KSIGN®
KSIGN (Guangdong) Testing Co., Ltd.
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# TEST REPORT

| | |
|---|---|
| **Report No.** : | **KS2010S01806E** |
| **FCC ID** : | **2AO94-MK05** |
| **Applicant** : | **MOKO TECHNOLOGY LIMITED** |
| Address : | 2F, Building1, No. 37 Xiaxintang Xintang village, Fucheng Street, Longhua District, Shenzhen, Guangdong Province, China |
| Manufacturer : | MOKO TECHNOLOHY Ltd |
| Address : | 2F, Building1, No. 37 Xiaxintang Xintang village, Fucheng Street, Longhua District, Shenzhen, Guangdong Province, China |
| Factory : | MOKO TECHNOLOHY Ltd |
| Address : | 2F, Building1, No. 37 Xiaxintang Xintang village, Fucheng Street, Longhua District, Shenzhen, Guangdong Province, China |
| **Product Name** : | **Bluetooth Low Energy Module** |
| Trade Mark : | / |
| Model/Type reference : | MK05A |
| Listed Model(s) : | MK05B |
| **Standard** : | **FCC CFR Title 47 Part 15 Subpart C Section 15.247** |
| Date of Receipt : | Oct. 30, 2020 |
| Date of Test Date : | Oct. 30, 2020- Nov. 6, 2020 |
| Date of issue : | Nov. 6, 2020 |
| **Test result** : | **Pass** |

| | | |
|---|---|---|
| Compiled by:<br>(Printed name+signature) | Rory Huang | Rory Huang |
| Supervised by:<br>( Printed name+signature) | Eder Zhan | Eder Zhan |
| Approved by:<br>( Printed name+signature) | Cary Luo | Cary Luo |

KSIGN(Guangdong) Testing Co., Ltd. KSIGN APPROVED

| | |
|---|---|
| **Testing Laboratory Name** : | **KSIGN(Guangdong) Testing Co., Ltd.** |
| Address : | West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu,Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, People's Republic of China |

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# 1. TEST SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:

**FCC Rules Part 15.247:** Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

**ANSI C63.10-2013:** American National Standard for Testing Unlicensed Wireless Devices.

**KDB 558074 D01**：The measurement guidance provided herein is applicable only to Digital Transmission System (DTS) devices operating in the 902-928 MHz. 2400-2483.5 MHz and/or 5725-5850 MHz bands under § 15.247 of the FCC rules (Title 47 of the Code of Federal Regulations).

## 1.2. Report version

| Revised No. | Date of issue | Description |
|---|---|---|
| 01 | Nov. 6, 2020 | Original |

## 1.3. Test Description

| FCC Part 15 Subpart C(15.247) | | | |
|---|---|---|---|
| Test Item | Standard Section | Result | Test Engineer |
| | FCC | | |
| Antenna Requirement | 15.203 | Pass | Rory Huang |
| Conducted Emission | 15.207 | Pass | Rory Huang |
| Restricted Bands | 15.205 | Pass | Rory Huang |
| Peak Output Power | 15.247(b) | Pass | Rory Huang |
| Band Edge Emissions | 15.247(d) | Pass | Rory Huang |
| Power Spectral Density | 15.247(e) | Pass | Rory Huang |
| Radiated Emission | 15.205&15.209 | Pass | Rory Huang |
| 6dB Bandwidth | 15.247(a)(2) | Pass | Rory Huang |
| Spurious RF Conducted Emission | 15.247(d) | Pass | Rory Huang |

Note:

1. The measurement uncertainty is not included in the test result.
2. The Two models have been tested, only the worst test model MK05B data is recorded in the report.

## 1.4. Test Facility

**Address of the report laboratory**

**KSIGN(Guangdong) Testing Co., Ltd.**

West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu,Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, People's Republic of China

**Laboratory accreditation**

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

**CNAS-Lab Code: L13261**
KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

**A2LA-Lab Cert. No.: 5457.01**
KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with 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.

**IC Registration No.: CN0096**
The 3m alternate test site of KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: CN0096

**FCC-Registration No.: CN1272**

KSIGN(Guangdong) Testing 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.

## 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the KSIGN(Guangdong) Testing Co., Ltd. system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device. Below is the best measurement capability for KSIGN(Guangdong) Testing Co., Ltd.

| Test Items | Measurement Uncertainty | Notes |
|---|---|---|
| Transmitter power conducted | 0.42 dB | (1) |
| Transmitter power Radiated | 2.14 dB | (1) |
| Conducted spurious emissions 9kHz~40GHz | 1.60 dB | (1) |
| Radiated spurious emissions 9kHz~40GHz | 2.20 dB | (1) |
| Conducted Emissions 9kHz~30MHz | 3.20 dB | (1) |
| Radiated Emissions 30~1000MHz | 4.70 dB | (1) |
| Radiated Emissions 1~18GHz | 5.00 dB | (1) |
| Radiated Emissions 18~40GHz | 5.54 dB | (1) |
| Occupied Bandwidth | 2.80 dB | (1) |

**Note (1):** This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

## 1.6. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature: | 15~35°C |
| Relative Humidity: | 30~60 % |
| Air Pressure: | 950~1050mba |

# 2. GENERAL INFORMATION

## 2.1. Client Information

| | |
|---|---|
| Applicant: | MOKO TECHNOLOGY LIMITED |
| Address: | 2F, Building1, No. 37 Xiaxintang Xintang village, Fucheng Street, Longhua District, Shenzhen, Guangdong Province, China |
| Manufacturer: | MOKO TECHNOLOHY Ltd |
| Address: | 2F, Building1, No. 37 Xiaxintang Xintang village, Fucheng Street, Longhua District, Shenzhen, Guangdong Province, China |
| Factory: | MOKO TECHNOLOHY Ltd |
| Address: | 2F, Building1, No. 37 Xiaxintang Xintang village, Fucheng Street, Longhua District, Shenzhen, Guangdong Province, China |

## 2.2. General Description of EUT

| | |
|---|---|
| Test Sample Number 1: | 1-1-1(Normal Sample),1-1-2(Engineering Sample）For MK05A |
| Test Sample Number 2: | 1-1-3(Normal Sample),1-1-4(Engineering Sample）For MK05B |
| Product Name: | Bluetooth Low Energy Module |
| Model/Type reference: | MK05A |
| Marketing Name: | / |
| Listed Model(s): | MK05B |
| Model Difference: | The difference between product models only depends and the model naming,Type of antenna is different. Other power supply methods, safety structure and key components are the same, which do not affect the safety and electromagnetic compatibility performance. |
| Power supply(Work) | Input:DC 3.3V |
| Hardware version: | V1.0 |
| Software version: | V1.0.0 |
| **Bluetooth 5.0 BLE** | |
| Modulation: | GFSK |
| Operation frequency: | 2402MHz~2480MHz |
| Max Peak Output Power: | 0.08dBm |
| Channel number: | 40 |
| Channel separation: | 2MHz |
| Antenna type: | PCB Antenna for MK05A<br>External FPC Antenna for MK05B |
| Antenna gain: | -0.1dBi for MK05A<br>Max .2.0dBi for MK05B |

## 2.3. Operation state

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. BT BLE, 40 channels are provided to the EUT. Channels 00/19/39 were selected for testing.

Operation Frequency List:

| Channel | Frequency (MHz) |
|---|---|
| **00** | **2402** |
| 01 | 2404 |
| ⋮ | ⋮ |
| **19** | **2440** |
| 20 | 2442 |
| 21 | 2444 |
| ⋮ | ⋮ |
| 38 | 2478 |
| **39** | **2480** |

Note: The display in grey were the channel selected for testing.

