

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

(Class II Permissive Change)

| | |
|----------------------|---|
| Test Standard | FCC Part 15.247 |
| FCC ID | FKGX11BKA |
| Product name | WLAN and BT, 2x2 PCIe M.2 2230 adapter card |
| Brand Name | DURABOOK |
| Model No. | 9260NGW |
| Test Result | Pass |

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)



Approved by:

A handwritten signature in black ink that appears to read "Sam Chuang".

Sam Chuang
Manager

Reviewed by:

A handwritten signature in black ink that appears to read "Jerry Chuang".

Jerry Chuang
Engineer

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|------|----------------|--|------------|
| 00 | March 23, 2018 | Initial Issue | Doris Chu |
| 01 | May 3, 2018 | <ol style="list-style-type: none">1. Add Cable Connector in section 1.3 in page 5.2. Add loop antenna in page 7.3. Revise section 2 in page 9. | Doris Chu |
| 02 | May 9, 2018 | <ol style="list-style-type: none">1. Revise section 1.3 Antenna connector in page 5. | Doris Chu |

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

| | |
|----------------------------|--|
| Applicant | TWINHEAD INTERNATIONAL CORP. 11F, No. 550, Rueiguang Rd., Neihu, Taipei, Taiwan 114, R.O.C. |
| Manufacturer | TWINHEAD INTERNATIONAL CORP. 11F, No. 550, Rueiguang Rd., Neihu, Taipei, Taiwan 114, R.O.C. |
| Equipment | WLAN and BT, 2x2 PCIe M.2 2230 adapter card |
| Model No. | 9260NGW |
| Model Discrepancy | All the model number was just for marketing purpose only. |
| Trade Name | DURABOOK |
| Received Date | December 21, 2017 |
| Date of Test | March 13 ~ 30, 2018 |
| Power Supply | Power form Adapter FSP / FSP065-REBN2 I/P: 100-240VAC, 50-60Hz, 1.5A O/P: 19VDC, 3.42A |
| Output Power(W) | GFSK : 0.0112W 8DPSK :0.0074W |
| Class II Permissive Change | 1. The subject approved module is being used in a specific host. [Product: Fully-Rugged Tablet PC, brand name/model: DURABOOK / X11XXXXXX(X=0~9,A~Z,a~z,Blank), U11XXXXXX(X=0~9,A~Z,a~z,Blank), R11(R5)]. 2. Power reduction per tune-up procedure is applied in order to comply with exposure requirements. 3. The product only installs a WLAN module [X11XXXXXX(X=0~9,A~Z,a~z,Blank), U11XXXXXX(X=0~9,A~Z,a~z,Blank), R11(R5)] |

Remark:

1. Client consigns only one sample to test (model number: X11BK). Therefore, the testing Lab. just guarantees the unit, which has been tested.

1.2 EUT CHANNEL INFORMATION

| | |
|-------------------|--|
| Frequency Range | 2402MHz-2480MHz |
| Modulation Type | 1. GFSK for BDR-1Mbps 2. $\pi/4$ -DQPSK for EDR-2Mbps 3. 8DPSK for EDR-3Mbps |
| Number of channel | 79 Channels |

Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 and RSS-GEN Table A1 for test channels

| Number of frequencies to be tested | | |
|--|-----------------------|--|
| Frequency range in which device operates | Number of frequencies | Location in frequency range of operation |
| <input type="checkbox"/> 1 MHz or less | 1 | Middle |
| <input type="checkbox"/> 1 MHz to 10 MHz | 2 | 1 near top and 1 near bottom |
| <input checked="" type="checkbox"/> More than 10 MHz | 3 | 1 near top, 1 near middle, and 1 near bottom |

1.3 ANTENNA INFORMATION

| | |
|-------------------|--|
| Antenna Type | <input checked="" type="checkbox"/> PIFA <input type="checkbox"/> PCB <input type="checkbox"/> Dipole <input type="checkbox"/> Coils |
| Antenna Gain | Well Green Technology Co., Ltd P/N: 22+600763+0 (Main) / -4.08dBi 22+600764+00 (Aux) / -0.05dBi |
| Antenna connector | Unique antenna connector with U.FL |

1.4 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---------------------------------------|-------------|
| AC Powerline Conducted Emission | +/- 1.2575 |
| Emission bandwidth, 20dB bandwidth | +/- 1.4003 |
| RF output power, conducted | +/- 1.1372 |
| Power density, conducted | +/- 1.4003 |
| 3M Semi Anechoic Chamber / 30M~200M | +/- 4.0138 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 3.9483 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 2.5975 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 2.6112 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 2.7389 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 2.9683 |
| 3M Semi Anechoic Chamber / 40G~60G | +/- 1.8509 |
| 3M Semi Anechoic Chamber / 60G~75G | +/- 1.9869 |
| 3M Semi Anechoic Chamber / 75G~110G | +/- 2.9651 |
| 3M Semi Anechoic Chamber / 110G~170G | +/- 2.7807 |
| 3M Semi Anechoic Chamber / 170G~220G | +/- 3.6437 |
| 3M Semi Anechoic Chamber / 220G~325G | +/- 4.2982 |

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at
No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

| Test site | Test Engineer | Remark |
|-----------|---------------|--------|
| Radiation | Jerry Chuang | |

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.6 INSTRUMENT CALIBRATION

| Wugu 966 Chamber A | | | | | |
|--------------------|----------------|-----------------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Date | Calibration Due |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 06/20/2017 | 06/19/2018 |
| Horn Antenna | ETC | MCTD 1209 | DRH13M02003 | 08/25/2017 | 08/24/2018 |
| Pre-Amplifier | EMEC | EM330 | 60609 | 06/07/2017 | 06/06/2018 |
| Spectrum Analyzer | Agilent | E4446A | US42510252 | 11/27/2017 | 11/26/2018 |
| Loop Ant | COM-POWER | AL-130 | 121051 | 03/21/2018 | 03/20/2019 |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R | N.C.R |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R | N.C.R |
| Pre-Amplifier | HP | 8449B | 3008A00965 | 06/27/2017 | 06/26/2018 |
| Filter | N/A | 2400-2500 | N/A | N/A | N/A |
| Filter | N/A | 0-6000 | N/A | N/A | N/A |
| Cable | HUBER SUHNER | SUCOFLEX 104PEA | 25157 | 07/31/2017 | 07/30/2018 |
| Cable | HUBER SUHNER | SUCOFLEX 104PEA | 20995 | 07/31/2017 | 07/30/2018 |

| AC Conducted Emissions Test Site | | | | | |
|----------------------------------|--------------|-----------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Date | Calibration Due |
| LISN | R&S | ENV216 | 101054 | 05/18/2017 | 05/17/2018 |
| LISN | SCHWARZBEC K | NSLK 8127 | 8127-541 | 02/14/2018 | 02/13/2019 |
| EMI Test Receiver | R&S | ESCI | 100064 | 05/17/2017 | 05/16/2018 |

Remark: Each piece of equipment is scheduled for calibration once a year.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

| EUT Accessories Equipment | | | | | |
|---------------------------|-----------|-------|-------|------------|--------|
| No. | Equipment | Brand | Model | Series No. | FCC ID |
| | N/A | | | | |

| Support Equipment | | | | | |
|-------------------|-----------|-------|-------|------------|--------|
| No. | Equipment | Brand | Model | Series No. | FCC ID |
| | N/A | | | | |

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247.

2. TEST SUMMARY

| FCC Standard Section | Report Section | Test Item | Result |
|----------------------|----------------|-----------------------------|--------|
| 15.203 | 1.3 | Antenna Requirement | Pass |
| 15.207(a) | 5.1 | AC Conducted Emission | Pass |
| 15.247(b)(1) | 5.2 | Output Power Measurement | Pass |
| 15.247(d) | 5.3 | Radiation Band Edge | Pass |
| 15.247(d) | 5.3 | Radiation Spurious Emission | Pass |

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

| | |
|--------------------------|---|
| Operation mode | GFSK for BDR-1Mbps (DH5) 8DPSK for EDR-3Mbps (DH5) |
| Test Channel Frequencies | GFSK for BDR-1Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz 8DPSK for EDR-3Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz |

Remark:

1. *EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.*

3.2 THE WORST MODE OF MEASUREMENT

| Radiated Emission Measurement Above 1G | |
|--|---|
| Test Condition | Band edge, Emission for Unwanted and Fundamental |
| Voltage/Hz | 120V/60Hz |
| Test Mode | Mode 1:EUT power by AC adapter via power cable. |
| Worst Mode | <input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4 |
| Worst Position | <input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane) |
| Worst Polarity | <input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical |

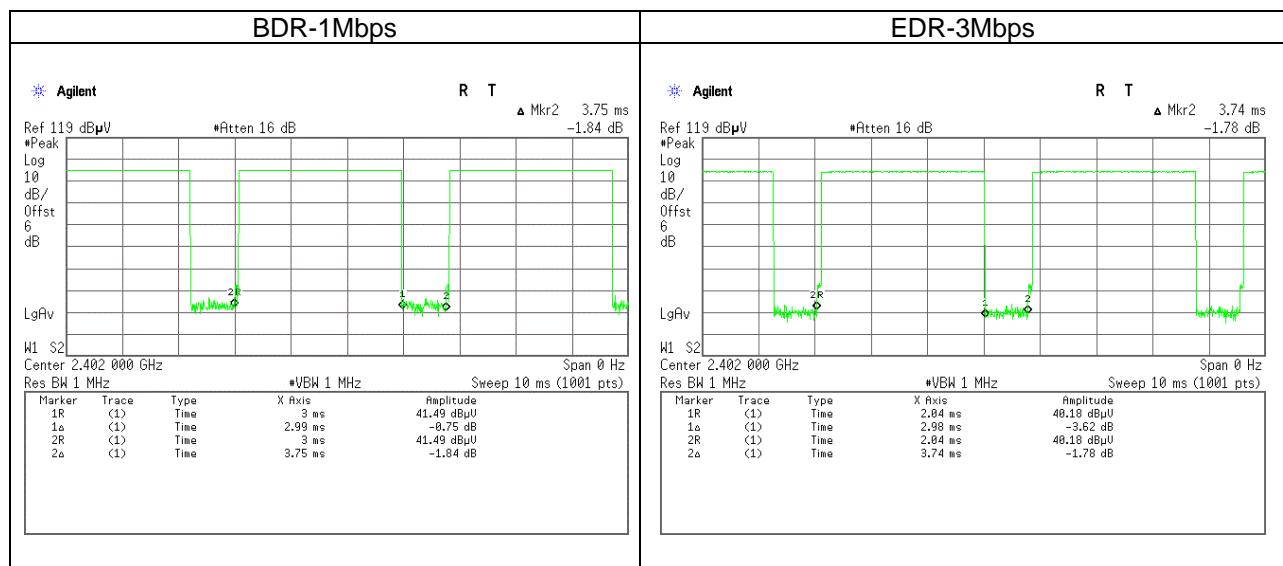
| Radiated Emission Measurement Below 1G | |
|--|--|
| Test Condition | Radiated Emission Below 1G |
| Voltage/Hz | 120V/60Hz |
| Test Mode | Mode 1:EUT power by AC adapter via power cable. |
| Worst Mode | <input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4 |

Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(Z-Plane and Horizontal) were recorded in this report
3. For below 1G, AC power line conducted emission and radiation emission were performed the EUT transmit at the highest output power channel as worse case.

