

FCC PART 15.247

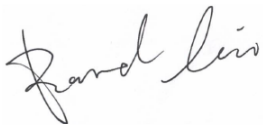
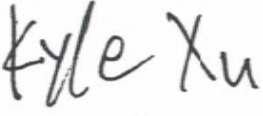
TEST REPORT

For

Signify (China) Investment Co., Ltd.

Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233, China

FCC ID: 2AGBW9290036670AX

Report Type: Original Report	Product Name: LED lamp
Report Number:	RKSB240619009-00B
Report Date:	2024-10-15
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Approved By:	Kyle Xu 
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Kunshan). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government.

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REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RKSB240619009-00B	R1V1	2024-10-15	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Signify (China) Investment Co., Ltd.
Tested Model:	9290036670A
Product Name:	LED lamp
Power Supply:	AC 110-130V
RF Function:	BLE; Zigbee
Maximum Output Power:	BLE (125 kbps): 7.90 dBm BLE 500 kbps):7.90 dBm BLE (1 Mbps):8.55 dBm BLE (2 Mbps): 8.72 dBm Zigbee: 8.47 dBm
Operating Band /Frequency:	BLE: 2402-2480 MHz Zigbee: 2405-2480 MHz
Modulation Type:	BLE: GFSK Zigbee: O-QPSK
Channel Number:	BLE: 40 Zigbee: 16
Antenna Type:	BLE/Zigbee: PCB Antenna
★Maximum Antenna Gain:	BLE/Zigbee: -0.9 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: RKSB240619009-1 (Assigned by the BACL (Kunshan). The EUT supplied by the applicant was received on 2024-06-19.)

Objective

This report is prepared for *Signify (China) Investment Co., Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communications Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and 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 Compliance Testing of Unlicensed Wireless Devices and FCC KDB 558074 D01 15.247 Meas Guidance v05r02.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

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 emissions	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°C
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 for BLE mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2430	28	2458
1	2404	15	2432	29	2460
2	2406	16	2434	30	2462
3	2408	17	2436	31	2464
4	2410	18	2438	32	2466
5	2412	19	2440	33	2468
6	2414	20	2442	34	2470
7	2416	21	2444	35	2472
8	2418	22	2446	36	2474
9	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454	/	/
13	2428	27	2456	/	/

EUT was tested with channel 0, 19 and 39.

Channel List for Zigbee mode:

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

EUT was tested with channel 11, 18 and 26.

EUT Exercise Software

RF Test Tool: HueApprobationTool.exe

★Power level: 8

Note: The power level was declared by the applicant.

Special Accessories

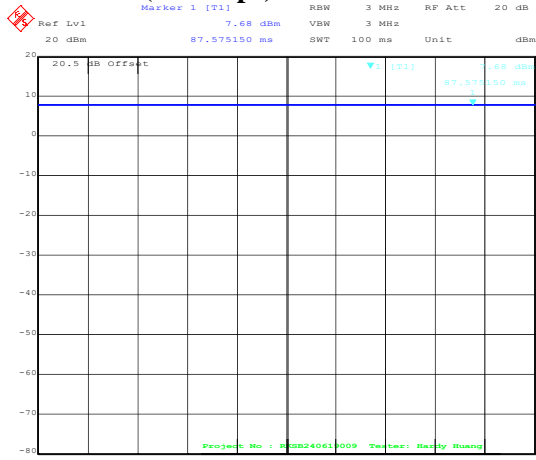
No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

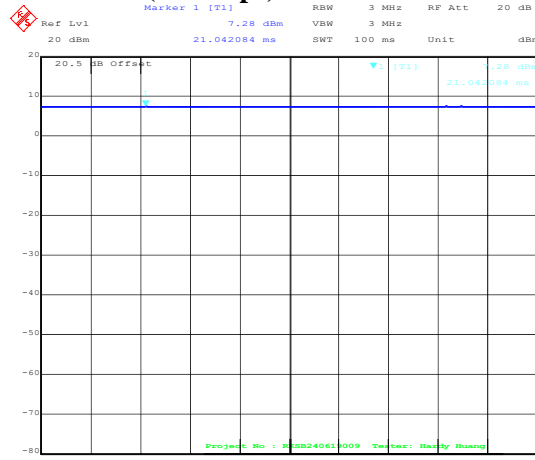
Duty Cycle:

BLE (125 kbps): Middle Channel



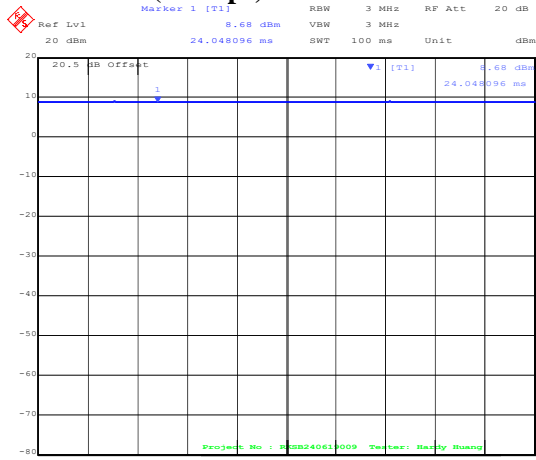
Date: 19.JUL.2024 10:16:51

BLE (500 kbps): Middle Channel



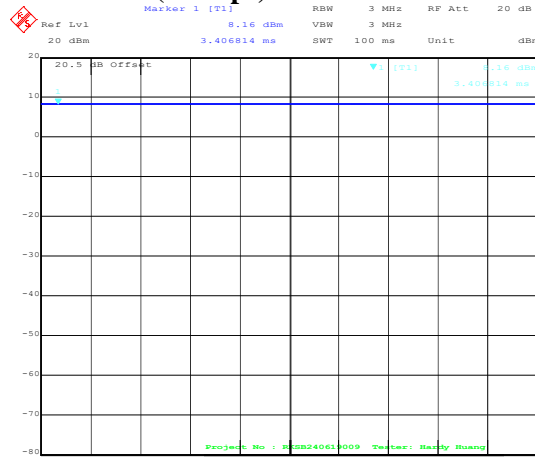
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BLE (1 Mbps): Middle Channel



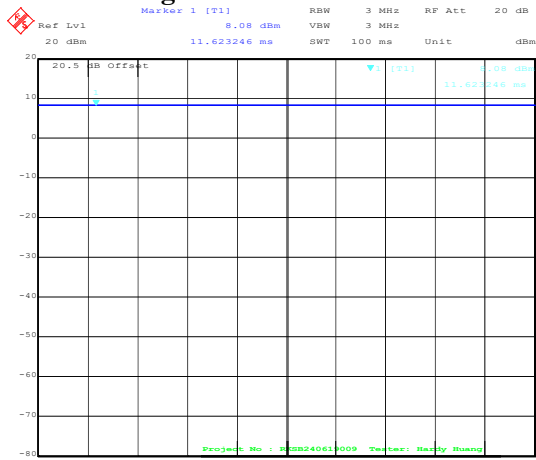
Date: 17.JUL.2024 17:29:50

BLE (2 Mbps): Middle Channel



Date: 25.JUL.2024 15:49:44

Zigbee: Middle Channel



Date: 25.JUL.2024 16:46:44

Mode	Duty Cycle (%)	T _{on} (ms)	T _{on+off} (ms)	10log(1/x)
BLE (125 kbps)	100	100	100	0
BLE (500 kbps)	100	100	100	0
BLE (1 Mbps)	100	100	100	0
BLE (2 Mbps)	100	100	100	0
Zigbee	100	100	100	0

Note: “x” means the Duty Cycle.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Unknown	Socket	Unknown	Unknown

External I/O Cable

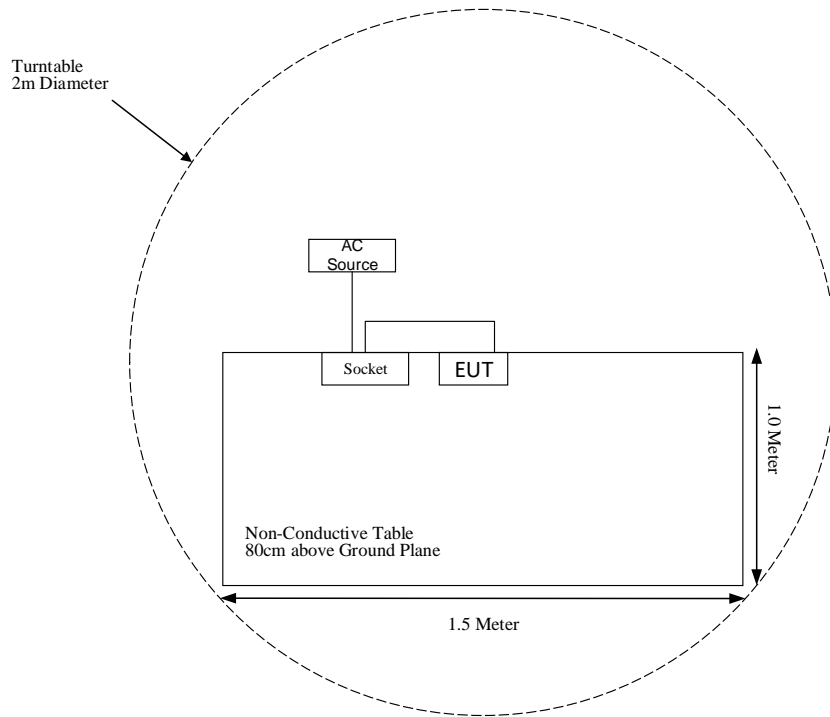
Cable Description	Length (m)	From Port	To
Power Cable 1	1.0	EUT	LISN/Socket
Power Cable 2	1.0	Socket	AC Source

Block Diagram of Test Setup

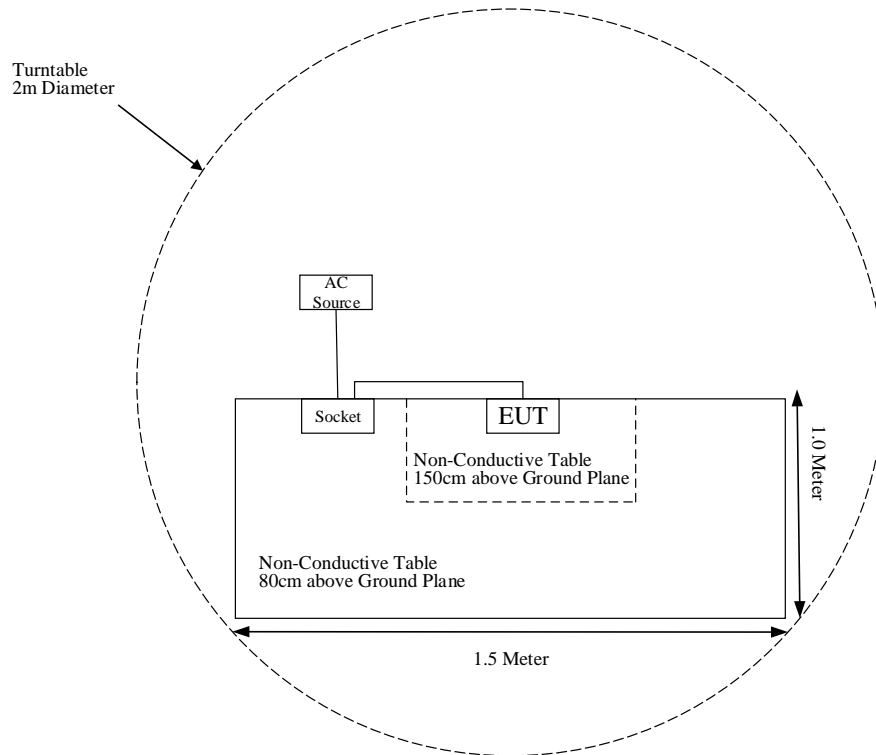
For Conducted Emissions:



For Radiated Emissions(Below 1 GHz):



For Radiated Emissions(Above 1 GHz):



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	Broadband Antenna	JB3	A090314-1	2023-11-11	2024-11-10
ETS-LINDGREN	Loop Antenna	6512	108100	2023-11-09	2024-11-08
Narda	6 dB Attenuator	773-6	10690812-2-3	2024-06-14	2025-06-13
Sonoma Instrument	Pre-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
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	2516	2023-12-08	2024-12-07
A.H.Systems,inc	Amplifier	PAM-0118P	512	2024-04-23	2025-04-22
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2024-04-23	2025-04-22
Narda	Attenuator	10dB	010	2024-04-23	2025-04-22
SELECTOR	Amplifier	EM18G40G	60726	2024-04-25	2025-04-24
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	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-12	012	2024-04-23	2025-04-22
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSIQ26	100048	2024-04-24	2025-04-23
Rohde & Schwarz	Spectrum Analyzer	FSU26	200103	2024-04-24	2025-04-23
Narda	Attenuator	20dB	020	2024-04-23	2025-04-22
XHFDZ	RG178 Coaxial Cable	SMA-178	XHF-1102	Each time	N/A
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	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).

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	MAXIMUM PERMISSIBLE EXPOSURE (MPE)	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)	Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

FCC §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary

Predication of MPE limit at a given distance

S = PG/4πR² = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Mode	Frequency Range (MHz)	Antenna Gain		★Tune-up Output Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE	2402~2480	-0.9	0.81	9.0	7.94	20	0.0013	1.0
Zigbee	2405~2480	-0.9	0.81	8.5	7.08	20	0.0011	1.0

Note:

1. For the above tune up power were declared by the manufacturer.
2. Zigbee and BLE cannot transmit simultaneously.

Result: The device meet FCC MPE at 20 cm distance.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 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 use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has a PCB antenna for BLE&Zigbee, and the antenna gain is -0.9 dBi, which permanently attached to the EUT, fulfill the requirement of this section. Please refer to the EUT photos.

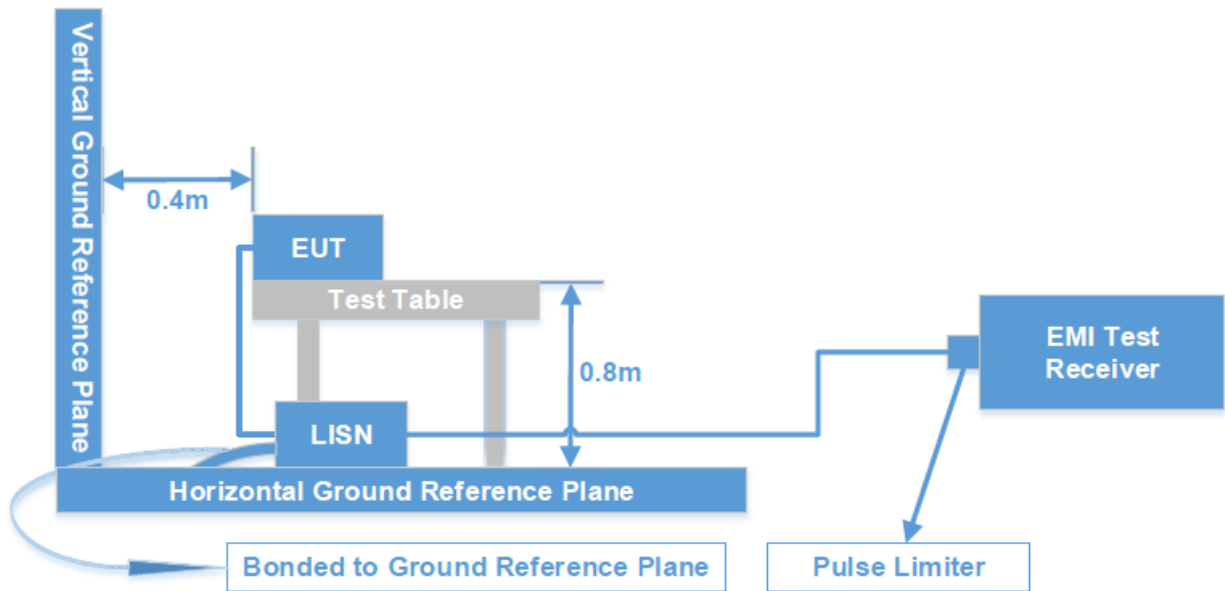
Result: Compliant.

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 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:

$$\text{Factor (dB)} = \text{LISN VDF (dB)} + \text{Cable Loss (dB)} + \text{Transient Limiter Attenuation (dB)}$$
$$\text{Level (dB}\mu\text{V)} = \text{Read level (dB}\mu\text{V)} + \text{Factor (dB)}$$

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:

$$\text{Over Limit (dB)} = \text{Level (dB}\mu\text{V)} - \text{Limit (dB}\mu\text{V)}$$
Test Results Summary

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

Test Data: See Appendix

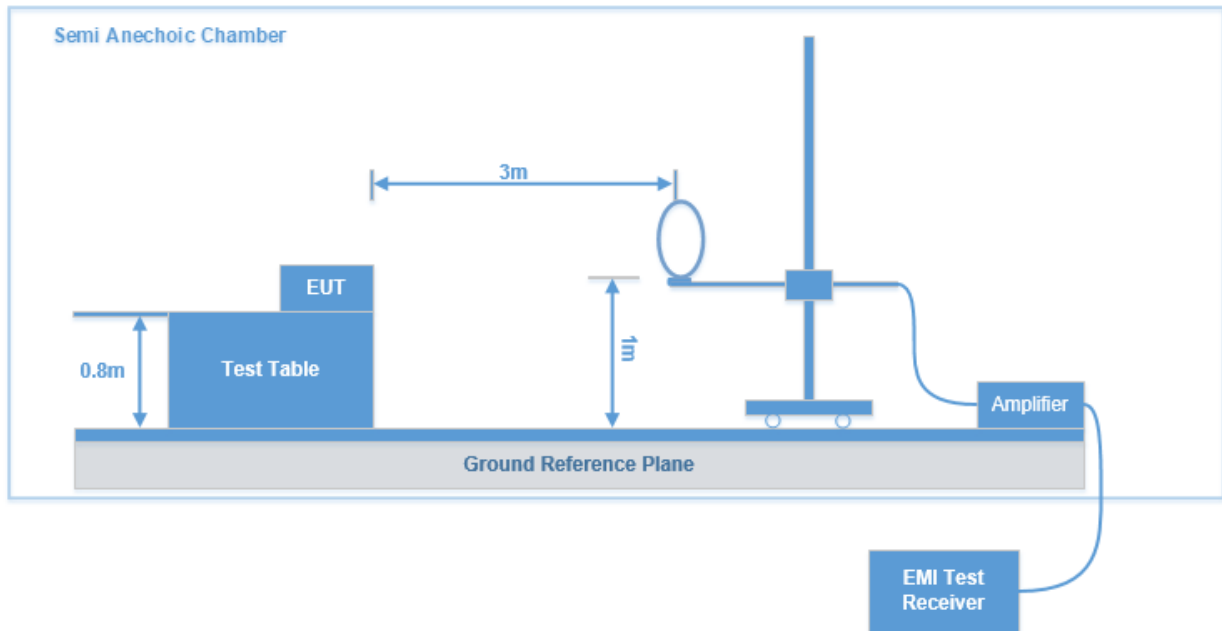
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

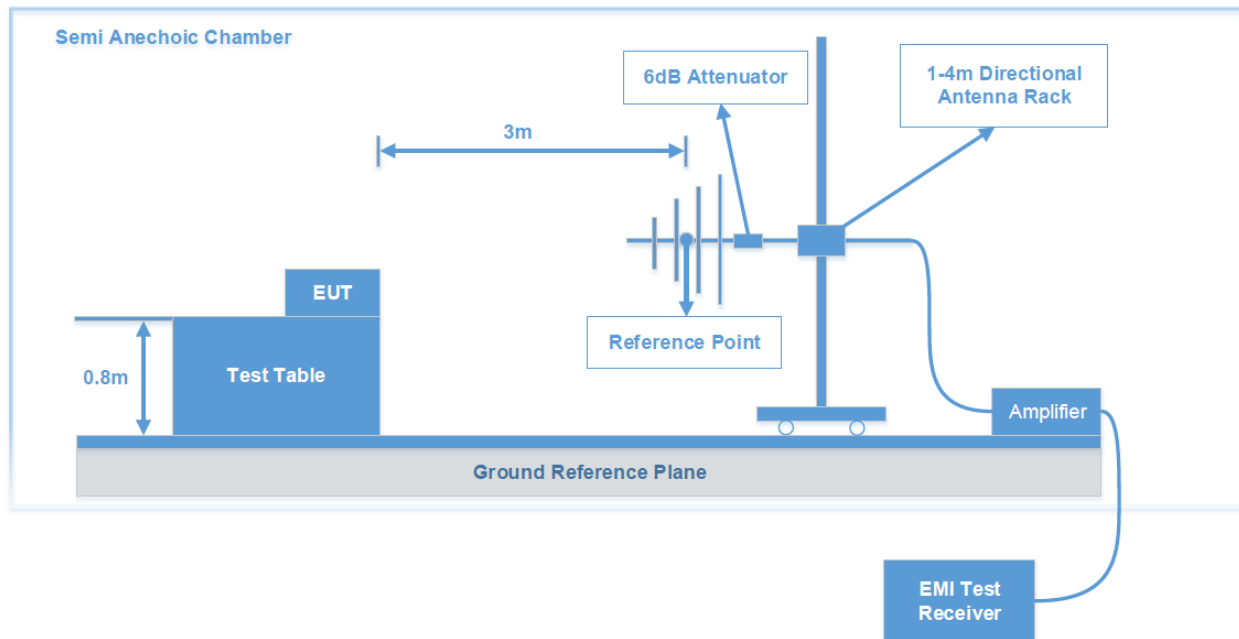
FCC §15.247 (d); §15.209; §15.205;

