

## FCC PART 15.247

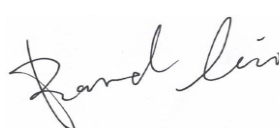
## TEST REPORT

For

### Signify (China) Investment Co., Ltd.

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

**FCC ID: 2AGBWMCGW**

|                                        |                                                                                                                                                                                                                             |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report | <b>Product Name:</b><br>Gateway Product                                                                                                                                                                                     |
| <b>Report Number:</b>                  | <u>RKSB250928004-00D</u>                                                                                                                                                                                                    |
| <b>Report Date:</b>                    | <u>2026-01-04</u>                                                                                                                                                                                                           |
| <b>Reviewed By:</b>                    | <u>Bard Liu</u><br>                                                                                                                    |
| <b>Approved By:</b>                    | <u>Oscar Ye</u><br>                                                                                                                    |
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Kunshan). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S.Government.

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**REPORT REVISION HISTORY**

| Number of Revisions | Report No.        | Version | Issue Date | Description     |
|---------------------|-------------------|---------|------------|-----------------|
| 0                   | RKSB250928004-00B | R1 V1   | 2026-01-04 | Initial Release |

## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

|                            |                                      |
|----------------------------|--------------------------------------|
| Applicant:                 | Signify (China) Investment Co., Ltd. |
| Model:                     | MC Gateway, GatewayFL                |
| Model Difference:          | Model name                           |
| Product Name:              | Gateway Product                      |
| Power Supply:              | DC 5V from adapter                   |
| RF Function:               | Zigbee                               |
| Maximum Output Power:      | 7.31 dBm                             |
| Operating Band /Frequency: | 2405-2480 MHz                        |
| Modulation Type:           | O-QPSK                               |
| Channel Number:            | 16                                   |
| Antenna Type:              | PCB Antenna                          |
| ★Maximum Antenna Gain:     | 3.75 dBi                             |

#### Adapter information

Model: S005BMM0500100

Input: 100-240 V, 50/60 Hz, 0.3 A, (8.0-18.0VA)

Output: 5.0 V, 1.0 A, 5.0 W

#### Note:

1. The maximum antenna gain was declared by the manufacturer.
2. The EUT has two PCB antenna for Zigbee, the two antenna can not transmit at same time.
3. The differences between the models are explained as below:

The HW and FW of MC Gateway and GatewayFL are identical with each other. The GatewayFL is only used in the FL emergency lighting system of United States and make the data available in the cloud for the user, and MC gateway is more widely used in all connected lighting system in the world and make the data available in the cloud for the user. MC Gateway is tested as representative.

All measurement and test data in this report was gathered from production sample serial number: RKS250928004-1 (Assigned by the BACL (Kunshan). The EUT supplied by the applicant was received on 2024-09-28.)

### Objective

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

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

## Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024<sup>▲</sup>, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and FCC KDB 558074 D01 15.247 Meas Guidance v05r02.

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

## Measurement Uncertainty

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

## Test Facility

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

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

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

Channel List for Zigbee mode:

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

EUT was tested with channel 11, 18 and 26.

### EUT Exercise Software

RF Test Tool: RadioControlConsole

★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.

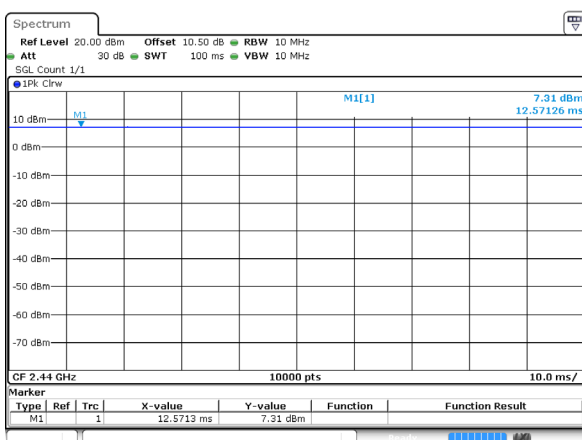
## Environmental Conditions &amp; Test Information

|                    |            |
|--------------------|------------|
| Test Date:         | 2025-11-11 |
| Temperature:       | 23.6 °C    |
| Relative Humidity: | 52 %       |
| ATM Pressure:      | 100.8kPa   |
| Test Engineer:     | Neil Zhou  |

## Duty Cycle:

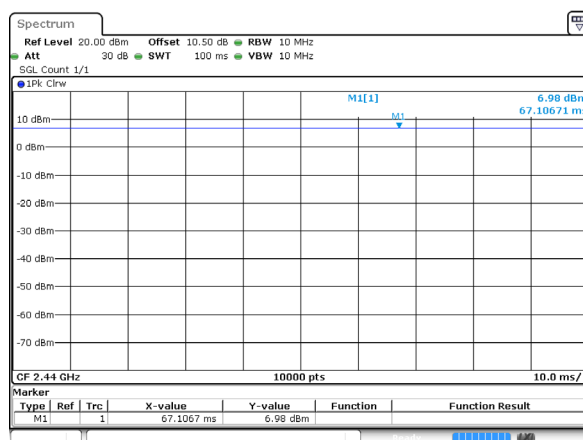
## Chain 0

## Zigbee: Middle Channel



## Chain 1

## Zigbee: Middle Channel



| Mode             | Duty Cycle (%) | T <sub>on</sub> (ms) | T <sub>on+off</sub> (ms) | 10log(1/x) (dB) |
|------------------|----------------|----------------------|--------------------------|-----------------|
| Zigbee (Chain 0) | 100            | 100                  | 100                      | /               |
| Zigbee (Chain 1) | 100            | 100                  | 100                      | /               |

## Note:

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

**Support Equipment List and Details**

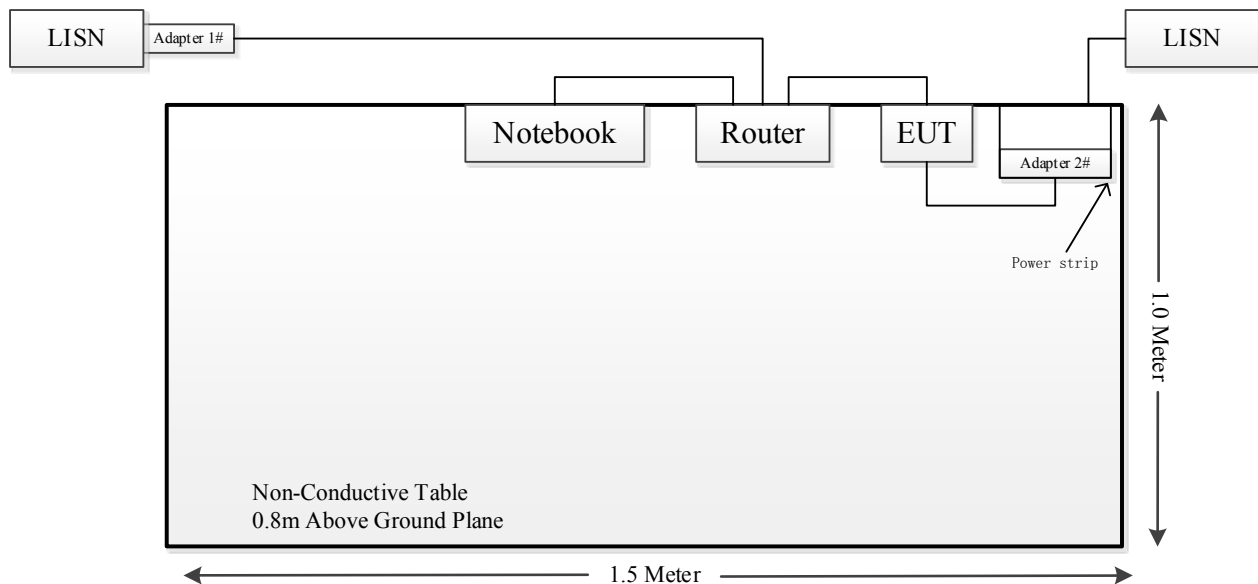
| Manufacturer | Description | Model      | Serial Number |
|--------------|-------------|------------|---------------|
| /            | Power strip | /          | /             |
| /            | Adapter 1#  | /          | /             |
| TP-LINK      | Router      | TL-XDR3010 | 12373X0002080 |
| Lenovo       | Notebook    | Y700P      | PF2B7PL5      |

**External I/O Cable**

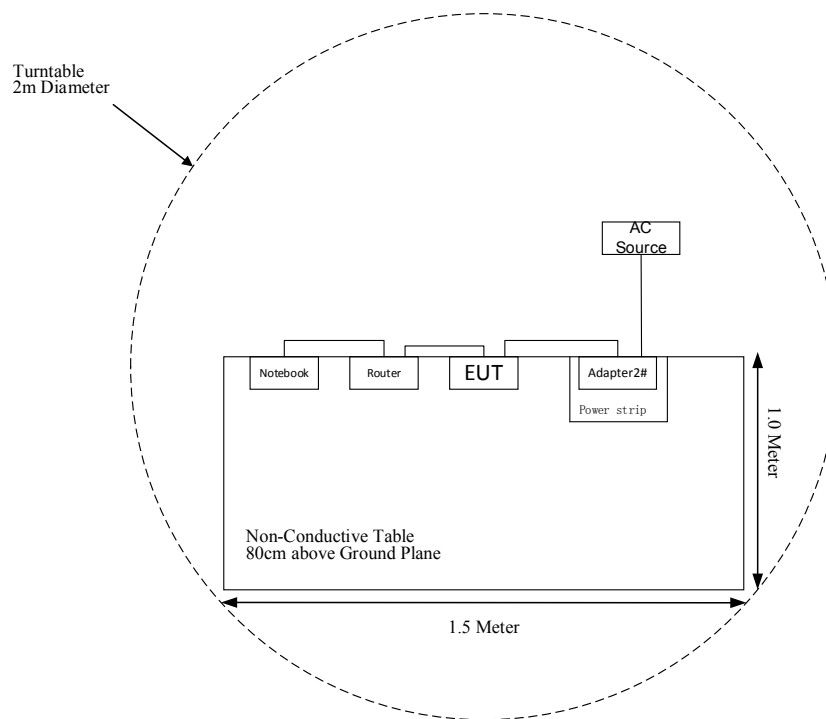
| Cable Description | Length (m) | From Port   | To         |
|-------------------|------------|-------------|------------|
| Power Cable 1     | 1.5        | EUT         | Adapter 2# |
| Power Cable 2     | 1.0        | Power strip | AC Source  |
| RJ45 Cable        | 3.0        | EUT         | Router     |
| Data Cable        | 1.0        | Router      | Notebook   |

**Block Diagram of Test Setup**

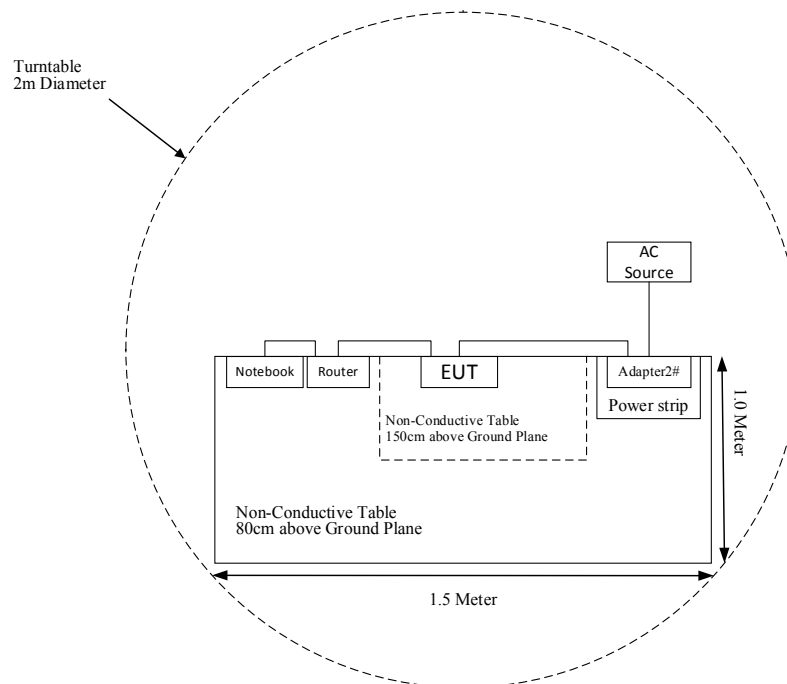
For Conducted Emissions:



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 |
|--------------------------------------------|---------------------|-----------|------------------------|------------------|----------------------|
| <b>Radiated Emission Test (Chamber #1)</b> |                     |           |                        |                  |                      |
| 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           |
| <b>Radiated Emission Test (Chamber #2)</b> |                     |           |                        |                  |                      |
| Rohde & Schwarz                            | EMI Test Receiver   | ESU40     | 100207/040             | 2025-04-09       | 2026-04-08           |
| ETS-LINDGREN                               | Horn Antenna        | 3115      | 9207-3900              | 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                    | 2025-04-09       | 2026-04-08           |
| MICRO-TRONICS                              | Band Reject Filter  | BRC50718  | G034                   | 2025-04-09       | 2026-04-08           |
| 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           |
| <b>RF Conducted Test</b>                   |                     |           |                        |                  |                      |
| Rohde & Schwarz                            | Signal Analyzer     | FSV40     | 101116                 | 2025-04-09       | 2026-04-08           |
| Rohde & Schwarz                            | Spectrum Analyzer   | FSU26     | 200103                 | 2025-04-09       | 2026-04-08           |
| Narda                                      | Attenuator          | 10dB      | 010                    | 2025-04-08       | 2026-04-07           |
| XHFDZ                                      | RG316 Coaxial Cable | SMA-316   | XHF-1175               | Each time        | N/A                  |
| <b>Conducted Emission Test</b>             |                     |           |                        |                  |                      |
| Rohde & Schwarz                            | EMI Test Receiver   | ESR       | 1316.3003K03-101746-zn | 2025-09-01       | 2026-08-31           |
| Rohde & Schwarz                            | LISN                | ENV216    | 101115                 | 2025-04-08       | 2026-04-07           |
| Rohde & Schwarz                            | LISN                | ENV216    | 101130                 | 2025-04-08       | 2026-04-07           |
| Audix                                      | Test Software       | e3        | V9                     | N/A              | N/A                  |
| Rohde & Schwarz                            | Pulse limiter       | ESH3-Z2   | 100552                 | 2025-04-08       | 2026-04-07           |
| MICRO-COAX                                 | Coaxial Cable       | Cable-15  | 015                    | 2025-04-08       | 2026-04-07           |

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**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**

| <b>FCC Rules</b>             | <b>Description of Test</b>         | <b>Result</b> |
|------------------------------|------------------------------------|---------------|
| §1.1310 & §2.1091            | MAXIMUM PERMISSIBLE EXPOSURE (MPE) | Compliant     |
| §15.203                      | Antenna Requirement                | Compliant     |
| §15.207 (a)                  | AC Line Conducted Emissions        | Compliant     |
| §15.205, §15.209, §15.247(d) | Spurious Emissions                 | Compliant     |
| §15.247 (a)(2)               | 6 dB Emission Bandwidth            | Compliant     |
| §15.247(b)(3)                | Maximum Conducted Output Power     | Compliant     |
| §15.247(d)                   | Band Edge                          | Compliant     |
| §15.247(d)                   | 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>(B) Limits for General Population/Uncontrolled Exposure</b> |                                      |                                      |                                          |                                 |
|----------------------------------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------|---------------------------------|
| <b>Frequency Range (MHz)</b>                                   | <b>Electric Field Strength (V/m)</b> | <b>Magnetic Field Strength (A/m)</b> | <b>Power Density (mW/cm<sup>2</sup>)</b> | <b>Averaging Time (minutes)</b> |
| 0.3-1.34                                                       | 614                                  | 1.63                                 | *(100)                                   | 30                              |
| 1.34-30                                                        | 824/f                                | 2.19/f                               | *(180/f <sup>2</sup> )                   | 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/cm<sup>2</sup>);

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);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

**Calculated Data:**

| Mode       | Frequency Range (MHz) | Antenna Gain |           | ★Tune-up Output Power |        | Evaluation Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | MPE Limit (mW/cm <sup>2</sup> ) | MPE ratio |
|------------|-----------------------|--------------|-----------|-----------------------|--------|--------------------------|-------------------------------------|---------------------------------|-----------|
|            |                       | (dBi)        | (numeric) | (dBm)                 | (mW)   |                          |                                     |                                 |           |
| 2.4G Wi-Fi | 2412~2462             | 3.55         | 2.26      | 21.50                 | 141.25 | 20                       | 0.0635                              | 1.0                             | 0.0635    |
| BLE        | 2402-2480             | 3.75         | 2.37      | 15.00                 | 31.62  | 20                       | 0.0149                              | 1.0                             | 0.0149    |
| Zigbee     | 2405-2480             | 3.75         | 2.37      | 7.50                  | 5.62   | 20                       | 0.0026                              | 1.0                             | 0.0026    |
| 5G Wi-Fi   | 5150~5250             | 6.05         | 4.03      | 10.50                 | 11.22  | 20                       | 0.0090                              | 1.0                             | 0.0090    |
|            | 5745~5825             | 4.45         | 2.79      | 12.50                 | 17.78  | 20                       | 0.0099                              | 1.0                             | 0.0099    |

**Note:**

1. For the above tune up power were declared by the manufacturer.
2. Zigbee or BLE and 2.4G Wi-Fi/5G WIFI can transmit simultaneously.

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$= S_{BLE}/S_{limitBLE} + S_{2.4G Wi-Fi}/S_{limit2.4G Wi-Fi}$$

$$= 0.0149 + 0.0635$$

$$= 0.0784$$

$$< 1.0$$

**Result:** The device meets MPE at distance 20cm.

## **FCC §15.203 – ANTENNA REQUIREMENT**

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### **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 two PCB antenna for Zigbee, and the antenna gain are 2.85 dBi(Chain 0) and 3.75 dBi(Chain 1), which permanently attached to the EUT, fulfill the requirement of this section. Please refer to the EUT photos.

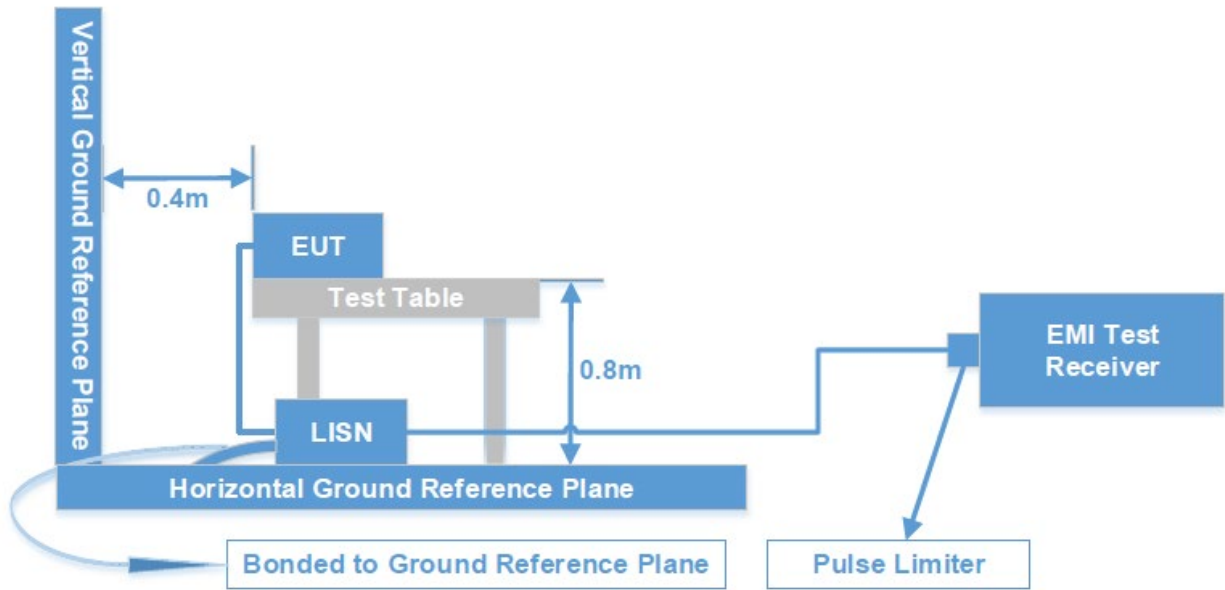
**Result:** Compliant.

## FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

FCC §15.207(a)

### Test System Setup



The measurement procedure of EUT setup is according with ANSI C63.10-2020. The related limit was specified in FCC Part 15.207.

### EMI Test Receiver Setup

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)

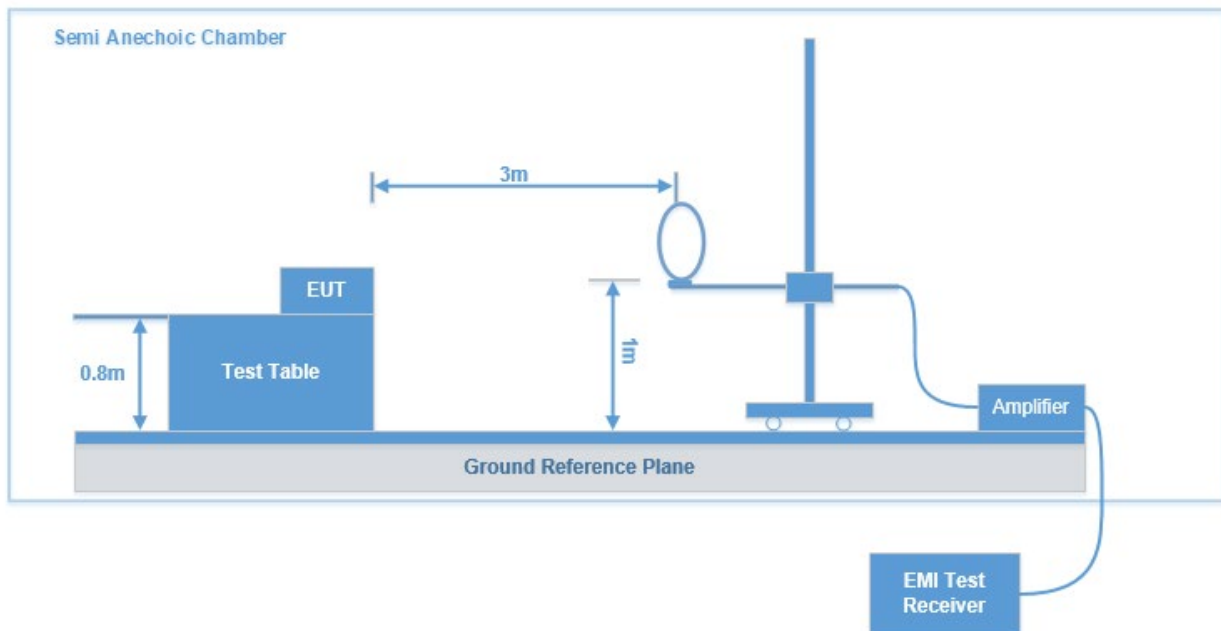
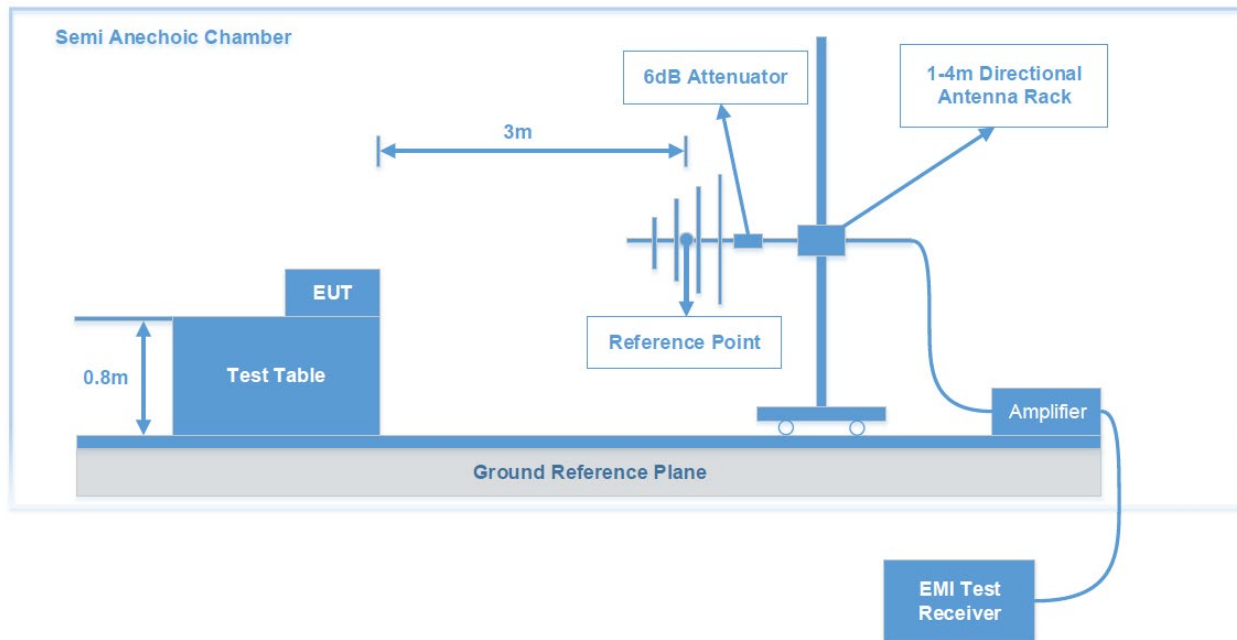
**Test Results Summary**

