# FCC Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **P27-XIONESCM2** |
| **Equipment** | : | **XiOne-SC (B)** |
| **Model No.** | : | **SCXIxxBEIxCO; SCXIxxBEI**<br>**(Refer to item 1.1.1 for more details.)** |
| **Brand Name** | : | **Comcast Xfinity; Cox; Shaw**<br>**(Refer to item 1.1.1 for more details.)** |
| **Applicant** | : | **Sercomm Corporation** |
| **Address** | : | **8F, 3-1, YuanQu St., NanKang, Taipei, 11503, Taiwan** |
| **Standard** | : | **47 CFR FCC Part 15.247** |
| **Received Date** | : | **Jun. 03, 2021** |
| **Tested Date** | : | **Jun. 15 ~ Jul. 01, 2021** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.**

**Reviewed by:** **Approved by:**

**Along Chen / Assistant Manager** **Gary Chang / Manager**

Testing Laboratory 2732

# Table of Contents


**1 GENERAL DESCRIPTION ..... 5**

1.1 Information ..... 5
1.2 Local Support Equipment List ..... 9
1.3 Test Setup Chart ..... 9
1.4 The Equipment List ..... 10
1.5 Test Standards ..... 11
1.6 Reference Guidance ..... 11
1.7 Deviation from Test Standard and Measurement Procedure ..... 11
1.8 Measurement Uncertainty ..... 11

**2 TEST CONFIGURATION ..... 12**

2.1 Testing Facility ..... 12
2.2 The Worst Test Modes and Channel Details ..... 12

**3 TRANSMITTER TEST RESULTS ..... 13**

3.1 Conducted Emissions ..... 13
3.2 Unwanted Emissions into Restricted Frequency Bands ..... 16
3.3 Unwanted Emissions into Non-Restricted Frequency Bands ..... 33
3.4 Conducted Output Power ..... 41
3.5 Number of Hopping Frequency ..... 44
3.6 20dB and Occupied Bandwidth ..... 48
3.7 Channel Separation ..... 55
3.8 Number of Dwell Time ..... 62

**4 TEST LABORATORY INFORMATION ..... 68**

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR161001AD | Rev. 01 | Initial issue | Jul. 26, 2021 |

# Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---|---|---|---|
| 15.207 | Conducted Emissions | [dBuV]: 5.535MHz<br>49.36 (Margin -10.64dB) - QP | Pass |
| 15.247(d)<br>15.209 | Radiated Emissions | [dBuV/m at 3m]: 555.65MHz<br>42.49 (Margin -3.51dB) - PK | Pass |
| 15.247(d) | Band Edge | Meet the requirement of limit | Pass |
| 15.247(b)(1) | Conducted Output Power | Power [dBm]: 12.90 | Pass |
| 15.247(a)(1)(iii) | Number of Hopping Channels | Meet the requirement of limit | Pass |
| 15.247(a)(1) | Hopping Channel Separation | Meet the requirement of limit | Pass |
| 15.247(a)(1)(iii) | Dwell Time | Meet the requirement of limit | Pass |
| 15.203 | Antenna Requirement | Meet the requirement of limit | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Information

### 1.1.1 Product Details

The following models are provided to this EUT.

| Brand Name | Model Name | Product Name | Description |
|---|---|---|---|
| Comcast Xfinity; Cox; Shaw | SCXIxxBEIxCO; SCXIxxBEI | XiOne-SC (B) | Where "x" may be any alphanumeric for External Body Color. |

- All models are electrically identical, different model names are for marketing purpose.
- The above models, model **SCXI11BEI** was selected as a representative one for the final test and only its data was recorded in this report.

### 1.1.2 Specification of the Equipment under Test (EUT)

| RF General Information | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Bluetooth Mode** | **Ch. Frequency (MHz)** | **Channel Number** | **Data Rate** |
| 2400-2483.5 | BR | 2402-2480 | 0-78 [79] | 1 Mbps |
| 2400-2483.5 | EDR | 2402-2480 | 0-78 [79] | 2 Mbps |
| 2400-2483.5 | EDR | 2402-2480 | 0-78 [79] | 3 Mbps |

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.
Note 2: Bluetooth BR uses a GFSK.
Note 3: Bluetooth EDR uses a combination of π/4-DQPSK and 8DPSK.

### 1.1.3 Antenna Details

| Ant. No. | Type | Connector | Gain (dBi) | Remarks |
|---|---|---|---|---|
| 1 | Printing | No | 3.85 | --- |

### 1.1.4 Power Supply Type of Equipment under Test (EUT)

| | |
|---|---|
| **Power Supply Type** | 5.0Vdc from AC adapter |

### 1.1.5 Accessories

| Accessories | | |
|---|---|---|
| **No.** | **Equipment** | **Description** |
| 1 | AC adapter | Brand: LEADER<br>Model: ML08-7050150-A1<br>I/P: 100-120V~ 50/60Hz, 0.25A<br>O/P: 5.0Vdc, 1.5A<br>Power Line: 1.8m non-shielded without core |
| 2 | AC adapter | Brand: NetBit<br>Model: NBC08A050150HU<br>I/P: 100-120V~ 50/60Hz, 0.2A<br>O/P: 5.0Vdc, 1.5A<br>Power Line: 1.81m non-shielded without core |
| 3 | AC adapter | Brand: AcBel<br>Model: WAK010<br>I/P: 100-120V~ 60Hz, 0.25A<br>O/P: 5.0Vdc, 1.5A<br>Power Line: 1.78m non-shielded without core |

### 1.1.6 Channel List

| Frequency band (MHz) | | | | 2400~2483.5 | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0 | 2402 | 20 | 2422 | 40 | 2442 | 60 | 2462 |
| 1 | 2403 | 21 | 2423 | 41 | 2443 | 61 | 2463 |
| 2 | 2404 | 22 | 2424 | 42 | 2444 | 62 | 2464 |
| 3 | 2405 | 23 | 2425 | 43 | 2445 | 63 | 2465 |
| 4 | 2406 | 24 | 2426 | 44 | 2446 | 64 | 2466 |
| 5 | 2407 | 25 | 2427 | 45 | 2447 | 65 | 2467 |
| 6 | 2408 | 26 | 2428 | 46 | 2448 | 66 | 2468 |
| 7 | 2409 | 27 | 2429 | 47 | 2449 | 67 | 2469 |
| 8 | 2410 | 28 | 2430 | 48 | 2450 | 68 | 2470 |
| 9 | 2411 | 29 | 2431 | 49 | 2451 | 69 | 2471 |
| 10 | 2412 | 30 | 2432 | 50 | 2452 | 70 | 2472 |
| 11 | 2413 | 31 | 2433 | 51 | 2453 | 71 | 2473 |
| 12 | 2414 | 32 | 2434 | 52 | 2454 | 72 | 2474 |
| 13 | 2415 | 33 | 2435 | 53 | 2455 | 73 | 2475 |
| 14 | 2416 | 34 | 2436 | 54 | 2456 | 74 | 2476 |
| 15 | 2417 | 35 | 2437 | 55 | 2457 | 75 | 2477 |
| 16 | 2418 | 36 | 2438 | 56 | 2458 | 76 | 2478 |
| 17 | 2419 | 37 | 2439 | 57 | 2459 | 77 | 2479 |
| 18 | 2420 | 38 | 2440 | 58 | 2460 | 78 | 2480 |
| 19 | 2421 | 39 | 2441 | 59 | 2461 | --- | --- |

### 1.1.7 Test Tool and Duty Cycle

| Test Tool | Tera Term V4.66 | |
|---|---|---|
| **Modulation Mode** | **Duty Cycle Of Test Signal (%)** | **Duty Factor (dB)** |
| DH5 | 78.76% | 1.04 |
| 2DH5 | 78.38% | 1.06 |
| 3DH5 | 77.61% | 1.10 |

### 1.1.8 Power Index of Test Tool

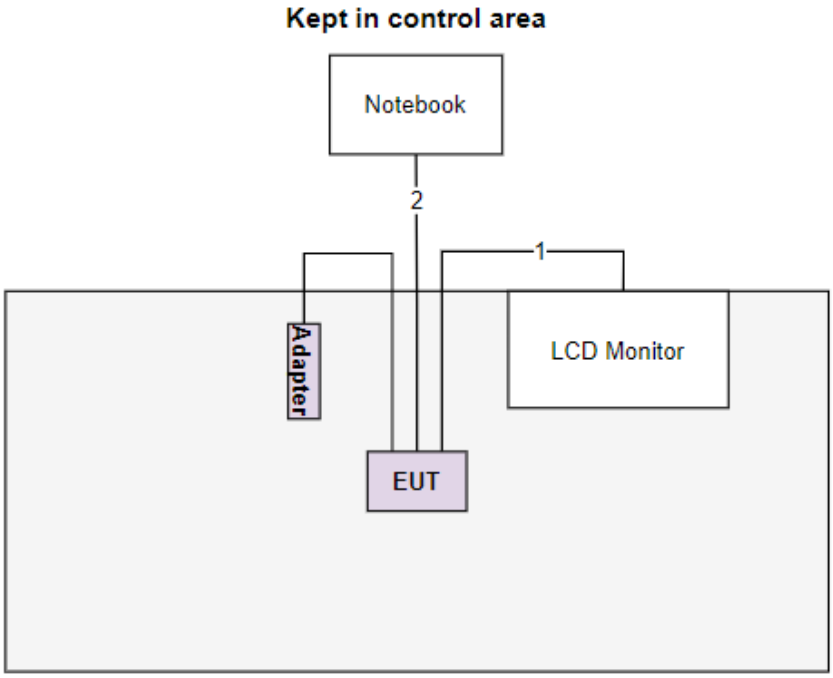
| Modulation Mode | Test Frequency (MHz) | | |
|---|---|---|---|
| | **2402** | **2441** | **2480** |
| GFSK/1Mbps | 0x09 0 0x0 | 0x09 0 0x0 | 0x09 0 0x0 |
| π/4-DQPSK /2Mbps | 0x09 0 0x0 | 0x09 0 0x0 | 0x09 0 0x0 |
| 8DPSK/3Mbps | 0x09 0 0x0 | 0x09 0 0x0 | 0x09 0 0x0 |

## 1.2 Local Support Equipment List

| Support Equipment List | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **FCC ID** | **Remarks** |
| 1 | Notebook | DELL | Latitude E5470 | DoC | --- |
| 2 | LCD Monitor | DELL | S2817Q | --- | --- |

## 1.3 Test Setup Chart

**Test Setup Diagram**




| No. | Signal cable / Length (m) |
|---|---|
| 1 | HDMI, 1.5m non-shielded. |
| 2 | RJ45, 10m non-shielded. |

## 1.4 The Equipment List

| Test Item | Conducted Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | Conduction room 1 / (CO01-WS) | | | | |
| **Tested Date** | Jun. 23, 2021 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101658 | Feb. 08, 2021 | Feb. 07, 2022 |
| LISN | R&S | ENV216 | 101579 | Mar. 17, 2021 | Mar. 16, 2022 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127-666 | Dec. 29, 2020 | Dec. 28, 2021 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Oct. 21, 2020 | Oct. 20, 2021 |
| 50 ohm terminal (Support Unit) | NA | 50 | 04 | May 25, 2021 | May 24, 2022 |
| Measurement Software | AUDIX | e3 | 6.120210k | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | Radiated Emission below 1GHz | | | | |
|---|---|---|---|---|---|
| **Test Site** | 966 chamber1 / (03CH01-WS) | | | | |
| **Tested Date** | Jun. 15 ~ Jun. 16, 2021 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101658 | Feb. 08, 2021 | Feb. 07, 2022 |
| Spectrum Analyzer | R&S | FSV40 | 101498 | Dec. 04, 2020 | Dec. 03, 2021 |
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Nov. 17, 2020 | Nov. 16, 2021 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Jul. 10, 2020 | Jul. 09, 2021 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1096 | Dec. 11, 2020 | Dec. 10, 2021 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Nov. 06, 2020 | Nov. 05, 2021 |
| Preamplifier | EMC | EMC02325 | 980225 | Jul. 03, 2020 | Jul. 02, 2021 |
| Preamplifier | Agilent | 83017A | MY39501308 | Sep. 26, 2020 | Sep. 25, 2021 |
| Preamplifier | EMC | EMC184045B | 980192 | Jul. 21, 2020 | Jul. 20, 2021 |
| Loop Antenna Cable | KOAX KABEL | 101354-BW | 101354-BW | Oct. 06, 2020 | Oct. 05, 2021 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Oct. 06, 2020 | Oct. 05, 2021 |
| LF cable 11M | EMC | EMCCFD400-NW-NW-11000 | 200801 | Oct. 06, 2020 | Oct. 05, 2021 |
| LF cable 1M | EMC | EMCCFD400-NM-NM-1000 | 160502 | Oct. 06, 2020 | Oct. 05, 2021 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16019/4 | Oct. 06, 2020 | Oct. 05, 2021 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16014/4 | Oct. 06, 2020 | Oct. 05, 2021 |
| Measurement Software | AUDIX | e3 | 6.120210g | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | RF Conducted | | | | |
|---|---|---|---|---|---|
| Test Site | (TH01-WS) | | | | |
| Tested Date | Jul. 01, 2021 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Spectrum Analyzer | R&S | FSV40 | 101063 | Apr. 19, 2021 | Apr. 18, 2022 |
| Power Meter | Anritsu | ML2495A | 1241002 | Nov. 04, 2020 | Nov. 03, 2021 |
| Power Sensor | Anritsu | MA2411B | 1207366 | Nov. 04, 2020 | Nov. 03, 2021 |
| Wireless connectivity tester | R&S | CMW270 | 100856 | Nov. 02, 2020 | Nov. 01, 2021 |
| Measurement Software | - | SENSE-15247_FS | V5.10.7.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

## 1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

## 1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

## 1.7 Deviation from Test Standard and Measurement Procedure

None

## 1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| **Measurement Uncertainty** | |
|---|---|
| **Parameters** | **Uncertainty** |
| Bandwidth | ±34.130 Hz |
| Conducted power | ±0.808 dB |
| Power density | ±0.583 dB |
| Conducted emission | ±2.715 dB |
| AC conducted emission | ±2.92 dB |
| Radiated emission ≤ 1GHz | ±3.41 dB |
| Radiated emission > 1GHz | ±4.59 dB |
| Time | ±0.1% |

# 2 Test Configuration

## 2.1 Testing Facility

| | |
|---|---|
| **Test Laboratory** | International Certification Corporation |
| **Test Site** | CO01-WS, 03CH01-WS, TH01-WS |
| **Address of Test Site** | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

## 2.2 The Worst Test Modes and Channel Details

| Test item | Mode | Test Frequency (MHz) | Data Rate (Mbps) | Test Configuration |
|---|---|---|---|---|
| Conducted Emissions<br>Radiated Emissions ≤ 1GHz | GFSK | 2402 | 1Mbps | --- |
| Radiated Emissions > 1GHz | GFSK<br>8DPSK | 2402, 2441, 2480<br>2402, 2441, 2480 | 1Mbps<br>3Mbps | --- |
| Conducted Output Power | GFSK<br>π/4 DQPSK<br>8DPSK | 2402, 2441, 2480<br>2402, 2441, 2480<br>2402, 2441, 2480 | 1Mbps<br>2Mbps<br>3Mbps | --- |
| Number of Hopping Channels | GFSK<br>π/4 DQPSK<br>8DPSK | 2402~2480<br>2402~2480<br>2402~2480 | 1Mbps<br>2Mbps<br>3Mbps | --- |
| Hopping Channel Separation<br>20dB and Occupied bandwidth | GFSK<br>π/4 DQPSK<br>8DPSK | 2402, 2441, 2480<br>2402, 2441, 2480<br>2402, 2441, 2480 | 1Mbps<br>2Mbps<br>3Mbps | --- |
| Dwell Time | GFSK<br>π/4 DQPSK<br>8DPSK | 2402<br>2402<br>2402 | 1Mbps<br>2Mbps<br>3Mbps | --- |

**NOTE:**
1. Three adapters (LEADER, NetBit & AcBel) had been covered during the pretest and found that **LEADER** adapter was the worst case and was selected for final testing.

