# FCC TEST REPORT

FOR

ZAGG Inc.

Bluetooth Keyboard

Model No.: ZAGG Folio For LG G Pad 8.3 LTE

| | | |
|---|---|---|
| Prepared for | : | ZAGG Inc. |
| Address | : | 3855 South 500 West Salt Lake City, UT 84115 USA |
| Prepared by | : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
| Address | : | 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China |
| Date of receipt of test sample | : | February 17, 2014 |
| Number of tested samples | : | 1 |
| Serial number | : | Prototype |
| Date of Test | : | February 17, 2014 – February 19, 2014 |
| Date of Report | : | February 19, 2014 |

**FCC TEST REPORT**

**FCC CFR 47 PART 15 C(15.247): 2012**

| | | |
|---|---|---|
| **Report Reference No. ..... :** | **LCS140217185TF** |
| Date of Issue ..... : | February 19, 2014 |
| **Testing Laboratory Name..... :** | **Shenzhen LCS Compliance Testing Laboratory Ltd.** |
| Address ..... : | 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China |
| Testing Location/ Procedure..... : | Full application of Harmonised standards ■<br>Partial application of Harmonised standards □<br>Other standard testing method □ |
| **Applicant's Name ..... :** | **ZAGG Inc.** |
| Address ..... : | 3855 South 500 West Salt Lake City, UT 84115 USA |
| **Test Specification** | |
| Standard ..... : | FCC CFR 47 PART 15 C(15.247): 2012 |
| Test Report Form No. ..... : | LCSEMC-1.0 |
| TRF Originator ..... : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
| Master TRF ..... : | Dated 2011-03 |



| | | |
|---|---|---|
| **Test Item Description. ..... :** | **Bluetooth Keyboard** |
| Trade Mark ..... : | **ZAGG** |
| Model/ Type reference..... : | ZAGG Folio For LG G Pad 8.3 LTE |
| Ratings ..... : | DC 3.7V by battery(190mAh)<br>Charging:DC 5V, 200~1000mA |
| **Result ..... :** | **Positive** |

| **Compiled by:** | **Supervised by:** | **Approved by:** |
|---|---|---|
| Jacky Li/ File administrators | Fox Zhang/ Technique principal | Gavin Liang/ Manager |

# FCC -- TEST REPORT

| **Test Report No. : LCS140217185TF** | February 19, 2014<br>Date of issue |
|---|---|

| | |
|---|---|
| Type / Model..... | : ZAGG Folio For LG G Pad 8.3 LTE |
| EUT..... | : Bluetooth Keyboard |
| **Applicant.....** | **: ZAGG Inc.** |
| Address..... | : 3855 South 500 West Salt Lake City, UT 84115 USA |
| Telephone..... | : / |
| Fax..... | : / |
| **Manufacturer.....** | **: ShenZhen YouShou Leather Goods Co., LTD** |
| Address..... | : 79 Bldg, Li Song Lang Second Industry Area Gong Ming,Guang Ming New Area,ShenZhen,China |
| Telephone..... | : / |
| Fax..... | : / |
| **Factory.....** | : **ShenZhen YouShou Leather Goods Co., LTD** |
| Address..... | : 79 Bldg, Li Song Lang Second Industry Area Gong Ming,Guang Ming New Area,ShenZhen,China |
| Telephone..... | : / |
| Fax..... | : / |

| **Test Result** | **Positive** |
|---|---|

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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Description Page

# 1. GENERAL INFORMATION

## 1.1 Description of Device (EUT)

| | |
|---|---|
| EUT | Bluetooth Keyboard |
| Model No. | ZAGG Folio For LG G Pad 8.3 LTE |
| Frequency Range | 2.402-2.480GHz |
| Channel Number | 79 |
| Channel frequency | 2402.00-2480.00MHz (Channel Frequency=2402+1(K-1), K=1, 2, 3 ……79) |
| Channel Spacing | 1MHz for 79 channels |
| Modulation Type | GFSK(1Mbps), π /4-DQPSK(2Mbps) , 8-DPSK(3Mbps) |
| Bluetooth Version | V3.0 |
| Antenna Gain | PCB antenna, 1.87dBi(Max.) |
| Input Voltage | : DC 3.7V by battery(190mAh)<br>Charging:DC 5V, 200~1000mA |

## 1.2 Support equipment List

| Manufacturer | Description | Model | Serial Number | Certificate |
|---|---|---|---|---|
| Lenovo | Notebook | B470 | WB05067151 | DOC |

## 1.3 External I/O Cable

| I/O Port Description | Quantity | Cable |
|---|---|---|
| USB Port | 1 | -- |
| -- | -- | -- |

## 1.4 Description of Test Facility

| Site Description | | |
|---|---|---|
| EMC Lab. | : | Accredited by CNAS, June 04, 2010<br>The Certificate Registration Number. is L4595.<br><br>Accredited by FCC, July 14, 2011<br>The Certificate Registration Number. is 899208.<br><br>Accredited by Industry Canada, May. 02, 2011<br>The Certificate Registration Number. is 9642A-1<br><br>Accredited by VCCI, Japan January 30, 2012<br>The Certificate Registration Number. is C-4260 and R-3804<br><br>Accredited by ESMD, April 24, 2012<br>The Certificate Registration Number. is ARCB0108.<br><br>Accredited by UL, June 11, 2012<br>The Certificate Registration Number. is 100571-492.<br><br>Accredited by TUV, November 21, 2012<br>The Certificate Registration Number. is SCN1081<br><br>Accredited by Intertek, December 21, 2012<br>The Certificate Registration Number. is 2011-RTL-L1-50. |

## 1.5 Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 1.6 Measurement Uncertainty

| Test Item | | Frequency Range | Uncertainty | Note |
|---|---|---|---|---|
| Radiation Uncertainty | : | 9KHz~30MHz | ±3.10dB | (1) |
| | | 30MHz~200MHz | ±2.96dB | (1) |
| | | 200MHz~1000MHz | ±3.10dB | (1) |
| | | 1GHz~26.5GHz | ±3.80dB | (1) |
| | | 26.5GHz~40GHz | ±3.90dB | (1) |
| Conduction Uncertainty | : | 150kHz~30MHz | ±1.63dB | (1) |
| Power disturbance | : | 30MHz~300MHz | ±1.60dB | (1) |

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.7 Description Of Test Modes

Bluetooth operates in the unlicensed ISM Band at 2.4GHz. With the introduction of the enhanced data rate (EDR) feature, the data rates can be up to 3 Mb/s. An increase in the peak data rate beyond the basic rate of 1 Mb/s is achieved by modulating the RF carrier using GFSK techniques, resulting in an increase of two to three times the number of bits per symbol. The 2 Mb/s EDR packets use a $\pi$ /4-DQPSK modulation and the 3 Mb/s EDR packets use 8DPSK modulation. All 3axis have been tested. The following operating modes were applied for the related test items. All test modes were tested, only the result of the worst case was recorded in the report.

| Mode of Operations | Frequency Range (MHz) | Data Rate (Mbps) |
|---|---|---|
| GFSK | 2402 | 1 |
| | 2441 | 1 |
| | 2480 | 1 |
| π /4 DQPSK | 2402 | 2 |
| | 2441 | 2 |
| | 2480 | 2 |
| 8-DPSK | 2402 | 3 |
| | 2441 | 3 |
| | 2480 | 3 |
| For Conducted Emission | | |
| Test Mode | TX Mode | |
| For Radiated Emission | | |
| Test Mode | TX Mode | |

Worst-case mode and channel used for 150kHz-30 MHz power line conducted emissions was the mode and channel with the highest output power, that was determined to be TX(1Mbps-Hopping Mode).

Worst-case mode and channel used for 9kHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be TX(1Mbps---Low Channel, Mid Channel and High Channel).

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, RSS-210, FCC CFR PART 15C 15.207, 15.209, 15.247 and DA 00-705.

## 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 2.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209, 15.247 under the FCC Rules Part 15 Subpart C and RSS-210.

## 2.3 General Test Procedures

### 2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

### 2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009

# 3. SYSTEM TEST CONFIGURATION

## 3.1 Justification

The system was configured for testing in a continuous transmit condition.

## 3.2 EUT Exercise Software

N/A.

## 3.3 Special Accessories

N/A.

## 3.4 Block Diagram/Schematics

Please refer to the related document.

## 3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

## 3.6 Test Setup

Please refer to the test setup photo.

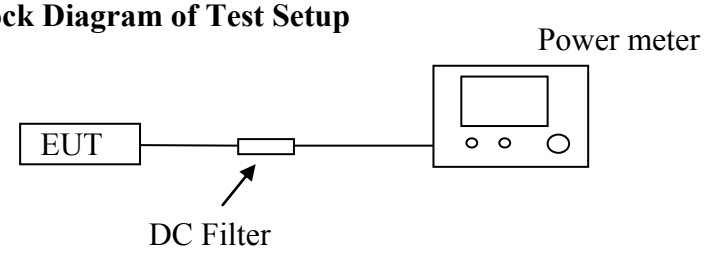
# 4. ANTENNA PORT MEASUREMENT

## 4.1 Peak Power

### 4.1.1 Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1 | Power Sensor | R&S | NRV-Z51 | 100458 | 2013-06-18 | 2014-06-17 |
| 2 | Power Sensor | R&S | NRV-Z32 | 10057 | 2013-06-18 | 2014-06-17 |
| 3 | Power Meter | R&S | NRVS | 100444 | 2013-06-18 | 2014-06-17 |
| 4 | DC Filter | MPE | 23872C | N/A | 2013-06-18 | 2014-06-17 |

### 4.1.2 Block Diagram of Test Setup




### 4.1.3 Limit

According to §15.247(a)(1) or A8.4 (2), For 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 125mW..

### 4.1.4 Test Procedure

The transmitter output is connected to the Power Meter.

### 4.1.5 Test Results

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (mW) | Limit (mW) | Result |
|---|---|---|---|---|---|
| GFSK | 2402 | 2.405 | 1.7398 | 125 | Pass |
| | 2441 | 3.090 | 2.0370 | 125 | Pass |
| | 2480 | 1.848 | 1.5304 | 125 | Pass |
| π /4 DQPSK | 2402 | 1.968 | 1.5733 | 125 | Pass |
| | 2441 | 2.623 | 1.8294 | 125 | Pass |
| | 2480 | 1.437 | 1.3922 | 125 | Pass |
| 8-DPSK | 2402 | 2.081 | 1.6147 | 125 | Pass |
| | 2441 | 2.663 | 1.8463 | 125 | Pass |
| | 2480 | 1.444 | 1.3944 | 125 | Pass |

## 4.2 Frequency Separation And 20 dB Bandwidth

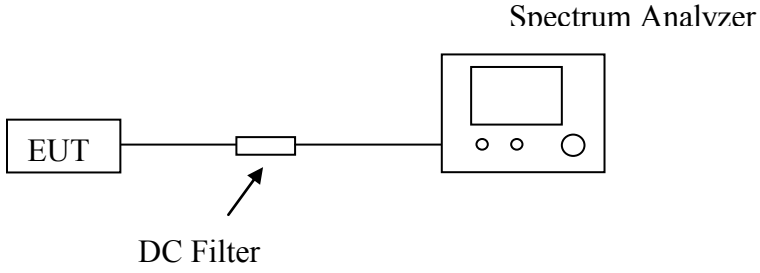
### 4.2.1 Limit

According to §15.247(c) or A8.1(a), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a).

### 4.2.2 Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer | Agilent | E4407B | MY41440292 | 2013-06-16 | 2014-06-15 |
| 2 | Signal analyzer | Agilent | E4448A(External mixers to 40GHz) | US44300469 | 2013-06-16 | 2014-06-15 |
| 3 | RF Cable | Hubersuhne | Sucoflex104 | FP2RX2 | 2013-06-18 | 2014-06-17 |
| 4 | DC Filter | MPE | 23872C | N/A | 2013-06-18 | 2014-06-17 |

### 4.2.3 Block Diagram of Test Setup




### 4.2.4 Test Procedure

A. Place the EUT on the table and set it in transmitting mode.
B. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
C. Set center frequency of Spectrum Analyzer = middle of hopping channel.
D. Set the Spectrum Analyzer as RBW = 100kHz, VBW = 100kHz, Span = wide enough to capture the peaks of two adjacent channels, Sweep = auto.
E. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

20dB bandwidth test procedure：

A. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel.
B. RBW ⩾1% of the 20 dB bandwidth, VBW ⩾RBW.
C. Detector function = peak.
D. Trace = max hold.

### 4.2.5 Test Results

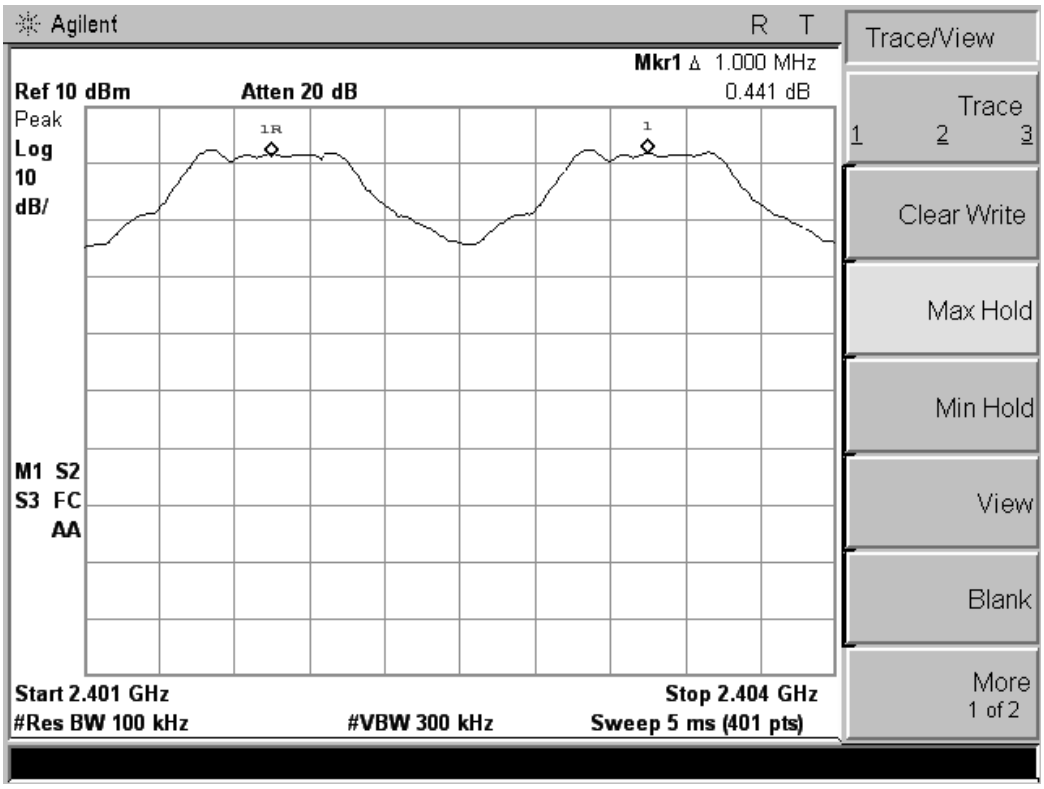
| The Measurement Result With 1Mbps For GFSK Modulation | | | | |
|---|---|---|---|---|
| **Channel** | **20dB Bandwidth (KHz)** | **Channel Separation (MHz)** | **Limit (MHz)** | **Result** |
| Low | 831.114 | 1.000 | >=25 KHz or 2/3 20 dB BW | Pass |
| Middle | 830.255 | | >=25 KHz or 2/3 20 dB BW | Pass |
| High | 829.942 | | >=25 KHz or 2/3 20 dB BW | Pass |

| The Measurement Result With 2Mbps For π /4 DQPSK Modulation | | | | |
|---|---|---|---|---|
| **Channel** | **20dB Bandwidth (MHz)** | **Channel Separation (MHz)** | **Limit (MHz)** | **Result** |
| Low | 1.123 | 1.000 | >=25 KHz or 2/3 20 dB BW | Pass |
| Middle | 1.123 | | >=25 KHz or 2/3 20 dB BW | Pass |
| High | 1.126 | | >=25 KHz or 2/3 20 dB BW | Pass |

