Prüfbericht-Nr.: *Test report no.:*	**CN257BDY 001**	**Auftrags-Nr.:** *Order no.*:	326069540	Seite 1 von 40 *Page 1 of 40*
Kunden-Referenz-Nr.: *Client reference no.:*	1288983	**Auftragsdatum:** *Order date:*	2024-12-19	
Auftraggeber: *Client:*	**IKEA of Sweden AB** Box 702, SE-343 81 Älmhult, Sweden			
Prüfgegenstand: *Test item:*	Self-ballasted LED lamps			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	LED2402C3NA			
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: 2013			

Wareneingangsdatum: *Date of sample receipt:*	2025-03-21 2025-03-27	Refer to photo document.
Prüfmuster-Nr.: *Test sample no:*	A003951539-002 A003957107-005	
Prüfzeitraum: *Testing period:*	2025-03-27 ~ 2025-06-02	
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 Tianlin Li Signed by: Tianlin Li	**genehmigt von:** authorized by:	X Hongfei Wu Signed by: Hongfei Wu
Datum: *Date:* 2025-06-19		**Datum:** *Date:* 2025-06-19	
Stellung / *Position:*	Sachverständige(r)/Expert	**Stellung** / *Position:*	Sachverständige(r)/Expert

Sonstiges / *Other:*	FCC ID: FHO-LED2402C3NA IC: 10912ALED2402C3NA HVIN: LED2402C3NA PMN: KAJPLATS This report is for Zigbee.
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*

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. *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.*
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3	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. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted 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.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, 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. *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 115:2021, 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.*

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*

Contents

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-176	Preamplifier	EMC184045SE	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 basics 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 LED lamp which supports Bluetooth, Zigbee and Thread.

The aim of this report is to evaluate RF character of Zigbee of the EUT.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Description of EUT	
Product Name:	Self-ballasted LED lamps
Model No.:	LED2402C3NA
Operation Voltage:	AC 120V, 60Hz
Test Voltage:	DC 3.3V for RF conducted and radiated test AC 120V, 60Hz for conducted emission test
RF Technical:	1) BLE 2) Zigbee 3) Thread
Technical Specification of Zigbee	
RF IC:	SiMG301
Frequency Range:	2405~2480MHz
Modulation Type:	OQPSK
Antenna Type:	PCB Antenna
Antenna Gain:	-3.05 dBi (declared by client)

Table 4: Operation Channel List

RF Channel	Frequency [MHz]	RF Channel	Frequency [MHz]	RF Channel	Frequency [MHz]	RF Channel	Frequency [MHz]
11	2405	15	2425	19	2445	23	2465
12	2410	16	2430	20	2450	24	2470
13	2415	17	2435	21	2455	25	2475
14	2420	18	2440	22	2460	26	2480

3.3 Independent Operation Modes

Test frequencies are lowest channel: 2405 MHz, middle channel: 2445 MHz and highest channel:2480 MHz

The basic operation modes are:

A. Zigbee 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: 2013.
Test Software: sscom 5.13.1

Table 5: Power parameter value

Mode	Power Parameter Setting Value
Zigbee	10

4.3 Special Accessories and Auxiliary Equipment

Table 6: Auxiliary Equipment

Equipment	Manufacturer	Model
Laptop	Lenovo	21AJ-S57N0J
Mobile phone	Apple	iPhone 15
Loudspeaker	Apple	HomePod mini
Remote control	IKEA	E2489

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 internal PCB antenna, the directional gain of antenna is -3.05 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 7: 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:	PCB 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 PCB antenna can be used
Verdict:	Pass

RSS-Gen 6.4 – External Control	
Requirement:	The device shall not have any external controls accessible to the user that enable it to be adjusted, selected or programmed to operate in violation of the regulatory requirements, including RSS-Gen and the applicable RSSs
Results:	The device does not have any transmitter external controls accessible to the user that can be adjusted and operated in violation of the limits of this standard.
Verdict:	PASS

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:	-3.05 dBi
Verdict:	PASS	

5.1.2 6dB & 99% Bandwidth

RESULT: **Pass**

Date of testing	:	2025-05-26
Ambient temperature	:	20.3°C
Relative humidity	:	50.7%
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: 2013
Test voltage	:	DC 3.3V
Test modes applied	:	A

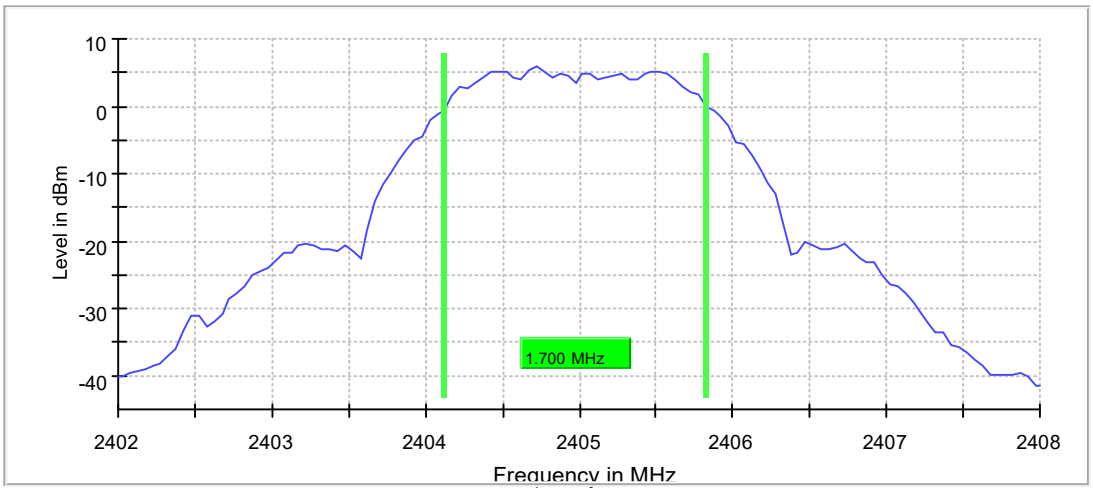
6dB Bandwidth, 2405MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2405.000000	1.700000	0.500000	---	2404.125000	2405.825000

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2405.000000	5.9	PASS

6 dB Bandwidth



Measurement

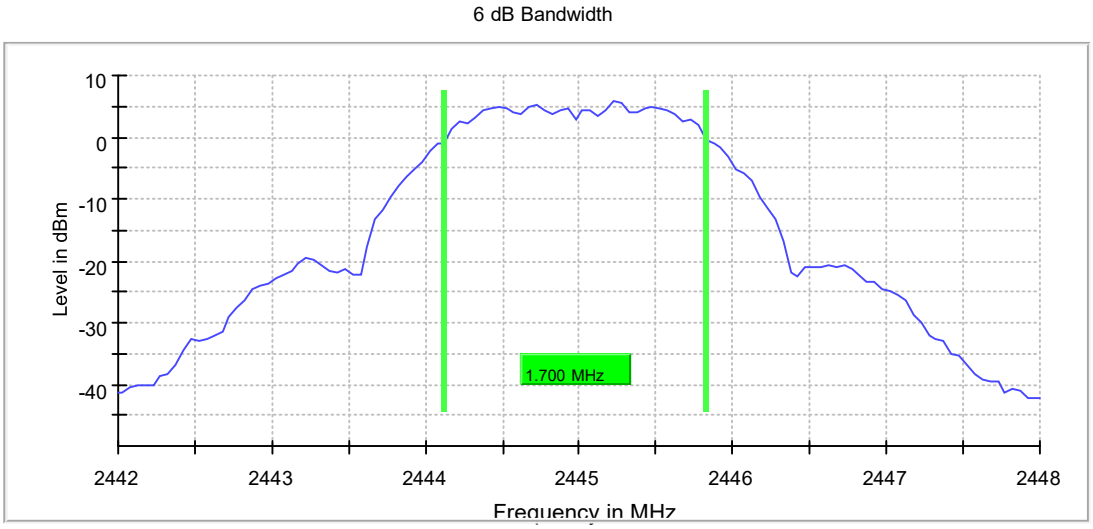
Setting	Instrument Value	Target Value
Start Frequency	2.40200 GHz	2.40200 GHz
Stop Frequency	2.40800 GHz	2.40800 GHz
Span	6.000 MHz	6.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	120	~ 120
Sweeptime	18.984 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 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	16 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.25 dB	0.50 dB

6dB Bandwidth, 2445MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2445.000000	1.700000	0.500000	---	2444.125000	2445.825000

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2445.000000	5.7	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.44800 GHz	2.44800 GHz
Span	6.000 MHz	6.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	120	~ 120
Sweeptime	18.984 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	15 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.05 dB	0.50 dB

