RADIO TEST REPORT

No. 1720278STO-002, Ed. 1

RF Performance

EQUIPMENT UNDER TEST

Equipment:	Remote Control
Type/Model:	E1743 TRÅDFRI
Additional type/model*:	E1766 TRÅDFRI
Manufacturer:	IKEA of Sweden AB
Tested by request of:	IKEA of Sweden AB

*See opinions and interpretations clause 2.5

SUMMARY

Referring to the emission limits, and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards:

47 CFR Part 15 (2016): Subpart C: Intentional radiators. Section 15.247

47 CFR Part 15 (2016): Subpart B: Unintentional radiators

RSS-GEN Issue 4 (2014): General requirements of compliance of radio apparatus (2014)

RSS-247 Issue 2 (2017): Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

For details, see clause 2 – 4.

Date of issue: 2018-03-26

Tested by: Daniel Nilsson

Approved by: Stefan Andersson

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Revision History

Edition	Date	Description	Changes
1	2018-03-26	First release	

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1 CLIENT INFORMATION

The EUT has been tested by request of

Company	IKEA of Sweden AB Box 702 343 81 Älmhult Sweden
Name of contact	M. Mauritzon HFB10 Lighting

2 EQUIPMENT UNDER TEST (EUT)

2.1 Identification of the EUT

Equipment:	Remote control	
Type/Model:	E1743 TRÅDFRI	
Brand name:	IKEA	
Serial number:	No visible serial number	
Manufacturer:	IKEA of Sweden	
Transmitter frequency range:	2405 - 2480 MHz	
Receiver frequency range:	2405 - 2480 MHz	
Frequency agile or hopping:	☐ Yes	☒ No
Antenna:	☒ Internal antenna	☐ External antenna
Antenna connector:	☒ None, internal antenna	☐ Yes
Antenna gain:	2,44 dBi	
Rating RF output power:	4.5 dBm	
Type of modulation:	QPSK	
Temperature range:	☐ Category I (General): -20°C to +55°C ☐ Category II (Portable equipment): -10°C to +55°C ☐ Category III (Equipment for normal indoor use): +5°C to +35°C ☒ Other: <0°C to +35°C	
Transmitter stand by mode supported:	☒ Yes	☐ No

2.2 Additional information about the EUT

The EUT consists of the following units:

ID	Type	Hardware	Comment
BRL	E1743 TRÅDFRI	V2.0 P1.2	Internal antenna, fixed on low channel
BRM	E1743 TRÅDFRI	V2.0 P1.2	Internal antenna, fixed on on mid channel
BRH	E1743 TRÅDFRI	V2.0 P1.2	Internal antenna, fixed on high channel
BCU	E1743 TRÅDFRI	V2.0 P1.2	With temporary antenna connector and UART for conducted testing

During the tests the EUT supported following software:

Firmware	Comment
20170904	-

2.3 Peripheral equipment

Peripheral equipment is equipment needed for correct operation of the EUT, but not included as part of the testing and evaluation of the EUT.

Equipment	Type/Model	Manufacturer	Serial no.
Remote control Laptop Power Supply	E1743 Latiude 5480 Power supply B6-10	IKEA Dell Oltronix	- F1C4FH2 -

2.4 Test signals and operation modes

The EUT supported the following operating modes:

Continuous transmission of modulated signal
Normal transmission of modulated signal

2.5 Opinions and interpretations

The following types/type are/is also included as additional types/type in this test report:

E1766 TRÅDFRI

The difference as compared to the tested type is (according to the manufacturer):

The embossed symbols on the top of the EUT are different.

The difference is considered not to imply different radio-characteristics when compared to the tested type. Therefore, this type is not tested, but considered to have the same radio-characteristics as the tested type.

3 TEST SPECIFICATIONS

3.1 Standards

Requirements:

47 CFR Part 15 (2016): Subpart C: Intentional radiators. Section 15.247

47 CFR Part 15 (2016): Subpart B: Unintentional radiators

RSS-GEN Issue 4 (2014): General requirements of compliance of radio apparatus (2014).

RSS-247 Issue 2 (2017): Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Test methods:
ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.2 Additions, deviations and exclusions from standards and accreditation

RSS-247 Issue 2 (2017) is not within Intertek's scope of accreditation.

No other additions, deviations or exclusions have been made from standards and accreditation.

3.3 Test site

Measurements were performed at:

Intertek Semko AB
Torshamnsgatan 43
Box 1103
SE-164 22 Kista

Intertek Semko AB is a FCC listed test site with site registration number 90913
Intertek Semko AB is a FCC accredited conformity assessment body with designation number SE0002
Intertek Semko AB is an Industry Canada listed test facility with IC assigned code 2042G

Measurement chambers

Measurement Chamber	Type of chamber	IC Site filing #
STORA HALLEN	Semi-anechoic 10 m and 3 m	2042G-2
3M FAC	Fully-anechoic 3 m	2042G-4

4 TEST SUMMARY

The results in this report apply only to sample tested:

Requirement	Description	Result
FCC §15.203 **RSS-GEN 8.3**	**Antenna requirement** The EUT has integrated non-detachable antenna which can't be removed without breaking the EUT.	**PASS**
FCC §15.207, 15.107 **RSS-GEN 8.8 table 3**	**Conducted continuous emission in the frequency range 150 kHz to 30 MHz, AC Power input port** Battery operated equipment.	**NA**
FCC §15.247 (b)(4) **RSS-247 5.4(4), 5.4(5)**	**Field strength of fundamental and antenna gain** The EUT complies with the limits. Antenna gain is less than 6 dBi.	**PASS**
FCC §15.247 (d), 15.209(a), 15.109 **RSS-GEN 8.9** **RSS-247 5.5**	**Radiated emission of electromagnetic fields in the frequency range 30 – 1000 MHz** The EUT complies with the limits. The margin to the limit was at least 10.4 dB at 76.803 MHz. See clause 6.4 – 6.5.	**PASS**
FCC §15.247(d), 15.209(a), 15.109 **RSS-GEN 8.9** **RSS-247 5.5**	**Radiated emission of electromagnetic fields in the frequency range above 1 GHz** The EUT complies with the limits. The margin to the limit was at least 11.7 dB at 4961.0 MHz. See clause 6.6 – 6.7.	**PASS**
FCC §15.247(a)(2) **RSS-GEN 6.6** **RSS-247 5.2(1)**	**Occupied bandwidth** The EUT complies with the limits. The margin to the limit is at least 1.28 MHz See clause 9.4.	**PASS**
FCC §15.247(b) **RSS-247 5.4(4)**	**Conducted output power** The EUT complies with the limits. The margin to the limit was at least 25.8 dB at 2480.0 MHz. See clause 8.4.	**PASS**
FCC §15.247(e) **RSS-247 5.2(2)**	**Peak power spectral density** The EUT complies with the limits. The margin to the limit was at least 15.1 dB at 2405.0 MHz. See clause 11.4.	**PASS**
FCC §15.247(e) **RSS-247 5.5**	**Band edge** The EUT complies with the limits. The margin to the limit was at least 10.7 dB at 2483.5 MHz. See clause 5.4.	**PASS**

5 RADIATED BAND EDGE

Date of test:	2018-02-16	**Test location:**	3m FAC
EUT Serial:	BRL, BRH	**Ambient temp:**	22 °C
Tested by:	DNI	**Relative humidity:**	25 %
Test result:	Pass	**Margin:**	10.7 dB

5.1 Test set-up and test procedure.

The test method is in accordance with ANSI C63.10-2013.

The EUT was set up in order to emit maximum disturbances.

The EUT was placed on an insulating support 1.5 m above the turntable which is part of the reference ground plane.

Overview sweeps were performed for six discrete elevation angles with the measurement receiver in max-hold mode and the peak and average detector was activated.

5.2 Test conditions

Test set-up:	**1 GHz – 40 GHz**	
Test receiver set-up:		
Final test, fundamental:	Peak,	RBW 1 MHz VBW 3 MHz
	Average	Peak value + 20 x LOG (Duty cycle)
Final test, band edge:	Peak	RBW 100 kHz VBW 300 kHz
	Average	Peak value + 20 x LOG (Duty cycle)
Measuring distance:	3 m	
Measuring angle:	0 – 359°	
Elevation angles:	0 - 180°	
Antenna		
Height above ground plane:	1.5 m	
Polarisation:	Vertical and Horizontal	
Type:	Horn	

5.3 Requirement

Outside the restricted bands:
Reference: CFR 47 §15.247(d), RSS-247 5.5,

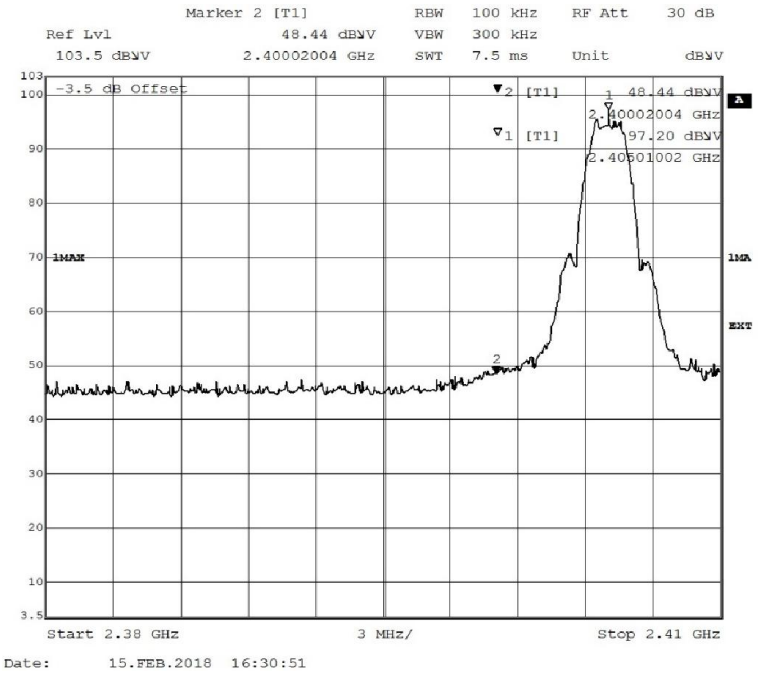
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

Within restricted bands:
Reference: CFR 47 §15.209, RSS-Gen section 8.9

Field strength of emissions must comply with limits shown in table below

Frequency range [MHz]	Field strength at 3 m (dBµV/m)	Field strength at 10 m (dBµV/m)	Detector (dBµV/m)
30 – 88	40.0	29.5	Quasi Peak
88 – 216	43.5	33.0	Quasi Peak
216 – 960	46.0	35.5	Quasi Peak
960 – 1000	54.0	43.5	Quasi Peak
Above 1000	54.0 / 74.0	43.5 / 63.5	Average / Peak

