



FCC TESTREPORT

Report No: STS1502042

Issued for

Alpha Comm Enterprises, Inc.

1500 Lakes Parkway Suite B Lawrenceville GA United States

|                |                          |
|----------------|--------------------------|
| Product Name:  | Bluetooth Stereo Headset |
| Brand Name:    | Quikcell                 |
| Model No.:     | Quikcell                 |
| FCC ID:        | X6HQIUCCELL              |
| Test Standard: | FCC Part 15.247          |

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**TEST RESULT CERTIFICATION****Applicant's name** ..... Alpha Comm Enterprises, Inc.

Address ..... 1500 Lakes Parkway Suite B Lawrenceville GA United States

**Manufacture's Name** ..... Shenzhen mees Technology Co., Ltd.

Address ..... Room 511, Block C, Huafeng Headquarters Economy Bldg., 288 Xixiang Avenue, Baoan, Shenzhen, 518101

**Product description**

Product name ..... Bluetooth Stereo Headset

Band name ..... Quikcell

Model and/or type  
reference ..... Quikcell

Ratings ..... DC3.7V by Battery

**Standards** ..... FCC Part15.247

Test procedure ..... ANSI C63.4-2009

This device described above has been tested by STS, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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**Date of Test** .....Date (s) of performance of tests .. **Jan.13,2015 to Jan.14,2015**Date of Issue ..... **Jan.15,2015**Test Result ..... **Pass**

Testing Engineer :

(Tony Liu)

Technical Manager :

(Vita Li)

Authorized Signatory :

(Bovey Yang)





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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 (15.247) , Subpart C |                             |          |        |
|---------------------------------|-----------------------------|----------|--------|
| Standard Section                | Test Item                   | Judgment | Remark |
| 15.207                          | Conducted Emission          | PASS     |        |
| 15.247(a)(1)                    | Hopping Channel Separation  | PASS     |        |
| 15.247(b)(1)                    | Peak Output Power           | PASS     |        |
| 15.247(c)                       | Radiated Spurious Emission  | PASS     |        |
| 15.247(d)                       | Conducted Spurious Emission | PASS     |        |
| 15.247(a)(iii)                  | Number of Hopping Frequency | PASS     |        |
| 15.247(a)(iii)                  | Dwell Time                  | PASS     |        |
| 15.247(a)(1)                    | Bandwidth                   | PASS     |        |
| 15.205                          | Band Edge Emission          | PASS     |        |
| 15.203                          | Antenna Requirement         | PASS     |        |



### 1.1 TEST FACILITY

Shenzhen STS Test Services Co., Ltd.

Add. : 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China.

FCC Registration No.: 842334; IC Registration No.: 12108A-1

### 1.2 MEASUREMENT UNCERTAINTY

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

| No. | Item                         | Uncertainty               |
|-----|------------------------------|---------------------------|
| 1   | Conducted Emission Test      | $\pm 3.18\text{dB}$       |
| 2   | RF power,conducted           | $\pm 0.16\text{dB}$       |
| 3   | Spurious emissions,conducted | $\pm 0.21\text{dB}$       |
| 4   | All emissions,radiated(<1G)  | $\pm 4.68\text{dB}$       |
| 5   | All emissions,radiated(>1G)  | $\pm 4.71\text{dB}$       |
| 6   | Temperature                  | $\pm 0.5^{\circ}\text{C}$ |
| 7   | Humidity                     | $\pm 2\%$                 |



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                           |                                                                               |
|---------------------------|-------------------------------------------------------------------------------|
| Equipment                 | Bluetooth Stereo Headset                                                      |
| Trade Name                | Quikcell                                                                      |
| Model Name                | Quikcell                                                                      |
| Channel List              | Please refer to the Note 2.                                                   |
| Bluetooth                 | Frequency:2402 – 2480 MHz<br>GFSK(1Mbps), $\pi/4$ -DQPSK(2Mbps),8-DPSK(3Mbps) |
| Battery                   | Rated Voltage: 3.7V<br>Charge Limit: 4.2V                                     |
| Hardware version number   | ZXCJSH19HWV1.0                                                                |
| Software versioningnumber | ZXCJSH19SFV1.0                                                                |
| Connecting I/O Port(s)    | Please refer to the User's Manual                                             |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2.

| Channel List |                 |         |                 |         |                 |
|--------------|-----------------|---------|-----------------|---------|-----------------|
| Channel      | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 00           | 2402            | 27      | 2429            | 54      | 2456            |
| 01           | 2403            | 28      | 2430            | 55      | 2457            |
| 02           | 2404            | 29      | 2431            | 56      | 2458            |
| 03           | 2405            | 30      | 2432            | 57      | 2459            |
| 04           | 2406            | 31      | 2433            | 58      | 2460            |
| 05           | 2407            | 32      | 2434            | 59      | 2461            |
| 06           | 2408            | 33      | 2435            | 60      | 2462            |
| 07           | 2409            | 34      | 2436            | 61      | 2463            |
| 08           | 2410            | 35      | 2437            | 62      | 2464            |
| 09           | 2411            | 36      | 2438            | 63      | 2465            |
| 10           | 2412            | 37      | 2439            | 64      | 2466            |
| 11           | 2413            | 38      | 2440            | 65      | 2467            |
| 12           | 2414            | 39      | 2441            | 66      | 2468            |
| 13           | 2415            | 40      | 2442            | 67      | 2469            |
| 14           | 2416            | 41      | 2443            | 68      | 2470            |
| 15           | 2417            | 42      | 2444            | 69      | 2471            |
| 16           | 2418            | 43      | 2445            | 70      | 2472            |
| 17           | 2419            | 44      | 2446            | 71      | 2473            |
| 18           | 2420            | 45      | 2447            | 72      | 2474            |
| 19           | 2421            | 46      | 2448            | 73      | 2475            |
| 20           | 2422            | 47      | 2449            | 74      | 2476            |
| 21           | 2423            | 48      | 2450            | 75      | 2477            |
| 22           | 2424            | 49      | 2451            | 76      | 2478            |
| 23           | 2425            | 50      | 2452            | 77      | 2479            |
| 24           | 2426            | 51      | 2453            | 78      | 2480            |
| 25           | 2427            | 52      | 2454            |         |                 |
| 26           | 2428            | 53      | 2455            |         |                 |

3. Table for Filed Antenna

| Ant | Brand | Model Name | Antenna Type    | Connector | Gain (dBi) | NOTE       |
|-----|-------|------------|-----------------|-----------|------------|------------|
| 1   | N/A   | N/A        | Ceramic Antenna | NA        | 0          | BT Antenna |

The EUT antenna is Ceramic Antenna. no antenna other than that furnished by the responsible party shall be used with the device.



## 2.1 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Pretest Mode | Description       |
|--------------|-------------------|
| Mode 1       | Low channel TX    |
| Mode 2       | Middle channel TX |
| Mode 3       | High channel TX   |
| Mode 4       | Hopping on        |

| For Conducted Emission |             |
|------------------------|-------------|
| Final Test Mode        | Description |
| Mode 4                 | keeping TX  |

| For Radiated Emission |                   |
|-----------------------|-------------------|
| Final Test Mode       | Description       |
| Mode 1                | Low channel TX    |
| Mode 2                | Middle channel TX |
| Mode 3                | High channel TX   |
| Mode 4                | Hopping on        |

Note:

(1)The measurements are performed at the highest, middle, lowest available channels.

## 2.2 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

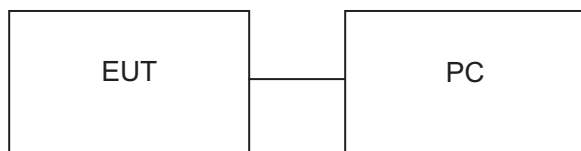
| Test software Version | Test program: N/A |          |          |
|-----------------------|-------------------|----------|----------|
| Frequency             | 2402 MHz          | 2441 MHz | 2480 MHz |
| Parameters(1Mbps)     | DEF               | DEF      | DEF      |
| Parameters(2Mbps)     | DEF               | DEF      | DEF      |
| Parameters(3Mbps)     | DEF               | DEF      | DEF      |

### 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

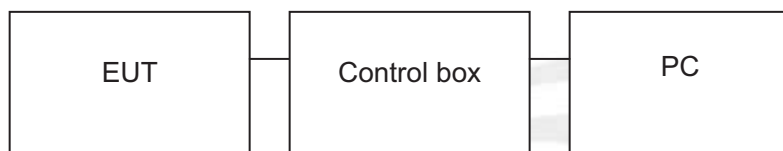
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

#### Radiated Spurious Emission Test

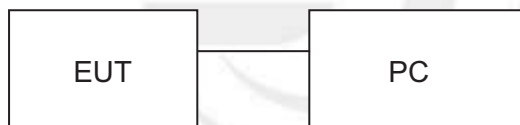
Configure 1: (Normal hopping)



Configure 2: (Control continuous TX)



#### Conducted Emission Test





## 2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment                | Mfr/Brand | Model/Type No. | Series No. | Note             |
|------|--------------------------|-----------|----------------|------------|------------------|
| 1    | Bluetooth Stereo Headset | Quikcell  | Quikcell       | N/A        | EUT              |
| 2    | PC                       | Dell      | INSPIRON       | N/A        | FCC DOC approval |
| 3    | Battery                  | N/A       | N/A            | N/A        | Accessory        |
| 4    | Control box              | N/A       | N/A            | N/A        | Accessory        |
|      |                          |           |                |            |                  |
|      |                          |           |                |            |                  |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
|      |               |              |        |      |
|      |               |              |        |      |
|      |               |              |        |      |
|      |               |              |        |      |
|      |               |              |        |      |

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.
- (4) N/A means not applicable.



## 2.5EQUIPMENTS LIST FOR ALL TEST ITEMS

## Radiation Test equipment

| Kind of Equipment  | Manufacturer | Type No.   | Serial No. | Last calibration | Calibrated until |
|--------------------|--------------|------------|------------|------------------|------------------|
| Spectrum Analyzer  | Agilent      | E4407B     | MY50140340 | 2014.10.25       | 2015.10.24       |
| Test Receiver      | R&S          | ESCI       | 101427     | 2014.10.25       | 2015.10.24       |
| Bilog Antenna      | TESEQ        | CBL6111D   | 34678      | 2014.10.27       | 2015.10.26       |
| 50Ω Coaxial Switch | Anritsu      | MP59B      | 6200264416 | 2014.06.06       | 2015.06.06       |
| Horn Antenna       | R&S          | 9120D      | 152265     | 2014.10.27       | 2015.10.26       |
| Horn Ant           | Schwarzbeck  | BBHA 9170  | 9170-181   | 2014.07.06       | 2015.07.05       |
| Amplifier          | EM           | EM-30180   | 060538     | 2014.12.22       | 2015.12.21       |
| Loop Antenna       | ARA          | PLA-1030/B | 1029       | 2014.06.08       | 2015.06.07       |
| Power Meter        | Anritsu      | ML2495A    | 1204003    | 2014.10.25       | 2015.10.24       |
| Power Sensor       | Anritsu      | MA2411B    | 100309     | 2014.10.25       | 2015.10.24       |

## Conduction Test equipment

| Kind of Equipment     | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until |
|-----------------------|--------------|----------|------------|------------------|------------------|
| Test Receiver         | R&S          | 102086   | 102086     | 2014.10.25       | 2015.10.24       |
| LISN                  | R&S          | ENV216   | 101242     | 2014.10.25       | 2015.10.24       |
| LISN                  | EMCO         | 3810/2NM | 000-23625  | 2014.10.25       | 2015.10.24       |
| 50Ω Coaxial Switch    | Anritsu      | MP59B    | 6200264417 | 2014.06.06       | 2015.06.06       |
| Passive Voltage Probe | R&S          | ESH2-Z3  | 100196     | 2014.06.06       | 2015.06.06       |
| Absorbing clamp       | R&S          | MDS-21   | 100668     | 2014.10.27       | 2015.10.26       |



### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

##### 3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.247&207(a) limit in the table below has to be followed.

| FREQUENCY (MHz) | Class B (dBuV) |           | Standard |
|-----------------|----------------|-----------|----------|
|                 | Quasi-peak     | Average   |          |
| 0.15 -0.5       | 66 - 56 *      | 56 - 46 * | CISPR    |
| 0.50 -5.0       | 56.00          | 46.00     | CISPR    |
| 5.0 -30.0       | 60.00          | 50.00     | CISPR    |

|           |           |           |     |
|-----------|-----------|-----------|-----|
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * | FCC |
| 0.50 -5.0 | 56.00     | 46.00     | FCC |
| 5.0 -30.0 | 60.00     | 50.00     | FCC |

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

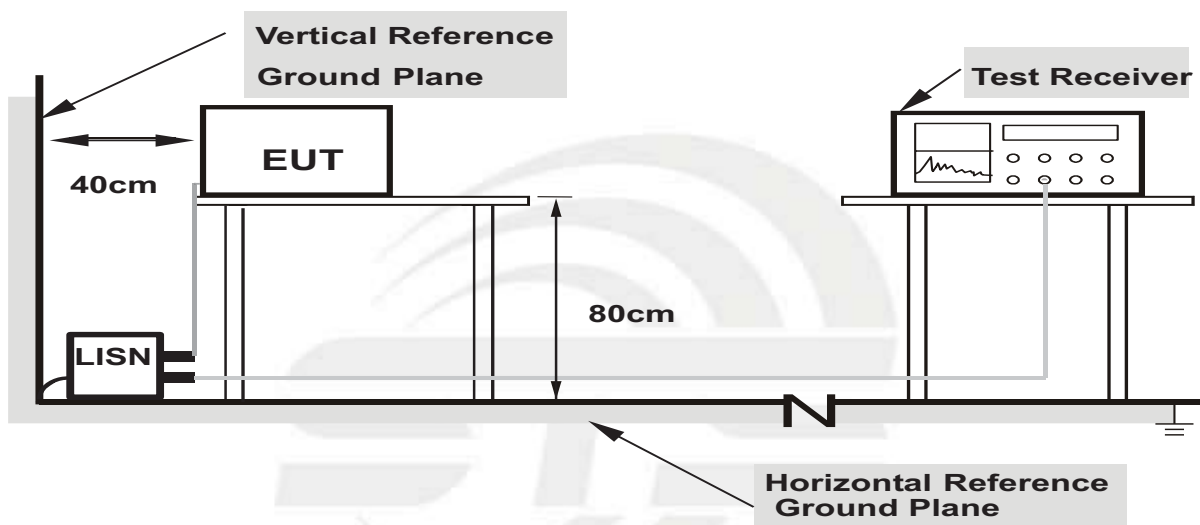
The following table is the setting of the receiver

| Receiver Parameters | Setting  |
|---------------------|----------|
| Attenuation         | 10 dB    |
| Start Frequency     | 0.15 MHz |
| Stop Frequency      | 30 MHz   |
| IF Bandwidth        | 9 kHz    |

### 3.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 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 from other units and other metal planes**

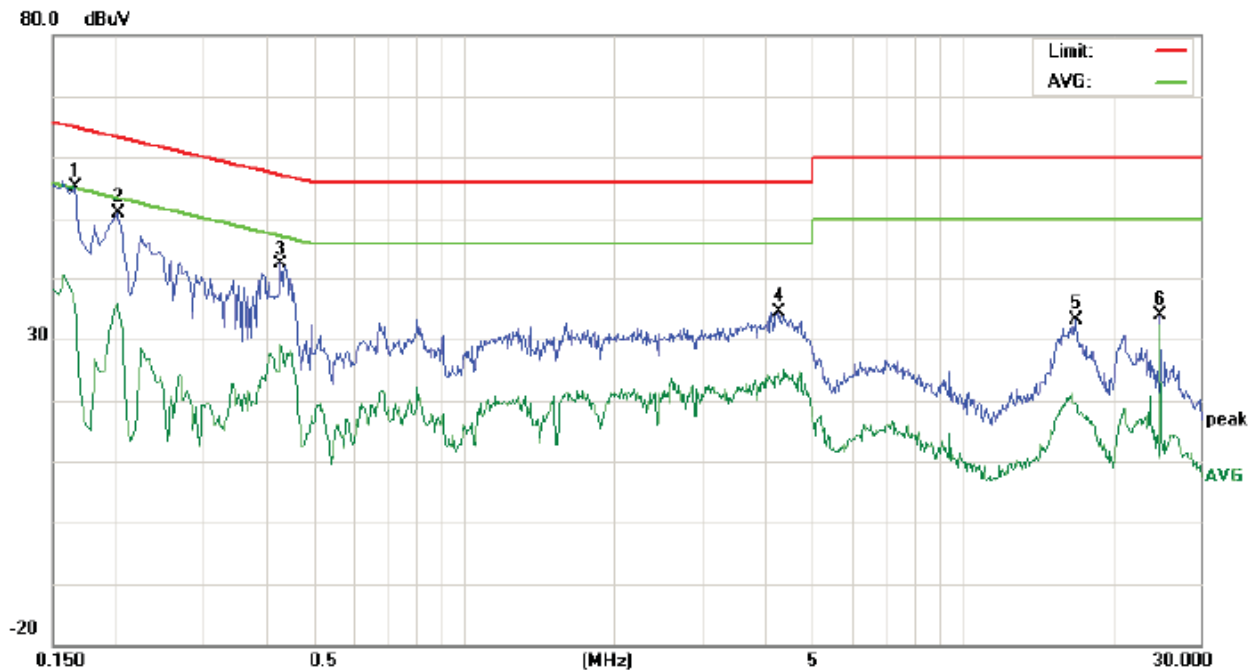
### 3.1.4EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



## 3.1.5 TEST RESULTS

|                |                          |                     |            |
|----------------|--------------------------|---------------------|------------|
| EUT :          | Bluetooth Stereo Headset | Model Name. :       | Quikcell   |
| Temperature :  | 23℃                      | Relative Humidity : | 50%        |
| Pressure :     | 1010hPa                  | Phase :             | L          |
| Test Voltage : | DC3.7V                   | Test Mode :         | keeping TX |



Site: Conduction

Phase: L1

Temperature: 26

Limit: FCC Class B Conduction(QP)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