Test mode

| |
|---|
| For RF test items: |
| The engineering test program was provided and enabled to make EUT continuous transmit. |
| For AC power line conducted emissions: |
| The EUT was set to connect with the Bluetooth instrument under large package sizes transmission. |
| For Radiated spurious emissions test item: |
| The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report. |

## 2.4. Measurement Instruments List

| Tonscend JS0806-2 Test system | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Until |
| 1 | Spectrum Analyzer | R&S | FSV40-N | 101798 | 04/07/2021 |
| 2 | Vector Signal Generator | Agilent | N5182A | MY50142520 | 04/07/2021 |
| 3 | Analog Signal Generator | HP | 83752A | 3344A00337 | 04/07/2021 |
| 4 | Power Sensor | Agilent | E9304A | MY50390009 | 04/07/2021 |
| 5 | Power Sensor | Agilent | E9300A | MY41498315 | 04/07/2021 |
| 6 | Wideband Radio Communication Tester | R&S | CMW500 | 157282 | 04/07/2021 |
| 7 | Climate Chamber | Angul | AGNH80L | 1903042120 | 04/07/2021 |
| 8 | Dual Output DC Power Supply | Agilent | E3646A | MY40009992 | 04/07/2021 |
| 9 | RF Control Unit | Tonscend | JS0806-2 | / | 04/07/2021 |

| Transmitter spurious emissions & Receiver spurious emissions | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Until |
| 1 | EMI Test Receiver | R&S | ESR | 102525 | 04/07/2021 |
| 2 | High Pass Filter | Chengdu E-Microwave | OHF-3-18-S | 0E01901038 | 03/27/2021 |
| 3 | High Pass Filter | Chengdu E-Microwave | OHF-6.5-18-S | 0E01901039 | 03/27/2021 |
| 4 | Spectrum Analyzer | HP | 8593E | 3831U02087 | 04/07/2021 |
| 5 | Ultra-Broadband logarithmic period Antenna | Schwarzbeck | VULB 9163 | 01230 | 03/29/2023 |
| 6 | Loop Antenna | Beijin ZHINAN | ZN30900C | 18050 | 03/25/2021 |
| 7 | Spectrum Analyzer | R&S | FSV40-N | 101798 | 04/07/2021 |
| 8 | Horn Antenna | Schwarzbeck | BBHA 9120 D | 2023 | 03/29/2023 |
| 9 | Pre-Amplifier | Schwarzbeck | BBV 9745 | 9745#129 | 04/07/2021 |
| 10 | Pre-Amplifier | EMCI | EMC051835SE | 980662 | 04/07/2021 |

| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Until |
|---|---|---|---|---|---|
| 1 | LISN | R&S | ENV432 | 1326.6105.02 | 03/27/2021 |
| 2 | EMI Test Receiver | R&S | ESR | 102524 | 04/07/2021 |
| 3 | Manual RF Switch | JS TOYO | / | MSW-01/002 | 04/07/2021 |

Note:
1)The Cal. Interval was one year.
2)The cable loss has calculated in test result which connection between each test instruments.

## 2.5. Test Software

| Software name | Model | Version |
|---|---|---|
| Conducted emission Measurement Software | EZ-EMC | EMC-Con 3A1.1 |
| Radiated emission Measurement Software | EZ-EMC | FA-03A.2.RE |
| Bluetooth and WIFI Test System | JS1120-3 | 2.5.77.0418 |

# 3. TEST ITEM AND RESULTS

## 3.1. Antenna requirement

**Requirement**

**FCC CFR Title 47 Part 15 Subpart C Section 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, 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.

**FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):**

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

**Test Result**

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

Note: The antenna is permanently fixed to the EUT

## 3.2. Conducted Emission

**Limit**

**Conducted Emission Test Limit**

| Frequency | Maximum RF Line Voltage (dBμV) | |
|---|---|---|
| | Quasi-peak Level | Average Level |
| 150kHz~500kHz | 66 ~ 56 * | 56 ~ 46 * |
| 500kHz~5MHz | 56 | 46 |
| 5MHz~30MHz | 60 | 50 |

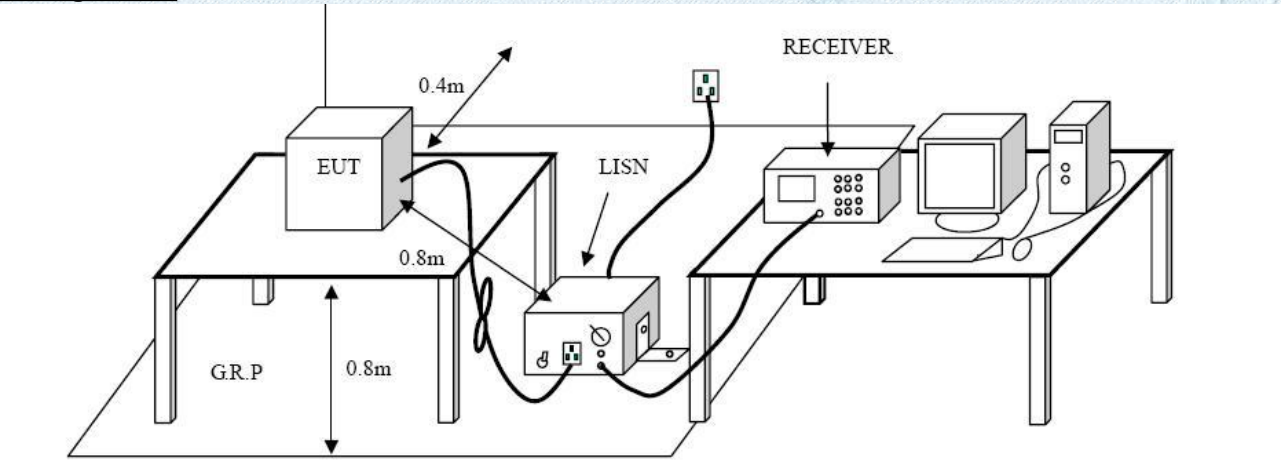
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

**Test Configuration**




**Test Procedure**

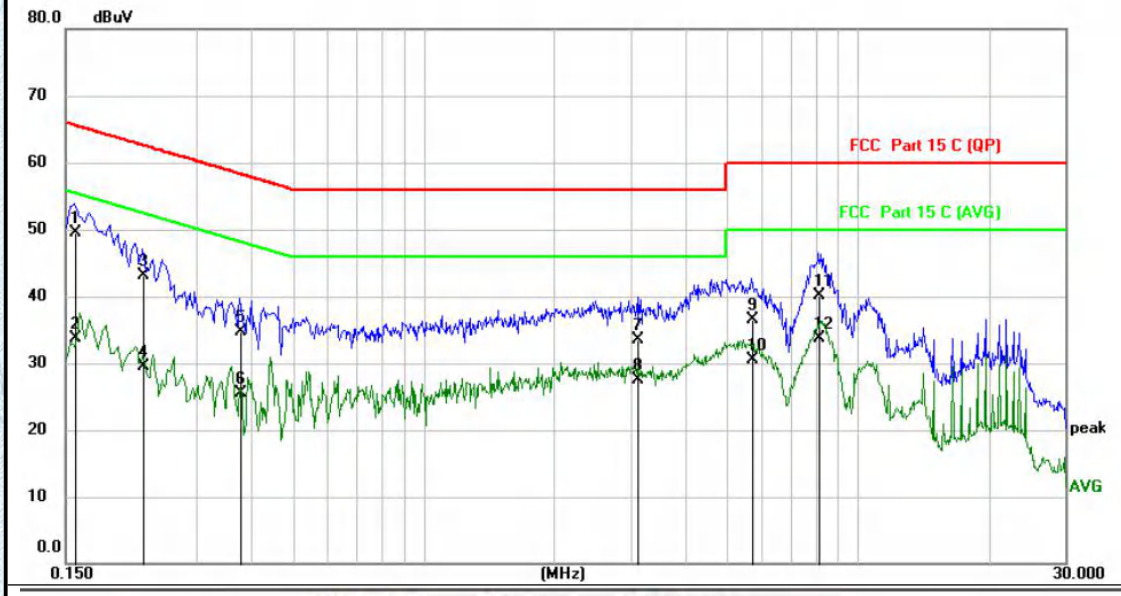
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment.
   The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
7. During the above scans, the emissions were maximized by cable manipulation.

**Test Mode:**

Please refer to the clause 2.3.