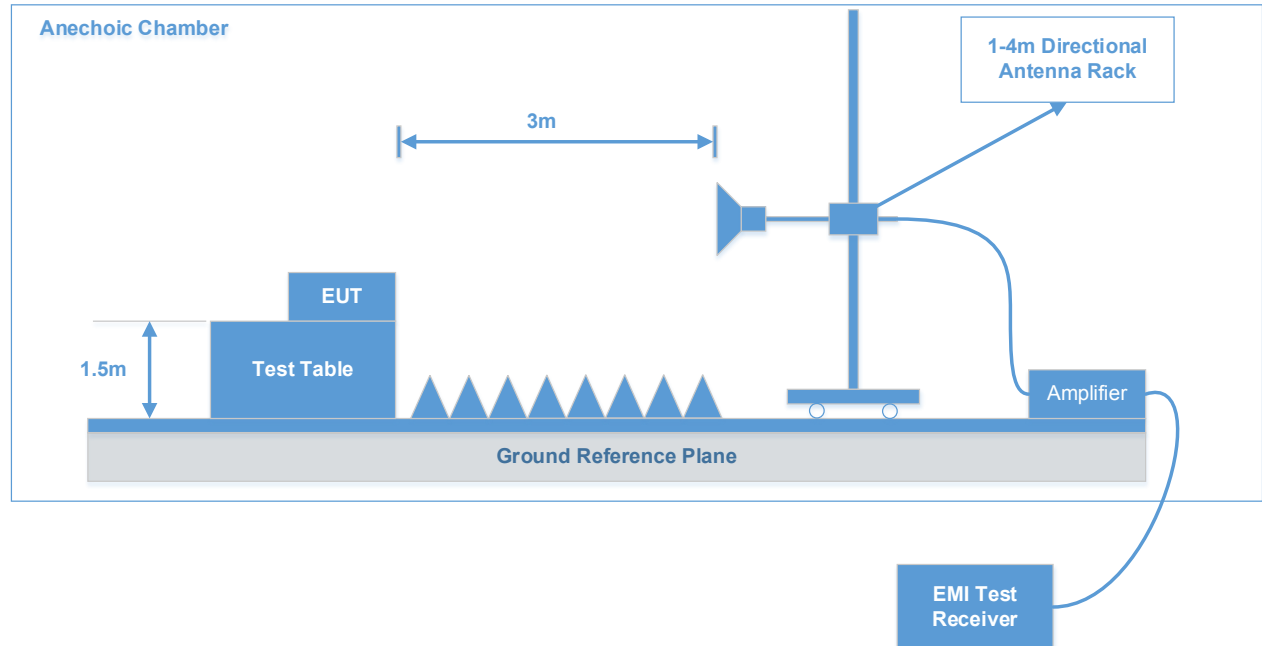
According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

**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:**

Note: The EUT Antenna 1.5m above Ground Plane

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**

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

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

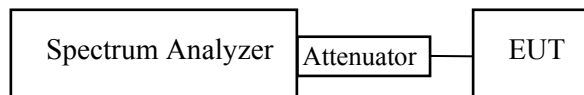
### **Applicable Standard**

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 C63.10-2020 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**

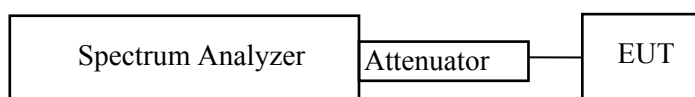
### **Applicable Standard**

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 & CONDUCTED SPURIOUS EMISSION**

### **Band Edges**

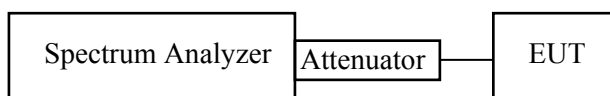
### **Applicable Standard**

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.

## Conducted Spurious Emission

### Applicable Standard

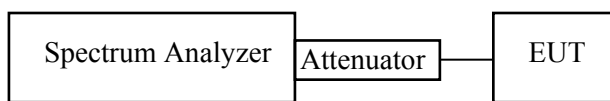
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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 Section 11.11

- a) Set the center frequency and span to encompass frequency range to be measured
- b) Set the RBW = 100 kHz.
- c) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- d) Detector = peak.
- e) Sweep time = No faster than coupled (auto) time.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.



Note: Offset (11dB) = Attenuator (10dB) + Cable Loss (1dB)

**Test Data: See Appendix**

## FCC §15.247(e) - POWER SPECTRAL DENSITY

### Applicable Standard

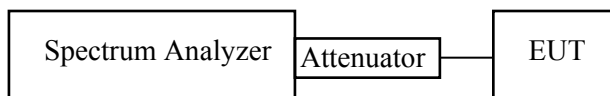
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of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

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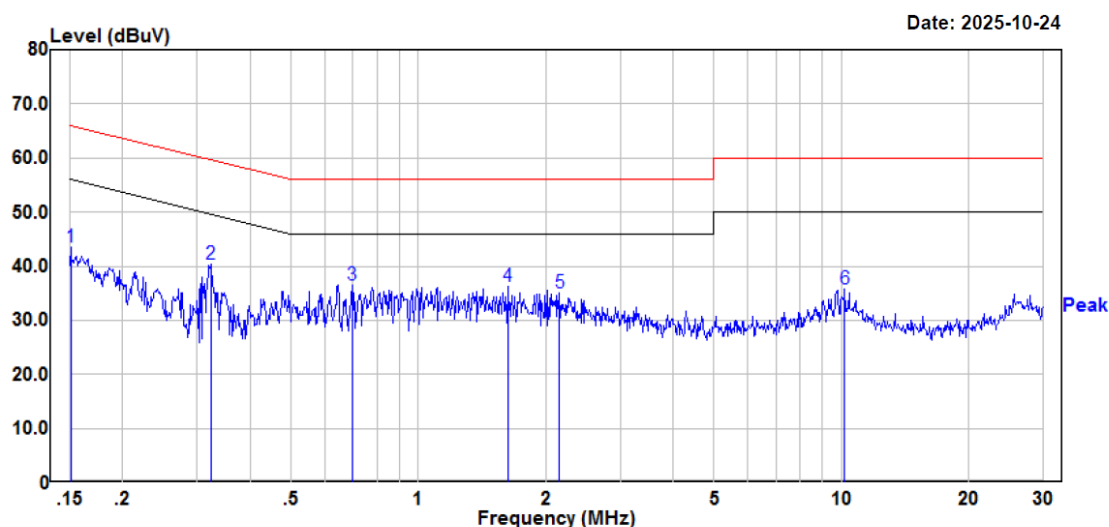
### AC LINE CONDUCTED EMISSIONS

#### Environmental Conditions & Test Information

|                    |            |
|--------------------|------------|
| Test Date:         | 2025-10-24 |
| Temperature:       | 22.2 °C    |
| Relative Humidity: | 54 %       |
| ATM Pressure:      | 102.8 kPa  |
| Test Result:       | Pass       |
| Test Engineer:     | Jack He    |

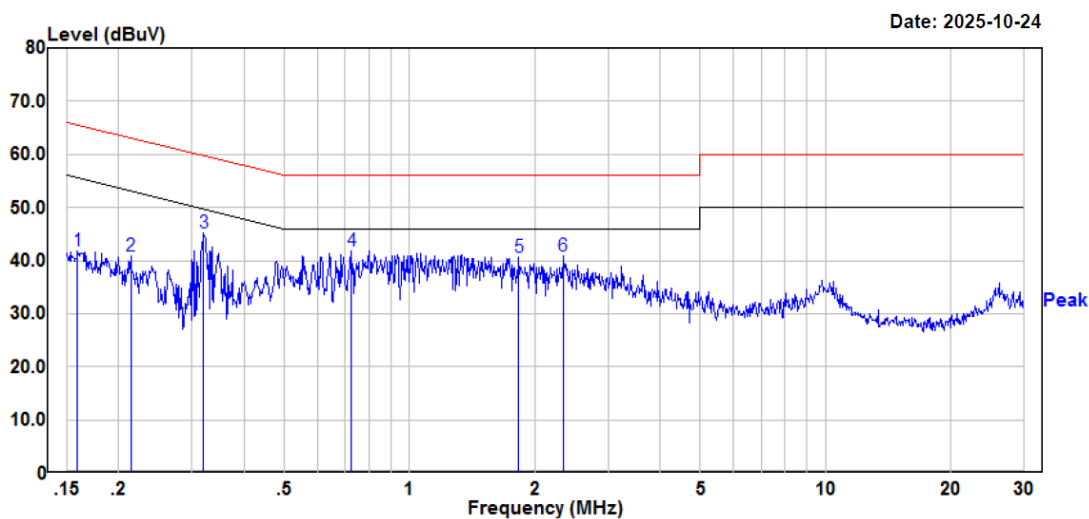
EUT operation mode: Transmitting in Chain 0, Zigbee Middle channel (maximum output power mode)

Line:



Site : CE  
Condition : limit\FCC PART 15.207  
: DET:Peak  
Project No. : RKSB250928004  
Model : MC Gateway  
Phase : L  
Voltage : 120V/60Hz  
Mode : ZigBee  
Test Equipment : ENV216, ESR3  
Receiver Setting : RBW: 9 kHz, VBW: 30 kHz, Sweep Time: Auto  
Temperature : 22.2°C  
Humidity : 54%  
Atmospheric pressure: 102.8kPa  
Test Engineer : Jack He

|   | Read   |       |        | Limit | Over  |              |
|---|--------|-------|--------|-------|-------|--------------|
|   | Freq   | Level | Factor | Level | Line  | Limit Remark |
|   | MHz    | dBuV  | dB     | dBuV  | dBuV  | dB           |
| 1 | 0.151  | 23.10 | 20.41  | 43.51 | 65.96 | -22.45 Peak  |
| 2 | 0.323  | 19.97 | 20.36  | 40.33 | 59.62 | -19.29 Peak  |
| 3 | 0.696  | 16.31 | 20.26  | 36.57 | 56.00 | -19.43 Peak  |
| 4 | 1.625  | 15.94 | 20.26  | 36.20 | 56.00 | -19.80 Peak  |
| 5 | 2.159  | 14.73 | 20.29  | 35.02 | 56.00 | -20.98 Peak  |
| 6 | 10.172 | 15.71 | 20.17  | 35.88 | 60.00 | -24.12 Peak  |

**Neutral:**

Site : CE  
 Condition : limit\FCC PART 15.207  
 : DET:Peak  
 Project No. : RKS250928004  
 Model : MC Gateway  
 Phase : N  
 Voltage : 120V/60Hz  
 Mode : ZigBee  
 Test Equipment : ENV216,ESR3  
 Receiver Setting : RBW: 9 kHz, VBW: 30 kHz, Sweep Time: Auto  
 Temperature : 22.2°C  
 Humidity : 54%  
 Atmospheric pressure: 102.8kPa  
 Test Engineer : Jack He

|   | Freq  | Read Level | Factor | Level | Limit Line | Over Limit | Remark |
|---|-------|------------|--------|-------|------------|------------|--------|
|   | MHz   | dBuV       | dB     | dBuV  | dBuV       | dB         |        |
| 1 | 0.159 | 21.53      | 20.40  | 41.93 | 65.50      | -23.57     | Peak   |
| 2 | 0.214 | 20.56      | 20.41  | 40.97 | 63.06      | -22.09     | Peak   |
| 3 | 0.320 | 24.75      | 20.35  | 45.10 | 59.71      | -14.61     | Peak   |
| 4 | 0.725 | 21.55      | 20.23  | 41.78 | 56.00      | -14.22     | Peak   |
| 5 | 1.831 | 20.41      | 20.27  | 40.68 | 56.00      | -15.32     | Peak   |
| 6 | 2.338 | 20.49      | 20.26  | 40.75 | 56.00      | -15.25     | Peak   |

**SPURIOUS EMISSIONS****Environmental Conditions & Test Information**

| Test Item:         | SPURIOUS EMISSIONS |              |                |                 |
|--------------------|--------------------|--------------|----------------|-----------------|
|                    | 9kHz – 30MHz       | 30MHz - 1GHz | 1 GHz - 18 GHz | 18 GHz - 25 GHz |
| Test Date:         | 2025-10-18         | 2025-10-25   | 2025-11-05     | 2025-11-15      |
| Temperature:       | 23.4℃              | 23.7℃        | 20.8 ℃         | 23.6 ℃          |
| Relative Humidity: | 45 %               | 54%          | 49%            | 50%             |
| ATM Pressure:      | 101.1 kPa          | 102.8 kPa    | 102.5 kPa      | 101.4 kPa       |
| Test Result:       | Pass               | Pass         | Pass           | Pass            |
| Test Engineer:     | Scarf Yang         | Scarf Yang   | Destine Hu     | Hugh Wu         |

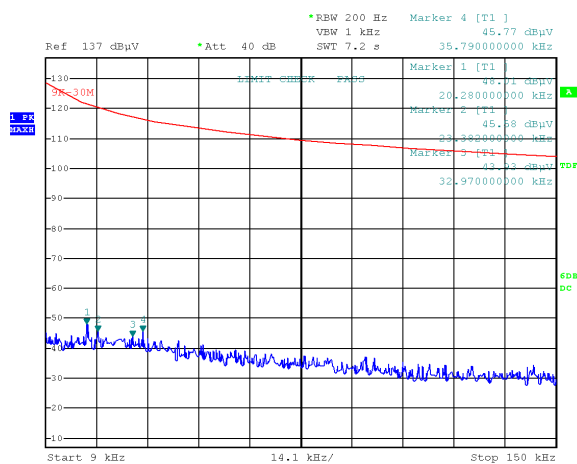
**Test Result:** Compliant.

