telefication bv
The Netherlands
Chamber of Commerce
51565536
www.telefication.com

telefication

FCC and IC Test report for parts 15.207, 15.209, 15.247 RSS-247, RSS-Gen

Product name	: Moonbird MBPROV1.3
Applicant	: Moonbird BV
FCC ID	: 2A3NN-MBPROV1
IC	: 27965-MBPROV1

Test report No. : P000022766 001 Ver 3.0

Laboratory information

Accreditation

Telefication complies with the accreditation criteria for test laboratories as laid down in ISO/IEC 17025:2017. The accreditation covers the quality system of the laboratory as well as the specific activities as described in the authorized annex bearing the accreditation number L021 and is granted on 30 November 1990 by the Dutch Council For Accreditation (RvA: Raad voor Accreditatie).

Telefication is designated by the FCC as an Accredited Test Firm for compliance testing of equipment subject to Certification under Parts 15 & 18. The Designation number is: NL0001.

Telefication is a Wireless Device Testing laboratory recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements.
The Industry Canada company number for Telefication is: 4173A.

Telefication is a registered Conformity Assessment body (CAB) under the Japan-EC MRA (Agreement on Mutual Recognition between Japan and the European Community). The registration number is: 201.

Documentation

The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 10 years at Telefication Netherlands.

Testing Location

Test Site	Kiwa Telefication BV
Test Site location	Wilmersdorf 50 7327 AC Apeldoorn The Netherlands Tel. +31 88998 3393
Test Site FCC	NL0001
CABID	NL0001

Revision History

Version	Date	Remarks	By
v0.50	13-12-2021	First draft	LDG
v1.00	18-01-2022	Final report	LDG
V2.00	10-02-2022	Updated chapter 4	RvB
V3.0	03-06-2022	Processed assessor feedback	PvW

Table of Contents

Summary of Test results

FCC	ISED	Description	Section in report	Verdict
15.247 (d) 15.209 (a)	RSS-Gen 8.9	Radiated spurious emissions	3.1	Pass
15.247 (a)(2)	RSS-247 5.2(a)	6 dB bandwidth	3.2	Pass
--	RSS-Gen 6.7	99% bandwidth	3.3	Pass
15.247 (b)(3)	RSS-247 5.4 (d)	RF output power	3.4	Pass
15.247 (e)	RSS-247 5.2 (b)	Power spectral density	3.5	Pass
15.247 (d)	RSS-247 5.5	Band edge	3.6	Pass
15.207 (c)	RSS-Gen 8.8	Conducted spurious emissions on AC mains	3.7	Pass

1 General Description

1.1 Applicant

Client name:	Moonbird BV
Address:	St-Lazaruslaan 4/10
Zip code:	1210
Country	Belgium
Telephone:	+32 473 926643
E-mail:	michael@moobird.life
Contact name:	Michael Broes

1.2 Manufacturer

Manufacturer name:	Moonbird BV
Address:	St-Lazaruslaan 4/10
Zip code:	1210
Country	Belgium
Telephone:	+32 473 926643
E-mail:	michael@moonbird.life
Contact name:	Michael Broes

1.3 Tested Equipment Under Test (EUT)

Product name:	Moonbird MBPROV1.3
Brand name:	Moonbird
FCC ID:	2A3NN-MBPROV1
IC:	27965-MBPROV1
Product type:	Hand held device for breathing exercises
Model(s):	MBPROV1.3
Batch and/or serial No.	770
Software version:	1
Hardware version:	1
Date of receipt	06-10-2021
Tests started:	13-10-2021
Testing ended:	14-10-2021

1.4 Product specifications of Equipment under test

Tx Frequency:	BLE: 2402 MHz – 2480 MHz
Rx frequency:	BLE: 2402 MHz – 2480 MHz
Antenna type:	BLE: Ceramic chip antenna
Antenna gain:	BLE: 0.5 dBi
Emission designator	1M05F1D
Modulation type	BLE: GFSK

Disclaimer: Operating frequency bands are declared by the applicant. The antenna gain is from the antenna datasheet.

1.5 Environmental conditions

Test date	13-10-2021	14-10-2021
Ambient temperature	21.1 °C	20.9 °C
Humidity	52.0 %	52.5%

1.6 Measurement standards

- ANSI C63.10:2013

1.7 Applicable standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.207
- FCC Part 15 Subpart C §15.209
- FCC Part 15 Subpart C §15.247
- RSS-Gen Issue 5
- RSS-247 Issue 2

1.8 Observation and remarks

None

1.9 Conclusions

The sample of the product showed **NO NON-COMPLIANCES** to the specifications stated in paragraph 1.7 of this report.

The results of the test as stated in this report, are exclusively applicable to the product items as identified in this report. Telefication accepts no responsibility for any properties of product items in this test report, which are not supported by the tests as specified in paragraph 1.7 *"Applicable standards".*

All conducted tests are performed by:

Name : A. Bos & L. de Groot O.S. P. van Wanrooij

Review of test methods and report by:

Name : ing. P.A. Suringa

The above conclusions have been verified by the following signatory:

Date : 07-06-2022

Name : Koray Korcum

Function : Test Engineer

Signature :

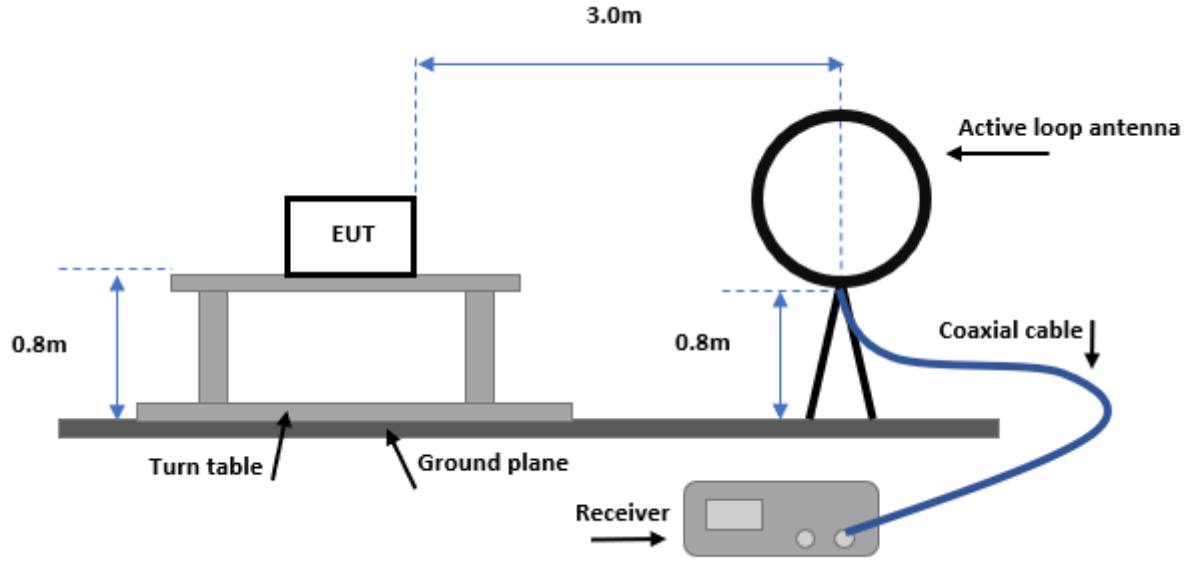
2 Test configuration of the Equipment Under Test

2.1 Test mode

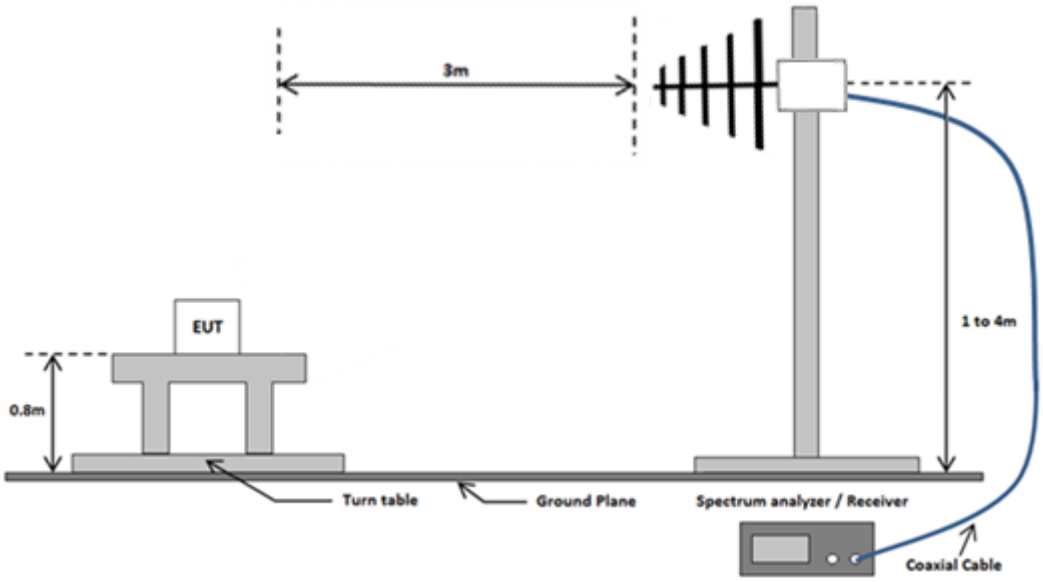
The manufacturer provided a sample with test mode with which the EUT could be set to transmit continuously at a fixed channel.

2.2 Test setups

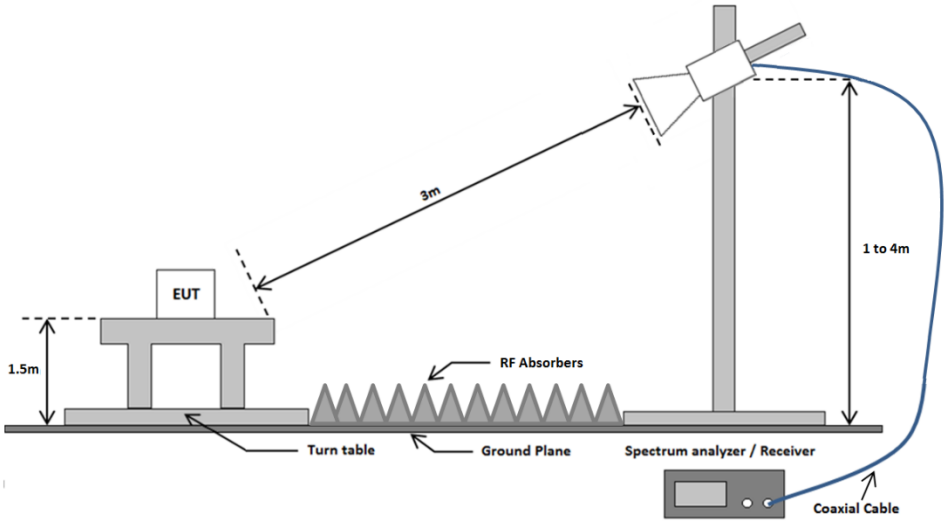
Radiated emissions test setup 9 kHz – 30 MHz



Radiated emissions test setup 30 MHz - 1 GHz

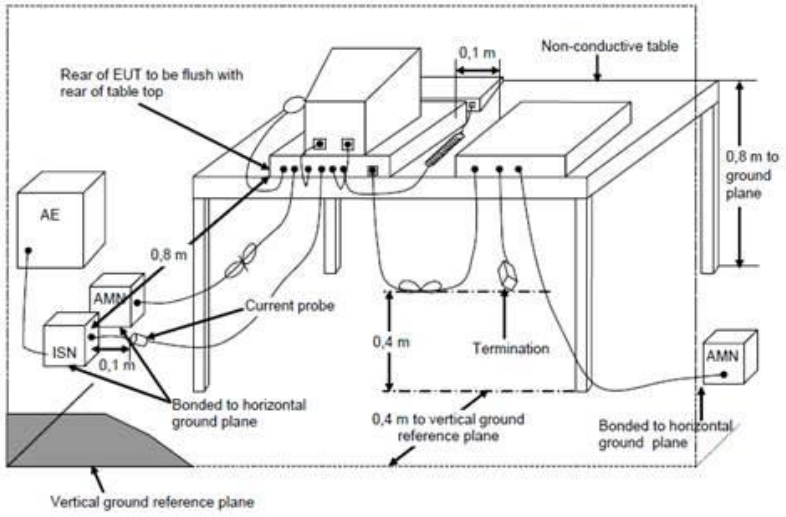


Radiated emissions test setup above 1 GHz



Conducted emissions test setup

Emissions test at AC mains



2.3 Equipment used in the test configuration

Description	Manufacturer	Model	ID	Used at Par.	Cal. Done date	Cal. Due date
EMI Receiver	Rohde & Schwarz	ESCI	TE11128	3.1, 3.7	02-2022	02-2023
Spectrum analyzer	Rohde & Schwarz	FSP40	TE11125	3.1 - 3.6	03-2022	03-2024
Signal generator	Rohde & Schwarz	SMBV100A	TE01280	3.4, 3.5	02-2021	02-2022
3.0 GHz HPF	Wainwright	WHK3.0/18G-10EF	TE01140	3.1	07-2021	09-2024
Active loop antenna	EMCO	6502	TE11171	3.1	01-2022	01-2024
Biconilog antenna	Chase	CBL6112A	TE00967	3.1	07-2020	07-2022
Horn antenna	EMCO	3115	TE00531	3.1 - 3.6	01-2021	01-2024
Preamplifier 1-18 GHz	µComp Nordic	MCNA-40-0010800-25-10P	TE11175	3.1 - 3.6	01-2022	01-2023
Horn antenna	FLANN-MICROWAVE	20240-25	TE 00818	3.1	NA*	NA*
Preamplifier 18-26 GHz	Miteq	JS4-18004000-33-8P	TE 11131	3.1	03-2021	03-2022
Test software	DARE	Radimation Version 2021.1.9	--	3.1, 3.7	NA	NA

*Note: standard gain horns do not require calibration

2.4 Sample calculations

All formulas for data conversions and conversion factors are reported in chapter 4 of this test report.

3 Test results

3.1 Radiated spurious emissions

3.1.1 Limit

Frequency (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance(m)
0.009 – 0.490	2400/F(kHz)	20*{log[2400]-log[F(kHz)]}	300*
0.490 – 1.705	24000/F(kHz)	20*{log[24000]-log[F(kHz)]}	30*
1.705 – 13.11 14.01 – 30.0	30	29.5	30*
30 -88	100	40	3
88 - 216	150	43,5	3
216-960	200	46	3
Above 960	500	54	3

*Note: Limit lines in the plots corrected to 3m measurement distance according to the method described in ANSI C63.10-2013, clause 6.4

3.1.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.1.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.1.4 Test procedure

The EUT was investigated in the X, Y and Z dimensions and was tested in the worst case configuration with regards to emissions.