5.4 Test results

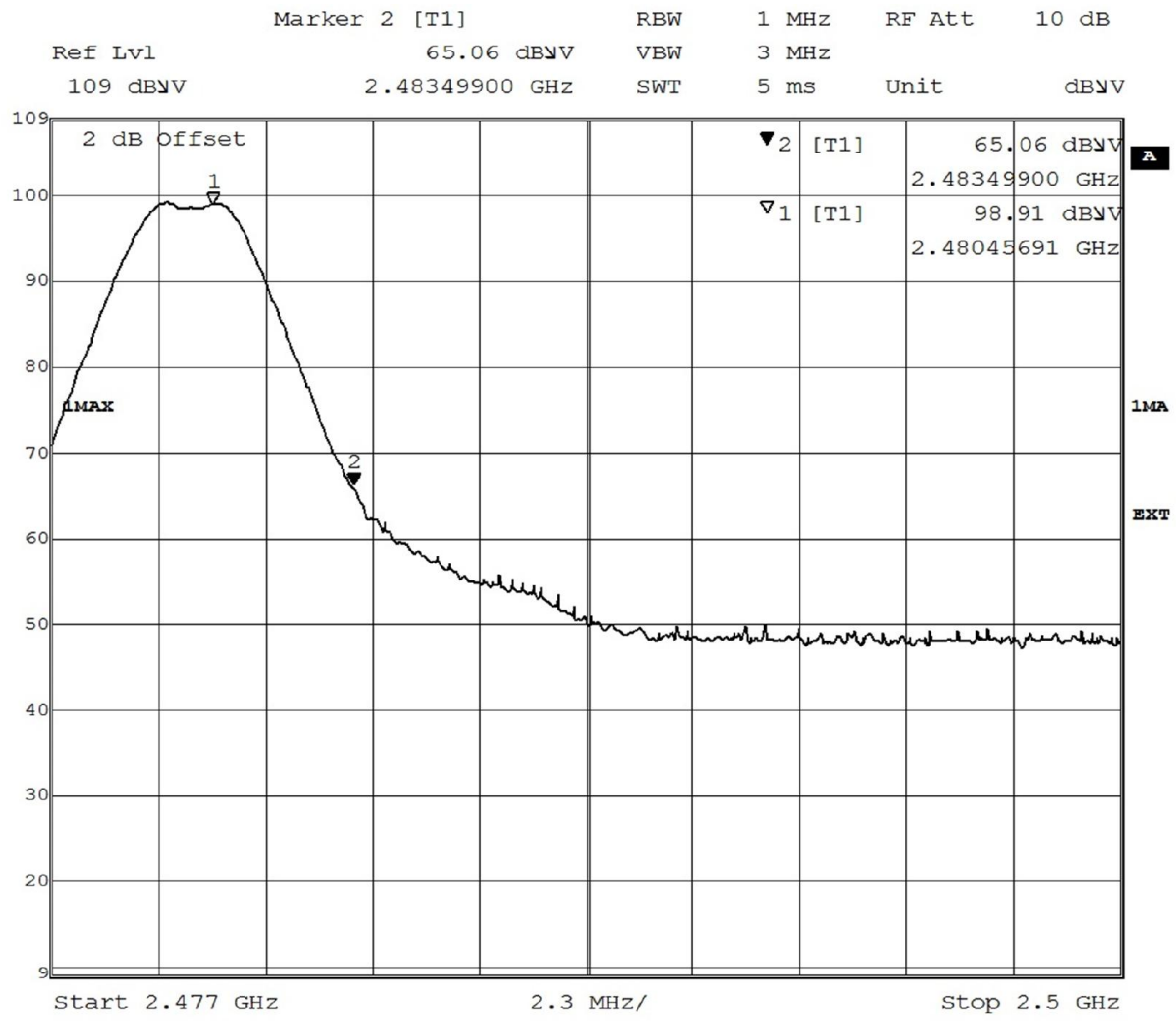


Lower band edge sweep

Field strength of fundamental and band edge, low channel

Frequency [MHz]	Level [dBµV/m]	Delta [dBc]	Limit [dBc]	Detector	Polarization H/V	Margin [dB]
2405.0	97.2		--	Peak	V	--
2400.0	48.4	48.8	20.0	Peak	V	28.8

Result [dBµV/m] = Analyser reading [dBµV] + Antenna factor [1/m] - Amplifier gain [dB] + Cable loss [dB]



Upper band edge sweep

Field strength of fundamental and band edge, high channel

Frequency [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Detector	Polarization H/V	Margin [dB]
2480.0	98.9	--	Peak	V	--
2483.5	65.1	74.0	Peak	V	8.9
2480.0	87.1	--	Average	V	--
2483.5	53.3	54.0	Average	V	0.7

Result [dBµV/m] = Analyser reading [dBµV] + Antenna factor [1/m] - Amplifier gain [dB] + Cable loss [dB]

6 RADIATED RF EMISSION IN THE FREQUENCY-RANGE 30 MHZ TO 25 GHZ

Date of test:	2018-01-23, 2018-01-31, 2018-02-05	**Test location:**	Stora Hallen / 3m FAC
EUT Serial:	BRL, BRM, BRH	**Ambient temp:**	21 - 22 °C
Tested by:	DNI / RHI	**Relative humidity:**	14 - 25 %
Test result:	Pass	**Margin:**	10.4 dB

6.1 Test set-up and test procedure.

The test method is in accordance with ANSI C63.10-2013.

The EUT was set up in order to emit maximum disturbances.

The EUT was placed on an insulating support 1.5 m above the turntable which is part of the reference ground plane.

Overview sweeps were performed for with the measurement receiver in max-hold mode and the peak and average detector was activated.

6.2 Test conditions

Test set-up:	**30 MHz to 1000 MHz**		
Test receiver set-up:			
Preview test:	Peak,	RBW 120 kHz	VBW 1 MHz
Final test:	Quasi-Peak,	RBW 120 kHz	VBW 1 MHz
EUT height above ground plane:	0.8 m		
Measuring distance:	3 m		
Measuring angle:	0 – 359°		
Antenna			
Height above ground plane:	1 – 4 m		
Polarisation:	Vertical and Horizontal		
Type:	Bilog		

Test set-up:	**1 GHz – 26.5 GHz**		
Test receiver set-up:			
Preview test:	Peak,	RBW 1 MHz	VBW 3 MHz
	Average,	RBW 1 MHz	VBW 3 MHz
Final test:	Peak,	RBW 1 MHz	VBW 3 MHz
	Average	Peak value + 20 x LOG (Duty cycle)	
EUT height above ground plane:	1.5 m		
Measuring distance:	3 m		
Measuring angle:	0 – 359°		
Elevation angles_	0 – 180°		
Antenna			
Height above ground plane:	1.5 m		
Polarisation:	Vertical and Horizontal		
Type:	Horn		
Antenna tilt:	Activated		

6.3 Requirements

Within restricted bands and receive mode:

Reference: CFR 47 §15.209, §15.109, RSS-Gen section 8.9

Field strength of emissions must comply with limits shown in table below

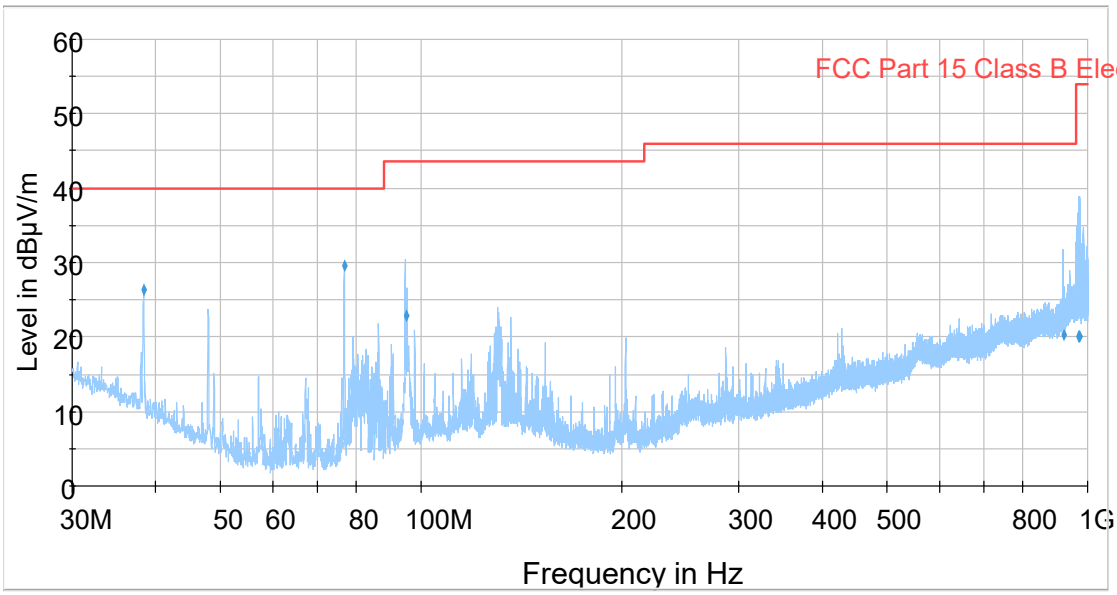
Frequency range [MHz]	Field strength at 3 m (dBμV/m)	Field strength at 10 m (dBμV/m)	Detector (dBμV/m)
30 – 88	40.0	29.5	Quasi Peak
88 – 216	43.5	33.0	Quasi Peak
216 – 960	46.0	35.5	Quasi Peak
960 – 1000	54.0	43.5	Quasi Peak
Above 1000	54.0 / 74.0	43.5 / 63.5	Average / Peak

The values for 10 m measuring distance are calculated by subtracting 10.5 dB from the 3 m limit.
(i.e. an extrapolation factor of 20 dB/decade according to CFR 47 §15.31(f)(1))

Outside the restricted bands:
Reference: CFR 47 §15.247(d), RSS-247 5.5,

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

6.4 Test results 30 MHz – 1000 MHz, RX



Diagram, Peak overview sweep, 30 – 1000 MHz at 3 m distance. RX.

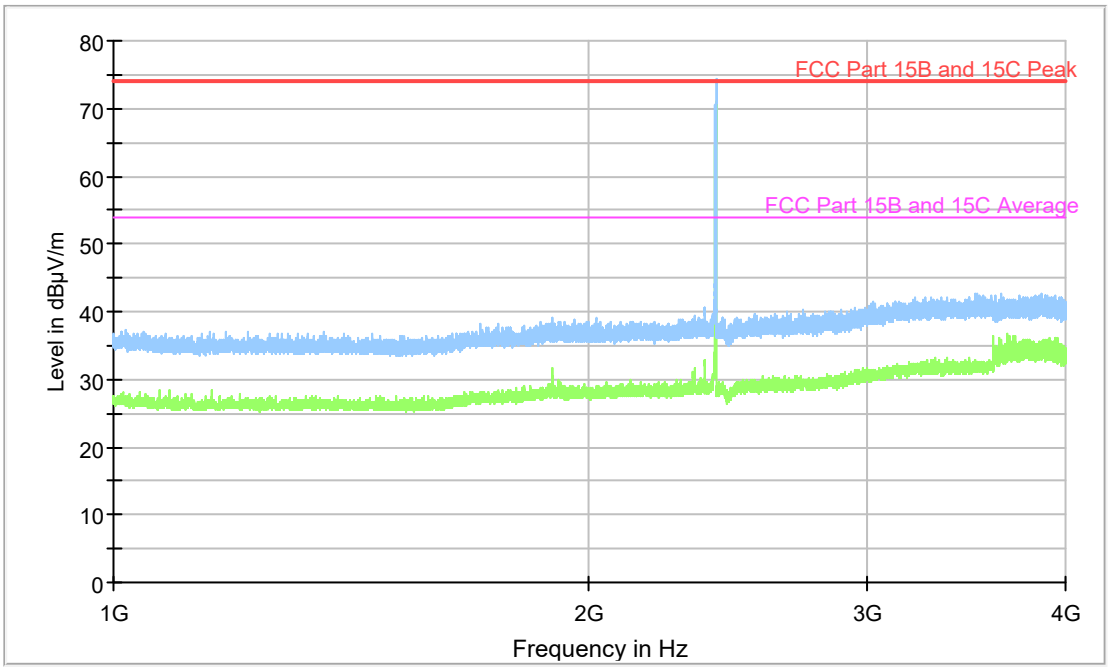
Measurement results, Quasi Peak

Frequency [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Polarization H/V	Margin [dB]
38.396	26.4	40.0	V	13.6
76.803	29.6	40.0	V	10.4

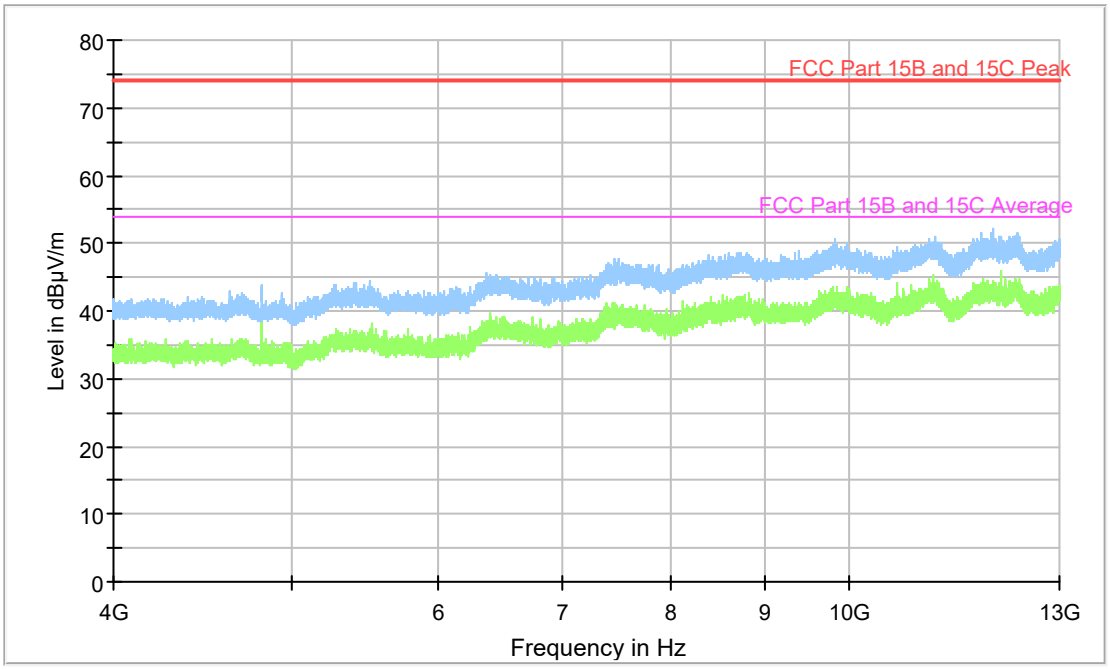
All other measured disturbances have a margin of more than 20 dB to the limits.