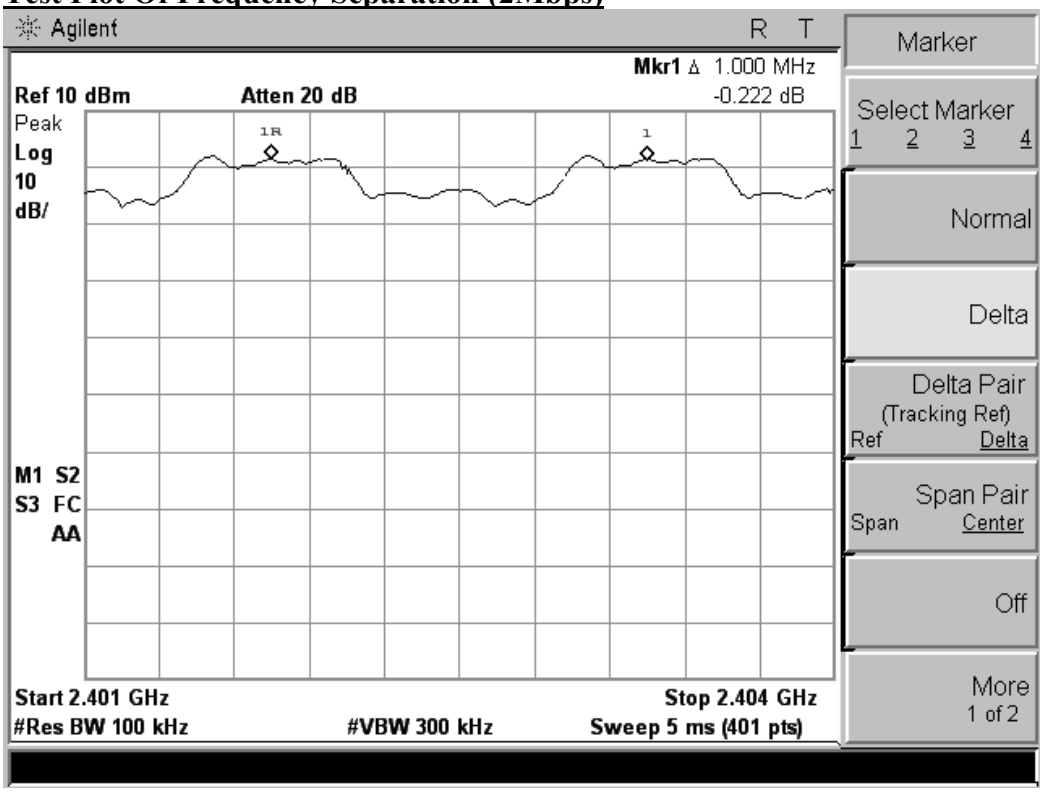
| The Measurement Result With 3Mbps For 8-DPSK Modulation | | | | |
|---|---|---|---|---|
| **Channel** | **20dB Bandwidth (MHz)** | **Channel Separation (MHz)** | **Limit (MHz)** | **Result** |
| Low | 1.165 | 1.000 | >=25 KHz or 2/3 20 dB BW | Pass |
| Middle | 1.163 | | >=25 KHz or 2/3 20 dB BW | Pass |
| High | 1.166 | | >=25 KHz or 2/3 20 dB BW | Pass |

*The test data refer to the following page.*

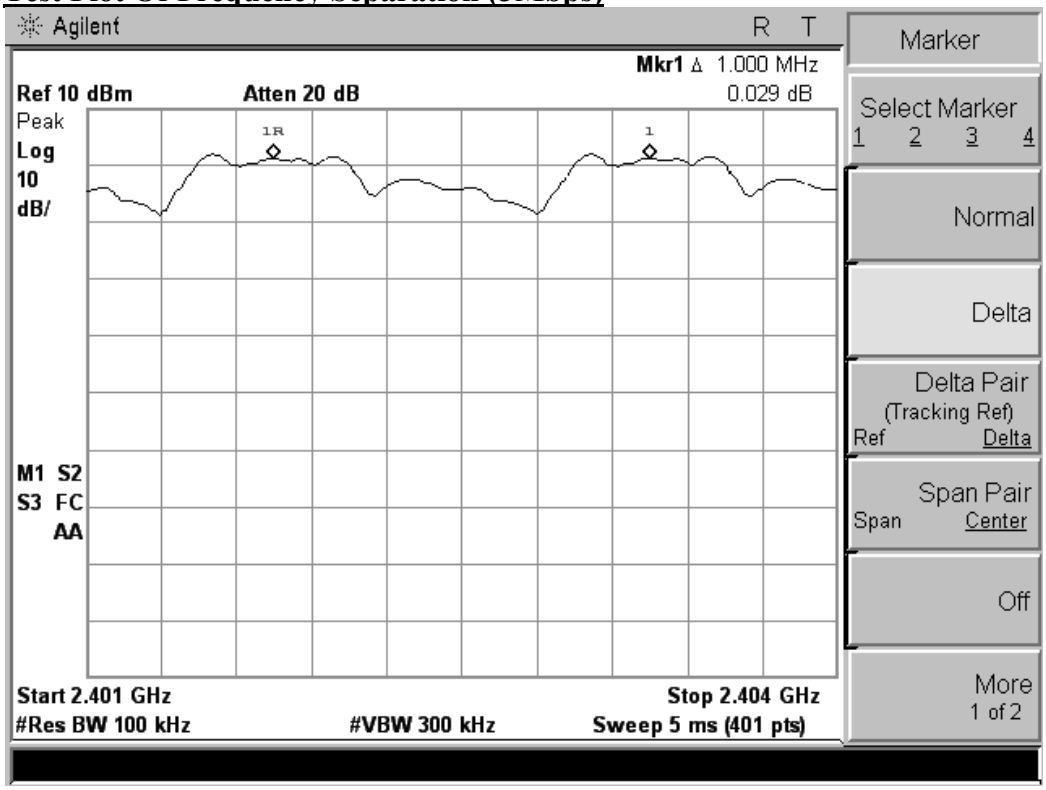
## Test Plot Of Frequency Separation (1Mbps)