# 3 Transmitter Test Results

## 3.1 Conducted Emissions

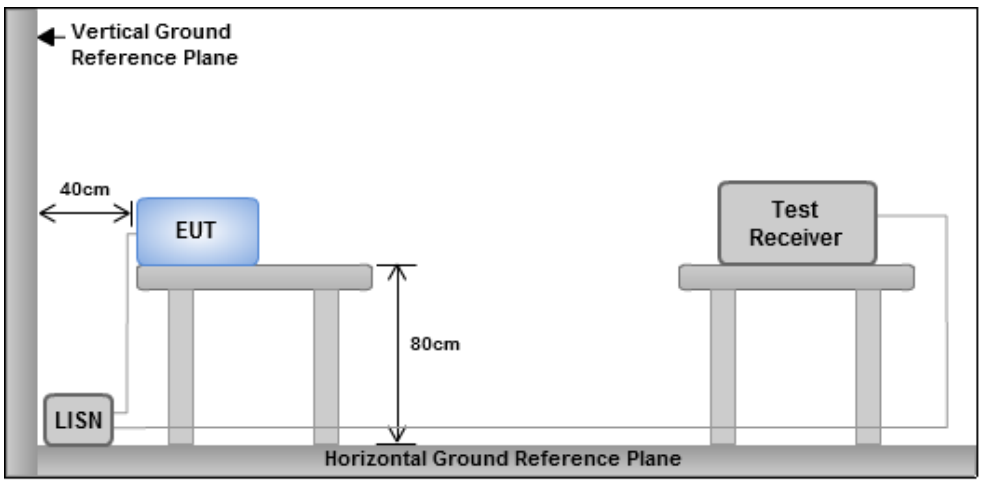
### 3.1.1 Limit of Conducted Emissions

| Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

### 3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

### 3.1.3 Test Setup



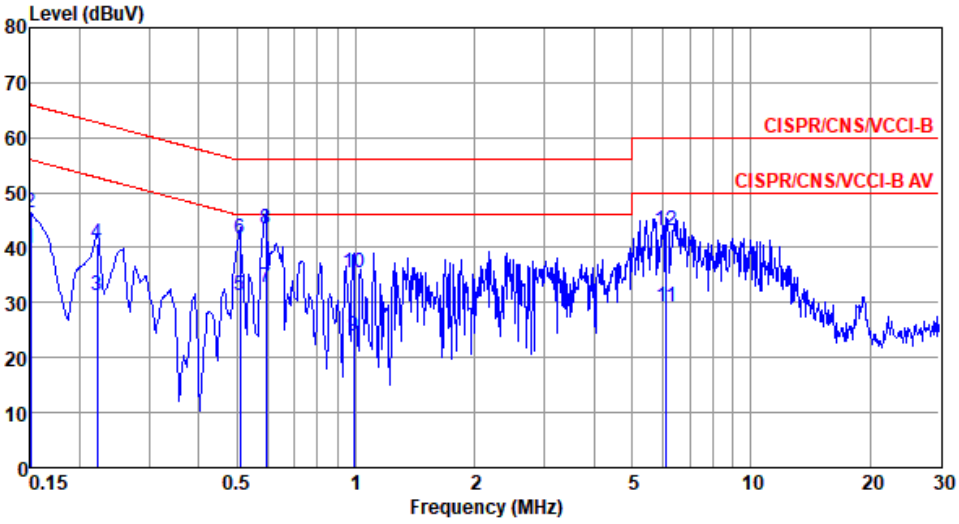

Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

### 3.1.4 Test Result of Conducted Emissions

| Modulation Mode | GFSK | Test Freq. (MHz) | 2402 |
|---|---|---|---|
| Power Phase | Line | | |

Test by : Joe Liao Temperature: 24°C Humidity: 63%

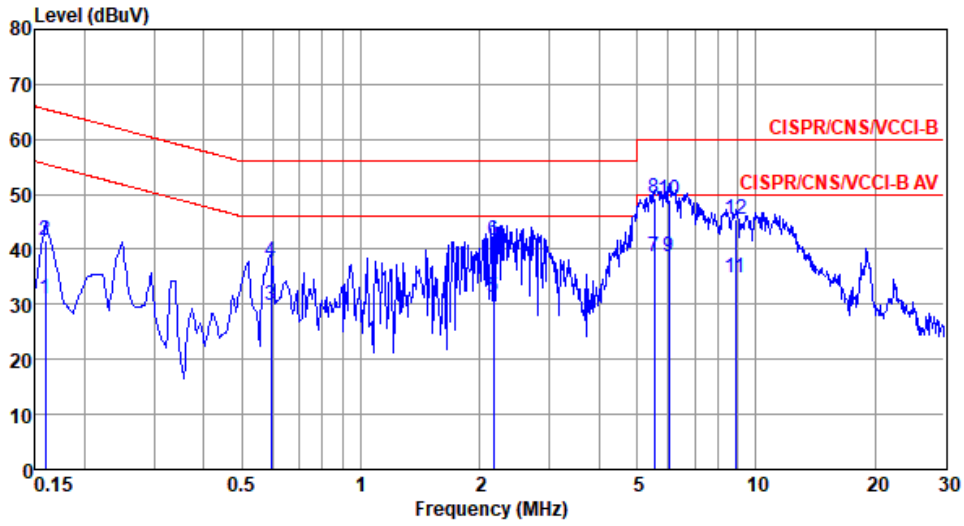



| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | |
| 1 | 0.150 | 39.98 | 56.00 | -16.02 | 30.10 | 9.83 | 0.05 | Average |
| 2 | 0.150 | 46.33 | 66.00 | -19.67 | 36.45 | 9.83 | 0.05 | QP |
| 3 | 0.222 | 31.17 | 52.74 | -21.57 | 21.26 | 9.85 | 0.06 | Average |
| 4 | 0.222 | 40.64 | 62.74 | -22.10 | 30.73 | 9.85 | 0.06 | QP |
| 5 | 0.510 | 31.20 | 46.00 | -14.80 | 21.19 | 9.92 | 0.09 | Average |
| 6 | 0.510 | 41.55 | 56.00 | -14.45 | 31.54 | 9.92 | 0.09 | QP |
| 7 | 0.592 | 32.79 | 46.00 | -13.21 | 22.76 | 9.93 | 0.10 | Average |
| 8* | 0.592 | 43.28 | 56.00 | -12.72 | 33.25 | 9.93 | 0.10 | QP |
| 9 | 0.989 | 23.84 | 46.00 | -22.16 | 13.73 | 9.99 | 0.12 | Average |
| 10 | 0.989 | 35.51 | 56.00 | -20.49 | 25.40 | 9.99 | 0.12 | QP |
| 11 | 6.121 | 29.31 | 50.00 | -20.69 | 18.90 | 10.07 | 0.34 | Average |
| 12 | 6.121 | 43.03 | 60.00 | -16.97 | 32.62 | 10.07 | 0.34 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

| Modulation Mode | GFSK | Test Freq. (MHz) | 2402 |
|---|---|---|---|
| Power Phase | Neutral | | |

Test by : Joe Liao Temperature: 24°C Humidity: 63%




| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | |
| 1 | 0.159 | 31.11 | 55.52 | -24.41 | 21.24 | 9.82 | 0.05 | Average |
| 2 | 0.159 | 41.56 | 65.52 | -23.96 | 31.69 | 9.82 | 0.05 | QP |
| 3 | 0.592 | 29.80 | 46.00 | -16.20 | 19.84 | 9.86 | 0.10 | Average |
| 4 | 0.592 | 37.82 | 56.00 | -18.18 | 27.86 | 9.86 | 0.10 | QP |
| 5 | 2.167 | 31.34 | 46.00 | -14.66 | 21.20 | 9.95 | 0.19 | Average |
| 6 | 2.167 | 41.54 | 56.00 | -14.46 | 31.40 | 9.95 | 0.19 | QP |
| 7 | 5.535 | 38.66 | 50.00 | -11.34 | 28.32 | 10.01 | 0.33 | Average |
| 8* | 5.535 | 49.36 | 60.00 | -10.64 | 39.02 | 10.01 | 0.33 | QP |
| 9 | 6.024 | 38.54 | 50.00 | -11.46 | 28.18 | 10.02 | 0.34 | Average |
| 10 | 6.024 | 48.87 | 60.00 | -11.13 | 38.51 | 10.02 | 0.34 | QP |
| 11 | 8.869 | 34.85 | 50.00 | -15.15 | 24.39 | 10.07 | 0.39 | Average |
| 12 | 8.869 | 45.39 | 60.00 | -14.61 | 34.93 | 10.07 | 0.39 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

## 3.2 Unwanted Emissions into Restricted Frequency Bands

### 3.2.1 Limit of Unwanted Emissions into Restricted Frequency Bands

| Restricted Band Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

**Note 1:**
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
**Note 2:**
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

### 3.2.2 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

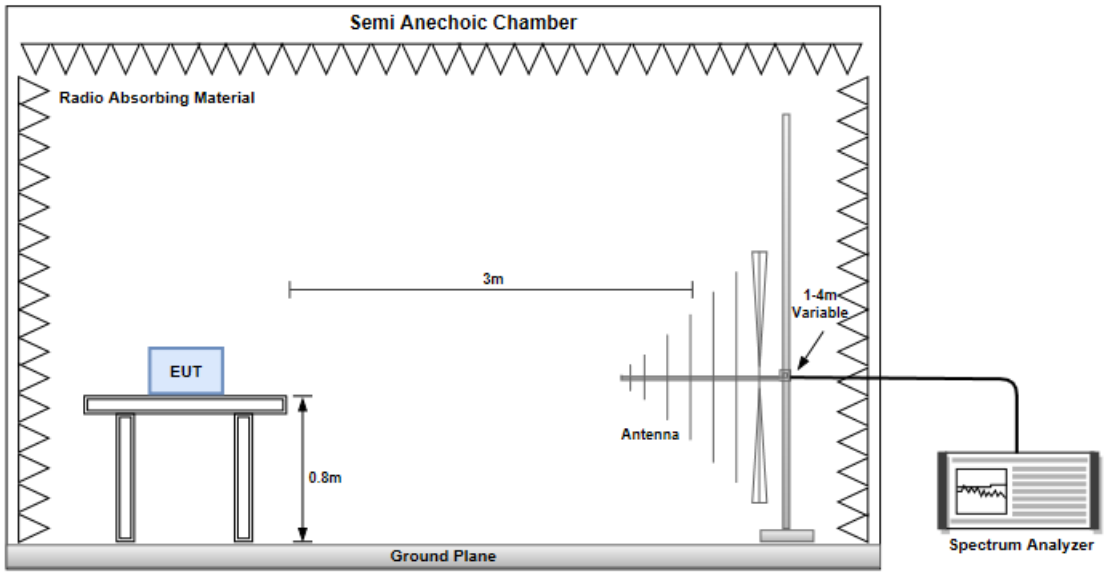
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. Radiated emission above 1GHz / Peak value
   RBW=1MHz, VBW=3MHz and Peak detector
3. Radiated emission above 1GHz / Average value for harmonics
   The average value is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula for DH5 packet type which has worst duty factor:

$$20\log(\text{Duty cycle}) = 20\log\frac{1\text{s} / 1600 * 5}{100\text{ ms}} = -30.1\text{dB}$$

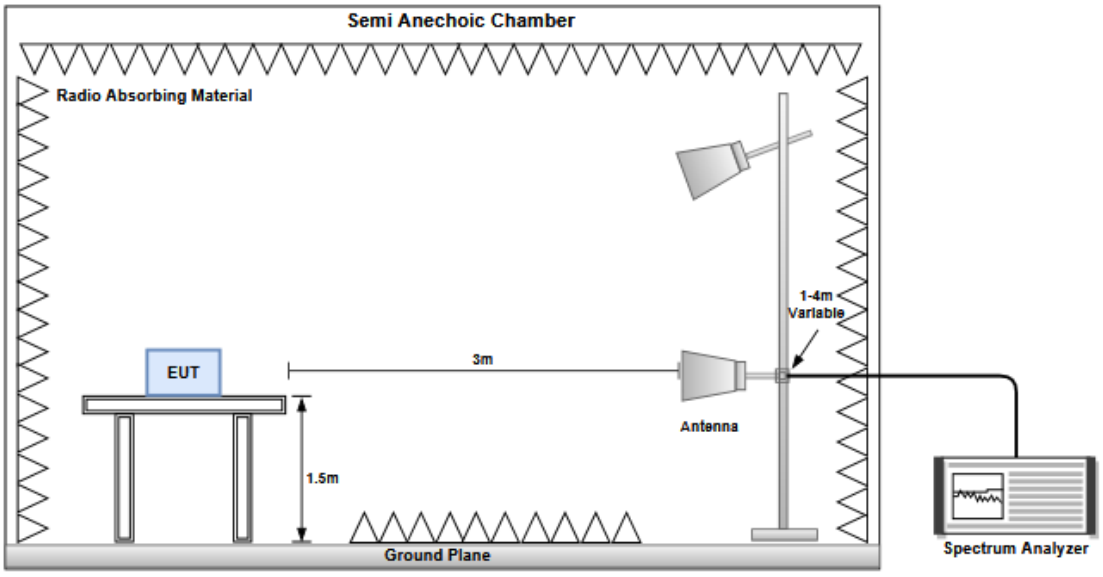
4. Radiated emission above 1GHz / Average value for other emissions
   RBW=1MHz, VBW=1/T and Peak detector

### 3.2.3 Test Setup

**Radiated Emissions below 1 GHz**



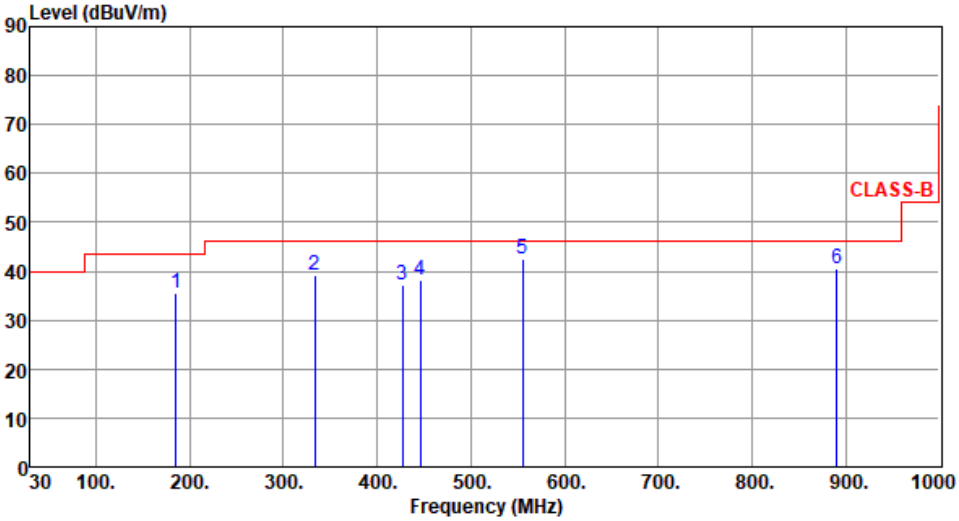

**Radiated Emissions above 1 GHz**



### 3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

| Modulation | GFSK | Test Freq. (MHz) | 2441 |
|---|---|---|---|
| Polarization | Horizontal | | |

Test By :Roger Lu Temperature(℃):24 Humidity(%):68

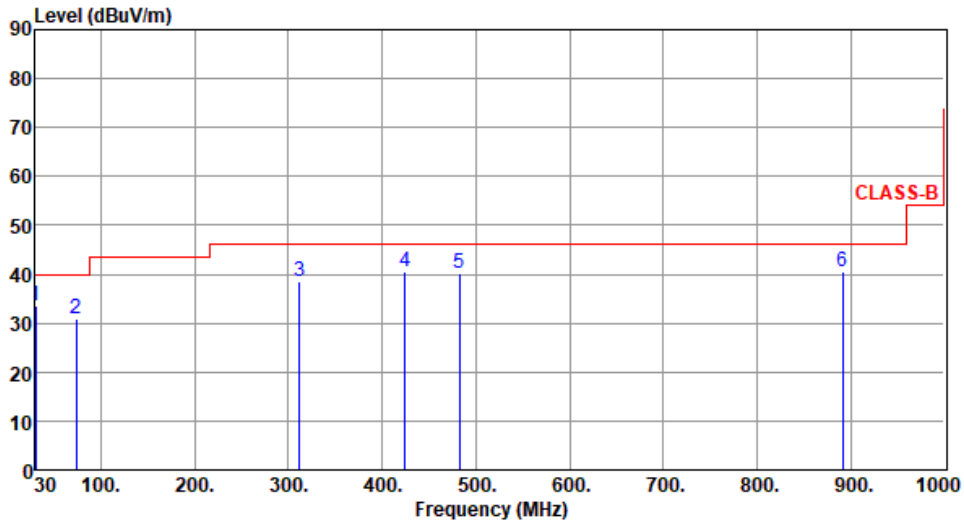



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 185.49 | 35.46 | 43.50 | -8.04 | 46.37 | -10.91 | Peak | --- | --- |
| 2 | 333.86 | 39.25 | 46.00 | -6.75 | 46.35 | -7.10 | Peak | --- | --- |
| 3 | 427.46 | 37.25 | 46.00 | -8.75 | 42.16 | -4.91 | Peak | --- | --- |
| 4 | 446.26 | 38.29 | 46.00 | -7.71 | 42.76 | -4.47 | Peak | --- | --- |
| 5 | 555.65 | 42.49 | 46.00 | -3.51 | 44.70 | -2.21 | Peak | --- | --- |
| 6 | 890.46 | 40.58 | 46.00 | -5.42 | 36.95 | 3.63 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

| Modulation | GFSK | Test Freq. (MHz) | 2441 |
|---|---|---|---|
| Polarization | Vertical | | |

Test By :Roger Lu Temperature(℃):24 Humidity(%):68



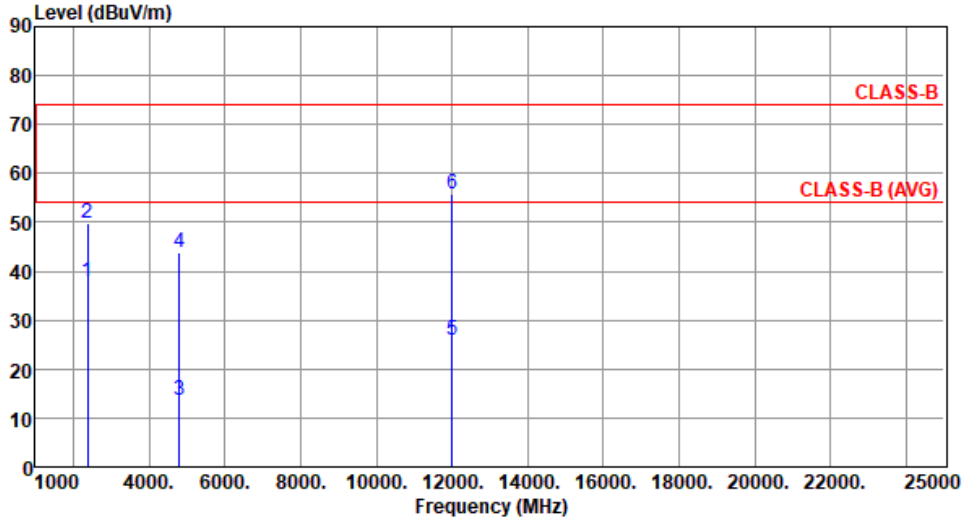

| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 30.25 | 33.56 | 40.00 | -6.44 | 43.12 | -9.56 | Peak | --- | --- |
| 2 | 73.49 | 30.98 | 40.00 | -9.02 | 42.73 | -11.75 | Peak | --- | --- |
| 3 | 311.59 | 38.45 | 46.00 | -7.55 | 46.14 | -7.69 | Peak | --- | --- |
| 4 | 424.15 | 40.59 | 46.00 | -5.41 | 45.64 | -5.05 | Peak | --- | --- |
| 5 | 482.16 | 40.26 | 46.00 | -5.74 | 43.91 | -3.65 | Peak | --- | --- |
| 6 | 891.22 | 40.56 | 46.00 | -5.44 | 36.88 | 3.68 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

### 3.2.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for GFSK

| Modulation | GFSK | Test Freq. (MHz) | 2402 |
|---|---|---|---|
| Polarization | Horizontal | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