Result [dBµV/m] = Analyser reading [dBµV] + Antenna factor [1/m] - Amplifier gain [dB] + Cable loss [dB]

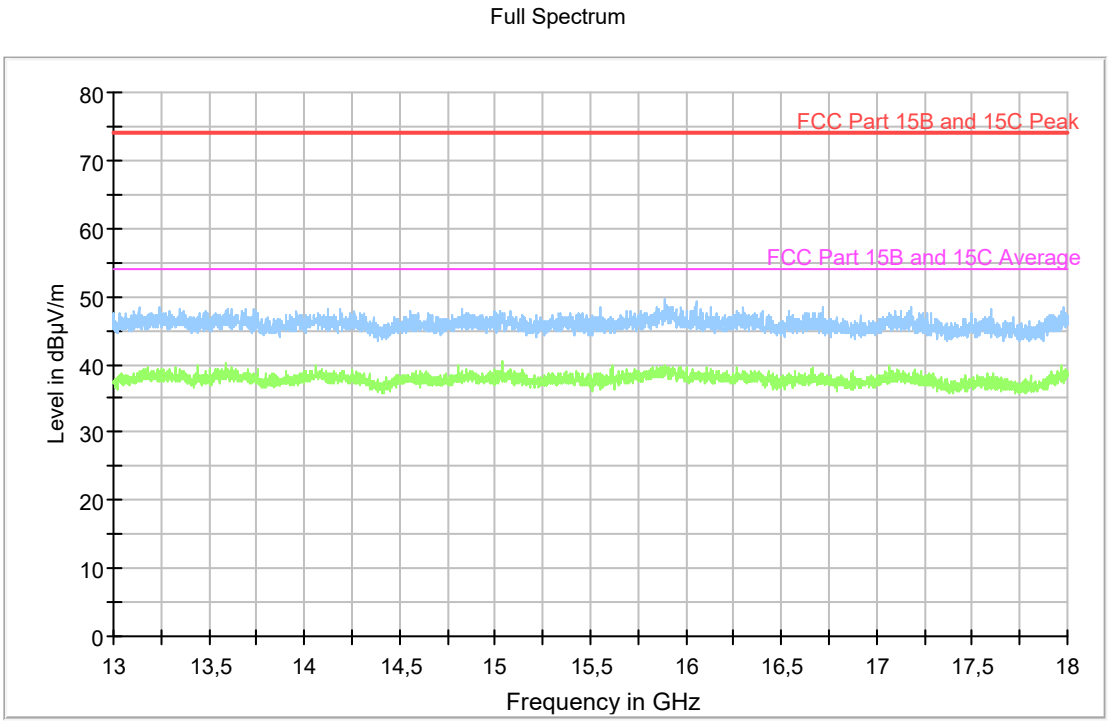
6.5 Test results 1 GHz – 25 GHz, TX



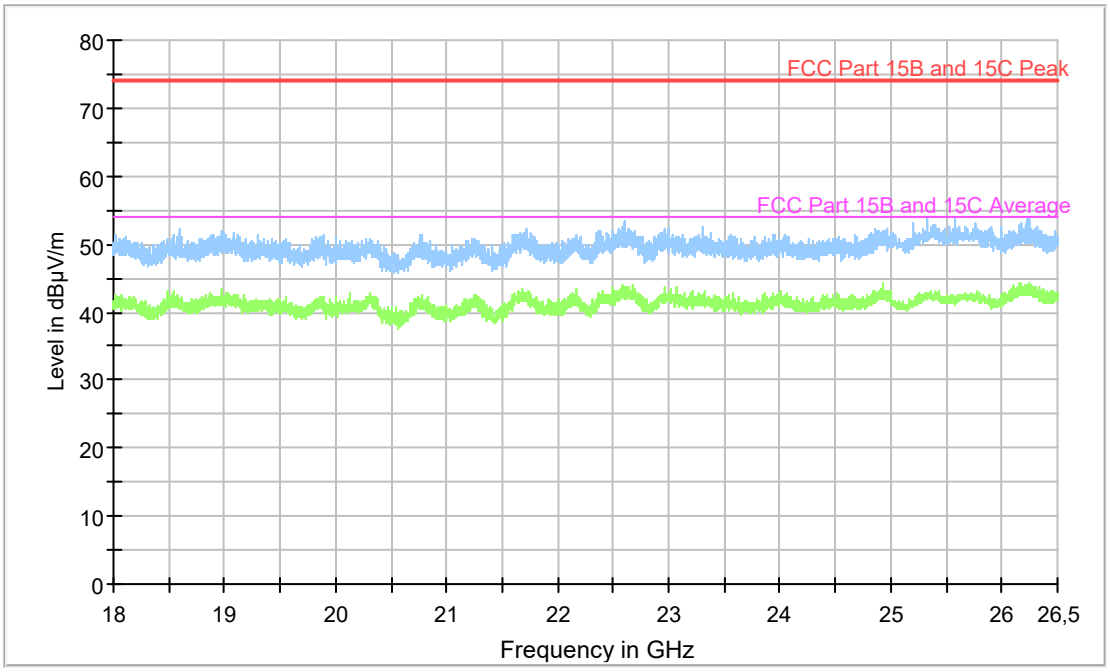
Diagram, Peak overview sweep, 1– 4 GHz at 3 m distance. TX low channel. Carrier is attenuated by band rejection filter K&L 6N45-2450/T 100-0/0.



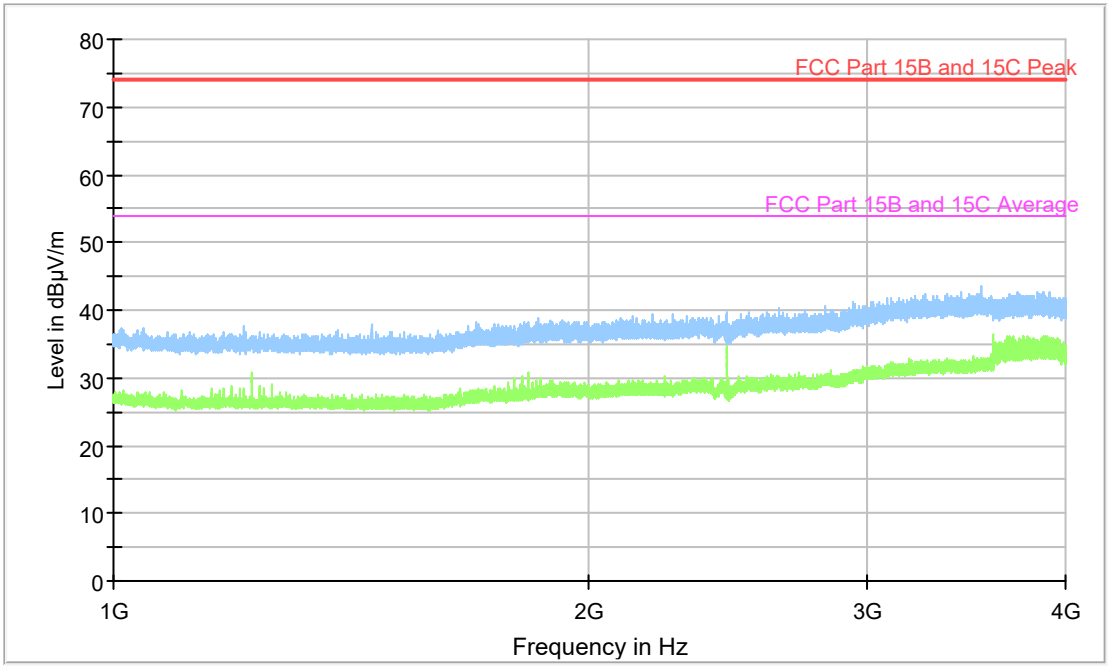
Diagram, Peak overview sweep, 4– 13 GHz at 3 m distance. TX low channel. Emissions below 4000 MHz are attenuated by high-pass filter K&L 4410-X4500/18000-0.



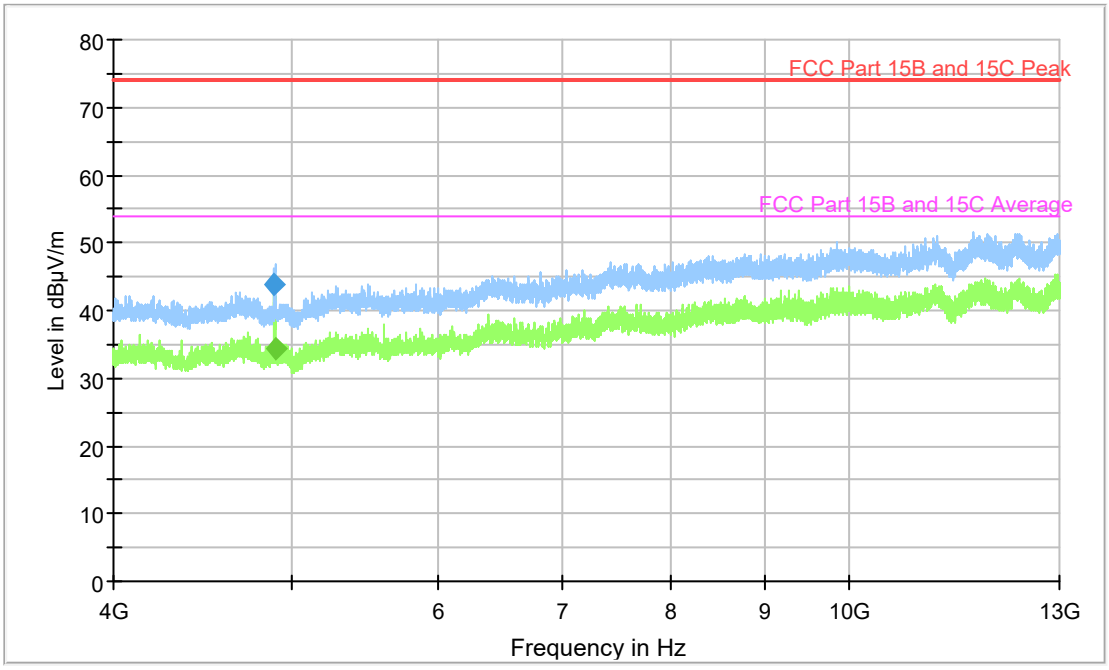
Diagram, Peak overview sweep, 13 – 18 GHz at 3 m distance. TX low channel.



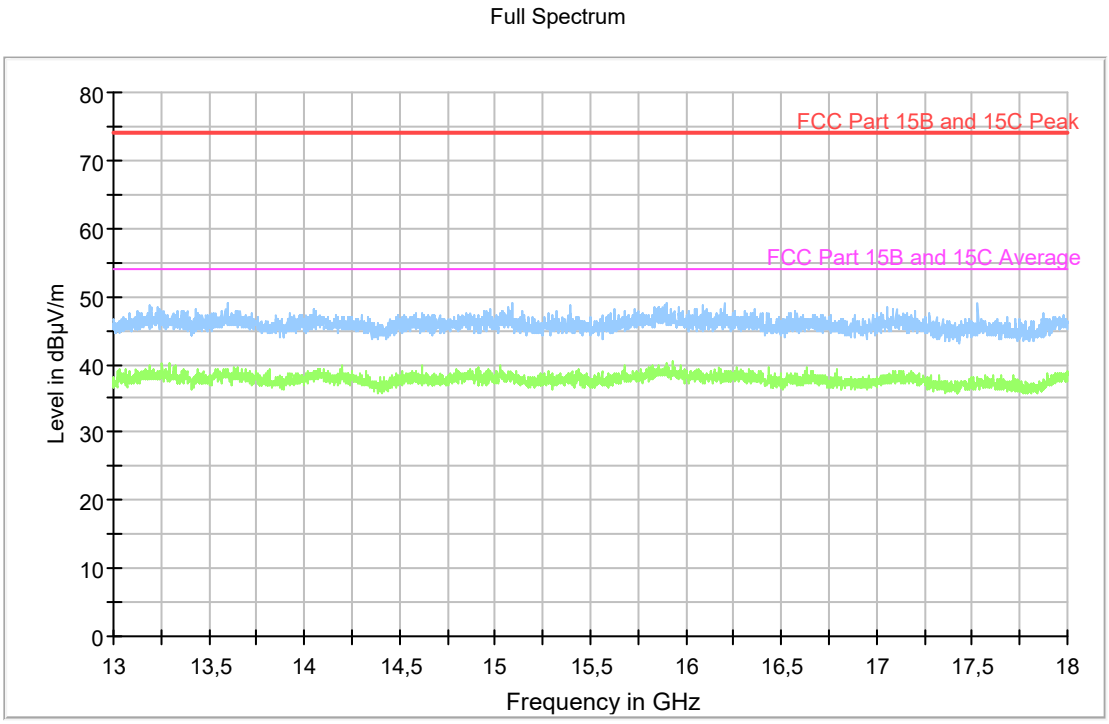
Diagram, Peak overview sweep, 18 – 25 GHz at 3 m distance. TX low channel.



