FCC PART 15.247

TEST REPORT

For

SEUIC Technologies Co., Ltd.

NO.15 Xinghuo Road, Nanjing New & High Technology Industry Development Zone, Nanjing, China

FCC ID: 2AC68-HS220CHD252B

Report Type:	**Product Name:**
Original Report	Handheld Scanner

Report Number:	RKSA240711002-00B
Report Date:	2025-02-11
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REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RKSA240711002-00B	R1V1	2025-02-11	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	SEUIC Technologies Co., Ltd.
Product Name:	Handheld Scanner
Tested Model	HS220CHD-252B
Series Model:	HS220CSR-252B, HS320GHD-203B, HS320GSR-203B, HS525DP-303B, HS525HDP-303B, HS325DP-203B, HS325HDP-203B
Model Difference:	Model Name
Power Supply:	DC 3.6V from Battery or DC 5 V from Charging Base or type-C port
RF Function:	BLE
Operating Band/Frequency:	2402-2480MHz
Maximum Peak Output Power:	BLE (1 Mbps): -3.59 dBm
Channel Number:	40
Channel Separation:	2 MHz
Modulation Type	GFSK
Antenna Type:	PCB Antenna
★Maximum Antenna Gain:	0.55 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: RKSA240711002-1 (Assigned by BACL (Kunshan). The EUT supplied by the applicant was received on 2024-07-11.)

Objective

This report is prepared for *SEUIC Technologies 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 Compliant 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.

Measurement Uncertainty

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

Test Facility

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

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

Channel List 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.

EUT Exercise Software

RF Test Tool: fcc_test_tool

★Power level: Default

Note: The power level was declared by the applicant.

Special Accessories

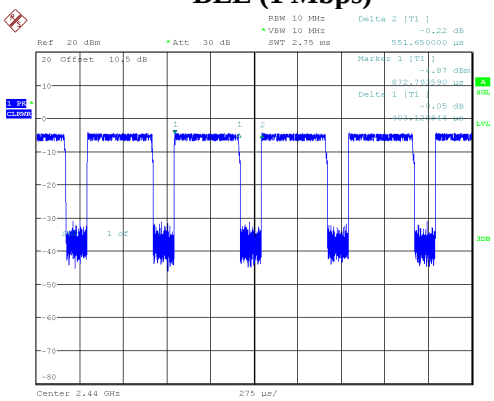
No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Duty Cycle:

BLE (1 Mbps)



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:07:25

Mode	Duty Cycle (%)	T_{on}(ms)	T_{on+off}(ms)	10log(1/x) (dB)
BLE (1 Mbps)	73.01	0.403	0.552	1.37

Note:
1. “x” means the Duty Cycle.
2. Offset（10.5dB）= Attenuator(10dB)+Cable loss(0.5dB)

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	Adapter 1	ADLX65NLC3	/
/	Adapter 2	DA-00051000UL001	/
Lenovo	Notebook	Y700P	PF2B7PL5
/	Debug Board	/	/
SEUIC Technologies CO.,Ltd	Communication Base	CB-220-PC-CH	CBP24030304

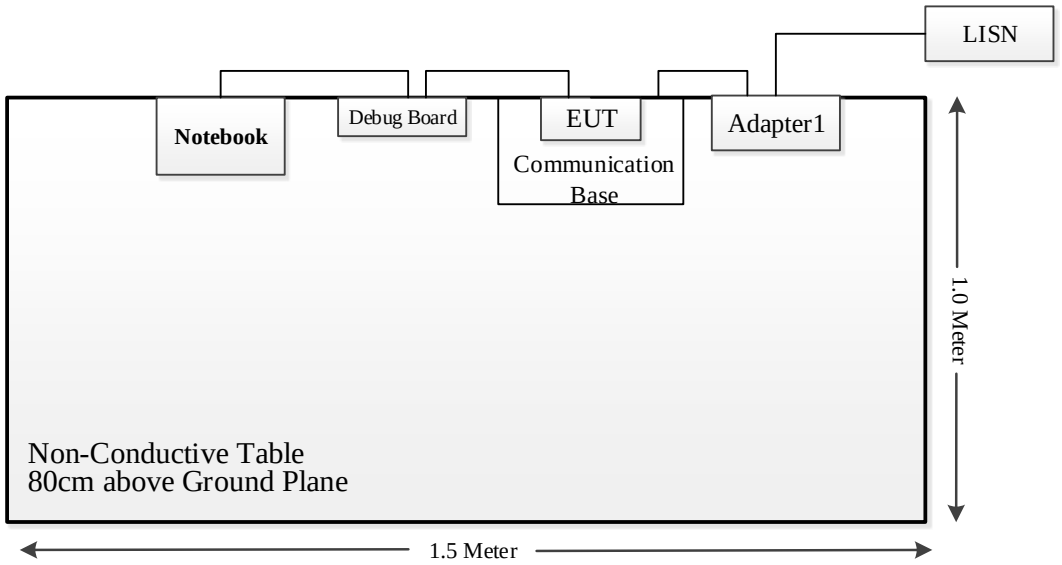
External I/O Cable

Cable Description	Length (m)	From Port	To Port
Power Cable 1	1.0	Adapter	LISN/AC Source
Power Cable 2	2.0	Communication Base	Adapter
Power Cable 3	1.2	EUT	Adapter
USB Cable	0.5	Notebook	Debug Board
Data Cable	0.2	Debug Board	EUT

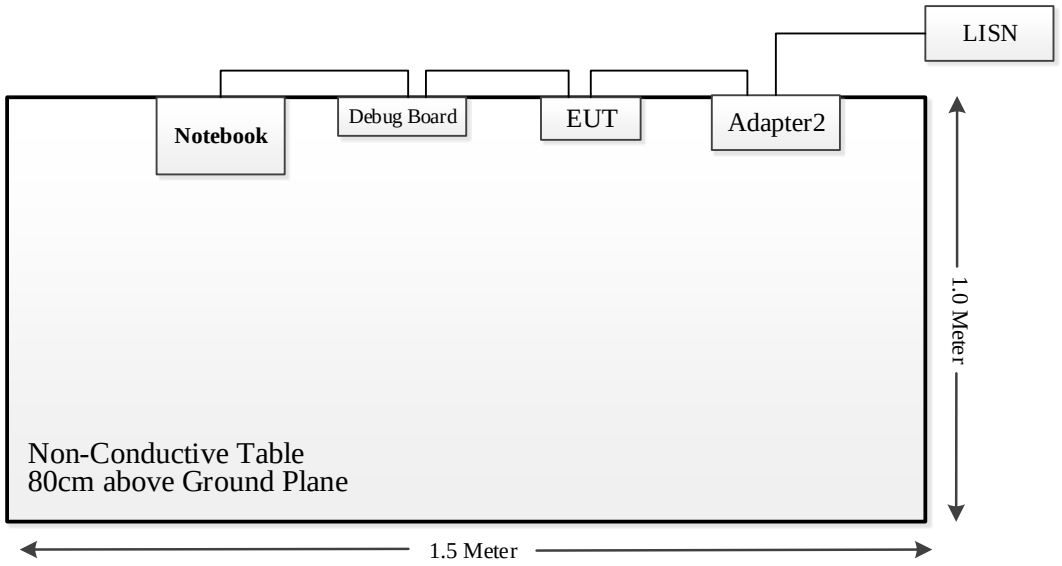
Block Diagram of Test Setup

Conducted Emissions:

