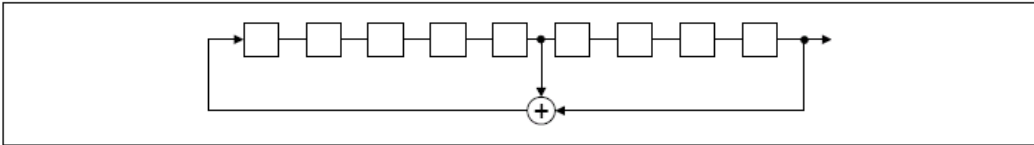
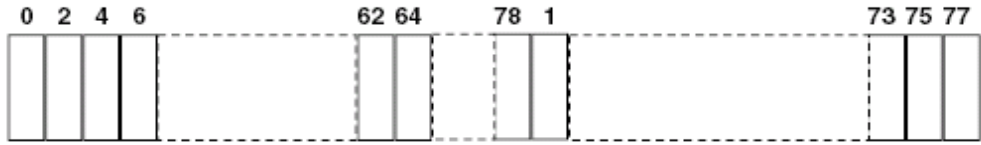
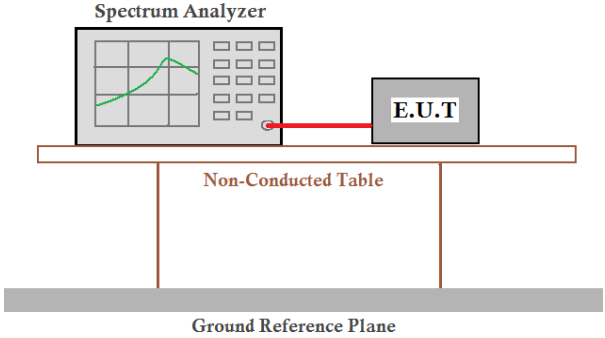


## 6.8 Pseudorandom Frequency Hopping Sequence

|  |   |
|--|---|
| <b>Test Requirement:</b>   | <b>FCC Part 15 C Section 15.247 (a)(1) requirement:</b> |
| <p>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.</p> <p>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.</p> |   |
| <b>EUT Pseudorandom Frequency Hopping Sequence</b>   |   |
| <p>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.</p> <ul style="list-style-type: none"> <li>• Number of shift register stages: 9</li> <li>• Length of pseudo-random sequence: <math>2^9 - 1 = 511</math> bits</li> <li>• Longest sequence of zeros: 8 (non-inverted signal)</li> </ul>  |   |
|   |   |
| <p><i>Linear Feedback Shift Register for Generation of the PRBS sequence</i></p>   |   |
| <p>An example of Pseudorandom Frequency Hopping Sequence as follow:</p>  |   |
|    |   |
| <p>Each frequency used equally on the average by each transmitter.</p> <p>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.</p>  |   |

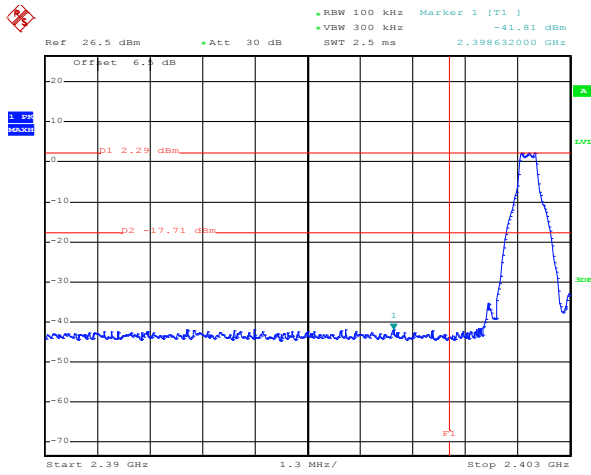
## 6.9 Band Edge

### 6.9.1 Conducted Emission Method

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (d)  |
| Test Method:      | ANSI C63.10:2013 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:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>   |
| Test Instruments: | Refer to section 5.7 for details  |
| Test mode:        | Non-hopping mode and hopping mode   |
| Test results:     | Pass  |

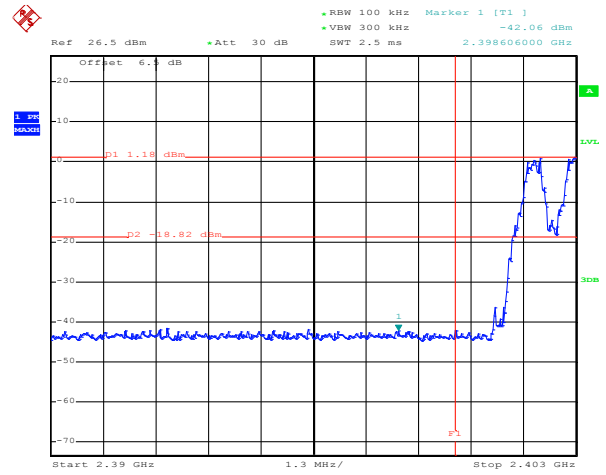
Test plot as follows:

