

# TEST REPORT

**Reference No.**..... : WTS17S0888240-6E  
**FCC ID** ..... : 2AC88-G1701  
**Applicant**..... : HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED  
**Address**..... : Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, HongKong  
**Manufacturer** ..... : Shenzhen uCloudlink Network Technology, Co., Ltd  
**Address**..... : 3rd Floor, A Part of Building 1, Shenzhen Software Industry Base, nanshan district xuefu Road Post Code 518057, Shenzhen City, Guangdong Province, P.R.China  
**Product**..... : Smart Phone  
**Model(s)** ..... : G1701  
**Brand**..... : GlocalMe  
**Standards**..... : FCC CFR47 Part 22 Subpart H:2016  
FCC CFR47 Part 24 Subpart E:2016  
**Date of Receipt sample** .... : 2017-08-23  
**Date of Test** ..... : 2017-08-24 to 2017-11-30  
**Date of Issue**..... : 2017-12-12  
**Test Result**..... : **Pass**

**Remarks:**

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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## 2 Laboratories Introduction

**Waltek Services Test Group Ltd.** is one of the largest and the most comprehensive third party testing organizations in China, our headquarter located in Shenzhen (CNAS Registration No. L3110, A2LA Certificate Number: 4243.01) and have branches in Foshan (CNAS Registration No. L6478), Dongguan (CNAS Registration No. L9950), Zhongshan, Suzhou (CNAS Registration No. L7754), Ningbo and Hong Kong, Our test capability covered four large fields: safety test. Electronic Magnetic Compatibility(EMC), reliability and energy performance, Chemical test. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC(The Federal Communications Commission), CPSC(Consumer Product Safety Commission), CEC(California energy efficiency), IC(Industry Canada) and ELI(Efficient Lighting Initiative). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as UL, Intertek(ETL-SEMKO), CSA, TÜV Rheinland, TÜV SÜD, etc. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

### Waltek Services (Shenzhen) Co., Ltd.

#### A. Accreditations for Conformity Assessment (International)

| Country/Region                                                      | Accreditation Body                                                                                  | Scope                         | Note |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------|------|
| USA                                                                 | <b>CNAS</b><br><b>(Registration No.: L3110)</b><br><b>A2LA</b><br><b>(Certificate No.: 4243.01)</b> | FCC ID \ DOC \ VOC            | 1    |
| Canada                                                              |                                                                                                     | IC ID \ VOC                   | 2    |
| Japan                                                               |                                                                                                     | MIC-T \ MIC-R                 | -    |
| Europe                                                              |                                                                                                     | EMCD \ RED                    | -    |
| Taiwan                                                              |                                                                                                     | NCC                           | -    |
| Hong Kong                                                           |                                                                                                     | OFCA                          | -    |
| Australia                                                           |                                                                                                     | RCM                           | -    |
| India                                                               |                                                                                                     | <b>International Services</b> | WPC  |
| Thailand                                                            | NTC                                                                                                 |                               | -    |
| Singapore                                                           | IDA                                                                                                 |                               | -    |
| Note:                                                               |                                                                                                     |                               |      |
| 1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476. |                                                                                                     |                               |      |
| 2. IC Canada Registration No.: 7760A                                |                                                                                                     |                               |      |

#### B. TCBs and Notify Bodies Recognized Testing Laboratory.

| Recognized Testing Laboratory of ... | Notify body number |
|--------------------------------------|--------------------|
|--------------------------------------|--------------------|

|                                          |           |
|------------------------------------------|-----------|
| TUV Rheinland                            | Optional. |
| Intertek                                 |           |
| TUV SUD                                  |           |
| SGS                                      |           |
| Phoenix Testlab GmbH                     | 0700      |
| Element Materials Technology Warwick Ltd | 0891      |
| Timco Engineering, Inc.                  | 1177      |
| Eurofins Product Service GmbH            | 0681      |

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#### 4 Revision History

| Test report No.      | Date of Receipt sample | Date of Test                    | Date of Issue | Purpose  | Comment | Approved |
|----------------------|------------------------|---------------------------------|---------------|----------|---------|----------|
| WTS17S08882<br>40-6E | 2017-08-23             | 2017-08-24<br>to 2017-11-<br>30 | 2017-12-12    | original | -       | Valid    |
|                      |                        |                                 |               |          |         |          |

## 5 General Information

### 5.1 General Description of E.U.T.

|                                       |                                                                                                                                                                                                       |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product:                              | Smart Phone                                                                                                                                                                                           |
| Model(s):                             | G1701                                                                                                                                                                                                 |
| Model Description:                    | N/A                                                                                                                                                                                                   |
| GSM Band(s):                          | GSM 850/900/1800/1900MHz                                                                                                                                                                              |
| GPRS/EGPRS Class:                     | 12                                                                                                                                                                                                    |
| WCDMA Band(s):                        | FDD Band I/II/IV/V                                                                                                                                                                                    |
| CDMA Band(s):                         | BC0/ BC1                                                                                                                                                                                              |
| LTE Band(s):                          | FDD Band 2/4/5/7/12/13/25/26<br>TDD Band 41                                                                                                                                                           |
| Wi-Fi Specification:                  | 2.4G-802.11b/g/n HT20<br>5G-802.11a/n HT20                                                                                                                                                            |
| Bluetooth Version:                    | Bluetooth v4.0 with BLE                                                                                                                                                                               |
| GPS:                                  | Support                                                                                                                                                                                               |
| NFC:                                  | N/A                                                                                                                                                                                                   |
| Hardware Version:                     | G1701_VER_B                                                                                                                                                                                           |
| Software Version:                     | S1_C00_TSV1.0.001.008.171030 user dev-keys                                                                                                                                                            |
| Highest frequency<br>(Exclude Radio): | 1.25GHz                                                                                                                                                                                               |
| Storage Location:                     | Internal Storage                                                                                                                                                                                      |
| Note:                                 | This EUT has two SIM card slots, and use same one RF module. We found that RF parameters are the same, when we insert the card 1 and card 2. So we usually performed the test under main card slot 1. |