**Test Results**

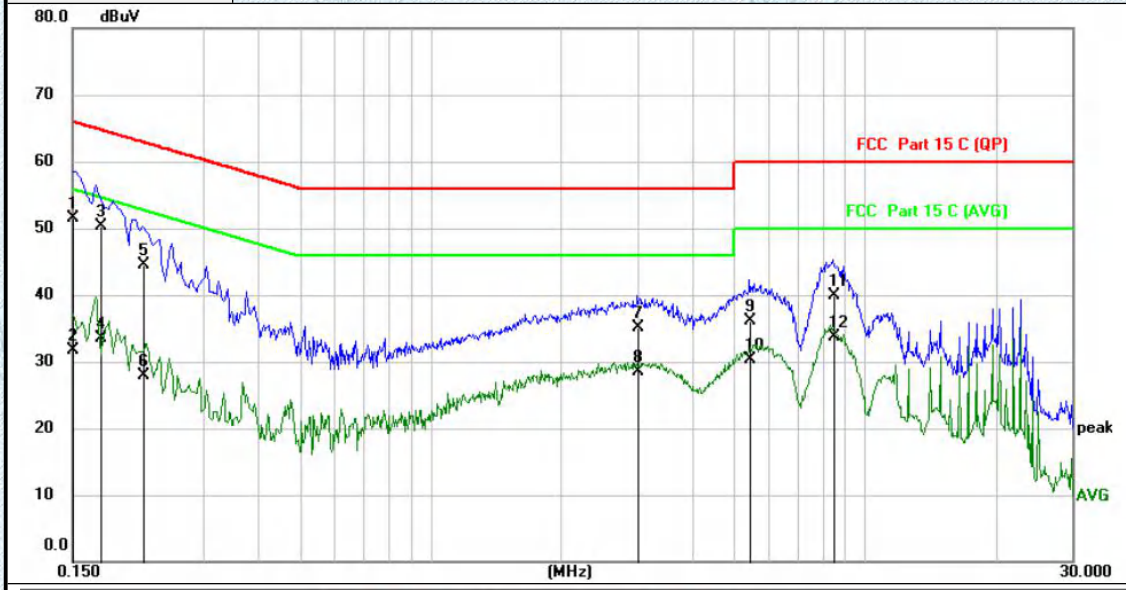
| Test Voltage: | AC 120V/60 Hz |
|---|---|
| Terminal: | Line |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | * | 0.1580 | 38.73 | 10.83 | 49.56 | 65.57 | -16.01 | QP |
| 2 | | 0.1580 | 22.86 | 10.83 | 33.69 | 55.57 | -21.88 | AVG |
| 3 | | 0.2260 | 32.18 | 10.88 | 43.06 | 62.60 | -19.54 | QP |
| 4 | | 0.2260 | 18.54 | 10.88 | 29.42 | 52.60 | -23.18 | AVG |
| 5 | | 0.3780 | 23.87 | 10.89 | 34.76 | 58.32 | -23.56 | QP |
| 6 | | 0.3780 | 14.54 | 10.89 | 25.43 | 48.32 | -22.89 | AVG |
| 7 | | 3.1140 | 22.65 | 10.92 | 33.57 | 56.00 | -22.43 | QP |
| 8 | | 3.1140 | 16.54 | 10.92 | 27.46 | 46.00 | -18.54 | AVG |
| 9 | | 5.6940 | 25.55 | 10.99 | 36.54 | 60.00 | -23.46 | QP |
| 10 | | 5.6940 | 19.57 | 10.99 | 30.56 | 50.00 | -19.44 | AVG |
| 11 | | 8.1180 | 29.24 | 10.96 | 40.20 | 60.00 | -19.80 | QP |
| 12 | | 8.1180 | 22.81 | 10.96 | 33.77 | 50.00 | -16.23 | AVG |

Remarks:
1.Measurement = Reading Level+ Correct Factor
2.Over = Measurement -Limit

| | |
|---|---|
| **Test Voltage:** | AC 120V/60 Hz |
| **Terminal:** | Neutral |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | | 0.1500 | 40.63 | 10.83 | 51.46 | 66.00 | -14.54 | QP |
| 2 | | 0.1500 | 20.92 | 10.83 | 31.75 | 56.00 | -24.25 | AVG |
| 3 | * | 0.1749 | 39.48 | 10.86 | 50.34 | 64.72 | -14.38 | QP |
| 4 | | 0.1749 | 22.66 | 10.86 | 33.52 | 54.72 | -21.20 | AVG |
| 5 | | 0.2180 | 33.62 | 10.87 | 44.49 | 62.89 | -18.40 | QP |
| 6 | | 0.2180 | 16.96 | 10.87 | 27.83 | 52.89 | -25.06 | AVG |
| 7 | | 2.9980 | 24.15 | 10.92 | 35.07 | 56.00 | -20.93 | QP |
| 8 | | 2.9980 | 17.54 | 10.92 | 28.46 | 46.00 | -17.54 | AVG |
| 9 | | 5.4220 | 25.19 | 10.97 | 36.16 | 60.00 | -23.84 | QP |
| 10 | | 5.4220 | 19.42 | 10.97 | 30.39 | 50.00 | -19.61 | AVG |
| 11 | | 8.4620 | 29.01 | 10.93 | 39.94 | 60.00 | -20.06 | QP |
| 12 | | 8.4620 | 22.69 | 10.93 | 33.62 | 50.00 | -16.38 | AVG |

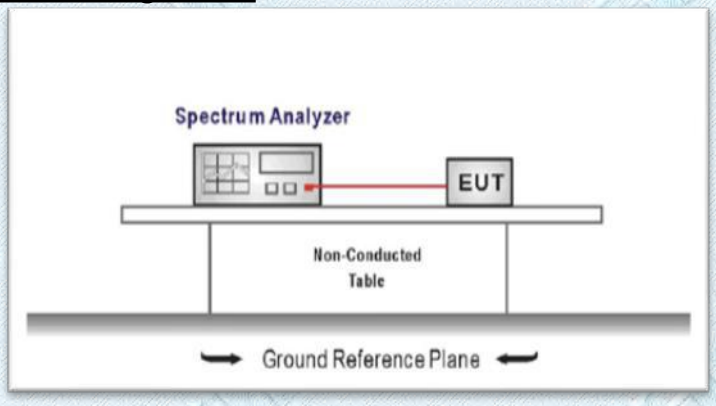
Remarks:
1.Measurement = Reading Level+ Correct Factor
2.Over = Measurement -Limit

## 3.3. Band edge and Spurious Emission (conducted)

**Limit**

**FCC CFR Title 47 Part 15 Subpart C Section15.247 (d):**
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

**Test Configuration**




**Test Procedure**

1. Connect EUT RF Output port to the Spectrum Analyzer through an RF attenuator.
2. Spectrum Setting:
   RBW=100KHz
   VBW=300KHz.
   Detector function: Peak.
   Trace: Max hold.
   Sweep = Auto couple.

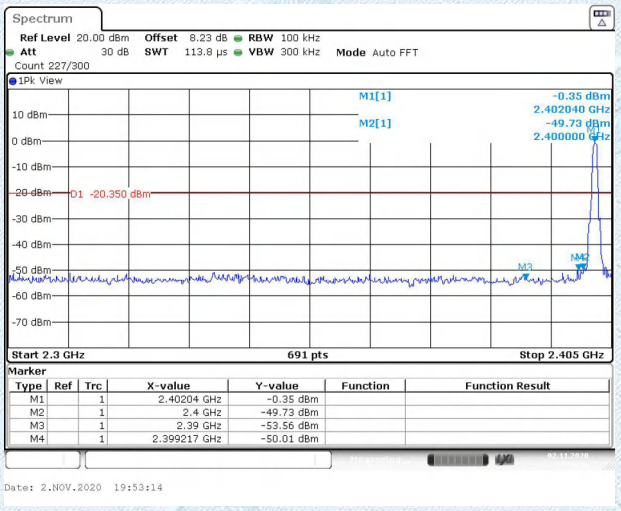
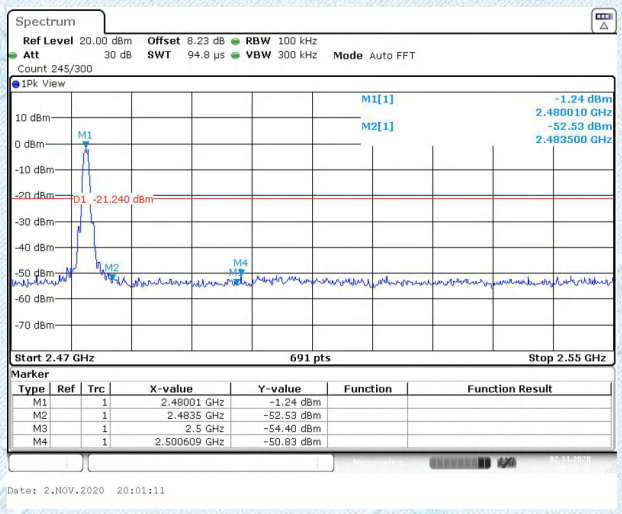
   Allow the trace to stabilize.

