

Test Report

Product	DECT Handset with WiFi and Android
Name and address of the applicant	Ascom Sweden AB Grimboden 2 SE-41749 Gothenburg, Sweden
Name and address of the manufacturer	Ascom Sweden AB Grimboden 2 SE-41749 Gothenburg, Sweden
Model	SH2
Rating	3.8 V _{DC} (Li-Ion Battery, 2935mAh)
Trademark	ASCOM
Serial number	See clause 1.1
Additional information	DECT 6.0, WiFi, Bluetooth, Bluetooth LE, NFC
Tested according to	Parts of FCC Part 15.247 Frequency Hopping Transmitters / Digital Transmission Systems Parts of 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	380626
Tested in period	2020-06-08 to 2020-06-11 and 2020-06-24 to 2020-06-25
Issue date	2020-07-09
Name and address of the testing laboratory	 Instituttveien 6 Kjeller, Norway
	CAB Number: FCC: NO0001 ISED: NO0470
	 
	An accredited technical test executed under the Norwegian accreditation scheme
	 Prepared by [Frode Sveinsen]
	 Approved by [G. Suhanthakumar]
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1 INFORMATION

1.1 Test Item

Name	Ascom
Model/version	Myco 3
FCC ID	BXZSH2D
ISED ID	3724B-SH2D
Serial number	Radiated Sample: SK00010041 Conducted Sample: SK00025441
Hardware identity and/or version	SH2 P2A
Software identity and/or version	SH2_ADAA/2.0.0_alpha6
Frequency Range	2402–2480 MHz
Number of Channels	79
Operating Modes	Bluetooth Basic Rate, Bluetooth 2-EDR and Bluetooth 3-EDR
Type of Modulation	BT Basic Rate: GFSK BT 2-EDR: π/4-DPSK BT 3-EDR: 8-DPSK
Conducted Output Power	BT Basic Rate: 4.1 mW (Peak) BT 2-EDR: 4.2 mW (Peak) BT 3-EDR: 3.9 mW (Peak)
Antenna Connector	None
Number of Antennas	1
Antenna Diversity Supported	No
Power Supply	Secondary Battery (3.7V Li-Ion)

Description of Test Item

The EUT is a DECT Handset with WiFi, BT, BT LE and NFC.

This Bluetooth part has been tested as a Frequency Hopping system and fulfils all requirements for FHSS systems.

1.2 Normal test condition

Temperature:	20–25 °C
Relative humidity	20–50 %
Normal test voltage	3.7 V _{DC} (Nominal Voltage)

All tests were performed with the EUT powered from a fully charged battery.

Values above are the limit registered during the test period.

1.3 Test Engineer

Frode Sveinsen

1.4 Antenna Requirement

Does the EUT have detachable antenna(s)?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If detachable, is the antenna connector(s) non-standard?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
The tested equipment has only integral antennas. Conducted tests were performed with a temporary antenna connector.		

Requirement: FCC 15.203, 15.204

1.5 EUT Operating Modes

Description of operating modes	Continuous TX and Hopping, Basic Rate, 2-EDR and 3-EDR
Additional information	<p>A computer was connected by USB to the EUT.</p> <p>The selected channel, modulation, bitpattern and output power was then programmed from the BT Tool application.</p> <p>The following settings were used for all tests:</p> <p>Power Setting in BT Tool: Level 6</p> <p>Bit Pattern: PSRB</p> <p>Frame Type: DH1, 2-DH1, 3-DH1</p>

All tests were performed with Power Level 6 in BT Tool.

1.6 Comments

The EUT uses the Bluetooth protocol with Frequency Hopping.

2 TEST REPORT SUMMARY

2.1 General

All measurements are traceable to national standards.

The tests were conducted for 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 made in a semi-anechoic chamber at measuring distances of 1m and 3m.

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

<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".

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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 (6) (RSS-247)	Complies
Antenna Requirement	15.203	6.8 (RSS-GEN)	Complies
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2 / 8.8 (RSS-GEN)	N/A¹
Channel Separation	15.247(a)(1)	5.1 (4) (RSS-247)	Complies
Pseudorandom Hopping Algorithm	15.247(a)(1)	5.1 (3) (RSS-247)	Complies
Time of Occupancy	15.247(a)(1)(iii)	5.1 (5) (RSS-247)	Complies
Hopping Bandwidth	15.247(a)(1)	5.1 (7) (RSS-247)	Complies
Occupied Bandwidth (99% BW)	N/A	6.7 (RSS-GEN)	Complies
Peak Power Output	15.247(b)	5.4 (RSS-247)	Complies
Spurious Emissions (Antenna Conducted)	15.247(c)	5.5 (RSS-247)	Complies
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	5.5 (RSS-247) 7.3 (RSS-GEN) 8.9 (RSS-GEN)	Complies

¹ The EUT is battery powered and the battery is charged in an external charger

Revision history

Revision	Date	Comment	Sign
00	2020-06-18	First edition	FS
01	2020-06-29	Updated test results with reduced output power	FS
02	2020-07-09	Added duty-cycle and average output power	FS

3 TEST RESULTS

3.1 20dB Bandwidth

FCC Part 15.247(a)(1)

ISED RSS-247 Issue 2, Clause 5.1 (b)

Measurement procedure: ANSI C63.10-2013 Clause 7.8.2

Test Results: Complies

Measurement Data:

Modulation	20 dB Bandwidth	Verdict
Basic Rate (GFSK)	0.88 MHz	Complies
2-EDR ($\pi/4$ -DPSK)	1.25 MHz	Complies
3-EDR (8-DPSK)	1.26 MHz	Complies

RF channel has no influence on 20 dB bandwidth.

See attached plots

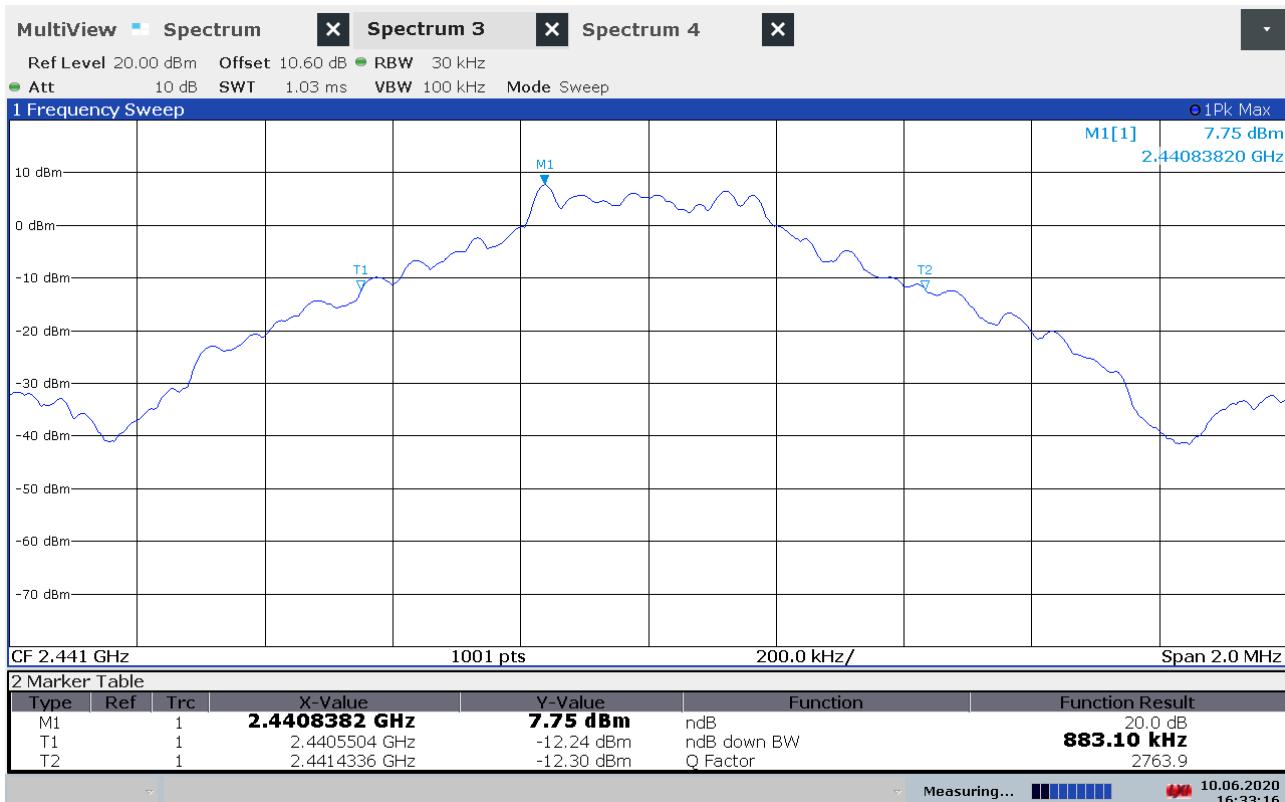
Requirement:

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.

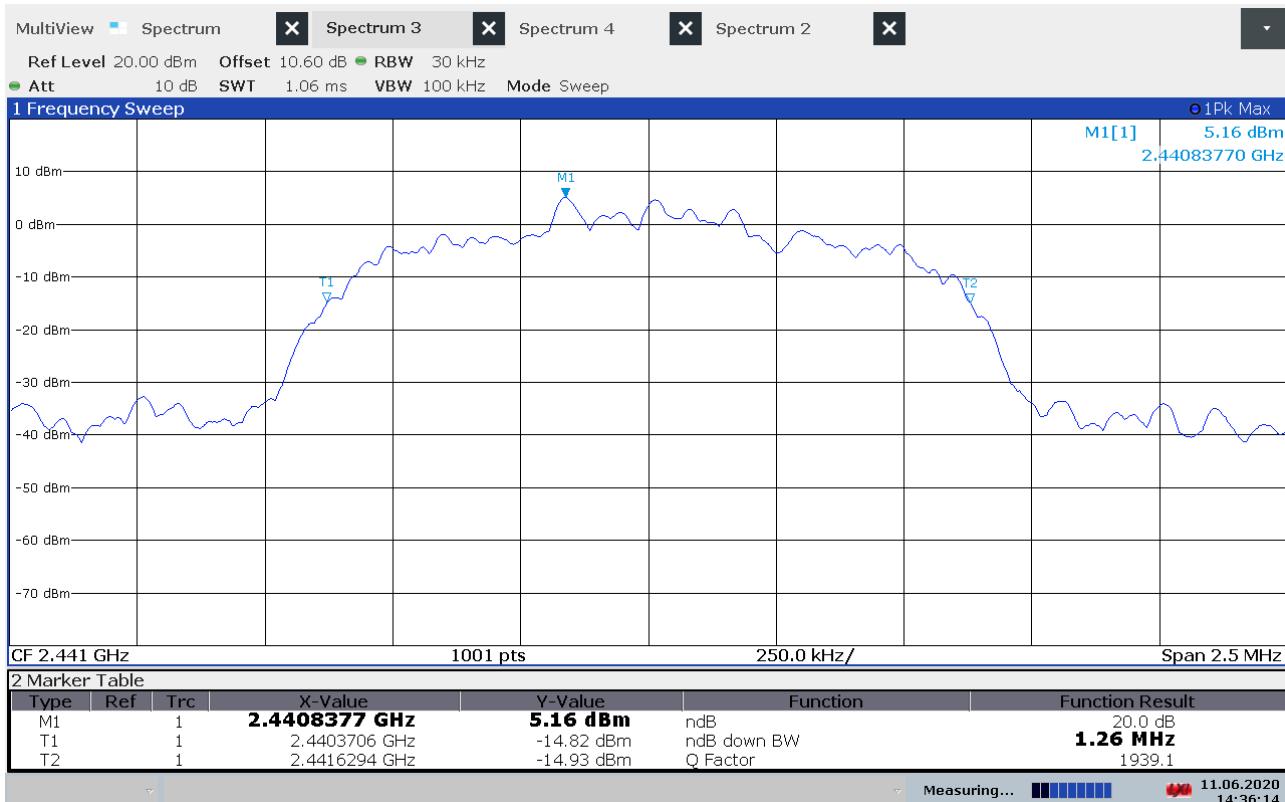
No requirements for Digital Transmission Systems.



20dB Bandwidth, 2441 MHz, Basic Rate



20dB Bandwidth, 2441 MHz, 2-EDR



20dB Bandwidth, 2441 MHz, 3-EDR

3.2 Hopping Bandwidth

FCC Part 15.247 (a)(1)(iii)

ISED Canada RSS-247 Issue 2, Clause 5.1

Measurement procedure: ANSI C63.10-2013 Clause 6.9.2 / 7.8.3

Test Results: Complies

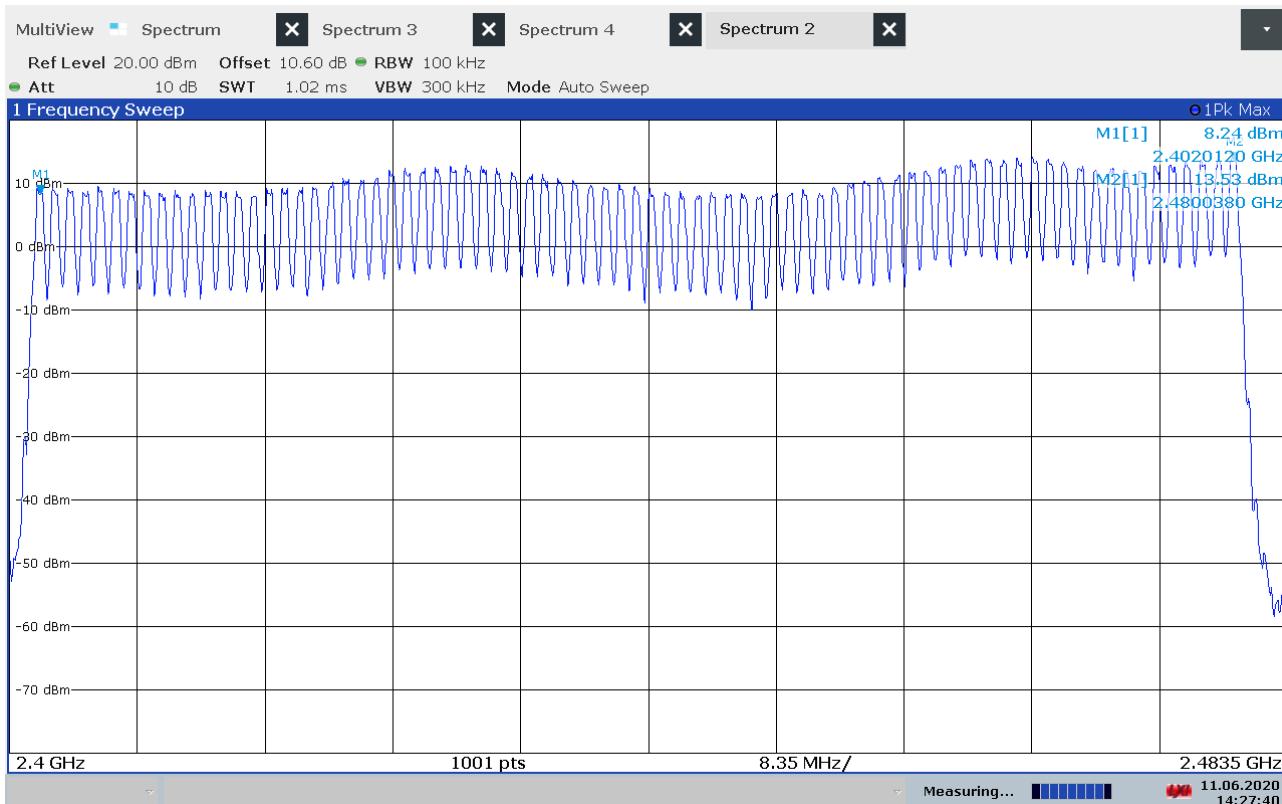
Measurement Data:

Number of RF Channels in use	20 to 79
Channel Centre Frequencies	2402 to 2480 MHz
Channel Separation	1 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.



RF Channels in Use, Basic Rate

3.3 Occupied Bandwidth (99% BW)

RSS-GEN Issue 5, Clause 6.7

Measurement procedure: ANSI C63.10-2013 Clause 6.9.2 / 7.8.3

Test Results: Complies

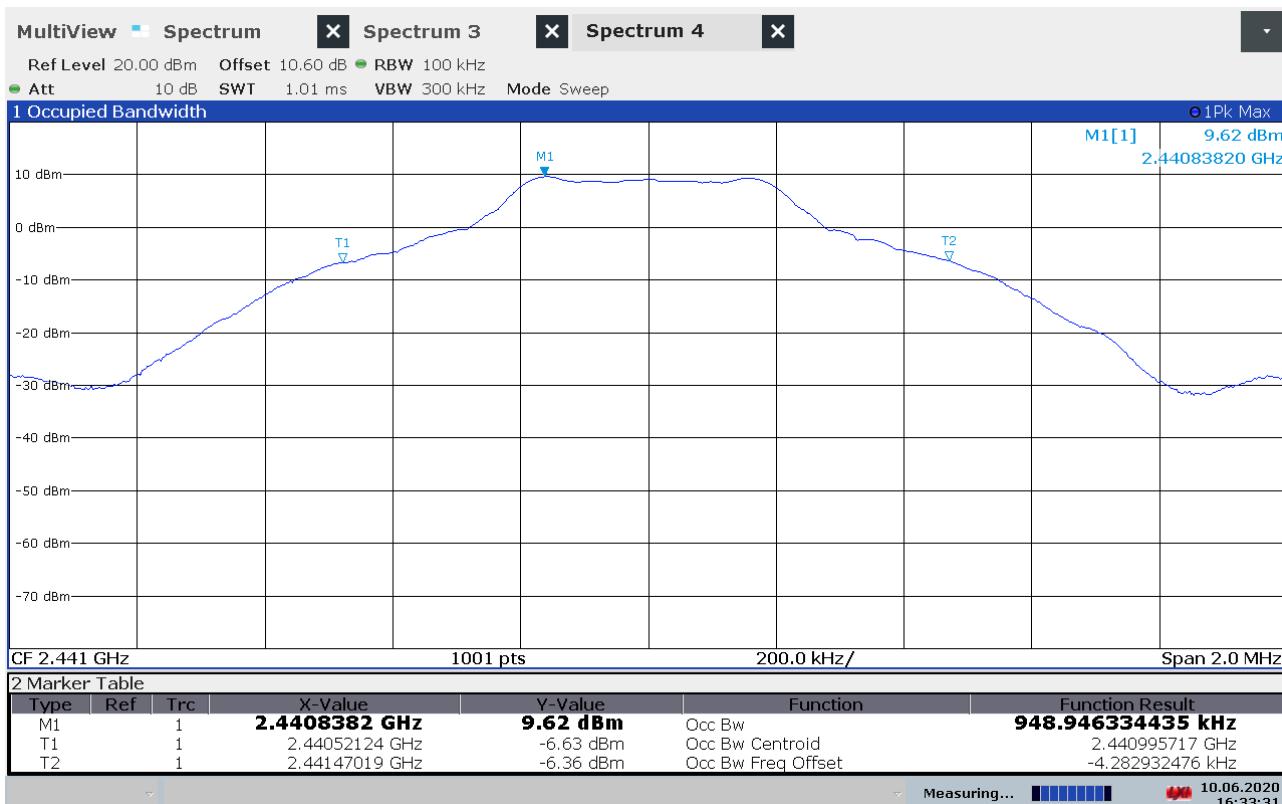
Measurement Data:

Carrier Frequency and Data Rate	Occupied Bandwidth (99% BW)
2441 MHz Basic Rate	0.95 MHz
2441 MHz 2-EDR	1.19 MHz
2441 MHz 3-EDR	1.18 MHz

See attached plots.

Requirements:

No limit specified.