9 kHz – 30 MHz: According to 8.2.3/ ANSI C63.10:2013 section 6
30 MHz to 26.5 GHz: According to ANSI C63.10:2013 section 6 and 11

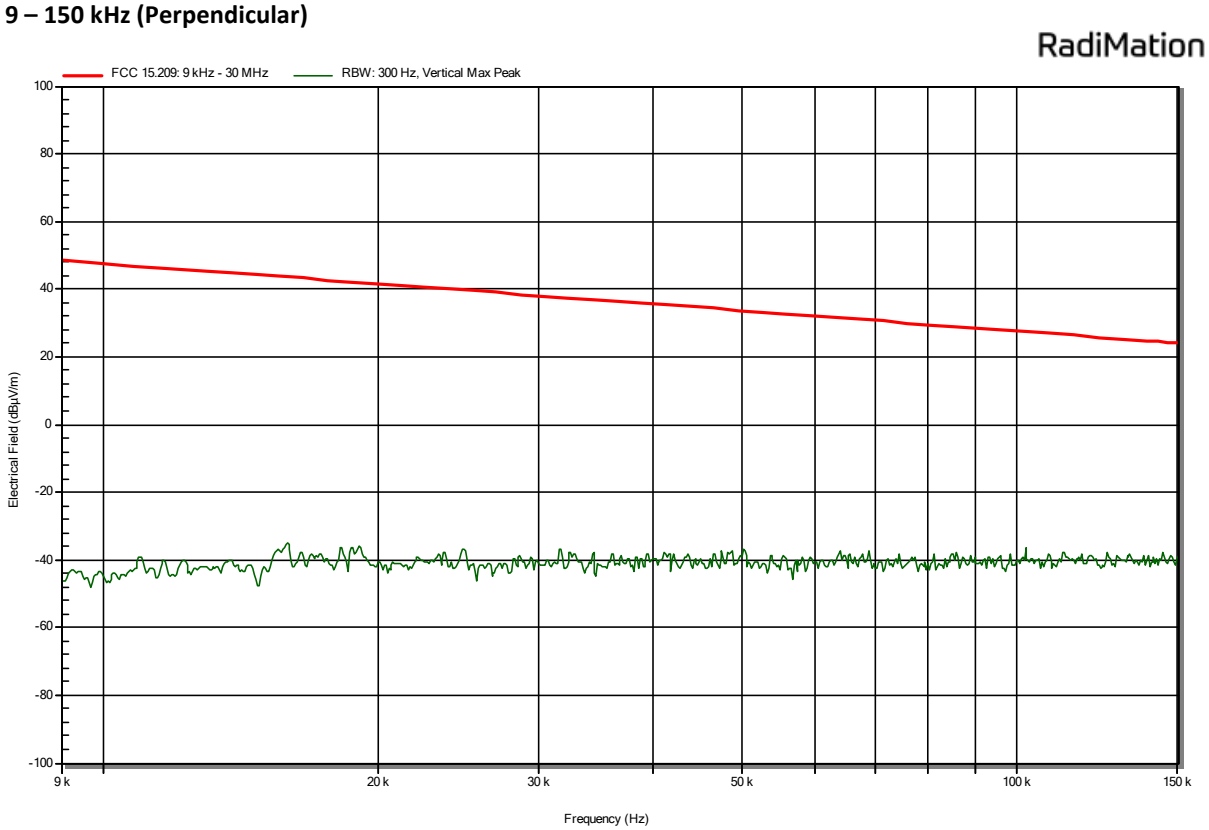
9 kHz to 30 MHz: IRN 026 – Method 10
30 MHz to 1 GHz: IRN 026 – Method 1
1 GHz to 18 GHz: IRN 026 – Method 2
18 to 26.5 GHz: IRN 026 – Method 3

3.1.5 Measurement Uncertainty

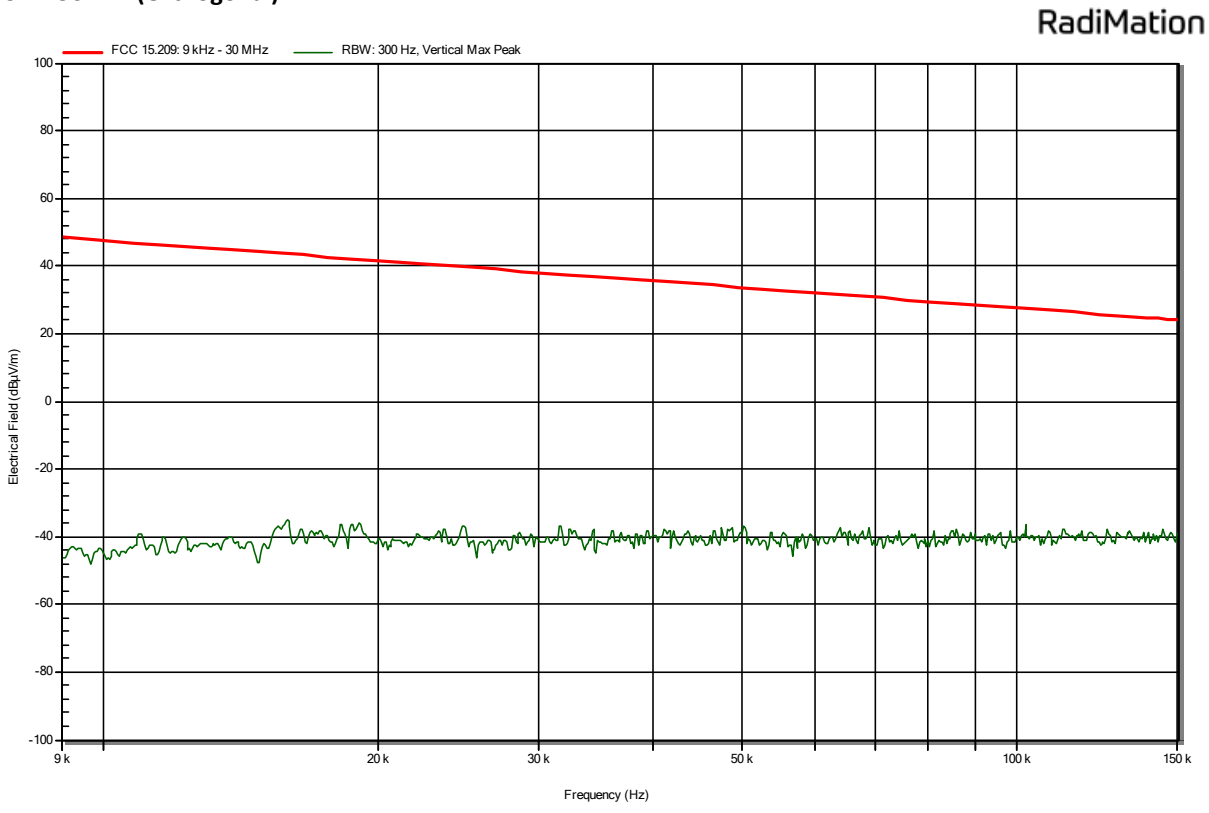
Frequency range	Polarization	Uncertainty
9 kHz – 30 MHz	--	±1.6 dB
30 – 200 MHz	Horizontal	±4.5 dB
	Vertical	±5.4 dB
200 -1000 MHz	Horizontal	±3.6 dB
	Vertical	±4.6 dB
1 – 18 GHz	Horizontal	±5.7 dB
	Vertical	±5.7 dB
18 – 26.5 GHz	Horizontal	±4.9 dB
	Vertical	±4.9 dB

3.1.6 Plots of the Radiated Spurious Emissions Measurement

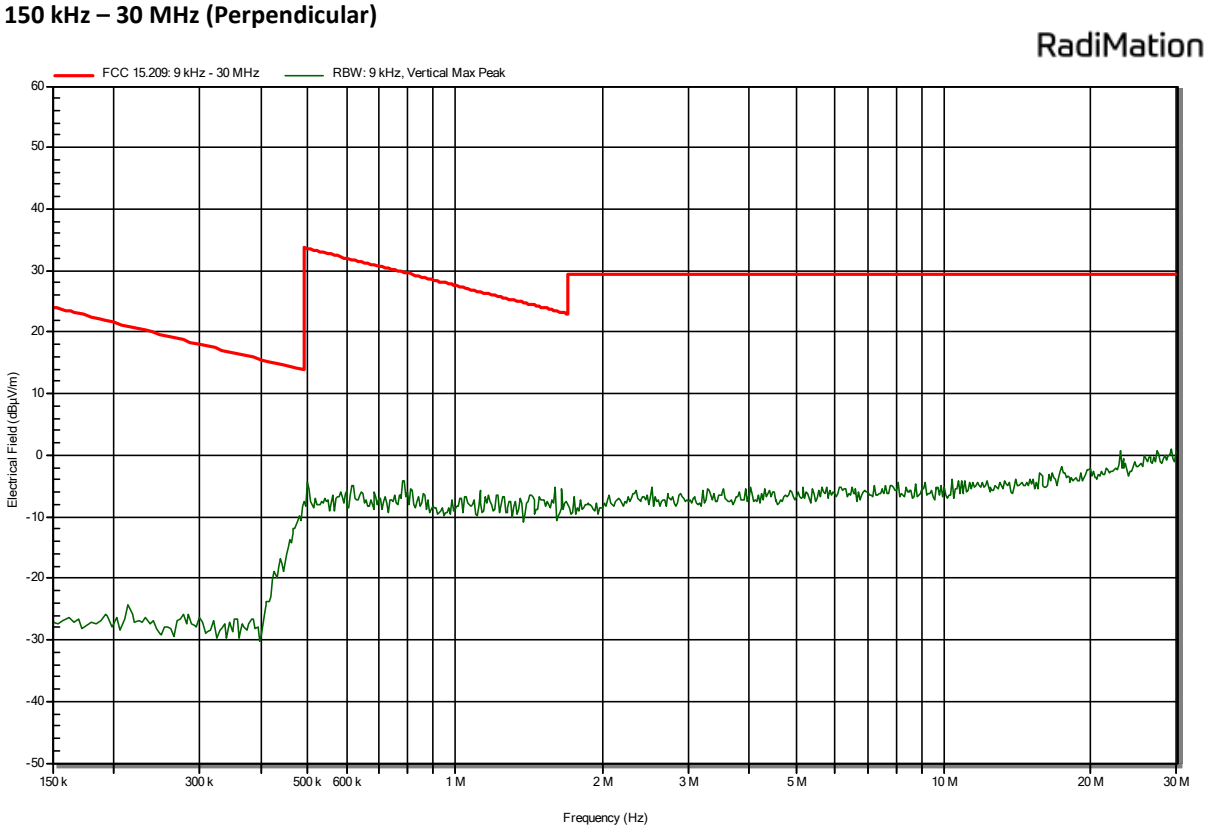
9 – 150 kHz (Perpendicular)



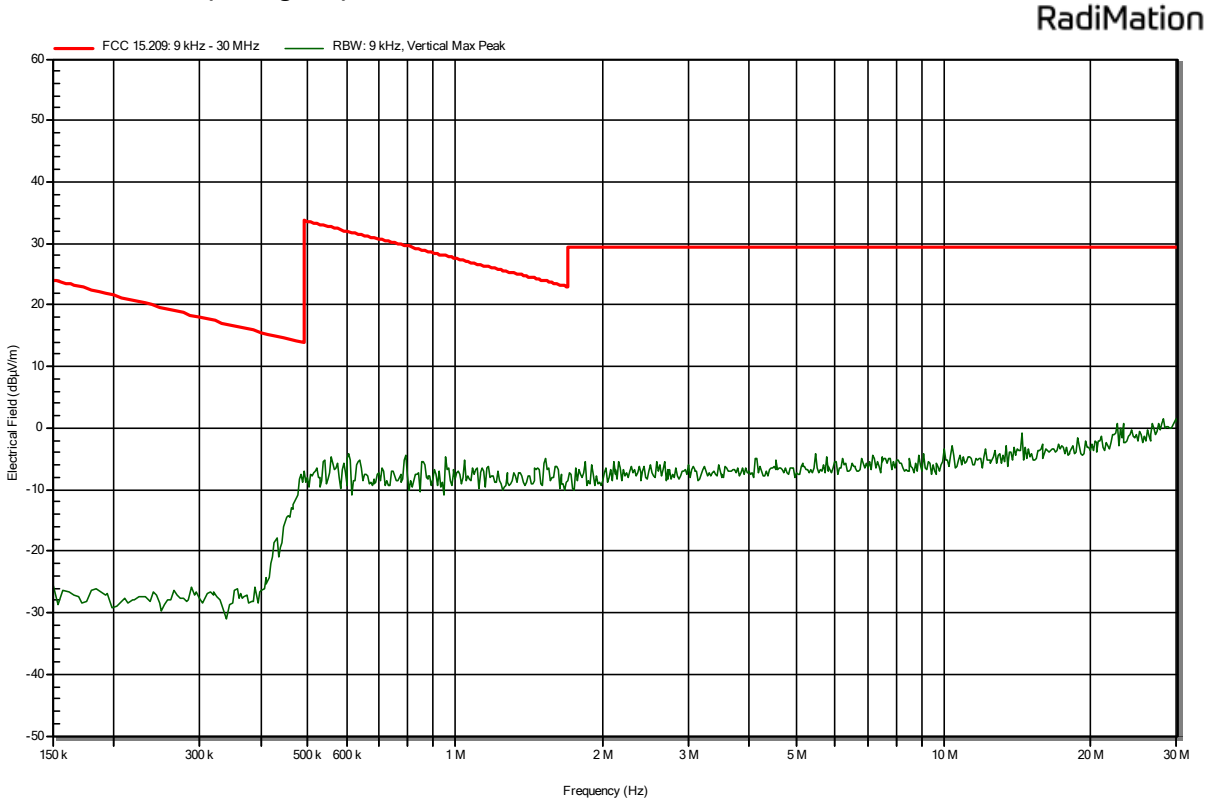
9 – 150 kHz (Orthogonal)



150 kHz – 30 MHz (Perpendicular)