*EUT operation mode: Transmitting*

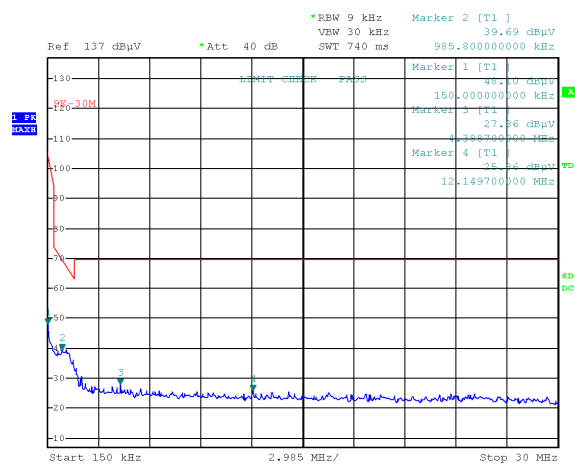
*After pre-scan in the X, Y and Z axes of orientation, the worst case in the Y axes of orientation is below:*

**9 kHz-30MHz: Transmitting in maximum output power mode Zigbee Chain 0, Middle channel**  
**Parallel(worst case)**

**9kHz-150kHz**



**150kHz-30MHz**



Project No.RKS250928004  
 Date: 18.OCT.2025 11:16:23

Tester:Scarf Yang

Project No.RKS250928004  
 Date: 18.OCT.2025 11:20:23

Tester:Scarf Yang

**9 kHz-150 kHz**

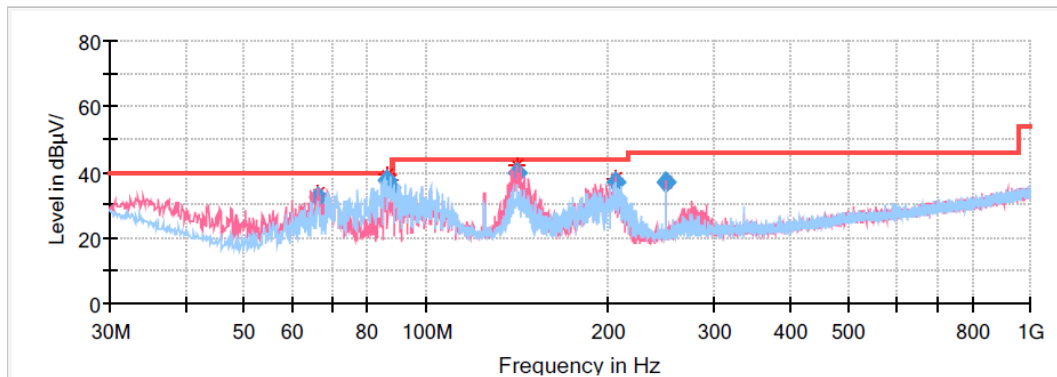
| Frequency (MHz) | Corrected Amplitude (dBμV/m) @3m | Detector PK/QP/Ave. | Corrected Factor (dB/m) | Limit (dBμV/m) @3m | Margin (dB) |
|-----------------|----------------------------------|---------------------|-------------------------|--------------------|-------------|
| 0.020280        | 48.01                            | PK                  | -0.56                   | 121.46             | 73.45       |
| 0.023382        | 45.58                            | PK                  | -0.58                   | 120.23             | 74.65       |
| 0.032970        | 43.93                            | PK                  | -1.09                   | 117.24             | 73.31       |
| 0.035790        | 45.77                            | PK                  | -1.54                   | 116.53             | 70.76       |

**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) |
|-----------------|----------------------------------|---------------------|-------------------------|--------------------|-------------|
| 0.150000        | 48.10                            | PK                  | -11.34                  | 104.08             | 55.98       |
| 0.985800        | 39.69                            | PK                  | -27.51                  | 67.73              | 28.04       |
| 4.388700        | 27.86                            | PK                  | -31.97                  | 69.54              | 41.68       |
| 12.149700       | 25.86                            | PK                  | -33.02                  | 69.54              | 43.68       |

**Zigbee: (Transmitting in maximum output power mode Zigbee Chain 0, Middle channel)****30 MHz-1 GHz:****Middle Channel: 2440 MHz****Common Information**

|                      |                                                     |
|----------------------|-----------------------------------------------------|
| Project No:          | RKSB250928004                                       |
| EUT Model:           | MC Gateway                                          |
| 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:         | 23.7°C                                              |
| Humidity:            | 54%                                                 |
| Barometric Pressure: | 102.8 kPa                                           |
| Test Engineer:       | Scarf Yang                                          |
| Test Date:           | 2025/10/25                                          |

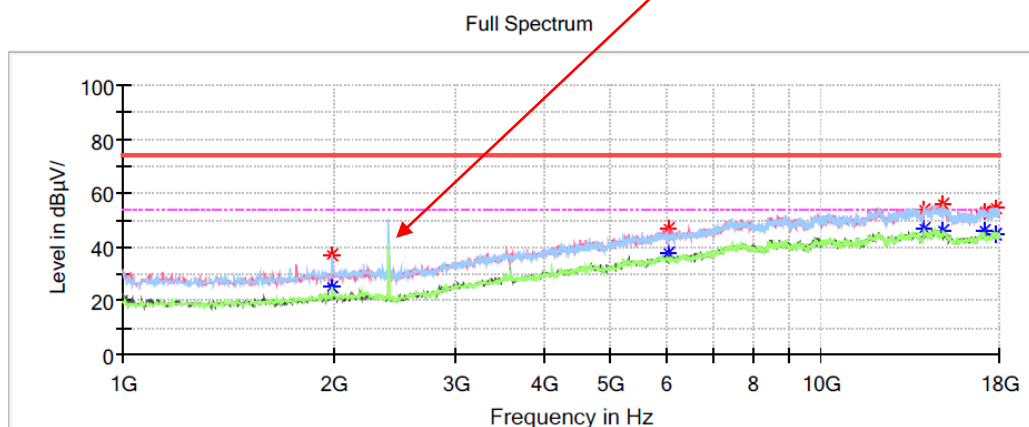
**Final Result**

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|--------------------------|----------------------|-------------|-----|--------------|
| 66.243850       | 32.51                    | 40.00                | 7.49        | V   | -16.8        |
| 86.049350       | 37.27                    | 40.00                | 2.73        | H   | -17.0        |
| 87.503400       | 35.04                    | 40.00                | 4.96        | H   | -16.9        |
| 141.230650      | 39.62                    | 43.50                | 3.88        | V   | -11.3        |
| 206.206250      | 36.64                    | 43.50                | 6.86        | V   | -12.5        |
| 249.976000      | 36.97                    | 46.00                | 9.03        | V   | -12.2        |

**Chain 0****1GHz-18GHz:****Low Channel: 2405 MHz****Common Information**

Project No.: RKS250928004  
EUT Model: MC Gateway  
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: 20.8°C  
Humidity: 49%  
Atmospheric Pressure: 102.5kPa  
Test Engineer: Destine Hu  
Test Date: 2025/11/5

Fundamental test with  
Band Reject Filter

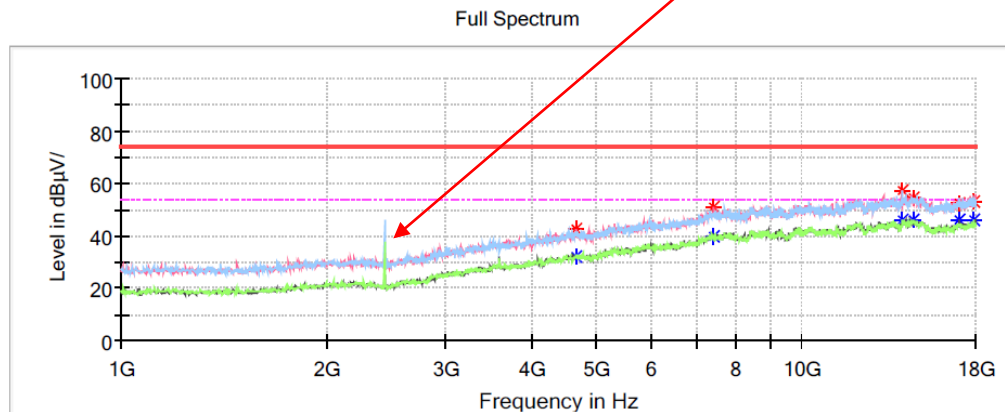
**Critical\_Freqs**

| Frequency (MHz) | MaxPeak (dB µ V/m) | Average (dB µ V/m) | Limit (dB µ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|--------------------|--------------------|------------------|-------------|-----|--------------|
| 1996.200000     | 36.94              | ---                | 74.00            | 37.06       | H   | -10.0        |
| 1996.200000     | ---                | 25.28              | 54.00            | 28.72       | H   | -10.0        |
| 6028.600000     | 47.01              | ---                | 74.00            | 26.99       | V   | -0.6         |
| 6028.600000     | ---                | 37.78              | 54.00            | 16.22       | V   | -0.6         |
| 14049.200000    | ---                | 46.97              | 54.00            | 7.03        | H   | 11.2         |
| 14049.200000    | 54.17              | ---                | 74.00            | 19.83       | H   | 11.2         |
| 14933.200000    | 55.64              | ---                | 74.00            | 18.36       | H   | 10.5         |
| 14933.200000    | ---                | 45.91              | 54.00            | 8.09        | H   | 10.5         |
| 17095.600000    | ---                | 45.95              | 54.00            | 8.05        | V   | 10.9         |
| 17095.600000    | 53.46              | ---                | 74.00            | 20.54       | V   | 10.9         |
| 17799.400000    | ---                | 44.45              | 54.00            | 9.55        | H   | 11.2         |
| 17799.400000    | 54.66              | ---                | 74.00            | 19.34       | H   | 11.2         |

**Middle Channel: 2440 MHz****Common Information**

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Project No.:          | RKSB250928004                                     |
| EUT Model:            | MC Gateway                                        |
| 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:          | 20.8℃                                             |
| Humidity:             | 49%                                               |
| Atmospheric Pressure: | 102.5kPa                                          |
| Test Engineer:        | Destine Hu                                        |
| Test Date:            | 2025/11/5                                         |

Fundamental test with  
Band Reject Filter

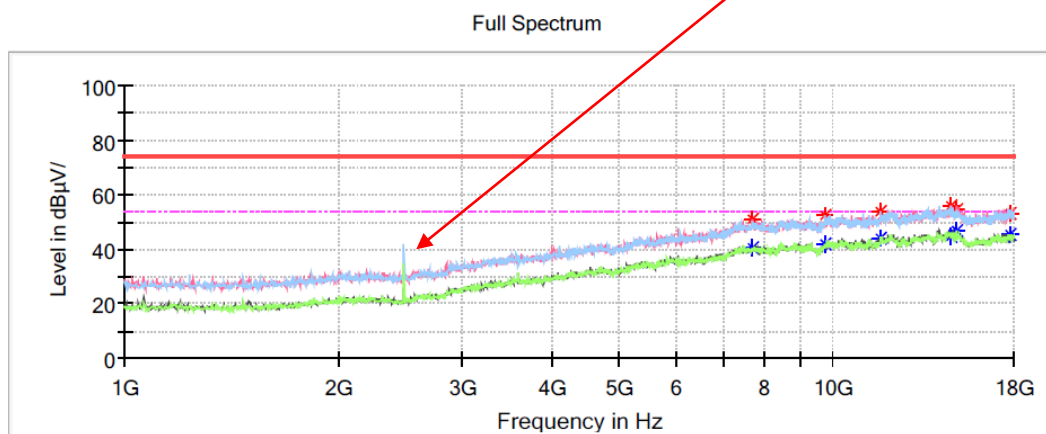
**Critical\_Freqs**

| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|--------------------|--------------------|------------------|-------------|-----|--------------|
| 4665.200000     | ---                | 32.20              | 54.00            | 21.80       | H   | -3.8         |
| 4665.200000     | 42.90              | ---                | 74.00            | 31.10       | H   | -3.8         |
| 7409.000000     | ---                | 39.70              | 54.00            | 14.30       | H   | 2.7          |
| 7409.000000     | 50.84              | ---                | 74.00            | 23.16       | H   | 2.7          |
| 14079.800000    | ---                | 45.86              | 54.00            | 8.14        | V   | 11.2         |
| 14079.800000    | 57.17              | ---                | 74.00            | 16.83       | V   | 11.2         |
| 14593.200000    | ---                | 46.39              | 54.00            | 7.61        | V   | 11.7         |
| 14593.200000    | 54.66              | ---                | 74.00            | 19.34       | V   | 11.7         |
| 16997.000000    | 52.67              | ---                | 74.00            | 21.33       | V   | 10.9         |
| 16997.000000    | ---                | 46.16              | 54.00            | 7.84        | V   | 10.9         |
| 17918.400000    | 53.22              | ---                | 74.00            | 20.78       | H   | 11.5         |
| 17918.400000    | ---                | 46.07              | 54.00            | 7.93        | H   | 11.5         |

