

# FCC Test Report

Report No.: AGC00803260402FR01

**FCC ID** : 2AKHJ-HB401

**APPLICATION PURPOSE** : Original Equipment

**PRODUCT DESIGNATION** : Wireless Keyboard

**BRAND NAME** : N/A

**MODEL NAME** : HB401

**APPLICANT** : Shenzhen Hangshi Electronic Technology Co., Ltd.

**DATE OF ISSUE** : Apr. 18, 2026

**STANDARD(S)** : FCC Part 15 Subpart C §15.247

**REPORT VERSION** : V1.0

Attestation Of Global Compliance (Shenzhen) Co., Ltd



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**Report Revise Record**

| Report Version | Revise Time | Issued Date   | Valid Version | Notes           |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0           | /           | Apr. 18, 2026 | Valid         | Initial Release |

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## 1. General Information

|                              |                                                                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant                    | Shenzhen Hangshi Electronic Technology Co., Ltd.                                                                                             |
| Address                      | 1/F&2/F,G-A2 BLDG, 3/F&4/F,G-A1 BLDG, Democracy West IndustryPark, Shajing Street, Bao'an District, Shenzhen City, Guangdong Province, China |
| Manufacturer                 | Shenzhen Hangshi Electronic Technology Co., Ltd.                                                                                             |
| Address                      | 1/F&2/F,G-A2 BLDG, 3/F&4/F,G-A1 BLDG, Democracy West IndustryPark, Shajing Street, Bao'an District, Shenzhen City, Guangdong Province, China |
| Factory                      | Shenzhen Hangshi Electronic Technology Co., Ltd.                                                                                             |
| Address                      | 1/F&2/F,G-A2 BLDG, 3/F&4/F,G-A1 BLDG, Democracy West IndustryPark, Shajing Street, Bao'an District, Shenzhen City, Guangdong Province, China |
| Product Designation          | Wireless Keyboard                                                                                                                            |
| Brand Name                   | N/A                                                                                                                                          |
| Test Model                   | HB401                                                                                                                                        |
| Series Model(s)              | N/A                                                                                                                                          |
| Difference Description       | N/A                                                                                                                                          |
| Date of receipt of test item | Apr. 13, 2026                                                                                                                                |
| Date of Test                 | Apr. 13, 2026 to Apr. 18, 2026                                                                                                               |
| Deviation from Standard      | No any deviation from the test method                                                                                                        |
| Condition of Test Sample     | Normal                                                                                                                                       |
| Test Result                  | Pass                                                                                                                                         |
| Test Report Form No          | AGCER-FCC-BLE-V1                                                                                                                             |

Note: The test results of this report relate only to the tested sample identified in this report.

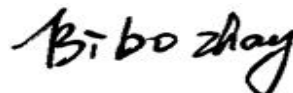
Prepared By



Jack Gui  
(Project Engineer)

Apr. 18, 2026

Reviewed By



Bibo Zhang  
(Reviewer)

Apr. 18, 2026

Approved By



Angela Li  
(Authorized Officer)

Apr. 18, 2026

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## 2. Product Information

### 2.1 Product Technical Description

|                                   |                                                                      |
|-----------------------------------|----------------------------------------------------------------------|
| Technology Type                   | Bluetooth Low Energy                                                 |
| Frequency Band                    | 2400MHz-2483.5MHz                                                    |
| Operation Frequency Range         | 2402MHz-2480MHz                                                      |
| Bluetooth Version                 | V5.0                                                                 |
| Modulation Type                   | BLE ☒ GFSK 1Mbps ☒ GFSK 2Mbps                                        |
| Number of channels                | 40                                                                   |
| Carrier Frequency of Each Channel | 40 Channels (37 Data channels + 3 Advertising channels)              |
| Channel Separation                | 2 MHz                                                                |
| Maximum Transmitter Power         | Bluetooth LE (1Mbps): -2.763 dBm<br>Bluetooth LE (2Mbps): -2.729 dBm |
| Hardware Version                  | V01                                                                  |
| Software Version                  | V01                                                                  |
| Antenna Designation               | PCB Antenna                                                          |
| Antenna Gain                      | 1.87dBi                                                              |
| Power Supply                      | DC 3.7V                                                              |

### 2.2 Test Frequency List

| Frequency Band | Channel Number | Test Frequency |
|----------------|----------------|----------------|
| 2400~2483.5MHz | 0              | 2402 MHz       |
|                | 1              | 2404 MHz       |
|                | :              | :              |
|                | 19             | 2440MHz        |
|                | :              | :              |
|                | 38             | 2478 MHz       |
|                | 39             | 2480 MHz       |

Note:  $f = 2402 + 2 \times k$  MHz,  $k = 0, \dots, 39$   $f$  is the operating frequency (MHz);  $k$  is the operating channel.

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## 2.3 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **2AKHJ-HB401**, filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

## 2.4 Test Methodology

The tests were performed according to following standards:

| No. | Identity                                         | Document Title                                                                                                                                                                            |
|-----|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | FCC 47 CFR Part 2                                | Frequency allocations and radio treaty matters; general rules and regulations                                                                                                             |
| 2   | FCC 47 CFR Part 15                               | Radio Frequency Devices                                                                                                                                                                   |
| 3   | ANSI C63.10-2020                                 | American National Standard for Testing Unlicensed Wireless Devices                                                                                                                        |
| 4   | KDB 558074<br>D01 15.247 Meas<br>Guidance v05r02 | Guidance for compliance measurements on Digital Transmission Systems, Frequency Hopping Spread Spectrum system, and Hybrid system devices operating under Section 15.247 of the FCC rules |

## 2.5 Special Accessories

Not available for this EUT intended for grant.

## 2.6 Equipment Modifications

Not available for this EUT intended for grant.

## 2.7 Antenna Requirement

| Standard Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>15.203 requirement:</b><br>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, 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.                                                                                                     |
| <b>15.247(b) (4) requirement:</b><br>The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi |
| EUT Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 1.87 dBi.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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### 3. Test Environment

#### 3.1 Address of the Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.  
Address: 101 & 201, Building 19(B5), Junfeng Industrial Park, Chongqing Road, P.R.C.

#### 3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L5488**

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories).

##### **A2LA-Lab Cert. No.: 5054.02**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

##### **FCC-Registration No.: 975832**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

##### **IC-Registration No.: 24842 (CAB identifier: CN0063)**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

### 3.3 Environmental Conditions

|                         | Normal Conditions |
|-------------------------|-------------------|
| Temperature range (°C)  | 15 - 35           |
| Relative humidity range | 20 % - 75 %       |
| Pressure range (kPa)    | 86 - 106          |
| Power supply            | --                |

### 3.4 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

| Item                                          | Measurement Uncertainty    |
|-----------------------------------------------|----------------------------|
| Uncertainty of Conducted Emission for AC Port | $U_c = \pm 2.9 \text{ dB}$ |
| Uncertainty of Radiated Emission below 1GHz   | $U_c = \pm 3.9 \text{ dB}$ |
| Uncertainty of Radiated Emission above 1GHz   | $U_c = \pm 4.9 \text{ dB}$ |
| Uncertainty of total RF Power, Conducted      | $U_c = \pm 0.8 \text{ dB}$ |
| Uncertainty of RF Power Density, Conducted    | $U_c = \pm 2.6 \text{ dB}$ |
| Uncertainty of Spurious Emissions, Conducted  | $U_c = \pm 2 \%$           |
| Uncertainty of Occupied Channel Bandwidth     | $U_c = \pm 2 \%$           |
| Uncertainty of Dwell Time                     | $U_c = \pm 2 \%$           |
| Duty cycle                                    | $U_c = \pm 2 \%$           |

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### 3.5 List of Equipment Use

| ● RF Conducted Test System          |               |                      |               |               |            |                           |                           |
|-------------------------------------|---------------|----------------------|---------------|---------------|------------|---------------------------|---------------------------|
| Used                                | Equipment No. | Test Equipment       | Manufacturer  | Model No.     | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input checked="" type="checkbox"/> | AGC-ER-E036   | Spectrum Analyzer    | Agilent       | N9020A        | MY49100060 | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-ER-A007   | 6dB Fixed Attenuator | Mini circuits | BW-S6-2W263A+ | N/A        | 2026-01-31                | 2028-01-30                |
| <input checked="" type="checkbox"/> | N/A           | RF Connection Cable  | N/A           | 1#            | N/A        | Each time                 | N/A                       |
| <input checked="" type="checkbox"/> | N/A           | RF Connection Cable  | N/A           | 2#            | N/A        | Each time                 | N/A                       |

| ● Radiated Spurious Emission        |               |                               |              |            |            |                           |                           |
|-------------------------------------|---------------|-------------------------------|--------------|------------|------------|---------------------------|---------------------------|
| Used                                | Equipment No. | Test Equipment                | Manufacturer | Model No.  | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input checked="" type="checkbox"/> | AGC-EM-E046   | EMI Test Receiver             | R&S          | ESCI       | 100096     | 2026-01-13                | 2027-01-12                |
| <input type="checkbox"/>            | AGC-EM-E116   | EMI Test Receiver             | R&S          | ESCI       | 100034     | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-EM-E061   | Spectrum Analyzer             | Agilent      | N9010A     | MY53470504 | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-EM-E086   | Loop Antenna                  | ZHINAN       | ZN30900C   | 18051      | 2026-01-14                | 2028-01-13                |
| <input checked="" type="checkbox"/> | AGC-EM-E001   | Wideband Antenna              | SCHWARZBECK  | VULB9168   | D69250     | 2025-03-14                | 2027-03-13                |
| <input checked="" type="checkbox"/> | AGC-EM-E029   | Broadband Ridged Horn Antenna | ETS          | 3117       | 00034609   | 2026-03-14                | 2027-03-13                |
| <input checked="" type="checkbox"/> | AGC-EM-E082   | Horn Antenna                  | SCHWARZBECK  | BBHA 9170  | #768       | 2025-09-10                | 2027-09-09                |
| <input checked="" type="checkbox"/> | AGC-EM-E146   | Pre-amplifier                 | ETS          | 3117-PA    | 00246148   | 2024-07-24                | 2026-07-23                |
| <input checked="" type="checkbox"/> | AGC-EM-A119   | 2.4GHz Filter                 | SongYi       | N/A        | N/A        | 2025-05-16                | 2026-05-15                |
| <input checked="" type="checkbox"/> | AGC-EM-A138   | 6dB Attenuator                | Eeatsheep    | LM-XX-6-5W | N/A        | 2025-05-16                | 2027-05-15                |
| <input type="checkbox"/>            | AGC-EM-A139   | 6dB Attenuator                | Eeatsheep    | LM-XX-6-5W | N/A        | 2025-05-16                | 2027-05-15                |

| ● AC Power Line Conducted Emission  |               |                   |               |           |            |                           |                           |
|-------------------------------------|---------------|-------------------|---------------|-----------|------------|---------------------------|---------------------------|
| Used                                | Equipment No. | Test Equipment    | Manufacturer  | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input checked="" type="checkbox"/> | AGC-EM-E116   | EMI Test Receiver | R&S           | ESCI      | 100034     | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-EM-A171   | Attenuator        | Mini-Circuits | UNAT-10A+ | DC-6GZ     | 2026-01-13                | 2028-01-12                |
| <input checked="" type="checkbox"/> | AGC-EM-E023   | AMN               | R&S           | ESH2-Z5   | 100086     | 2025-05-08                | 2026-05-07                |

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| ● Test Software                     |               |                     |              |                      |                     |
|-------------------------------------|---------------|---------------------|--------------|----------------------|---------------------|
| Used                                | Equipment No. | Test Equipment      | Manufacturer | Model No.            | Version Information |
| <input checked="" type="checkbox"/> | AGC-EM-S004   | RE Test System      | Tonscend     | TS+ Ver2.1(JS32-RE)  | 4.0.0.0             |
| <input checked="" type="checkbox"/> | AGC-ER-S012   | BT/WIFI Test System | Tonscend     | JS1120-2             | 2.6                 |
| <input checked="" type="checkbox"/> | AGC-EM-S011   | RSE Test System     | Tonscend     | TS+-Ver2.1(JS36-RSE) | 4.0.0.0             |
| <input checked="" type="checkbox"/> | AGC-EM-S001   | CE Test System      | R&S          | ES-K1                | V1.71               |

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## 4. System Test Configuration

### 4.1 EUT Configuration

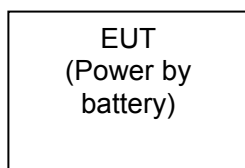
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 4.2 EUT Exercise

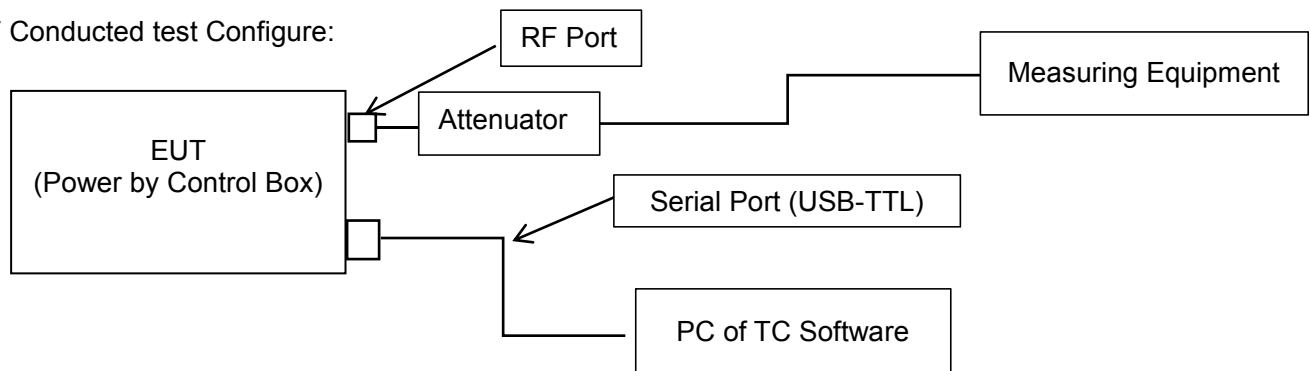
The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

### 4.3 Configuration of Tested System

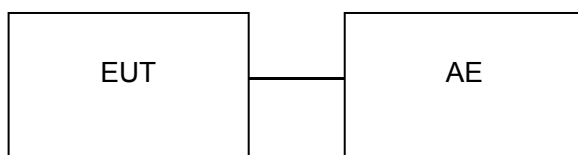
Radiated Emission Configure:



RF Conducted test Configure:



Conducted Emission Configure:



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#### 4.4 Equipment Used In Tested System

The following peripheral devices and interface cables were connected during the measurement:

☒ Test Accessories Come From The Laboratory

| No. | Equipment   | Manufacturer | Model No. | Specification Information | Cable           |
|-----|-------------|--------------|-----------|---------------------------|-----------------|
| 1   | Control Box | RISYM        | USB-TTL   | --                        | --              |
| 2   | Adapter     | Apple        | A2452     | USB-C/140W Max            | 1.2m unshielded |

☐ Test Accessories Come From The Manufacturer

| No. | Equipment | Manufacturer | Model No. | Specification Information | Cable |
|-----|-----------|--------------|-----------|---------------------------|-------|
| 1   | --        | --           | --        | --                        | --    |

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#### 4.5 Summary of Test Results

| Item | FCC Rules            | Description of Test                           | Result |
|------|----------------------|-----------------------------------------------|--------|
| 1    | §15.203&15.247(b)(4) | Antenna Equipment                             | Pass   |
| 2    | §15.247 (b)(3)       | RF Output Power                               | Pass   |
| 3    | §15.247 (a)(2)       | 6 dB Bandwidth                                | Pass   |
| 4    | §15.247 (e)          | Power Spectral Density                        | Pass   |
| 5    | §15.247 (d)          | Conducted Band Edge and Out-of-Band Emissions | Pass   |
| 6    | §15.209              | Radiated Emission& Band Edge                  | Pass   |
| 7    | §15.207              | AC Power Line Conducted Emission              | Pass   |

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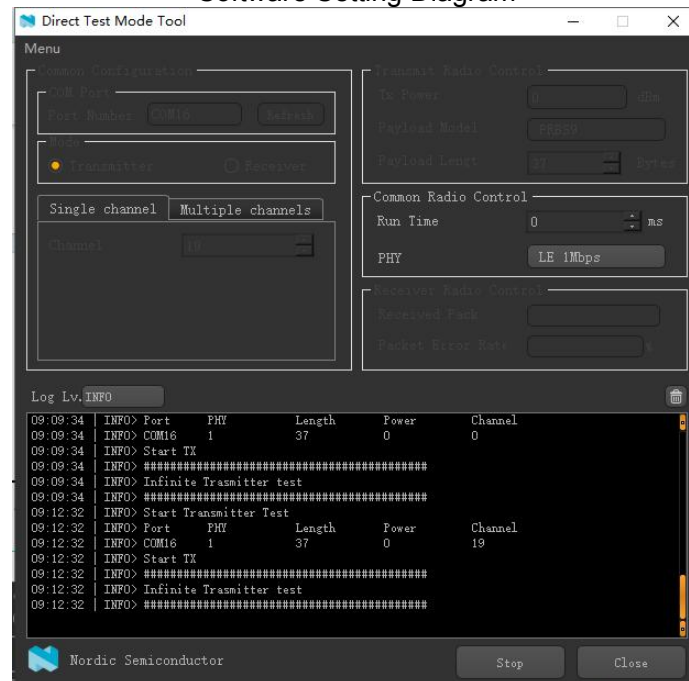
## 5. Description of Test Modes

| Summary Table of Test Cases     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Item                       | Data Rate / Modulation                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                 | Bluetooth–LE(1Mbps/2Mbps)/GFSK                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Radiated & Conducted Test Cases | Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps(Battery powered or AC/DC adapter)<br>Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps(Battery powered or AC/DC adapter)<br>Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps(Battery powered or AC/DC adapter)<br>Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps(Battery powered or AC/DC adapter)<br>Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps(Battery powered or AC/DC adapter)<br>Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps(Battery powered or AC/DC adapter) |
| AC Conducted Emission           | Mode 1: Bluetooth Link + Battery + USB Cable (Charging from AC/DC Adapter)                                                                                                                                                                                                                                                                                                                                                                                                       |

Note:

- Only the result of the worst case was recorded in the report, if no other cases.
- The battery is full-charged during the test.
- For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- For Conducted Test method, a temporary antenna connector is provided by the manufacture.
- The manufacturer of RF external cable claims that the cable loss is 0.5dB, and the cable loss and attenuator have been compensated into the Corrections Configuration of measuring equipment.
- Input correction factor includes external cable loss and attenuator amplitude compensation. The formula is:  
Input compensation coefficient (dB) = Cable Loss (dB) + Attenuator attenuation value (dB)