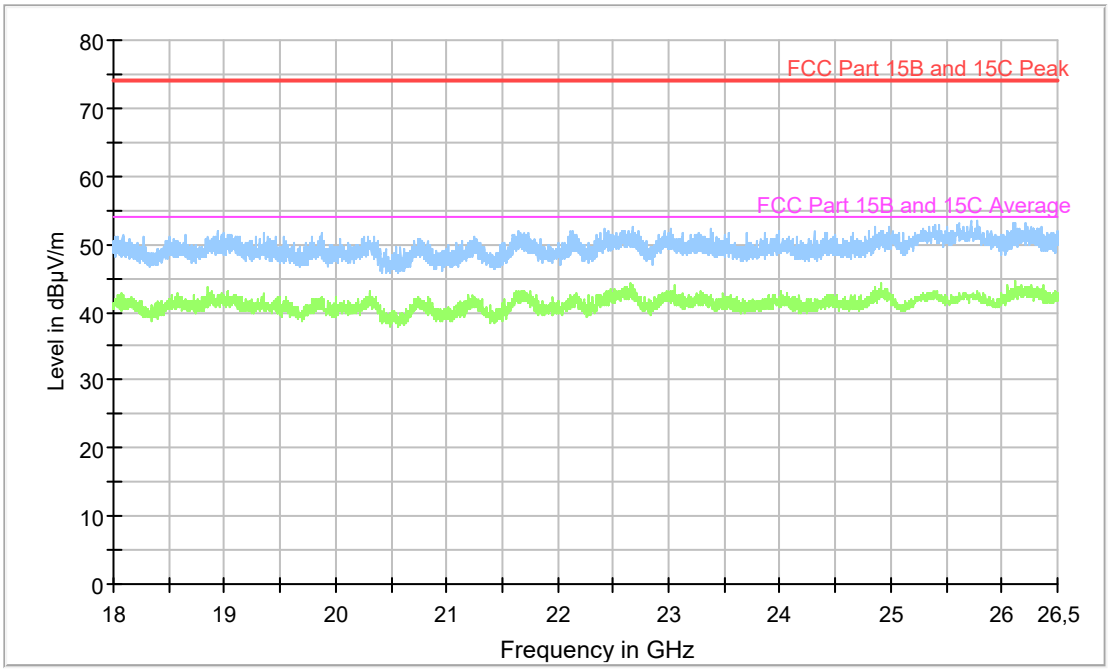
Diagram, Peak overview sweep, 1– 4 GHz at 3 m distance. TX middle channel. Carrier is attenuated by band rejection filter K&L 6N45-2450/T 100-0/0.



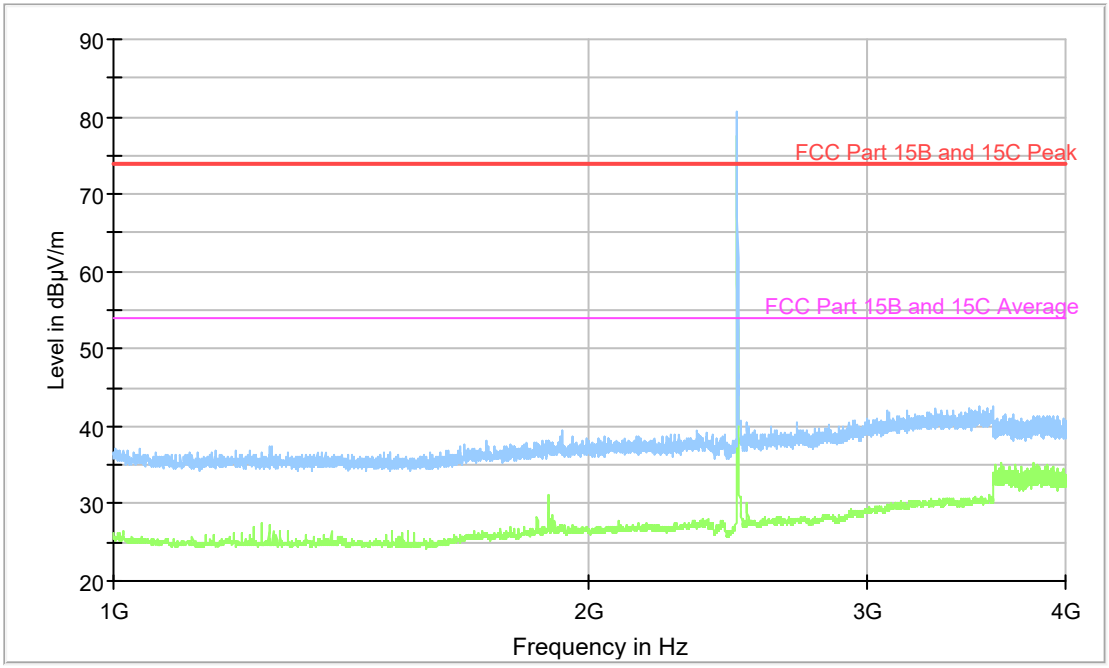
Diagram, Peak overview sweep, 4– 13 GHz at 3 m distance. TX middle channel. Emissions below 4000 MHz are attenuated by high-pass filter K&L 4410-X4500/18000-0.



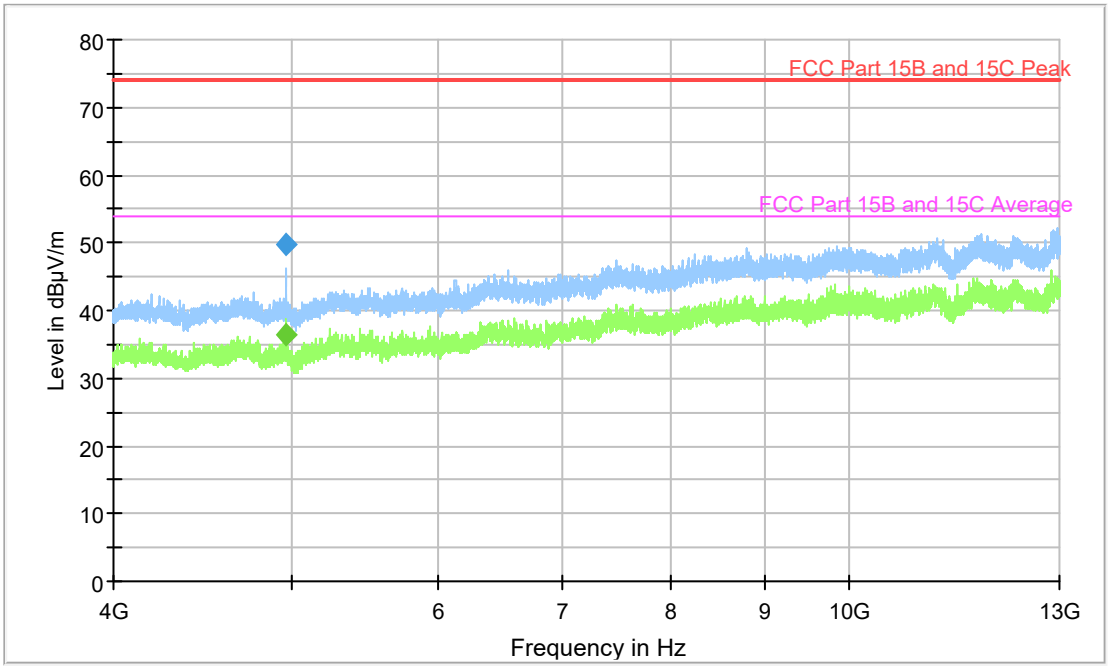
Diagram, Peak overview sweep, 13 – 18 GHz at 3 m distance. TX middle channel.



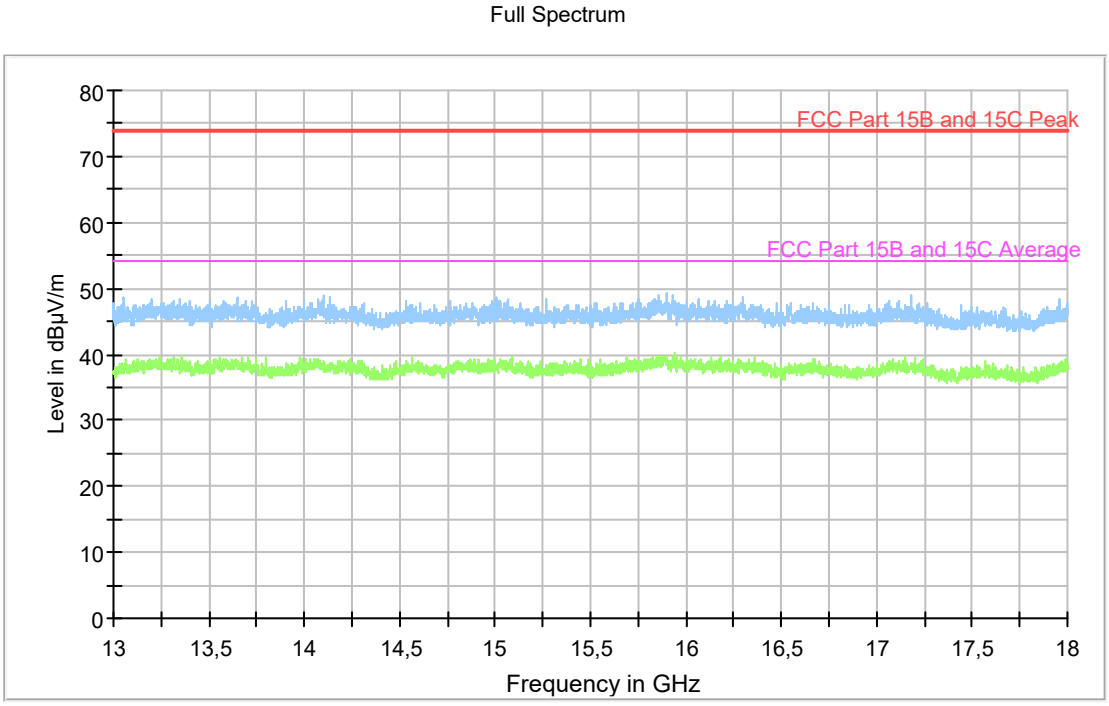
Diagram, Peak overview sweep, 18 – 25 GHz at 3 m distance. TX middle channel.