Occupied Bandwidth, 99%, 2441 MHz, Basic Rate



Occupied Bandwidth, 99%, 2441 MHz, 2-EDR



Occupied Bandwidth, 99%, 2441 MHz, 3-EDR

3.4 Output Power

FCC 15.247 (b)

ISED Canada RSS-247 Issue 2, Clause 5.4

Measurement procedure: ANSI C63.10-2013 Clause 11.9.1.2

Test Results: Complies

Measurement Data:

Conducted Output Power				
Carrier Frequency and Modulation	Peak Conducted Power (dBm)	Peak Conducted Power (mW)	Average Conducted Power (dBm)	Average Conducted Power (mW)
2402 MHz GFSK	4.96	3.13	3.08	2.03
2441 MHz GFSK	6.11	4.08	4.24	2.65
2480 MHz GFSK	5.33	3.41	3.46	2.22
2402 MHz π/4-DPSK	5.07	3.21	3.19	2.09
2441 MHz π/4-DPSK	6.20	4.17	4.33	2.71
2480 MHz π/4-DPSK	5.56	3.60	3.69	2.34
2402 MHz 8-DPSK	5.41	3.48	3.54	2.26
2441 MHz 8-DPSK	5.94	3.93	4.07	2.55
2480 MHz 8-DPSK	5.83	3.83	3.96	2.49

Slot Type	Burst Length (ms)	Frame Length (ms)	Maximum Duty Cycle (%)	Duty Cycle Correction (dB)
DH1	0.372	2.5	14.88	-8.27
DH3	1.626	2.5	65.04	-1.87
DH5	2.88	5.0	57.60	-2.40

Average Output Power is calculated from Peak Power by correcting for Duty Cycle.

Radiated Power was calculated from measured Field Strength using the method described in FCC KDB 412172 D01.

Antenna Gain is less than 6 dBi.

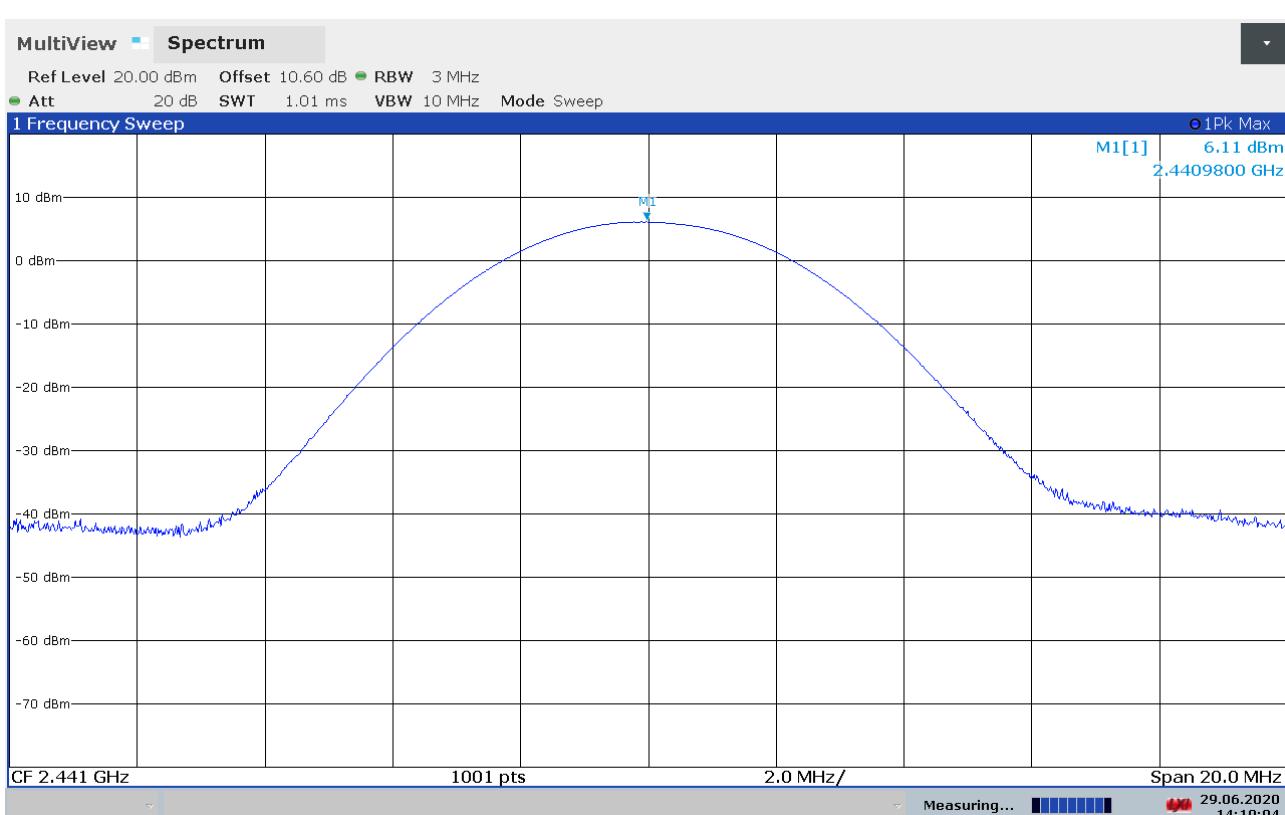
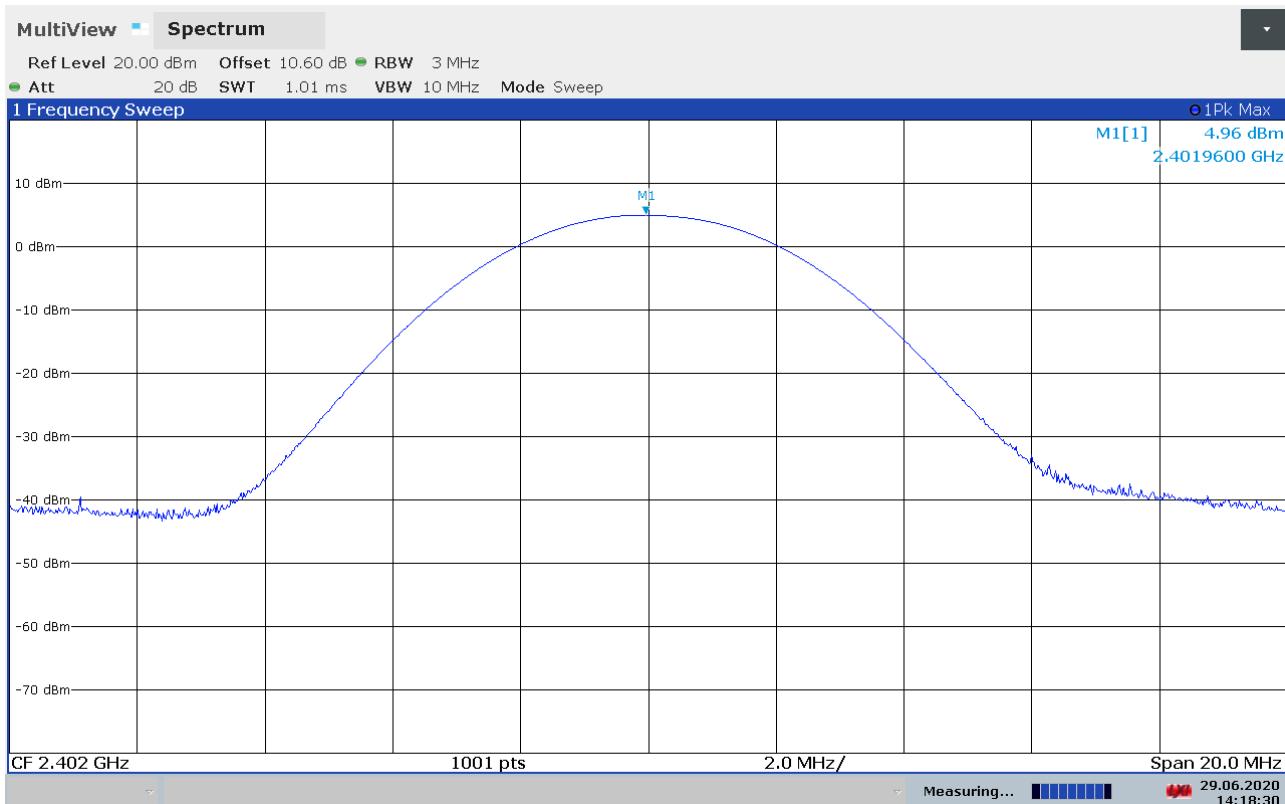
See attached plots.

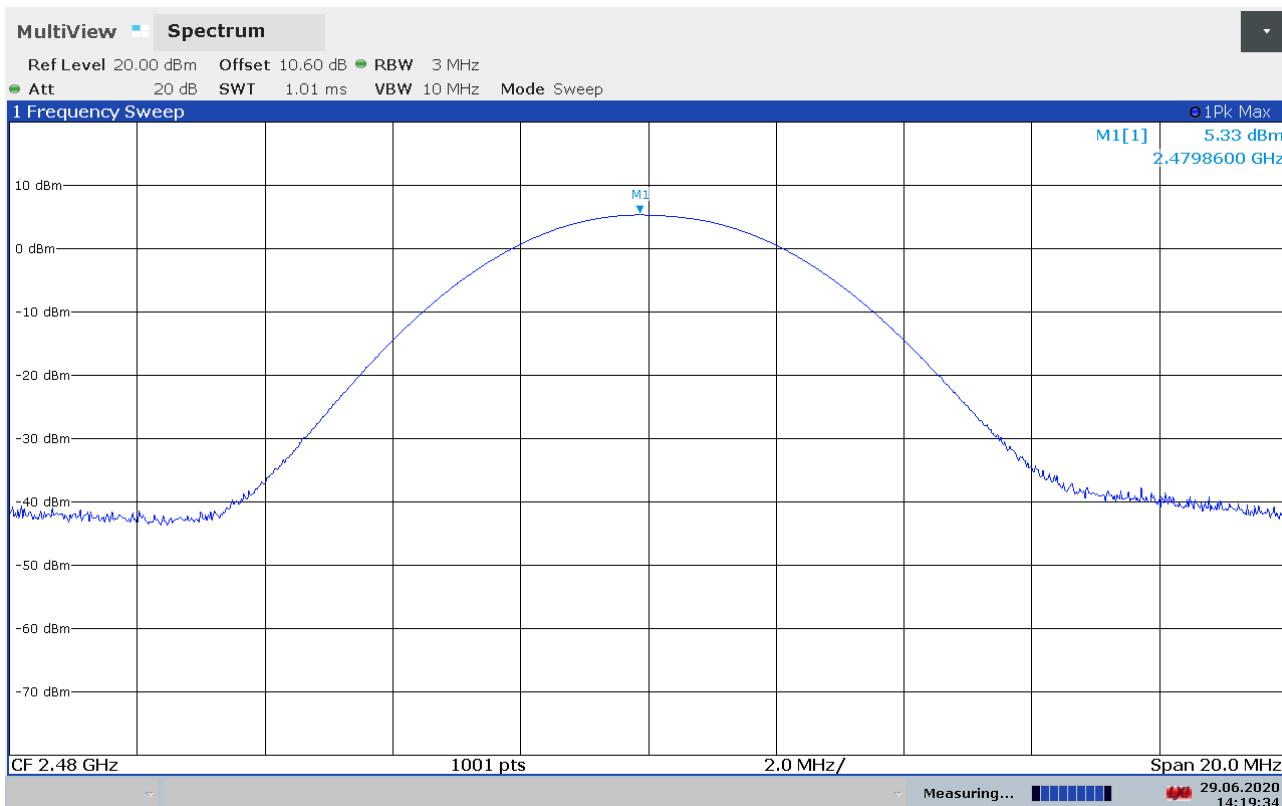
Requirements:

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

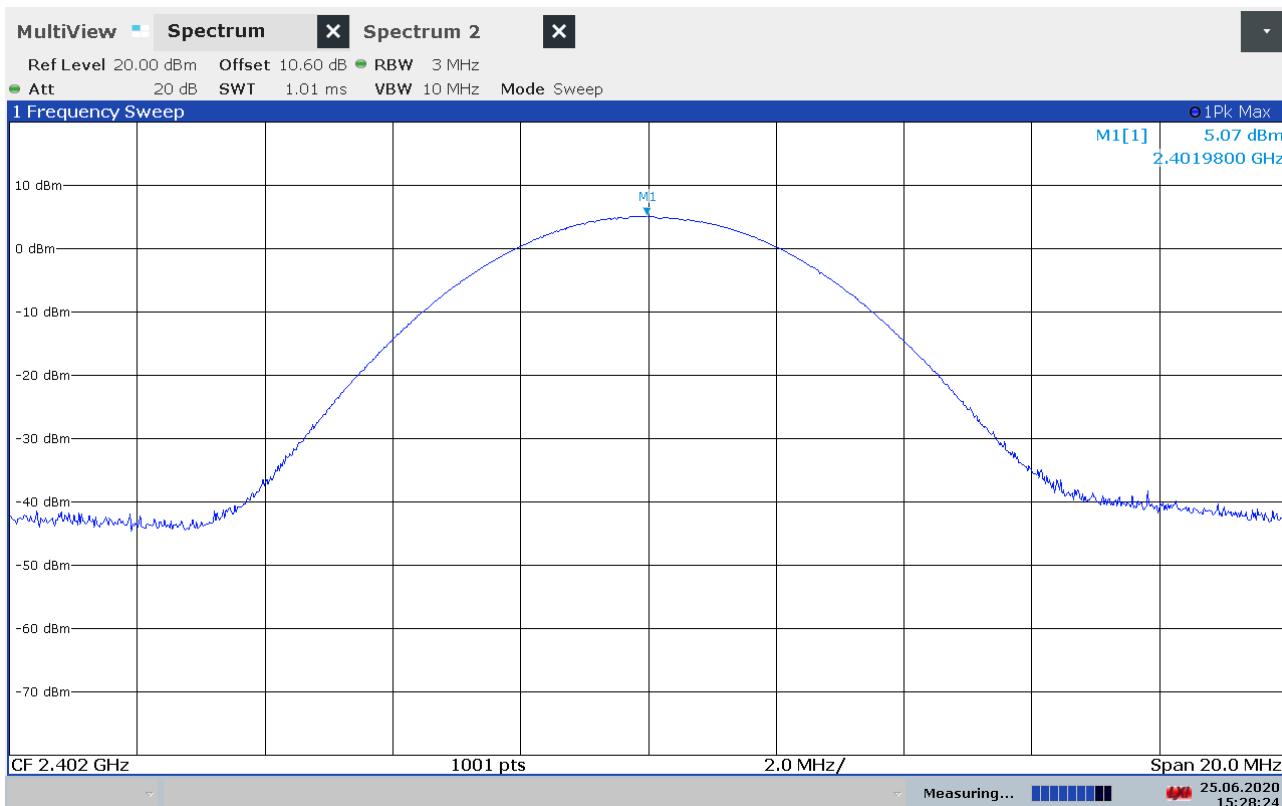
For Digital Transmission Systems in the 2400–2483.5 MHz band: 1 Watt

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

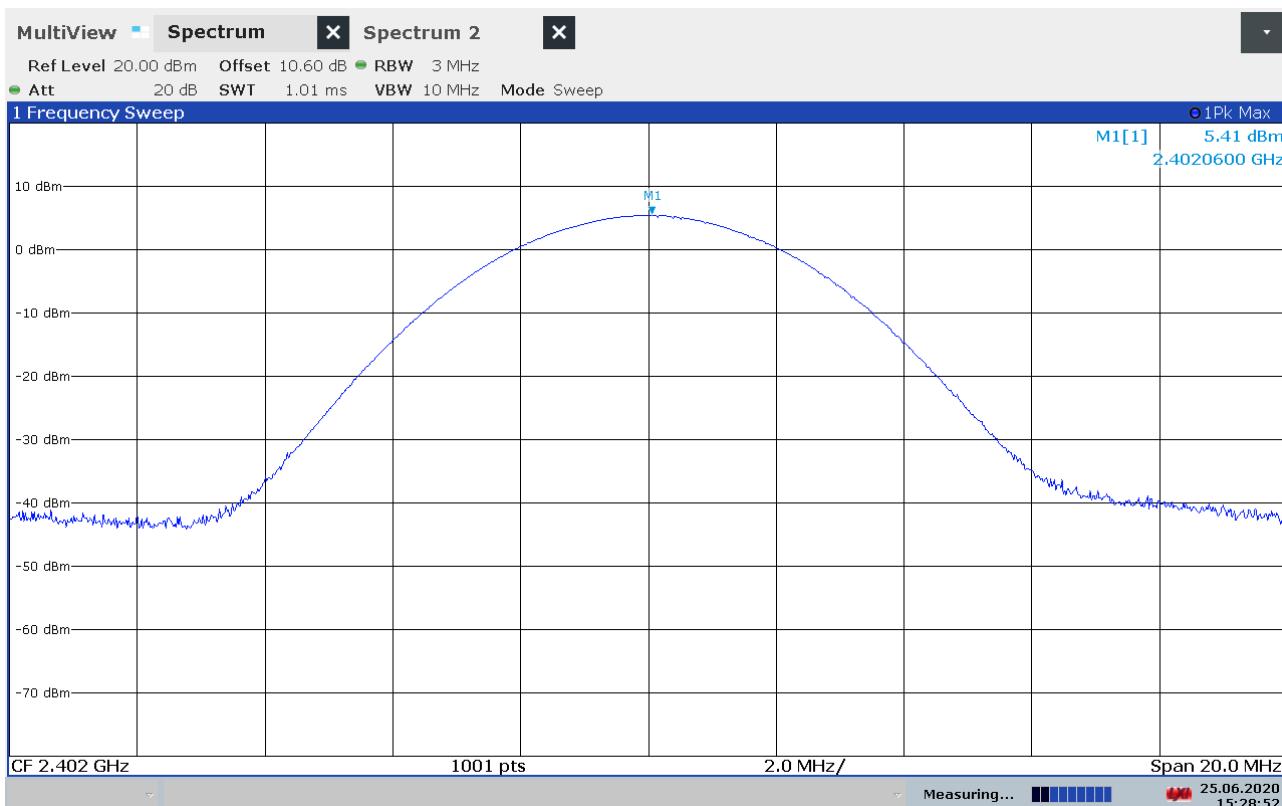




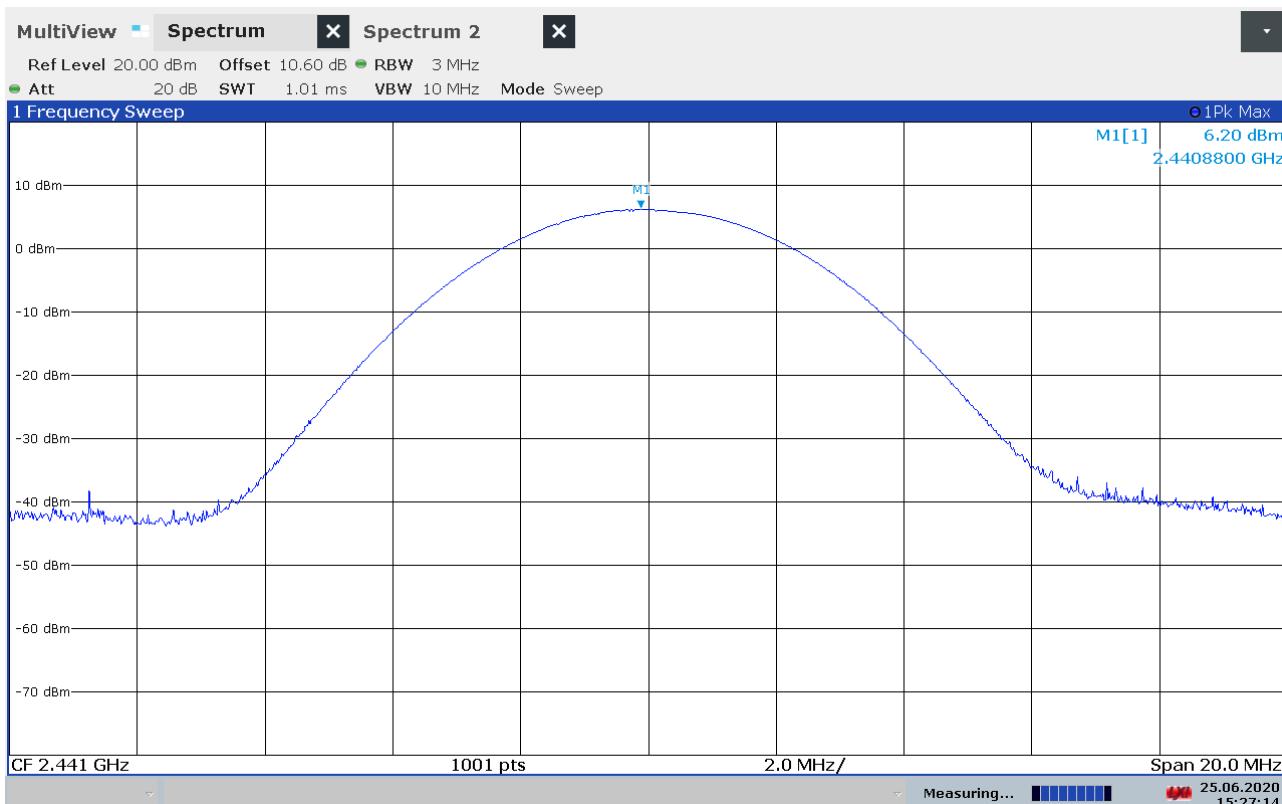
Peak Conducted Power, 2480 MHz, Basic Rate



