

Prüfbericht-Nr.: Test report no.:	CN25OPVB 001	Auftrags-Nr.: Order no.:	326121137	Seite 1 von 40 Page 1 of 40
Kunden-Referenz-Nr.: Client reference no.:	/	Auftragsdatum: Order date:	2025-07-22	
Auftraggeber: Client:	Intex Development Company Limited 9th Floor, Dah Sing Financial Centre 108 Gloucester Road, Wanchai, Hong Kong.			
Prüfgegenstand: Test item:	Sand Filter Pump & Saltwater System			
Bezeichnung / Typ-Nr.: Identification / Type no.:	CSW15110, CSW20110			
Auftrags-Inhalt: Order content:	Complete test			
Prüfgrundlage: Test specification:	FCC CFR47 Part 15, Subpart C Section 15.247 ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024+Errata to C63.10a-2024 ANSI C63.10 2020			
Wareneingangsdatum: Date of sample receipt:	2025-09-01	/		
Prüfmuster-Nr.: Test sample no.:	A004081458-001			
Prüfzeitraum: Testing period:	2025-09-09~2025-09-20			
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:	X <u>Tianlin Li</u>		genehmigt von: authorized by:	X <u>Yanli Fan</u>
Datum: Date: 2025-12-01	Signed by: Tianlin Li		Ausstellungsdatum: Issue date: 2025-12-01	Signed by: Yanli Fan
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert
Sonstiges / Other:	FCC ID: SVYCSW			
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				
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Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
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4	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 bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <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>

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.
No.14 building and north half of No.10 workshop building, No.525, Yuewang Lingang South Road, Pingqian (Taicang) Modern Industrial Park, Shaxi Town, Taicang City, Jiangsu Province, P.R. 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-317	Thermohygrometer	608-H1	testo	2026-06-10
EMC-C-304	OSP	OSP-B157W8	Rohde & Schwarz	2025-12-10
EMC-C-303	Vector signal generator	SMW200A	Rohde & Schwarz	2025-12-10
EMC-C-302	Signal generator	SMB100B (6 GHz)	Rohde & Schwarz	2025-12-10
EMC-C-196	Wireless connectivity tester	CMW270	Rohde & Schwarz	2027-08-09
EMC-C-161	Spectrum analyser	FSV40	Rohde & Schwarz	2026-07-11
EMC-S-036	RF measurement software	WMS32-WB (11.40.00)	Rohde & Schwarz	N/A
EMC-S-032	EMI measurement software	EMC32-MEB (10.60.20)	Rohde & Schwarz	N/A
EMC-C-018	Double ridged horn antenna	BBHA 9120 D	Schwarzbeck	2026-03-24
EMC-C-066	EMI test receiver	ESCI	Rohde & Schwarz	2026-09-28
EMC-C-121	Thermohygrometer	608-H1	testo	2026-06-05
EMC-C-155	BiLog antenna	CBL 6112D	Teseq	2026-09-24
EMC-C-068	Broadband horn antenna	BBHA 9170	9170-305	2028-06-18
EMC-C-001	3 m semi-anechoic chamber	SAC3	Frankonia	2026-12-03
EMC-C-176	Preamplifier	EMC184045SE	EMCI Taiwan	2026-07-11
EMC-C-175	Preamplifier	EMC051845SE	EMCI Taiwan	2026-07-11
EMC-S-028	EMI measurement software	EMC32-E+ (10.60.20)	Rohde & Schwarz	N/A
EMC-C-366	Thermohygrometer	608-H1	testo	2026-07-11
EMC-C-195	EMI test receiver	ESR3	Rohde & Schwarz	2026-08-02
EMC-C-190	Artificial mains network	ENV432	Rohde & Schwarz	2026-09-02

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	±3.39dB
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 Sand Filter Pump & Saltwater System which contains Bluetooth LE and Wi-Fi function.
This report is only evaluates Bluetooth LE function.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Description of EUT	
Product Name:	Sand Filter Pump & Saltwater System
Model No.:	CSW15110, CSW20110
Operation Voltage:	110~120V, 60Hz
Test voltage	120V, 60Hz
Technical Specification of Bluetooth LE	
Frequency Range:	2402 – 2480MHz
Modulation Type:	GFSK
Data Rate:	1Mb/s
Antenna Type:	IPEX Integral Antenna
Antenna Gain:	0.3dBi
Technical Specification of WI-Fi	
Frequency Range:	802.11 b/g/n-HT20: 2412MHz – 2472MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n-HT20: OFDM (QPSK/BPSK/16QAM/64QAM)
Antenna Type:	IPEX Integral Antenna
Antenna Gain:	0.3dBi (Provided by the Client)

Note:

The difference between CSW15110 and CSW20110 is in the motor specifications and power ratings, other structures are the same.

So, the model CSW20110 was chosen for tests.

Table 4: Operation Channel List

RF Channel	Frequency [MHz]	RF Channel	Frequency [MHz]	RF Channel	Frequency [MHz]	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

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

3.3 Independent Operation Modes

The basic operation modes are:

A. On, Bluetooth transmitting 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 used: sscm 5.13.1

Table 5: Power parameter value

Channel Frequency [MHz]	Power Parameter Value
2402	Auto
2440	Auto
2480	Auto

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	Brand	Model Number	Serial number
Laptop	Lenovo	EMC-COMP-026	PF-49VKS3

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4.4 Countermeasures to achieve EMC Compliance

Null.

5. Test Results

5.1 Conducted Testing at Antenna Port

5.1.1 Antenna Requirement

RESULT:**Pass**

According to the manufacturer declared, the EUT has one PCB antenna, the directional gain of antenna is 0.3 dBi and the antenna is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Table 8: Antenna Requirement

FCC 15.203 – Antenna Requirement 1	
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device
Results:	Antenna type: IPEX antenna
Verdict:	Pass

FCC 15.204 – Antenna Requirement 2	
Requirement:	An intentional radiator may be operated only with the antenna with which it is authorized. If an antenna is marketed with the intentional radiator, it shall be of a type which is authorized with the intentional radiator.
Results:	Only one IPEX antenna can be used
Verdict:	Pass

5.1.2 6dB & 99% Bandwidth**RESULT:****Pass**

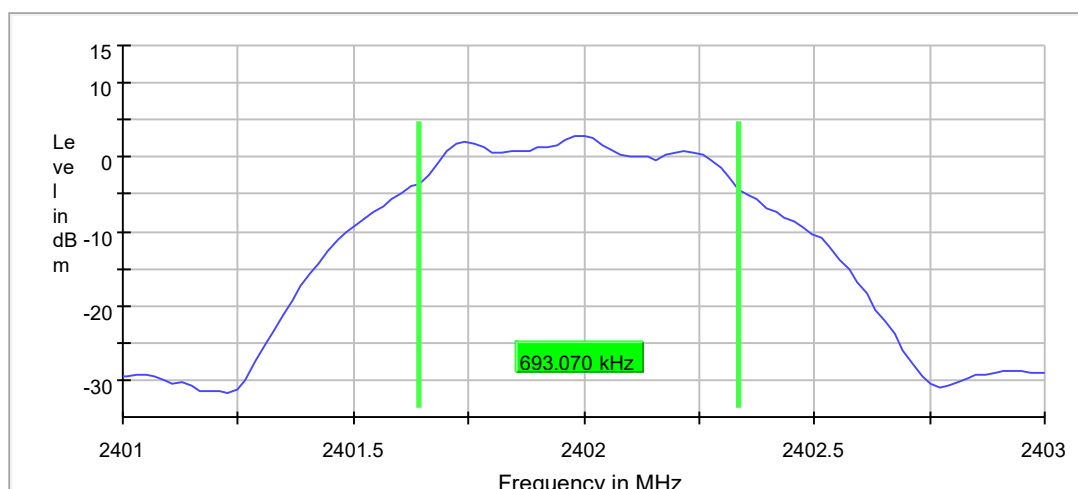
Date of testing	:	2025-09-19
Ambient temperature	:	23.1°C
Relative humidity	:	57.5%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(a)(2)
Test procedure	:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024+Errata to C63.10a-2024
Test voltage	:	AC 120V, 60Hz
Test modes applied	:	A

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6dB Bandwidth, 1Mbps, 2402MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.693070	0.500000	---	2401.643564	2402.336634