Software Setting Diagram



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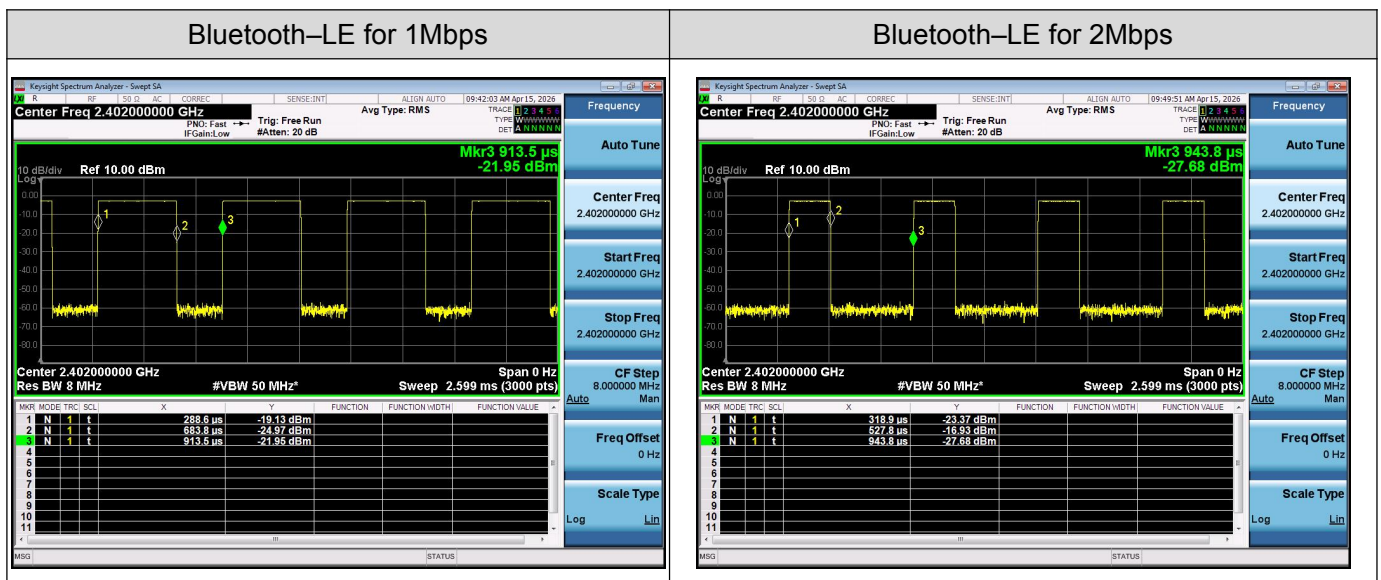
## 6. Duty Cycle Measurement

The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector =Average. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

| Operating mode | T(μs) | Duty Cycle (%) | Duty Cycle Factor (dB) | 1/ T Minimum VBW (kHz) |
|----------------|-------|----------------|------------------------|------------------------|
| BLE_1Mbps      | 395.2 | 63.24          | 1.99                   | 2.53                   |
| BLE_2Mbps      | 208.9 | 33.43          | 4.76                   | 4.79                   |

Remark:

- Duty Cycle factor =  $10 * \log(1/\text{Duty cycle})$
  - The duty cycle of each frequency band mode reflects the determination requirements of the low channel measurement value
- The test plots as follows:



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## 7. RF Output Power Measurement

### 7.1 Provisions Applicable

For DTSs employing digital modulation techniques operating in the bands 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W.

### 7.2 Measurement Procedure

☒ For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.1 Method Max peak power:

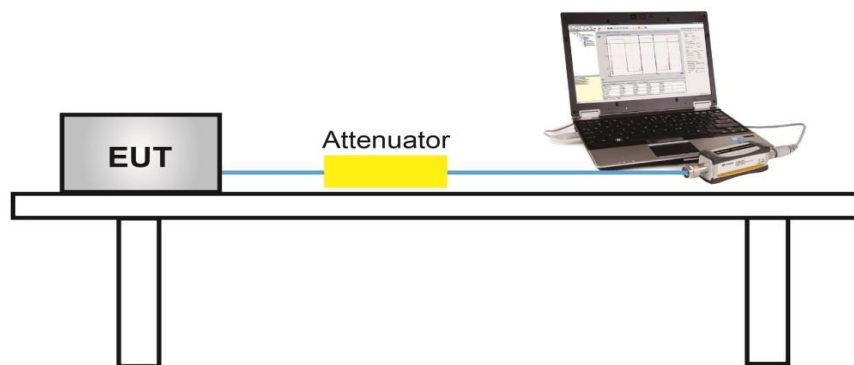
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the RBW  $\geq$  DTS bandwidth
3. Set the VBW  $\geq$   $[3 \times \text{RBW}]$ .
4. Span  $\geq$   $[3 \times \text{RBW}]$ .
5. Sweep = auto couple.
6. Detector Function = Peak.
7. Trace mode = Max hold.
8. Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

☐ For Average power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G:

1. The RF output of EUT was connected to the power meter by RF cable and attenuator.
2. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

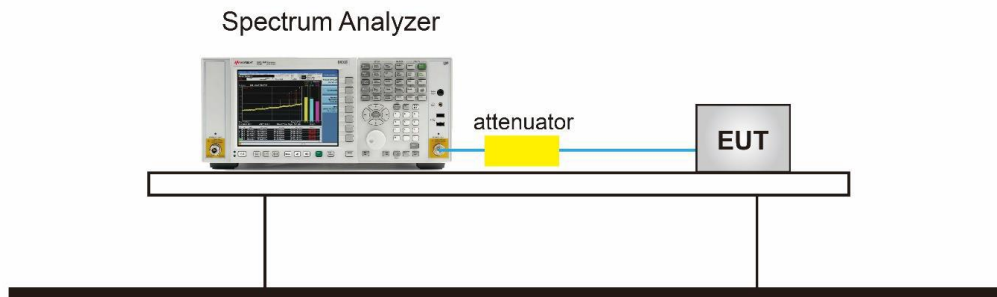
### 7.3 Measurement Setup (Block Diagram of Configuration)

☒ For Average power test setup



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☐ For peak power test setup



#### 7.4 Measurement Result

| Test Data of Conducted Output Power |                      |                  |              |              |
|-------------------------------------|----------------------|------------------|--------------|--------------|
| Test Mode                           | Test Frequency (MHz) | Peak Power (dBm) | Limits (dBm) | Pass or Fail |
| GFSK_1Mbps                          | 2402                 | -2.763           | $\leq 30$    | Pass         |
|                                     | 2440                 | -3.667           | $\leq 30$    | Pass         |
|                                     | 2480                 | -3.893           | $\leq 30$    | Pass         |
| GFSK_2Mbps                          | 2402                 | -2.729           | $\leq 30$    | Pass         |
|                                     | 2440                 | -3.620           | $\leq 30$    | Pass         |
|                                     | 2480                 | -3.984           | $\leq 30$    | Pass         |

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### Test Graphs of Conducted Output Power



Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Peak Power



Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Peak Power

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Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Peak Power



Test\_Graph\_LE2M\_ANT1\_2402\_2Mbps\_Peak Power

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Test\_Graph\_LE2M\_ANT1\_2440\_2Mbps\_Peak Power



Test\_Graph\_LE2M\_ANT1\_2480\_2Mbps\_Peak Power

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## 8. 6dB Bandwidth Measurement

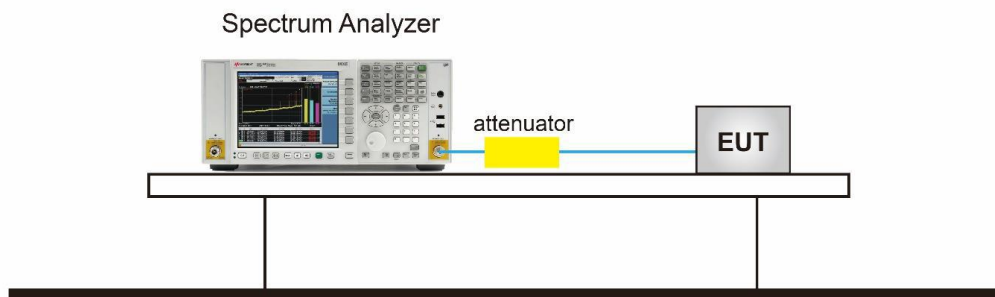
### 8.1 Provisions Applicable

The minimum 6dB bandwidth shall be 500 kHz.

### 8.2 Measurement Procedure

- The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
  2. Set to the maximum power setting and enable the EUT transmit continuously.
  3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
  4. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the OBW and set the Video bandwidth (VBW)  $\geq 3 * \text{RBW}$ .
  5. Measure and record the results in the test report.