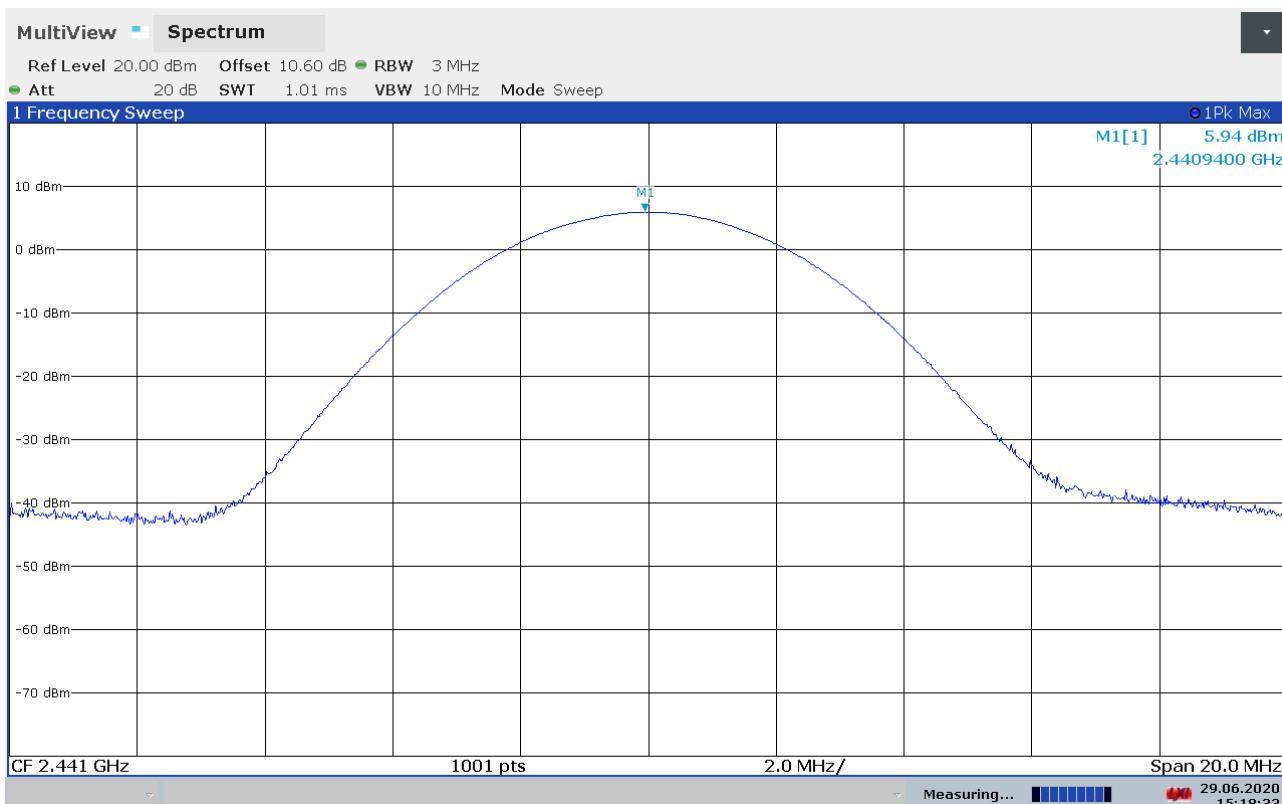
Peak Conducted Power, 2402 MHz, 2-EDR



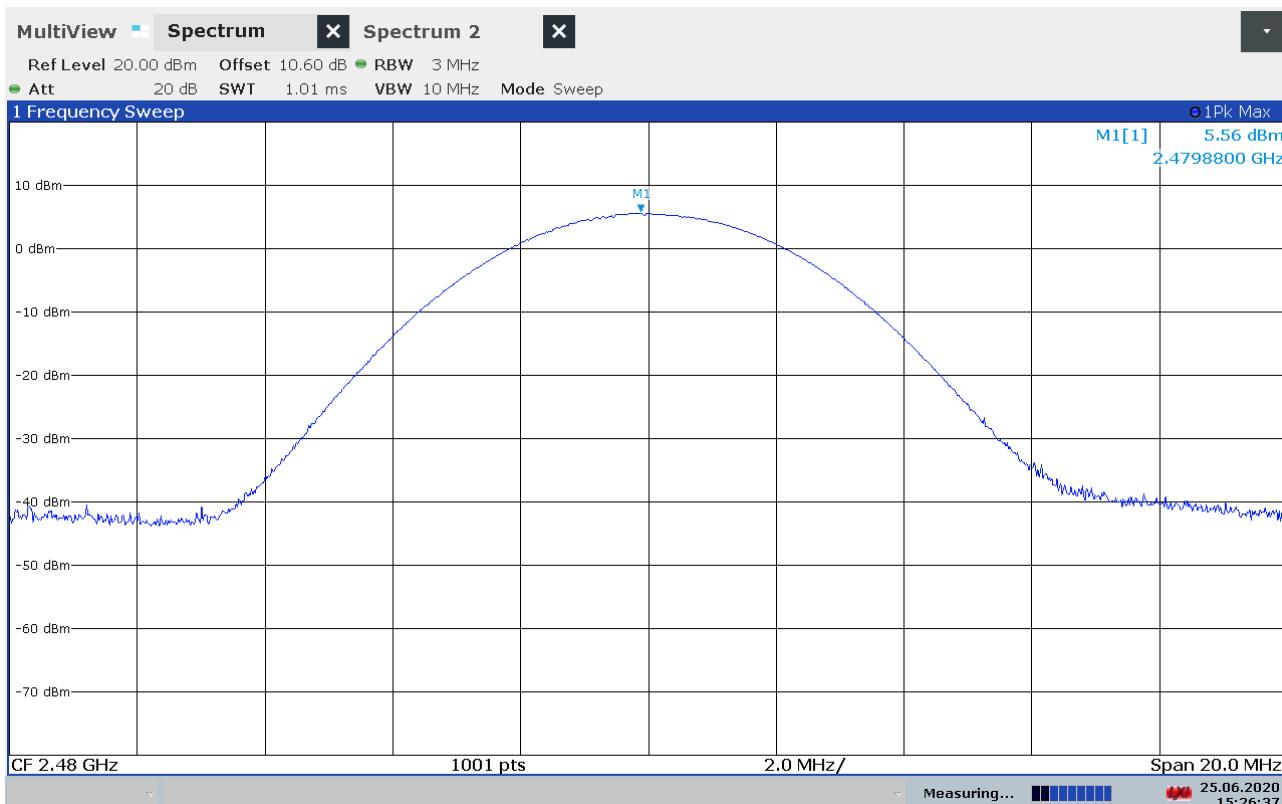
Peak Conducted Power, 2402 MHz, 3-EDR



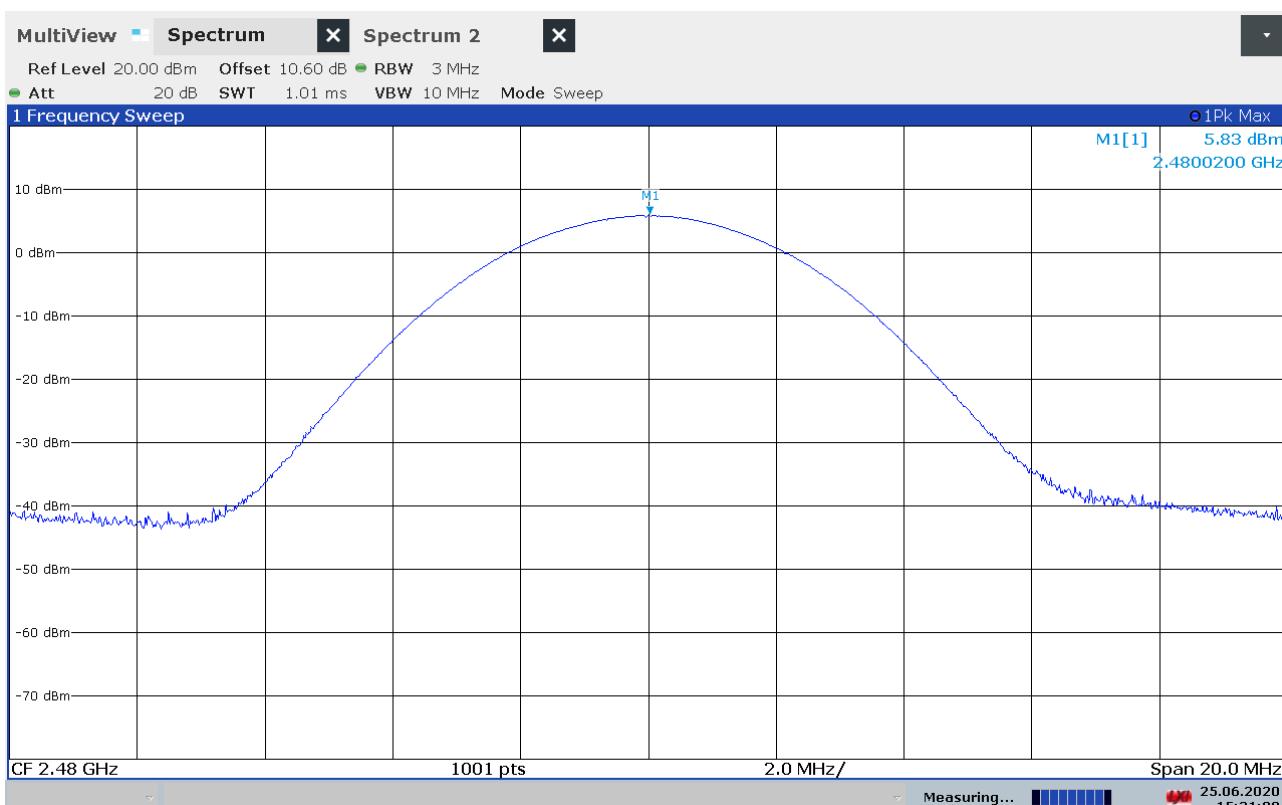
Peak Conducted Power, 2441 MHz, 2-EDR



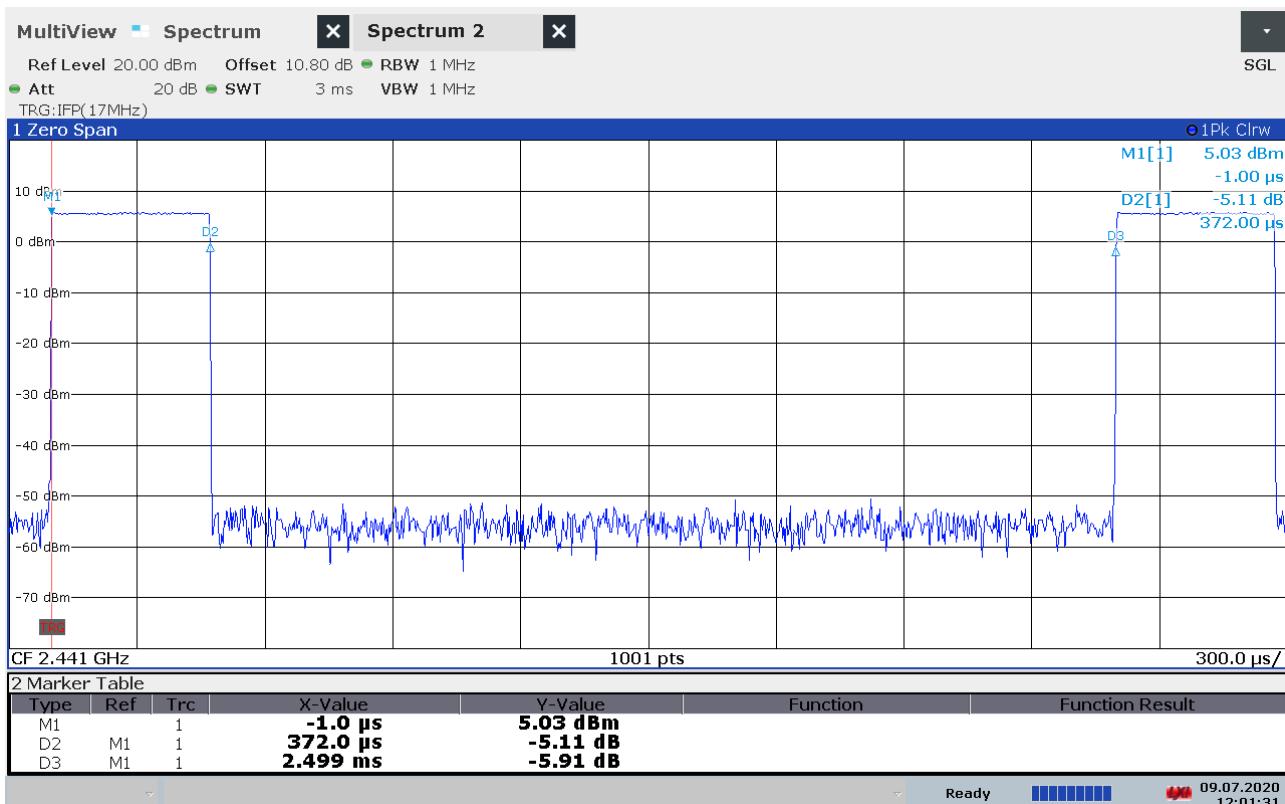
Peak Conducted Power, 2441 MHz, 3-EDR



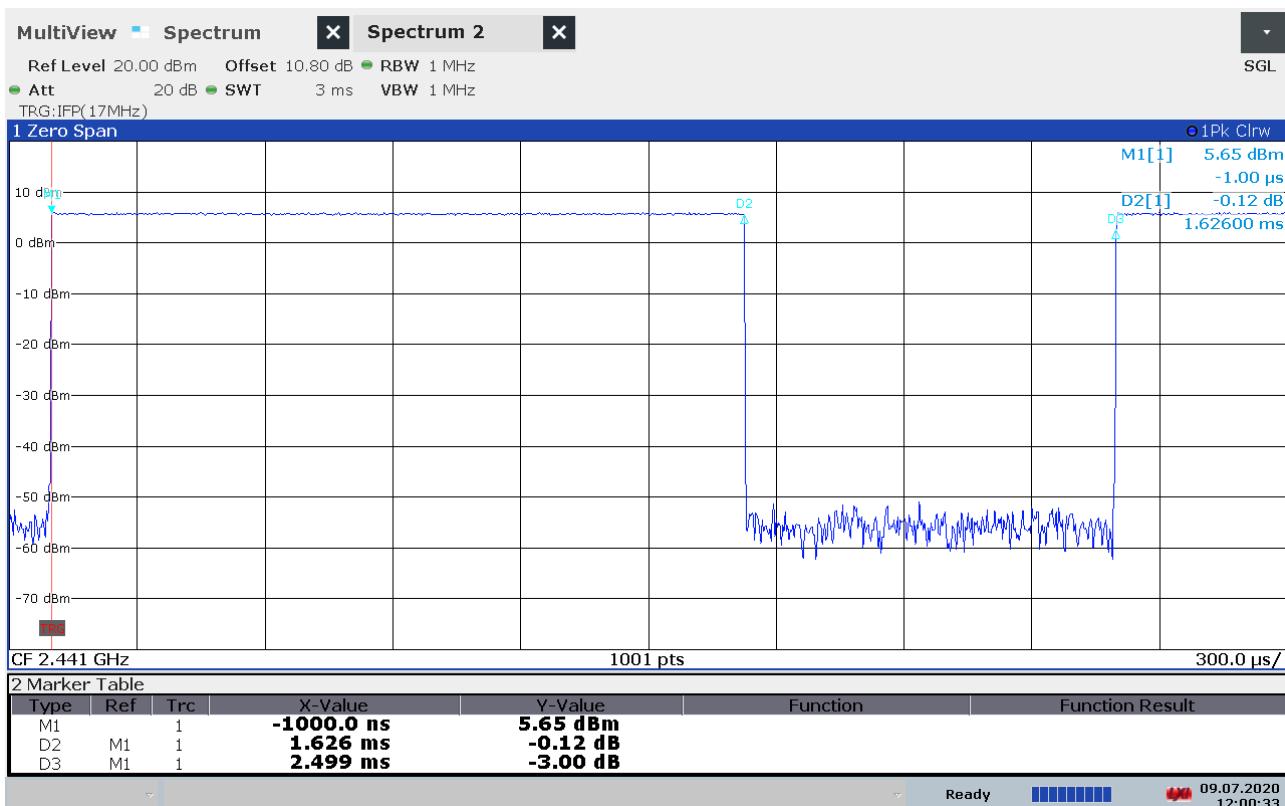
Peak Conducted Power, 2480 MHz, 2-EDR



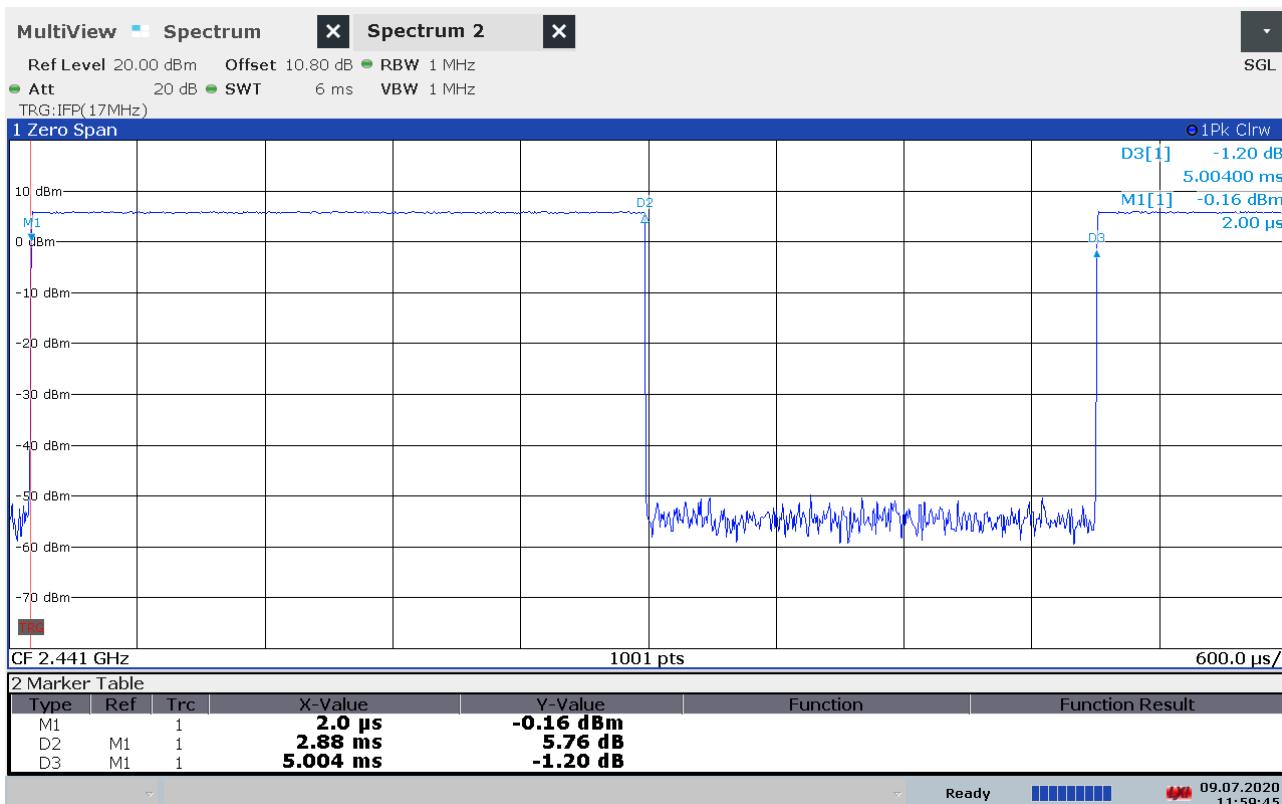
Peak Conducted Power, 2480 MHz, 3-EDR



Duty Cycle, DH1



Duty Cycle, DH3



Duty Cycle, DH5

3.5 Conducted Emissions at Antenna Connector

FCC Part 15.247 (d)