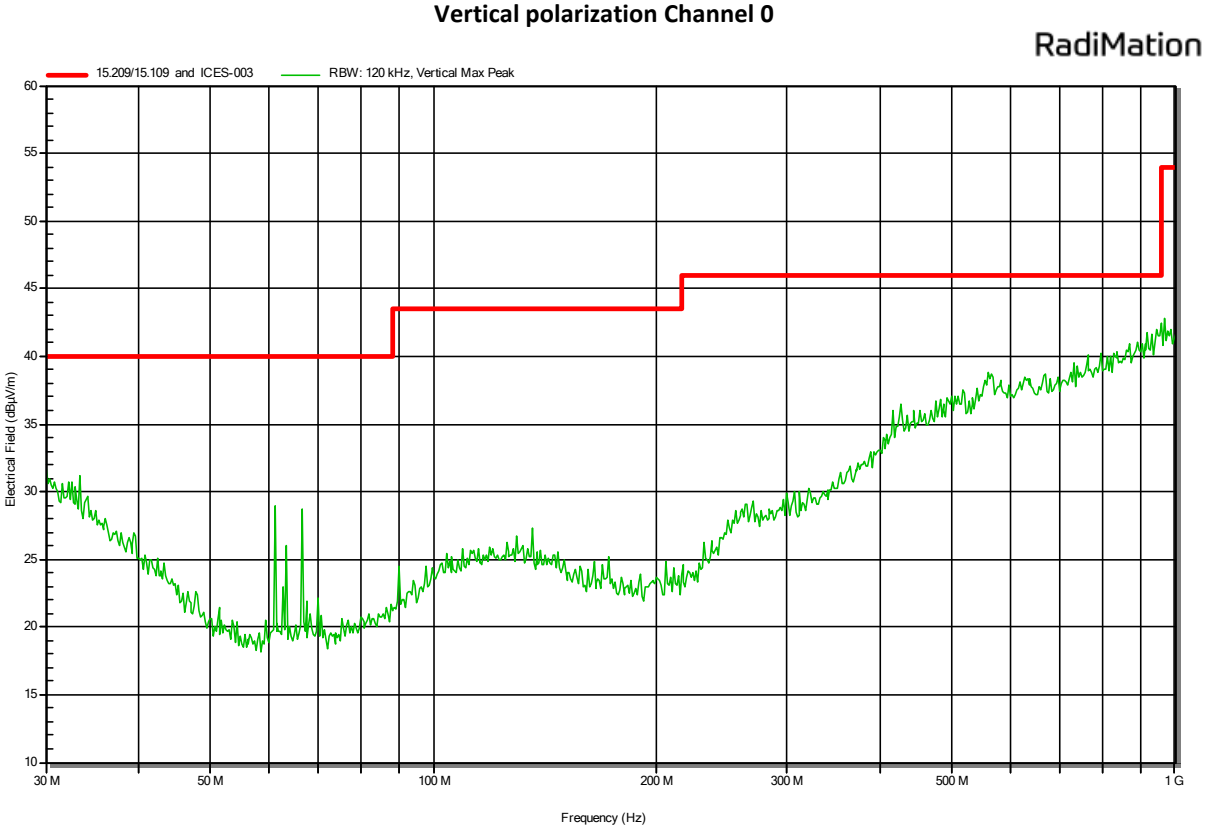


150 kHz – 30 MHz (Orthogonal)

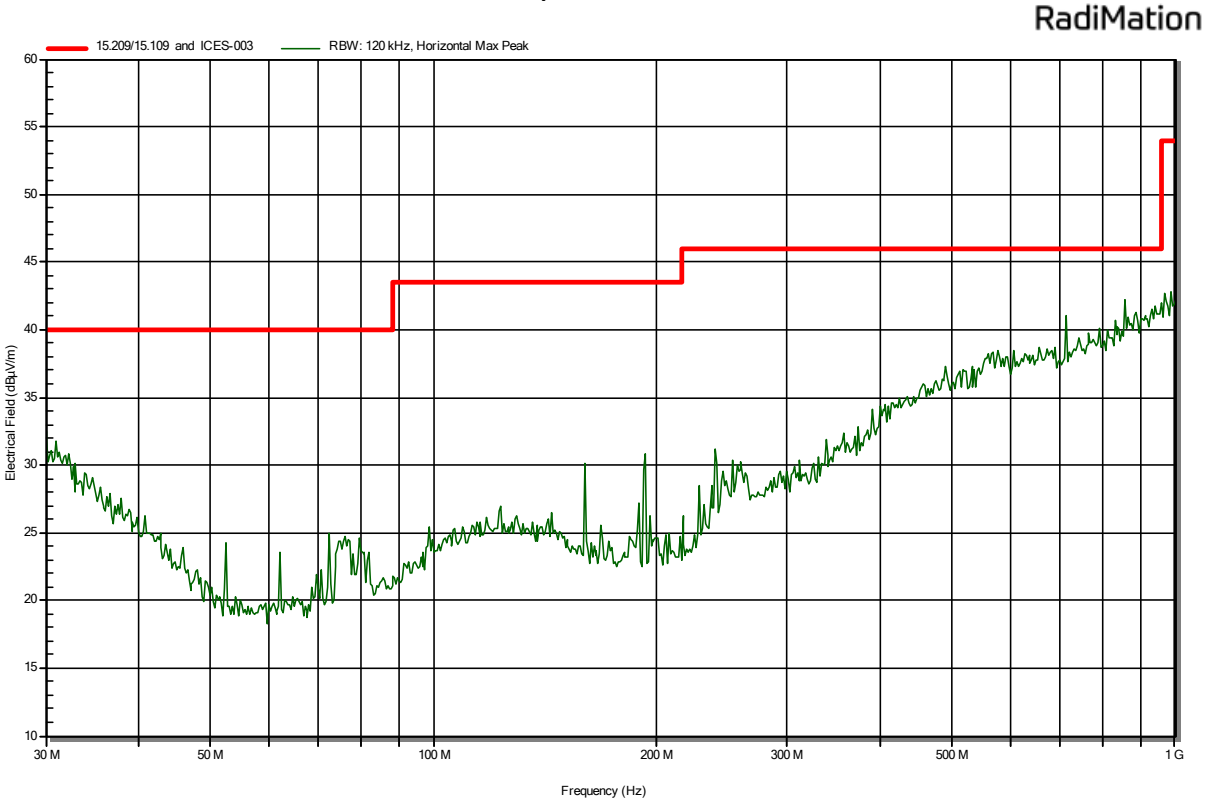


30 -1000 MHz

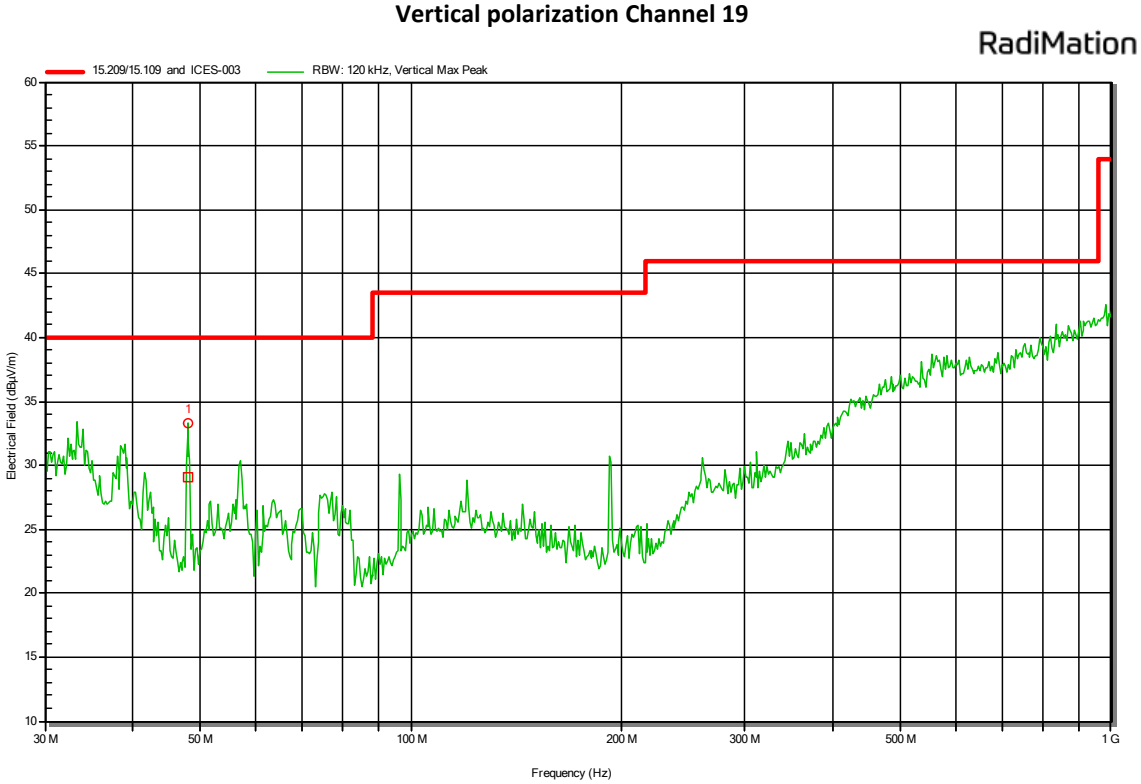
Vertical polarization Channel 0



Horizontal polarization Channel 0

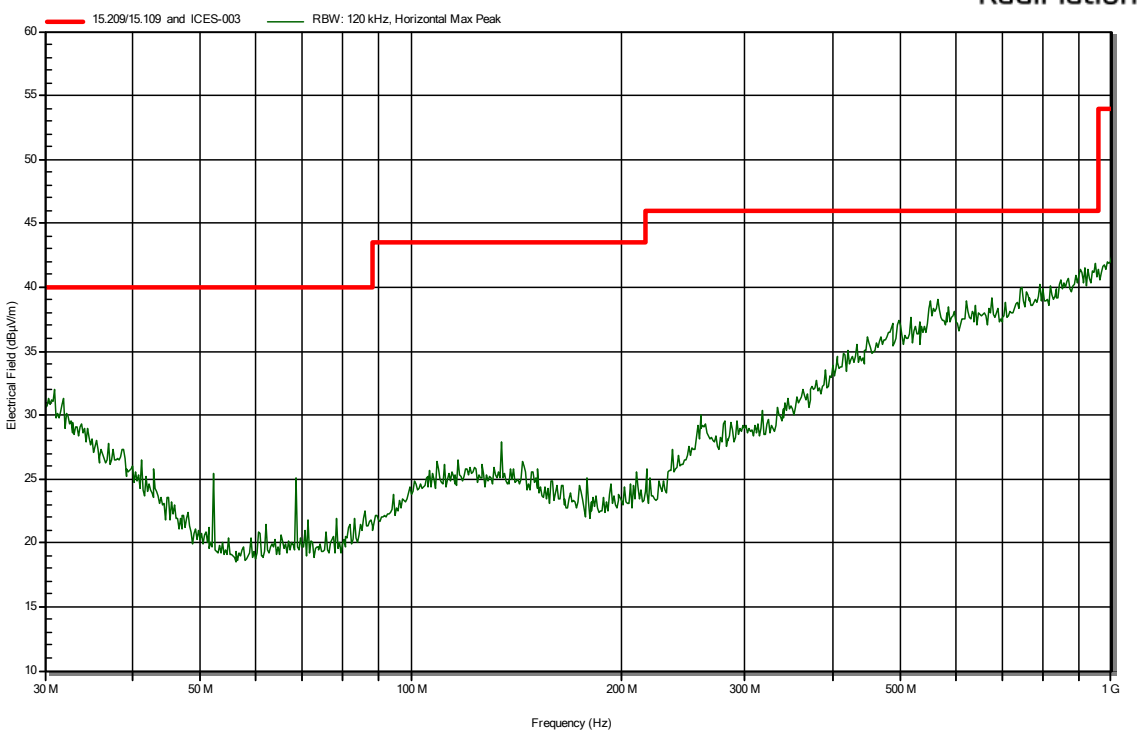


Vertical polarization Channel 19

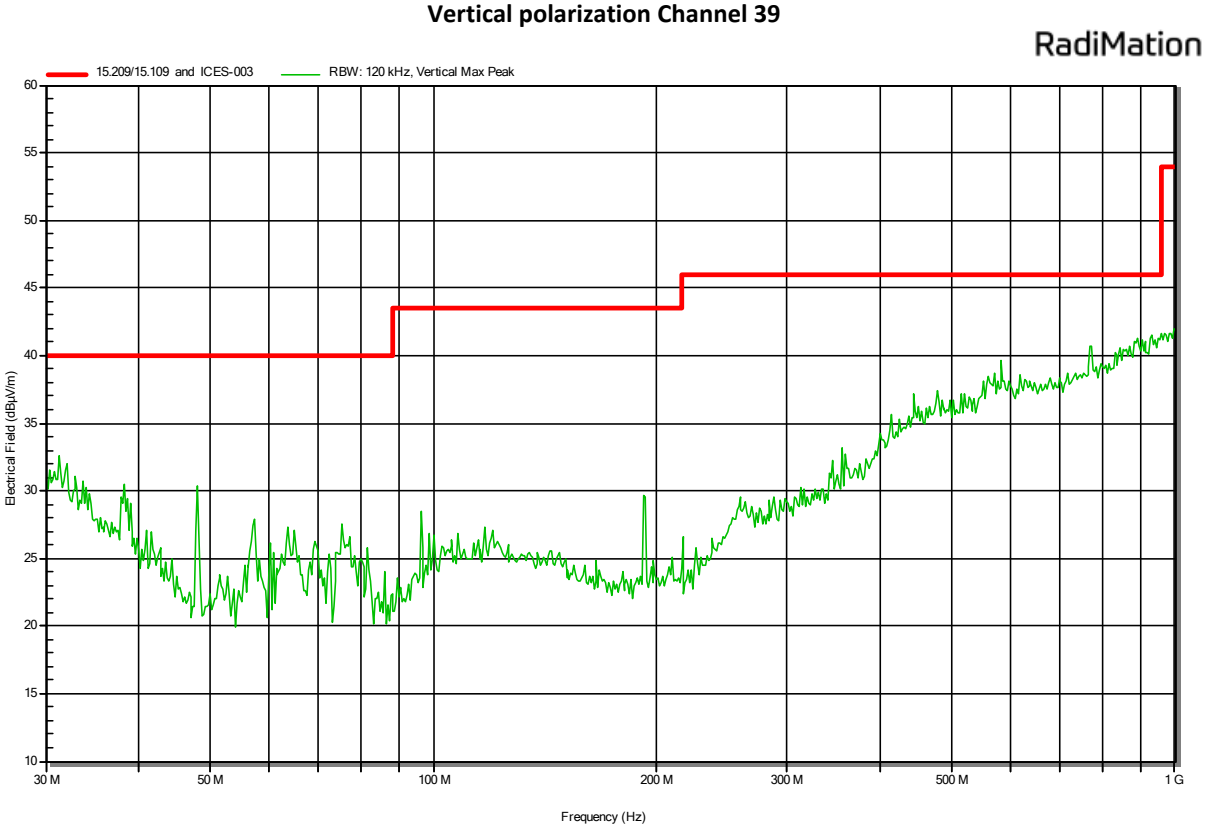


Peak Number	Frequency	Peak	Peak Limit	Quasi-Peak	Quasi-Peak Limit	Status
1	48,048 MHz	33,3 dBµV/m	40 dBµV/m	29,1 dBµV/m	40 dBµV/m	Pass