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	2.9	PASS

6 dB Bandwidth


Measurement

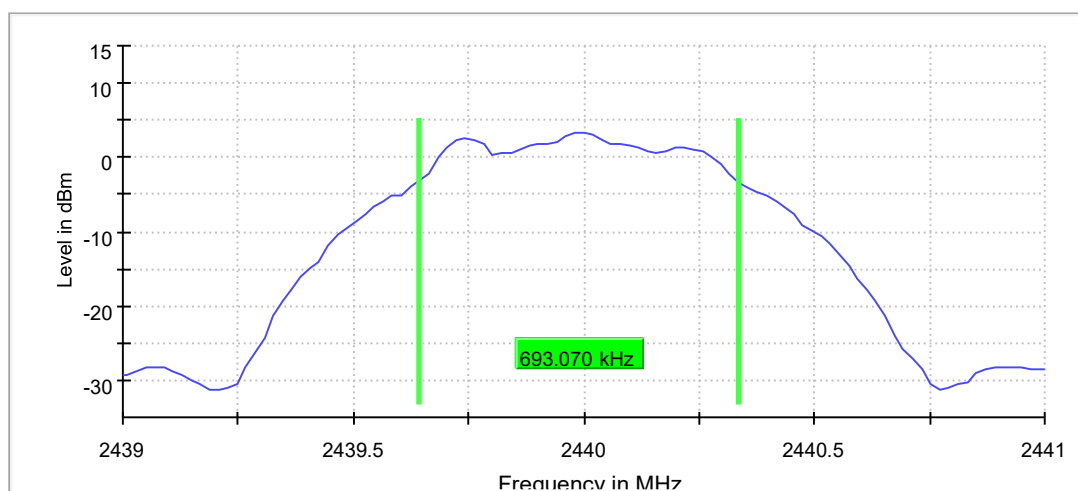
Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 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	9 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.05 dB	0.50 dB

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6dB Bandwidth, 1Mbps, 2440MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	0.693070	0.500000	---	2439.643564	2440.336634

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	3.4	PASS

6 dB Bandwidth


Measurement

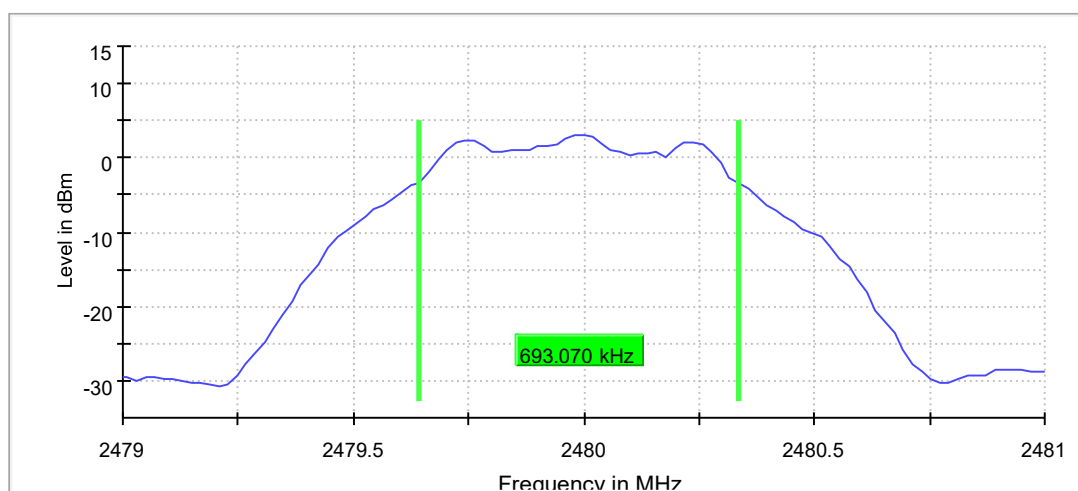
Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweptime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	10 / max.	max. 150
Stable	5 / 5	5
Max Stable Difference	0.05 dB	0.50 dB

6dB Bandwidth, 1Mbps, 2480MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.693070	0.500000	---	2479.643564	2480.336634

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	3.1	PASS

6 dB Bandwidth


Measurement

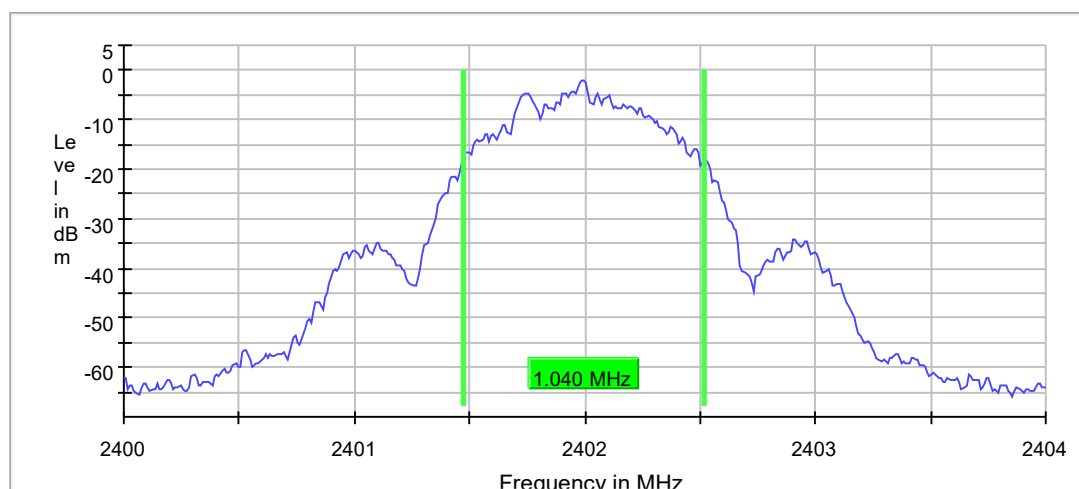
Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweptime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	10 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.02 dB	0.50 dB

99% Occupied Channel Bandwidth, 1Mbps, 2402MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.040000	---	---	2401.475000	2402.515000

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	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.11 dB	0.30 dB

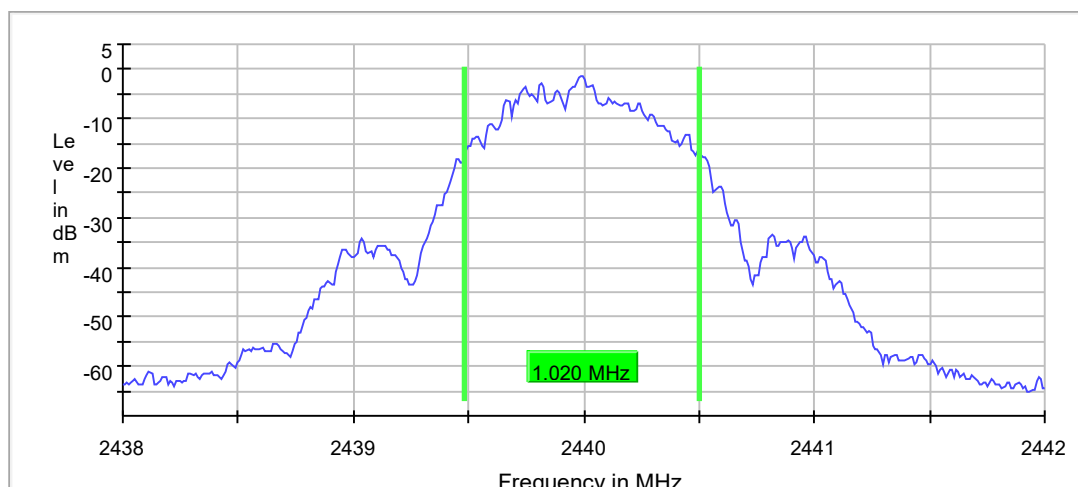
99% Occupied Channel Bandwidth, 1Mbps, 2440MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.020000	---	---	2439.485000	2440.505000

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

DUT Frequency (MHz)	Result
2440.000000	PASS

99 % Bandwidth


Measurement

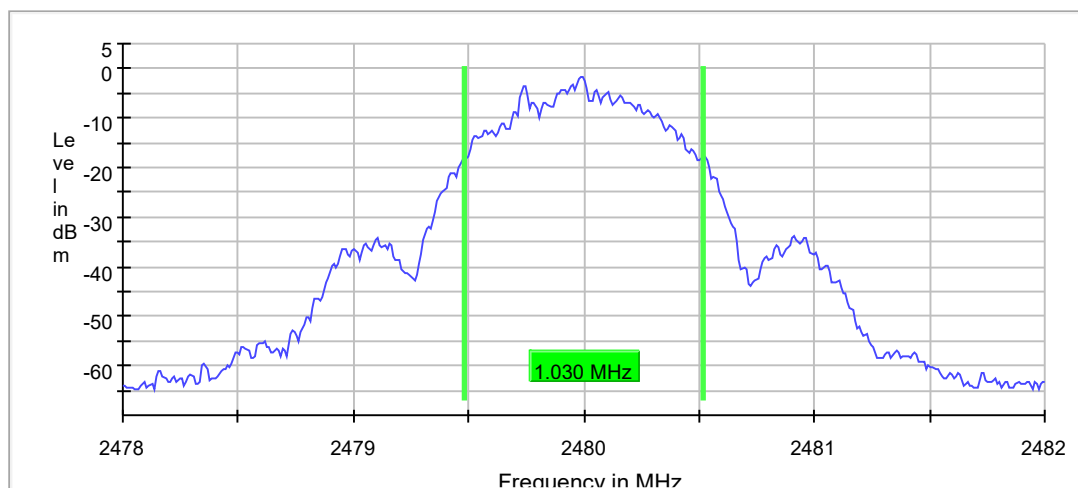
Setting	Instrument Value	Target Value
Start Frequency	2.43800 GHz	2.43800 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	400	~ 400
Sweptime	94.824 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 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	0.16 dB	0.30 dB