## Test Plot Of Frequency Separation (2Mbps)

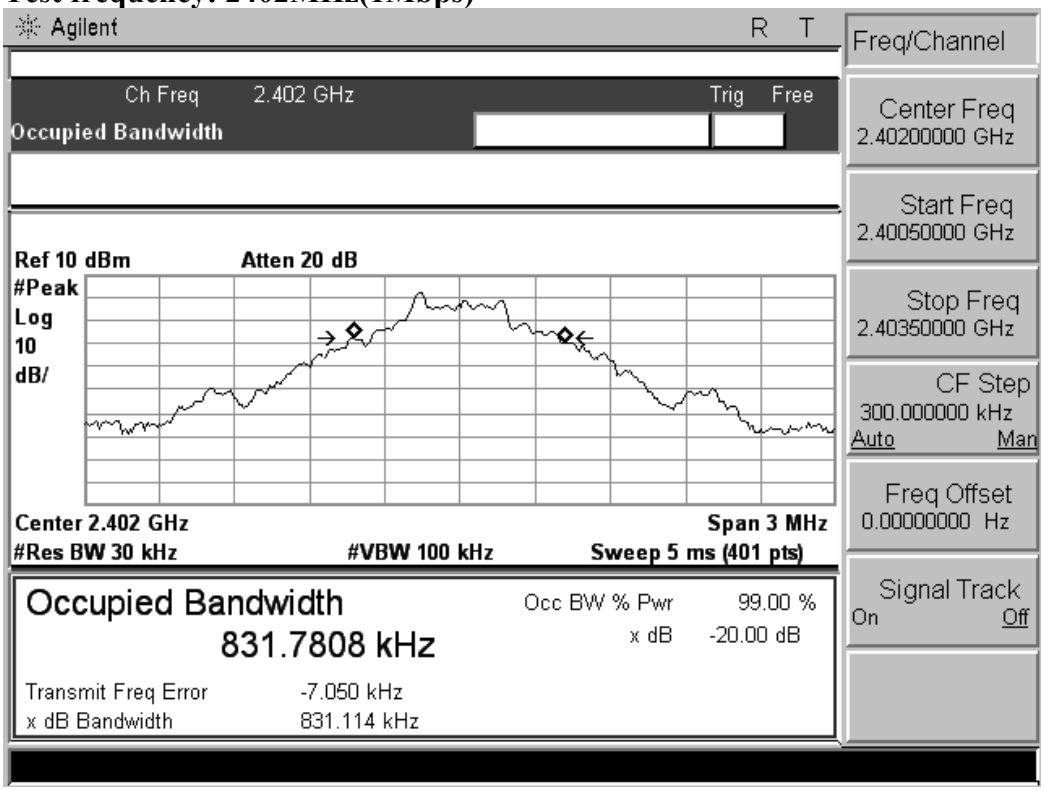


## Test Plot Of Frequency Separation (3Mbps)

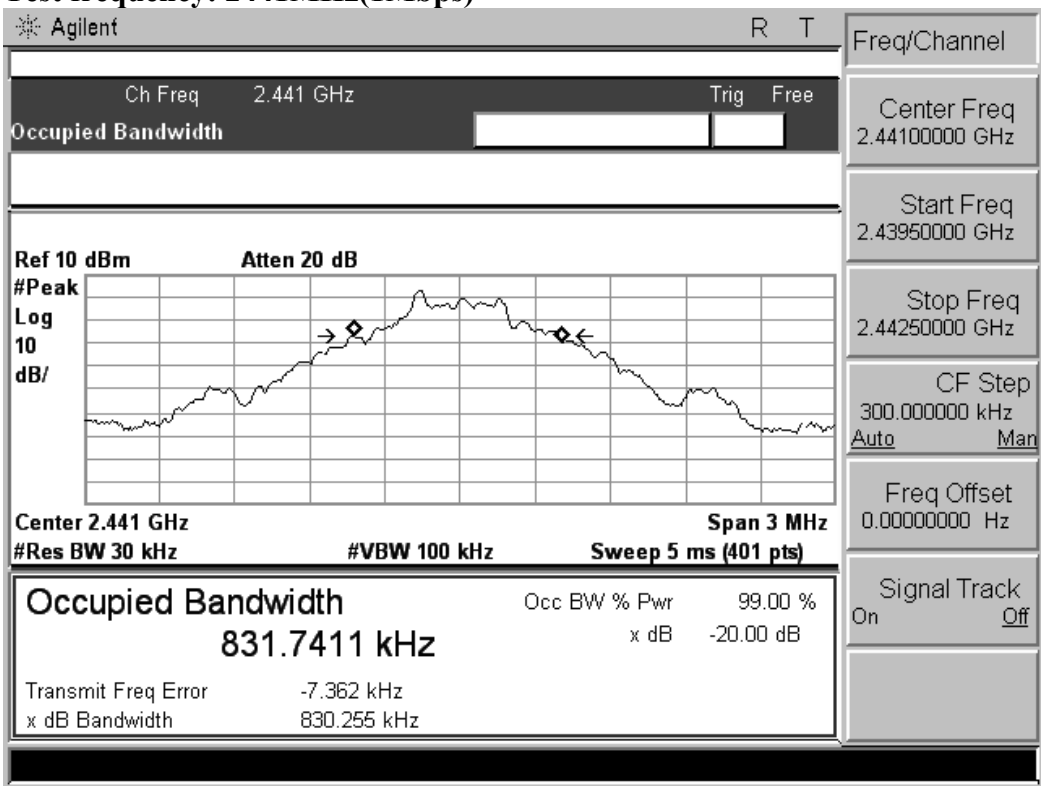


## Measurement of 20dB Bandwidth

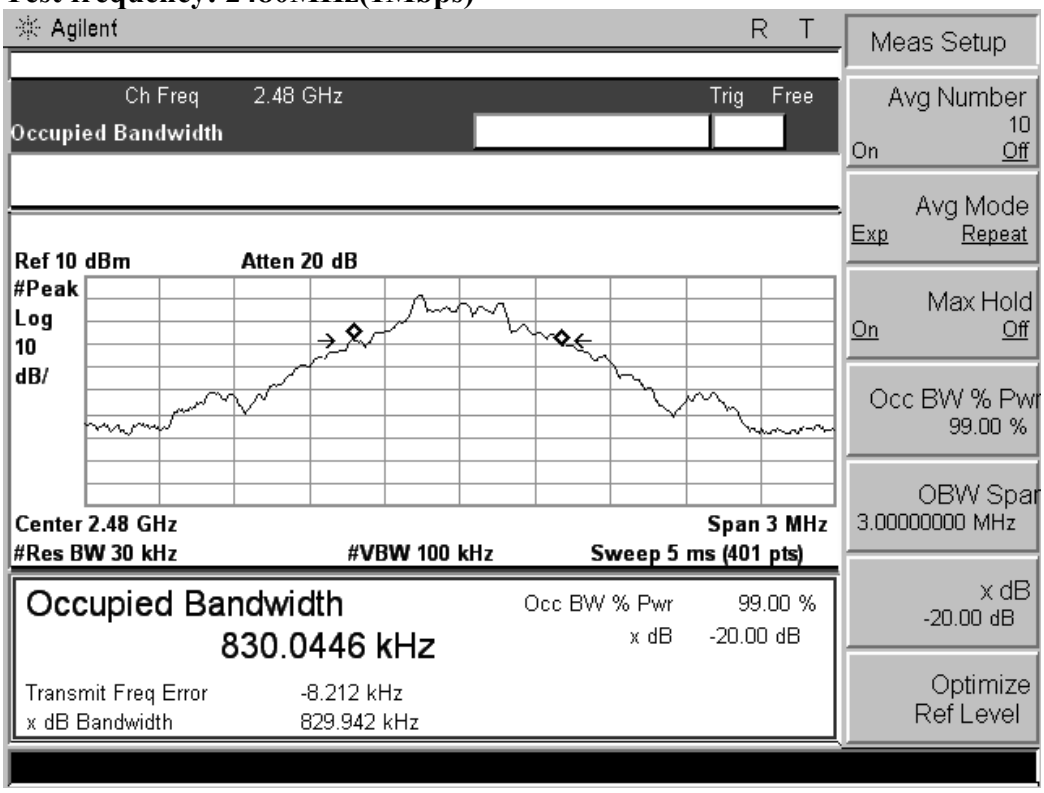
**Test frequency: 2402MHz(1Mbps)**



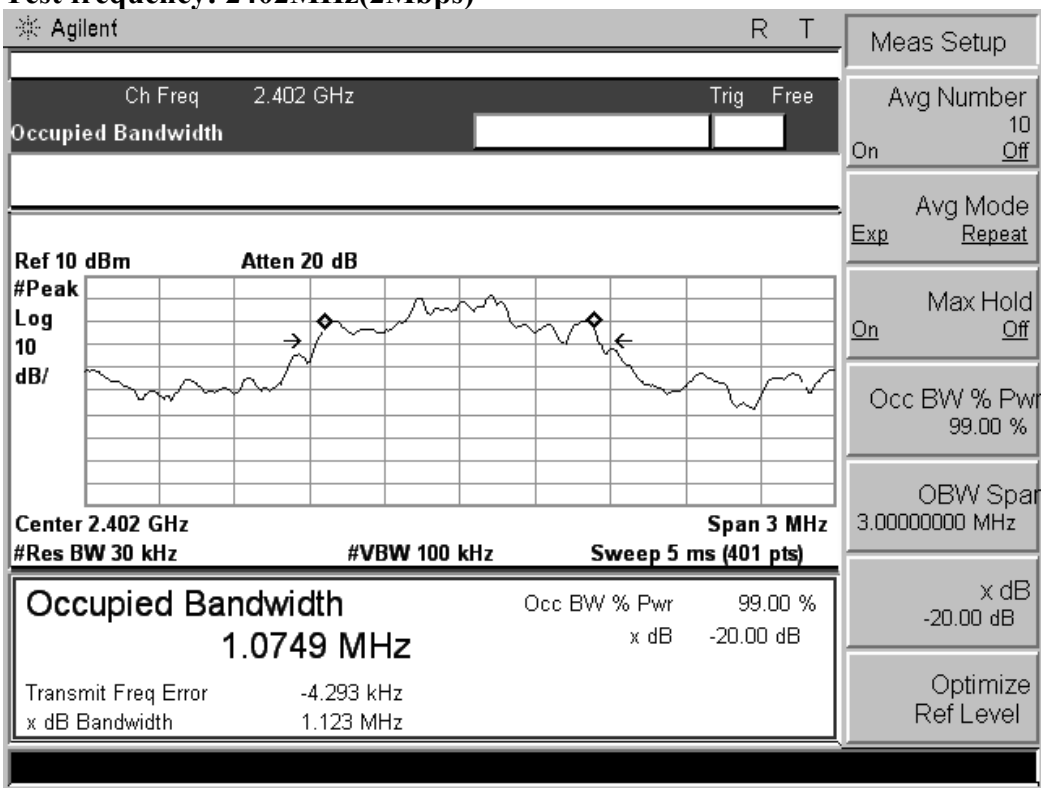

**Test frequency: 2441MHz(1Mbps)**



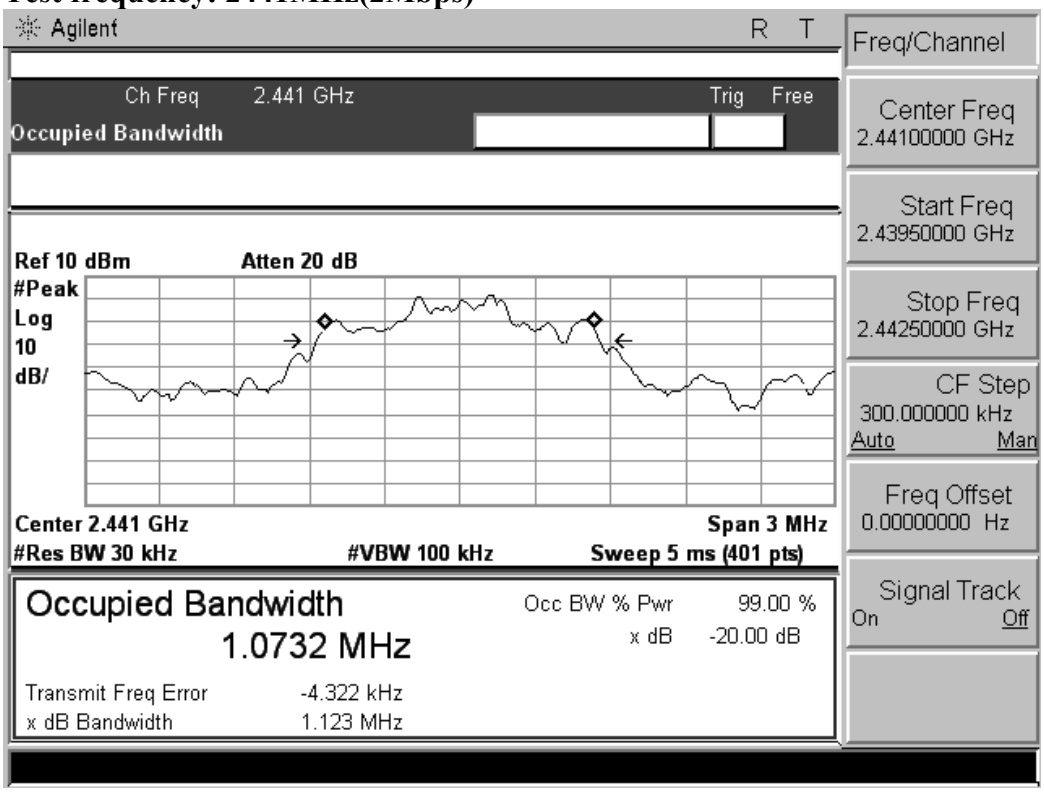
**Test frequency: 2480MHz(1Mbps)**



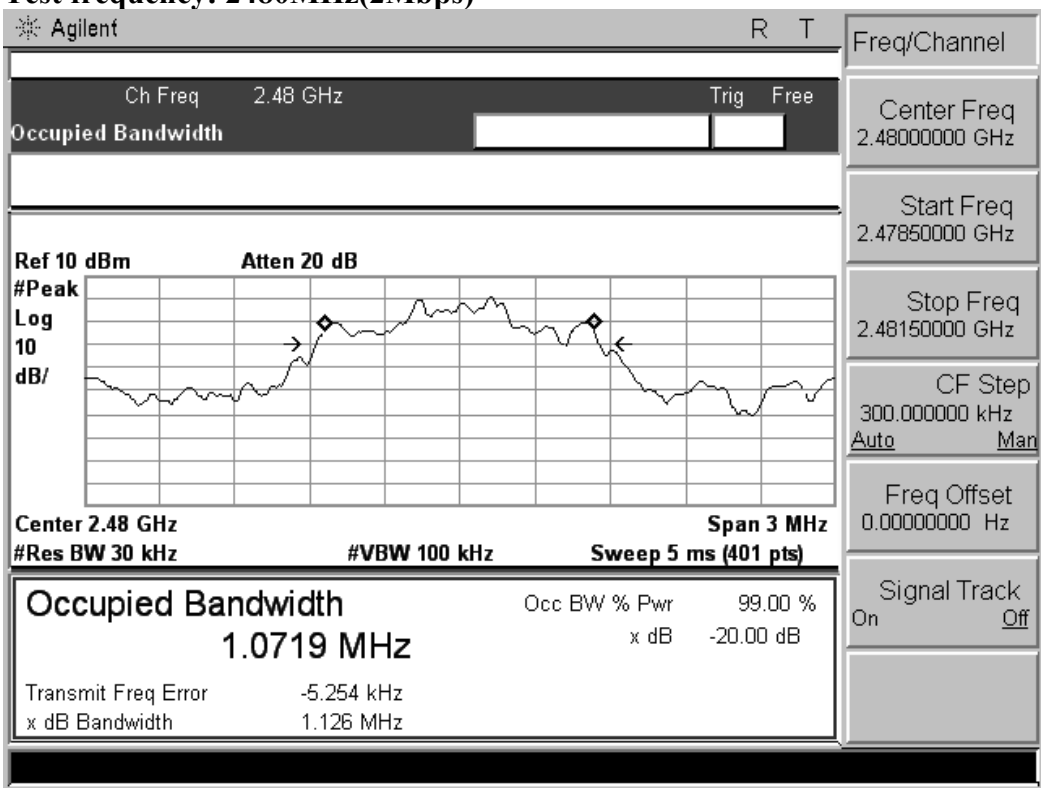

**Test frequency: 2402MHz(2Mbps)**



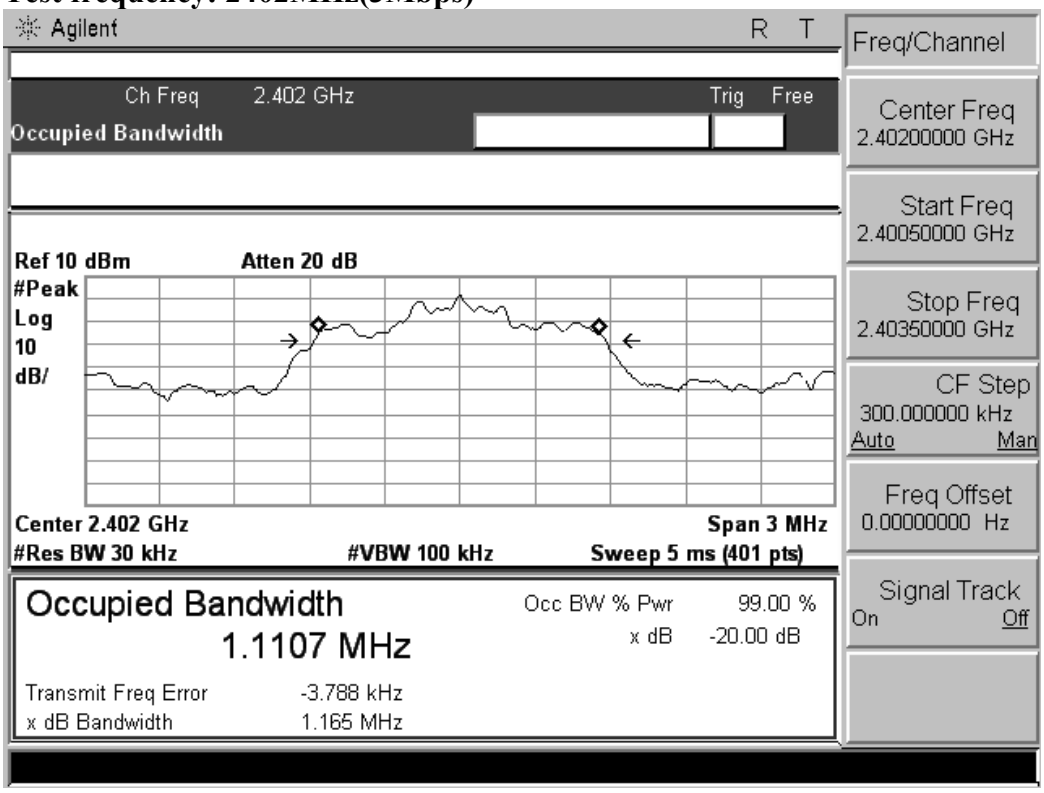
**Test frequency: 2441MHz(2Mbps)**



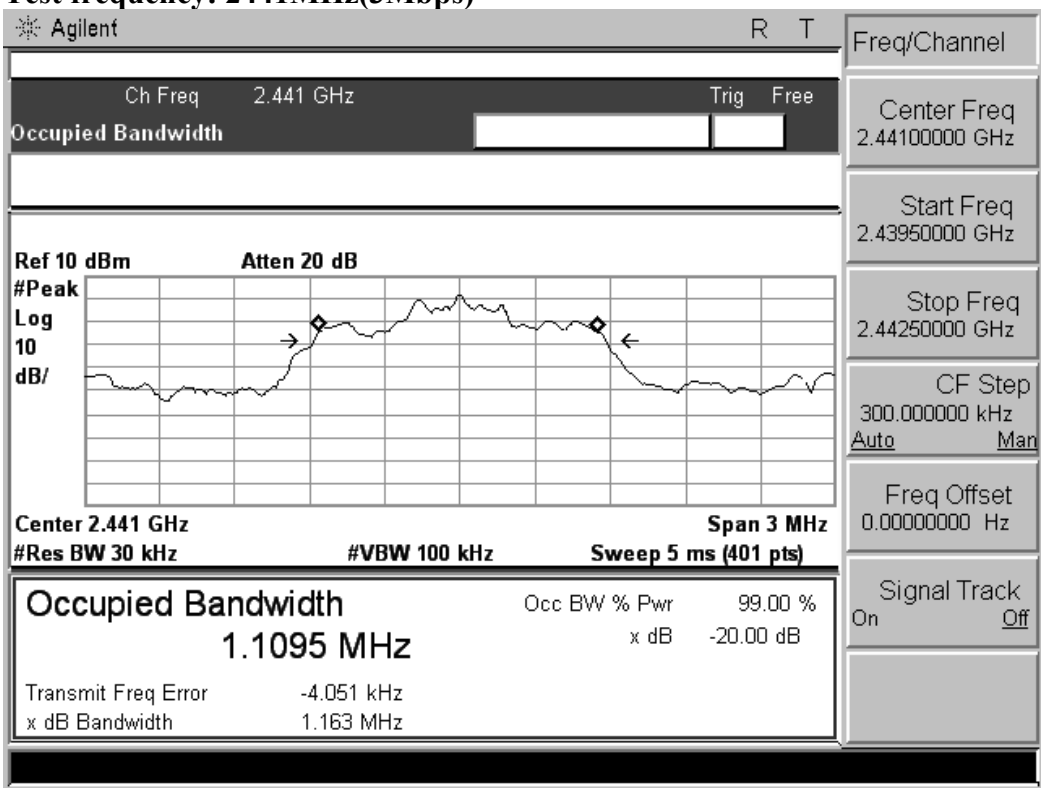

**Test frequency: 2480MHz(2Mbps)**



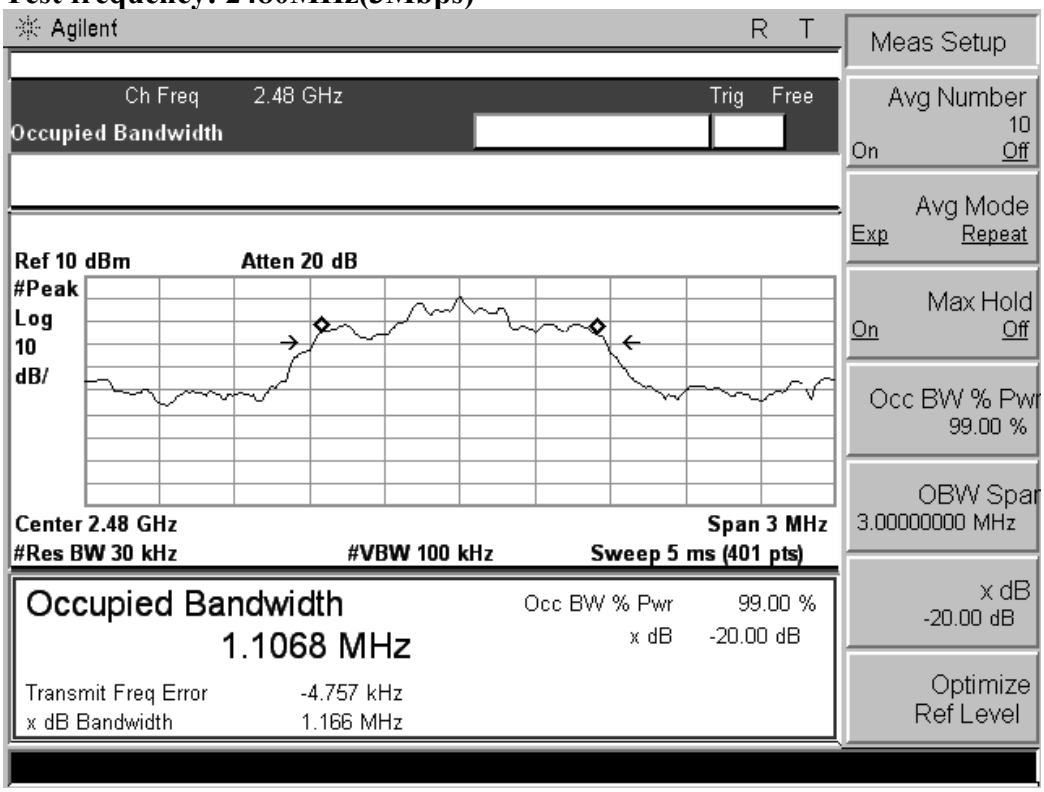
**Test frequency: 2402MHz(3Mbps)**




**Test frequency: 2441MHz(3Mbps)**



**Test frequency: 2480MHz(3Mbps)**



## 4.3 Number Of Hopping Frequency

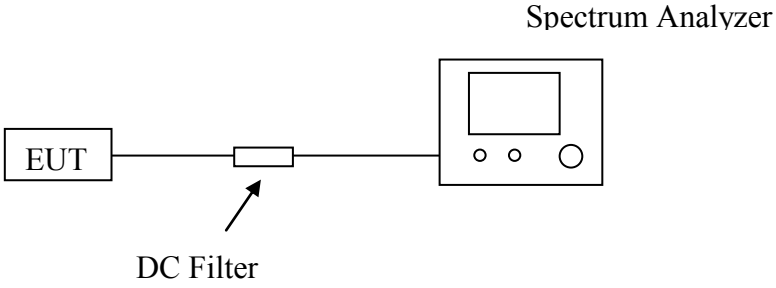
### 4.3.1 Limit

According to §15.247(a)(1)(ii) or A8.1 (d), Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

### 4.3.2 Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer | Agilent | E4407B | MY41440292 | 2013-06-16 | 2014-06-15 |
| 2 | Signal analyzer | Agilent | E4448A(External mixers to 40GHz) | US44300469 | 2013-06-16 | 2014-06-15 |
| 3 | RF Cable | Hubersuhne | Sucoflex104 | FP2RX2 | 2013-06-18 | 2014-06-17 |
| 4 | DC Filter | MPE | 23872C | N/A | 2013-06-18 | 2014-06-17 |

### 4.3.3 Block Diagram of Test Setup




### 4.3.4 Test Procedure

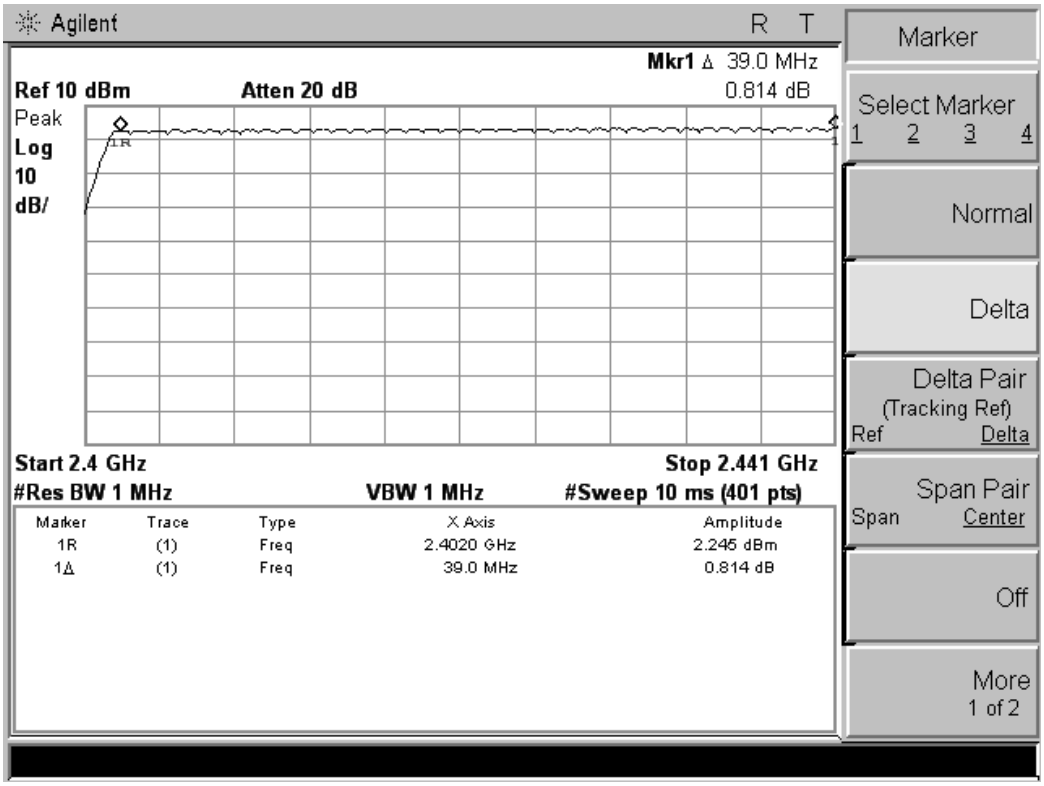
A. Place the EUT on the table and set it in transmitting mode.
B. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
C. Set Spectrum Analyzer Start=2400MHz, Stop = 2483.5MHz, Sweep = auto.
D. Set the Spectrum Analyzer as RBW, VBW=1MHz.
E. Max hold, view and count how many channel in the band.

