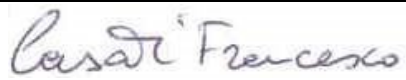


RF TEST REPORT

Test Report No:	24-4791342877-20-1-1-RAD-A
UL Project No:	4791342877
Date of issue:	2024-10-10
Total number of pages:	57
Applicant:	Philips Consumer Lifestyle B.V. Tussendiepen 4 9206 AD Drachten – Netherlands
Contact's person:	Klaas Kloosterman (klaas.kloosterman@philips.com)
Testing Laboratory:	UL International Italia S.r.l. Via delle Industrie, 6 (Sede A) 20061 Carugate (MI) – Italy
Testing location:	UL International Italia S.r.l. Via delle Industrie, 6 20061 Carugate (MI) – Italy
Test specification:	
Regulations:	FCC/ISED
Standards:	FCC Parts 15.207 & 15.209(a) & 15.247 RSS-247 Issue 3:2023 RSS-Gen Issue 5:2021
Non-standard test method:	N/A
Scope of testing:	Wireless - New testing
TRF No.:	TRF_Accredia_FCC/ISED-FT_rev 0
Test Report Form(s) Originator:	UL International Italia S.r.l.
Master TRF	2017-07
Compiled by: (name, function, signature)	Andrea Giovanni Galbiati Laboratory Engineer 
Approved by: (name, function, signature)	Francesco Casati Operations Leader 
General disclaimer: The test results presented in this test report relate only to the object tested, not selected by UL International Italia S.r.l.. This report shall not be reproduced, except in full, without the written approval of the issuing Testing Laboratory. This document contains data (of information) using color and if printed, should be printed in color to retain legibility and the information represented by the color.	
Declination of responsibility: Data provided by the customer are clearly identified with (*). UL International Italia S.r.l. cannot be considered responsible for this information, for any other document sent by the Applicant/Manufacturer and for any difference between the software version present in the tested sample and that present in the object intended for final sale. In some cases, the software in the tested sample is in a version dedicated exclusively to the test, and therefore does not represent the software installed in the final version of the product.	

Test Item Description:	Rechargeable shaver with integrated Bluetooth® Low Energy
Trade Mark: (*)	PHILIPS
Manufacturer: (*)	Philips Consumer Lifestyle B.V. Tussendiepen 4 9206 AD Drachten - Netherlands
Model Name or Numer / HVIN: (*)	XP9200
PMN: (*)	shaver
FCC ID: (*)	2AICSXP92
ISED Canada Certification number: (*)	21912-XP92
Ratings: (*)	USB charge input: 5 Vdc; 1 A Internal batteries: Li-Ion-AA
Testing:	
Date of receipt of test item:	2024-06-06
UL Sample Tag No.:	7270495
Status of sample upon receipt:	☒ New and operational ☐ Reconditioned ☐ Damaged
Date(s) of performance of tests:	2024-06-10 to 2024-07-26
Name and address of factory(ies): (*)	<u>Factory 1</u> Philips Consumer Lifestyle B.V. Oliemolenstraat 5 9203 ZN Drachten - Netherlands <u>Factory 2</u> Philips Domestic Appliance & Personal Care Co. of Zhuhai SEZ Ltd. No. 365, Ding Wan 2nd Road, SanZao, Jinwan, Zhuhai, Guangdong 519040 - China
General remarks: A cross ☒ in a rectangular shape means that this option is applied. ☒ Indicates that the listed condition, standard or equipment is applicable for this report. ☐ Indicates that the listed condition, standard or equipment is not applicable for this report. Throughout this report a ☐ comma / ☒ point is used as decimal separator. Where not otherwise specified or communicated in writing, statements of conformity (e.g. Pass/Fail) are established according to the following decision rule: considering that the applied test standards take measurement uncertainty into account, acceptance limit equals the tolerance limit (simple acceptance). This leads to a maximum 50% of false accept or false reject when the measured value equals the tolerance limit. See ILAC-G8:09/2019 for further details.	

General product information: (*)

Project Phoenix can be split in two families, XP94xx and XP92xx.
These are the main characteristics:

Family	XP94xx	XP92xx
Charging	USB, input 4,75-5,25V $\geq$ 1A	
Use	Wet, no corded use	
BlueTooth	Yes	
Display	Color LCD	B/W OLED
Battery type	Li-Ion-AA	
Battery supplier / type	High Power, 14500 CY900	
Production location	NL	NL and CN
Potential accessories	XA90; This is a so-called 'UV-case' for cleaning shaving head and charging shaver, XA90 will have dedicated UL-certification. Charging stand with light Quick Clean Pod (non-electric) Several click-on attachments	

Document history

Test Report No.	Reason for change	Date of issue
24-4791342877-20-1-0-RAD	Original release	2024-07-31
24-4791342877-20-1-1-RAD	- Attachment 1 added at the end of this report - Correction of the name of BLE module from nRF52833 to nRF52832 - Correction of Duty cycle correction factor - Correction of the value of top channel bandwidth (frequency channel=2480 relating to Transmitter Minimum 6 Db Bandwidth) - Correction of the description of test method of Transmitter Power Spectral Density test - Add of plot results of Top Band Edge - Correction of the list of test equipment - Updating of verdict summary table - Updating of number of pages - Updating of applicant name and address - Updating of operation mode descriptions - Updating with date of ITE Power supply used for testing - Updating of antenna information - Additional statement at page 53 - Correction of corrected AVG level at page 40 and 41 - Removing of attachment 1	2024-10-10

NOTE: New test report issue cancels and replaces the previous one.

Laboratory Accreditation

FCC Accredited Test Firm

Accreditation	MRA	Designation Number	Expiration Date
Ministero dello Sviluppo Economico- Direzione Generale Pianificazione e Gestione dello Spettro Radioelettrico <u>Scope:</u> - Unintentional Radiators - FCC Part 15 Subpart B - Industrial, Scientific, and Medical Equipment - FCC Part 18 - Intentional Radiators - FCC Part 15 Subpart C	US-EU	IT0010	2025-06-25

ISED Wireless Device Testing Laboratory

Company Number	CAB Identifier	Scope/Recognition Date	Expiration Date
UL INTERNATIONAL ITALIA S.R.L.	IT0008	RSS-GEN (2023-10-06) RSS-247 (2023-10-06)	RECOGNIZED UNTIL: 2025-06-16 ACCREDIA ISO/IEC 17025:2017 Expires: 2025-06-16

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1 Test Item Description

Serial number: (*)	No information available						
Date of production: (*)	No information available						
Ports: (*)	Port name and description		Cable				
			Maximum length(m)	Attached during test	Shielded		
	AC Mains (^)		---	☒	☐		
	USB input		0.92	☒	☐		
Supplementary information to the ports:	(^) Input AC power port of external EPS						
Rated power supply: (*)		Voltage and frequency		Reference poles			
				N	L1	L2	L3
	☒	AC: 120 V; 60 Hz		☒	☒	☐	☐
	☒	DC: Internal batteries					
Rated power: (*)	---						
Working frequencies: (*)	No information available						
Other parameters: (*)	---						
Firmware/Software version (original): (*)	12NC= 300011042361						
Firmware/Software version (used for testing): (*)	12NC= 300011042361						
Hardware version: (*)	5NC=42281						
Dimensions in cm (W x H x D): (*)	6.5 x 17 x 7						

Number	Operating modes		
1	Continuous Transmission on Bottom Channel, Max Power (Center frequency= 2402 MHz) Data rate: 1 Mbps		
2	Continuous Transmission on Middle Channel, Max Power (Center frequency= 2440 MHz) Data rate: 1 Mbps		
3	Continuous Transmission on Top Channel, Max Power (Center frequency= 2480 MHz) Data rate: 1 Mbps		
Supplemental information to the operating mode:		<u>For radiated tests only</u> Pre-scan in the X,Y and Z axes of orientation, the worst case of orientation was recorded in the test report.	
Auxiliary equipment (AuxEq): <i>Peripheral equipment that is part of the system under test</i>		Description	Manufacturer
		ITE POWER SUPPLY	GlobTek
Associated equipment (AE): <i>Equipment that is not part of the system under test but needed to exercise and/or monitor the EUT</i>		Description	Type
		---	---
Documents as provided by the applicant: (*)		Description	File name
		---	---
Modifications to the test item during testing:		None	

Copy of marking plate: (*)



1.1 Additional Information Related to Testing (*)

Technology Tested:	Bluetooth® Low Energy
Type of Unit:	Chipset
Model/Type:	nRF52832 BLE
Manufacturer:	Nordic Semiconductor
Transmit Frequency Range:	2.4 GHz band
Equipment type:	Non-FHSS equipment Non-adaptive equipment Receiver category 2

1.2 Additional information related to antenna (*)

Antenna description	
Manufacturer:	Sunlord
Model/Type reference:	SLDA31-2R400G-S2TF
Mounting:	Built-in
Type:	Multilayer Chip Antenna
Gain (dBi)	2.5

2 Verdict summary section

Standard clause		Description	Verdict	Note
FCC	ISED			
15.203	RSS-Gen 6.8	Antenna requirements	N/A	1
15.207	RSS-Gen 8.8	AC power-line conducted emissions	P	
15.209 15.247(d)	RSS-Gen 6.13 RSS-Gen 8.9 RSS-Gen 8.10	Transmitter unwanted emissions	P	
15.35	RSS-Gen 8.2	Transmitter Duty Cycle	P	
15.247(a)(1)	RSS-Gen 6.7 RSS-247 5.1(a)	20 dB emission bandwidth	N/A	4
15.247(a)(1)	RSS-247 5.1(b)	Channel separation test	N/A	4
15.247(a)(1)	RSS-247 5.1(d)	Time of occupancy (dwell time)	N/A	4
15.247(a)(1)	RSS-247 5.1(d)	Quantity of hopping channels	N/A	4
15.247(a)(2)	RSS-Gen 6.7 RSS-247 5.2(a)	6 dB emission bandwidth	P	
---	RSS-Gen 6.7	99% emission bandwidth	P	
15.247(b)	RSS-Gen 6.12 RSS-247 5.4(d)	Maximum peak conducted output power	P	5
15.247(b)	RSS-Gen 6.12 RSS-247 5.4(d)	Transmitter maximum (average) output power	N/P	6
15.247(c)	RSS-247 5.4(f)	Operation with directional antenna gains greater than 6 dBi	N/A	7
15.247(d)	RSS-247 5.5	100 kHz bandwidth of frequency band edge	P	
15.247(e)	RSS-247 5.2(b)	Power spectral density	P	

Test method: ANSI C63.10-2013

Test guide: FCC/KDB-558074 D01 15.247 Meas Guidance v05r02

Notes:

1. The EUT uses a permanently attached antenna.
2. Conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.
3. Applicable when the field strength or envelope power is not constant or it is in pulses.
4. Applicable to frequency hopping intentional radiators only.
5. §15.247(b)(3) applied.
6. Maximum peak conducted output power measured.
7. The EUT doesn't use directional antenna with gain greater than 6 dBi.

Possible test case verdicts:

Test case not performed: N/P

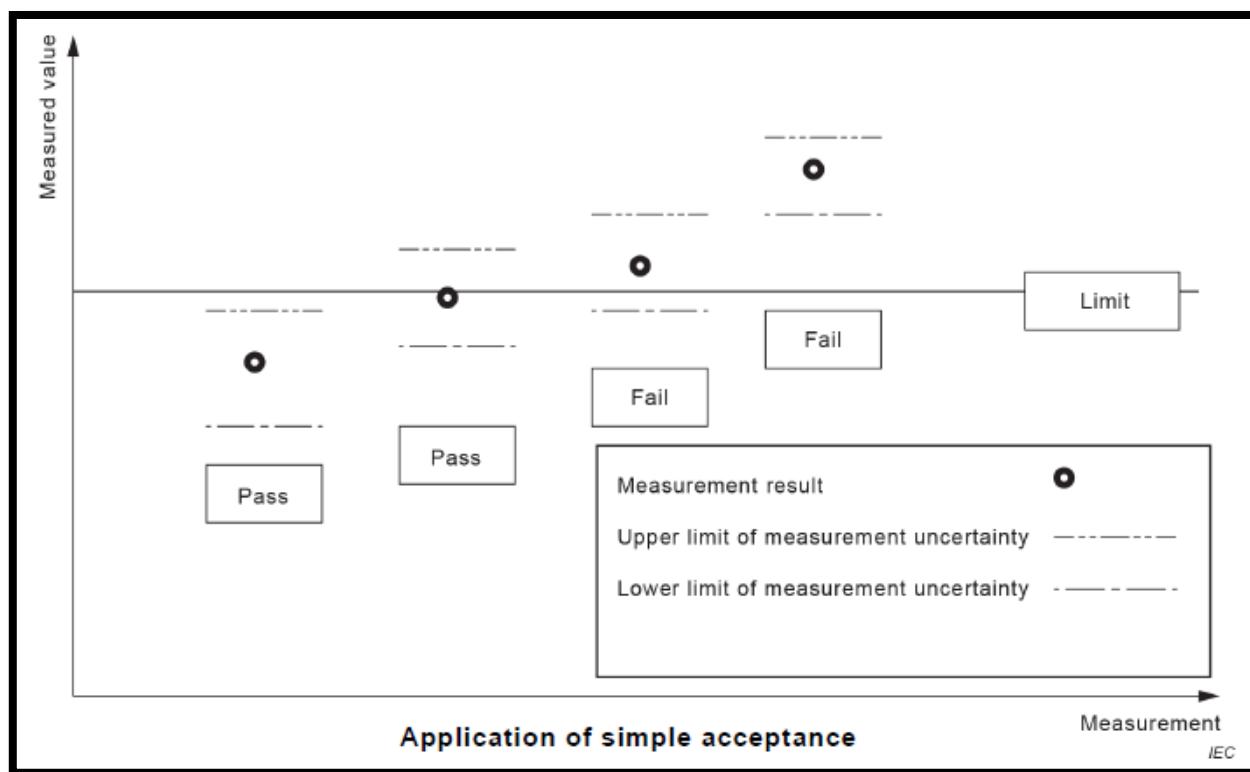
Test case does not apply to test object: N/A

Test object does meet requirement: Pass (P)

Test object does not meet requirement: Fail (F)

3 Conformity decision rule

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.



4 Formulas used

☒ Disturbance voltage

$$V \text{ (dB}\mu\text{V)} = V \text{ receiver (dB}\mu\text{V)} + \text{Correction (dB)}$$

where:

$$\text{Correction (dB)} = \text{I.L. transducer (dB)} + \text{I.L. cable (dB)}$$

☐ Magnetic field

$$H \text{ (dB}\mu\text{A/m)} = V \text{ receiver (dB}\mu\text{V)} + \text{Correction (dB)}$$

where:

$$\text{Correction (dB)} = \text{Magnetic antenna factor (dB}/\Omega\text{m)} + \text{I.L. cables (dB)}$$

☒ Electric field

$$E \text{ (dB}\mu\text{V/m)} = V \text{ receiver (dB}\mu\text{V)} + \text{Correction (dB)}$$

where:

$$\text{Correction (dB)} = \text{Electric antenna factor (dB/m)} - \text{Gain external preamplifier (dB)} + \text{I.L. external filter (dB)} + \text{I.L. cables (dB)}$$

Note: external preamplifier and external filter are optional and, if used, are indicated in the list of test equipment

☒ Margin

$$\text{Margin (dB)} = \text{Measure} - \text{Limit}$$

☐ Radiated emission limit conversion for a different measuring distance

$$40 \text{ dB/decade (f < 30 MHz); } 20 \text{ dB/decade (f} \geq 30 \text{ MHz)}$$

☐ Correction of radiated field from 5 m to 3 m

$$+8.87 \text{ dB (f < 30 MHz); } +4.44 \text{ dB (f} \geq 30 \text{ MHz)}$$

☒ Linear to logarithmic conversion

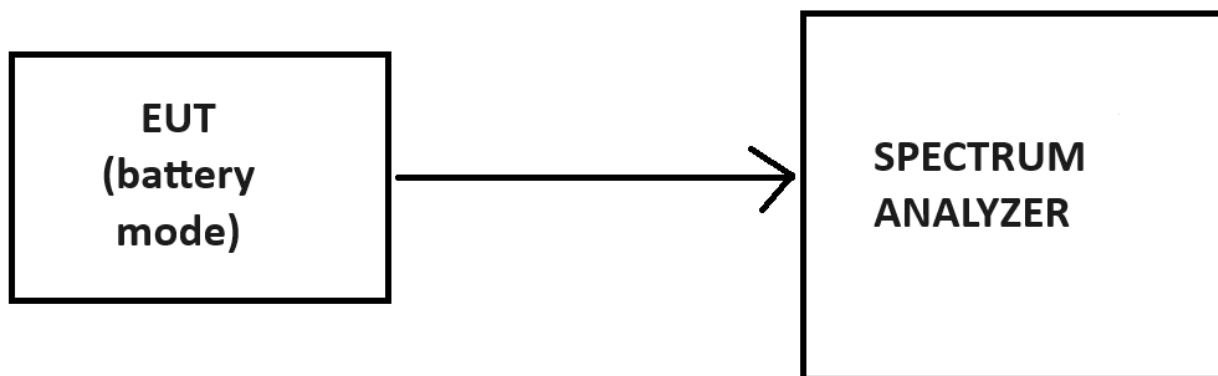
$$\text{Log} = 20 \cdot \log(\text{Lin}) \text{ for voltage and current; } \text{Log} = 10 \cdot \log(\text{Lin}) \text{ for power}$$

