# FCC Test Report

| FCC EVALUATION REPORT FOR CERTIFICATE | |
|---|---|
| Project Reference No. | 274749 |
| Product | Tablet PC |
| Brand Name | XTRATECH |
| Model | W850 |
| Alternate Model | N/A |
| Tested according to | FCC Rules and Regulations Part 15 Subpart C 2013, 15.247<br>ANSI C63.4-2009 |

| | | |
|---|---|---|
| Tested in period | 2014-12-25 to 2014-12-30 | |
| Issued date | 2014-12-31 | |
| Name and address of the Test House | Nemko Shanghai Ltd. Shenzhen Branch<br>Unit CD, Floor 10, Tower 2, Kefa Road 8#, Hi-Technology Park, Nanshan District, Shenzhen, China<br>Phone : +86 755 8221 0420 Fax : +86 755 8221 3363 | |
| Tested by | Zone Peng | 2014-12-31 |
| | ***Zone Peng*** | ***date*** |
| Verified by | Daria Liu | 2014-12-31 |
| | ***Daria Liu*** | ***date*** |

## Contents of This Report

# 1. Client Information

## 1.1 Applicant

| | |
|---|---|
| Company Name: | South Holdings Industrial Limited |
| Company Address: | Building 1, Hao'er JiaShiTai Industrial Park, FengTang Rd., Tangwei, FuYong Town, Bao'an District, Shenzhen, 518103, China |

## 1.2 Manufacturer

| | |
|---|---|
| Company Name: | South Holdings Industrial Limited |
| Company Address: | Building 1, Hao'er JiaShiTai Industrial Park, FengTang Rd., Tangwei, FuYong Town, Bao'an District, Shenzhen, 518103, China |

## 1.3 Scope

●Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.247.

# 2. Equipment under Test (EUT)

## 2.1 Identification of EUT

| | |
|---|---|
| Category: | Bluetooth 4.0 |
| Name: | Tablet PC |
| Model Name: | W850 |
| Alternate model: | N/A |
| Brand name: | XTRATECH |

## 2.2 Detail spec:

**Operation Frequency：2402 MHz -2480MHz**
**Protocal: Bluetooth 4.0**
**Type of Modulation : GFSK**

**Antenna Type：Integral Antenna**
**Antenna Number : 1**
**Antenna gain: 1.31dBi**
**Channel number: 40**
**Data rate: 1Mbps**

**Max PK Output power: 3.25dBm**

**AC/DC Adapter: KA24-0503000US**
**Input: 100-240V~, 50/60Hz, 0.55A max.Class II**
**Output: 5Vdc,300mA**

## 2.3 Additional Information Related to Testing

**CH LOW:2402MHz**
**CH MID:2442MHz**
**CH HIGH:2480MHz**

**Remark: Only the worse case found by prescan is listed**

# 3. General Test Conditions

## 3.1 Location

Global United Technology Services Co., Ltd. -- Nemko ELA 632

2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

FCC Registration No.:600491

IC Registration No.9079A-2

Note: all test are witnessed by NEMKO engineer

## 3.2 Operating Environment

All tests and measurements were performed in a shielded enclosure or a controlled environment suitable for the tests conducted. The climatic conditions in the test area are automatically controlled and recorded continuously.

| Parameters | Recording during test | Accepted deviation |
|---|---|---|
| Ambient temperature | 24-25°C | 15 – 35 ºC |
| Relative humidity | 50-55% | 30 - 60% |
| Atmospheric pressure | 101.2 kPa -101.3kPa | 86-106kPa |

## 3.3 Operating During Test

**Test mode: 5Vdc 3A Full charged battery**

**TM1 : continuance TX MODE**

**TM2: Hopping on mode**

**Remark : When measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, have been performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. No findable change appear.**
**And only choose the worse mode to be the representative test mode**

## 3.4 Test Equipment

The test equipments used in testing are calibrated on a regular basis. For most of the testing equipments accredited calibration is conducted once a year. For certain equipment the calibration interval is longer. Between the calibrations all test equipment are controlled and verified on a regular basis. The test equipments used are defined in each test section of this report.

***A.E. used during testing:***

1. HDMI cable: detachable, shielded with electric conductivity fabric and 2 magnetic core fixed at both end of the HDMI line (1m).
2. Earphone: detachable, un-shield with a magnetic core at the jack end (0.8m).
   manufacture: Aoni, model no: MP-105 (FCC VOC)
3. AC power cable: detachable, un-shield (1.5m)
3. Monitor: manufacture: AOC, model no: V22T (FCC DOC)
4: SD CARD: manufacture:Sony, model no: SR-32C4 (FCC DOC)
5: USB cable: detachable, shielded (0.2m)

## 4. Measurement Uncertainty

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95 %.

| | | |
|---|---|---|
| Conducted Emission : | 0.15~30MHz | 3.45dB |
| Radiated Emission: | 30MHz~1000MHz | 4.50dB |
| | 1GHz-18GHz | 4.70dB |

# 5. Radiated Electromagnetic Disturbances

## 5.1 Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast.

The EUT were rotated 0 to 360 degree and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. The test result are reported as below.

For below 1GHz

RBW=120 kHz; VBW=300KHz.QP detector,The frequency range from 30MHz to 1000MHz is checked.

For above 1GHz. The frequency range from 1GHz to 25GHz($10^{th}$ harmonics) is checked.

RBW=1MHz ; VBW=1MHz,PK detector for peak emissions measurement above 1GHz

RBW=1MHz ; VBW=3MHz, RMS detector for average emissions measure above 1GHz

## 5.2 Measurement Equipment

| | Equipment | Calibration due | Type | Serial No. | Manufacturer |
|---|---|---|---|---|---|
| ☒ | EMI Test Receiver | Jul. 04 2015 | ESU26 | GTS203 | R&S |
| ☒ | BiConiLog Antenna | Feb. 26 2015 | VULB9163 | GTS214 | SCHWARZBECK |
| ☒ | Horn Antenna | Feb. 25 2015 | BBHA9120D | GTS215 | SCHWARZBECK |
| ☒ | Coaxial Cable | Apr. 01 2015 | N/A | GTS213 | GTS |
| ☒ | Coaxial Cable | Apr. 01 2015 | N/A | GTS211 | GTS |
| ☒ | Coaxial Cable | Apr. 01 2015 | N/A | GTS211 | GTS |
| ☒ | Coaxial cable | Apr. 01 2015 | N/A | GTS210 | GTS |
| ☒ | Amplifier | Jul. 04 2015 | 8347A | GTS204 | HP |

## 5.3 Test Result

Remark: If PK value is lower than AV limit , only show PK diagram as below.

From 18GHz to 25GHz, Spurious Emission can not be found .

For restriction band test :Only list the restriction band test which there found emission.

For other restriction band: no emission found.

For Radiated emission test : The EUT have been tested at X,Y,Z axial direction, Only list the worse mode.

| Mode | Freq range | | Test ANT polarity | Diagram | Test Result |
|---|---|---|---|---|---|
| TX MODE | 30MHz-1GHz: | | H | 5-1 | Pass |
| | 30MHz-1GHz: | | V | 5-2 | Pass |
| **Mode** | **Freq range** | **Channel** | **Test ANT polarity** | **Diagram** | **Test Result** |
| GFSK | 1GHz-18GHz: | CH LOW | H | 5-3 | Pass |
| | 1GHz-18GHz: | CH LOW | V | 5-4 | Pass |
| | 1GHz-18GHz: | CH MID | H | 5-5 | Pass |
| | 1GHz-18GHz: | CH MID | V | 5-6 | Pass |
| | 1GHz-18GHz: | CH HIGH | H | 5-7 | Pass |
| | 1GHz-18GHz: | CH HIGH | V | 5-8 | Pass |

Restricted band test:

| Mode | Freq range | Channel | Test ANT polarity | Diagram | Test Result |
|---|---|---|---|---|---|
| GFSK | Restricted band | CH LOW | H | 5-9 | Pass |
| | | CH LOW | V | 5-10 | Pass |
| | | CH HIGH | H | 5-11 | Pass |
| | | CH HIGH | V | 5-12 | Pass |

NOTES:

1.All modes were measured and only the worst case emission was reported.

2. H =Horizontal V=Vertical

3. Emission = Reading +Antenna Factor + Cable Loss –Amp Factor

4. Emission level dB μ V = 20 log Emission level μ V/m

5. The lower limit shall apply at the transition frequencies

6. All the emissions appearing within 15.205 Restricted bands shall not exceed the limits shown in (15.209 limit )#.

7. Unwanted emissions not falling within restricted frequency bands shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits;

Remark :

The limit of " # "of 3 meter distance is

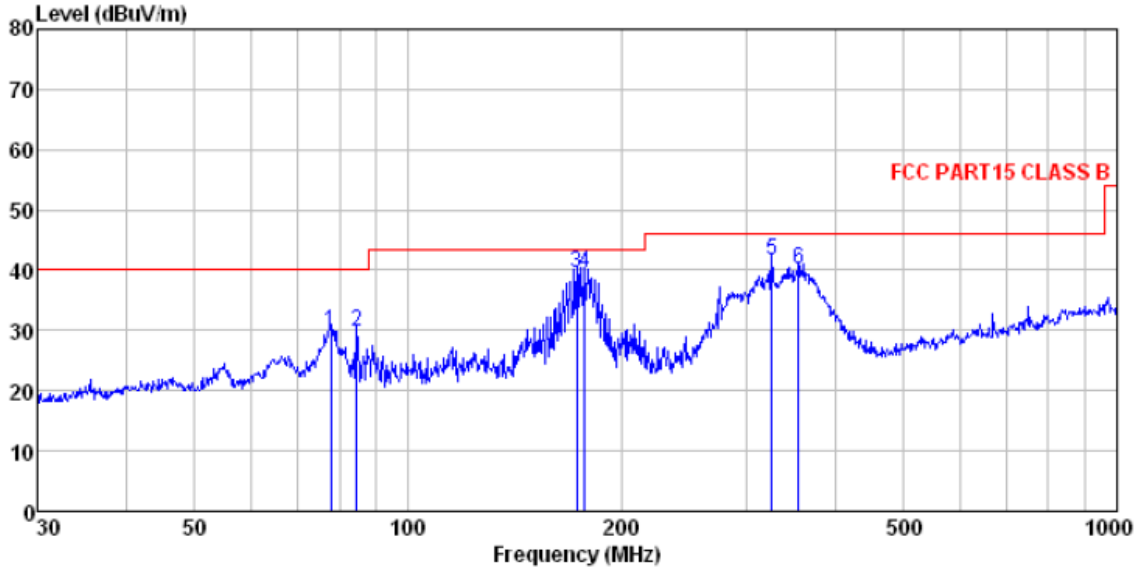
| Frequency MHz | Distance m | Field strength | | Distance m | Field strength |
|---|---|---|---|---|---|
| | | μV/m | dBμV/m(QP) | | dBμV/m(QP) |
| 30-88 | 3 | 100 | 40.0 | 10 | 30.0 |
| 88-216 | 3 | 150 | 43.5 | 10 | 33.5 |
| 216-960 | 3 | 200 | 46.0 | 10 | 36.0 |
| 960-1000 | 3 | 500 | 54.0 | 10 | 44.0 |
| Above 1000 | 3 | 74.0 dBμV/m (PK)<br>54.0 dBμV/m (AV) | | / | / |

15.205 Restricted bands:

| 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. | | | |

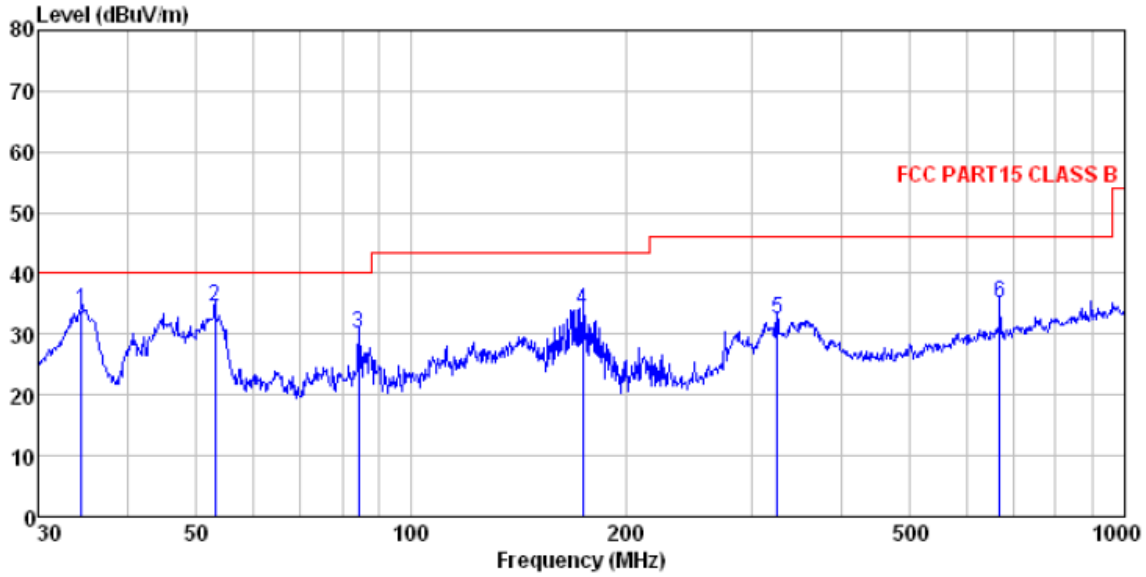
[1]Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.
[2]Above 38.6

