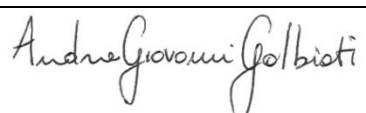
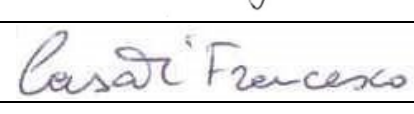


RF TEST REPORT

Test Report No:	24-4791342877-8-1-1-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: (*)	XP9403
PMN: (*)	shaver
FCC ID: (*)	2AICSXP94
ISED Canada Certification number: (*)	21912-XP94
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.:	7270486
Status of sample upon receipt:	☒ New and operational ☐ Reconditioned ☐ Damaged
Date(s) of performance of tests:	2024-06-10 to 2024-07-01
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
24-4791342877-8-1-0-RAD-A	Original release	2024-08-02
24-4791342877-8-1-1-RAD-A	- Attachment 1 added at the end of this report - 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 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 in the spurious emission test - 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:	nRF52833 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.
8. Maximum output power is less than the PSD limit of 8 dBm/3 kHz

Possible test case verdicts:

Test case not performed: N/P

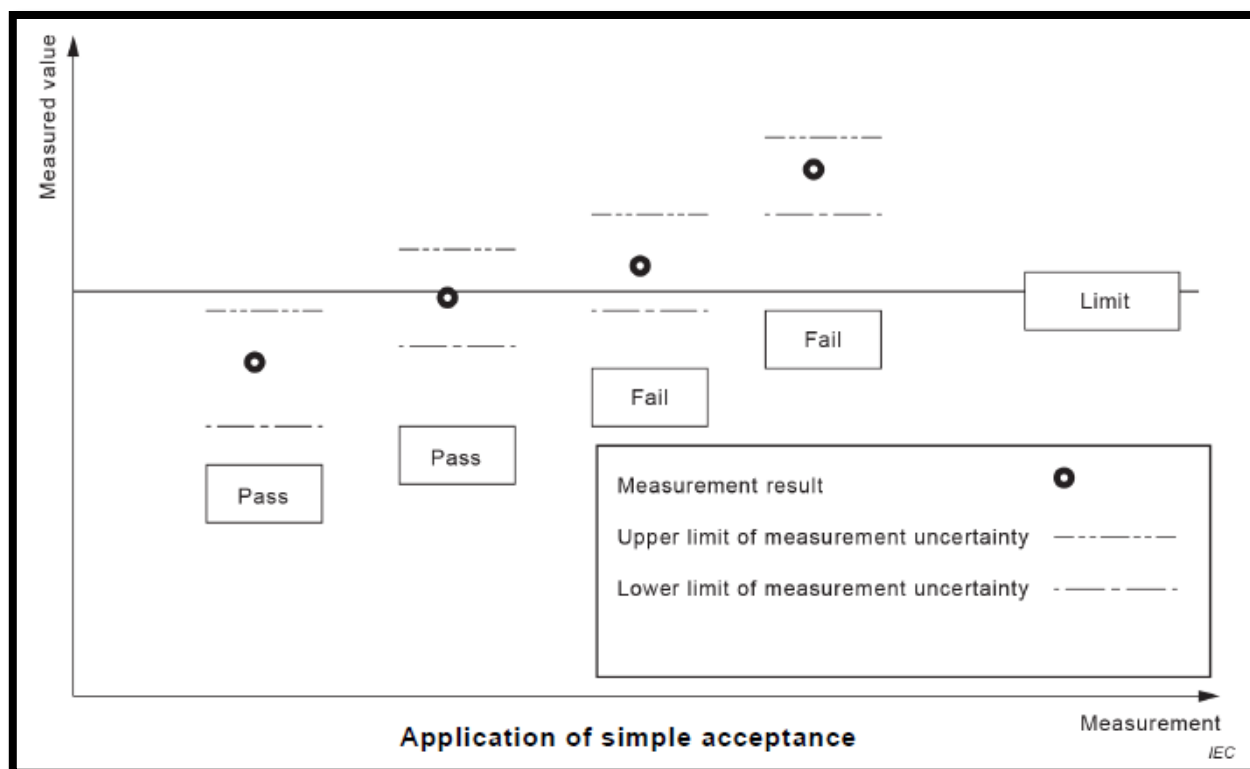
Test case does not apply to test object: N/A

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

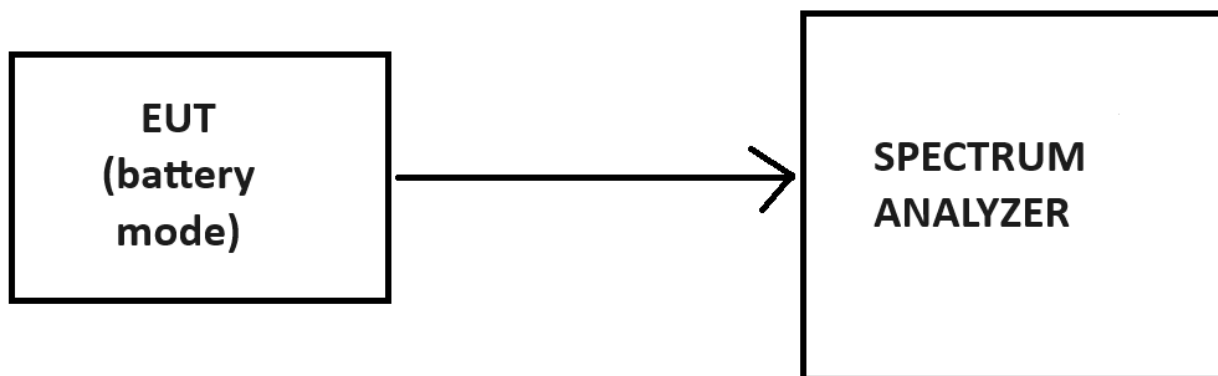
$$\text{Log} = 20 \cdot \log(\text{Lin}) \text{ for voltage and current; } \text{Log} = 10 \cdot \log(\text{Lin}) \text{ for power}$$

☒ Conducted Radio Measurements

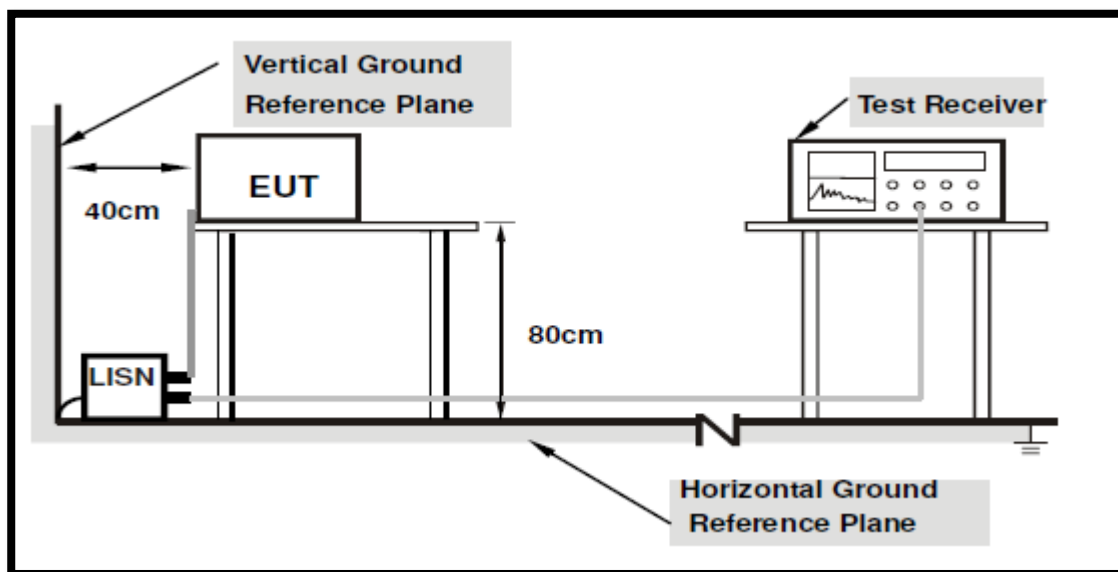
$$P_{\text{out_EUT}} = P_{\text{read_Amplifier}} \text{ (dBm)} + \text{Cable Losses (dB)} + \text{Attenuator (dB)}$$

5 Test Setup Diagrams

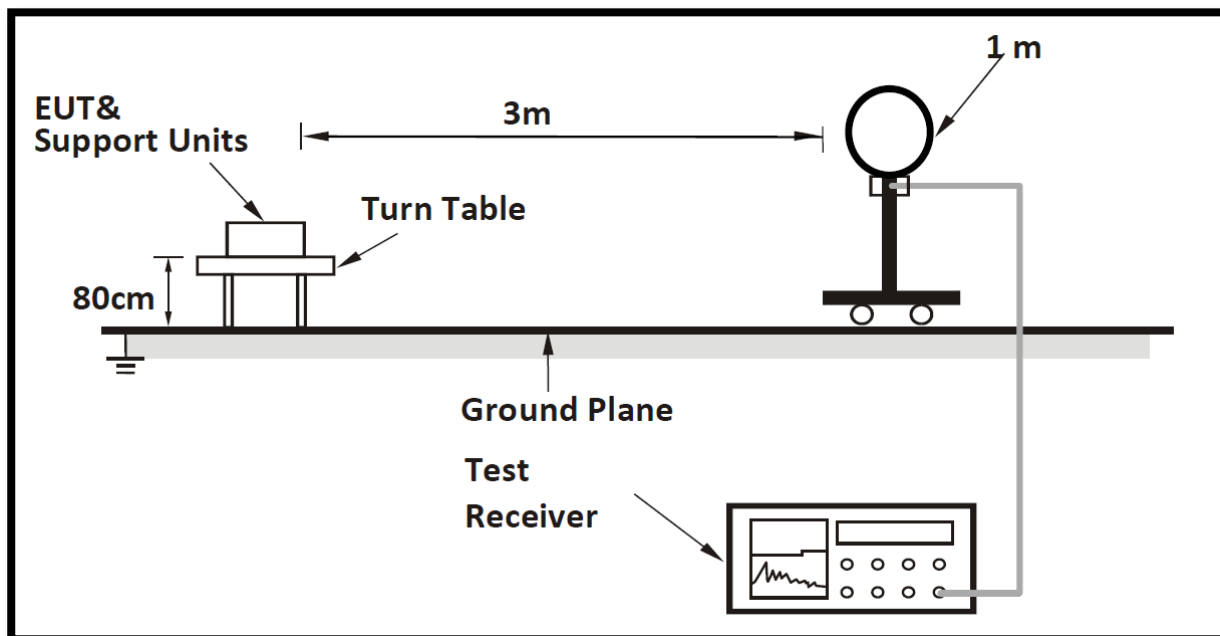
Conducted tests on antenna port:



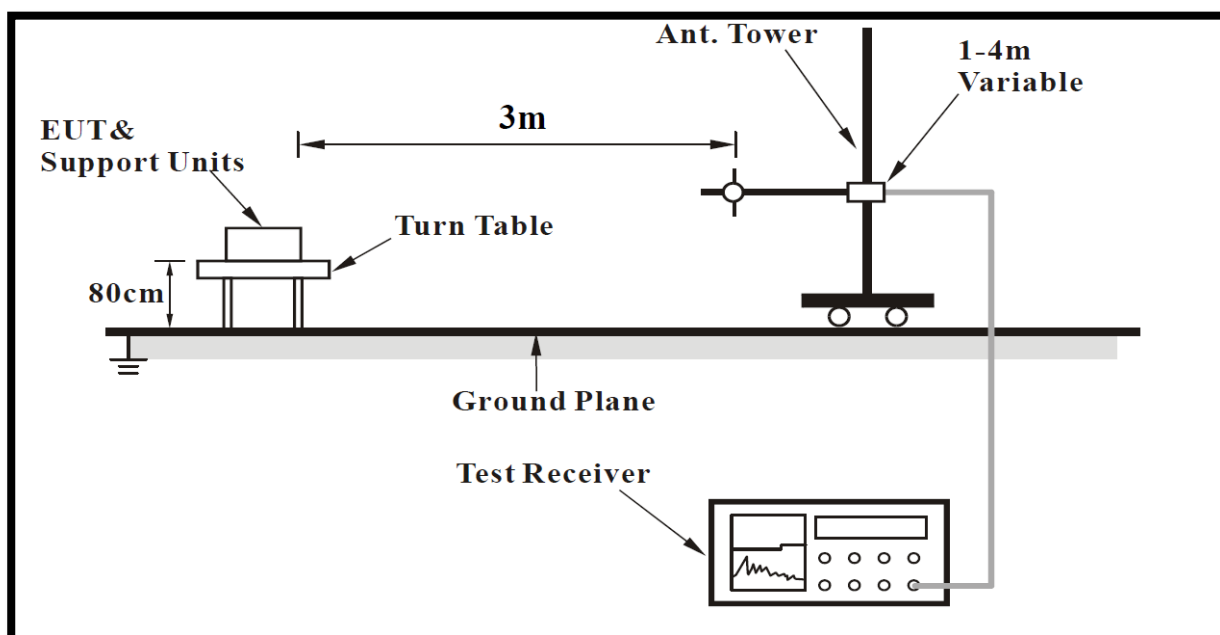
AC Conducted emission:



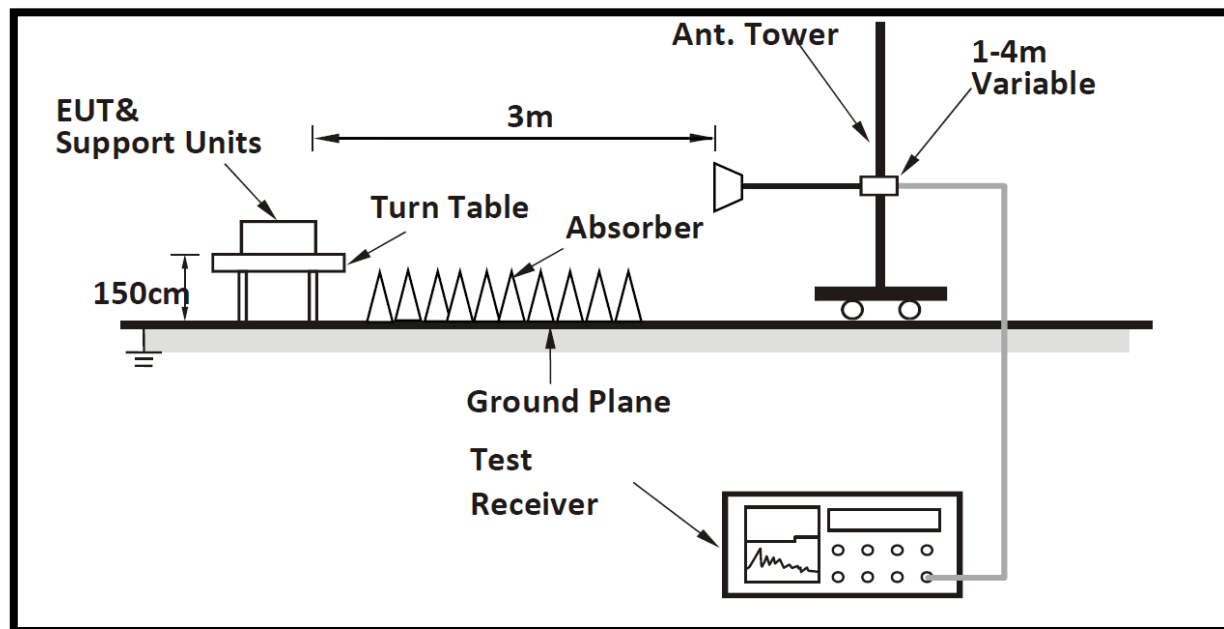
Radiated emission from 9kHz to 30 MHz



Radiated emission from 30 MHz to 1 GHz



Radiated emission from 1 GHz to 26 GHz



6 Tests

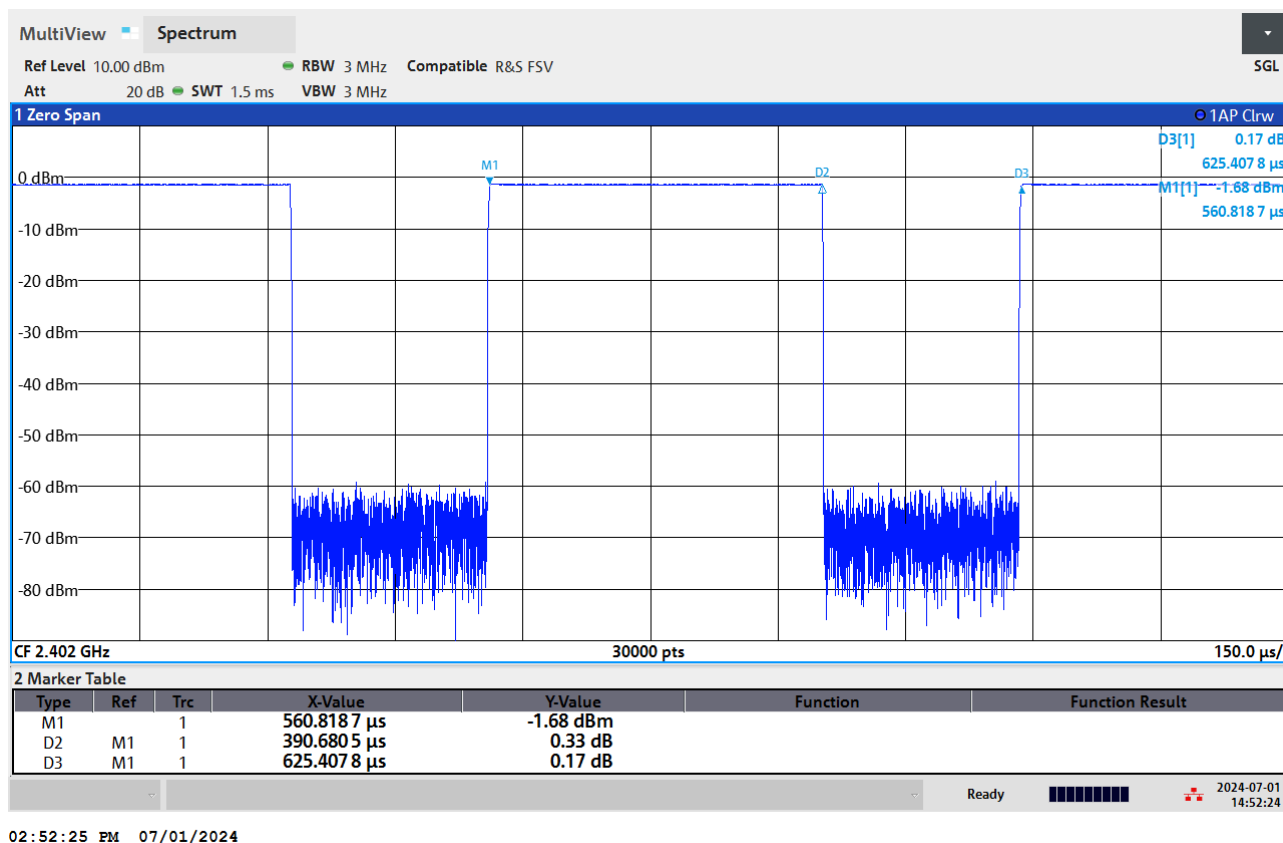
6.1 Antenna Port Test Results

6.1.1 Transmitter Duty Cycle

Tested by:	Andrea Giovanni Galbiati
Test date:	2024-07-01
Test location (stand):	EMC Laboratory
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Part 15.35 (c)
ISED Reference:	RSS-Gen 8.2
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



02:52:25 PM 07/01/2024

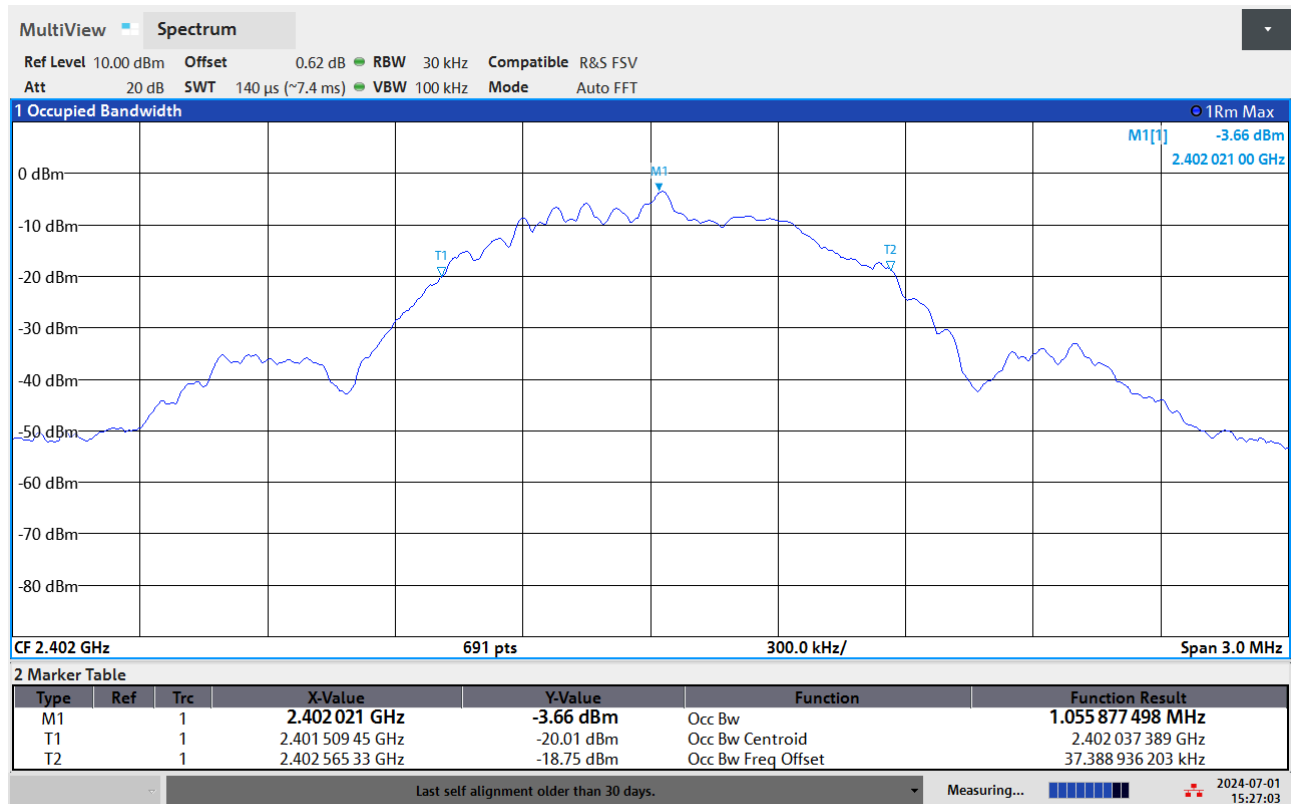
Pulse Duration (μs)	Period (μs)	Duty Cycle (%)	DC Correction Factor (dB)
390.68	625.41	62.5	2.04

6.1.2 Transmitter 99% Occupied Bandwidth

Tested by:	Andrea Giovanni Galbiati
Test date:	2024-07-01
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.

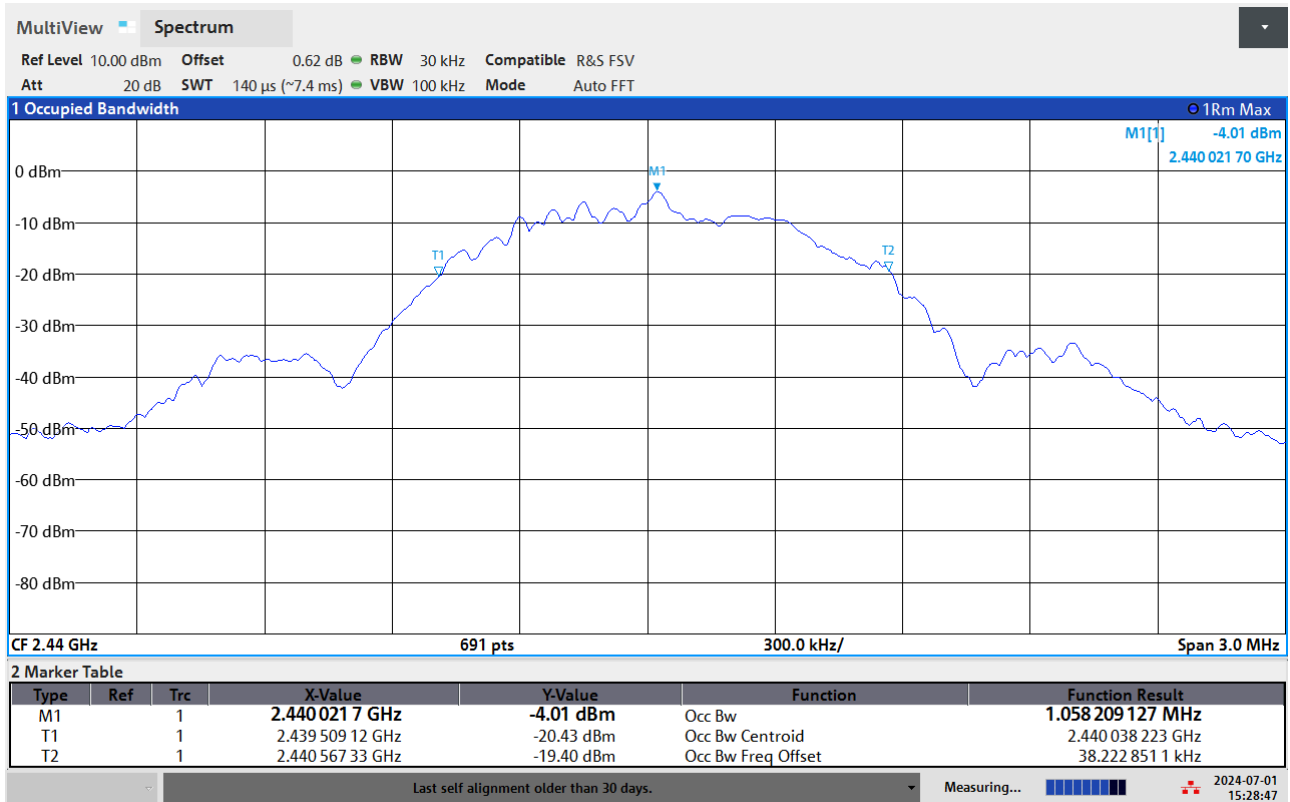
Results:

Operating mode: 1



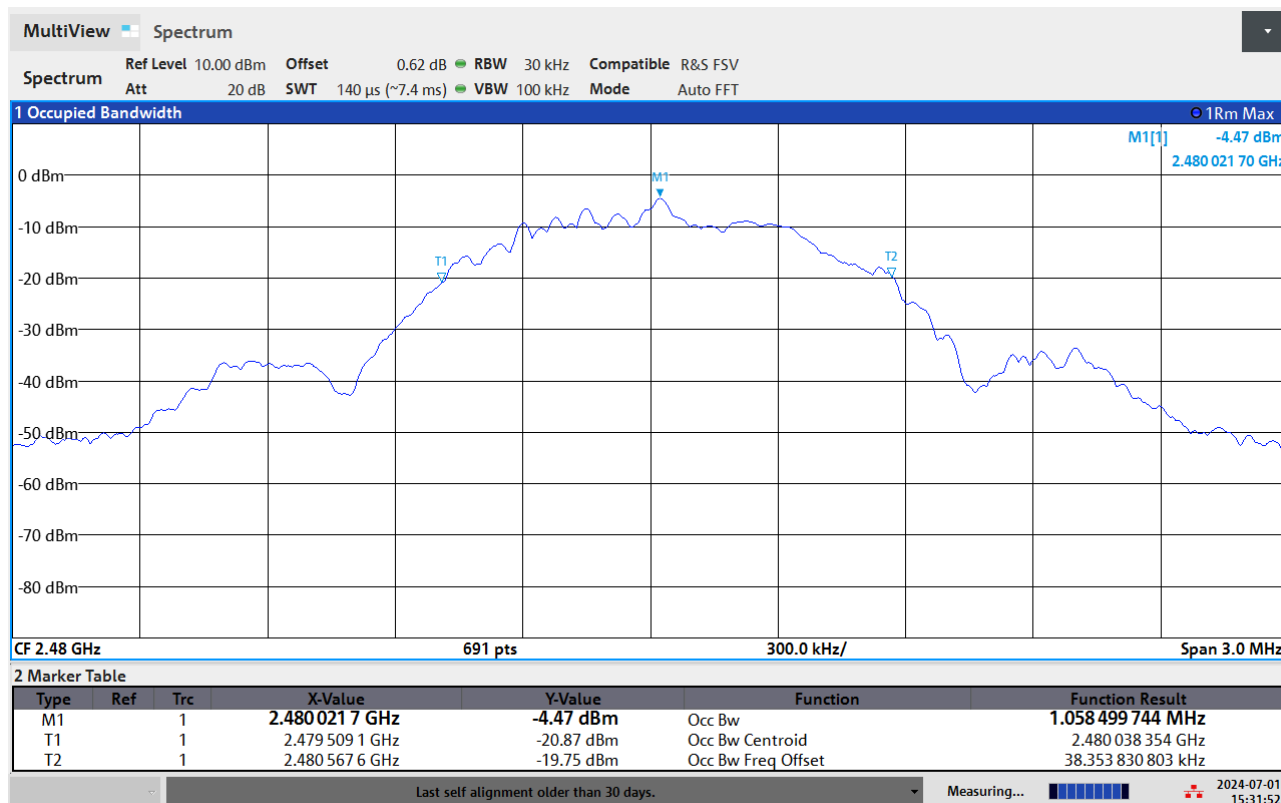
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Operating mode: 2



