

Prüfbericht-Nr.: Test report no.:	CN25MKSC 001	Auftrags-Nr.: Order no.:	326058866	Seite 1 von 43 Page 1 of 43
Kunden-Referenz-Nr.: Client reference no.:	1288983	Auftragsdatum: Order date:	2024-10-22	
Auftraggeber: Client:	IKEA of Sweden AB Box 702, SE-343 81 Älmhult, Sweden			
Prüfgegenstand: Test item:	GREJSIMOJS Mouse Speaker			
Bezeichnung / Typ-Nr.: Identification / Type no.:	E2498			
Auftrags-Inhalt: Order content:	Test Report			
Prüfgrundlage: Test specification:	FCC CFR47 Part 15, Subpart C Section 15.247 RSS-Gen Issue 5, Amendment 2, February 2021 RSS-247 Issue 3, August 2023 ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024+Errata to C63.10a-2024			
Wareneingangsdatum: Date of sample receipt:	2024-12-06	Refer to photo document.		
Prüfmuster-Nr.: Test sample no.:	A003881280-005~006			
Prüfzeitraum: Testing period:	2024-12-07 ~ 2025-05-29			
Ort der Prüfung: Place of testing:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	<input checked="" type="checkbox"/> <u>Hongfei Wu</u>	genehmigt von: authorized by:	<input checked="" type="checkbox"/> <u>Yanli Fan</u>	
Datum: Date:	2025-09-02 <small>Signed by: Hongfei Wu</small>	Datum: Date:	2025-09-02 <small>Signed by: Yanli Fan</small>	
Stellung / Position:	Sachverständige(r)/Expert	Stellung / Position:	Sachverständige(r)/Expert	
Sonstiges / Other:	FCC ID: FHO-E2498 IC: 10912A-E2498 HVIN: E2498 PMN: GREJSIMOJS			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Anmerkungen
Remarks

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3	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
4	<p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT*RESULT: Pass***5.1.2 6dB & 99% BANDWIDTH***RESULT: Pass***5.1.3 OUTPUT POWER***RESULT: Pass***5.1.4 POWER SPECTRAL DENSITY***RESULT: Pass***5.1.5 CONDUCTED BAND EDGE AND OUT-OF BAND EMISSIONS***RESULT: Pass***5.2.1 CONDUCTED EMISSION***RESULT: Pass***5.3.1 RADIATED BAND-EDGE***RESULT: Pass***5.3.2 RADIATED SPURIOUS EMISSION***RESULT: Pass*

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

2. Test Sites

2.1 Test Facilities

TÜV Rheinland (Shanghai) Co., Ltd.

Workshop14, North Half of Workshop 10 and Workshop 16, Pingqian (Taicang) Modern Industrial Park, No.525, Yuewang Lingang South Road, Shaxi, Taicang, Jiangsu, China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 930979.

The Innovation, Science and Economic Development Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 33038.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Equip.	Description	Model	Manufacturer	Due Date DD.MM.YYYY
EMC-C-196	Wireless connectivity tester	CMW270	Rohde & Schwarz	23.08.2025
EMC-C-302	Signal generator	SMB100B (6 GHz)	Rohde & Schwarz	10.12.2025
EMC-C-303	Vector Signal generator	SMW200A	Rohde & Schwarz	10.12.2025
EMC-C-304	OSP	OSP-B157W8	Rohde & Schwarz	10.12.2025
EMC-C-161	Spectrum analyser	FSV40	Rohde&Schwarz	15.07.2025
EMC-C-018	Double ridged horn antenna	BBHA 9120 D	Schwarzbeck	24.03.2026
EMC-C-066	EMI test receiver	ESCI	Rohde&Schwarz	27.10.2025
EMC-C-068	Broadband horn antenna	BBHA 9170	Schwarzbeck	18.06.2028
EMC-C-155	BiLog antenna	CBL 6112D	Teseq	24.03.2026
EMC-C-175	Preamplifier	EMC051845SE	EMCI Taiwan	24.07.2025
EMC-C-001	3 m semi-anechoic chamber	SAC3	Frankonia	03.12.2026
EMC-C-141	Shielded enclosure	10.055x3.605x3.000	Frankonia	08.11.2028
EMC-C-195	EMI test receiver	ESR3	Rohde&Schwarz	03.08.2025
EMC-C-190	Artificial mains network	ENV432	Rohde&Schwarz	11.10.2025
software				
EMC-S-036	RF measurement software	WMS32-WB (11.40.00)	Rohde&Schwarz	NA
EMC-S-032	EMI measurement software	EMC32-E+ (10.60.20)	Rohde&Schwarz	NA
EMC-S-028	EMI measurement software	EMC32-MEB (10.60.20)	Rohde&Schwarz	NA

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

Table 2: Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
Conducted Emission	150kHz - 30MHz	±2.33dB
Radiated Emission	9kHz - 30MHz	±2.93dB
	30MHz - 1GHz	±5.34dB
	> 1GHz	±5.40dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is a speaker which supports Bluetooth and 2.4GHz proprietary function.

The aim of this report is to evaluate RF character of 2.4 GHz proprietary of the EUT.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Description of EUT	
Product Name:	GREJSIMOJS Mouse Speaker
Model No.:	E2498
Operation Voltage:	DC 5V (USB Type C) DC 3.6V (Li-ion Battery)
Test Voltage:	DC 3.3V for RF conducted and radiated test AC 120V, 60Hz for conducted emission test
RF Technical:	1) Bluetooth Classic 2) 2.4 GHz proprietary
Technical Specification of 2.4 GHz proprietary	
Frequency Range:	2402~2480MHz
Modulation Type:	GFSK
Data Rate:	2Mbps
Equipment Type:	Non-FHSS
Antenna Type:	PCB Antenna
Antenna Gain:	1.5 dBi (declared by client)

Table 4: Operation Channel List

RF Channel	Frequency [MHz]						
00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	19	2440	29	2460	39	2480

3.3 Independent Operation Modes

Test frequencies are lowest channel: 2402 MHz, middle channel: 2440 MHz and highest channel: 2480 MHz

The basic operation modes are:

- A. 2.4 GHz proprietary transmitting mode
- B. Radio operating mode

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024+Errata to C63.10a-2024.

Test Software: Telink BDT, V5.7.4

Table 5: Power parameter value

Mode	Frequency [MHz]	Power Parameter Setting Value
2.4 GHz proprietary	2402	8.2
	2440	8.2
	2480	8.2

4.3 Special Accessories and Auxiliary Equipment

Table 6: Special Accessories

Accessories	Parameter
RF Cable between the antenna port and test system	Cable loss: 0.5dB

Note: The RF cable used in the test was provided by

Client

Test Lab

And the cable loss has been factored in the related test.

Table 7: Auxiliary Equipment

Equipment	Manufacturer	Model
Laptop	Lenovo	21AJ-S57N0J
Cell phone	Huawei	STF-AL10
USB charger	IKEA	E2301-EU

4.4 Countermeasures to achieve EMC Compliance

Null.

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Page 14 of 43**RSS-Gen 6.8 – Antenna Requirement**

Requirement: When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

Results:

a) Antenna Type:	PCB Antenna
b) Manufacture:	N/A
c) Model No.:	N/A
d) Gain with reference to an isotropic radiator:	1.5 dBi

Verdict: PASS

5.1.2 6dB & 99% Bandwidth

RESULT:**Pass**

Date of testing	:	2025-05-08
Ambient temperature	:	21.7°C
Relative humidity	:	49.8%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(a)(2) RSS-247 Issue 3, August 2023, Clause 5.2(a) RSS-Gen Issue 5, Amendment 2, February 2021, Clause 6.7
Test procedure	:	ANSI C63.10-2020+Cor. 1-2023+C63.10a- 2024+Errata to C63.10a-2024
Test voltage	:	DC 3.3V
Test modes applied	:	A

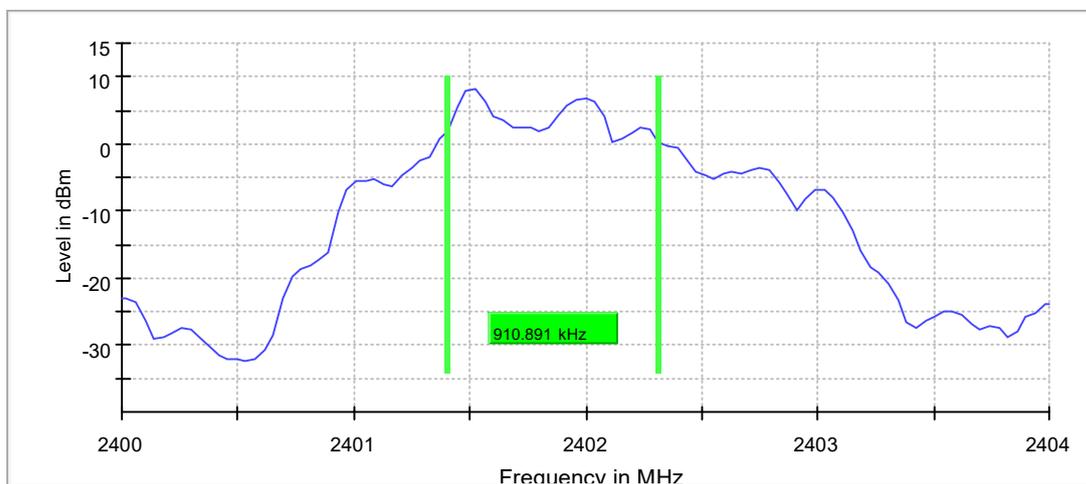
6dB Bandwidth (2Mbps, 2402MHz)