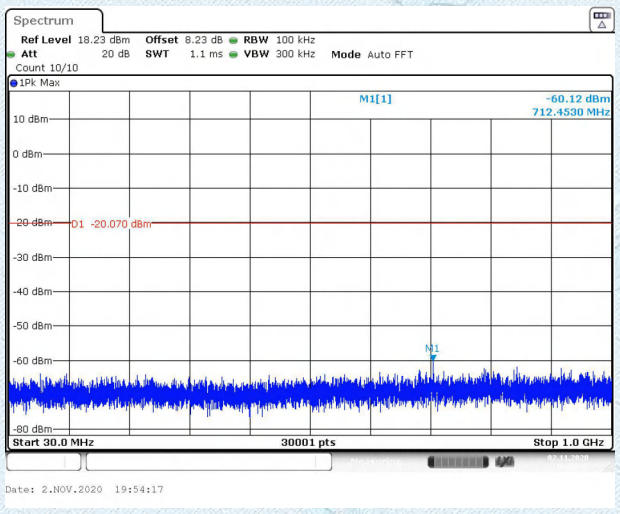
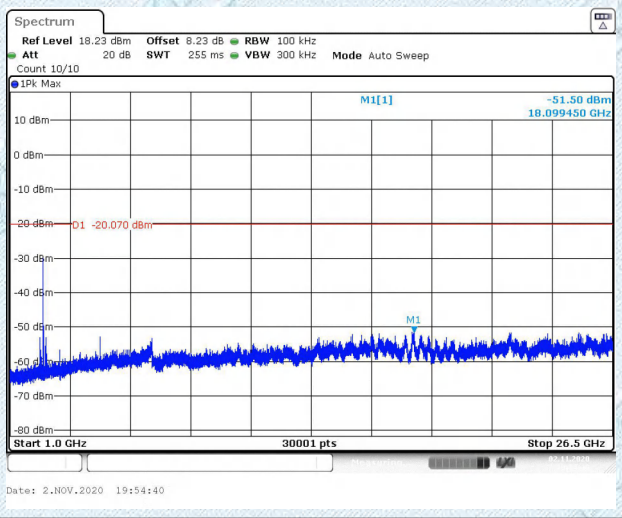
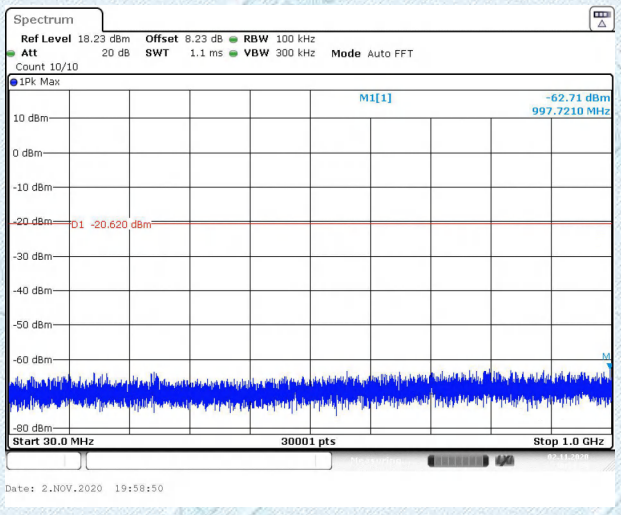
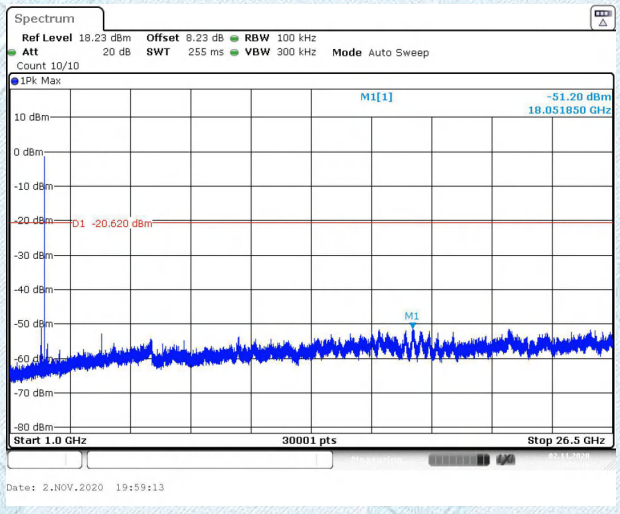
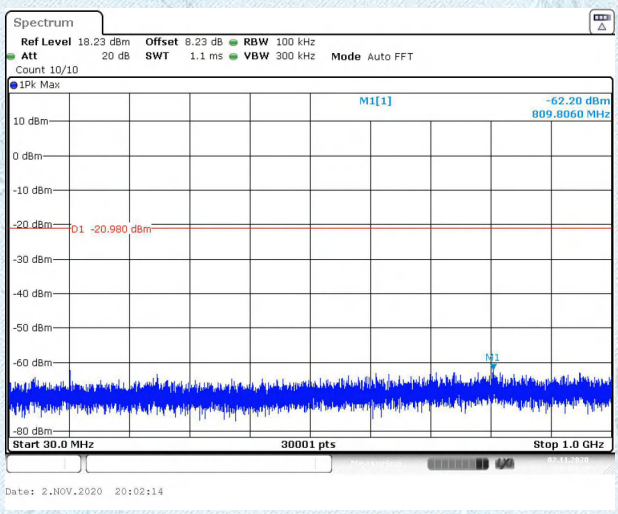
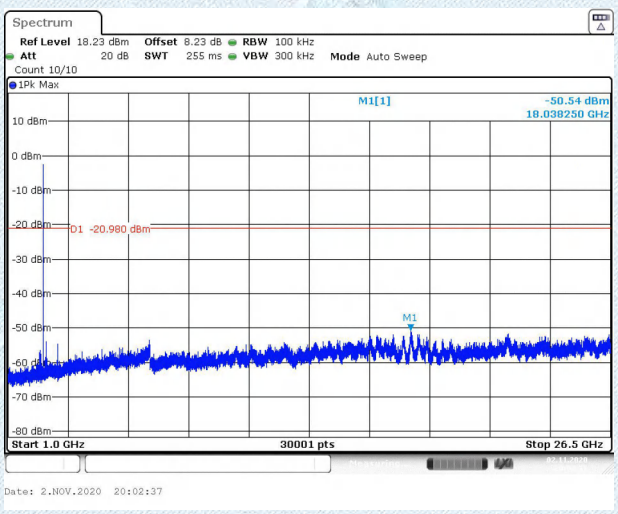
**Test Mode**

Please refer to the clause 2.3.