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Operating mode: 3



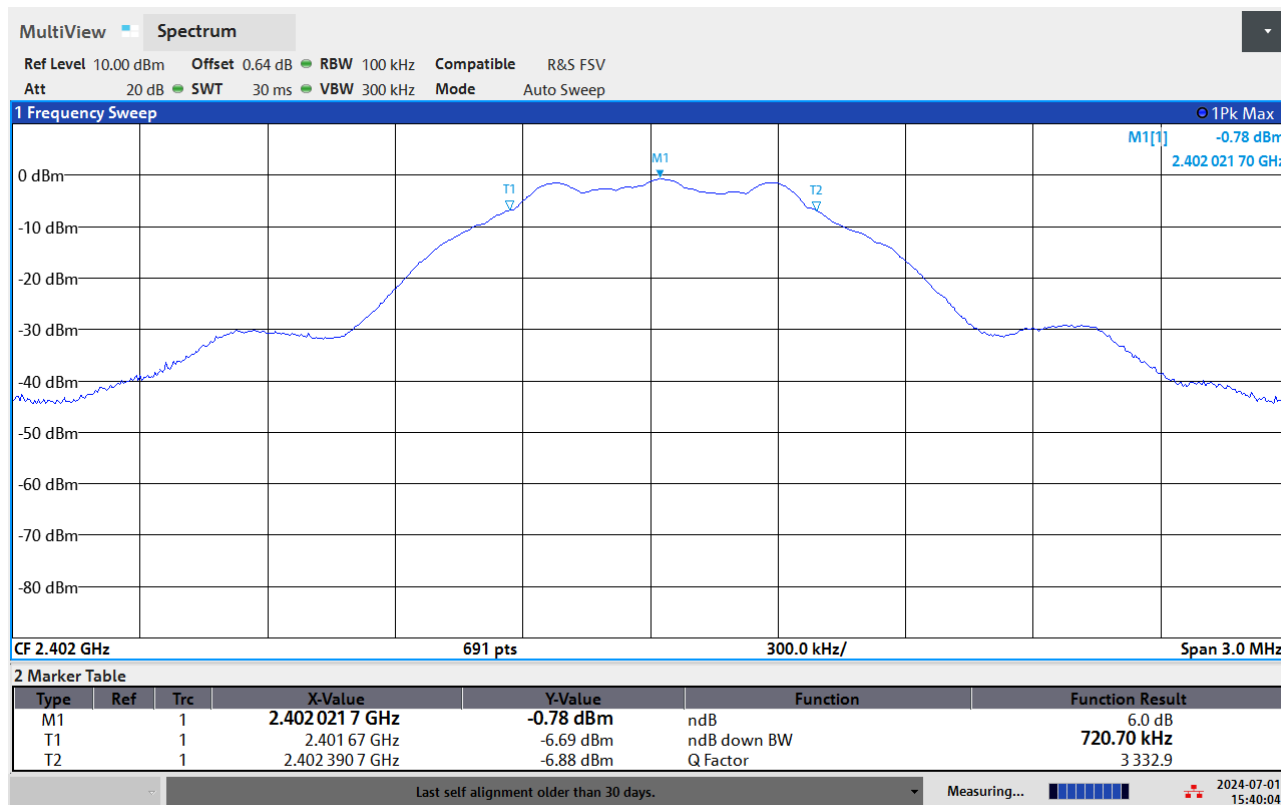
03:31:52 PM 07/01/2024

Channel	99% Occupied Bandwidth (kHz)
Bottom	1055.877
Middle	1058.209
Top	1058.499

6.1.3 Transmitter Minimum 6 dB Bandwidth

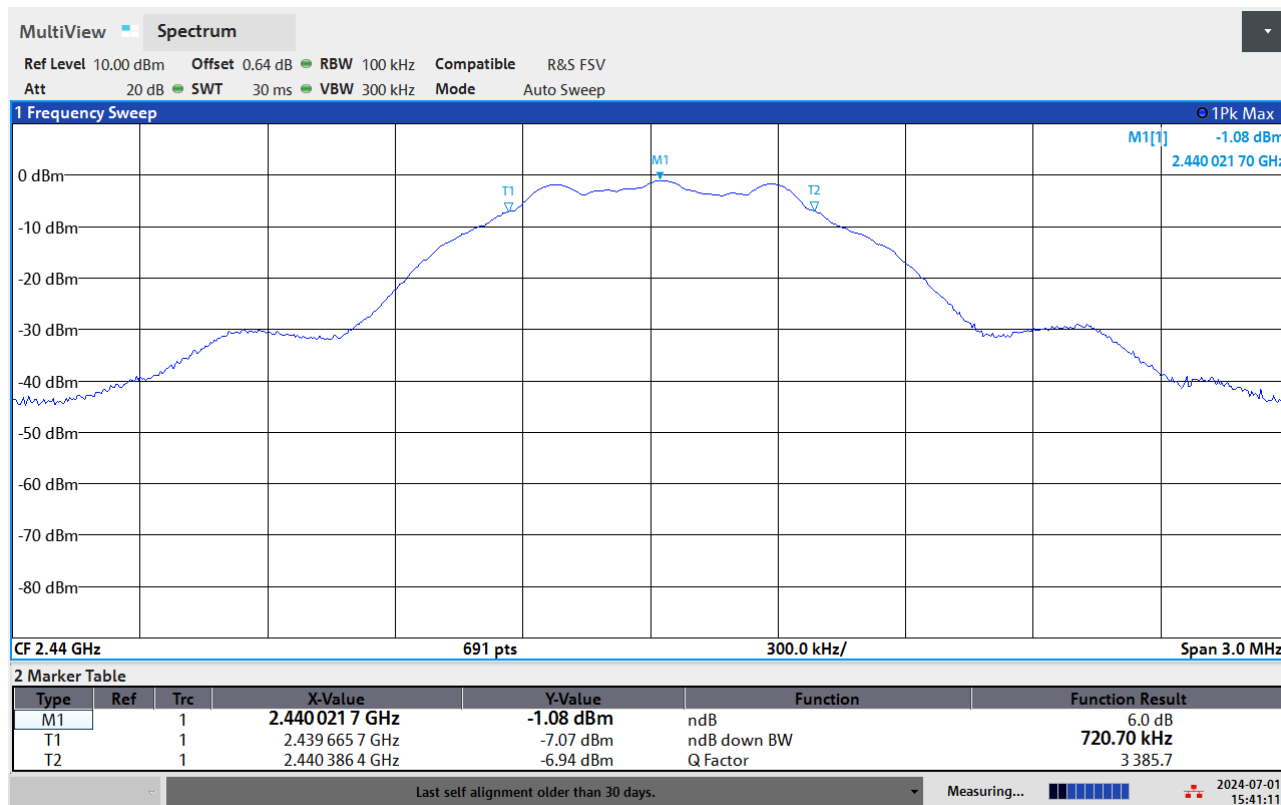
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-07-01
Test location (stand):	EMC Lab
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	996 mbar
FCC Reference:	Part 15.247(a)(2)
ISED Canada Reference:	RSS-Gen 6.7 / RSS-247 5.2(a)
Test Method Used	FCC KDB 558074 Section 8.2 referencing ANSI C63.10 Section 11.8.2
Used mains voltage/frequency:	Fully charged battery
Supplementary information:	0.64 dB offset applied for RF cable insertion loss correction.

Operating mode: 1



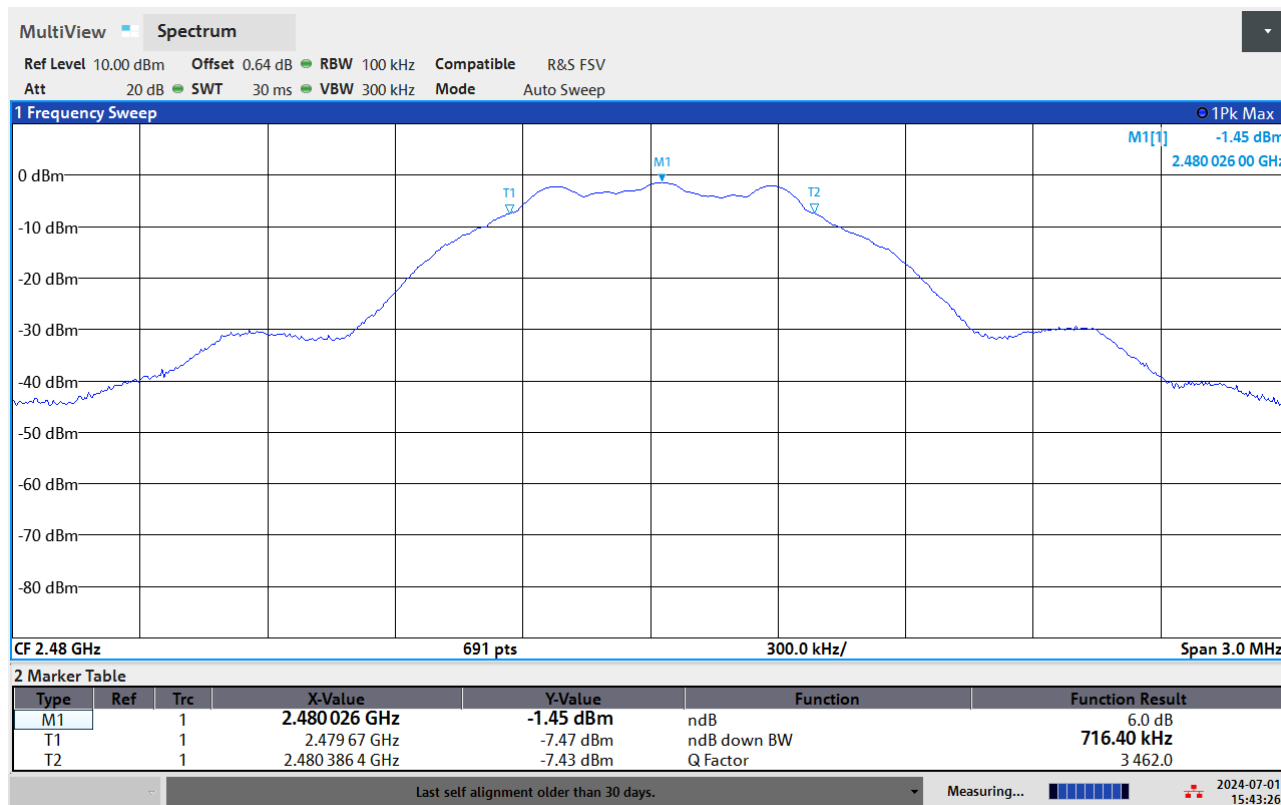
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Operating mode: 2



03:41:11 PM 07/01/2024

Operating mode: 3



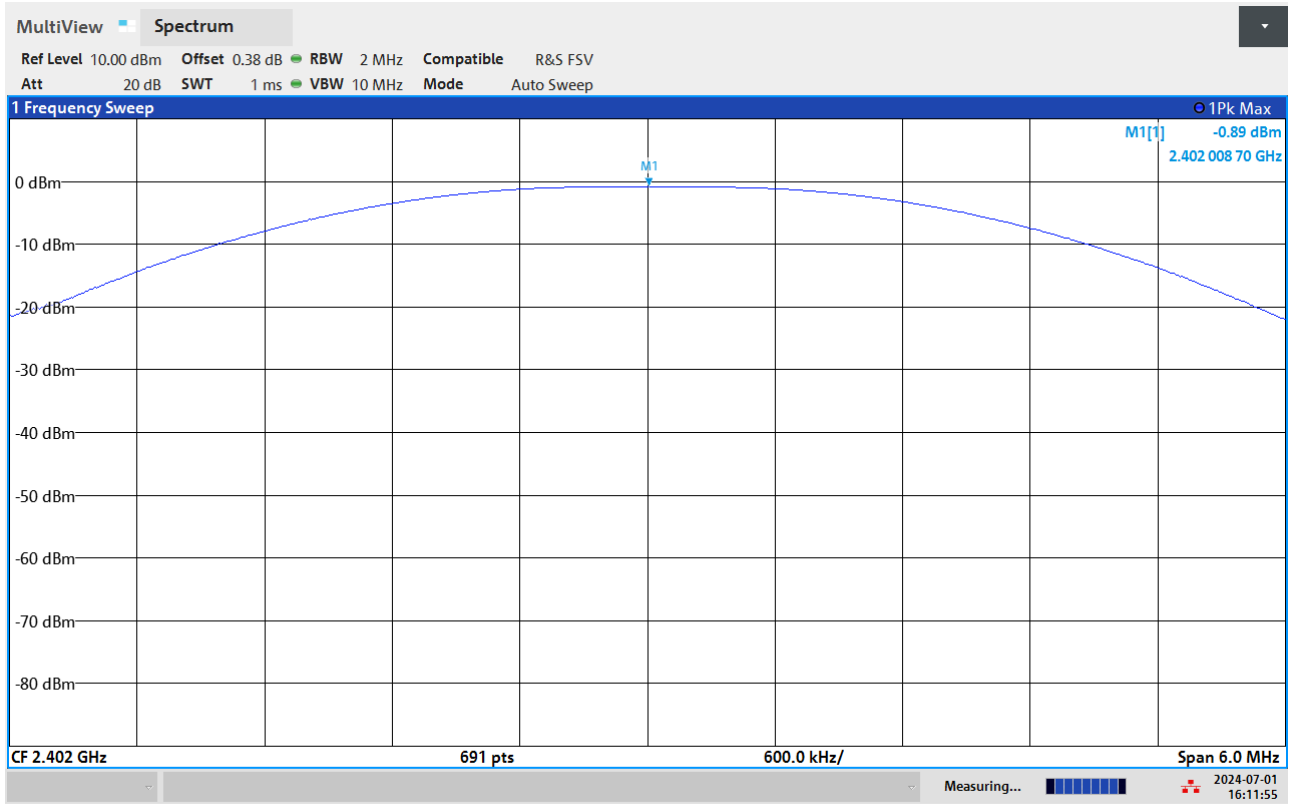
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Channel	6 dB Bandwidth (kHz)	Limit (kHz)	Result
Bottom	720.70	≥500	Pass
Middle	720.70	≥500	Pass
Top	716.40	≥500	Pass

