

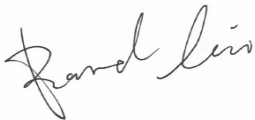
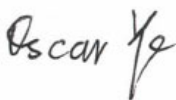
FCC PART 15.247 TEST REPORT

For

Anhui Hangke Optoelectronics Co., Ltd.

Optoelectric Park, Tongcheng Economic Development Zone, Anqing, Anhui, China

FCC ID: 2A2Z6-HKAUG240924

Report Type: Original Report	Product Name: MAGI LUX BLUETOOTH SPEAKER
Report Number:	RKSB240819001-00C
Report Date:	2024-10-22
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

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.

TABLE OF CONTENTS

REPORT REVISION HISTORY.....	4
GENERAL INFORMATION.....	5
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
OBJECTIVE	5
TEST METHODOLOGY	5
MEASUREMENT UNCERTAINTY	6
TEST FACILITY	6
SYSTEM TEST CONFIGURATION	7
DESCRIPTION OF TEST CONFIGURATION	7
EUT EXERCISE SOFTWARE	7
SPECIAL ACCESSORIES	7
EQUIPMENT MODIFICATIONS	7
SUPPORT EQUIPMENT LIST AND DETAILS	8
EXTERNAL I/O CABLE.....	8
BLOCK DIAGRAM OF TEST SETUP	8
TEST EQUIPMENT LIST	10
SUMMARY OF TEST RESULTS	11
FCC §1.1310 & §2.1093 –RF EXPOSURE	12
FCC §15.203 – ANTENNA REQUIREMENT	13
APPLICABLE STANDARD	13
ANTENNA CONNECTOR CONSTRUCTION	13
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	14
APPLICABLE STANDARD	14
TEST SYSTEM SETUP	14
EMI TEST RECEIVER SETUP.....	14
TEST PROCEDURE	15
TEST RESULTS SUMMARY	15
TEST DATA: SEE APPENDIX	15
FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS.....	16
APPLICABLE STANDARD	16
TEST SYSTEM SETUP	16
EMI TEST RECEIVER SETUP.....	17
TEST PROCEDURE	17
TEST RESULTS SUMMARY	18
TEST DATA: SEE APPENDIX	18
FCC §15.247(a) (1)-CHANNEL SEPARATION TEST	19
APPLICABLE STANDARD	19
TEST PROCEDURE	19
TEST DATA: SEE APPENDIX	19
FCC §15.247(a) (1) – 20 dB EMISSION BANDWIDTH.....	20
APPLICABLE STANDARD	20
TEST PROCEDURE	20
TEST DATA: SEE APPENDIX	20
FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST	21

APPLICABLE STANDARD	21
TEST PROCEDURE	21
TEST DATA: SEE APPENDIX	21
FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME).....	22
APPLICABLE STANDARD	22
TEST PROCEDURE	22
TEST DATA: SEE APPENDIX	22
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT	23
APPLICABLE STANDARD	23
TEST PROCEDURE	23
TEST DATA: SEE APPENDIX	23
FCC §15.247(d) - BAND EDGES TESTING	24
APPLICABLE STANDARD	24
TEST PROCEDURE	24
TEST DATA: SEE APPENDIX	24
EUT PHOTOGRAPHS	25
TEST SETUP PHOTOGRAPHS	26
APPENDIX - TEST DATA.....	27
ENVIRONMENTAL CONDITIONS & TEST INFORMATION.....	27
AC LINE CONDUCTED EMISSIONS	28
RADIATED EMISSIONS & RESTRICTED BANDS EMISSIONS	30
CHANNEL SEPARATION TEST	49
20 dB BANDWIDTH TEST	51
QUANTITY OF HOPPING CHANNEL TEST	54
TIME OF OCCUPANCY (DWELL TIME)	56
PEAK OUTPUT POWER MEASUREMENT.....	59
BAND EDGES.....	62

REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RKSB240819001-00C	R1 V1	2024-10-22	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Anhui Hangke Optoelectronics Co., Ltd.
Tested Model:	AGSPKGY2201
Product Name:	MAGI LUX BLUETOOTH SPEAKER
Power Supply:	DC 5 V from USB port or DC 3.7V from battery
RF Function:	Classic BT
Operating Band/Frequency:	2402-2480 MHz
Maximum Output Power:	GFSK: -2.17 dBm $\pi/4$ -DQPSK: -1.40 dBm 8DPSK: -0.97 dBm
Channel Number:	79
Channel Separation:	1 MHz
Modulation Type:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Antenna Type:	PCB Antenna
★Maximum Antenna Gain:	-0.58 dBi

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

All measurement and tested data in this report was gathered from production sample serial number: RKS240819001-1 (Assigned by BACL (Kunshan). The EUT supplied by the applicant was received on 2024-08-19.)

Objective

This test report is prepared for *Anhui Hangke Optoelectronics 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 Compliance Testing of Unlicensed Wireless Devices and 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°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:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	40	2442
1	2403	...	...
...	...	...	...
...	...	78	2480
39	2441	/	/

EUT was tested with Channel 0, 39 and 78.

EUT Exercise Software

RF Test Tool: FCC Assist 1.0.2.2

★Power level: 10

Note: The power level was declared by the applicant.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

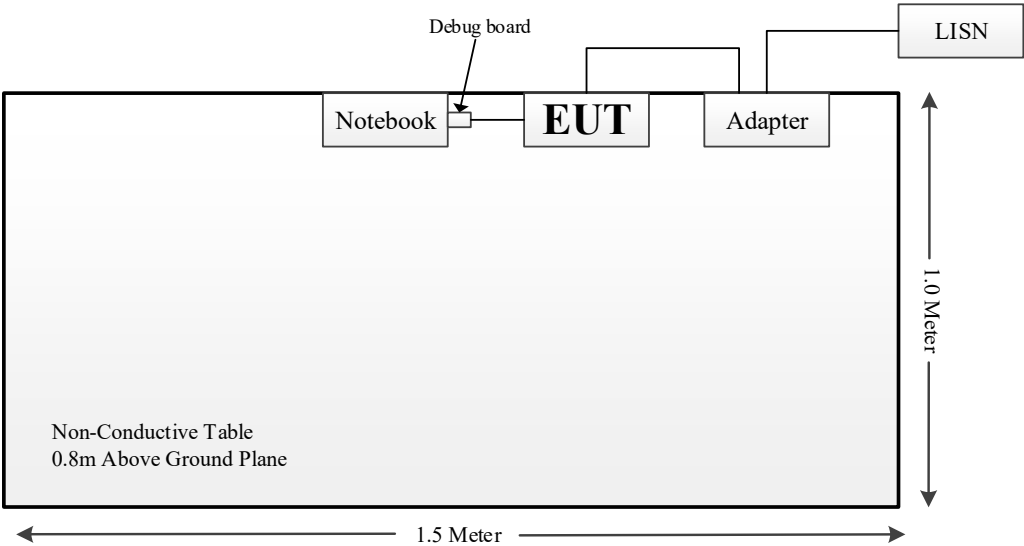
Manufacturer	Description	Model	Serial Number
Power on Tools Co.,Ltd.	Adapter	DA-00051000UL001	Unknown
Lenovo	Notebook	Y700P	PF2B7PL5
Unknown	Debug board	Unknown	Unknown

External I/O Cable

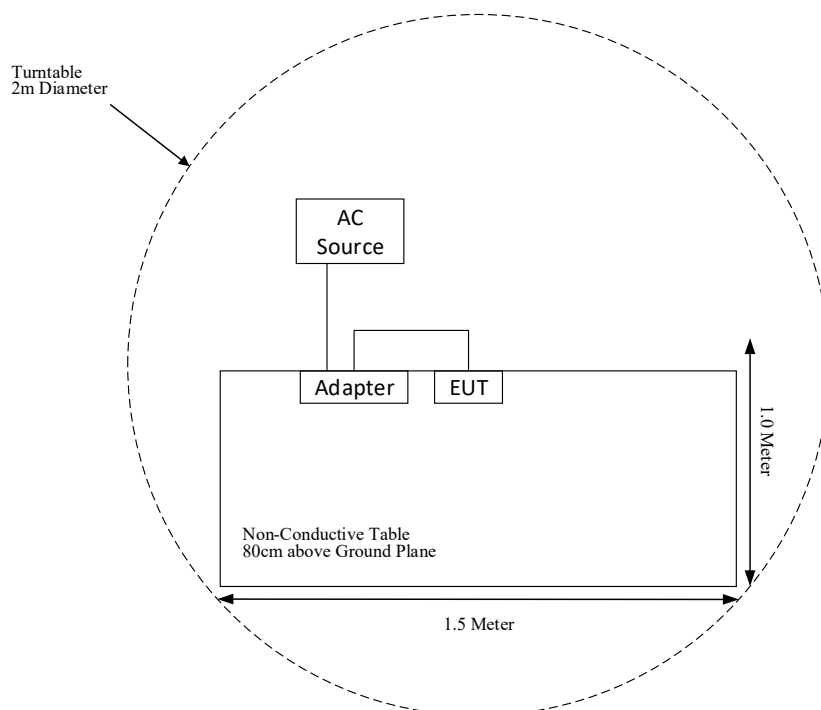
Cable Description	Length (m)	From Port	To Port
Power Cable 1	1.0	AC Source/LISN	Adapter
Power Cable 2	1.5	Adapter	EUT
USB Cable	0.1	EUT	Debug board

Block Diagram of Test Setup

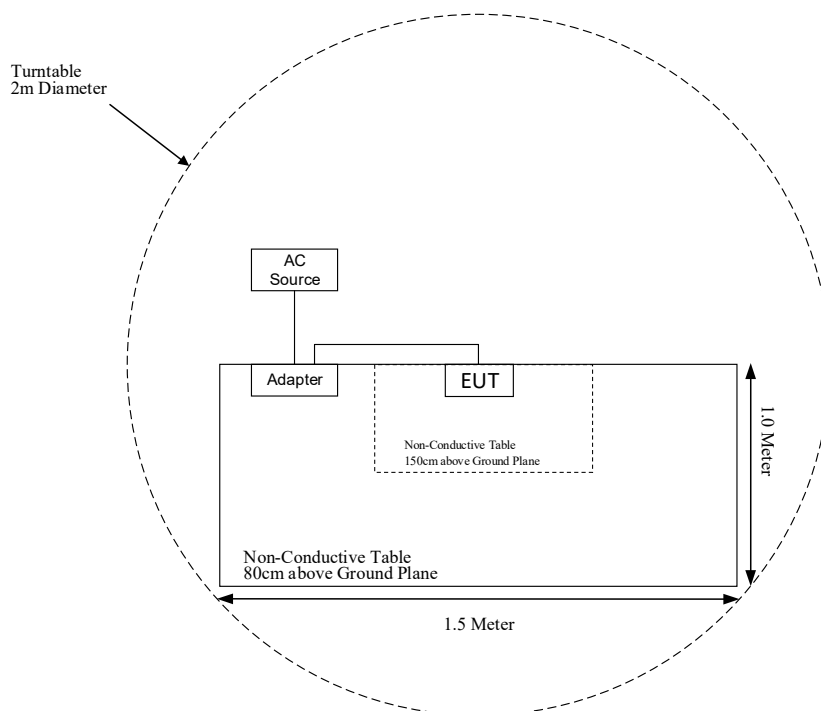
For Conducted Emissions:



For Radiated Emissions(Below 1GHz):



For Radiated Emissions(Above 1GHz):



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
Narda	6dB Attenuator	773-6	10690812-2-1	2024-01-12	2025-01-11
Sonoma Instrument	Amplifier	310N	171205	2024-04-23	2025-04-22
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
Radiated Emission Test (Chamber #2)					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2024-04-25	2025-04-24
ETS-LINDGREN	Horn Antenna	3115	9207-3900	2024-06-27	2025-06-26
ETS-LINDGREN	Horn Antenna	3116	2516	2023-12-08	2024-12-07
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	2024-04-25	2025-04-24
Narda	Attenuator	20dB	020	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	2024-04-25	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	101116	2024-04-24	2025-04-23
Narda	Attenuator	10dB	N/A	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	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).

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)	Radiated Emissions & Restricted Bands Emission	Compliant
§15.247(a)(1)	20 dB Emission Bandwidth	Compliant
§15.247(a)(1)	Channel Separation Test	Compliant
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliant
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant
§15.247(b)(1)	Peak Output Power Measurement	Compliant
§15.247(d)	Band edges	Compliant

FCC §1.1310 & §2.1093 – RF EXPOSURE

Applicable Standard

According to §2.1093 and §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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ 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.

Calculated Data:

Mode	Frequency Range (MHz)	Max Tune-up Conducted Power		Calculated Distance (mm)	Calculated Value	Threshold (1-g SAR)	SAR Test Exclusion
		(dBm)	(mW)				
BLE	2402~2480	-2.5	0.56	5.0	0.18	3.0	Yes
Classic BT	2402~2480	-0.5	0.89	5.0	0.28	3.0	Yes

Note:

1. For the above tune up power were declared by the manufacturer.

Result: No SAR test is required.

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 Bluetooth, and the antenna gain is -0.58 dBi, which is permanently attached to the unit, fulfill the requirement of this section. Please refer to the EUT photos.

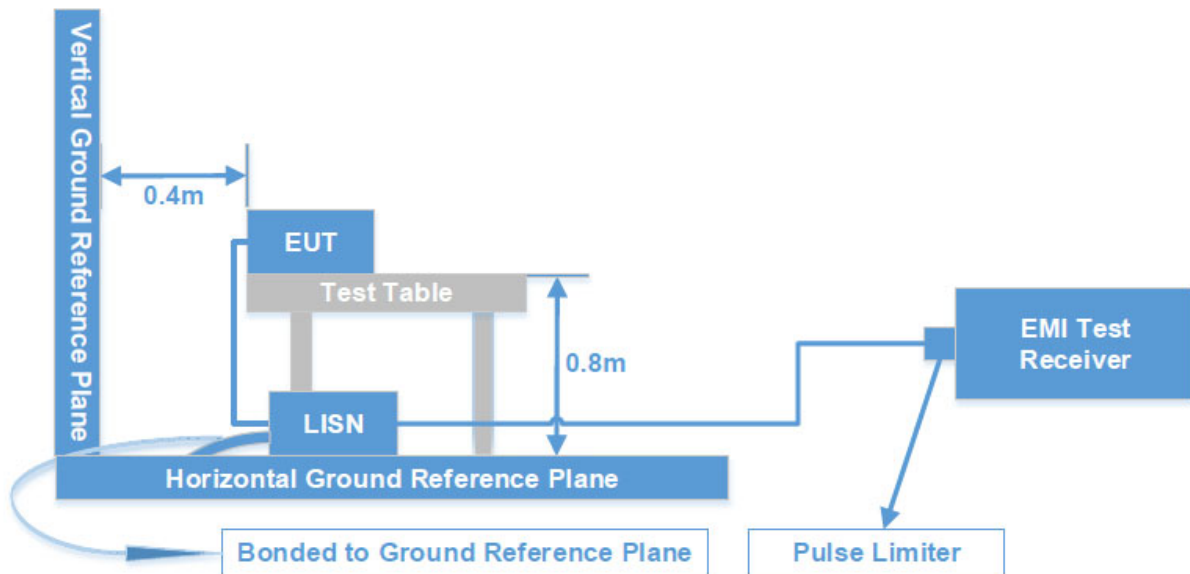
Result: Compliant.