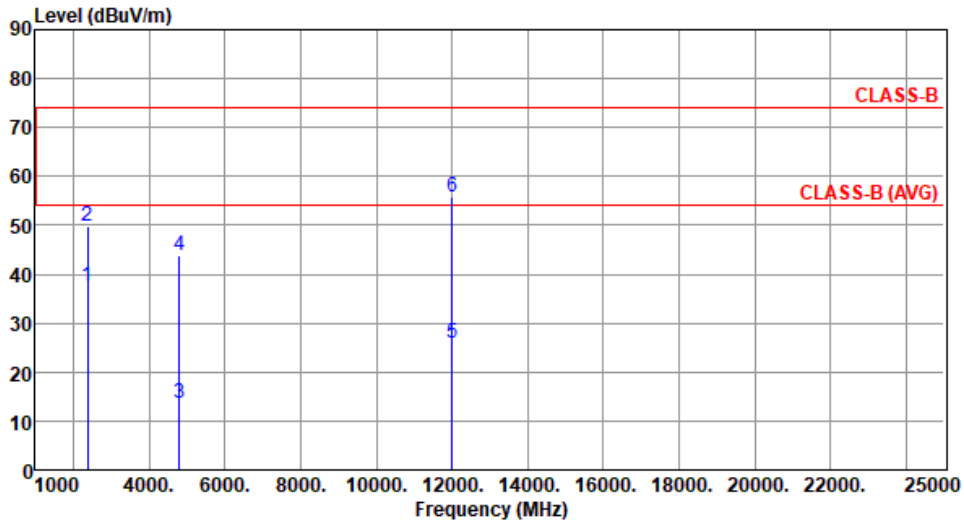



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.89 | 54.00 | -16.11 | 40.68 | -2.79 | Average | 100 | 300 |
| 2 | 2390.00 | 49.88 | 74.00 | -24.12 | 52.67 | -2.79 | Peak | 100 | 300 |
| 3 | 4804.00 | 13.66 | 54.00 | -40.34 | 10.16 | 3.50 | Average | 100 | 10 |
| 4 | 4804.00 | 43.76 | 74.00 | -30.24 | 40.26 | 3.50 | Peak | 100 | 10 |
| 5 | 12010.00 | 25.75 | 54.00 | -28.25 | 11.48 | 14.27 | Average | 100 | 90 |
| 6 | 12010.00 | 55.85 | 74.00 | -18.15 | 41.58 | 14.27 | Peak | 100 | 90 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | GFSK | Test Freq. (MHz) | 2402 |
|---|---|---|---|
| Polarization | Vertical | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

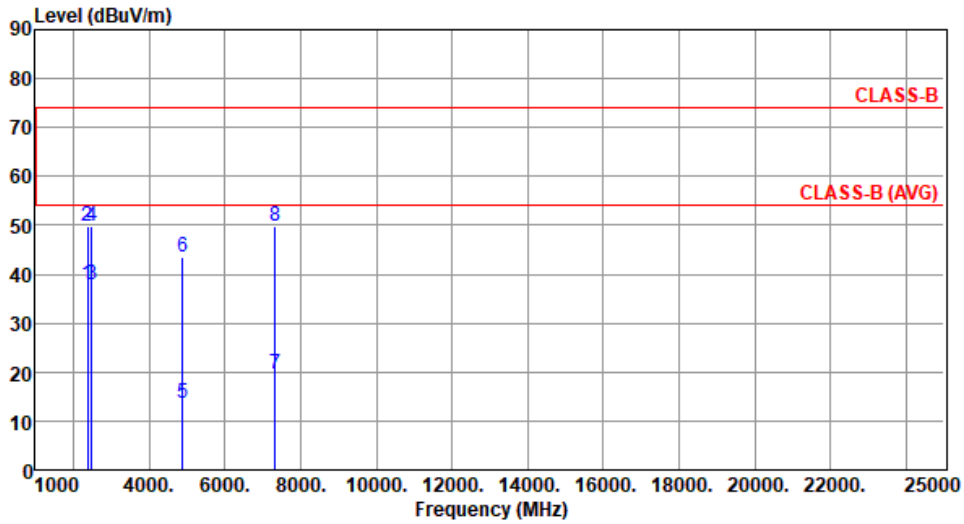



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.66 | 54.00 | -16.34 | 40.45 | -2.79 | Average | 362 | 46 |
| 2 | 2390.00 | 49.70 | 74.00 | -24.30 | 52.49 | -2.79 | Peak | 362 | 46 |
| 3 | 4804.00 | 13.59 | 54.00 | -40.41 | 10.09 | 3.50 | Average | 100 | 30 |
| 4 | 4804.00 | 43.69 | 74.00 | -30.31 | 40.19 | 3.50 | Peak | 100 | 30 |
| 5 | 12010.00 | 25.81 | 54.00 | -28.19 | 11.54 | 14.27 | Average | 100 | 20 |
| 6 | 12010.00 | 55.91 | 74.00 | -18.09 | 41.64 | 14.27 | Peak | 100 | 20 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | GFSK | Test Freq. (MHz) | 2441 |
|---|---|---|---|
| Polarization | Horizontal | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

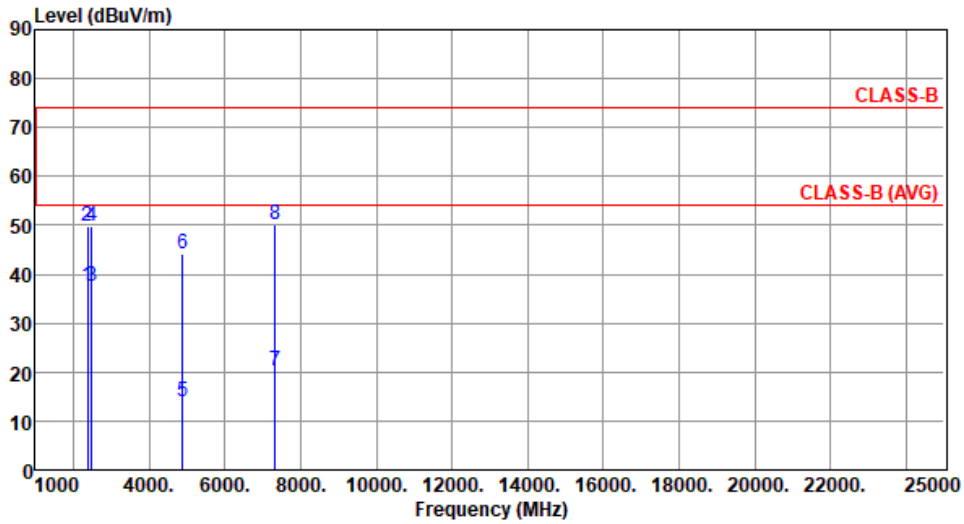



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.88 | 54.00 | -16.12 | 40.67 | -2.79 | Average | 100 | 300 |
| 2 | 2390.00 | 49.85 | 74.00 | -24.15 | 52.64 | -2.79 | Peak | 100 | 300 |
| 3 | 2483.50 | 37.81 | 54.00 | -16.19 | 40.55 | -2.74 | Average | 100 | 300 |
| 4 | 2483.50 | 49.84 | 74.00 | -24.16 | 52.58 | -2.74 | Peak | 100 | 300 |
| 5 | 4882.00 | 13.51 | 54.00 | -40.49 | 10.04 | 3.47 | Average | 100 | 15 |
| 6 | 4882.00 | 43.61 | 74.00 | -30.39 | 40.14 | 3.47 | Peak | 100 | 15 |
| 7 | 7323.00 | 19.65 | 54.00 | -34.35 | 10.62 | 9.03 | Average | 100 | 348 |
| 8 | 7323.00 | 49.75 | 74.00 | -24.25 | 40.72 | 9.03 | Peak | 100 | 348 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | GFSK | Test Freq. (MHz) | 2441 |
|---|---|---|---|
| Polarization | Vertical | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

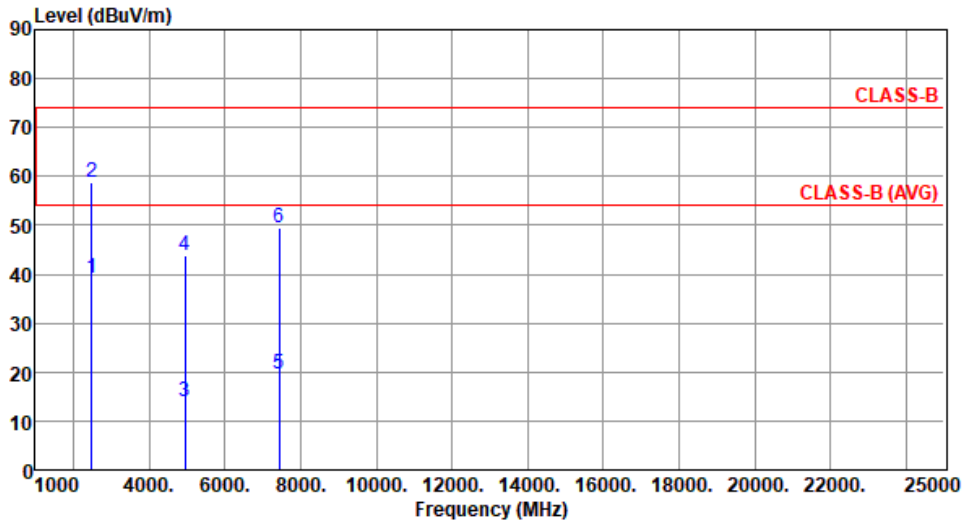



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.66 | 54.00 | -16.34 | 40.45 | -2.79 | Average | 365 | 42 |
| 2 | 2390.00 | 49.79 | 74.00 | -24.21 | 52.58 | -2.79 | Peak | 365 | 42 |
| 3 | 2483.50 | 37.55 | 54.00 | -16.45 | 40.29 | -2.74 | Average | 365 | 42 |
| 4 | 2483.50 | 49.70 | 74.00 | -24.30 | 52.44 | -2.74 | Peak | 365 | 42 |
| 5 | 4882.00 | 13.98 | 54.00 | -40.02 | 10.51 | 3.47 | Average | 100 | 50 |
| 6 | 4882.00 | 44.08 | 74.00 | -29.92 | 40.61 | 3.47 | Peak | 100 | 50 |
| 7 | 7323.00 | 20.19 | 54.00 | -33.81 | 11.16 | 9.03 | Average | 100 | 95 |
| 8 | 7323.00 | 50.29 | 74.00 | -23.71 | 41.26 | 9.03 | Peak | 100 | 95 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | GFSK | Test Freq. (MHz) | 2480 |
|---|---|---|---|
| Polarization | Horizontal | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

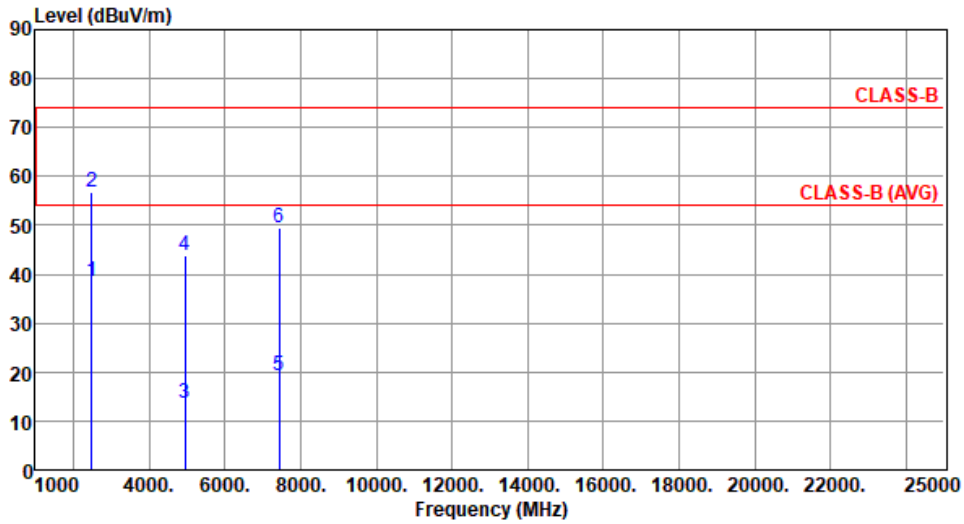



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 39.09 | 54.00 | -14.91 | 41.83 | -2.74 | Average | 100 | 298 |
| 2 | 2483.50 | 58.90 | 74.00 | -15.10 | 61.64 | -2.74 | Peak | 100 | 298 |
| 3 | 4960.00 | 13.84 | 54.00 | -40.16 | 10.16 | 3.68 | Average | 100 | 20 |
| 4 | 4960.00 | 43.94 | 74.00 | -30.06 | 40.26 | 3.68 | Peak | 100 | 20 |
| 5 | 7440.00 | 19.53 | 54.00 | -34.47 | 10.55 | 8.98 | Average | 100 | 345 |
| 6 | 7440.00 | 49.63 | 74.00 | -24.37 | 40.65 | 8.98 | Peak | 100 | 345 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | GFSK | Test Freq. (MHz) | 2480 |
|---|---|---|---|
| Polarization | Vertical | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62



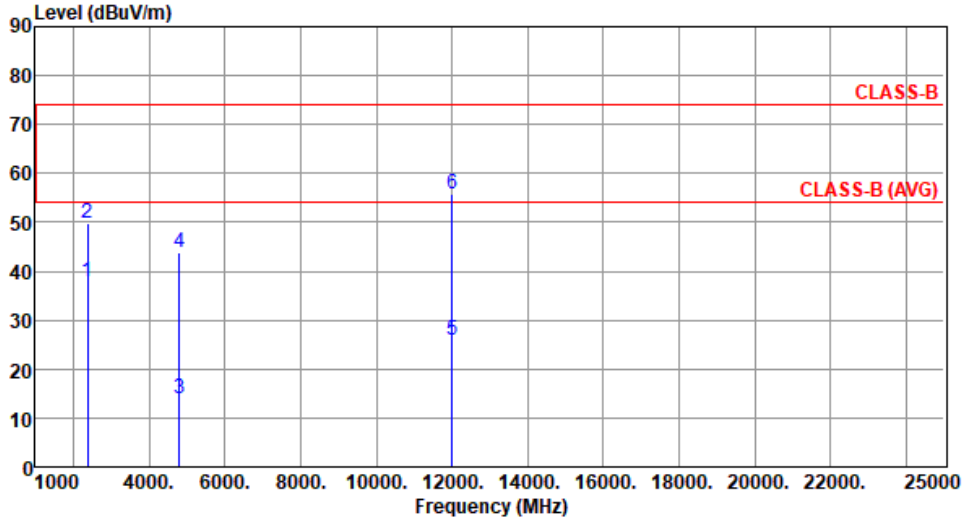

| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 38.46 | 54.00 | -15.54 | 41.20 | -2.74 | Average | 365 | 44 |
| 2 | 2483.50 | 56.70 | 74.00 | -17.30 | 59.44 | -2.74 | Peak | 365 | 44 |
| 3 | 4960.00 | 13.76 | 54.00 | -40.24 | 10.08 | 3.68 | Average | 100 | 60 |
| 4 | 4960.00 | 43.86 | 74.00 | -30.14 | 40.18 | 3.68 | Peak | 100 | 60 |
| 5 | 7440.00 | 19.34 | 54.00 | -34.66 | 10.36 | 8.98 | Average | 100 | 50 |
| 6 | 7440.00 | 49.44 | 74.00 | -24.56 | 40.46 | 8.98 | Peak | 100 | 50 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

### 3.2.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 8DPSK

| Modulation | 8DPSK | Test Freq. (MHz) | 2402 |
|---|---|---|---|
| Polarization | Horizontal | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

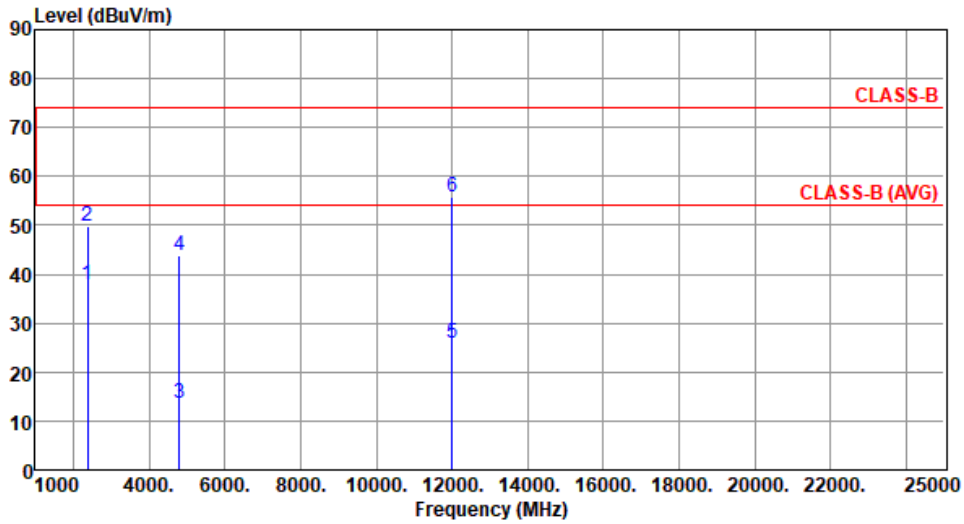



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.88 | 54.00 | -16.12 | 40.67 | -2.79 | Average | 100 | 302 |
| 2 | 2390.00 | 49.89 | 74.00 | -24.11 | 52.68 | -2.79 | Peak | 100 | 302 |
| 3 | 4804.00 | 13.86 | 54.00 | -40.14 | 10.36 | 3.50 | Average | 100 | 40 |
| 4 | 4804.00 | 43.96 | 74.00 | -30.04 | 40.46 | 3.50 | Peak | 100 | 40 |
| 5 | 12010.00 | 25.85 | 54.00 | -28.15 | 11.58 | 14.27 | Average | 100 | 80 |
| 6 | 12010.00 | 55.95 | 74.00 | -18.05 | 41.68 | 14.27 | Peak | 100 | 80 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | 8DPSK | Test Freq. (MHz) | 2402 |
|---|---|---|---|
| Polarization | Vertical | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

