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## FCC TEST REPORT (PART 24)

**REPORT NO.:** RF131029E03-3

**MODEL NO.:** xAPT-103WiFi.3G

**FCC ID:** MQT-XAPT103WIFI3G

**RECEIVED:** Oct. 29, 2013

**TESTED:** Nov. 05 to 15, 2013

**ISSUED:** Nov. 29, 2013

**APPLICANT:** XAC AUTOMATION CORP.

**ADDRESS:** 4F, No. 30, INDUSTRY E. RD. IX, SCIENCE-BASED  
INDUSTRIAL PARK, HSINCHU, TAIWAN

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)  
Ltd., Taoyuan Branch Hsin Chu Laboratory

**LAB ADDRESS:** No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,  
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,  
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## RELEASE CONTROL RECORD

| ISSUE NO.     | REASON FOR CHANGE | DATE ISSUED   |
|---------------|-------------------|---------------|
| RF131029E03-3 | Original release  | Nov. 29, 2013 |



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## 1 CERTIFICATION

**PRODUCT :** Terminal

**BRAND NAME :** XAC

**MODEL NO. :** xAPT-103WiFi.3G

**TEST ITEM:** ENGINEERING SAMPLE

**APPLICANT :** XAC AUTOMATION CORP.

**TESTED DATE :** Nov. 05 to 15, 2013

**STANDARDS :** FCC Part 24, Subpart E

The above equipment (model: xAPT-103WiFi.3G) 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 :** Phoenix Huang , **DATE:** Nov. 29, 2013  
( Phoenix Huang, Specialist )

**APPROVED BY :** May Chen , **DATE:** Nov. 29, 2013  
( May Chen, Manager )

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 24 & Part 2 |                                         |        |                                                                                   |
|----------------------------------------|-----------------------------------------|--------|-----------------------------------------------------------------------------------|
| STANDARD SECTION                       | TEST TYPE                               | RESULT | REMARK                                                                            |
| 2.1046<br>24.232                       | Equivalent isotropically radiated power | PASS   | Meet the requirement of limit.                                                    |
| 2.1055<br>24.235                       | Frequency Stability                     | PASS   | Meet the requirement of limit.                                                    |
| 2.1049<br>24.238(b)                    | Occupied Bandwidth                      | PASS   | Meet the requirement of limit.                                                    |
| 24.238(b)                              | Band Edge Measurements                  | PASS   | Meet the requirement of limit.                                                    |
| 2.1051<br>24.238                       | Conducted Spurious Emissions            | PASS   | Meet the requirement of limit.                                                    |
| 2.1053<br>24.238                       | Radiated Spurious Emissions             | PASS   | Meet the requirement of limit.<br>Minimum passing margin is -14.36dB at 18800MHz. |

### 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     | UNCERTAINTY |
|--------------------|---------------|-------------|
| Radiated emissions | 30MHz ~ 1GHz  | 5.46 dB     |
|                    | 1GHz ~6GHz    | 3.54 dB     |
|                    | 6GHz ~ 18GHz  | 4.08 dB     |
|                    | 18GHz ~ 40GHz | 4.11 dB     |

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



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## 2.2 TEST SITE AND INSTRUMENTS

For radiated spurious emissions: (EDGE Mode, below 1GHz)

| DESCRIPTION & MANUFACTURER              | MODEL NO.                | SERIAL NO.                          | CALIBRATED DATE | CALIBRATED UNTIL |
|-----------------------------------------|--------------------------|-------------------------------------|-----------------|------------------|
| MXE EMI Receiver<br>Agilent             | N9038A                   | MY50010156                          | Jan. 16, 2013   | Jan. 15, 2014    |
| Pre-Amplifier<br>Mini-Circuits          | ZFL-1000VH2<br>B         | AMP-ZFL-04                          | Nov. 13, 2013   | Nov. 12, 2014    |
| Trilog Broadband Antenna<br>SCHWARZBECK | VULB 9168                | 9168-361                            | Mar. 25, 2013   | Mar. 24, 2014    |
| RF Cable                                | NA                       | CHHCAB_001                          | Oct. 06, 2013   | Oct. 05, 2014    |
| Horn_Antenna<br>AISI                    | AIH.8018                 | 0000220091110                       | Nov. 27, 2012   | Nov. 26, 2013    |
| Pre-Amplifier<br>Agilent                | 8449B                    | 3008A01923                          | Oct. 29, 2013   | Oct. 28, 2014    |
| RF Cable                                | NA                       | RF104-205<br>RF104-207<br>RF104-202 | Dec. 26, 2012   | Dec. 25, 2013    |
| Spectrum Analyzer<br>Agilent            | E4446A                   | MY48250253                          | Aug. 28, 2013   | Aug. 27, 2014    |
| Pre-Amplifier<br>SPACEK LABS            | SLKKa-48-6               | 9K16                                | Nov. 13, 2013   | Nov. 12, 2014    |
| Horn_Antenna<br>SCHWARZBECK             | BBHA 9170                | 9170-424                            | Oct. 08, 2013   | Oct. 07, 2014    |
| Software                                | ADT_Radiated<br>_V8.7.07 | NA                                  | NA              | NA               |
| Antenna Tower & Turn Table<br>CT        | NA                       | NA                                  | NA              | NA               |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Nov. 15, 2013



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**For other test radiated spurious emissions:**

| DESCRIPTION & MANUFACTURER              | MODEL NO.               | SERIAL NO.                          | CALIBRATED DATE | CALIBRATED UNTIL |
|-----------------------------------------|-------------------------|-------------------------------------|-----------------|------------------|
| MXE EMI Receiver<br>Agilent             | N9038A                  | MY50010156                          | Jan. 16, 2013   | Jan. 15, 2014    |
| Pre-Amplifier<br>Mini-Circuits          | ZFL-1000VH2<br>B        | AMP-ZFL-04                          | Nov. 14, 2012   | Nov. 13, 2013    |
| Trilog Broadband Antenna<br>SCHWARZBECK | VULB 9168               | 9168-361                            | Mar. 25, 2013   | Mar. 24, 2014    |
| RF Cable                                | NA                      | CHHCAB_001                          | Oct. 06, 2013   | Oct. 05, 2014    |
| Horn_Antenna<br>AISI                    | AIH.8018                | 0000220091110                       | Nov. 27, 2012   | Nov. 26, 2013    |
| Pre-Amplifier<br>Agilent                | 8449B                   | 3008A01923                          | Oct. 29, 2013   | Oct. 28, 2014    |
| RF Cable                                | NA                      | RF104-205<br>RF104-207<br>RF104-202 | Dec. 26, 2012   | Dec. 25, 2013    |
| Spectrum Analyzer<br>Agilent            | E4446A                  | MY48250253                          | Aug. 28, 2013   | Aug. 27, 2014    |
| Pre-Amplifier<br>SPACEK LABS            | SLKKa-48-6              | 9K16                                | Nov. 14, 2012   | Nov. 13, 2013    |
| Horn_Antenna<br>SCHWARZBECK             | BBHA 9170               | 9170-424                            | Oct. 08, 2013   | Oct. 07, 2014    |
| Software                                | ADT_Radiated<br>V8.7.07 | NA                                  | NA              | NA               |
| Antenna Tower & Turn Table<br>CT        | NA                      | NA                                  | NA              | NA               |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Nov. 08 to 12, 2013



**A D T****For other test items:**

| DESCRIPTION &<br>MANUFACTURER                   | MODEL NO.            | SERIAL NO.                            | CALIBRATED<br>DATE | CALIBRATED<br>UNTIL |
|-------------------------------------------------|----------------------|---------------------------------------|--------------------|---------------------|
| Spectrum Analyzer<br>R&S                        | FSP 40               | 100036                                | Jan. 21, 2013      | Jan. 20, 2014       |
| Spectrum Analyzer<br>Agilent                    | E4446A               | MY48250253                            | Aug. 28, 2013      | Aug. 27, 2014       |
| Power meter<br>Anritsu                          | ML2495A              | 0824006                               | May 20, 2013       | May 19, 2014        |
| Power sensor<br>Anritsu                         | MA2411B              | 0738172                               | May 20, 2013       | May 19, 2014        |
| AC Power Source<br>EXTECH Electronics           | 6205                 | 1440452                               | NA                 | NA                  |
| Temperature & Humidity<br>Chamber<br>GIANTFORCE | GTH-150-40-SP<br>-AR | MAA0812-008                           | Jan. 17, 2013      | Jan. 16, 2014       |
| DC Power Supply<br>Topward                      | 6603D                | 795558                                | NA                 | NA                  |
| ESG Vector signal<br>generator<br>Agilent       | E4438C               | MY47271330<br>506 602 UNJ             | Apr. 30, 2013      | Apr. 29, 2014       |
| ESG Vector signal<br>generator<br>Agilent       | E4438C               | MY45094468/0<br>05 506 602<br>UK6 UNJ | Dec. 14, 2012      | Dec. 13, 2013       |

- NOTE:**
1. The test was performed in Oven room B.
  2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  3. Tested Date: Nov. 05, 2013