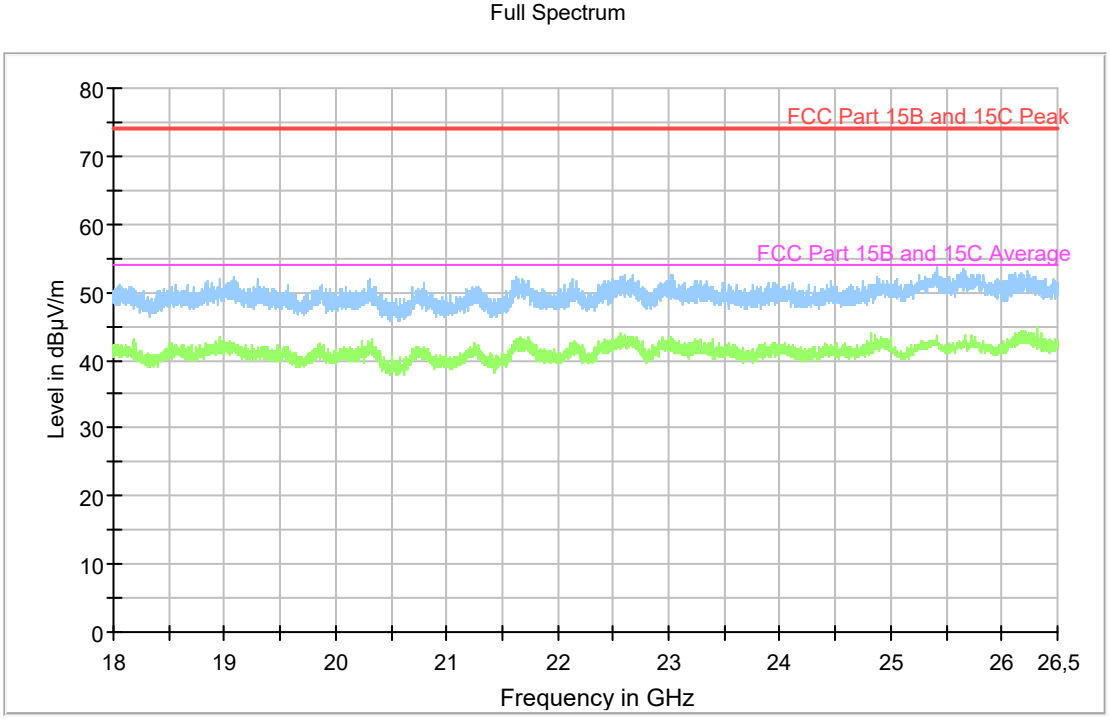
Diagram, Peak overview sweep, 1– 4 GHz at 3 m distance. TX high channel. Carrier is attenuated by band rejection filter K&L 6N45-2450/T 100-0/0.



Diagram, Peak overview sweep, 4– 13 GHz at 3 m distance. TX high channel. Emissions below 4000 MHz are attenuated by high-pass filter K&L 4410-X4500/18000-0.



Diagram, Peak overview sweep, 13 – 18 GHz at 3 m distance. TX high channel.



Diagram, Peak overview sweep, 18 – 25 GHz at 3 m distance. TX high channel.

Measurement results, Peak, TX

Frequency [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Polarization H/V	Margin [dB]
4961.0	49.8	74.0	H	24.2

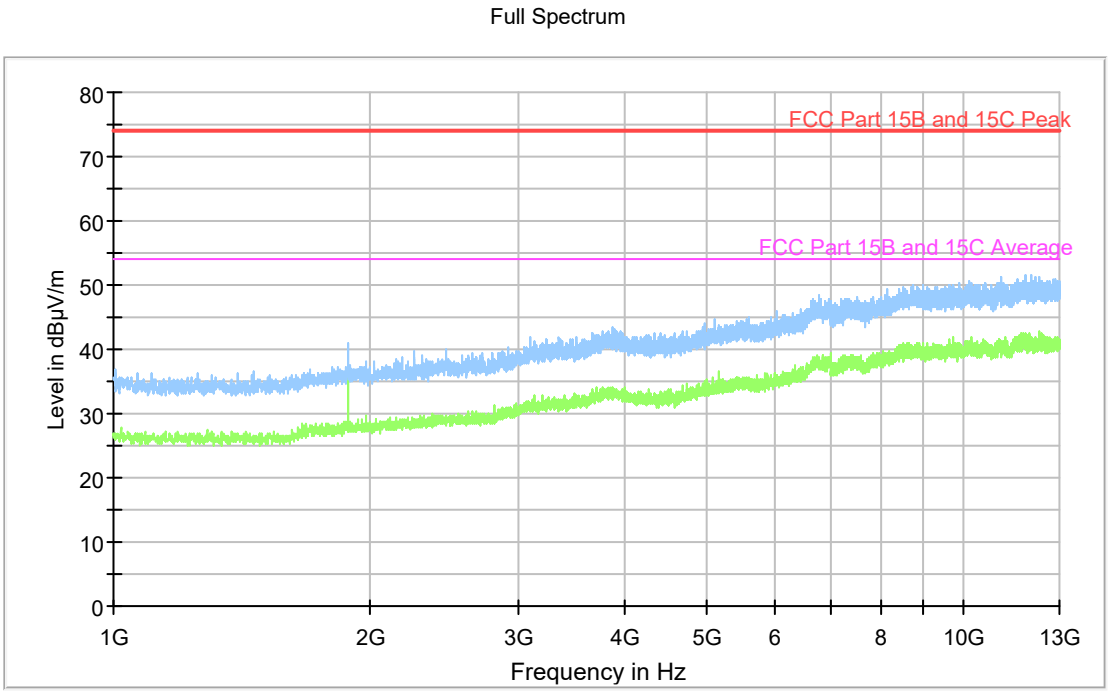
Measurement results, Average, TX

Frequency [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Polarization H/V	Margin [dB]
4961.0	42.3	54.0	H	11.7

Result [dBµV/m] = Analyser reading [dBµV] + Antenna factor [1/m] - Amplifier gain [dB] + Cable loss [dB]

All other out of band emissions (peak) have a margin of atleast 20 dB to the applicable limit.

6.6 Test results 1 GHz – 13 GHz, RX



Diagram, Peak overview sweep, 1 – 13 GHz at 3 m distance. RX.

Measurement results, Peak, RX

All peak emissions are below the average limit.

7 CONDUCTED BAND EDGE MEASUREMENT

Date of test:	2018-02-13	**Test location:**	Wireless center
EUT Serial:	BCU	**Ambient temp:**	22 °C
Tested by:	DNI	**Relative humidity:**	25 %
Test result:	Pass	**Margin:**	21.8 dB

7.1 Test set-up and test procedure.

The test method is in accordance with ANSI C63.10-2013 section 6.10.4.

The EUT was connected to spectrum analyser via rf-cable and attenuator.

The EUT was set up in order to emit maximum disturbances.

7.2 Test conditions

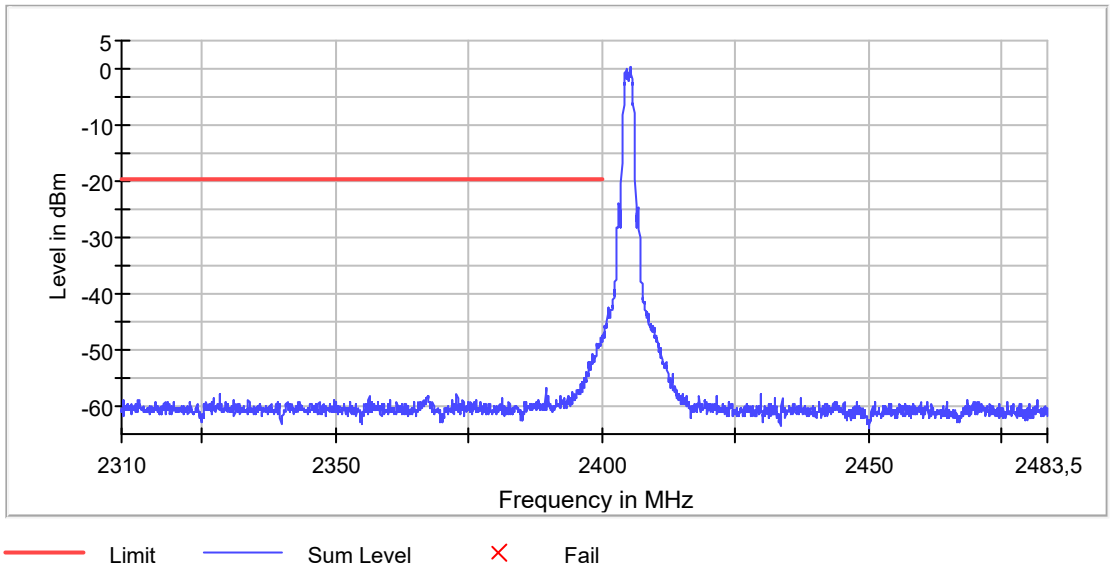
Detector: Peak
RBW: 100 kHz
VBW: 300 kHz
Span: 83.5 MHz

7.3 Requirement

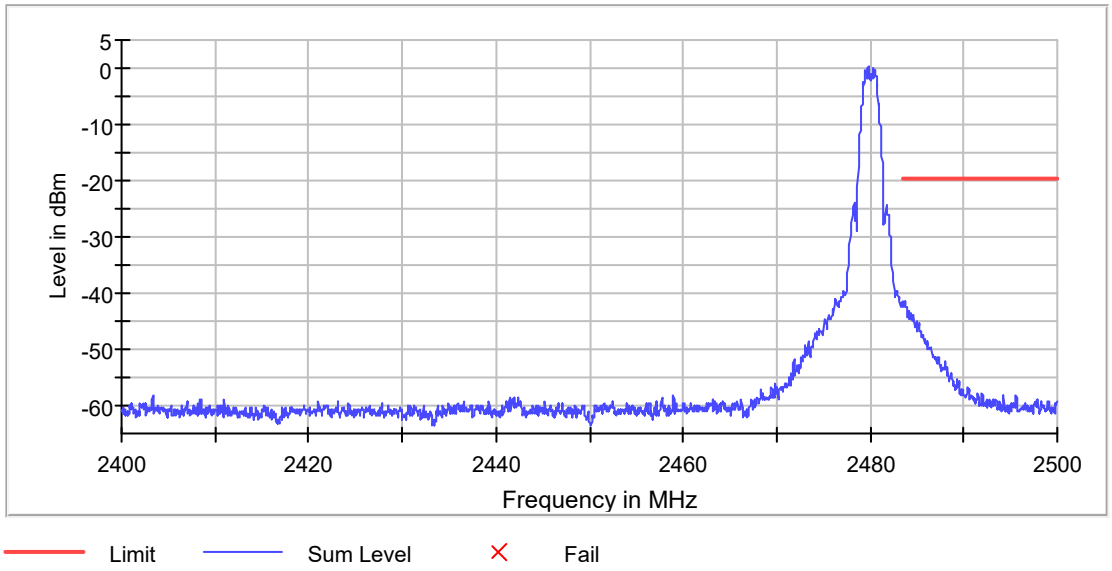
Reference: CFR 47 §15.247(d), RSS-247 5.5,

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

7.4 Test results



Screenshot: Lower band edge sweep, single channel



Screenshot: Upper band edge sweep, single channel

Lower

Frequency	Level [dBm]	Delta [dBc]	Limit [dBc]	Margin [dB]
2405.0		--	--	--
2400.0	48.3		20.0	28.3

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
2480.0	0.2	--	--
2483.5	-41.6	-19.8	21.8

8 PEAK CONDUCTED OUTPUT POWER

Date of test:	2018-02-13	**Test location:**	3m FAC
EUT Serial:	BCU	**Ambient temp:**	22 °C
Tested by:	DNI	**Relative humidity:**	25 %
Test result:	Pass	**Margin:**	25.8 dB

8.1 Test set-up and test procedure.

The test method is in accordance with ANSI C63.10-2013.

The EUT was connected to spectrum analyser via rf-cable and attenuator.

