# FCC Test Report

# (PART 22)

| | |
|---|---|
| **Report No.:** | RF150722C10A-6 |
| **FCC ID:** | 2AFD7-P3302 |
| **Test Model:** | P3302 |
| **Received Date:** | Jul. 22, 2015 |
| **Test Date:** | Sep. 15, 2015 ~ Sep. 30, 2015 |
| **Issued Date:** | Oct. 06, 2015 |
| **Applicant:** | Poynt Co. |
| **Address:** | 490 S California Avenue Suite 200 Palo Alto, CA 94306 USA |
| **Issued By:** | Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch |
| **Lab Address:** | No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan ( R.O.C ) |
| **Test Location (1):** | No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C. |

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## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RF150722C10A-6 | Original Release | Oct. 06, 2015 |

## 1 Certificate of Conformity

| | |
|---|---|
| **Product:** | POS |
| **Brand:** | POYNT |
| **Test Model:** | P3302 |
| **Sample Status:** | Production Unit |
| **Applicant:** | Poynt Co. |
| **Test Date:** | Sep. 15, 2015 ~ Sep. 30, 2015 |
| **Standards:** | FCC Part 22, Subpart H |

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** _____ , **Date:** Oct. 06, 2015

Ivonne Wu / Supervisor

**Approved by :** _____ , **Date:** Oct. 06, 2015

Kay Wu / Supervisor

## 2 Summary of Test Results

| Applied Standard: FCC Part 22 & Part 2 | | | |
|---|---|---|---|
| FCC Clause | Test Item | Result | Remarks |
| 2.1046<br>22.913 (a) | Effective radiated power | PASS | Meet the requirement of limit. |
| --- | Peak To Average Ratio | PASS | Meet the requirement of limit. |
| 2.1055<br>22.355 | Frequency Stability | PASS | Meet the requirement of limit. |
| 2.1049 | Occupied Bandwidth | PASS | Meet the requirement of limit. |
| 22.917 | Band Edge Measurements | PASS | Meet the requirement of limit. |
| 2.1051<br>22.917 | Conducted Spurious Emissions | PASS | Meet the requirement of limit. |
| 2.1053<br>22.917 | Radiated Spurious Emissions | PASS | Meet the requirement of limit.<br>Minimum passing margin is -26.24dB at 1672.80MHz. |

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement | Frequency | Expended Uncertainty (k=2) (±) |
|---|---|---|
| Conducted Emissions at mains ports | 150kHz ~ 30MHz | 2.44 dB |
| Radiated Emissions up to 1 GHz | 30MHz ~ 200MHz | 2.93 dB |
| | 200MHz ~1000MHz | 2.95 dB |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz | 2.26 dB |
| | 18GHz ~ 40GHz | 1.94 dB |

## 2.2 Test Site And Instruments

| Description & Manaufacturer | Model No. | Serial No. | Date of Calibration | Due Date of Calibration |
|---|---|---|---|---|
| Test Receiver Agilent | N9038A | MY51210203 | Jan. 21, 2015 | Jan. 21, 2016 |
| Spectrum Analyzer Agilent | N9010A | MY52220314 | Sep. 03, 2015 | Sep. 02, 2016 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSU43 | 101261 | Dec. 10, 2014 | Dec. 09, 2015 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-472 | Feb. 04, 2015 | Feb. 04, 2016 |
| HORN Antenna SCHWARZBECK | BBHA 9120 D | 9120D-969 | Feb. 09, 2015 | Feb. 09, 2016 |
| HORN Antenna SCHWARZBECK | BBHA 9170 | 9170-480 | Feb. 04, 2015 | Feb. 04, 2016 |
| Loop Antenna | EM-6879 | 269 | Jul. 31, 2015 | Jul. 30, 2016 |
| Preamplifier EMCI | EMC 012645 | 980115 | Dec. 12, 2014 | Dec. 11, 2015 |
| Preamplifier EMCI | EMC 184045 | 980116 | Jan. 09, 2015 | Jan. 08, 2016 |
| Preamplifier EMCI | EMC 330H | 980112 | Dec. 27, 2014 | Dec. 26, 2015 |
| Power Meter Anritsu | ML2495A | 1012010 | Aug. 21, 2015 | Aug. 20, 2016 |
| Power Sensor Anritsu | MA2411B | 1315050 | Aug. 21, 2015 | Aug. 20, 2016 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 309219/4 2950114 | Oct. 18, 2014 | Oct. 17, 2015 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 250130/4 | Oct. 18, 2014 | Oct. 17, 2015 |
| RF Coaxial Cable Worken | 8D-FB | Cable-Ch10-01 | Nov. 07, 2014 | Nov. 06, 2015 |
| Software BV ADT | E3 6.120103 | NA | NA | NA |
| Antenna Tower MF | MFA-440H | NA | NA | NA |
| Turn Table MF | MFT-201SS | NA | NA | NA |
| Antenna Tower &Turn Table Controller MF | MF-7802 | NA | NA | NA |
| Communications Tester-Wireless Agilent | 8960 Series 10 | MY53201073 | Jul. 03, 2015 | Jul. 02, 2017 |

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 690701.
5. The IC Site Registration No. is IC7450F-10.

## 3 General Information

### 3.1 General Description of EUT

| | | |
|---|---|---|
| Product | POS | |
| Brand | POYNT | |
| Test Model | P3302 | |
| Status of EUT | Production Unit | |
| Power Supply Rating | 5.0Vdc (adapter or host equipment)<br>3.7Vdc (Li-ion battery) | |
| Modulation Type | GPRS | GMSK |
| | EDGE | GMSK, 8PSK |
| | WCDMA | BPSK |
| Frequency Range | GPRS/EDGE | 824.2 ~ 848.8 MHz |
| | WCDMA | 826.4 ~ 846.6 MHz |
| Max. ERP Power | GPRS | 674.53mW |
| | EDGE | 155.17mW |
| | WCDMA | 48.96mW |
| Emission Designator | GPRS | 243KGXW |
| | EDGE | 247KG7W |
| | WCDMA | 4M07F9W |
| Antenna Type | Fixed Internal Antenna | |
| Accessory Device | Refer to Note as below | |
| Data Cable Supplied | Refer to Note as below | |

Note:

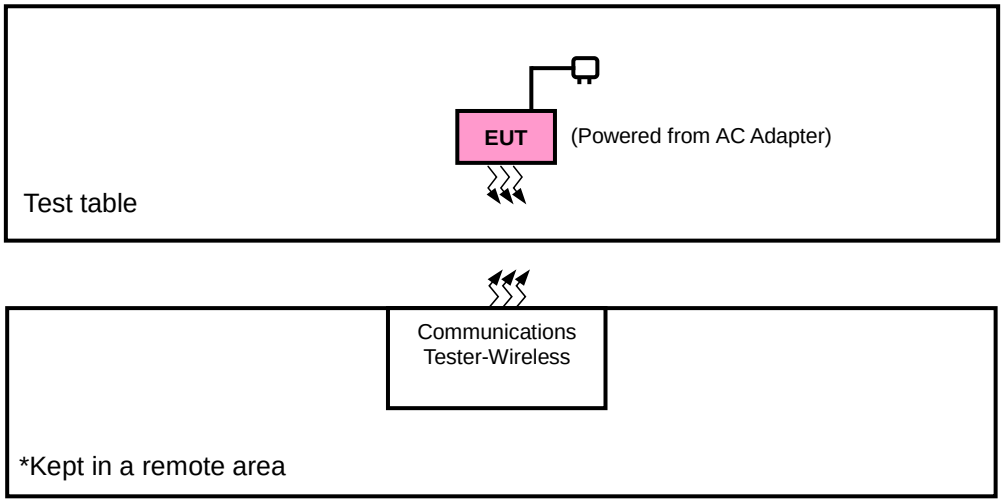
1. The EUT contains following accessory devices.

| Product | Brand | Model | Description |
|---|---|---|---|
| Adapter | FSP GROUP INC. | FSP040-RHBN2 | I/P: 100-240Vac, 50/60Hz, 1.5A<br>O/P: 12Vdc, 3.33A<br>1.2m shielded cable with one core |
| Battery | Formosa Electronic Industries IN | P61 | 3.7Vdc, 14.8Wh |
| LCD Panel 1 | LG | LD070WX7-SMN4 | 7” |
| LCD Panel 2 | LG | LH430WV1-SD07 | 4.3” |
| Photo Camera | LITE-ON CORP. | 5BA502T2A | -- |
| Video Camera | NingBo Sunny Opotech | Q034C-200 | -- |
| Main Board | Quanta | DA0P61MBAB0 | -- |
| eMMC | kingston | EMMC16G-V100-C50 | 16GB |
| CPU | nV | T40s | -- |
| WLAN Module | Azurewave | AW-AH640 | -- |
| WWAN Module | HUAWEI | MU736 | -- |
| Docking | Quanta | DA0P61TB6B0 | -- |