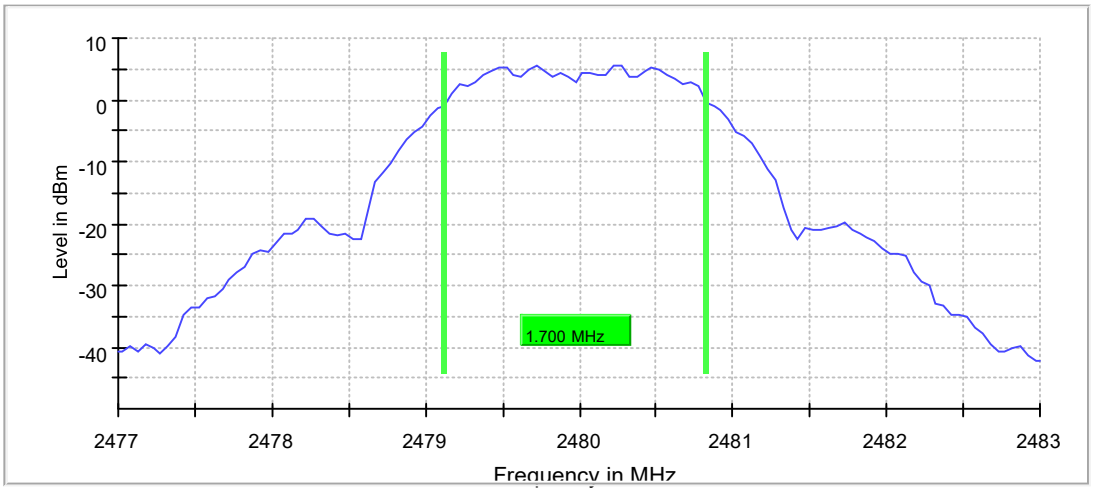
6dB Bandwidth, 2480MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.700000	0.500000	---	2479.125000	2480.825000

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	5.6	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47700 GHz	2.47700 GHz
Stop Frequency	2.48300 GHz	2.48300 GHz
Span	6.000 MHz	6.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	120	~ 120
Sweeptime	18.984 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	20 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.36 dB	0.50 dB

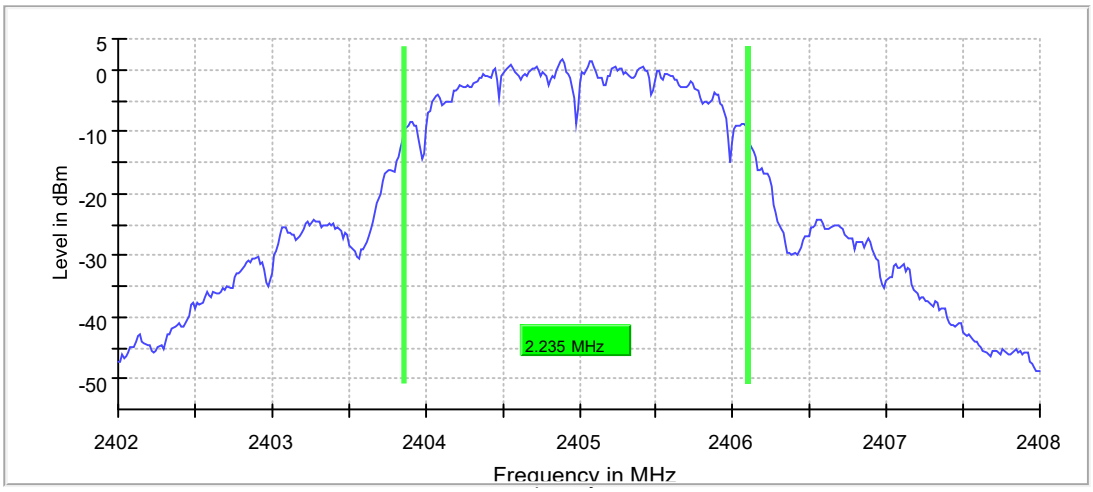
99% Occupied Channel Bandwidth, 2405MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2405.000000	2.235000	---	---	2403.867500	2406.102500

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

DUT Frequency (MHz)	Result
2405.000000	PASS

99 % Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40200 GHz	2.40200 GHz
Stop Frequency	2.40800 GHz	2.40800 GHz
Span	6.000 MHz	6.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 90.000 kHz
SweepPoints	400	~ 400
Sweeptime	63.216 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	17 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.16 dB	0.30 dB

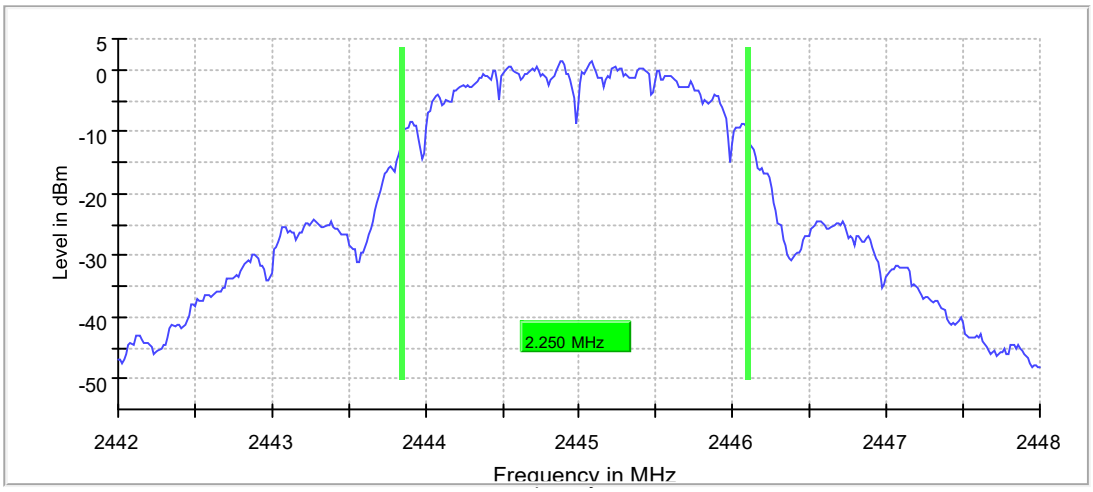
99% Occupied Channel Bandwidth, 2445MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2445.000000	2.250000	---	---	2443.852500	2446.102500

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

DUT Frequency (MHz)	Result
2445.000000	PASS

99 % Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.44800 GHz	2.44800 GHz
Span	6.000 MHz	6.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 90.000 kHz
SweepPoints	400	~ 400
Sweeptime	63.216 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	25 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.08 dB	0.30 dB

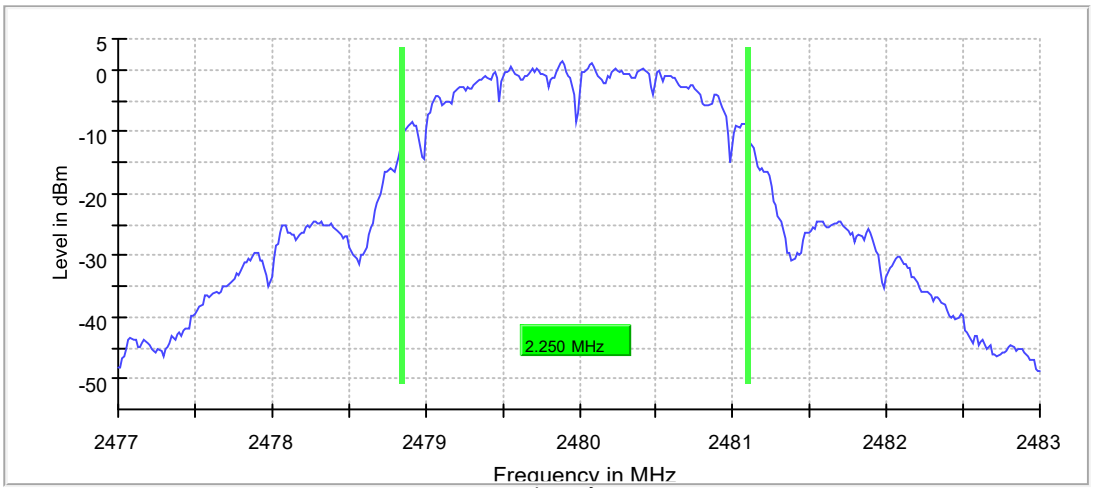
99% Occupied Channel Bandwidth, 2480MHz

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	2.250000	---	---	2478.852500	2481.102500

(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	2.47700 GHz	2.47700 GHz
Stop Frequency	2.48300 GHz	2.48300 GHz
Span	6.000 MHz	6.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 90.000 kHz
SweepPoints	400	~ 400
Sweeptime	63.216 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	22 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.27 dB	0.30 dB

5.1.3 Output Power

RESULT: **Pass**

Date of testing	:	2025-05-26
Ambient temperature	:	20.3°C
Relative humidity	:	50.7%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(b)(3) RSS-247 Issue 3, August 2023, Clause 5.4(d)
Test procedure	:	ANSI C63.10: 2013
Test voltage	:	DC 3.3V
Test modes applied	:	A

Table 8: Peak Output Power

Frequency [MHz]	Peak Conducted Output Power [dBm]	Limit [dBm]
2405	9.7	30
2445	9.5	30
2480	9.4	30

Note:
1. The cable loss is taken into account in results.
2. EIRP=Conducted Output Power + Antenna Gain (-3.05dBi), which is far below the 4 W (36dBm).