### 4.3.5 Test Results

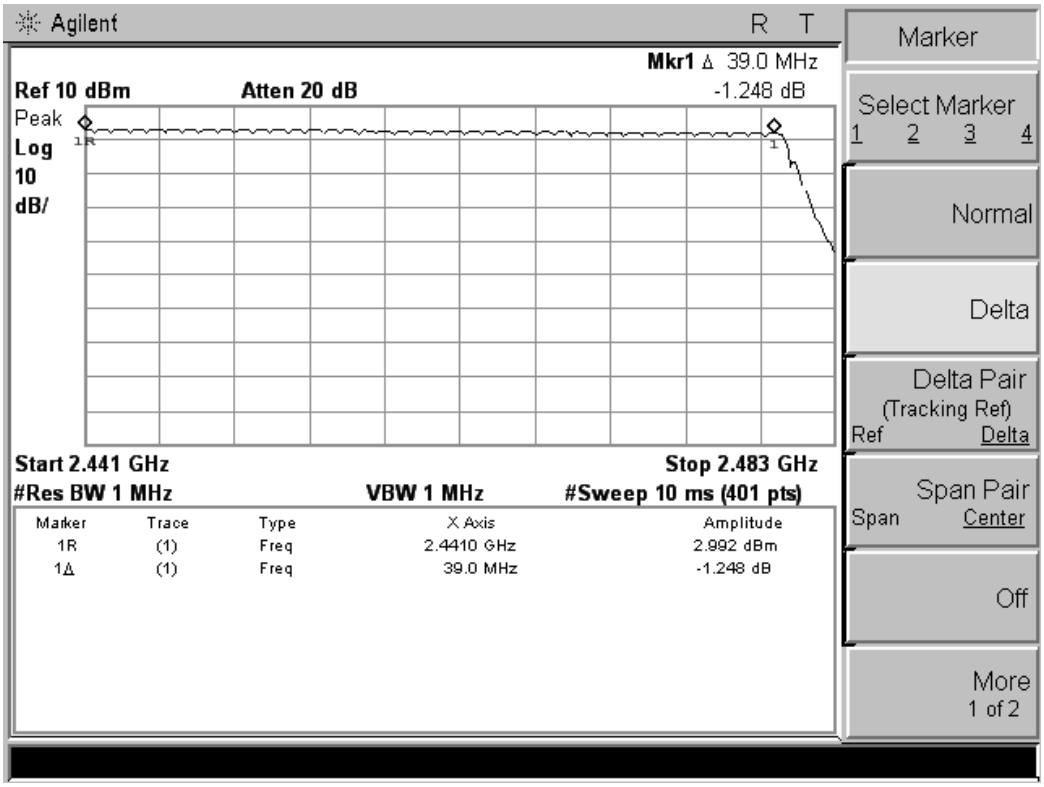
| The Measurement Result With The Worst Case of 1Mbps For GFSK Modulation | | | |
|---|---|---|---|
| **Total No. of Hopping Channel** | **Measurement Result (No. of Ch)** | **Limit (MHz)** | **Result** |
| | 79 | ≥15 | Pass |

*The test data refer to the following page.*

**Test Plot-1 For Number of Hopping Channel**




**Test Plot-2 For Number of Hopping Channel**



## 4.4 Time Of Occupancy (Dwell Time)

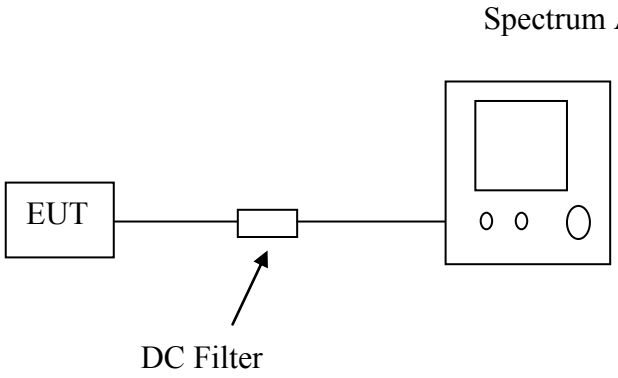
### 4.4.1 Limit

According to §15.247(a)(1)(iii) or A8.1 (d), Frequency hopping systems operating in the 2400MHz- 2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

### 4.4.2 Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer | Agilent | E4407B | MY41440292 | 2013-06-16 | 2014-06-15 |
| 2 | Signal analyzer | Agilent | E4448A(External mixers to 40GHz) | US44300469 | 2013-06-16 | 2014-06-15 |
| 3 | RF Cable | Hubersuhne | Sucoflex104 | FP2RX2 | 2013-06-18 | 2014-06-17 |
| 4 | DC Filter | MPE | 23872C | N/A | 2013-06-18 | 2014-06-17 |

### 4.4.3 Block Diagram of Test Setup




### 4.4.4 Test Procedure

A. Place the EUT on the table and set it in transmitting mode.
B. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
C. Set center frequency of Spectrum Analyzer = operating frequency.
D. Set the Spectrum Analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
E. Repeat above procedures until all frequency measured were complete.

### 4.5.5 Test Results

| The Measurement Result With The Worst Case of 3Mbps For 8-DPSK Modulation | | | | |
|---|---|---|---|---|
| **Channel** | **Time of Pulse for DH5 (ms)** | **Period Time (s)** | **Sweep Time (ms)** | **Limit (ms)** |
| Low | 2.875 | 31.6 | 306.67 | 400 |
| Middle | 2.875 | 31.6 | 306.67 | 400 |
| High | 2.875 | 31.6 | 306.67 | 400 |

**Low Channel**

2.875*(1600/6)/79*31.6=306.67ms

**Middle Channel**

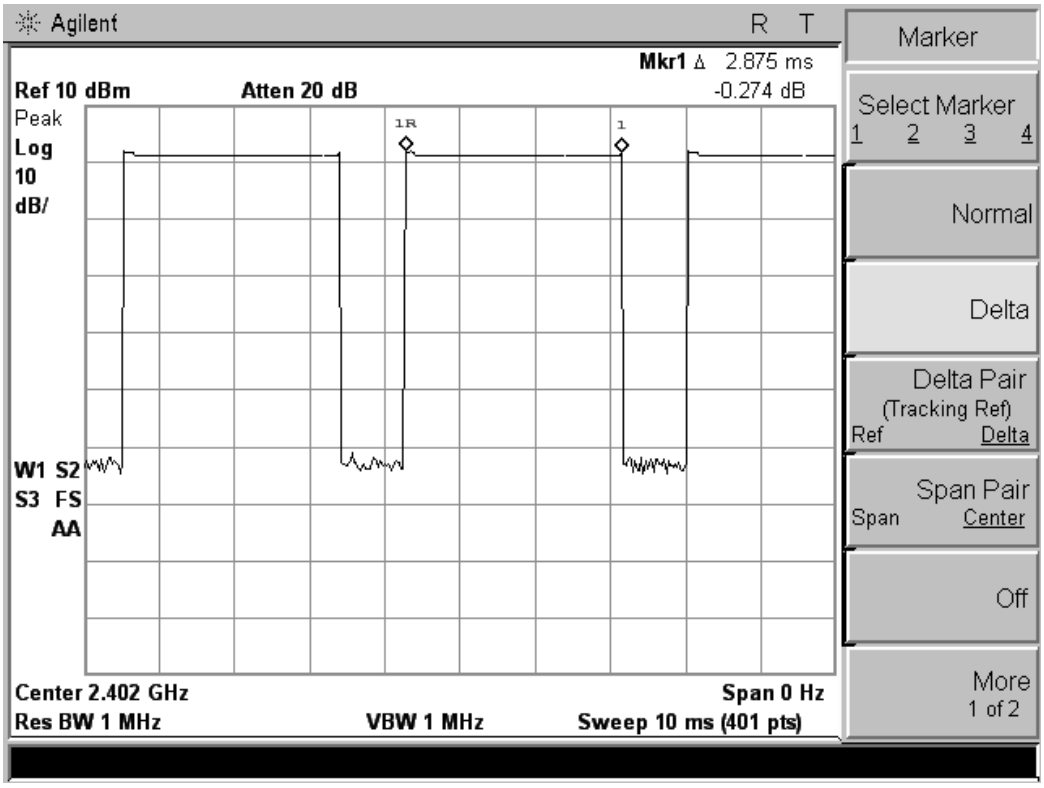
2.875*(1600/6)/79*31.6=306.67ms

**High Channel**

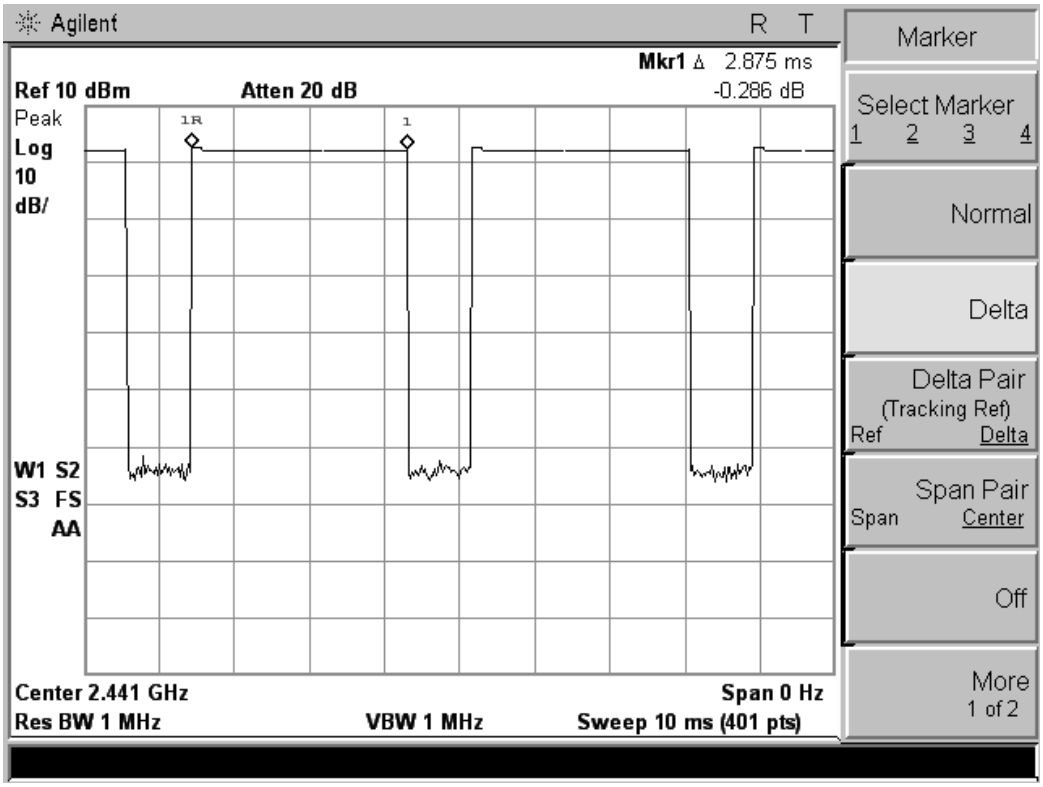
2.875*(1600/6)/79*31.6=306.67ms

*The test data refer to the following:*

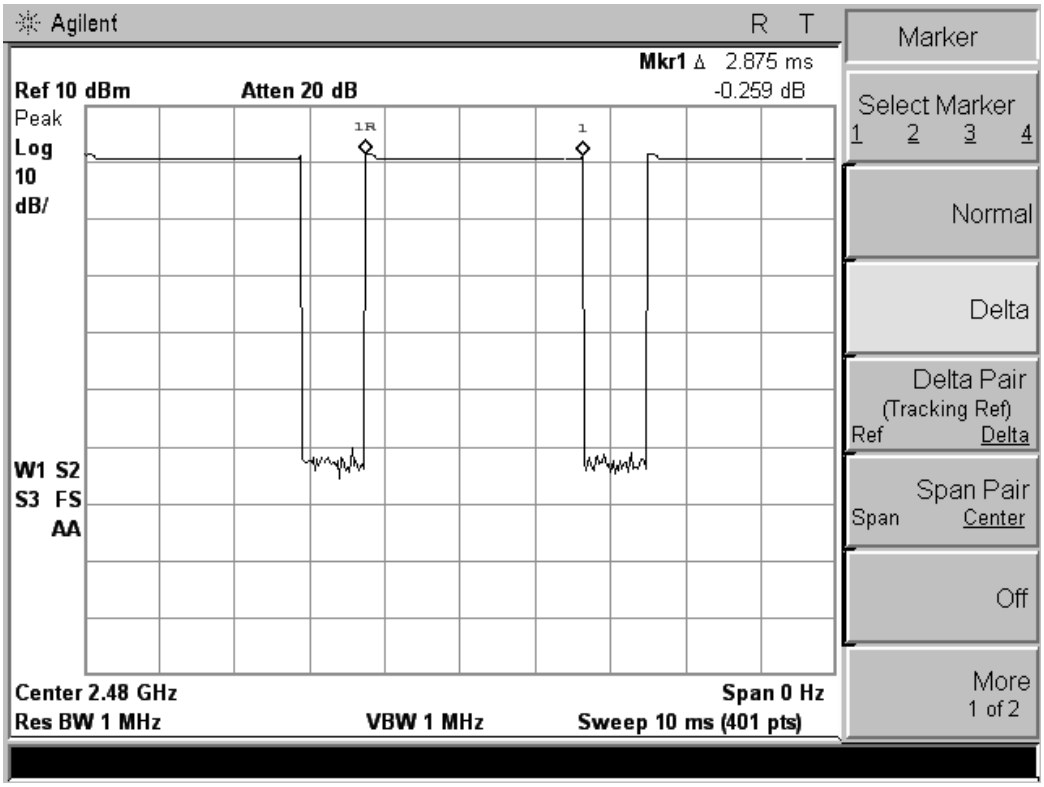
**Low Channel**



**Middle Channel**




**High Channel**



## 4.5 Conducted Spurious Emissions and Band Edges Test

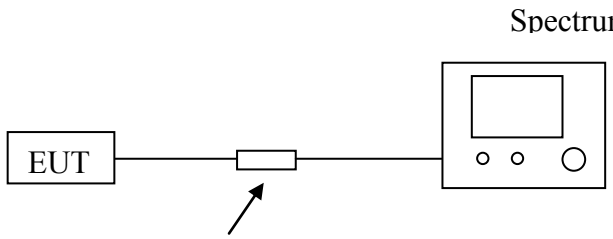
### 4.5.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### 4.5.2 Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer | Agilent | E4407B | MY41440292 | 2013-06-16 | 2014-06-15 |
| 2 | Signal analyzer | Agilent | E4448A(External mixers to 40GHz) | US44300469 | 2013-06-16 | 2014-06-15 |
| 3 | RF Cable | Hubersuhne | Sucoflex104 | FP2RX2 | 2013-06-18 | 2014-06-17 |
| 4 | DC Filter | MPE | 23872C | N/A | 2013-06-18 | 2014-06-17 |

### 4.5.3 Block Diagram of Test Setup




### 4.5.4 Test Proced

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 100 KHz.