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.910891	0.500000	---	2401.405941	2402.316832

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	8.1	PASS

6 dB Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
Sweeptime	18.938 µs	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	18 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.11 dB	0.50 dB

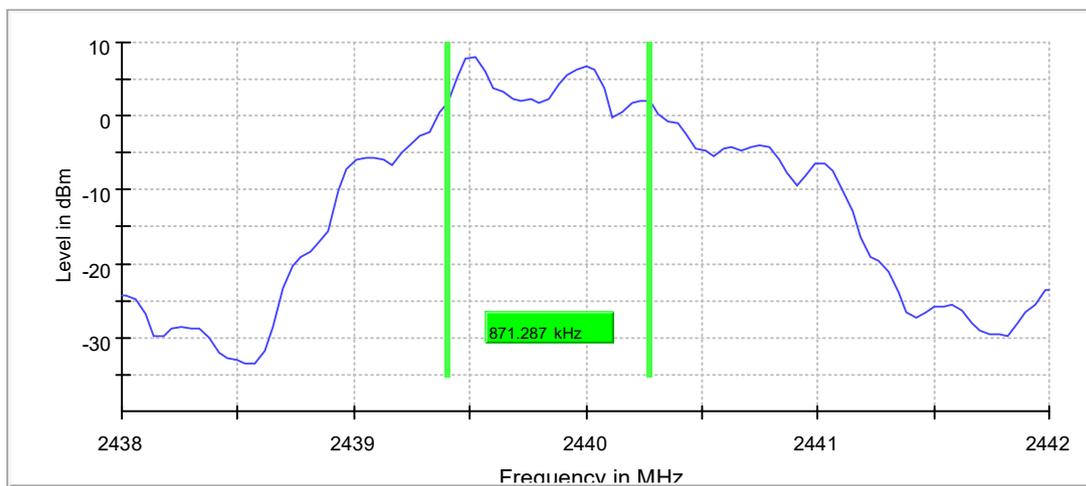
6dB Bandwidth (2Mbps, 2440MHz)

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	0.871287	0.500000	---	2439.405941	2440.277228

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	7.9	PASS

6 dB Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43800 GHz	2.43800 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
Sweeptime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	21 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.06 dB	0.50 dB

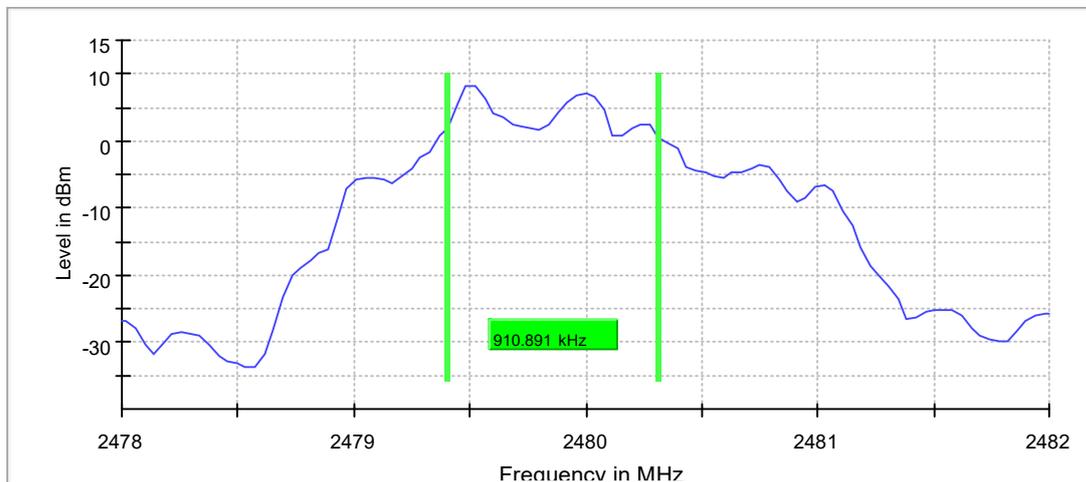
6dB Bandwidth (2Mbps, 2480MHz)

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.910891	0.500000	---	2479.405941	2480.316832

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	8.2	PASS

6 dB Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
Sweeptime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	18 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.50 dB

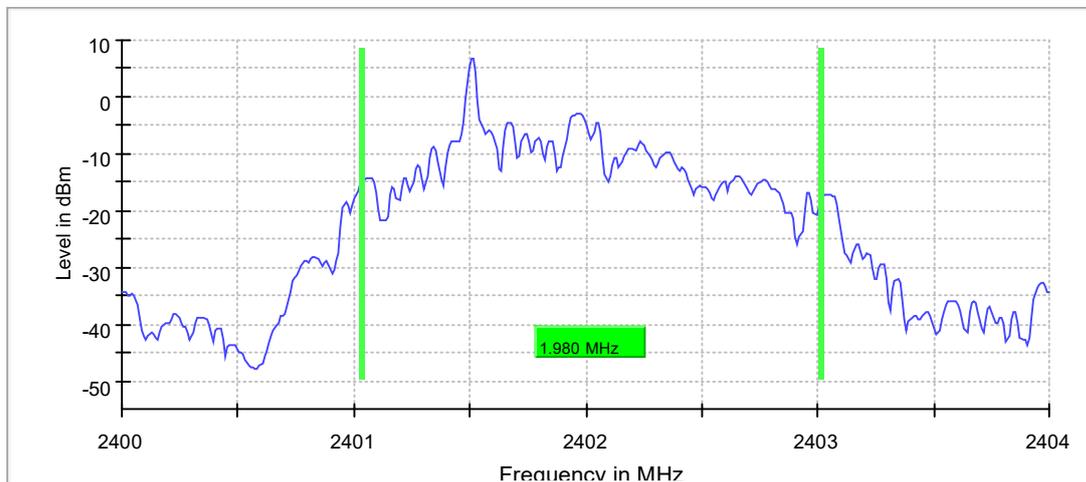
99% Bandwidth (2Mbps, 2402MHz)

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.980000	---	---	2401.035000	2403.015000

(continuation of the "99% Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS

99 % Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	400	~ 400
Sweeptime	94.824 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.05 dB	0.50 dB

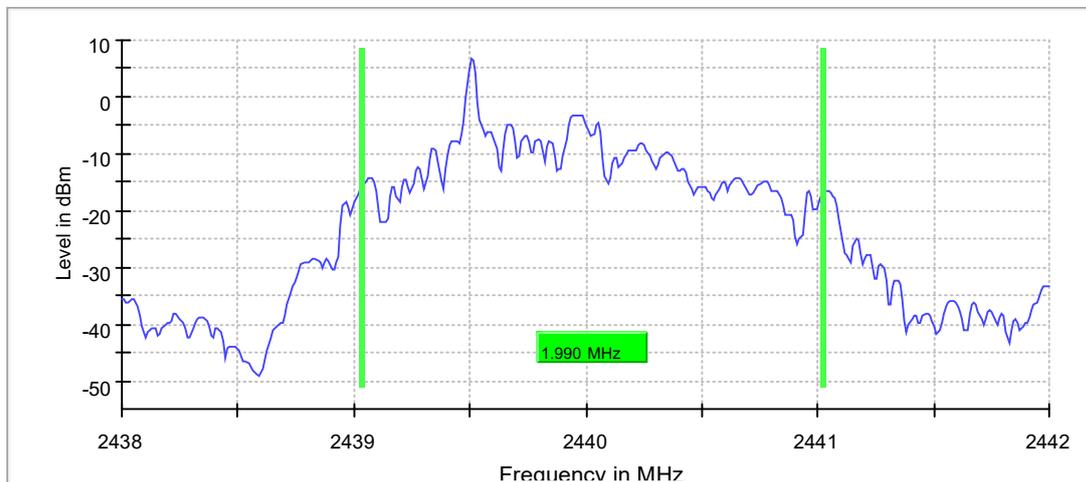
99% Bandwidth (2Mbps, 2440MHz)

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.990000	---	---	2439.035000	2441.025000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2440.000000	PASS

99 % Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43800 GHz	2.43800 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	400	~ 400
Sweeptime	94.824 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.30 dB

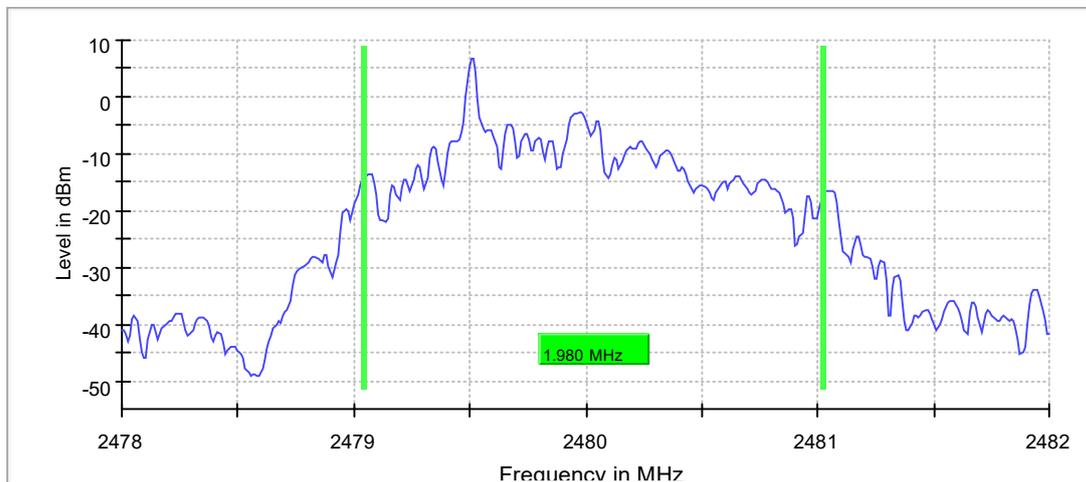
99%Bandwidth (2Mbps, 2480MHz)