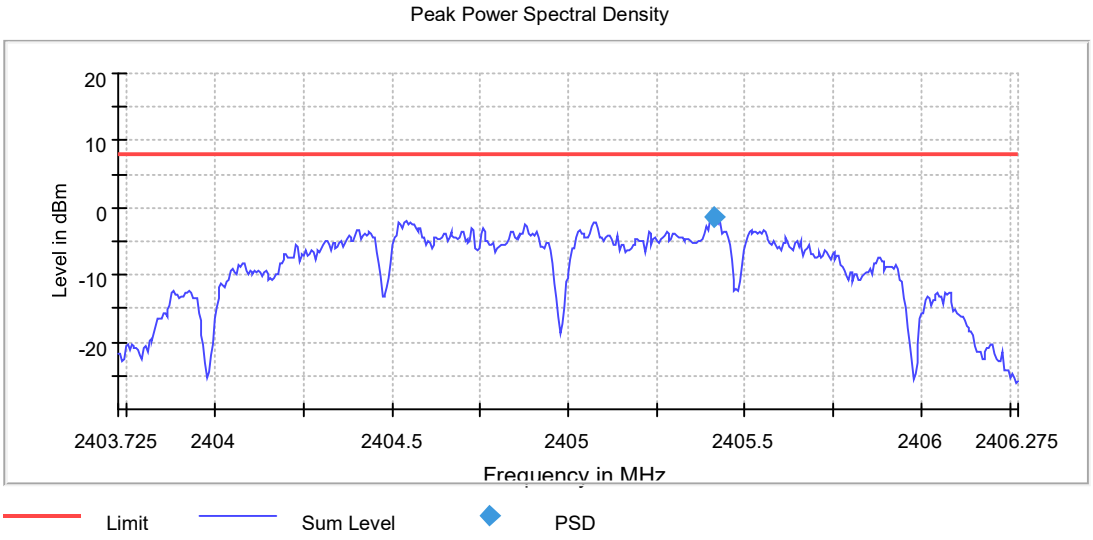
5.1.4 Power Spectral Density

RESULT: **Pass**

Date of testing	:	2025-05-26
Ambient temperature	:	20.3°C
Relative humidity	:	50.7%
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: 2013
Test voltage	:	DC 3.3V
Test modes applied	:	A

Power Spectral Density, 2405MHz

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2405.000000	2405.412500	-1.507	8.0	PASS



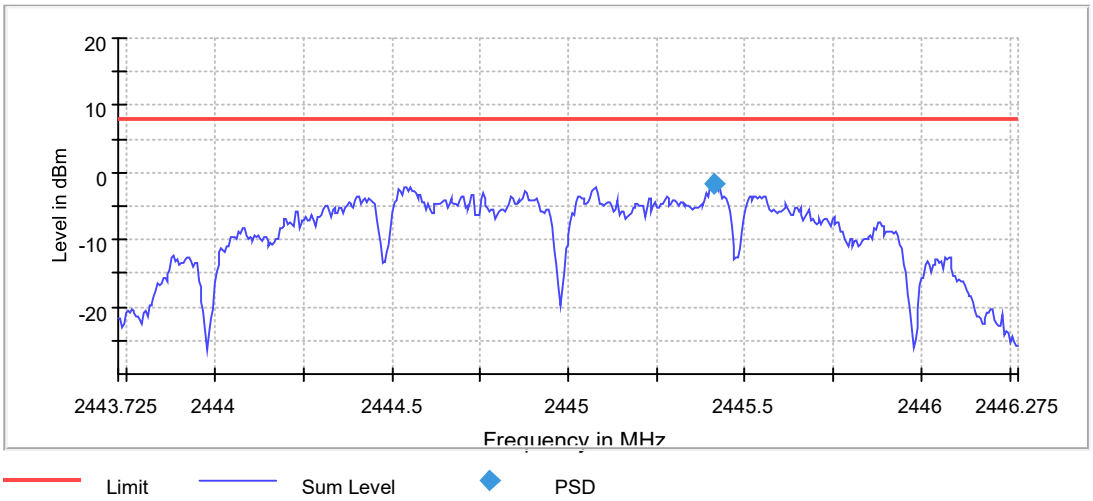
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40373 GHz	2.40373 GHz
Stop Frequency	2.40628 GHz	2.40628 GHz
Span	2.550 MHz	2.550 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	510	~ 510
Sweeptime	2.550 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	14 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.24 dB	0.50 dB

Power Spectral Density, 2445MHz

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2445.000000	2445.412500	-1.656	8.0	PASS

Peak Power Spectral Density

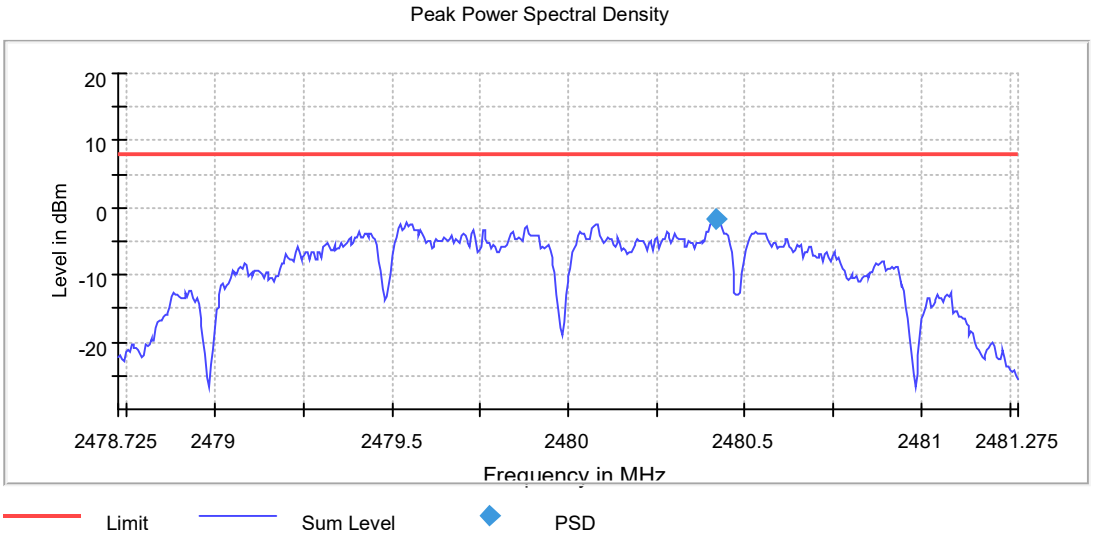


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44373 GHz	2.44373 GHz
Stop Frequency	2.44628 GHz	2.44628 GHz
Span	2.550 MHz	2.550 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	510	~ 510
Sweeptime	2.550 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	12 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.27 dB	0.50 dB

Power Spectral Density, 2480MHz

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2480.417500	-1.784	8.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47873 GHz	2.47873 GHz
Stop Frequency	2.48128 GHz	2.48128 GHz
Span	2.550 MHz	2.550 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	510	~ 510
Sweeptime	2.550 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	9 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.46 dB	0.50 dB

5.1.5 Conducted Band Edge and out-of Band Emissions

RESULT: **Pass**

Date of testing	:	2025-05-26, 2025-05-28
Ambient temperature	:	20.3°C, 20.3°C
Relative humidity	:	50.7%,51.0%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.247(d) RSS-247 Issue 3, August 2023, Clause 5.5
Test procedure	:	ANSI C63.10: 2013
Test voltage	:	DC 3.3V
Test modes applied	:	A

