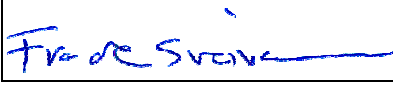


Test Report

Product	Bluetooth Transceiver in IP Phone
Name and address of the applicant	Panasonic Corporation 1-62, 4-chome, Minoshima, Hakata-ku Fukuoka, 812-8531, Japan
Name and address of the manufacturer	Panasonic Corporation 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8501, Japan
Model	KX-NT680 KX-NT680C
Rating	120V 60Hz (Mains) 48V DC (PoE)
Trademark	PANASONIC
Serial number	/
Additional information	Bluetooth, Proprietary IP
Tested according to	FCC Part 15.247 Digital Transmission Systems Industry Canada RSS-247, Issue 2 Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
Order number	354306
Tested in period	2018.06.18 to 2018.07.02
Issue date	2018.07.18
Name and address of the testing laboratory	 Instituttveien 6 Kjeller, Norway SITE NUMBER: FCC: NO0001 IC: 2040D-1   An accredited technical test executed under the Norwegian accreditation scheme
 Prepared by [Frode Sveinsen]  Approved by [G.Suhanthakumar]	
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Nemko Norway

Nemko AS, Instituttveien 6, P.O. Box 96 Kjeller, 2027 Kjeller, Norway
TEL +47 22 96 03 30 FAX +47 22 96 05 50 EMAIL info@nemko.com
ENTERPRISE NUMBER NO974404532

nemko.com/no

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1 INFORMATION

1.1 Test Item

Name	Panasonic
FCC ID	ACJ96NKX-NT680
ISED ID	216A-KXNT680
Model/version	KX-NT680 KX-NT680C
Serial number	/
Hardware version	BT module: PNLB2118, Main board: PNLB2758S2
Software version	BT module: V1198, Main board: V68.998
Frequency Range	2402 – 2480 MHz
Number of Channels	79
Operating Modes	FHSS
Type of Modulation	Digital (GFSK)
User Frequency Adjustment	None
Rated Output Power	0.00662 Watts (Conducted)
Power Supply	AC Adaptor PNLV6508 (Input: 100-240V 0.5-0.3A 50/60Hz; Output: 12V _{DC} 1.5A)
Antenna Connector	None
Number of Antennas	1
Antenna Diversity Supported	No
Desktop Charger	N/A

Description of Test Item

The EUT is an IP Phone with Bluetooth Transceiver.

The models KX-NT680 and KX-NT680C are identical.

1.2 Normal test condition

Temperature:	20 – 24 °C
Relative humidity:	20 – 50 %
Normal test voltage:	120 V 60 Hz (Mains) 48 V DC (Power over Ethernet)

The values are the limit registered during the test period.

1.3 Test Engineer(s)

Frode Sveinsen

1.4 Description of modification for Modification Filing

Not applicable.

1.5 Family List Rational

Not Applicable.

1.6 Antenna Requirement

Is the antenna detachable? ☐ Yes ☒ No
If detachable, is the antenna connector non-standard? ☐ Yes ☐ No

The EUT has only internal antenna. A temporary antenna connector was used for conducted tests.

Ref. FCC §15.203

1.7 Worst-Case Configuration and Mode

The EUT supports only Basic Rate Bluetooth with standard bitrate.

1.8 Comments

The measurements were done with the EUT powered by the supplied AC adaptor and with the EUT supplied from Power over Ethernet.

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 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-247 Issue 2 and RSS-GEN Issue 5.

Tests were performed in accordance with ANSI C63.4-2014 and ANSI C63.10-2013.

Radiated tests were performed 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".

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2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-247 Issue 2, RSS-GEN Issue 5 reference	Result
Supply Voltage Variations	15.31(e)	6.11 (RSS-GEN)	Complies
Number of Operating Frequencies	15.31(m)	5.1 (d)	Complies
Antenna Requirement	15.203	6.8 (RSS-GEN)	Complies
Power Line Conducted Emission	15.107(a) 15.207(a)	8.8 (RSS-GEN)	Complies
Channel Separation	15.247(a)(1)	5.1 (b)	Complies
Pseudorandom Hopping Algorithm	15.247(a)(1)	5.1 (a)	Complies
Time of Occupancy	15.247(a)(1)(iii)	5.1 (d)	Complies
Occupied Bandwidth	15.247(a)(1)	5.1 (e) 6.7 (RSS-GEN)	Complies
Minimum 6 dB Bandwidth	15.247(a)(2)	5.2 (a)	N/A ¹
Peak Power Output	15.247(b)	5.4 (b)	Complies
Power Spectral Density	15.247(d)	5.2 (b)	N/A ¹
Spurious Emissions (Antenna Conducted)	15.247(c)	5.5	Complies ²
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	6.13 (RSS-GEN) 8.9 (RSS-GEN)	Complies

¹ Not applicable for FHSS equipment

² The tested equipment has integrated antennas only

3 TEST RESULTS

3.1 Power Line Conducted Emissions

Para. No.: 15.207 (a)

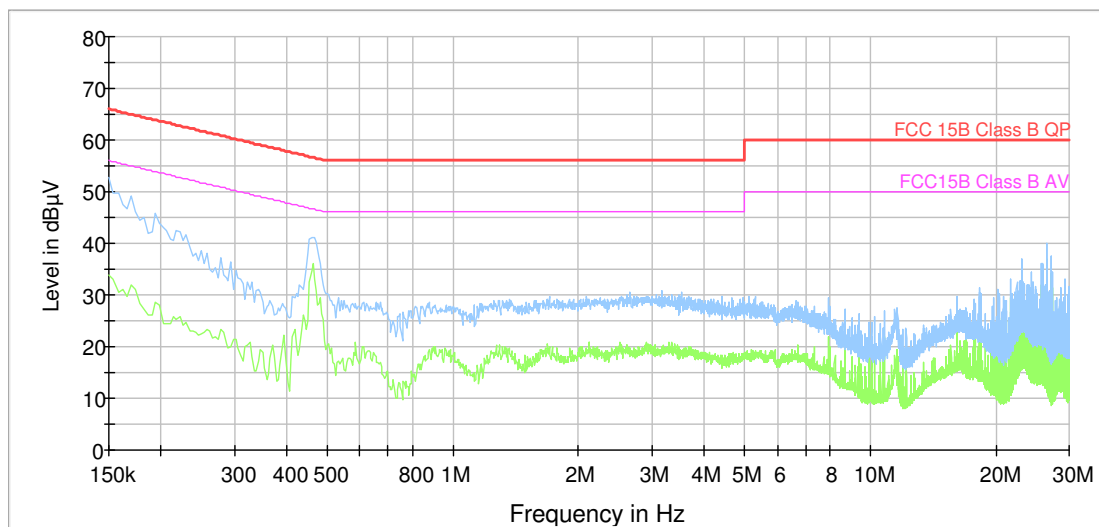
Measurement procedure: ANSI C63.4-2014 using 50 μ H/50 ohms LISN.

Test Results: Complies.

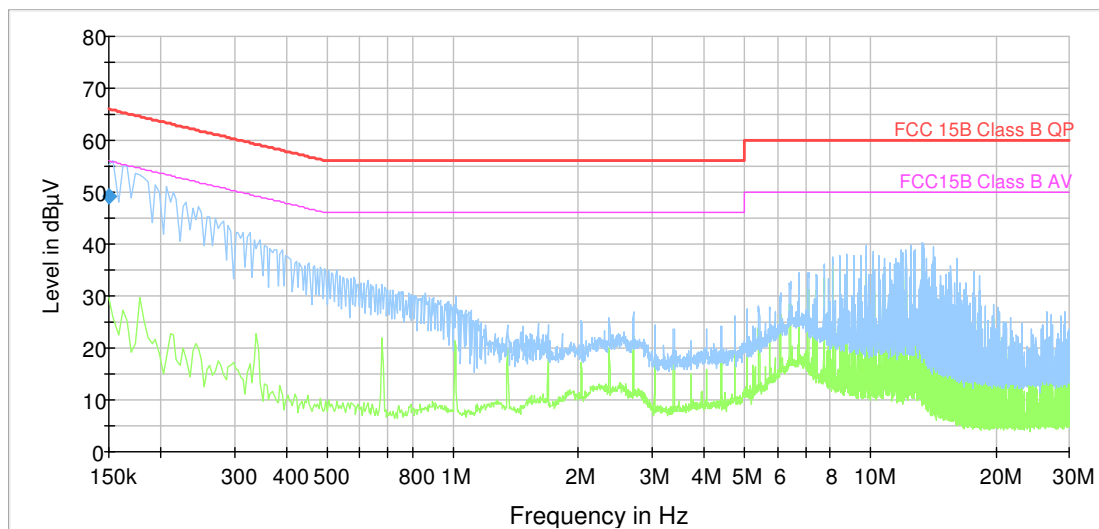
Highest measured value (L1 and N):

All emissions are below the Average Limit even when measured with Peak Detector.

AC Adaptor, 120V 60Hz:



Power over Ethernet, 120V 60Hz:



3.2 Channel Separation

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

Test Results: **Complies**

Measurement Data:

Channel Separation:	1.0 MHz
Nominal value for Channel Separation	1.0 MHz
20 dB BW of hopping channel, 2402MHz:	930 kHz
20 dB BW of hopping channel, 2441MHz:	928 kHz
20 dB BW of hopping channel, 2480MHz:	924 kHz

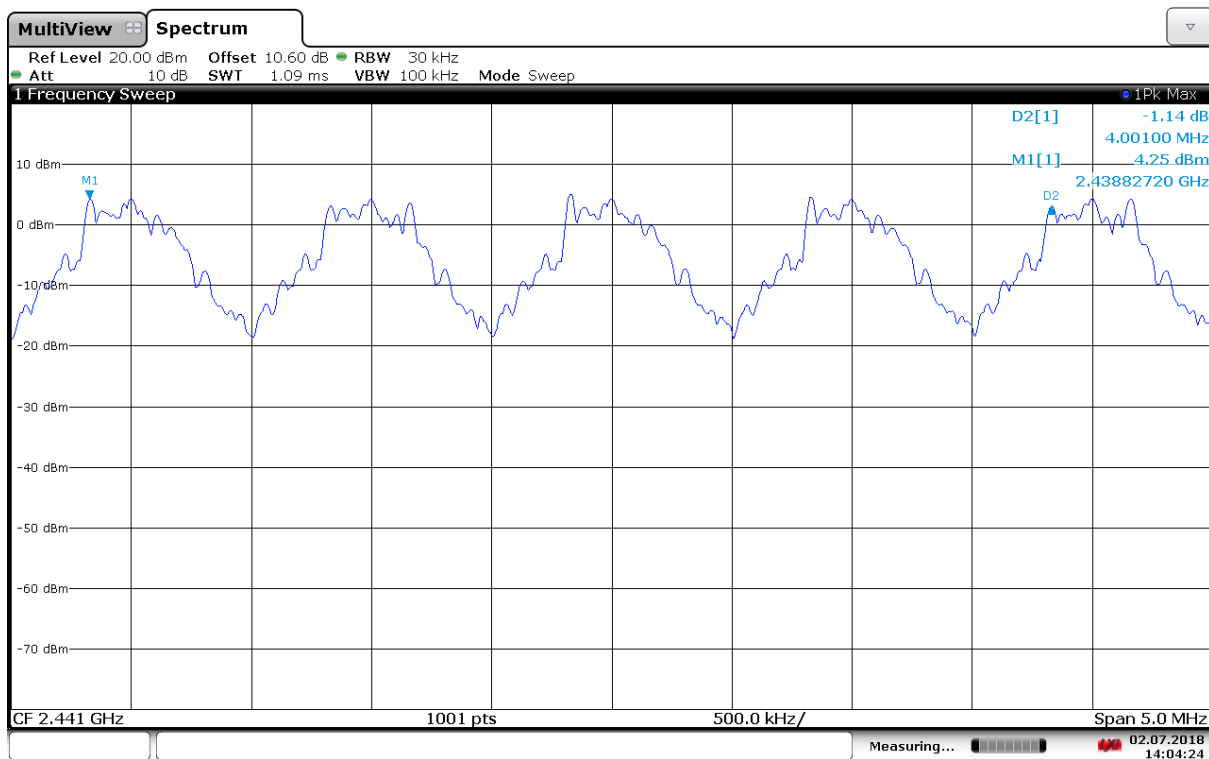
See attached plots

Requirement:

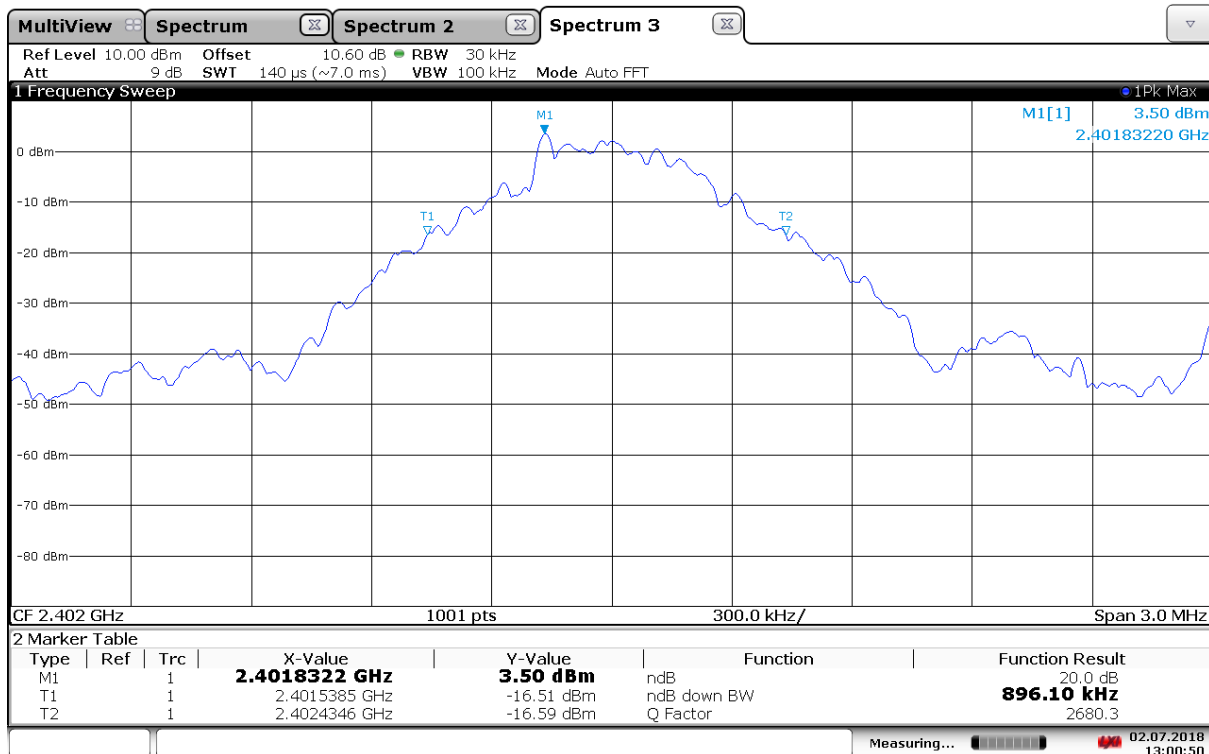
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

or:

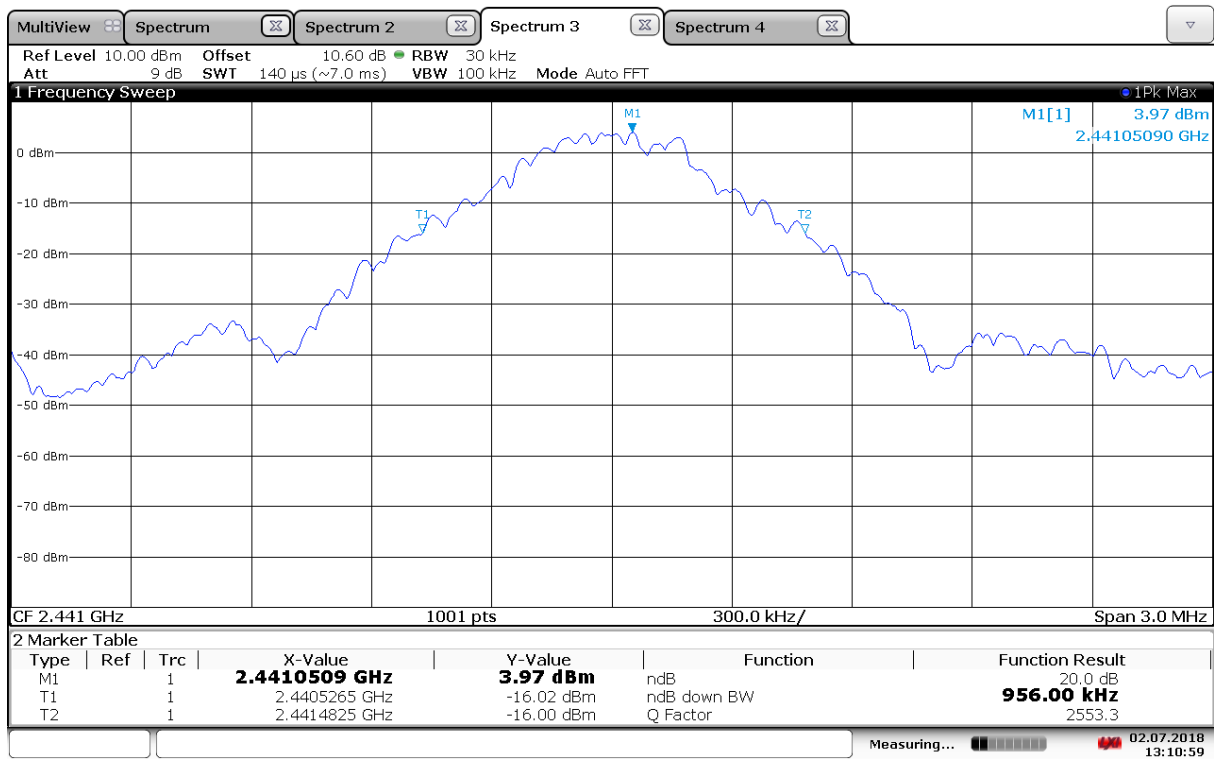
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the system operates with an output power no greater than 125 mW.



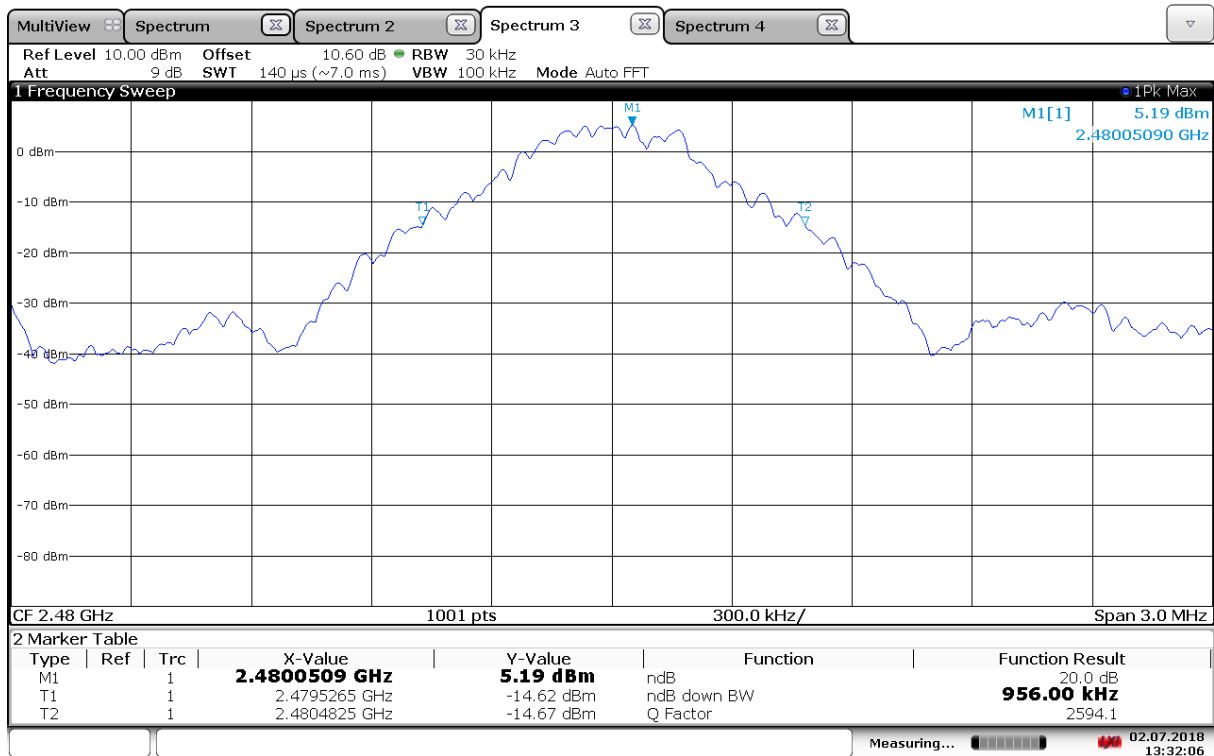
Channel Separation



20dB Bandwidth, 2402 MHz



20dB Bandwidth, 2441 MHz



20dB Bandwidth, 2480 MHz

3.3 Pseudorandom Hopping Algorithm

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

Test Results: Complies

Measurement Data: The EUT follows the Bluetooth standard.