M/N: Quikcell

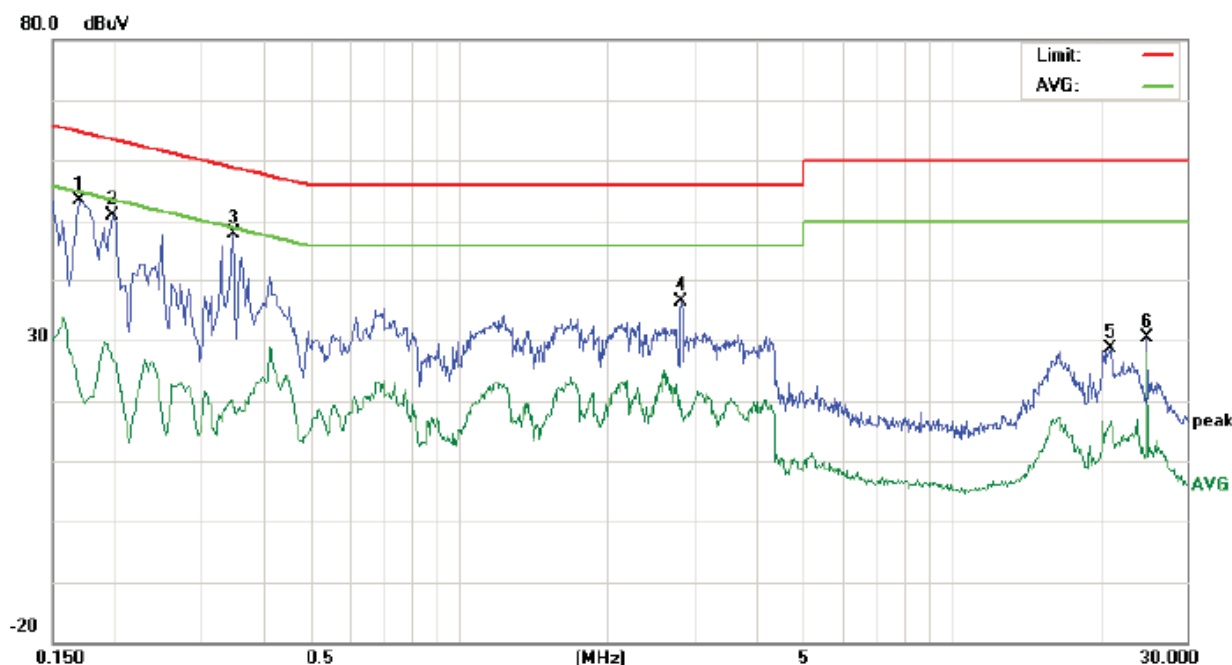
Mode: keeping TX

Note:

| No. | Freq.<br>(MHz) | Reading_Level<br>(dBuV) |    |       | Correct<br>Factor | Measurement<br>(dBuV) |    |       | Limit<br>(dBuV) |       | Margin<br>(dB) |        | P/F | Comment |
|-----|----------------|-------------------------|----|-------|-------------------|-----------------------|----|-------|-----------------|-------|----------------|--------|-----|---------|
|     |                | Peak                    | QP | AVG   |                   | Peak                  | QP | AVG   | QP              | AVG   | QP             | AVG    |     |         |
| 1   | 0.1660         | 44.91                   |    | 25.64 | 10.18             | 55.09                 |    | 35.82 | 65.15           | 55.15 | -10.06         | -19.33 | P   |         |
| 2   | 0.2020         | 40.70                   |    | 25.64 | 10.22             | 50.92                 |    | 35.86 | 63.52           | 53.52 | -12.60         | -17.66 | P   |         |
| 3   | 0.4300         | 31.92                   |    | 18.89 | 10.35             | 42.27                 |    | 29.24 | 57.25           | 47.25 | -14.98         | -18.01 | P   |         |
| 4   | 4.3059         | 24.19                   |    | 13.99 | 10.30             | 34.49                 |    | 24.29 | 56.00           | 46.00 | -21.51         | -21.71 | P   |         |
| 5   | 16.8458        | 22.91                   |    | 9.49  | 10.13             | 33.04                 |    | 19.62 | 60.00           | 50.00 | -26.96         | -30.38 | P   |         |
| 6   | 25.0020        | 23.75                   |    | 22.22 | 10.12             | 33.87                 |    | 32.34 | 60.00           | 50.00 | -26.13         | -17.66 | P   |         |



|                |                          |                     |            |
|----------------|--------------------------|---------------------|------------|
| EUT :          | Bluetooth Stereo Headset | Model Name. :       | Quikcell   |
| Temperature :  | 23 °C                    | Relative Humidity : | 50%        |
| Pressure :     | 1010hPa                  | Phase :             | N          |
| Test Voltage : | DC3.7V                   | Test Mode :         | keeping TX |



Site: Conduction  
Limit: FCC Class B Conduction(QP)  
EUT: Bluetooth Stereo Headset  
M/N: Quikcell  
Mode: keeping TX  
Note:

Phase: **N**  
Power:  
Temperature: 26  
Humidity: 60 %

| No. | Freq.<br>(MHz) | Reading_Level<br>(dBuV) |    |       | Correct<br>Factor<br>dB | Measurement<br>(dBuV) |    |       | Limit<br>(dBuV) |       | Margin<br>(dB) |        | P/F | Comment |
|-----|----------------|-------------------------|----|-------|-------------------------|-----------------------|----|-------|-----------------|-------|----------------|--------|-----|---------|
|     |                | Peak                    | QP | AVG   |                         | Peak                  | QP | AVG   | QP              | AVG   | QP             | AVG    |     |         |
| 1   | 0.1700         | 43.22                   |    | 11.18 | 10.18                   | 53.40                 |    | 21.36 | 64.96           | 54.96 | -11.56         | -33.60 | P   |         |
| 2   | 0.1980         | 40.76                   |    | 16.46 | 10.21                   | 50.97                 |    | 26.67 | 63.69           | 53.69 | -12.72         | -27.02 | P   |         |
| 3   | 0.3500         | 37.46                   |    | 8.56  | 10.31                   | 47.77                 |    | 18.87 | 58.96           | 48.96 | -11.19         | -30.09 | P   |         |
| 4   | 2.8300         | 25.87                   |    | 6.93  | 10.51                   | 36.38                 |    | 17.44 | 56.00           | 46.00 | -19.62         | -28.56 | P   |         |
| 5   | 20.9540        | 18.37                   |    | 5.73  | 10.13                   | 28.50                 |    | 15.86 | 60.00           | 50.00 | -31.50         | -34.14 | P   |         |
| 6   | 25.0020        | 20.20                   |    | 17.79 | 10.12                   | 30.32                 |    | 27.91 | 60.00           | 50.00 | -29.68         | -22.09 | P   |         |

## 3.2 RADIATED EMISSION MEASUREMENT

### 3.2.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15247&205(a), then the Part 15 247&209(a) limit in the table below has to be followed.

#### LIMITS OF RADIATED EMISSION MEASUREMENT (30MHz - 1000MHz)

| Frequencies<br>(MHz) | Field Strength<br>(micorvolts/meter) | Measurement Distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009~0.490          | 2400/F(KHz)                          | 300                              |
| 0.490~1.705          | 24000/F(KHz)                         | 30                               |
| 1.705~30.0           | 30                                   | 30                               |
| 30~88                | 100                                  | 3                                |
| 88~216               | 150                                  | 3                                |
| 216~960              | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

#### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Class B (dBuV/m) (at 3M) |         |
|-----------------|--------------------------|---------|
|                 | PEAK                     | AVERAGE |
| Above 1000      | 74                       | 54      |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

#### FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

| Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz) | Range (MHz)                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Below 1.705                                                                                                                     | 30                                                                              |
| 1.705 – 108                                                                                                                     | 1000                                                                            |
| 108 – 500                                                                                                                       | 2000                                                                            |
| 500 – 1000                                                                                                                      | 5000                                                                            |
| Above 1000                                                                                                                      | 5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower |

| Spectrum Parameter                    | Setting                                                                                          |
|---------------------------------------|--------------------------------------------------------------------------------------------------|
| Attenuation                           | Auto                                                                                             |
| Detector                              | Peak                                                                                             |
| Start Frequency                       | 1000 MHz(Peak/AV)                                                                                |
| Stop Frequency                        | 10th carrier harmonic(Peak/AV)                                                                   |
| RB / VB (emission in restricted band) | RBW 1MHz / VBW 1MHz Peak detector for Pk value<br>RBW 1MHz / VBW 10Hz Peak detector for AV value |

| Receiver Parameter     | Setting                          |
|------------------------|----------------------------------|
| Attenuation            | Auto                             |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP    |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP    |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

### 3.2.2 TEST PROCEDURE

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then QuasiPeak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

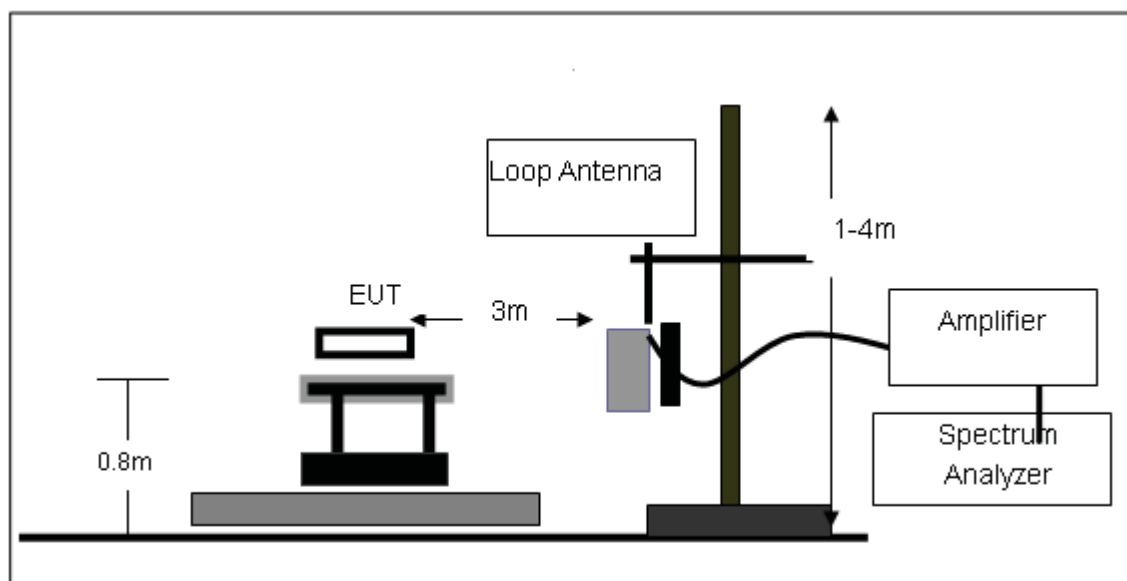
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

### 3.2.3 DEVIATION FROM TEST STANDARD

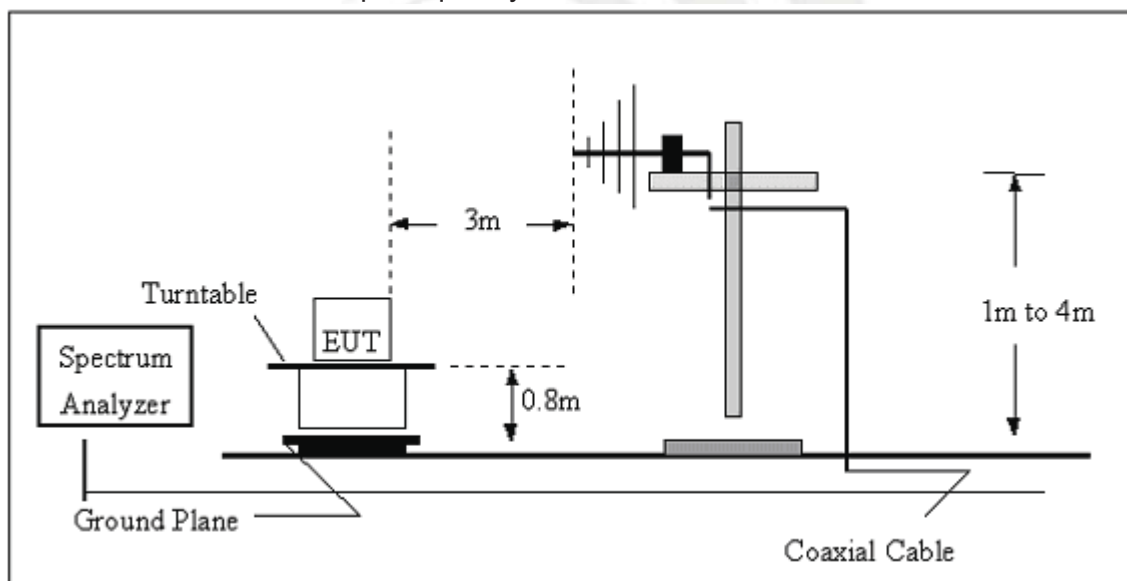
No deviation

### 3.2.4 TESTSETUP

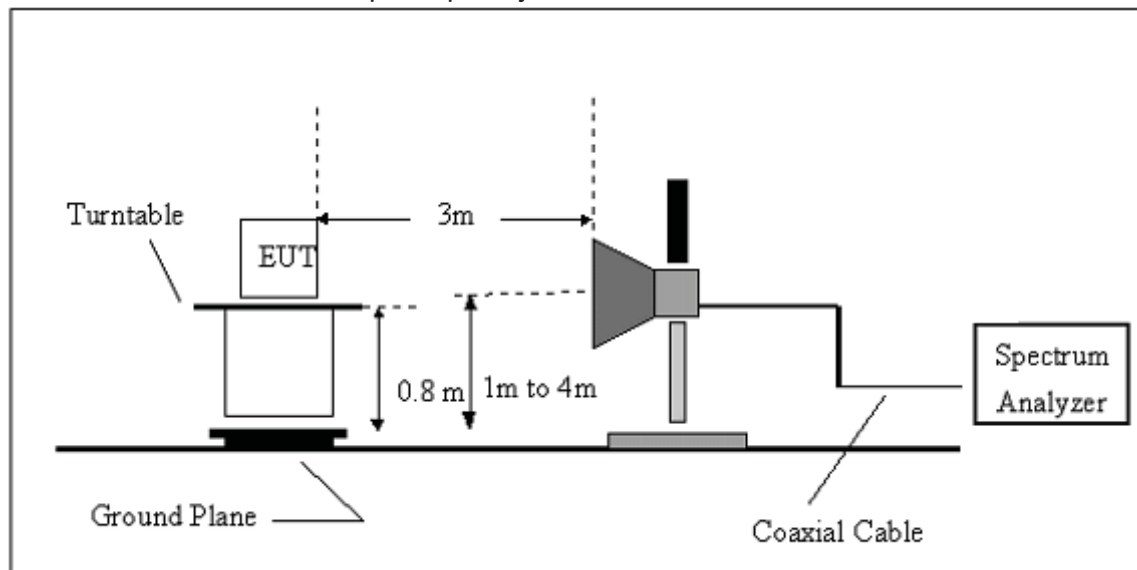
#### (A) Radiated Emission Test-Up Frequency Below 30MHz



#### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



### (C) Radiated Emission Test-Up Frequency Above 1GHz



#### 3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**REMARK :** GFSK(1Mbps),  $\pi/4$ -DQPSK(2Mbps), 8-DPSK(3Mbps) all have been tested , GFSK(1Mbps) is found as worst case and only reported



## 3.2.6 TEST RESULTS (WORST CASE : GFSK)

Below 30 MHz

|                |                          |                     |          |
|----------------|--------------------------|---------------------|----------|
| EUT :          | Bluetooth Stereo Headset | Model Name. :       | Quikcell |
| Temperature :  | 23 °C                    | Relative Humidity : | 50%      |
| Pressure :     | 1010hPa                  | Polarization :      | ---      |
| Test Voltage : | DC 3.7V                  |                     |          |
| Test Mode :    | TX Mode                  |                     |          |

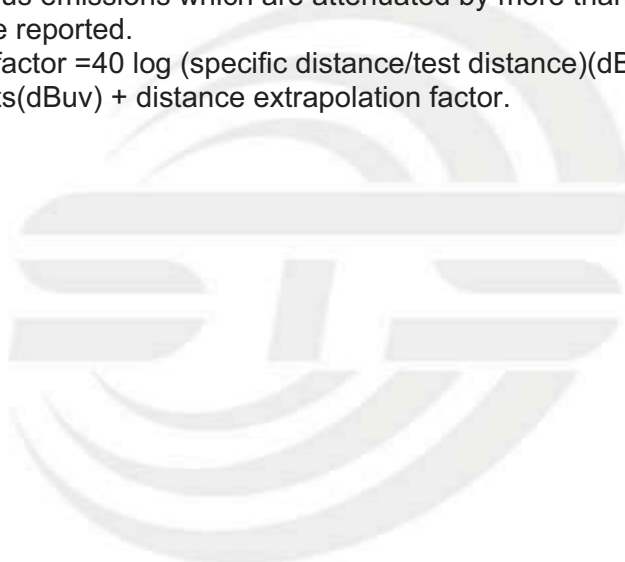
| Freq. | Reading  | Limit    | Margin | State |
|-------|----------|----------|--------|-------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB)   | P/F   |
| --    | --       | --       | --     | PASS  |
| --    | --       | --       | --     | PASS  |

**NOTE:**

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance}/\text{test distance})$ (dB);

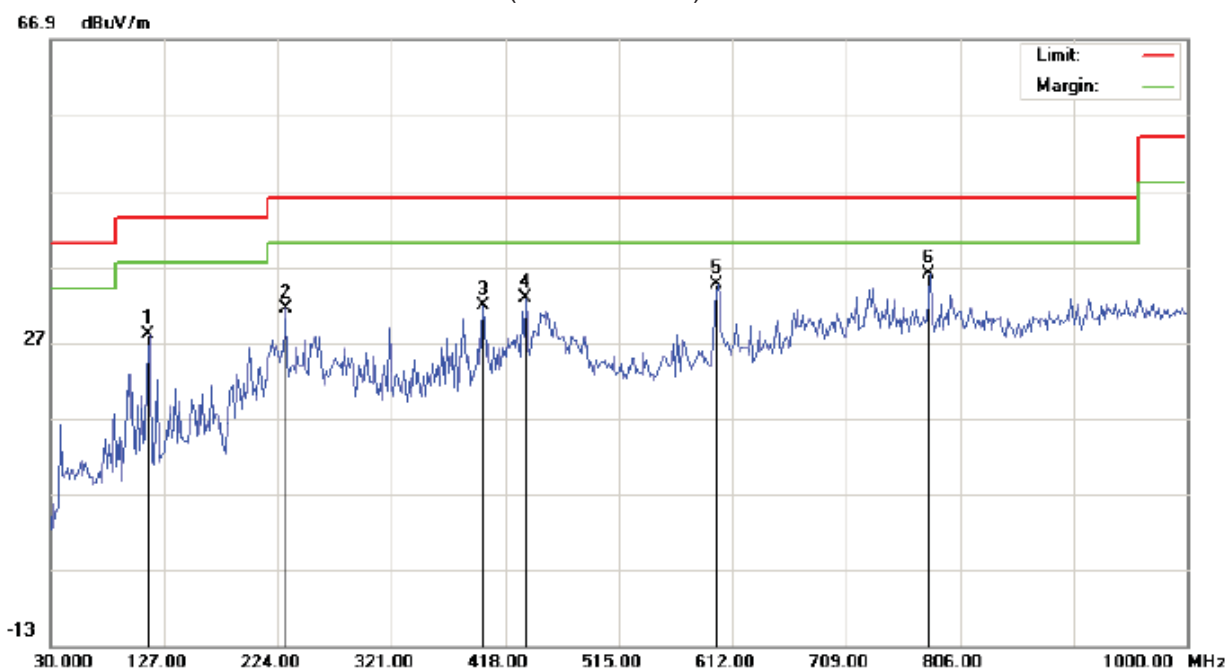
Limit line = specific limits(dBuv) + distance extrapolation factor.





