

# FCC REPORT

**Applicant:** Interglobe Connection Corp

**Address of Applicant:** 7500 NW 25<sup>th</sup> Street 112 Miami, Florida 33122 USA

## Equipment Under Test (EUT)

**Product Name:** MOBILE PHONE

**Model No.:** SOLE-R150

**Trade mark:** SOLE

**FCC ID:** 2AC7ISOLE-R150

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.247

**Date of sample receipt:** 23 Jan., 2015

**Date of Test:** 23 Jan., to 07 Feb., 2015

**Date of report issued:** 08 Feb., 2015

**Test Result:** PASS \*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang  
Laboratory Manager

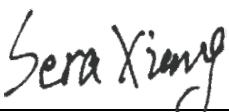
This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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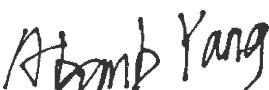
**2 Version**

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | 08 Feb., 2015 | Original    |
|             |               |             |
|             |               |             |
|             |               |             |
|             |               |             |

**Prepared by:**  
Sera Xiang**Date:**

08 Feb., 2015

Report Clerk

**Reviewed by:**  
Abimb Yang**Date:**

08 Feb., 2015

Project Engineer

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#### 4 Test Summary

| Test Item                        | Section in CFR 47 | Result |
|----------------------------------|-------------------|--------|
| Antenna Requirement              | 15.203/15.247 (c) | Pass   |
| AC Power Line Conducted Emission | 15.207            | Pass   |
| Conducted Peak Output Power      | 15.247 (b)(1)     | Pass   |
| 20dB Occupied Bandwidth          | 15.247 (a)(1)     | Pass   |
| Carrier Frequencies Separation   | 15.247 (a)(1)     | Pass   |
| Hopping Channel Number           | 15.247 (a)(1)     | Pass   |
| Dwell Time                       | 15.247 (a)(1)     | Pass   |
| Radiated Emission                | 15.205/15.209     | Pass   |
| Band Edge                        | 15.247(d)         | Pass   |

*Pass: The EUT complies with the essential requirements in the standard.*

## 5 General Information

### 5.1 Client Information

|                       |  |
|-----------------------|--|
| Applicant:            | Interglobe Connection Corp                                   |
| Address of Applicant: | 7500 NW 25 <sup>th</sup> Street 112 Miami, Florida 33122 USA |

### 5.2 General Description of E.U.T.

|                        |   |
|------------------------|---|
| Product Name:          | MOBILE PHONE  |
| Model No.:             | SOLE-R15  |
| Operation Frequency:   | 2402MHz~2480MHz   |
| Transfer rate:         | 1/2/3 Mbits/s   |
| Number of channel:     | 79  |
| Modulation type:       | GFSK, π/4-DQPSK, 8DPSK                                      |
| Modulation technology: | FHSS  |
| Antenna Type:          | Internal Antenna  |
| Antenna gain:          | 1.3 dBi   |
| Power supply:          | Rechargeable Li-ion Battery DC3.7V-500mAh                   |
| AC adapter:            | Input:100-240V AC,50/60Hz 0.15A<br>Output:5.0V DC MAX 500mA |

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

Remark: Channel 0, 39 &78 selected for GFSK,  $\pi/4$ -DQPSK and 8DPSK.

### 5.3 Test mode

|                    |  |
|--------------------|--|
| Transmitting mode: | Keep the EUT in transmitting mode with worst case data rate. |
| Remark             | GFSK (1 Mbps) is the worst case mode.                        |

The sample was placed 0.8m above the ground plane of 3m chamber\*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working with a fresh battery, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

### 5.4 Laboratory Facility

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

● **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012.

● **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

### 5.5 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282

Fax: +86-755-23116366

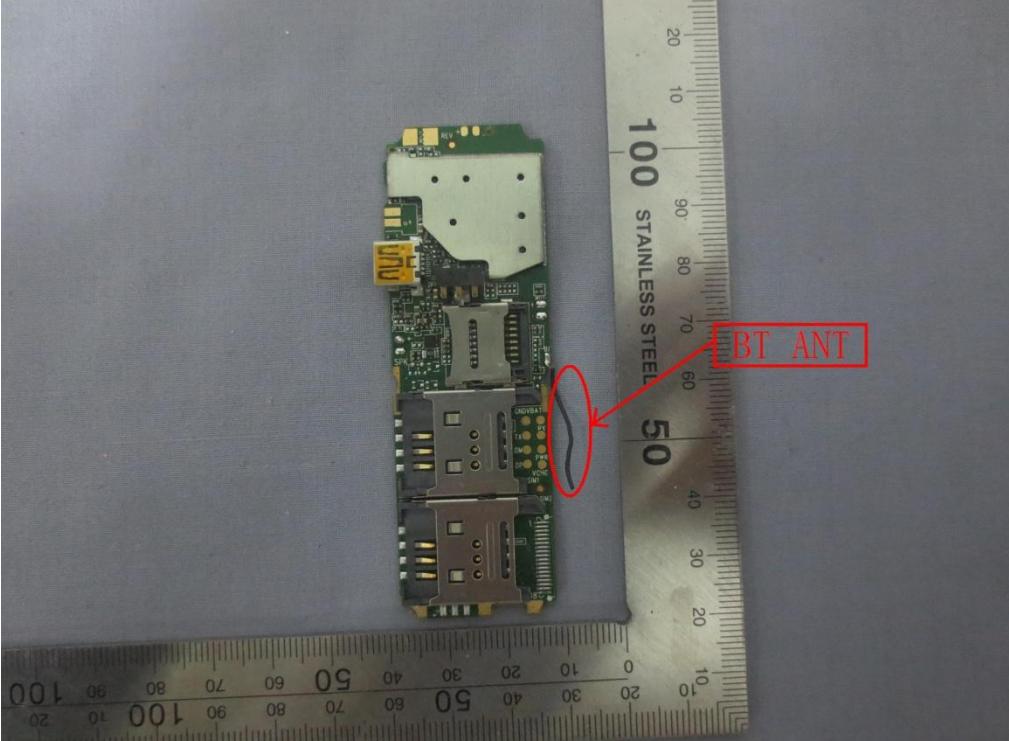
## 5.6 Test Instruments list

| <b>Radiated Emission:</b> |                                      |                                   |                             |                      |                             |                                 |
|---------------------------|--------------------------------------|-----------------------------------|-----------------------------|----------------------|-----------------------------|---------------------------------|
| <b>Item</b>               | <b>Test Equipment</b>                | <b>Manufacturer</b>               | <b>Model No.</b>            | <b>Inventory No.</b> | <b>Cal. Date (mm-dd-yy)</b> | <b>Cal. Due date (mm-dd-yy)</b> |
| 1                         | 3m Semi- Anechoic Chamber            | SAEMC                             | 9(L)*6(W)* 6(H)             | CCIS0001             | 08-23-2014                  | 08-22-2017                      |
| 2                         | BiConiLog Antenna                    | SCHWARZBECK MESS-ELEKTRONIK       | VULB9163                    | CCIS0005             | 04-19-2014                  | 04-19-2015                      |
| 3                         | Double -ridged waveguide horn        | SCHWARZBECK MESS-ELEKTRONIK       | BBHA9120D                   | CCIS0006             | 04-19-2014                  | 04-19-2015                      |
| 4                         | EMI Test Software                    | AUDIX                             | E3                          | N/A                  | N/A                         | N/A                             |
| 5                         | Amplifier(10kHz- 1.3GHz)             | HP                                | 8447D                       | CCIS0003             | 04-01-2014                  | 03-31-2015                      |
| 6                         | Amplifier(1GHz- 18GHz)               | Compliance Direction Systems Inc. | PAP-1G18                    | CCIS0011             | 06-09-2014                  | 06-05-2015                      |
| 7                         | Pre-amplifier (18-26GHz)             | Rohde & Schwarz                   | AFS33-18002<br>650-30-8P-44 | GTS218               | 04-01-2014                  | 03-31-2015                      |
| 8                         | Horn Antenna                         | ETS-LINDGREN                      | 3160                        | GTS217               | 03-30-2014                  | 03-29-2015                      |
| 9                         | Printer                              | HP                                | HP LaserJet P1007           | N/A                  | N/A                         | N/A                             |
| 10                        | Positioning Controller               | UC                                | UC3000                      | CCIS0015             | N/A                         | N/A                             |
| 11                        | Spectrum analyzer 9k-30GHz           | Rohde & Schwarz                   | FSP                         | CCIS0023             | 04-19-2014                  | 04-19-2015                      |
| 12                        | EMI Test Receiver                    | Rohde & Schwarz                   | ESPI                        | CCIS0022             | 04-01-2014                  | 03-31-2015                      |
| 13                        | Loop antenna                         | Laplace instrument                | RF300                       | EMC0701              | 04-01-2014                  | 03-31-2015                      |
| 14                        | Universal radio communication tester | Rhode & Schwarz                   | CMU200                      | CCIS0069             | 05-29-2014                  | 05-28-2015                      |
| 15                        | Signal Analyzer                      | Rohde & Schwarz                   | FSIQ3                       | CCIS0088             | 04-19-2014                  | 04-19-2015                      |

| <b>Conducted Emission:</b> |                       |                     |                       |                      |                             |                                 |
|----------------------------|-----------------------|---------------------|-----------------------|----------------------|-----------------------------|---------------------------------|
| <b>Item</b>                | <b>Test Equipment</b> | <b>Manufacturer</b> | <b>Model No.</b>      | <b>Inventory No.</b> | <b>Cal. Date (mm-dd-yy)</b> | <b>Cal. Due date (mm-dd-yy)</b> |
| 1                          | Shielding Room        | ZhongShuo Electron  | 11.0(L)x4.0(W)x3.0(H) | CCIS0061             | 11-10-2012                  | 11-09-2015                      |
| 2                          | EMI Test Receiver     | Rohde & Schwarz     | ESCI                  | CCIS0002             | 04-10-2014                  | 04-09-2015                      |
| 3                          | LISN                  | CHASE               | MN2050D               | CCIS0074             | 04-10-2014                  | 04-10-2015                      |
| 4                          | Coaxial Cable         | CCIS                | N/A                   | CCIS0086             | 04-01-2014                  | 03-31-2015                      |
| 5                          | EMI Test Software     | AUDIX               | E3                    | N/A                  | N/A                         | N/A                             |

## 6 Test results and Measurement Data

### 6.1 Antenna requirement

|  |   |
|--|---|
| <b>Standard requirement:</b>   | FCC Part 15 C Section 15.203 /247(c)  |
| 15.203 requirement:<br><i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i> |   |
| 15.247(c) (1)(i) requirement:<br><i>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</i>  |   |
| <b>E.U.T Antenna:</b>  | <p>The Bluetooth antenna is an integral antenna which permanently attached, and the best case gain of the antenna is 1.3 dBi.</p>  |

## 6.2 Conducted Emissions

|                       |  |              |           |
|-----------------------|--|--------------|-----------|
| Test Requirement:     | FCC Part 15 C Section 15.207           |              |           |
| Test Method:          | ANSI C63.4:2003                        |              |           |
| Test Frequency Range: | 150 kHz to 30 MHz                      |              |           |
| Class / Severity:     | Class B                                |              |           |
| Receiver setup:       | RBW=9 kHz, VBW=30 kHz, Sweep time=auto |              |           |
| Limit:                | Frequency range (MHz)                  | Limit (dBuV) |           |
|                       |  | Quasi-peak   | Average   |
|                       | 0.15-0.5                               | 66 to 56*    | 56 to 46* |
|                       | 0.5-5                                  | 56           | 46        |
|                       | 5-30                                   | 60           | 50        |

\* Decreases with the logarithm of the frequency.

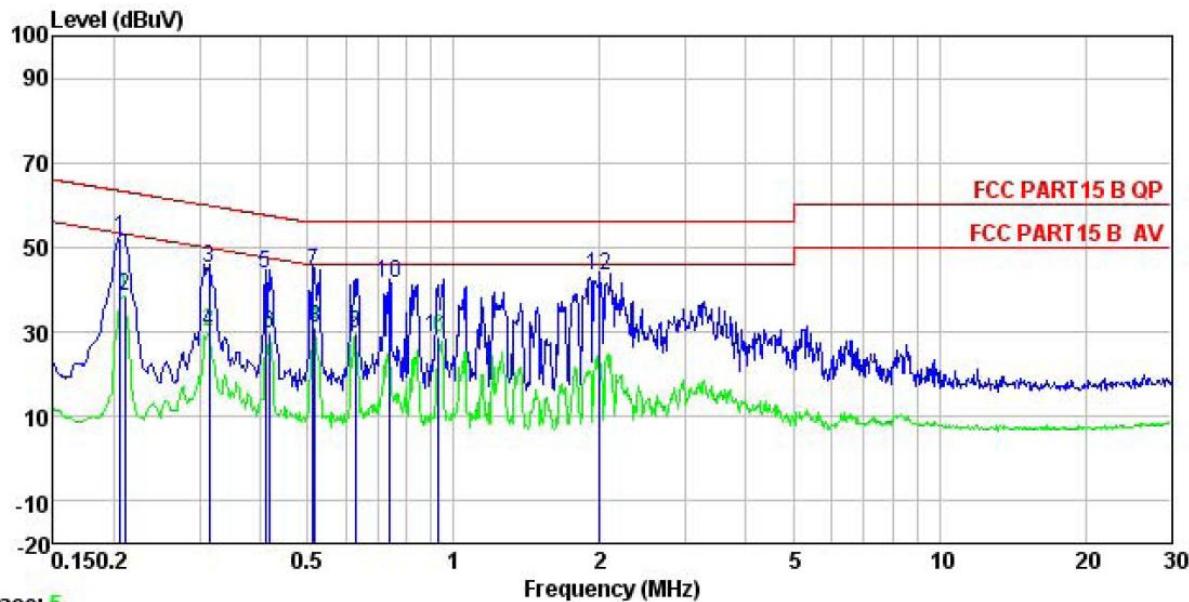
|             |   |
|-------------|---|
| Test setup: | <p>Reference Plane</p> <p>LISN</p> <p>AUX Equipment</p> <p>E.U.T</p> <p>EMI Receiver</p> <p>Filter</p> <p>AC power</p> <p>Test table/Insulation plane</p> <p>40cm</p> <p>80cm</p> <p>Test table height=0.8m</p> |
|-------------|---|

*Remark*  
E.U.T: Equipment Under Test  
LISN: Line Impedance Stabilization Network  
Test table height=0.8m

|                   |   |
|-------------------|---|
| Test procedure:   | <ol style="list-style-type: none"> <li>The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.</li> </ol> |
| Test Instruments: | Refer to section 5.7 for details  |
| Test mode:        | Bluetooth (Continuous transmitting) mode  |
| Test results:     | Pass  |

## Measurement Data

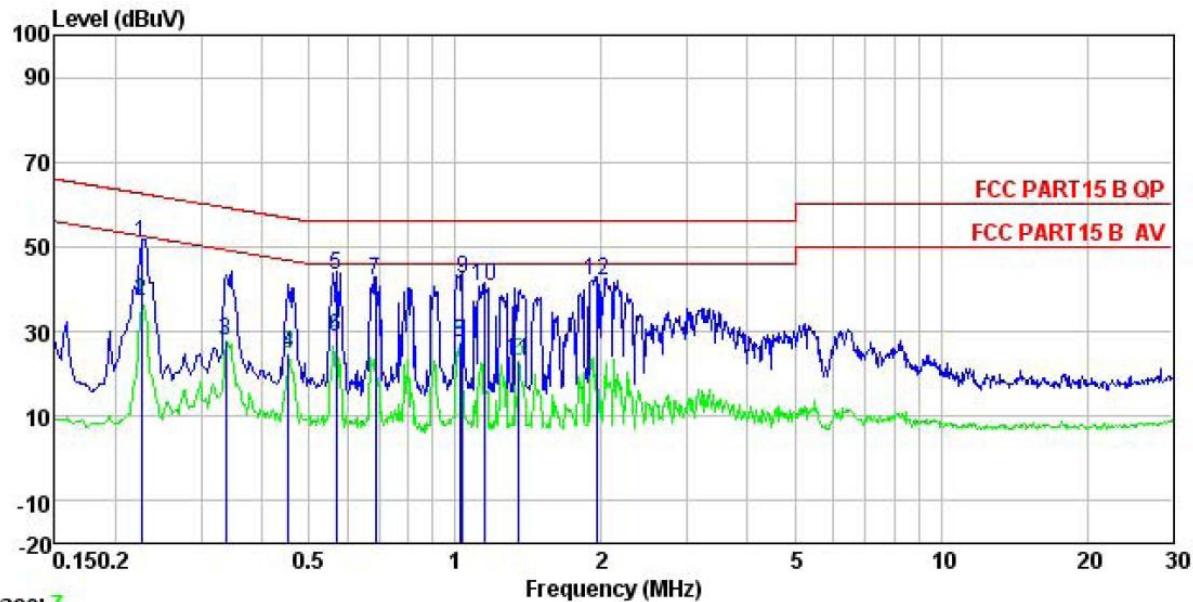
Line:



Trace: 5

Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN LINE  
 Job No. : 0064RF  
 EUT : MOBILE PHONE  
 Model : SOLE R150  
 Test Mode : BT mode  
 Power Rating : AC 120/60Hz  
 Environment : Temp: 23 °C Huni:56% Atmos:101KPa  
 Test Engineer: A-bomb  
 Remark :

| Freq | Read  | LISN   | Cable | Limit | Over  | Remark               |
|------|-------|--------|-------|-------|-------|----------------------|
|      | Level | Factor | Loss  |       |       |                      |
| MHz  | dBuV  |        | dB    | dBuV  | dBuV  | dB                   |
| 1    | 0.206 | 41.30  | 0.28  | 10.76 | 52.34 | 63.36 -11.02 QP      |
| 2    | 0.211 | 27.54  | 0.28  | 10.76 | 38.58 | 53.18 -14.60 Average |
| 3    | 0.313 | 34.05  | 0.26  | 10.74 | 45.05 | 59.88 -14.83 QP      |
| 4    | 0.313 | 18.91  | 0.26  | 10.74 | 29.91 | 49.88 -19.97 Average |
| 5    | 0.410 | 32.62  | 0.28  | 10.72 | 43.62 | 57.64 -14.02 QP      |
| 6    | 0.417 | 18.72  | 0.28  | 10.73 | 29.73 | 47.51 -17.78 Average |
| 7    | 0.513 | 33.35  | 0.28  | 10.76 | 44.39 | 56.00 -11.61 QP      |
| 8    | 0.518 | 19.83  | 0.28  | 10.76 | 30.87 | 46.00 -15.13 Average |
| 9    | 0.627 | 18.37  | 0.24  | 10.77 | 29.38 | 46.00 -16.62 Average |
| 10   | 0.739 | 30.37  | 0.22  | 10.79 | 41.38 | 56.00 -14.62 QP      |
| 11   | 0.933 | 17.59  | 0.24  | 10.85 | 28.68 | 46.00 -17.32 Average |
| 12   | 2.001 | 32.13  | 0.26  | 10.96 | 43.35 | 56.00 -12.65 QP      |