8.2 Test conditions

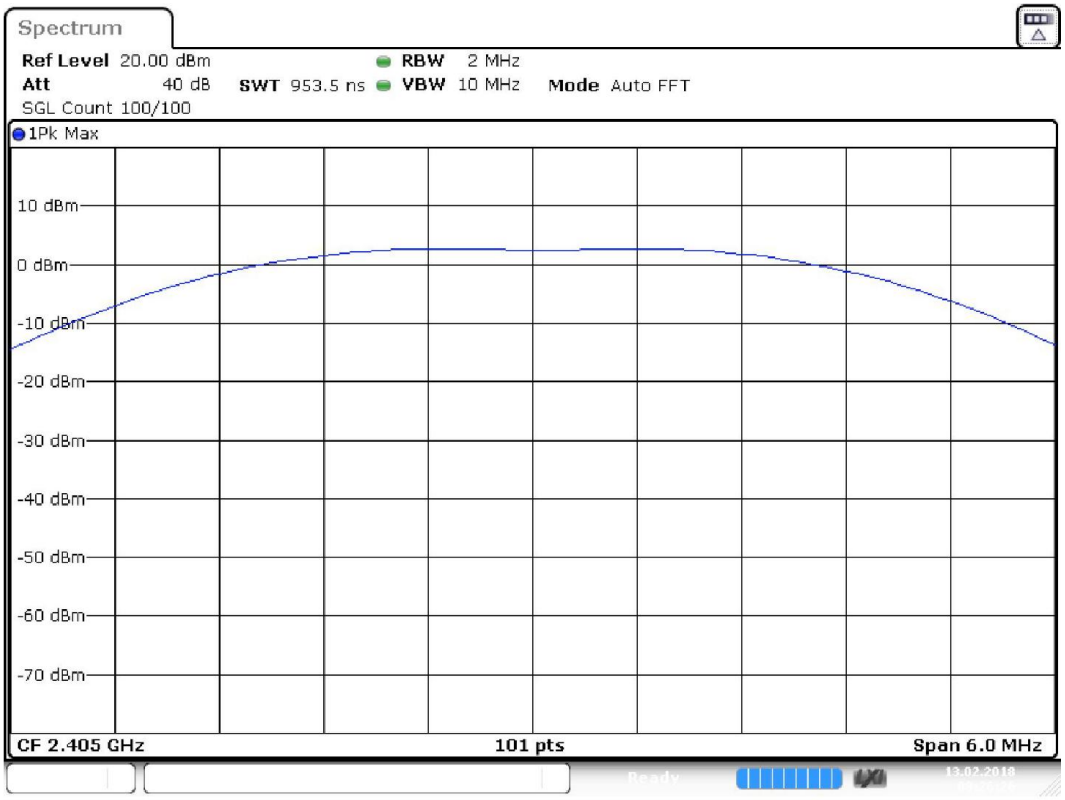
Detector: Peak,
RBW: >OBW
VBW: 3 x RBW
Span: >3 x OBW

The EUT was set up in order to emit maximum disturbances.

8.3 Requirements

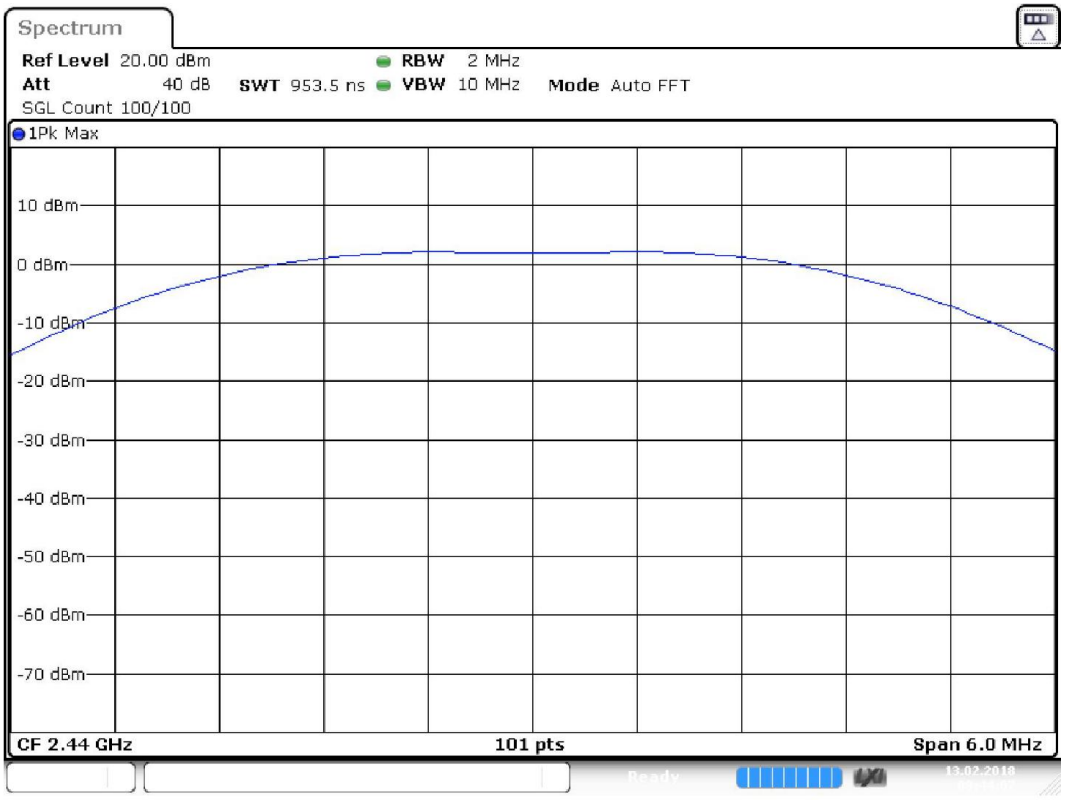
Reference: CFR 47§15.247(b)(3), RSS-247 5.4
For DTSs employing digital modulation techniques operating in the bands 902 – 128 MHz, 2400 – 2483.5 MHz and 5725 – 5850 MHz, the maximum peak conducted output power shall not exceed 1W.

8.4 Test results



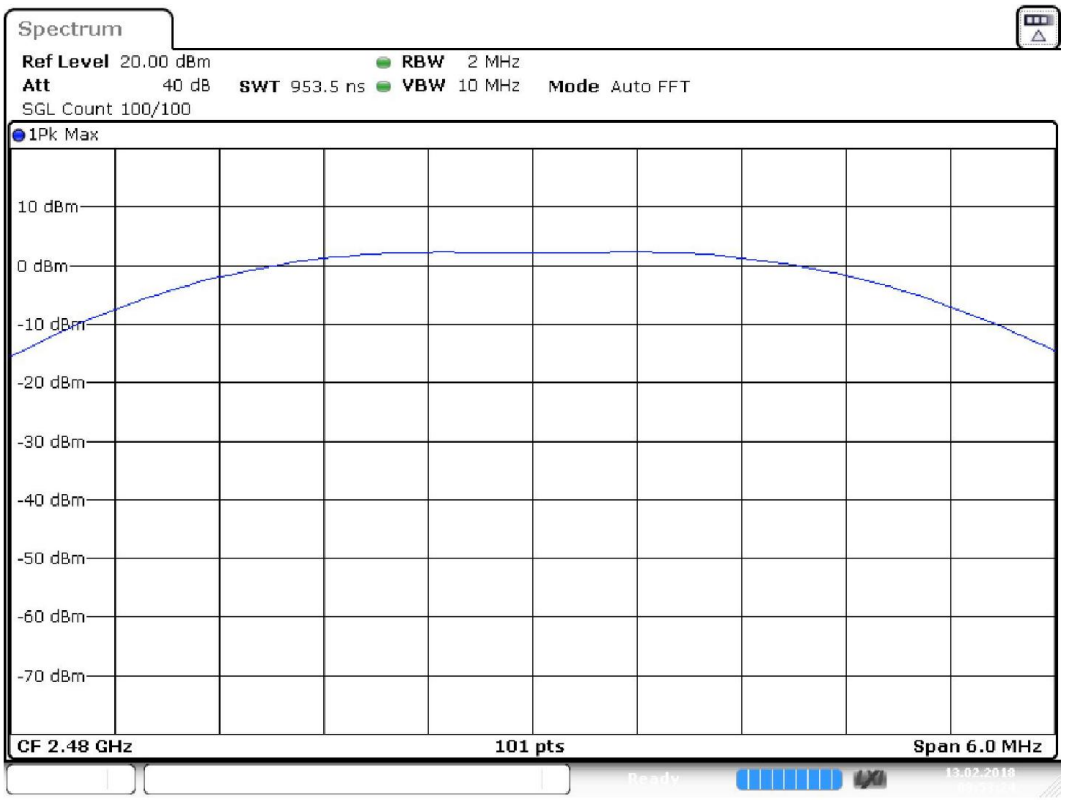
Date: 13.FEB.2018 08:26:26

Screenshot: Output power, low channel



Date: 13.FEB.2018 08:44:07

Screenshot: Output power, middle channel



Date: 13.FEB.2018 08:53:25

Screenshot: Output power, high channel

Test result

Channel [MHz]	Output power [dBm]
2405	4.2
2440	3.6
2480	3.8

9 OCCUPIED 6 DB BANDWIDTH

Date of test:	2018-02-13	**Test location:**	Wireless Center
EUT Serial:	BCU	**Ambient temp:**	22 °C
Tested by:	DNI	**Relative humidity:**	25 %
Test result:	Pass	**Margin:**	1.28 MHz

9.1 Test set-up and test procedure.

The test method is in accordance with ANSI C63.10-2013 section.

The EUT was connected to spectrum analyser via rf-cable and attenuator.

9.2 Test conditions

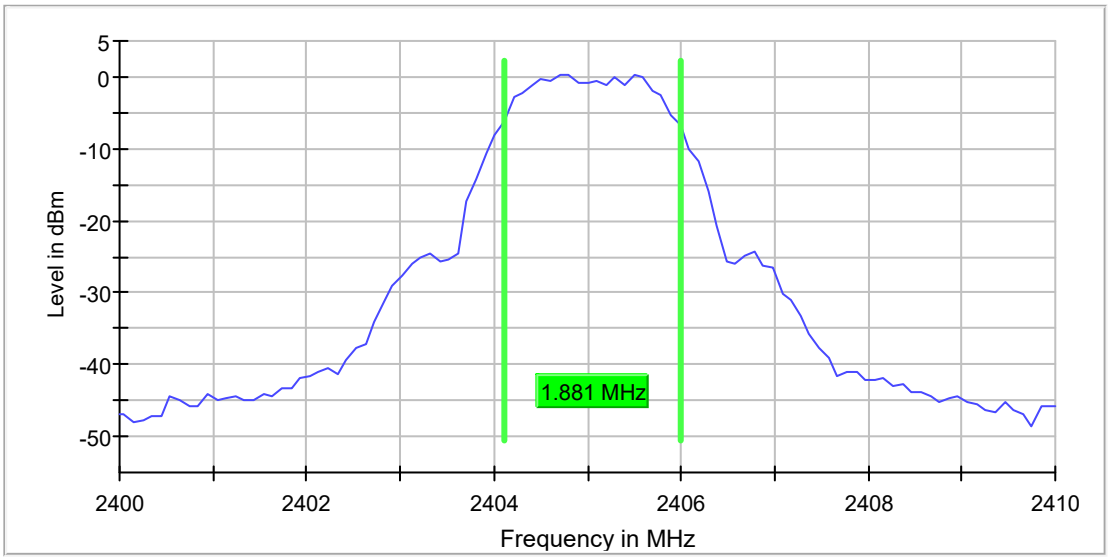
Detector: Peak,
RBW: 100 kHz
VBW: 3 x RBW
Span: >1,5 x OBW

The EUT was set up in order to emit maximum disturbances.

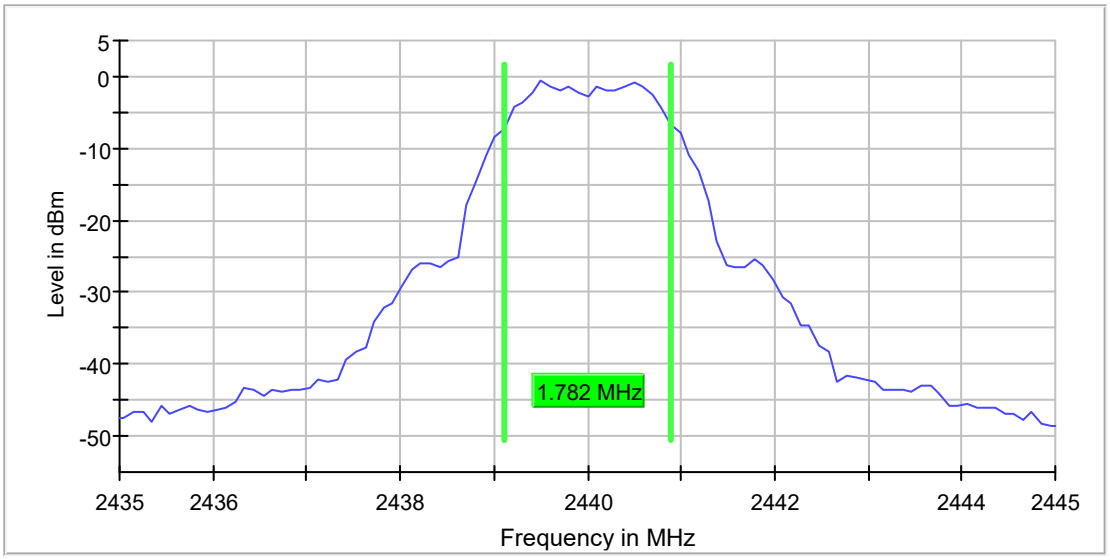
9.3 Requirements

Reference: CFR 47§15.247(a)(2), RSS-247 5.2(1)
The minimum 6 dB bandwidth shall be 500 kHz.

