



# Part 24

## TEST REPORT

|                      |                            |
|----------------------|----------------------------|
| <b>Product Name</b>  | GPS Tracker                |
| <b>Model Name</b>    | ES710                      |
| <b>Brand Name</b>    | eSky                       |
| <b>FCC ID</b>        | YR8ES710                   |
| <b>Applicant</b>     | eSky wireless Inc.         |
| <b>Manufacturer</b>  | ASIATELCO TECHNOLOGIES CO. |
| <b>Date of issue</b> | March 20, 2015             |

**TA Technology (Shanghai) Co., Ltd.**

**TA Technology (Shanghai) Co., Ltd.**  
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**GENERAL SUMMARY**

|                              |  |
|------------------------------|--|
| <b>Reference Standard(s)</b> | <p><b>FCC CFR47 Part 2 (2013)</b> Frequency Allocations And Radio Treaty Matters; General Rules And Regulations</p> <p><b>FCC CFR47 Part 24E (2013)</b> Personal Communications Services</p> <p><b>ANSI/TIA-603-C(2004)</b> Land mobile FM or PM Communications Equipment Measurements and Performance Standards.</p> <p><b>KDB 971168 D01 Power Meas License Digital Systems v02r02</b> Measurement Guidance for Certification of Licensed Digital Transmitters</p> |
| <b>Conclusion</b>            | <p>This fixed wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment: <b>Pass</b></p>  |
| <b>Comment</b>               | <p>The test result only responds to the measured sample.</p>   |

Approved by Kai Xu

Kai Xu  
Director

Revised by Lingling Kang

Lingling Kang  
RF Manager

Performed by Changxu Wan

Changxu Wan  
RF Engineer

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## **1. General Information**

### **1.1. Notes of the test report**

**TA Technology (Shanghai) Co., Ltd.** has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L2264.

**TA Technology (Shanghai) Co., Ltd.** has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 428261.

**TA Technology (Shanghai) Co., Ltd.** has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 8510A.

**TA Technology (Shanghai) Co., Ltd.** guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

**TA Technology (Shanghai) Co., Ltd.** is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. The sample under test was selected by the Client. This report only refers to the item that has undergone the test.

This report standalone does not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

If the electrical report is inconsistent with the printed one, it should be subject to the latter.

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### 1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.  
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong  
City: Shanghai  
Post code: 201201  
Country: P. R. China  
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Website: <http://www.ta-shanghai.com>  
E-mail: [xukai@ta-shanghai.com](mailto:xukai@ta-shanghai.com)

### 1.3. Applicant Information

Company: eSky wireless Inc.  
Address: A311#,258,Road Ren'ai Suzhou 215021  
PR.China

### 1.4. Manufacturer Information

Company: AsiaTelco Technologies Co.  
Address: #289 Bisheng Road, Building-8, 3F, Zhangjiang Hi-Tech Park, Pudong,  
Shanghai-201204, China

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## 1.5. Information of EUT

### General information

|  |   |                   |                   |
|--|---|-------------------|-------------------|
| MEID:                                  | A100003230B9D6  |                   |                   |
| Hardware Version:                      | P1  |                   |                   |
| Software Version:                      | 1.1.67T   |                   |                   |
| Antenna Type:                          | Internal Antenna  |                   |                   |
| Device Operating Configurations:       |   |                   |                   |
| Test Mode(s):                          | CDMA PCS:   |                   |                   |
| Support mode:                          | 1x RTT  |                   |                   |
| Test Modulation:                       | QPSK  |                   |                   |
| Maximum E.I.R.P.                       | 22.36 dBm   |                   |                   |
| Rated Power Supply Voltage:            | 12V   |                   |                   |
| Extreme Voltage:                       | Minimum: 6V    Maximum: 40V   |                   |                   |
| Extreme Temperature:                   | Lowest: -40°C    Highest: +80°C   |                   |                   |
| Test Channel:<br>(Low - Middle - High) | 25 - 600 - 1175                      (CDMA PCS)                      (tested) |                   |                   |
| Operating Frequency Range(s)           | Band  | Tx (MHz)          | Rx (MHz)          |
|  | CDMA PCS  | 1851.25 ~ 1908.75 | 1931.25 ~ 1988.75 |

## 1.6. Test Date

The test is performed from February 10, 2015 to February 12, 2015.

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## 2. Test Information

### 2.1. Summary of test results

| Number | Test Case                               | Clause in FCC rules | Verdict |
|--------|---|---------------------|---------|
| 1      | RF power output                         | 2.1046              | PASS    |
| 2      | Effective Isotropic Radiated power      | 24.232              | PASS    |
| 3      | Occupied Bandwidth                      | 2.1049              | PASS    |
| 4      | Band Edge Compliance                    | 24.238              | PASS    |
| 5      | Peak-to-Average Power Ratio             | KDB 971168 D01(5.7) | PASS    |
| 6      | Frequency Stability                     | 2.1055 / 24.235     | PASS    |
| 7      | Spurious Emissions at Antenna Terminals | 2.1051 / 24.238     | PASS    |
| 8      | Radiates Spurious Emission              | 2.1053 / 24.238     | PASS    |

PASS: The EUT complies with the essential requirements in the standard.

FAIL: The EUT does not comply with the essential requirements in the standard.