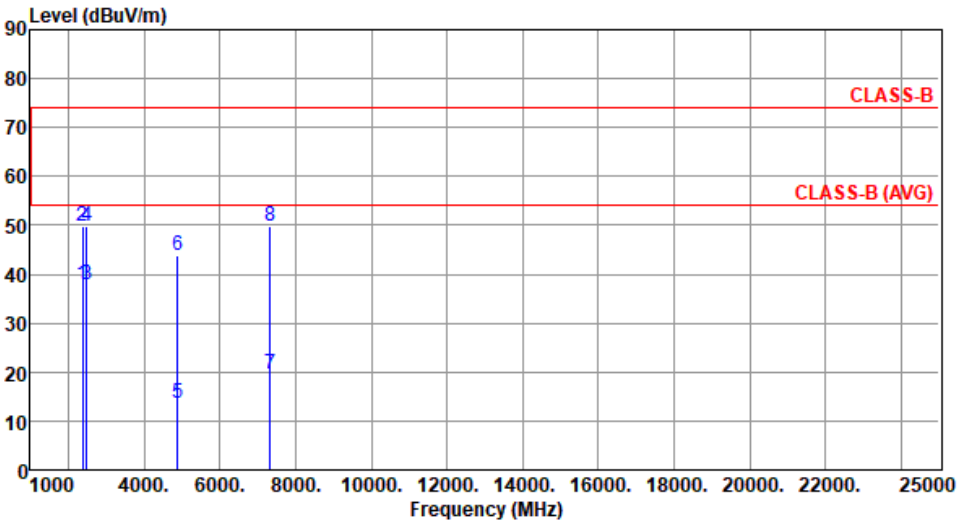



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.75 | 54.00 | -16.25 | 40.54 | -2.79 | Average | 364 | 42 |
| 2 | 2390.00 | 49.67 | 74.00 | -24.33 | 52.46 | -2.79 | Peak | 364 | 42 |
| 3 | 4804.00 | 13.72 | 54.00 | -40.28 | 10.22 | 3.50 | Average | 100 | 30 |
| 4 | 4804.00 | 43.82 | 74.00 | -30.18 | 40.32 | 3.50 | Peak | 100 | 30 |
| 5 | 12010.00 | 25.74 | 54.00 | -28.26 | 11.47 | 14.27 | Average | 100 | 90 |
| 6 | 12010.00 | 55.84 | 74.00 | -18.16 | 41.57 | 14.27 | Peak | 100 | 90 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | 8DPSK | Test Freq. (MHz) | 2441 |
|---|---|---|---|
| Polarization | Horizontal | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

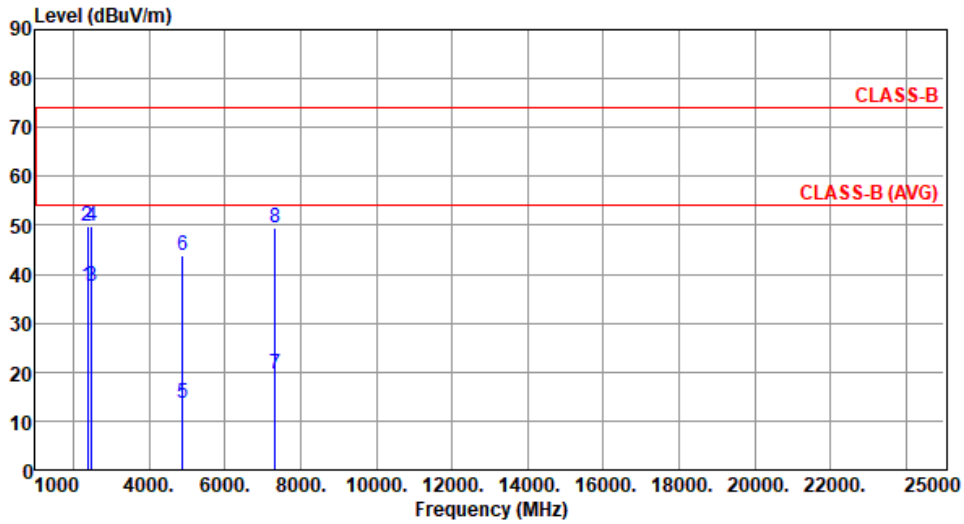



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.79 | 54.00 | -16.21 | 40.58 | -2.79 | Average | 100 | 301 |
| 2 | 2390.00 | 49.80 | 74.00 | -24.20 | 52.59 | -2.79 | Peak | 100 | 301 |
| 3 | 2483.50 | 37.73 | 54.00 | -16.27 | 40.47 | -2.74 | Average | 100 | 301 |
| 4 | 2483.50 | 49.90 | 74.00 | -24.10 | 52.64 | -2.74 | Peak | 100 | 301 |
| 5 | 4882.00 | 13.65 | 54.00 | -40.35 | 10.18 | 3.47 | Average | 100 | 20 |
| 6 | 4882.00 | 43.75 | 74.00 | -30.25 | 40.28 | 3.47 | Peak | 100 | 20 |
| 7 | 7323.00 | 19.58 | 54.00 | -34.42 | 10.55 | 9.03 | Average | 100 | 345 |
| 8 | 7323.00 | 49.68 | 74.00 | -24.32 | 40.65 | 9.03 | Peak | 100 | 345 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | 8DPSK | Test Freq. (MHz) | 2441 |
|---|---|---|---|
| Polarization | Vertical | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

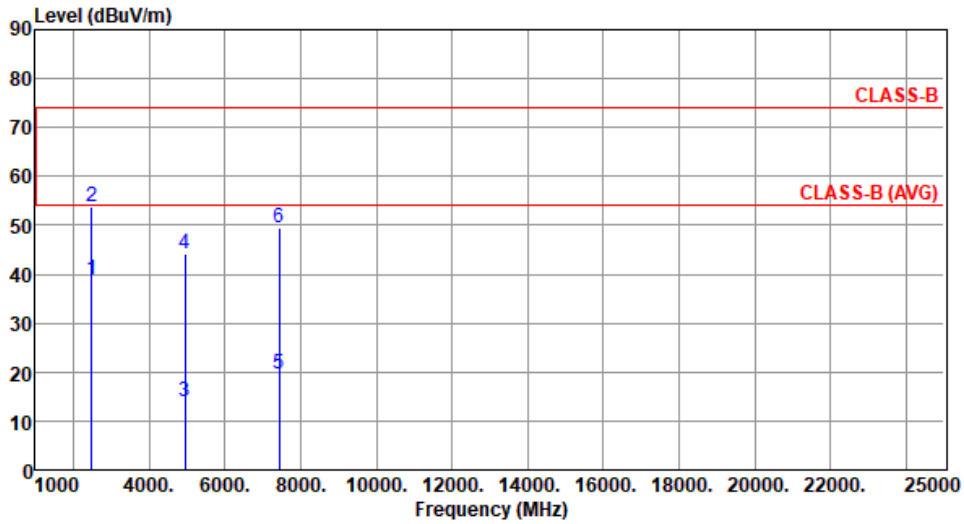



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | 37.67 | 54.00 | -16.33 | 40.46 | -2.79 | Average | 362 | 41 |
| 2 | 2390.00 | 49.68 | 74.00 | -24.32 | 52.47 | -2.79 | Peak | 362 | 41 |
| 3 | 2483.50 | 37.59 | 54.00 | -16.41 | 40.33 | -2.74 | Average | 362 | 41 |
| 4 | 2483.50 | 49.82 | 74.00 | -24.18 | 52.56 | -2.74 | Peak | 362 | 41 |
| 5 | 4882.00 | 13.72 | 54.00 | -40.28 | 10.25 | 3.47 | Average | 100 | 35 |
| 6 | 4882.00 | 43.82 | 74.00 | -30.18 | 40.35 | 3.47 | Peak | 100 | 35 |
| 7 | 7323.00 | 19.50 | 54.00 | -34.50 | 10.47 | 9.03 | Average | 100 | 60 |
| 8 | 7323.00 | 49.60 | 74.00 | -24.40 | 40.57 | 9.03 | Peak | 100 | 60 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | 8DPSK | Test Freq. (MHz) | 2480 |
|---|---|---|---|
| Polarization | Horizontal | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

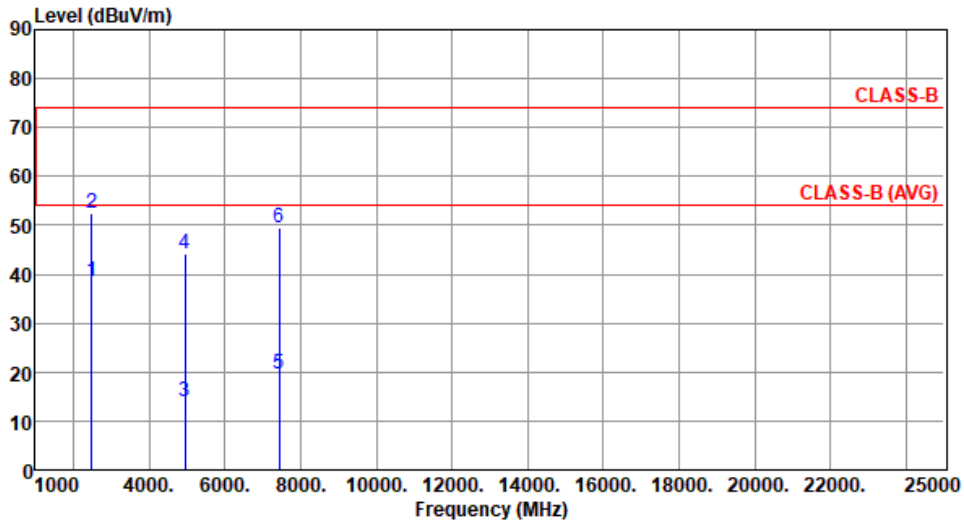



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 38.88 | 54.00 | -15.12 | 41.62 | -2.74 | Average | 100 | 297 |
| 2 | 2483.50 | 53.77 | 74.00 | -20.23 | 56.51 | -2.74 | Peak | 100 | 297 |
| 3 | 4960.00 | 14.09 | 54.00 | -39.91 | 10.41 | 3.68 | Average | 100 | 40 |
| 4 | 4960.00 | 44.19 | 74.00 | -29.81 | 40.51 | 3.68 | Peak | 100 | 40 |
| 5 | 7440.00 | 19.50 | 54.00 | -34.50 | 10.52 | 8.98 | Average | 100 | 340 |
| 6 | 7440.00 | 49.60 | 74.00 | -24.40 | 40.62 | 8.98 | Peak | 100 | 340 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| Modulation | 8DPSK | Test Freq. (MHz) | 2480 |
|---|---|---|---|
| Polarization | Vertical | | |

Test By :Roger Lu Temperature(℃):25 Humidity(%):62




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB/m | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 38.52 | 54.00 | -15.48 | 41.26 | -2.74 | Average | 362 | 47 |
| 2 | 2483.50 | 52.43 | 74.00 | -21.57 | 55.17 | -2.74 | Peak | 362 | 47 |
| 3 | 4960.00 | 14.05 | 54.00 | -39.95 | 10.37 | 3.68 | Average | 100 | 30 |
| 4 | 4960.00 | 44.15 | 74.00 | -29.85 | 40.47 | 3.68 | Peak | 100 | 30 |
| 5 | 7440.00 | 19.45 | 54.00 | -34.55 | 10.47 | 8.98 | Average | 100 | 60 |
| 6 | 7440.00 | 49.55 | 74.00 | -24.45 | 40.57 | 8.98 | Peak | 100 | 60 |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

## 3.3 Unwanted Emissions into Non-Restricted Frequency Bands

### 3.3.1 Limit of Unwanted Emissions into Non-Restricted Frequency Bands

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

### 3.3.2 Test Procedures

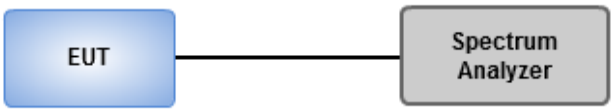
**Reference level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

**Emission level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

### 3.3.3 Test Setup

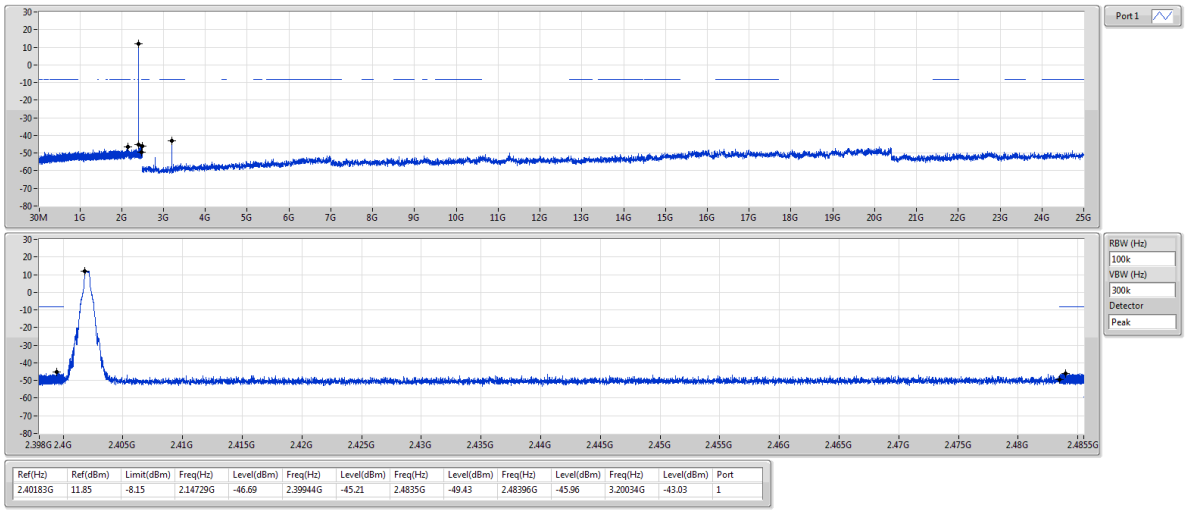


## 3.3.4 Unwanted Emissions into Non-Restricted Frequency Bands

| Ambient Condition | 24°C / 65% | Tested By | Aska Huang |
|---|---|---|---|

**BT-BR(1Mbps)** **CSENdB-FS**

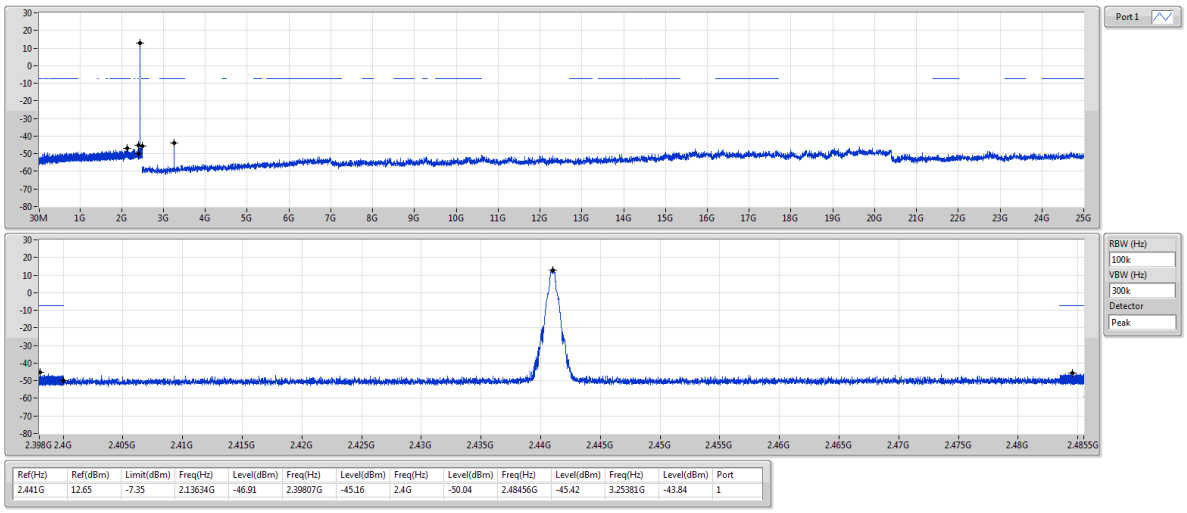
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.40183G | 11.85 | -8.15 | 2.14729G | -46.69 | 2.39944G | -45.21 | 2.4835G | -49.43 | 2.48396G | -45.96 | 3.20034G | -43.03 | 1 |

**BT-BR(1Mbps)** **CSENdB-FS**

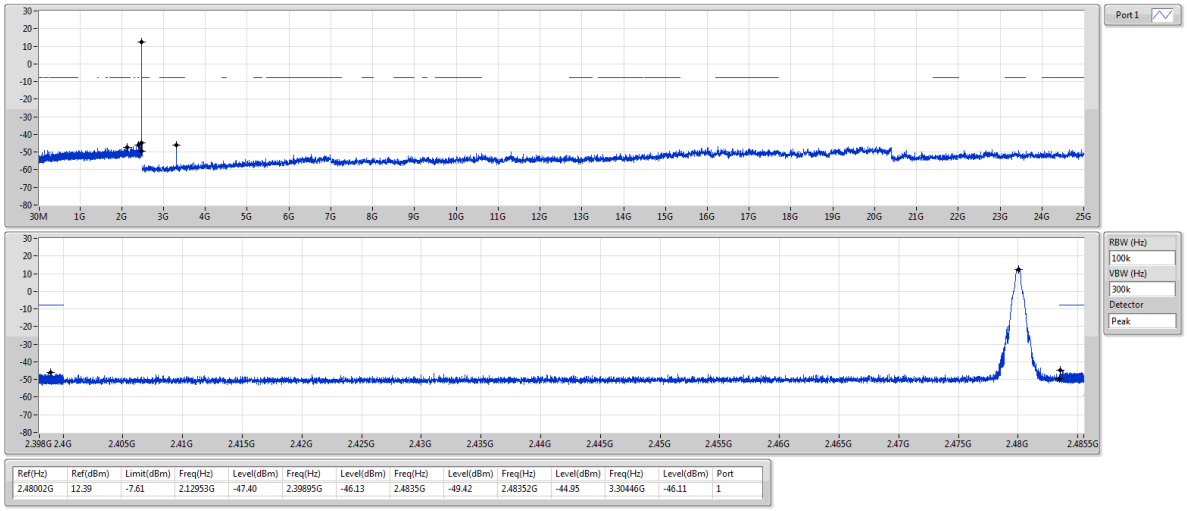
**2441MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.441G | 12.65 | -7.35 | 2.13634G | -46.91 | 2.39807G | -45.16 | 2.4G | -50.04 | 2.48456G | -45.42 | 3.25381G | -43.84 | 1 |