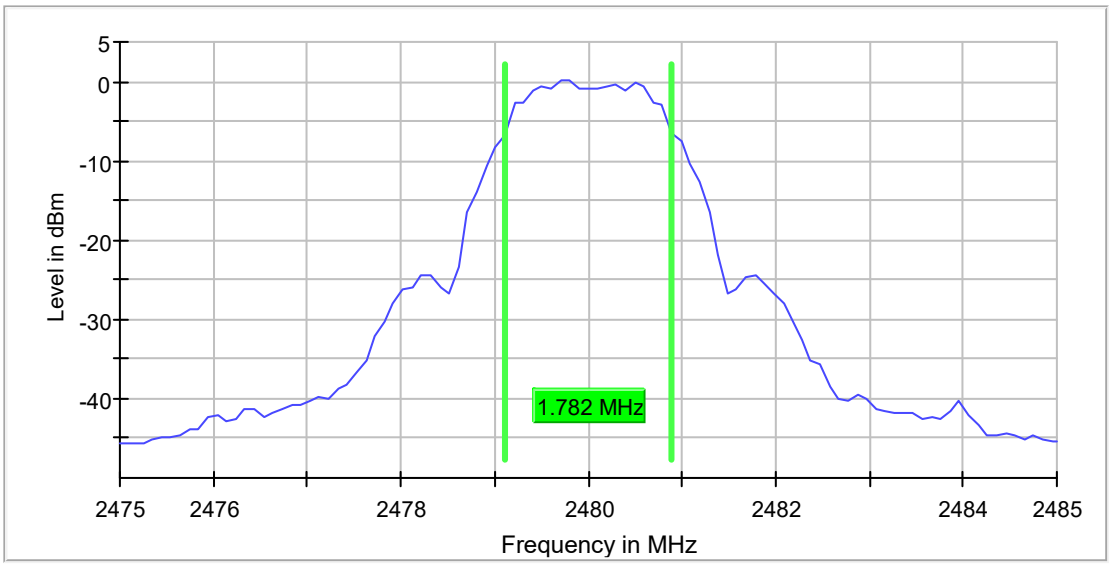
9.4 Test results



Screenshot: Occupied 6 dB bandwidth Measurement, low channel



Screenshot: Occupied 6 dB bandwidth Measurement, middle channel



Screenshot: Occupied 6 dB bandwidth Measurement, high channel

Test result

Channel [MHz]	6 dB BW [MHz]
2405	1.88
2440	1.78
2480	1.78

10 99 % BANDWIDTH

Date of test:	2018-02-15	**Test location:**	Wireless Center
EUT Serial:	BCU	**Ambient temp:**	22 °C
Tested by:	DNI	**Relative humidity:**	25 %
Test result:	NA	**Margin:**	-

10.1 Test set-up and test procedure.

The test method is in accordance with RSS-GEN section 6.6.

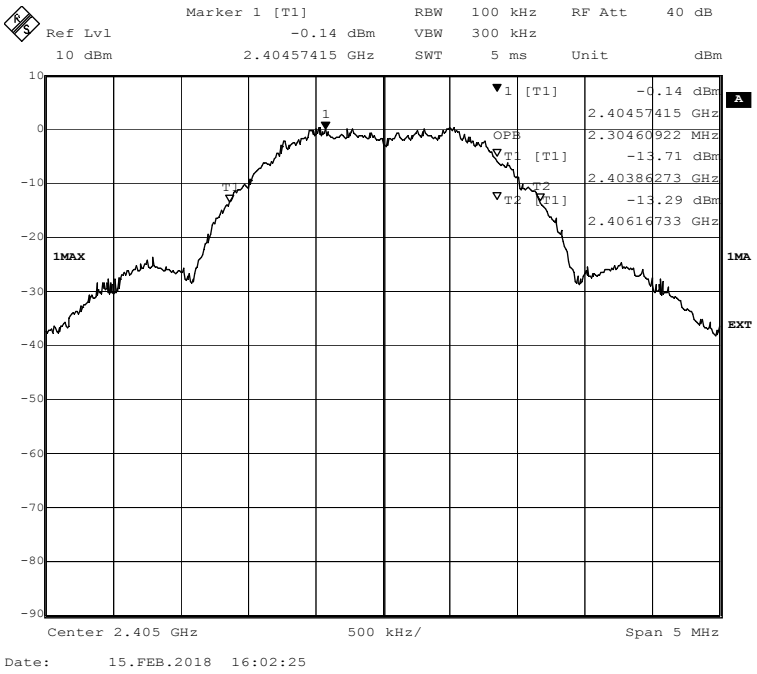
The EUT was connected to spectrum analyser via rf-cable and attenuator. Spectrum analyser with occupied bandwidth measurement function is used to determine the occupied bandwidth.

10.2 Test conditions

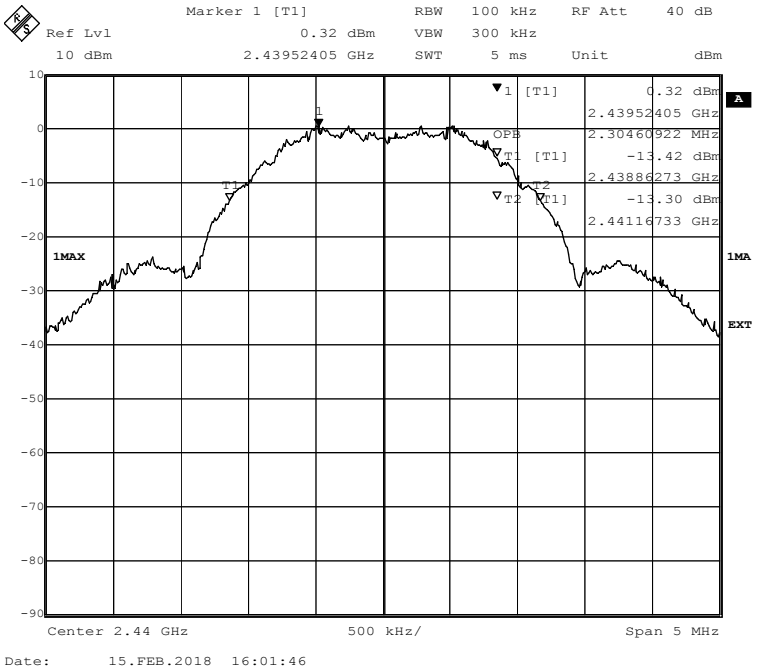
Detector: Peak,
RBW: 1 – 5 % of OBW
VBW: 3 x RBW

The EUT was set up in order to emit maximum disturbances.

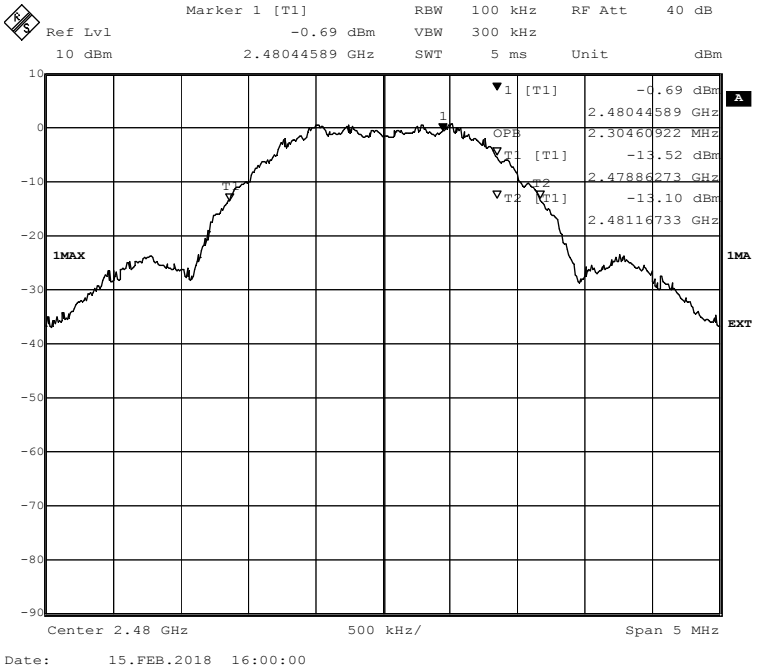
10.3 Test results



Screenshot: 99 % bandwidth Measurement, low channel



Screenshot: 99 % bandwidth Measurement, middle channel



Screenshot: 99 % bandwidth Measurement, high channel

Test result

Channel [MHz]	99 % BW [MHz]
2405	2.30
2440	2.30
2480	2.30

11 PEAK POWER SPECTRAL DENSITY

Date of test:	2018-02-13	**Test location:**	Wireless Center
EUT Serial:	BCU	**Ambient temp:**	22 °C
Tested by:	DNI	**Relative humidity:**	25 %
Test result:	Pass	**Margin:**	15.1 dB

11.1 Test set-up and test procedure.

The test method is in accordance with ANSI C63.10-2013 section.

The EUT was connected to spectrum analyser via rf-cable and attenuator.

11.2 Test conditions

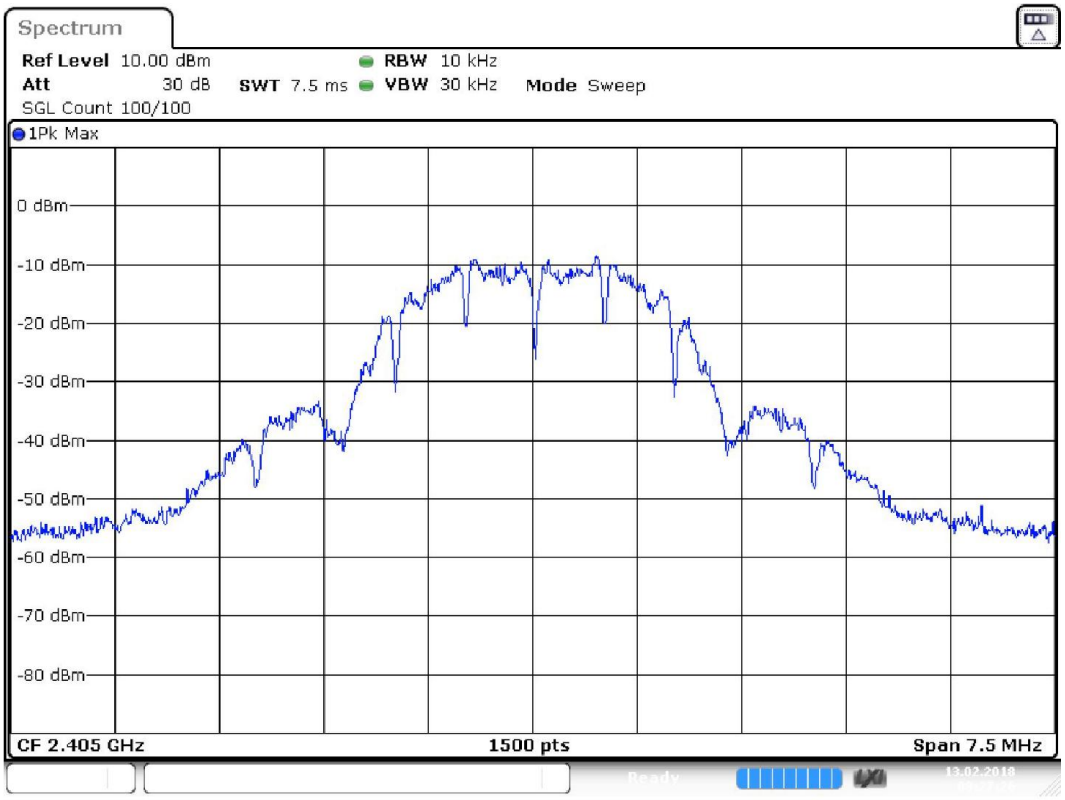
Detector: Peak,
RBW: 3 - 100 kHz
VBW: >3 x RBW
Span: 1.5 x 6 dB bandwidth

The EUT was set up in order to emit maximum disturbances.