### 8.3 Measurement Setup (Block Diagram of Configuration)



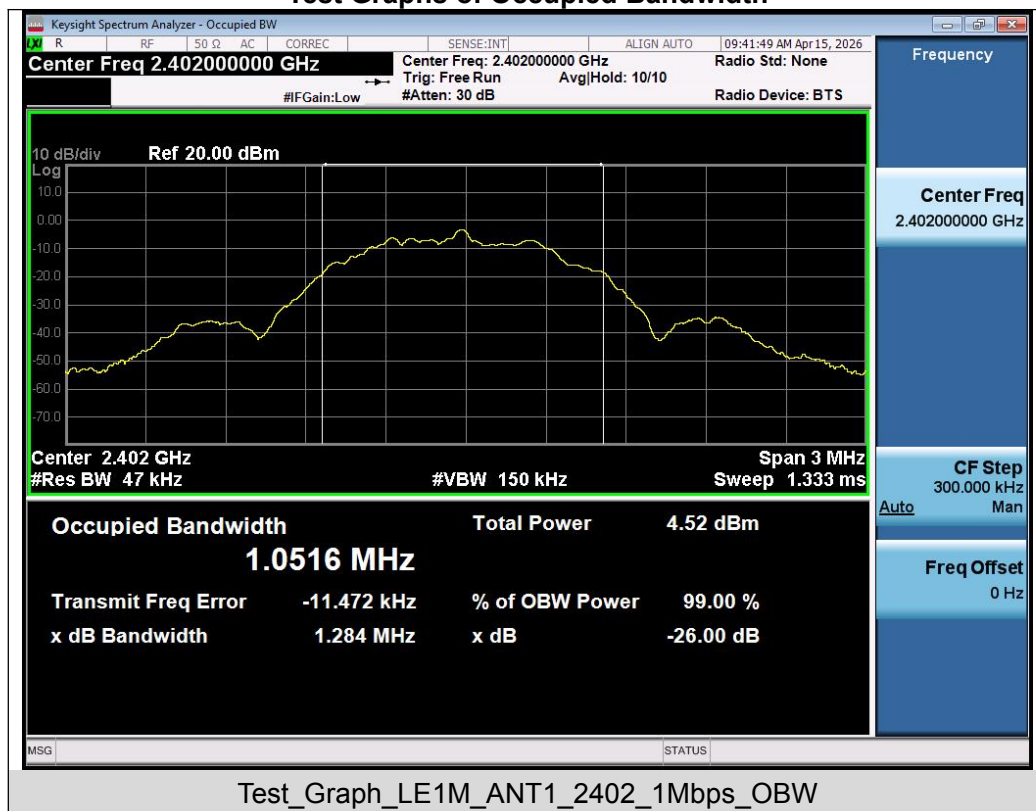
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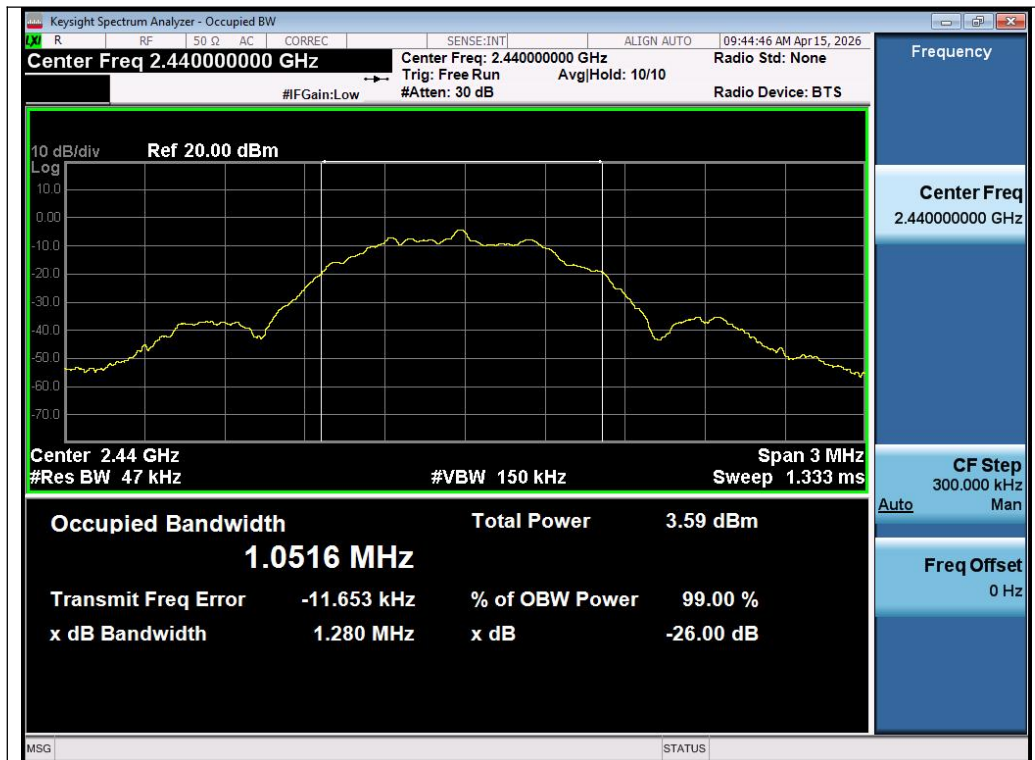
## 8.4 Measurement Results

| Test Data of Occupied Bandwidth and DTS Bandwidth |                      |                          |              |               |              |
|---------------------------------------------------|----------------------|--------------------------|--------------|---------------|--------------|
| Test Mode                                         | Test Frequency (MHz) | Occupied Bandwidth (MHz) | DTS BW (MHz) | DTS BW Limits | Pass or Fail |
| GFSK_1Mbps                                        | 2402                 | 1.052                    | 0.694        | $\geq 0.5$    | Pass         |
|                                                   | 2440                 | 1.052                    | 0.699        | $\geq 0.5$    | Pass         |
|                                                   | 2480                 | 1.055                    | 0.693        | $\geq 0.5$    | Pass         |
| GFSK_2Mbps                                        | 2402                 | 2.074                    | 1.146        | $\geq 0.5$    | Pass         |
|                                                   | 2440                 | 2.077                    | 1.159        | $\geq 0.5$    | Pass         |
|                                                   | 2480                 | 2.080                    | 1.150        | $\geq 0.5$    | Pass         |

### Test Graphs of Occupied Bandwidth



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Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_OBW