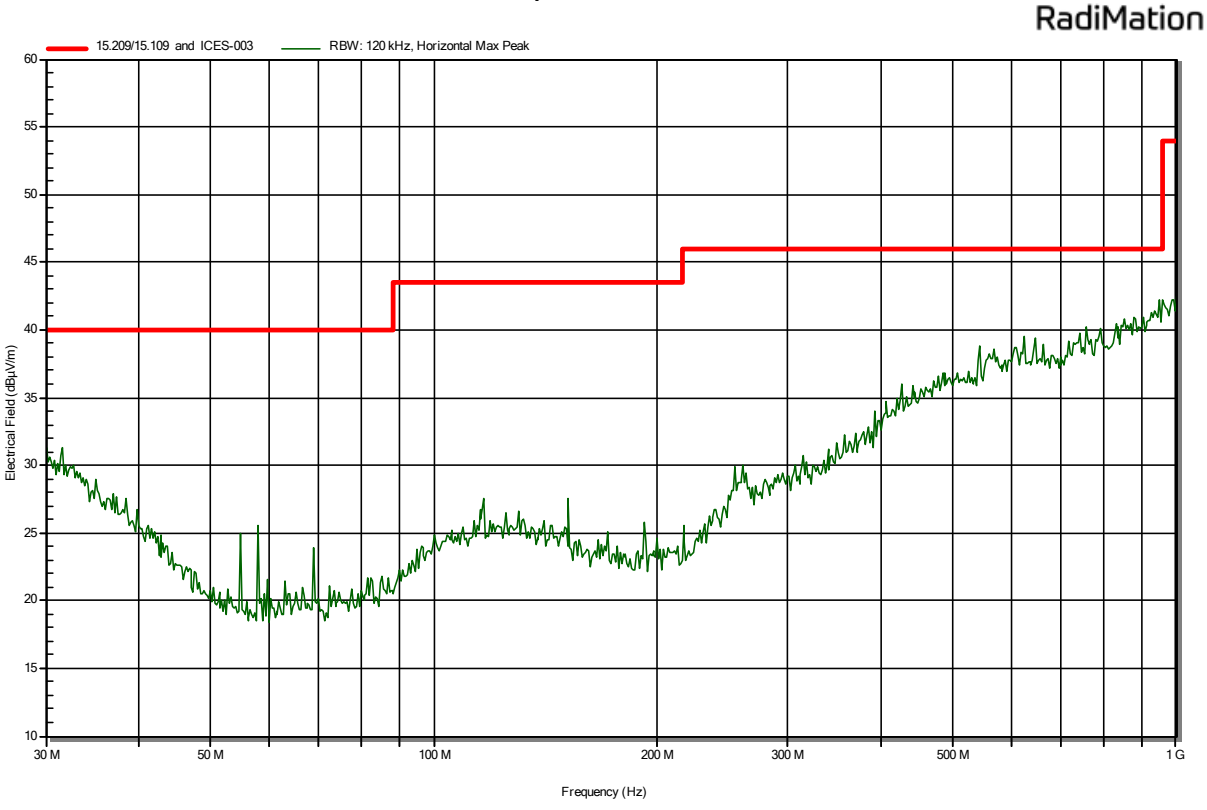
Horizontal polarization Channel 19



Vertical polarization Channel 39

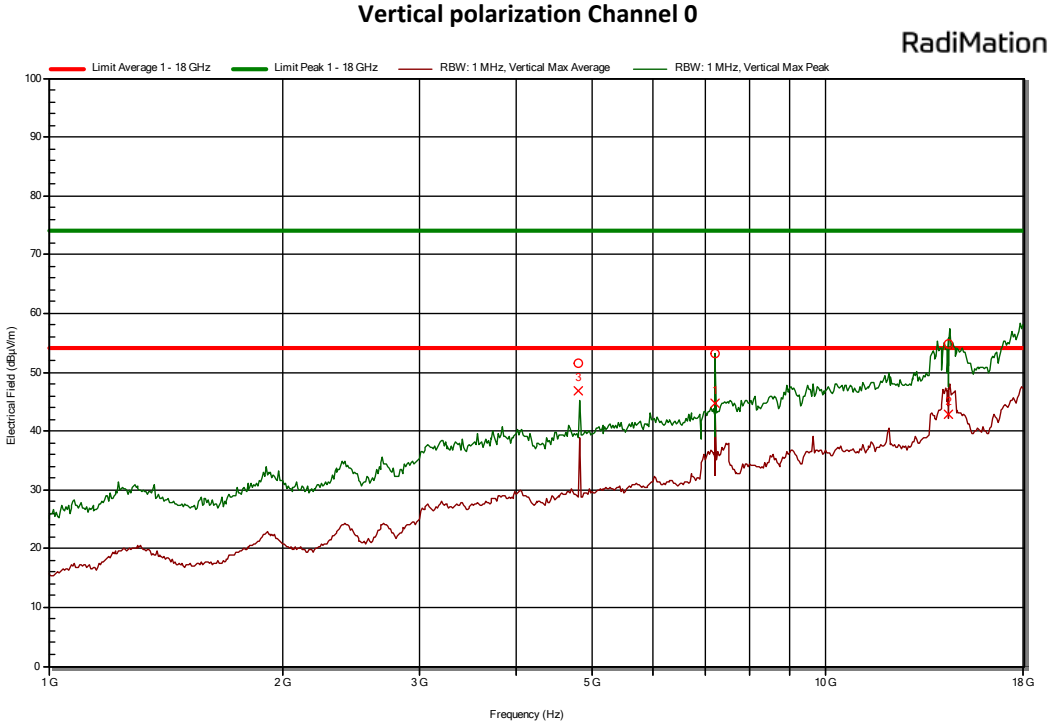


Horizontal polarization Channel 39



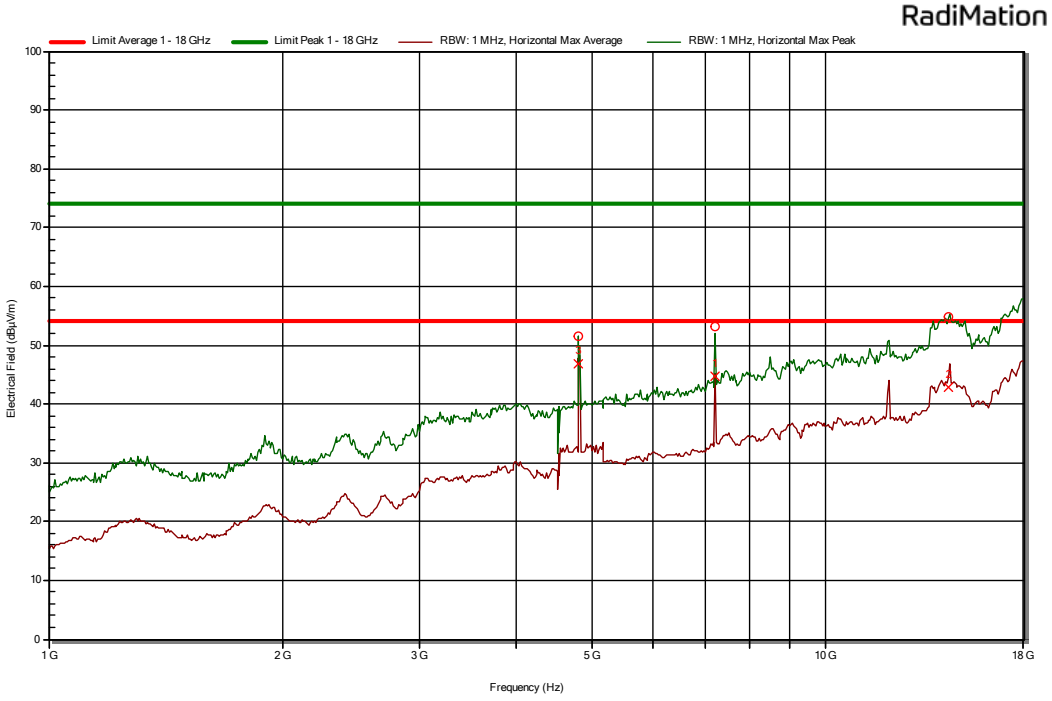
1 GHz – 18 GHz

Vertical polarization Channel 0



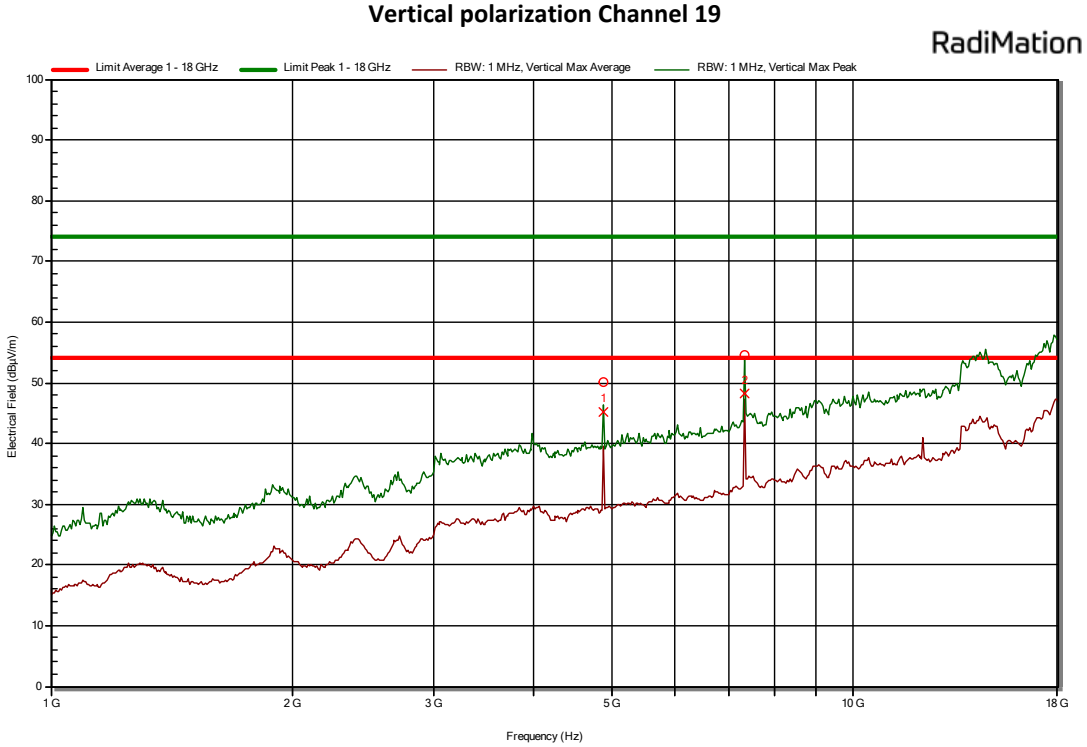
Peak Number	Frequency	Peak	Peak Limit	Average	Average Limit	Status
1	7,205 GHz	53,1 dBµV/m	74 dBµV/m	44,6 dBµV/m	54 dBµV/m	Pass
2	14,377 GHz	54,9 dBµV/m	74 dBµV/m	43 dBµV/m	54 dBµV/m	Pass

Horizontal polarization Channel 0

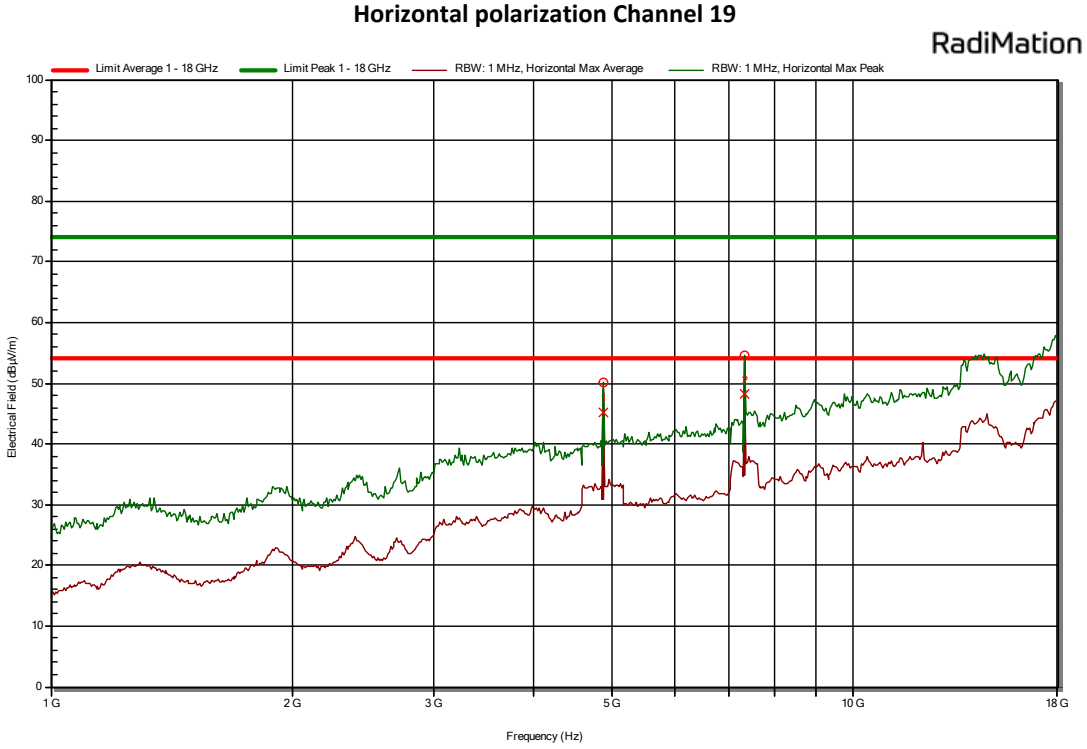


Peak Number	Frequency	Peak	Peak Limit	Average	Average Limit	Status
3	4,804 GHz	51,4 dBµV/m	74 dBµV/m	46,9 dBµV/m	54 dBµV/m	Pass

Vertical polarization Channel 19

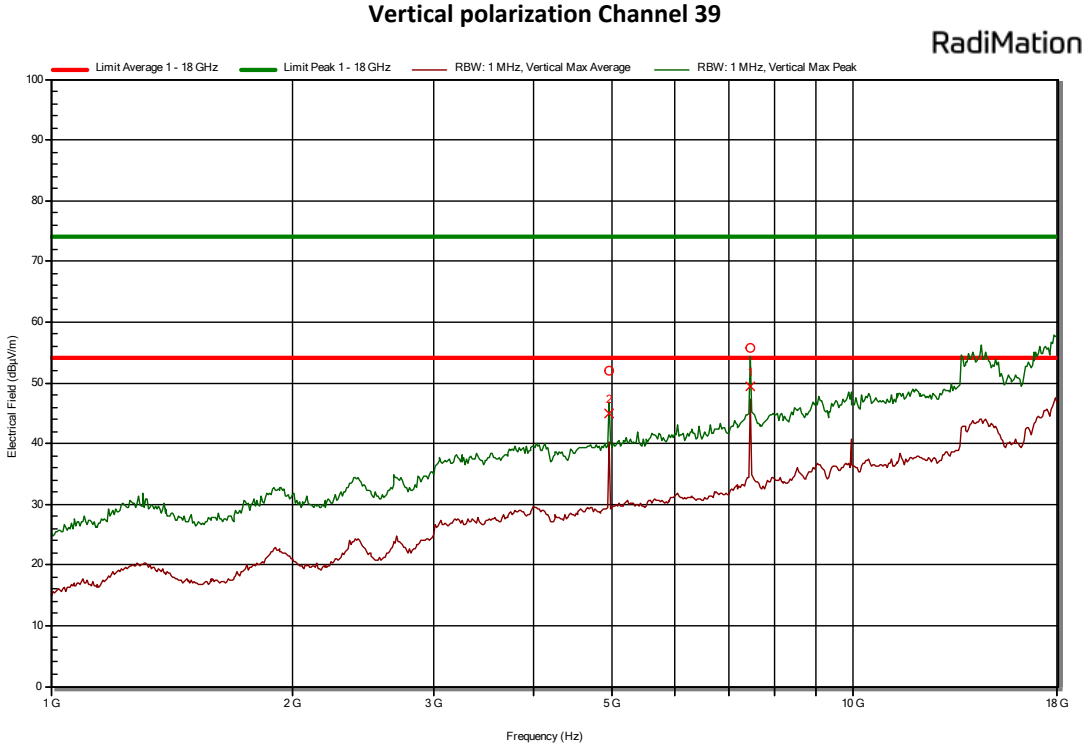


Horizontal polarization Channel 19

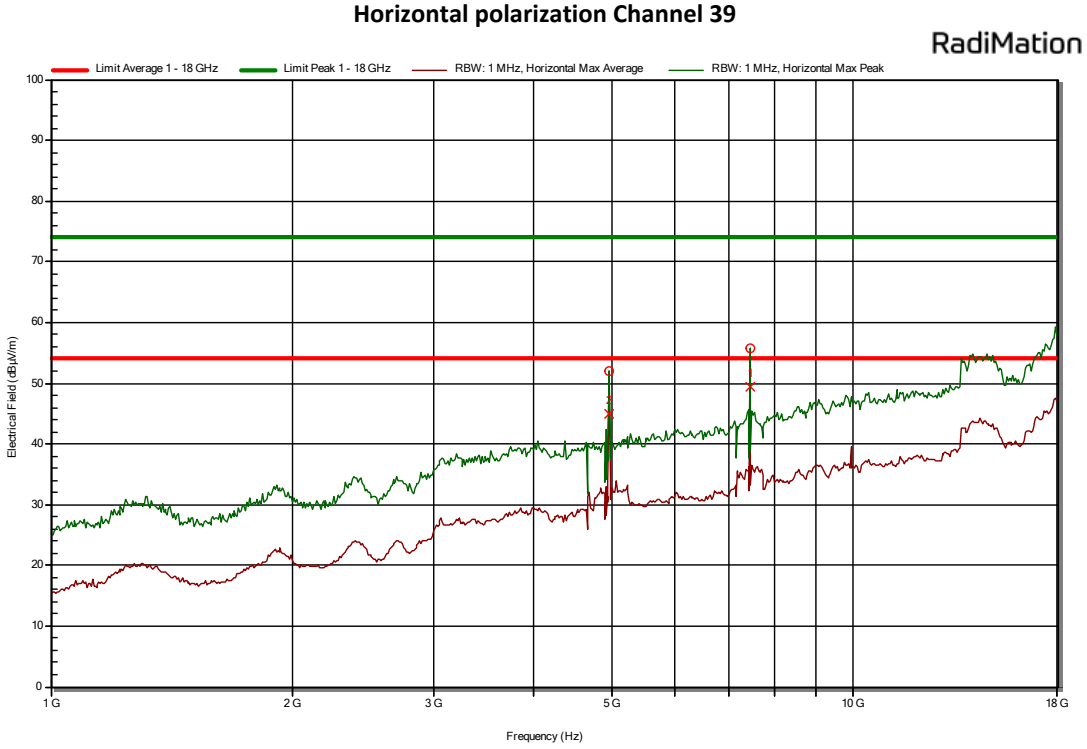


Peak Number	Frequency	Peak	Peak Limit	Average	Average Limit	Status
1	4,88 GHz	50,2 dBµV/m	74 dBµV/m	45,1 dBµV/m	54 dBµV/m	Pass
2	7,321 GHz	54,5 dBµV/m	74 dBµV/m	48,2 dBµV/m	54 dBµV/m	Pass

Vertical polarization Channel 39



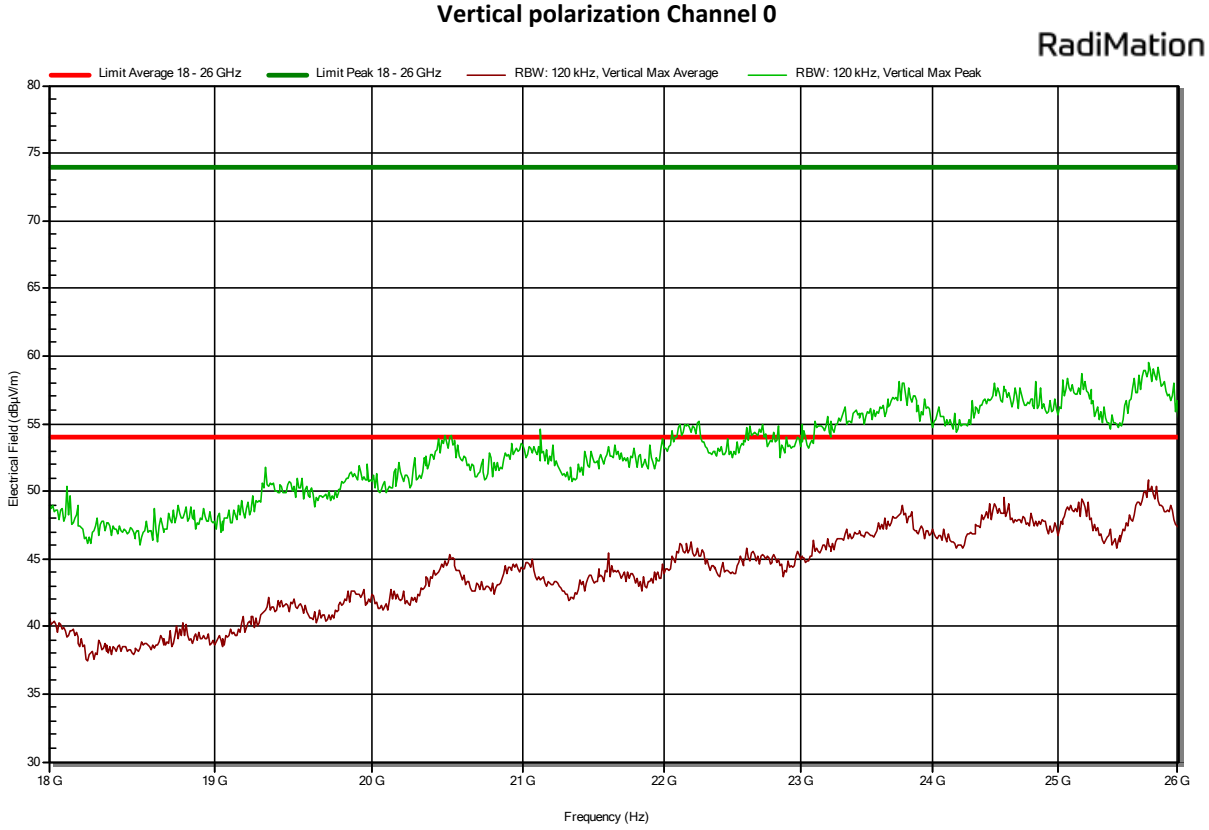
Horizontal polarization Channel 39



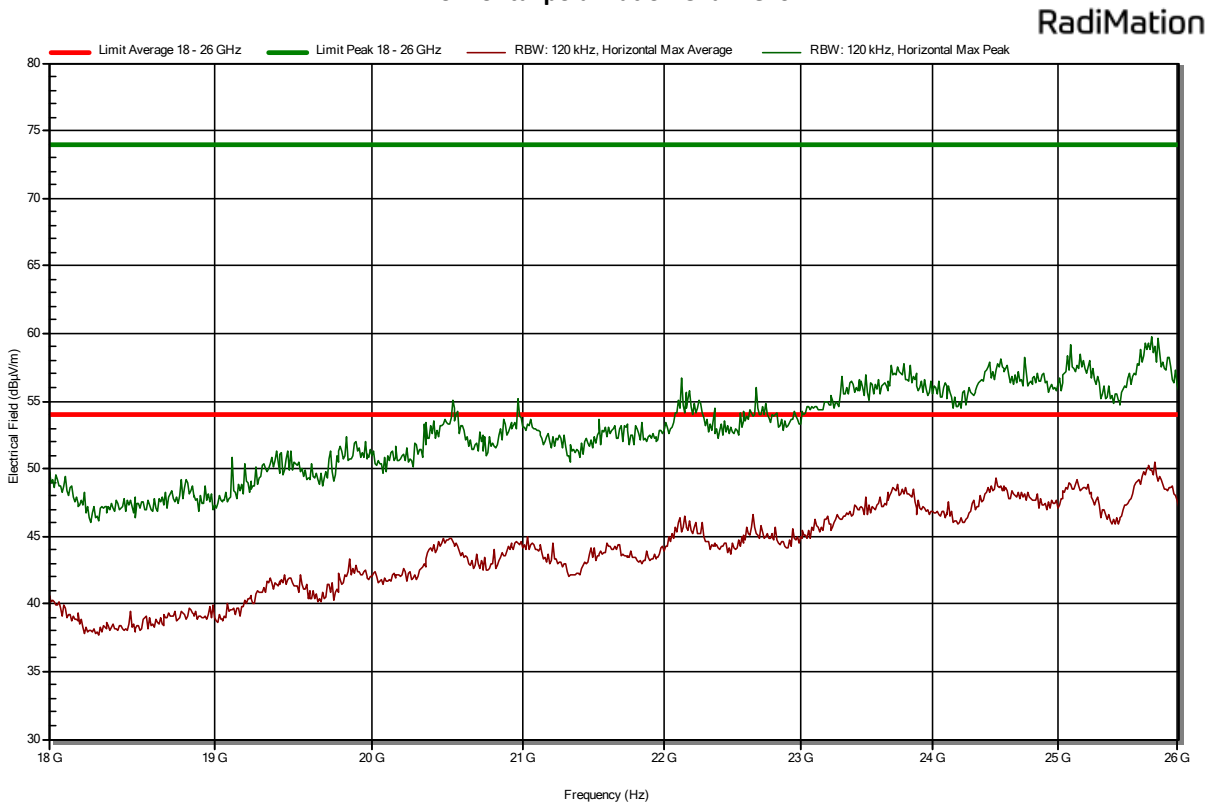
Peak Number	Frequency	Peak	Peak Limit	Average	Average Limit	Status
1	7,441 GHz	55,7 dBµV/m	74 dBµV/m	49,3 dBµV/m	54 dBµV/m	Pass
2	4,959 GHz	51,9 dBµV/m	74 dBµV/m	45,1 dBµV/m	54 dBµV/m	Pass

18 GHz – 26 GHz

Vertical polarization Channel 0

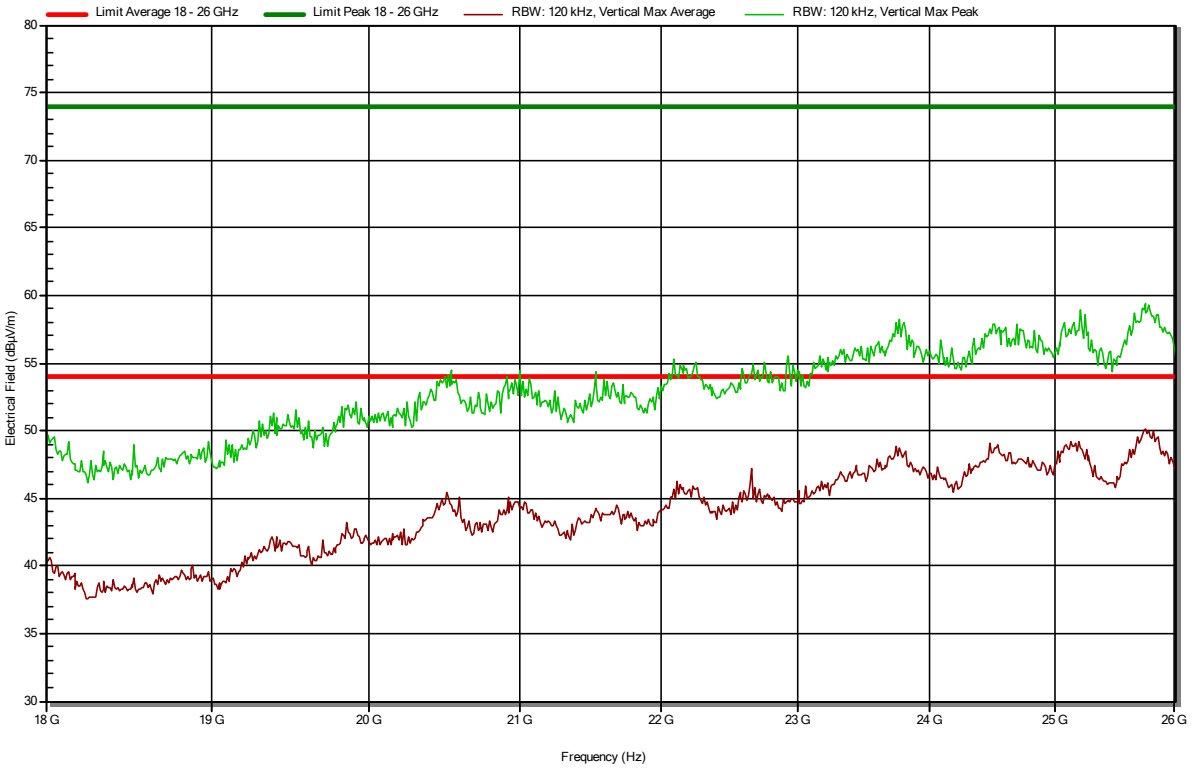


Horizontal polarization Channel 0



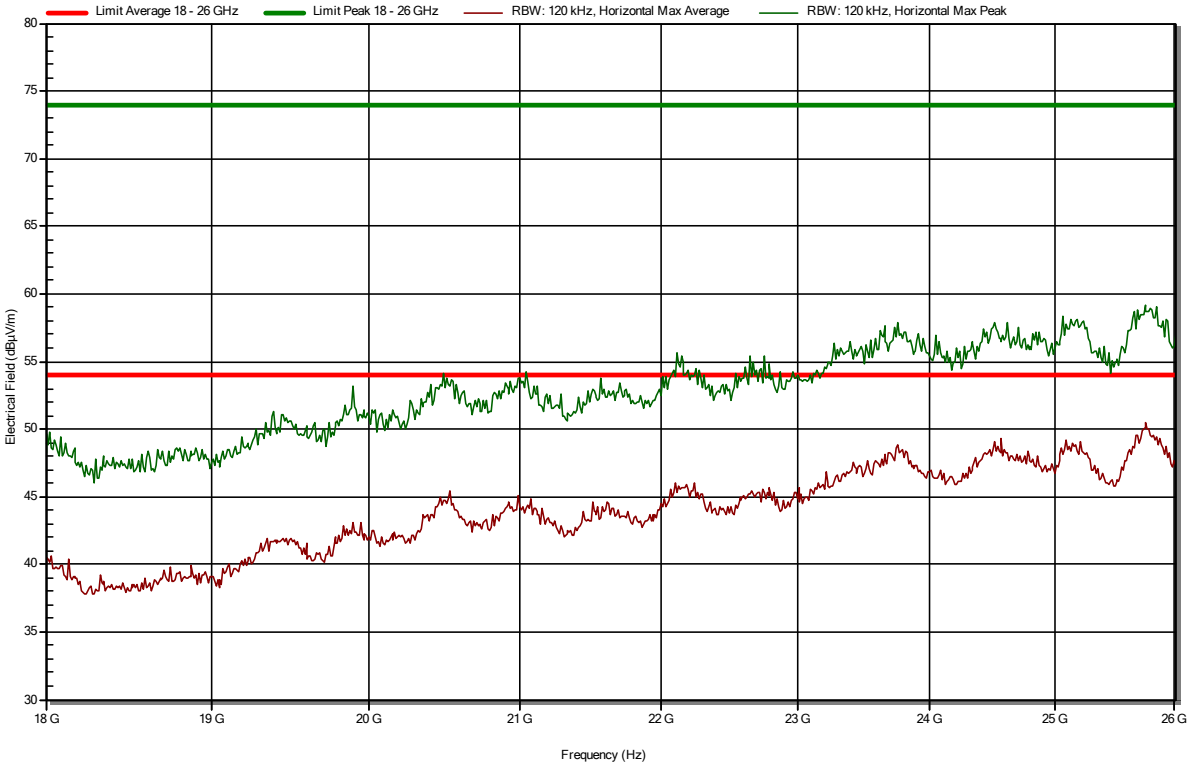
Vertical polarization Channel 19

RadiMation



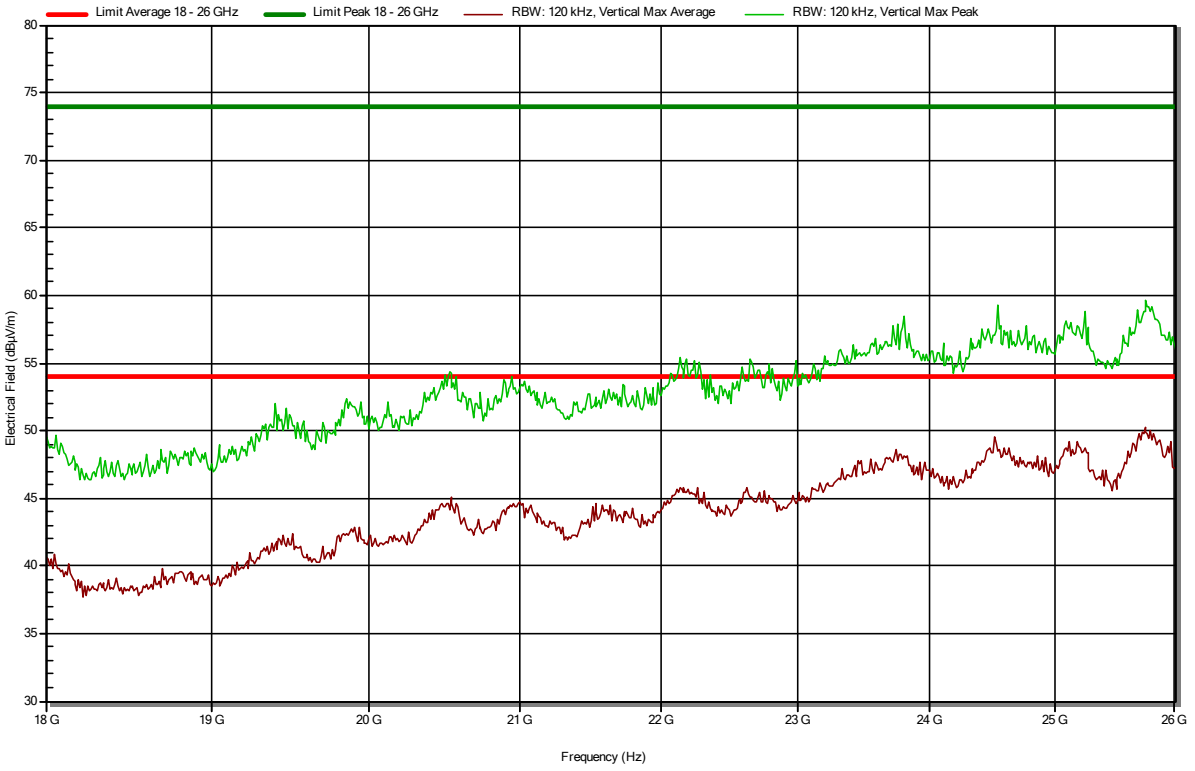
Horizontal polarization Channel 19

RadiMation



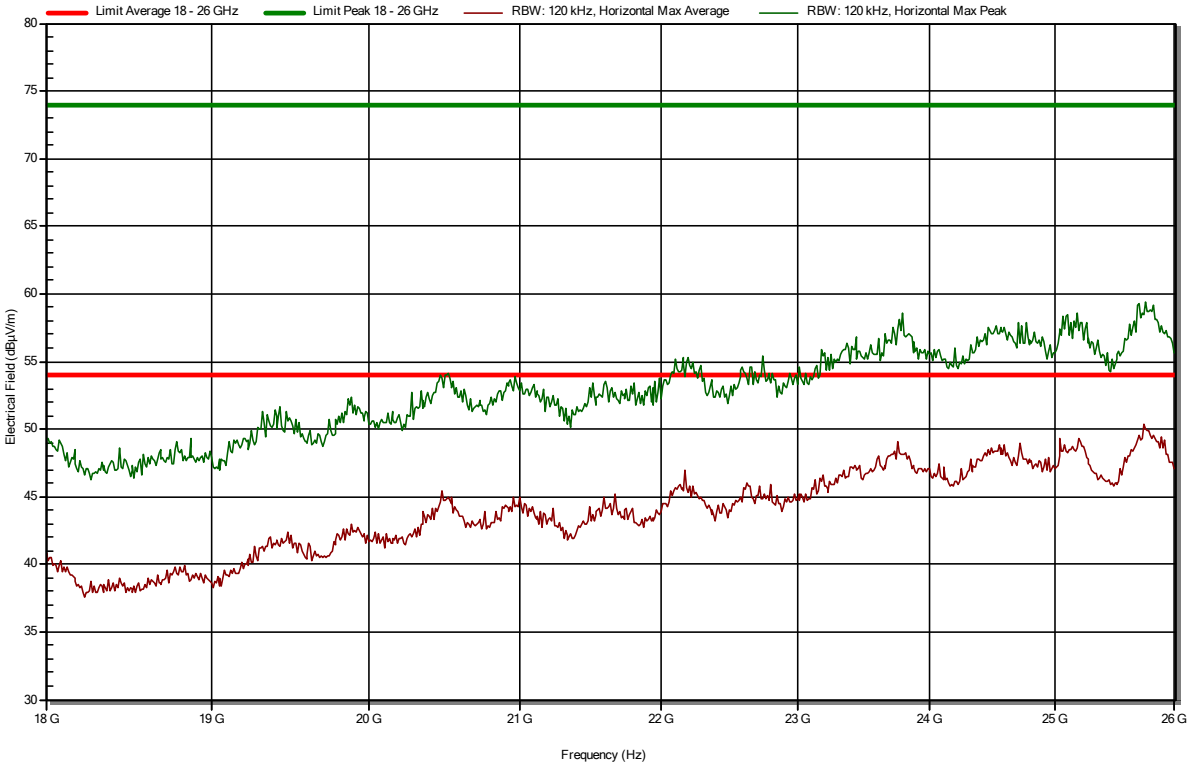
Vertical polarization Channel 39

RadiMation



Horizontal polarization Channel 39

RadiMation



3.2 6dB bandwidth Measurement

3.2.1 Limit

The minimum 6 dB Bandwidth shall be at least 500 kHz.

3.2.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.2.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.2.4 Test procedure

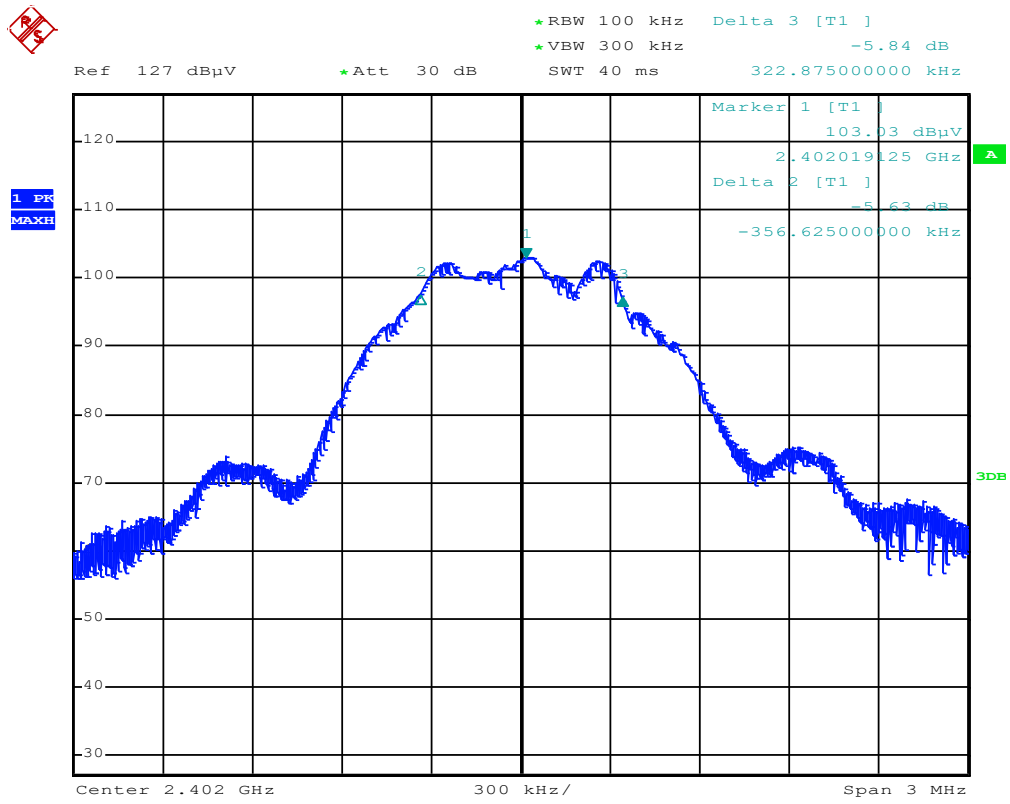
Tests according to ANSI C63.10
IRN 017 - Occupied bandwidth (Hz) Method 4 – DTS Bandwidth.

3.2.5 Test Results of the 6 dB bandwidth Measurement

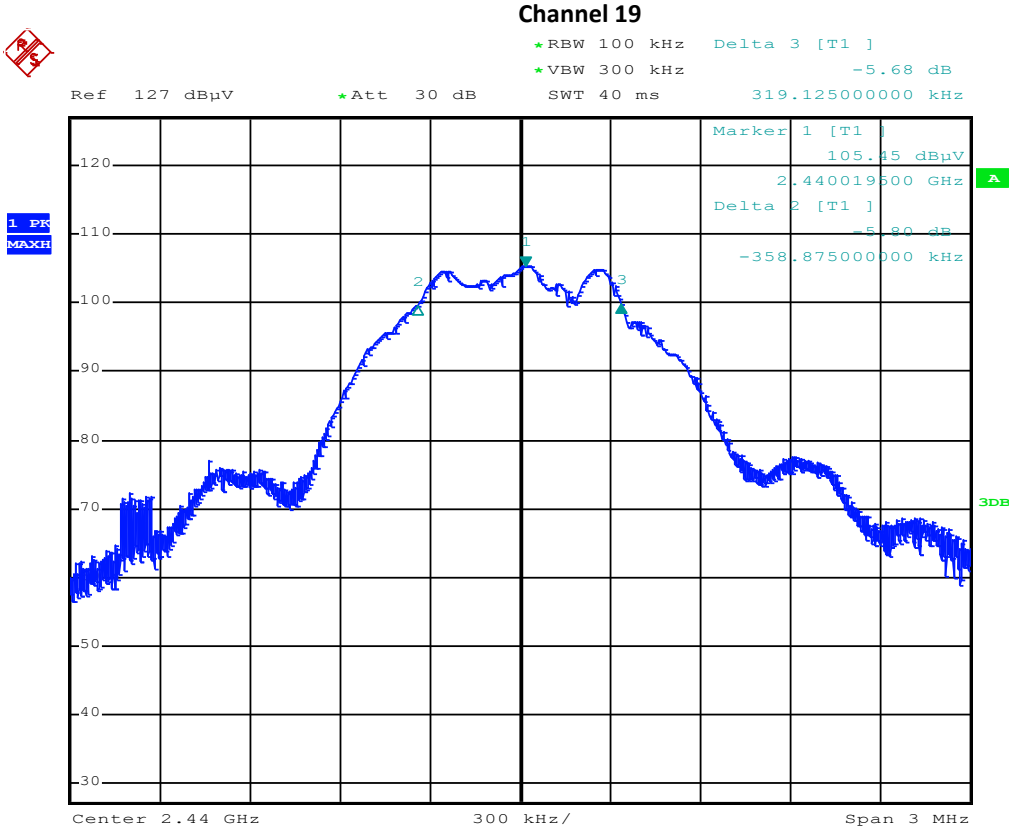
Technology Std.	Channel	Frequency (MHz)	Data rate	6dB bandwidth (kHz)
Bluetooth Low energy	0	2402	1 Mbps	679.5
	19	2440	1 Mbps	678
	39	2480	1 Mbps	684
Uncertainty	± 36.2 kHz			

3.2.6 Plots of the 6 dB bandwidth measurement

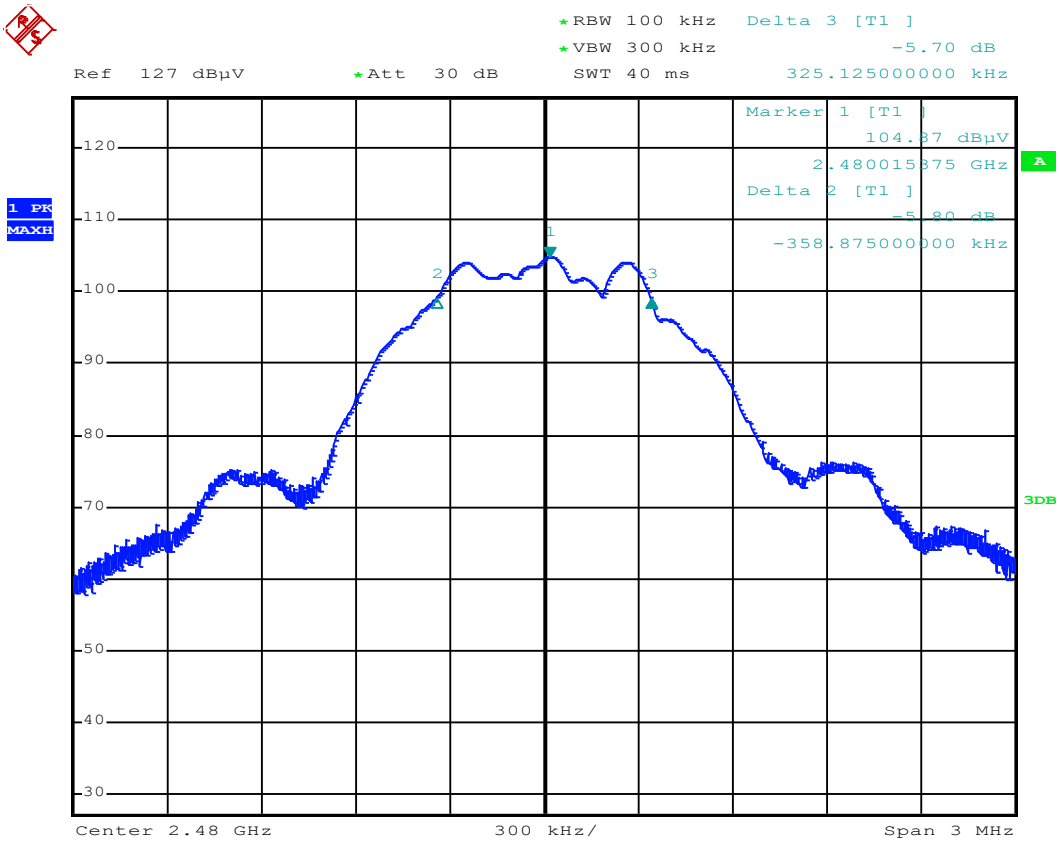
Channel 0



Channel 19



Channel 39


RBW 100 kHz
VBW 300 kHz
SWT 40 ms
Delta 3 [T1]
-5.70 dB
325.125000000 kHz
Ref 127 dBµV
Att 30 dB
Marker 1 [T1]
104.87 dBµV
2.480015375 GHz
Delta 2 [T1]
-5.80 dB
-358.875000000 kHz
1 PK
MAXH
A
3DB
120
110
100
90
80
70
50
40
30
Center 2.48 GHz
300 kHz/
Span 3 MHz

3.3 99% Occupied Bandwidth

3.3.1 Limit

No limit measurement required, only for reporting purposes

3.3.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.3.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.3.4 Test procedure

IRN 017 - Occupied bandwidth (Hz) Method 1 – XX % power bandwidth.