ISED Canada RSS-247 Issue 2, Clause 5.5

Measurement procedure: ANSI C63.10-2013 Clause 11.11

Test Results: Complies

Test Results:

Carrier Frequency	Highest Value (dBc)	Margin (dB)	Verdict
2402 MHz	> 40	> 20	Pass
2440 MHz	> 40	> 20	Pass
2480 MHz	> 40	> 20	Pass

Measured with Peak Detector

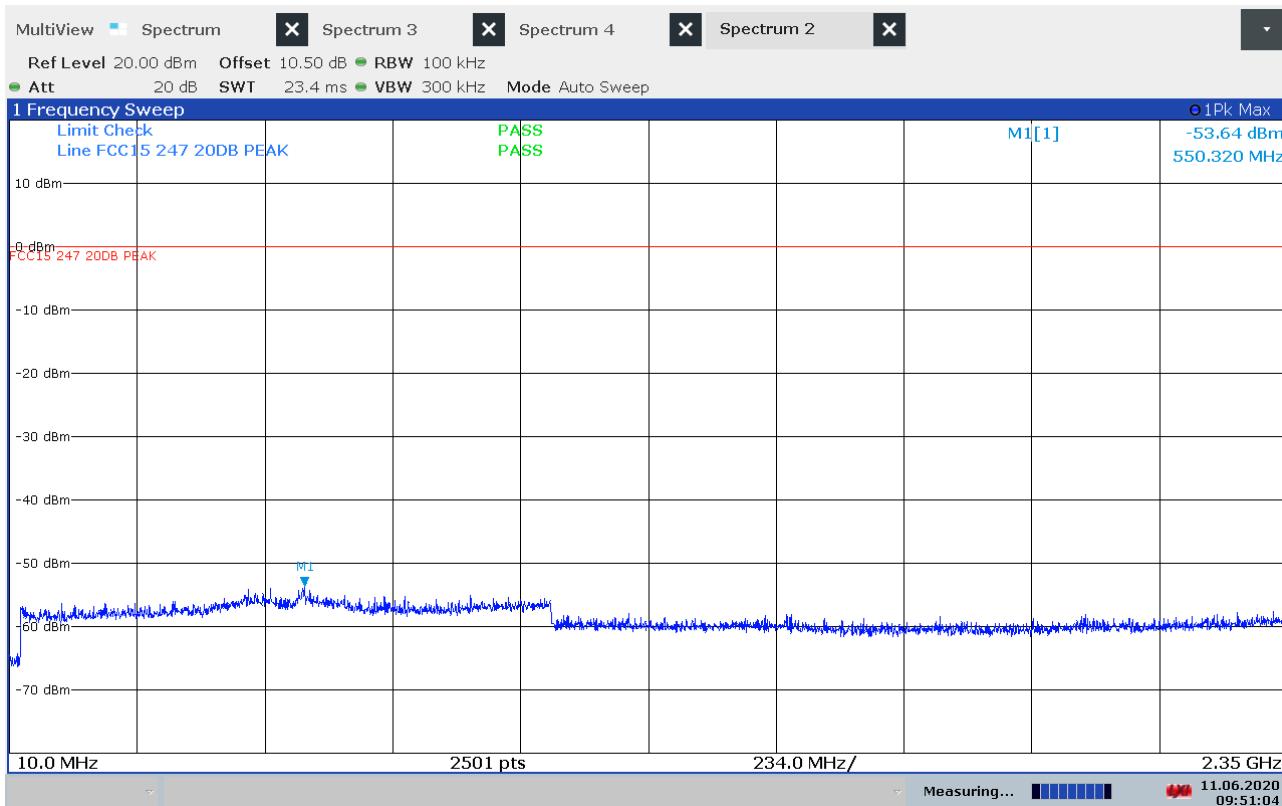
RF conducted power to 25 GHz: see attached plots.

Limit

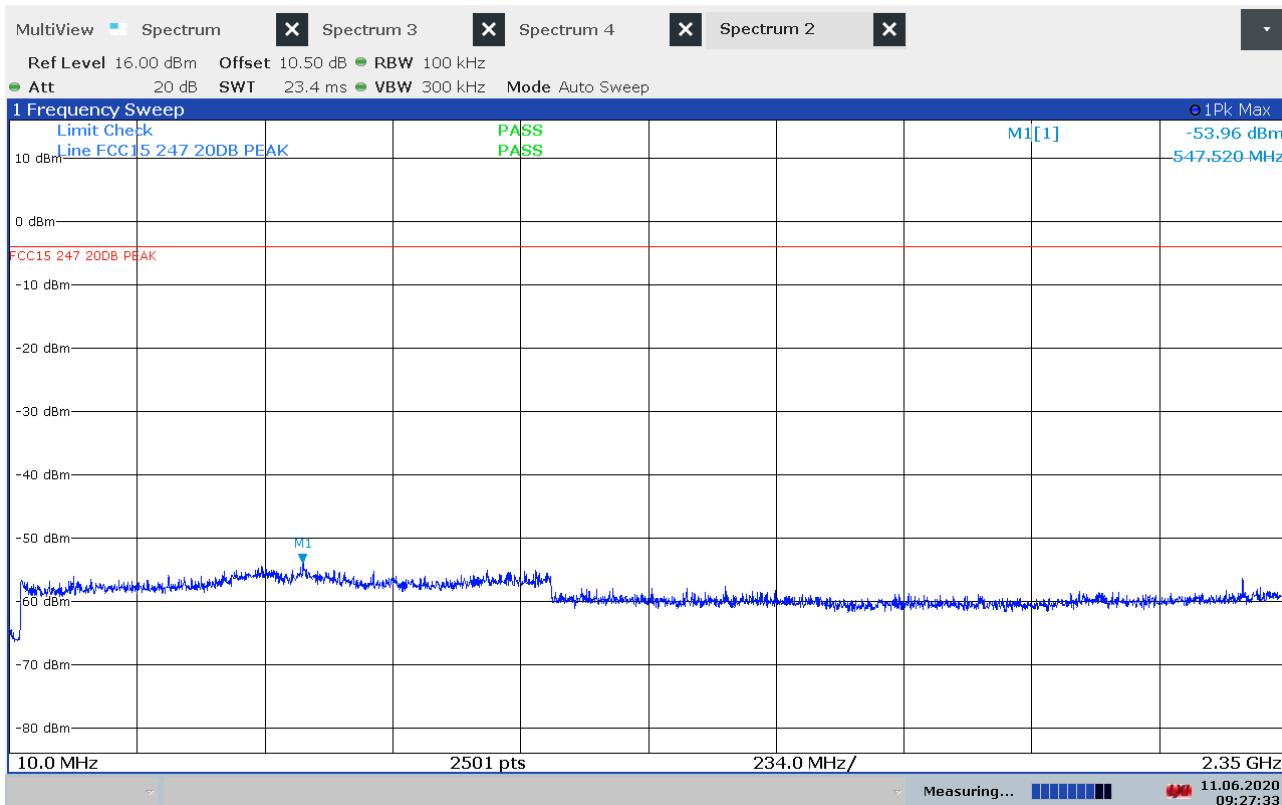
Peak measurement	RMS averaging
20 dBc or more in 100 kHz bandwidth	30 dBc or more in 100 kHz bandwidth

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

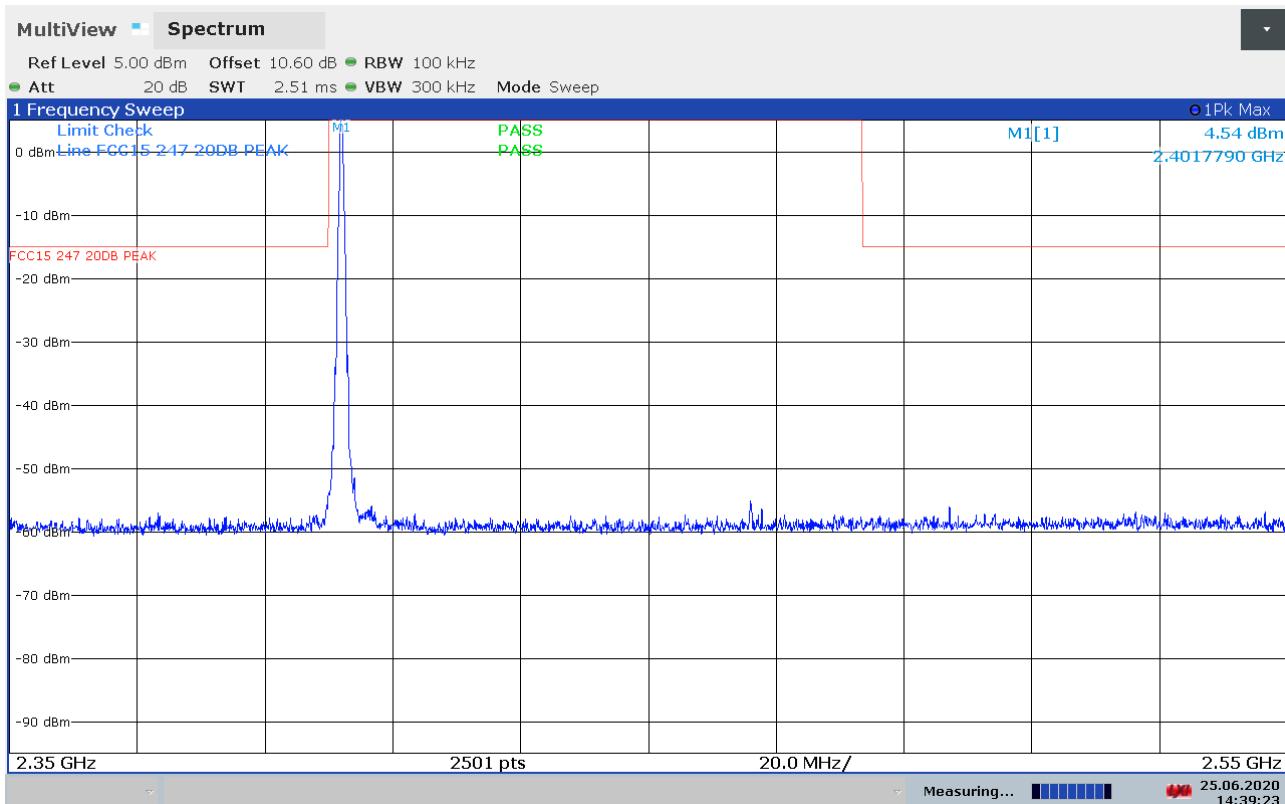
Attenuation below the general limits specified in part 15.209(a) is not required.



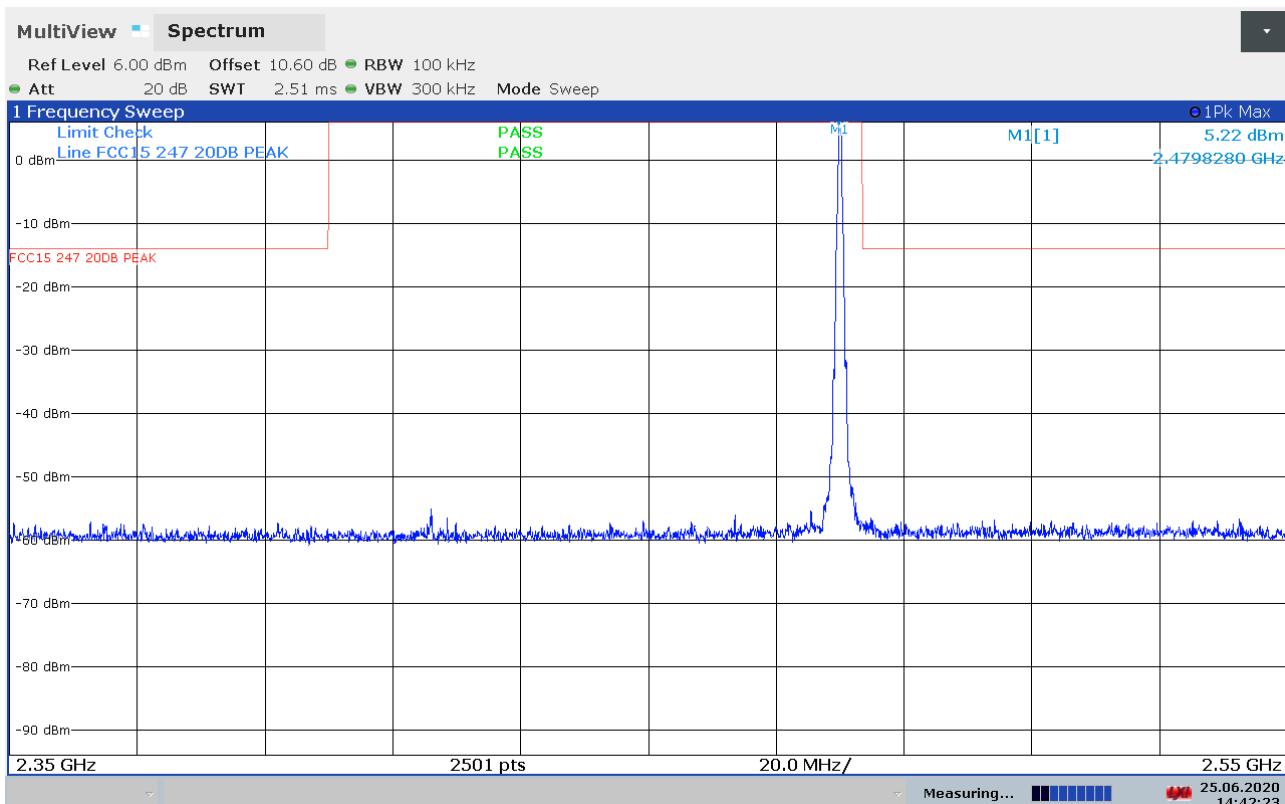
Conducted Emissions, 10 - 2350 MHz, 2402 MHz, Basic Rate



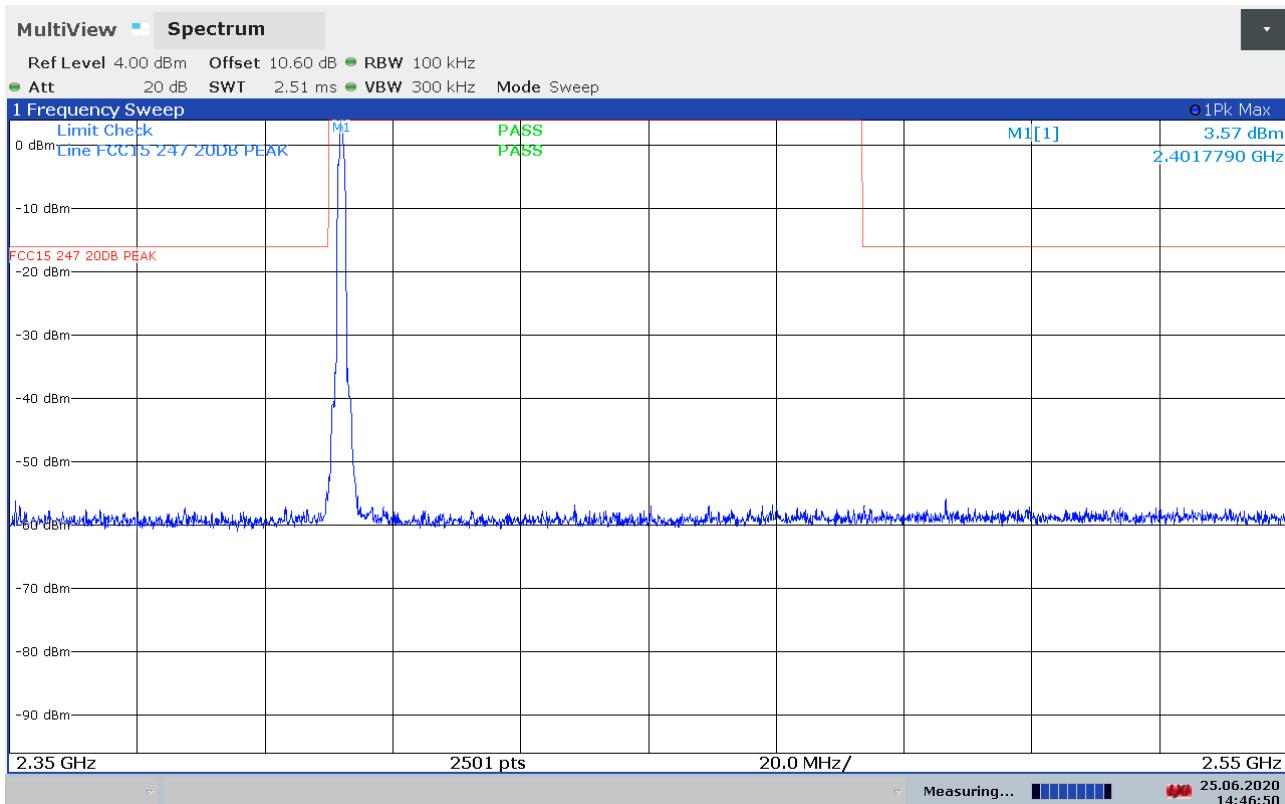
Conducted Emissions, 10 - 2350 MHz, 2480 MHz, Basic Rate



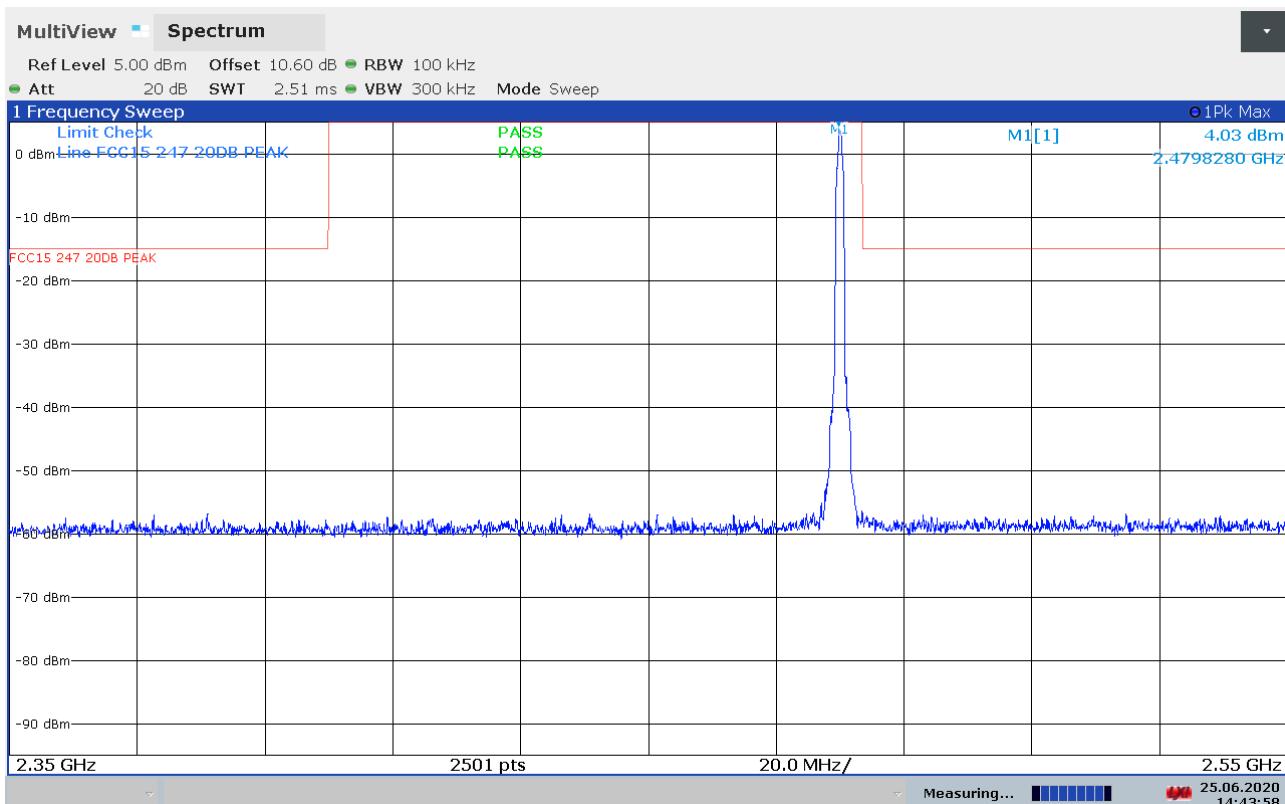
Conducted Emissions, 2350 - 2550 MHz, 2441 MHz, Basic Rate