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	2.90 ms
Time between RF Burst on same RF Channel	75.2 ms (20 ch)
	297.04 ms (79 ch)
Time of Occupancy (20 and 79 ch mode)	309.6 ms

20 Ch Mode:

Time between RF burst on same channel: $3.76 \times 20 \text{ ms} = 75.2 \text{ ms}$

Time of occupancy: $(2.91 \times 400 \times 20) / 75.2 = 309.6 \text{ ms}$

79 Ch Mode:

Time between RF burst on same channel: $3.76 \times 79 \text{ ms} = 297.04 \text{ ms}$

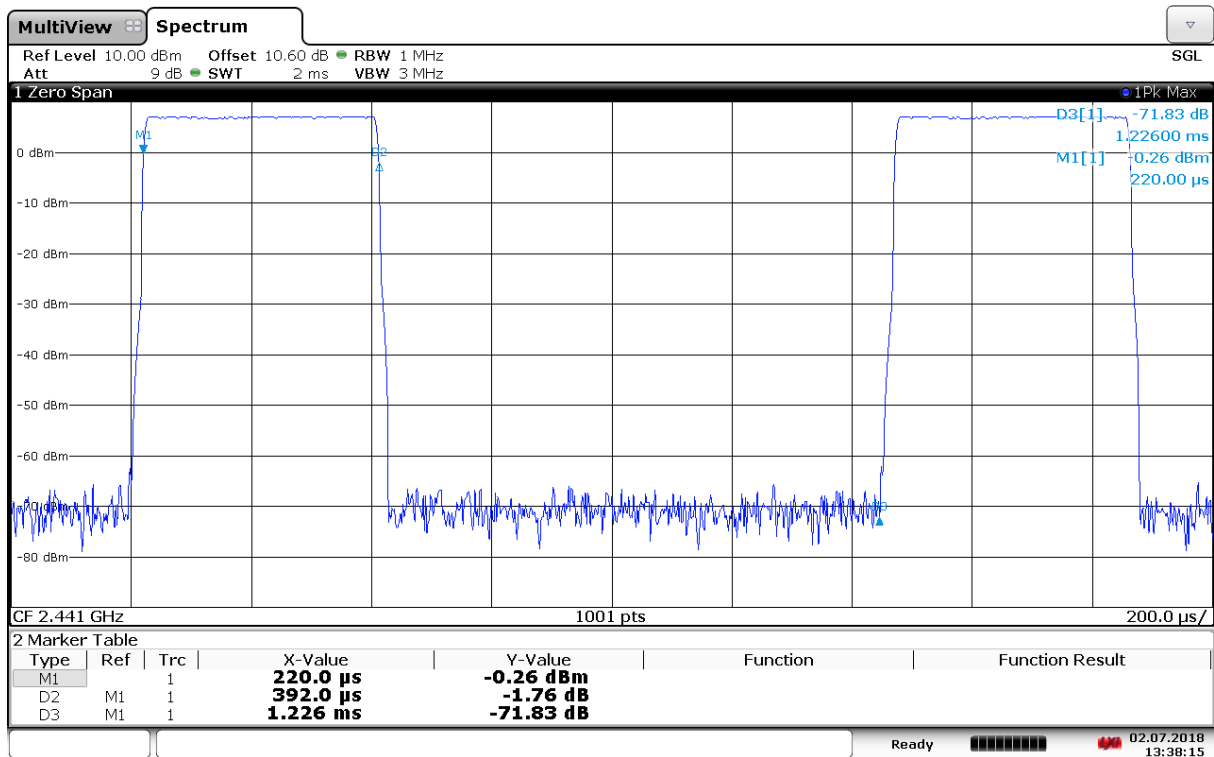
Time of occupancy: $(2.91 \times 400 \times 79) / 297.04 = 309.6 \text{ ms}$

See attached graph.

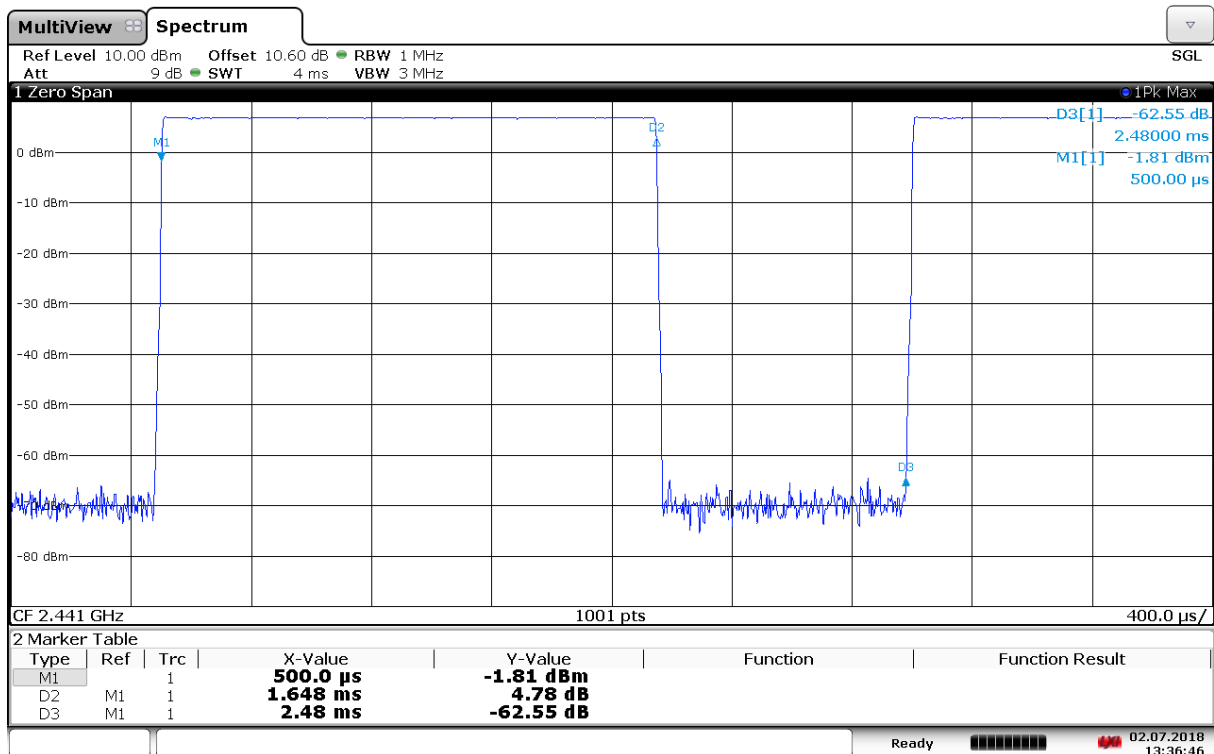
Requirements:

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.

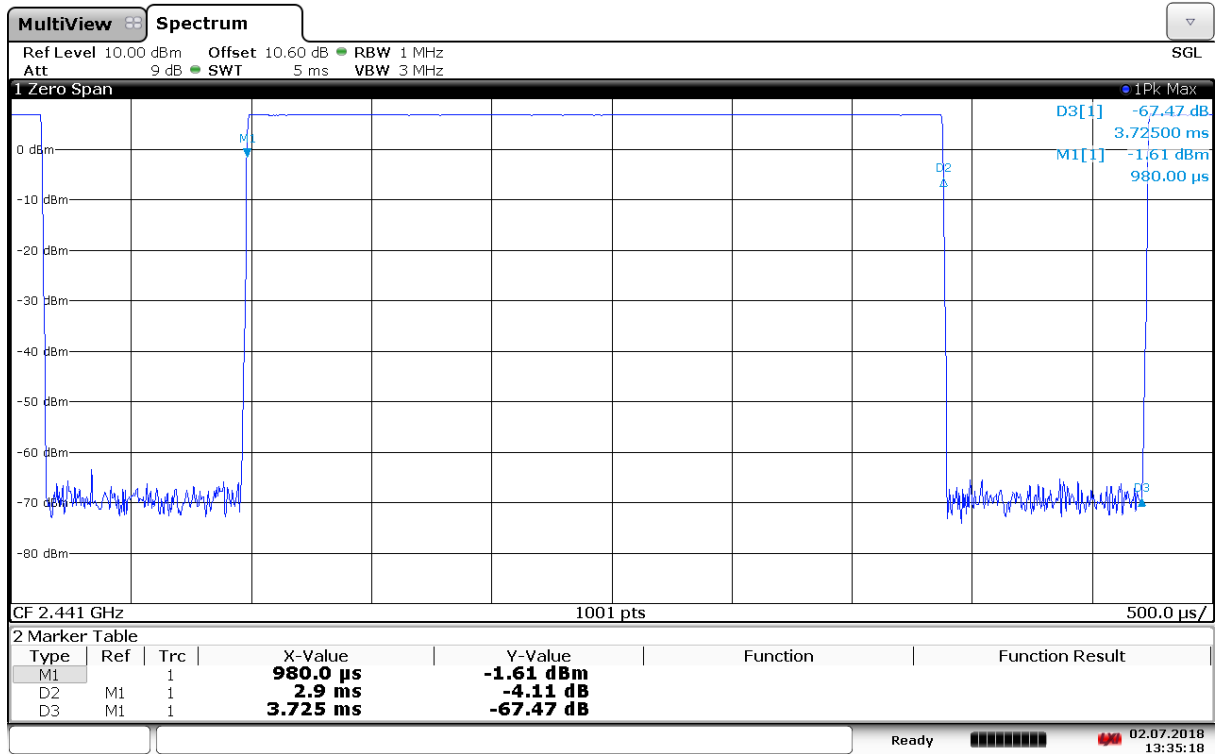
No requirements for Digital Transmission Systems.



Burst Length DH1



Burst Length DH3



Burst Length DH5

3.5 Occupied Bandwidth

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

Test Results: Complies

Measurement Data:

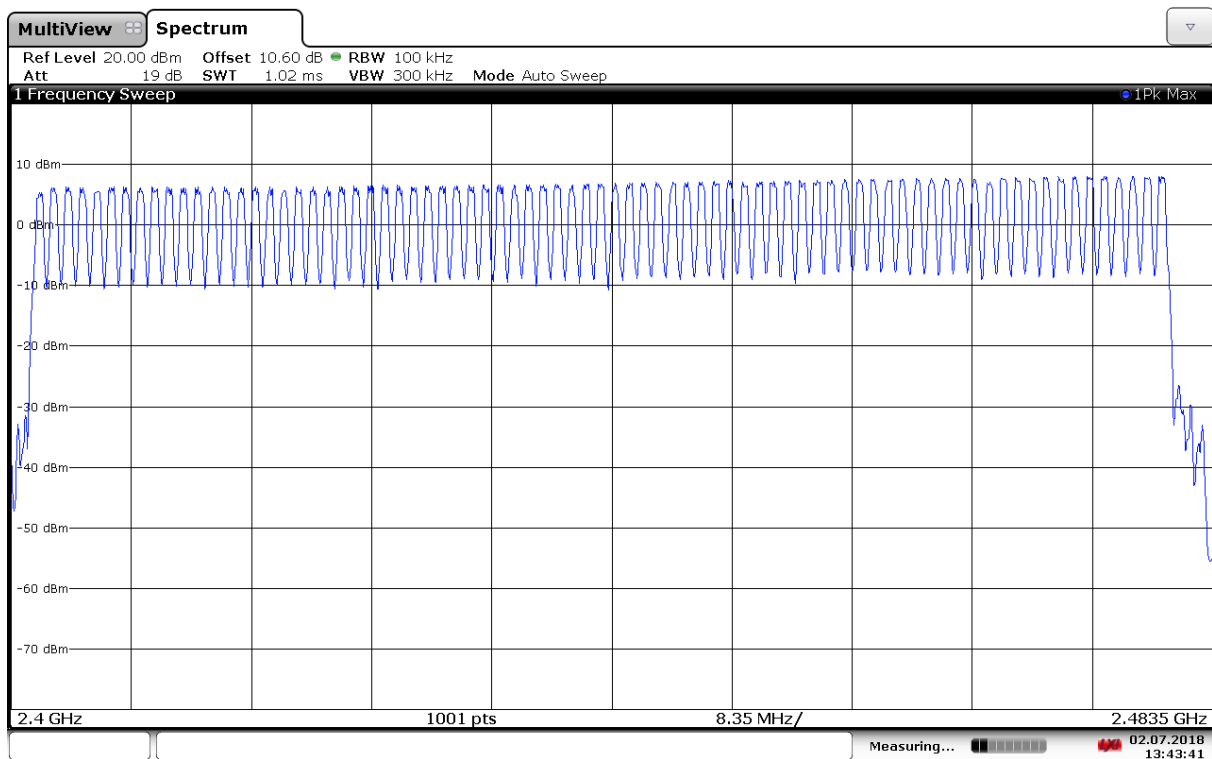
Number of RF Channels in use:	20 or 79 RF channels in use
Channel Centre Frequencies:	The channels are centered at each full MHz from 2402 to 2480 MHz
2402MHz: 99% Bandwidth	847 kHz
2441MHz: 99% Bandwidth	872 kHz
2480MHz: 99% Bandwidth	880 kHz

See attached plots.

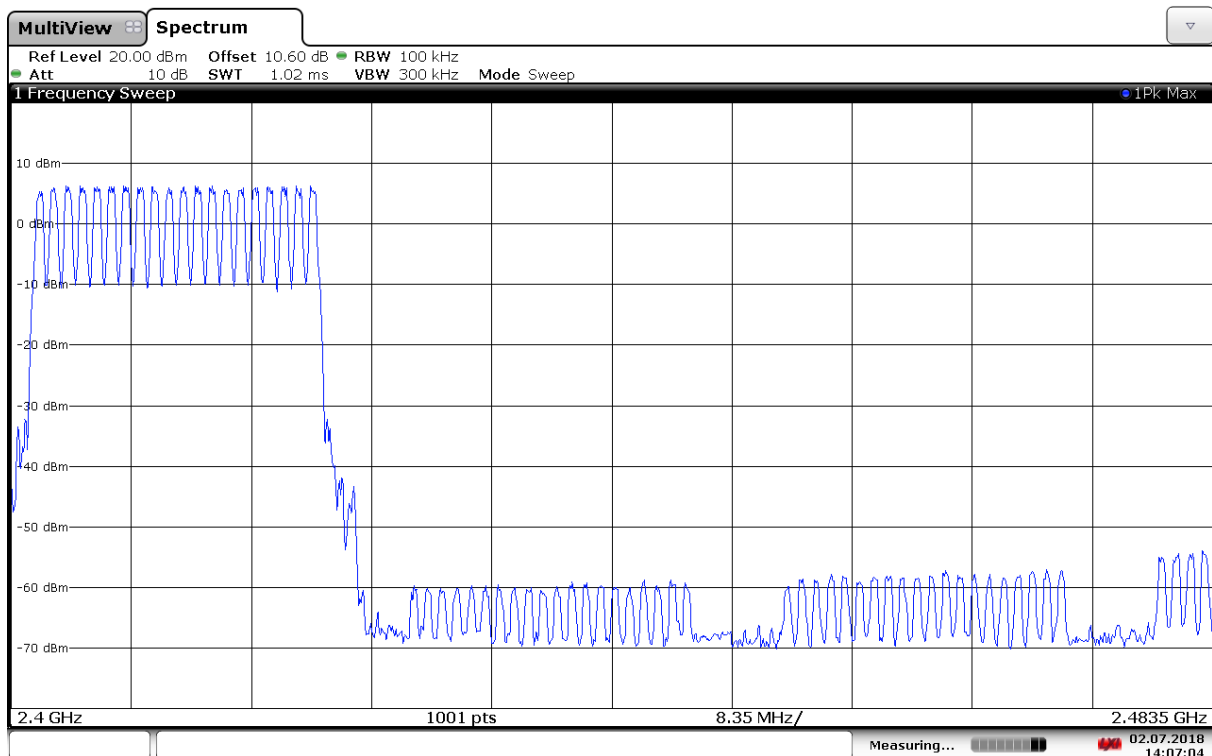
Requirements:

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.

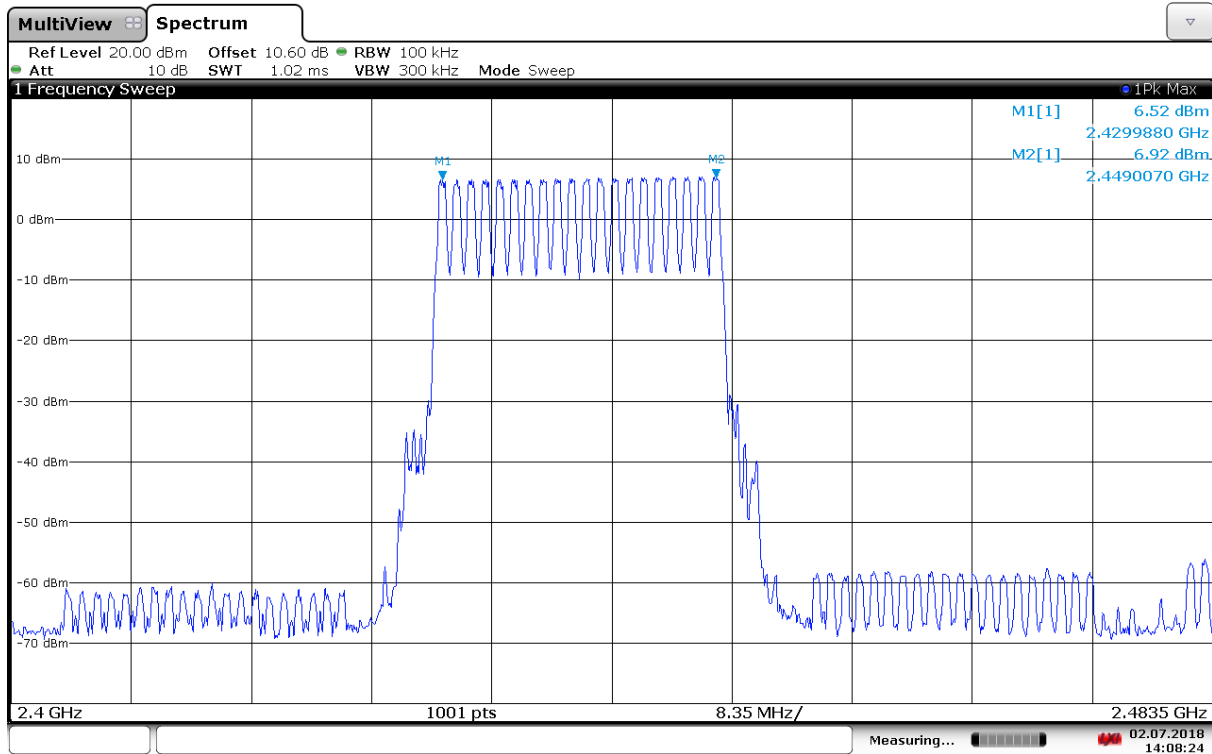
No requirement for 99% BW.