4. EUT DUTY CYCLE

| Duty Cycle | | | | |
|---------------|------------|-------------|----------------|-----------------|
| Configuration | TX ON (ms) | TX ALL (ms) | Duty Cycle (%) | Duty Factor(dB) |
| BDR-1Mbps | 2.9900 | 3.7500 | 79.73% | 0.98 |
| EDR-3Mbps | 2.9800 | 3.7400 | 79.68% | 0.99 |



5. TEST RESULT

5.1 AC POWER LINE CONDUCTED EMISSION

5.1.1 Test Limit

According to §15.207(a)(2)

| Frequency Range (MHz) | Limits(dB μ V) | |
|--------------------------|--------------------|-----------|
| | 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 |

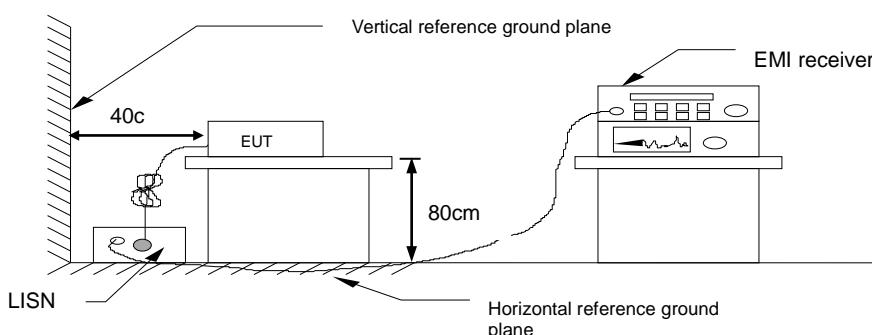
* Decreases with the logarithm of the frequency.

5.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

5.1.3 Test Setup

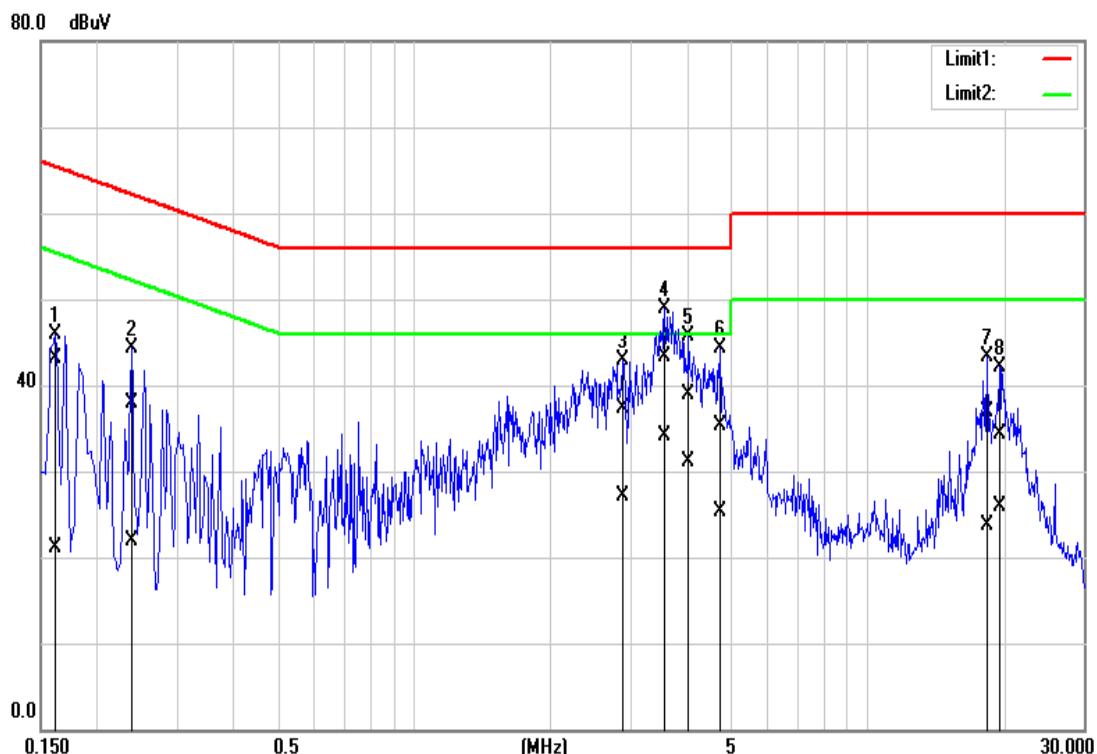


5.1.4 Test Result

Pass.

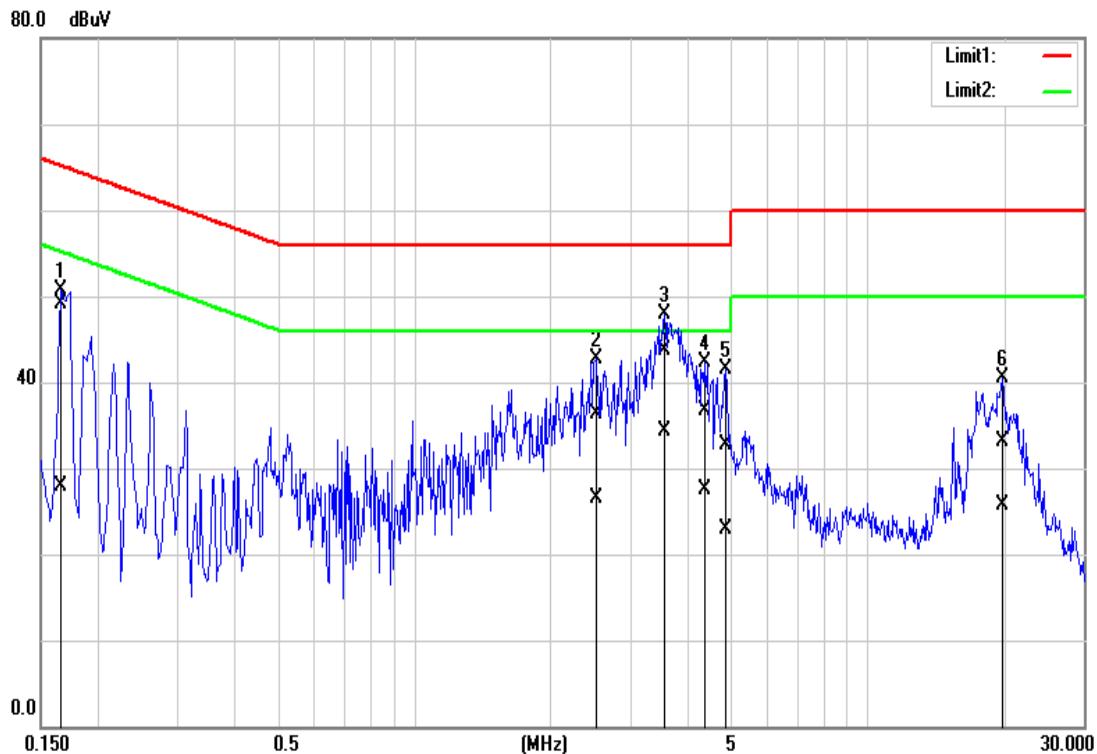
Test Data

| | | | |
|---------------|---------------|---------------|----------------|
| Test Mode: | Mode 1 | Temp/Hum | 24(°C)/ 50%RH |
| Test Voltage: | 120Vac / 60Hz | Test Date | March 30, 2018 |
| Phase: | Line | Test Engineer | Dally Hong |



| No. | Frequency | QuasiPeak reading | Average reading | Correction factor | QuasiPeak result | Average result | QuasiPeak limit | Average limit | QuasiPeak margin | Average margin |
|-----|-----------|-------------------|-----------------|-------------------|------------------|----------------|-----------------|---------------|------------------|----------------|
| | (MHz) | (dBuV) | (dBuV) | (dB) | (dBuV) | (dBuV) | (dBuV) | (dBuV) | (dB) | (dB) |
| 1 | 0.1620 | 33.53 | 11.54 | 9.66 | 43.19 | 21.20 | 65.36 | 55.36 | -22.17 | -34.16 |
| 2 | 0.2380 | 28.17 | 12.22 | 9.67 | 37.84 | 21.89 | 62.16 | 52.17 | -24.32 | -30.28 |
| 3 | 2.8940 | 27.56 | 17.32 | 9.73 | 37.29 | 27.05 | 56.00 | 46.00 | -18.71 | -18.95 |
| 4 | 3.5660 | 33.60 | 24.31 | 9.75 | 43.35 | 34.06 | 56.00 | 46.00 | -12.65 | -11.94 |
| 5 | 4.0300 | 29.17 | 21.41 | 9.75 | 38.92 | 31.16 | 56.00 | 46.00 | -17.08 | -14.84 |
| 6 | 4.7220 | 25.52 | 15.62 | 9.77 | 35.29 | 25.39 | 56.00 | 46.00 | -20.71 | -20.61 |
| 7 | 18.3540 | 26.93 | 13.80 | 9.99 | 36.92 | 23.79 | 60.00 | 50.00 | -23.08 | -26.21 |
| 8 | 19.5820 | 24.29 | 15.83 | 10.01 | 34.30 | 25.84 | 60.00 | 50.00 | -25.70 | -24.16 |

| | | | |
|---------------|---------------|---------------|----------------|
| Test Mode: | Mode 1 | Temp/Hum | 24(°C)/ 50%RH |
| Test Voltage: | 120Vac / 60Hz | Test Date | March 30, 2018 |
| Phase: | Neutral | Test Engineer | Dally Hong |



| No. | Frequency | QuasiPeak reading | Average reading | Correction factor | QuasiPeak result | Average result | QuasiPeak limit | Average limit | QuasiPeak margin | Average margin |
|-----|-----------|-------------------|-----------------|-------------------|------------------|----------------|-----------------|---------------|------------------|----------------|
| | (MHz) | (dBuV) | (dBuV) | (dB) | (dBuV) | (dBuV) | (dBuV) | (dBuV) | (dB) | (dB) |
| 1 | 0.1660 | 39.43 | 18.21 | 9.71 | 49.14 | 27.92 | 65.15 | 55.16 | -16.01 | -27.24 |
| 2 | 2.5220 | 26.52 | 16.73 | 9.77 | 36.29 | 26.50 | 56.00 | 46.00 | -19.71 | -19.50 |
| 3 | 3.5700 | 33.82 | 24.58 | 9.79 | 43.61 | 34.37 | 56.00 | 46.00 | -12.39 | -11.63 |
| 4 | 4.3620 | 26.88 | 17.67 | 9.79 | 36.67 | 27.46 | 56.00 | 46.00 | -19.33 | -18.54 |
| 5 | 4.8780 | 22.98 | 13.01 | 9.81 | 32.79 | 22.82 | 56.00 | 46.00 | -23.21 | -23.18 |
| 6 | 19.9340 | 23.00 | 15.72 | 10.06 | 33.06 | 25.78 | 60.00 | 50.00 | -26.94 | -24.22 |

5.2 OUTPUT POWER MEASUREMENT

5.2.1 Test Limit

According to §15.247(b)(1)

Peak output power :

FCC

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

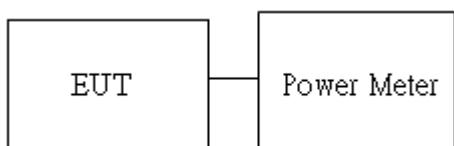
| | |
|-------|--|
| Limit | <input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 21dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : 21dBm [Limit = 30 – (DG – 6)] |
|-------|--|

Average output power : For reporting purposes only.