## 2.2. RF Power Output

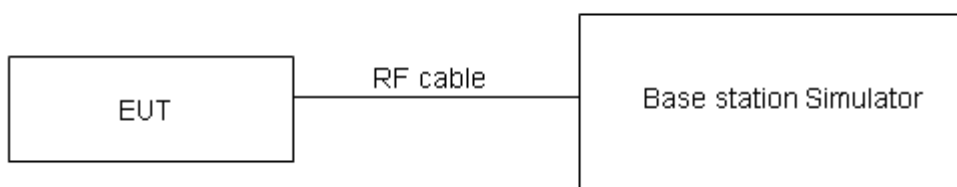
### Ambient condition

|             |                   |          |
|-------------|-------------------|----------|
| Temperature | Relative humidity | Pressure |
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

### Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

### Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

### Limits

No specific RF power output requirements in part 2.1046.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.4$  dB.



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**Test Results**

| <b>CDMA PCS</b> |        | <b>Conducted Power(dBm)</b> |              |               |
|-----------------|--------|-----------------------------|--------------|---------------|
|                 |        | Channel 25                  | Channel 600  | Channel 1175  |
|                 |        | 1851.25 (MHz)               | 1880 (MHz)   | 1908.75 (MHz) |
| SO32            | +F-SCH | <b>23.18</b>                | <b>23.12</b> | <b>22.62</b>  |
|                 | +SCH   | 22.96                       | 22.74        | 22.64         |

Note:

- 1) The maximum RF Output Power numbers are marks in bold.
- 2) The following testing is set to +F-SCH based on the maximum RF Output Power.

### 2.3. Effective Isotropic Radiated Power

#### Ambient condition

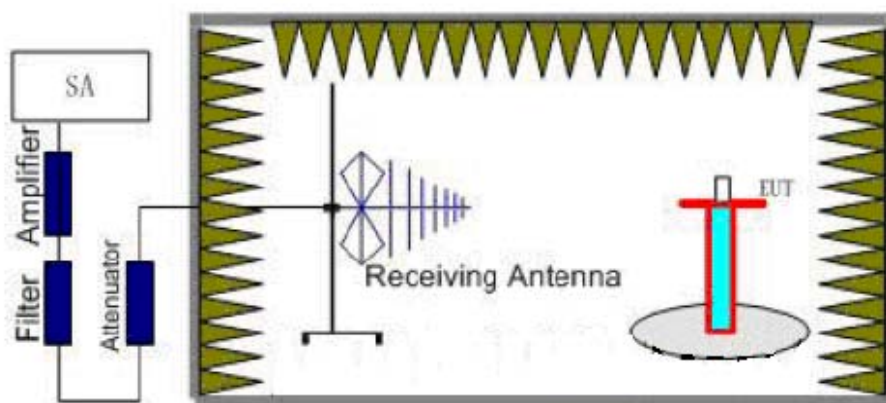
|             |                   |
|-------------|-------------------|
| Temperature | Relative humidity |
| 21°C ~25°C  | 40%~60%           |

#### Methods of Measurement

The measurement procedures in TIA- 603C are used.

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;  
UMTS operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10.  $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$   
 $P_s$  (dBm) : Input power to substitution antenna.  
 $G_s$  (dBi or dBd) : Substitution antenna Gain.  
 $E_t = R_t + AF$   
 $E_s = R_s + AF$   
 $AF$  (dB/m) : Receive antenna factor  
 $R_t$  : The highest received signal in spectrum analyzer for EUT.  
 $R_s$  : The highest received signal in spectrum analyzer for substitution antenna.

#### Test Setup



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**Limits**

Rule Part 24.232(b) specifies that "Mobile/portable stations are limited to 2 watts EIRP. Peak power" and Rule Part 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage".

|              |                            |
|--------------|----------------------------|
| Limit (EIRP) | $\leq 2\text{ W}$ (33 dBm) |
|--------------|----------------------------|

**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 1.19\text{ dB}$

**Test Results: Pass**

| Mode     | Channel | Polarization | Rt (dBm) | Rs (dBm) | Ps (dBm) | Gs (dBi) | E.I.R.P. (dBm) |
|----------|---------|--------------|----------|----------|----------|----------|----------------|
| CDMA PCS | 25      | Vertical     | -36.81   | -53.71   | 0        | 1.92     | 18.82          |
|          | 600     | Vertical     | -37.71   | -53.91   | 0        | 1.94     | 18.14          |
|          | 1175    | Vertical     | -39.31   | -54.55   | 0        | 1.92     | 17.16          |
|          | 25      | Horizontal   | -33.35   | -53.19   | 0        | 1.92     | 21.76          |
|          | 600     | Horizontal   | -33.00   | -53.42   | 0        | 1.94     | 22.36          |
|          | 1175    | Horizontal   | -34.70   | -53.64   | 0        | 1.92     | 20.86          |

Note: 1. EIRP = E.R.P + 2.15

## 2.4. Occupied Bandwidth

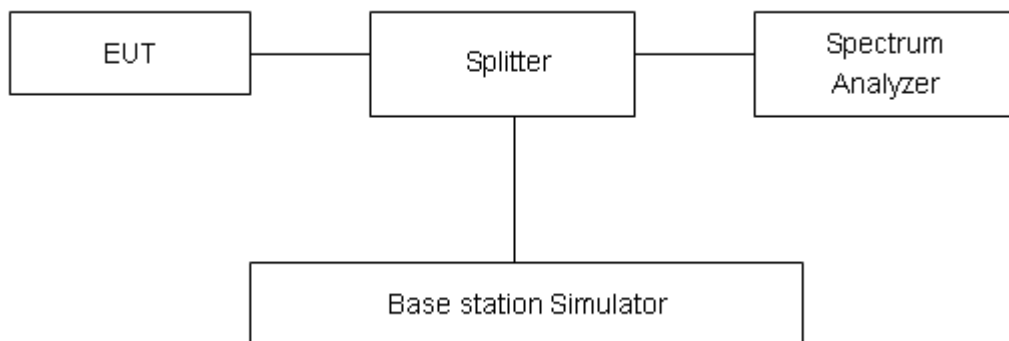
### Ambient condition

|             |                   |          |
|-------------|-------------------|----------|
| Temperature | Relative humidity | Pressure |
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 30kHz, VBW is set to 300kHz for CDMA PCS. 99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

### Test Setup



### Limits

No specific occupied bandwidth requirements in part 2.1049.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 624\text{Hz}$ .