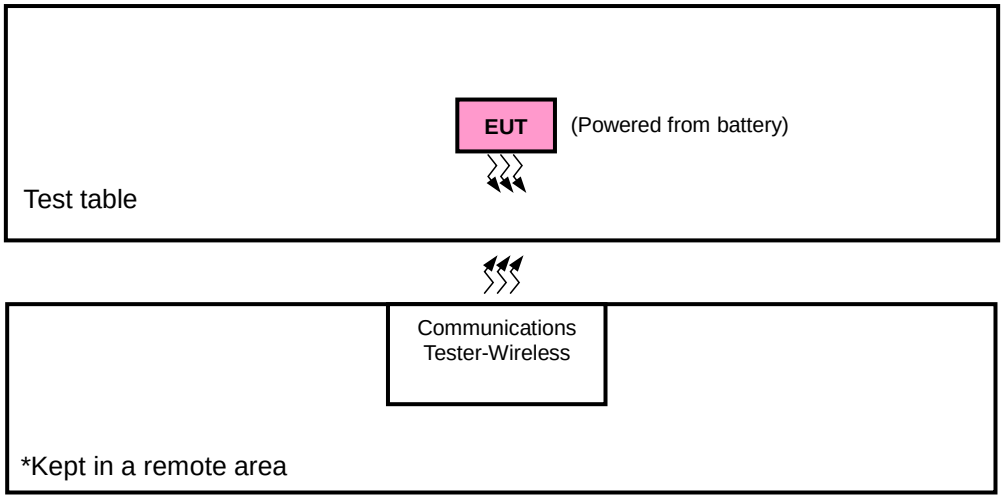
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

## 3.2 Configuration of System Under Test

<Radiated Emission Test>




<E.R.P. Test>




### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

### 3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

| Band | ERP | Radiated Emission |
|---|---|---|
| GPRS | X-plane | Y-axis |
| EDGE | X-plane | Y-axis |
| WCDMA | X-plane | Y-axis |

**GPRS MODE**

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Mode |
|---|---|---|---|---|
| - | ERP | 128 to 251 | 128, 189, 251 | GPRS, EDGE |
| - | Frequency Stability | 128 to 251 | 189 | GPRS, EDGE |
| - | Occupied Bandwidth | 128 to 251 | 128, 189, 251 | GPRS, EDGE |
| - | Band Edge | 128 to 251 | 128, 251 | GPRS, EDGE |
| - | Peak to Average Ratio | 128 to 251 | 128, 189, 251 | GPRS, EDGE |
| - | Condcudeted Emission | 128 to 251 | 189 | GPRS, EDGE |
| - | Radiated Emission | 128 to 251 | 189 | GPRS, EDGE |

**WCDMA MODE**

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Mode |
|---|---|---|---|---|
| - | ERP | 4132 to 4233 | 4132, 4182, 4233 | WCDMA |
| - | Frequency Stability | 4132 to 4233 | 4182 | WCDMA |
| - | Occupied Bandwidth | 4132 to 4233 | 4132, 4182, 4233 | WCDMA |
| - | Band Edge | 4132 to 4233 | 4132, 4233 | WCDMA |
| - | Peak to Average Ratio | 4132 to 4233 | 4132, 4182, 4233 | WCDMA |
| - | Condcudeted Emission | 4132 to 4233 | 4182 | WCDMA |
| - | Radiated Emission | 4132 to 4233 | 4182 | WCDMA |

**Test Condition:**

| Test Item | Environmental Conditions | Input Power | Tested By |
|---|---|---|---|
| ERP | 25deg. C, 65%RH | 3.7Vdc | Karl Lee |
| Frequency Stability | 25deg. C, 65%RH | 3.7Vdc | Carlos Chen |
| Occupied Bandwidth | 25deg. C, 65%RH | 3.7Vdc | Carlos Chen |
| Band Edge | 25deg. C, 65%RH | 3.7Vdc | Carlos Chen |
| Peak to Average Ratio | 25deg. C, 65%RH | 3.7Vdc | Carlos Chen |
| Condcudeted Emission | 25deg. C, 65%RH | 3.7Vdc | Carlos Chen |
| Radiated Emission | 25deg. C, 65%RH | 120Vac, 60Hz | Karl Lee |

### 3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

### 3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**
**FCC 47 CFR Part 22**
**ANSI/TIA/EIA-603-C 2004**

**NOTE:** All test items have been performed and recorded as per the above standards.

# 4 Test Types and Results

## 4.1 Output Power Measurement

### 4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 7 watts e.r.p.

### 4.1.2 Test Procedures

**EIRP / ERP Measurement:**

a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GPRS & EDGE, and 5MHz for WCDMA mode.

b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value“ of step b. Record the power level of S.G

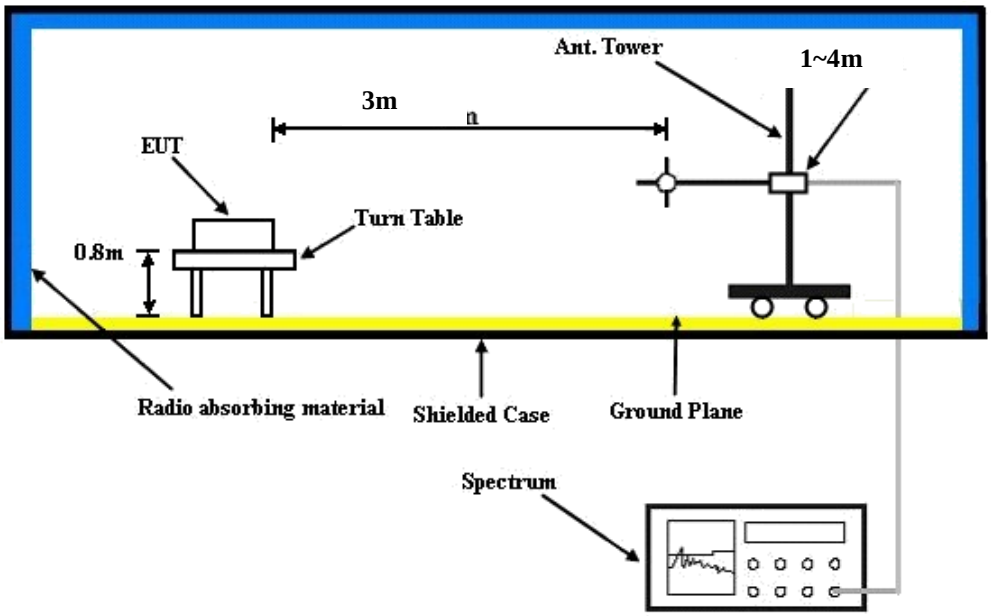
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

**Conducted Power Measurement:**

The EUT was set up for the maximum power with GPRS, EDGE, and WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

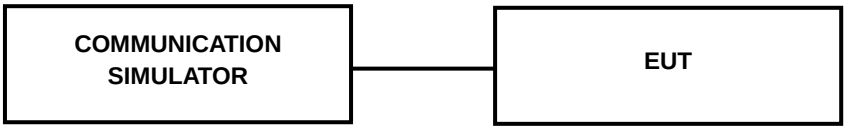
4.1.3 Test Setup

EIRP / ERP MEASUREMENT:




For the actual test configuration, please refer to the attached file (Test Setup Photo).