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99% Occupied Channel Bandwidth, 1Mbps, 2480MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.030000	---	---	2479.485000	2480.515000

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	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.07 dB	0.30 dB

5.1.3 Output Power

RESULT:
Pass

Date of testing : 2025-09-19
 Ambient temperature : 23.1°C
 Relative humidity : 57.5%
 Atmospheric pressure : 101kPa
 Test requirement : FCC Part 15.247(b)(3)
 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 : A

Table 9: Peak Output Power

Data Rate	Frequency [MHz]	Peak Conducted Output Power [dBm]	Limit [dBm]	Maximum EIRP [dBm]	EIRP Limit [dBm]
1Mbps	2402	3.0	30	3.3	36
	2440	3.5	30	3.8	36
	2480	3.3	30	3.6	36

Note:

1. The cable loss is taken into account in results.
2. EIRP=Conducted Output Power + Antenna Gain (0.3dBi), which is far below the 4 W (36dBm).

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5.1.4 Power Spectral Density

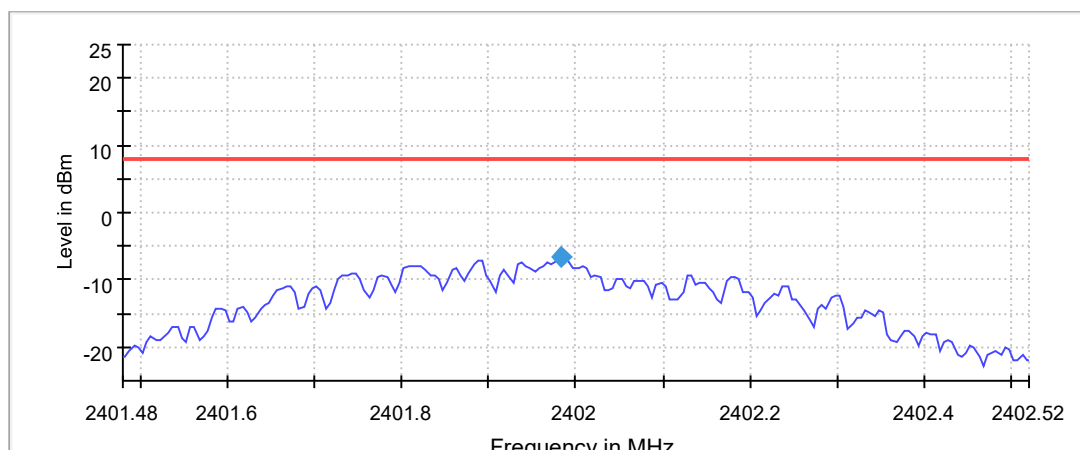
RESULT:**Pass**

Date of testing	:	2025-09-19
Ambient temperature	:	23.1°C
Relative humidity	:	57.5%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(e)
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	:	A

Power Spectral Density, 1Mbps, 2402MHz

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2401.982507	-6.528	8.0	PASS

Peak Power Spectral Density



— Limit — Sum Level ◆ PSD

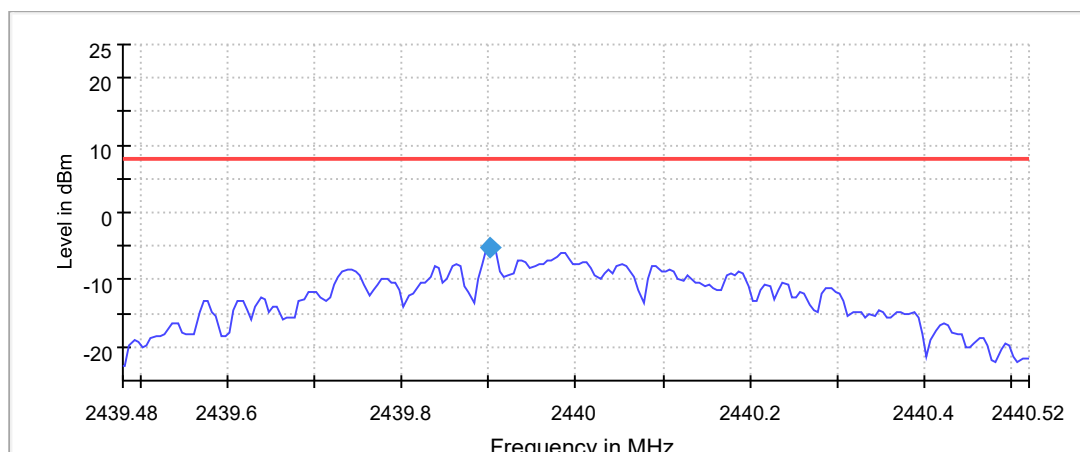
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40148 GHz	2.40148 GHz
Stop Frequency	2.40252 GHz	2.40252 GHz
Span	1.040 MHz	1.040 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	208	~ 208
Sweeptime	1.040 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	0.06 dB	0.50 dB

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Power Spectral Density, 1Mbps, 2440MHz

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2440.000000	2439.902537	-5.154	8.0	PASS

Peak Power Spectral Density



— Limit
 — Sum Level
 ◆ PSD

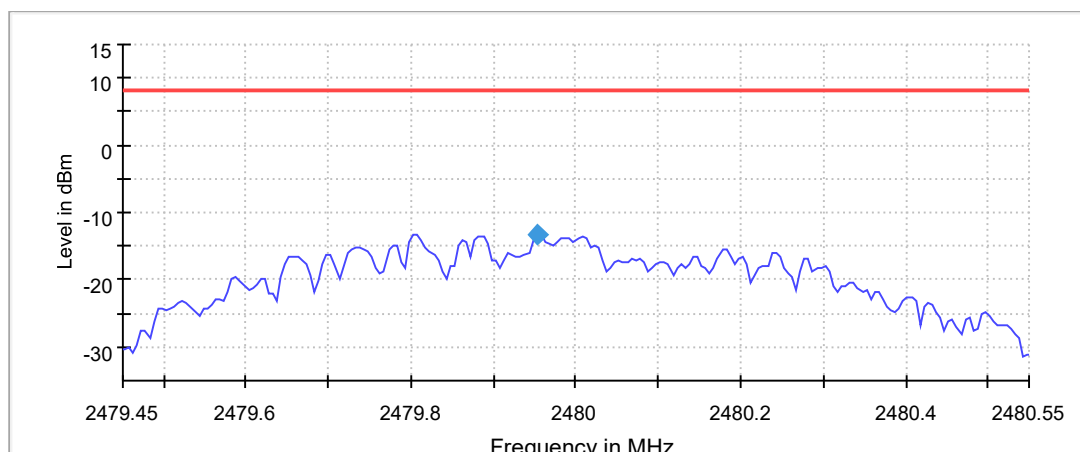
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43948 GHz	2.43948 GHz
Stop Frequency	2.44052 GHz	2.44052 GHz
Span	1.040 MHz	1.040 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	208	~ 208
Sweeptime	1.040 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	0.26 dB	0.50 dB

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Power Spectral Density, 1Mbps, 2480MHz

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.982507	-6.470	8.0	PASS

Peak Power Spectral Density



— Limit
 — Sum Level
 ◆ PSD

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47948 GHz	2.47948 GHz
Stop Frequency	2.48052 GHz	2.48052 GHz
Span	1.040 MHz	1.040 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	208	~ 208
Sweeptime	1.040 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	0.14 dB	0.50 dB

Prüfbericht - Nr.: CN25OPVB 001
Test Report No.**Seite 25 von 40**
Page 25 of 40**5.1.5 Conducted Band Edge and out-of Band Emissions****RESULT:****Pass**

Date of testing	:	2025-09-19
Ambient temperature	:	23.1°C
Relative humidity	:	57.5%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(d)
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	:	A