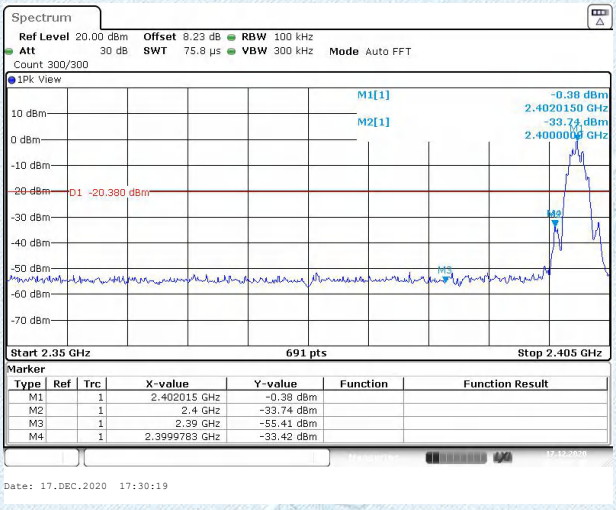
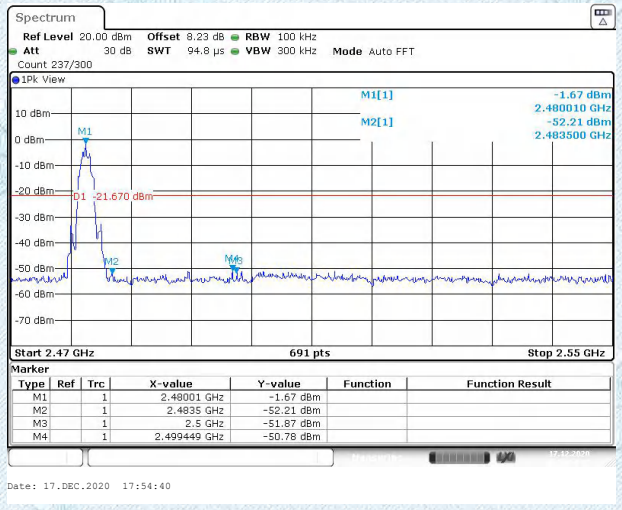
## Test Results

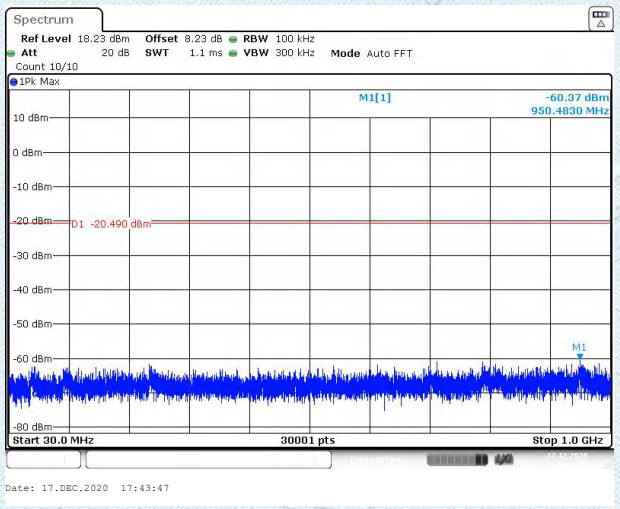
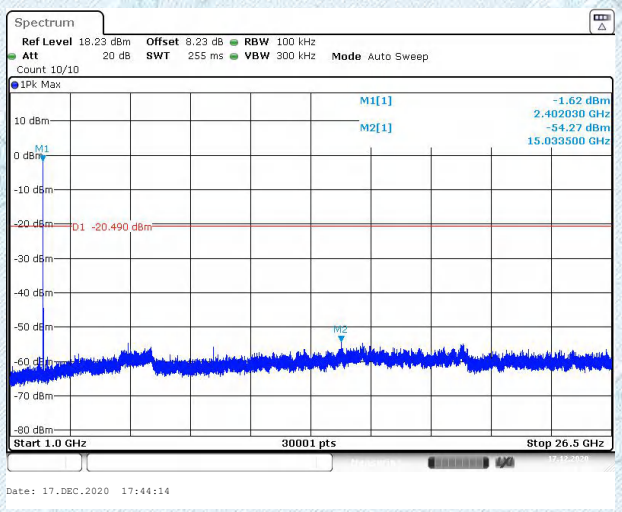
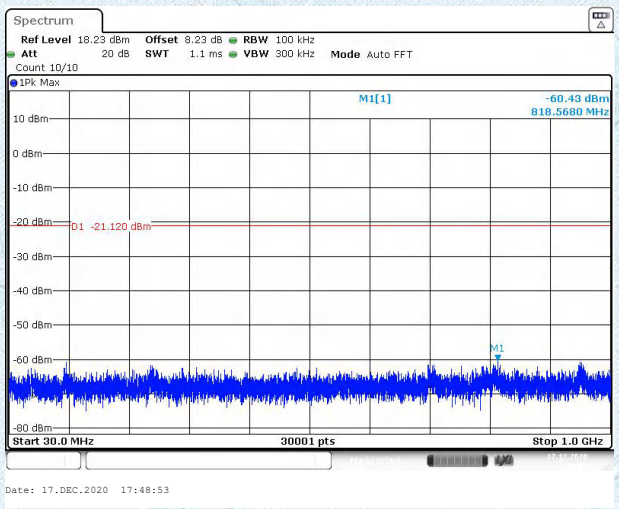
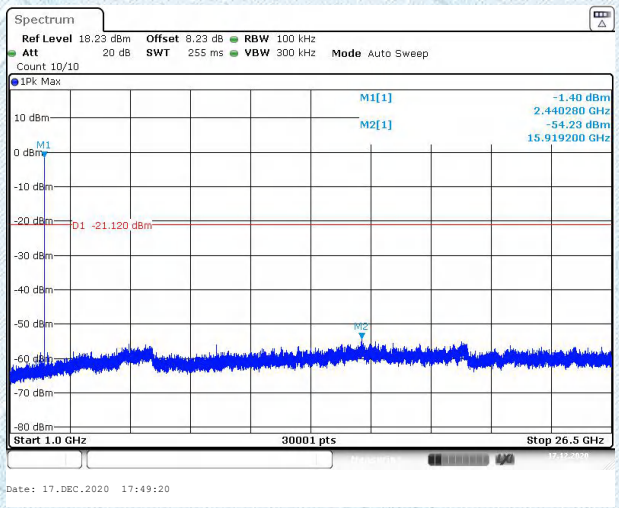
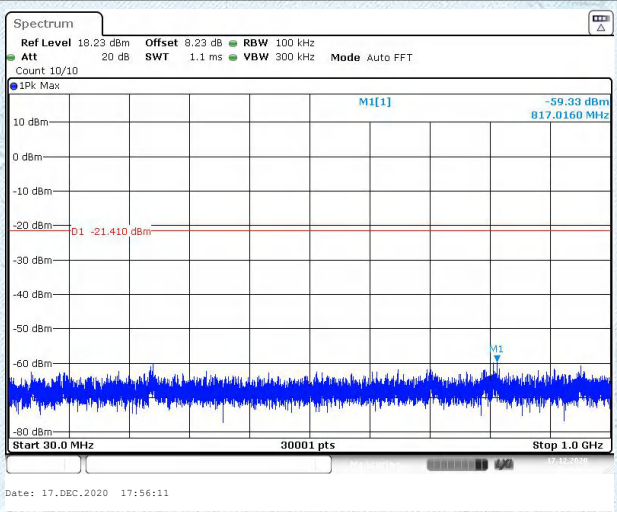
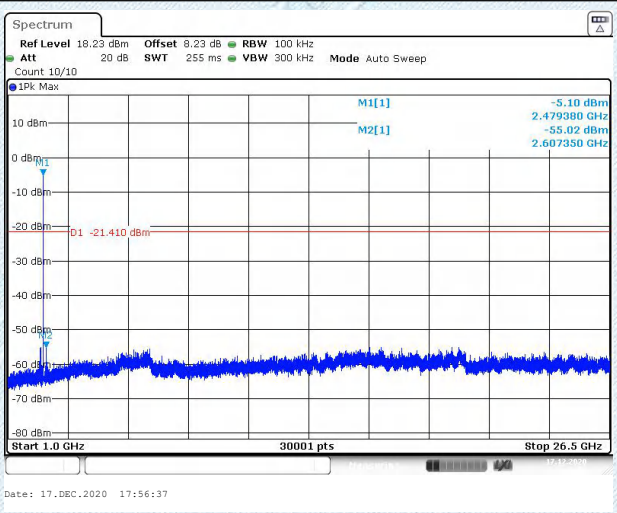
BLE_1M