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

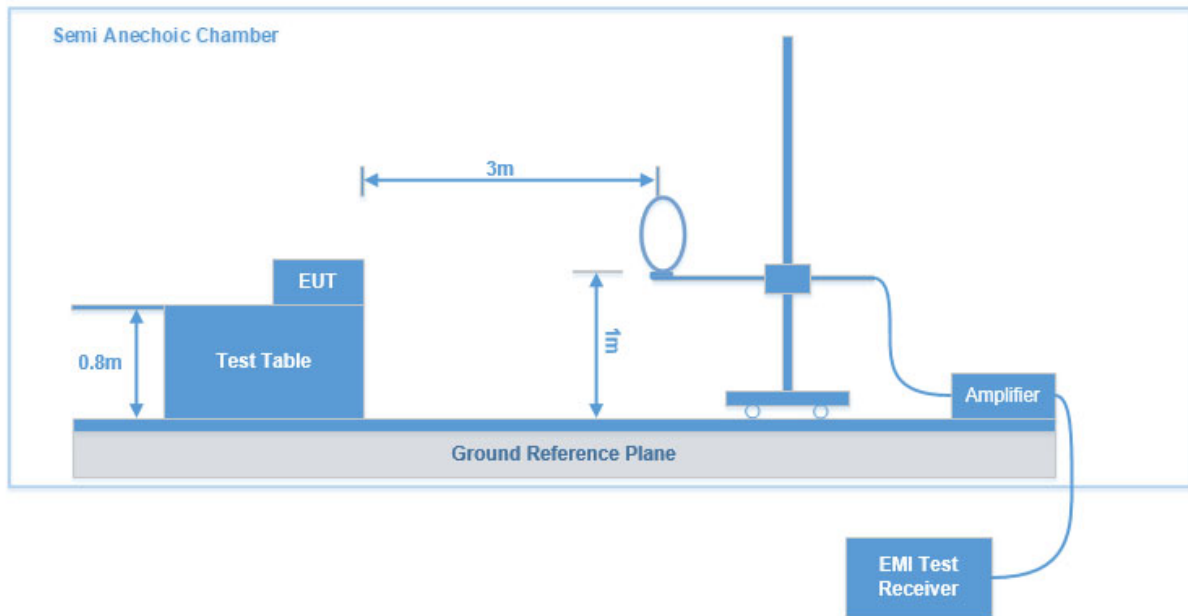
FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

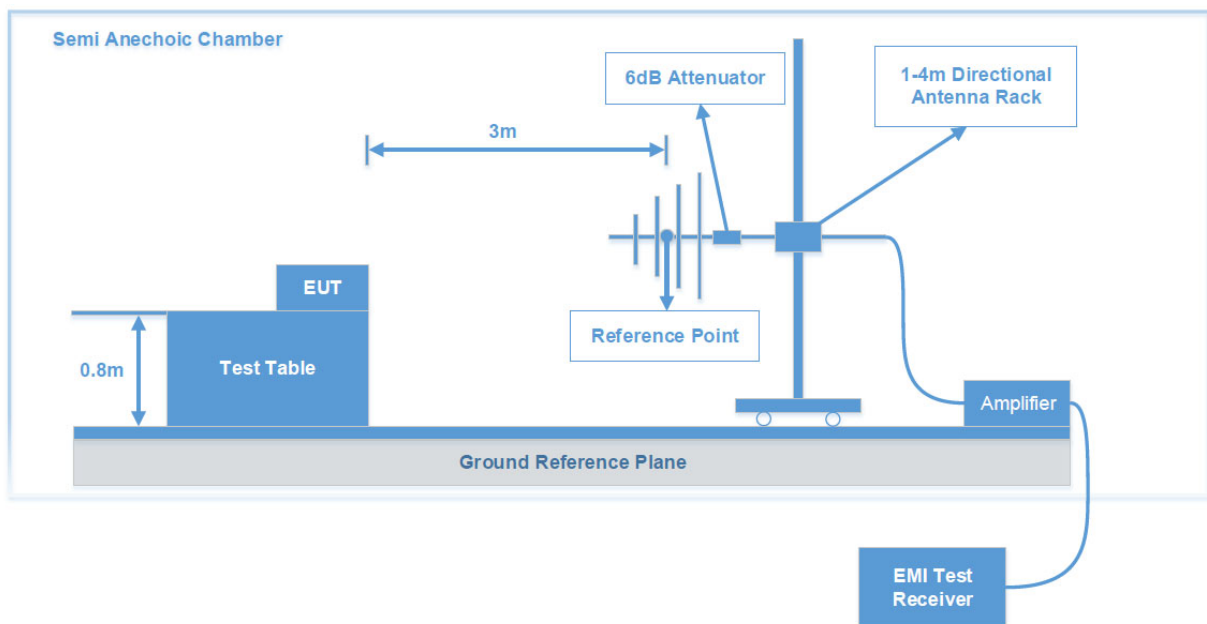
FCC §15.205; §15.209; §15.247(d)

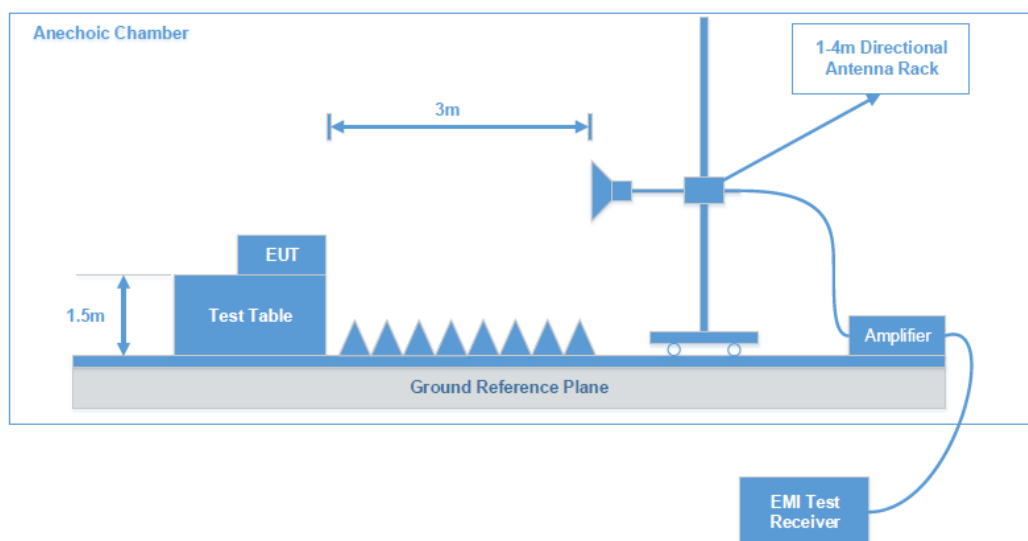
Test System Setup

9 kHz - 30 MHz:



30 MHz - 1 GHz:



Above 1GHz:

The radiated emission tests were performed in the 3 meters, 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	Detector
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

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.

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.

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) (1)-CHANNEL SEPARATION TEST

Applicable Standard

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

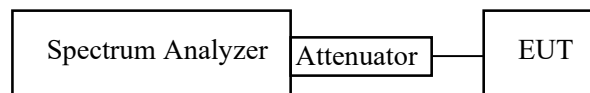
Test Procedure

According to ANSI C63.10-2013 Section 7.8.2

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a. Span: Wide enough to capture the peaks of two adjacent channels.
- b. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- c. Video (or average) bandwidth (VBW) $\geq$ RBW.
- d. Sweep: Auto.
- e. Detector function: Peak.
- f. Trace: Max hold.
- g. Allow the trace to stabilize.

Use the marker-delta function to determine the separation between the peaks of the adjacent channels.



Test Data: See Appendix

FCC §15.247(a) (1) – 20 dB EMISSION BANDWIDTH

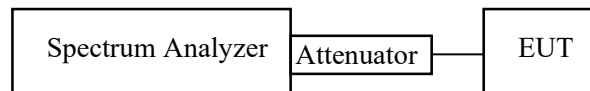
Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

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 it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



Test Data: See Appendix

FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

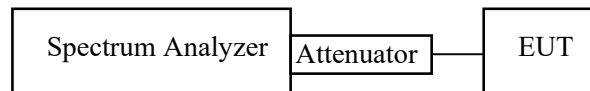
Test Procedure

According to ANSI C63.10-2013 Section 7.8.3

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a. Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- b. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- c. VBW $\geq$ RBW.
- d. Sweep: Auto.
- e. Detector function: Peak.
- f. Trace: Max hold.
- g. Allow the trace to stabilize.

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies.



Test Data: See Appendix

FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

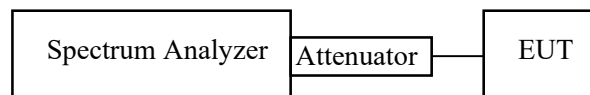
Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

According to ANSI C63.10-2013 Section 7.8.4

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a. Span: Zero span, centered on a hopping channel.
- b. RBW shall be $\leq$ channel spacing and where possible RBW should be set $\geq 1 / T$, where T is the expected dwell time per channel.
- c. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
- d. Detector function: Peak.
- e. Trace: Max hold.



Test Data: See Appendix

FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

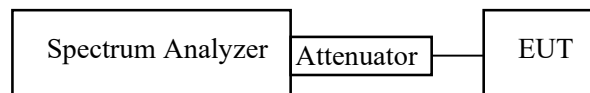
Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Test Procedure

According to ANSI C63.10-2013 Section 7.8.5

- a. Use the following spectrum analyzer settings:
 - 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
 - 2) RBW > 20 dB bandwidth of the emission being measured.
 - 3) VBW $\geq$ RBW.
 - 4) Sweep: Auto.
 - 5) Detector function: Peak.
 - 6) Trace: Max hold.
- b. Allow trace to stabilize.
- c. Use the marker-to-peak function to set the marker to the peak of the emission.
- d. The indicated level is the peak output power, after any corrections for external attenuators and cables.
- e. A plot of the test results and setup description shall be included in the test report.



Test Data: See Appendix

FCC §15.247(d) - BAND EDGES TESTING

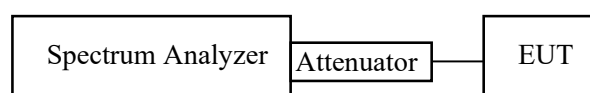
Applicable Standard

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 Section 7.8.6

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 100 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

EUT PHOTOGRAPHS

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

TEST SETUP PHOTOGRAPHS

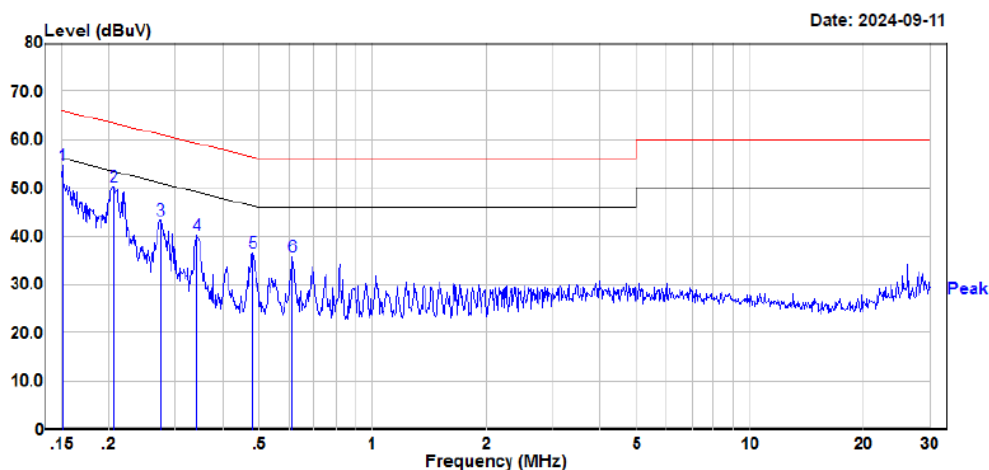
Please refer to the attachment EXHIBIT C - TEST SETUP PHOTOGRAPHS.

APPENDIX - TEST DATA

Environmental Conditions & Test Information

Test Item:	AC LINE CONDUCTED EMISSIONS	RADIATED EMISSIONS			CHANNEL SEPARATION TEST
		9kHz - 1GHz	1 GHz - 18 GHz	18 GHz - 25 GHz	
Test Date:	2024-09-11	2024-09-07	2024-09-15	2024-09-26	2024-09-21
Temperature:	27.5 °C	26.3 °C	25.6 °C	23.8 °C	24.5 °C
Relative Humidity:	61 %	58 %	60 %	58 %	55 %
ATM Pressure:	101.0 kPa	100.5 kPa	100.4 kPa	101.5 kPa	101.4 kPa
Test Result:	Pass	Pass	Pass	Pass	Pass
Test Engineer:	Leah Li	Grace Luo	Destine Hu	Hugh Wu	Jason Lu

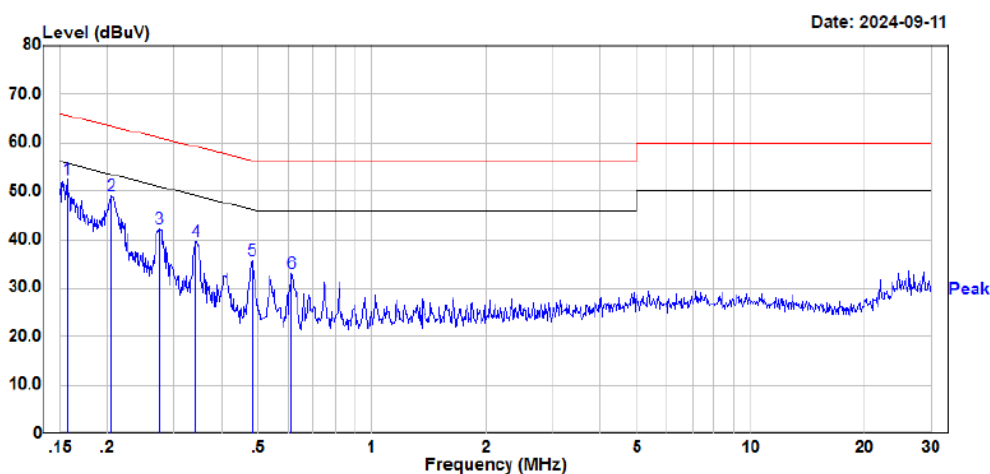
Test Item:	20 DB BANDWIDTH TEST	Quantity Of Hopping Channel Test	Time Of Occupancy (Dwell Time)	PEAK OUTPUT POWER MEASUREMENT	BAND EDGES TESTING
Test Date:	2024-09-21	2024-09-21	2024-09-23	2024-09-21	2024-09-21
Temperature:	24.5 °C	24.5 °C	24.9 °C	24.5 °C	24.5 °C
Relative Humidity:	55 %	55 %	58 %	55 %	55 %
ATM Pressure:	101.4 kPa	101.4 kPa	101.6 kPa	101.4 kPa	101.4 kPa
Test Result:	Pass	Pass	Pass	Pass	Pass
Test Engineer:	Jason Lu	Jason Lu	Jason Lu	Jason Lu	Jason Lu

AC LINE CONDUCTED EMISSIONS*EUT operation mode: Transmitting in 8DPSK Mode middle channel (maximum output power mode)***AC 120V/60 Hz, Line**

Site : CE
Condition : limit\FCC PART 15.207
 : DET:Peak
Project No. : RKSB240819001
Model : AGSPKGY2201
Phase : L
Voltage : 120V/60Hz
Mode : BT
Test Equipment : ENV216,ESR
Temperature : 27.5°C
Humidity : 61%
Atmospheric pressure: 101.0kPa
Test Engineer : Leah Li

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.151	34.58	20.12	54.70	65.96	-11.26	Peak
2	0.205	30.27	20.11	50.38	63.39	-13.01	Peak
3	0.274	23.03	20.15	43.18	60.99	-17.81	Peak
4	0.341	20.04	20.19	40.23	59.17	-18.94	Peak
5	0.479	16.32	20.17	36.49	56.35	-19.86	Peak
6	0.612	15.74	20.09	35.83	56.00	-20.17	Peak

AC 120V/60 Hz, Neutral



Site : CE
Condition : limit\FCC PART 15.207
: DET:Peak
Project No. : RKSB240819001
Model : AGSPKGY2201
Phase : N
Voltage : 120V/60Hz
Mode : BT
Test Equipment : ENV216,ESR
Temperature : 27.5°C
Humidity : 61%
Atmospheric pressure: 101.0kPa
Test Engineer : Leah Li

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.156	32.41	20.11	52.52	65.67	-13.15	Peak
2	0.204	28.85	20.11	48.96	63.43	-14.47	Peak
3	0.274	22.19	20.15	42.34	60.99	-18.65	Peak
4	0.341	19.52	20.19	39.71	59.17	-19.46	Peak
5	0.482	15.63	20.16	35.79	56.31	-20.52	Peak
6	0.612	12.97	20.09	33.06	56.00	-22.94	Peak

RADIATED EMISSIONS & RESTRICTED BANDS EMISSIONS

EUT operation mode: Transmitting

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

9 kHz-30 MHz: (Transmitting maximum output power 8 DPSK mode and middle channel)

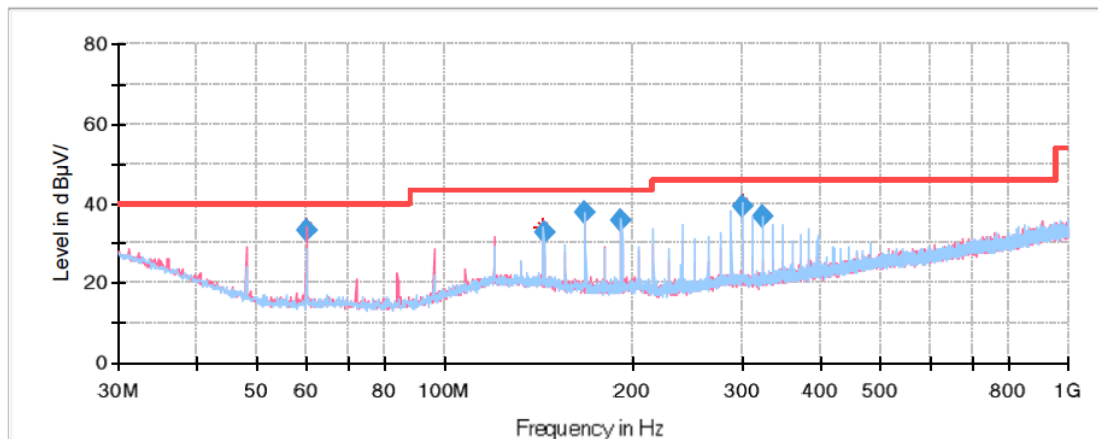
The amplitude of spurious emissions attenuated more than 20 dB below the limit was not be recorded.

30 MHz - 1 GHz (Transmitting in maximum output power 8DPSK mode):

Low Channel: 2402 MHz

Common Information

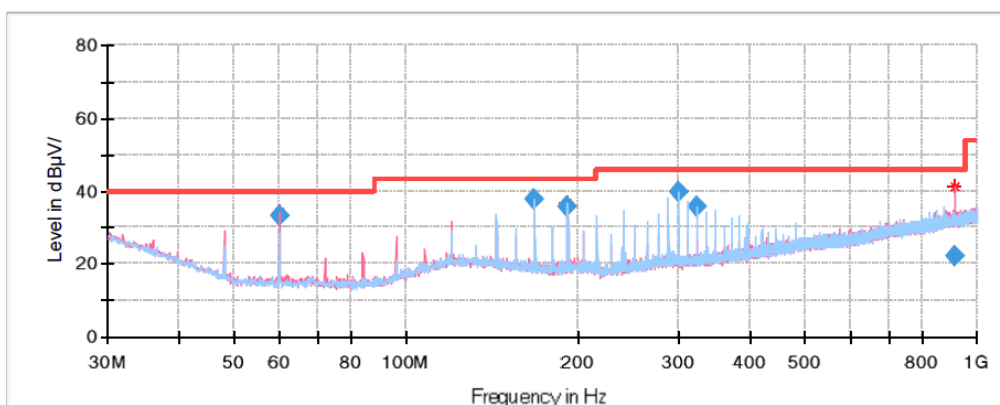
Project No:	RKSB240819001
Test Mode:	Transmitting in BT mode low channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Grace Luo

**Final Result**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
59.992550	33.45	40.00	6.55	V	-17.6
144.015500	32.72	43.50	10.78	H	-11.6
168.019100	37.58	43.50	5.92	H	-12.5
191.997500	35.75	43.50	7.75	H	-12.5
299.995250	39.38	46.00	6.62	H	-10.5
324.028250	36.63	46.00	9.37	H	-9.9

Middle Channel: 2441 MHz**Common Information**

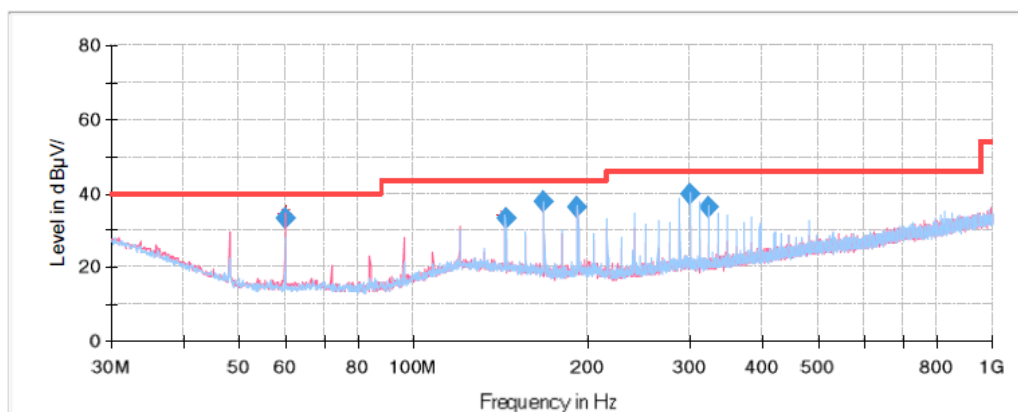
Project No: RKSB240819001
 Test Mode: Transmitting in BT mode middle channel
 Standard: FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
 Test Engineer: Grace Luo

**Final Result**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	PoI	Corr. (dB/m)
60.003050	33.43	40.00	6.57	V	-17.6
168.002600	37.54	43.50	5.96	H	-12.5
192.020000	35.93	43.50	7.57	H	-12.5
300.022250	39.94	46.00	6.06	H	-10.5
324.025550	35.52	46.00	10.48	H	-9.9
913.361950	22.28	46.00	23.72	V	1.2

High Channel:2480 MHz**Common Information**

Project No:	RKSB240819001
Test Mode:	Transmitting in BT mode high channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Equipment:	ESCI, JB3, 310N
Test Engineer:	Grace Luo

**Final_Result**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
60.001250	33.43	40.00	6.57	V	-17.6
144.019100	33.35	43.50	10.15	H	-11.6
168.012500	37.66	43.50	5.84	H	-12.5
192.014900	36.26	43.50	7.24	H	-12.5
300.030650	39.83	46.00	6.17	H	-10.5
324.004850	36.15	46.00	9.85	H	-9.9

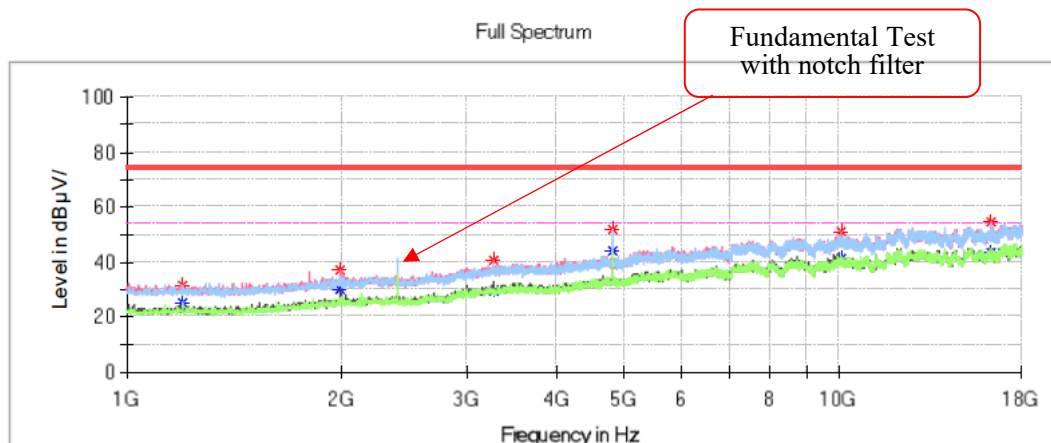
1 GHz - 18 GHz:

GFSK:

Low Channel: 2402 MHz

Common Information

Project No.: RKSB240819001
 Test Mode: BT
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Destine Hu

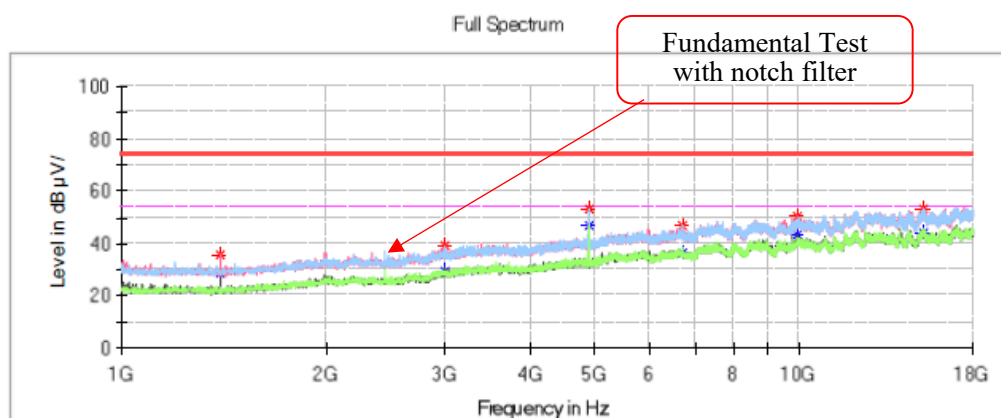


Critical_Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1198.900000	---	24.99	54.00	29.01	H	-15.2
1198.900000	31.80	---	74.00	42.20	H	-15.2
1996.200000	---	30.09	54.00	23.91	V	-11.8
1996.200000	36.92	---	74.00	37.08	V	-11.8
3274.600000	---	29.35	54.00	24.65	V	-7.3
3274.600000	40.50	---	74.00	33.50	V	-7.3
4802.900000	---	44.37	54.00	9.63	H	-3.2
4802.900000	51.54	---	74.00	22.46	H	-3.2
10023.600000	---	41.10	54.00	12.90	H	7.2
10023.600000	50.95	---	74.00	23.05	H	7.2
16322.100000	---	43.70	54.00	10.30	V	10.3
16322.100000	54.84	---	74.00	19.16	V	10.3

Middle Channel: 2441 MHz**Common Information**

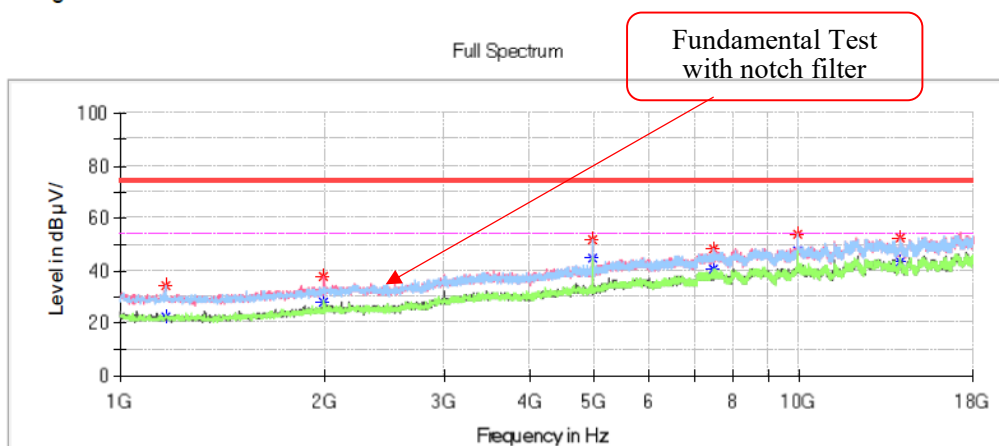
Project No.: RKSB240819001
 Test Mode: BT
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Destine Hu

**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)
1399.500000	35.97	---	74.00	38.03	V	-14.9
1399.500000	---	28.65	54.00	25.35	V	-14.9
2990.700000	39.50	---	74.00	34.50	V	-8.5
2990.700000	---	29.55	54.00	24.45	V	-8.5
4881.100000	---	46.91	54.00	7.09	H	-2.9
4881.100000	53.08	---	74.00	20.92	H	-2.9
6723.900000	46.92	---	74.00	27.08	H	1.5
6723.900000	---	36.25	54.00	17.75	H	1.5
9952.200000	50.48	---	74.00	23.52	V	7.0
9952.200000	---	43.65	54.00	10.35	V	7.0
15210.300000	---	43.87	54.00	10.13	V	9.5
15210.300000	52.90	---	74.00	21.10	V	9.5

High Channel: 2480 MHz**Common Information**

Project No.: RKS240819001
 Test Mode: BT
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Destine Hu

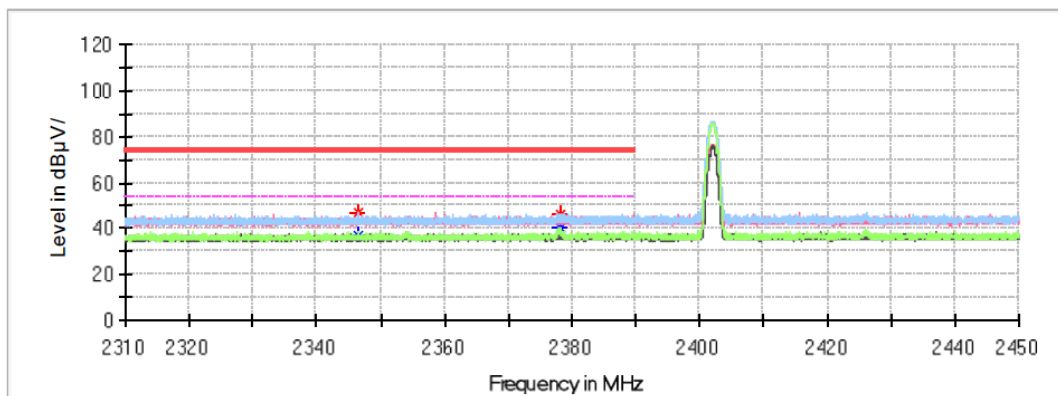
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1164.900000	---	22.22	54.00	31.78	H	-15.2
1164.900000	34.42	---	74.00	39.58	H	-15.2
1996.200000	---	28.00	54.00	26.00	V	-11.8
1996.200000	37.91	---	74.00	36.09	V	-11.8
4959.300000	---	44.42	54.00	9.58	H	-2.6
4959.300000	51.74	---	74.00	22.26	H	-2.6
7439.600000	---	40.24	54.00	13.76	H	3.7
7439.600000	48.19	---	74.00	25.81	H	3.7
9919.900000	---	47.52	54.00	6.48	H	6.9
9919.900000	53.56	---	74.00	20.44	H	6.9
14018.600000	---	43.20	54.00	10.80	V	9.8
14018.600000	52.11	---	74.00	21.89	V	9.8

Restricted Bands Emission:**Left Side****Common Information**

Project No.: RKSB240819001
Test Mode: BT
Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer: Destine Hu

Full Spectrum

**Critical_Freqs**

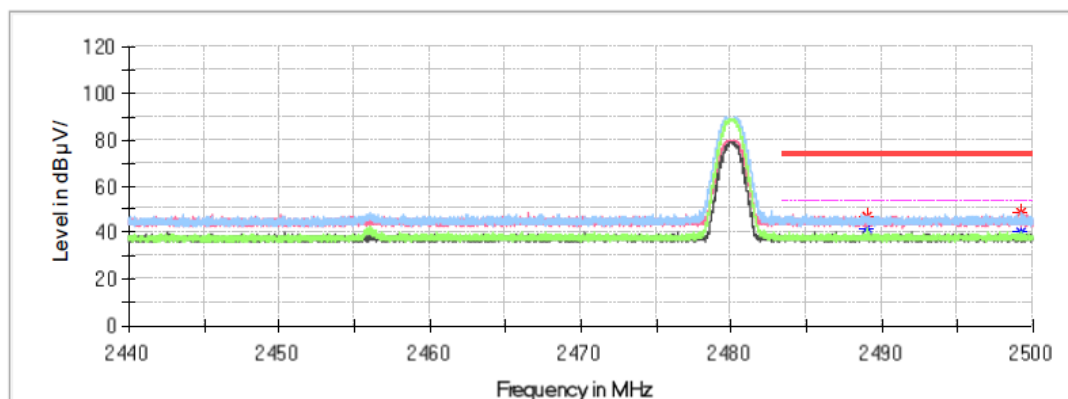
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2346.358000	47.19	---	74.00	26.81	H	-0.7
2346.358000	---	37.04	54.00	16.96	H	-0.7
2378.068000	46.05	---	74.00	27.95	V	-0.6
2378.068000	---	40.69	54.00	13.31	V	-0.6

Right Side

Common Information

Project No.: RKSB240819001
Test Mode: BT
Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer: Destine Hu

Full Spectrum



Critical_Freqs

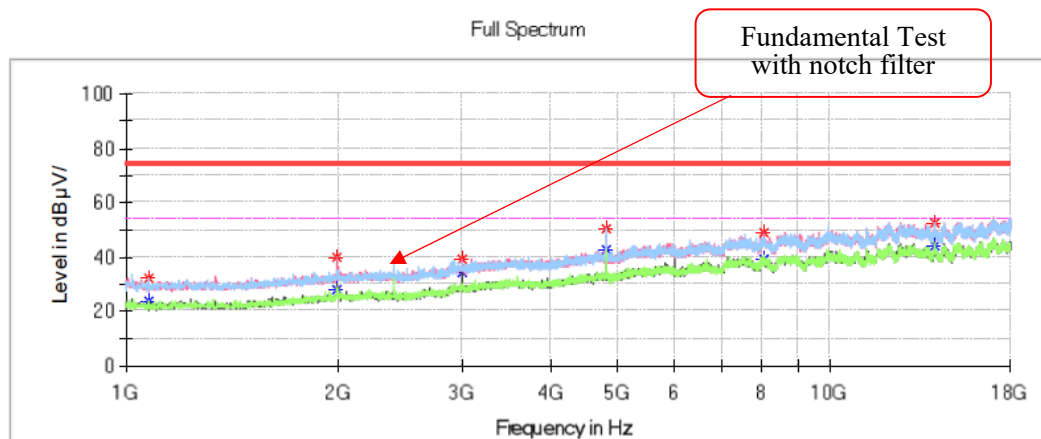
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2489.014000	---	41.64	54.00	12.36	V	-0.2
2489.014000	47.08	---	74.00	26.92	V	-0.2
2499.208000	---	40.32	54.00	13.68	H	-0.2
2499.208000	48.39	---	74.00	25.61	H	-0.2

$\pi/4$ -DQPSK:

Low Channel: 2402 MHz

Common Information

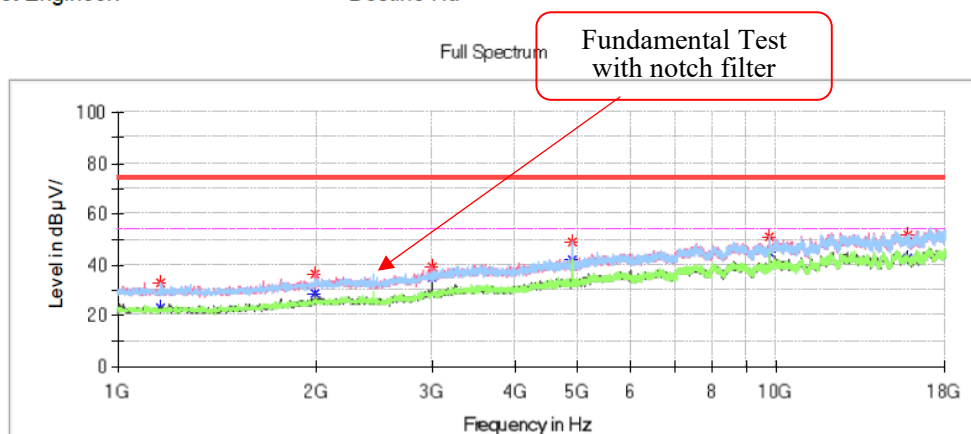
Project No.:	RKSB240819001
Test Mode:	BT
Standard:	FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer:	Destine Hu

**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)
1076.500000	32.51	---	74.00	41.49	H	-15.3
1076.500000	---	23.65	54.00	30.35	H	-15.3
1989.400000	39.86	---	74.00	34.14	V	-11.8
1989.400000	---	27.90	54.00	26.10	V	-11.8
2990.700000	39.16	---	74.00	34.84	V	-8.5
2990.700000	---	33.97	54.00	20.03	V	-8.5
4802.900000	---	42.53	54.00	11.47	H	-3.2
4802.900000	50.38	---	74.00	23.62	H	-3.2
8055.000000	---	39.34	54.00	14.66	V	4.1
8055.000000	48.88	---	74.00	25.12	V	4.1
14006.700000	---	43.94	54.00	10.06	V	9.8
14006.700000	52.50	---	74.00	21.50	V	9.8

Middle Channel: 2441 MHz**Common Information**

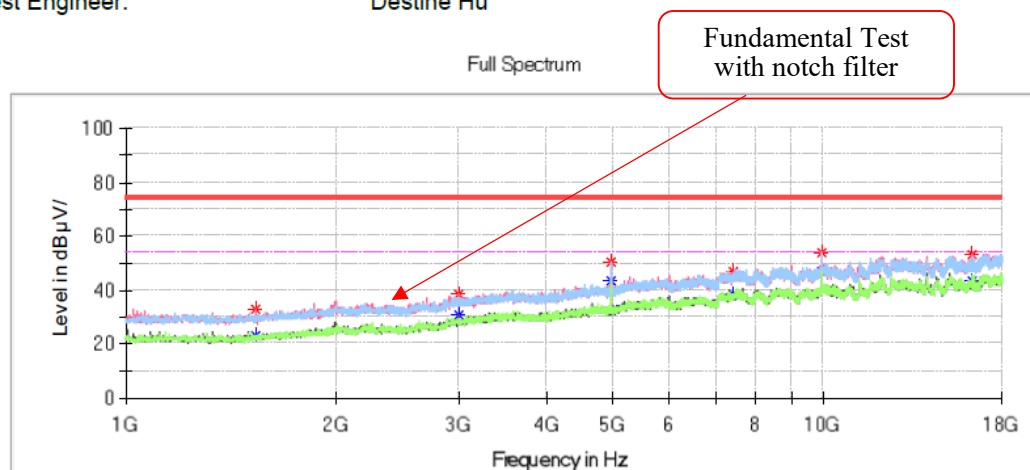
Project No.: RKSB240819001
 Test Mode: BT
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Destine Hu

**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)
1163.200000	33.15	---	74.00	40.85	H	-15.2
1163.200000	---	23.35	54.00	30.65	H	-15.2
1992.800000	36.19	---	74.00	37.81	V	-11.8
1992.800000	---	28.51	54.00	25.49	V	-11.8
2990.700000	38.94	---	74.00	35.06	V	-8.5
2990.700000	---	35.00	54.00	19.00	V	-8.5
4881.100000	---	42.14	54.00	11.86	H	-2.9
4881.100000	49.18	---	74.00	24.82	H	-2.9
9763.500000	---	44.52	54.00	9.48	H	6.3
9763.500000	50.71	---	74.00	23.29	H	6.3
15790.000000	---	42.88	54.00	11.12	V	9.6
15790.000000	52.04	---	74.00	21.96	V	9.6

High Channel: 2480 MHz**Common Information**

Project No.: RKSB240819001
 Test Mode: BT
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Destine Hu

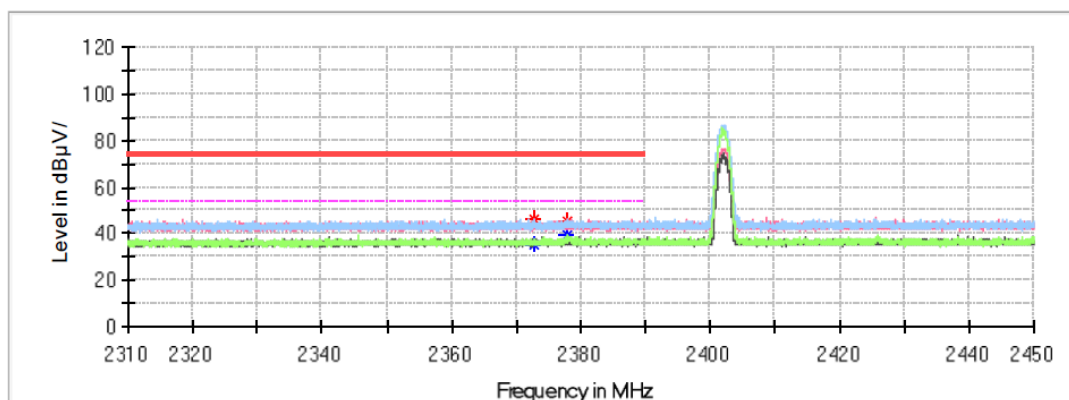
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1533.800000	---	23.08	54.00	30.92	V	-14.5
1533.800000	32.86	---	74.00	41.14	V	-14.5
2990.700000	---	30.54	54.00	23.46	V	-8.5
2990.700000	38.65	---	74.00	35.35	V	-8.5
4959.300000	---	43.61	54.00	10.39	H	-2.6
4959.300000	50.69	---	74.00	23.31	H	-2.6
7420.900000	---	38.45	54.00	15.55	V	3.7
7420.900000	46.66	---	74.00	27.34	V	3.7
9919.900000	---	47.10	54.00	6.90	H	6.9
9919.900000	54.01	---	74.00	19.99	H	6.9
16315.300000	---	43.47	54.00	10.53	V	10.3
16315.300000	53.17	---	74.00	20.83	V	10.3

Restricted Bands Emission:**Left Side****Common Information**

Project No.: RKSB240819001
Test Mode: BT
Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer: Destine Hu

Full Spectrum

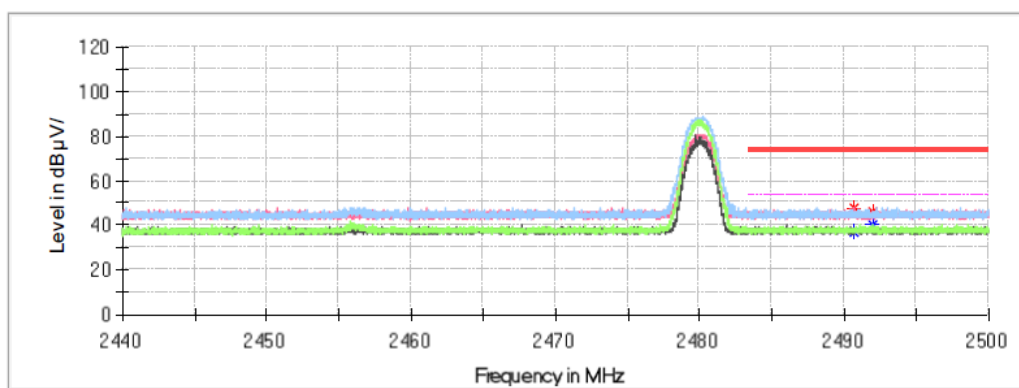
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2372.874000	46.31	---	74.00	27.69	V	-0.6
2372.874000	---	35.65	54.00	18.35	V	-0.6
2377.970000	45.52	---	74.00	28.48	H	-0.6
2377.970000	---	39.65	54.00	14.35	H	-0.6

Right Side**Common Information**

Project No.: RKSB240819001
Test Mode: BT
Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer: Destine Hu

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)
2490.670000	48.01	---	74.00	25.99	V	-0.2
2490.670000	---	37.23	54.00	16.77	V	-0.2
2491.984000	46.24	---	74.00	27.76	H	-0.2
2491.984000	---	40.02	54.00	13.98	H	-0.2

8DPSK:**Low Channel: 2402 MHz****Common Information**

Project No.:

RKSB240819001

Test Mode:

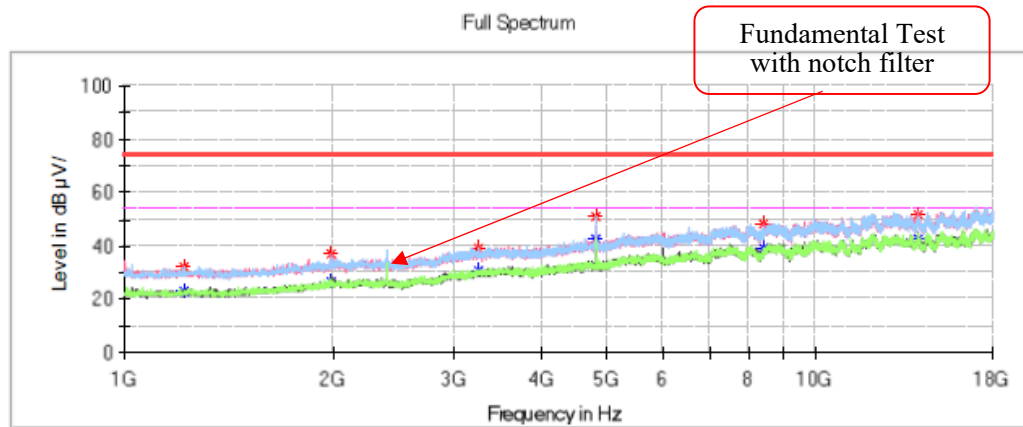
BT

Standard:

FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209

Test Engineer:

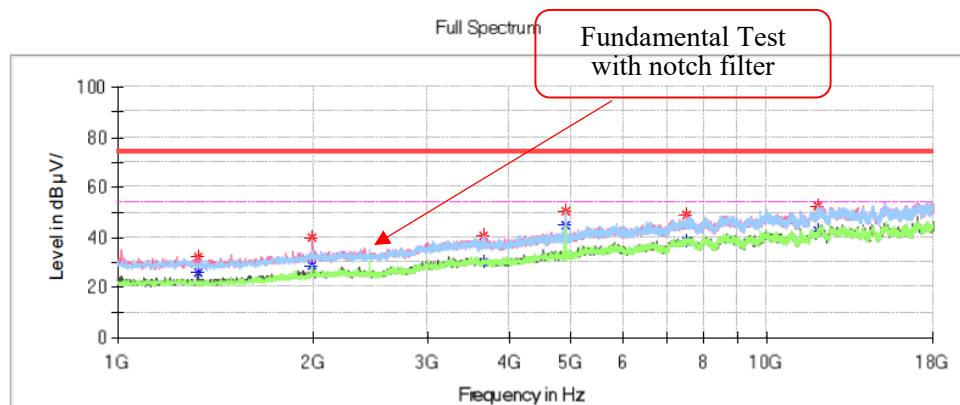
Destine Hu

**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)
1215.900000	---	22.90	54.00	31.10	H	-15.1
1215.900000	32.20	---	74.00	41.80	H	-15.1
1992.800000	---	26.90	54.00	27.10	V	-11.8
1992.800000	36.75	---	74.00	37.25	V	-11.8
3247.400000	---	30.50	54.00	23.50	H	-7.4
3247.400000	39.25	---	74.00	34.75	H	-7.4
4802.900000	---	42.77	54.00	11.23	H	-3.2
4802.900000	50.99	---	74.00	23.01	H	-3.2
8393.300000	---	38.84	54.00	15.16	V	5.1
8393.300000	48.30	---	74.00	25.70	V	5.1
14054.300000	---	42.68	54.00	11.32	V	9.8
14054.300000	52.09	---	74.00	21.91	V	9.8

Middle Channel: 2441 MHz**Common Information**

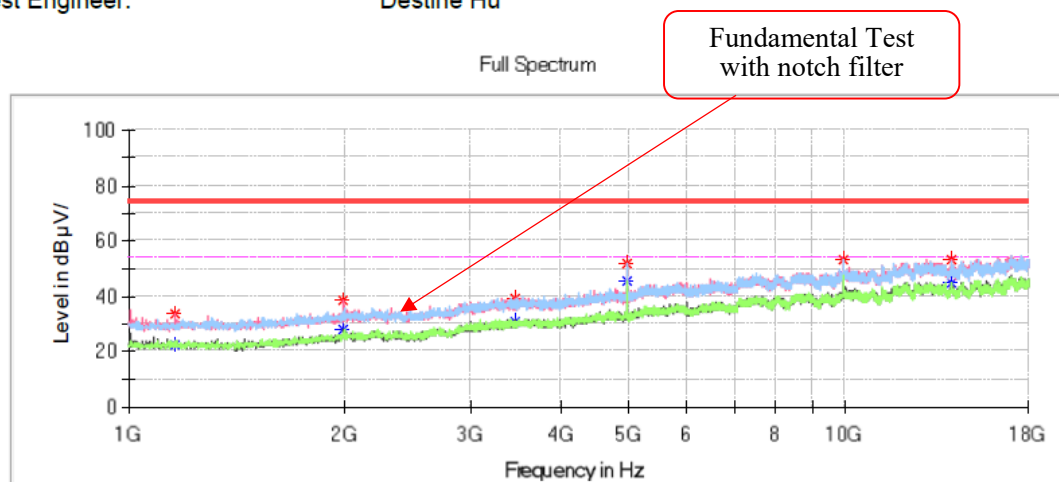
Project No.: RKS240819001
Test Mode: BT
Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer: Destine Hu

**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB µV/m)	Average (dB µV/m)	Limit (dB µV/m)	Margin (dB)	Pol	Corr. (dB/m)
1328.100000	---	26.15	54.00	27.85	V	-15.0
1328.100000	32.31	---	74.00	41.69	V	-15.0
1991.100000	---	28.54	54.00	25.46	V	-11.8
1991.100000	39.79	---	74.00	34.21	V	-11.8
3645.200000	---	30.39	54.00	23.61	H	-6.2
3645.200000	40.79	---	74.00	33.21	H	-6.2
4881.100000	---	44.45	54.00	9.55	H	-2.9
4881.100000	50.40	---	74.00	23.60	H	-2.9
7516.100000	---	38.77	54.00	15.23	V	3.9
7516.100000	48.83	---	74.00	25.17	V	3.9
11982.000000	---	42.76	54.00	11.24	H	9.0
11982.000000	52.14	---	74.00	21.86	H	9.0

High Channel: 2480 MHz**Common Information**

Project No.: RKSB240819001
 Test Mode: BT
 Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
 Test Engineer: Destine Hu

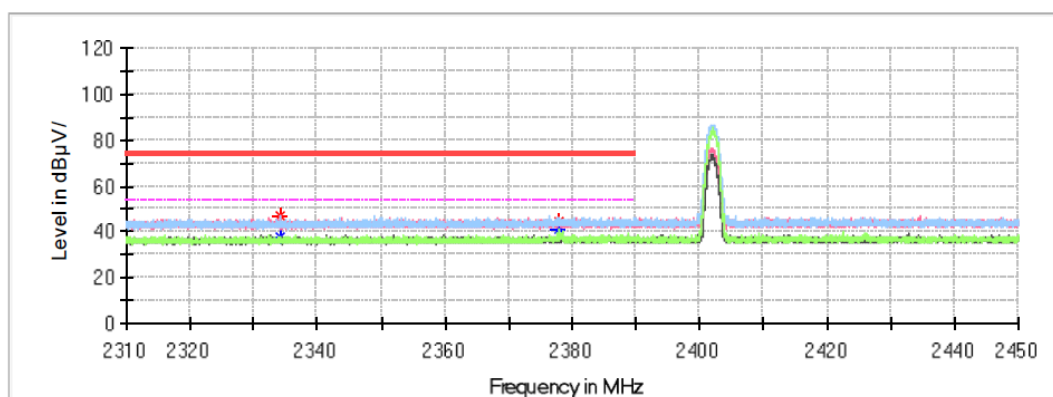
**Critical Freqs**

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1161.500000	---	22.24	54.00	31.76	V	-15.2
1161.500000	33.38	---	74.00	40.62	V	-15.2
1996.200000	---	27.71	54.00	26.29	V	-11.8
1996.200000	38.56	---	74.00	35.44	V	-11.8
3459.900000	---	30.88	54.00	23.12	V	-6.5
3459.900000	39.15	---	74.00	34.85	V	-6.5
4959.300000	---	45.21	54.00	8.79	H	-2.6
4959.300000	51.65	---	74.00	22.35	H	-2.6
9919.900000	---	47.81	54.00	6.19	V	6.9
9919.900000	53.19	---	74.00	20.81	V	6.9
14039.000000	---	44.58	54.00	9.42	H	9.8
14039.000000	52.99	---	74.00	21.01	H	9.8

Restricted Bands Emission:**Left Side****Common Information**

Project No.: RKSB240819001
Test Mode: BT
Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer: Destine Hu

Full Spectrum

**Critical_Freqs**

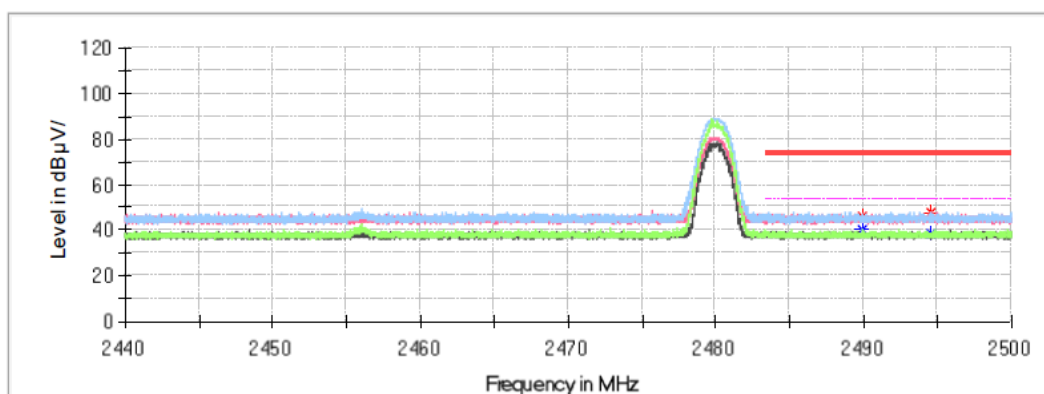
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2334.164000	46.81	---	74.00	27.19	H	-0.8
2334.164000	---	37.38	54.00	16.62	H	-0.8
2377.858000	44.51	---	74.00	29.49	V	-0.6
2377.858000	---	40.97	54.00	13.03	V	-0.6

Right Side

Common Information

Project No.: RKSB240819001
Test Mode: BT
Standard: FCC Part 15.247 & FCC Part 15.205 & FCC Part 15.209
Test Engineer: Destine Hu

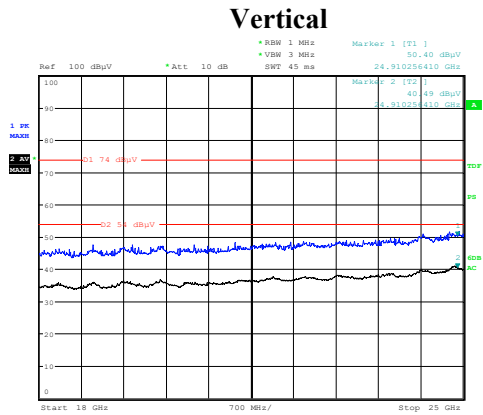
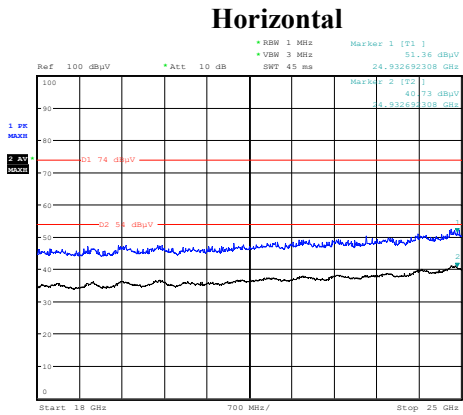
Full Spectrum



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)
2489.902000	---	40.34	54.00	13.66	H	-0.2
2489.902000	46.39	---	74.00	27.61	H	-0.2
2494.570000	---	38.30	54.00	15.70	V	-0.2
2494.570000	48.04	---	74.00	25.96	V	-0.2

18 GHz - 25 GHz (8DPSK Mode low channel):



Project No :RKSB240819001
Date: 26.SEP.2024 12:53:09

Tester :Rugh Wu

Project No :RKSB240819001
Date: 26.SEP.2024 13:09:58

Tester :Rugh Wu

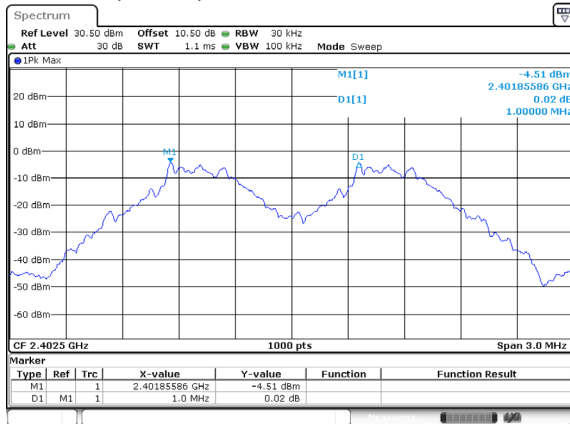
Note: The test distance is 3m. The limit is 74dB μ V/m(Peak) and 54dB μ V/m(Average).

CHANNEL SEPARATION TEST*EUT operation mode: Transmitting*

Mode	Channel	Channel frequency (MHz)	Result (MHz)	Limit (MHz)
GFSK	Low	2402-2403	1.000	0.663
	Middle	2441-2442	1.000	0.685
	High	2480-2479	1.000	0.685

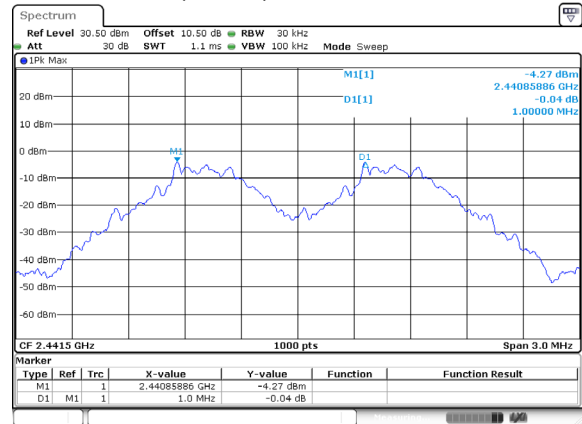
Limit $\geq$ 20 dB bandwidth * 2/3

BDR (GFSK): Low Channel



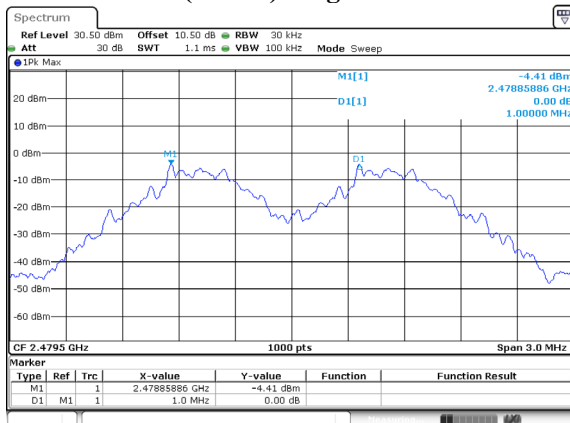
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:22:49

BDR (GFSK): Middle Channel



ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:26:05

BDR (GFSK): High Channel

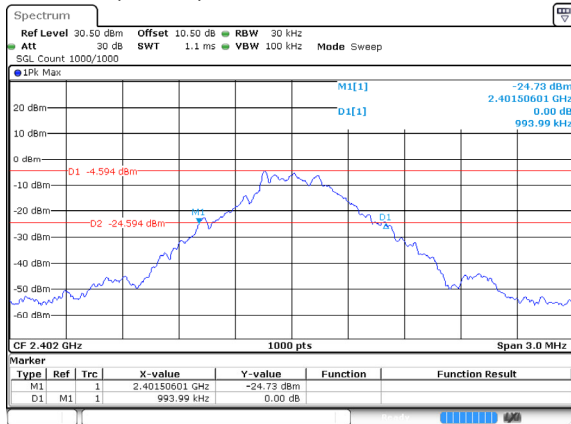


ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:29:37

20 dB BANDWIDTH TEST*EUT operation mode: Transmitting*

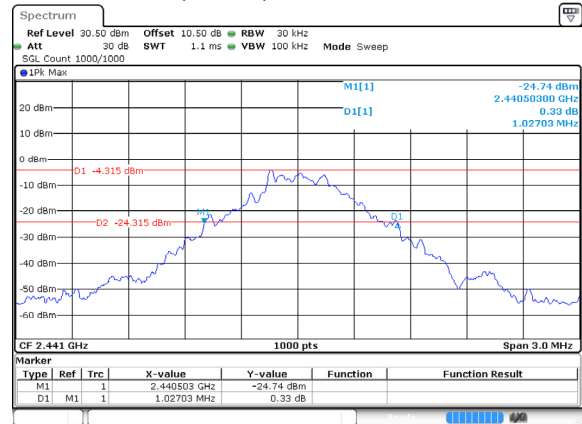
Mode	Channel	Frequency (MHz)	20 dB Emission Bandwidth (MHz)
BDR (GFSK)	Low	2402	0.994
	Middle	2441	1.027
	High	2480	1.027
EDR ($\pi/4$-DQPSK)	Low	2402	1.288
	Middle	2441	1.285
	High	2480	1.282
EDR (8DPSK)	Low	2402	1.252
	Middle	2441	1.252
	High	2480	1.243

BDR (GFSK): Low Channel



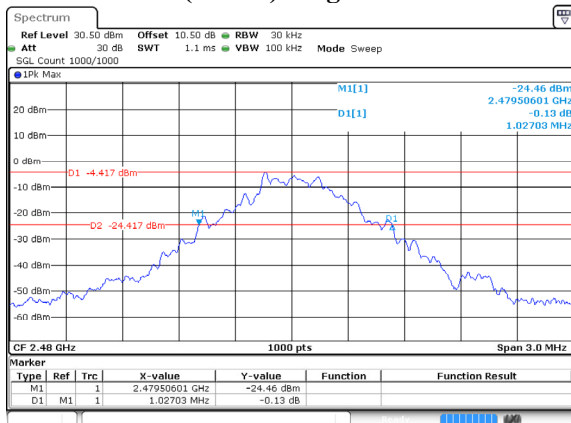
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:19:32

BDR (GFSK): Middle Channel

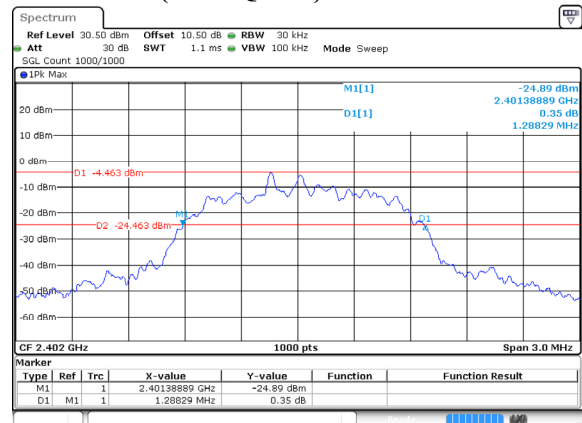


ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:23:38

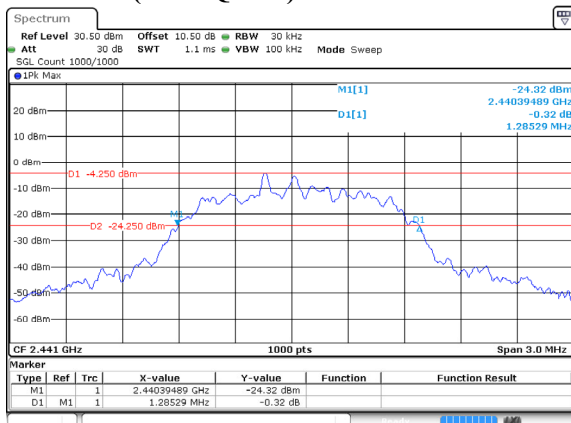
BDR (GFSK): High Channel



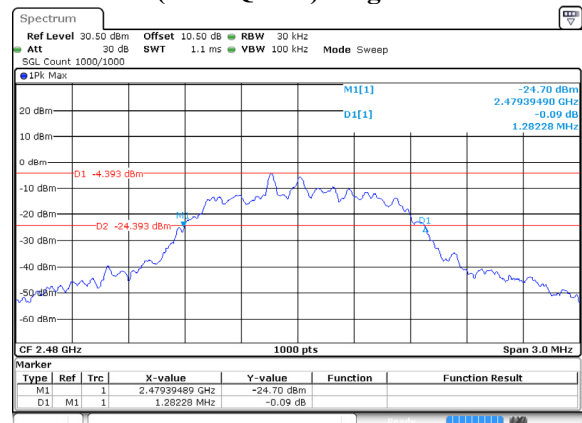
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:26:46

EDR ($\pi/4$ -DQPSK): Low Channel

ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:34:54

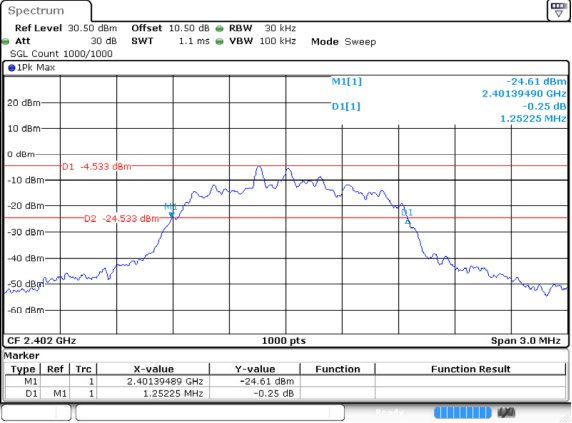
EDR ($\pi/4$ -DQPSK): Middle Channel

ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:38:27

EDR ($\pi/4$ -DQPSK): High Channel

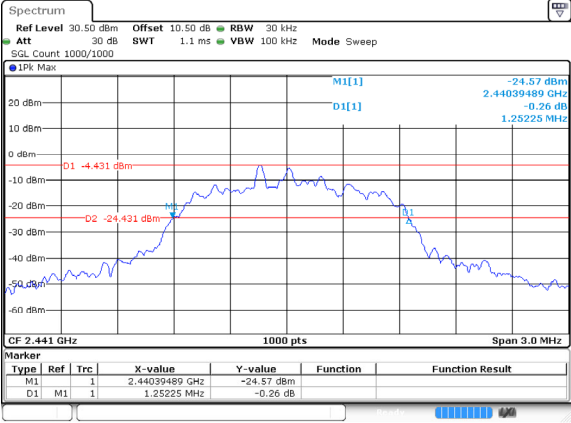
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:45:24

EDR (8DPSK): Low Channel



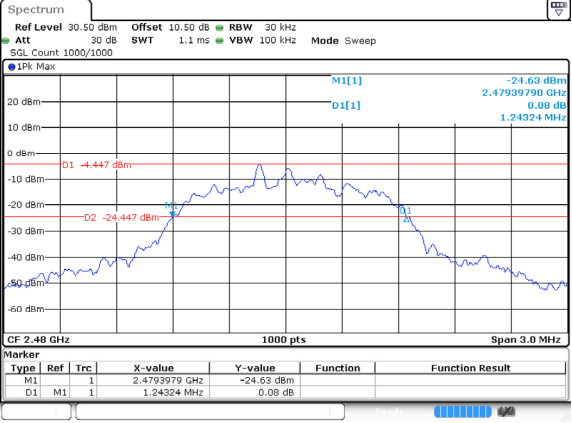
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:53:57

EDR (8DPSK): Middle Channel



ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:58:16

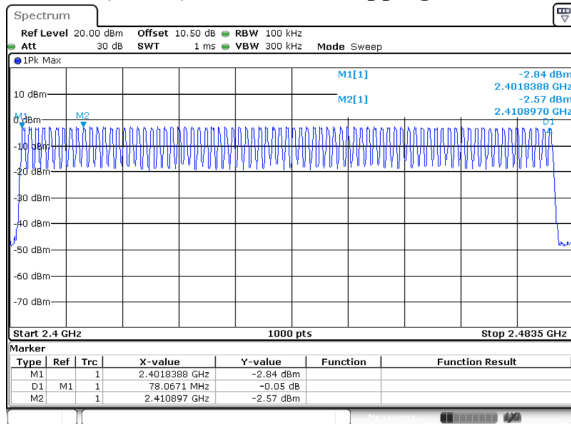
EDR (8DPSK): High Channel



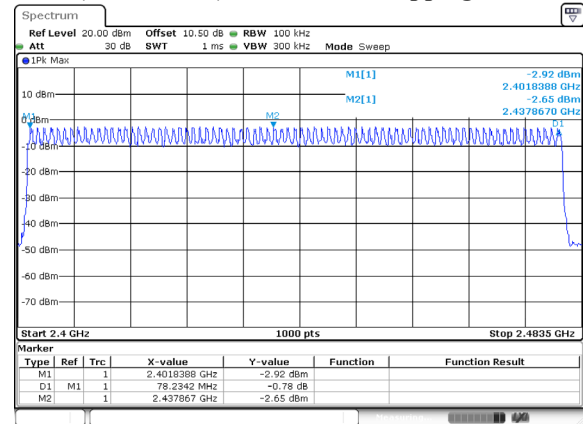
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 15:26:12

QUANTITY OF HOPPING CHANNEL TEST*EUT operation mode: Hopping*

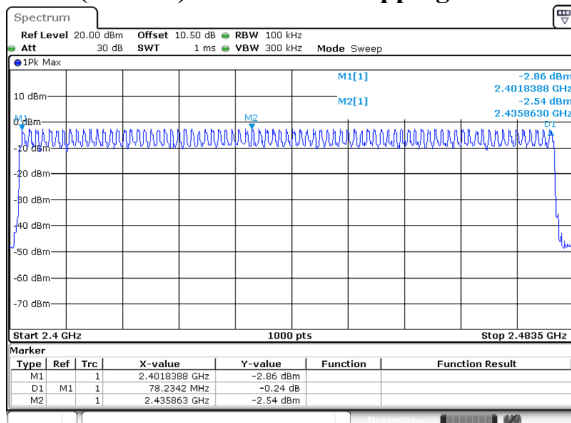
Mode	Frequency Range (MHz)	Number of Hopping Channel (CH)	Limit (CH)
BDR (GFSK)	2400-2483.5	79	≥15
EDR ($\pi/4$ -DQPSK)	2400-2483.5	79	≥15
EDR (8DPSK)	2400-2483.5	79	≥15

BDR (GFSK): Number of Hopping Channels

ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:33:12

EDR ($\pi/4$ -DQPSK): Number of Hopping Channels

ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 14:52:18

EDR (8DPSK): Number of Hopping Channels

ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP 2024 15:34:58

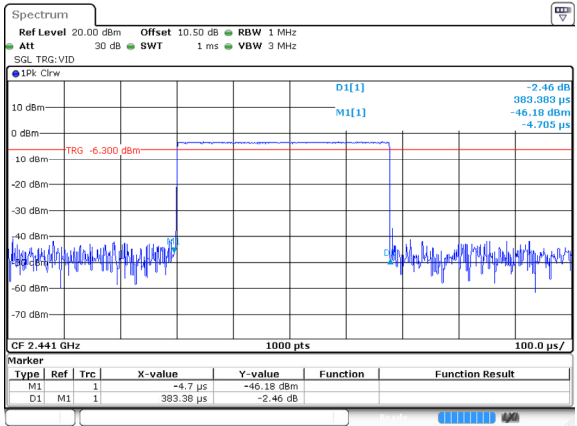
TIME OF OCCUPANCY (DWELL TIME)*EUT operation mode: Hopping*

Mode	Pulse width (ms)	Dwell time (s)	Limit (s)	Result
GFSK_Hopping_DH1	0.383	0.123	0.400	Pass
GFSK_Hopping_DH3	1.643	0.263	0.400	Pass
GFSK_Hopping_DH5	2.898	0.309	0.400	Pass
$\pi/4$ -DQPSK_Hopping_2DH1	0.395	0.126	0.400	Pass
$\pi/4$ -DQPSK_Hopping_2DH3	1.655	0.265	0.400	Pass
$\pi/4$ -DQPSK_Hopping_2DH5	2.908	0.310	0.400	Pass
8DPSK_Hopping_3DH1	0.396	0.127	0.400	Pass
8DPSK_Hopping_3DH3	1.652	0.264	0.400	Pass
8DPSK_Hopping_3DH5	2.908	0.310	0.400	Pass

Note:

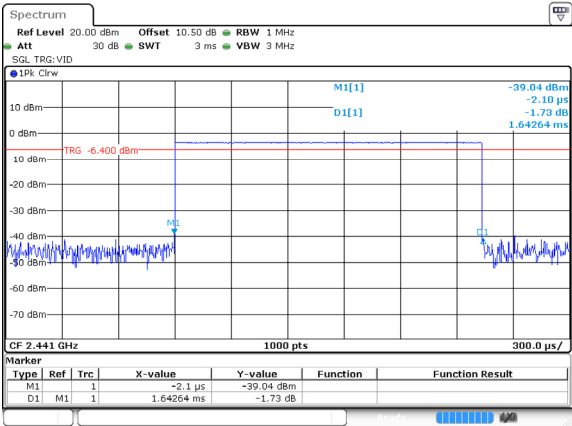
DH1:Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 sDH3:Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 sDH5:Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s2DH1: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s2DH3: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s2DH5: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s3DH1: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s3DH3: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s3DH5: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s

BDR (GFSK): Pulse time, Middle Channel, DH1



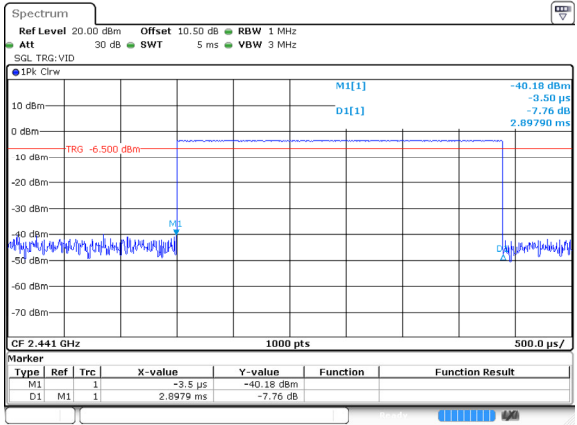
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 23 SEP. 2024 09:45:26

BDR (GFSK): Pulse time, Middle Channel, DH3



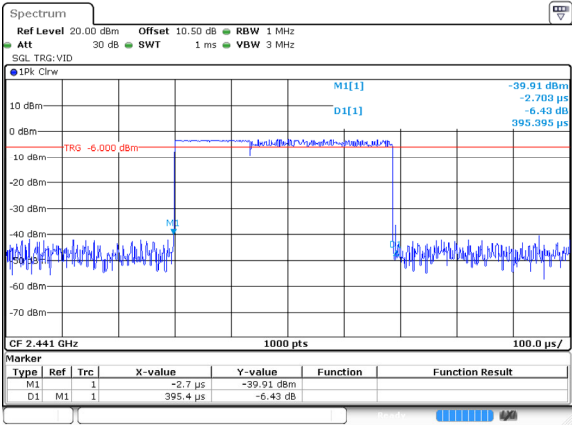
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 23 SEP. 2024 09:45:56

BDR (GFSK): Pulse time, Middle Channel, DH5



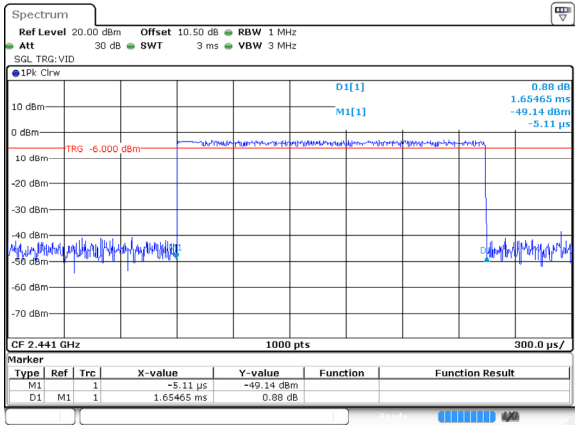
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 23 SEP. 2024 09:46:24

EDR ($\pi/4$ -DQPSK): Pulse time, Middle Channel, 2DH1



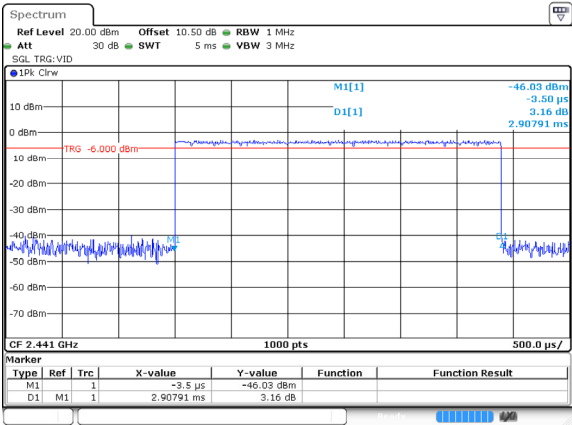
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 23 SEP. 2024 09:47:07

EDR ($\pi/4$ -DQPSK): Pulse time, Middle Channel, 2DH3



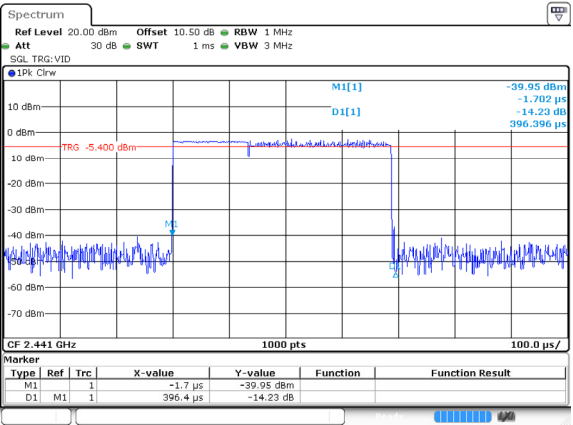
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 23 SEP. 2024 09:47:48

EDR ($\pi/4$ -DQPSK): Pulse time, Middle Channel, 2DH5



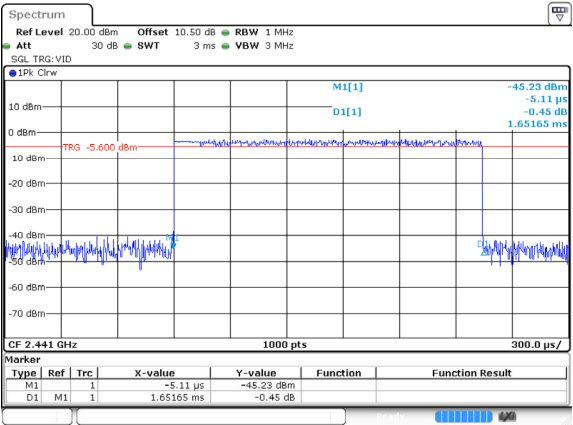
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 23 SEP. 2024 09:48:18

EDR (8DPSK): Pulse time, Middle Channel, 3DH1



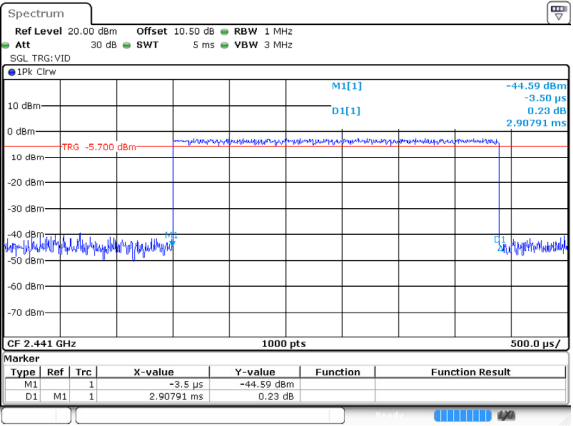
ProjectNo.:RKSB240819001 Tester:Jason Lu
Date: 23 SEP 2024 09:48:54

EDR (8DPSK): Pulse time, Middle Channel, 3DH3



ProjectNo.:RKSB240819001 Tester:Jason Lu
Date: 23 SEP 2024 09:48:29

EDR (8DPSK): Pulse time, Middle Channel, 3DH5

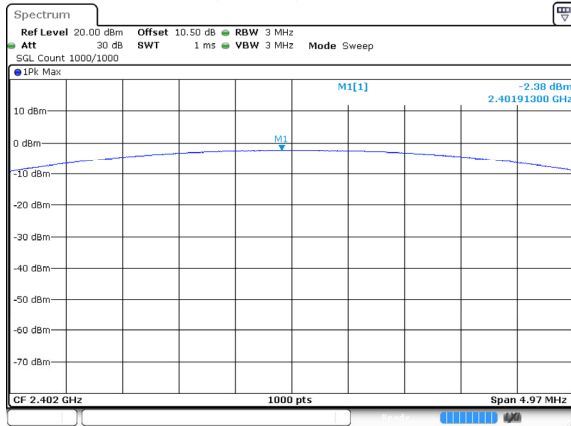


ProjectNo.:RKSB240819001 Tester:Jason Lu
Date: 23 SEP 2024 09:50:00

PEAK OUTPUT POWER MEASUREMENT*EUT operation mode: Transmitting*

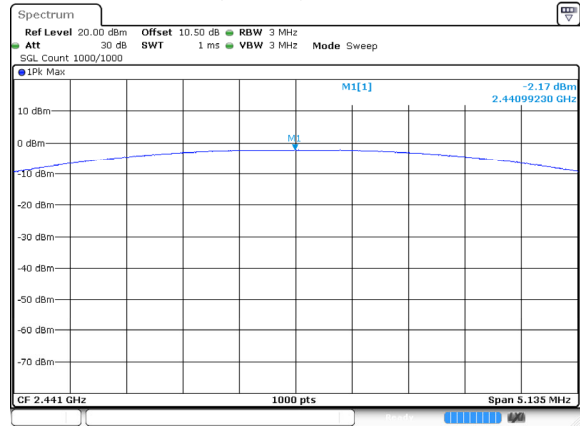
Mode	Channel	Frequency (MHz)	Result (dBm)	Limit (dBm)
GFSK	Low	2402	-2.38	21
	Middle	2441	-2.17	
	High	2480	-2.41	
$\pi/4$ DQPSK	Low	2402	-1.50	
	Middle	2441	-1.40	
	High	2480	-1.65	
8DPSK	Low	2402	-1.01	
	Middle	2441	-0.97	
	High	2480	-1.06	

BDR (GFSK): 2402MHz



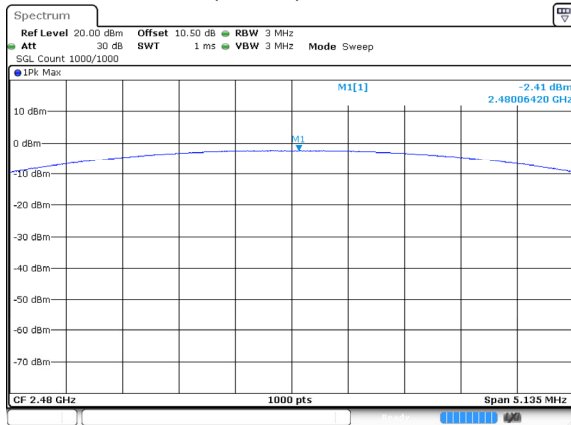
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:21:56

BDR (GFSK): 2441MHz



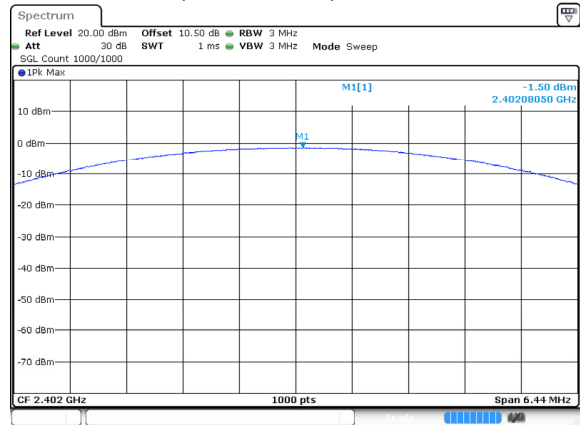
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:25:15

BDR (GFSK): 2480MHz



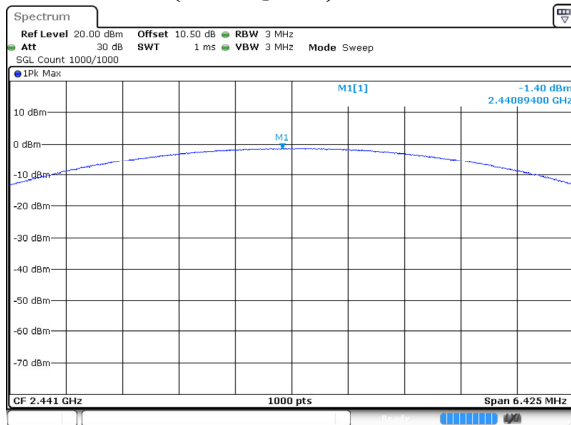
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:28:48

EDR($\pi/4$ -DQPSK): 2402MHz



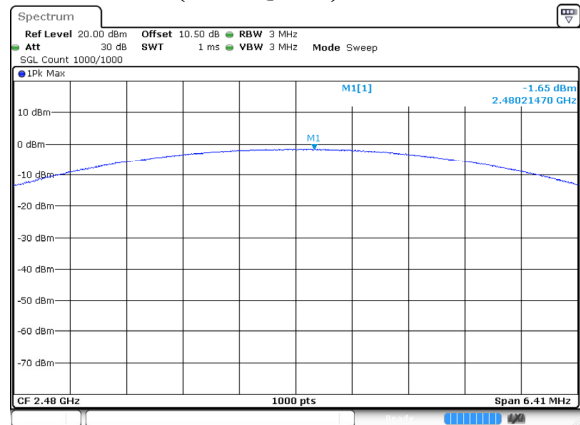
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:37:13

EDR($\pi/4$ -DQPSK): 2441MHz



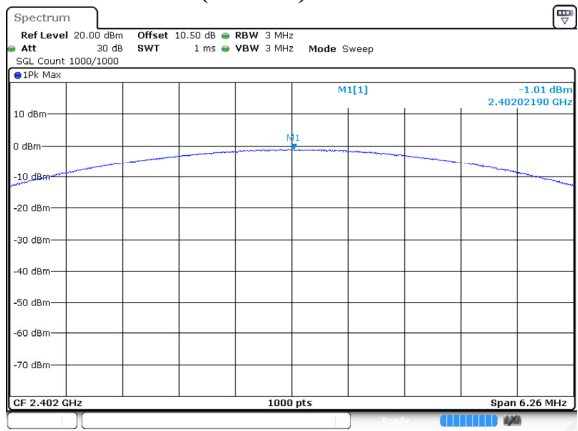
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:43:47

EDR($\pi/4$ -DQPSK): 2480MHz



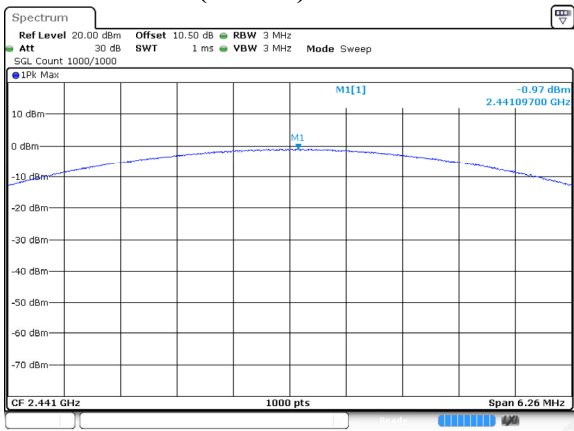
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:47:40

EDR(8DPSK): 2402MHz



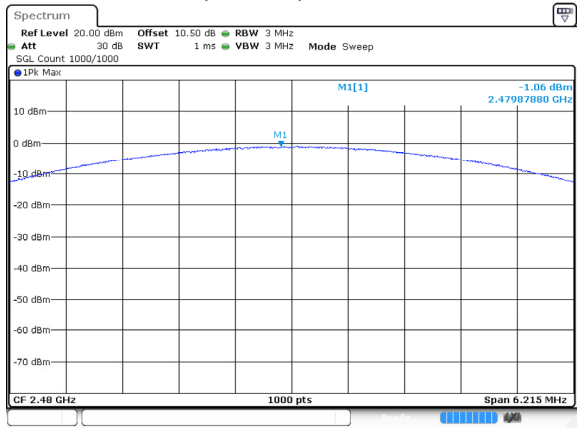
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:56:09

EDR(8DPSK): 2441MHz



ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 15:25:04

EDR(8DPSK): 2480MHz



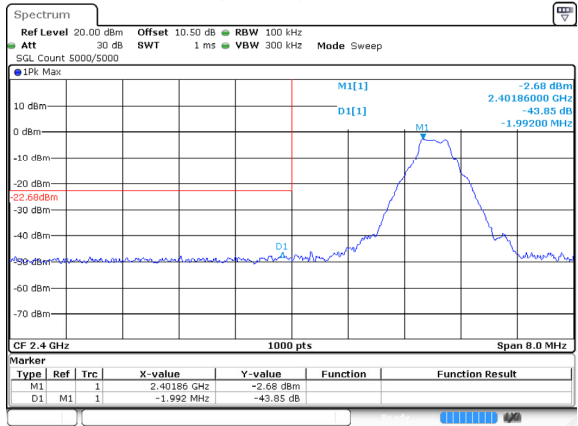
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 15:29:48

BAND EDGES*EUT operation mode: Transmitting & Hopping**Test Result: Compliant.*

Mode	Channel	Frequency (MHz)	Result (dBc)	Limit (dBc)
GFSK	Low	2402	43.85	20
	High	2480	44.16	
$\pi/4$ DQPSK	Low	2402	44.96	
	High	2480	44.29	
8DPSK	Low	2402	44.94	
	High	2480	43.80	
GFSK (Hopping)	Low	2402	44.92	
	High	2480	43.75	
$\pi/4$ DQPSK (Hopping)	Low	2402	43.82	
	High	2480	43.91	
8DPSK (Hopping)	Low	2402	44.06	
	High	2480	44.21	

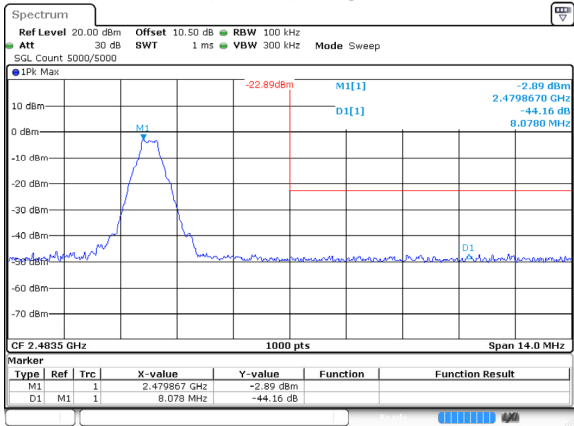
Band Edge

BDR (GFSK): Left Side



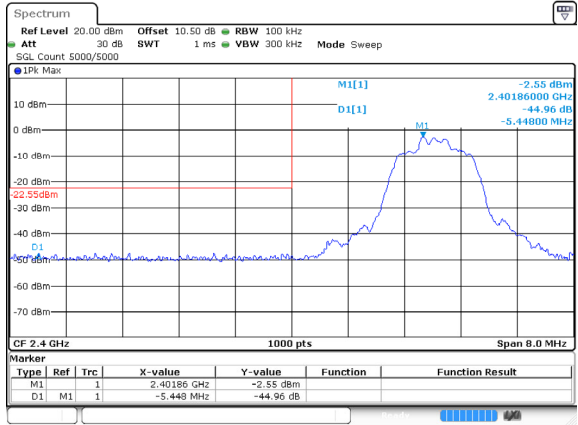
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:20:18

BDR (GFSK): Right Side



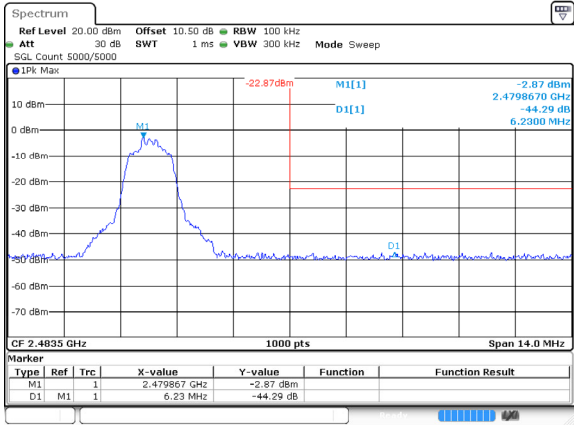
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:27:25

EDR ($\pi/4$ -DQPSK): Left Side



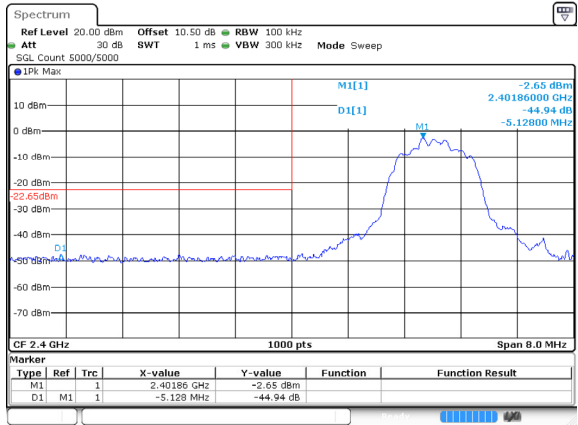
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:35:42

EDR ($\pi/4$ -DQPSK): Right Side



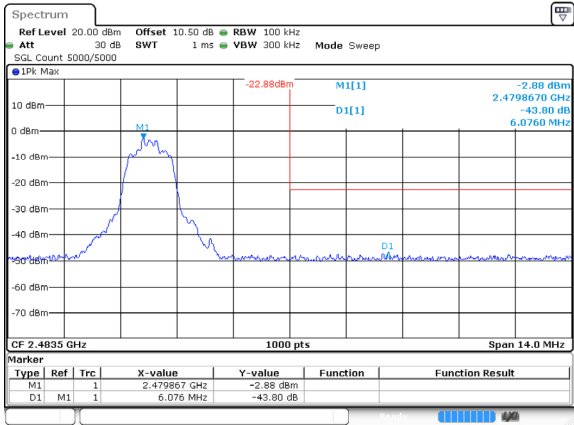
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:46:05

EDR (8DPSK): Left Side



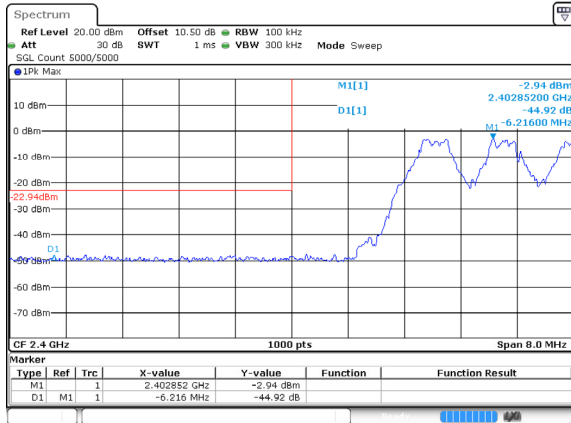
ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 14:54:46

EDR (8DPSK): Right Side

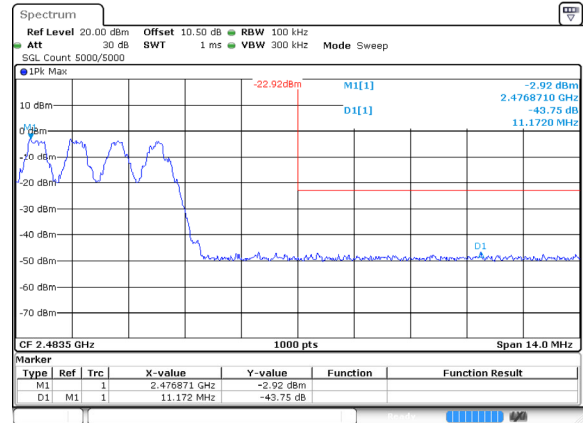
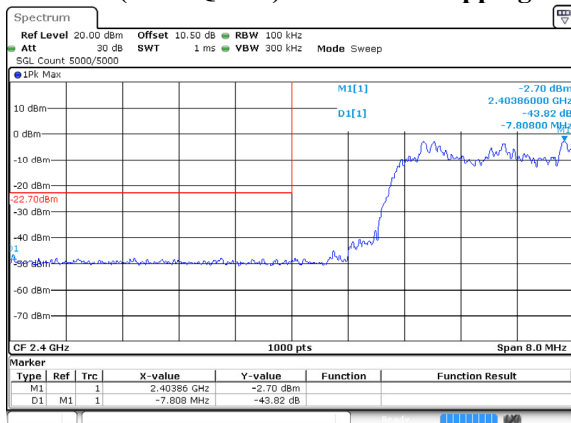
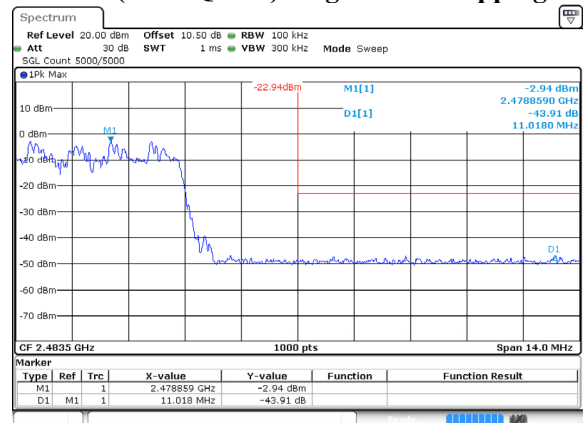


ProjectNo.: RKSB240819001 Tester: Jason Lu
Date: 21 SEP. 2024 15:26:55

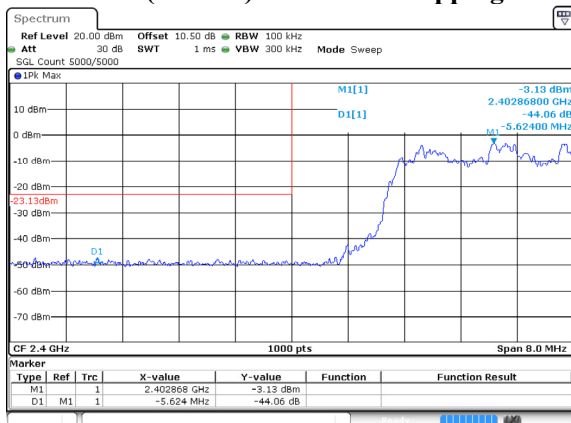
BDR (GFSK): Left Side- Hopping



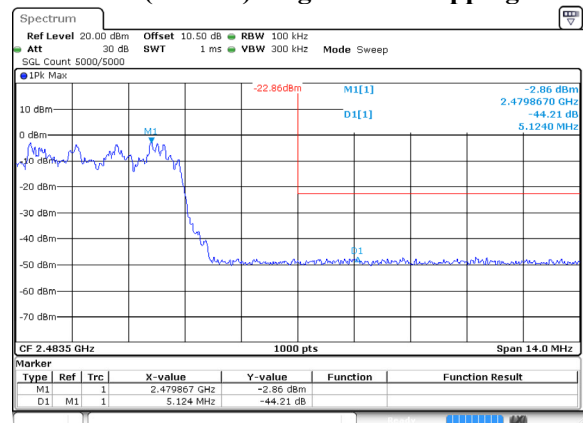
BDR (GFSK): Right Side- Hopping

EDR ($\pi/4$ -DQPSK): Left Side- HoppingEDR ($\pi/4$ -DQPSK): Right Side- Hopping

EDR (8DPSK): Left Side- Hopping



EDR (8DPSK): Right Side- Hopping



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 *******