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.980000	---	---	2479.045000	2481.025000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS

99 % Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	400	~ 400
Sweeptime	94.824 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.30 dB

5.1.4 Power Spectral Density

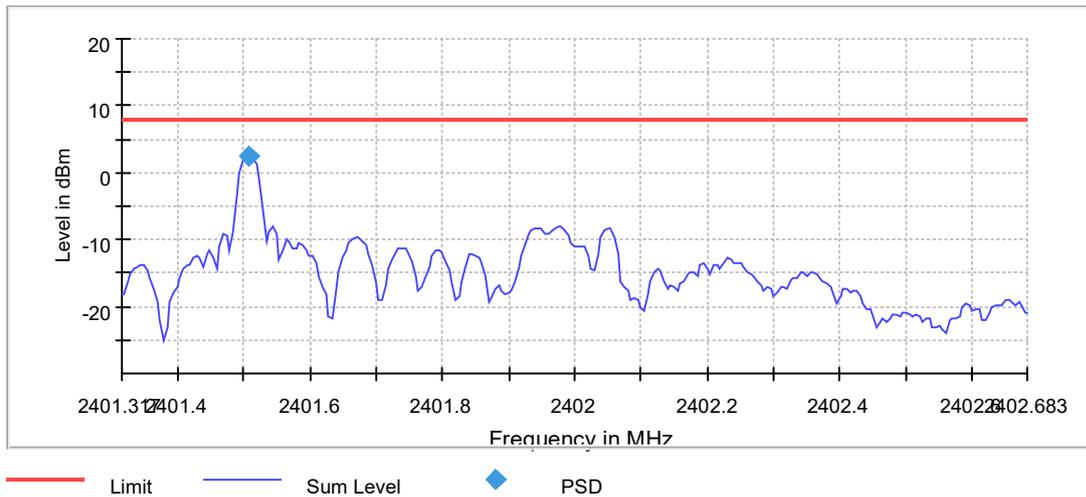
RESULT:**Pass**

Date of testing	:	2025-05-08
Ambient temperature	:	21.7°C
Relative humidity	:	49.8%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(e) RSS-247 Issue 3, August 2023, Clause 5.2(b)
Test procedure	:	ANSI C63.10-2020+Cor. 1-2023+C63.10a- 2024+Errata to C63.10a-2024
Test voltage	:	DC 3.3V
Test modes applied	:	A

Power Spectral Density(2Mbps 2402MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2401.509520	2.514	8.0	PASS

Peak Power Spectral Density

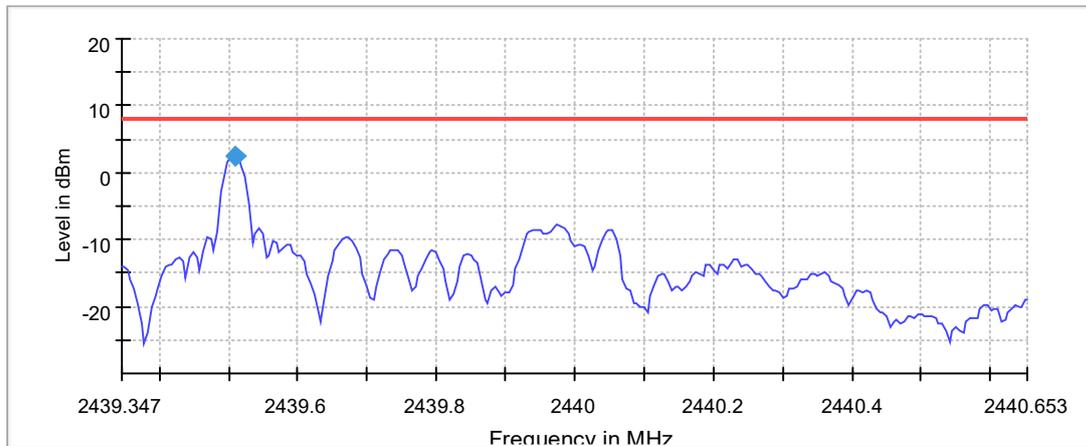

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40132 GHz	2.40132 GHz
Stop Frequency	2.40268 GHz	2.40268 GHz
Span	1.366 MHz	1.366 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	273	~ 273
Sweeptime	1.370 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.07 dB	0.50 dB

Power Spectral Density(2Mbps 2440MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2440.000000	2439.509275	2.360	8.0	PASS

Peak Power Spectral Density



— Limit — Sum Level ◆ PSD

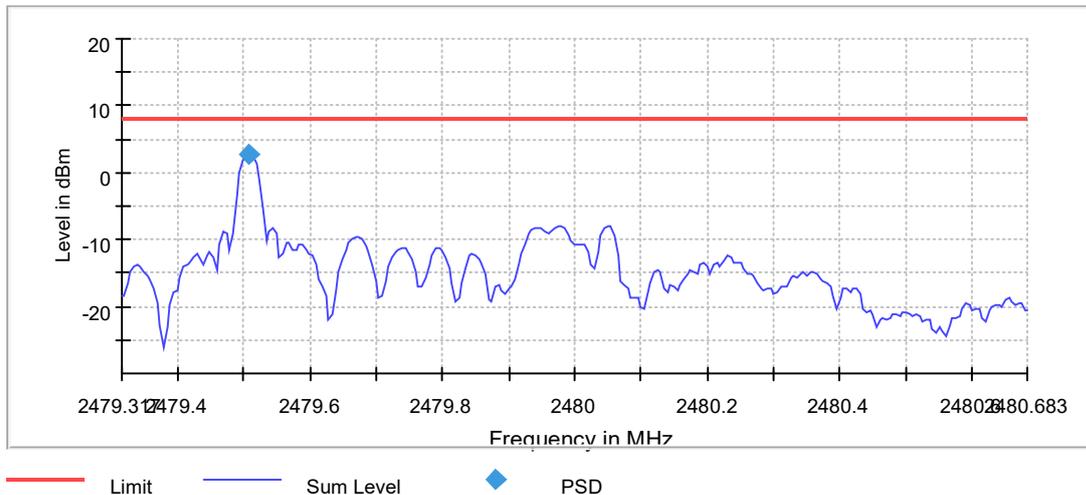
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43935 GHz	2.43935 GHz
Stop Frequency	2.44065 GHz	2.44065 GHz
Span	1.307 MHz	1.307 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	261	~ 261
SweepTime	1.310 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.28 dB	0.50 dB

Power Spectral Density(2Mbps 2480MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.509520	2.603	8.0	PASS

Peak Power Spectral Density


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47932 GHz	2.47932 GHz
Stop Frequency	2.48068 GHz	2.48068 GHz
Span	1.366 MHz	1.366 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	273	~ 273
Sweeptime	1.370 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.13 dB	0.50 dB

5.1.5 Conducted Band Edge and out-of Band Emissions

RESULT:**Pass**

Date of testing : 2025-05-29
Ambient temperature : 22.7°C
Relative humidity : 49.7%
Atmospheric pressure : 101kPa
Test requirement : FCC Part 15.247(d)
RSS-247 Issue 3, August 2023, Clause 5.5
Test procedure : ANSI C63.10-2020+Cor. 1-2023+C63.10a-
2024+Errata to C63.10a-2024
Test voltage : DC 3.3V
Test modes applied : A