5.2.2 Test Procedure

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

5.2.3 Test Setup



5.2.4 Test Result

Peak output power :

| BT | | | | | |
|---------------------------------|----|----------------|----------------------|--------------------|----------------|
| Config. | CH | Freq. (MHz) | PK Power (dBm) | PK Power (W) | Limit (dBm) |
| GFSK BR- 1Mbps (DH5) | 0 | 2402 | 9.61 | 0.0091 | 21 |
| | 39 | 2441 | 10.13 | 0.0103 | |
| | 78 | 2480 | 10.49 | 0.0112 | |
| 8DPSK EDR- 3Mbps (DH5) | 0 | 2402 | 8.27 | 0.0067 | 21 |
| | 39 | 2441 | 8.40 | 0.0069 | |
| | 78 | 2480 | 8.69 | 0.0074 | |

Average output power :

| BT | | | |
|---------------------------------|----|-------------|----------------------|
| Config. | CH | Freq. (MHz) | AV Power (dBm) |
| GFSK BR- 1Mbps (DH5) | 0 | 2402 | 7.49 |
| | 39 | 2441 | 7.91 |
| | 78 | 2480 | 8.39 |
| 8DPSK EDR- 3Mbps (DH5) | 0 | 2402 | 5.85 |
| | 39 | 2441 | 5.86 |
| | 78 | 2480 | 5.83 |

5.3 RADIATION BANDEDGE AND SPURIOUS EMISSION

5.3.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

| Frequency | Field Strength (microvolts/m) | Magnetic H-Field (microamperes/m) | Measurement Distance (metres) |
|---------------|-------------------------------|-----------------------------------|-------------------------------|
| 9-490 kHz | 2,400/F (F in kHz) | 2,400/F (F in kHz) | 300 |
| 490-1,705 kHz | 24,000/F (F in kHz) | 24,000/F (F in kHz) | 30 |
| 1.705-30 MHz | 30 | N/A | 30 |

Above 30 MHz

| Frequency (MHz) | Field Strength microvolts/m at 3 metres (watts, e.i.r.p.) | |
|-----------------|---|--------------|
| | Transmitters | Receivers |
| 30-88 | 100 (3 nW) | 100 (3 nW) |
| 88-216 | 150 (6.8 nW) | 150 (6.8 nW) |
| 216-960 | 200 (12 nW) | 200 (12 nW) |
| Above 960 | 500 (75 nW) | 500 (75 nW) |

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

5.3.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.
3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

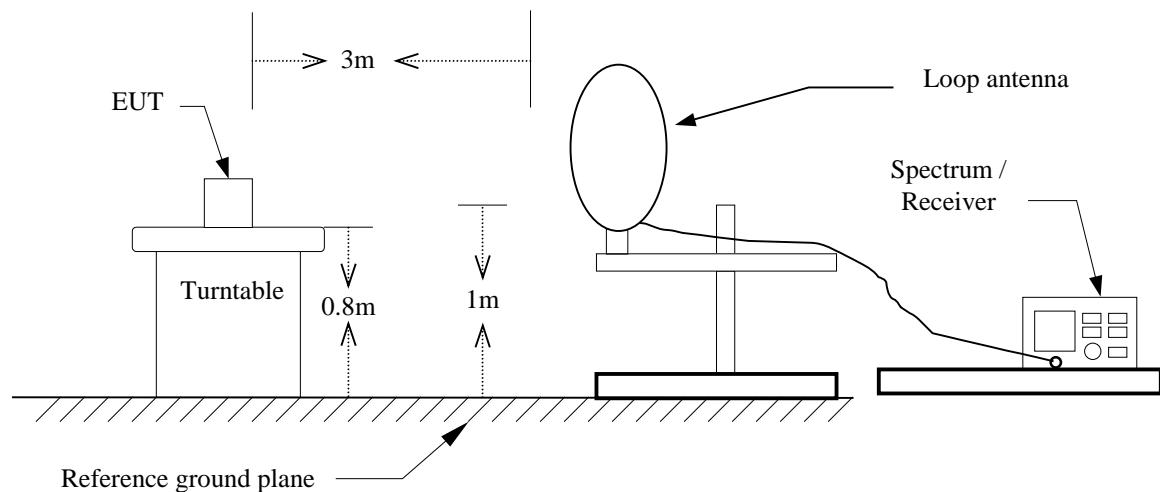
4. For harmonic, the worst case of output power was BDR-1Mbps. Therefore only BDR-1Mbps record in the report.
5. The SA setting following :

- (1) Below 1G : RBW = 100kHz, VBW \geq 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
- (2) Above 1G :
 - (2.1) For Peak measurement : RBW = 1MHz, VBW \geq 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2.2) For Average measurement : RBW = 1MHz, VBW
 - If Duty Cycle \geq 98%, VBW=10Hz.
 - If Duty Cycle < 98%, VBW \geq 1/T.

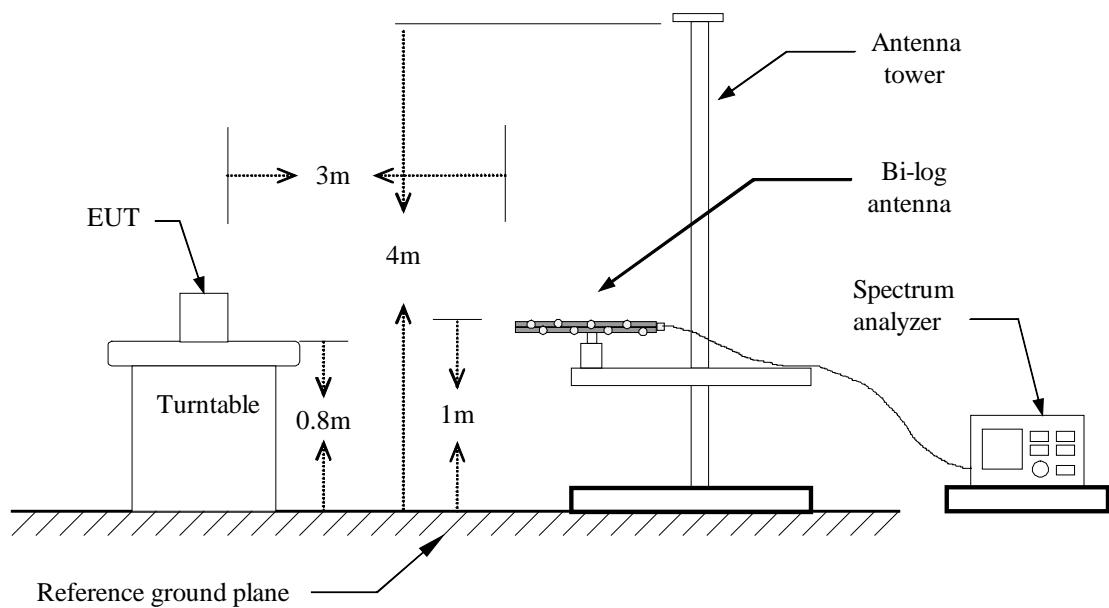
| Configuration | Duty Cycle (%) | T(ms) | 1/T (kHz) | VBW setting |
|-----------------|----------------|--------|-----------|-------------|
| GFSK_BDR-1Mbps | 80% | 2.9900 | 0.334 | 360Hz |
| 8DPSK_EDR-3Mbps | 80% | 2.9800 | 0.336 | 360Hz |