6.1.4 Transmitter Maximum Peak Output Power

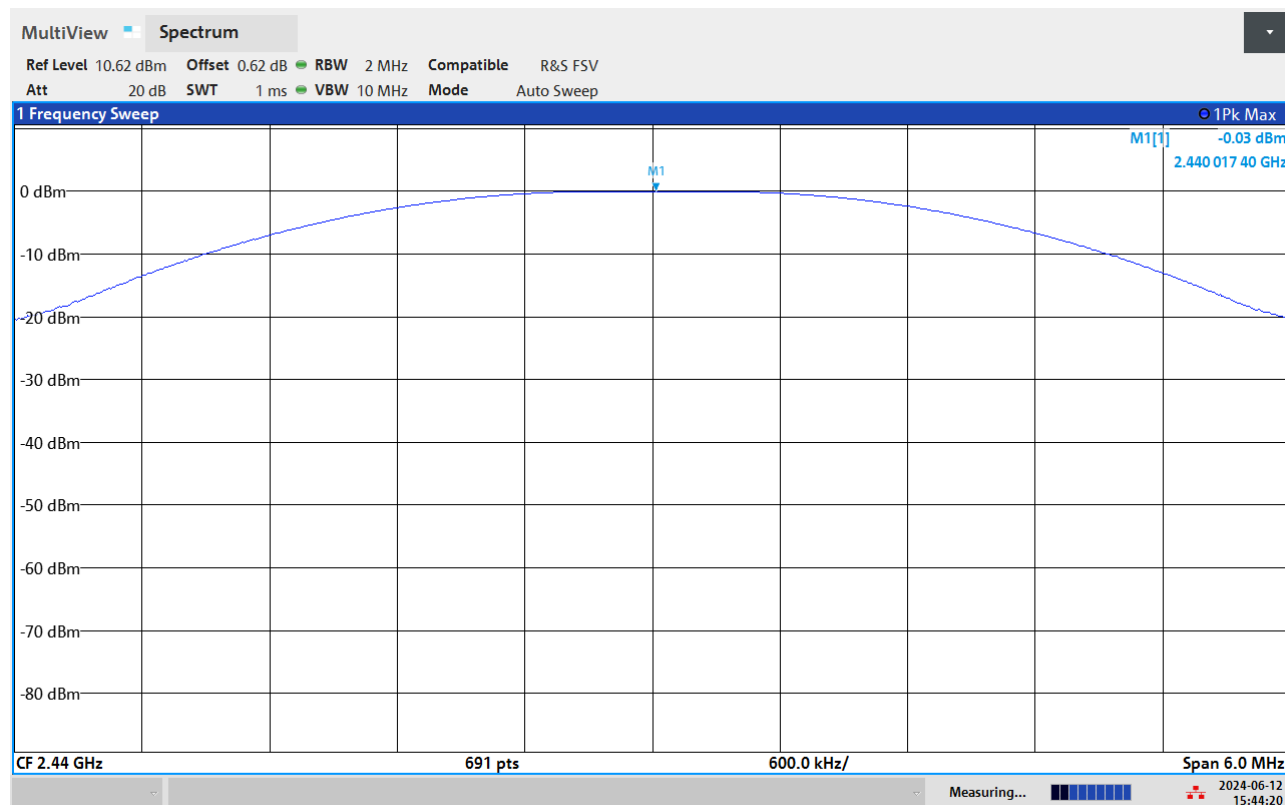
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-07-01
Test location (stand):	EMC Lab
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Part 15.247(b)(3)
ISED Canada Reference:	RSS-Gen 6.12 / RSS-247 5.4(d)
Test Method Used	FCC KDB 558074 Section 8.3.1.1 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 0.38 dB was added to the value displayed on spectrum analyzer to compensate losses of RF cables and splitter.

Operating mode: 1



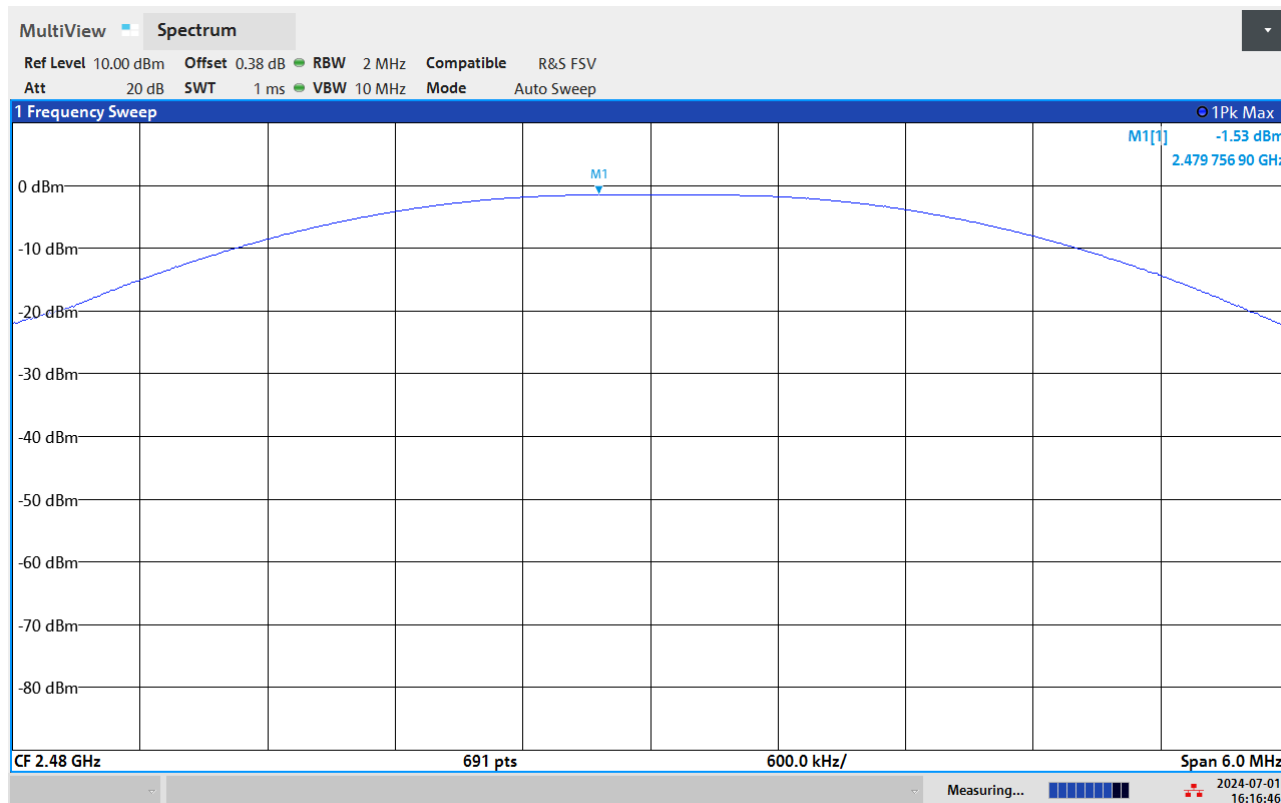
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Operating mode: 2



03:44:20 PM 06/12/2024

Operating mode: 3



04:16:46 PM 07/01/2024

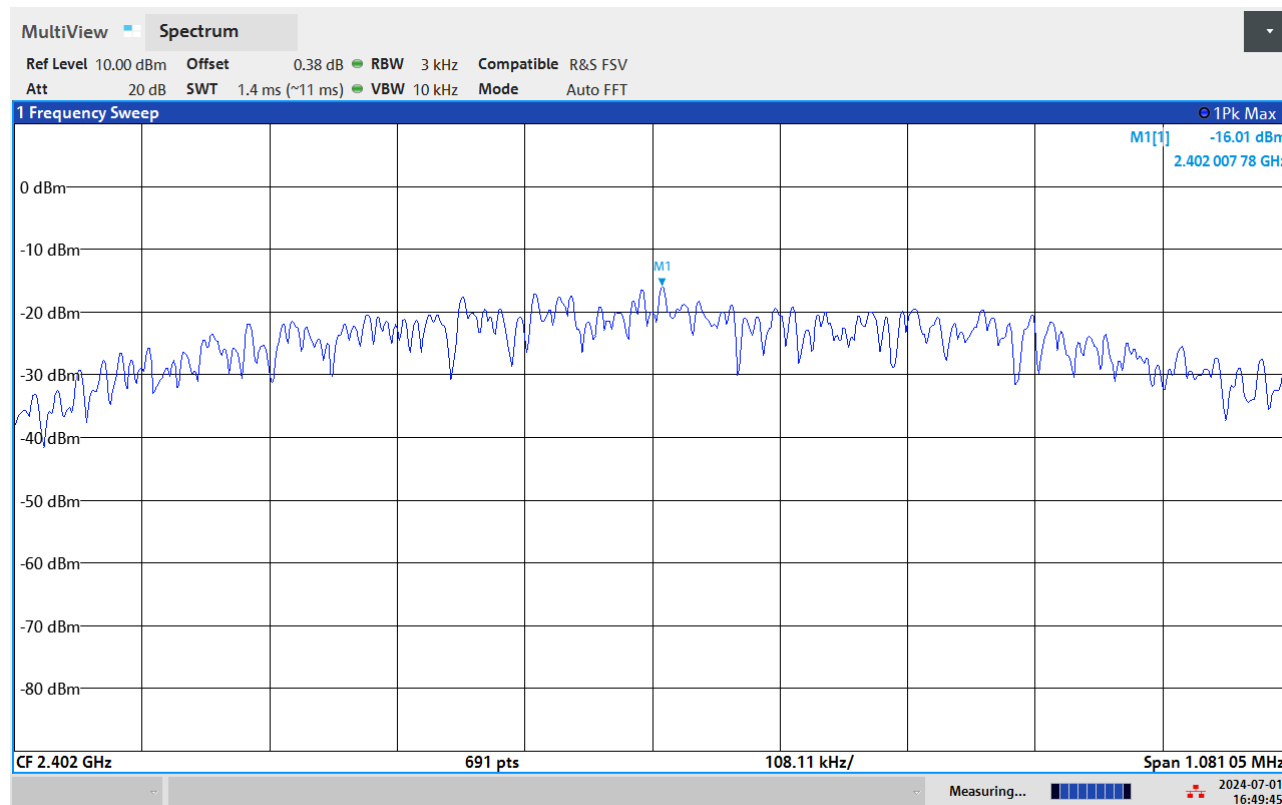
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-0.89	30.0	-30.89	Pass
Middle	-0.03	30.0	-30.03	Pass
Top	-1.53	30.0	-31.53	Pass

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-0.89	2.5	1.61	36.0	-34.39	Pass
Middle	-0.03	2.5	2.47	36.0	-33.53	Pass
Top	-1.53	2.5	0.97	36.0	-35.03	Pass

6.1.5 Transmitter Power Spectral Density

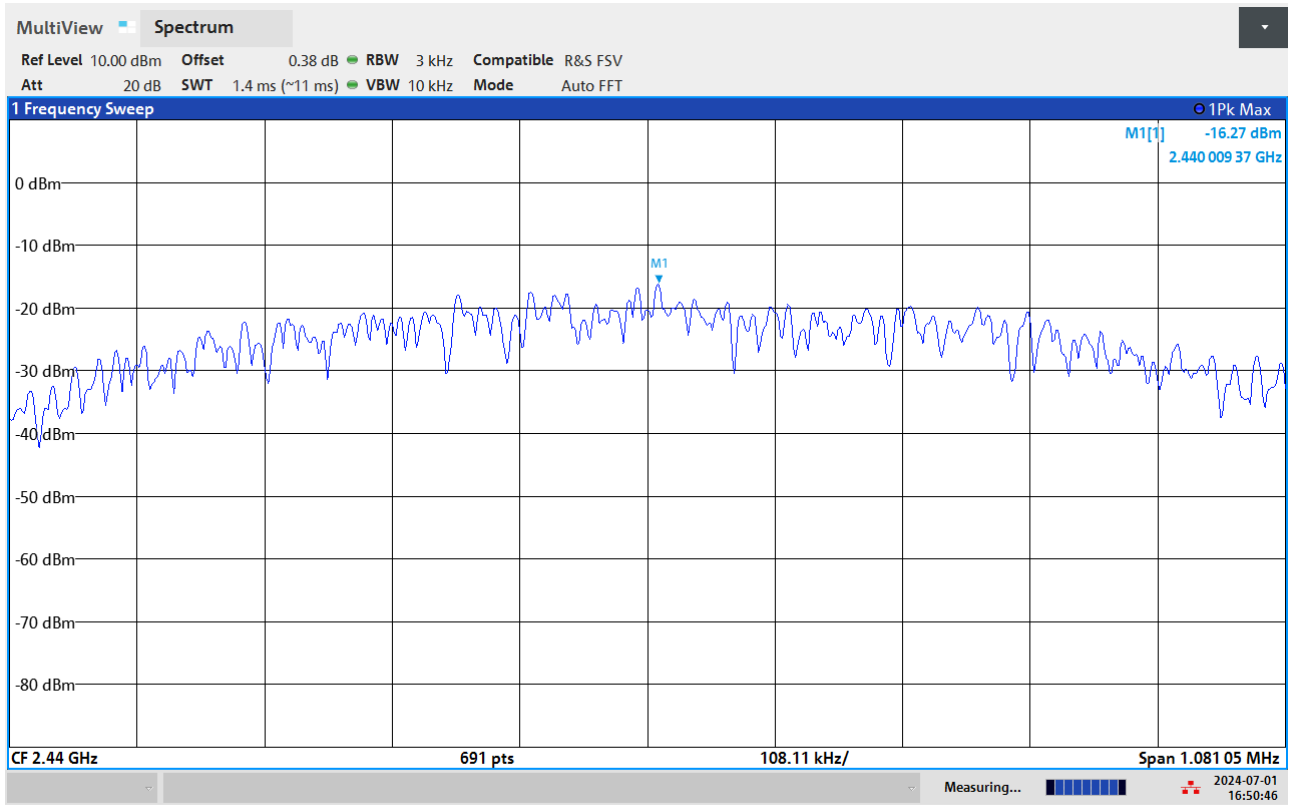
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-07-01
Test location (stand):	EMC Lab
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Part 15.247(e)
ISED Canada Reference:	RSS-247 5.2(b)
Test Method Used	FCC KDB 558074 Section 8.4 referencing ANSI C63.10 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