Between 30MHz – 1000 MHz

## RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL-HORIZONTAL



Site: site #1

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Class B 3M Radiation

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance: 3m

M/N: Quikcell

Mode: Low Channel TX

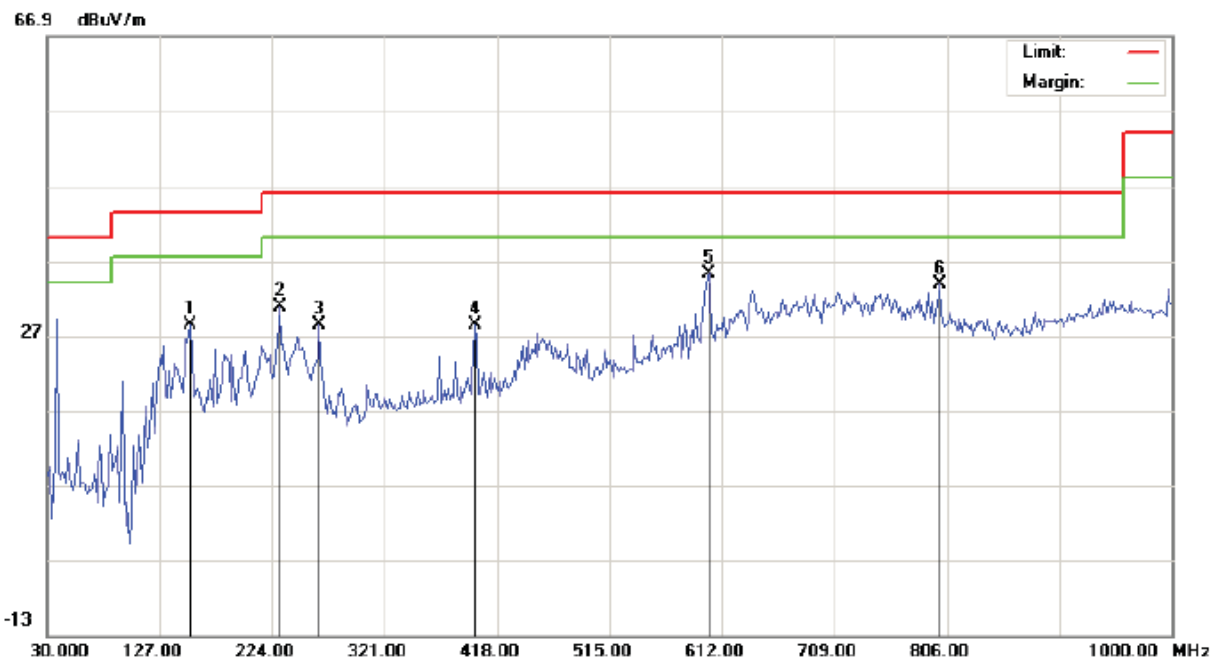
Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 114.0666 | 16.50   | 11.45  | 27.95       | 43.50  | -15.55 | peak     |                |              |         |
| 2   |    | 230.4667 | 18.22   | 13.16  | 31.38       | 46.00  | -14.62 | peak     |                |              |         |
| 3   |    | 398.6000 | 12.78   | 19.06  | 31.84       | 46.00  | -14.16 | peak     |                |              |         |
| 4   |    | 435.7832 | 12.59   | 20.16  | 32.75       | 46.00  | -13.25 | peak     |                |              |         |
| 5   |    | 599.0666 | 10.87   | 23.71  | 34.58       | 46.00  | -11.42 | peak     |                |              |         |
| 6   | *  | 780.1332 | 9.01    | 27.05  | 36.06       | 46.00  | -9.94  | peak     |                |              |         |

**RESULT: PASS**



## RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL -VERTICAL



Site: site #1  
Limit: FCC Class B 3M Radiation  
EUT: Bluetooth Stereo Headset  
M/N: Quikcell  
Mode: Low Channel TX  
Note:

Polarization: **Vertical**  
Power:  
Distance: 3m

Temperature: 26  
Humidity: 60 %

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 152.8667 | 13.03   | 15.28  | 28.31       | 43.50  | -15.19 | peak     |                |              |         |
| 2   |    | 230.4667 | 18.76   | 11.99  | 30.75       | 46.00  | -15.25 | peak     |                |              |         |
| 3   |    | 264.4166 | 14.07   | 14.34  | 28.41       | 46.00  | -17.59 | peak     |                |              |         |
| 4   |    | 398.6000 | 9.36    | 19.06  | 28.42       | 46.00  | -17.58 | peak     |                |              |         |
| 5   | *  | 600.6833 | 12.55   | 22.75  | 35.30       | 46.00  | -10.70 | peak     |                |              |         |
| 6   |    | 799.5333 | 6.41    | 27.31  | 33.72       | 46.00  | -12.28 | peak     |                |              |         |

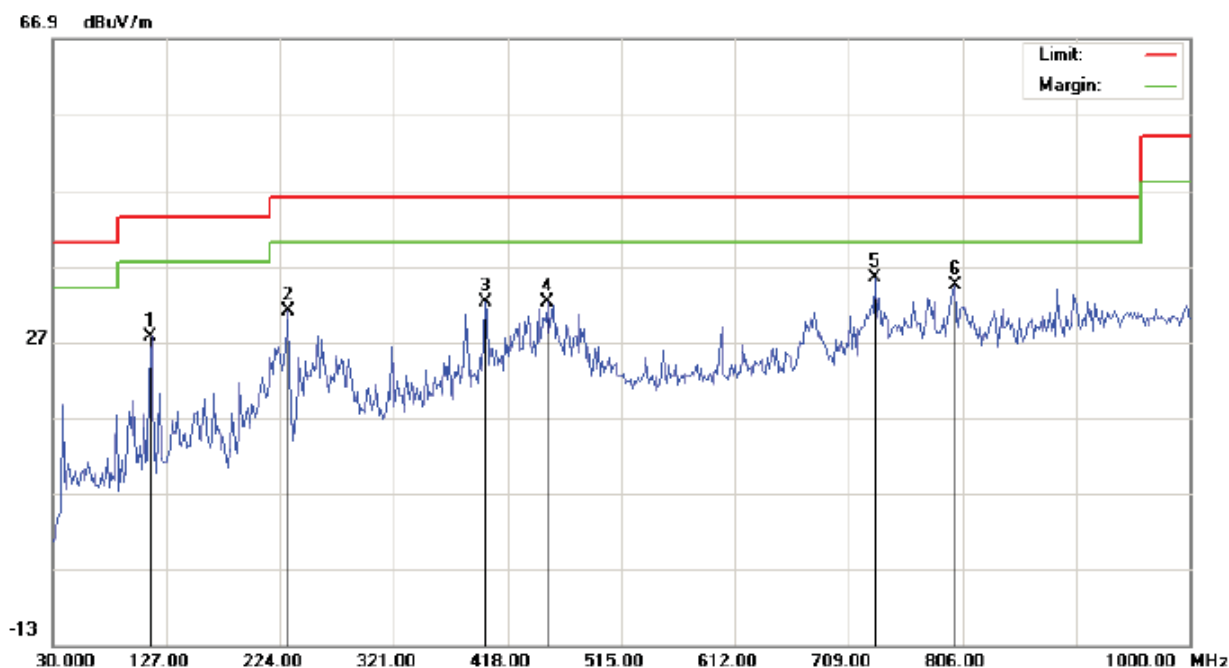
**RESULT: PASS**

**Note:** 1. Factor=Antenna Factor+ Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.



## RADIATED EMISSION TEST- (30MHZ-1GHZ)-MIDDLE CHANNEL-HORIZONTAL



Site: site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance: 3m

M/N: Quikcell

Mode: Middle Channel TX

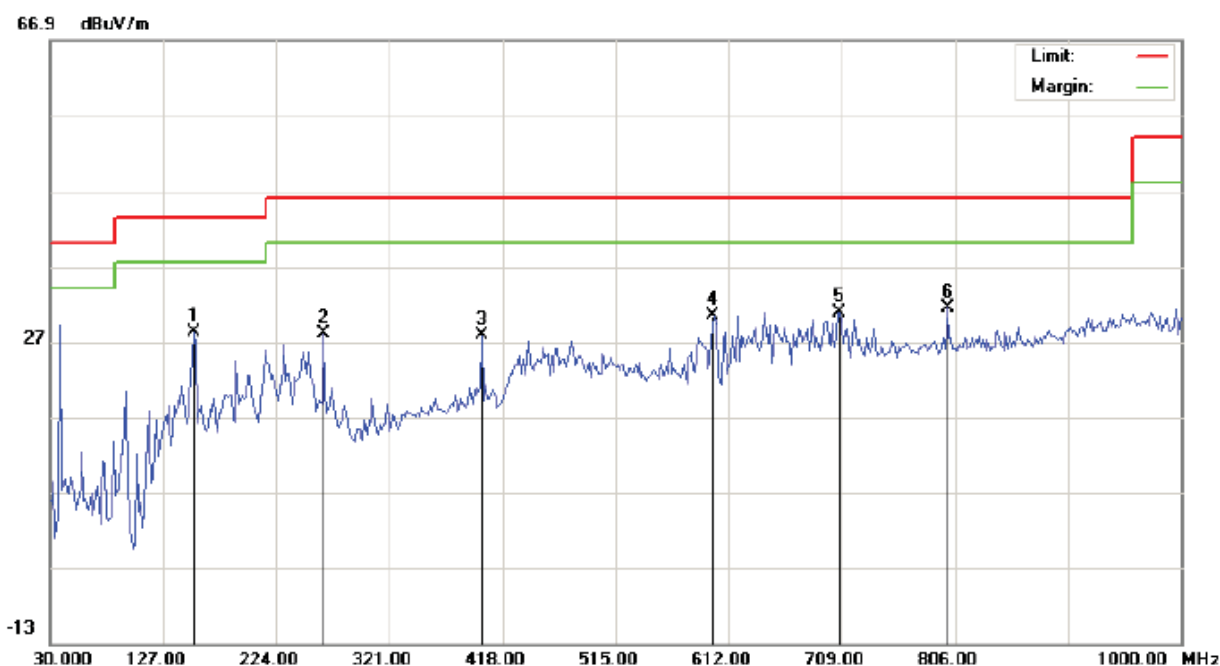
Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 114.0666 | 16.08   | 11.45  | 27.53       | 43.50  | -15.97 | peak     |                |              |         |
| 2   |    | 230.4667 | 17.83   | 13.16  | 30.99       | 46.00  | -15.01 | peak     |                |              |         |
| 3   |    | 398.6000 | 13.17   | 19.06  | 32.23       | 46.00  | -13.77 | peak     |                |              |         |
| 4   |    | 451.9499 | 11.64   | 20.61  | 32.25       | 46.00  | -13.75 | peak     |                |              |         |
| 5   | *  | 731.6332 | 9.37    | 26.10  | 35.47       | 46.00  | -10.53 | peak     |                |              |         |
| 6   |    | 799.5333 | 7.06    | 27.31  | 34.37       | 46.00  | -11.63 | peak     |                |              |         |

**RESULT: PASS**



## RADIATED EMISSION TEST- (30MHZ-1GHZ)- MIDDLE CHANNEL -VERTICAL



Site: site #1

Limit: FCC Class B 3M Radiation

EUT: Bluetooth Stereo Headset

M/N: Quikcell

Mode: Middle Channel TX

Note:

Polarization: **Vertical**

Power:

Distance: 3m

Temperature: 26

Humidity: 60 %

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 152.8667 | 12.88   | 15.28  | 28.16       | 43.50  | -15.34 | peak     |                |              |         |
| 2   |    | 264.4166 | 13.59   | 14.34  | 27.93       | 46.00  | -18.07 | peak     |                |              |         |
| 3   |    | 400.2167 | 8.63    | 19.08  | 27.71       | 46.00  | -18.29 | peak     |                |              |         |
| 4   |    | 599.0666 | 7.76    | 22.73  | 30.49       | 46.00  | -15.51 | peak     |                |              |         |
| 5   |    | 707.3832 | 5.45    | 25.40  | 30.85       | 46.00  | -15.15 | peak     |                |              |         |
| 6   | *  | 799.5333 | 4.01    | 27.31  | 31.32       | 46.00  | -14.68 | peak     |                |              |         |

**RESULT: PASS****Note:** 1. Factor=Antenna Factor+ Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.



## RADIATED EMISSION TEST- (30MHZ-1GHZ)-HIGH CHANNEL-HORIZONTAL



Site: site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance: 3m

M/N: Quikcell

Mode: High Channel TX

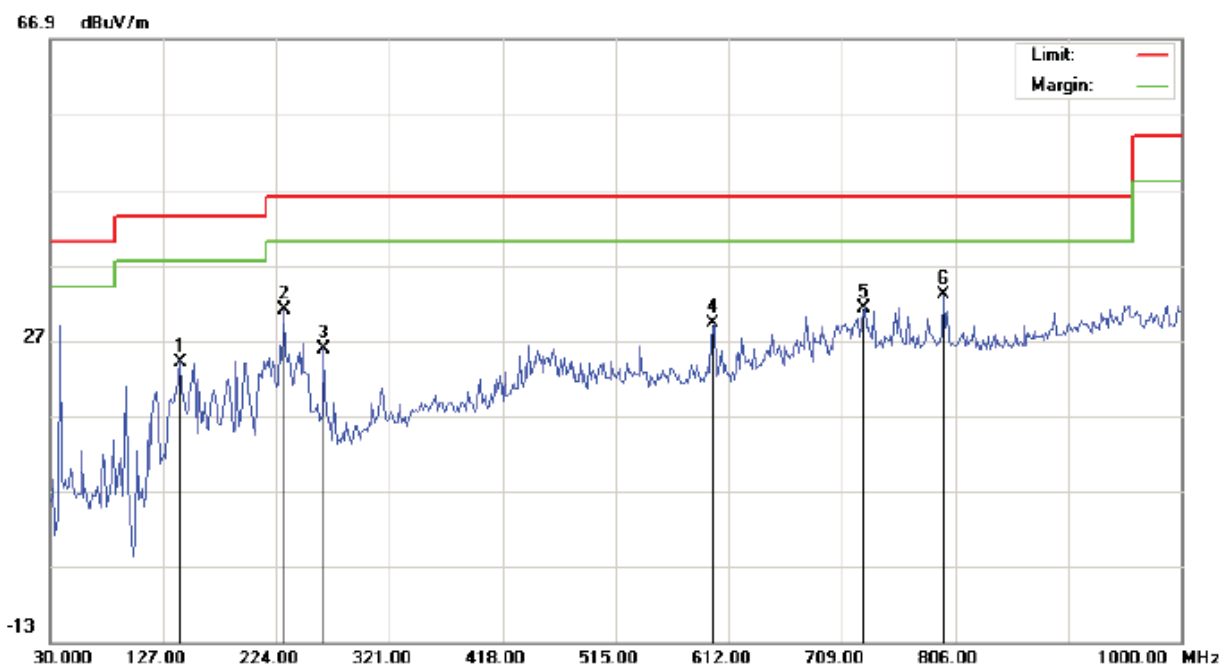
Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 114.0666 | 15.79   | 11.45  | 27.24       | 43.50  | -16.26 | peak     |                |              |         |
| 2   |    | 230.4667 | 17.16   | 13.16  | 30.32       | 46.00  | -15.68 | peak     |                |              |         |
| 3   |    | 259.5667 | 16.36   | 14.19  | 30.55       | 46.00  | -15.45 | peak     |                |              |         |
| 4   |    | 395.3666 | 12.46   | 19.04  | 31.50       | 46.00  | -14.50 | peak     |                |              |         |
| 5   | *  | 484.2832 | 10.96   | 20.96  | 31.92       | 46.00  | -14.08 | peak     |                |              |         |
| 6   |    | 599.0666 | 7.67    | 23.71  | 31.38       | 46.00  | -14.62 | peak     |                |              |         |

**RESULT: PASS**



## RADIATED EMISSION TEST- (30MHZ-1GHZ)-HIGH CHANNEL -VERTICAL



Site: site #1

Polarization: **Vertical**

Temperature: 26

Limit: FCC Class B 3M Radiation

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance: 3m

M/N: Quikcell

Mode: High Channel TX

Note:

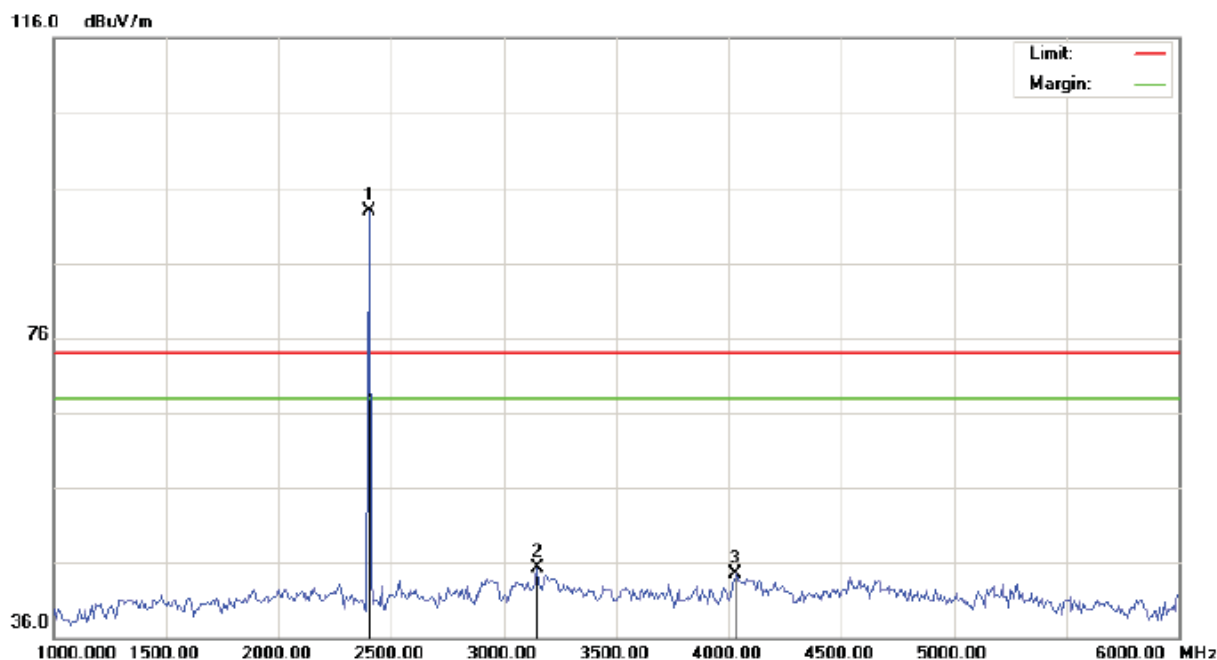
| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 141.5500 | 8.89    | 15.21  | 24.10       | 43.50  | -19.40 | peak     |                |              |         |
| 2   |    | 230.4667 | 19.09   | 11.99  | 31.08       | 46.00  | -14.92 | peak     |                |              |         |
| 3   |    | 264.4166 | 11.56   | 14.34  | 25.90       | 46.00  | -20.10 | peak     |                |              |         |
| 4   |    | 599.0666 | 6.49    | 22.73  | 29.22       | 46.00  | -16.78 | peak     |                |              |         |
| 5   |    | 728.3999 | 5.17    | 26.01  | 31.18       | 46.00  | -14.82 | peak     |                |              |         |
| 6   | *  | 796.2999 | 5.67    | 27.27  | 32.94       | 46.00  | -13.06 | peak     |                |              |         |

**RESULT: PASS****Note:** 1. Factor=Antenna Factor+ Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.



Above 1000 MHz

RADIATED EMISSION ABOVE 1GHZ (1-10<sup>th</sup> Harmonics)-LOW CHANNEL-HORIZONTAL

Site: site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

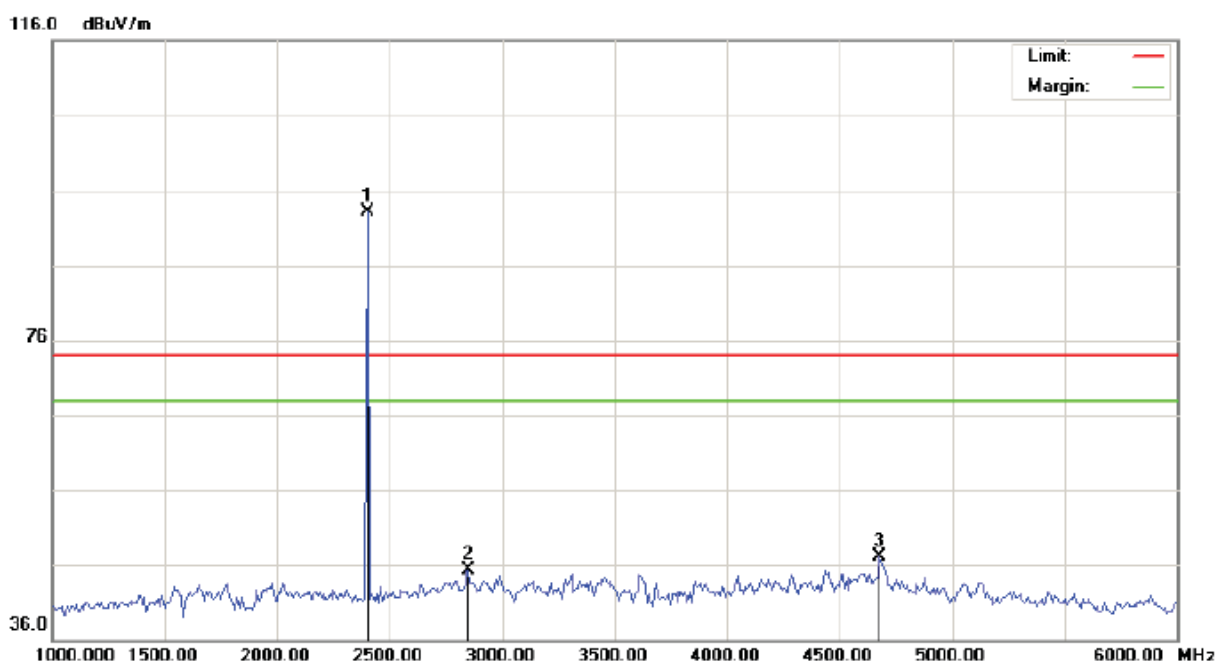
M/N: Quikcell

Mode: Low Channel TX

Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2402.000 | 82.57   | 10.32  | 92.89       | 74.00  | 18.89  | peak     |                |              |         |
| 2   |    | 3150.000 | 33.54   | 11.78  | 45.32       | 74.00  | -28.68 | peak     |                |              |         |
| 3   |    | 4033.333 | 29.91   | 14.64  | 44.55       | 74.00  | -29.45 | peak     |                |              |         |

**RESULT: PASS**

RADIATED EMISSION ABOVE 1GHZ (1-10<sup>th</sup> Harmonics)-LOW CHANNEL –VERTICAL

Site: site #1

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

EUT: Bluetooth Stereo Headset

M/N: Quikcell

Mode: Low Channel TX

Note:

Polarization: Vertical

Power:

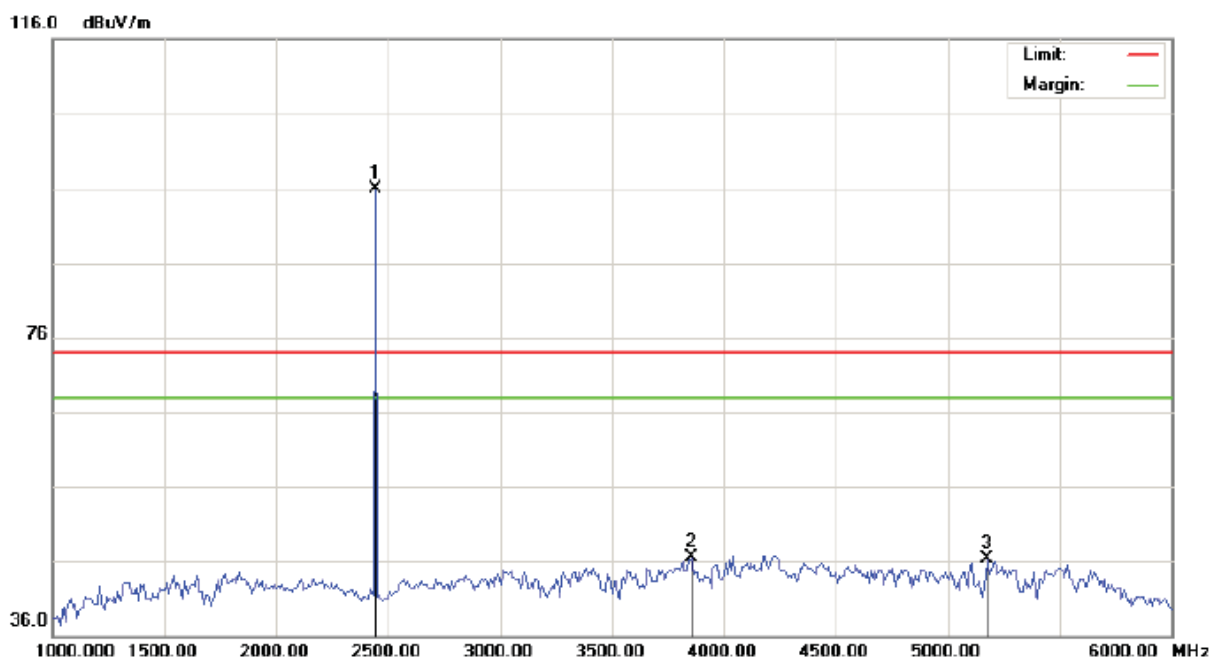
Distance:

Temperature: 26

Humidity: 60 %

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2402.000 | 82.70   | 10.32  | 93.02       | 74.00  | 19.02  | peak     |                |              |         |
| 2   |    | 2850.000 | 34.12   | 11.28  | 45.40       | 74.00  | -28.60 | peak     |                |              |         |
| 3   |    | 4675.000 | 39.83   | 7.35   | 47.18       | 74.00  | -26.82 | peak     |                |              |         |

**RESULT: PASS**

RADIATED EMISSION ABOVE 1GHZ (1-10<sup>th</sup> Harmonics)-MIDDLE CHANNEL-HORIZONTAL

Site: site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

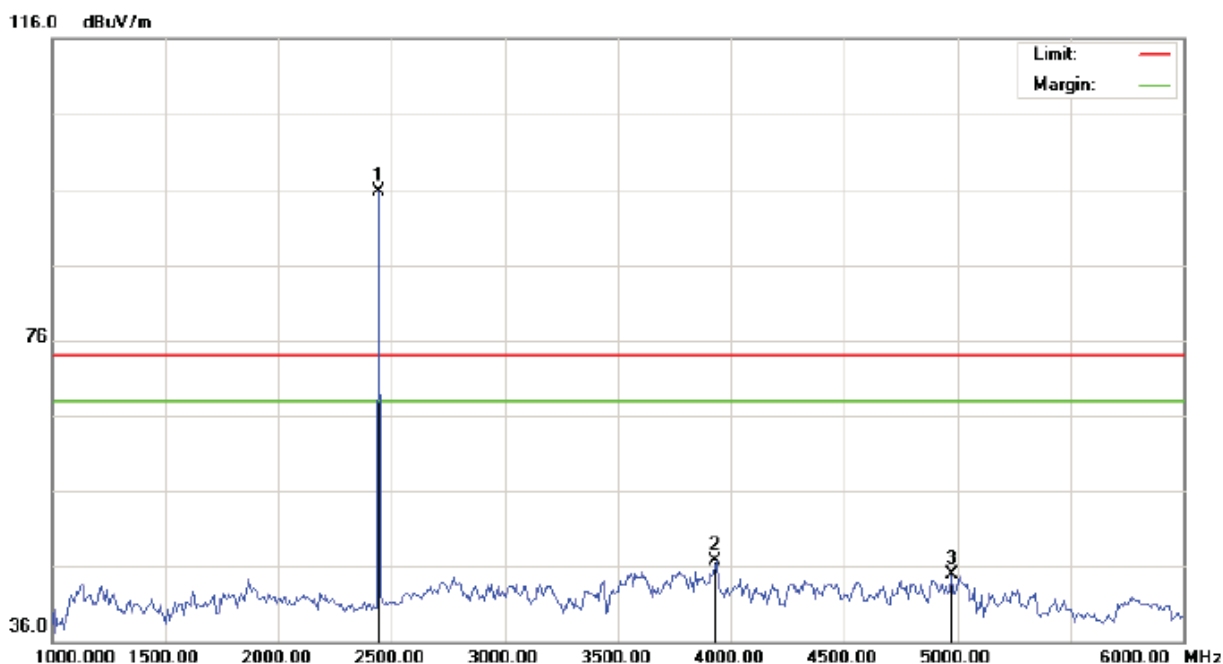
M/N: Quikcell

Mode: Middle Channel TX

Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2441.000 | 85.60   | 10.37  | 95.97       | 74.00  | 21.97  | peak     |                |              |         |
| 2   |    | 3858.333 | 32.10   | 14.32  | 46.42       | 74.00  | -27.58 | peak     |                |              |         |
| 3   |    | 5175.000 | 41.66   | 4.70   | 46.36       | 74.00  | -27.64 | peak     |                |              |         |

**RESULT: PASS**

RADIATED EMISSION ABOVE 1GHZ (1-10<sup>th</sup> Harmonics)- MIDDLE CHANNEL –VERTICAL

Site: site #1

Polarization: **Vertical**

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

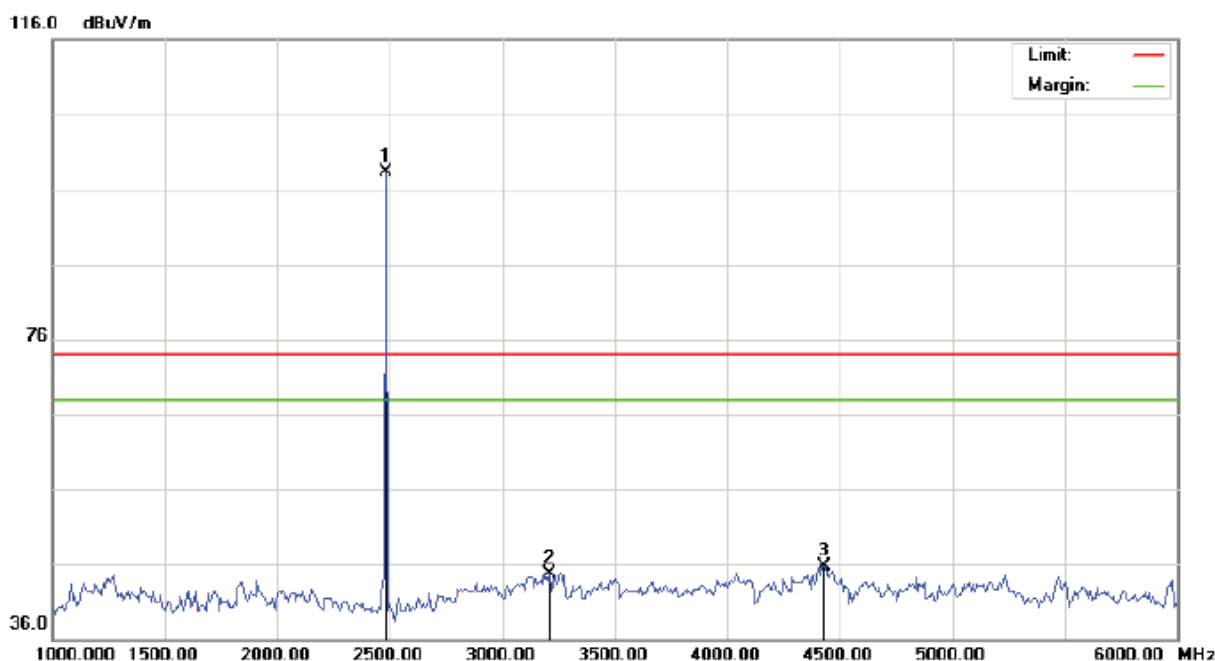
M/N: Quikcell

Mode: Middle Channel TX

Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2441.000 | 85.40   | 10.37  | 95.77       | 74.00  | 21.77  | peak     |                |              |         |
| 2   |    | 3933.333 | 31.89   | 14.78  | 46.67       | 74.00  | -27.33 | peak     |                |              |         |
| 3   |    | 4975.000 | 36.85   | 8.13   | 44.98       | 74.00  | -29.02 | peak     |                |              |         |

**RESULT: PASS**

RADIATED EMISSION ABOVE 1GHZ (1-10<sup>th</sup> Harmonics)-HIGH CHANNEL-HORIZONTAL

Site: site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

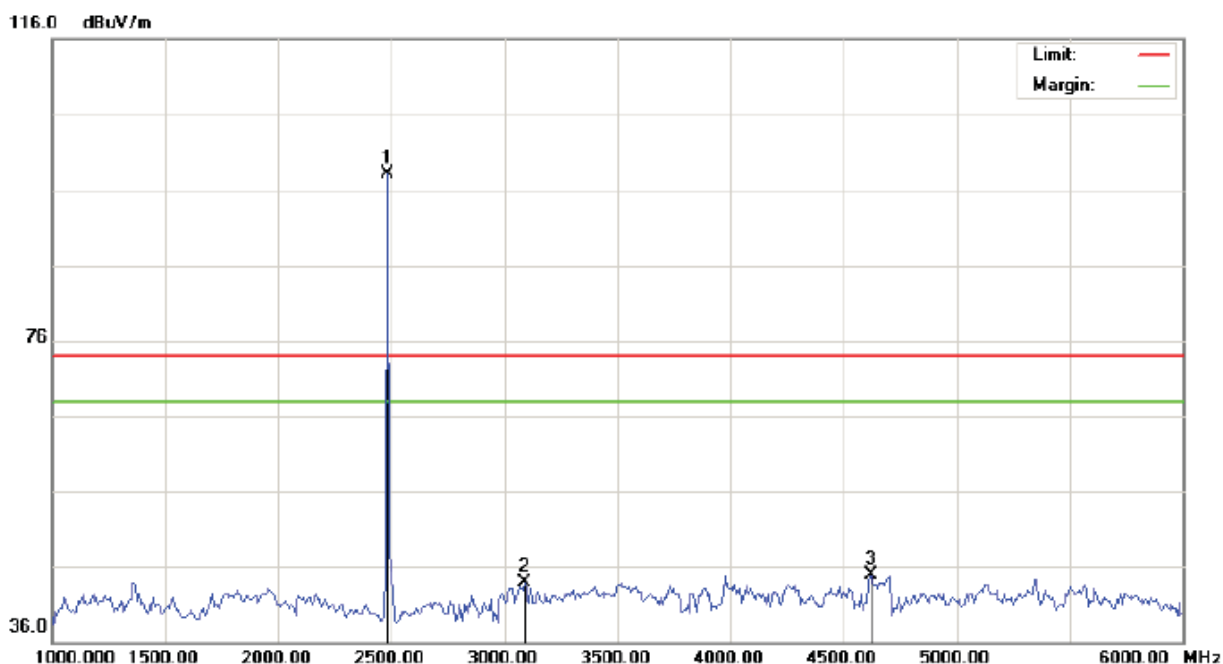
M/N: Quikcell

Mode: High Channel TX

Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2480.000 | 87.89   | 10.41  | 98.30       | 74.00  | 24.30  | peak     |                |              |         |
| 2   |    | 3208.333 | 32.91   | 11.84  | 44.75       | 74.00  | -29.25 | peak     |                |              |         |
| 3   |    | 4433.333 | 37.79   | 8.00   | 45.79       | 74.00  | -28.21 | peak     |                |              |         |

**RESULT: PASS**

RADIATED EMISSION ABOVE 1GHZ (1-10<sup>th</sup> Harmonics)-HIGH CHANNEL –VERTICAL

Site: site #1

Polarization: **Vertical**

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

M/N: Quikcell

Mode: High Channel TX

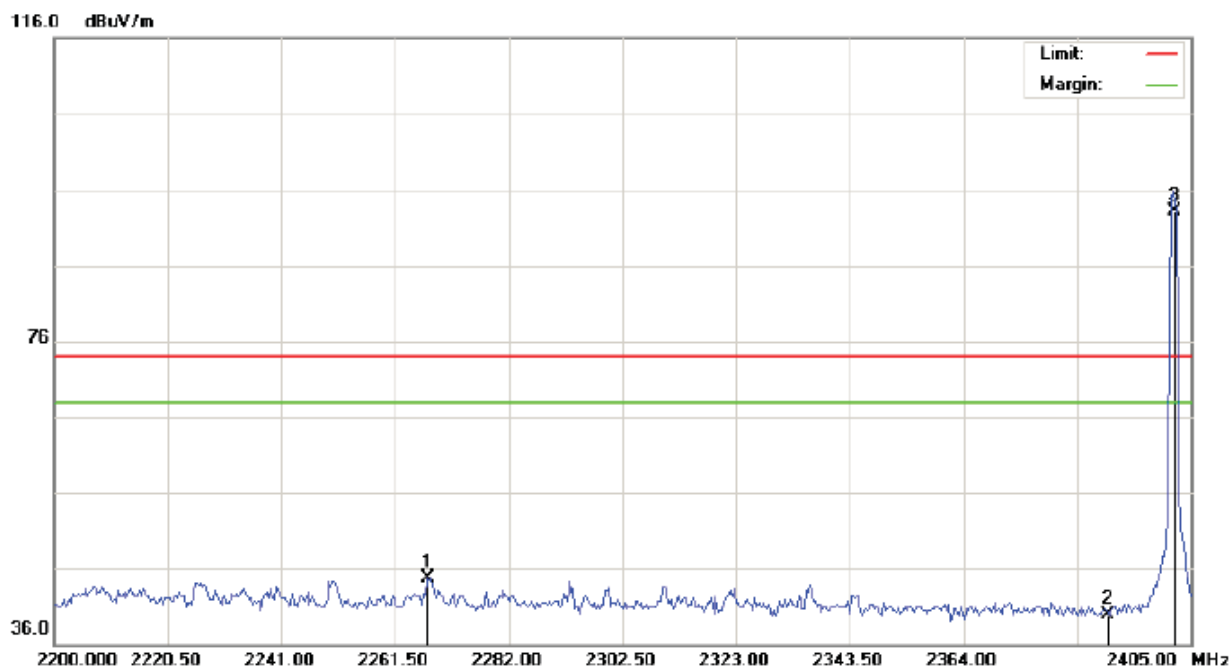
Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2480.000 | 87.76   | 10.41  | 98.17       | 74.00  | 24.17  | peak     |                |              |         |
| 2   |    | 3091.667 | 32.10   | 11.73  | 43.83       | 74.00  | -30.17 | peak     |                |              |         |
| 3   |    | 4625.000 | 37.64   | 7.22   | 44.86       | 74.00  | -29.14 | peak     |                |              |         |

**RESULT: PASS****Note:** 6~25GHz at least have 20dB margin. No recording in the test report.

Factor=Antenna Factor+ Cable loss-Amplifier gain, Margin=Measurement-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