## GFSK Lowest Channel



Date: 27.SEP.2016 10:22:24

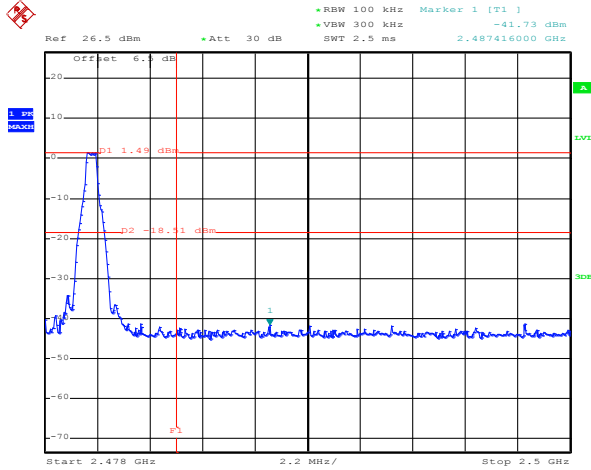
No-hopping mode



Date: 27.SEP.2016 10:38:07

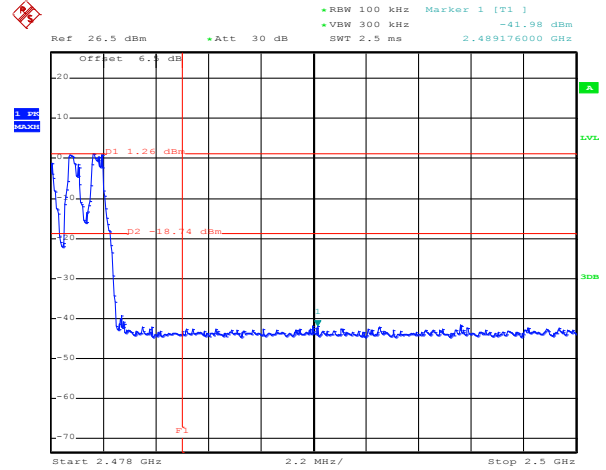
Hopping mode

## Highest Channel



Date: 27.SEP.2016 10:43:30

No-hopping mode

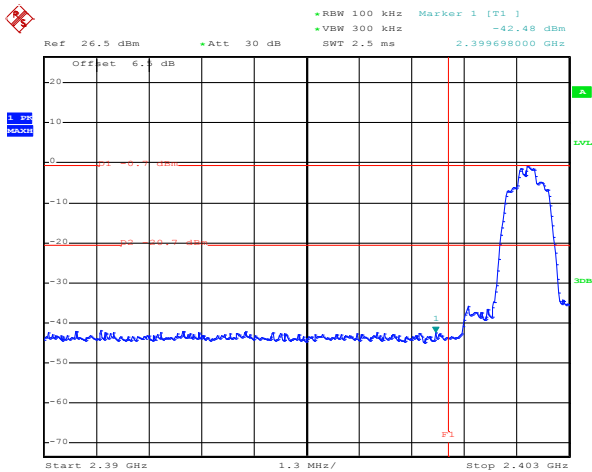


Date: 27.SEP.2016 10:45:02

Hopping mode

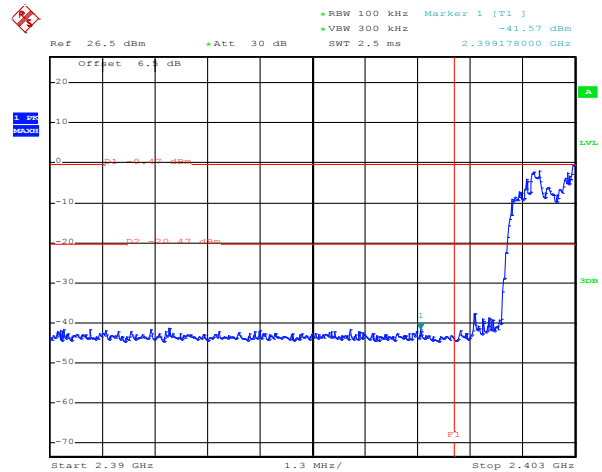
## $\pi/4$ -DQPSK

### Lowest Channel



Date: 27.SEP.2016 10:24:18

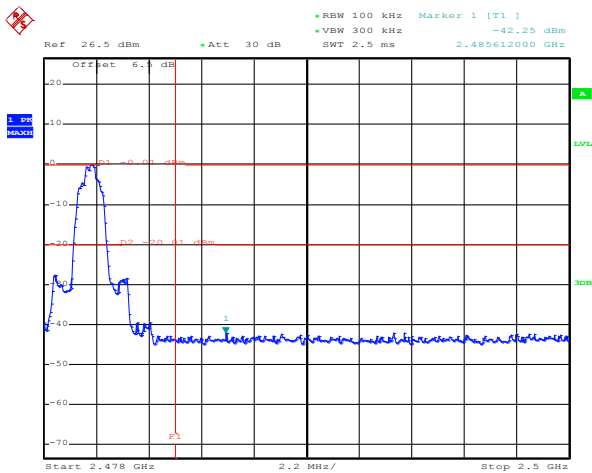
No-hopping mode



Date: 27.SEP.2016 10:39:51

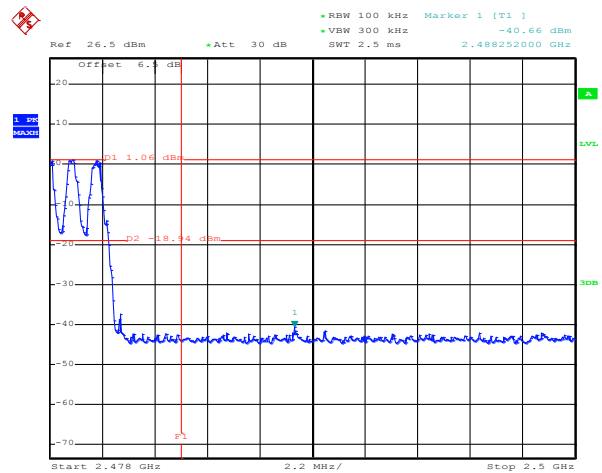
Hopping mode

### Highest Channel



Date: 27.SEP.2016 10:46:39

No-hopping mode

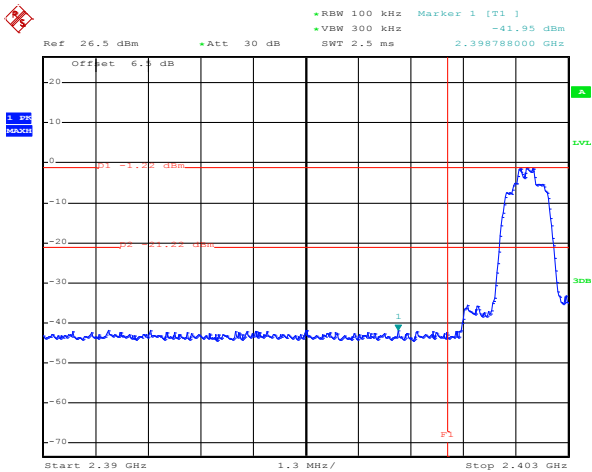


Date: 27.SEP.2016 10:48:02

Hopping mode

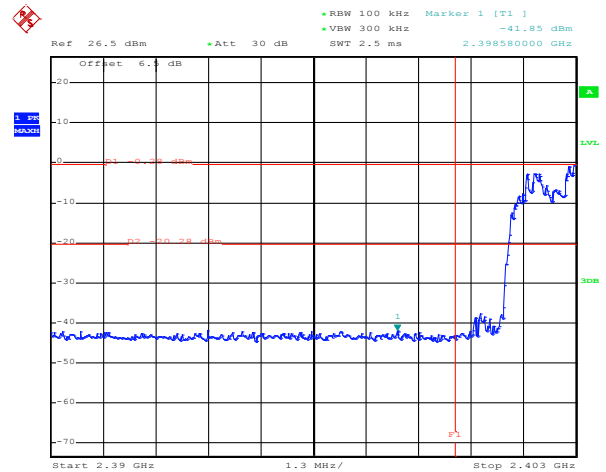
## 8DPSK

### Lowest Channel



Date: 27.SEP.2016 10:29:38

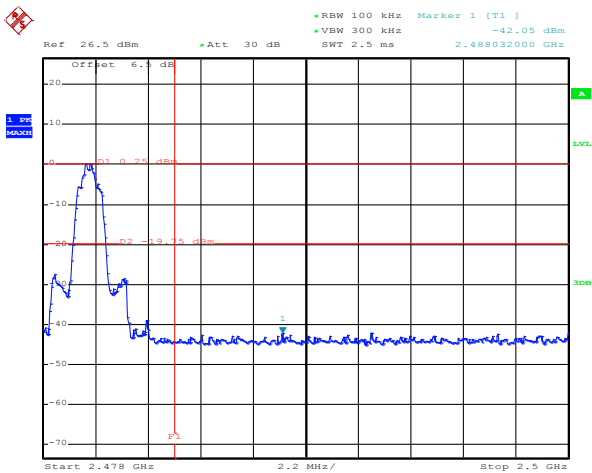
No-hopping mode



Date: 27.SEP.2016 10:41:54

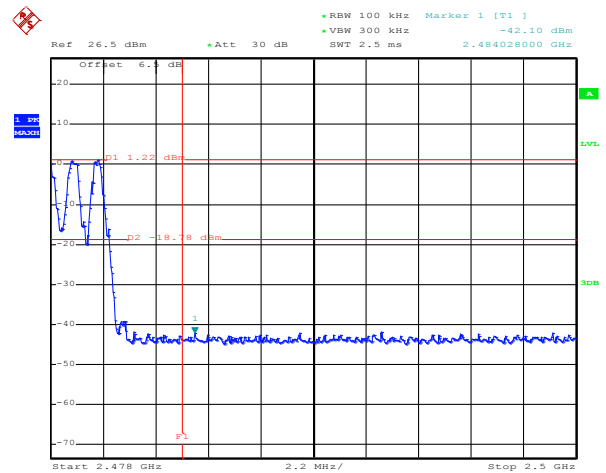
Hopping mode

### Highest Channel



Date: 27.SEP.2016 10:50:42

No-hopping mode



Date: 27.SEP.2016 10:51:54

Hopping mode

## 6.9.2 Radiated Emission Method

|                       |  |                    |              |               |                             |
|-----------------------|--|--------------------|--------------|---------------|-----------------------------|
| Test Requirement:     | FCC Part 15 C Section 15.209 and 15.205  |                    |              |               |                             |
| Test Method:          | ANSI C63.10: 2013  |                    |              |               |                             |
| Test Frequency Range: | 2.3GHz to 2.5GHz   |                    |              |               |                             |
| Test site:            | Measurement Distance: 3m   |                    |              |               |                             |
| Receiver setup:       | Frequency  | Detector           | RBW          | VBW           | Remark                      |
|                       | Above 1GHz   | Peak<br>RMS        | 1MHz<br>1MHz | 3MHz<br>3MHz  | Peak Value<br>Average 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>1. The EUT was placed on the top of a rotating table 1.5meters 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:         | Passed   |                    |              |               |                             |

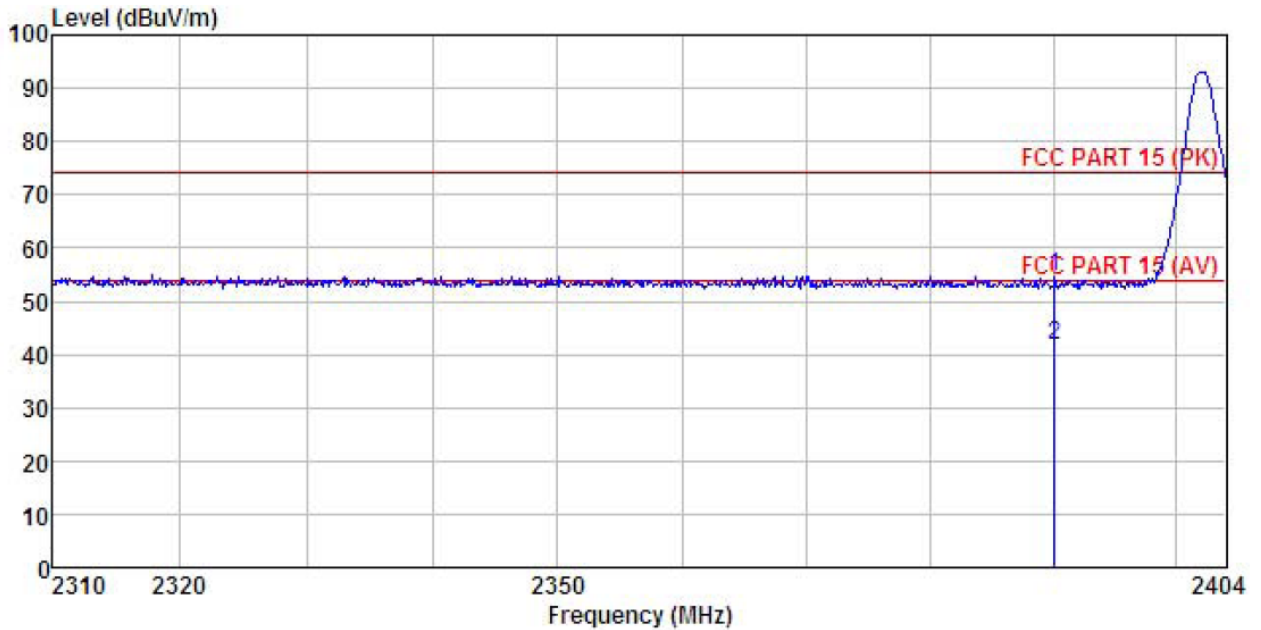
**Remark:**

1. During the test, pre-scan the GFSK,  $\pi/4$ -DQPSK, 8DPSK, and all data were shown in report.
2. 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**

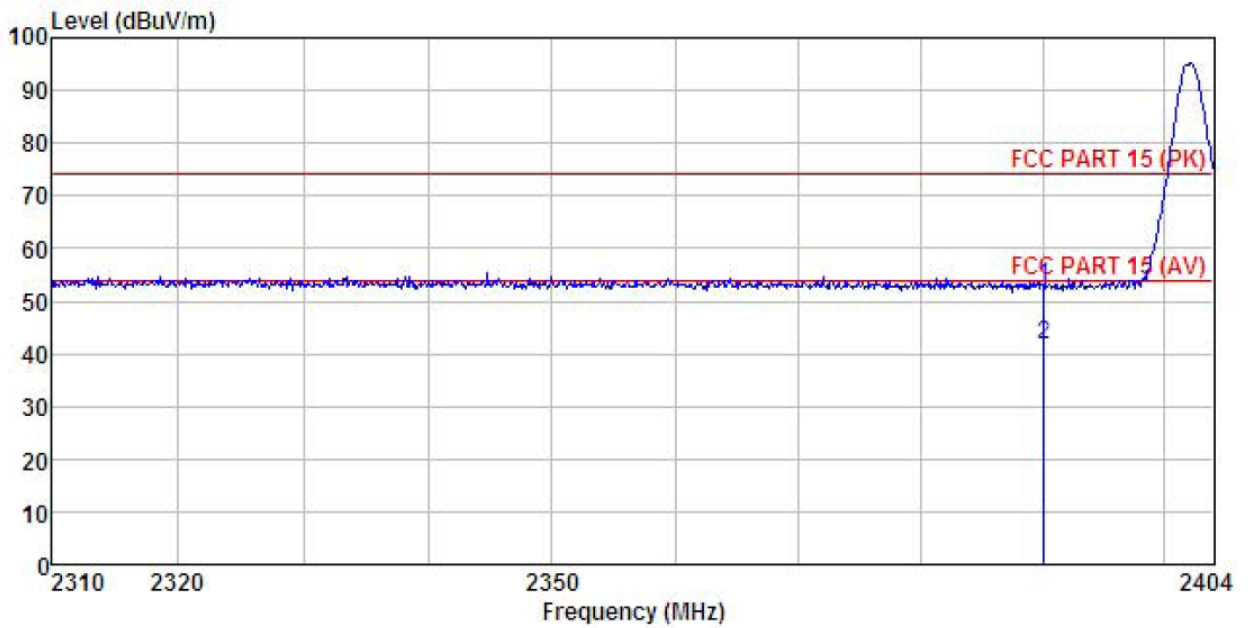
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : DH1-L mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 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    | 2390.000 | 26.16   | 23.68 | 4.69   | 0.00   | 54.53  | 74.00 | -19.47 Peak    |
| 2    | 2390.000 | 13.31   | 23.68 | 4.69   | 0.00   | 41.68  | 54.00 | -12.32 Average |