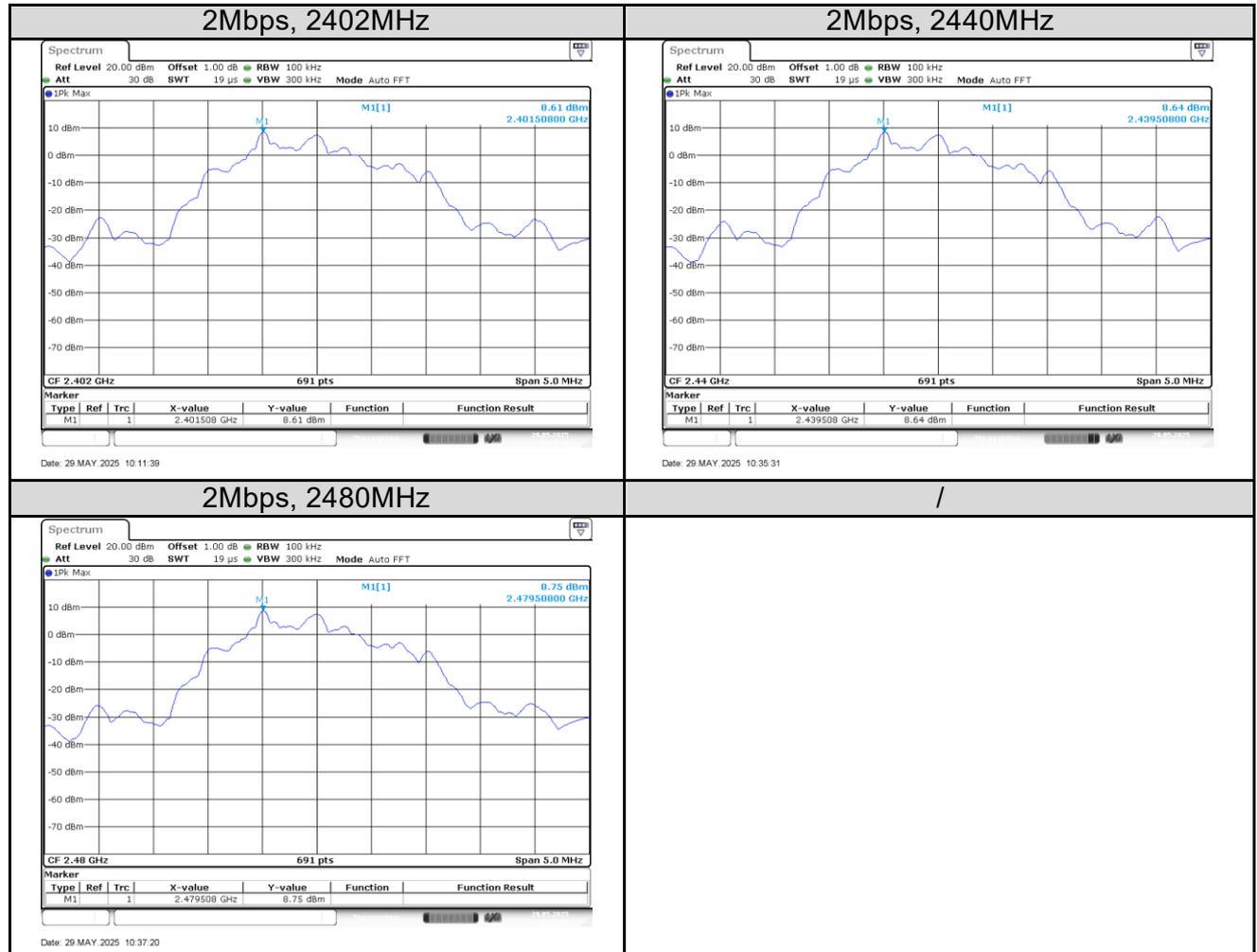
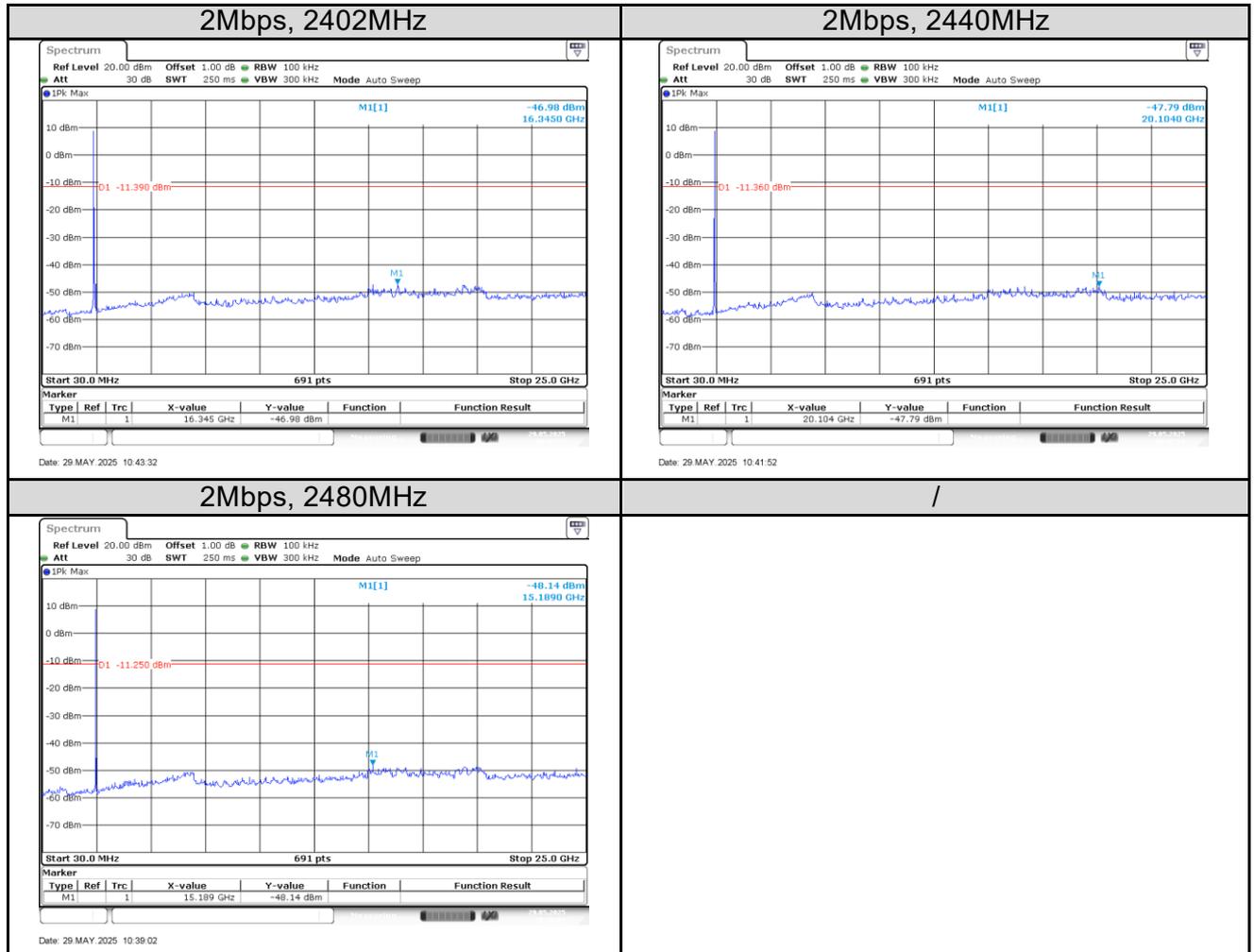
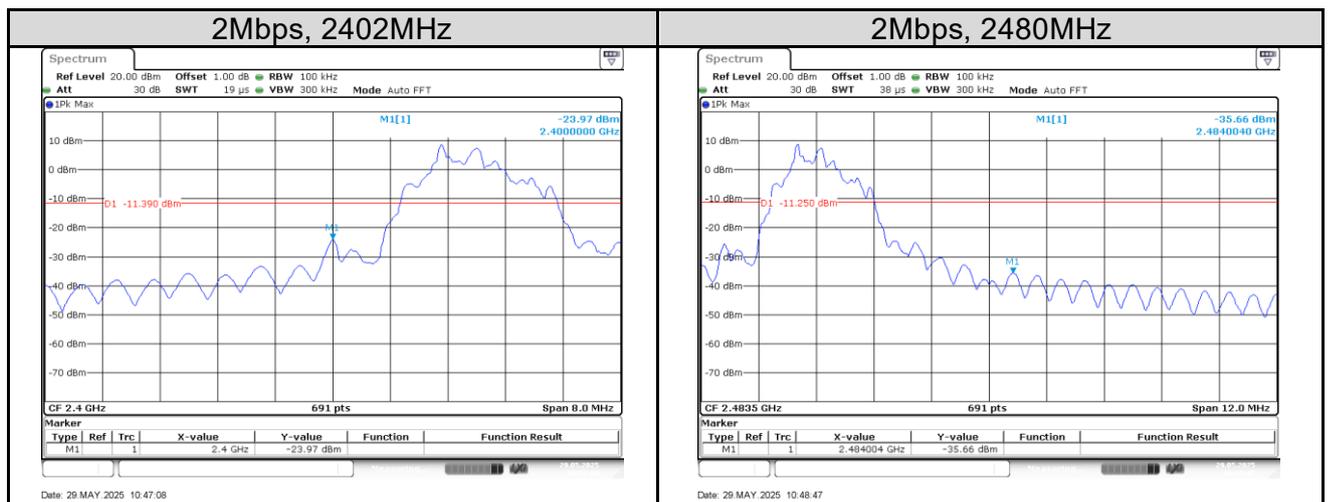
Figure 1: Reference level


