

**FCC Part 15.247**  
**RSS-247, ISSUE 4, July 2025**  
**RSS-GEN, ISSUE 5, February 2021 Amendment 2**  
**TEST REPORT**

For

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

Building No.9, Lane 888, Tianlin Road, Minhang district, 200233 Shanghai, China

**FCC ID: 2AGBW44229669593X**  
**IC: 20812-69593X**

|                                                                                                                                                                                                                                                                                |                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>Report Type:</b><br>Original Report                                                                                                                                                                                                                                         | <b>Product Type:</b><br>Hue Connect |
| <b>Report Producer :</b> <u>Sandy Luo</u>                                                                                                                                                                                                                                      |                                     |
| <b>Report Number :</b> <u>RLK251120053RF02</u>                                                                                                                                                                                                                                 |                                     |
| <b>Report Date :</b> <u>2025-12-18</u>                                                                                                                                                                                                                                         |                                     |
| <b>Reviewed By:</b> <u>Rory Cheng</u>                                                                                                                                                      |                                     |
| <b>Prepared By:</b> Bay Area Compliance Laboratories Corp.<br>(Linkou Laboratory)<br>No. 6, Wende 2Rd., Guishan Dist., Taoyuan<br>City 33382, Taiwan (R.O.C.)<br>Tel: +886 (3)3961072<br>Fax: +886 (3) 3961027<br><a href="http://www.baclcorp.com.tw">www.baclcorp.com.tw</a> |                                     |

Revision History

| Revision | No.          | Report Number    | Issue Date | Description     | Author/<br>Revised by |
|----------|--------------|------------------|------------|-----------------|-----------------------|
| 0.0      | RLK251120053 | RLK251120053RF02 | 2025-12-18 | Original Report | Sandy Luo             |

## **TABLE OF CONTENTS**

|          |                                                                                                                      |            |
|----------|----------------------------------------------------------------------------------------------------------------------|------------|
| <b>1</b> | <b>General Information .....</b>                                                                                     | <b>5</b>   |
| 1.1      | Product Description for Equipment under Test (EUT) .....                                                             | 5          |
| 1.2      | Objective .....                                                                                                      | 6          |
| 1.3      | Test Methodology .....                                                                                               | 6          |
| 1.4      | Statement .....                                                                                                      | 6          |
| 1.5      | Measurement Uncertainty .....                                                                                        | 7          |
| 1.6      | Environmental Conditions .....                                                                                       | 7          |
| 1.7      | Test Facility .....                                                                                                  | 7          |
| <b>2</b> | <b>System Test Configuration .....</b>                                                                               | <b>8</b>   |
| 2.1      | Description of Test Configuration .....                                                                              | 8          |
| 2.2      | Equipment Modifications.....                                                                                         | 8          |
| 2.3      | EUT Exercise Software.....                                                                                           | 9          |
| 2.4      | Support Equipment List and Details .....                                                                             | 9          |
| 2.5      | External Cable List and Details .....                                                                                | 9          |
| 2.6      | Block Diagram of Test Setup.....                                                                                     | 10         |
| 2.7      | Duty Cycle .....                                                                                                     | 12         |
| <b>3</b> | <b>Summary of Test Results.....</b>                                                                                  | <b>18</b>  |
| <b>4</b> | <b>Test Equipment List and Details .....</b>                                                                         | <b>19</b>  |
| <b>5</b> | <b>FCC §15.203 &amp; RSS-GEN §6.8 – Antenna Requirements .....</b>                                                   | <b>20</b>  |
| 5.1      | Applicable Standard.....                                                                                             | 20         |
| 5.2      | Antenna Information.....                                                                                             | 20         |
| <b>6</b> | <b>FCC §15.207(a) &amp; RSS-GEN §8.8 – AC Line Conducted Emissions.....</b>                                          | <b>21</b>  |
| 6.1      | Applicable Standard.....                                                                                             | 21         |
| 6.2      | EUT Setup.....                                                                                                       | 22         |
| 6.3      | EMI Test Receiver Setup .....                                                                                        | 22         |
| 6.4      | Test Procedure .....                                                                                                 | 22         |
| 6.5      | Corrected Factor & Over Limit Calculation .....                                                                      | 22         |
| 6.6      | Test Results.....                                                                                                    | 23         |
| <b>7</b> | <b>FCC §15.209, §15.205, §15.247(d) &amp; RSS-247 §5.5, RSS-GEN §8.9, §8.10 – Spurious Emissions.....</b>            | <b>25</b>  |
| 7.1      | Applicable Standard.....                                                                                             | 25         |
| 7.2      | EUT Setup.....                                                                                                       | 28         |
| 7.3      | EMI Test Receiver & Spectrum Analyzer Setup .....                                                                    | 29         |
| 7.4      | Test Procedure .....                                                                                                 | 29         |
| 7.5      | Corrected Factor & Margin Calculation .....                                                                          | 29         |
| 7.6      | Test Results.....                                                                                                    | 30         |
| <b>8</b> | <b>FCC §15.247(a)(2) &amp; RSS-247 §5.2(a), RSS-GEN §6.7 – 6 dB Emission Bandwidth &amp; Occupied Bandwidth.....</b> | <b>90</b>  |
| 8.1      | Applicable Standard.....                                                                                             | 90         |
| 8.2      | Test Procedure .....                                                                                                 | 90         |
| 8.3      | Test Results.....                                                                                                    | 91         |
| <b>9</b> | <b>FCC §15.247(b)(3) &amp; RSS-247 §5.4(d) – Maximum Output Power.....</b>                                           | <b>125</b> |
| 9.1      | Applicable Standard.....                                                                                             | 125        |
| 9.2      | Test Procedure .....                                                                                                 | 125        |
| 9.3      | Test Results.....                                                                                                    | 126        |

**10 FCC §15.247(d) & RSS-247 §5.5 – 100 kHz Bandwidth of Frequency Band Edge128**

10.1 Applicable Standard..... 128

10.2 Test Procedure ..... 128

10.3 Test Results..... 129

**11 FCC §15.247(e) & RSS-247 §5.2(b) – Power Spectral Density ..... 141**

19.1 Applicable Standard..... 141

19.2 Test Procedure ..... 141

19.3 Test Results..... 142

# 1 General Information

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

|                                     |                                                                                                                                            |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant                           | Signify (China) Investment Co., Ltd.                                                                                                       |
|                                     | Building No.9, Lane 888, Tianlin Road, Minhang district, 200233 Shanghai, China                                                            |
| Brand(Trade) Name                   | Signify                                                                                                                                    |
| Product (Equipment)                 | Hue Connect                                                                                                                                |
| PMN                                 | 44229669594, 44229669593                                                                                                                   |
| Main Model Name                     | 44229669594                                                                                                                                |
| HVIN                                | 44229669594, 44229669593                                                                                                                   |
| Series Model Name                   | 44229669593                                                                                                                                |
| Frequency Range                     | BLE Mode: 2402 ~ 2480 MHz<br>Zigbee & Thread Mode: 2405 ~ 2480 MHz                                                                         |
| Maximum Conducted Peak Output Power | BLE(125k) Mode: 9.82 dBm<br>BLE(500k) Mode: 9.83 dBm<br>BLE(1M) Mode: 9.80 dBm<br>BLE(2M) Mode: 9.81 dBm<br>Zigbee & Thread Mode: 9.74 dBm |
| Modulation Technique                | BLE Mode: GFSK<br>Zigbee & Thread Mode: O-QPSK                                                                                             |
| Transmit Data Rate                  | BLE Mode: 125 kbps, 500 kbps, 1 Mbps, 2 Mbps<br>Zigbee & Thread Mode: 250 kbps                                                             |
| Power Operation (Voltage Range)     | DC24V                                                                                                                                      |
| Received Date                       | 2025/11/19                                                                                                                                 |

\*All measurement and test data in this report was gathered from production sample serial number:

RLK251120053-1 (Assigned by BACL, Linkou Laboratory).

## 1.2 Objective

This report is prepared on behalf of Signify (China) Investment Co., Ltd. in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communication Commission's rules and RSS-247, Issue 4, August 2023, RSS-Gen, Issue 5, February 2021 Amendment 2 of the Innovation, Science and Economic Development Canada.

## 1.3 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, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and KDB 558074 D01 15.247 Meas Guidance v05r02. And RSS-247, Issue 4, August 2023, RSS-Gen, Issue 5, February 2021 Amendment 2 of the Innovation, Science and Economic Development Canada.

## 1.4 Statement

Decision Rule: No, (The test results do not include MU judgment)

1. The measurement results in this report were performed at Bay Area Compliance Laboratories Corp. (Linkou Laboratory)
2. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.
3. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
4. The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification.
5. Bay Area Compliance Laboratories Corp. (Linkou Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

### 1.5 Measurement Uncertainty

| Parameter                         |               | Uncertainty |
|-----------------------------------|---------------|-------------|
| AC Mains                          |               | +/- 2.98 dB |
| RF output power, conducted        |               | +/- 3.73 dB |
| Power Spectral Density, conducted |               | +/- 0.65 dB |
| Occupied Bandwidth                |               | +/- 0.09 %  |
| Unwanted Emissions, conducted     |               | +/- 1.03 dB |
| Emissions, radiated               | 9 kHz~30 MHz  | +/- 3.13 dB |
|                                   | 30 MHz~1 GHz  | +/- 3.09 dB |
|                                   | 1 GHz~18 GHz  | +/- 5.22 dB |
|                                   | 18 GHz~40 GHz | +/- 4.72 dB |
| Temperature                       |               | +/- 0.78 °C |
| Humidity                          |               | +/- 0.04 %  |

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

### 1.6 Environmental Conditions

| Test Site                                | Test Date             | Temperature (°C) | Relative Humidity (%) | Test Engineer |
|------------------------------------------|-----------------------|------------------|-----------------------|---------------|
| AC Line Conducted Emissions              | 2025/12/03            | 24.2             | 49                    | Vin           |
| Radiation Spurious Emissions             | 2025/11/28~2025/12/02 | 17~18            | 42~55                 | Yue           |
| Duty Cycle                               | 2025/11/25~2025/12/05 | 22.2~22.4        | 41~45                 | James         |
| Conducted Spurious Emissions             | 2025/12/05            | 22.4             | 41                    | James         |
| Emission Bandwidth                       | 2025/11/25~2025/12/05 | 22.2~22.4        | 41~45                 | James         |
| Maximum Output Power                     | 2025/11/25            | 22.4             | 41                    | James         |
| 100 kHz Bandwidth of Frequency Band Edge | 2025/11/27~2025/12/01 | 18~22.4          | 41~42                 | Yue           |
| Power Spectral Density                   | 2025/11/25~2025/12/05 | 22.2~22.4        | 41~45                 | James         |

### 1.7 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Linkou Laboratory) to collect test data is located on

☒ No.6, Wende 2Rd., Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.).

Bay Area Compliance Laboratories Corp. (Linkou Laboratory) is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3546) and the FCC designation No.TW3546 under the Mutual Recognition Agreement (MRA) in FCC Test.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: TW3546.

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Linkou Laboratory)

## 2 System Test Configuration

### 2.1 Description of Test Configuration

For BLE mode(125k/500k/1M/2M), there are totally 40 channels.

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

For BLE Modes were tested with channel 0, 19 and 39.

For Zigbee mode, there are totally 16 channels.

| 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            |

For BLE Modes were tested with channel 11, 18 and 26.

### 2.2 Equipment Modifications

No modification was made to the EUT.

### 2.3 EUT Exercise Software

The test software was used “HueApprobationTool 1.5.9.2.exe”

The system was configured for testing in engineering mode, which was provided by Applicant.

| Model                     | Test Frequency      |          | Low     | Middle  | High    |
|---------------------------|---------------------|----------|---------|---------|---------|
| Main Model : 44229669594  | Power Level Setting | BLE 125k | default | default | default |
|                           |                     | BLE 500k | default | default | default |
|                           |                     | BLE 1M   | default | default | default |
|                           |                     | BLE 2M   | default | default | default |
|                           |                     | Zigbee   | default | default | default |
| Series Model: 44229669593 | Power Level Setting | BLE 125k | default | default | default |
|                           |                     | BLE 500k | default | default | default |
|                           |                     | BLE 1M   | default | default | default |
|                           |                     | BLE 2M   | default | default | default |
|                           |                     | Zigbee   | default | default | default |

### 2.4 Support Equipment List and Details

| No. | Description                   | Manufacturer | Model      |
|-----|-------------------------------|--------------|------------|
| 1   | Notebook (Lab provided)       | DELL         | E6410      |
| 2   | Fixture(Customer provided)    | Signify      | E234156    |
| 3   | LED strip(Customer provided)  | Signify      | 9290019201 |
| 4   | DC Power Suply (Lab provided) | KIKUSUI      | PAS60-12   |

### 2.5 External Cable List and Details

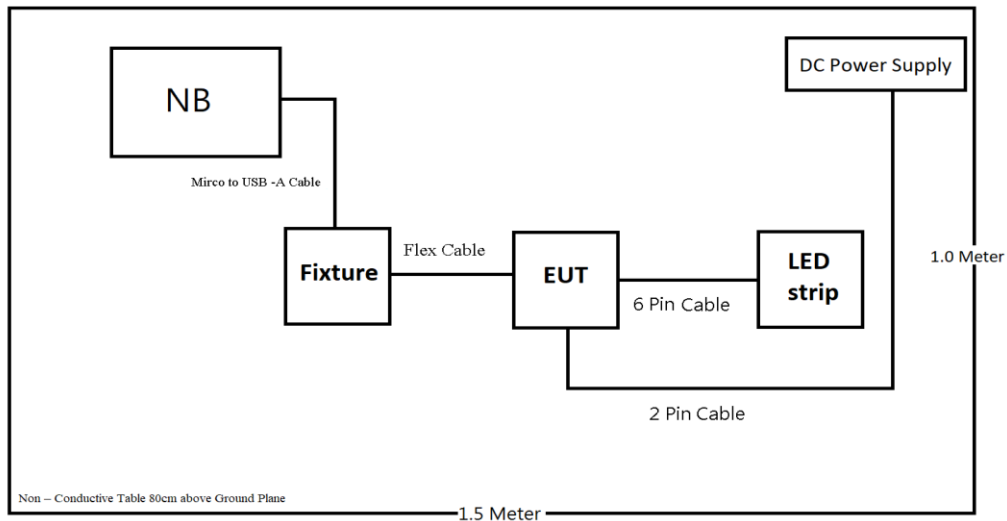
| No. | Description                               | Manufacturer | Model  |
|-----|-------------------------------------------|--------------|--------|
| 1   | Mirco to USB -A Cable (Customer provided) | Signify      | 1m     |
| 2   | Flex Cable(Customer provided)             | Signify      | 0.15m  |
| 3   | 6 Pin Cable(Customer provided)            | Signify      | 0.22 m |
| 4   | 2 Pin Cable(Lab provided)                 | Bacl         | 0.6 m  |

## 2.6 Block Diagram of Test Setup

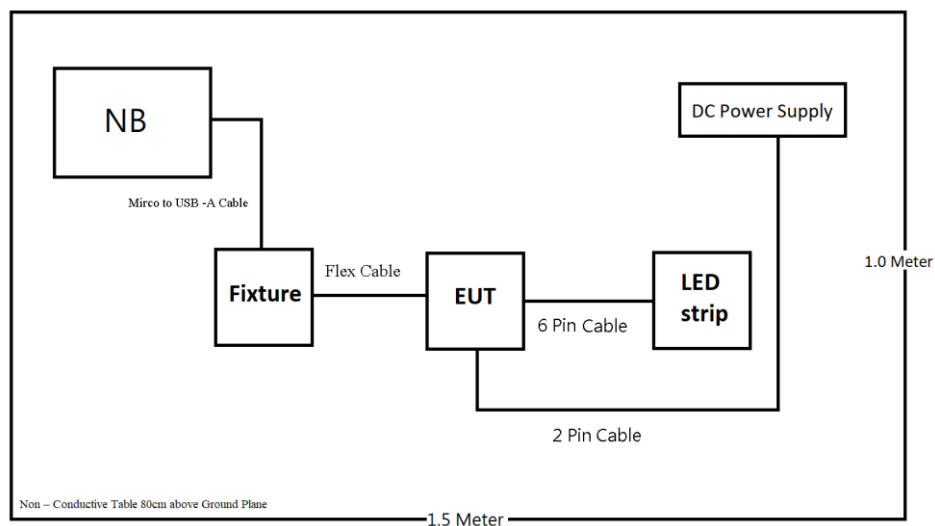
See test photographs attached in setup photos for the actual connections between EUT and support equipment.

### Radiation:

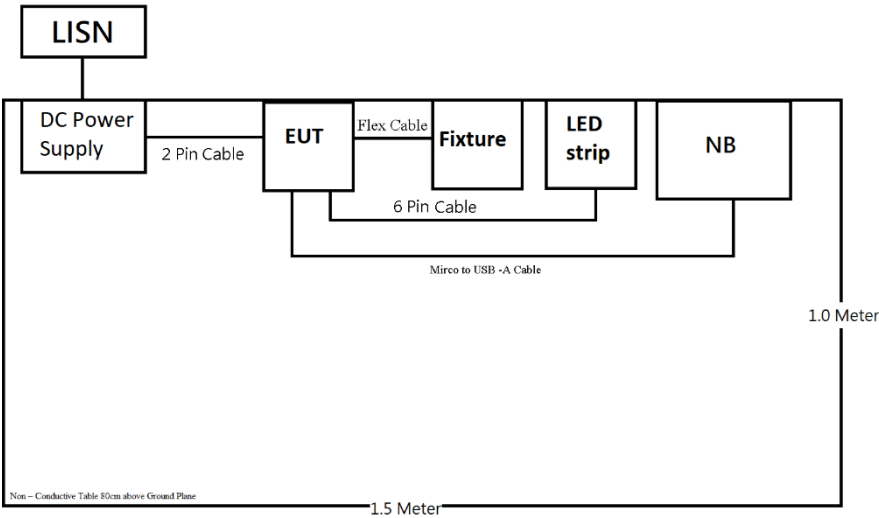
Below 1GHz



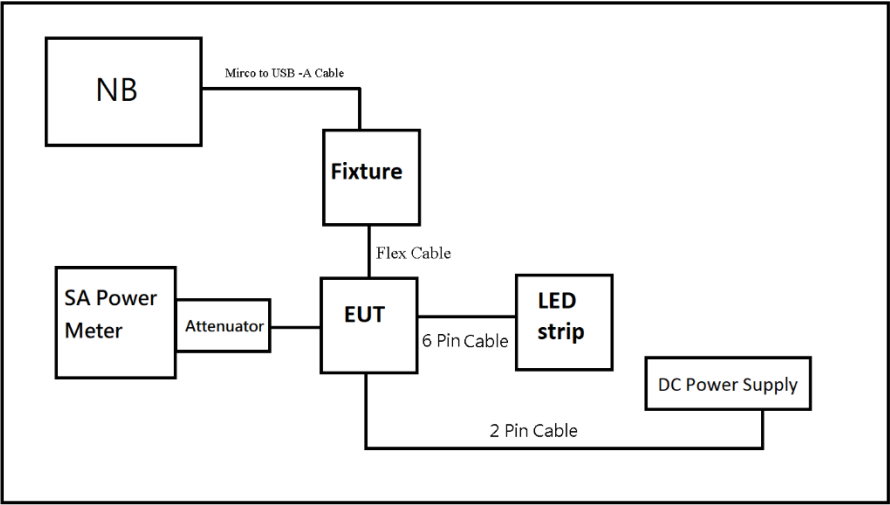
### Above 1GHz:



Conduction:



Conducted:

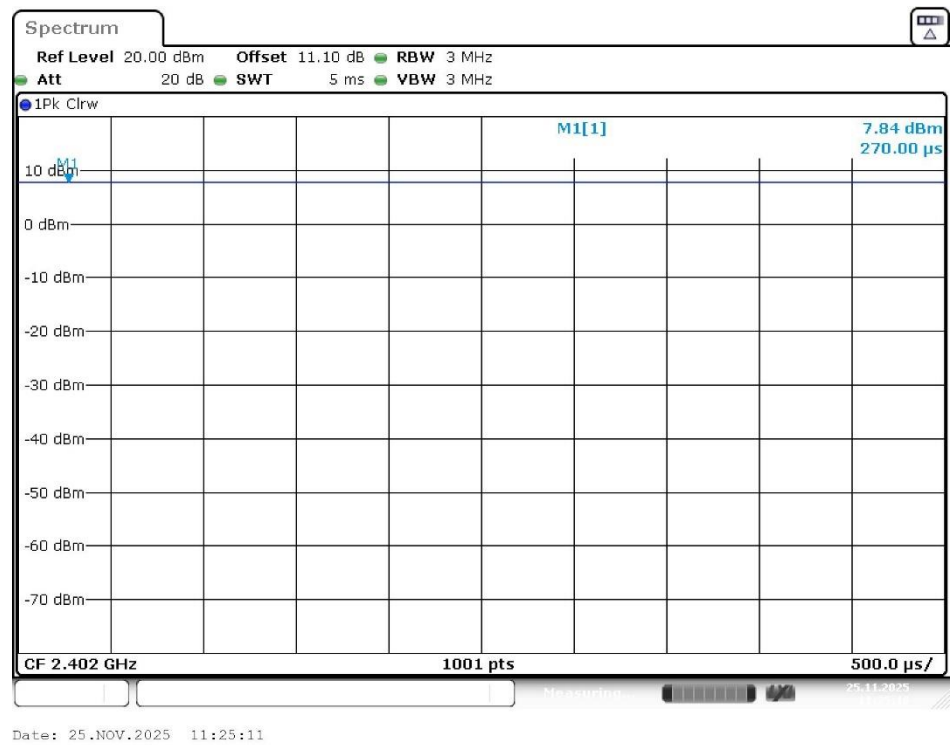


2.7 Duty Cycle  
44229669594 :

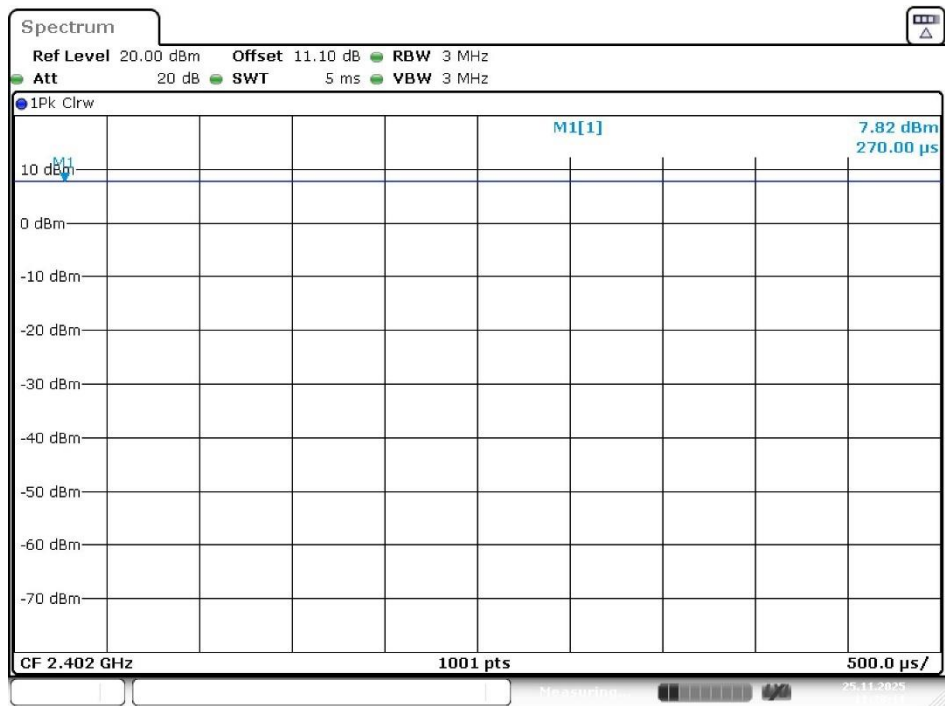
| Model Name  | Radio Mode | On Time (ms) | Off Time (ms) | Duty Cycle (%) | 1/T (Hz) | 1/T VBW setting (Hz) |
|-------------|------------|--------------|---------------|----------------|----------|----------------------|
| 44229669594 | BLE(125k)  | 1            | 1             | 0.00           | 10       | 1                    |
|             | BLE(500k)  | 1            | 1             | 0.00           | 10       | 1                    |
|             | BLE(1M)    | 1            | 1             | 0.00           | 10       | 1                    |
|             | BLE(2M)    | 1            | 1             | 0.00           | 10       | 1                    |
|             | Zigbee     | 1            | 1             | 0.00           | 10       | 1                    |

Please refer to the following plots.