### 5.2 Details of E.U.T.

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation Frequency: | GSM/GPRS/EDGE 850: 824~849MHz<br>PCS/GPRS/EDGE 1900: 1850~1910MHz<br>WCDMA Band II: 1850~1910MHz<br>WCDMA Band V: 824~849MHz<br>WCDMA Band IV: 1710~1755MHz<br>CDMA2000 BC0: 824.70~848.31MHz<br>CDMA2000 BC1: 1851.25~1908.75MHz<br>LTE Band 2: 1850~1910MHz<br>LTE Band 4: 1710~1755MHz<br>LTE Band 5: 824~849MHz<br>LTE Band 7: 2500~2570MHz<br>LTE Band 12: 699~716MHz<br>LTE Band 13: 777~787MHz<br>LTE Band 17: 704~716MHz |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                |
|-----------------------|------------------------------------------------|
|                       | LTE Band 25 1850~1915MHz                       |
|                       | LTE Band 26: 814~849MHz                        |
|                       | LTE Band 41: 2496~2690MHz                      |
|                       | WiFi:                                          |
|                       | 802.11b/g/n HT20: 2412~2462MHz                 |
|                       | 802.11a/ n(HT20): 5150MHz~5250MHz              |
|                       | 5725MHz~5850MHz                                |
|                       | Bluetooth: 2402~2480MHz                        |
|                       | NFC:13.56MHz                                   |
| Max. RF output power: | GSM 850: 32.82dBm                              |
|                       | PCS1900: 29.98dBm                              |
|                       | WCDMA Band II: 22.81dBm                        |
|                       | WCDMA Band V: 22.70dBm                         |
|                       | WCDMA Band IV: 22.81dBm                        |
|                       | CDMA2000 BC 0: 24.64dBm                        |
|                       | CDMA2000 BC 1: 24.47dBm                        |
|                       | LTE Band 2: 23.90dBm                           |
|                       | LTE Band 4: 22.89dBm                           |
|                       | LTE Band 5: 22.95dBm                           |
|                       | LTE Band 7: 21.97dBm                           |
|                       | LTE Band 12: 23.88dBm                          |
|                       | LTE Band 13: 23.73dBm                          |
|                       | LTE Band 17: 22.93dBm                          |
|                       | LTE Band 25: 22.95dBm                          |
|                       | LTE Band 26: 22.98dBm                          |
|                       | LTE Band 41: 22.95dBm                          |
|                       | WiFi(2.4G): 9.49dBm                            |
|                       | WiFi(5G) Band I: 9.52dBm                       |
|                       | WiFi(5G)Band IV: 7.44dBm                       |
|                       | Bluetooth: 2.13dBm                             |
| Type of Modulation:   | GSM,GPRS: GMSK                                 |
|                       | EDGE: GMSK, 8PSK                               |
|                       | WCDMA: BPSK, 16QAM                             |
|                       | CDMA2000:QPSK, 8PSK                            |
|                       | LTE: QPSK, 16QAM                               |
|                       | WiFi: CCK, OFDM                                |
|                       | Bluetooth: GFSK, Pi/4 DQPSK, 8DPSK             |
|                       | NFC: ASK, 2ASK                                 |
| Antenna installation: | GSM/WCDMA/CDMA/LTE: internal permanent antenna |
|                       | WiFi/Bluetooth: internal permanent antenna     |
|                       | NFC: Loop antenna                              |
| Antenna Gain:         | GSM 850: -1.56dBi                              |

|                   |                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------|
|                   | PCS1900: 1.79dBi                                                                                   |
|                   | WCDMA Band II: 1.79dBi                                                                             |
|                   | WCDMA Band V: -1.56dBi                                                                             |
|                   | WCDMA Band IV: -0.12dBi                                                                            |
|                   | CDMA2000 BC0: -0.3dBi                                                                              |
|                   | CDMA2000 BC1: -1.9dBi                                                                              |
|                   | LTE Band 2: 1.79dBi                                                                                |
|                   | LTE Band 4: -0.12dBi                                                                               |
|                   | LTE Band 5: -1.56dBi                                                                               |
|                   | LTE Band 7: 3.01dBi                                                                                |
|                   | LTE Band 12: -2.76dBi                                                                              |
|                   | LTE Band 13: -1.28dBi                                                                              |
|                   | LTE Band 17: -2.76dBi                                                                              |
|                   | LTE Band 25: 1.79dBi                                                                               |
|                   | LTE Band 26 -1.56dBi                                                                               |
|                   | LTE Band 41 3.62dBi                                                                                |
|                   | WiFi(2.4G): 2.47dBi                                                                                |
|                   | WiFi(5G): 2.47dBi                                                                                  |
|                   | Bluetooth: 2.47dBi                                                                                 |
| Ratings:          | Battery DC 3.85V, 2900mAh                                                                          |
|                   | DC 5V, 2.0A; 9V, 2.0A; 12V, 1.5A charging from adapter 1<br>(Adapter Input: 100-240V~50/60Hz 0.6A) |
|                   | DC 5V, 2.0A charging from adapter 2<br>(Adapter Input: 100-240V~50/60Hz MAX 0.3A)                  |
| Adapter1:         | Manufacture: ShenZhen HuaJin Electronics CO.,LTD<br>Model No.: HJ-FC010K7-US                       |
| Adapter2:         | Manufacture: SHENZHEN HONOR ELECTRONIC CO.,LTD<br>Model No.: ADS-12DA-05 05010E                    |
| Type of Emission: | CDMA2000 BC0: 1M20F9W<br>CDMA2000 BC1: 1M30F9W                                                     |

### 5.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

| Support Band                                                        | Test Mode   | Channel Frequency | Channel Number |
|---------------------------------------------------------------------|-------------|-------------------|----------------|
| CDMA2000 BC0                                                        | Ev-Do Rev.A | 824.70 MHz        | 1013           |
|                                                                     |             | 836.52 MHz        | 384            |
|                                                                     |             | 848.31 MHz        | 777            |
| CDMA2000 BC1                                                        | Ev-Do Rev.A | 1851.25 MHz       | 25             |
|                                                                     |             | 1880.00 MHz       | 600            |
|                                                                     |             | 1908.75 MHz       | 1175           |
| Remark: This device only supports data communication without Voice. |             |                   |                |

## 6 Test Summary

| Test Items                             | Test Requirement                     | Result |
|----------------------------------------|--------------------------------------|--------|
| RF Output Power                        | 2.1046<br>22.913 (a)<br>24.232 (c)   | PASS   |
| Peak-to-Average Ratio                  | 24.232 (d)                           | PASS   |
| Bandwidth                              | 2.1049<br>22.905<br>22.917<br>24.238 | PASS   |
| Spurious Emissions at Antenna Terminal | 2.1051<br>22.917 (a)<br>24.238 (a)   | PASS   |
| Field Strength of Spurious Radiation   | 2.1053<br>22.917 (a)<br>24.238 (a)   | PASS   |
| Out of band emission, Band Edge        | 22.917 (a)<br>24.238 (a)             | PASS   |
| Frequency Stability                    | 2.1055<br>22.355<br>24.235           | PASS   |
| Maximum Permissible Exposure<br>(SAR)  | 1.1307<br>2.1093                     | PASS   |

## 7 Equipment Used during Test

### 7.1 Equipments List

| RF Conducted Test                               |                                            |                         |                   |            |                       |                      |
|-------------------------------------------------|--------------------------------------------|-------------------------|-------------------|------------|-----------------------|----------------------|
| Item                                            | Equipment                                  | Manufacturer            | Model No.         | Serial No. | Last Calibration Date | Calibration Due Date |
| 1.                                              | EMC Analyzer<br>(9k~26.5GHz)               | Agilent                 | E7405A            | MY45114943 | 2017-08-15            | 2018-08-14           |
| 2.                                              | Spectrum Analyzer<br>(9k-6GHz)             | R&S                     | FSL6              | 100959     | 2017-08-15            | 2018-08-14           |
| 3.                                              | Humidity Chamber                           | GF                      | GTH-225-40-1P     | IAA061213  | 2017-08-15            | 2018-08-14           |
| 4.                                              | Universal Radio<br>Communication<br>Tester | R&S                     | CMU 200           | 112461     | 2017-08-15            | 2018-08-14           |
| 3m Semi-anechoic Chamber for Radiated Emissions |                                            |                         |                   |            |                       |                      |
| Item                                            | Equipment                                  | Manufacturer            | Model No.         | Serial No. | Last Calibration Date | Calibration Due Date |
| 1                                               | EMC Analyzer                               | Agilent                 | E7405A            | MY45114943 | 2017-09-15            | 2018-09-14           |
| 2                                               | Active Loop Antenna                        | Beijing Dazhi           | ZN30900A          | -          | 2017-09-15            | 2018-09-14           |
| 3                                               | Trilog Broadband<br>Antenna                | SCHWARZBECK             | VULB9163          | 336        | 2017-08-15            | 2018-08-14           |
| 4                                               | Coaxial Cable<br>(below 1GHz)              | Top                     | TYPE16(13M)       | -          | 2017-09-15            | 2018-09-14           |
| 5                                               | Broad-band Horn<br>Antenna                 | SCHWARZBECK             | BBHA 9120 D       | 667        | 2017-04-18            | 2018-04-17           |
| 6                                               | Broad-band Horn<br>Antenna                 | SCHWARZBECK             | BBHA 9120 D       | 669        | 2017-04-18            | 2018-04-17           |
| 7                                               | Broadband<br>Preamplifier                  | COMPLIANCE<br>DIRECTION | PAP-1G18          | 2004       | 2017-09-15            | 2018-09-14           |
| 8                                               | Coaxial Cable<br>(above 1GHz)              | Top                     | 1000MHz-<br>25GHz | EW02014-7  | 2017-08-15            | 2018-08-14           |
| 9                                               | Broad-band Horn<br>Antenna                 | SCHWARZBECK             | BBHA 9170         | 335        | 2017-09-15            | 2018-09-14           |
| 10                                              | Universal Radio<br>Communication<br>Tester | R&S                     | CMU 200           | 112461     | 2017-08-15            | 2018-08-14           |
| 11                                              | Signal Generator                           | R&S                     | SMR20             | 100046     | 2017-09-15            | 2018-09-14           |