**Neutral:**

Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN NEUTRAL

Job No. : 0064RF

EUT : MOBILE PHONE

Model : SOLE R150

Test Mode : BT mode

Power Rating : AC 120/60Hz

Environment : Temp: 23 °C Humi:56% Atmos:101KPa

Test Engineer: A-bomb

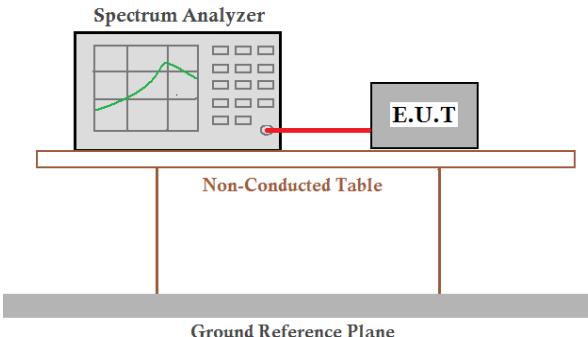
Remark :

| Freq | Read  | LISN   | Cable | Limit | Over  | Remark               |
|------|-------|--------|-------|-------|-------|----------------------|
|      | Level | Factor | Loss  |       |       |                      |
| MHz  | dBuV  | dB     | dB    | dBuV  | dBuV  | dB                   |
| 1    | 0.226 | 39.90  | 0.25  | 10.75 | 50.90 | 62.61 -11.71 QP      |
| 2    | 0.226 | 26.05  | 0.25  | 10.75 | 37.05 | 52.61 -15.56 Average |
| 3    | 0.337 | 16.83  | 0.26  | 10.73 | 27.82 | 49.27 -21.45 Average |
| 4    | 0.454 | 13.72  | 0.27  | 10.74 | 24.73 | 46.80 -22.07 Average |
| 5    | 0.570 | 32.12  | 0.25  | 10.77 | 43.14 | 56.00 -12.86 QP      |
| 6    | 0.570 | 17.63  | 0.25  | 10.77 | 28.65 | 46.00 -17.35 Average |
| 7    | 0.686 | 31.10  | 0.19  | 10.77 | 42.06 | 56.00 -13.94 QP      |
| 8    | 1.021 | 16.25  | 0.22  | 10.87 | 27.34 | 46.00 -18.66 Average |
| 9    | 1.037 | 31.50  | 0.22  | 10.87 | 42.59 | 56.00 -13.41 QP      |
| 10   | 1.147 | 29.47  | 0.23  | 10.89 | 40.59 | 56.00 -15.41 QP      |
| 11   | 1.352 | 11.73  | 0.25  | 10.91 | 22.89 | 46.00 -23.11 Average |
| 12   | 1.959 | 30.70  | 0.29  | 10.96 | 41.95 | 56.00 -14.05 QP      |

**Notes:**

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss

### 6.3 Conducted Output Power

|                   |  |
|-------------------|--|
| Test Requirement: | FCC Part 15 C Section 15.247 (b)(3)  |
| Test Method:      | ANSI C63.4:2003 and DA00-705   |
| Receiver setup:   | RBW=1MHz, VBW=3MHz, Detector=Peak (If 20dB BW ≤ 1 MHz)<br>RBW=3MHz, VBW=10MHz, Detector=Peak (If 20dB BW > 1 MHz and < 3MHz)   |
| Limit:            | 125 mW(21 dBm)   |
| Test setup:       |  <p>The diagram illustrates the test setup for conducted output power. A Spectrum Analyzer is positioned above a Non-Conducted Table. A red line connects the Spectrum Analyzer to the Equipment Under Test (E.U.T), which is a gray rectangular box. The entire setup rests on a horizontal ground reference plane.</p> |
| Test Instruments: | Refer to section 5.7 for details   |
| Test mode:        | Non-hopping mode   |
| Test results:     | Pass   |

#### Measurement Data

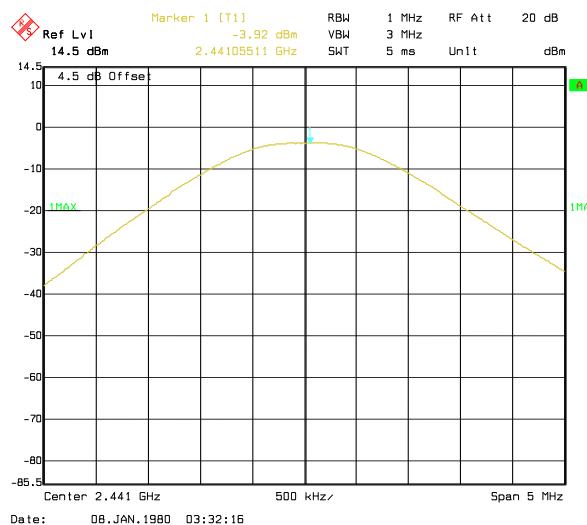
| GFSK mode           |                         |             |        |
|---------------------|-------------------------|-------------|--------|
| Test channel        | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest              | -5.37                   | 21.00       | Pass   |
| Middle              | -3.92                   | 21.00       | Pass   |
| Highest             | -3.44                   | 21.00       | Pass   |
| $\pi/4$ -DQPSK mode |                         |             |        |
| Test channel        | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest              | -5.68                   | 21.00       | Pass   |
| Middle              | -4.52                   | 21.00       | Pass   |
| Highest             | -4.04                   | 21.00       | Pass   |
| 8DPSK mode          |                         |             |        |
| Test channel        | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest              | -5.80                   | 21.00       | Pass   |
| Middle              | -4.52                   | 21.00       | Pass   |
| Highest             | -3.92                   | 21.00       | Pass   |

Test plot as follows:

Modulation mode: GFSK



Lowest channel

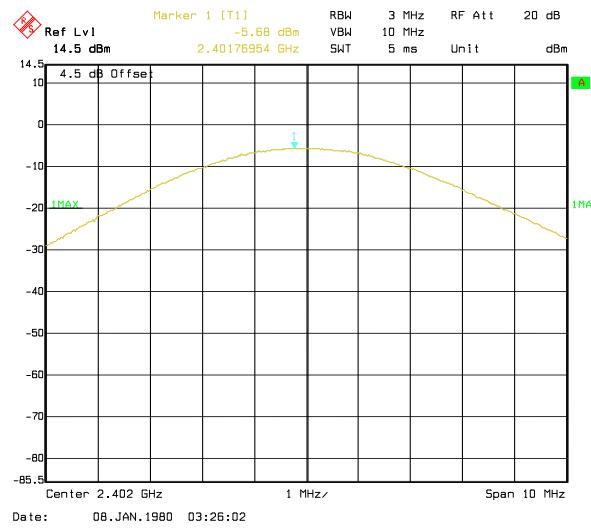


Middle channel

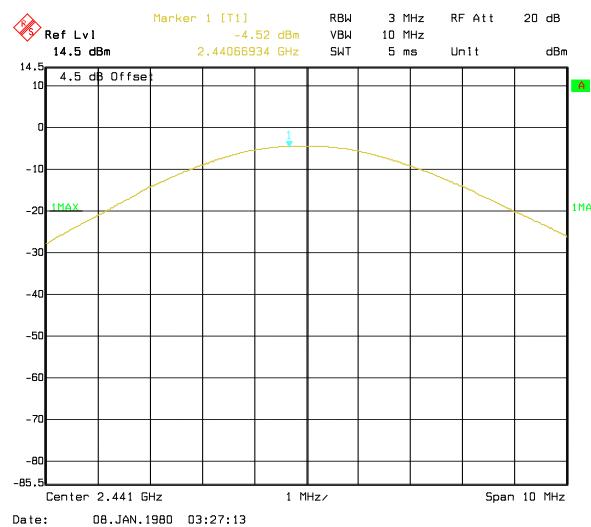


Highest channel

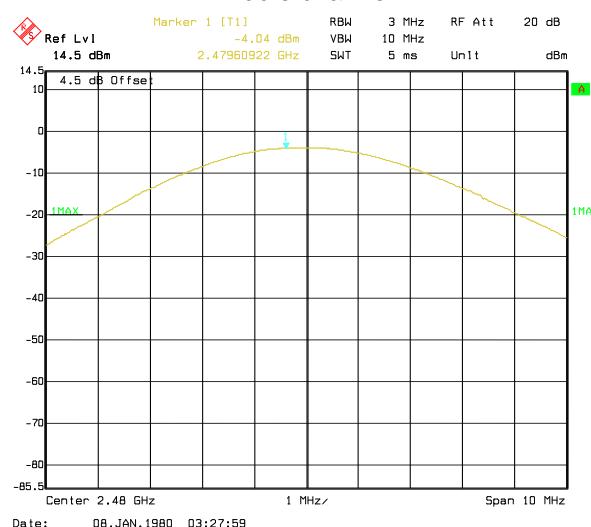
### Modulation mode: π/4-DQPSK



### Lowest channel

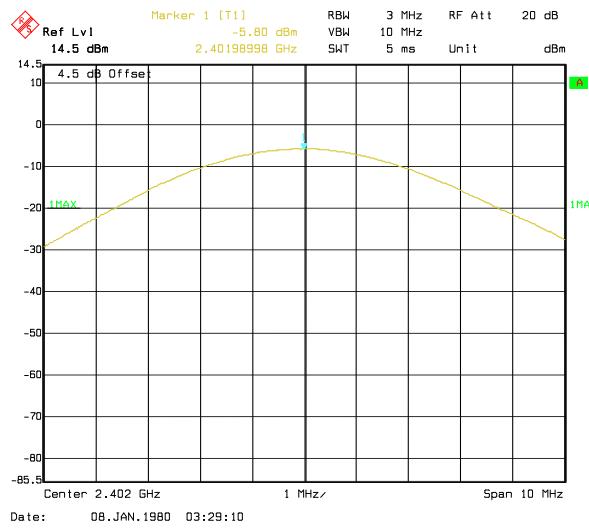


### Middle channel

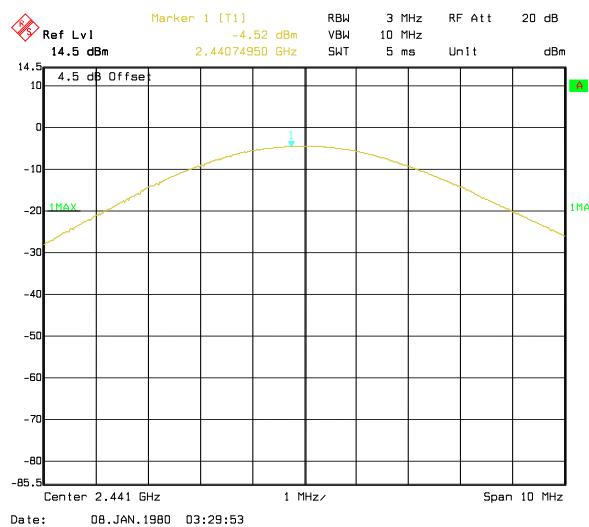


### Highest channel

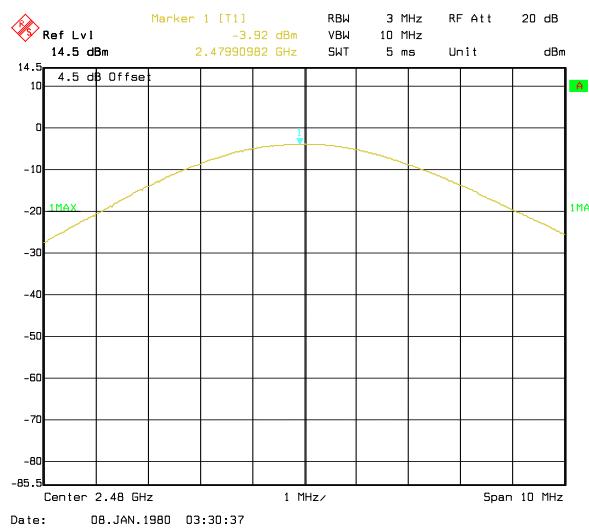
### Modulation mode: 8DPSK



### Lowest channel



### Middle channel



### Highest channel

## 6.4 20dB Occupy Bandwidth

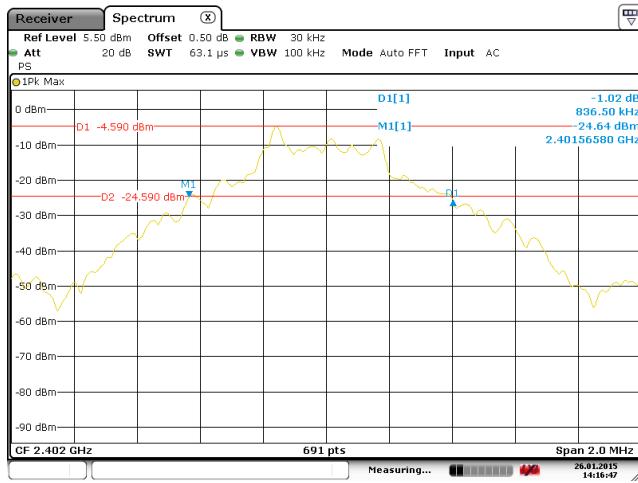
|                   |  |
|-------------------|--|
| Test Requirement: | FCC Part 15 C Section 15.247 (a)(1)  |
| Test Method:      | ANSI C63.4:2003 and DA00-705   |
| Receiver setup:   | RBW=30 kHz, VBW=100 kHz, detector=Peak   |
| Limit:            | NA   |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is positioned at the top left, displaying a green waveform on its screen. A red line extends from the analyzer's output port to a grey rectangular box labeled 'E.U.T' (Equipment Under Test). This 'E.U.T' box rests on a light blue rectangular platform labeled 'Non-Conducted Table'. Below the table is a thick grey horizontal bar labeled 'Ground Reference Plane'.</p> |
| Test Instruments: | Refer to section 5.7 for details   |
| Test mode:        | Non-hopping mode   |
| Test results:     | Pass   |

### Measurement Data

| Test channel | 20dB Occupy Bandwidth (kHz) |                |         |
|--------------|-----------------------------|----------------|---------|
|              | GFSK                        | $\pi/4$ -DQPSK | 8DPSK   |
| Lowest       | 836.50                      | 1114.30        | 1166.40 |
| Middle       | 839.40                      | 1114.30        | 1166.40 |
| Highest      | 836.50                      | 1120.10        | 1166.40 |

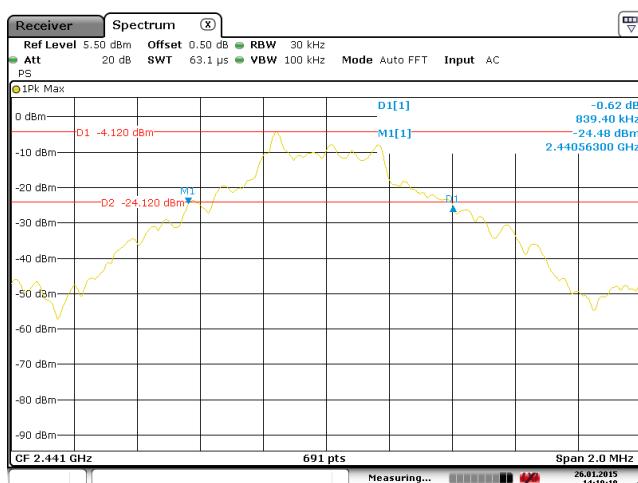
Test plot as follows:

Modulation mode: GFSK



Date: 26.JAN.2015 14:16:47

### Lowest channel



Date: 26.JAN.2015 14:19:10

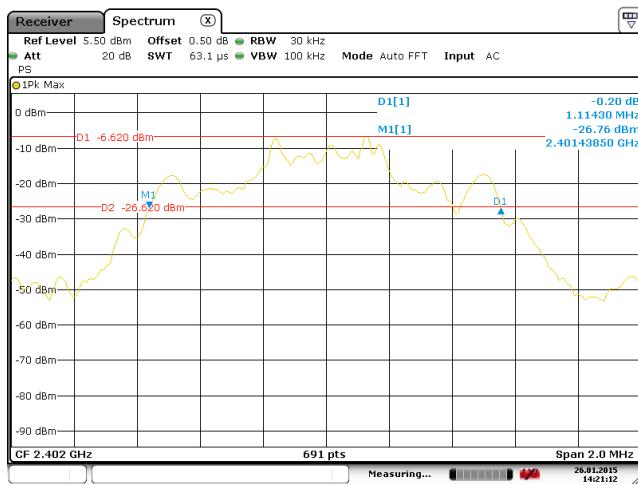
### Middle channel



Date: 26.JAN.2015 14:19:57

### Highest channel

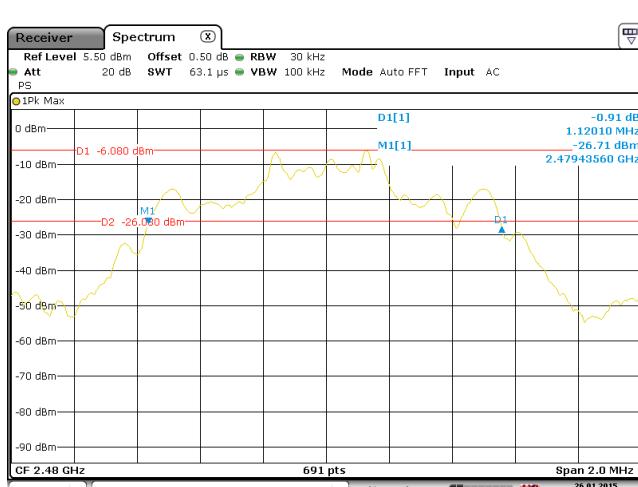
Modulation mode:  $\pi/4$ -DQPSK



Lowest channel

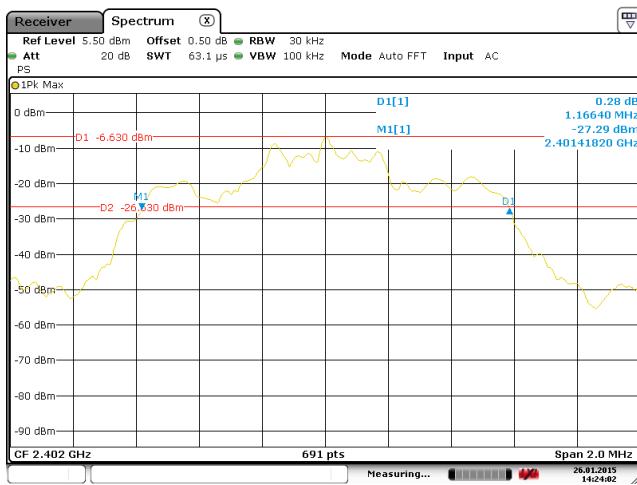


Middle channel



Highest channel

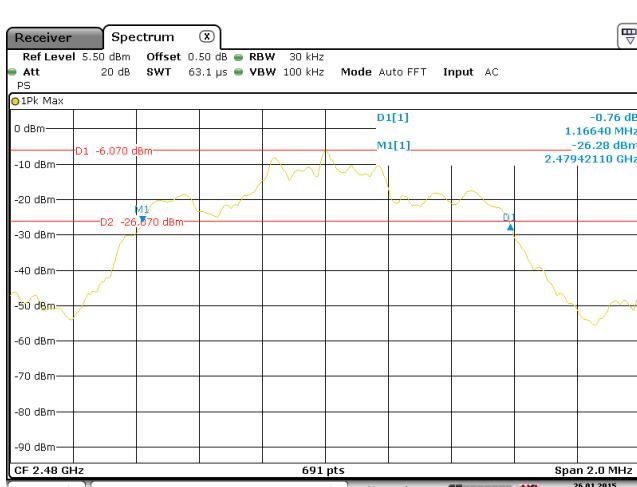
Modulation mode: 8DPSK



Lowest channel

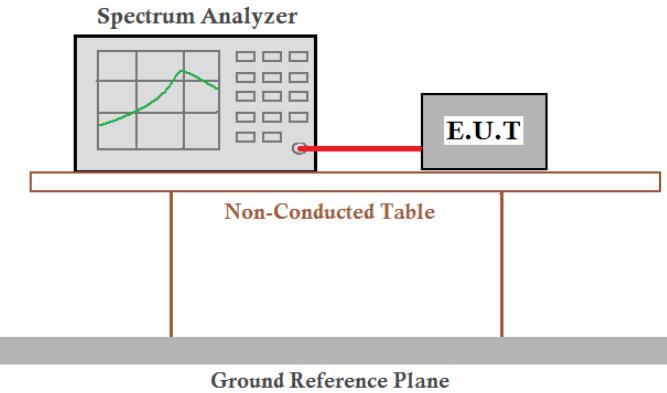


Middle channel



Highest channel

## 6.5 Carrier Frequencies Separation

|                   |  |
|-------------------|--|
| Test Requirement: | FCC Part 15 C Section 15.247 (a)(1)  |
| Test Method:      | ANSI C63.4:2003 and DA00-705   |
| Receiver setup:   | RBW=100 kHz, VBW=300 kHz, detector=Peak  |
| Limit:            | 0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)                       |
| Test setup:       |  |
| Test Instruments: | Refer to section 5.7 for details   |
| Test mode:        | Hopping mode   |
| Test results:     | Pass   |