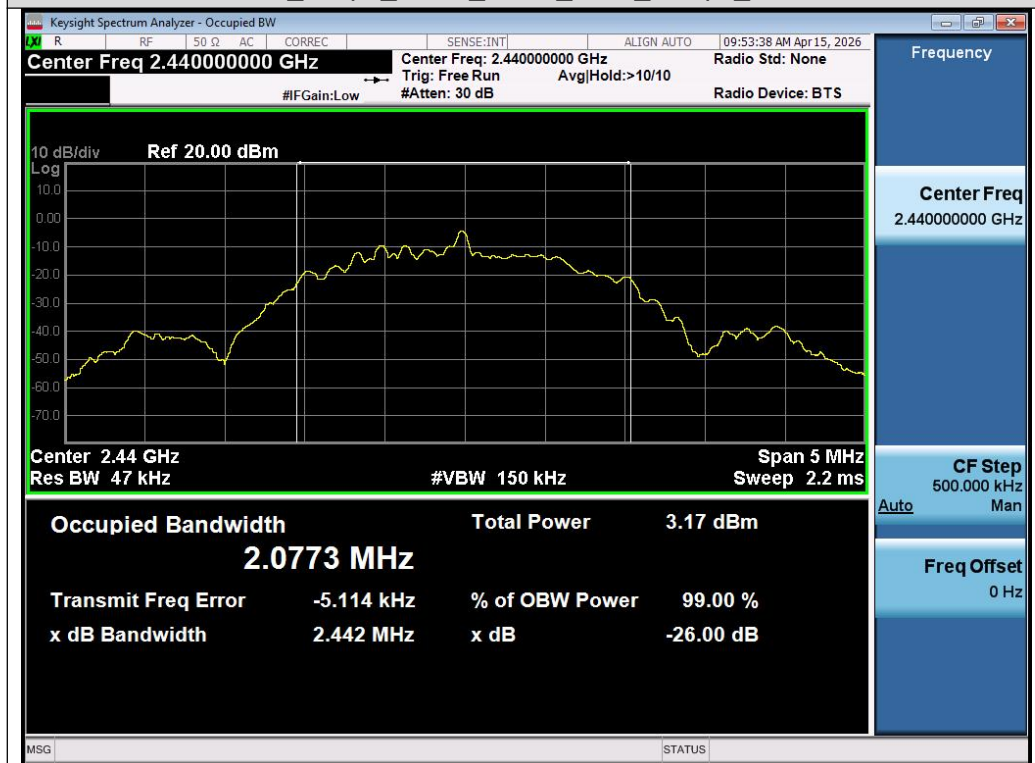


Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_OBW

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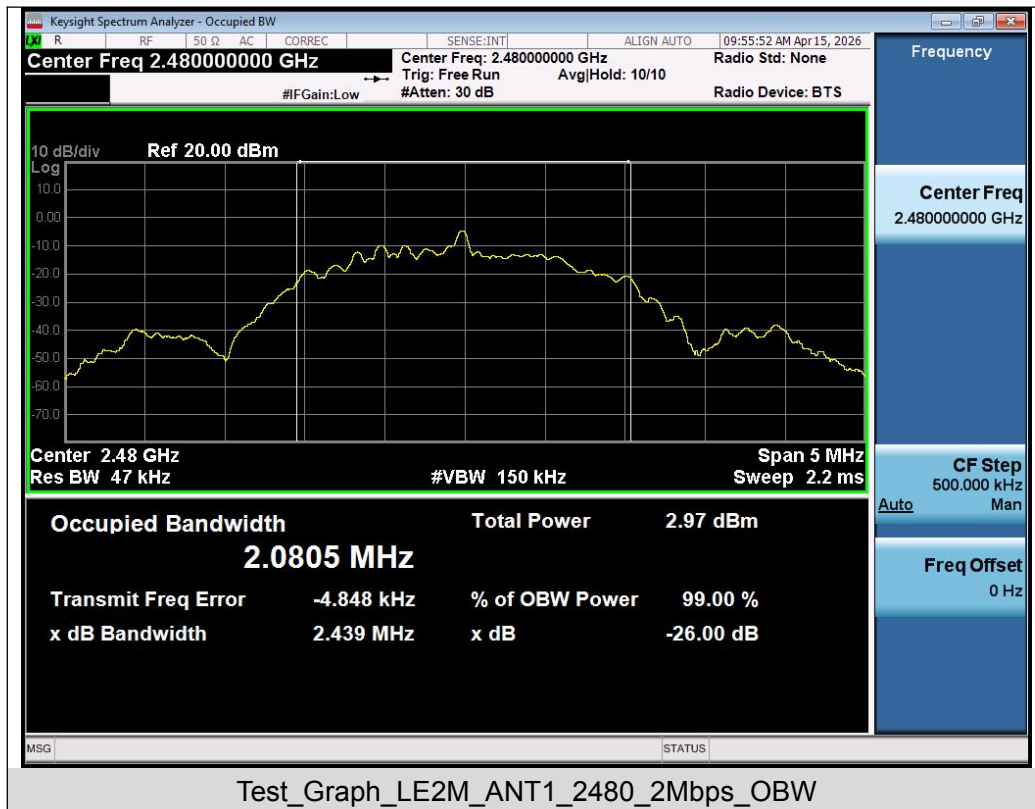


Test\_Graph\_LE2M\_ANT1\_2402\_2Mbps\_OBW

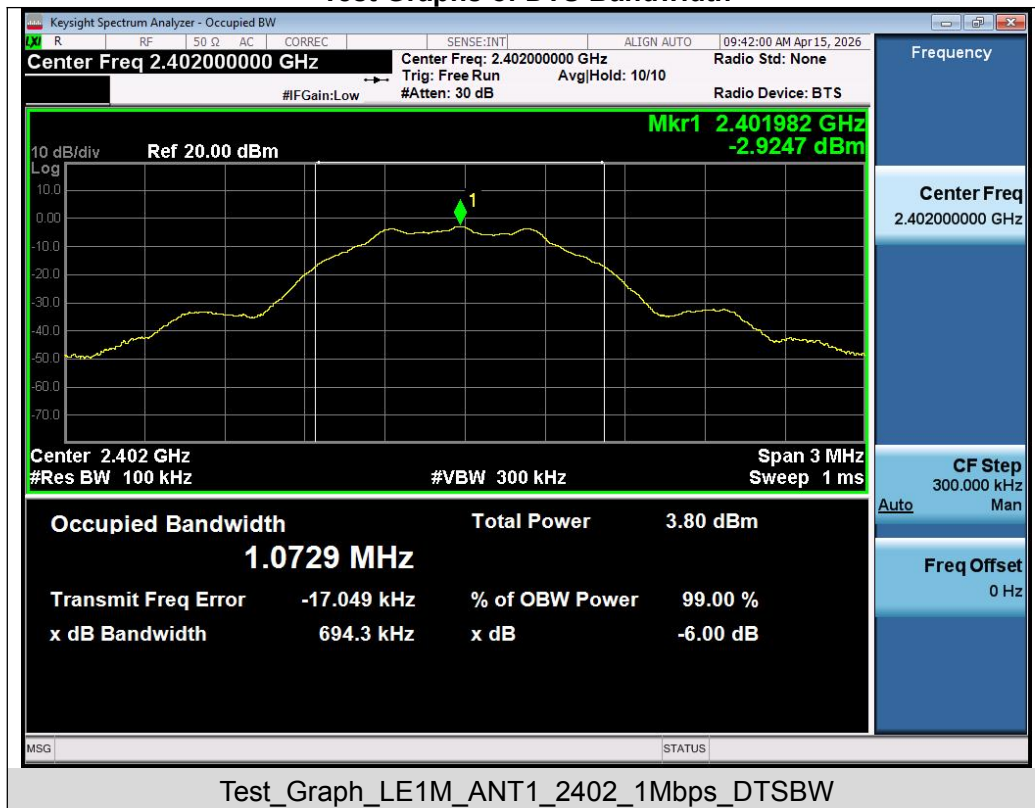


Test\_Graph\_LE2M\_ANT1\_2440\_2Mbps\_OBW

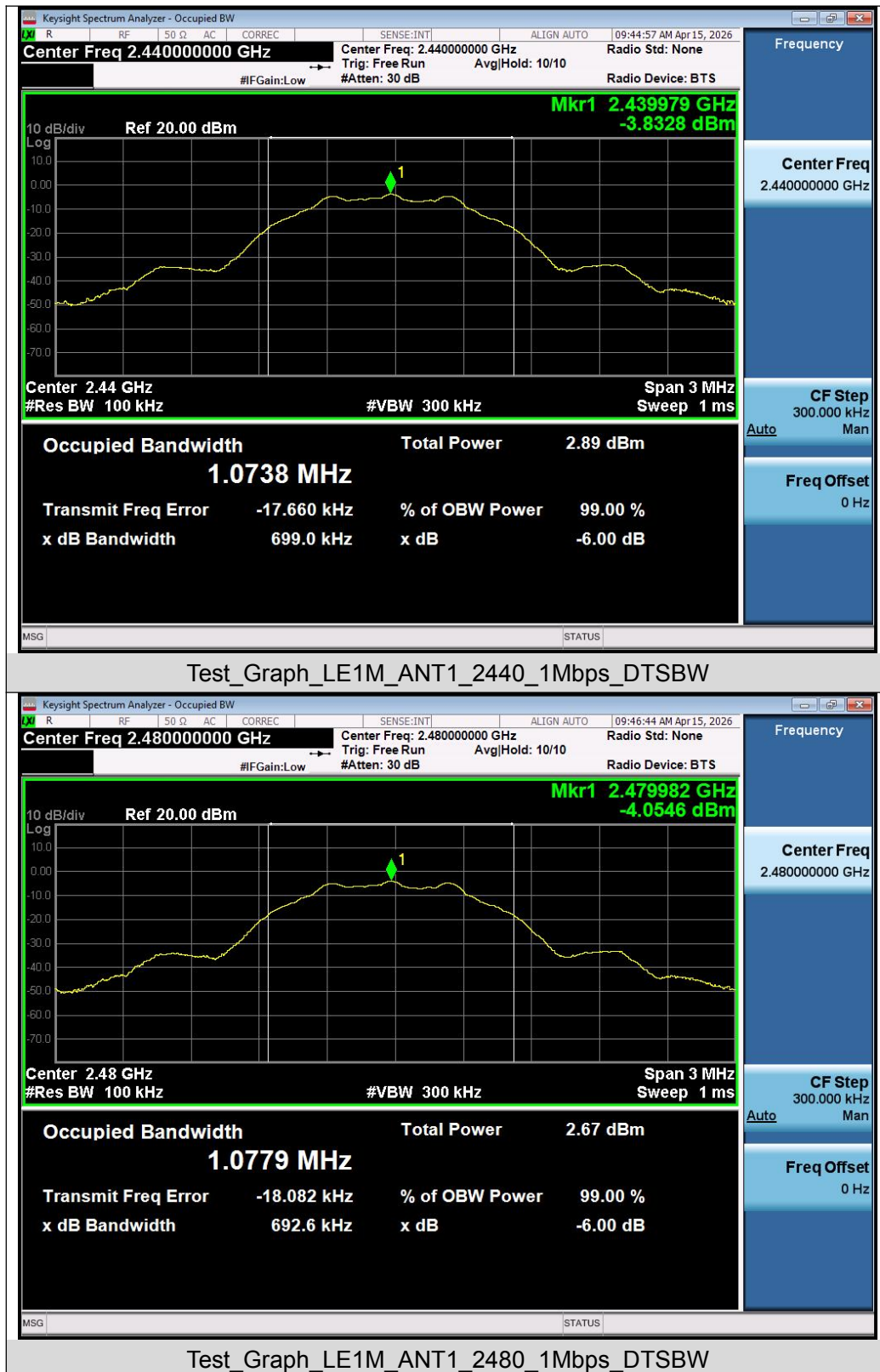
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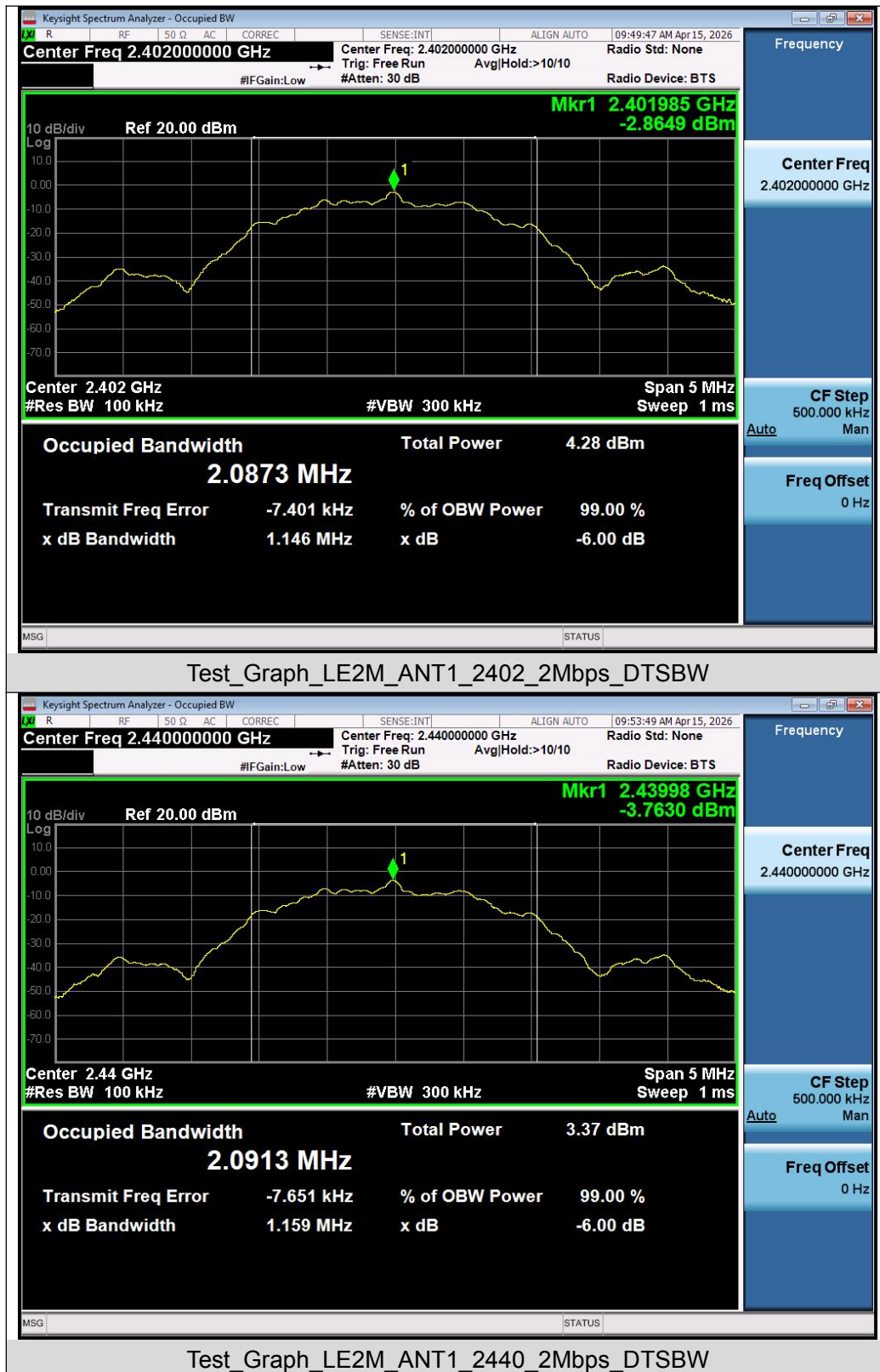
### Test Graphs of DTS Bandwidth