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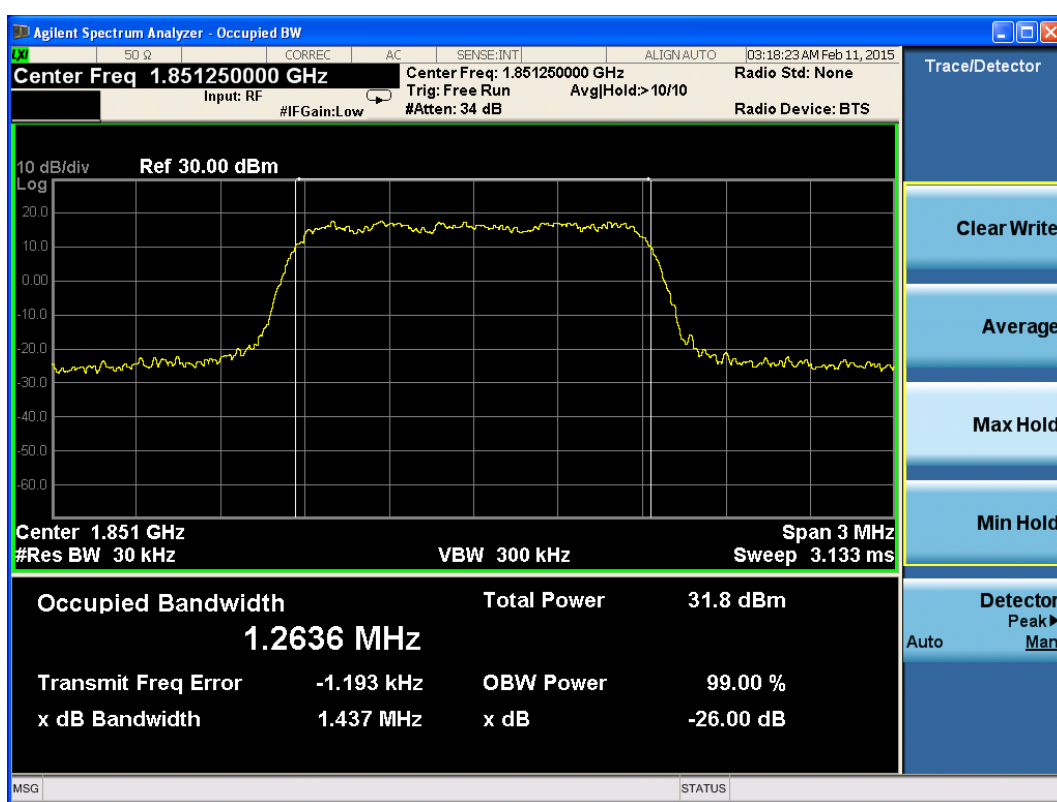
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### Test Result

| CDMA PCS | Channel | Frequency (MHz) | 99% Power Bandwidth (MHz) | -26dBc Bandwidth(MHz) |
|----------|---------|-----------------|---------------------------|-----------------------|
| +F-SCH   | 25      | 1851.25         | 1.2636                    | 1.437                 |
|          | 600     | 1880.0          | 1.2664                    | 1.427                 |
|          | 1175    | 1908.75         | 1.2667                    | 1.428                 |