### 5.3.1 Diagram 5-1



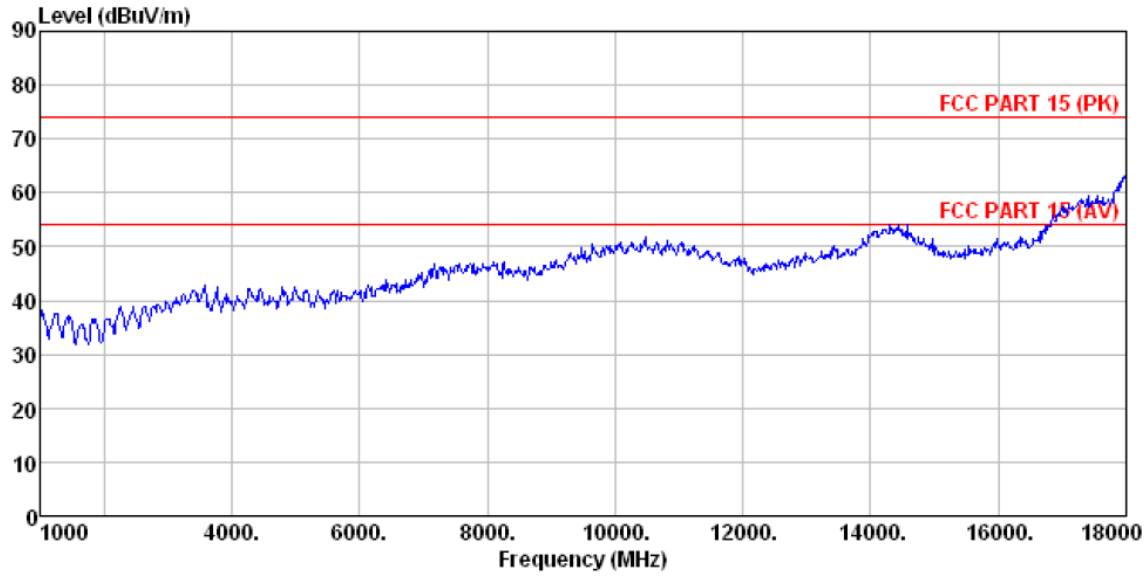

| | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 77.865 | 50.38 | 10.26 | 1.01 | 31.78 | 29.87 | 40.00 | -10.13 | QP |
| 2 | 84.702 | 48.18 | 12.16 | 1.07 | 31.74 | 29.67 | 40.00 | -10.33 | QP |
| 3 | 173.205 | 58.90 | 11.16 | 1.70 | 32.06 | 39.70 | 43.50 | -3.80 | QP |
| 4 | 177.509 | 58.39 | 11.49 | 1.73 | 32.07 | 39.54 | 43.50 | -3.96 | QP |
| 5 | 325.596 | 55.77 | 15.59 | 2.49 | 32.09 | 41.76 | 46.00 | -4.24 | QP |
| 6 | 355.427 | 53.10 | 16.35 | 2.64 | 32.01 | 40.08 | 46.00 | -5.92 | QP |

### 5.3.2 Diagram 5-2

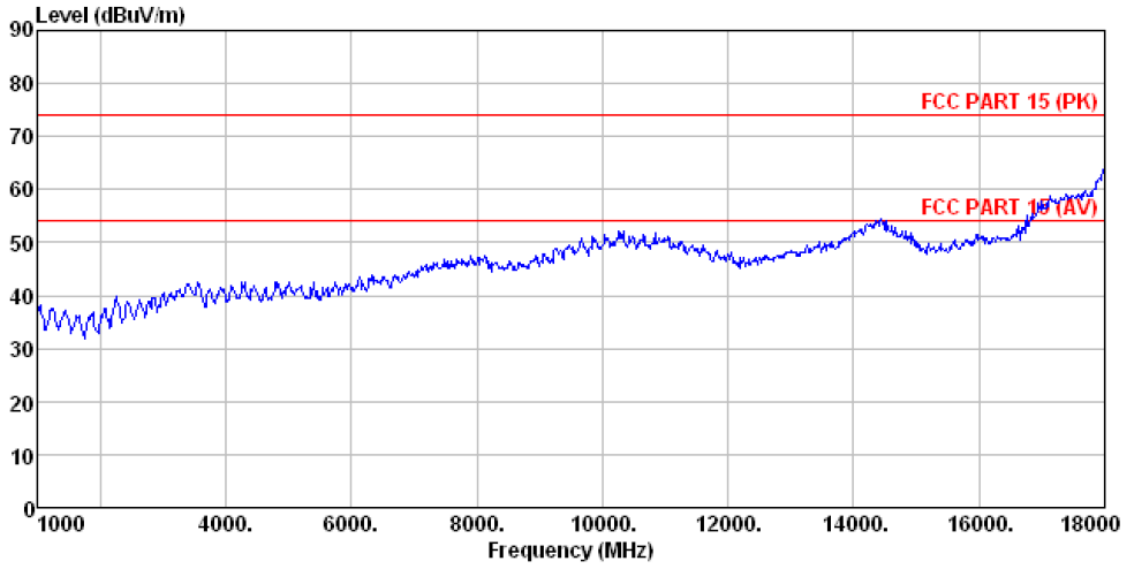



| | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 34.517 | 51.00 | 14.30 | 0.60 | 32.06 | 33.84 | 40.00 | -6.16 | QP |
| 2 | 53.131 | 50.70 | 15.10 | 0.80 | 31.95 | 34.65 | 40.00 | -5.35 | QP |
| 3 | 84.405 | 48.55 | 12.16 | 1.07 | 31.74 | 30.04 | 40.00 | -9.96 | QP |
| 4 | 173.814 | 53.19 | 11.23 | 1.71 | 32.06 | 34.07 | 43.50 | -9.43 | QP |
| 5 | 325.596 | 46.56 | 15.59 | 2.49 | 32.09 | 32.55 | 46.00 | -13.45 | QP |
| 6 | 668.142 | 41.47 | 20.69 | 3.97 | 31.15 | 34.98 | 46.00 | -11.02 | QP |

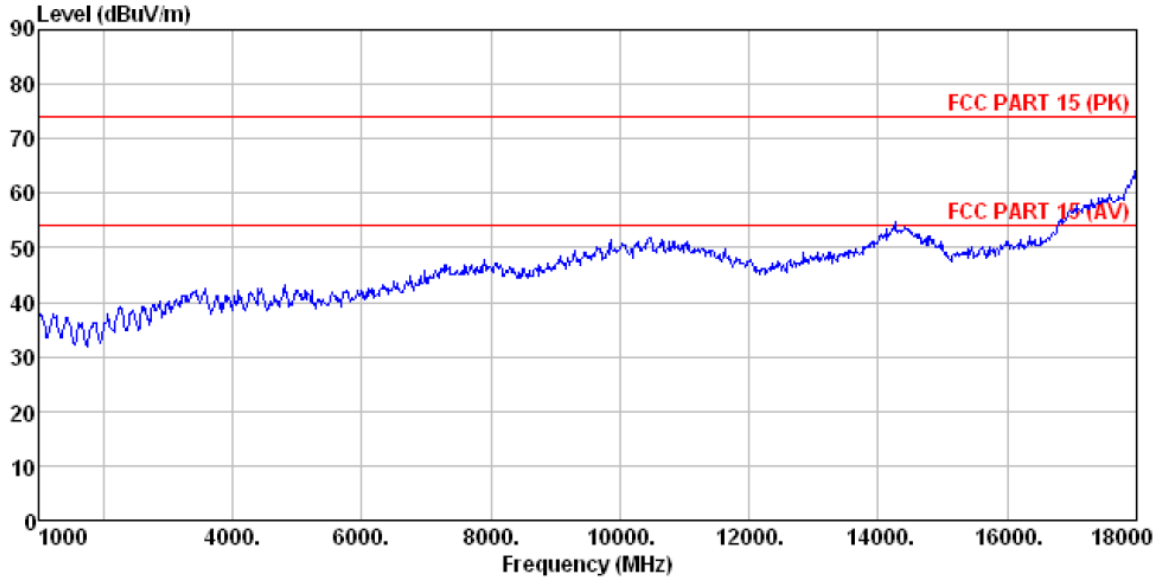
### 5.3.3 Diagram 5-3



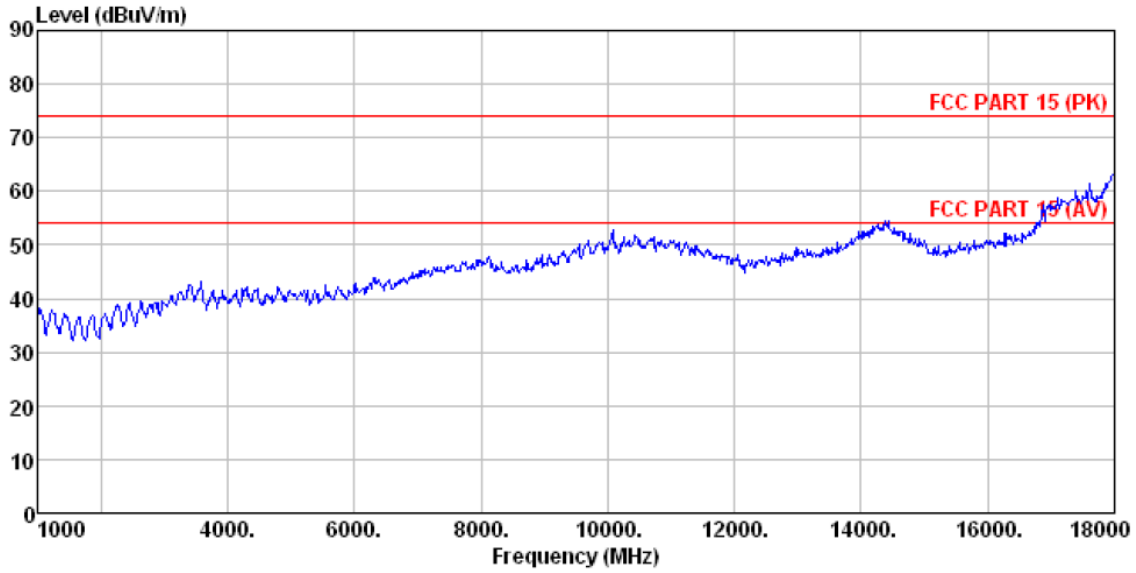

### 5.3.4 Diagram 5-4



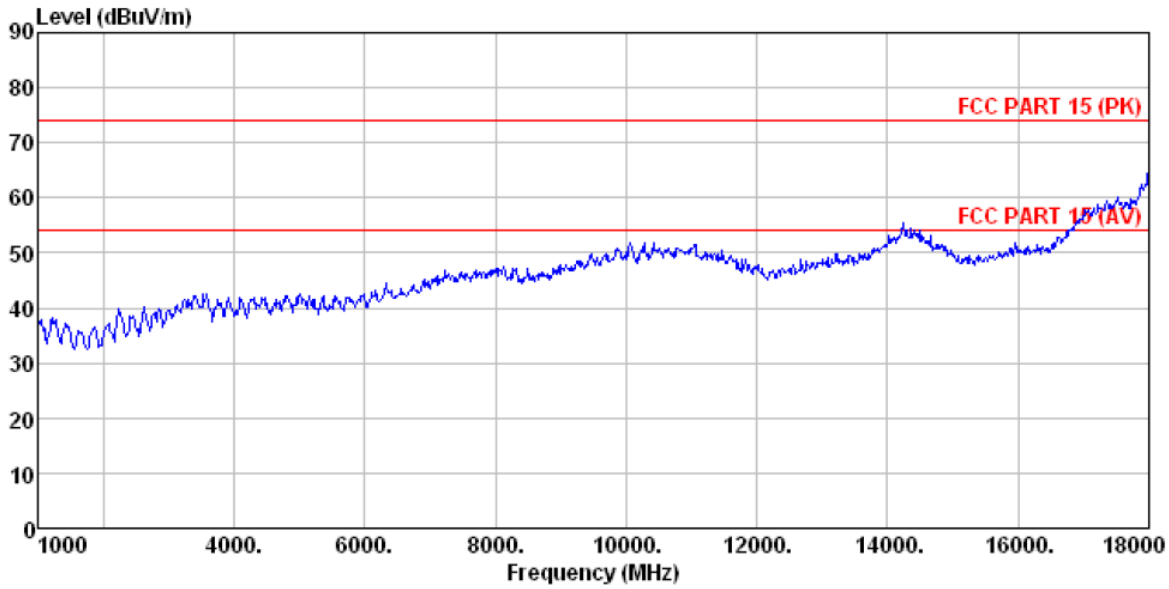
### 5.3.5 Diagram 5-5



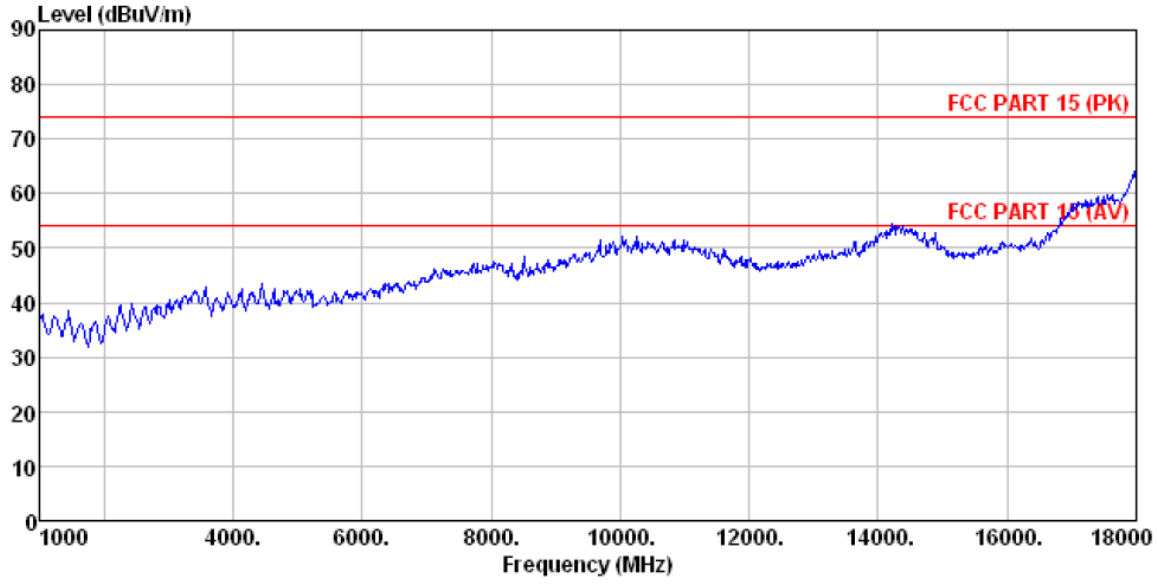

### 5.3.6 Diagram 5-6



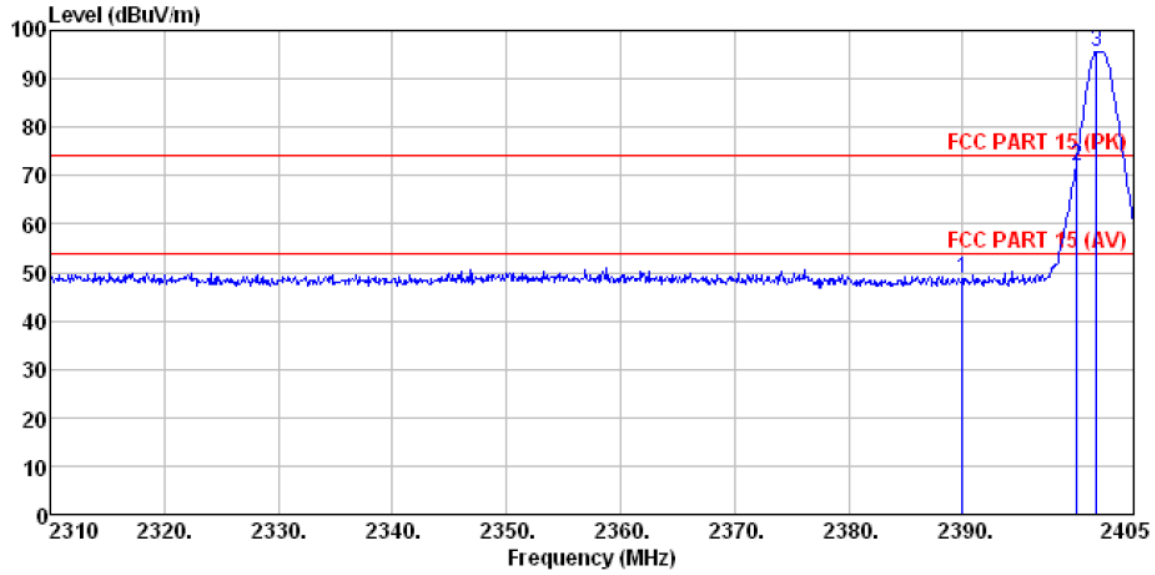
### 5.3.7 Diagram 5-7




### 5.3.8 Diagram 5-8

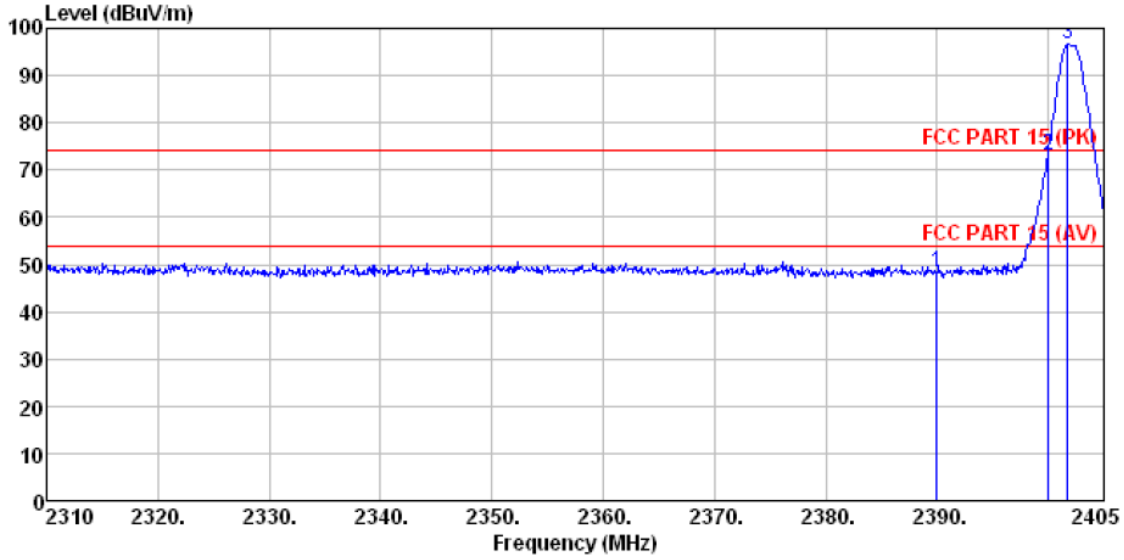


### 5.3.9 Diagram 5-9



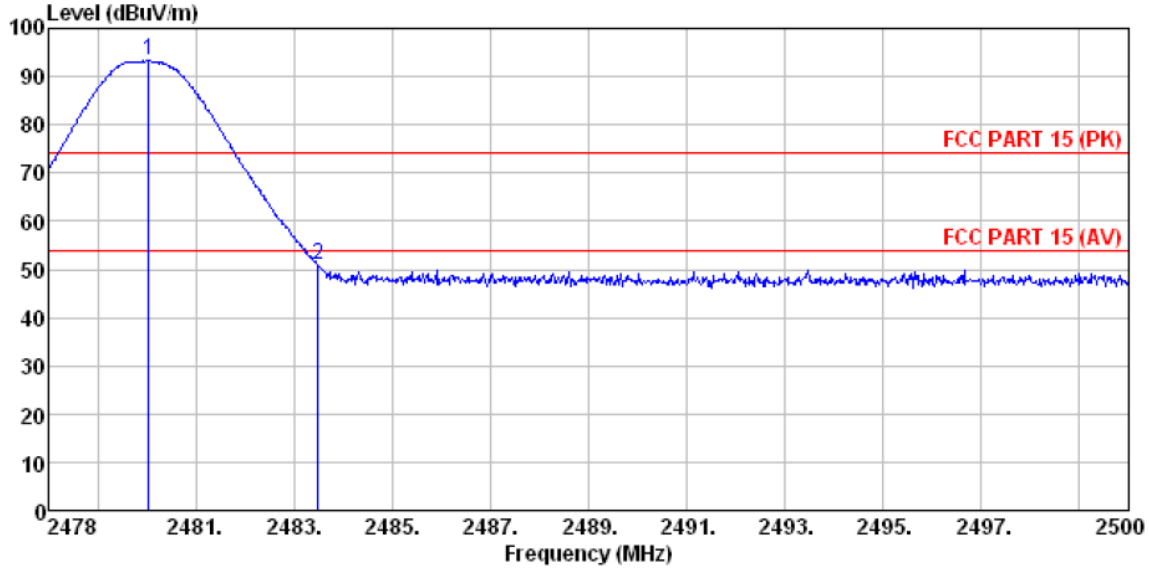

| | | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | | 2390.000 | 46.09 | 27.59 | 5.38 | 30.18 | 48.88 | 74.00 | -25.12 | Peak |
| 2 | | 2400.000 | 69.23 | 27.58 | 5.39 | 30.18 | 72.02 | | | Peak |
| 3 | * | 2401.770 | 92.94 | 27.58 | 5.39 | 30.18 | 95.73 | | | Peak |

### 5.3.10 Diagram 5-10



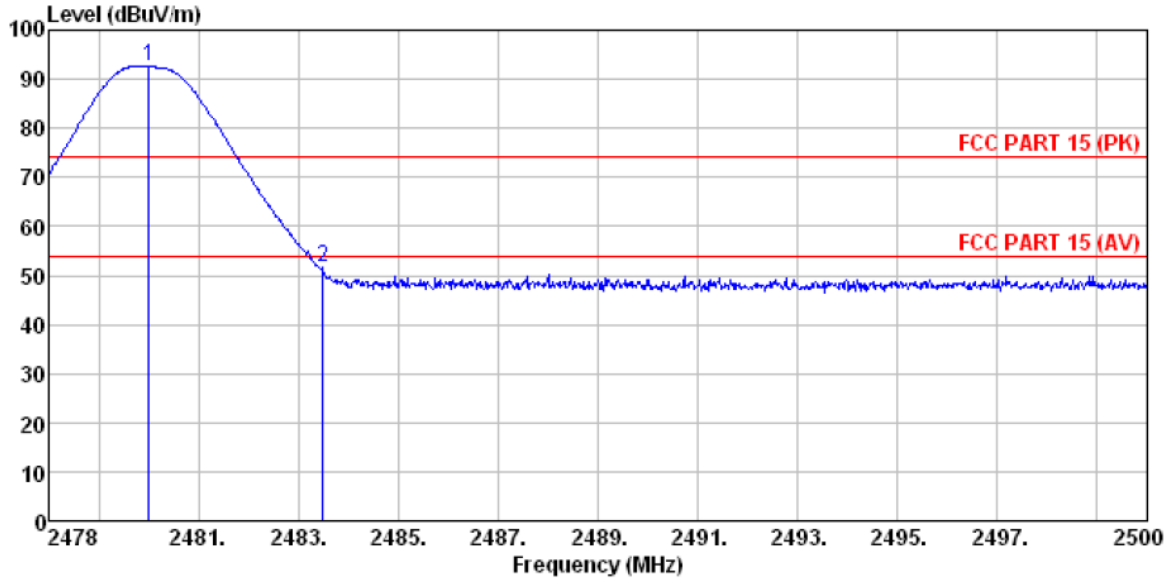

| | | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | | 2390.000 | 45.53 | 27.59 | 5.38 | 30.18 | 48.32 | 74.00 | -25.68 | Peak |
| 2 | | 2400.000 | 70.22 | 27.58 | 5.39 | 30.18 | 73.01 | | | Peak |
| 3 | * | 2401.770 | 93.80 | 27.58 | 5.39 | 30.18 | 96.59 | | | Peak |

### 5.3.11 Diagram 5-11




| | 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 * | 2480.046 | 90.33 | 27.52 | 5.47 | 29.93 | 93.39 | | | Peak |
| 2 | 2483.500 | 47.74 | 27.53 | 5.47 | 29.93 | 50.81 | 74.00 | -23.19 | Peak |

### 5.3.12 Diagram 5-12




| | | 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 | * | 2480.002 | 89.72 | 27.52 | 5.47 | 29.93 | 92.78 | | | Peak |
| 2 | | 2483.500 | 48.44 | 27.53 | 5.47 | 29.93 | 51.51 | 74.00 | -22.49 | Peak |

# 6. 6dB and 99% Bandwidth test

## 6.1 Test Procedure

**6dB Bandwidth:**

Systems using digital modulation techniques may operate in the 902 - 928 MHz,2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum with the power of which is lower than peak power for 6dB.

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW)>= RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

## 6.2 Measurement Equipment

| | Equipment | Calibration due | Type | Serial No. | Manufacturer |
|---|---|---|---|---|---|
| ☒ | Spectrum Analyzer | Dec. 04 2015 | E4440A | GTS533 | Agilent |

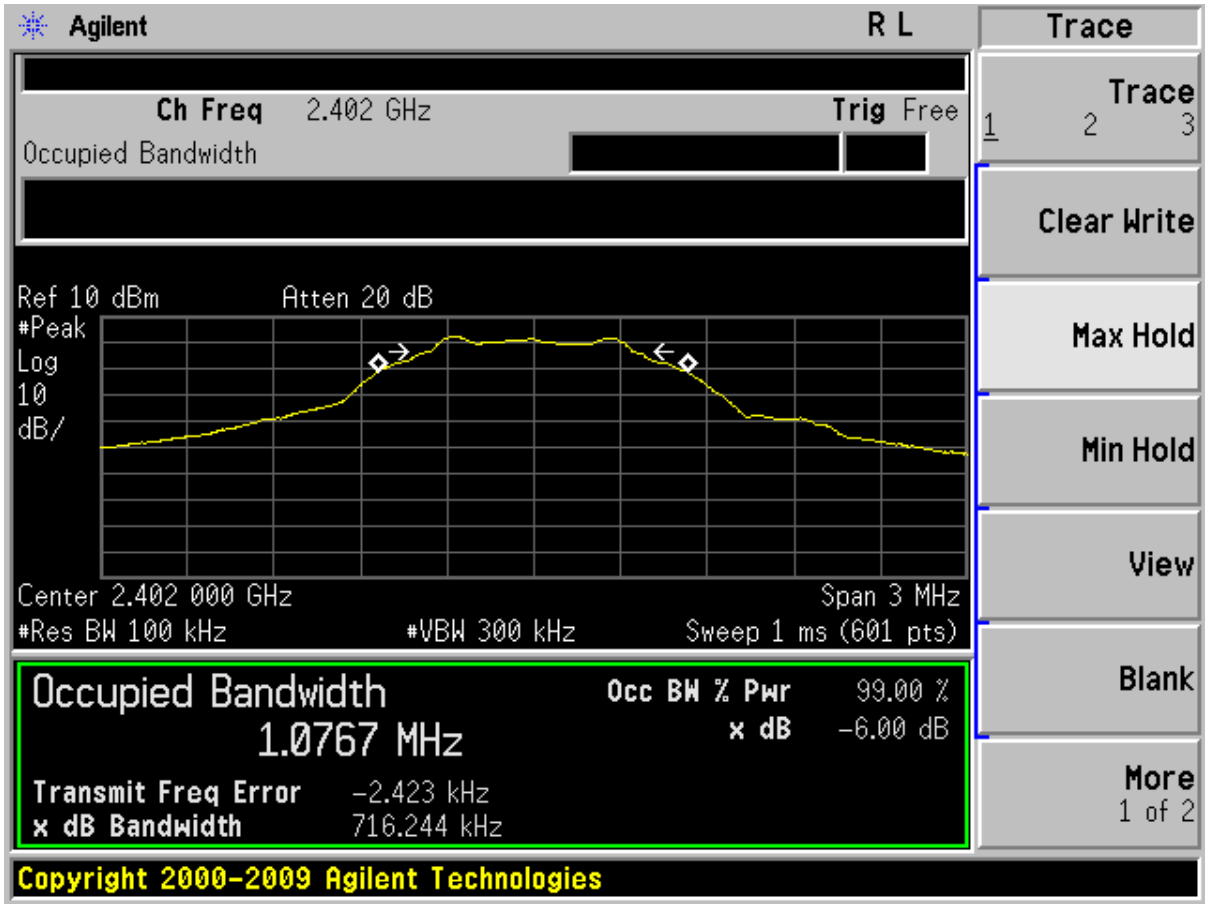
## 6.3 Test Result

Remark : Conducted measurement.

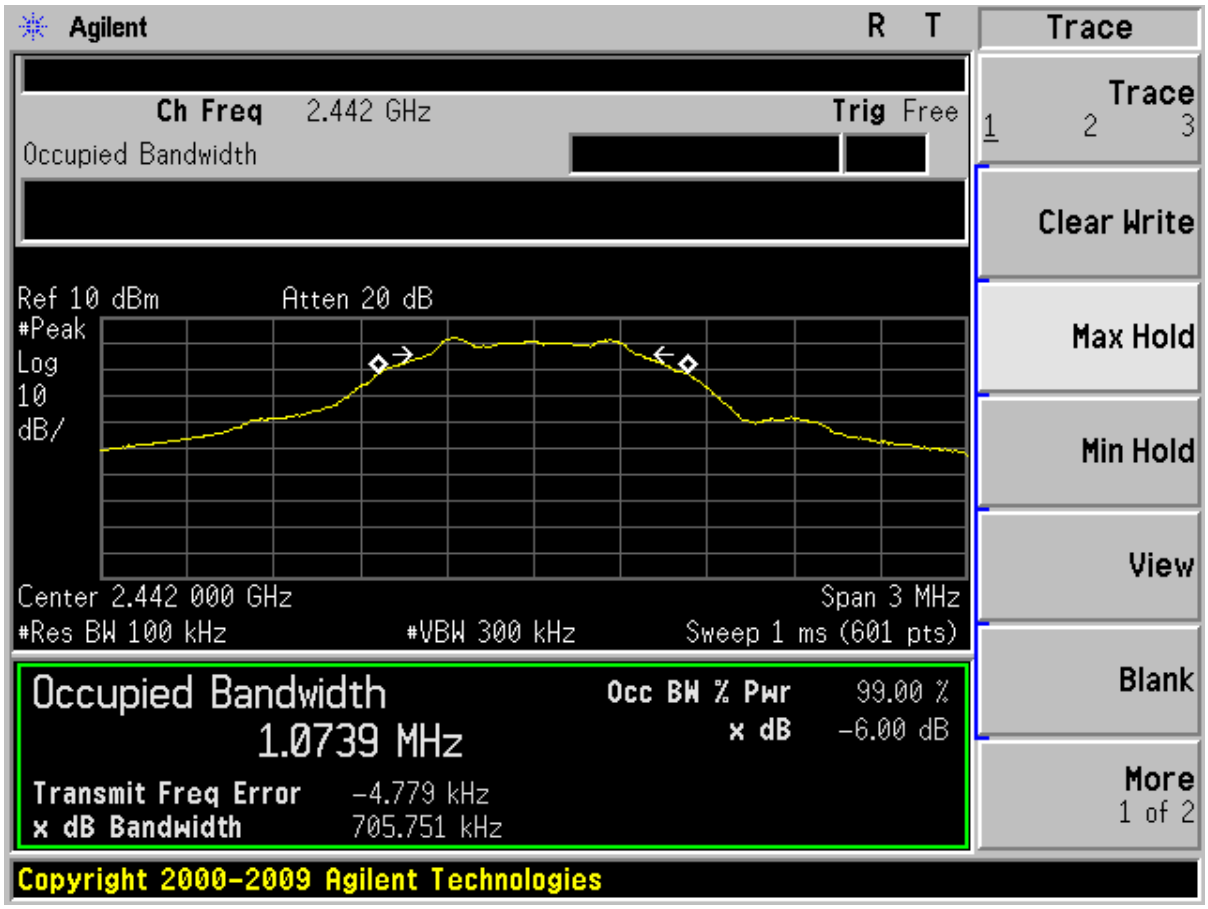
**6dB Bandwidth:**

| GFSK | | | | | |
|---|---|---|---|---|---|
| Channel | Diagram | 6dB bandwidth (KHz) | 99% bandwidth (MHz) | >Limit kHz | Result |
| CH LOW | 6-1 | 716.244 | 1.0767 | 500 | PASS |
| CH MID | 6-2 | 705.751 | 1.0739 | 500 | PASS |
| CH HIGH | 6-3 | 712.647 | 1.0744 | 500 | PASS |

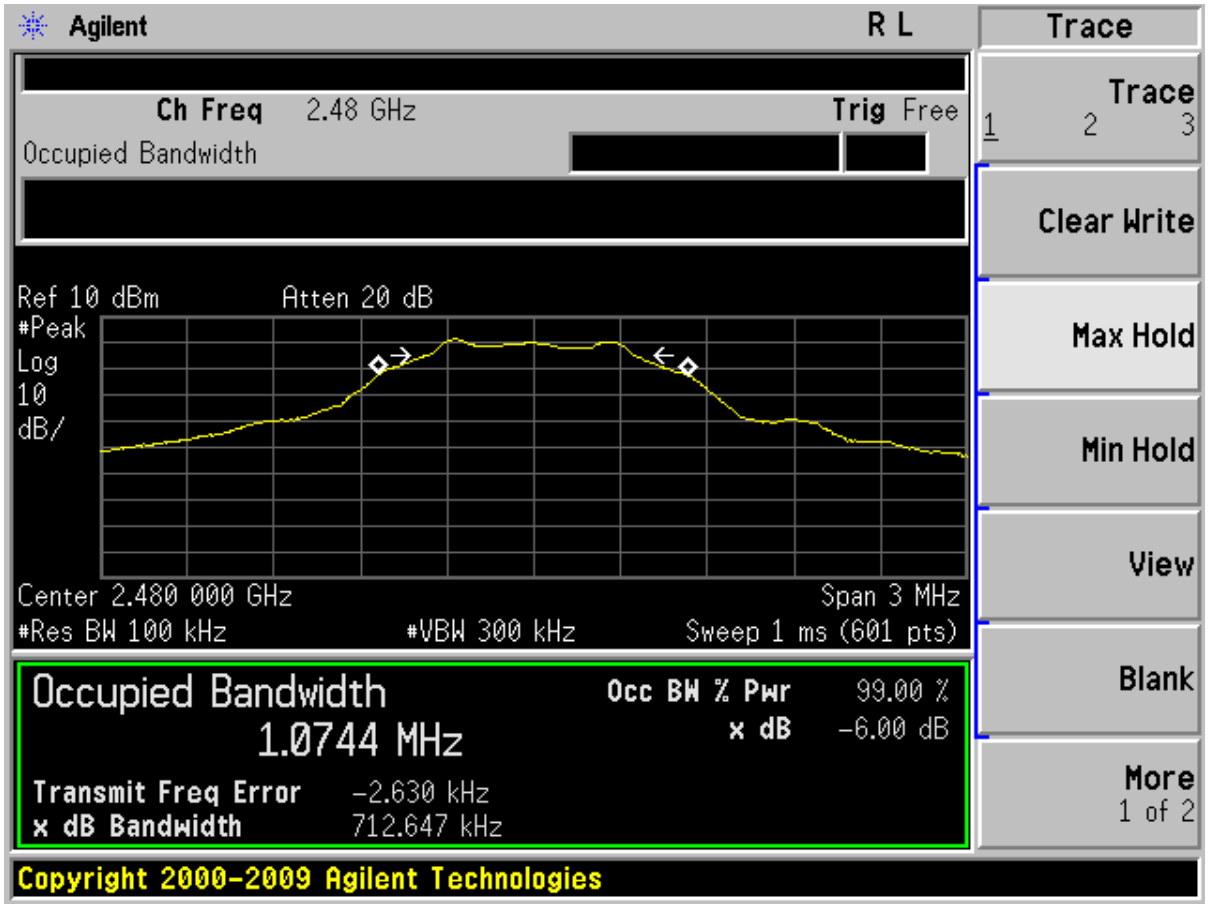
### 6.3.1 Diagram 6-1



### 6.3.2 Diagram 6-2



### 6.3.3 Diagram 6-3



# 7. Band Edge Compliance Test

## 7.1 Test Procedure

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.

## 7.2 Measurement Equipment

| | Equipment | Calibration due | Type | Serial No. | Manufacturer |
|---|---|---|---|---|---|
| ☒ | Spectrum Analyzer | Dec. 04 2015 | E4440A | GTS533 | Agilent |

## 7.3 Test Result

Conducted measurement

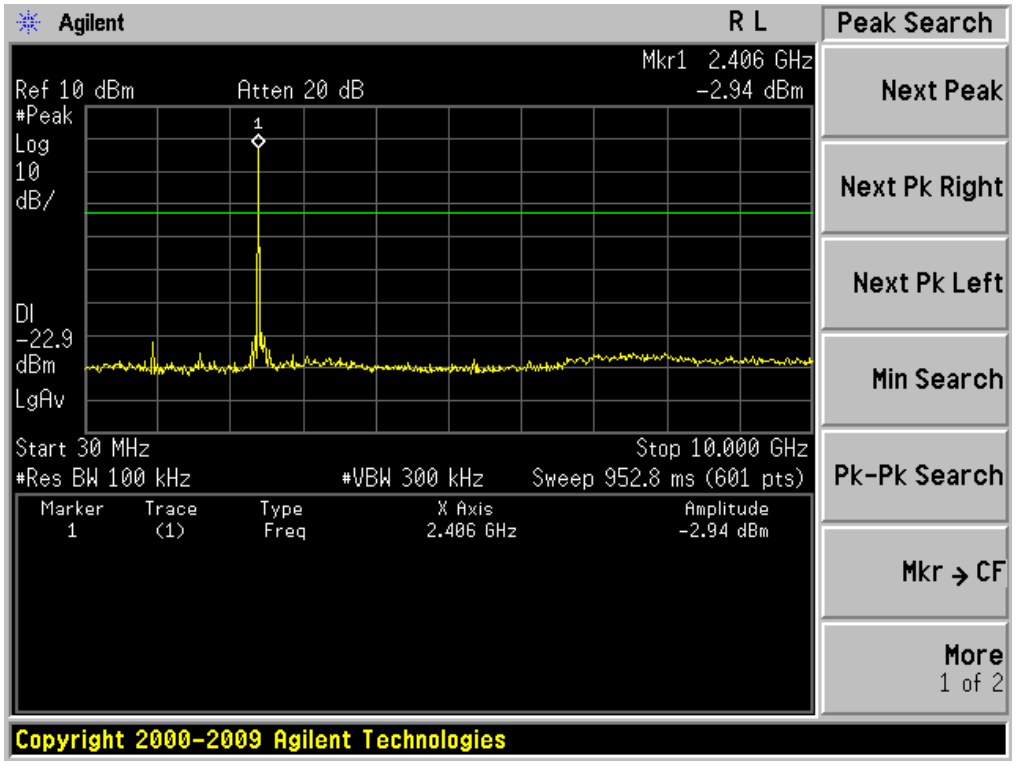
PK detector

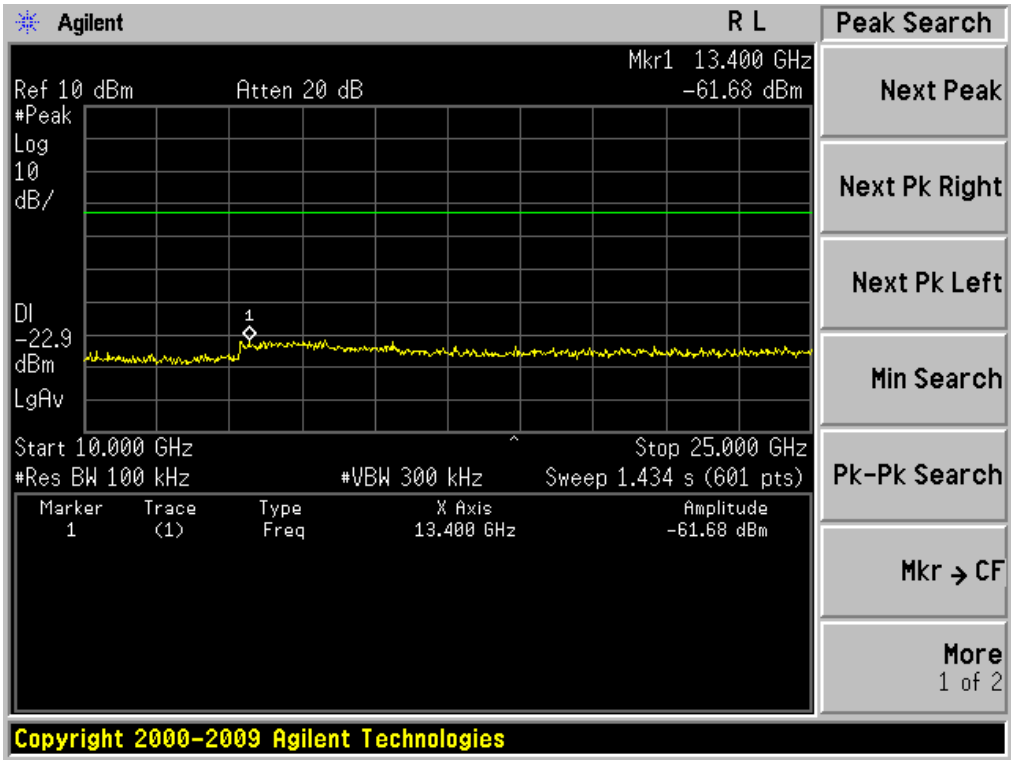
Max hold

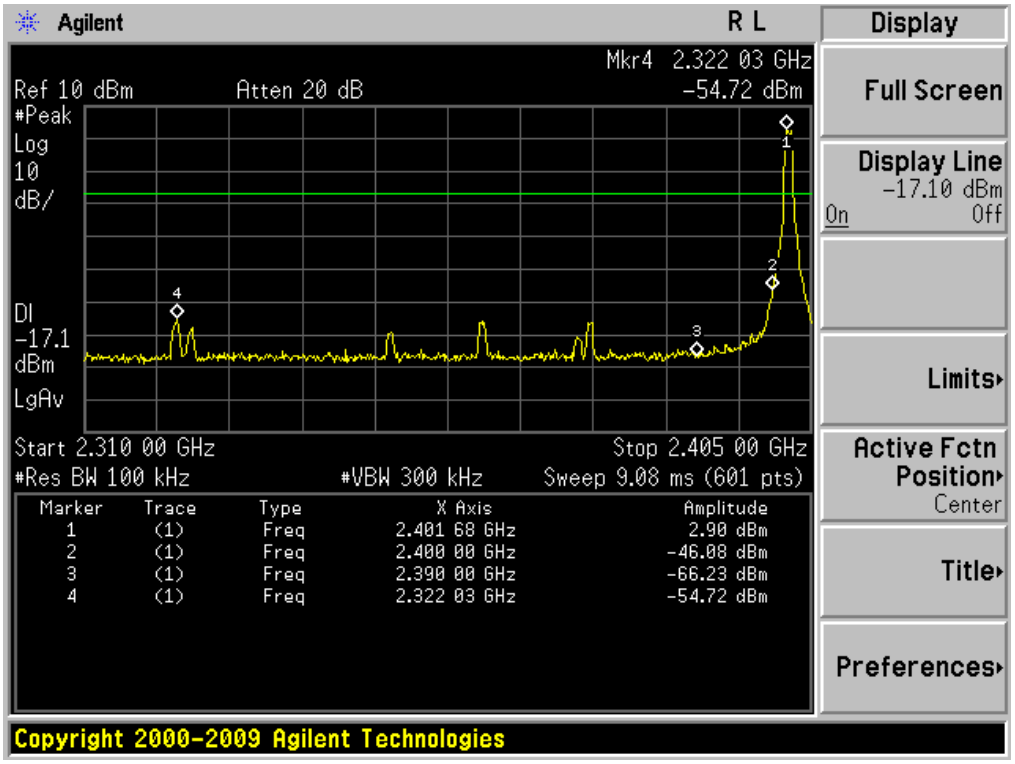
RMB=100kHz VBW=300kHz

| Mode | Channel | Test Data | Test Result |
|---|---|---|---|
| GFSK | CH LOW | Diagram 7-1 | Pass |
| | CH MID | Diagram 7-2 | Pass |
| | CH HIGH | Diagram 7-3 | Pass |

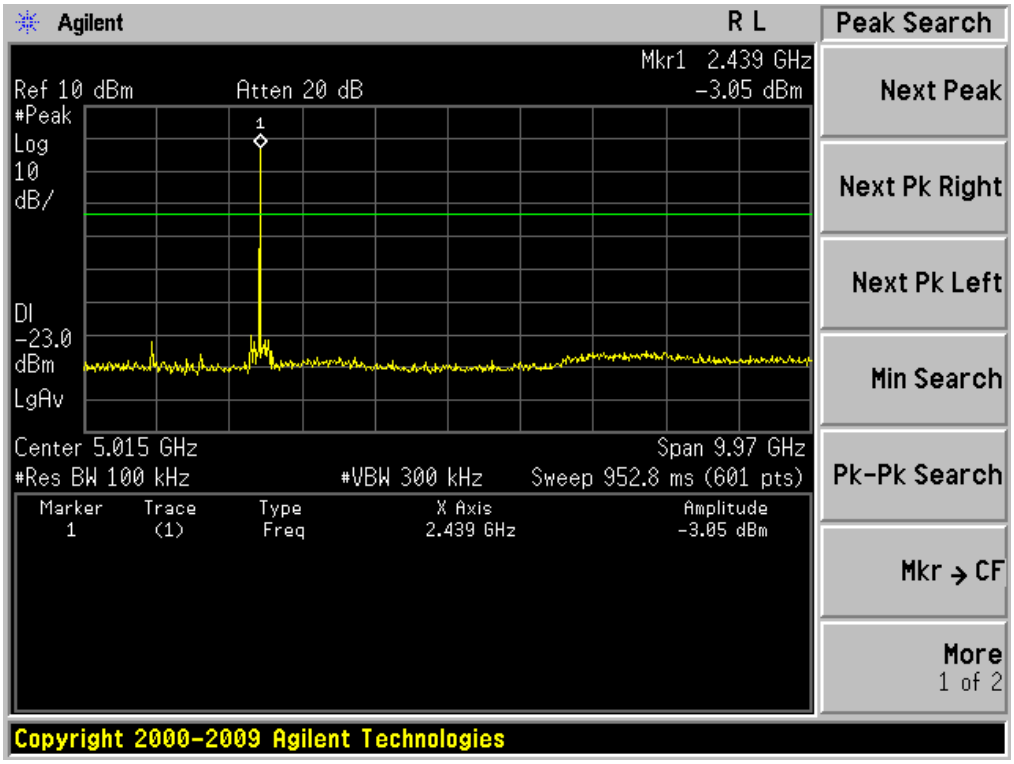
### 7.3.1 Diagram 7-1

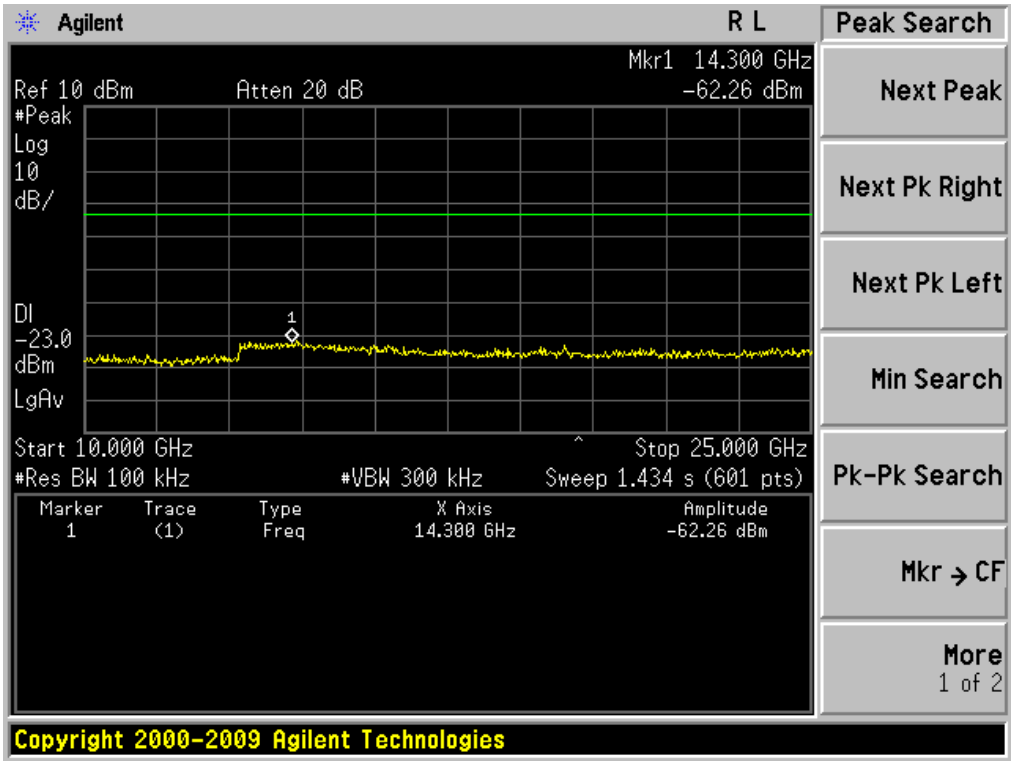



Agilent
R L
Peak Search
Mkr1 13.400 GHz
Ref 10 dBm
Atten 20 dB
-61.68 dBm
#Peak
Log
10
dB/
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Dl
-22.9
dBm
LgAv
Start 10.000 GHz
Stop 25.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.434 s (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 13.400 GHz -61.68 dBm
Copyright 2000-2009 Agilent Technologies

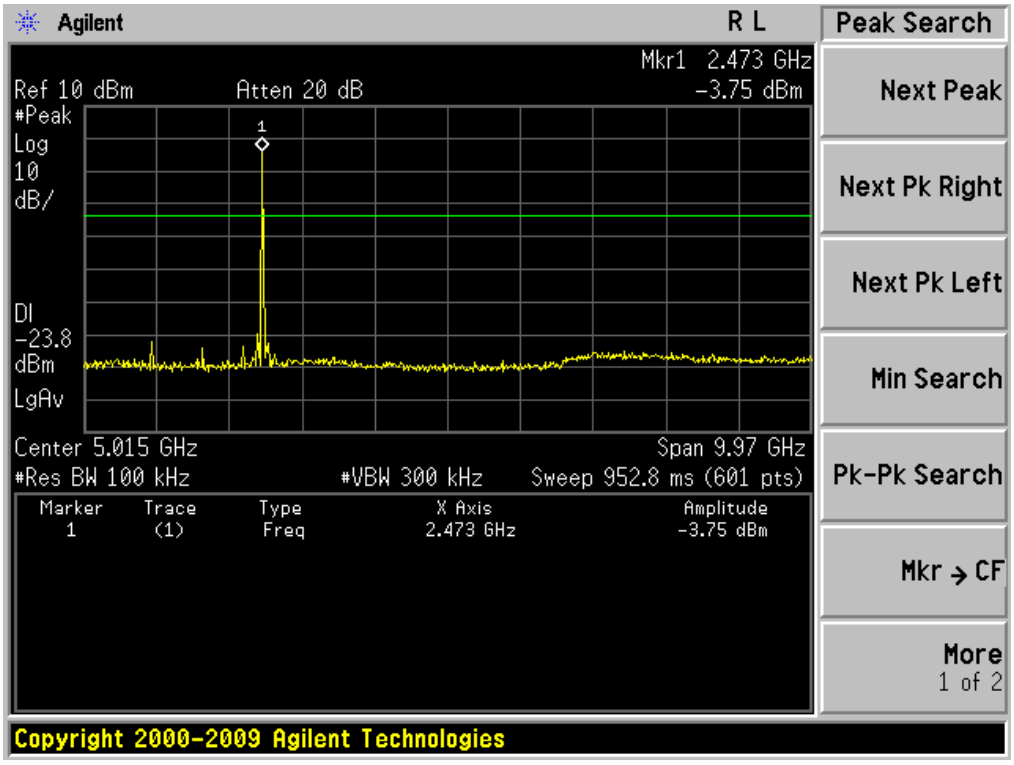

Agilent
R L
Display
Mkr4 2.322 03 GHz
Ref 10 dBm
Atten 20 dB
-54.72 dBm
#Peak
Log
10
dB/
Full Screen
Display Line
-17.10 dBm
On Off
Limits
Active Fctn
Position
Center
Title
Preferences
Dl
-17.1
dBm
LgAv
Start 2.310 00 GHz
Stop 2.405 00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 9.08 ms (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.401 68 GHz 2.90 dBm
2 (1) Freq 2.400 00 GHz -46.08 dBm
3 (1) Freq 2.390 00 GHz -66.23 dBm
4 (1) Freq 2.322 03 GHz -54.72 dBm
Copyright 2000-2009 Agilent Technologies

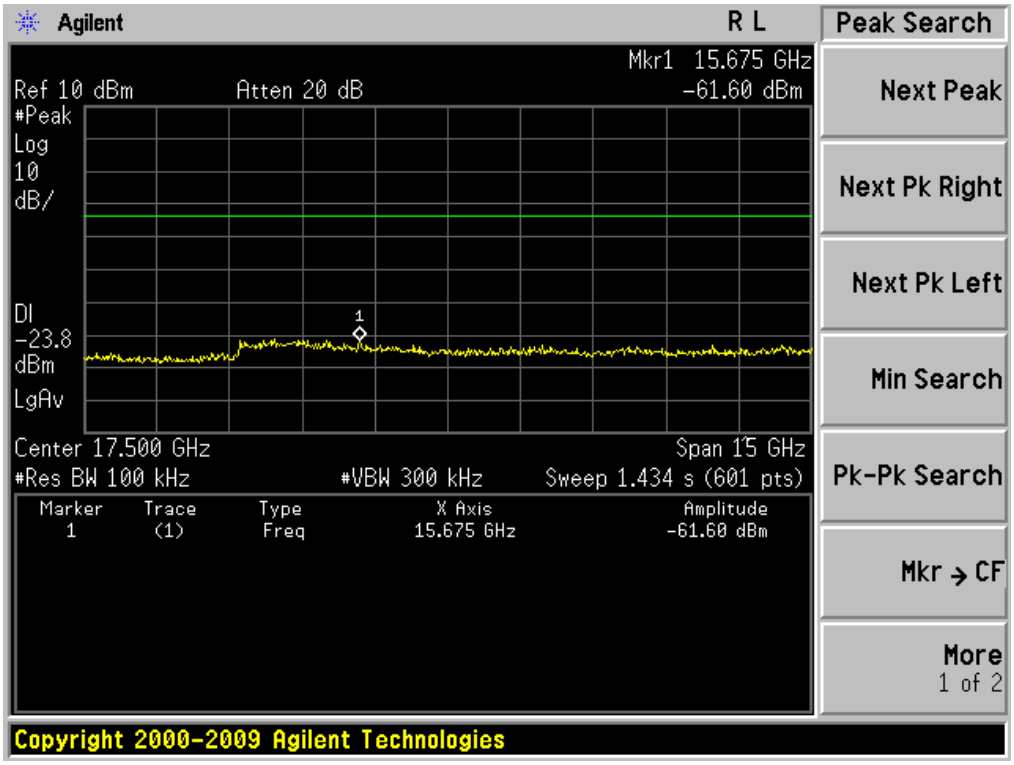
### 7.3.2 Diagram 7-2

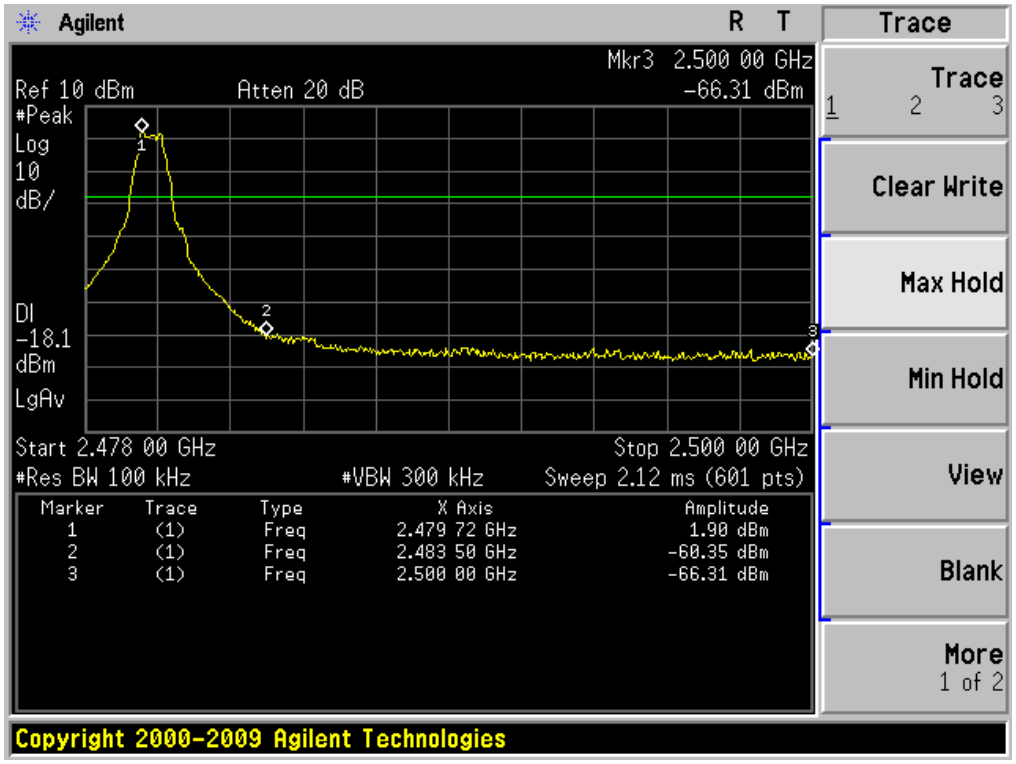


### 7.3.3 Diagram 7-3




Agilent
R T
Trace
Mkr3 2.500 00 GHz
Ref 10 dBm
Atten 20 dB
-66.31 dBm
#Peak
Log
10
dB/
DI
-18.1
dBm
LgAv
Start 2.478 00 GHz
Stop 2.500 00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.12 ms (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.479 72 GHz 1.90 dBm
2 (1) Freq 2.483 50 GHz -60.35 dBm
3 (1) Freq 2.500 00 GHz -66.31 dBm
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Copyright 2000-2009 Agilent Technologies

# 8. Power Spectral Density Test

## 8.1 Test Procedure

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

The transmitter output was connected to a spectrum analyzer. The maximum power density level was measured by spectrum analyzer with RBW >3kHz and Detector: PK

Cable loss and attenuator loss have been added in Spectrum setting offset .

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW >=3 kHz.
4. Set the VBW>= 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

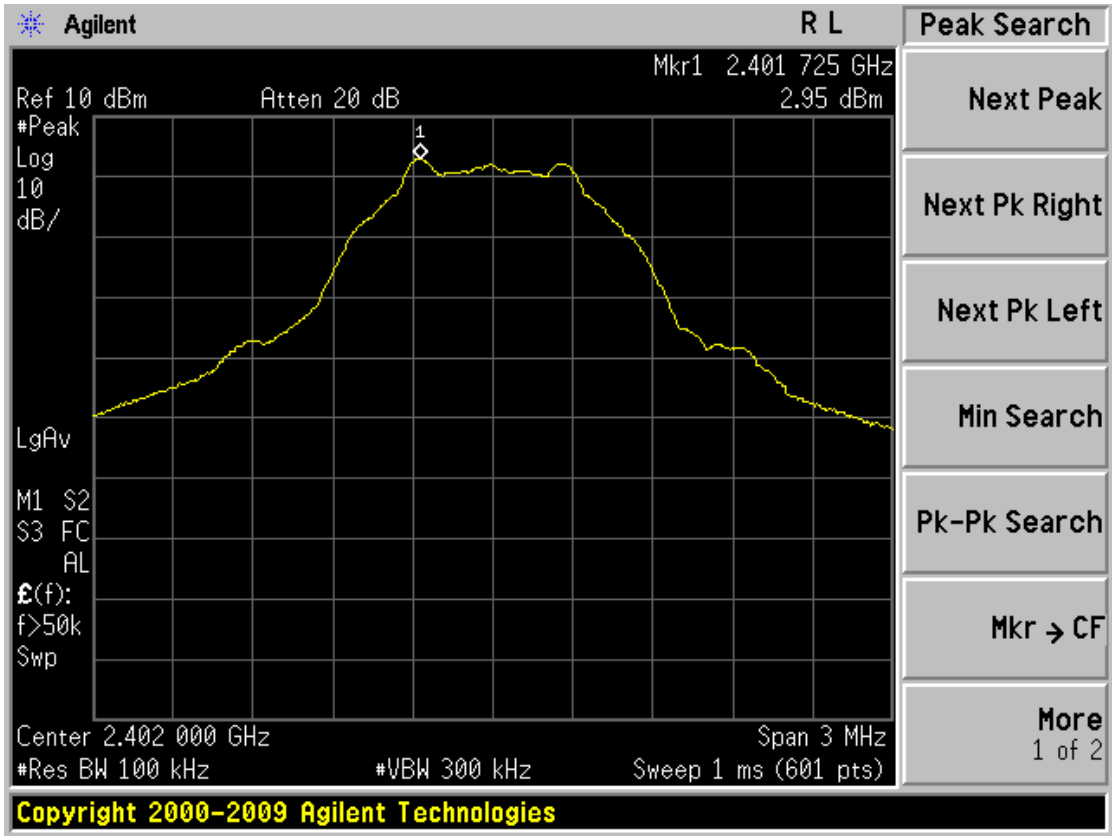
## 8.2 Measurement Equipment

| | Equipment | Calibration due | Type | Serial No. | Manufacturer |
|---|---|---|---|---|---|
| ☒ | Spectrum Analyzer | Dec. 04 2015 | E4440A | GTS533 | Agilent |