BLE(125k) Mode

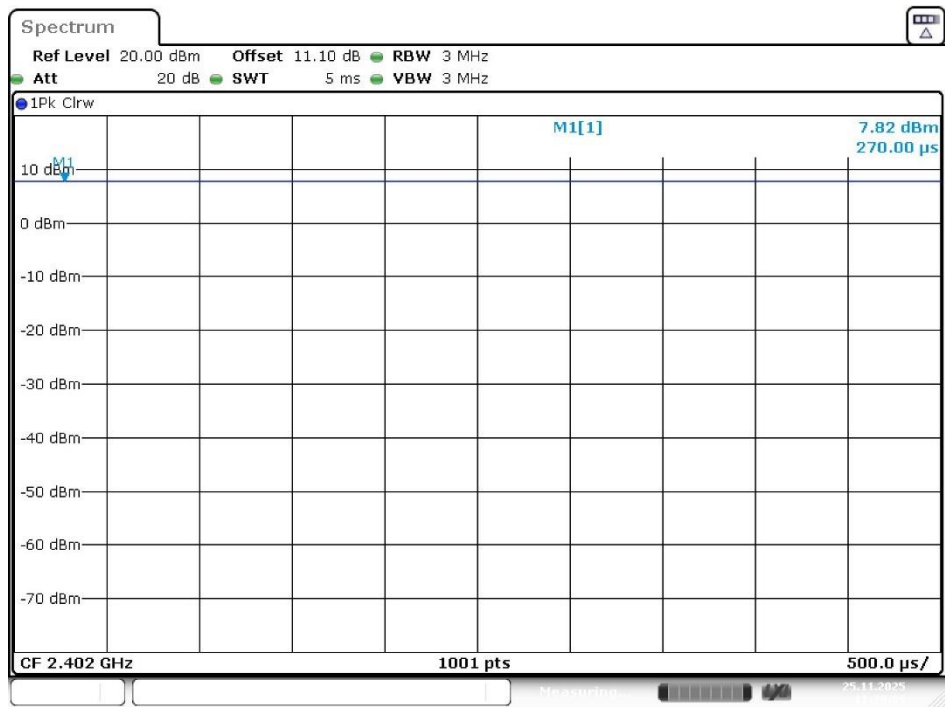


BLE(500k) Mode



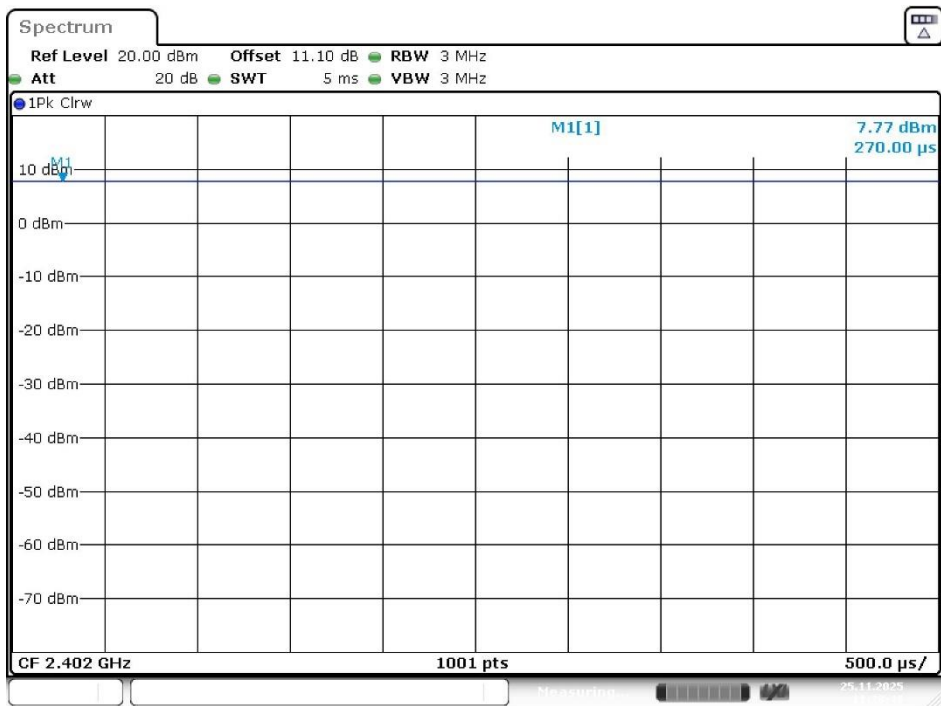
Date: 25.NOV.2025 11:28:11

BLE(1M) Mode



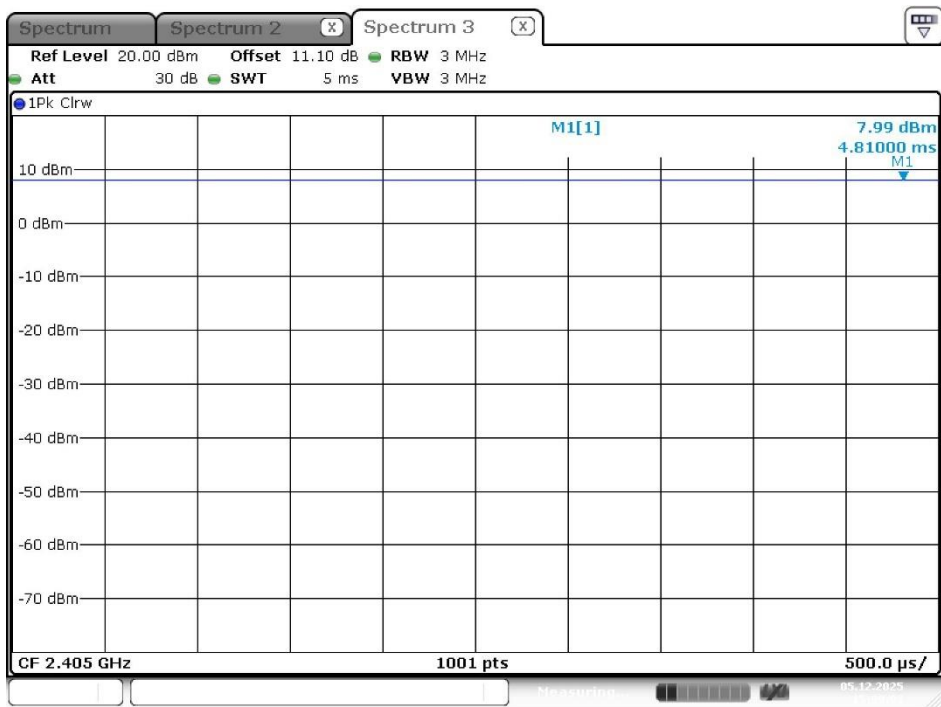
Date: 25.NOV.2025 11:29:09

BLE(2M) Mode



Date: 25.NOV.2025 11:28:41

Zigbee Mode

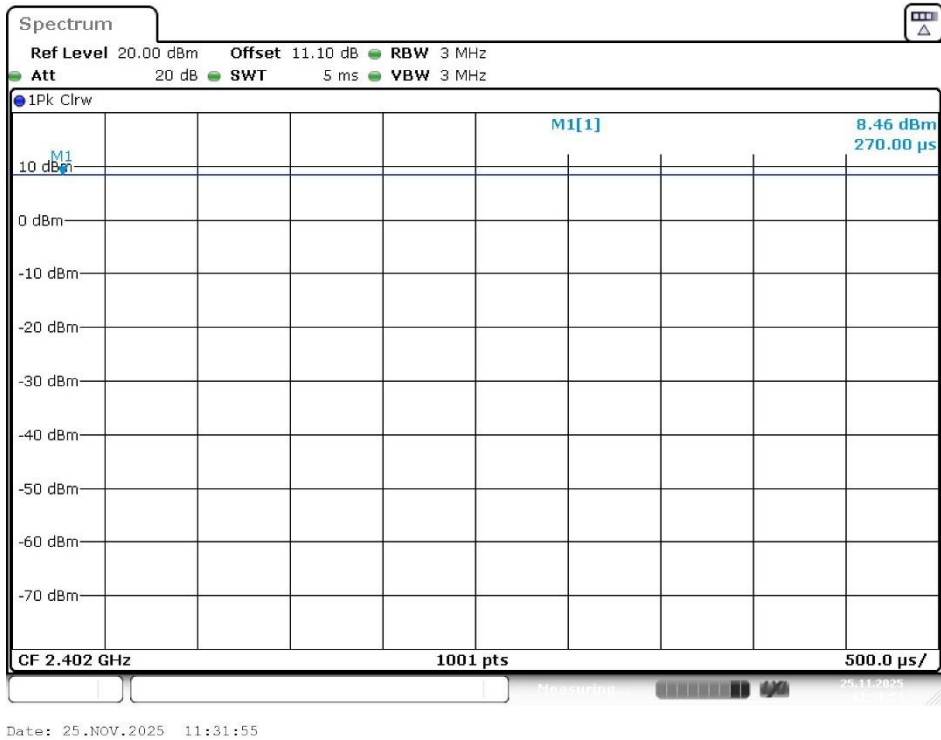


Date: 5.DEC.2025 15:09:03

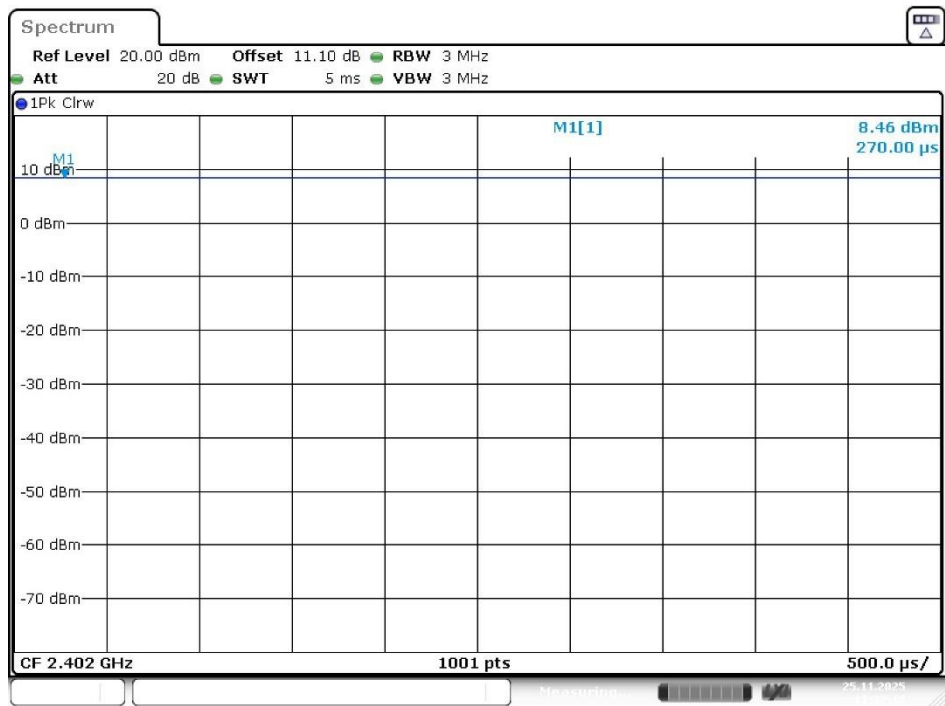
44229669593 :

| Model Name  | Radio Mode | On Time (ms) | Off Time (ms) | Duty Cycle (%) | 1/T (Hz) | 1/T VBW setting (Hz) |
|-------------|------------|--------------|---------------|----------------|----------|----------------------|
| 44229669593 | BLE(125k)  | 1            | 1             | 0.00           | 10       | 1                    |
|             | BLE(500k)  | 1            | 1             | 0.00           | 10       | 1                    |
|             | BLE(1M)    | 1            | 1             | 0.00           | 10       | 1                    |
|             | BLE(2M)    | 1            | 1             | 0.00           | 10       | 1                    |
|             | Zigbee     | 1            | 1             | 0.00           | 10       | 1                    |

BLE(125k) Mode

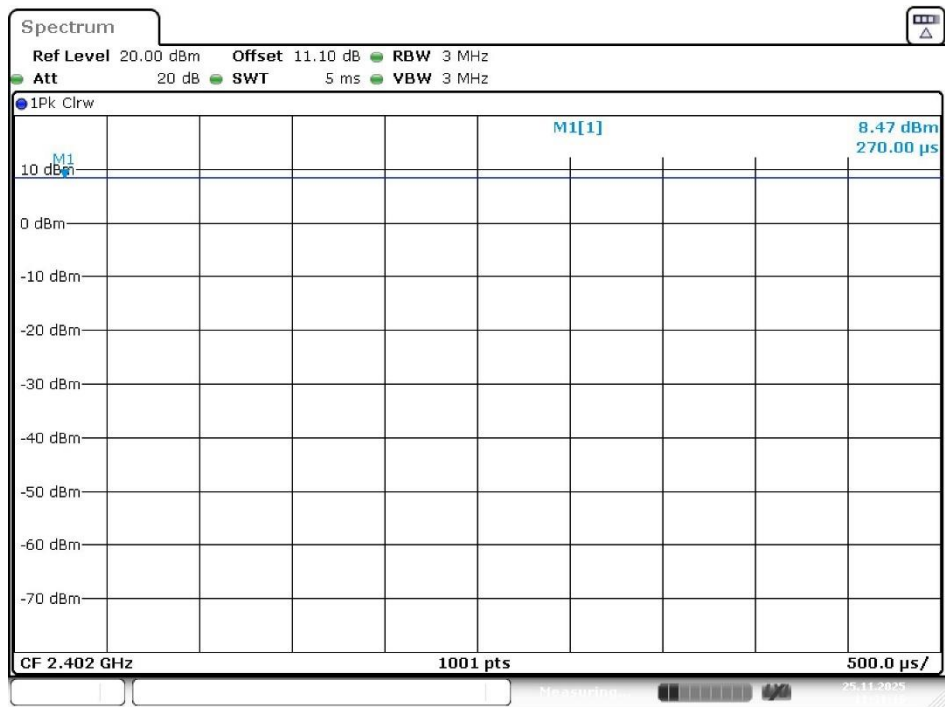


BLE(500k) Mode



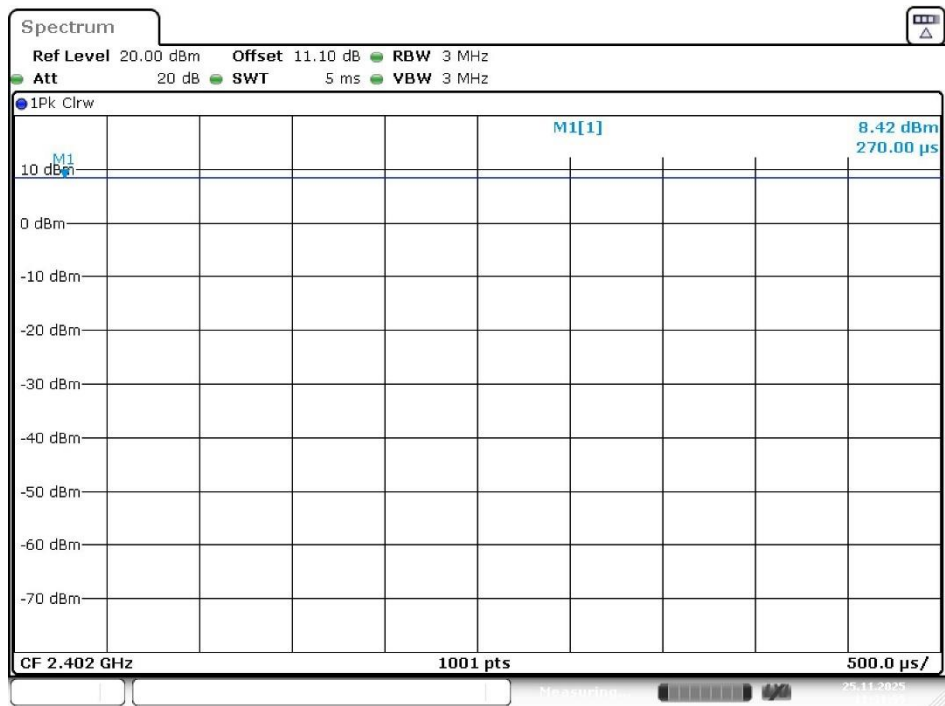
Date: 25.NOV.2025 11:32:13

BLE(1M) Mode



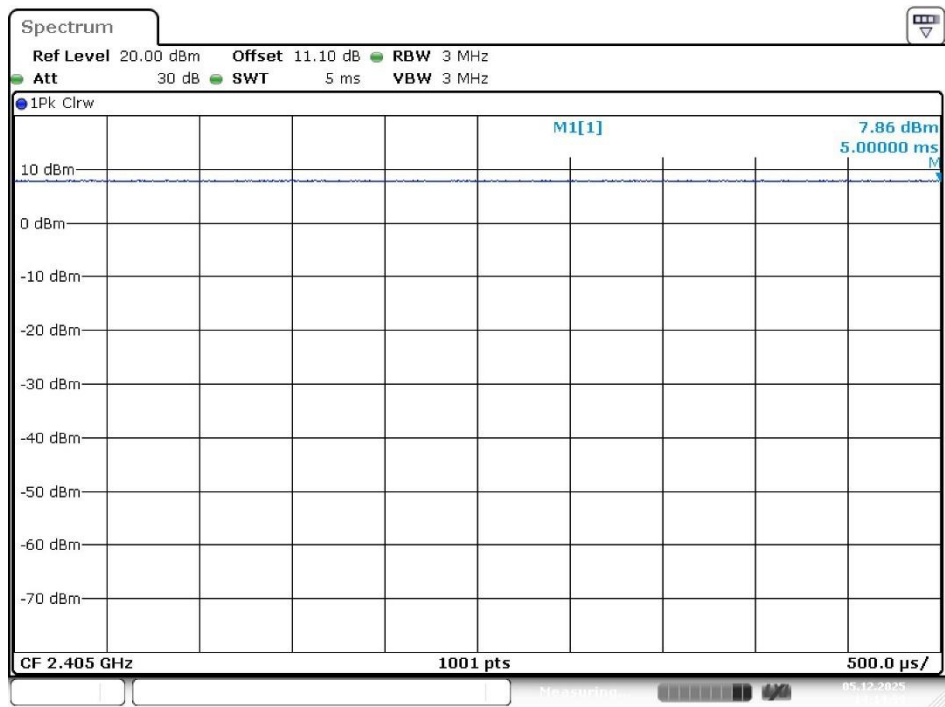
Date: 25.NOV.2025 11:31:16

BLE(2M) Mode



Date: 25.NOV.2025 11:31:36

Zigbee Mode



Date: 5.DEC.2025 14:14:39

### 3 Summary of Test Results

| Rules                                                                             | Description of Test                      | Results    |
|-----------------------------------------------------------------------------------|------------------------------------------|------------|
| FCC §15.203<br>RSS-Gen §6.8                                                       | Antenna Requirement                      | Compliance |
| FCC §15.207(a)<br>RSS-Gen §8.8                                                    | AC Line Conducted Emissions              | Compliance |
| FCC §15.205, §15.209, §15.247(d)<br>RSS-247 §5.5<br>RSS-Gen §8.9<br>RSS-Gen §8.10 | Spurious Emissions                       | Compliance |
| FCC §15.247(a)(2)<br>RSS-247 §5.2(a)<br>RSS-Gen §6.7                              | Emission Bandwidth                       | Compliance |
| FCC §15.247(b)(3)<br>RSS-247 §5.4(d)                                              | Maximum Peak Output Power                | Compliance |
| FCC §15.247(d)<br>RSS-247 §5.5                                                    | 100 kHz Bandwidth of Frequency Band Edge | Compliance |
| FCC §15.247(e)<br>RSS-247 §5.2(b)                                                 | Power Spectral Density                   | Compliance |

## 4 Test Equipment List and Details

| Description                     | Manufacturer          | Model                 | Serial Number        | Calibration Date | Calibration Due Date |
|---------------------------------|-----------------------|-----------------------|----------------------|------------------|----------------------|
| AC Line Conduction Room (CON-A) |                       |                       |                      |                  |                      |
| Pulse Limiter                   | SCHWARZBECK           | VTSD 9561-F           | 00432                | 2025/08/14       | 2026/08/14           |
| ESR EMI Test Receiver           | Rohde & Schwarz       | ESCI7                 | 100769               | 2025/04/02       | 2026/04/02           |
| RF Cable                        | EMCI                  | EMCCFD300-BM-BM-3000  | 221013               | 2025/10/16       | 2026/10/16           |
| Two-Line V-Network              | Rohde & Schwarz       | ENV216                | 100037               | 2025/09/15       | 2026/09/15           |
| Software                        | Audix                 | e3 v9                 | E3LK-03              | N.C.R            | N.C.R                |
| Radiation 3M Room (966-A)       |                       |                       |                      |                  |                      |
| Bilog Antenna & 6 dB Attenuator | SUNOL SCIENCES & EMCI | JB3 & N-6-06          | A111513 & AT-N0668   | 2025/04/11       | 2026/04/11           |
| Active Loop Antenna             | ETS-Lindgren          | 6502                  | 0001-3322            | 2025/03/27       | 2026/03/27           |
| Horn Antenna                    | ETS-Lindgren          | 3115                  | 109141               | 2025/08/22       | 2026/08/22           |
| Horn Antenna                    | ETS-Lindgren          | 3160-09               | 123852               | 2025/07/18       | 2026/07/18           |
| Horn Antenna                    | ETS-Lindgren          | 3160-10               | 123855               | 2025/07/18       | 2026/07/18           |
| 18-40GHz Preamplifier           | GLOBAL                | 1313-A1840            | 5031382              | 2025/04/28       | 2026/04/28           |
| 30M-18GHz Preamplifier          | A.H. Systems          | PAM-0118P             | 470                  | 2025/03/25       | 2026/03/25           |
| ESR EMI Test Receiver           | Rohde & Schwarz       | ESR3                  | 102448               | 2025/10/02       | 2026/10/02           |
| Spectrum Analyzer               | Rohde & Schwarz       | FSV40                 | 101940               | 2024/12/12       | 2025/12/12           |
| Microflex Cable (1m)            | UTiFLEX               | UFB205A-0-0360-000000 | W6103                | 2025/08/01       | 2026/08/01           |
| Microflex Cable (2m)            | EMCI                  | EMCI06-SM-SM-2000     | 180515               | 2025/08/01       | 2026/08/01           |
| Microflex Cable (8m)            | UTIFLEX               | UFA210A-1-3149-300300 | MFR 64639 232490-001 | 2025/08/01       | 2026/08/01           |
| Software                        | AUDIX                 | E3 V9                 | E3LK-01              | N.C.R            | N.C.R                |
| Conducted Room                  |                       |                       |                      |                  |                      |
| Cable                           | MTJ                   | MT40S                 | 620620-MT40S-100     | 2024/12/26       | 2025/12/26           |
| Signal and Spectrum Analyzer    | Rohde & Schwarz       | FSV40                 | 101457               | 2025/09/12       | 2026/09/12           |
| USB Wideband Power Sensor       | AGILENT               | U2021XA               | MY54080011           | 2025/08/26       | 2026/08/26           |
| 10dB Attenuator                 | MCL                   | BW-S10W5+             | 605                  | 2025/04/14       | 2026/04/14           |

**\*Statement of Traceability:** BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements.

## 5 FCC §15.203 & RSS-GEN §6.8 – Antenna Requirements

### 5.1 Applicable Standard

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

According to RSS-Gen 6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list. For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISSED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

### 5.2 Antenna Information

| Manufacturer | Model       | Type         | Antenna Gain |
|--------------|-------------|--------------|--------------|
| Signify      | 44229669594 | PIFA antenna | 2.2 dBi      |

Unit uses a unique coupling to the intentional radiator.