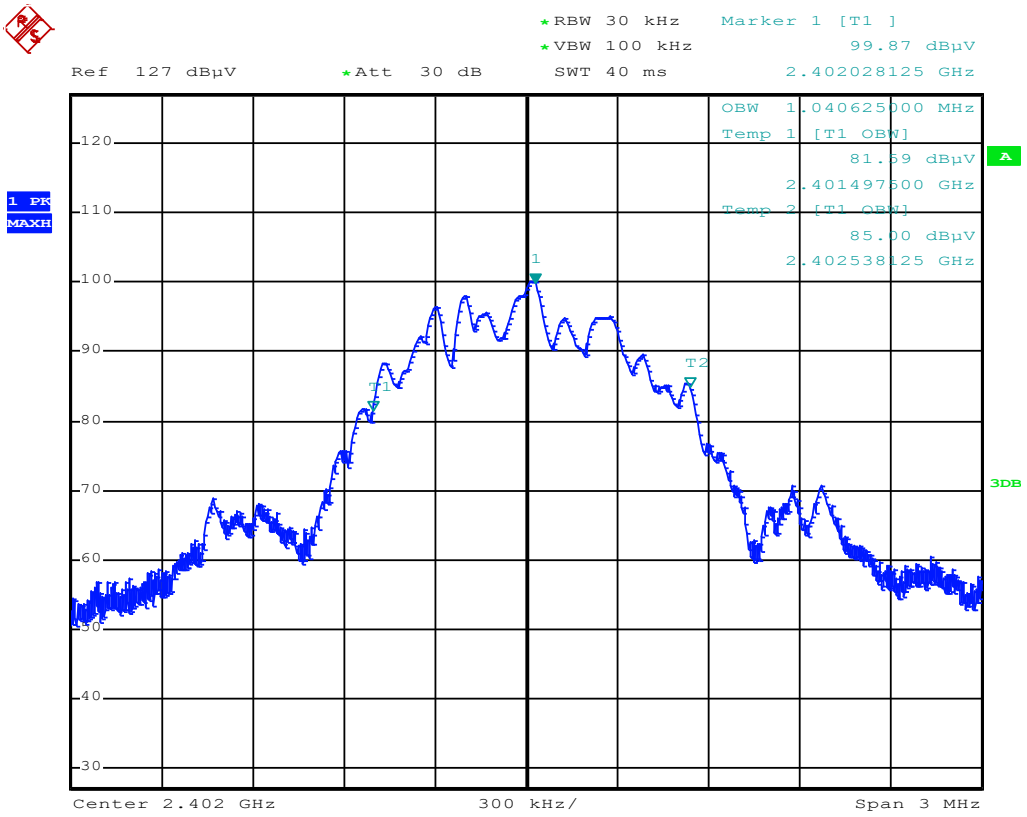
1. Set the centre frequency to the nominal EUT channel centre frequency
2. Set span = 1.5 times to 0.5 times the Occupied Bandwidth
3. Set VBW ≥ 3x RBW
4. Video averaging is not permitted. Where practical, detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

3.3.5 Test results of the 99% occupied bandwidth measurement

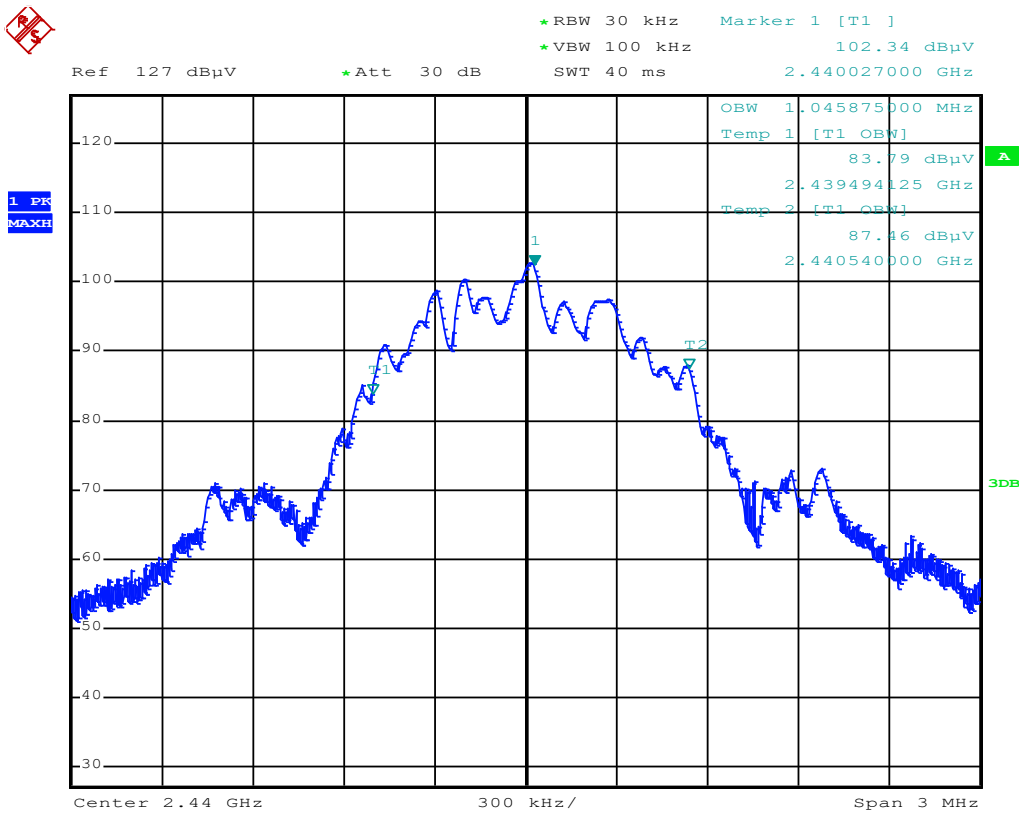
Technology Std.	Channel	Frequency (MHz)	Data rate	99% bandwidth (kHz)
Bluetooth Low energy	0	2402	1 Mbps	1040.625
	19	2440	1 Mbps	1045.875
	39	2480	1 Mbps	1040.25
Uncertainty	± 12 kHz			

3.3.6 Plots of the 99% occupied bandwidth measurement

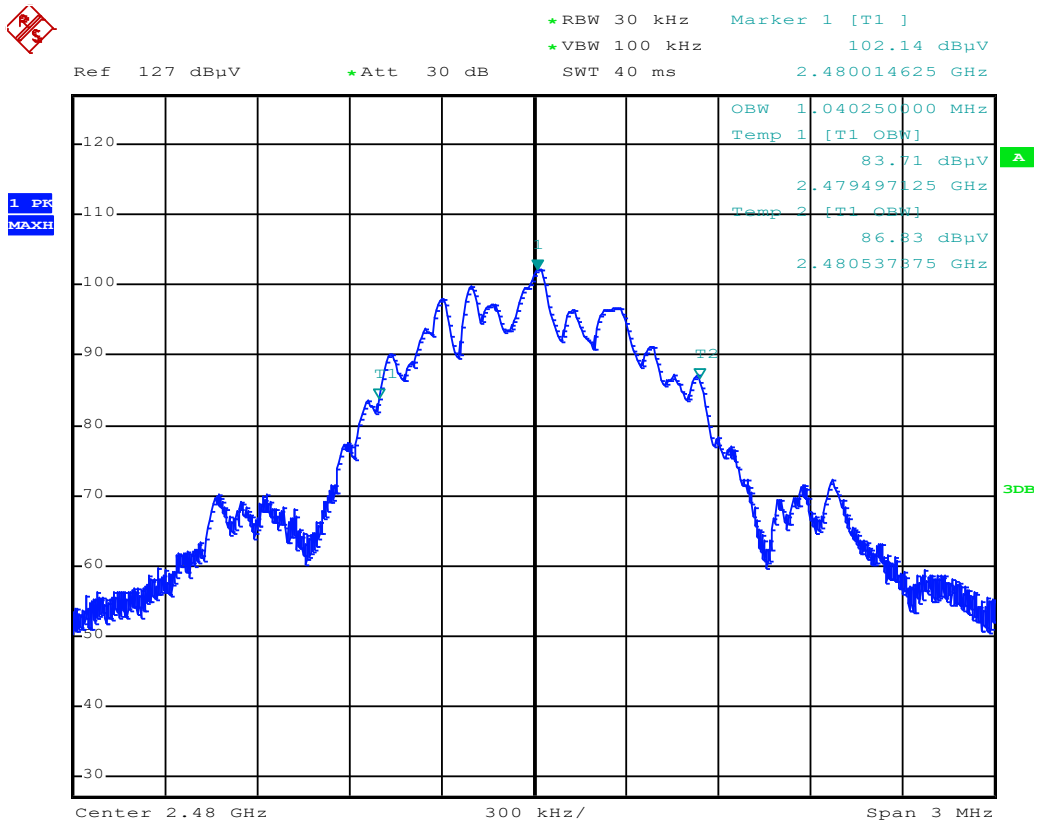
Channel 0



Channel 19



Channel 39


RBW 30 kHz
VBW 100 kHz
SWT 40 ms
Marker 1 [T1]
102.14 dBµV
2.480014625 GHz
Ref 127 dBµV
Att 30 dB
OBW 1.040250000 MHz
Temp 1 [T1 OBW]
83.71 dBµV
2.479497125 GHz
Temp 2 [T1 OBW]
86.83 dBµV
2.480537875 GHz
1 PK
MAXH
A
3DB
120
110
100
90
80
70
60
50
40
30
T1
T2
Center 2.48 GHz
300 kHz/
Span 3 MHz

3.4 Output Power Measurement

3.4.1 Limit

For systems using digital modulation in the 2400-2483.5 MHz, the limit for the peak output power is 30 dBm. If transmitting antenna of directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point to point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

3.4.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.4.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.4.4 Test procedure

The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05.

IRN 014 - RF power (W) - Method 10 – Radiated output power according to ANSI C63.10.

3.4.5 Test results of Output Power Measurement

Peak method

Technology Std.	Channel	Frequency (MHz)	Data rate	Peak output power (dBm)
Bluetooth Low Energy	0	2402	1 Mbps	-3.4
	19	2440	1 Mbps	0.1
	39	2480	1 Mbps	-1.47
Uncertainty	±0.71 dB			

3.5 Power Spectral Density

3.5.1 Limit

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band at any time interval of continuous transmission.

3.5.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.5.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.5.4 Test procedure

The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05.

IRN 030 - Spectral power density (W per n.Hz) - Method 5 – Peak method PKPSD (PSD in 3 kHz band)

3.5.5 Test results of Power Spectral Density Measurement

Peak Power spectral density

Technology Std.	Channel	Frequency (MHz)	Data rate	PSD (dBm/3 kHz)
Bluetooth Low Energy	0	2402	1 Mbps	-20.35
	19	2440	1 Mbps	-17.4
	39	2480	1 Mbps	-18.7
Uncertainty	±2 dB			

3.6 Band edge Measurement

3.6.1 Limit

Band edge:
At the edge of the authorized band the RF power shall be at least 20 dB down.

3.6.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.6.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.6.4 Test procedure

The EUT was investigated in the X, Y and Z dimensions and was tested in the worst case configuration with regards to emissions.

The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05, sections 11.3 and 12.1. IRN 026 - Radiated electrical disturbance (V per m) Method 6 – Radiated electrical disturbance at the Authorized band edge.

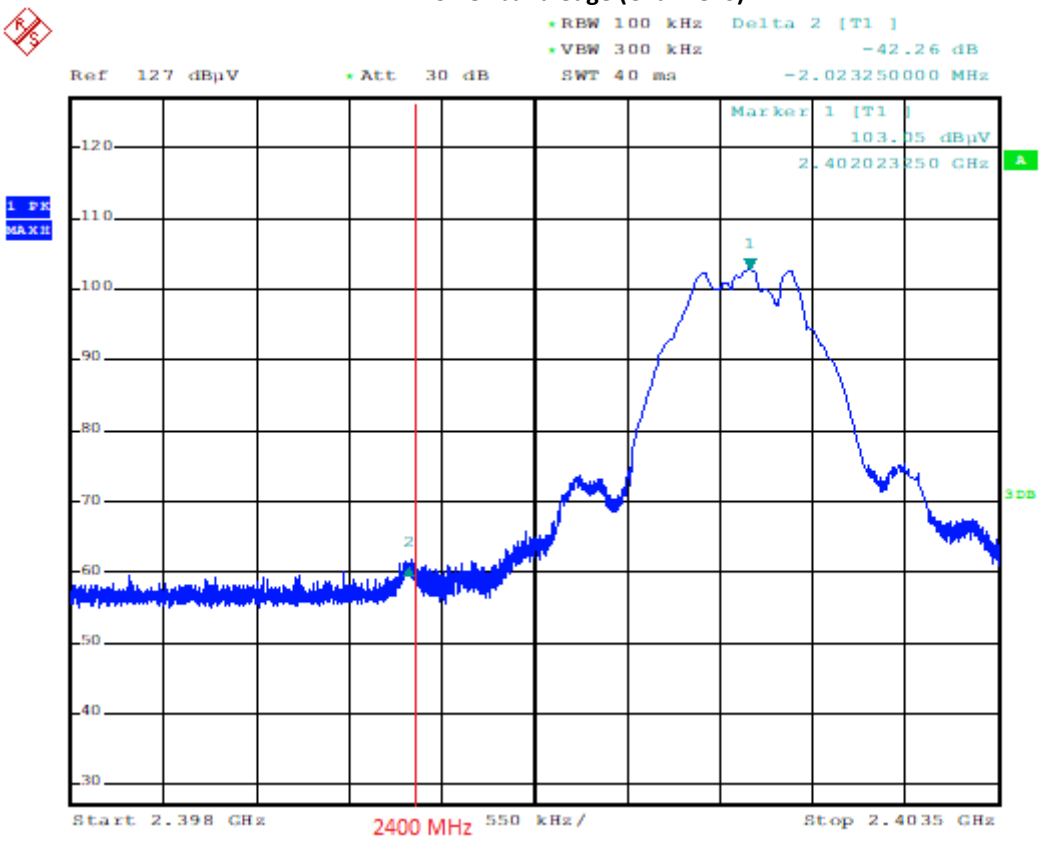
3.6.5 Measurement Uncertainty

± 5.7 dB.