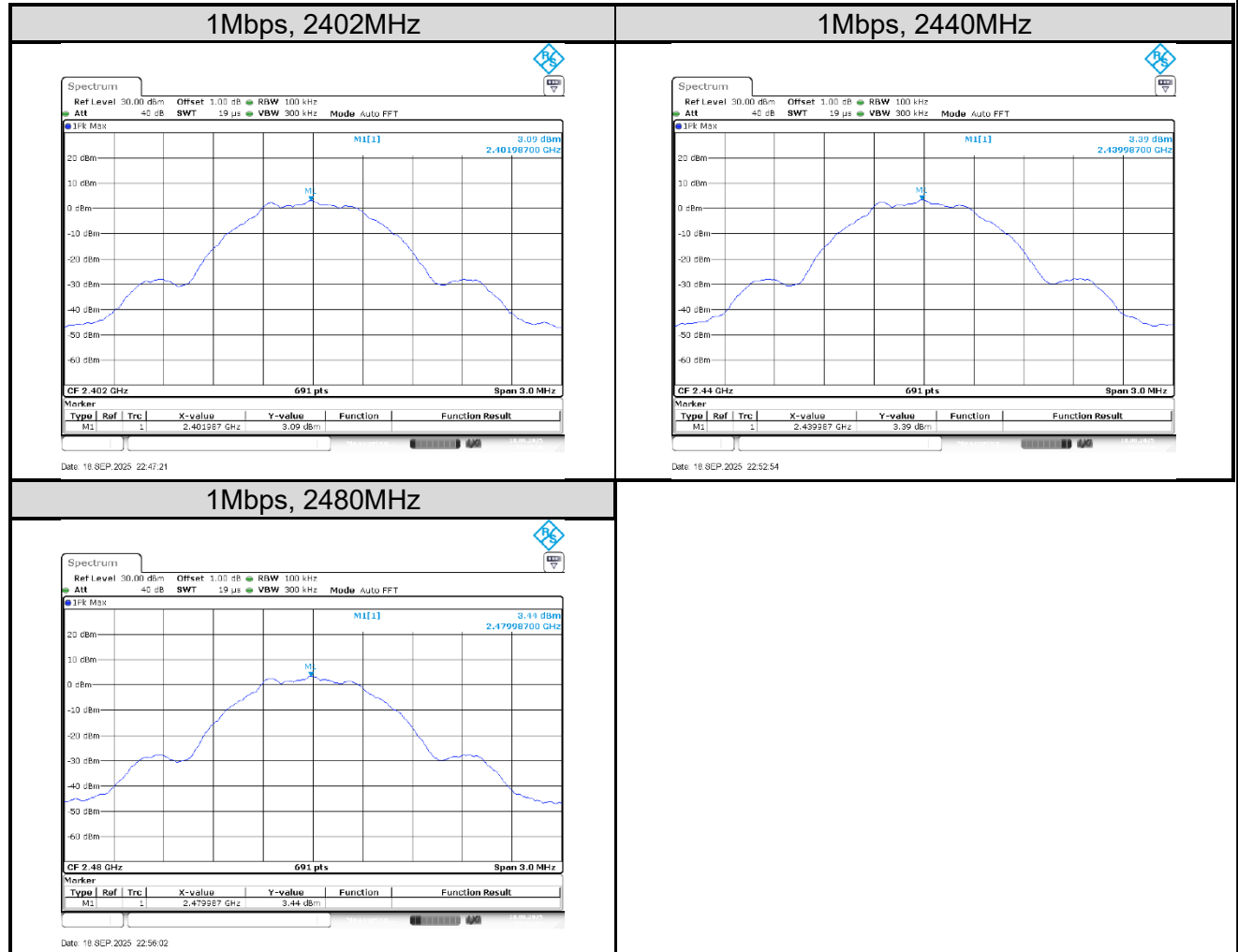
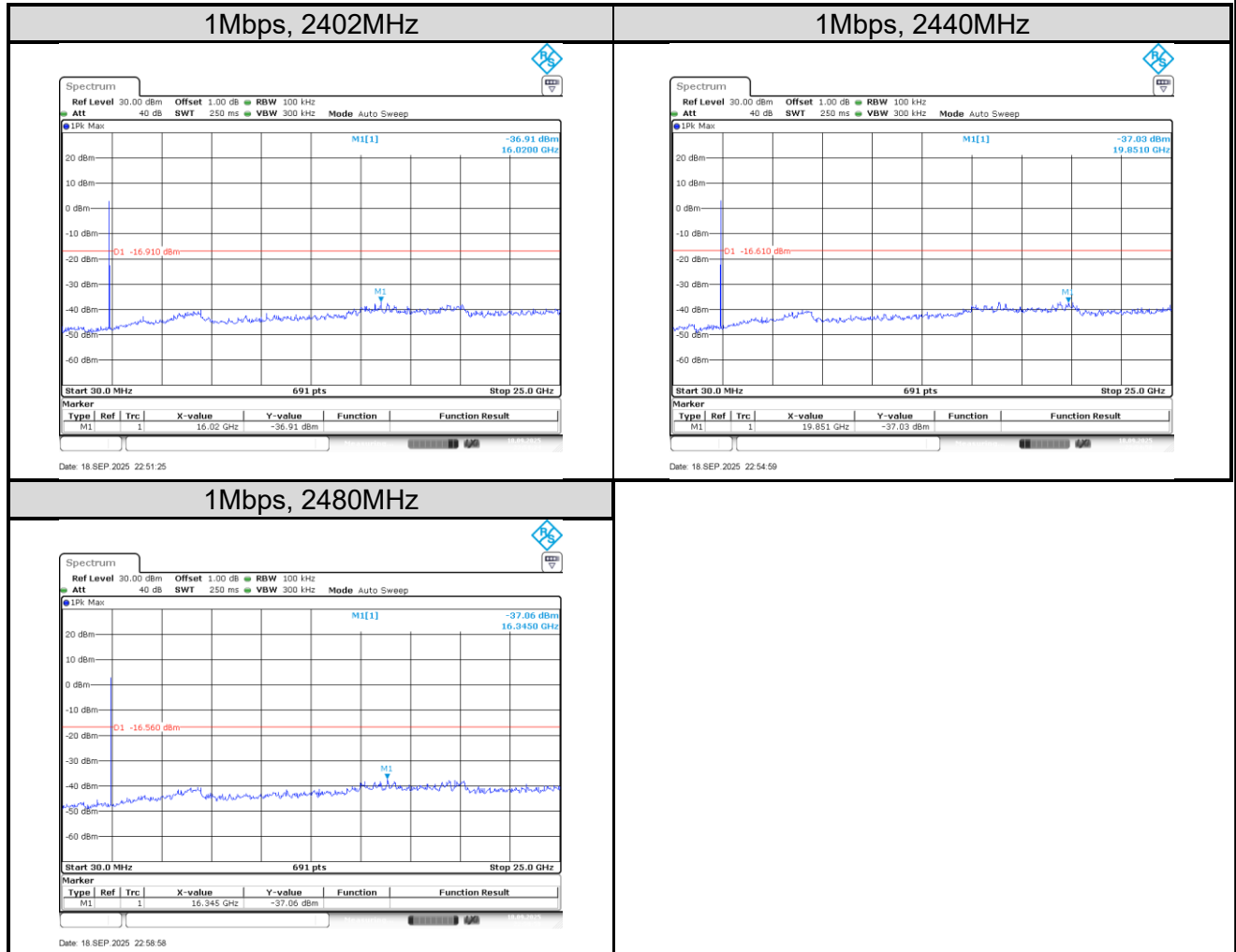
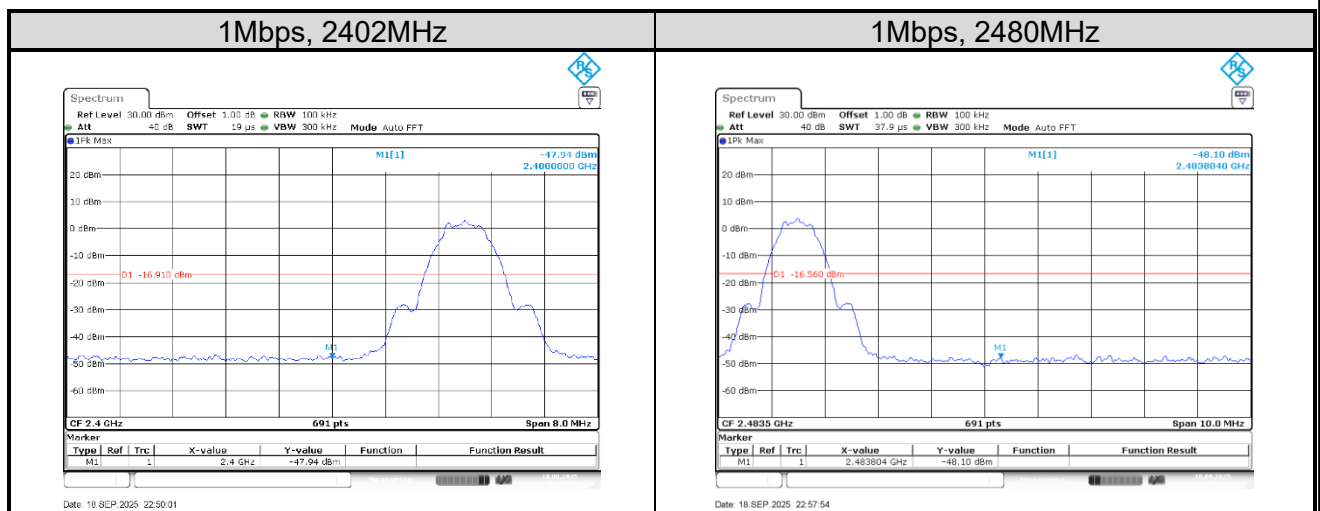
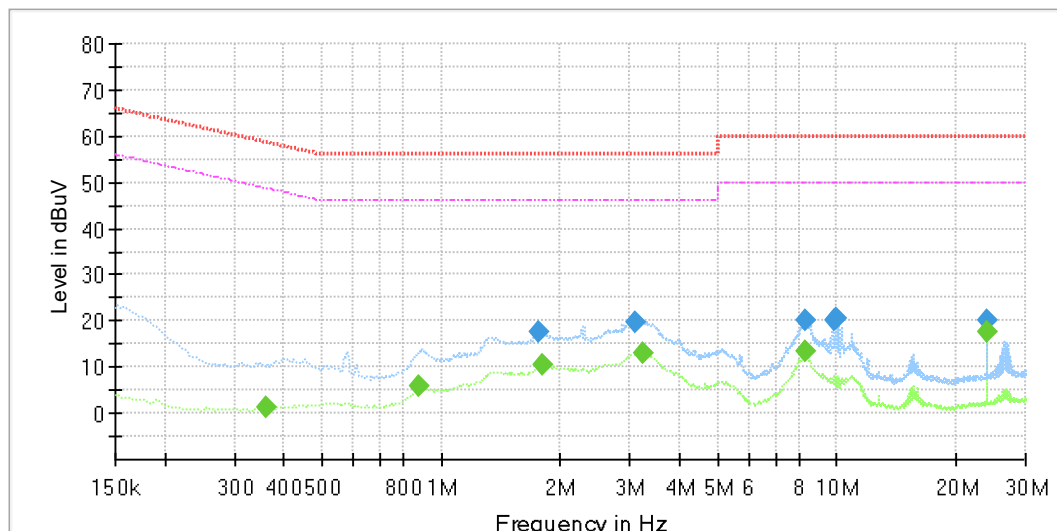
Figure 1: Reference level