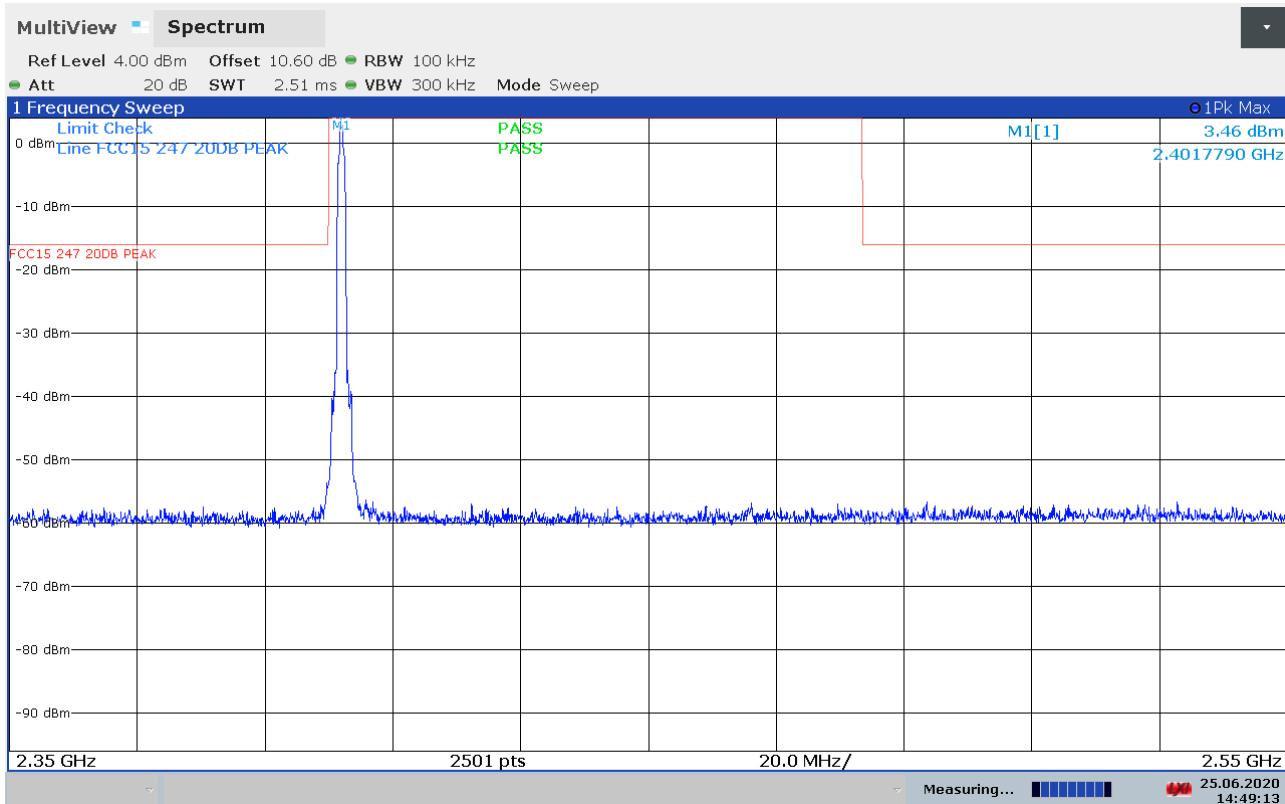
Conducted Emissions, 2350 - 2550 MHz, 2480 MHz, Basic Rate



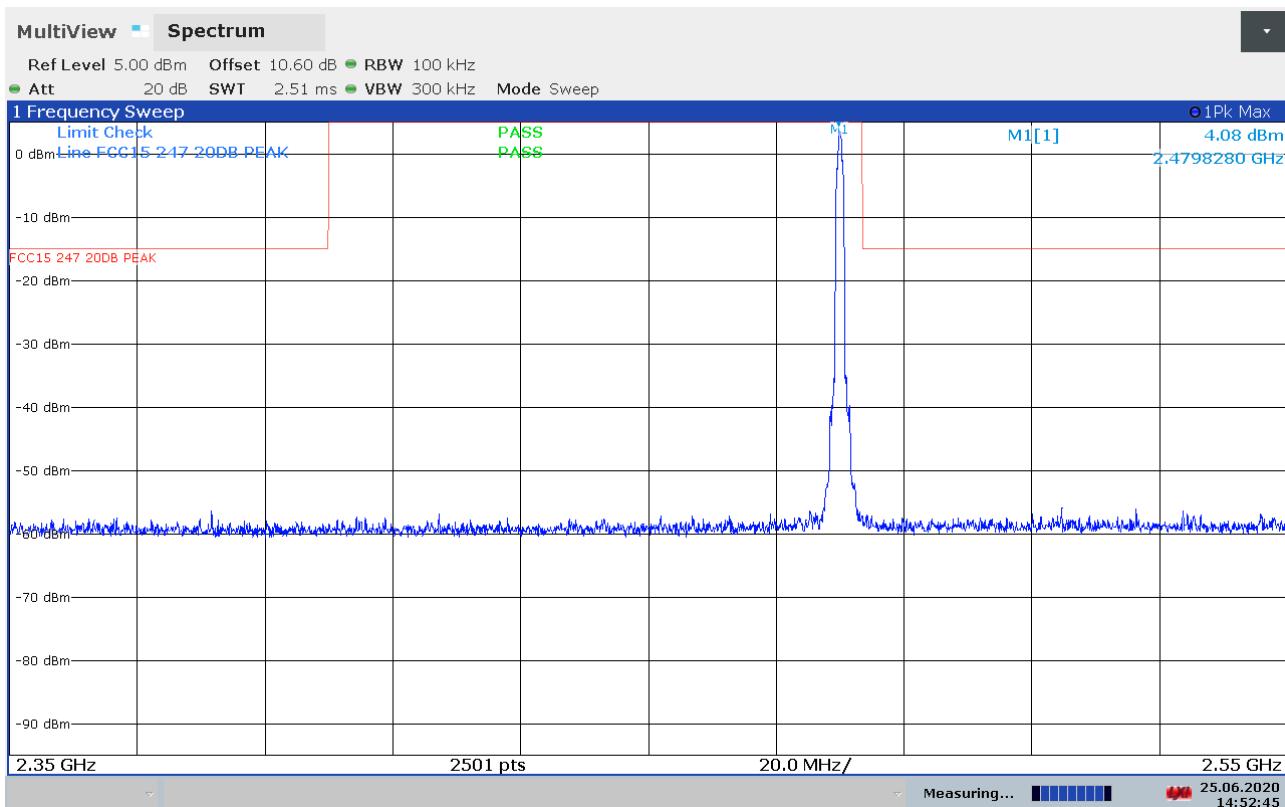
Conducted Emissions, 2350 - 2550 MHz, 2402 MHz, 2-EDR



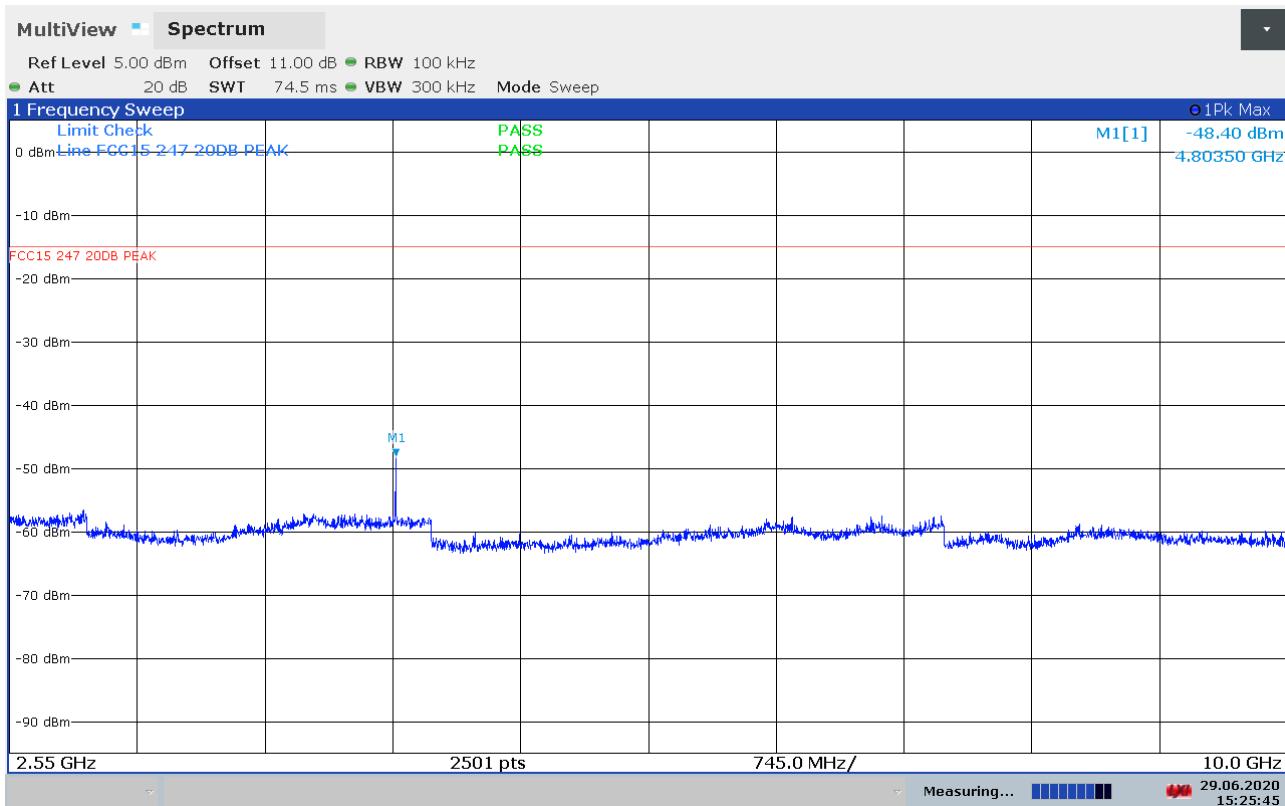
Conducted Emissions, 2350 - 2550 MHz, 2480 MHz, 2-EDR



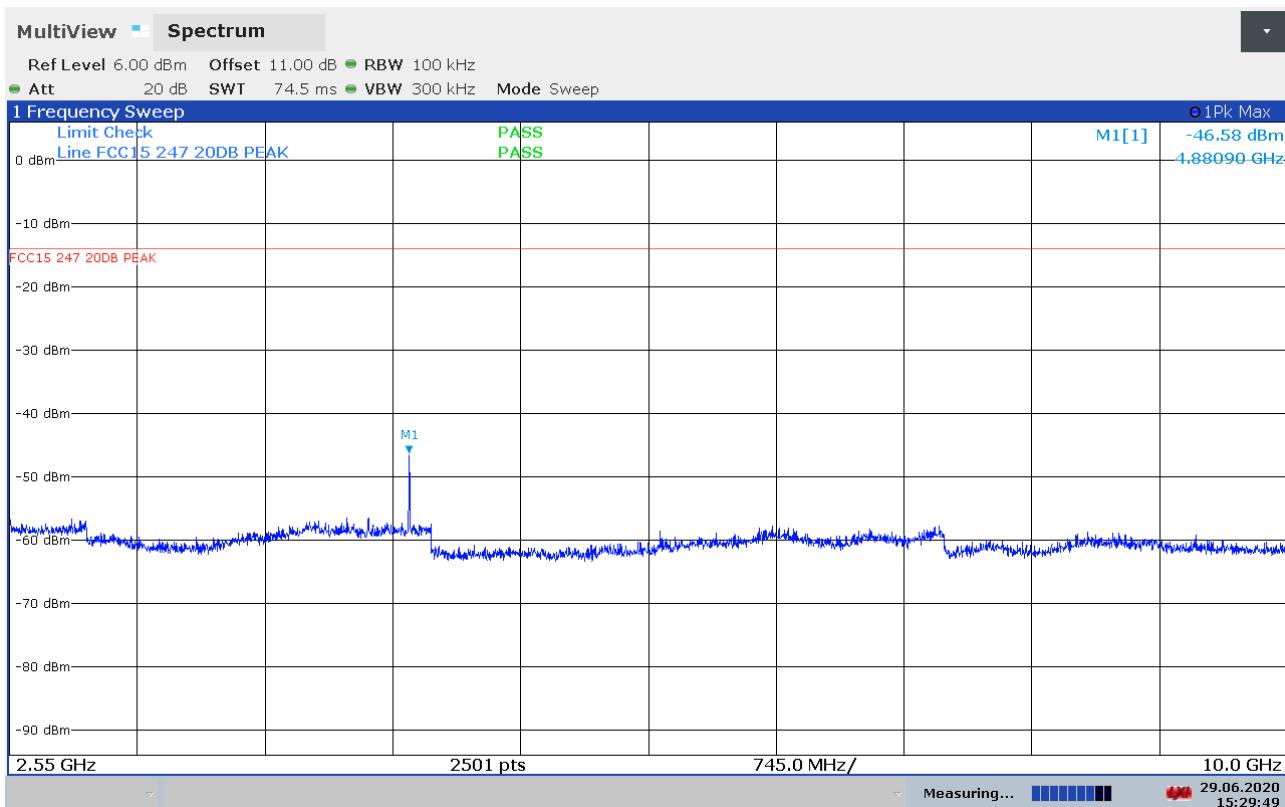
Conducted Emissions, 2350 - 2550 MHz, 2402 MHz, 3-EDR



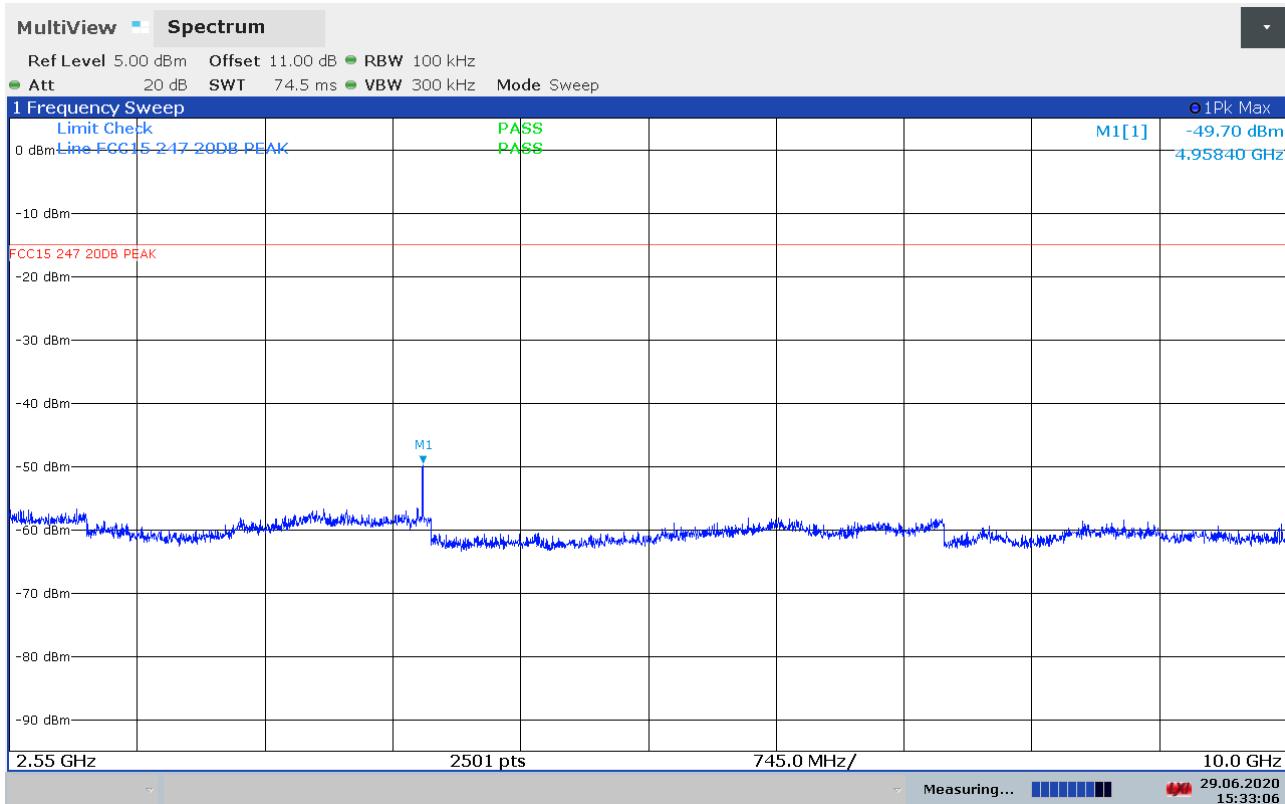
Conducted Emissions, 2350 - 2550 MHz, 2480 MHz, 3-EDR



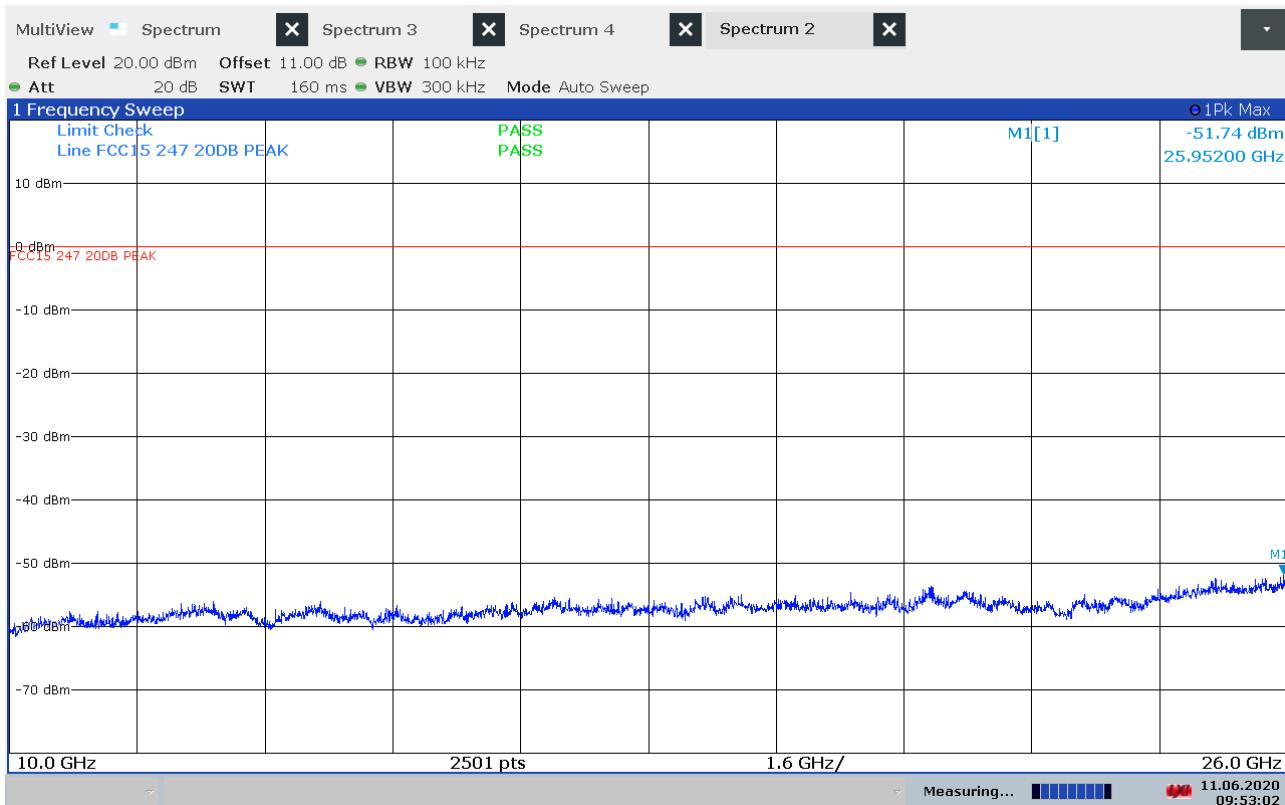
Conducted Emissions, 2550 - 10000 MHz, 2402 MHz, Basic Rate