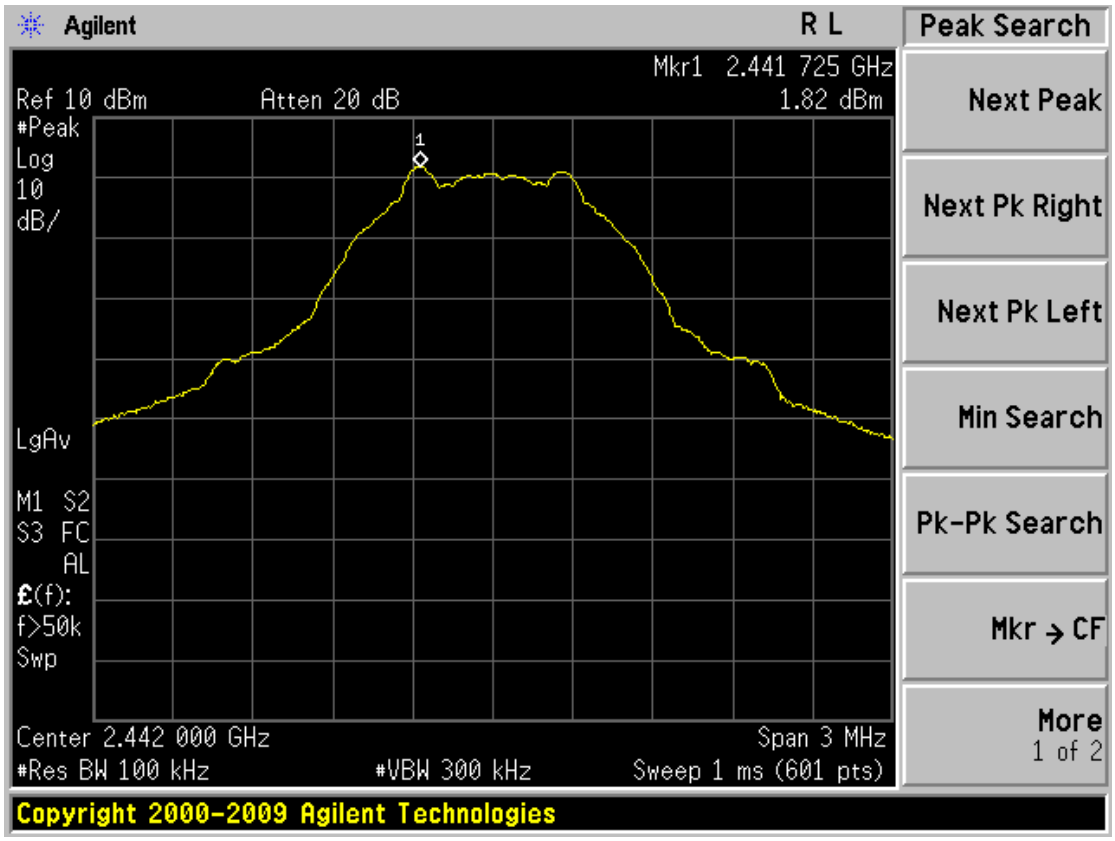
## 8.3 Test Result

| Mode | Channel | Diagram | Result (dBm) | <Limit (dBm) | Result |
|---|---|---|---|---|---|
| GFSK | CH LOW | 8-1 | 2.95 | 8 | Pass |
| GFSK | CH MID | 8-2 | 1.82 | 8 | Pass |
| GFSK | CH HIGH | 8-3 | 1.05 | 8 | Pass |

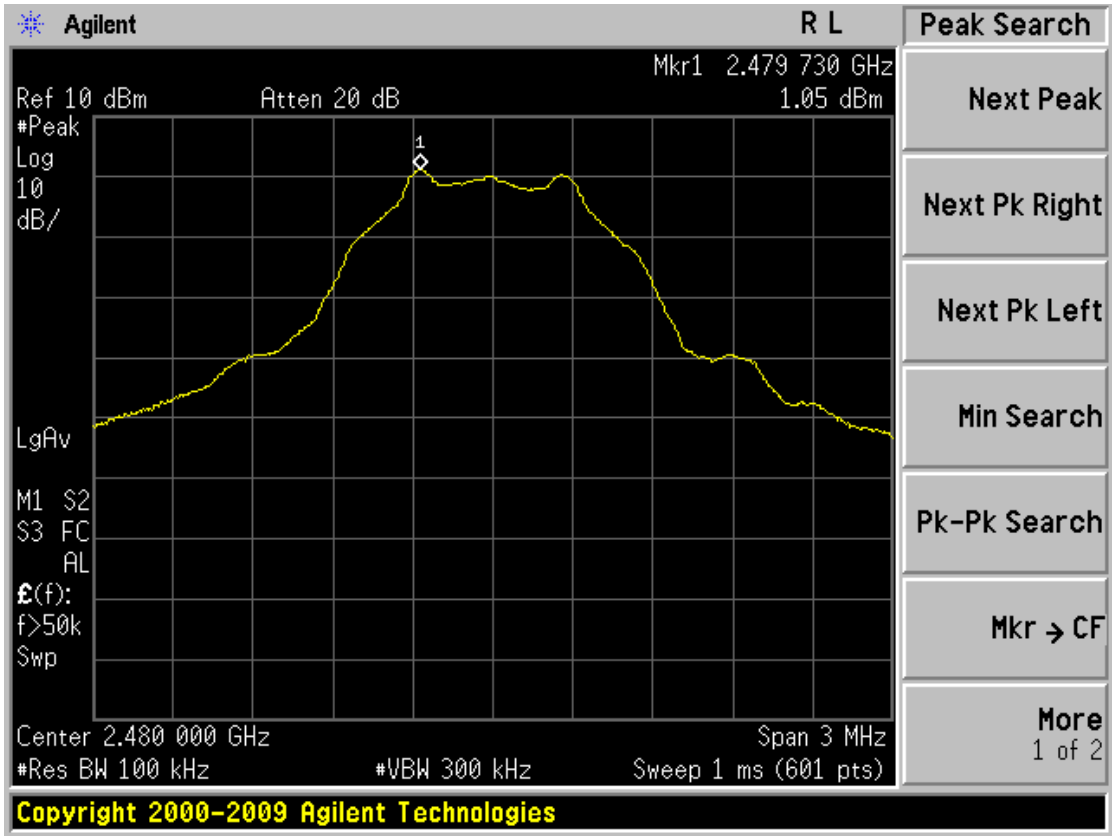
### 8.3.1 Diagram 8-1



### 8.3.2 Diagram 8-2



### 8.3.3 Diagram 8-3



# 9. Peak Output Power Test

## 9.1 Test Procedure

For systems using digital modulation in the 2400-2483.5MHz, The Peak output power shall not exceed 1W(30dBm)
PEAK detector
RBW>6dB Bandwidth
VBW>=RBW
Sweep time :AUTO

## 9.2 Measurement Equipment

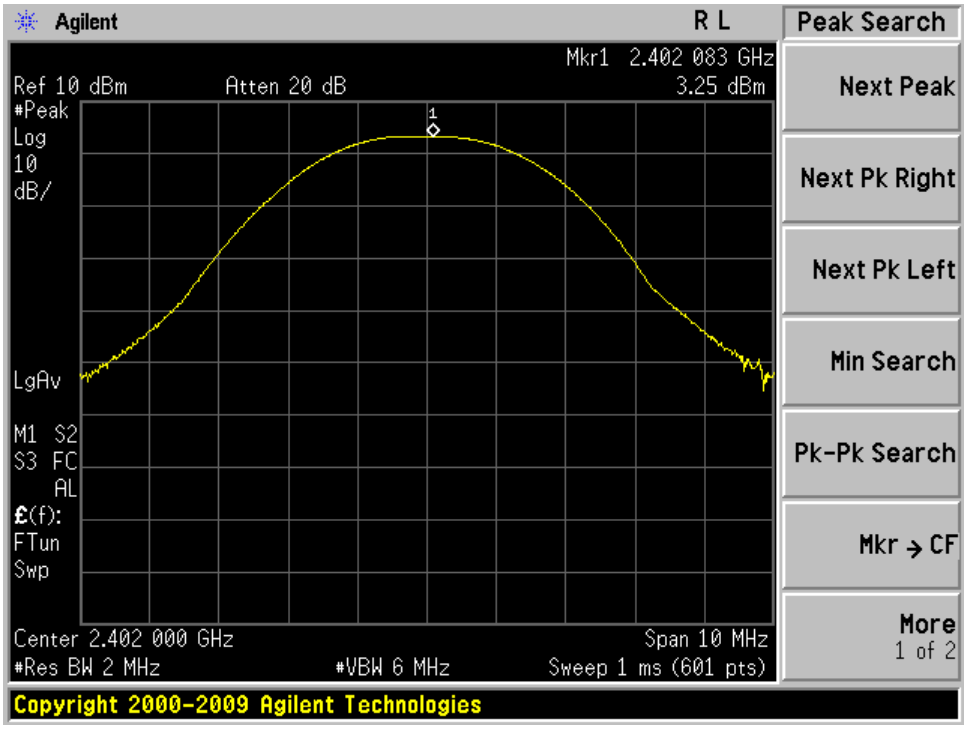
| | Equipment | Calibration due | Type | Serial No. | Manufacturer |
|---|---|---|---|---|---|
| ☒ | Spectrum Analyzer | Dec. 04 2015 | E4440A | GTS533 | Agilent |

## 9.3 Test Result

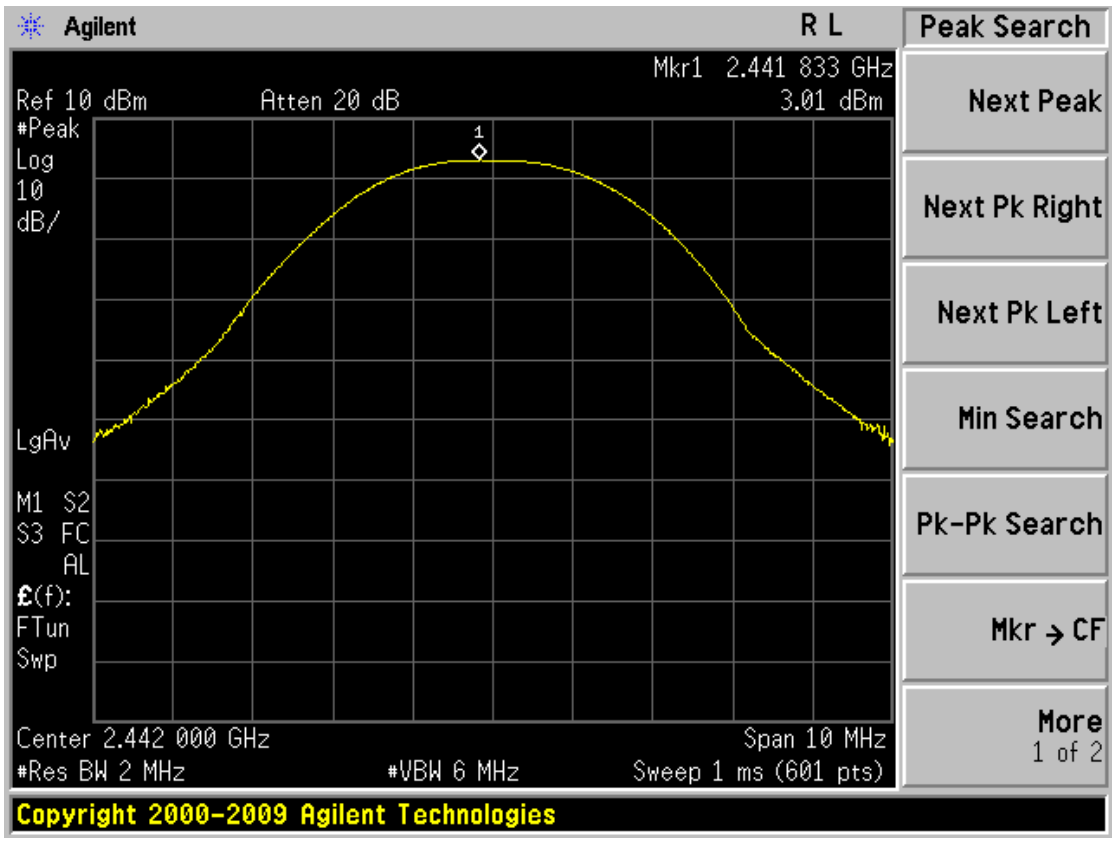
**PEAK Output power : PASS**

| Test Mode | CH | Peak output Power （dBm） | Limit (dBm) |
|---|---|---|---|
| GFSK | CH LOW | 3.25 | 30 |
| | CH MID | 3.01 | 30 |
| | CH HIGH | 2.33 | 30 |