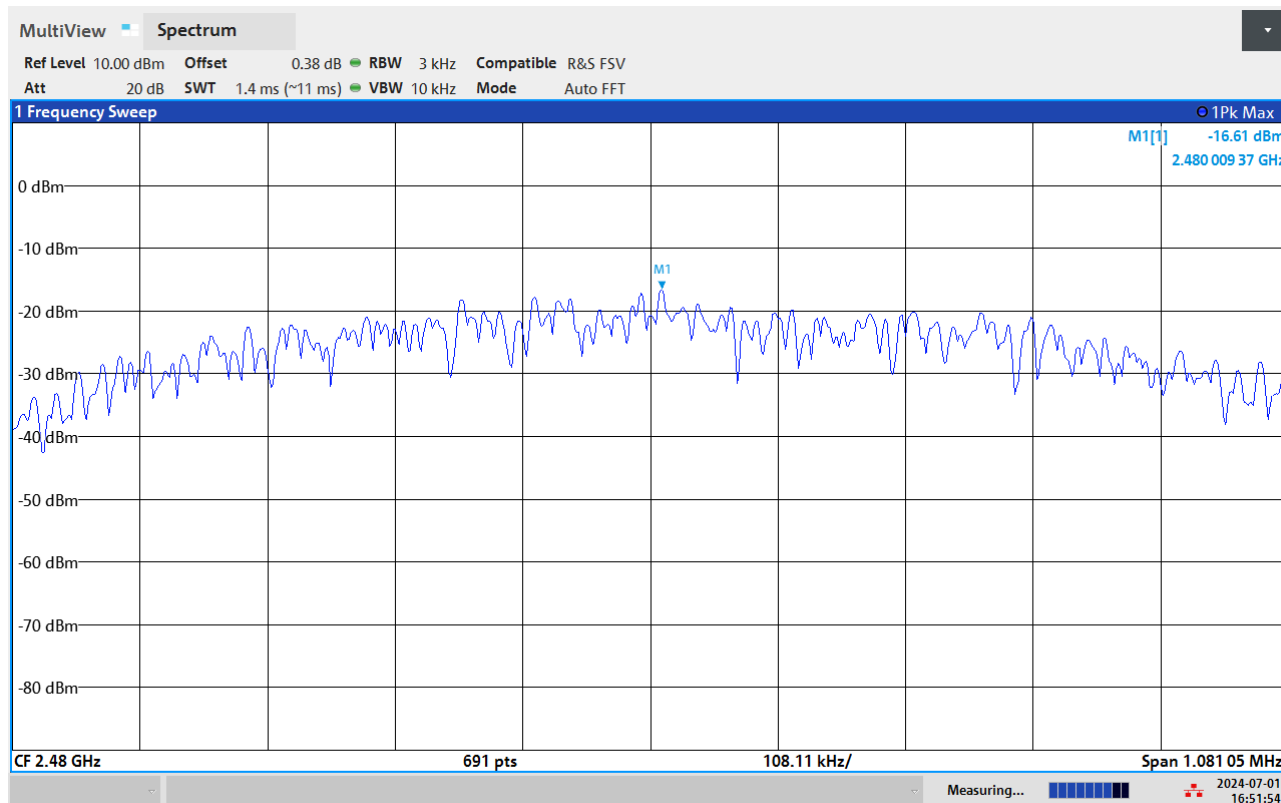
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Operating mode: 2



04:50:47 PM 07/01/2024

Operating mode: 3



04:51:54 PM 07/01/2024

Channel	Output Power (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-16.01	8.0	-24.01	Pass
Middle	-16.27	8.0	-24.27	Pass
Top	-16.61	8.0	-24.61	Pass

6.2 Radiated Test Results

6.2.1 Transmitter Radiated Emission < 1 GHz

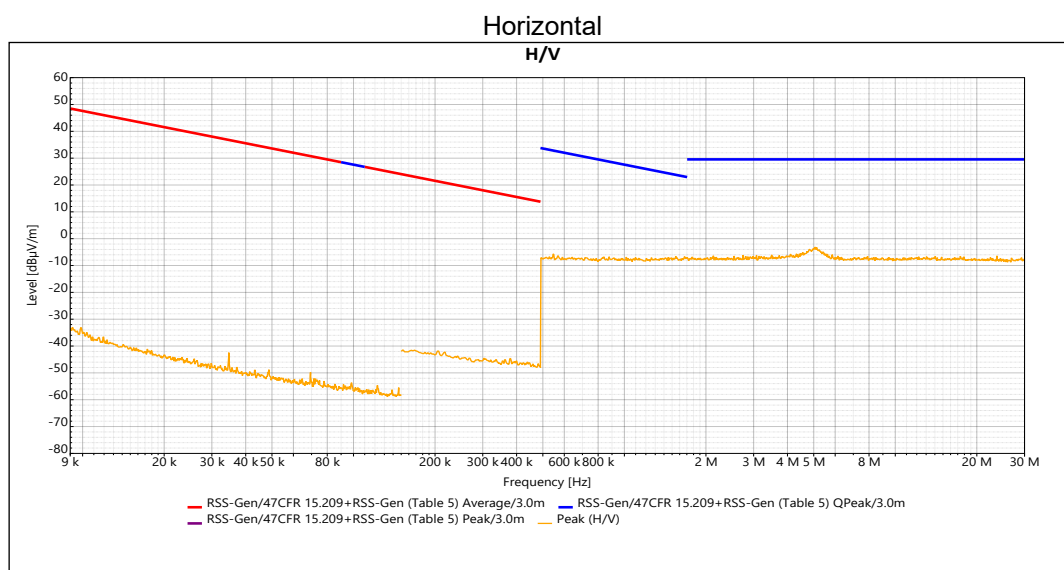
Tested by:	Andrea Giovanni Galbiati
Test date:	2024-06-26
Test location (stand):	Area 9: SAC 5-3.0 (RF emission)
Ambient temperature:	22 °C
Relative humidity:	45 %
Atmospheric pressure:	998 mbar
FCC Reference:	Parts 15.247(d) & 15.209(a)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5
Test Method 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



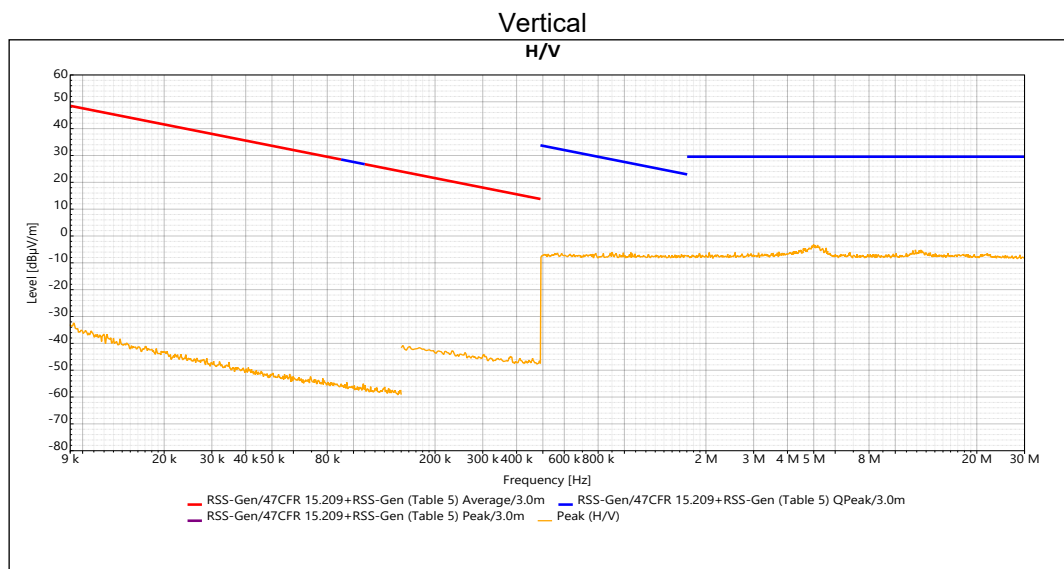
Final measurement

- ☒ 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)		
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:

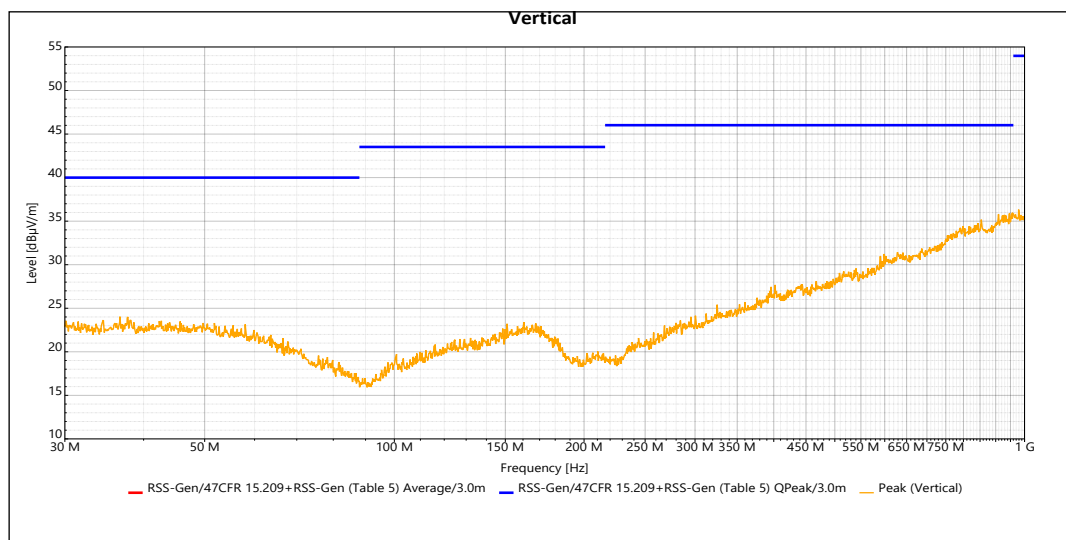
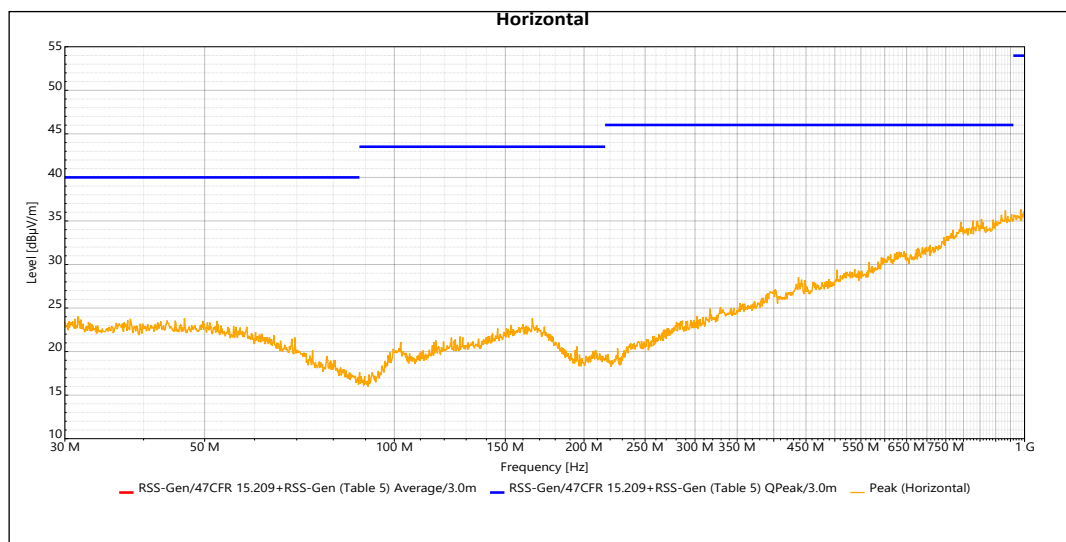
6.2.3 Transmitter Radiated Emission > 1 GHz

