

FCC PART 15.247

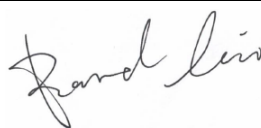
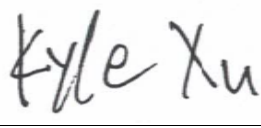
TEST REPORT

For

Altenergy Power System Inc.

Building 2, No. 522, Yatai Road, Jiaxing 314050 China

FCC ID: 2AFGR-APS2652D

Report Type: Original Report	Product Name: Zigbee module
Report Number: RSHA250530004-00A	
Report Date: 2025-09-12	
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Approved By:	Kyle Xu 
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Kunshan). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government.

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	9
EQUIPMENT MODIFICATIONS	9
SUPPORT EQUIPMENT LIST AND DETAILS	9
EXTERNAL I/O CABLE.....	9
BLOCK DIAGRAM OF TEST SETUP	10
TEST EQUIPMENT LIST	12
SUMMARY OF TEST RESULTS	13
FCC §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)	14
FCC §15.203 – ANTENNA REQUIREMENT.....	15
APPLICABLE STANDARD	15
ANTENNA CONNECTOR CONSTRUCTION	15
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	16
APPLICABLE STANDARD	16
TEST SYSTEM SETUP.....	16
EMI TEST RECEIVER SETUP.....	16
TEST PROCEDURE	17
TEST RESULTS SUMMARY	17
TEST DATA: SEE APPENDIX	17
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS.....	18
APPLICABLE STANDARD	18
TEST SYSTEM SETUP.....	18
EMI TEST RECEIVER SETUP.....	19
TEST PROCEDURE	19
TEST RESULTS SUMMARY	20
TEST DATA: SEE APPENDIX	20
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH.....	21
APPLICABLE STANDARD	21
TEST PROCEDURE	21
TEST DATA: SEE APPENDIX	21
FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER.....	22
APPLICABLE STANDARD	22
TEST PROCEDURE	22
TEST DATA: SEE APPENDIX	22
FCC §15.247(d) – BAND EDGE.....	23
APPLICABLE STANDARD	23
TEST PROCEDURE	23

TEST DATA: SEE APPENDIX	23
FCC §15.247(e) - POWER SPECTRAL DENSITY	24
APPLICABLE STANDARD	24
TEST PROCEDURE	24
TEST DATA: SEE APPENDIX	24
APPENDIX - TEST DATA.....	25
AC LINE CONDUCTED EMISSIONS	25
SPURIOUS EMISSIONS	28
6 dB EMISSION BANDWIDTH	37
MAXIMUM CONDUCTED OUTPUT POWER.....	38
BAND EDGE	40
POWER SPECTRAL DENSITY	41
CONDUCTED SPURIOUS EMISSION.....	42
EUT PHOTOGRAPHS	43
TEST SETUP PHOTOGRAPHS	44

REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RSHA250530004-00A	R1V1	2025-09-12	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Altenergy Power System Inc.
Tested Model:	APS2652D
Product Name:	Zigbee module
Power Supply:	DC 3.3V
RF Function:	Zigbee
Maximum Output Power:	3.80 dBm
Operating Band /Frequency:	2405-2480 MHz
Modulation Type:	OQPSK
Channel Number:	16
Antenna Type:	Monopole Antenna
★Maximum Antenna Gain:	3.26 dBi

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

All measurement and test data in this report was gathered from production sample serial number: RSHA250530004-1 (Assigned by the BACL (Kunshan). The EUT supplied by the applicant was received on 2025-05-30.)

Objective

This report is prepared for *Altenergy Power System Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communications Commission rules.

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

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020, 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		3.19dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emissions	9 kHz~150 kHz	3.8dB
	150 kHz~30 MHz	3.4dB
	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0°C
Humidity		6%

Test Facility

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

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

Channel List:

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

EUT was tested with channel 11, 18 and 26.

EUT Exercise Software

RF Test Tool: SmartRF_Studio 7

Power Level Setting:

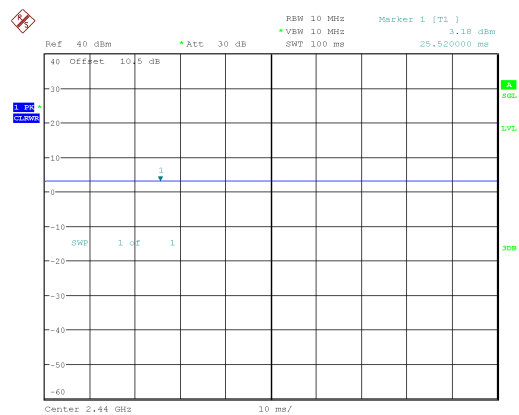
Channel	Frequency(MHz)	★Power Level
Low	2405	5
Middle	2440	5
High	2480	5

Note: The power level was declared by the applicant.

Duty Cycle:

Test Date:	2025-08-16
Temperature:	24.7 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa
Test Result:	Pass
Test Engineer:	Neil Zhou

Middle Channel



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:38:03

Mode	Duty Cycle (%)	T _{on} (ms)	T _{on+off} (ms)	10log(1/x)(dB)
Zigbee	100	100	100	0

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

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

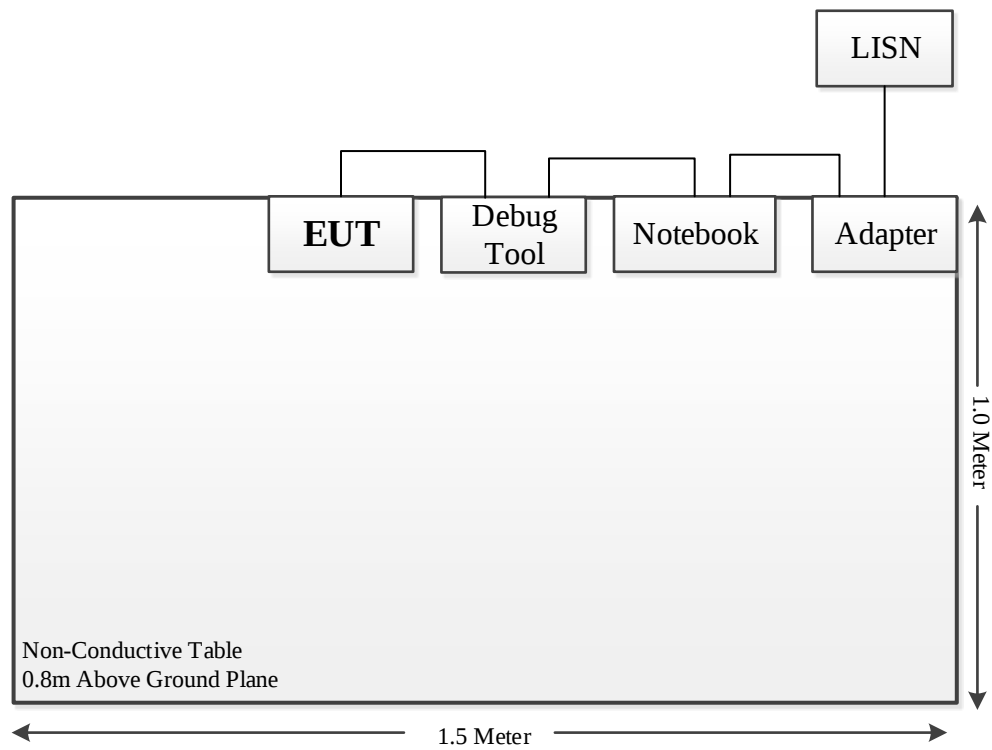
Manufacturer	Description	Model	Serial Number
Lenovo	Notebook	Y7000P2020H	/
/	Debug Tool	/	/
/	Adapter	ADLX65NLC3	/

External I/O Cable

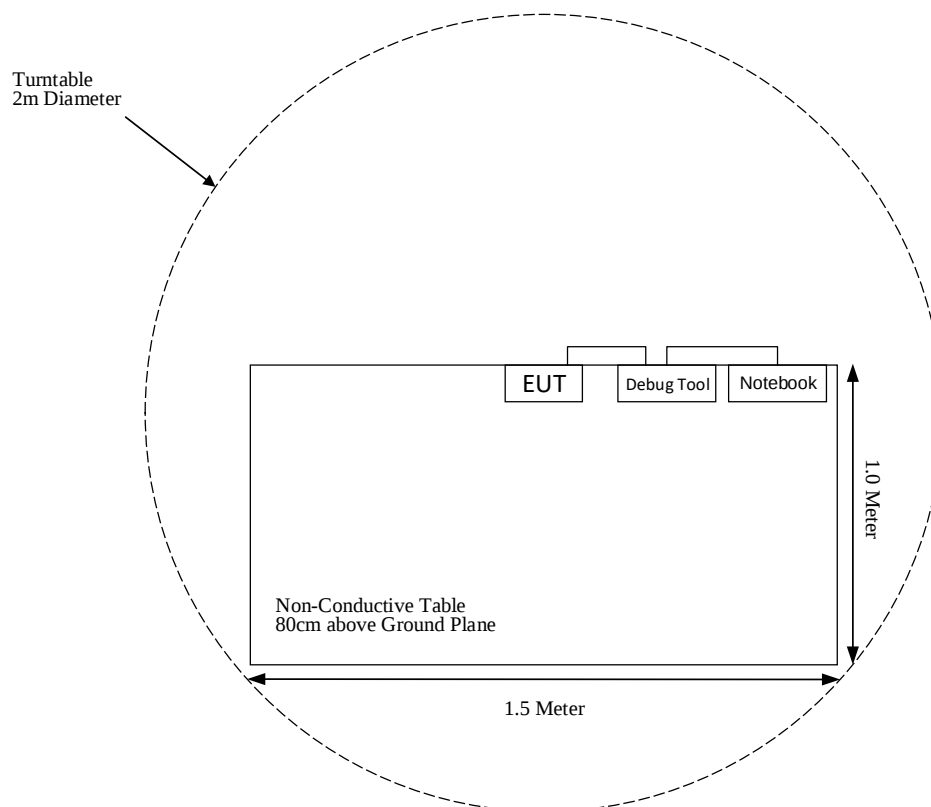
Cable Description	Length (m)	From Port	To Port
RF Cable	0.2	EUT	Debug Tool
USB Cable	1.5	Debug Tool	Notebook
Power Cable 1	1.0	Notebook	Adapter
Power Cable 2	1.0	Adapter	LISN

Block Diagram of Test Setup

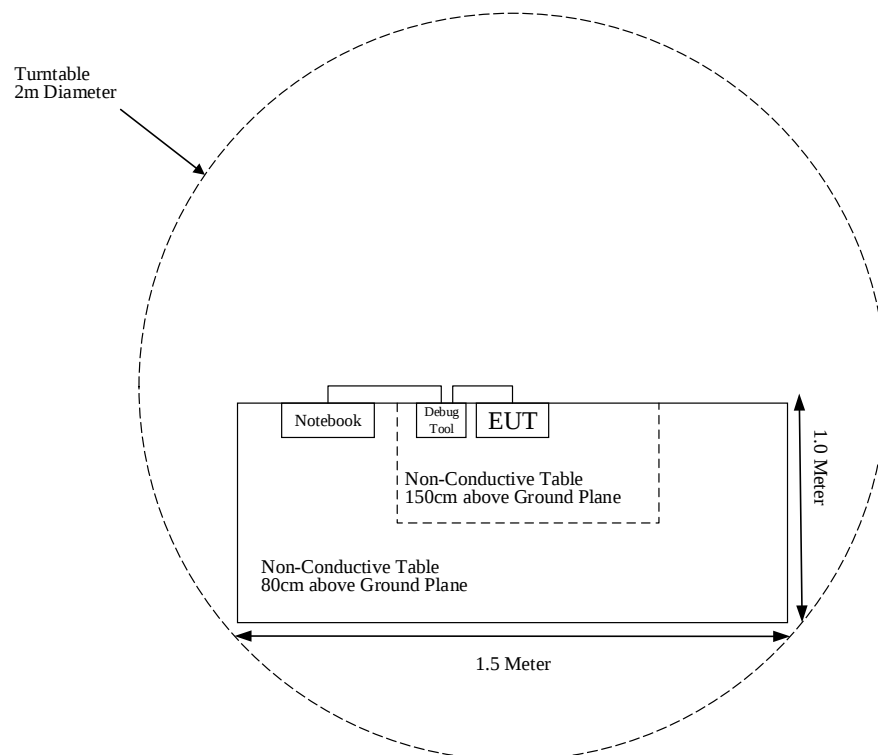
For Conducted Emissions:



For Radiated Emissions(Below 1 GHz):



For Radiated Emissions(Above 1 GHz):



TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test (Chamber #1)					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2025-04-09	2026-04-08
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	2025-04-09	2026-04-08
Rohde & Schwarz	Auto Test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-8	008	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-9	009	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-10	010	2025-04-09	2026-04-08
Radiated Emission Test (Chamber #2)					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207/040	2025-04-09	2026-04-08
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2025-04-09	2026-04-08
ETS-LINDGREN	Horn Antenna	3116	2516	2024-12-12	2027-12-11
A.H.Systems,inc	Amplifier	PAM-0118P	512	2025-04-09	2026-04-09
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2025-04-09	2026-04-09
Narda	Attenuator	10dB	010	2025-04-08	2026-04-07
SELECTOR	Amplifier	EM18G40G	60726	2025-04-09	2026-04-08
Rohde & Schwarz	Auto test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-6	006	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-11	011	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-12	012	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-13	013	2025-04-09	2026-04-08
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSU26	200103	2025-04-09	2026-04-08
Narda	Attenuator	10dB	010	2025-04-08	2026-04-07
XHFDZ	RG178 Coaxial Cable	SMA-178	XHF-1102	Each time	N/A
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	101746	2025-04-08	2026-04-07
Rohde & Schwarz	LISN	ENV216	101115	2025-04-08	2026-04-07
Audix	Test Software	e3	V9	N/A	N/A
Rohde & Schwarz	Pulse Limiter	ESH3-Z2	0357.8810.54	2025-04-08	2026-04-07
MICRO-COAX	Coaxial Cable	Cable-15	015	2025-04-09	2026-04-08

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

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	MAXIMUM PERMISSIBLE EXPOSURE (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	Band Edge& Conducted Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant

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

Applicable Standard

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

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

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

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

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

Calculated Formulary

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

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

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

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

Calculated Data:

Mode	Frequency Range (MHz)	Antenna Gain		★Tune-up Conducted Output Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Zigbee	2405~2480	3.26	2.12	4.0	2.51	20	0.0011	1.0

Note:

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

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

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has a monopole antenna for Zigbee, and the antenna gain is 3.26 dBi, which use a unique type of connector to attach to the EUT, fulfill the requirement of this section. Please refer to the EUT photos.

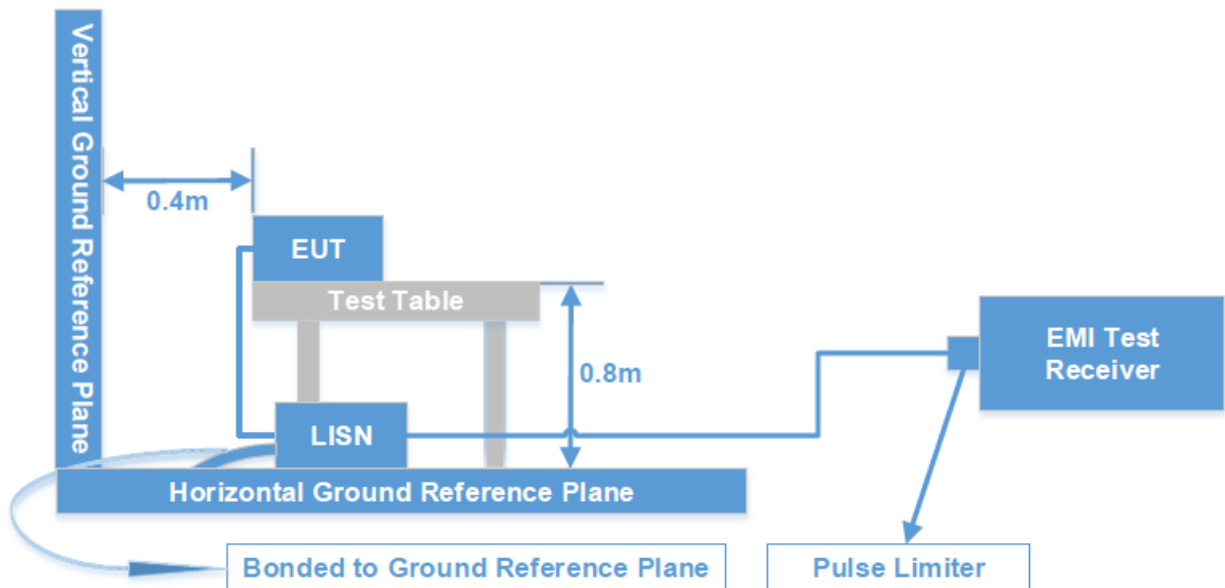
Result: Compliant.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

Test System Setup



The measurement procedure of EUT setup is according with ANSI C63.10-2020. 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 C63.10-2020 clause 6.2

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

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

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

Level & Over Limit Calculation

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

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)

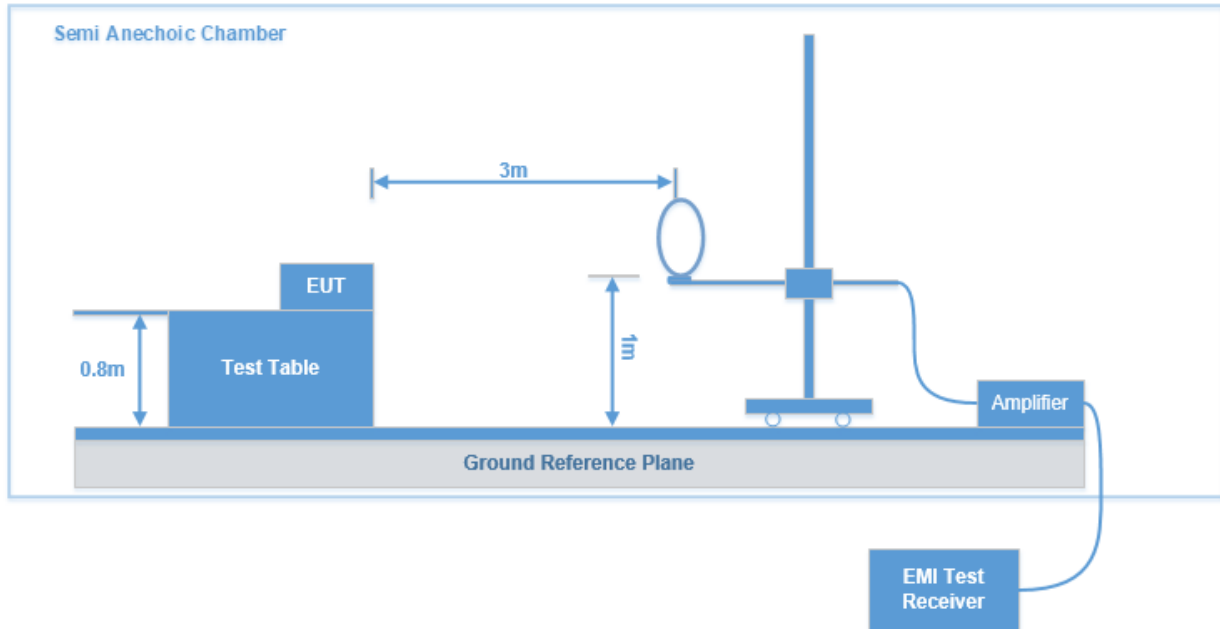
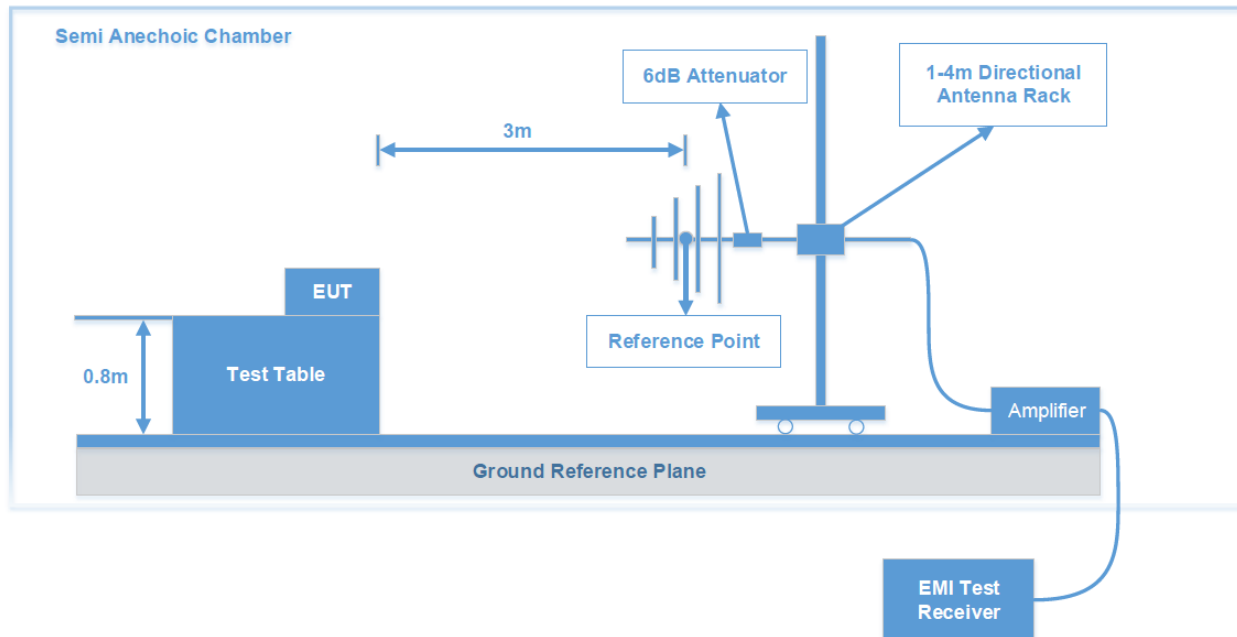
Test Results Summary

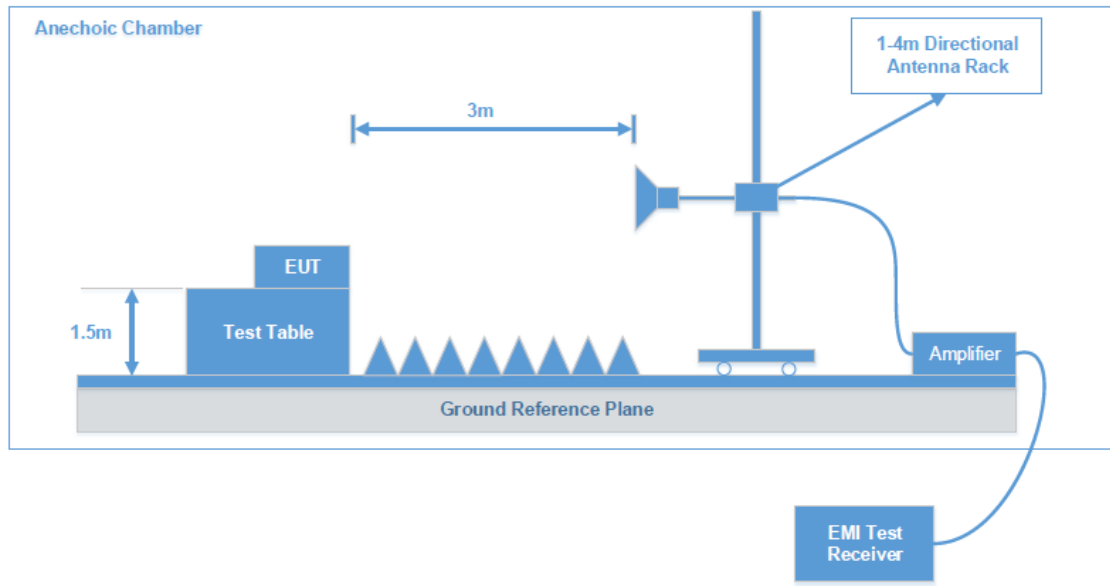
According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

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 C63.10-2020. The specification used was the FCC 15.209, and FCC 15.247 limits.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 25 GHz.

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

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

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

Test Procedure

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

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

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude (dB μ V/m) = Meter Reading (dB μ V) + 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 (dB μ V/m) – Corrected Amplitude (dB μ V/m)

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

Test Results Summary

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

Test Data: See Appendix

FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

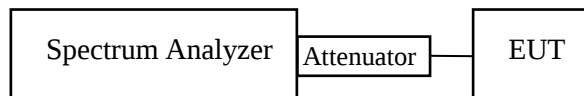
Applicable Standard

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

Test Procedure

According to ANSI C63.10-2020 sub-clause 11.8.1

- a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- b) Set the VBW $\geq [3 \times \text{RBW}]$.
- c) Detector = peak.
- d) Trace mode = max-hold.
- e) Sweep = No faster than coupled (auto) time.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “–6 dB down amplitude”. If a marker is below this “–6 dB down amplitude” value, then it shall be as close as possible to this value.



Note: the offset=Attenuator (10dB) + Cable loss (0.5dB) has been added in Spectrum Analyzer.

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 C63.10-2020 sub-clause 11.9.1.1

1. Set the RBW $\geq$ DTS bandwidth.
2. Set VBW $\geq 3 * \text{RBW}$.
3. Set span $\geq 3 * \text{RBW}$
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: the offset=Attenuator (10dB) + Cable loss (0.5dB) has been added in Spectrum Analyzer.

Test Data: See Appendix

FCC §15.247(d) – BAND EDGE

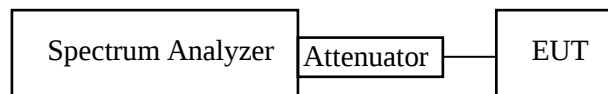
Applicable Standard

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 C63.10-2020 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: the offset=Attenuator (10dB) + Cable loss (0.5dB) has been added in Spectrum Analyzer.

Test Data: See Appendix

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

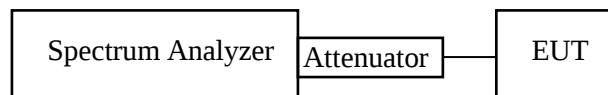
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of 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 C63.10-2020 sub-clause 11.10.2

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

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



Note: the offset=Attenuator (10dB) + Cable loss (0.5dB) has been added in Spectrum Analyzer.

Test Data: See Appendix

APPENDIX - TEST DATA

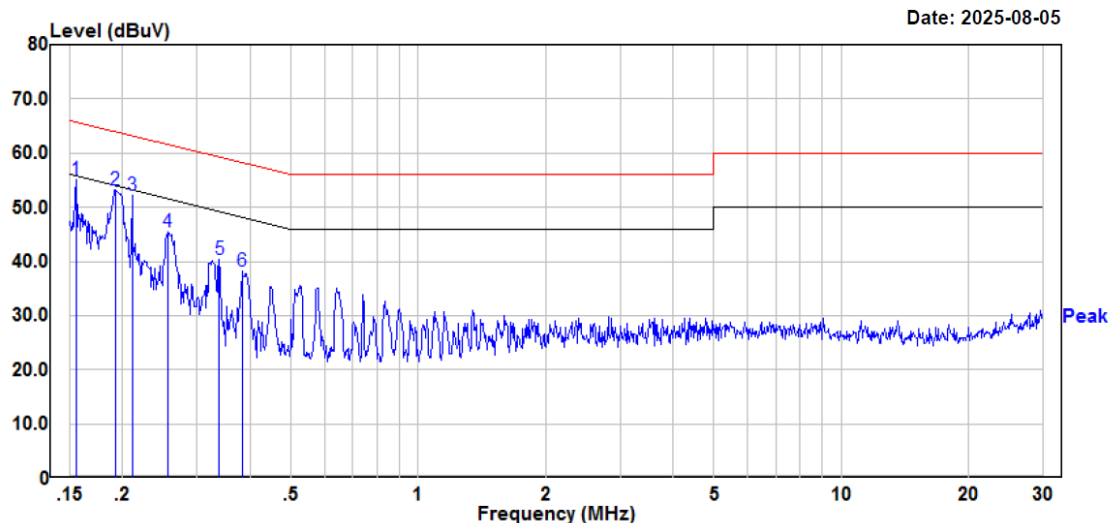
AC LINE CONDUCTED EMISSIONS

Environmental Conditions & Test Information

Test Date:	2025-08-05
Temperature:	26.9 °C
Relative Humidity:	69 %
ATM Pressure:	101.6 kPa
Test Result:	Pass
Test Engineer:	Myles Miao

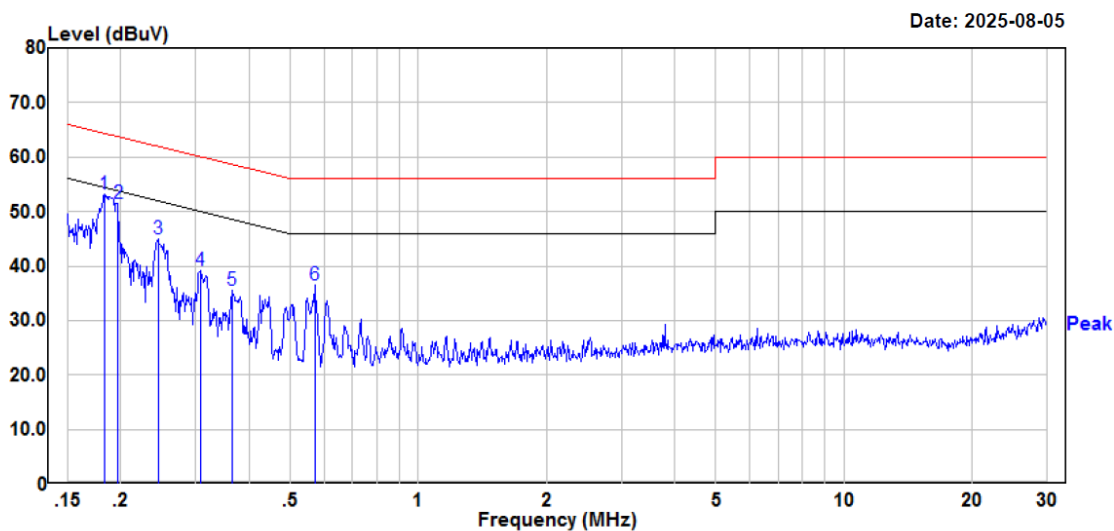
EUT operation mode: Transmitting in Zigbee low channel (maximum output power mode)

Line:



Site : CE
Condition : limit\FCC PART 15.207
: DET:Peak
Project No. : RSHA250530004
Model : APS2652D
Phase : L
Voltage : 120V/60Hz
Mode : ZigBee
Test Equipment : ENV216,ESR3
Receiver Setting : RBW: 9 kHz,Sweep Time: Auto
Temperature : 26.9℃
Humidity : 69%
Atmospheric pressure: 100.6kPa
Test Engineer : Myles Miao

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.155	34.97	20.23	55.20	65.71	-10.51	Peak
2	0.192	32.93	20.22	53.15	63.93	-10.78	Peak
3	0.211	31.94	20.21	52.15	63.18	-11.03	Peak
4	0.256	25.26	20.21	45.47	61.57	-16.10	Peak
5	0.338	20.14	20.23	40.37	59.25	-18.88	Peak
6	0.383	17.94	20.23	38.17	58.22	-20.05	Peak

Neutral:

Site : CE
Condition : limit\FCC PART 15.207
: DET:Peak
Project No. : RSHA250530004
Model : APS2652D
Phase : N
Voltage : 120V/60Hz
Mode : ZigBee
Test Equipment : ENV216, ESR3
Receiver Setting : RBW: 9 kHz, Sweep Time: Auto
Temperature : 26.9°C
Humidity : 69%
Atmospheric pressure: 100.6kPa
Test Engineer : Myles Miao

	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV	dBuV	dB
1	0.183	32.87	20.21	53.08	64.34	-11.26 Peak
2	0.197	31.34	20.21	51.55	63.72	-12.17 Peak
3	0.244	24.72	20.20	44.92	61.94	-17.02 Peak
4	0.307	18.87	20.23	39.10	60.04	-20.94 Peak
5	0.364	15.19	20.24	35.43	58.63	-23.20 Peak
6	0.570	16.31	20.22	36.53	56.00	-19.47 Peak

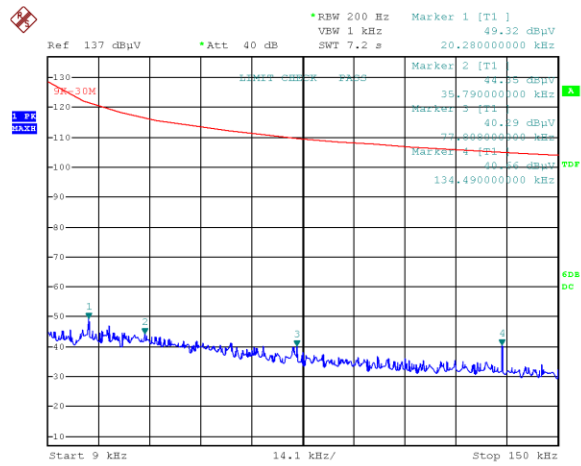
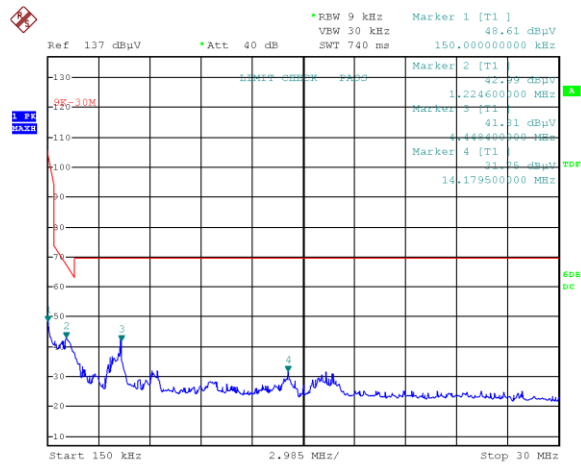
SPURIOUS EMISSIONS**Environmental Conditions & Test Information**

Test Item:	9 kHz – 30 MHz	30 MHz – 1 GHz	1 GHz - 18 GHz	18 GHz - 25 GHz
Test Date:	2025-08-11	2025-08-09	2025-08-13	2025-08-13
Temperature:	25.6 °C	25 °C	28.3°C	28.3°C
Relative Humidity:	51 %	56 %	48 %	48 %
ATM Pressure:	101.5 kPa	100.8 kPa	101.3 kPa	101.3 kPa
Test Result:	Pass	Pass	Pass	Pass
Test Engineer:	Link Xia	Link Xia	Destine Hu	Hugh Wu

Test Result: Compliant.

EUT operation mode: Transmitting

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

9 kHz-30 MHz: (Transmitting maximum output power Zigbee Mode low channel)**Parallel(worst case)****9 kHz-150 kHz****150 kHz-30 MHz**

Project No.RSHA250530004
Date: 11.AUG.2025 12:02:43

Tester:Link Xia

Project No.RSHA250530004
Date: 11.AUG.2025 12:05:51

Tester:Link Xia

9 kHz - 150 kHz

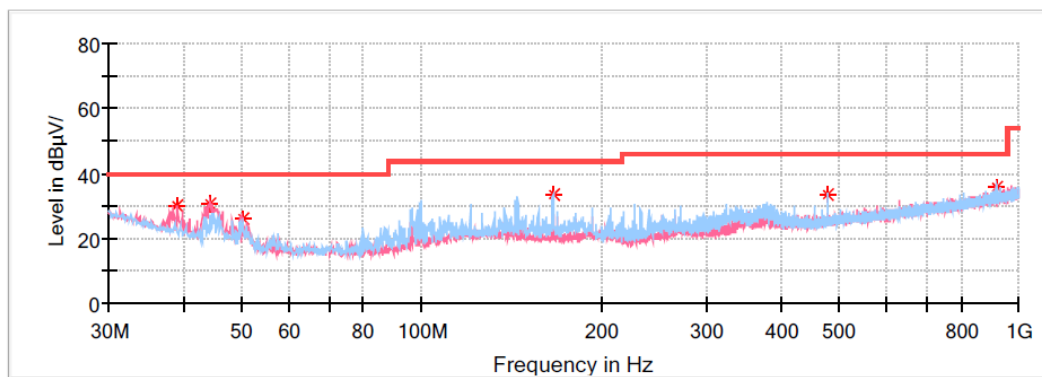
Frequency (MHz)	Corrected Amplitude (dBμV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBμV/m) @3m	Margin (dB)
0.020280	49.32	PK	30.80	121.46	72.14
0.035790	44.35	PK	30.70	116.53	72.18
0.077808	40.29	PK	22.83	109.78	69.49
0.134490	40.66	PK	9.35	105.03	64.37

150 kHz - 30 MHz

Frequency (MHz)	Corrected Amplitude (dBμV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBμV/m) @3m	Margin (dB)
0.1500	48.61	PK	26.35	104.08	55.47
1.2246	42.99	PK	3.40	65.84	22.85
4.4484	41.81	PK	-0.70	69.54	27.73
14.1795	31.75	PK	-1.60	69.54	37.79

30 MHz-1 GHz (Transmitting in maximum output power low channel):**Low Channel: 2405 MHz****Common Information**

Project No: RSHA250530004
EUT Model: APS2652D
Test Mode: ZigBee
Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
Test Equipment: ESCI, JB3, 310N
Receiver Setting: RBW: 100 kHz, VBW: 300 kHz, Sweep Time: Auto
Temperature: 25°C
Humidity: 56%
Barometric Pressure: 100.8kPa
Test Engineer: Link Xia
Test Date: 2025/8/9

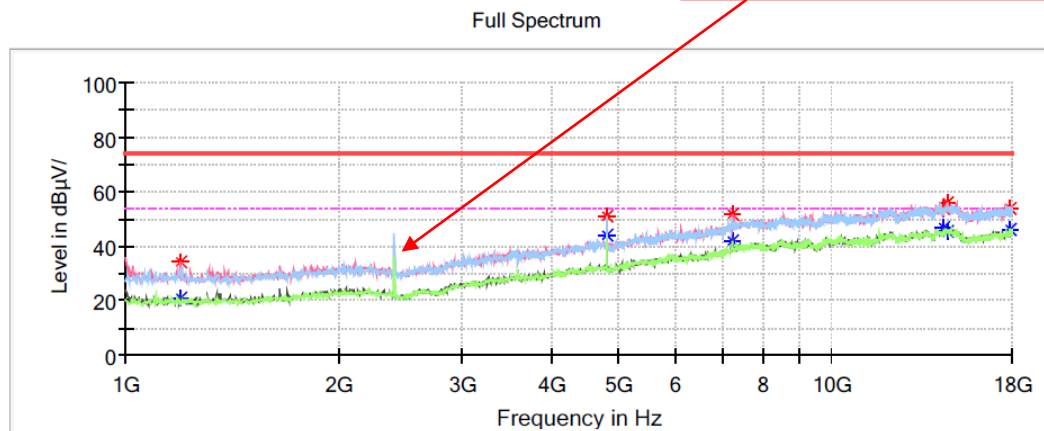
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
39.093750	30.19	40.00	9.81	V	-10.7
44.186250	30.43	40.00	9.57	V	-13.7
50.248750	26.27	40.00	13.73	V	-17.0
166.042500	33.20	43.50	10.30	H	-12.4
479.958750	33.46	46.00	12.54	H	-5.9
921.672500	35.75	46.00	10.25	H	1.4

1GHz-18GHz:**Low Channel: 2405 MHz****Common Information**

Project No.:	RSHA250530004
EUT Model:	APS2652D
Test Mode:	ZigBee
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment:	ESU40,3115,PAM-0118P
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature:	28.3°C
Humidity:	48%
Atmospheric Pressure:	101.3kPa
Test Engineer:	Destine Hu
Test Date:	2025/8/13

Fundamental test with Band
Reject Filter

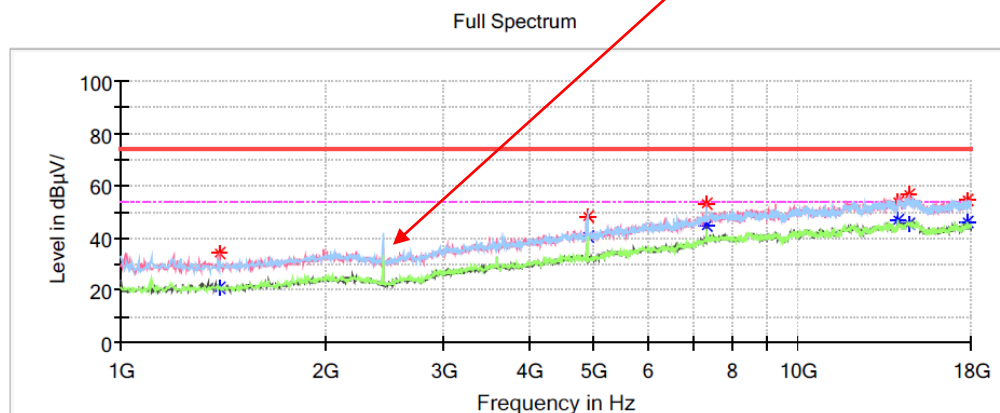
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1193.800000	---	21.18	54.00	32.82	V	-14.5
1193.800000	34.20	---	74.00	39.80	V	-14.5
4808.000000	51.25	---	74.00	22.75	H	-3.4
4808.000000	---	43.77	54.00	10.23	H	-3.4
7215.200000	---	41.91	54.00	12.09	H	2.1
7215.200000	51.81	---	74.00	22.19	H	2.1
14423.200000	---	46.59	54.00	7.41	V	11.8
14423.200000	53.84	---	74.00	20.16	V	11.8
14542.200000	---	45.64	54.00	8.36	H	11.8
14542.200000	55.65	---	74.00	18.35	H	11.8
17891.200000	---	45.82	54.00	8.18	V	11.5
17891.200000	53.64	---	74.00	20.36	V	11.5

Middle Channel: 2440 MHz**Common Information**

Project No.: RSHA250530004
EUT Model: APS2652D
Test Mode: ZigBee
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 28.3℃
Humidity: 48%
Atmospheric Pressure: 101.3kPa
Test Engineer: Destine Hu
Test Date: 2025/8/13

Fundamental test with Band
Reject Filter

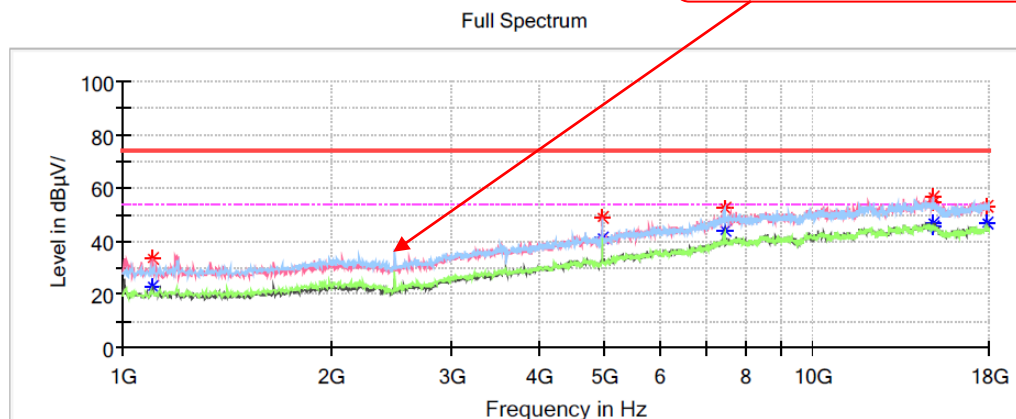
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1394.400000	---	20.66	54.00	33.34	V	-13.8
1394.400000	33.93	---	74.00	40.07	V	-13.8
4879.400000	48.50	---	74.00	25.50	H	-3.2
4879.400000	---	40.47	54.00	13.53	H	-3.2
7317.200000	53.04	---	74.00	20.96	V	2.4
7317.200000	---	44.48	54.00	9.52	V	2.4
14052.600000	---	46.65	54.00	7.35	H	11.2
14052.600000	54.14	---	74.00	19.86	H	11.2
14606.800000	---	45.77	54.00	8.23	V	11.6
14606.800000	56.40	---	74.00	17.60	V	11.6
17819.800000	---	45.89	54.00	8.11	V	11.3
17819.800000	54.41	---	74.00	19.59	V	11.3

High Channel: 2480 MHz**Common Information**

Project No.: RSHA250530004
EUT Model: APS2652D
Test Mode: ZigBee
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 28.3°C
Humidity: 48%
Atmospheric Pressure: 101.3kPa
Test Engineer: Destine Hu
Test Date: 2025/8/13

Fundamental test with Band
Reject Filter

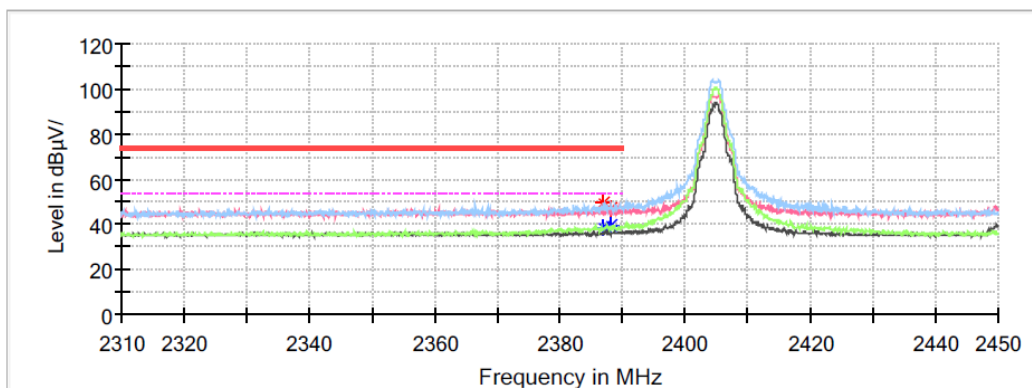
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1105.400000	---	23.15	54.00	30.85	V	-14.8
1105.400000	33.77	---	74.00	40.23	V	-14.8
4957.600000	---	40.91	54.00	13.09	H	-3.0
4957.600000	49.16	---	74.00	24.84	H	-3.0
7439.600000	---	43.75	54.00	10.25	V	2.8
7439.600000	52.47	---	74.00	21.53	V	2.8
14906.000000	---	46.90	54.00	7.10	V	10.6
14906.000000	54.25	---	74.00	19.75	V	10.6
14943.400000	---	45.38	54.00	8.62	H	10.5
14943.400000	56.81	---	74.00	17.19	H	10.5
17843.600000	53.32	---	74.00	20.68	V	11.3
17843.600000	---	46.58	54.00	7.42	V	11.3

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

Project No.: RSHA250530004
EUT Model: APS2652D
Test Mode: ZigBee
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 28.3°C
Humidity: 48%
Atmospheric Pressure: 101.3kPa
Test Engineer: Destine Hu
Test Date: 2025/8/13

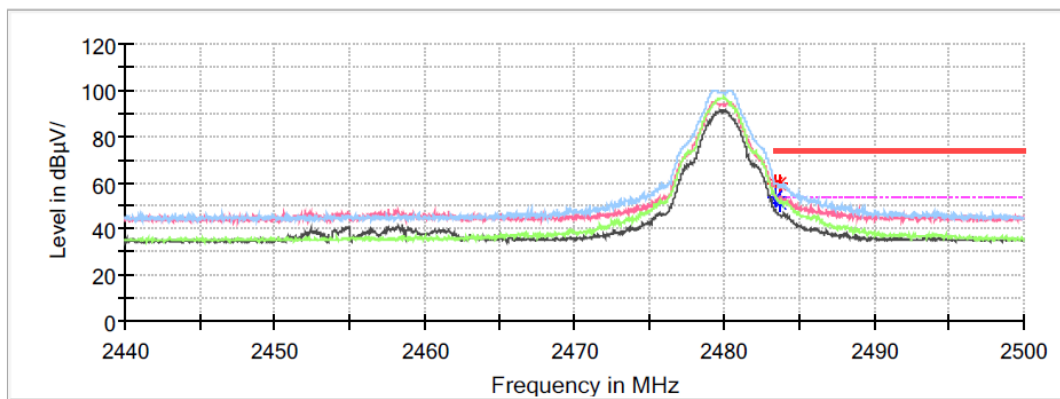
Full Spectrum

**Critical_Freqs**

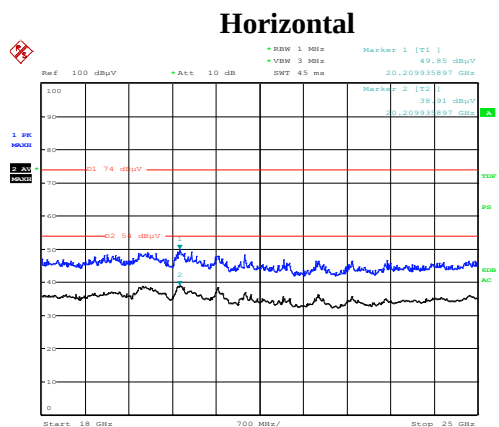
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2386.944000	49.11	---	74.00	24.89	H	0.2
2386.944000	---	38.35	54.00	15.65	H	0.2
2388.064000	47.09	---	74.00	26.91	H	0.2
2388.064000	---	39.59	54.00	14.41	H	0.2

Right Side**Common Information**

Project No.: RSHA250530004
EUT Model: APS2652D
Test Mode: ZigBee
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 28.3°C
Humidity: 48%
Atmospheric Pressure: 101.3kPa
Test Engineer: Destine Hu
Test Date: 2025/8/13

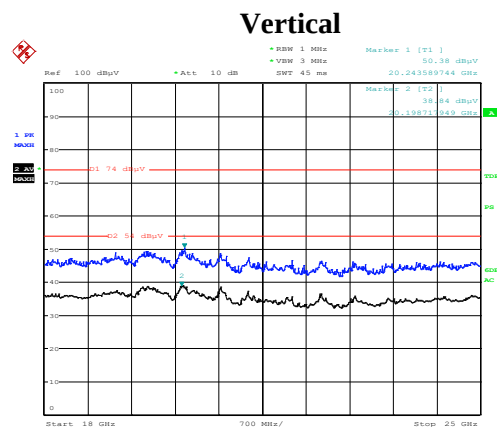
Full Spectrum**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.512000	59.56	---	74.00	14.44	H	0.4
2483.512000	---	53.39	54.00	0.61	H	0.4
2483.728000	---	51.50	54.00	2.50	H	0.4
2483.728000	59.68	---	74.00	14.32	H	0.4

18 GHz - 25 GHz (Transmitting in maximum output power low channel):

Project No.: RSHA250530004
Date: 13.AUG.2025 13:37:22

Tester: Hugh Wu



Project No.: RSHA250530004
Date: 13.AUG.2025 14:09:39

Tester: Hugh Wu

Frequency (GHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
20.21	---	38.91	54	15.09	H	12.47
20.21	49.85	---	74	24.15	H	12.47
20.20	---	38.84	54	15.16	V	12.46
20.24	50.38	---	74	23.62	V	12.50

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

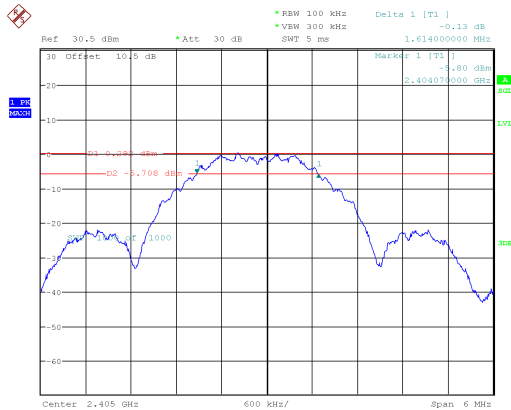
6 dB EMISSION BANDWIDTH

Environmental Conditions & Test Information

Test Date:	2025-08-16
Temperature:	24.7 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa
Test Result:	Pass
Test Engineer:	Neil Zhou

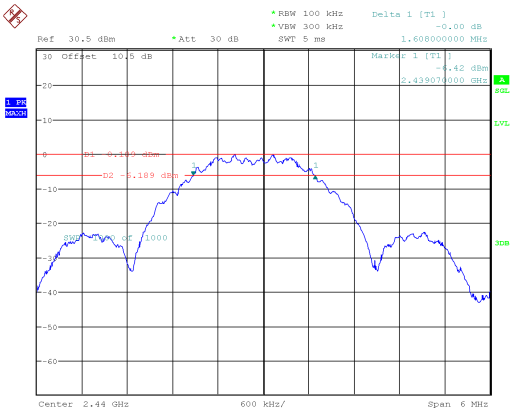
Mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
Zigbee	Low	2405	1.614	≥0.5
	Middle	2440	1.608	≥0.5
	High	2480	1.614	≥0.5

Low Channel



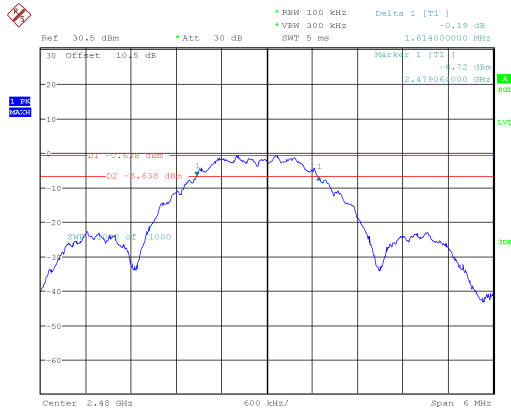
ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:27:43

Middle Channel



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:38:38

High Channel



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:46:36

MAXIMUM CONDUCTED OUTPUT POWER**Environmental Conditions & Test Information**

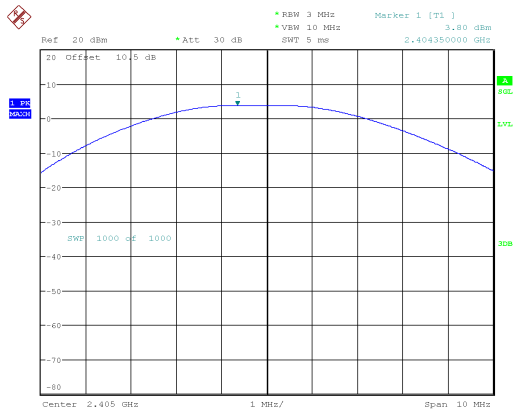
Test Date:	2025-08-16
Temperature:	24.7 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa
Test Result:	Pass
Test Engineer:	Neil Zhou

Test Result: Compliant.

EUT operation mode: Transmitting

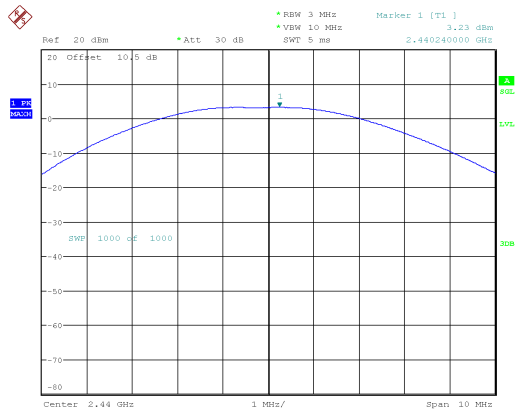
Mode	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Zigbee	2405	3.80	30	Pass
	2440	3.23	30	Pass
	2480	2.88	30	Pass

2405 MHz



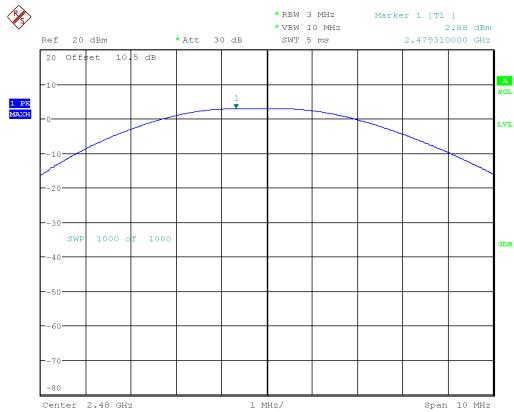
ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:28:47

2440 MHz



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:39:15

2480 MHz



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:47:19

BAND EDGE

Environmental Conditions & Test Information

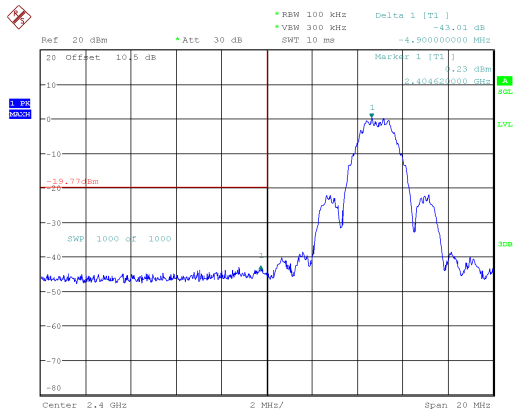
Test Date:	2025-08-16
Temperature:	24.7 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa
Test Result:	Pass
Test Engineer:	Neil Zhou

Test Result: Compliant.

EUT operation mode: Transmitting

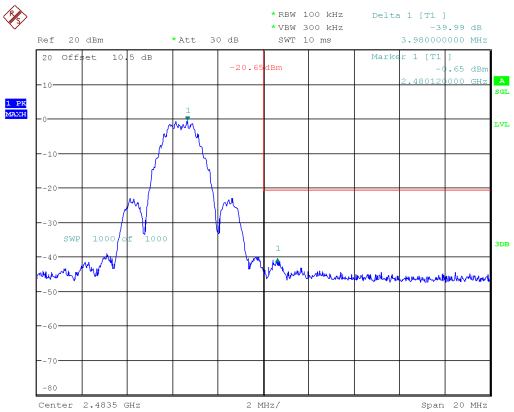
Mode	Frequency (MHz)	Result (dBc)	Limit (dBc)
Zigbee	2405	43.01	20
	2480	39.99	

Left Side-2405MHz



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:29:46

Right Side-2480MHz



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:48:18

POWER SPECTRAL DENSITY

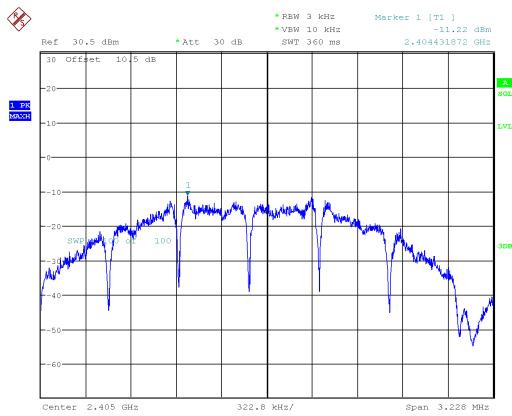
Environmental Conditions & Test Information

Test Date:	2025-08-16
Temperature:	24.7 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa
Test Result:	Pass
Test Engineer:	Neil Zhou

Test Result: Compliant.
EUT operation mode: Transmitting

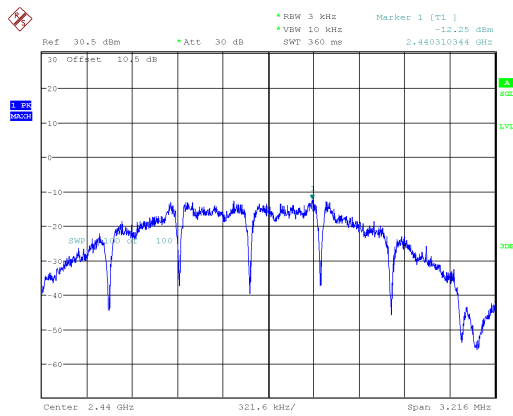
Mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
Zigbee	Low	2405	-11.22	≤8
	Middle	2440	-12.25	≤8
	High	2480	-12.25	≤8

Low Channel



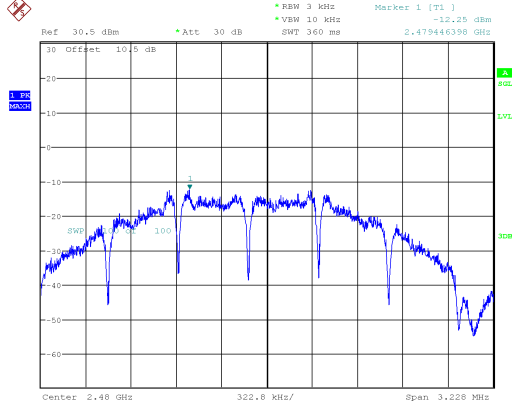
ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:31:13

Middle Channel



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:40:00

High Channel



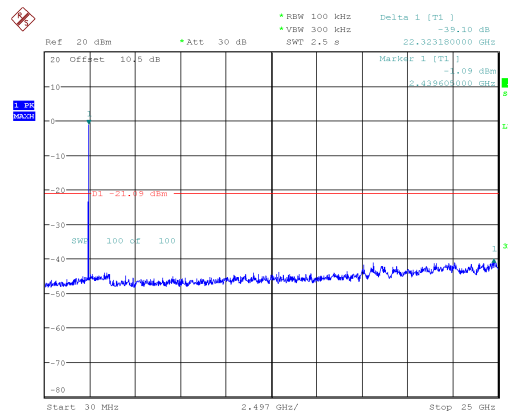
ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:49:02

Environmental Conditions & Test Information

Test Date:	2025-08-16
Temperature:	24.7 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa
Test Result:	Pass
Test Engineer:	Neil Zhou

Channel	Result (dB)	Limit (dB)	Verdict
Low	39.08	20	Pass
Middle	39.10	20	Pass
High	38.87	20	Pass

Middle Channel



ProjectNo.:RSHA250530004 Tester:Neil Zhou
Date: 16.AUG.2025 11:44:40

1.00 MHz

Spectrum Analyzer

Ref 20 dBm *Att 30 dB SMT 2.5 s 22.298210000 GHz

20 Offset 10 5 dB

10 -10 -20 -30 -40 -50 -60 -70 -80

2.497 2.497666000 GHz 2.503

21 -21.47 dBm

SMT 100 dB 100

2.497 GHz/

Start 30 MHz Stop 25 GHz

Delta 1 [T1] -38.87 dB

Mackelz 1 [T1] -1.47 dBm

2.477666000 GHz

Page 42 of 45

EUT PHOTOGRAPHS

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

TEST SETUP PHOTOGRAPHS

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

Declarations

1. The laboratory is not responsible for the authenticity of any information provided by the applicant. Information from the applicant that may affect test results is marked with “★”.
2. The test data was only valid for the test sample(s).
3. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.
4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor $k=2$ with the 95.45% confidence interval.

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