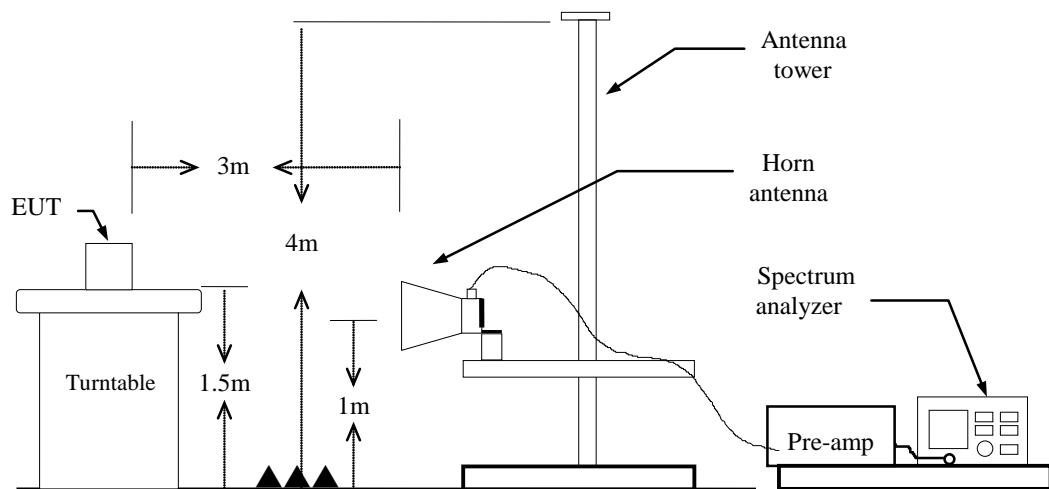
5.3.3 Test Setup

9kHz ~ 30MHz



30MHz ~ 1GHz

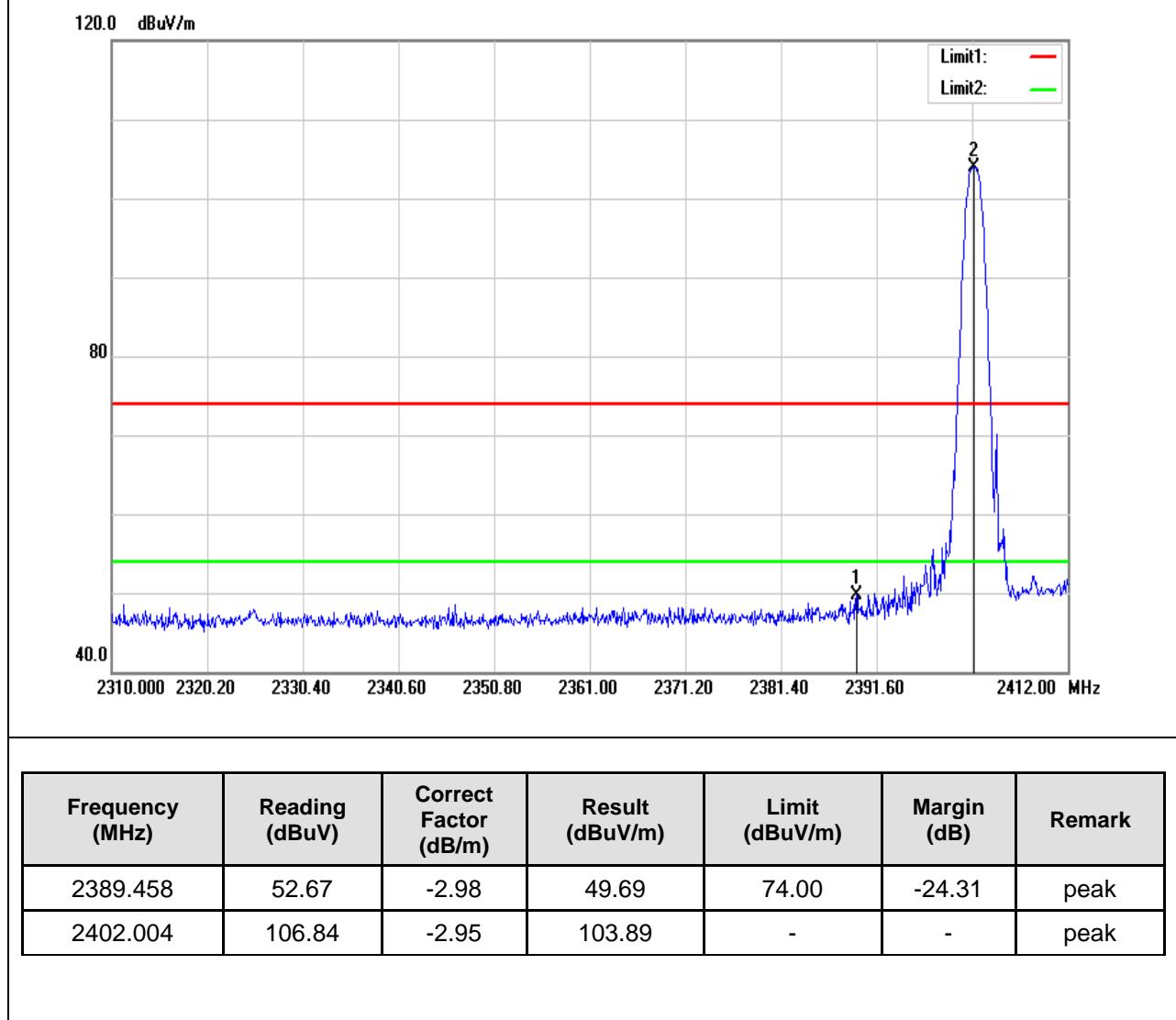


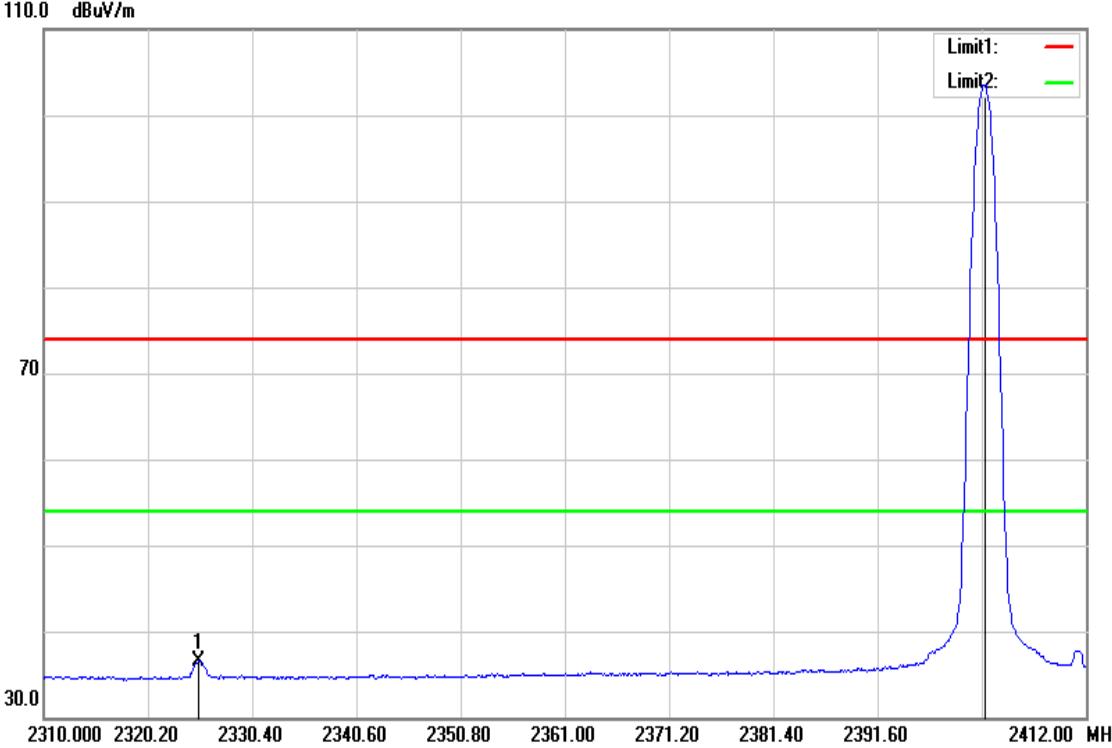
Above 1 GHz

5.3.4 Test Result

Band Edge Test Data

| | | | |
|------------|--------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps Low CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Band Edge | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak | Test Voltage | 120Vac / 60Hz |



| Test Mode: | GFSK_BDR-1Mbps Low CH | | Temp/Hum | 24(°C)/ 33%RH | | |
|---|--------------------------|-----------------------|-----------------|----------------|-------------|--------|
| Test Item | Band Edge | | Test Date | March 13, 2018 | | |
| Polarize | Horizontal | | Test Engineer | Jerry Chuang | | |
| Detector | Average | | Test Voltage | 120Vac / 60Hz | | |
|  | | | | | | |
| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
| 2325.096 | 39.71 | -3.19 | 36.52 | 54.00 | -17.48 | AVG |
| 2402.106 | 106.52 | -2.95 | 103.57 | - | - | AVG |

| | | | |
|------------|---------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Band Edge | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak | Test Voltage | 120Vac / 60Hz |

120.0 dB_{uV/m}

Limit1: —

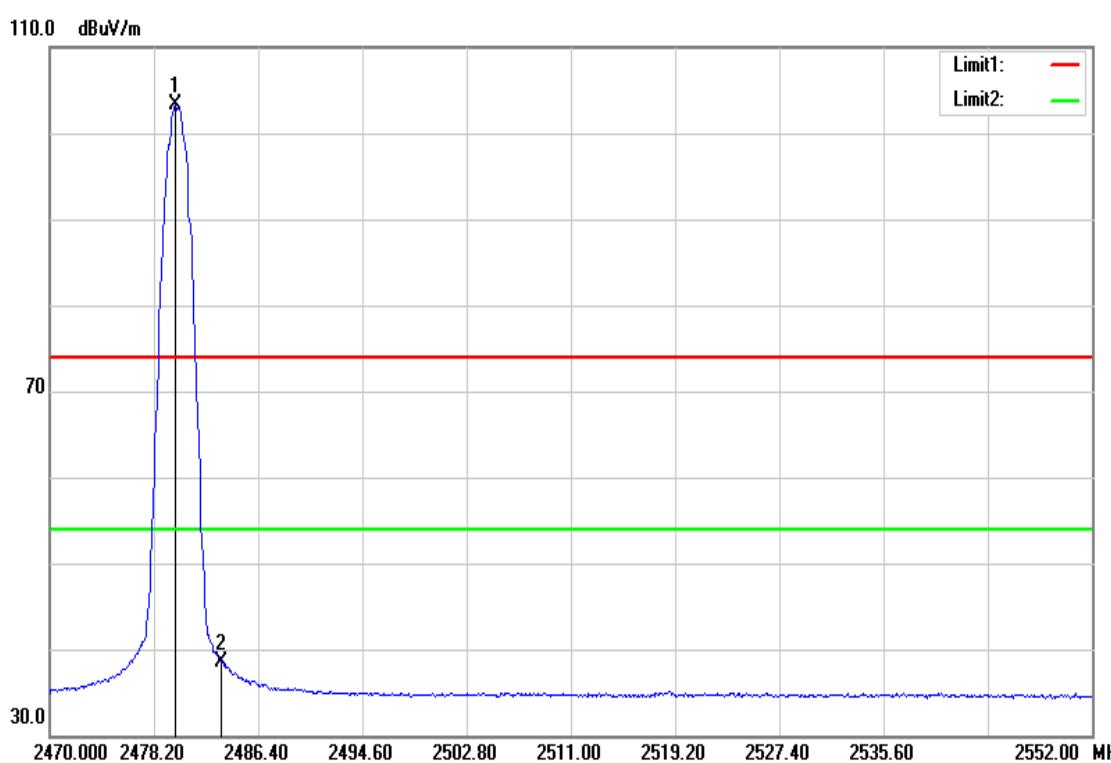
Limit2: —

40.0 80 120.0 dB_{uV/m}

2470.000 2478.20 2486.40 2494.60 2502.80 2511.00 2519.20 2527.40 2535.60 2552.00 MHz

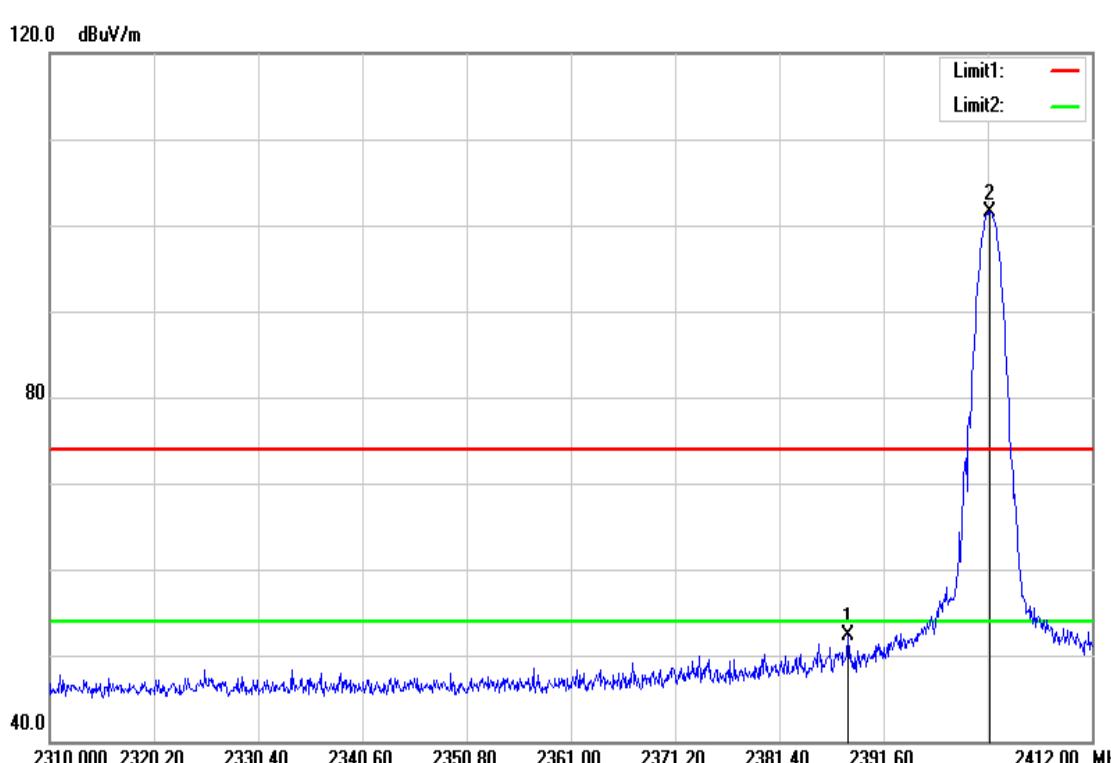
| Frequency (MHz) | Reading (dB _{uV}) | Correct Factor (dB/m) | Result (dB _{uV/m}) | Limit (dB _{uV/m}) | Margin (dB) | Remark |
|-----------------|-----------------------------|-----------------------|------------------------------|-----------------------------|-------------|--------|
| 2480.004 | 106.50 | -2.70 | 103.80 | - | - | peak |
| 2484.350 | 59.06 | -2.69 | 56.37 | 74.00 | -17.63 | peak |

| | | | |
|------------|---------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Band Edge | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Average | Test Voltage | 120Vac / 60Hz |



| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 2479.922 | 105.96 | -2.70 | 103.26 | - | - | AVG |
| 2483.500 | 41.25 | -2.69 | 38.56 | 54.00 | -15.44 | AVG |

| | | | |
|------------|---------------------------|---------------|----------------|
| Test Mode: | 8DPSK_EDR-3Mbps Low CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Band Edge | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak | Test Voltage | 120Vac / 60Hz |



| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 2388.132 | 55.24 | -2.98 | 52.26 | 74.00 | -21.74 | peak |
| 2402.004 | 104.48 | -2.95 | 101.53 | - | - | peak |