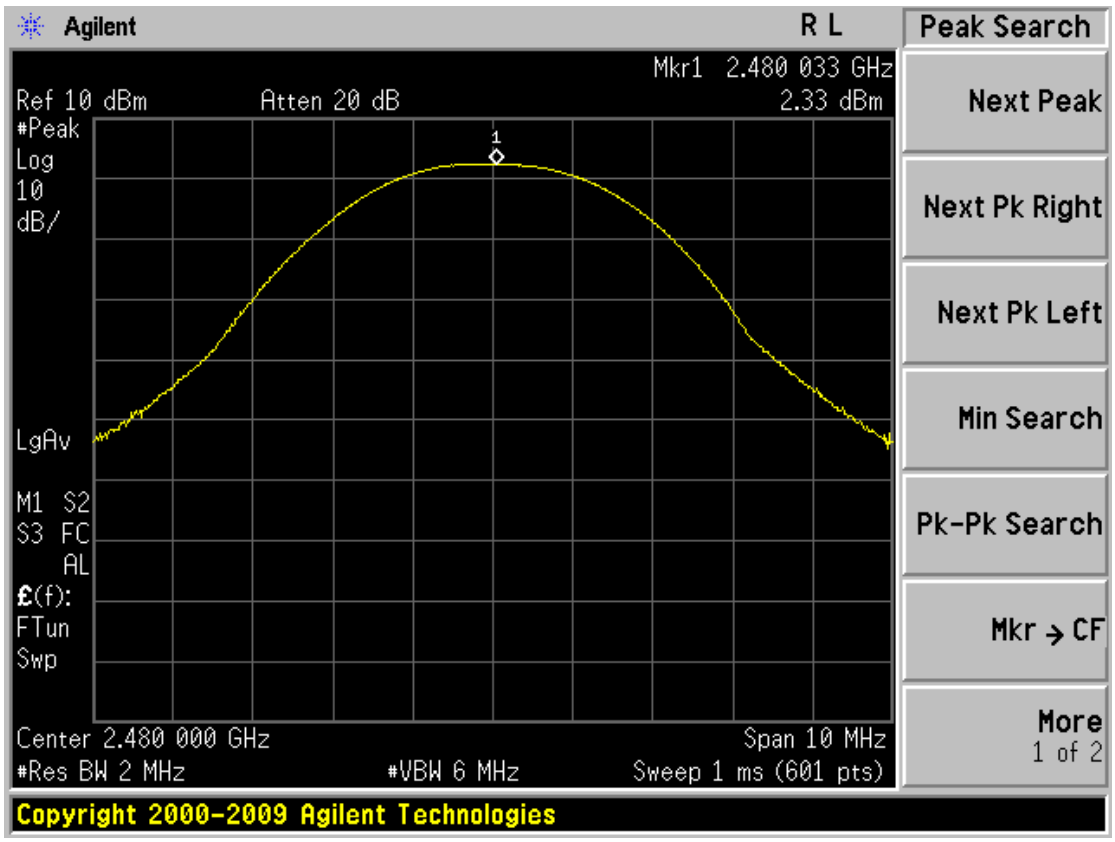
### 9.3.1 Diagram 9-1



### 9.3.2 Diagram 9-2



### 9.3.3 Diagram 9-3



# 10 POWER LINE CONDUCTED EMISSION TEST

## 10.1 Test Procedure

An intentional radiator that 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 the limits in the following table, as measured using a 50 μH/50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency of emission (MHz) | Conducted limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15–0.5 | 66 to 56* | 56 to 46* |
| 0.5–5 | 56 | 46 |
| 5–30 | 60 | 50 |
| *-Decreases with the logarithm of the frequency. | | |

## 10.2 Measurement Equipment

| | Equipment | Calibration due | Type | Serial No. | Manufacturer |
|---|---|---|---|---|---|
| ☒ | Shielding Room | Jul. 04 2015 | 7.0(L)x3.0(W)x3.0(H) | GTS252 | ZhongYu Electron |
| ☒ | EMI Test Receiver | Jul. 04 2015 | ESCS30 | 1102.4500K30 | Rohde & Schwarz |
| ☒ | 10dB Pulse Limita | Jul. 04 2015 | N/A | GTS224 | Rohde & Schwarz |
| ☒ | LISN | Jul. 04 2015 | NSLK 8127 | 8127549 | SCHWARZBECK MESS-ELEKTRONIK |
| ☒ | Coaxial Cable | Apr. 01 2015 | N/A | N/A | GTS |

## 10.3 Test Result

The EUT was placed on a non-metallic table, 80cm above the ground plane. The other peripheral devices power cord connected to the power mains through another line impedance stabilization network.In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2009 on conducted Emission test.

**Preview measurements:**
0.15 MHz to 30 MHz
Receiver settings: PK&AV detector
RBW:9 kHz

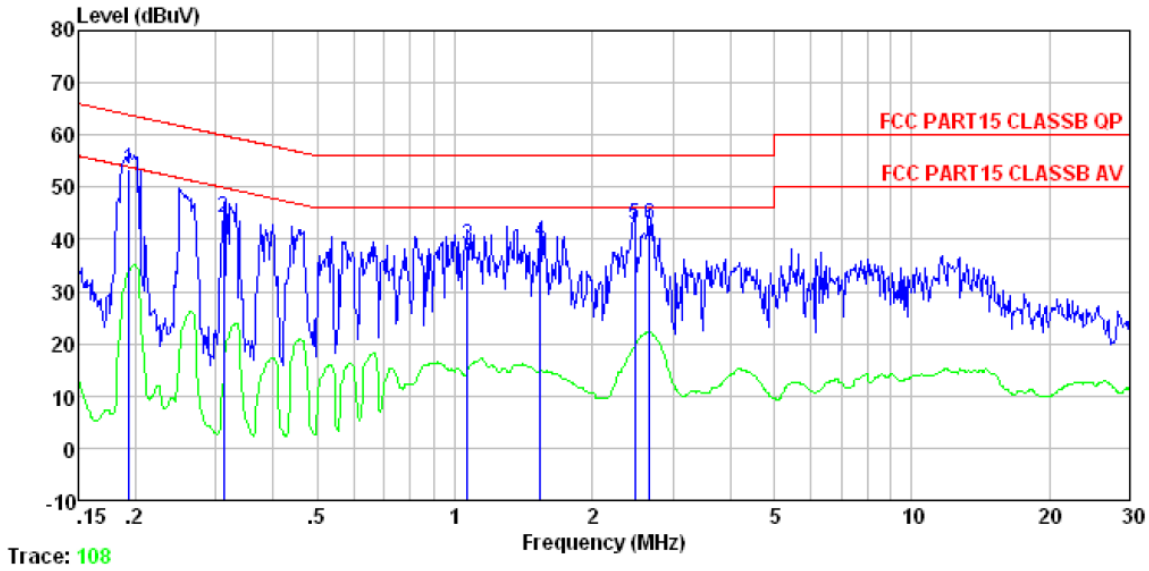
**Final measurement:**
0.15 MHz to 30 MHz
Receiver settings:QP&AV detector

| Test mode | Power Line | Test Data | Test Result |
|---|---|---|---|
| TM1 | Line | Diagram 10-1 | Pass |
| | Neutral | Diagram 10-2 | Pass |

NOTES:

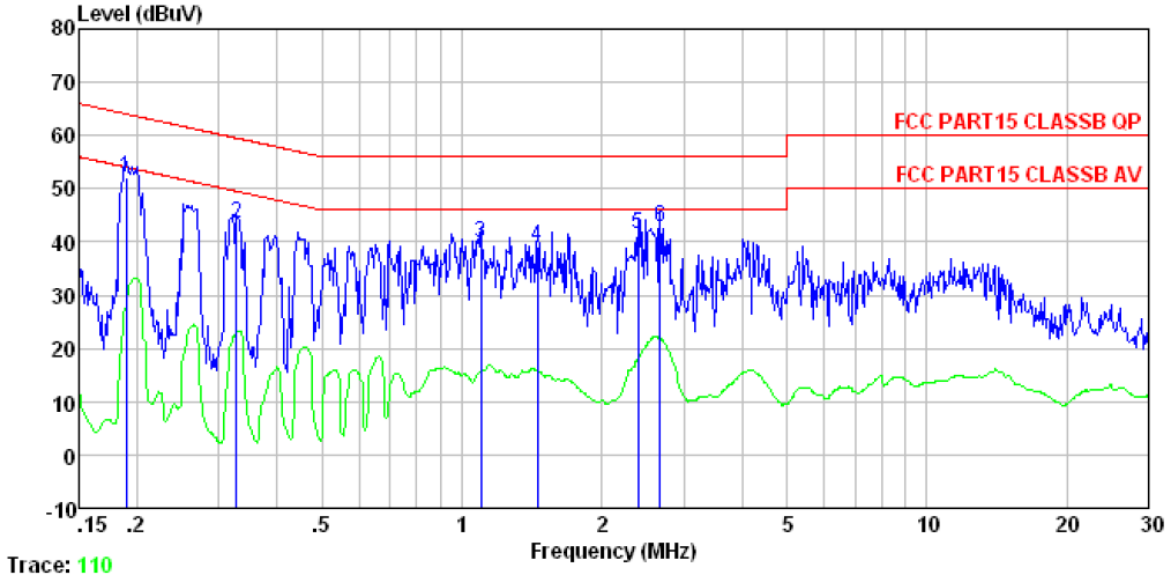
1. Measurements using CISPR quasi-peak mode & average mode.
2. All modes of operation were investigated and the worst -case emission are reported. See attached Plots.
3: If PK value is lower than AV limit then QP and AV value are deemed to be complied with rules and only diagram will be shown as below.

### 10.3.1 Diagram 10-1




| | Freq | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.193 | 53.19 | 0.14 | 0.13 | 53.46 | 63.89 | -10.43 | QP |
| 2 | 0.312 | 44.03 | 0.11 | 0.10 | 44.24 | 59.93 | -15.69 | QP |
| 3 | 1.065 | 38.44 | 0.14 | 0.13 | 38.71 | 56.00 | -17.29 | QP |
| 4 | 1.535 | 39.23 | 0.12 | 0.14 | 39.49 | 56.00 | -16.51 | QP |
| 5 | 2.474 | 42.42 | 0.13 | 0.15 | 42.70 | 56.00 | -13.30 | QP |
| 6 | 2.664 | 42.59 | 0.14 | 0.15 | 42.88 | 56.00 | -13.12 | QP |

### 10.3.2 Diagram 10-2




| | Freq | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.189 | 51.93 | 0.07 | 0.13 | 52.13 | 64.06 | -11.93 | QP |
| 2 | 0.327 | 43.15 | 0.06 | 0.10 | 43.31 | 59.53 | -16.22 | QP |
| 3 | 1.100 | 39.47 | 0.08 | 0.13 | 39.68 | 56.00 | -16.32 | QP |
| 4 | 1.456 | 39.06 | 0.09 | 0.13 | 39.28 | 56.00 | -16.72 | QP |
| 5 | 2.396 | 41.11 | 0.10 | 0.15 | 41.36 | 56.00 | -14.64 | QP |
| 6 | 2.664 | 42.47 | 0.10 | 0.15 | 42.72 | 56.00 | -13.28 | QP |

# 11. Antenna requirement

## 11.1 Requirement

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

## 11.2 Result

The antenna used for this product is Internal Patch antenna that no antenna other than that furnished by the responsible party shall be used with the device, The maximum peak gain of this antenna is 1.31dBi.

******END OF REPORT******