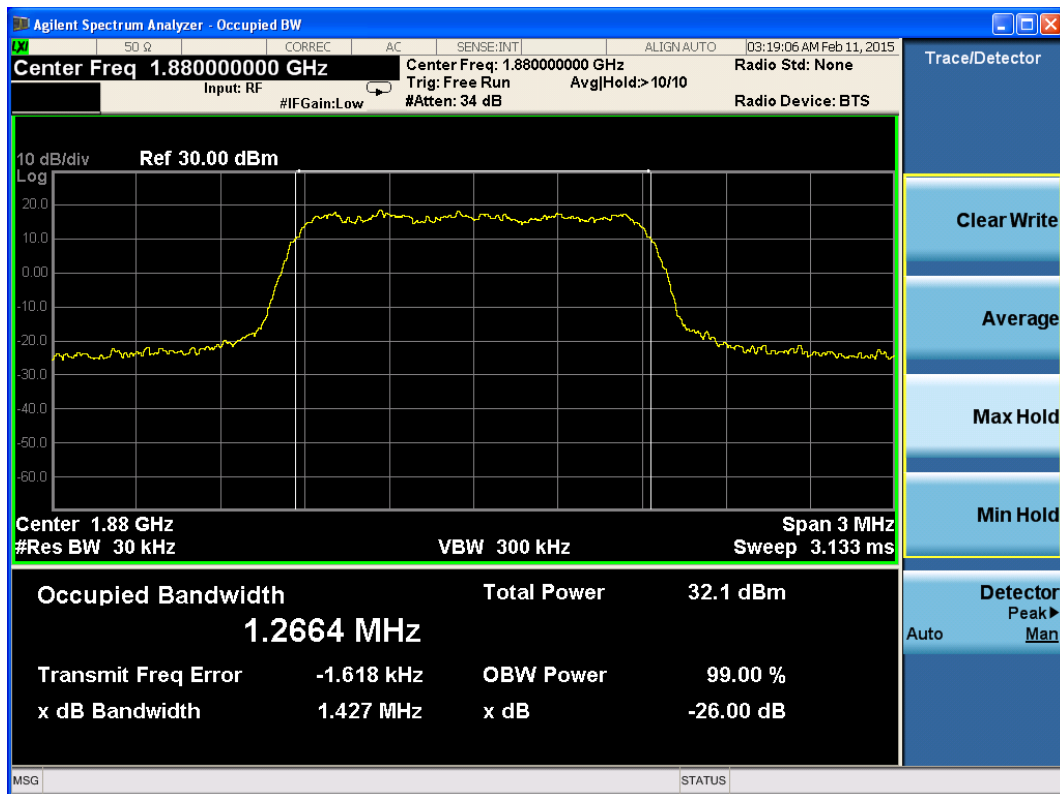
CDMA PCS +F-SCH CH25 Occupied Bandwidth

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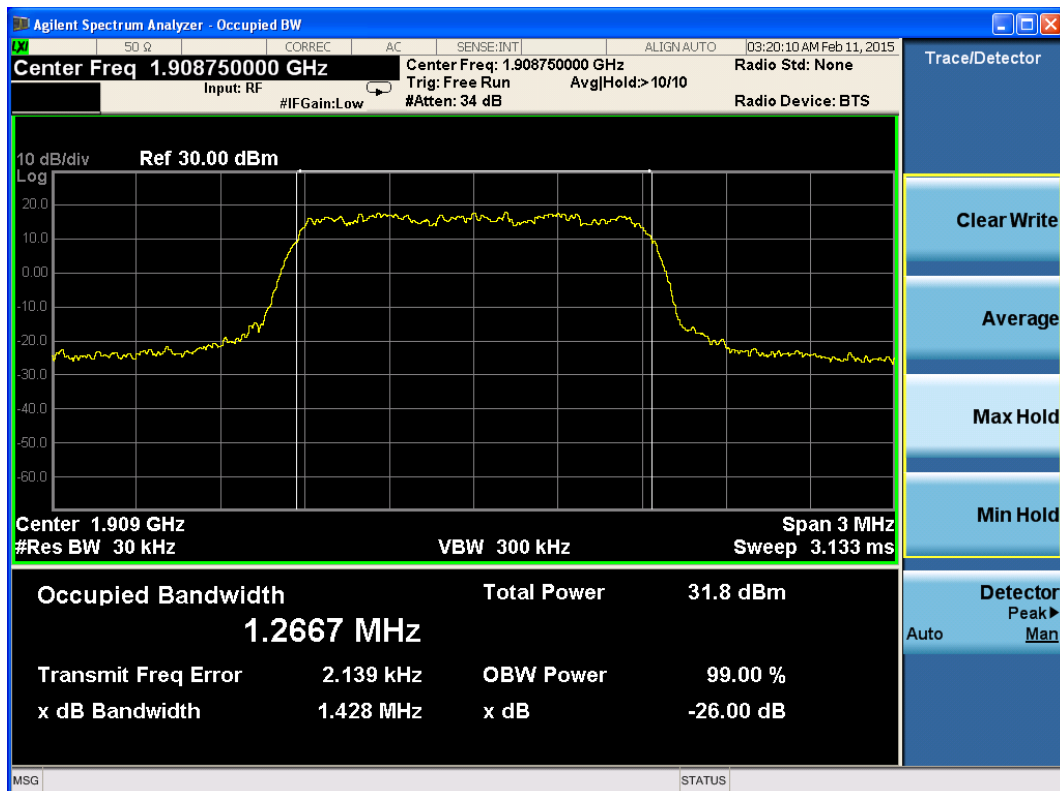
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CDMA PCS +F-SCH CH600 Occupied Bandwidth



CDMA PCS +F-SCH CH1175 Occupied Bandwidth

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### 2.5. Band Edge Compliance

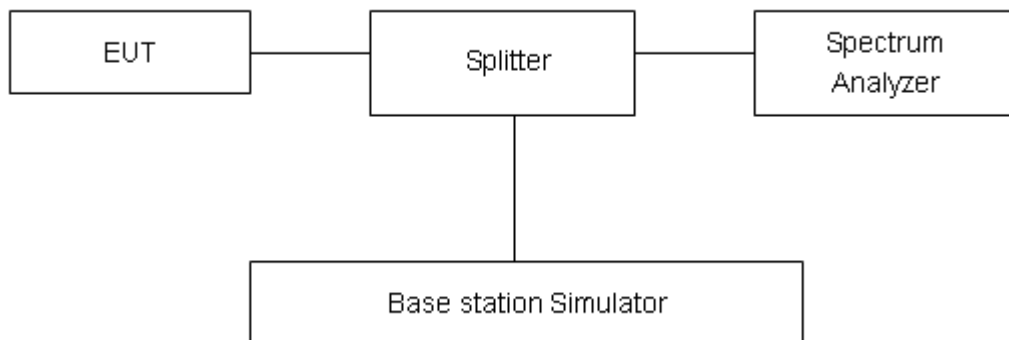
#### Ambient condition

|             |                   |          |
|-------------|-------------------|----------|
| Temperature | Relative humidity | Pressure |
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

#### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The Average detector is used and RBW is set to 15kHz, VBW is set to 30kHz for CDMA PCS. Spectrum analyzer plots are included on the following pages.