Figure 2: Conducted Spurious Emission

Figure 3: Conducted Band Edge


Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.361500	---	1.01	48.69	47.69	L1	10.4
0.876750	---	1.86	46.00	44.14	L1	10.4
2.053500	---	7.08	46.00	38.92	L1	10.4
3.095250	21.06	---	56.00	34.94	L1	10.4
3.270750	---	14.29	46.00	31.71	L1	10.4
8.333250	---	11.50	50.00	38.50	L1	10.7
9.892500	21.97	---	60.00	38.03	L1	10.8
10.005000	23.86	---	60.00	36.14	L1	10.8
10.119750	23.37	---	60.00	36.63	L1	10.8
10.234500	20.78	---	60.00	39.22	L1	10.8
24.000000	---	18.57	50.00	31.43	L1	11.3
24.000000	20.41	---	60.00	39.59	L1	11.3

Figure 5: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N.


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.361500	---	1.35	48.69	47.35	N	10.3
0.876750	---	5.79	46.00	40.21	N	10.3
1.763250	17.66	---	56.00	38.34	N	10.3
1.792500	---	10.53	46.00	35.47	N	10.4
3.088500	19.92	---	56.00	36.08	N	10.4
3.228000	---	13.17	46.00	32.83	N	10.4
8.322000	---	13.31	50.00	36.69	N	10.7
8.340000	20.03	---	60.00	39.97	N	10.7
9.890250	20.16	---	60.00	39.84	N	10.8
10.007250	20.74	---	60.00	39.26	N	10.8
24.000000	---	17.55	50.00	32.45	N	11.4
24.000000	19.95	---	60.00	40.05	N	11.4

5.3 Emission in the Frequency Range above 30MHz

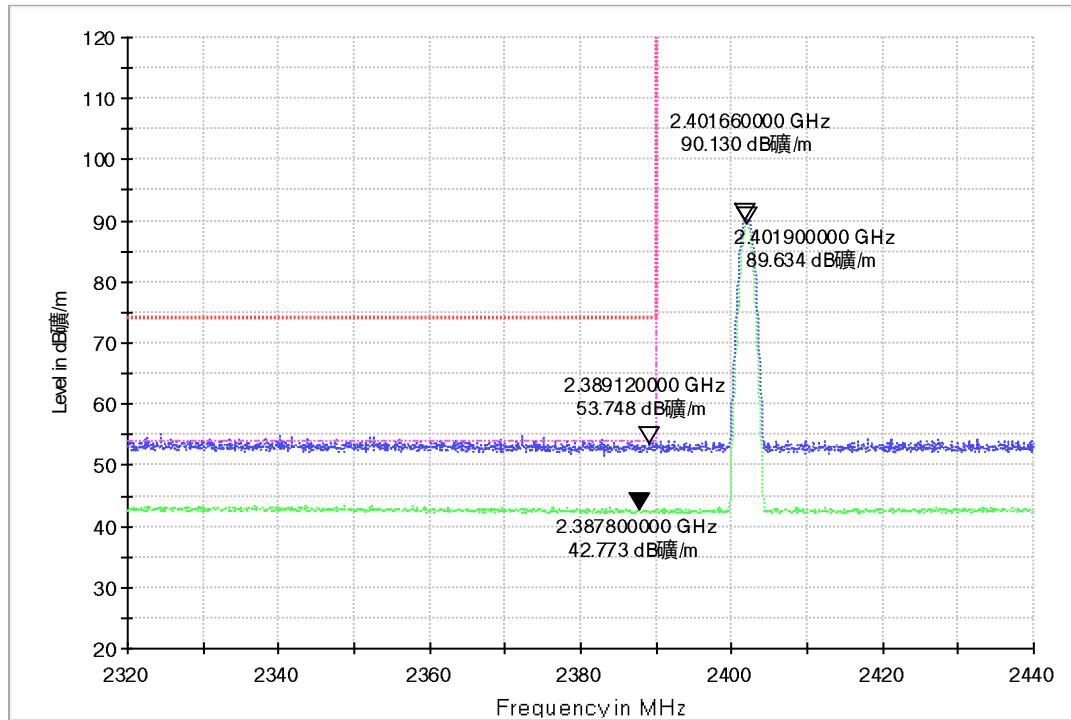
5.3.1 Radiated Band-Edge

RESULT:**Pass**

Date of testing	: 2025-09-06
Ambient temperature	: 23.1°C
Relative humidity	: 57.5%
Atmospheric pressure	: 101kPa
Test requirement	: FCC Part 15.247(d) FCC Part 15.205(a) FCC Part 15.209(a)
Test procedure	: ANSI C63.10-2020+Cor. 1-2023+C63.10a- 2024+Errata to C63.10a-2024
Test voltage	: AC120V, 60Hz
Test modes applied	: A