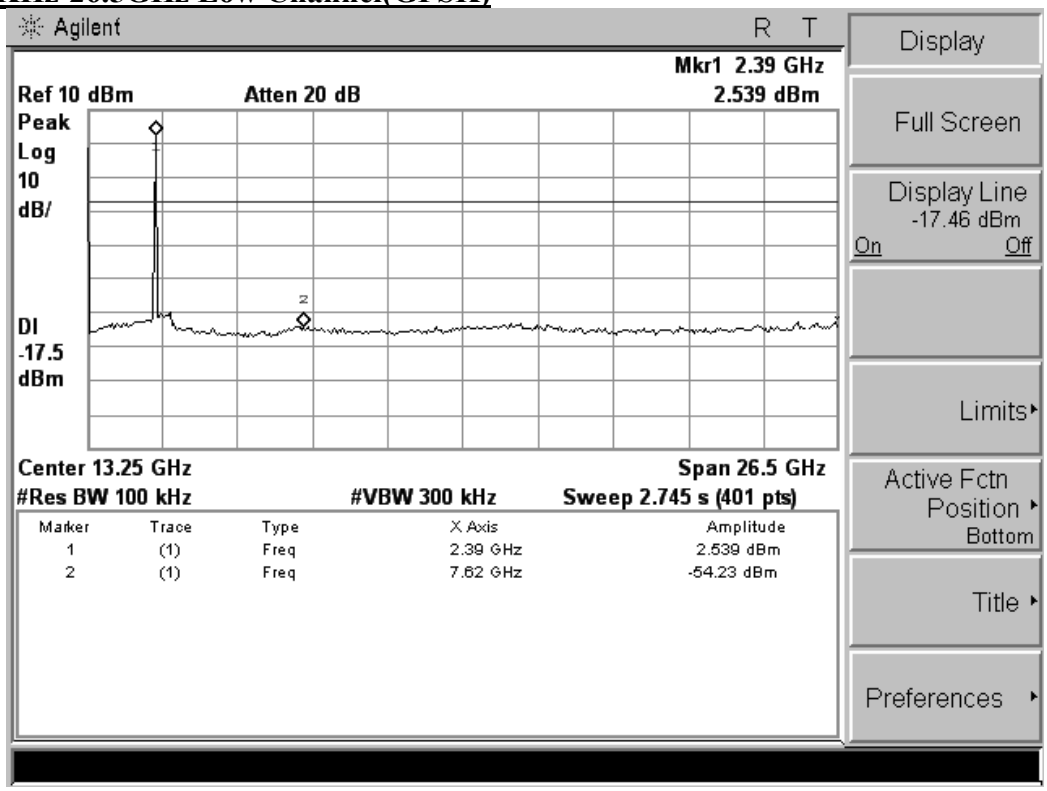
Measurements are made over the 9kHz to 26.5GHz range with the transmitter set to the lowest, middle, and highest channels

### 4.5.5 Test Results of Conducted Spurious Emissions

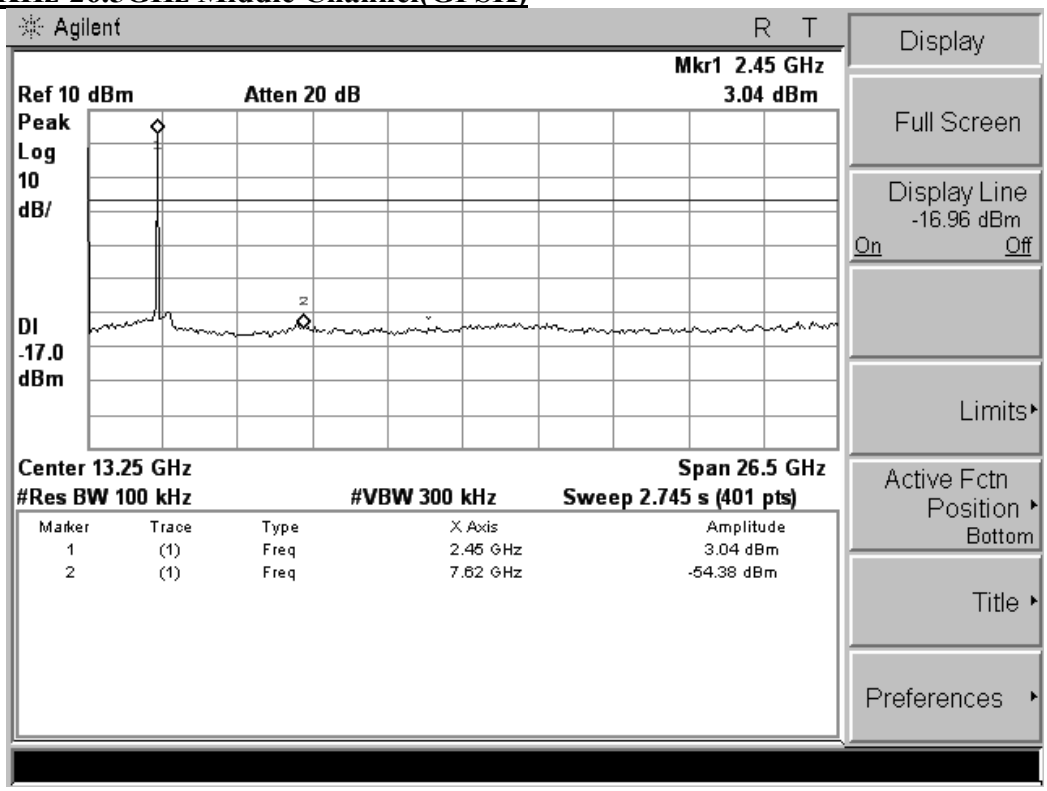
No non-compliance noted. Only record the worst test result (TX-GFSK) in this report. The test data refer to the following page.

## Test Plot

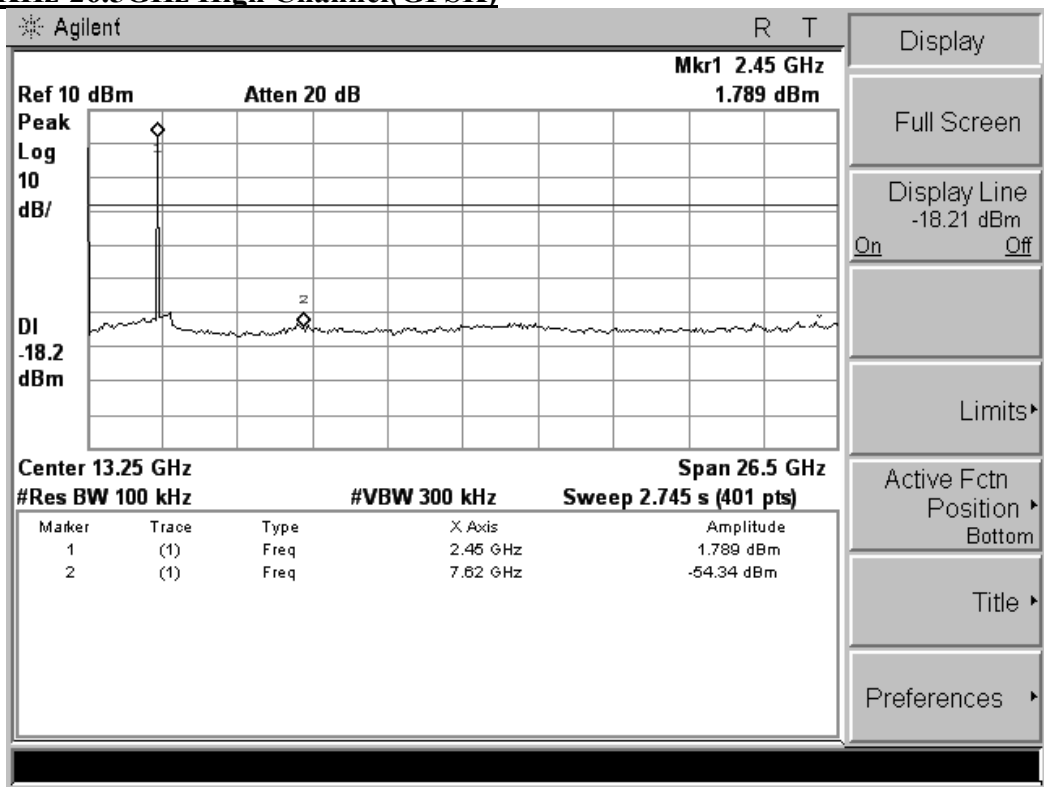
### 9KHz-26.5GHz Low Channel(GFSK)




### 9KHz-26.5GHz Middle Channel(GFSK)



## 9KHz-26.5GHz High Channel(GFSK)

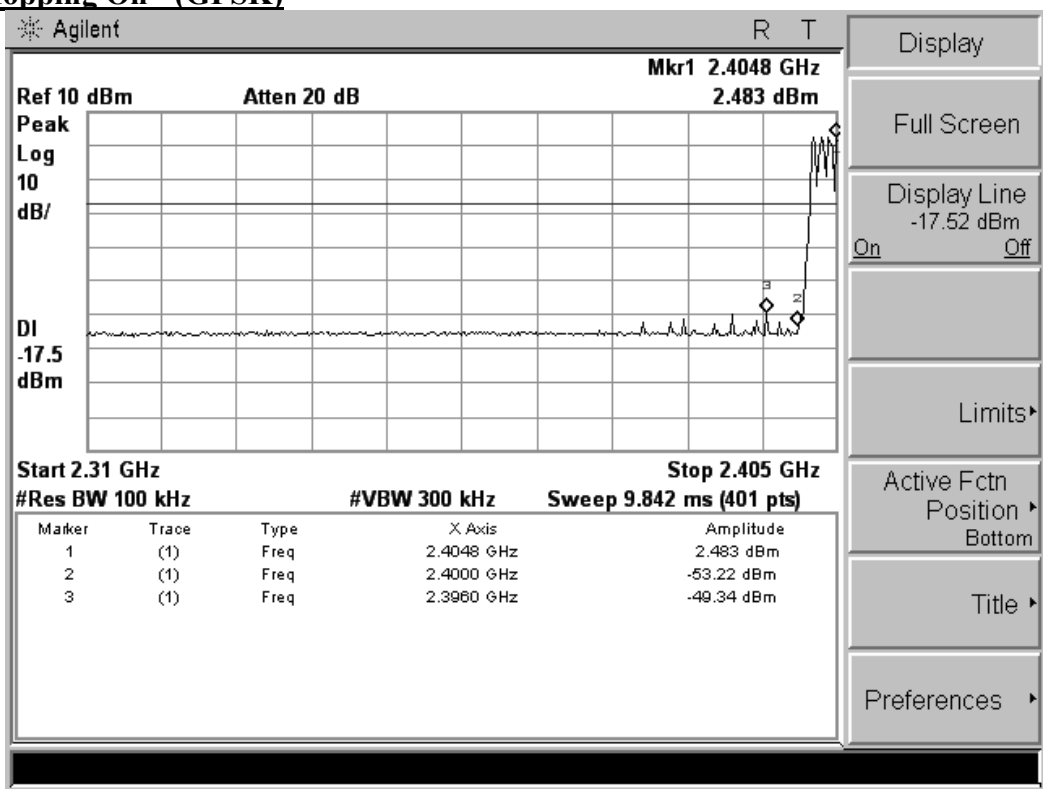


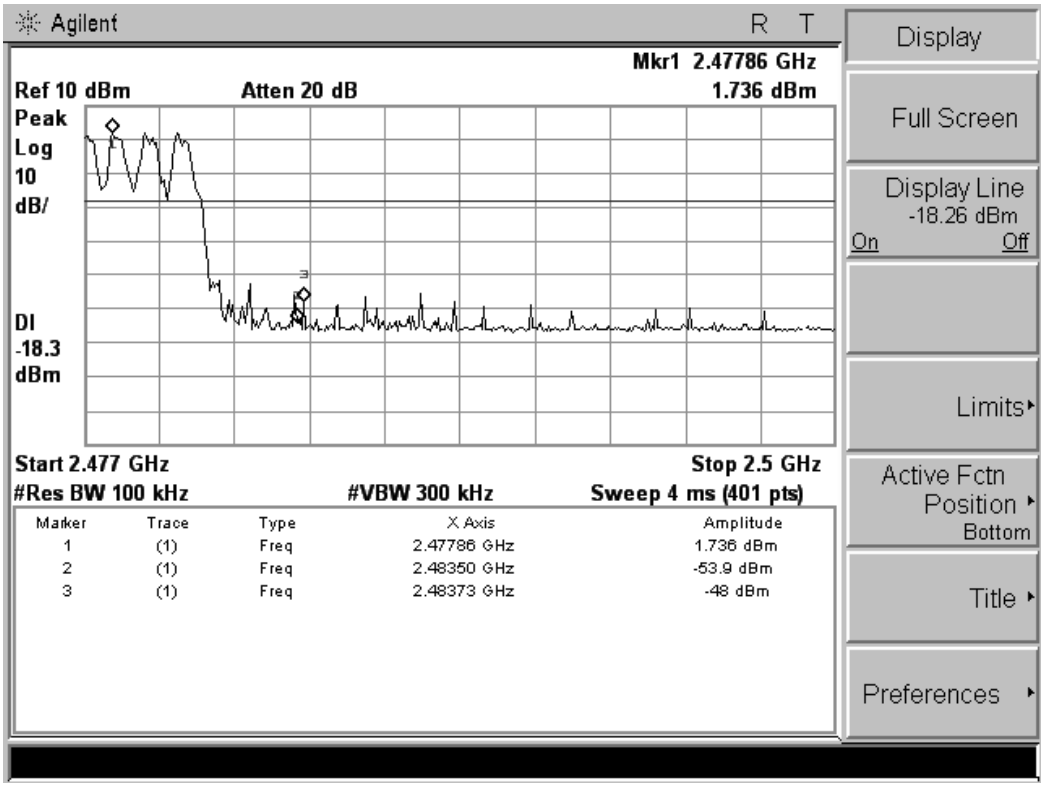
### 4.5.5 Test Results of Band Edges Test

No non-compliance noted. Only record the worst test result in this report. The test data refer to the following page.