Vertical:



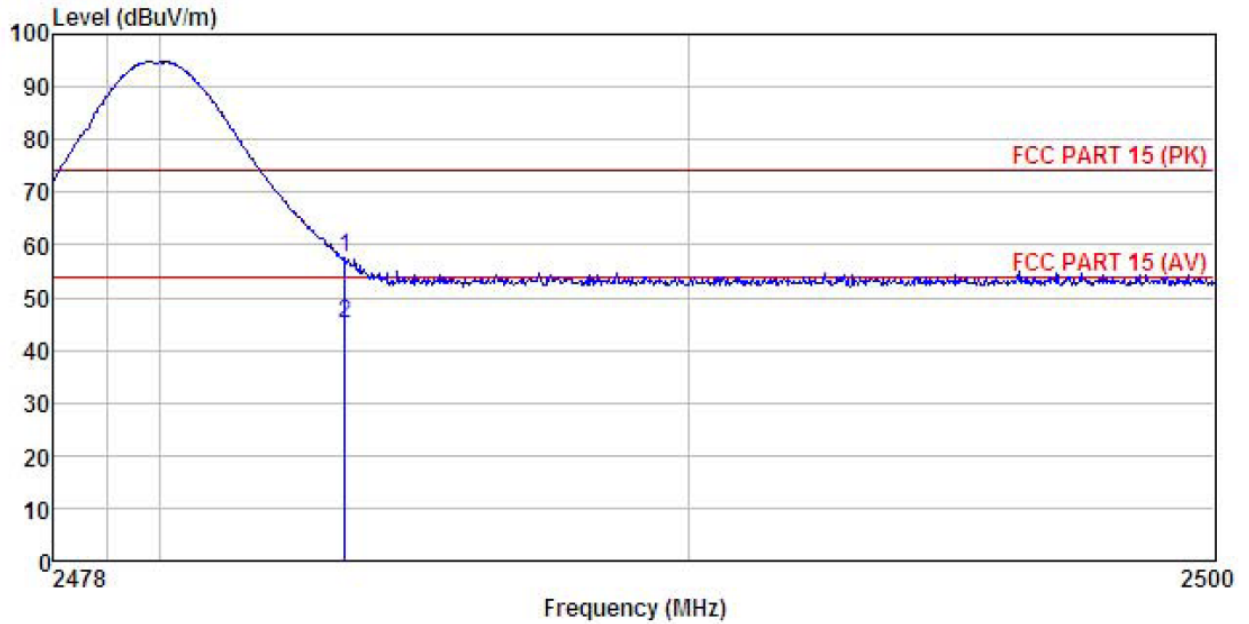
Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : DH1-L mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|   | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Remark  |
|---|----------|------------|----------------|------------|---------------|--------|------------|------------|---------|
|   | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |         |
| 1 | 2390.000 | 24.50      | 23.68          | 4.69       | 0.00          | 52.87  | 74.00      | -21.13     | Peak    |
| 2 | 2390.000 | 13.31      | 23.68          | 4.69       | 0.00          | 41.68  | 54.00      | -12.32     | Average |



**Test channel: Highest**

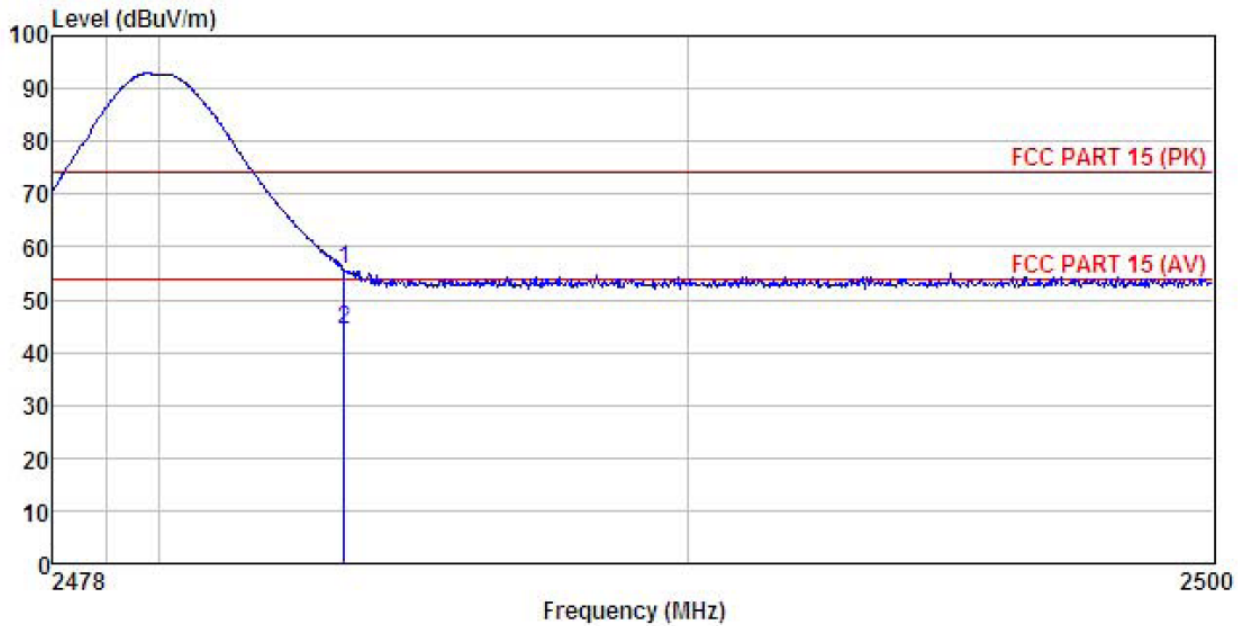
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : DH1-H mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|   | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Remark  |
|---|----------|------------|----------------|------------|---------------|--------|------------|------------|---------|
|   | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |         |
| 1 | 2483.500 | 28.89      | 23.70          | 4.81       | 0.00          | 57.40  | 74.00      | -16.60     | Peak    |
| 2 | 2483.500 | 16.32      | 23.70          | 4.81       | 0.00          | 44.83  | 54.00      | -9.17      | Average |

Vertical:



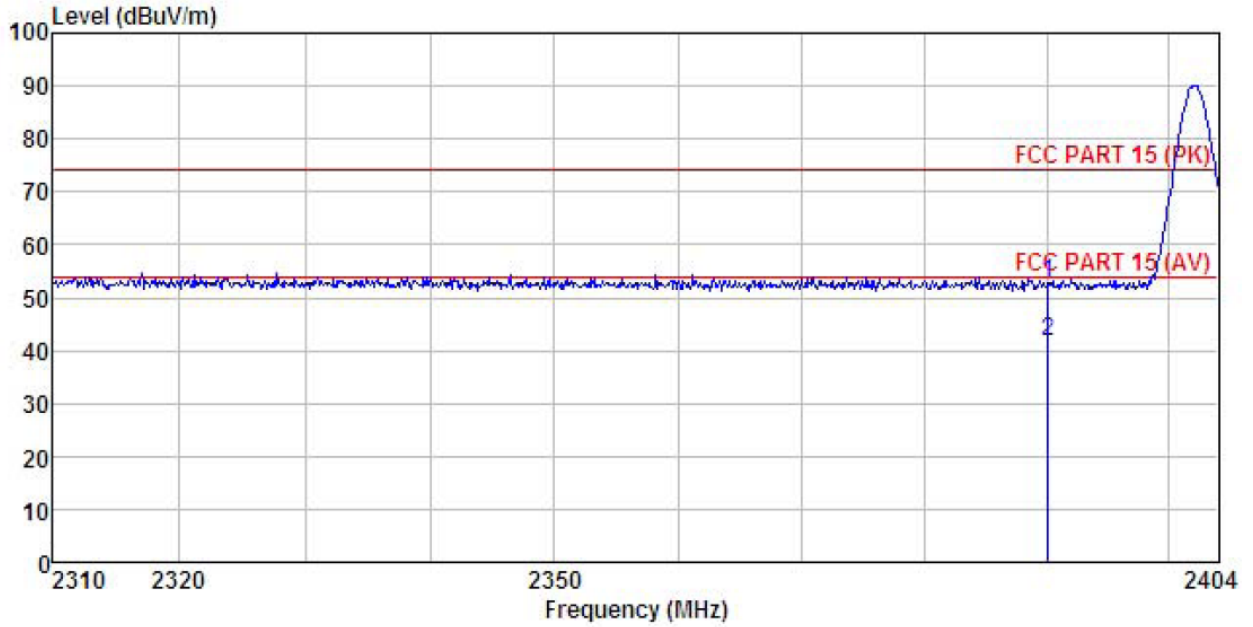
Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : DH1-H mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|      | ReadAntenna | Cable  | Preamp |        | Limit  | Over   |       |               |
|------|-------------|--------|--------|--------|--------|--------|-------|---------------|
| Freq | Level       | Factor | Loss   | Factor | Level  | Line   | Limit |               |
| MHz  | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB    |               |
| 1    | 2483.500    | 27.15  | 23.70  | 4.81   | 0.00   | 55.66  | 74.00 | -18.34 Peak   |
| 2    | 2483.500    | 15.82  | 23.70  | 4.81   | 0.00   | 44.33  | 54.00 | -9.67 Average |