**Result: Compliance**

## 6 FCC §15.207(a) & RSS-GEN §8.8 – AC Line Conducted Emissions

### 6.1 Applicable Standard

According to §15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

According to RSS-GEN §8.8

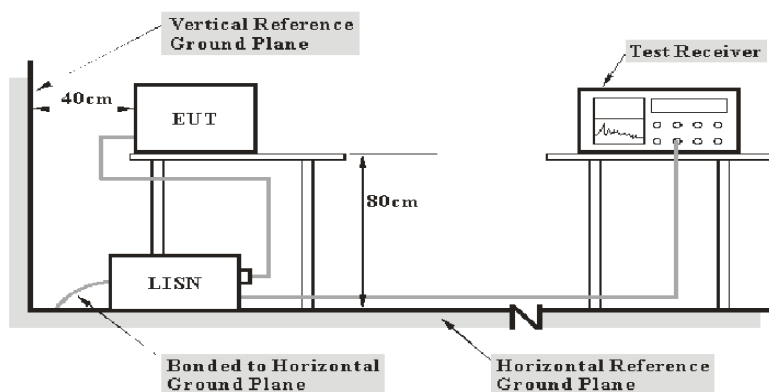
Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50  $\mu$ H / 50  $\Omega$  line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

| Frequency of Emission<br>(MHz) | Conducted Limit (dBuV)     |                            |
|--------------------------------|----------------------------|----------------------------|
|                                | Quasi-Peak                 | Average                    |
| 0.15-0.5                       | 66 to 56 <sup>Note 1</sup> | 56 to 46 <sup>Note 1</sup> |
| 0.5-5                          | 56                         | 46                         |
| 5-30                           | 60                         | 50                         |

*Note 1: Decreases with the logarithm of the frequency.*

## 6.2 EUT Setup



Note: 1. Support units were connected to second LISN.  
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2020 + COR. 1-2023 + C63.10A-2024 + ERRATA TO C63.10A-2024 measurement procedure. The specification used was with the FCC Part 15.207 and RSS-GEN limits.

## 6.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

| Frequency Range | IF B/W |
|-----------------|--------|
| 150kHz – 30MHz  | 9kHz   |

## 6.4 Test Procedure

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

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

All data was recorded in the Quasi-peak and average detection mode.

## 6.5 Corrected Factor & Over Limit Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

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 below the limit. The equation for Over Limit calculation is as follows:

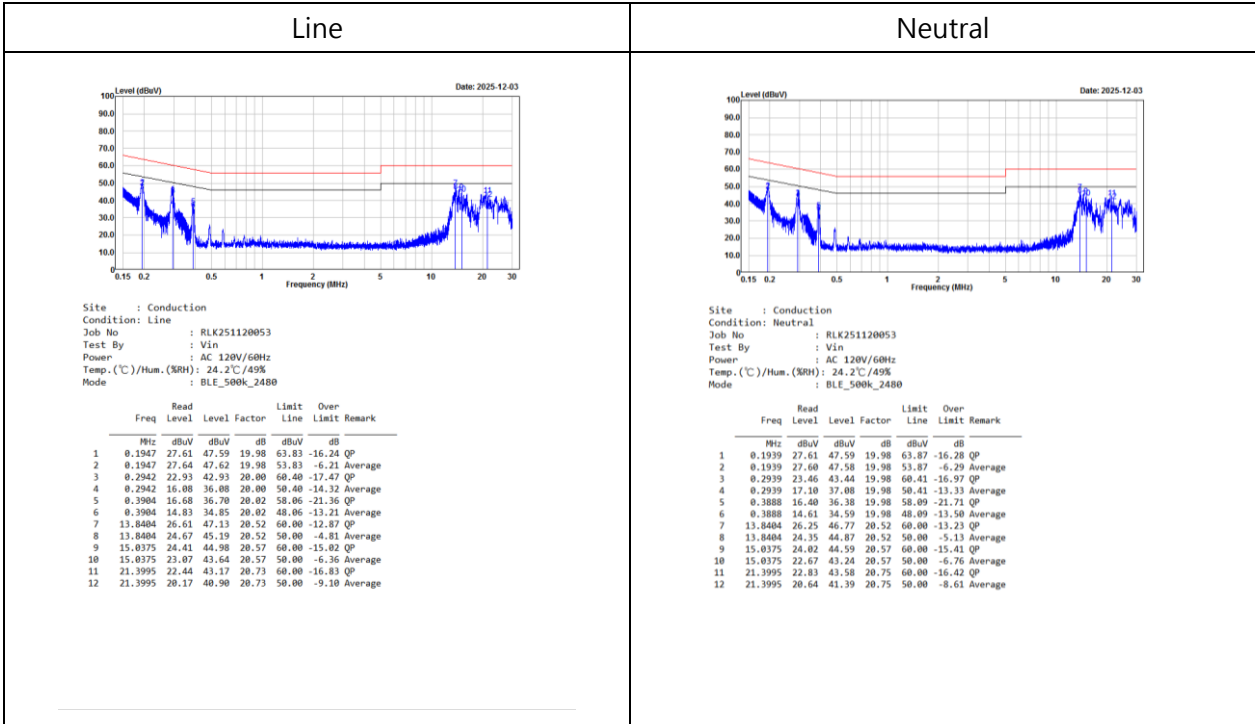
$$\text{Over Limit} = \text{Result} - \text{Limit Line}$$

6.6 Test Results

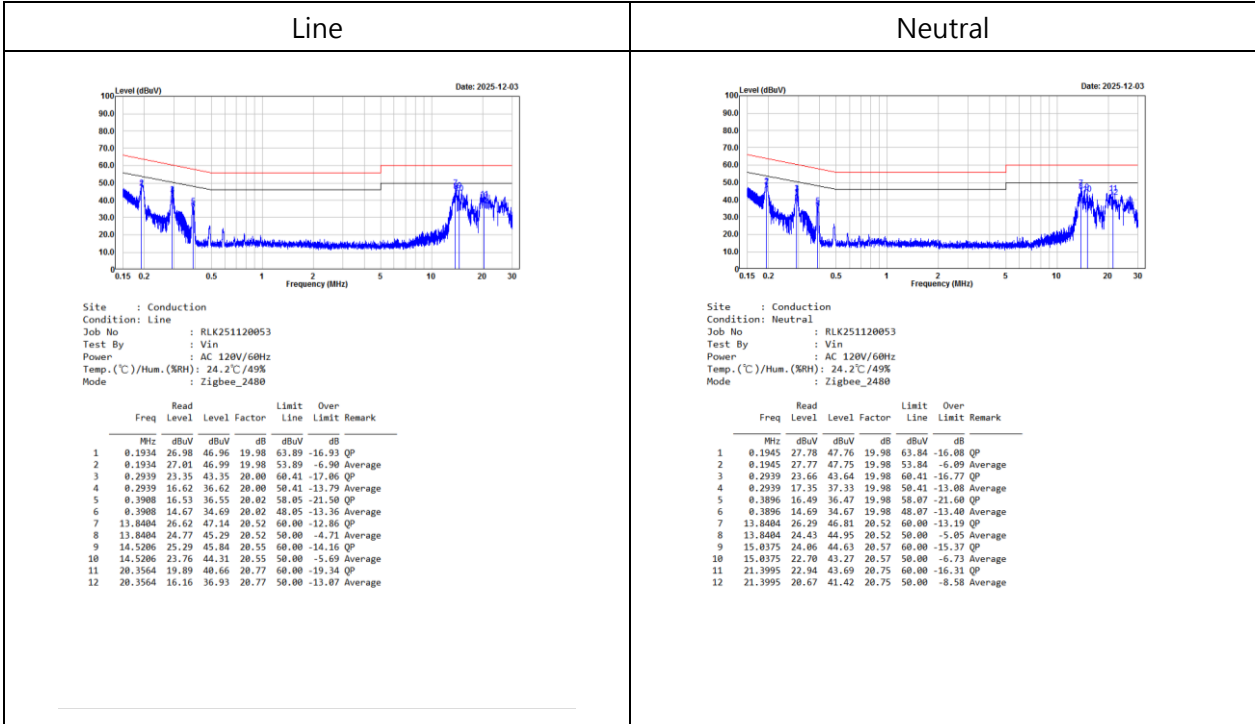
Test Mode: Transmitting

Main 44229669594: AC120 V, 60 Hz

(Worst case is BLE(500k) mode, High Channel)



(Worst case is Zigbee mode, High Channel)



Note:

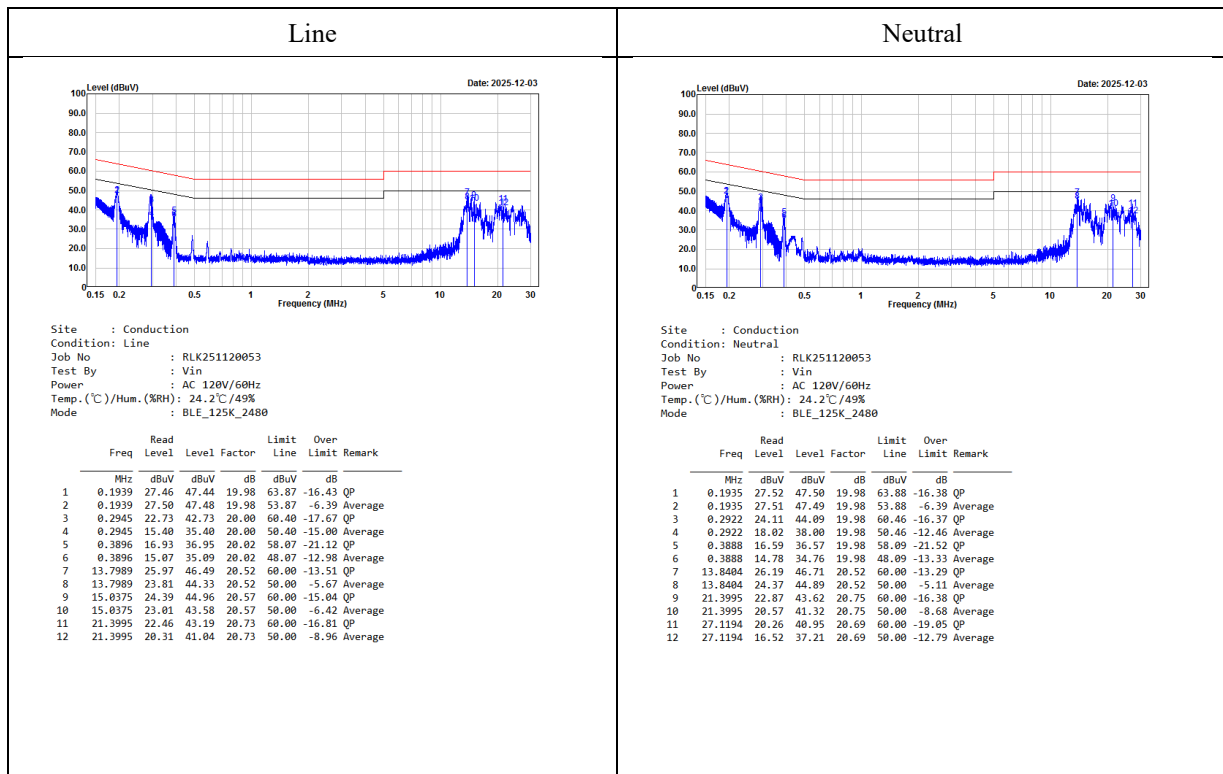
Result = Reading + Factor

Over Limit = Result – Limit Line

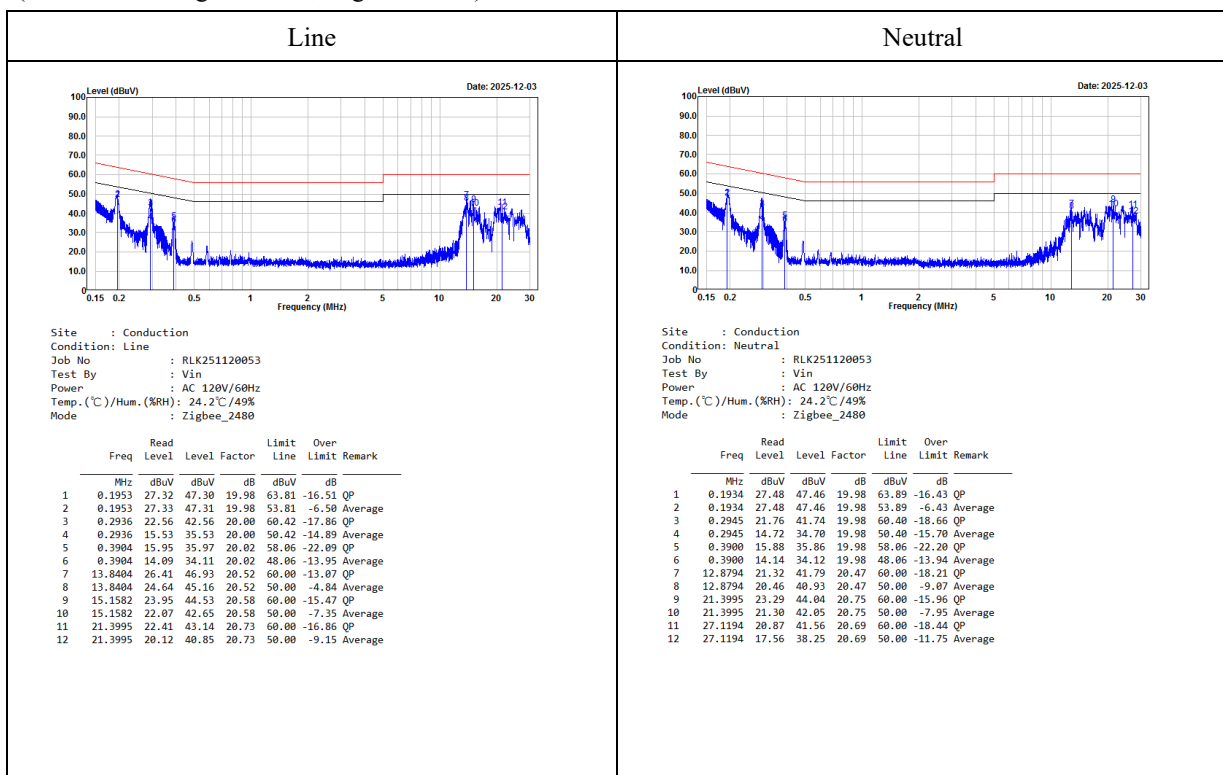
Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

## Series 44229669593: AC120 V, 60 Hz

(Worst case is BLE(125k) mode, High Channel)



(Worst case is Zigbee mode, High Channel)



Note:

Result = Reading + Factor

Over Limit = Result - Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

(Linkou Laboratory)

## 7 FCC §15.209, §15.205, §15.247(d) & RSS-247 §5.5, RSS-GEN §8.9, §8.10 – Spurious Emissions

### 7.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz.

As per RSS-Gen 8.10,

Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply:

(a)The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD).

(b)Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.

(c)Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                 | MHz                   | MHz             | GHz           |
|---------------------|-----------------------|-----------------|---------------|
| 0.090 – 0.110       | 16.42 – 16.423        | 608 – 614       | 4. 5 – 5. 15  |
| 0.495 – 0.505       | 16.69475 – 16.69525   | 960 – 1240      | 5. 35 – 5. 46 |
| 2.1735 – 2.1905     | 16.80425 – 16.80475   | 1300 – 1427     | 7.25 – 7.75   |
| 4.125 – 4.128       | 25.5 – 25.67          | 1435 – 1626.5   | 8.025 – 8.5   |
| 4.17725 – 4.17775   | 37.5 – 38.25          | 1645.5 – 1646.5 | 9.0 – 9.2     |
| 4.20725 – 4.20775   | 73 – 74.6             | 1660 – 1710     | 9.3 – 9.5     |
| 6.215 – 6.218       | 74.8 – 75.2           | 1718.8 – 1722.2 | 10.6 – 12.7   |
| 6.26775 – 6.26825   | 108 – 121.94          | 2200 – 2300     | 13.25 – 13.4  |
| 6.31175 – 6.31225   | 123 – 138             | 2310 – 2390     | 14.47 – 14.5  |
| 8.291 – 8.294       | 149.9 – 150.05        | 2483.5 – 2500   | 15.35 – 16.2  |
| 8.362 – 8.366       | 156.52475 – 156.52525 | 2690 – 2900     | 17.7 – 21.4   |
| 8.37625 – 8.38675   | 156.7 – 156.9         | 3260 – 3267     | 22.01 – 23.12 |
| 8.41425 – 8.41475   | 162.0125 – 167.17     | 3.332 – 3.339   | 23.6 – 24.0   |
| 12.29 – 12.293      | 167.72 – 173.2        | 3 3458 – 3 358  | 31.2 – 31.8   |
| 12.51975 – 12.52025 | 240 – 285             | 3.600 – 4.400   | 36.43 – 36.5  |
| 12.57675 – 12.57725 | 322 – 335.4           |                 | Above 38.6    |
| 13.36 – 13.41       | 399.9 – 410           |                 |               |

As per FCC §15.209(a) and RSS-GEN §8.9: Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (micro volts/meter) | Measurement Distance (meters) |
|-----------------|------------------------------------|-------------------------------|
| 0.009 - 0.490   | 2400/F(kHz)                        | 300                           |
| 0.490 - 1.705   | 24000/F(kHz)                       | 30                            |
| 1.705 - 30.0    | 30                                 | 30                            |
| 30 - 88         | 100**                              | 3                             |
| 88 - 216        | 150**                              | 3                             |
| 216 - 960       | 200**                              | 3                             |
| Above 960       | 500                                | 3                             |

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per RSS-GEN §8.9: Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

**Table 5 – General field strength limits at frequencies above 30 MHz**

| Frequency (MHz) | Field Strength (μV/m at 3 m) |
|-----------------|------------------------------|
| 30 - 88         | 100                          |
| 88 - 216        | 150                          |
| 216 - 960       | 200                          |
| Above 960       | 500                          |

**Table 6 – General field strength limits at frequencies below 30 MHz**

| Frequency (MHz)               | Field Strength (H-Field) (μA/m) | Measurement distance (m) |
|-------------------------------|---------------------------------|--------------------------|
| 9 - 490 kHz <sup>Note 1</sup> | 6.37/F (F in kHz)               | 300                      |
| 490 - 1705 kHz                | 63.7/F (F in kHz)               | 30                       |
| 1.705 - 30 MHz                | 0.08                            | 30                       |

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Note 2: The limit was added 51.5dB to convert the limit from dBuA/m to dBuV/m.

According to ANSI C63.10-2020 + COR. 1-2023 + C63.10A-2024 + ERRATA TO C63.10A-2024, section 5.3.3 Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field, and the emissions to be measured can be detected by the measurement equipment (see 4.3.4). Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. Measurements from 18 GHz to 40 GHz are typically made at distances significantly less than 3 m from the EUT. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade of distance (inverse of linear distance for field-strength measurements or inverse of linear distance-squared for power-density measurements).

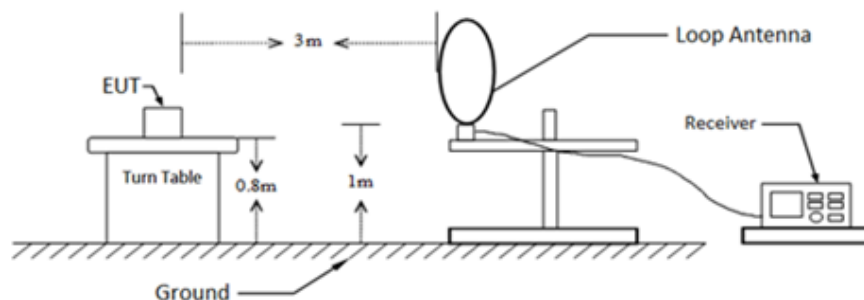
As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the 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)).