**BAND EDGE TEST****(Worst Modulation: GFSK)****TEST PLOT OF BAND EDGE FOR LOW CHANNEL -Horizontal**

Site: site #1

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

M/N: Quikcell

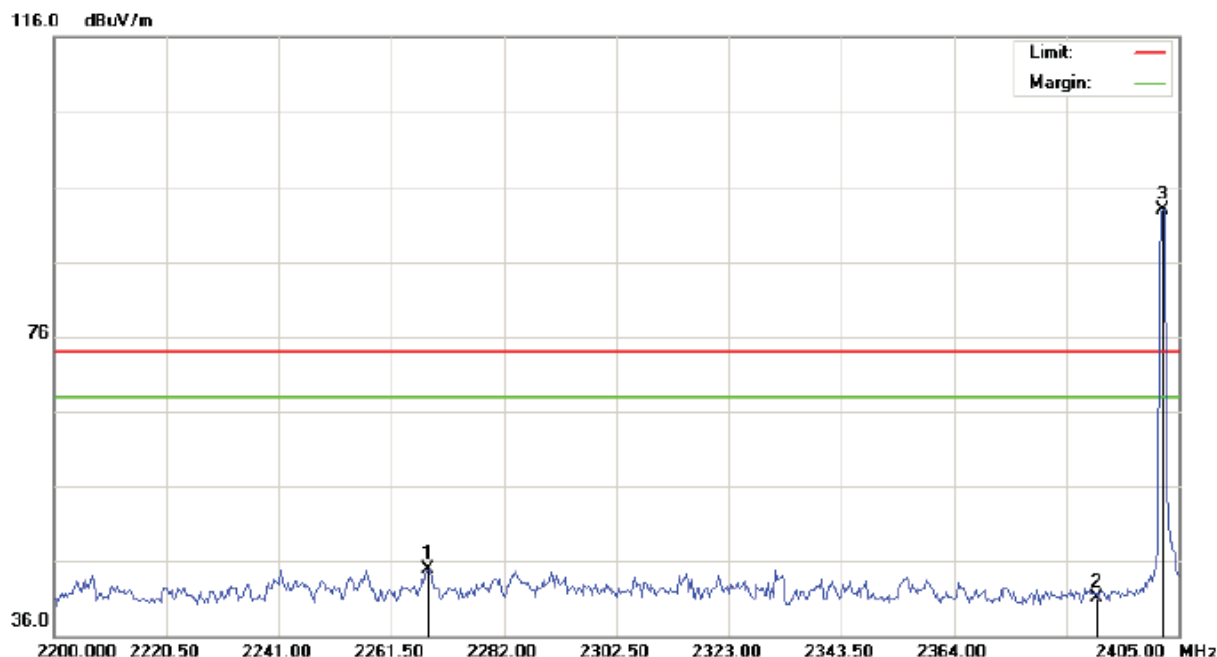
Mode: Low Channel TX

Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 2267.308 | 34.59   | 10.17  | 44.76       | 74.00  | -29.24 | peak     |                |              |         |
| 2   |    | 2390.000 | 29.50   | 10.31  | 39.81       | 74.00  | -34.19 | peak     |                |              |         |
| 3   | *  | 2402.000 | 82.72   | 10.32  | 93.04       | 74.00  | 19.04  | peak     |                |              |         |



## TEST PLOT OF BAND EDGE FOR LOW CHANNEL -Vertical



Site: site #1

Polarization: *Vertical*

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

M/N: Quikcell

Mode: Low Channel TX

Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   |    | 2268.333 | 34.75   | 10.18  | 44.93       | 74.00  | -29.07 | peak     |                |              |         |
| 2   |    | 2390.000 | 30.71   | 10.31  | 41.02       | 74.00  | -32.98 | peak     |                |              |         |
| 3   | *  | 2402.000 | 82.59   | 10.32  | 92.91       | 74.00  | 18.91  | peak     |                |              |         |



## TEST PLOT OF BAND EDGE FOR HIGH CHANNEL -Horizontal



Site: site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Stereo Headset

Distance:

M/N: Quikcell

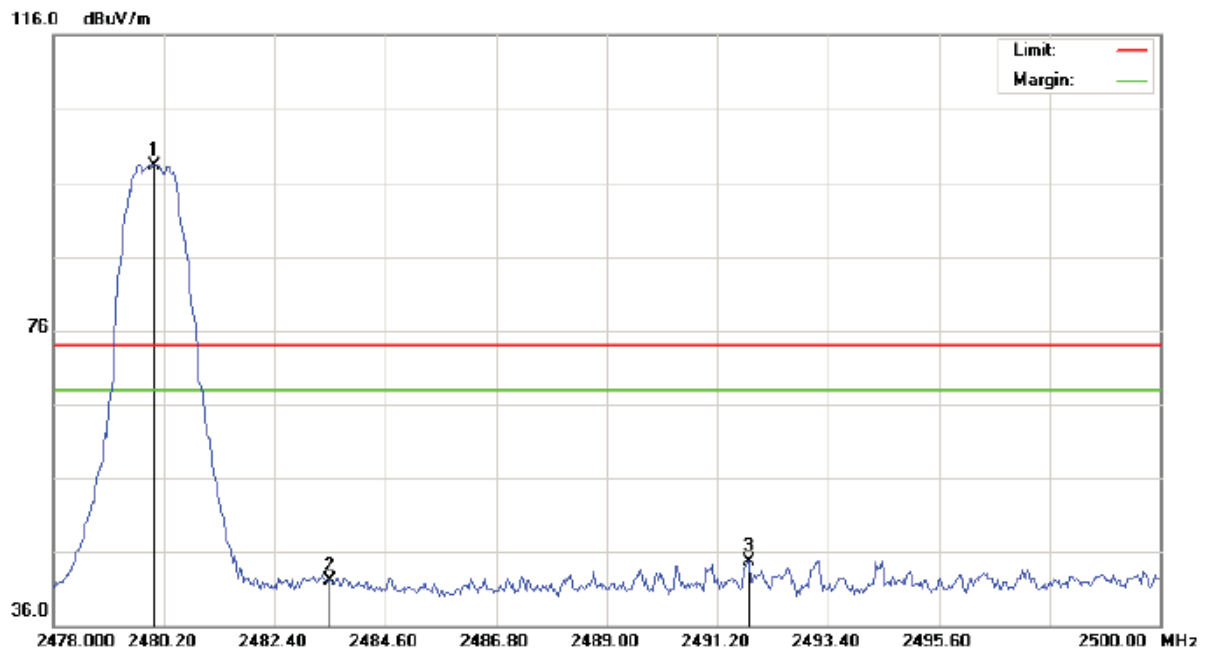
Mode: High Channel TX

Note:

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2480.000 | 88.05   | 10.41  | 98.46       | 74.00  | 24.46  | peak     |                |              |         |
| 2   |    | 2483.500 | 30.19   | 10.41  | 40.60       | 74.00  | -33.40 | peak     |                |              |         |
| 3   |    | 2490.833 | 35.40   | 10.42  | 45.82       | 74.00  | -28.18 | peak     |                |              |         |



## TEST PLOT OF BAND EDGE FOR HIGH CHANNEL -Vertical



Site: site #1

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

EUT: Bluetooth Stereo Headset

M/N: Quikcell

Mode: High Channel TX

Note:

Polarization: **Vertical**

Power:

Distance:

Temperature: 26

Humidity: 60 %

| No. | Mk | Freq.    | Reading | Factor | Measurement | Limit  | Over   | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
|     |    | MHz      | dBuV    | dB/m   | dBuV/m      | dBuV/m | dB     |          | cm             | degree       |         |
| 1   | *  | 2480.000 | 87.82   | 10.41  | 98.23       | 74.00  | 24.23  | peak     |                |              |         |
| 2   |    | 2483.500 | 31.76   | 10.41  | 42.17       | 74.00  | -31.83 | peak     |                |              |         |
| 3   |    | 2491.823 | 34.34   | 10.42  | 44.76       | 74.00  | -29.24 | peak     |                |              |         |

**RESULT: PASS****Note:** 1. Factor=Antenna Factor+ Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

## 4. CONDUCTED SPURIOUS EMISSIONS

### 4.1 REQUIREMENT

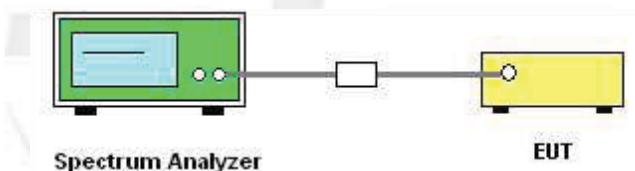
According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

### 4.2 TEST PROCEDURE

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

| Spectrum Parameter                    | Setting                         |
|---------------------------------------|---------------------------------|
| Detector                              | Peak                            |
| Start/Stop Frequency                  | 30 MHz to 10th carrier harmonic |
| RB / VB (emission in restricted band) | 100 KHz/100 KHz                 |
| Trace-Mode:                           | Max hold                        |

### 4.3 TEST SETUP



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth(RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

### 4.4 EUT OPERATION CONDITIONS

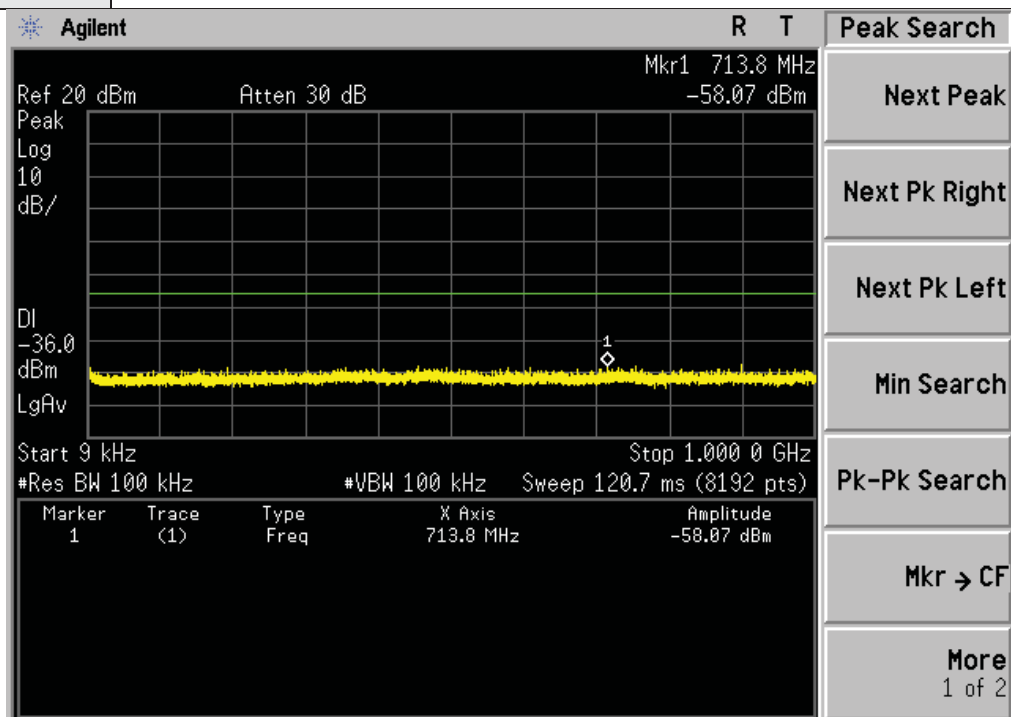
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

**REMARK:** GFSK(1Mbps),  $\pi/4$ -DQPSK(2Mbps),8-DPSK(3Mbps) all have been tested , GFSK(1Mbps) is found as worst case and only reported

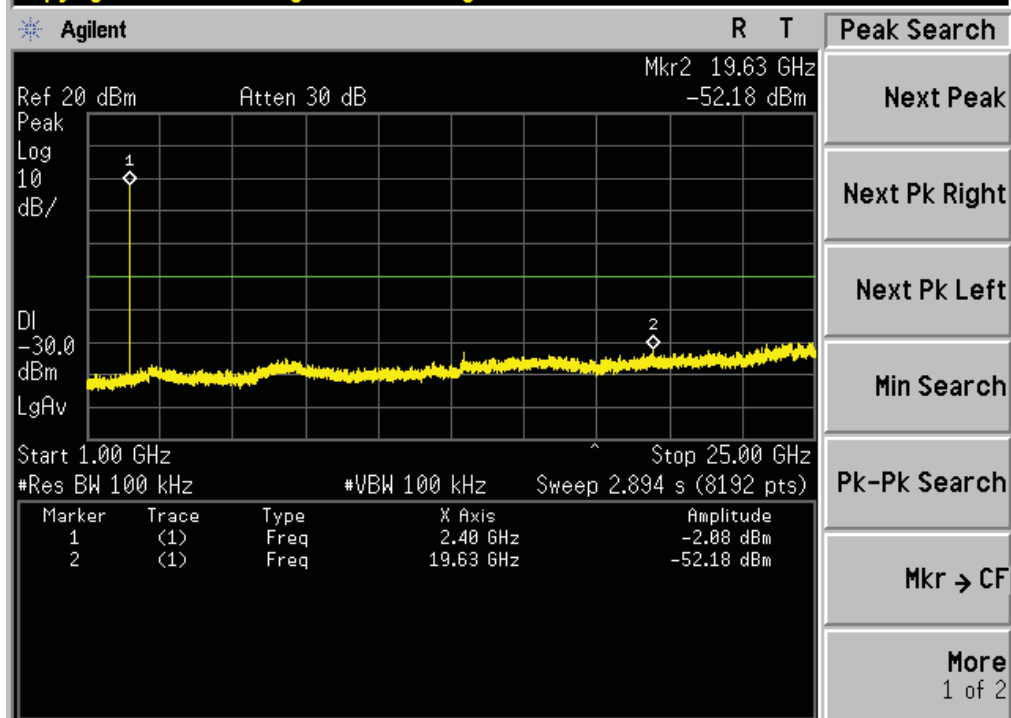


## 4.5 TEST RESULTS

|               |                          |                     |          |
|---------------|--------------------------|---------------------|----------|
| EUT :         | Bluetooth Stereo Headset | Model Name :        | Quikcell |
| Temperature : | 25°C                     | Relative Humidity : | 50%      |
| Pressure :    | 1012 hPa                 | Test Voltage :      | DC 3.7V  |
| Test Mode :   | GFSK                     |                     |          |



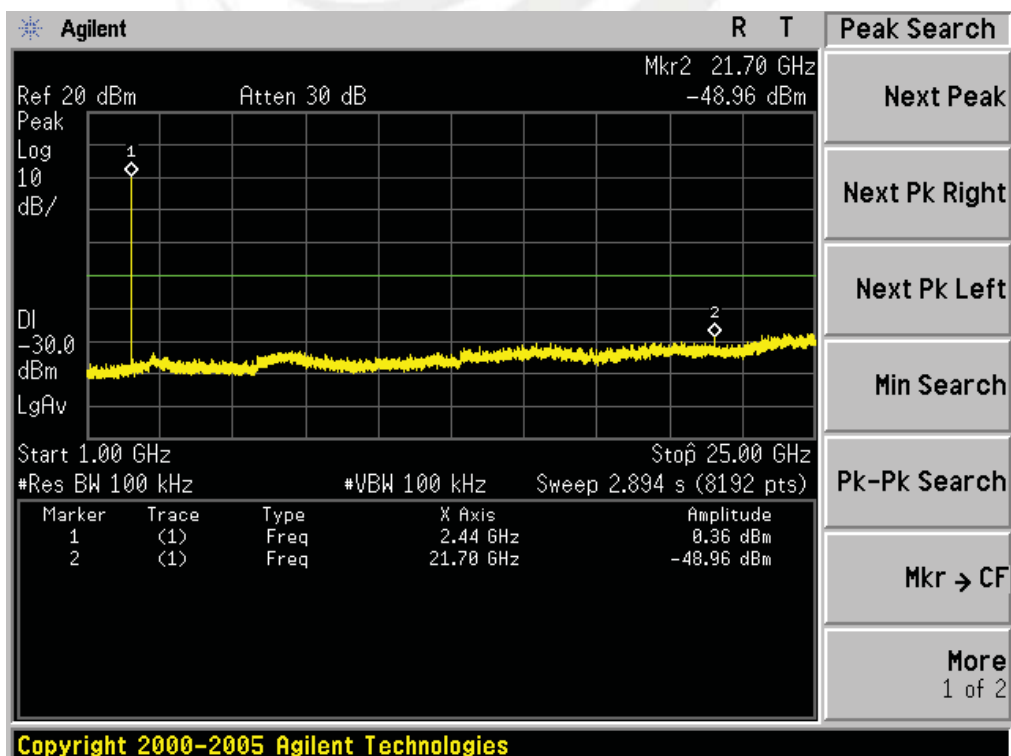
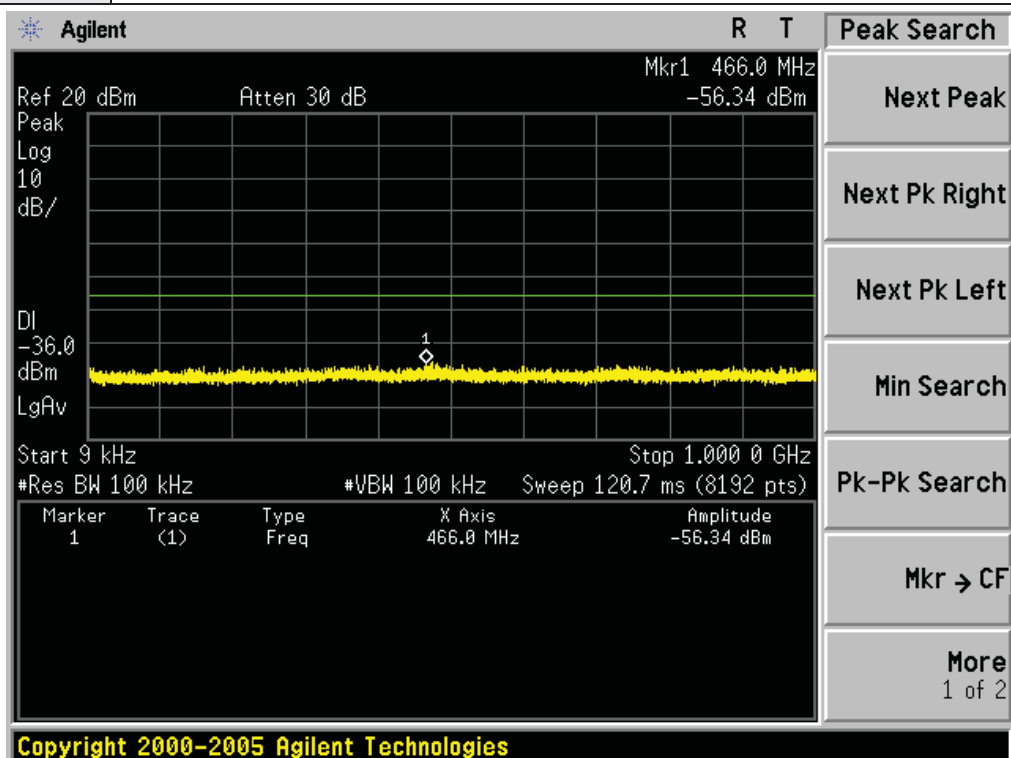
Copyright 2000-2005 Agilent Technologies