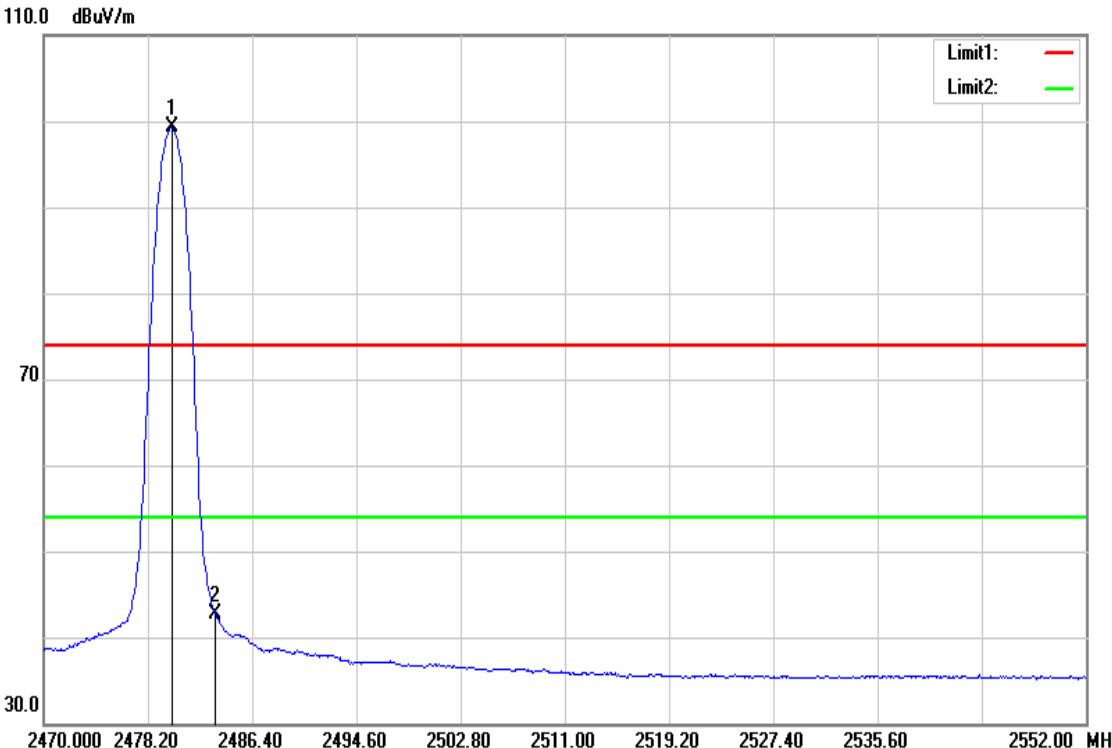
| | | | |
|------------|---------------------------|---------------|----------------|
| Test Mode: | 8DPSK_EDR-3Mbps Low CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Band Edge | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Average | Test Voltage | 120Vac / 60Hz |

| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 2390.000 | 39.83 | -2.98 | 36.85 | 54.00 | -17.15 | AVG |
| 2401.800 | 99.99 | -2.95 | 97.04 | - | - | AVG |

| | | | |
|------------|----------------------------|---------------|----------------|
| Test Mode: | 8DPSK_EDR-3Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Band Edge | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak | Test Voltage | 120Vac / 60Hz |

| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 2480.004 | 105.25 | -2.70 | 102.55 | - | - | peak |
| 2483.500 | 59.28 | -2.69 | 56.59 | 74.00 | -17.41 | peak |

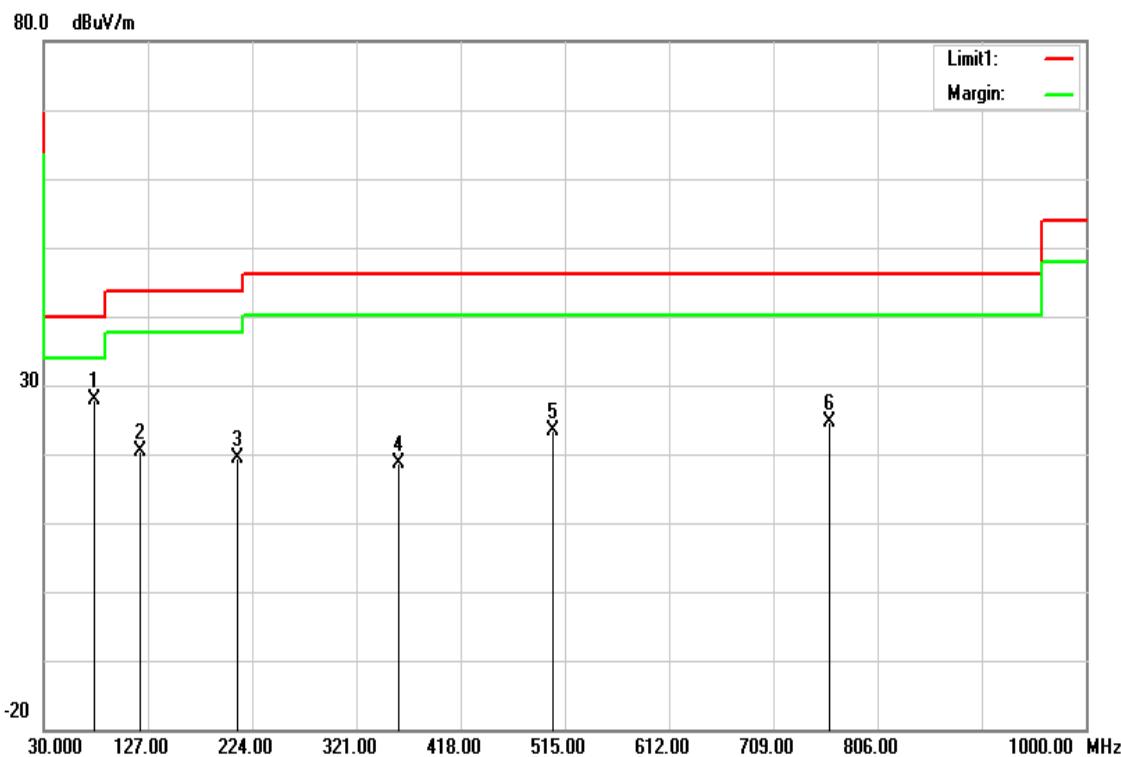
| | | | |
|------------|----------------------------|---------------|----------------|
| Test Mode: | 8DPSK_EDR-3Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Band Edge | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Average | Test Voltage | 120Vac / 60Hz |



| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 2480.086 | 101.93 | -2.70 | 99.23 | - | - | AVG |
| 2483.500 | 45.47 | -2.69 | 42.78 | 54.00 | -11.22 | AVG |

Below 1G Test Data

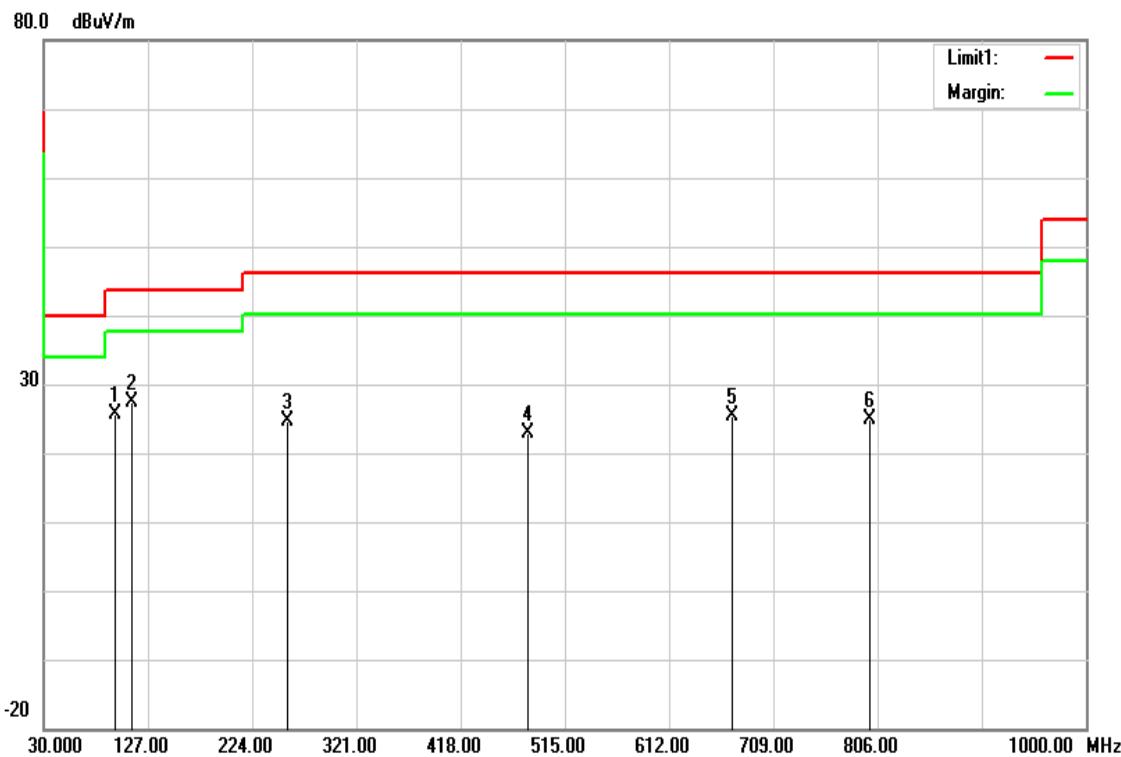
| | | | |
|------------|------------|---------------|----------------|
| Test Mode: | BT Mode | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | 30MHz-1GHz | Test Date | March 13, 2018 |
| Polarize | Vertical | Test Engineer | Jerry Chuang |
| Detector | Peak | Test Voltage | 120Vac / 60Hz |



| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 77.5300 | 49.38 | -21.45 | 27.93 | 40.00 | -12.07 | peak |
| 120.2100 | 35.42 | -15.01 | 20.41 | 43.52 | -23.11 | peak |
| 210.4200 | 35.67 | -16.37 | 19.30 | 43.52 | -24.22 | peak |
| 359.8000 | 31.25 | -12.67 | 18.58 | 46.02 | -27.44 | peak |
| 504.3300 | 31.70 | -8.41 | 23.29 | 46.02 | -22.73 | peak |
| 761.3800 | 28.78 | -4.08 | 24.70 | 46.02 | -21.32 | peak |

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

| | | | |
|------------|------------|---------------|----------------|
| Test Mode: | BT Mode | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | 30MHz-1GHz | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak | Test Voltage | 120Vac / 60Hz |

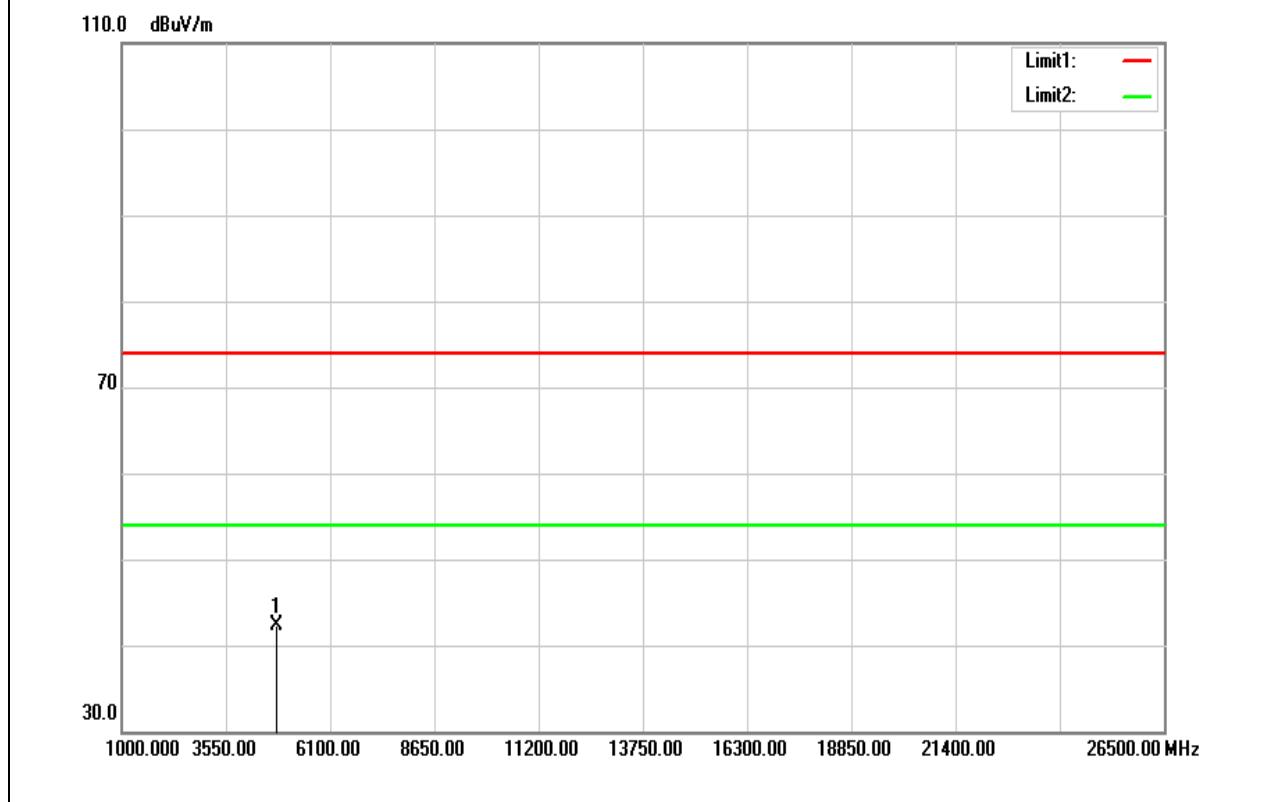


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 95.9600 | 45.16 | -19.65 | 25.51 | 43.52 | -18.01 | peak |
| 112.4500 | 43.70 | -16.35 | 27.35 | 43.52 | -16.17 | peak |
| 256.9800 | 40.19 | -15.62 | 24.57 | 46.02 | -21.45 | peak |
| 480.0800 | 31.92 | -8.94 | 22.98 | 46.02 | -23.04 | peak |
| 670.2000 | 30.62 | -5.29 | 25.33 | 46.02 | -20.69 | peak |
| 799.2100 | 28.35 | -3.39 | 24.96 | 46.02 | -21.06 | peak |