For Charging Base

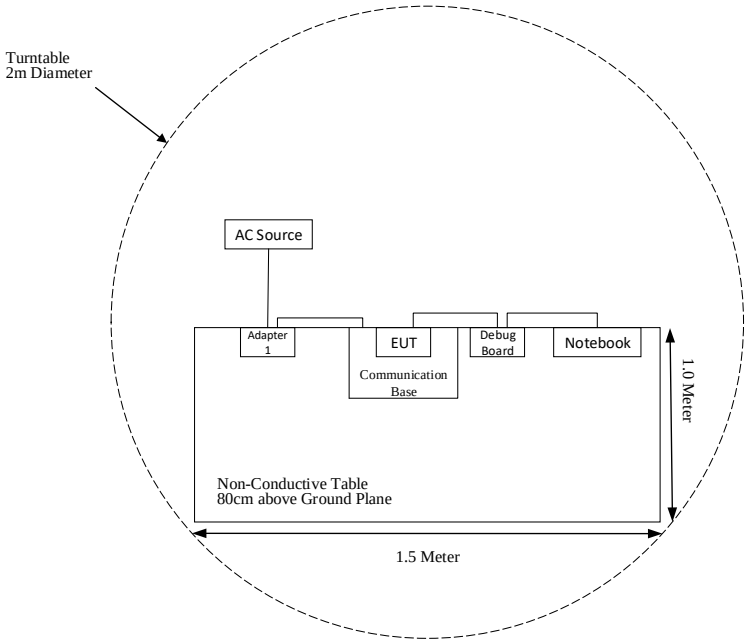


For Type-C

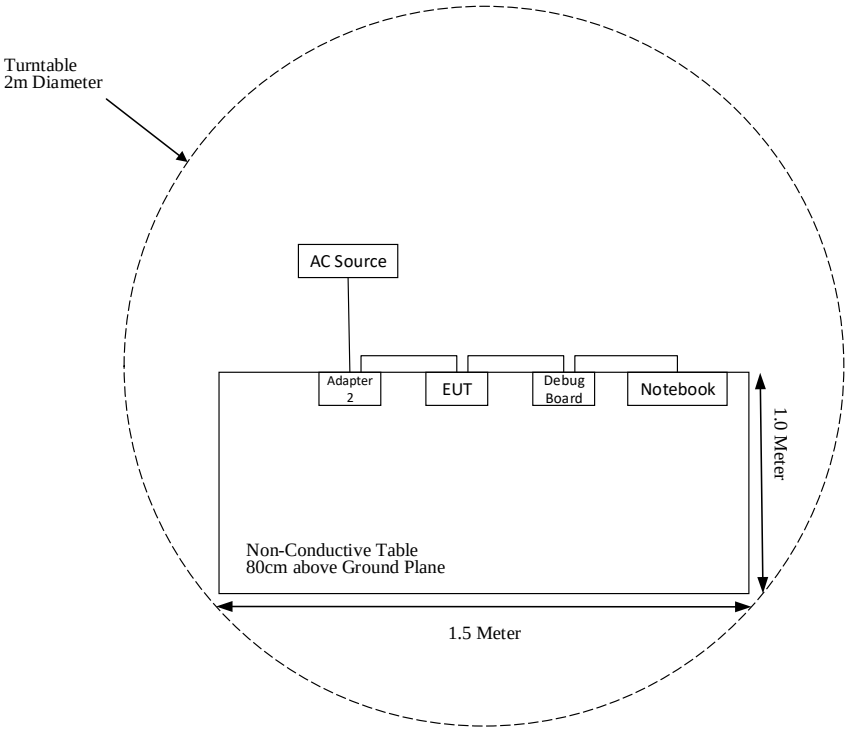


Radiated Emissions(Below 1GHz):

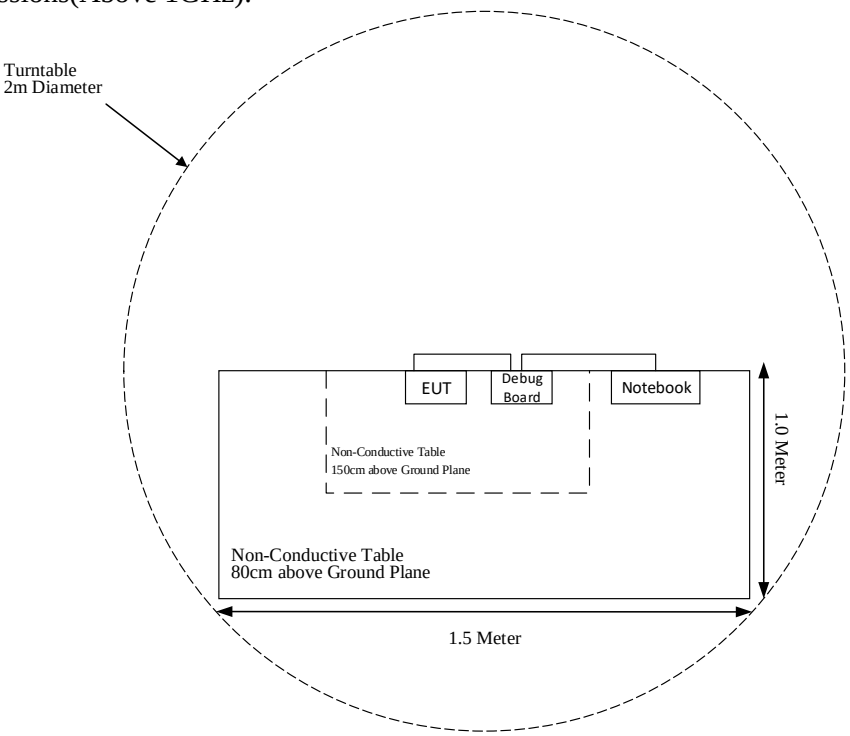
For Charging Base



For Type-C



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	A090314-2	2024-10-29	2027-10-28
BACL	Active Loop Antenna	1313-1A	4041511	2024-11-22	2027-11-21
Narda	6 dB Attenuator	771-6	10690812-2-1	2024-10-29	2027-10-28
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	2024-11-03	2027-11-02
ETS-LINDGREN	Horn Antenna	3116	2516	2024-12-12	2027-12-11
A.H.Systems,inc	Amplifier	PAM-0118P	512	2024-04-25	2025-04-24
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2024-04-23	2025-04-22
Narda	Attenuator	10dB	010	2024-04-23	2025-04-22
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	2024-04-25	2025-04-24
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
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	103298	2024-04-24	2025-04-23
Narda	Attenuator	10dB	010	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
§1.1307(b)(1)& §2.1093	RF EXPOSURE	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

FCC §1.1307(b) & §2.1093 - RF EXPOSURE

Applicable Standard

According to§15.247(i) and §1.1310, 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 KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
• f(GHz) is the RF channel transmit frequency in GHz
• Power and distance are rounded to the nearest mW and mm before calculation
• The result is rounded to one decimal place for comparison
• 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

Mode	Frequency Range (MHz)	Max Tune-up Conducted Power		Calculated Distance (mm)	Calculated Value	Threshold (1-g SAR)	SAR Test Exclusion
		(dBm)	(mW)				
SRD	2410-2470	-5.0	0.32	5.0	0.1	3.0	Yes
BLE	2402-2480	-3.5	0.45	5.0	0.1	3.0	Yes

Result: So the standalone SAR evaluation is not necessary.

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, and the antenna gain is 0.55 dBi, which is permanently attached to the unit, fulfill the requirement of this section. Please refer to the EUT photos.

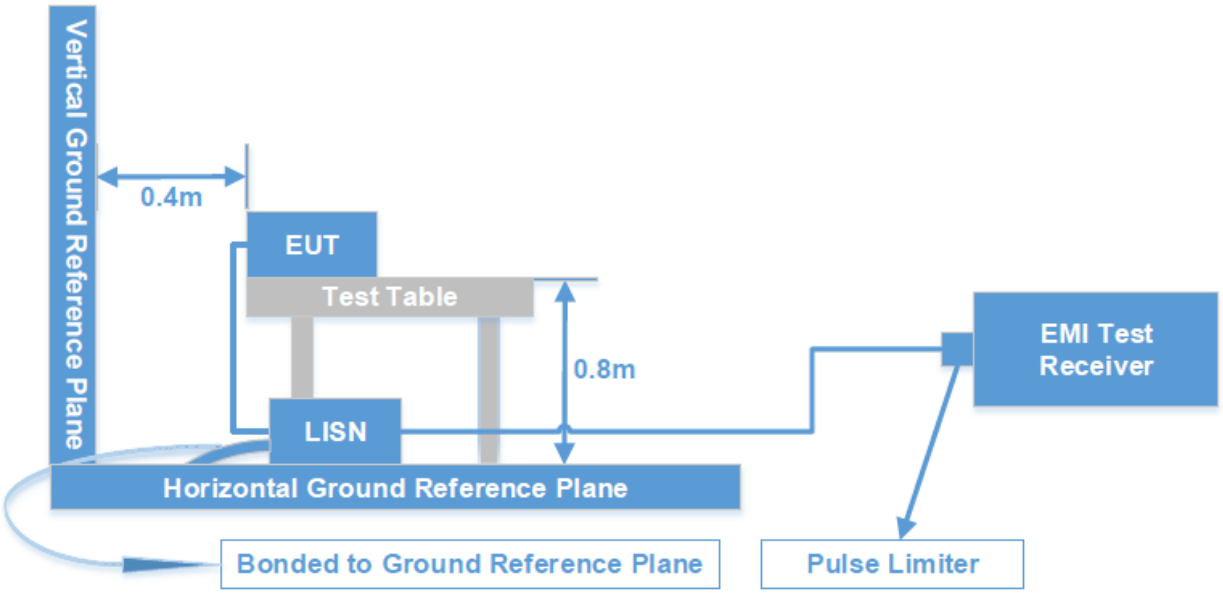
Result: Compliant.

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 adapter was connected to the outlet of the LISN.