Figure 1: Reference level

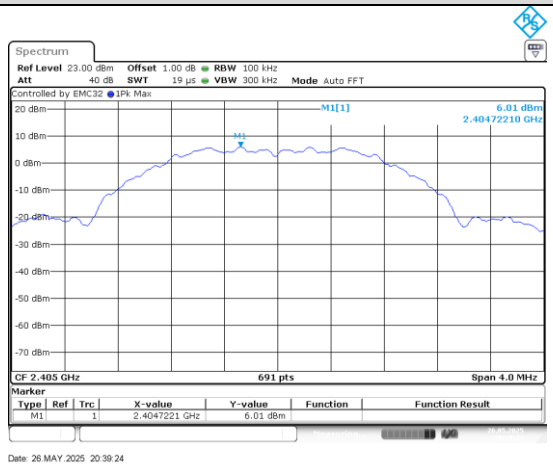
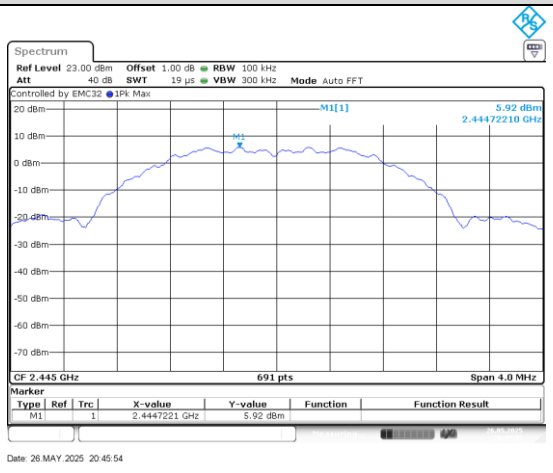
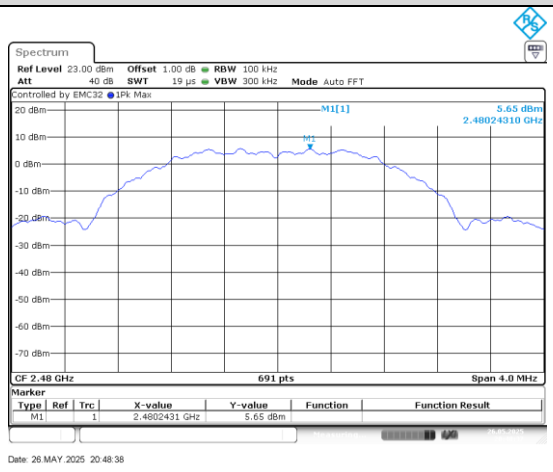
2405MHz	2445MHz
	
2480MHz	**/**
	/

Figure 2: Conducted Spurious Emission

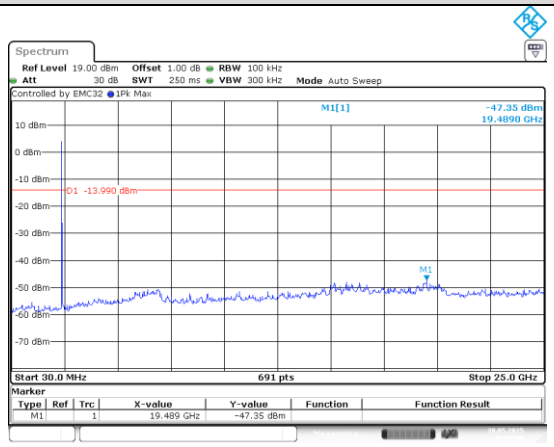
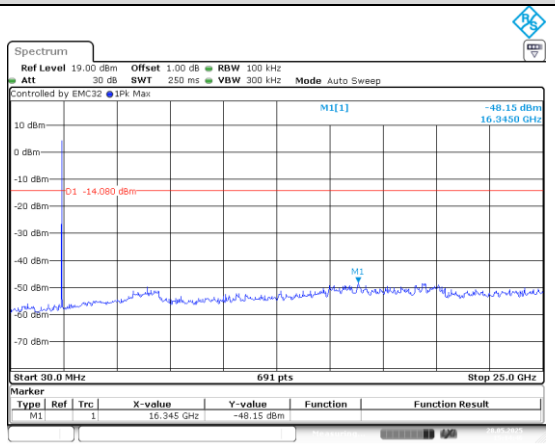
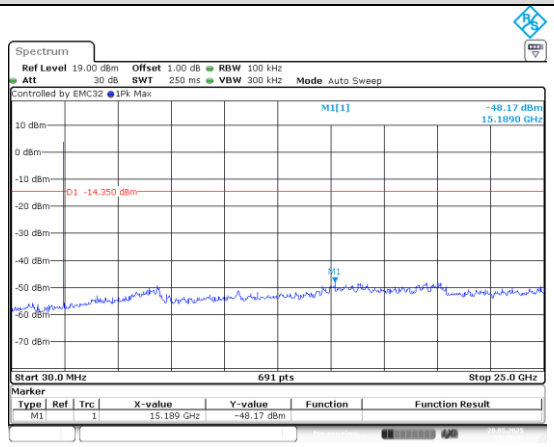
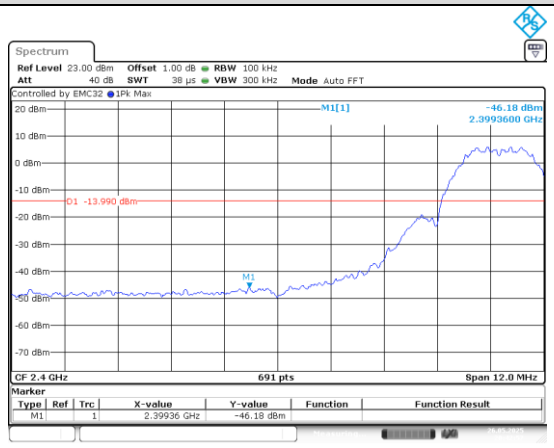
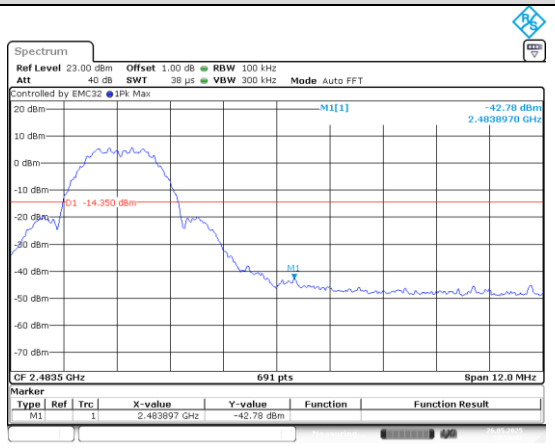
2405MHz	2445MHz
	
2480MHz	**/**
	/

Figure 3: Conducted Band Edge

2405MHz	2480MHz
	

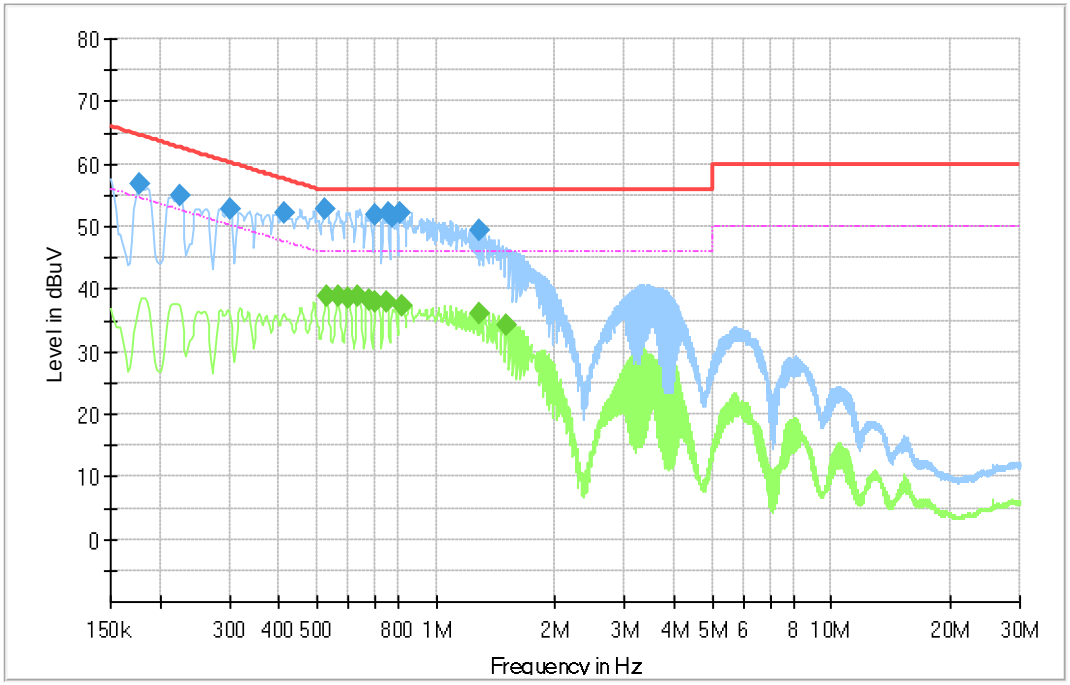
5.2 Emission in the Frequency Range up to 30MHz