Figure 6: Radiated Band-Edge, 1Mbps, 2402MHz, H

XXY-2310~2410 BE 1-18GHz HL050 FSV40 Pre-10-YUNFANG


Figure 7: Radiated Band-Edge, 1Mbps, 2402MHz, V

XXY-2310~2410 BE 1-18GHz HL050 FSV40 Pre-10-YUNFANG

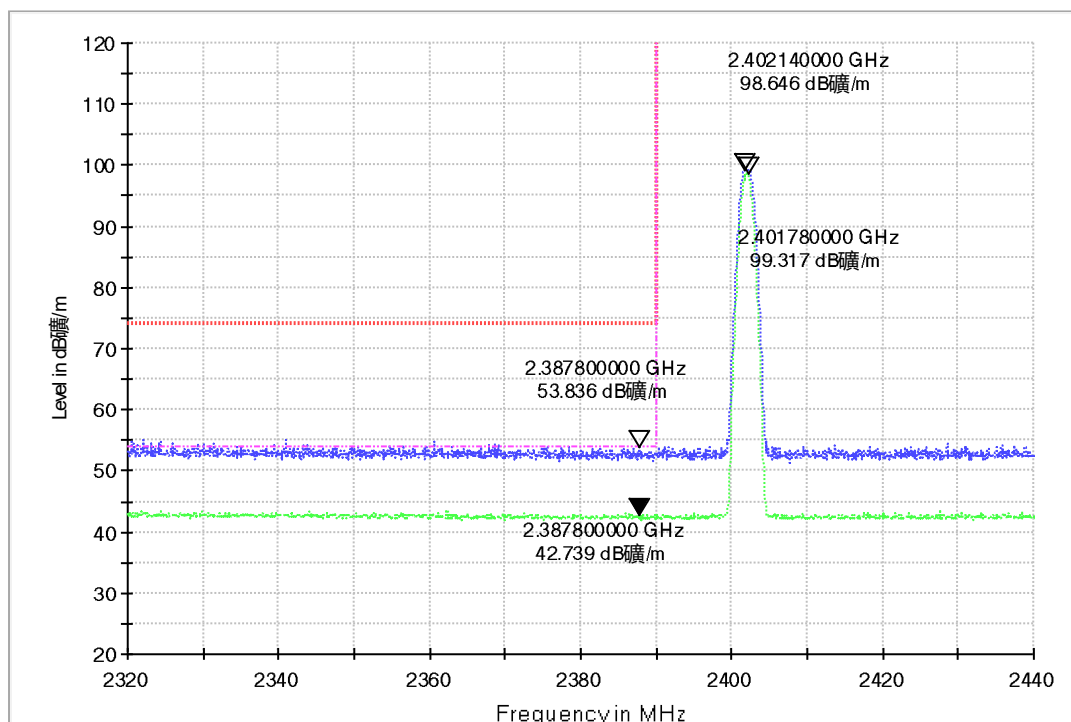
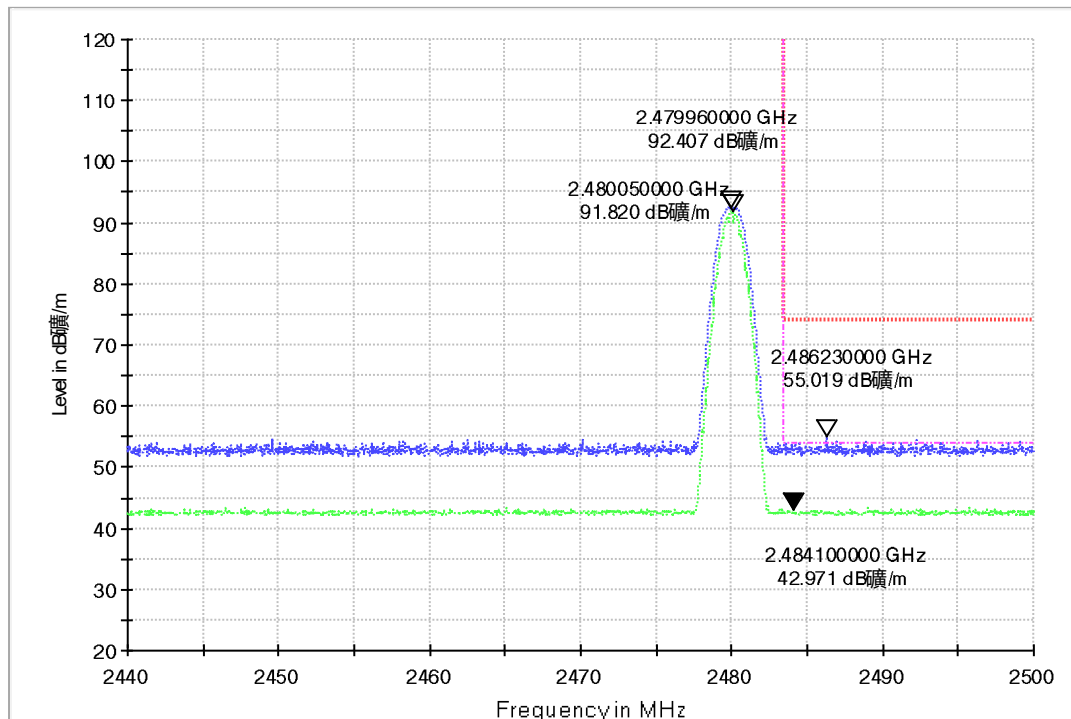
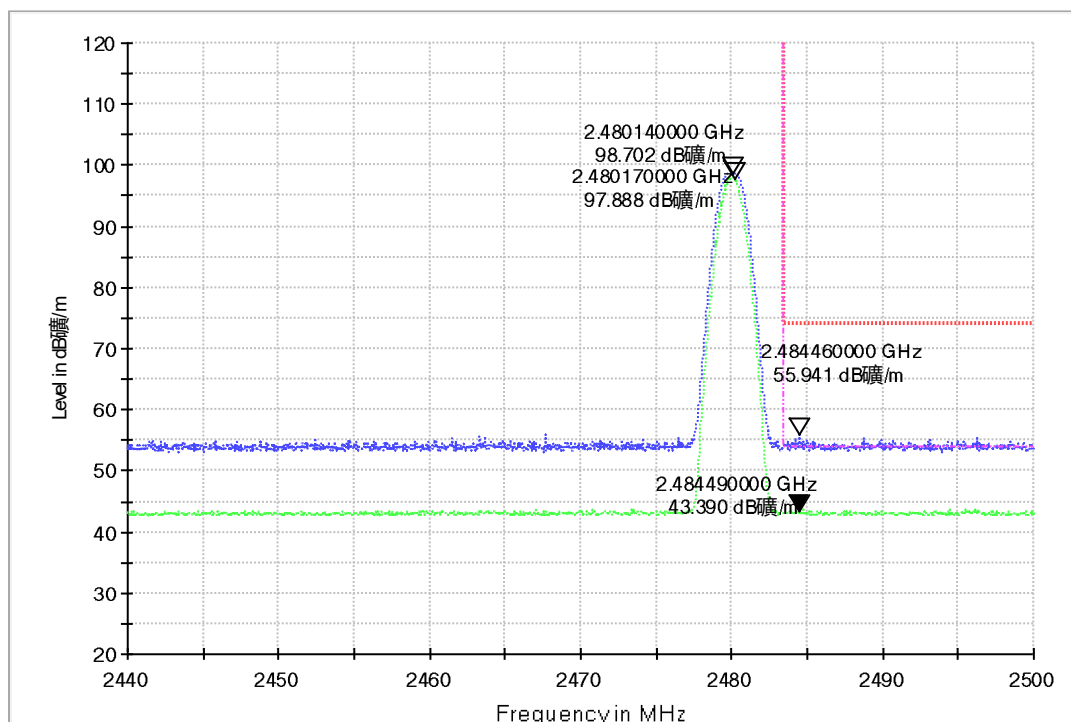