**BT-BR(1Mbps)** **CSENdB-FS**

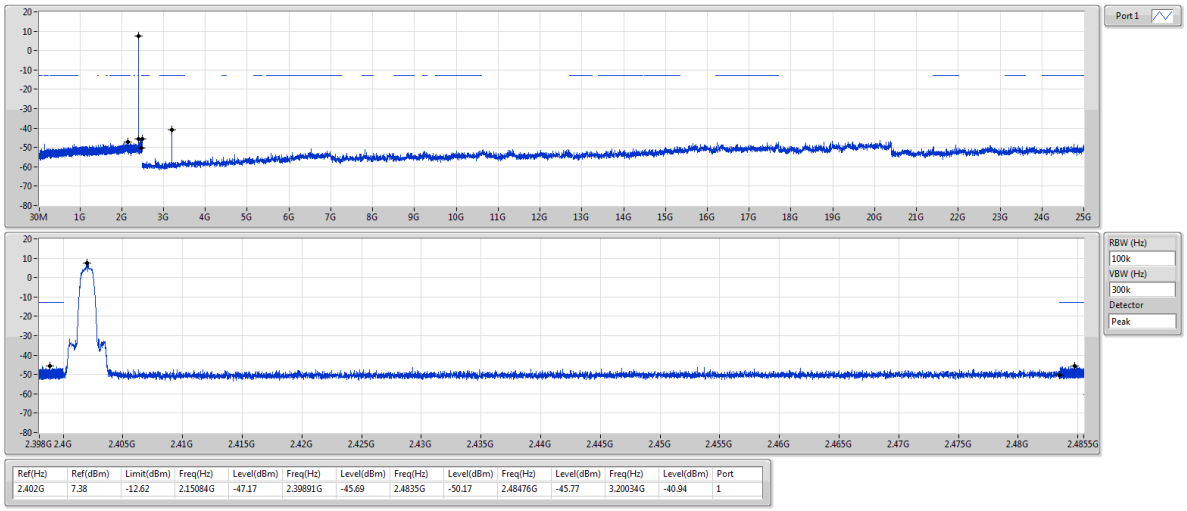
**2480MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.48002G | 12.39 | -7.61 | 2.12953G | -47.40 | 2.39895G | -46.13 | 2.4835G | -49.42 | 2.48352G | -44.95 | 3.30446G | -46.11 | 1 |

**BT-EDR(2Mbps)** **CSENdB-FS**

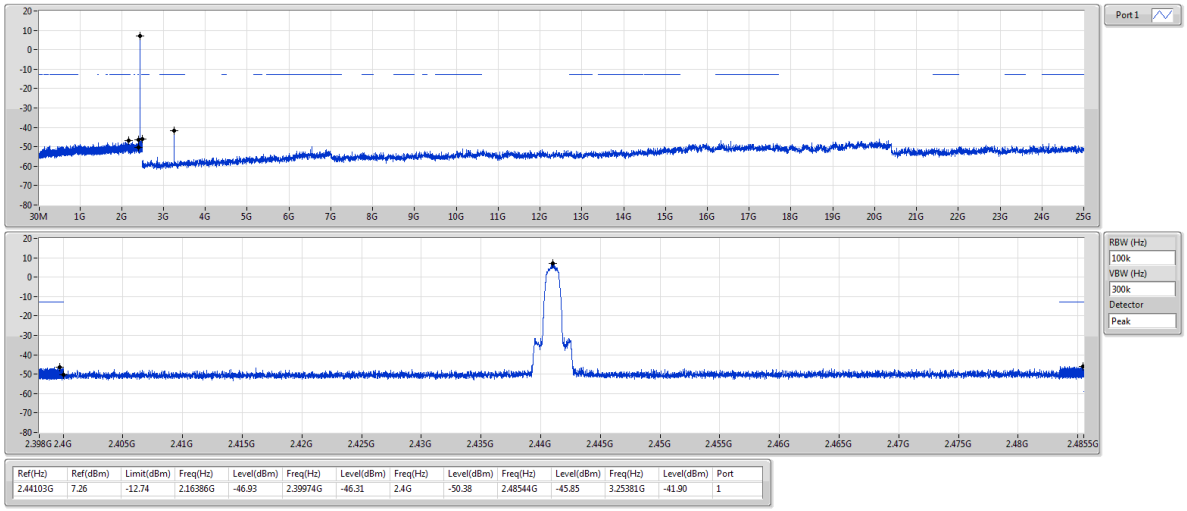
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.402G | 7.38 | -12.62 | 2.15084G | -47.17 | 2.39891G | -45.69 | 2.4835G | -50.17 | 2.48476G | -45.77 | 3.20034G | -40.94 | 1 |

**BT-EDR(2Mbps)** **CSENdB-FS**

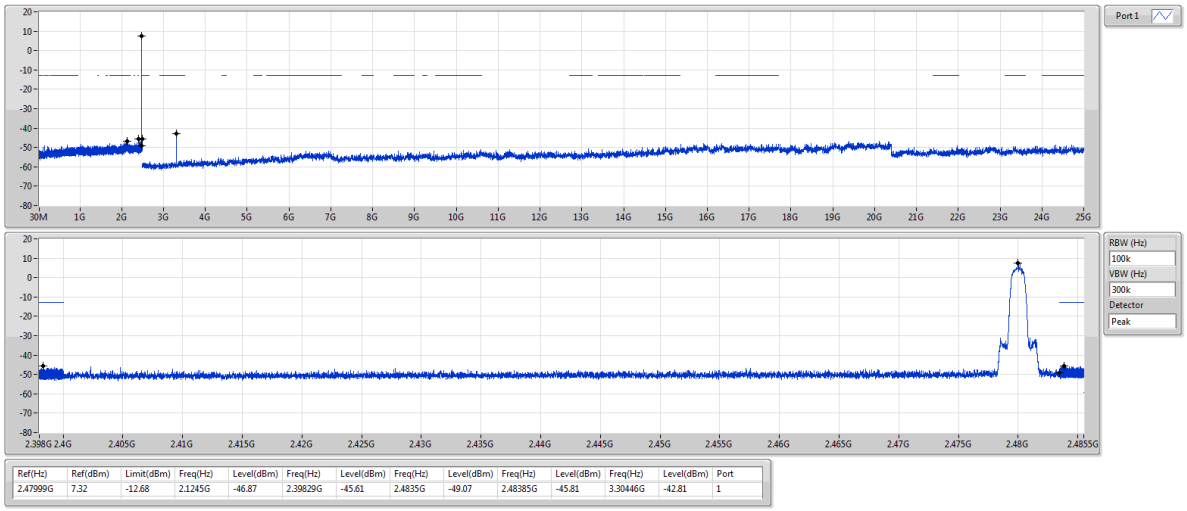
**2441MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.44103G | 7.26 | -12.74 | 2.16386G | -46.93 | 2.39974G | -46.31 | 2.4G | -50.38 | 2.48544G | -45.85 | 3.25381G | -41.90 | 1 |

**BT-EDR(2Mbps)** **CSENdB-FS**

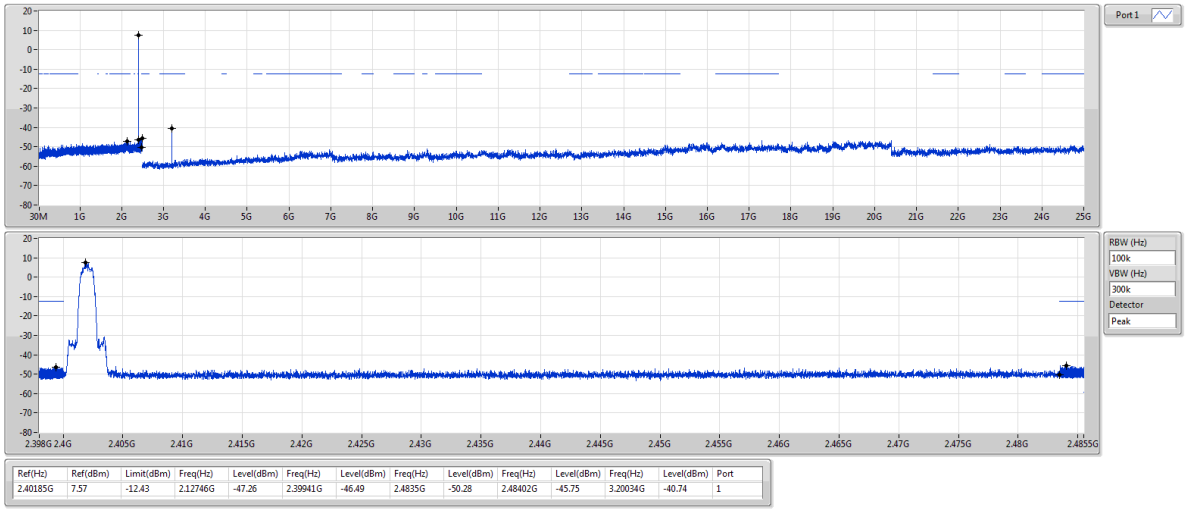
**2480MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.47999G | 7.32 | -12.68 | 2.1245G | -46.87 | 2.39829G | -45.61 | 2.4835G | -49.07 | 2.48385G | -45.81 | 3.30446G | -42.81 | 1 |

**BT-EDR(3Mbps)** **CSENdB-FS**

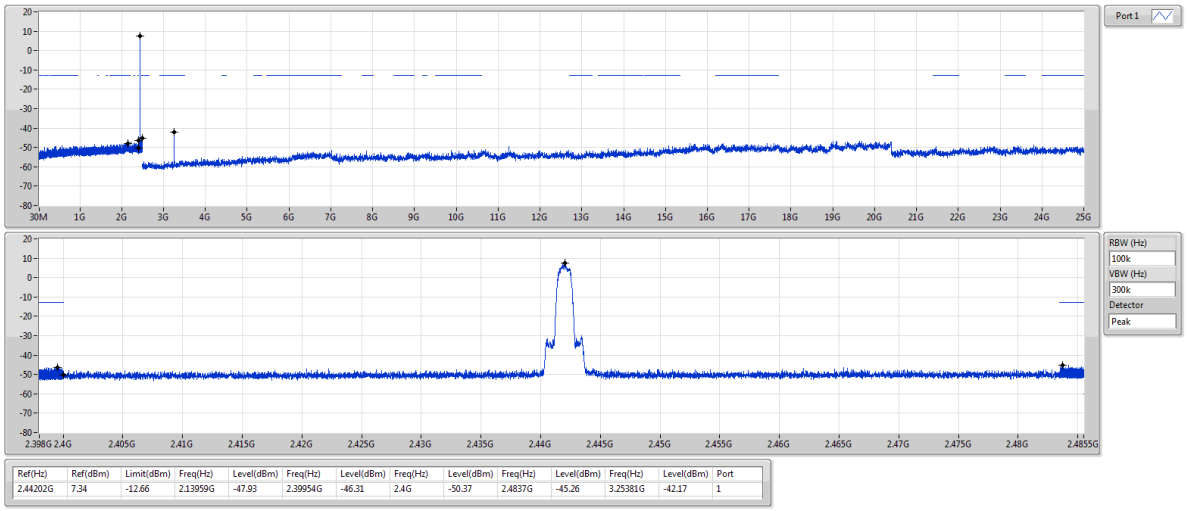
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.40185G | 7.57 | -12.43 | 2.12746G | -47.26 | 2.39941G | -46.49 | 2.4835G | -50.28 | 2.48402G | -45.75 | 3.20034G | -40.74 | 1 |

**BT-EDR(3Mbps)** **CSENdB-FS**

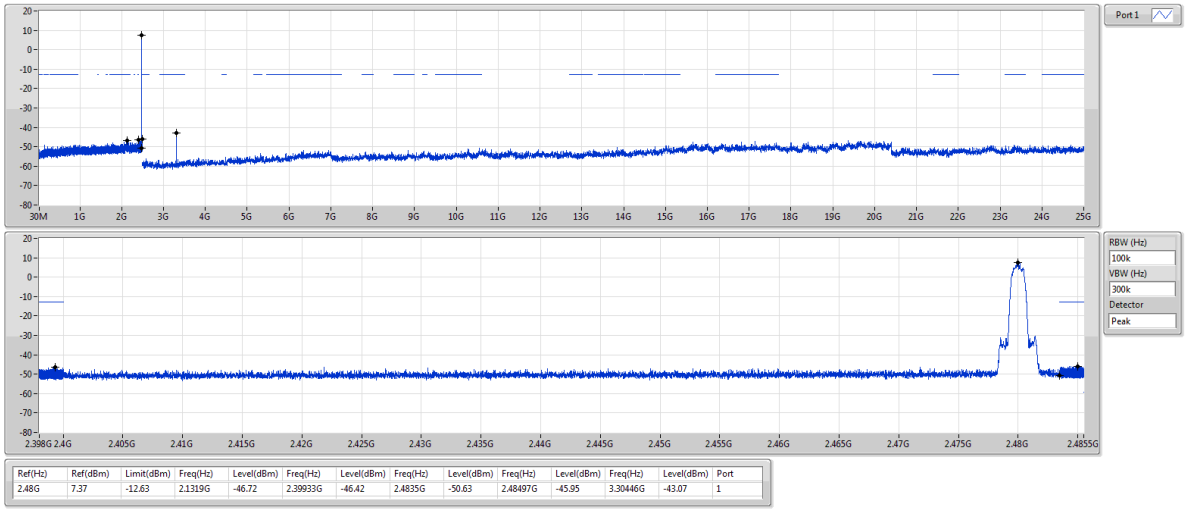
**2441MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.44202G | 7.34 | -12.66 | 2.13959G | -47.93 | 2.39954G | -46.31 | 2.4G | -50.37 | 2.4837G | -45.26 | 3.25381G | -42.17 | 1 |

**BT-EDR(3Mbps)** **CSENdB-FS**

**2480MHz**

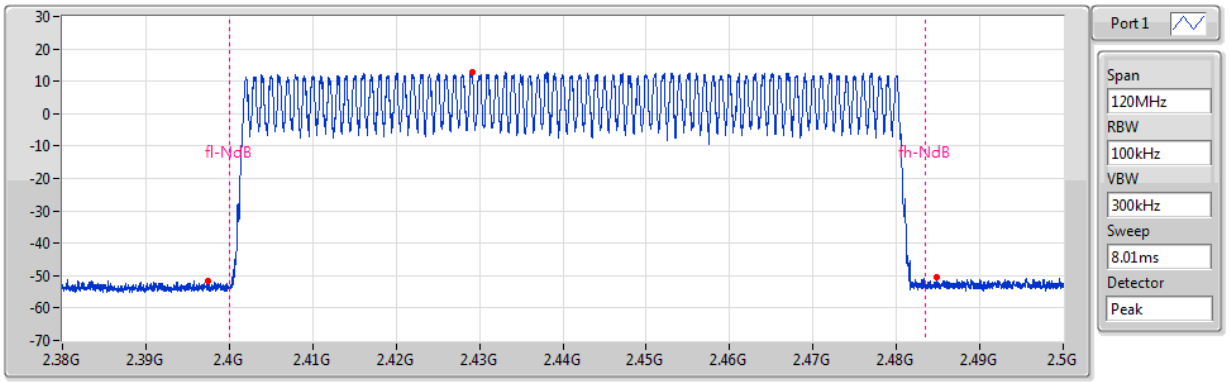



| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.48G | 7.37 | -12.63 | 2.1319G | -46.72 | 2.39933G | -46.42 | 2.4835G | -50.63 | 2.48497G | -45.95 | 3.30446G | -43.07 | 1 |

## BT-BR(1Mbps)

## 2402MHz

## Hopping Ch Bandedge (Non-restricted Band)

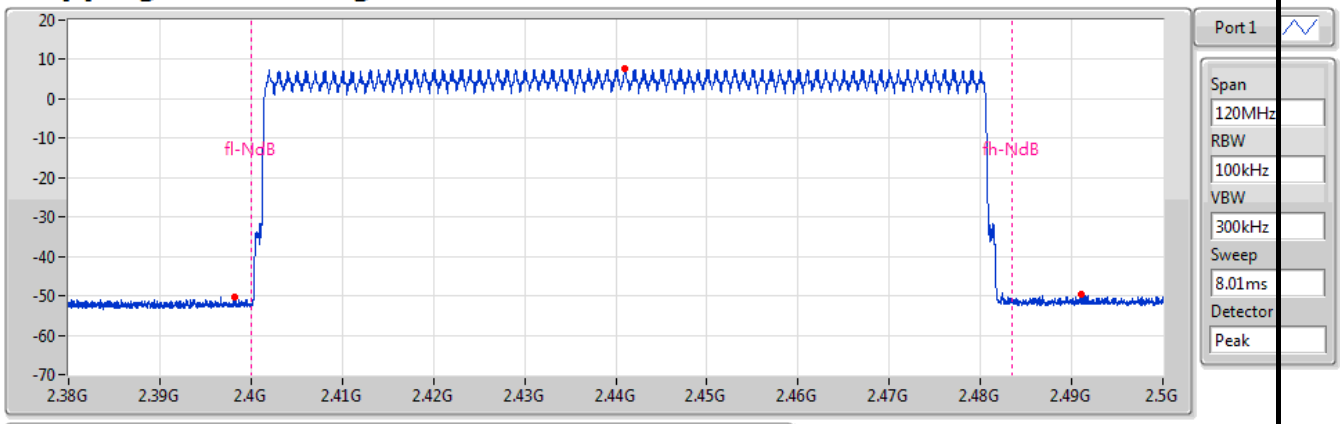



| Limit(dBm) | Ref(Hz) | Ref(dBm) | BE-l(Hz) | BE-l(dBm) | BE-h(Hz) | BE-h(dBm) |
|---|---|---|---|---|---|---|
| -7.3 | 2.429155G | 12.7 | 2.397385G | -51.8 | 2.48488G | -50.56 |