As per RSS-247 5.5,

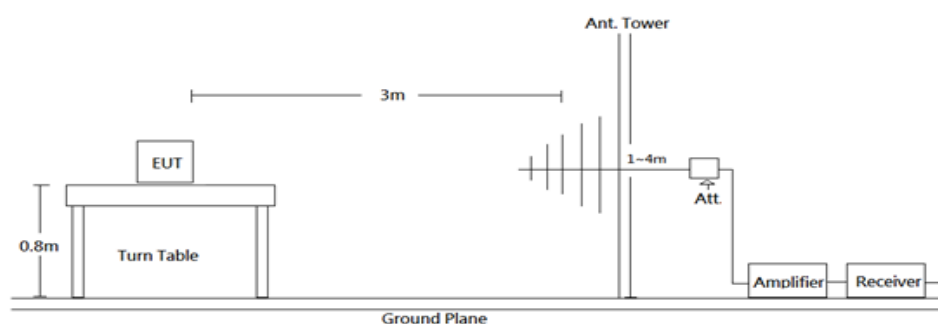
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

## 7.2 EUT Setup

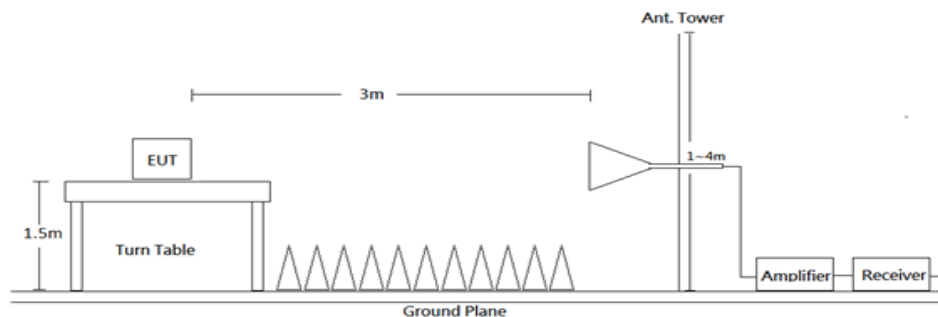
9kHz-30MHz:



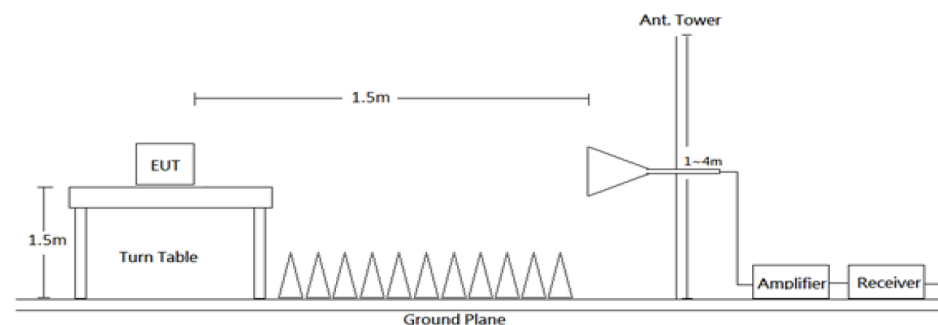
30MHz-1GHz:



1-18 GHz:



18-26.5 GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2020 + COR. 1-2023 + C63.10A-2024 + ERRATA TO C63.10A-2024. The specification used was the FCC Part 15.209, FCC 15.247 and RSS-Gen, RSS-247 Limits.

### 7.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 26.5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

| Frequency Range  | RBW                                                         | VBW                                       | Duty cycle | Measurement method | Detector |
|------------------|-------------------------------------------------------------|-------------------------------------------|------------|--------------------|----------|
| 9 kHz - 150 kHz  | 200 Hz/300 Hz                                               | 1 kHz                                     | /          | QP/AV              | QP/AV    |
| 150 kHz - 30 MHz | 9 kHz/10 kHz                                                | 30 kHz                                    | /          | QP/AV              | QP/AV    |
| 30-1000 MHz      | 100 kHz                                                     | 300 kHz                                   | /          | QP                 | QP       |
| Above 1 GHz      | Pre-scan :                                                  |                                           |            |                    |          |
|                  | 1 MHz                                                       | 3 MHz                                     | /          | PK                 | PK       |
|                  | 1 MHz                                                       | 1 kHz                                     | >98%       | Ave                | PK       |
|                  | 1 MHz                                                       | $\geq 1/\text{Ton}$ , not less than 1 kHz | <98%       | Ave                | PK       |
|                  | Final measurement for emission identified during pre-scan : |                                           |            |                    |          |
|                  | 1 MHz                                                       | 3 MHz                                     | /          | PK                 | PK       |
|                  | 1 MHz                                                       | 10 Hz                                     | >98%       | Ave                | PK       |
|                  | 1 MHz                                                       | $\geq 1/\text{Ton}$                       | <98%       | Ave                | PK       |

Note: T is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

### 7.4 Test Procedure

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

All data was recorded in Quasi-peak and average detector mode from 9 kHz to 30 MHz, Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

### 7.5 Corrected Factor & Margin Calculation

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

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

7.6 Test Results

Test Mode: Transmitting

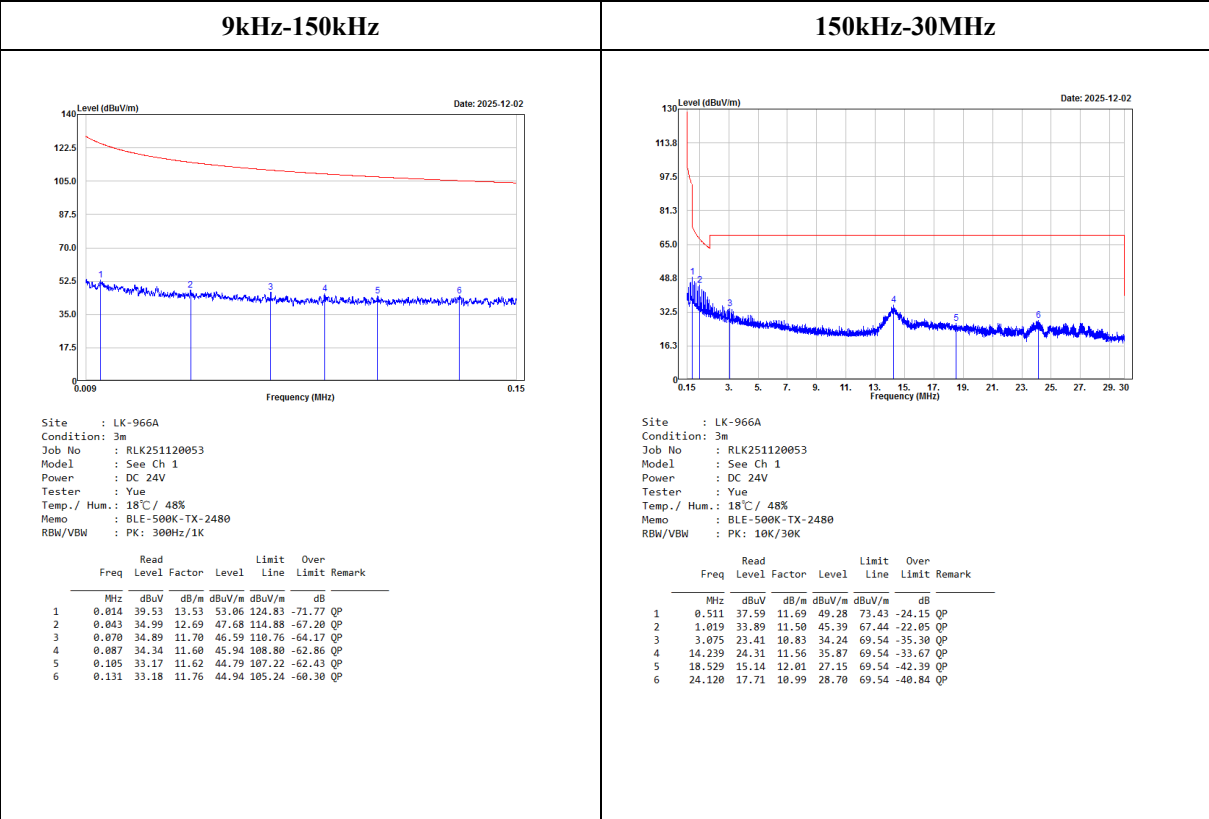
(Pre-scan performed along three orthogonal axes for frequencies above 30 MHz, with the worst-case orientation along the X-axis.)

Main 44229669594 (BLE Mode):

9kHz-30MHz:

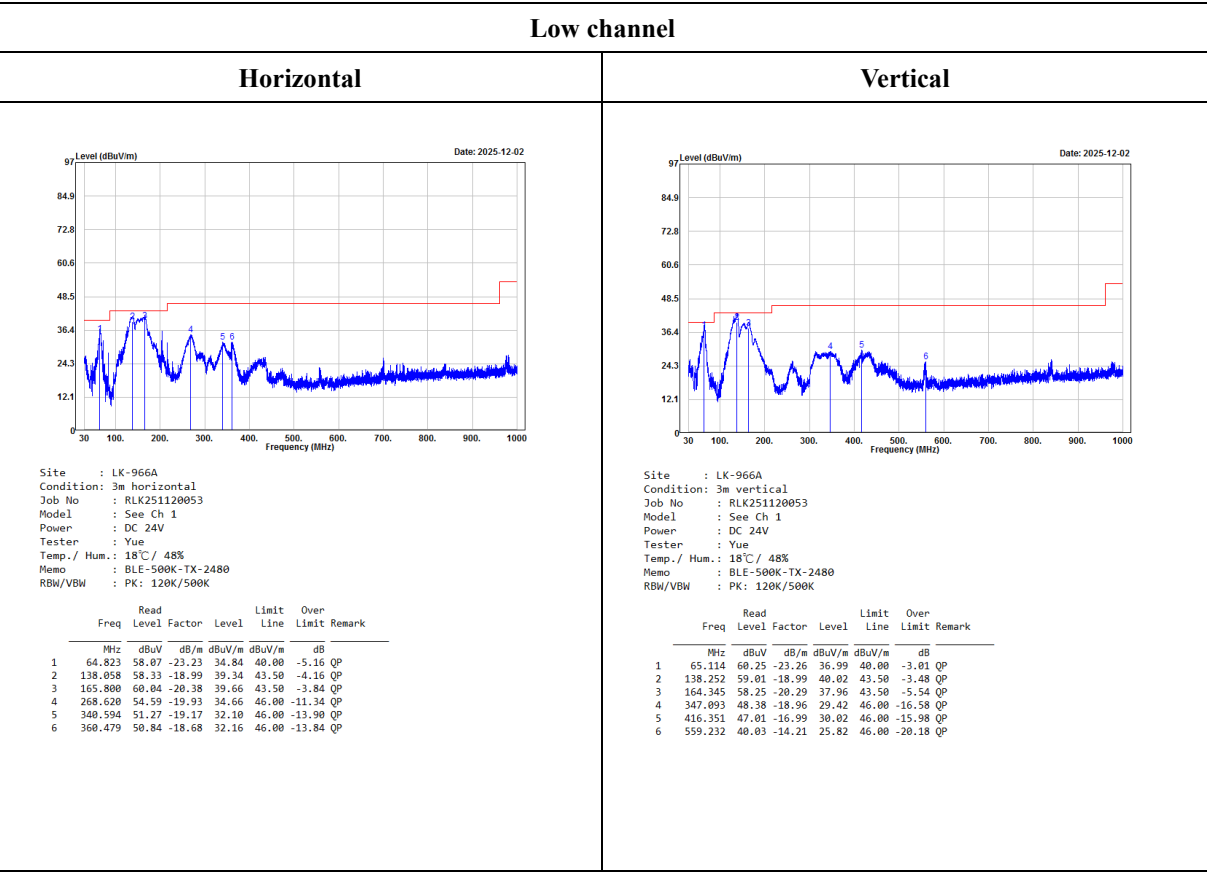
(Worst case is BLE 500k mode, high channel)

(Pre-scan using three directional polarities, worst case as X-axis.)



30MHz-1GHz:

(Worst case is BLE 500k mode, high channel)



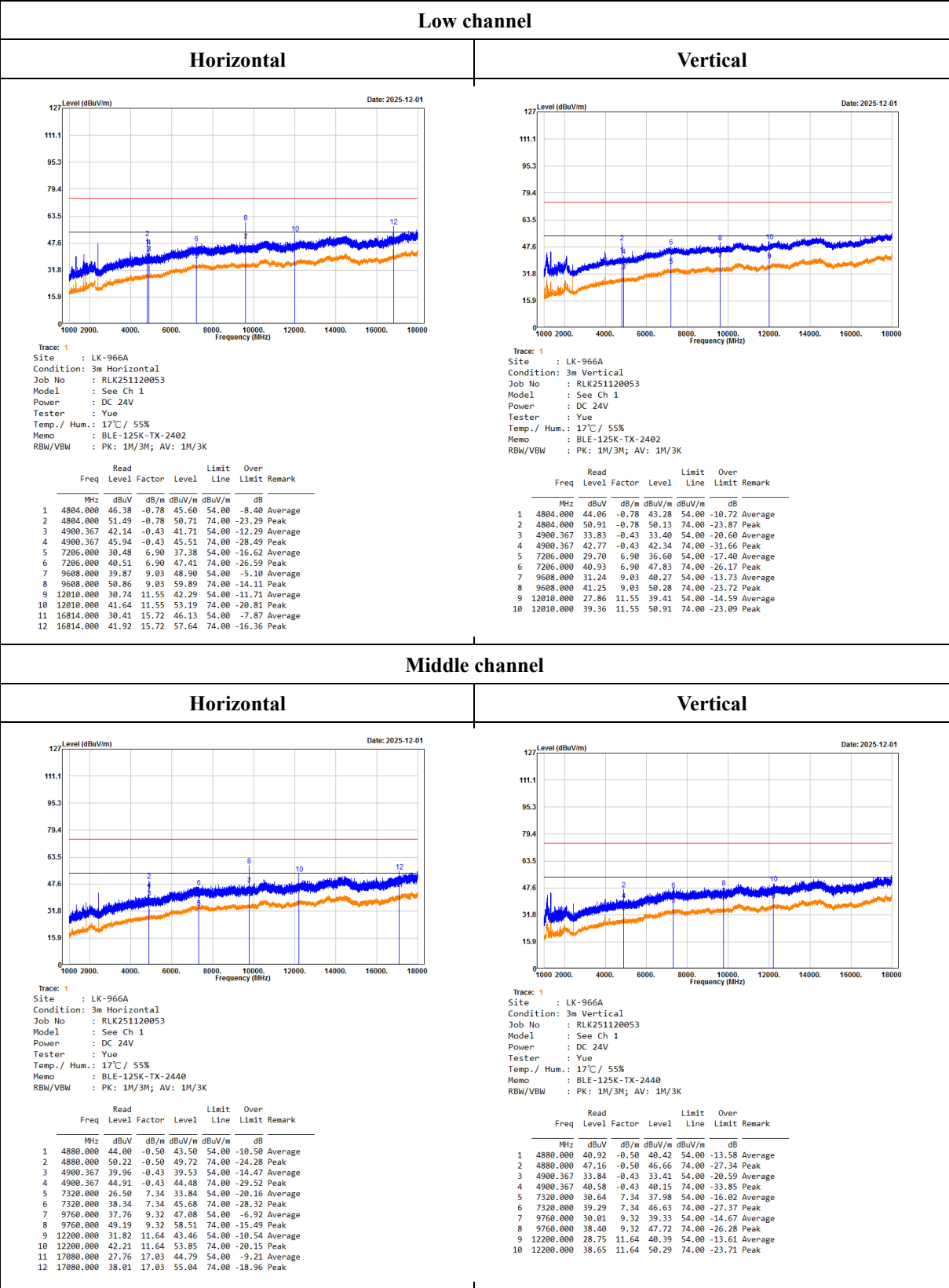
Level = Read Level + Factor.

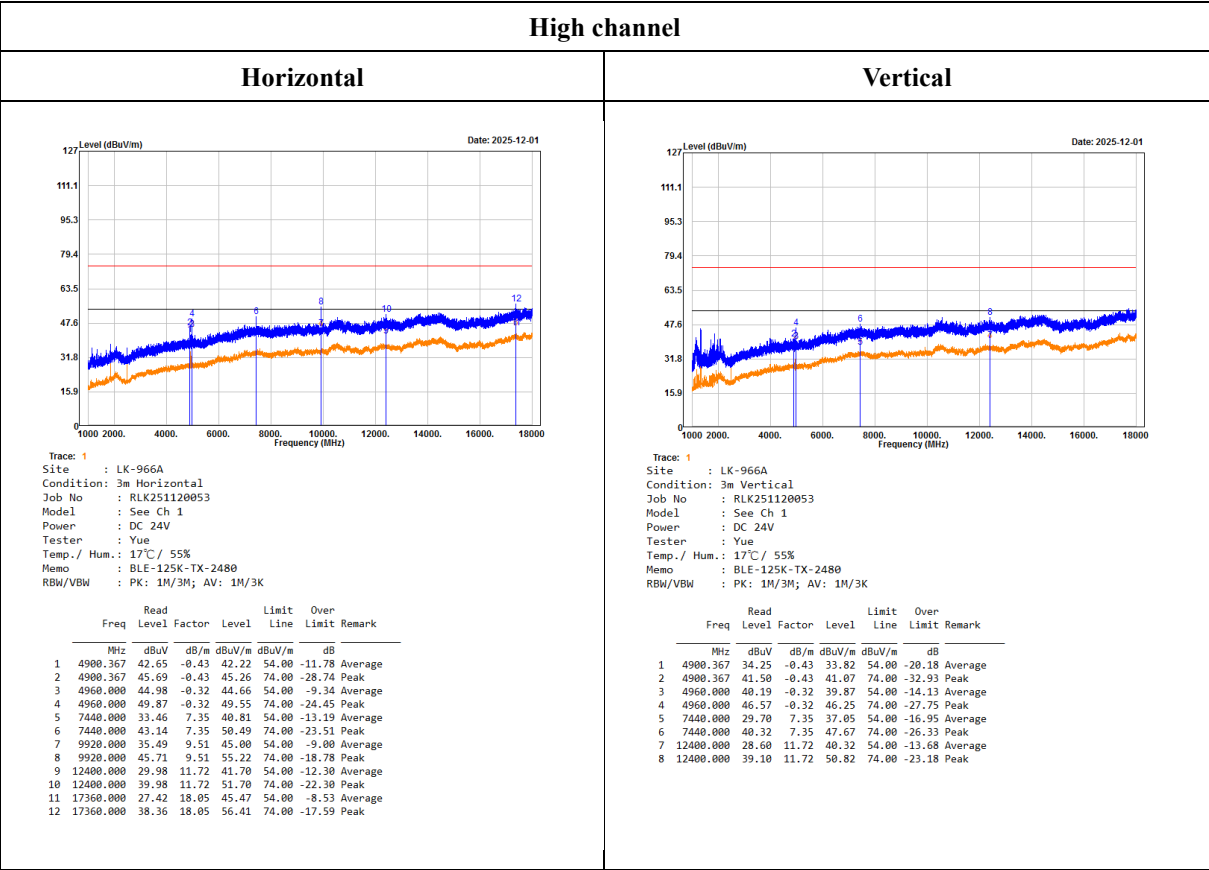
Over Limit = Level – Limit Line.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

1GHz-18GHz:

BLE 125k



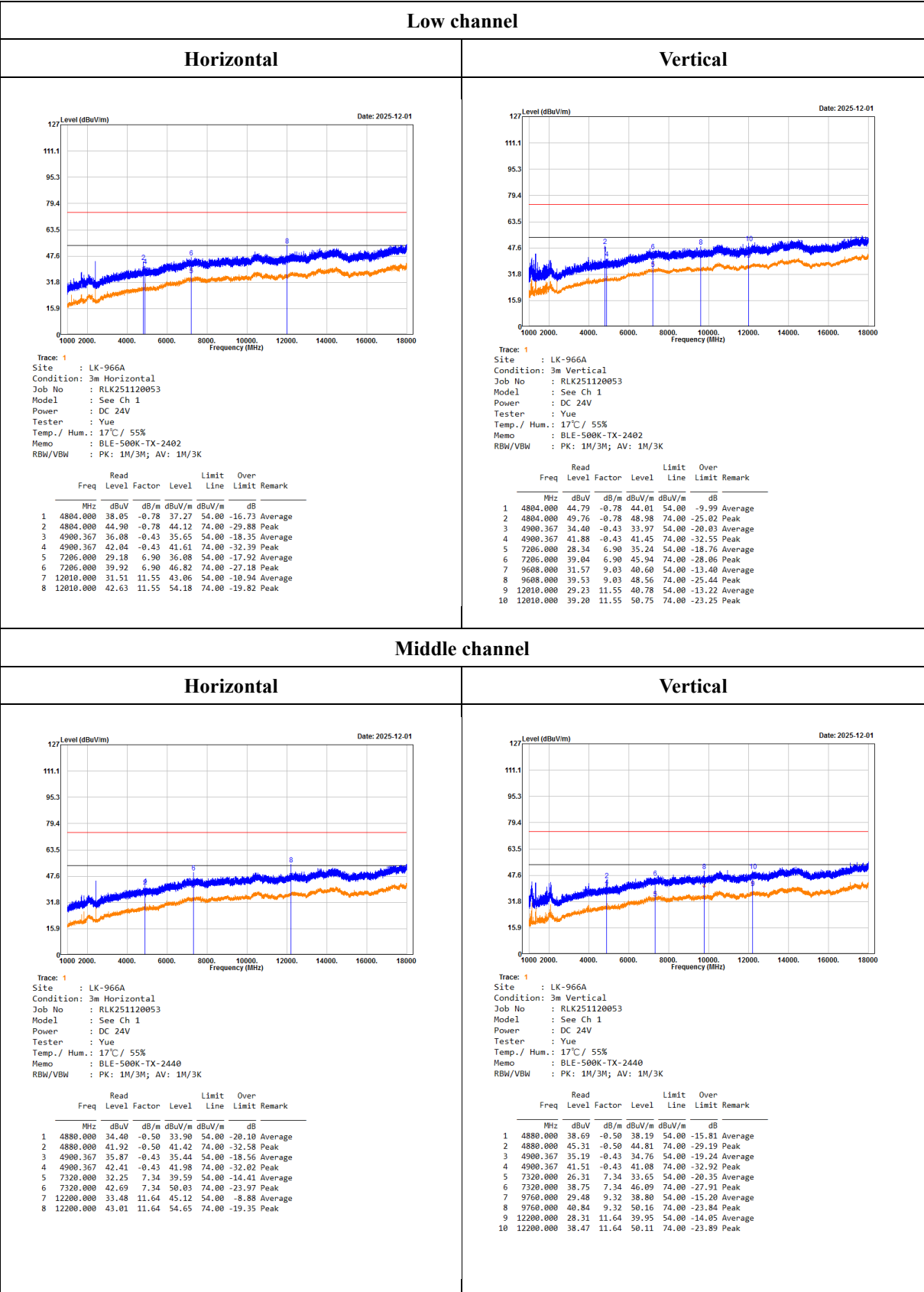


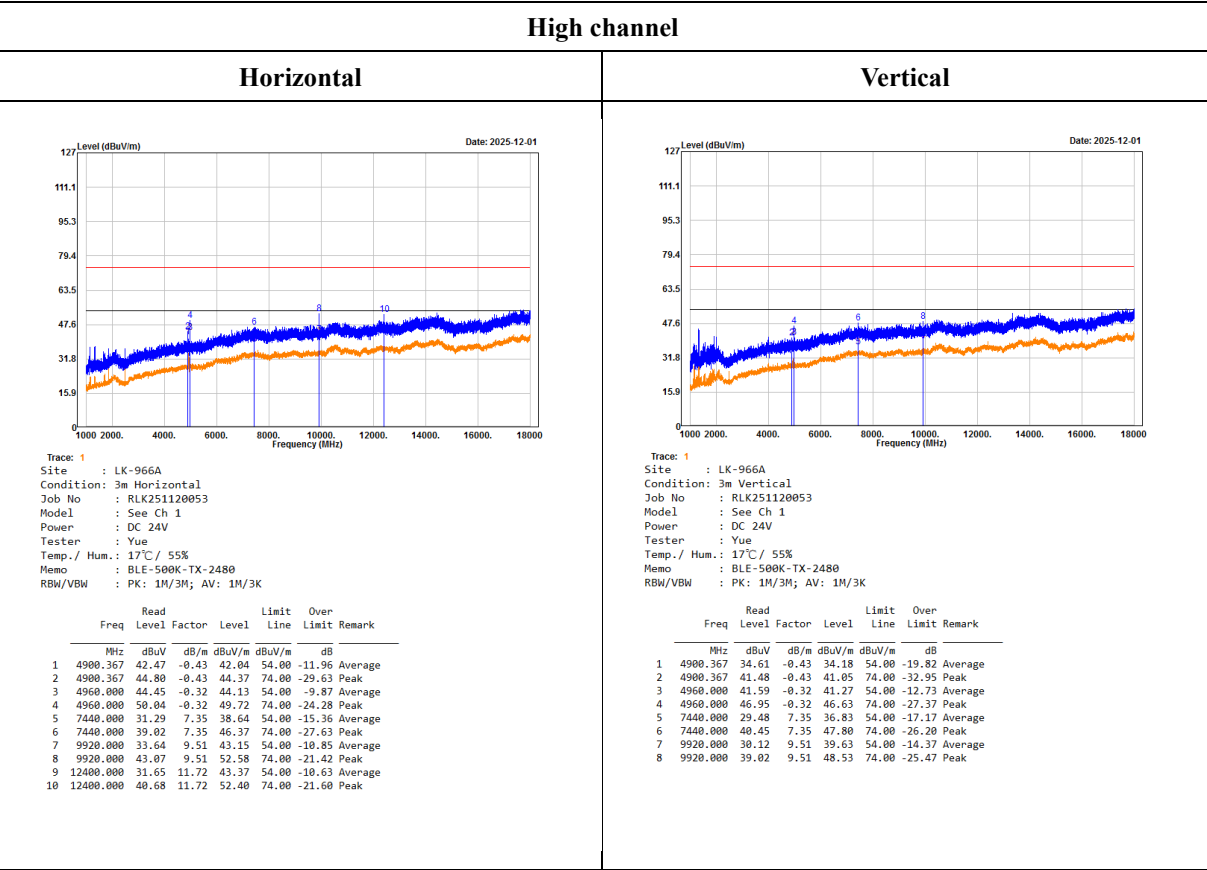
Level = Read Level + Factor.

Over Limit = Level – Limit Line.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

BLE 500k



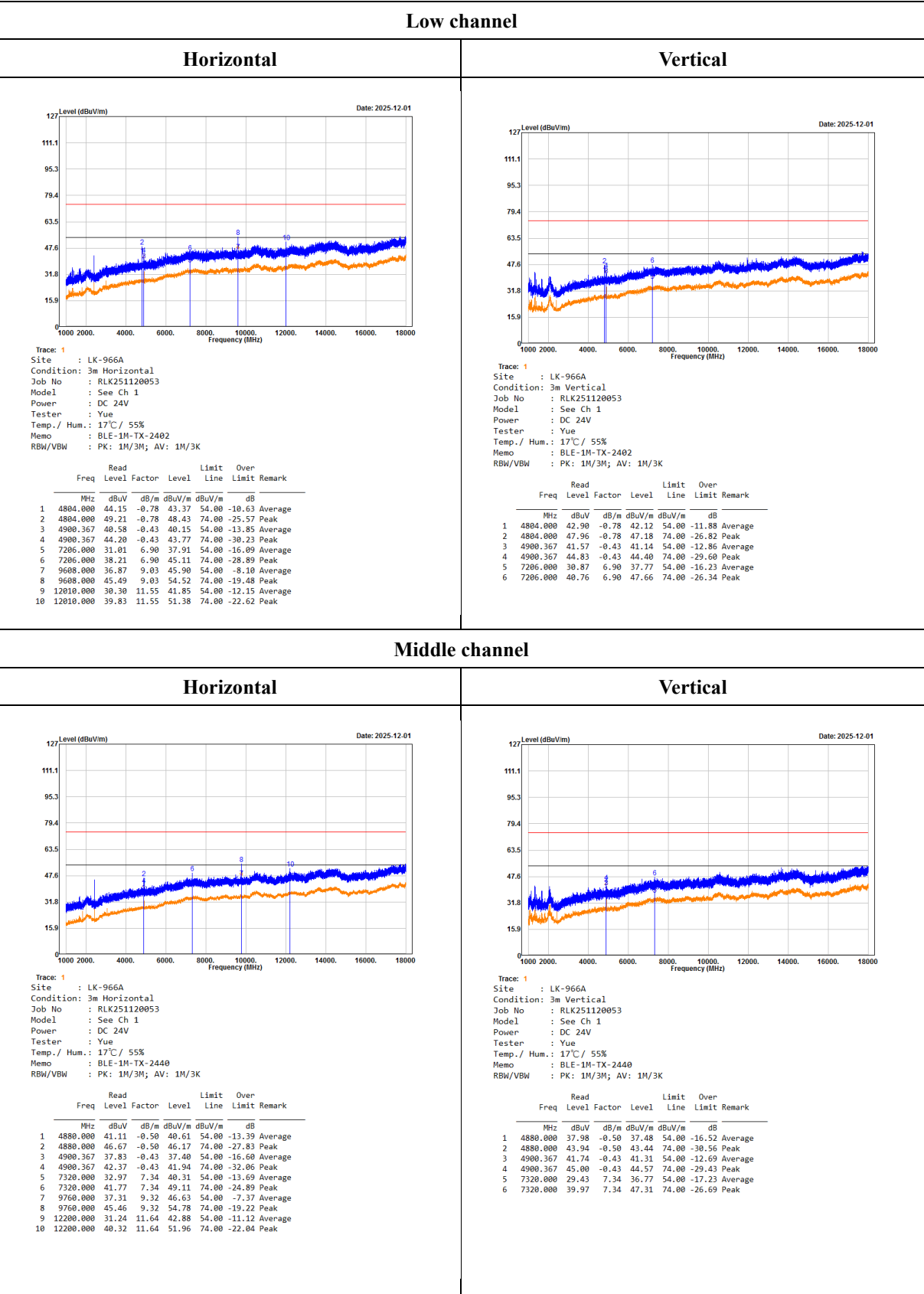


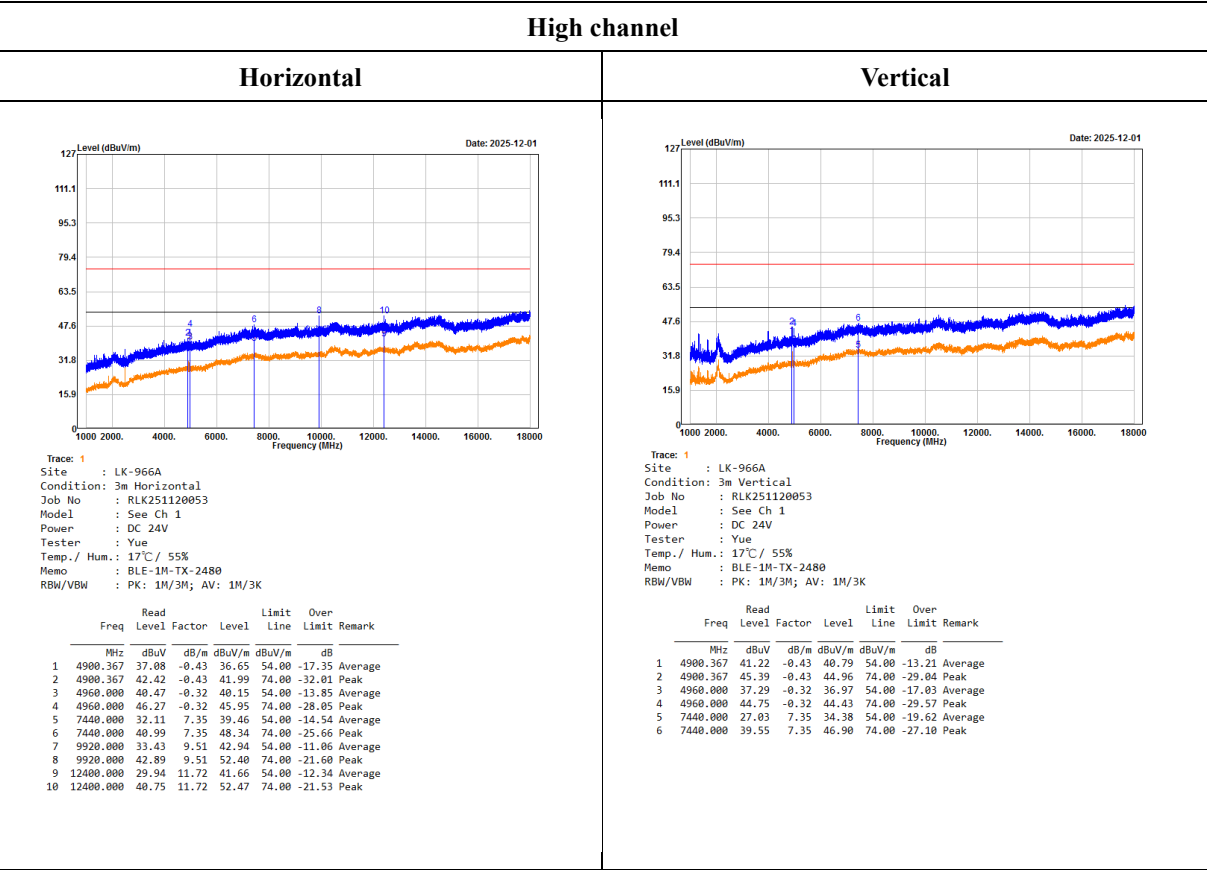
Level = Read Level + Factor.

Over Limit = Level – Limit Line.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

BLE 1M



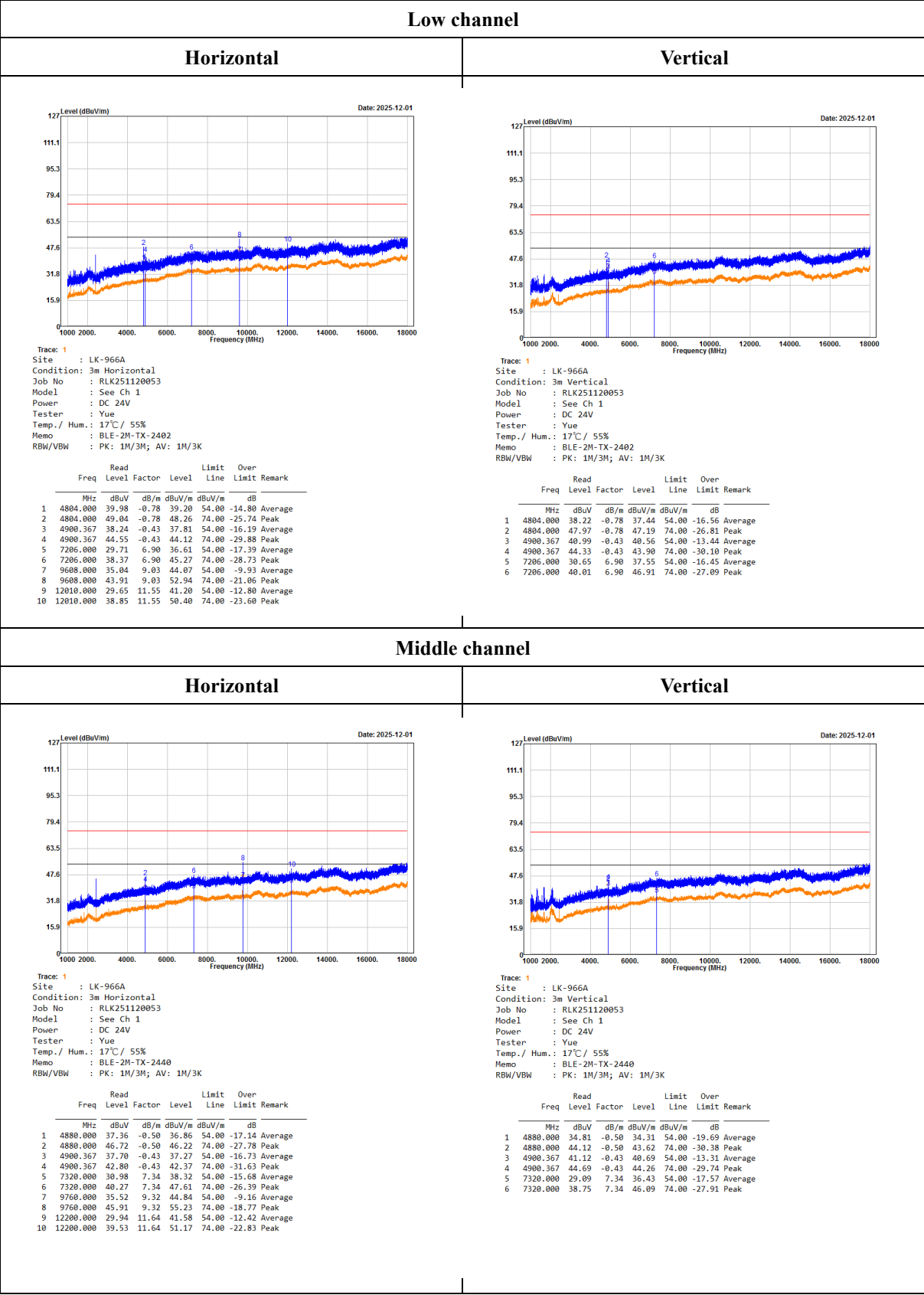


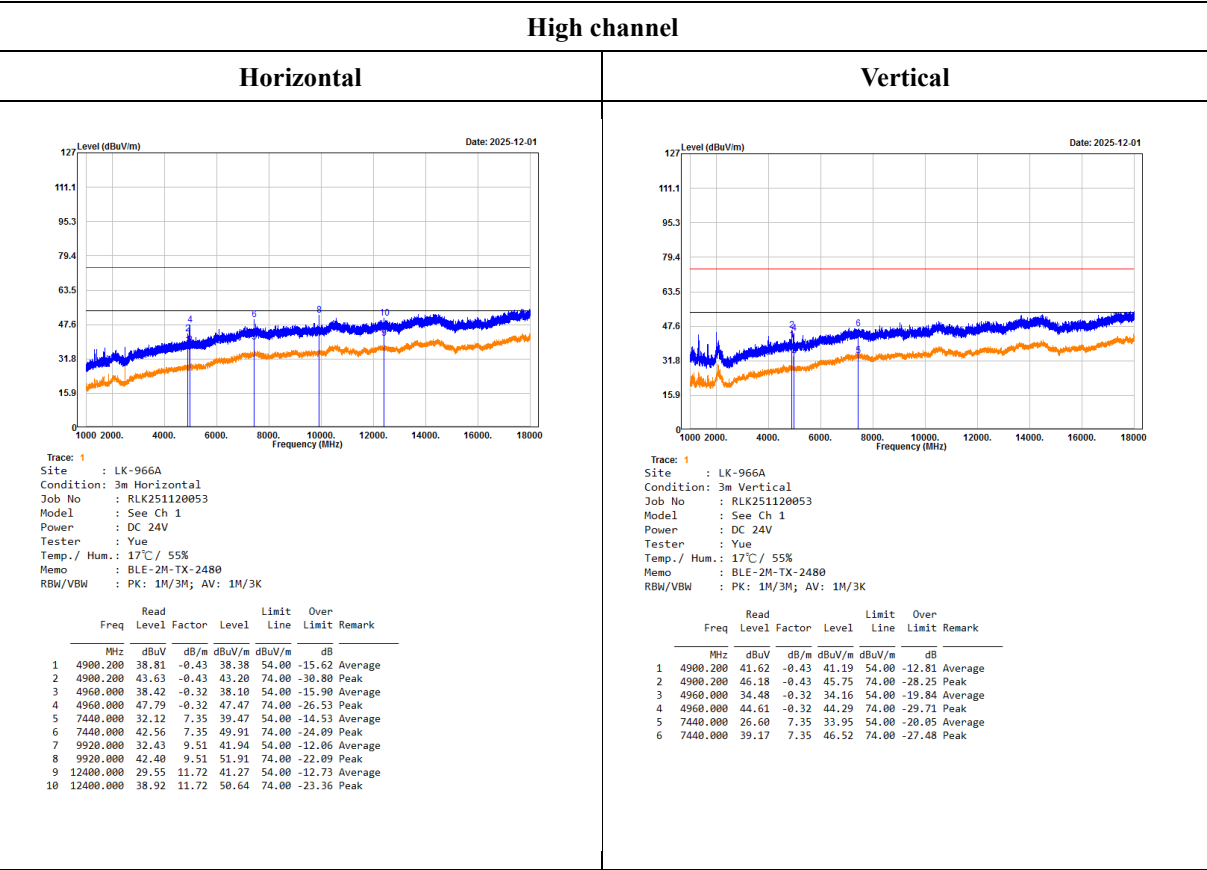
Level = Read Level + Factor.

Over Limit = Level – Limit Line.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

BLE 2M





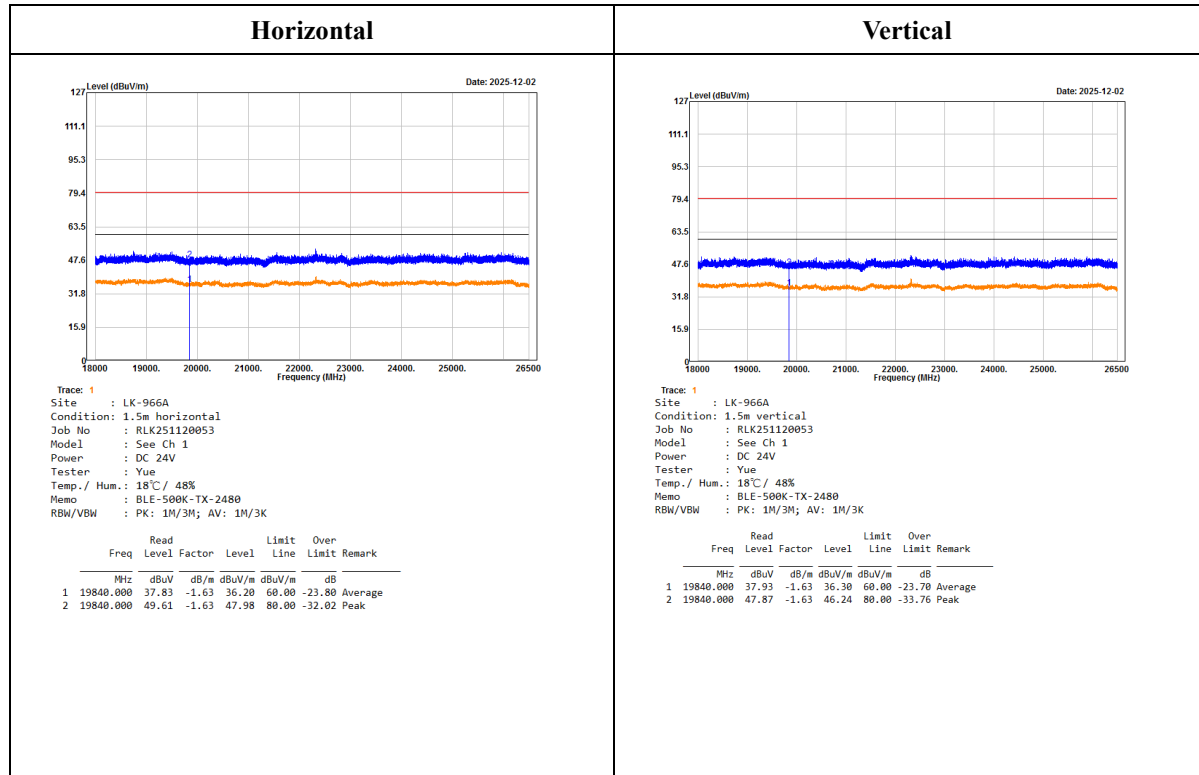
Level = Read Level + Factor.