## 7.2 Measurement Uncertainty

| Parameter                         | Uncertainty                                 |
|-----------------------------------|---------------------------------------------|
| Radio Frequency                   | $\pm 1 \times 10^{-6}$                      |
| RF Power                          | $\pm 1.0$ dB                                |
| RF Power Density                  | $\pm 2.2$ dB                                |
| Radiated Spurious Emissions test  | $\pm 5.03$ dB (Bilog antenna 30M~1000MHz)   |
|                                   | $\pm 5.47$ dB (Horn antenna 1000M~25000MHz) |
| Conducted Spurious Emissions test | $\pm 3.64$ dB (AC mains 150KHz~30MHz)       |

## 7.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

## 8 RF OUTPUT POWER

|                   |                                            |
|-------------------|--------------------------------------------|
| Test Requirement: | FCC Part 2.1046, 22.913 (a),24.232 (c)     |
| Test Method:      | TIA/EIA-603-D:2010<br>KDB971168 D01 v02r02 |
| Test Mode:        | Transmitting                               |

### 8.1 EUT Operation

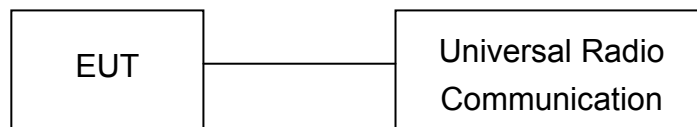
Operating Environment :

|                       |           |
|-----------------------|-----------|
| Temperature:          | 22.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.2kPa  |

### 8.2 Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

1. The setup of EUT is according with per TIA/EIA Standard 603D measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

### 8.3 Test Result

| Conducted Power(dBm)       |              |        |        |              |         |              |
|----------------------------|--------------|--------|--------|--------------|---------|--------------|
| Band                       | CDMA2000 BC0 |        |        | CDMA2000 BC1 |         |              |
| Channel                    | 1013         | 384    | 777    | 25           | 600     | 1175         |
| Frequency                  | 824.70       | 836.52 | 848.31 | 1851.25      | 1880.00 | 1908.75      |
| Ev-Do Rev.A RTAP 153.6kpbs | <b>24.64</b> | 24.14  | 24.32  | 24.34        | 23.78   | <b>24.47</b> |

**Radiated Power(Measured at max. conducted power channel)**

Max. ERP and EIRP

**Cellular Band (Part 22H)**

| Frequency                  | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Part 22H |        |
|----------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|----------|--------|
|                            |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit    | Margin |
| (MHz)                      | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)    | (dB)   |
| CDMA 2000 BC0 Channel 1013 |                  |                  |            |       |             |       |              |                |          |        |
| 824.70                     | 87.50            | 298              | 1.7        | H     | 16.50       | 0.20  | 0.00         | 16.30          | 38.45    | -22.15 |
| 824.70                     | 92.14            | 123              | 1.1        | V     | 19.86       | 0.20  | 0.00         | 19.66          | 38.45    | -18.79 |
| CDMA 2000 BC0 Channel 384  |                  |                  |            |       |             |       |              |                |          |        |
| 836.52                     | 84.32            | 57               | 2.4        | H     | 13.32       | 0.20  | 0.00         | 13.12          | 38.45    | -25.33 |
| 836.52                     | 92.61            | 66               | 2.0        | V     | 20.33       | 0.20  | 0.00         | 20.13          | 38.45    | -18.32 |
| CDMA 2000 BC0 Channel 777  |                  |                  |            |       |             |       |              |                |          |        |
| 848.31                     | 85.07            | 25               | 1.4        | H     | 14.07       | 0.20  | 0.00         | 13.87          | 38.45    | -24.58 |
| 848.31                     | 92.76            | 269              | 2.1        | V     | 20.48       | 0.20  | 0.00         | 20.28          | 38.45    | -18.17 |

**Cellular Band (Part 24E)**

| Frequency                 | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Part 24E |        |
|---------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|----------|--------|
|                           |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit    | Margin |
| (MHz)                     | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)    | (dB)   |
| CDMA 2000 BC1 Channel 25  |                  |                  |            |       |             |       |              |                |          |        |
| 1851.25                   | 79.23            | 3                | 2.3        | H     | 5.26        | 0.31  | 10.40        | 15.35          | 33       | -17.65 |
| 1851.25                   | 84.03            | 121              | 1.1        | V     | 10.75       | 0.31  | 10.40        | 20.84          | 33       | -12.16 |
| CDMA 2000 BC1 Channel 600 |                  |                  |            |       |             |       |              |                |          |        |
| 1880.00                   | 79.43            | 49               | 1.7        | H     | 5.58        | 0.31  | 10.40        | 15.67          | 33       | -17.33 |
| 1880.00                   | 84.75            | 291              | 2.0        | V     | 11.63       | 0.31  | 10.40        | 21.72          | 33       | -11.28 |
| CDMA 2000 BC1Channel 1175 |                  |                  |            |       |             |       |              |                |          |        |
| 1908.75                   | 76.65            | 225              | 2.4        | H     | 2.92        | 0.32  | 10.40        | 13.00          | 33       | -20.00 |
| 1908.75                   | 84.25            | 266              | 1.2        | V     | 11.29       | 0.32  | 10.40        | 21.37          | 33       | -11.63 |

## 9 Peak-to-Average Ratio

|                   |              |
|-------------------|--------------|
| Test Requirement: | 24.232 (d)   |
| Test Method:      | N/A          |
| Test Mode:        | Transmitting |

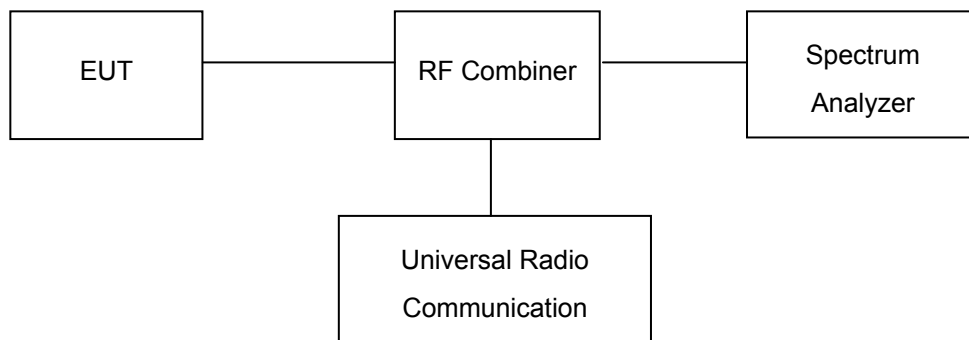
### 9.1 EUT Operation

Operating Environment :

|                       |          |
|-----------------------|----------|
| Temperature:          | 22.5 °C  |
| Humidity:             | 52.3% RH |
| Atmospheric Pressure: | 101.2kPa |

### 9.2 Test Procedure

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. Set EUT to transmit at maximum output power.
3. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.