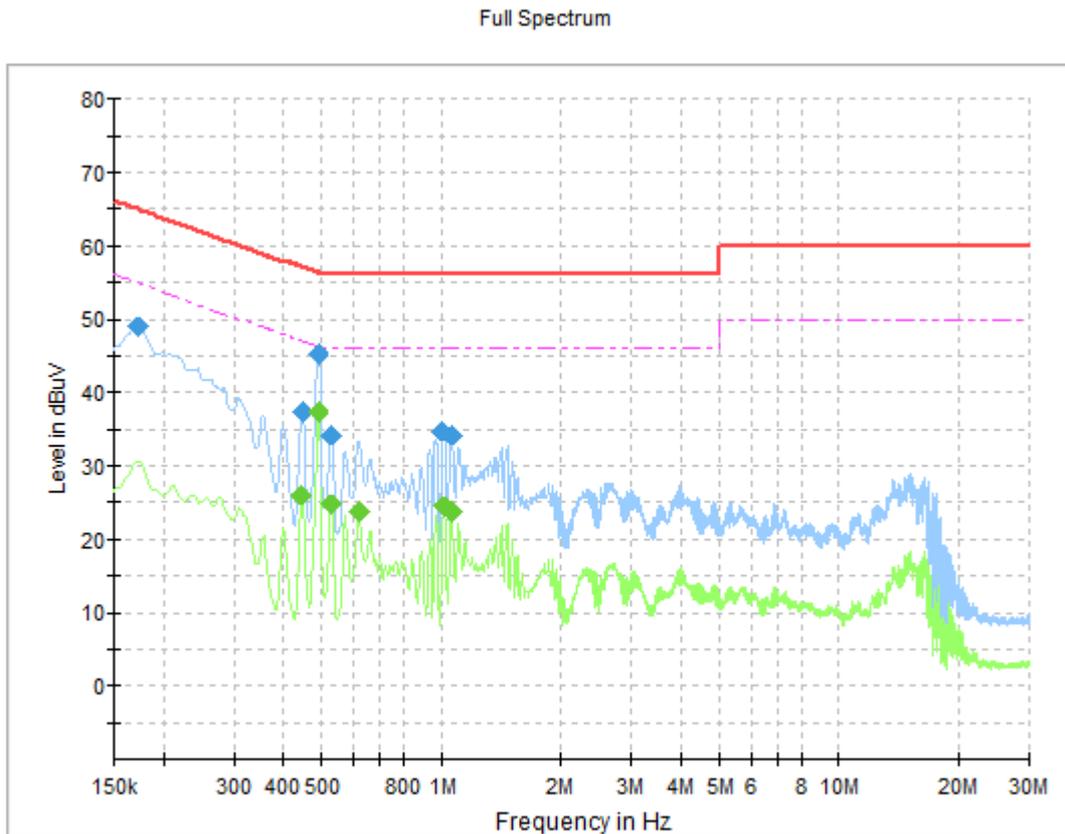
Figure 2: Conducted Spurious Emission

Figure 3: Conducted Band Edge


5.2 Emission in the Frequency Range up to 30MHz

5.2.1 Conducted Emission

RESULT:**Pass**

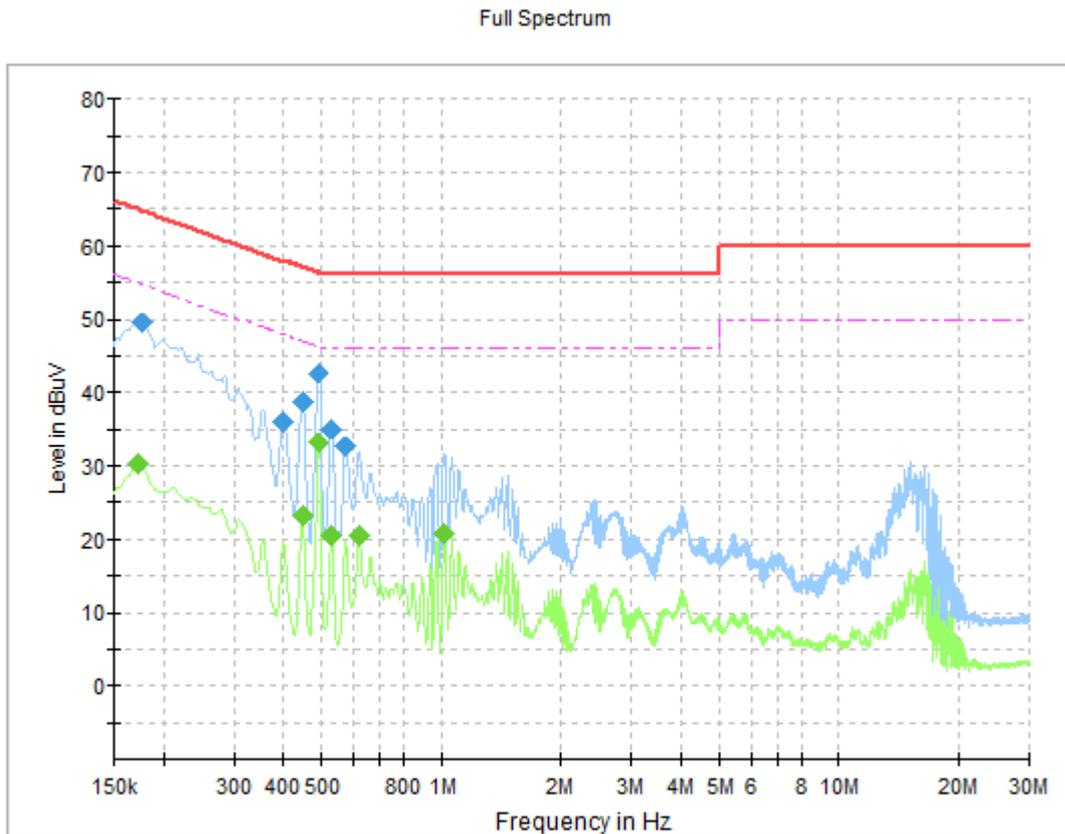
Date of testing	:	2024-12-07
Ambient temperature	:	20.5°C
Relative humidity	:	48.2%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.207 (a) RSS-Gen Issue 5, Amendment 2, February 2021, Clause 8.8
Test procedure	:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024+Errata to C63.10a-2024
Test voltage	:	AC 120V, 60Hz
Test modes applied	:	B

Figure 4: Conducted Emission, L

Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.172500	48.91	64.84	15.93	1000.0	9.000	L1	10.3
0.444750	37.31	56.97	19.66	1000.0	9.000	L1	10.3
0.487500	45.37	56.21	10.84	1000.0	9.000	L1	10.3
0.528000	34.33	56.00	21.67	1000.0	9.000	L1	10.3
1.009500	34.82	56.00	21.18	1000.0	9.000	L1	10.7
1.061250	34.23	56.00	21.77	1000.0	9.000	L1	10.7

Final Result CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.442500	26.07	47.02	20.95	1000.0	9.000	L1	10.3
0.487500	37.34	46.21	8.87	1000.0	9.000	L1	10.3
0.530250	24.61	46.00	21.39	1000.0	9.000	L1	10.3
0.615750	23.79	46.00	22.21	1000.0	9.000	L1	10.3
1.016250	24.38	46.00	21.62	1000.0	9.000	L1	10.7
1.059000	23.71	46.00	22.29	1000.0	9.000	L1	10.7

Figure 5: Conducted Emission, N

Final Result QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.174750	49.51	64.73	15.22	1000.0	9.000	N	10.5
0.399750	36.11	57.86	21.75	1000.0	9.000	N	10.3
0.444750	38.73	56.97	18.24	1000.0	9.000	N	10.3
0.487500	42.56	56.21	13.65	1000.0	9.000	N	10.2
0.528000	34.93	56.00	21.07	1000.0	9.000	N	10.2
0.573000	32.67	56.00	23.33	1000.0	9.000	N	10.3

Final Result CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.172500	30.36	54.84	24.48	1000.0	9.000	N	10.5
0.444750	23.06	46.97	23.91	1000.0	9.000	N	10.3
0.487500	33.29	46.21	12.92	1000.0	9.000	N	10.2
0.530250	20.63	46.00	25.37	1000.0	9.000	N	10.2
0.615750	20.41	46.00	25.59	1000.0	9.000	N	10.3
1.018500	20.88	46.00	25.12	1000.0	9.000	N	10.4

5.3 Emission in the Frequency Range above 30MHz

5.3.1 Radiated Band-Edge

RESULT:**Pass**

Date of testing	:	2025-05-10
Ambient temperature	:	20.3°C
Relative humidity	:	47.5%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(d) FCC Part 15.205(a) FCC Part 15.209(a) RSS-Gen Issue 5, Amendment 2, February 2021, Clause 8.9 RSS-Gen Issue 5, Amendment 2, February 2021, Clause 8.10 RSS-247 Issue 3, August 2023, Clause 5.5
Test procedure	:	ANSI C63.10-2020+Cor. 1-2023+C63.10a- 2024+Errata to C63.10a-2024
Test voltage	:	DC 3.3V
Test modes applied	:	A

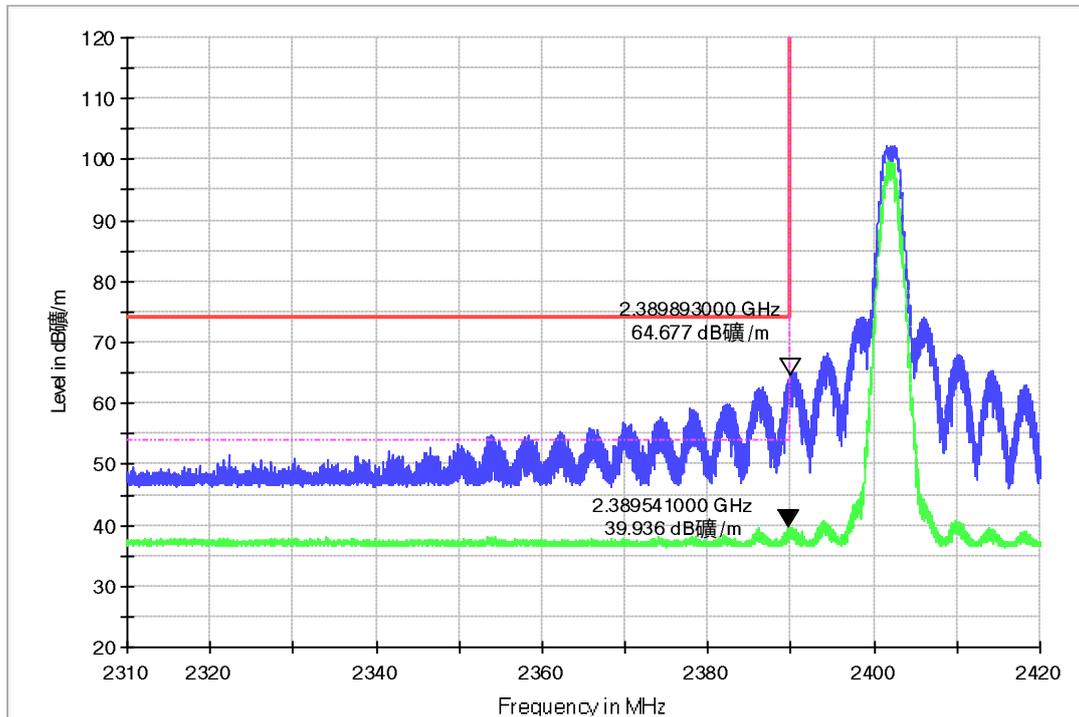
Note:

Trace (Blue): Measured peak value

Trace (Green): Measured average value

Figure 6: Radiated Band-Edge, 2Mbps, 2402MHz, H

2310° 2410 BE 1-18GHz_HL050_FSV40_Pre


Figure 7: Radiated Band-Edge, 2Mbps, 2402MHz, V

2310° 2410 BE 1-18GHz_HL050_FSV40_Pre

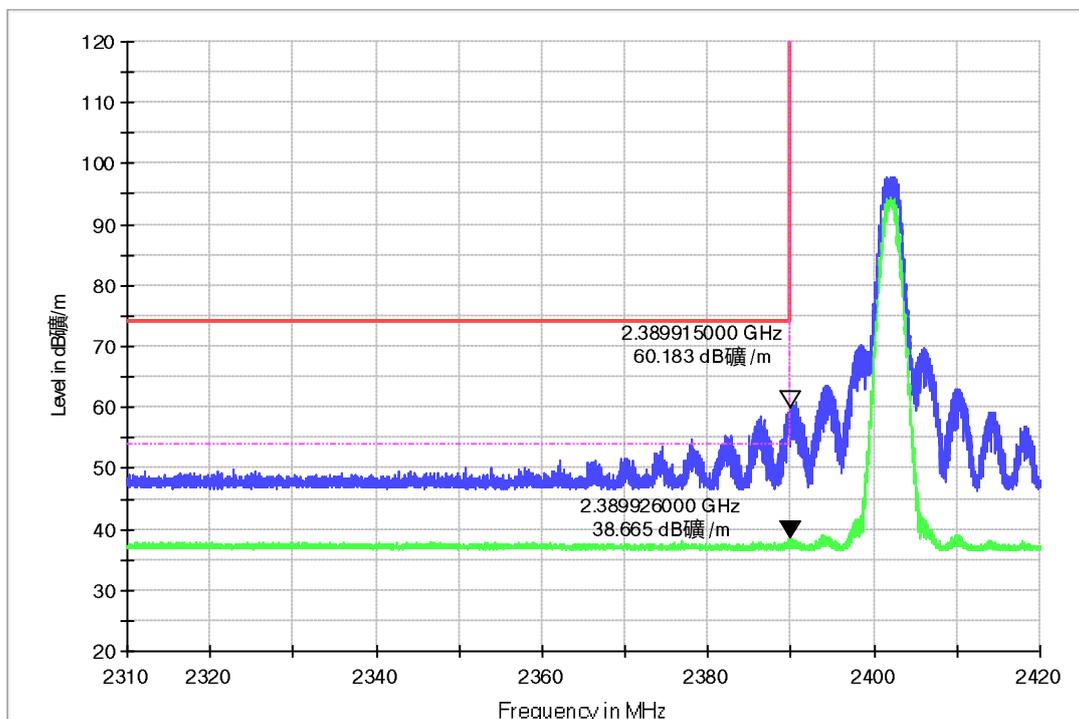
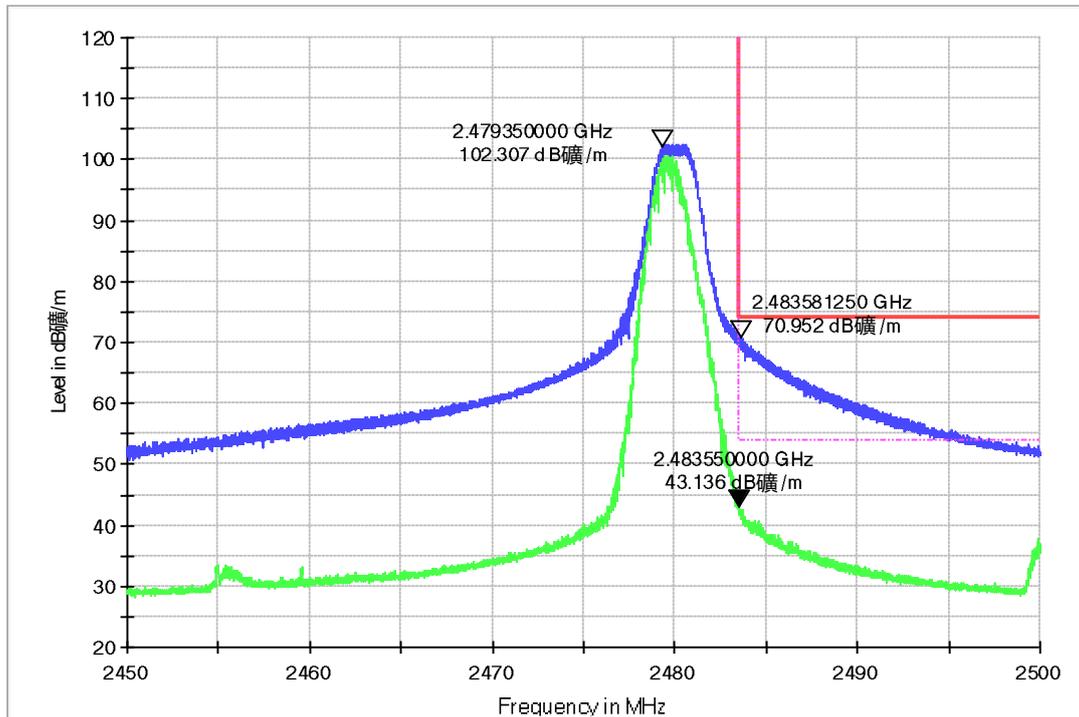
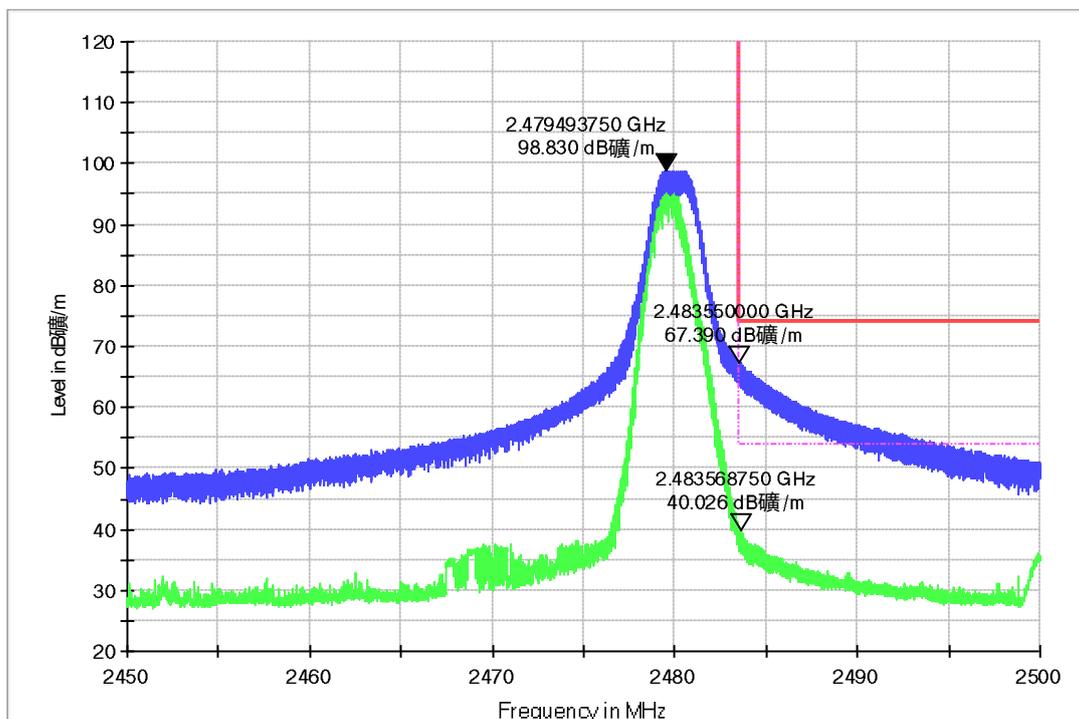