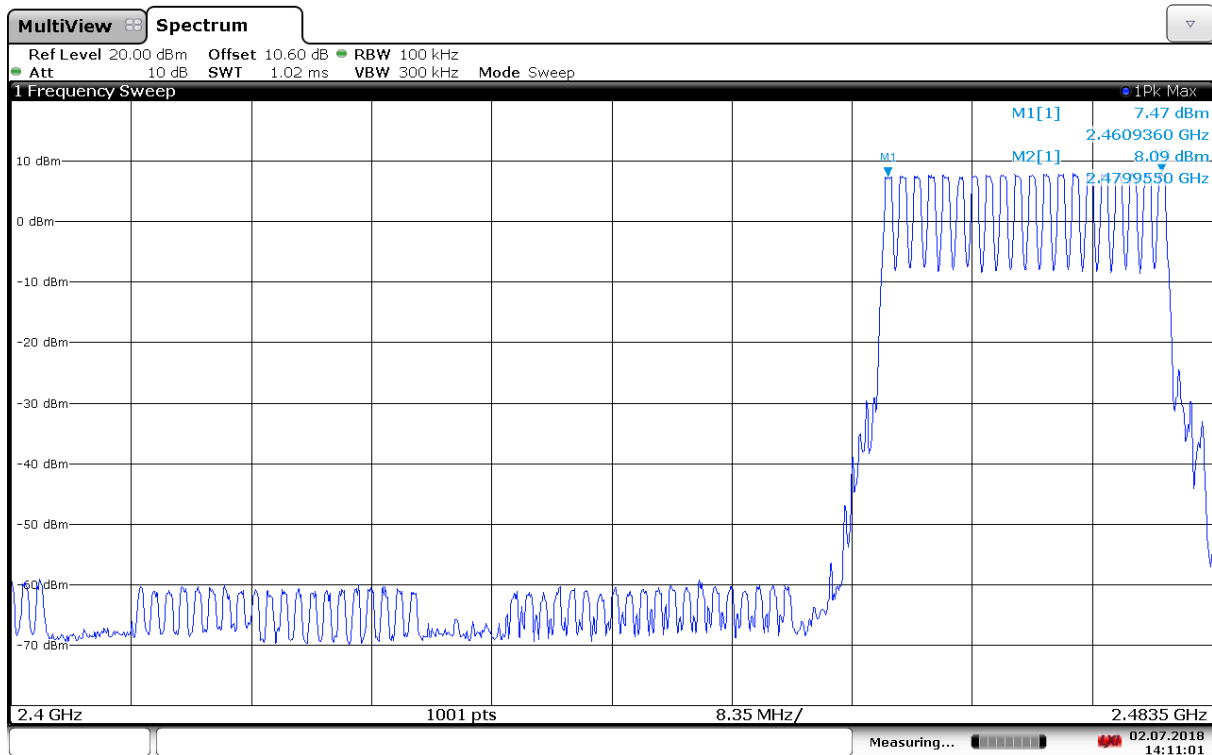
RF Channels in Use, 79 Ch



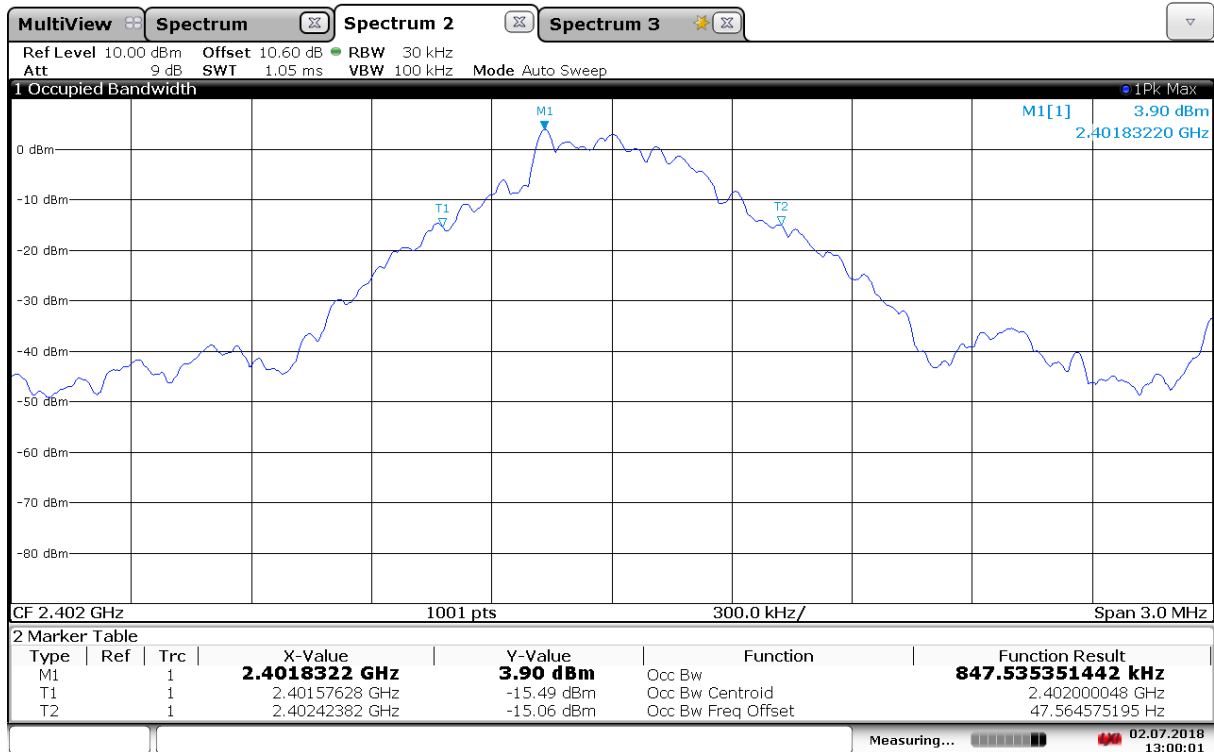
RF Channels in Use, 20 Ch, Low



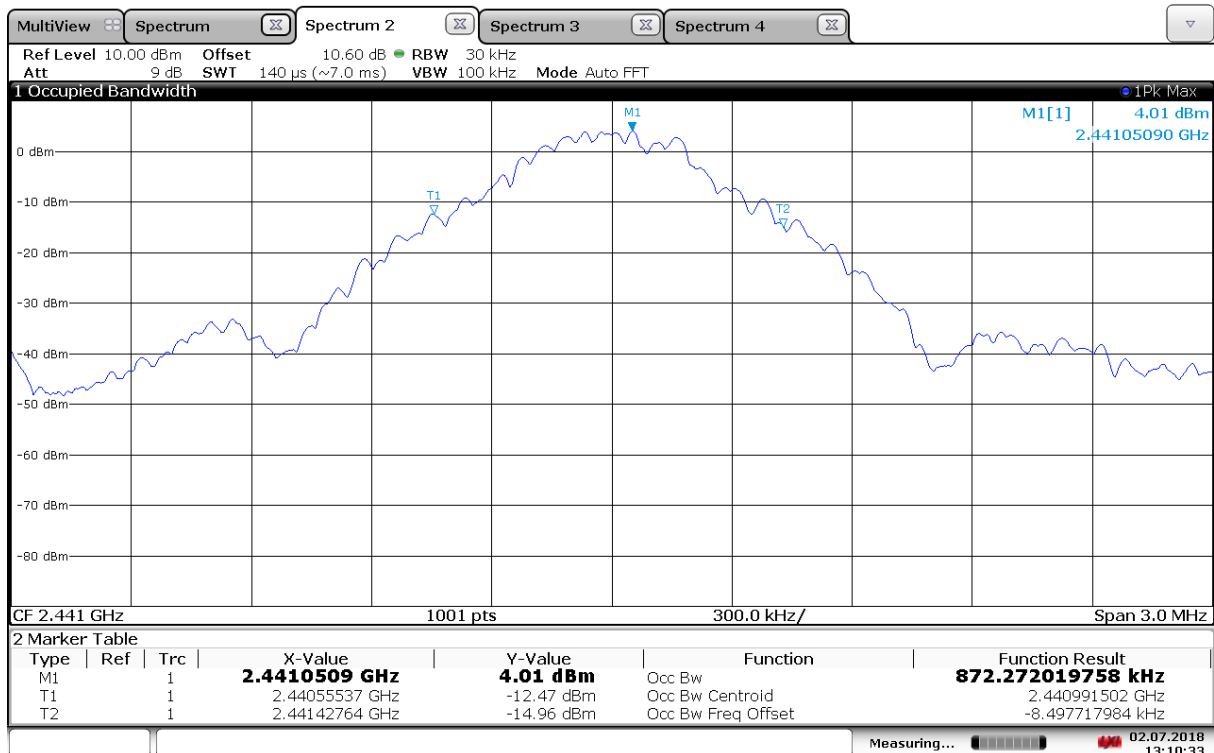
RF Channels in Use, 20 Ch, Mid



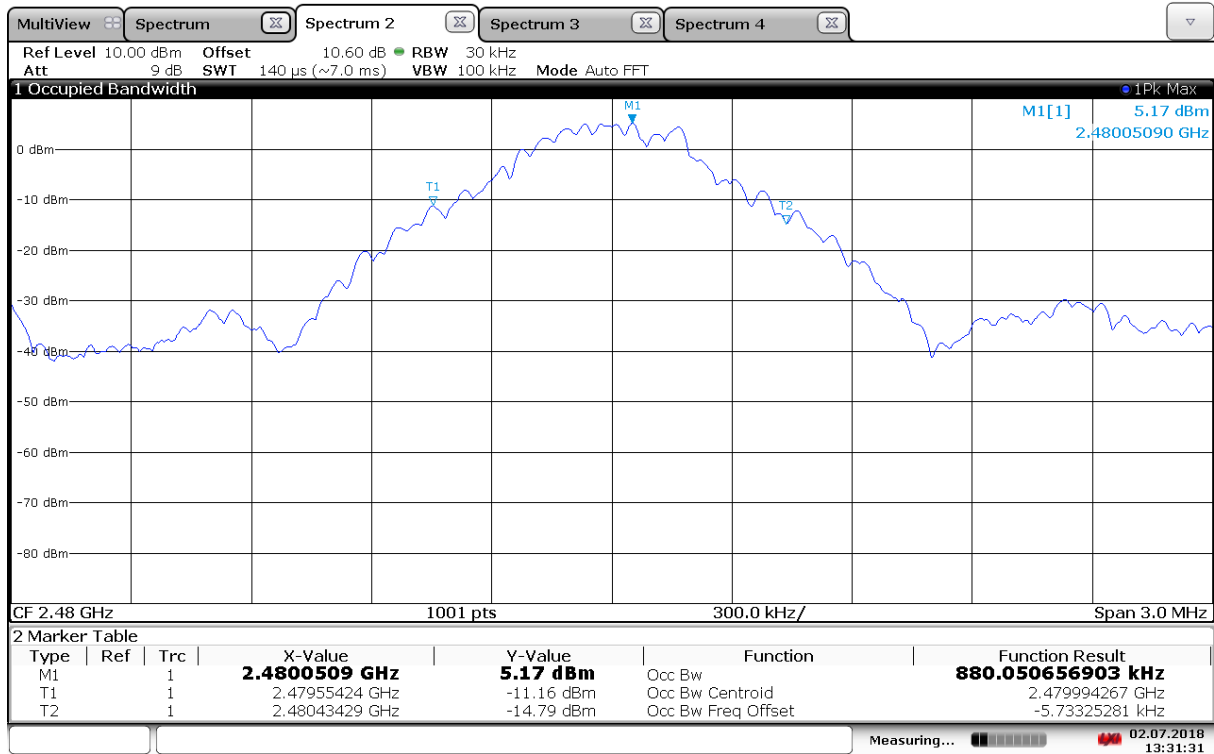
RF Channels in Use, 20 Ch, High



Occupied Bandwidth, 99% BW, 2402 MHz



Occupied Bandwidth, 99% BW, 2441 MHz



Occupied Bandwidth, 99% BW, 2480 MHz

3.6 Peak Power Output

Para. No.: 15.247 (b)

Test Results: Complies

Measurement Data:

	2402 MHz	2441 MHz	2480 MHz
Peak Conducted Power (dBm)	5.77	7.10	8.21
Peak Conducted Power (Watts)	0.00378	0.00513	0.00662
Measured Field Strength (dBμV/m, @3m)	101.7	104.2	105.1
Calculated Output Power (dBm)	6.49	8.94	9.90
Calculated Antenna Gain (dBi)	0.7	1.8	1.7

Radiated Power and Antenna Gain is calculated from measured Field Strength by the formulas in KDB 412172 D01 Determining ERP and EIRP v01r01.

See attached plots.

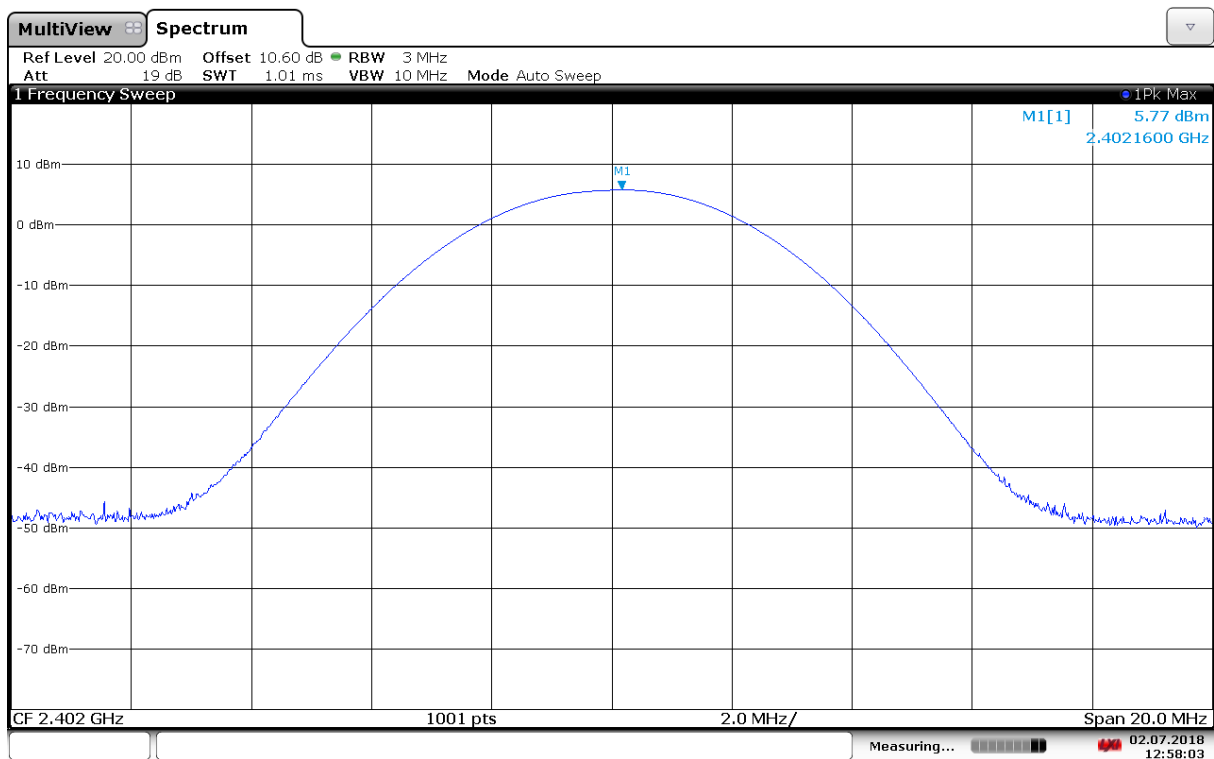
Requirements:

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

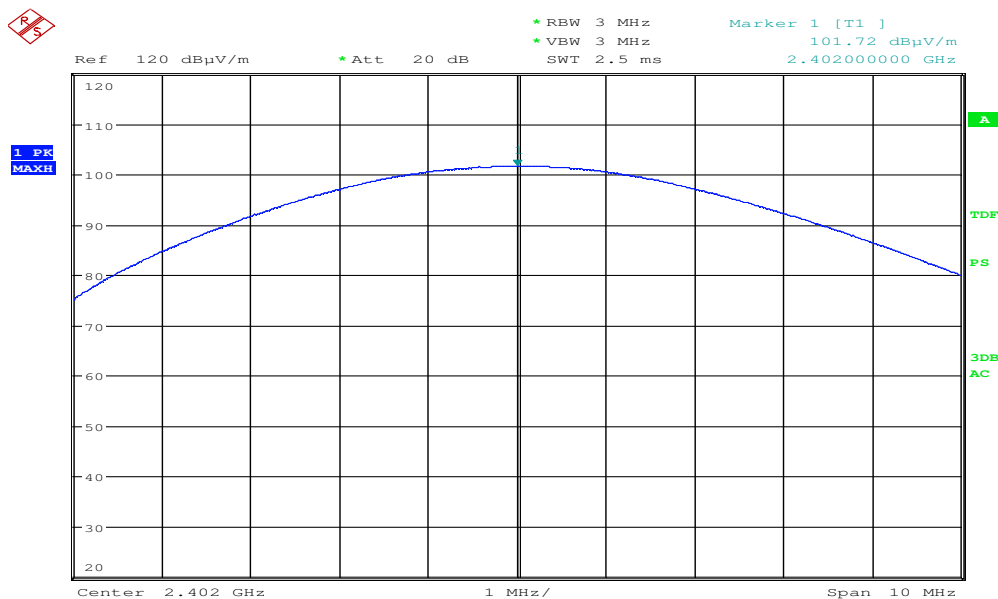
For frequency hopping systems employing at least 75 hopping channels: 1 Watt

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

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.

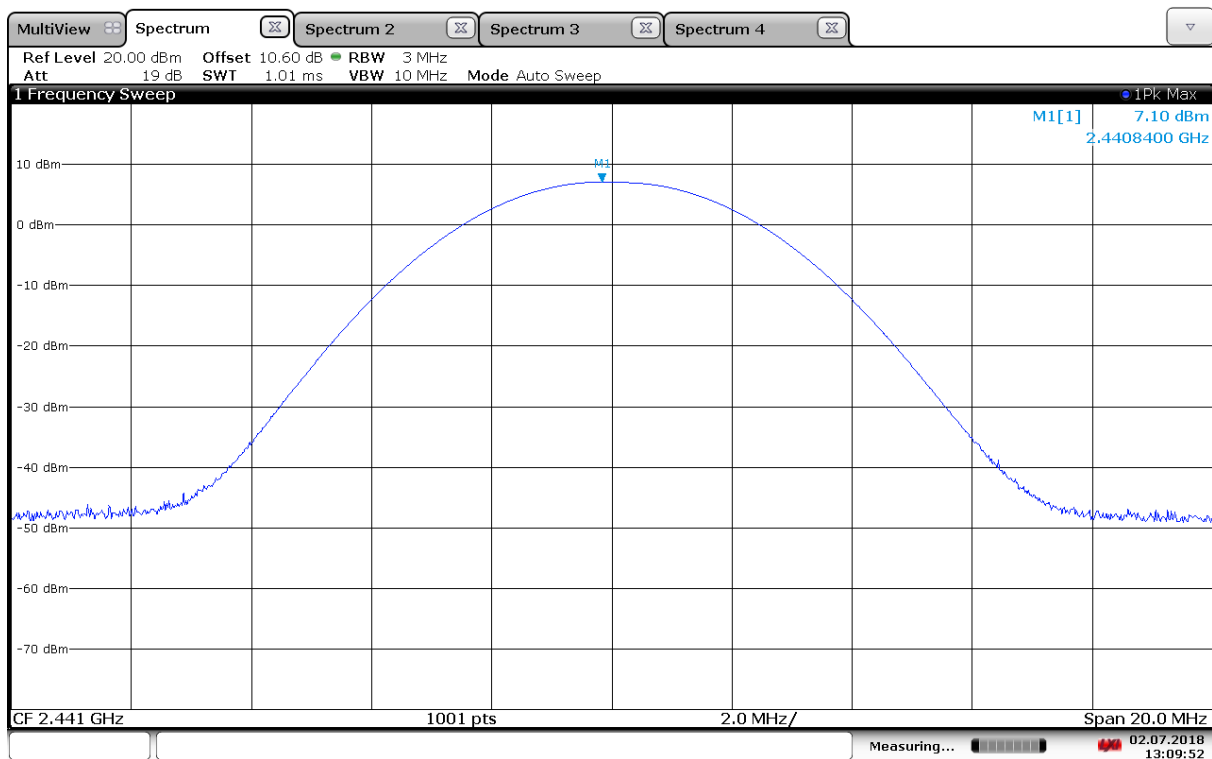


Conducted Power, 2402 MHz

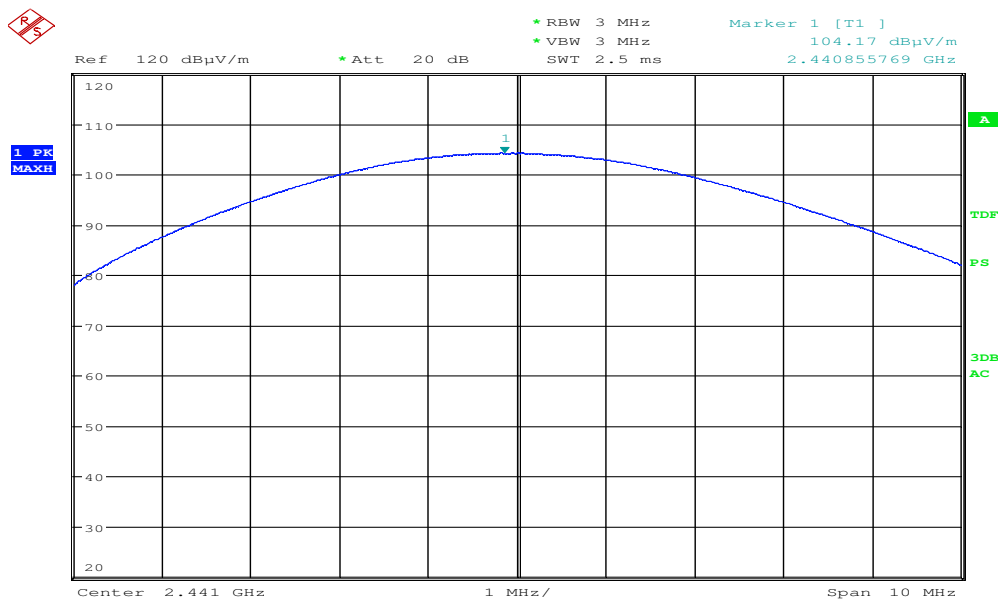


Date: 18.JUN.2018 14:42:38

Radiated Power, 2402 MHz

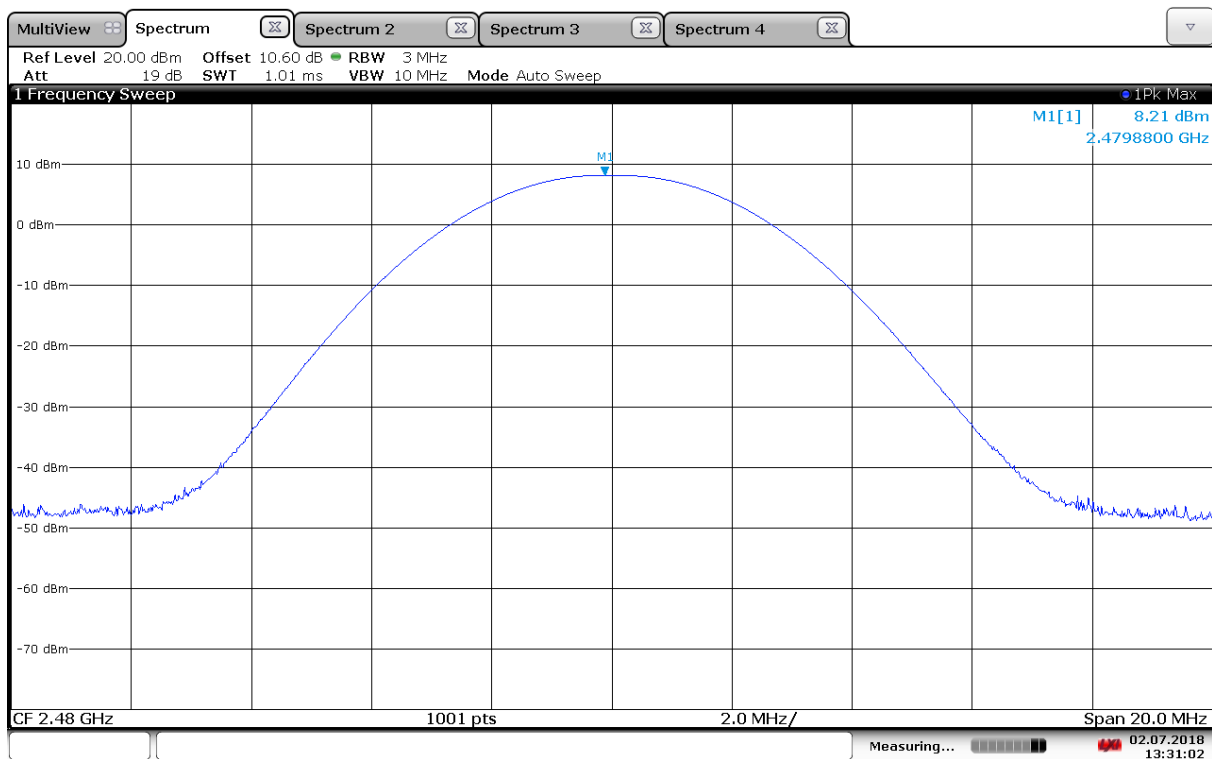


Conducted Power, 2441 MHz

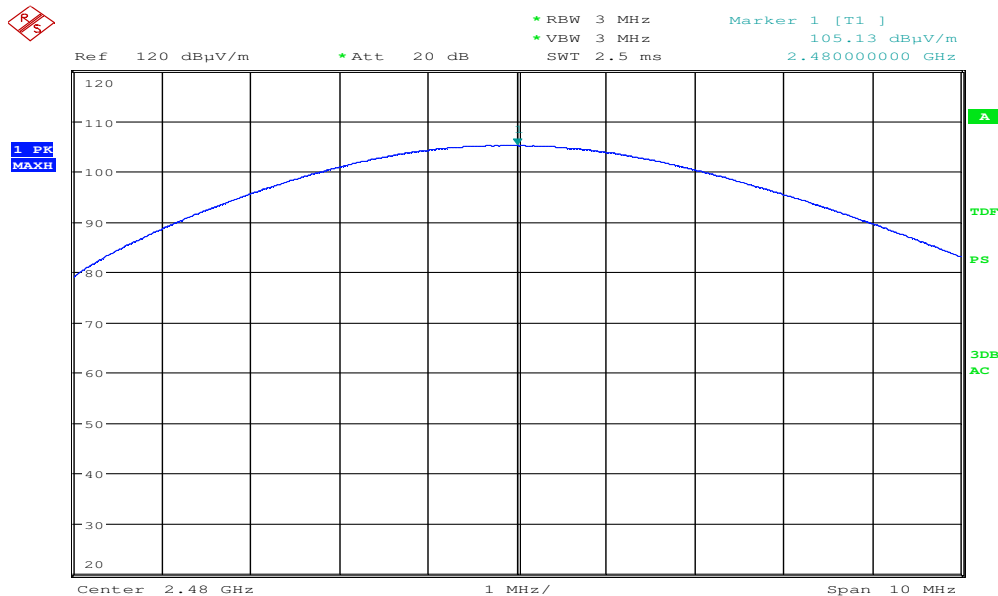


Date: 18.JUN.2018 14:41:55

Radiated Power, 2441 MHz



Conducted Power, 2480 MHz



Date: 18.JUN.2018 14:41:15

Radiated Power, 2480 MHz

3.7 Conducted Emissions at Antenna Connector

FCC Part 15.247 (d)

Test Results: Complies

Measurement Data:

Carrier Frequency	Highest Value (dBc)	Margin (dB)	Verdict
All	> 55	> 35	Pass

Measured with Peak Detector

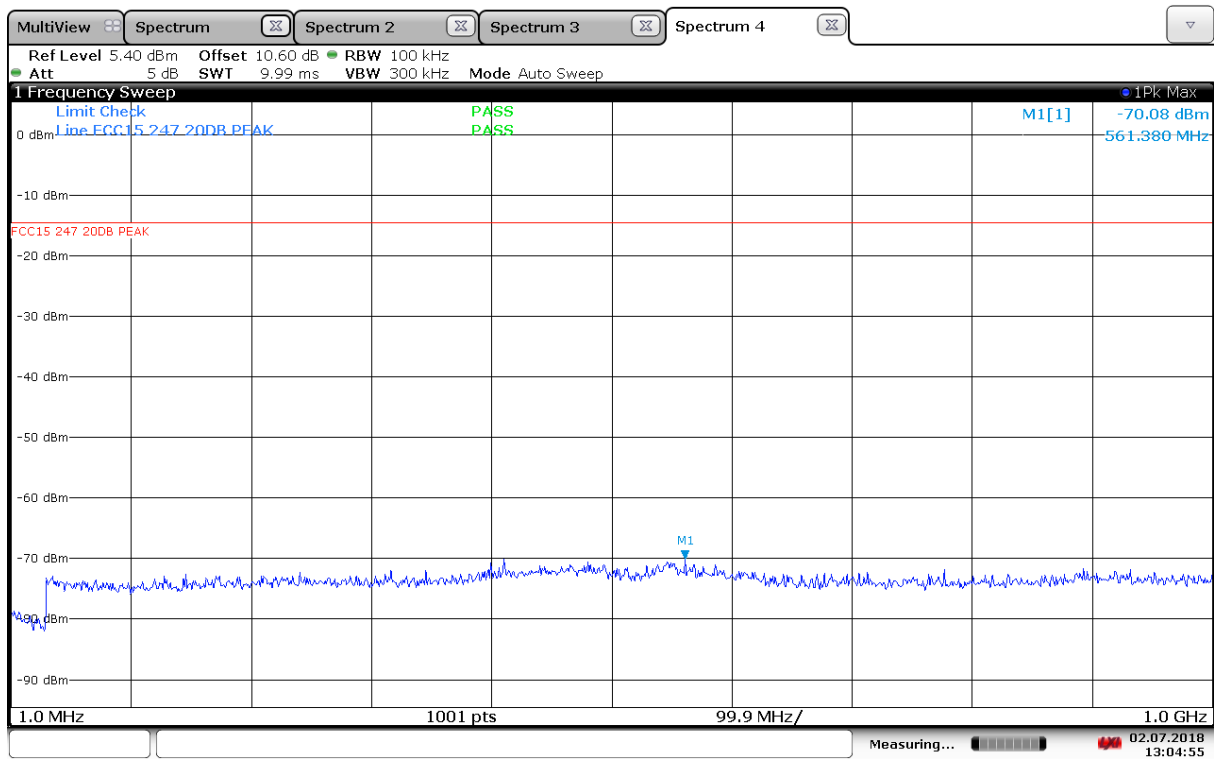
RF conducted power to 25 GHz: see attached plots.