Copyright 2000-2005 Agilent Technologies

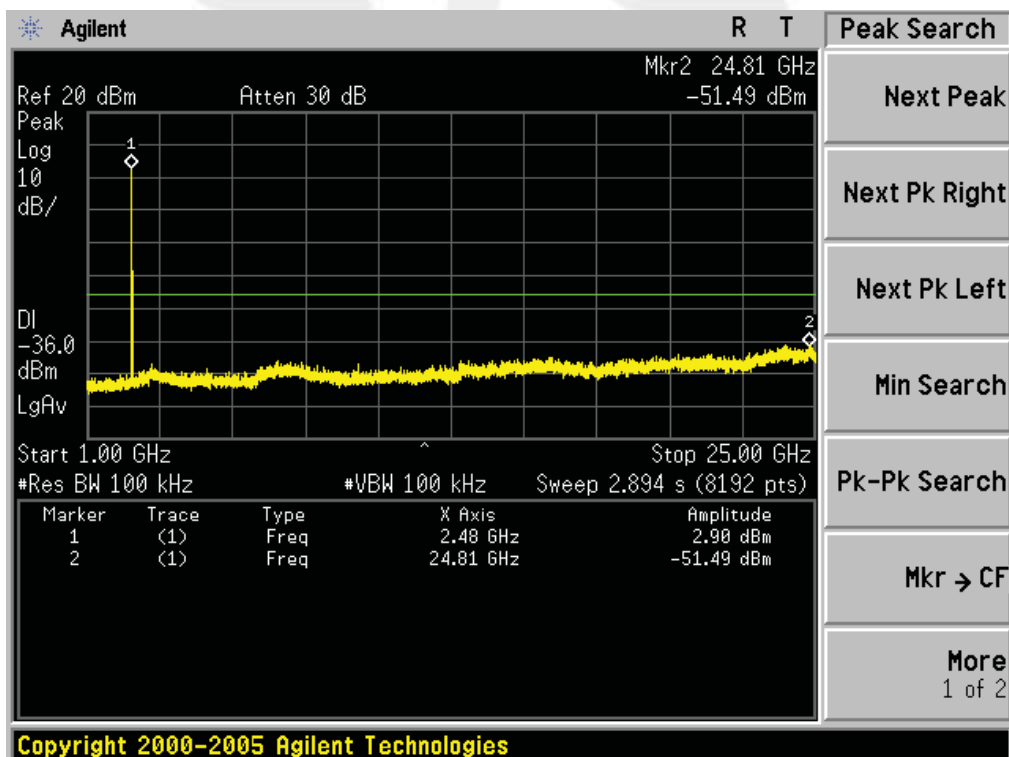
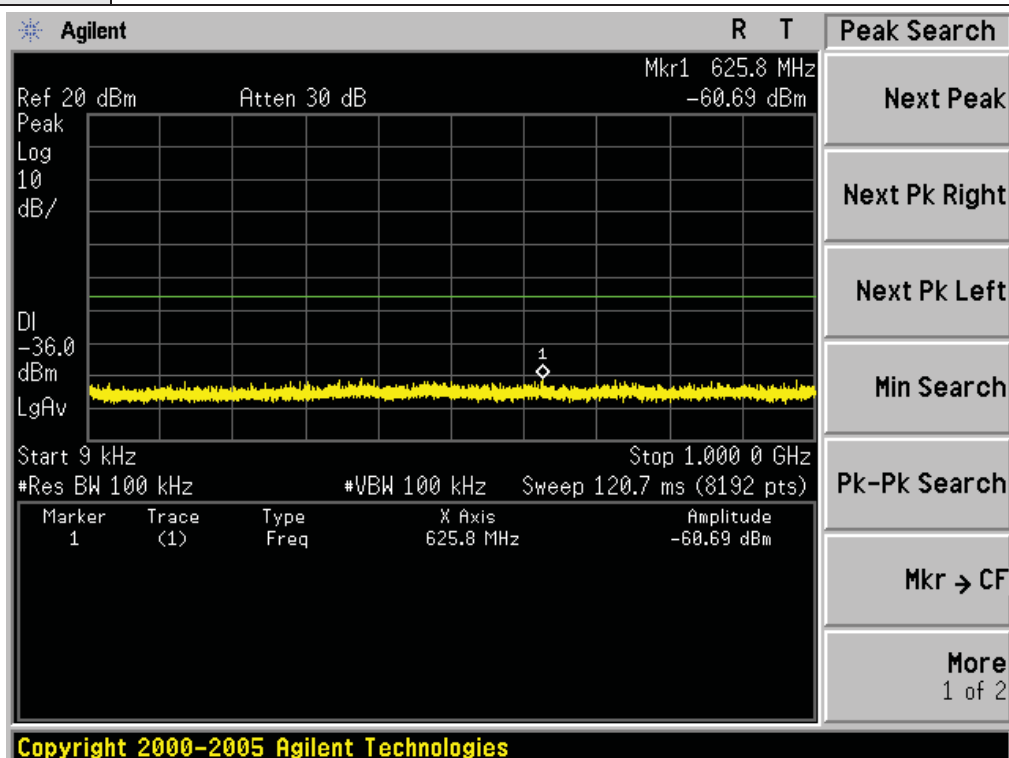


|               |                          |                     |          |
|---------------|--------------------------|---------------------|----------|
| EUT :         | Bluetooth Stereo Headset | Model Name :        | Quikcell |
| Temperature : | 25°C                     | Relative Humidity : | 50%      |
| Pressure :    | 1012 hPa                 | Test Voltage :      | DC 3.7V  |
| Test Mode :   | $\pi$ /4DQPSK            |                     |          |



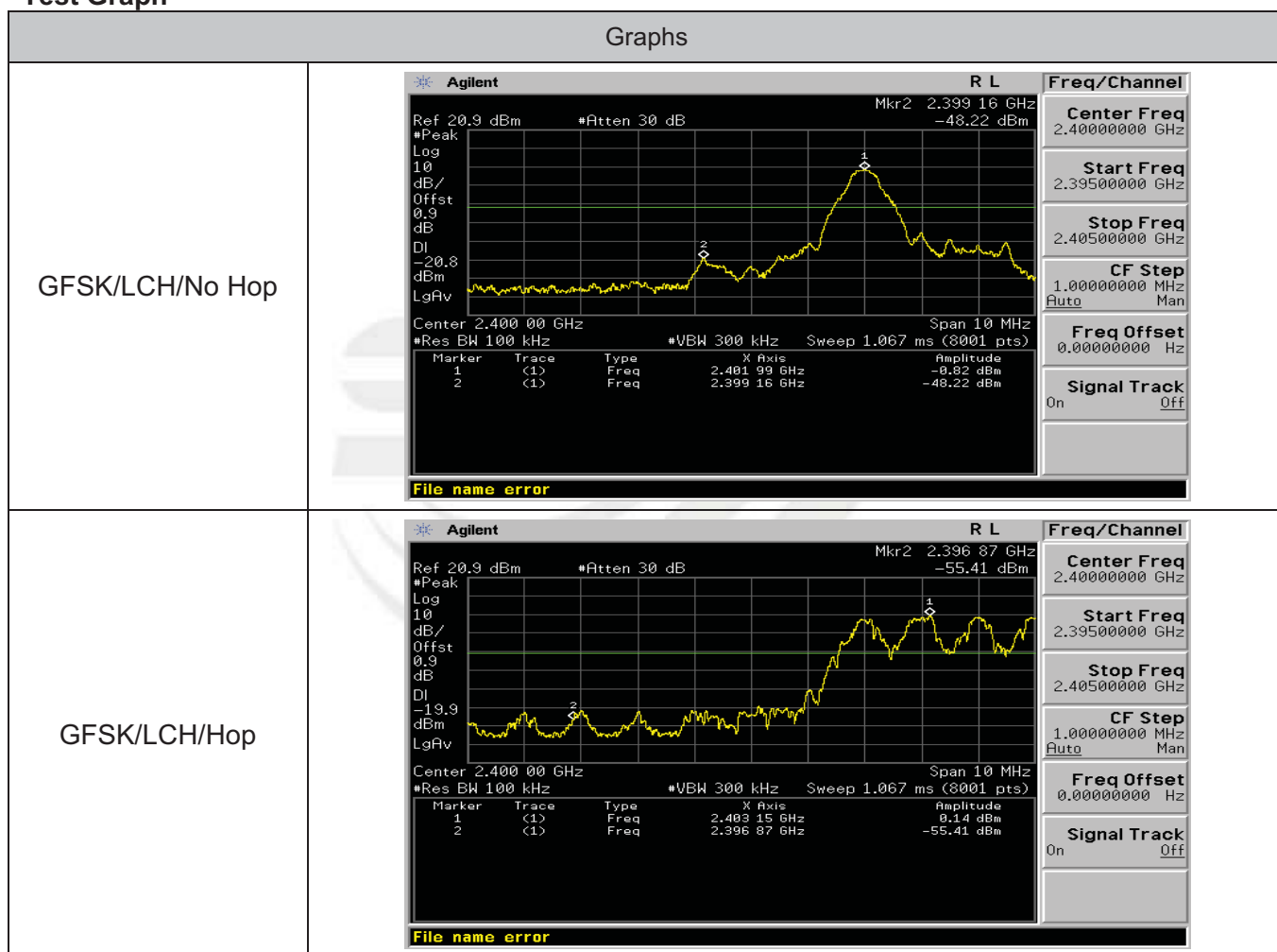


|               |                          |                     |          |
|---------------|--------------------------|---------------------|----------|
| EUT :         | Bluetooth Stereo Headset | Model Name :        | Quikcell |
| Temperature : | 25°C                     | Relative Humidity : | 50%      |
| Pressure :    | 1012 hPa                 | Test Voltage :      | DC 3.7V  |
| Test Mode :   | 8DPSK                    |                     |          |





| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBm] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -48.22                   | PASS    |
|               |         |                         | On                | -55.41                   | PASS    |
| GFSK          | HCH     | 2480                    | Off               | -63.85                   | PASS    |
|               |         |                         | On                | -47.75                   | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -51.26                   | PASS    |
|               |         |                         | On                | -58.53                   | PASS    |
| $\pi/4$ DQPSK | HCH     | 2480                    | Off               | -59.28                   | PASS    |
|               |         |                         | On                | -50.95                   | PASS    |
| 8DPSK         | LCH     | 2402                    | Off               | -53.91                   | PASS    |
|               |         |                         | On                | -54.51                   | PASS    |
| 8DPSK         | HCH     | 2480                    | Off               | -58.10                   | PASS    |
|               |         |                         | On                | -50.49                   | PASS    |



| GFSK/HCH/No Hop          | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div></div><div><div>Ref 20.9 dBm</div><div>#Atten 30 dB</div><div>Mkr2 2.486 08 GHz</div><div>-63.85 dBm</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>DI</div><div>-19.8</div><div>dBm</div><div>LgAv</div></div><div><div>Center 2.483 50 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 1.067 ms (8001 pts)</div><div>Span 10 MHz</div></div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.479 98 GHz</td><td>0.24 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.486 08 GHz</td><td>-63.85 dBm</td></tr></table></div><div><div>File name error</div></div></div> <div><div>Center Freq</div><div>2.48350000 GHz</div></div> <div><div>Start Freq</div><div>2.47850000 GHz</div></div> <div><div>Stop Freq</div><div>2.48850000 GHz</div></div> <div><div>CF Step</div><div>1.00000000 MHz</div><div>Auto</div><div>Man</div></div> <div><div>Freq Offset</div><div>0.00000000 Hz</div></div> <div><div>Signal Track</div><div>On</div><div>Off</div></div>  | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.479 98 GHz | 0.24 dBm  | 2 | (1) | Freq | 2.486 08 GHz | -63.85 dBm |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------|------------|--------|-----------|---|-----|------|--------------|-----------|---|-----|------|--------------|------------|
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.479 98 GHz | 0.24 dBm   |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.486 08 GHz | -63.85 dBm |        |           |   |     |      |              |           |   |     |      |              |            |
| GFSK/HCH/Hop             | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div></div><div><div>Ref 20.9 dBm</div><div>#Atten 30 dB</div><div>Mkr2 2.483 92 GHz</div><div>-47.75 dBm</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>DI</div><div>-20.6</div><div>dBm</div><div>LgAv</div></div><div><div>Center 2.483 50 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 1.067 ms (8001 pts)</div><div>Span 10 MHz</div></div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.480 13 GHz</td><td>-0.60 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.483 92 GHz</td><td>-47.75 dBm</td></tr></table></div><div><div>File name error</div></div></div> <div><div>Center Freq</div><div>2.48350000 GHz</div></div> <div><div>Start Freq</div><div>2.47850000 GHz</div></div> <div><div>Stop Freq</div><div>2.48850000 GHz</div></div> <div><div>CF Step</div><div>1.00000000 MHz</div><div>Auto</div><div>Man</div></div> <div><div>Freq Offset</div><div>0.00000000 Hz</div></div> <div><div>Signal Track</div><div>On</div><div>Off</div></div> | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.480 13 GHz | -0.60 dBm | 2 | (1) | Freq | 2.483 92 GHz | -47.75 dBm |
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.480 13 GHz | -0.60 dBm  |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.483 92 GHz | -47.75 dBm |        |           |   |     |      |              |           |   |     |      |              |            |
| $\pi$ /4DQPSK/LCH/No Hop | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div></div><div><div>Ref 20.9 dBm</div><div>#Atten 30 dB</div><div>Mkr2 2.400 00 GHz</div><div>-51.26 dBm</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>DI</div><div>-25.8</div><div>dBm</div><div>LgAv</div></div><div><div>Center 2.400 00 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 1.067 ms (8001 pts)</div><div>Span 10 MHz</div></div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.401 82 GHz</td><td>-5.77 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.400 00 GHz</td><td>-51.26 dBm</td></tr></table></div><div><div>File name error</div></div></div> <div><div>Center Freq</div><div>2.40000000 GHz</div></div> <div><div>Start Freq</div><div>2.39500000 GHz</div></div> <div><div>Stop Freq</div><div>2.40500000 GHz</div></div> <div><div>CF Step</div><div>1.00000000 MHz</div><div>Auto</div><div>Man</div></div> <div><div>Freq Offset</div><div>0.00000000 Hz</div></div> <div><div>Signal Track</div><div>On</div><div>Off</div></div> | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.401 82 GHz | -5.77 dBm | 2 | (1) | Freq | 2.400 00 GHz | -51.26 dBm |
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.401 82 GHz | -5.77 dBm  |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.400 00 GHz | -51.26 dBm |        |           |   |     |      |              |           |   |     |      |              |            |
| $\pi$ /4DQPSK/LCH/Hop    | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div></div><div><div>Ref 20.9 dBm</div><div>#Atten 30 dB</div><div>Mkr2 2.399 79 GHz</div><div>-58.53 dBm</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>DI</div><div>-23.8</div><div>dBm</div><div>LgAv</div></div><div><div>Center 2.400 00 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 1.067 ms (8001 pts)</div><div>Span 10 MHz</div></div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.404 02 GHz</td><td>-3.79 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.399 79 GHz</td><td>-58.53 dBm</td></tr></table></div><div><div>File name error</div></div></div> <div><div>Center Freq</div><div>2.40000000 GHz</div></div> <div><div>Start Freq</div><div>2.39500000 GHz</div></div> <div><div>Stop Freq</div><div>2.40500000 GHz</div></div> <div><div>CF Step</div><div>1.00000000 MHz</div><div>Auto</div><div>Man</div></div> <div><div>Freq Offset</div><div>0.00000000 Hz</div></div> <div><div>Signal Track</div><div>On</div><div>Off</div></div> | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.404 02 GHz | -3.79 dBm | 2 | (1) | Freq | 2.399 79 GHz | -58.53 dBm |
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.404 02 GHz | -3.79 dBm  |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Freq   | 2.399 79 GHz | -58.53 dBm |        |           |   |     |      |              |           |   |     |      |              |            |



| $\pi$ /4DQPSK/HCH/No Hop | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ref 20.9 dBm #Atten 30 dB Mkr2 2.483 65 GHz -59.28 dBm</div><div>#Peak Log 10 dB/Offst 0.9 dB DI -21.5 dBm LgAv</div><div>Center 2.483 50 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms (8001 pts) Span 10 MHz</div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.480 12 GHz</td><td>-1.49 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.483 65 GHz</td><td>-59.28 dBm</td></tr></table></div><div>File name error</div></div><div><div>Freq/Channel</div><div>Center Freq 2.48350000 GHz</div><div>Start Freq 2.47850000 GHz</div><div>Stop Freq 2.48850000 GHz</div><div>CF Step 1.00000000 MHz Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div></div> | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.480 12 GHz | -1.49 dBm | 2 | (1) | Freq | 2.483 65 GHz | -59.28 dBm |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------|------------|--------|-----------|---|-----|------|--------------|-----------|---|-----|------|--------------|------------|
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.480 12 GHz | -1.49 dBm  |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.483 65 GHz | -59.28 dBm |        |           |   |     |      |              |           |   |     |      |              |            |
| $\pi$ /4DQPSK/HCH/Hop    | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ref 20.9 dBm #Atten 30 dB Mkr2 2.487 22 GHz -50.95 dBm</div><div>#Peak Log 10 dB/Offst 0.9 dB DI -24.4 dBm LgAv</div><div>Center 2.483 50 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms (8001 pts) Span 10 MHz</div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.479 16 GHz</td><td>-4.41 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.487 22 GHz</td><td>-50.95 dBm</td></tr></table></div><div>File name error</div></div><div><div>Freq/Channel</div><div>Center Freq 2.48350000 GHz</div><div>Start Freq 2.47850000 GHz</div><div>Stop Freq 2.48850000 GHz</div><div>CF Step 1.00000000 MHz Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div></div> | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.479 16 GHz | -4.41 dBm | 2 | (1) | Freq | 2.487 22 GHz | -50.95 dBm |
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.479 16 GHz | -4.41 dBm  |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.487 22 GHz | -50.95 dBm |        |           |   |     |      |              |           |   |     |      |              |            |
| 8DPSK/LCH/No Hop         | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ref 20.9 dBm #Atten 30 dB Mkr2 2.399 96 GHz -53.91 dBm</div><div>#Peak Log 10 dB/Offst 0.9 dB DI -25.8 dBm LgAv</div><div>Center 2.400 00 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms (8001 pts) Span 10 MHz</div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.402 16 GHz</td><td>-5.78 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.399 96 GHz</td><td>-53.91 dBm</td></tr></table></div><div>File name error</div></div><div><div>Freq/Channel</div><div>Center Freq 2.40000000 GHz</div><div>Start Freq 2.39500000 GHz</div><div>Stop Freq 2.40500000 GHz</div><div>CF Step 1.00000000 MHz Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div></div> | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.402 16 GHz | -5.78 dBm | 2 | (1) | Freq | 2.399 96 GHz | -53.91 dBm |
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.402 16 GHz | -5.78 dBm  |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.399 96 GHz | -53.91 dBm |        |           |   |     |      |              |           |   |     |      |              |            |
| 8DPSK/LCH/Hop            | <div><div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ref 20.9 dBm #Atten 30 dB Mkr2 2.399 75 GHz -54.51 dBm</div><div>#Peak Log 10 dB/Offst 0.9 dB DI -23.8 dBm LgAv</div><div>Center 2.400 00 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms (8001 pts) Span 10 MHz</div><div><table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.402 94 GHz</td><td>-3.77 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.399 75 GHz</td><td>-54.51 dBm</td></tr></table></div><div>File name error</div></div><div><div>Freq/Channel</div><div>Center Freq 2.40000000 GHz</div><div>Start Freq 2.39500000 GHz</div><div>Stop Freq 2.40500000 GHz</div><div>CF Step 1.00000000 MHz Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div></div> | Marker | Trace        | Type       | X Axis | Amplitude | 1 | (1) | Freq | 2.402 94 GHz | -3.77 dBm | 2 | (1) | Freq | 2.399 75 GHz | -54.51 dBm |
| Marker                   | Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Type   | X Axis       | Amplitude  |        |           |   |     |      |              |           |   |     |      |              |            |
| 1                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.402 94 GHz | -3.77 dBm  |        |           |   |     |      |              |           |   |     |      |              |            |
| 2                        | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Freq   | 2.399 75 GHz | -54.51 dBm |        |           |   |     |      |              |           |   |     |      |              |            |