CONDUCTED POWER MEASUREMENT:



4.1.4 Test Results

**CONDUCTED OUTPUT POWER (dBm)**

| Band | GPRS850 | | |
|---|---|---|---|
| Channel | 128 | 189 | 251 |
| Frequency (MHz) | 824.2 | 836.4 | 848.8 |
| GPRS 8 | 31.75 | 31.79 | 31.92 |
| GPRS 10 | 29.31 | 29.35 | 29.48 |
| GPRS 11 | 27.85 | 27.89 | 28.02 |
| GPRS 12 | 26.37 | 26.41 | 26.54 |
| EDGE 8 | 25.84 | 25.88 | 26.01 |
| EDGE 10 | 23.58 | 23.62 | 23.75 |
| EDGE 11 | 22.13 | 22.17 | 22.30 |
| EDGE 12 | 20.69 | 20.73 | 20.86 |

| Band | WCDMA V | | |
|---|---|---|---|
| Channel | 4132 | 4182 | 4233 |
| Frequency (MHz) | 826.4 | 836.4 | 846.6 |
| RMC 12.2K | 23.48 | 23.19 | 22.96 |
| HSDPA Subtest-1 | 23.25 | 22.96 | 22.73 |
| HSDPA Subtest-2 | 22.28 | 21.99 | 21.76 |
| HSDPA Subtest-3 | 22.03 | 21.74 | 21.51 |
| HSDPA Subtest-4 | 21.77 | 21.48 | 21.25 |
| HSUPA Subtest-1 | 22.25 | 21.96 | 21.73 |
| HSUPA Subtest-2 | 20.20 | 19.91 | 19.68 |
| HSUPA Subtest-3 | 21.01 | 20.72 | 20.49 |
| HSUPA Subtest-4 | 20.54 | 20.25 | 20.02 |
| HSUPA Subtest-5 | 22.36 | 22.07 | 21.84 |

**ERP POWER (dBm)**

| GPRS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor(dB) | ERP(dBm) | ERP(mW) | Polarization (H/V) |
| X | 128 | 824.2 | -1.01 | 31.208 | 28.05 | 637.97 | H |
| | 189 | 836.4 | -0.86 | 31.3 | 28.29 | 674.53 | |
| | 251 | 848.8 | -0.97 | 31.222 | 28.10 | 645.95 | |
| | 128 | 824.2 | -4.37 | 31.504 | 24.98 | 315.06 | V |
| | 189 | 836.4 | -4.61 | 31.117 | 24.36 | 272.71 | |
| | 251 | 848.8 | -5.06 | 31.922 | 24.71 | 295.94 | |

| EDGE | | | | | | | |
|---|---|---|---|---|---|---|---|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor(dB) | ERP(dBm) | ERP(mW) | Polarization (H/V) |
| X | 128 | 824.2 | -7.15 | 31.208 | 21.91 | 155.17 | H |
| | 189 | 836.4 | -7.87 | 31.3 | 21.28 | 134.28 | |
| | 251 | 848.8 | -7.46 | 31.222 | 21.61 | 144.94 | |
| | 128 | 824.2 | -11.43 | 31.504 | 17.92 | 62.00 | V |
| | 189 | 836.4 | -11.11 | 31.117 | 17.86 | 61.05 | |
| | 251 | 848.8 | -12.35 | 31.922 | 17.42 | 55.23 | |

| WCDMA | | | | | | | |
|---|---|---|---|---|---|---|---|
| Plane | Channel | Frequency (MHz) | LVL (dBm) | Correction Factor(dB) | ERP(dBm) | ERP(mW) | Polarization (H/V) |
| X | 4132 | 826.4 | -12.16 | 31.208 | 16.90 | 48.96 | H |
| | 4182 | 836.4 | -12.42 | 31.3 | 16.73 | 47.10 | |
| | 4233 | 846.6 | -12.44 | 31.222 | 16.63 | 46.05 | |
| | 4132 | 826.4 | -16.76 | 31.504 | 12.59 | 18.17 | V |
| | 4182 | 836.4 | -16.29 | 31.117 | 12.68 | 18.52 | |
| | 4233 | 846.6 | -17.12 | 31.922 | 12.65 | 18.42 | |

## 4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stabiliity Measurement

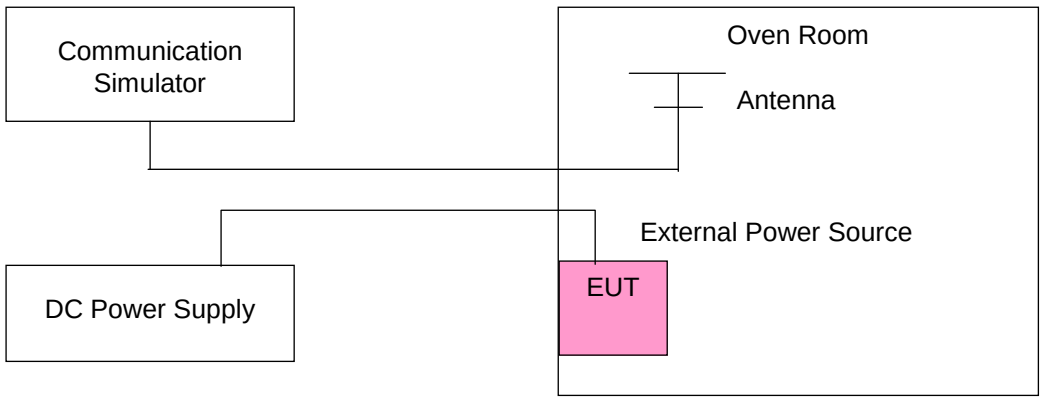
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.2.2 Test Procedure

a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

4.2.3 Test Setup



4.2.4 Test Results

Frequency Error vs. Voltage

| Voltage (Volts) | Frequency Error (ppm) | | | Limit (ppm) |
|---|---|---|---|---|
| | GPRS | EDGE | WCDMA | |
| 3.7 | 0.0019 | 0.0002 | 0.0020 | 2.5 |
| 3.33 | 0.0007 | 0.0035 | 0.0016 | 2.5 |
| 4.255 | 0.0033 | 0.0019 | 0.0018 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.33Vdc to 4.255Vdc.

Frequency Error vs. Temperature

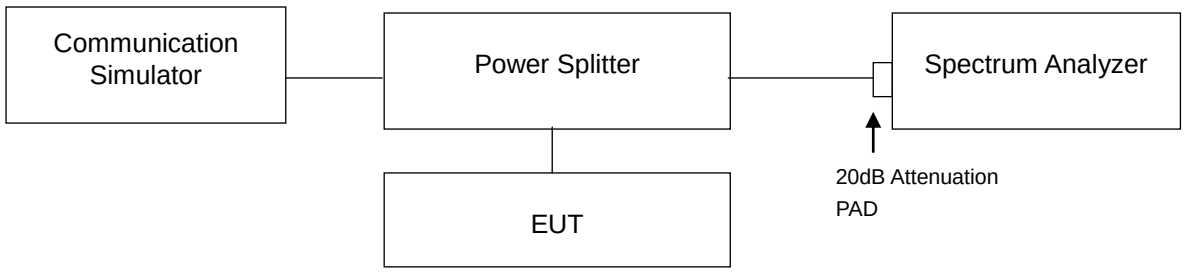
| Temp. (℃) | Frequency Error (ppm) | | | Limit (ppm) |
|---|---|---|---|---|
| | GPRS | EDGE | WCDMA | |
| -30 | 0.002 | 0.004 | 0.002 | 2.5 |
| -20 | 0.003 | 0.002 | 0.000 | 2.5 |
| -10 | 0.001 | 0.002 | 0.002 | 2.5 |
| 0 | 0.000 | 0.004 | 0.002 | 2.5 |
| 10 | 0.004 | 0.003 | 0.003 | 2.5 |
| 20 | -0.001 | -0.002 | -0.005 | 2.5 |
| 30 | -0.004 | 0.000 | -0.002 | 2.5 |
| 40 | -0.002 | -0.001 | 0.000 | 2.5 |
| 50 | -0.003 | -0.001 | -0.003 | 2.5 |