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                              |                            |                       |
|------------------------------|----------------------------|-----------------------|
| <b>EUT</b>                   | Terminal                   |                       |
| <b>MODEL NO.</b>             | xAPT-103WiFi.3G            |                       |
| <b>POWER SUPPLY</b>          | DC 12V from power adapter  |                       |
| <b>IMEI CODE</b>             | 35999804                   |                       |
| <b>HW VERSION</b>            | A07                        |                       |
| <b>SW VERSION</b>            | 02131413                   |                       |
| <b>MODULATION TYPE</b>       | <b>GPRS</b>                | GMSK                  |
|                              | <b>EDGE</b>                | 8PSK                  |
|                              | <b>WCDMA, HSDPA, HSUPA</b> | BPSK                  |
| <b>FREQUENCY RANGE</b>       | <b>GPRS, EDGE</b>          | 1850.2MHz ~ 1909.8MHz |
|                              | <b>WCDMA, HSDPA, HSUPA</b> | 1852.4MHz ~ 1907.6MHz |
| <b>MAX. EIRP POWER</b>       | <b>GPRS</b>                | 1548.8mW              |
|                              | <b>EDGE</b>                | 707.9mW               |
|                              | <b>WCDMA</b>               | 354.8mW               |
| <b>EMISSION DESIGNATOR</b>   | <b>GPRS</b>                | 248KG7W               |
|                              | <b>EDGE</b>                | 246KG7W               |
|                              | <b>WCDMA</b>               | 4M16F9W               |
|                              | <b>HSDPA</b>               | 4M18F9W               |
|                              | <b>HSUPA</b>               | 4M16F9W               |
| <b>MULTI-SLOTS CLASS</b>     | 12                         |                       |
| <b>WCDMA RELEASE VERSION</b> | 6                          |                       |
| <b>ANTENNA TYPE</b>          | Refer to NOTE              |                       |
| <b>I/O PORTS</b>             | Refer to users' manual     |                       |
| <b>DATA CABLE</b>            | NA                         |                       |
| <b>ACCESSORY DEVICES</b>     | Adapter × 1                |                       |

#### NOTE:

1. The EUT is a WLAN, RFID, GSM and WCDMA device.
2. WLAN, RFID, GSM and WCDMA technology cannot transmit at same time.
3. The EUT could be supplied with a power adapter as the following table:

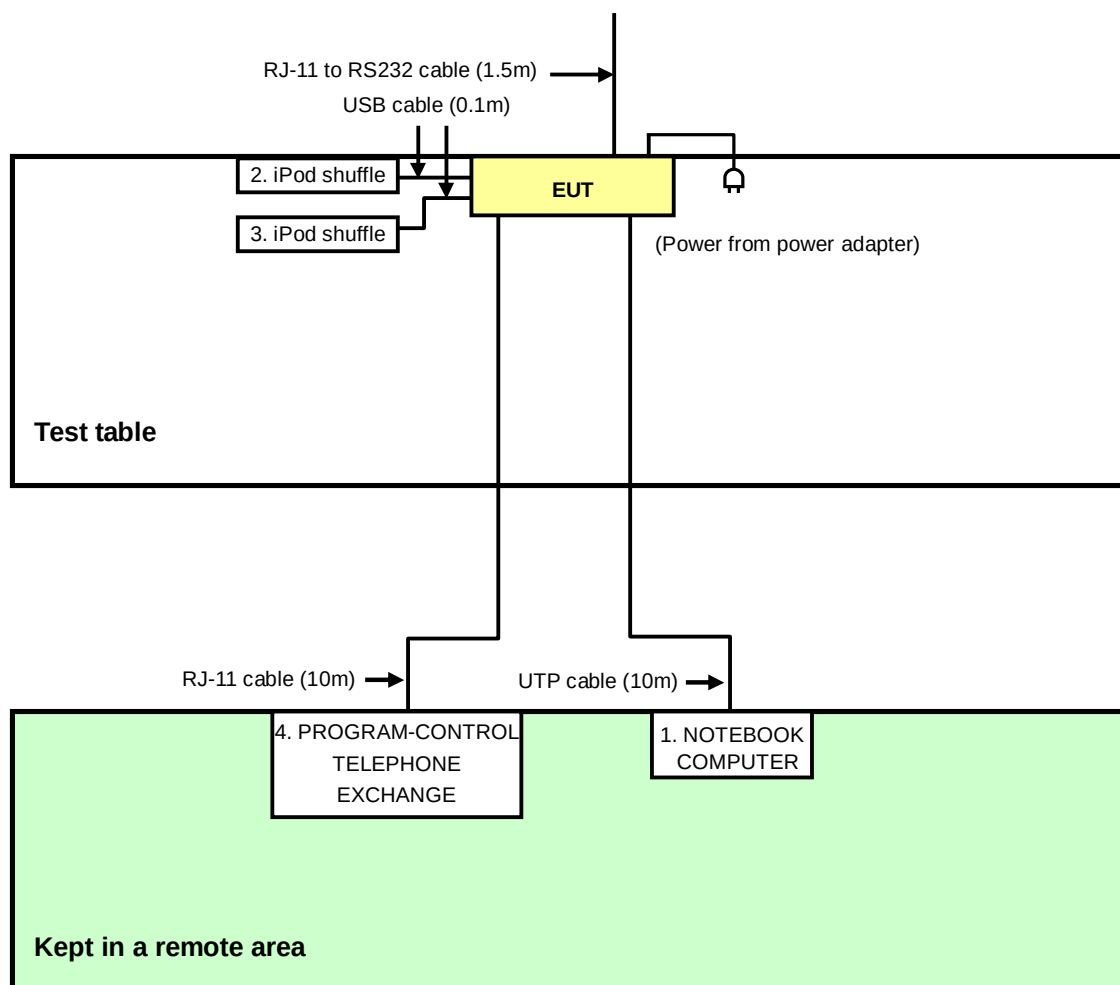
| Brand     | Model No.        | Spec.                                                                                   |
|-----------|------------------|-----------------------------------------------------------------------------------------|
| HON-KWANG | HK-AX-120A200-US | AC I/P: 100-240V, 50/60Hz, 0.8A<br>DC O/P: 12V, 2A<br>DC output cable(Unshielded, 1.5m) |

4. The antennas provided to the EUT, please refer to the following table:

| RFID Antenna Spec.                              |                                       |               |                   |                   |                 |                 |
|-------------------------------------------------|---------------------------------------|---------------|-------------------|-------------------|-----------------|-----------------|
| Brand                                           | Model No.                             | Antenna Type  | Antenna Connector | Gain(dBi)         | Frequency (MHz) |                 |
| XAC                                             | PCB ENIG ANT BOARD (W/KEY) 8006(ROHS) | PCB (2 Layer) | NA                | 13                | 13.56           |                 |
| GPRS / WCDMA(UMTS) / HSDPA / EDGE Antenna Spec. |                                       |               |                   |                   |                 |                 |
| Brand                                           | Model No.                             | Antenna Type  | Antenna Connector | Gain(dBi)         | Frequency (MHz) |                 |
| Ethertronics Inc.                               | T-000084-01                           | FPCB          | NA                | 0.14              | 850             |                 |
|                                                 |                                       |               |                   | 2.57              | 1900            |                 |
| WLAN Antenna Spec.                              |                                       |               |                   |                   |                 |                 |
| Transmitter Circuit                             | Brand                                 | Model No.     | Antenna Type      | Antenna Connector | Gain(dBi)       | Frequency (MHz) |
| Chain (0)                                       | HUN-PAI                               | M30-005++-000 | PIFA              | NA                | 1.5             | 2400-2500       |
| Chain (1)                                       |                                       |               |                   |                   | 2.9             |                 |
| NOTE: 1. Chain (0) -- Tx & RX / Chain (1) -- TX |                                       |               |                   |                   |                 |                 |

5. The above EUT information was 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



### 3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| NO. | PRODUCT                              | BRAND   | MODEL NO. | SERIAL NO.   | FCC ID  |
|-----|--------------------------------------|---------|-----------|--------------|---------|
| 1   | NOTEBOOK COMPUTER                    | DELL    | PP32LA    | FSLB32S      | FCC DoC |
| 2   | iPod shuffle                         | Apple   | MC749TA/A | CC4DN25WDFDM | NA      |
| 3   | iPod shuffle                         | Apple   | MC749TA/A | CC4DMFJUDFDM | NA      |
| 4   | PROGRAM-CONTROL TELEPHONE EXCHANGE   | TELTONE | TC-104H   | TC001        | NA      |
| 5   | Universal Radio Communication Tester | R&S     | CMU200    | 121040       | NA      |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|-----------------------------------------------------|
| 1   | UTP cable, 10m                                      |
| 2   | USB cable, 0.1m                                     |
| 3   | USB cable, 0.1m                                     |
| 4   | RJ-11 cable, 10m                                    |
| 5   | NA                                                  |

**NOTE:**

1. All power cords of the above support units are non-shielded (1.8m).
2. Items 1-5 act as communication partners to transfer data.