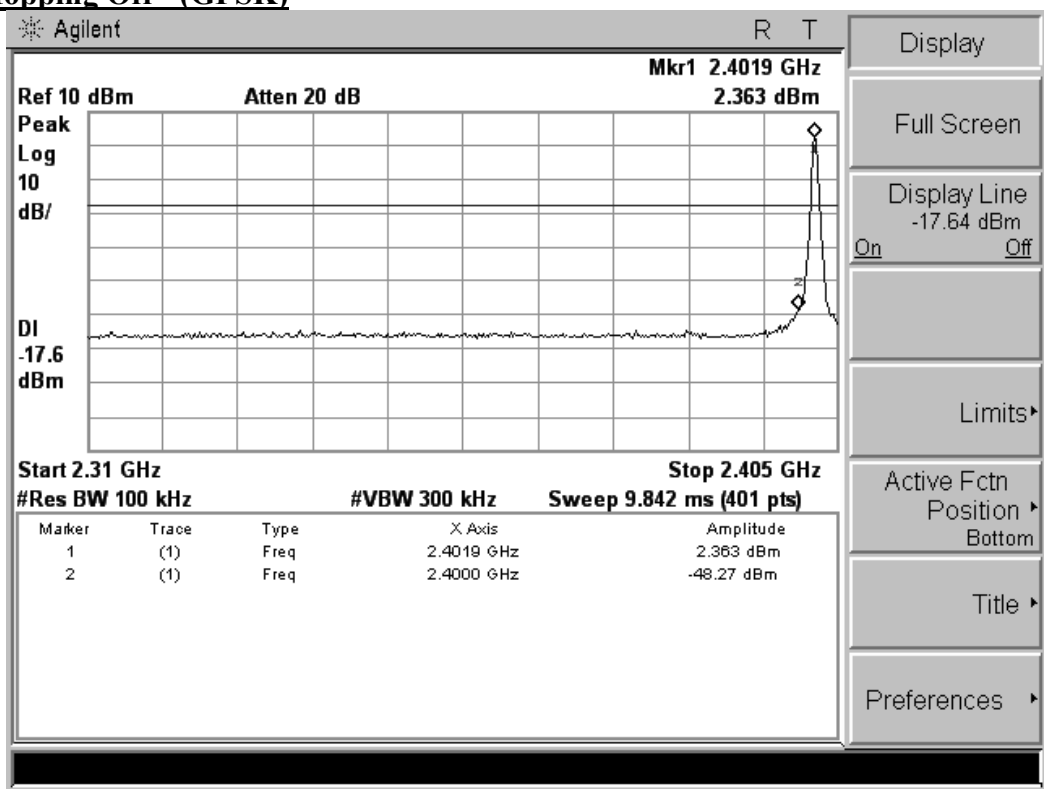
**Test Plot**

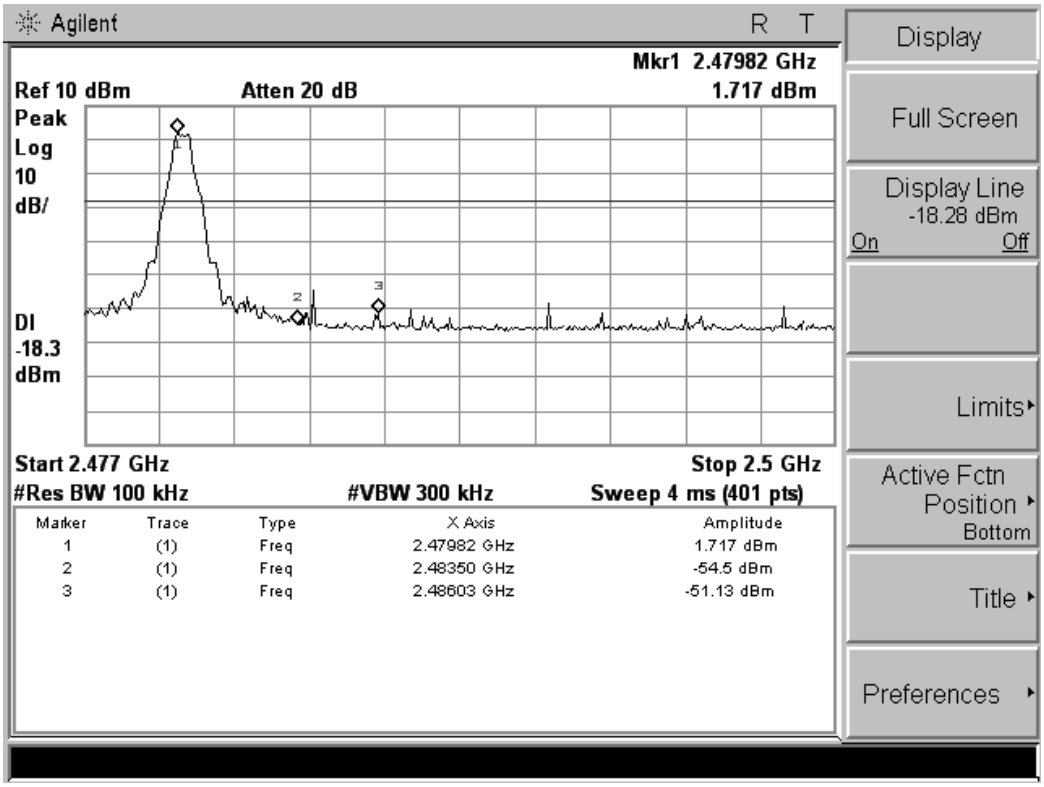
**Hopping On - (GFSK)**



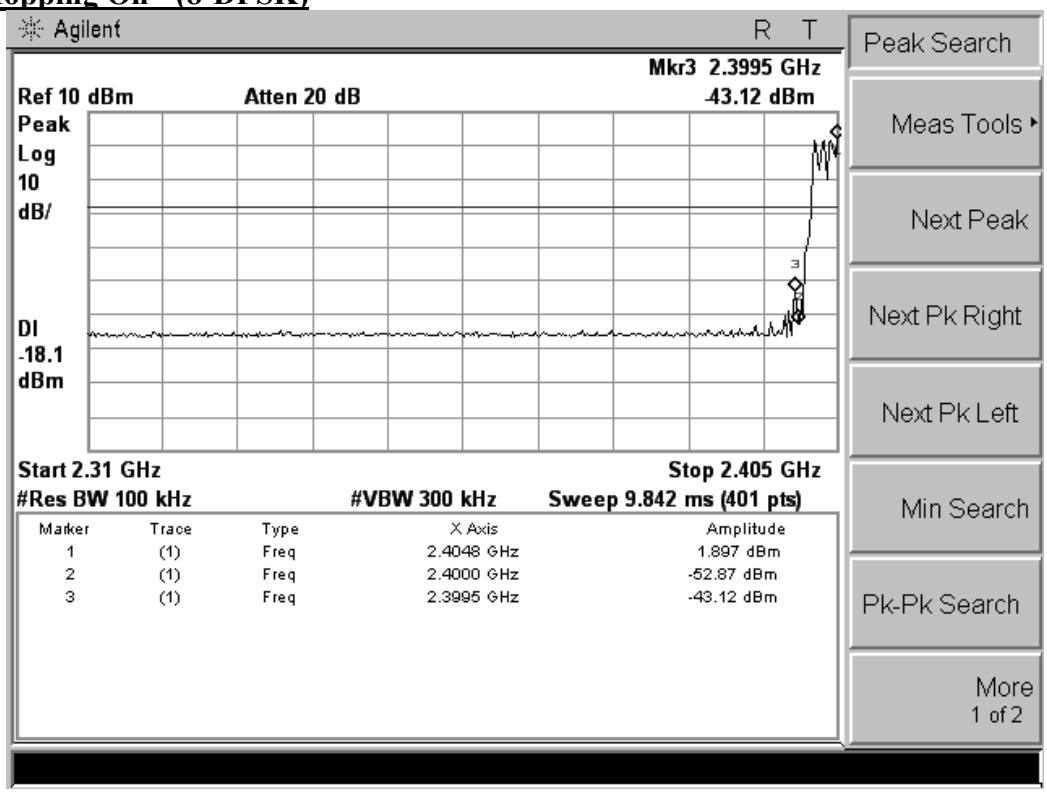



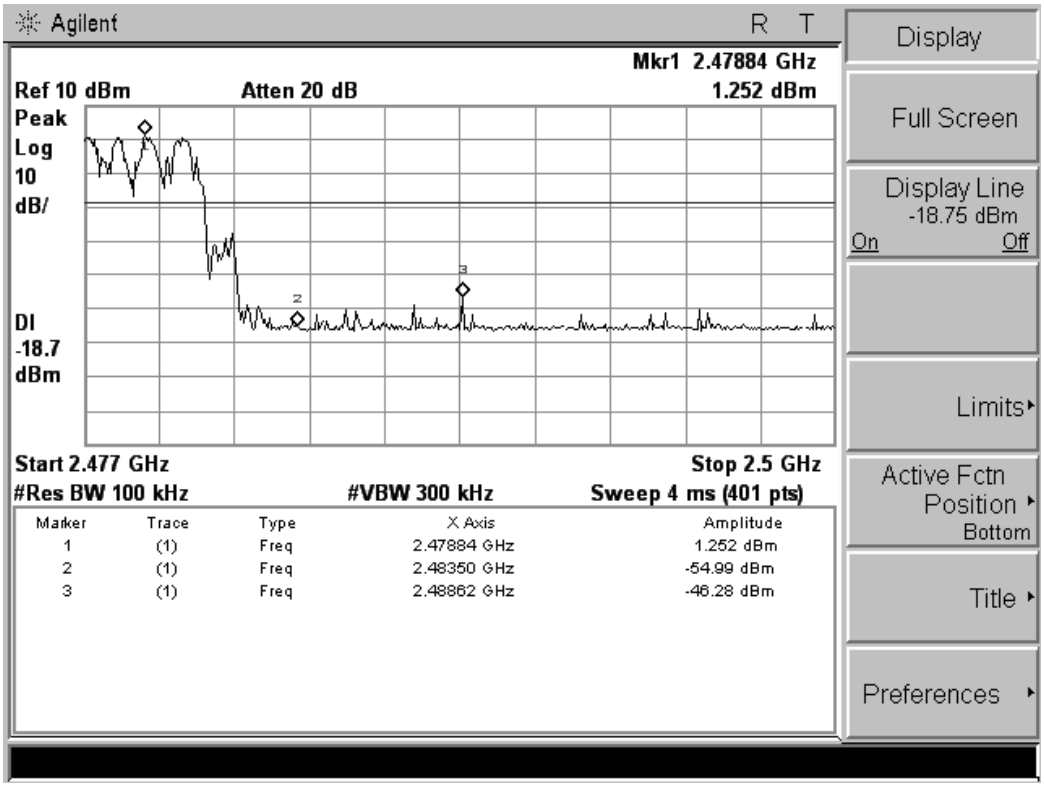
## Hopping Off - (GFSK)



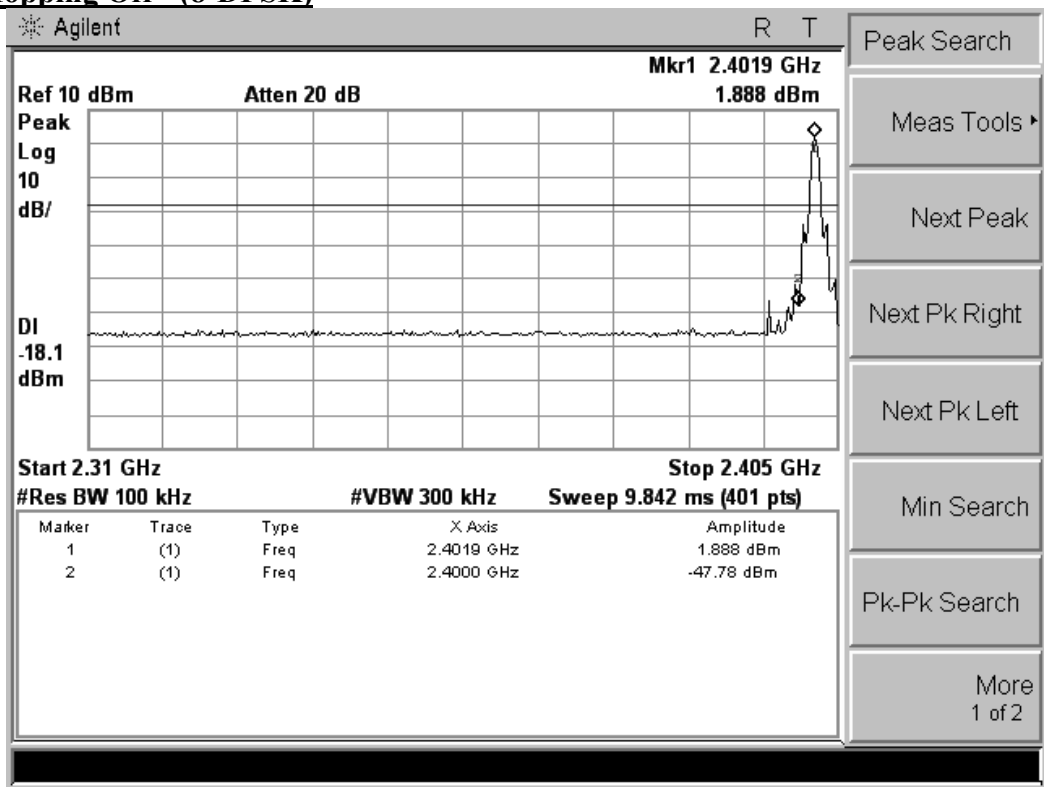



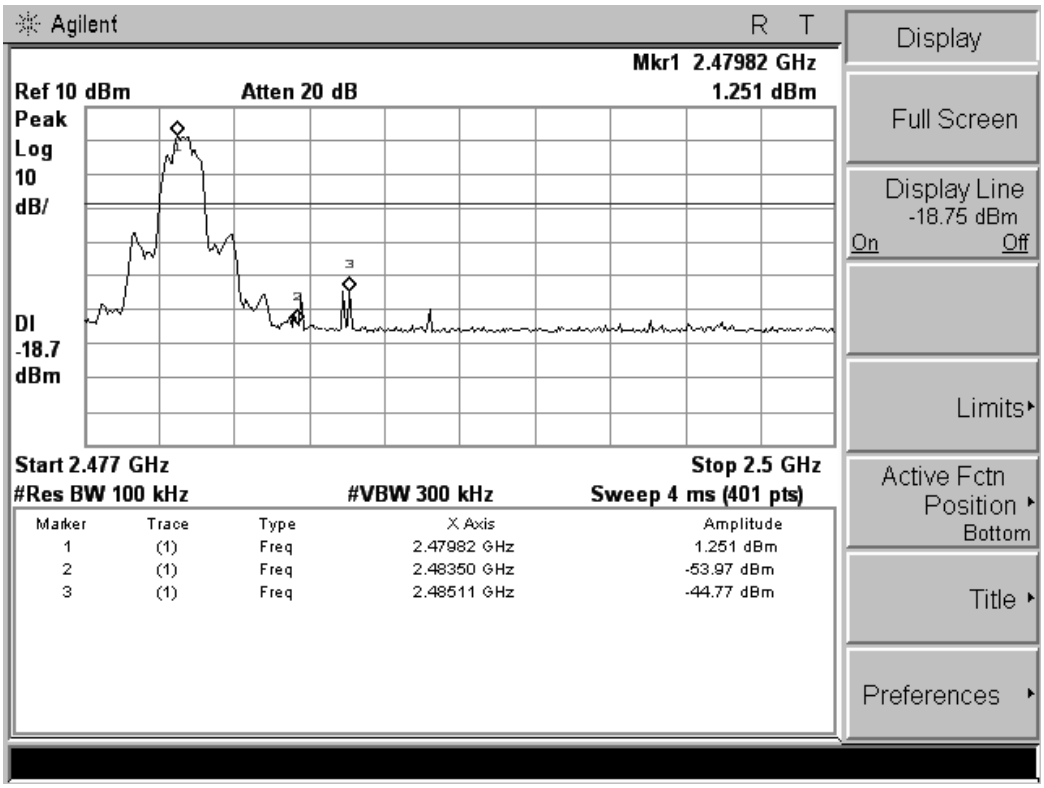
**Hopping On - (8-DPSK)**



**Hopping Off - (8-DPSK)**



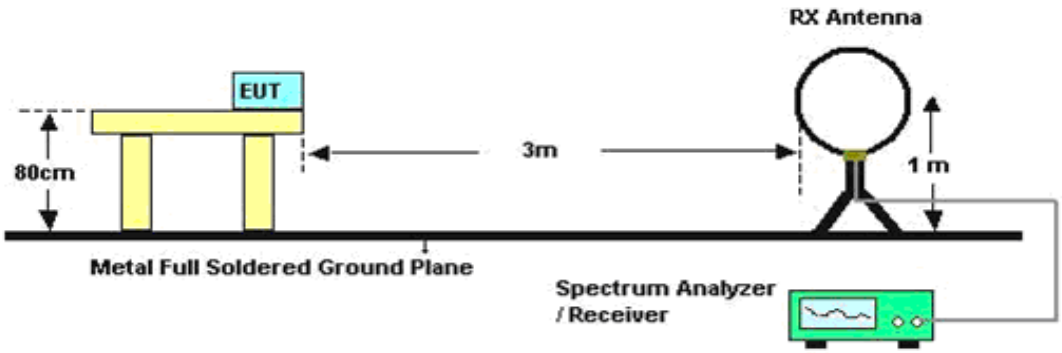



# 5. RADIATED MEASUREMENT

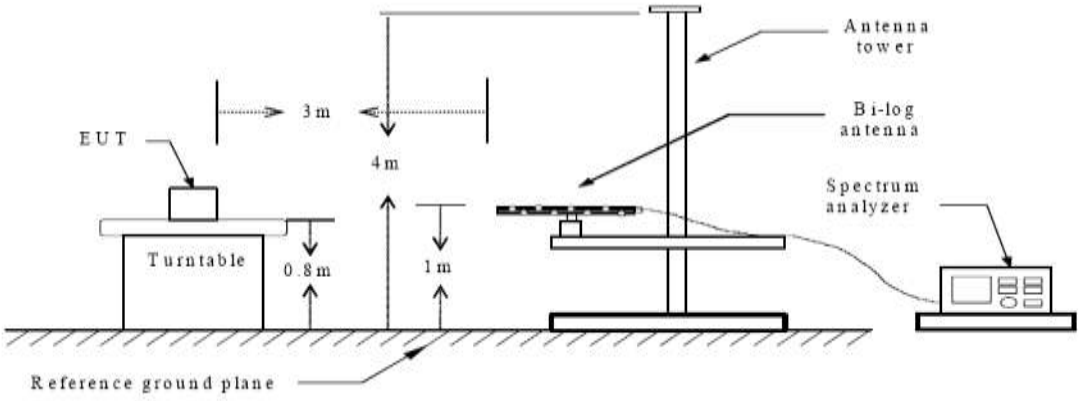
## 5.1 Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1 | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 2013-06-18 | 2014-06-17 |
| 2 | Amplifier | SCHAFFNER | COA9231A | 18667 | 2013-06-18 | 2014-06-17 |
| 3 | Amplifier | Agilent | 8449B | 3008A02120 | 2013-06-16 | 2014-06-15 |
| 4 | Amplifier | MITEQ | AMF-6F-260 400 | 9121372 | 2013-06-16 | 2014-06-15 |
| 5 | Spectrum Analyzer | Agilent | E4407B | MY41440292 | 2013-06-16 | 2014-06-15 |
| 6 | Signal analyzer | Agilent | E4448A(Exte rnal mixers to 40GHz) | US44300469 | 2013-06-16 | 2014-06-15 |
| 7 | Loop Antenna | R&S | HFH2-Z2 | 860004/001 | 2013-06-18 | 2014-06-17 |
| 8 | By-log Antenna | SCHWARZBECK | VULB9163 | 9163-470 | 2013-06-10 | 2014-06-09 |
| 9 | Horn Antenna | EMCO | 3115 | 6741 | 2013-06-10 | 2014-06-09 |
| 10 | Horn Antenna | SCHWARZBECK | BBHA9170 | BBHA91701 54 | 2013-06-10 | 2014-06-09 |
| 11 | RF Cable-R03m | Jye Bao | RG142 | CB021 | 2013-06-18 | 2014-06-17 |
| 12 | RF Cable-HIGH | SUHNER | SUCOFLEX 106 | 03CH03-HY | 2013-06-18 | 2014-06-17 |