Test System Setup

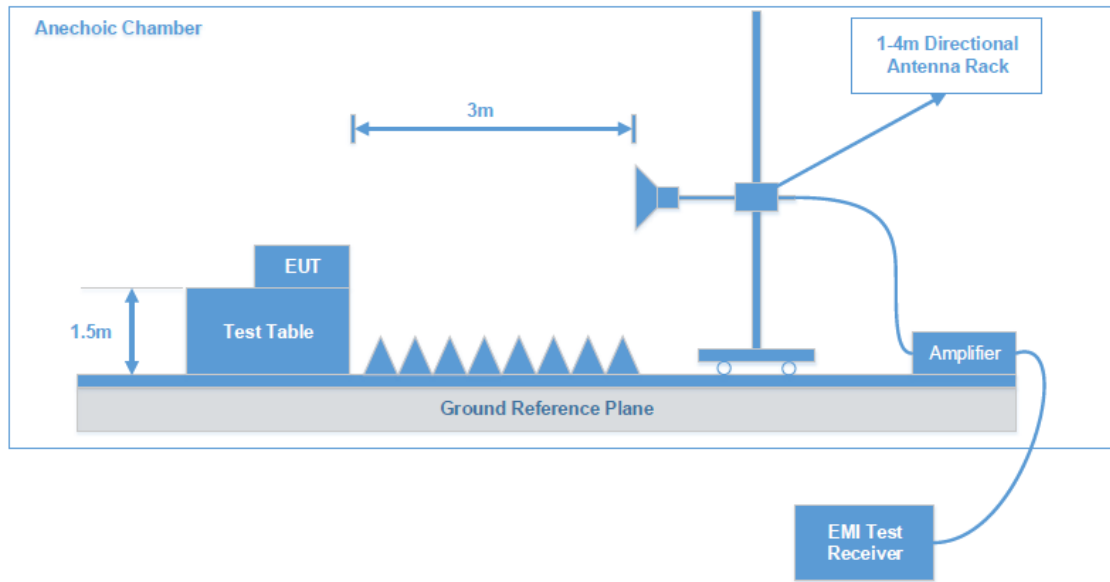
9 kHz - 30 MHz:



30 MHz - 1 GHz:



Above 1 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

The system was investigated from 9 kHz to 25 GHz.

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-30 MHz 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

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

If the measured peak level of the emissions that the measuring receiver reading level plus corrected factor is at least 6 dB below the QP emission limit, there's no need to record the measured QP level of the emissions in the report.

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:

$$\text{Corrected Amplitude (dB}\mu\text{V/m)} = \text{Meter Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Amplifier Gain (dB)}$$

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:

$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Corrected Amplitude (dB}\mu\text{V/m)}$$

Note: The QuasiPeak (dB μ V/m), MaxPeak (dB μ V/m), Average (dB μ V/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

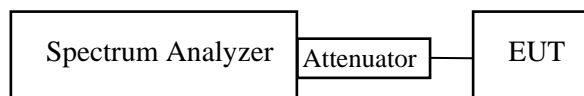
Applicable Standard

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) $\geq 3 * \text{RBW}$.
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

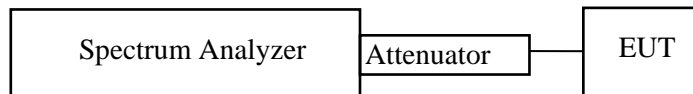
Applicable Standard

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, compliance 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 11.9.1.1

1. Set the RBW \geq DTS bandwidth.
2. Set VBW $\geq 3 * RBW$.
3. Set span $\geq 3 * RBW$
4. Sweep time = auto couple.
5. Detector = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use peak marker function to determine the peak amplitude level.



Test Data: See Appendix

FCC §15.247(d) – BAND EDGE

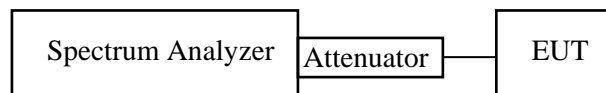
Applicable Standard

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 compliance 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

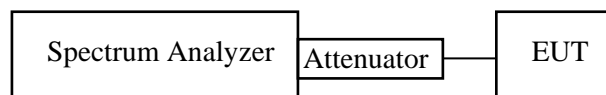
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of 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 compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

1. Set the RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{ kHz}$.
2. Set the VBW $\geq 3 * \text{RBW}$.
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

Appendix - TEST DATA

Environmental Conditions & Test Information

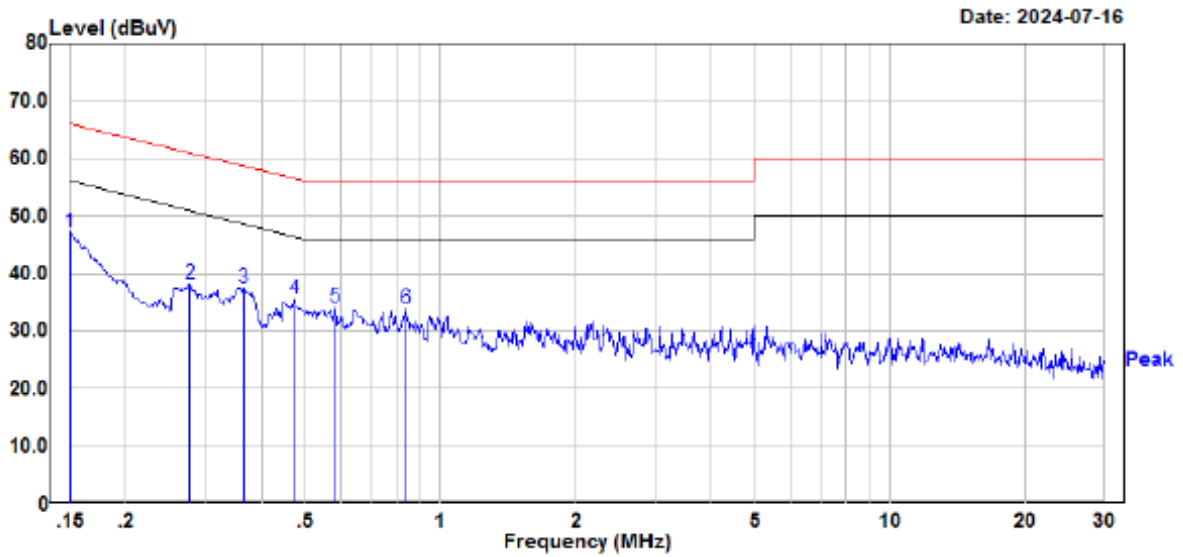
Test Item:	AC LINE CONDUCTED EMISSIONS	SPURIOUS EMISSIONS		
		9kHz - 1GHz	1 GHz - 18 GHz	18 GHz - 25 GHz
Test Date:	2024-07-16	2024-07-20	2024-07-15	2024-08-05
Temperature:	25.8 °C	25.3 °C	24.3 °C	25.3 °C
Relative Humidity:	53 %	58 %	56 %	55 %
ATM Pressure:	101.1 kPa	100.5 kPa	100.3 kPa	100.7 kPa
Test Result:	Pass	Pass	Pass	Pass
Test Engineer:	Leah Li	Leah Li	Klein Zhu	Hugh Wu

Test Item:	DUTY CYCLE	6 DB EMISSION BANDWIDTH	MAXIMUM CONDUCTED OUTPUT POWER	BAND EDGE	POWER SPECTRAL DENSITY
Test Date:	2024-07-17 to 2024-07-25	2024-07-17 to 2024-07-25	2024-07-17 to 2024-08-26	2024-07-17 to 2024-07-25	2024-07-17 to 2024-07-25
Temperature:	23.8-24.9 °C	24.8-24.9 °C	24.8-26.2 °C	23.8-24.9 °C	23.8-24.9 °C
Relative Humidity:	55-58 %	55-58 %	55-57 %	55-58 %	55-58 %
ATM Pressure:	100.3-100.5kPa	100.3-100.5kPa	100.3-100.4kPa	100.3-100.5kPa	100.3-100.5kPa
Test Result:	/	Pass	Pass	Pass	Pass
Test Engineer:	Hardy Huang	Hardy Huang	Hardy Huang	Hardy Huang	Hardy Huang

AC LINE CONDUCTED EMISSIONS

EUT operation mode: Transmitting in BLE (2 Mbps) low channel (maximum output power mode)

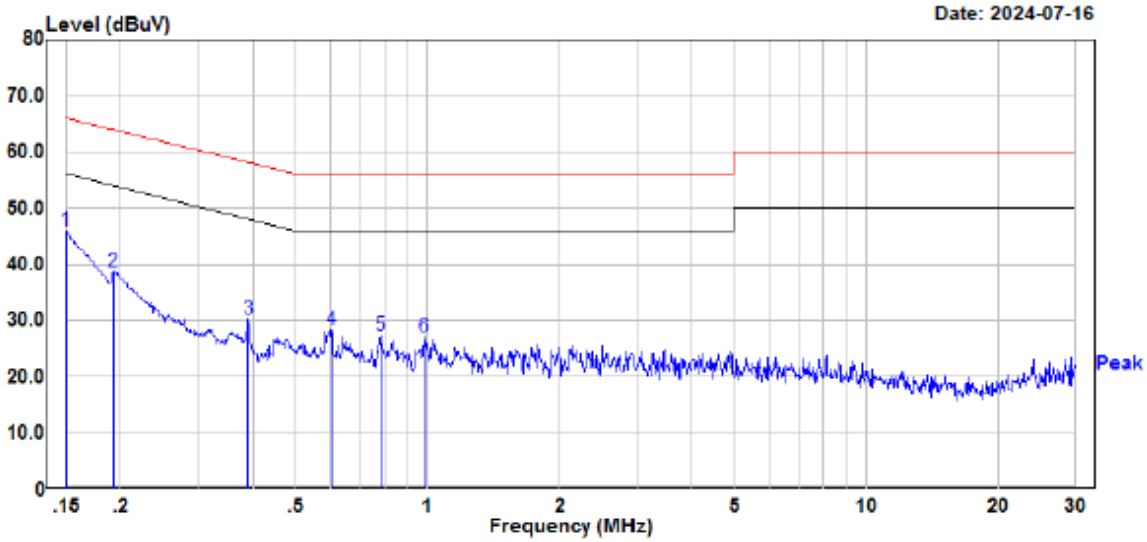
Line:



Site : CE
 Condition : FCC Part 15.207
 : DET:Peak
 Project No. : RKSB240619009
 Model : 9290036670A
 Phase : L
 Voltage : 120V/60Hz
 Mode : BLE 2M
 Test Equipment : ENV216,ESR
 Temperature : 25.8°C
 Humidity : 53%
 Atmospheric pressure: 101.1kPa
 Test Engineer : Leah Li

	Read	Limit	Over				
Freq	Level	Factor	Level	Line			
MHz	dBuV	dB	dBuV	dBuV			
1	0.150	26.98	20.12	47.10	66.00	-18.90	Peak
2	0.277	18.09	20.15	38.24	60.91	-22.67	Peak
3	0.364	17.33	20.20	37.53	58.63	-21.10	Peak
4	0.474	15.41	20.18	35.59	56.44	-20.85	Peak
5	0.582	14.10	20.10	34.20	56.00	-21.80	Peak
6	0.837	14.04	19.89	33.93	56.00	-22.07	Peak

Neutral:

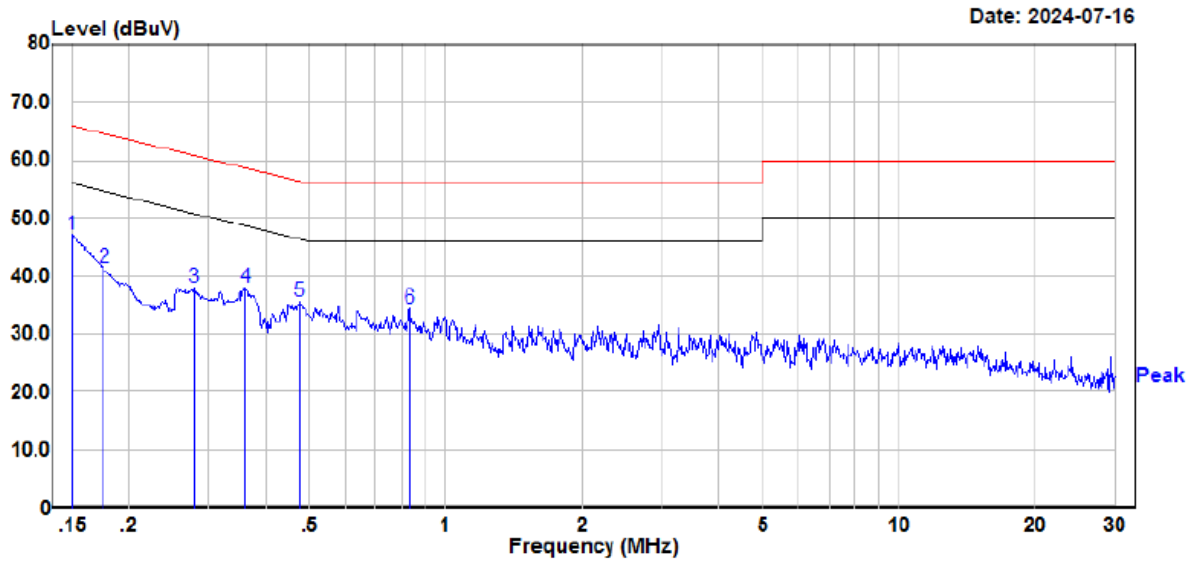


Site : CE
 Condition : FCC Part 15.207
 : DET:Peak
 Project No. : RKSB240619009
 Model : 9290036670A
 Phase : N
 Voltage : 120V/60Hz
 Mode : BLE 2M
 Test Equipment : ENV216,ESR
 Temperature : 25.8°C
 Humidity : 53%
 Atmospheric pressure: 101.1kPa
 Test Engineer : Leah Li

	Read		Limit	Over		
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.150	25.80	20.12	45.92	66.00	-20.08 Peak
2	0.192	18.62	20.11	38.73	63.93	-25.20 Peak
3	0.391	10.10	20.20	30.30	58.05	-27.75 Peak
4	0.606	8.11	20.09	28.20	56.00	-27.80 Peak
5	0.781	7.46	19.96	27.42	56.00	-28.58 Peak
6	0.982	7.39	19.74	27.13	56.00	-28.87 Peak

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

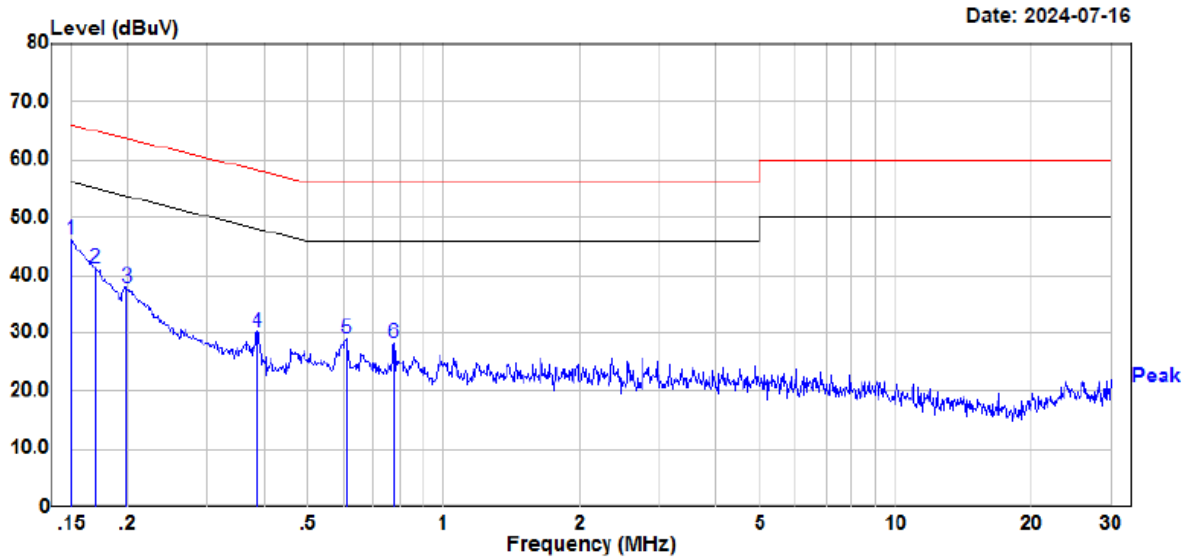
Line:



Site : CE
 Condition : FCC Part 15.207
 : DET:Peak
 Project No. : RKSB240619009
 Model : 9290036670A
 Phase : L
 Voltage : 120V/60Hz
 Mode : Zigbee
 Test Equipment : ENV216,ESR
 Temperature : 25.8°C
 Humidity : 53%
 Atmospheric pressure: 101.1kPa
 Test Engineer : Leah Li

	Read	Limit	Over				
Freq	Level	Factor	Level	Line			
MHz	dBuV	dB	dBuV	dBuV			
1	0.150	26.96	20.12	47.08	66.00	-18.92	Peak
2	0.176	21.26	20.12	41.38	64.68	-23.30	Peak
3	0.278	17.82	20.15	37.97	60.87	-22.90	Peak
4	0.361	17.85	20.20	38.05	58.71	-20.66	Peak
5	0.474	15.48	20.18	35.66	56.44	-20.78	Peak
6	0.833	14.44	19.90	34.34	56.00	-21.66	Peak

Neutral:



Site : CE
 Condition : FCC Part 15.207
 : DET:Peak
 Project No. : RKSB240619009
 Model : 9290036670A
 Phase : N
 Voltage : 120V/60Hz
 Mode : Zigbee
 Test Equipment : ENV216,ESR
 Temperature : 25.8°C
 Humidity : 53%
 Atmospheric pressure: 101.1kPa
 Test Engineer : Leah Li

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.150	26.01	20.12	46.13	66.00	-19.87	Peak
2	0.169	21.34	20.11	41.45	65.01	-23.56	Peak
3	0.198	17.77	20.11	37.88	63.68	-25.80	Peak
4	0.387	9.97	20.20	30.17	58.13	-27.96	Peak
5	0.609	8.99	20.09	29.08	56.00	-26.92	Peak
6	0.777	8.21	19.97	28.18	56.00	-27.82	Peak

SPURIOUS EMISSIONS

Test Result: Compliant.