5.2.1 Conducted Emission

RESULT: **Pass**

Date of testing	:	2025-03-27
Ambient temperature	:	22.6°C
Relative humidity	:	53.2%
Atmospheric pressure	:	101kPa
Test requirement	:	FCC Part 15.207 (a) RSS-Gen Issue 5, Amendment 2, February 2021, Clause 8.8
Test procedure	:	KDB 558074 D01v05r02 ANSI C63.10: 2013
Test voltage	:	AC 120V, 60Hz
Test modes applied	:	B

Figure 4: Conducted Emission, L&N



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.177000	56.83	---	64.63	7.79	N	10.5
0.224250	54.85	---	62.66	7.81	N	10.7
0.300750	52.71	---	60.22	7.51	N	10.5
0.413250	52.06	---	57.58	5.52	N	10.3
0.525750	52.82	---	56.00	3.18	L1	10.3
0.528000	---	38.94	46.00	7.06	N	10.2
0.564000	---	38.88	46.00	7.12	N	10.3
0.600000	---	38.65	46.00	7.35	N	10.3
0.636000	---	38.84	46.00	7.16	N	10.4
0.676500	---	38.10	46.00	7.90	N	10.4
0.699000	51.79	---	56.00	4.21	N	10.4
0.703500	---	38.00	46.00	8.00	N	10.4
0.753000	---	37.94	46.00	8.06	N	10.4
0.757500	52.09	---	56.00	3.91	L1	10.4
0.771000	51.40	---	56.00	4.60	N	10.4
0.807000	52.22	---	56.00	3.78	L1	10.5
0.818250	---	37.31	46.00	8.69	N	10.4
1.286250	---	36.22	46.00	9.78	L1	10.5
1.286250	49.49	---	56.00	6.51	L1	10.5
1.504500	---	34.32	46.00	11.68	N	10.4

5.3 Emission in the Frequency Range above 30MHz

5.3.1 Radiated Band-Edge

RESULT: **Pass**

Date of testing	:	2025-05-25
Ambient temperature	:	22.3°C
Relative humidity	:	51.7%
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: 2013
Test voltage	:	DC 3.3V
Test modes applied	:	A