### 3.4 TEST ITEM AND TEST CONFIGURATION

Following channel(s) was (were) selected for the final test as listed below:

#### GPRS MODE

| TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL | MODE       |
|-----------------------|-------------------|----------------|------------|
| EIRP                  | 512 to 810        | 512, 661, 810  | GPRS, EDGE |
| FREQUENCY STABILITY   | 512 to 810        | 661            | GPRS, EDGE |
| OCCUPIED BANDWIDTH    | 512 to 810        | 512, 661, 810  | GPRS, EDGE |
| PEAK TO AVERAGE RATIO | 512 to 810        | 512, 661, 810  | GPRS, EDGE |
| BAND EDGE             | 512 to 810        | 512, 810       | GPRS, EDGE |
| CONDCUDED EMISSION    | 512 to 810        | 661            | GPRS, EDGE |
| RADIATED EMISSION     | 512 to 810        | 661            | GPRS, EDGE |

#### WCDMA MODE

| TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL   | MODE                |
|-----------------------|-------------------|------------------|---------------------|
| EIRP                  | 9262 to 9538      | 9262, 9400, 9538 | WCDMA               |
| FREQUENCY STABILITY   | 9262 to 9538      | 9400             | WCDMA               |
| OCCUPIED BANDWIDTH    | 9262 to 9538      | 9262, 9400, 9538 | WCDMA, HSDPA, HSUPA |
| PEAK TO AVERAGE RATIO | 9262 to 9538      | 9262, 9400, 9538 | WCDMA, HSDPA, HSUPA |
| BAND EDGE             | 9262 to 9538      | 9262, 9538       | WCDMA, HSDPA, HSUPA |
| CONDCUDED EMISSION    | 9262 to 9538      | 9400             | WCDMA               |
| RADIATED EMISSION     | 9262 to 9538      | 9400             | WCDMA               |

#### TEST CONDITION:

| TEST ITEM             | ENVIRONMENTAL CONDITIONS | INPUT POWER  | TESTED BY    |
|-----------------------|--------------------------|--------------|--------------|
| EIRP                  | 25deg. C, 63%RH          | 120Vac, 60Hz | Robert Cheng |
| FREQUENCY STABILITY   | 25deg. C, 63%RH          | 120Vac, 60Hz | Robert Cheng |
| OCCUPIED BANDWIDTH    | 25deg. C, 63%RH          | 120Vac, 60Hz | Robert Cheng |
| PEAK TO AVERAGE RATIO | 25deg. C, 63%RH          | 120Vac, 60Hz | Robert Cheng |
| BAND EDGE             | 25deg. C, 63%RH          | 120Vac, 60Hz | Robert Cheng |
| CONDCUDED EMISSION    | 25deg. C, 63%RH          | 120Vac, 60Hz | Robert Cheng |
| RADIATED EMISSION     | 25deg. C, 63%RH          | 120Vac, 60Hz | Nelson Teng  |

### **3.5 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

### **3.6 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 24**

**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 and portable stations are limited to 2 watts EIRP

#### 4.1.2 TEST PROCEDURES

##### CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with GPRS & 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.

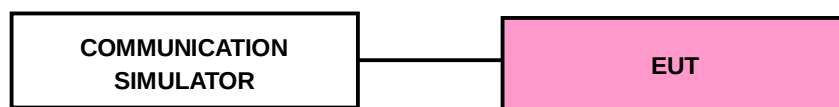
##### EIRP MEASUREMENT:

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GPRS & EDGE, 5MHz for WCDMA.
- b. Substitution method is used for EIRP 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.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$



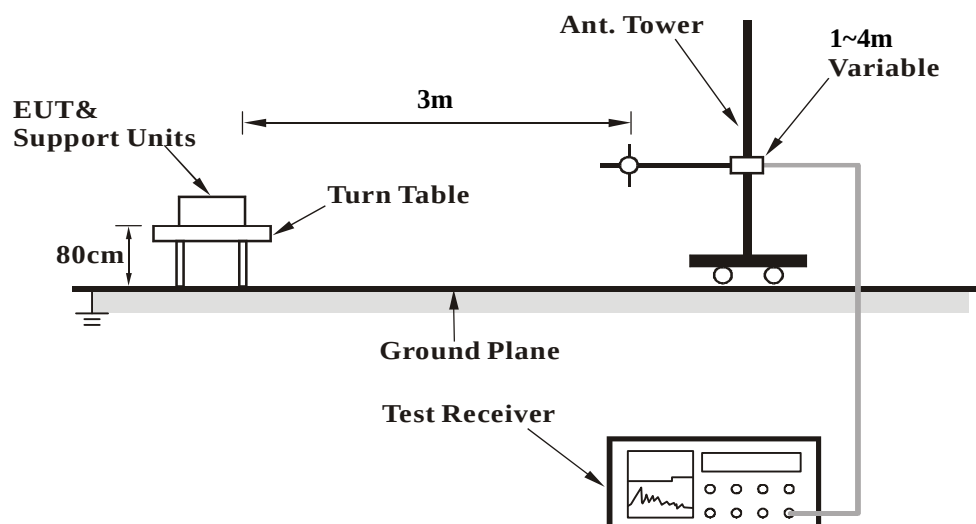
### 4.1.3 TEST SETUP

#### CONDUCTED POWER MEASUREMENT:



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

#### EIRP MEASUREMENT:



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

#### 4.1.4 TEST RESULTS

##### CONDUCTED OUTPUT POWER (dBm)

| Band               | GPRS1900 |        |             |
|--------------------|----------|--------|-------------|
| Channel            | 512      | 661    | 810         |
| Frequency (MHz)    | 1850.2   | 1880.0 | 1909.8      |
| GPRS 8 (1 Uplink)  | 28.9     | 28.8   | <b>29.4</b> |
| GPRS 10 (2 Uplink) | 26.0     | 25.9   | 26.3        |
| GPRS 11 (3 Uplink) | 24.2     | 24.0   | 24.4        |
| GPRS 12 (4 Uplink) | 22.9     | 22.8   | 23.1        |
| EDGE 8 (1 Uplink)  | 24.9     | 24.7   | <b>25.0</b> |
| EDGE 10 (2 Uplink) | 22.6     | 22.4   | 22.5        |
| EDGE 11 (3 Uplink) | 20.3     | 20.1   | 20.3        |
| EDGE 12 (4 Uplink) | 18.9     | 19.0   | 19.3        |

| Band            | WCDMA II    |        |        |
|-----------------|-------------|--------|--------|
| Channel         | 9262        | 9400   | 9538   |
| Frequency (MHz) | 1852.4      | 1880.0 | 1907.6 |
| RMC 12.2K       | <b>23.8</b> | 23.6   | 23.5   |
| HSDPA Subtest-1 | 23.6        | 23.1   | 22.9   |
| HSDPA Subtest-2 | 23.3        | 23.1   | 23.0   |
| HSDPA Subtest-3 | 23.4        | 23.2   | 23.1   |
| HSDPA Subtest-4 | 23.5        | 22.7   | 22.8   |
| HSUPA Subtest-1 | 23.6        | 22.3   | 22.7   |
| HSUPA Subtest-2 | 23.5        | 22.2   | 22.6   |
| HSUPA Subtest-3 | 23.7        | 22.3   | 22.7   |
| HSUPA Subtest-4 | 23.5        | 22.4   | 22.5   |
| HSUPA Subtest-5 | 23.3        | 22.4   | 22.3   |

## EIRP POWER (dBm)

### GPRS

| Channel | Frequency (MHz) | LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) |
|---------|-----------------|-----------|-----------------------|-----------|----------|
| 512     | 1850.2          | 25.1      | 6.6                   | 31.7      | 1479.1   |
| 661     | 1880.0          | 25.1      | 6.7                   | 31.8      | 1513.6   |
| 810     | 1909.8          | 25.2      | 6.7                   | 31.9      | 1548.8   |

### EDGE

| Channel | Frequency (MHz) | LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) |
|---------|-----------------|-----------|-----------------------|-----------|----------|
| 512     | 1850.2          | 21.5      | 6.6                   | 28.1      | 645.7    |
| 661     | 1880.0          | 21.5      | 6.7                   | 28.2      | 660.7    |
| 810     | 1909.8          | 21.8      | 6.7                   | 28.5      | 707.9    |

### WCDMA

| Channel | Frequency (MHz) | LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) |
|---------|-----------------|-----------|-----------------------|-----------|----------|
| 9262    | 1852.4          | 17.9      | 6.6                   | 24.5      | 281.8    |
| 9400    | 1880.0          | 18.8      | 6.7                   | 25.5      | 354.8    |
| 9538    | 1907.6          | 18.7      | 6.7                   | 25.4      | 346.7    |

**REMARKS:** 1. Output Power (dBm) = SPA Reading (dBm) + Correction Factor (dB).  
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss.