Figure 8: Radiated Band-Edge, 1Mbps, 2480MHz, H

XXY-2470° 2500 BE 1-18GHz HL050 FSV40 Pre-10-YUNFANG


Figure 9: Radiated Band-Edge, 1Mbps, 2480MHz, V

XXY-2470° 2500 BE 1-18GHz HL050 FSV40 Pre-10-YUNFANG



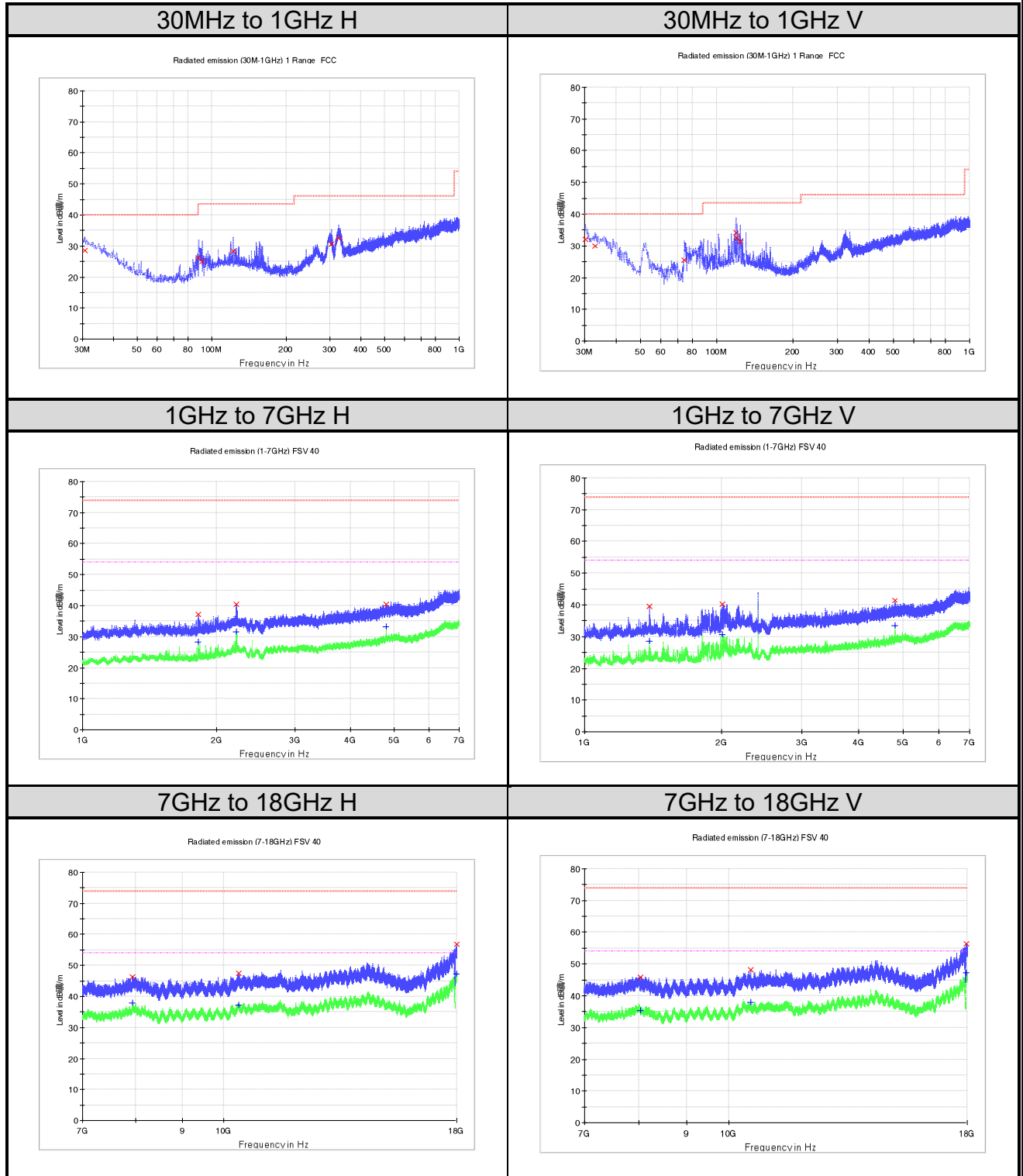
5.3.2 Radiated Spurious Emission

RESULT:**Pass**

Date of testing	:	2025-09-20
Ambient temperature	:	23.1°C
Relative humidity	:	57.5%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(d) FCC Part 15.209(a)
Test procedure	:	ANSI C63.10-2020+Cor. 1-2023+C63.10a- 2024+Errata to C63.10a-2024
Test voltage	:	AC120V, 60Hz
Test modes applied	:	A

Note:

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

Figure 10: Radiated Spurious Emission, 1Mbps, 2402MHz


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QP

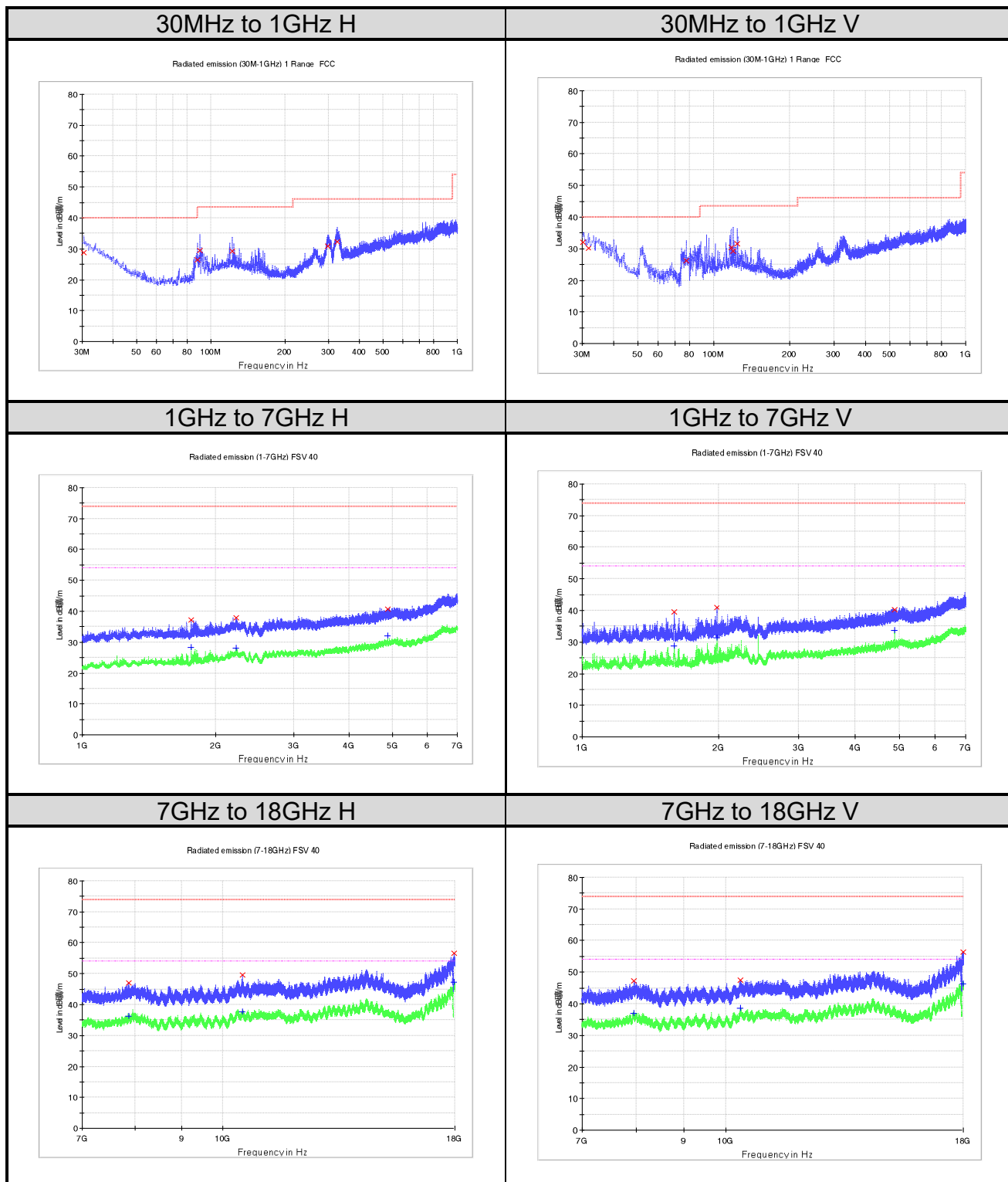
Frequency (MHz)	QuasiPeak (dBμV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
30.727500	28.6	H	25.0	11.4	40.0
88.442500	26.2	H	15.1	17.3	43.5
91.473750	25.1	H	15.6	18.4	43.5
122.271250	28.2	H	18.7	15.3	43.5
303.903750	30.7	H	20.6	15.3	46.0
326.698750	32.5	H	21.3	13.5	46.0
30.242500	32.0	V	25.3	8.0	40.0
32.910000	30.0	V	23.8	10.0	40.0
74.620000	25.5	V	13.2	14.5	40.0
118.876250	34.2	V	18.8	9.3	43.5
120.573750	32.5	V	18.7	11.0	43.5
123.968750	31.2	V	18.7	12.3	43.5

PK

Frequency (MHz)	MaxPeak (dBμV/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1818.727273	37.1	H	-18.7	36.9	74.0
2216.636364	40.4	H	-15.6	33.6	74.0
4804.272727	40.4	H	-11.2	33.6	74.0
7948.406250	46.2	H	-3.5	27.8	74.0
10381.125000	47.6	H	-2.1	26.4	74.0
17983.843750	56.8	H	11.8	17.2	74.0
1390.545455	39.6	V	-18.6	34.4	74.0
2003.909091	40.3	V	-17.7	33.7	74.0
4804.272727	41.3	V	-11.2	32.7	74.0
8038.125000	45.9	V	-3.5	28.2	74.0
10541.656250	48.3	V	-1.6	25.7	74.0
17976.625000	56.3	V	11.7	17.7	74.0

AV

Frequency (MHz)	Average (dBμV/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1818.727273	28.4	H	-18.7	25.6	54.0
2216.636364	31.5	H	-15.6	22.5	54.0
4804.272727	33.3	H	-11.2	20.7	54.0
7948.406250	38.0	H	-3.5	16.0	54.0
10381.125000	37.2	H	-2.1	16.8	54.0
17983.843750	47.2	H	11.8	6.8	54.0
1390.545455	28.6	V	-18.6	25.4	54.0
2003.909091	30.6	V	-17.7	23.4	54.0
4804.272727	33.4	V	-11.2	20.6	54.0
8038.125000	35.3	V	-3.5	18.7	54.0
10541.656250	38.0	V	-1.6	16.0	54.0
17976.625000	47.2	V	11.7	6.8	54.0