Figure 5: Radiated Band-Edge, 2405MHz, H

XXY-2310~ 2410 BE 1-18GHz_HL050_FSV40_Pre-10-YUNFANG

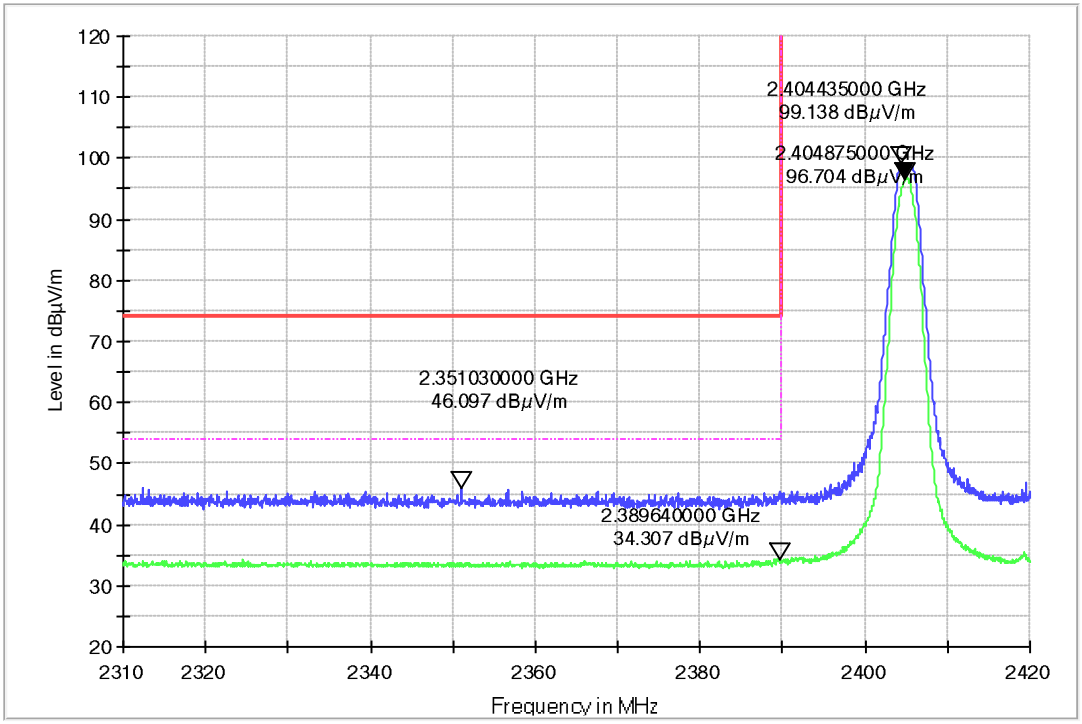


Figure 6: Radiated Band-Edge, 2405MHz, V

XXY-2310~ 2410 BE 1-18GHz_HL050_FSV40_Pre-10-YUNFANG

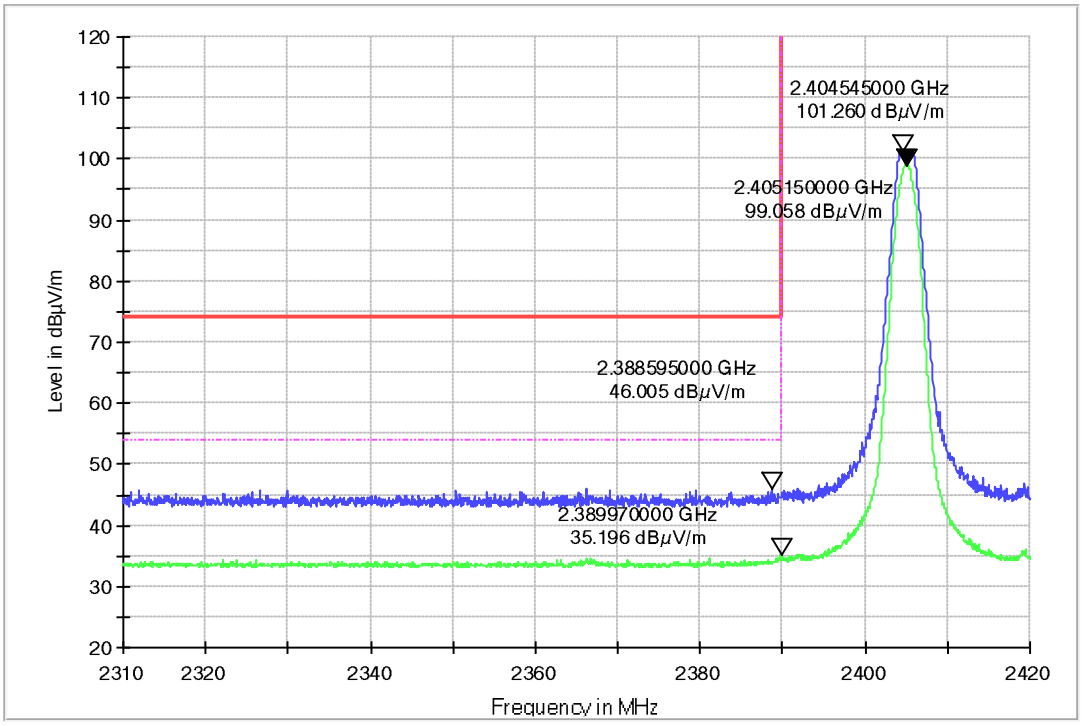


Figure 7: Radiated Band-Edge, 2480MHz, H

XXY-2470~ 2500 BE_1-18GHz_HL050_FSV40_Pre-10-YUNFANG

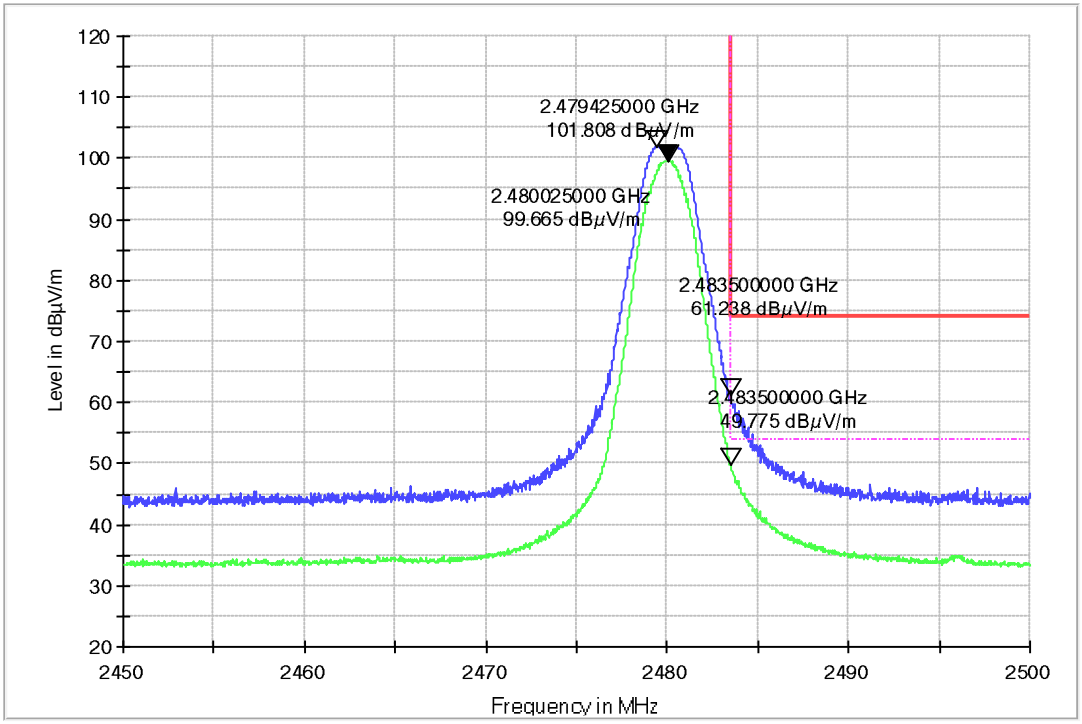
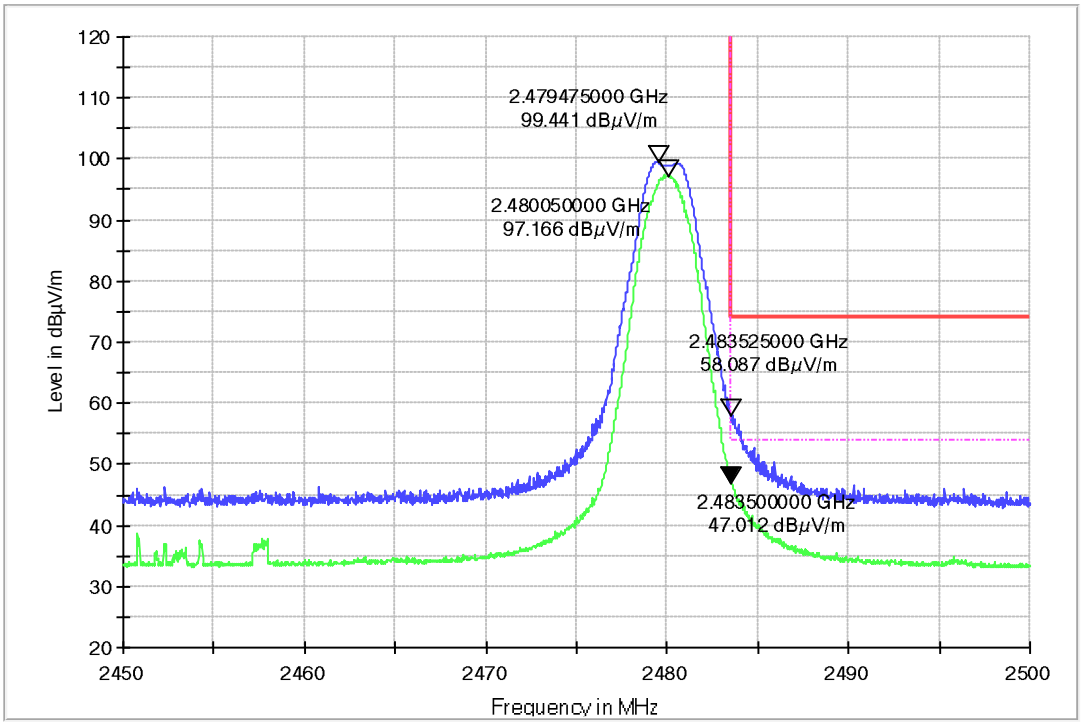


Figure 8: Radiated Band-Edge, 2480MHz, V

XXY-2470~ 2500 BE_1-18GHz_HL050_FSV40_Pre-10-YUNFANG



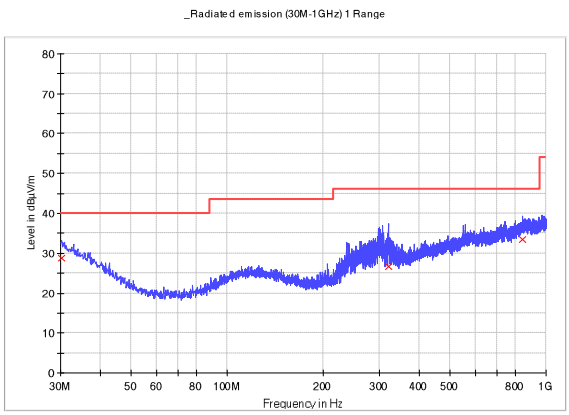
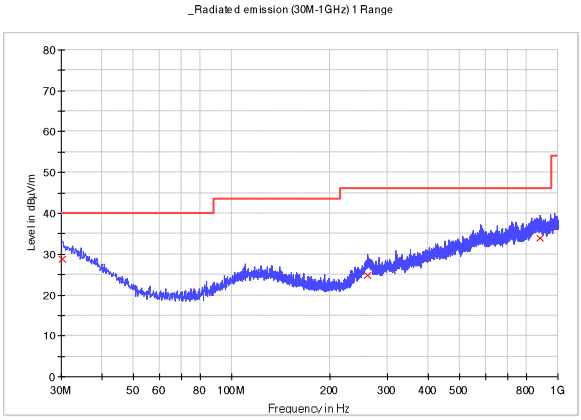
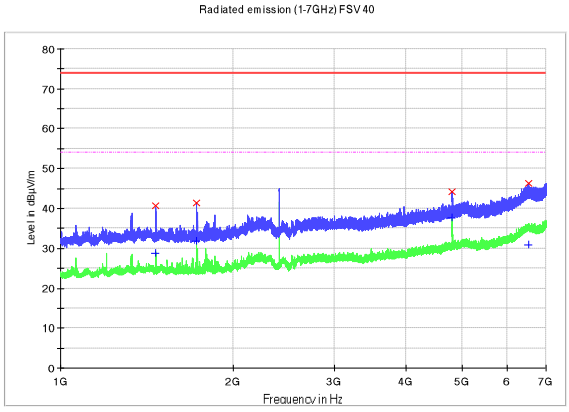
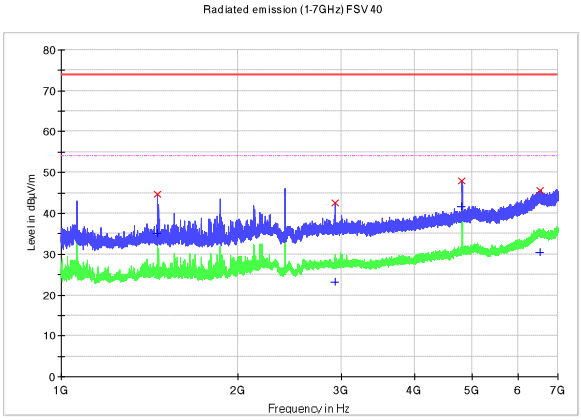
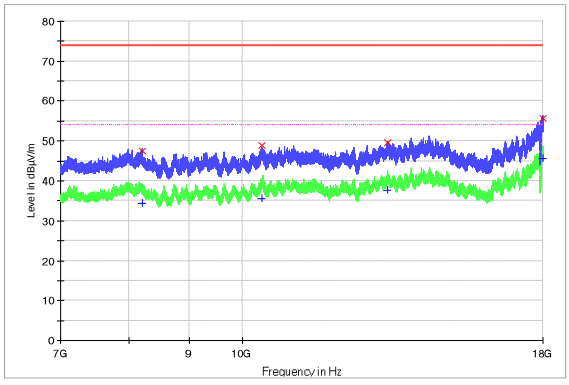
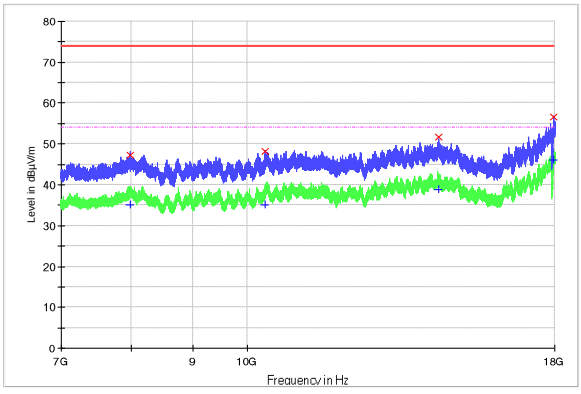
5.3.2 Radiated Spurious Emission