## 4.2 FREQUENCY STABILITY MEASUREMENT

### 4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

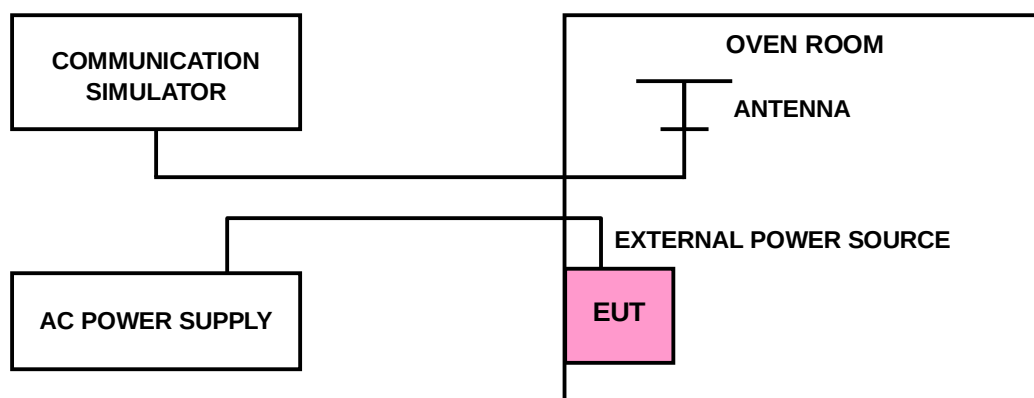
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### 4.2.2 TEST PROCEDURE

- 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.
- EUT is connected the external power supply to control the AC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  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<br>(Volts) | FREQUENCY ERROR (ppm) |       |       | LIMIT<br>(ppm) |
|--------------------|-----------------------|-------|-------|----------------|
|                    | GPRS                  | EDGE  | WCDMA |                |
| 102                | 0.006                 | 0.007 | 0.008 | 2.5            |
| 138                | 0.006                 | 0.006 | 0.007 | 2.5            |

**NOTE:** The applicant defined the normal working voltage of the battery is from 102Vac to 138Vac.

##### FREQUENCY ERROR vs. TEMPERATURE

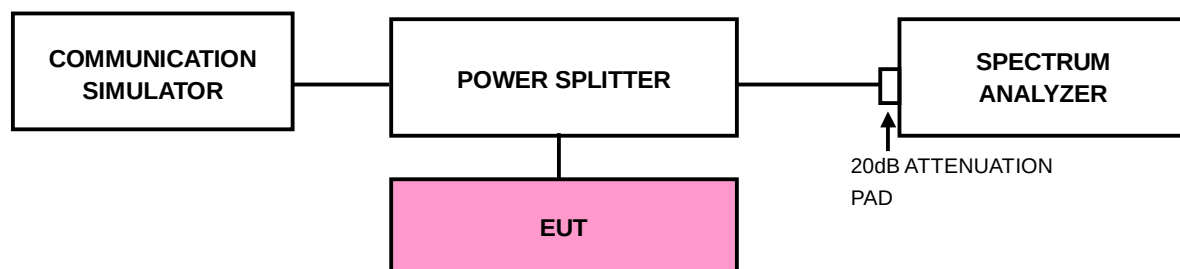
| TEMP. (°C) | FREQUENCY ERROR (ppm) |       |       | LIMIT<br>(ppm) |
|------------|-----------------------|-------|-------|----------------|
|            | GPRS                  | EDGE  | WCDMA |                |
| 50         | 0.011                 | 0.013 | 0.011 | 2.5            |
| 40         | 0.011                 | 0.013 | 0.010 | 2.5            |
| 30         | 0.008                 | 0.011 | 0.010 | 2.5            |
| 20         | 0.007                 | 0.011 | 0.009 | 2.5            |
| 10         | 0.007                 | 0.010 | 0.009 | 2.5            |
| 0          | 0.011                 | 0.010 | 0.010 | 2.5            |
| -10        | 0.012                 | 0.013 | 0.012 | 2.5            |
| -20        | 0.014                 | 0.014 | 0.013 | 2.5            |
| -30        | 0.016                 | 0.016 | 0.014 | 2.5            |

## 4.3 OCCUPIED BANDWIDTH MEASUREMENT

### 4.3.1 TEST PROCEDURES

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.

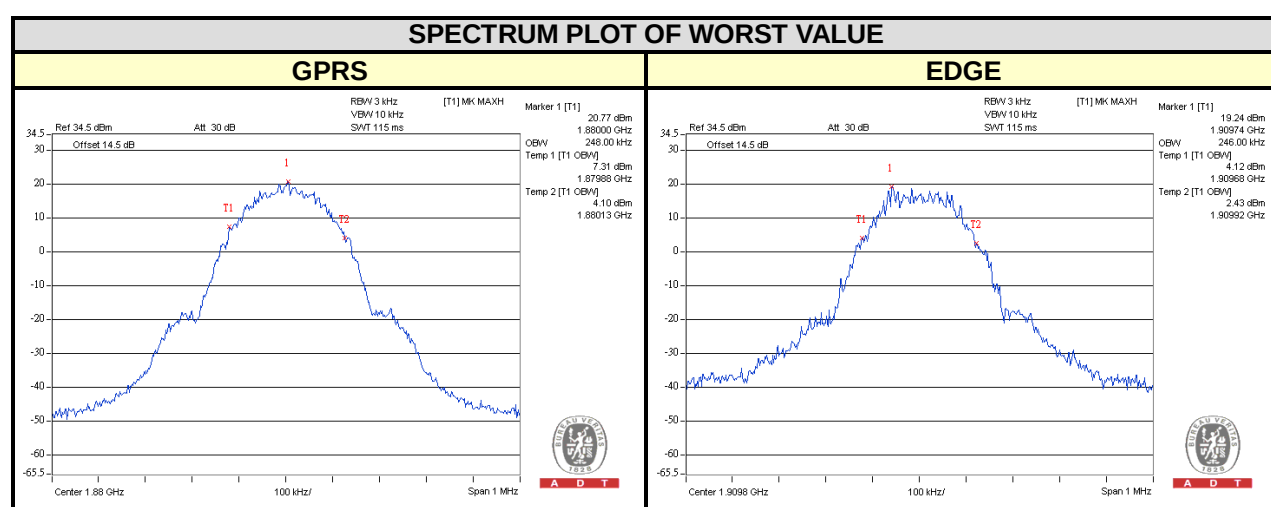
### 4.3.2 TEST SETUP



### 4.3.3 TEST RESULTS

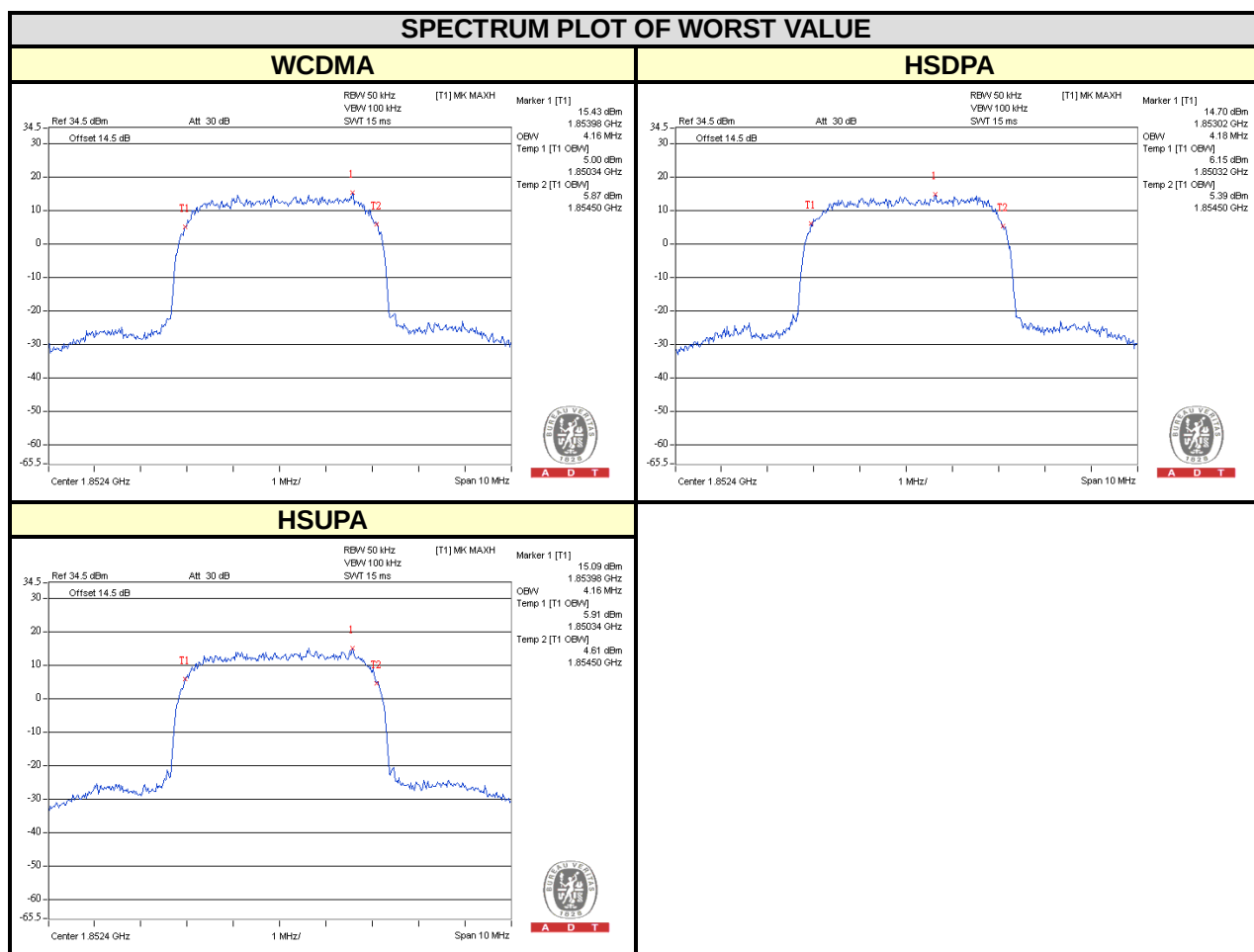
#### GPRS/EDGE

| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (kHz) |       |
|---------|-----------------|------------------------------|-------|
|         |                 | GPRS                         | EDGE  |
| 512     | 1850.2          | 242.0                        | 244.0 |
| 661     | 1880.0          | 248.0                        | 238.0 |
| 810     | 1909.8          | 244.0                        | 246.0 |



# WCDMA/HSDPA/HSUPA

| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) |       |       |
|---------|-----------------|------------------------------|-------|-------|
|         |                 | WCDMA                        | HSDPA | HSUPA |
| 9262    | 1852.4          | 4.16                         | 4.18  | 4.16  |
| 9400    | 1880.0          | 4.16                         | 4.16  | 4.16  |
| 9538    | 1907.6          | 4.16                         | 4.16  | 4.16  |



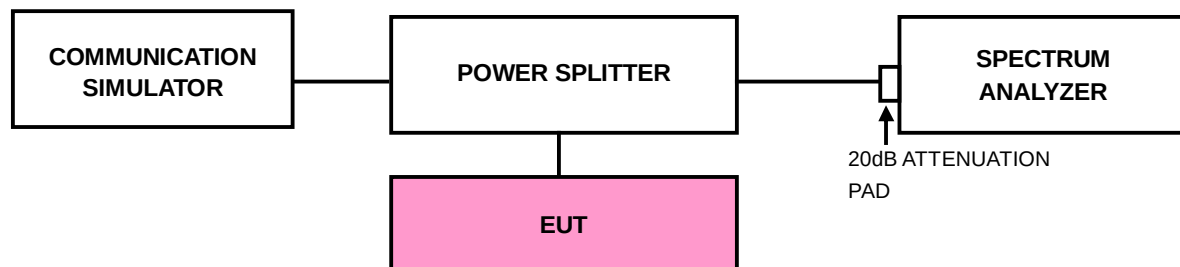


## 4.4 PEAK TO AVERAGE RATIO

### 4.4.1 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

### 4.4.2 TEST SETUP



### 4.4.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth  $\geq$  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%.

#### 4.4.4 TEST RESULTS

| GPRS    |                 |                            | EDGE                       |                 |                            |
|---------|-----------------|----------------------------|----------------------------|-----------------|----------------------------|
| CHANNEL | FREQUENCY (MHz) | PEAK TO AVERAGE RATIO (dB) | CHANNEL                    | FREQUENCY (MHz) | PEAK TO AVERAGE RATIO (dB) |
| 512     | 1850.2          | 0.2                        | 512                        | 1850.2          | 3.2                        |
| 661     | 1880.0          | 0.27                       | 661                        | 1880.0          | 3.27                       |
| 810     | 1909.8          | 0.27                       | 810                        | 1909.8          | 3.29                       |
| WCDMA   |                 |                            |                            |                 |                            |
| CHANNEL |                 | FREQUENCY (MHz)            | PEAK TO AVERAGE RATIO (dB) |                 |                            |
| 9262    |                 | 1852.4                     | 3.13                       |                 |                            |
| 9400    |                 | 1880.0                     | 3.09                       |                 |                            |
| 9538    |                 | 1907.6                     | 3.07                       |                 |                            |

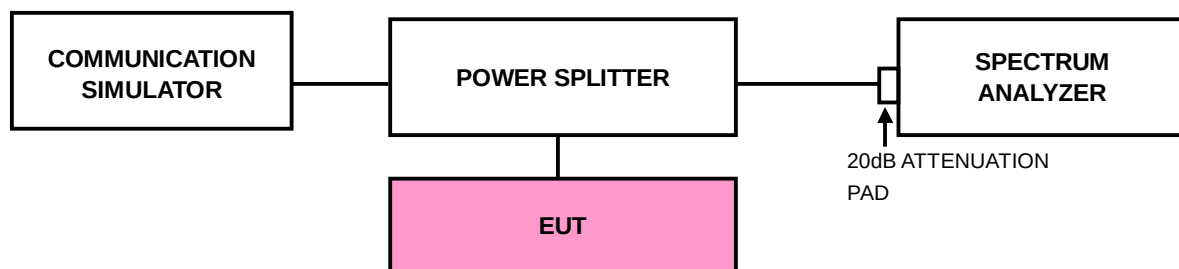


## 4.5 BAND EDGE MEASUREMENT

### 4.5.1 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.

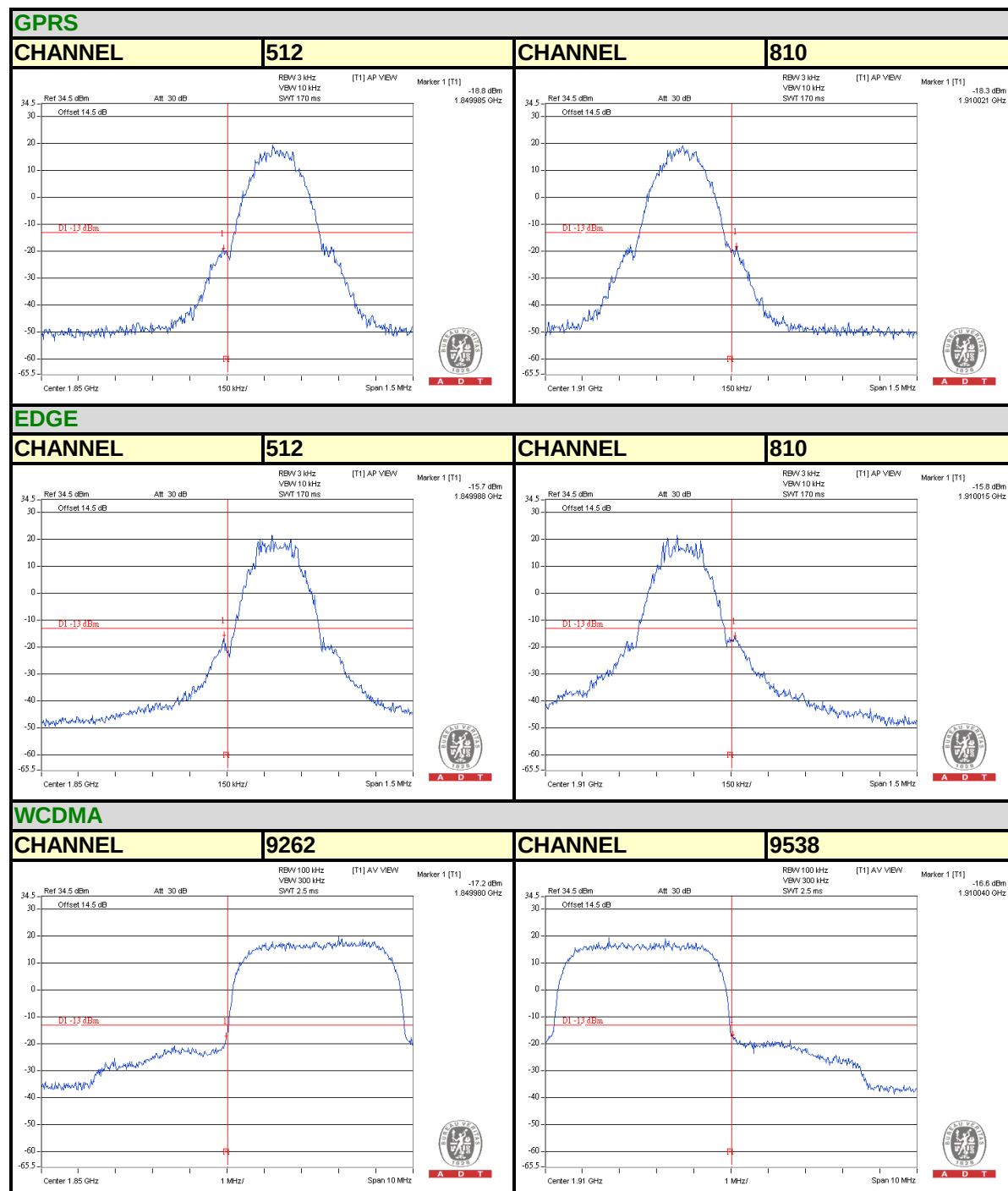
### 4.5.2 TEST SETUP



### 4.5.3 TEST PROCEDURES

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and s RB of the spectrum is  $>1\%$  OCCUPIED BANDWIDTH and VB of the spectrum is  $\geq 3 \cdot RB$ .
- Record the max trace plot into the test report.