Figure 8: Radiated Band-Edge, 2Mbps, 2480MHz, H

2470 2500 BE_1-18GHz_HL050_FSV40_Pre


Figure 9: Radiated Band-Edge, 2Mbps, 2480MHz, V

2470 2500 BE_1-18GHz_HL050_FSV40_Pre



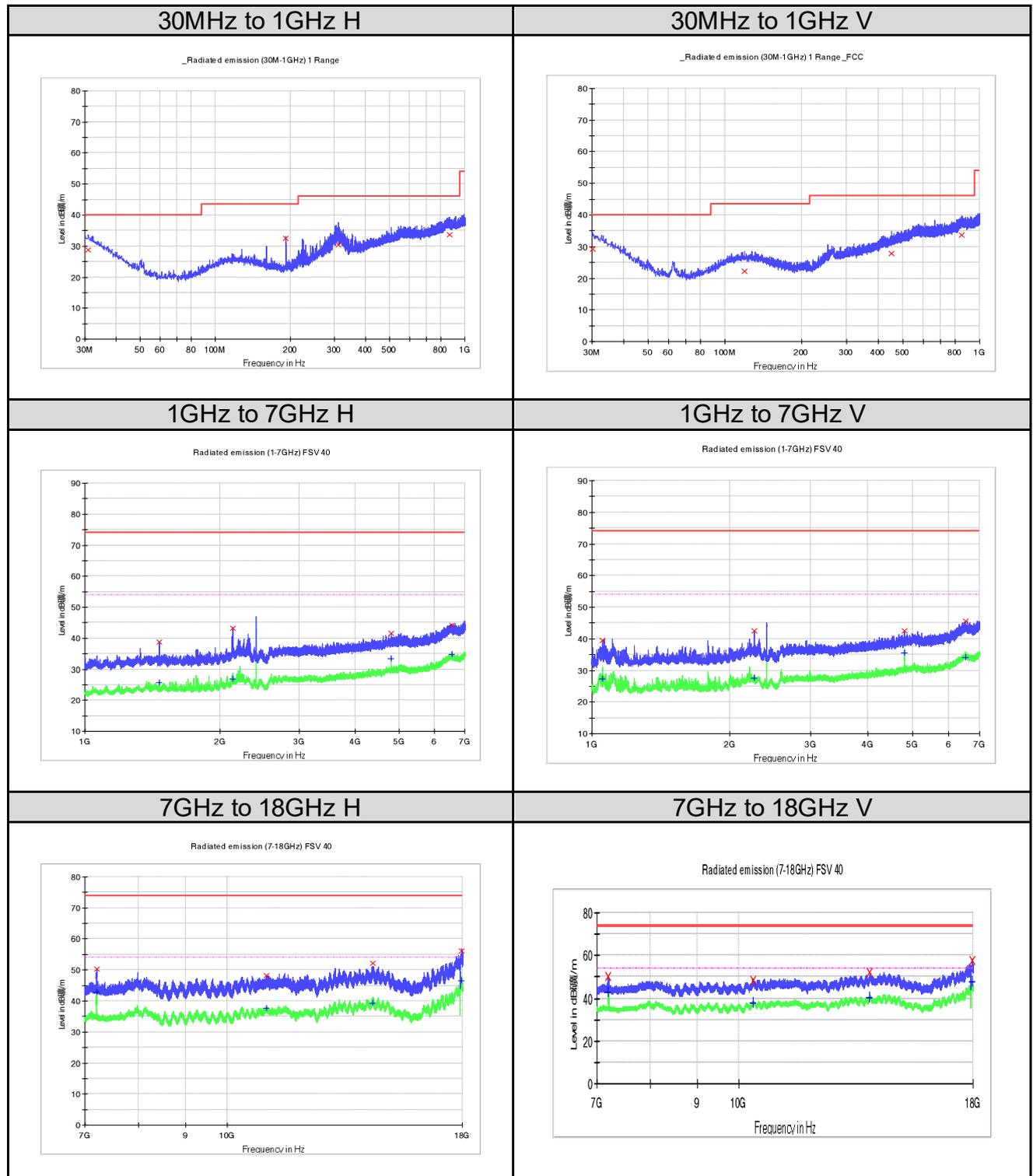
5.3.2 Radiated Spurious Emission

RESULT:**Pass**

Date of testing	:	2025-05-10
Ambient temperature	:	20.3°C
Relative humidity	:	47.5%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(d) FCC Part 15.209(a) RSS-Gen Issue 5, Amendment 2, February 2021, Clause 8.9 RSS-247 Issue 3, August 2023, Clause 5.5
Test procedure	:	ANSI C63.10-2020+Cor. 1-2023+C63.10a- 2024+Errata to C63.10a-2024
Test voltage	:	DC 3.3V
Test modes applied	:	A

Note:

For the frequency range from 18GHz to 25GHz, no emission was found.

Figure 10: Radiated Spurious Emission, 2Mbps, 2402MHz


Limit and Margin
QP

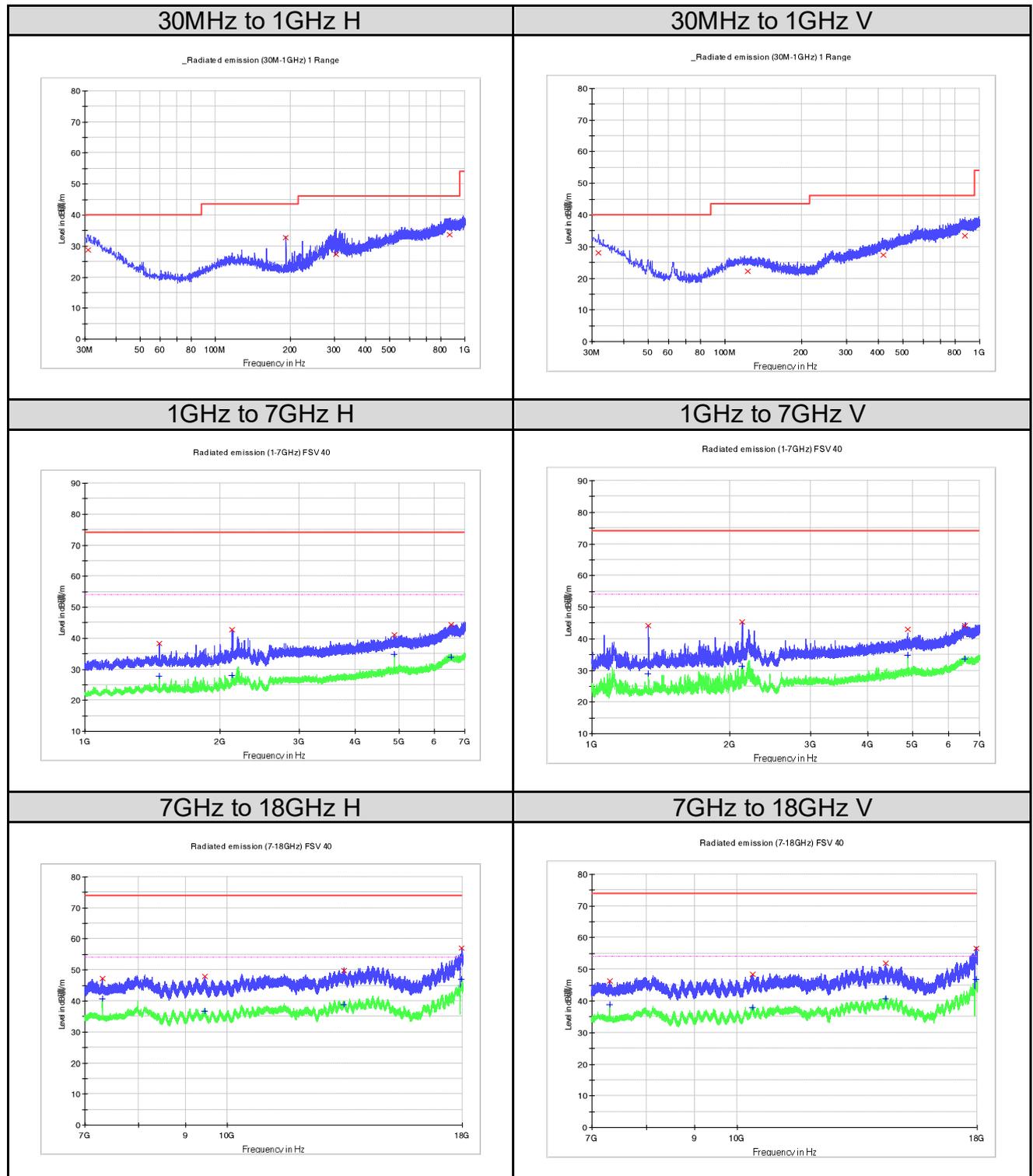
Frequency (MHz)	QuasiPeak (dB μ V/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
30.970000	28.7	H	25.2	11.3	40.0
191.990000	32.6	H	16.0	10.9	43.5
312.270000	30.3	H	20.6	15.7	46.0
867.110000	33.7	H	28.8	12.3	46.0
30.121250	29.2	V	25.6	10.8	40.0
119.118750	22.3	V	19.0	21.2	43.5
451.950000	27.7	V	24.2	18.3	46.0
853.166250	33.7	V	29.0	12.3	46.0

PK

Frequency (MHz)	MaxPeak (dB μ V/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dB μ V/m)
1463.500000	38.7	H	-18.7	35.3	74.0
2131.600000	43.3	H	-16.5	30.7	74.0
4803.100000	41.5	H	-11.4	32.5	74.0
6556.900000	44.2	H	-7.6	29.8	74.0
7207.281250	50.4	H	-6.1	23.6	74.0
11032.875000	48.2	H	-2.3	25.8	74.0
14383.406250	52.2	H	2.3	21.8	74.0
17963.218750	56.2	H	11.7	17.8	74.0
1056.100000	39.5	V	-20.1	34.5	74.0
2262.400000	42.6	V	-15.7	31.4	74.0
4803.100000	42.6	V	-11.4	31.4	74.0
6532.300000	45.6	V	-7.6	28.4	74.0
7204.187500	50.0	V	-6.1	24.0	74.0
10368.750000	48.7	V	-2.7	25.3	74.0
13889.093750	52.0	V	0.5	22.0	74.0
17973.531250	57.7	V	11.9	16.3	74.0

AV

Frequency (MHz)	Average (dB μ V/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dB μ V/m)
1463.500000	25.7	H	-18.7	28.3	54.0
2131.600000	26.8	H	-16.5	27.2	54.0
4803.100000	33.4	H	-11.4	20.6	54.0
6556.900000	34.7	H	-7.6	19.3	54.0
7207.281250	42.7	H	-6.1	11.3	54.0
11032.875000	37.6	H	-2.3	16.4	54.0
14383.406250	39.2	H	2.3	14.8	54.0
17963.218750	46.6	H	11.7	7.4	54.0
1056.100000	27.2	V	-20.1	28.6	54.0
2262.400000	27.6	V	-15.7	26.4	54.0
4803.100000	35.6	V	-11.4	18.4	54.0
6532.300000	34.2	V	-7.6	19.8	54.0
7204.187500	42.5	V	-6.1	11.5	54.0
10368.750000	37.9	V	-2.7	16.1	54.0
13889.093750	40.6	V	0.5	13.4	54.0
17973.531250	47.5	V	11.9	6.5	54.0