RESULT: **Pass**

Date of testing	:	2025-05-22, 2025-06-02
Ambient temperature	:	20.5°C, 22.8°C
Relative humidity	:	51.7%,52.1%
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: 2013
Test voltage	:	DC 3.3V
Test modes applied	:	A

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

Figure 9: Radiated Spurious Emission, 2405MHz

30MHz to 1GHz H	30MHz to 1GHz V
	
1GHz to 7GHz H	**1GHz to 7GHz V**
	
7GHz to 18GHz H	**7GHz to 18GHz V**
	

Limit and Margin

QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.121250	28.8	H	25.3	11.2	40.0
319.666250	26.6	H	20.9	19.4	46.0
841.647500	33.4	H	28.9	12.6	46.0
30.242500	28.8	V	25.3	11.2	40.0
261.830000	24.9	V	21.7	21.1	46.0
881.538750	33.9	V	29.1	12.1	46.0

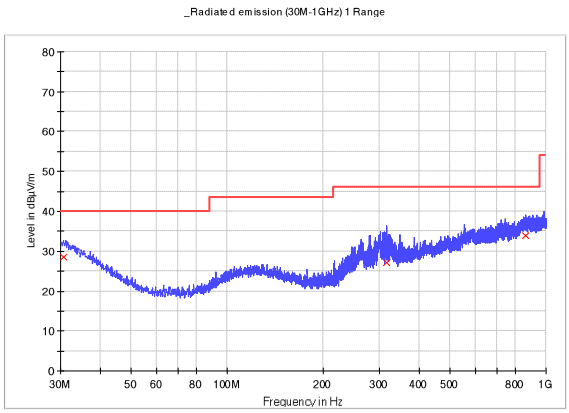
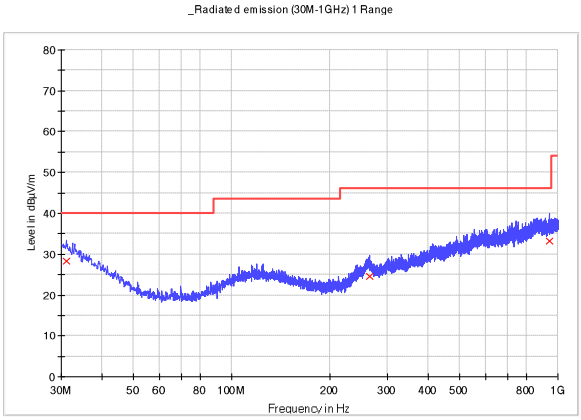
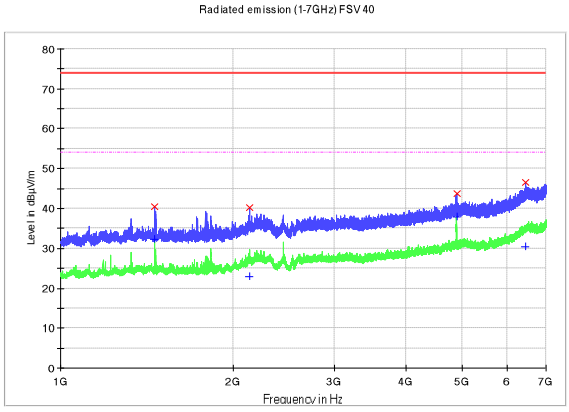
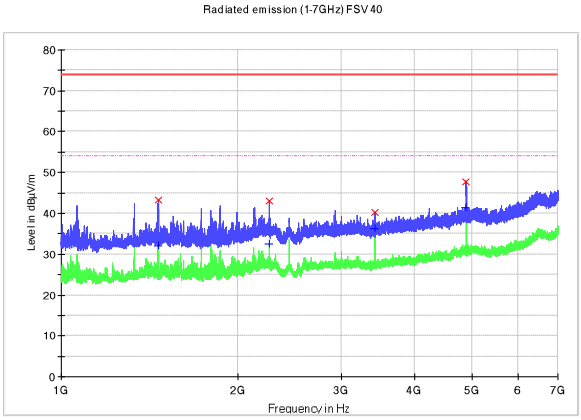
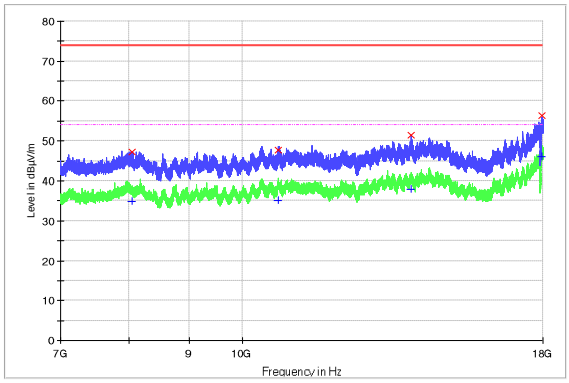
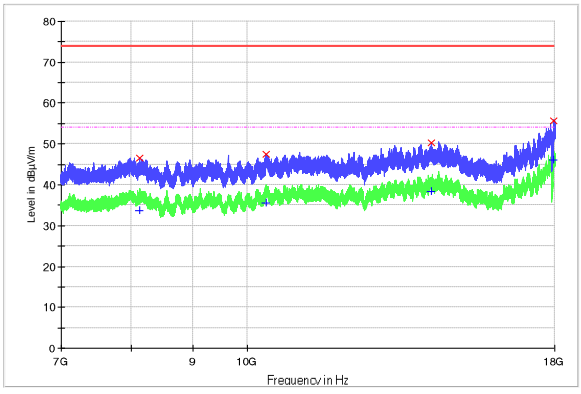
PK

Frequency (MHz)	MaxPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1462.272727	40.7	H	-18.6	33.3	74.0
1725.454546	41.3	H	-18.8	32.7	74.0
4809.181818	44.2	H	-11.2	29.8	74.0
6531.727273	46.2	H	-7.3	27.8	74.0
8209.312500	47.4	H	-4.7	26.6	74.0
10390.406250	48.9	H	-2.1	25.1	74.0
13275.843750	49.6	H	0.3	24.4	74.0
17988.312500	55.6	H	11.9	18.4	74.0
1460.363636	44.7	V	-18.6	29.3	74.0
2928.727273	42.5	V	-15.1	31.5	74.0
4808.909091	48.0	V	-11.2	26.0	74.0
6538.000000	45.5	V	-7.3	28.5	74.0
7982.781250	47.3	V	-3.4	26.7	74.0
10347.781250	48.1	V	-2.1	25.9	74.0
14416.750000	51.8	V	2.7	22.2	74.0
17976.281250	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)
1462.272727	28.8	H	-18.6	25.2	54.0
1725.454546	31.8	H	-18.8	22.2	54.0
4809.181818	37.6	H	-11.2	16.4	54.0
6531.727273	30.9	H	-7.3	23.1	54.0
8209.312500	34.4	H	-4.7	19.6	54.0
10390.406250	35.6	H	-2.1	18.4	54.0
13275.843750	37.7	H	0.3	16.3	54.0
17988.312500	45.7	H	11.9	8.3	54.0
1460.363636	35.2	V	-18.6	18.8	54.0
2928.727273	23.3	V	-15.1	30.7	54.0
4808.909091	41.7	V	-11.2	12.3	54.0
6538.000000	30.5	V	-7.3	23.5	54.0
7982.781250	35.1	V	-3.4	18.9	54.0
10347.781250	35.1	V	-2.1	18.9	54.0
14416.750000	38.8	V	2.7	15.2	54.0
17976.281250	46.0	V	11.7	8.0	54.0

Figure 10: Radiated Spurious Emission, 2445MHz

30MHz to 1GHz H	30MHz to 1GHz V
	
1GHz to 7GHz H	**1GHz to 7GHz V**
	
7GHz to 18GHz H	**7GHz to 18GHz V**
	

Limit and Margin

QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.606250	28.6	H	25.1	11.4	40.0
315.665000	27.2	H	20.5	18.8	46.0
860.441250	33.9	H	29.1	12.1	46.0
31.091250	28.3	V	24.8	11.7	40.0
263.891250	24.6	V	21.5	21.4	46.0
939.253750	33.3	V	28.8	12.7	46.0