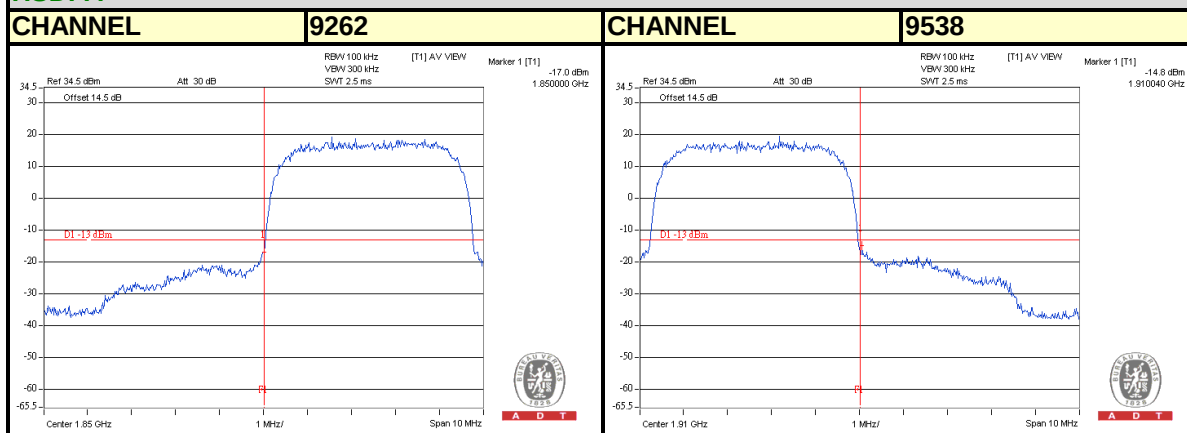
## 4.5.4 TEST RESULTS



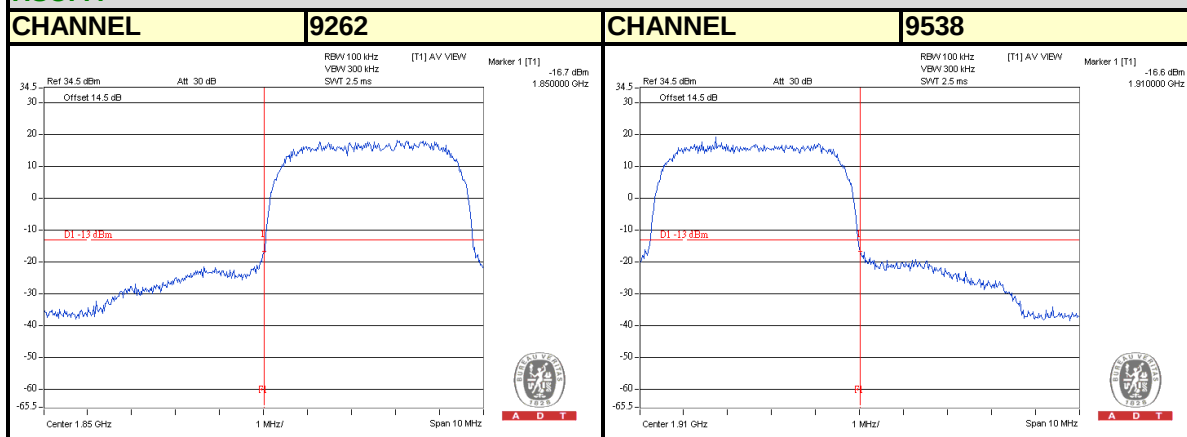


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## HSDPA



## HSUPA



## 4.6 CONDUCTED SPURIOUS EMISSIONS

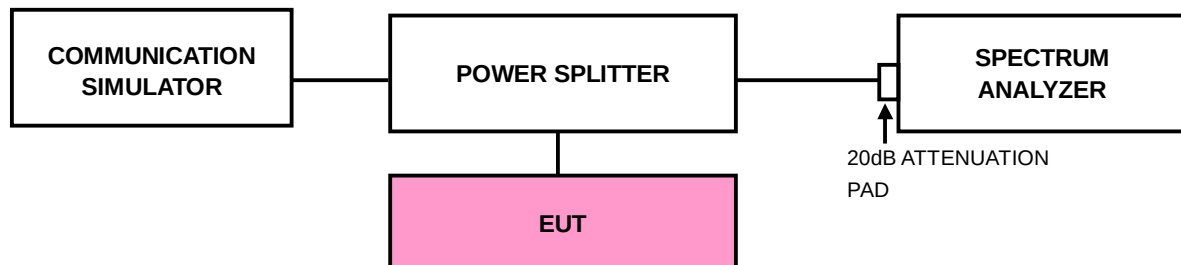
### 4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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  $-13\text{dBm}$ .

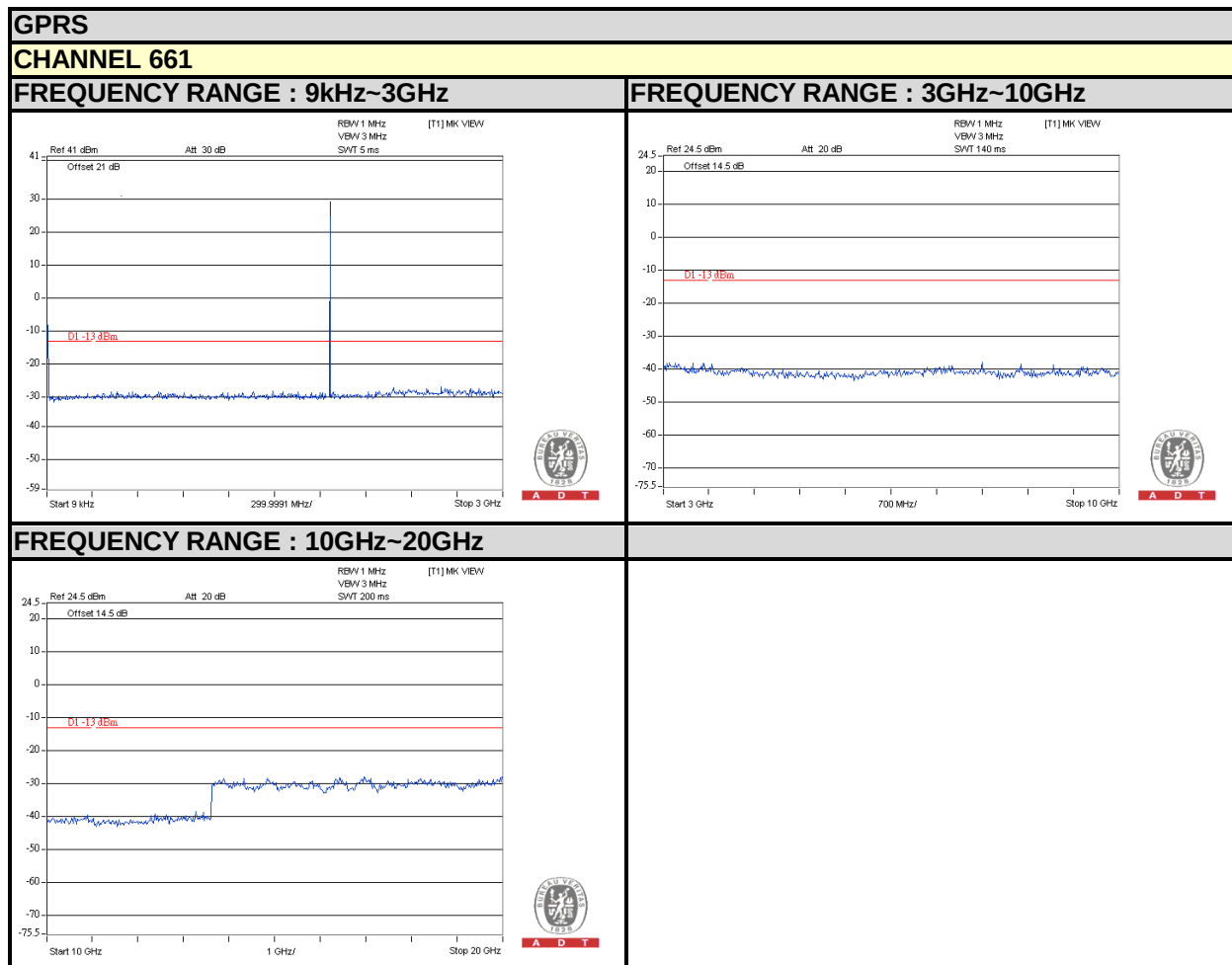
### 4.6.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz to 20GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

### 4.6.3 TEST SETUP



## 4.6.4 TEST RESULTS



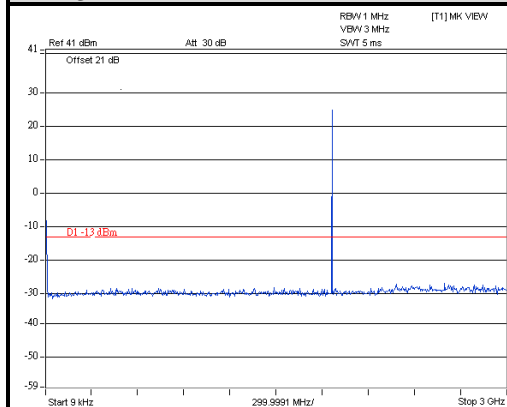


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## EDGE

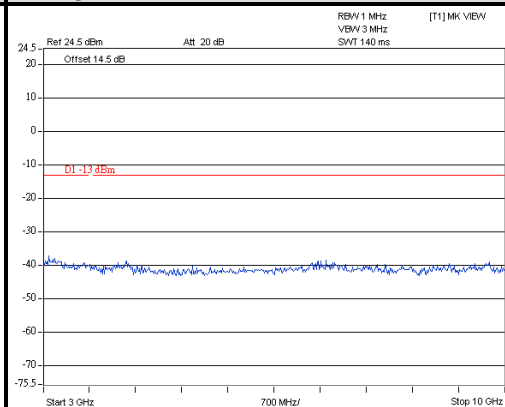
### CHANNEL 661

#### FREQUENCY RANGE : 9kHz~3GHz



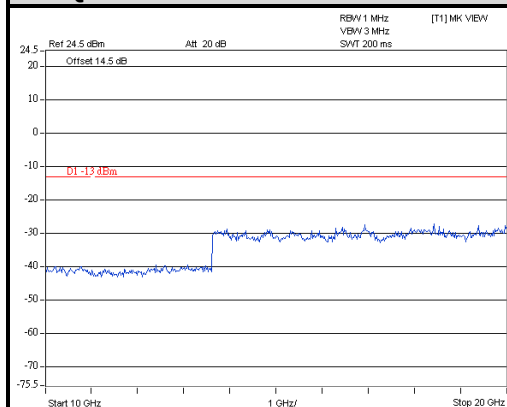
A D T

#### FREQUENCY RANGE : 3GHz~10GHz



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#### FREQUENCY RANGE : 10GHz~20GHz