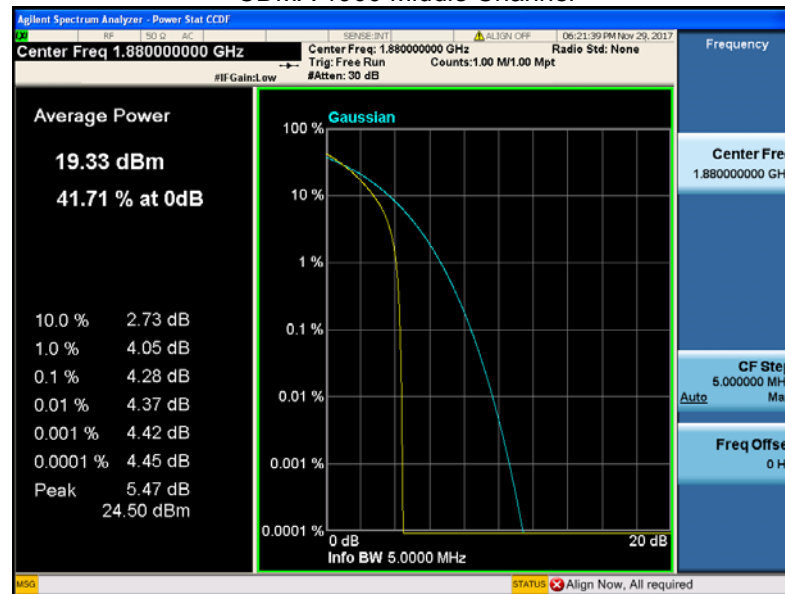
### 9.3 Test Result

Cellular Band (Part 24E)

| Mode                          | CDMA2000 BC1 |         |         | Limit<br>(dB) |
|-------------------------------|--------------|---------|---------|---------------|
| Channel                       | 25           | 600     | 1175    |               |
| Frequency<br>(MHz)            | 1851.25      | 1880.00 | 1908.75 |               |
| Peak-to-Average<br>Ratio (dB) | 4.25         | 4.28    | 4.21    | 13            |

Test Plots (Part 24E)

CDMA 1900 Middle Channel



## 10 BANDWIDTH

|                   |                                            |
|-------------------|--------------------------------------------|
| Test Requirement: | FCC Part 2.1049,22.917,22.905,24.238       |
| Test Method:      | TIA/EIA-603-D:2010<br>KDB971168 D01 v02r02 |
| Test Mode:        | Transmitting                               |

### 10.1 EUT Operation

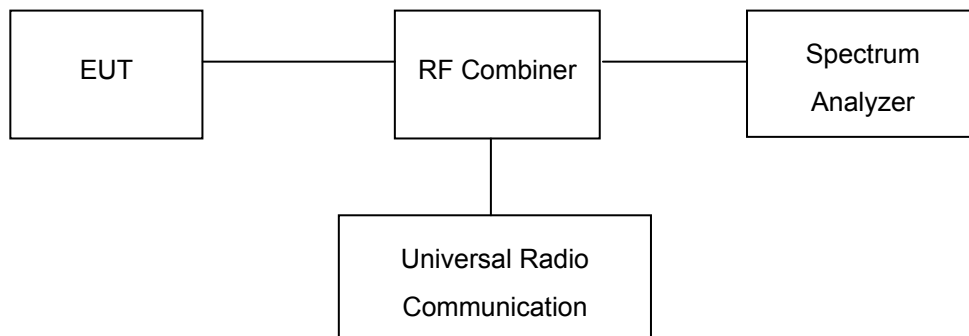
Operating Environment :

|                       |          |
|-----------------------|----------|
| Temperature:          | 22.5 °C  |
| Humidity:             | 52.3% RH |
| Atmospheric Pressure: | 101.2kPa |

### 10.2 Test Procedure

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 3 kHz (Cellular /PCS) and the 26 dB & 99%bandwidth was recorded.

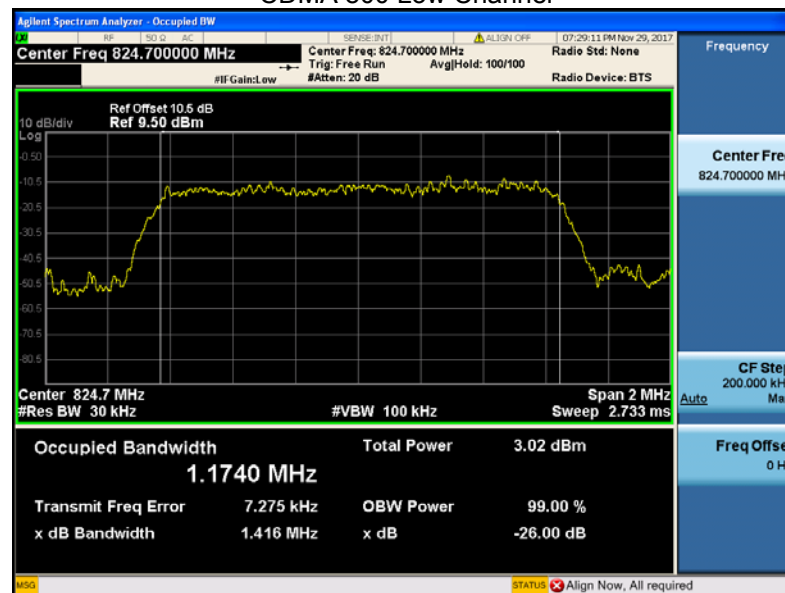


### 10.3 Test Result

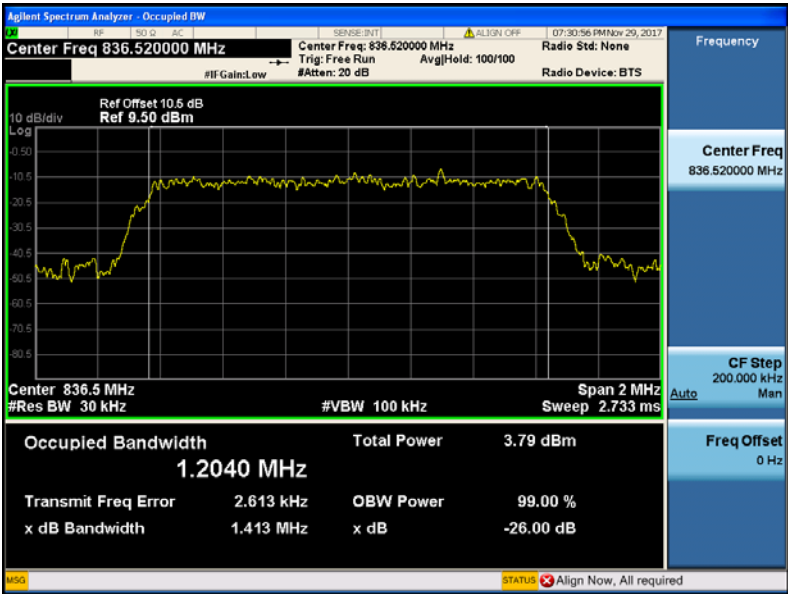
| Test Mode    | Channel | Frequency<br>(MHz) | 99% Occupied<br>Bandwidth(mHz) | 26 dB Emission<br>Bandwidth(mHz) |
|--------------|---------|--------------------|--------------------------------|----------------------------------|
| CDMA2000 BC0 | 1013    | 824.70             | 1.17                           | 1.42                             |
|              | 384     | 836.52             | 1.20                           | 1.41                             |
|              | 777     | 848.31             | 1.18                           | 1.25                             |
| CDMA2000 BC1 | 25      | 1851.25            | 1.27                           | 1.42                             |
|              | 600     | 1880.00            | 1.23                           | 1.41                             |
|              | 1175    | 1908.75            | 1.30                           | 1.78                             |