Limit

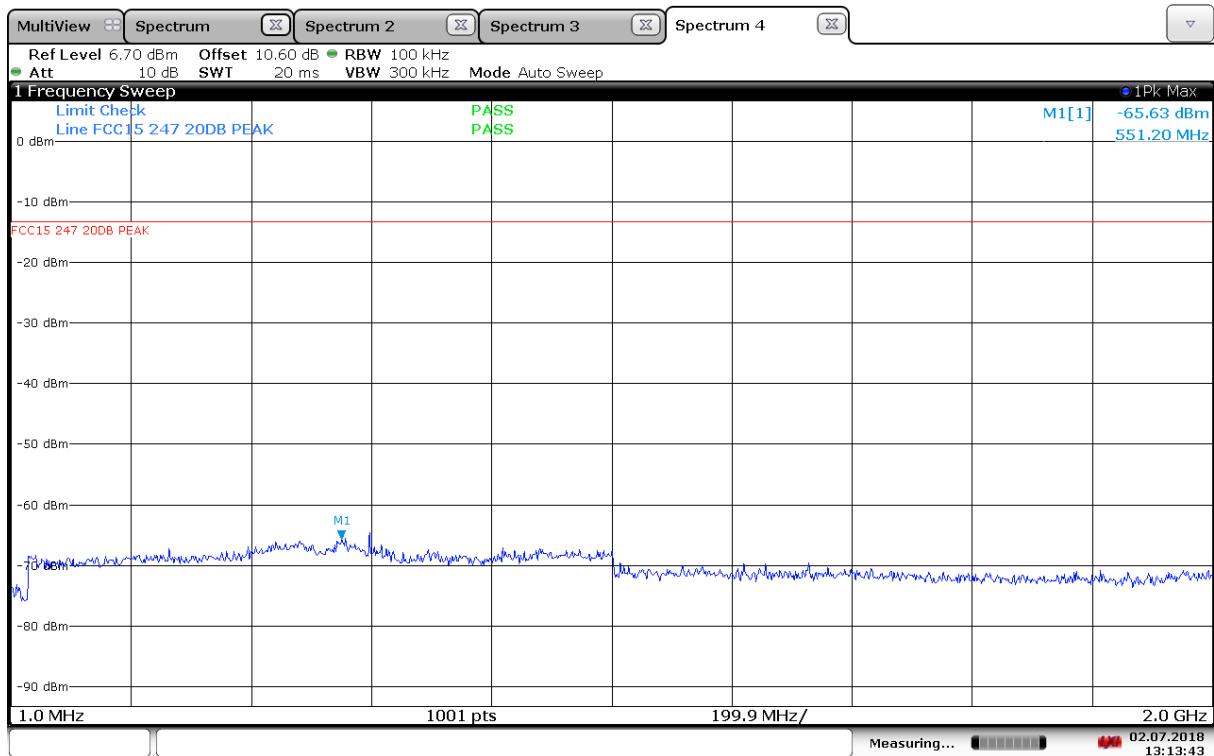
Peak measurement	RMS averaging
20 dBc or more in 100 kHz bandwidth	30 dBc or more in 100 kHz bandwidth

Detector type shall be the same as used for measuring Output Power.

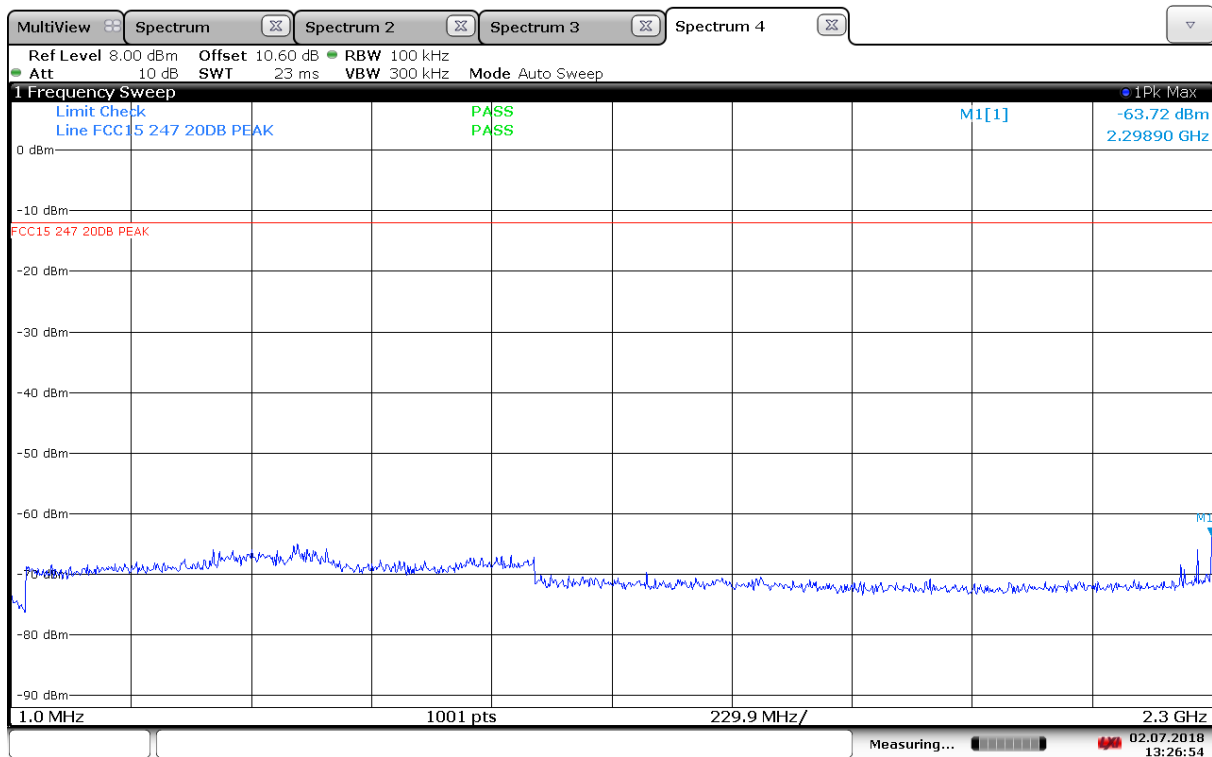
Attenuation below the general limits specified in part 15.209(a) is not required.



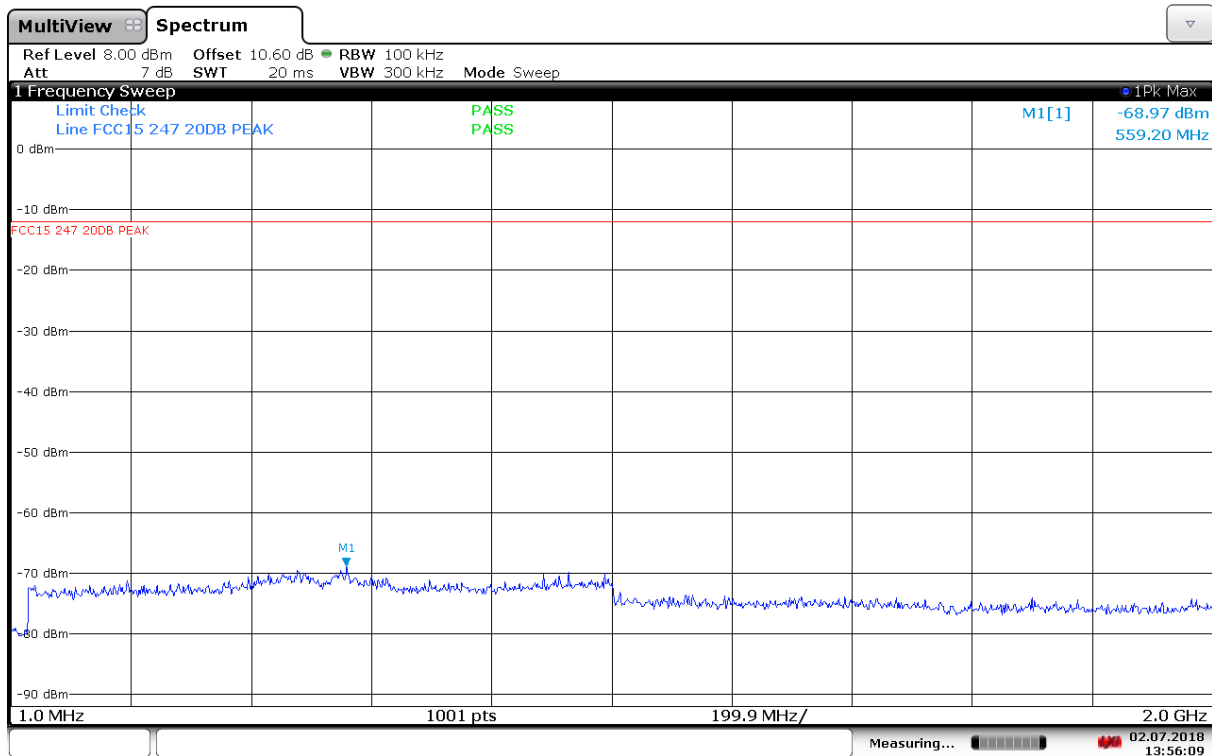
Conducted Emissions, 1 -2000MHz, ch00



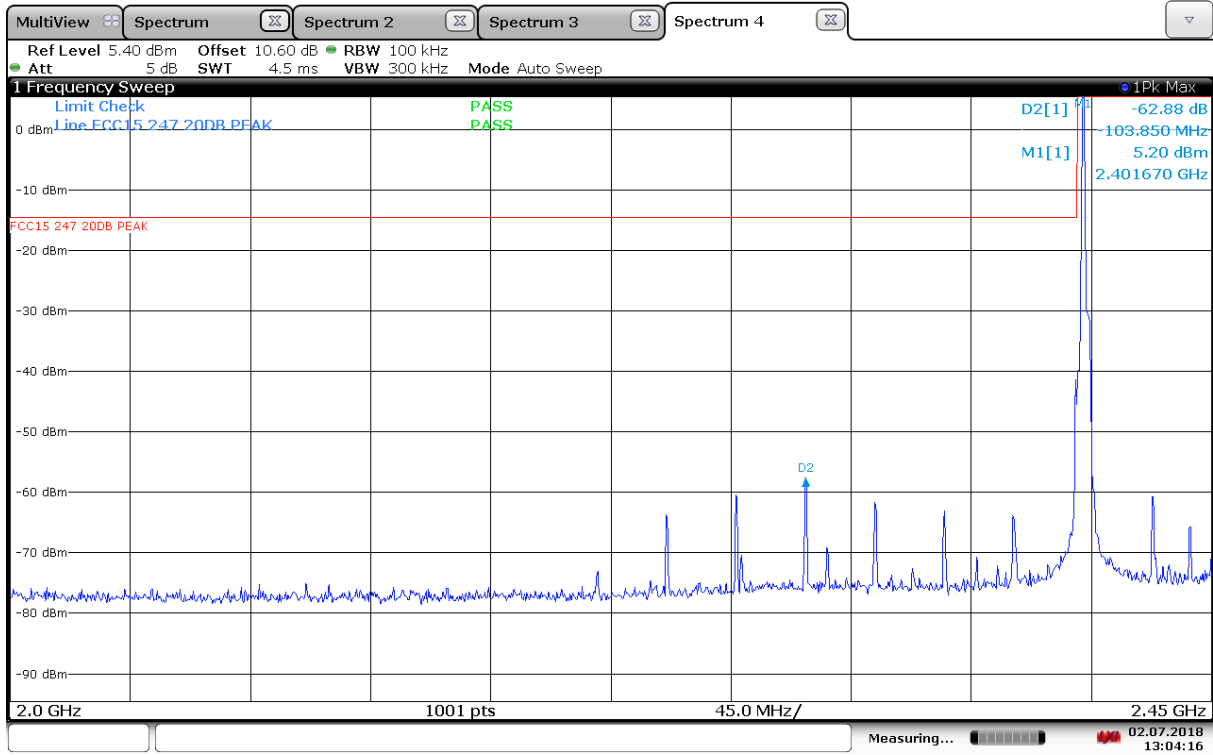
Conducted Emissions, 1 -2000MHz, ch39



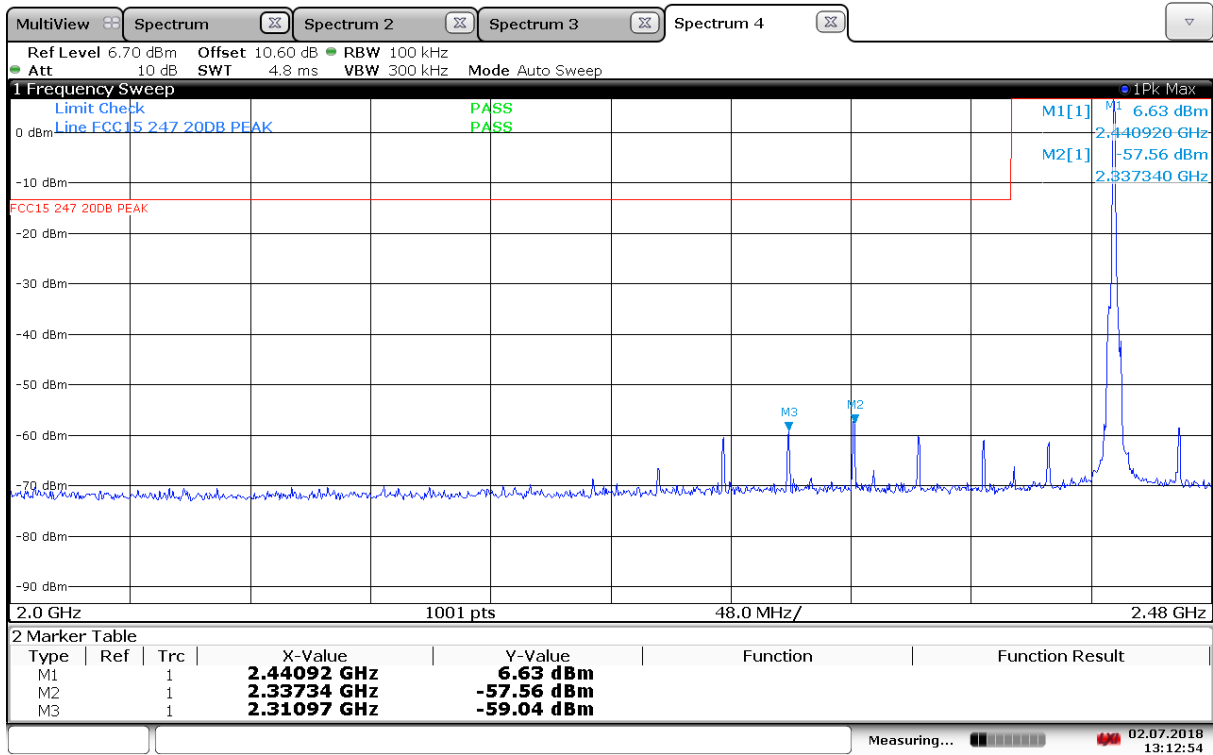
Conducted Emissions, 1 -2300MHz, ch78



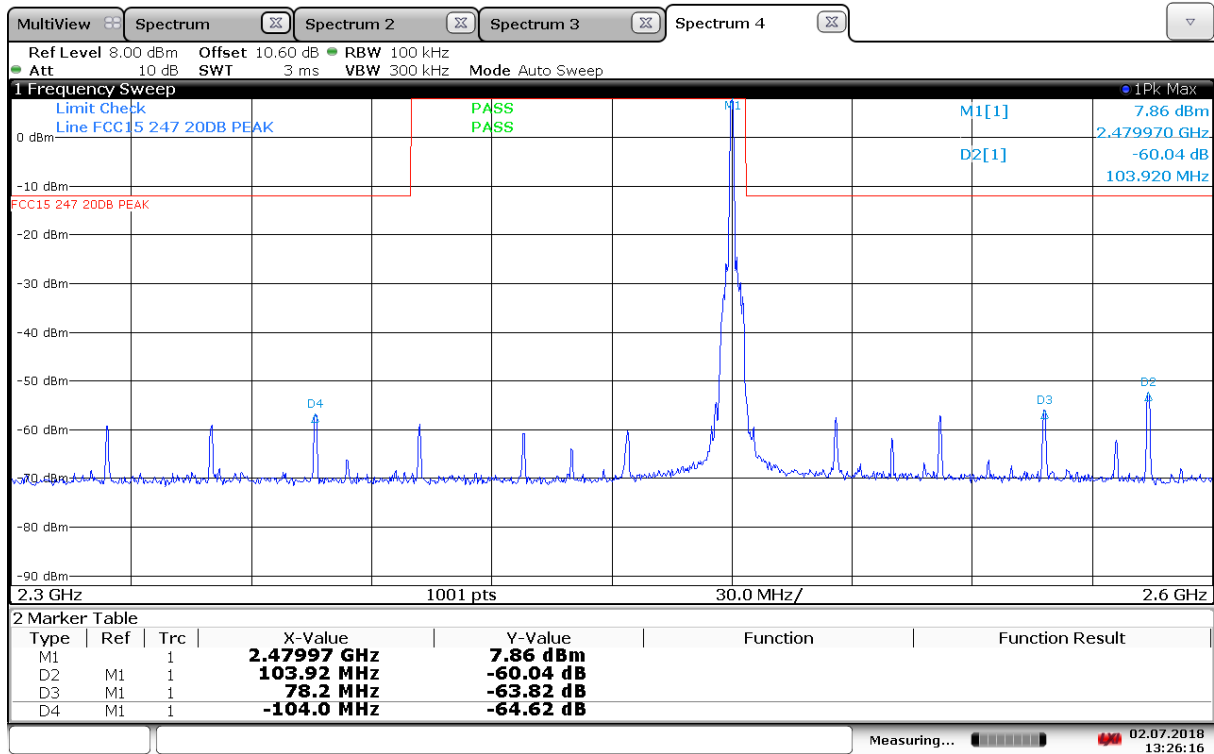
Conducted Emissions, 1 -2000MHz, Hopping