## Measurement Data

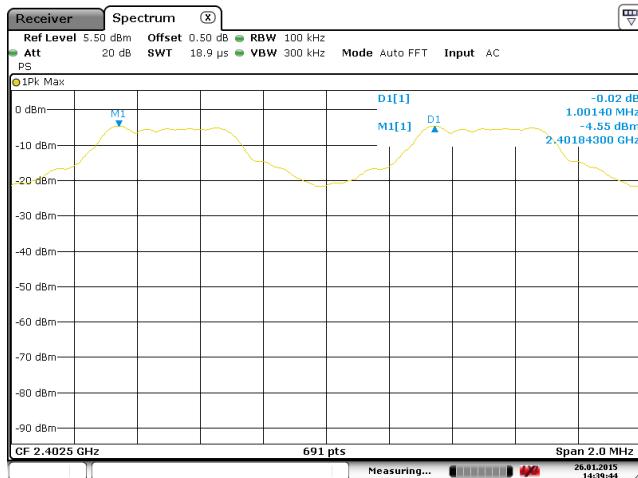
| GFSK mode           |                                      |             |        |
|---------------------|--------------------------------------|-------------|--------|
| Test channel        | Carrier Frequencies Separation (kHz) | Limit (kHz) | Result |
| Lowest              | 1001                                 | 559.60      | Pass   |
| Middle              | 1001                                 | 559.60      | Pass   |
| Highest             | 1001                                 | 559.60      | Pass   |
| $\pi/4$ -DQPSK mode |                                      |             |        |
| Test channel        | Carrier Frequencies Separation (kHz) | Limit (kHz) | Result |
| Lowest              | 1001                                 | 746.73      | Pass   |
| Middle              | 1001                                 | 746.73      | Pass   |
| Highest             | 1001                                 | 746.73      | Pass   |
| 8DPSK mode          |                                      |             |        |
| Test channel        | Carrier Frequencies Separation (kHz) | Limit (kHz) | Result |
| Lowest              | 1001                                 | 777.60      | Pass   |
| Middle              | 1001                                 | 777.60      | Pass   |
| Highest             | 1001                                 | 777.60      | Pass   |

Note: According to section 6.4

| Mode           | 20dB bandwidth (kHz)<br>(worse case) | Limit (kHz)<br>(Carrier Frequencies Separation) |
|----------------|--------------------------------------|---|
| GFSK           | 839.40                               | 559.60  |
| $\pi/4$ -DQPSK | 1120.10                              | 746.73  |
| 8DPSK          | 1166.40                              | 777.60  |

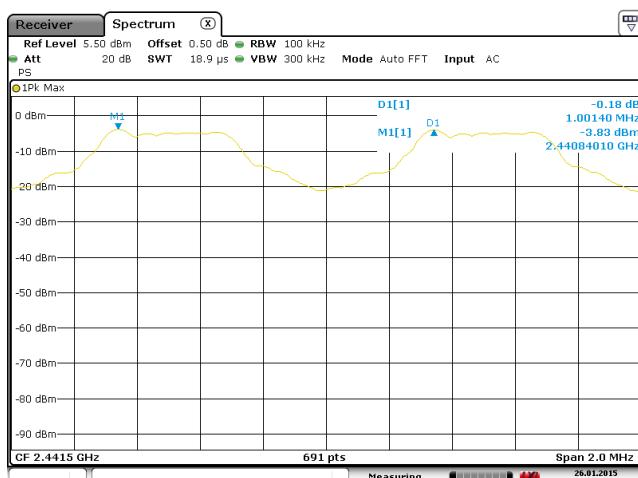
Test plot as follows:

Modulation mode: GFSK



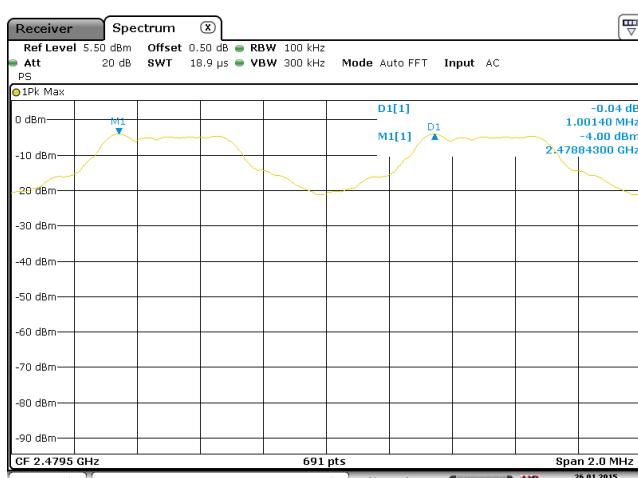
Date: 26.JAN.2015 14:39:44

Lowest channel



Date: 26.JAN.2015 14:41:18

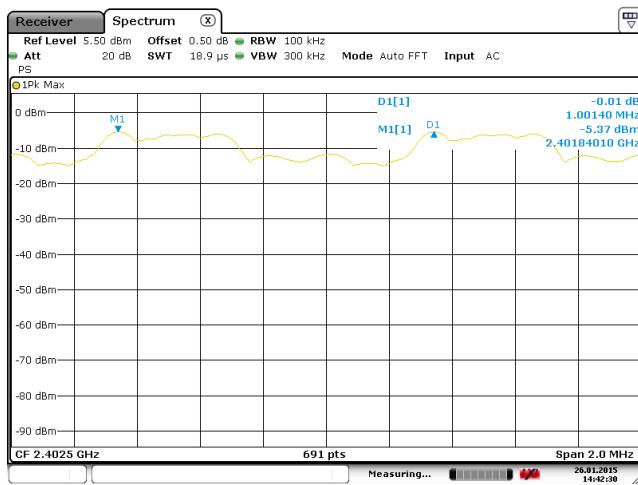
Middle channel



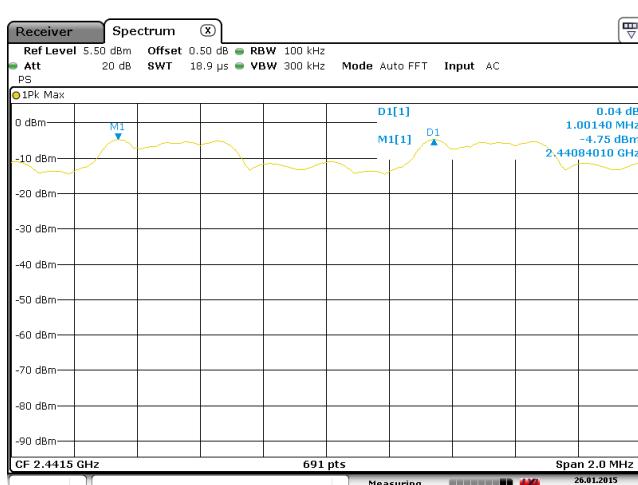
Date: 26.JAN.2015 14:41:50

Highest channel

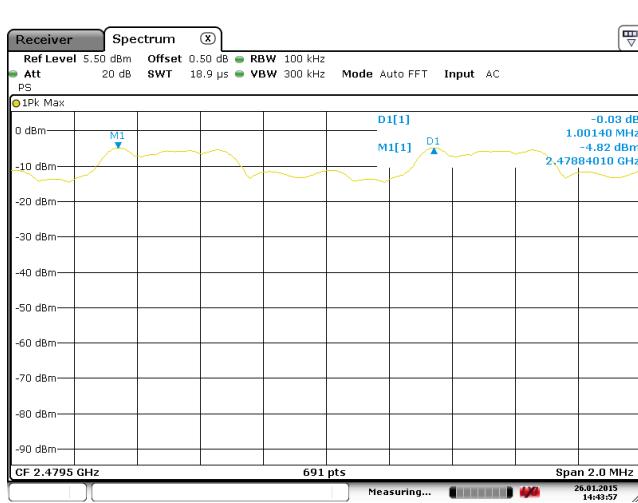
Modulation mode:  $\pi/4$ -DQPSK



Lowest channel

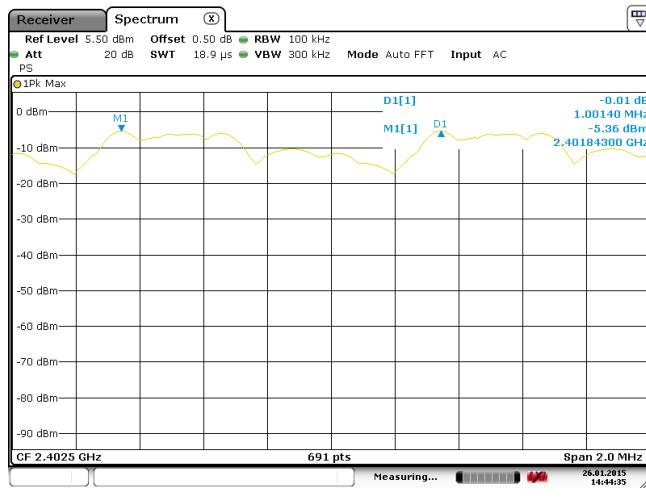


Middle channel

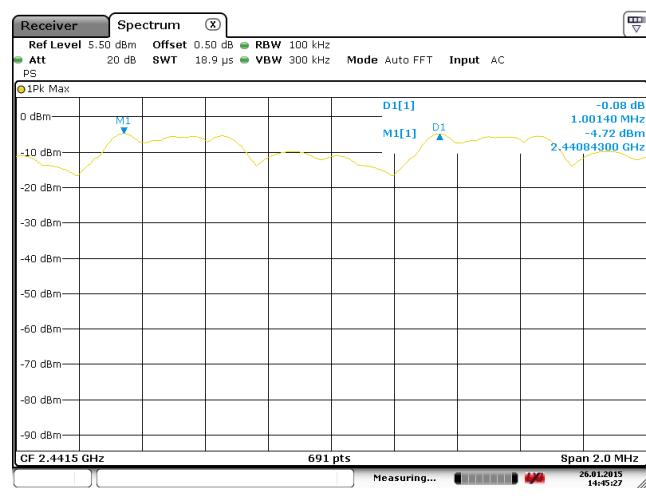


Highest channel

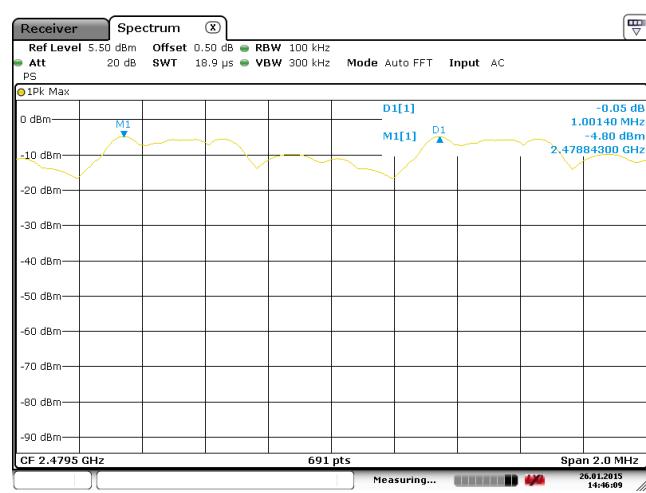
## Modulation mode: 8DPSK



## Lowest channel

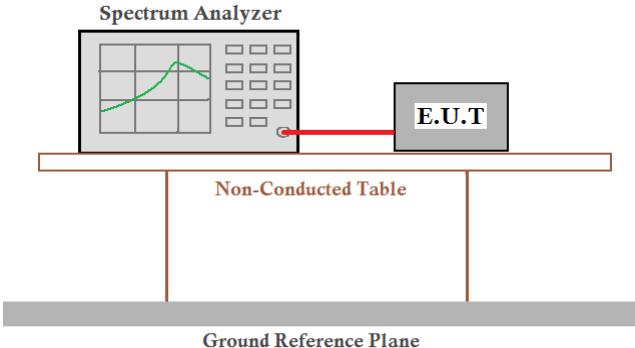


## Middle channel



## Highest channel

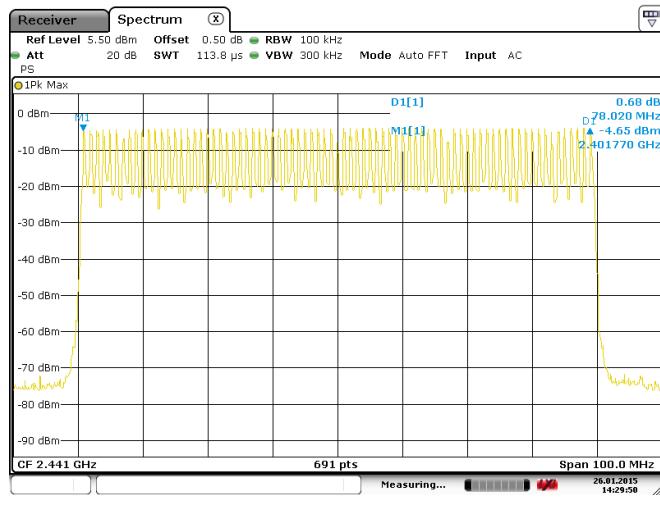
## 6.6 Hopping Channel Number

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (a)(1)   |
| Test Method:      | ANSI C63.4:2003 and DA00-705  |
| Receiver setup:   | RBW=100 kHz, VBW=300 kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak  |
| Limit:            | 15 channels   |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to the E.U.T (Equipment Under Test) via a coaxial cable. The E.U.T is placed on a Non-Conducted Table. The entire assembly sits on a Ground Reference Plane.</p> |
| Test Instruments: | Refer to section 5.7 for details  |
| Test mode:        | Hopping mode  |
| Test results:     | Pass  |

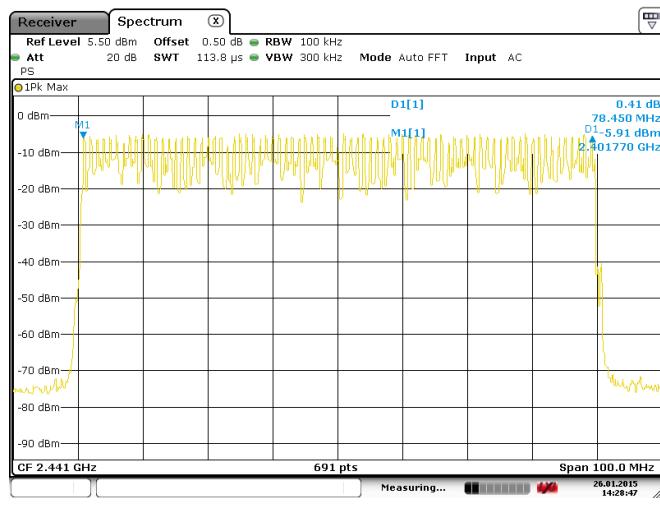
### Measurement Data:

| Mode                   | Hopping channel numbers | Limit | Result |
|------------------------|-------------------------|-------|--------|
| GFSK, π/4-DQPSK, 8DPSK | 79                      | 15    | Pass   |

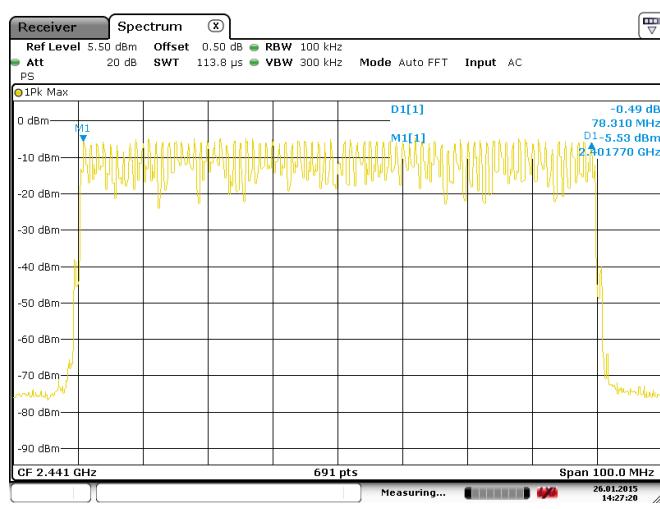
## GFSK



## $\pi/4$ -DQPSK



## 8DPSK



## 6.7 Dwell Time

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (a)(1)   |
| Test Method:      | ANSI C63.4:2003 and KDB DA00-705  |
| Receiver setup:   | RBW=1 MHz, VBW=1 MHz, Span=0 Hz, Detector=Peak  |
| Limit:            | 0.4 Second  |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to the E.U.T (Equipment Under Test) via a coaxial cable. The E.U.T is placed on a Non-Conducted Table. The entire assembly sits on a Ground Reference Plane.</p> |
| Test Instruments: | Refer to section 5.7 for details  |
| Test mode:        | Hopping mode  |
| Test results:     | Pass  |