#### Test Plots

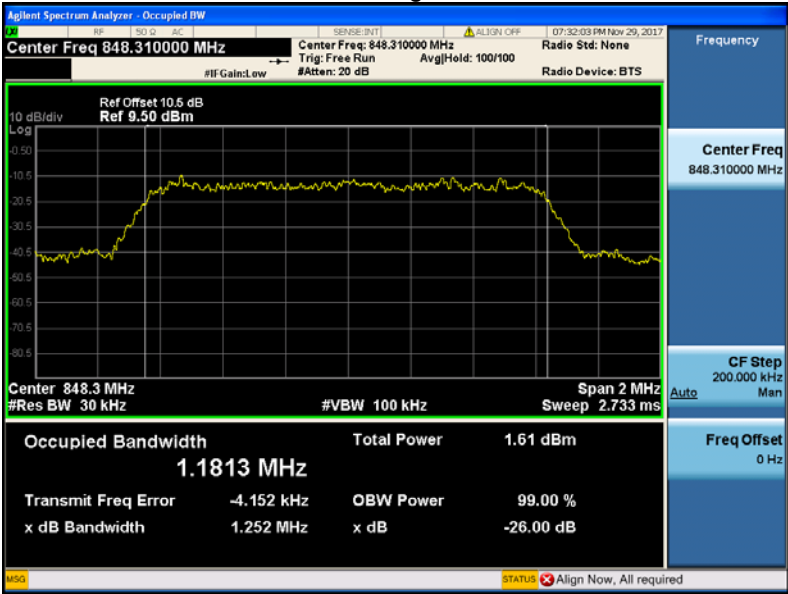
##### CDMA 800 Low Channel



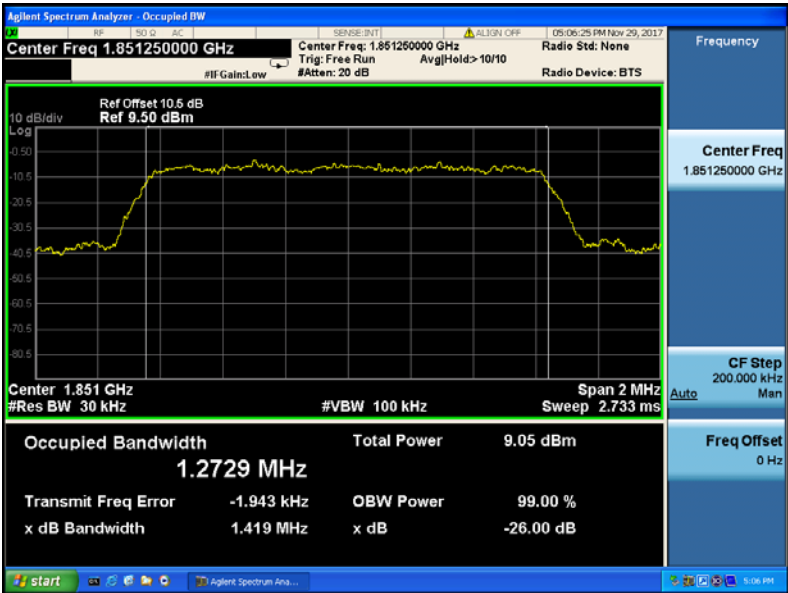
CDMA 800 Middle Channel



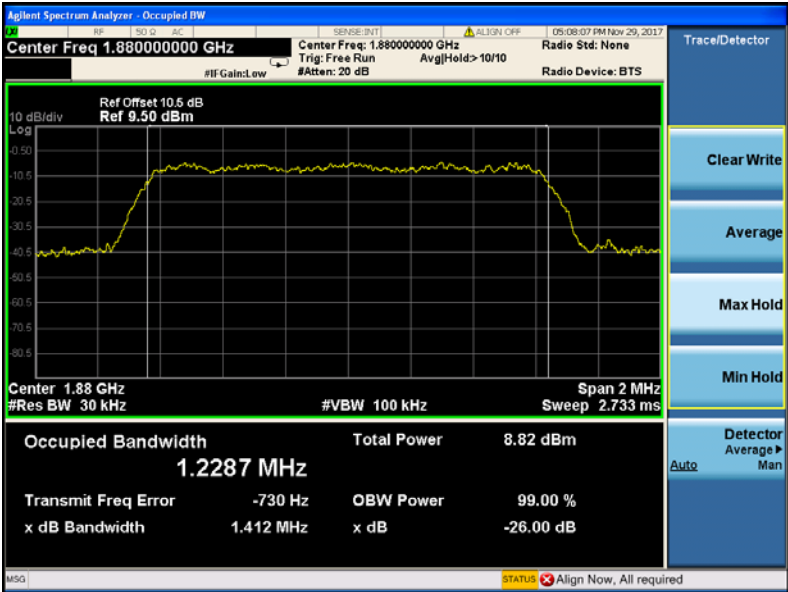
CDMA 800 High Channel



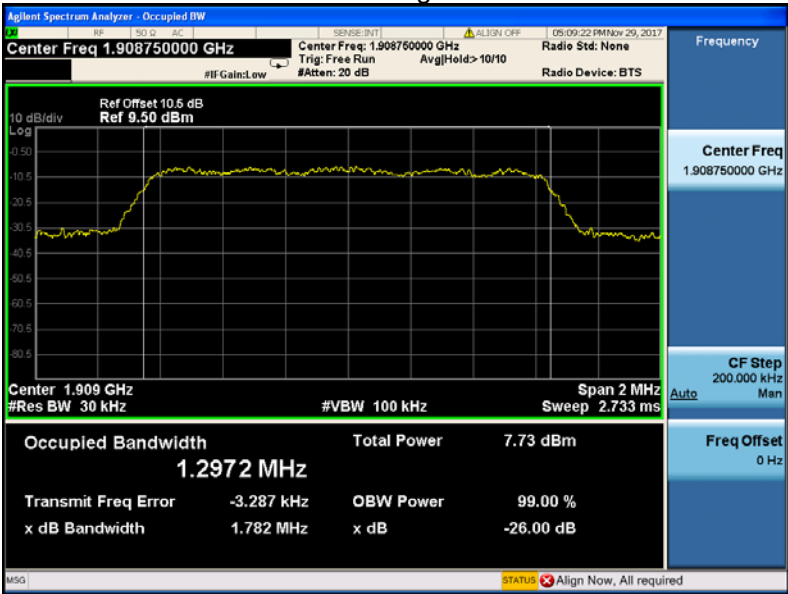
CDMA 1900 Low Channel



CDMA 1900 Middle Channel



CDMA 1900 High Channel



## 11 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

|                   |                                            |
|-------------------|--------------------------------------------|
| Test Requirement: | FCC Part 2.1051,22.917(a),24.238(a)        |
| Test Method:      | TIA/EIA-603-D:2010<br>KDB971168 D01 v02r02 |
| Test Mode:        | Transmitting                               |