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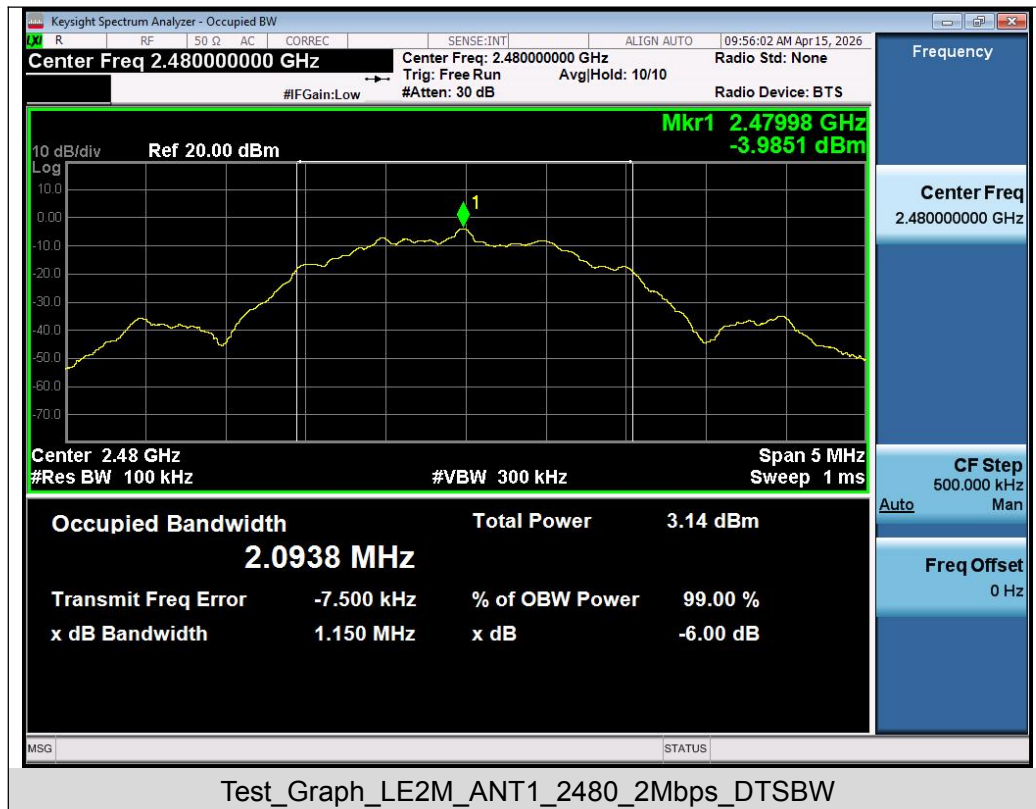


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## 9. Power Spectral Density Measurement

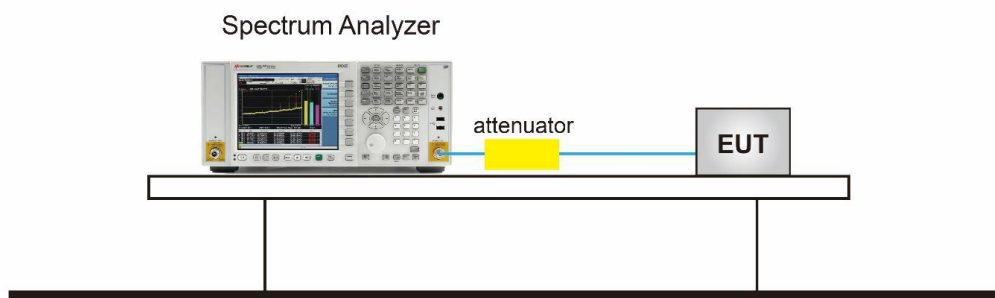
### 9.1 Provisions Applicable

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 9.2 Measurement Procedure

- The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
- 1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously.
- 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz in order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
- 4. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
- 5. Measure and record the results in the test report.
- 6. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