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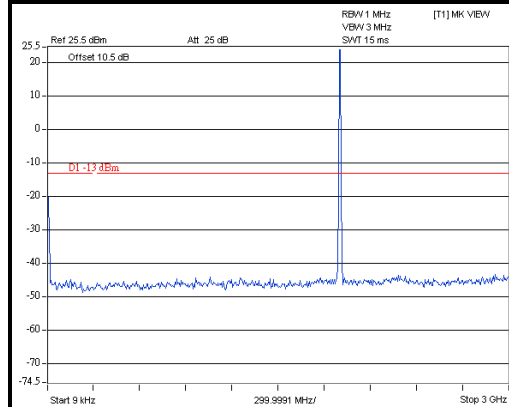


A D T

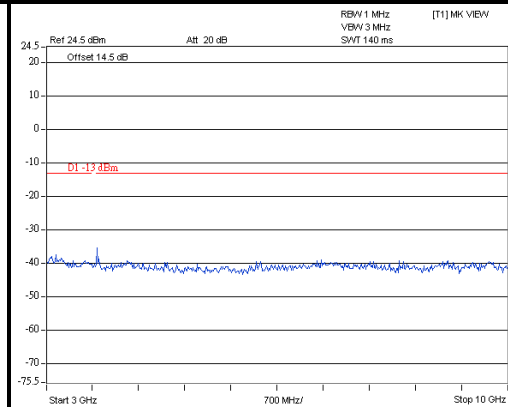
## WCDMA

### CHANNEL 9400

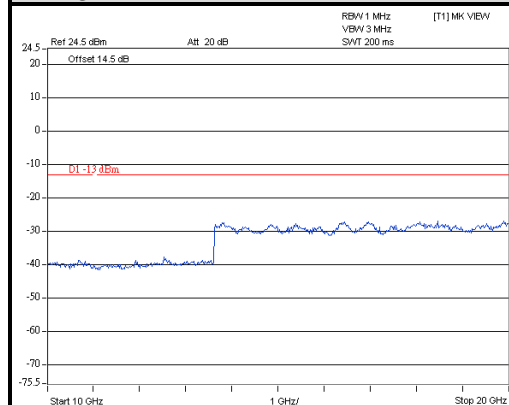
#### FREQUENCY RANGE : 9kHz~3GHz



#### FREQUENCY RANGE : 3GHz~10GHz



#### FREQUENCY RANGE : 10GHz~20GHz



## 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  $-13\text{dBm}$ .

### 4.7.2 TEST PROCEDURES

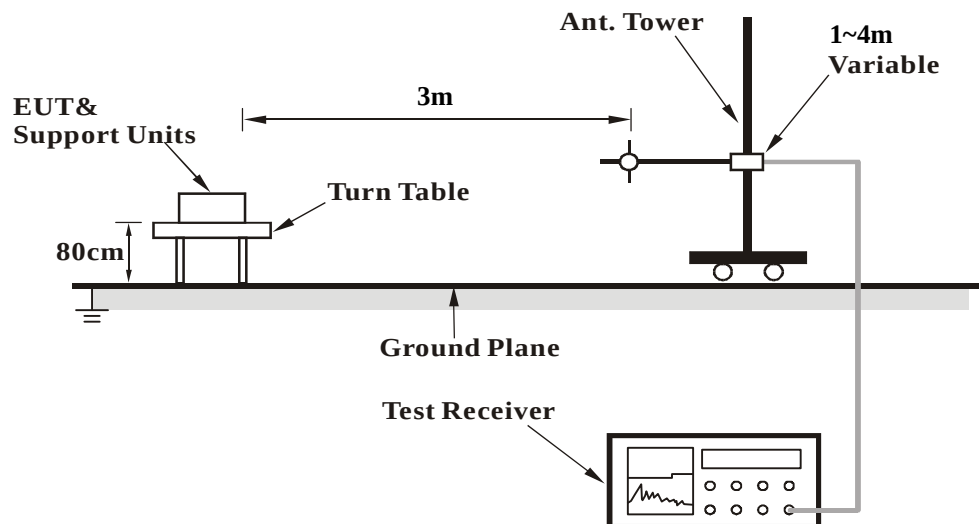
- a. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ .

**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

Below 1GHz

GPRS:

|      |                |                 |               |
|------|----------------|-----------------|---------------|
| MODE | TX channel 661 | FREQUENCY RANGE | Below 1000MHz |
|------|----------------|-----------------|---------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |               |             |                       |                        |            |             |
|-----------------------------------------------------|-------------|---------------|-------------|-----------------------|------------------------|------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 77.32       | 38.11         | -13         | -56.46                | -1.93                  | -58.40     | -45.40      |
| 2                                                   | 115.92      | 38.44         | -13         | -51.38                | -1.07                  | -52.45     | -39.45      |
| 3                                                   | 157.45      | 37.43         | -13         | -50.06                | -1.06                  | -51.12     | -38.12      |
| 4                                                   | 241.08      | 43.17         | -13         | -52.14                | 3.82                   | -48.32     | -35.32      |
| 5                                                   | 323.62      | 41.05         | -13         | -55.72                | 3.66                   | -52.06     | -39.06      |
| 6                                                   | 402.24      | 38.56         | -13         | -59.30                | 3.31                   | -55.99     | -42.99      |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |               |             |                       |                        |            |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 77.64       | 38.57         | -13         | -54.13                | -2.46                  | -56.59     | -43.59      |
| 2                                                   | 117.61      | 38.80         | -13         | -50.28                | -1.17                  | -51.45     | -38.45      |
| 3                                                   | 242.68      | 44.16         | -13         | -51.09                | 3.84                   | -47.25     | -34.25      |
| 4                                                   | 255.55      | 42.51         | -13         | -51.93                | 4.00                   | -47.93     | -34.93      |
| 5                                                   | 266.72      | 42.68         | -13         | -51.72                | 3.79                   | -47.93     | -34.93      |
| 6                                                   | 403.63      | 37.49         | -13         | -60.38                | 3.29                   | -57.09     | -44.09      |

### REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

**A D T****EDGE:**

|             |                |                        |               |
|-------------|----------------|------------------------|---------------|
| <b>MODE</b> | TX channel 661 | <b>FREQUENCY RANGE</b> | Below 1000MHz |
|-------------|----------------|------------------------|---------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |               |             |                       |                        |            |             |
|-----------------------------------------------------|-------------|---------------|-------------|-----------------------|------------------------|------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 77.32       | 38.11         | -13         | -56.46                | -1.93                  | -58.40     | -45.40      |
| 2                                                   | 115.92      | 38.44         | -13         | -51.38                | -1.07                  | -52.45     | -39.45      |
| 3                                                   | 157.45      | 37.43         | -13         | -50.06                | -1.06                  | -51.12     | -38.12      |
| 4                                                   | 241.08      | 43.17         | -13         | -52.14                | 3.82                   | -48.32     | -35.32      |
| 5                                                   | 323.62      | 41.05         | -13         | -55.72                | 3.66                   | -52.06     | -39.06      |
| 6                                                   | 402.24      | 38.56         | -13         | -59.30                | 3.31                   | -55.99     | -42.99      |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |               |             |                       |                        |            |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 79.21       | 26.94         | -13         | -55.18                | -7.58                  | -62.76     | -49.76      |
| 2                                                   | 118.72      | 35.13         | -13         | -55.54                | -0.63                  | -56.17     | -43.17      |
| 3                                                   | 243.01      | 39.20         | -13         | -56.16                | 3.82                   | -52.34     | -39.34      |
| 4                                                   | 268.12      | 40.80         | -13         | -53.77                | 3.97                   | -49.80     | -36.80      |
| 5                                                   | 301.12      | 45.76         | -13         | -50.02                | 3.71                   | -46.31     | -33.31      |
| 6                                                   | 405.21      | 47.00         | -13         | -50.84                | 3.33                   | -47.51     | -34.51      |