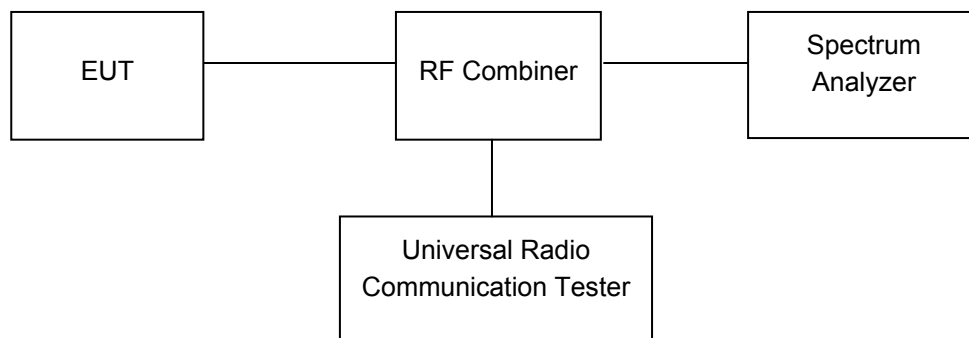
### 11.1 EUT Operation

Operating Environment :

|                       |           |
|-----------------------|-----------|
| Temperature:          | 23.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.3kPa  |

### 11.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.



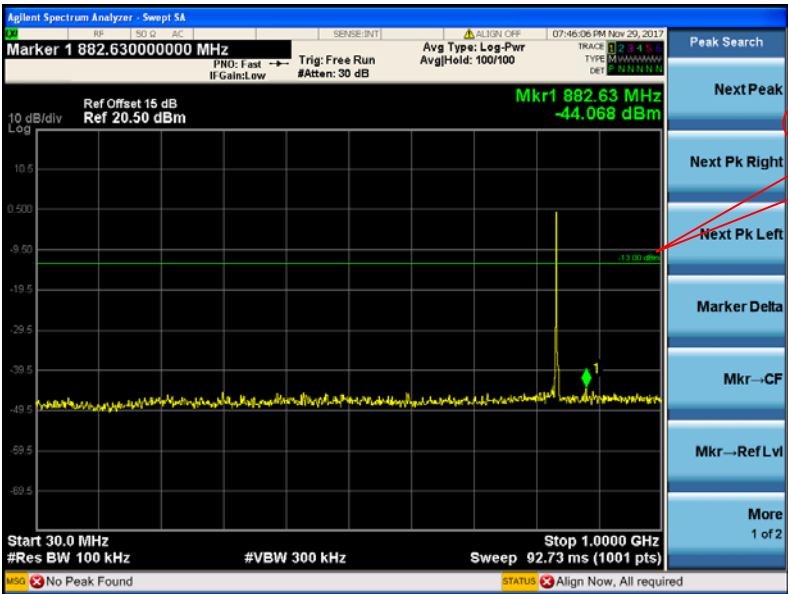
11.3 Test Result

Remark: only the worst data were recorded.

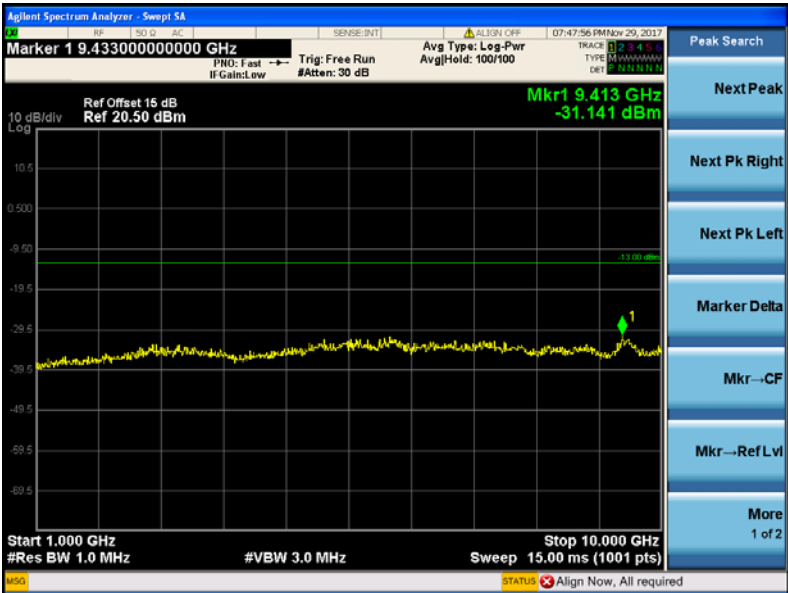
Cellular Band (Part 22H)

CDMA 800 - channel 384

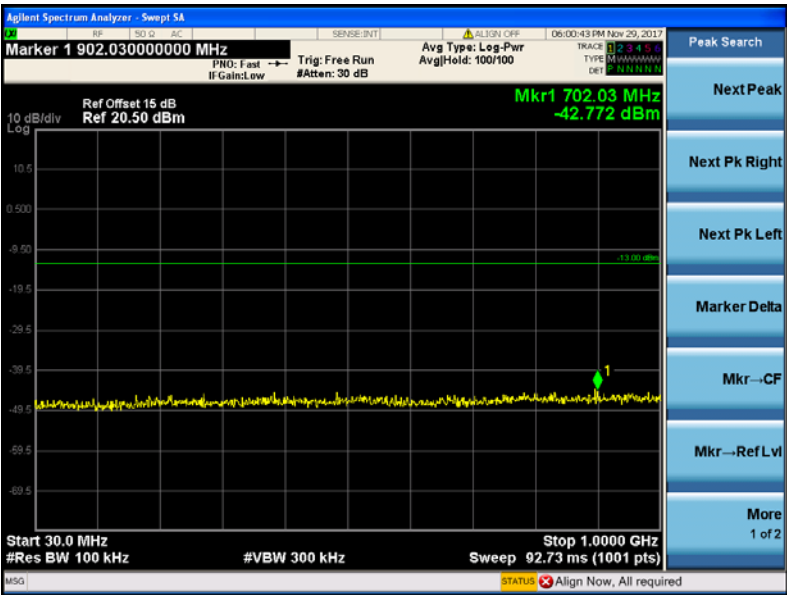
30MHz-1GHz



Above 1GHz



Cellular Band (Part 24E)  
CDMA 1900 - channel 600  
30MHz-1GHz



Above 1GHz

Fundamental



## 12 SPURIOUS RADIATED EMISSIONS

|                   |                                            |
|-------------------|--------------------------------------------|
| Test Requirement: | FCC Part 2.1053,22.917,24.238,27.53(h)     |
| Test Method:      | TIA/EIA-603-D:2010<br>KDB971168 D01 v02r02 |
| Test Mode:        | Transmitting                               |

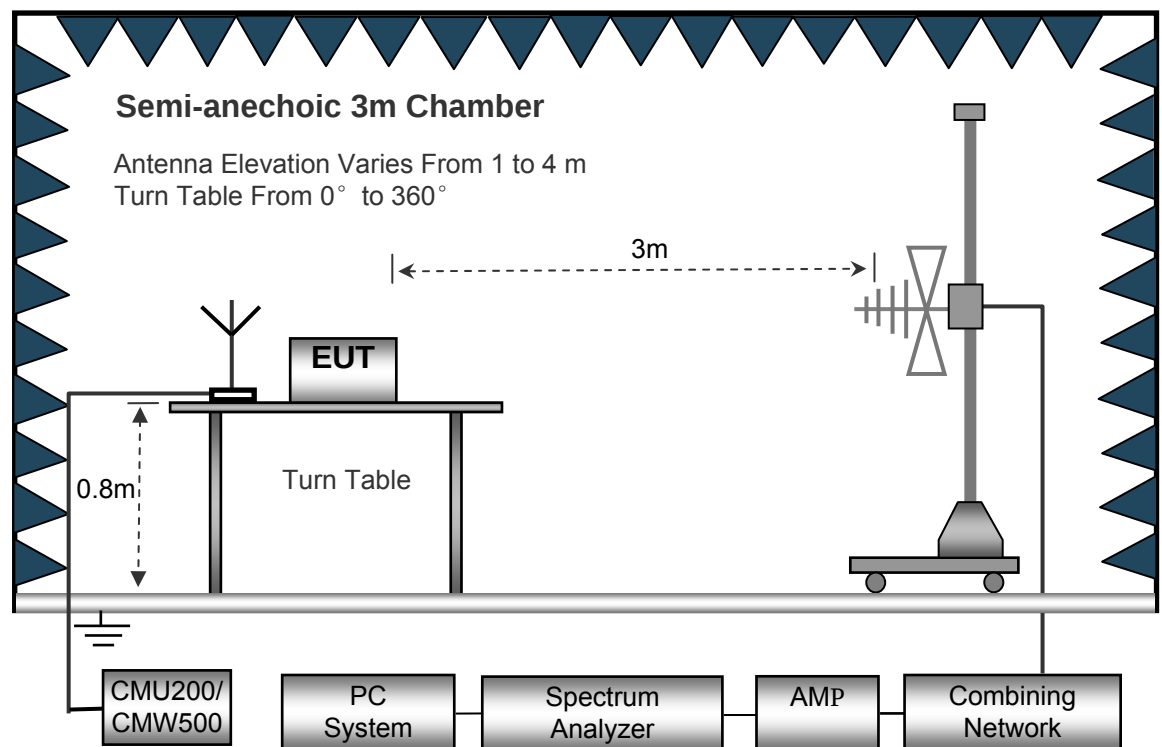
### 12.1 EUT Operation

Operating Environment :

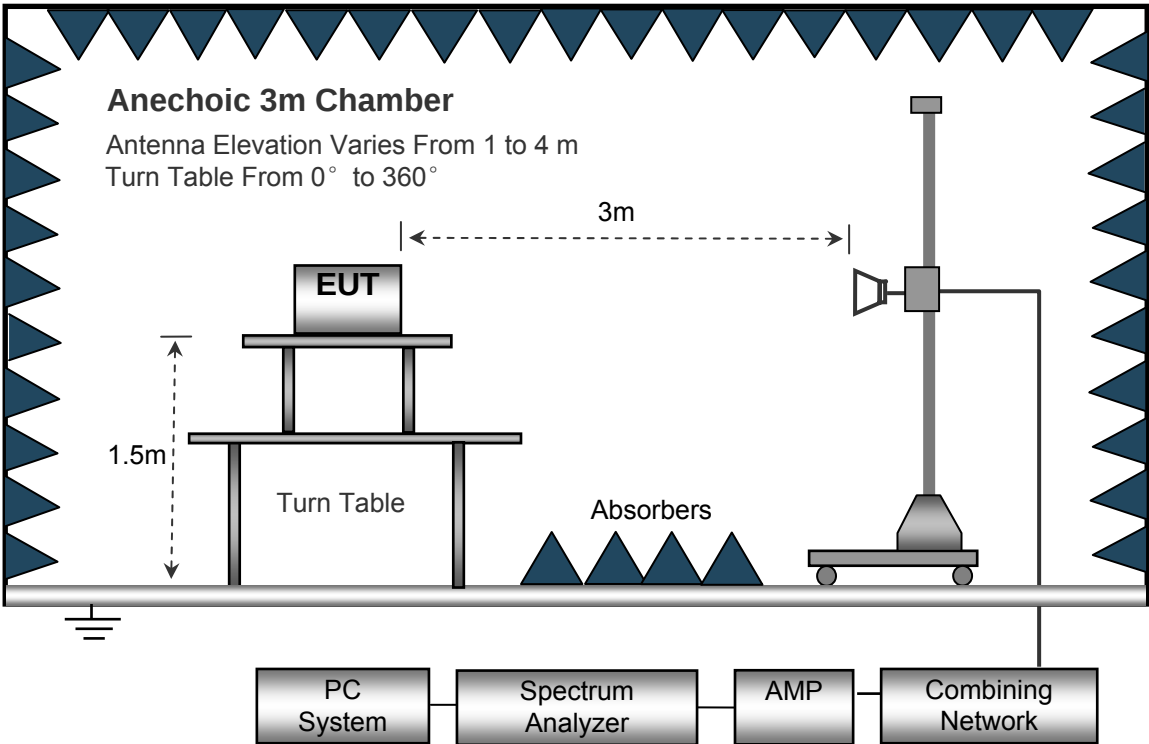
|                       |           |
|-----------------------|-----------|
| Temperature:          | 23.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.2kPa  |

### 12.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



12.3 Spectrum Analyzer Setup

30MHz ~ 1GHz

Sweep Speed ..... Auto  
Detector ..... PK  
Resolution Bandwidth..... 100kHz  
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto  
Detector ..... PK  
Resolution Bandwidth..... 1MHz  
Video Bandwidth..... 3MHz  
Detector ..... Ave.  
Resolution Bandwidth..... 1MHz  
Video Bandwidth..... 10Hz

## 12.4 Test Procedure

1. The EUT is placed on a turntable, which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from 30MHz up to the tenth harmonic of the highest fundamental frequency.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
7. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.  
  
Spurious emissions in dB =  $10 \lg (\text{TXpwr in Watts}/0.001)$  – the absolute level  
Spurious attenuation limit in dB =  $43 + 10 \lg (\text{power out in Watts})$
8. Repeat above procedures until the measurements for all frequencies are completed.

## 12.5 Summary of Test Results

For 19.2MHz,

The measurements were more than 20 dB below the limit and not reported.

Remark: Test performed from 30MHz to 10<sup>th</sup> harmonics with low/middle/high channels, only the worst data were recorded.

Cellular Band (Part 22H)

| Frequency             | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Result |        |
|-----------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|--------|--------|
|                       |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit  | Margin |
| (MHz)                 | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)  | (dB)   |
| CDMA 800 Channel 1013 |                  |                  |            |       |             |       |              |                |        |        |
| 201.33                | 41.43            | 262              | 1.4        | H     | -69.08      | 0.15  | 0.00         | -69.23         | -13.00 | -56.23 |
| 201.33                | 45.65            | 318              | 1.2        | V     | -61.94      | 0.15  | 0.00         | -62.09         | -13.00 | -49.09 |
| 1649.40               | 65.47            | 293              | 1.8        | H     | -48.50      | 0.30  | 9.40         | -39.40         | -13.00 | -26.40 |
| 1649.40               | 58.32            | 298              | 1.9        | V     | -55.21      | 0.30  | 9.40         | -46.11         | -13.00 | -33.11 |
| 2474.10               | 55.36            | 337              | 1.2        | H     | -58.64      | 0.43  | 10.60        | -48.47         | -13.00 | -35.47 |
| 2474.10               | 49.35            | 110              | 2.0        | V     | -60.93      | 0.43  | 10.60        | -50.76         | -13.00 | -37.76 |

Cellular Band (Part 24E/27)

| Frequency              | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Result |        |
|------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|--------|--------|
|                        |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit  | Margin |
| (MHz)                  | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)  | (dB)   |
| CDMA 1900 Channel 1175 |                  |                  |            |       |             |       |              |                |        |        |
| 201.33                 | 46.67            | 44               | 1.2        | H     | -63.84      | 0.15  | 0.00         | -63.99         | -13.00 | -50.99 |
| 201.33                 | 39.03            | 335              | 2.1        | V     | -68.56      | 0.15  | 0.00         | -68.71         | -13.00 | -55.71 |
| 3817.50                | 65.95            | 268              | 1.2        | H     | -45.59      | 2.37  | 12.50        | -35.46         | -13.00 | -22.46 |
| 3817.50                | 59.98            | 358              | 1.2        | V     | -49.83      | 2.37  | 12.50        | -39.70         | -13.00 | -26.70 |
| 5726.25                | 53.58            | 200              | 1.7        | H     | -56.03      | 2.86  | 12.90        | -45.99         | -13.00 | -32.99 |
| 5726.25                | 44.73            | 324              | 1.7        | V     | -64.15      | 2.86  | 12.90        | -54.11         | -13.00 | -41.11 |