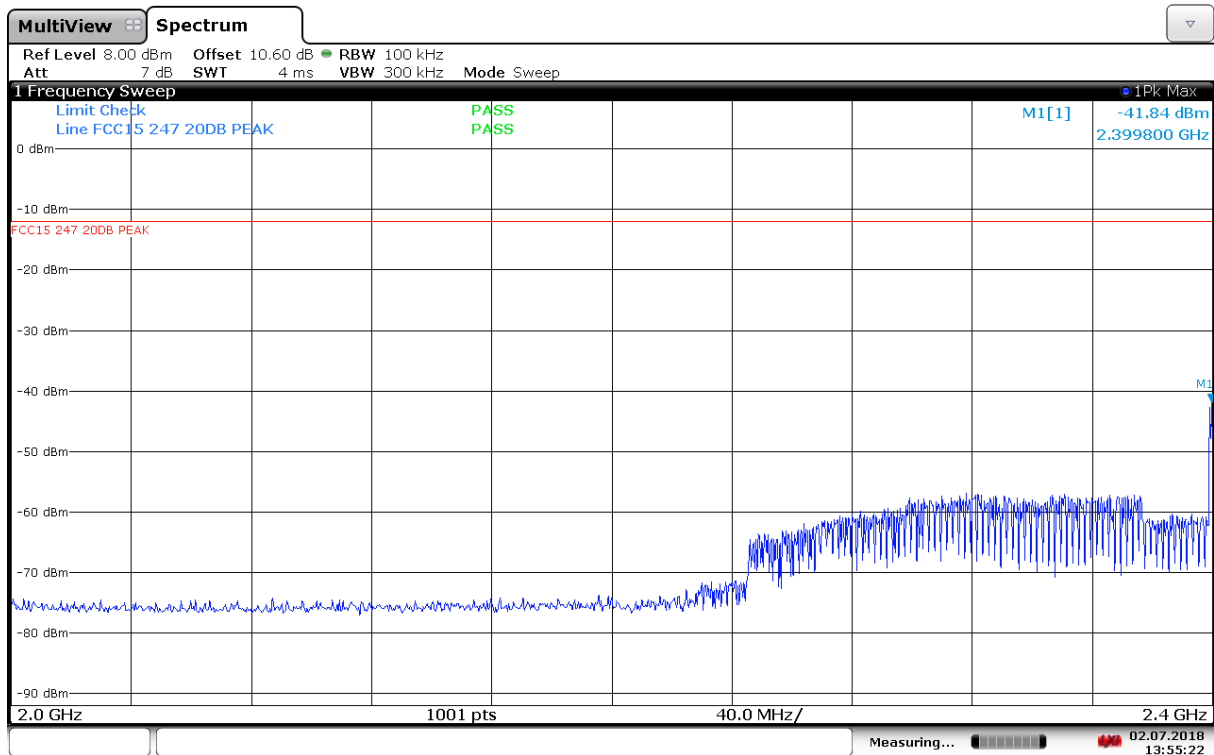
Conducted Emissions, 2000 -2450MHz, ch00



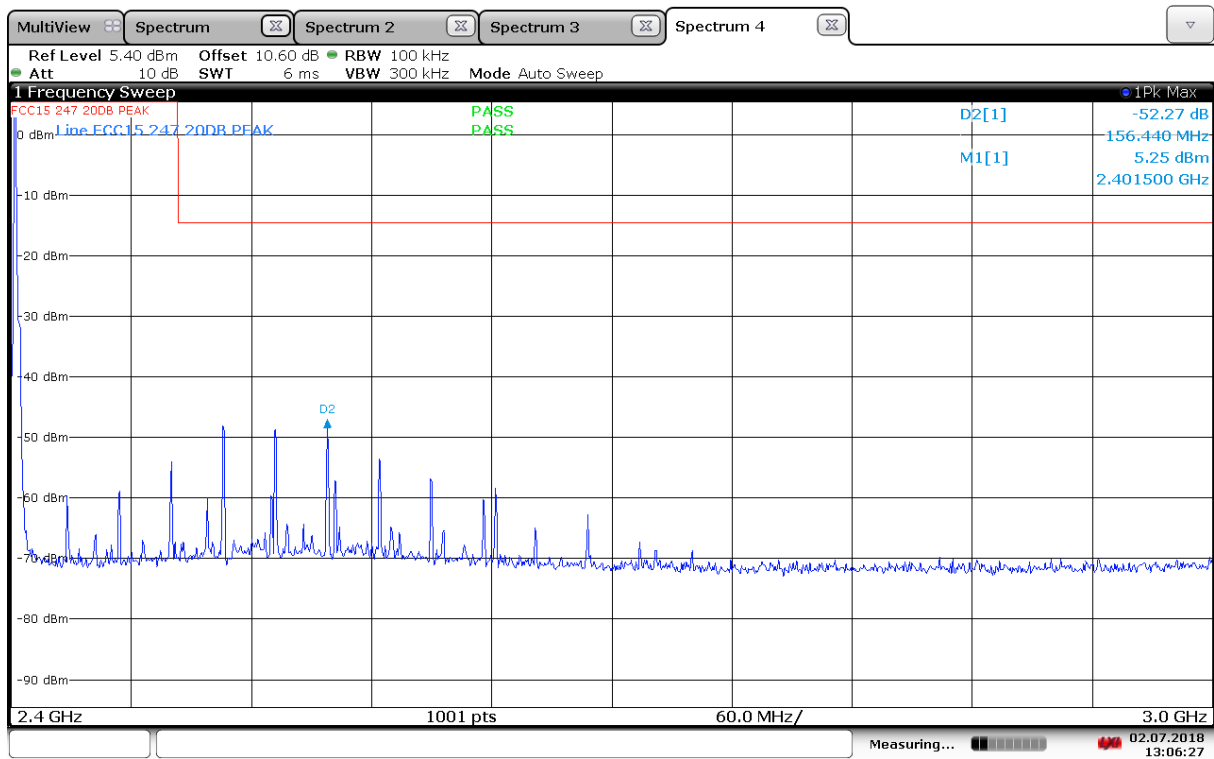
Conducted Emissions, 2000 -2480MHz, ch39



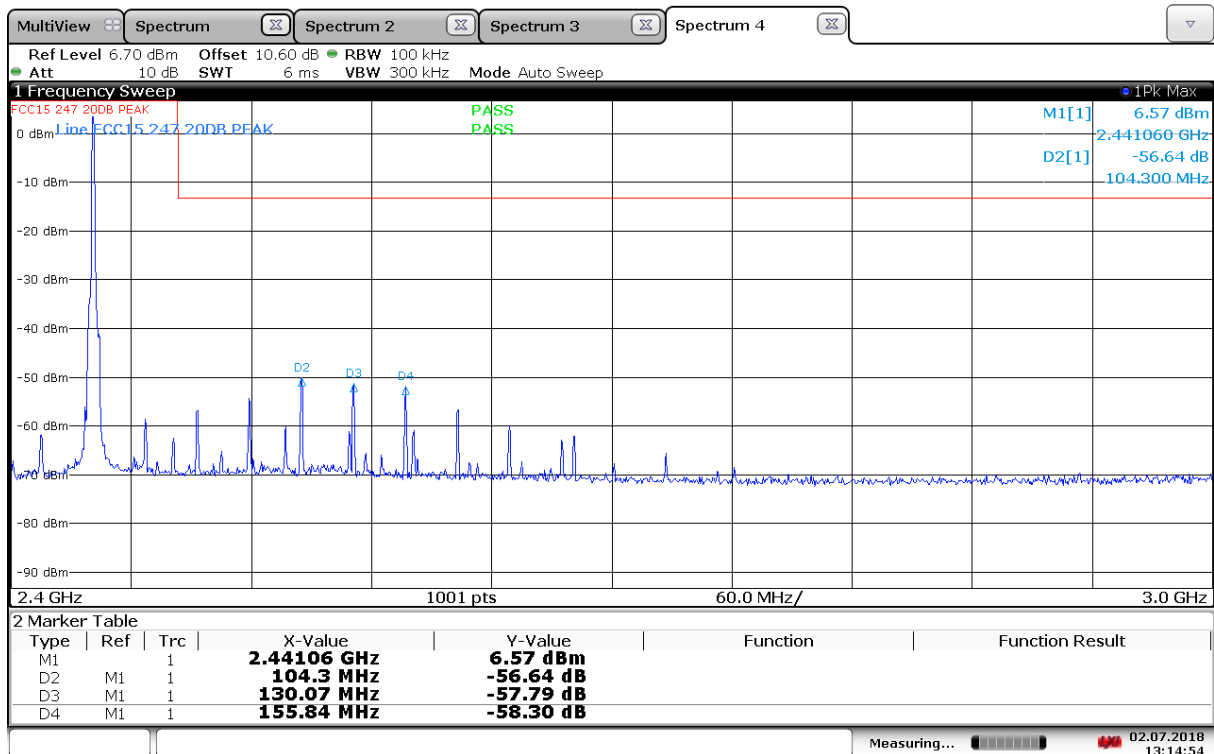
Conducted Emissions, 2300 -2600MHz, ch78



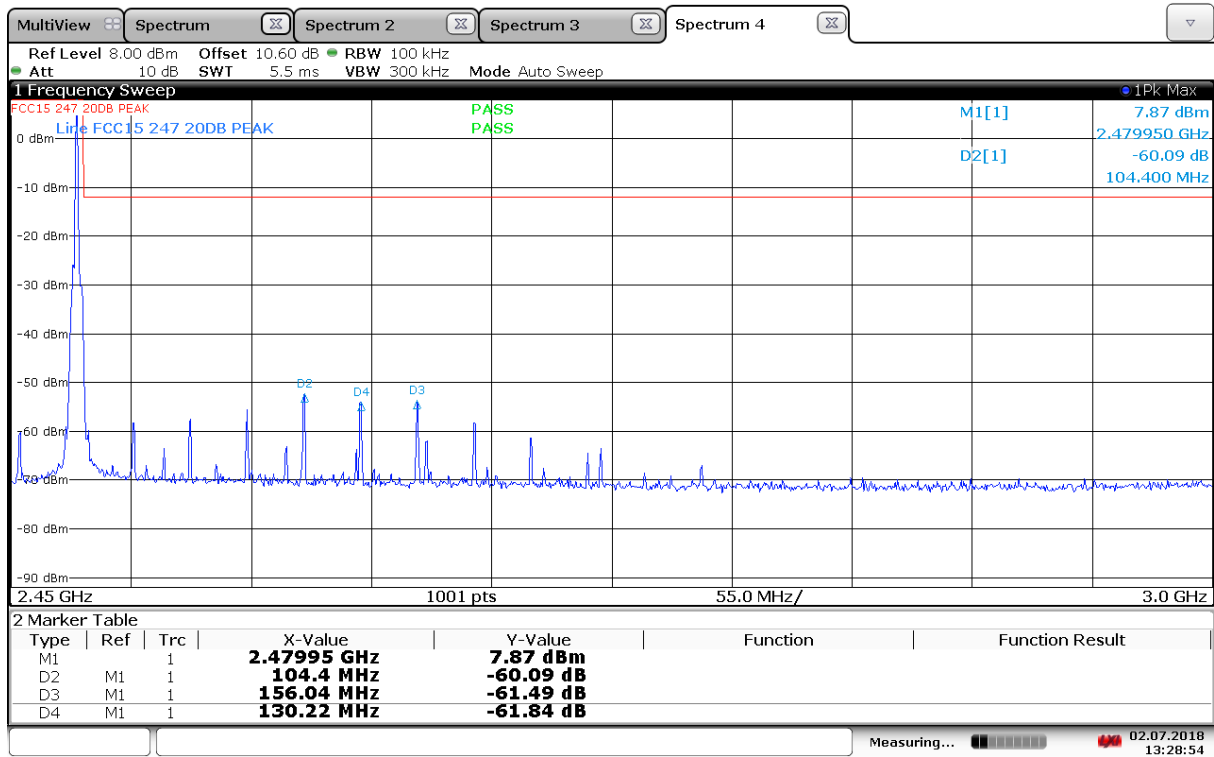
Conducted Emissions, 2000 -2400MHz, Hopping



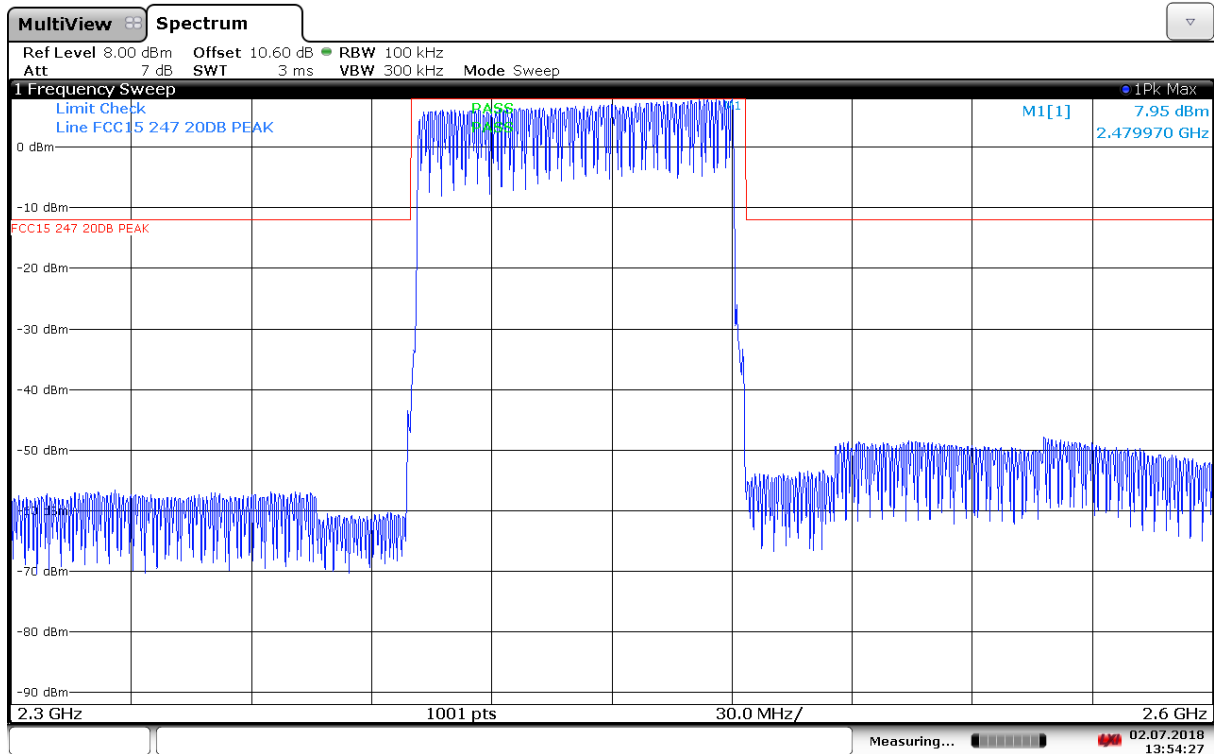
Conducted Emissions, 2400 -3000MHz, ch00



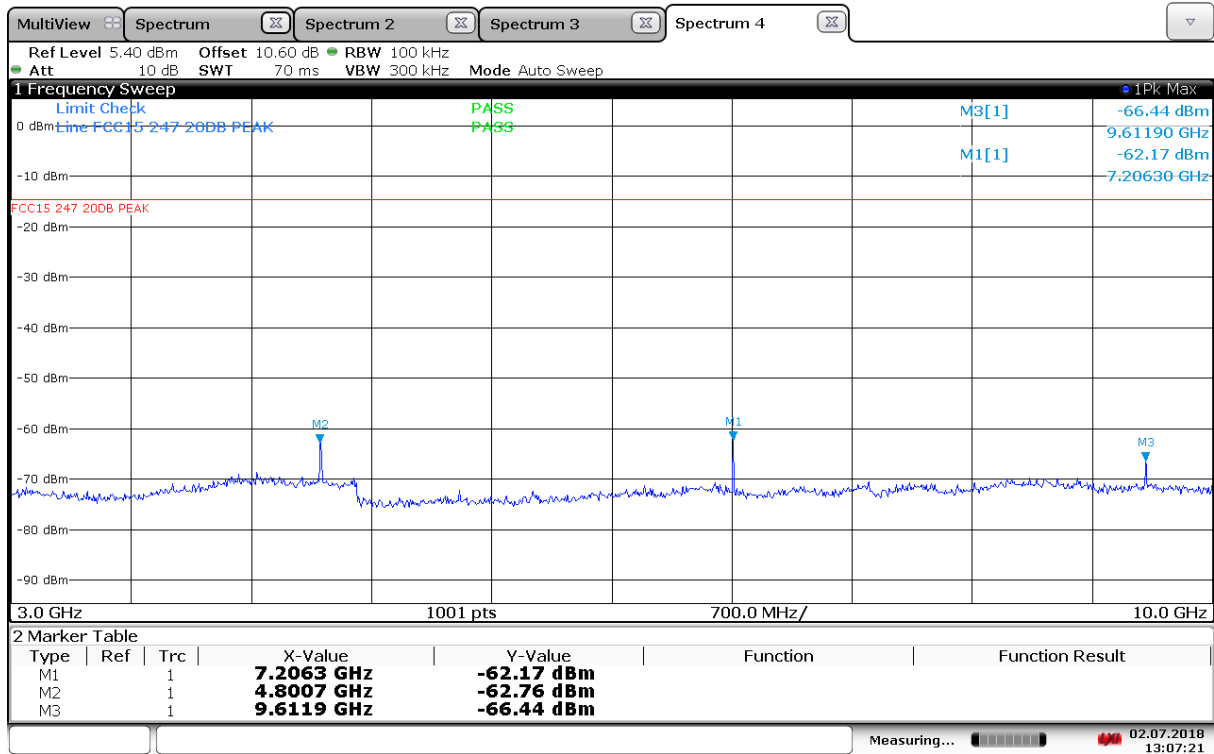
Conducted Emissions, 2400 -3000MHz, ch39



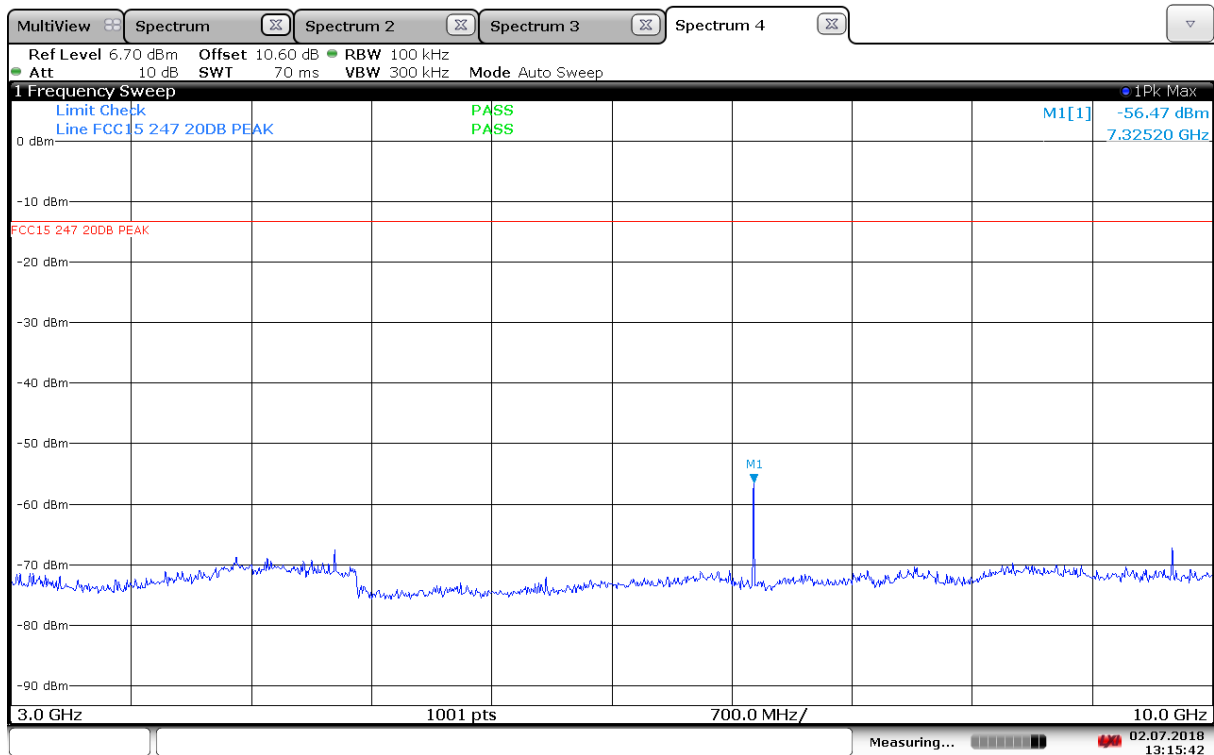
Conducted Emissions, 2450 -3000MHz, ch78



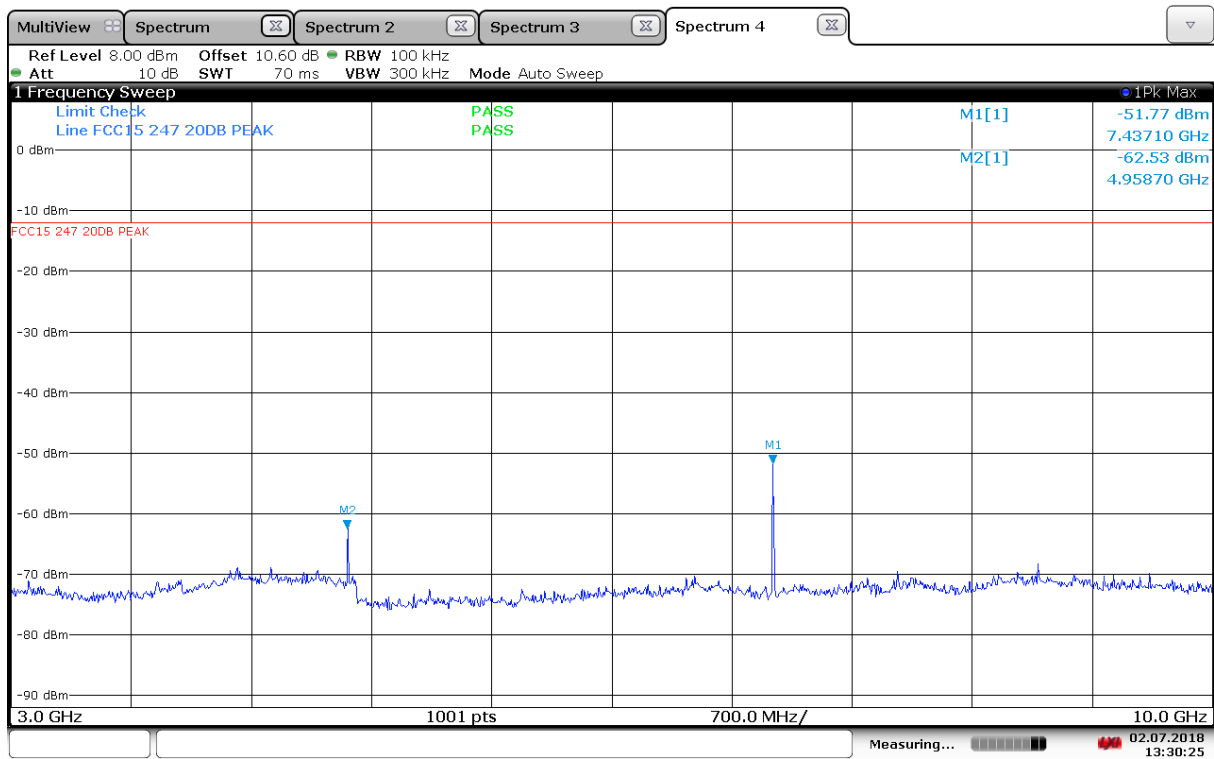
Conducted Emissions, 2300 -2600MHz, Hopping