## 4.3 Occupied Bandwidth Measurement

### 4.3.1 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

### 4.3.2 Test Setup

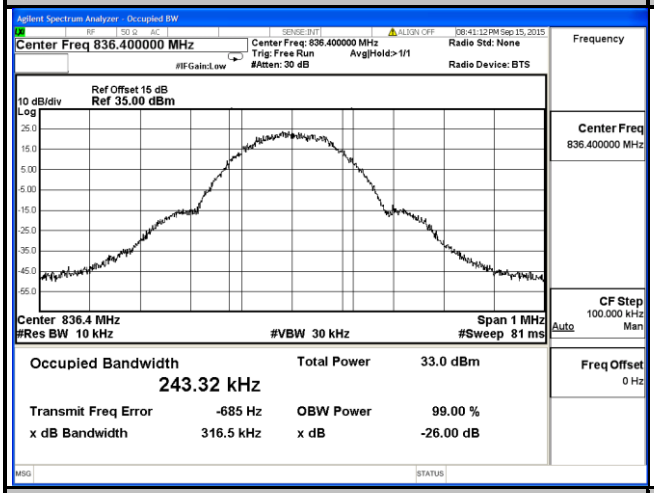


4.3.3 Test Result

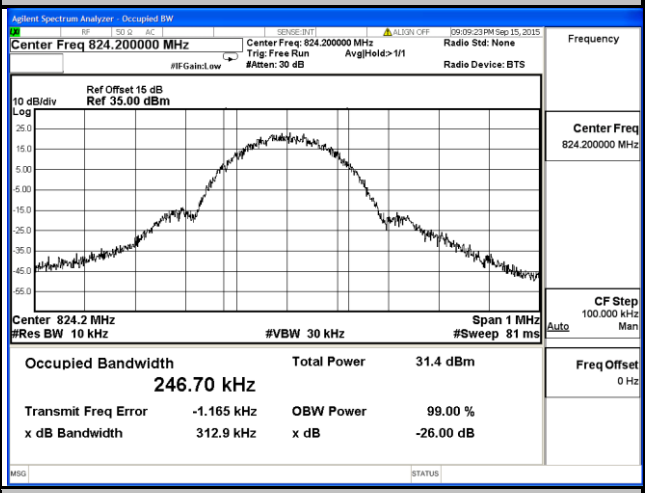
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
|---|---|---|---|---|---|---|
| | | GPRS | EDGE | | | WCDMA |
| 128 | 824.2 | 242.65 | 246.70 | 4132 | 826.4 | 4.0598 |
| 189 | 836.4 | 243.32 | 242.35 | 4182 | 836.4 | 4.0747 |
| 251 | 848.8 | 242.59 | 246.70 | 4233 | 846.6 | 4.0702 |
| Channel | Frequency (MHz) | 26dB Bandwidth (kHz) | | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| | | GPRS | EDGE | | | WCDMA |
| 128 | 824.2 | 315.10 | 312.90 | 4132 | 826.4 | 4.619 |
| 189 | 836.4 | 316.50 | 305.60 | 4182 | 836.4 | 4.645 |
| 251 | 848.8 | 317.80 | 314.90 | 4233 | 846.6 | 4.628 |

Spectrum Plot of Worst Value

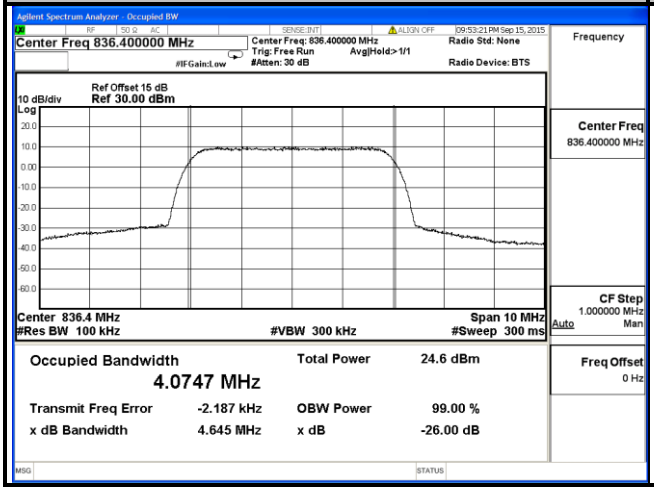
GPRS




EDGE




WCDMA

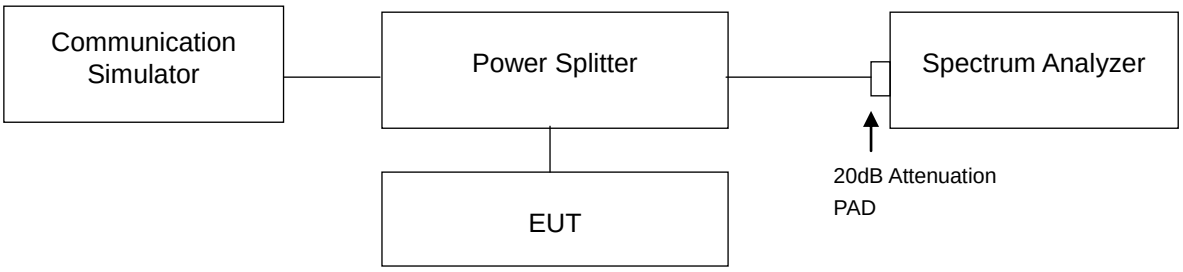


## 4.4 Band Edge Measurement

### 4.4.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

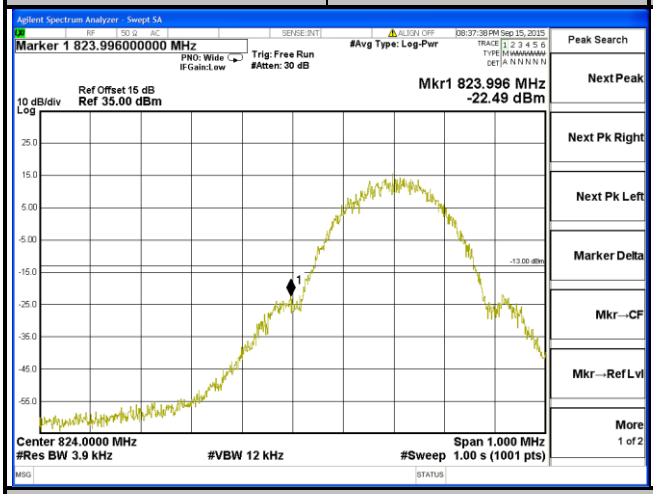
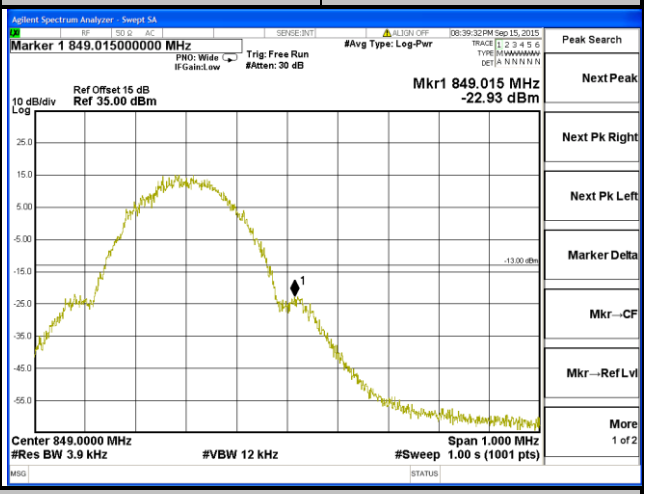
### 4.4.2 Test Setup




### 4.4.3 Test Procedures

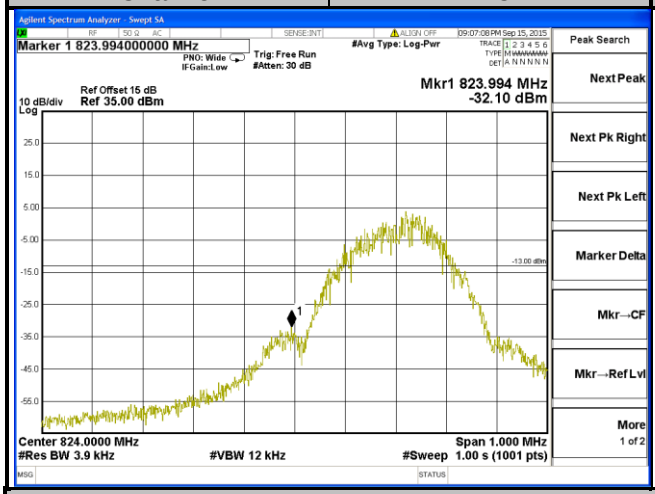
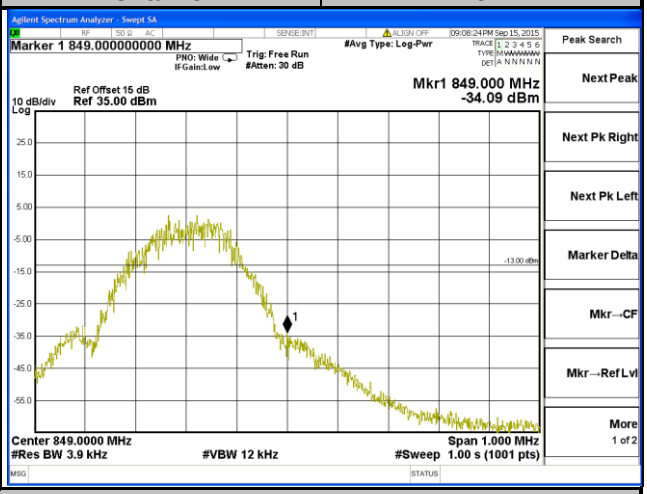
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 3.9kHz and VB of the spectrum is 12kHz (GPRS/EDGE).
c. The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).
d. Record the max trace plot into the test report.

### 4.4.4 Test Results

| GPRS | | | |
|---|---|---|---|
| Channel | 128 | Channel | 251 |
|  | |  | |

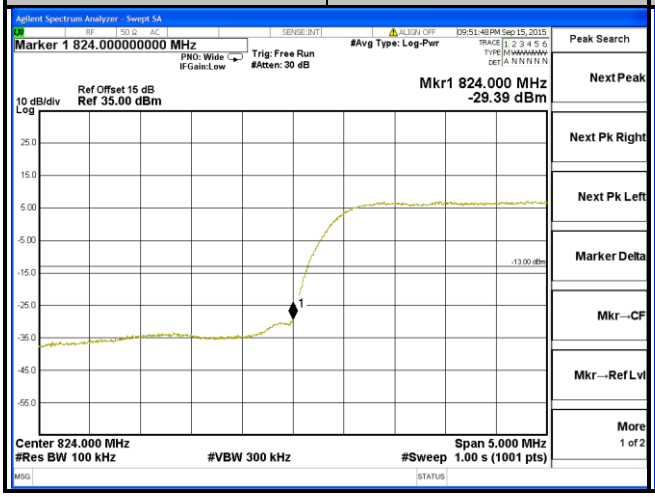
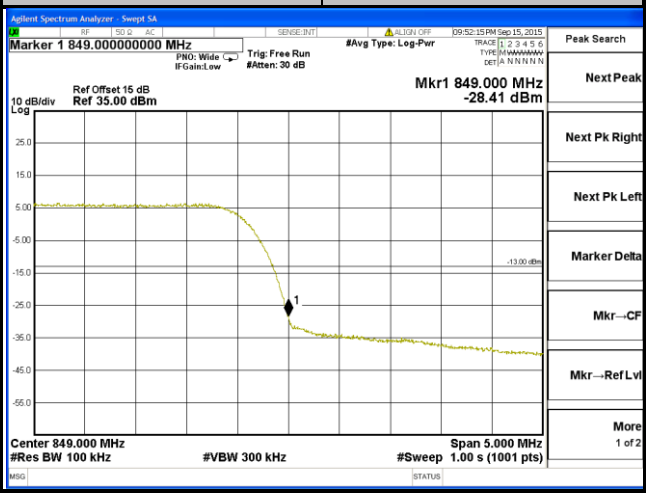




| EDGE | | | |
|---|---|---|---|
| Channel | 128 | Channel | 251 |
|  | |  | |





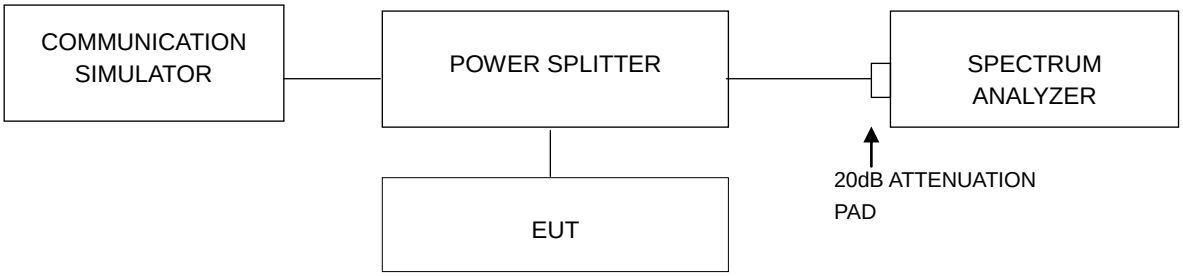
| WCDMA | | | |
|---|---|---|---|
| Channel | 4132 | Channel | 4233 |
|  | |  | |

## 4.5 Peak To Average Ratio

### 4.5.1 Limits of Peak To Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

### 4.5.2 Test Setup




### 4.5.3 Test Procedures

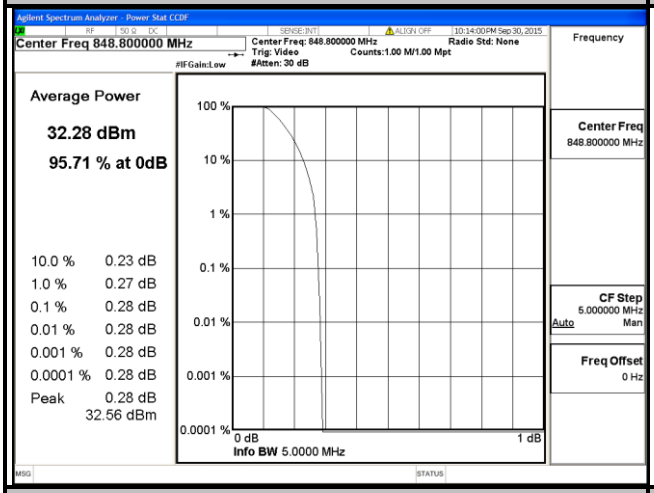
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

### 4.5.4 Test Results

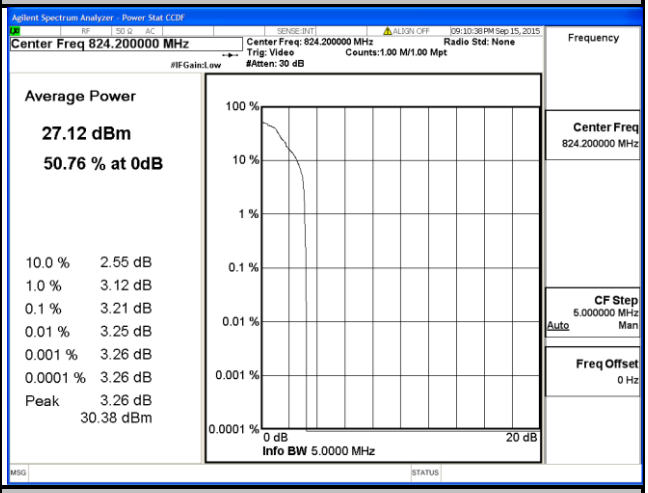
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|---|---|---|---|---|---|---|
| | | GPRS | EDGE | | | WCDMA |
| 128 | 824.2 | 0.27 | 3.21 | 4132 | 826.4 | 3.19 |
| 189 | 836.4 | 0.27 | 3.19 | 4182 | 836.4 | 3.06 |
| 251 | 848.8 | 0.28 | 3.19 | 4233 | 846.6 | 3.07 |