**High Channel: 2480 MHz****Common Information**

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Project No.:          | RKS250928004                                      |
| EUT Model:            | MC Gateway                                        |
| 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:          | 20.8°C                                            |
| Humidity:             | 49%                                               |
| Atmospheric Pressure: | 102.5kPa                                          |
| Test Engineer:        | Destine Hu                                        |
| Test Date:            | 2025/11/5                                         |

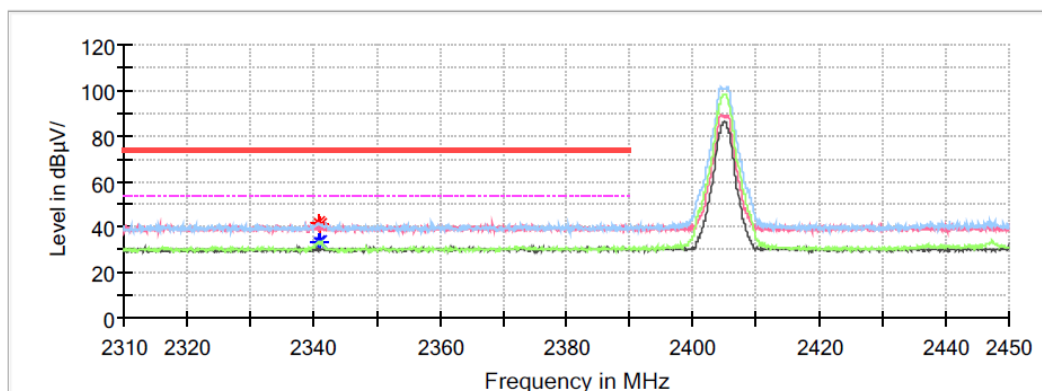
Fundamental test with  
Band Reject Filter

**Critical\_Freqs**

| Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Average (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------------|------------------------|----------------------|-------------|-----|--------------|
| 7701.400000     | ---                    | 40.53                  | 54.00                | 13.47       | V   | 3.1          |
| 7701.400000     | 50.73                  | ---                    | 74.00                | 23.27       | V   | 3.1          |
| 9758.400000     | ---                    | 41.69                  | 54.00                | 12.31       | H   | 5.6          |
| 9758.400000     | 52.53                  | ---                    | 74.00                | 21.47       | H   | 5.6          |
| 11655.600000    | ---                    | 43.85                  | 54.00                | 10.15       | V   | 8.4          |
| 11655.600000    | 53.60                  | ---                    | 74.00                | 20.40       | V   | 8.4          |
| 14698.600000    | ---                    | 44.70                  | 54.00                | 9.30        | V   | 11.3         |
| 14698.600000    | 56.19                  | ---                    | 74.00                | 17.81       | V   | 11.3         |
| 14974.000000    | 54.57                  | ---                    | 74.00                | 19.43       | H   | 10.4         |
| 14974.000000    | ---                    | 46.80                  | 54.00                | 7.20        | H   | 10.4         |
| 17782.400000    | 52.96                  | ---                    | 74.00                | 21.04       | H   | 11.2         |
| 17782.400000    | ---                    | 45.65                  | 54.00                | 8.35        | H   | 11.2         |

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

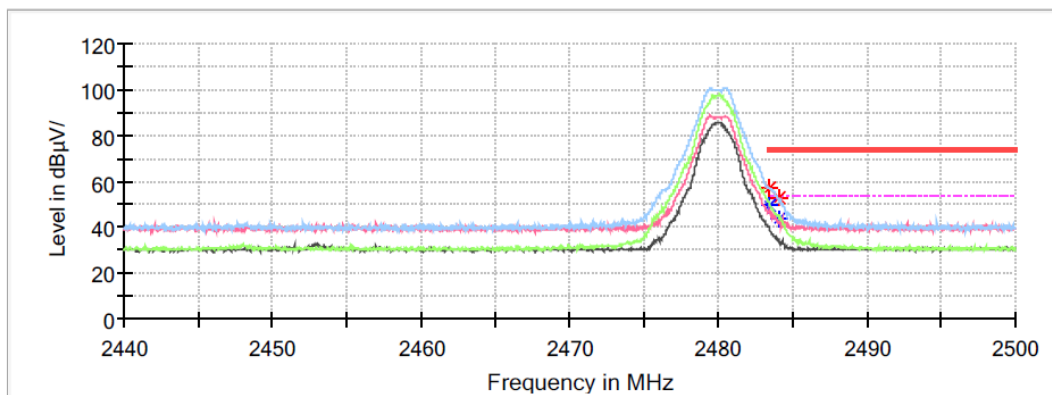
Project No.: RKSB250928004  
EUT Model: MC Gateway  
Test Mode: ZigBee  
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209  
Test Equipment: ESU40,3115,PAM-0118P  
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto  
Temperature: 20.8°C  
Humidity: 49%  
Atmospheric Pressure: 102.5kPa  
Test Engineer: Destine Hu  
Test Date: 2025/11/5

**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) |
|-----------------|--------------------|--------------------|------------------|-------------|-----|--------------|
| 2340.856000     | 42.07              | ---                | 74.00            | 31.93       | H   | -3.7         |
| 2340.856000     | ---                | 33.22              | 54.00            | 20.78       | H   | -3.7         |
| 2341.024000     | 41.17              | ---                | 74.00            | 32.83       | H   | -3.7         |
| 2341.024000     | ---                | 33.74              | 54.00            | 20.26       | H   | -3.7         |

**Right Side****Common Information**

Project No.: RKS250928004  
EUT Model: MC Gateway  
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: 20.8℃  
Humidity: 49%  
Atmospheric Pressure: 102.5kPa  
Test Engineer: Destine Hu  
Test Date: 2025/11/5

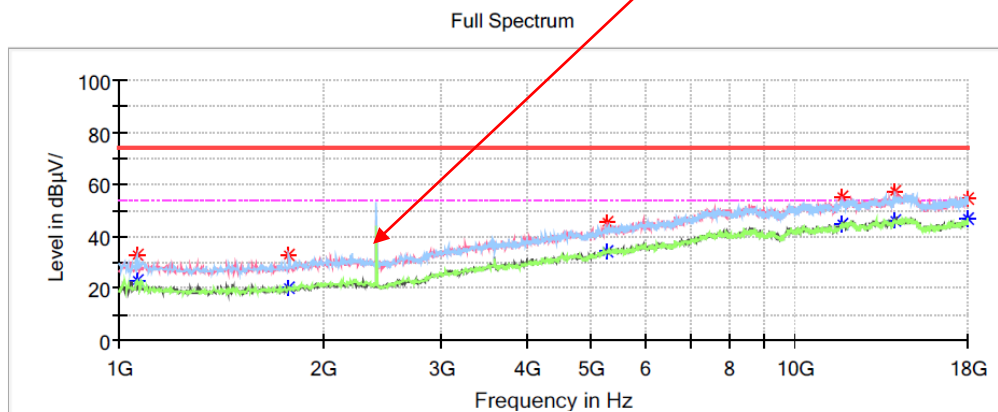
**Full Spectrum****Critical Freqs**

| 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     | ---                | 49.49              | 54.00            | 4.51        | H   | -3.5         |
| 2483.512000     | 57.20              | ---                | 74.00            | 16.80       | H   | -3.5         |
| 2484.112000     | ---                | 43.65              | 54.00            | 10.35       | H   | -3.5         |
| 2484.112000     | 52.48              | ---                | 74.00            | 21.52       | H   | -3.5         |

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

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Project No.:          | RKS250928004                                      |
| EUT Model:            | MC Gateway                                        |
| 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:          | 20.8°C                                            |
| Humidity:             | 49%                                               |
| Atmospheric Pressure: | 102.5kPa                                          |
| Test Engineer:        | Destine Hu                                        |
| Test Date:            | 2025/11/5                                         |

Fundamental test with  
Band Reject Filter

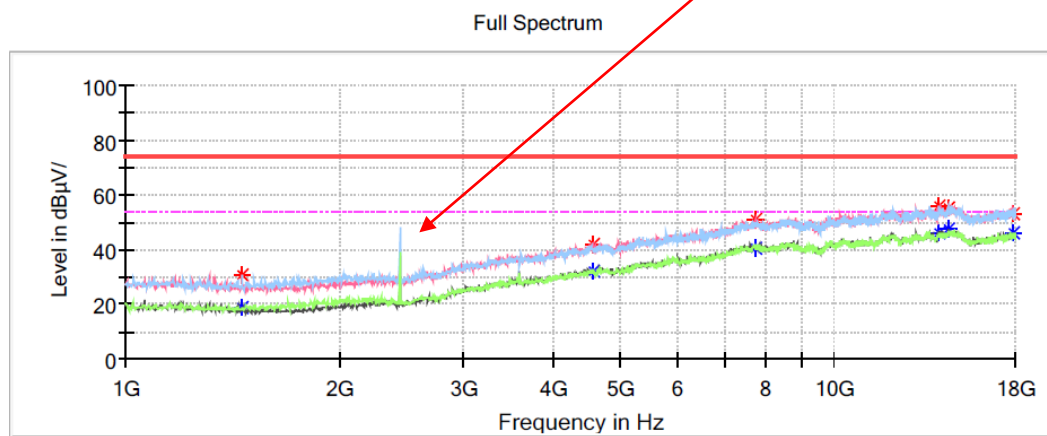
**Critical Freqs**

| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|--------------------|--------------------|------------------|-------------|-----|--------------|
| 1061.200000     | 33.13              | ---                | 74.00            | 40.87       | H   | -15.0        |
| 1061.200000     | ---                | 22.89              | 54.00            | 31.11       | H   | -15.0        |
| 1785.400000     | 32.96              | ---                | 74.00            | 41.04       | H   | -11.5        |
| 1785.400000     | ---                | 19.99              | 54.00            | 34.01       | H   | -11.5        |
| 5267.000000     | 45.37              | ---                | 74.00            | 28.63       | V   | -2.3         |
| 5267.000000     | ---                | 34.43              | 54.00            | 19.57       | V   | -2.3         |
| 11750.800000    | ---                | 44.45              | 54.00            | 9.55        | V   | 8.6          |
| 11750.800000    | 55.09              | ---                | 74.00            | 18.91       | V   | 8.6          |
| 14059.400000    | 57.05              | ---                | 74.00            | 16.95       | H   | 11.2         |
| 14059.400000    | ---                | 46.05              | 54.00            | 7.95        | H   | 11.2         |
| 17972.800000    | ---                | 46.79              | 54.00            | 7.21        | V   | 11.7         |
| 17972.800000    | 54.53              | ---                | 74.00            | 19.47       | V   | 11.7         |

**Middle Channel: 2440 MHz****Common Information**

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| Project No.:          | RKS250928004                                        |
| EUT Model:            | MC Gateway                                          |
| 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:          | 20.8°C                                              |
| Humidity:             | 49%                                                 |
| Atmospheric Pressure: | 102.5kPa                                            |
| Test Engineer:        | Destine Hu                                          |
| Test Date:            | 2025/11/5                                           |

Fundamental test with  
Band Reject Filter

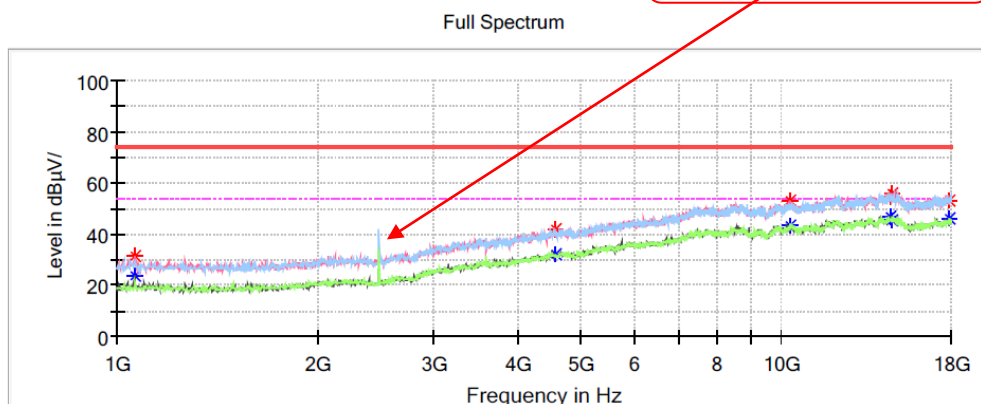
**Critical Freqs**

| Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Average (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------------|------------------------|----------------------|-------------|-----|--------------|
| 1459.000000     | ---                    | 19.00                  | 54.00                | 35.00       | V   | -13.6        |
| 1459.000000     | 30.57                  | ---                    | 74.00                | 43.43       | V   | -13.6        |
| 4559.800000     | ---                    | 32.32                  | 54.00                | 21.68       | V   | -4.0         |
| 4559.800000     | 42.23                  | ---                    | 74.00                | 31.77       | V   | -4.0         |
| 7721.800000     | ---                    | 40.57                  | 54.00                | 13.43       | V   | 3.1          |
| 7721.800000     | 51.39                  | ---                    | 74.00                | 22.61       | V   | 3.1          |
| 14079.800000    | ---                    | 45.94                  | 54.00                | 8.06        | H   | 11.2         |
| 14079.800000    | 56.26                  | ---                    | 74.00                | 17.74       | H   | 11.2         |
| 14518.400000    | ---                    | 47.24                  | 54.00                | 6.76        | H   | 11.9         |
| 14518.400000    | 55.23                  | ---                    | 74.00                | 18.77       | H   | 11.9         |
| 17935.400000    | 53.38                  | ---                    | 74.00                | 20.62       | V   | 11.6         |
| 17935.400000    | ---                    | 46.27                  | 54.00                | 7.73        | V   | 11.6         |