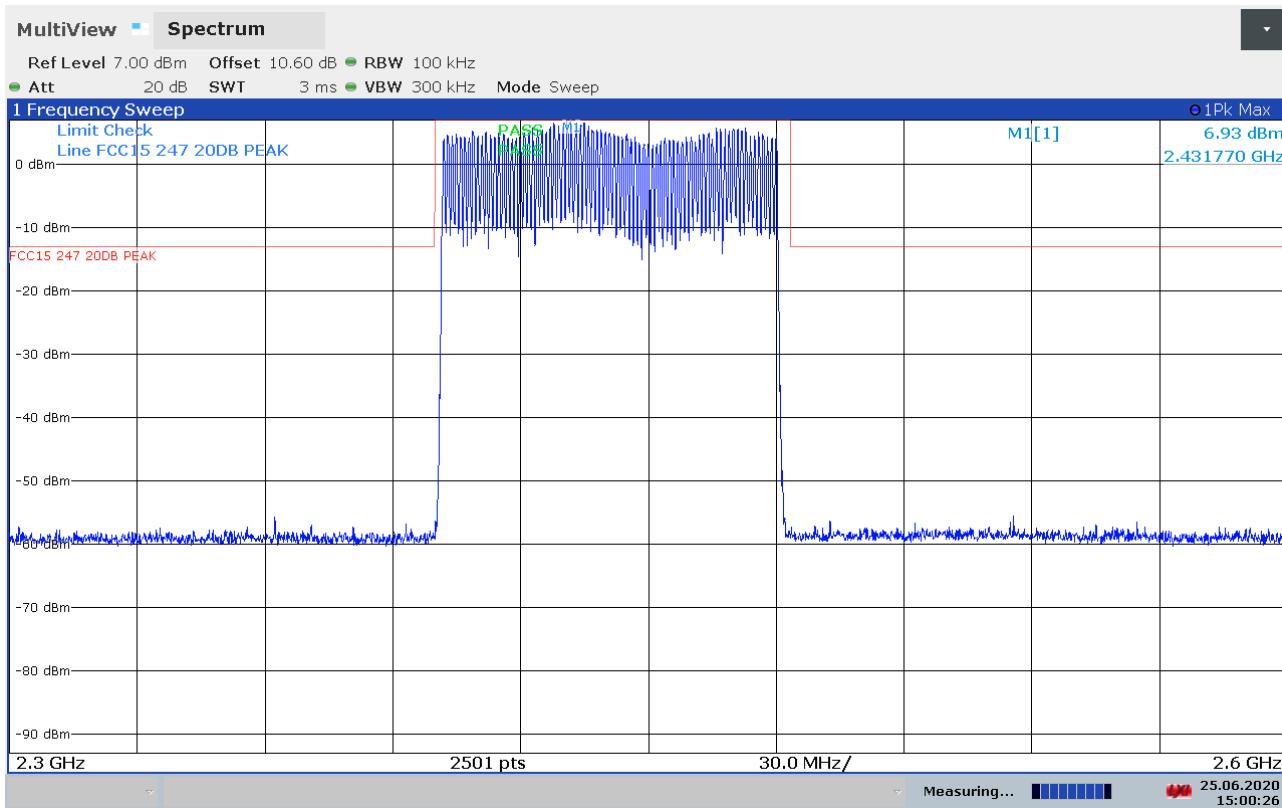
Conducted Emissions, 2550 - 10000 MHz, 2441 MHz, Basic Rate



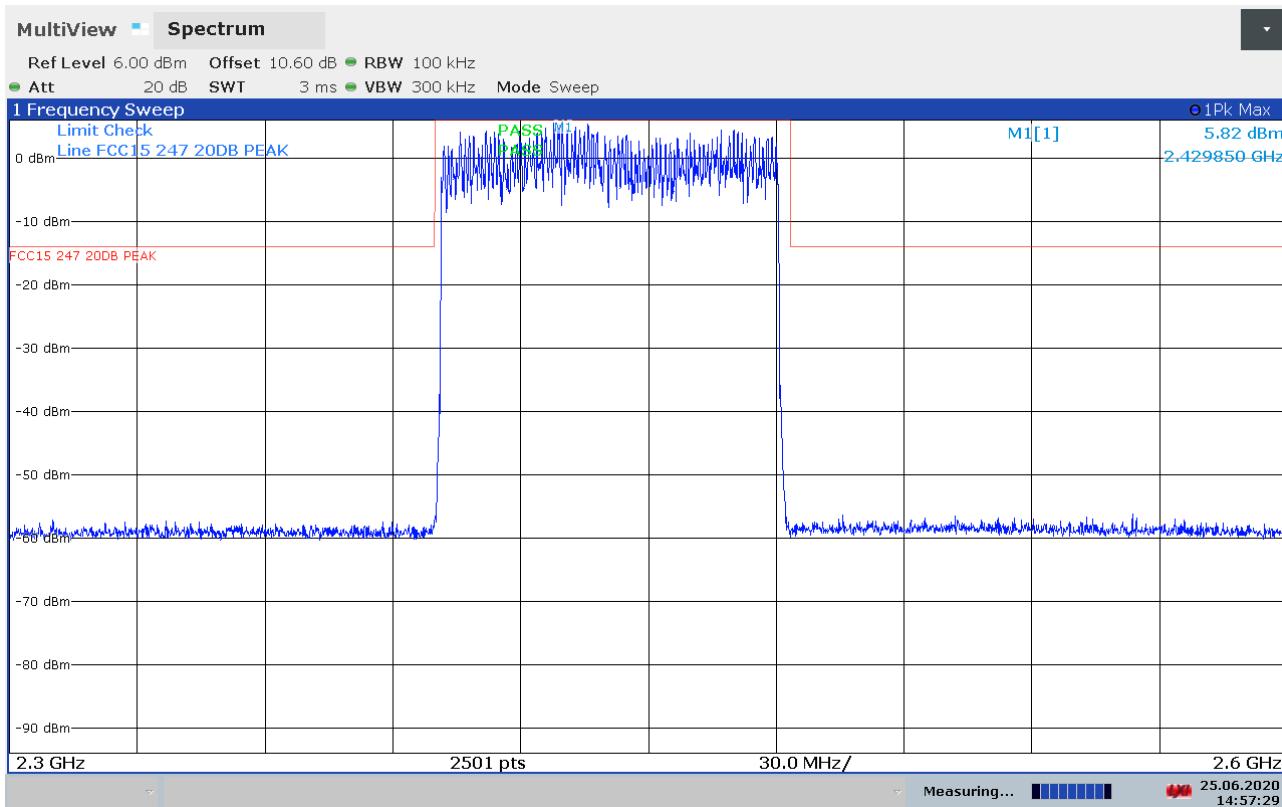
Conducted Emissions, 2550 - 10000 MHz, 2480 MHz, Basic Rate



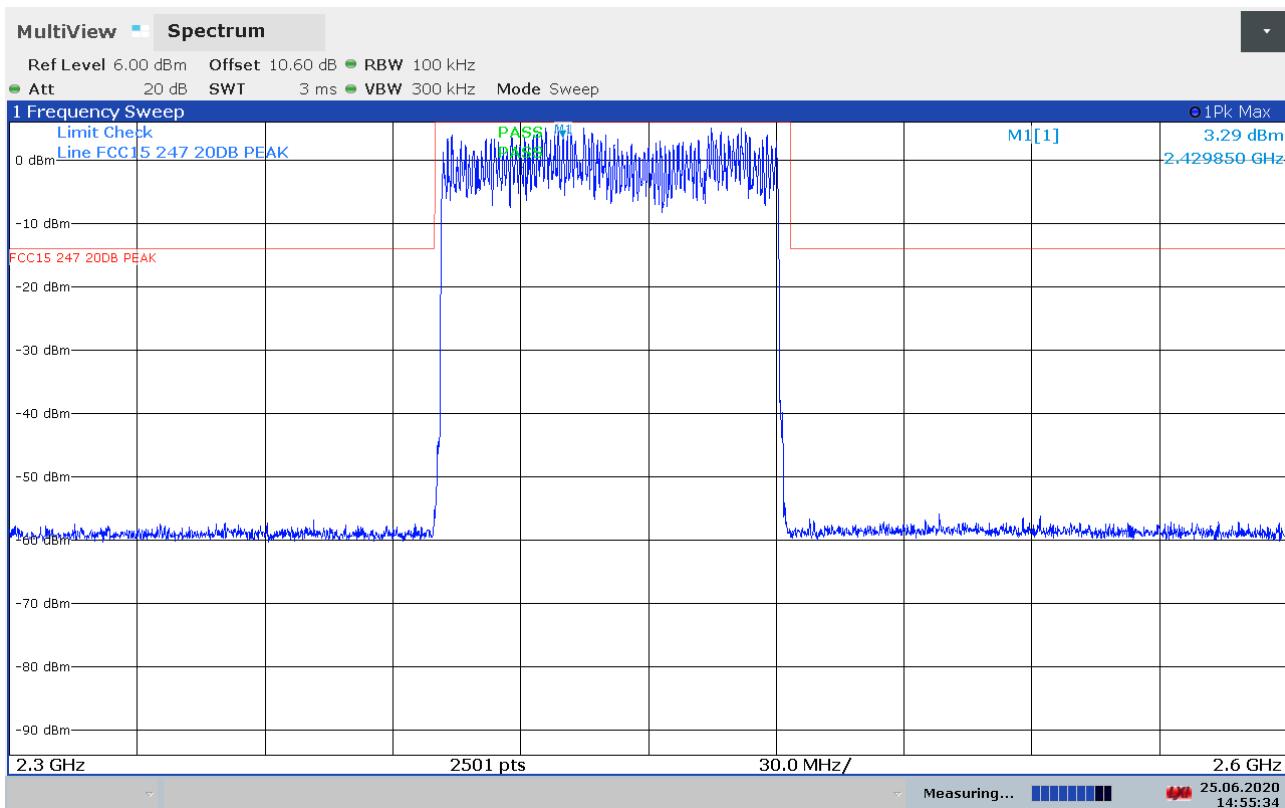
Conducted Emissions, 10000 - 26000 MHz, 2441 MHz, Basic Rate



Conducted Emissions, 2300 – 2600 MHz, Hopping, Basic Rate



Conducted Emissions, 2300 – 2600 MHz, Hopping, 2-EDR



Conducted Emissions, 2300 – 2600 MHz, Hopping, 3-EDR

3.6 Restricted Bands of operation

Restricted Bands of operation for FCC and ISED are defined in FCC Part 15.205 and ISED RSS-GEN, Issue 5 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 5, clause 8.9.

FCC (MHz)	ISED (MHz)	FCC (GHz)	ISED (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 ISED, all other frequencies are common.

3.7 Radiated Emissions, Band Edge

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3 / 8.9

Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

Measurement Data:

Carrier Frequency and Data Rate	Band Edge Frequency	Measured Field Strength (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)	
		Peak Detector	Average Detector	Peak Det	Average Det	Peak Det	Average Det
2402 MHz GFSK	2390 MHz	42.2	/	74	54	31.8	/
2480 MHz GFSK	2483.5 MHz	42.8	/			31.2	/
2402 MHz 2-EDR	2390 MHz	42.1	/			31.9	/
2480 MHz 2-EDR	2483.5 MHz	44.9	/			29.1	/
2402 MHz 3-EDR	2390 MHz	48.9	/			25.1	/
2480 MHz 3-EDR	2483.5 MHz	48.8	/			25.2	/

Band Edge is measured with the EUT transmitting on 2402 and 2480 MHz

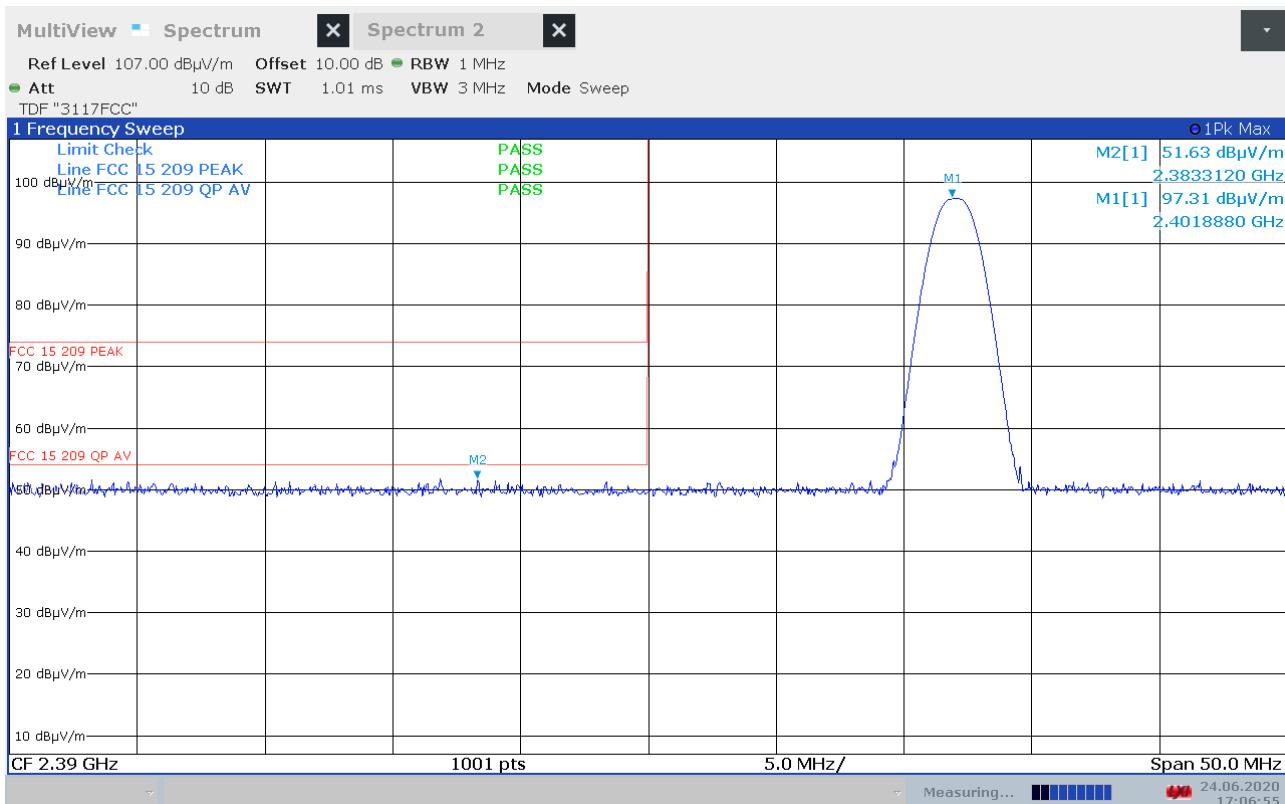
Peak values are below the Average Limit

See attached plots.

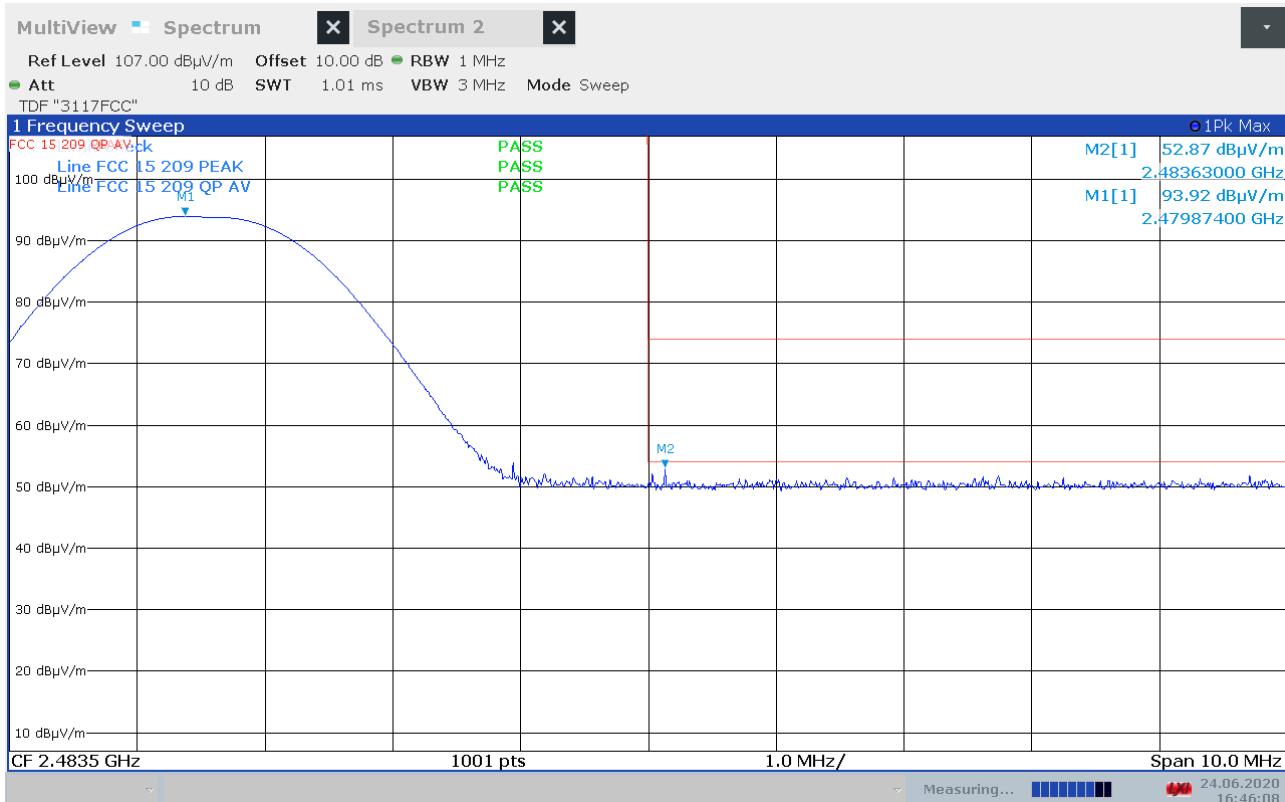
Duty Cycle Correction Factors

Correction Factor = $-20 \times \log(\text{Sum of Bursts} / (\text{Frame Length} \times (\text{Min # Hopping Channels} / \text{Bursts per frame})))$
 $= -20 \times \log((0.140 + 3 \times 0.164) / (4.000 \times (20 / 4))) \text{ dB} = -20 \times \log(0.632 / 20) = 30.0 \text{ dB}$