Spectrum Plot of Worst Value

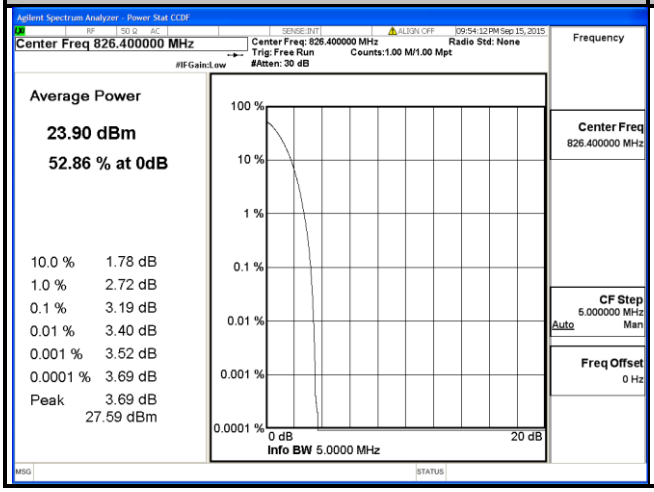
GPRS




EDGE




WCDMA

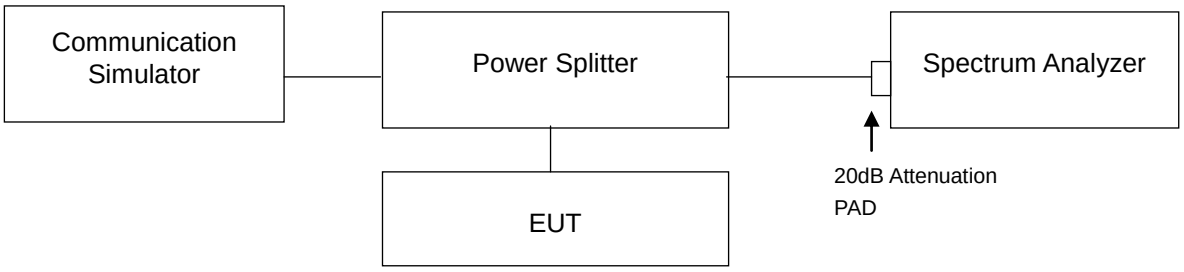


## 4.6 Conducted Spurious Emissions

### 4.6.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

### 4.6.2 Test Setup

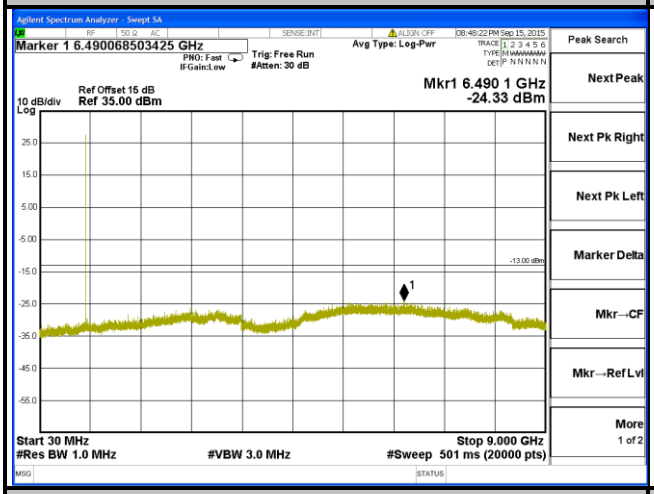
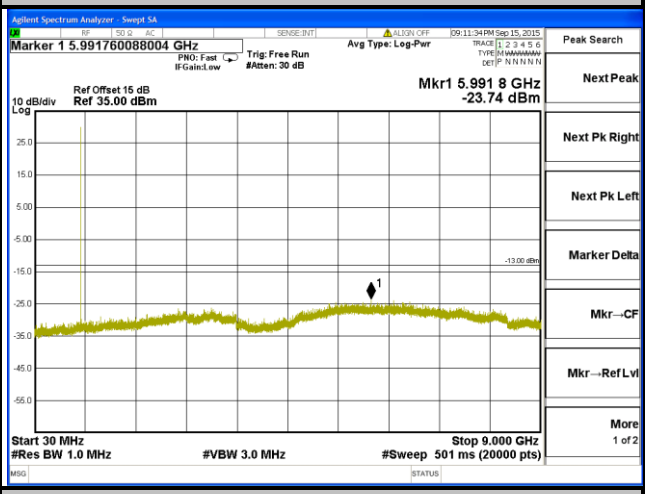
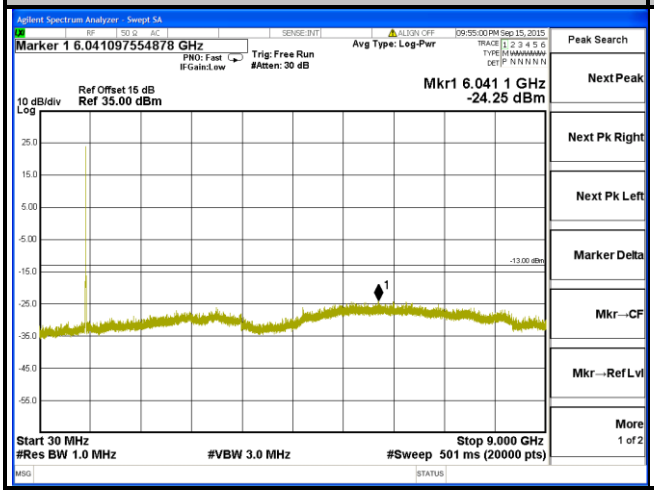



### 4.6.3 Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.

b. Measuring frequency range is from 9 kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

## 4.6.4 Test Results

| GPRS | EDGE |
|---|---|
| Channel 189 | Channel 189 |
|  |  |
| WCDMA | |
| Channel 4182 | |
|  | |

## 4.7 Radiated Emission Measurement

### 4.7.1 Limits of Radiated Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

### 4.7.2 Test Procedure

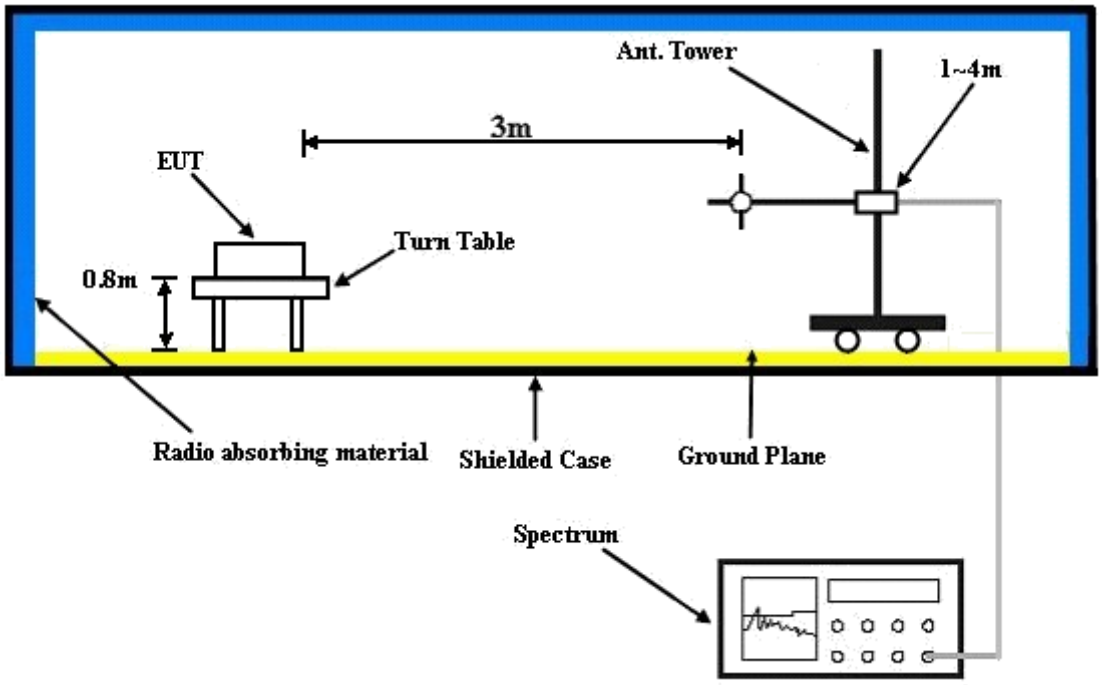
a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 4.7.3 Deviation from Test Standard

No deviation.

