FCC PART 15.247

TEST REPORT

For

Hangzhou YuShu Technology Co., Ltd.

306 Room, Building 1, 88 Dongliu Rd, XiXing Street, Binjiang District, Hangzhou, ZheJiang, China

FCC ID: 2A5PE-YUSHU007

Report Type:	**Product Name:**
Original Report	Remote Control

Report Number:	RKSA240809002-00C
Report Date:	2024-09-14
Reviewed By:	Bard Liu
Approved By:	Oscar Ye
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu Province, China Tel: +86-512-86175000 Fax: +86-512-88934268 www.baclcorp.com.cn

TABLE OF CONTENTS

REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RKSA240809002-00C	R1V1	2024-09-14	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Hangzhou YuShu Technology Co., Ltd.
Tested Model:	R3-1
Product Name:	Remote Control
Power Supply:	DC 3.7V from battery or DC 5V charging from type-c port
RF Function:	2.4G SRD
Operating Band/Frequency:	2401.6-2480 MHz
Maximum Output Power:	1.87 dBm
Modulation Type:	BPSK
Antenna Type:	Copper tube dipole antenna
★Maximum Antenna Gain:	2.49 dBi

Note: The maximum antenna gain is provided by the applicant.

All measurement and test data in this report was gathered from production sample serial number: RKSA240809002-1 (Assigned by the BACL (Kunshan). The EUT supplied by the applicant was received on 2024-08-09.)

Objective

This report is prepared for *Hangzhou YuShu Technology Co., Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions' rules.

The tests were performed in order to determine Compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliant Testing of Unlicensed Wireless Devices and FCC 558074 D01 15.247 Meas Guidance v05r02.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	9 kHz~150 kHz	3.8dB
	150 kHz~30 MHz	3.4dB
	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0℃
Humidity		6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) is accredited in accordance with ISO/IEC 17025:2017 by NVLAP (Lab code: 600338-0), and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, the FCC Designation No.: CN5055.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

Channel list as below:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2401.6	50	2440.8	94	2476.0
2	2402.4	51	2441.6	95	2476.8
3	2403.2	52	2442.4	96	2477.6
4	2404.0	53	2443.2	97	2478.4
5	2404.8	54	2444.0	98	2479.2
6	2405.6	55	2444.8	99	2480.0
7	2406.4	56	2445.6	---	---
8	2407.2	57	2446.4	---	---
…	…	…	…	---	---
49	2440.0	93	2475.2	---	---

EUT was tested with Channel 1, 49 and 99.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

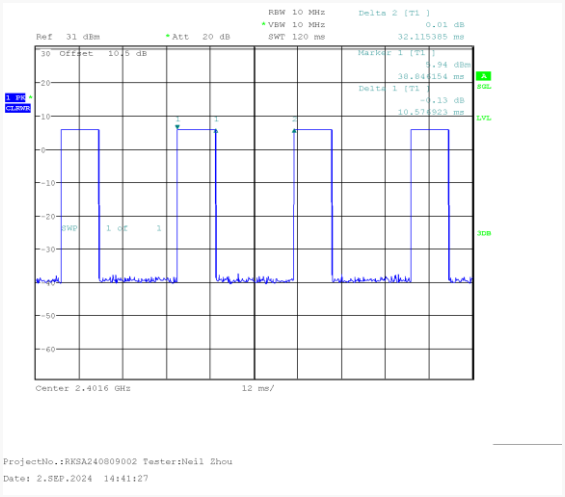
RF Test Software: XCOM V2.1

Mode	Channel	★Power Level
SRD	Low	10
	Middle	10
	High	10

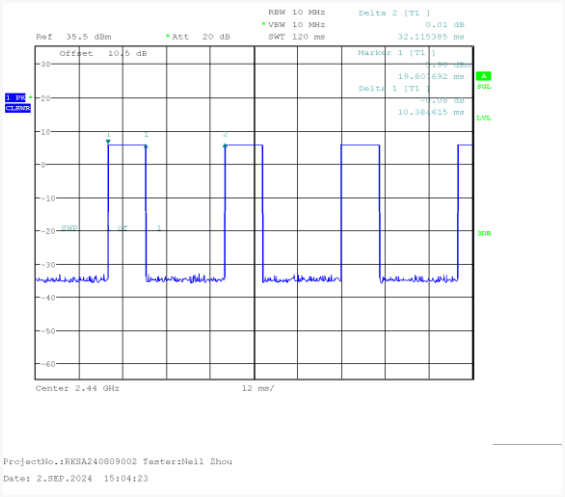
Note: The power level was declared by the applicant.

Duty Cycle:

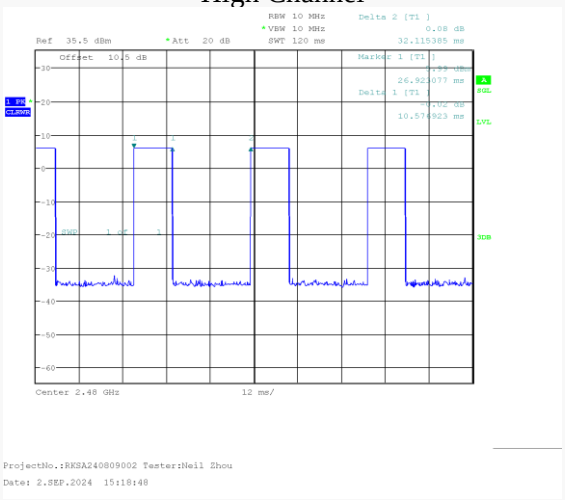
Low Channel



Middle Channel



High Channel



Channel	Duty Cycle (%)	Ton (ms)	Ton+off (ms)	10log(1/x)
Low	32.93	10.577	32.115	4.82
Middle	32.34	10.385	32.115	4.90
High	32.93	10.577	32.115	4.82

Note: “x” means the Duty Cycle.

Support Equipment List and Details

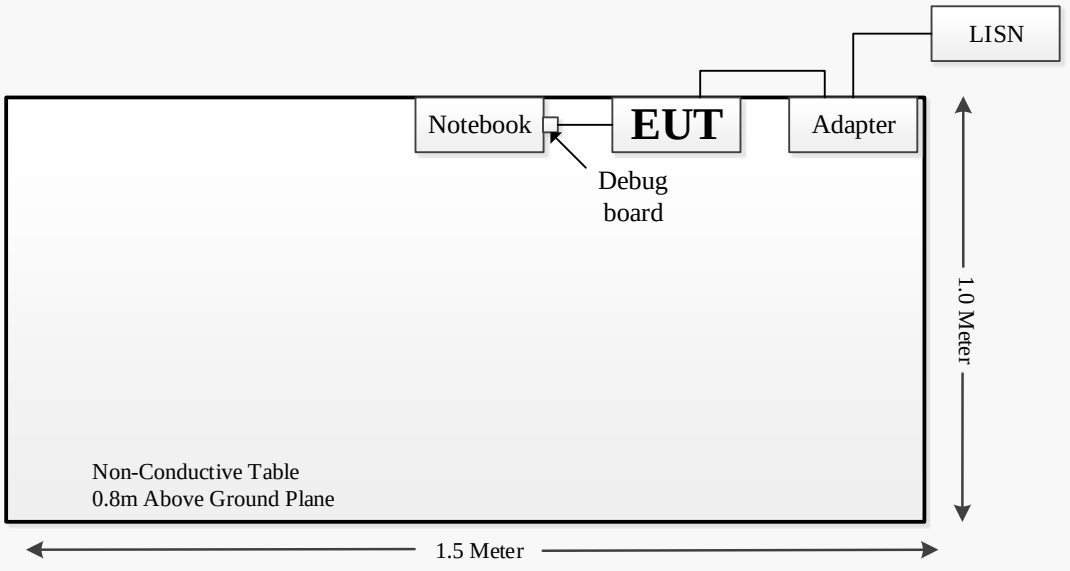
Manufacturer	Description	Model	Serial Number
Power on Tools Co., Ltd.	Adapter 5V 1A	DA-00051000UL001	Unknown
Lenovo	Notebook	Unknown	Unknown
Dell	Notebook	Unknown	Unknown
/	Debug board	/	/

External I/O Cable

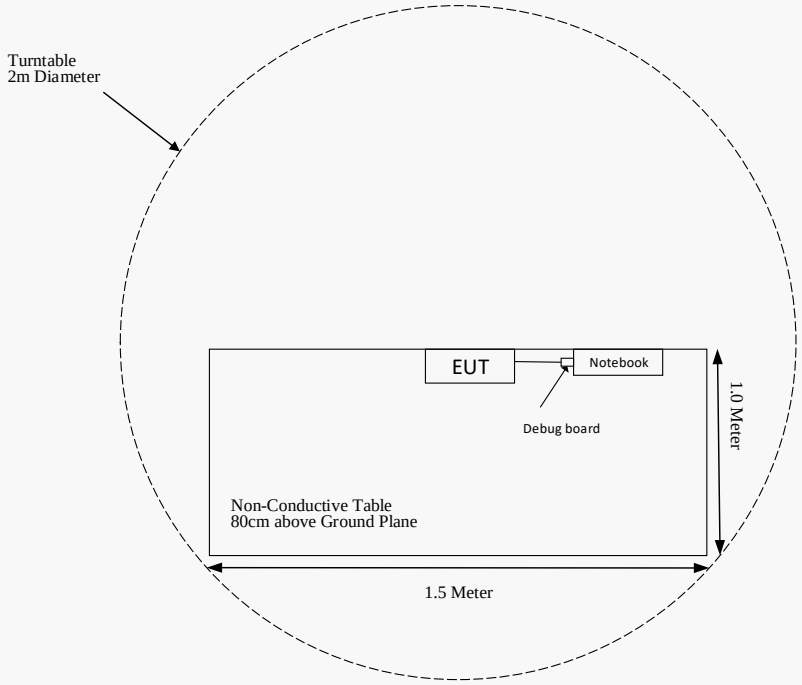
Cable Description	Length(m)	From Port	To
Power Cable 1	1.0	LISN	Adapter
Power Cable 2	0.8	Adapter	EUT
Data cable	0.1	EUT	Debug board

Block Diagram of Test Setup

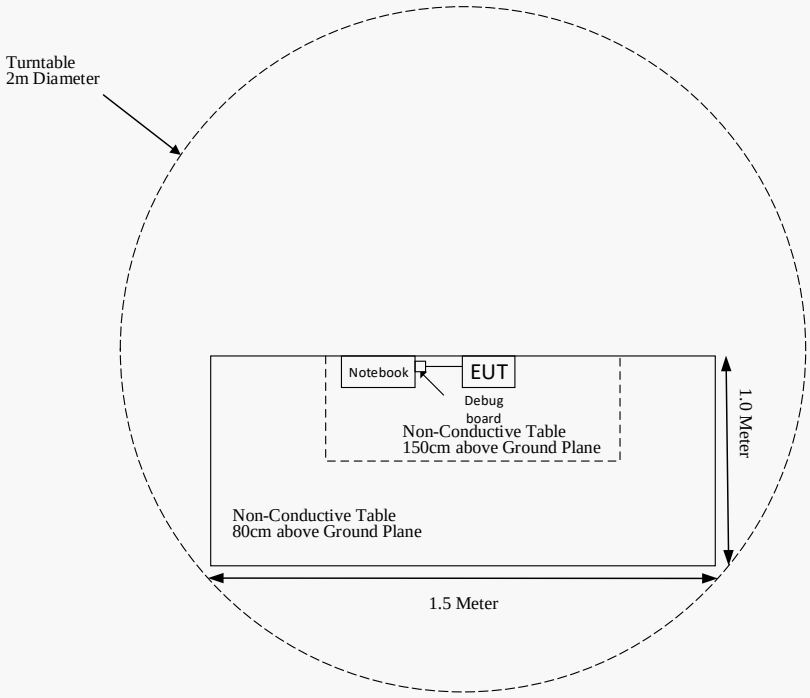
For Conducted Emissions:



For Radiated Emissions(Below 1GHz):



For Radiated Emissions (Above 1 GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1093	RF EXPOSURE	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test (Chamber #1)					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2024-04-23	2025-04-22
Sunol Sciences	Hybrid Antenna	JB3	A090314-1	2023-11-11	2024-11-10
ETS-LINDGREN	Loop Antenna	6512	108100	2023-11-09	2024-11-08
Sonoma Instrument	Amplifier	310N	171205	2024-04-23	2025-04-22
Rohde & Schwarz	Auto test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-8	008	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-9	009	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-10	010	2024-04-23	2025-04-22
Narda	6dB Attenuator	773-6	10690812-2-1	2023-11-11	2024-11-10
Radiated Emission Test (Chamber #2)					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207/040	2024-04-25	2025-04-24
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2023-12-02	2024-12-01
ETS-LINDGREN	Horn Antenna	3116	84159	2023-12-07	2024-12-06
A.H.Systems, inc	Amplifier	PAM-0118P	512	2024-04-25	2025-04-24
EM Electronics Corporation	Amplifier	EM18G40G	060726	2024-04-25	2025-04-24
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2024-04-23	2025-04-22
Narda	Attenuator	10dB	010	2024-04-23	2025-04-22
Rohde & Schwarz	Auto test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-6	006	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-11	011	2024-04-25	2025-04-24
MICRO-COAX	Coaxial Cable	Cable-12	012	2024-04-25	2025-04-24
MICRO-COAX	Coaxial Cable	Cable-13	013	2024-04-25	2025-04-24
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSV40-N	103298	2024-04-24	2025-04-23
Anritsu	Power Sensor	MA24418A	12621	2024-04-23	2025-04-22
N/A	Attenuator	10 dB	N/A	2024-04-23	2025-04-22
XHFDZ	RG316 Coaxial Cable	SMA-316	XHF-1175	Each time	N/A
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR	101746	2024-04-23	2025-04-22
Rohde & Schwarz	LISN	ENV216	101115	2024-04-23	2025-04-22
Audix	Test Software	e3	V9	N/A	N/A
Rohde & Schwarz	Pulse Limiter	ESH3-Z2	0357.8810.54	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-15	015	2024-04-23	2025-04-22

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1093 - RF EXPOSURE

Applicable Standard

According to§2.1093and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm)] • [√ f (GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. f (GHz) is the RF channel transmit frequency in GHz.

2. Power and distance are rounded to the nearest mW and mm before calculation.

3. The result is rounded to one decimal place for comparison.

4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

Measurement Result

Mode	Frequency Range (MHz)	Max Tune-up Conducted Power★		Calculated Distance (mm)	Calculated Value	Threshold (1-g SAR)	SAR Test Exclusion
		(dBm)	(mW)				
SRD	2401.6-2480	2	1.58	5	0.49	3.0	Yes

Result: So the standalone SAR evaluation is not necessary.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine Compliant with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has a copper tube dipole antenna gain is 2.49 dBi, the antenna was permanently attached, fulfill the requirement of this section. Please refer to the EUT photos.

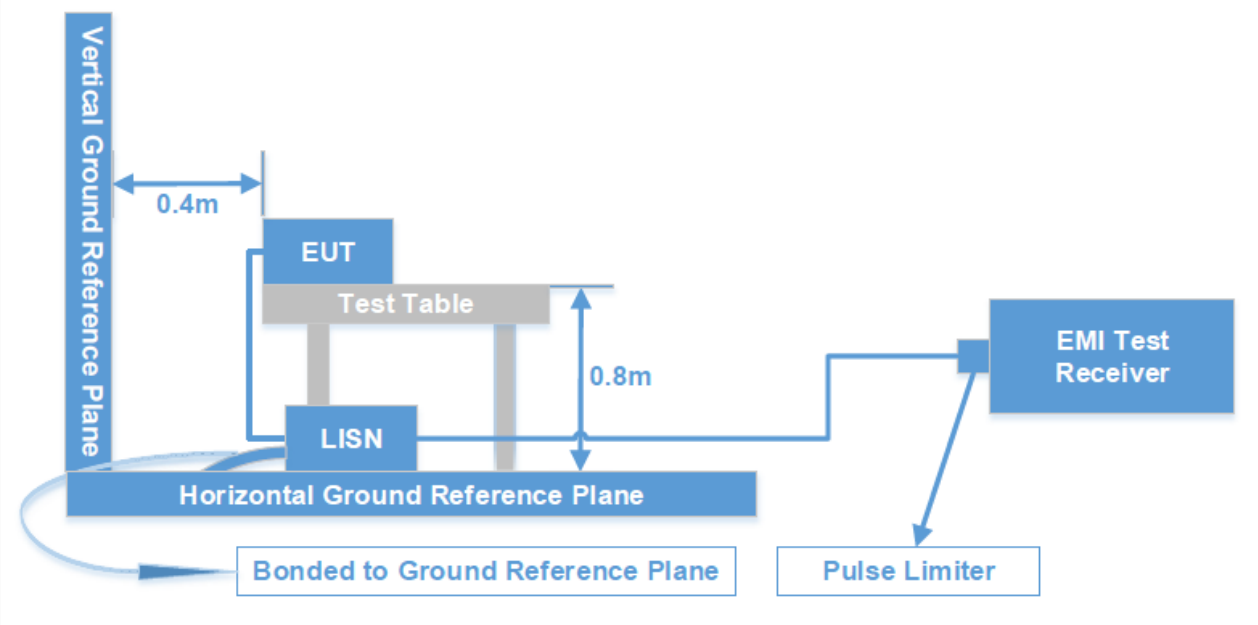
Result: Compliant.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

Test System Setup



The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	VBW
150 kHz - 30 MHz	9 kHz	30 kHz

Test Procedure

ANSI C63.10-2013 clause 6.2

During the conducted emission test, the EUT or adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

If the maximum peak value of the emissions is below the average limit, the QP value and average value measurement will not need to be performed and only record the maximum peak measured value to meet the requirements.

Level & Over Limit Calculation

The Level is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation from the Meter Reading. The basic equation is as follows:

Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
Level (dBμV) = Read level (dBμV) + Factor (dB)

The "**Over Limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit of 7 dB means the emission is 7 dB above the limit. The equation for Over Limit calculation is as follows:

Over Limit (dB) = Level (dBμV) - Limit (dBμV)

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data: See Appendix

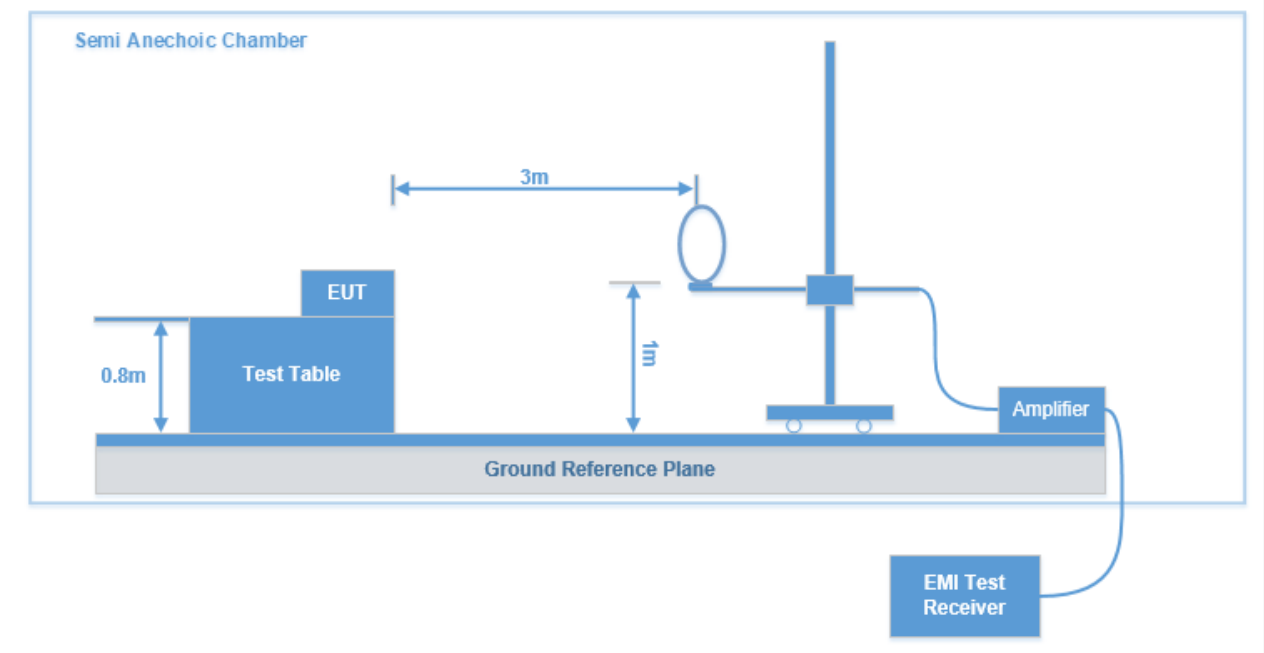
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

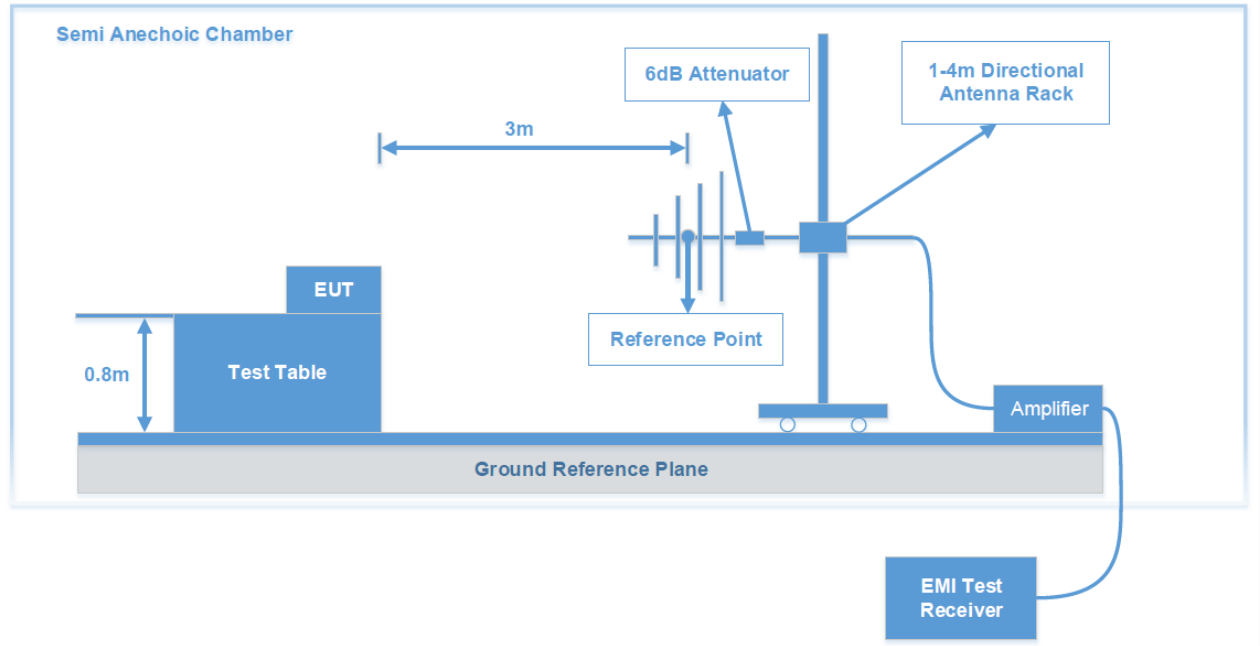
FCC §15.247 (d); §15.209; §15.205;

Test System Setup

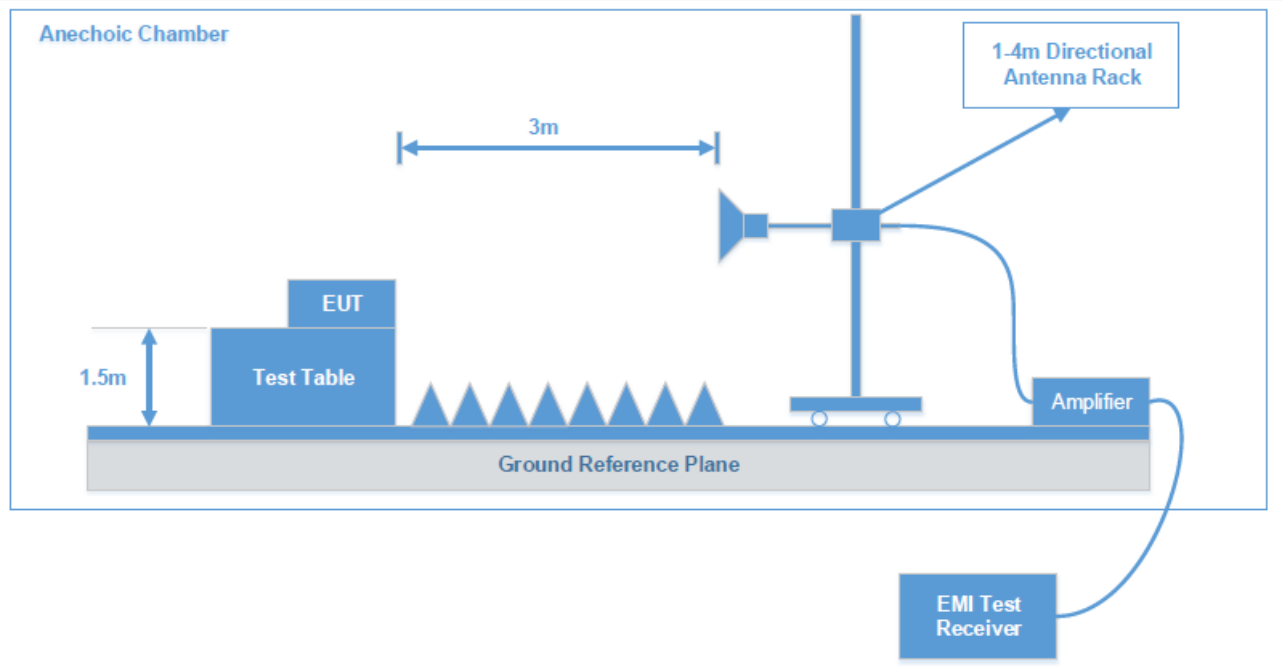
9 kHz - 30 MHz:



30 MHz - 1 GHz:



1 GHz - 25 GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

EMI Test Receiver Setup

During the radiated emission test, the EMI test receiver setup was set with the following configurations:

Frequency Range	RBW	VBW	IF B/W	Measurement
9 kHz – 150 kHz	200 Hz	1 kHz	200 Hz	QP/Average
150 kHz – 30 MHz	9 kHz	30 kHz	9 kHz	QP/ Average
30 MHz – 1000 MHz	100 kHz	300 kHz	/	Peak
	/	/	120 kHz	QP
Above 1GHz	1MHz	3 MHz	/	Peak
	1MHz	3 MHz	/	Average

For 9 kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

Test Procedure

According to ANSI C63.10-2013 clause 6.5, 6.6 and 6.7.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz - 1GHz, peak and Average detection mode for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude (dBμV/m) = Meter Reading (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)

The "**Margin**" column of the following data tables indicates the degree of Compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Note: The QuasiPeak (dBμV/m), MaxPeak (dBμV/m), Average (dBμV/m) which shown in the data table are all Corrected Amplitude.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247.

Test Data: See Appendix

FCC §15.247(A) (2) - 6 DB EMISSION BANDWIDTH

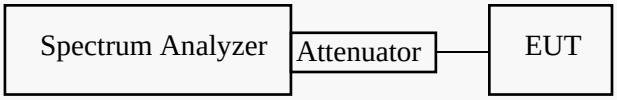
Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

According to ANSI C63.10-2013 sub-clause 11.8.1

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 * RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Data: See Appendix

FCC §15.247(B) (3) - MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, Compliant with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

According to ANSI C63.10-2013 sub-clause 11.9.1.3

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.

Test Data: See Appendix

FCC §15.247(D) - 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

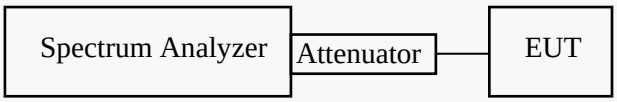
Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates Compliant with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

According to ANSI C63.10-2013 sub-clause 6.10.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.



Test Data: See Appendix

FCC §15.247(E) - POWER SPECTRAL DENSITY

Applicable Standard

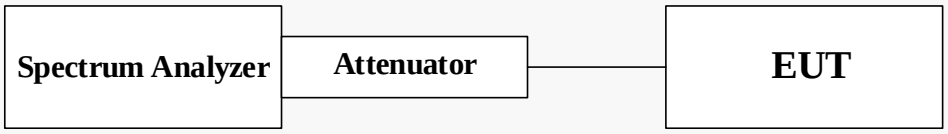
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

According to ANSI C63.10-2013 sub-clause 11.10.2

The following procedure shall be used if maximum peak conducted output power was used to determine Compliant, and it is optional if the maximum conducted (average) output power was used to determine Compliant:

1. Set the RBW to: 3kHz≤ RBW≤100 kHz.
2. Set the VBW ≥ 3*RBW.
3. Set the span to 1.5 times the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level within the RBW.
9. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



Test Data: See Appendix

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APPENDIX - TEST DATA

Environmental Conditions & Test Information

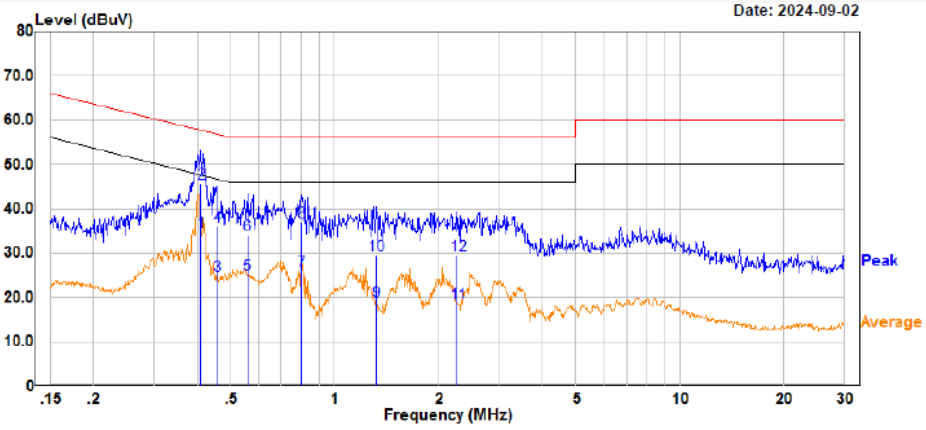
Test Item:	AC LINE CONDUCTED EMISSIONS	SPURIOUS EMISSIONS			DUTY CYCLE
		9 kHz - 1GHz	1 GHz - 18 GHz	18 GHz - 25 GHz	
Test Date:	2024-09-02	2024-08-29	2024-08-22	2024-06-12	2024-09-02
Temperature:	28.5 ℃	24.8 ℃	25.1 ℃	22.5 ℃	25.8 ℃
Relative Humidity:	55 %	42 %	55 %	56 %	52 %
ATM Pressure:	100.9 kPa	100.8 kPa	100.3 kPa	100.6 kPa	100.4 kPa
Test Result:	Pass	Pass	Pass	Pass	/
Test Engineer:	Leah Li	Grace Luo	Klein Zhu	Hugh Wu	Neil Zhou

Test Item:	6 DB EMISSION BANDWIDTH	MAXIMUM CONDUCTED OUTPUT POWER	100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE	POWER SPECTRAL DENSITY
Test Date:	2024-09-02	2024-09-02	2024-09-02	2024-09-02
Temperature:	25.8 ℃	25.8 ℃	25.8 ℃	25.8 ℃
Relative Humidity:	52 %	52 %	52 %	52 %
ATM Pressure:	100.4 kPa	100.4 kPa	100.4 kPa	100.4 kPa
Test Result:	Pass	Pass	Pass	Pass
Test Engineer:	Neil Zhou	Neil Zhou	Neil Zhou	Neil Zhou

AC LINE CONDUCTED EMISSIONS

EUT operation mode: Transmitting in low channel (maximum output power mode)

AC 120V/60 Hz, Line

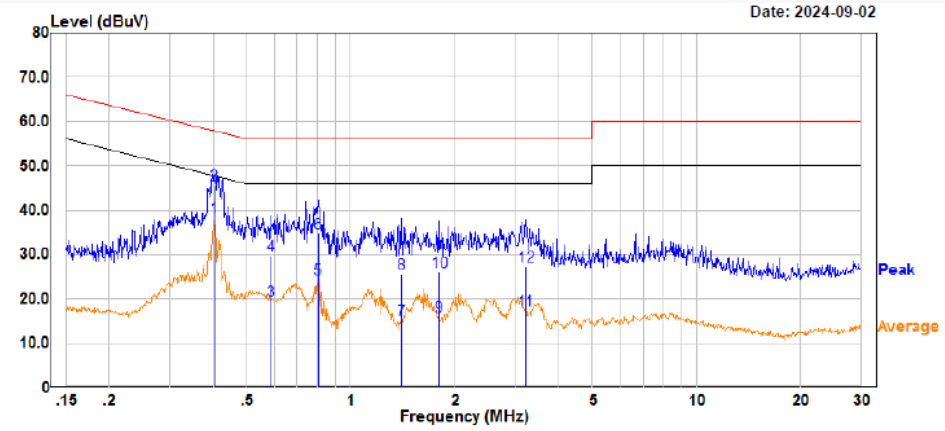


Trace: 1

```
Site                  : CE
Condition             : FCC PART 15.207
                      : DET:Peak
Project               : RKSA240809002
Model                 : R3-1
Phase                 : L
Voltage               : 120V/60Hz
Mode                  : SRD
Test Equipment        : ENV216,ESR
Temperature           : 28.5℃
Humidity              : 55%
Atmospheric pressure: 100.9kPa
Test Engineer         : Leah Li
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.411	14.60	20.21	34.81	47.64	-12.83	Average
2	0.411	25.40	20.21	45.61	57.64	-12.03	QP
3	0.456	4.80	20.22	25.02	46.77	-21.75	Average
4	0.456	15.70	20.22	35.92	56.77	-20.85	QP
5	0.559	5.10	20.11	25.21	46.00	-20.79	Average
6	0.559	14.00	20.11	34.11	56.00	-21.89	QP
7	0.801	6.20	19.94	26.14	46.00	-19.86	Average
8	0.801	17.10	19.94	37.04	56.00	-18.96	QP
9	1.318	-0.90	19.89	18.99	46.00	-27.01	Average
10	1.318	9.50	19.89	29.39	56.00	-26.61	QP
11	2.269	-1.50	20.18	18.68	46.00	-27.32	Average
12	2.269	9.30	20.18	29.48	56.00	-26.52	QP

AC 120V/60 Hz, Neutral



Trace: 1

Site : CE
Condition : limit\FCC PART 15B\Class B QP.csv Line
: DET:Peak
Project : RKSA240809002
Model : R3-1
Phase : N
Voltage : 120V/60Hz
Mode : SRD
Test Equipment : ENV216,ESR
Temperature : 28.5℃
Humidity : 55%
Atmospheric pressure: 100.9kPa
Test Engineer : Leah Li

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.402	18.30	20.20	38.50	47.80	-9.30	Average
2	0.402	25.50	20.20	45.70	57.80	-12.10	QP
3	0.588	-0.50	20.10	19.60	56.00	-36.40	Peak
4	0.588	9.70	20.10	29.80	56.00	-26.20	QP
5	0.805	4.50	19.93	24.43	46.00	-21.57	Average
6	0.805	14.80	19.93	34.73	56.00	-21.27	QP
7	1.399	-4.80	19.93	15.13	46.00	-30.87	Average
8	1.399	5.80	19.93	25.73	56.00	-30.27	QP
9	1.795	-4.10	20.09	15.99	46.00	-30.01	Average
10	1.795	6.10	20.09	26.19	56.00	-29.81	QP
11	3.200	-2.90	20.23	17.33	46.00	-28.67	Average
12	3.200	7.10	20.23	27.33	56.00	-28.67	QP

SPURIOUS EMISSIONS & RESTRICTED BANDS EMISSIONS

EUT operation mode: Transmitting

After pre-scan in the X, Y and Z axes of orientation, the worst case X axes is below:

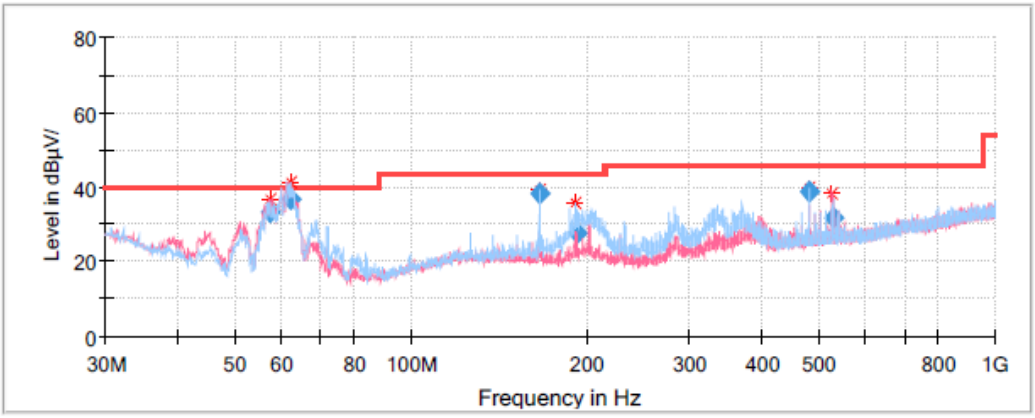
9 kHz-30 MHz: *(Transmitting maximum output power low channel)*

The amplitude of spurious emissions attenuated more than 20 dB below the limit was not be recorded.

30MHz - 1GHz
Low Channel: 2401.6 MHz

Common Information

Project No:	RKSA240809002
EUT Model:	R3-1
Test Mode:	SRD
Standard:	FCC Part 15.205 &FCC Part 15.209&FCC Part 15.247
Test Equipment:	ESCI, JB3, 310N
Temperature:	24.8℃
Humidity:	42%
Barometric Pressure:	100.8kPa
Test Engineer:	Grace Luo
Test Date:	2024/8/29



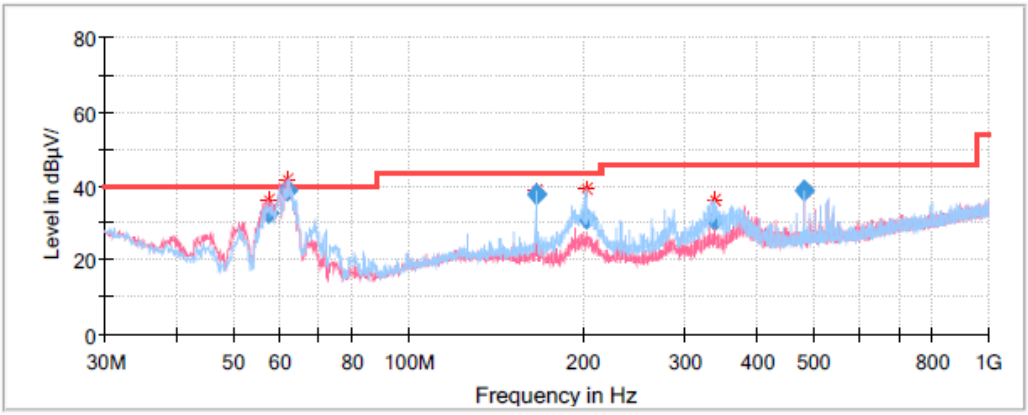
Final_Result

Frequency (MHz)	QuasiPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
57.523000	33.45	40.00	6.55	V	-17.3
62.131000	36.71	40.00	3.29	H	-17.5
166.581200	38.13	43.50	5.37	H	-12.4
192.450150	27.82	43.50	15.68	H	-12.5
479.999000	38.86	46.00	7.14	H	-5.9
528.084750	31.80	46.00	14.20	V	-5.1

Middle Channel: 2440 MHz

Common Information

Project No:	RKSA240809002
EUT Model:	R3-1
Test Mode:	SRD
Standard:	FCC Part 15.205 &FCC Part 15.209&FCC Part 15.247
Test Equipment:	ESCI, JB3, 310N
Temperature:	24.8℃
Humidity:	42%
Barometric Pressure:	100.8kPa
Test Engineer:	Grace Luo
Test Date:	2024/8/29



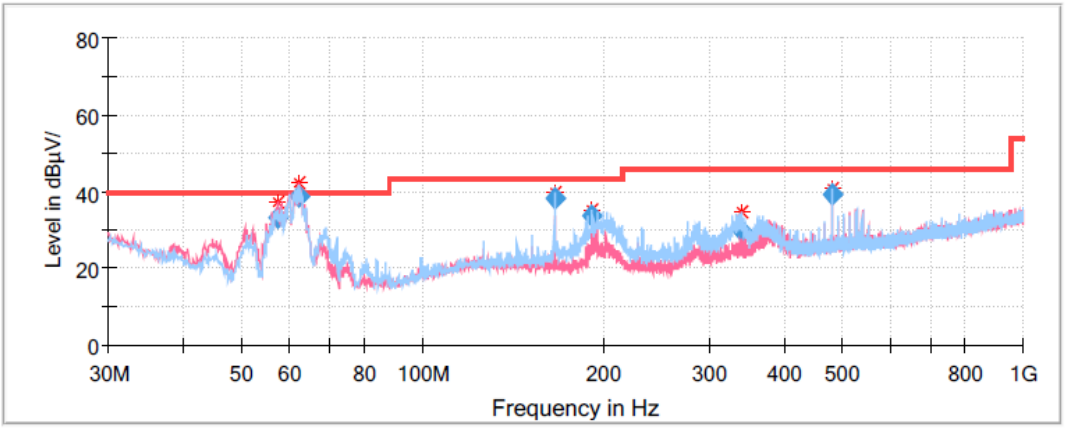
Final_Result

Frequency (MHz)	QuasiPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
57.523000	32.68	40.00	7.32	V	-17.3
61.767500	38.71	40.00	1.29	V	-17.4
166.527500	37.97	43.50	5.53	H	-12.4
202.563050	31.14	43.50	12.36	H	-12.4
338.096000	30.73	46.00	15.27	H	-9.7
479.986700	38.56	46.00	7.44	H	-5.9

High Channel: 2480 MHz

Common Information

Project No:	RKSA240809002
EUT Model:	R3-1
Test Mode:	SRD
Standard:	FCC Part 15.205 &FCC Part 15.209&FCC Part 15.247
Test Equipment:	ESCI, JB3, 310N
Temperature:	24.8℃
Humidity:	42%
Barometric Pressure:	100.8kPa
Test Engineer:	Grace Luo
Test Date:	2024/8/29



Final_Result

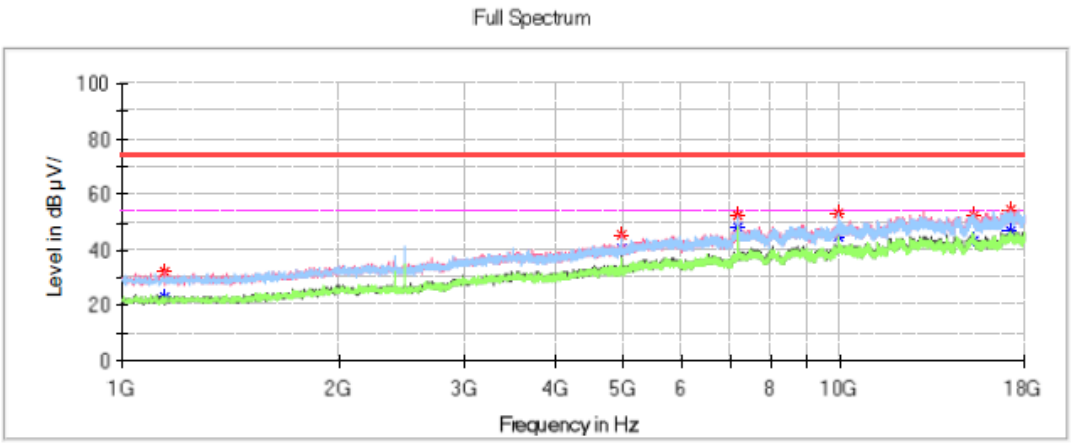
Frequency (MHz)	QuasiPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
57.564850	33.26	40.00	6.74	V	-17.4
62.172950	38.53	40.00	1.47	V	-17.4
165.921000	38.41	43.50	5.09	H	-12.4
191.969550	33.50	43.50	10.00	H	-12.5
339.242600	29.86	46.00	16.14	H	-9.5
479.998050	39.00	46.00	7.00	H	-5.9

1GHz - 18GHz:

Low Channel: 2401.6 MHz

Common Information

Project No.:	RKSA240809002
Test Mode:	SRD
Standard:	FCC Part 15.247&FCC Part 15.205&FCC Part 15.209
Test Engineer:	Klein Zhu



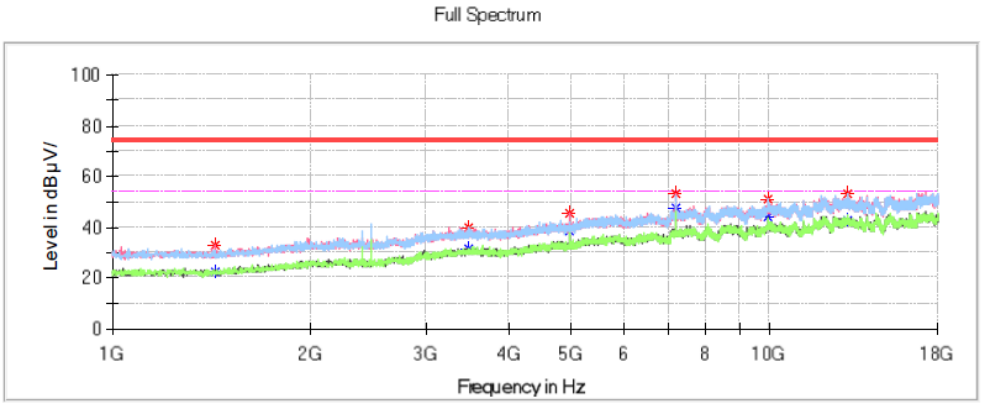
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1146.200000	32.15	---	74.00	41.85	V	-15.2
1146.200000	---	22.75	54.00	31.25	V	-15.2
4959.300000	45.23	---	74.00	28.77	V	-2.6
4959.300000	---	40.81	54.00	13.19	V	-2.6
7205.000000	---	47.96	54.00	6.04	H	3.1
7205.000000	52.61	---	74.00	21.39	H	3.1
9918.200000	52.97	---	74.00	21.03	H	6.9
9918.200000	---	44.92	54.00	9.08	H	6.9
15319.100000	52.59	---	74.00	21.41	V	9.7
15319.100000	---	43.60	54.00	10.40	V	9.7
17231.600000	---	46.74	54.00	7.26	V	11.9
17231.600000	54.22	---	74.00	19.78	V	11.9

Middle Channel: 2440 MHz

Common Information

Project No.:	RKSA240809002
Test Mode:	SRD
Standard:	FCC Part 15.247&FCC Part 15.205&FCC Part 15.209
Test Engineer:	Klein Zhu



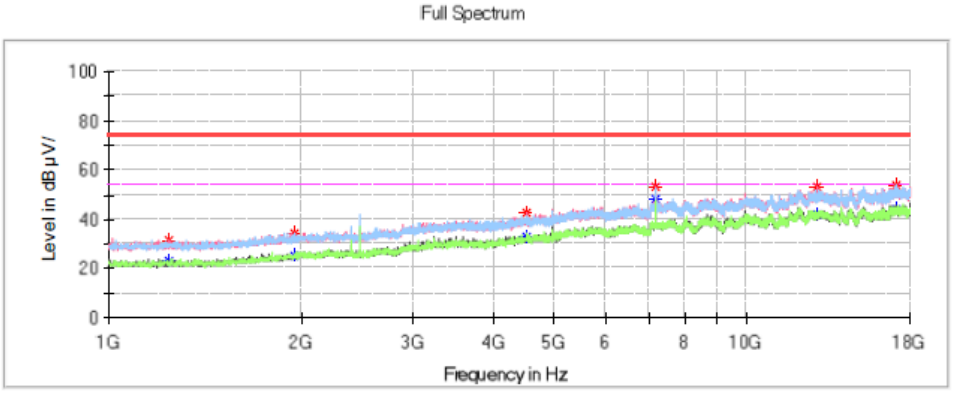
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1433.500000	---	22.27	54.00	31.73	V	-14.8
1433.500000	32.87	---	74.00	41.13	V	-14.8
3488.800000	---	31.46	54.00	22.54	H	-6.4
3488.800000	39.64	---	74.00	34.36	H	-6.4
4959.300000	---	38.32	54.00	15.68	V	-2.6
4959.300000	45.50	---	74.00	28.50	V	-2.6
7205.000000	53.12	---	74.00	20.88	V	3.1
7205.000000	---	47.40	54.00	6.60	V	3.1
9919.900000	---	44.37	54.00	9.63	V	6.9
9919.900000	51.29	---	74.00	22.71	V	6.9
13083.600000	---	42.96	54.00	11.04	H	9.7
13083.600000	52.92	---	74.00	21.08	H	9.7

High Channel: 2480 MHz

Common Information

Project No.:	RKSA240809002
Test Mode:	SRD
Standard:	FCC Part 15.247&FCC Part 15.205&FCC Part 15.209
Test Engineer:	Klein Zhu



Critical_Freqs

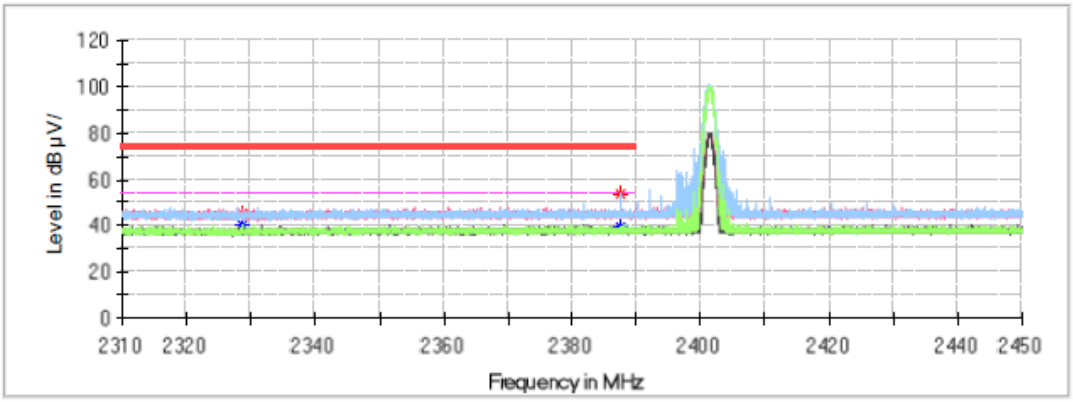
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1239.700000	---	22.76	54.00	31.24	V	-15.1
1239.700000	31.61	---	74.00	42.39	V	-15.1
1948.600000	---	25.16	54.00	28.84	V	-12.0
1948.600000	34.20	---	74.00	39.80	V	-12.0
4520.700000	---	33.08	54.00	20.92	V	-4.2
4520.700000	42.54	---	74.00	31.46	V	-4.2
7205.000000	---	48.59	54.00	5.41	V	3.1
7205.000000	53.48	---	74.00	20.52	V	3.1
12876.200000	53.47	---	74.00	20.53	V	9.7
12876.200000	---	42.20	54.00	11.80	V	9.7
17178.900000	---	43.99	54.00	10.01	H	12.0
17178.900000	53.53	---	74.00	20.47	H	12.0

RESTRICTED BANDS EMISSIONS

Low Channel

Common Information

Project No.:	RKSA240809002
Test Mode:	SRD
Standard:	FCC Part 15.247&FCC Part 15.205&FCC Part 15.209
Test Engineer:	Klein Zhu



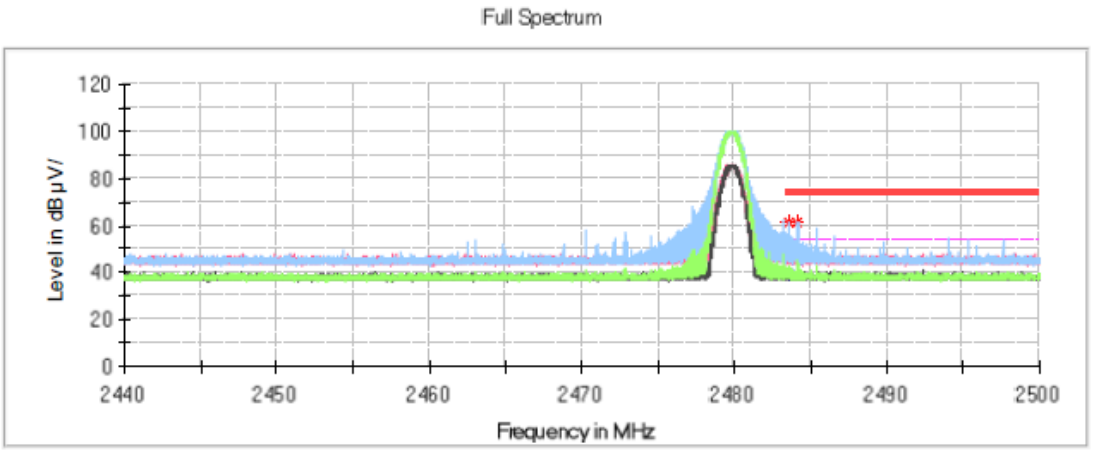
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2328.620000	45.26	---	74.00	28.74	H	-0.8
2328.620000	---	40.41	54.00	13.59	H	-0.8
2387.504000	53.86	---	74.00	20.14	H	-0.6
2387.504000	---	39.23	54.00	14.77	H	-0.6

High Channel

Common Information

Project No.:	RKSA240809002
Test Mode:	SRD
Standard:	FCC Part 15.247&FCC Part 15.205&FCC Part 15.209
Test Engineer:	Klein Zhu

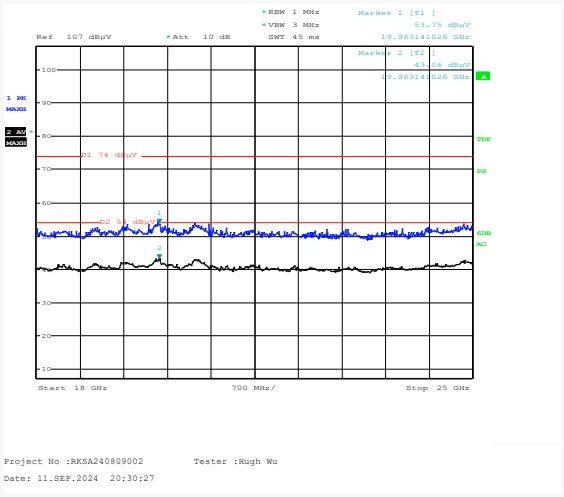


Critical_Freqs

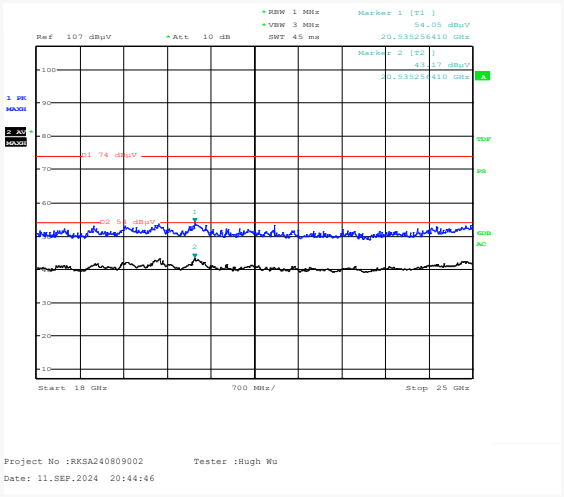
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.548000	61.68	---	74.00	12.32	H	-0.3
2483.548000	---	39.28	54.00	14.72	H	-0.3
2484.094000	61.38	---	74.00	12.62	H	-0.3
2484.094000	---	44.96	54.00	9.04	H	-0.3

18 GHz-25 GHz:

Horizontal



Vertical



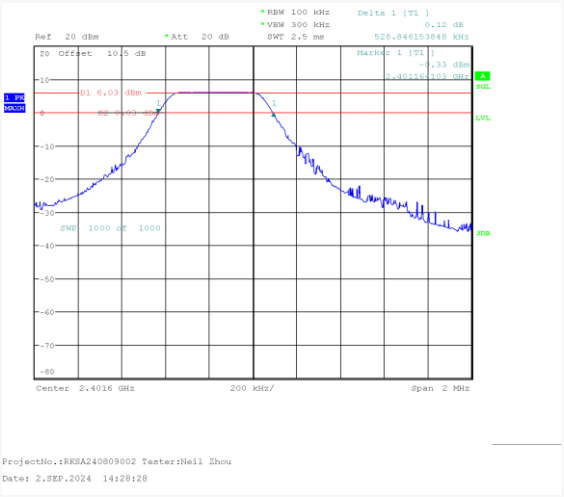
Note: The test distance is 3m. The limit is 74dBµV/m(Peak) and 54dBµV/m(Average).

6 dB EMISSION BANDWIDTH

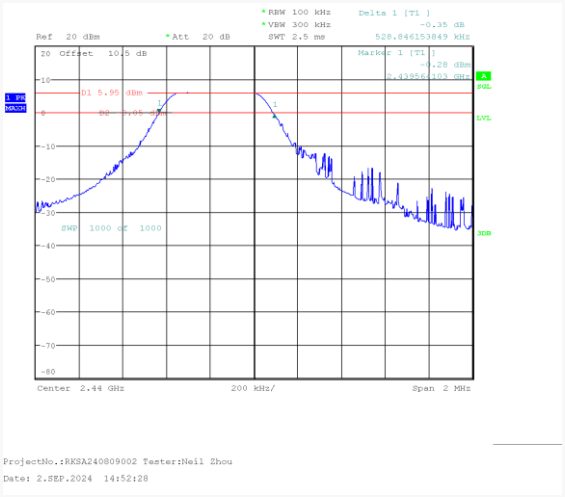
EUT operation mode: Transmitting

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
Low	2401.6	0.53	≥ 0.5
Middle	2440	0.53	≥ 0.5
High	2480	0.53	≥ 0.5

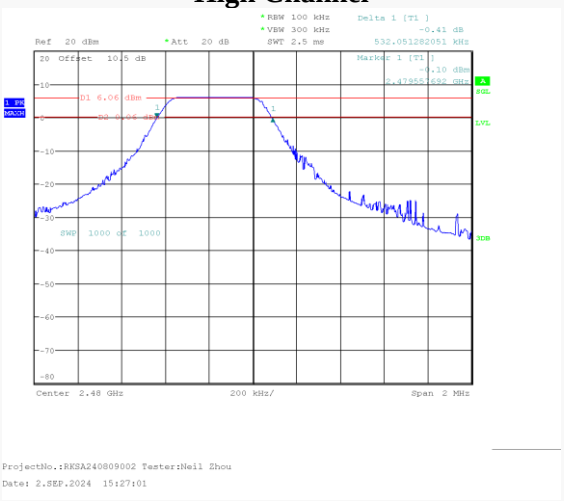
Low Channel



Middle Channel



High Channel



MAXIMUM CONDUCTED OUTPUT POWER

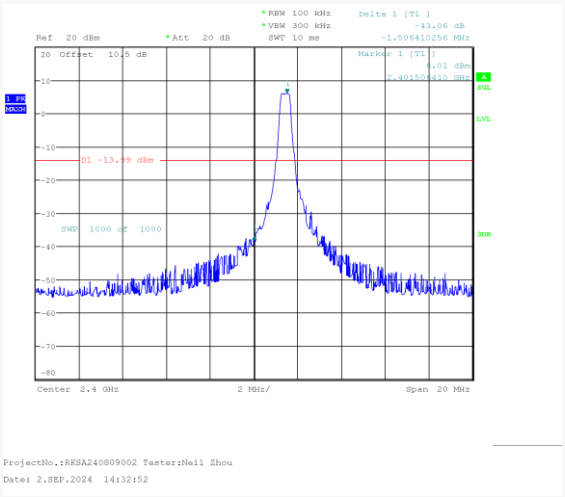
EUT operation mode: Transmitting

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Low	2401.6	1.87	30	Pass
Middle	2440	1.73	30	Pass
High	2480	1.81	30	Pass

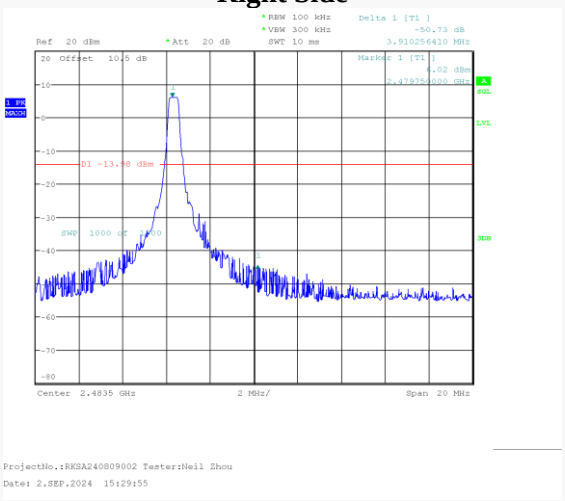
100 kHz Bandwidth of Frequency Band Edge

EUT operation mode: Transmitting

Left Side



Right Side

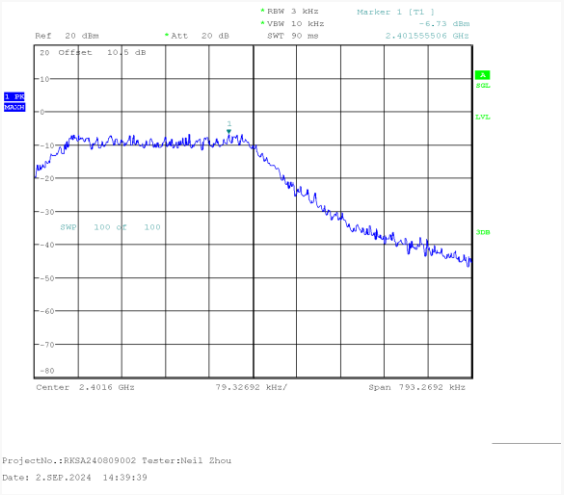


Power Spectral Density

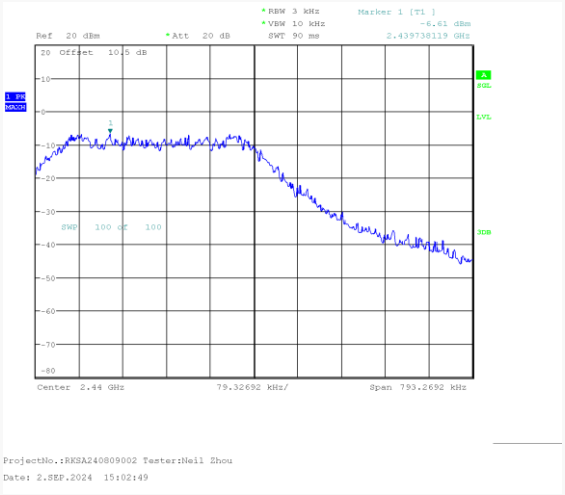
EUT operation mode: Transmitting

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
Low	2401.6	-6.73	≤ 8
Middle	2440	-6.61	≤ 8
High	2480	-6.46	≤ 8

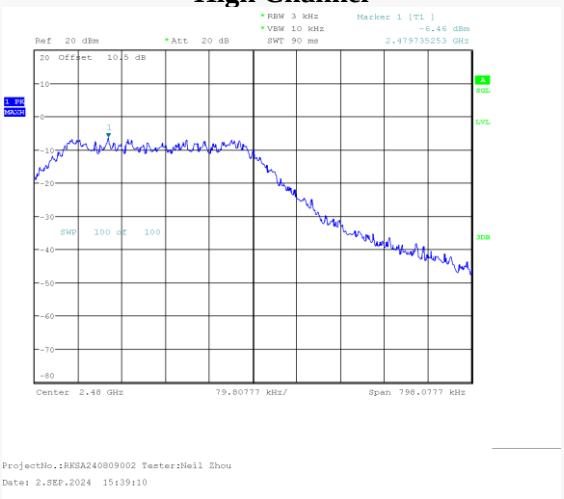
Low Channel



Middle Channel



High Channel



EUT PHOTOGRAPHS

Please refer to the attachment EXHIBIT A - EUT EXTERNAL PHOTOGRAPHS and EXHIBIT B - EUT INTERNAL PHOTOGRAPHS.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment EXHIBIT C - TEST SETUP PHOTOGRAPHS.

Declarations

1. The laboratory is not responsible for the authenticity of any information provided by the applicant. Information from the applicant that may affect test results is marked with "★".

2. The test data was only valid for the test sample(s).

3. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor k=2 with the 95.45% confidence interval.

******* END OF REPORT *******