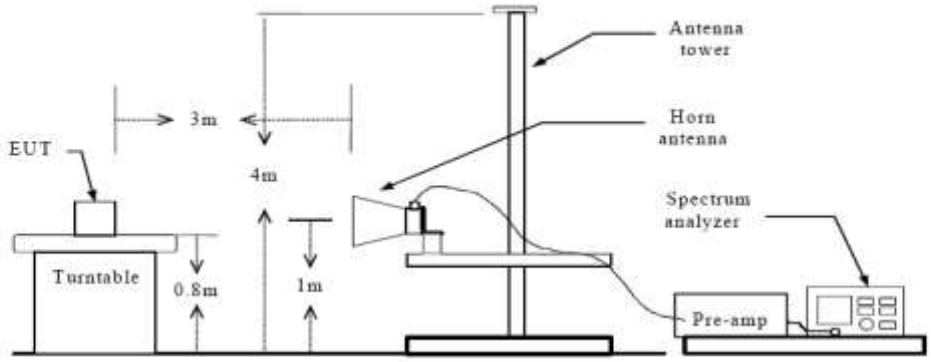
## 5.2 Block Diagram of Test Setup




**Below 30MHz**




**Below 1 GHz**




**Above 1 GHz**

## 5.3 Radiated Emission Limit

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| \1\ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293. | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (\2\) |
| 13.36-13.41 | | | |

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

Part 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions

appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector.

Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Part 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|---|---|---|
| 0.009–0.490 | 2400/F(kHz) | 300 |
| 0.490–1.705 | 24000/F(kHz) | 30 |
| 1.705–30.0 | 30 | 30 |
| 30–88 | 100** | 3 |
| 88–216 | 150** | 3 |
| 216–960 | 200** | 3 |
| Above 960 | 500 | 3 |

## 5.4 Instruments Setting

The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RB / VB (Emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average |
| RB / VB (Emission in non-restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average |

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 100kHz for QP |

## 5.5 Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.

4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading

5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.

7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.

9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

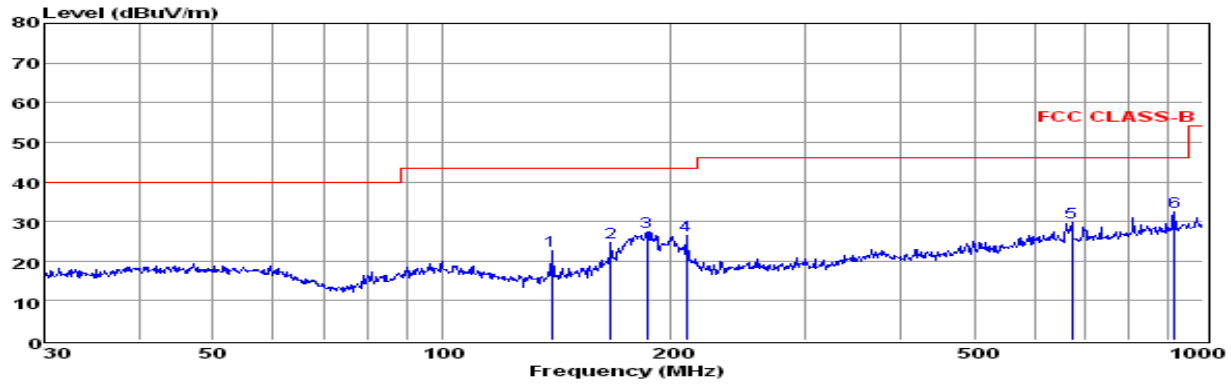
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

## 5.6 Results for Radiated Emissions

**PASS.**

*Only record the worst test result in this report.*
*The test data please refer to following page:*

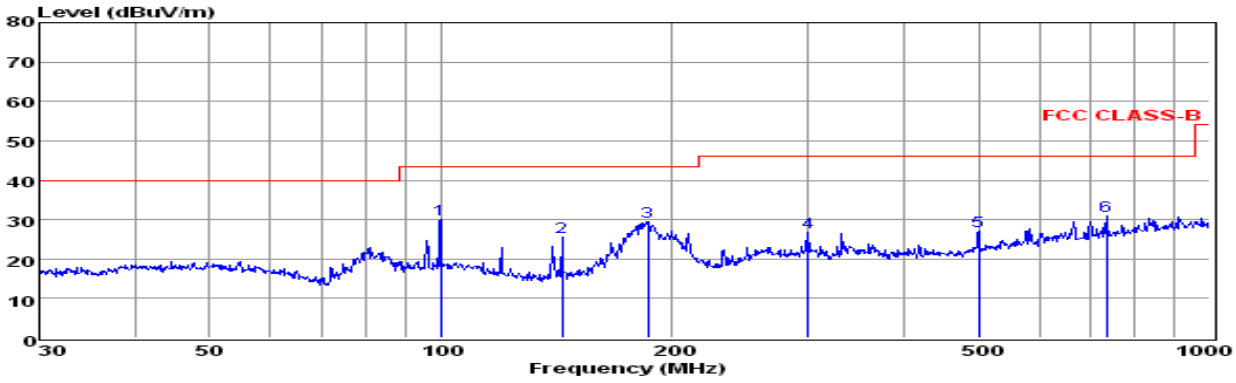
## Below 1GHz




Env./Ins: 24℃/56%
EUT: Bluetooth Keyboard
M/N: ZAGG Folio For LG G Pad 8.3 LTE
Power Rating: DC 3.7V
Test Mode: BT-L
Operator: JACKY
Memo:
pol: VERTICAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 139.36 | 13.49 | 0.75 | 8.24 | 22.48 | 43.50 | -21.02 | QP |
| 2 | 166.65 | 15.14 | 0.77 | 8.87 | 24.78 | 43.50 | -18.72 | QP |
| 3 | 185.79 | 16.60 | 0.70 | 10.19 | 27.49 | 43.50 | -16.01 | QP |
| 4 | 209.31 | 14.71 | 0.86 | 10.86 | 26.43 | 43.50 | -17.07 | QP |
| 5 | 672.84 | 9.32 | 1.65 | 18.71 | 29.68 | 46.00 | -16.32 | QP |
| 6 | 916.07 | 9.11 | 2.04 | 21.19 | 32.34 | 46.00 | -13.66 | QP |

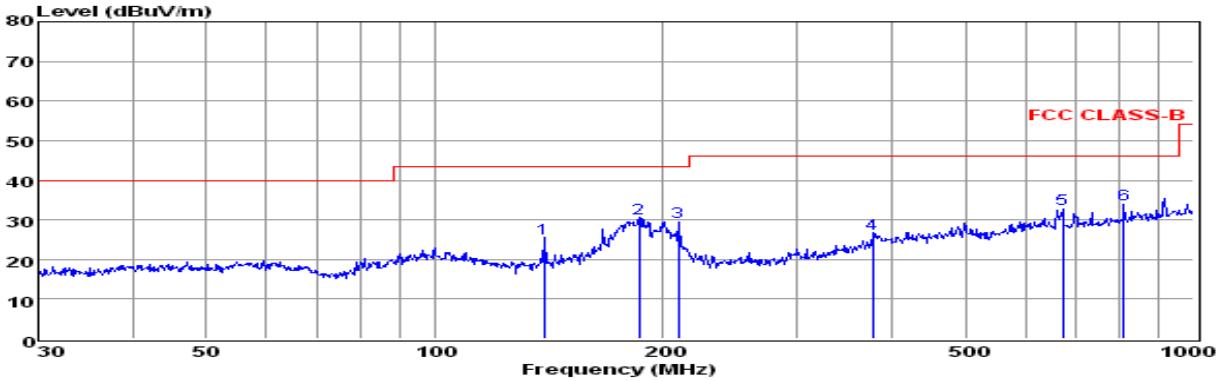
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported




Env./Ins: 24℃/56%
EUT: Bluetooth Keyboard
M/N: ZAGG Folio For LG G Pad 8.3 LTE
Power Rating: DC 3.7V
Test Mode: BT-L
Operator: JACKY
Memo:
pol: HORIZONTAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 99.88 | 16.21 | 0.60 | 13.15 | 29.96 | 43.50 | -13.54 | QP |
| 2 | 143.83 | 16.64 | 0.71 | 8.22 | 25.57 | 43.50 | -17.93 | QP |
| 3 | 185.79 | 18.56 | 0.70 | 10.19 | 29.45 | 43.50 | -14.05 | QP |
| 4 | 300.37 | 12.53 | 1.13 | 13.06 | 26.72 | 46.00 | -19.28 | QP |
| 5 | 501.18 | 8.86 | 1.54 | 16.60 | 27.00 | 46.00 | -19.00 | QP |
| 6 | 734.49 | 9.89 | 1.74 | 19.24 | 30.87 | 46.00 | -15.13 | QP |

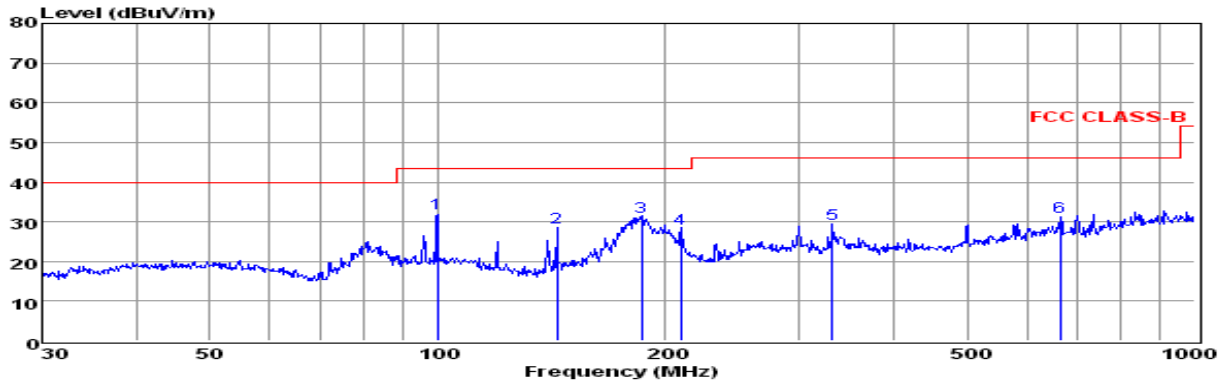
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported




Env./Ins: 24℃/56%
EUT: Bluetooth Keyboard
M/N: ZAGG Folio For LG G Pad 8.3 LTE
Power Rating: DC 3.7V
Test Mode: BT-M
Operator: JACKY
Memo:
pol: VERTICAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 139.36 | 16.42 | 0.75 | 8.24 | 25.41 | 43.50 | -18.09 | QP |
| 2 | 185.79 | 19.52 | 0.70 | 10.19 | 30.41 | 43.50 | -13.09 | QP |
| 3 | 209.31 | 17.69 | 0.86 | 10.86 | 29.41 | 43.50 | -14.09 | QP |
| 4 | 377.26 | 10.54 | 1.30 | 14.57 | 26.41 | 46.00 | -19.59 | QP |
| 5 | 672.84 | 12.22 | 1.65 | 18.71 | 32.58 | 46.00 | -13.42 | QP |
| 6 | 810.27 | 11.99 | 1.71 | 20.17 | 33.87 | 46.00 | -12.13 | QP |

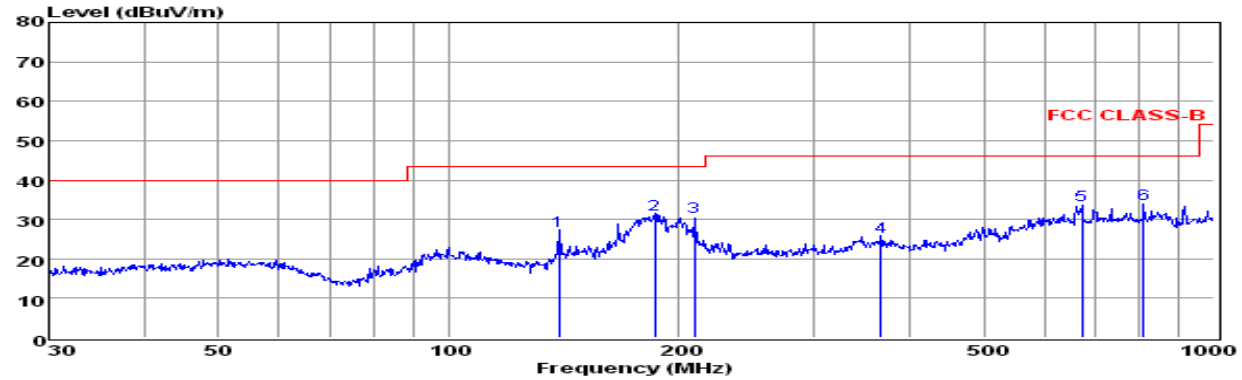
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported




Env./Ins: 24℃/56%
EUT: Bluetooth Keyboard
M/N: ZAGG Folio For LG G Pad 8.3 LTE
Power Rating: DC 3.7V
Test Mode: BT-M
Operator: JACKY
Memo:
pol: HORIZONTAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 99.88 | 18.29 | 0.60 | 13.15 | 32.04 | 43.50 | -11.46 | QP |
| 2 | 143.83 | 19.59 | 0.71 | 8.22 | 28.52 | 43.50 | -14.98 | QP |
| 3 | 185.79 | 20.43 | 0.70 | 10.19 | 31.32 | 43.50 | -12.18 | QP |
| 4 | 209.31 | 16.56 | 0.86 | 10.86 | 28.28 | 43.50 | -15.22 | QP |
| 5 | 332.52 | 14.41 | 1.11 | 13.82 | 29.34 | 46.00 | -16.66 | QP |
| 6 | 663.47 | 10.99 | 1.67 | 18.68 | 31.34 | 46.00 | -14.66 | QP |

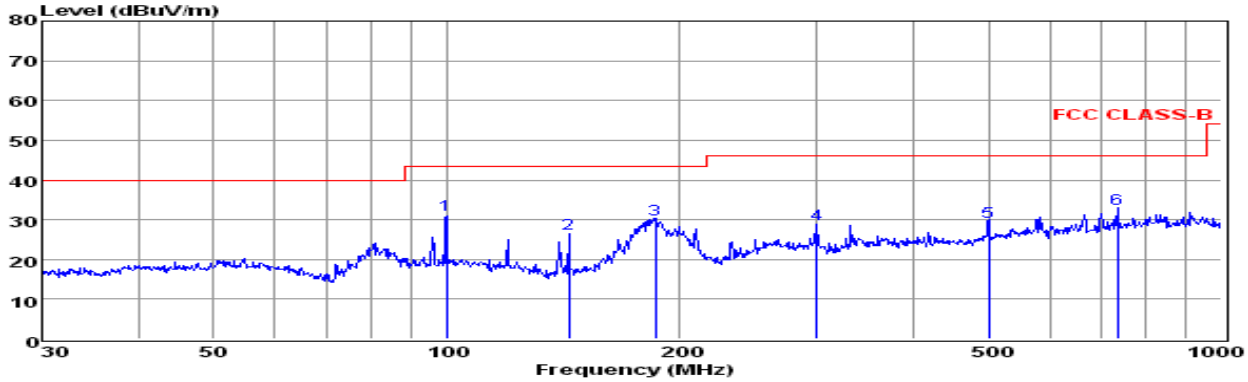
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported




Env./Ins: 24℃/56%
EUT: Bluetooth Keyboard
M/N: ZAGG Folio For LG G Pad 8.3 LTE
Power Rating: DC 3.7V
Test Mode: BT-H
Operator: JACKY
Memo:
pol: VERTICAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 139.36 | 18.19 | 0.75 | 8.24 | 27.18 | 43.50 | -16.32 | QP |
| 2 | 185.79 | 20.32 | 0.70 | 10.19 | 31.21 | 43.50 | -12.29 | QP |
| 3 | 209.31 | 18.91 | 0.86 | 10.86 | 30.63 | 43.50 | -12.87 | QP |
| 4 | 366.82 | 10.02 | 1.14 | 14.48 | 25.64 | 46.00 | -20.36 | QP |
| 5 | 672.84 | 13.34 | 1.65 | 18.71 | 33.70 | 46.00 | -12.30 | QP |
| 6 | 810.27 | 12.04 | 1.71 | 20.17 | 33.92 | 46.00 | -12.08 | QP |

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported




Env./Ins: 24℃/56%
EUT: Bluetooth Keyboard
M/N: ZAGG Folio For LG G Pad 8.3 LTE
Power Rating: DC 3.7V
Test Mode: BT-H
Operator: JACKY
Memo:
pol: HORIZONTAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 99.88 | 17.38 | 0.60 | 13.15 | 31.13 | 43.50 | -12.37 | QP |
| 2 | 143.83 | 17.44 | 0.71 | 8.22 | 26.37 | 43.50 | -17.13 | QP |
| 3 | 185.79 | 19.13 | 0.70 | 10.19 | 30.02 | 43.50 | -13.48 | QP |
| 4 | 300.37 | 14.55 | 1.13 | 13.06 | 28.74 | 46.00 | -17.26 | QP |
| 5 | 501.18 | 11.28 | 1.54 | 16.60 | 29.42 | 46.00 | -16.58 | QP |
| 6 | 734.49 | 11.85 | 1.74 | 19.24 | 32.83 | 46.00 | -13.17 | QP |

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported

**Above 1GHz**

The worst test result for GFSK, Tx-Low Channel:

| Freq. MHz | Reading dBuv | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4804.00 | 54.39 | 33.06 | 35.04 | 3.94 | 56.35 | 74 | -17.65 | Peak | Horizontal |
| 4804.00 | 42.28 | 33.06 | 35.04 | 3.94 | 44.24 | 54 | -9.76 | Average | Horizontal |
| 4804.00 | 53.21 | 33.06 | 35.04 | 3.94 | 55.17 | 74 | -18.83 | Peak | Vertical |
| 4804.00 | 42.00 | 33.06 | 35.04 | 3.94 | 43.96 | 54 | -10.04 | Average | Vertical |

The worst test result for GFSK, Tx-Middle Channel:

| Freq. MHz | Reading Dbuv | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4882.00 | 54.90 | 33.16 | 35.15 | 3.96 | 56.87 | 74 | -17.13 | Peak | Horizontal |
| 4882.00 | 42.39 | 33.16 | 35.15 | 3.96 | 44.36 | 54 | -9.64 | Average | Horizontal |
| 4882.00 | 53.17 | 33.16 | 35.15 | 3.96 | 55.14 | 74 | -18.86 | Peak | Vertical |
| 4882.00 | 42.05 | 33.16 | 35.15 | 3.96 | 44.02 | 54 | -9.98 | Average | Vertical |

The worst test result for GFSK, Tx-High Channel:

| Freq. MHz | Reading DBuv | Ant. Fac dB/m | Pre. Fac dB | Cab. Los dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4960.00 | 54.31 | 33.26 | 35.14 | 3.98 | 56.41 | 74 | -17.59 | Peak | Horizontal |
| 4960.00 | 42.48 | 33.26 | 35.14 | 3.98 | 44.58 | 54 | -9.42 | Average | Horizontal |
| 4960.00 | 53.16 | 33.26 | 35.14 | 3.98 | 55.26 | 74 | -18.74 | Peak | Vertical |
| 4960.00 | 41.21 | 33.26 | 35.14 | 3.98 | 43.31 | 54 | -10.69 | Average | Vertical |

***Notes:***

*1. Measuring frequencies from 9k~10th harmonic (ex. 26GHz), No emission found between lowest internal used/generated frequency to 30 MHz.*

*2. Radiated emissions measured in frequency range from 9k~10th harmonic (ex. 26GHz) were made with an instrument using Peak detector mode.*

*3. 18~25GHz at least have 20dB margin. No recording in the test report.*

## 5.7 Results for Band edge Testing (Radiated)

Only record the worst test case (Tx, GFSK, Non-hopping) as following:

Tx-2402, GFSK, Non-hopping

| Freq. MHz | Reading Level dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 2390.00 | 49.96 | 32.89 | 35.16 | 3.51 | 51.20 | 74 | -22.80 | Peak | Horizontal |
| 2390.00 | 38.90 | 32.89 | 35.16 | 3.51 | 40.14 | 54 | -13.86 | Average | Horizontal |
| 2400.00 | 53.08 | 32.92 | 35.16 | 3.54 | 54.38 | 74 | -19.62 | Peak | Horizontal |
| 2400.00 | 42.11 | 32.92 | 35.16 | 3.54 | 43.41 | 54 | -10.59 | Average | Horizontal |
| 2390.00 | 50.12 | 32.89 | 35.16 | 3.51 | 51.36 | 74 | -22.64 | Peak | Vertical |
| 2390.00 | 39.19 | 32.89 | 35.16 | 3.51 | 40.43 | 54 | -13.57 | Average | Vertical |
| 2400.00 | 52.02 | 32.92 | 35.16 | 3.54 | 53.32 | 74 | -20.68 | Peak | Vertical |
| 2400.00 | 40.98 | 32.92 | 35.16 | 3.54 | 42.28 | 54 | -11.72 | Average | Vertical |

Tx-2480, GFSK, Non-hopping

| Freq. MHz | Reading Level dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 2483.50 | 51.50 | 33.06 | 35.18 | 3.60 | 52.98 | 74 | -21.02 | Peak | Horizontal |
| 2483.50 | 39.26 | 33.06 | 35.18 | 3.60 | 40.74 | 54 | -13.26 | Average | Horizontal |
| 2483.50 | 49.78 | 33.06 | 35.18 | 3.60 | 51.26 | 74 | -22.74 | Peak | Vertical |
| 2483.50 | 38.71 | 33.06 | 35.18 | 3.60 | 40.19 | 54 | -13.81 | Average | Vertical |

## 5.8. Power line conducted emissions

### 5.8.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

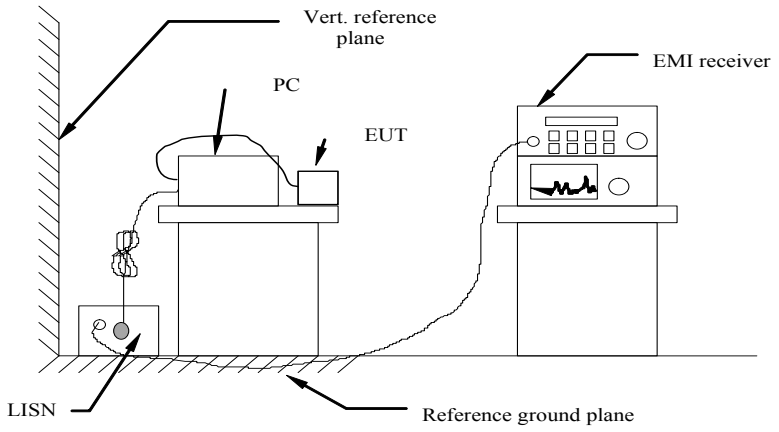
| Frequency Range (MHz) | Limits (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

### 5.8.2. Test Equipment

The following test equipments are used during the power line conducted measurement:

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
|---|---|---|---|---|---|
| 1 | EMI Test Receiver | ROHDE & SCHWARZ | ESCI | 101142 | 2014/06/18 |
| 2 | EMI Test Receiver | ROHDE & SCHWARZ | ESPI | 101840 | 2014/06/18 |
| 3 | Artificial Mains | ROHDE & SCHWARZ | ENV216 | 101288 | 2014/06/19 |
| 4 | EMI Test Software | AUDIX | E3 | N/A | 2014/06/18 |

### 5.8.3 Block Diagram of Test Setup

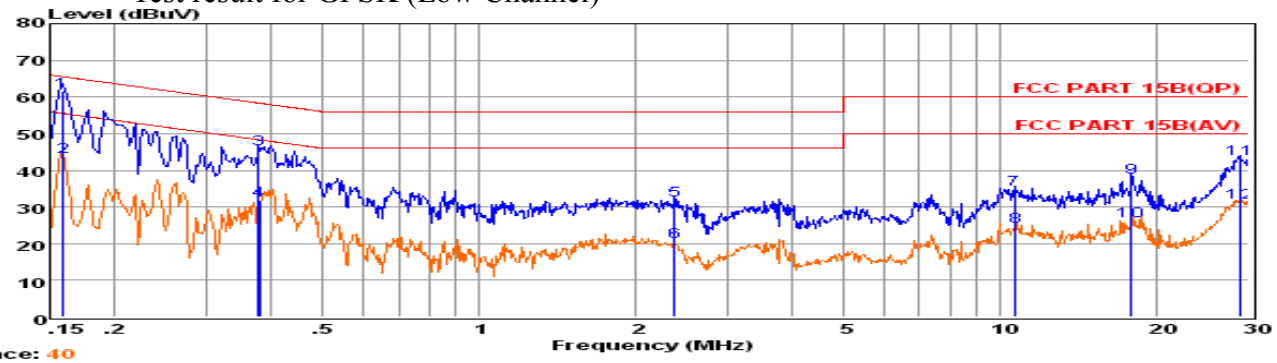



### 5.6.3 Test Results

PASS.

The test data please refer to following page.

Test result for GFSK (Low Channel)

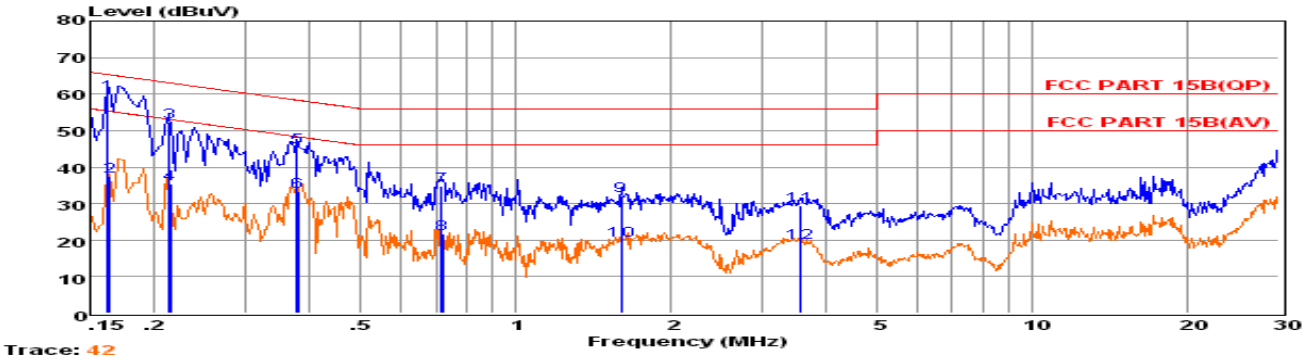



Trace: 40

| | |
|---|---|
| Env. Ins: | 24*/56% |
| EUT: | Bluetooth Keyboard |
| M/N: | ZAGG Folio For LG G Pad 8.3 LTE |
| Power Rating: | AC 120V/60Hz |
| Test Mode: | BT-L |
| Operator: | JACKY |
| Memo: | |
| Pol: | LINE |

| | Freq | Reading | LisnFac | CabLos | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.15816 | 52.02 | 9.58 | 0.02 | 61.62 | 65.56 | -3.94 | QP |
| 2 | 0.15916 | 34.14 | 9.58 | 0.02 | 43.74 | 55.51 | -11.77 | Average |
| 3 | 0.37711 | 36.01 | 9.62 | 0.04 | 45.67 | 58.34 | -12.67 | QP |
| 4 | 0.37811 | 22.02 | 9.62 | 0.04 | 31.68 | 48.32 | -16.64 | Average |
| 5 | 2.37098 | 22.08 | 9.64 | 0.05 | 31.77 | 56.00 | -24.23 | QP |
| 6 | 2.37198 | 10.97 | 9.64 | 0.05 | 20.66 | 46.00 | -25.34 | Average |
| 7 | 10.67629 | 24.92 | 9.69 | 0.08 | 34.69 | 60.00 | -25.31 | QP |
| 8 | 10.67729 | 14.99 | 9.69 | 0.08 | 24.76 | 50.00 | -25.24 | Average |
| 9 | 17.84926 | 28.34 | 9.74 | 0.11 | 38.19 | 60.00 | -21.81 | QP |
| 10 | 17.85026 | 16.30 | 9.74 | 0.11 | 26.15 | 50.00 | -23.85 | Average |
| 11 | 28.75498 | 33.25 | 9.71 | 0.14 | 43.10 | 60.00 | -16.90 | QP |
| 12 | 28.75598 | 21.35 | 9.71 | 0.14 | 31.20 | 50.00 | -18.80 | Average |

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
2. The emission levels that are 20dB below the official limit are not reported.




Trace: 42

| | |
|---|---|
| Env. Ins: | 24*/56% |
| EUT: | Bluetooth Keyboard |
| M/N: | ZAGG Folio For LG G Pad 8.3 LTE |
| Power Rating: | AC 120V/60Hz |
| Test Mode: | BT-L |
| Operator: | JACKY |
| Memo: | |
| Pol: | NEUTRAL |

| | Freq | Reading | LisnFac | CabLos | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.16241 | 50.26 | 9.67 | 0.02 | 59.95 | 65.34 | -5.39 | QP |
| 2 | 0.16341 | 27.68 | 9.67 | 0.02 | 37.37 | 55.29 | -17.92 | Average |
| 3 | 0.21392 | 42.73 | 9.59 | 0.03 | 52.35 | 63.05 | -10.70 | QP |
| 4 | 0.21492 | 25.67 | 9.59 | 0.03 | 35.29 | 53.01 | -17.72 | Average |
| 5 | 0.37711 | 35.75 | 9.61 | 0.04 | 45.40 | 58.34 | -12.94 | QP |
| 6 | 0.37811 | 23.78 | 9.61 | 0.04 | 33.43 | 48.32 | -14.89 | Average |
| 7 | 0.71977 | 25.00 | 9.63 | 0.04 | 34.67 | 56.00 | -21.33 | QP |
| 8 | 0.72077 | 12.03 | 9.63 | 0.04 | 21.70 | 46.00 | -24.30 | Average |
| 9 | 1.60196 | 22.31 | 9.63 | 0.05 | 31.99 | 56.00 | -24.01 | QP |
| 10 | 1.60260 | 10.29 | 9.63 | 0.05 | 19.97 | 46.00 | -26.03 | Average |
| 11 | 3.54655 | 19.85 | 9.65 | 0.06 | 29.56 | 56.00 | -26.44 | QP |
| 12 | 3.54755 | 9.74 | 9.65 | 0.06 | 19.45 | 46.00 | -26.55 | Average |

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
2. The emission levels that are 20dB below the official limit are not reported.

# 6. ANTENNA REQUIREMENT

## 6.1 Standard Applicable

According to antenna requirement of §15.203.
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

## 6.2 Antenna Connected Construction

### 6.2.1. Standard Applicable

According to § 15.203 & RSS-Gen, 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.

### 6.2.2. Antenna Connector Construction

The directional gains of antenna used for transmitting is 1.87dBi, and the antenna is connected to PCB board and no consideration of replacement. Please see EUT photo for details.

### 6.2.3. Results: Compliance.

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# 7. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following series model(s):

| | | | |
|---|---|---|---|
| -- | -- | -- | -- |

Belong to the tested device:

Product description : Bluetooth Keyboard

Model name : ZAGG Folio For LG G Pad 8.3 LTE

Remark: No additional models were tested.

----------THE END OF REPORT----------