### 4.7.4 Test Setup

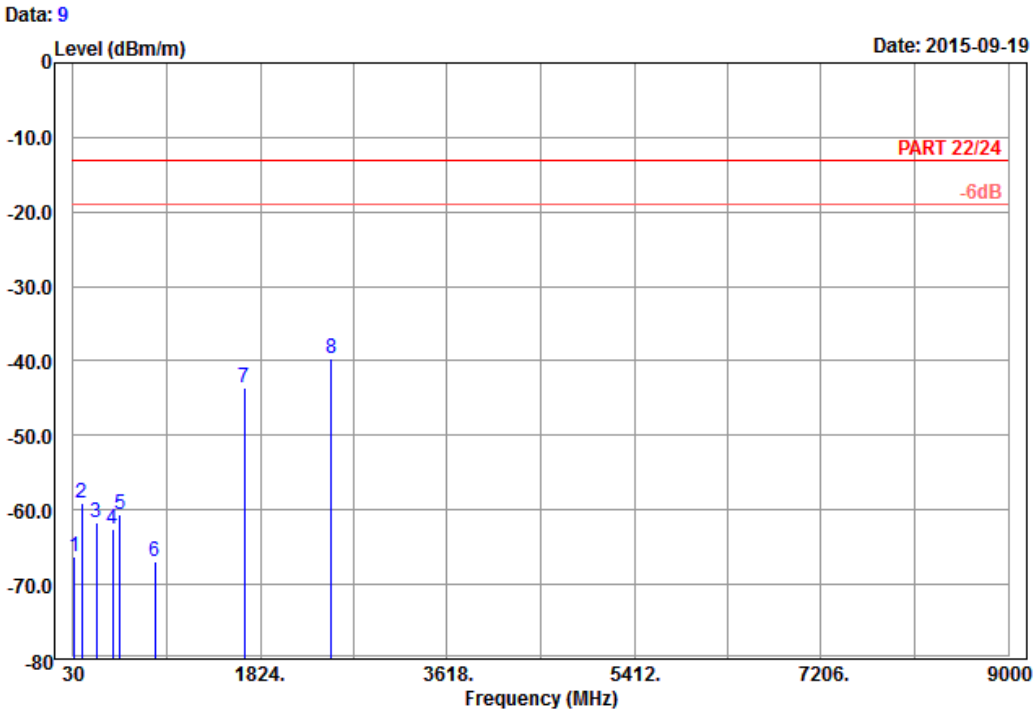



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.7.5 Test Results

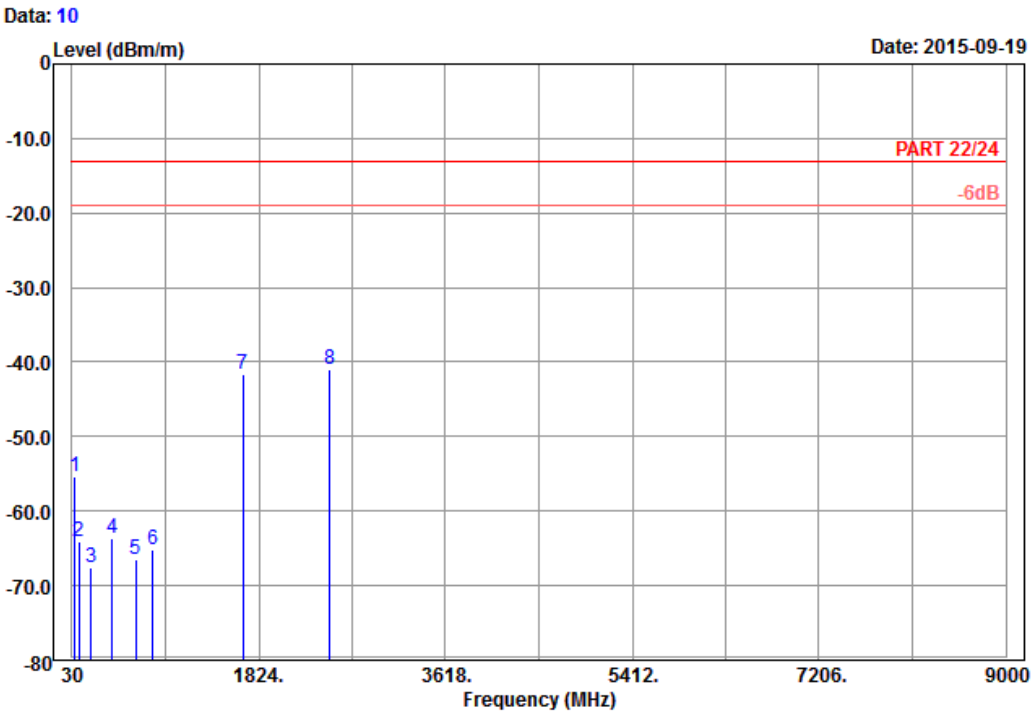
GPRS:

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark : GPRS 850_Link_CH189
Tested by: Karl Lee
Plane : Y

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | |
| 1 | 44.04 | -66.22 | -54.64 | -13.00 | -53.22 | -11.58 | Peak |
| 2 | 111.27 | -59.05 | -50.23 | -13.00 | -46.05 | -8.82 | Peak |
| 3 | 250.05 | -61.64 | -56.13 | -13.00 | -48.64 | -5.51 | Peak |
| 4 | 405.70 | -62.59 | -59.72 | -13.00 | -49.59 | -2.87 | Peak |
| 5 | 479.90 | -60.58 | -55.88 | -13.00 | -47.58 | -4.70 | Peak |
| 6 | 813.80 | -67.02 | -68.88 | -13.00 | -54.02 | 1.86 | Peak |
| 7 | 1672.80 | -43.64 | -51.55 | -13.00 | -30.64 | 7.91 | Peak |
| 8 pp | 2509.20 | -39.58 | -50.86 | -13.00 | -26.58 | 11.28 | Peak |

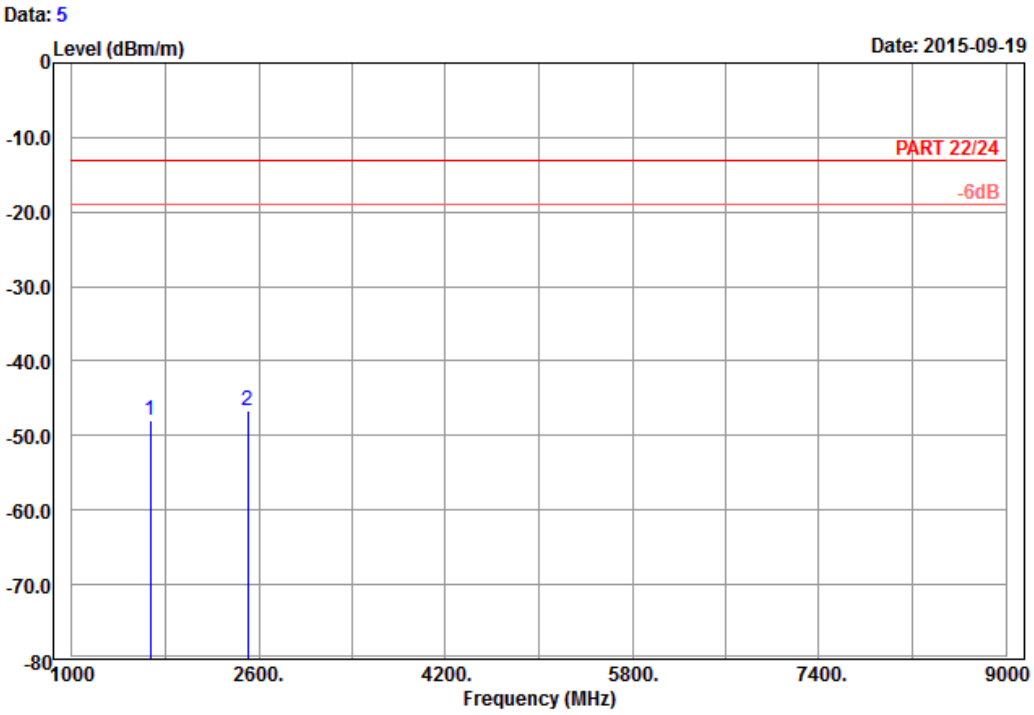



Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : GPRS 850_Link_CH189
Tested by: Karl Lee
Plane : Y

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | |
| 1 | 54.30 | -55.30 | -41.24 | -13.00 | -42.30 | -14.06 | Peak |
| 2 | 95.07 | -64.09 | -53.69 | -13.00 | -51.09 | -10.40 | Peak |
| 3 | 213.33 | -67.67 | -61.67 | -13.00 | -54.67 | -6.00 | Peak |
| 4 | 418.30 | -63.67 | -60.53 | -13.00 | -50.67 | -3.14 | Peak |
| 5 | 644.40 | -66.53 | -66.46 | -13.00 | -53.53 | -0.07 | Peak |
| 6 | 807.50 | -65.26 | -67.18 | -13.00 | -52.26 | 1.92 | Peak |
| 7 | 1672.80 | -41.54 | -49.45 | -13.00 | -28.54 | 7.91 | Peak |
| 8 pp | 2509.20 | -41.05 | -52.33 | -13.00 | -28.05 | 11.28 | Peak |