11.3 Requirements

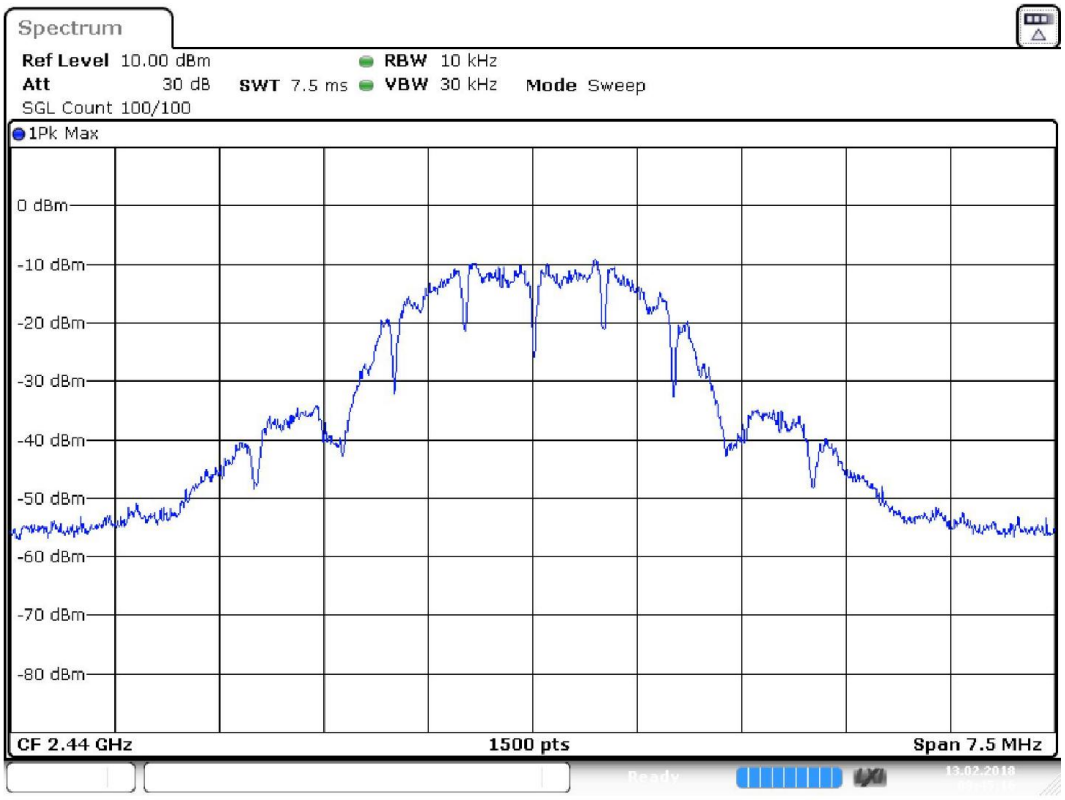
Reference: CFR 47§15.247(3), RSS-247 5.2(2)
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

11.4 Test results



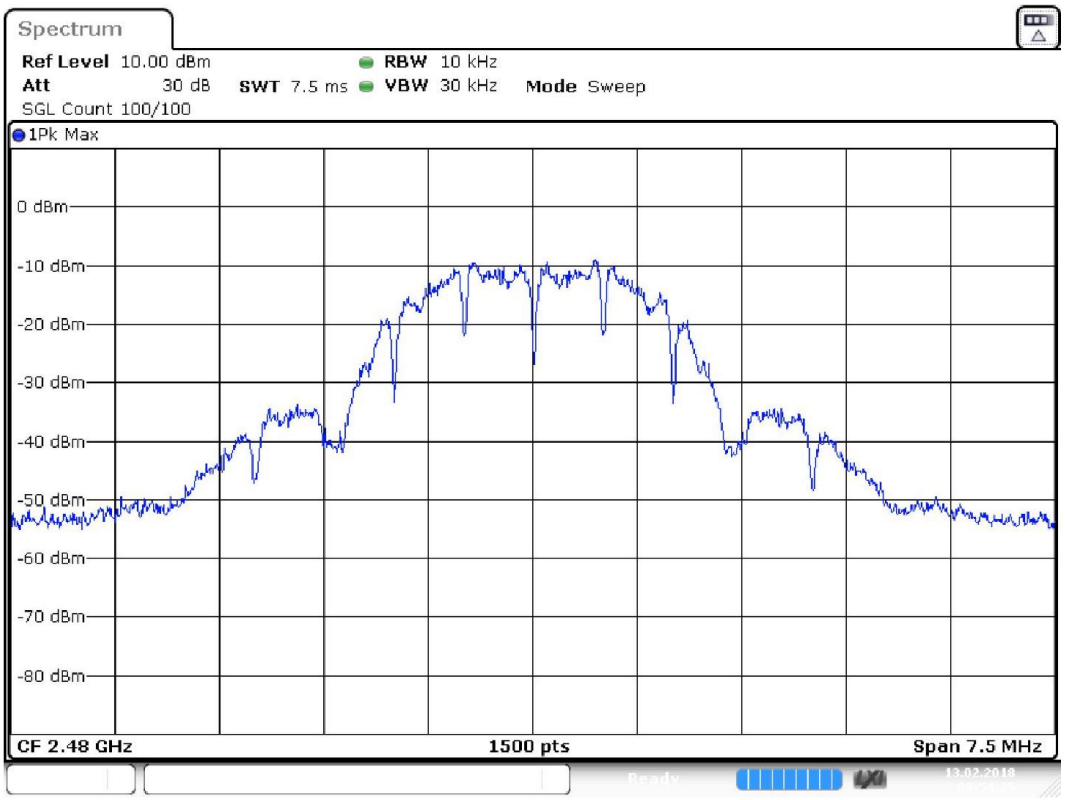
Date: 13.FEB.2018 08:27:26

Screenshot: Peak power spectral density, low channel



Date: 13.FEB.2018 08:45:15

Screenshot: Peak power spectral density, middle channel



Date: 13.FEB.2018 08:54:26

Screenshot: Peak power spectral density, high channel

Test result

Channel [MHz]	PSD [dBm/3kHz]
2405	-7.1
2440	-7.7
2480	-7.5

12 TRANSMITTER DUTY CYCLE FOR PULSED TRANSMISSIONS

Date of test:	2018-03-21	**Test location:**	Wireless Center
EUT Serial:	BCU	**Ambient temp:**	22 °C
Tested by:	DNI	**Relative humidity:**	25 %
Test result:	Pass	**Margin:**	N/A

12.1 Test set-up and test procedure.

The test method is in accordance with ANSI C63.10.section 7.5

The EUT was connected to spectrum analyser via rf-cable and attenuator.

12.2 Test conditions

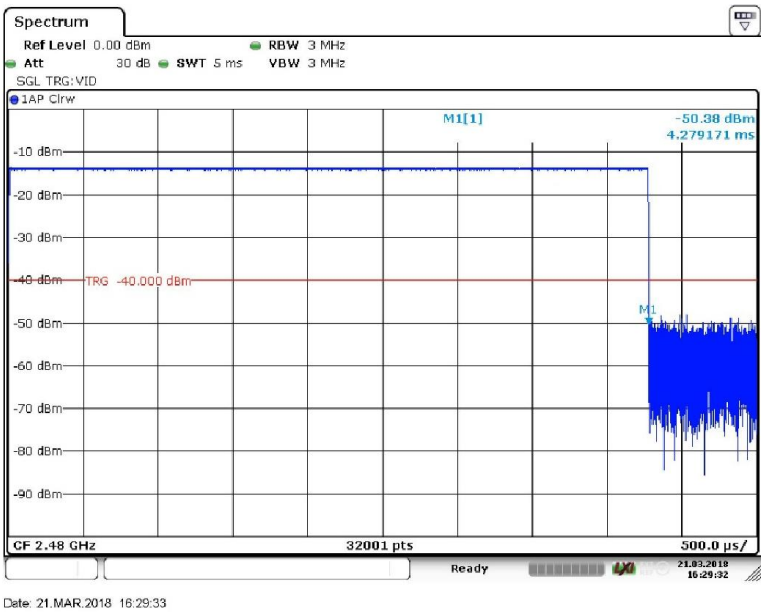
Detector: Peak
RBW 3 MHz
VBW 3 MHz
Span 0 Hz
Sweep time 100 ms

12.3 Requirement

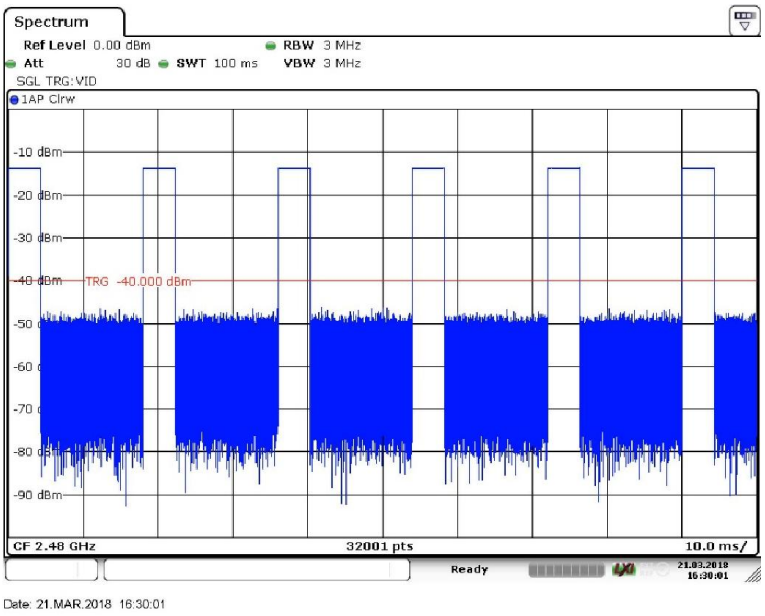
CFR 47 15.35(c) and RSS-GEN section 6.10

12.4 Test results

T_{on} = 4.28
N_{Burst} = 6
Duty cycle is calculated N_{Burst} * T_{on} / 100 ms = 0.257
Peak to average correction factor = 20 LOG (Duty cycle) = -11.8



Screenshot: Time of one pulse



Screen shot: 100 ms measurement

13 TEST EQUIPMENT

Stora Hallen

Equipment type	Manufacturer	Model	Inv. No.	Last Cal. date	Cal. interval
Receiver	Rohde & Schwarz	ESU 8	12866	2017-07	2018-07
BiLog antenna	Chase	CBL6110A	971	2017-09	2020-09
Preamplifier	SEMKO	--	7993	2017-06	2018-06

Wireless Center and 3m FAC

Equipment type	Manufacturer	Model	Inv. No.	Last Cal. date	Cal. interval
Measurement receiver	Rohde & Schwarz	ESU 40	13178	2018-01	2019-01
Signal analyzer	Rohde & Schwarz	FSIQ 40	12793	2017-07	2018-07
Horn antenna	EMCO	3115	4628	2015-11	2018-11
Preamplifier	Sangus	00101400-23-10P -6-S ; AFS44-12002400-32-10P -44	12335	2017-07	2018-07
Horn antenna	EMCO	3160-08	30099	2016-10	2019-10
Horn antenna	EMCO	3160-09	30101	2016-10	2019-10
Signal analyzer:	Rohde & Schwarz	FSV	32594	2017-07	2018-07
Signal generator:	Rohde & Schwarz	SMB100A	32592	2017-07	2018-07
1 GHz high pass filter	MICROWAVE CIRCUITS	H1G013G1	13142	2017-08	2018-07
2,4 GHz band reject filter:	K&L MICROWAVE INC	6N45-2450/T100-0/0	12389	2017-03	2018-03
4 GHz high pass filter	K&L MICROWAVE INC	4410-X4500/18000-0/0	5133	2017-08	2018-08
10 dB Attenuator:	Huber+Suhner	5910_N-50-010	32696	2017-05	2018-05

14 MEASUREMENT UNCERTAINTY

Continuous conducted disturbances with AMN in the frequency range 9 kHz to 30 MHz ± 3.7 dB

Measurement uncertainty for radiated disturbance

Uncertainty for the frequency range 30 to 1000 MHz at 3 m	± 5.1 dB
Uncertainty for the frequency range 30 to 1000 MHz at 10 m	± 5.0 dB
Uncertainty for the frequency range 1.0 to 18 GHz at 3 m	± 4.7 dB
Uncertainty for the frequency range 18 to 26 GHz at 3 m	± 4.8 dB
Uncertainty for the frequency range 26 to 40 GHz at 3 m	± 5.7 dB

Measurement uncertainty is calculated in accordance with CISPR 16-4-2:2011.
The measurement uncertainty is given with a confidence of 95 %.

15 TEST SET UP AND EUT PHOTOS

EUT photos are in separate document 1720278STO-002 Annex 1.
Test set up photos are in separate document 1720278STO-002 Annex 2.