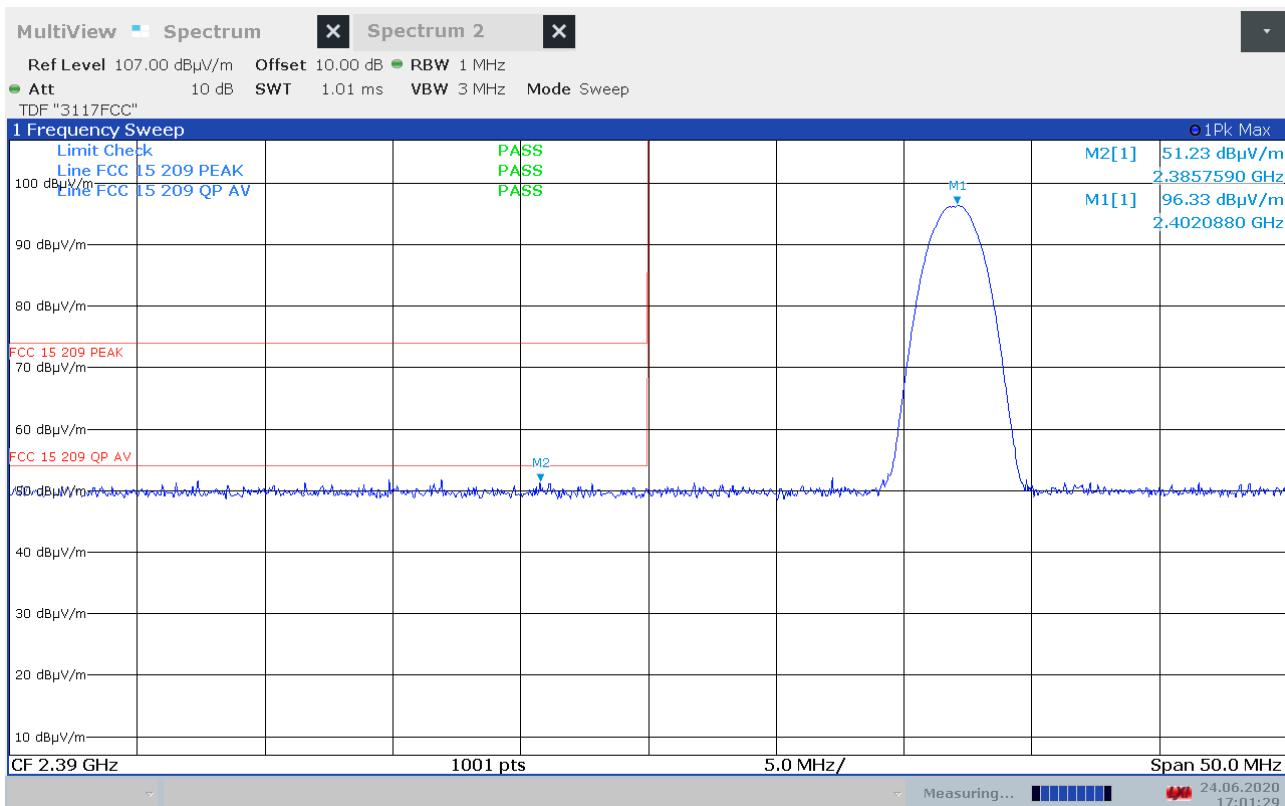
Maximum Allowed Correction Factor = 20 dB



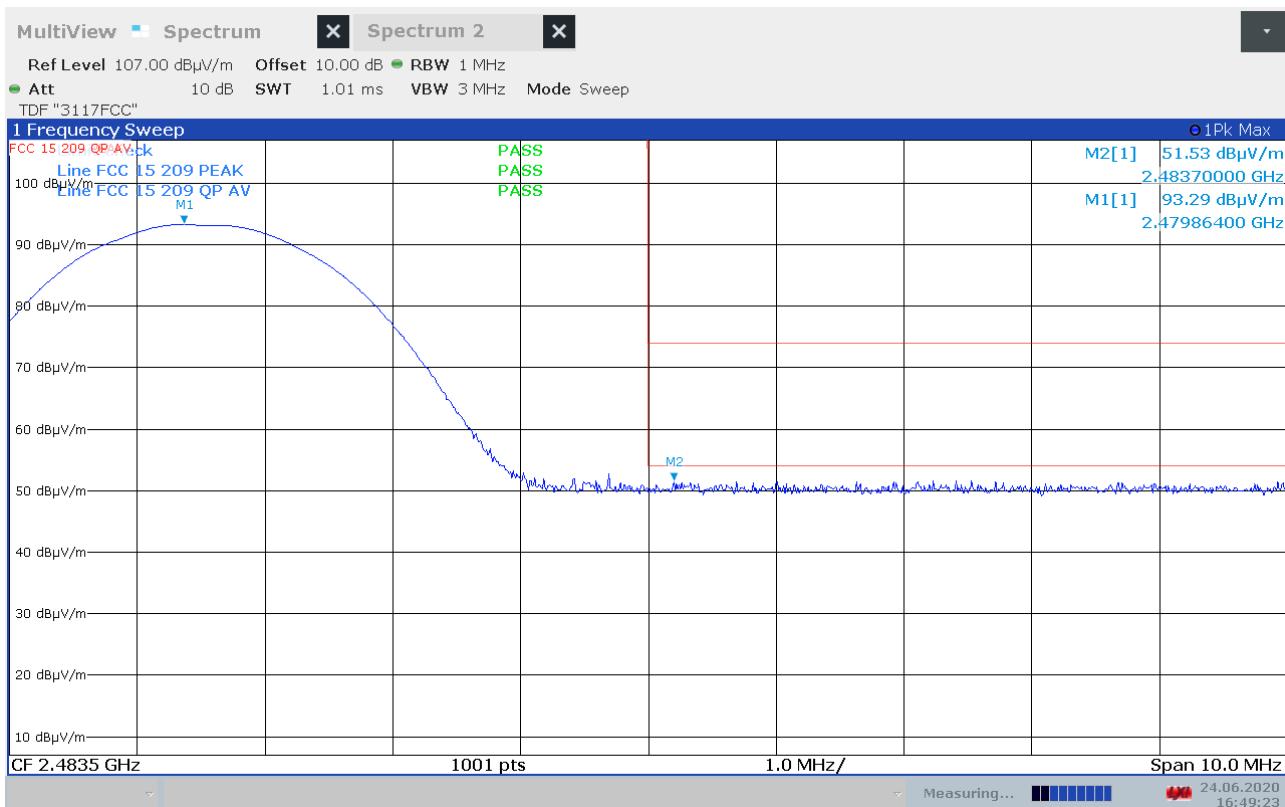
Lower Band Edge, Peak, 2402 MHz GFSK



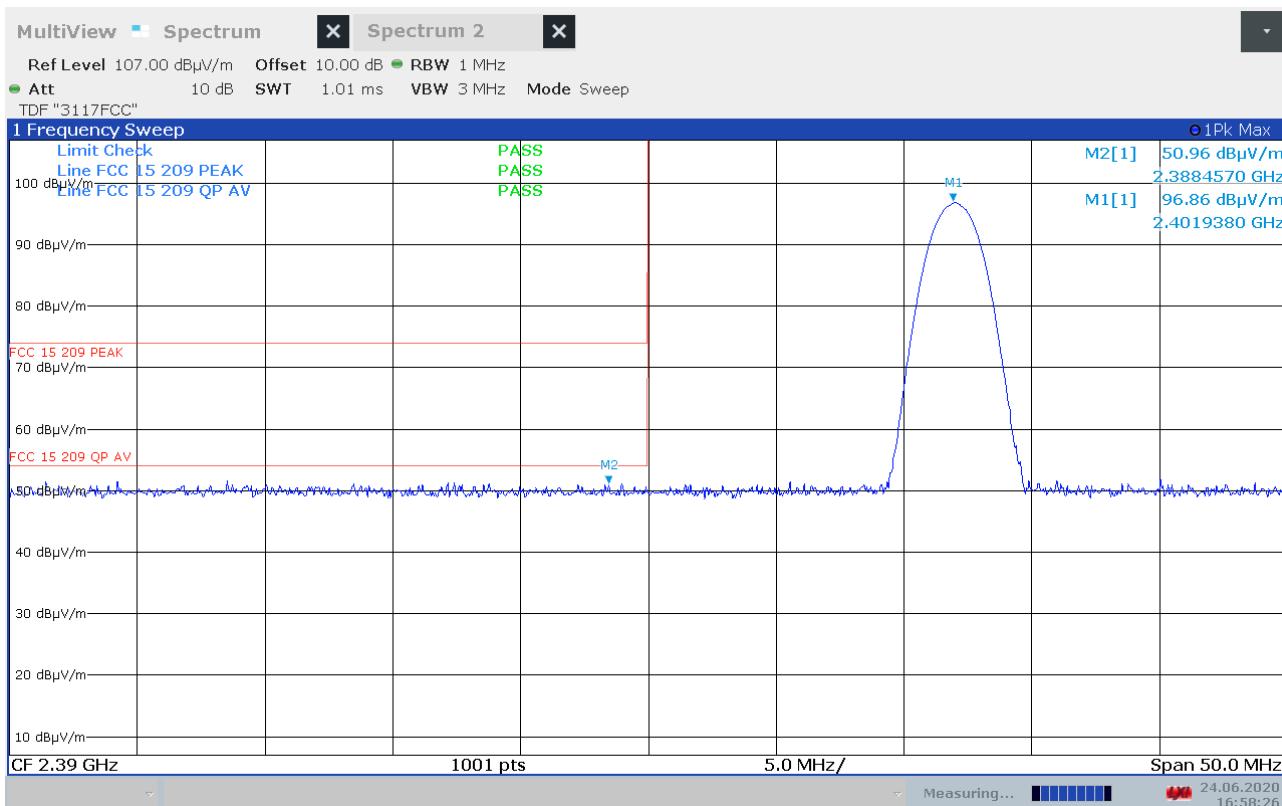
Upper Band Edge, Peak, 2480 MHz GFSK



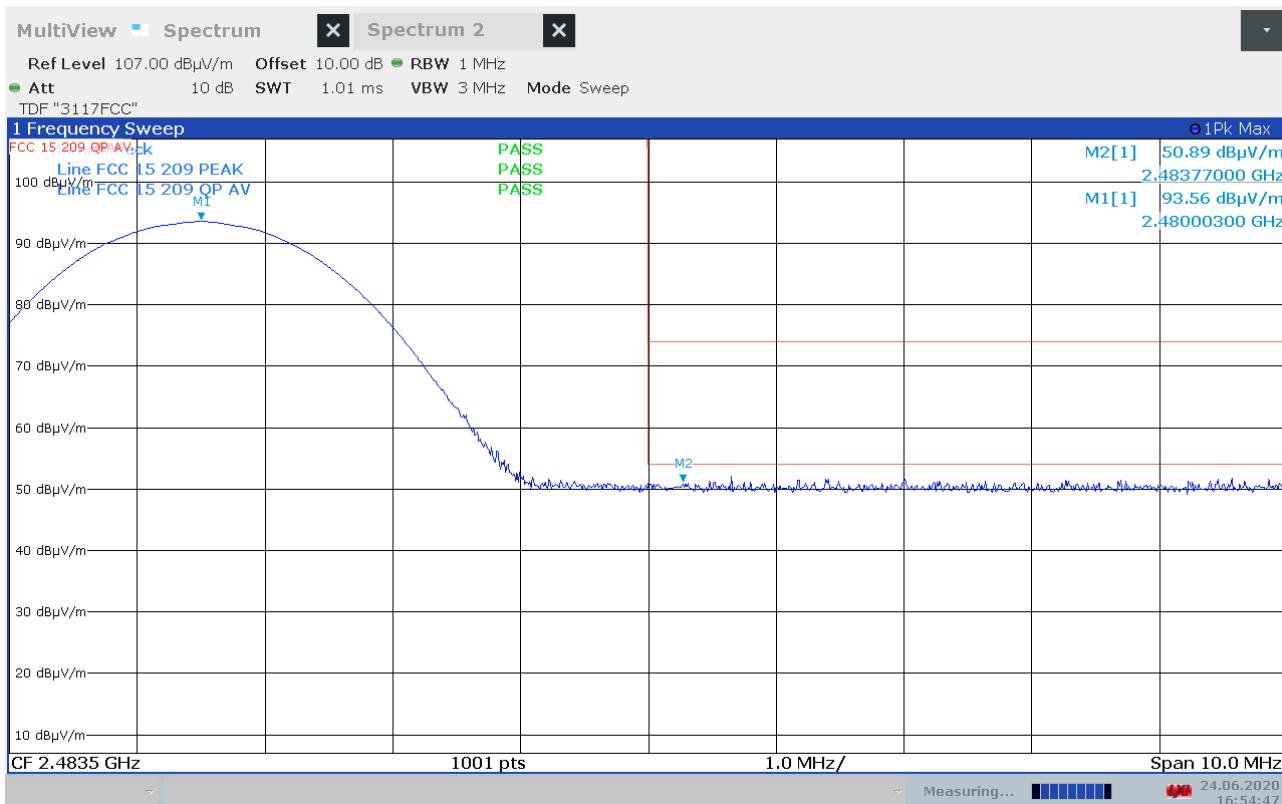
Lower Band Edge, Peak, 2402 MHz 2-EDR



Upper Band Edge, Peak, 2480 MHz 2-EDR



Lower Band Edge, Peak, 2402 MHz 3-EDR



Upper Band Edge, Peak, 2480 MHz 3-EDR

3.8 Radiated Emissions, 30 – 1000 MHz

FCC 15.205, 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

Measurement Data:

Measuring distance 3 m

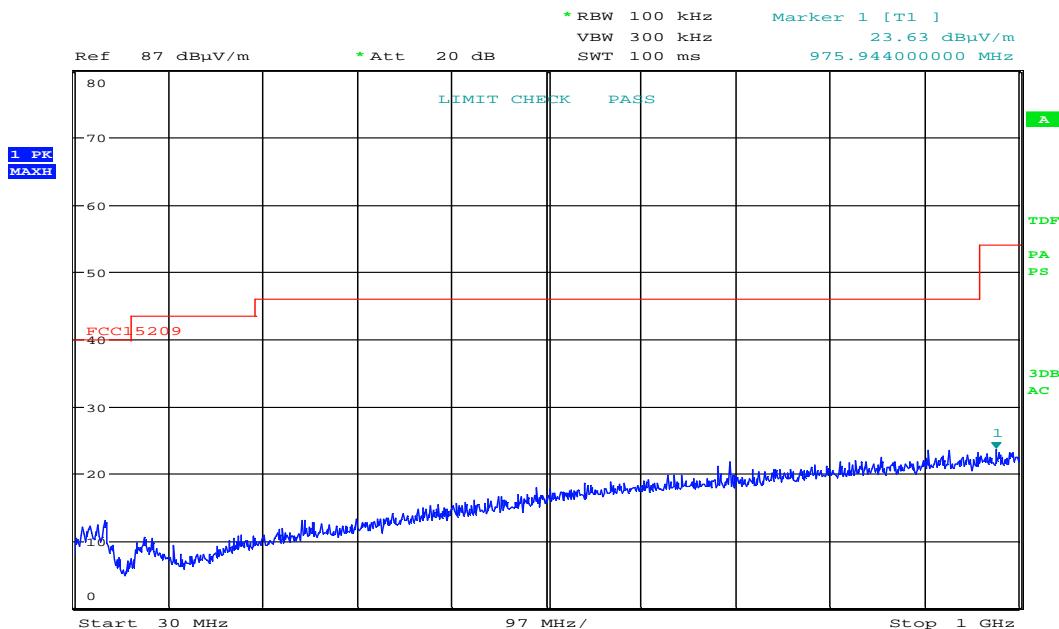
Tested in test mode with EUT transmitting.

No spurious emissions were detected.

See attached plots.

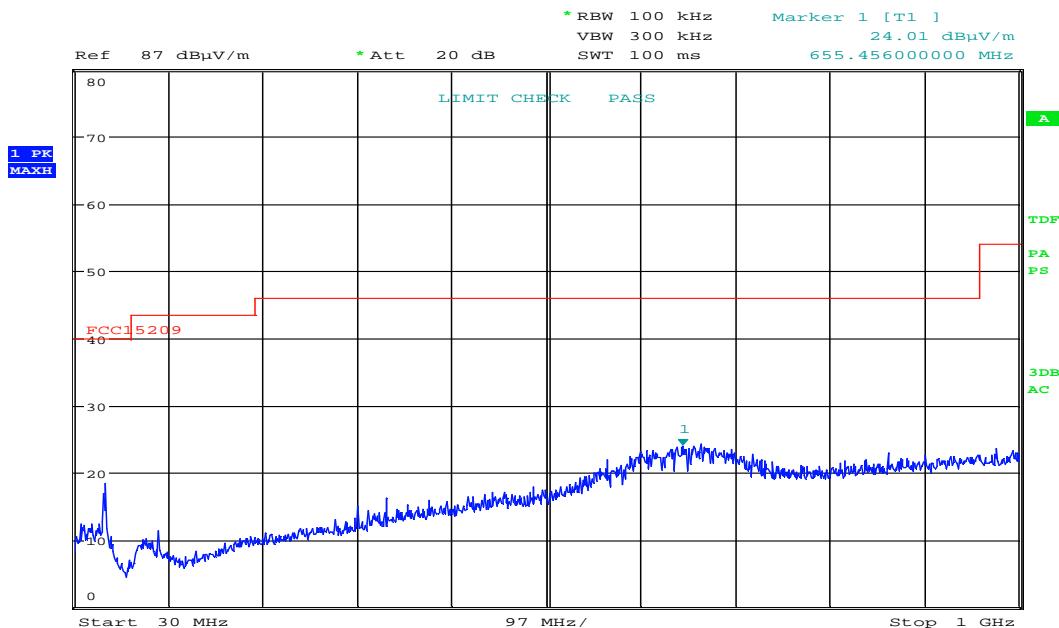
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10	
Frequency	Radiated emission limit @3 meters	
30 – 88 MHz	100 μ V/m	40.0 dB μ V/m
88 – 216 MHz	150 μ V/m	43.5 dB μ V/m
216 – 960 MHz	200 μ V/m	46.0 dB μ V/m
960 – 1000 MHz	500 μ V/m	54.0 dB μ V/m
Limits above are with Quasi Peak Detector		



Date: 9.JUN.2020 14:22:24

Radiated Emissions, 30 – 1000 MHz, 2441 MHz, EUT H1, HP



Date: 9.JUN.2020 14:20:12

Radiated Emissions, 30 – 1000 MHz, 2441 MHz, EUT H1, VP

3.9 Radiated Emissions, 1 – 18 GHz

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

Measurement Data:

Measuring distance: 3 m (1–18 GHz)

Measured values:

Frequency (MHz)	Channel	Polarization	Peak (dB μ V/m)	Average (dB μ V/m)	Peak Margin (dB)	Av Margin (dB)
4804	00	V	52.6	/	21.4	/
4882	39	V	51.8	/	22.2	/
4960	78	V	53.9	/	20.1	/
Any	Any	V/H	< 54	< 34	> 20	> 20

Peak values are below the Average Limit.

All measurements were performed with the EUT transmitting on a fixed channel.

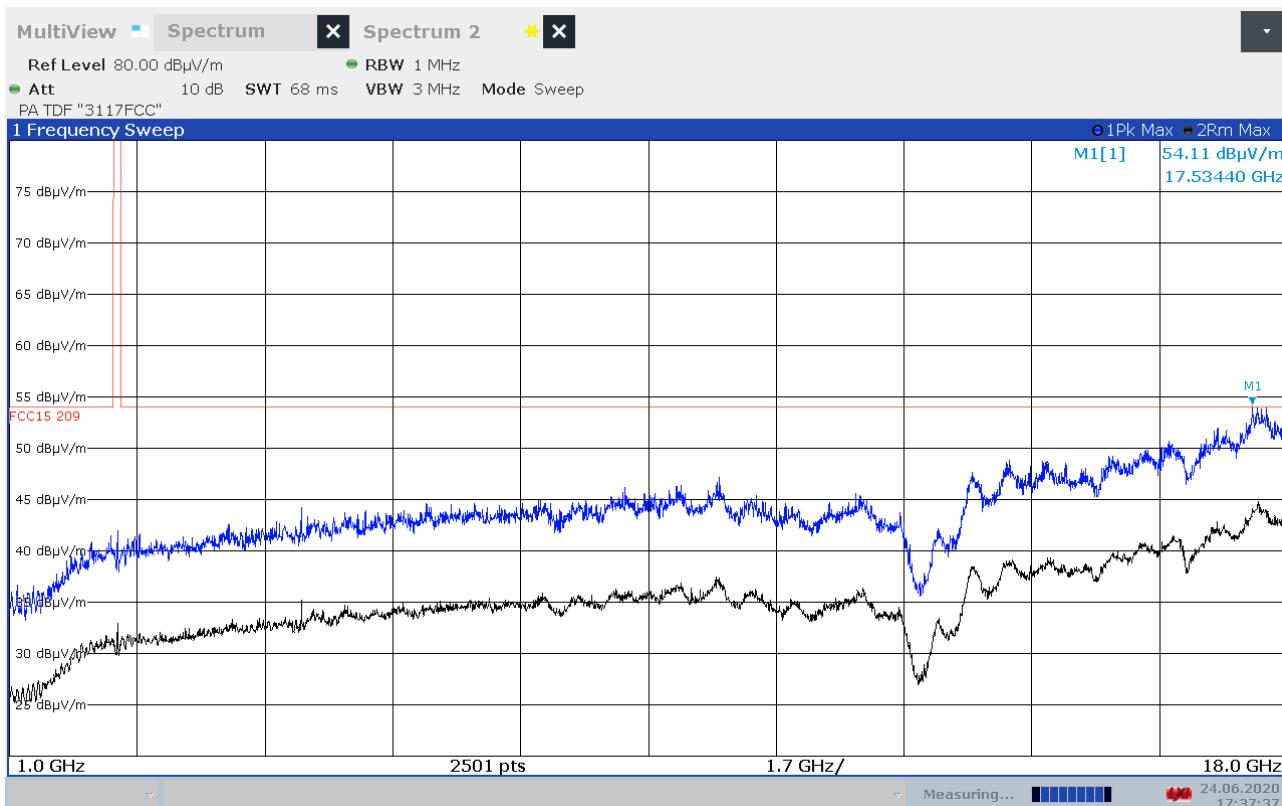
A Band Reject Filter was used for measurements from 1 GHz to 4 GHz and a High Pass Filter was used from 3 GHz to 18 GHz.