| GFSK_1M | |
|---|---|
| CH00-Bandedge | CH39-Bandedge |
|  |  |

| GFSK_1M | |
|---|---|
| CH00-SE | |
|  |  |
| CH19-SE | |
|  |  |
| CH39-SE | |
|  |  |

BLE_2M：

| GFSK_2M | |
|---|---|
| CH00-Bandedge | CH39-Bandedge |
|  |  |

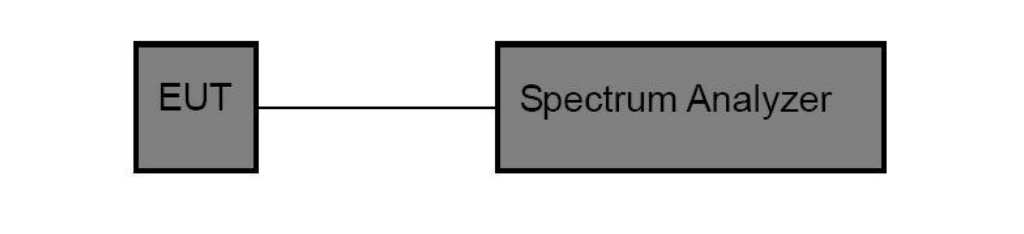
| GFSK_2M | |
|---|---|
| CH00-SE | |
|  |  |
| CH19-SE | |
|  |  |
| CH39-SE | |
|  |  |

## 3.4. 6dB Bandwidth

**Limit**

| Test Item | Limit | Frequency Range(MHz) |
|---|---|---|
| Bandwidth | >=500 KHz (6dB bandwidth) | 2400~2483.5 |

**Test Configuration**




**Test Procedure**

1. Connect EUT RF Output port to the Spectrum Analyzer through an RF attenuator.
2. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.
3. The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.
4. Spectrum Setting:

   6dB bandwidth:

   (1) Set RBW = 100 kHz.

   (2) Set the video bandwidth (VBW) ≥ 3* RBW.

   (3) Detector = Peak.

   (4) Trace mode = Max hold.

   (5) Sweep = Auto couple.

   (6) Allow the trace to stabilize.

   (7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

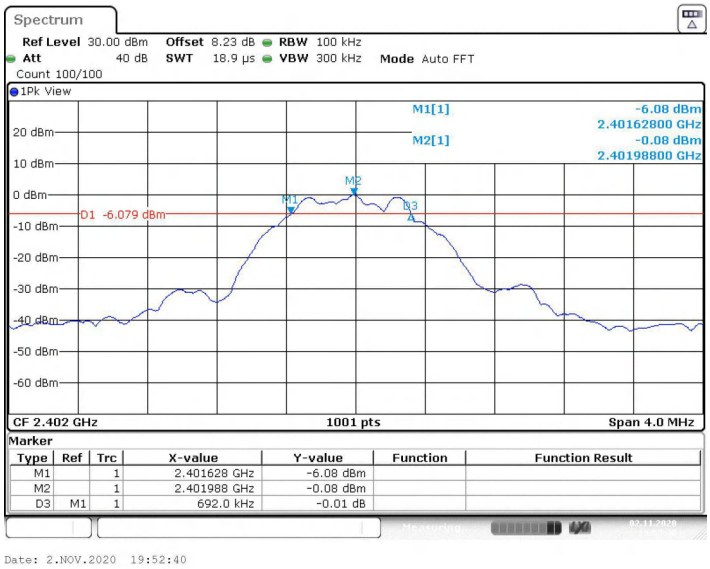
**Test Mode**

Please refer to the clause 2.3.

**Test Results**

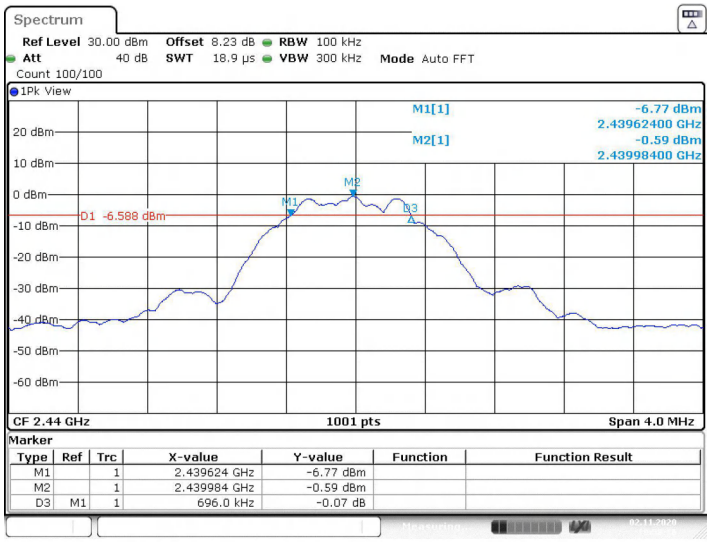
BLE_1M:

| Test Mode: | BLE Mode | |
|---|---|---|
| **Channel frequency (MHz)** | **6dB Bandwidth (kHz)** | **Limit (kHz)** |
| 2402 | 692 | ≧500 |
| 2440 | 696 | |
| 2480 | 696 | |
| **BLE Mode** | | |
| **2402 MHz** | | |