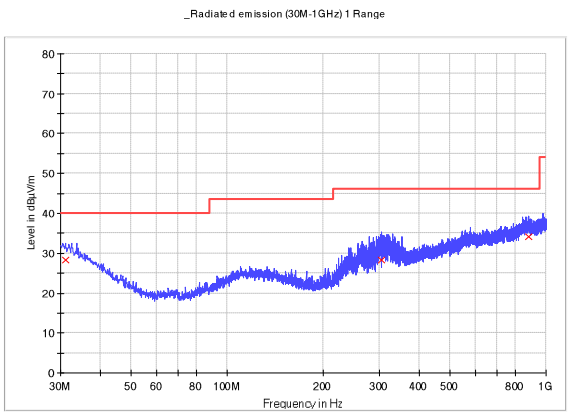
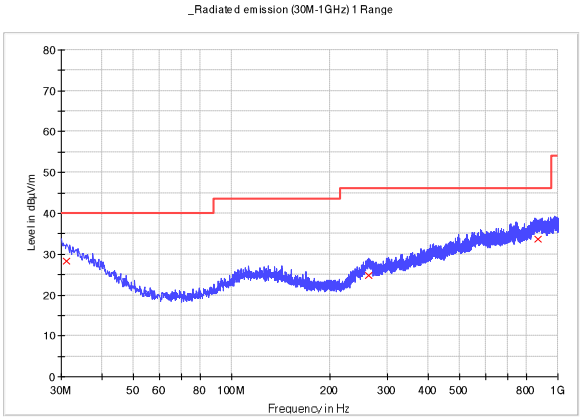
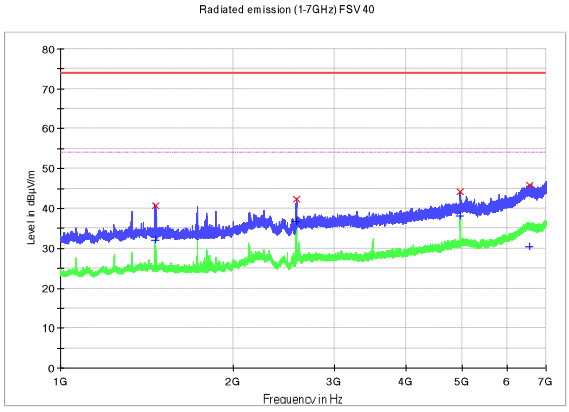
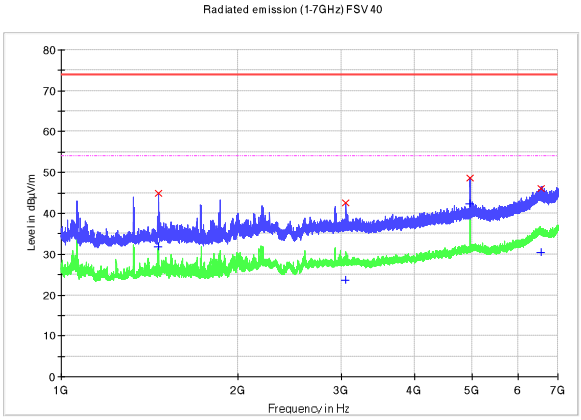
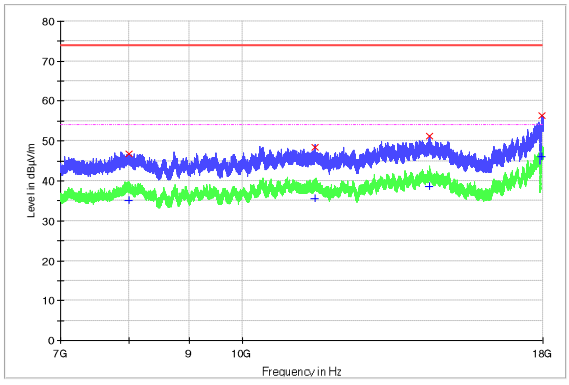
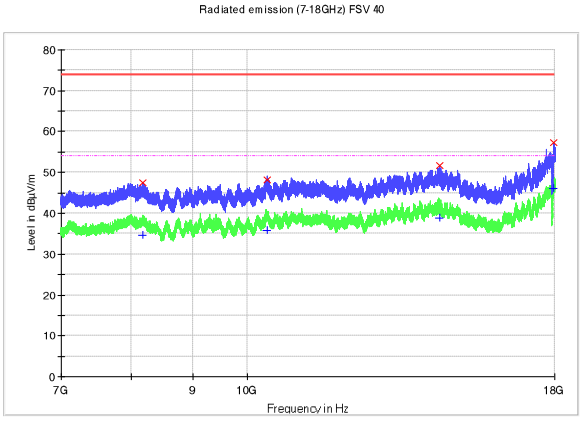
PK

Frequency (MHz)	MaxPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1460.363636	40.4	H	-18.6	33.6	74.0
2129.909091	40.2	H	-16.4	33.8	74.0
4891.545455	43.7	H	-11.1	30.3	74.0
6460.545455	46.5	H	-7.6	27.5	74.0
8054.281250	47.3	H	-3.5	26.7	74.0
10714.906250	47.6	H	-2.0	26.4	74.0
13897.687500	51.5	H	1.1	22.5	74.0
17976.625000	56.3	H	11.7	17.7	74.0
1462.545455	43.3	V	-18.6	30.7	74.0
2259.181818	43.1	V	-15.6	30.9	74.0
3417.181818	40.3	V	-14.9	33.7	74.0
4888.818182	47.8	V	-11.1	26.2	74.0
8129.562500	46.5	V	-4.1	27.5	74.0
10365.312500	47.4	V	-2.1	26.6	74.0
14228.375000	50.2	V	2.1	23.8	74.0
17973.875000	55.7	V	11.7	18.3	74.0

AV

Frequency (MHz)	Average (dBµV/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1460.363636	32.2	H	-18.6	21.8	54.0
2129.909091	22.9	H	-16.4	31.1	54.0
4891.545455	37.8	H	-11.1	16.2	54.0
6460.545455	30.4	H	-7.6	23.6	54.0
8054.281250	34.9	H	-3.5	19.1	54.0
10714.906250	35.0	H	-2.0	19.0	54.0
13897.687500	38.0	H	1.1	16.0	54.0
17976.625000	46.0	H	11.7	8.0	54.0
1462.545455	32.1	V	-18.6	21.9	54.0
2259.181818	32.6	V	-15.6	21.4	54.0
3417.181818	36.2	V	-14.9	17.8	54.0
4888.818182	41.5	V	-11.1	12.5	54.0
8129.562500	33.8	V	-4.1	20.2	54.0
10365.312500	35.6	V	-2.1	18.4	54.0
14228.375000	38.4	V	2.1	15.6	54.0
17973.875000	46.1	V	11.7	7.9	54.0

Figure 11: Radiated Spurious Emission, 2480MHz

30MHz to 1GHz H	30MHz to 1GHz V
	
1GHz to 7GHz H	**1GHz to 7GHz V**
	
7GHz to 18GHz H	**7GHz to 18GHz V**
	

Limit and Margin

QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
31.091250	28.3	H	24.8	11.7	40.0
304.631250	28.3	H	20.6	17.7	46.0
882.872500	34.1	H	29.2	11.9	46.0
31.091250	28.3	V	24.8	11.7	40.0
263.042500	24.8	V	21.6	21.2	46.0
868.565000	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)
1461.727273	40.6	H	-18.6	33.4	74.0
2575.000000	42.4	H	-15.8	31.6	74.0
4961.090909	44.2	H	-11.0	29.8	74.0
6559.545455	45.9	H	-7.3	28.1	74.0
7998.250000	46.8	H	-3.3	27.2	74.0
11510.687500	48.5	H	-1.4	25.5	74.0
14421.906250	51.3	H	2.7	22.7	74.0
17972.156250	56.4	H	11.6	17.6	74.0
1461.181818	44.9	V	-18.6	29.1	74.0
3053.636364	42.6	V	-14.8	31.4	74.0
4959.181818	48.7	V	-11.0	25.3	74.0
6549.454546	46.1	V	-7.3	27.9	74.0
8178.031250	47.4	V	-4.4	26.6	74.0
10386.625000	48.1	V	-2.1	25.9	74.0
14430.500000	51.7	V	2.7	22.3	74.0
17971.468750	57.3	V	11.6	16.7	74.0

AV

Frequency (MHz)	Average (dBµV/m)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1461.727273	32.0	H	-18.6	22.0	54.0
2575.000000	36.7	H	-15.8	17.3	54.0
4961.090909	38.1	H	-11.0	15.9	54.0
6559.545455	30.4	H	-7.3	23.6	54.0
7998.250000	35.1	H	-3.3	18.9	54.0
11510.687500	35.6	H	-1.4	18.4	54.0
14421.906250	38.6	H	2.7	15.4	54.0
17972.156250	46.0	H	11.6	8.0	54.0
1461.181818	31.8	V	-18.6	22.2	54.0
3053.636364	23.6	V	-14.8	30.4	54.0
4959.181818	42.4	V	-11.0	11.6	54.0
6549.454546	30.4	V	-7.3	23.6	54.0
8178.031250	34.7	V	-4.4	19.3	54.0
10386.625000	35.8	V	-2.1	18.2	54.0
14430.500000	38.9	V	2.7	15.1	54.0
17971.468750	46.1	V	11.6	7.9	54.0

6. List of Tables

7. List of Figures