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

Above 1G Test Data

| | | | |
|------------|--------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps Low CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Vertical | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

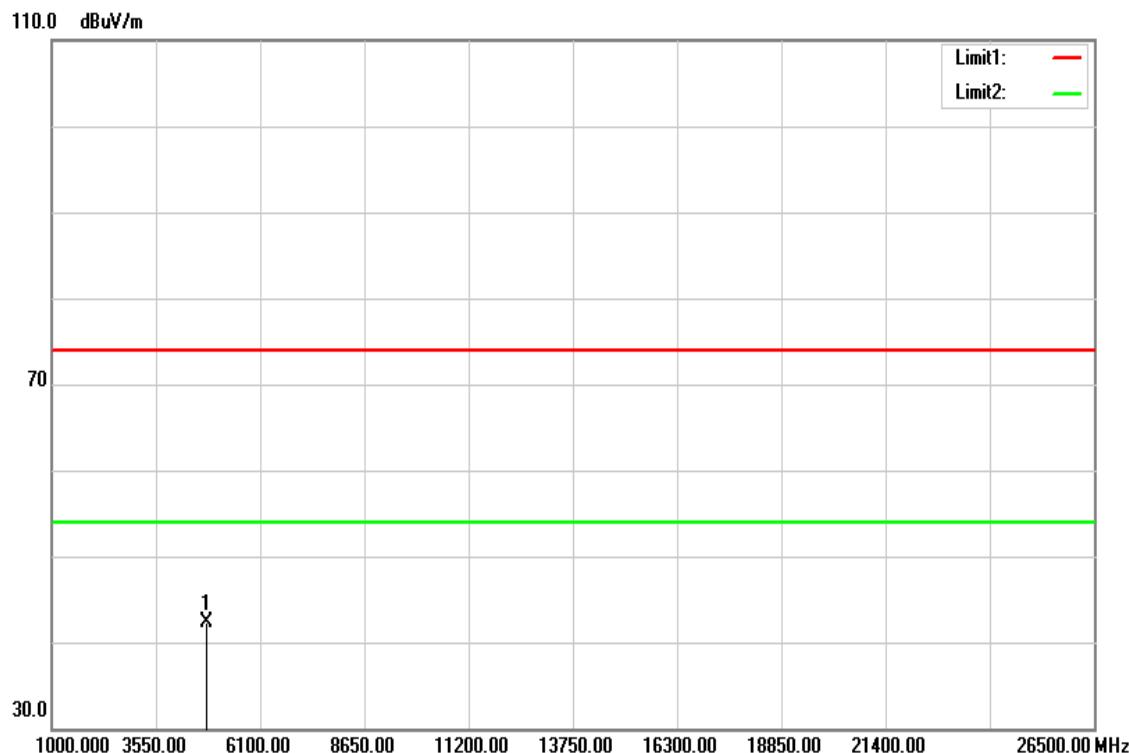


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4804.000 | 37.99 | 4.34 | 42.33 | 74.00 | -31.67 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|------------|--------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps Low CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

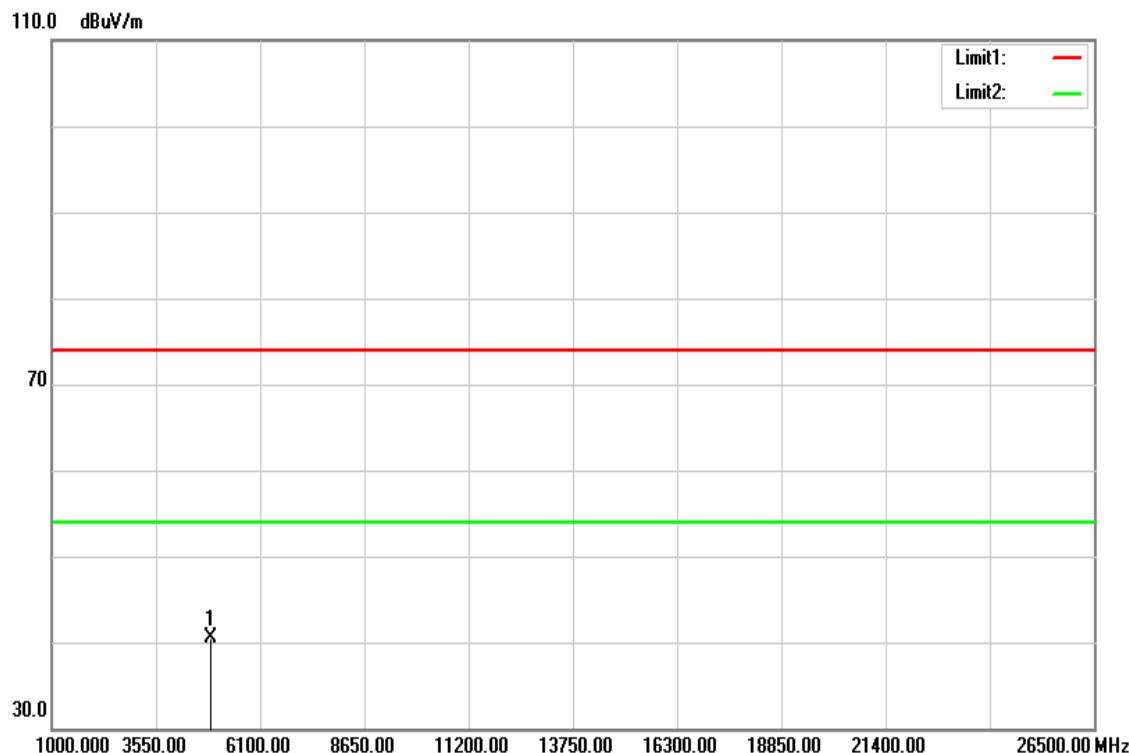


| Frequency (MHz) | Reading (dB _{uV}) | Correct Factor (dB/m) | Result (dB _{uV/m}) | Limit (dB _{uV/m}) | Margin (dB) | Remark |
|-----------------|-----------------------------|-----------------------|------------------------------|-----------------------------|-------------|--------|
| 4804.000 | 37.89 | 4.34 | 42.23 | 74.00 | -31.77 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|------------|--------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps Mid CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Vertical | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

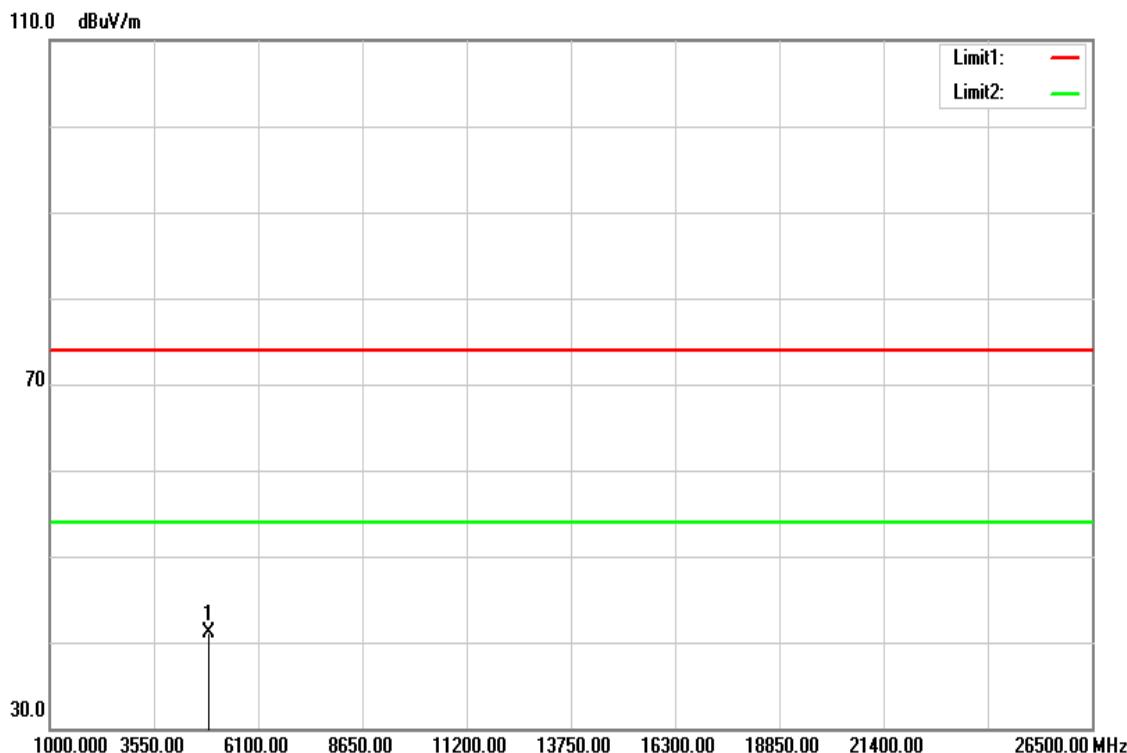


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4882.000 | 36.06 | 4.49 | 40.55 | 74.00 | -33.45 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|------------|--------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps Mid CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