Figure 11: Radiated Spurious Emission, 2Mbps, 2440MHz


Limit and Margin
QP

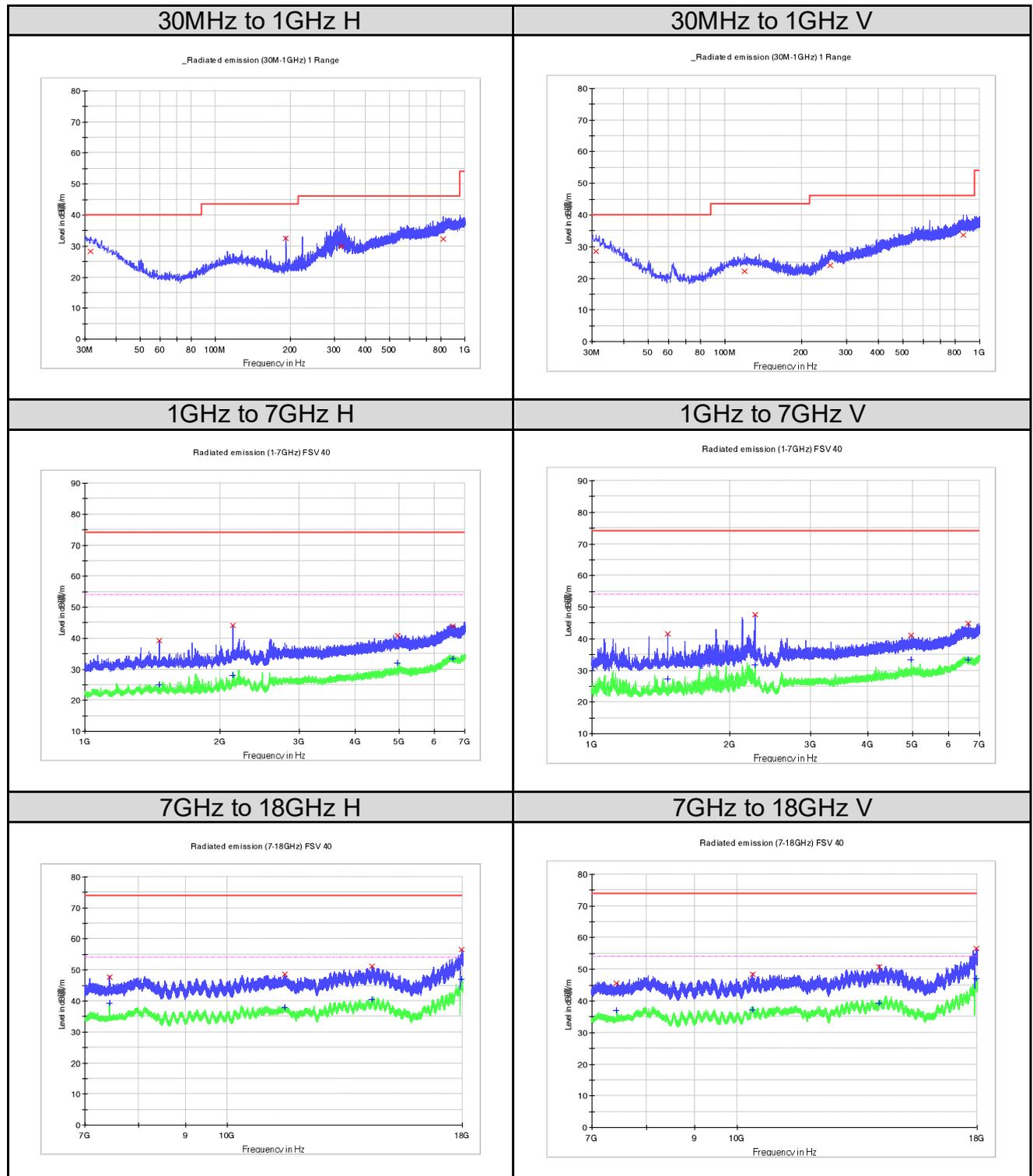
Frequency (MHz)	QuasiPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.970000	28.7	H	25.2	11.3	40.0
191.990000	32.6	H	16.0	10.9	43.5
305.237500	27.3	H	20.4	18.7	46.0
871.717500	33.6	H	28.6	12.4	46.0
31.940000	28.1	V	24.5	11.9	40.0
123.120000	22.2	V	19.0	21.3	43.5
419.940000	27.4	V	23.9	18.6	46.0
876.931250	33.5	V	28.5	12.5	46.0

PK

Frequency (MHz)	MaxPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1465.000000	38.4	H	-18.7	35.6	74.0
2126.500000	42.7	H	-16.6	31.3	74.0
4879.000000	41.1	H	-11.3	32.9	74.0
6528.400000	44.4	H	-7.6	29.7	74.0
7319.000000	47.2	H	-6.6	26.8	74.0
9446.812500	47.9	H	-4.5	26.1	74.0
13399.593750	49.9	H	-0.3	24.1	74.0
17972.843750	57.1	H	11.9	16.9	74.0
1328.800000	44.1	V	-18.8	29.9	74.0
2126.500000	45.2	V	-16.6	28.8	74.0
4881.100000	42.9	V	-11.3	31.1	74.0
6503.200000	44.2	V	-7.6	29.8	74.0
7321.062500	46.3	V	-6.6	27.7	74.0
10376.656250	48.5	V	-2.7	25.5	74.0
14386.500000	52.0	V	2.3	22.0	74.0
17960.468750	56.7	V	11.7	17.3	74.0

AV

Frequency (MHz)	Average (dBµV/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1465.000000	27.8	H	-18.7	26.2	54.0
2126.500000	28.0	H	-16.6	26.0	54.0
4879.000000	34.7	H	-11.3	19.3	54.0
6528.400000	33.9	H	-7.6	20.1	54.0
7319.000000	40.6	H	-6.6	13.4	54.0
9446.812500	36.8	H	-4.5	17.2	54.0
13399.593750	38.9	H	-0.3	15.1	54.0
17972.843750	46.9	H	11.9	7.1	54.0
1328.800000	29.0	V	-18.8	25.0	54.0
2126.500000	31.2	V	-16.6	22.8	54.0
4881.100000	34.9	V	-11.3	19.1	54.0
6503.200000	33.6	V	-7.6	20.4	54.0
7321.062500	38.8	V	-6.6	15.2	54.0
10376.656250	37.8	V	-2.7	16.2	54.0
14386.500000	40.6	V	2.3	13.4	54.0
17960.468750	46.7	V	11.7	7.3	54.0

Figure 12: Radiated Spurious Emission, 2Mbps, 2480MHz


Limit and Margin
QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
31.576250	28.3	H	24.8	11.7	40.0
191.990000	32.6	H	16.0	10.9	43.5
320.030000	29.9	H	20.9	16.1	46.0
819.943750	32.4	H	28.1	13.6	46.0
31.212500	28.6	V	25.0	11.4	40.0
119.603750	22.3	V	19.0	21.2	43.5
259.162500	24.0	V	20.8	22.0	46.0
864.078750	33.7	V	28.9	12.3	46.0

PK

Frequency (MHz)	MaxPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1465.600000	39.2	H	-18.7	34.8	74.0
2132.500000	44.1	H	-16.5	29.9	74.0
4959.100000	41.0	H	-11.2	33.0	74.0
6574.900000	43.8	H	-7.6	30.2	74.0
7441.375000	47.7	H	-6.0	26.3	74.0
11539.906250	48.7	H	-1.8	25.3	74.0
14366.218750	51.2	H	2.3	22.8	74.0
17970.093750	56.6	H	11.9	17.4	74.0
1462.600000	41.6	V	-18.7	32.4	74.0
2266.000000	47.6	V	-15.7	26.4	74.0
4959.100000	41.2	V	-11.2	32.8	74.0
6598.300000	45.0	V	-7.7	29.0	74.0
7438.625000	45.5	V	-6.1	28.5	74.0
10372.187500	48.3	V	-2.7	25.7	74.0
14165.125000	50.8	V	1.2	23.2	74.0
17970.093750	56.7	V	11.9	17.3	74.0

AV

Frequency (MHz)	Average (dBµV/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1465.600000	24.9	H	-18.7	29.1	54.0
2132.500000	27.9	H	-16.5	26.1	54.0
4959.100000	32.1	H	-11.2	21.9	54.0
6574.900000	33.5	H	-7.6	20.5	54.0
7441.375000	39.2	H	-6.0	14.8	54.0
11539.906250	37.9	H	-1.8	16.1	54.0
14366.218750	40.5	H	2.3	13.5	54.0
17970.093750	46.9	H	11.9	7.1	54.0
1462.600000	27.4	V	-18.7	26.6	54.0
2266.000000	31.8	V	-15.7	22.2	54.0
4959.100000	33.3	V	-11.2	20.7	54.0
6598.300000	33.4	V	-7.7	20.6	54.0
7438.625000	37.0	V	-6.1	17.0	54.0
10372.187500	37.2	V	-2.7	16.8	54.0
14165.125000	39.3	V	1.2	14.7	54.0
17970.093750	47.0	V	11.9	7.0	54.0

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