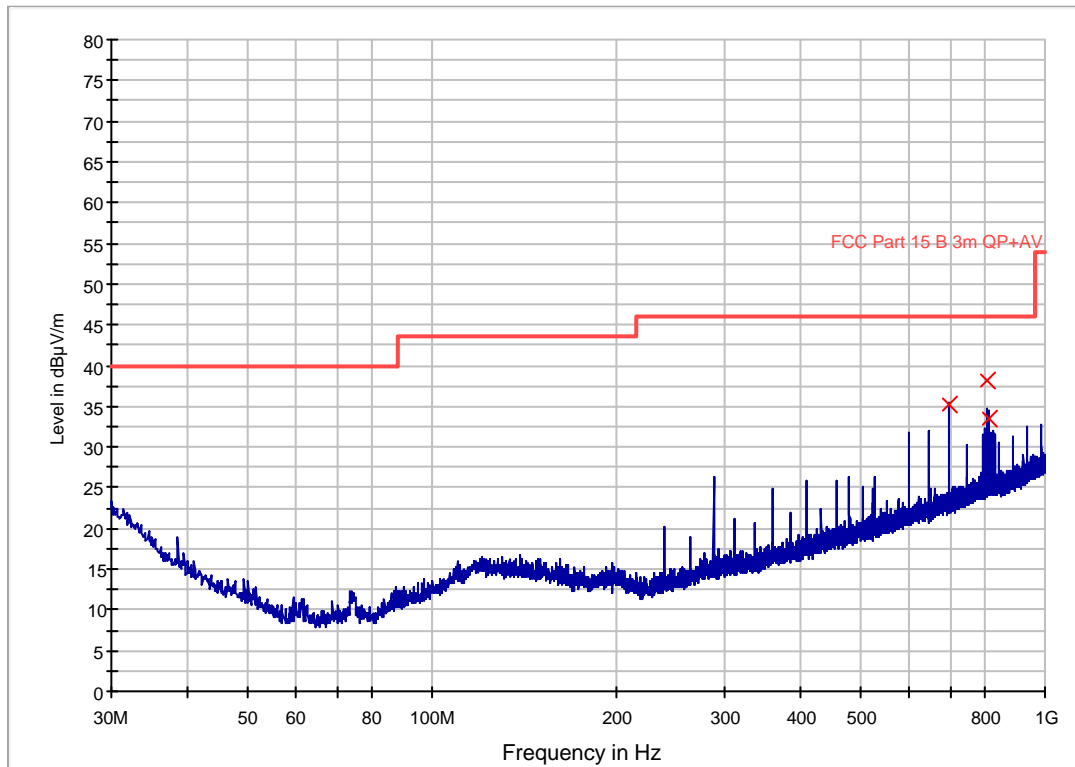
Detector: Quasi-Peak

Measuring distance 3 m according to FCC 15.209.

Tested in hopping mode with transmitter active.

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Polarization	Margin (dB)	Limit (dBµV/m)	Comment
695.964389	35.1	120.000	H	10.9	46.0	
805.673909	38.3	120.000	V	7.7	46.0	
809.655904	33.4	120.000	V	12.6	46.0	

FCC Pt15 Class B 30-1000M 3m



Radiated Emissions, 1-25 GHz

Measuring distance: 3m (1 – 8.5 GHz)
 1m (8.5 – 25 GHz)

Peak Detector:

Frequency	RF channel	Field strength, Peak Detector, 3m	Limit	Margin
MHz	MHz	dB μ V/m	dB μ V/m	dB
4804	2402	60.1	74	13.9
4880	2440	59.0	74	15.0
4960	2480	59.1	74	14.9
7206	2402	55.7	74	18.3
7320	2440	59.4	74	14.6
7440	2480	69.1	74	14.9
9608	2402	58.4	74	15.6
9760	2440	57.3	74	16.7
9920	2480	55.1	74	18.9
14412	2402	57.3	74	16.7
14640	2440	65.7	74	8.3
14880	2480	67.0	74	7.0
19520	2440	49.1	74	24.9
24400	2440	54.0	74	20.0
Other freqs	any	< 54	74	>20

Antenna factor, amplifier gain and cable loss are included in spectrum analyzer “Transducer factor”.

Distance correction factor is included on the plot for measurements at 1m.

See plots.

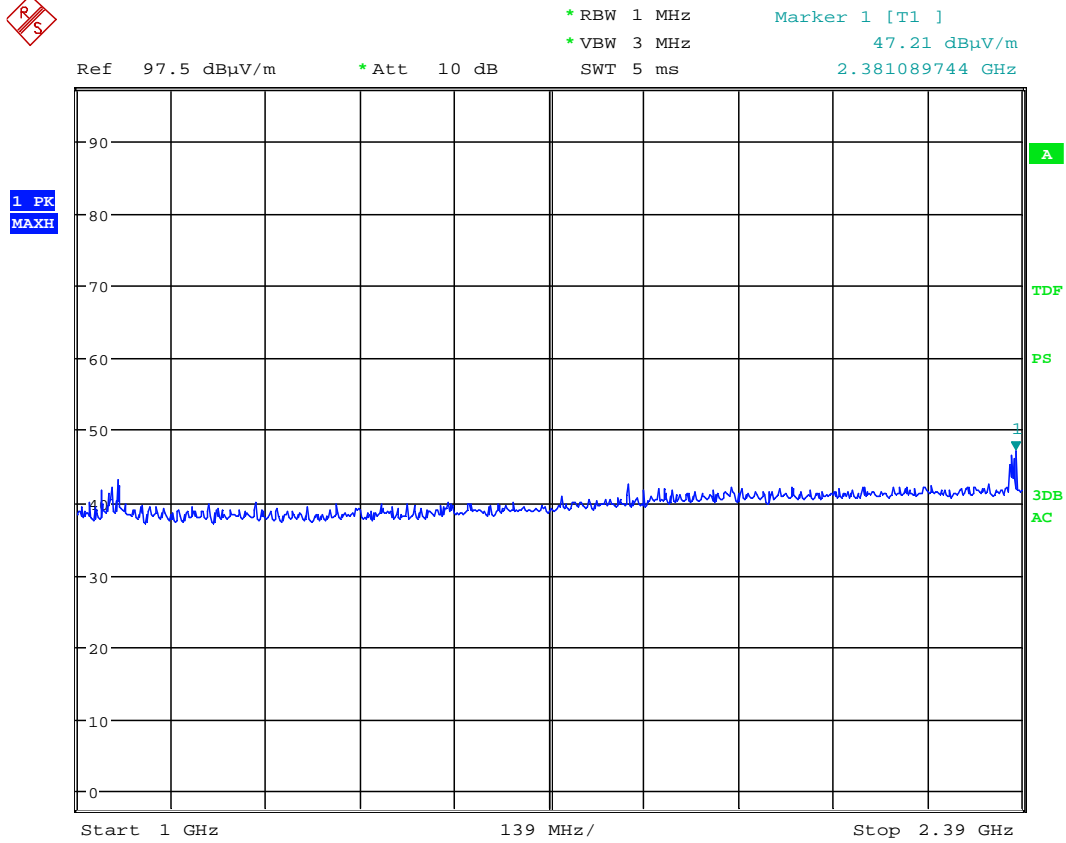
Radiated Emissions, 1-25 GHz

 Measuring distance: 3m (1 – 8.5 GHz)
 1m (8.5 – 25 GHz)

Average Detector:

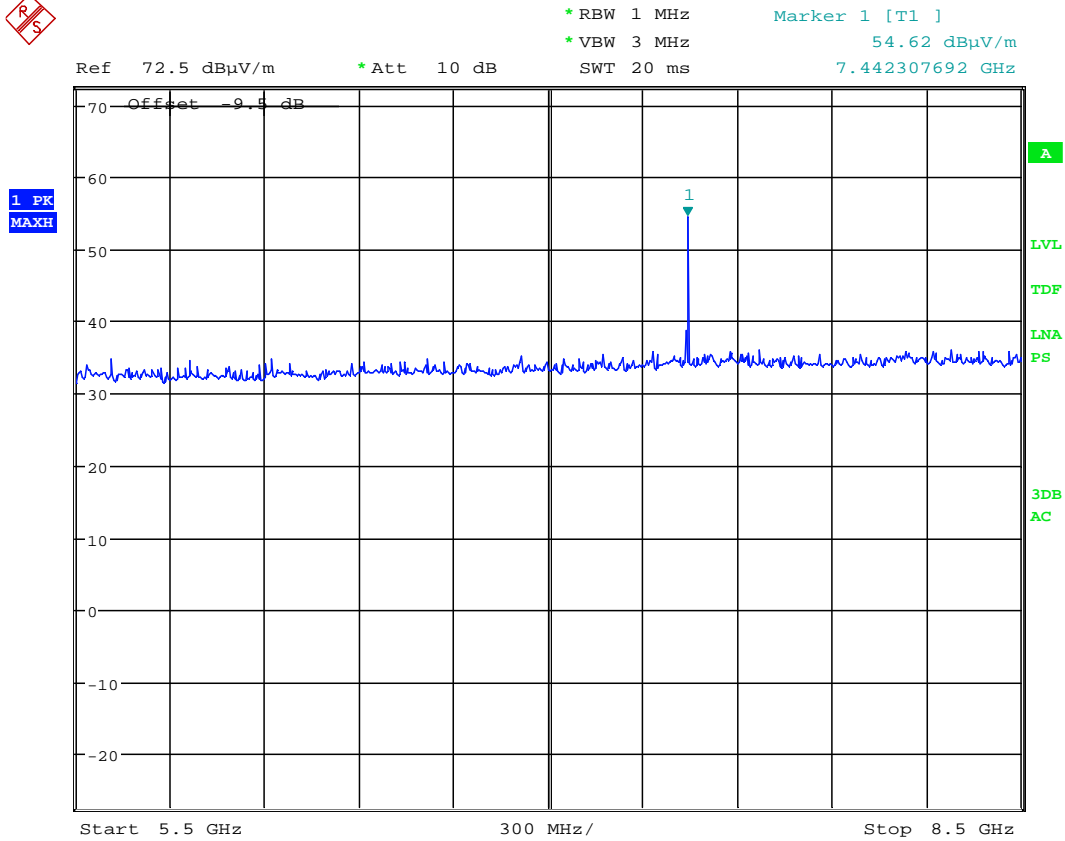
Frequency	RF channel	Field strength, Peak Detector, 3m	Duty cycle corr. factor	Limit	Margin
GHz	MHz	dB μ V/m	dB	dB μ V/m	dB
4804	2402	40.1	20	54	13.9
4880	2440	39.0	20	54	15.0
4960	2480	39.1	20	54	14.9
7206	2402	35.7	20	54	18.3
7320	2440	39.4	20	54	14.6
7440	2480	49.1	20	54	14.9
9608	2402	38.4	20	54	15.6
9760	2440	37.3	20	54	16.7
9920	2480	35.1	20	54	18.9
14412	2402	37.3	20	54	16.7
14640	2440	45.7	20	54	8.3
14880	2480	47.0	20	54	7.0
19520	2440	29.1	20	54	24.9
24400	2440	34.0	20	54	20.0
Other freqs	any	< 34	20	54	>20

Average Detector values are calculated from Peak values by Duty Cycle Correction Factor.