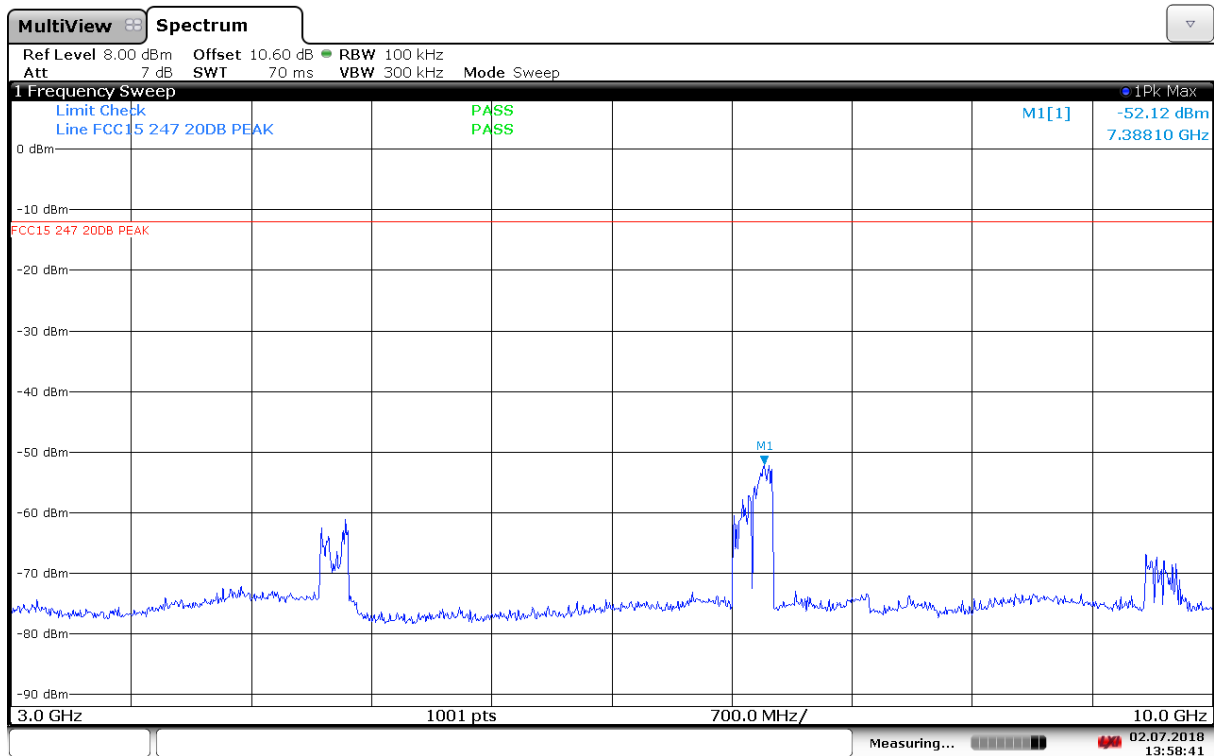
Conducted Emissions, 3000 -10000MHz, ch00



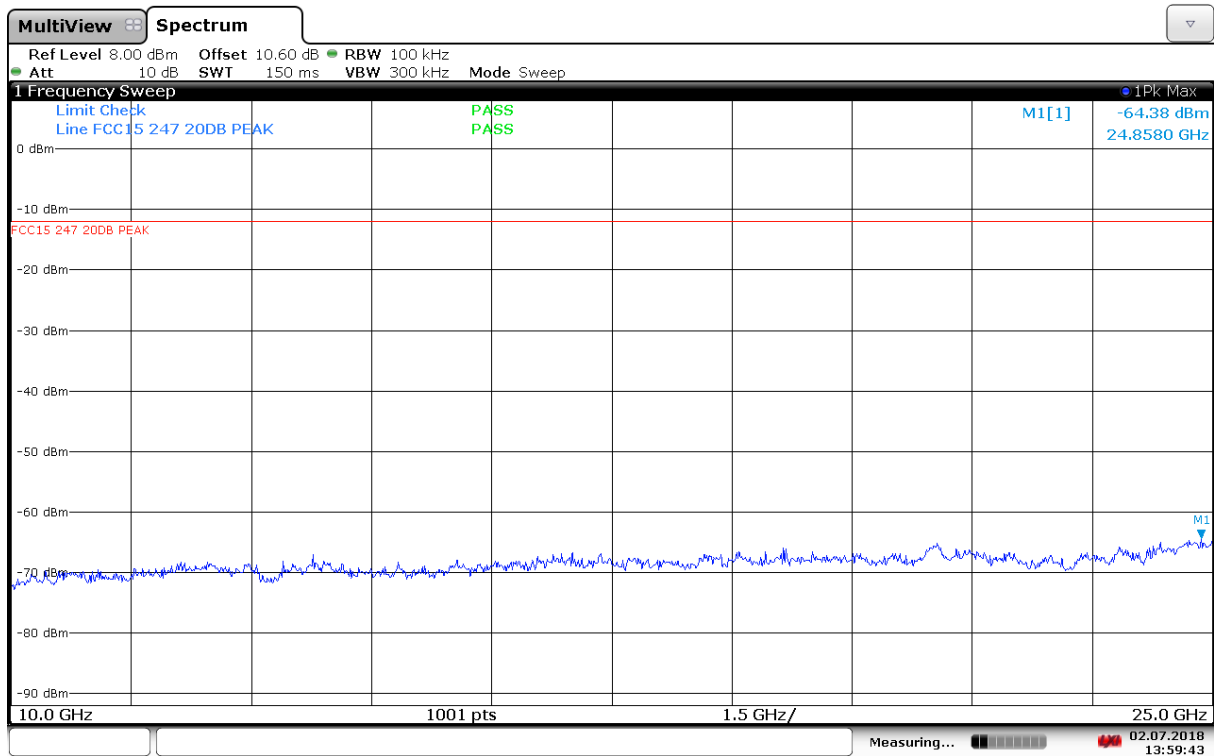
Conducted Emissions, 3000 -10000MHz, ch39



Conducted Emissions, 3000 -10000MHz, ch78



Conducted Emissions, 3000 -10000MHz, Hopping



Conducted Emissions, 10000 -25000MHz, Hopping

3.8 Restricted Bands of operation

Restricted Bands of operation for FCC and ISSED are defined in FCC Part 15.205 and ISSED RSS-GEN, Issue 4 clause 8.10.

Generally, no fundamentals are allowed in the restricted bands and all emissions must comply with the limits in FCC 15.209 or RSS-GEN, Issue 4, clause 8.9.

FCC (MHz)	ISSED (MHz)	FCC (GHz)	ISSED (GHz)
0.090-0.110		0.96-1.24 1.3-1.427	0.96-1.427
0.495-0.505		1.435-1.6265	
2.1735-2.1905		1.6455-1.6465	
	3.020-3.026	1.660-1.710	
4.125-4.128		1.7188-1.7222	
4.17725-4.17775		2.2-2.3	
4.20725-4.20775		2.31-2.39	
	5.677-5.683	2.4835-2.5	
6.215-6.218		2.69-2.9	2.655-2.9
6.26775-6.26825		3.26-3.267	
6.31175-6.31225		3.332-3.339	
8.291-8.294		3.3458-3.358	
8.362-8.366		3.6-4.4	3.5-4.4
8.37625-8.38675		4.5-5.15	
8.41425-8.41475		5.35-5.46	
12.29-12.293		7.25-7.75	
12.51975-12.52025		8.025-8.5	
12.57675-12.57725		9.0-9.2	
13.36-13.41		9.3-9.5	
16.42-16.423		10.6-12.7	
16.69475-16.69525		13.25-13.4	
16.80425-16.80475		14.47-14.5	
25.5-25.67		15.35-16.2	
37.5-38.25		17.7-21.4	
73-74.6		22.01-23.12	
74.8-75.2		23.6-24.0	
108-121.94 123-138	108-138	31.2-31.8	
149.9-150.05		36.43-36.5	
156.52475-156.52525		Above 38.6	
156.7-156.9			
162.0125-167.17			
167.72-173.2			
240-285			
322-335.4			
399.9-410			
608-614			

Frequencies in **Bold** text are specific for FCC or ISSED, all other frequencies are common.

3.9 Band Edge Emissions (Radiated)

FCC Part 15.209

Test Results: Complies

Measurement Data:

	Calculated field strength (dBμV/m)		Limit	Margin	
	2390 MHz	2483.5 MHz	dB	dB	
Peak Detector	45.9	64.1	74	28.1	9.9
Average Detector	25.9	44.1	54	28.1	9.9

Average Detector values are calculated from Peak Values.

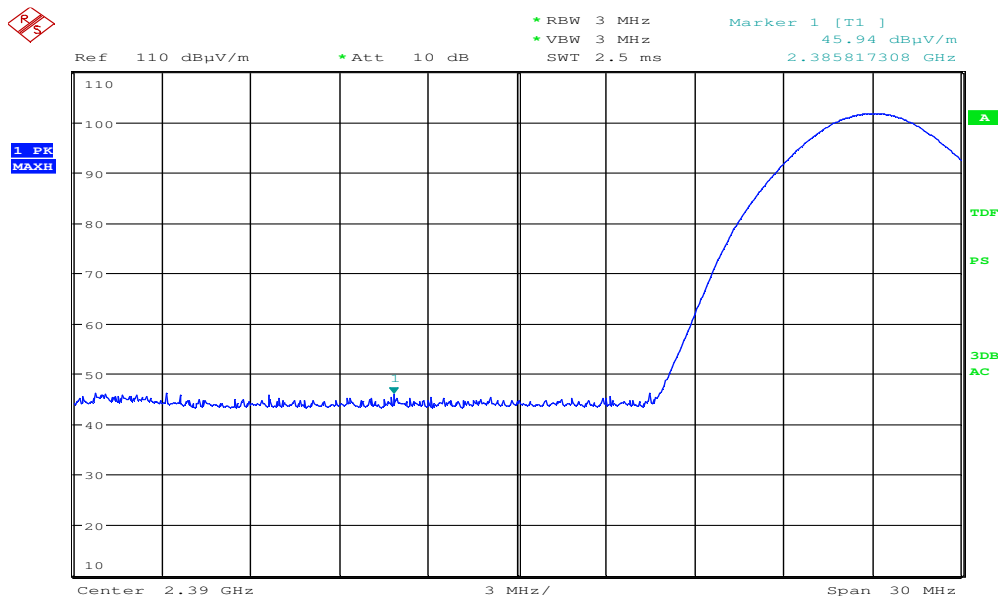
See attached plots.

Duty Cycle Correction Factor

Correction Factor = $-20 \times \log(\text{Burst Length} / (\text{Frame Length} * \text{Number of Hopping Channels}))$

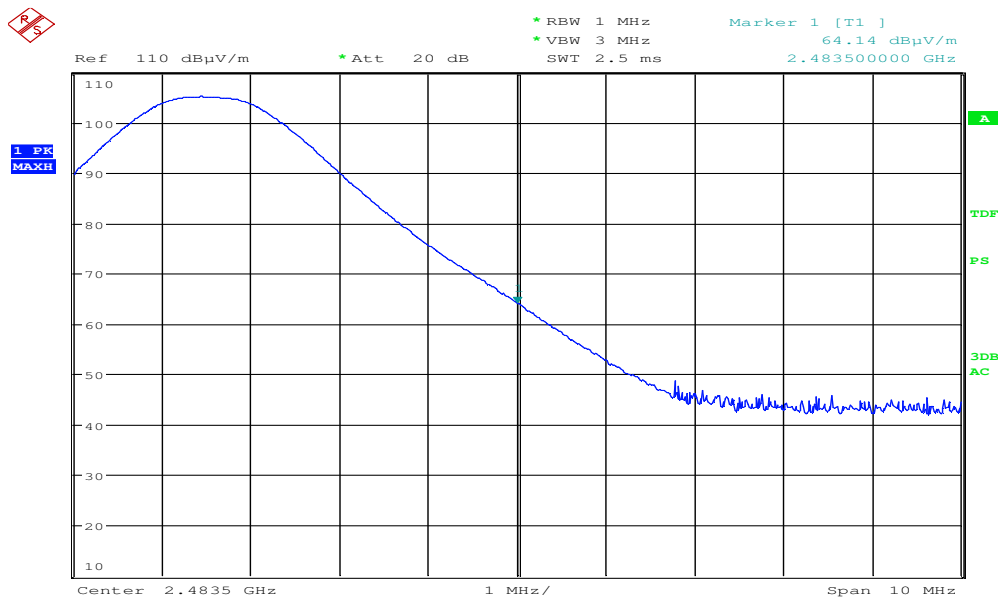
= $-20 \times \log(2.91 / (3.76 * 20)) \text{ dB} = 28.25 \text{ dB}$

Maximum Allowed Correction Factor = 20 dB



Date: 18.JUN.2018 14:44:02

Band Edge, Lower, Peak, 2402 MHz



Date: 18.JUN.2018 14:40:39

Band Edge, Upper, Peak, 2480 MHz

3.10 Radiated Emissions, below 1GHz

FCC 15.205, 15.209

ISED RSS-GEN, Issue 5, Clause 8.9

Test Results: Complies

Measuring distance 3m.

Measured with EUT in Hopping Mode.

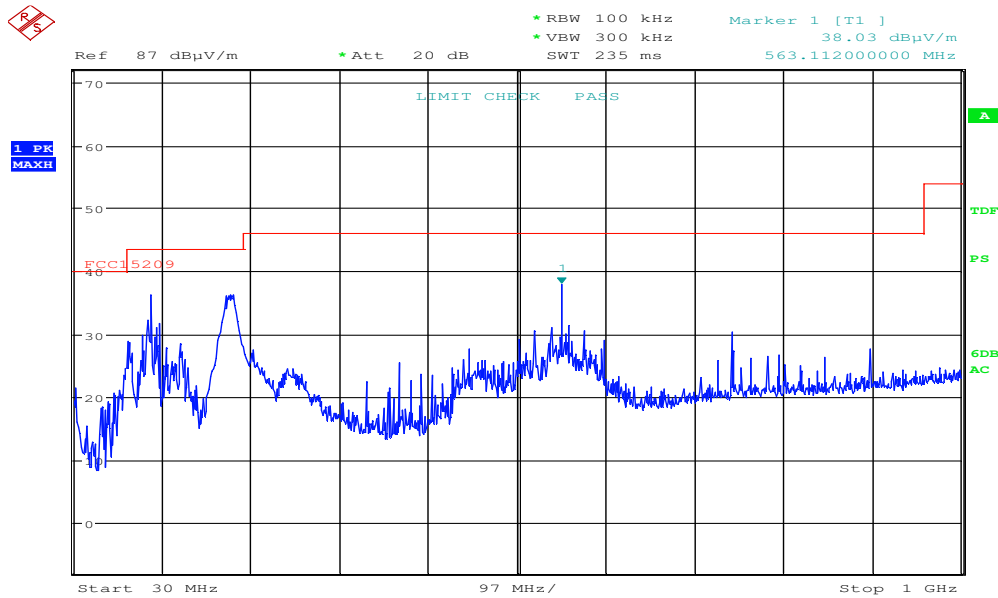
Measured values (QuasiPeak):

Frequency (MHz)	Polarization	Height (cm)	Azimuth (deg)	Bandwidth (kHz)	Field Strength QP (dBμV/m @3m)	Limit (dBμV/m)	Margin (dB)
101.8	VP	114	270	120	28.1	43.5	15.4
115.7	HP	284	324	120	31.5	43.5	12.0
200.0	HP	177	109	120	34.8	43.5	8.7
562.5	HP	196	144	120	38.5	46.0	7.5

See attached plots.

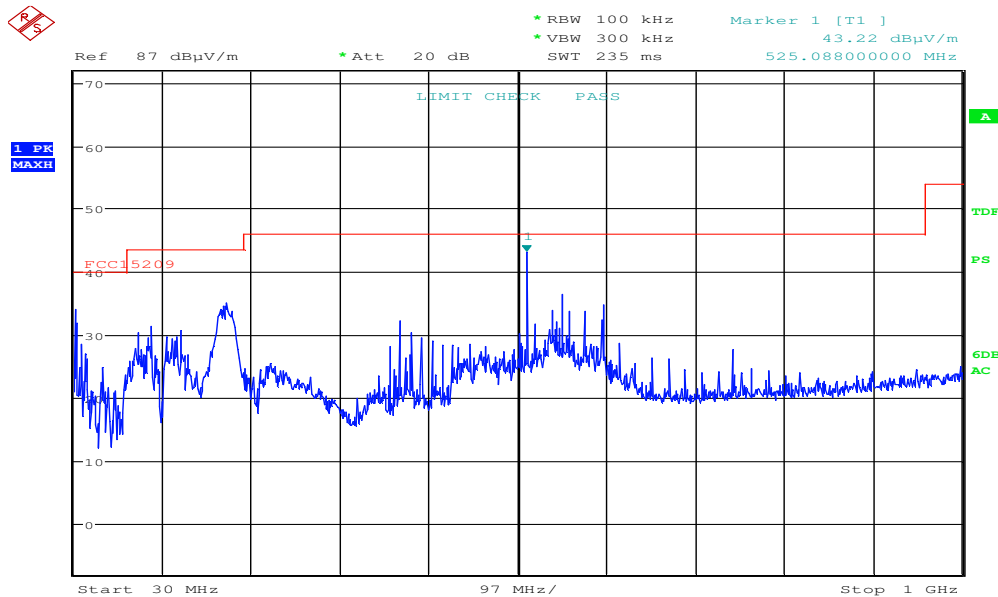
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	Quasi Peak (μV/m)	Quasi Peak (dBμV/m)
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0



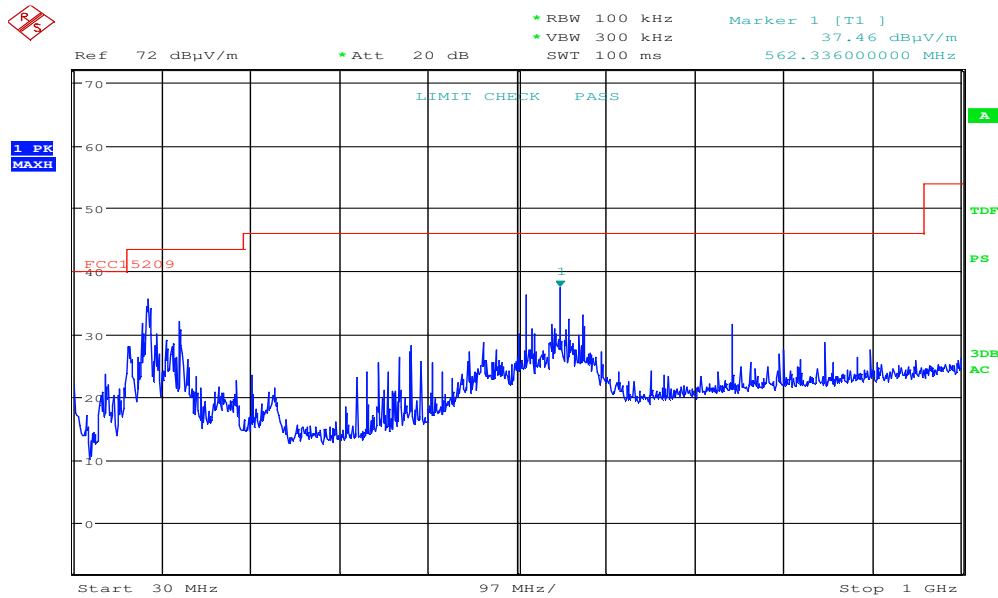
Date: 27.JUN.2018 09:57:52

Radiated Emissions, 30 -1000MHz, HP, Hopping ON, Power over Ethernet



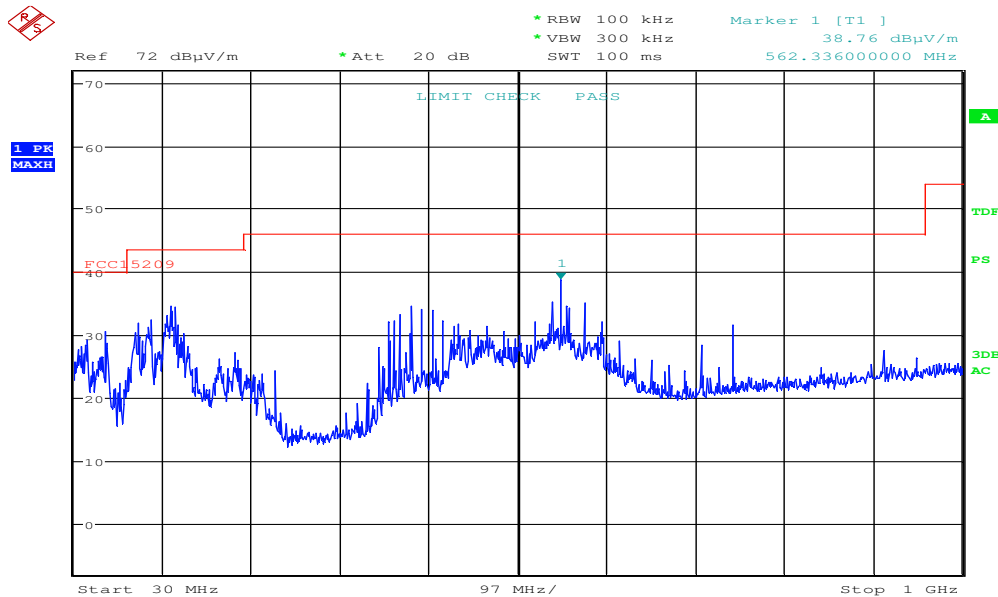
Date: 27.JUN.2018 09:55:46

Radiated Emissions, 30 -1000MHz, VP, Hopping ON, Power over Ethernet



Date: 27.JUN.2018 09:12:22

Radiated Emissions, 30 -1000MHz, HP, Hopping ON, AC Adaptor



Date: 27.JUN.2018 09:10:16

Radiated Emissions, 30 -1000MHz, VP, Hopping ON, AC Adaptor

3.11 Radiated Emissions, above 1GHz

FCC 15.205, 15.209

ISED RSS-GEN, Issue 5, Clause 8.9

Test Results: Complies

Measurement Data:

Radiated Emissions, 1-25 GHz

Measuring distance: 3m (1 – 18 GHz)
1m (18 – 26 GHz)

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

Measured values:

Frequency (MHz)	Channel	Polarization	Max Peak (dBμV/m)	Average (dBμV/m)	Peak Margin (dB)	Av Margin (dB)
4804	00	HP	50.6	30.6	23.6	23.6
4882	39	HP	51.1	31.1	22.9	22.9
4960	78	HP	49.3	29.3	24.7	24.7

All emissions are below the Average Limit even when measured with Peak Detector.