☒ Conducted Radio Measurements

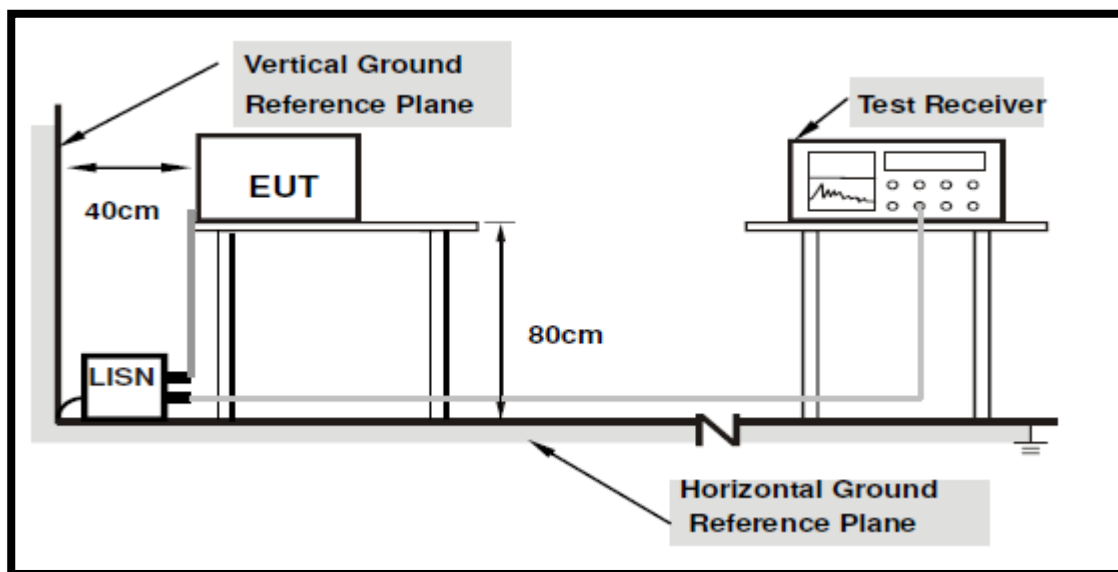
$$P_{\text{out_EUT}} = P_{\text{read_Amplifier}} \text{ (dBm)} + \text{Cable Losses (dB)} + \text{Attenuator (dB)}$$

5 Test Setup Diagrams

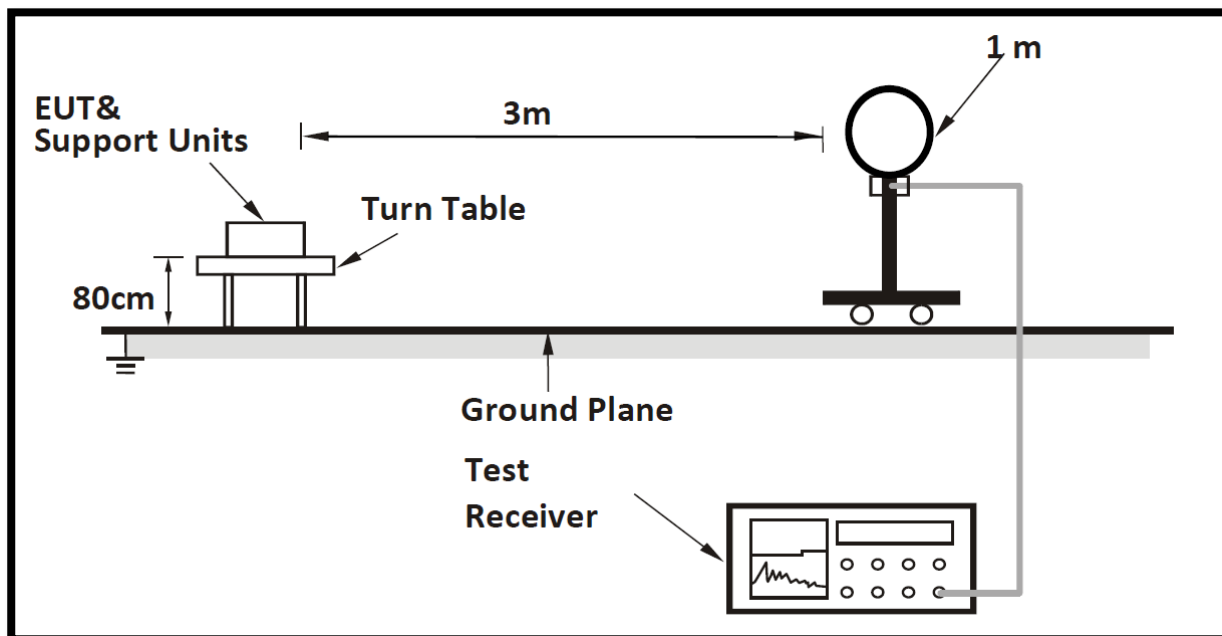
Conducted tests on antenna port:



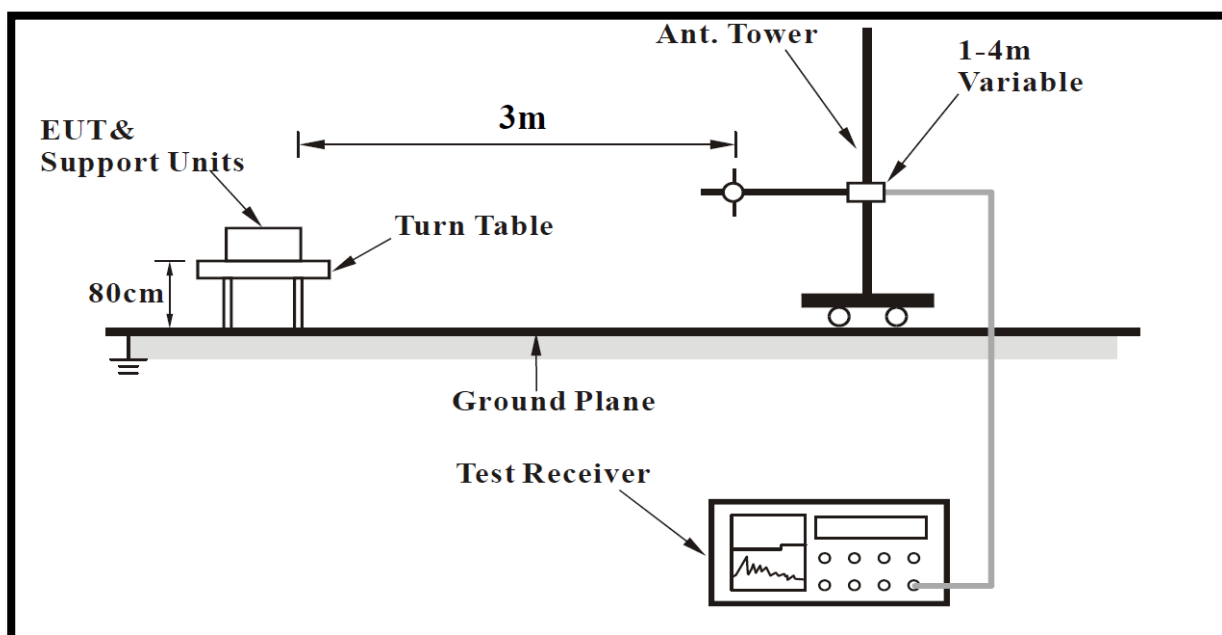
AC Conducted emission:



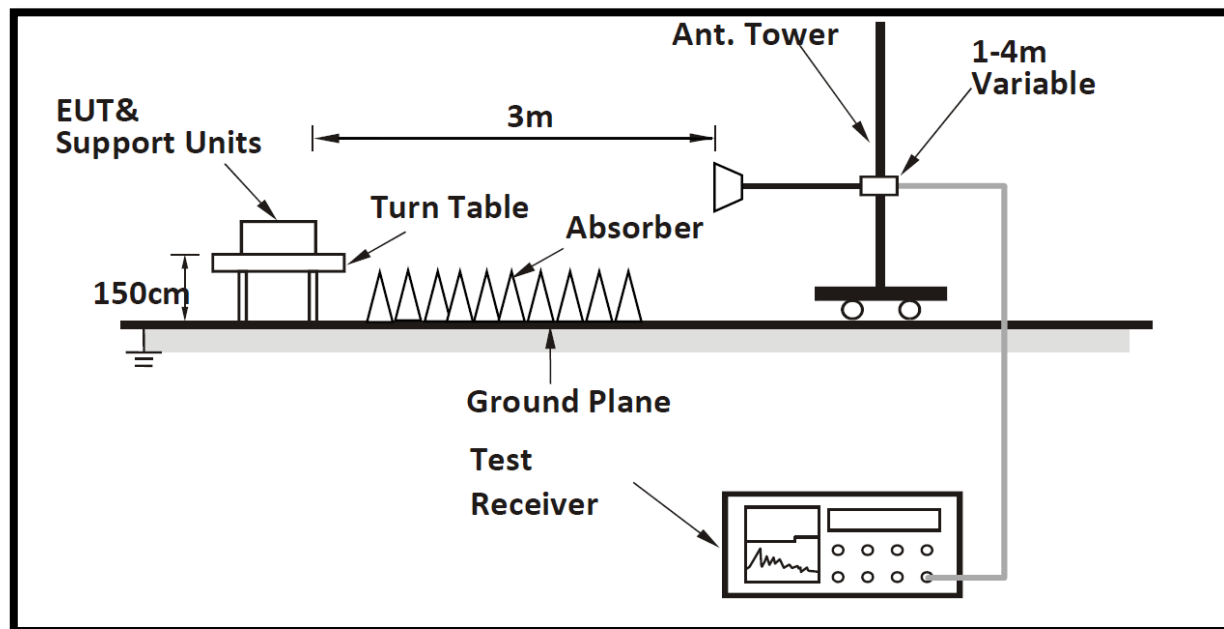
Radiated emission from 9kHz to 30 MHz



Radiated emission from 30 MHz to 1 GHz



Radiated emission from 1 GHz to 26 GHz



6 Tests

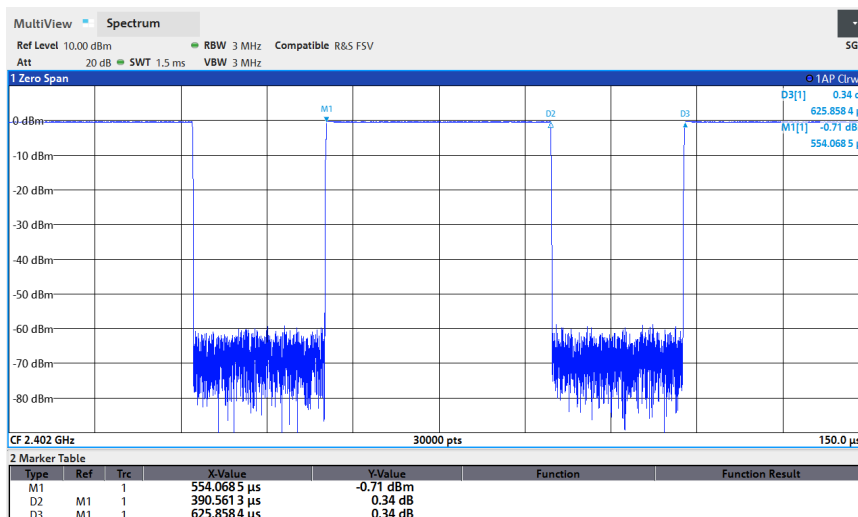
6.1 Antenna Port Test Results

6.1.1 Transmitter Duty Cycle

Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-12
Test location (stand):	EMC Laboratory
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
ISED Reference:	RSS-Gen 8.2
FCC Reference:	Part 15.35 (c)
Test Method Used	FCC KDB 558074 Section 6 referencing ANSI C63.10 Section 11.6
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	The transmitter duty cycle was measured using a spectrum/signal analyser in the time domain and calculated by using the following calculation: $DC (\%) = \left(\frac{\sum T_{ON}}{\text{Period or 100 ms whichever is the lesser}} \right) \times 100$ $DC (dB) = 10 \times \log \left(\frac{\text{Period or 100 ms whichever is the lesser}}{\sum T_{ON}} \right)$

Results:

Operating mode: 1



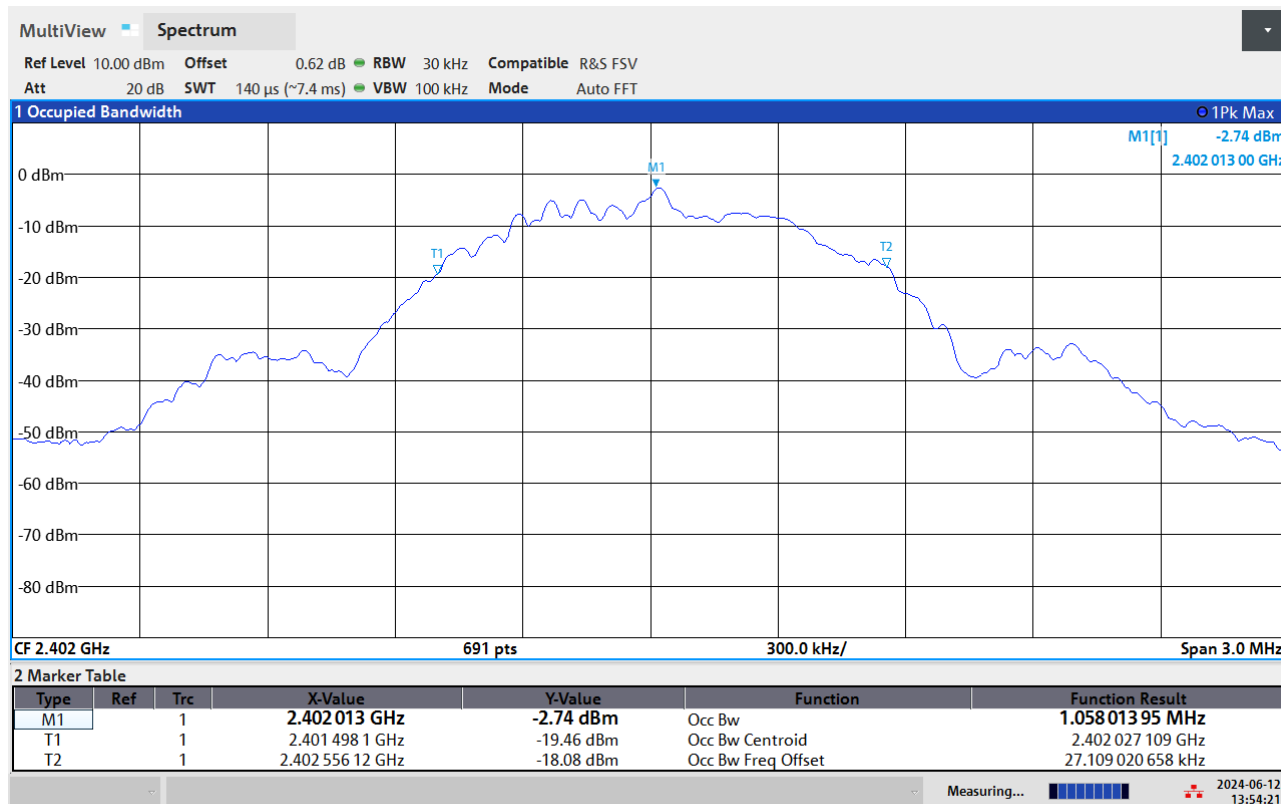
Pulse Duration (μs)	Period (μs)	Duty Cycle (%)	DC Correction Factor (dB)
390.56	625.86	62.5	2.04

6.1.2 Transmitter 99% Occupied Bandwidth

Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-12
Test location (stand):	EMC Lab
Ambient temperature:	22 °C
Relative humidity:	51 %
Atmospheric pressure:	998 mbar
FCC Reference:	N/A
ISED Reference:	RSS-Gen 6.7
Test Method Used	RSS-Gen 6.7 and Notes below
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	The 99% emission bandwidth was measured using the signal analyser occupied bandwidth function. The resolution bandwidth was set in the range of 1% to 5% of the occupied bandwidth and the video bandwidth set to 3 times the resolution bandwidth. The span was set to capture all products of the modulation process including emission skirts. 0.62 dB offset applied for RF cable insertion loss correction.