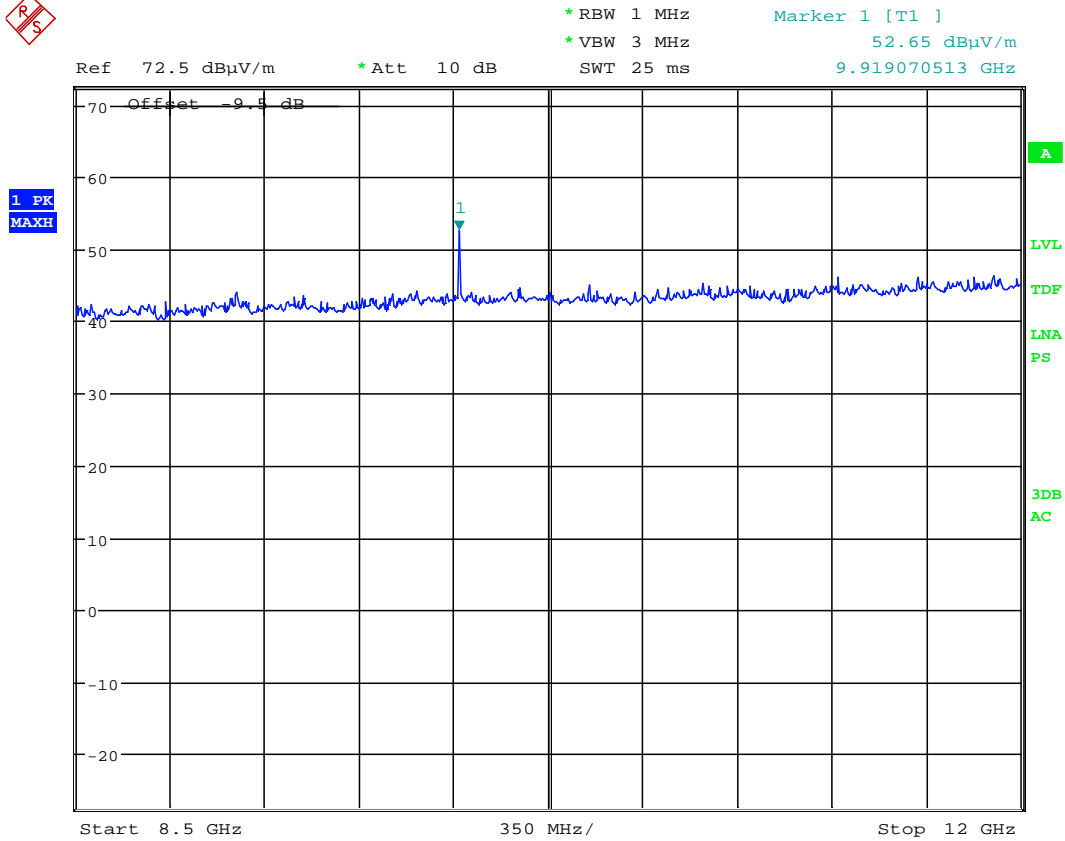
Date: 5.DEC.2012 15:57:11

Radiated Emissions, 1000 -2390MHz, 2402MHz, EUT V, HP



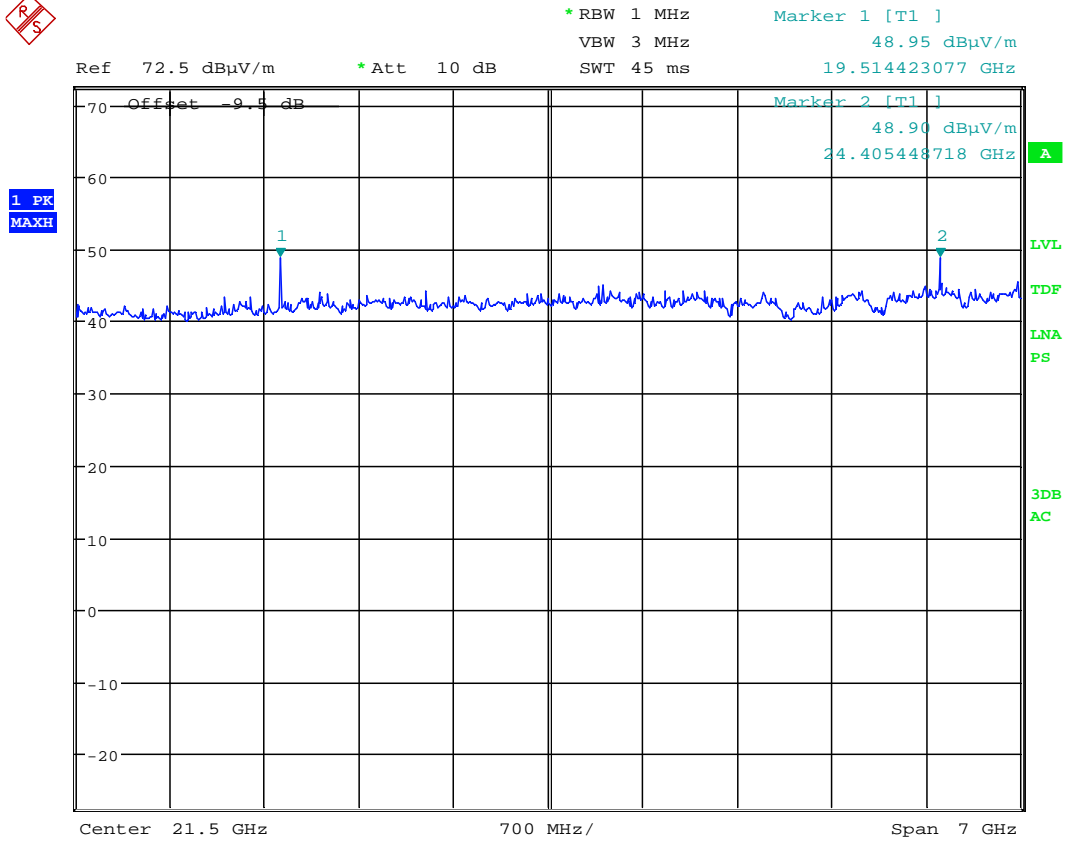
Date: 7.NOV.2012 14:32:10

Radiated Emissions, 5500 -8500MHz, 2440MHz, EUT V, HP, @1m



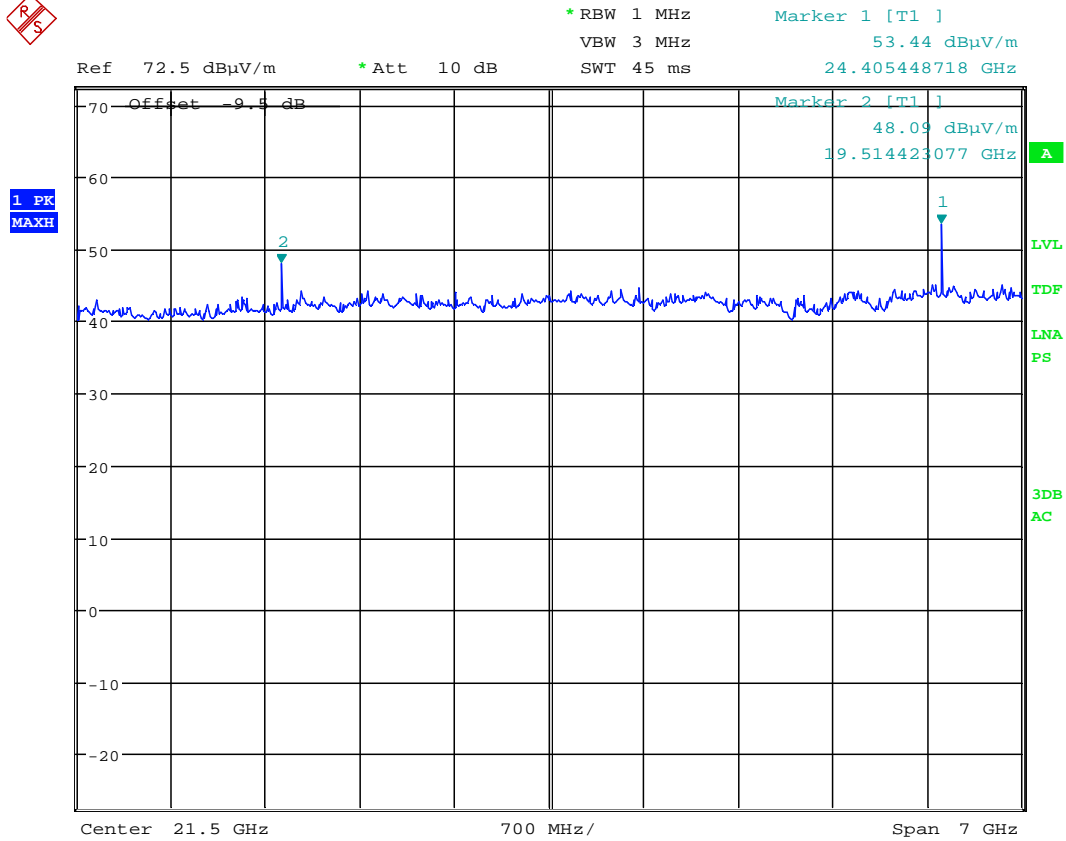
Date: 7.NOV.2012 14:42:58

Radiated Emissions, 8500 -12000MHz, 2440MHz, EUT V, HP, @1m



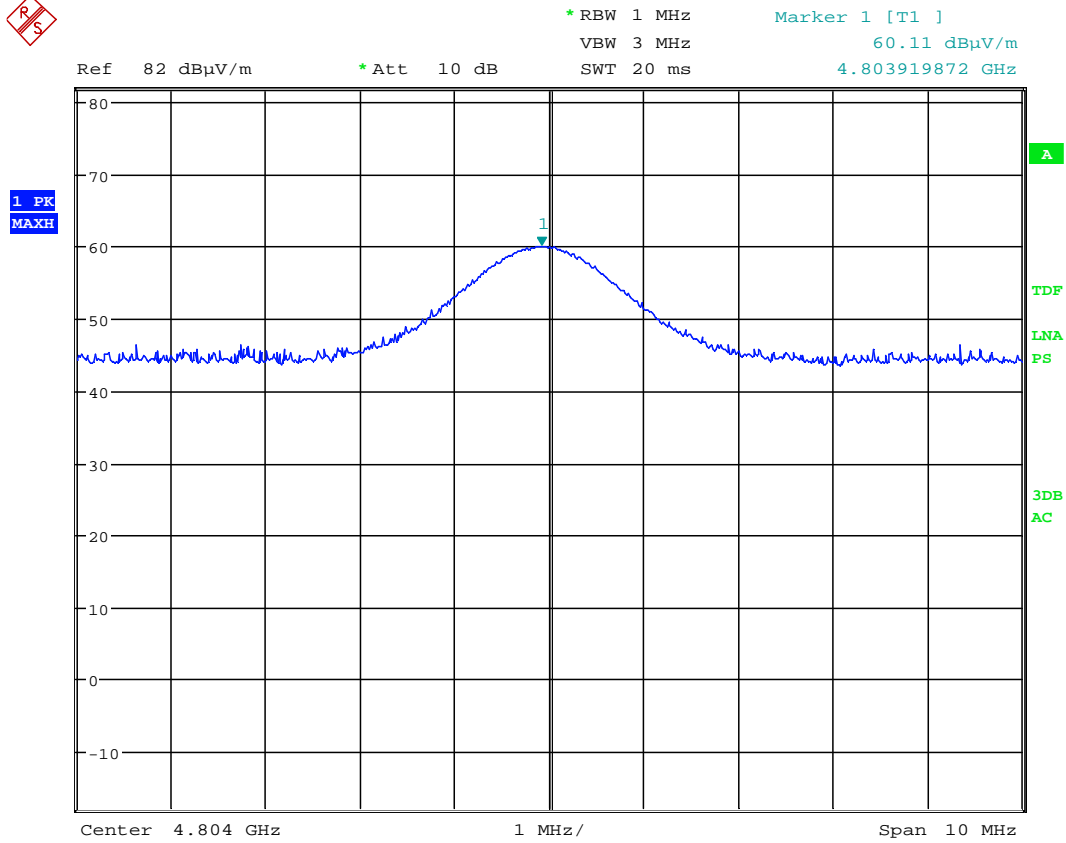
Date: 7.NOV.2012 16:16:05

Radiated Emissions, 18000 -25000MHz, 2440MHz, EUT V, HP, @1m



Date: 7.NOV.2012 16:13:48

Radiated Emissions, 18000 -25000MHz, 2440MHz, EUT V, VP, @1m

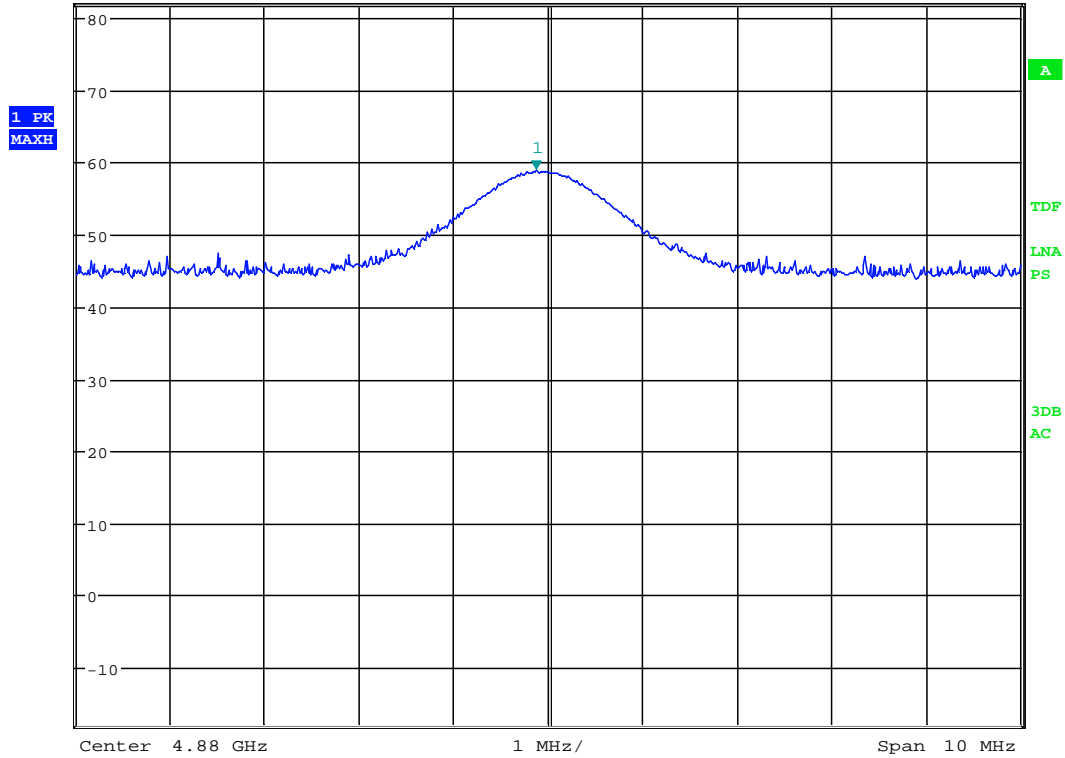


Date: 7.NOV.2012 13:19:36

Radiated Emissions, 4804MHz, 2402MHz, EUT V, VP



Ref 82 dB μ V/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 59.00 dB μ V/m
 SWT 20 ms 4.879871795 GHz

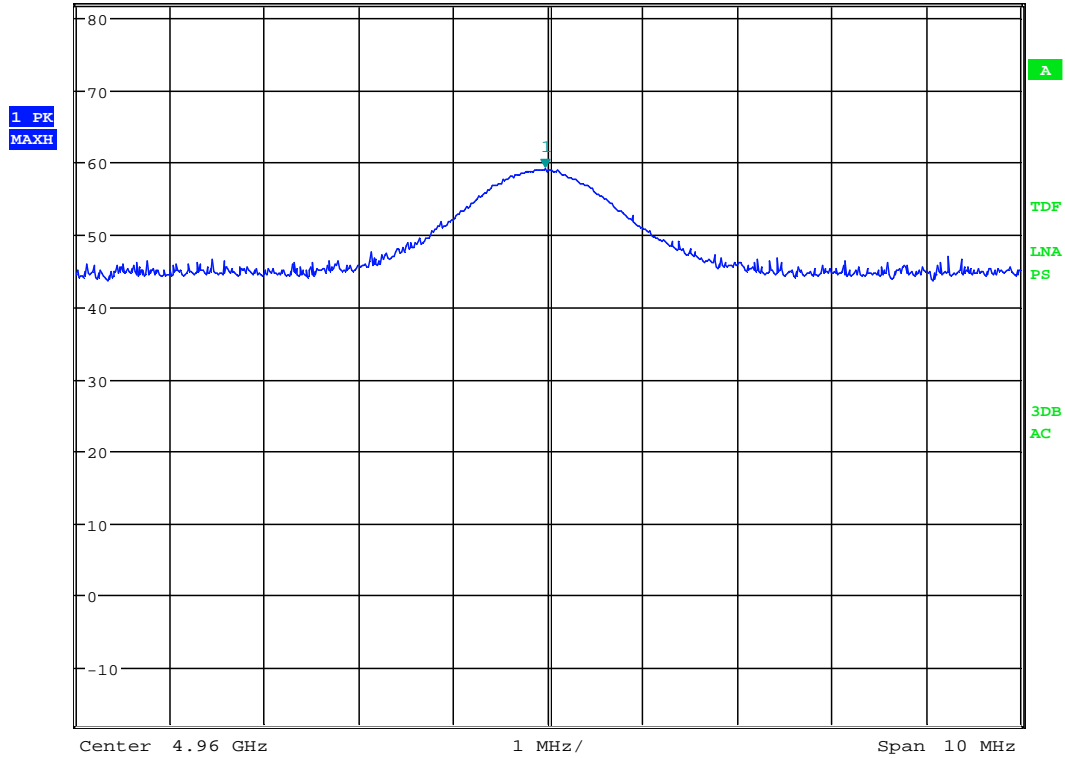


Date: 7.NOV.2012 13:21:31

Radiated Emissions, 4880MHz, 2440MHz, EUT V, HP



Ref 82 dB μ V/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 59.12 dB μ V/m
 SWT 20 ms 4.959967949 GHz

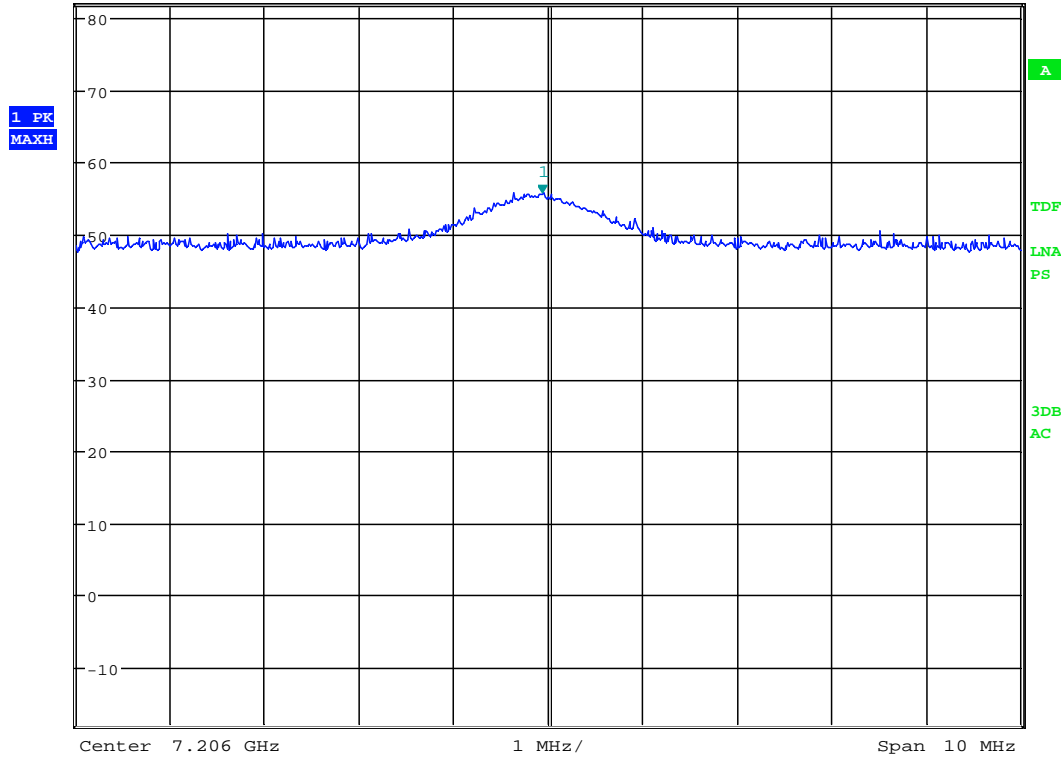


Date: 7.NOV.2012 13:23:22

Radiated Emissions, 4960MHz, 2480MHz, EUT V, HP



Ref 82 dB μ V/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 55.73 dB μ V/m
 SWT 20 ms 7.205935897 GHz

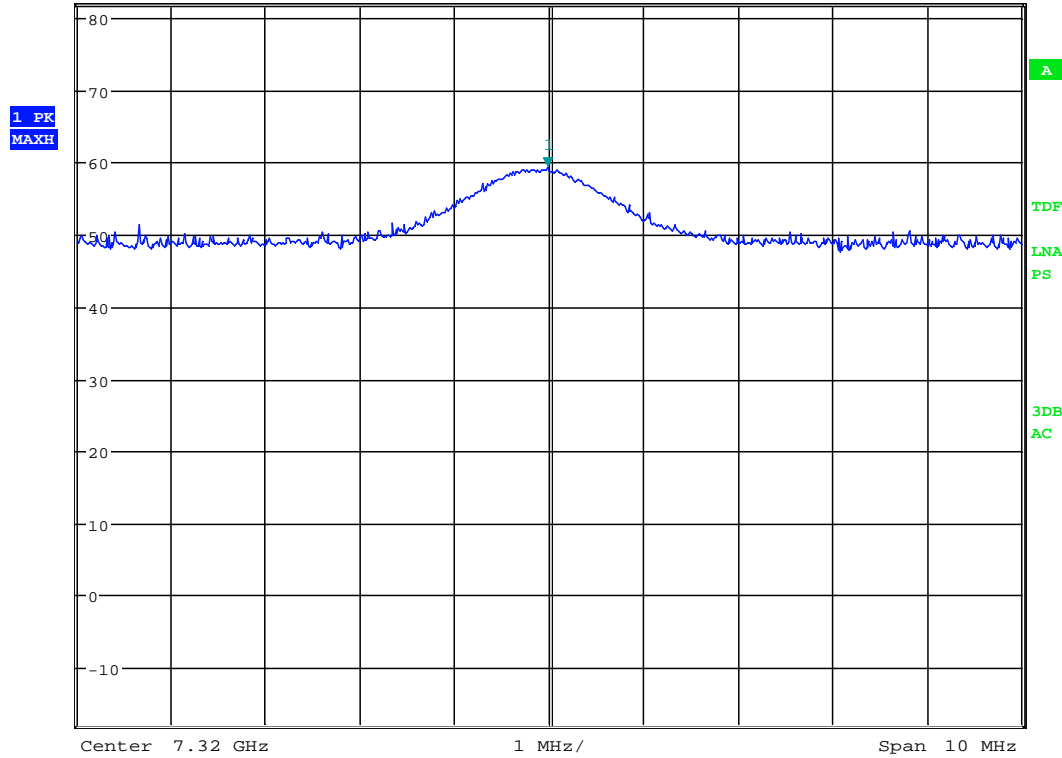


Date: 7.NOV.2012 13:58:42

Radiated Emissions, 7206MHz, 2402MHz, EUT H1, VP



Ref 82 dB μ V/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 59.39 dB μ V/m
 SWT 20 ms 7.319983974 GHz

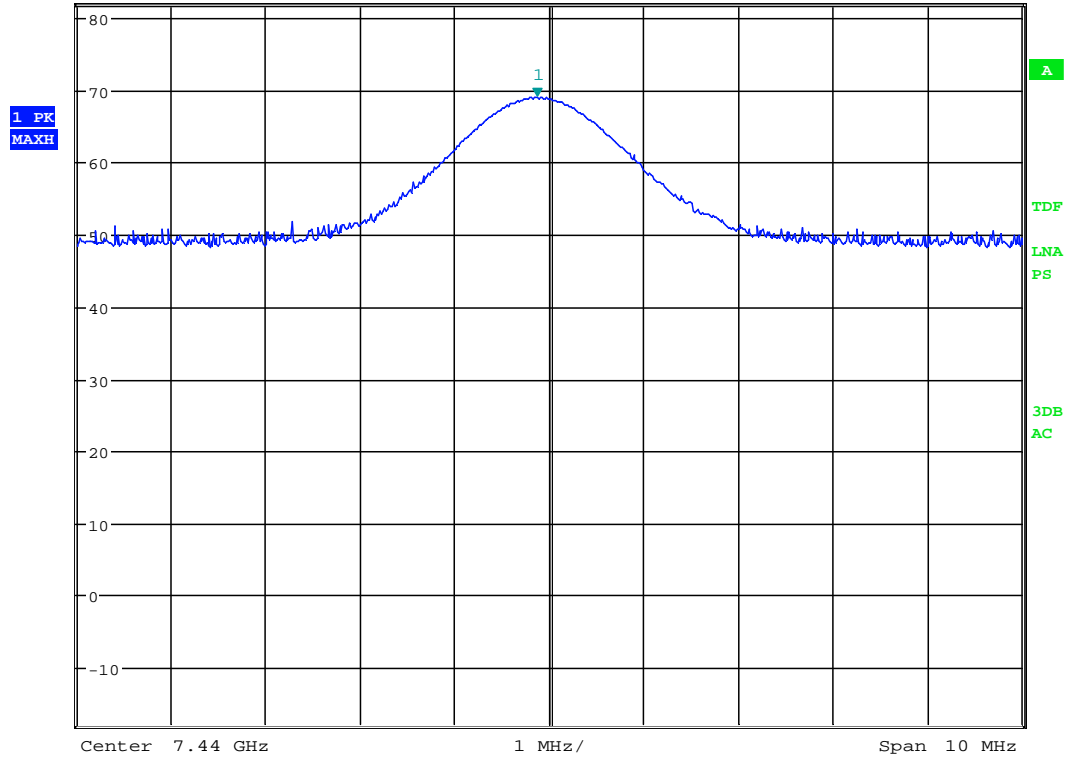


Date: 7.NOV.2012 13:56:44

Radiated Emissions, 7320MHz, 2440MHz, EUT H2, VP

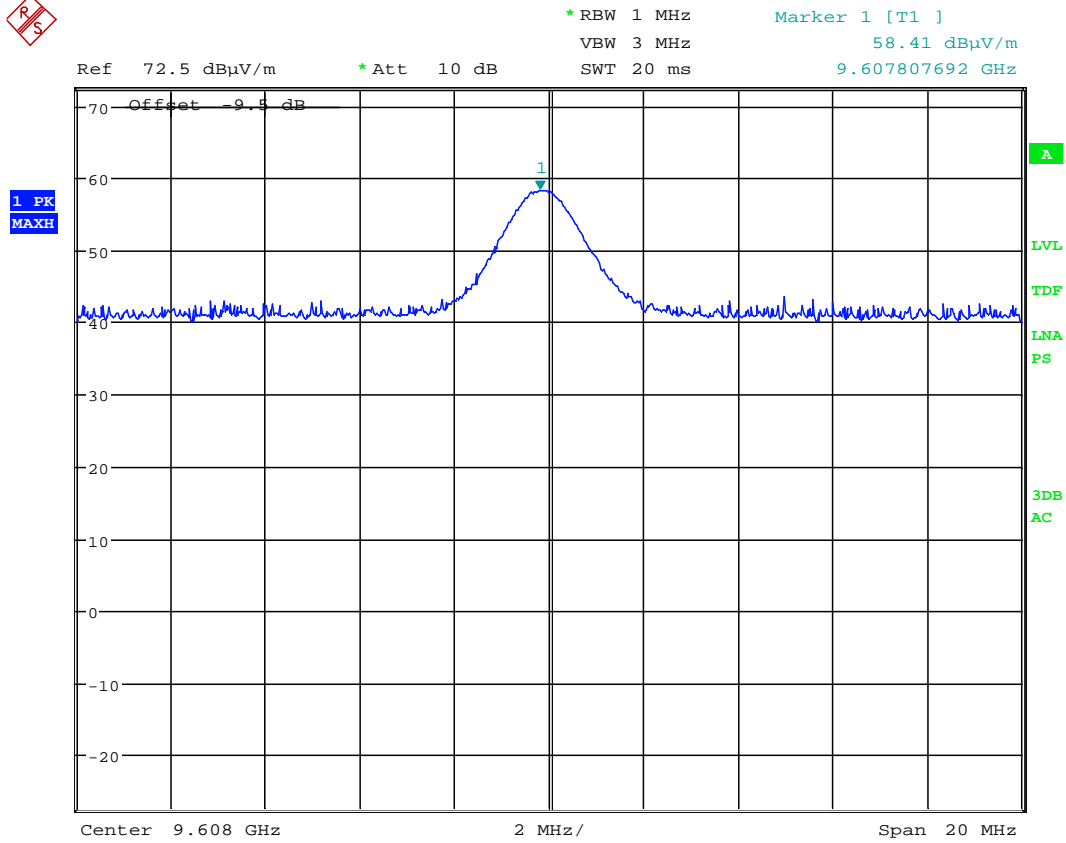


Ref 82 dB μ V/m *Att 10 dB *RBW 1 MHz Marker 1 [T1]
VBW 3 MHz 69.11 dB μ V/m
SWT 20 ms 7.439871795 GHz



Date: 7.NOV.2012 13:50:19

Radiated Emissions, 7440MHz, 2480MHz, EUT H2, VP

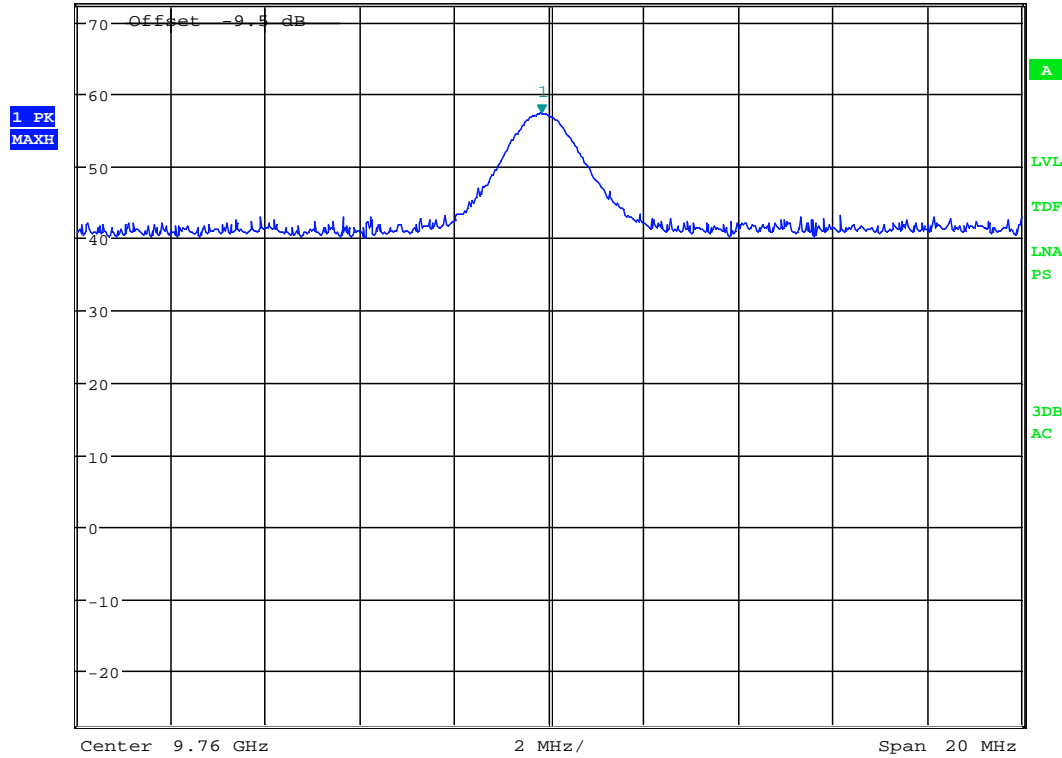


Date: 7.NOV.2012 15:20:47

Radiated Emissions, 9608MHz, 2402MHz, EUT H2, VP, @1m

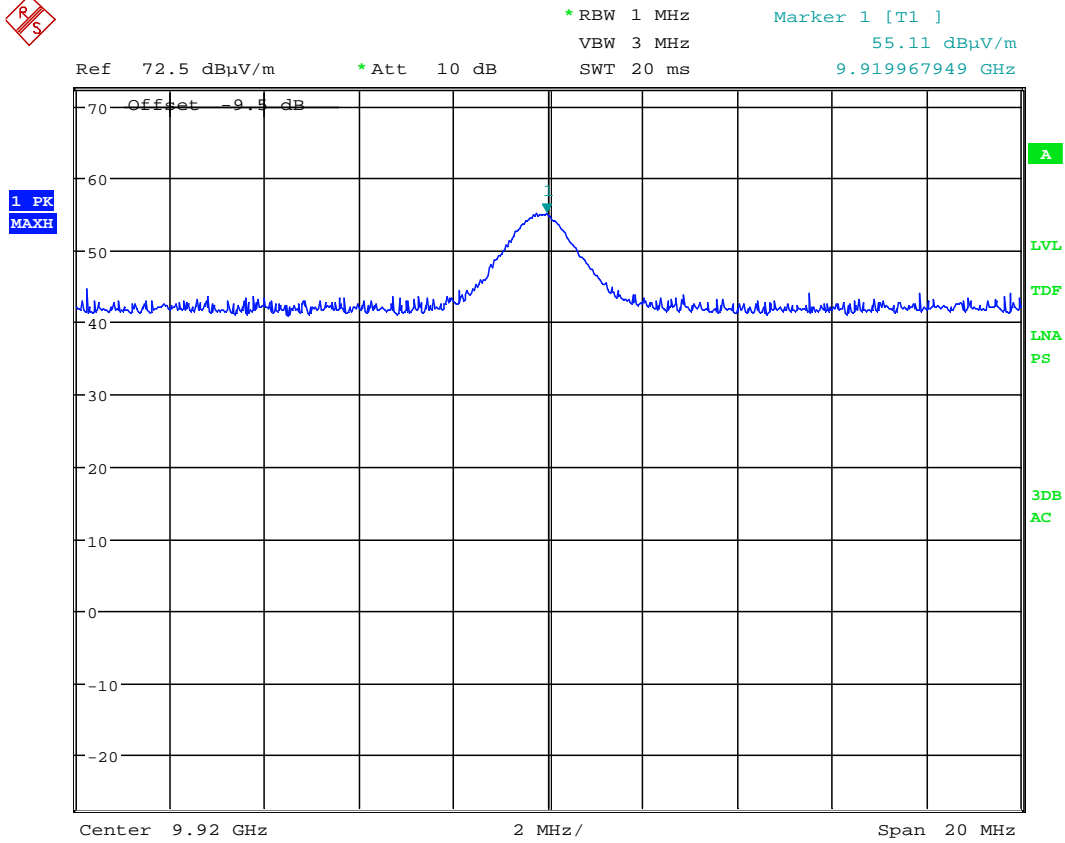


Ref 72.5 dBµV/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 57.29 dBµV/m
 SWT 20 ms 9.759839744 GHz



Date: 7.NOV.2012 15:18:56

Radiated Emissions, 9760MHz, 2440MHz, EUT H2, VP, @1m

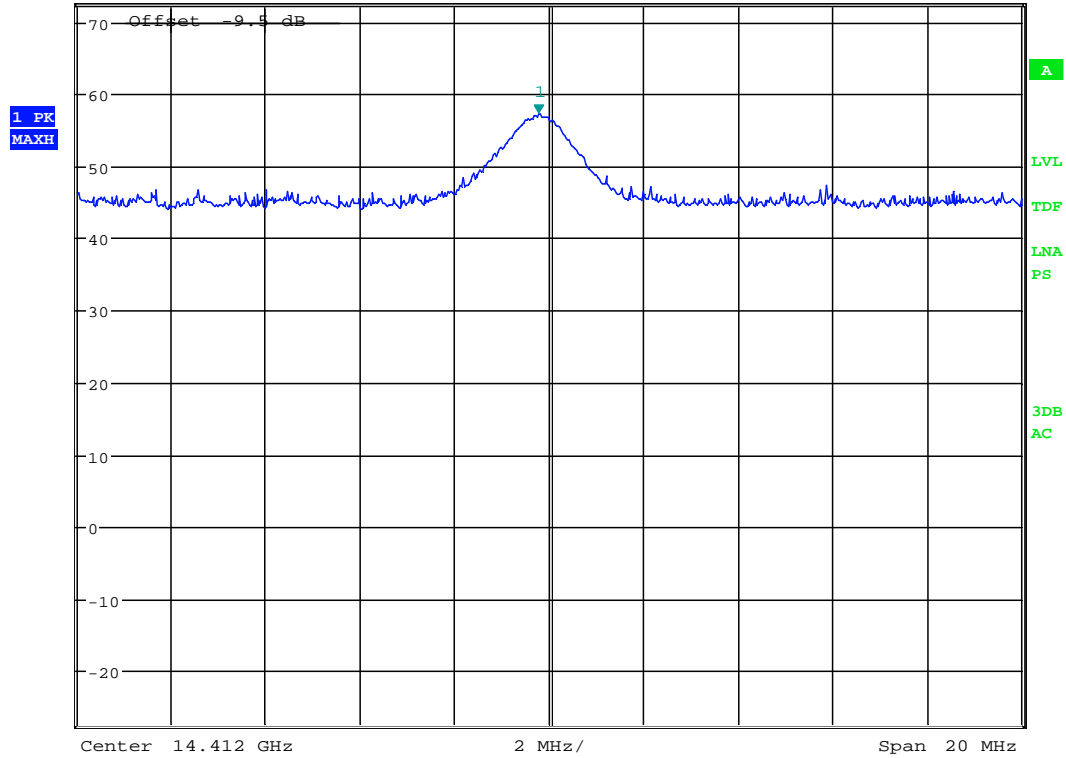


Date: 7.NOV.2012 14:50:03

Radiated Emissions, 9920MHz, 2480MHz, EUT H2, VP, @1m



Ref 72.5 dBµV/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 57.26 dBµV/m
 SWT 20 ms 14.411775641 GHz

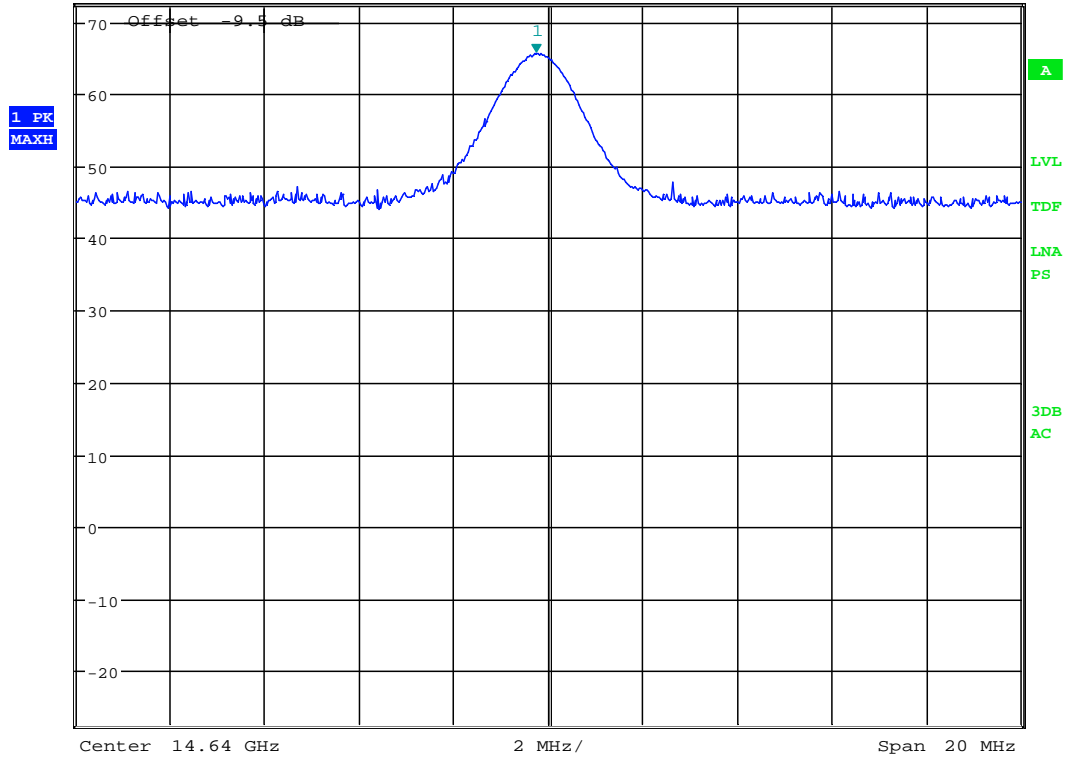


Date: 7.NOV.2012 15:48:44

Radiated Emissions, 14412MHz, 2402MHz, EUT H2, VP, @1m



Ref 72.5 dBµV/m *Att 10 dB *RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 65.69 dBµV/m
 SWT 20 ms 14.639743590 GHz

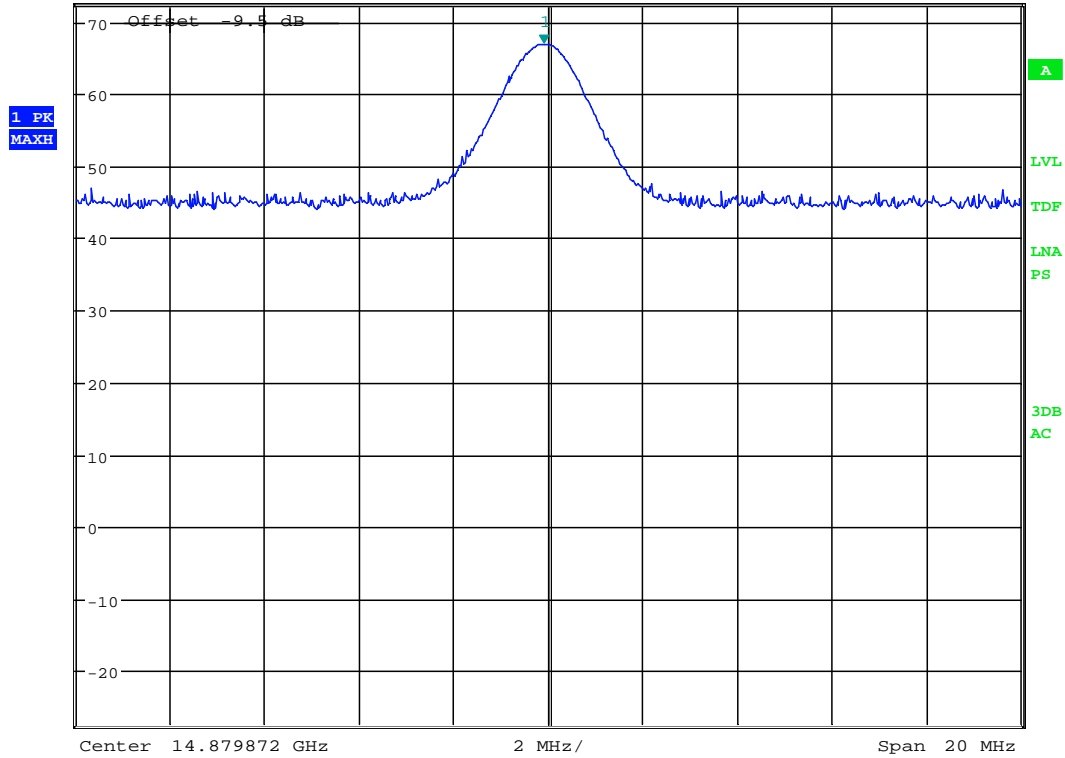


Date: 7.NOV.2012 15:44:39

Radiated Emissions, 14640MHz, 2440MHz, EUT H2, VP, @1m



Ref 72.5 dBµV/m *Att 10 dB *RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 67.03 dBµV/m
 SWT 20 ms 14.879775846 GHz

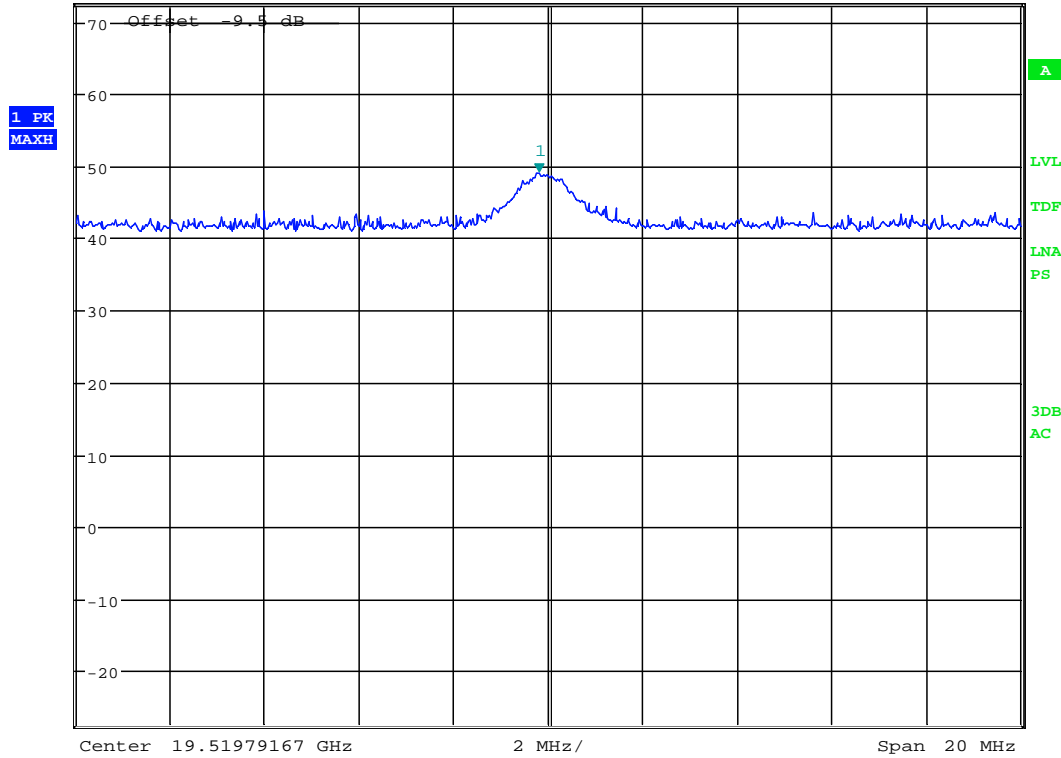


Date: 7.NOV.2012 15:35:03

Radiated Emissions, 14880MHz, 2402MHz, EUT H2, VP, @1m



Ref 72.5 dBµV/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 49.05 dBµV/m
 SWT 20 ms 19.519599359 GHz

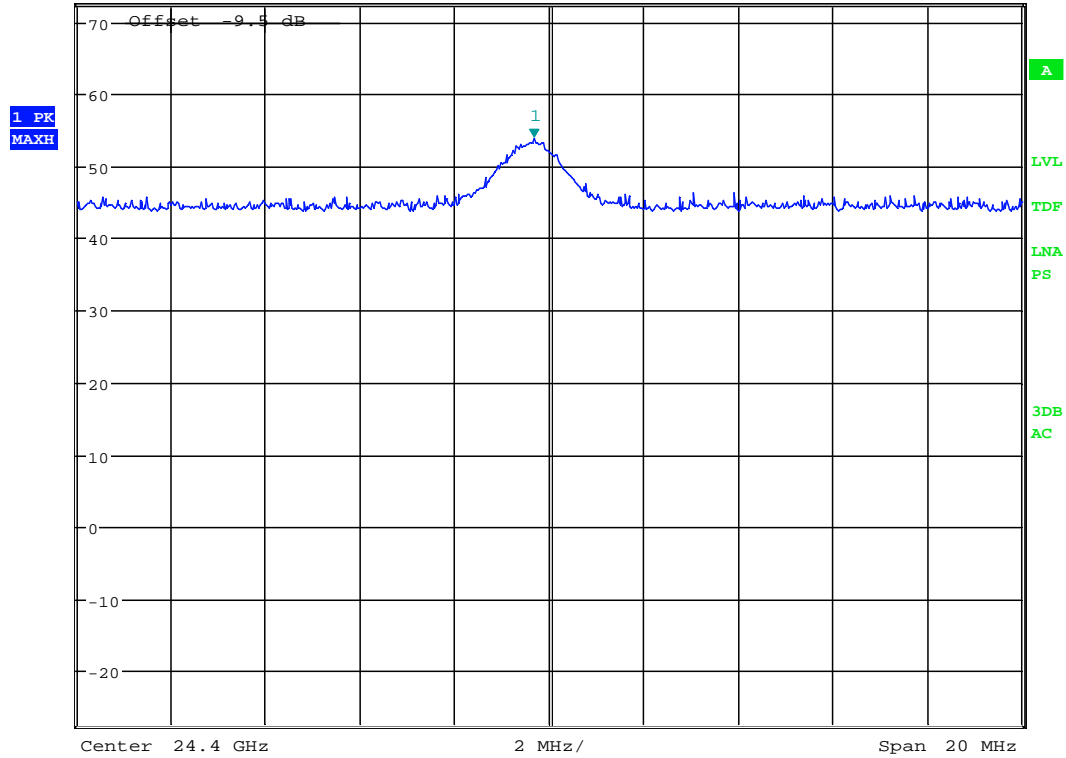


Date: 7.NOV.2012 16:21:10

Radiated Emissions, 19520MHz, 2440MHz, EUT V, HP, @1m



Ref 72.5 dB μ V/m * Att 10 dB * RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 54.00 dB μ V/m
 SWT 20 ms 24.399679487 GHz



Date: 7.NOV.2012 16:23:09

Radiated Emissions, 24400MHz, 2440MHz, EUT V, VP, @1m

5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	FSW26	Spectrum Analyzer	Rohde & Schwarz	LR 1640	2012.06	2013.06
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2012.06	2013.06
3	4768-10	Attenuator	Narda	LR 1356	Cal b4 use	
4	6HC3000/18000	Highpass Filter	Trilithic	LR 1614	Cal b4 use	
5	JB3	BiLog Antenna	Sunol Sciences	N-4525	2012.10.11	2015.10.11
6	LNA6900	Preamplifier	Teseq	LR 1593	2011.11.24	2013.11.24
7	3115	Horn Antenna	EMCO	LR 1330	2010.08.05	2013.08.05
8	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2012-09	2013-09
9	643	Antenna Horn	Narda	LR 093	2009.01.26	2014.01.26
10	PM7320X	Antenna Horn	Sivers Lab	LR 102	2009.01.26	2014.01.26
11	DBF-520-20	Antenna Horn	Systron Donner	LR 100	2009.01.26	2014.01.26
12	638	Antenna Horn	Narda	LR 1480	2010.06.17	2013.06.17
14	HFH2-Z2	Loop Antenna	Rohde & Schwarz	LR 285	2010.10.08	2013.10.08
15	Model 87V	Multimeter	Fluke	LR 1599	2012.10.29	2014.10.29
16	B300D	Power Supply	Oltronics	LR 1000	Cal b4 use	

6 BLOCK DIAGRAM

6.1 Test Site Radiated Emission