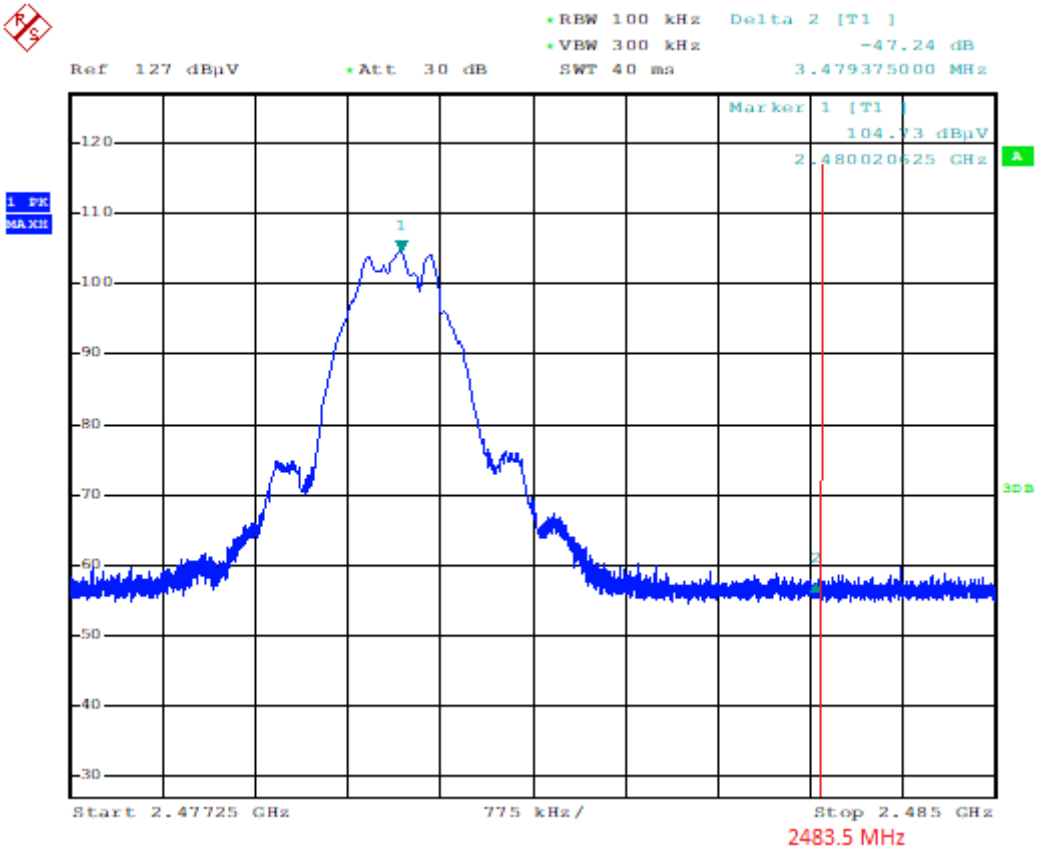
3.6.6 Plots of the Band edge Measurements

See next page

BLE Lower band edge (Channel 0)



BLE Upper band edge (Channel 39)



3.7 AC power line conducted emissions

3.7.1 Limit

According to 15.207 (c)

Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

3.7.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.7.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.7.4 Test procedure

According to ANSI C63.10: 2013, section 6.2
IRN 029 – Method 1

3.7.5 Test results and plots of the AC mains conducted measurement

See next page.

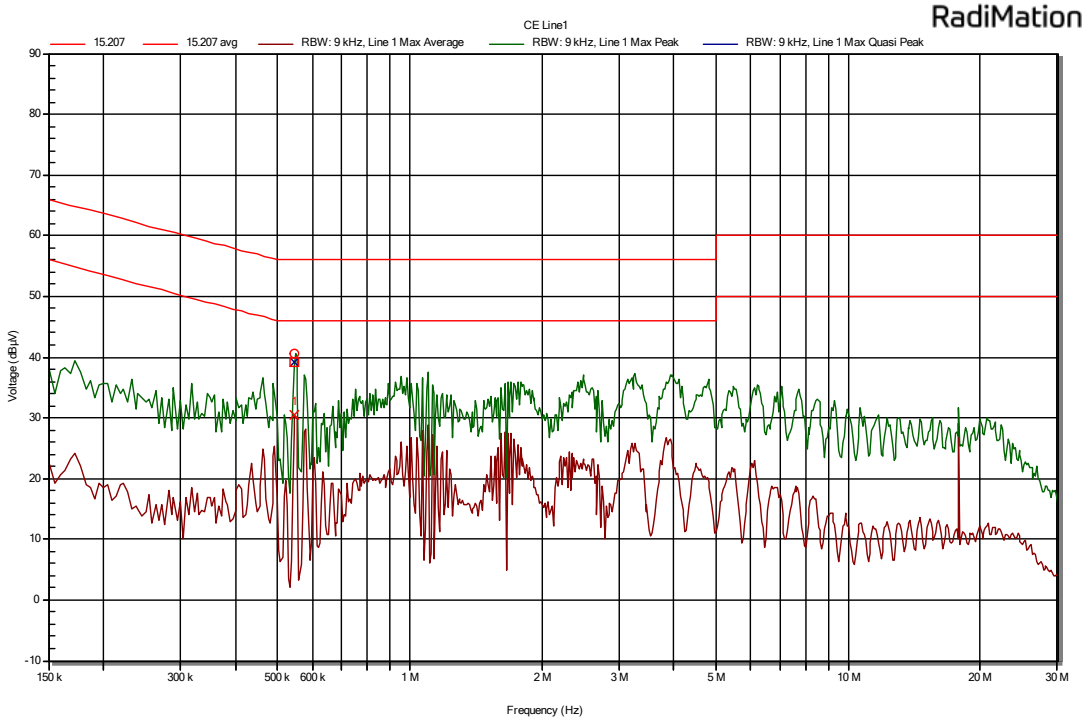
The equipment is tested in charging mode. The equipment will not be in charging mode while in use since it is a portable handheld device.

3.7.6 Measurement uncertainty

+/- 3.6 dB

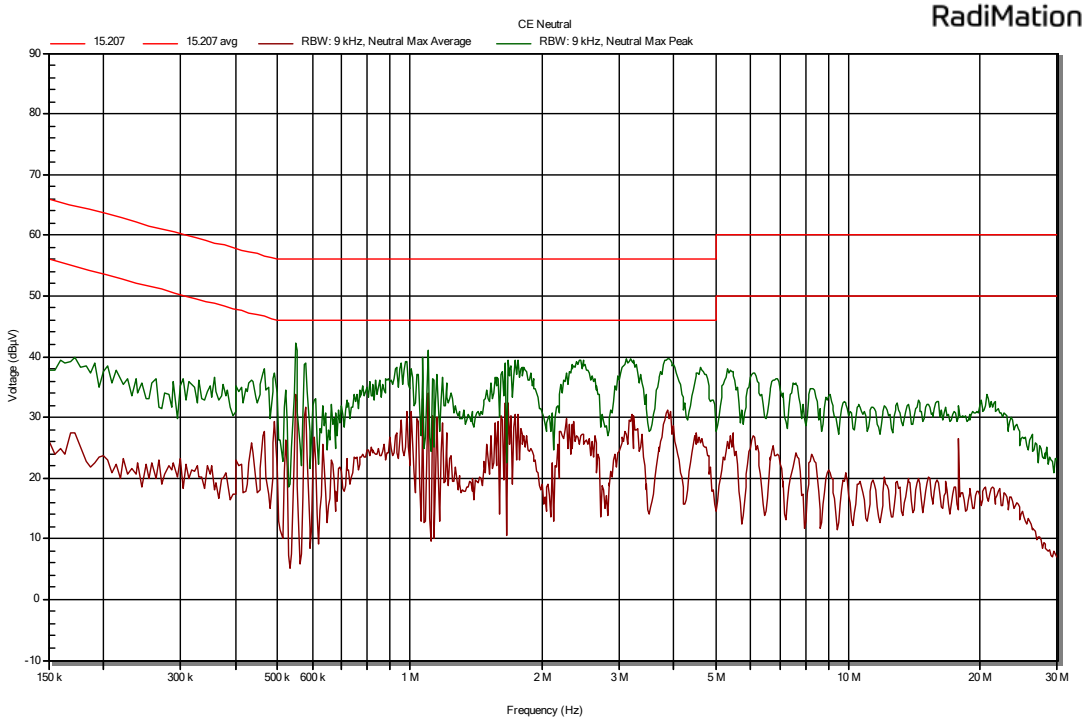
3.7.7 Plots of the AC mains conducted spurious measurement

Phase



Peak Number	Frequency	Peak	Average	Average Limit	Quasi-Peak	Quasi-Peak Limit	Average Status	Quasi-Peak Status
1	546,9 kHz	40,6 dBµV	30,6 dBµV	46 dBµV	39,1 dBµV	56 dBµV	Pass	Pass

Neutral



4 Sample calculations

All formulas for data conversions and conversion factors are reported in this chapter.

Conducted emission Measurement:

U_{lisn} (dBµV) = U (dBµV) + Corr. (dB)

Where:
U = Measuring receiver voltage
LISN insertion loss = Voltage division factor of LISN
Corr. = sum of single correction factors of used LISN, cables and pulse limiter.
Linear interpolation will be used for frequencies in between the values in the table.

Frequency (Mhz)	**Voltage division LISN (db)**	**Cable loss (dB)**	**Corr. (dB)**
	114379 Rohde & Schwarz ENV216	**TE 11134**	
0,15	9.6	0,02	9.62
0,3	9.6	0,03	9.63
0,5	9.6	0,08	9.68
0,7	9.7	0,25	9.95
1	9.6	0,11	9.71
3	9.6	0,21	9.81
5	9.6	0,21	9.81
7	9.7	0,25	9.95
10	9.7	0,29	9.99
15	9.7	0,34	10.04
20	9.8	0,37	10.17
22	9.6	0,39	9.99
24	9.6	0,43	10.03
30	9.6	0,45	10.05

Magnetic field strength measurement:

$$H\left[dB\left(\mu\frac{A}{m}\right)\right] = V[dB(\mu V)] + L_c[dB] + AF^H[\frac{dB}{\Omega m}]$$

Where:
H is the magnetic field strength (to be compared to the limit)
V is the voltage level measured by the receiver or spectrum analyzer
L_C is the cable loss
AF^H is the magnetic antenna factor

Frequency (MHz)	AF (dB/Ωm) 114515 EMCO 6505 S/N:9112-2710	CL (dB) SAR cable	Corr. (dB)
0,009	-32,35	0,7	-31,65
0,01	-33,16	0,05	-33,11
0,02	-37,56	0,07	-37,49
0,03	-39,29	0,1	-39,19
0,04	-40,11	0,1	-40,01
0,1	-41,27	0,1	-41,17
0,2	-41,48	0,1	-41,38
0,5	-41,58	0,1	-41,48
1	-41,62	0,2	-41,42
3	-41,6	0,2	-41,4
5	-41,65	0,3	-41,35
10	-42,11	0,6	-41,51
15	-42,88	0,9	-41,98
20	-43,78	1	-42,78
25	-44,85	0,7	-44,15
27	-45,36	1,2	-44,16
30	-46,25	1	-45,25

Field Strength Measurement:

E (dBµV/m) = U(dBµV) + AF (dB/m) + Corr. (dB)

Where:
E = Electric field strength
U = Measuring receiver voltage
AF = Antenna factor
CL = Cable loss

Corr. = sum of single correction factors of used cable and amplifier (if applicable).
Linear interpolation will be used for frequencies in between the values in the table.
Tables shows an extract of the values.

Frequency (MHz)	**AF (dB/m)** **TE 00967** **Chase CBL6112A** **SN: 2308**	**Cable loss (dB)** **Id: SAR cable**	**Corr. (dB)**
30	18,6	0,68	19,28
100	10,7	1,15	11,85
150	10,6	1,41	12,01
200	9,3	1,63	10,93
250	12,6	1,93	14,53
300	13,3	2,12	15,42
350	14,6	2,2	16,8
400	15,5	2,29	17,79
450	16,9	2,53	19,43
500	17,5	2,67	20,17
550	18,4	2,9	21,3
600	18,8	3,02	21,82
650	19,2	3,09	22,29
700	19	3,22	22,22
750	19,8	3,56	23,36
800	19,7	3,69	23,39
900	20,4	3,81	24,21
950	20,8	3,91	24,71
1000	21,2	4,3	25,5

Frequency (MHz)	AF (dB/m) TE 00531 Emco 3115 SN: 9412-4377	Gain (dB) TE 11132 Miteq JS4-18004000-30-8P-A1	Cable loss (dB) TE 01315	Corr. (dB)
1000	23,6	40,4	2,0	66
1500	25,1	40,5	2,4	68
2000	27,1	40,5	2,7	70,3
2500	28,6	40,7	3,2	72,5
3000	30,5	40,7	3,2	74,4
3500	31,2	40,7	3,4	75,3
4000	32,7	40,9	4,9	78,5
4500	32,4	40,9	4,4	77,7
5000	33,2	40,7	4,6	78,5
5500	34,0	40,5	4,5	79
6000	34,6	40,0	5,2	79,8
6500	34,3	39,4	5,9	79,6
7000	35,2	38,6	5,7	79,5
7500	36,4	39,2	5,9	81,5
8000	37,0	38,9	6,3	82,2
8500	37,5	38,4	6,4	82,3
9000	38,1	37,4	6,5	82
9500	37,8	37,0	7,1	81,9
10000	38,2	36,5	7,3	82
10500	38,1	36,7	7,6	82,4
11000	38,3	36,9	8,3	83,5
11500	38,5	37,6	8,1	84,2
12000	39,1	38,3	8,4	85,8
12500	38,7	38,5	8,3	85,5
13000	39,2	38,9	9,2	87,3
13500	40,5	40,2	8,3	89
14000	41,1	40,0	8,2	89,3
14500	41,4	40,1	8,2	89,7
15000	40,2	41,4	8,3	89,9
15500	37,9	41,4	8,6	87,9
16000	37,5	42,8	9,2	89,5
16500	38,6	42,3	8,8	89,7
17000	41,1	43,1	9,4	93,6
17500	42,7	43,2	9,4	95,3
18000	44,0	44,2	9,8	98

Frequency (MHz)	AF (dB/m) TE 00818 Flann 20240-25	Gain (dB) TE 11132 Miteq JS4-18004000-30-8P-A1	Cable loss (dB) TE 01315	Corr. (dB)
18000	31,3	26,2	9,8	67,3
19000	31,5	26,1	9,6	67,2
20000	31,7	25,9	11	68,6
21000	31,9	24,3	10,7	66,9
22000	32,1	18,3	10,5	60,9
23000	32,2	18,9	10,8	61,9
24000	32,3	23,6	11,4	67,3
25000	32,4	24,5	11,6	68,5
26000	32,5	25,3	11,7	69,5

End of report