**REMARKS:**

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

# WCDMA:

|      |                 |                 |               |
|------|-----------------|-----------------|---------------|
| MODE | TX channel 9400 | FREQUENCY RANGE | Below 1000MHz |
|------|-----------------|-----------------|---------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |               |             |                       |                        |            |             |
|-----------------------------------------------------|-------------|---------------|-------------|-----------------------|------------------------|------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 79.36       | 38.35         | -13         | -55.87                | -1.82                  | -57.69     | -44.69      |
| 2                                                   | 125.95      | 38.16         | -13         | -52.73                | -1.22                  | -53.95     | -40.95      |
| 3                                                   | 166.99      | 37.39         | -13         | -52.77                | 0.31                   | -52.46     | -39.46      |
| 4                                                   | 244.57      | 43.30         | -13         | -51.88                | 3.85                   | -48.03     | -35.03      |
| 5                                                   | 326.97      | 40.96         | -13         | -55.95                | 3.65                   | -52.30     | -39.30      |
| 6                                                   | 403.26      | 38.35         | -13         | -59.52                | 3.30                   | -56.22     | -43.22      |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |               |             |                       |                        |            |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 83.08       | 38.42         | -13         | -55.16                | -1.60                  | -56.76     | -43.76      |
| 2                                                   | 122.45      | 38.50         | -13         | -51.63                | -1.20                  | -52.83     | -39.83      |
| 3                                                   | 243.65      | 43.39         | -13         | -51.82                | 3.84                   | -47.98     | -34.98      |
| 4                                                   | 256.11      | 41.90         | -13         | -52.56                | 4.00                   | -48.56     | -35.56      |
| 5                                                   | 271.91      | 43.22         | -13         | -51.39                | 3.78                   | -47.61     | -34.61      |
| 6                                                   | 407.57      | 38.28         | -13         | -59.63                | 3.25                   | -56.37     | -43.37      |

## REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Above 1GHz

GPRS:

|      |                |                 |               |
|------|----------------|-----------------|---------------|
| MODE | TX channel 661 | FREQUENCY RANGE | Above 1000MHz |
|------|----------------|-----------------|---------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |               |             |                       |                        |            |             |
|-----------------------------------------------------|-------------|---------------|-------------|-----------------------|------------------------|------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 3760        | 40.10         | -13         | -64.05                | 7.68                   | -56.37     | -43.37      |
| 2                                                   | 5640        | 46.50         | -13         | -58.24                | 7.02                   | -51.22     | -38.22      |
| 3                                                   | 7520        | 52.10         | -13         | -50.52                | 4.53                   | -45.99     | -32.99      |
| 4                                                   | 9400        | 51.8          | -13         | -49.83                | 4.22                   | -45.61     | -32.61      |
| 5                                                   | 11280       | 55            | -13         | -46.49                | 3.48                   | -43.01     | -30.01      |
| 6                                                   | 13160       | 58.1          | -13         | -42.51                | 4.06                   | -38.44     | -25.44      |
| 7                                                   | 15040       | 58.3          | -13         | -39.05                | 3.70                   | -35.35     | -22.35      |
| 8                                                   | 16920       | 61.1          | -13         | -36.25                | 3.70                   | -32.55     | -19.55      |
| 9                                                   | 18800       | 64.6          | -13         | -31.73                | 3.66                   | -28.06     | -15.06      |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |               |             |                       |                        |            |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 3760        | 44.1          | -13         | -60.05                | 7.68                   | -52.37     | -39.37      |
| 2                                                   | 5640        | 48.3          | -13         | -56.44                | 7.02                   | -49.42     | -36.42      |
| 3                                                   | 7520        | 53.2          | -13         | -49.42                | 4.53                   | -44.89     | -31.89      |
| 4                                                   | 9400        | 53.1          | -13         | -48.53                | 4.22                   | -44.31     | -31.31      |
| 5                                                   | 11280       | 55.9          | -13         | -45.59                | 3.48                   | -42.11     | -29.11      |
| 6                                                   | 13160       | 58.3          | -13         | -42.31                | 4.06                   | -38.24     | -25.24      |
| 7                                                   | 15040       | 59.1          | -13         | -38.25                | 3.70                   | -34.55     | -21.55      |
| 8                                                   | 16920       | 63.1          | -13         | -34.25                | 3.70                   | -30.55     | -17.55      |
| 9                                                   | 18800       | 65.3          | -13         | -31.03                | 3.66                   | -27.36     | -14.36      |

## REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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## EDGE:

|      |                |                 |               |
|------|----------------|-----------------|---------------|
| MODE | TX channel 661 | FREQUENCY RANGE | Above 1000MHz |
|------|----------------|-----------------|---------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |               |             |                       |                        |            |             |
|-----------------------------------------------------|-------------|---------------|-------------|-----------------------|------------------------|------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 3760        | 40.31         | -13         | -63.84                | 7.68                   | -56.16     | -43.16      |
| 2                                                   | 5640        | 45.96         | -13         | -58.78                | 7.02                   | -51.76     | -38.76      |
| 3                                                   | 7520        | 51.73         | -13         | -50.89                | 4.53                   | -46.36     | -33.36      |
| 4                                                   | 9400        | 51.11         | -13         | -50.52                | 4.22                   | -46.30     | -33.30      |
| 5                                                   | 11280       | 53.53         | -13         | -47.96                | 3.48                   | -44.48     | -31.48      |
| 6                                                   | 13160       | 57.14         | -13         | -43.47                | 4.06                   | -39.40     | -26.40      |
| 7                                                   | 15040       | 57.7          | -13         | -39.65                | 3.70                   | -35.95     | -22.95      |
| 8                                                   | 16920       | 61            | -13         | -36.35                | 3.70                   | -32.65     | -19.65      |
| 9                                                   | 18800       | 64.65         | -13         | -31.68                | 3.66                   | -28.01     | -15.01      |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |               |             |                       |                        |            |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 3760        | 43.59         | -13         | -60.56                | 7.68                   | -52.88     | -39.88      |
| 2                                                   | 5640        | 49.16         | -13         | -55.58                | 7.02                   | -48.56     | -35.56      |
| 3                                                   | 7520        | 52.7          | -13         | -49.92                | 4.53                   | -45.39     | -32.39      |
| 4                                                   | 9400        | 53.09         | -13         | -48.54                | 4.22                   | -44.32     | -31.32      |
| 5                                                   | 11280       | 56.18         | -13         | -45.31                | 3.48                   | -41.83     | -28.83      |
| 6                                                   | 13160       | 59.02         | -13         | -41.59                | 4.06                   | -37.52     | -24.52      |
| 7                                                   | 15040       | 58.52         | -13         | -38.83                | 3.70                   | -35.13     | -22.13      |
| 8                                                   | 16920       | 63.3          | -13         | -34.05                | 3.70                   | -30.35     | -17.35      |
| 9                                                   | 18800       | 64.63         | -13         | -31.70                | 3.66                   | -28.03     | -15.03      |

## REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



# WCDMA:

|      |                 |                 |               |
|------|-----------------|-----------------|---------------|
| MODE | TX channel 9400 | FREQUENCY RANGE | Above 1000MHz |
|------|-----------------|-----------------|---------------|

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |               |             |                       |                        |            |             |
|-----------------------------------------------------|-------------|---------------|-------------|-----------------------|------------------------|------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 3760        | 50.70         | -13         | -53.45                | 7.68                   | -45.77     | -32.77      |
| 2                                                   | 5640        | 46.60         | -13         | -58.14                | 7.02                   | -51.12     | -38.12      |
| 3                                                   | 7520        | 53.30         | -13         | -49.32                | 4.53                   | -44.79     | -31.79      |
| 4                                                   | 9400        | 52.8          | -13         | -48.83                | 4.22                   | -44.61     | -31.61      |
| 5                                                   | 11280       | 53.9          | -13         | -47.59                | 3.48                   | -44.11     | -31.11      |
| 6                                                   | 13160       | 57.4          | -13         | -43.21                | 4.06                   | -39.14     | -26.14      |
| 7                                                   | 15040       | 57.3          | -13         | -40.05                | 3.70                   | -36.35     | -23.35      |
| 8                                                   | 16920       | 63.2          | -13         | -34.15                | 3.70                   | -30.45     | -17.45      |
| 9                                                   | 18800       | 63.6          | -13         | -32.73                | 3.66                   | -29.06     | -16.06      |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |               |             |                       |                        |            |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | Limit (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Margin (dB) |
| 1                                                   | 3760        | 48.6          | -13         | -55.55                | 7.68                   | -47.87     | -34.87      |
| 2                                                   | 5640        | 47.2          | -13         | -57.54                | 7.02                   | -50.52     | -37.52      |
| 3                                                   | 7520        | 51.3          | -13         | -51.32                | 4.53                   | -46.79     | -33.79      |
| 4                                                   | 9400        | 51.8          | -13         | -49.83                | 4.22                   | -45.61     | -32.61      |
| 5                                                   | 11280       | 54.1          | -13         | -47.39                | 3.48                   | -43.91     | -30.91      |
| 6                                                   | 13160       | 58.7          | -13         | -41.91                | 4.06                   | -37.84     | -24.84      |
| 7                                                   | 15040       | 58.9          | -13         | -38.45                | 3.70                   | -34.75     | -21.75      |
| 8                                                   | 16920       | 61.2          | -13         | -36.15                | 3.70                   | -32.45     | -19.45      |
| 9                                                   | 18800       | 64.1          | -13         | -32.23                | 3.66                   | -28.56     | -15.56      |

## REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 6 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.

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



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## **7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications were made to the EUT by the lab during the test.

---END---