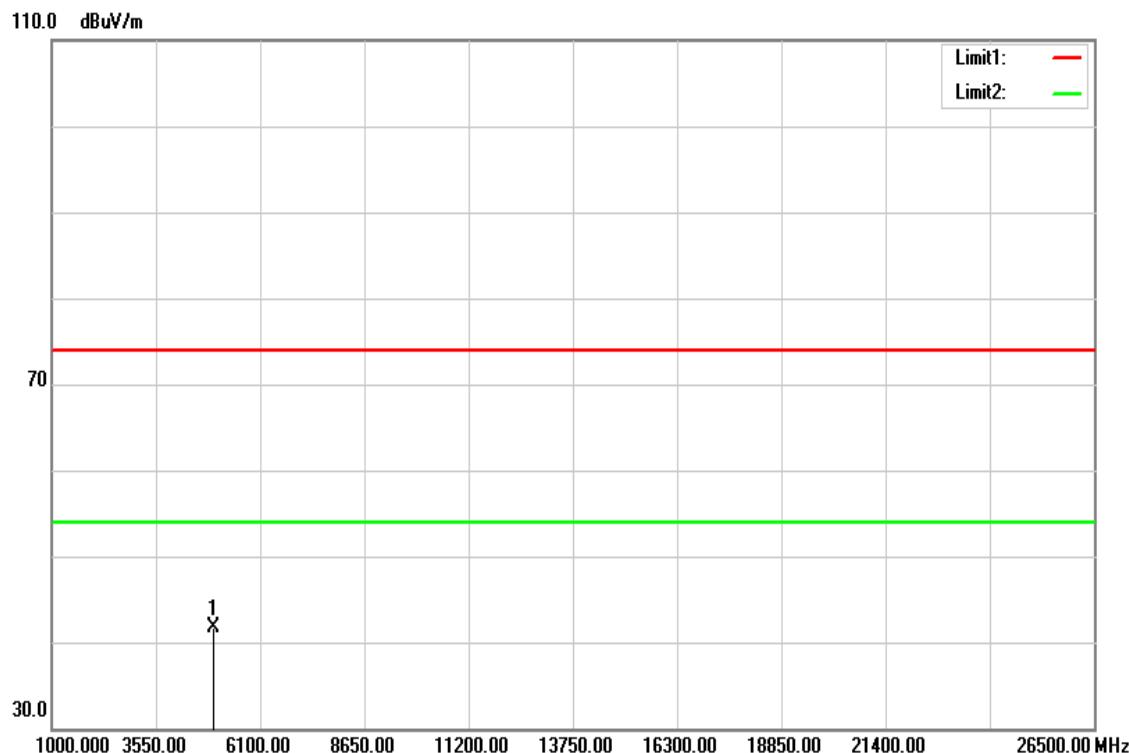


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4882.000 | 36.52 | 4.49 | 41.01 | 74.00 | -32.99 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|------------|---------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Vertical | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

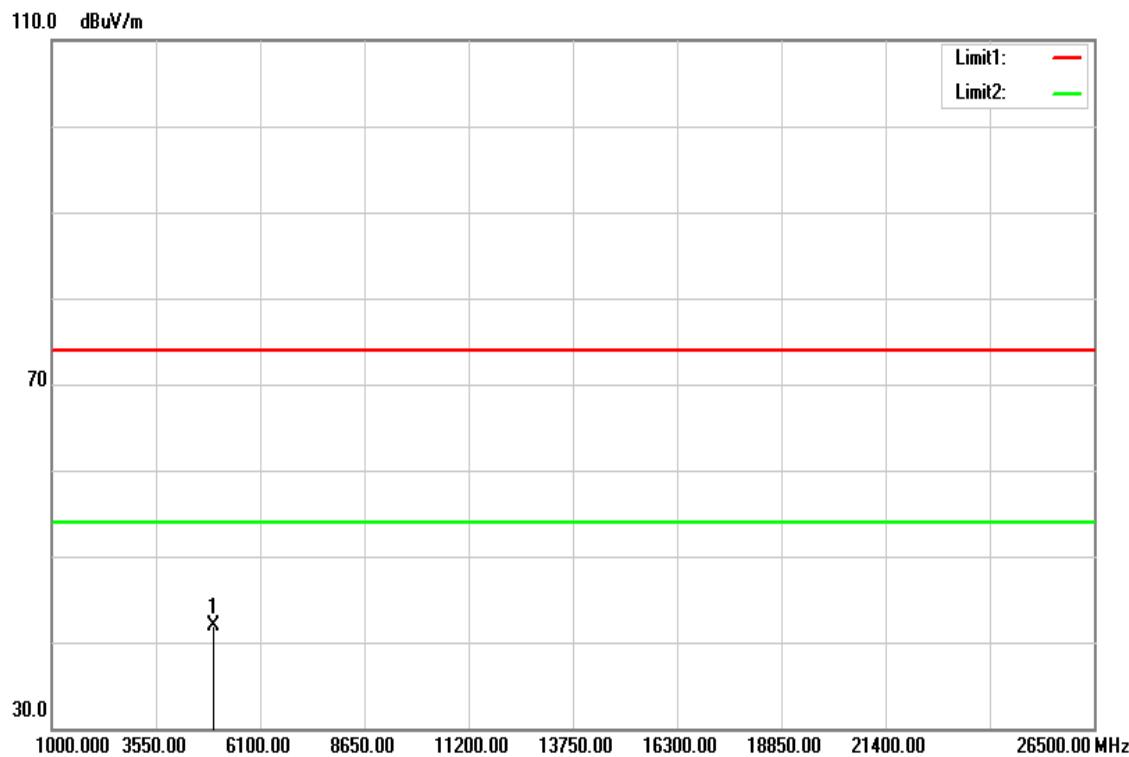


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4960.000 | 37.04 | 4.61 | 41.65 | 74.00 | -32.35 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|------------|---------------------------|---------------|----------------|
| Test Mode: | GFSK_BDR-1Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

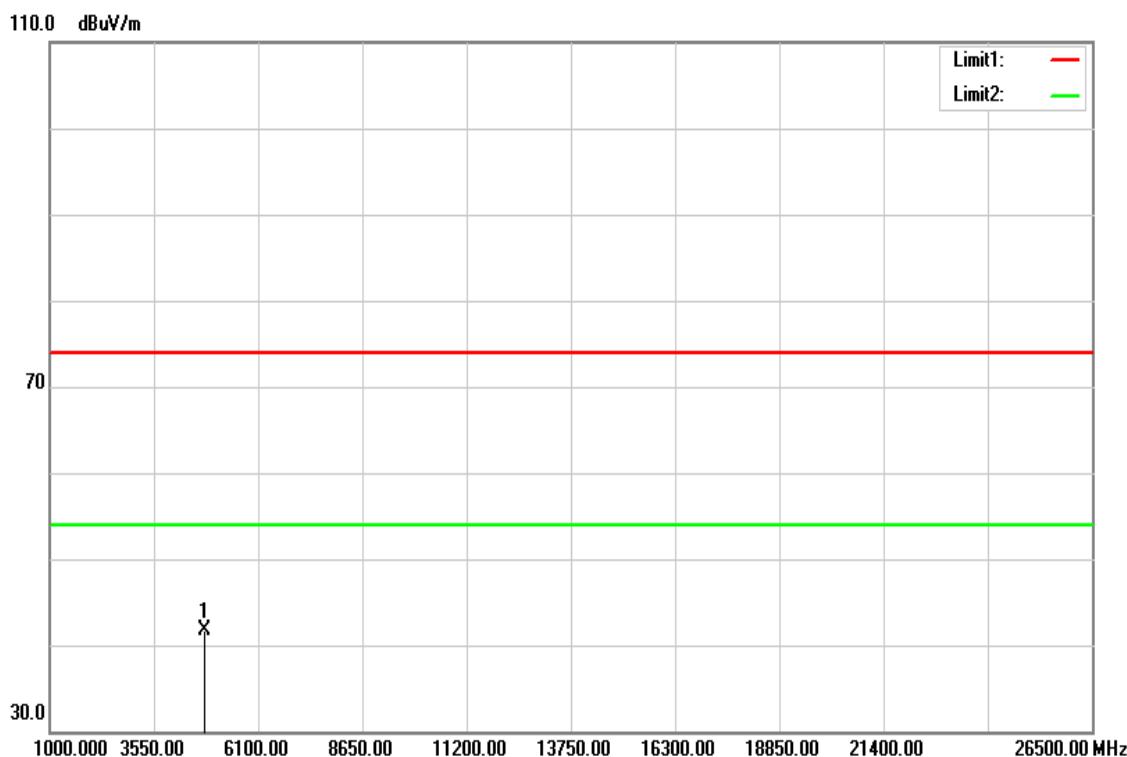


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4960.000 | 37.23 | 4.61 | 41.84 | 74.00 | -32.16 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|-----------|------------------------|---------------|----------------|
| Test Mode | 8DPSK_EDR-3Mbps Low CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Vertical | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

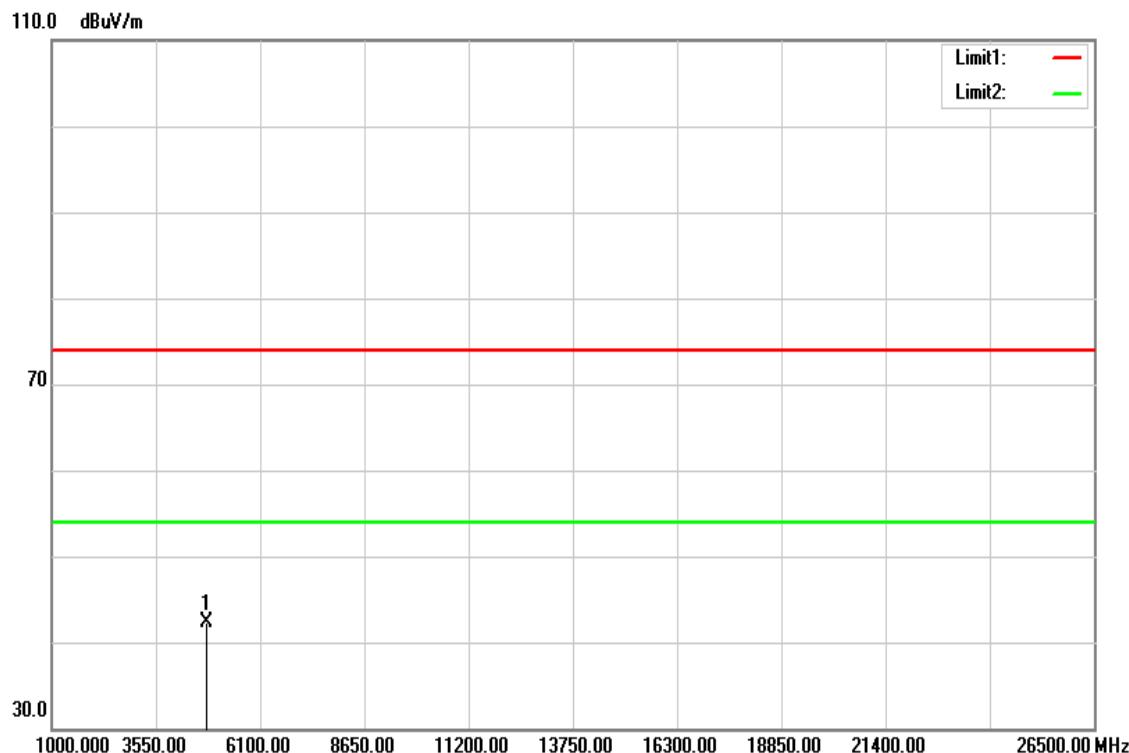


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4804.000 | 37.30 | 4.34 | 41.64 | 74.00 | -32.36 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|-----------|------------------------|---------------|----------------|
| Test Mode | 8DPSK_EDR-3Mbps Low CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