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

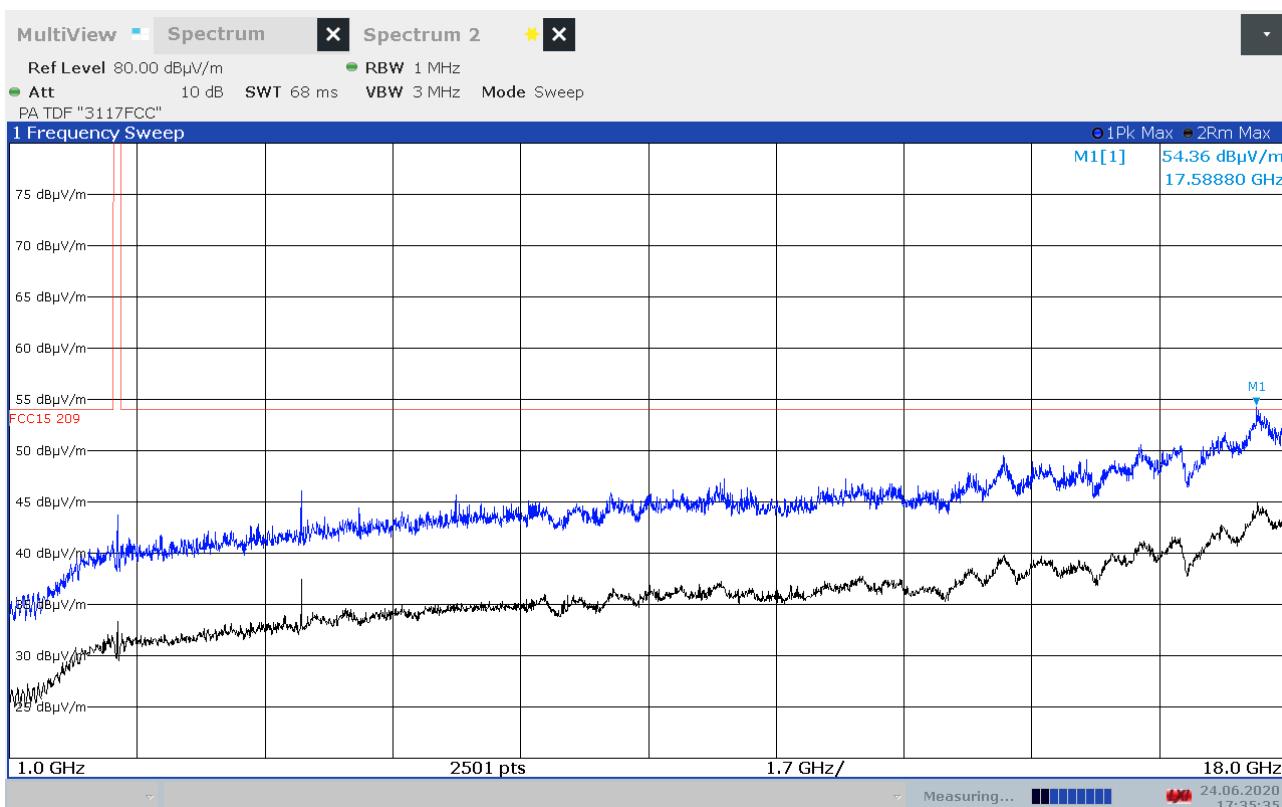
See plots.

Requirements/Limit

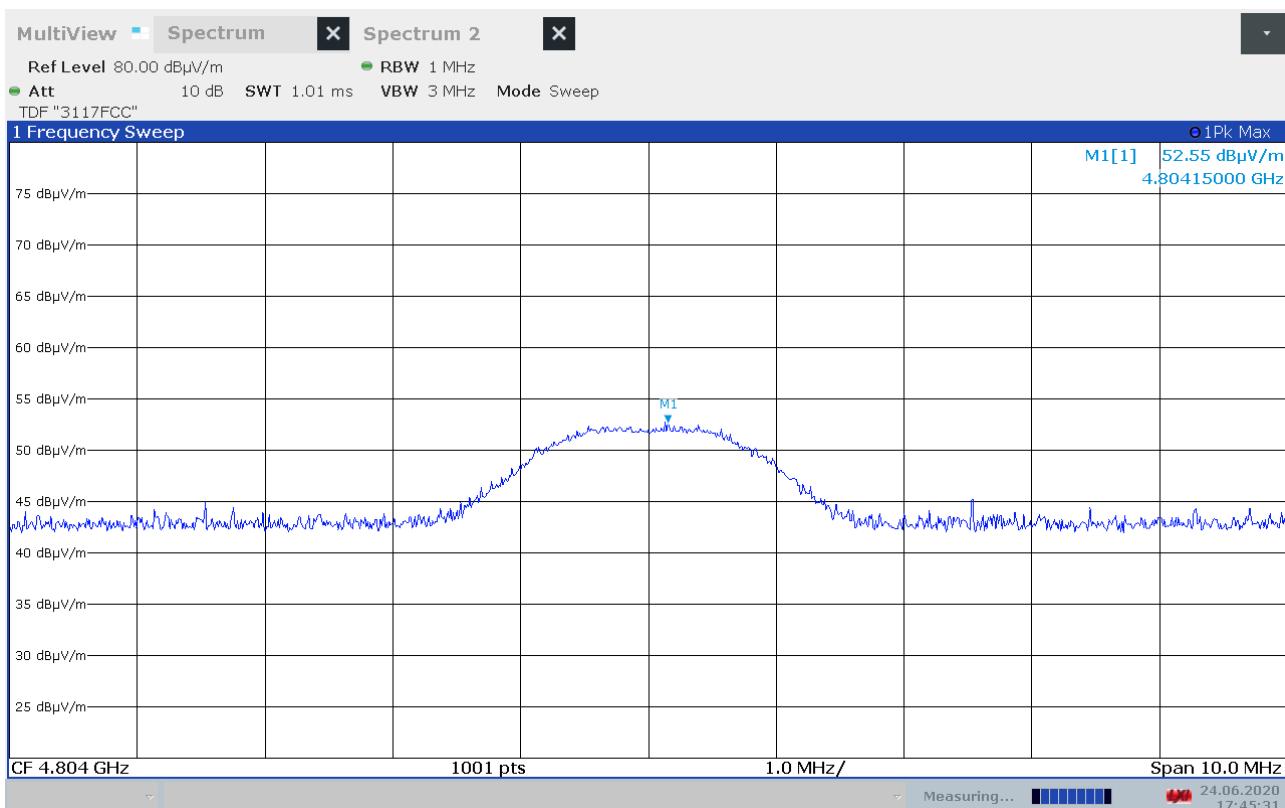
FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, clause 8.9 @ frequencies defined in clause 8.10	
Radiated emission limit @3 meters		
Frequency	Average Detector	Peak Detector
1 – 26 GHz	54.0 dB μ V/m	74.0 dB μ V/m



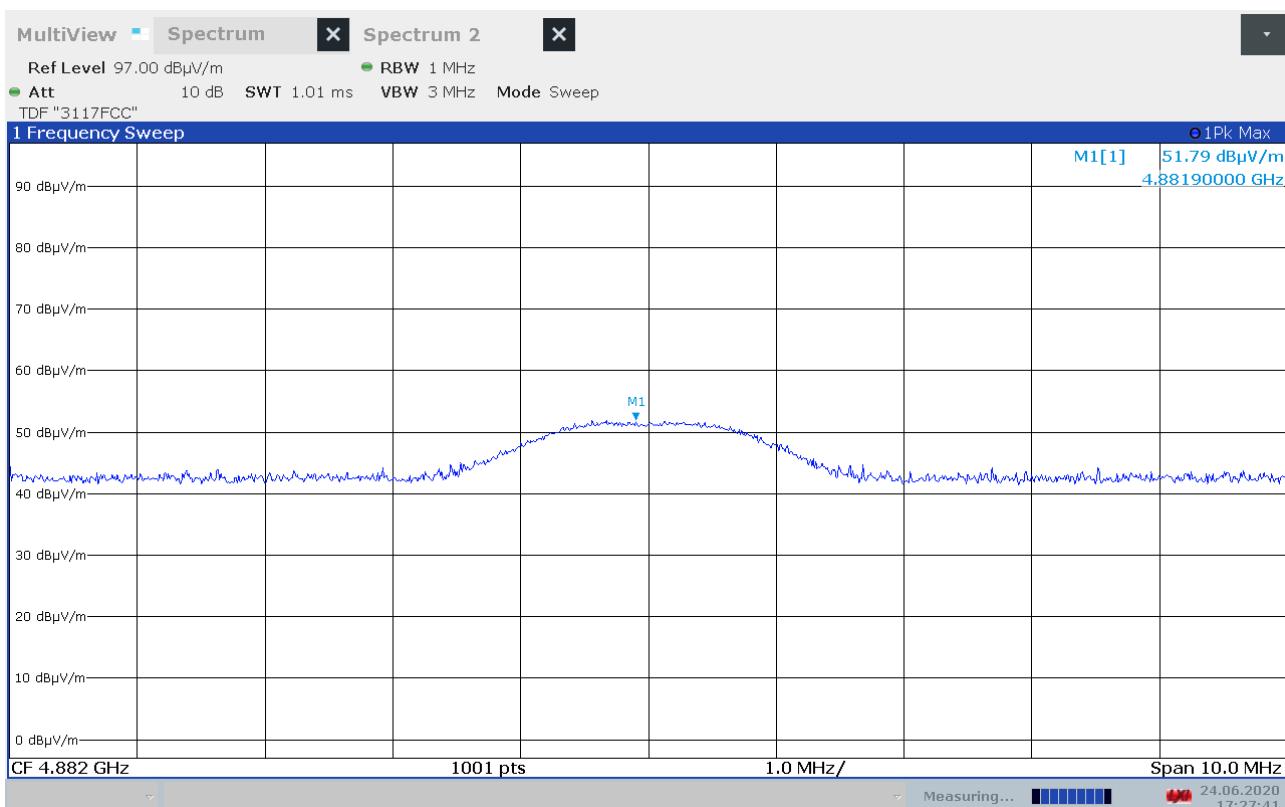
Radiated Emissions, 1000 – 18000 MHz, 2441 MHz GFSK, EUT H1, HP



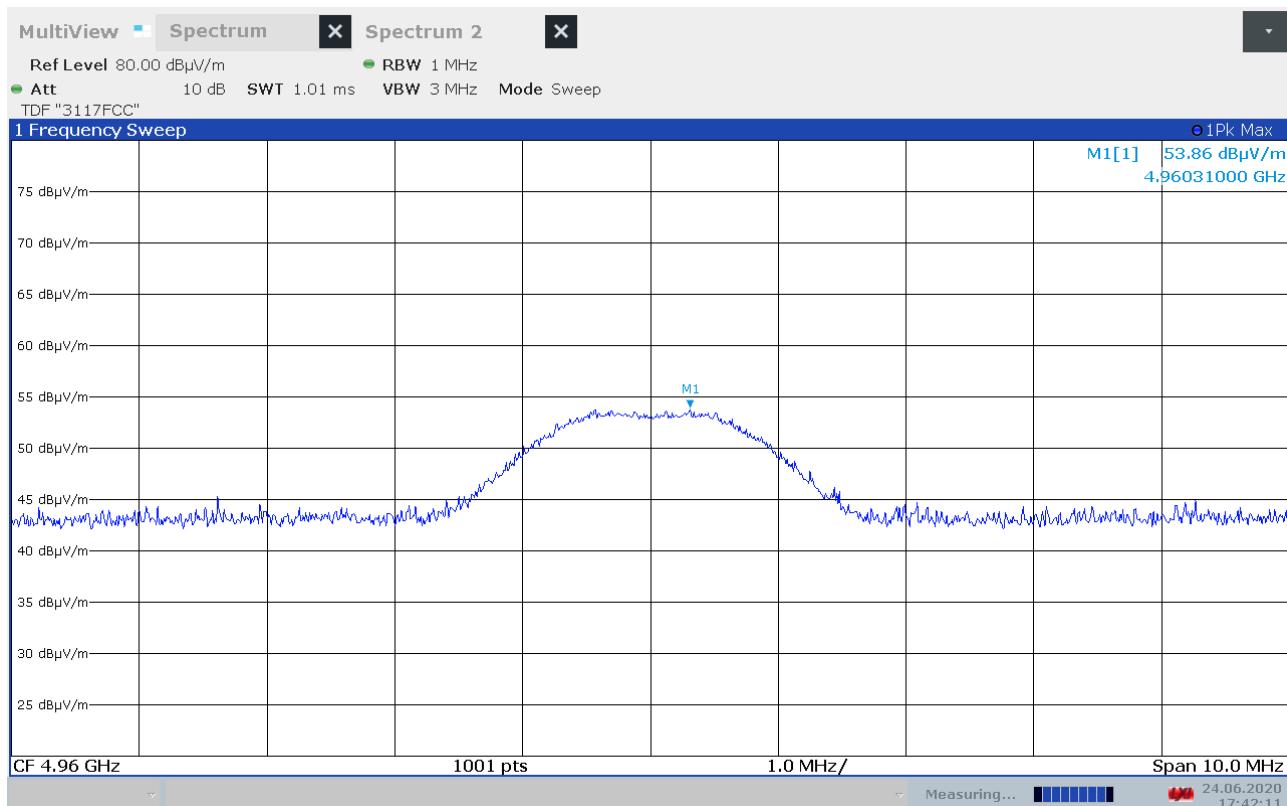
Radiated Emissions, 1000 – 18000 MHz, 2441 MHz GFSK, EUT H1, VP



Radiated Emissions, 4804 MHz, 2402 MHz GFSK, (Max: EUT H1, VP)



Radiated Emissions, 4882 MHz, 2441 MHz GFSK, (Max: EUT H1, VP)



Radiated Emissions, 4960 MHz, 2480 MHz GFSK, (Max: EUT H1, VP)

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 number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	FSW43	Spectrum Analyzer	Rohde & Schwarz	LR 1690	2020-01	2021-01
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2020-01	2021-01
3	6810.17B	Attenuator	Suhner	LR 1669	2019-07	2020-07
4	NO324415	Band Reject Filter	Microwave Circuits	LR 1760	COU	
5	VULB 9163	BiLog Antenna	Schwarzbech	LR 1616	2020-01	2023-01
6	317	Preamplifier	Sonoma Inst.	LR 1687	2020-07	2021-07
7	3117-PA	Horn Antenna +PreAmp	EMCO	LR 1717	2017-12	2020-12
8	WLK5-1100-1485-7000-40SS	Low Pass Filter	Wainwright Inst.	LR 1761	COU	
9	ST18/SMA/N/36	RF Cable	Suhner	LR 1627	COU	

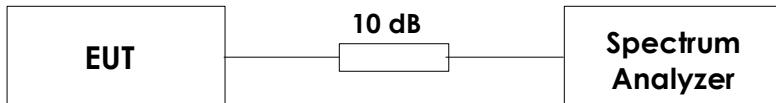
Note: COU – calibrate on use; N/A – Not Applicable

The software listed below has been used for one or more tests.

No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC32	10.40.10	Radiated Emission test software
2	Rohde & Schwarz	GPIBShot	2.7	Screenshots from R&S Spectrum Analyzers
3				

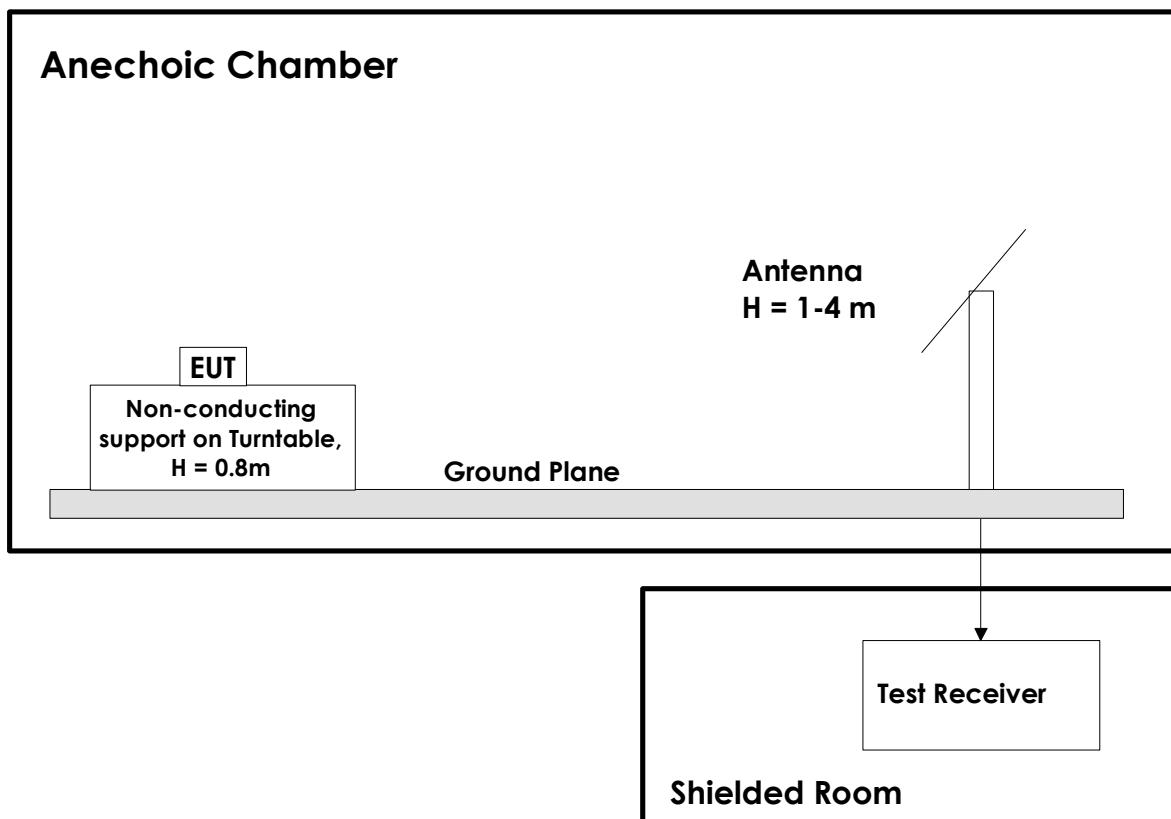
6 BLOCK DIAGRAM

6.1 Conducted Tests



This test set-up is used for all Conducted tests.

6.2 Test Site Radiated Emission



This test setup is used for all radiated emissions tests. The measuring distance is 3m or 1m. Emissions above 1 GHz are measured with a Spectrum Analyzer and Horn Antenna.

For measurements above 18 GHz the test receiver is moved inside the anechoic chamber and located next to the antenna to minimize the cable loss. All measurements at 1GHz and above were performed with turntable height 1.5m and with the ground plane covered by absorbers. A pre-amplifier is used for all measurements, and High-Pass filter is used for all harmonics.