EUT operation mode: Transmitting

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

9 kHz-30MHz:

BLE: *Transmitting in maximum output power BLE (2 Mbps) mode and low channel*

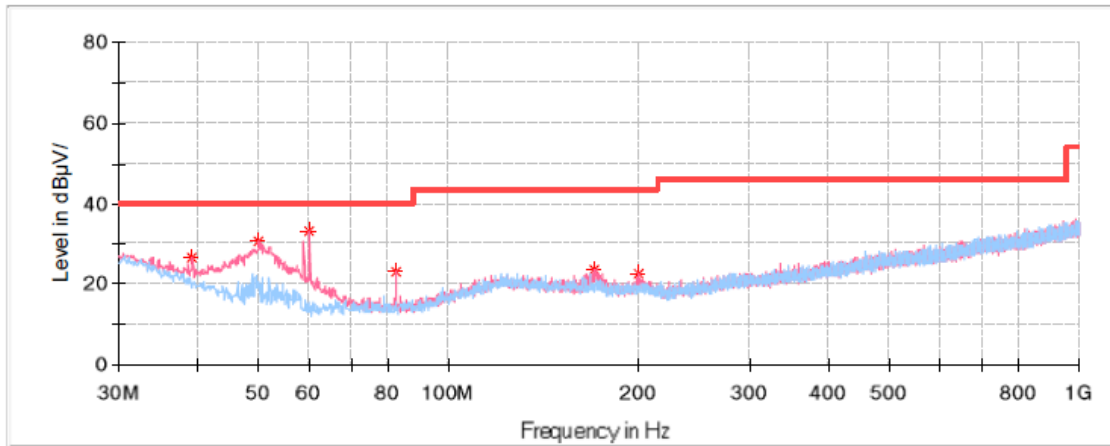
Zigbee: *Transmitting in low channel*

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

30 MHz-1 GHz (Transmitting in maximum output power mode BLE 2 Mbps):
Low Channel: 2402 MHz

Common Information

Project No: RKS240619009
 Test Mode: BLE 2 Mbps
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Leah Li



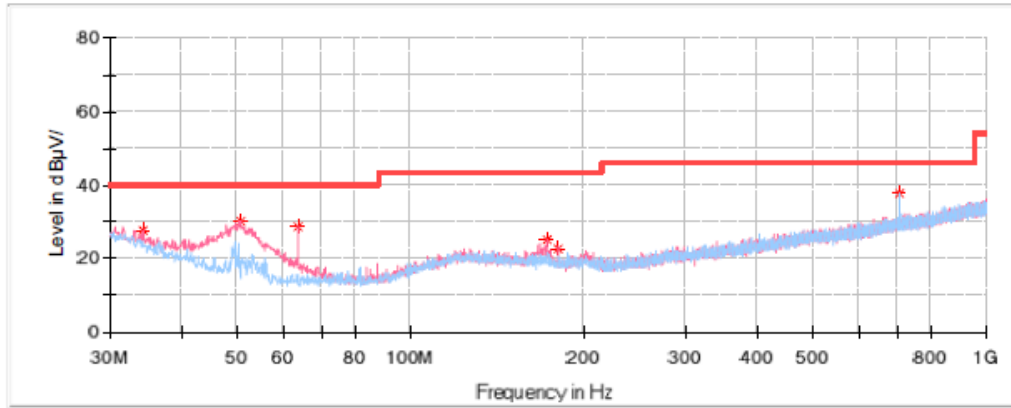
Critical Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
39.215000	26.81	40.00	13.19	V	-10.9
50.006250	30.45	40.00	9.55	V	-16.8
60.191250	33.17	40.00	6.83	V	-17.6
82.622500	23.39	40.00	16.61	V	-17.2
170.043750	23.53	43.50	19.97	V	-12.6
200.598750	22.43	43.50	21.07	V	-12.2

Middle Channel: 2440 MHz

Common Information

Project No: RKSB240619009
 Test Mode: BLE 2 Mbps
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Leah Li



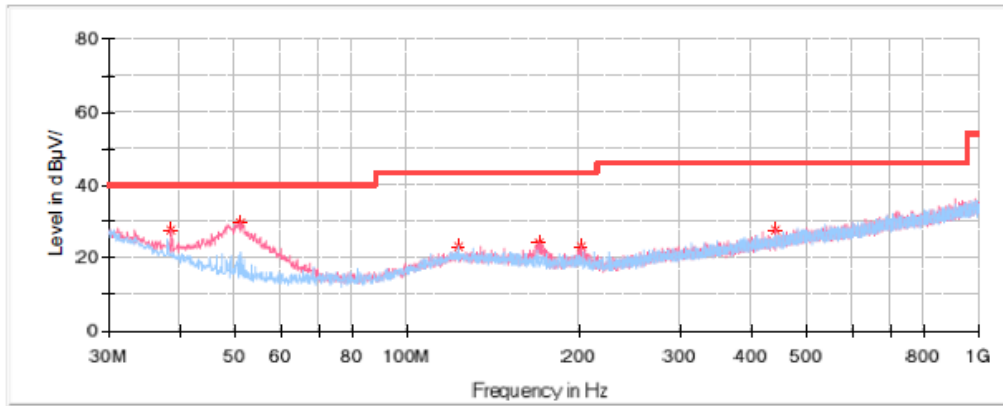
Critical Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
34.365000	27.82	40.00	12.18	V	-7.7
50.491250	30.15	40.00	9.85	V	-16.8
63.707500	28.89	40.00	11.11	V	-17.4
172.226250	25.00	43.50	18.50	V	-12.7
179.865000	22.89	43.50	20.61	V	-13.0
705.968750	37.50	46.00	8.50	H	-1.9

High Channel:2480 MHz

Common Information

Project No: RKS240619009
 Test Mode: BLE 2 Mbps
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Leah Li



Critical Freqs

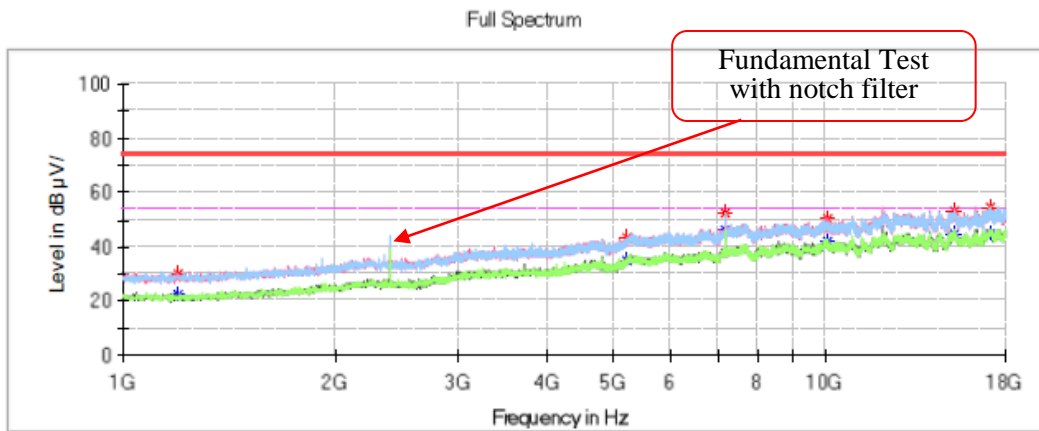
Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
38.608750	27.61	40.00	12.39	V	-10.5
51.097500	29.57	40.00	10.43	V	-16.9
122.513750	23.23	43.50	20.27	H	-10.9
170.650000	24.31	43.50	19.19	V	-12.6
201.205000	23.06	43.50	20.44	V	-12.3
440.916250	27.78	46.00	18.22	V	-6.9

1GHz-18GHz (BLE 125 kbps):

Low Channel: 2402 MHz

Common Information

Project No.:	RKSB240619009
Test Mode:	BLE 125 Kbps
Standard:	FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer:	Klein Zhu



Critical Freqs

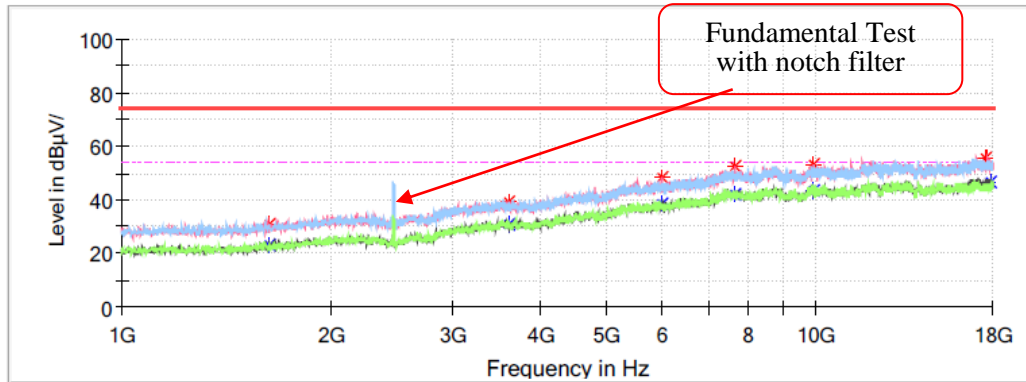
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1195.500000	30.27	---	74.00	43.73	V	-15.2
1195.500000	---	22.67	54.00	31.33	V	-15.2
5212.600000	43.63	---	74.00	30.37	V	-1.5
5212.600000	---	34.88	54.00	19.12	V	-1.5
7205.000000	52.35	---	74.00	21.65	H	3.1
7205.000000	---	46.36	54.00	7.64	H	3.1
10042.300000	50.28	---	74.00	23.72	V	7.2
10042.300000	---	41.80	54.00	12.20	V	7.2
15242.600000	53.41	---	74.00	20.59	V	9.6
15242.600000	---	44.58	54.00	9.42	V	9.6
17172.100000	54.84	---	74.00	19.16	H	12.0
17172.100000	---	45.01	54.00	8.99	H	12.0

Middle Channel: 2440 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 125Kbps
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



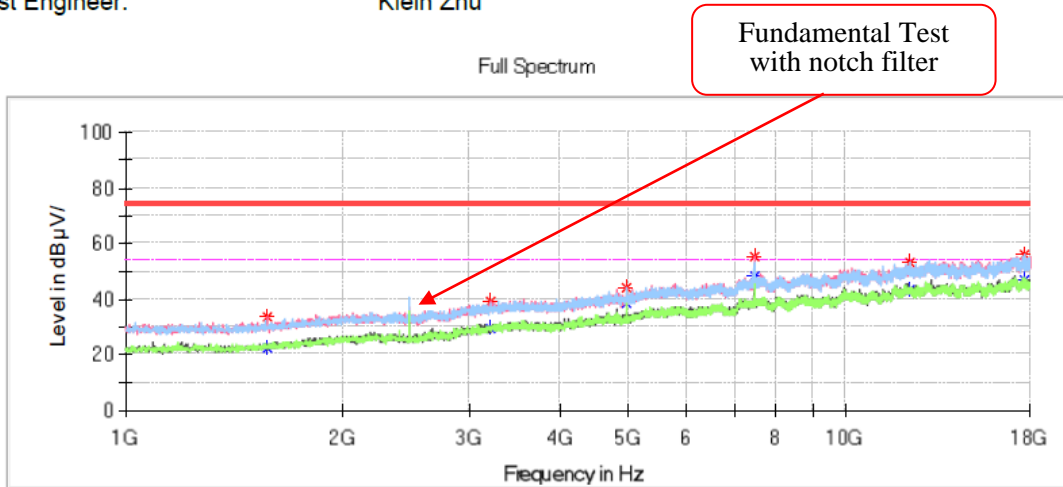
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1629.000000	30.94	---	74.00	43.06	V	-14.0
1629.000000	---	23.29	54.00	30.71	V	-14.0
3607.800000	---	30.90	54.00	23.10	H	-6.2
3607.800000	39.47	---	74.00	34.53	H	-6.2
5986.100000	47.99	---	74.00	26.01	V	0.0
5986.100000	---	38.32	54.00	15.68	V	0.0
7635.100000	---	42.01	54.00	11.99	H	3.9
7635.100000	52.28	---	74.00	21.72	H	3.9
9950.500000	52.97	---	74.00	21.03	H	7.0
9950.500000	---	43.07	54.00	10.93	H	7.0
17725.800000	---	47.82	54.00	6.18	V	11.7
17649.500000	57.22	---	74.00	16.78	V	11.7

High Channel: 2480 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 125 Kbps
 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)
1574.600000	---	22.59	54.00	31.41	V	-14.3
1574.600000	33.51	---	74.00	40.49	V	-14.3
3208.300000	---	29.59	54.00	24.41	V	-7.6
3208.300000	39.30	---	74.00	34.70	V	-7.6
4959.300000	---	38.39	54.00	15.61	H	-2.6
4959.300000	44.34	---	74.00	29.66	H	-2.6
7439.600000	---	48.12	54.00	5.88	V	3.7
7439.600000	55.12	---	74.00	18.88	V	3.7
12254.000000	53.32	---	74.00	20.68	H	9.3
12254.000000	---	43.70	54.00	10.30	H	9.3
17649.800000	---	46.61	54.00	7.39	V	11.7
17649.800000	55.74	---	74.00	18.26	V	11.7

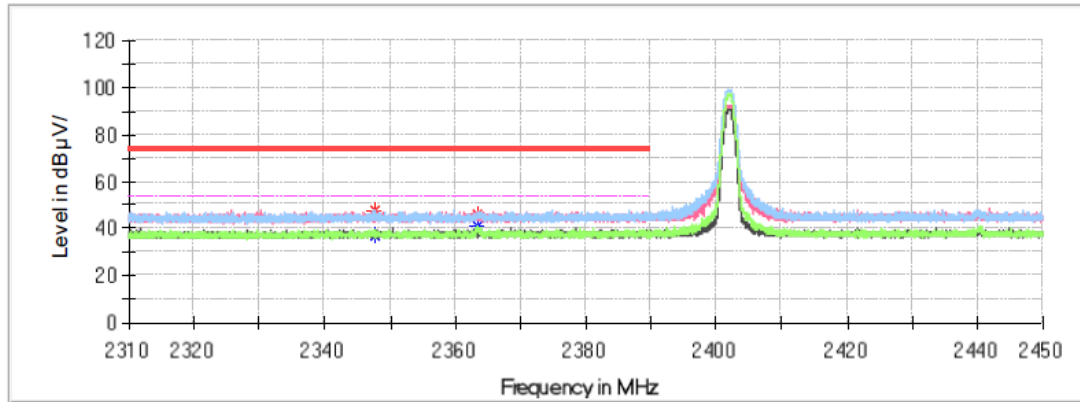
Restricted Bands Emission:

Left Side

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 125 Kbps
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



Critical_Freqs

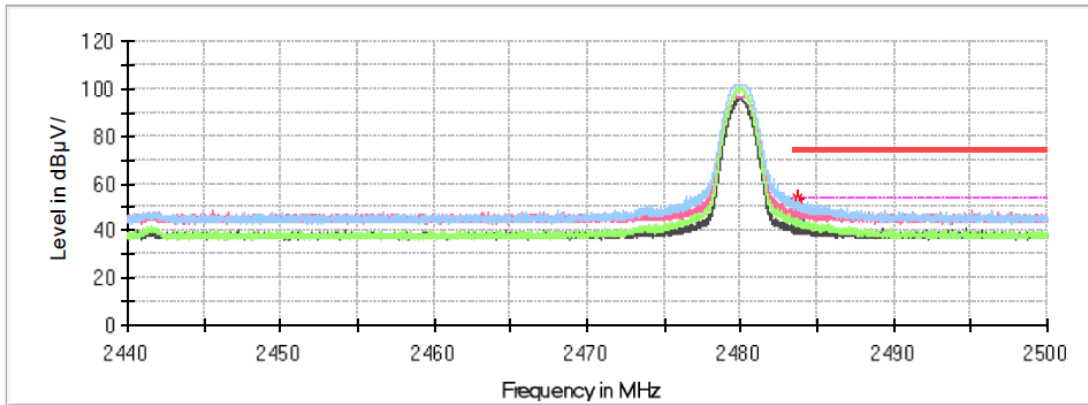
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2347.716000	47.96	---	74.00	26.04	H	-0.7
2347.716000	---	36.77	54.00	17.23	H	-0.7
2363.382000	46.32	---	74.00	27.68	H	-0.7
2363.382000	---	40.72	54.00	13.28	H	-0.7

Right Side

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 125 Kbps
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



Critical_Freqs

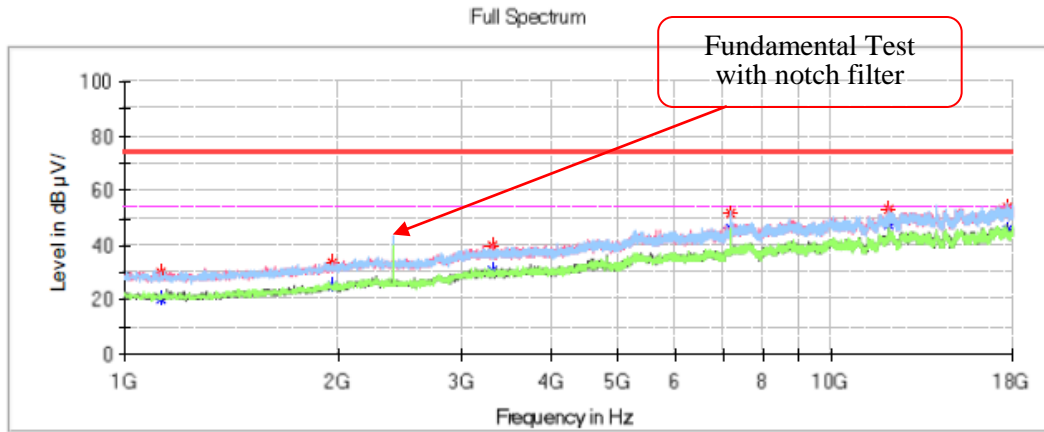
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.692000	54.01	---	74.00	19.99	H	-0.3
2483.692000	---	44.16	54.00	9.84	H	-0.3
2483.698000	50.78	---	74.00	23.22	H	-0.3
2483.698000	---	45.37	54.00	8.63	H	-0.3

1GHz-18GHz (BLE 500 kbps):

Low Channel: 2402 MHz

Common Information

Project No.:	RKSB240619009
Test Mode:	BLE 500 Kbps
Standard:	FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer:	Klein Zhu



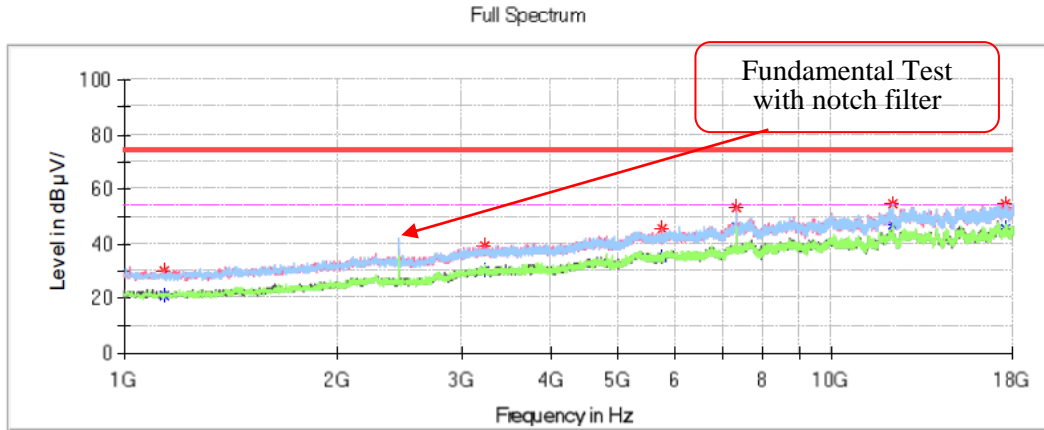
Critical Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1125.800000	29.72	---	74.00	44.28	H	-15.3
1125.800000	---	20.53	54.00	33.47	H	-15.3
1960.500000	33.56	---	74.00	40.44	H	-12.0
1960.500000	---	25.00	54.00	29.00	H	-12.0
3308.600000	39.77	---	74.00	34.23	V	-7.1
3308.600000	---	30.63	54.00	23.37	V	-7.1
7205.000000	51.79	---	74.00	22.21	V	3.1
7205.000000	---	46.09	54.00	7.91	V	3.1
12009.200000	53.05	---	74.00	20.95	V	9.0
12009.200000	---	47.41	54.00	6.59	V	9.0
17649.800000	---	47.16	54.00	6.84	H	11.7
17649.800000	55.43	---	74.00	18.57	H	11.7

Middle Channel: 2440 MHz

Common Information

Project No.: RKS240619009
 Test Mode: BLE 500 Kbps
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu



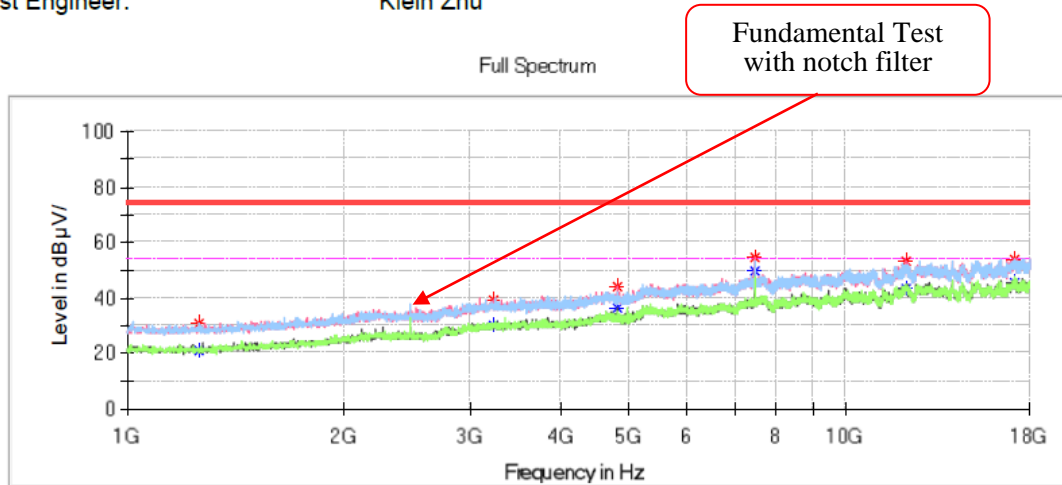
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1137.700000	30.09	---	74.00	43.91	V	-15.3
1137.700000	---	21.08	54.00	32.92	V	-15.3
3221.900000	---	30.08	54.00	23.92	V	-7.5
3221.900000	39.20	---	74.00	34.80	V	-7.5
5748.100000	45.52	---	74.00	28.48	V	-0.2
5748.100000	---	34.68	54.00	19.32	V	-0.2
7318.900000	52.97	---	74.00	21.03	H	3.4
7318.900000	---	46.30	54.00	7.70	H	3.4
12197.900000	54.26	---	74.00	19.74	H	9.2
12197.900000	---	46.85	54.00	7.15	H	9.2
17552.900000	---	45.73	54.00	8.27	H	11.6
17552.900000	54.32	---	74.00	19.68	H	11.6

High Channel: 2480 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 500 Kbps
 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)
1256.700000	---	21.21	54.00	32.79	H	-15.1
1256.700000	30.74	---	74.00	43.26	H	-15.1
3221.900000	---	30.17	54.00	23.83	V	-7.5
3221.900000	38.88	---	74.00	35.12	V	-7.5
4809.700000	---	36.70	54.00	17.30	V	-3.1
4809.700000	44.28	---	74.00	29.72	V	-3.1
7439.600000	---	49.71	54.00	4.29	V	3.7
7439.600000	54.87	---	74.00	19.13	V	3.7
12104.400000	---	43.45	54.00	10.55	V	9.1
12104.400000	53.42	---	74.00	20.58	V	9.1
17087.100000	---	45.70	54.00	8.30	V	12.1
17087.100000	54.03	---	74.00	19.97	V	12.1

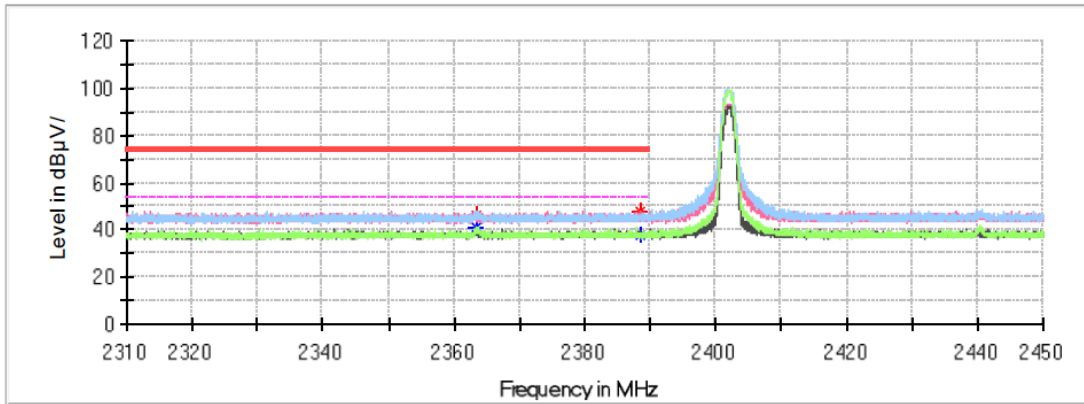
Restricted Bands Emission:

Left Side

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 500 Kbps
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



Critical Freqs

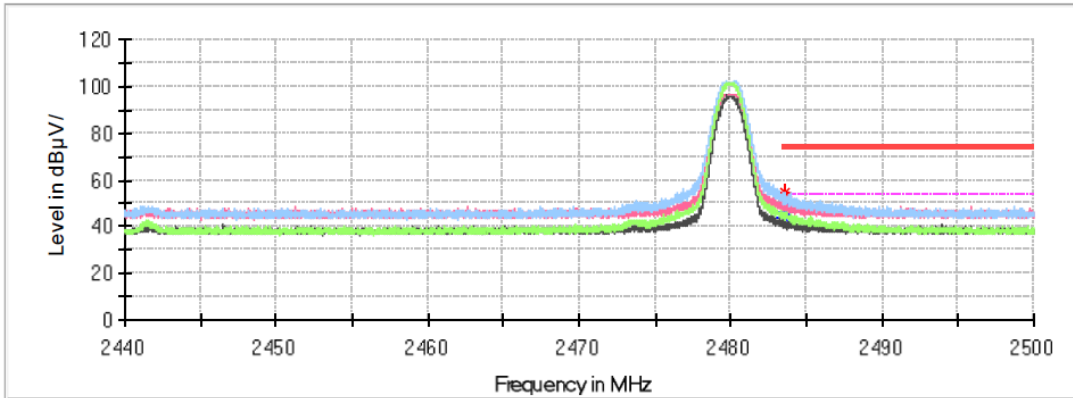
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2363.508000	46.48	---	74.00	27.52	H	-0.7
2363.508000	---	41.30	54.00	12.70	H	-0.7
2388.428000	48.20	---	74.00	25.80	V	-0.6
2388.428000	---	37.98	54.00	16.02	V	-0.6

Right Side

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 500 Kbps
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



Critical Freqs

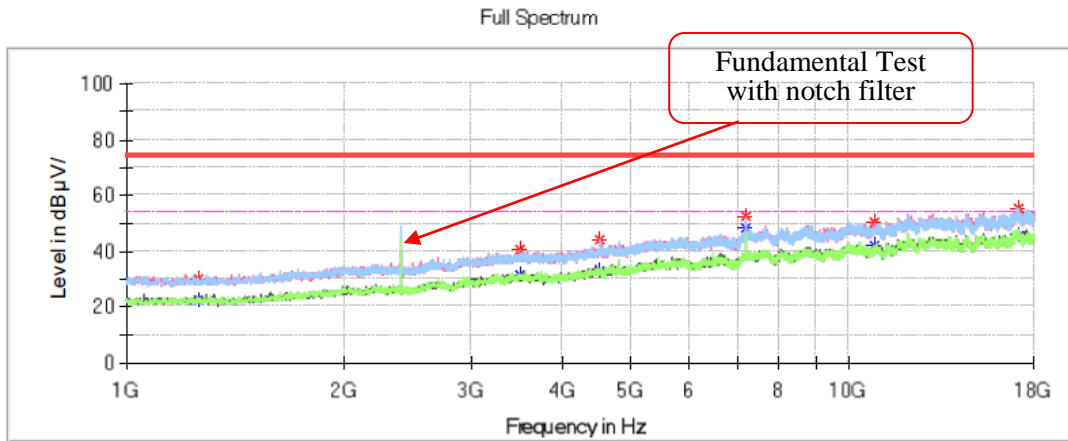
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.590000	---	43.66	54.00	10.34	H	-0.3
2483.590000	54.64	---	74.00	19.36	H	-0.3
2483.656000	---	46.13	54.00	7.87	H	-0.3
2483.656000	51.31	---	74.00	22.69	H	-0.3

1GHz-18GHz (BLE 1 Mbps):

Low Channel: 2402 MHz

Common Information

Project No.:	RKSB240619009
Test Mode:	BLE 1M
Standard:	FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer:	Klein Zhu



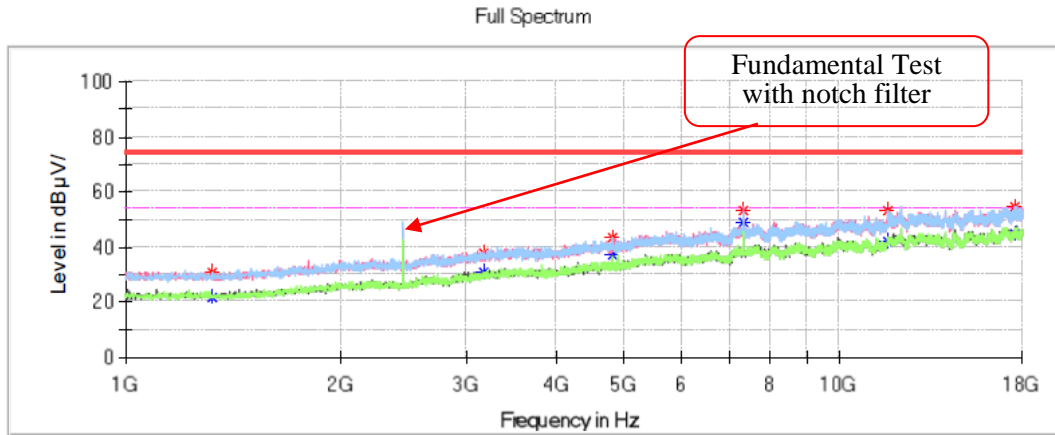
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1258.400000	---	22.60	54.00	31.40	V	-15.1
1258.400000	30.36	---	74.00	43.64	V	-15.1
3495.600000	---	31.61	54.00	22.39	V	-6.4
3495.600000	40.64	---	74.00	33.36	V	-6.4
4505.400000	---	33.17	54.00	20.83	H	-4.2
4505.400000	43.84	---	74.00	30.16	H	-4.2
7205.000000	---	48.20	54.00	5.80	V	3.1
7205.000000	52.66	---	74.00	21.34	V	3.1
10844.700000	50.61	---	74.00	23.39	V	7.2
10844.700000	---	41.84	54.00	12.16	V	7.2
17160.200000	---	45.31	54.00	8.69	H	12.0
17160.200000	55.51	---	74.00	18.49	H	12.0

Middle Channel: 2440 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 1M
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu



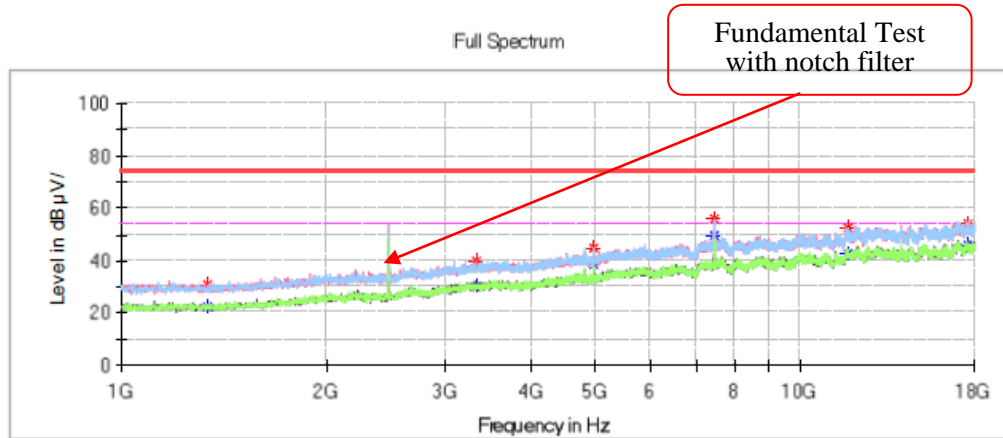
Critical Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1319.600000	30.88	---	74.00	43.12	H	-15.0
1319.600000	---	21.93	54.00	32.07	H	-15.0
3170.900000	---	30.51	54.00	23.49	H	-7.7
3170.900000	37.80	---	74.00	36.20	H	-7.7
4809.700000	43.27	---	74.00	30.73	V	-3.1
4809.700000	---	37.17	54.00	16.83	V	-3.1
7318.900000	---	49.06	54.00	4.94	V	3.4
7318.900000	53.20	---	74.00	20.80	V	3.4
11665.800000	53.29	---	74.00	20.71	V	8.9
11665.800000	---	42.13	54.00	11.87	V	8.9
17549.500000	---	44.89	54.00	9.11	V	11.6
17549.500000	54.79	---	74.00	19.21	V	11.6

High Channel: 2480 MHz

Common Information

Project No.: RKS240619009
 Test Mode: BLE 1M
 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)
1340.000000	---	22.34	54.00	31.66	V	-15.0
1340.000000	31.00	---	74.00	43.00	V	-15.0
3337.500000	---	30.26	54.00	23.74	V	-7.0
3337.500000	39.51	---	74.00	34.49	V	-7.0
4959.300000	---	38.80	54.00	15.20	H	-2.6
4959.300000	45.06	---	74.00	28.94	H	-2.6
7439.600000	---	49.83	54.00	4.17	V	3.7
7439.600000	55.86	---	74.00	18.14	V	3.7
11733.800000	---	42.50	54.00	11.50	V	8.9
11733.800000	52.27	---	74.00	21.73	V	8.9
17649.800000	---	47.14	54.00	6.86	H	11.7
17649.800000	54.11	---	74.00	19.89	H	11.7

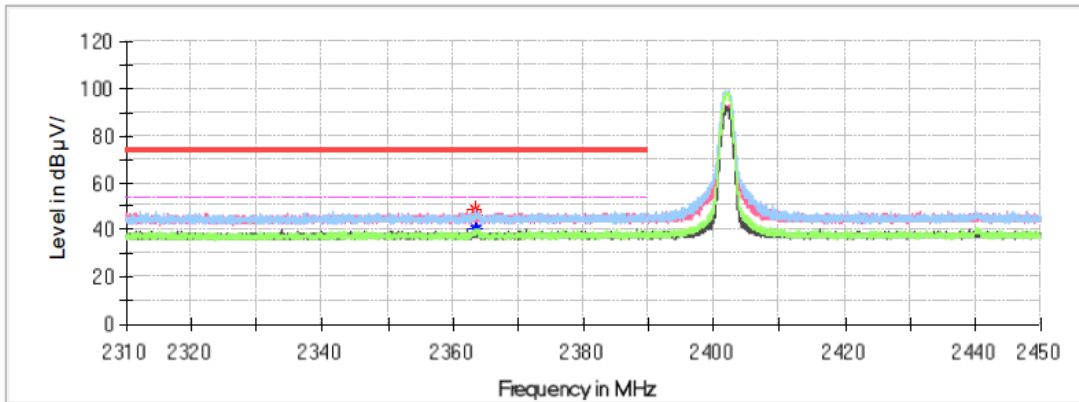
Restricted Bands Emission:

Left Side

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 1M
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



Critical_Freqs

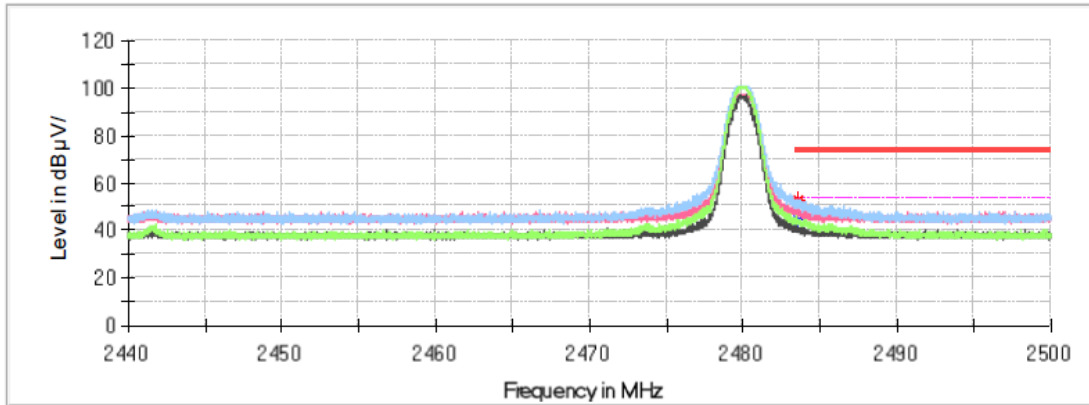
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2363.508000	48.31	---	74.00	25.69	H	-0.7
2363.508000	---	39.90	54.00	14.10	H	-0.7
2363.732000	46.56	---	74.00	27.44	H	-0.7
2363.732000	---	40.27	54.00	13.73	H	-0.7

Right Side

Common Information

Project No.: RKS240619009
 Test Mode: BLE 1M
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



Critical_Freqs

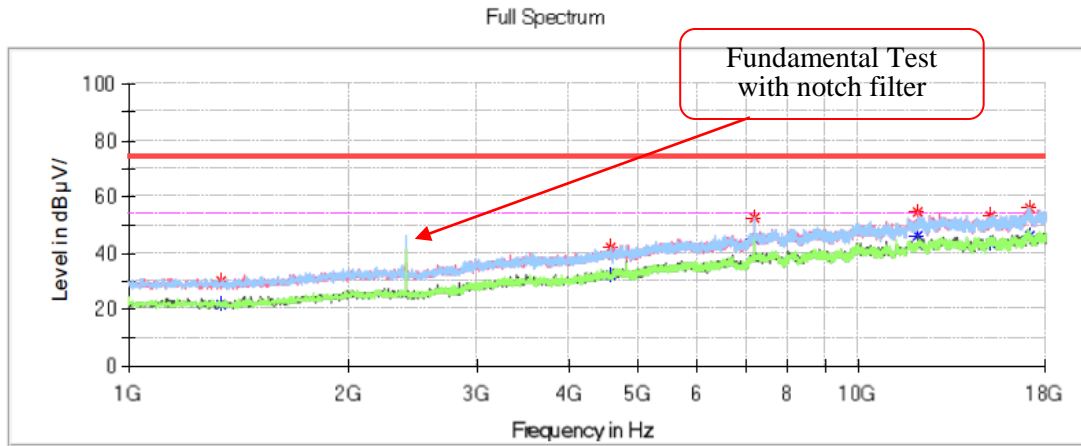
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.572000	---	44.88	54.00	9.12	H	-0.3
2483.572000	52.39	---	74.00	21.61	H	-0.3
2483.632000	---	43.53	54.00	10.47	H	-0.3
2483.632000	52.89	---	74.00	21.11	H	-0.3

1GHz-18GHz (BLE 2 Mbps):

Low Channel: 2402 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 2M
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu



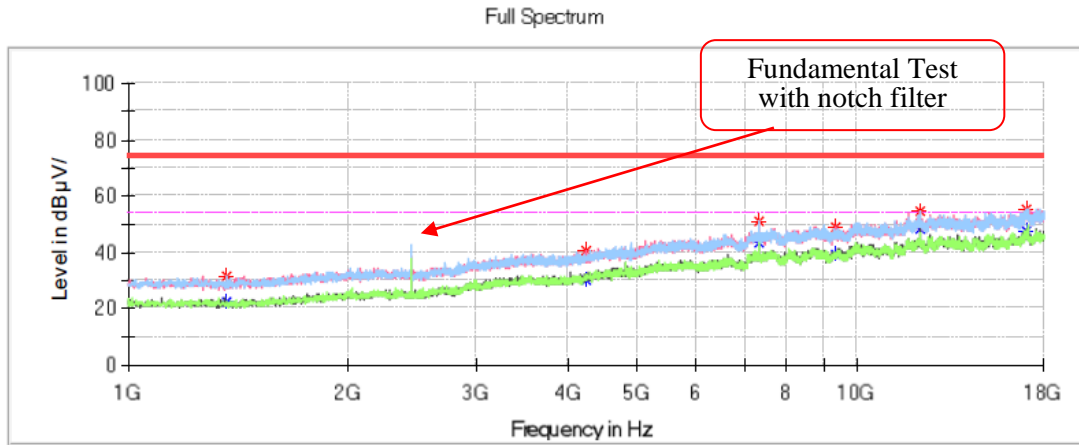
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	PoI	Corr. (dB/m)
1336.600000	30.27	---	74.00	43.73	V	-15.0
1336.600000	---	21.60	54.00	32.40	V	-15.0
4571.700000	42.15	---	74.00	31.85	H	-4.0
4571.700000	---	32.25	54.00	21.75	H	-4.0
7206.700000	---	45.06	54.00	8.94	H	3.2
7206.700000	52.14	---	74.00	21.86	H	3.2
12012.600000	54.67	---	74.00	19.33	V	9.0
12012.600000	---	46.42	54.00	7.58	V	9.0
15176.300000	53.39	---	74.00	20.61	V	9.5
15176.300000	---	43.69	54.00	10.31	V	9.5
17092.200000	---	46.07	54.00	7.93	H	12.1
17092.200000	56.11	---	74.00	17.89	H	12.1

Middle Channel: 2440 MHz

Common Information

Project No.: RKS240619009
 Test Mode: BLE 2M
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu



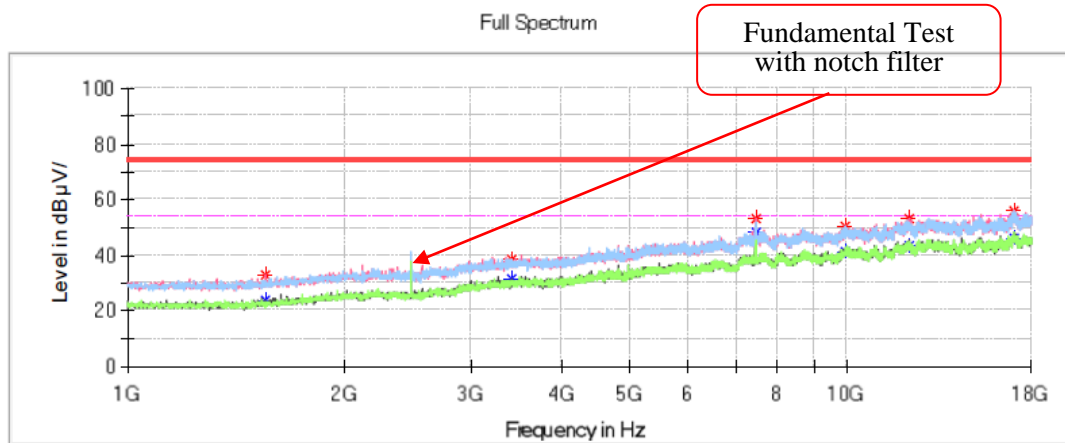
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1363.800000	31.62	---	74.00	42.38	H	-14.9
1363.800000	---	22.65	54.00	31.35	H	-14.9
4252.100000	40.67	---	74.00	33.33	V	-5.1
4252.100000	---	30.19	54.00	23.81	V	-5.1
7317.200000	51.02	---	74.00	22.98	V	3.4
7317.200000	---	43.19	54.00	10.81	V	3.4
9345.300000	---	39.45	54.00	14.55	V	5.4
9345.300000	49.19	---	74.00	24.81	V	5.4
12197.900000	54.37	---	74.00	19.63	V	9.2
12197.900000	---	47.91	54.00	6.09	V	9.2
17056.500000	---	47.81	54.00	6.19	H	12.2
17056.500000	55.50	---	74.00	18.50	H	12.2

High Channel: 2480 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 2M
 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)
1554.200000	32.88	---	74.00	41.12	V	-14.4
1554.200000	---	23.99	54.00	30.01	V	-14.4
3419.100000	38.12	---	74.00	35.88	V	-6.7
3419.100000	---	31.16	54.00	22.84	V	-6.7
7437.900000	53.07	---	74.00	20.93	V	3.7
7437.900000	---	47.97	54.00	6.03	V	3.7
9897.800000	---	41.28	54.00	12.72	V	6.8
9897.800000	50.17	---	74.00	23.83	V	6.8
12152.000000	53.13	---	74.00	20.87	H	9.2
12152.000000	---	43.51	54.00	10.49	H	9.2
17002.100000	56.20	---	74.00	17.80	H	12.3
17002.100000	---	46.30	54.00	7.70	H	12.3

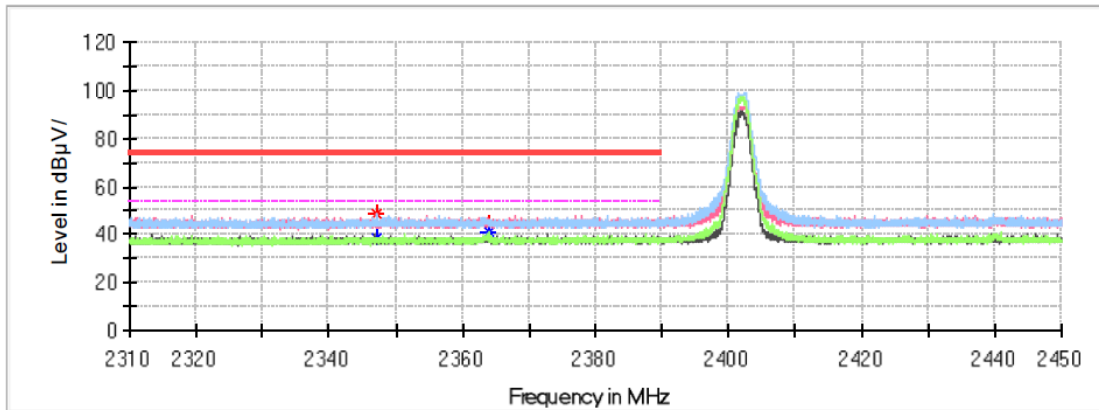
Restricted Bands Emission:

Left Side

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 2M
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum



Critical_Freqs

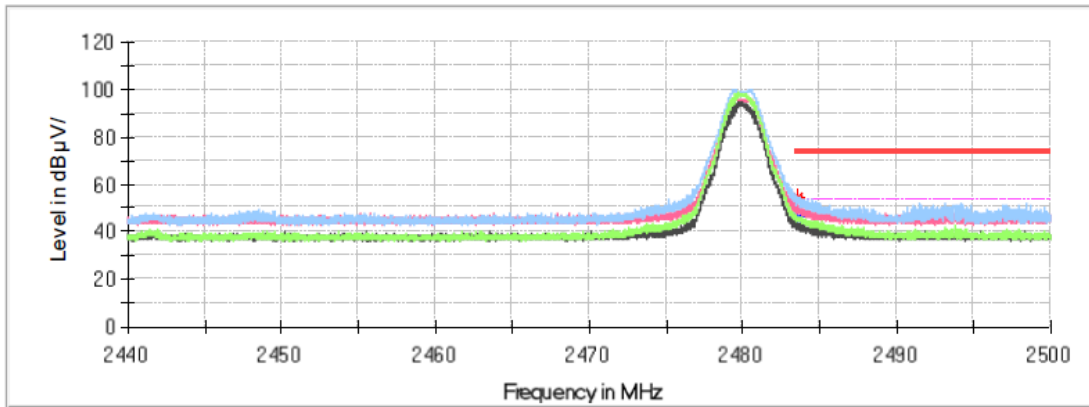
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2347.254000	---	38.65	54.00	15.35	H	-0.7
2347.254000	48.52	---	74.00	25.48	H	-0.7
2363.914000	---	40.74	54.00	13.26	H	-0.7
2363.914000	44.69	---	74.00	29.31	H	-0.7

Right Side

Common Information

Project No.: RKSB240619009
 Test Mode: BLE 2M
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Klein Zhu

Full Spectrum

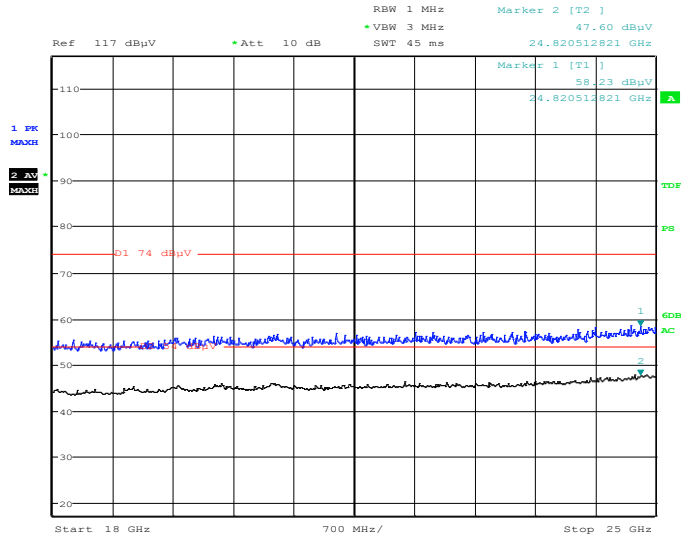


Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.524000	---	45.16	54.00	8.84	H	-0.3
2483.524000	54.66	---	74.00	19.34	H	-0.3
2483.620000	---	46.48	54.00	7.52	H	-0.3
2483.620000	53.86	---	74.00	20.14	H	-0.3

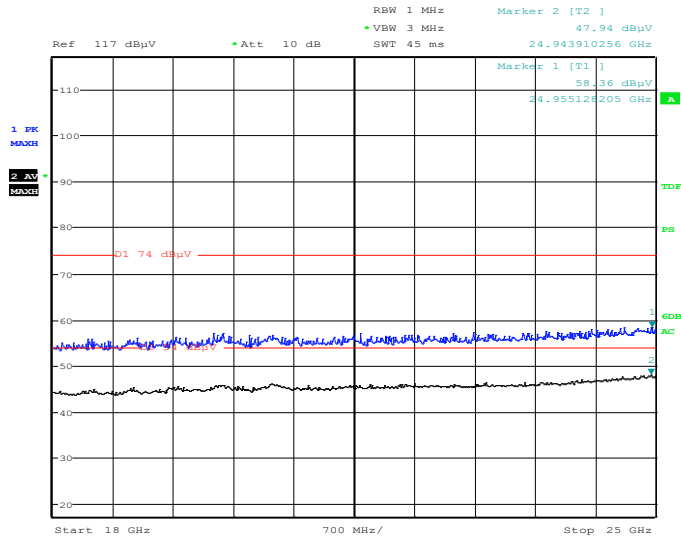
18 GHz - 25 GHz (BLE (2 Mbps) low channel was worst):

Horizontal



Project No : RKSB240619009 Tester :Hugh Wu
Date: 5.AUG.2024 18:17:33

Vertical



Project No : RKSB240619009 Tester :Hugh Wu
Date: 5.AUG.2024 18:30:47

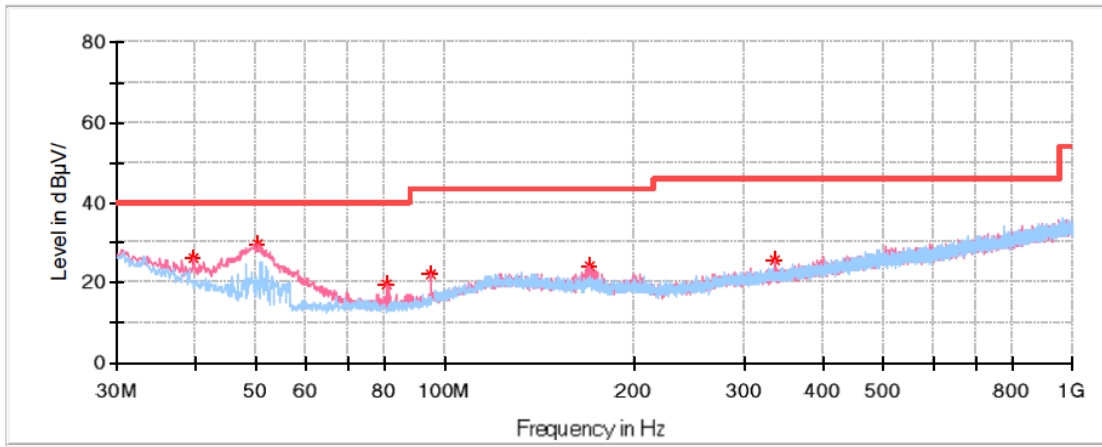
Note: The test distance is 3m. The limit is 74dBuV/m(Peak) and 54dBuV/m(Average).

Zigbee:
30 MHz-1 GHz:

Low Channel: 2405 MHz

Common Information

Project No: RKS240619009
 Test Mode: Zigbee
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Leah Li



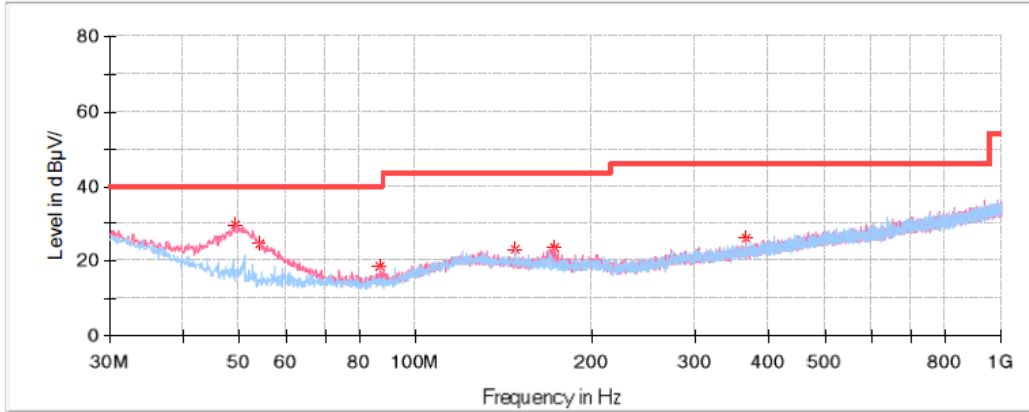
Critical Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
39.821250	26.37	40.00	13.63	V	-11.3
50.370000	29.65	40.00	10.35	V	-16.8
80.925000	19.52	40.00	20.48	V	-17.3
94.747500	22.37	43.50	21.13	V	-15.7
169.922500	24.20	43.50	19.30	V	-12.6
336.156250	25.41	46.00	20.59	V	-9.6

Middle Channel: 2440 MHz

Common Information

Project No: RKSB240619009
 Test Mode: Zigbee
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Leah Li



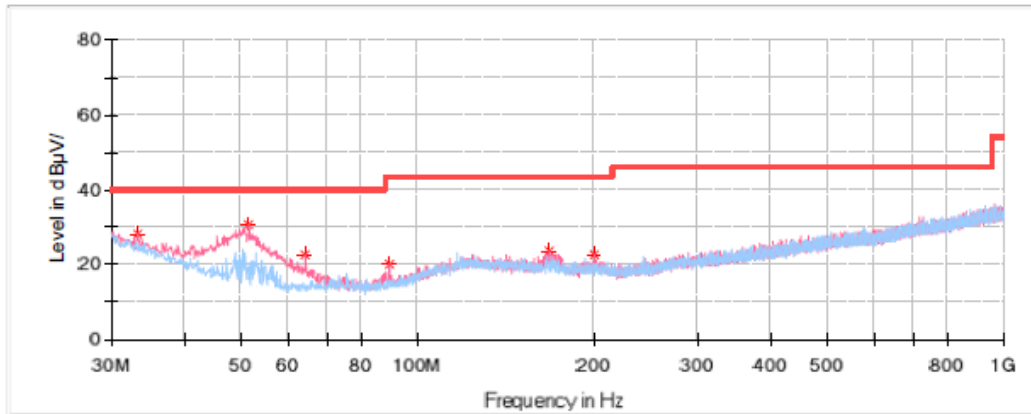
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
49.278750	29.75	40.00	10.25	V	-16.4
54.128750	24.89	40.00	15.11	V	-17.1
86.745000	18.40	40.00	21.60	V	-17.1
147.855000	23.15	43.50	20.35	H	-11.7
171.983750	23.52	43.50	19.98	V	-12.7
366.105000	25.99	46.00	20.01	V	-8.8

High Channel:2480 MHz

Common Information

Project No: RKS240619009
 Test Mode: Zigbee
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Leah Li



Critical Freqs

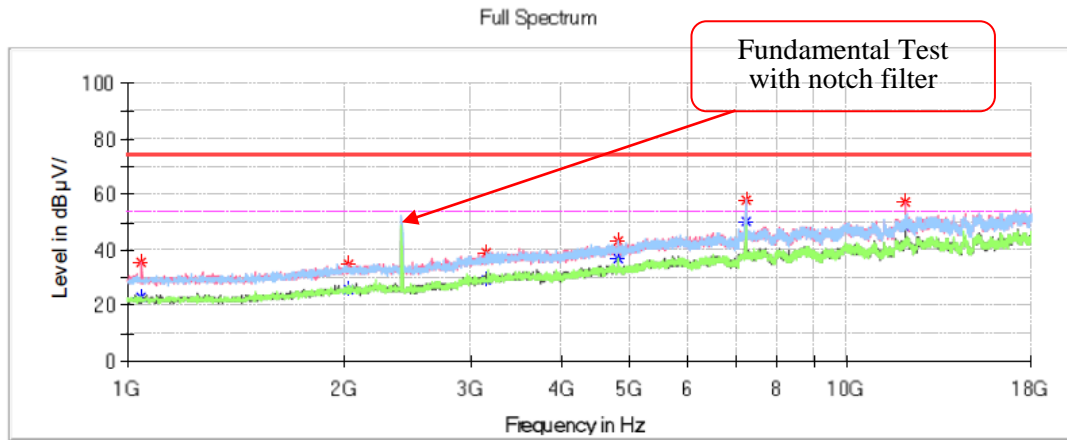
Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
33.152500	28.04	40.00	11.96	V	-6.8
51.582500	30.80	40.00	9.20	V	-16.9
64.313750	22.75	40.00	17.25	V	-17.3
89.170000	20.35	43.50	23.15	V	-16.9
167.618750	23.42	43.50	20.08	V	-12.5
200.598750	22.48	43.50	21.02	V	-12.2

1GHz-18GHz:

Low Channel: 2405 MHz

Common Information

Project No.:	RKSB240619009
Test Mode:	Zigbee
Standard:	FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
Test Engineer:	Kelin Zhu



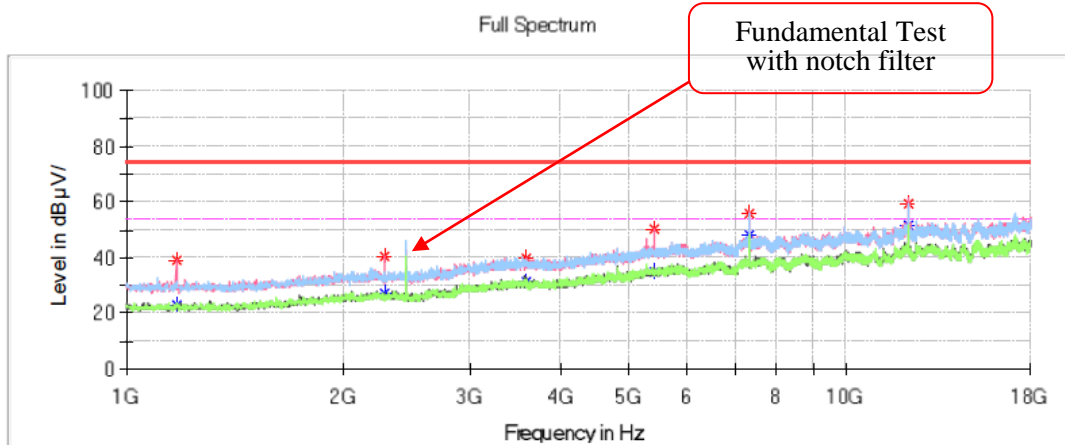
Critical Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1047.600000	---	23.37	54.00	30.63	V	-15.4
1047.600000	35.88	---	74.00	38.12	V	-15.4
2030.200000	---	25.76	54.00	28.24	H	-11.6
2030.200000	34.98	---	74.00	39.02	H	-11.6
3150.500000	---	29.56	54.00	24.44	H	-7.8
3150.500000	39.48	---	74.00	34.52	H	-7.8
4809.700000	43.24	---	74.00	30.76	H	-3.1
4809.700000	---	37.00	54.00	17.00	H	-3.1
7213.500000	58.07	---	74.00	15.93	V	3.2
7213.500000	---	50.53	54.00	3.47	V	3.2
12027.900000	57.19	---	74.00	16.81	V	9.0
12027.900000	---	48.59	54.00	5.41	V	9.0

Middle Channel: 2440 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: Zigbee
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Kelin Zhu



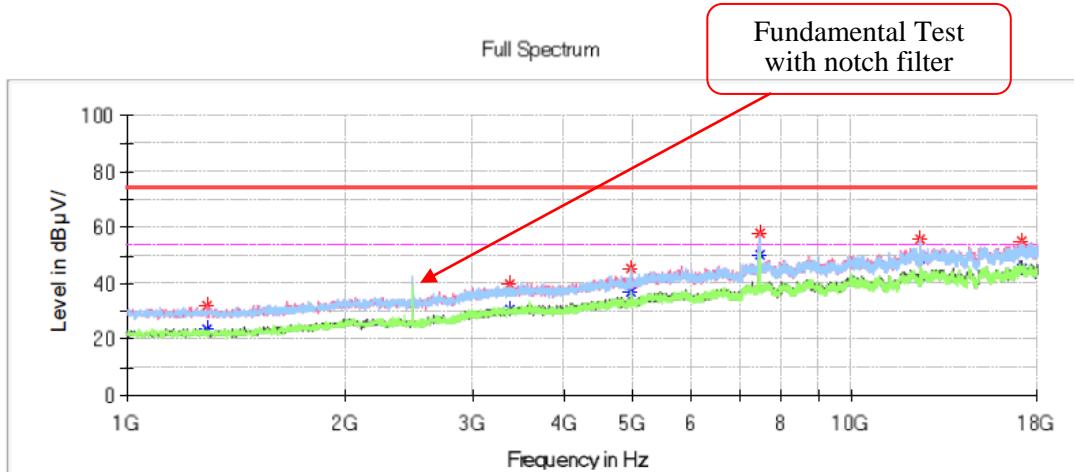
Critical Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1171.700000	---	22.78	54.00	31.22	V	-15.2
1171.700000	39.07	---	74.00	34.93	V	-15.2
2283.500000	---	26.98	54.00	27.02	V	-10.8
2283.500000	40.21	---	74.00	33.79	V	-10.8
3585.700000	---	31.56	54.00	22.44	V	-6.3
3585.700000	39.56	---	74.00	34.44	V	-6.3
5413.200000	---	35.29	54.00	18.71	V	-0.7
5413.200000	50.39	---	74.00	23.61	V	-0.7
7320.600000	56.09	---	74.00	17.91	H	3.4
7320.600000	---	48.33	54.00	5.67	H	3.4
12197.900000	---	51.63	54.00	2.37	H	9.2
12197.900000	59.36	---	74.00	14.64	H	9.2

High Channel: 2480 MHz

Common Information

Project No.: RKSB240619009
 Test Mode: Zigbee
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Kelin 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)
1289.000000	31.89	---	74.00	42.11	V	-15.0
1289.000000	---	23.71	54.00	30.29	V	-15.0
3378.300000	---	30.89	54.00	23.11	V	-6.8
3378.300000	39.55	---	74.00	34.45	V	-6.8
4957.600000	45.28	---	74.00	28.72	H	-2.6
4957.600000	---	37.06	54.00	16.94	H	-2.6
7441.300000	---	50.28	54.00	3.72	V	3.7
7441.300000	57.79	---	74.00	16.21	V	3.7
12401.900000	56.12	---	74.00	17.88	V	9.5
12401.900000	---	48.92	54.00	5.08	V	9.5
17165.300000	---	45.62	54.00	8.38	V	12.0
17165.300000	55.34	---	74.00	18.66	V	12.0

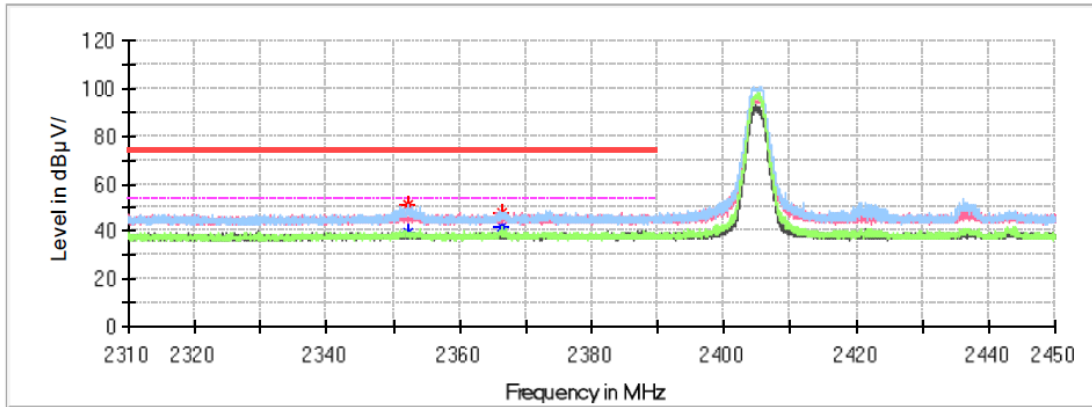
Restricted Bands Emission:

Left Side

Common Information

Project No.: RKSB240619009
 Test Mode: Zigbee
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Kelin Zhu

Full Spectrum



Critical Freqs

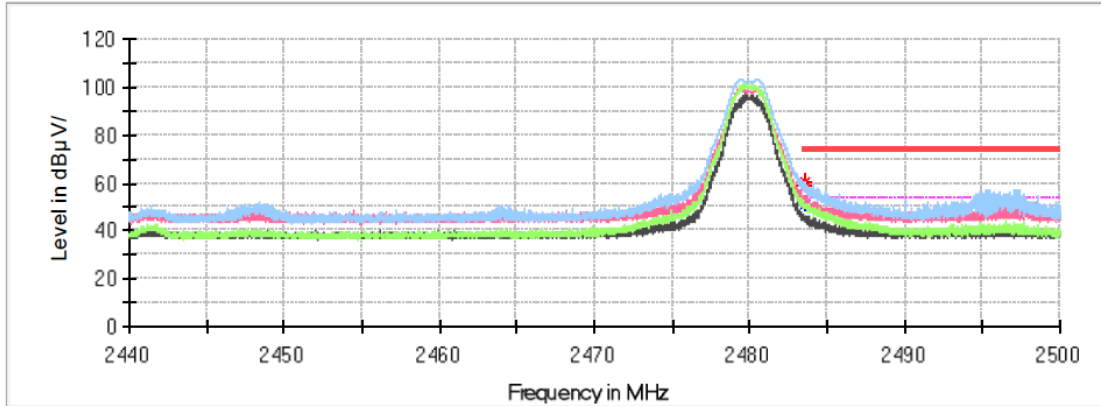
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2352.126000	---	39.42	54.00	14.58	H	-0.7
2352.126000	51.00	---	74.00	23.00	H	-0.7
2366.448000	---	42.02	54.00	11.98	H	-0.7
2366.448000	47.77	---	74.00	26.23	H	-0.7

Right Side

Common Information

Project No.: RKSB240619009
 Test Mode: Zigbee
 Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
 Test Engineer: Kelin Zhu

Full Spectrum

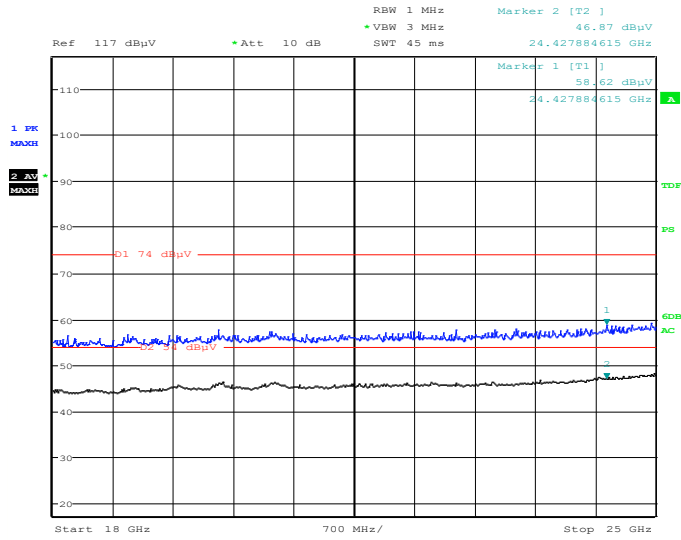


Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.530000	---	51.49	54.00	2.51	H	-0.3
2483.530000	58.79	---	74.00	15.21	H	-0.3
2483.560000	---	51.27	54.00	2.73	H	-0.3
2483.560000	60.53	---	74.00	13.47	H	-0.3

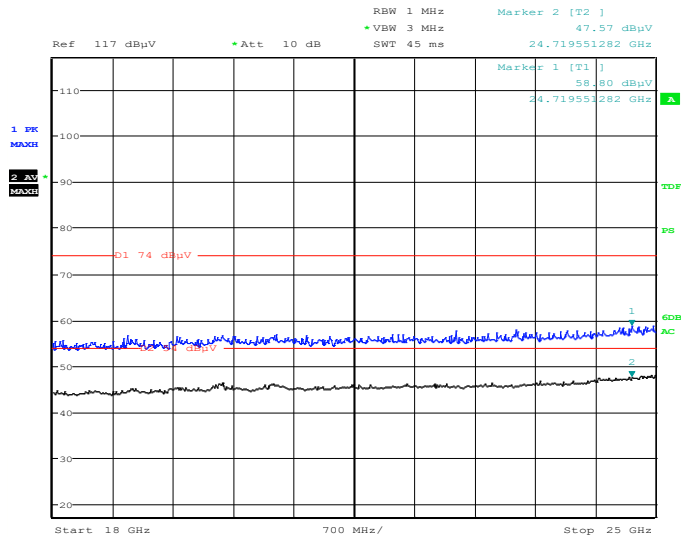
18 GHz - 25 GHz (low channel was worst):

Horizontal



Project No : RKSB240619009 Tester :Hugh Wu
Date: 5.AUG.2024 19:50:28

Vertical



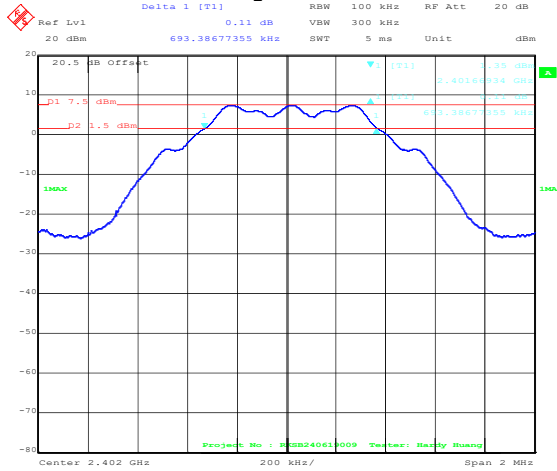
Project No : RKSB240619009 Tester :Hugh Wu
Date: 5.AUG.2024 19:38:38

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

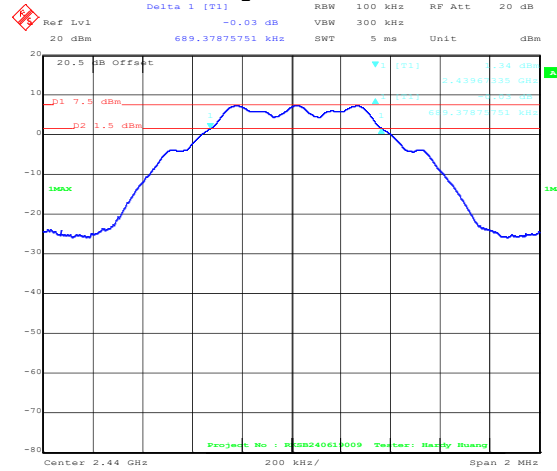
6 dB EMISSION BANDWIDTH

Mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
BLE (125 kbps)	Low	2402	0.69	≥0.5
	Middle	2440	0.69	≥0.5
	High	2480	0.69	≥0.5
BLE (500 kbps)	Low	2402	0.71	≥0.5
	Middle	2440	0.71	≥0.5
	High	2480	0.71	≥0.5
BLE (1 Mbps)	Low	2402	0.72	≥0.5
	Middle	2440	0.71	≥0.5
	High	2480	0.71	≥0.5
BLE (2 Mbps)	Low	2402	1.38	≥0.5
	Middle	2440	1.37	≥0.5
	High	2480	1.35	≥0.5
Zigbee	Low	2405	1.67	≥0.5
	Middle	2440	1.67	≥0.5
	High	2480	1.66	≥0.5

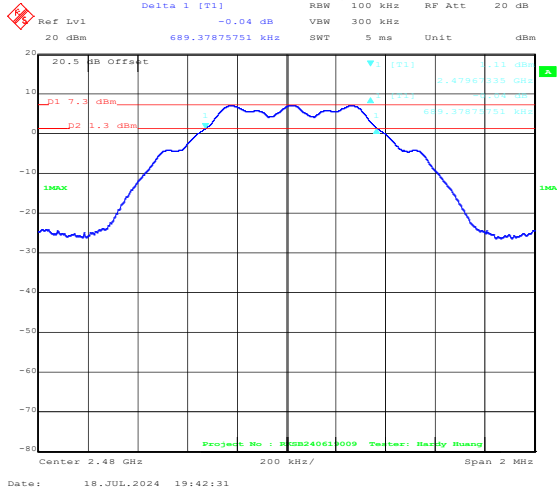
BLE (125 kbps): Low Channel



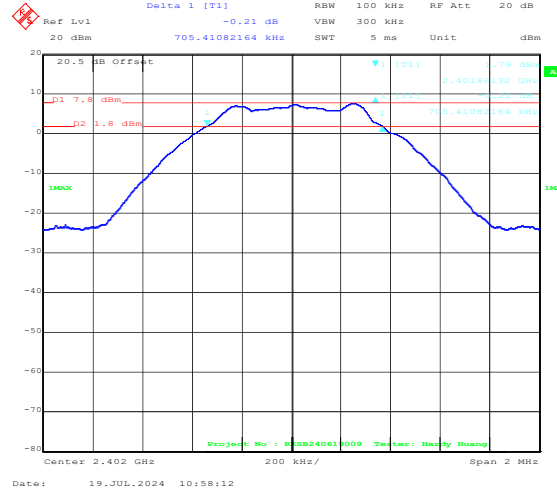
BLE (125 kbps): Middle Channel



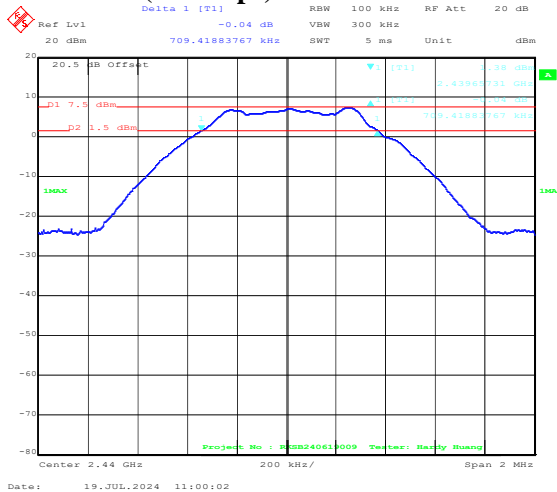
BLE (125 kbps): High Channel



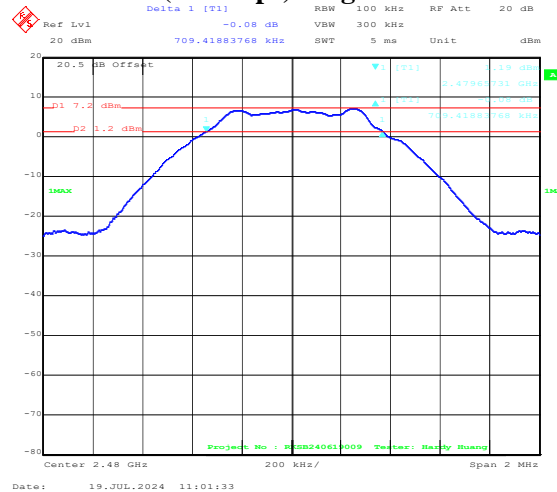
BLE (500 kbps): Low Channel



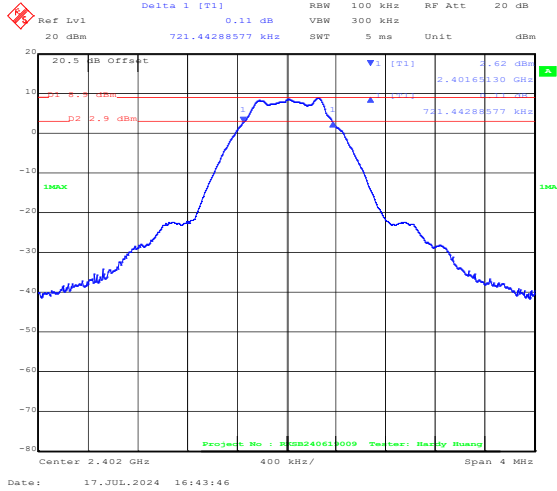
BLE (500 kbps): Middle Channel



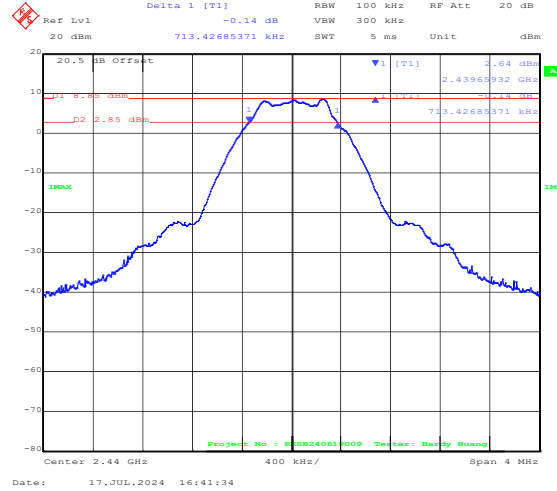
BLE (500 kbps): High Channel



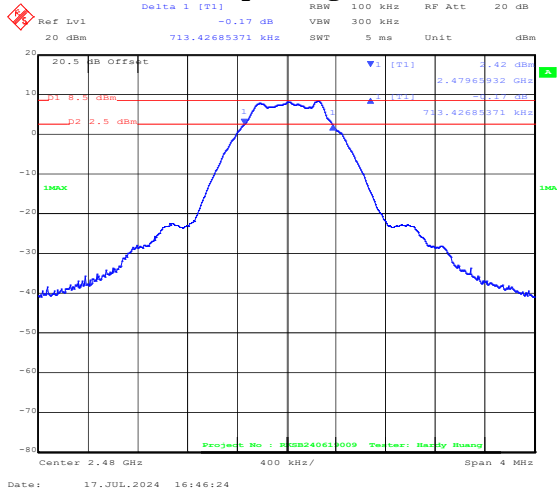
BLE (1 Mbps): Low Channel



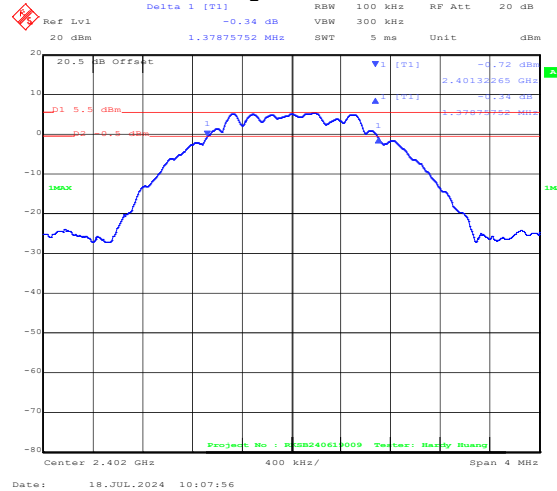
BLE (1 Mbps): Middle Channel



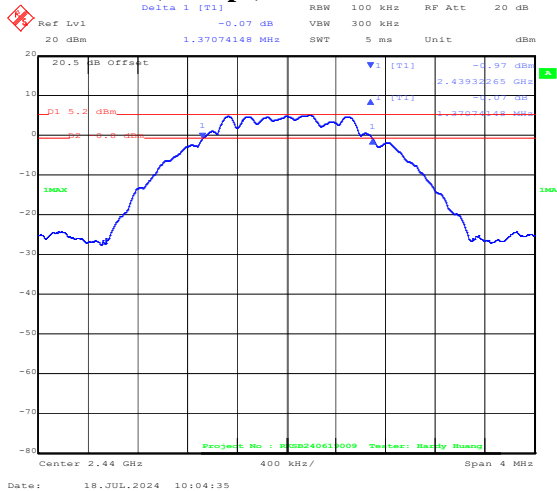
BLE (1 Mbps): High Channel



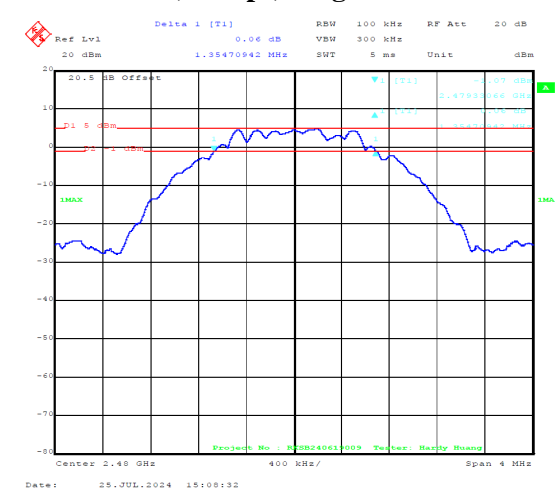
BLE (2 Mbps): Low Channel



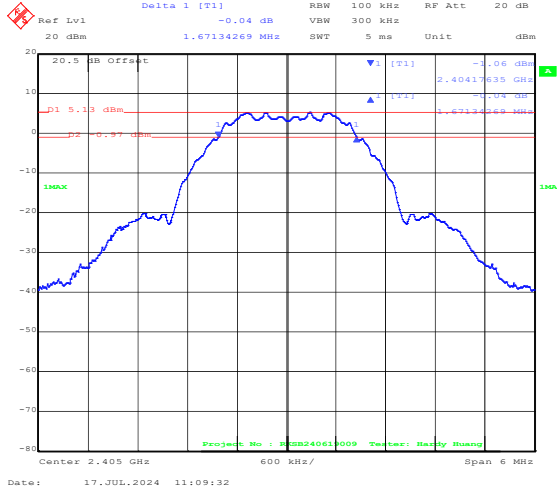
BLE (2 Mbps): Middle Channel



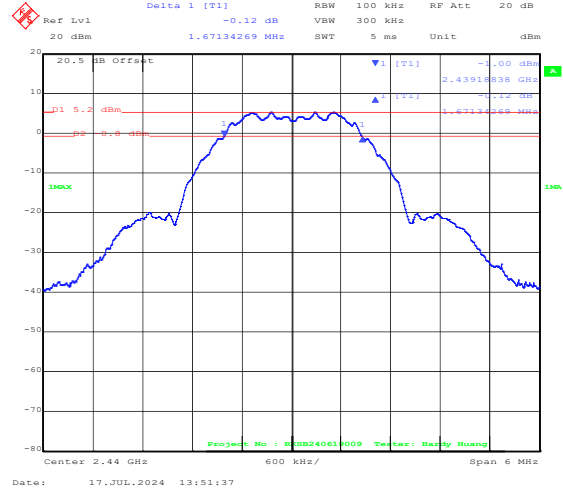
BLE (2 Mbps): High Channel



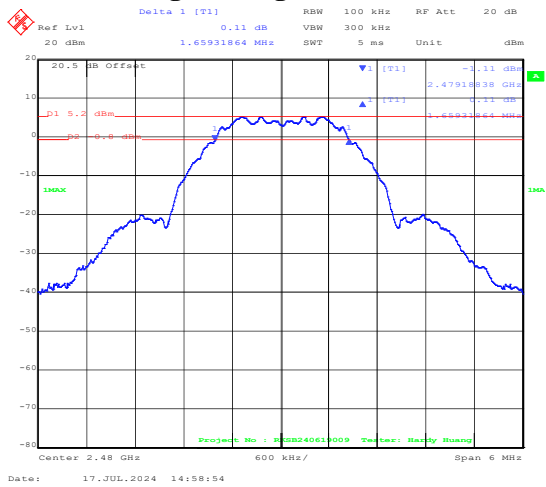
Zigbee: Low Channel



Zigbee: Middle Channel



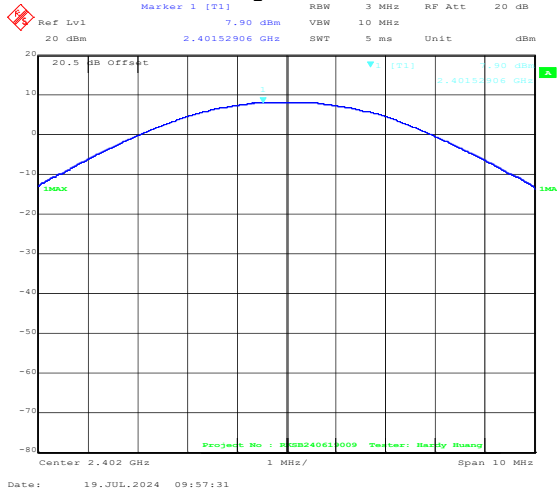
Zigbee: High Channel



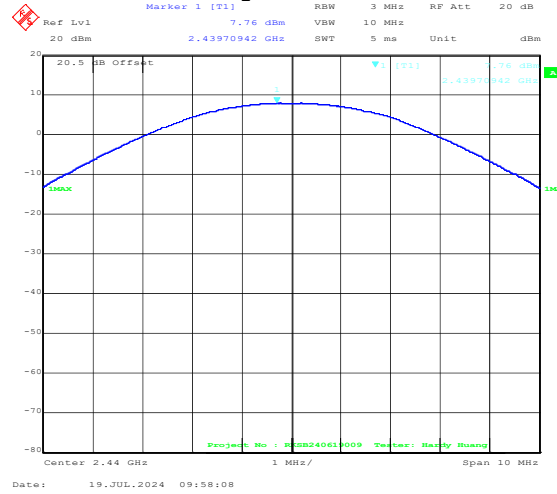
MAXIMUM CONDUCTED OUTPUT POWER**Test Result:** Compliant.*EUT operation mode: Transmitting*

Mode	Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Limit (dBm)	Result
BLE (125 kbps)	Low	2402	7.90	30	Pass
	Middle	2440	7.76	30	Pass
	High	2480	7.49	30	Pass
BLE (500 kbps)	Low	2402	7.90	30	Pass
	Middle	2440	7.76	30	Pass
	High	2480	7.60	30	Pass
BLE (1 Mbps)	Low	2402	8.55	30	Pass
	Middle	2440	8.03	30	Pass
	High	2480	7.96	30	Pass
BLE (2 Mbps)	Low	2402	8.72	30	Pass
	Middle	2440	8.48	30	Pass
	High	2480	8.38	30	Pass
Zigbee	Low	2405	8.47	30	Pass
	Middle	2440	8.42	30	Pass
	High	2480	8.30	30	Pass

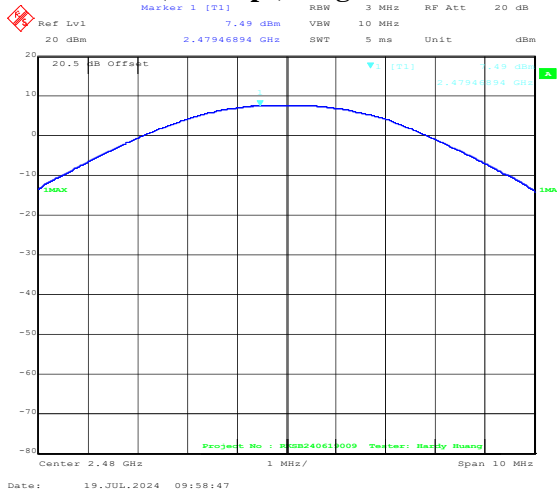
BLE (125 kbps): Low Channel



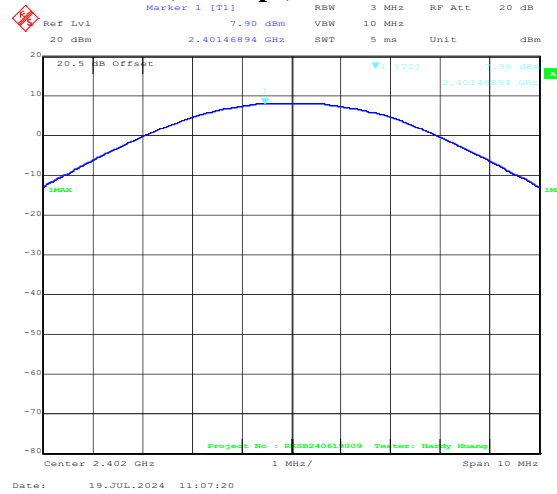
BLE (125 kbps): Middle Channel



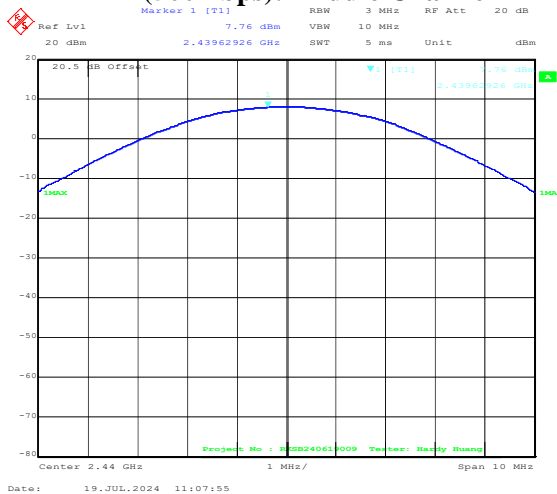
BLE (125 kbps): High Channel



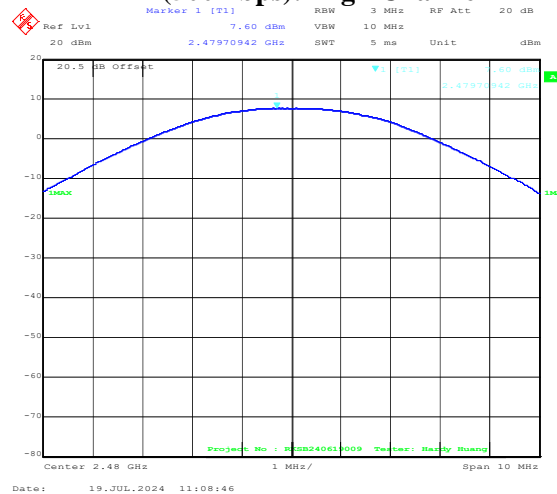
BLE (500 kbps): Low Channel



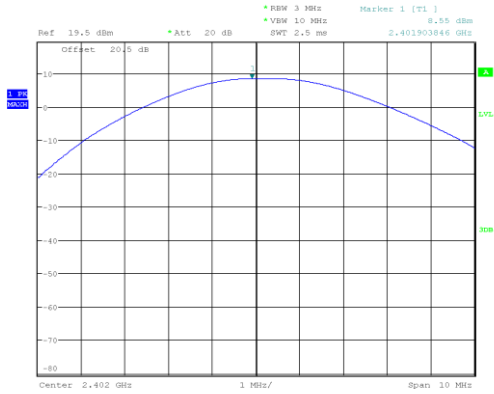
BLE (500 kbps): Middle Channel



BLE (500 kbps): High Channel

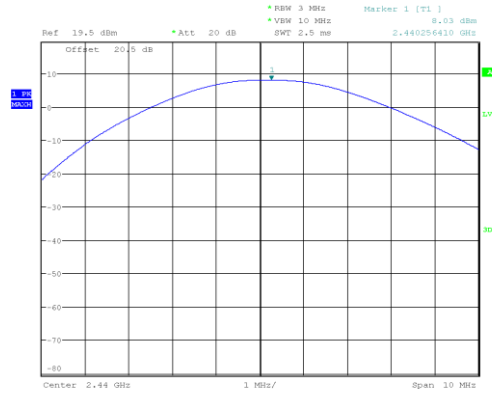


BLE (1 Mbps): Low Channel



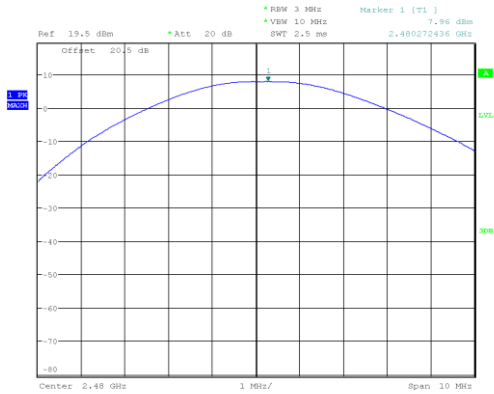
ProjectNo.:RKS240619009 Tester:Hardy Huang
 Date: 26.AUG.2024 19:25:26

BLE (1 Mbps): Middle Channel



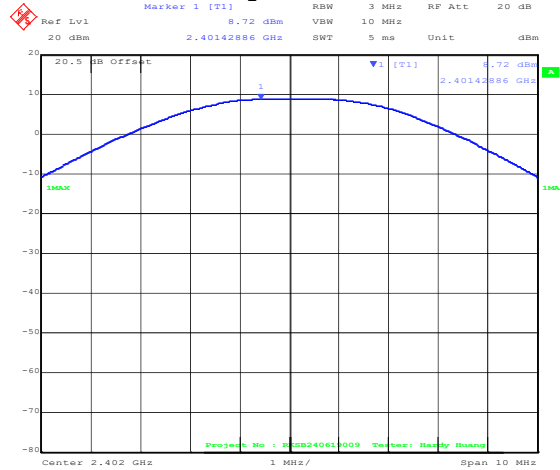
ProjectNo.:RKS240619009 Tester:Hardy Huang
 Date: 26.AUG.2024 19:26:27

BLE (1 Mbps): High Channel



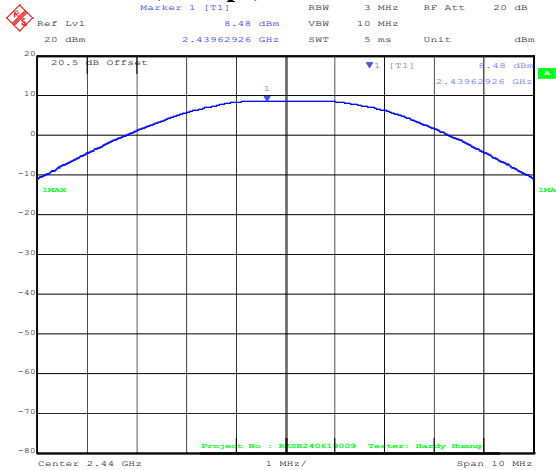
ProjectNo.:RKS240619009 Tester:Hardy Huang
 Date: 26.AUG.2024 19:27:04

BLE (2 Mbps): Low Channel



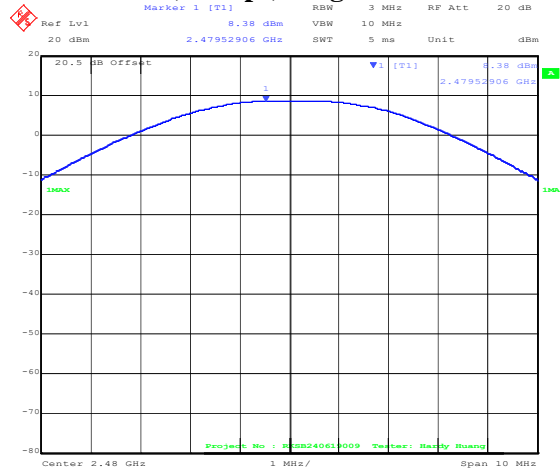
Date: 18.JUL.2024 10:27:47

BLE (2 Mbps): Middle Channel



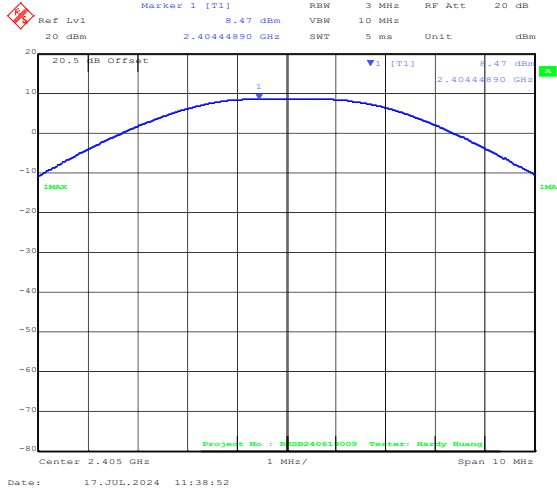
Date: 18.JUL.2024 10:26:17

BLE (2 Mbps): High Channel

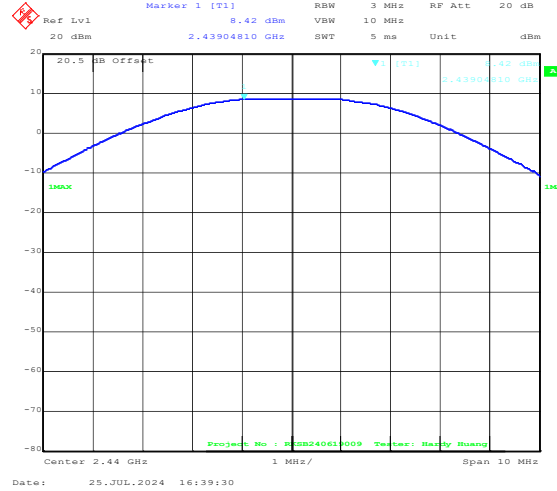


Date: 18.JUL.2024 10:28:29

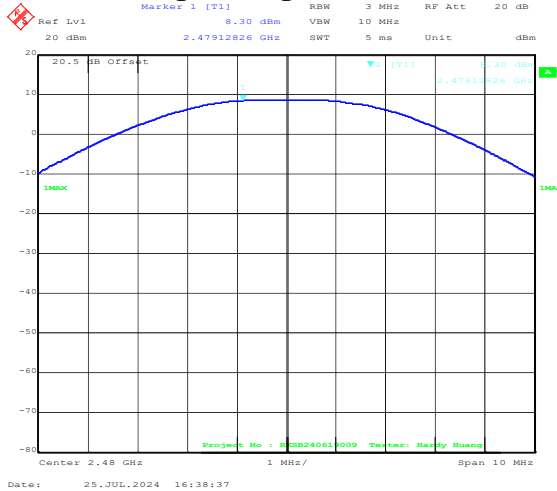
Zigbee: Low Channel



Zigbee: Middle Channel



Zigbee: High Channel



BAND EDGE

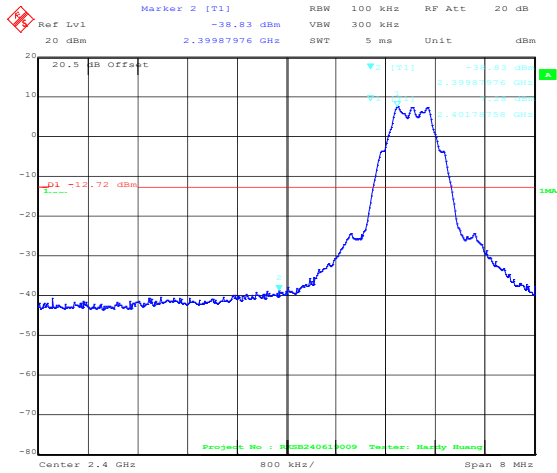
Test Result: Compliant.

EUT operation mode: Transmitting

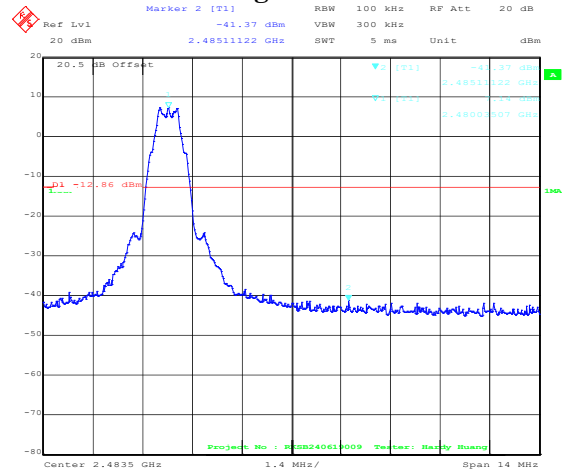
Mode	Channel	Frequency (MHz)	Result (dBc)	Limit (dBc)
BLE (125 kbps)	Low	2402	38.83	20
	High	2480	41.37	
BLE (500 kbps)	Low	2402	41.21	
	High	2480	43.93	
BLE (1 Mbps)	Low	2402	47.40	
	High	2480	50.74	
BLE (2 Mbps)	Low	2402	41.39	
	High	2480	42.85	
Zigbee	Low	2405	48.07	
	High	2480	42.47	

BLE (125 kbps):

Left Side

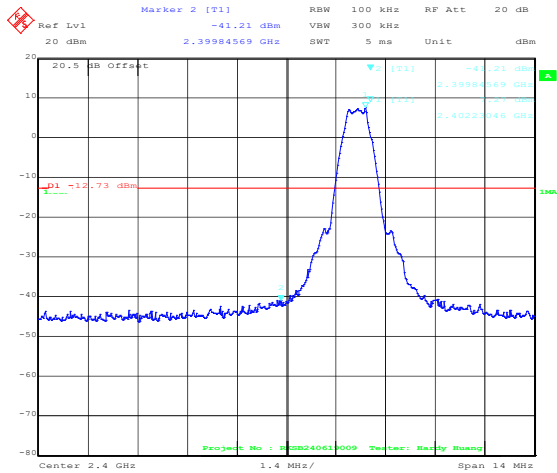


Right Side

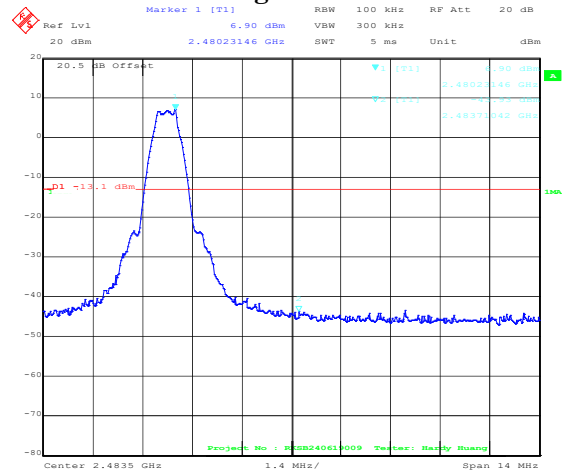


BLE (500 kbps):

Left Side

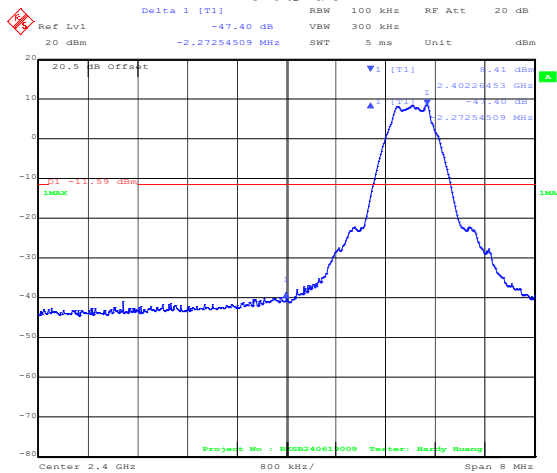


Right Side

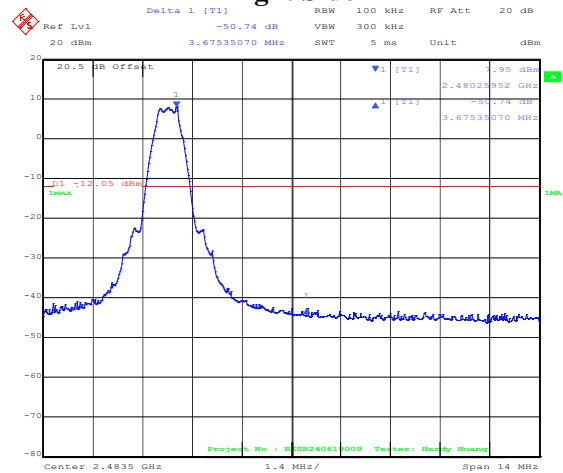


BLE (1 Mbps):

Left Side

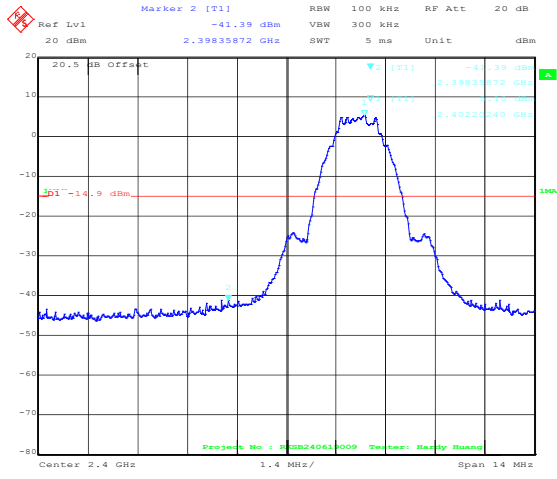


Right Side

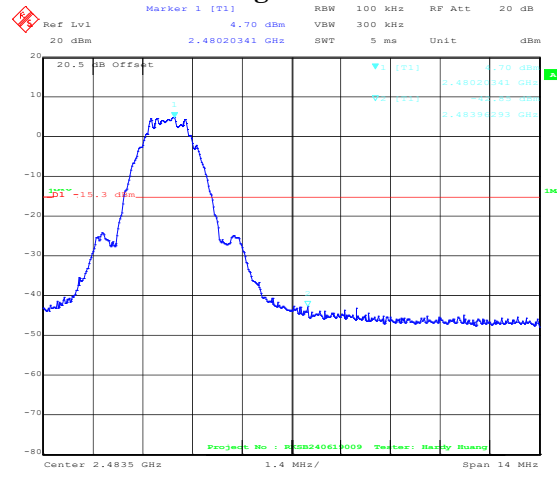


BLE (2 Mbps):

Left Side

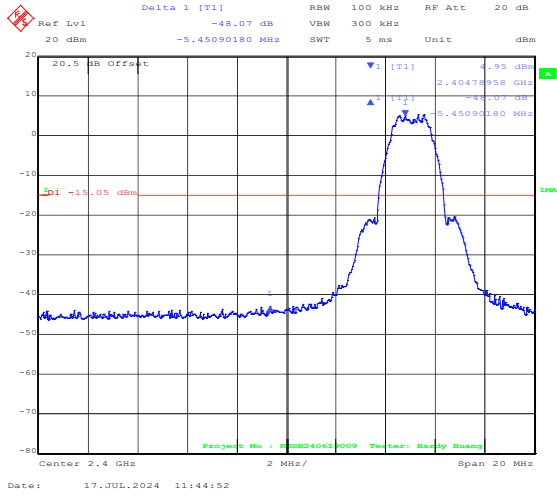


Right Side

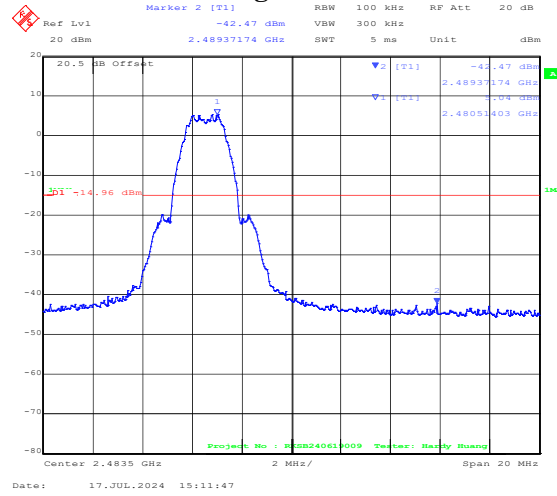


Zigbee:

Left Side



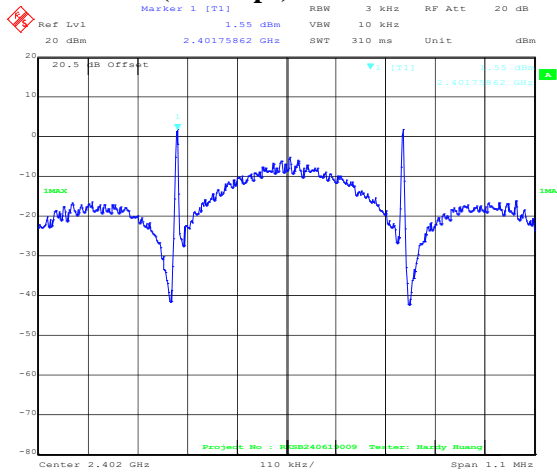
Right Side



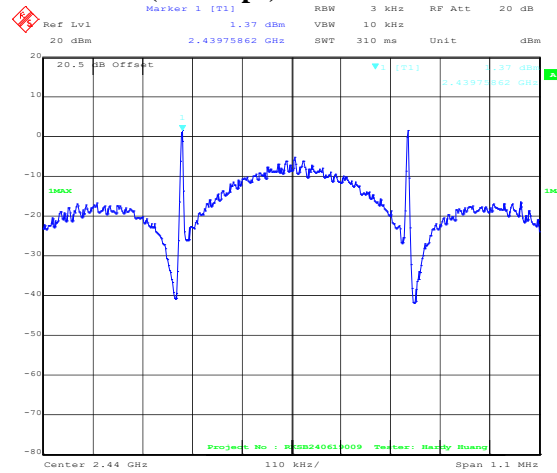
POWER SPECTRAL DENSITY**Test Result:** Compliant.*EUT operation mode: Transmitting*

Mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
BLE (125 kbps)	Low	2402	1.55	≤8
	Middle	2440	1.37	≤8
	High	2480	1.16	≤8
BLE (500 kbps)	Low	2402	-9.24	≤8
	Middle	2440	-9.51	≤8
	High	2480	-9.69	≤8
BLE (1 Mbps)	Low	2402	-6.02	≤8
	Middle	2440	-6.30	≤8
	High	2480	-6.47	≤8
BLE (2 Mbps)	Low	2402	-8.33	≤8
	Middle	2440	-8.49	≤8
	High	2480	-8.71	≤8
Zigbee	Low	2405	-6.22	≤8
	Middle	2440	-6.32	≤8
	High	2480	-7.12	≤8

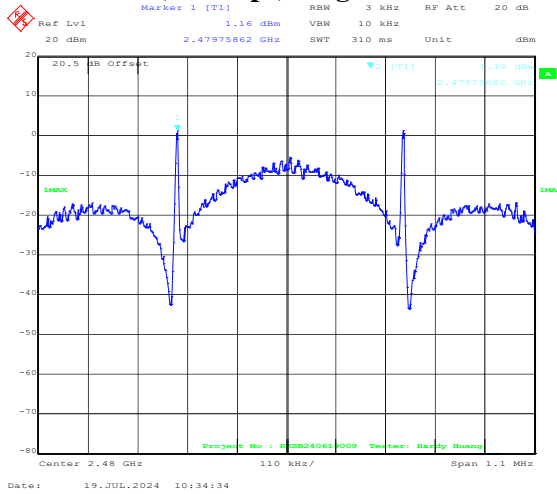
BLE (125 kbps): Low Channel



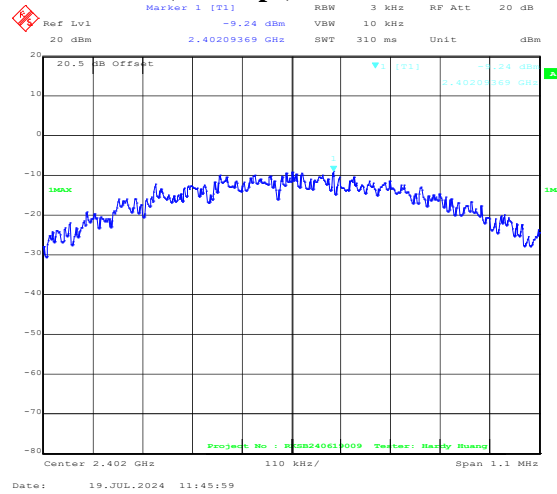
BLE (125 kbps): Middle Channel



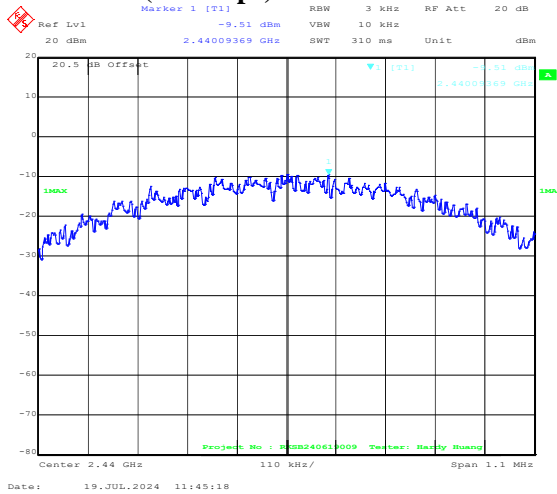
BLE (125 kbps): High Channel



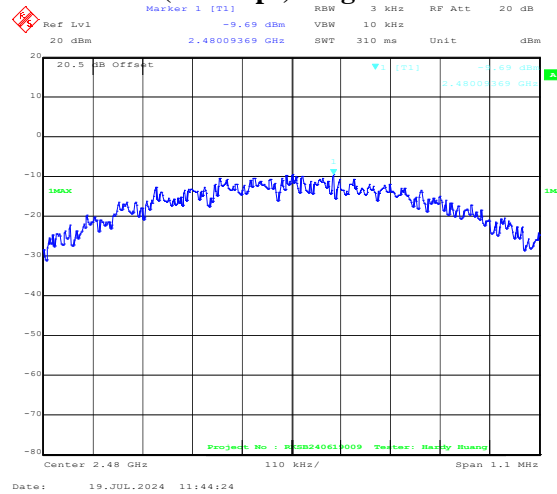
BLE (500 kbps): Low Channel



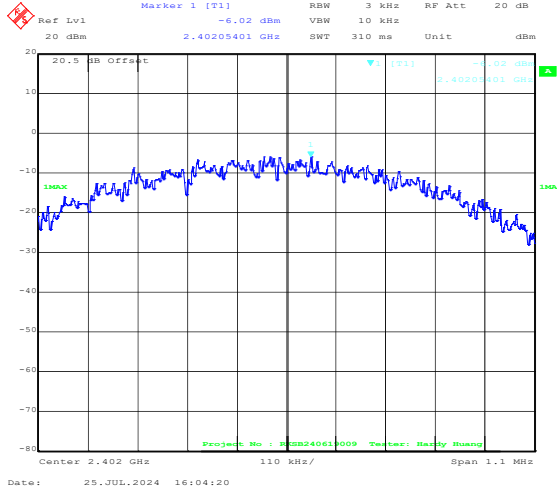
BLE (500 kbps): Middle Channel



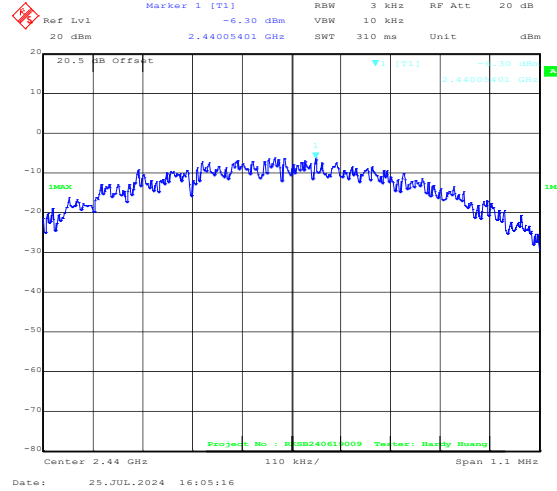
BLE (500 kbps): High Channel



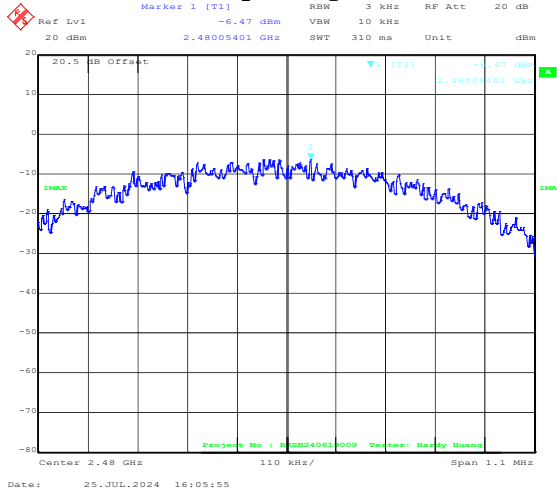
BLE (1 Mbps): Low Channel



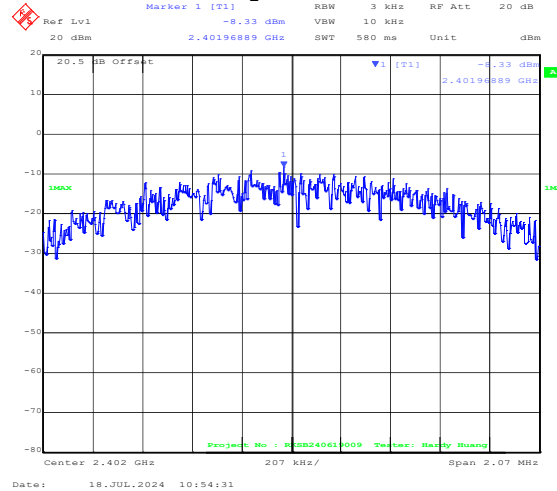
BLE (1 Mbps): Middle Channel



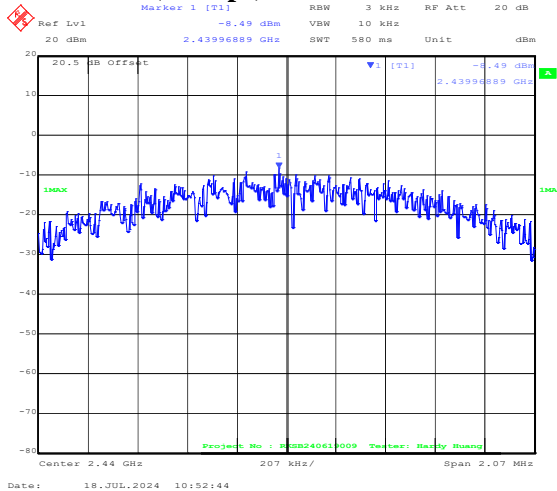
BLE (1 Mbps): High Channel



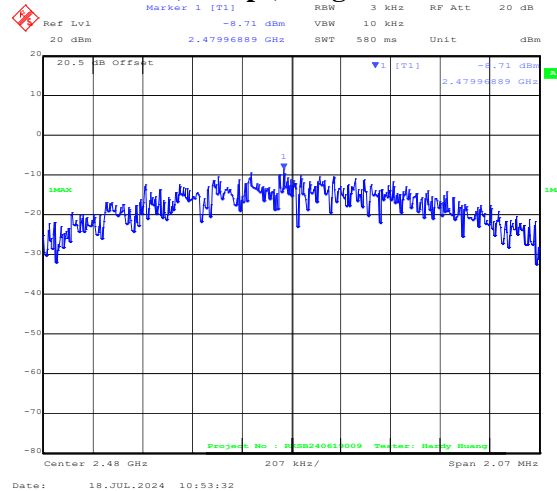
BLE (2 Mbps): Low Channel



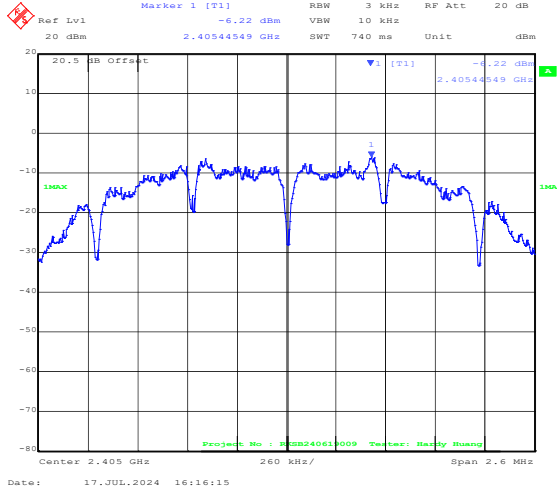
BLE (2 Mbps): Middle Channel



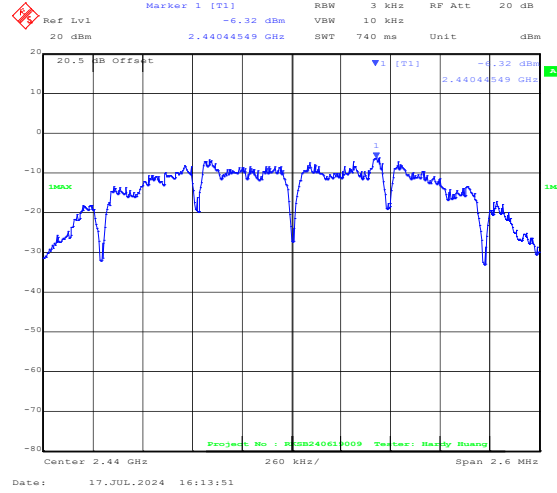
BLE (2 Mbps): High Channel



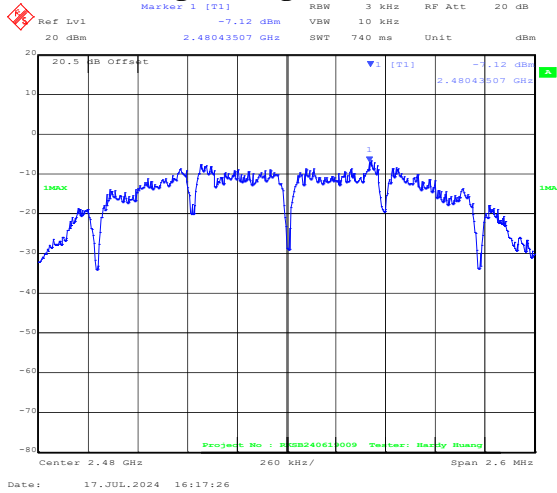
Zigbee: Low Channel



Zigbee: Middle Channel



Zigbee: High Channel



EUT PHOTOGRAPHS

Please refer to the attachment EXHIBIT A - EUT EXTERNAL 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 *******