#### Test Setup



#### Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10} (P)$  dB.”

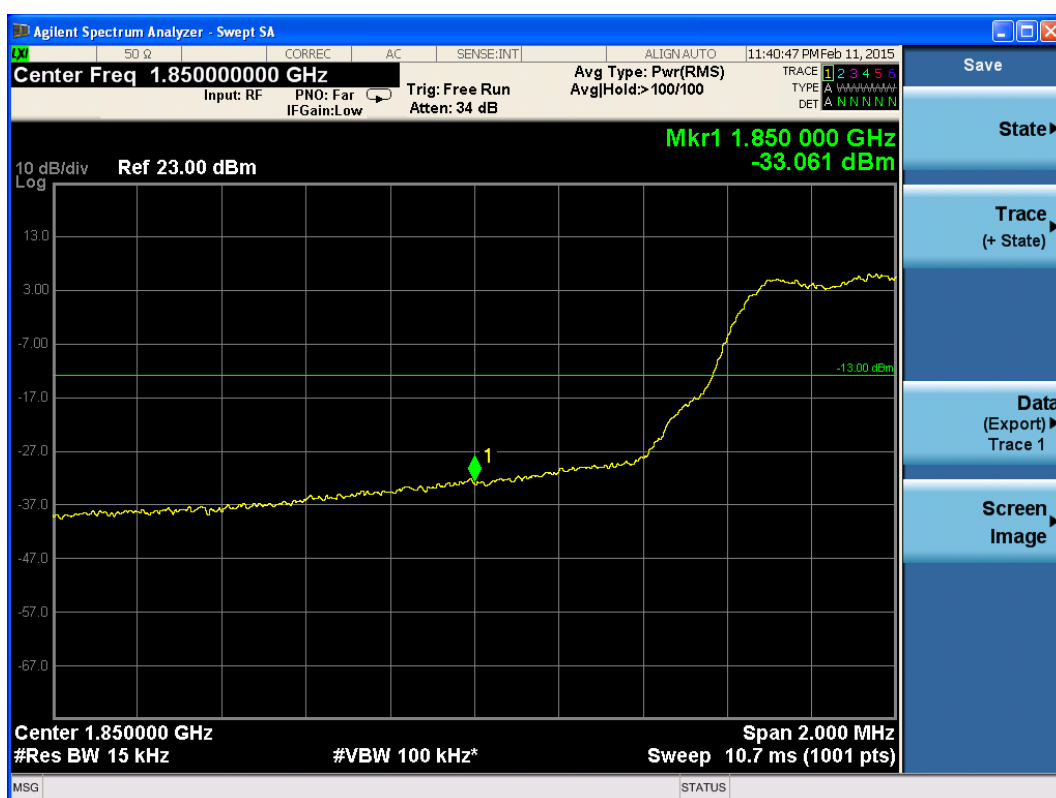
|       |         |
|-------|---------|
| Limit | -13 dBm |
|-------|---------|

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U=0.684$ dB.

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| CDMA PCS | Carrier frequency (MHz) | Reference value (dBm) | Limit | Conclusion |
|----------|-------------------------|-----------------------|-------|------------|
| +F-SCH   | 1850.0                  | -33.061               | -13   | PASS       |
|          | 1910.0                  | -34.983               | -13   | PASS       |



CDMA PCS +F-SCH 25 Channel

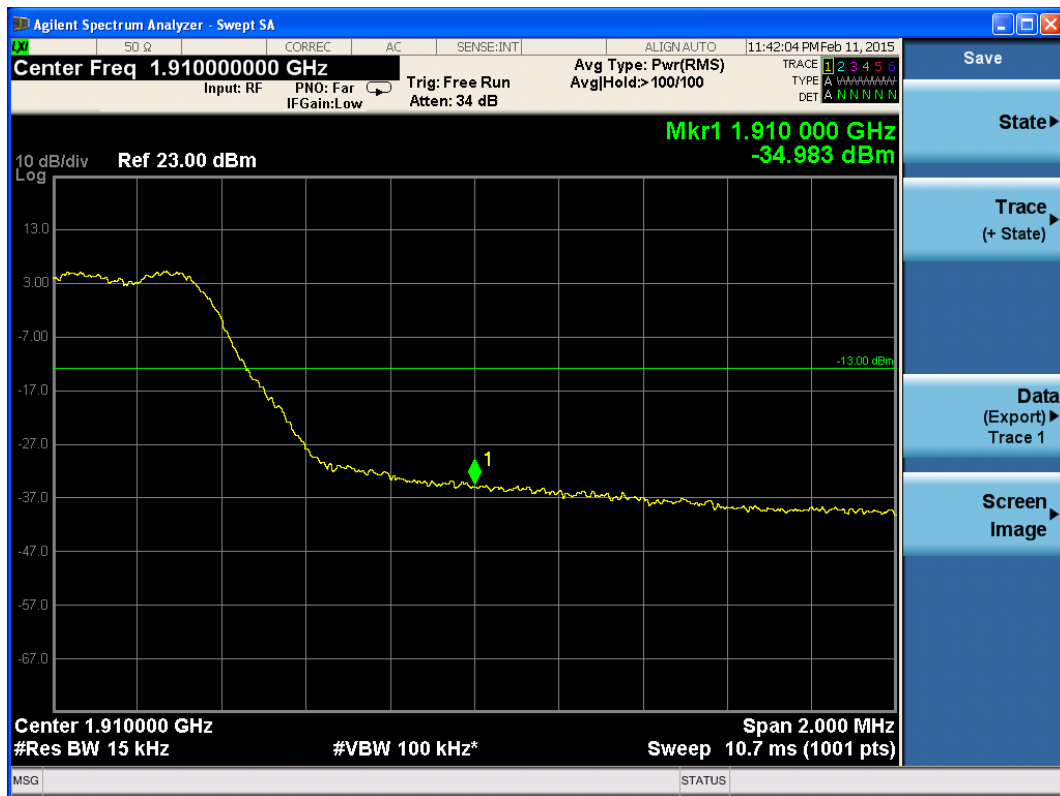


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CDMA PCS +F-SCH 1175 Channel

## 2.6. Peak-to-Average Power Ratio (PAPR)

### Ambient condition

|             |                   |
|-------------|-------------------|
| Temperature | Relative humidity |
| 21°C ~25°C  | 40%~60%           |

### Methods of Measurement

The measurement procedures in KDB971168 are used.

The inherent randomness of the power peaks in a noise-like signal makes it difficult to quantify the peak power using traditional measurement techniques for determining the peak power of an analog signal. The peak power of a digitally-modulated signal is predictable only on a statistical basis. Thus, for these types of signals, a statistical measurement of the peak power is necessary.

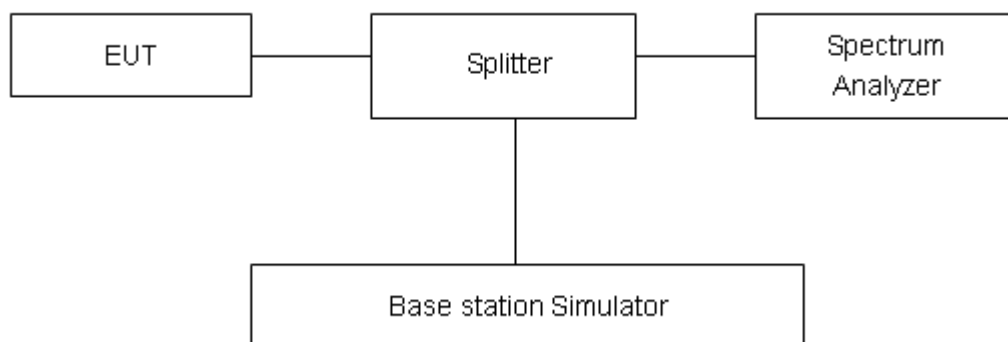
Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth.

Step 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.

Step 2. Set the CCDF option in Spectrum analyzer.

Step 3. Record the maximum PAPR level associated with a probability of 0.1%.

### Test Setup



### Limits

No specific Peak-to-Average Ratio requirements in KDB 971168.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.4$  dB.

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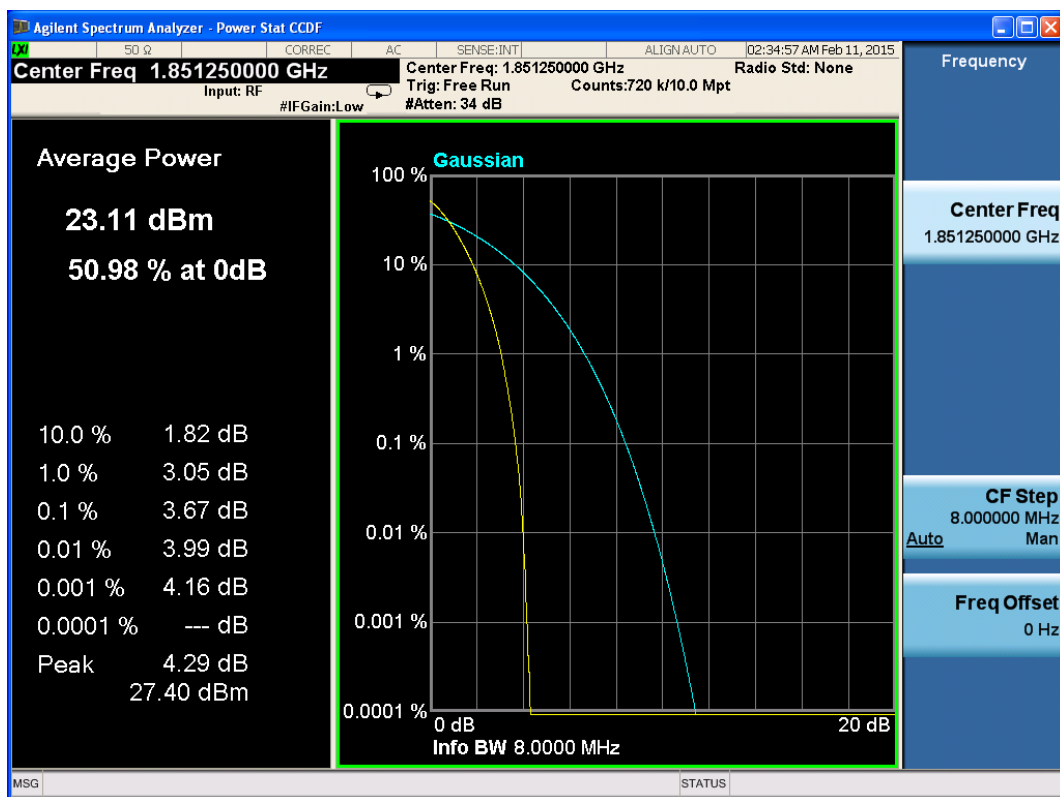
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### Test Result:

| Mode   | Channel | Frequency (MHz) | Test Result(dB) |
|--------|---------|-----------------|-----------------|
| +F-SCH | 25      | 1851.25         | 3.67            |
|        | 600     | 1880.0          | 3.87            |
|        | 1175    | 1908.75         | 3.91            |



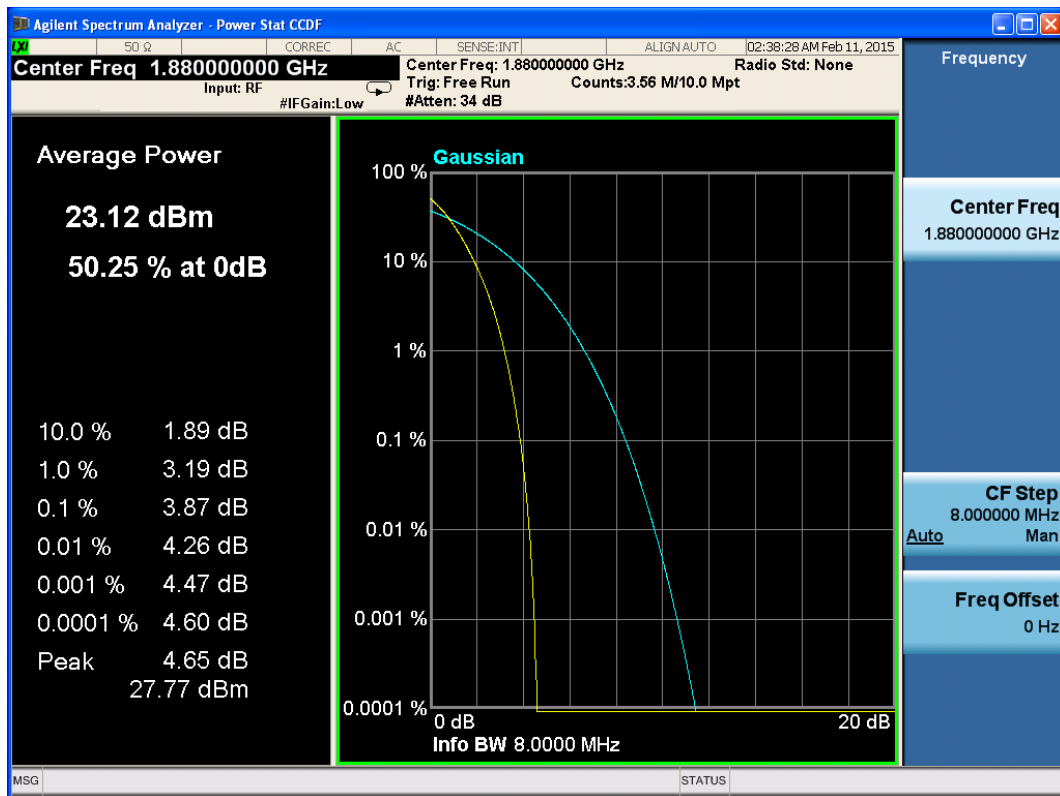
CDMA PCS +F-SCH CH25 Channel

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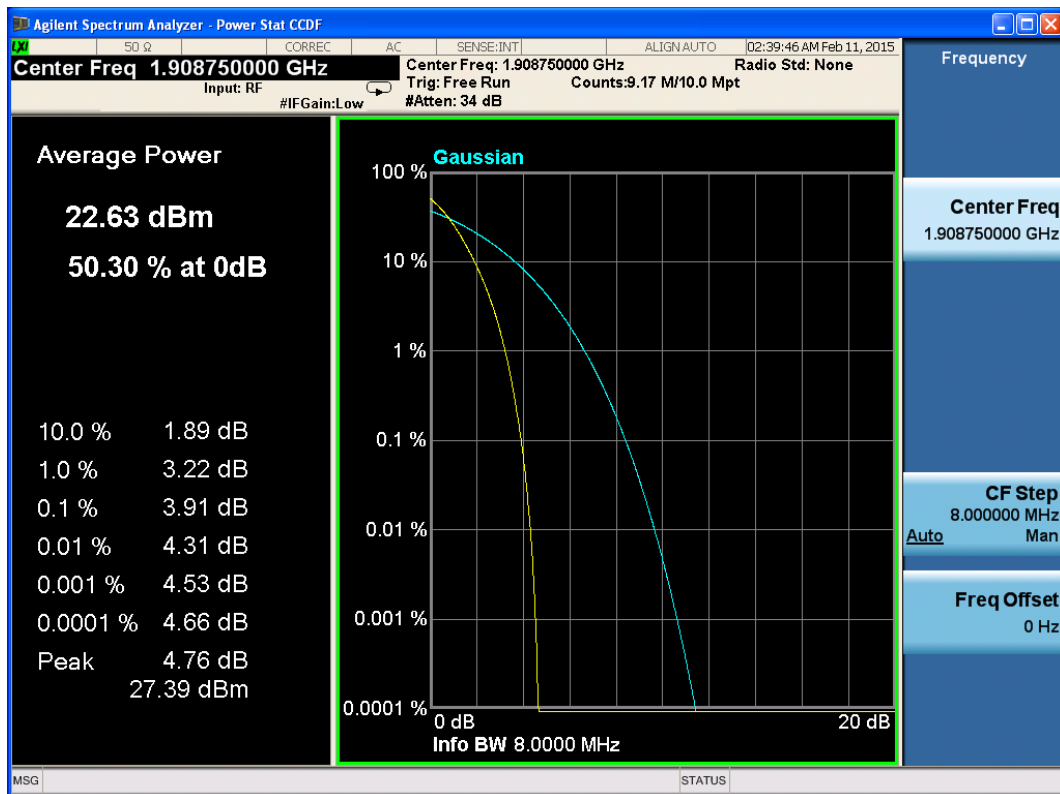
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CDMA PCS +F-SCH CH600 Channel