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

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

Level & Over Limit Calculation

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

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

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

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

Test Results Summary

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

Test Data: See Appendix

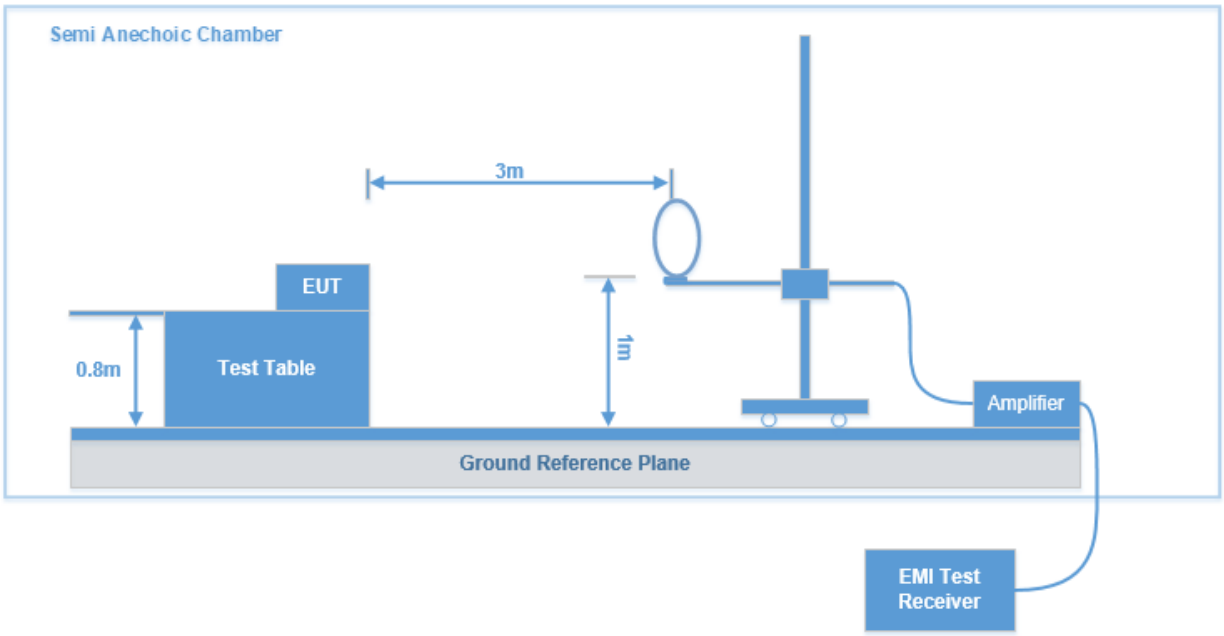
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

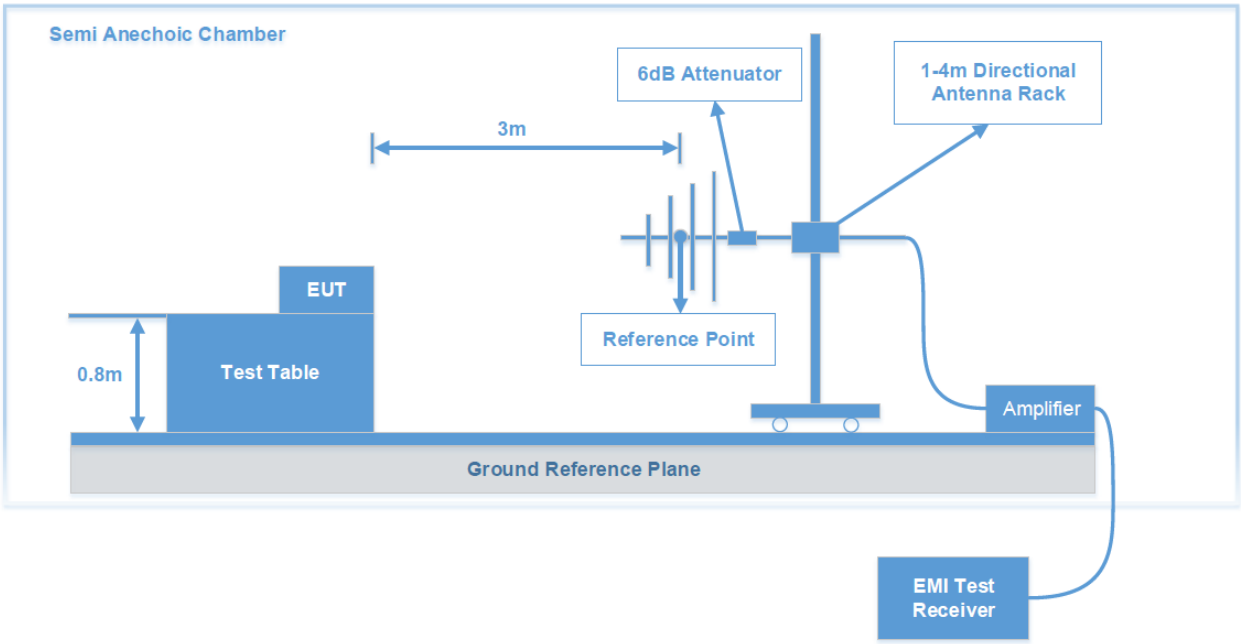
FCC §15.247 (d); §15.209; §15.205;

Test System Setup

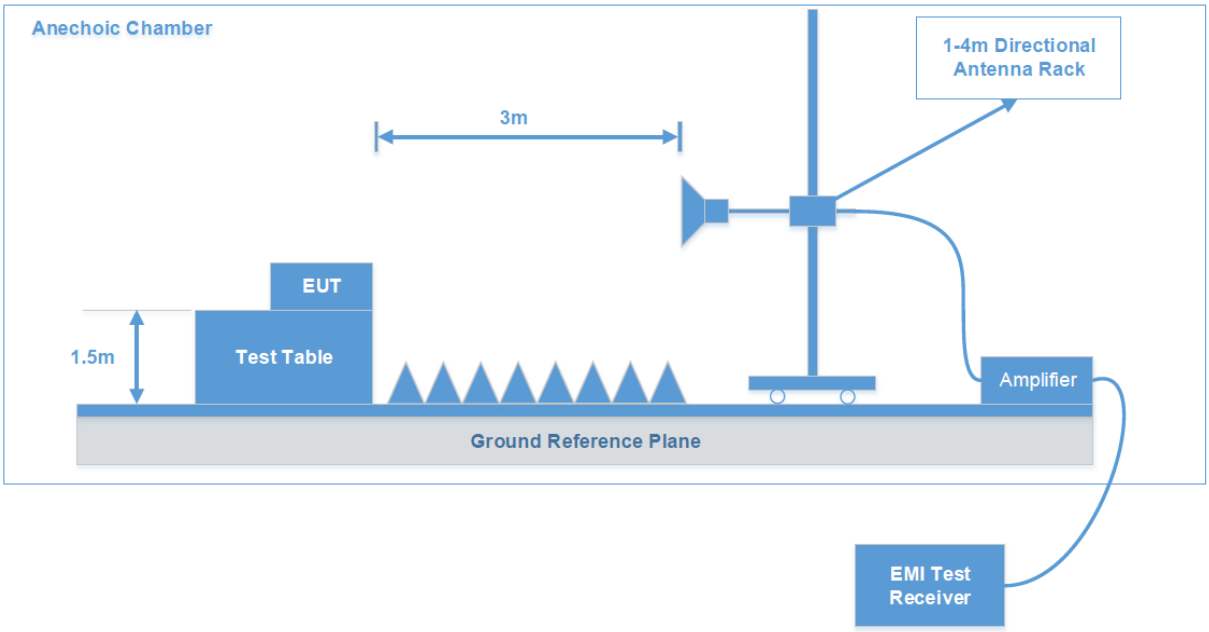
9 kHz - 30 MHz:



30 MHz - 1 GHz:



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

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

Test Procedure

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

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) (2) – 6 dB EMISSION BANDWIDTH

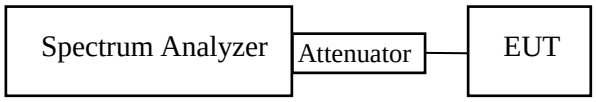
Applicable Standard

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

Test Procedure

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

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



Note: Offset（10.5dB）= Attenuator(10dB)+Cable loss(0.5dB)

Test Data: See Appendix

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

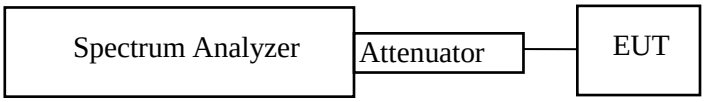
Applicable Standard

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 ≥ DTS bandwidth.
2. Set VBW ≥ 3 * RBW.
3. Set span ≥ 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.



Note: Offset（10.5dB）= Attenuator(10dB)+Cable loss(0.5dB)

Test Data: See Appendix

FCC §15.247(d) – BAND EDGE

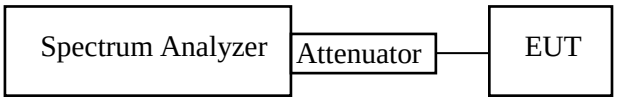
Applicable Standard

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.



Note: Offset（10.5dB）= Attenuator(10dB)+Cable loss(0.5dB)

Test Data: See Appendix

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

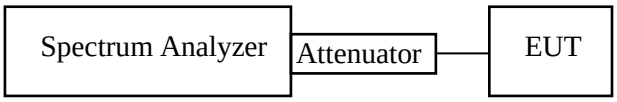
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of 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: 3kHz≤ RBW≤100 kHz.
2. Set the VBW ≥ 3*RBW.
3. Set the span to 1.5 times the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level within the RBW.
9. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



Note: Offset（10.5dB）= Attenuator(10dB)+Cable loss(0.5dB)

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

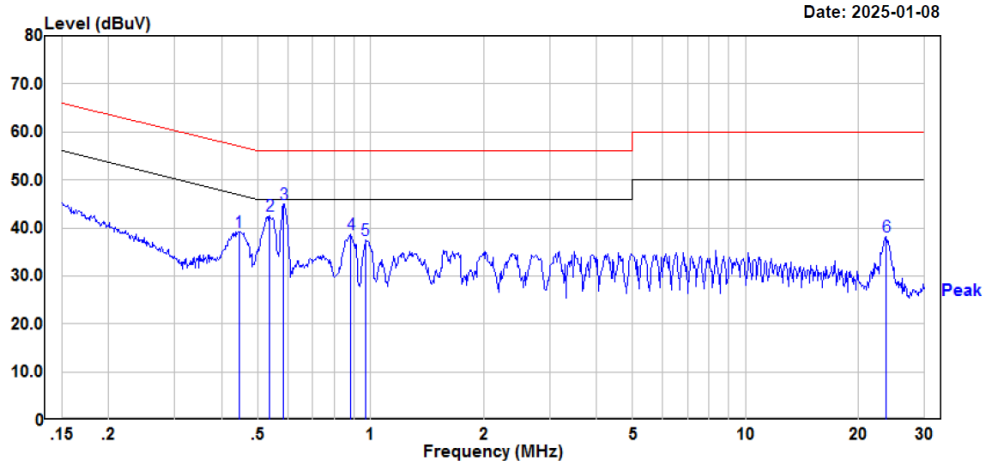
Test Item:	AC LINE CONDUCTED EMISSIONS	SPURIOUS EMISSIONS				DUTY CYCLE
		9 kHz – 30MHz	30MHz - 1GHz	1 GHz - 18 GHz	18 GHz - 25 GHz	
Test Date:	2025-01-08 & 2025-02-11	2025-01-08& 2025-02-10	2024-12-07 &2025-02-10	2025-01-09	2024-11-20	2024-12-11
Temperature:	16.3&17.4℃	16.3&17.1℃	16.9&17.1℃	17.2 ℃	22.5 ℃	23.6℃
Relative Humidity:	36&42 %	36&42 %	33&42 %	51 %	49 %	46%
ATM Pressure:	102.5&102.4 kPa	102.5&102.1 kPa	102.3&102.1 kPa	103.2 kPa	102.6 kPa	101.7 kPa
Test Result:	Pass	Pass	Pass	Pass	Pass	/
Test Engineer:	Myles Miao	Jerry Yan	Jerry Yan	Destine Hu	Hugh Wu	Neil Zhou

Test Item:	6 DB EMISSION BANDWIDTH	MAXIMUM CONDUCTED OUTPUT POWER	BAND EDGE	POWER SPECTRAL DENSITY
Test Date:	2024-12-11	2024-12-11	2024-12-11	2024-12-11
Temperature:	23.6℃	23.6℃	23.6℃	23.6℃
Relative Humidity:	46%	46%	46%	46%
ATM Pressure:	101.7 kPa	101.7 kPa	101.7 kPa	101.7 kPa
Test Result:	Pass	Pass	Pass	Pass
Test Engineer:	Neil Zhou	Neil Zhou	Neil Zhou	Neil Zhou

AC LINE CONDUCTED EMISSIONS

EUT operation mode: Transmitting in BLE (1 Mbps) low channel (maximum output power)

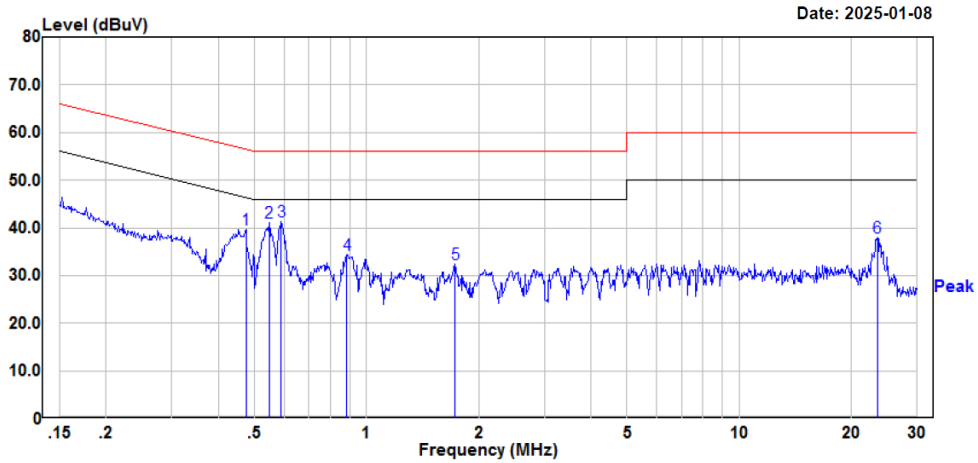
For Charging Base
AC 120V/60 Hz, Line




```
Site                : CE
Condition           : limit\FCC PART 15.207
                    : DET:Peak
Project No.         : RKSA240711002
Model               : HS220CHD 252B
Phase               : L
Voltage             : 120V/60Hz
Mode                : BLE 1M
Test Equipment      : ENV216,ESR
Receiver Setting    : RBW: 9 kHz, VBW: 30 kHz, Sweep Time: Auto
Temperature         : 16.3℃
Humidity            : 36%
Atmospheric pressure: 102.5kPa
Test Engineer       : Myles Miao
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.445	18.96	20.23	39.19	56.98	-17.79	Peak
2	0.537	22.39	20.12	42.51	56.00	-13.49	Peak
3	0.585	24.97	20.10	45.07	56.00	-10.93	Peak
4	0.885	18.92	19.84	38.76	56.00	-17.24	Peak
5	0.968	17.82	19.75	37.57	56.00	-18.43	Peak
6	23.735	18.45	19.80	38.25	60.00	-21.75	Peak

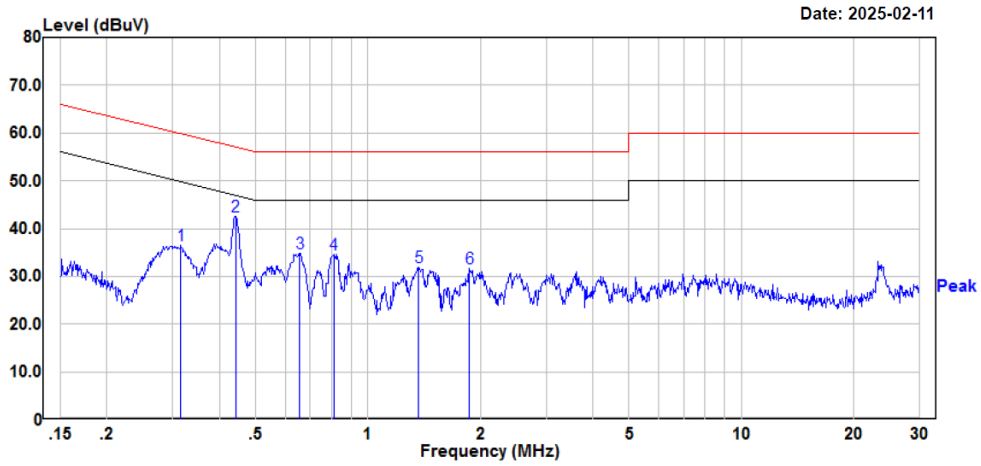
AC 120V/60 Hz, Neutral




```
Site                : CE
Condition           : limit\FCC PART 15.207
                    : DET:Peak
Project No.         : RKSA240711002
Model               : HS220CHD 252B
Phase               : N
Voltage             : 120V/60Hz
Mode                : BLE 1M
Test Equipment      : ENV216,ESR
Receiver Setting    : RBW: 9 kHz, VBW: 30 kHz, Sweep Time: Auto
Temperature         : 16.3℃
Humidity            : 36%
Atmospheric pressure: 102.5kPa
Test Engineer       : Myles Miao
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.474	19.55	20.18	39.73	56.44	-16.71	Peak
2	0.548	20.95	20.11	41.06	56.00	-14.94	Peak
3	0.591	21.27	20.10	41.37	56.00	-14.63	Peak
4	0.885	14.51	19.84	34.35	56.00	-21.65	Peak
5	1.725	12.23	20.06	32.29	56.00	-23.71	Peak
6	23.499	18.06	19.79	37.85	60.00	-22.15	Peak

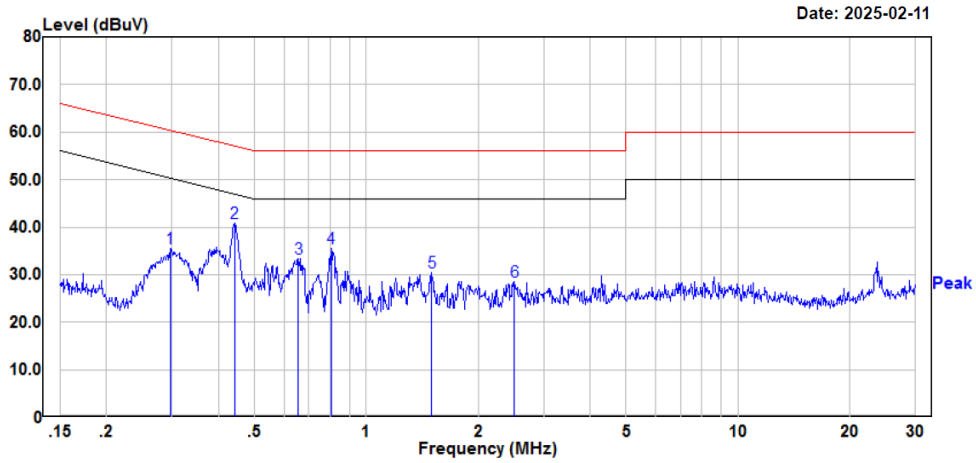
For Type-C
AC 120V/60 Hz, Line




```
Site                : CE
Condition           : limit\FCC PART 15.207
                    : DET:Peak
Project No.         : RKSA240711002
Model               : HS220CHD 252B
Phase               : L
Voltage             : 120V/60Hz
Mode                : BLE 1M
Test Equipment      : ENV216,ESR
Receiver Setting    : RBW: 9 kHz, VBW: 30 kHz, Sweep Time: Auto
Temperature         : 17.4℃
Humidity            : 42%
Atmospheric pressure: 102.4kPa
Test Engineer       : Myles Miao
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.315	16.24	20.17	36.41	59.83	-23.42	Peak
2	0.442	22.35	20.23	42.58	57.02	-14.44	Peak
3	0.656	14.83	20.08	34.91	56.00	-21.09	Peak
4	0.809	14.70	19.93	34.63	56.00	-21.37	Peak
5	1.365	12.00	19.91	31.91	56.00	-24.09	Peak
6	1.868	11.46	20.11	31.57	56.00	-24.43	Peak

AC 120V/60 Hz, Neutral




```
Site                : CE
Condition           : limit\FCC PART 15.207
                    : DET:Peak
Project No.         : RKSA240711002
Model               : HS220CHD 252B
Phase               : N
Voltage             : 120V/60Hz
Mode                : BLE 1M
Test Equipment      : ENV216,ESR
Receiver Setting    : RBW: 9 kHz, VBW: 30 kHz, Sweep Time: Auto
Temperature         : 17.4℃
Humidity            : 42%
Atmospheric pressure: 102.4kPa
Test Engineer       : Myles Miao
```

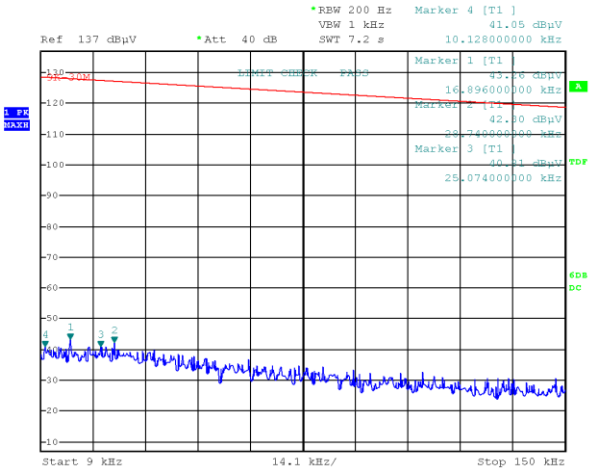
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.297	15.37	20.16	35.53	60.33	-24.80	Peak
2	0.442	20.68	20.23	40.91	57.02	-16.11	Peak
3	0.656	13.30	20.08	33.38	56.00	-22.62	Peak
4	0.805	15.58	19.93	35.51	56.00	-20.49	Peak
5	1.500	10.42	19.97	30.39	56.00	-25.61	Peak
6	2.507	8.35	20.19	28.54	56.00	-27.46	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 is below:

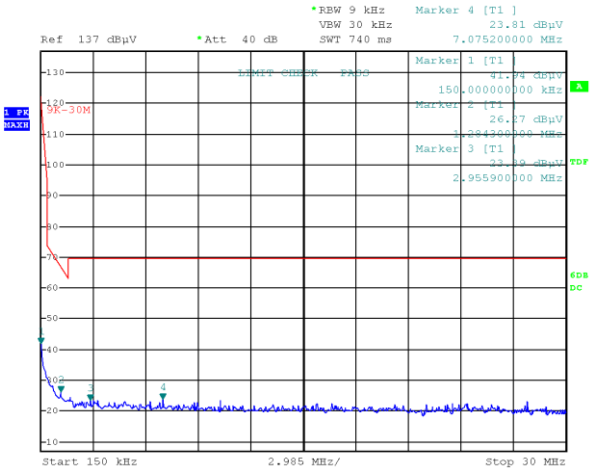
For Charging Base
9 kHz-30 MHz: (*Transmitting in maximum output power BLE (1 Mbps) low channel)*
Parallel(worst case)

9kHz-150kHz



Project No.RKSA240711002 Tester:Jerry Yan
Date: 8.JAN.2025 17:28:58

150kHz-30MHz



Project No.RKSA240711002 Tester:Jerry Yan
Date: 8.JAN.2025 17:33:14

9kHz-150kHz

Frequency (MHz)	Corrected Amplitude (dBµV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBµV/m) @3m	Margin (dB)
0.010128	41.05	PK	-0.51	127.49	86.44
0.016896	43.26	PK	-0.54	123.05	79.79
0.025074	40.31	PK	-0.59	119.62	79.31
0.028740	42.30	PK	-0.60	118.43	76.13

150kHz-30MHz

Frequency (MHz)	Corrected Amplitude (dBµV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBµV/m) @3m	Margin (dB)
0.15000	41.94	PK	-11.34	104.08	62.14
1.28430	26.27	PK	-28.55	65.43	39.16
2.95590	23.39	PK	-31.39	69.54	46.15
7.07520	23.81	PK	-32.37	69.54	45.73

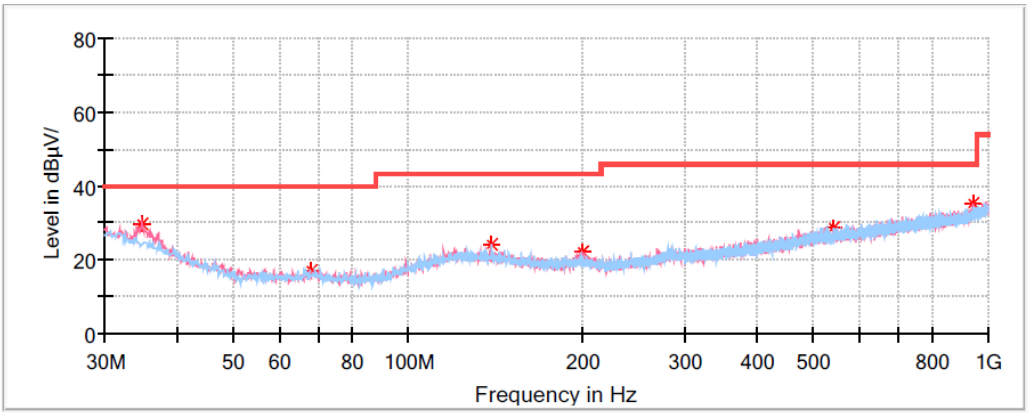
BLE (1 Mbps)

30 MHz - 1 GHz: *(Transmitting in maximum output power BLE (1 Mbps) low channel)*

Low Channel: 2402 MHz

Common Information

Project No:	RKSA240711002
EUT Model:	HS220CHD-252B
Test Mode:	Transmitting in BLE-1M mode low channel
Standard:	FCC Part 15.205 &FCC Part 15.209&FCC Part 15.247
Test Equipment:	ESCI, JB3, 310N
Receiver Setting:	RBW:120 kHz, VBW: 300 kHz, Sweep Time: Auto
Temperature:	16.9℃
Humidity:	52%
Barometric Pressure:	102.3kPa
Test Engineer:	Jerry Yan
Test Date:	2024/12/07



Critical_Freqs

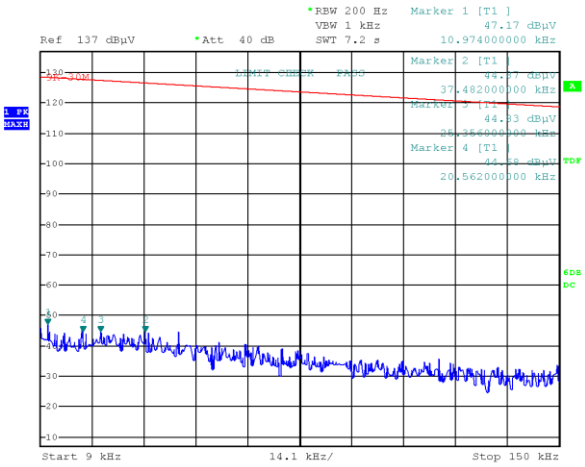
Frequency (MHz)	MaxPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
34.850000	29.47	40.00	10.53	V	-7.9
67.951250	17.33	40.00	22.67	V	-16.6
139.610000	24.18	43.50	19.32	H	-11.2
199.992500	22.15	43.50	21.35	V	-12.0
543.130000	28.85	46.00	17.15	H	-4.7
944.831250	35.13	46.00	10.87	V	1.3

For Type-C

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

Parallel(worst case)

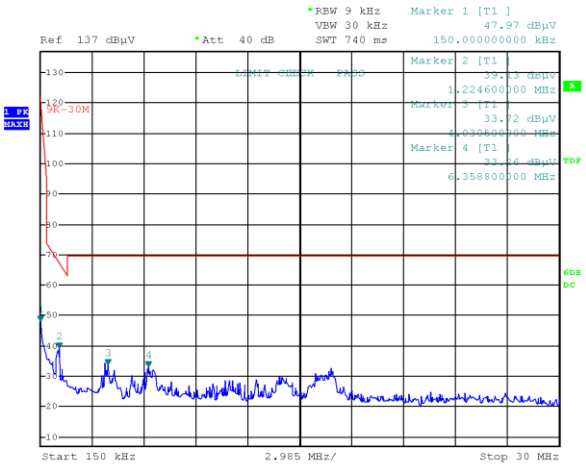
9kHz-150kHz



Project No.RKSA240711002 Tester:Jerry Yan

Date: 10.FEB.2025 12:00:26

150kHz-30MHz



Project No.RKSA240711002 Tester:Jerry Yan

Date: 10.FEB.2025 12:05:33

9kHz-150kHz

Frequency (MHz)	Corrected Amplitude (dBµV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBµV/m) @3m	Margin (dB)
0.010974	47.17	PK	-0.52	126.80	79.63
0.020562	44.68	PK	-0.56	121.343	76.66
0.025356	44.83	PK	-0.59	119.52	74.69
0.037482	44.87	PK	-1.81	116.13	71.26

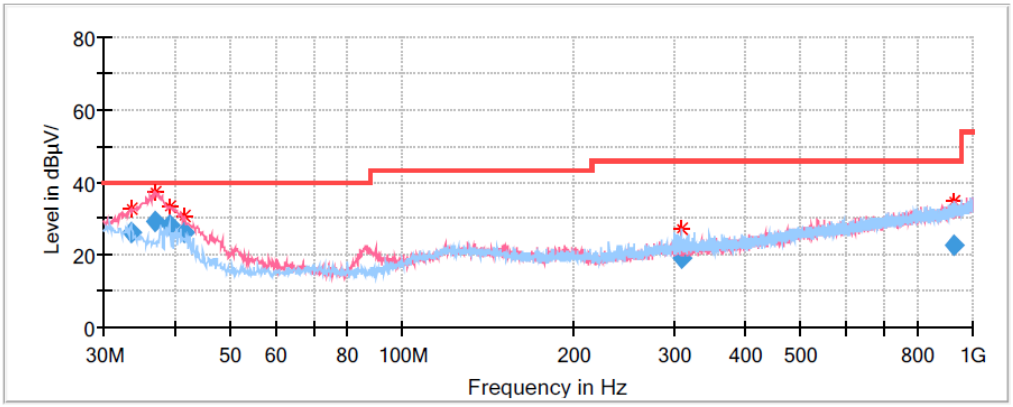
150kHz-30MHz

Frequency (MHz)	Corrected Amplitude (dBµV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBµV/m) @3m	Margin (dB)
0.15000	47.97	PK	-11.34	104.08	56.11
1.22460	39.13	PK	-28.35	65.84	26.71
4.03050	33.72	PK	-31.92	69.54	35.82
6.35880	33.26	PK	-32.26	69.54	36.28

30MHz - 1GHz
Transmitting maximum output power low channel

Common Information

Project No:	RKSA240711002
EUT Model:	HS220CHD-252B
Test Mode:	Transmitting in BLE-1M mode low channel
Standard:	FCC Part 15.205 &FCC Part 15.209&FCC Part 15.247
Test Equipment:	ESCI, JB3, 310N
Receiver Setting:	RBW:120 kHz, VBW: 300 kHz, Sweep Time: Auto
Temperature:	15.7℃
Humidity:	36%
Barometric Pressure:	102.9kPa
Test Engineer:	Jerry Yan
Test Date:	2025/2/10



Final_Result

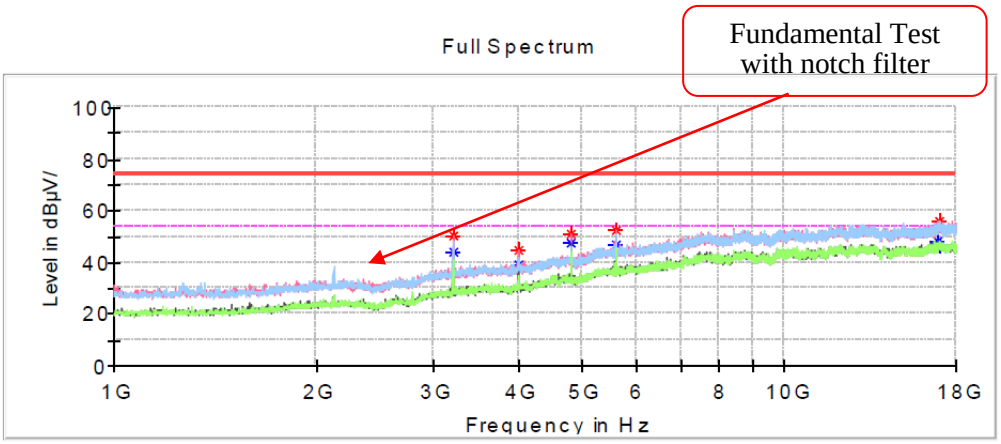
Frequency (MHz)	QuasiPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
33.395000	26.16	40.00	13.84	V	-7.4
36.911000	28.94	40.00	11.06	V	-9.7
39.215000	28.21	40.00	11.79	V	-10.5
41.640000	26.34	40.00	13.66	V	-11.6
308.632000	19.35	46.00	26.65	H	-10.1
929.553700	22.42	46.00	23.58	H	0.9

1 GHz-18 GHz:

Low Channel: 2402 MHz

Common Information

Project No.:	RKSA240711002
Test Mode:	BLE 1M
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Test Engineer:	Destine Hu



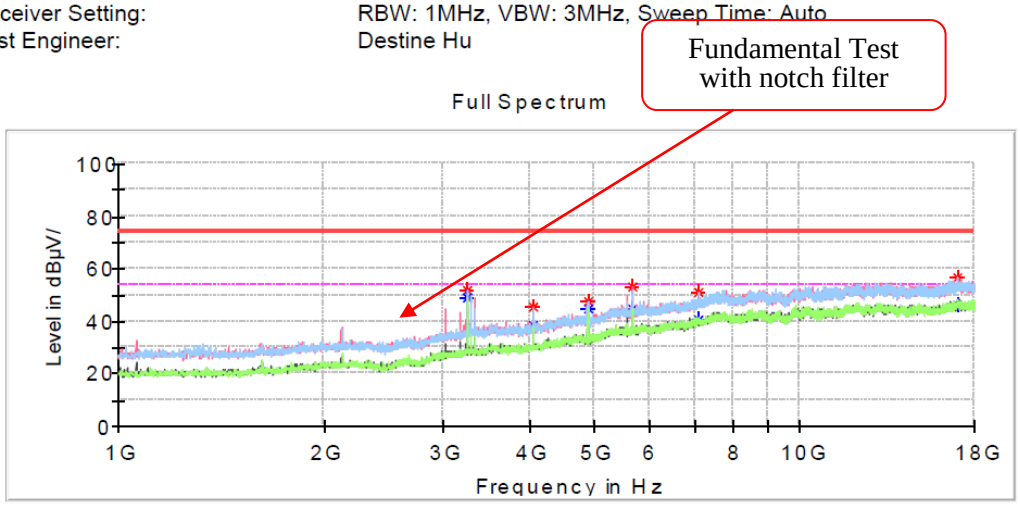
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
3199.800000	50.55	---	74.00	23.45	V	-7.6
3199.800000	---	43.89	54.00	10.11	V	-7.6
4000.500000	44.97	---	74.00	29.03	V	-5.9
4000.500000	---	38.85	54.00	15.15	V	-5.9
4801.200000	50.89	---	74.00	23.11	V	-3.2
4801.200000	---	47.33	54.00	6.67	V	-3.2
5601.900000	52.19	---	74.00	21.81	V	-0.3
5601.900000	---	46.80	54.00	7.20	V	-0.3
16910.300000	---	48.46	54.00	5.54	H	12.0
16910.300000	53.39	---	74.00	20.61	H	12.0
17032.700000	---	45.84	54.00	8.16	H	12.2
17032.700000	56.14	---	74.00	17.86	H	12.2

Middle Channel: 2440 MHz

Common Information

Project No.:	RKSA240711002
Test Mode:	BLE 1M
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Test Engineer:	Destine Hu



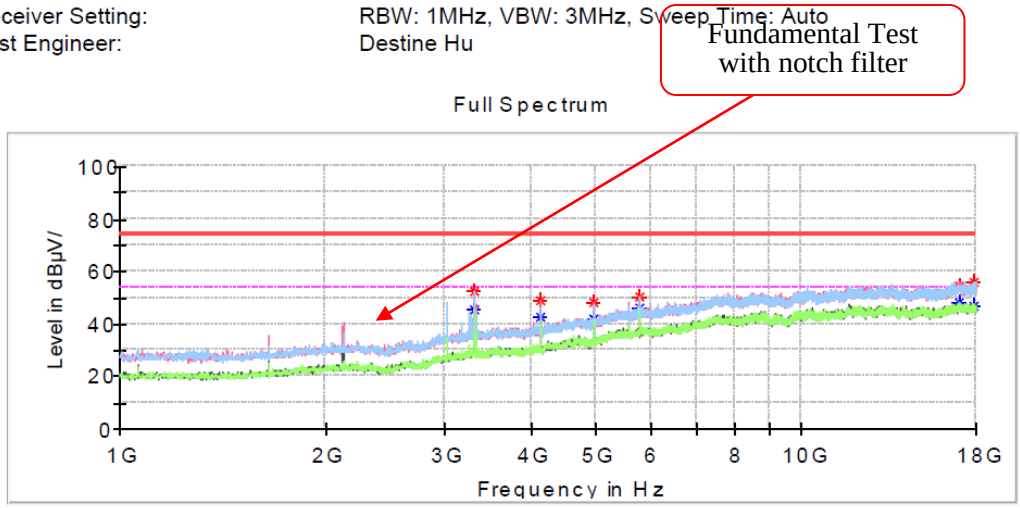
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
3252.500000	52.02	---	74.00	21.98	H	-7.4
3252.500000	---	48.73	54.00	5.27	H	-7.4
4065.100000	45.66	---	74.00	28.34	V	-5.7
4065.100000	---	38.13	54.00	15.87	V	-5.7
4879.400000	47.88	---	74.00	26.12	H	-2.9
4879.400000	---	44.58	54.00	9.42	H	-2.9
5692.000000	53.16	---	74.00	20.84	V	-0.2
5692.000000	---	44.80	54.00	9.20	V	-0.2
7087.700000	---	40.31	54.00	13.69	H	2.9
7087.700000	51.16	---	74.00	22.84	H	2.9
17059.900000	---	46.12	54.00	7.88	H	12.2
17059.900000	56.93	---	74.00	17.07	H	12.2

High Channel: 2480 MHz

Common Information

Project No.:	RKSA240711002
Test Mode:	BLE 1M
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
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)
3305.200000	52.52	---	74.00	21.48	H	-7.2
3305.200000	---	45.56	54.00	8.44	H	-7.2
4133.100000	48.64	---	74.00	25.36	V	-5.5
4133.100000	---	42.47	54.00	11.53	V	-5.5
4959.300000	48.31	---	74.00	25.69	V	-2.6
4959.300000	---	42.24	54.00	11.76	V	-2.6
5785.500000	50.38	---	74.00	23.62	H	-0.1
5785.500000	---	46.23	54.00	7.77	H	-0.1
16998.700000	---	48.41	54.00	5.59	H	12.3
16998.700000	54.27	---	74.00	19.73	H	12.3
17872.500000	---	46.81	54.00	7.19	V	11.9
17872.500000	56.14	---	74.00	17.86	V	11.9

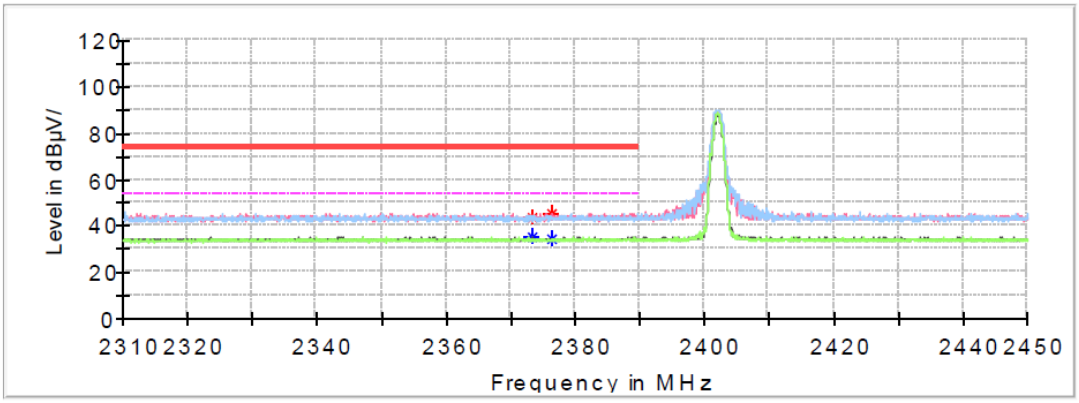
Restricted Bands Emission:

Left Side

Common Information

Project No.:	RKSA240711002
Test Mode:	BLE 1M
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Test Engineer:	Destine Hu

Full Spectrum



Critical_Freqs

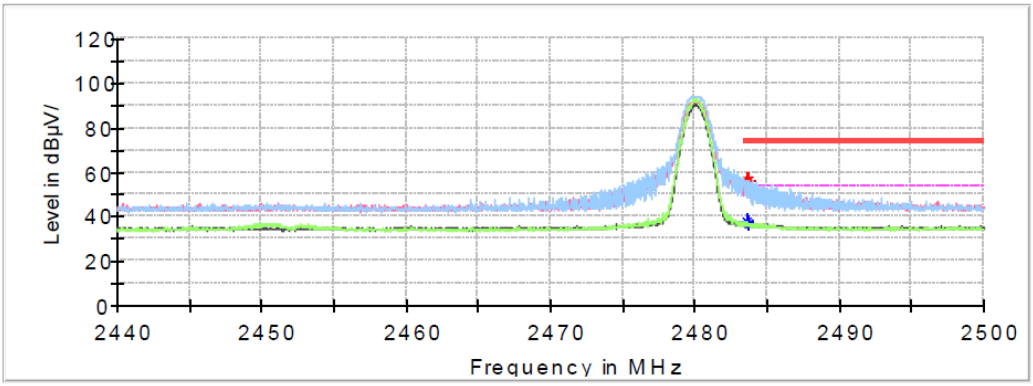
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2373.280000	---	35.63	54.00	18.37	H	-0.6
2373.280000	43.87	---	74.00	30.13	H	-0.6
2376.472000	---	34.27	54.00	19.73	V	-0.6
2376.472000	45.70	---	74.00	28.30	V	-0.6

Right Side

Common Information

Project No.:	RKSA240711002
Test Mode:	BLE 1M
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Test Engineer:	Destine Hu

Full Spectrum

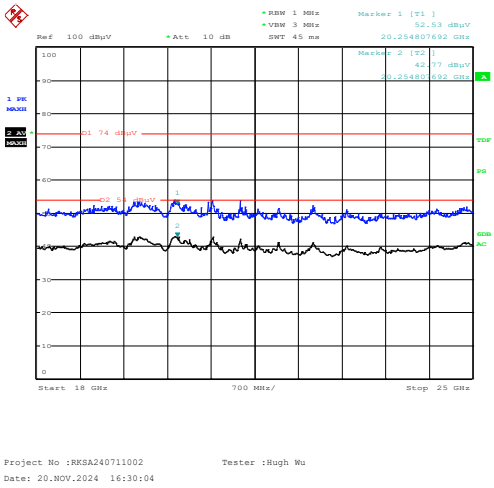


Critical_Freqs

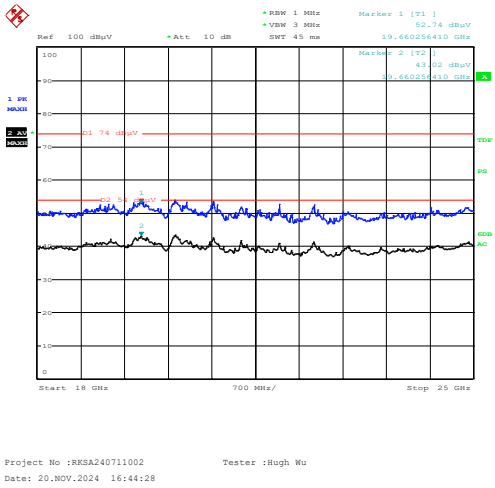
Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.608000	---	37.55	54.00	16.45	H	-0.3
2483.608000	56.40	---	74.00	17.60	H	-0.3
2483.680000	---	36.90	54.00	17.10	H	-0.3
2483.680000	56.50	---	74.00	17.50	H	-0.3

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

Horizontal



Vertical



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

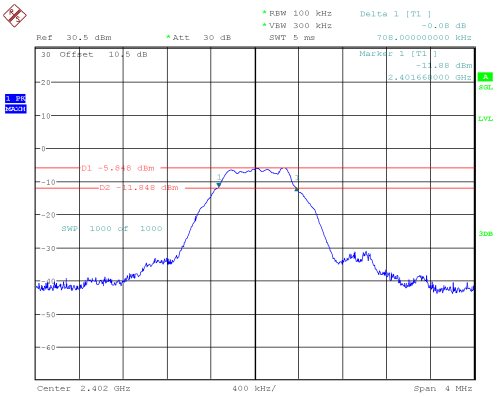
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
19660.26	---	43.02	54	10.98	V	11.30
19660.26	52.74	---	74	21.26	V	11.30
20254.81	---	42.77	54	11.23	H	12.51
20254.81	52.53	---	74	21.47	H	12.51

6 dB EMISSION BANDWIDTH

Mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
BLE (1 Mbps)	Low	2402	0.708	≥0.5
	Middle	2440	0.704	≥0.5
	High	2480	0.716	≥0.5

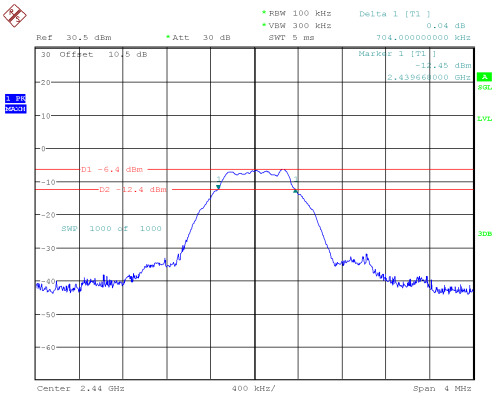
BLE (1 Mbps)

Low Channel



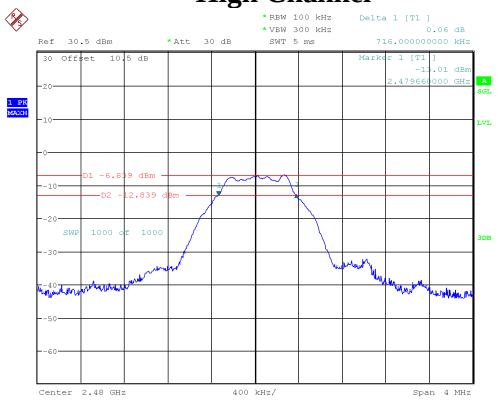
ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:19:07

Middle Channel



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:05:35

High Channel



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:11:51

MAXIMUM CONDUCTED OUTPUT POWER

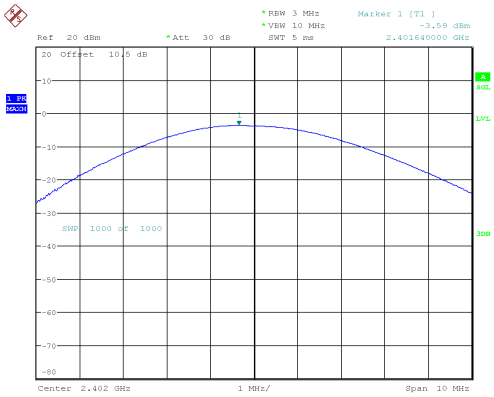
Test Result: Compliant.

EUT operation mode: Transmitting

Mode	Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Limit (dBm)	Result
BLE (1 Mbps)	Low	2402	-3.59	30	Pass
	Middle	2440	-4.04	30	Pass
	High	2480	-4.63	30	Pass

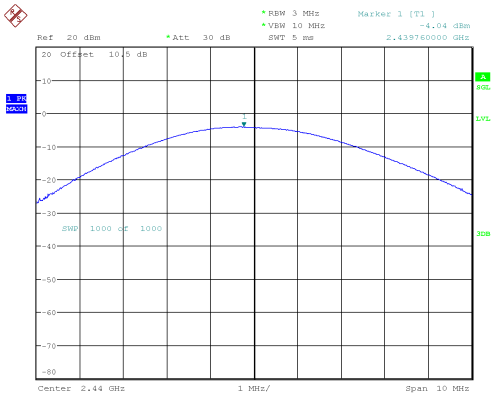
BLE (1 Mbps)

Low Channel



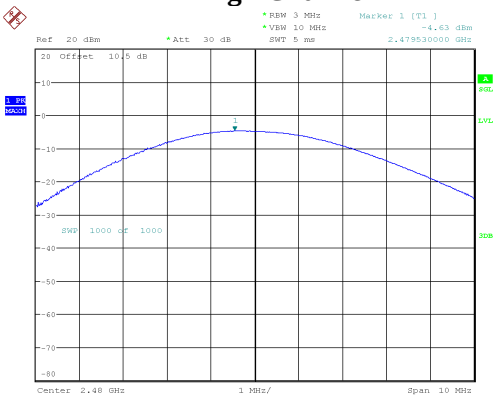
ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:20:04

Middle Channel



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:08:54

High Channel



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:16:15

BAND EDGE

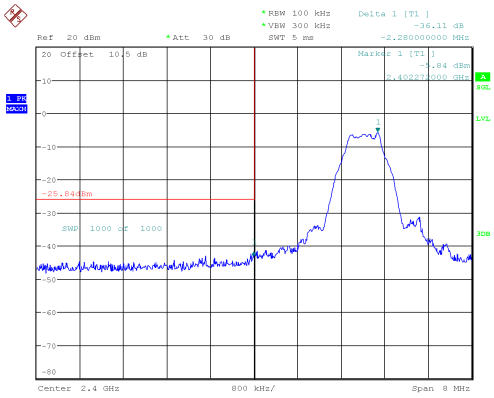
Test Result: Compliant.

EUT operation mode: Transmitting

Mode	Channel	Frequency (MHz)	Result (dBc)	Limit (dBc)
BLE (1 Mbps)	Low	2402	36.11	20
	High	2480	37.37	

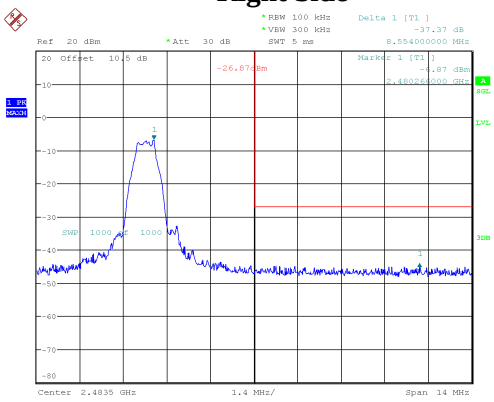
BLE (1 Mbps)

Left Side



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:10:27

Right Side



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:10:58

POWER SPECTRAL DENSITY

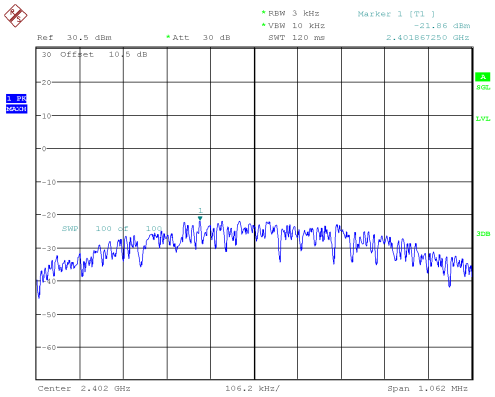
Test Result: Compliant.

EUT operation mode: Transmitting

Mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
BLE (1 Mbps)	Low	2402	-21.86	≤8
	Middle	2440	-22.33	≤8
	High	2480	-22.81	≤8

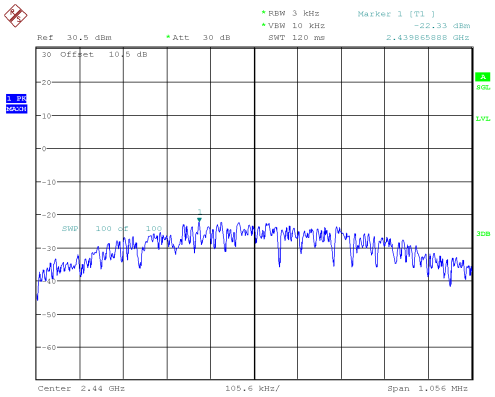
BLE (1 Mbps)

Low Channel



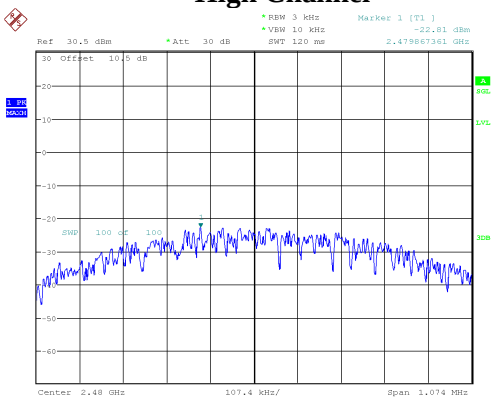
ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:20:24

Middle Channel



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:09:15

High Channel



ProjectNo.:RKSA240711002 Tester:Neil Zhou
Date: 11.DEC.2024 18:16:36

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 *******