Over Limit = Level – Limit Line.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

18GHz-26.5GHz:

(Worst case is BLE 500k mode, High channel)



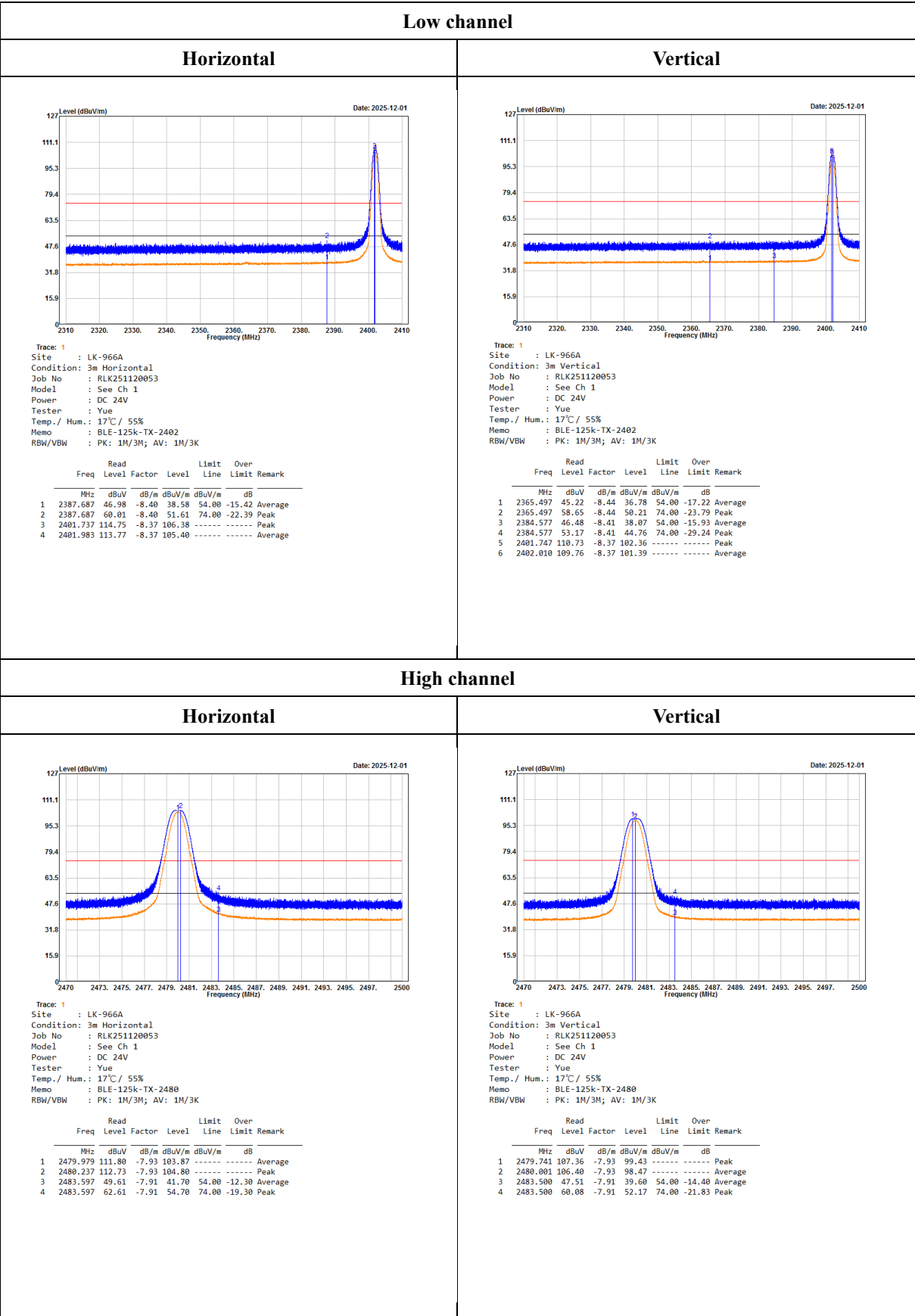
For 18-26.5GHz Convert the test distance limit of 3 meters to a limit of 1.5 meter:

Conversion factor =  $20 \log(1.5\text{m}/3\text{m}) = 6 \text{ dB}$ ,

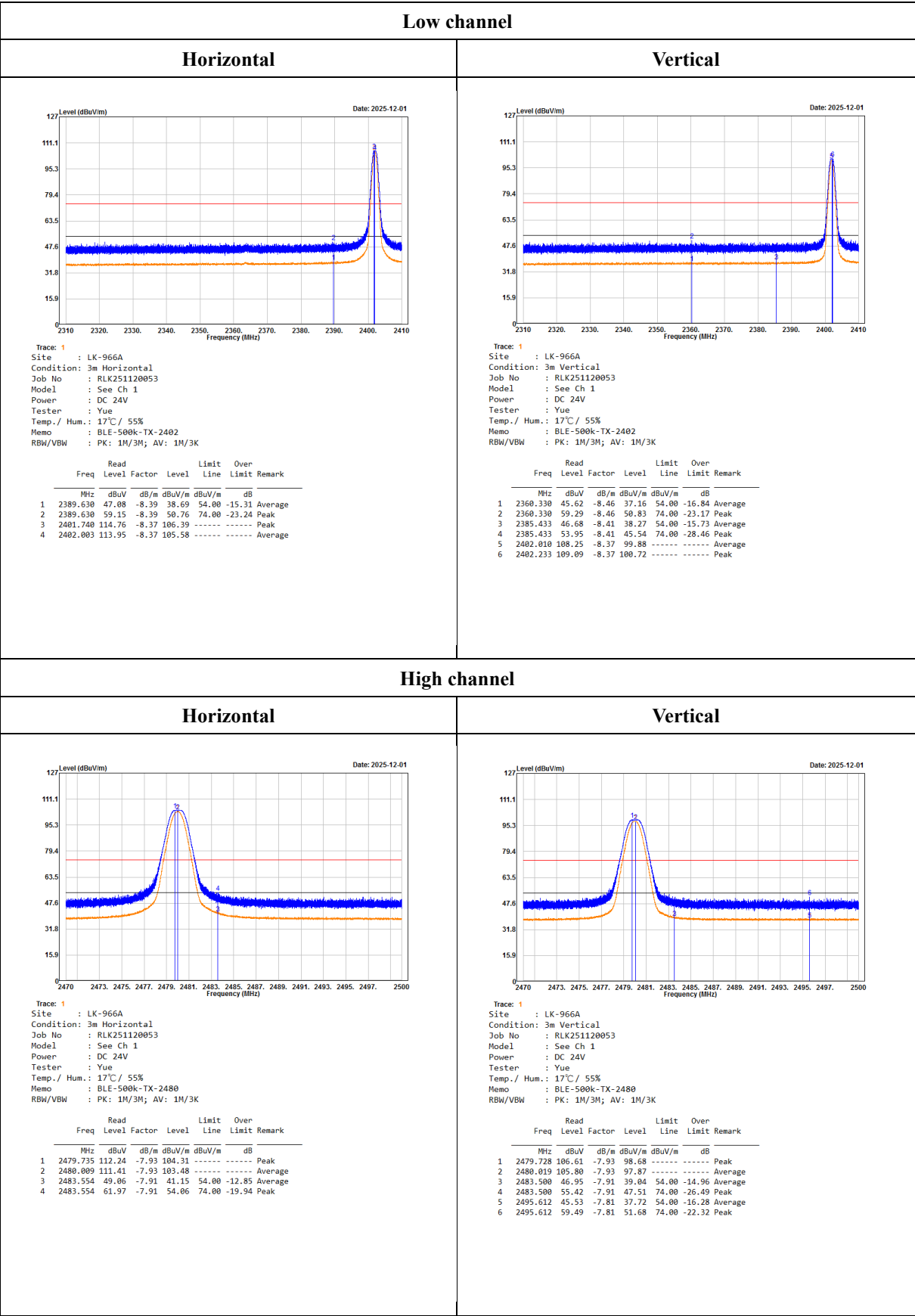
Average Limit =  $54+6 = 60 \text{ dBuV/m}@1.5\text{m}$  , Peak Limit =  $60+20 = 80 \text{ dBuV/m}@1.5\text{m}$

Band-Edge:

BLE 125k



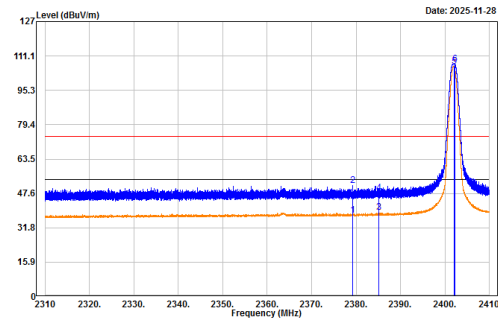
BLE 500k



BLE 1M

Low channel

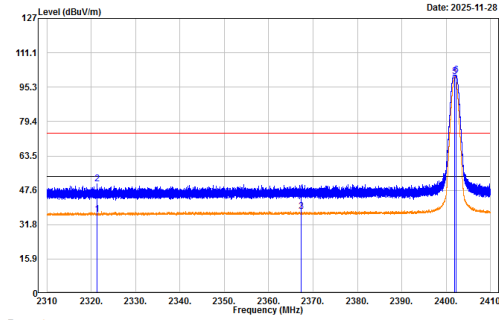
Horizontal



Trace: 1  
Site : LK-966A  
Condition: 3m Horizontal  
Job No : RLK251120053  
Model : See Ch 1  
Power : DC 24V  
Tester : Yue  
Temp./ Hum.: 17°C / 49%  
Memo : BLE-1M-TX-2402  
RBW/VBW : PK: 1M/3M; AV: 1M/3K

|      | Read     | Read   | Read  | Limit  | Over  |                |
|------|----------|--------|-------|--------|-------|----------------|
| Freq | Level    | Factor | Level | Line   | Limit | Remark         |
| MHz  | dBuV     |        | dB/m  | dBuV/m | dB    |                |
| 1    | 2379.187 | 45.88  | -8.42 | 37.46  | 54.00 | -16.54 Average |
| 2    | 2379.187 | 59.57  | -8.42 | 51.15  | 74.00 | -22.85 Peak    |
| 3    | 2385.137 | 47.34  | -8.41 | 38.93  | 54.00 | -15.07 Average |
| 4    | 2385.137 | 56.08  | -8.41 | 47.67  | 74.00 | -26.33 Peak    |
| 5    | 2402.017 | 114.85 | -8.37 | 106.48 | ----- | ----- Average  |
| 6    | 2402.233 | 115.63 | -8.37 | 107.26 | ----- | ----- Peak     |

Vertical

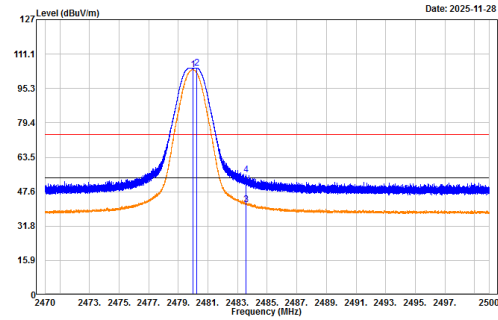


Trace: 1  
Site : LK-966A  
Condition: 3m Vertical  
Job No : RLK251120053  
Model : See Ch 1  
Power : DC 24V  
Tester : Yue  
Temp./ Hum.: 17°C / 49%  
Memo : BLE-1M-TX-2402  
RBW/VBW : PK: 1M/3M; AV: 1M/3K

|      | Read     | Read   | Read  | Limit  | Over  |                |
|------|----------|--------|-------|--------|-------|----------------|
| Freq | Level    | Factor | Level | Line   | Limit | Remark         |
| MHz  | dBuV     |        | dB/m  | dBuV/m | dB    |                |
| 1    | 2321.237 | 45.26  | -8.66 | 36.60  | 54.00 | -17.40 Average |
| 2    | 2321.237 | 59.20  | -8.66 | 50.54  | 74.00 | -23.46 Peak    |
| 3    | 2367.360 | 46.46  | -8.44 | 38.02  | 54.00 | -15.98 Average |
| 4    | 2367.360 | 54.68  | -8.44 | 46.24  | 74.00 | -27.76 Peak    |
| 5    | 2401.990 | 108.43 | -8.37 | 100.06 | ----- | ----- Average  |
| 6    | 2402.243 | 109.25 | -8.37 | 100.88 | ----- | ----- Peak     |

High channel

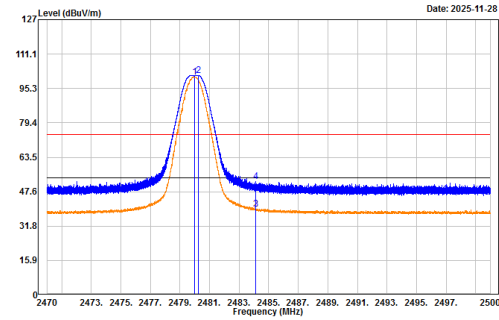
Horizontal



Trace: 1  
Site : LK-966A  
Condition: 3m Horizontal  
Job No : RLK251120053  
Model : See Ch 1  
Power : DC 24V  
Tester : Yue  
Temp./ Hum.: 17°C / 49%  
Memo : BLE-1M-TX-2480  
RBW/VBW : PK: 1M/3M; AV: 1M/3K

|      | Read     | Read   | Read  | Limit  | Over  |                |
|------|----------|--------|-------|--------|-------|----------------|
| Freq | Level    | Factor | Level | Line   | Limit | Remark         |
| MHz  | dBuV     |        | dB/m  | dBuV/m | dB    |                |
| 1    | 2479.994 | 111.79 | -7.93 | 103.86 | ----- | ----- Average  |
| 2    | 2480.214 | 112.60 | -7.93 | 104.67 | ----- | ----- Peak     |
| 3    | 2483.551 | 49.72  | -7.91 | 41.81  | 54.00 | -12.19 Average |
| 4    | 2483.551 | 63.44  | -7.91 | 55.53  | 74.00 | -18.47 Peak    |

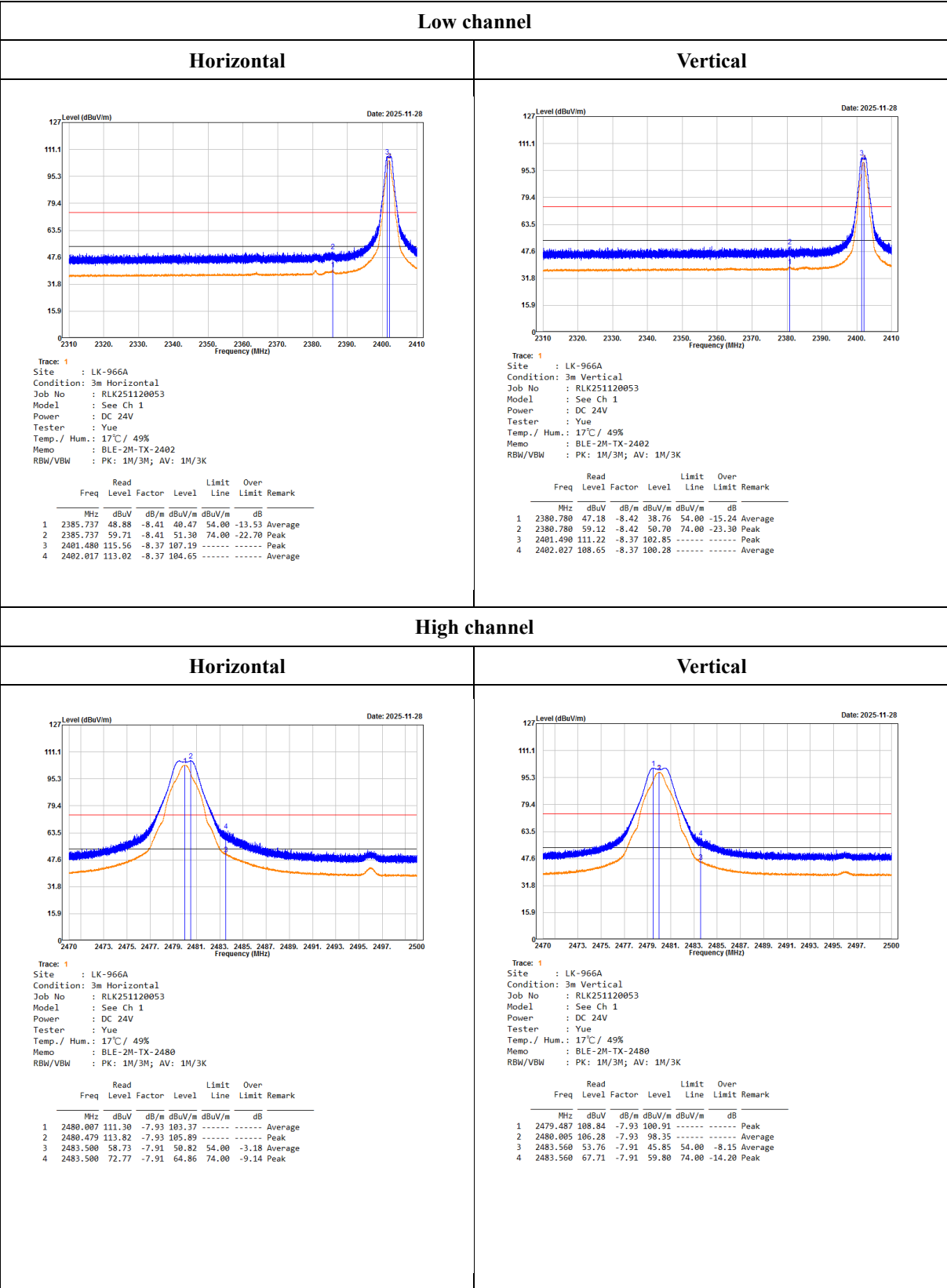
Vertical



Trace: 1  
Site : LK-966A  
Condition: 3m Vertical  
Job No : RLK251120053  
Model : See Ch 1  
Power : DC 24V  
Tester : Yue  
Temp./ Hum.: 17°C / 49%  
Memo : BLE-1M-TX-2480  
RBW/VBW : PK: 1M/3M; AV: 1M/3K

|      | Read     | Read   | Read  | Limit  | Over  |                |
|------|----------|--------|-------|--------|-------|----------------|
| Freq | Level    | Factor | Level | Line   | Limit | Remark         |
| MHz  | dBuV     |        | dB/m  | dBuV/m | dB    |                |
| 1    | 2479.998 | 108.42 | -7.93 | 100.49 | ----- | ----- Average  |
| 2    | 2480.229 | 109.16 | -7.93 | 101.23 | ----- | ----- Peak     |
| 3    | 2484.118 | 47.39  | -7.91 | 39.48  | 54.00 | -14.52 Average |
| 4    | 2484.118 | 60.39  | -7.91 | 52.48  | 74.00 | -21.52 Peak    |

BLE 2M



Level = Read Level + Factor.

Over Limit = Level – Limit Line.

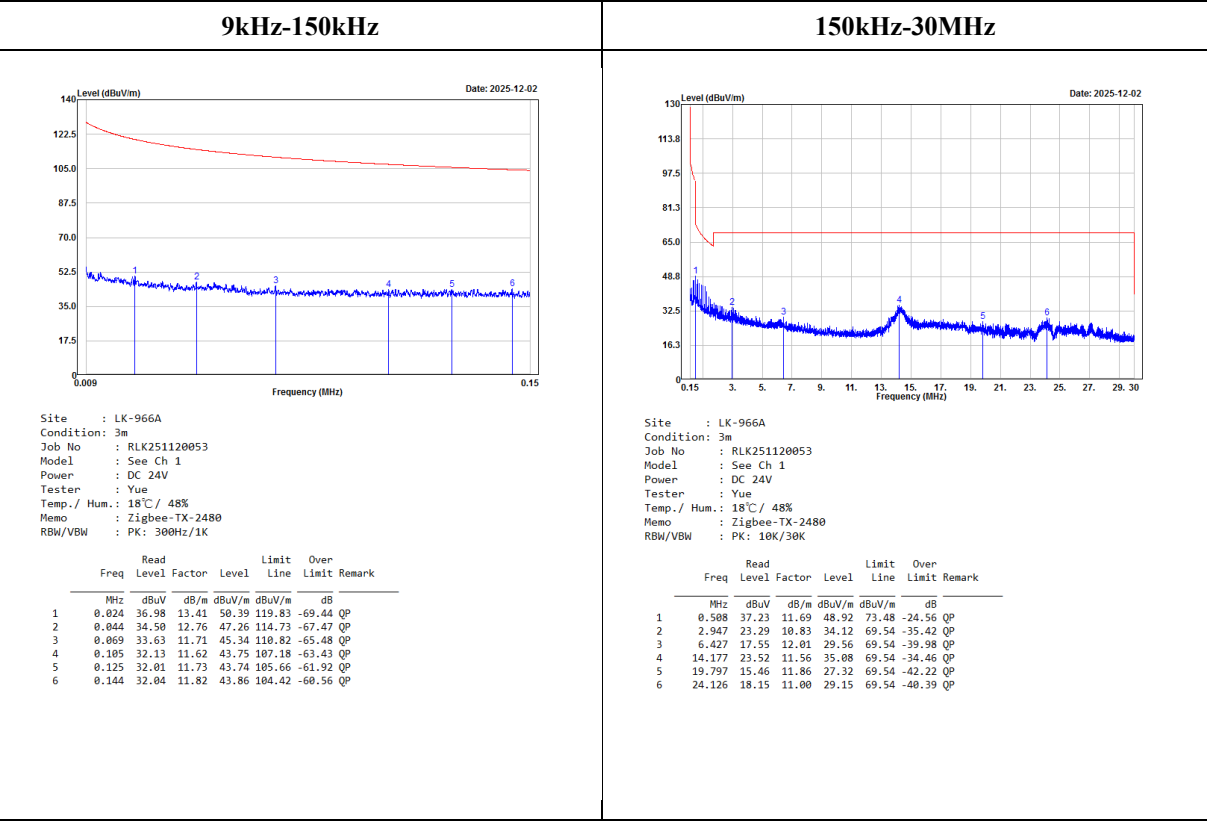
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Main 44229669594 (Zigbee Mode):

9kHz-30MHz:

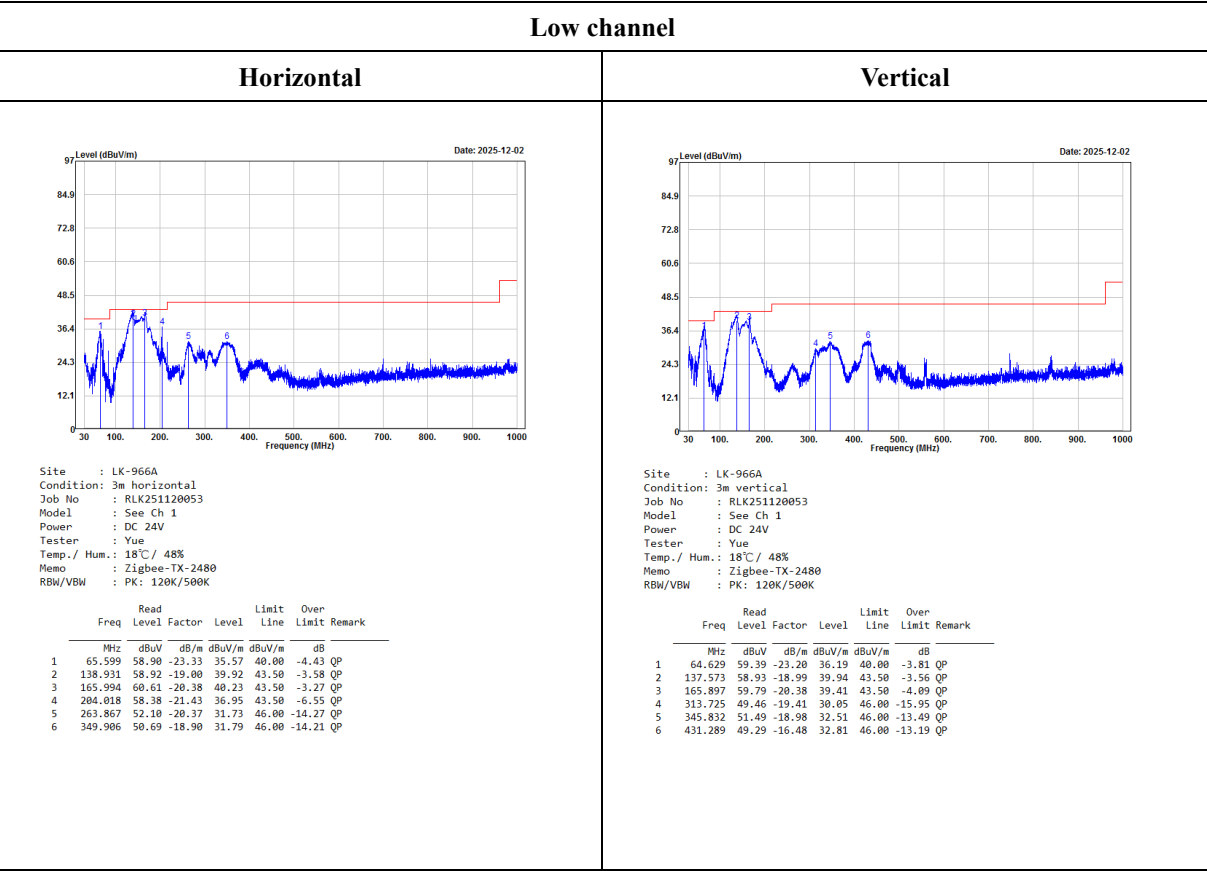
(Worst case is Zigbee mode, , high channel)

(Pre-scan using three directional polarities, worst case as X-axis.)