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



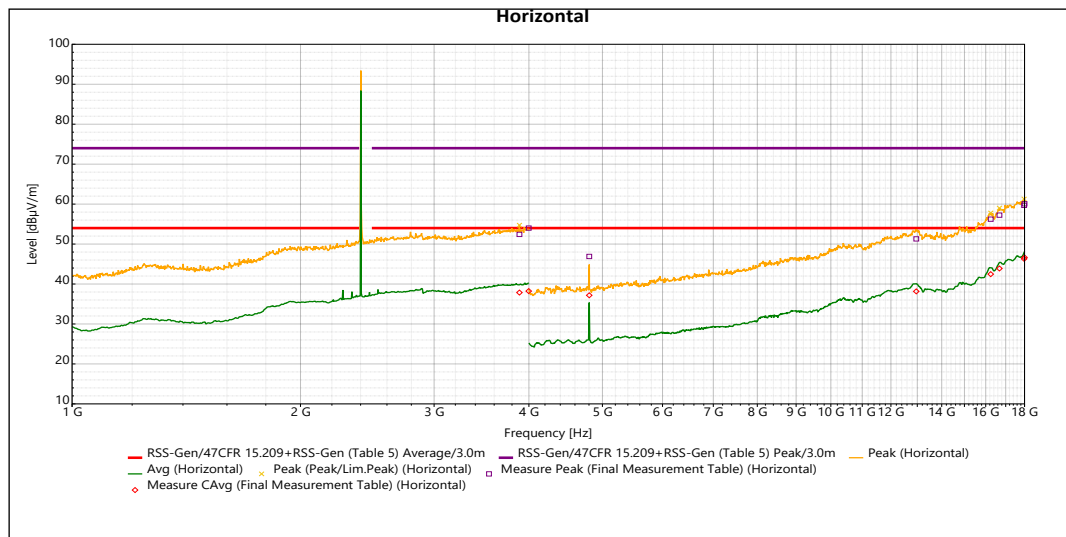
Final measurement

- ☒ 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:	2024-06-19

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

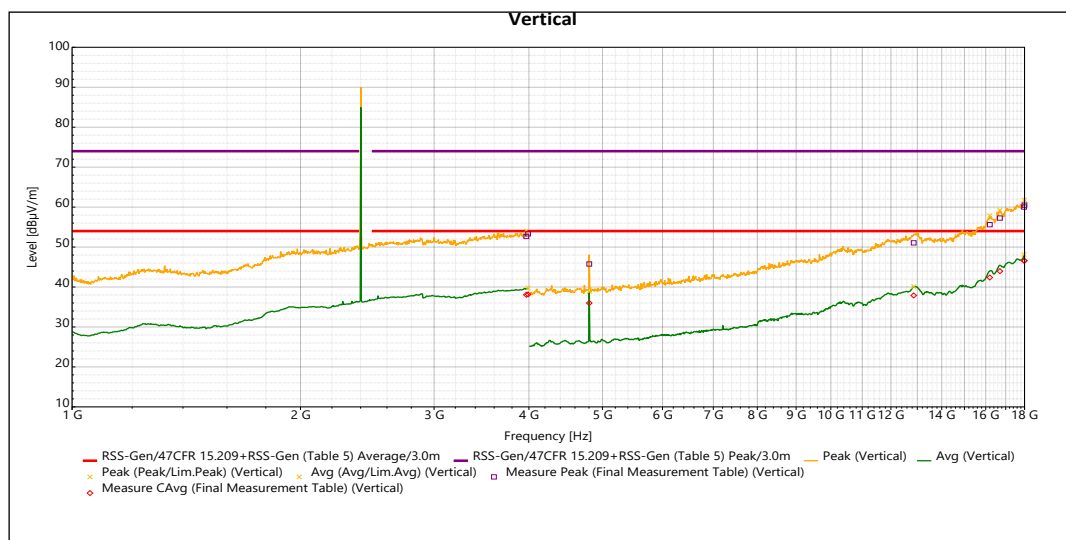
☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

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)
3.887 GHz	1	52.418	74	-21.582	37.865	39.905	54	-14.065	1.169	315.4	Horizontal	1 M	5	Pass	39.295
3.998 GHz	1	53.997	74	-20.003	38.228	40.268	54	-13.702	3.31	238	Horizontal	1 M	5	Pass	39.448
4.804 GHz	2	46.903	74	-27.097	37.179	39.219	54	-14.751	2.164	39.9	Horizontal	1 M	5	Pass	7.594
12.96 GHz	2	51.295	74	-22.705	38.16	40.2	54	-13.77	3.064	52	Horizontal	1 M	5	Pass	21.936
16.246 GHz	2	56.228	74	-17.772	42.47	44.51	54	-9.46	3.369	6.2	Horizontal	1 M	5	Pass	26.047
16.68 GHz	2	57.235	74	-16.765	43.888	45.928	54	-8.042	1.858	49.2	Horizontal	1 M	5	Pass	27.906
17.978 GHz	2	59.687	74	-14.313	46.297	48.337	54	-5.633	3.993	5.3	Horizontal	1 M	5	Pass	31.262
18 GHz	2	60.08	74	-13.92	46.646	48.686	54	-5.284	1.088	14.4	Horizontal	1 M	5	Pass	31.309

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

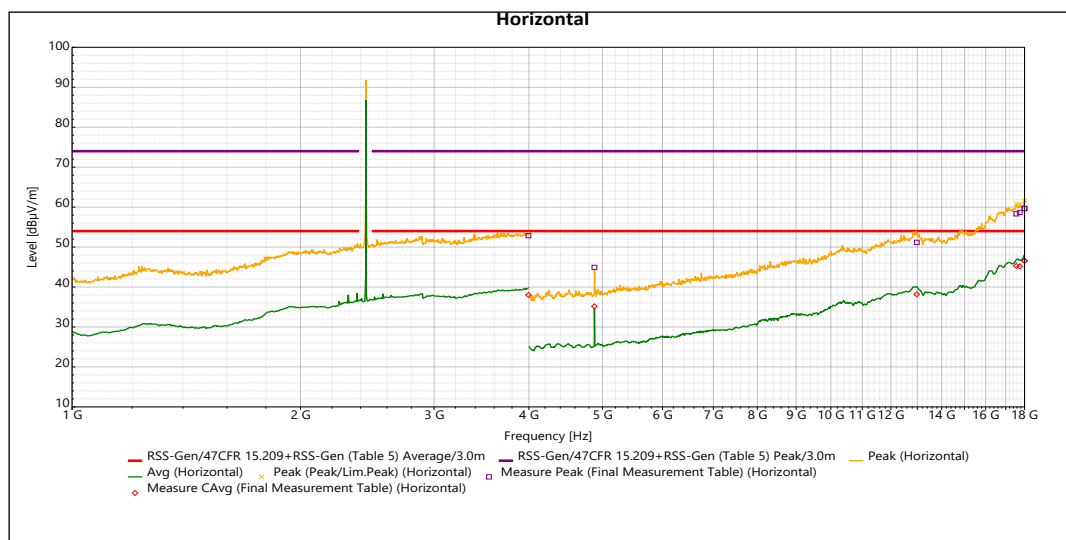
☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

Frequency	SR #	Measure Peak (dBuV/m)	Limit Peak (dBuV/m)	Margin Peak (dB)	Measure CAvg (dBuV/m)	Corrected Avg level (dBuV/m)	Limit Avg (dBuV/m)	Margin Avg (dB)	Height (m)	Angle (°)	Polarization	RBW (Hz)	Meas.Time (s)	Comments	Correction (dB)
3.969 GHz	1	52.656	74	-21.344	38.063	40.103	54	-13.867	1	341	Vertical	1 M	5	Pass	39.415
3.99 GHz	1	53.306	74	-20.694	38.146	40.186	54	-13.784	3.772	351	Vertical	1 M	5	Pass	39.439
4.804 GHz	2	45.761	74	-28.239	35.994	38.034	54	-15.936	2.369	353.2	Vertical	1 M	5	Pass	7.594
12.86 GHz	2	51.046	74	-22.954	37.89	39.93	54	-14.04	1.791	336.8	Vertical	1 M	5	Pass	21.812
16.2 GHz	2	55.595	74	-18.405	42.384	44.424	54	-9.546	3.803	24.7	Vertical	1 M	5	Pass	25.794
16.705 GHz	2	57.256	74	-16.744	43.978	46.018	54	-7.952	1.868	356.1	Vertical	1 M	5	Pass	27.991
17.996 GHz	2	60.49	74	-13.51	46.564	48.604	54	-5.366	2.654	341.5	Vertical	1 M	5	Pass	31.3
18 GHz	2	60.02	74	-13.98	46.586	48.626	54	-5.344	3.527	5.6	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

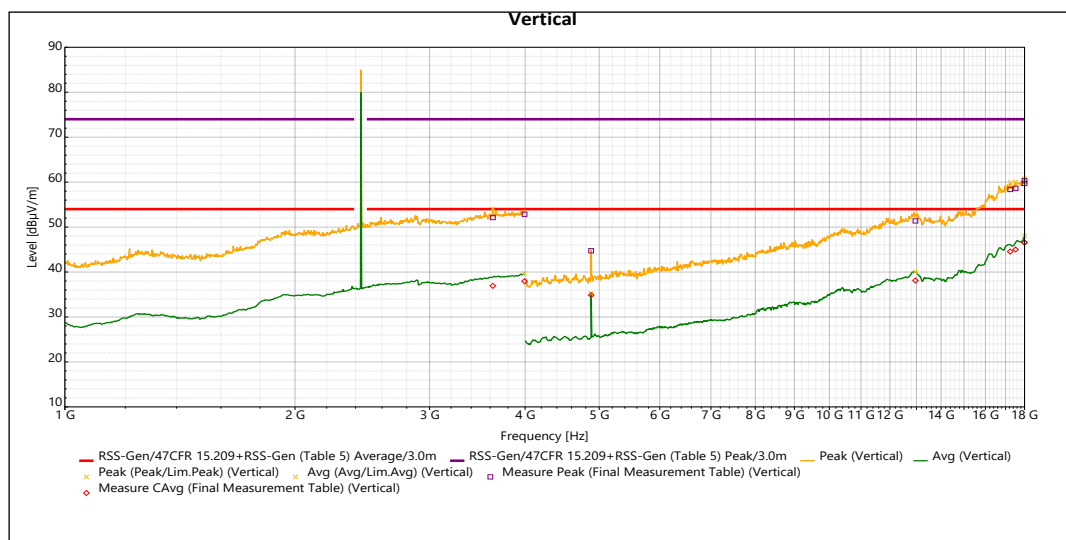
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

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)
3.995 GHz	1	52.862	74	-21.138	38.005	40.045	54	-13.925	3.356	294.3	Horizontal	1 M	5	Pass	39.444
4.88 GHz	2	44.91	74	-29.09	35.149	37.189	54	-16.781	2.175	33.6	Horizontal	1 M	5	Pass	7.678
12.98 GHz	2	51.166	74	-22.834	38.187	40.227	54	-13.743	3.041	348.2	Horizontal	1 M	5	Pass	21.948
17.56 GHz	2	58.322	74	-15.678	45.277	47.317	54	-6.653	2.081	37.2	Horizontal	1 M	5	Pass	29.805
17.742 GHz	2	58.665	74	-15.335	45.179	47.219	54	-6.751	1.88	337.9	Horizontal	1 M	5	Pass	30.463
17.998 GHz	2	59.64	74	-14.36	46.568	48.608	54	-5.362	3.362	4.9	Horizontal	1 M	5	Pass	31.306
18 GHz	2	59.667	74	-14.333	46.57	48.61	54	-5.36	3.542	347.9	Horizontal	1 M	5	Pass	31.309

Operating Mode:	2
Test result:	Pass
Tested on:	2024-06-19

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

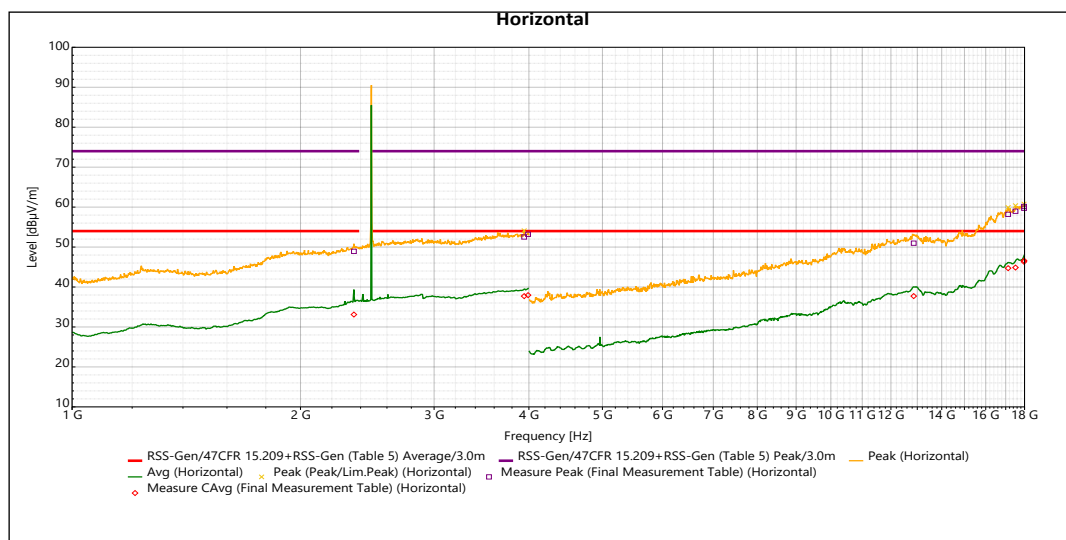
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

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)
3.63 GHz	1	52.13	74	-21.87	36.925	38.965	54	-15.005	3.87	52.6	Vertical	1 M	5	Pass	39.033
3.993 GHz	1	52.858	74	-21.142	37.958	39.998	54	-13.972	1.004	305.1	Vertical	1 M	5	Pass	39.442
4.88 GHz	2	44.726	74	-29.274	34.869	36.909	54	-17.061	1.816	8.7	Vertical	1 M	5	Pass	7.678
12.96 GHz	2	51.372	74	-22.628	38.117	40.157	54	-13.813	3.274	8.8	Vertical	1 M	5	Pass	21.936
17.241 GHz	2	58.375	74	-15.625	44.551	46.591	54	-7.379	2.885	358.4	Vertical	1 M	5	Pass	28.994
17.521 GHz	2	58.622	74	-15.378	45	47.04	54	-6.93	1.356	351.5	Vertical	1 M	5	Pass	29.66
17.996 GHz	2	59.706	74	-14.294	46.559	48.599	54	-5.371	2.846	25.4	Vertical	1 M	5	Pass	31.301
17.999 GHz	2	60.323	74	-13.677	46.538	48.578	54	-5.392	3.708	354.5	Vertical	1 M	5	Pass	31.308