**High Channel: 2480 MHz****Common Information**

Project No.: RKS250928004  
EUT Model: MC Gateway  
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: 20.8°C  
Humidity: 49%  
Atmospheric Pressure: 102.5kPa  
Test Engineer: Destine Hu  
Test Date: 2025/11/5

Fundamental test with  
Band Reject Filter

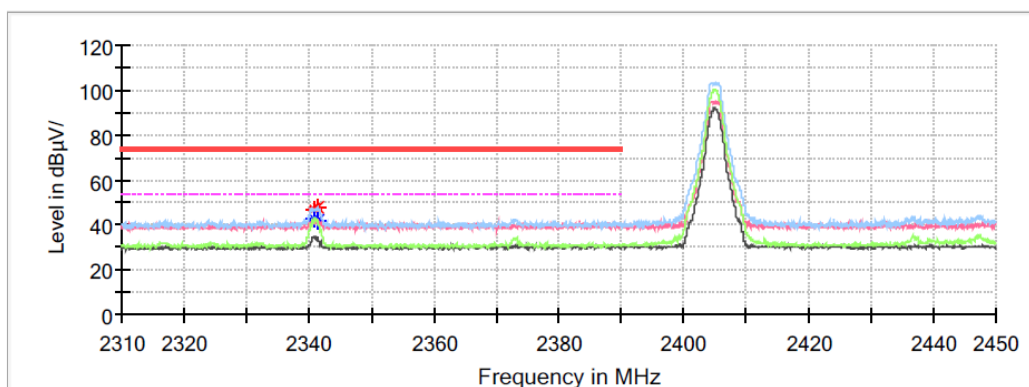
**Critical Freqs**

| Frequency (MHz) | MaxPeak (dB µV/m) | Average (dB µV/m) | Limit (dB µV/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|-------------------|-------------------|-----------------|-------------|-----|--------------|
| 1061.200000     | ---               | 24.05             | 54.00           | 29.95       | V   | -15.0        |
| 1061.200000     | 31.64             | ---               | 74.00           | 42.36       | V   | -15.0        |
| 4573.400000     | ---               | 32.05             | 54.00           | 21.95       | V   | -4.0         |
| 4573.400000     | 42.07             | ---               | 74.00           | 31.93       | V   | -4.0         |
| 10322.800000    | ---               | 43.37             | 54.00           | 10.63       | H   | 6.6          |
| 10322.800000    | 53.45             | ---               | 74.00           | 20.55       | H   | 6.6          |
| 14549.000000    | ---               | 47.02             | 54.00           | 6.98        | H   | 11.8         |
| 14549.000000    | 54.62             | ---               | 74.00           | 19.38       | H   | 11.8         |
| 14661.200000    | ---               | 45.57             | 54.00           | 8.43        | V   | 11.4         |
| 14661.200000    | 55.94             | ---               | 74.00           | 18.06       | V   | 11.4         |
| 17847.000000    | 53.21             | ---               | 74.00           | 20.79       | V   | 11.4         |
| 17847.000000    | ---               | 46.27             | 54.00           | 7.73        | V   | 11.4         |

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

Project No.: RKS250928004  
EUT Model: MC Gateway  
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: 20.8℃  
Humidity: 49%  
Atmospheric Pressure: 102.5kPa  
Test Engineer: Destine Hu  
Test Date: 2025/11/5

Full Spectrum

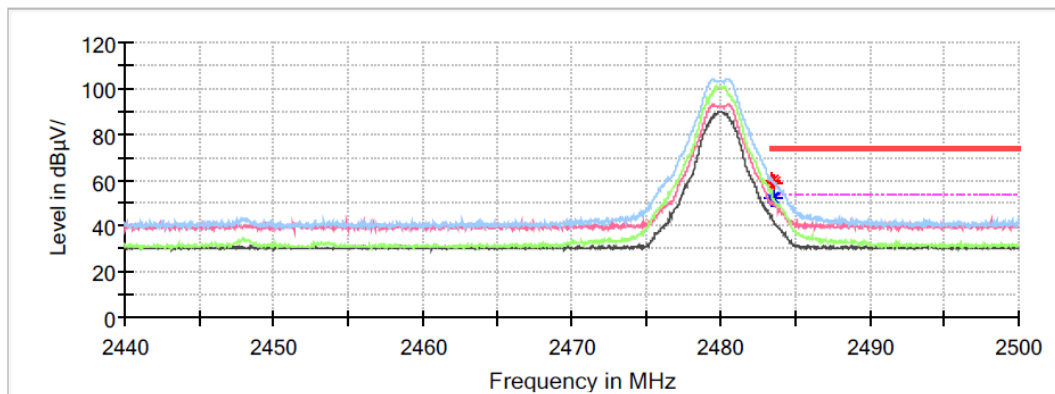
**Critical\_Freqs**

| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|--------------------|--------------------|------------------|-------------|-----|--------------|
| 2340.800000     | ---                | 42.77              | 54.00            | 11.23       | H   | -3.7         |
| 2340.800000     | 46.80              | ---                | 74.00            | 27.20       | H   | -3.7         |
| 2341.248000     | ---                | 41.90              | 54.00            | 12.10       | H   | -3.7         |
| 2341.248000     | 47.79              | ---                | 74.00            | 26.21       | H   | -3.7         |

**Right Side****Common Information**

Project No.: RKSB250928004  
EUT Model: MC Gateway  
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: 20.8℃  
Humidity: 49%  
Atmospheric Pressure: 102.5kPa  
Test Engineer: Destine Hu  
Test Date: 2025/11/5

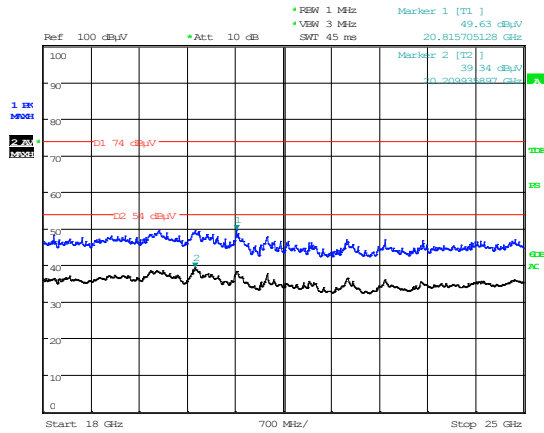
Full Spectrum

**Critical Freqs**

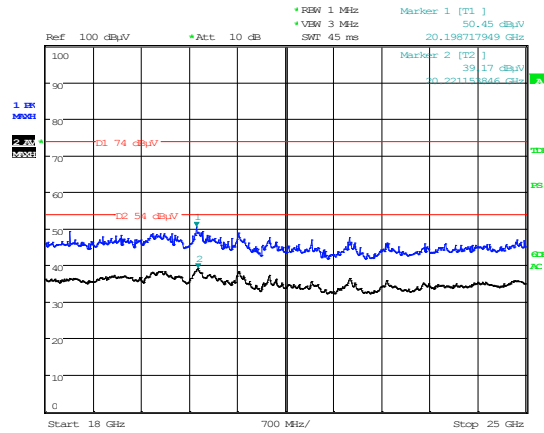
| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|--------------------|--------------------|------------------|-------------|-----|--------------|
| 2483.512000     | 59.83              | ---                | 74.00            | 14.17       | H   | -3.5         |
| 2483.512000     | ---                | 52.16              | 54.00            | 1.84        | H   | -3.5         |
| 2483.584000     | 59.04              | ---                | 74.00            | 14.96       | H   | -3.5         |
| 2483.584000     | ---                | 52.19              | 54.00            | 1.81        | H   | -3.5         |

**18 GHz - 25 GHz (Transmitting in maximum output power mode Zigbee Chain 0, Middle channel):**

**Horizontal**



**Vertical**



Project No :RKS250928004 Tester :Hugh Wu  
Date: 15.NOV.2025 17:23:51

Project No :RKS250928004 Tester :Hugh Wu  
Date: 15.NOV.2025 17:56:55

| Frequency (GHz) | MaxPeak (dBμV/m) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------|------------------|----------------|-------------|-----|--------------|
| 20.22           | ---              | 39.17            | 54             | 14.83       | V   | 12.48        |
| 20.20           | 50.45            | ---              | 74             | 23.55       | V   | 12.46        |
| 20.21           | ---              | 39.34            | 54             | 14.66       | H   | 12.47        |
| 20.82           | 49.63            | ---              | 74             | 24.37       | H   | 13.01        |

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

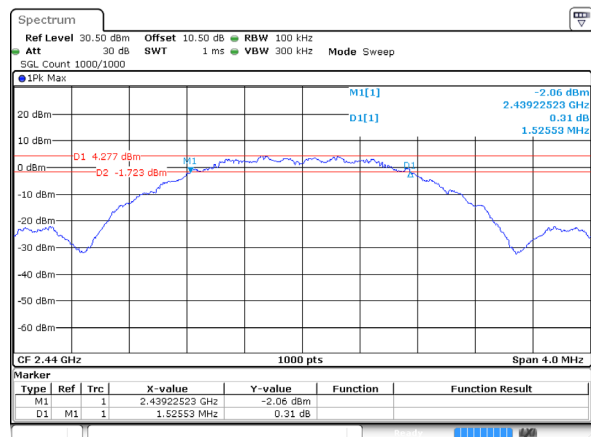
**6 dB EMISSION BANDWIDTH****Environmental Conditions & Test Information**

|                           |            |            |
|---------------------------|------------|------------|
| <b>Test Date:</b>         | 2025-11-11 | 2025-12-25 |
| <b>Temperature:</b>       | 23.6 °C    | 19.9 °C    |
| <b>Relative Humidity:</b> | 52 %       | 25 %       |
| <b>ATM Pressure:</b>      | 100.8kPa   | 103.0kPa   |
| <b>Test Result:</b>       | Pass       | Pass       |
| <b>Test Engineer:</b>     | Neil Zhou  | Neil Zhou  |

**Chain 0:**

| <b>Mode</b> | <b>Channel</b> | <b>Frequency<br/>(MHz)</b> | <b>6 dB Emission<br/>Bandwidth<br/>(MHz)</b> | <b>Limit<br/>(MHz)</b> |
|-------------|----------------|----------------------------|----------------------------------------------|------------------------|
| Zigbee      | Low            | 2405                       | 1.587                                        | ≥0.5                   |
|             | Middle         | 2440                       | 1.526                                        | ≥0.5                   |
|             | High           | 2480                       | 1.558                                        | ≥0.5                   |

## Zigbee: Middle Channel



ProjectNo.:RKSB250928004 Tester:Neil Zhou  
Date: 11.NOV.2025 15:47:02

Spectrum

Ref Level 30.50 dBm Offset 10.50 dB RBW 100 kHz  
ATT 30 dB SWT 1 ms VBW 200 kHz Mode Sweep  
SGL Count 1000/1000

1Pk: Max

M1[1] -2.18 dBm  
D1[1] 2.47921321 GHz -0.37 dBm  
D1 4.108 dBm  
D2 -1.892 dBm

20 dBm  
10 dBm  
0 dBm  
-10 dBm  
-20 dBm  
-30 dBm  
-40 dBm  
-50 dBm  
-60 dBm

CF 2.40 GHz 1000 pts Span 4.0 MHz

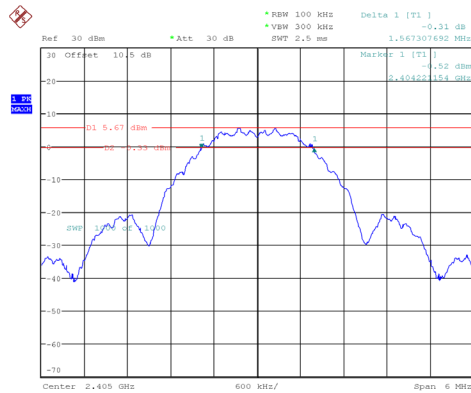
| Marker | Type | Ref | Trc | X-value        | Y-value   | Function | Function Result |
|--------|------|-----|-----|----------------|-----------|----------|-----------------|
| M1     | 1    |     |     | 2.47921321 GHz | -2.18 dBm |          |                 |
| D1     | M1   | 1   |     | 1.55756 MHz    | -0.37 dB  |          |                 |

ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 11.NOV.2025 15:51:33

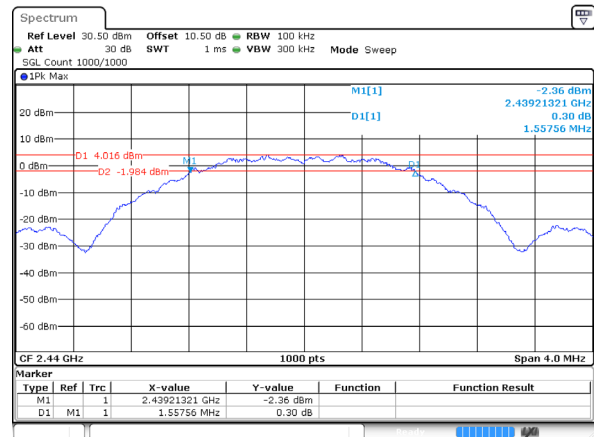
**Chain 1:**

| Mode   | Channel | Frequency (MHz) | 6 dB Emission Bandwidth (MHz) | Limit (MHz) |
|--------|---------|-----------------|-------------------------------|-------------|
| Zigbee | Low     | 2405            | 1.567                         | $\geq 0.5$  |
|        | Middle  | 2440            | 1.558                         | $\geq 0.5$  |
|        | High    | 2480            | 1.566                         | $\geq 0.5$  |

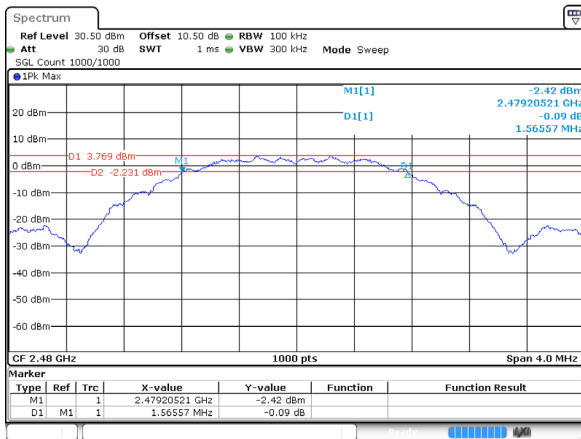
Zigbee: Low Channel



Zigbee: Middle Channel



Zigbee: High Channel



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

|                           |            |
|---------------------------|------------|
| <b>Test Date:</b>         | 2025-11-11 |
| <b>Temperature:</b>       | 23.6 °C    |
| <b>Relative Humidity:</b> | 52 %       |
| <b>ATM Pressure:</b>      | 100.8kPa   |
| <b>Test Result:</b>       | Pass       |
| <b>Test Engineer:</b>     | Neil Zhou  |

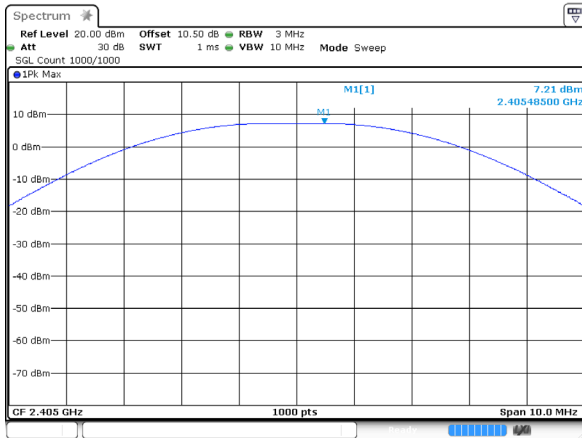
**Test Result:** Compliant.

*EUT operation mode: Transmitting*

**Chain 0**

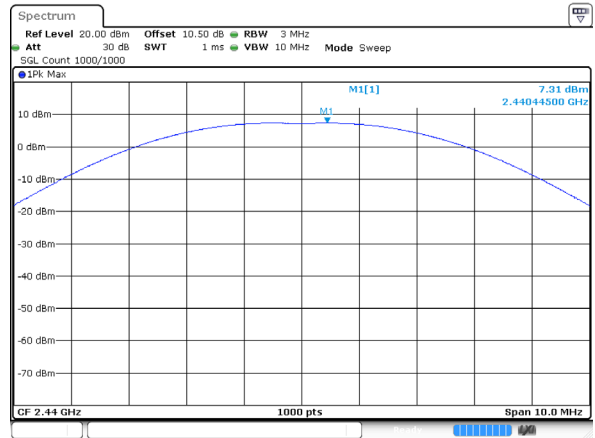
| <b>Mode</b> | <b>Channel</b> | <b>Frequency<br/>(MHz)</b> | <b>Max Conducted<br/>Peak Output<br/>Power<br/>(dBm)</b> | <b>Limit<br/>(dBm)</b> | <b>Result</b> |
|-------------|----------------|----------------------------|----------------------------------------------------------|------------------------|---------------|
| Zigbee      | Low            | 2405                       | 7.21                                                     | 30                     | Pass          |
|             | Middle         | 2440                       | 7.31                                                     | 30                     | Pass          |
|             | High           | 2480                       | 7.11                                                     | 30                     | Pass          |

### Zigbee: Low Channel



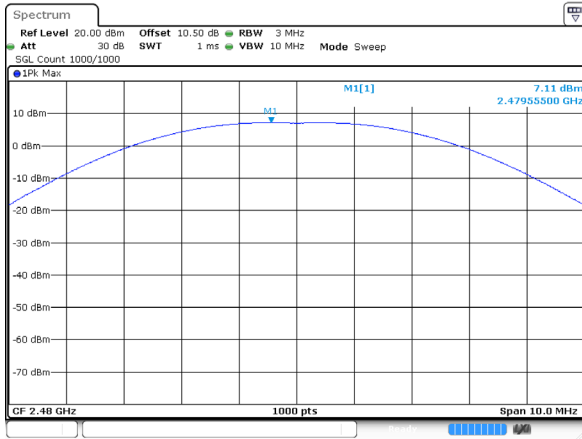
ProjectNo.: RKS250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:19:44

### Zigbee: Middle Channel



ProjectNo.: RKS250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 15:47:11

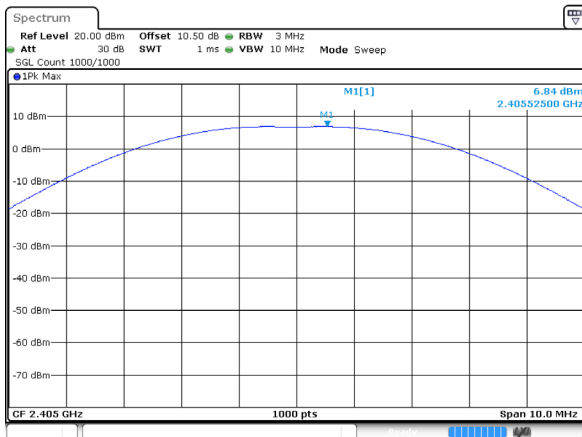
### Zigbee: High Channel



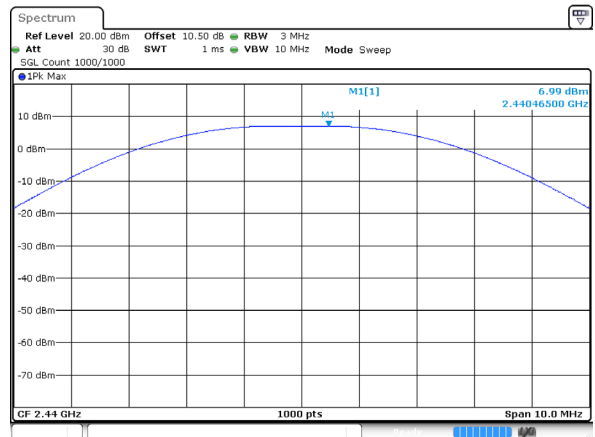
ProjectNo.: RKS250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 15:51:56

**Chain 1**

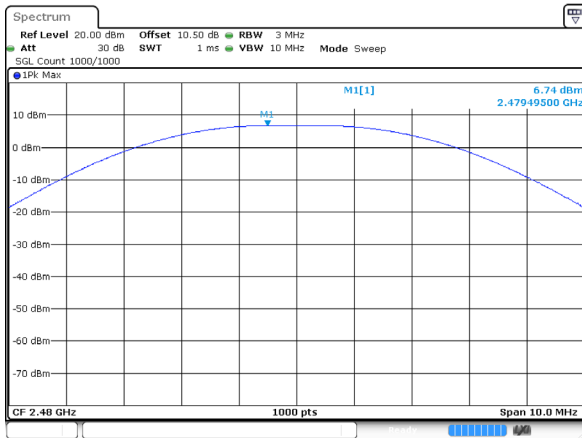
| Mode   | Channel | Frequency (MHz) | Max Conducted Peak Output Power (dBm) | Limit (dBm) | Result |
|--------|---------|-----------------|---------------------------------------|-------------|--------|
| Zigbee | Low     | 2405            | 6.84                                  | 30          | Pass   |
|        | Middle  | 2440            | 6.99                                  | 30          | Pass   |
|        | High    | 2480            | 6.74                                  | 30          | Pass   |

**Zigbee: Low Channel**

ProjectNo.: RKS250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:38:17

**Zigbee: Middle Channel**

ProjectNo.: RKS250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:44:20

**Zigbee: High Channel**

ProjectNo.: RKS250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:46:38

# BAND EDGE

## Environmental Conditions & Test Information

|                    |            |
|--------------------|------------|
| Test Date:         | 2025-11-11 |
| Temperature:       | 23.6 °C    |
| Relative Humidity: | 52 %       |
| ATM Pressure:      | 100.8kPa   |
| Test Result:       | Pass       |
| Test Engineer:     | Neil Zhou  |

Test Result: Compliant.

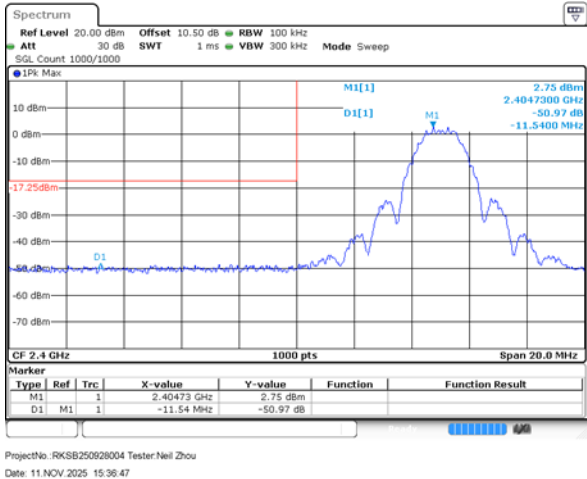
EUT operation mode: Transmitting

## Chain 0

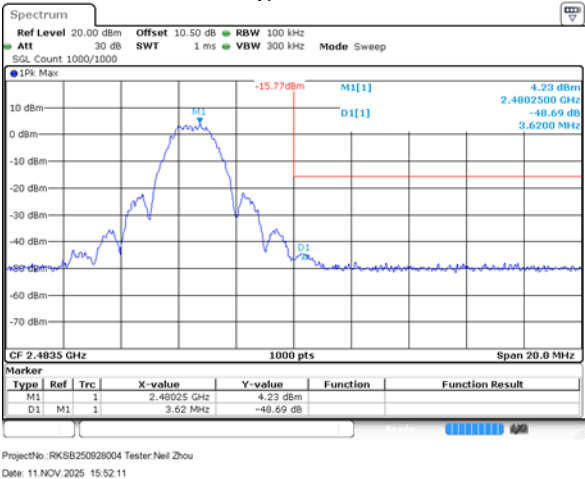
| Mode   | Channel | Frequency (MHz) | Result (dBc) | Limit (dBc) |
|--------|---------|-----------------|--------------|-------------|
| Zigbee | Low     | 2405            | 50.97        | ≥20         |
|        | High    | 2480            | 48.69        |             |

## Zigbee:

### Left Side

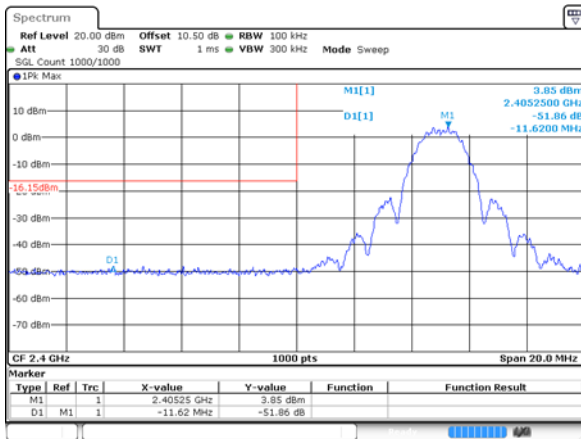


### Right Side

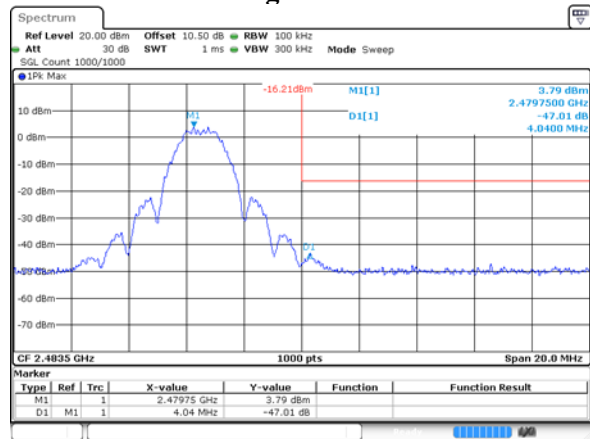


**Chain 1**

| Mode   | Channel | Frequency (MHz) | Result (dBc) | Limit (dBc) |
|--------|---------|-----------------|--------------|-------------|
| Zigbee | Low     | 2405            | 51.86        | $\geq 20$   |
|        | High    | 2480            | 47.01        |             |

**Zigbee:****Left Side**

ProjectNo.: RKSB250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:39:38

**Right Side**

ProjectNo.: RKSB250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:46:54

**POWER SPECTRAL DENSITY****Environmental Conditions & Test Information**

|                           |            |            |
|---------------------------|------------|------------|
| <b>Test Date:</b>         | 2025-11-11 | 2025-12-25 |
| <b>Temperature:</b>       | 23.6 °C    | 19.9 °C    |
| <b>Relative Humidity:</b> | 52 %       | 25 %       |
| <b>ATM Pressure:</b>      | 100.8kPa   | 103.0kPa   |
| <b>Test Result:</b>       | Pass       | Pass       |
| <b>Test Engineer:</b>     | Neil Zhou  | Neil Zhou  |

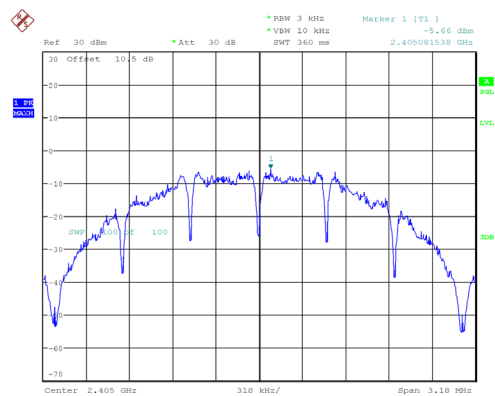
**Test Result:** Compliant.