### 9.3 Measurement Setup (Block Diagram of Configuration)

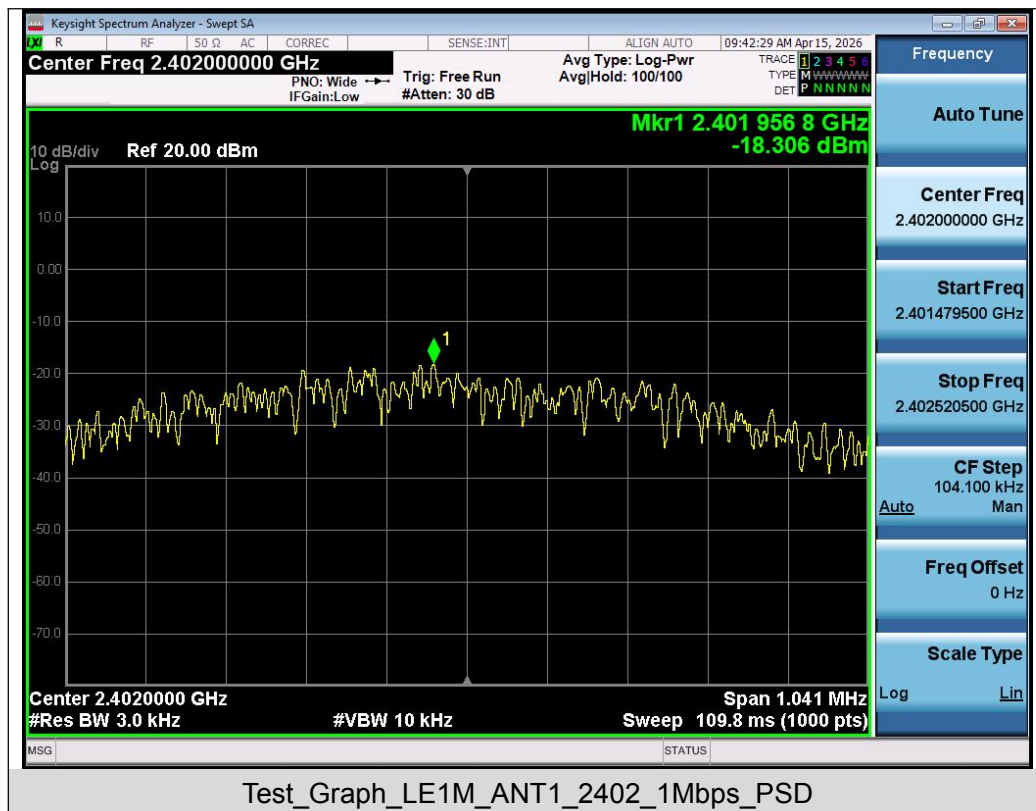


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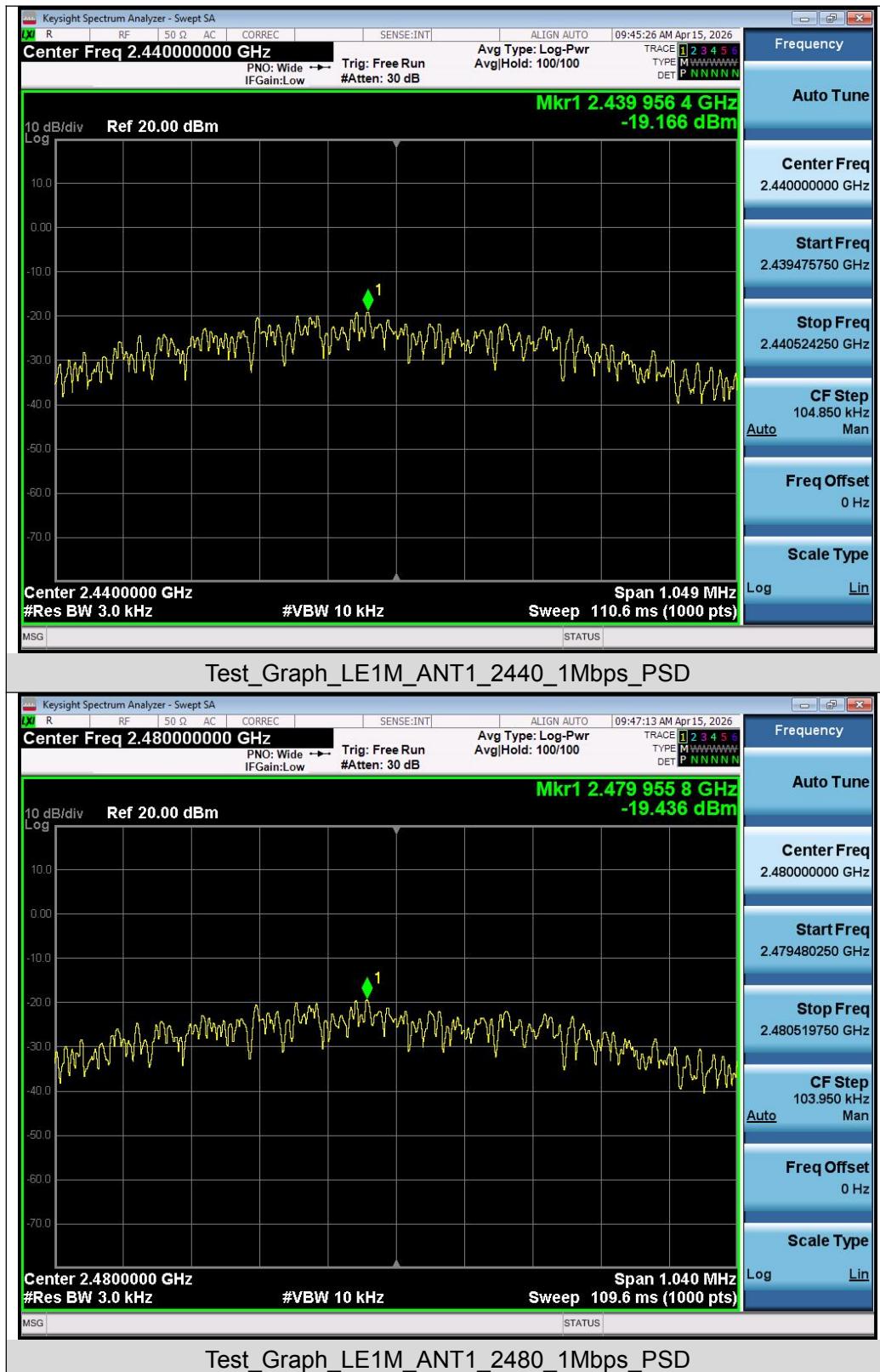
## 9.4 Measurement Results

| Test Data of Conducted Output Power Spectral Density |                      |                          |                  |              |
|------------------------------------------------------|----------------------|--------------------------|------------------|--------------|
| Test Mode                                            | Test Frequency (MHz) | Power density (dBm/3kHz) | Limit (dBm/3kHz) | Pass or Fail |
| GFSK_1Mbps                                           | 2402                 | -18.306                  | $\leq 8$         | Pass         |
|                                                      | 2440                 | -19.166                  | $\leq 8$         | Pass         |
|                                                      | 2480                 | -19.436                  | $\leq 8$         | Pass         |
| GFSK_2Mbps                                           | 2402                 | -20.703                  | $\leq 8$         | Pass         |
|                                                      | 2440                 | -21.576                  | $\leq 8$         | Pass         |
|                                                      | 2480                 | -21.968                  | $\leq 8$         | Pass         |