## BLE Mode

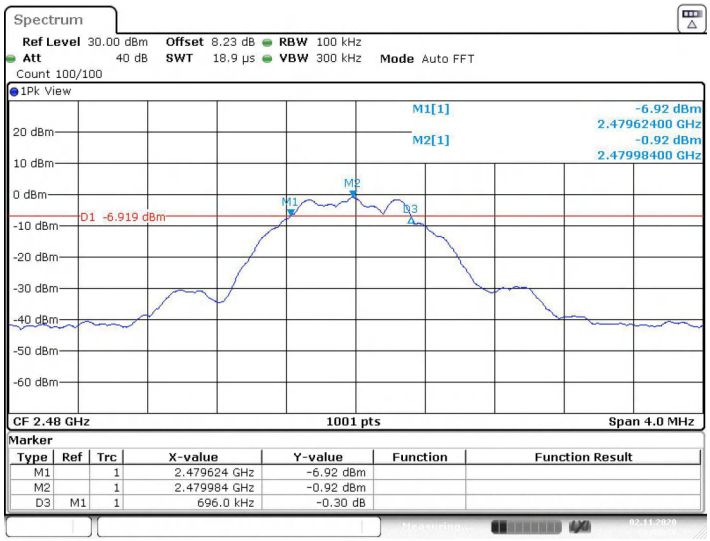
### 2440 MHz




Date: 2.NOV.2020 19:58:15

## BLE Mode

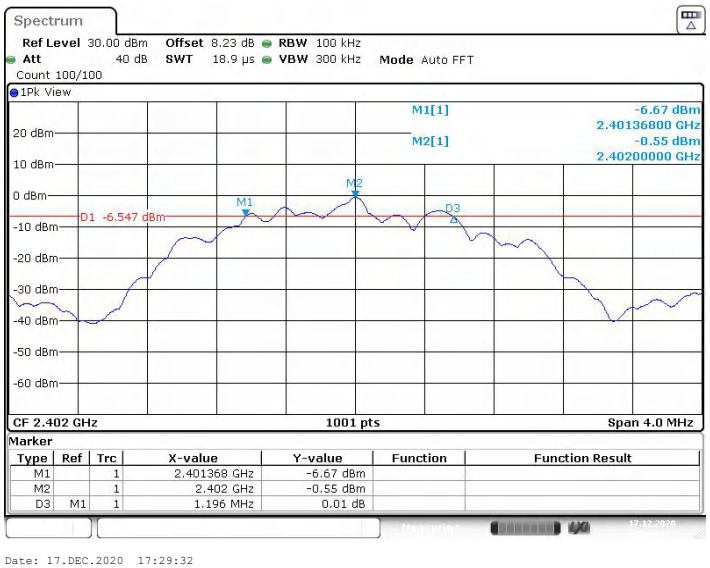
### 2480 MHz




Date: 2.NOV.2020 20:00:38

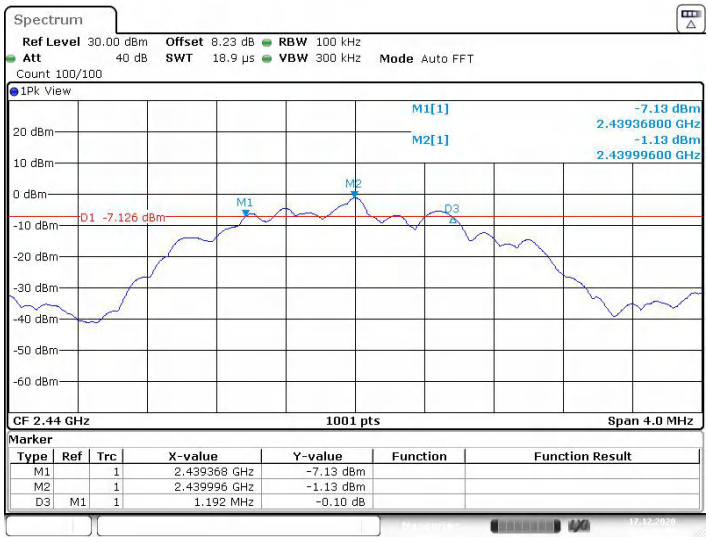
BLE_2M:

| Test Mode: | BLE Mode | |
|---|---|---|
| **Channel frequency (MHz)** | **6dB Bandwidth (kHz)** | **Limit (kHz)** |
| 2402 | 1196 | ≧500 |
| 2440 | 1192 | |
| 2480 | 1188 | |
| **BLE Mode** | | |
| **2402 MHz** | | |



## BLE Mode

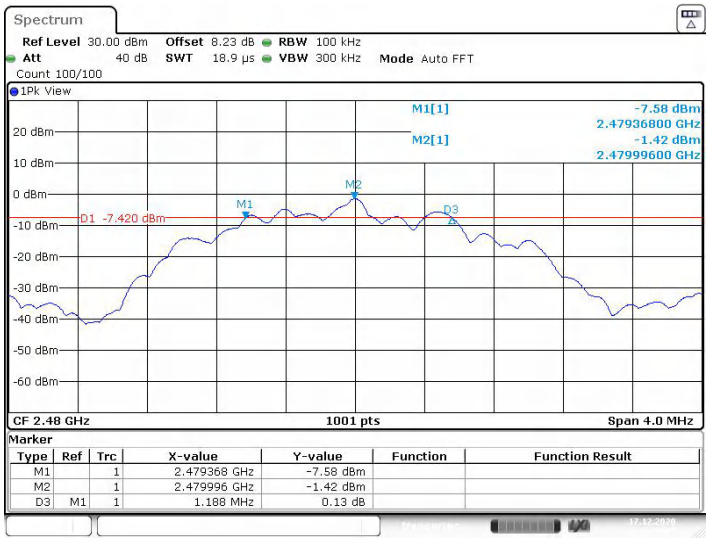
### 2440 MHz




Date: 17.DEC.2020 17:48:00

## BLE Mode

### 2480 MHz



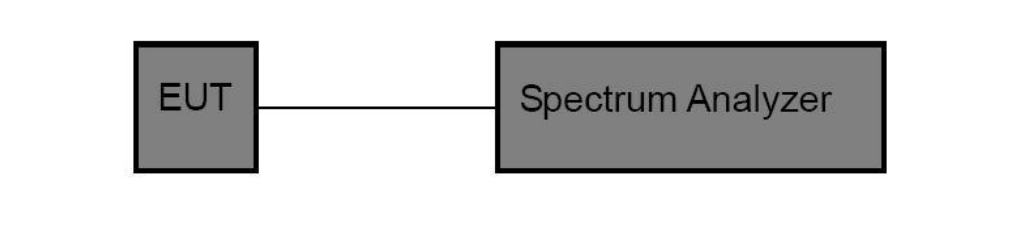

Date: 17.DEC.2020 17:53:52

## 3.5. Peak Output Power

**Limit**

| Test Item | Limit | Frequency Range(MHz) |
|---|---|---|
| Peak Output Power | 1 Watt or 30 dBm | 2400~2483.5 |

**Test Configuration**




**Test Procedure**

1. Connect EUT RF Output port to the Spectrum Analyzer through an RF attenuator.
2. Spectrum Setting:
   Peak Detector: RBW≥DTS Bandwidth, VBW≥3*RBW.
   Sweep time=Auto.
   Detector= Peak.
   Trace mode= Maxhold.
   Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

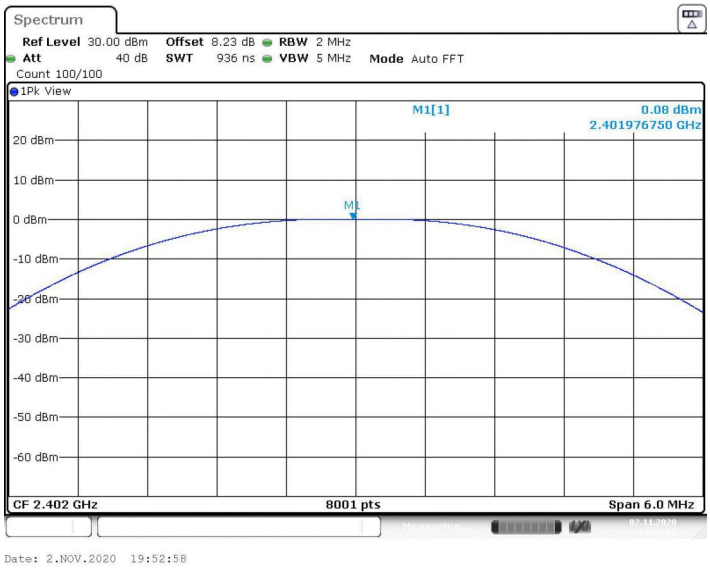
**Test Mode**

Please refer to the clause 2.3.

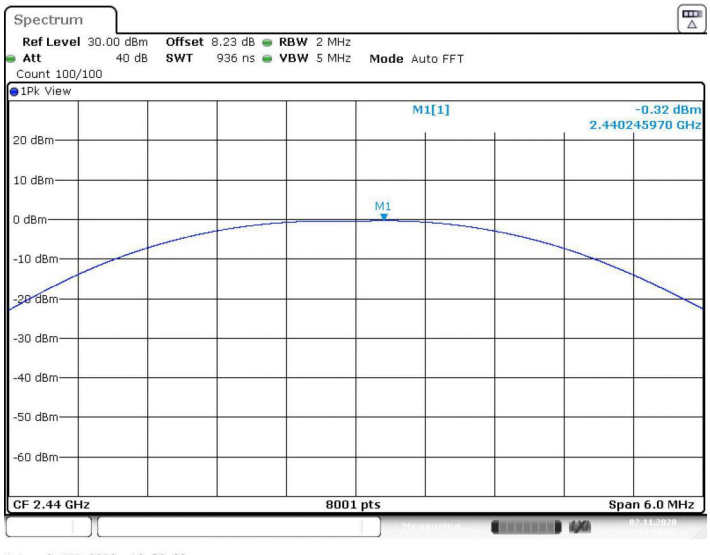
**Test Result**

BLE_1M:

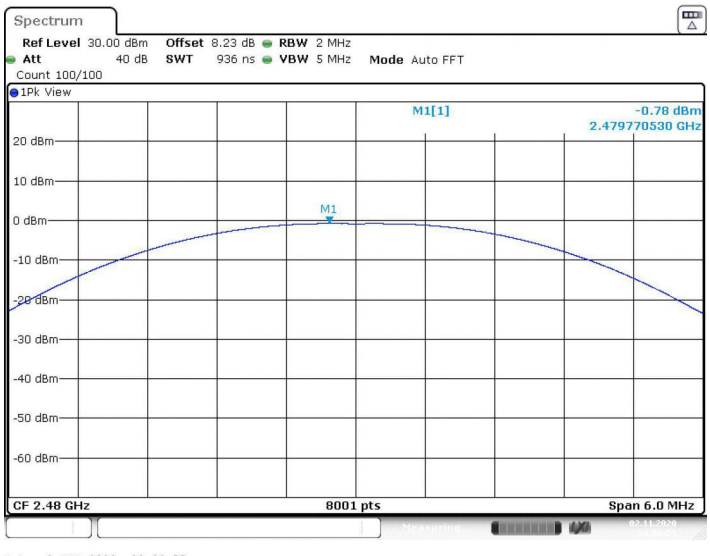
| Test Mode: | BLE Mode | |
|---|---|---|
| **Channel frequency (MHz)** | **Test Result (dBm)** | **Limit (dBm)** |
| 2402 | 0.08 | **30** |
| 2440 | -0.32 | |
| 2480 | -0.78 | |
| **BLE Mode** | | |
| **2402 MHz** | | |



| BLE Mode |
| --- |
| 2440 MHz |

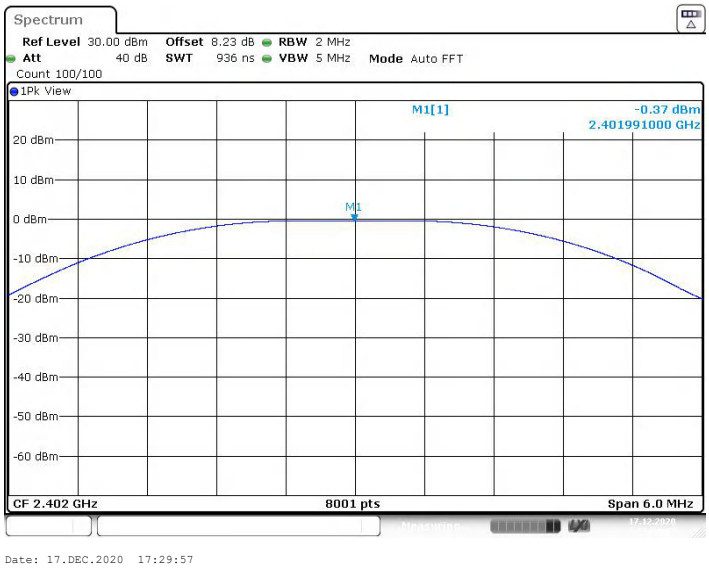



| BLE Mode |
| --- |
| 2480 MHz |

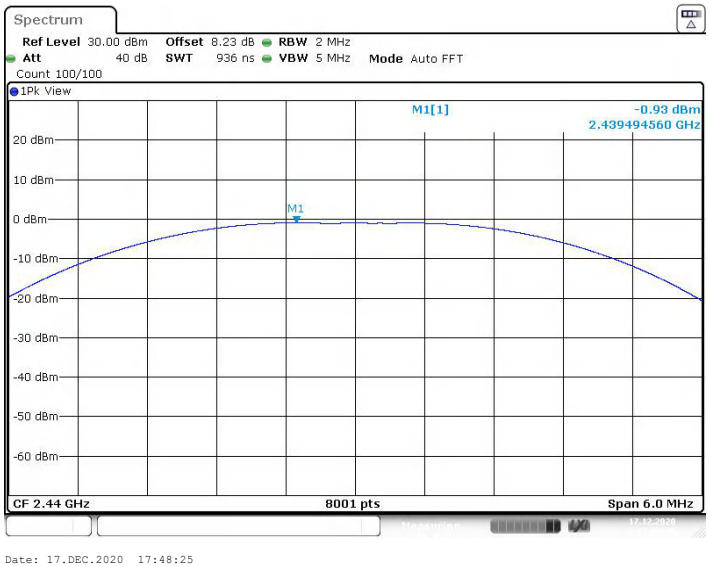


BLE_2M:

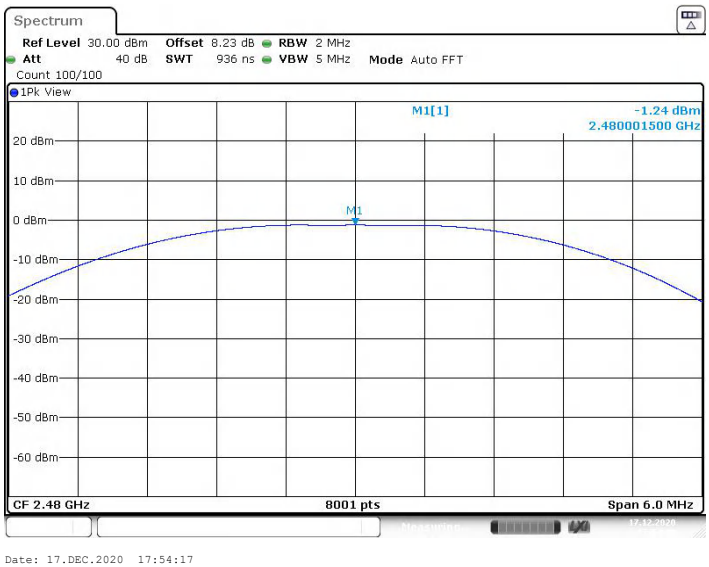
| Test Mode: | BLE Mode | |
|---|---|---|
| **Channel frequency (MHz)** | **Test Result (dBm)** | **Limit (dBm)** |
| 2402 | -0.37 | **30** |
| 2440 | -0.93 | |
| 2480 | -1.24 | |
| **BLE Mode** | | |
| **2402 MHz** | | |



| BLE Mode |
| --- |
| 2440 MHz |




| BLE Mode |
| --- |
| 2480 MHz |

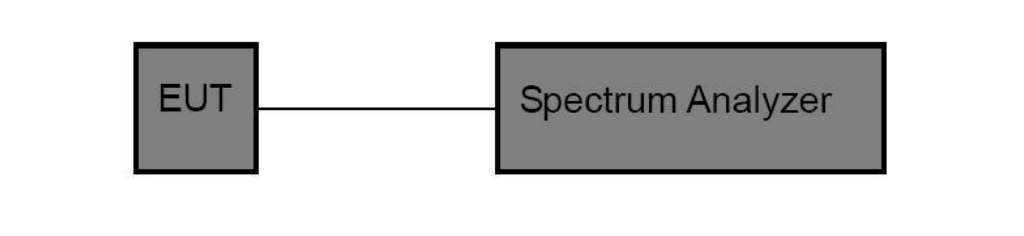


## 3.6. Power Spectral Density

**Limit**

| FCC Part 15 Subpart C(15.247) | | |
|---|---|---|
| **Test Item** | **Limit** | **Frequency Range(MHz)** |
| Power Spectral Density | 8dBm(in any 3 kHz) | 2400~2483.5 |

**Test Configuration**




**Test Procedure**

1. Connect EUT RF Output port to the Spectrum Analyzer through an RF attenuator.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v04.
3. Spectrum Setting:
   Set analyser center frequency to DTS channel center frequency.
   Set the span to 1.5 times the DTS bandwidth.
   Set the RBW to: 10 kHz
   Set the VBW to: 30 kHz
   Detector: peak
   Sweep time: auto
   Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

**Test Mode**

Please refer to the clause 2.3.

**Test Result**

Note:

Power Density(dBm/3kHz)=Power Density(dBm/10kHz)-10*Log(10/3)

BLE_1M:

| Test Mode: | BLE Mode | | |
|---|---|---|---|
| **Channel Frequency (MHz)** | **Power Density (dBm/10kHz)** | **Power Density (dBm/3kHz)** | **Limit (dBm)** |
| 2402 | -9.93 | -15.16 | 8dBm/3kHz |
| 2440 | -10.51 | -15.74 | |
| 2480 | -10.82 | -16.05 | |
| **BLE Mode** | | | |
| **2402 MHz** | | | |