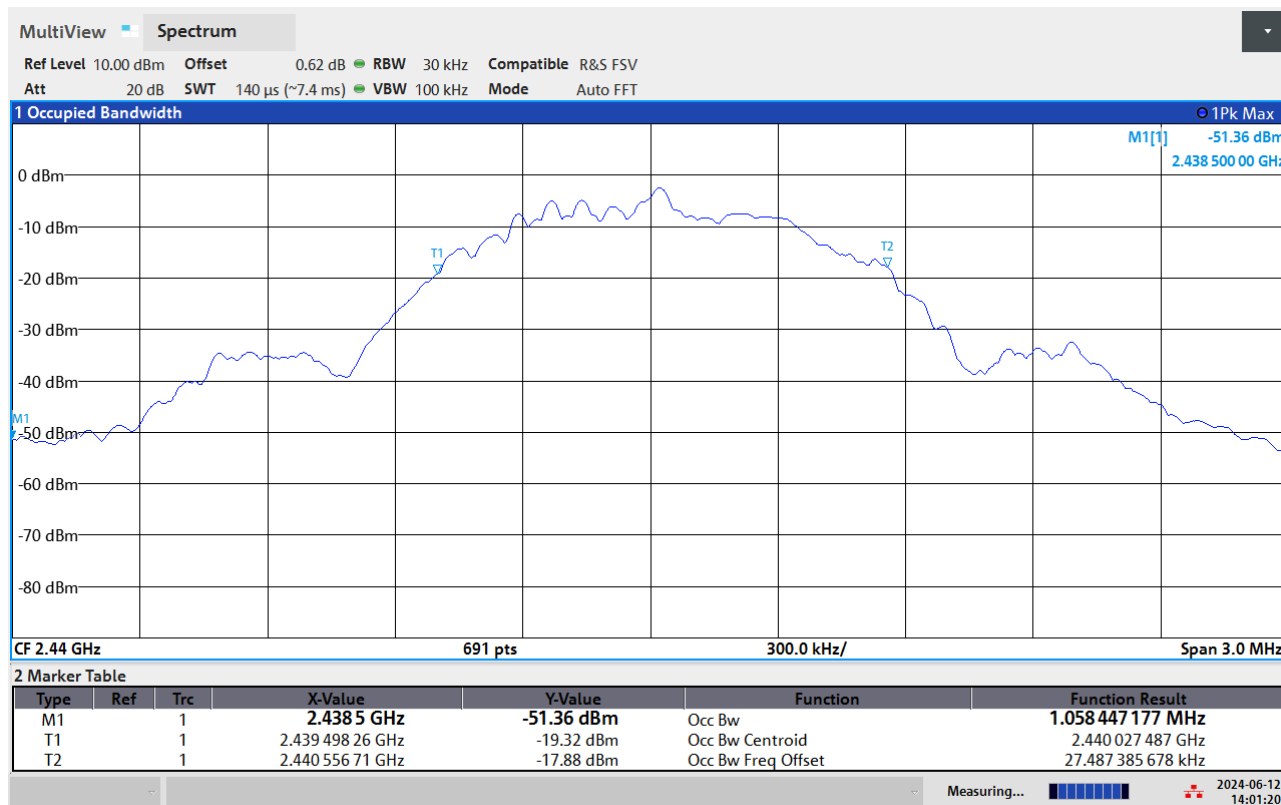
Results:

Operating mode: 1



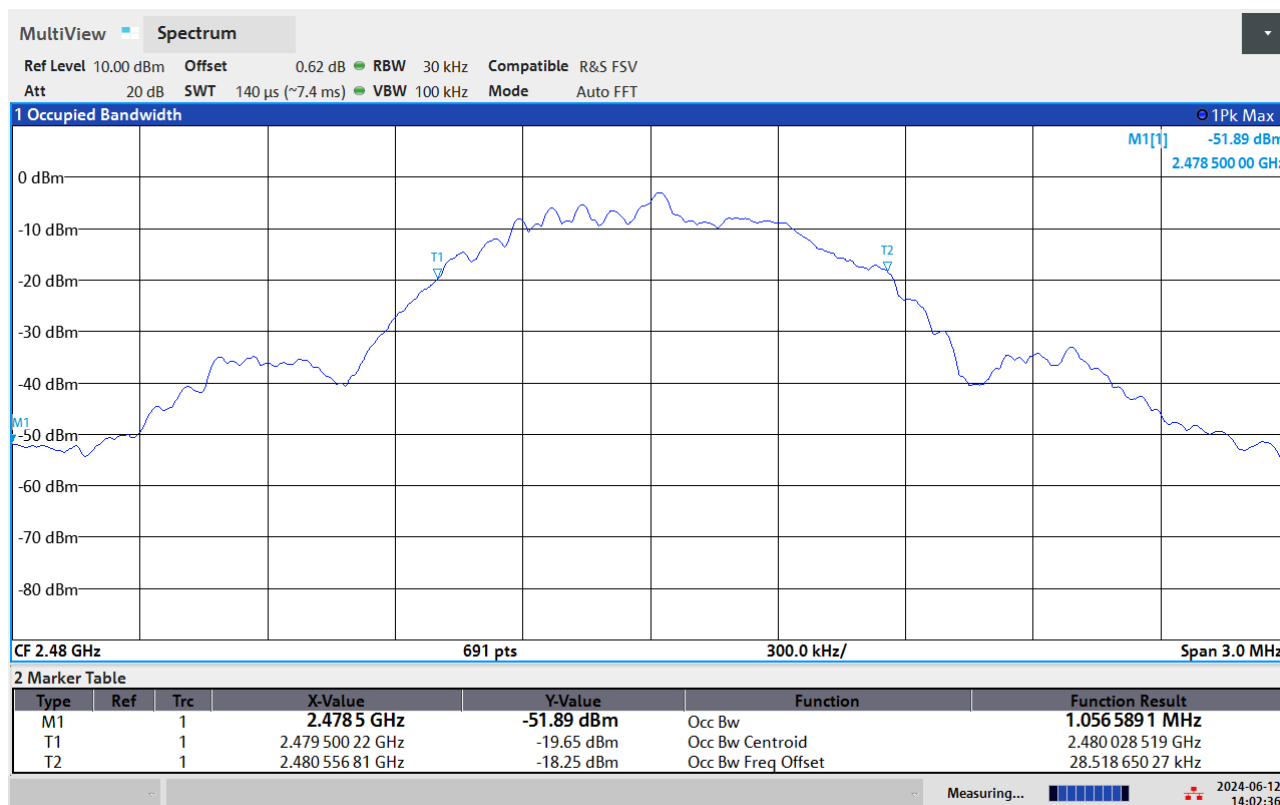
01:54:22 PM 06/12/2024

Operating mode: 2



02:01:21 PM 06/12/2024

Operating mode: 3



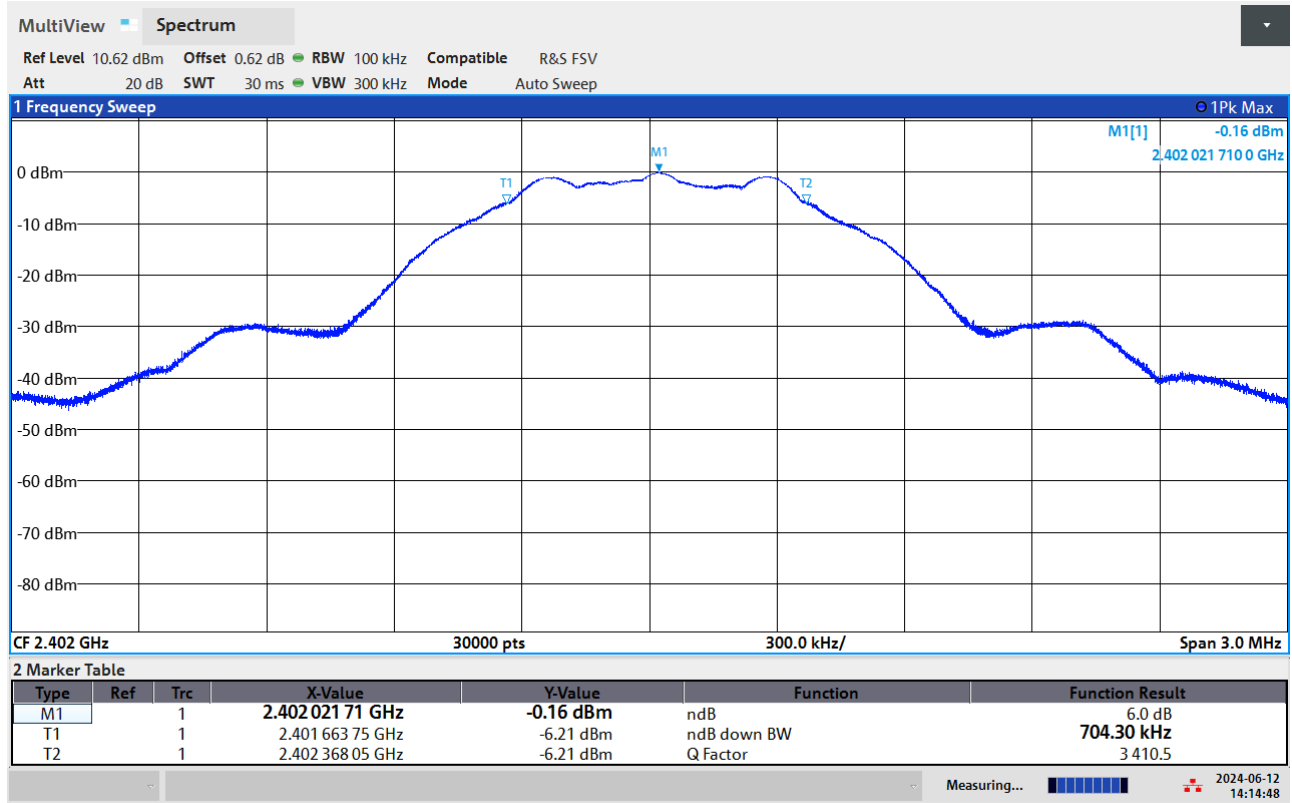
02:02:37 PM 06/12/2024

Channel	99% Occupied Bandwidth (kHz)
Bottom	1058.013
Middle	1058.447
Top	1056.589

6.1.3 Transmitter Minimum 6 dB Bandwidth

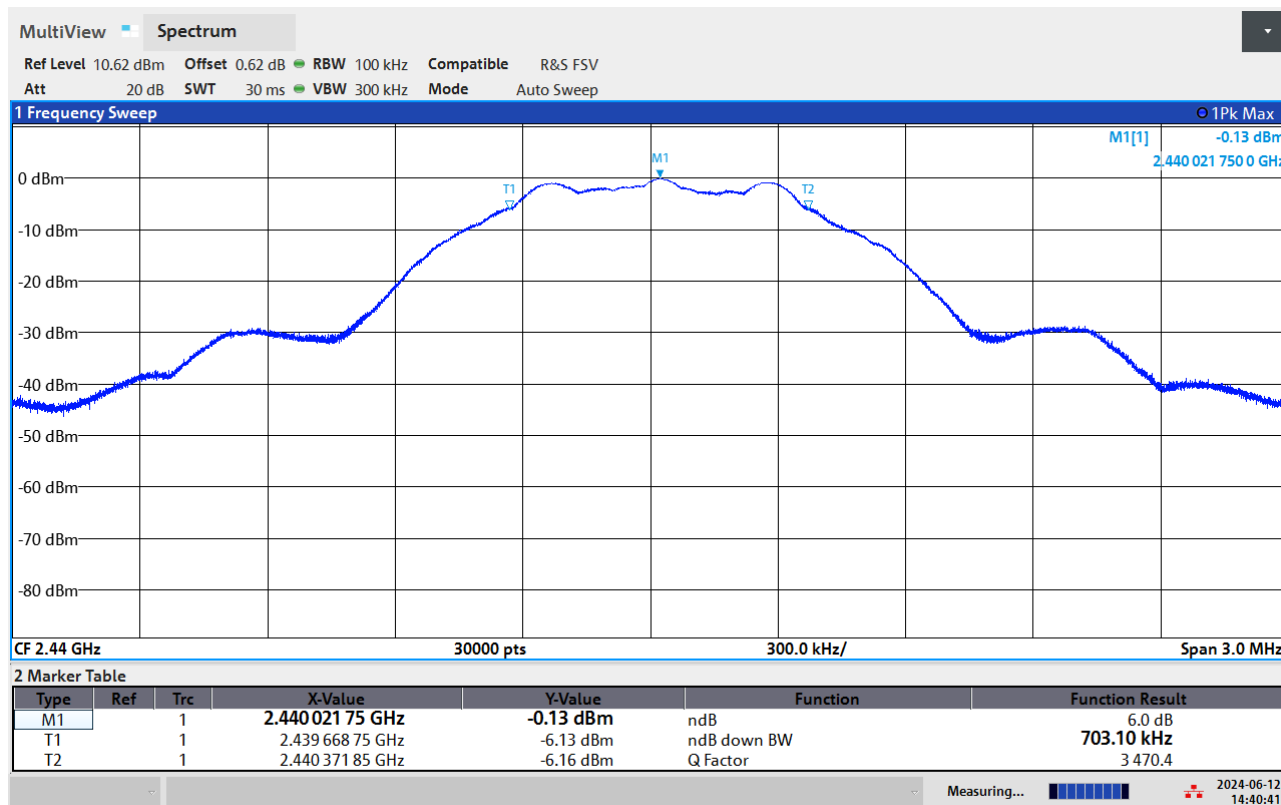
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-12
Test location (stand):	EMC Lab
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	996 mbar
FCC Reference:	Part 15.247(a)(2)
ISED Canada Reference:	RSS-Gen 6.7 / RSS-247 5.2(a)
Test Method Used	FCC KDB 558074 Section 8.2 referencing ANSI C63.10 Section 11.8.2
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	0.62 dB offset applied for RF cable insertion loss correction.

Operating mode: 1



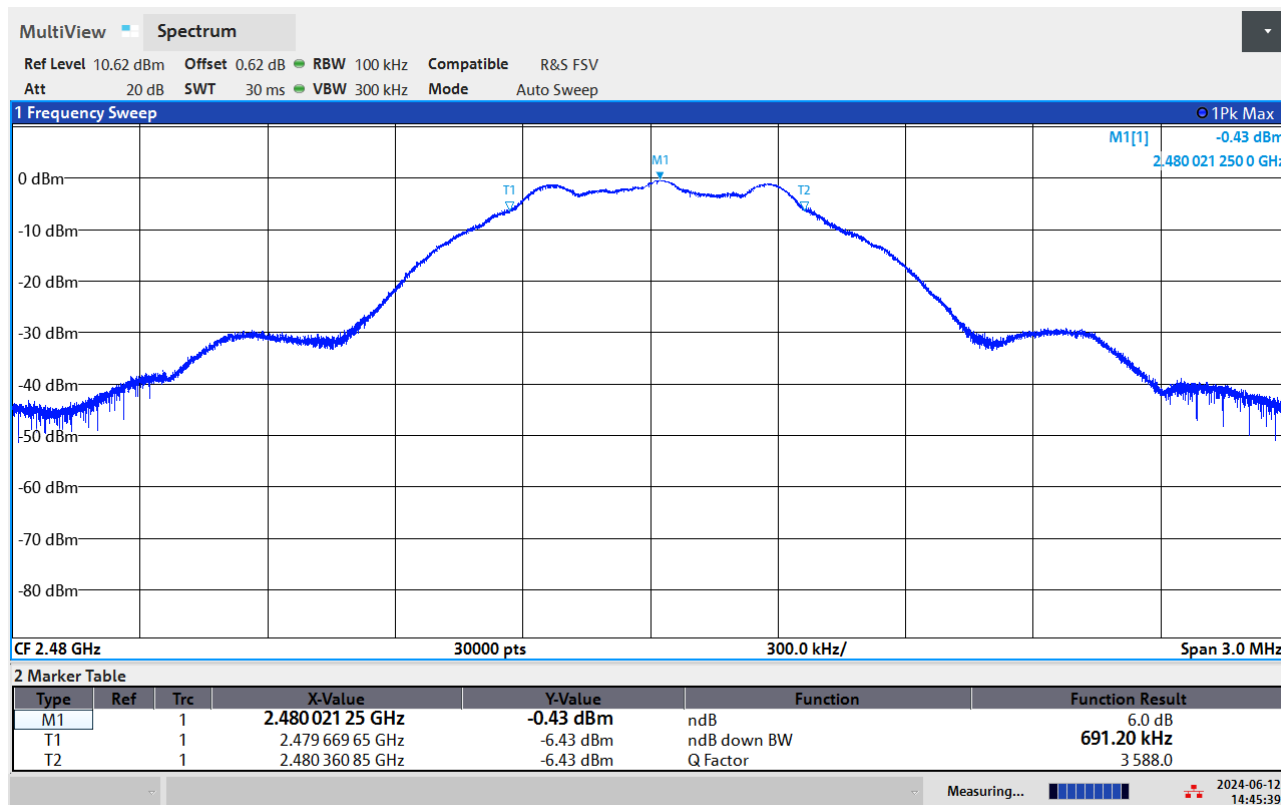
02:14:49 PM 06/12/2024

Operating mode: 2



02:40:42 PM 06/12/2024

Operating mode: 3



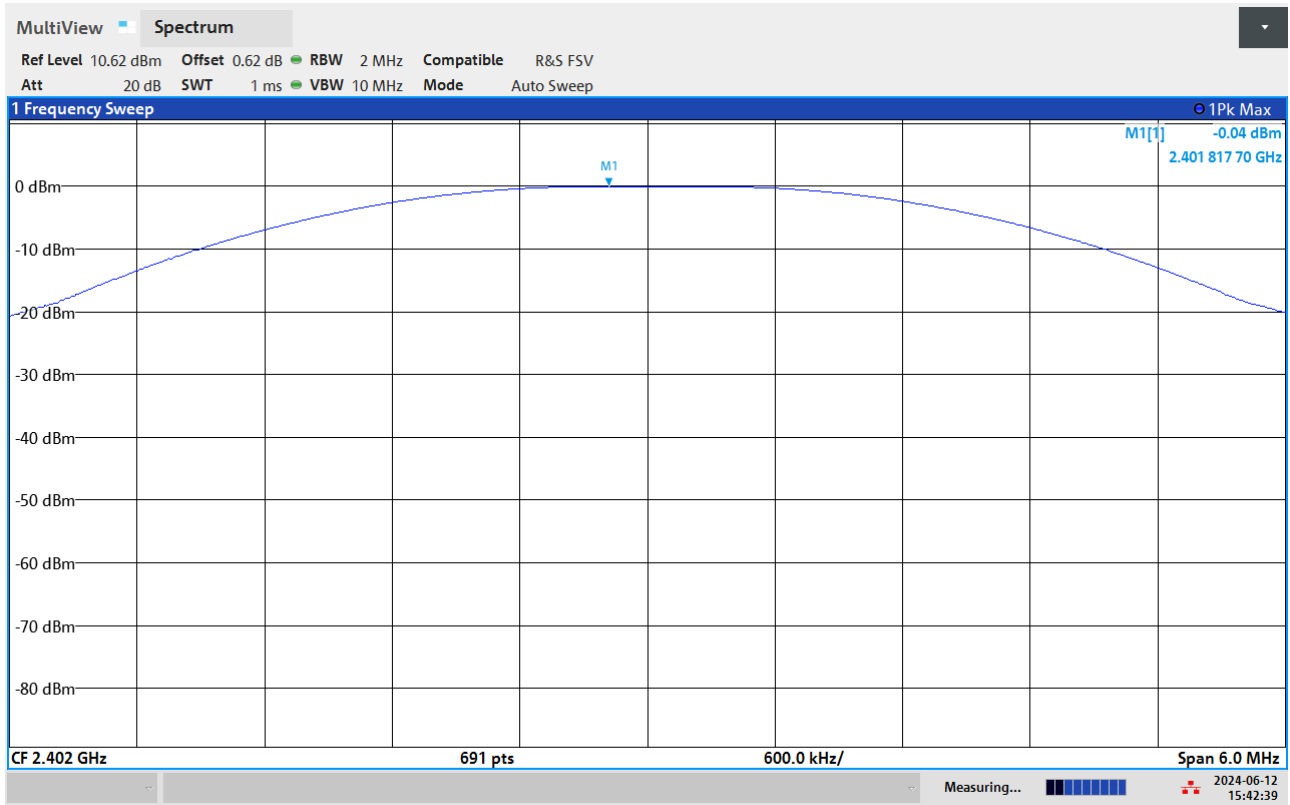
02:45:40 PM 06/12/2024

Channel	6 dB Bandwidth (kHz)	Limit (kHz)	Result
Bottom	704.30	≥500	Pass
Middle	703.10	≥500	Pass
Top	691.20	≥500	Pass

6.1.4 Transmitter Maximum Peak Output Power

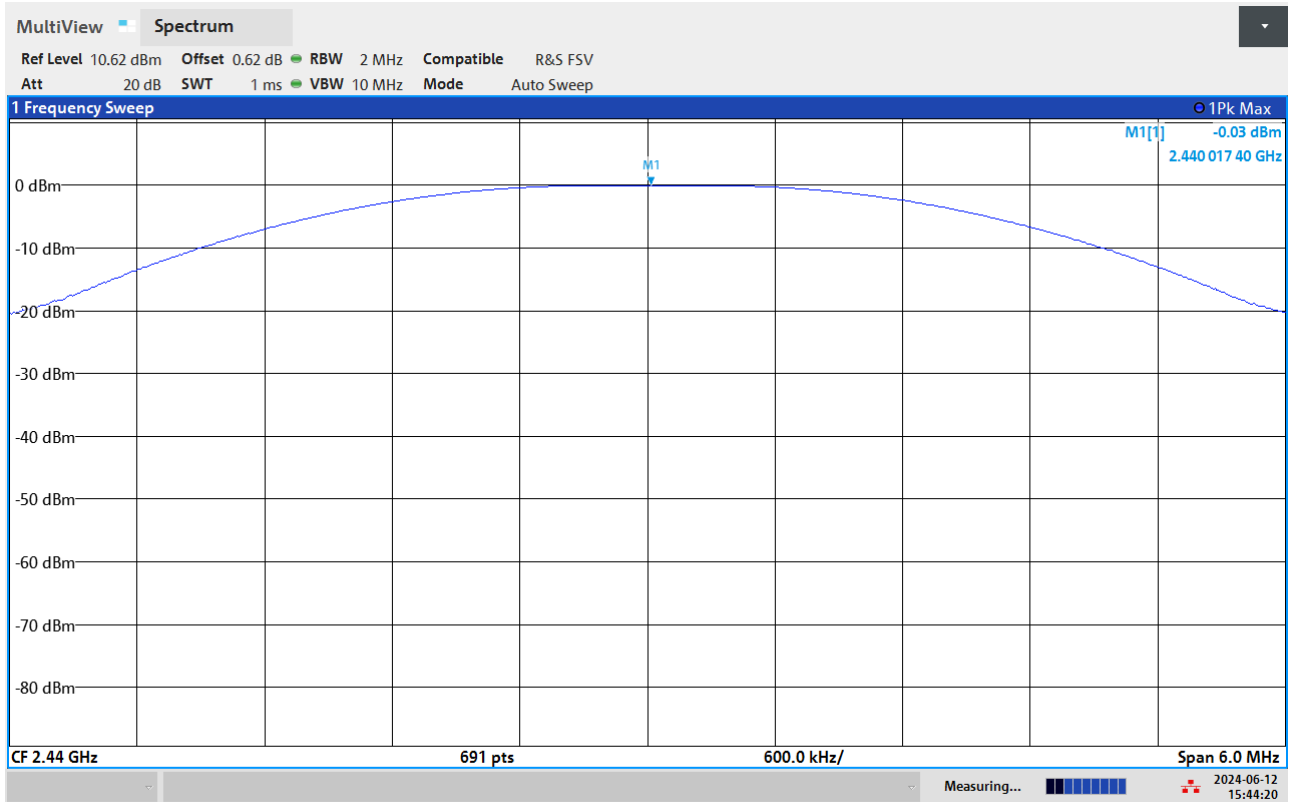
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-12
Test location (stand):	EMC Lab
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Part 15.247(b)(3)
ISED Canada Reference:	RSS-Gen 6.12 / RSS-247 5.4(d)
Test Method Used	FCC KDB 558074 Section 8.3.1.1 referencing ANSI C63.10 Section 11.9.1.1 and Notes below
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	- Instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges was used. - The conducted power was added to the declared antenna gain to obtain the EIRP. - A correction of 0.62 dB was added to the value displayed on spectrum analyzer to compensate losses of RF cables and splitter.

Operating mode: 1



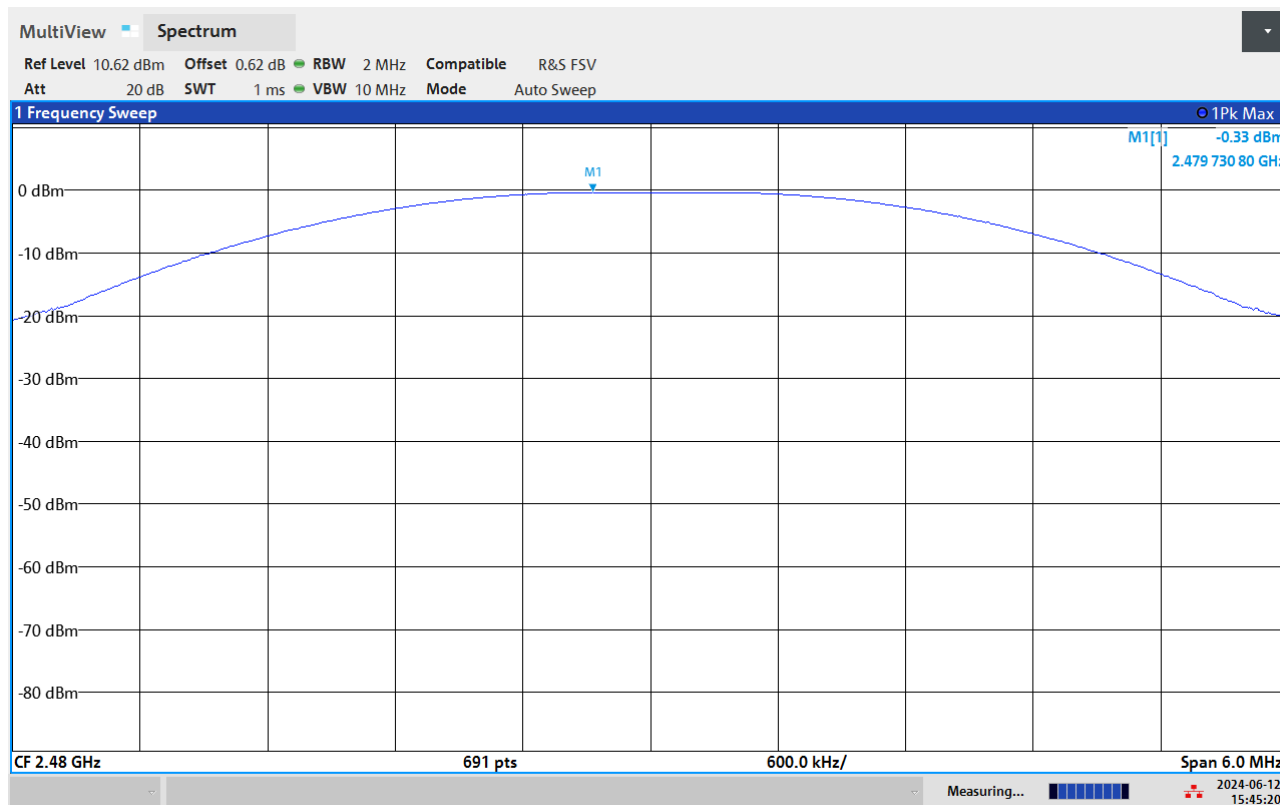
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Operating mode: 2



03:44:20 PM 06/12/2024

Operating mode: 3



03:45:21 PM 06/12/2024

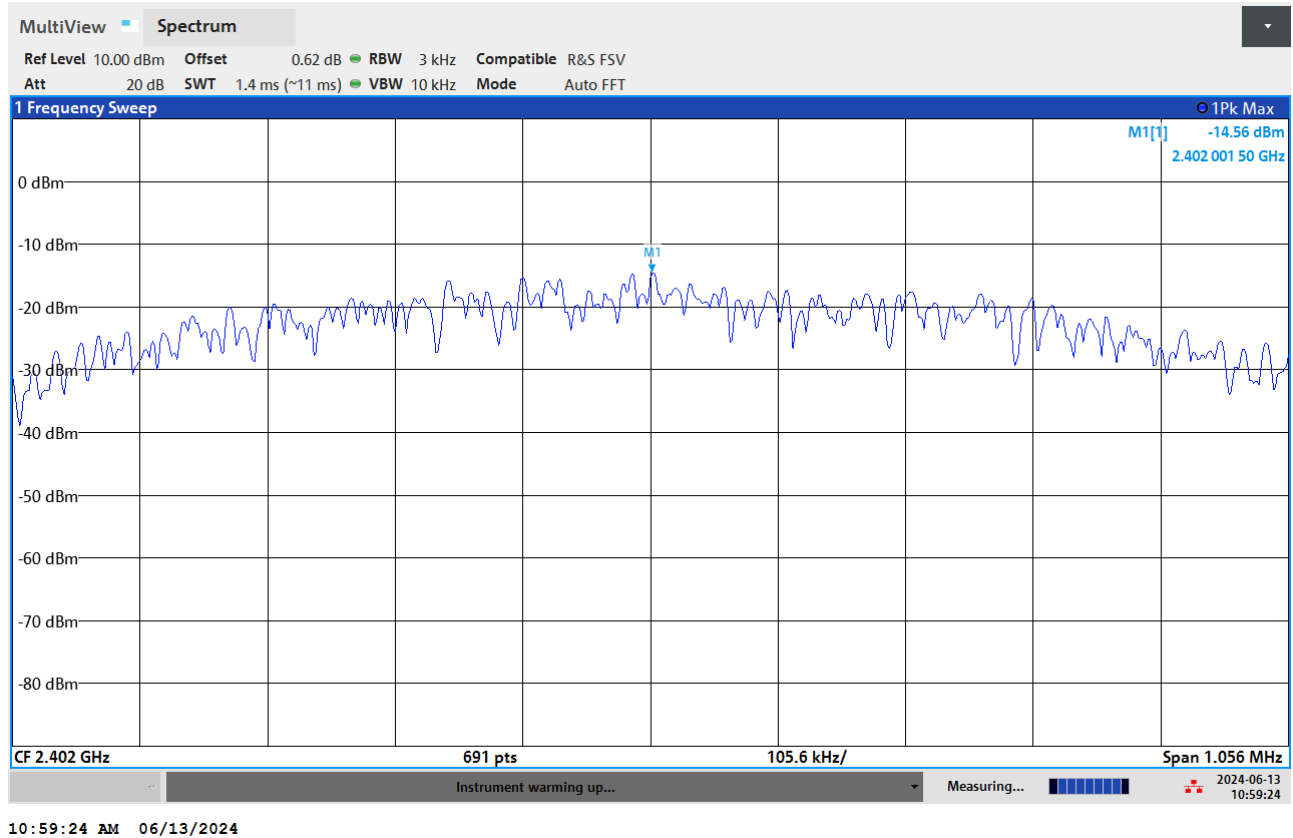
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-0.04	30.0	-30.04	Pass
Middle	-0.03	30.0	-30.03	Pass
Top	-0.33	30.0	-30.33	Pass

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-0.04	2.5	2.46	36.0	-33.54	Pass
Middle	-0.03	2.5	2.47	36.0	-33.53	Pass
Top	-0.33	2.5	2.17	36.0	-33.83	Pass

6.1.5 Transmitter Power Spectral Density

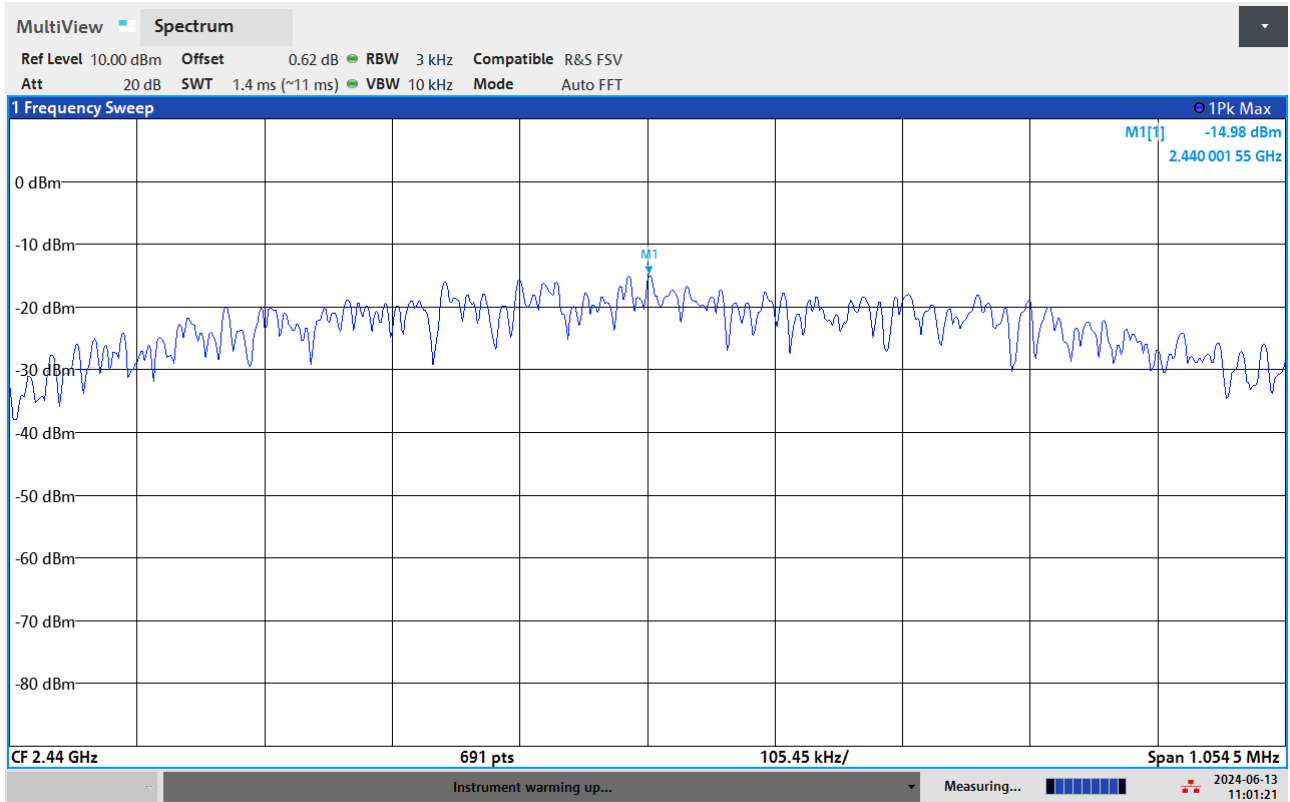
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-13
Test location (stand):	EMC Lab
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Part 15.247(e)
ISED Canada Reference:	RSS-247 5.2(b)
Test Method Used	FCC KDB 558074 Section 8.4 referencing ANSI C63.10 Section 11.10.2
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the signal analyser to compensate for the loss of the attenuator and RF cable.

Operating mode: 1



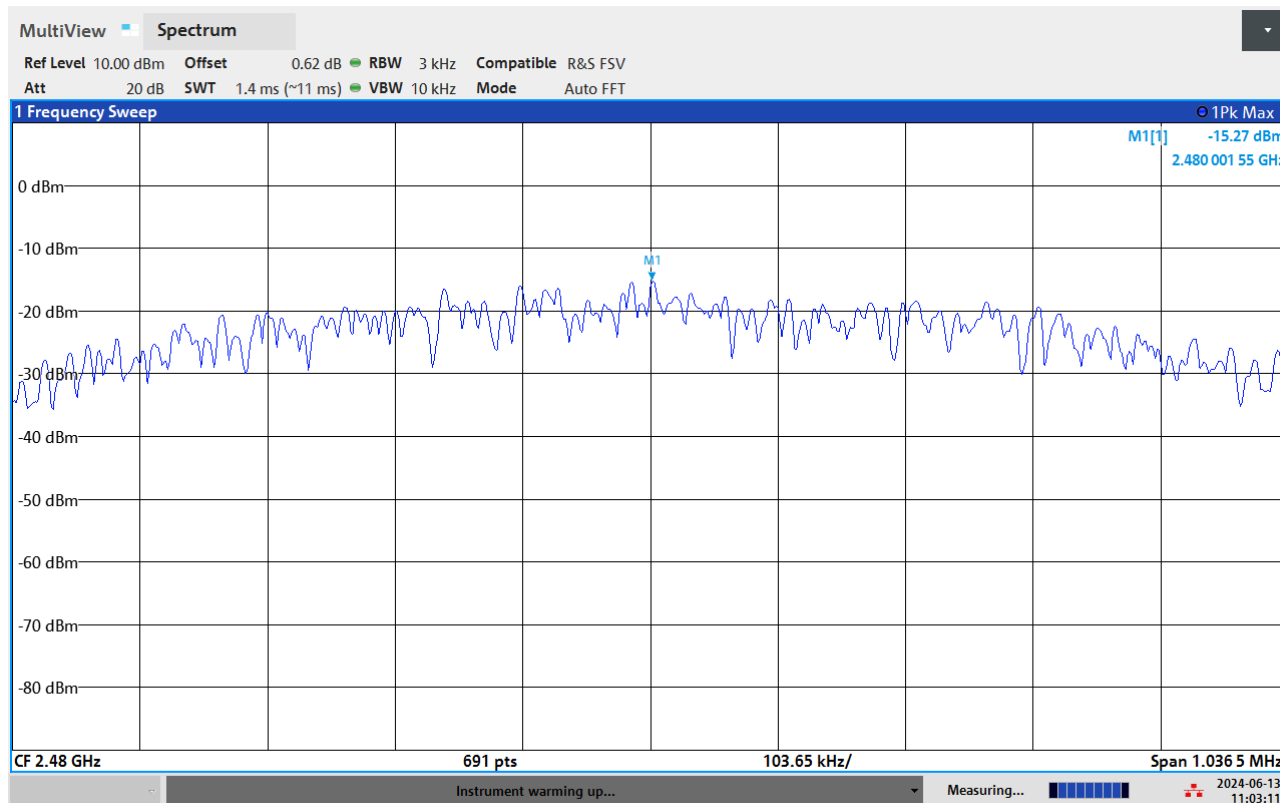
10:59:24 AM 06/13/2024

Operating mode: 2



11:01:21 AM 06/13/2024

Operating mode: 3



11:03:12 AM 06/13/2024

Channel	Output Power (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-14.56	8.0	-22.56	Pass
Middle	-14.98	8.0	-22.98	Pass
Top	-15.27	8.0	-23.27	Pass

6.2 Radiated Test Results

6.2.1 Transmitter Radiated Emission < 1 GHz

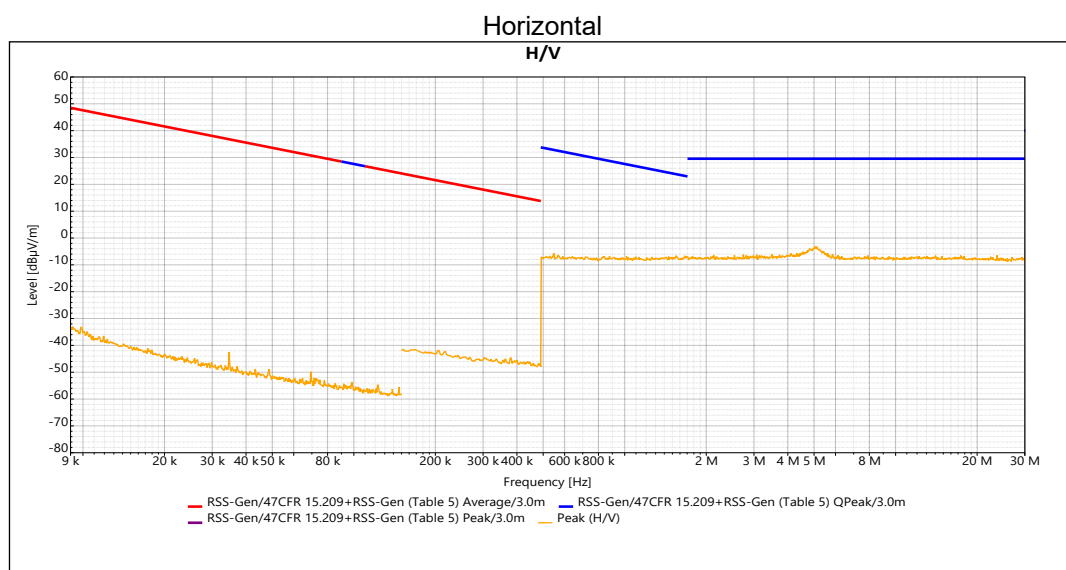
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-26
Test location (stand):	Area 9: SAC 5-3.0 (RF emission)
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Parts 15.247(d) & 15.209(a)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5
Test Method Used	ANSI C63.10 Sections 6.3, 6.4 and 6.5
Frequency Range	9 kHz to 1000 MHz
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	- Measurements below 30 MHz were performed in a semi-anechoic chamber at 3 metres. ANSI C63.10 clause 5.2 states an alternative test site that can demonstrate equivalence to an open area test site may be used for measurements below 30 MHz. Therefore, measurements were performed in a semi-anechoic chamber. The correlation data between semi-anechoic chamber and an open field test site is available upon request - As the EUT had a duty cycle < 98% the duty cycle correction factor has been applied to the average result. The corrected level is shown below: $\text{Average result} + \text{Correction Factor DC} = \text{Corrected average level}$ The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a). are identical to those in RSS-Gen Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using a free space impedance of 377Ω. For example, the measurement frequency X kHz resulted in a level of Y dBμV/m which is equivalent to $Y - 51.5 = Z$ dBμA/m, which has the same margin, W dB, to the corresponding RSS-Gen Table 6 limit as it has to the 15.209(a) limit

Results:

Operating Mode:	1 (worst case)		
Test result:	Pass	Tested on:	2024-06-26

Start Frequency: 9 kHz; Stop Frequency: 150 kHz; Step: 50 Hz; Sweep Time: 500 ms/Step; RF Attenuation: Auto; RBW: 200 Hz; VBW: Auto; Preamplifier: OFF; Preselector: ON

Start Frequency: 150 kHz; Stop Frequency: 30 MHz; Step: 2.25 kHz; Sweep Time: 500 ms/Step; RF Attenuation: Auto; RBW: 9 kHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



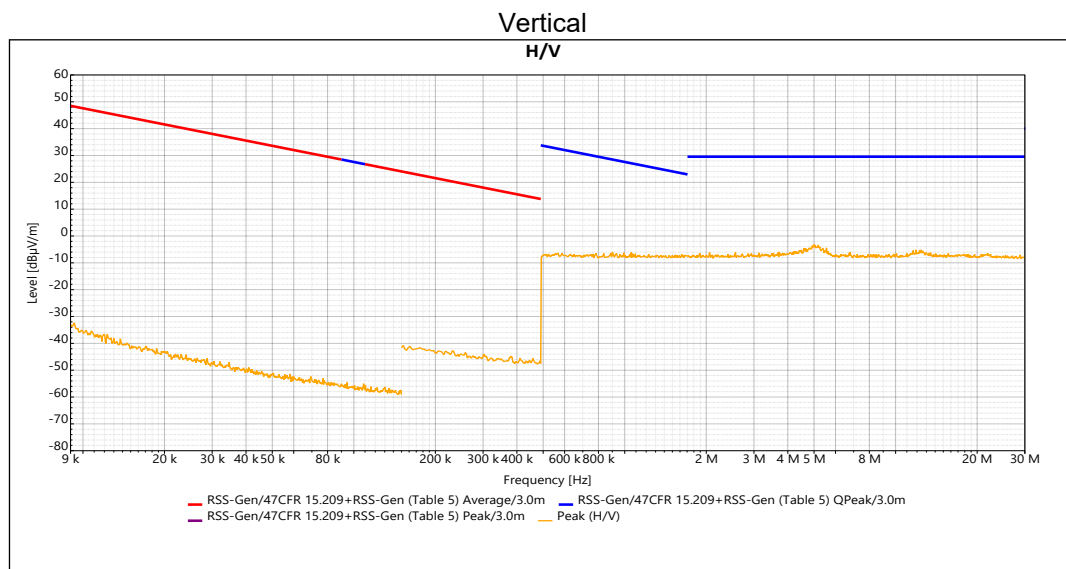
Final measurement

- ☒ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☐ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Operating Mode:	1 (worst case from 30 MHz to 1 GHz)		
Test result:	Pass	Tested on:	2024-06-26

Start Frequency: 9 kHz; Stop Frequency: 150 kHz; Step: 50 Hz; Sweep Time: 500 ms/Step; RF Attenuation: Auto; RBW: 200 Hz; VBW: Auto; Preamplifier: OFF; Preselector: ON

Start Frequency: 150 kHz; Stop Frequency: 30 MHz; Step: 2.25 kHz; Sweep Time: 500 ms/Step; RF Attenuation: Auto; RBW: 9 kHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



Final measurement

- ☒ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☐ The measurement results of highest emissions relative to the limit for each detector type are shown below:

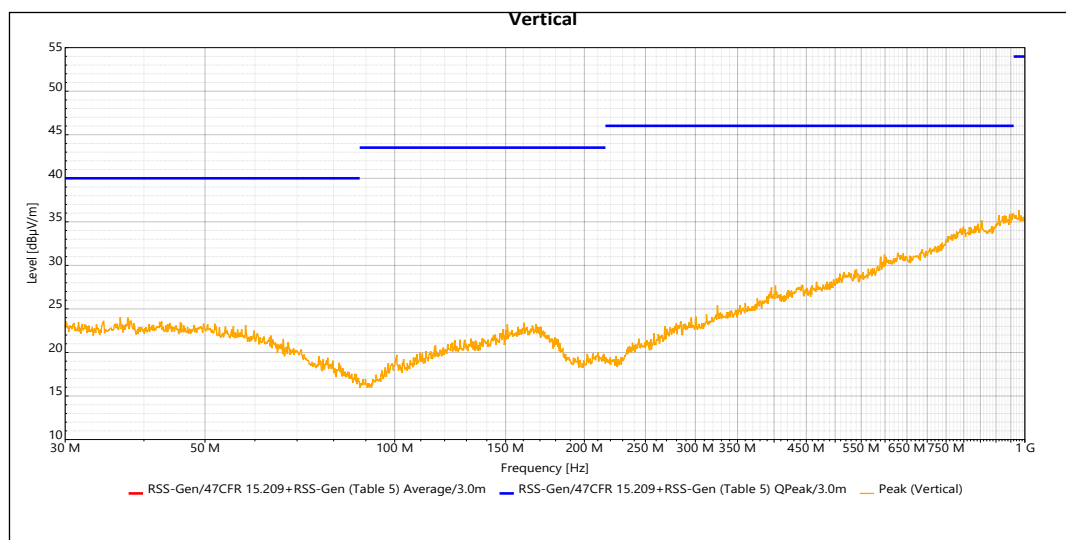
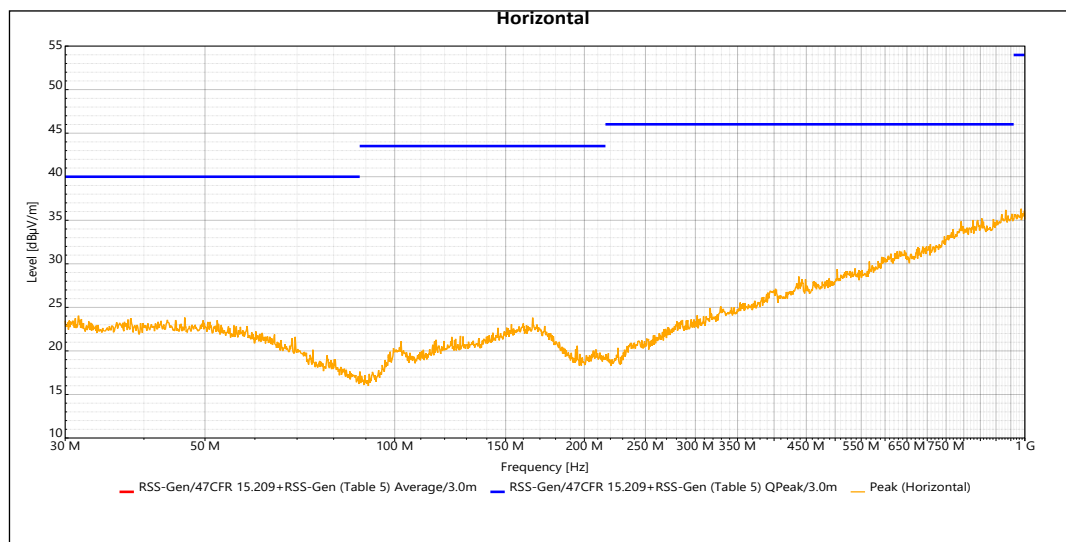
6.2.3 Transmitter Radiated Emission > 1 GHz

Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-10 to 2024-06-18
Test location (stand):	Area 8: SAC 3-1.2 (RF emission)
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	997 mbar
FCC Reference:	Parts 15.247(d) & 15.209(a)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5
Test Method Used	ANSI C63.10 Sections 6.3, 6.4 and 6.5
Frequency Range	30 MHz to 26 GHz
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	As the EUT had a duty cycle < 98% the duty cycle correction factor has been applied to the average result. The corrected level is shown below: <i>Average result + Correction Factor DC = Corrected average level</i>

Results:

Operating Mode:	1 (worst case)		
Test result:	Pass	Tested on:	2024-06-10

Start Frequency: 30 MHz; Stop Frequency: 1 GHz; Step: 30 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 120 kHz; VBW: Auto; Preamplifier: ON; Preselector: ON



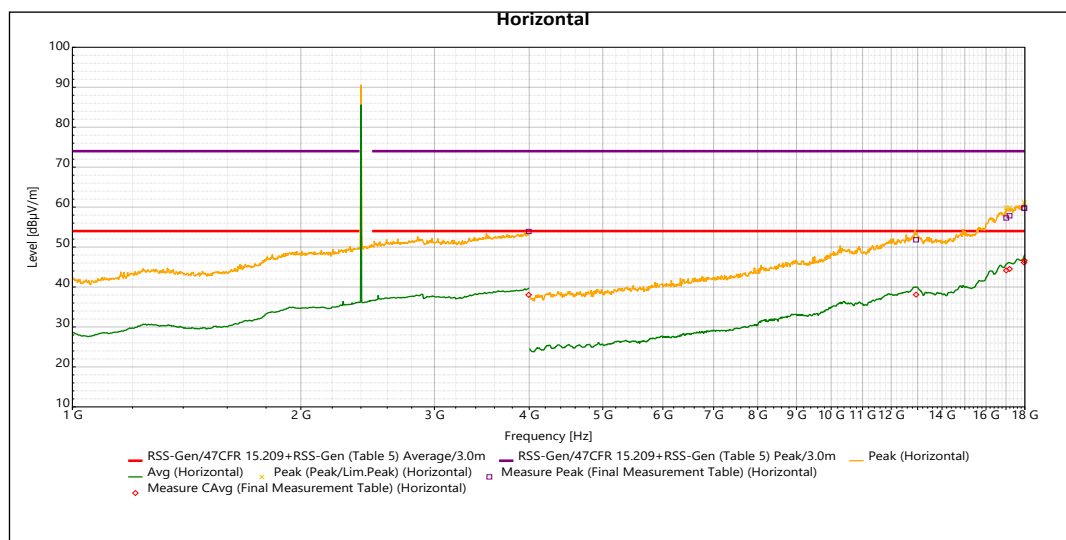
Final measurement

- ☒ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☐ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Operating Mode:	1		
Test result:	Pass	Tested on:	2024-06-18

Start Frequency: 1 GHz; Stop Frequency: 4 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON

Start Frequency: 4 GHz; Stop Frequency: 18 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



Final measurement

☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit

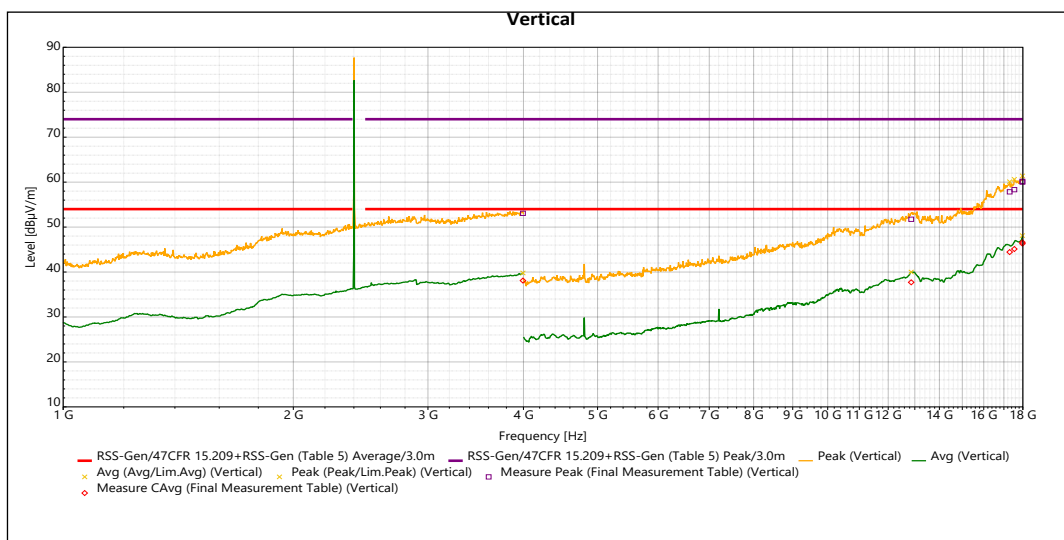
☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBμV/m)	Limit Peak (dBμV/m)	Margin Peak (dB)	Measure CAvg (dBμV/m)	Corrected Avg level (dBμV/m)	Limit Avg (dBμV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
3.994 GHz	1	53.904	74	-20.096	38.051	40.091	54	-13.879	3.605	262.5	Horizontal	1 M	5	Pass	39.443
12.94 GHz	2	51.819	74	-22.181	38.089	40.129	54	-13.841	1.332	310.1	Horizontal	1 M	5	Pass	21.914
17.012 GHz	2	57.277	74	-16.723	44.165	46.205	54	-7.765	1.306	312.4	Horizontal	1 M	5	Pass	28.906
17.184 GHz	2	57.817	74	-16.183	44.514	46.554	54	-7.416	1.093	310.1	Horizontal	1 M	5	Pass	28.899
17.96 GHz	2	59.785	74	-14.215	46.123	48.163	54	-5.807	2.803	339.8	Horizontal	1 M	5	Pass	31.221
18 GHz	2	59.714	74	-14.286	46.619	48.659	54	-5.311	1.329	327.2	Horizontal	1 M	5	Pass	31.31

Operating Mode:	1
Test result:	Pass
Tested on:	2024-06-17

Start Frequency: 1 GHz; Stop Frequency: 4 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON

Start Frequency: 4 GHz; Stop Frequency: 18 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



Final measurement

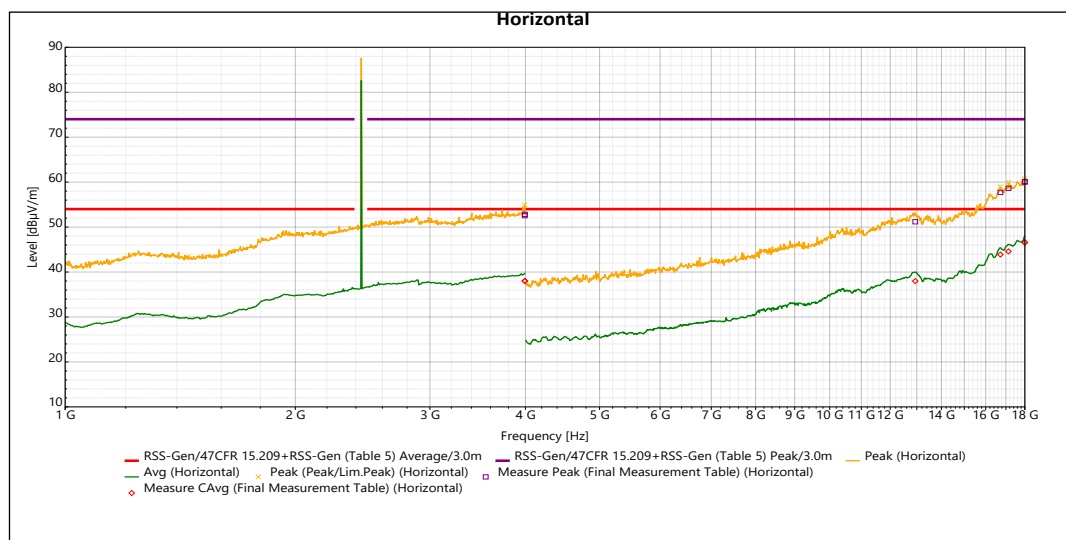
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBμV/m)	Limit Peak (dBμV/m)	Margin Peak (dB)	Measure CAvg (dBμV/m)	Corrected Avg level (dBμV/m)	Limit Avg (dBμV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
3.994 GHz	1	53.055	74	-20.945	38.1	40.14	54	-13.879	1.721	163.1	Vertical	1 M	5	Pass	39.443
12.86 GHz	2	51.741	74	-22.259	37.711	39.751	54	-13.841	2.689	320.7	Vertical	1 M	5	Pass	21.812
17.301 GHz	2	57.84	74	-16.16	44.436	46.476	54	-7.765	2.284	339.9	Vertical	1 M	5	Pass	29.099
17.544 GHz	2	58.33	74	-15.67	45.119	47.159	54	-7.416	1.653	302.6	Vertical	1 M	5	Pass	29.739
17.978 GHz	2	60.008	74	-13.992	46.314	48.354	54	-5.807	3.459	295.1	Vertical	1 M	5	Pass	31.261
18 GHz	2	60.169	74	-13.831	46.619	48.659	54	-5.311	1.226	356.5	Vertical	1 M	5	Pass	31.31

Operating Mode:	2		
Test result:	Pass	Tested on:	2024-06-18

Start Frequency: 1 GHz; Stop Frequency: 4 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON

Start Frequency: 4 GHz; Stop Frequency: 18 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



Final measurement

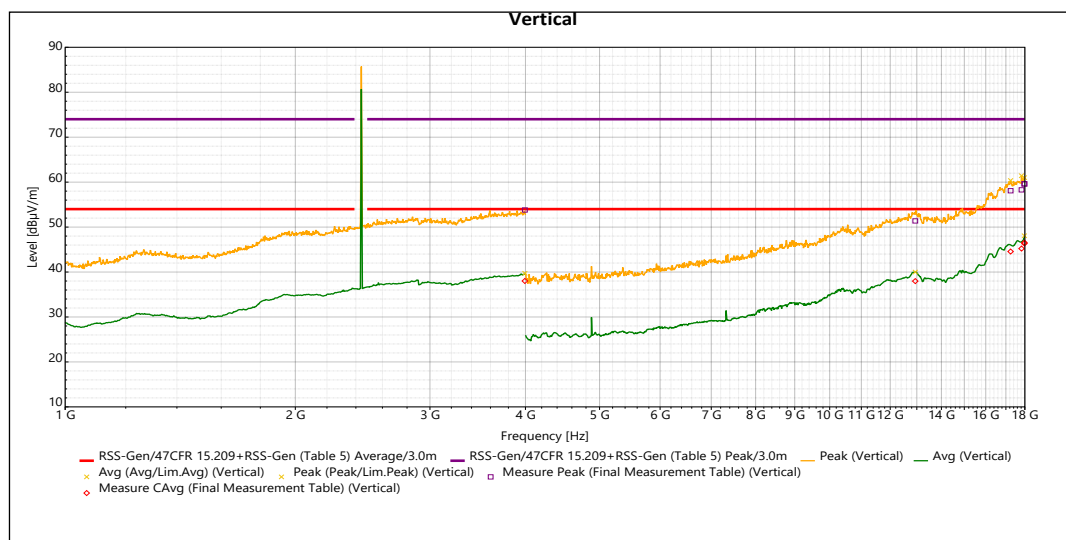
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBμV/m)	Limit Peak (dBμV/m)	Margin Peak (dB)	Measure CAvg (dBμV/m)	Corrected Avg level (dBμV/m)	Limit Avg (dBμV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
3.991 GHz	1	52.554	74	-21.446	38.015	40.055	54	-13.915	1.086	120.4	Horizontal	1 M	5	Pass	39.44
3.994 GHz	1	52.828	74	-21.172	37.998	40.038	54	-13.932	2.35	145.7	Horizontal	1 M	5	Pass	39.443
12.94 GHz	2	51.18	74	-22.82	37.995	40.035	54	-13.935	2.359	337.8	Horizontal	1 M	5	Pass	21.915
16.721 GHz	2	57.721	74	-16.279	43.891	45.931	54	-8.039	1.359	330.6	Horizontal	1 M	5	Pass	28.03
17.133 GHz	2	58.628	74	-15.372	44.594	46.634	54	-7.336	3.784	339.3	Horizontal	1 M	5	Pass	28.876
17.996 GHz	2	60.141	74	-13.859	46.556	48.596	54	-5.374	1.258	339.8	Horizontal	1 M	5	Pass	31.301
18 GHz	2	60.014	74	-13.986	46.578	48.618	54	-5.352	1.953	322.5	Horizontal	1 M	5	Pass	31.309

Operating Mode:	2
Test result:	Pass
Tested on:	2024-06-18

Start Frequency: 1 GHz; Stop Frequency: 4 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON

Start Frequency: 4 GHz; Stop Frequency: 18 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



Final measurement

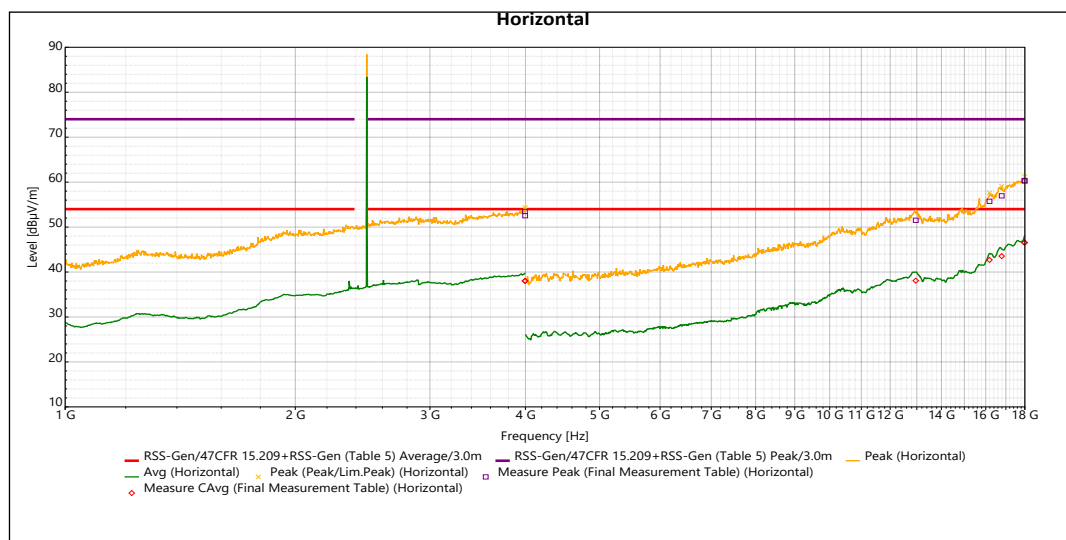
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBμV/m)	Limit Peak (dBμV/m)	Margin Peak (dB)	Measure CAvg (dBμV/m)	Corrected Avg level (dBμV/m)	Limit Avg (dBμV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
3.993 GHz	1	53.8	74	-20.2	38.013	40.053	54	-13.917	2.139	165.5	Vertical	1 M	5	Pass	39.442
12.94 GHz	2	51.375	74	-22.625	37.976	40.016	54	-13.954	2.828	320.3	Vertical	1 M	5	Pass	21.915
17.244 GHz	2	58.08	74	-15.92	44.564	46.604	54	-7.366	2.667	304.1	Vertical	1 M	5	Pass	29.002
17.821 GHz	2	58.277	74	-15.723	45.22	47.26	54	-6.71	1.002	301.4	Vertical	1 M	5	Pass	30.742
17.978 GHz	2	59.582	74	-14.418	46.355	48.395	54	-5.575	1.878	296.3	Vertical	1 M	5	Pass	31.262
18 GHz	2	59.648	74	-14.352	46.56	48.6	54	-5.37	3.321	346.7	Vertical	1 M	5	Pass	31.31

Operating Mode:	3		
Test result:	Pass	Tested on:	2024-06-18

Start Frequency: 1 GHz; Stop Frequency: 4 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON

Start Frequency: 4 GHz; Stop Frequency: 18 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



Final measurement

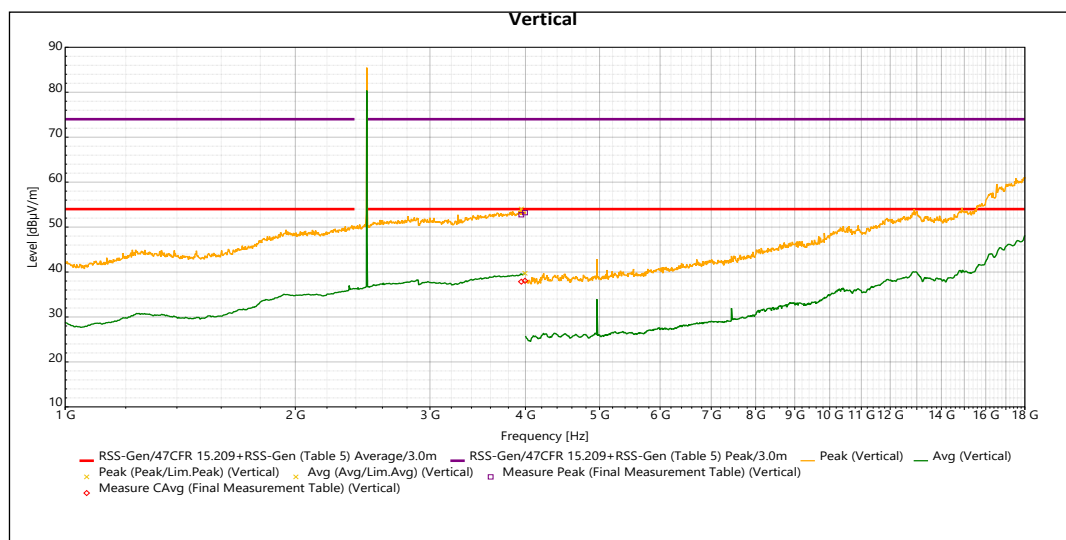
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBμV/m)	Limit Peak (dBμV/m)	Margin Peak (dB)	Measure CAvg (dBμV/m)	Corrected Avg level (dBμV/m)	Limit Avg (dBμV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
3.994 GHz	1	53.467	74	-20.533	38.029	40.069	54	-13.901	2.076	169.1	Horizontal	1 M	5	Pass	39.443
3.996 GHz	1	52.544	74	-21.456	38.02	40.06	54	-13.91	2.595	309.9	Horizontal	1 M	5	Pass	39.446
12.96 GHz	2	51.51	74	-22.49	38.071	40.111	54	-13.859	1.69	333	Horizontal	1 M	5	Pass	21.936
16.182 GHz	2	55.741	74	-18.259	42.685	44.725	54	-9.245	1.519	344.1	Horizontal	1 M	5	Pass	25.722
16.789 GHz	2	56.947	74	-17.053	43.537	45.577	54	-8.393	3.679	323.5	Horizontal	1 M	5	Pass	28.195
17.995 GHz	2	60.272	74	-13.728	46.559	48.599	54	-5.371	1.118	340	Horizontal	1 M	5	Pass	31.298
18 GHz	2	60.339	74	-13.661	46.505	48.545	54	-5.425	3.993	342	Horizontal	1 M	5	Pass	31.31

Operating Mode:	3		
Test result:	Pass	Tested on:	2024-06-18

Start Frequency: 1 GHz; Stop Frequency: 4 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON

Start Frequency: 4 GHz; Stop Frequency: 18 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



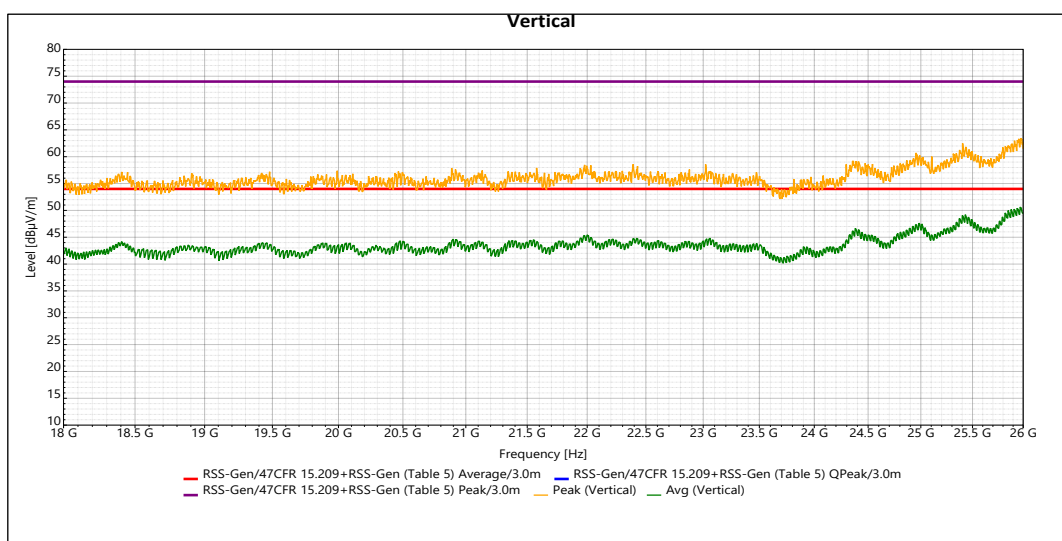
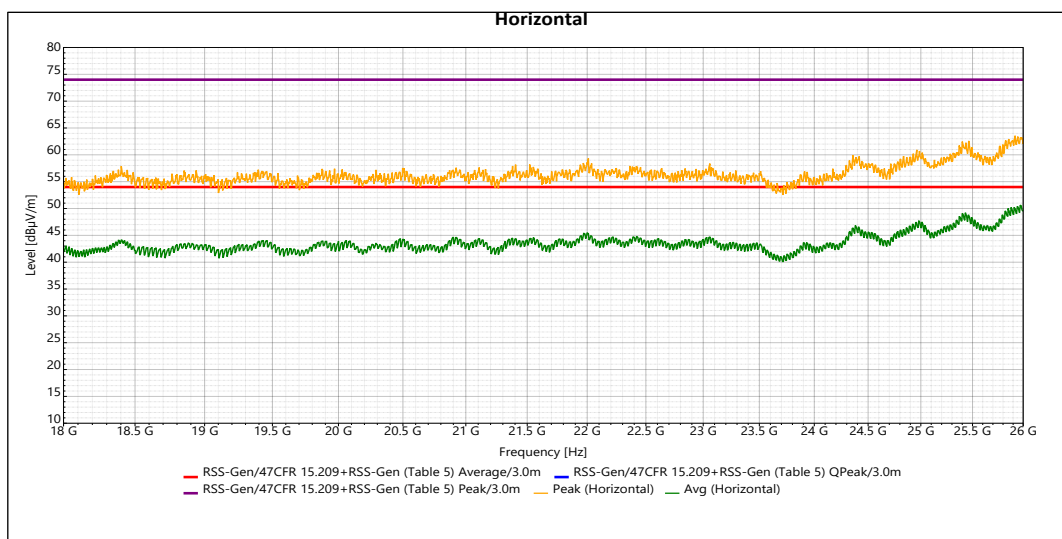
Final measurement

- ☒ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBμV/m)	Limit Peak (dBμV/m)	Margin Peak (dB)	Measure CAvg (dBμV/m)	Corrected Avg level (dBμV/m)	Limit Avg (dBμV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
3.951 GHz	1	52.744	74	-21.256	37.846	39.886	54	-14.084	2.966	194.7	Vertical	1 M	5	Pass	39.395
3.994 GHz	1	53.212	74	-20.788	38.046	40.086	54	-13.884	3.756	169.1	Vertical	1 M	5	Pass	39.444

Operating Mode:	1 (worst case)		
Test result:	Pass	Tested on:	2024-06-18

Start Frequency: 18 GHz; Stop Frequency: 26 GHz; Step: 250 kHz; Sweep Time: 20 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: OFF; Preselector: ON



Final measurement

- ☒ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☐ The measurement results of highest emissions relative to the limit for each detector type are shown below:

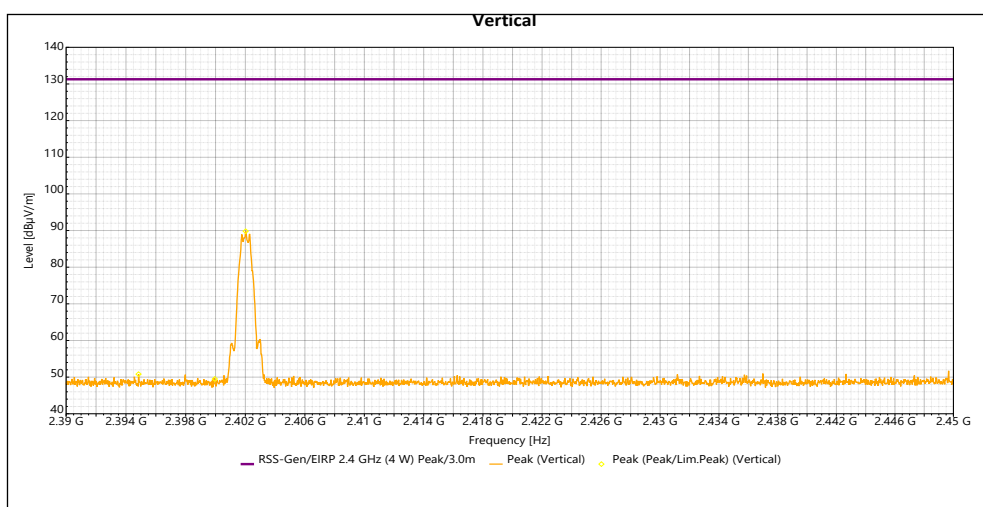
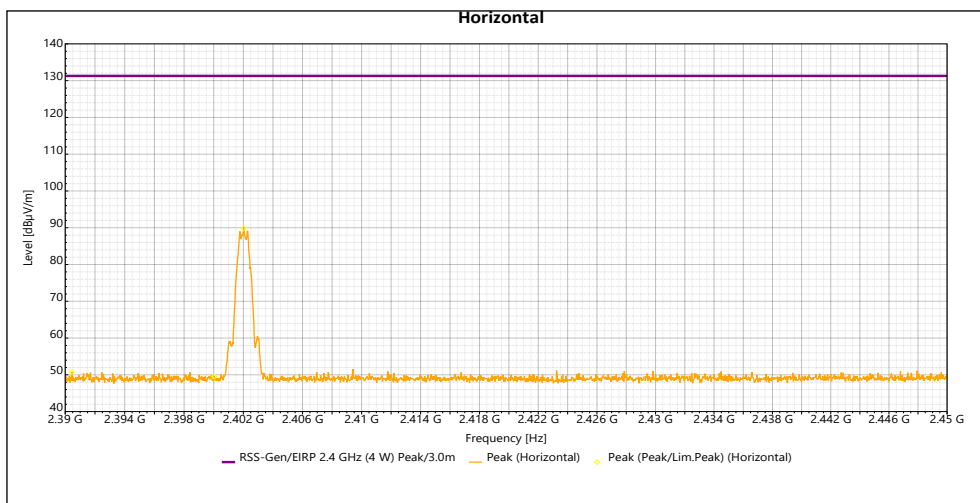
6.2.4 Transmitter Band Edge Radiated Emission and restricted band evaluation

Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-18
Test location (stand):	Area 8: SAC 3-1.2 (RF emission)
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Parts 15.247(d) & 15.209(a)
ISED Canada Reference:	RSS-Gen 6.13 / RSS-247 5.5
Test Method Used	KDB 558074 Section 8.7 referencing ANSI C63.10 Sections 11.11, 11.12 & 11.13
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	As the EUT had a duty cycle < 98% the duty cycle correction factor has been applied to the average result. The corrected level is shown below: <i>Upper Band Average result + Correction Factor DC = Corrected band edge level</i>

Results

Operating Mode:	1		
Test result:	Pass	Tested on:	2024-06-18

Start Frequency: 2.39 GHz; Stop Frequency: 2.45 GHz; Step: 20000 Pts; Sweep Time: 1 s; RF Attenuation: 10 dB; RBW: 100 kHz; VBW: 300 kHz; Preamplifier: ON; Preselector: ON

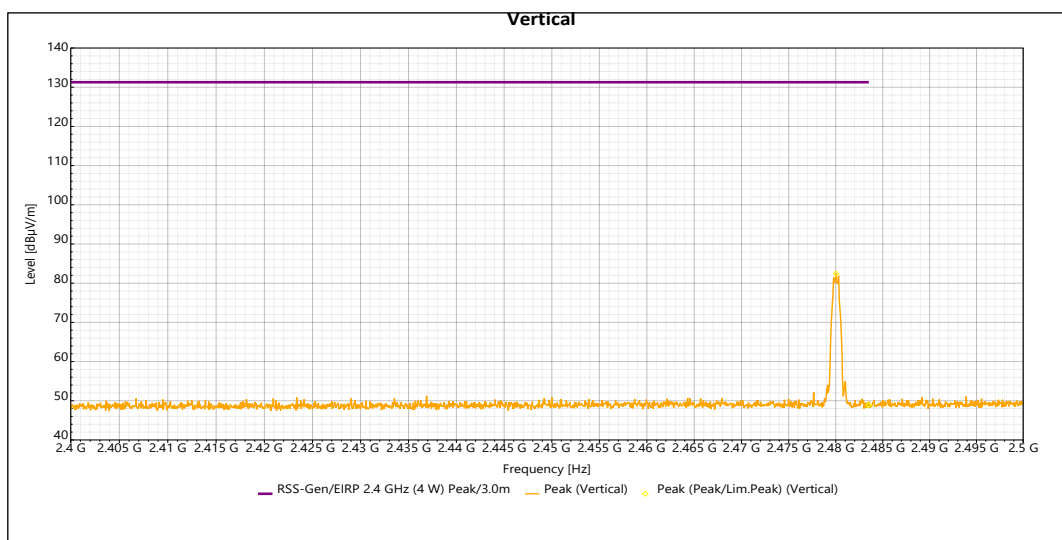
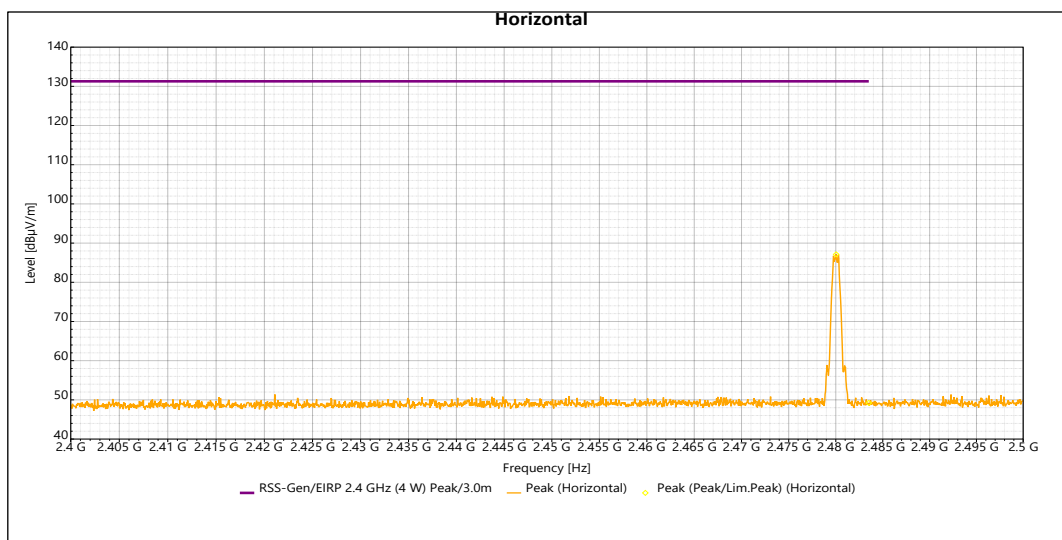


Channel	Max peak of in-band emission (dBm)	Frequency of max peak at the band edge (MHz)	Peak of carrier (dB)	Delta (dB)	Margin (dB)	polarization	Result
Bottom	49.555	2400	89.869	40.314	>20 dB	Horizontal	Pass
Bottom	49.485	2400	89.824	40.339	>20 dB	Vertical	Pass

NOTE: 20 dB margin applied because conducted output power was measured using Peak detector.

Operating Mode:	3	
Test result:	Pass	Tested on: 2024-06-18

Start Frequency: 2.4 GHz; Stop Frequency: 2.5 GHz; Step: 20000 Pts; Sweep Time: 1 s; RF Attenuation: 10 dB; RBW: 100 kHz; VBW: 300 kHz; Preamplifier: ON; Preselector: ON



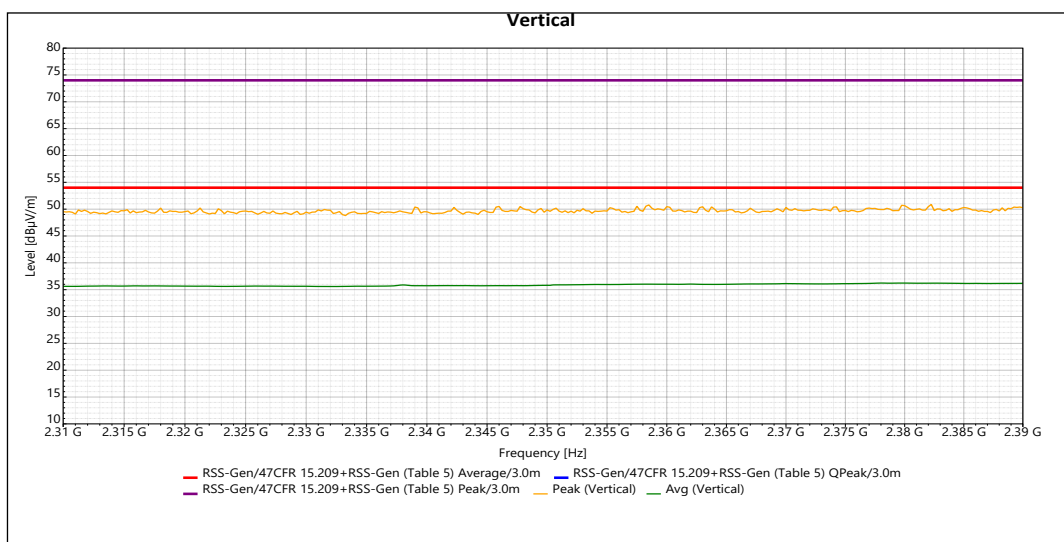
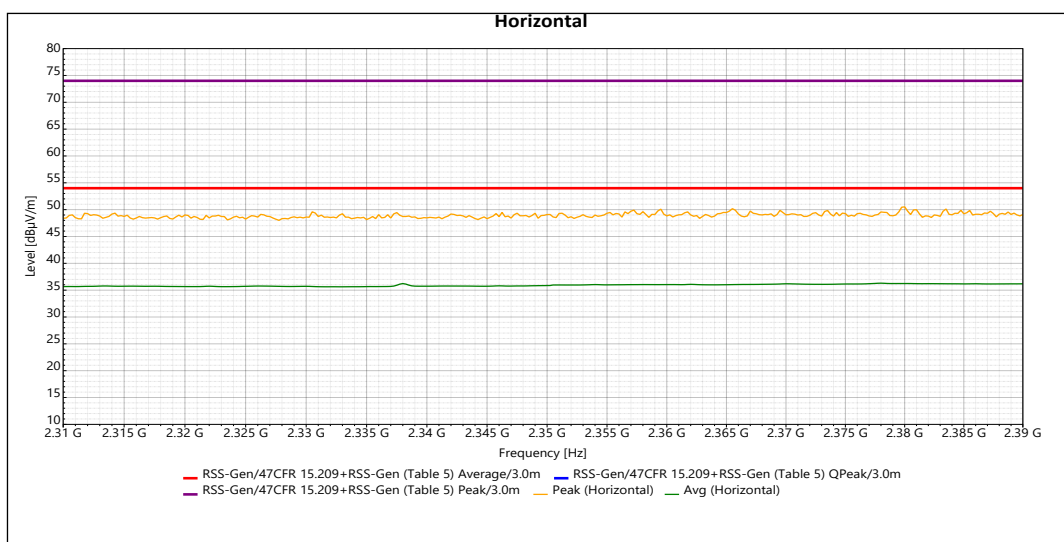
Channel	Max peak of in-band emission (dBm)	Frequency of max peak at the band edge (MHz)	Peak of carrier (dB)	Delta (dB)	Margin (dB)	polarization	Result
Top	49.206	2484	87.127	37.921	>20 dB	Horizontal	Pass
Top	48.856	2483	82.448	33.592	>20 dB	Vertical	Pass

NOTE: 20 dB margin applied because conducted output power was measured using Peak detector.

Restricted band results:

Operating Mode:	1		
Test result:	Pass	Tested on:	2024-06-18

Start Frequency: 2.31 GHz; Stop Frequency: 2.39 GHz; Step: 250 kHz; Sweep Time: 500 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON

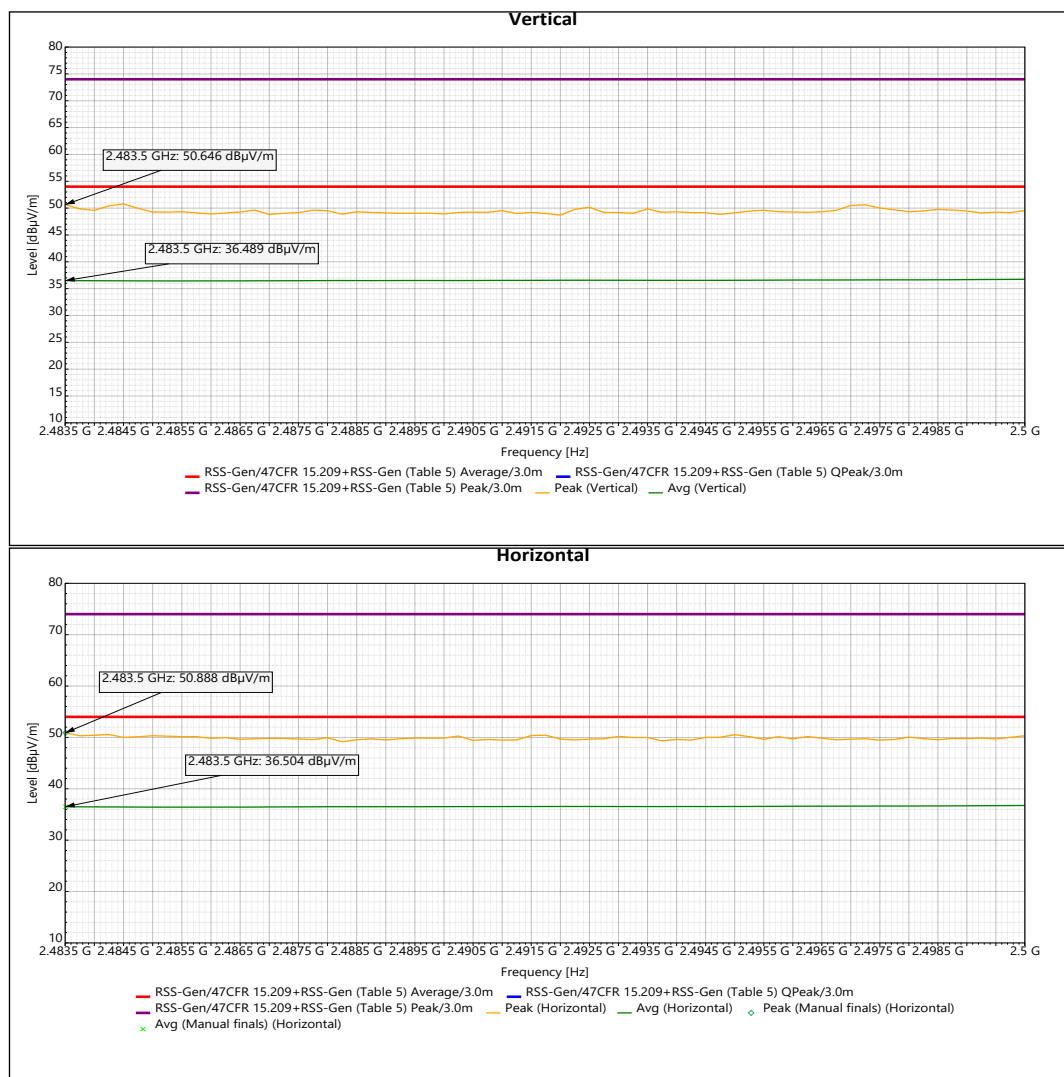


Final measurement

- ☒ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☐ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Operating Mode:	3
Test result:	Pass
Tested on:	2024-06-18

Start Frequency: 2.4835 GHz; Stop Frequency: 2.5 GHz; Step: 250 kHz; Sweep Time: 500 ms/Step; RF Attenuation: Auto; RBW: 1 MHz; VBW: Auto; Preamplifier: ON; Preselector: ON



Final measurement

- ☒ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBμV/m)	Limit Peak (dBμV/m)	Margin Peak (dB)	Measure CAvg (dBμV/m)	Corrected Avg level (dBμV/m)	Limit Avg (dBμV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Comments	Correction (dB)
2.483.5 GHz	1	50.888	74	23.112	36.504	38.544	54	15.426	1.498	329.9	Horizontal	1 M	Pass	36.804
2.483.5 GHz	1	50.646	74	23.354	36.489	38.529	54	15.441	1.498	329.9	Vertical	1 M	Pass	36.804