Note: 1) Absolute Level = SG Level - Cable loss + Antenna Gain

2) Margin = Limit- Absolute Level

## 13 Band Edge Measurement

|                   |                                            |
|-------------------|--------------------------------------------|
| Test Requirement: | FCC Part 2.1051,22.917(a),24.238(a)        |
| Test Method:      | TIA/EIA-603-D:2010<br>KDB971168 D01 v02r02 |
| Test Mode:        | Transmitting                               |

### 13.1 EUT Operation

Operating Environment :

|                       |           |
|-----------------------|-----------|
| Temperature:          | 23.5 °C   |
| Humidity:             | 52.3 % RH |
| Atmospheric Pressure: | 101.3kPa  |

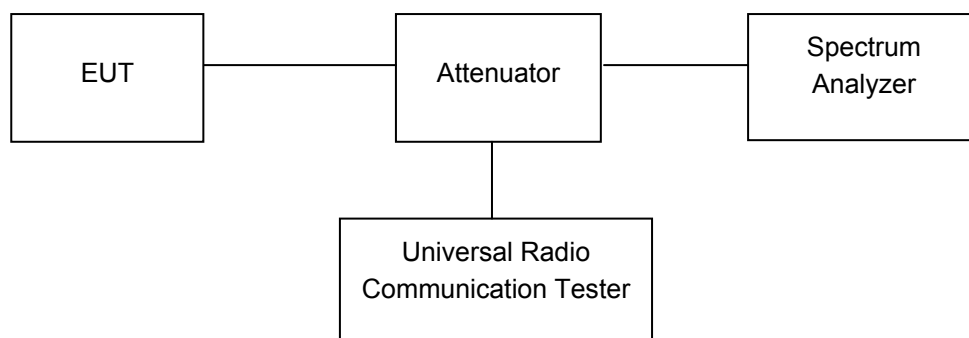
### 13.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

According to FCC Part 22.917(a), the power of any emissions 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.

According to FCC Part 24.238(a), the power of any emissions 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 center of the spectrum analyzer was set to block edge frequency



13.3 Test Result

Test plots

Cellular Band (Part 22H)

CDMA 800 band edge-left side

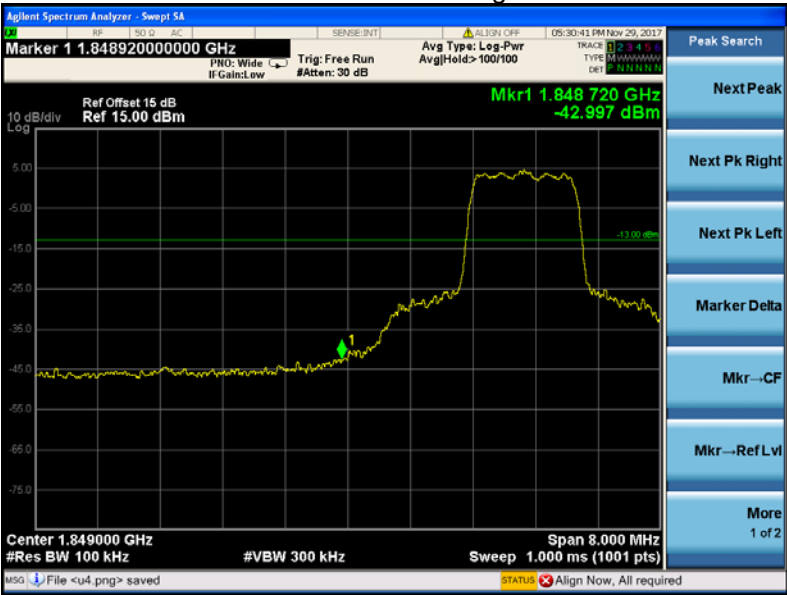


CDMA 800 band edge-right side



Cellular Band (Part 24E)

CDMA 1900 band edge-left side



CDMA 1900 band edge-right side



## 14 FREQUENCY STABILITY

|                   |                                             |
|-------------------|---------------------------------------------|
| Test Requirement: | FCC Part 2.1055,22.355,24.235,27.5(h),27.54 |
| Test Method:      | TIA/EIA-603-D:2010<br>KDB971168 D01 v02r02  |
| Test Mode:        | Transmitting                                |

### 14.1 EUT Operation

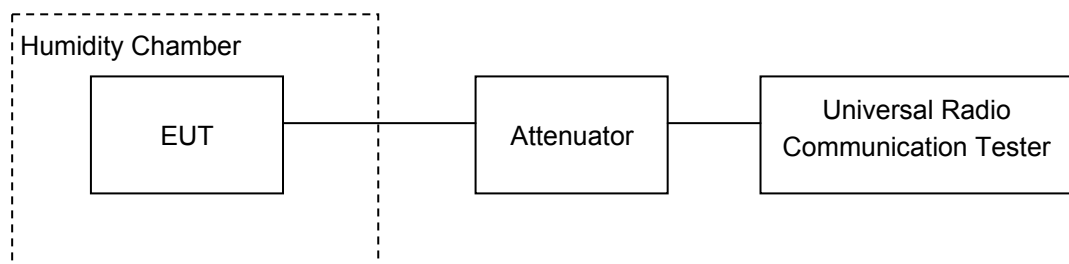
|                         |           |
|-------------------------|-----------|
| Operating Environment : |           |
| Temperature:            | 22.9 °C   |
| Humidity:               | 52.0 % RH |
| Atmospheric Pressure:   | 101.3kPa  |

### 14.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



### 14.3 Test Result

Cellular Band (Part 22H)

| CDMA 800 Test Frequency:836.52MHz |                    |                      |                       |             |
|-----------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                  | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                | 3.85               | -5                   | -0.0060               | 2.5         |
| 40                                |                    | 2                    | 0.0024                | 2.5         |
| 30                                |                    | -7                   | -0.0084               | 2.5         |
| 20                                |                    | 2                    | 0.0020                | 2.5         |
| 10                                |                    | 8                    | 0.0096                | 2.5         |
| 0                                 |                    | 2                    | 0.0024                | 2.5         |
| -10                               |                    | 0                    | 0.0000                | 2.5         |
| -20                               |                    | -1                   | -0.0012               | 2.5         |
| -30                               |                    | -5                   | -0.0060               | 2.5         |
| 20                                | 3.3                | -4                   | -0.0048               | 2.5         |
| 20                                | 4.2                | 2                    | 0.0024                | 2.5         |

PCS Band (Part 24E)

| CDMA 1900 Test Frequency:1880.00MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 3.85               | -9                   | -0.0048               | 2.5         |
| 40                                  |                    | -2                   | -0.0011               | 2.5         |
| 30                                  |                    | -1                   | -0.0005               | 2.5         |
| 20                                  |                    | 0                    | -0.0002               | 2.5         |
| 10                                  |                    | -7                   | -0.0037               | 2.5         |
| 0                                   |                    | -9                   | -0.0048               | 2.5         |
| -10                                 |                    | -1                   | -0.0005               | 2.5         |
| -20                                 |                    | -3                   | -0.0016               | 2.5         |
| -30                                 |                    | -1                   | -0.0005               | 2.5         |
| 20                                  | 3.3                | 5                    | 0.0027                | 2.5         |
| 20                                  | 4.2                | 6                    | 0.0032                | 2.5         |

## **15 RF Exposure**

Remark: refer to SAR test report: WTS17S0888245E.

## **16 Photographs of test setup and EUT.**

Note: Please refer to appendix: WTS17S0888240E\_Photo.

===== End of Report =====