## BT-EDR(2Mbps)

## 2402MHz

## Hopping Ch Bandedge (Non-restricted Band)

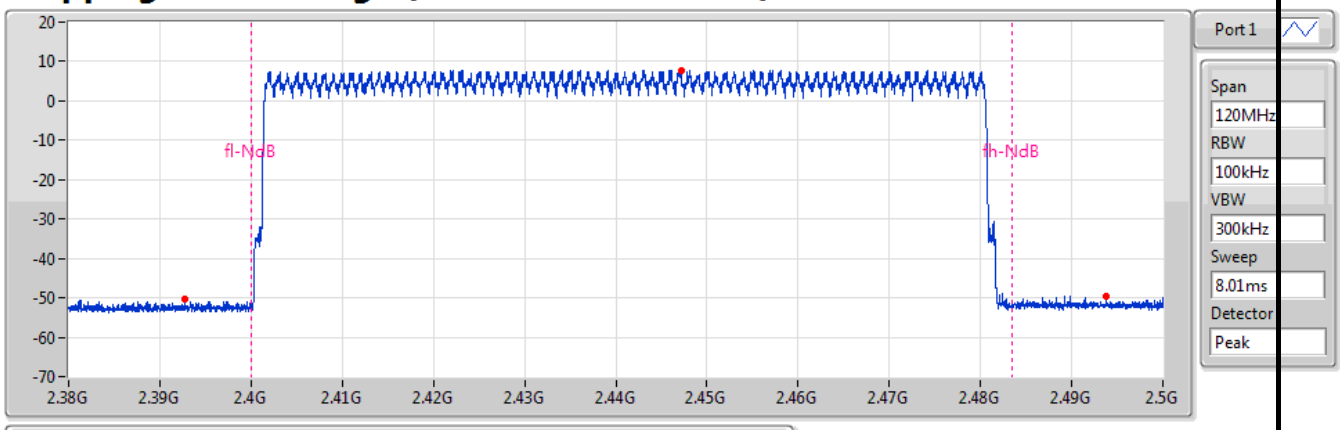



| Limit(dBm) | Ref(Hz) | Ref(dBm) | BE-l(Hz) | BE-l(dBm) | BE-h(Hz) | BE-h(dBm) |
|---|---|---|---|---|---|---|
| -12.43 | 2.441005G | 7.57 | 2.39815G | -50.36 | 2.491G | -49.46 |

**BT-EDR(3Mbps)**

**2402MHz**

**Hopping Ch Bandedge (Non-restricted Band)**




| Limit(dBm) | Ref(Hz) | Ref(dBm) | BE-l(Hz) | BE-l(dBm) | BE-h(Hz) | BE-h(dBm) |
|---|---|---|---|---|---|---|
| -12.38 | 2.447155G | 7.62 | 2.392705G | -50.4 | 2.49379G | -49.75 |

# 3.4 Conducted Output Power

## 3.4.1 Limit of Conducted Output Power

☐ 1 Watt
For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band.

☒ 0.125 Watt
For all other frequency hopping systems in the 2400–2483.5 MHz band.

☐ 0.125 Watt
For Frequency hopping systems operating in the 2400–2483.5 MHz band have hopping channel carrier frequencies that are separated by two-thirds of the 20 dB bandwidth of the hopping channel.

## 3.4.2 Test Procedures

1. A wideband power meter is used for power measurement. Bandwidth of power senor and meter is 50MHz

2 If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power

## 3.4.3 Test Setup

### 3.4.4 Test Result of Conducted Output Power

| Ambient Condition | 24°C / 65% | Tested By | Aska Huang |
|---|---|---|---|

**Summary of Peak Conducted Output Power**

| Mode | Power (dBm) | Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-BR(1Mbps) | 12.90 | 0.01950 |
| BT-EDR(2Mbps) | 9.92 | 0.00982 |
| BT-EDR(3Mbps) | 10.17 | 0.01040 |

**Result**

| Mode | Result | Antenna Gain (dBi) | Power (dBm) | Power Limit (dBm) |
|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.85 | 12.77 | 21.00 |
| 2441MHz | Pass | 3.85 | 12.90 | 21.00 |
| 2480MHz | Pass | 3.85 | 12.73 | 21.00 |
| BT-EDR(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.85 | 9.79 | 21.00 |
| 2441MHz | Pass | 3.85 | 9.92 | 21.00 |
| 2480MHz | Pass | 3.85 | 9.73 | 21.00 |
| BT-EDR(3Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.85 | 10.12 | 21.00 |
| 2441MHz | Pass | 3.85 | 10.17 | 21.00 |
| 2480MHz | Pass | 3.85 | 10.01 | 21.00 |

**Summary of Conducted (Average) Output Power**

| Mode | Power (dBm) | Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-BR(1Mbps) | 12.80 | 0.01905 |
| BT-EDR(2Mbps) | 7.53 | 0.00566 |
| BT-EDR(3Mbps) | 7.54 | 0.00568 |

**Result**

| Mode | Result | Antenna Gain (dBi) | Power (dBm) | Power Limit (dBm) |
|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.85 | 12.60 | - |
| 2441MHz | Pass | 3.85 | 12.80 | - |
| 2480MHz | Pass | 3.85 | 12.63 | - |
| BT-EDR(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.85 | 7.41 | - |
| 2441MHz | Pass | 3.85 | 7.53 | - |
| 2480MHz | Pass | 3.85 | 7.35 | - |
| BT-EDR(3Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.85 | 7.48 | - |
| 2441MHz | Pass | 3.85 | 7.54 | - |
| 2480MHz | Pass | 3.85 | 7.36 | - |

Note: Average power is for reference only.

## 3.5 Number of Hopping Frequency

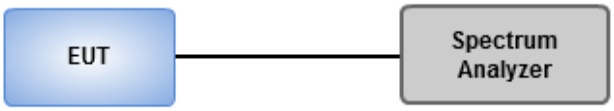
### 3.5.1 Limit of Number of Hopping Frequency

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

### 3.5.2 Test Procedures

1. Set RBW = 100kHz, VBW = 300kHz, Sweep time = Auto, Detector = Peak Trace max hold.
2 Allow trace to stabilize.

### 3.5.3 Test Setup



## 3.5.4 Test Result of Number of Hopping Frequency

| Ambient Condition | 24°C / 65% | Tested By | Aska Huang |
|---|---|---|---|

**Summary**

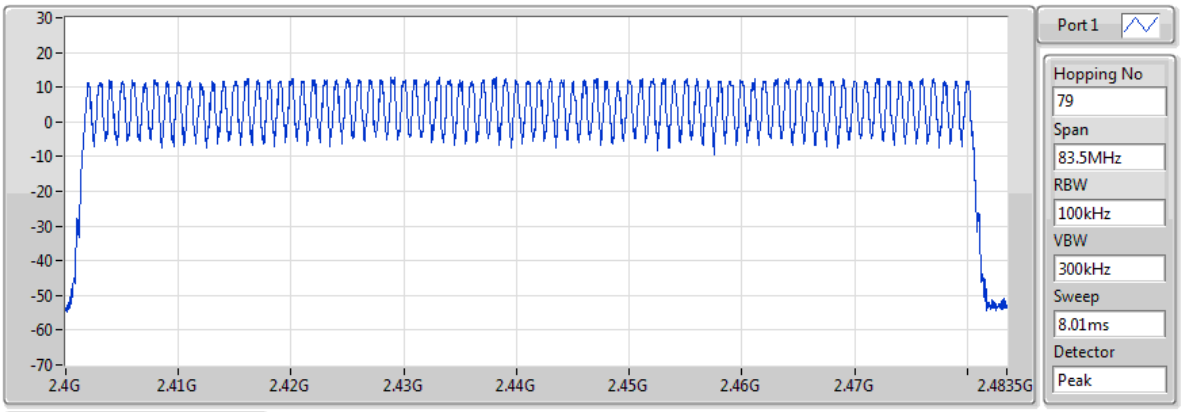
| Mode | Max-Hop No |
|---|---|
| 2.4-2.4835GHz | - |
| BT-BR(1Mbps) | 79 |
| BT-EDR(2Mbps) | 79 |
| BT-EDR(3Mbps) | 79 |

**Result**

| Mode | Result | Hopping No | Limit |
|---|---|---|---|
| BT-BR(1Mbps) | - | - | - |
| 2402MHz | Pass | 79 | 15 |
| BT-EDR(2Mbps) | - | - | - |
| 2402MHz | Pass | 79 | 15 |
| BT-EDR(3Mbps) | - | - | - |
| 2402MHz | Pass | 79 | 15 |

**BT-BR(1Mbps)** **Hopping-FS**

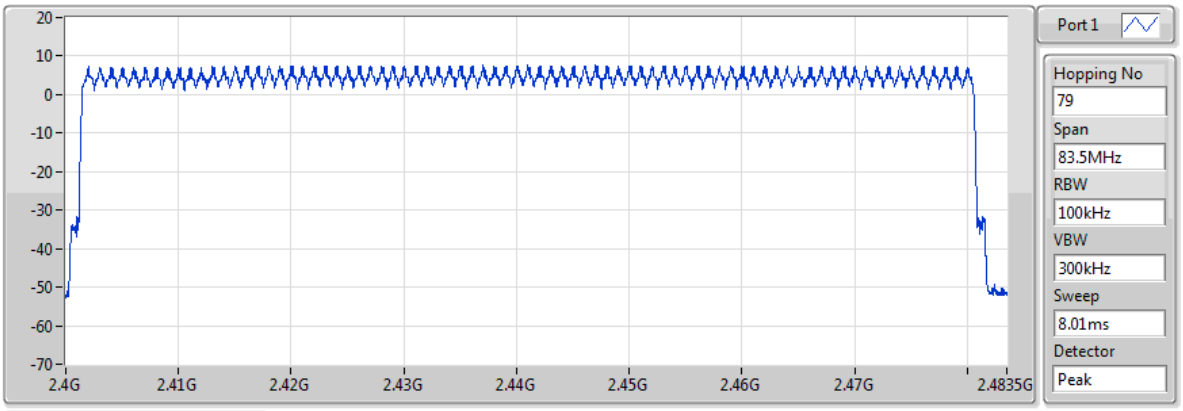
**2402MHz**




| Hopping No | Limit |
|---|---|
| 79 | 15 |

**BT-EDR(2Mbps)** **Hopping-FS**

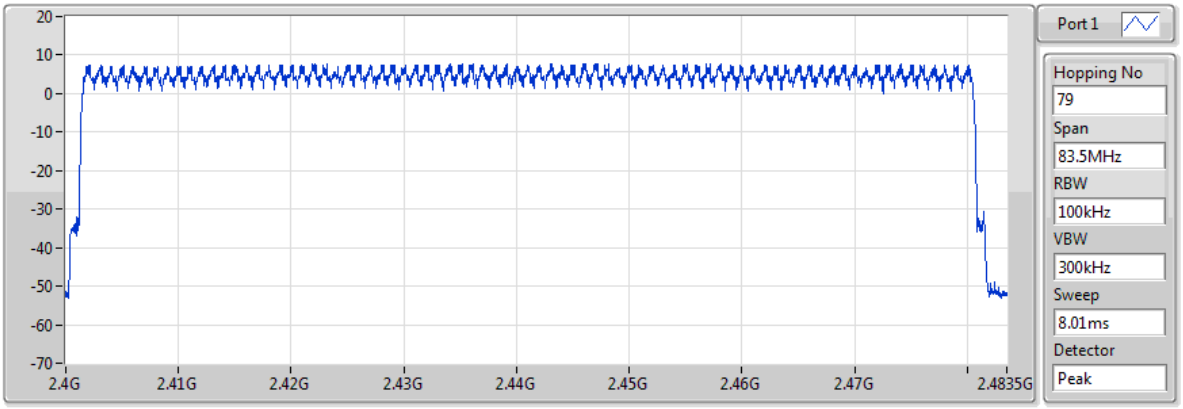
**2402MHz**




| Hopping No | Limit |
|---|---|
| 79 | 15 |

**BT-EDR(3Mbps)** **Hopping-FS**

**2402MHz**




| Hopping No | Limit |
|---|---|
| 79 | 15 |

# 3.6 20dB and Occupied Bandwidth

## 3.6.1 Test Procedures

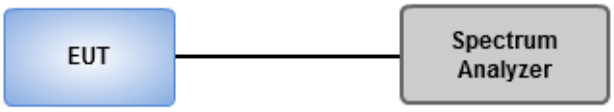
**20dB Bandwidth**

1. Set RBW=20kHz, VBW=100kHz, Sweep time = Auto, Detector=Peak , Trace max hold
2 Allow trace to stabilize
3 Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

**Occupied Bandwidth**

1. Set RBW=20kHz, VBW=100kHz , Sweep time = Auto, Detector=Sample , Trace max hold
2 Allow trace to stabilize
3. Use Occupied bandwidth function of spectrum analyzer to measuring 99% occupied bandwidth

## 3.6.2 Test Setup



### 3.6.3 Test result of 20dB and Occupied Bandwidth

| Ambient Condition | 24°C / 65% | Tested By | Aska Huang |
|---|---|---|---|

**Summary**

| Mode | Max-N dB (Hz) | Max-OBW (Hz) | ITU-Code | Min-N dB (Hz) | Min-OBW (Hz) |
|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - |
| BT-BR(1Mbps) | 1.022M | 926.194k | 926KF1D | 1.004M | 897.25k |
| BT-EDR(2Mbps) | 1.333M | 1.208M | 1M21G1D | 1.315M | 1.201M |
| BT-EDR(3Mbps) | 1.312M | 1.212M | 1M21G1D | 1.254M | 1.205M |

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

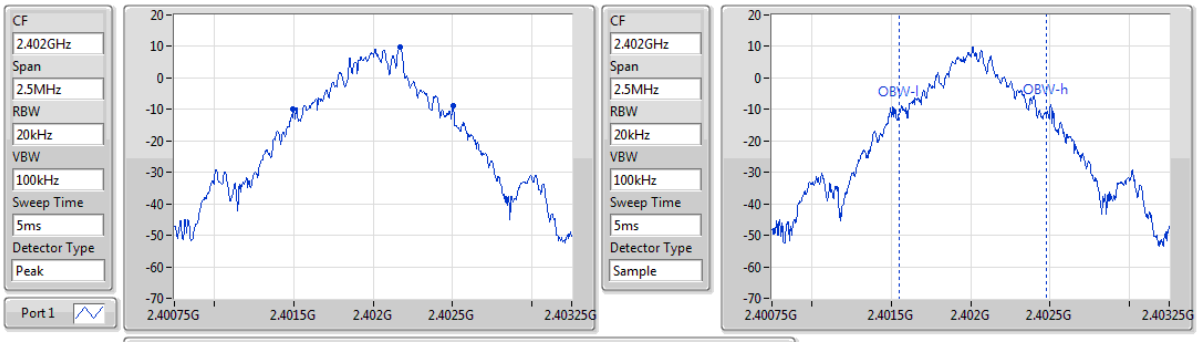
**Result**

| Mode | Result | Limit (Hz) | Port 1-N dB (Hz) | Port 1-OBW (Hz) |
|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - |
| 2402MHz | Pass | Inf | 1.011M | 926.194k |
| 2441MHz | Pass | Inf | 1.022M | 911.722k |
| 2480MHz | Pass | Inf | 1.004M | 897.25k |
| BT-EDR(2Mbps) | - | - | - | - |
| 2402MHz | Pass | Inf | 1.322M | 1.201M |
| 2441MHz | Pass | Inf | 1.333M | 1.208M |
| 2480MHz | Pass | Inf | 1.315M | 1.201M |
| BT-EDR(3Mbps) | - | - | - | - |
| 2402MHz | Pass | Inf | 1.312M | 1.212M |
| 2441MHz | Pass | Inf | 1.257M | 1.205M |
| 2480MHz | Pass | Inf | 1.254M | 1.212M |

Port X-N dB = Port X 20dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

**BT-BR(1Mbps)** **EBW-FS**

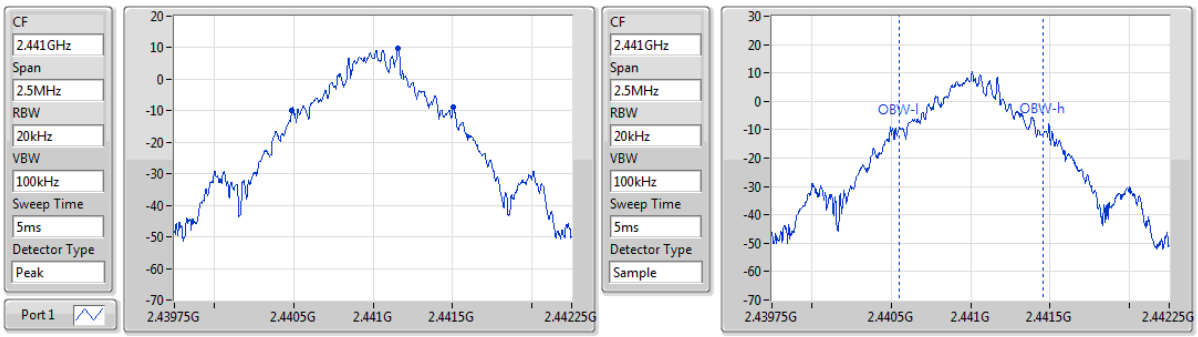
**2402MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.011M | 2.401496G | 2.402507G | 926.194k | 2.401548G | 2.402474G | Inf | 1 |

**BT-BR(1Mbps)** **EBW-FS**

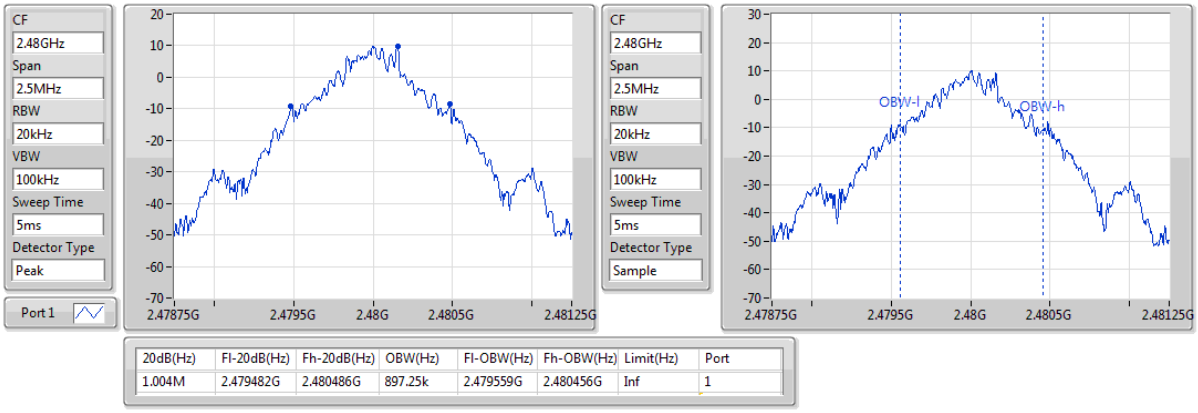
**2441MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.022M | 2.440486G | 2.441507G | 911.722k | 2.440548G | 2.441459G | Inf | 1 |