## 5. NUMBER OF HOPPING CHANNEL

### 5.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                           |           |                      |        |
|---------------------------------|---------------------------|-----------|----------------------|--------|
| Section                         | Test Item                 | Limit     | FrequencyRange (MHz) | Result |
| 15.247 (a)(1)(iii)              | Number of Hopping Channel | $\geq 15$ | 2400-2483.5          | PASS   |

| Spectrum Parameters | Setting                    |
|---------------------|----------------------------|
| Attenuation         | Auto                       |
| Span Frequency      | > Operating FrequencyRange |
| RB                  | 100KHz                     |
| VB                  | 300KHz                     |
| Detector            | Peak                       |
| Trace               | Max Hold                   |
| Sweep Time          | Auto                       |

### 5.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100K, VBW=300K, Sweep time = Auto.

### 5.3 TEST SETUP



### 5.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

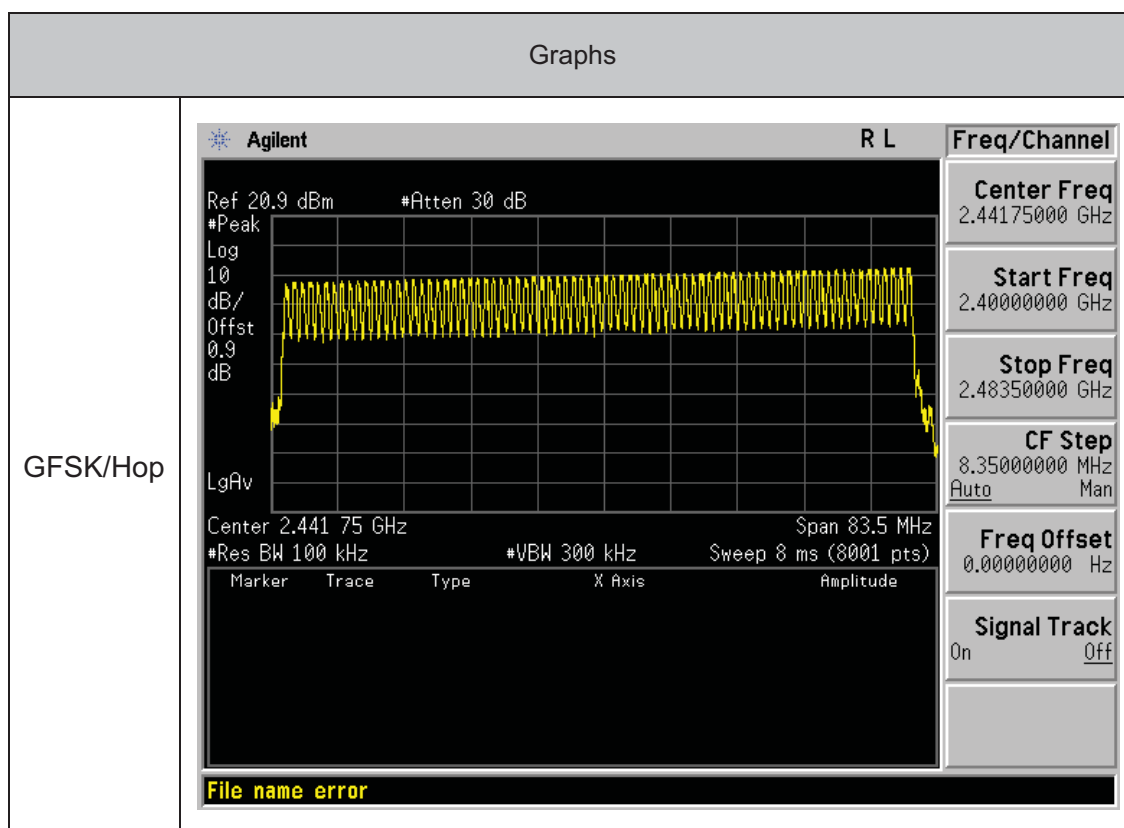


## 5.5 TEST RESULTS

|               |                          |                     |          |
|---------------|--------------------------|---------------------|----------|
| EUT :         | Bluetooth Stereo Headset | Model Name :        | Quikcell |
| Temperature : | 25°C                     | Relative Humidity : | 60%      |
| Pressure :    | 1015 hPa                 | Test Voltage :      | DC 3.7V  |
| Test Mode :   | Hopping Mode             |                     |          |

|                           |    |
|---------------------------|----|
| Number of Hopping Channel | 79 |
|---------------------------|----|

## Hopping channel



Note: All modes (GFSK,  $\pi/4$ DQPSK, 8DPSK) were tested, test result was pass.

## 6. AVERAGE TIME OF OCCUPANCY

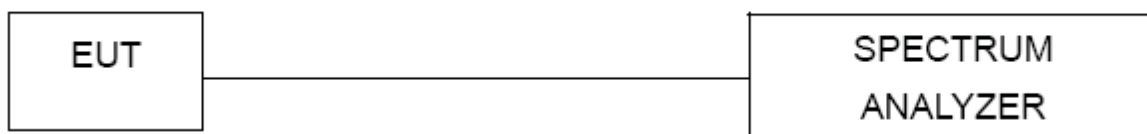
### 6.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                           |        |                      |        |
|---------------------------------|---------------------------|--------|----------------------|--------|
| Section                         | Test Item                 | Limit  | FrequencyRange (MHz) | Result |
| 15.247 (a)(1)(iii)              | Average Time of Occupancy | 0.4sec | 2400-2483.5          | PASS   |

### 6.2 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyzer
- Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- DH5 Packet permit maximum  $1600 / 79 / 6 = 3.37$  hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $3.37 \times 31.6 = 106.6$  within 31.6 seconds.
- DH3 Packet permit maximum  $1600 / 79 / 4 = 5.06$  hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $5.06 \times 31.6 = 160$  within 31.6 seconds.
- DH1 Packet permit maximum  $1600 / 79 / 2 = 10.12$  hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $10.12 \times 31.6 = 320$  within 31.6 seconds.

### 6.3 TEST SETUP



### 6.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



## 6.5 TEST RESULTS

|               |                              |                     |          |
|---------------|------------------------------|---------------------|----------|
| EUT :         | Bluetooth Speaker            | Model Name :        | Quikcell |
| Temperature : | 25°C                         | Relative Humidity : | 50%      |
| Pressure :    | 1012 hPa                     | Test Voltage :      | DC 3.7V  |
| Test Mode :   | 8DPSK(3Mbps)DH5 (Worst case) |                     |          |

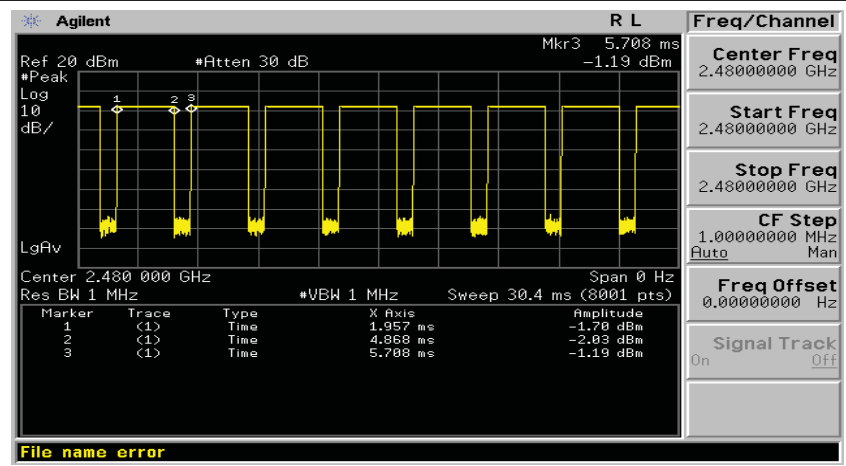
| Mode  | Channel. | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[ms] | Verdict | Limit (ms) |
|-------|----------|-------------------------|--------------------|----------------|---------|------------|
| 8DPSK | LCH      | 2.907                   | 106.67             | 310.090        | PASS    | 400        |
| 8DPSK | MCH      | 2.911                   | 106.67             | 310.516        | PASS    | 400        |
| 8DPSK | HCH      | 2.911                   | 106.67             | 310.516        | PASS    | 400        |

## Test Graph





8DPSK /HCH



## 7. HOPPING CHANNEL SEPARATION MEASUREMENT

### 7.1 APPLIED PROCEDURES / LIMIT

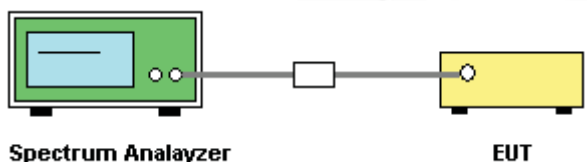
Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 20 dB bandwidth of the hopping channel, whichever is greater.

| Spectrum Parameter | Setting                                       |
|--------------------|-----------------------------------------------|
| Attenuation        | Auto                                          |
| Span Frequency     | > Measurement Bandwidth or Channel Separation |
| RB                 | 30 kHz                                        |
| VB                 | 30 kHz                                        |
| Detector           | Peak                                          |
| Trace              | Max Hold                                      |
| Sweep Time         | Auto                                          |

### 7.2 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 30 kHz and the video bandwidth of 30 kHz were utilised for 20 dB bandwidth measurement.
- The resolution bandwidth of 30 kHz and the video bandwidth of 30 kHz were utilised for channel separation measurement.

### 7.3 TEST SETUP



### 7.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

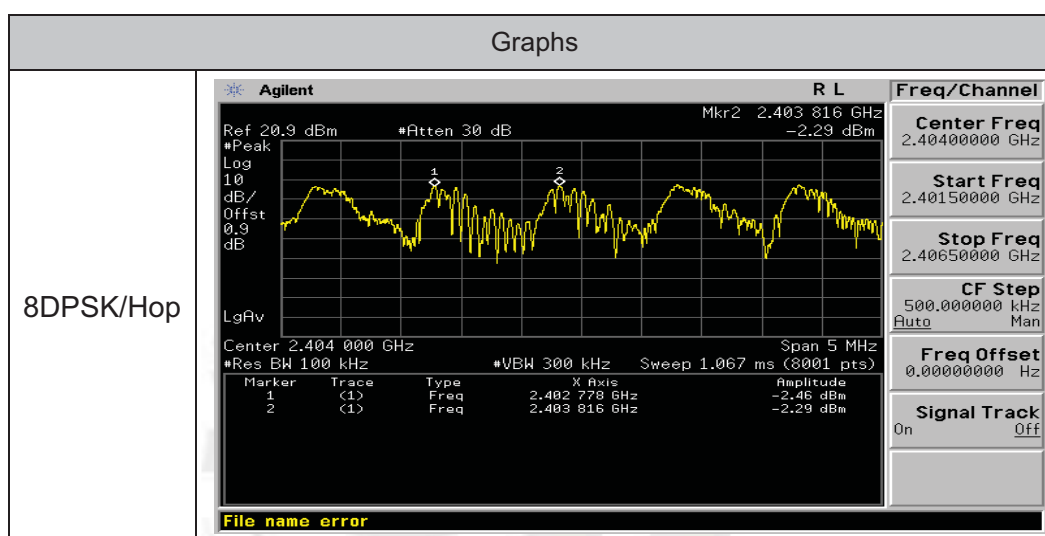


## 7.5 TEST RESULTS

|               |                          |                     |          |
|---------------|--------------------------|---------------------|----------|
| EUT :         | Bluetooth Stereo Headset | Model Name :        | Quikcell |
| Temperature : | 25°C                     | Relative Humidity : | 50%      |
| Pressure :    | 1012 hPa                 | Test Voltage :      | DC 3.7V  |
| Test Mode :   | CH00 (8DPSK(3Mbps) Mode) |                     |          |

| Mode  | Channel. | Carrier Frequency Separation [MHz] | Verdict |
|-------|----------|------------------------------------|---------|
| 8DPSK | Hop      | 1.038                              | PASS    |

Note: All modes were tested, only the worst case record in the report.





## 8. BANDWIDTH TEST

### 8.1 APPLIED PROCEDURES / LIMIT

#### FCC Part15 (15.247) , Subpart C

| Section          | Test Item | Limit            | FrequencyRange (MHz) | Result |
|------------------|-----------|------------------|----------------------|--------|
| 15.247<br>(a)(1) | Bandwidth | (20dB bandwidth) | 2400-2483.5          | PASS   |

| Spectrum Parameter | Setting                                       |
|--------------------|-----------------------------------------------|
| Attenuation        | Auto                                          |
| Span Frequency     | > Measurement Bandwidth or Channel Separation |
| RB                 | 30 kHz                                        |
| VB                 | 30 kHz                                        |
| Detector           | Peak                                          |
| Trace              | Max Hold                                      |
| Sweep Time         | Auto                                          |

### 8.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 30KHz, VBW  $\geq$  RBW, Sweep time = Auto.

### 8.3 TEST SETUP



### 8.4 EUT OPERATION CONDITIONS

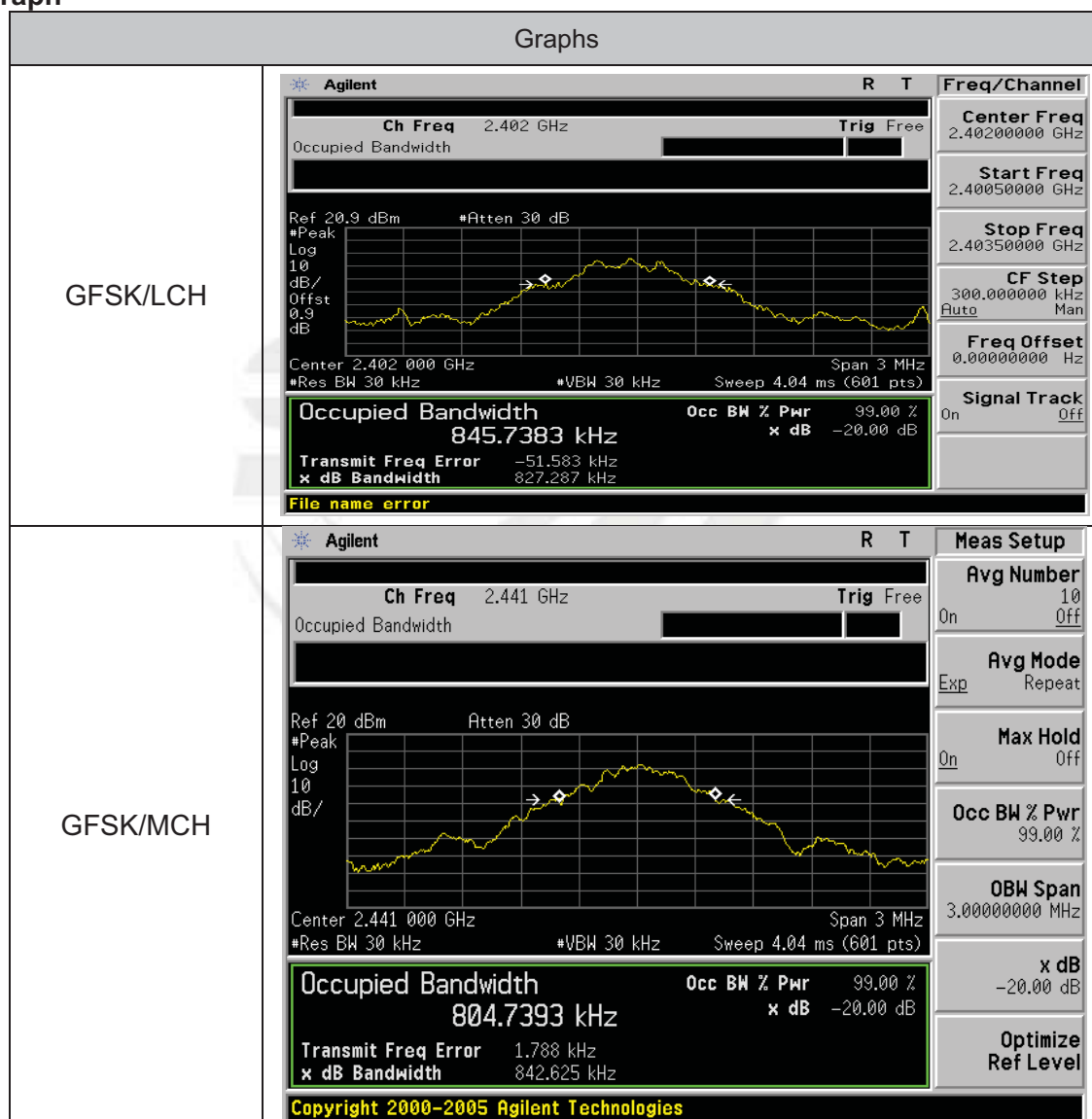
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



## 8.5TEST RESULTS

| Mode          | Channel. | 20dB bandwidth [MHz] | 99%bandwidth [MHz] | Verdict |
|---------------|----------|----------------------|--------------------|---------|
| GFSK          | LCH      | 0.827                | 0.846              | PASS    |
| GFSK          | MCH      | 0.843                | 0.805              | PASS    |
| GFSK          | HCH      | 0.974                | 0.835              | PASS    |
| $\pi$ /4DQPSK | LCH      | 1.223                | 1.125              | PASS    |
| $\pi$ /4DQPSK | MCH      | 1.157                | 1.176              | PASS    |
| $\pi$ /4DQPSK | HCH      | 1.254                | 1.204              | PASS    |
| 8DPSK         | LCH      | 1.211                | 1.152              | PASS    |
| 8DPSK         | MCH      | 1.292                | 1.267              | PASS    |
| 8DPSK         | HCH      | 1.127                | 1.256              | PASS    |

## Test Graph





|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GFSK/HCH          | <div><div>Agilent</div><div>R T</div><div>Freq/Channel</div><div>Ch Freq 2.48 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20.9 dBm</div><div>*Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>Center 2.480 000 GHz</div><div>*Res BW 30 kHz</div><div>*VBW 30 kHz</div><div>Sweep 4.04 ms (601 pts)</div><div>Span 3 MHz</div><div>Occupied Bandwidth 834.9045 kHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -20.00 dB</div><div>Transmit Freq Error -35.638 kHz</div><div>x dB Bandwidth 973.653 kHz</div><div>File name error</div><div>Center Freq 2.48000000 GHz</div><div>Start Freq 2.47850000 GHz</div><div>Stop Freq 2.48150000 GHz</div><div>CF Step 300.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div> |
| $\pi$ /4DQPSK/LCH | <div><div>Agilent</div><div>R T</div><div>Freq/Channel</div><div>Ch Freq 2.402 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20.9 dBm</div><div>*Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>Center 2.402 000 GHz</div><div>*Res BW 30 kHz</div><div>*VBW 30 kHz</div><div>Sweep 4.04 ms (601 pts)</div><div>Span 3 MHz</div><div>Occupied Bandwidth 1.1254 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -20.00 dB</div><div>Transmit Freq Error -37.844 kHz</div><div>x dB Bandwidth 1.223 MHz</div><div>File name error</div><div>Center Freq 2.40200000 GHz</div><div>Start Freq 2.40050000 GHz</div><div>Stop Freq 2.40350000 GHz</div><div>CF Step 300.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div>    |
| $\pi$ /4DQPSK/MCH | <div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ch Freq 2.441 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20.9 dBm</div><div>*Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>Center 2.441 000 GHz</div><div>*Res BW 30 kHz</div><div>*VBW 30 kHz</div><div>Sweep 4.04 ms (601 pts)</div><div>Span 3 MHz</div><div>Occupied Bandwidth 1.1764 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -20.00 dB</div><div>Transmit Freq Error -60.717 kHz</div><div>x dB Bandwidth 1.157 MHz</div><div>File name error</div><div>Center Freq 2.44100000 GHz</div><div>Start Freq 2.43950000 GHz</div><div>Stop Freq 2.44250000 GHz</div><div>CF Step 300.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div>    |
| $\pi$ /4DQPSK/HCH | <div><div>Agilent</div><div>R T</div><div>Freq/Channel</div><div>Ch Freq 2.48 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20.9 dBm</div><div>*Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offst</div><div>0.9</div><div>dB</div><div>Center 2.480 000 GHz</div><div>*Res BW 30 kHz</div><div>*VBW 30 kHz</div><div>Sweep 4.04 ms (601 pts)</div><div>Span 3 MHz</div><div>Occupied Bandwidth 1.2043 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -20.00 dB</div><div>Transmit Freq Error -71.535 kHz</div><div>x dB Bandwidth 1.254 MHz</div><div>File name error</div><div>Center Freq 2.48000000 GHz</div><div>Start Freq 2.47850000 GHz</div><div>Stop Freq 2.48150000 GHz</div><div>CF Step 300.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div>     |



|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8DPSK/LCH | <div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ch Freq 2.402 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20.9 dBm</div><div>*Atten 30 dB</div><div>*Peak Log 10 dB/Offst 0.9 dB</div><div>Center 2.402 000 GHz</div><div>*Res BW 30 kHz</div><div>*VBW 30 kHz</div><div>Sweep 4.04 ms (601 pts)</div><div>Span 3 MHz</div><div>Occupied Bandwidth 1.1522 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -20.00 dB</div><div>Transmit Freq Error -34.371 kHz</div><div>x dB Bandwidth 1.211 MHz</div><div>File name error</div><div>Center Freq 2.40200000 GHz</div><div>Start Freq 2.40050000 GHz</div><div>Stop Freq 2.40350000 GHz</div><div>CF Step 300.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div> |
| 8DPSK/MCH | <div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ch Freq 2.441 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20.9 dBm</div><div>*Atten 30 dB</div><div>*Peak Log 10 dB/Offst 0.9 dB</div><div>Center 2.441 000 GHz</div><div>*Res BW 30 kHz</div><div>*VBW 30 kHz</div><div>Sweep 4.04 ms (601 pts)</div><div>Span 3 MHz</div><div>Occupied Bandwidth 1.2674 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -20.00 dB</div><div>Transmit Freq Error -27.326 kHz</div><div>x dB Bandwidth 1.292 MHz</div><div>File name error</div><div>Center Freq 2.44100000 GHz</div><div>Start Freq 2.43950000 GHz</div><div>Stop Freq 2.44250000 GHz</div><div>CF Step 300.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div> |
| 8DPSK/HCH | <div><div>Agilent</div><div>R L</div><div>Freq/Channel</div><div>Ch Freq 2.48 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20.9 dBm</div><div>*Atten 30 dB</div><div>*Peak Log 10 dB/Offst 0.9 dB</div><div>Center 2.480 000 GHz</div><div>*Res BW 30 kHz</div><div>*VBW 30 kHz</div><div>Sweep 4.04 ms (601 pts)</div><div>Span 3 MHz</div><div>Occupied Bandwidth 1.2557 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -20.00 dB</div><div>Transmit Freq Error -35.978 kHz</div><div>x dB Bandwidth 1.127 MHz</div><div>File name error</div><div>Center Freq 2.48000000 GHz</div><div>Start Freq 2.47850000 GHz</div><div>Stop Freq 2.48150000 GHz</div><div>CF Step 300.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div></div>  |

## 9. OUTPUT POWER TEST

### 9.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                   |                                                                                                                            |                      |        |
|---------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------|--------|
| Section                         | Test Item         | Limit                                                                                                                      | FrequencyRange (MHz) | Result |
| 15.247 (b)(i)                   | Peak Output Power | 1 W or 0.125W                                                                                                              | 2400-2483.5          | PASS   |
|                                 |                   | Or if channel separation > 2/3 bandwidth provided the system operate with an output power no greater than 125 mW(20.96dBm) |                      |        |

### 9.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting :GFSK(1Mbps):RBW= 1.5MHz, VBW= 1.5MHz, Sweep time = Auto.
- Spectrum Setting : $\pi/4$ -DQPSK(2Mbps):RBW= 1.5MHz, VBW= 1.5MHz, Sweep time = Auto.
- Spectrum Setting :8-DPSK(3Mbps):RBW= 1.5MHz, VBW= 1.5MHz, Sweep time = Auto.

### 9.3 TEST SETUP



### 9.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



## 9.5TEST RESULTS

**PEAK OUTPUT POWER MEASUREMENT RESULT  
FOR GFSK MODULATION**

| Frequency<br>(GHz) | Peak Power<br>(dBm) | Applicable Limits<br>(dBm) | Pass or Fail |
|--------------------|---------------------|----------------------------|--------------|
| 2.402              | -2.08               | 21                         | Pass         |
| 2.441              | 0.71                | 21                         | Pass         |
| 2.480              | 3.24                | 21                         | Pass         |

**PEAK OUTPUT POWER MEASUREMENT RESULT  
FOR II /4-DQPSK MODULATION**

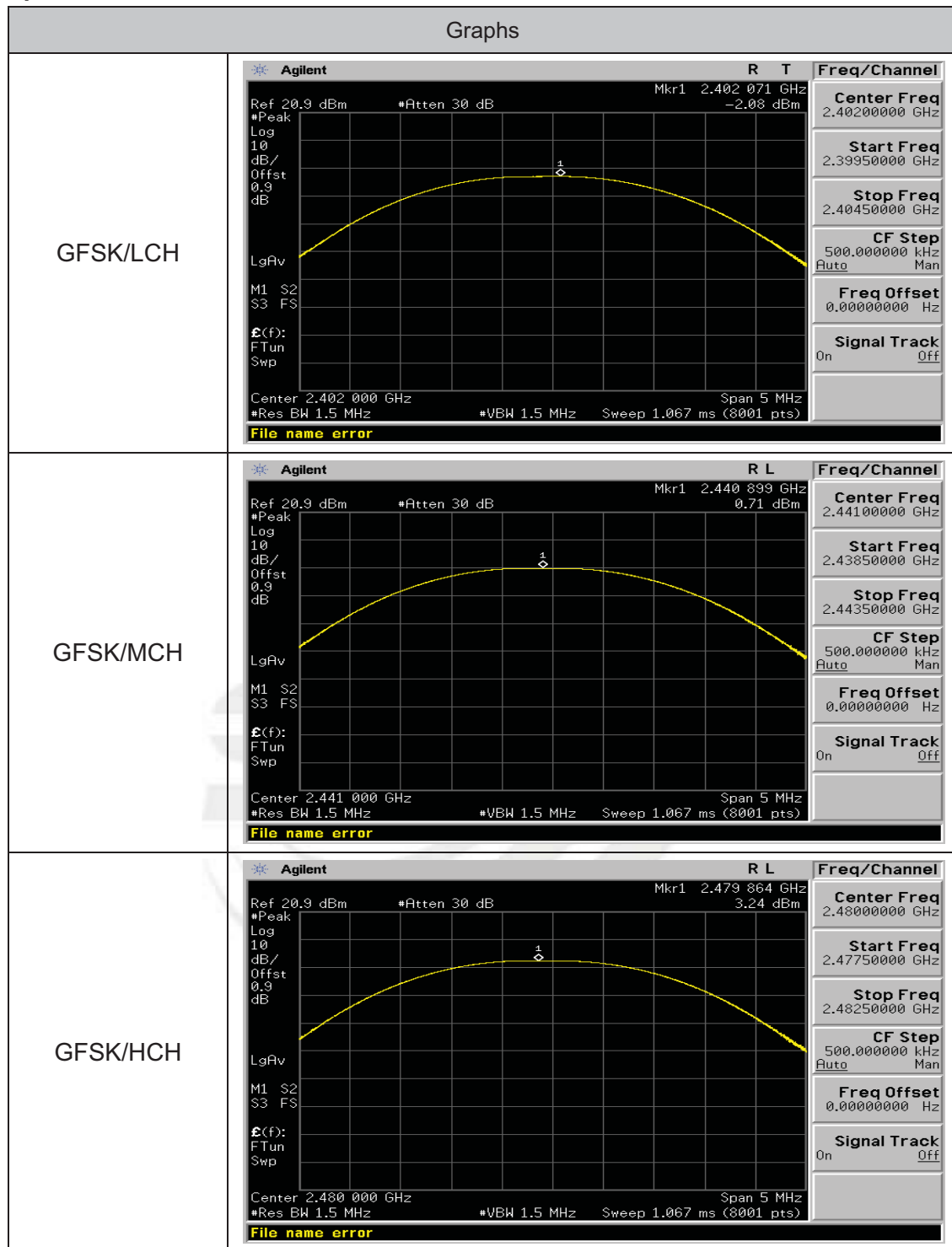
| Frequency<br>(GHz) | Peak Power<br>(dBm) | Applicable Limits<br>(dBm) | Pass or Fail |
|--------------------|---------------------|----------------------------|--------------|
| 2.402              | -2.93               | 21                         | Pass         |
| 2.441              | 0.48                | 21                         | Pass         |
| 2.480              | 2.87                | 21                         | Pass         |

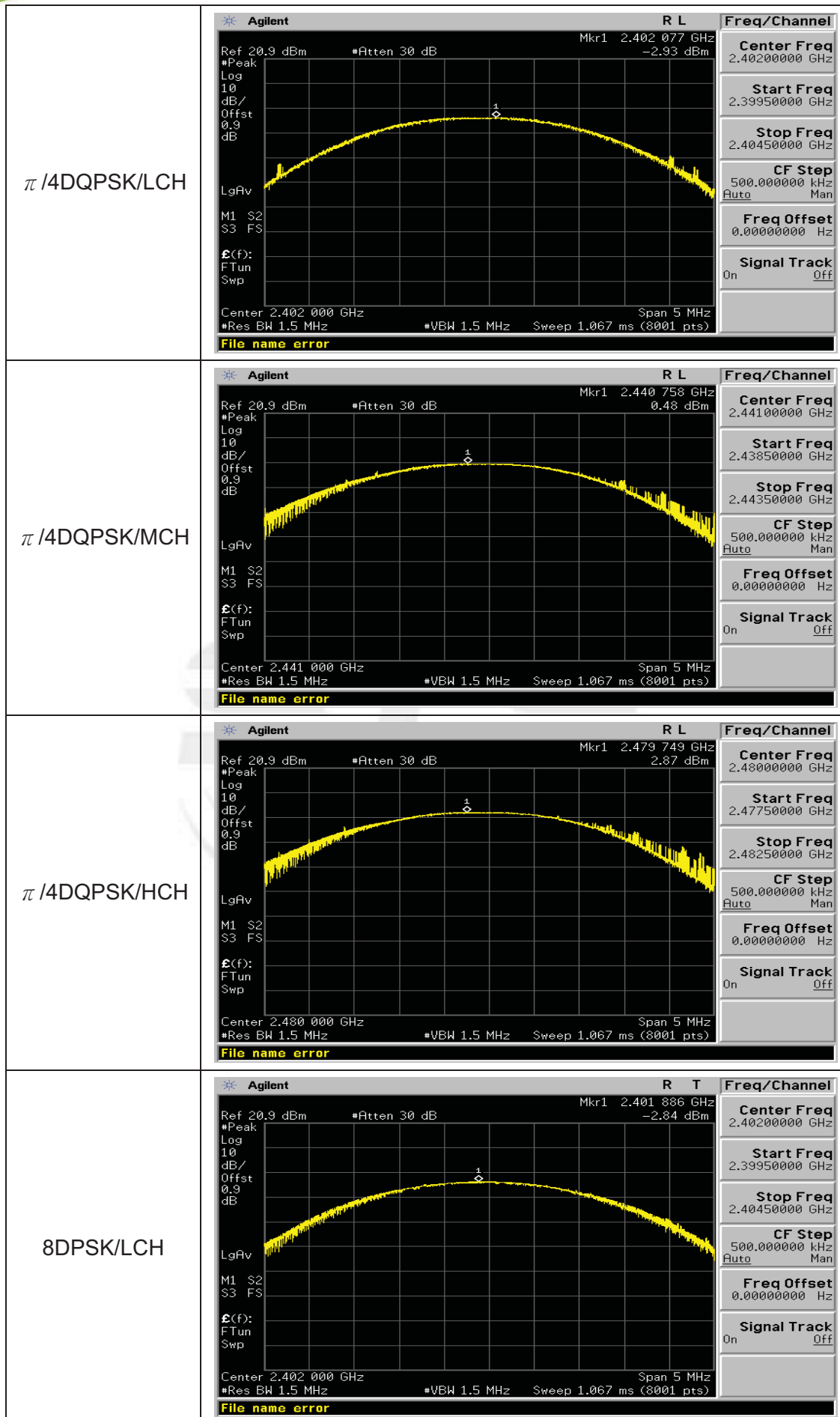
**PEAK OUTPUT POWER MEASUREMENT RESULT  
FOR 8-DPSK MODULATION**

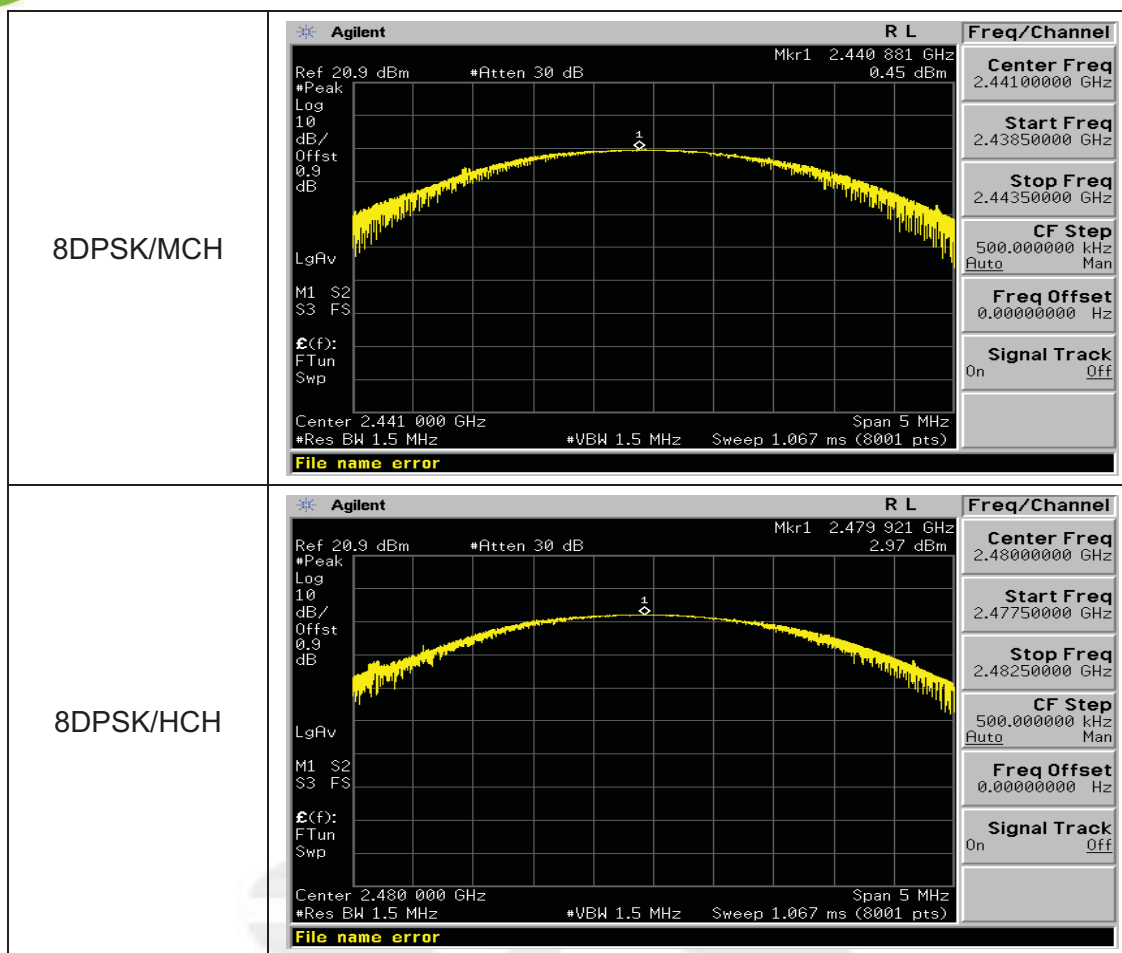
| Frequency<br>(GHz) | Peak Power<br>(dBm) | Applicable Limits<br>(dBm) | Pass or Fail |
|--------------------|---------------------|----------------------------|--------------|
| 2.402              | -2.84               | 21                         | Pass         |
| 2.441              | 0.45                | 21                         | Pass         |
| 2.480              | 2.97                | 21                         | Pass         |



## Test Graph









## 10. ANTENNA REQUIREMENT

### 10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

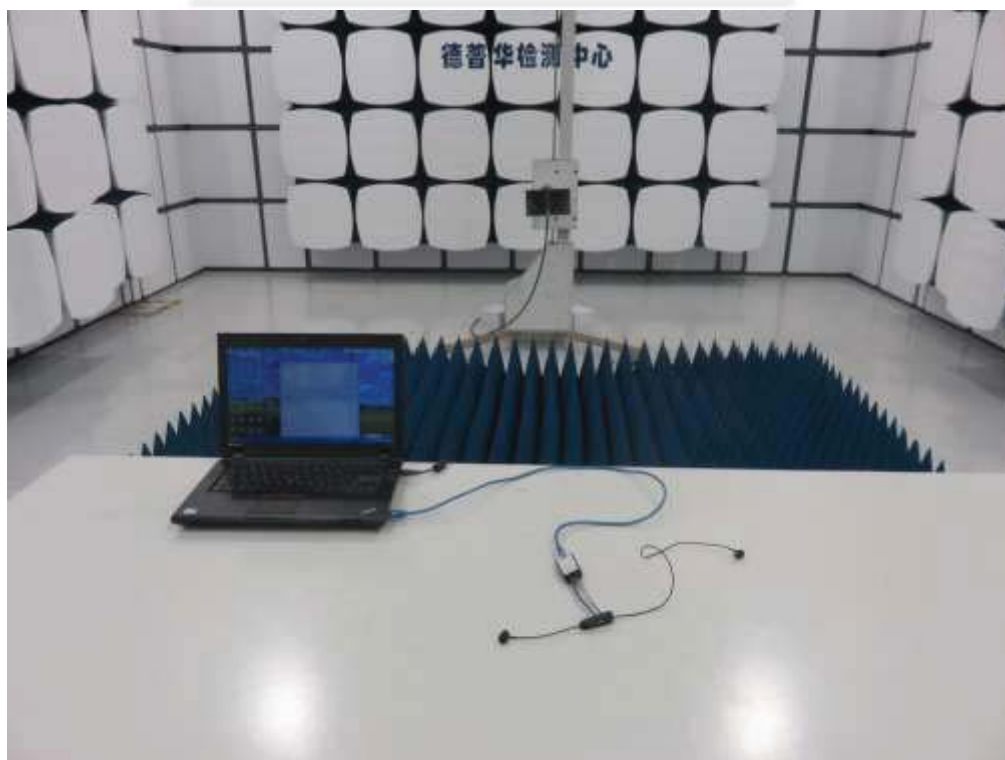
### 10.2 EUT ANTENNA

The EUT antenna is Ceramic Antenna. It comply with the standard requirement.



## APPENDIX-PHOTOS OF TEST SETUP

## Radiated Measurement Photos





### Conducted Measurement Photos