Figure 11: Radiated Spurious Emission, 1Mbps, 2440MHz


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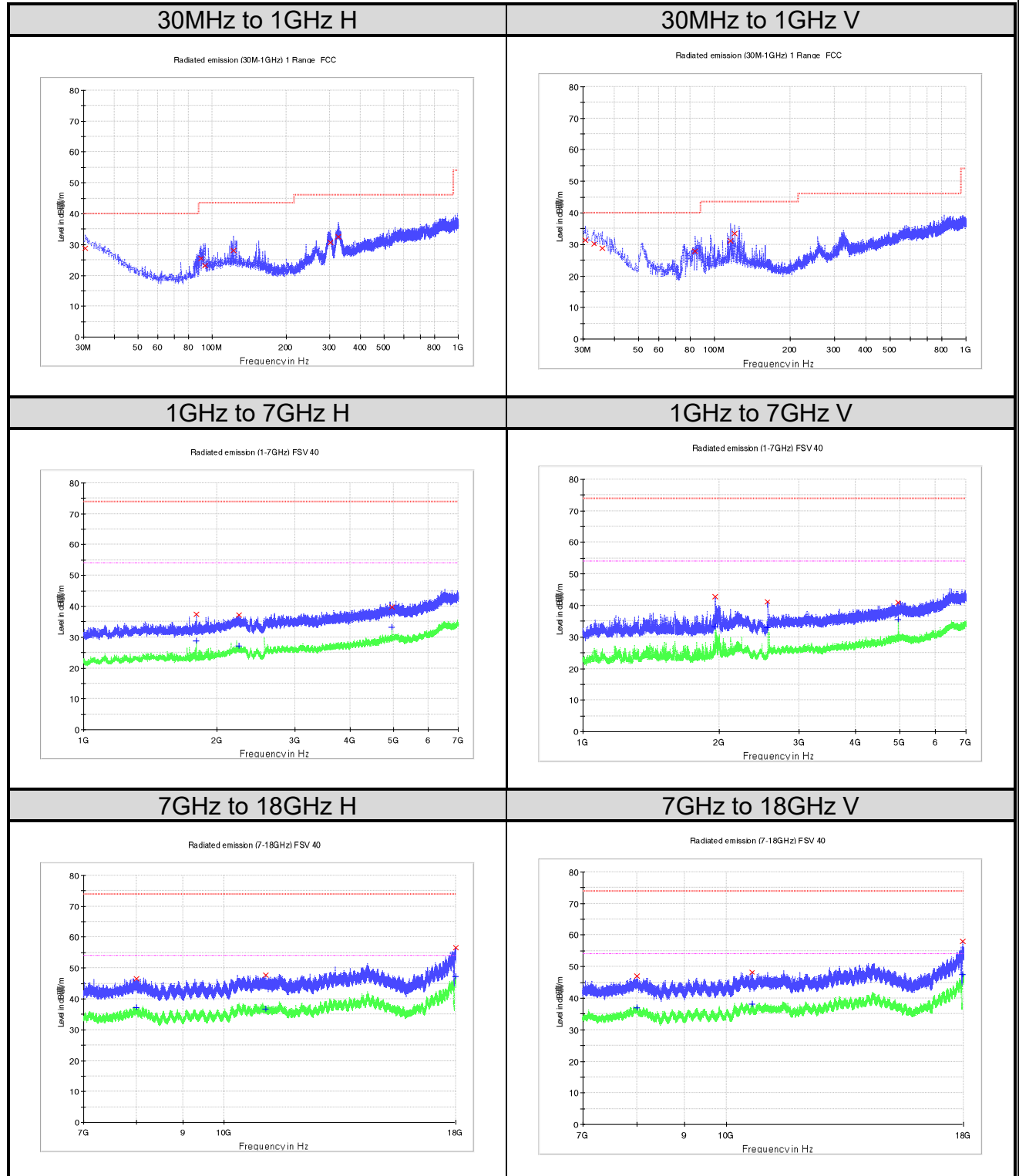
Frequency (MHz)	QuasiPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.485000	28.7	H	25.2	11.3	40.0
88.200000	26.4	H	15.0	17.1	43.5
90.261250	29.5	H	15.4	14.0	43.5
122.271250	29.2	H	18.7	14.4	43.5
297.841250	30.8	H	20.6	15.2	46.0
324.758750	32.2	H	21.3	13.8	46.0
30.242500	32.0	V	25.3	8.0	40.0
31.818750	30.1	V	24.4	9.9	40.0
77.651250	26.3	V	13.5	13.7	40.0
117.178750	30.5	V	18.8	13.0	43.5
119.361250	29.2	V	18.7	14.3	43.5
123.960000	31.7	V	18.7	11.8	43.5

PK

Frequency (MHz)	MaxPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1762.000000	37.2	H	-18.8	36.8	74.0
2222.363636	37.8	H	-15.6	36.2	74.0
4880.636364	40.8	H	-11.1	33.2	74.0
7880.000000	47.1	H	-4.0	26.9	74.0
10508.312500	49.5	H	-1.9	24.5	74.0
17980.406250	56.7	H	11.8	17.3	74.0
1594.000000	39.5	V	-18.9	34.5	74.0
1984.272727	40.9	V	-17.8	33.1	74.0
4879.545455	40.2	V	-11.1	33.8	74.0
7950.812500	47.2	V	-3.5	26.8	74.0
10365.312500	47.5	V	-2.1	26.5	74.0
17983.500000	56.5	V	11.8	17.5	74.0

AV

Frequency (MHz)	Average (dBµV/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1762.000000	28.3	H	-18.8	25.7	54.0
2222.363636	28.1	H	-15.6	25.9	54.0
4880.636364	32.0	H	-11.1	22.1	54.0
7880.000000	36.3	H	-4.0	17.7	54.0
10508.312500	37.6	H	-1.9	16.4	54.0
17980.406250	47.3	H	11.8	6.7	54.0
1594.000000	28.9	V	-18.9	25.1	54.0
1984.272727	31.3	V	-17.8	22.7	54.0
4879.545455	33.7	V	-11.1	20.3	54.0
7950.812500	36.9	V	-3.5	17.1	54.0
10365.312500	38.5	V	-2.1	15.5	54.0
17983.500000	46.4	V	11.8	7.6	54.0

Figure 12: Radiated Spurious Emission, 1Mbps, 2480MHz


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Frequency (MHz)	QuasiPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.485000	28.7	H	25.2	11.3	40.0
89.897500	25.5	H	15.3	18.0	43.5
93.777500	23.2	H	16.1	20.3	43.5
122.271250	28.2	H	18.7	15.3	43.5
301.357500	30.8	H	20.9	15.3	46.0
325.607500	32.4	H	21.3	13.6	46.0
30.727500	31.4	V	25.0	8.6	40.0
33.152500	30.2	V	23.6	9.8	40.0
35.698750	28.8	V	22.2	11.2	40.0
83.956250	27.9	V	14.3	12.1	40.0
115.966250	31.1	V	18.8	12.4	43.5
120.573750	33.5	V	18.7	10.0	43.5

PK

Frequency (MHz)	MaxPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1794.454546	37.5	H	-18.8	36.5	74.0
2240.090909	37.3	H	-15.6	36.7	74.0
4959.727273	39.9	H	-11.0	34.1	74.0
8002.718750	46.6	H	-3.3	27.4	74.0
11106.781250	47.6	H	-2.4	26.4	74.0
17984.531250	56.5	H	11.8	17.5	74.0
1957.818182	42.8	V	-17.9	31.2	74.0
2559.454546	41.3	V	-15.9	32.7	74.0
4960.272727	41.0	V	-11.0	33.0	74.0
8002.031250	47.0	V	-3.3	27.0	74.0
10655.093750	48.1	V	-1.4	25.9	74.0
17973.531250	57.9	V	11.7	16.1	74.0

AV

Frequency (MHz)	Average (dBµV/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1794.454546	28.7	H	-18.8	25.3	54.0
2240.090909	27.1	H	-15.6	26.9	54.0
4959.727273	33.2	H	-11.0	20.8	54.0
8002.718750	37.2	H	-3.3	16.8	54.0
11106.781250	36.8	H	-2.4	17.2	54.0
17984.531250	47.3	H	11.8	6.7	54.0
1957.818182	33.3	V	-17.9	20.7	54.0
2559.454546	33.0	V	-15.9	21.0	54.0
4960.272727	35.5	V	-11.0	18.5	54.0
8002.031250	37.0	V	-3.3	17.0	54.0
10655.093750	38.0	V	-1.4	16.0	54.0
17973.531250	47.4	V	11.7	6.6	54.0

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