**BT-BR(1Mbps)** **EBW-FS**

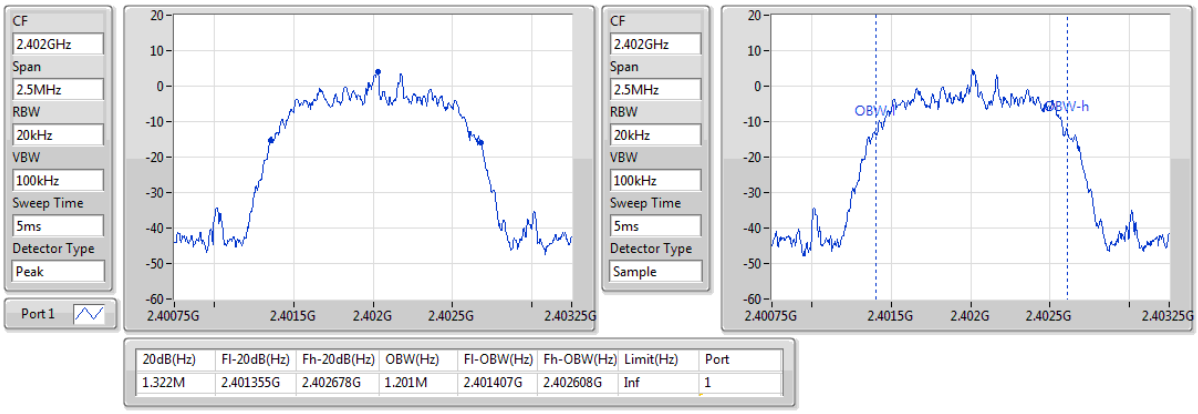
**2480MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.004M | 2.479482G | 2.480486G | 897.25k | 2.479559G | 2.480456G | Inf | 1 |

**BT-EDR(2Mbps)** **EBW-FS**

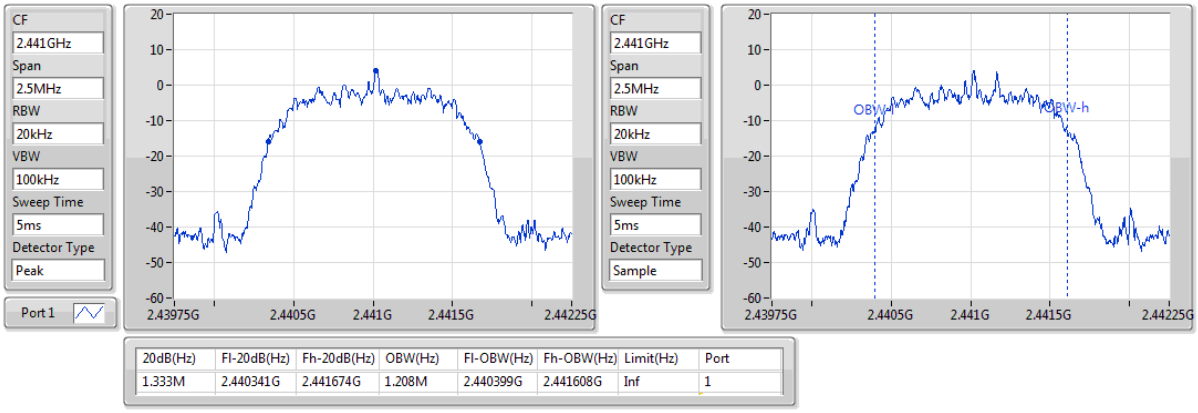
**2402MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.322M | 2.401355G | 2.402678G | 1.201M | 2.401407G | 2.402608G | Inf | 1 |

**BT-EDR(2Mbps)** **EBW-FS**

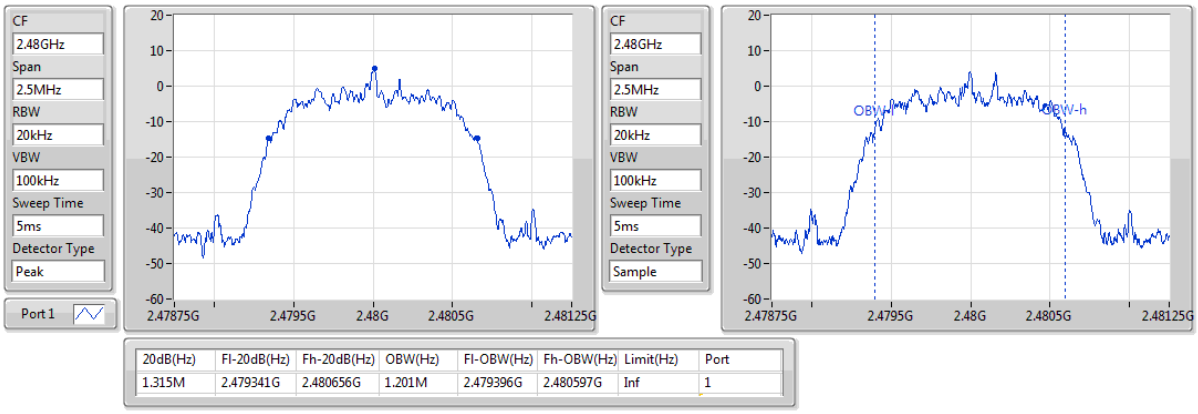
**2441MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.333M | 2.440341G | 2.441674G | 1.208M | 2.440399G | 2.441608G | Inf | 1 |

**BT-EDR(2Mbps)** **EBW-FS**

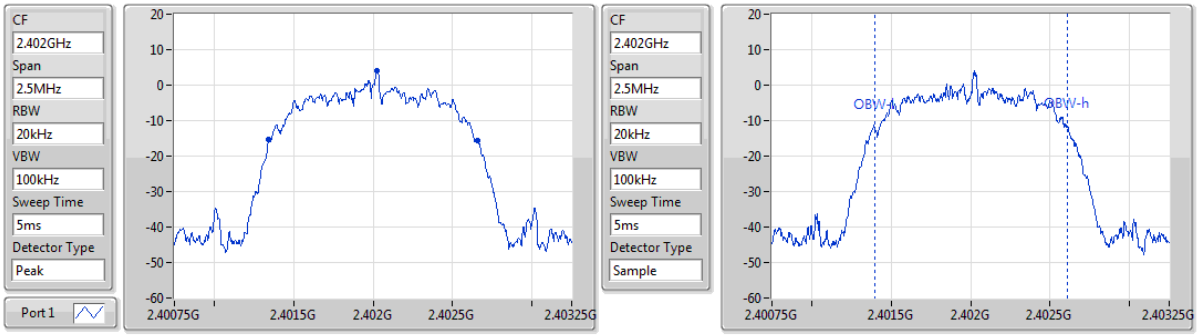
**2480MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.315M | 2.479341G | 2.480656G | 1.201M | 2.479396G | 2.480597G | Inf | 1 |

**BT-EDR(3Mbps)** **EBW-FS**

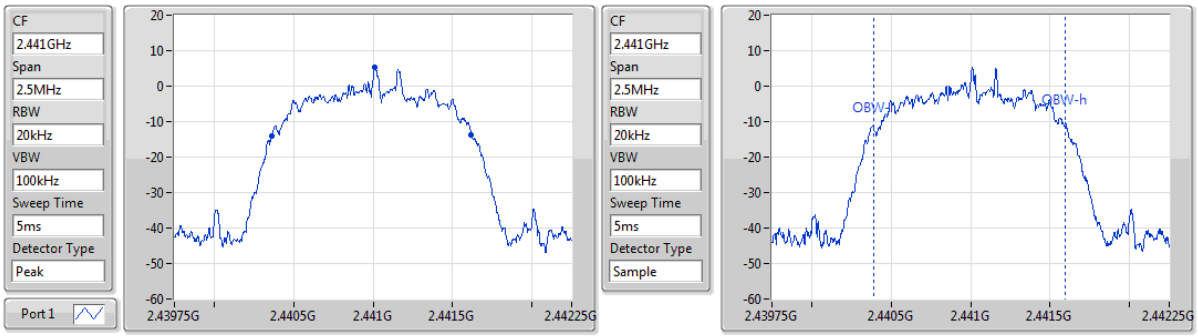
**2402MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.312M | 2.401344G | 2.402656G | 1.212M | 2.401396G | 2.402608G | Inf | 1 |

**BT-EDR(3Mbps)** **EBW-FS**

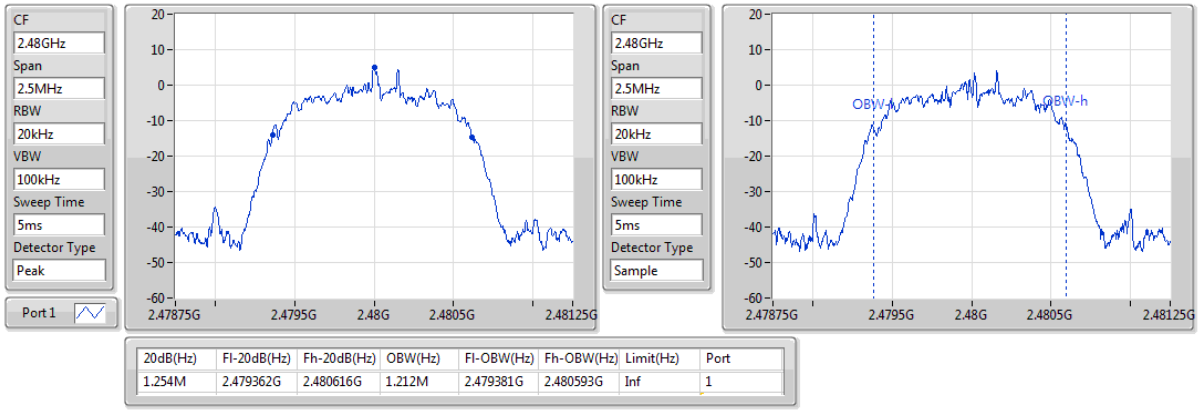
**2441MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.257M | 2.440362G | 2.44162G | 1.205M | 2.440392G | 2.441597G | Inf | 1 |

**BT-EDR(3Mbps)** **EBW-FS**

**2480MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.254M | 2.479362G | 2.480616G | 1.212M | 2.479381G | 2.480593G | Inf | 1 |

# 3.7 Channel Separation

## 3.7.1 Limit of Channel Separation

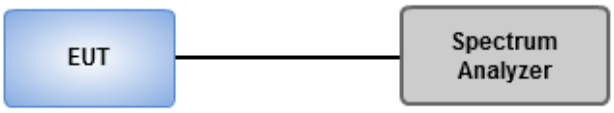
☐ Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

☒ Frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

## 3.7.2 Test Procedures

1. Set RBW=30kHz, VBW=100kHz,Sweep time = Auto, Detector=Peak Trace max hold
2. Allow trace to stabilize
3. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The EUT shall show compliance with the appropriate regulatory limit

## 3.7.3 Test Setup



## 3.7.4 Test result of Channel Separation

| Ambient Condition | 24°C / 65% | Tested By | Aska Huang |
|---|---|---|---|

**Summary**

| Mode | Max-Space (Hz) | Min-Space (Hz) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-BR(1Mbps) | 1M | 1M |
| BT-EDR(2Mbps) | 1M | 1M |
| BT-EDR(3Mbps) | 1.004348M | 1M |

**Result**

| Mode | Result | Fl (Hz) | Fh (Hz) | Ch.Space (Hz) | Limit (Hz) |
|---|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - | - |
| 2402MHz | Pass | 2.40217G | 2.40317G | 1M | 673.326k |
| 2441MHz | Pass | 2.441009G | 2.442009G | 1M | 680.652k |
| 2480MHz | Pass | 2.479004G | 2.480004G | 1M | 668.664k |
| BT-EDR(2Mbps) | - | - | - | - | - |
| 2402MHz | Pass | 2.402017G | 2.403017G | 1M | 880.452k |
| 2441MHz | Pass | 2.441009G | 2.442009G | 1M | 887.778k |
| 2480MHz | Pass | 2.479004G | 2.480004G | 1M | 875.79k |
| BT-EDR(3Mbps) | - | - | - | - | - |
| 2402MHz | Pass | 2.402165G | 2.403165G | 1M | 873.792k |
| 2441MHz | Pass | 2.441009G | 2.442009G | 1M | 837.162k |
| 2480MHz | Pass | 2.479G | 2.480004G | 1.004348M | 835.164k |

**BT-BR(1Mbps)** **Channel Separation-FS**

**2.402G/2.403GHz**


| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.40217G | 2.40317G | 1M | 673.326k |

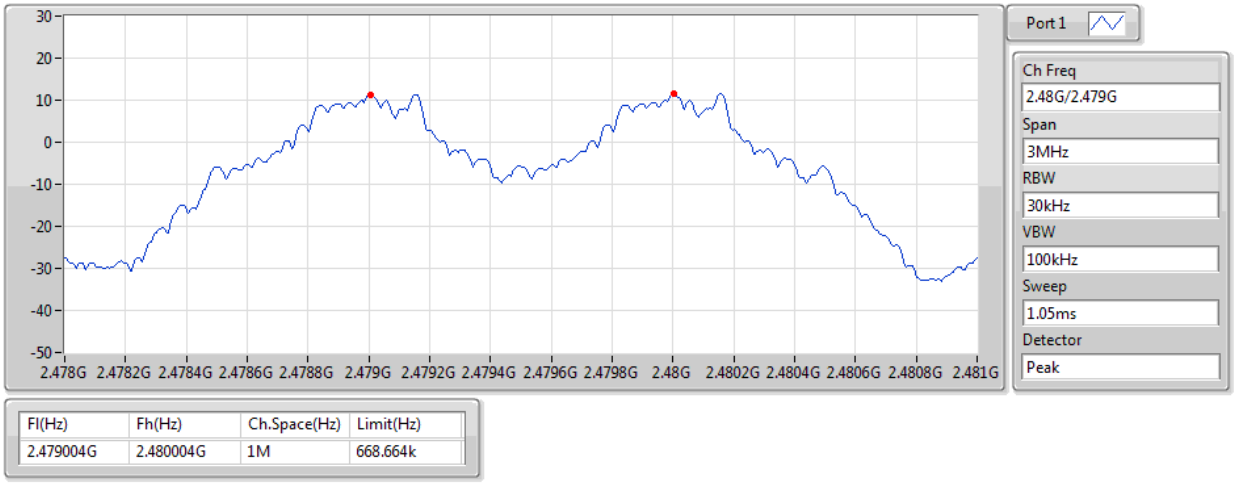
**BT-BR(1Mbps)** **Channel Separation-FS**

**2.441G/2.442GHz**


| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.441009G | 2.442009G | 1M | 680.652k |

**BT-BR(1Mbps)** **Channel Separation-FS**

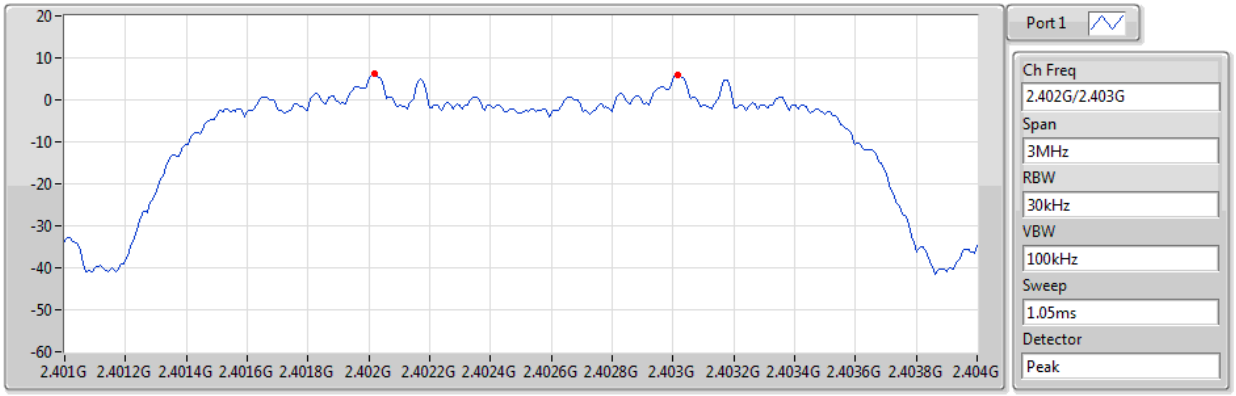
**2.48G/2.479GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.479004G | 2.480004G | 1M | 668.664k |

**BT-EDR(2Mbps)** **Channel Separation-FS**

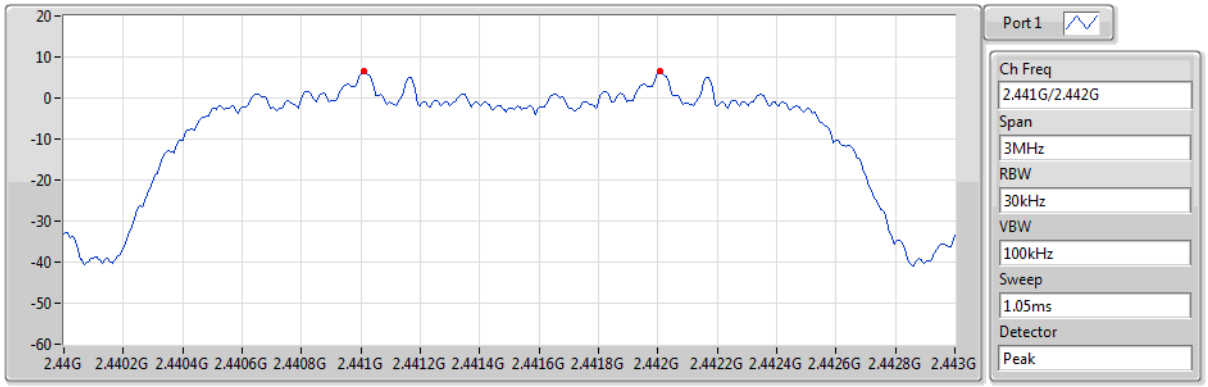
**2.402G/2.403GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.402017G | 2.403017G | 1M | 880.452k |