**$\pi/4$ -DQPSK mode**

**Test channel: Lowest**

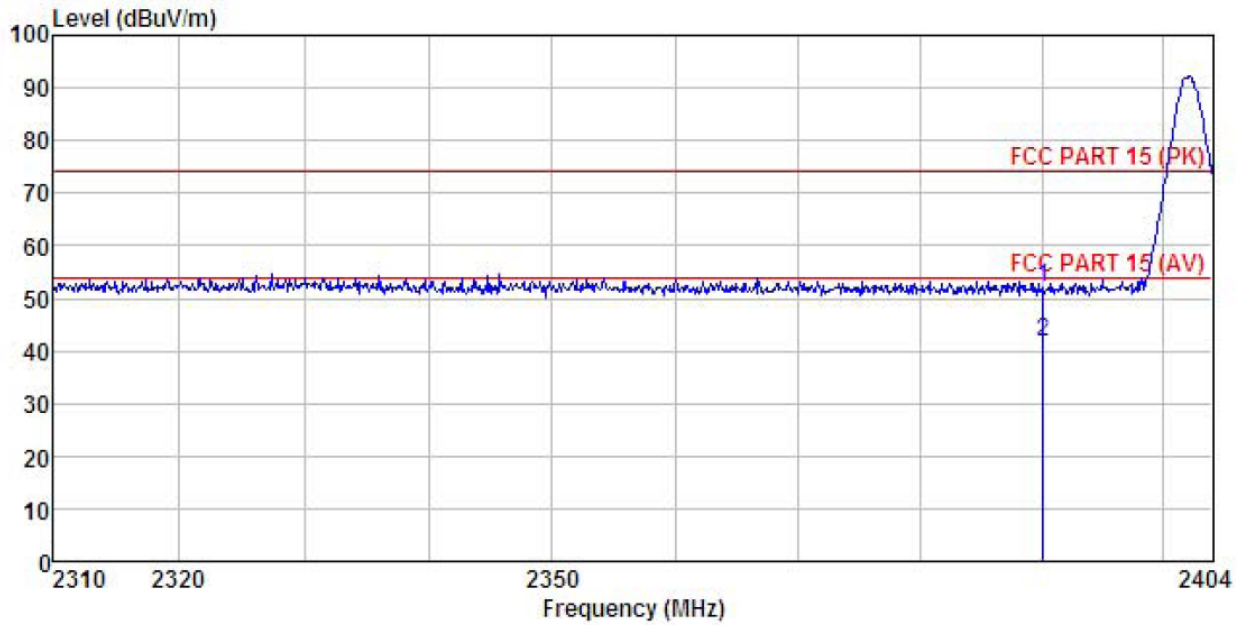
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : 2DH1-L mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|   | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Remark  |
|---|----------|------------|----------------|------------|---------------|--------|------------|------------|---------|
|   | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |         |
| 1 | 2390.000 | 24.31      | 23.68          | 4.69       | 0.00          | 52.68  | 74.00      | -21.32     | Peak    |
| 2 | 2390.000 | 13.28      | 23.68          | 4.69       | 0.00          | 41.65  | 54.00      | -12.35     | Average |

Vertical:

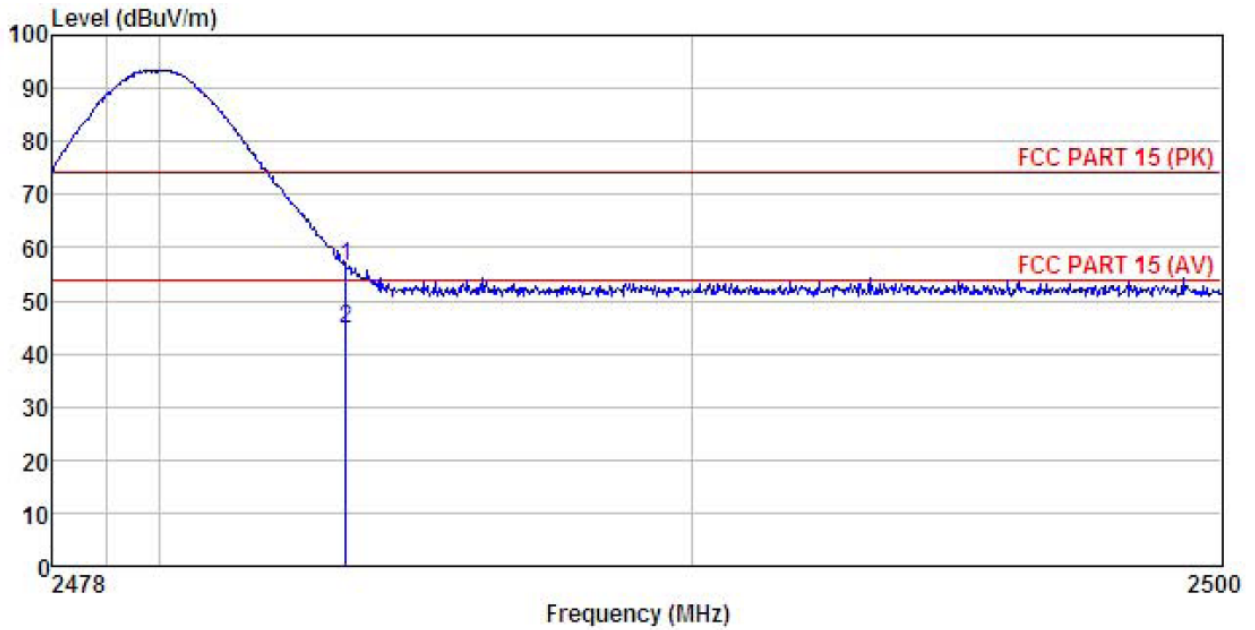


Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 EUI : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : 2DH1-L mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|   | Freq     | Read  | Antenna | Cable | Preamp | Level  | Limit  | Over   |         |
|---|----------|-------|---------|-------|--------|--------|--------|--------|---------|
|   | MHz      | Level | Factor  | Loss  | Factor | Level  | Line   | Limit  | Remark  |
|   |          | dBuV  | dB/m    | dB    | dB     | dBuV/m | dBuV/m | dB     |         |
| 1 | 2390.000 | 23.73 | 23.68   | 4.69  | 0.00   | 52.10  | 74.00  | -21.90 | Peak    |
| 2 | 2390.000 | 13.26 | 23.68   | 4.69  | 0.00   | 41.63  | 54.00  | -12.37 | Average |

**Test channel: Highest**

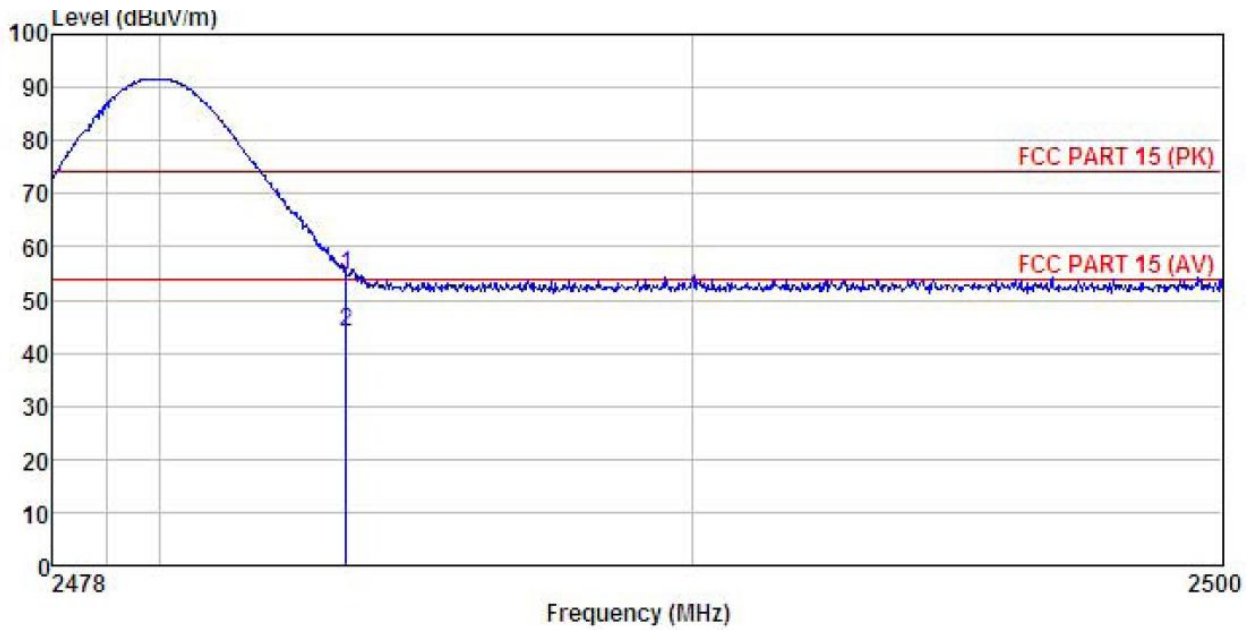
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : 2DH1-H mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|      | Read     | Antenna | Cable | Preamp | Level  | 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 | 27.94   | 23.70 | 4.81   | 0.00   | 56.45  | 74.00 | -17.55 Peak   |
| 2    | 2483.500 | 15.96   | 23.70 | 4.81   | 0.00   | 44.47  | 54.00 | -9.53 Average |

Vertical:



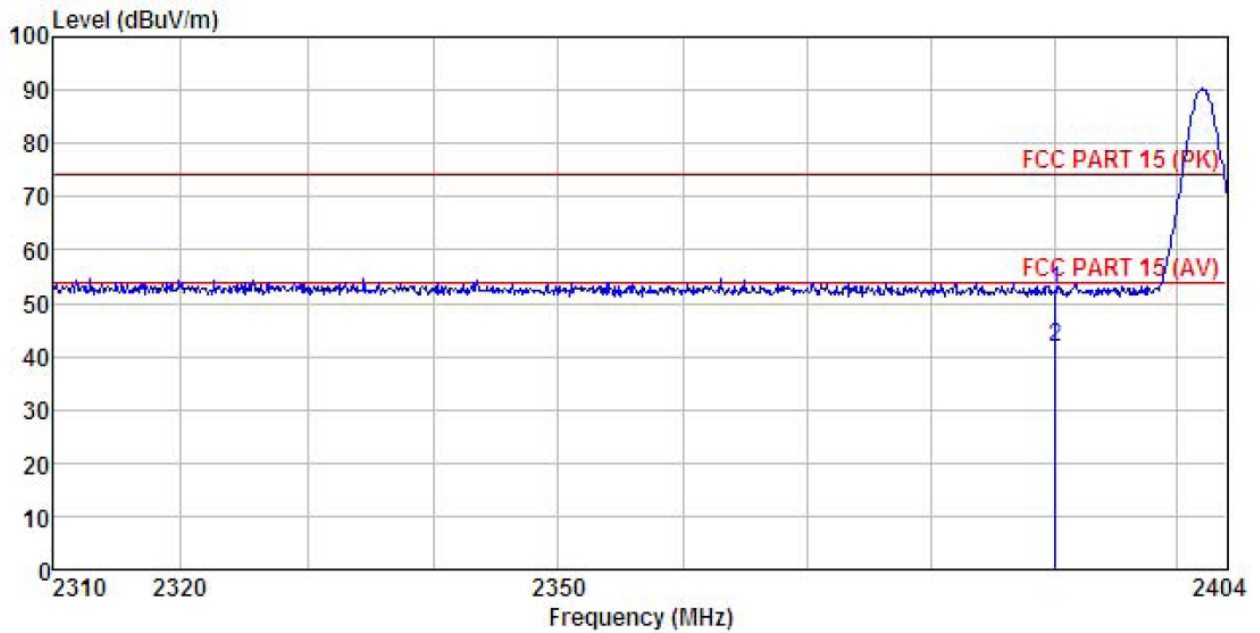
Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : 2DH1-H mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|      | Read     | Antenna | Cable | Preamp | Limit  | Over   |        |                |
|------|----------|---------|-------|--------|--------|--------|--------|----------------|
| Freq | Level    | Factor  | Loss  | Factor | Line   | Limit  | Remark |                |
| MHz  | dBuV     | dB/m    | dB    | dB     | dBuV/m | dBuV/m | dB     |                |
| 1    | 2483.500 | 26.02   | 23.70 | 4.81   | 0.00   | 54.53  | 74.00  | -19.47 Peak    |
| 2    | 2483.500 | 15.43   | 23.70 | 4.81   | 0.00   | 43.94  | 54.00  | -10.06 Average |

**8DPSK mode**

**Test channel: Lowest**

Horizontal:

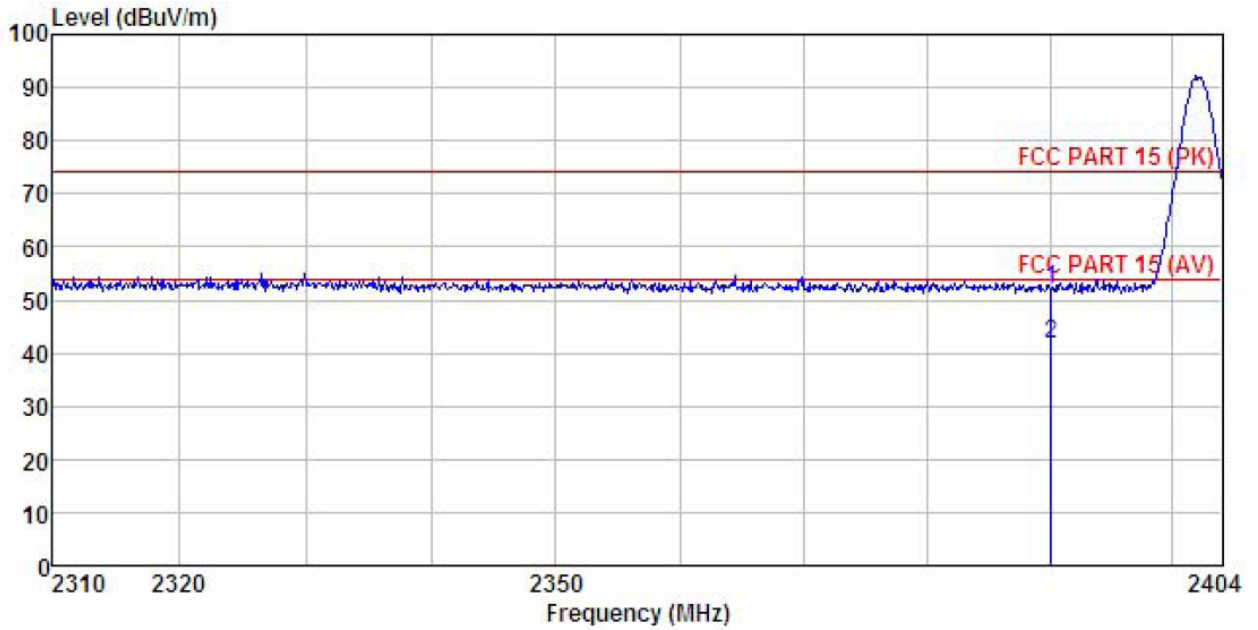


```

Site       : 3m chamber
Condition  : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT       : Bluetooth Earphone
Model     : HPB4HE
Test mode  : 3DH1-L mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Humi:55% 101KPa
Test Engineer: Zora
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     | 2390.000 | 23.98   | 23.68 | 4.69   | 0.00   | 52.35  | 74.00 | -21.65 Peak    |
| 2     | 2390.000 | 13.30   | 23.68 | 4.69   | 0.00   | 41.67  | 54.00 | -12.33 Average |

Vertical:



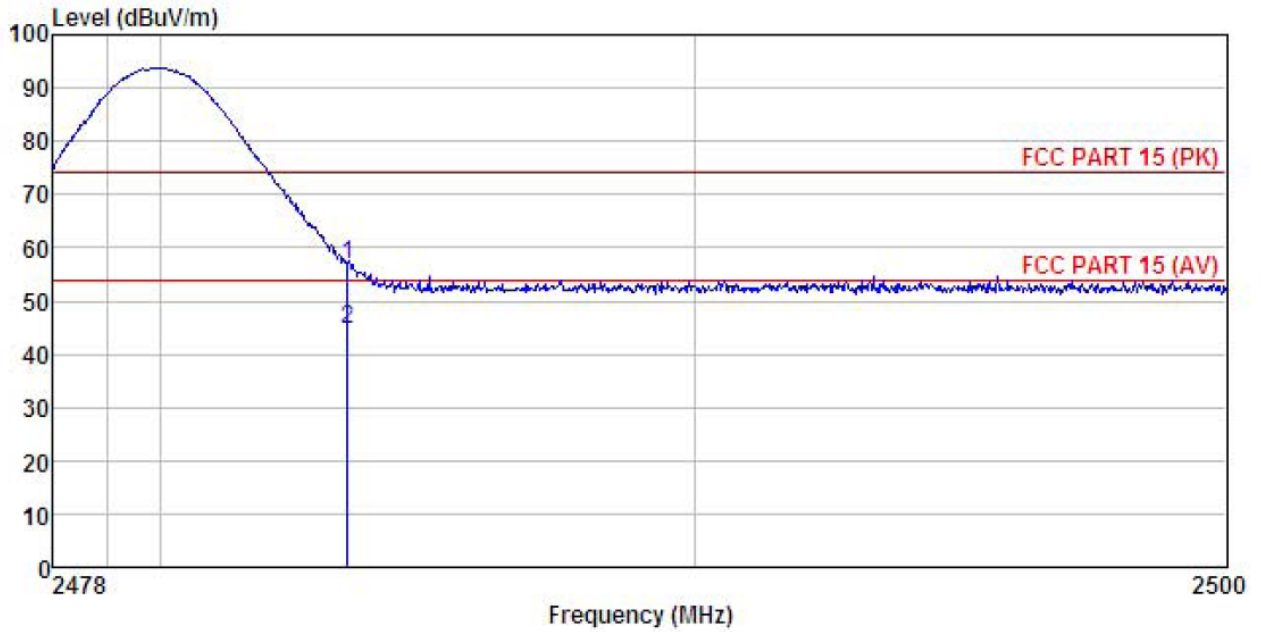
Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : 3DH1-L mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|       | Read     | Antenna | Cable | Preamp | Level | Limit | Over  |        |         |
|-------|----------|---------|-------|--------|-------|-------|-------|--------|---------|
| ----- | Level    | Factor  | Loss  | Factor | ----- | Line  | Limit | -----  |         |
| ----- | -----    | -----   | ----- | -----  | ----- | ----- | ----- | -----  |         |
| ----- | -----    | -----   | ----- | -----  | ----- | ----- | ----- | -----  |         |
| ----- | -----    | -----   | ----- | -----  | ----- | ----- | ----- | -----  |         |
| 1     | 2390.000 | 23.61   | 23.68 | 4.69   | 0.00  | 51.98 | 74.00 | -22.02 | Peak    |
| 2     | 2390.000 | 13.31   | 23.68 | 4.69   | 0.00  | 41.68 | 54.00 | -12.32 | Average |



**Test channel: Highest**

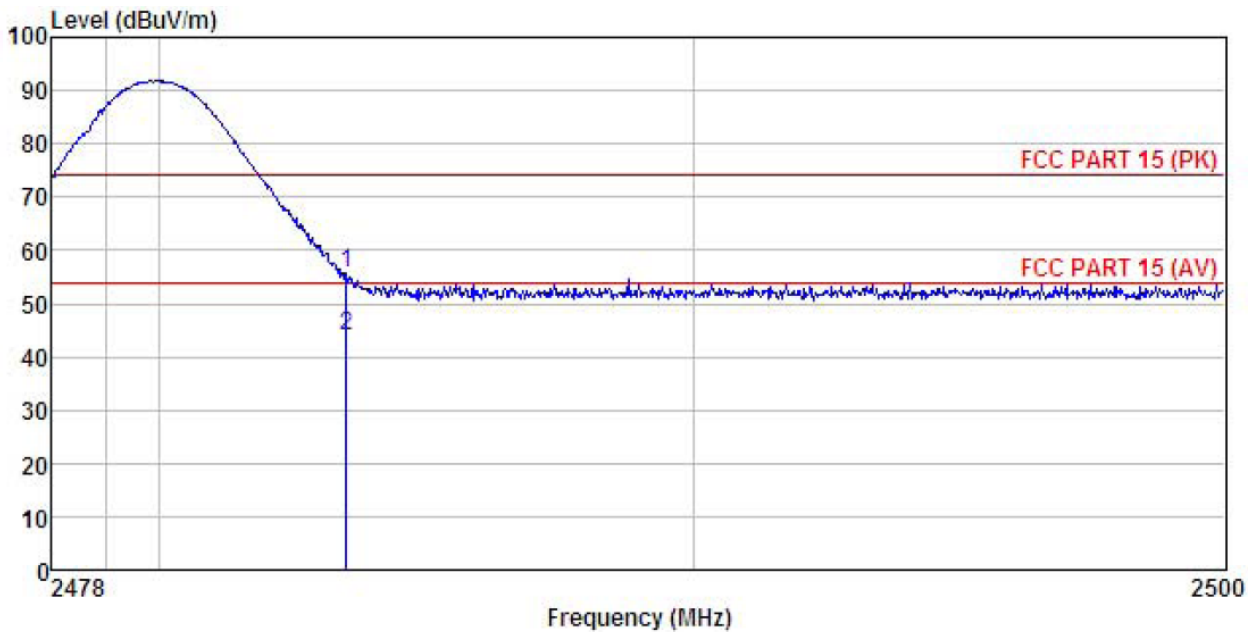
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : 3DH1-H mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|   | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Remark  |
|---|----------|------------|----------------|------------|---------------|--------|------------|------------|---------|
|   | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |         |
| 1 | 2483.500 | 28.33      | 23.70          | 4.81       | 0.00          | 56.84  | 74.00      | -17.16     | Peak    |
| 2 | 2483.500 | 15.99      | 23.70          | 4.81       | 0.00          | 44.50  | 54.00      | -9.50      | Average |

Vertical:

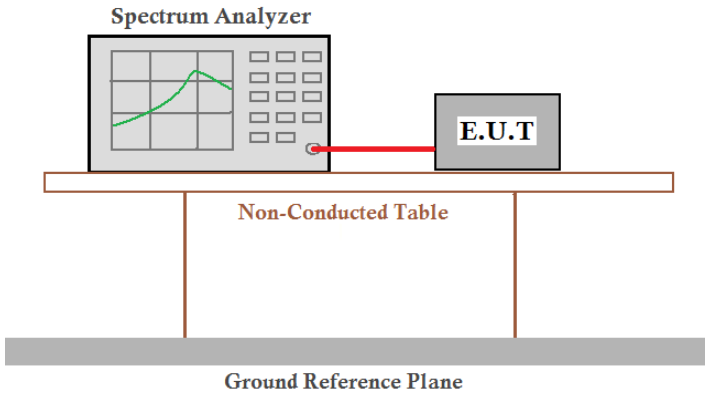


Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : 3DH1-H mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

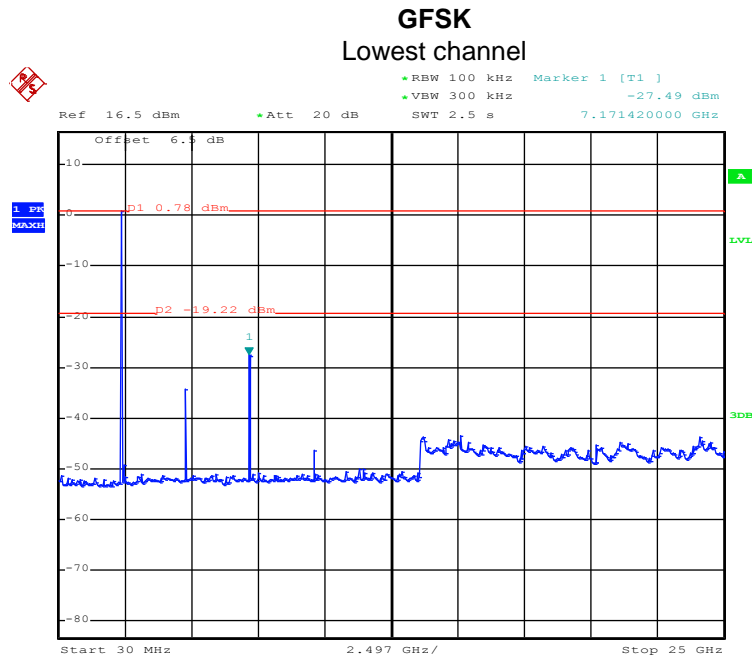
|   | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Remark  |
|---|----------|------------|----------------|------------|---------------|--------|------------|------------|---------|
|   | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |         |
| 1 | 2483.500 | 27.33      | 23.70          | 4.81       | 0.00          | 55.84  | 74.00      | -18.16     | Peak    |
| 2 | 2483.500 | 15.45      | 23.70          | 4.81       | 0.00          | 43.96  | 54.00      | -10.04     | Average |

## 6.10 Spurious Emission

### 6.10.1 Conducted Emission Method

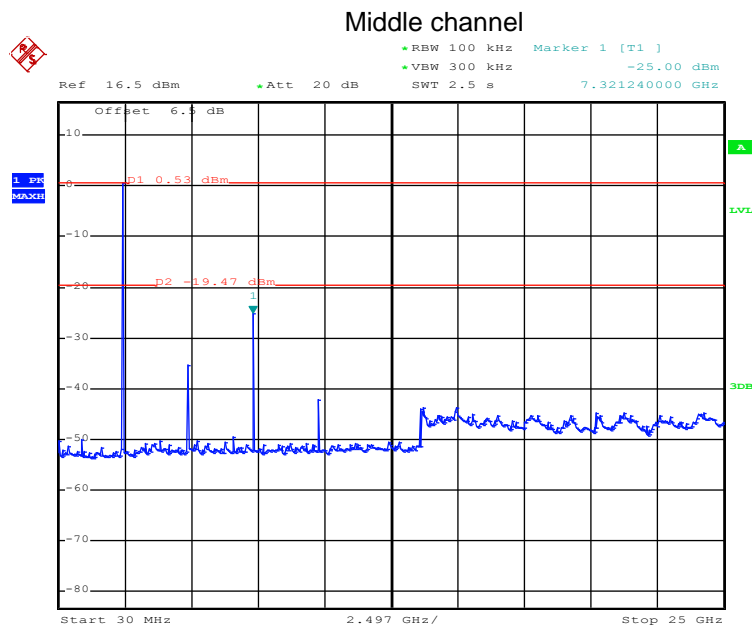
|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (d)  |
| Test Method:      | ANSI C63.10:2013 and DA00-705   |
| Limit:            | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, 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:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two legs. Below the table is a Ground Reference Plane.</p>   |
| Test Instruments: | Refer to section 5.7 for details  |
| Test mode:        | Non-hopping mode  |
| Test results:     | Pass  |

Test plot as follows:



Date: 27.SEP.2016 11:11:55

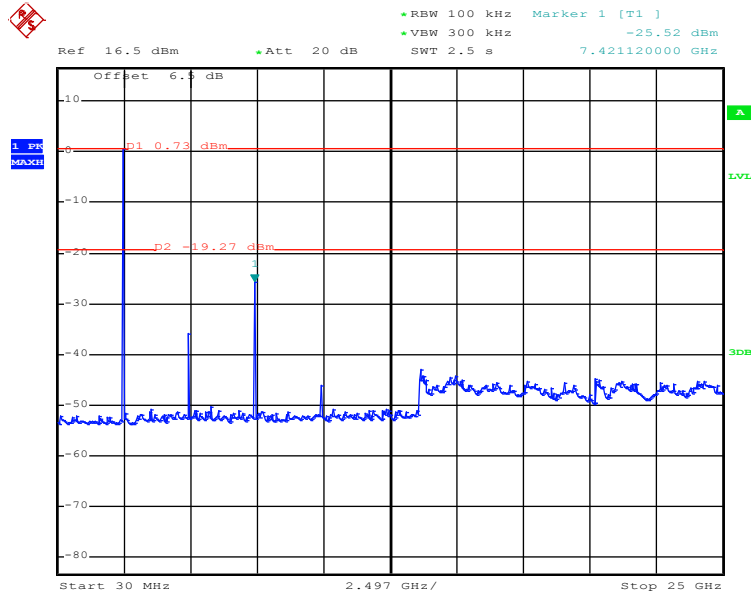
30MHz~25GHz



Date: 27.SEP.2016 11:18:28

30MHz~25GHz

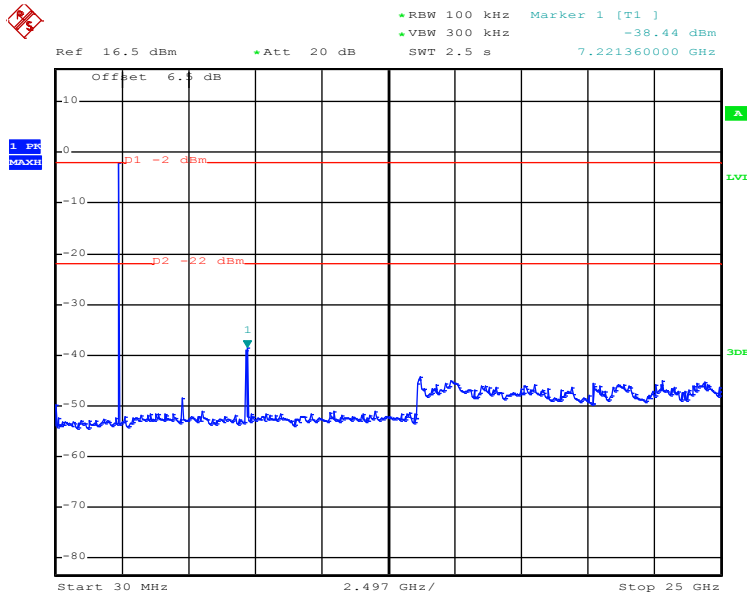
### Highest channel



Date: 27.SEP.2016 11:14:27

30MHz~25GHz

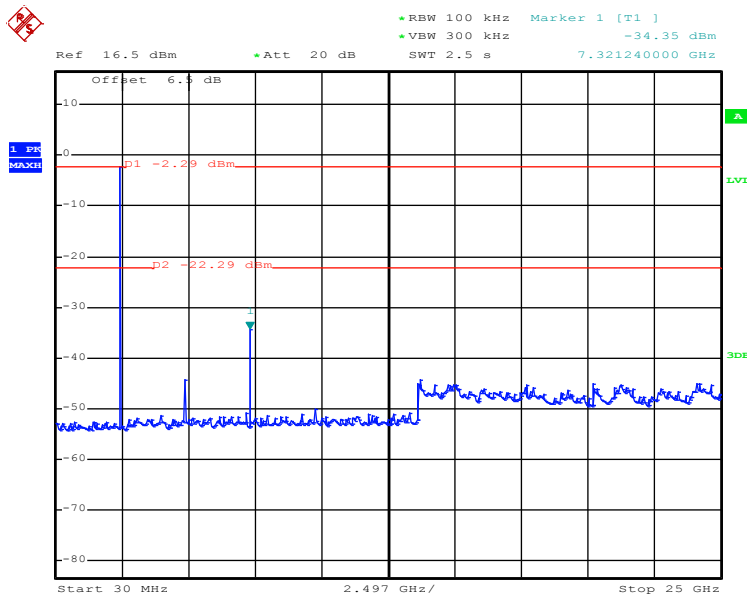
## $\pi/4$ -DQPSK Lowest channel



Date: 27.SEP.2016 11:19:46

30MHz~25GHz

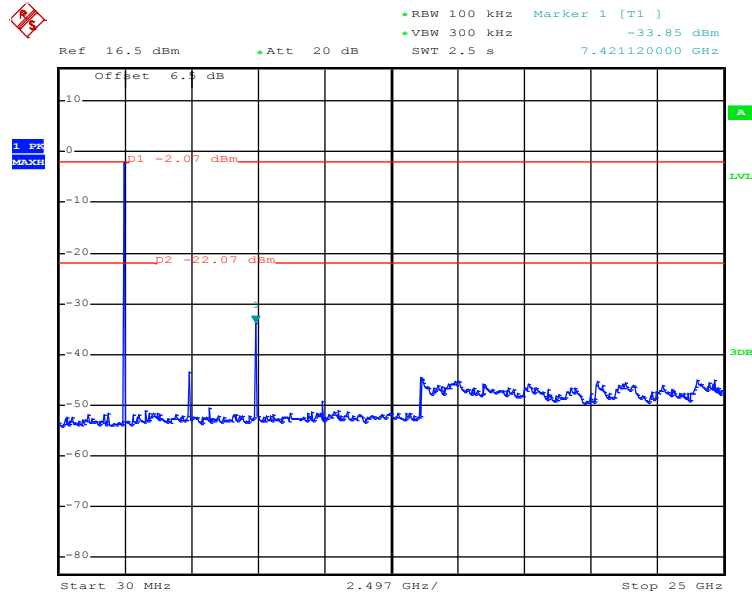
## Middle channel



Date: 27.SEP.2016 11:20:32

30MHz~25GHz

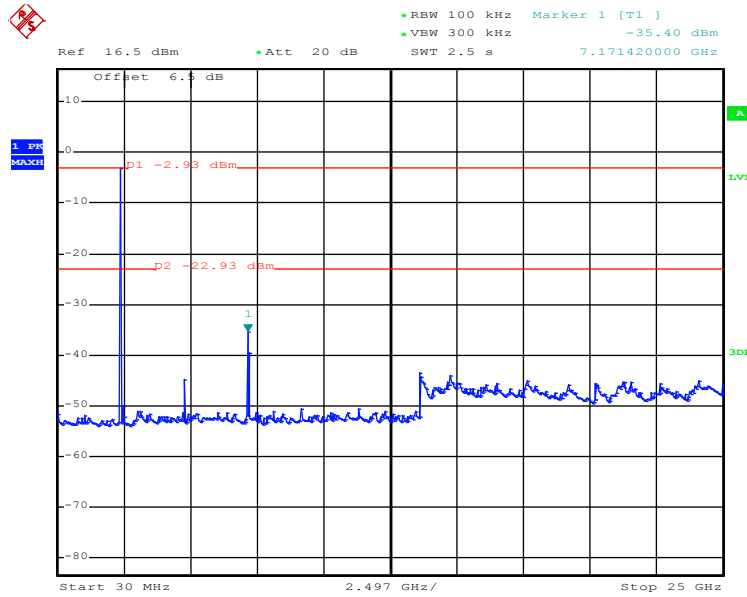
### Highest channel



Date: 27.SEP.2016 11:21:23

30MHz~25GHz

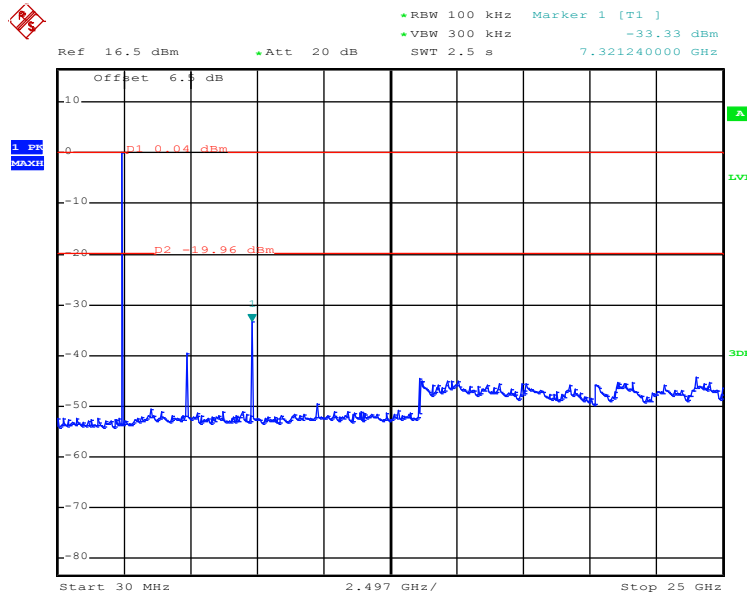
## 8DPSK Lowest channel



Date: 27.SEP.2016 11:22:46

30MHz~25GHz

## Middle channel

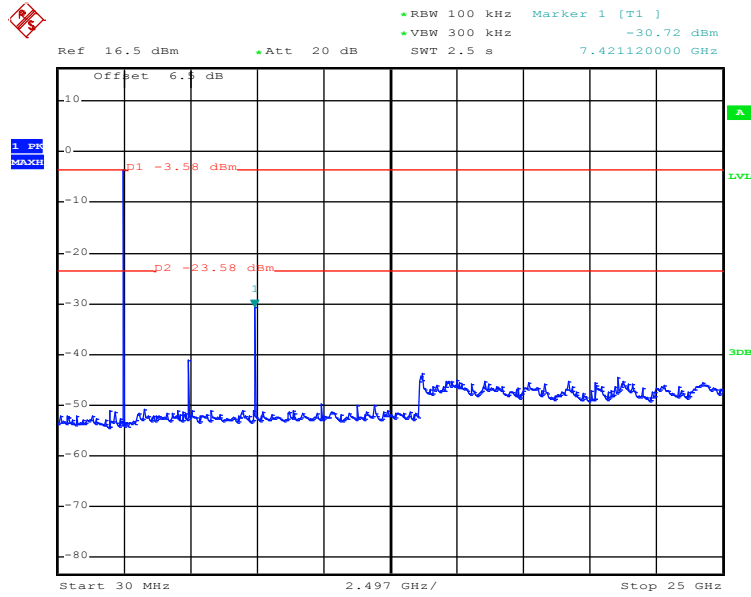


Date: 27.SEP.2016 11:24:45

30MHz~25GHz



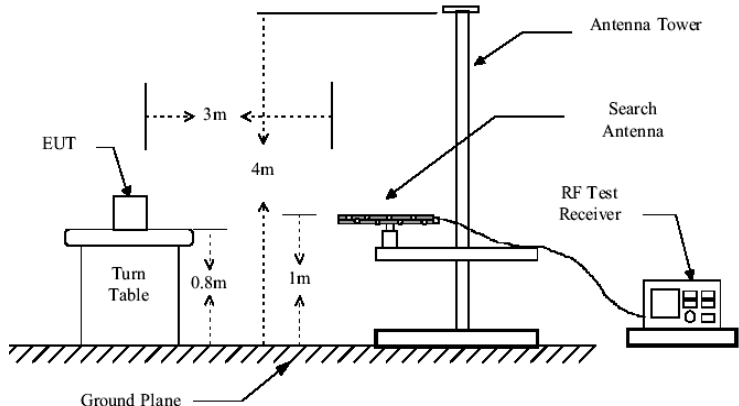
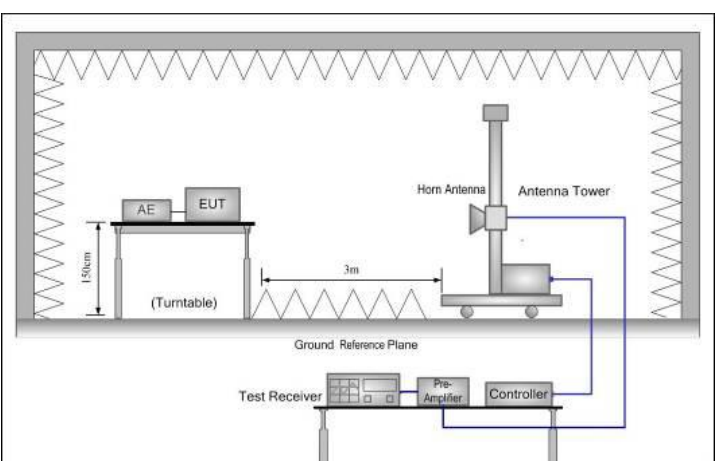
### Highest channel



Date: 27.SEP.2016 11:25:53

30MHz~25GHz

## 6.10.2 Radiated Emission Method

|                       |  |            |                    |        |                  |
|-----------------------|--|------------|--------------------|--------|------------------|
| Test Requirement:     | FCC Part 15 C Section 15.209   |            |                    |        |                  |
| Test Method:          | ANSI C63.10: 2013  |            |                    |        |                  |
| 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       |
|                       |  | RMS        | 1MHz               | 3MHz   | Average Value    |
| Limit:                | 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    |
|                       |  |            |                    | 74.0   | Peak Value       |
| Test setup:           | <p>Below 1GHz</p>  <p>Above 1GHz</p>  |            |                    |        |                  |

|                   |  |
|-------------------|--|
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz) /1.5m(above 1GHz) above the ground at a 3 meter chamber. 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   |

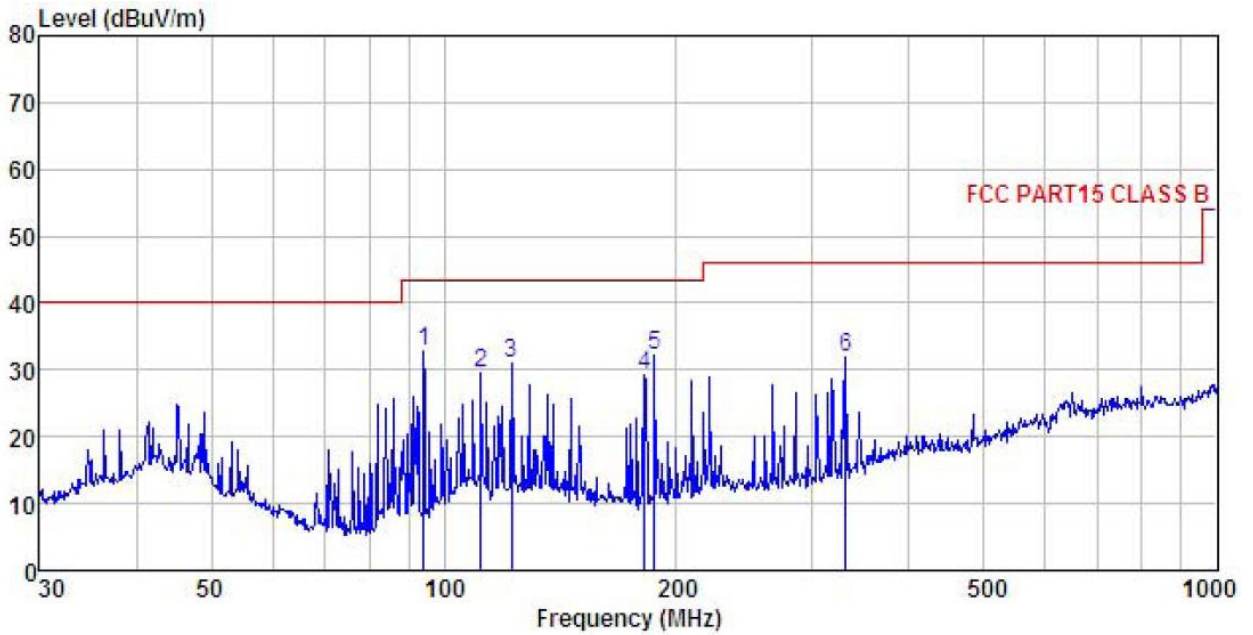
**Remark:**

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**

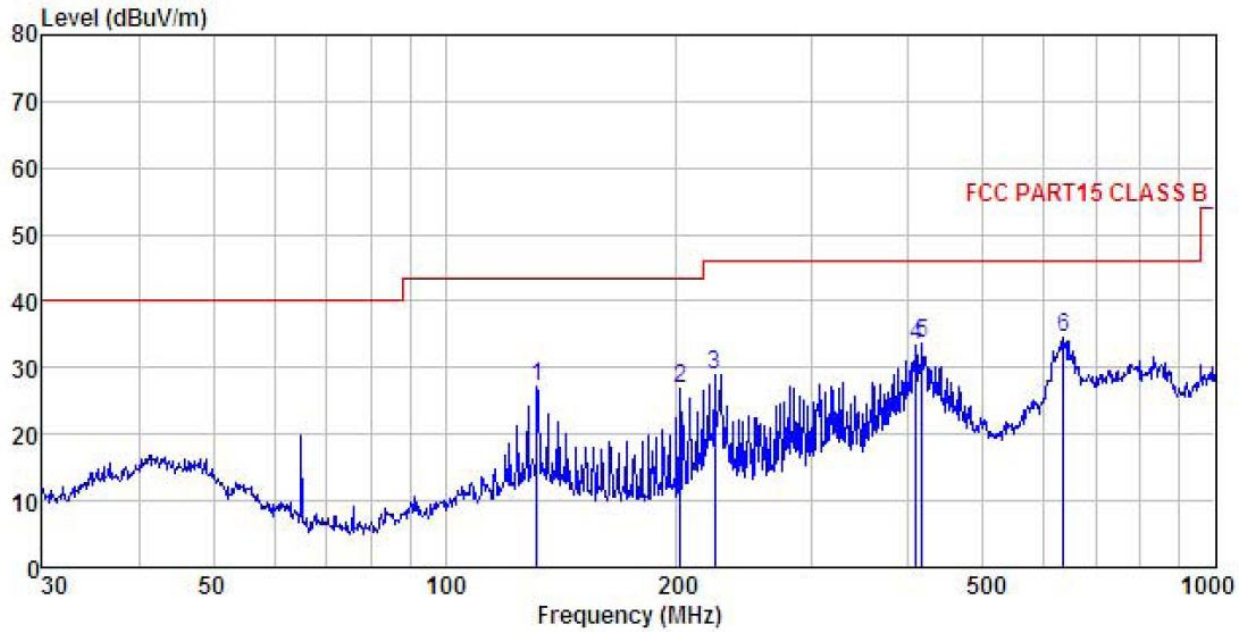
Vertical:



Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) VERTICAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : BT mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|      | Read    | Antenna | Cable | Preamp | Limit  | Over   |        |           |
|------|---------|---------|-------|--------|--------|--------|--------|-----------|
| Freq | Level   | Factor  | Loss  | Factor | Line   | Limit  | Remark |           |
| MHz  | dBuV    | dB/m    | dB    | dB     | dBuV/m | dBuV/m | dB     |           |
| 1    | 94.098  | 51.77   | 8.53  | 2.01   | 29.55  | 32.76  | 43.50  | -10.74 QP |
| 2    | 111.738 | 46.17   | 10.62 | 2.08   | 29.44  | 29.43  | 43.50  | -14.07 QP |
| 3    | 122.404 | 46.35   | 11.92 | 2.19   | 29.38  | 31.08  | 43.50  | -12.42 QP |
| 4    | 181.920 | 46.21   | 9.28  | 2.74   | 28.96  | 29.27  | 43.50  | -14.23 QP |
| 5    | 187.096 | 48.73   | 9.53  | 2.78   | 28.92  | 32.12  | 43.50  | -11.38 QP |
| 6    | 331.355 | 43.85   | 13.63 | 3.04   | 28.52  | 32.00  | 46.00  | -14.00 QP |

Horizontal:



Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) HORIZONTAL  
 EUT : Bluetooth Earphone  
 Model : HPB4HE  
 Test mode : BT mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

|      | Read    | Antenna | Cable | Preamp | Level  | Limit  | Over  |           |
|------|---------|---------|-------|--------|--------|--------|-------|-----------|
| Freq | Level   | Factor  | Loss  | Factor | Level  | Line   | Limit | Remark    |
| MHz  | dBuV    | dB/m    | dB    | dB     | dBuV/m | dBuV/m | dB    |           |
| 1    | 131.758 | 41.86   | 12.19 | 2.30   | 29.32  | 27.03  | 43.50 | -16.47 QP |
| 2    | 202.100 | 42.65   | 10.29 | 2.87   | 28.82  | 26.99  | 43.50 | -16.51 QP |
| 3    | 223.733 | 43.38   | 11.53 | 2.84   | 28.69  | 29.06  | 46.00 | -16.94 QP |
| 4    | 408.946 | 43.13   | 15.96 | 3.10   | 28.80  | 33.39  | 46.00 | -12.61 QP |
| 5    | 416.179 | 43.37   | 16.00 | 3.12   | 28.81  | 33.68  | 46.00 | -12.32 QP |
| 6    | 636.134 | 40.71   | 18.71 | 3.88   | 28.82  | 34.48  | 46.00 | -11.52 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         | 68.31             | 35.99                 | 6.80            | 41.81              | 69.29          | 74.00               | -4.71           | Vertical     |
| 4804.00         | 68.16             | 35.99                 | 6.80            | 41.81              | 69.14          | 74.00               | -4.86           | 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         | 44.60             | 35.99                 | 6.80            | 41.81              | 45.58          | 54.00               | -8.42           | Vertical     |
| 4804.00         | 44.62             | 35.99                 | 6.80            | 41.81              | 45.60          | 54.00               | -8.40           | 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         | 66.73             | 36.38                 | 6.86            | 41.84              | 68.13          | 74.00               | -5.87           | Vertical     |
| 4882.00         | 64.01             | 36.38                 | 6.86            | 41.84              | 65.41          | 74.00               | -8.59           | 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         | 43.95             | 36.38                 | 6.86            | 41.84              | 45.35          | 54.00               | -8.65           | Vertical     |
| 4882.00         | 41.95             | 36.38                 | 6.86            | 41.84              | 43.35          | 54.00               | -10.65          | 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         | 66.58             | 36.71                 | 6.91            | 41.87              | 68.33          | 74.00               | -5.67           | Vertical     |
| 4960.00         | 60.59             | 36.71                 | 6.91            | 41.87              | 62.34          | 74.00               | -11.66          | 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         | 43.70             | 36.71                 | 6.91            | 41.87              | 45.45          | 54.00               | -8.55           | Vertical     |
| 4960.00         | 42.31             | 36.71                 | 6.91            | 41.87              | 44.06          | 54.00               | -9.94           | 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.