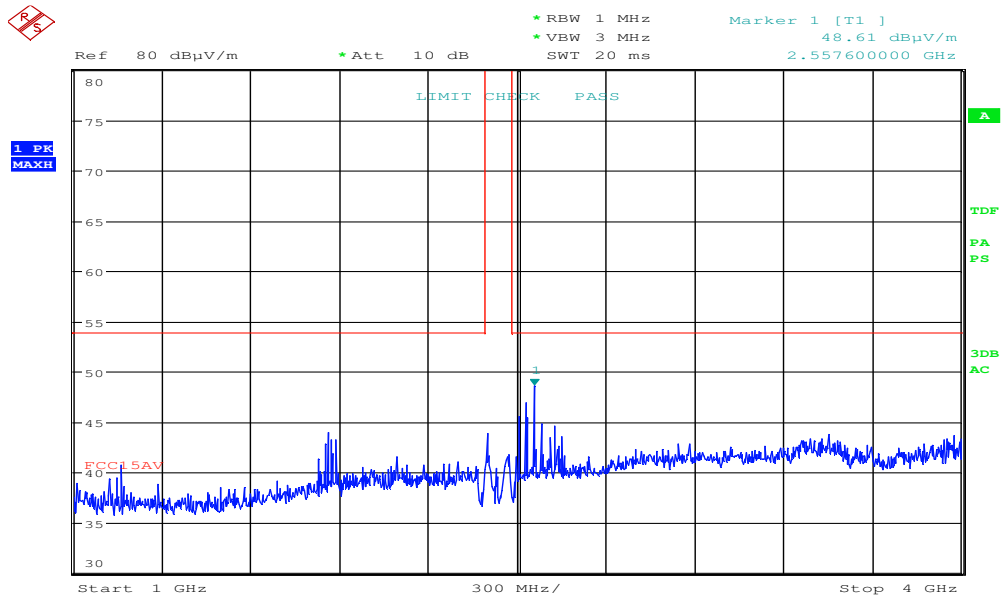
Average Values are calculated from Peak Values by Duty Cycle Correction Factor.

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

See plots.

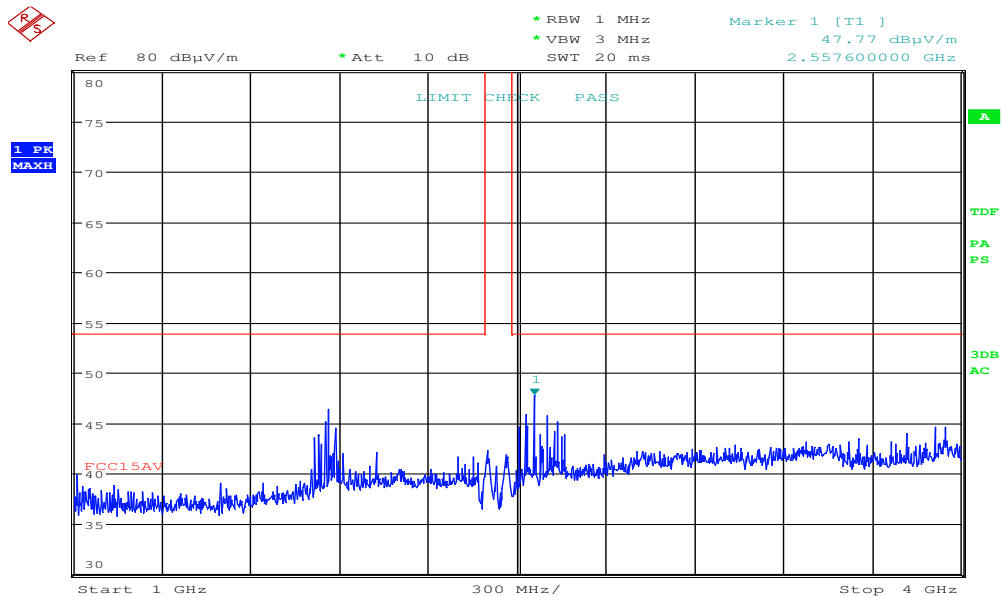
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	AV (dBμV/m)	Peak (dBμV/m)
Above 1 GHz	54.0	74.0