**BT-EDR(2Mbps)** **Channel Separation-FS**

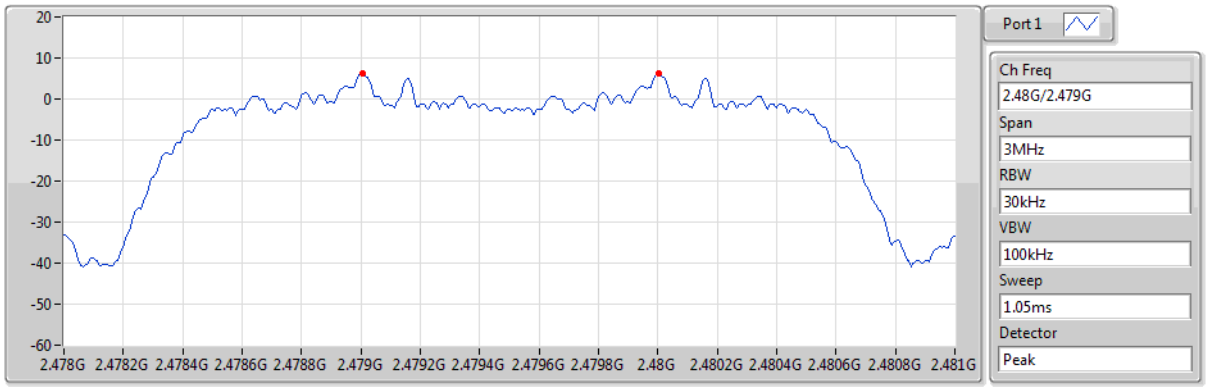
**2.441G/2.442GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.441009G | 2.442009G | 1M | 887.778k |

**BT-EDR(2Mbps)** **Channel Separation-FS**

**2.48G/2.479GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.479004G | 2.480004G | 1M | 875.79k |

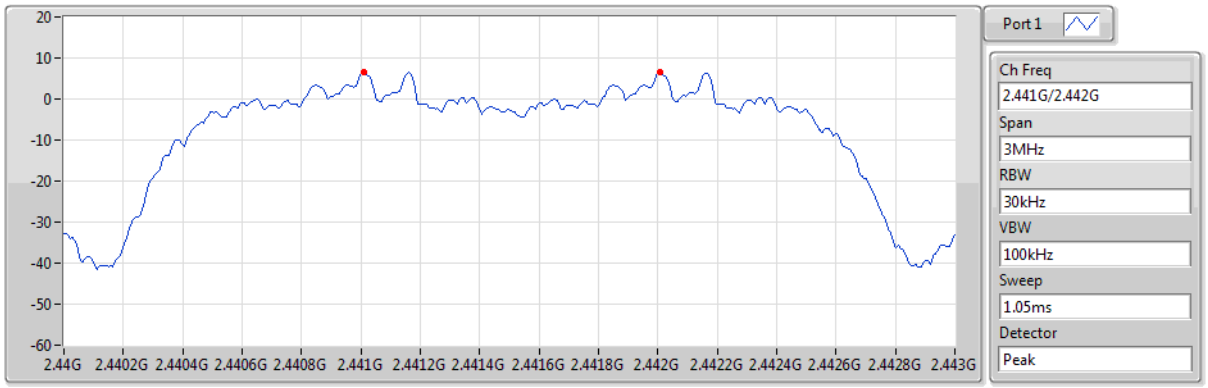
**BT-EDR(3Mbps)** **Channel Separation-FS**

**2.402G/2.403GHz**


| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.402165G | 2.403165G | 1M | 873.792k |

**BT-EDR(3Mbps)** **Channel Separation-FS**

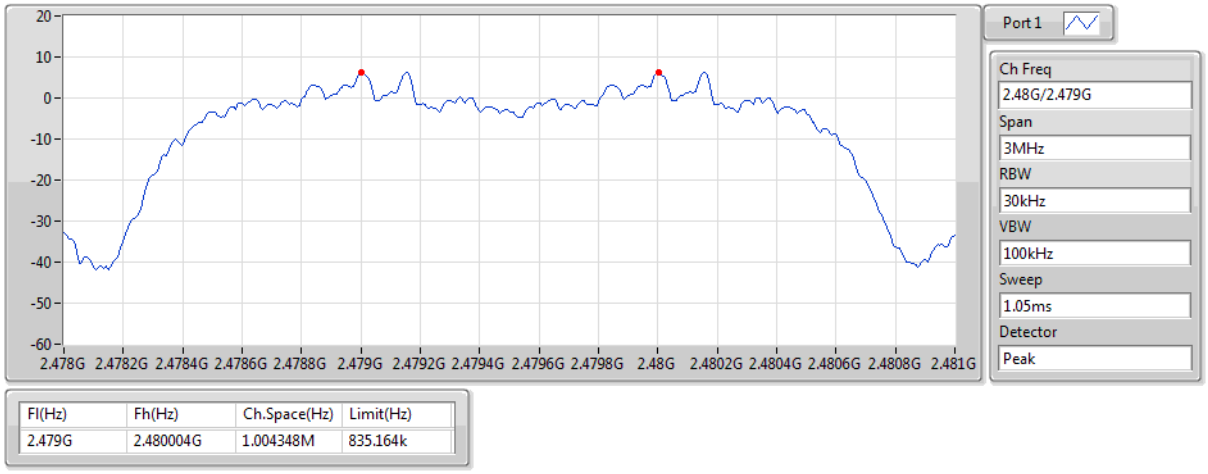
**2.441G/2.442GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.441009G | 2.442009G | 1M | 837.162k |

**BT-EDR(3Mbps)** **Channel Separation-FS**

**2.48G/2.479GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.479G | 2.480004G | 1.004348M | 835.164k |

## 3.8 Number of Dwell Time

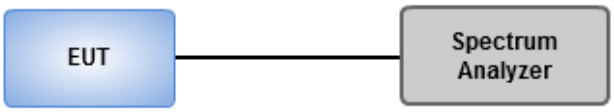
### 3.8.1 Limit of Dwell time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 3.8.2 Test Procedures

1. Set RBW=300 kHz, VBW=1 MHz, Sweep time=8 ms, Detector=Peak, Span=0 Hz,Trace max hold.
2 Enable gating and trigger function of spectrum analyzer to measure burst on time.
3. Set RBW=300 kHz, VBW=1 MHz, Sweep time=5 s / 2 s, Detector=Peak, Span=0 Hz,Trace max hold.
4. Enable gating and trigger function of spectrum analyzer to measure burst on number of transmission.
5 Set RBW=300 kHz, VBW=1 MHz, Sweep time=31.6 s / 8 s, Detector=Peak, Span=0 Hz,Trace max hold.
6 Enable gating and trigger function of spectrum analyzer to measure burst on number of transmission of entire time cycle.

### 3.8.3 Test Setup



### 3.8.4 Test Result of Dwell Time

| Ambient Condition | 24°C / 65% | Tested By | Aska Huang |
|---|---|---|---|

**Summary**

| Mode | Max-Dwell (s) |
|---|---|
| 2.4-2.4835GHz | - |
| BT-BR(1Mbps) | 347.15128m_DH5 |
| BT-EDR(2Mbps) | 347.36142m_DH5 |
| BT-EDR(3Mbps) | 311.33426m_DH5 |
| BT-BR-AFH(1Mbps) | 300.638m_DH5-AFH |
| BT-EDR-AFH(2Mbps) | 312.417m_DH5-AFH |
| BT-EDR-AFH(3Mbps) | 312.66m_DH5-AFH |

### Result/ Non AFH mode

| Mode | Result | Period (s) | Dwell (s) | Limit (s) | Tx On (ms) | Number of transmission in a 5 s |
|---|---|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 31.6 | 0.34715 | 0.4 | 2.89100 | 19 |
| BT-EDR(2Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 31.6 | 0.34736 | 0.4 | 2.89275 | 19 |
| BT-EDR(3Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 31.6 | 0.31133 | 0.4 | 2.89775 | 17 |

Note 1: Dwell time =Number of transmission in a 5 second x Tx On Time x 6.32

Note 2: DH5 was the worst mode.

### Result/ AFH mode

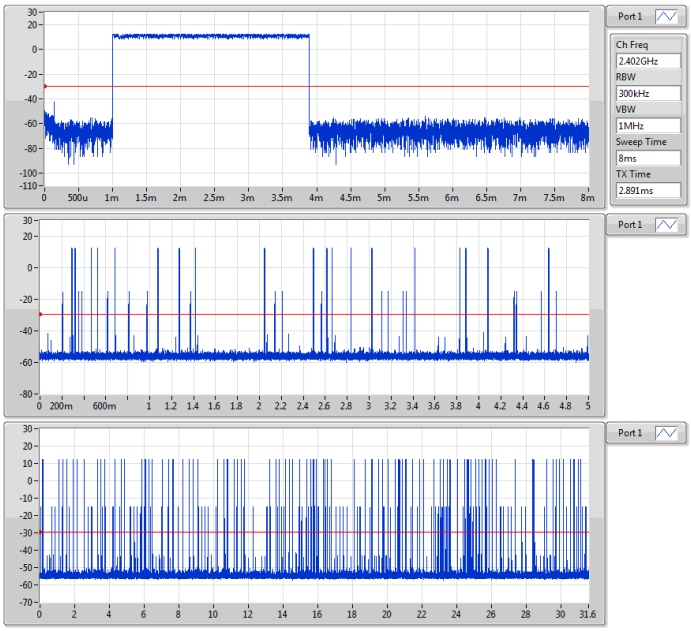
| Mode | Result | Period (s) | Dwell (s) | Limit (s) | Tx On (ms) | Number of transmission in a 2 s |
|---|---|---|---|---|---|---|
| BT-BR-AFH(1Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 8 | 0.30064 | 0.4 | 2.89075 | 26 |
| BT-EDR-AFH(2Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 8 | 0.31242 | 0.4 | 2.89275 | 27 |
| BT-EDR-AFH(3Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 8 | 0.31266 | 0.4 | 2.89500 | 27 |

Note 1: Dwell time =Number of transmission in a 2 second x Tx On Time x 4

Note 2: DH5 was the worst mode.

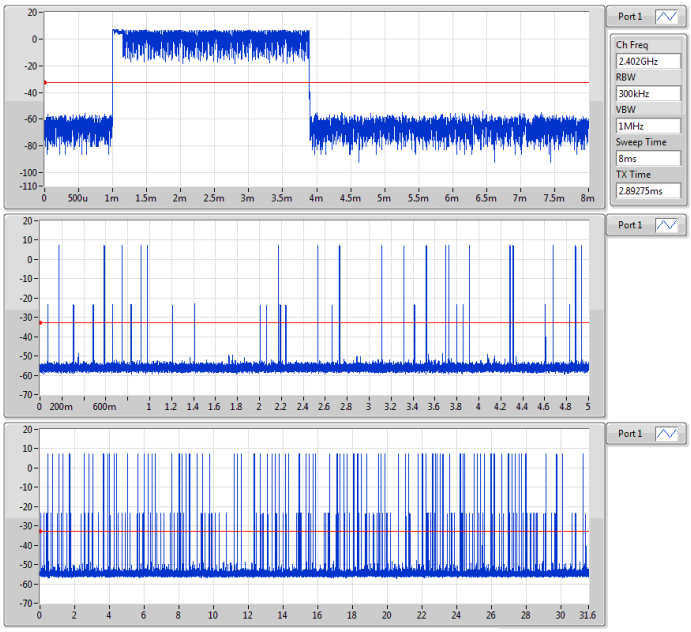
**BT-BR(1Mbps)** **Dwell-FS**

**2402MHz**



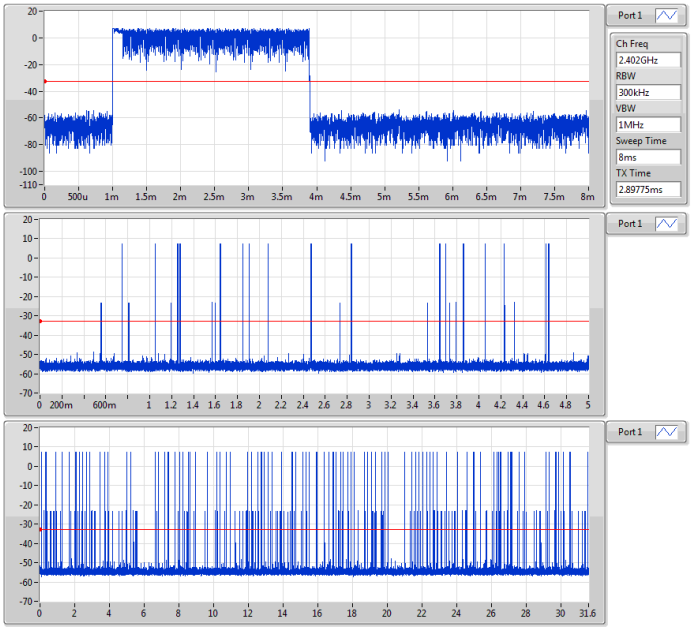

**BT-EDR(2Mbps)** **Dwell-FS**

**2402MHz**



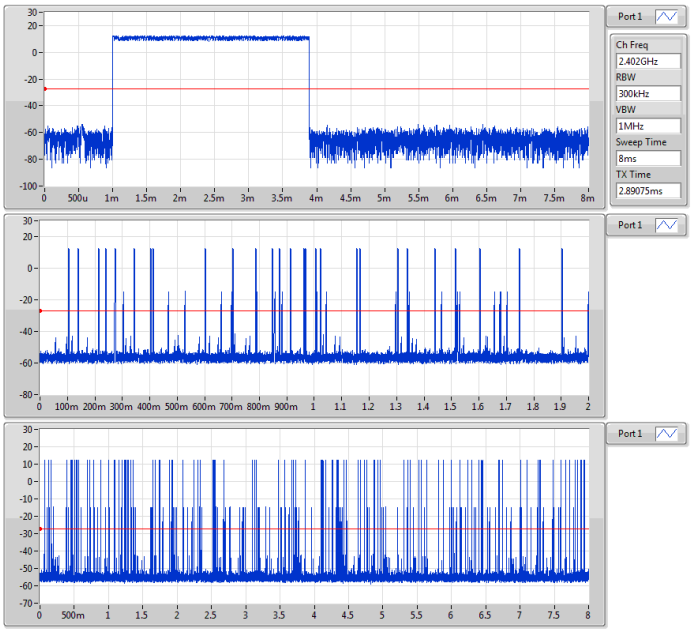
**BT-EDR(3Mbps)** **Dwell-FS**

**2402MHz**



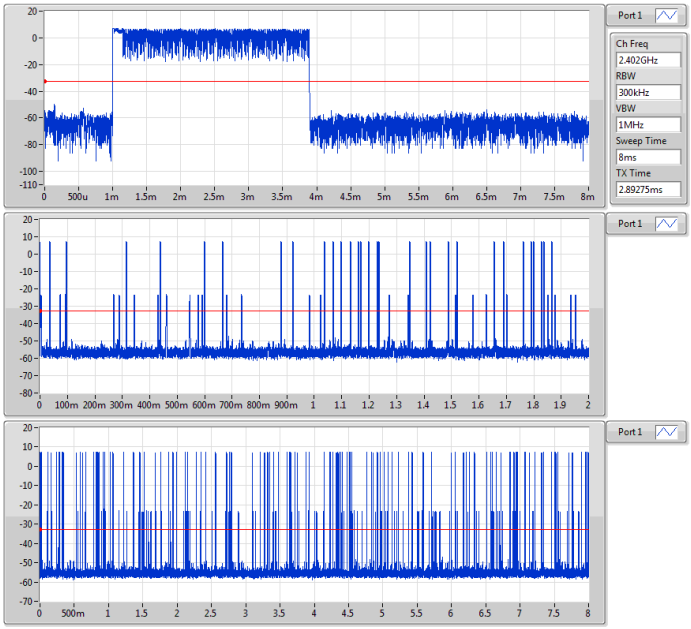

**BT-BR-AFH(1Mbps)** **Dwell-FS**

**2402MHz**



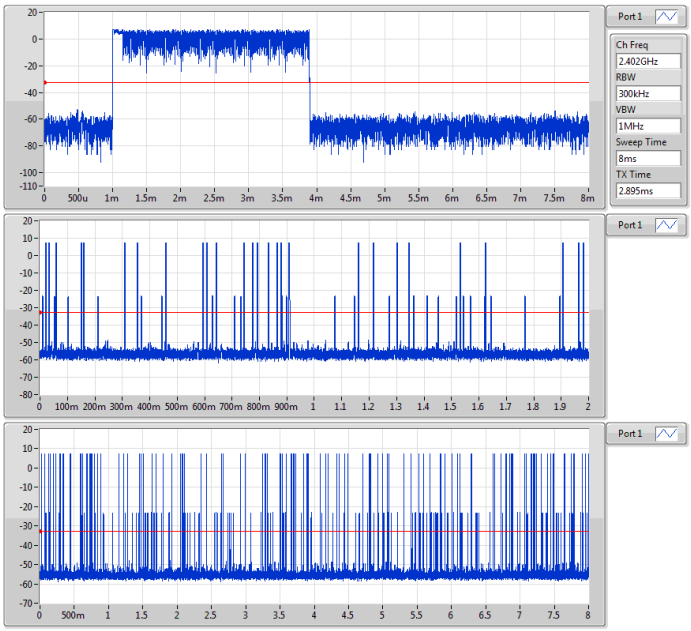
**BT-EDR-AFH(2Mbps)** **Dwell-FS**

**2402MHz**




**BT-EDR-AFH(3Mbps)** **Dwell-FS**

**2402MHz**



# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

**Linkou**

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

**Kwei Shan**

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

**Kwei Shan Site II**

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

**==END==**