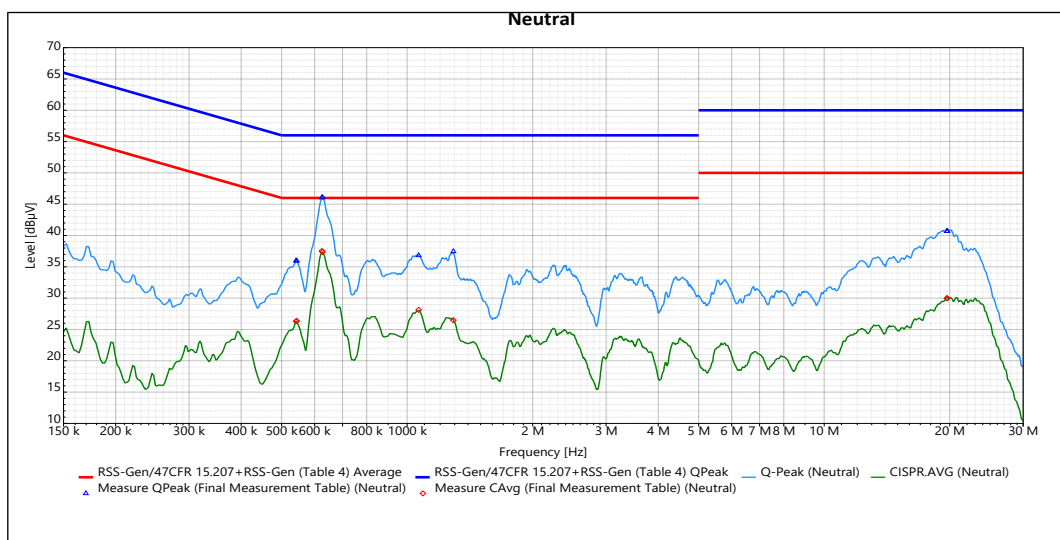
6.3 Transmitted AC Conducted Spurious Emissions

Tested by:	Andrea Giovanni Galbiati	
Test date:	2024-06-12	
Test location (stand):	Area 11: SR2 (RF emission)	
Ambient temperature:	22 °C	
Relative humidity:	45 %	
Atmospheric pressure:	998 mbar	
Test set-up description:	☒	Set-up Type A (40 cm distance to vertical ground plane and 80 cm to horizontal ground plane)
	☐	Set-up Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment set-up (10 cm over ground plane)
	☐	80 cm to horizontal ground plane (vertical ground plane not used according to ANSI C63.4-2014 clause 5.2.3)
	☐	Artificial hand applied
	☐	Other:
FCC Reference:	Part 15.207	
ISED Canada Reference:	RSS-Gen 8.8	
Test Method Used	ANSI C63.10 Section 6.2 / FCC KDB 174176 and notes below	
Used mains voltage/frequency:	120 V; 60 Hz 240 V; 60 Hz	
Supplementary information:	The 120V and 240V power supply have been investigated during pre-scanning. Only worst case (120V) condition has been recorded in this report	

Results

Operating Mode:	1 (worst case)		
Power supply:	120 V; 60 Hz (worst case)		
Port tested:	AC Mains		
Line tested:	Line		
Test result:	Pass	Tested on:	2024-06-12

Start Frequency: 150 kHz; Stop Frequency: 30 MHz; Step: 2.25 kHz; Sweep Time: 1 s/Step; RF Attenuation: Auto; 10 dB min attenuation: ON; RBW: 9 kHz; Preamplifier: OFF; Preselector: ON



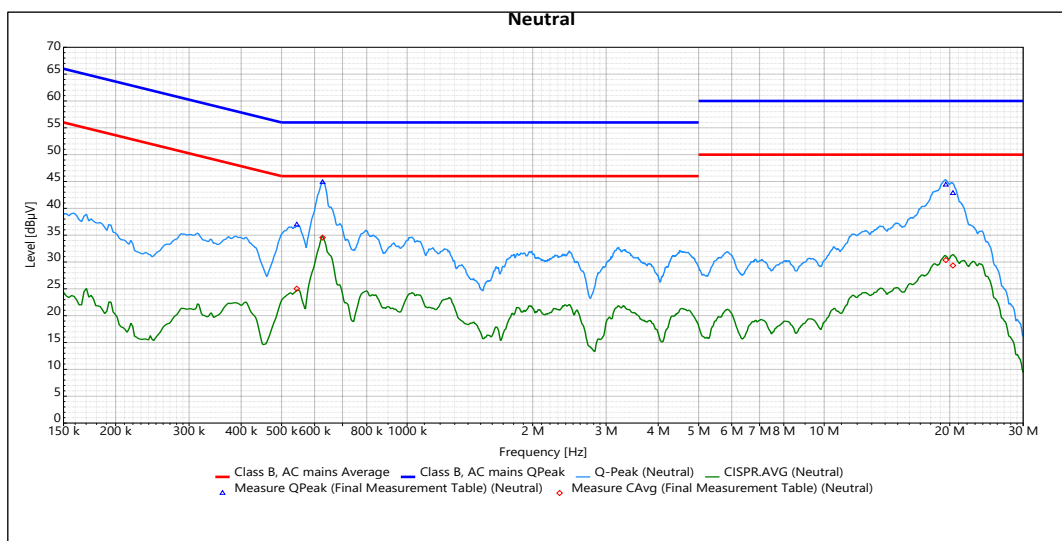
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Final Measurement Table

Frequency	SR #	Measure QPeak (dBμV)	Limit QPeak (dBμV)	Margin QPeak (dB)	Measure CAvg (dBμV)	Limit Avg (dBμV)	Margin Avg (dB)	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
541.5 kHz	1	35.979	56	-20.021	26.308	46	-19.692	9 k	5	Pass	10.32
543.75 kHz	1	35.956	56	-20.044	26.359	46	-19.641	9 k	5	Pass	10.32
624.75 kHz	1	46.057	56	-9.943	37.526	46	-8.474	9 k	5	Pass	10.322
627 kHz	1	46.09	56	-9.91	37.374	46	-8.626	9 k	5	Pass	10.323
1.066 MHz	1	36.821	56	-19.179	28.124	46	-17.876	9 k	5	Pass	10.34
1.291 MHz	1	37.46	56	-18.54	26.467	46	-19.533	9 k	5	Pass	10.343
19.682 MHz	1	40.685	60	-19.315	30.004	50	-19.996	9 k	5	Pass	10.851
19.739 MHz	1	40.689	60	-19.311	29.977	50	-20.023	9 k	5	Pass	10.853

Operating Mode:	1 (worst case)		
Power supply:	120 V; 60 Hz (worst case)		
Port tested:	AC Mains		
Line tested:	Neutral		
Test result:	Pass	Tested on:	2024-06-12

Start Frequency: 150 kHz; Stop Frequency: 30 MHz; Step: 2.25 kHz; Sweep Time: 1 s/Step; RF Attenuation: Auto; 10 dB min attenuation: ON; RBW: 9 kHz; Preamplifier: OFF; Preselector: ON



- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Final Measurement Table

Frequency	SR #	Measure QPeak (dBμV)	Limit QPeak (dBμV)	Margin QPeak (dB)	Measure CAvg (dBμV)	Limit Avg (dBμV)	Margin Avg (dB)	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
543.75 kHz	1	36.947	56	-19.053	25.028	46	-20.972	9 k	5	Pass	10.32
627 kHz	1	44.839	56	-11.161	34.55	46	-11.45	9 k	5	Pass	10.323
19.574 MHz	1	44.378	60	-15.622	30.362	50	-19.638	9 k	5	Pass	10.848
20.357 MHz	1	42.821	60	-17.179	29.353	50	-20.647	9 k	5	Pass	10.868

7 List of test equipment

Equipment	Type	Inventory number	Manufacturer	Serial Number	Last calibration date	Calibration due date
Test Stand: Radiated emission 9 kHz to 30 MHz						
DC Power Injector	PI 6121	155980	Teseq, Inc	-	-	-
EMI TEST RECEIVER	ESR7	204729	Rohde & Schwarz	102380	2024-04-12	2025-06-28
Active Loop Antenna	HLA 6121	155933	Teseq, Inc	45746	2023-02-06	2025-02-28
Software - EMC	BAT-EMC	156535	Nexio Technologies		-	-
Antenna Tripod	CTP 6099	155934	Teseq, Inc	-	-	-
SEMI-ANECHOIC CHAMBER	FACT5-3.0 STD	210401	ETS-Lindgren	-	-	-
12m N(m)-N(m) RF cable	Hyperflex 5 12m	248398	Kabel Kusch	None	2024-05-14	2025-05-28
Center, Modular RF Platform	7000-011	210858	ETS-Lindgren	00231681	-	-
Test Stand: Radiated emission 30 MHz to 1 GHz						
Cable 2000mm - 18 GHz	SF126/11SMA/11N/2000	220503	Huber+Suhner	554756/126	2024-05-10	2025-05-28
Cable 8000mm - 18 GHz	SF126/11N/11N/8000	220502	Huber+Suhner	556226/126	2024-05-10	2025-05-28
NSA Normalized Site Attenuation	NSA FACT3-1.2 STD	210410	ETS-Lindgren	NSA FACT3-1.2 STD	2022-04-12	2025-04-28
SEMI-ANECHOIC CHAMBER	FACT3-1.2 STD	210407	ETS-Lindgren	-	-	-
Software - EMC	BAT-EMC	156535	Nexio Technologies		-	-
Trilog-Broadband Antenna	VULB 9168	210290	Schwarzbeck Mess-Elektronik OHG	1244	2023-08-25	2025-08-28
Tilting Antenna Mast Positioning Tower	2171B/2170B	135821	ETS-Lindgren (Cedar Park, Texas)	-	-	-
EMI TEST RECEIVER	ESW26	246431	Rohde & Schwarz (Koeln) GmbH & Co. KG	103182	2024-03-07	2025-03-28
Center, Modular RF Platform	7000-011	210859	ETS-Lindgren	00231682	-	-
6dB Attenuator	DGA 9552 N	210263	Schwarzbeck Mess-Elektronik OHG	CH9006	2023-09-06	2024-09-28
Test Stand: Radiated emission 1 GHz to 18 GHz + Band Edge						
Cable 2000mm - 18 GHz	SF126/11SMA/11N/2000	220503	Huber+Suhner	554756/126	2024-05-10	2025-05-28
Low-Noise EMI Preamplifier	BBV 9718 C	179026	Schwarzbeck Mess-Elektronik OHG	0002700027	2024-02-20	2025-02-28
Microwave Coaxial Cable N to Sma-M	AK 9515 H	213199	Schwarzbeck Mess-Elektronik OHG	00169	2024-05-10	2025-05-28
Highpass Filter	WHKX12-2520-2800-18000-60ST	154712	Wainwright Instruments GmbH	1	2023-10-27	2024-10-28
Software - EMC	BAT-EMC	156535	Nexio Technologies		-	-
SVSWR Voltage Standing Wave Ratio	SVSWR FACT3-1.2 STD	210409	ETS-Lindgren	SVSWR FACT3-1.2 STD	2022-04-12	2025-04-28
EMI TEST RECEIVER	ESW26	246431	Rohde & Schwarz (Koeln) GmbH & Co. KG	103182	2024-03-07	2025-03-28
Tilting Antenna Mast Positioning Tower	2171B/2170B	135821	ETS-Lindgren (Cedar Park, Texas)	-	-	-
Absorber High Frequency	EHP-12	212616	ETS-Lindgren	-	-	-
SEMI-ANECHOIC CHAMBER	FACT3-1.2 STD	210407	ETS-Lindgren	-	-	-
Center, Modular RF Platform	7000-011	210859	ETS-Lindgren	00231682	-	-
Double Ridged Broadband Horn Antenna	3117	138662	ETS-Lindgren (Cedar Park, Texas)	00208482	2023-01-20	2025-01-28
Cable 8000mm - 18 GHz	SF126/11N/11N/8000	220502	Huber+Suhner	556226/126	2024-05-10	2025-05-28

Test Stand: Radiated emission 18 GHz to 26 GHz						
SEMI-ANECHOIC CHAMBER	FACT3-1.2 STD	210407	ETS-Lindgren	-	-	-
Double Ridged Broadband Horn Antenna	3116C	210452	ETS-Lindgren	00240011	2024-05-20	2027-05-28
Center, Modular RF Platform	7000-011	210859	ETS-Lindgren	00231682	-	-
Absorber High Frequency	EHP-12	212616	ETS-Lindgren	-	-	-
Cable 6000mm - 0.04 to 26.5 GHz	SF526S-600-2X11PC35501	216873	Huber+Suhner	2717237001	2024-03-04	2025-03-28
Software - EMC	BAT-EMC	156535	Nexio Technologies	-	-	-
EMI TEST RECEIVER	ESW26	246431	Rohde & Schwarz (KoeIn) GmbH & Co. KG	103182	2024-03-07	2025-03-28
Tilting Antenna Mast Positioning Tower	2171B/2170B	135821	ETS-Lindgren (Cedar Park, Texas)	-	-	-
Test Stand: Transmitter AC Conducted Spurious Emission						
Sheat current blocking cable	MSS 9630	210320	Schwarzbeck Mess-Elektronik OHG	-	2023-09-06	2024-09-28
Shielded Room 2 RF Emission	-	210412	ETS-Lindgren	-	-	-
RF CABLES	LMR-240	175758	TIMES MICROWAVE SYSTEMS	None	2024-02-22	2025-02-28
Line Impedance Stabilization Network 3PH32A	ENV432	154695	Rohde & Schwarz	101335	2024-01-25	2025-01-28
Software - EMC	BAT-EMC	156535	Nexio Technologies	-	-	-
EMI TEST RECEIVER	ESR7	204729	Rohde & Schwarz	102380	2024-04-12	2025-06-28
Test Stand: Conducted radio tests						
Signal and Spectrum Analyzer 44 GHz	FSV3044	213658	Rohde & Schwarz	101224	2024-04-26	2025-04-28
Cable SK252 40GHz	SF102/11SK/11SK/900 mm	213660	Huber+Suhner	40421/2	2024-01-25	2025-01-28
Auxiliary equipment						
Isolated voltage variac (60 Hz)	T40NC-6	80699	BELOTTI VARIATORI	-	-	-
Frequency Converter (60 Hz)	FWW-SFUP 40kVA	37730	GUSTAV KLEIN	-	-	-
Laser Measure	RSLDM-50H	224436	RS Pro	210743764	2023-11-10	2024-11-28
Mini Datalogger (FACT3)	174H	211147	Testo	83306371	2023-10-18	2024-10-28
Mini Datalogger (SR2)	174H	211146	Testo	83293175	2023-10-18	2024-10-28
CLIMATIC CENTRAL UNIT (SACs side)	iBTHX-W	70611	Omega Engineering Inc.	1040495	2024-04-05	2025-04-28

8 Measurement instrumentation uncertainties

The Uncertainty of Measurement (UoM) for each unit measured in this Test Report was estimated in accordance with the UL International Italia document No. 23-CL-G0025 and is retained on file. Details of the estimation of UoM may be made available upon request, in particular for quantities not listed.

Measurement	Range	U _{lab}	Unit
Frequency	9 kHz to 40 GHz	0.5	kHz
Time	0.7 μ s to 16000 s	3.00	%
Conducted power, by spectrum analyzer	9 kHz to 40 GHz	0.45	dB
Conducted power, by fast power meter	9 kHz to 8 GHz	0.41	dB
Temperature (ambient)	15 to 35 °C	0.72	°C
Temperature (climatic chamber)	-40 to 100 °C	1.63	°C
Humidity (ambient)	30 to 70 %	5.76	%RH
Humidity (climatic chamber)	30 to 95 %	3.95	%RH
Supply voltage (AC)	0 to 500 V	3.00	%
Supply voltage (DC)	0 to 15 V	0.28	%
Conducted disturbance at mains and other port power using V-AMN	9 kHz to 150 kHz	3.71	dB
Conducted disturbance at mains and other port power using V-AMN	150 kHz to 30 MHz	3.32	dB
Radiated disturbance (magnetic field using a loop antenna)	9 kHz to 30 MHz	3.16	dB
Radiated disturbance (electric field strength in SAC 3, hybrid antenna, Hor)	30 MHz to 1000 MHz	4.22	dB
Radiated disturbance (electric field strength in SAC 3, hybrid antenna, Ver)	30 MHz to 1000 MHz	5.64	dB
Radiated disturbance (electric field strength in SAC 5, hybrid antenna, Hor)	30 MHz to 1000 MHz	3.98	dB
Radiated disturbance (electric field strength in SAC 5, hybrid antenna, Ver)	30 MHz to 1000 MHz	5.66	dB
Radiated disturbance (electric field strength in FSOATS 3) (1)	1 GHz to 6 GHz	5.43	dB
Radiated disturbance (electric field strength in FSOATS 3) (2)	1 GHz to 6 GHz	4.29	dB
Radiated disturbance (electric field strength in FSOATS 3) (1)	6 GHz to 18 GHz	5.18	dB
Radiated disturbance (electric field strength in FSOATS 3) (2)	6 GHz to 18 GHz	4.22	dB
Radiated disturbance (electric field strength in FSOATS 5) (1)	1 GHz to 6 GHz	5.12	dB
Radiated disturbance (electric field strength in FSOATS 5) (2)	1 GHz to 6 GHz	4.13	dB
Radiated disturbance (electric field strength in FSOATS 5) (1)	6 GHz to 18 GHz	5.63	dB
Radiated disturbance (electric field strength in FSOATS 5) (2)	6 GHz to 18 GHz	4.54	dB
Radiated disturbance (electric field strength in FSOATS 3) (1)	18 GHz to 40 GHz	7.63	dB
Radiated disturbance (electric field strength in FSOATS 5) (1)	18 GHz to 40 GHz	7.63	dB
Radiated Spurious Emission (ERP/EIRP, Substitution Method)	25 MHz to 26 GHz	5.97	dB
Legend/Remarks: n.d.: not defined (1) Using external EMI preamplifier. (2) Not using external EMI preamplifier. Supplementary information: - The measurement uncertainty values are calculated and correspond to an expansion factor (coverage factor) $k = 2$ (which provide confidence level of 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). - Listed values are intended with prefix "±".			

<END OF TEST REPORT>