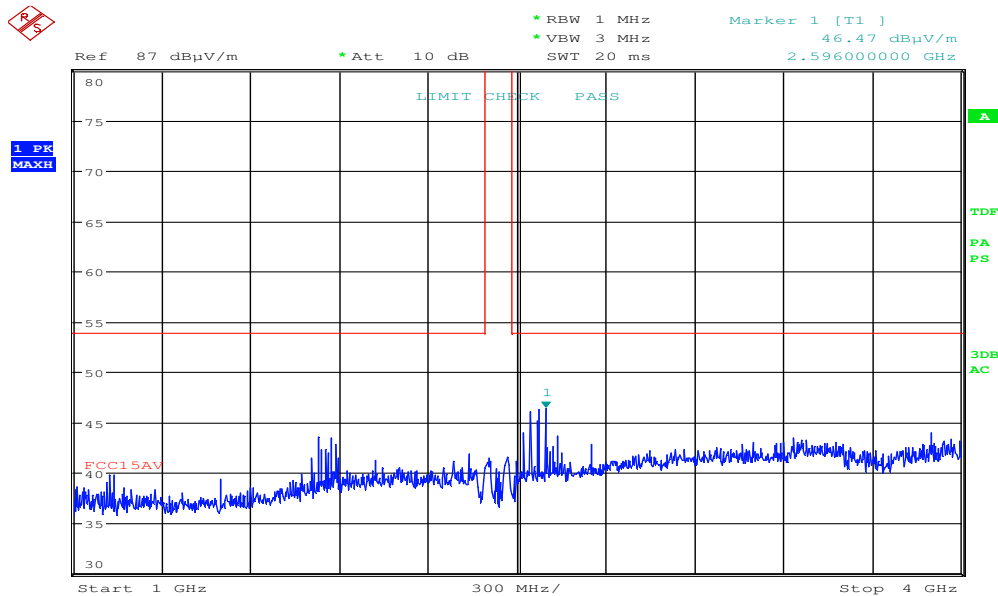
Date: 18.JUN.2018 14:30:39

Radiated Emissions, 1000 -4000 MHz, ch00, HP



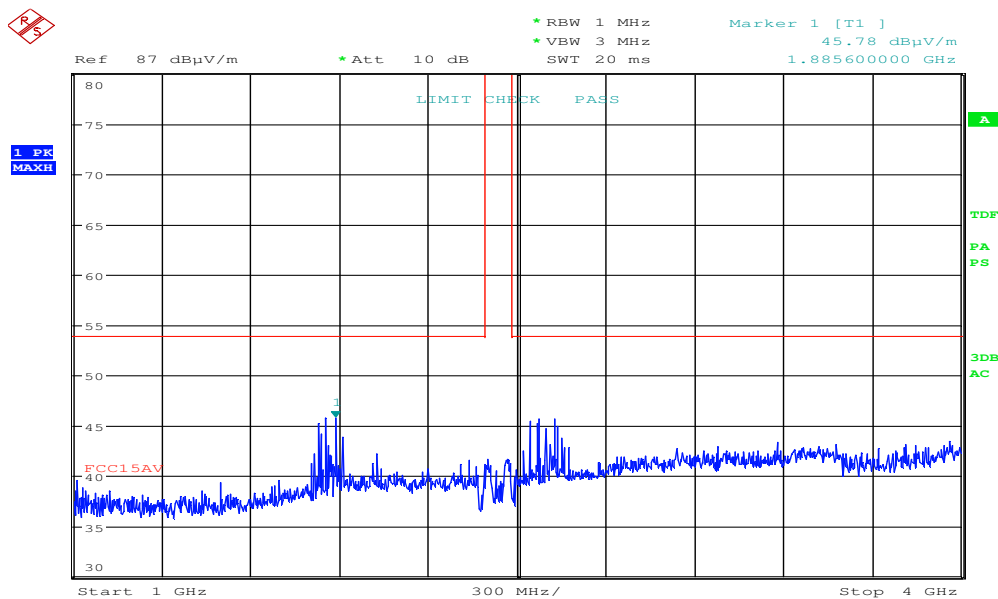
Date: 18.JUN.2018 14:28:44

Radiated Emissions, 1000 -4000 MHz, ch00, VP



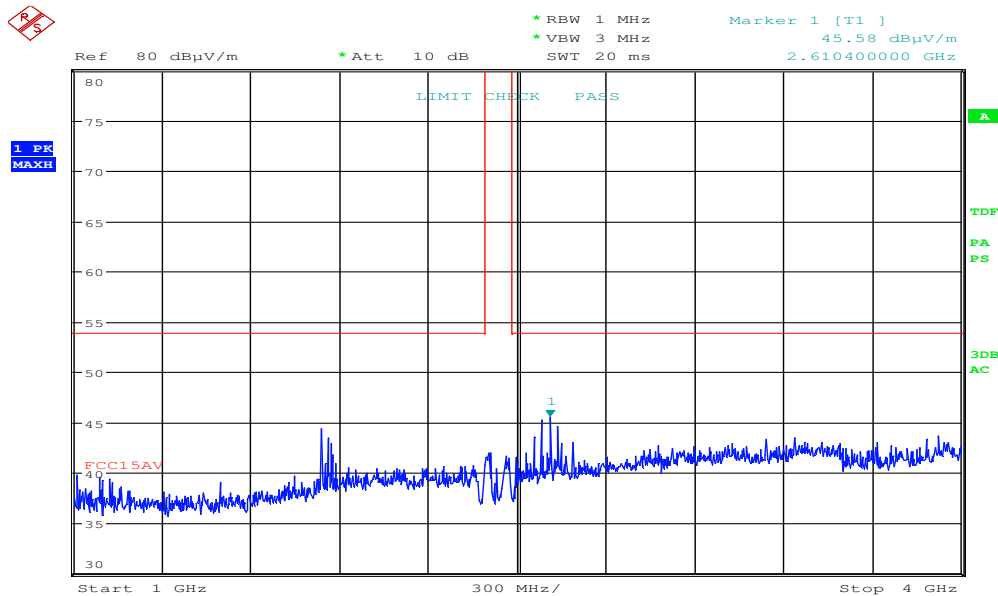
Date: 18.JUN.2018 14:26:16

Radiated Emissions, 1000 -4000 MHz, ch39, HP



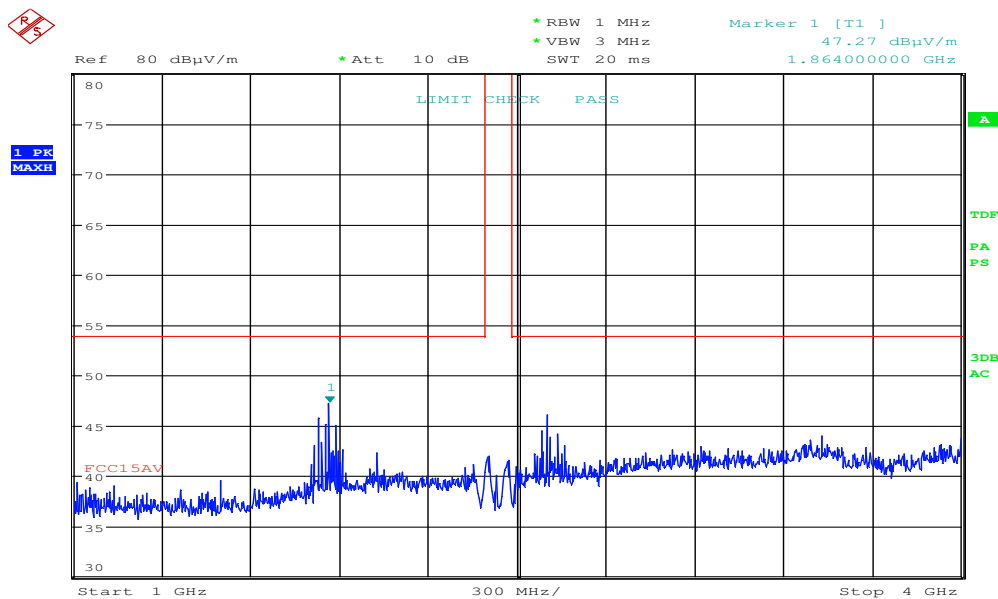
Date: 18.JUN.2018 14:24:21

Radiated Emissions, 1000 -4000 MHz, ch39, VP



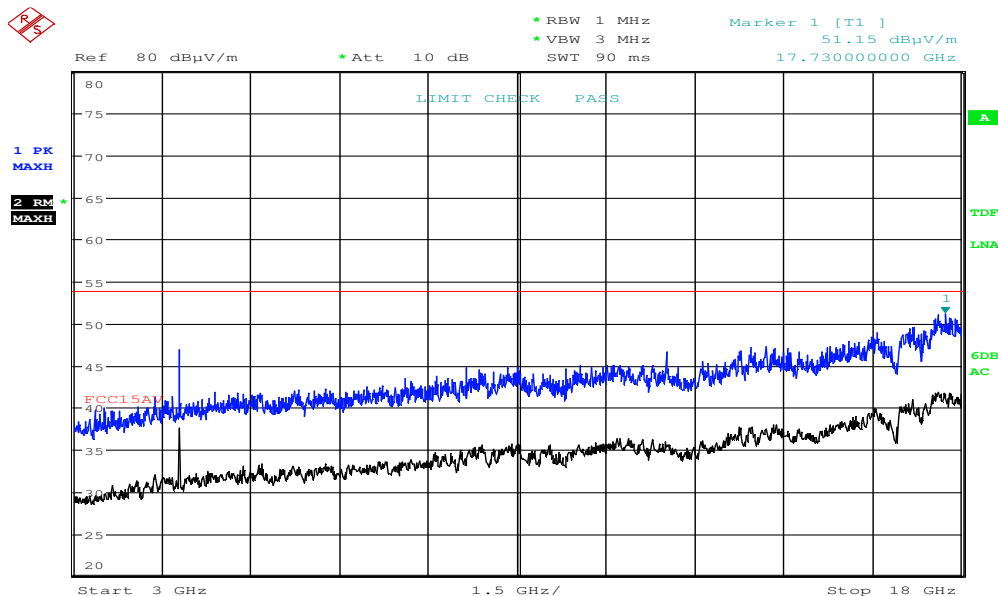
Date: 18.JUN.2018 14:35:51

Radiated Emissions, 1000 -4000 MHz, ch78, HP



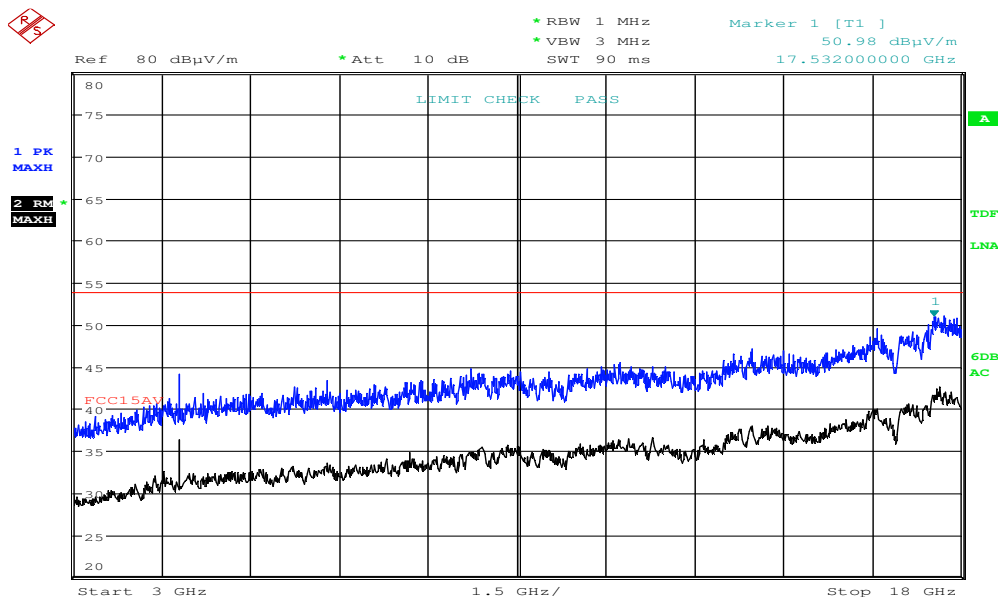
Date: 18.JUN.2018 14:33:55

Radiated Emissions, 1000 -4000 MHz, ch78, VP



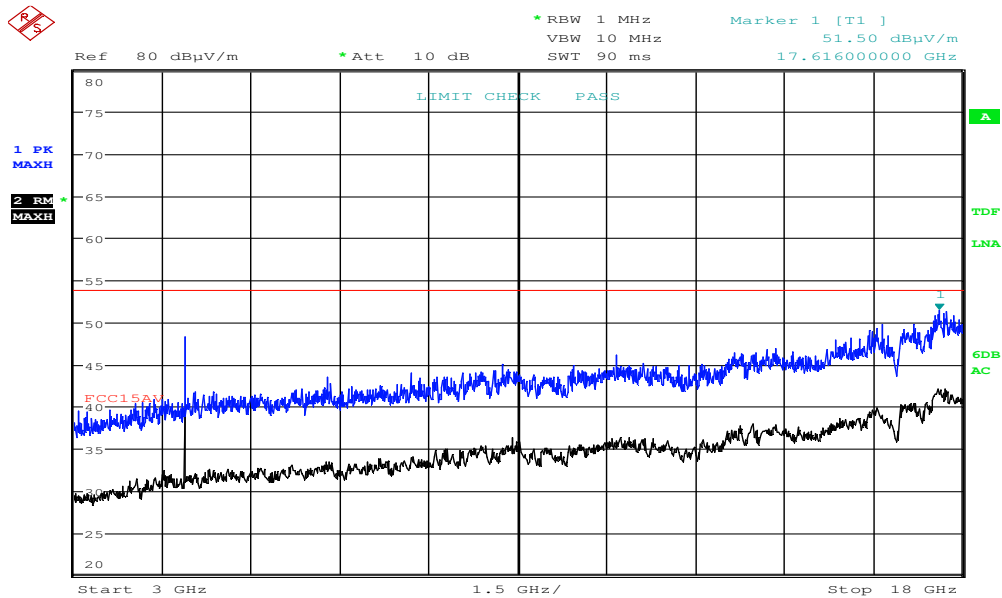
Date: 27.JUN.2018 13:14:58

Radiated Emissions, 3000 -18000 MHz, ch00, HP



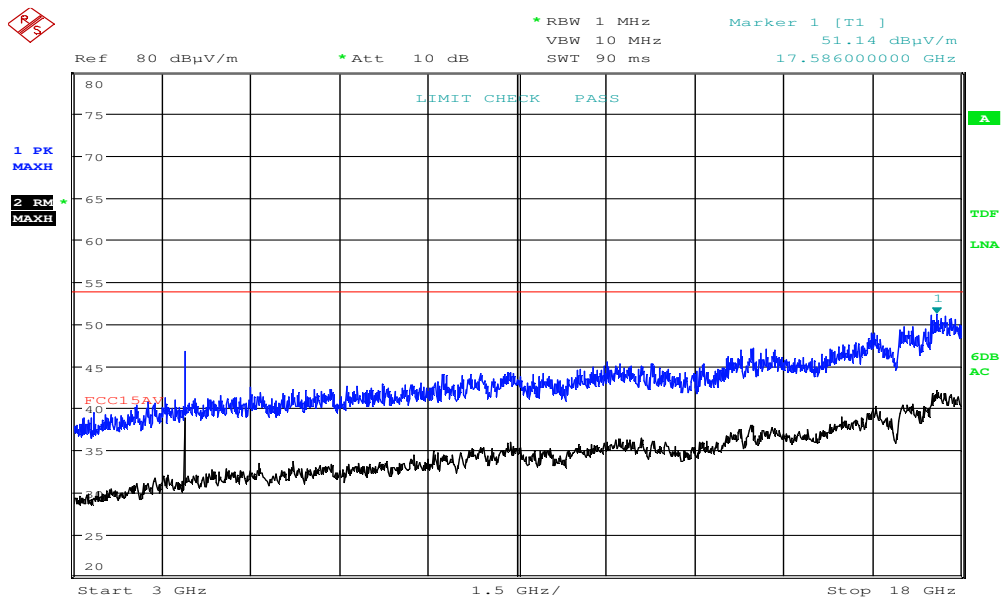
Date: 27.JUN.2018 13:13:03

Radiated Emissions, 3000 -18000 MHz, ch00, VP



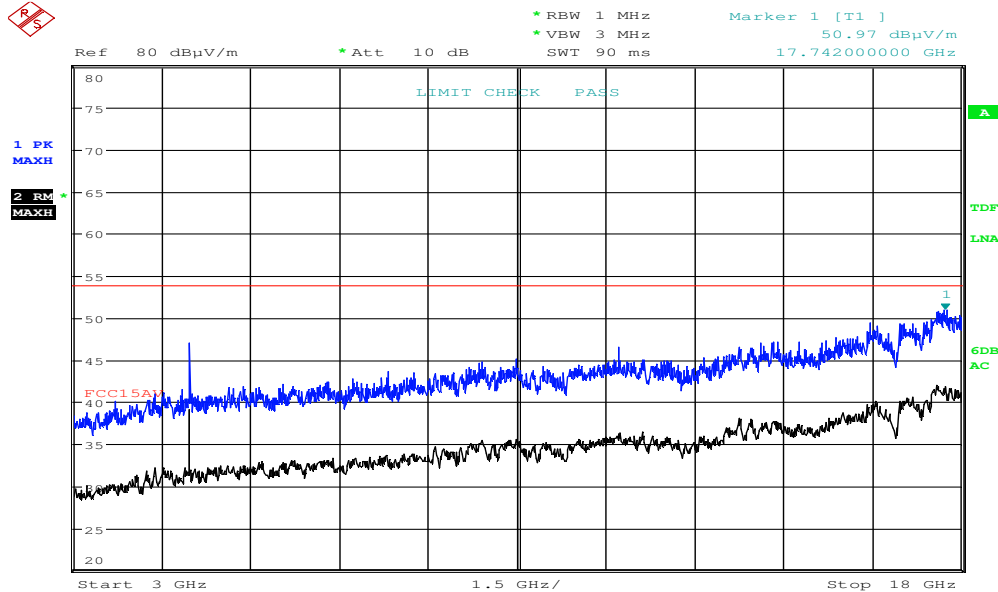
Date: 27.JUN.2018 13:08:09

Radiated Emissions, 3000 -18000 MHz, ch39, HP



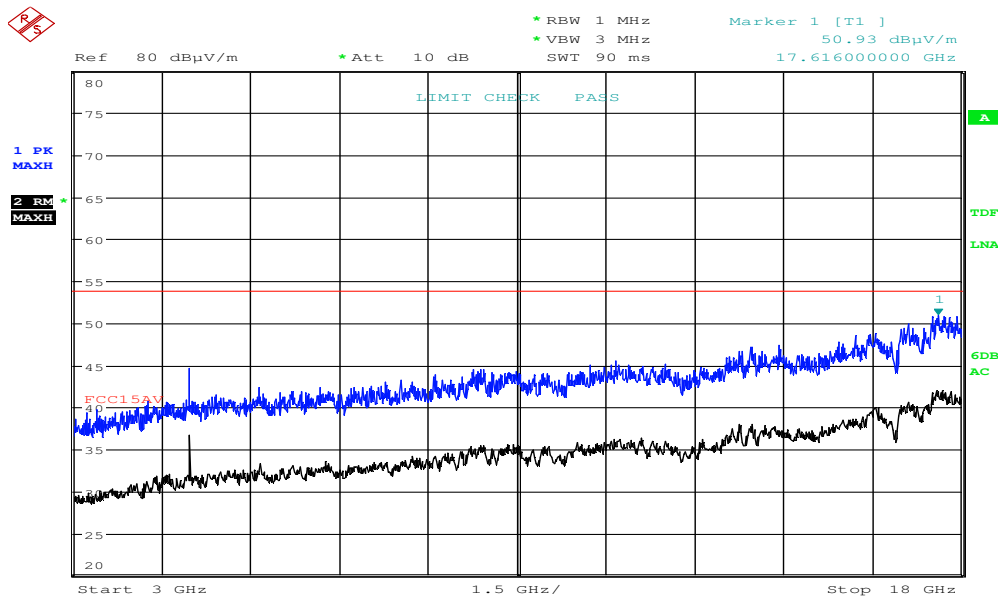
Date: 27.JUN.2018 13:05:48

Radiated Emissions, 3000 -18000 MHz, ch39, VP



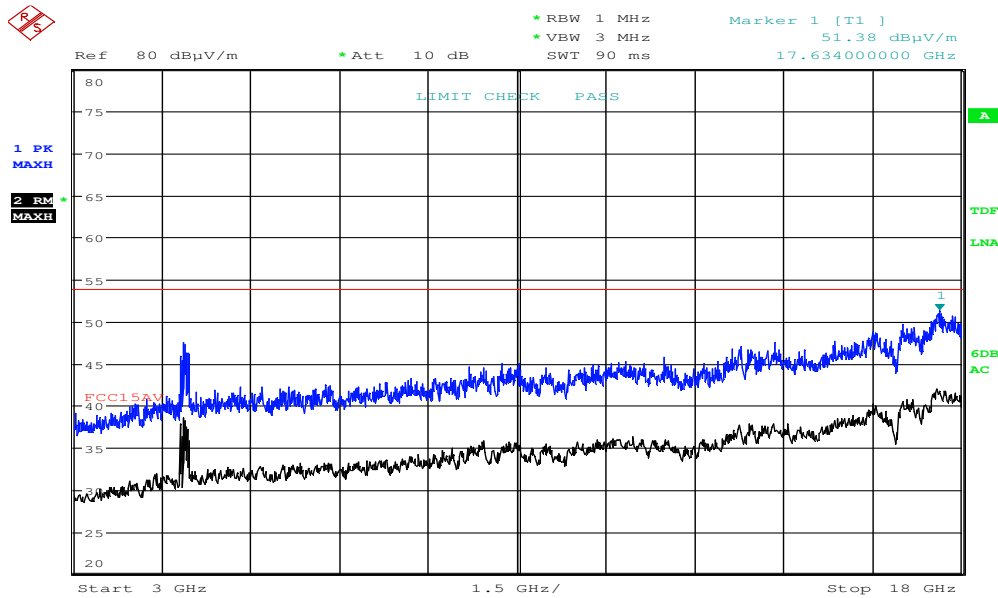
Date: 27.JUN.2018 13:19:58

Radiated Emissions, 3000 -18000 MHz, ch78, HP



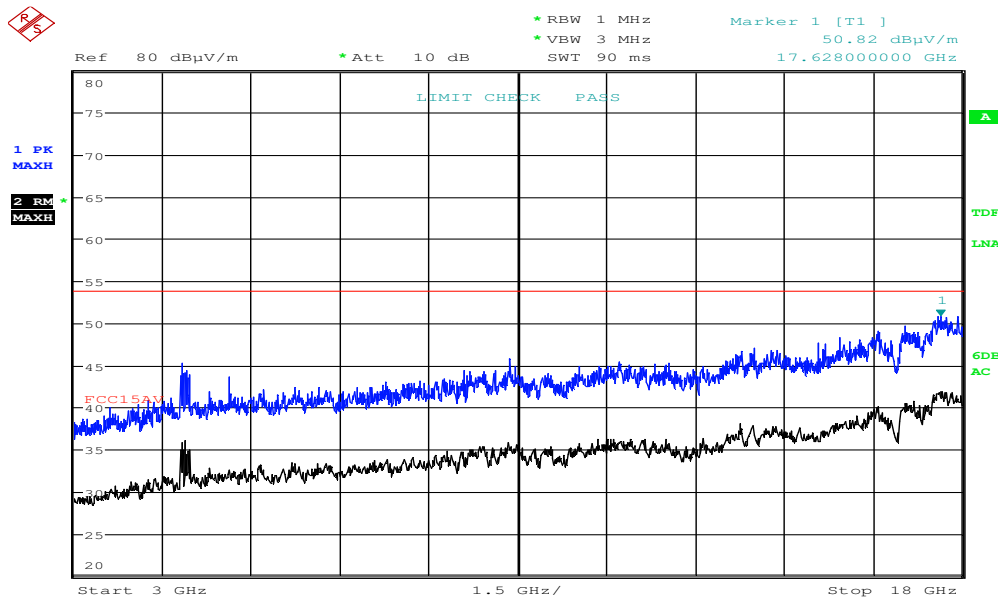
Date: 27.JUN.2018 13:18:05

Radiated Emissions, 3000 -18000 MHz, ch78, VP



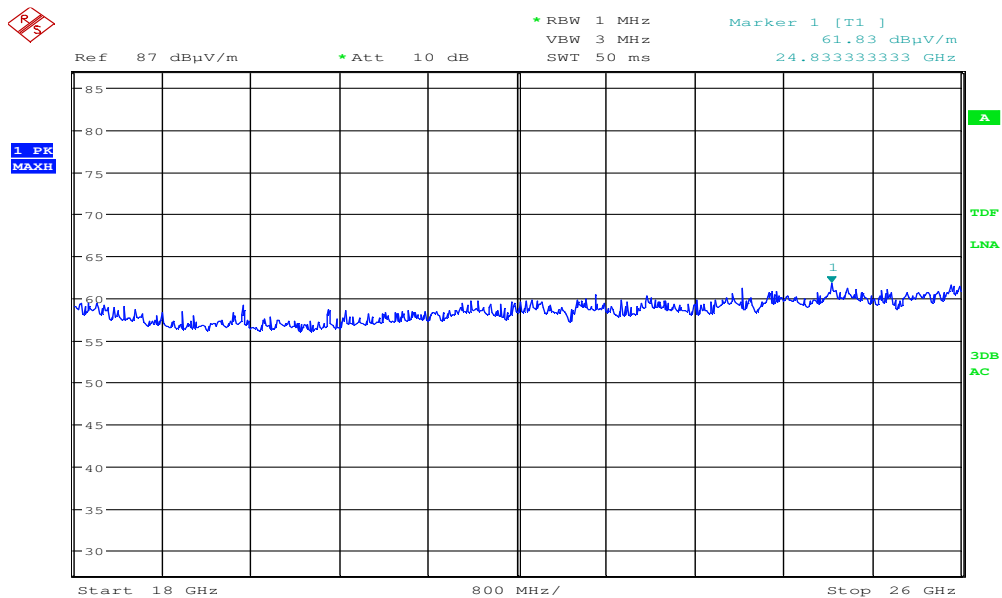
Date: 27.JUN.2018 12:51:14

Radiated Emissions, 3000 -18000 MHz, Hopping, HP



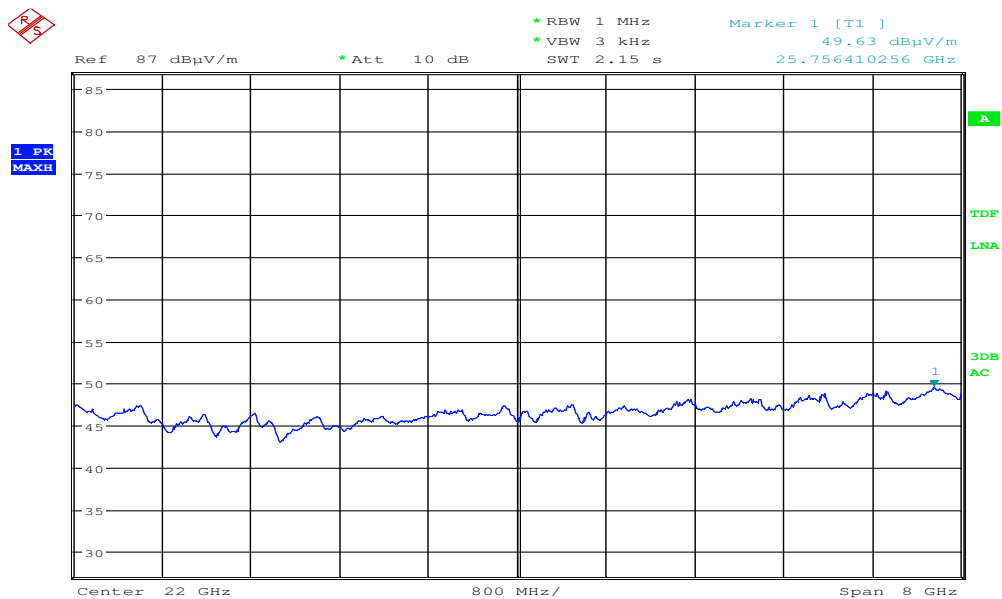
Date: 27.JUN.2018 12:46:39

Radiated Emissions, 3000 -18000 MHz, Hopping, VP



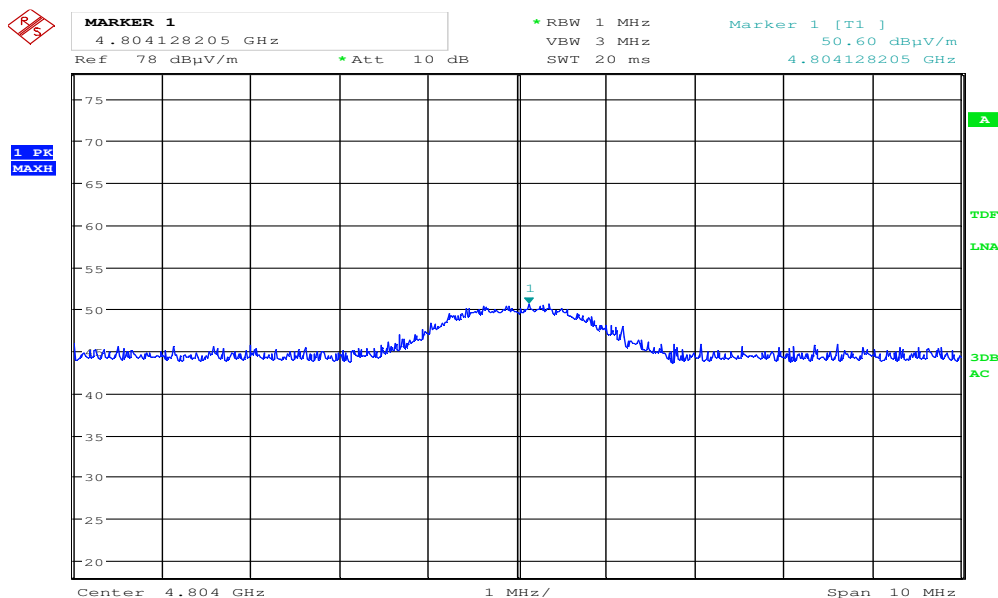
Date: 27.JUN.2018 14:07:52

Pre-scan, 18000 -26000 MHz, ch39, Peak



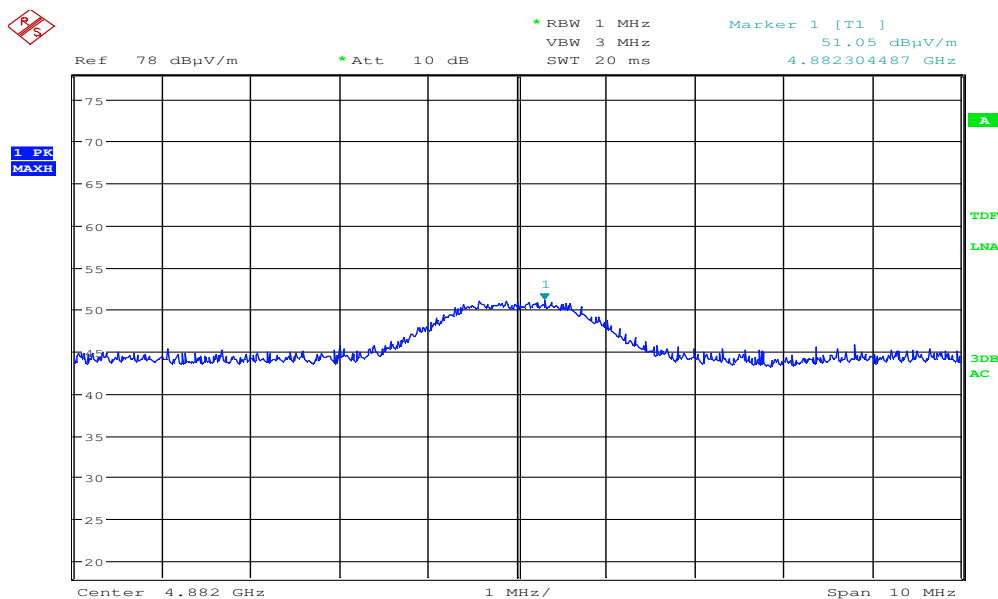
Date: 27.JUN.2018 14:09:40

Pre-scan, 18000 -26000 MHz, ch39, Av



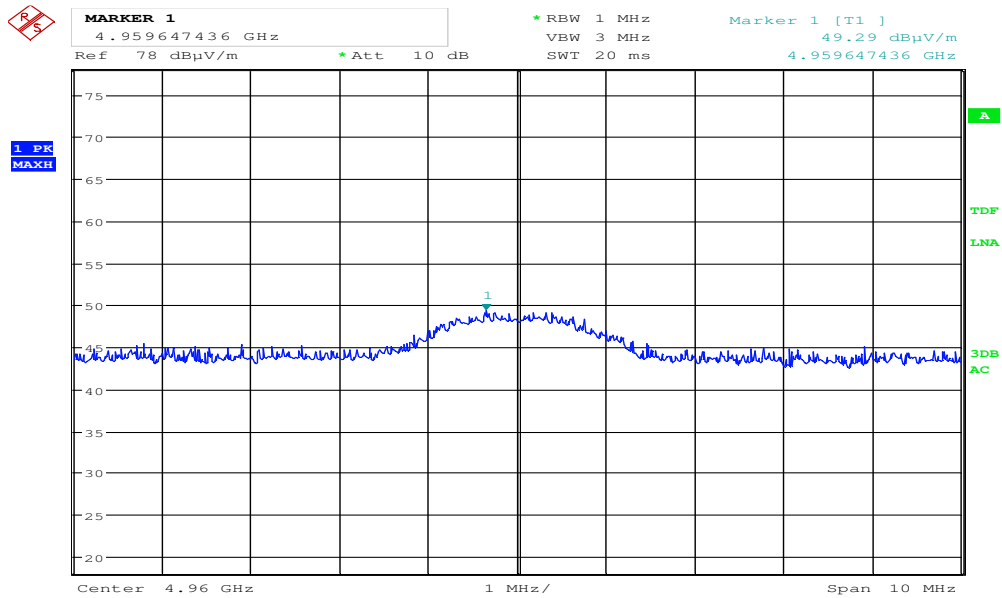
Date: 27.JUN.2018 14:53:46

Radiated Emissions, 4804 MHz, ch00, Pk, Max



Date: 27.JUN.2018 14:49:00

Radiated Emissions, 4882 MHz, ch39, Pk, Max



Date: 27.JUN.2018 14:54:35

Radiated Emissions, 4960 MHz, ch78, Pk, Max

4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		Uncertainty
Output Power		±0.5 dB
Power Spectral Density		±0.5 dB
Out of Band Emissions, Conducted	< 3.6 GHz	±0.6 dB
	> 3.6 GHz	±0.9 dB
Spurious Emissions, Radiated	< 1 GHz	±2.5 dB
	> 1 GHz	±2.2 dB
Emission Bandwidth		±4 %
Power Line Conducted Emissions		+2.9 / -4.1 dB
Spectrum Mask Measurements	Frequency	±5 %
	Amplitude	±1.0 dB
Frequency Error		±0.6 ppm
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

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.

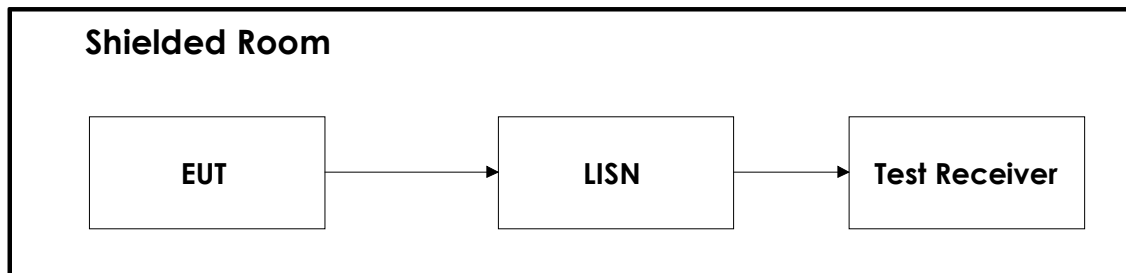
No.	Model	Description	Manufacturer	Asset no.	Cal. date	Cal. Due
1	FSW40	Spectrum Analyzer	Rohde & Schwarz	LR 1690	2018.01	2019.01
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2018.03	2019.03
3	6HC3000/18000	Highpass Filter	Trilithic	LR 1614	COU	
4	310	Preamplifier	Sonoma Instrument	LR 1686	2017.08	2018.08
5	317	Preamplifier	Sonoma Instrument	LR 1687	2017.08	2018.08
6	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2017.08	2018.08
7	6812B	AC Power Source	Agilent	LR 1515	COU	
8	3115	Horn Antenna	EMCO	LR 1330	2016.10	2021.10
9	3117-PA	Horn Antenna with Preamp	EMCO	LR 1717	2017.12	2018.12
10	JB3	BiLog Antenna	Sunol	N-4525	2017.11	2020.11
11	638	Antenna Horn	Narda	LR 1480	2010.06	2020.06
12	Model 87 V	Multimeter	Fluke	N-4669	2016.10	2018.10
13	ST8/SMAm/Nm/36	RF Cable	Suhner	LR 1630	COU	
14	Prosafe FS108P	10/100 Switch with PoE	Netgear	SN: 2HK11B3W00AB8	N/A	

COU = Calibrate on use

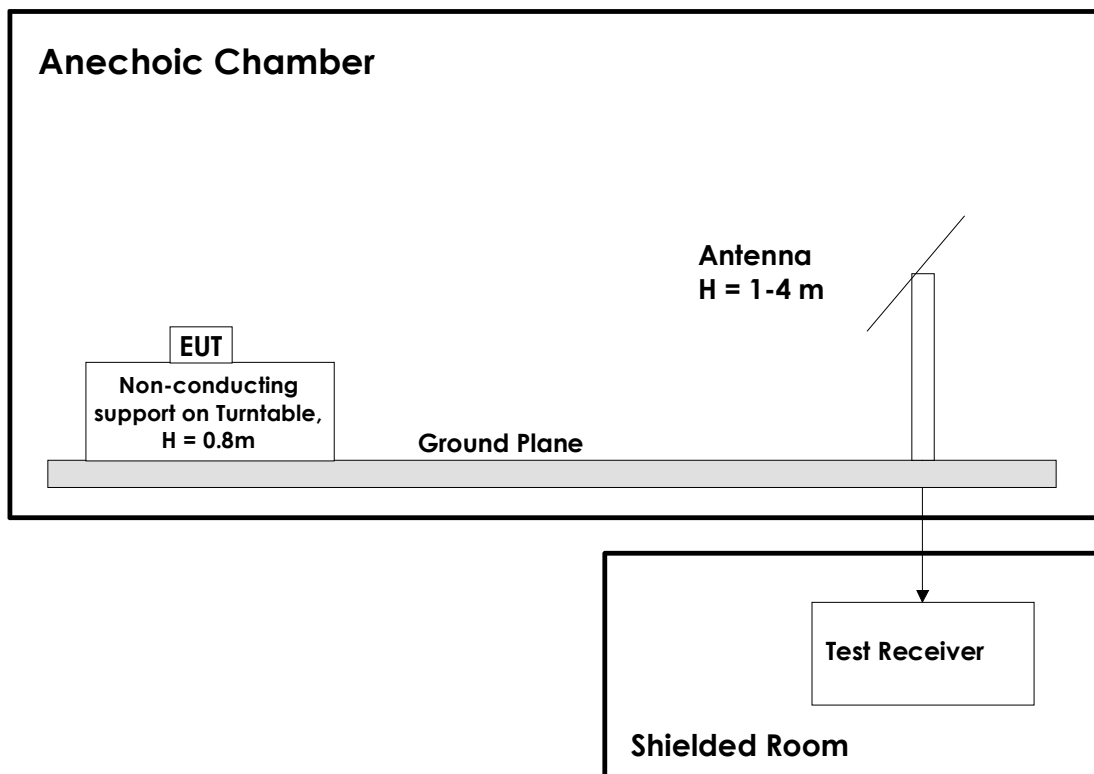
Test Software List			
Description	Manufacturer	Model	Version
EMC Software for Conducted tests	Rohde & Schwarz	EMC32	10.20.01
EMC Software for Radiated tests	Rohde & Schwarz	EMC32	10.20.01

6 BLOCK DIAGRAM

6.1 Power Line Conducted Emission



6.2 Test Site Radiated Emission



All tests below 1 GHz were performed at 3m with ground plane. The EUT was placed on the stand at 0.8m height.

Tests above 1 GHz were performed with the space between the EUT and the antenna covered by absorbers. The EUT was placed on a 1.5m high stand. Tests from 1 GHz to 18 GHz were performed @3m distance. Tests above 18 GHz were performed @1m distance.

The antenna was raised from 1 to 4m and the turntable rotated from 0 to 360 degrees to maximize any emissions found.

Revision history

Version	Date	Comment	Sign
1.0	2018.07.16	First edition	FS
1.1	2018.07.18	Corrected version info	FS