## Test Graphs of Conducted Output Power Spectral Density

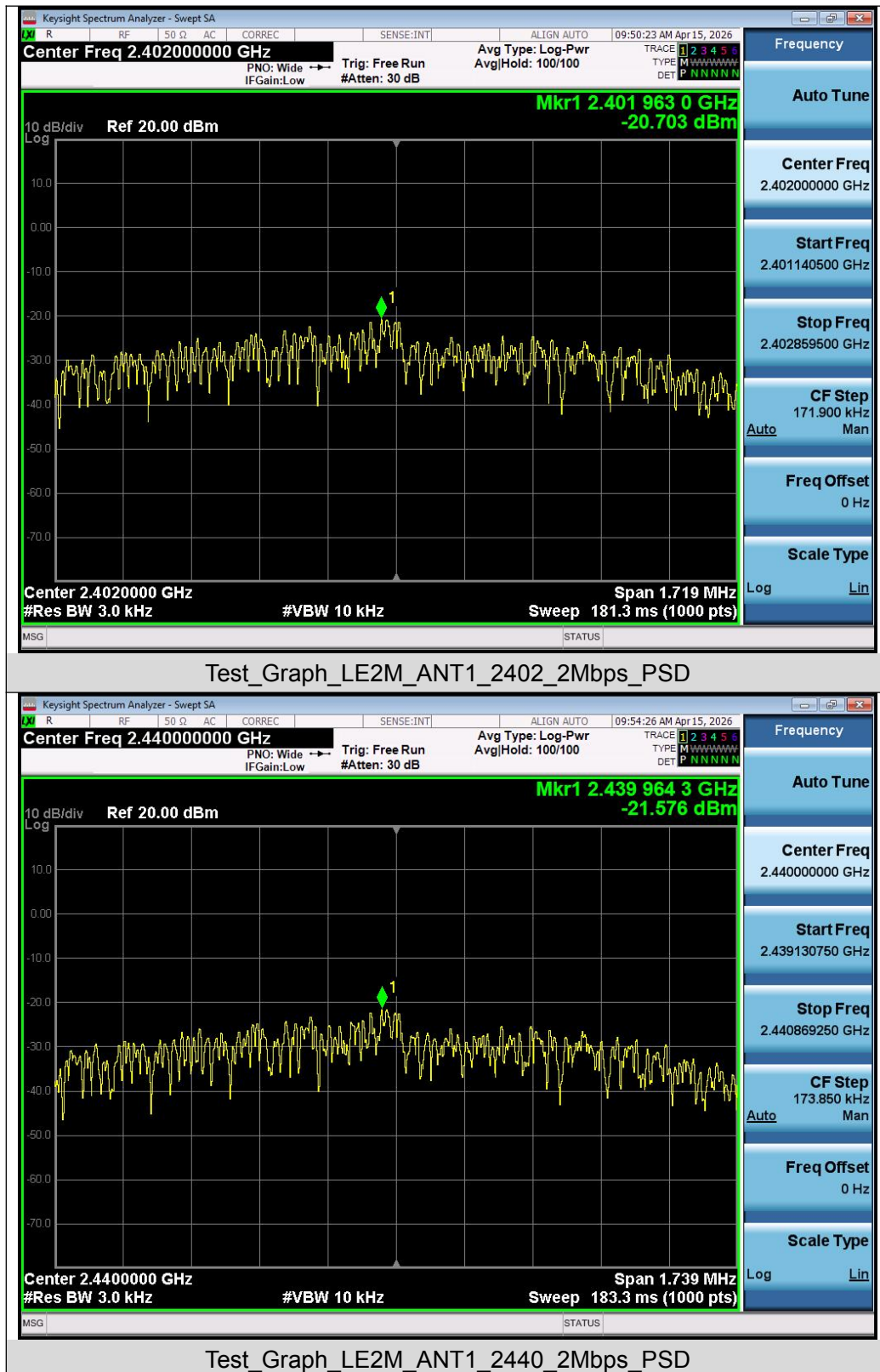


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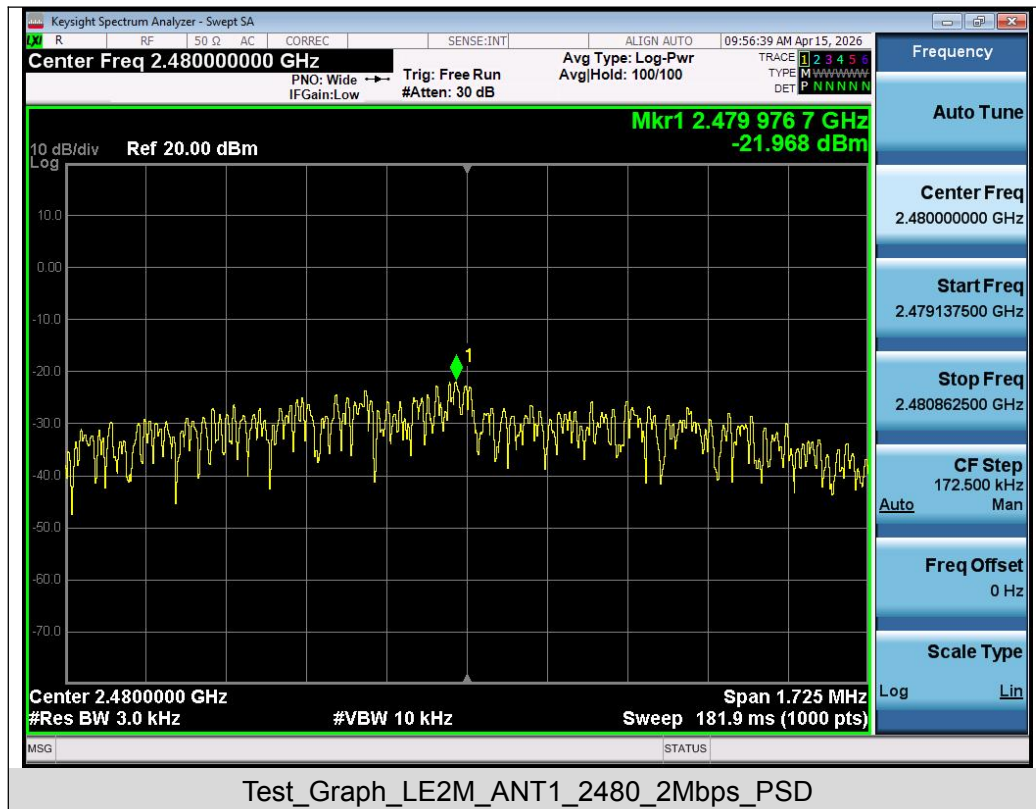
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## 10. Conducted Band Edge and Out-of-Band Emissions

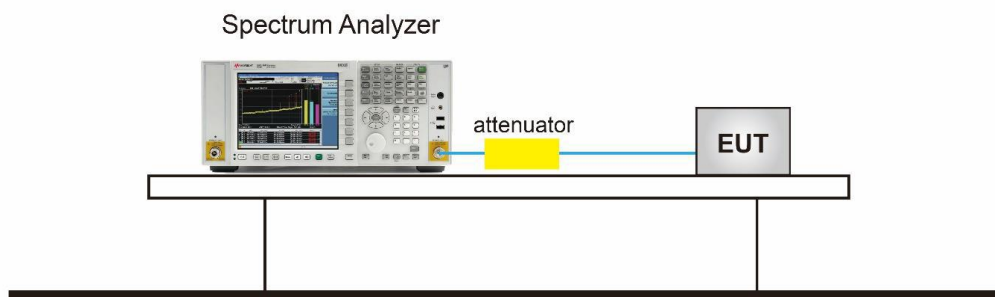
### 10.1 Provisions Applicable

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure.

### 10.2 Measurement Procedure

- Reference level measurement
  1. Set instrument center frequency to DTS channel center frequency
  2. Set the span to  $\geq 1.5$  times the DTS bandwidth
  3. Set the RBW = 100 kHz
  4. Set the VBW  $\geq 3 \times$  RBW
  5. Detector = peak
  6. Sweep time = auto couple
  7. Trace mode = max hold
  8. Allow trace to fully stabilize
  9. Input compensation coefficient (dB) = Cable Loss (dB) + Attenuator attenuation value (dB)
- Emission level measurement
  1. Set the center frequency and span to encompass frequency range to be measured
  2. RBW = 100kHz
  3. VBW = 300kHz
  4. Detector = Peak
  5. Trace mode = max hold
  6. Sweep time = auto couple
  7. The trace was allowed to stabilize
  8. Input compensation coefficient (dB) = Cable Loss (dB) + Attenuator attenuation value (dB)

### 10.3 Measurement Setup (Block Diagram of Configuration)



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## 10.4 Measurement Results

### Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands



Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Reference Level



Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Lower Band Emissions

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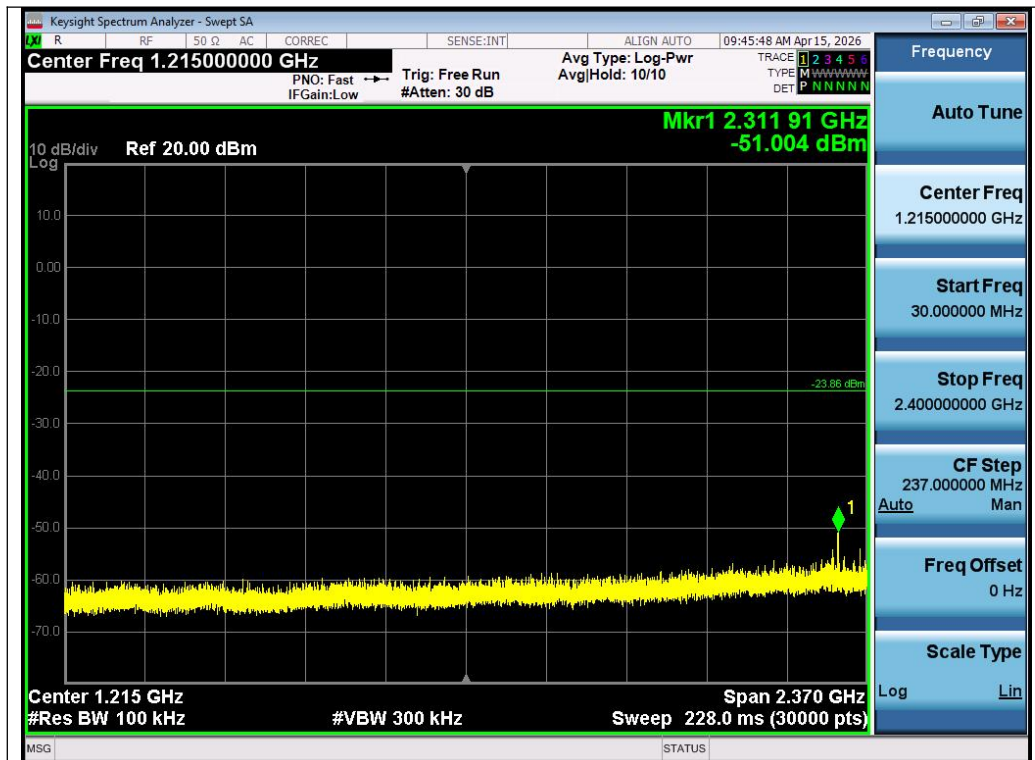
Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Higher Band Emissions



Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Reference Level

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Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Lower Band Emissions



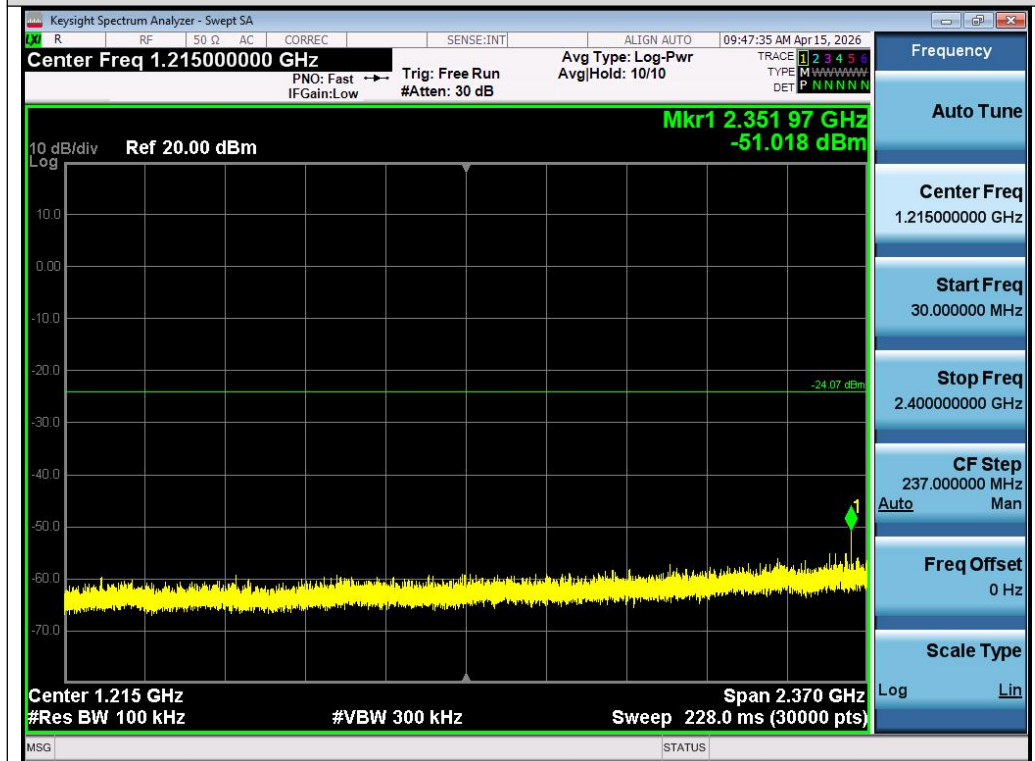
Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Higher Band Emissions

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Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Reference Level



Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Lower Band Emissions

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