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

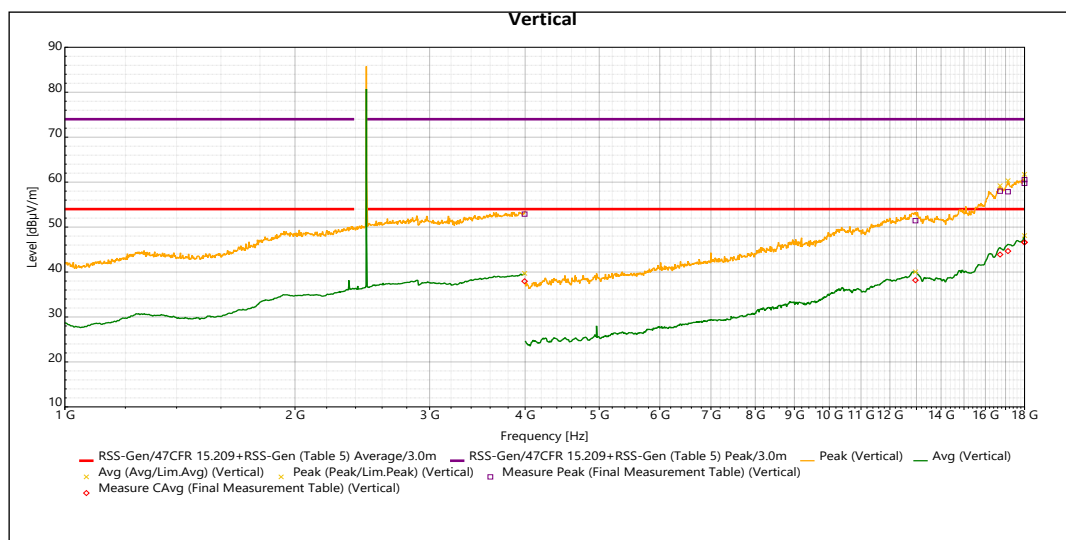
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

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)
2.352 GHz	1	48.926	74	-25.074	33.113	35.153	54	-18.817	1.194	108.9	Horizontal	1 M	5	Pass	36.205
3.943 GHz	1	52.525	74	-21.475	37.724	39.764	54	-14.206	4	340.9	Horizontal	1 M	5	Pass	39.382
3.99 GHz	1	53.189	74	-20.811	37.973	40.013	54	-13.957	3.413	49.3	Horizontal	1 M	5	Pass	39.439
12.86 GHz	2	50.973	74	-23.027	37.733	39.773	54	-14.197	3.038	345.8	Horizontal	1 M	5	Pass	21.812
17.126 GHz	2	58.185	74	-15.815	44.725	46.765	54	-7.205	1.809	327.3	Horizontal	1 M	5	Pass	28.877
17.514 GHz	2	58.97	74	-15.03	44.871	46.911	54	-7.059	3.363	341.4	Horizontal	1 M	5	Pass	29.637
17.971 GHz	2	60.162	74	-13.838	46.317	48.357	54	-5.613	1.299	342.1	Horizontal	1 M	5	Pass	31.245
18 GHz	2	59.723	74	-14.277	46.616	48.656	54	-5.314	2.596	318.9	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



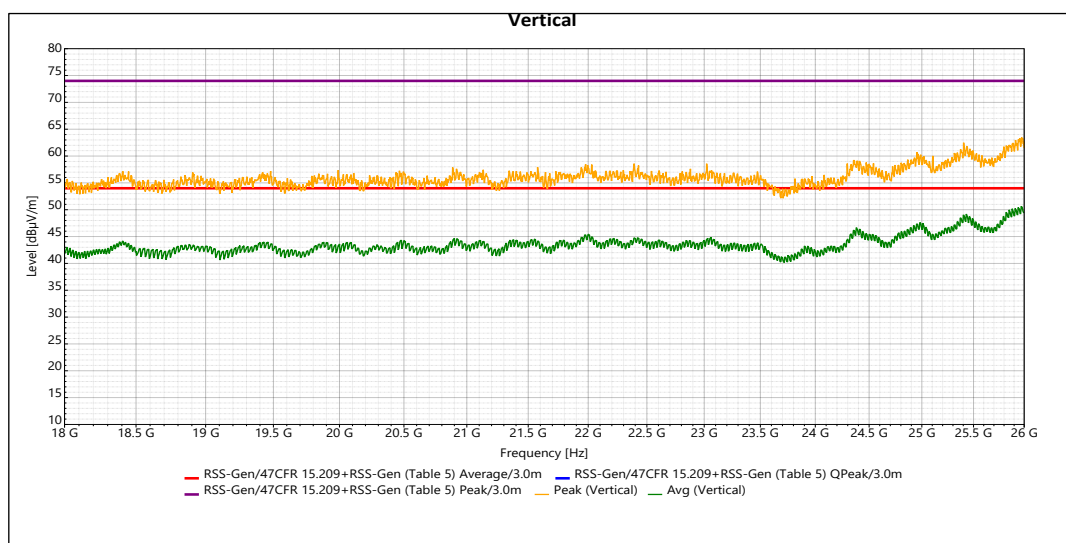
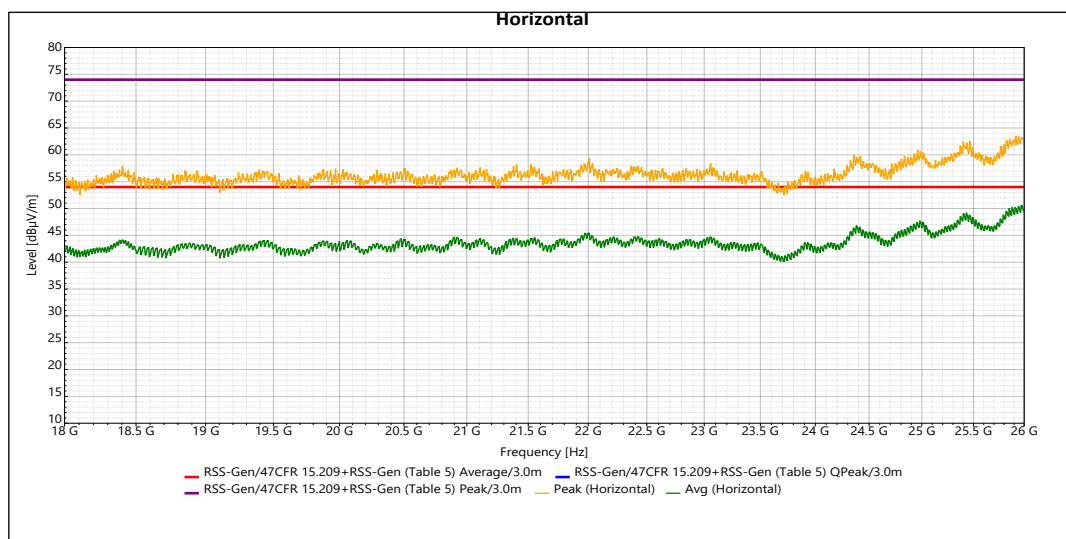
Final measurement

- ☐ 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)
3.994 GHz	1	52.894	74	-21.106	37.954	39.994	54	-13.976	3.122	60.5	Vertical	1 M	5	Pass	39.443
12.96 GHz	2	51.415	74	-22.585	38.185	40.225	54	-13.745	1.344	307.8	Vertical	1 M	5	Pass	21.936
16.723 GHz	2	57.986	74	-16.014	43.889	45.929	54	-8.041	2.336	353.4	Vertical	1 M	5	Pass	28.034
17.125 GHz	2	57.861	74	-16.139	44.662	46.702	54	-7.268	3.598	308.2	Vertical	1 M	5	Pass	28.877
17.997 GHz	2	59.733	74	-14.267	46.58	48.62	54	-5.35	2.421	332.7	Vertical	1 M	5	Pass	31.303
18 GHz	2	60.546	74	-13.454	46.636	48.676	54	-5.294	1.685	320.1	Vertical	1 M	5	Pass	31.309

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:

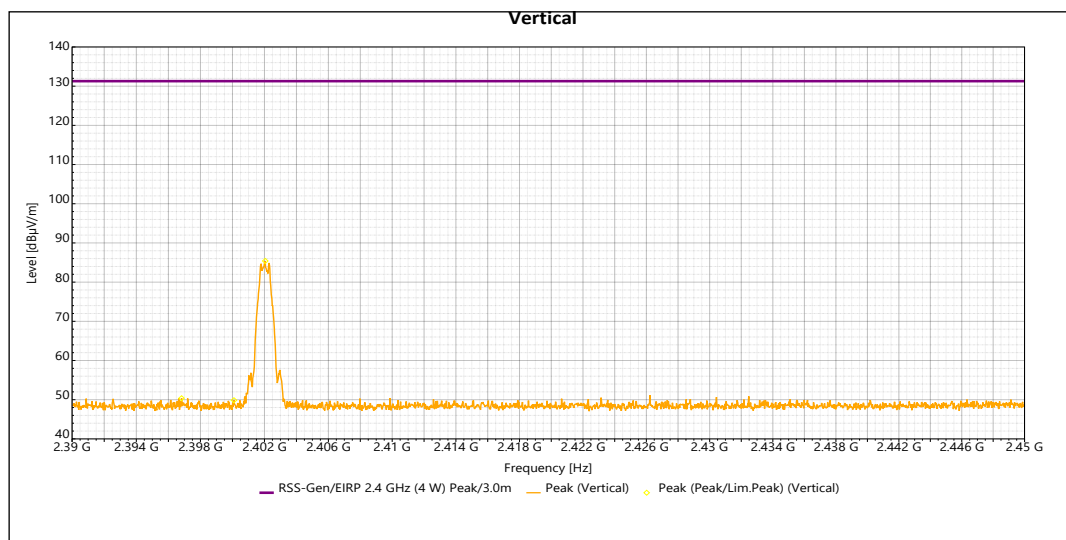
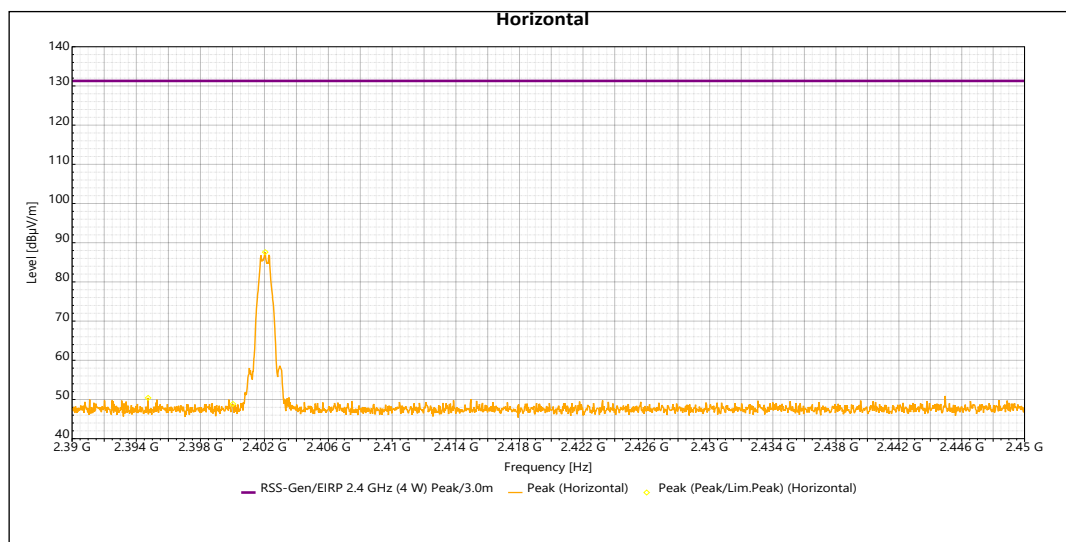
6.2.4 Transmitter Band Edge Radiated Emission and restricted band evaluation

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:	2024-06-19

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

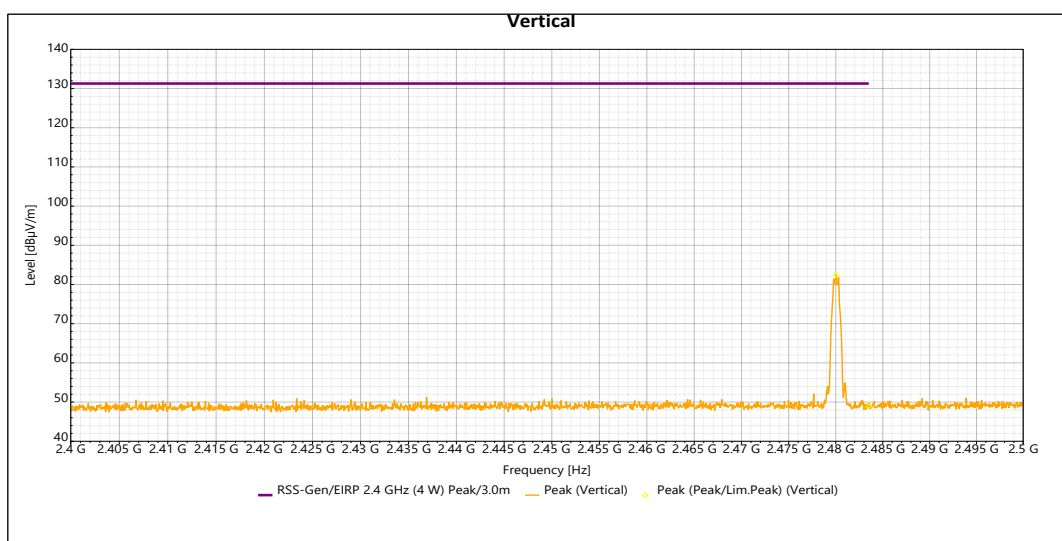
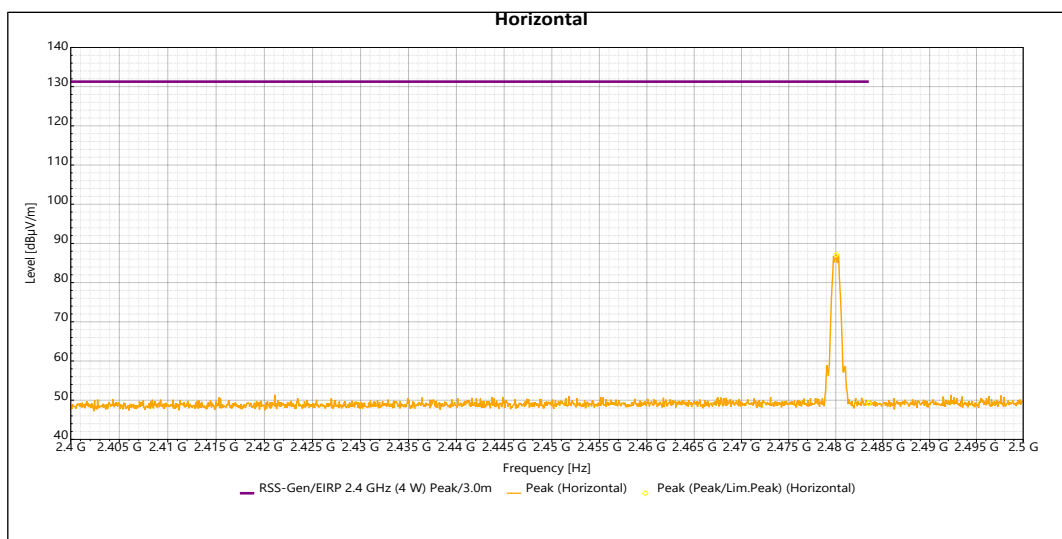


Channel	Max peak of in-band emission (dBm)	Frequency of max peak at the band edge (MHz)	Peak of carrier (dB)	Delta (dB)	Margin (dB)	polarization	Result
Bottom	50.404	2394	87.59	37.19	>20 dB	Horizontal	Pass
Bottom	50.384	2400	85.40	35.02	>20 dB	Vertical	Pass

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



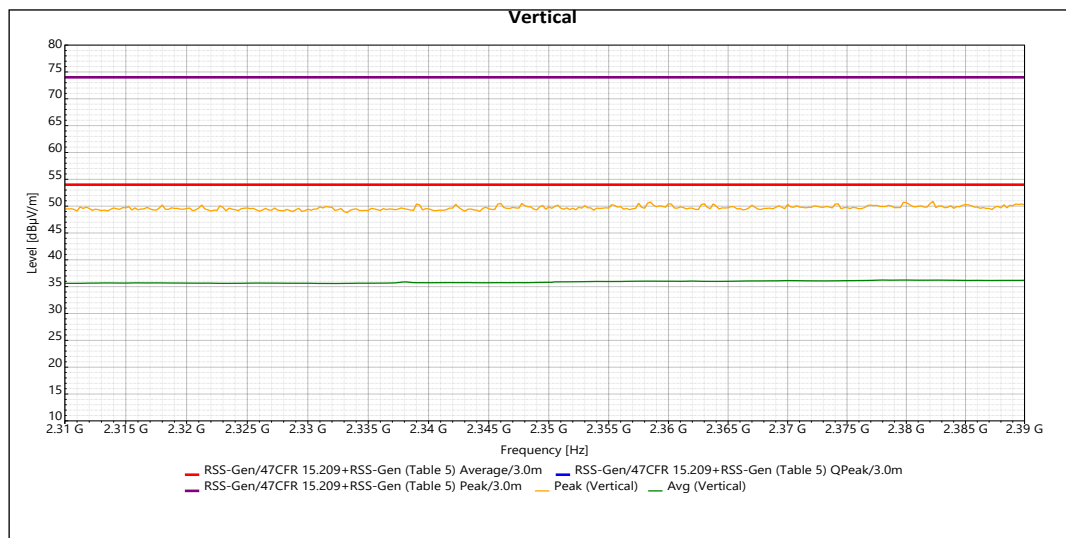
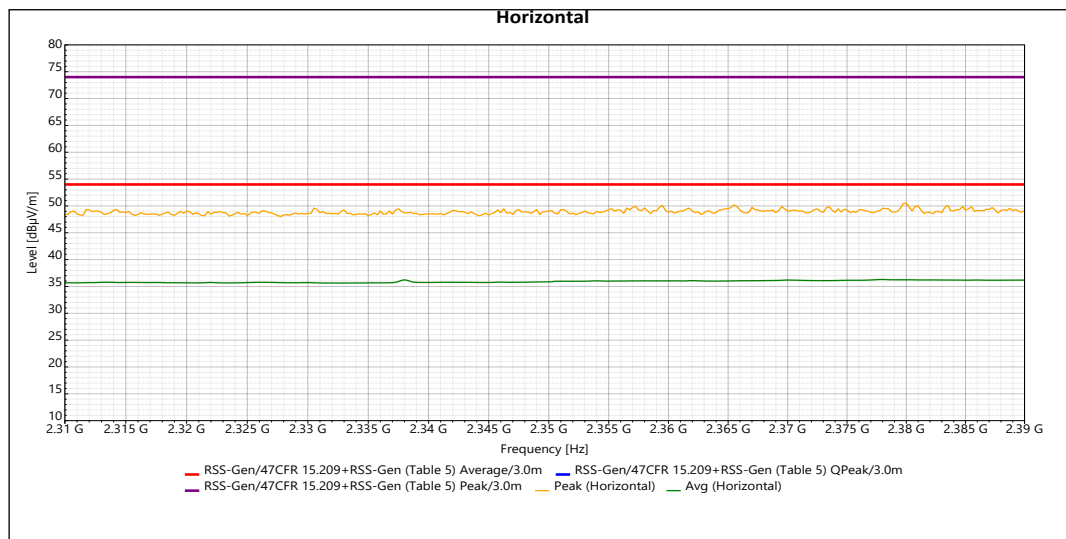
Channel	Max peak of in-band emission (dBm)	Frequency of max peak at the band edge (MHz)	Peak of carrier (dB)	Delta (dB)	Margin (dB)	polarization	Result
Top	49.206	2484	87.127	37.921	>20 dB	Horizontal	Pass
Top	48.856	2483	82.448	33.592	>20 dB	Vertical	Pass

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

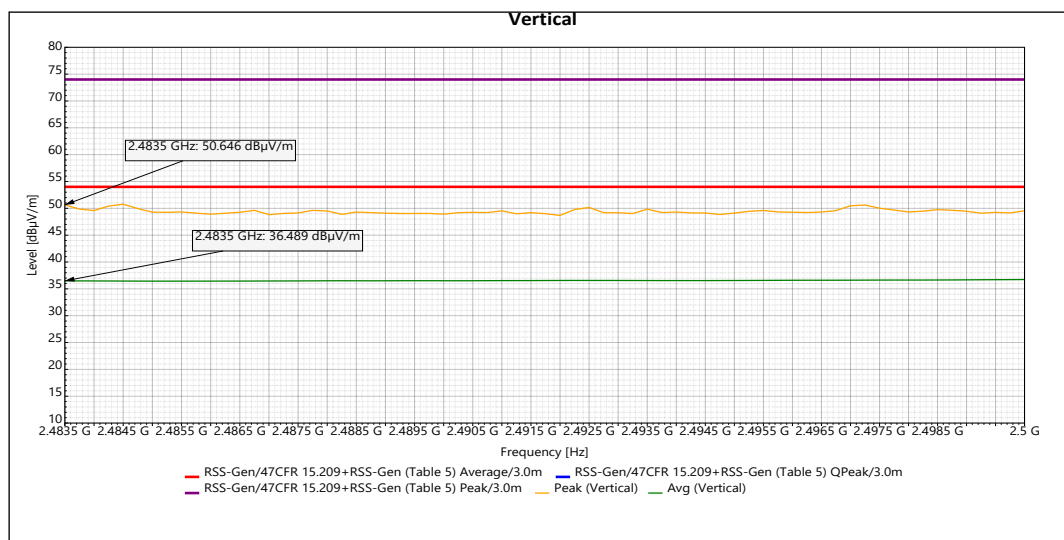
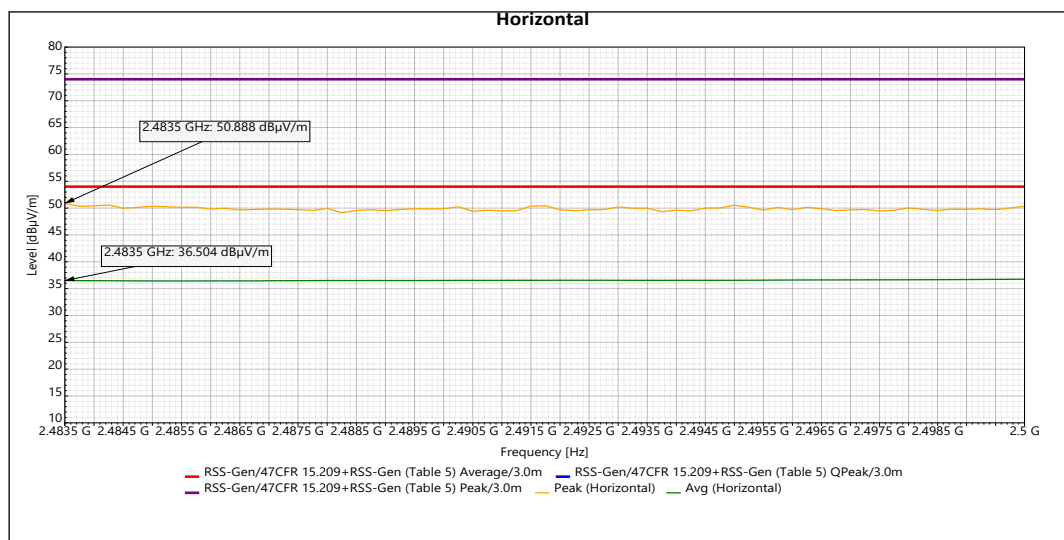


Final measurement

- ☒ 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

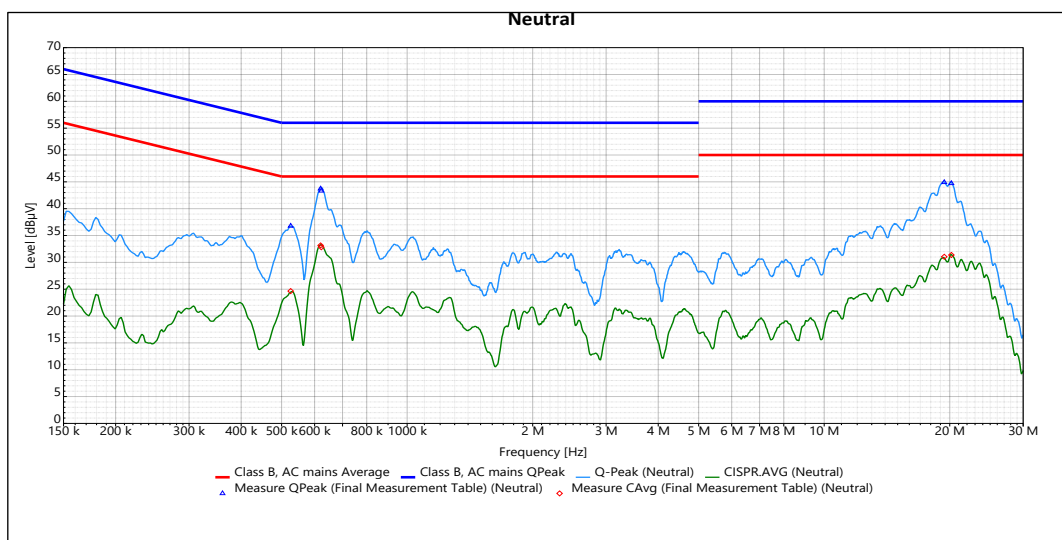
6.3 Transmitted AC Conducted Spurious Emissions

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



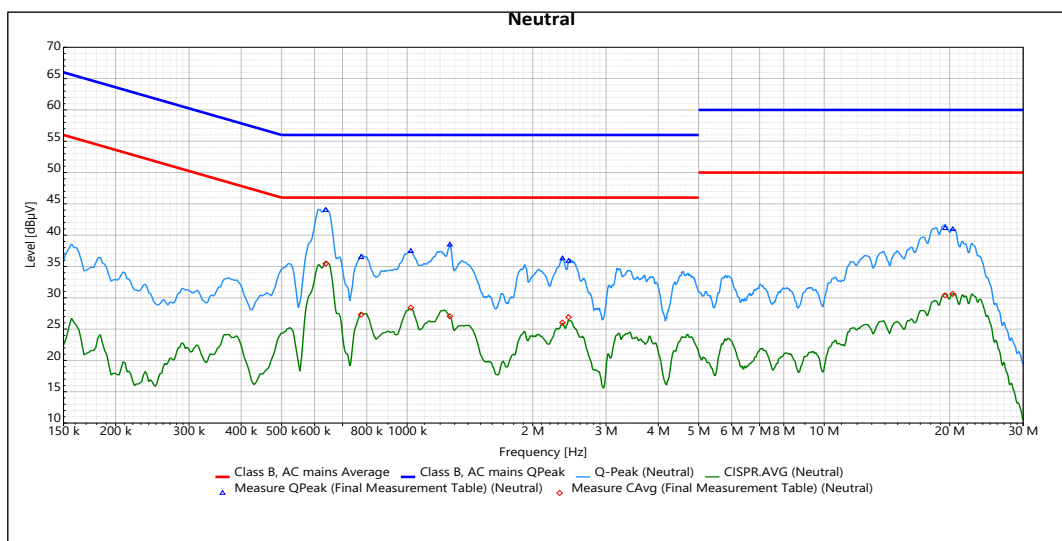
- ☐ The emissions are below the measurement system noise floor or 20 dB or more below the limit
- ☒ The measurement results of highest emissions relative to the limit for each detector type are shown below:

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)
525.75 kHz	1	36.78	56	-19.22	24.649	46	-21.351	9 k	5	Pass	10.32
620.25 kHz	1	43.719	56	-12.281	33.164	46	-12.836	9 k	5	Pass	10.322
622.5 kHz	1	43.332	56	-12.668	32.806	46	-13.194	9 k	5	Pass	10.322
19.403 MHz	1	44.908	60	-15.092	31.035	50	-18.965	9 k	5	Pass	10.843
20.182 MHz	1	44.719	60	-15.281	31.367	50	-18.633	9 k	5	Pass	10.864

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)
638.25 kHz	1	43.997	56	-12.003	35.474	46	-10.526	9 k	5	Pass	10.324
775.5 kHz	1	36.477	56	-19.523	27.313	46	-18.687	9 k	5	Pass	10.338
1.021 MHz	1	37.448	56	-18.552	28.425	46	-17.575	9 k	5	Pass	10.34
1.266 MHz	1	38.471	56	-17.529	27.055	46	-18.945	9 k	5	Pass	10.342
2.357 MHz	1	36.269	56	-19.731	26.015	46	-19.985	9 k	5	Pass	10.367
2.438 MHz	1	35.873	56	-20.127	26.897	46	-19.103	9 k	5	Pass	10.369
19.502 MHz	1	41.122	60	-18.878	30.387	50	-19.613	9 k	5	Pass	10.846
20.333 MHz	1	40.934	60	-19.066	30.634	50	-19.366	9 k	5	Pass	10.867

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	Ulab	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>