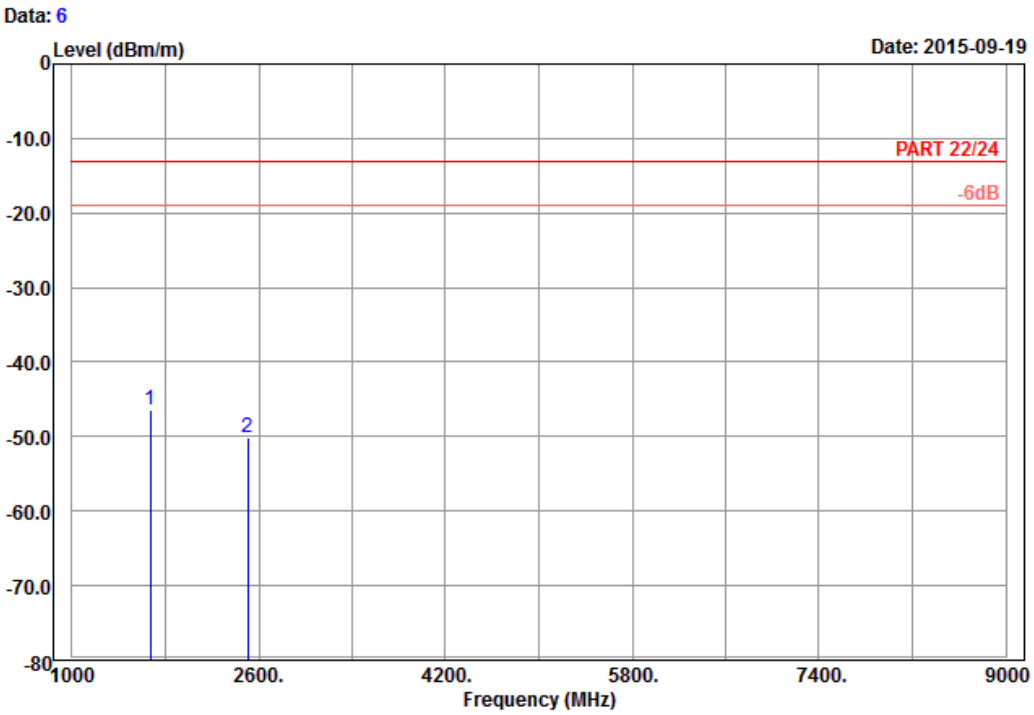
EDGE:

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site      : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark    : EDGE 850_Link_CH189
Tested by: Karl Lee
Plane     : Y
```

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | |
| 1 | 1672.80 | -48.01 | -55.92 | -13.00 | -35.01 | 7.91 | Peak |
| 2 pp | 2509.20 | -46.58 | -57.86 | -13.00 | -33.58 | 11.28 | Peak |

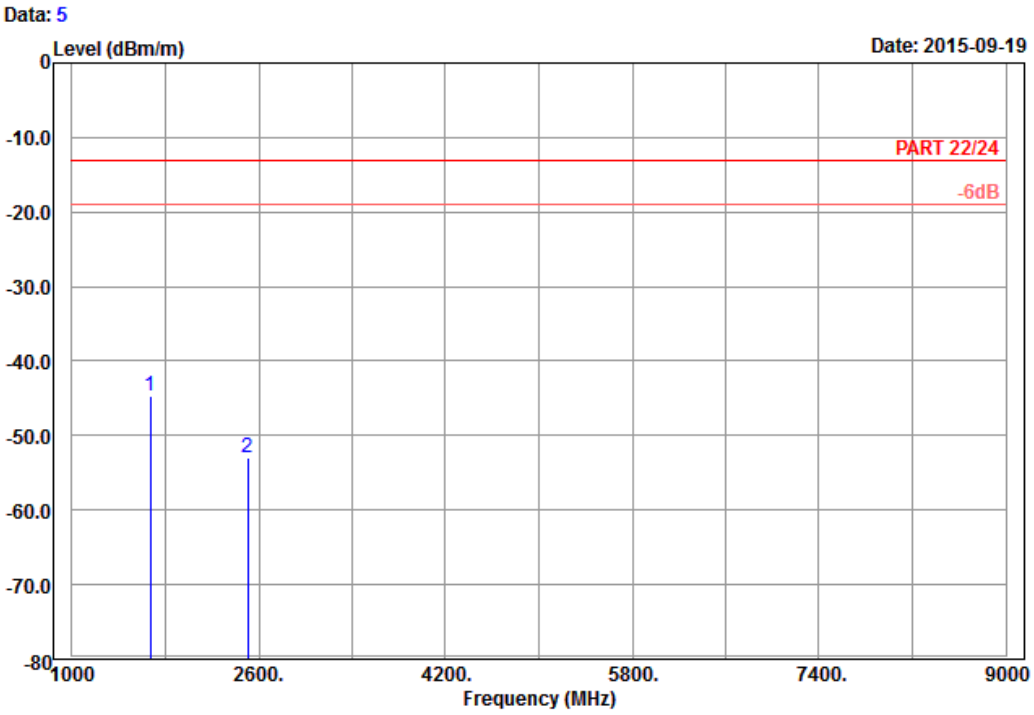



Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : EDGE 850_Link_CH189
Tested by: Karl Lee
Plane : Y

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | |
| 1 pp | 1672.80 | -46.52 | -54.43 | -13.00 | -33.52 | 7.91 | Peak |
| 2 | 2509.20 | -50.22 | -61.50 | -13.00 | -37.22 | 11.28 | Peak |

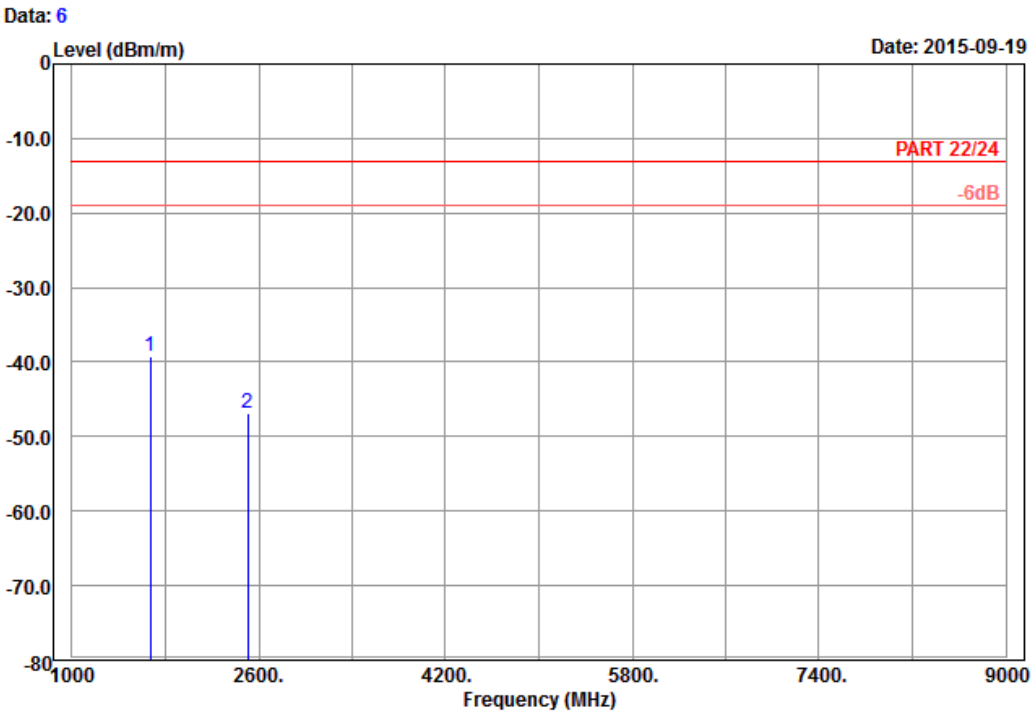
WCDMA:

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark : Band V_Link_CH4182
Tested by: Karl Lee
Plane : Y

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | |
| 1 pp | 1672.80 | -44.74 | -52.65 | -13.00 | -31.74 | 7.91 | Peak |
| 2 | 2509.20 | -52.89 | -64.17 | -13.00 | -39.89 | 11.28 | Peak |




Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : Band V_Link_CH4182
Tested by: Karl Lee
Plane : Y

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | |
| 1 pp | 1672.80 | -39.24 | -47.15 | -13.00 | -26.24 | 7.91 | Peak |
| 2 | 2509.20 | -46.88 | -58.16 | -13.00 | -33.88 | 11.28 | Peak |

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

**Appendix – Information on the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following: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**Web Site:** www.bureauveritas-adt.com


The address and road map of all our labs can be found in our web site also.

**--- END ---**