30MHz-1GHz:

(Worst case is Zigbee mode, high channel)

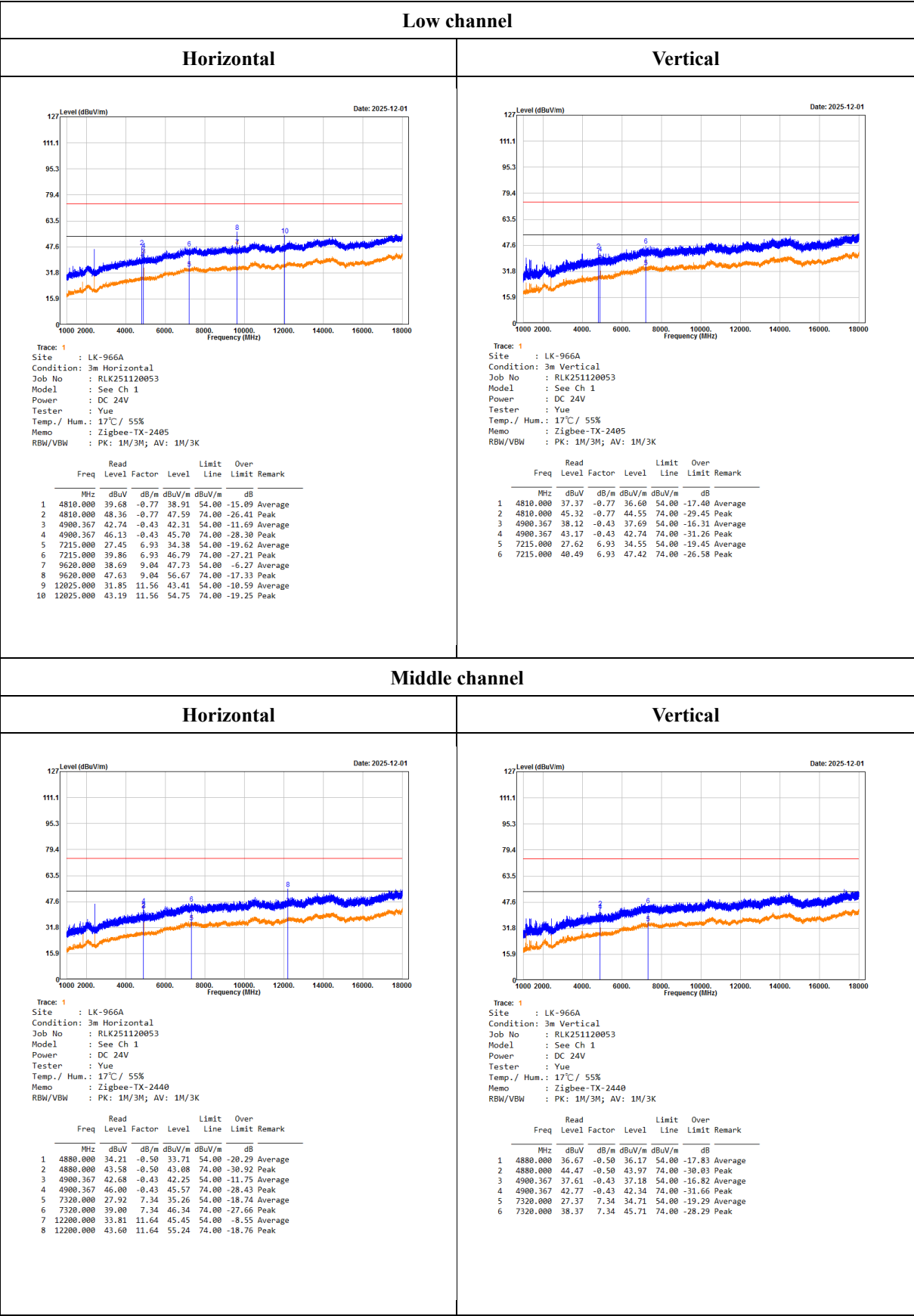


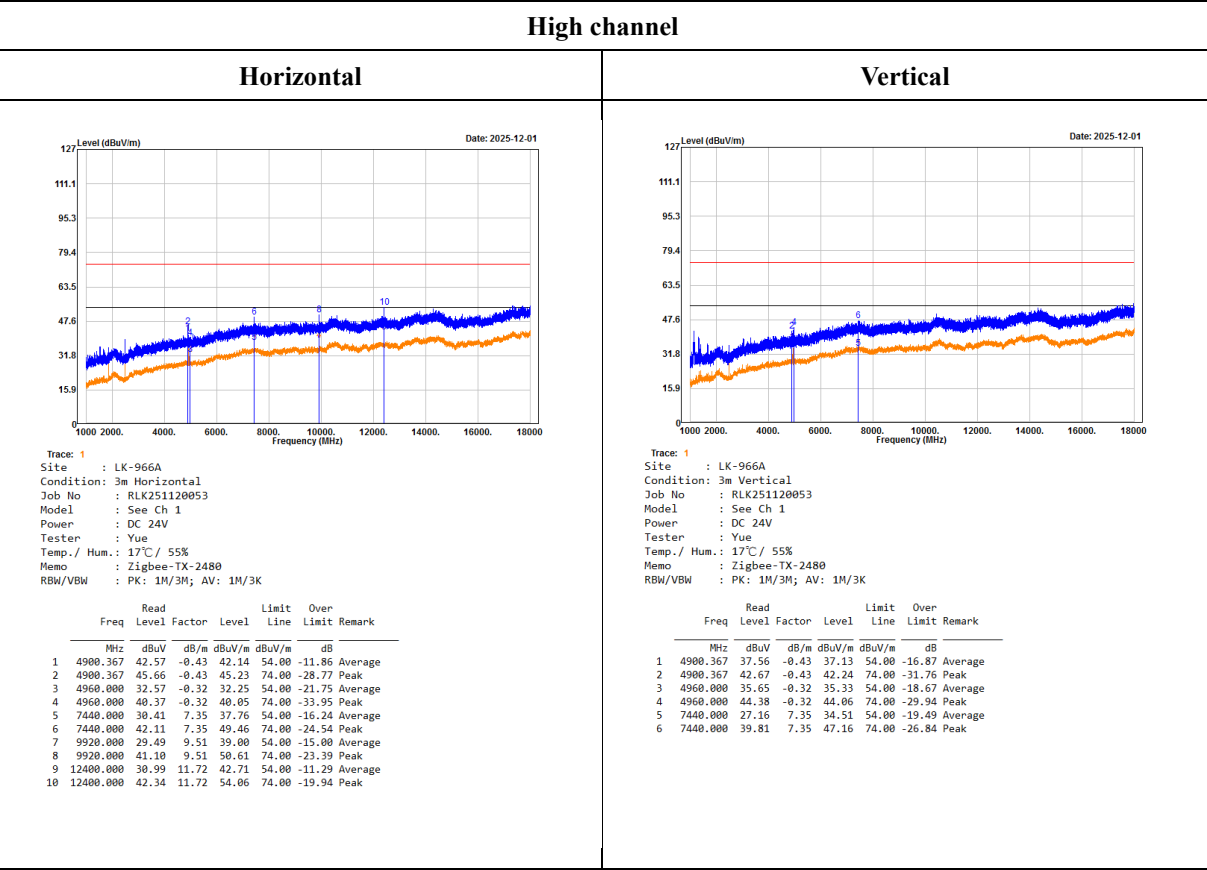
Level = Read Level + Factor.

Over Limit = Level – Limit Line.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

1GHz-18GHz:

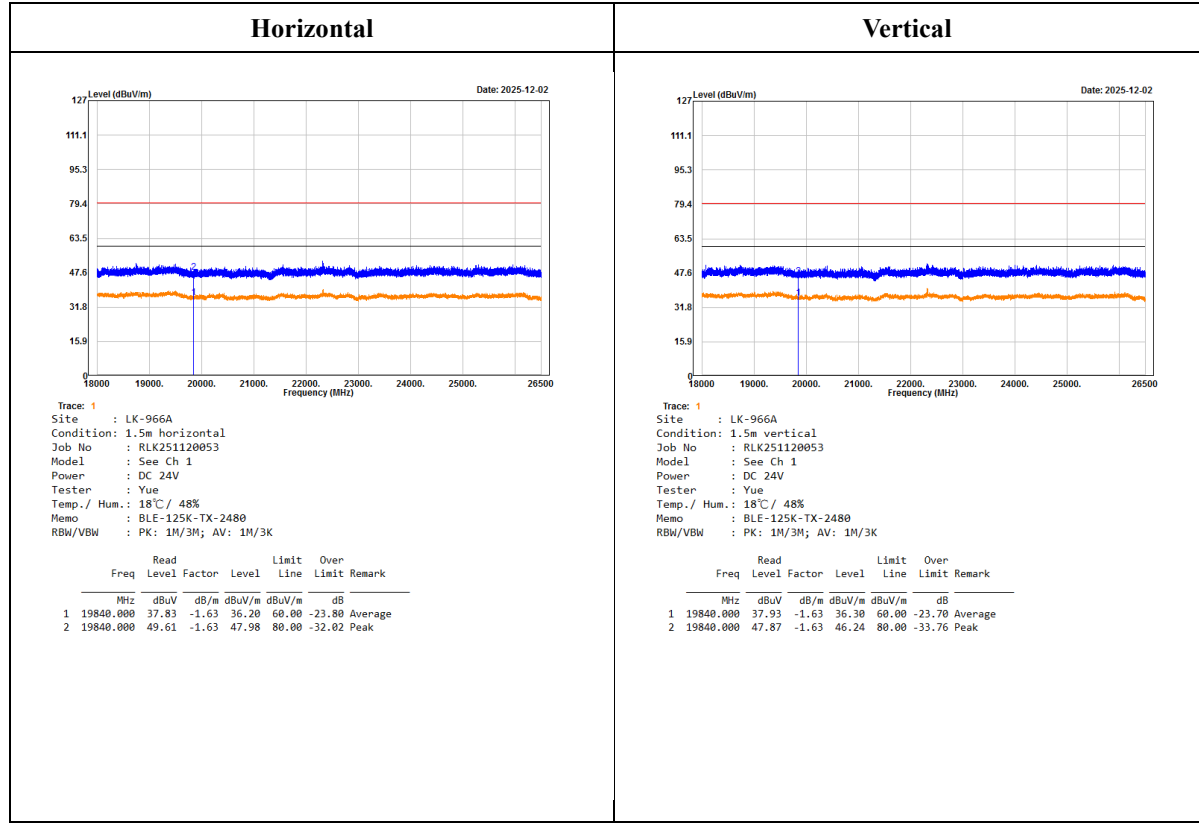




Level = Read Level + Factor.  
Over Limit = Level – Limit Line.  
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

18GHz-26.5GHz:

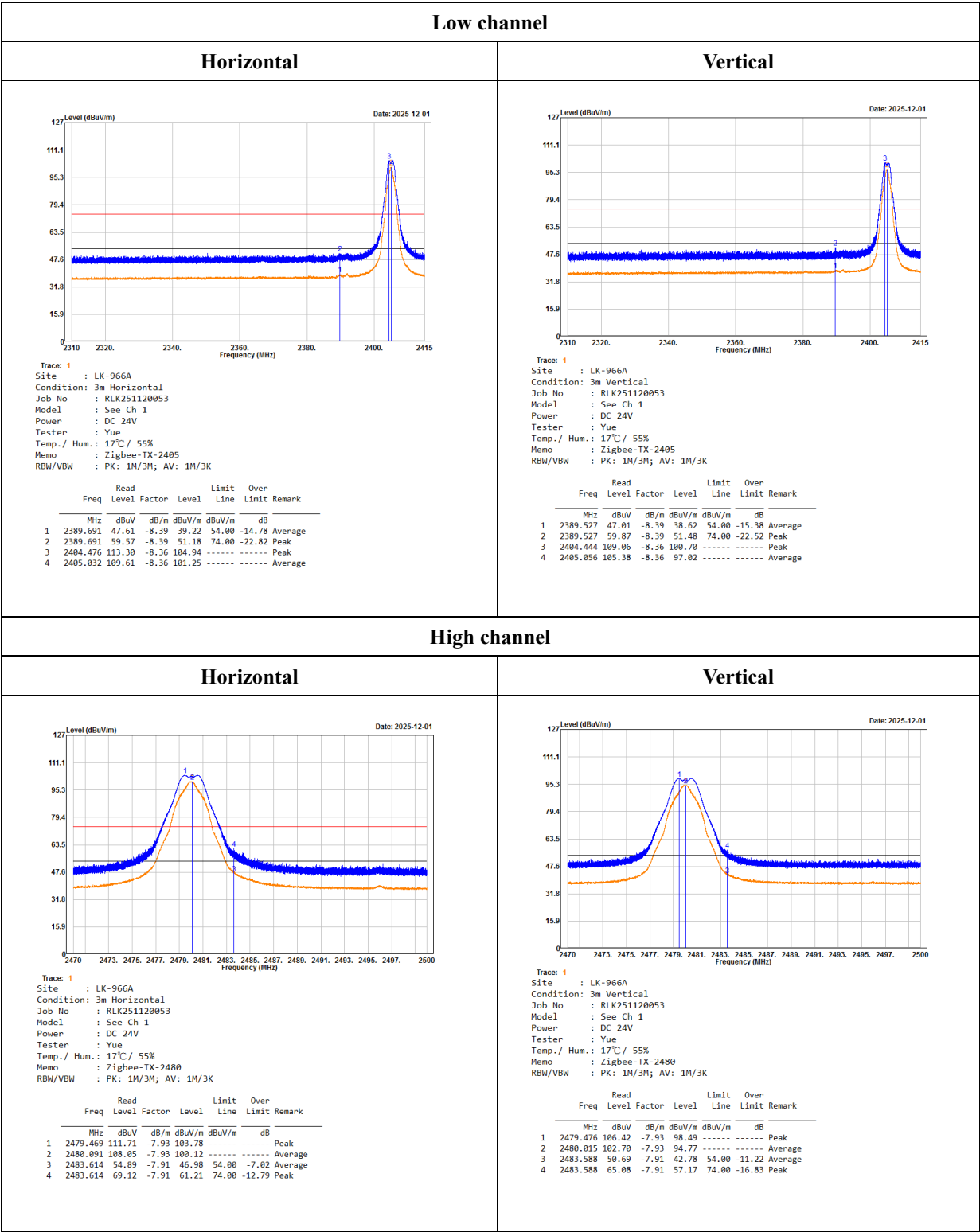
(Worst case is Zigbee mode, high channel)



For 18-26.5GHz Convert the test distance limit of 3 meters to a limit of 1.5 meter:  
Conversion factor = 20 log (1.5m/3m) = 6 dB,  
Average Limit = 54+6 = 60 dBuV/m@1.5m , Peak Limit = 60+20 = 80 dBuV/m@1.5m

Band-Edge:

Zigbee



Level = Read Level + Factor.

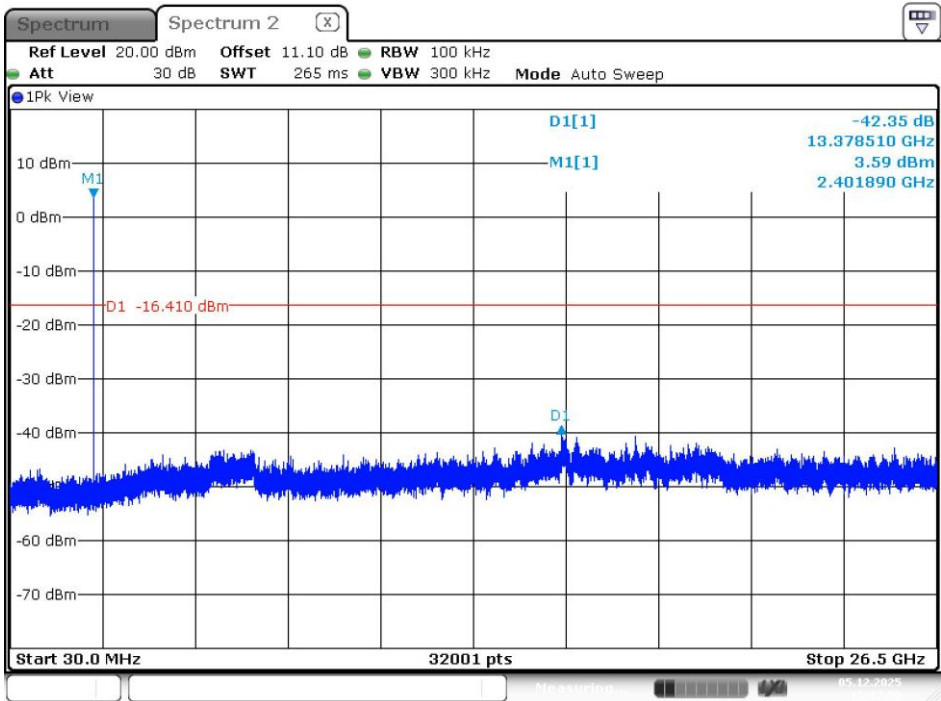
Over Limit = Level – Limit Line.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

**Conducted Spurious Emissions:**

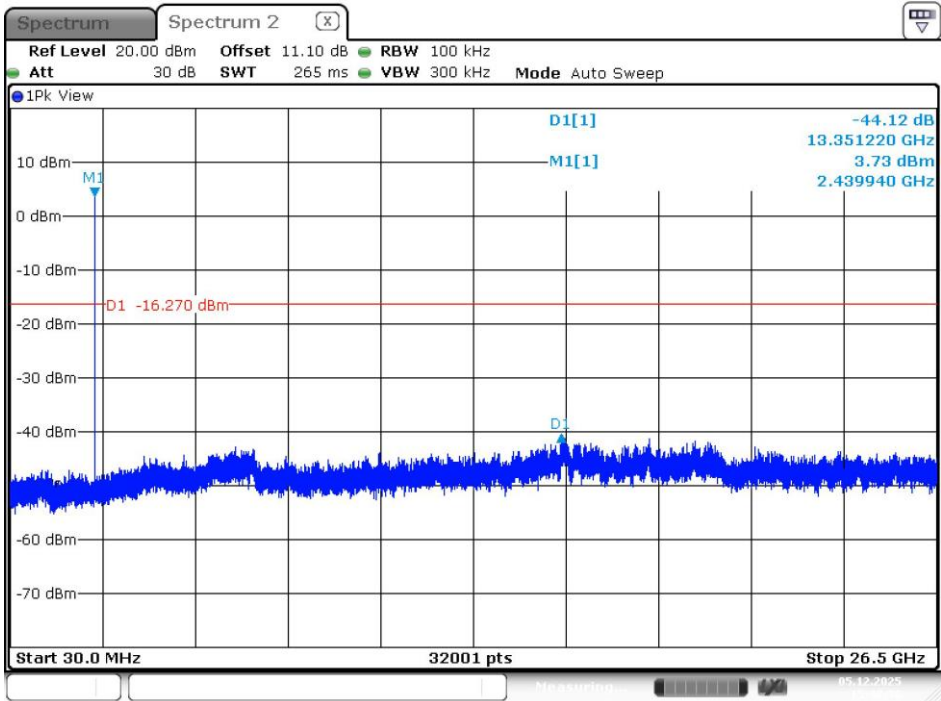
| Channel        | Frequency (MHz) | Delta Peak to Band Emission (dBc) | Limit (dBc) | Result |
|----------------|-----------------|-----------------------------------|-------------|--------|
| BLE(125k) Mode |                 |                                   |             |        |
| Low            | 2402            | 42.35                             | $\geq 20$   | PASS   |
| Mid            | 2440            | 44.12                             | $\geq 20$   | PASS   |
| High           | 2480            | 46.11                             | $\geq 20$   | PASS   |
| BLE(500k) Mode |                 |                                   |             |        |
| Low            | 2402            | 46.56                             | $\geq 20$   | PASS   |
| Mid            | 2440            | 47.12                             | $\geq 20$   | PASS   |
| High           | 2480            | 47.38                             | $\geq 20$   | PASS   |
| BLE(1M) Mode   |                 |                                   |             |        |
| Low            | 2402            | 47.54                             | $\geq 20$   | PASS   |
| Mid            | 2440            | 48.88                             | $\geq 20$   | PASS   |
| High           | 2480            | 46.67                             | $\geq 20$   | PASS   |
| BLE(2M) Mode   |                 |                                   |             |        |
| Low            | 2402            | 44.77                             | $\geq 20$   | PASS   |
| Mid            | 2440            | 45.27                             | $\geq 20$   | PASS   |
| High           | 2480            | 44.15                             | $\geq 20$   | PASS   |
| Zigbee Mode    |                 |                                   |             |        |
| Low            | 2405            | 43.35                             | $\geq 20$   | PASS   |
| Mid            | 2440            | 41.82                             | $\geq 20$   | PASS   |
| High           | 2480            | 43.50                             | $\geq 20$   | PASS   |

BLE(125k) Mode  
Low Channel



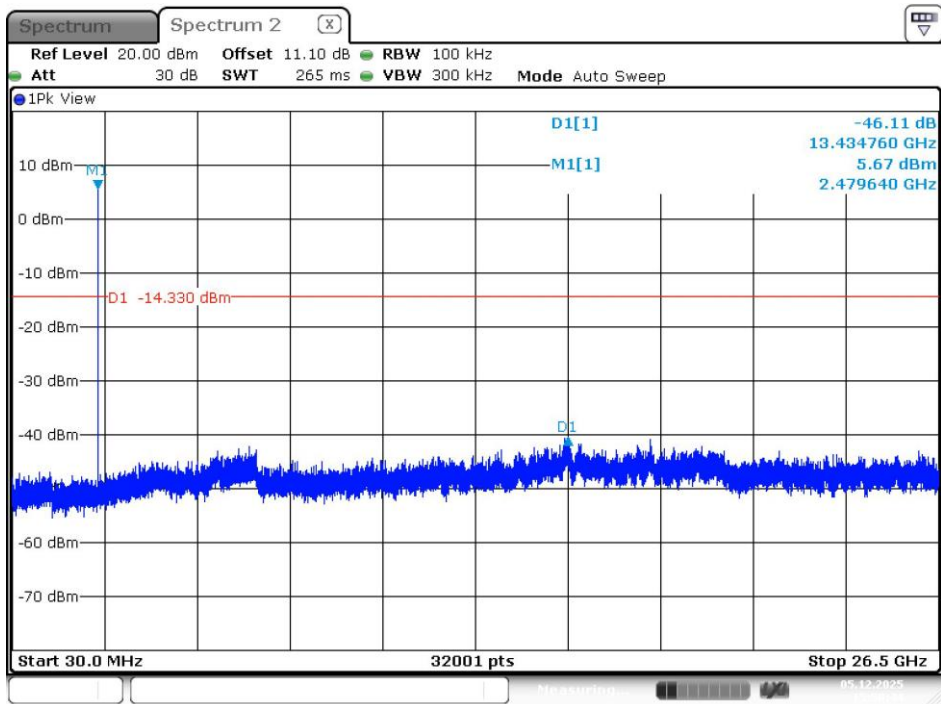
Date: 5.DEC.2025 15:42:50

Middle Channel



Date: 5.DEC.2025 15:48:39

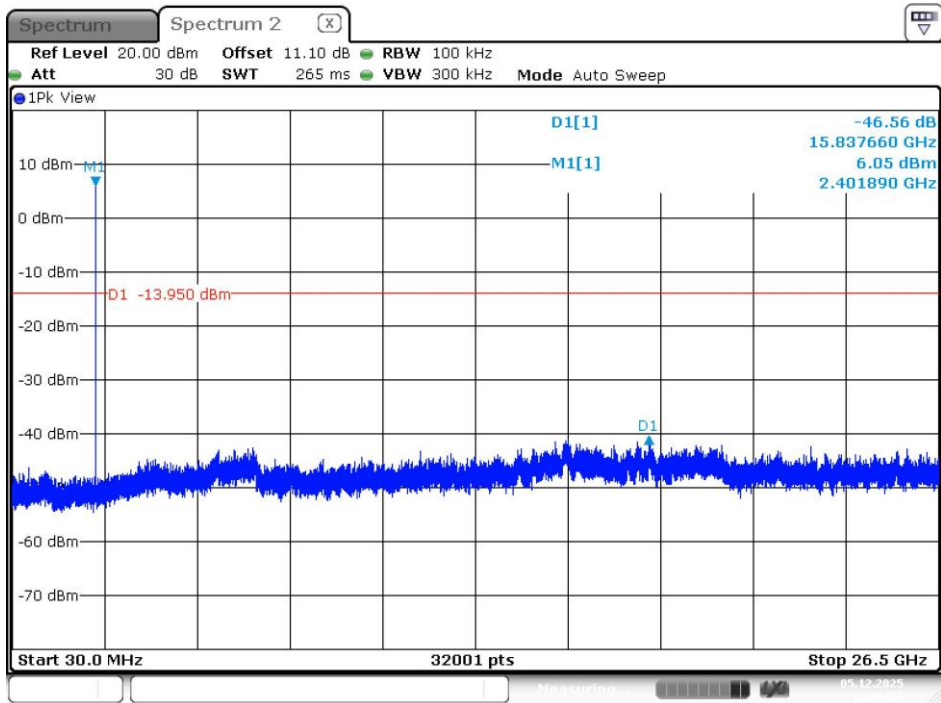
High Channel



Date: 5.DEC.2025 15:50:45

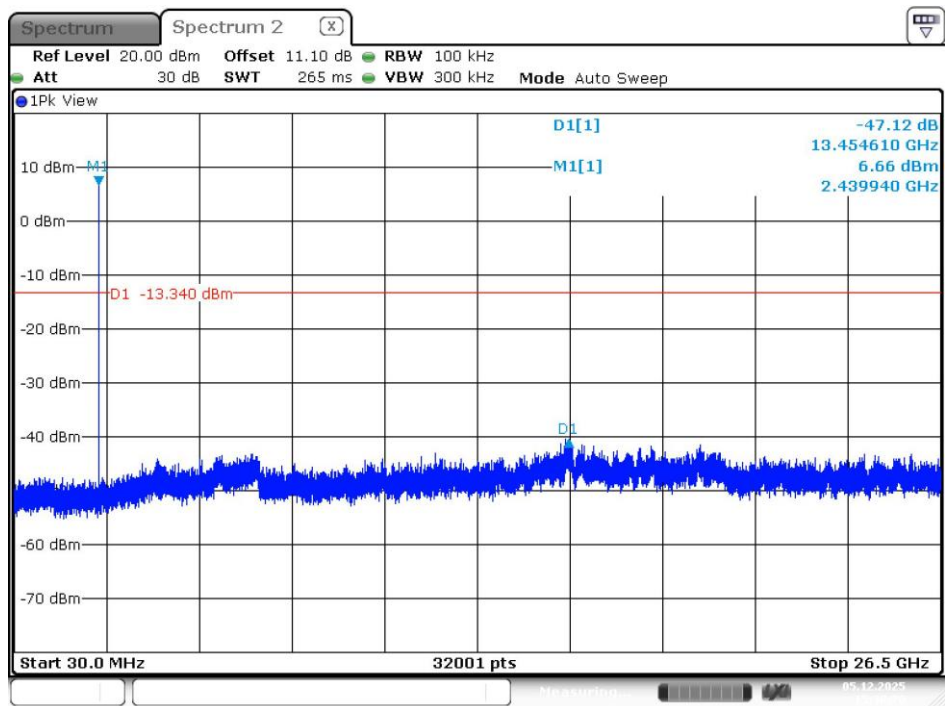
BLE(500k) Mode

Low Channel



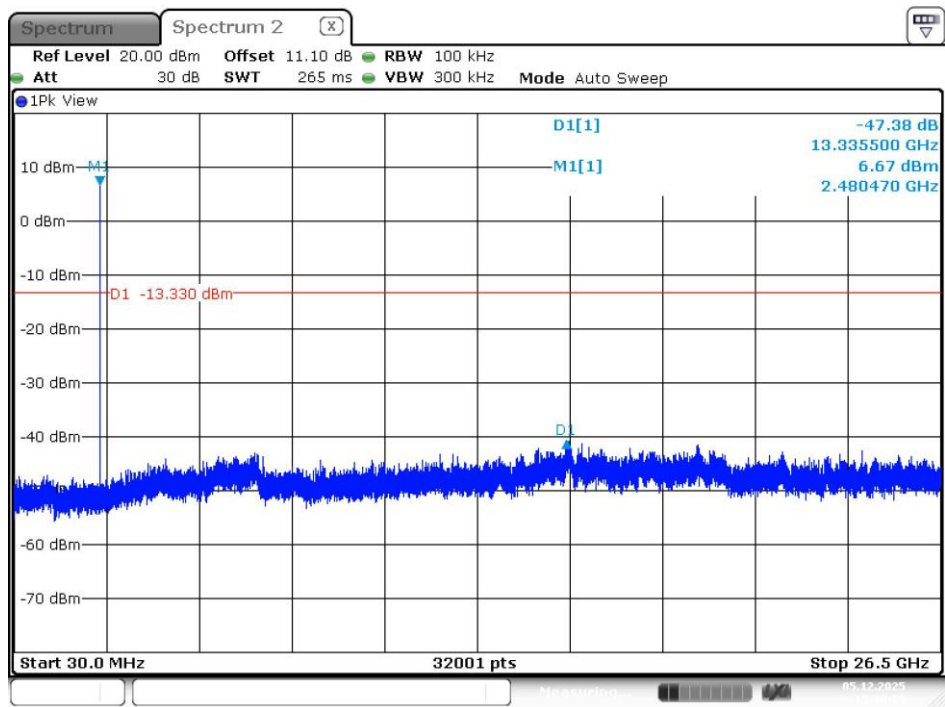
Date: 5.DEC.2025 15:36:55

Middle Channel



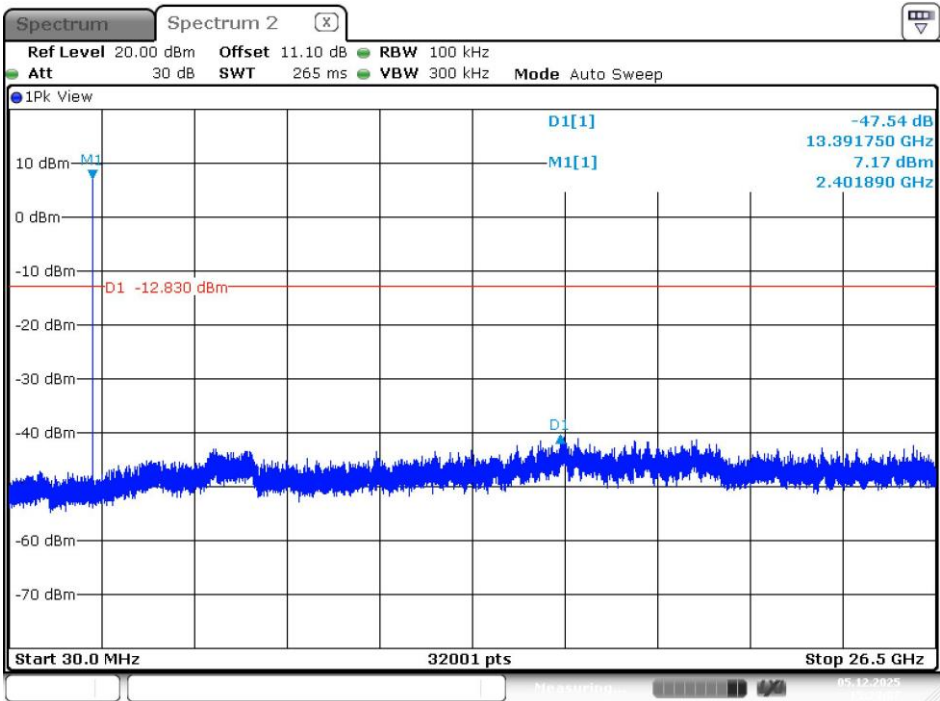
Date: 5.DEC.2025 15:38:20

High Channel



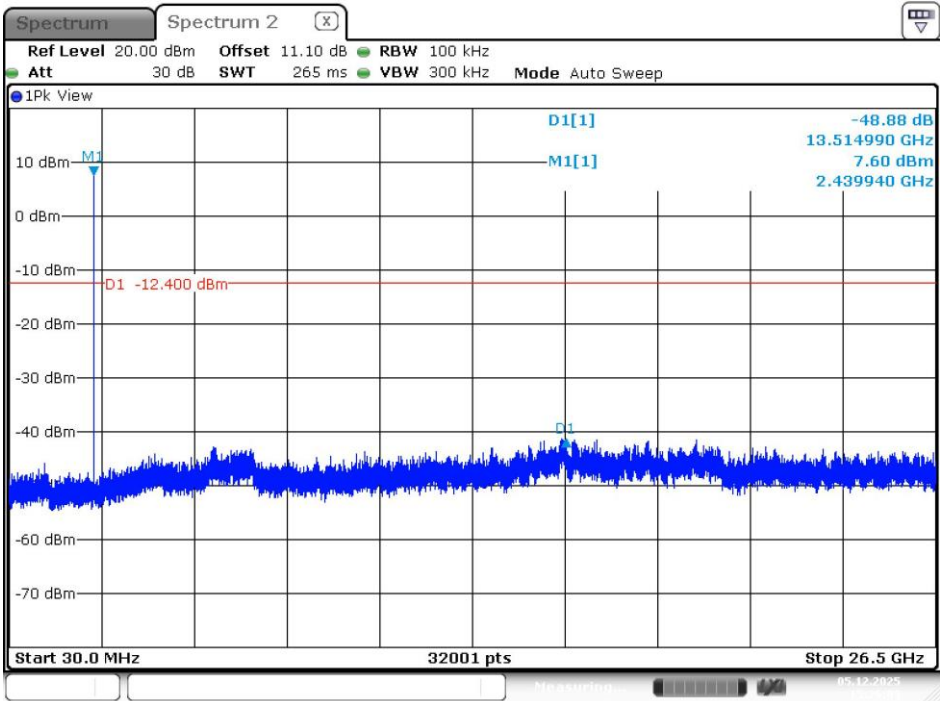
Date: 5.DEC.2025 15:40:23

BLE(1M) Mode  
Low Channel



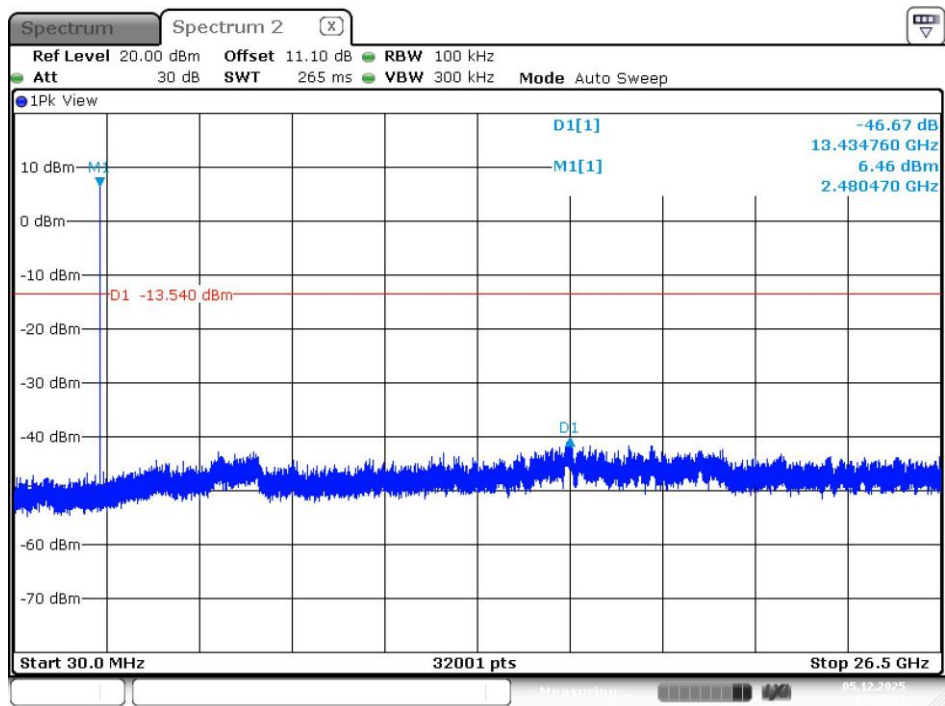
Date: 5.DEC.2025 15:23:07

Middle Channel



Date: 5.DEC.2025 15:26:03

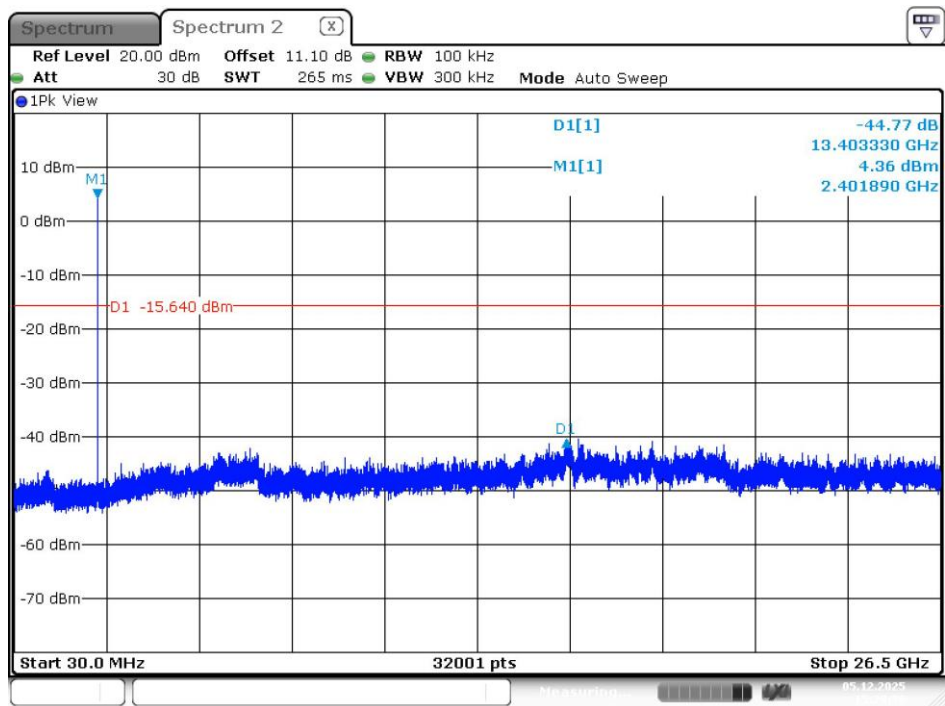
High Channel



Date: 5.DEC.2025 15:27:23

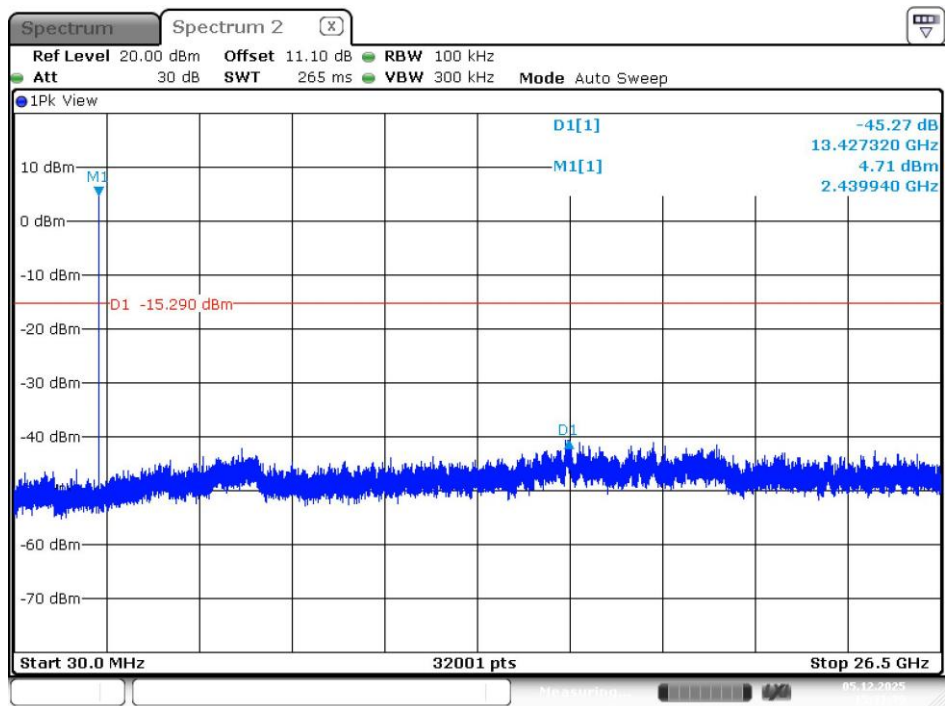
BLE(2M) Mode

Low Channel



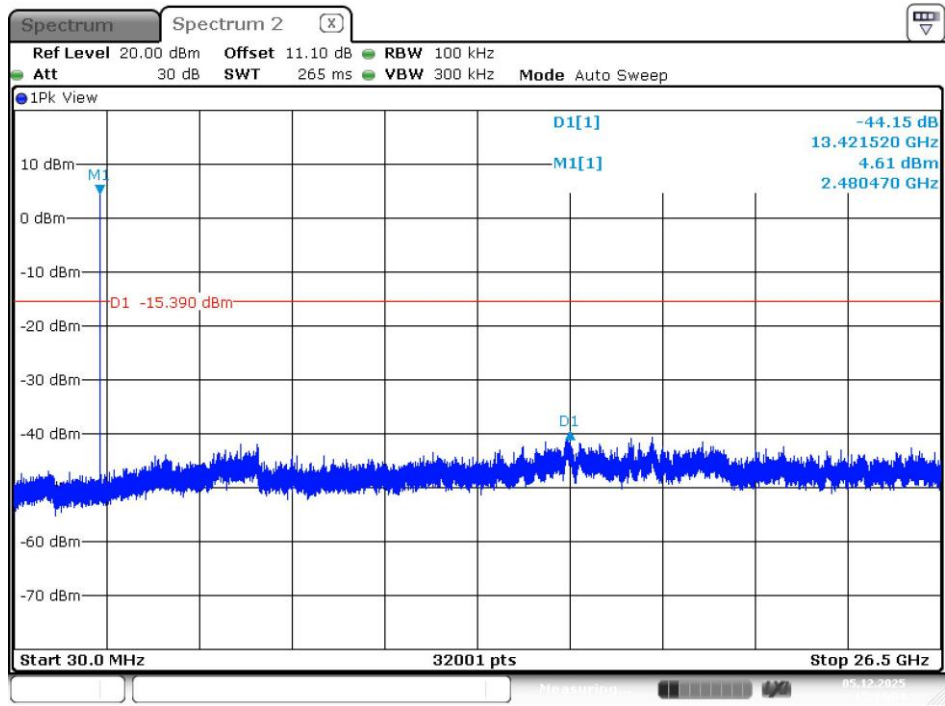
Date: 5.DEC.2025 15:29:36

Middle Channel



Date: 5.DEC.2025 15:31:39

High Channel



Date: 5.DEC.2025 15:34:03