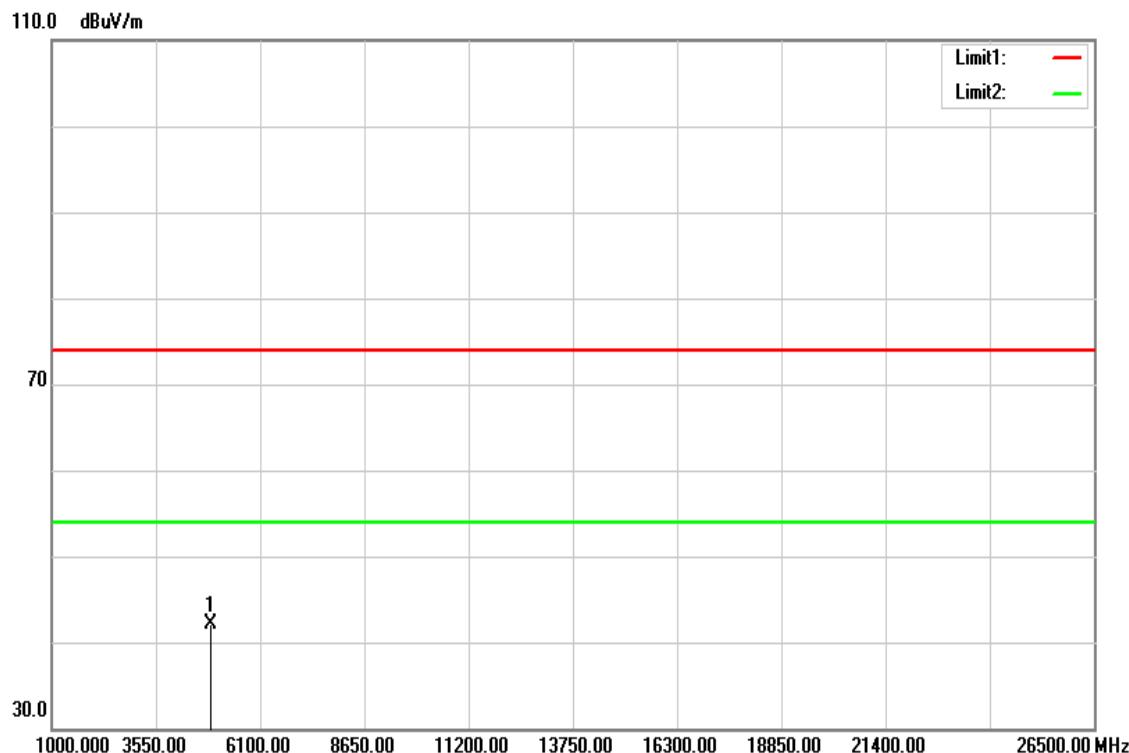


| Frequency (MHz) | Reading (dB _{uV}) | Correct Factor (dB/m) | Result (dB _{uV/m}) | Limit (dB _{uV/m}) | Margin (dB) | Remark |
|-----------------|-----------------------------|-----------------------|------------------------------|-----------------------------|-------------|--------|
| 4804.000 | 37.90 | 4.34 | 42.24 | 74.00 | -31.76 | peak |
| N/A | | | | | | |
| | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|-----------|---------------------------|---------------|----------------|
| Test Mode | 8DPSK_EDR-3Mbps Mid CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Vertical | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

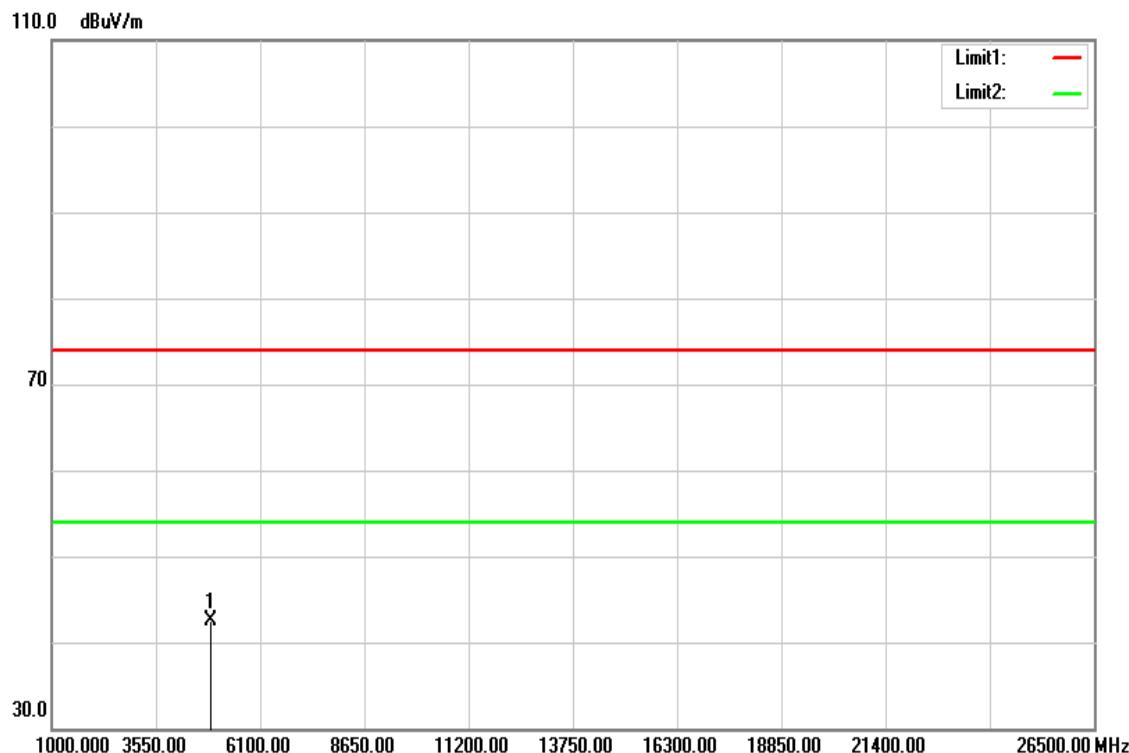


| Frequency (MHz) | Reading (dB _{uV}) | Correct Factor (dB/m) | Result (dB _{uV/m}) | Limit (dB _{uV/m}) | Margin (dB) | Remark |
|-----------------|-----------------------------|-----------------------|------------------------------|-----------------------------|-------------|--------|
| 4882.000 | 37.61 | 4.49 | 42.10 | 74.00 | -31.90 | peak |
| N/A | | | | | | |
| | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|-----------|---------------------------|---------------|----------------|
| Test Mode | 8DPSK_EDR-3Mbps Mid CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

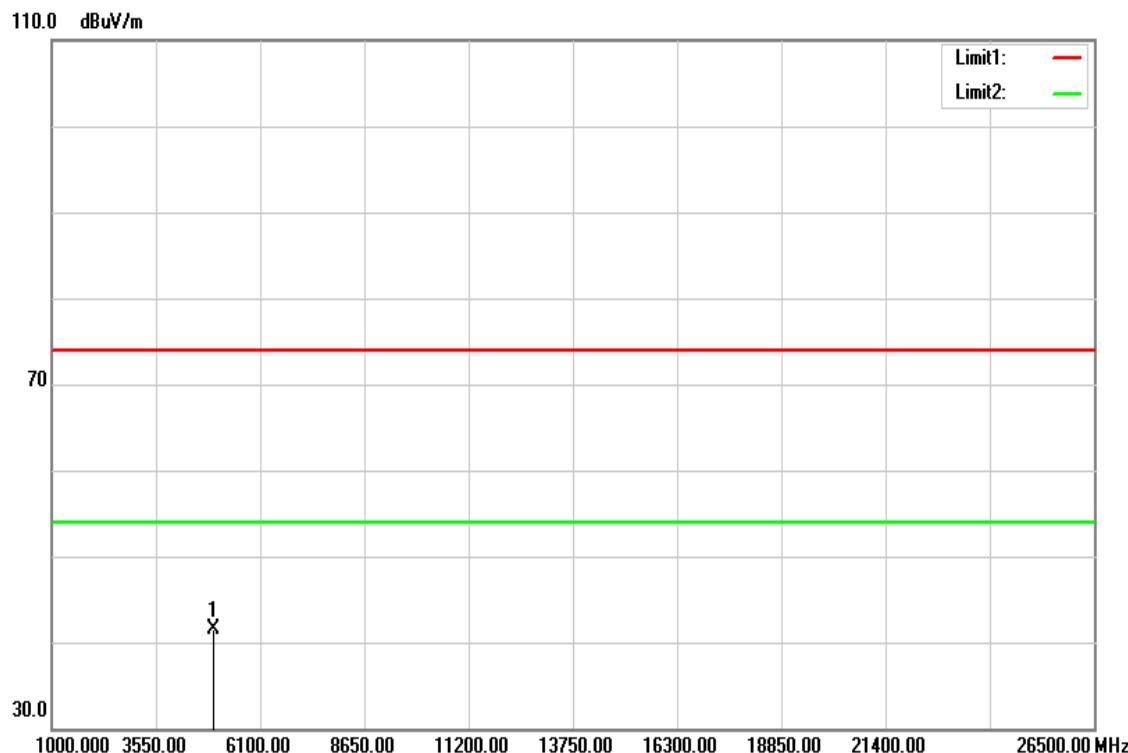


| Frequency (MHz) | Reading (dB _{uV}) | Correct Factor (dB/m) | Result (dB _{uV/m}) | Limit (dB _{uV/m}) | Margin (dB) | Remark |
|-----------------|-----------------------------|-----------------------|------------------------------|-----------------------------|-------------|--------|
| 4882.000 | 37.93 | 4.49 | 42.42 | 74.00 | -31.58 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|-----------|----------------------------|---------------|----------------|
| Test Mode | 8DPSK_EDR-3Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Vertical | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |

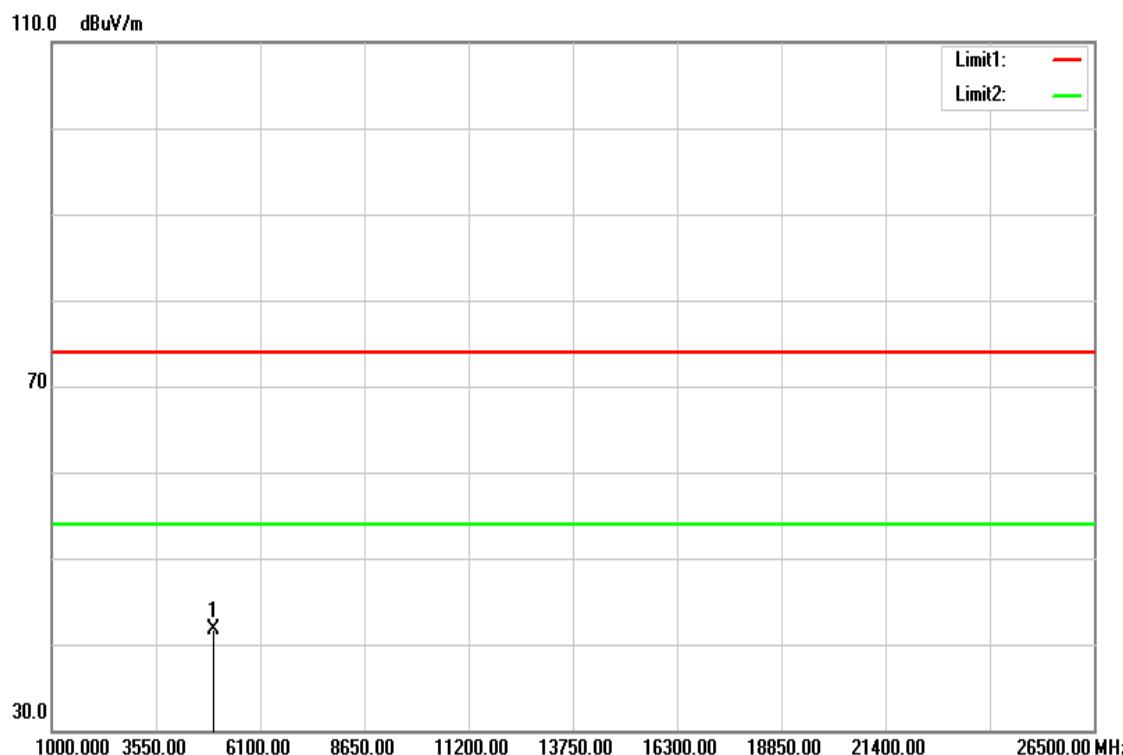


| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4960.000 | 36.94 | 4.61 | 41.55 | 74.00 | -32.45 | peak |
| N/A | | | | | | |
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Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| | | | |
|-----------|----------------------------|---------------|----------------|
| Test Mode | 8DPSK_EDR-3Mbps High CH | Temp/Hum | 24(°C)/ 33%RH |
| Test Item | Harmonic | Test Date | March 13, 2018 |
| Polarize | Horizontal | Test Engineer | Jerry Chuang |
| Detector | Peak and Average | Test Voltage | 120Vac / 60Hz |



| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------|
| 4960.000 | 37.09 | 4.61 | 41.70 | 74.00 | -32.30 | peak |
| N/A | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit