

## Test Report

<b>Product</b>	BT Transceiver in UPCS Base Station	
<b>Name and address of the applicant</b>	Panasonic Corporation of North America	
<b>Name and address of the manufacturer</b>	Panasonic System Networks Co., Ltd. 1-62, 4-chome, Minoshima, Hakata-ku Fukuoka 812-8531, Japan	
<b>Model</b>	KX-PRL260	
<b>Rating</b>	120 V AC (Mains)	
<b>Trademark</b>	Panasonic	
<b>Serial number</b>	/	
<b>Additional information</b>	Bluetooth 2.1 +EDR, 3.0 +HS	
<b>Tested according to</b>	<b>FCC Part 15.247</b> Frequency Hopping Transmitters <b>Industry Canada RSS-210, Issue 8</b> Low Power Licence-Exempt Radiocommunications Devices	
<b>Order number</b>	248567	
<b>Tested in period</b>	2013.12.12 to 2014.01.06	
<b>Issue date</b>	2014.01.08	
<b>Name and address of the testing laboratory</b>	  Instituttveien 6 Kjeller, Norway	FCC No: 994405 IC OATS: 2040D-1  TEL: (+47) 64 84 57 00 FAX: (+47) 64 84 57 05
	 Prepared by [Frode Sveinsen]	 Approved by [G.Suhanthakumar]
This report shall not be reproduced except in full without the written approval of Nemko. Opinions and interpretations expressed within this report are not part of the current accreditation. This report was originally distributed electronically with digital signatures. For more information contact Nemko.		

## CONTENTS

<b>1</b>	<b>INFORMATION .....</b>	<b>3</b>
1.1	Test Item.....	3
1.2	Test Environment .....	4
1.3	Test Engineer(s) .....	4
1.4	Test Equipment .....	4
<b>2</b>	<b>TEST REPORT SUMMARY .....</b>	<b>5</b>
2.1	General.....	5
2.2	Test Summary .....	6
2.3	Description of modification for Modification Filing .....	6
2.4	Comments .....	6
2.5	Family List Rational .....	6
<b>3</b>	<b>TEST RESULTS.....</b>	<b>7</b>
3.1	Power Line Conducted Emissions.....	7
3.2	Channel Separation and 20dB Bandwidth.....	10
3.3	Pseudorandom Hopping Algorithm.....	16
3.4	Occupancy Time.....	17
3.5	Occupied Bandwidth.....	23
3.6	Peak Power Output .....	26
3.7	Spurious Emissions (Radiated) .....	36
<b>4</b>	<b>LIST OF TEST EQUIPMENT .....</b>	<b>67</b>
<b>5</b>	<b>BLOCK DIAGRAM .....</b>	<b>68</b>
5.1	Power Line Conducted Emission.....	68
5.2	Test Site Radiated Emission .....	68

# 1 INFORMATION

## 1.1 Test Item

Name :	Panasonic
FCC ID :	ACJ96NKX-PRL260
Industry Canada ID :	216A-KXPRL260
Model/version :	KX-PRL260
Serial number :	/
Hardware identity and/or version:	PNLB2284xx (Main PCB)
Software identity and/or version :	SW401
Frequency Range :	2402 - 2480 MHz
Number of Channels :	79
Type of Modulation :	Digital (GFSK, $\pi/4$ -DQPSK, 8DPSK)
User Frequency Adjustment :	None
Conducted Output Power :	0.0077 Watts (Peak)
Type of Power Supply :	AC Adaptor PNLV238
Antenna Connector :	None
Number of Antennas :	1
Antenna Diversity Supported :	No

### Description of Test Item

The EUT is a Bluetooth transceiver in a DECT Base station. This report covers only the BT part.

The Bluetooth transceiver supports BT 2.1 +EDR and BT 3.0 +HS.

### Exposure Evaluation

The EUT is designed to be fixed to a wall etc. and the user manual contains text that it shall be mounted with a separation distance of at least 20 cm from any humans. For the purposes of exposure evaluation this EUT is a mobile or fixed device. 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.

## 1.2 Test Environment

### 1.2.1 *Normal test condition*

Temperature:	20.8 – 23.3 °C
Relative humidity:	27 – 43 %
Normal test voltage:	120 V AC

The values are the limit registered during the test period.

## 1.3 Test Engineer(s)

Frode Sveinsen

## 1.4 Test Equipment

See list of test equipment in clause 5.

## 2 TEST REPORT SUMMARY

### 2.1 General

All measurements are traceable 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.

New Submission

Production Unit

Class II Permissive Change

Pre-production Unit

**DSS** Equipment Code

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".

Nemko Group authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only. Any reproduction of parts of this report requires approval in writing from Nemko Group.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko Group accepts no responsibility for damages suffered by any third party as a result of decisions made or actions based on this report.

## 2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-210 Issue 8 reference	Result
Supply Voltage Variations	15.31(e)	8 (RSS-GEN)	Complies
Number of Operating Frequencies	15.31(m)	A8.1	Complies
Antenna Requirement	15.203	7.1.4 (RSS-GEN)	Complies
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2.2 (RSS-GEN)	Complies
Channel Separation	15.247(a)(1)	A8.1	Complies
Pseudorandom Hopping Algorithm	15.247(a)(1)	A8.1	Complies
Time of Occupancy	15.247(a)(1)(iii)	A8.1	Complies
Occupied Bandwidth	15.247(a)(1)	A8.1	Complies
Minimum 6 dB Bandwidth	15.247(a)(2)	A8.2	N/A <sup>2</sup>
Peak Power Output	15.247(b)	A8.4	Complies
Power Spectral Density	15.247(d)	A8.2	N/A <sup>2</sup>
Spurious Emissions (Antenna Conducted)	15.247(c)	A8.5	N/A <sup>1</sup>
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	A8.5	Complies

<sup>1</sup> The tested equipment has integrated antennas only

<sup>2</sup> Not Applicable for FHSS equipments

## 2.3 Description of modification for Modification Filing

Not applicable.

## 2.4 Comments

The measurements were done with the EUT powered by 120 V AC. It was checked that power variations between 85% and 115% did not have any influence on the measurements.

All ports were populated during spurious emission measurements.

## 2.5 Family List Rational

Not Applicable.

### 3 TEST RESULTS

#### 3.1 Power Line Conducted Emissions

Para. No.: 15.207 (a)

Test Performed By: Thomas Dangle	Date of Test: 16 Dec 2013
----------------------------------	---------------------------

Measurement procedure: ANSI C63.4-2009 using 50  $\mu$ H/50 ohms LISN.

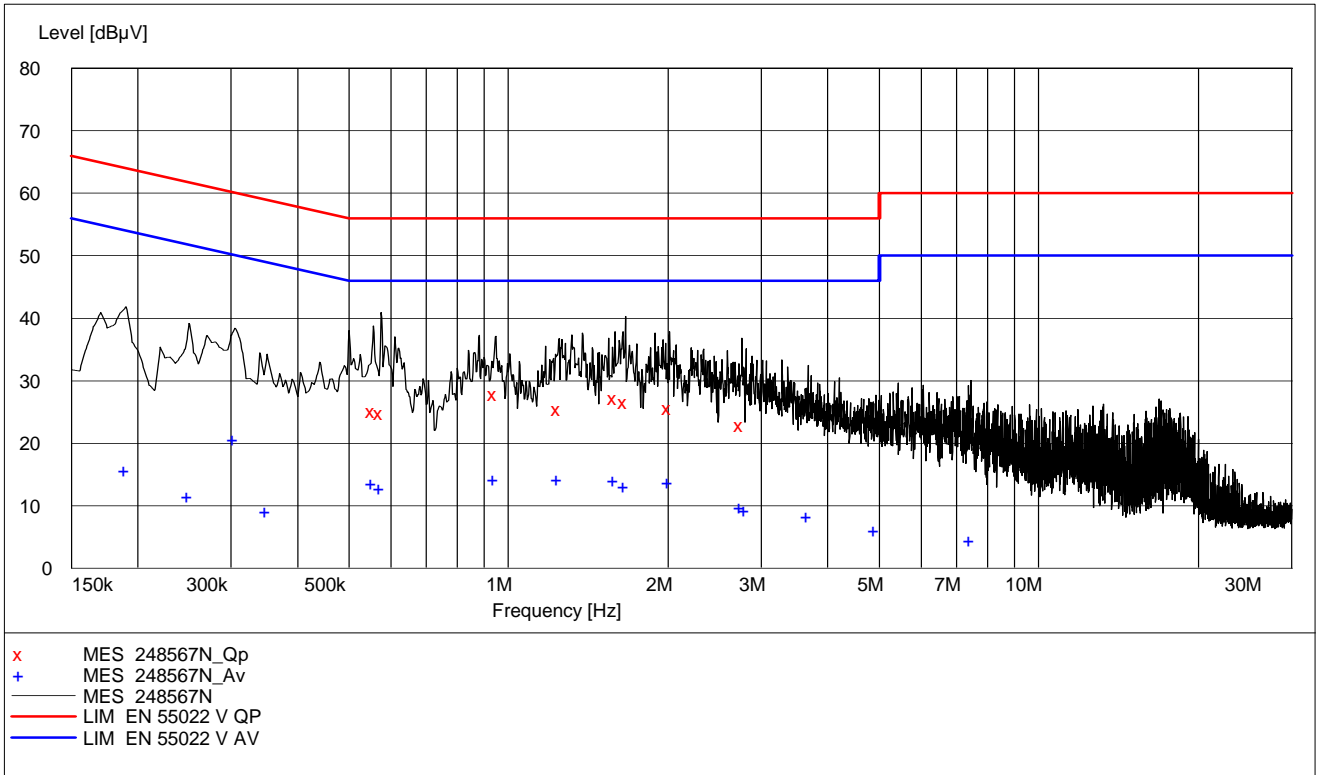
Test Results: Complies

Measurement Data: See attached graph, (Peak detector).

Highest measured value (L1 and N):

**AC Adaptor PNLV238 (UC):**

Frequency [MHz]	Level [dBuV]	Af [dB]	Limit [dBuV]	Margin [dB]	Det	Position	Verdict [Pass/Fail]
0.555000	25.10	10.20	56.00	30.90	QP	L1	Pass
0.575000	24.80	10.20	56.00	31.20	QP	L1	Pass
0.945000	27.90	10.20	56.00	28.10	QP	N	Pass
1.245000	25.50	10.20	56.00	30.50	QP	L1	Pass
1.590000	27.30	10.30	56.00	28.70	QP	N	Pass
1.665000	26.60	10.30	56.00	29.40	QP	N	Pass
2.015000	25.70	10.20	56.00	30.30	QP	L1	Pass
2.755000	23.00	10.30	56.00	33.00	QP	N	Pass
0.190000	15.70	10.10	54.00	38.30	AV	N	Pass
0.250000	11.60	10.10	51.80	40.20	AV	L1	Pass
0.305000	20.70	10.10	50.10	29.40	AV	L1	Pass
0.350000	9.10	10.20	49.00	39.90	AV	N	Pass
0.555000	13.60	10.20	46.00	32.40	AV	L1	Pass
0.575000	12.80	10.20	46.00	33.20	AV	L1	Pass
0.945000	14.20	10.20	46.00	31.80	AV	N	Pass
1.245000	14.20	10.20	46.00	31.80	AV	L1	Pass
1.590000	14.10	10.30	46.00	31.90	AV	N	Pass
1.665000	13.10	10.30	46.00	32.90	AV	N	Pass
2.015000	13.90	10.20	46.00	32.10	AV	L1	Pass
2.755000	9.70	10.30	46.00	36.30	AV	N	Pass
2.805000	9.30	10.30	46.00	36.70	AV	L1	Pass
3.675000	8.30	10.30	46.00	37.70	AV	L1	Pass
4.935000	6.20	10.40	46.00	39.80	AV	N	Pass
7.460000	4.40	10.50	50.00	45.60	AV	N	Pass



**AC Adaptor PNLV238 (UC)**

Plot shows maximum of Phase L1 and N

### 3.2 Channel Separation and 20dB Bandwidth

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

Test Results: **Complies**

**Measurement Data:**

Channel Separation: 1.000 MHz

20 dB Bandwidth (kHz)			
Modulation	2402 MHz	2442 MHz	2480 MHz
GFSK (DH5)	925	923	923
2-EDR (2-DH5)	1261	1311	1309
3-EDR (3-DH5)	1261	1267	1267

See attached plots

Channel Separation nominal value: 1.000 MHz

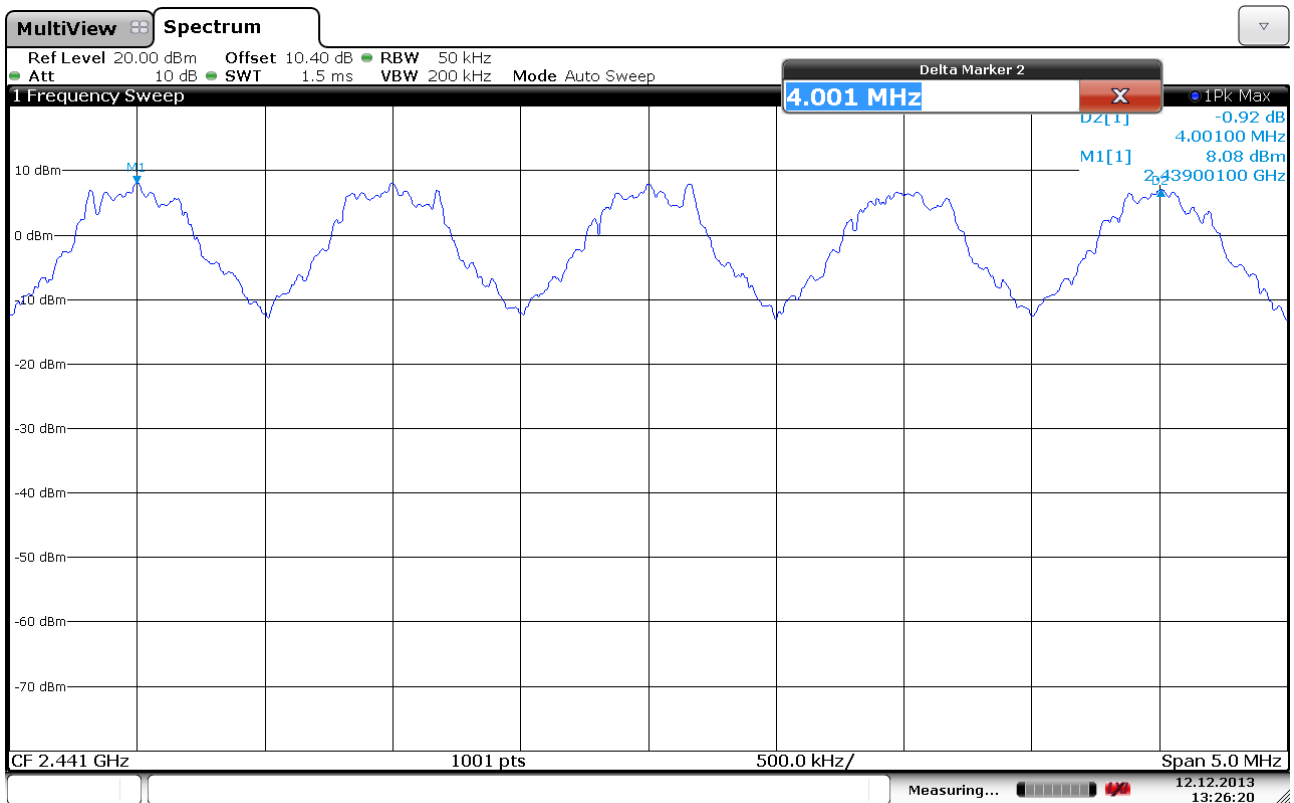
**Requirement:**

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.

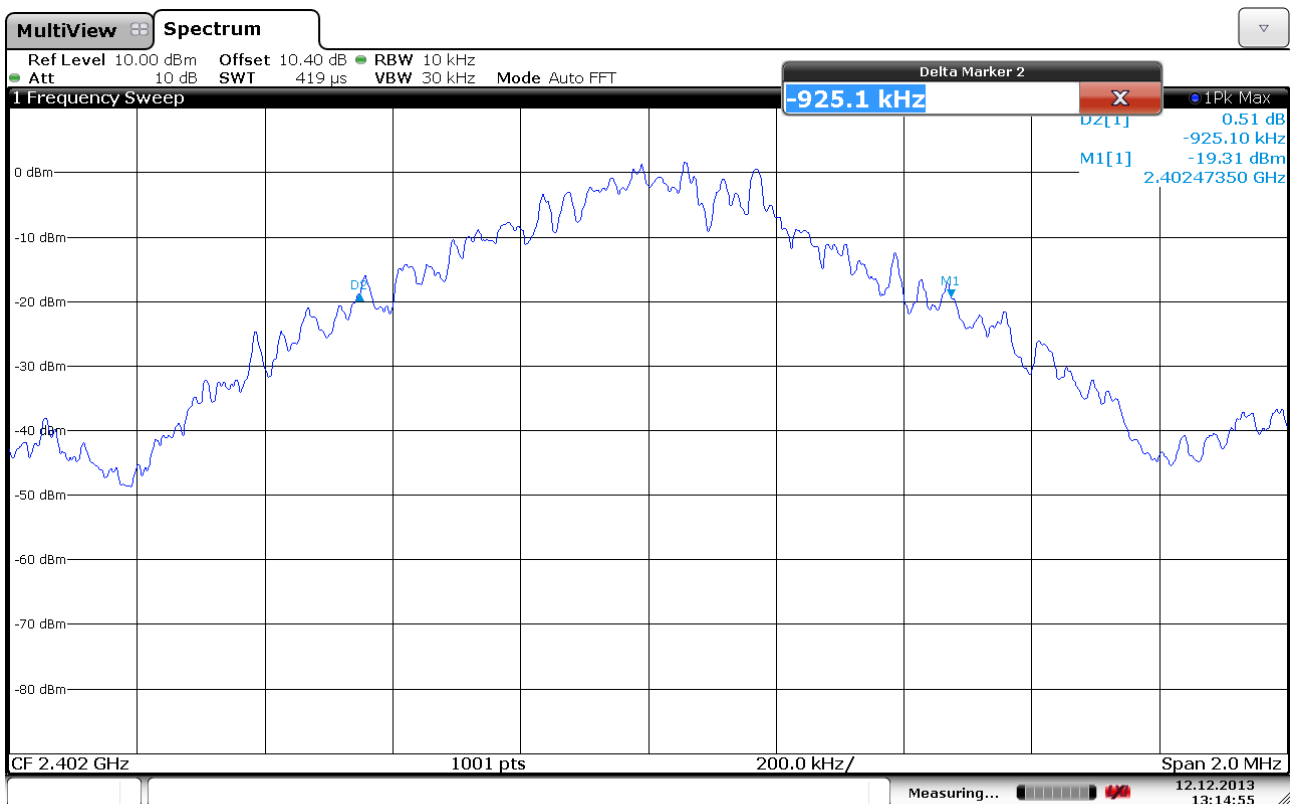
or:

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.

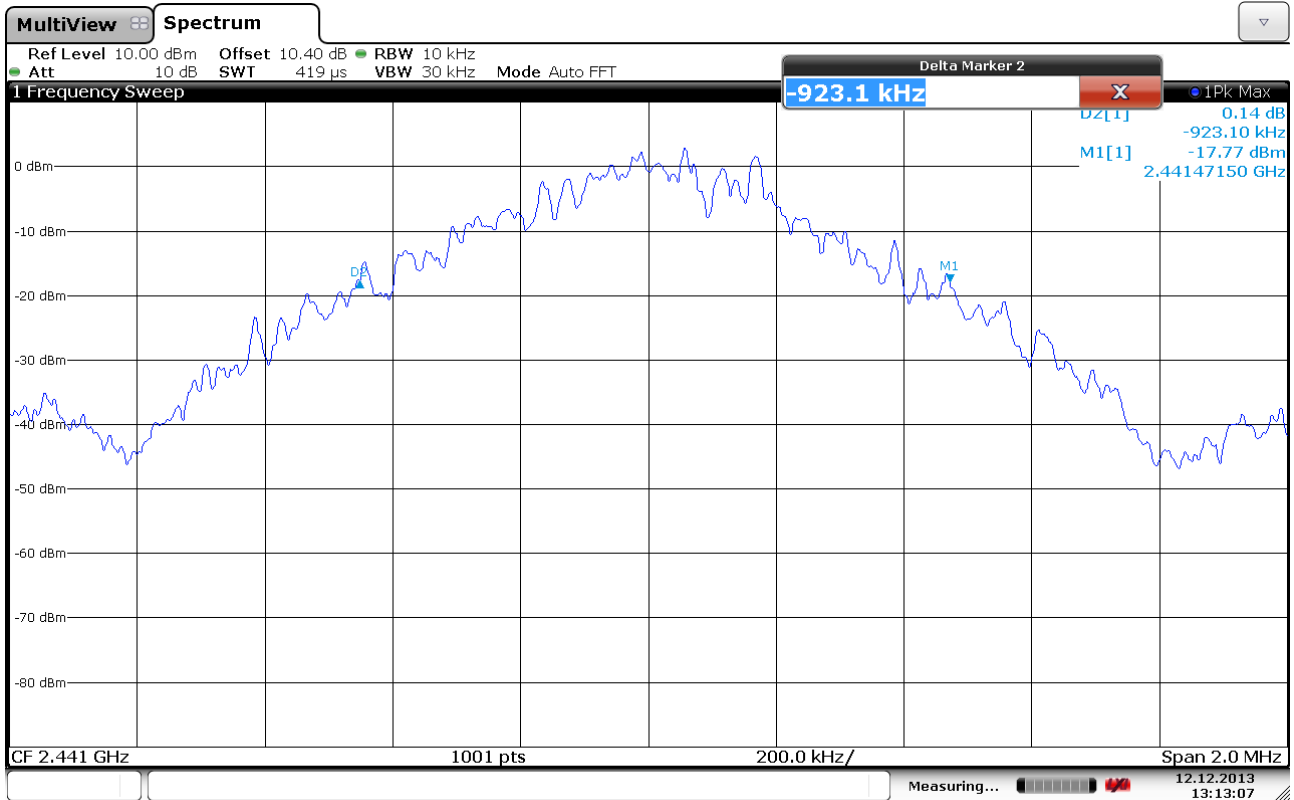
No requirements for Digital Transmission Systems.



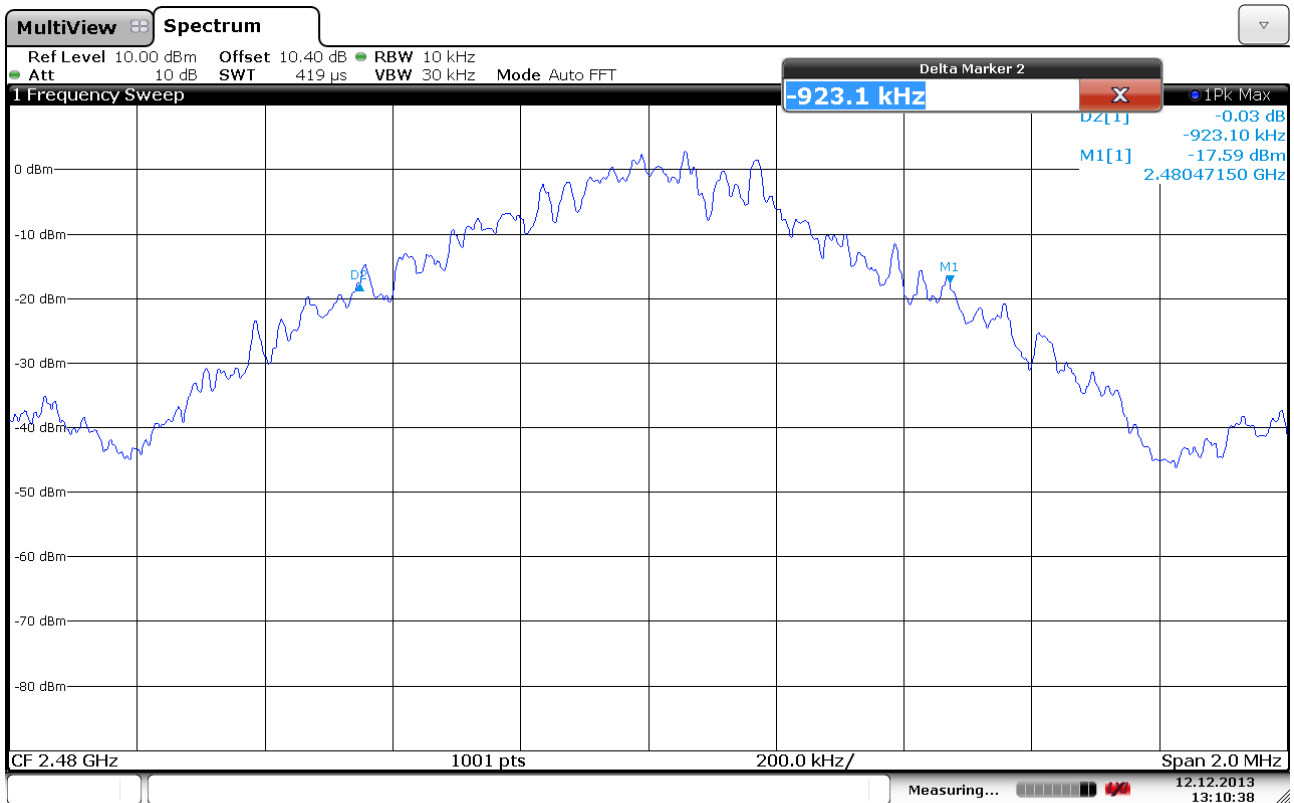
### Channel Separation



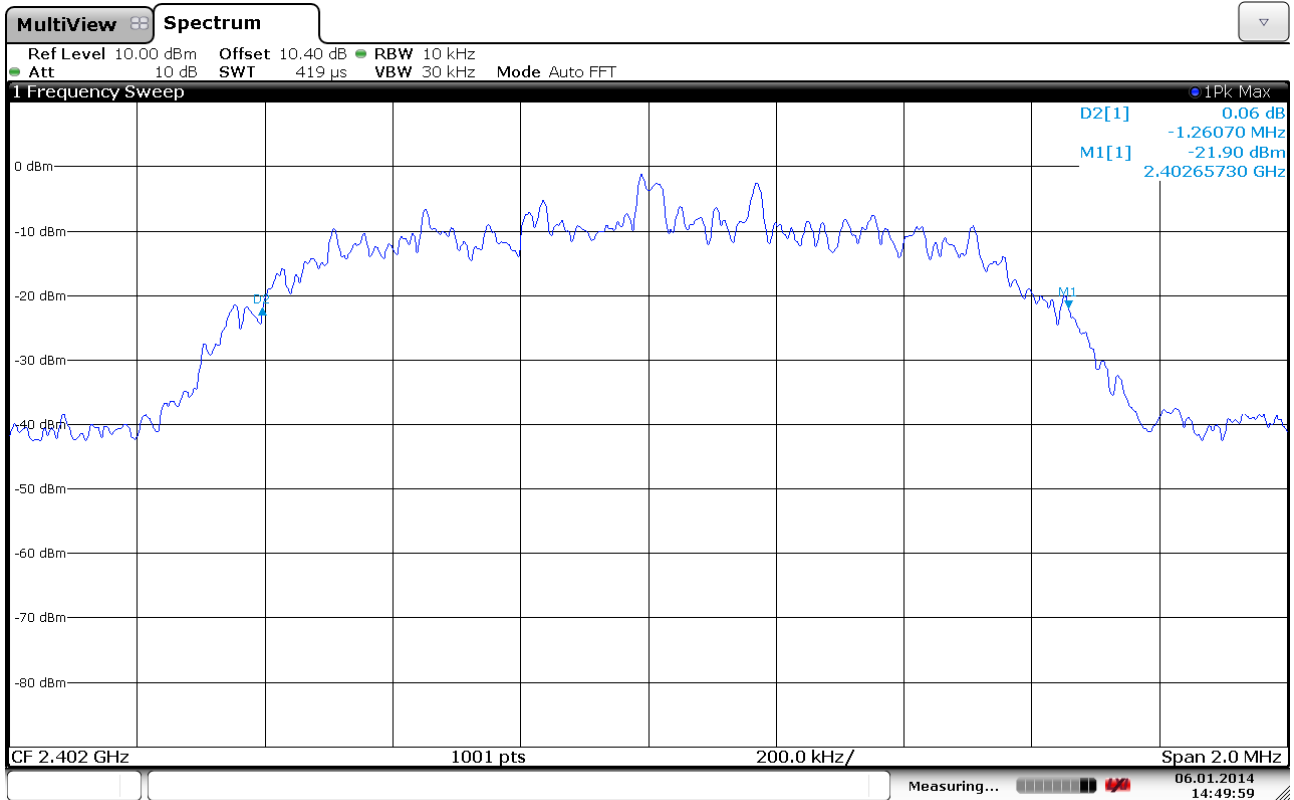
### 20dB Bandwidth, 2402MHz, DH5



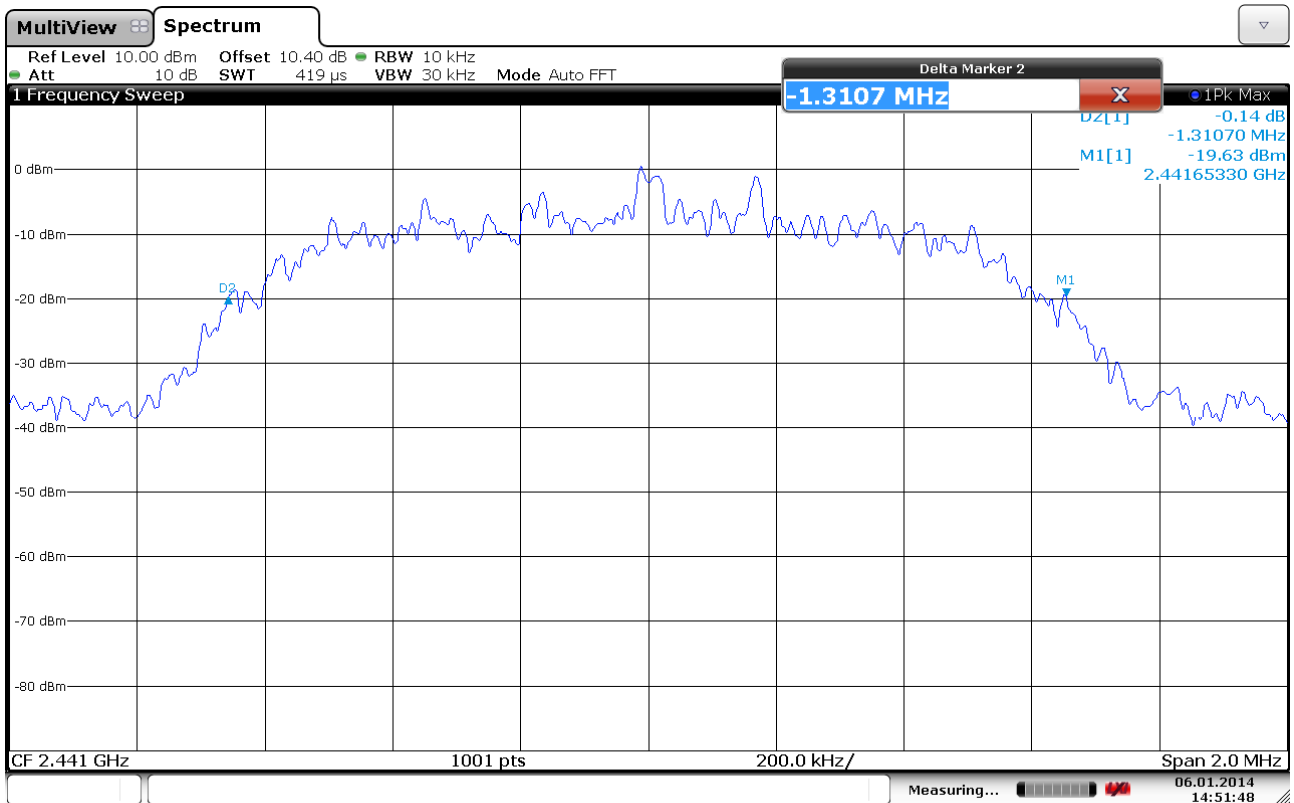
20dB Bandwidth, 2441MHz, DH5



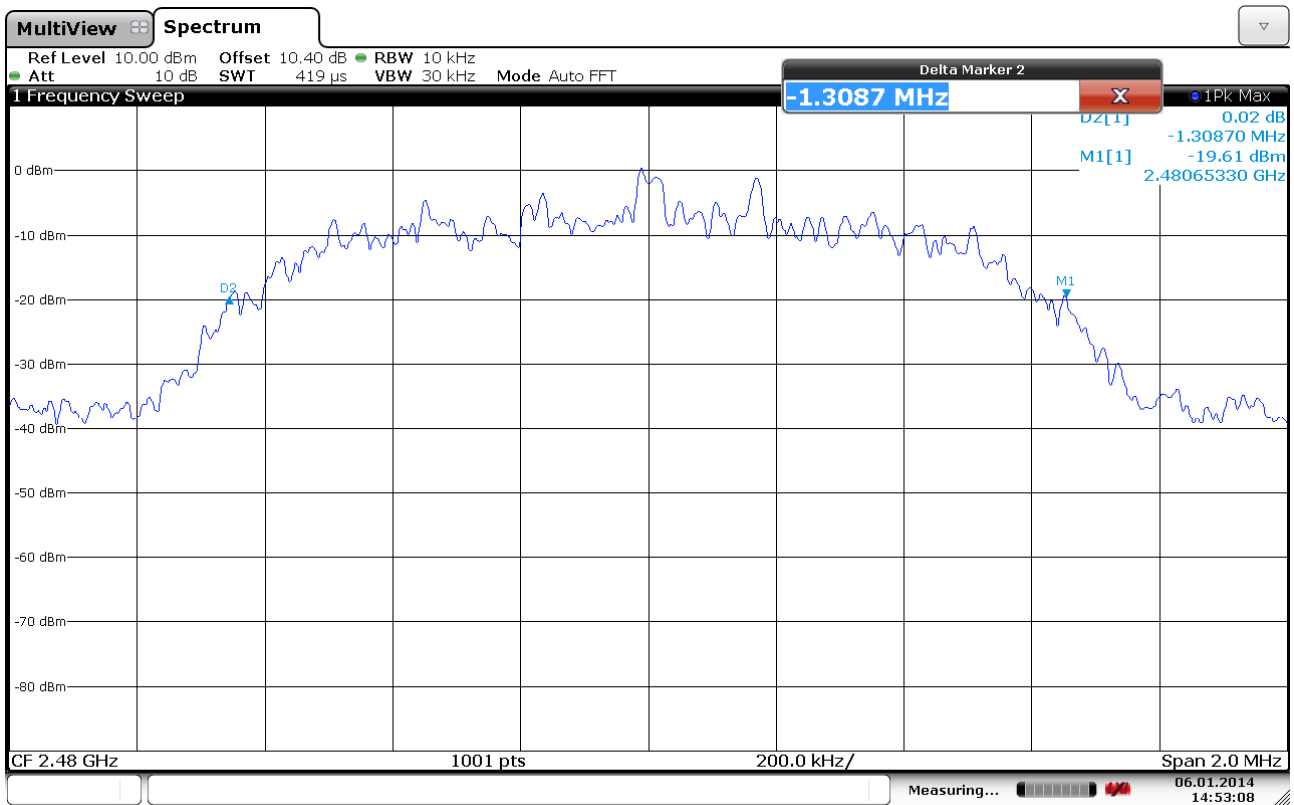
20dB Bandwidth, 2480MHz, DH5



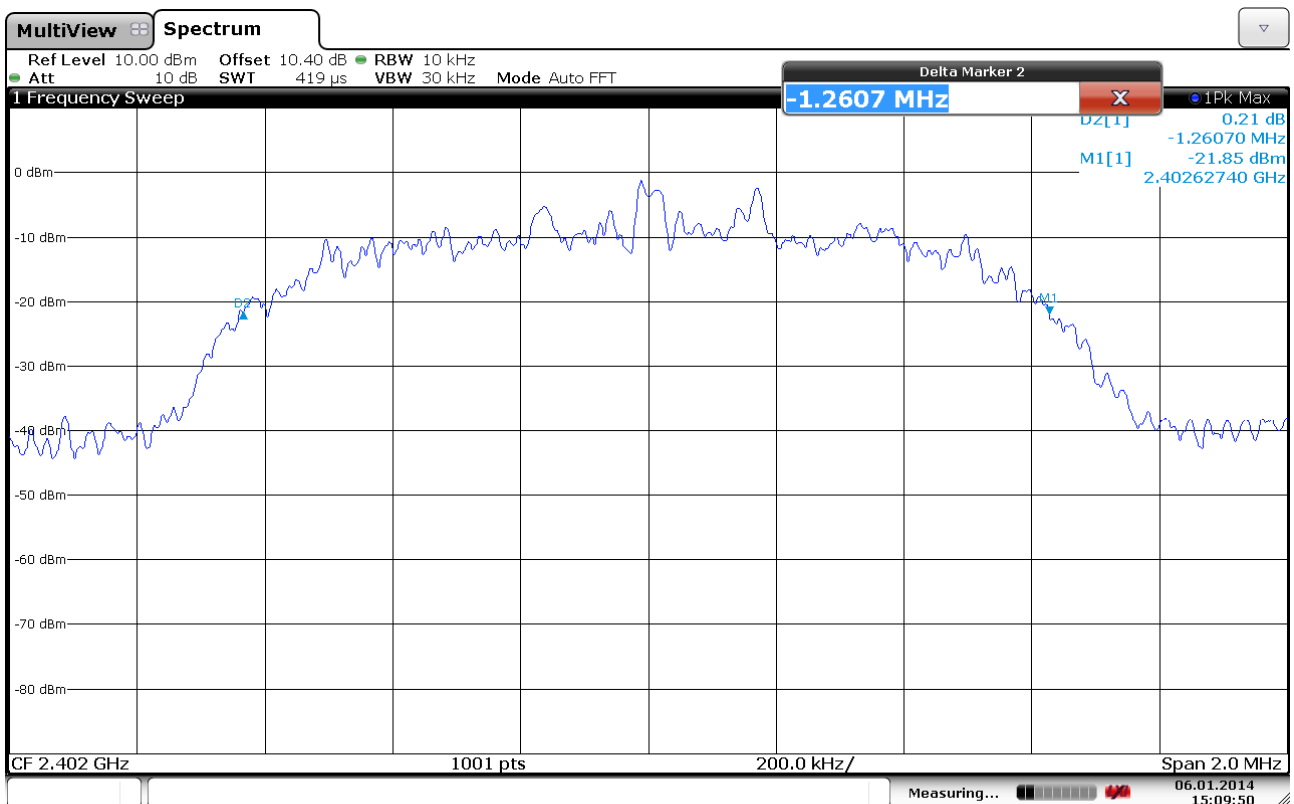
20dB Bandwidth, 2402MHz, 2-DH5



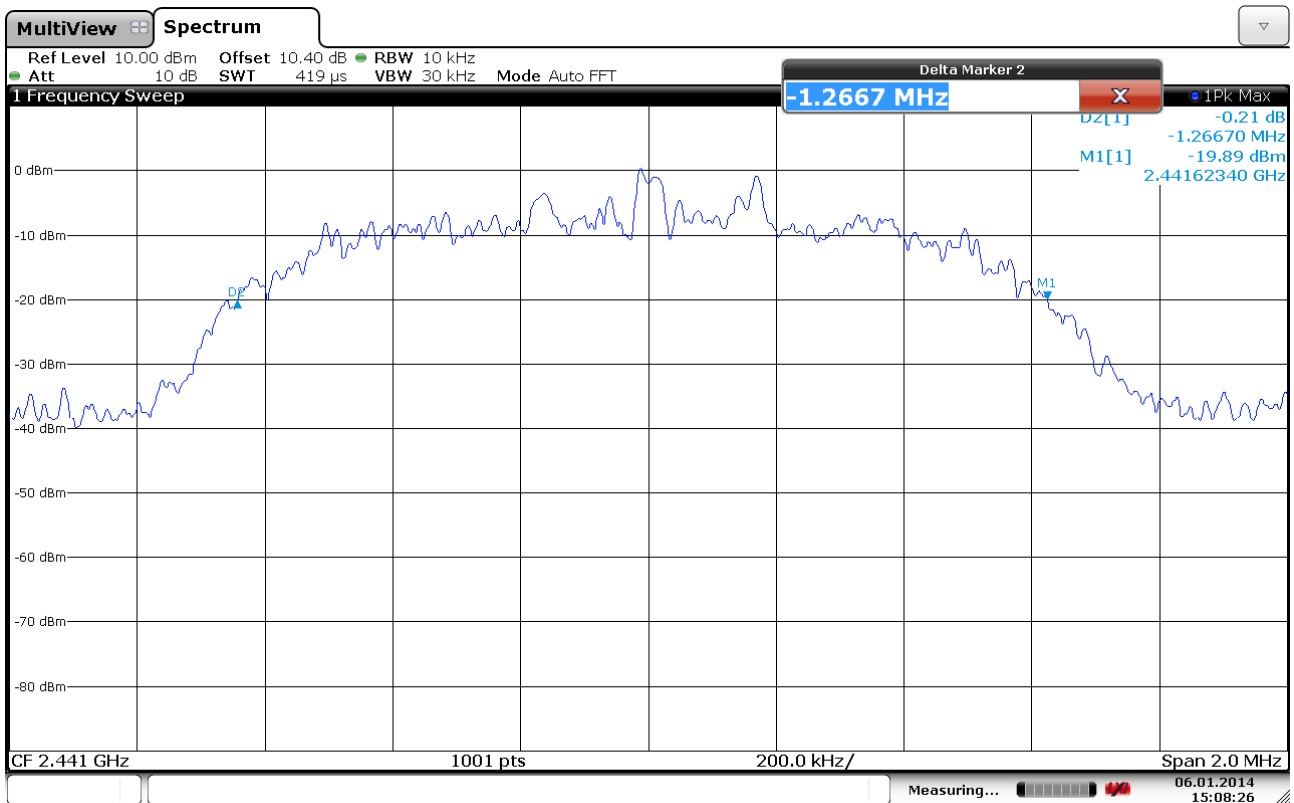
20dB Bandwidth, 2441MHz, 2-DH5



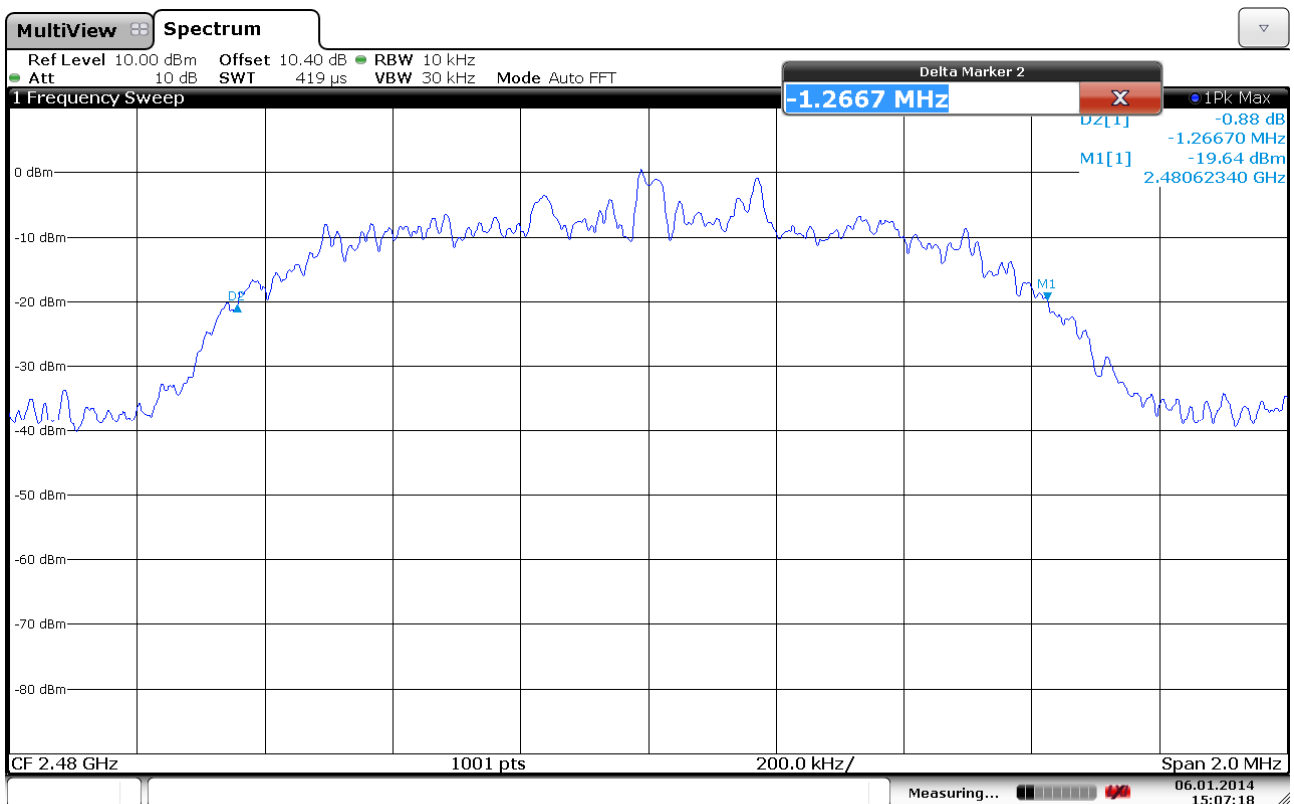
20dB Bandwidth, 2480MHz, 2-DH5



20dB Bandwidth, 2402MHz, 3-DH5



20dB Bandwidth, 2441MHz, 3-DH5



20dB Bandwidth, 2480MHz, 3-DH5

### 3.3 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.

### 3.4 Occupancy Time

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

Test Results: **Complies**

**Measurement Data:**

Minimum Number of RF Channels:	20
Maximum Number of RF Channels:	79
Maximum Length of RF Burst pr. channel	2.93 ms
Time between RF Burst on same RF Channel	75.0 ms (20 ch)
	296.25 ms (79 ch)
Time of Occupancy (20 and 79 ch mode)	312.5 ms

Max Occupancy Time is with 2-DH5 burst.

20 Ch Mode:

Time between RF burst on same channel:  $3.75 \times 20 \text{ ms} = 75.0 \text{ ms}$

Time of occupancy:  $(2.93 \times 400 \times 20) / 75.0 = 312.5 \text{ ms}$

79 Ch Mode:

Time between RF burst on same channel:  $3.75 \times 79 \text{ ms} = 296.25 \text{ ms}$

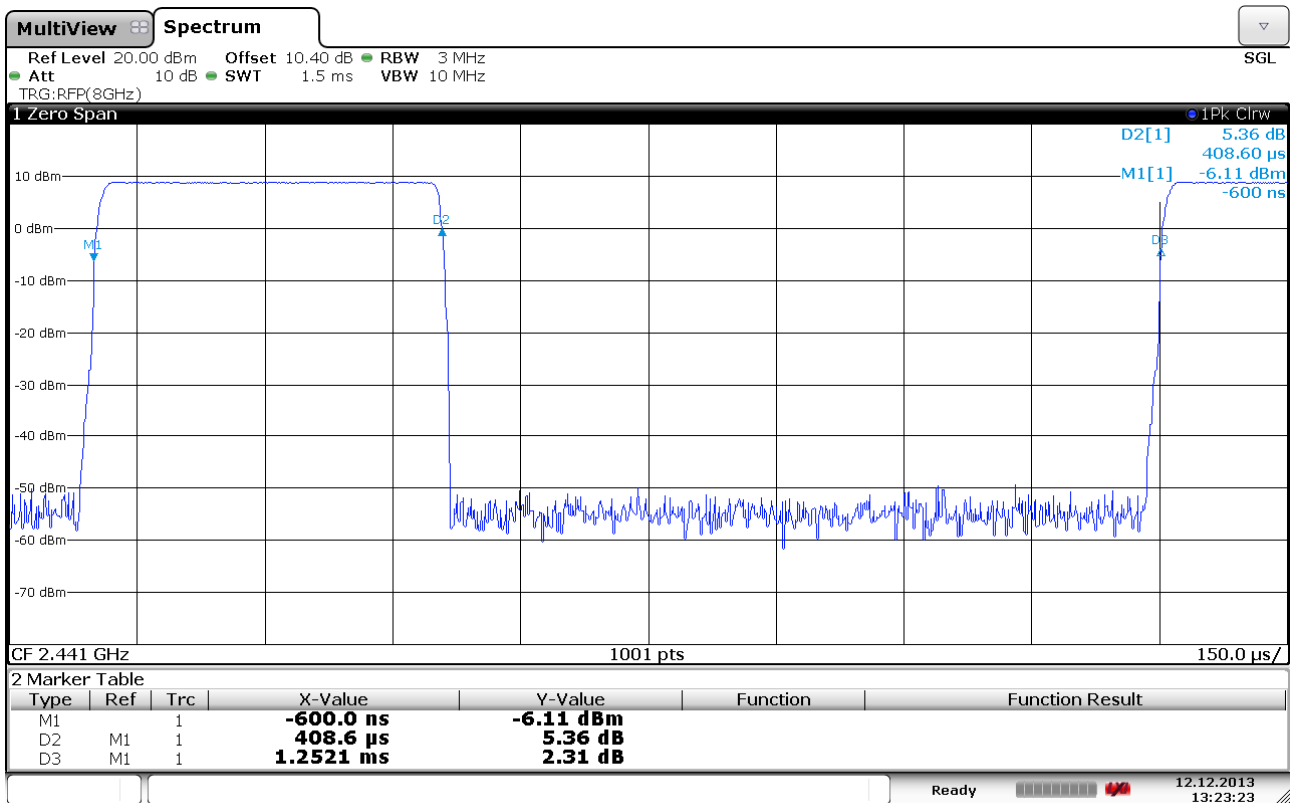
Time of occupancy:  $(2.93 \times 400 \times 79) / 296.25 = 312.5 \text{ ms}$

**See attached plots.**

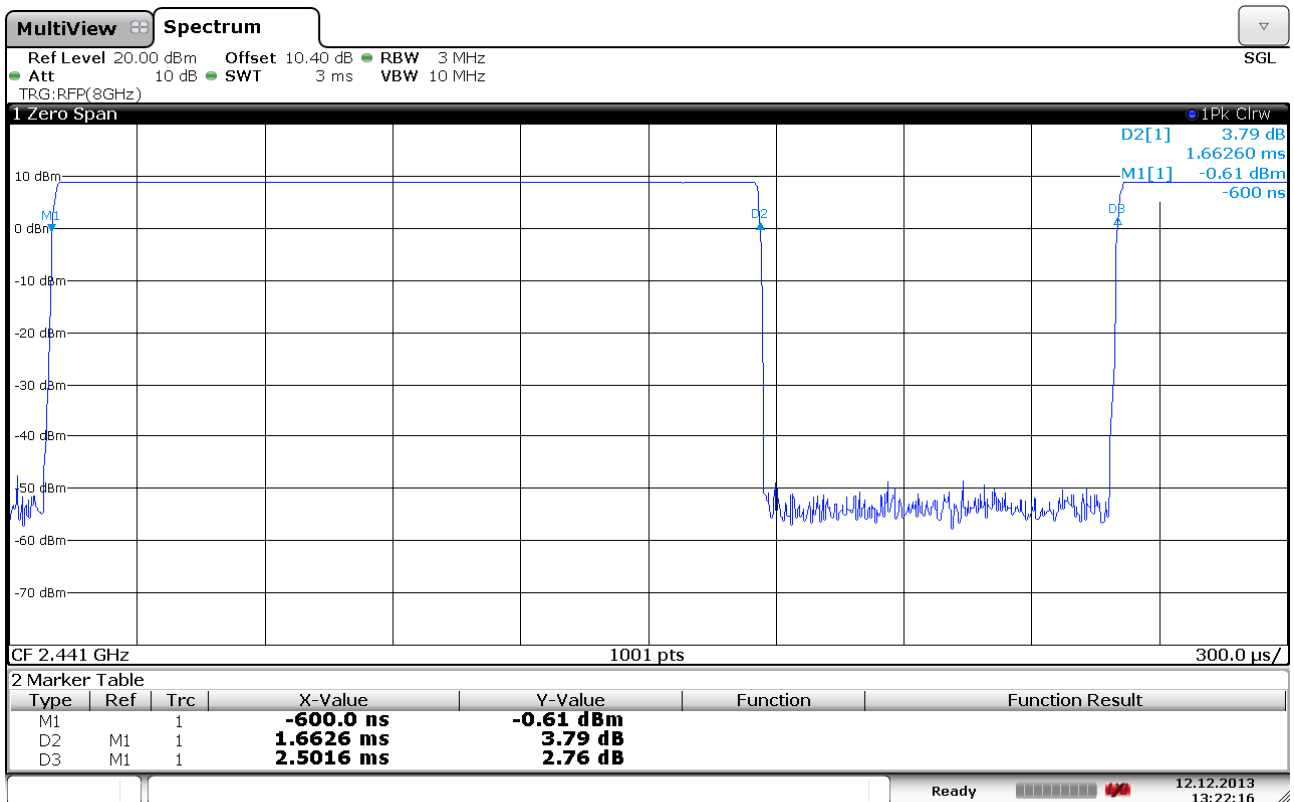
**Requirements:**

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.

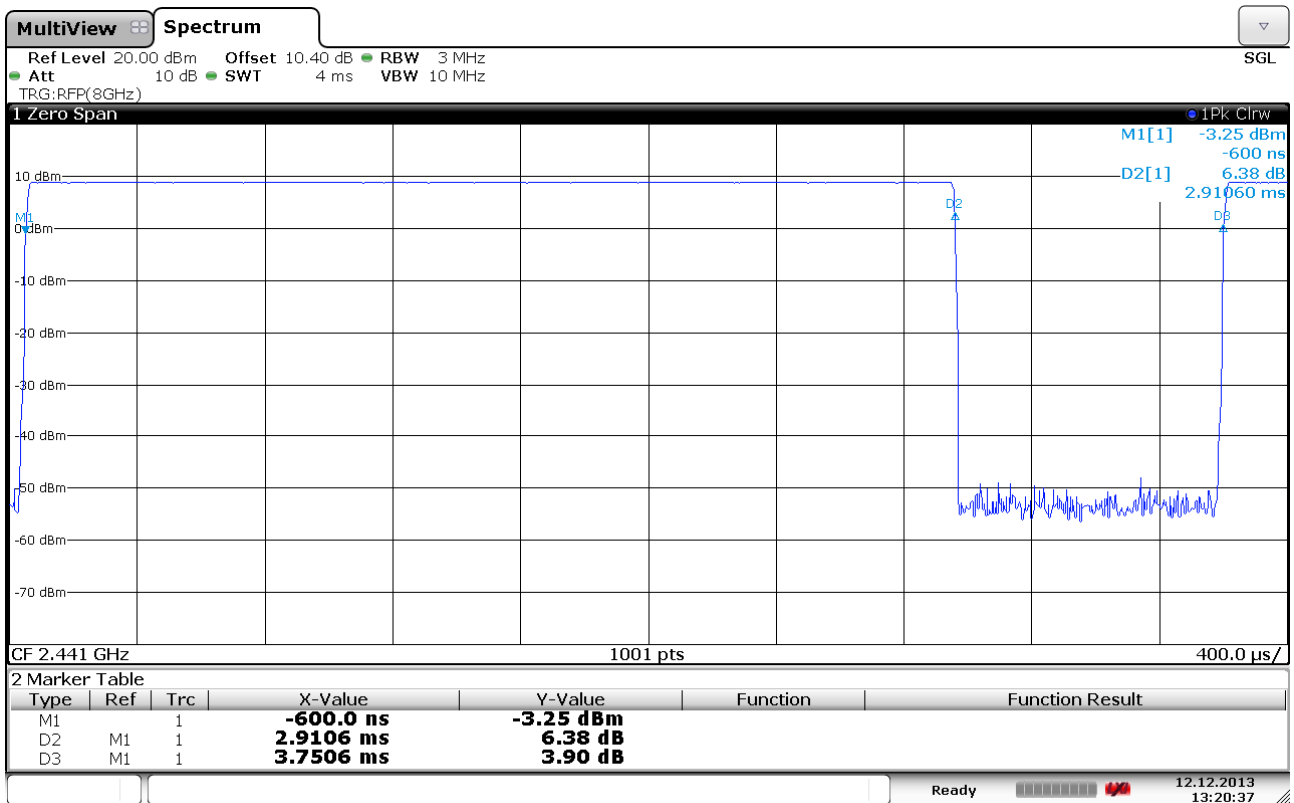
No requirements for Digital Transmission Systems.



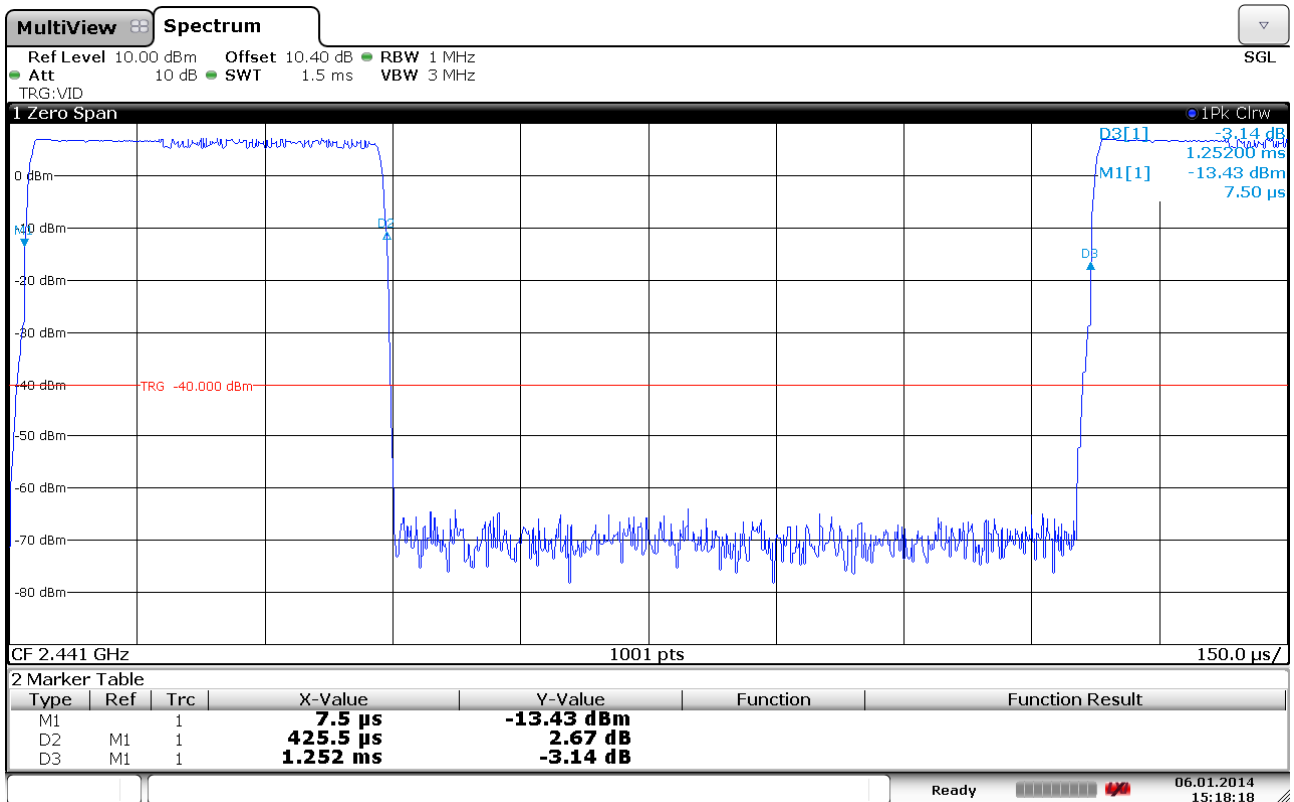
Burst Length, DH1



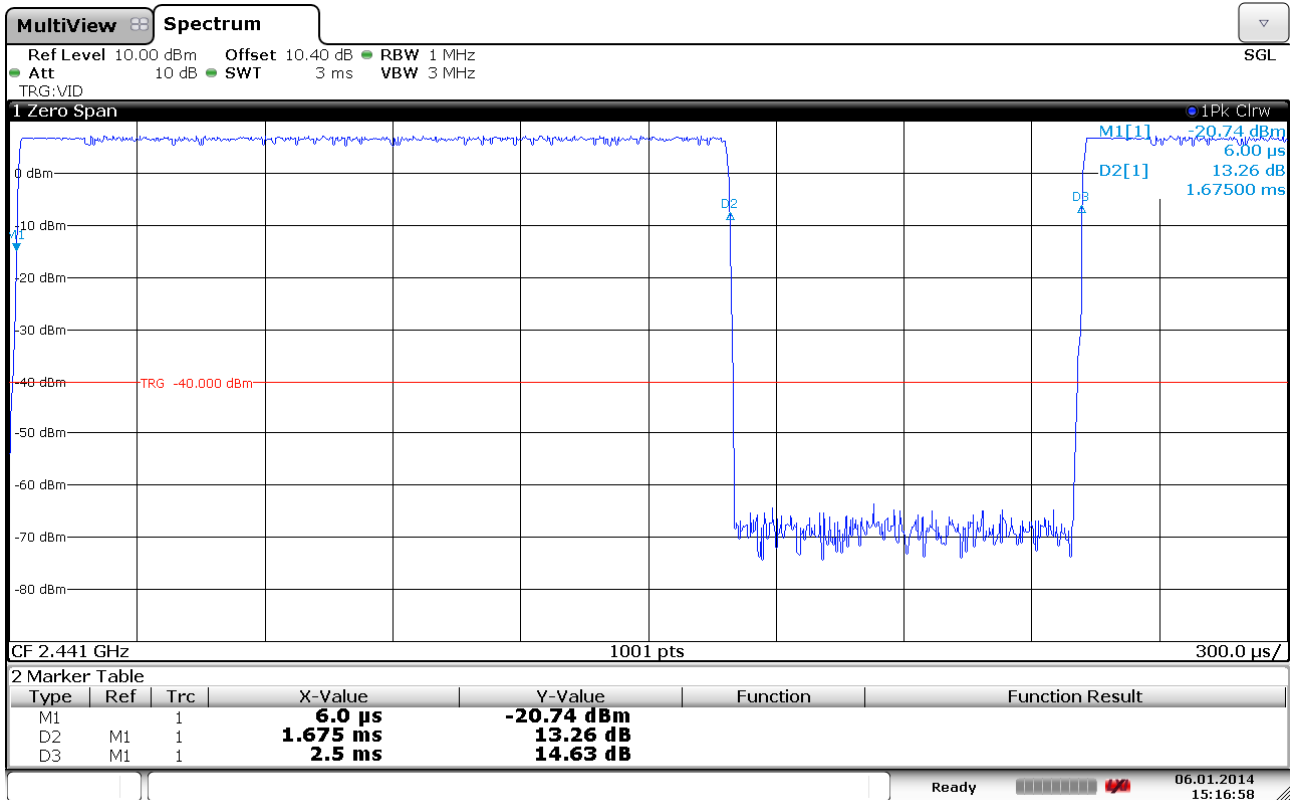
Burst Length, DH3



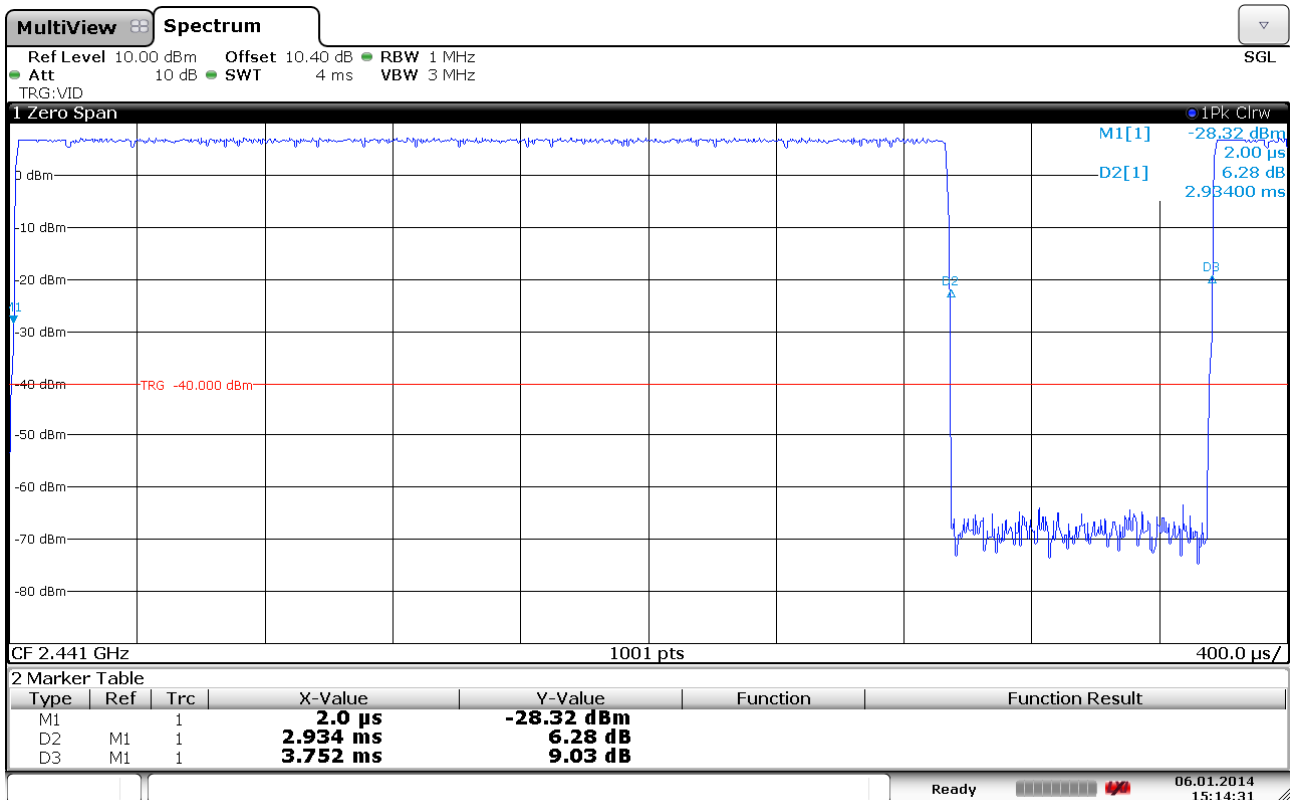
### Burst Length, DH5



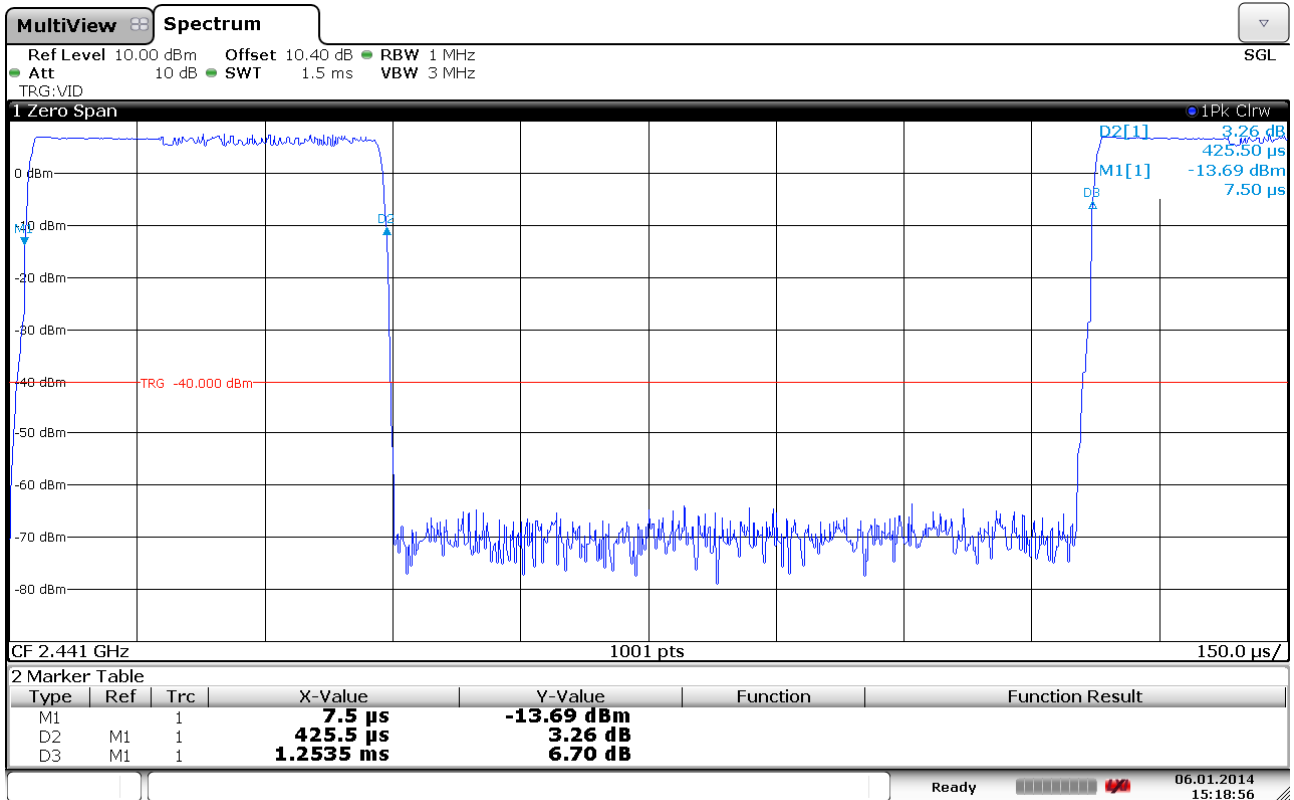
### Burst Length, 2-DH1



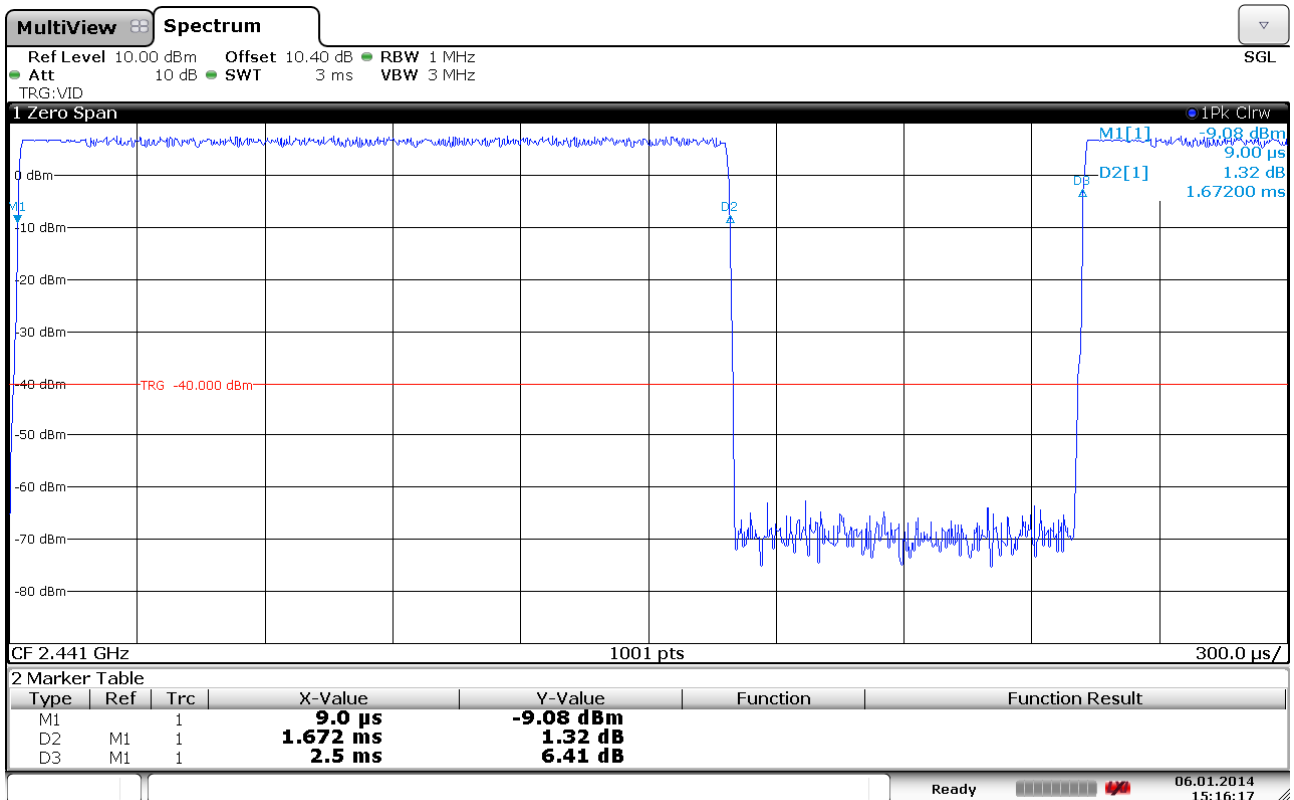
Burst Length, 2-DH3



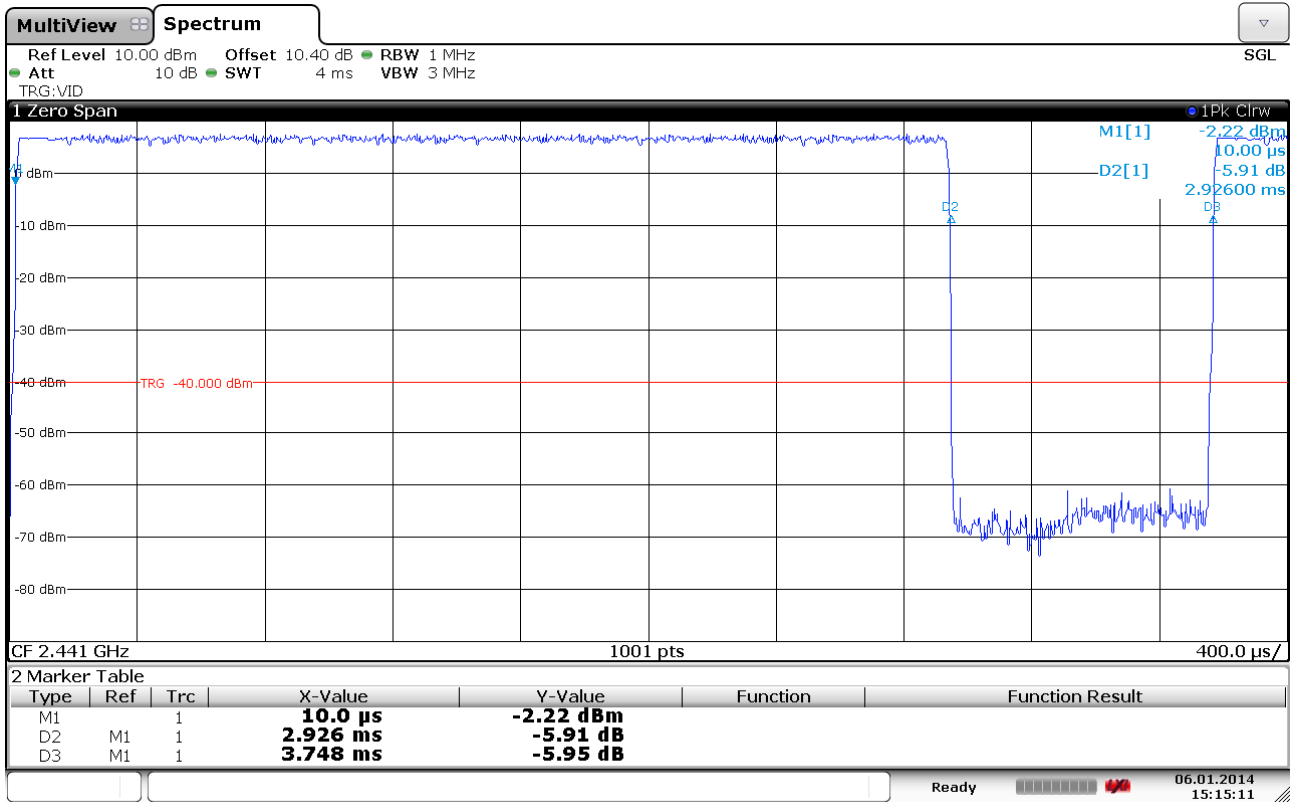
Burst Length, 2-DH5



Burst Length, 3-DH1



Burst Length, 3-DH3



**Burst Length, 3-DH5**

### 3.5 Occupied Bandwidth

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

Test Results: **Complies**

Measurement Data:

Number of RF Channels in use:	20 or 79 RF channels in use
Channel Centre Frequencies:	The channels are centered at each full MHz from 2402 to 2480 MHz

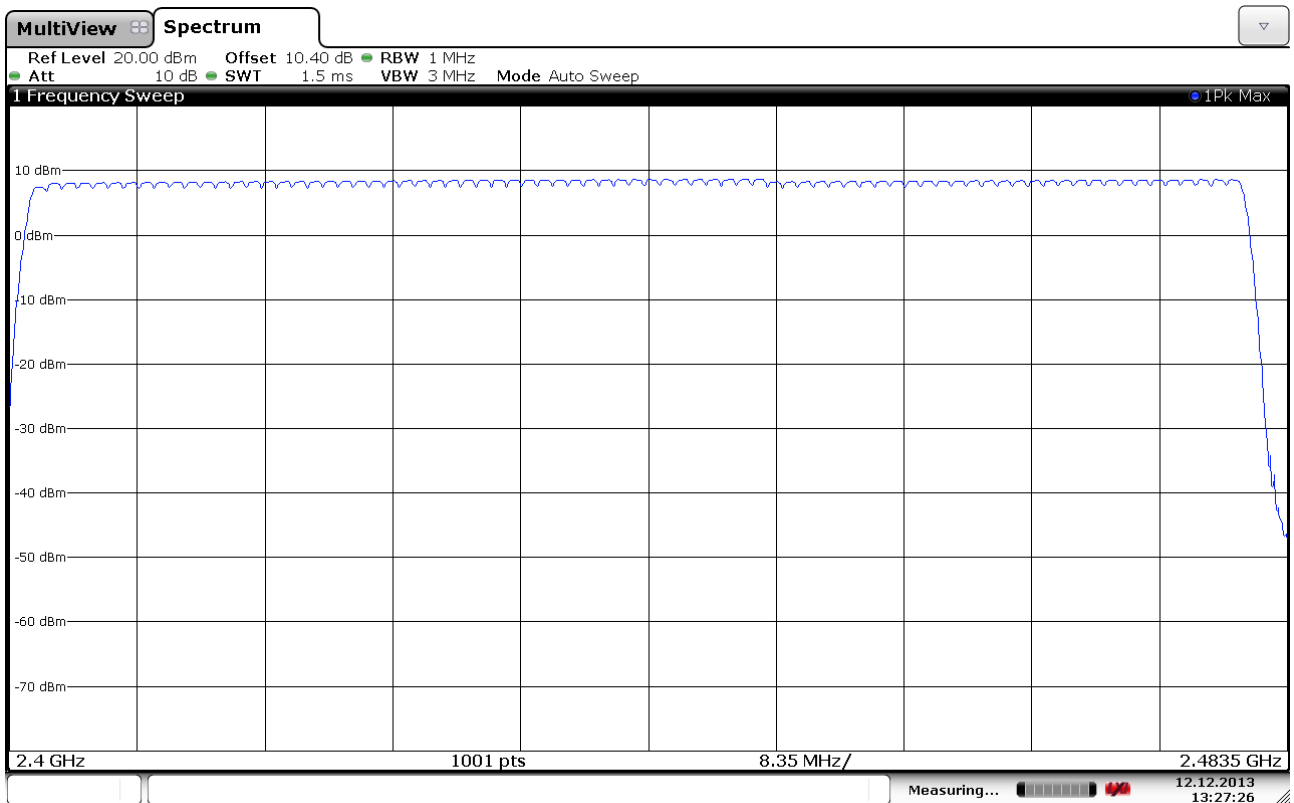
See attached plots.

#### Requirements:

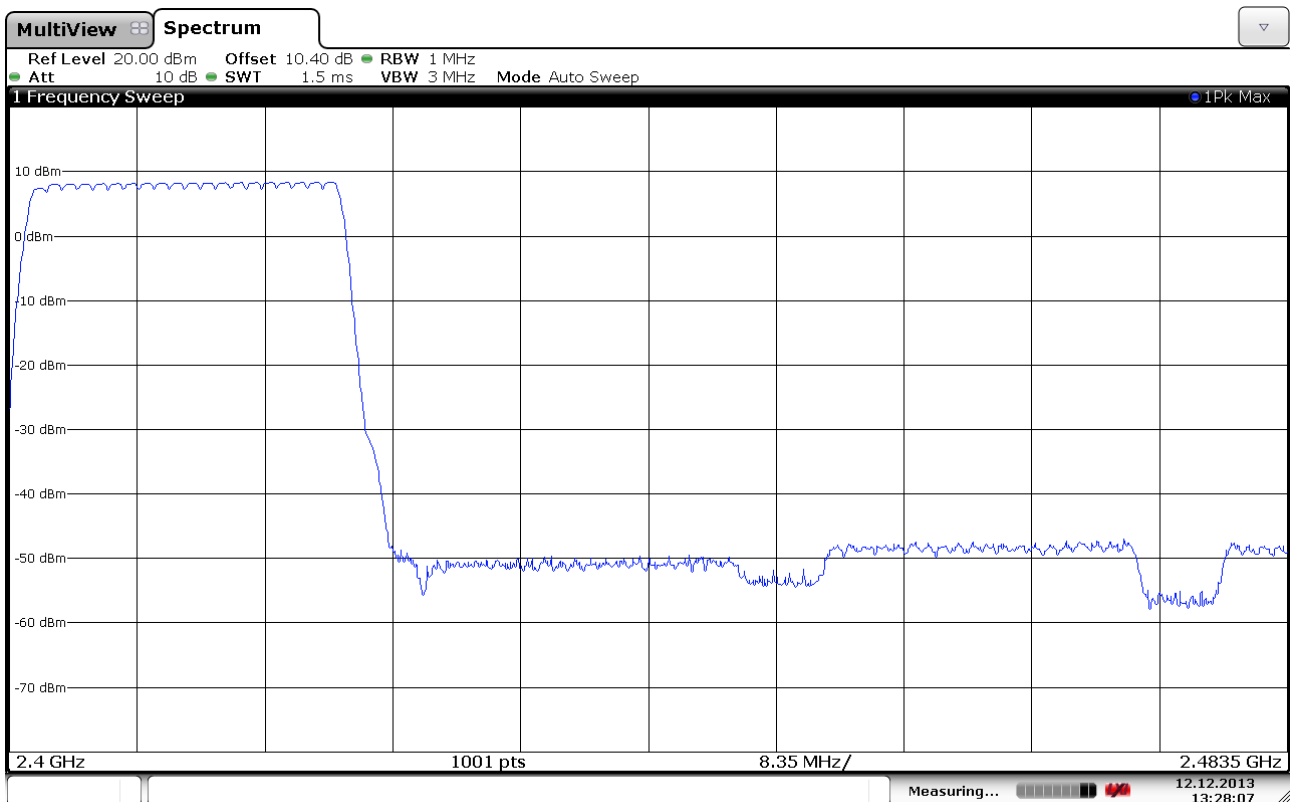
Frequency hopping systems in the 2400 - 2483.5 MHz band shall use at least 15 non-overlapping channels.  
No requirements for bandwidth for this frequency band.

No requirements for Digital Transmission Systems.

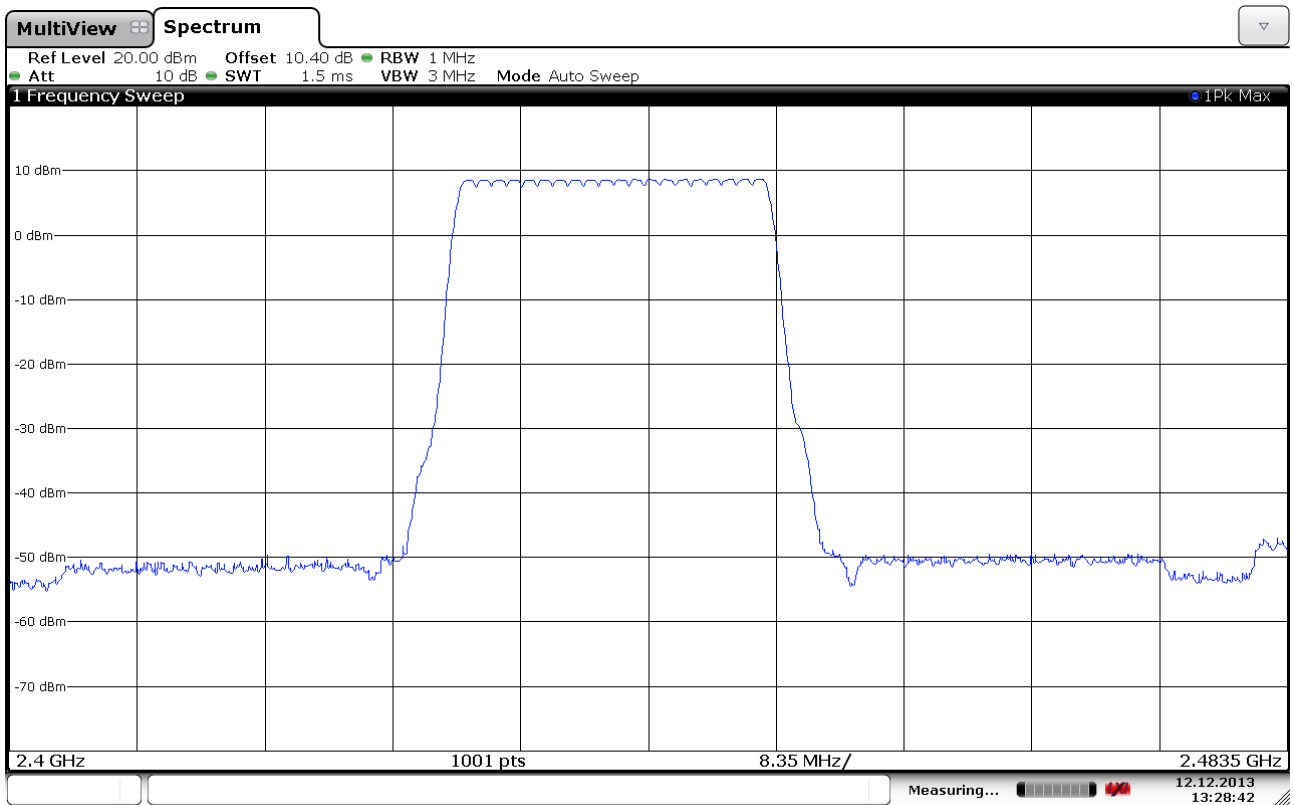
No requirement for 99% BW, reported for information only.



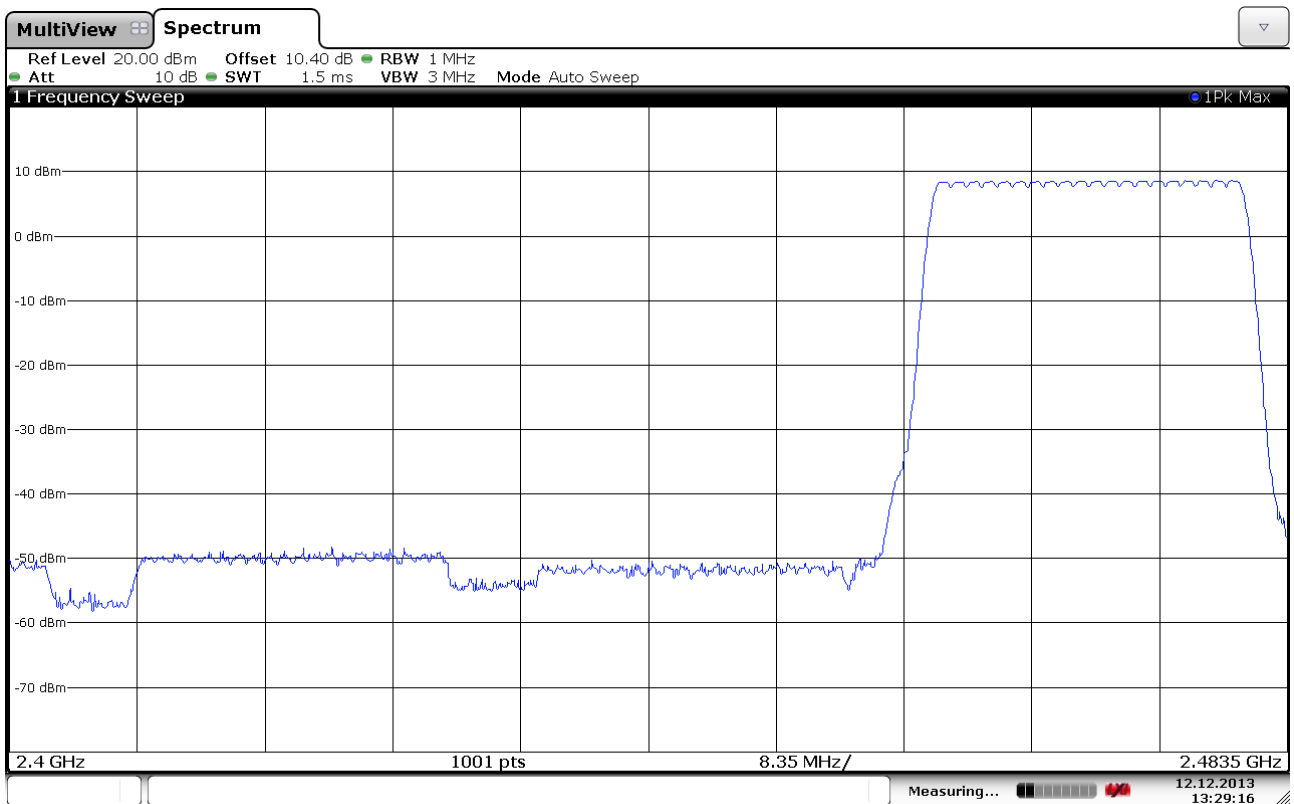
RF Channels in Use, Full Band



RF Channels in Use, 20 Channels, Lower



RF Channels in Use, 20 Channels, Middle



RF Channels in Use, 20 Channels, Upper

### 3.6 Peak Power Output

Para. No.: 15.247 (b)

Test Results: Complies

Measurement Data:

	2402 MHz	2441 MHz	2480 MHz
Peak Power (dBm)	7.8	8.9	8.9
Peak Power (Watts)	0.0060	0.0077	0.0077
Field Strength (dBµV/m)	104.6	104.7	104.9
EIRP, Calculated (Watts)	0.0087	0.0089	0.0092
Antenna gain (dBi)	1.6	0.6	0.8

Peak Power is with DH5 modulation.

Antenna gain =  $10 \cdot \log(\text{EIRP} / \text{Conducted power})$  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: /

**Requirements:**

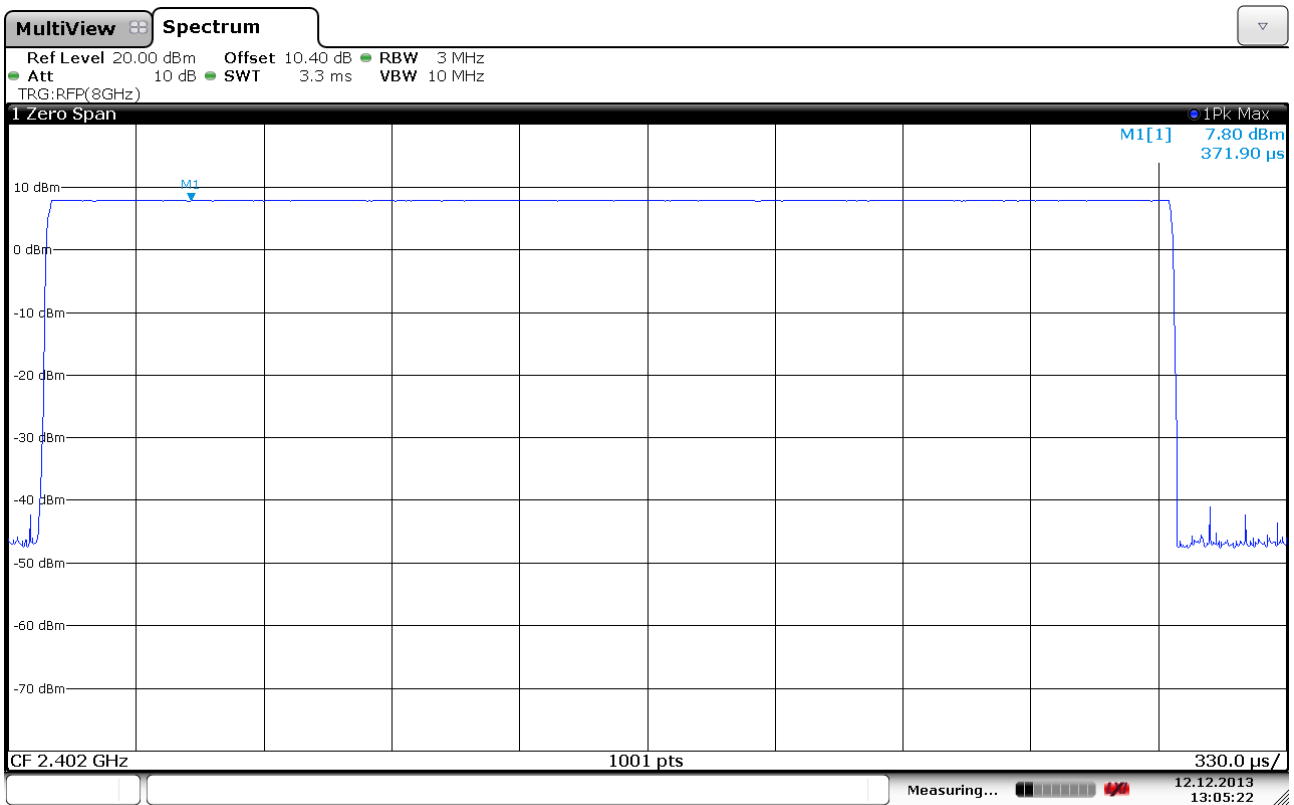
The maximum peak output power shall not exceed the following limits:

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

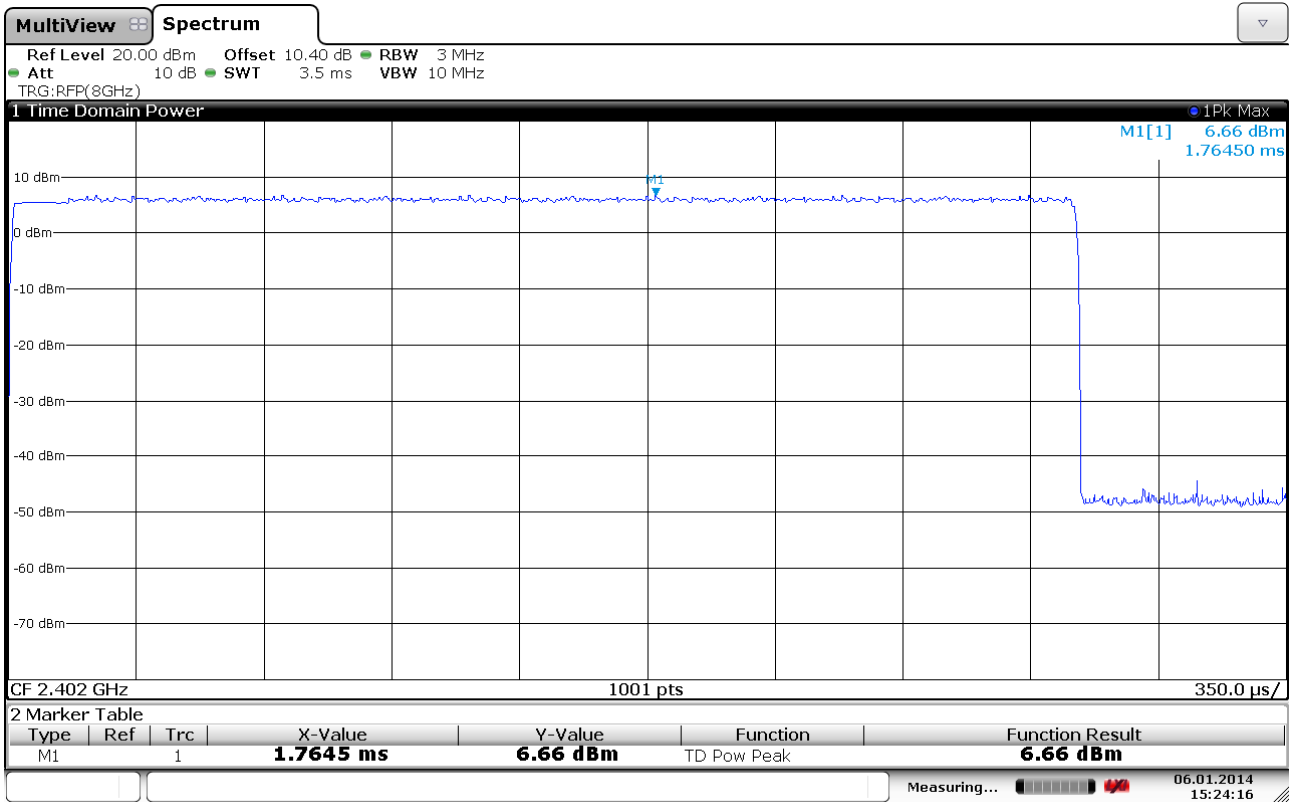
If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced below the stated value above by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



### Conducted Output Power, 2402MHz, DH5



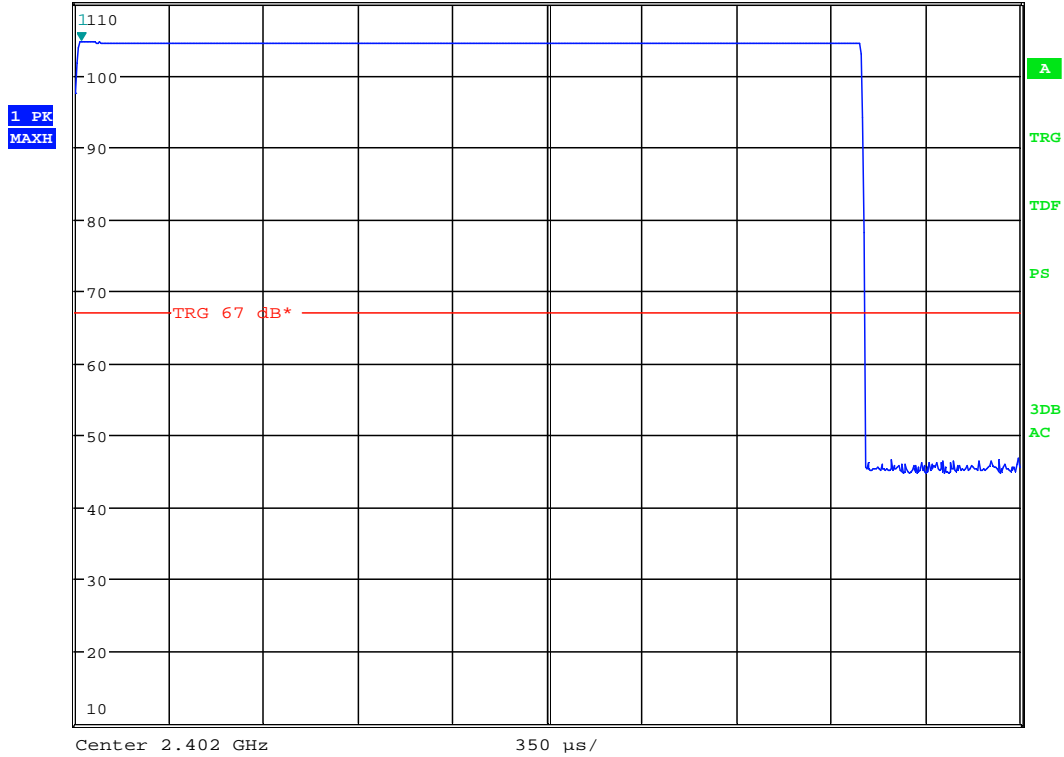
### Conducted Output Power, 2402MHz, 2-DH5



**Conducted Output Power, 2402MHz, 3-DH5**



<b>MARKER 1</b>	RBW 3 MHz	Marker 1 [T1 ]
22.43589744 $\mu$ s	VBW 10 MHz	104.64 dB $\mu$ V/m
Ref 110 dB $\mu$ V/m	*Att 10 dB	SWT 3.5 ms
		22.435897 $\mu$ s

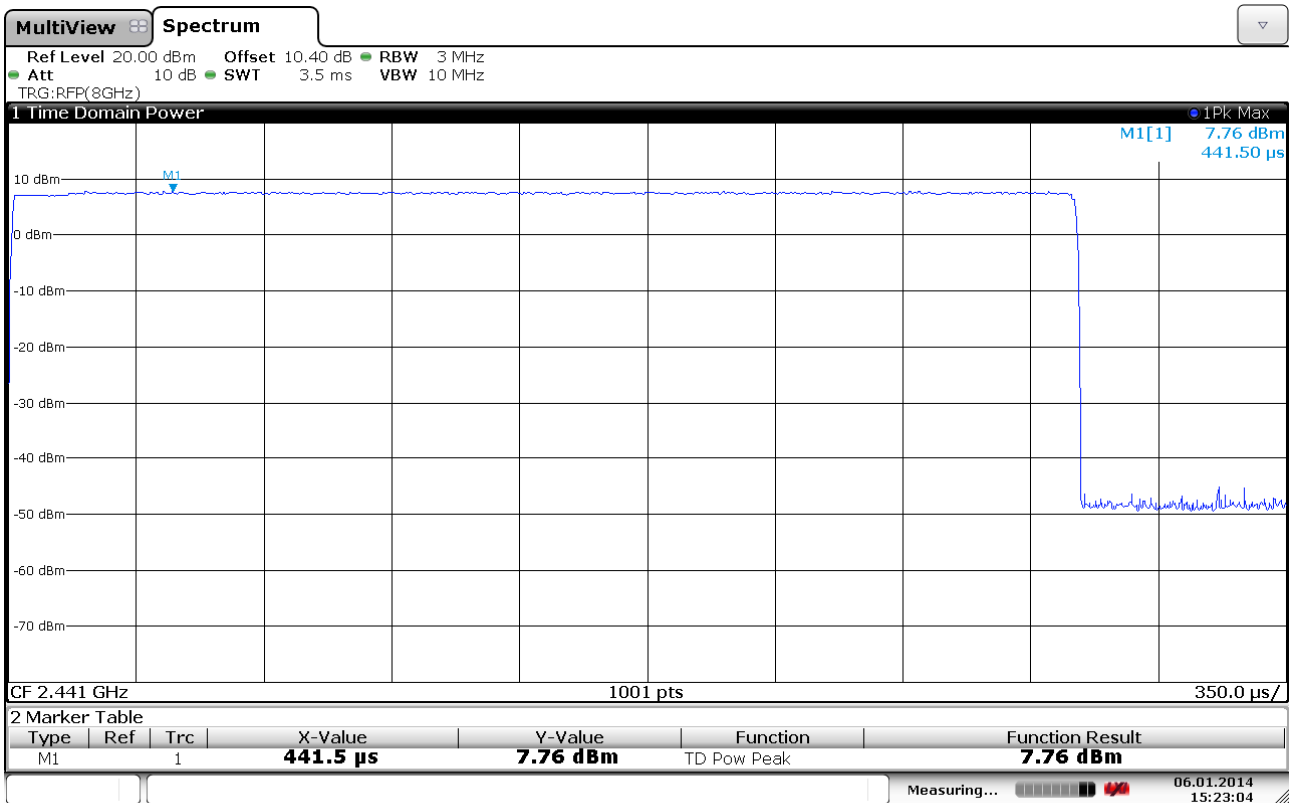


Date: 16.DEC.2013 15:59:51

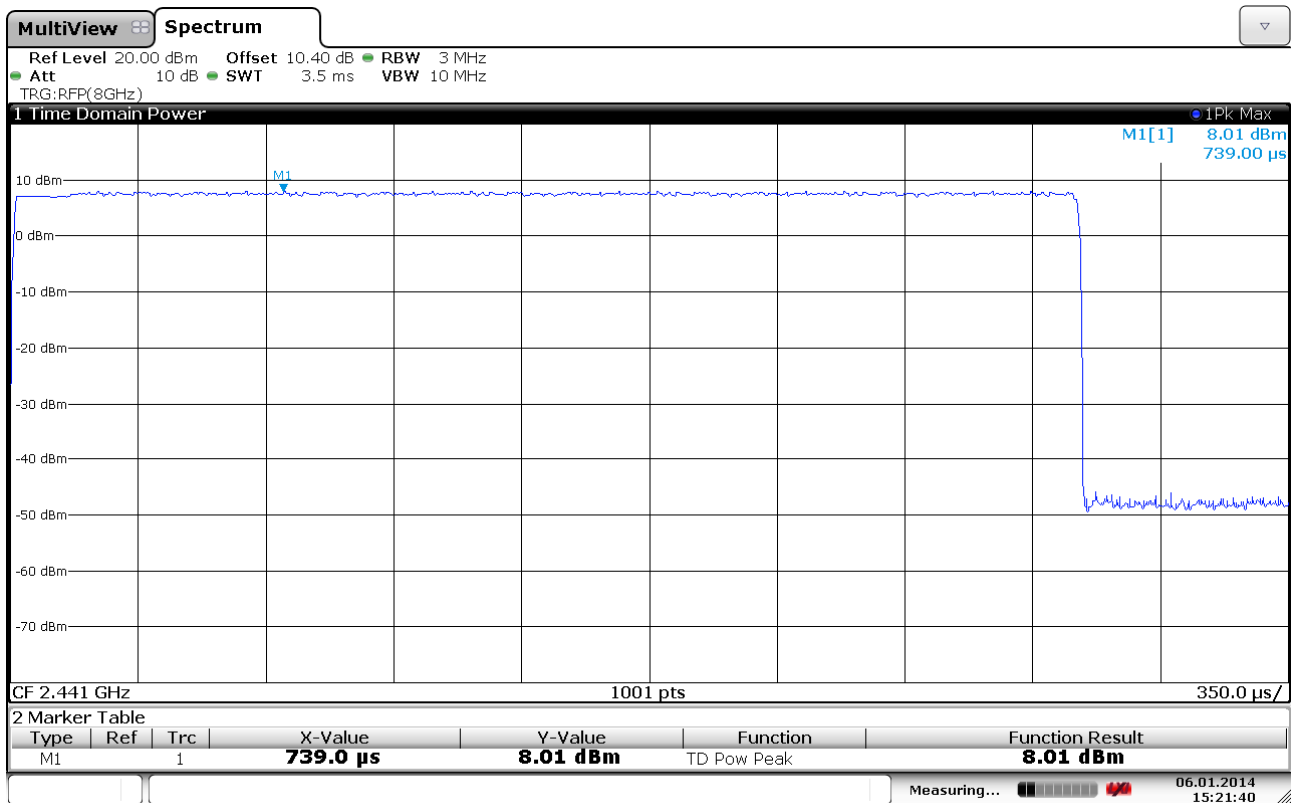
**Maximum Field Strength, 2402MHz (Max: VP), DH5**



### Conducted Output Power, 2441MHz, DH5



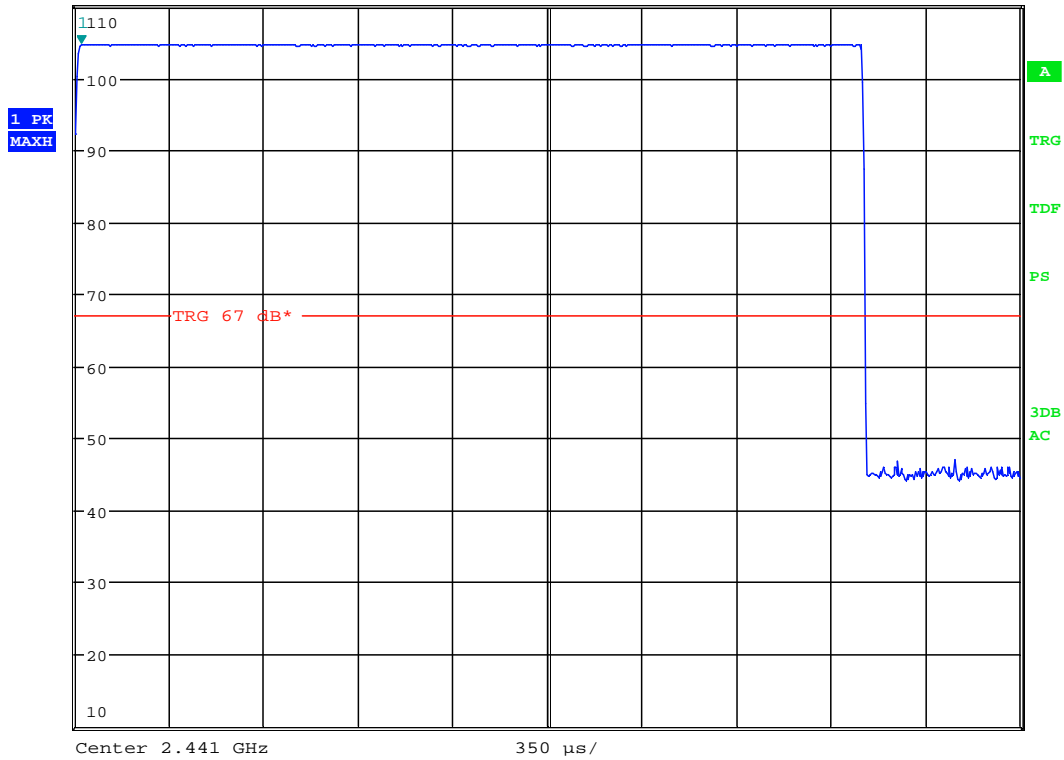
### Conducted Output Power, 2441MHz, 2-DH5



**Conducted Output Power, 2441MHz, 3-DH5**

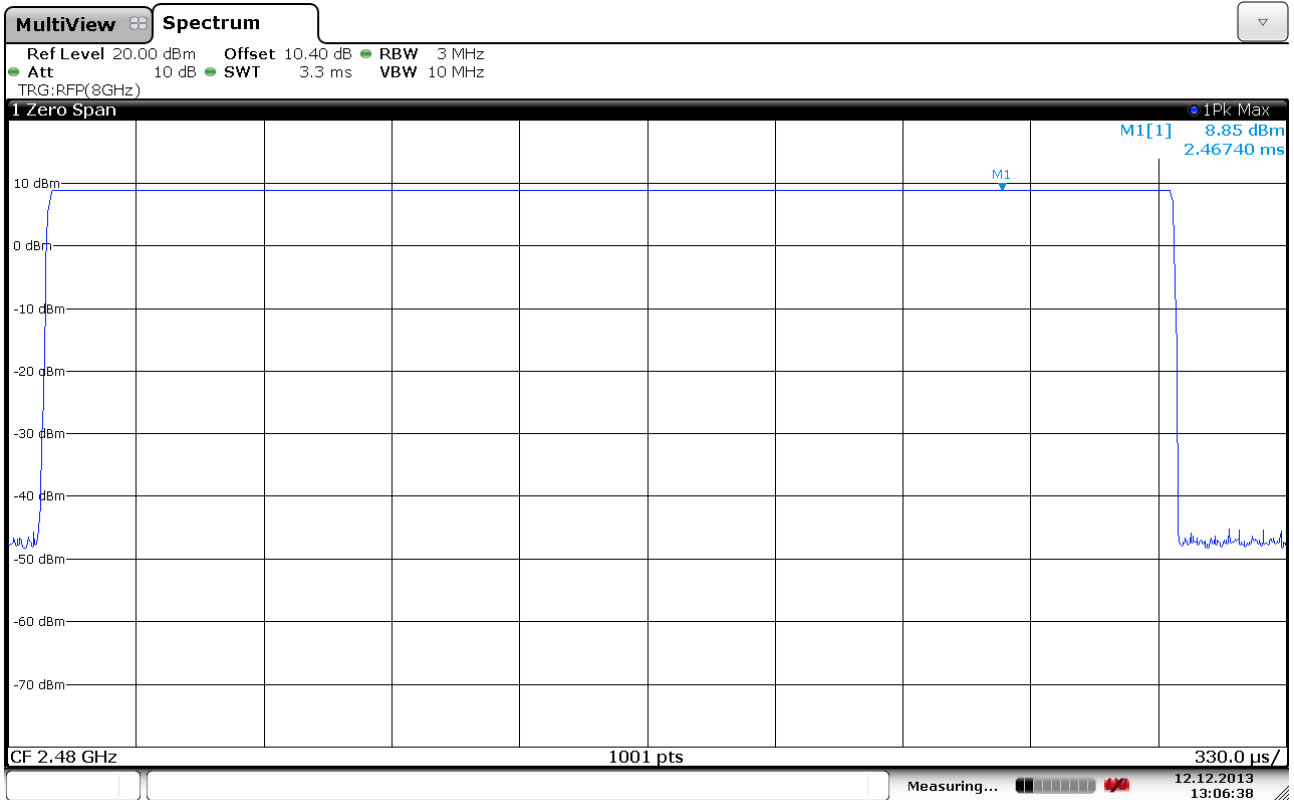


<b>MARKER 1</b>	RBW 3 MHz	Marker 1 [T1 ]
22.43589744 $\mu$ s	VBW 10 MHz	104.72 dB $\mu$ V/m
Ref 110 dB $\mu$ V/m	*Att 10 dB	SWT 3.5 ms
		22.435897 $\mu$ s

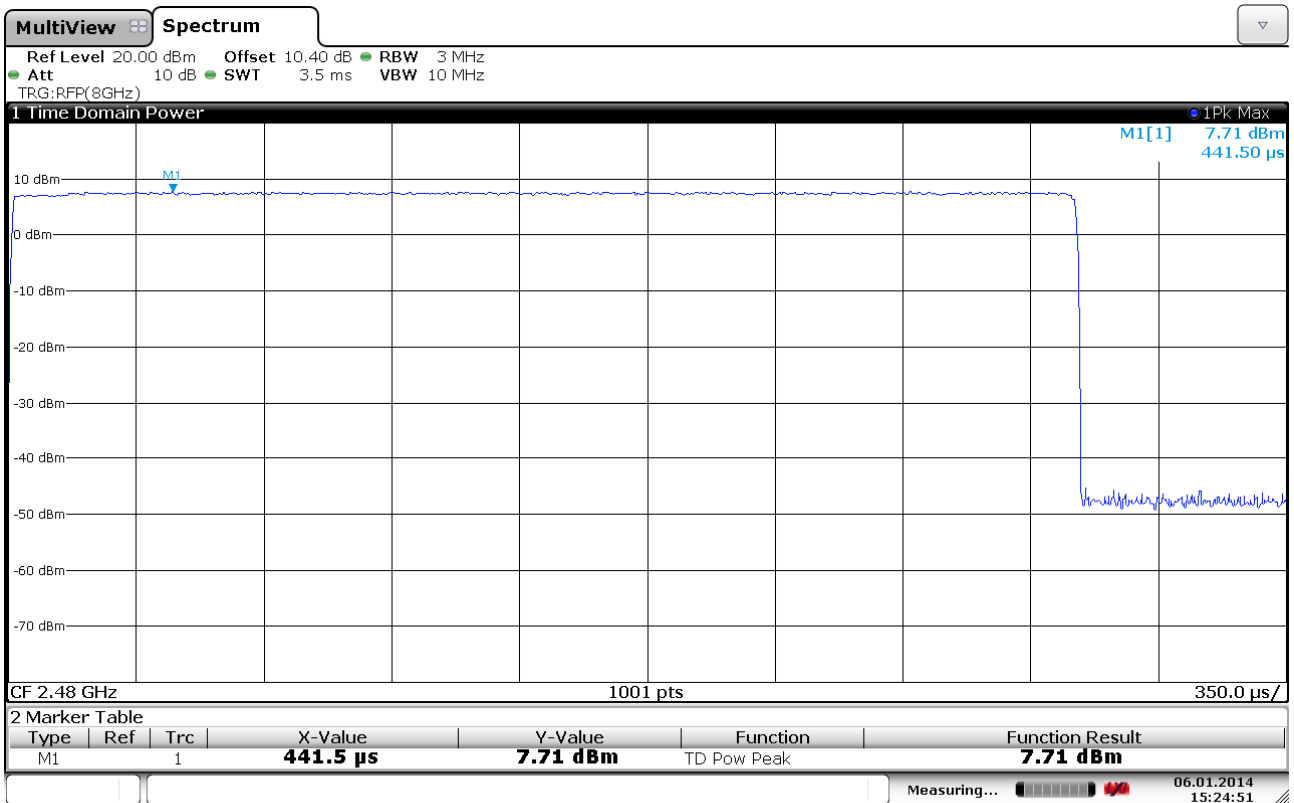


Date: 16.DEC.2013 16:06:07

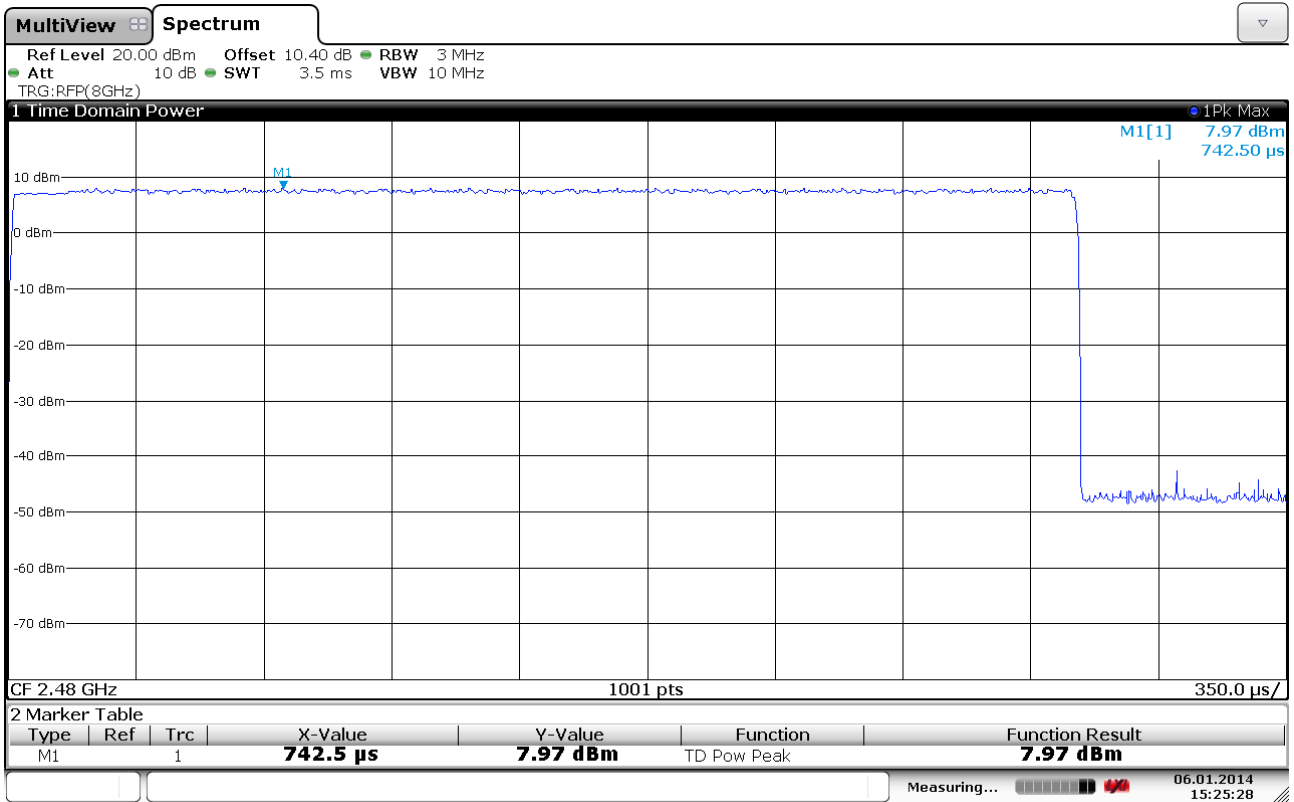
**Maximum Field Strength, 2441MHz (Max: VP), DH5**



### Conducted Output Power, 2480MHz, DH5



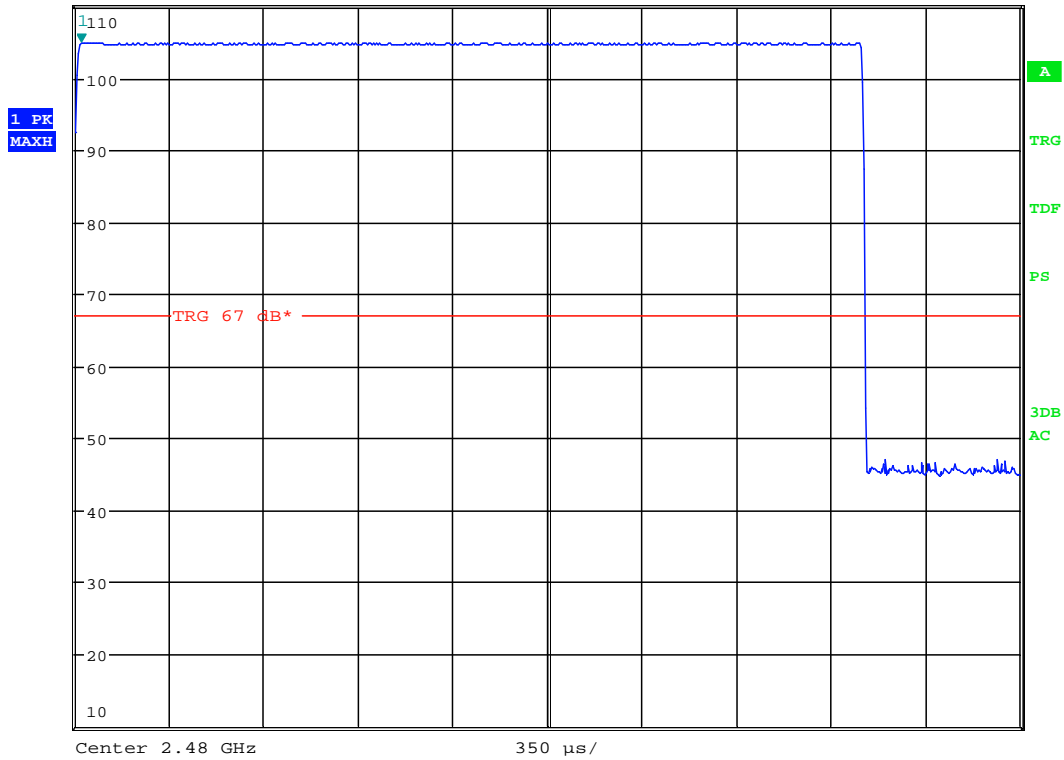
### Conducted Output Power, 2480MHz, 2-DH5



**Conducted Output Power, 2480MHz, 3-DH5**



<b>MARKER 1</b>	RBW 3 MHz	Marker 1 [T1 ]
22.43589744 $\mu$ s	VBW 10 MHz	104.88 dB $\mu$ V/m
Ref 110 dB $\mu$ V/m	*Att 10 dB	22.435897 $\mu$ s
	SWT 3.5 ms	



Date: 16.DEC.2013 16:08:17

**Maximum Field Strength, 2480MHz (Max: VP), DH5**

### 3.7 Spurious Emissions (Radiated)

Para. No.: 15.247 (c)

Test Results: Complies

Measurement Data:

Band-edge conducted power, Hopping OFF:

	Measured field strength @3m (dB $\mu$ V/m)		Limit dB $\mu$ V/m	Margin	
	2390 MHz	2483.5 MHz		dB	
Peak Detector	46.1	62.5	74	27.9	11.5
Average Detector	26.1	42.5	54	27.9	11.5

Band-edge conducted power, Hopping ON:

	Measured field strength @3m (dB $\mu$ V/m)		Limit dB $\mu$ V/m	Margin	
	2390 MHz	2483.5 MHz		dB	
Peak Detector	48.1	62.9	74	25.9	11.1
Average Detector	28.1	42.9	54	25.9	11.1

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

All field strength values above are at 3m.

See attached plots.

Measurements with 2-DH5 and 3-DH5 modulations were only performed Conducted; radiated levels were calculated using the method from KDB 558074 D01 v03r01, clause 12.2.2. Values above are for the highest of the measurements.

**Duty Cycle Correction Factor Calculation:**

**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 00: >50 dB/C, margin >30 dB

RF ch 39: >50 dB/C, margin >30 dB

RF ch 78: >50 dB/C, margin >30 dB

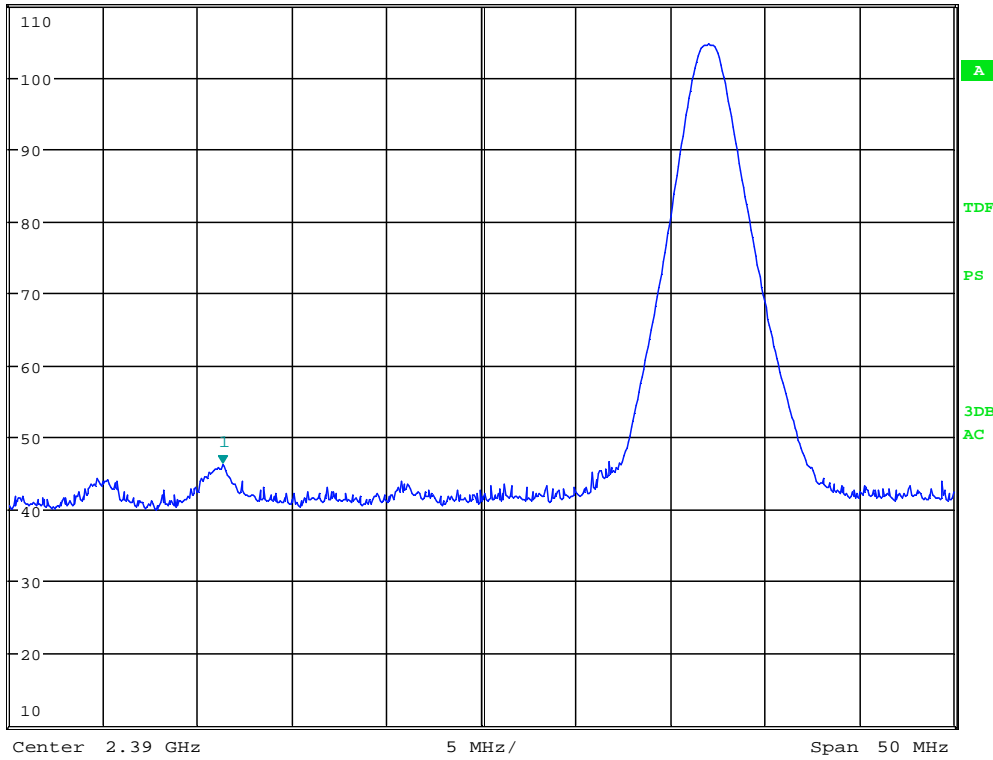


**MARKER 1**  
 2.376298077 GHz  
 Ref 110 dBµV/m \*Att 10 dB

\*RBW 1 MHz  
 VBW 3 MHz  
 SWT 2.5 ms

Marker 1 [T1 ]  
 46.14 dBµV/m  
 2.376298077 GHz

1 PK  
 MAXH

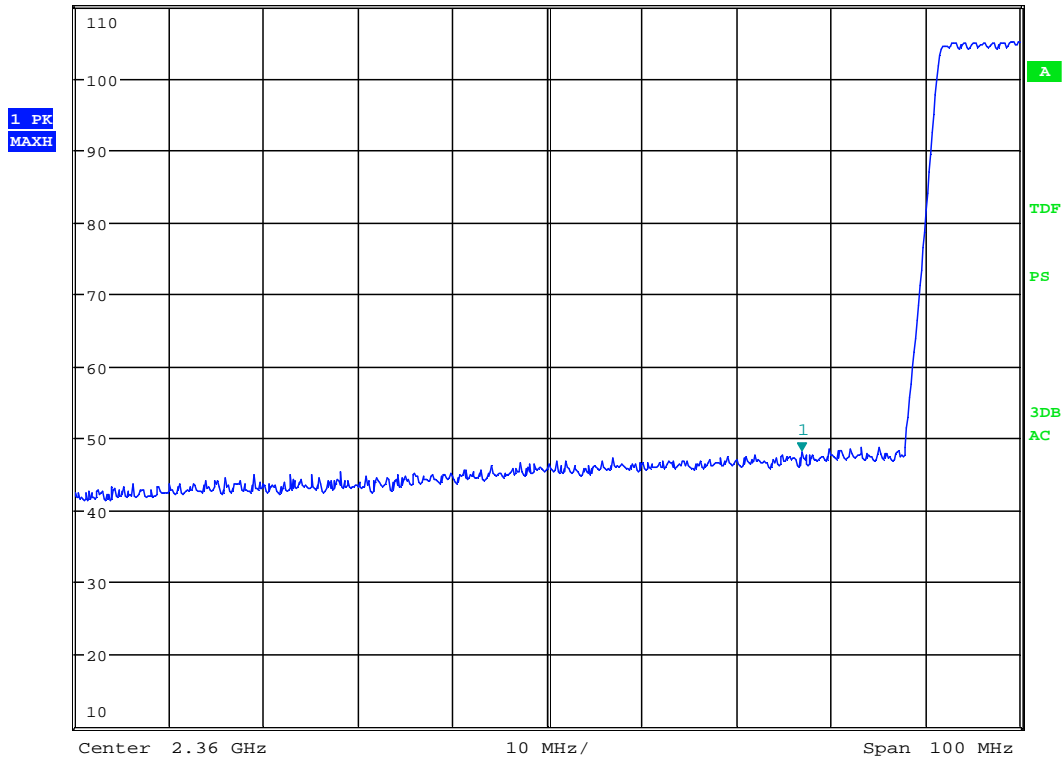


Date: 16.DEC.2013 16:03:19

**Band Edge, Lower, Radiated, Peak, Hopping OFF, DH5**



<b>MARKER 1</b>	* RBW 1 MHz	Marker 1 [T1]
2.386923077 GHz	* VBW 3 MHz	48.07 dBμV/m
Ref 110 dBμV/m	* Att 10 dB	SWT 2.5 ms
		2.386923077 GHz

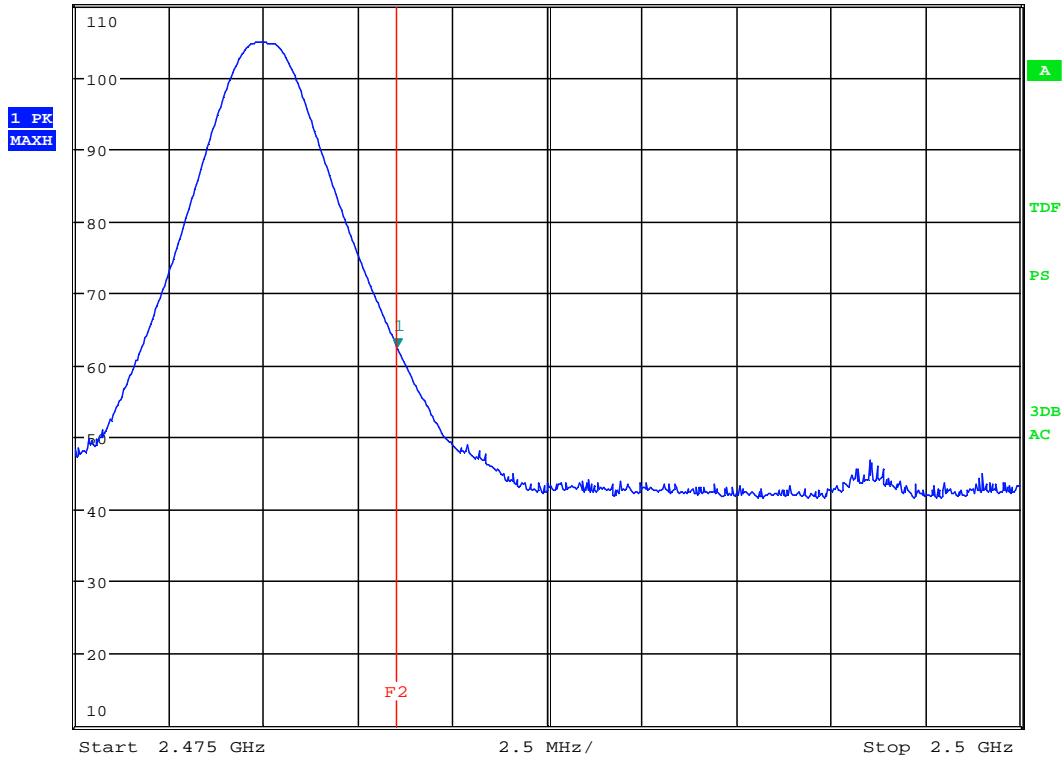


Date: 16.DEC.2013 17:13:45

**Band Edge, Lower, Radiated, Peak, Hopping ON, DH5**



<b>MARKER 1</b>	*RBW 1 MHz	Marker 1 [T1]
2.483533654 GHz	VBW 3 MHz	62.50 dBμV/m
Ref 110 dBμV/m	SWT 2.5 ms	2.483533654 GHz
*Att 10 dB		



Date: 16.DEC.2013 16:10:51

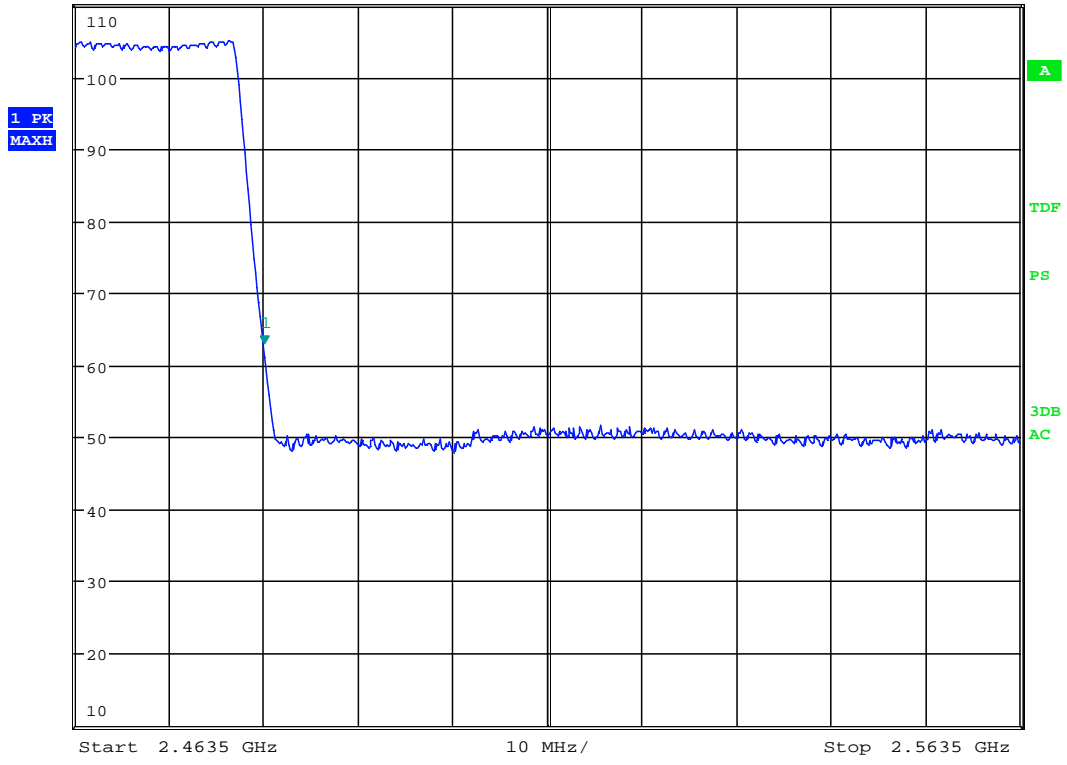
**Band Edge, Upper, Radiated, Peak, Hopping OFF, DH5**



**MARKER 1**  
 2.483532051 GHz  
 Ref 110 dBµV/m \*Att 10 dB

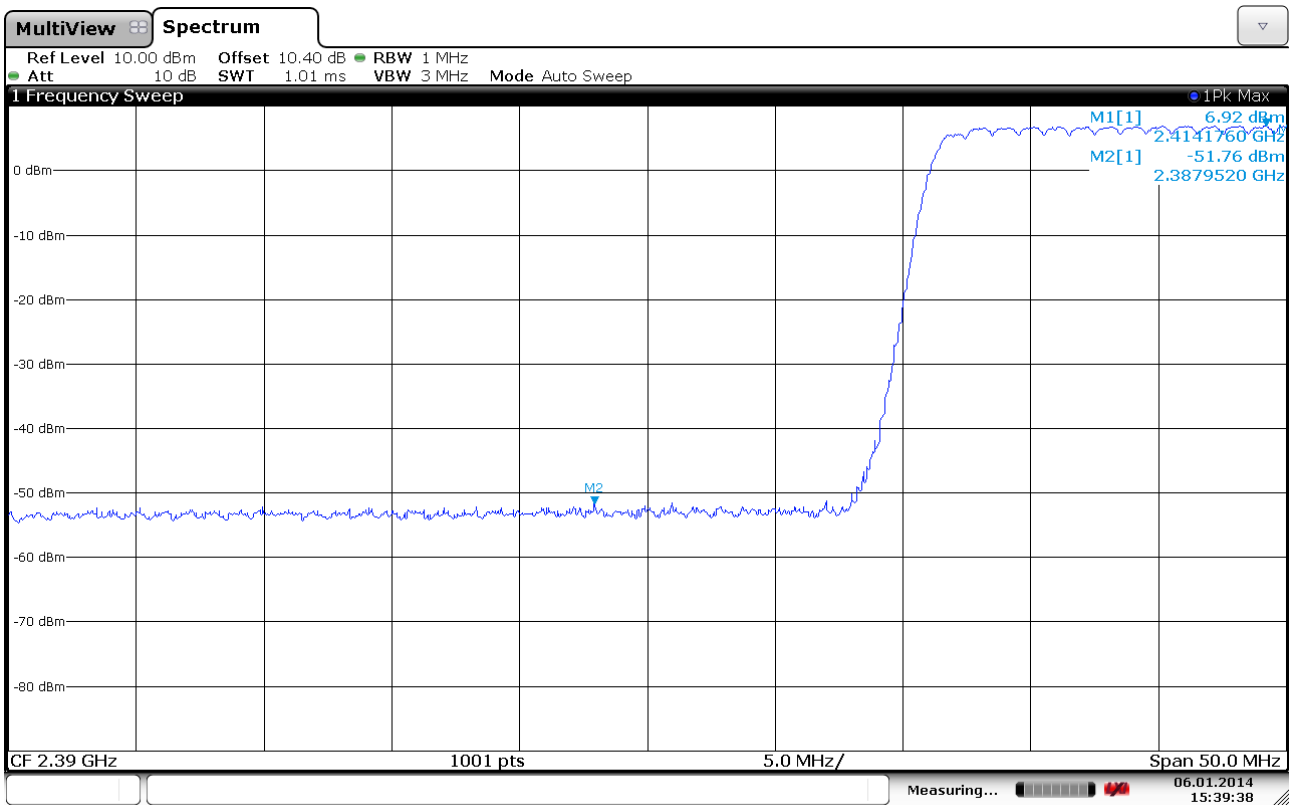
\*RBW 1 MHz  
 VBW 3 MHz  
 SWT 2.5 ms

Marker 1 [T1 ]  
 62.89 dBµV/m  
 2.483532051 GHz

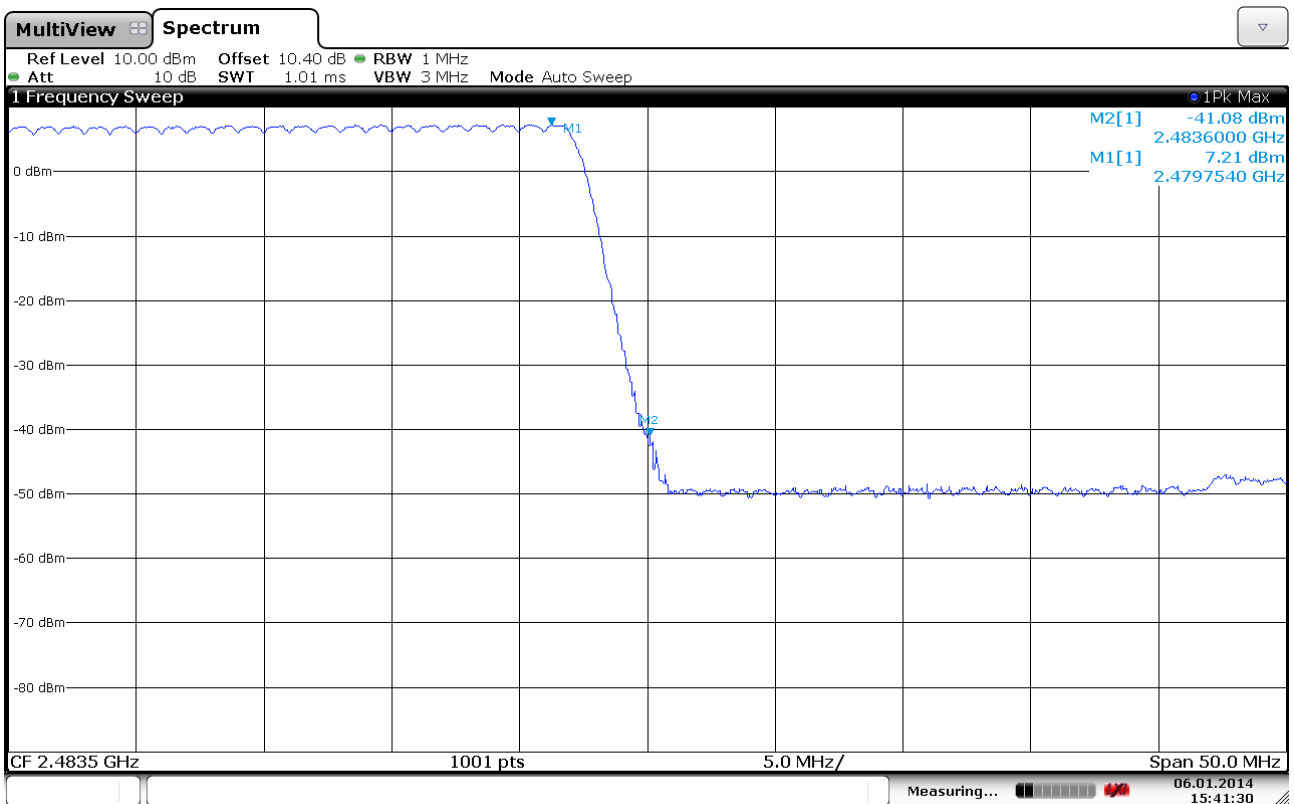


Date: 16.DEC.2013 17:15:11

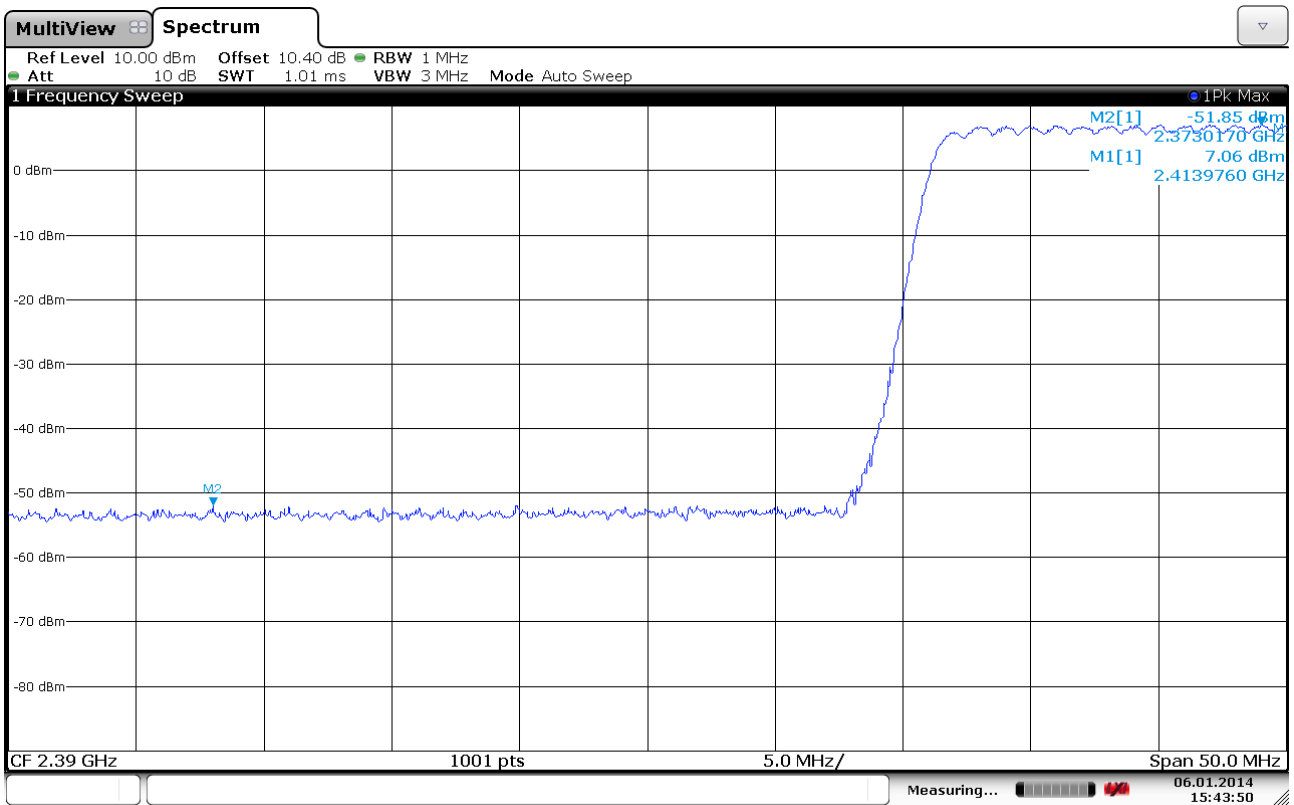
**Band Edge, Upper, Radiated, Peak, Hopping ON, DH5**



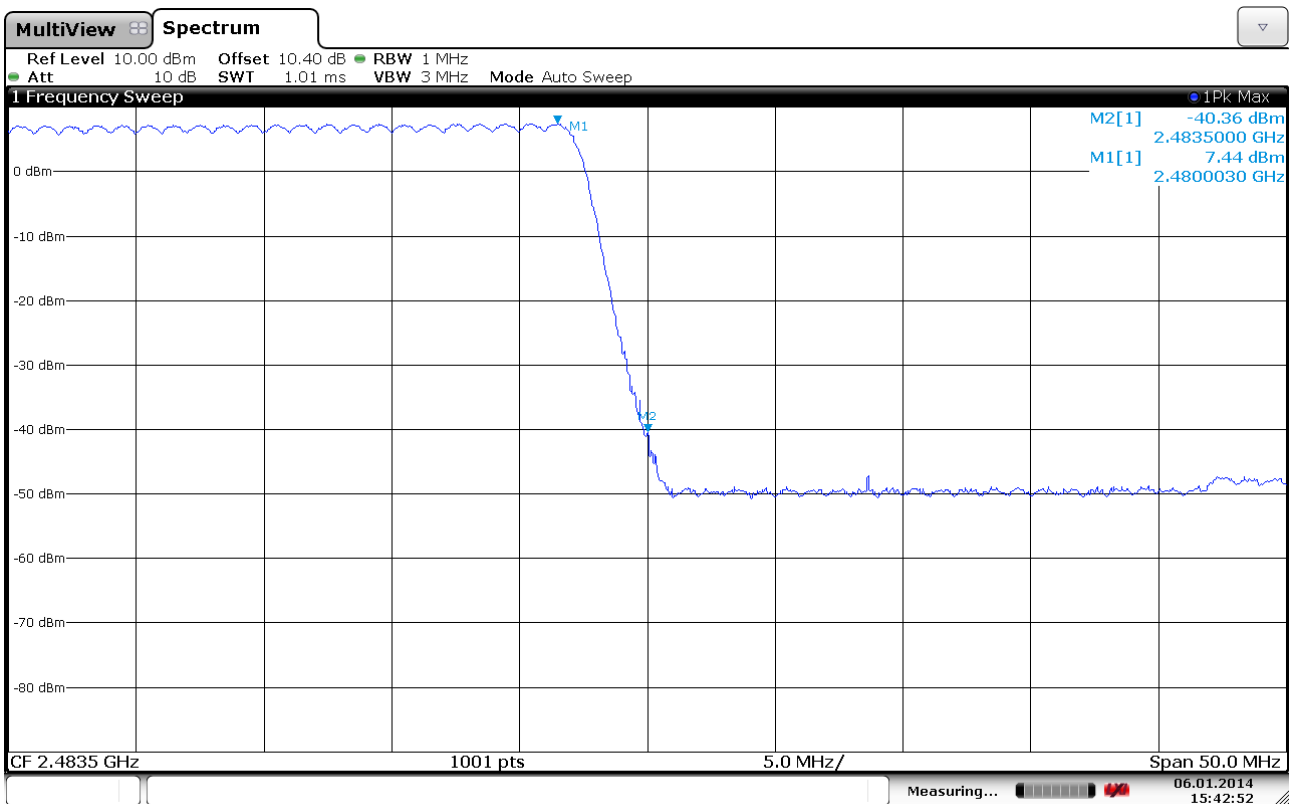
**Band Edge, Lower, Conducted, Peak, Hopping ON, 2-DH5**



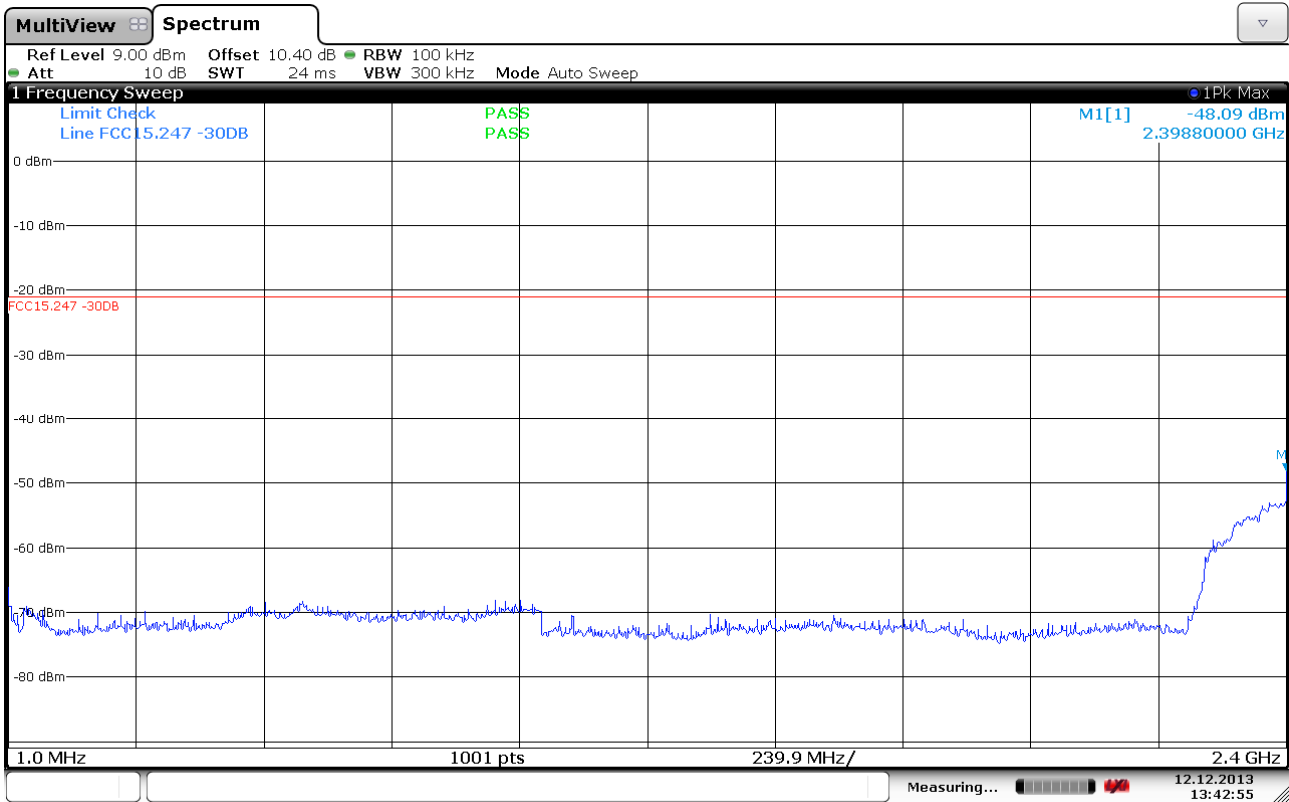
**Band Edge, Upper, Conducted, Peak, Hopping ON, 2-DH5**



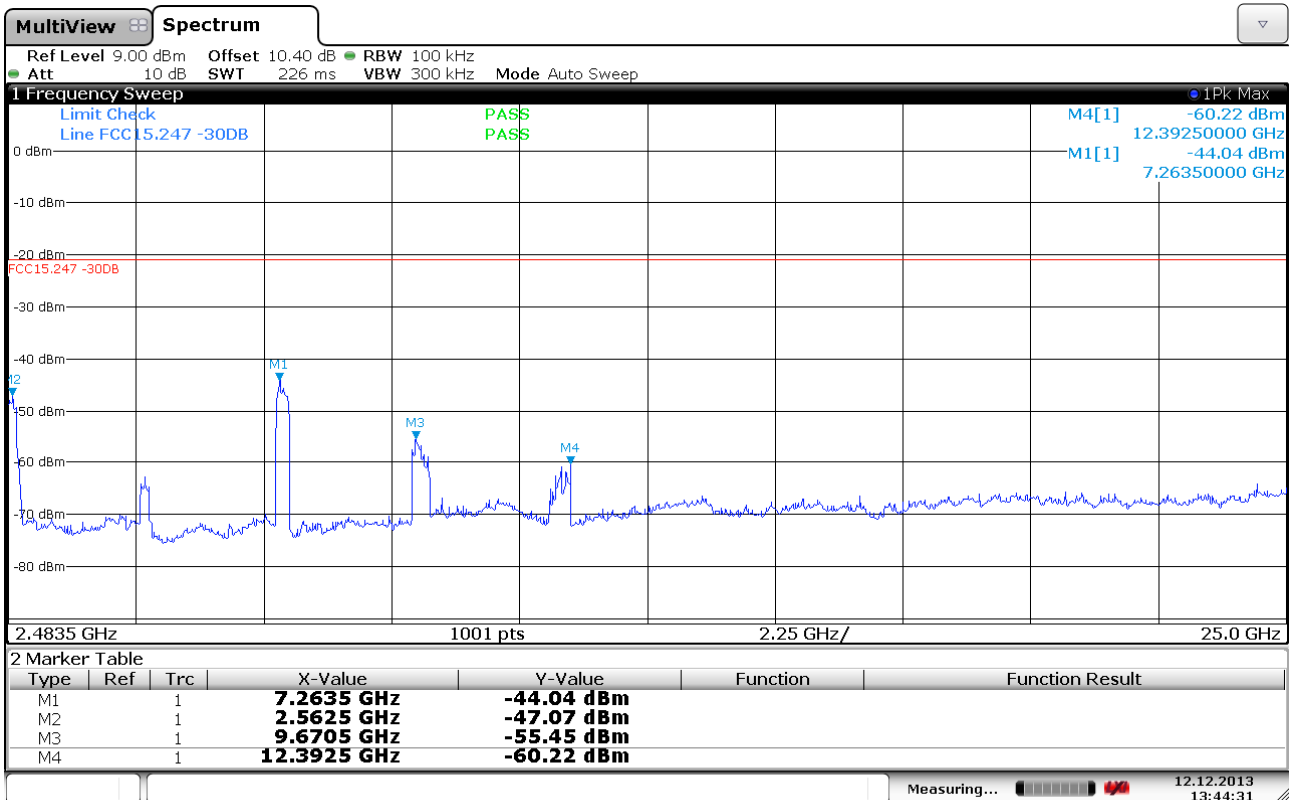
**Band Edge, Lower, Conducted, Peak, Hopping ON, 3-DH5**



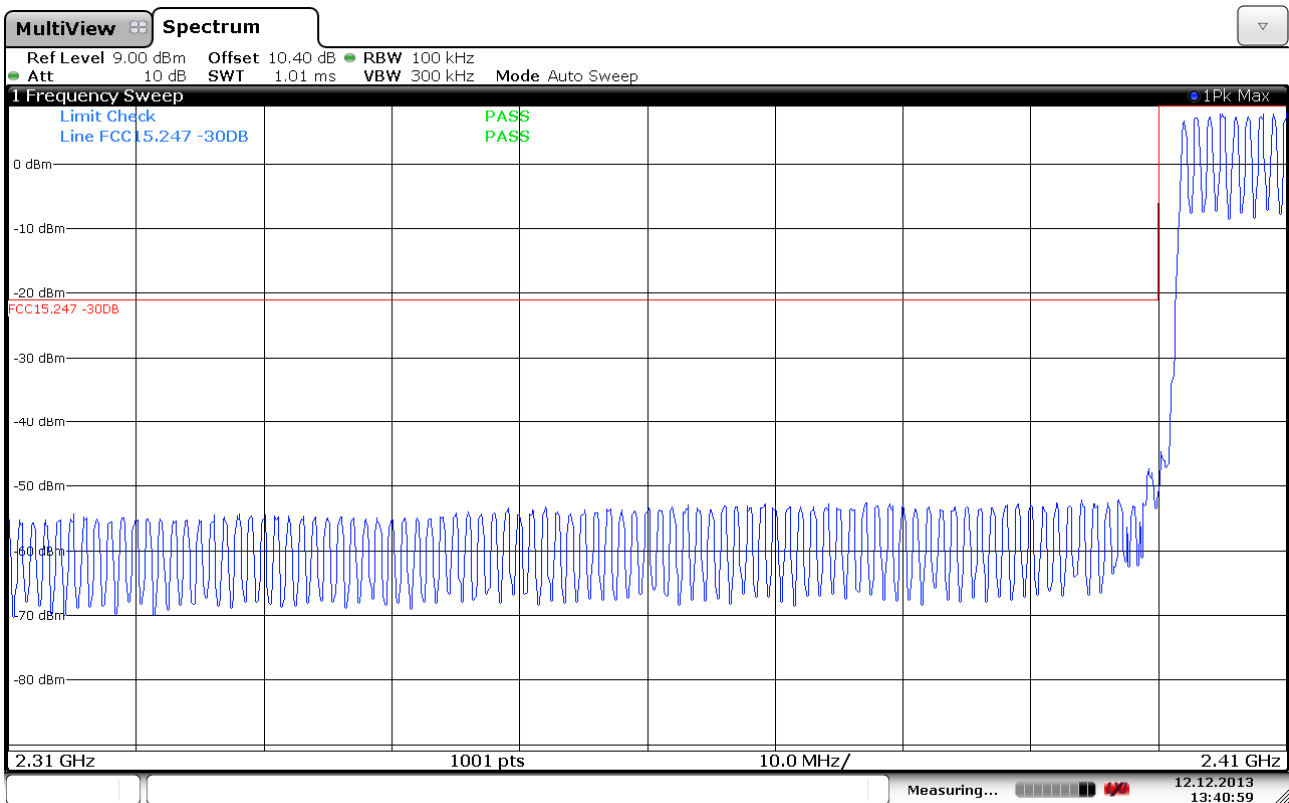
**Band Edge, Upper, Conducted, Peak, Hopping ON, 3-DH5**



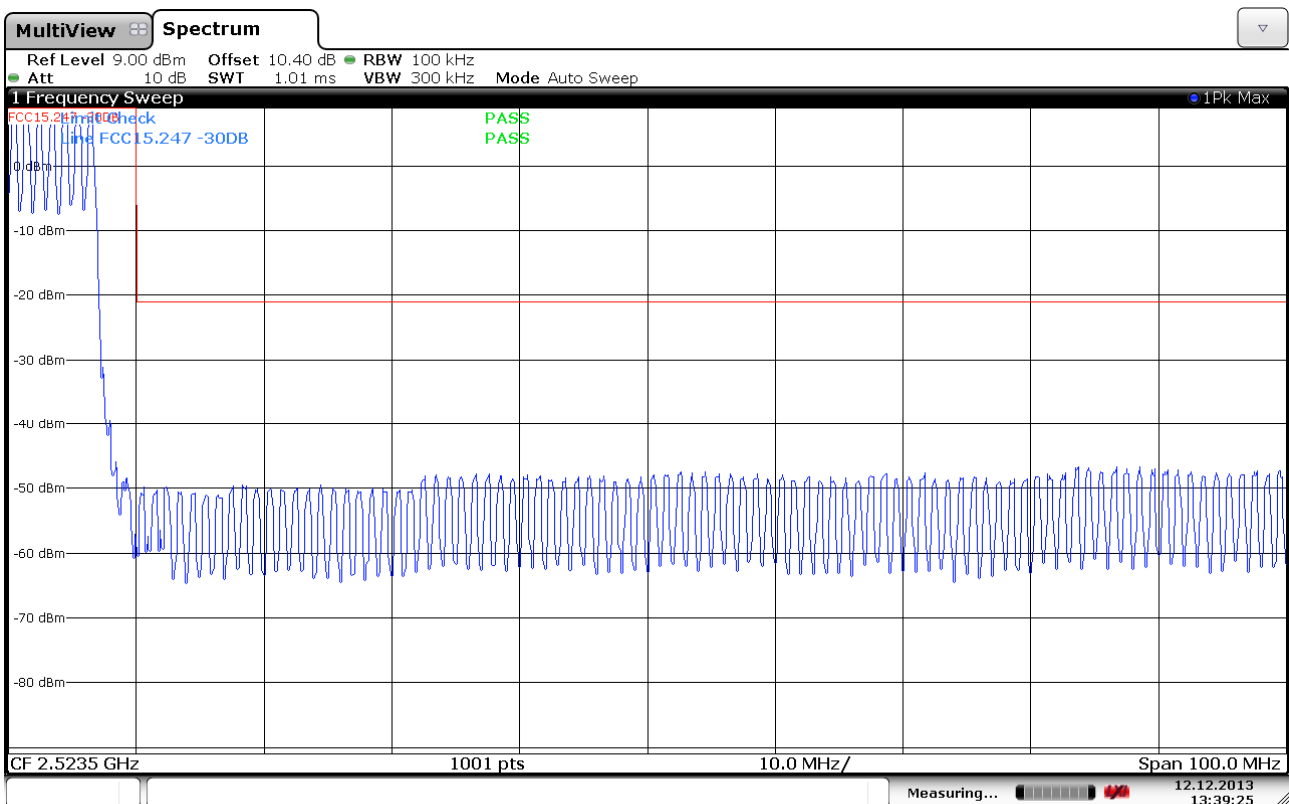
### Conducted Emissions, 1MHz -2400MHz, Hopping On, DH5



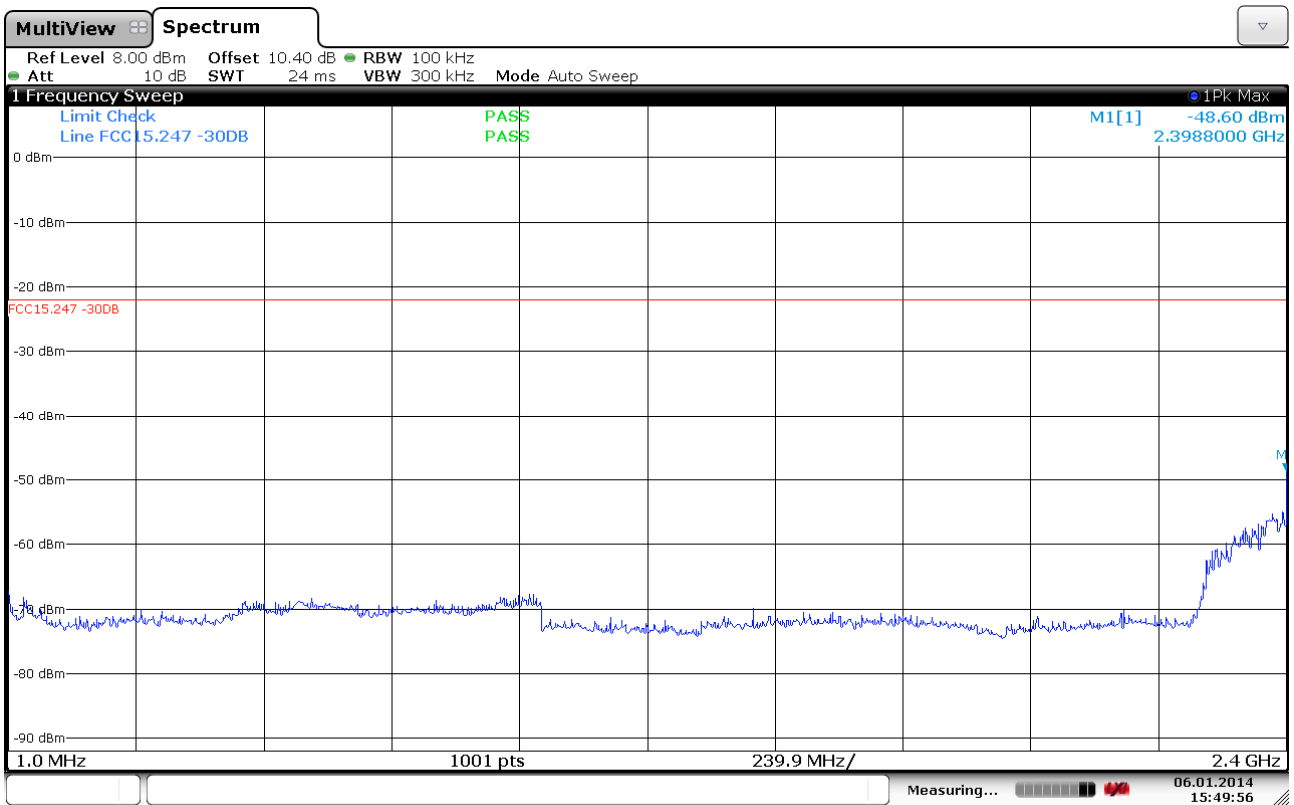
### Conducted Emissions, 2.4835 -25GHz, Hopping On, DH5



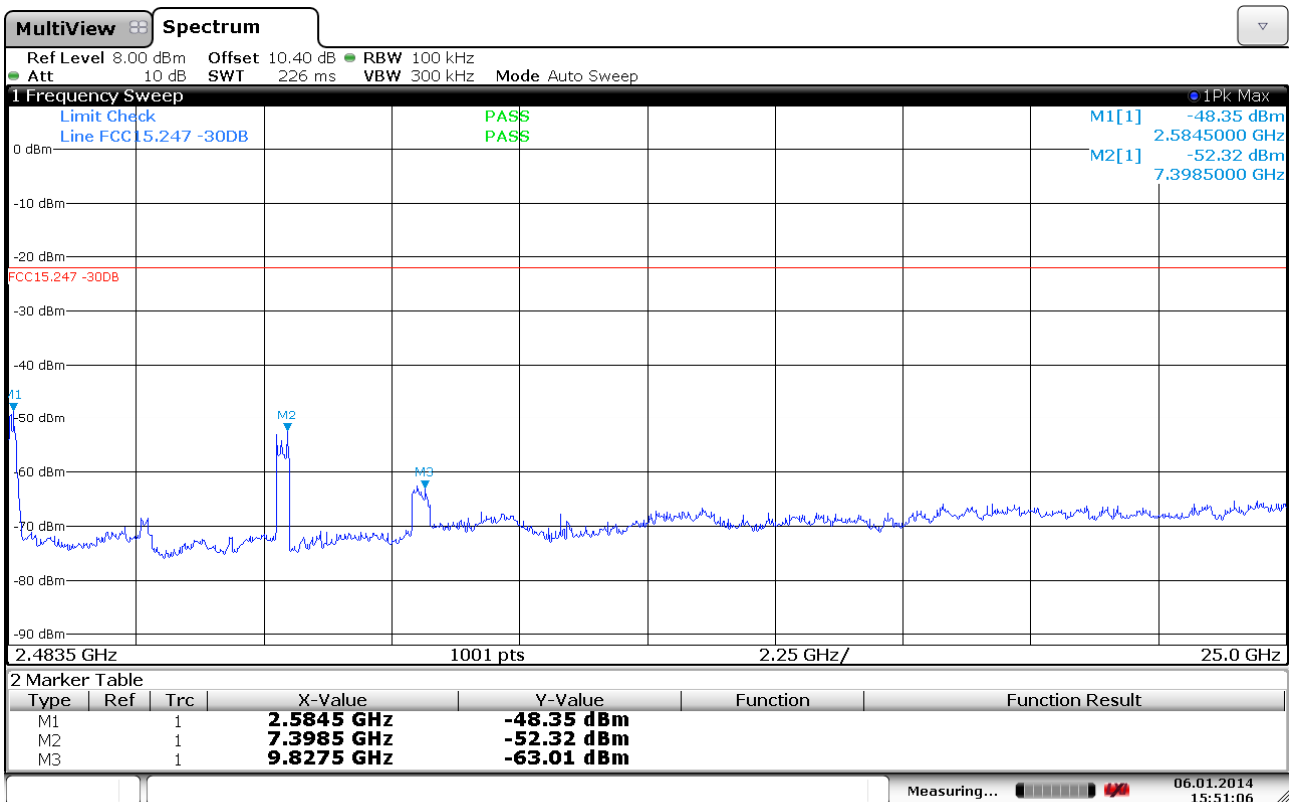
**Conducted Emissions, 2310 -2410 MHz, Hopping ON, DH5**



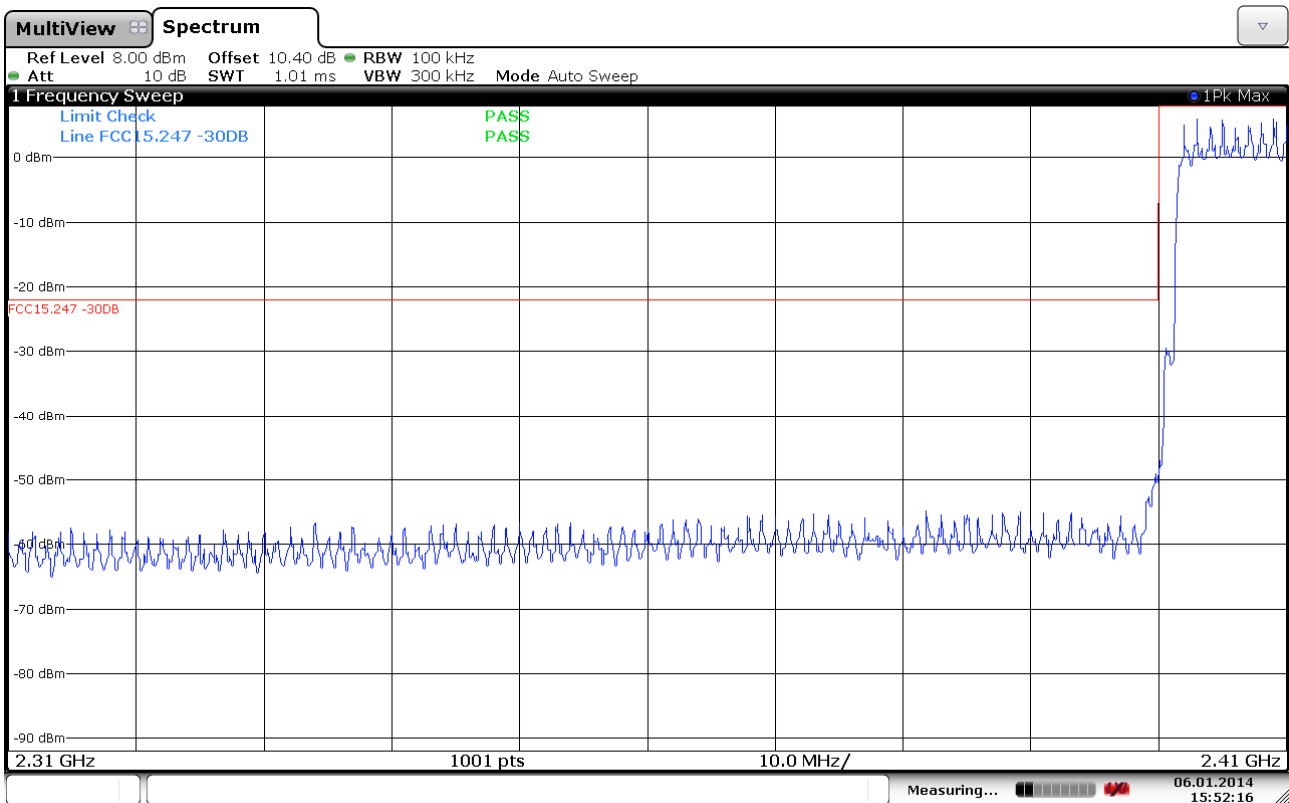
**Conducted Emissions, 2473.5 -2573.5 MHz, Hopping ON, DH5**



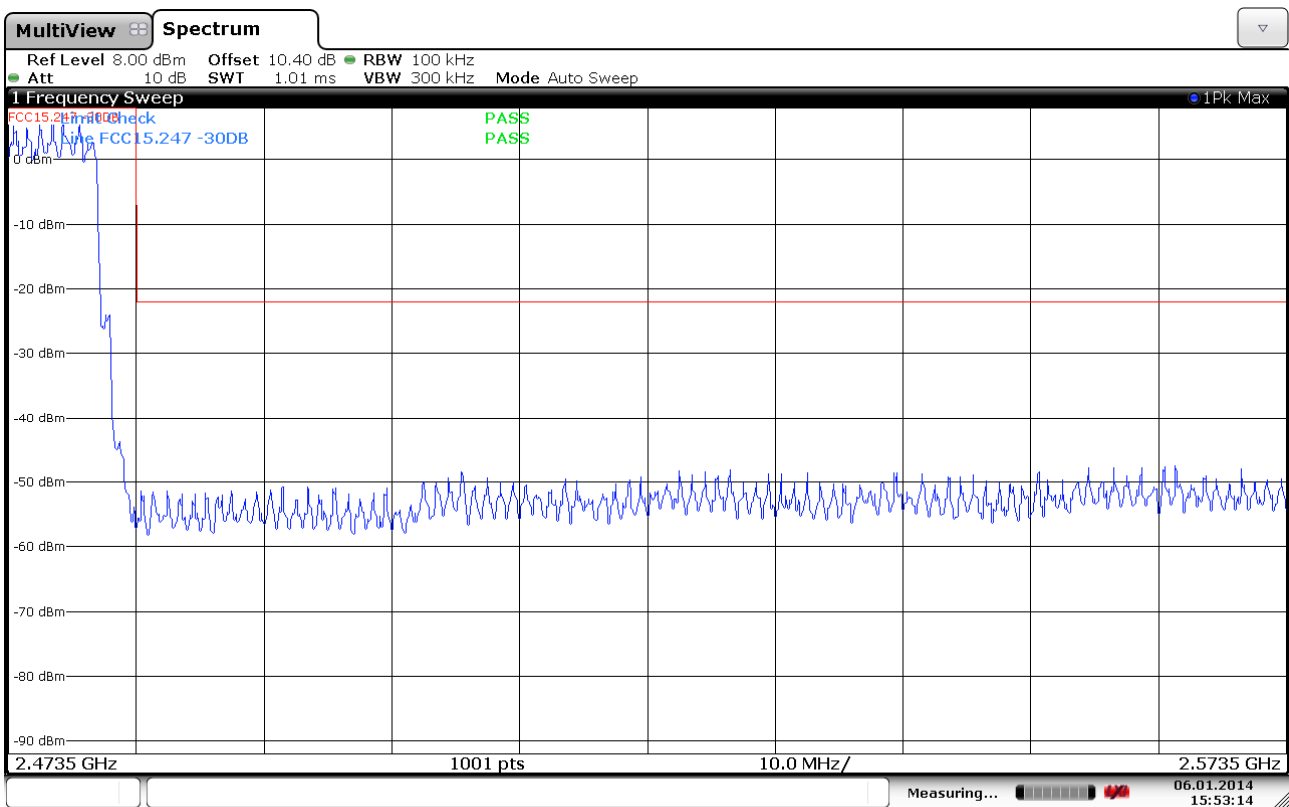
### Conducted Emissions, 1MHz -2400MHz, Hopping On, 2-DH5



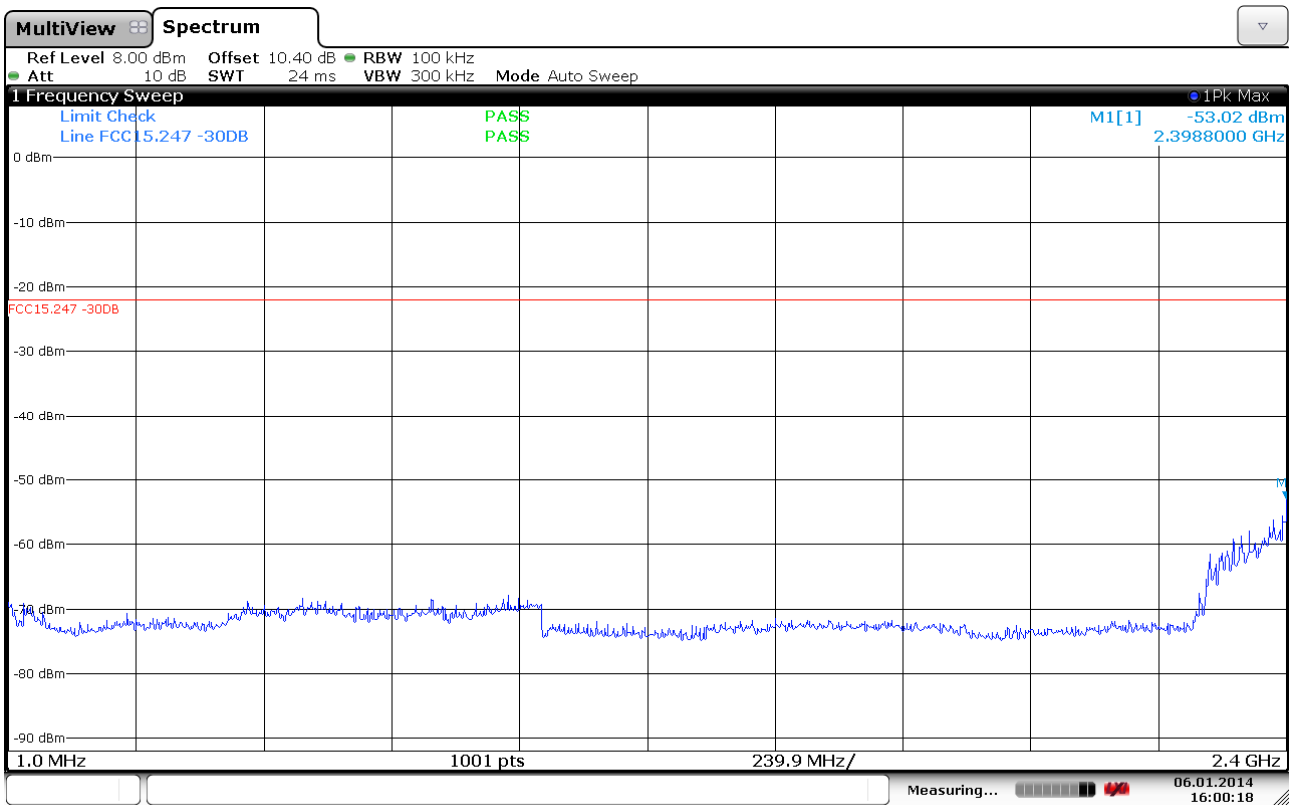
### Conducted Emissions, 2.4835 -25GHz, Hopping On, 2-DH5



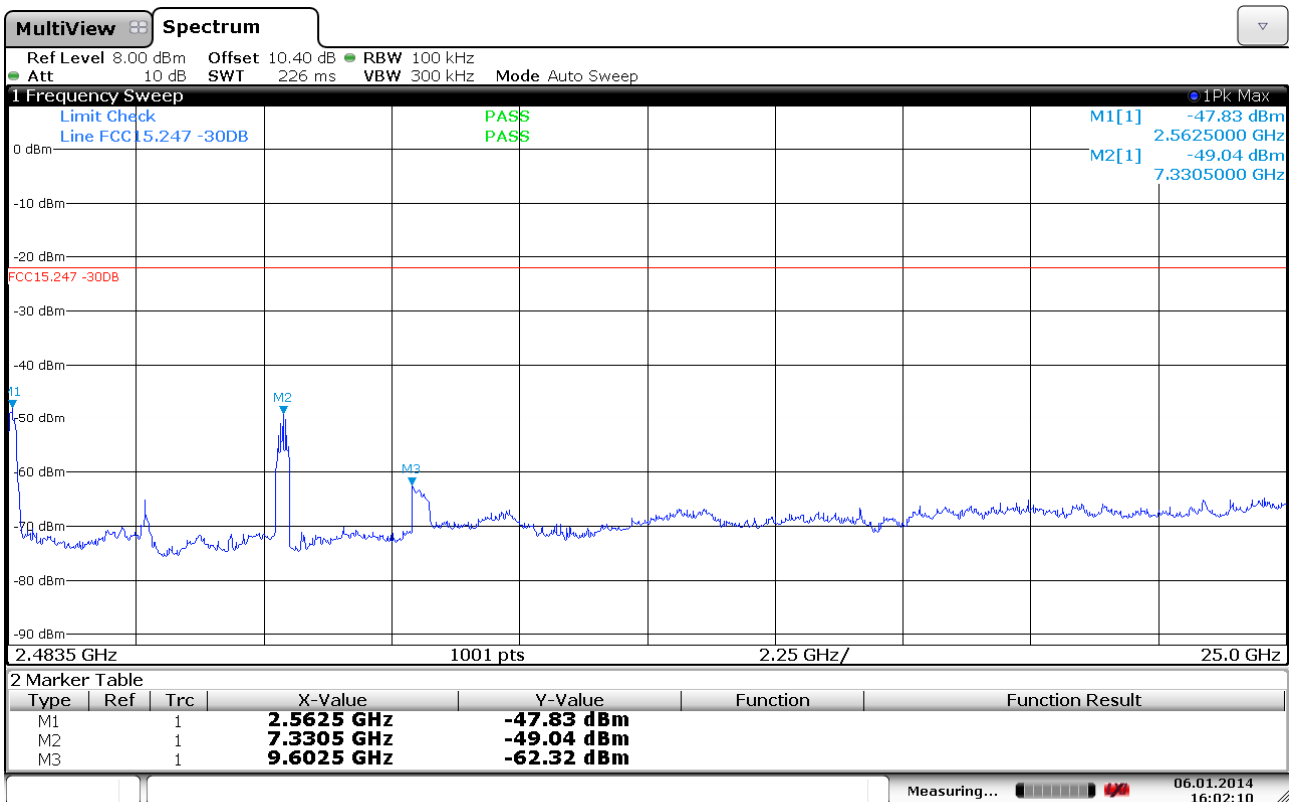
**Conducted Emissions, 2310 -2410 MHz, Hopping ON, 2-DH5**



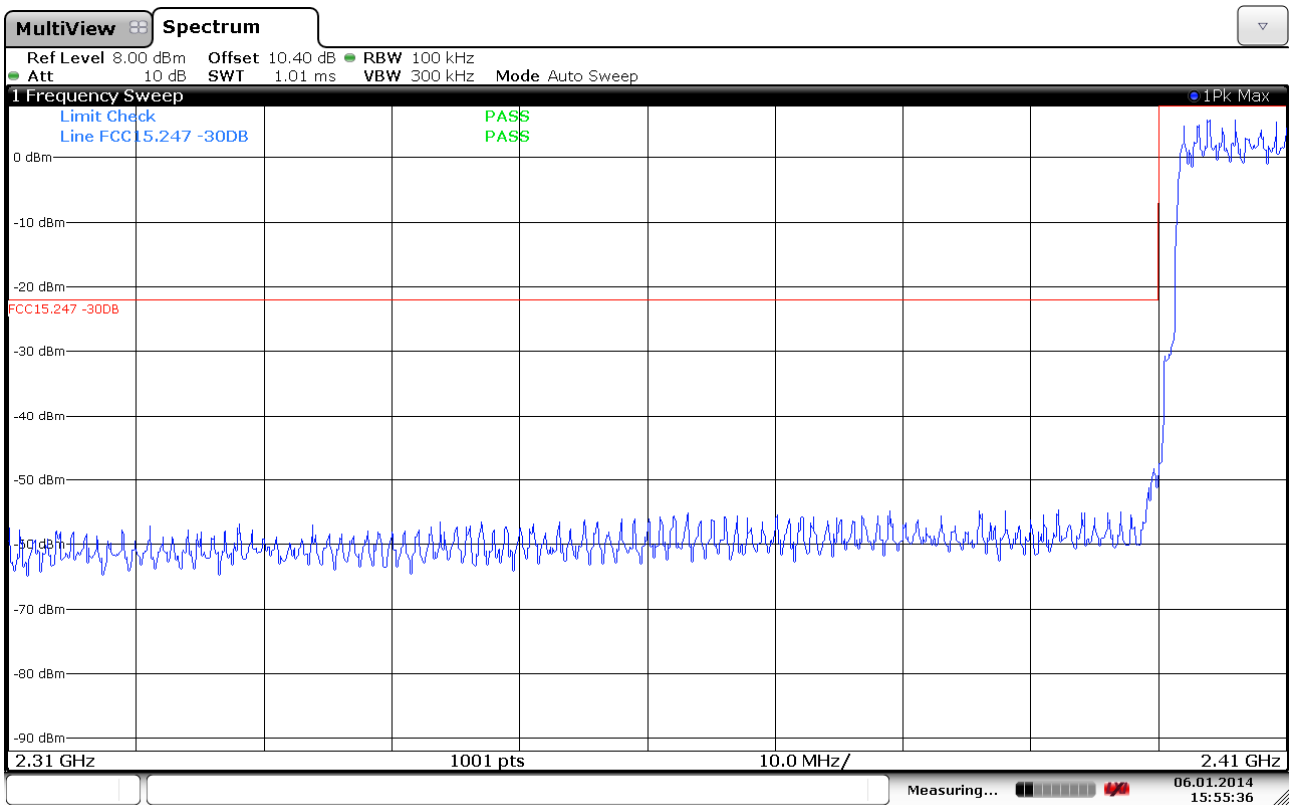
**Conducted Emissions, 2473.5 -2573.5 MHz, Hopping ON, 2-DH5**



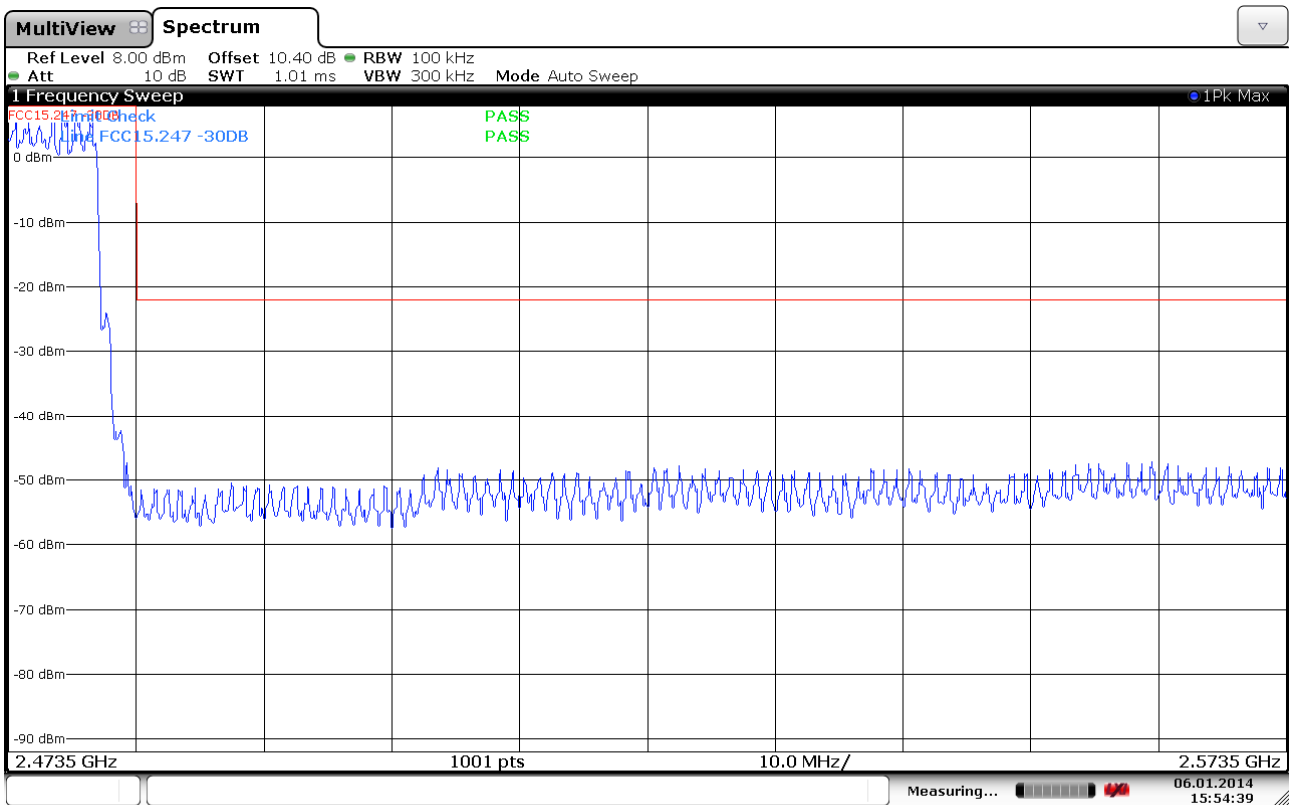
### Conducted Emissions, 1MHz -2400MHz, Hopping On, 3-DH5



### Conducted Emissions, 2.4835 -25GHz, Hopping On, 3-DH5



**Conducted Emissions, 2310 -2410 MHz, Hopping ON, 3-DH5**



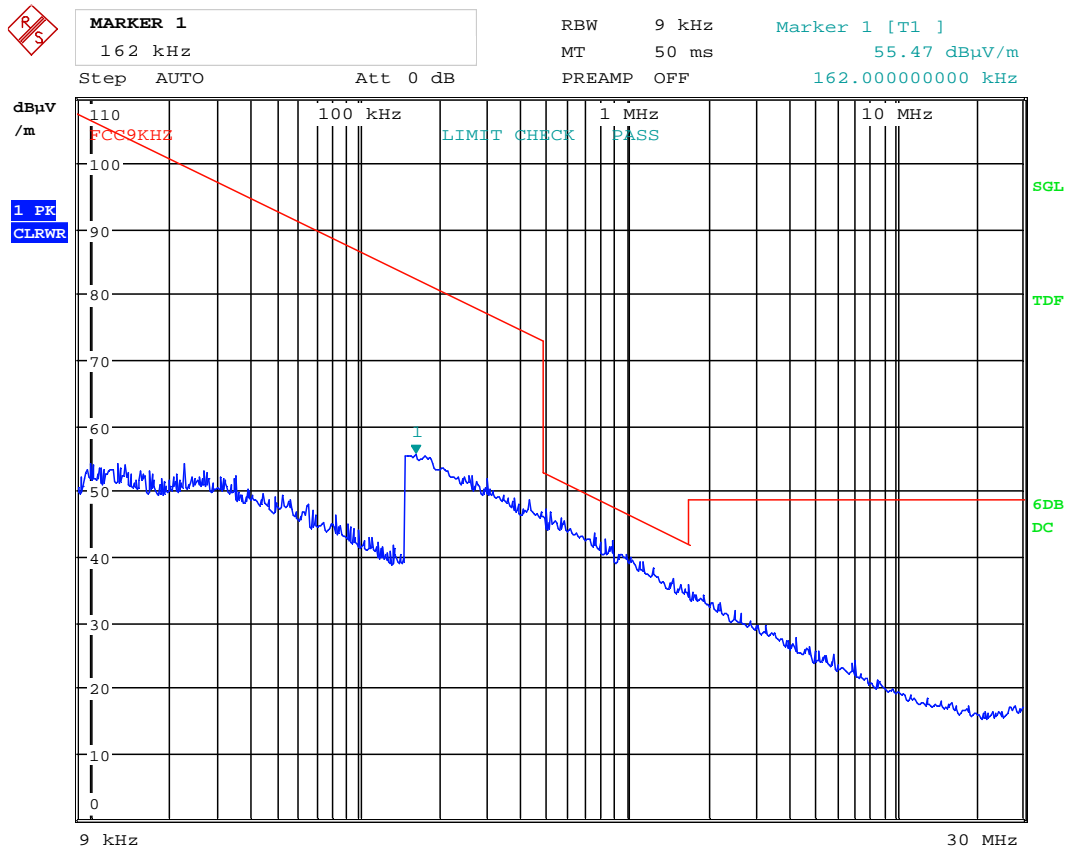
**Conducted Emissions, 2473.5 -2573.5 MHz, Hopping ON, 3-DH5**

**Radiated emissions 9 kHz-30 MHz.**

Measuring distance 10 m, measured with Peak detector.

No component detected, see attached graph.

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



Date: 18.DEC.2013 14:09:42

**Radiated emission 30 – 1000 MHz.**

Detector: Quasi-Peak

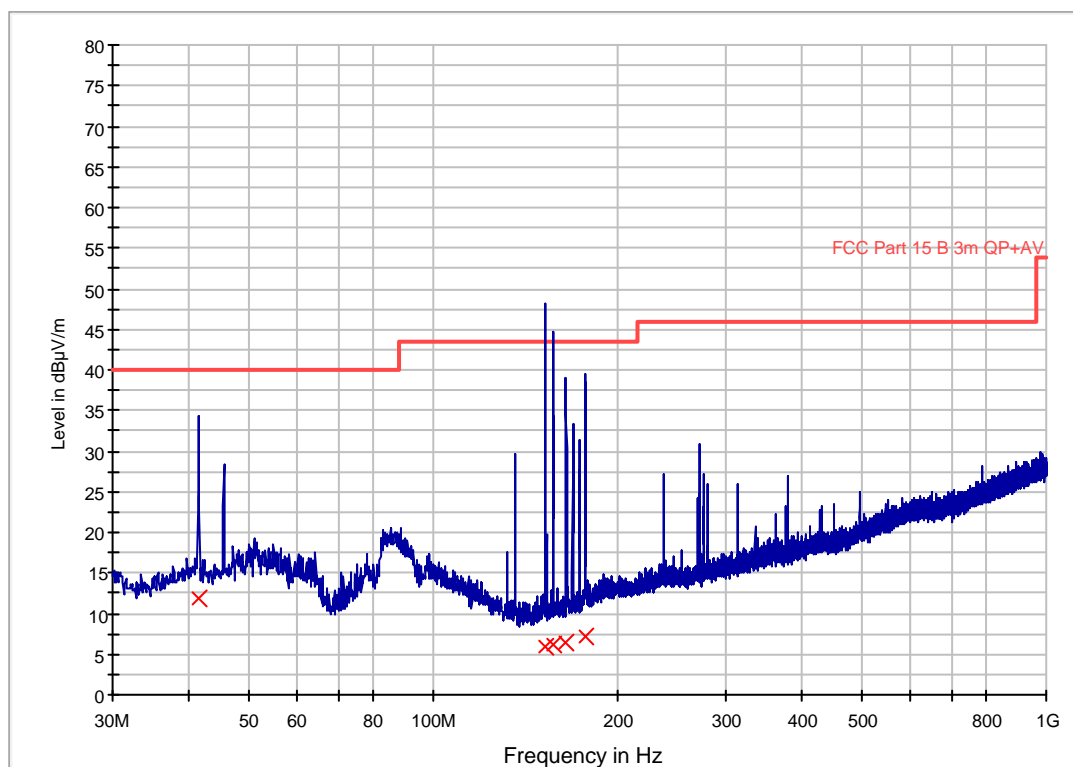
Measuring distance 3 m according to ANSI C63.4-2003.

Tested in speech mode with active connection.

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Polarization	Margin (dB)	Limit (dBµV/m)	Comment
41.438818	11.9	120.000	V	28.1	40.0	
152.819973	5.9	120.000	V	37.6	43.5	
156.907095	6.1	120.000	V	37.4	43.5	
164.817463	6.4	120.000	V	37.1	43.5	
176.977680	7.2	120.000	V	36.3	43.5	

See plot.

NTC FCC Pt15 Class B 30-1000M 3m



### Radiated Emissions, 1-25 GHz

Measuring distance: 3m (1 – 8.5 GHz)  
 1m (5.5 – 18 GHz)

A pre-scan was performed above 18 GHz and no spurious emissions were detected.

#### Peak Detector:

Frequency	RF channel	Dist. corr. factor	Field strength, Peak Detector, 3m	Limit	Margin
MHz	L,M,H	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
1842	Hopping	0	54.6	74	19.4
7206	L	0	49.0	74	25.0
7323	M	0	54.2	74	19.8
7440	H	0	56.1	74	17.9

#### Average Detector:

Frequency	RF channel	Dist. corr. factor	Field strength, Peak Detector, 3m	Duty cycle corr. factor	Limit	Margin
MHz	L,M,H	dB	dB $\mu$ V/m	dB	dB $\mu$ V/m	dB
1842	Hopping	0	54.6	20	54	19.4
7206	L	0	29.0	20	54	25.0
7323	M	0	34.2	20	54	19.8
7440	H	0	36.1	20	54	17.9

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

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

Distance correction factor is included on the plots for measurements @1m.

See plots.

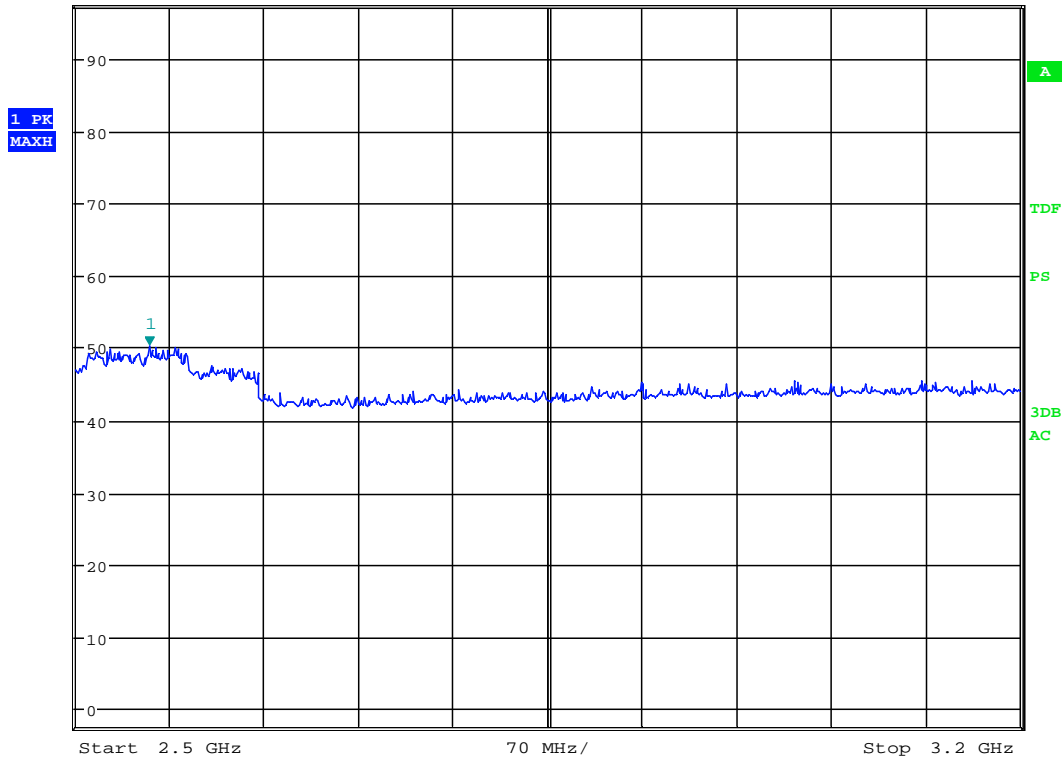








<b>MARKER 1</b>	*RBW 1 MHz	Marker 1 [T1]
2.483532051 GHz	*VBW 3 MHz	50.38 dBμV/m
Ref 97.5 dBμV/m	*Att 10 dB	SWT 2.5 ms
		2.554967949 GHz



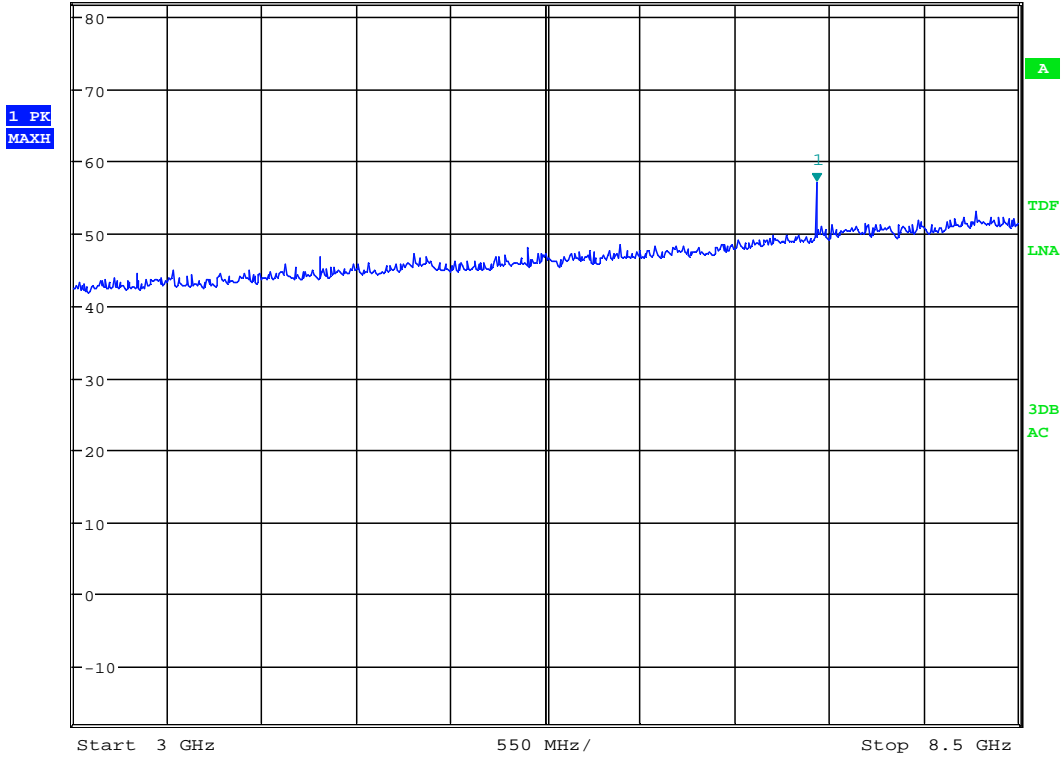
Date: 16.DEC.2013 17:20:00

**Radiated Emissions, 2500 -3200MHz, HP, Hopping ON, UPCS Active**



\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      57.17 dBµV/m  
 SWT 35 ms      7.327724359 GHz

Ref 82 dBµV/m      \*Att 10 dB



Date: 16.DEC.2013 17:37:44

**Radiated Emissions, 3000 -8500MHz, VP**

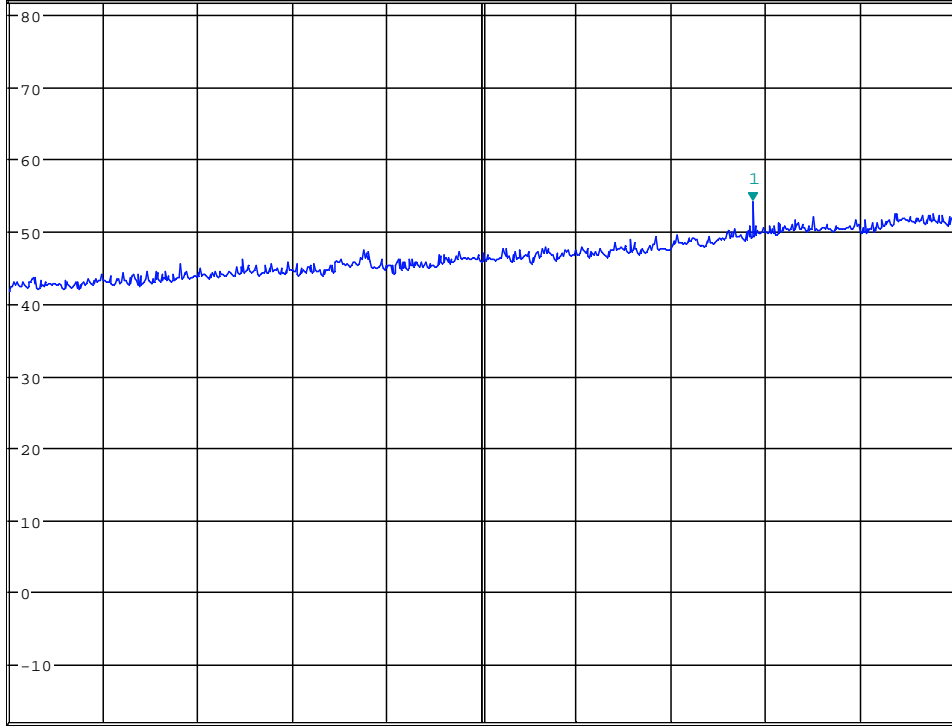


\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      54.20 dBµV/m  
 SWT 35 ms      7.327724359 GHz

Ref 82 dBµV/m

\*Att 10 dB

1 PK  
 MAXH



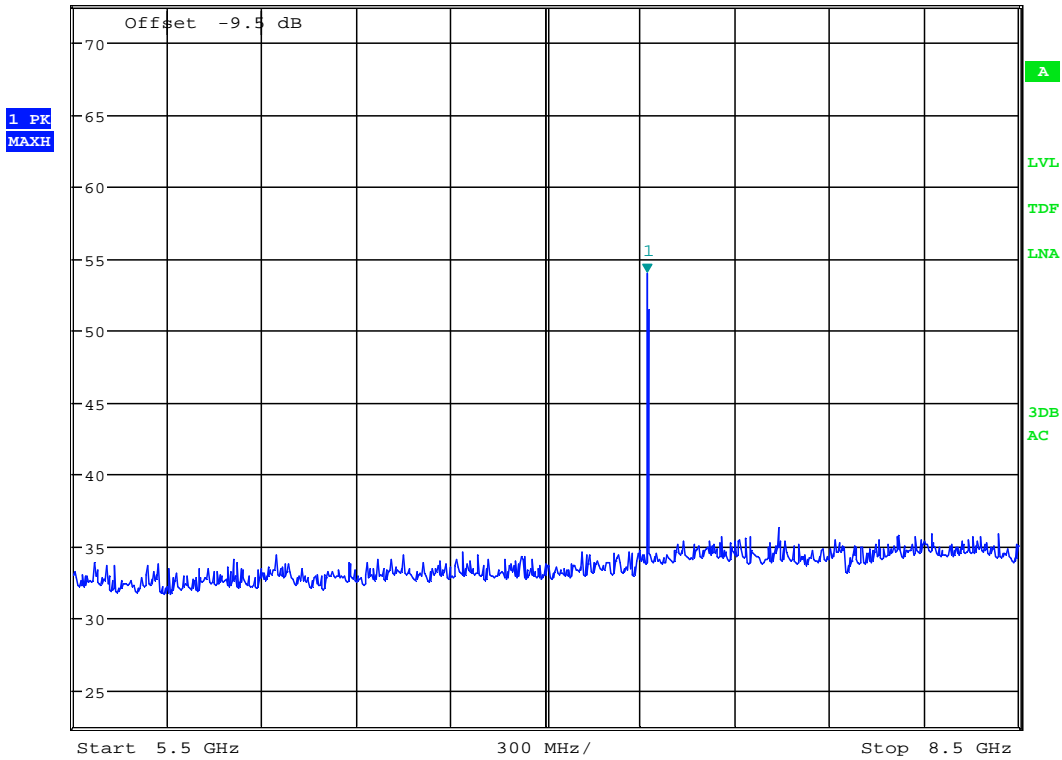
Start 3 GHz      550 MHz/      Stop 8.5 GHz

Date: 16.DEC.2013 17:39:25

**Radiated Emissions, 3000 -8500MHz, HP**



\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      53.99 dBµV/m  
 Ref 72.5 dBµV/m    \*Att 10 dB      SWT 20 ms      7.322115385 GHz

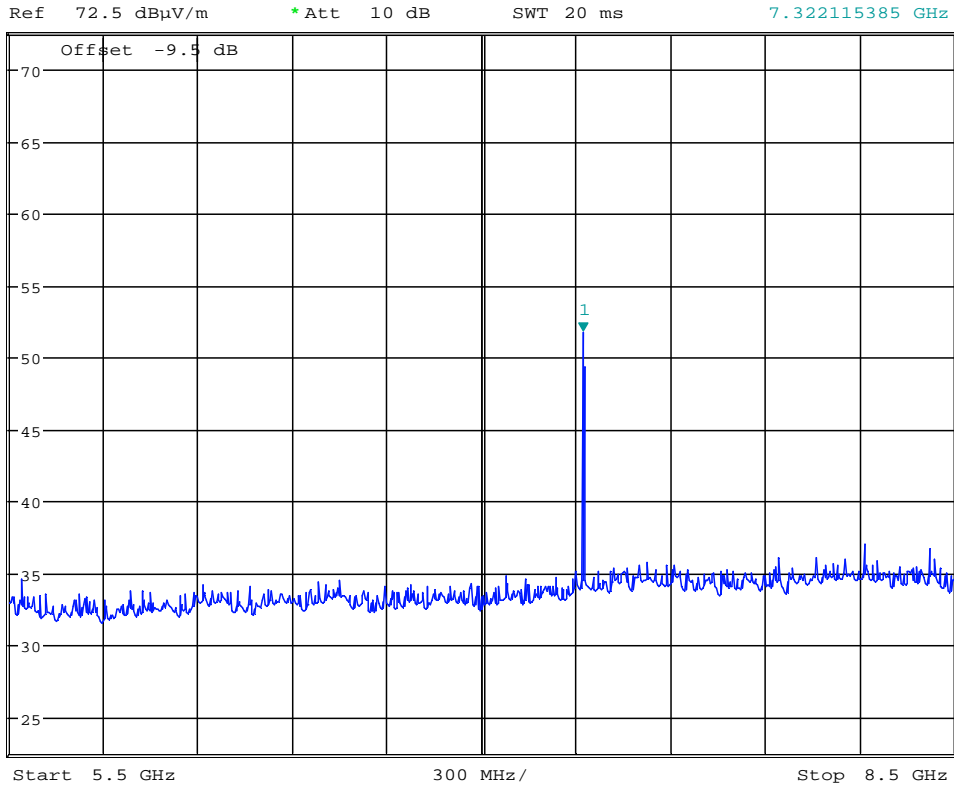


Date: 16.DEC.2013 17:46:25

**Radiated Emissions, 5500 -8500MHz, VP, @1m**



\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      51.74 dBμV/m  
 SWT 20 ms      7.322115385 GHz

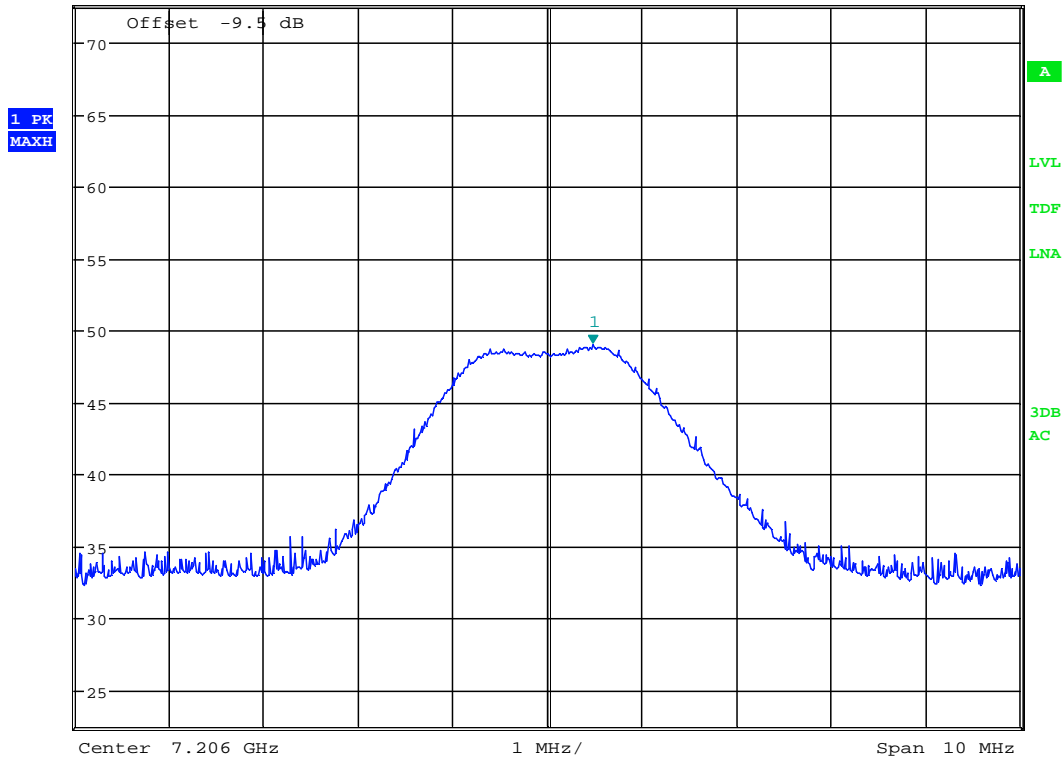


Date: 16.DEC.2013 17:48:07

**Radiated Emissions, 5500 -8500MHz, HP, @1m**



**MARKER 1**  
 7.206480769 GHz  
 Ref 72.5 dBµV/m \*Att 10 dB \*RBW 1 MHz Marker 1 [T1 ]  
 VBW 3 MHz 49.01 dBµV/m  
 SWT 20 ms 7.206480769 GHz

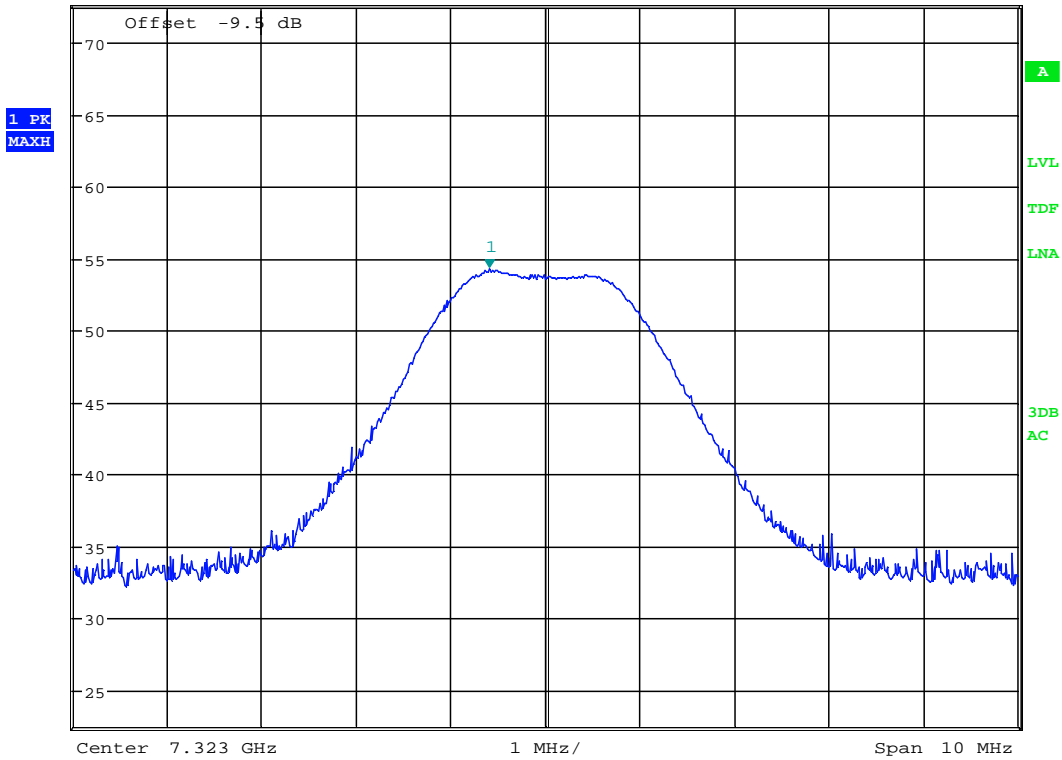


Date: 16.DEC.2013 18:04:20

**Radiated Emissions, 7206MHz, VP, Ch00**



\*RBW 1 MHz      Marker 1 [T1 ]  
 VBW 3 MHz      54.23 dBµV/m  
 SWT 20 ms      7.322407051 GHz  
 Ref 72.5 dBµV/m      \*Att 10 dB

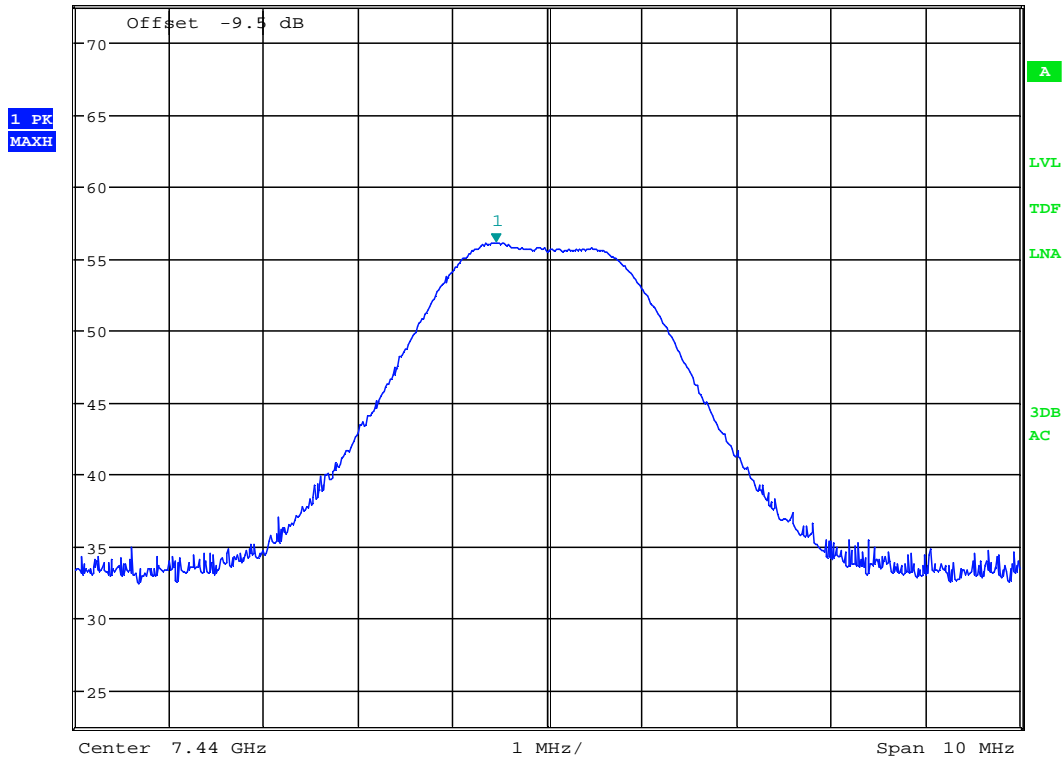


Date: 16.DEC.2013 18:00:23

**Radiated Emissions, 7323MHz, VP, Ch00**



<b>MARKER 1</b>	*RBW 1 MHz	Marker 1 [T1 ]
7.439455128 GHz	VBW 3 MHz	56.11 dBµV/m
Ref 72.5 dBµV/m	SWT 20 ms	7.439455128 GHz
*Att 10 dB		



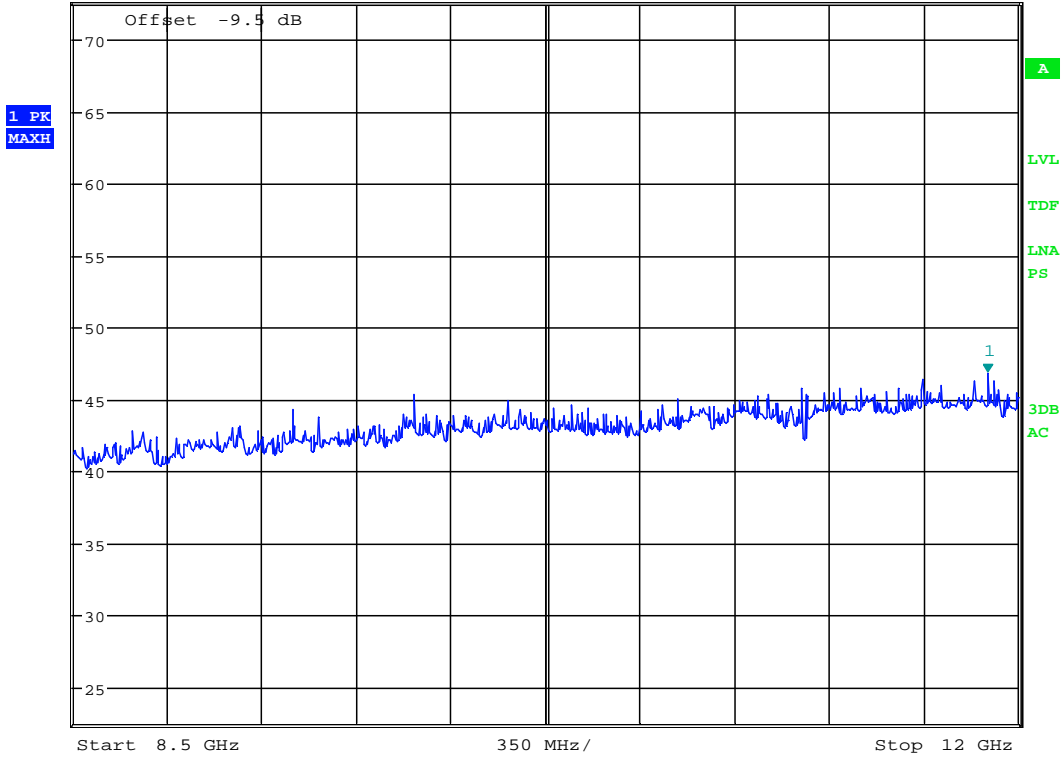
Date: 16.DEC.2013 18:06:11

**Radiated Emissions, 7440MHz, VP, Ch78**



\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      46.82 dBμV/m  
 SWT 25 ms      11.887820513 GHz

Ref 72.5 dBμV/m      \*Att 10 dB



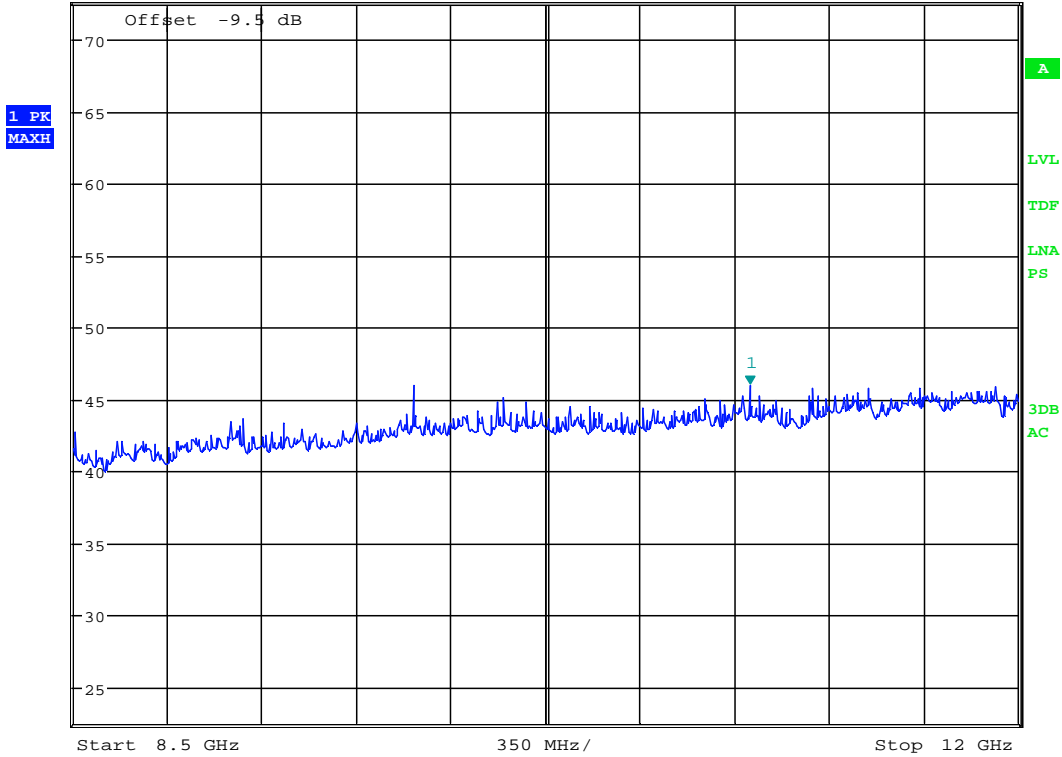
Date: 16.DEC.2013 18:11:04

**Radiated Emissions, 8500 -12000MHz, VP, @1m**



\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      46.03 dBμV/m  
 SWT 25 ms      11.007211538 GHz

Ref 72.5 dBμV/m      \*Att 10 dB



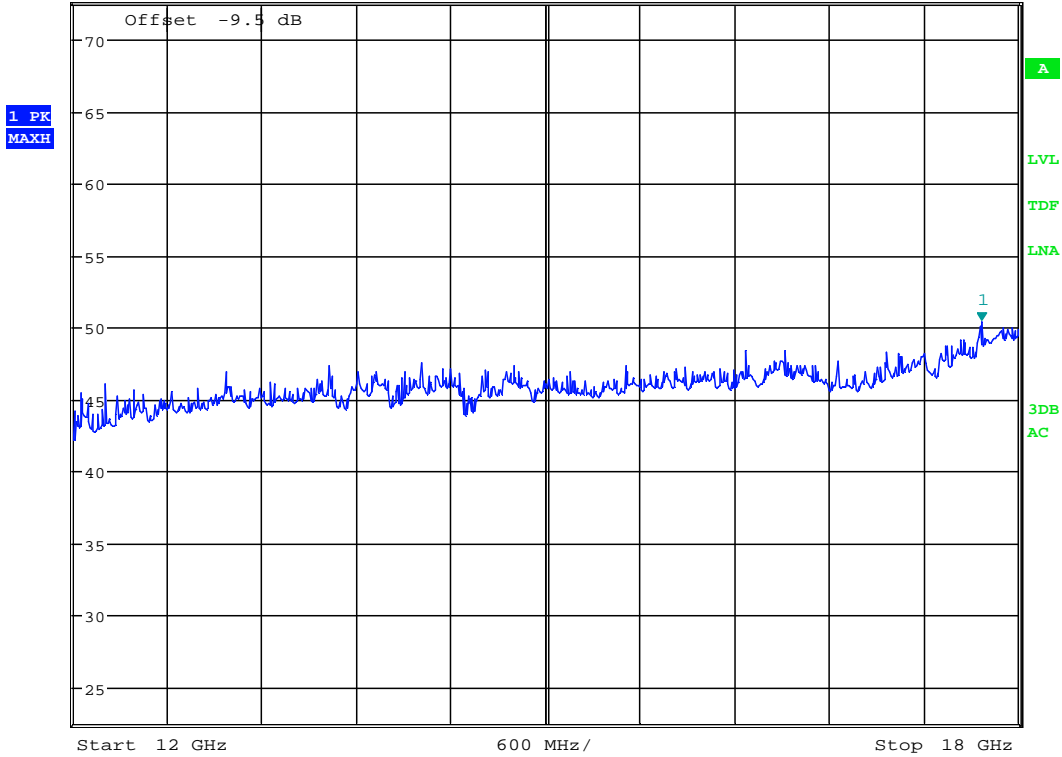
Date: 16.DEC.2013 18:12:45

**Radiated Emissions, 8500 -12000MHz, HP, @1m**



\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      50.38 dBµV/m  
 SWT 35 ms      17.769230769 GHz

Ref 72.5 dBµV/m      \*Att 10 dB



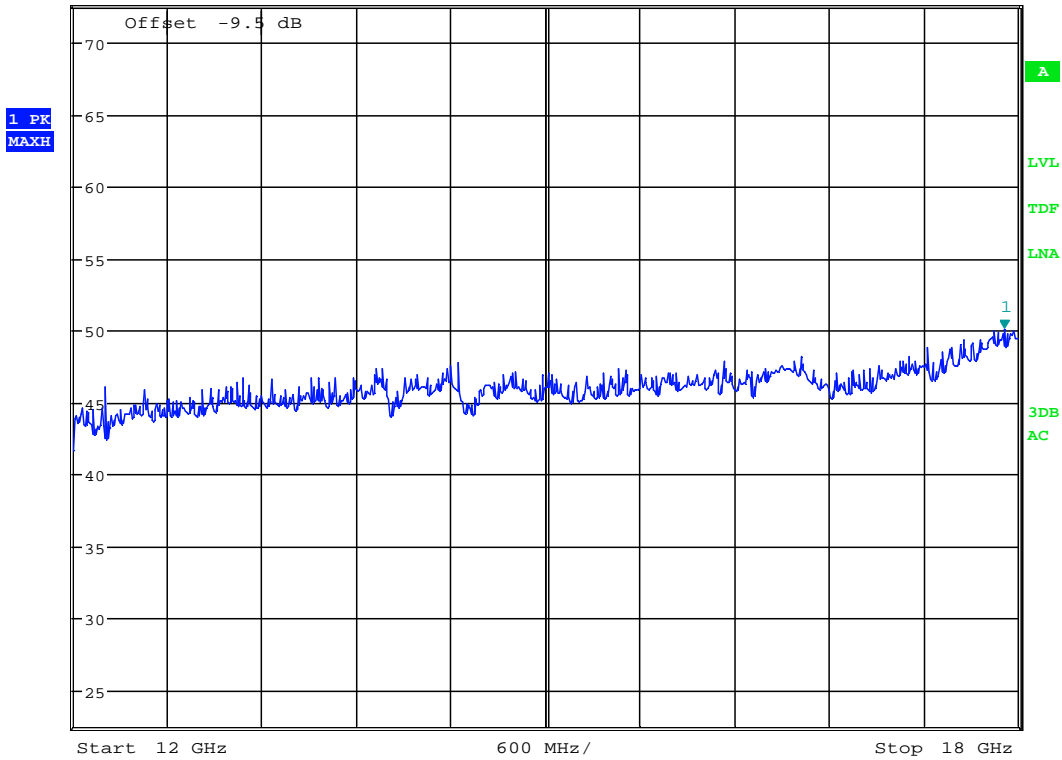
Date: 16.DEC.2013 18:16:33

**Radiated Emissions, 12000 -18000MHz, VP, @1m**



\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      50.03 dBµV/m  
 SWT 35 ms      17.913461538 GHz

Ref 72.5 dBµV/m      \*Att 10 dB



Date: 16.DEC.2013 18:18:13

**Radiated Emissions, 12000 -18000MHz, HP, @1m**

**Pre-scan, 18000 -25000MHz, @ approx. 10cm**

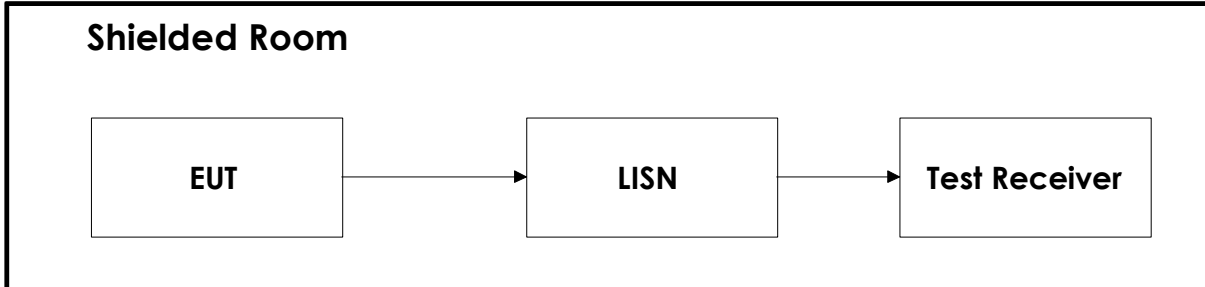
## 4 LIST OF TEST EQUIPMENT

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	2013.08.30	2014.08.30
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2013.09.24	2014.09.24
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	2015.08.05
8	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2013-09	2014-09
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	2015.06.17
14	HFH2-Z2	Loop Antenna	Rohde & Schwarz	LR 285	2010.10	2015.10
15	Model 87V	Multimeter	Fluke	N-4669	2013.09	2014.09
16	6812B	AC Power Source	Agilent	LR 1515	2013.10.28	2014.10.28
17	ESHS10	Measuring Receiver	Rohde & Schwarz	N- 3528	2012.06.28	2014.06.28
18	ESH3-Z5	Two Line V-Network	Rohde & Schwarz	LR 1076	Cal b4 use	
19	ESH3-Z2	Pulse Limiter	Rohde & Schwarz	LR 1074	2012.04.24	2014.04.24

## 5 BLOCK DIAGRAM

### 5.1 Power Line Conducted Emission



### 5.2 Test Site Radiated Emission