*EUT operation mode: Transmitting*

**Chain 0**

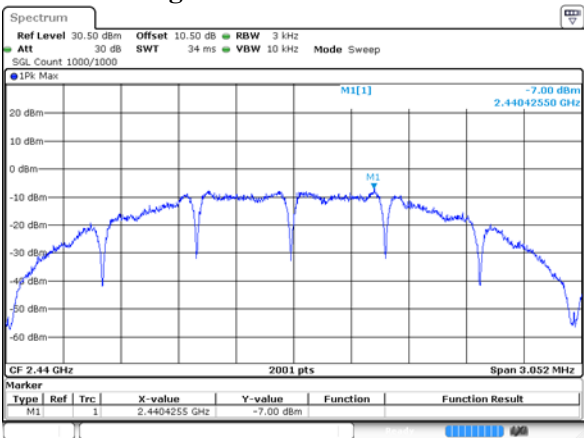
| <b>Mode</b> | <b>Channel</b> | <b>Frequency<br/>(MHz)</b> | <b>PSD<br/>(dBm/3kHz)</b> | <b>Limit<br/>(dBm/3kHz)</b> |
|-------------|----------------|----------------------------|---------------------------|-----------------------------|
| Zigbee      | Low            | 2405                       | -5.66                     | ≤8                          |
|             | Middle         | 2440                       | -7.00                     | ≤8                          |
|             | High           | 2480                       | -7.51                     | ≤8                          |

Zigbee: Low Channel



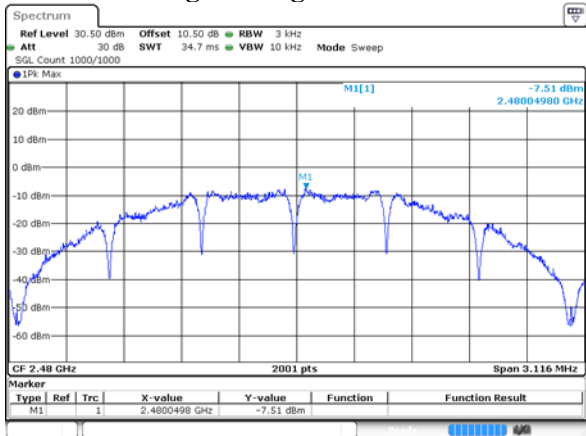
ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 25.DEC.2025 15:14:04

Zigbee: Middle Channel



ProjectNo.: RKS250928004 Tester:Neil Zhou  
Date: 11.NOV.2025 15:48:01

Zigbee: High Channel

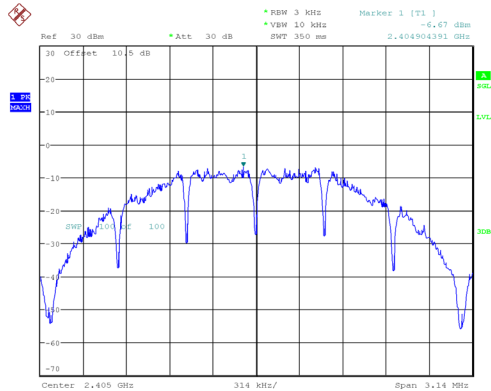


ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 11.NOV.2025 15:53:00

## Chain 1

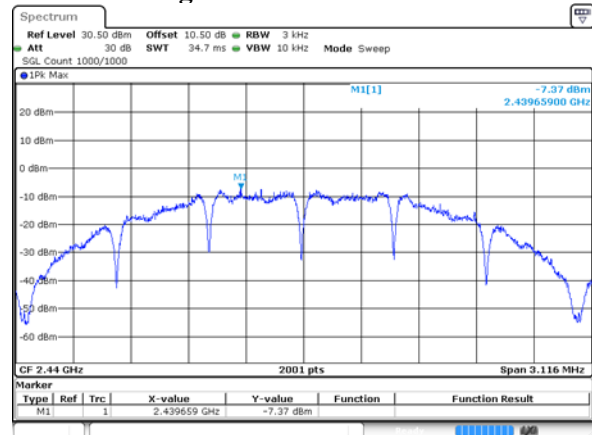
| Mode   | Channel | Frequency (MHz) | PSD (dBm/3kHz) | Limit (dBm/3kHz) |
|--------|---------|-----------------|----------------|------------------|
| Zigbee | Low     | 2405            | -6.67          | ≤8               |
|        | Middle  | 2440            | -7.37          | ≤8               |
|        | High    | 2480            | -7.65          | ≤8               |

## Zigbee: Low Channel



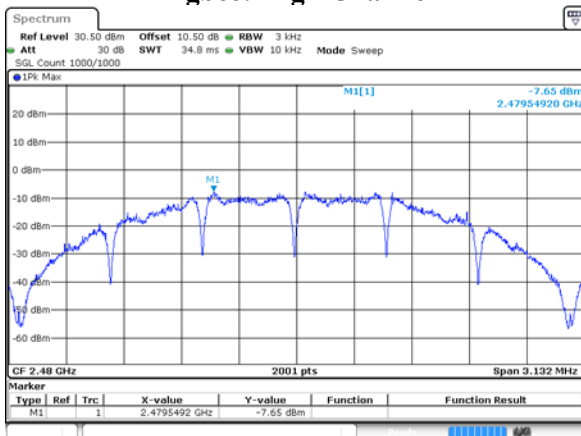
ProjectNo.: RKSB250928004 Tester: Neil Zhou  
Date: 25.DEC.2025 15:12:18

## Zigbee: Middle Channel



ProjectNo.: RKSB250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:45:11

## Zigbee: High Channel



ProjectNo.: RKSB250928004 Tester: Neil Zhou  
Date: 11.NOV.2025 16:47:44

CONDUCTED SPURIOUS EMISSION

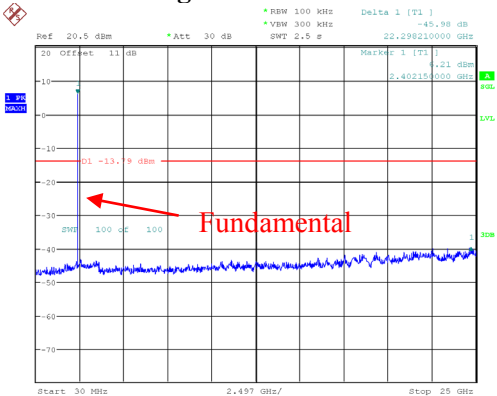
Environmental Conditions & Test Information

|                    |            |
|--------------------|------------|
| Test Date:         | 2025-12-27 |
| Temperature:       | 21.8 °C    |
| Relative Humidity: | 37 %       |
| ATM Pressure:      | 102.5kPa   |
| Test Result:       | Pass       |
| Test Engineer:     | Neil Zhou  |

Chain 0

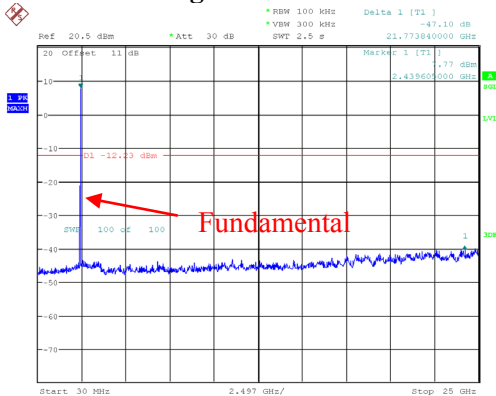
| Mode   | Channel | Frequency (MHz) | Result (dBc) | Limit (dBc) |
|--------|---------|-----------------|--------------|-------------|
| Zigbee | Low     | 2405            | 45.98        | ≥20         |
|        | Middle  | 2440            | 47.10        |             |
|        | High    | 2480            | 47.64        |             |

Zigbee: Low Channel



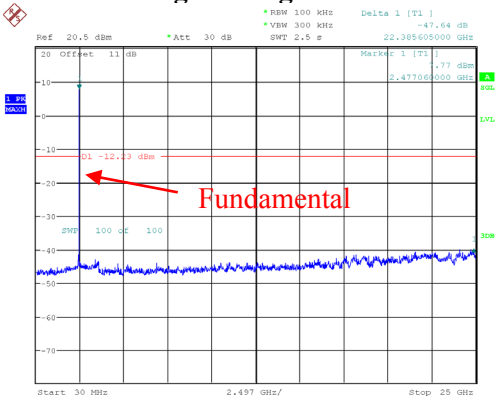
ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 27.DEC.2025 14:37:18

Zigbee: Middle Channel



ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 27.DEC.2025 14:43:47

Zigbee: High Channel

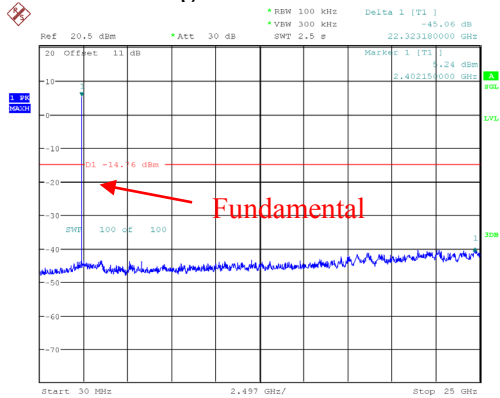


ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 27.DEC.2025 14:50:55

## Chain 1

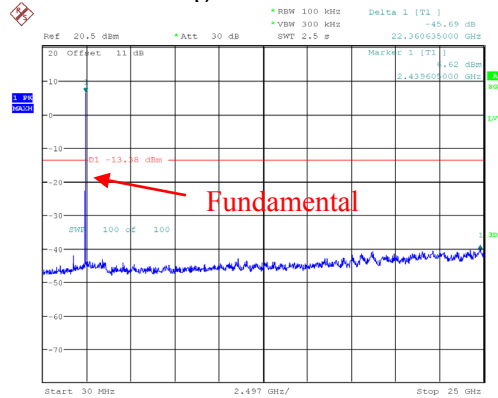
| Mode   | Channel | Frequency (MHz) | Result (dBc) | Limit (dBc) |
|--------|---------|-----------------|--------------|-------------|
| Zigbee | Low     | 2405            | 45.06        | ≥20         |
|        | Middle  | 2440            | 45.69        |             |
|        | High    | 2480            | 46.75        |             |

Zigbee: Low Channel



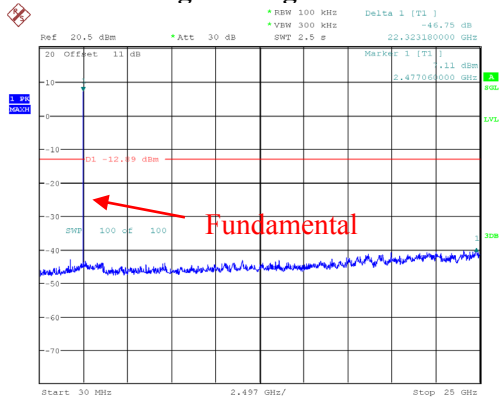
ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 27.DEC.2025 14:57:41

Zigbee: Middle Channel



ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 27.DEC.2025 15:03:05

Zigbee: High Channel



ProjectNo.:RKS250928004 Tester:Neil Zhou  
Date: 27.DEC.2025 15:10:05

## **EUT PHOTOGRAPHS**

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

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## **TEST SETUP PHOTOGRAPHS**

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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.
6. This report may contain standards and test items that are not covered by the accreditation scope and shall be marked with an asterisk “▲”.

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