### Measurement Data (Worse case)

| Mode           | Packet | Dwell time (second) | Limit (second) | Result |
|----------------|--------|---------------------|----------------|--------|
| GFSK           | DH1    | 0.12576             | 0.4            | Pass   |
|                | DH3    | 0.26624             |                |        |
|                | DH5    | 0.31083             |                |        |
| $\pi/4$ -DQPSK | 2-DH1  | 0.12800             | 0.4            | Pass   |
|                | 2-DH3  | 0.26928             |                |        |
|                | 2-DH5  | 0.31339             |                |        |
| 8DPSK          | 3-DH1  | 0.12896             | 0.4            | Pass   |
|                | 3-DH3  | 0.26528             |                |        |
|                | 3-DH5  | 0.31424             |                |        |

For GFSK,  $\pi/4$ -DQPSK and 8DPSK:

The test period:  $T = 0.4$  Second/Channel  $\times 79$  Channel = 31.6 s

$$\text{DH1 time slot} = 0.393 * (1600 / (2 * 79)) * 31.6 = 125.76\text{ms}$$

$$\text{DH3 time slot} = 1.664 * (1600 / (4 * 79)) * 31.6 = 266.24\text{ms}$$

$$\text{DH5 time slot} = 2.914 * (1600 / (6 * 79)) * 31.6 = 310.83\text{ms}$$

$$2-\text{DH1 time slot} = 0.400 * (1600 / (2 * 79)) * 31.6 = 128.00\text{ms}$$

$$2-\text{DH3 time slot} = 1.683 * (1600 / (4 * 79)) * 31.6 = 269.28\text{ms}$$

$$2-\text{DH5 time slot} = 2.938 * (1600 / (6 * 79)) * 31.6 = 313.39\text{ms}$$

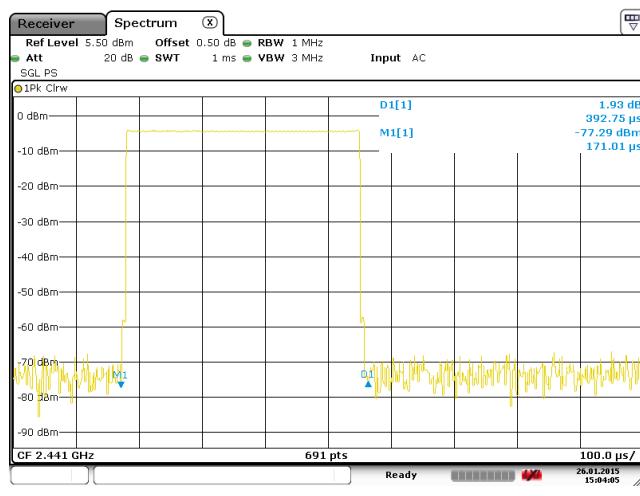
$$3-\text{DH1 time slot} = 0.403 * (1600 / (2 * 79)) * 31.6 = 128.96\text{ms}$$

$$3-\text{DH3 time slot} = 1.658 * (1600 / (4 * 79)) * 31.6 = 265.28\text{ms}$$

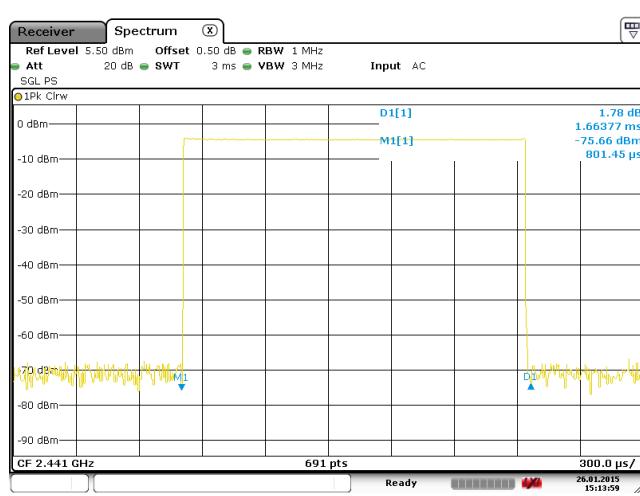
$$3-\text{DH5 time slot} = 2.946 * (1600 / (6 * 79)) * 31.6 = 314.24\text{ms}$$

Test plot as follows:

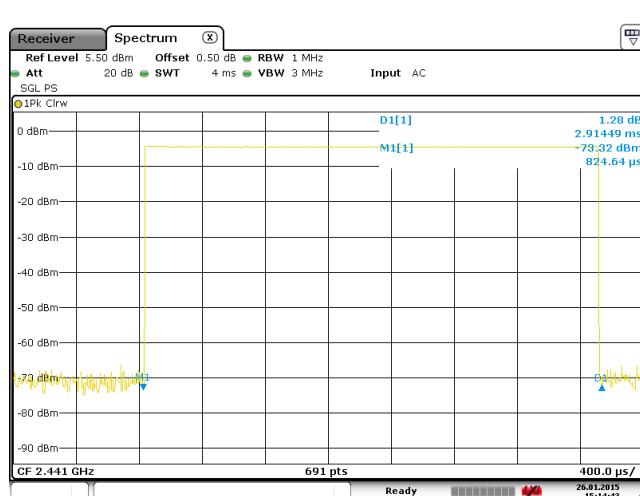
Modulation mode: GFSK



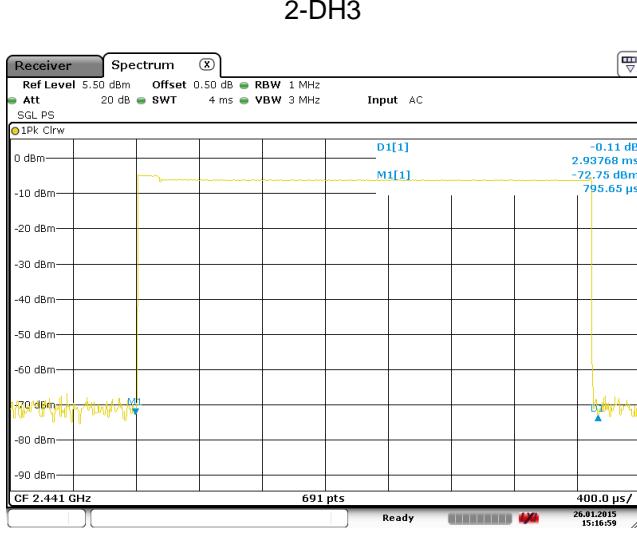
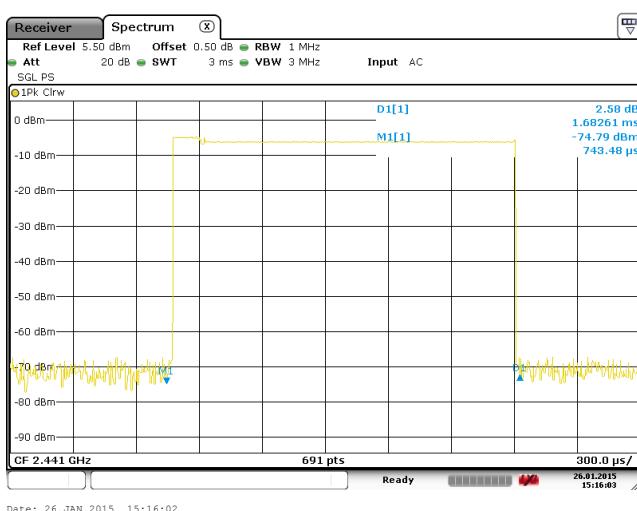
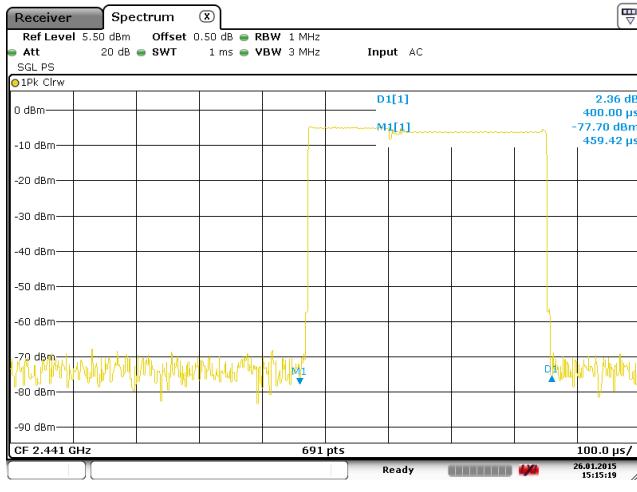
DH1



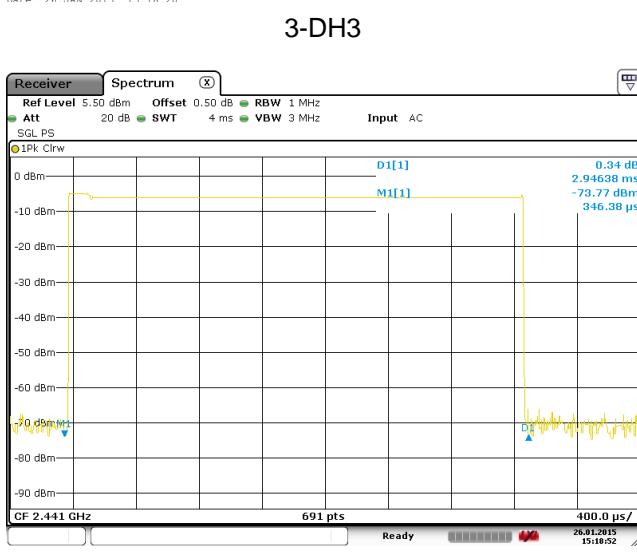
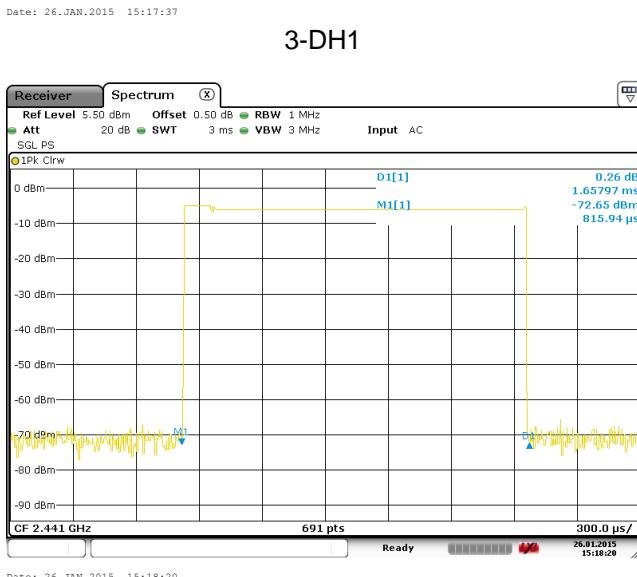
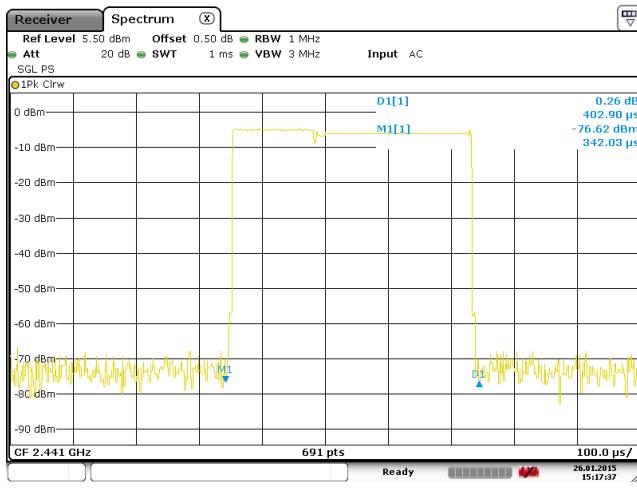
DH3



DH5

Modulation mode:  $\pi/4$ -DQPSK

Modulation mode: 8DPSK

**3-DH5**

## 6.8 Pseudorandom Frequency Hopping Sequence

**Test Requirement:**
**FCC Part 15 C Section 15.247 (a)(1) requirement:**

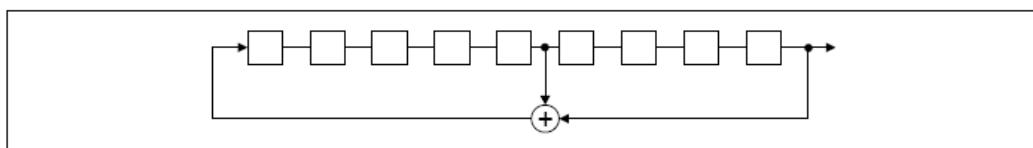
*Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.*

*Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.*

**EUT Pseudorandom Frequency Hopping Sequence**

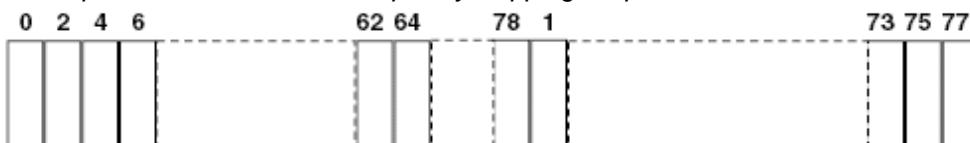
*The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.*

- Number of shift register stages: 9
- Length of pseudo-random sequence:  $2^9 - 1 = 511$  bits
- Longest sequence of zeros: 8 (non-inverted signal)



*Linear Feedback Shift Register for Generation of the PRBS sequence*

*An example of Pseudorandom Frequency Hopping Sequence as follow:*

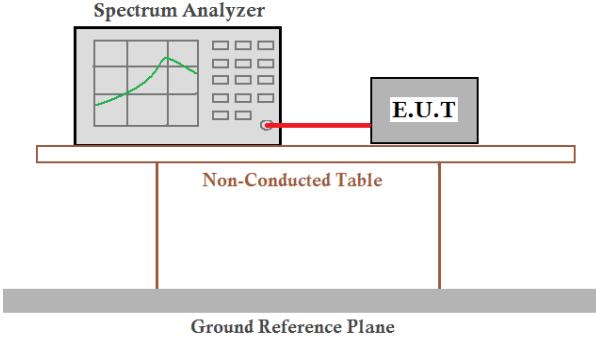


*Each frequency used equally on the average by each transmitter.*

*The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.*

## 6.9 Band Edge

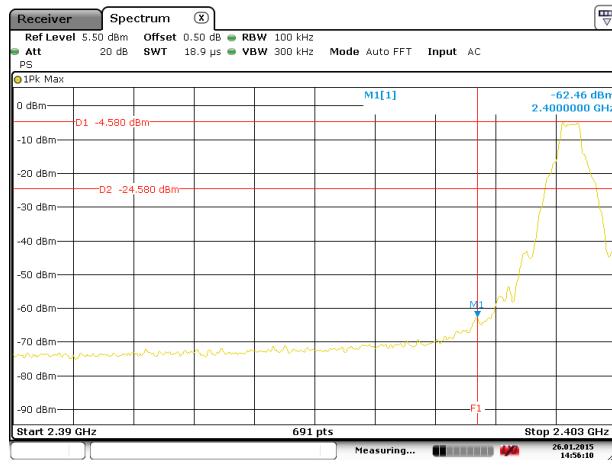
### 6.9.1 Conducted Emission Method

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (d)  |
| Test Method:      | ANSI C63.4:2003 and DA00-705  |
| Receiver setup:   | RBW=100 kHz, VBW=300 kHz, Detector=Peak   |
| Limit:            | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test setup:       |   |
| Test Instruments: | Refer to section 5.7 for details  |
| Test mode:        | Non-hopping mode and hopping mode   |
| Test results:     | Pass  |

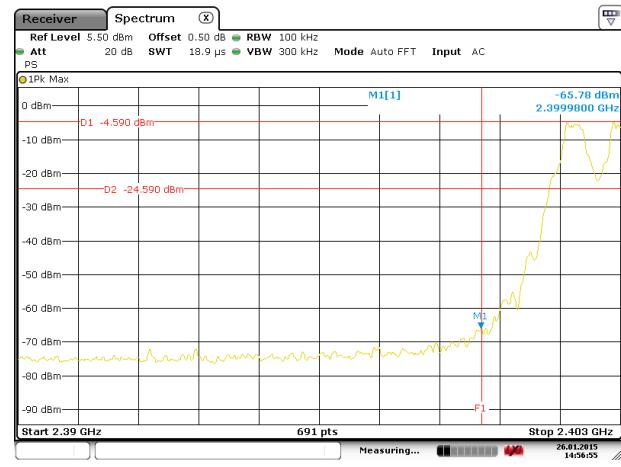
**Test plot as follows:**

## GFSK

### Lowest Channel

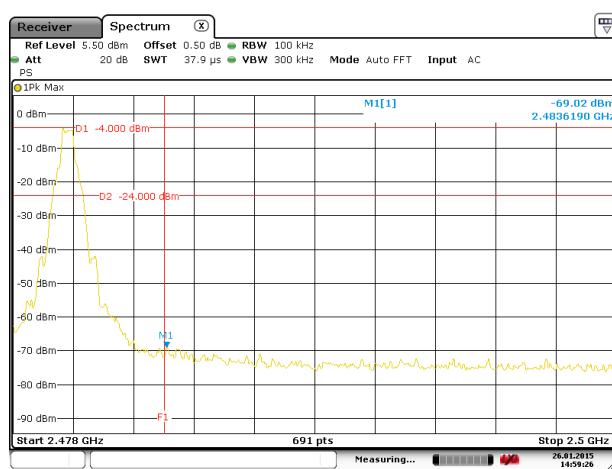


No-hopping mode

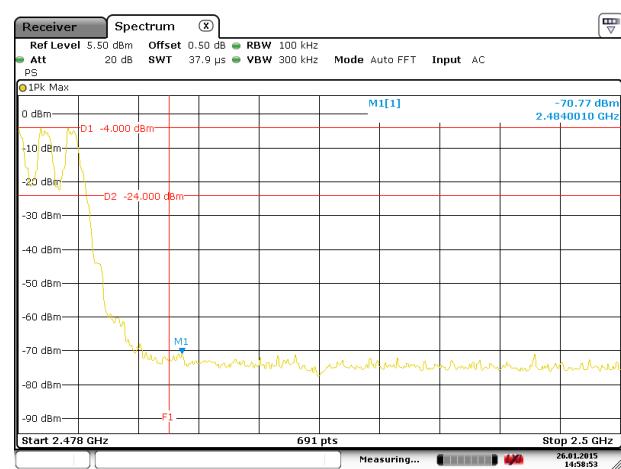


Hopping mode

### Highest Channel



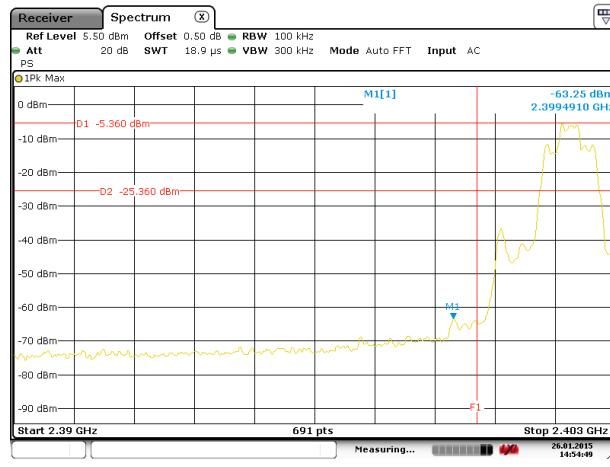
No-hopping mode



Hopping mode

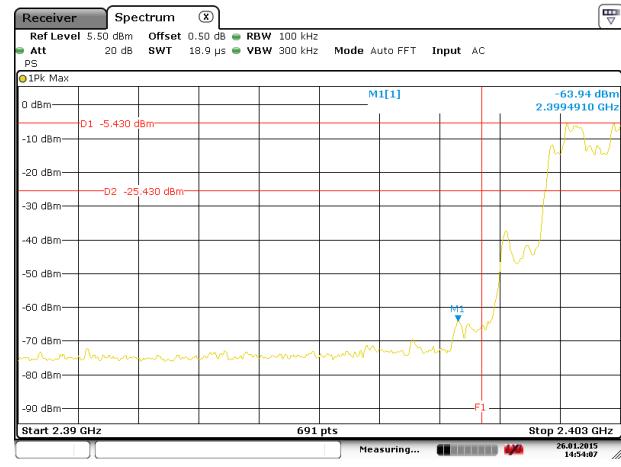
## $\pi/4$ -DQPSK

### Lowest Channel



Date: 26.JAN.2015 14:54:49

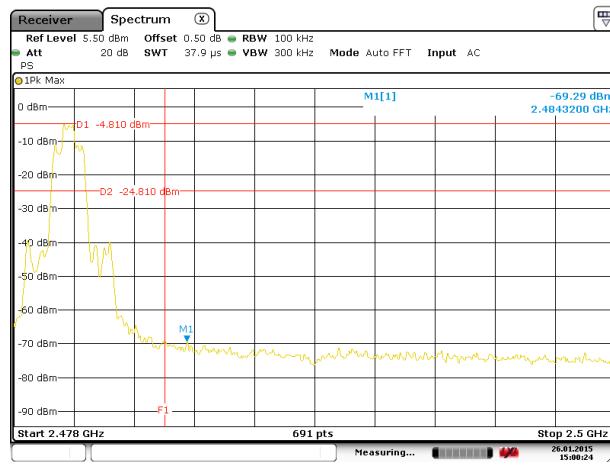
No-hopping mode



Date: 26.JAN.2015 14:54:06

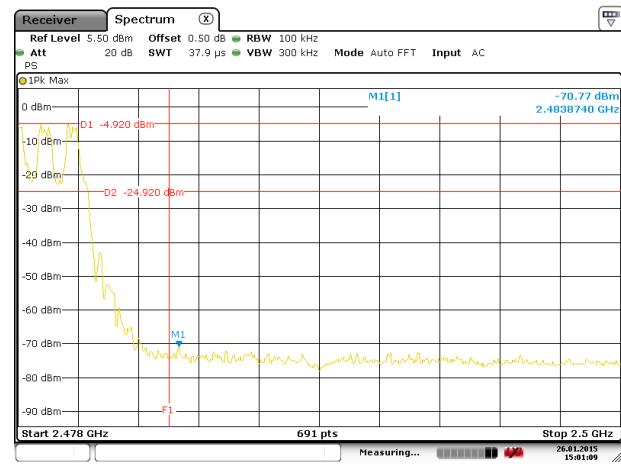
Hopping mode

### Highest Channel



Date: 26.JAN.2015 15:00:24

No-hopping mode

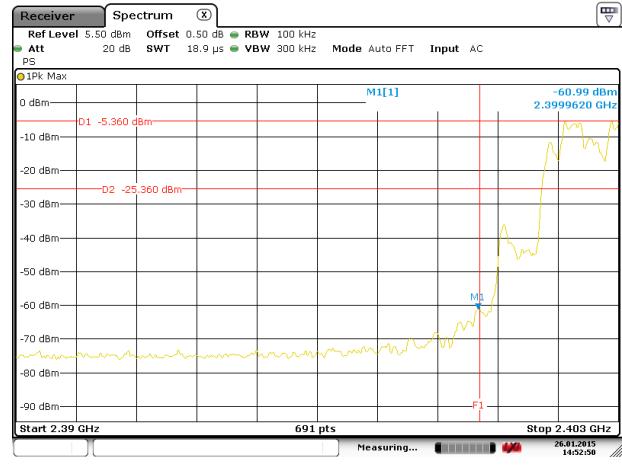
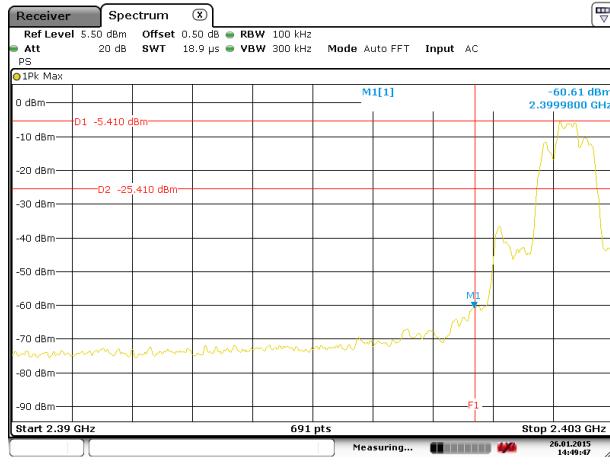


Date: 26.JAN.2015 15:01:09

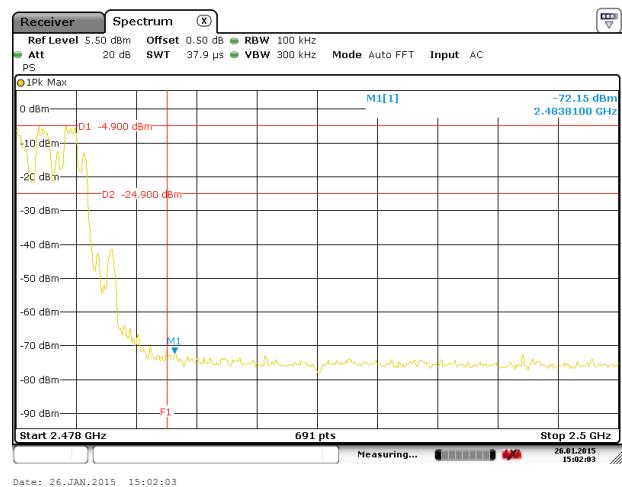
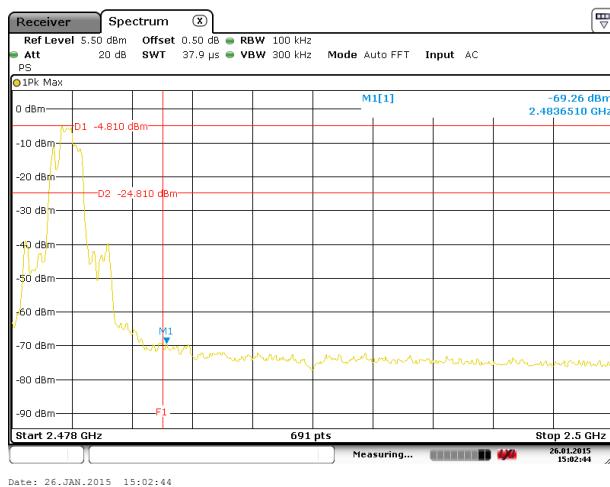
Hopping mode

## 8DPSK

### Lowest Channel



### Highest Channel



### 6.9.2 Radiated Emission Method

|                       |   |                    |      |               |            |  |  |  |  |
|-----------------------|---|--------------------|------|---------------|------------|--|--|--|--|
| Test Requirement:     | FCC Part 15 C Section 15.209 and 15.205   |                    |      |               |            |  |  |  |  |
| Test Method:          | ANSI C63.4: 2003  |                    |      |               |            |  |  |  |  |
| Test Frequency Range: | 2.3GHz to 2.5GHz  |                    |      |               |            |  |  |  |  |
| Test site:            | Measurement Distance: 3m  |                    |      |               |            |  |  |  |  |
| Receiver setup:       | Frequency   | Detector           | RBW  | VBW           | Remark     |  |  |  |  |
|                       | Above 1GHz  | Peak               | 1MHz | 3MHz          | Peak Value |  |  |  |  |
| Limit:                | Frequency   | Limit (dBuV/m @3m) |      | Remark        |            |  |  |  |  |
|                       | Above 1GHz  | 54.00              |      | Average Value |            |  |  |  |  |
|                       |   | 74.00              |      | Peak Value    |            |  |  |  |  |
| Test setup:           |   |                    |      |               |            |  |  |  |  |
| Test Procedure:       | <ol style="list-style-type: none"> <li>The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li> </ol> |                    |      |               |            |  |  |  |  |
| Test Instruments:     | Refer to section 5.7 for details  |                    |      |               |            |  |  |  |  |
| Test mode:            | Non-hopping mode  |                    |      |               |            |  |  |  |  |
| Test results:         | Passed  |                    |      |               |            |  |  |  |  |

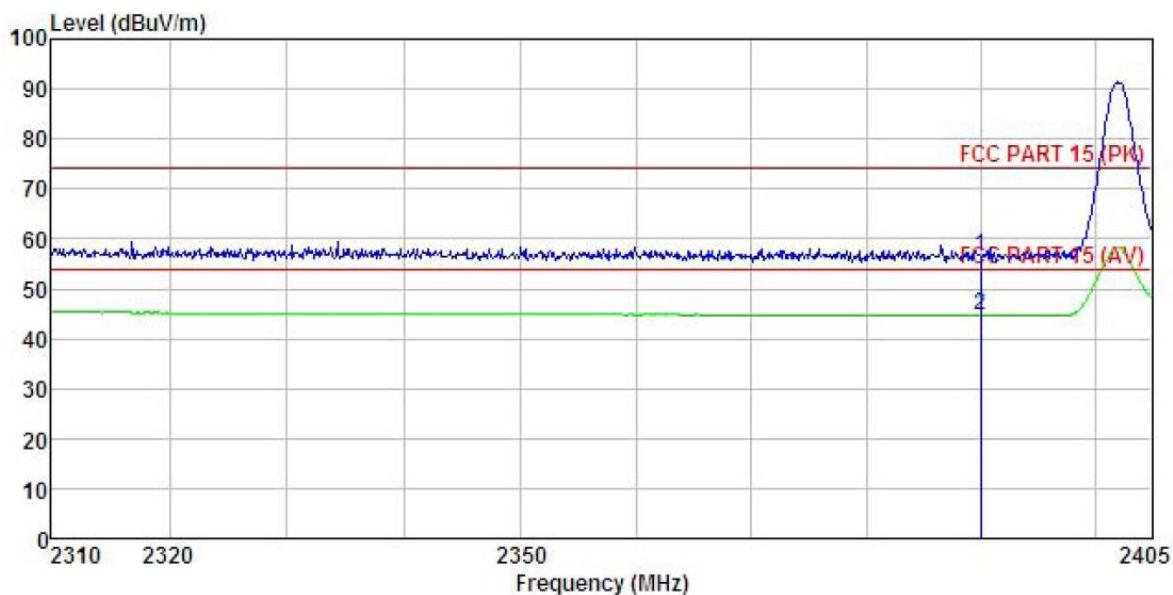
#### Remark:

- During the test, pre-scan the GFSK, π/4-DQPSK, 8DPSK, and all data were shown in report.
- Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.

**GFSK mode**

Test channel: Lowest

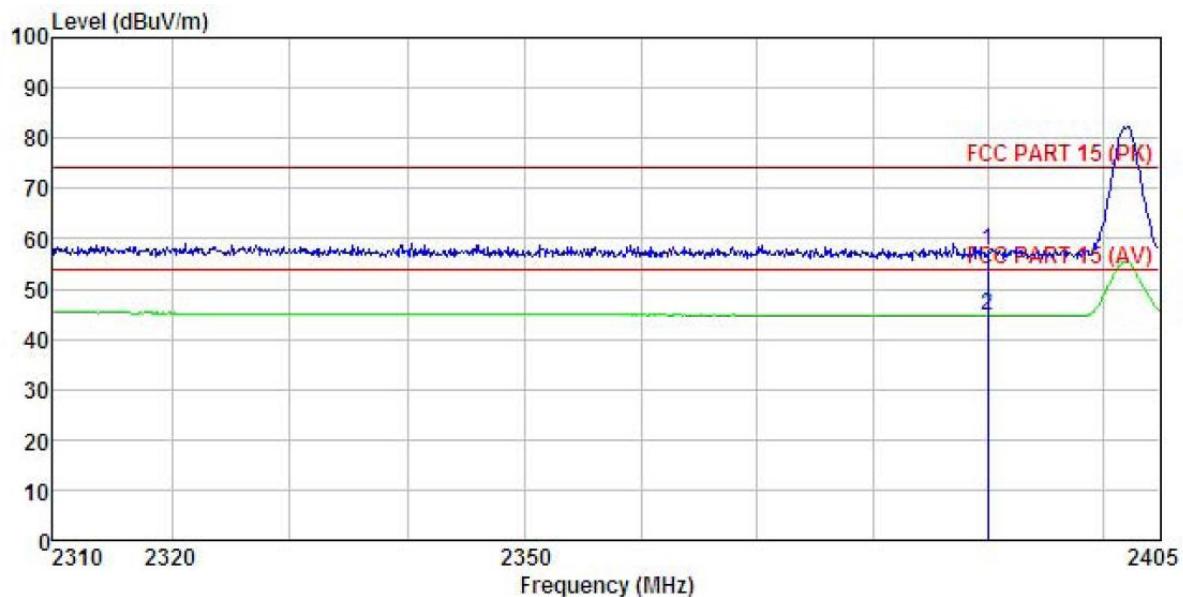
Horizontal:



Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT DH1-L Mode  
Power Rating : AC 120W/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: A-bomb  
REMARK :

| Freq | ReadAntenna |        | Cable | Preamp | Limit  | Over   | Remark              |
|------|-------------|--------|-------|--------|--------|--------|---------------------|
|      | Level       | Factor | Loss  | Factor |        |        |                     |
| MHz  | dBuV        | dB/m   | dB    | dB     | dBuV/m | dBuV/m | dB                  |
| 1    | 2390.000    | 23.15  | 27.58 | 5.67   | 0.00   | 56.40  | 74.00 -17.60 Peak   |
| 2    | 2390.000    | 11.44  | 27.58 | 5.67   | 0.00   | 44.69  | 54.00 -9.31 Average |

Vertical:



Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL

EUT : MOBILE PHONE

Model : SOLE-R150

Test mode : BT DH1-L Mode

Power Rating : AC 120V/60Hz

Environment : Temp:25.5°C Humi:55%

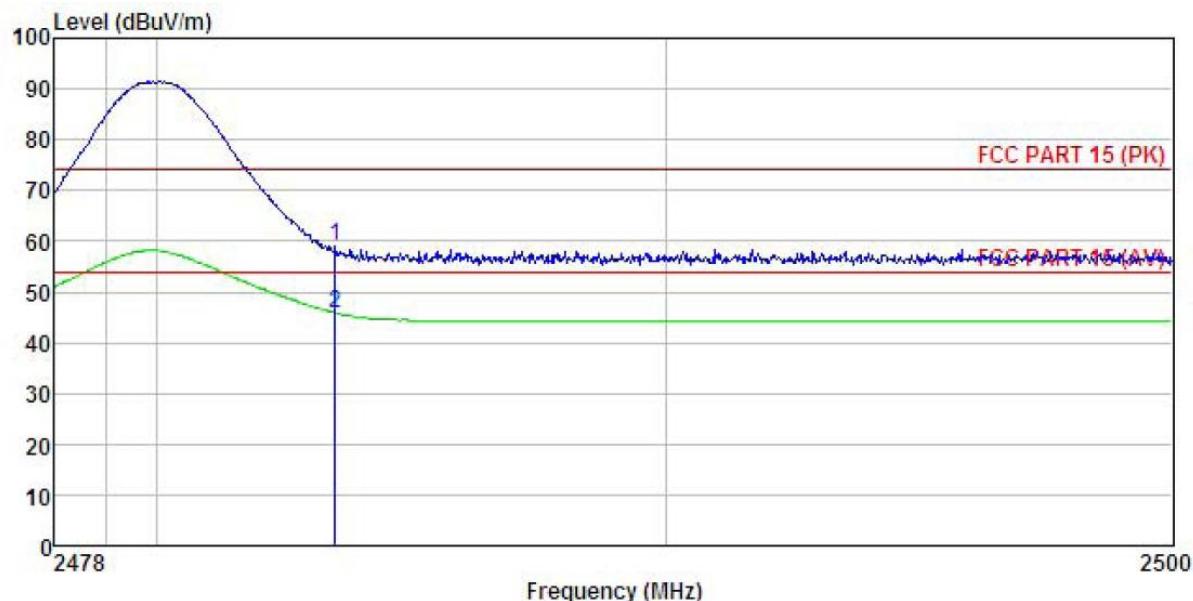
Test Engineer: A-bomb

REMARK :

|      | ReadAntenna | Cable  | Preamp | Limit | Over   |         |
|------|-------------|--------|--------|-------|--------|---------|
| Freq | Level       | Factor | Loss   | Level | Line   | Limit   |
| MHz  | dBuV        | dB/m   | dB     | dB    | dBuV/m | dBuW/m  |
| 1    | 2390.000    | 24.24  | 27.58  | 5.67  | 0.00   | 57.49   |
| 2    | 2390.000    | 11.41  | 27.58  | 5.67  | 0.00   | 44.66   |
|      |             |        |        |       | 74.00  | -16.51  |
|      |             |        |        |       | 54.00  | -9.34   |
|      |             |        |        |       |        | Peak    |
|      |             |        |        |       |        | Average |

Test channel: Highest

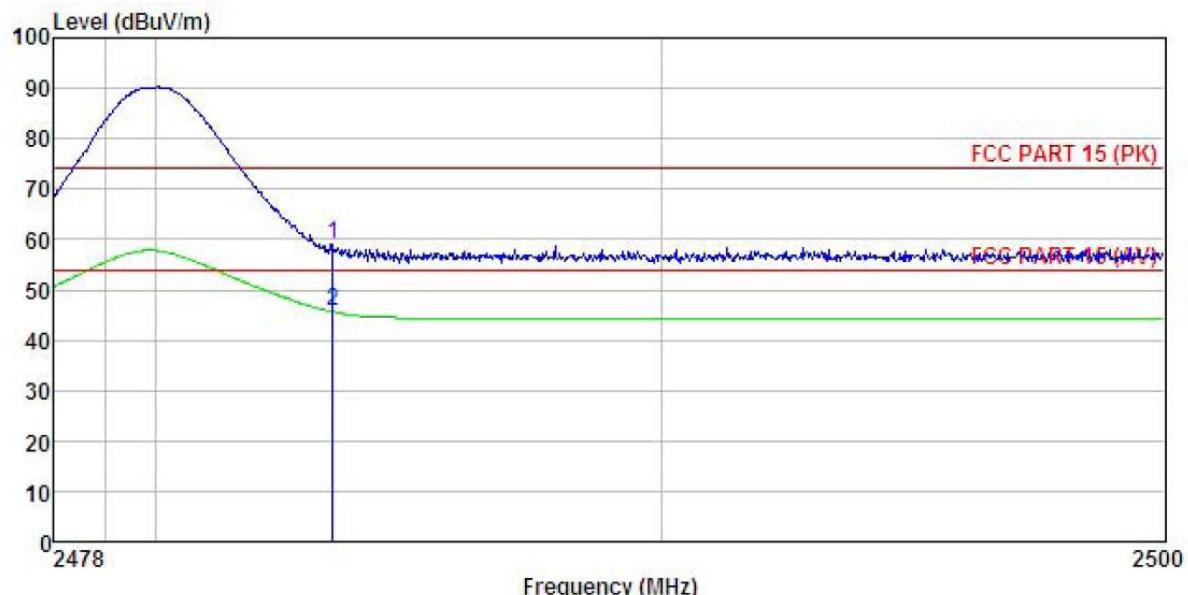
Horizontal:



Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT DH1-H Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Humi:55%  
Test Engineer: A-bomb  
REMARK :

|       | Read     | Antenna | Cable | Preamp | Limit | Over   |        |               |
|-------|----------|---------|-------|--------|-------|--------|--------|---------------|
| Freq  | Level    | Factor  | Loss  | Factor | Level | Line   | Limit  | Remark        |
| ----- | MHz      | dBuV    | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB            |
| 1     | 2483.500 | 25.70   | 27.52 | 5.70   | 0.00  | 58.92  | 74.00  | -15.08 Peak   |
| 2     | 2483.500 | 12.65   | 27.52 | 5.70   | 0.00  | 45.87  | 54.00  | -8.13 Average |

Vertical:



Site : 3m chamber

Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL

EUT : MOBILE PHONE

Model : SOLE-R150

Test mode : BT DH1-H Mode

Power Rating : AC 120V/60Hz

Environment : Temp:25.5°C Humi:55%

Test Engineer: A-bomb

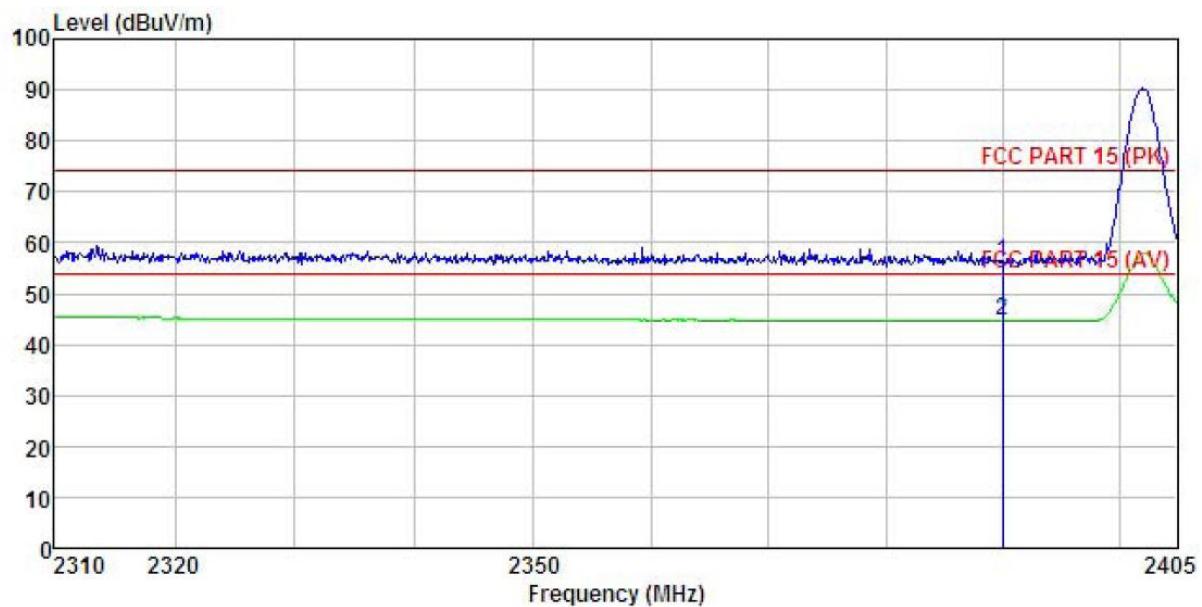
REMARK :

|   | ReadAntenna<br>Freq | Cable<br>Level | Preamp<br>Factor | Loss<br>Factor | Limit<br>Level | Line<br>Limit | Over<br>Limit | Remark        |
|---|---------------------|----------------|------------------|----------------|----------------|---------------|---------------|---------------|
|   | MHz                 | dBuV           | dB/m             | dB             | dB             | dBuV/m        | dBuV/m        | dB            |
| 1 | 2483.500            | 25.70          | 27.52            | 5.70           | 0.00           | 58.92         | 74.00         | -15.08 Peak   |
| 2 | 2483.500            | 12.39          | 27.52            | 5.70           | 0.00           | 45.61         | 54.00         | -8.39 Average |

**π/4-DQPSK mode**

Test channel: Lowest

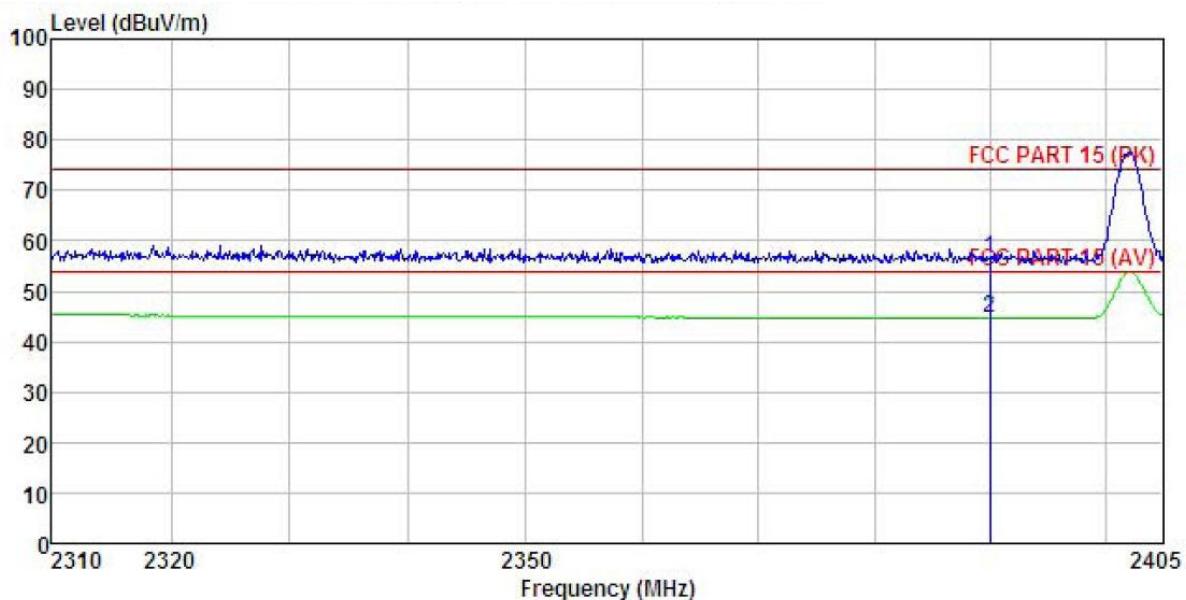
Horizontal:



Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT 2DH1-L Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: A-bomb  
REMARK :

| Freq | ReadAntenna |        | Cable | Preamp | Limit  | Over   | Remark              |
|------|-------------|--------|-------|--------|--------|--------|---------------------|
|      | Level       | Factor | Loss  | Factor |        |        |                     |
| MHz  | dBuV        | dB/m   | dB    | dB     | dBuV/m | dBuV/m | dB                  |
| 1    | 2390.000    | 22.77  | 27.58 | 5.67   | 0.00   | 56.02  | 74.00 -17.98 Peak   |
| 2    | 2390.000    | 11.45  | 27.58 | 5.67   | 0.00   | 44.70  | 54.00 -9.30 Average |

Vertical:

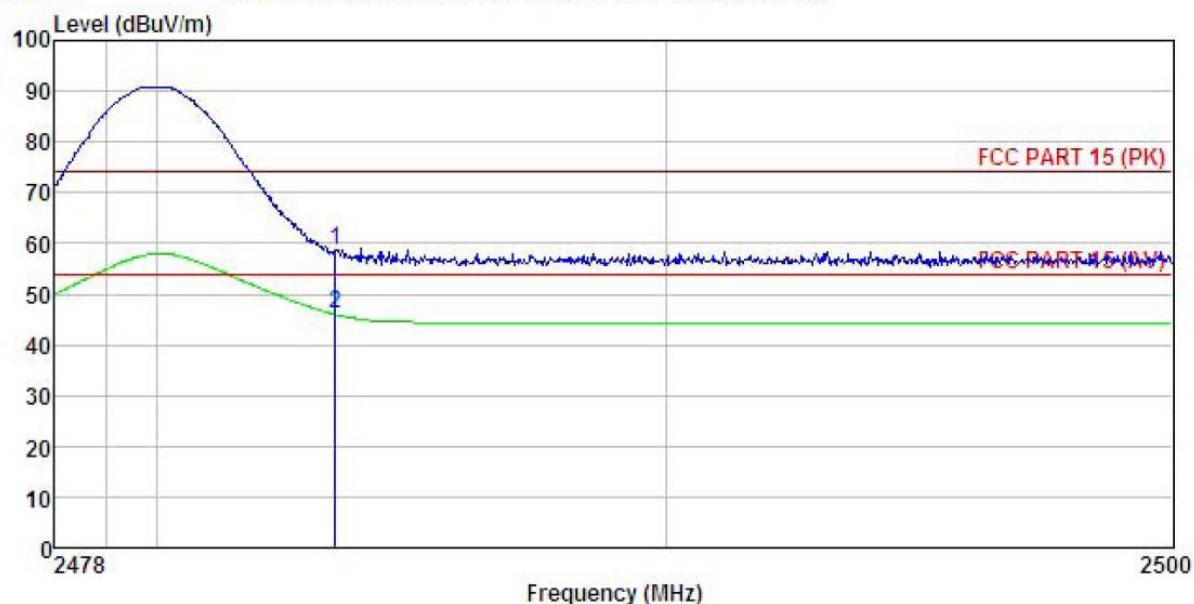


Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT 2DH1-L Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: A-bomb  
REMARK :

|      | Read     | Antenna | Cable | Preamp | Limit  | Over   |                     |
|------|----------|---------|-------|--------|--------|--------|---------------------|
| Freq | Level    | Factor  | Loss  | Factor | Level  | Line   | Limit               |
| MHz  | dBuV     | dB/m    | dB    | dB     | dBuV/m | dBuV/m | dB                  |
| 1    | 2390.000 | 23.30   | 27.58 | 5.67   | 0.00   | 56.55  | 74.00 -17.45 Peak   |
| 2    | 2390.000 | 11.42   | 27.58 | 5.67   | 0.00   | 44.67  | 54.00 -9.33 Average |

Test channel: Highest

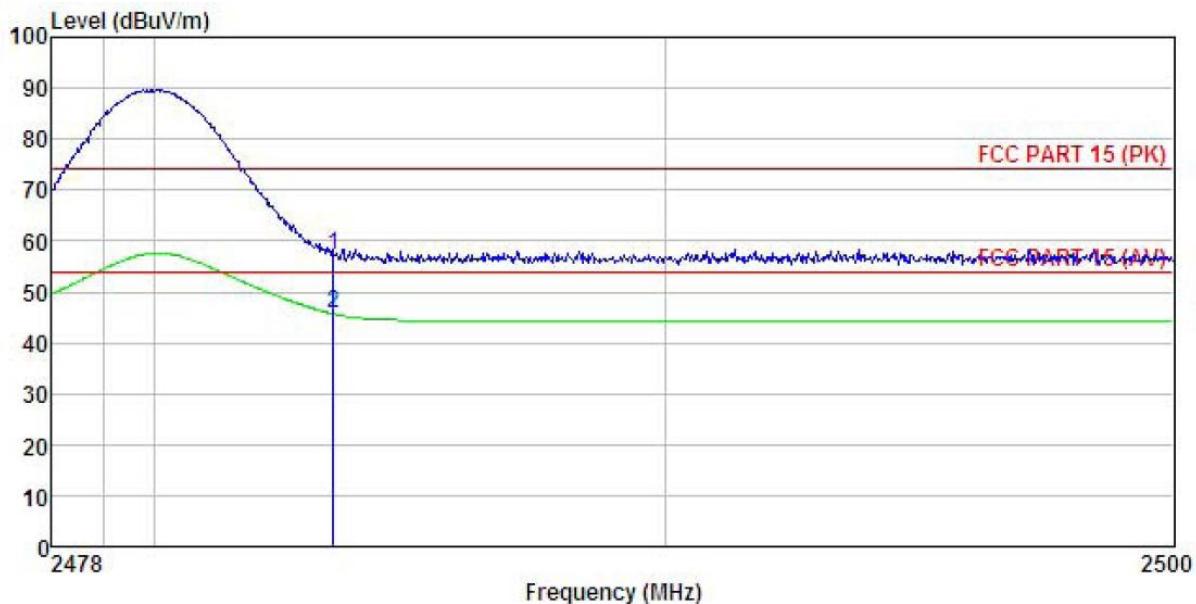
Horizontal:



Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT 2DH1-H Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: A-bomb  
REMARK :

|   | Read     | Antenna | Cable  | Preamp | Limit | Over   |                     |
|---|----------|---------|--------|--------|-------|--------|---------------------|
|   | Freq     | Level   | Factor | Loss   | Level | Line   | Limit               |
|   | MHz      | dBuV    | dB/m   | dB     | dB    | dBuV/m | dBuV/m              |
| 1 | 2483.500 | 25.28   | 27.52  | 5.70   | 0.00  | 58.50  | 74.00 -15.50 Peak   |
| 2 | 2483.500 | 12.77   | 27.52  | 5.70   | 0.00  | 45.99  | 54.00 -8.01 Average |

Vertical:



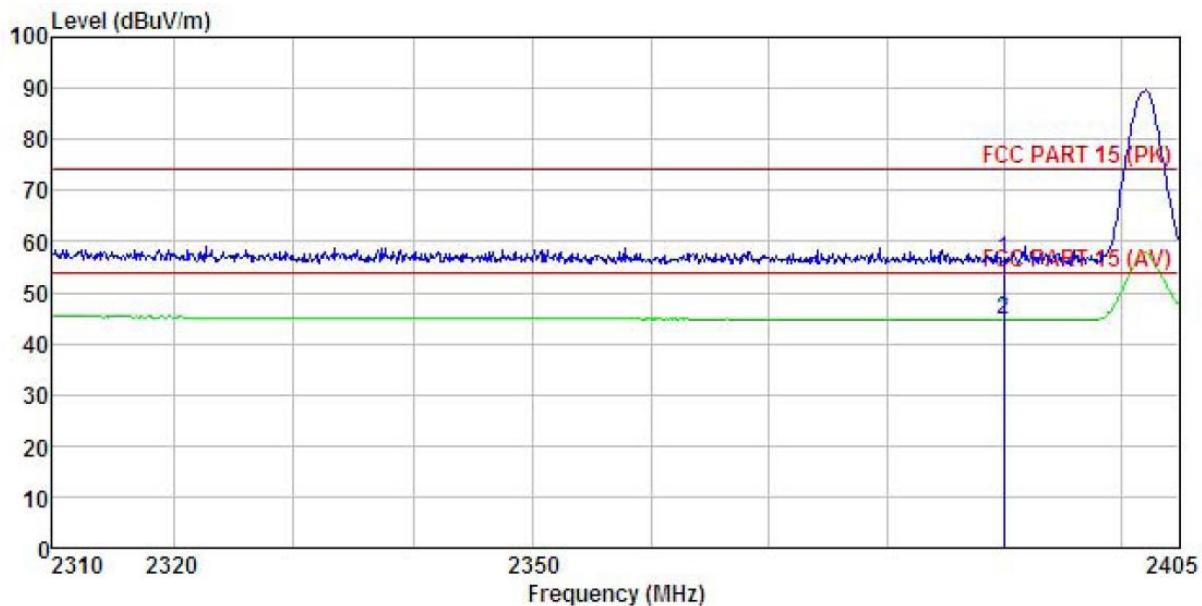
Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT 2DH1-H Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Humi:55%  
Test Engineer: A-bomb  
REMARK :

|      | Read     | Antenna | Cable | Preamp | Limit | Over   |        |               |
|------|----------|---------|-------|--------|-------|--------|--------|---------------|
| Freq | Level    | Factor  | Loss  | Factor | Level | Line   | Limit  | Remark        |
|      | MHz      | dBuV    | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB            |
| 1    | 2483.500 | 23.98   | 27.52 | 5.70   | 0.00  | 57.20  | 74.00  | -16.80 Peak   |
| 2    | 2483.500 | 12.45   | 27.52 | 5.70   | 0.00  | 45.67  | 54.00  | -8.33 Average |

**8DPSK mode**

Test channel: Lowest

Horizontal:



Site : 3m chamber

Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL

EUT : MOBILE PHONE

Model : SOLE-R150

Test mode : BT 3DH1-L Mode

Power Rating : AC 120V/60Hz

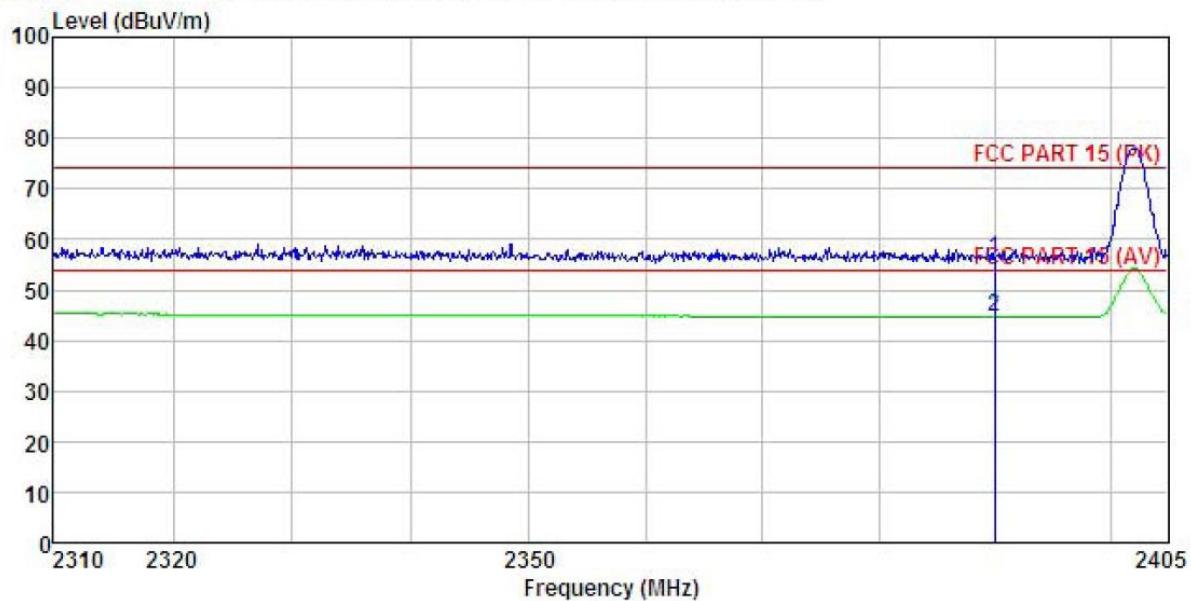
Environment : Temp:25.5°C Huni:55%

Test Engineer: A-bomb

REMARK :

|   | ReadAntenna<br>Freq | Cable<br>Level | Preamp<br>Factor | Limit<br>Loss<br>Factor | Over<br>Line<br>Level | Over<br>Line<br>Limit | Over<br>Line<br>Remark |               |
|---|---------------------|----------------|------------------|-------------------------|-----------------------|-----------------------|------------------------|---------------|
|   | MHz                 | dBuV           | dB/m             | dB                      | dB                    | dBuV/m                | dBuV/m                 | dB            |
| 1 | 2390.000            | 23.33          | 27.58            | 5.67                    | 0.00                  | 56.58                 | 74.00                  | -17.42 Peak   |
| 2 | 2390.000            | 11.41          | 27.58            | 5.67                    | 0.00                  | 44.66                 | 54.00                  | -9.34 Average |

Vertical:

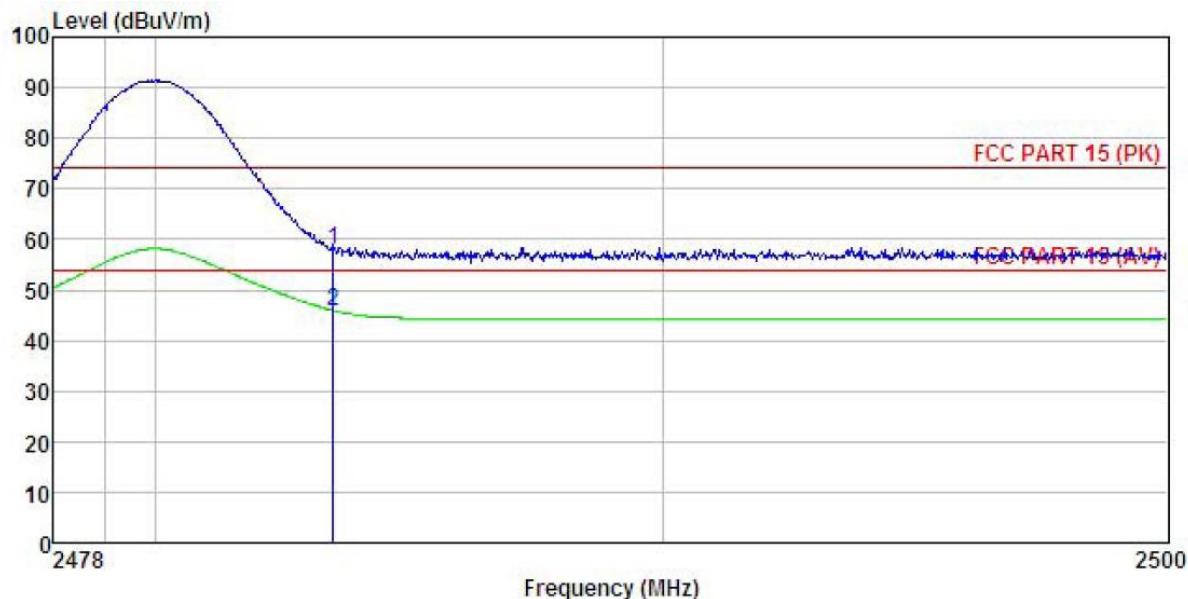


Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT 3DH1-L Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: A-bomb  
REMARK :

|      | ReadAntenna | Cable  | Preamp |        | Limit  | Over   |       |               |
|------|-------------|--------|--------|--------|--------|--------|-------|---------------|
| Freq | Level       | Factor | Loss   | Factor | Level  | Line   | Limit | Remark        |
| MHz  | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB    |               |
| 1    | 2390.000    | 22.70  | 27.58  | 5.67   | 0.00   | 55.95  | 74.00 | -18.05 Peak   |
| 2    | 2390.000    | 11.44  | 27.58  | 5.67   | 0.00   | 44.69  | 54.00 | -9.31 Average |

Test channel: Highest

Horizontal:



Site : 3m chamber

Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL

EUT : MOBILE PHONE

Model : SOLE-R150

Test mode : BT 3DH1-H Mode

Power Rating : AC 120V/60Hz

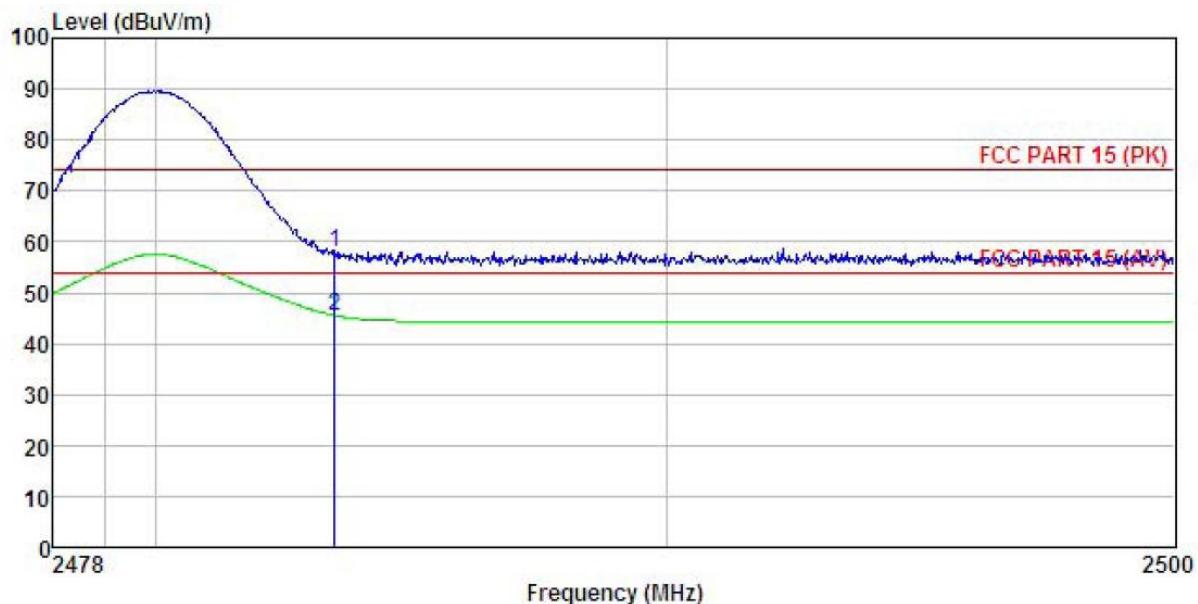
Environment : Temp:25.5°C Humi:55%

Test Engineer: A-bomb

REMARK :

|            | ReadAntenna | Cable  | Preamp | Limit | Over   |        |               |
|------------|-------------|--------|--------|-------|--------|--------|---------------|
| Freq       | Level       | Factor | Loss   | Level | Line   | Limit  | Remark        |
| MHz        | dBuV        | dB/m   | dB     | dB    | dBuV/m | dBuV/m | dB            |
| 1 2483.500 | 24.62       | 27.52  | 5.70   | 0.00  | 57.84  | 74.00  | -16.16 Peak   |
| 2 2483.500 | 12.68       | 27.52  | 5.70   | 0.00  | 45.90  | 54.00  | -8.10 Average |

Vertical:



Site : 3m chamber  
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT 3DH1-H Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: A-bomb  
REMARK :

|      | Read     | Antenna | Cable | Preamp | Limit | Over   |        |               |
|------|----------|---------|-------|--------|-------|--------|--------|---------------|
| Freq | Level    | Factor  | Loss  | Factor | Level | Line   | Limit  | Remark        |
|      | MHz      | dBuV    | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB            |
| 1    | 2483.500 | 24.64   | 27.52 | 5.70   | 0.00  | 57.86  | 74.00  | -16.14 Peak   |
| 2    | 2483.500 | 12.29   | 27.52 | 5.70   | 0.00  | 45.51  | 54.00  | -8.49 Average |

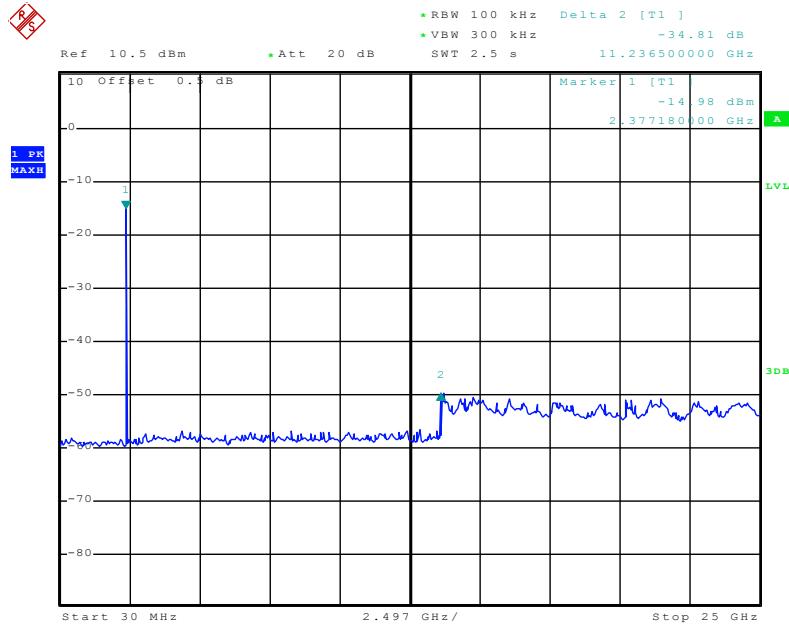
## 6.10 Spurious Emission

### 6.10.1 Conducted Emission Method

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (d)  |
| Test Method:      | ANSI C63.4:2003 and DA00-705  |
| Limit:            | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test setup:       |    |
| Test Instruments: | Refer to section 5.7 for details  |
| Test mode:        | Non-hopping mode  |
| Test results:     | Pass  |

## GFSK

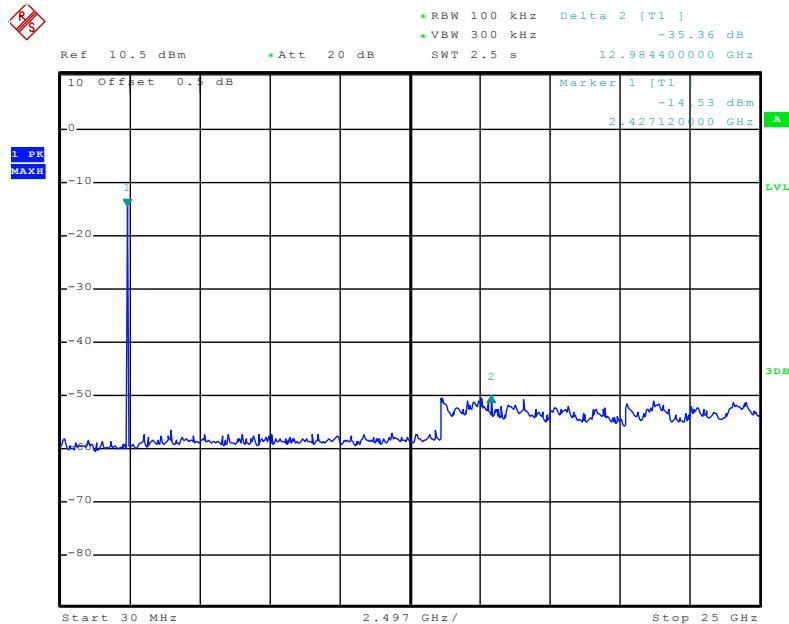
### Lowest channel



Date: 26.JAN.2015 17:49:53

### 30MHz~25GHz

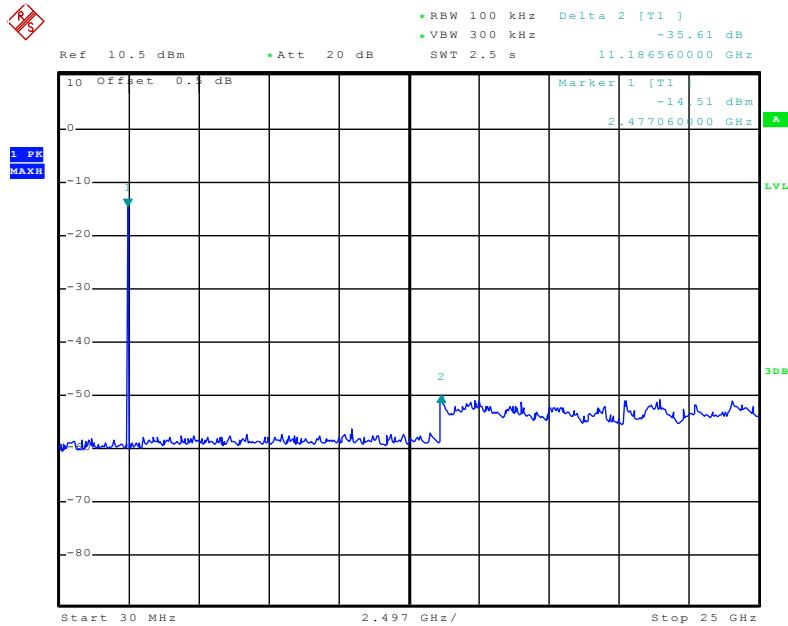
### Middle channel



Date: 26.JAN.2015 17:50:51

### 30MHz~25GHz

## Highest channel

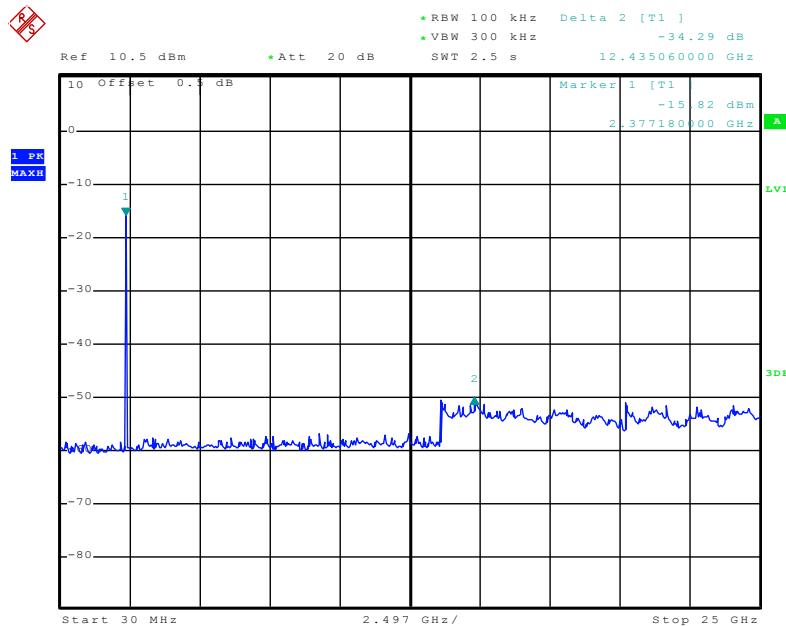


Date: 26.JAN.2015 17:51:51

30MHz~25GHz

## $\pi/4$ -DQPSK

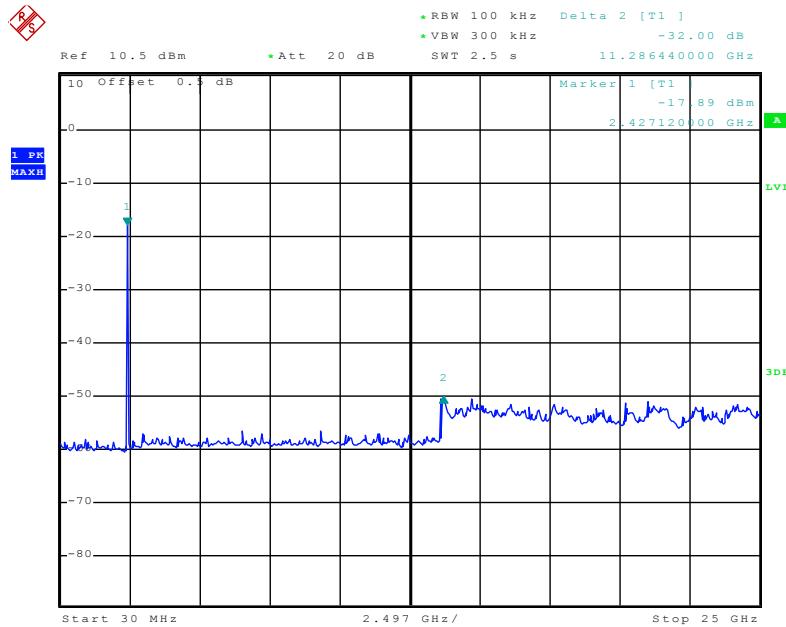
Lowest channel



Date: 26.JAN.2015 17:54:25

30MHz~25GHz

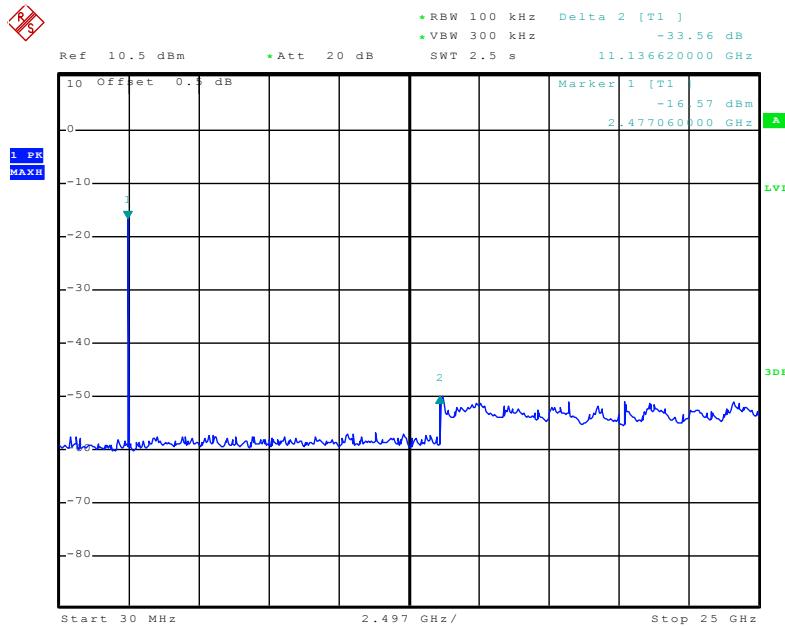
Middle channel



Date: 26.JAN.2015 17:53:45

30MHz~25GHz

## Highest channel

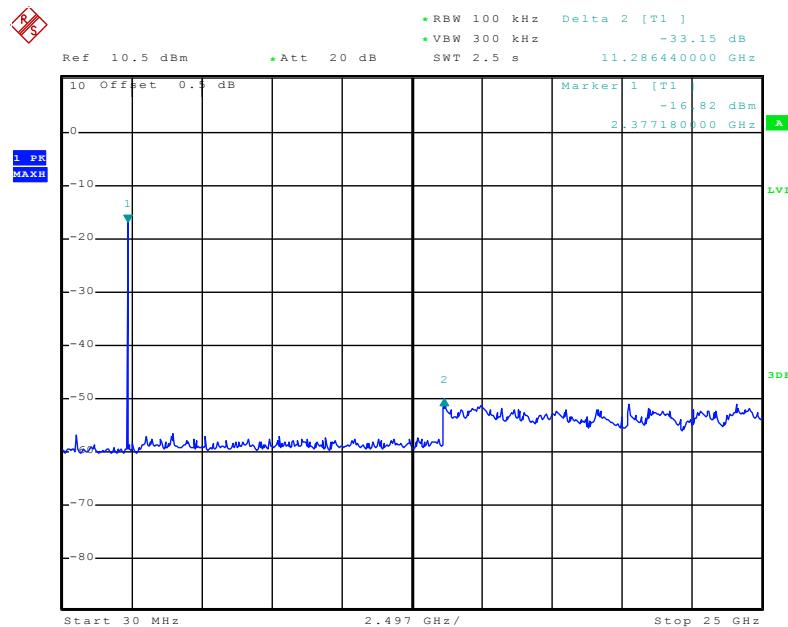


Date: 26.JAN.2015 17:53:03

30MHz~25GHz

## 8DPSK

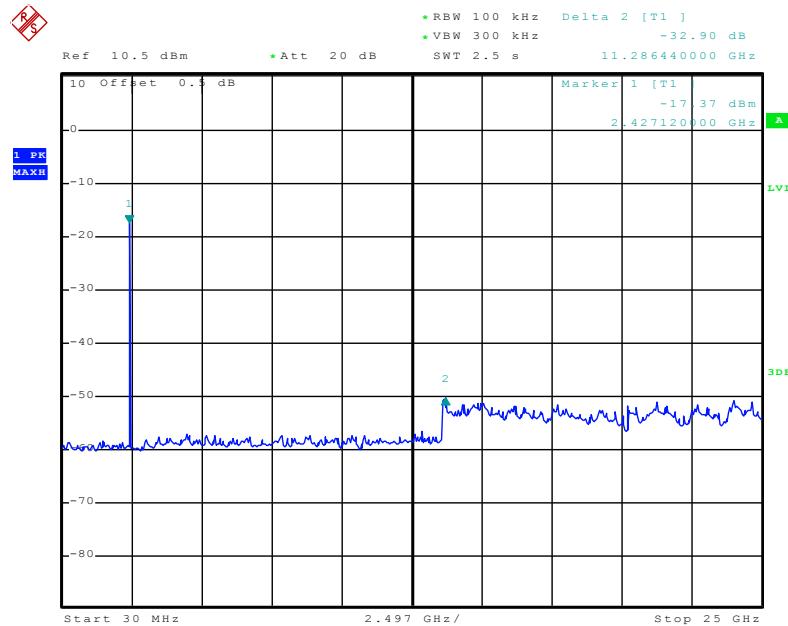
Lowest channel



Date: 26.JAN.2015 17:55:20

30MHz~25GHz

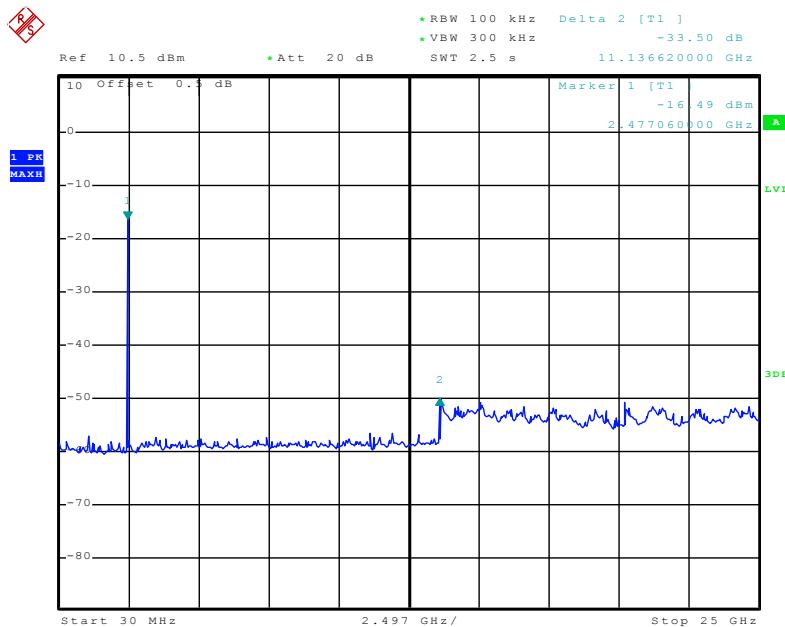
Middle channel



Date: 26.JAN.2015 17:56:13

30MHz~25GHz

## Highest channel



Date: 26.JAN.2015 17:57:01

30MHz~25GHz

### 6.10.2 Radiated Emission Method

|                       |                              |                    |        |                  |                  |  |  |
|-----------------------|------------------------------|--------------------|--------|------------------|------------------|--|--|
| Test Requirement:     | FCC Part 15 C Section 15.209 |                    |        |                  |                  |  |  |
| Test Method:          | ANSI C63.4: 2003             |                    |        |                  |                  |  |  |
| Test Frequency Range: | 9 kHz to 25 GHz              |                    |        |                  |                  |  |  |
| Test site:            | Measurement Distance: 3m     |                    |        |                  |                  |  |  |
| Receiver setup:       | Frequency                    | Detector           | RBW    | VBW              | Remark           |  |  |
|                       | 30MHz-1GHz                   | Quasi-peak         | 120kHz | 300kHz           | Quasi-peak Value |  |  |
|                       | Above 1GHz                   | Peak               | 1MHz   | 3MHz             | Peak Value       |  |  |
| Limit:                | Peak                         | 1MHz               | 10Hz   | Average Value    |                  |  |  |
|                       | Frequency                    | Limit (dBuV/m @3m) |        | Remark           |                  |  |  |
|                       | 30MHz-88MHz                  | 40.0               |        | Quasi-peak Value |                  |  |  |
|                       | 88MHz-216MHz                 | 43.5               |        | Quasi-peak Value |                  |  |  |
|                       | 216MHz-960MHz                | 46.0               |        | Quasi-peak Value |                  |  |  |
|                       | 960MHz-1GHz                  | 54.0               |        | Quasi-peak Value |                  |  |  |
|                       | Above 1GHz                   | 54.0               |        | Average Value    |                  |  |  |
| Test setup:           | 74.0                         |                    |        |                  |                  |  |  |
|                       | Peak Value                   |                    |        |                  |                  |  |  |
| Below 1GHz            |                              |                    |        |                  |                  |  |  |
| Above 1GHz            |                              |                    |        |                  |                  |  |  |

|                   |  |
|-------------------|--|
| Test Procedure:   | <ol style="list-style-type: none"><li>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li><li>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li><li>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li><li>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li><li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li><li>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li></ol> |
| Test Instruments: | Refer to section 5.7 for details   |
| Test mode:        | Non-hopping mode   |
| Test results:     | Pass   |

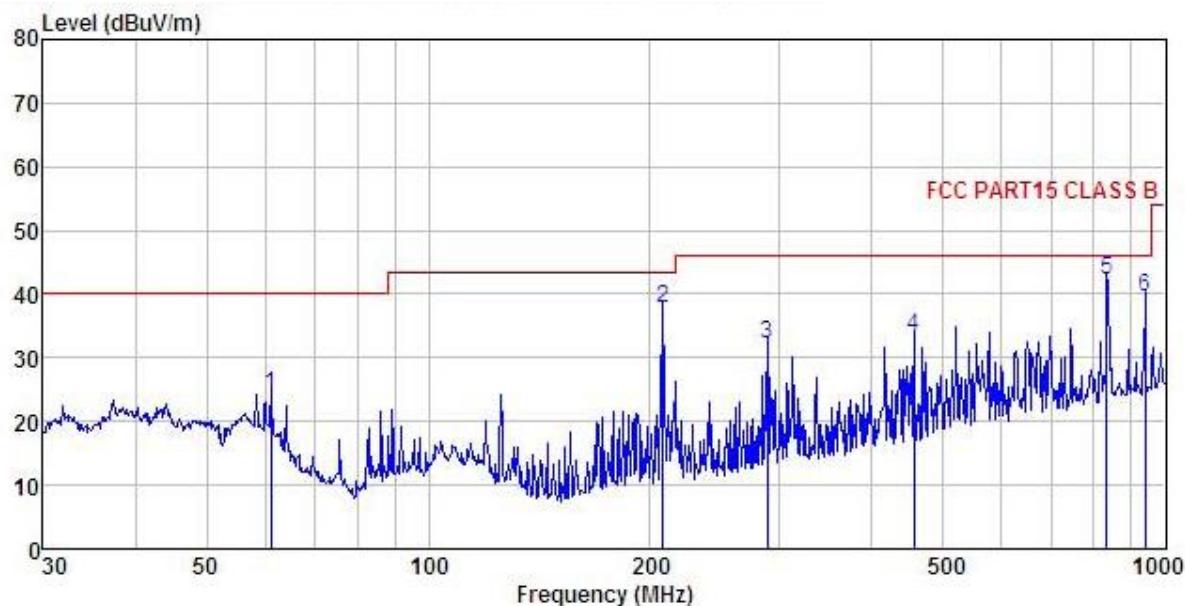
**Remark:**

1. During the test, pre-scan the GFSK,  $\pi/4$ -DQPSK, 8DPSK modulation, and found the GFSK modulation is the worst case.
2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.
3. 9 kHz to 30 MHz is noise floor, so only shows the data of above 30MHz in this report.

**Measurement data:**

**Below 1GHz**

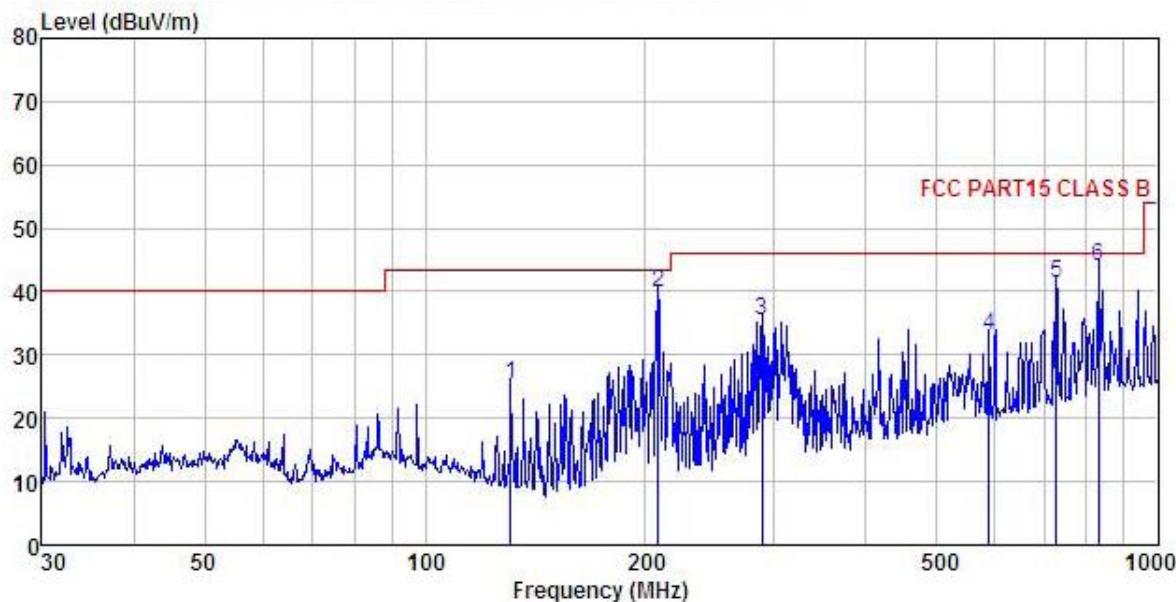
Vertical:



Site : 3m chamber  
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT Mode  
Power Rating : AC 120V/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: Wendell  
REMARK :

| Freq | Read    | Antenna | Cable | Preamp | Limit<br>Level | Line<br>Limit | Over<br>Remark  |
|------|---------|---------|-------|--------|----------------|---------------|-----------------|
|      | Level   | Factor  | Loss  | Factor |                |               |                 |
| MHz  | dBuV    | dB/m    | dB    | dB     | dBuV/m         | dBuV/m        | dB              |
| 1    | 61.132  | 41.09   | 12.29 | 0.70   | 29.77          | 24.31         | 40.00 -15.69 QP |
| 2    | 207.850 | 54.33   | 10.80 | 1.42   | 28.78          | 37.77         | 43.50 -5.73 QP  |
| 3    | 287.990 | 46.01   | 12.84 | 1.74   | 28.47          | 32.12         | 46.00 -13.88 QP |
| 4    | 455.906 | 44.40   | 15.58 | 2.27   | 28.88          | 33.37         | 46.00 -12.63 QP |
| 5    | 833.317 | 46.62   | 20.42 | 3.22   | 28.07          | 42.19         | 46.00 -3.81 QP  |
| 6    | 938.833 | 42.51   | 21.34 | 3.43   | 27.76          | 39.52         | 46.00 -6.48 QP  |

Horizontal:



Site : 3m chamber  
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL  
EUT : MOBILE PHONE  
Model : SOLE-R150  
Test mode : BT Mode  
Power Rating : AC 120W/60Hz  
Environment : Temp:25.5°C Huni:55%  
Test Engineer: Wendell  
REMARK :

| Freq | ReadAntenna |            | Cable Preamp |         | Limit Level | Over Line Limit | Remark          |
|------|-------------|------------|--------------|---------|-------------|-----------------|-----------------|
|      | MHz         | Level dBuV | Factor dB    | Loss dB |             |                 |                 |
| 1    | 130.837     | 44.52      | 8.88         | 1.20    | 29.32       | 25.28           | 43.50 -18.22 QP |
| 2    | 207.850     | 56.38      | 10.80        | 1.42    | 28.78       | 39.82           | 43.50 -3.68 QP  |
| 3    | 287.990     | 49.26      | 12.84        | 1.74    | 28.47       | 35.37           | 46.00 -10.63 QP |
| 4    | 588.905     | 41.10      | 18.29        | 2.60    | 28.97       | 33.02           | 46.00 -12.98 QP |
| 5    | 726.805     | 47.73      | 19.15        | 2.98    | 28.57       | 41.29           | 46.00 -4.71 QP  |
| 6    | 830.400     | 48.54      | 20.37        | 3.22    | 28.08       | 44.05           | 46.00 -1.95 QP  |

**Above 1GHz:**

| Test channel:   |                   |                       | Lowest          |                    | Level:         |                     | Peak            |              |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4804.00         | 46.90             | 31.53                 | 8.90            | 40.24              | 47.09          | 74.00               | -26.91          | Vertical     |
| 4804.00         | 46.58             | 31.53                 | 8.90            | 40.24              | 46.77          | 74.00               | -27.23          | Horizontal   |

| Test channel:   |                   |                       | Lowest          |                    | Level:         |                     | Average         |              |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4804.00         | 36.57             | 31.53                 | 8.90            | 40.24              | 36.76          | 54.00               | -17.24          | Vertical     |
| 4804.00         | 37.63             | 31.53                 | 8.90            | 40.24              | 37.82          | 54.00               | -16.18          | Horizontal   |

| Test channel:   |                   |                       | Middle          |                    | Level:         |                     | Peak            |              |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4882.00         | 45.55             | 31.58                 | 8.98            | 40.15              | 45.96          | 74.00               | -28.04          | Vertical     |
| 4882.00         | 47.36             | 31.58                 | 8.98            | 40.15              | 47.77          | 74.00               | -26.23          | Horizontal   |

| Test channel:   |                   |                       | Middle          |                    | Level:         |                     | Average         |              |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4882.00         | 35.16             | 31.58                 | 8.98            | 40.15              | 35.57          | 54.00               | -18.43          | Vertical     |
| 4882.00         | 37.43             | 31.58                 | 8.98            | 40.15              | 37.84          | 54.00               | -16.16          | Horizontal   |

| Test channel:   |                   |                       | Highest         |                    | Level:         |                     | Peak            |              |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4960.00         | 47.23             | 31.69                 | 9.08            | 40.03              | 47.97          | 74.00               | -26.03          | Vertical     |
| 4960.00         | 45.87             | 31.69                 | 9.08            | 40.03              | 46.61          | 74.00               | -27.39          | Horizontal   |

| Test channel:   |                   |                       | Highest         |                    | Level:         |                     | Average         |              |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4960.00         | 37.71             | 31.69                 | 9.08            | 40.03              | 38.45          | 54.00               | -15.55          | Vertical     |
| 4960.00         | 35.01             | 31.69                 | 9.08            | 40.03              | 35.75          | 54.00               | -18.25          | Horizontal   |

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.