CDMA PCS +F-SCH CH1175 Channel

## 2.7. Frequency Stability

### Ambient condition

|             |                   |          |
|-------------|-------------------|----------|
| Temperature | Relative humidity | Pressure |
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

### Method of Measurement

#### 1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -40°C to +80°C in 10°C step size,

(1) With all power removed, the temperature was decreased to -40°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -40°C to +80°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

#### 2. Frequency Stability (Voltage Variation)

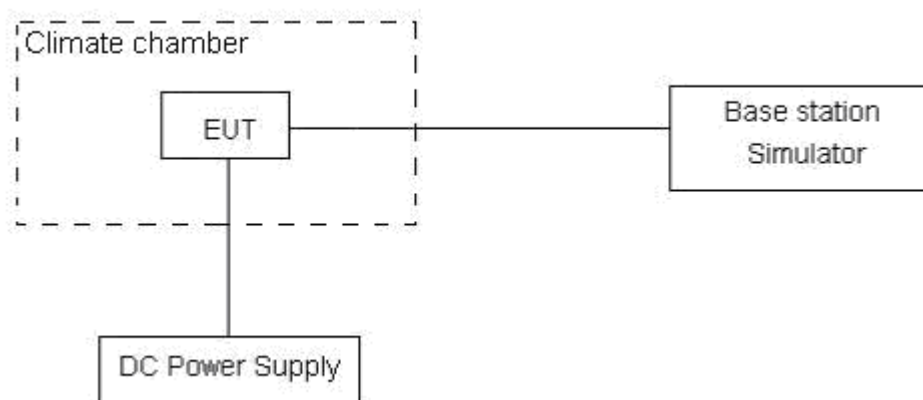
The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 6 V and 40 V, with a nominal voltage of 12V.

### Test setup



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**Limits**

No specific frequency stability requirements in part 24.235

**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 3$ ,  $U = 0.01\text{ppm}$ .

**Test Result**

| Temperature<br>(°C) | Test Results (ppm) / 12 V Power supply |
|---------------------|--|
|                     | Channel 600                            |
|                     | +F-SCH                                 |
| -40                 | -0.005521277                           |
| -30                 | -0.005824468                           |
| -20                 | -0.006159574                           |
| -10                 | -0.006037234                           |
| 0                   | -0.00587234                            |
| 10                  | -0.006154255                           |
| 20                  | -0.006085106                           |
| 30                  | -0.005930851                           |
| 40                  | -0.006446809                           |
| 50                  | -0.006414894                           |
| 60                  | -0.006042553                           |
| 70                  | -0.006691489                           |
| 80                  | -0.006611702                           |

| Voltage<br>(V) | Test Results(ppm) / 20°C |
|----------------|--------------------------|
|                | Channel 600              |
|                | +F-SCH                   |
| 6              | -0.006670213             |
| 12             | -0.006085106             |
| 40             | -0.008765957             |

## 2.8. Spurious Emissions at Antenna Terminals

### Ambient condition

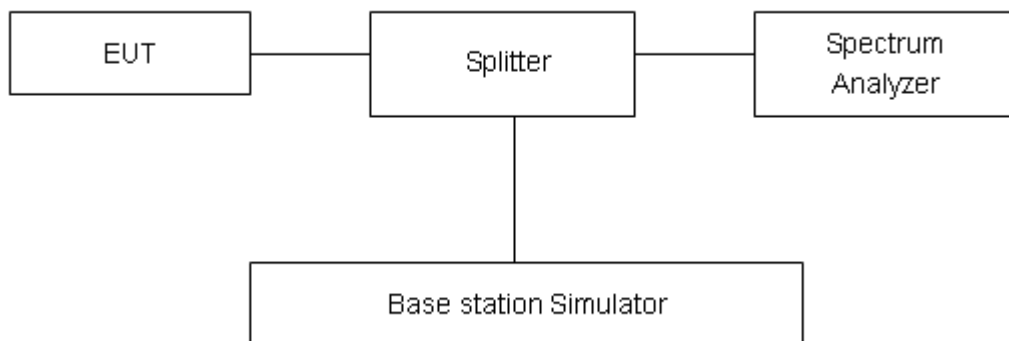
|             |                   |          |
|-------------|-------------------|----------|
| Temperature | Relative humidity | Pressure |
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. For CDMA PCS, RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

### Test setup



### Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.”

|       |         |
|-------|---------|
| Limit | -13 dBm |
|-------|---------|

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

|             |             |
|-------------|-------------|
| Frequency   | Uncertainty |
| 100kHz-2GHz | 0.684 dB    |
| 2GHz-18GHz  | 1.407 dB    |

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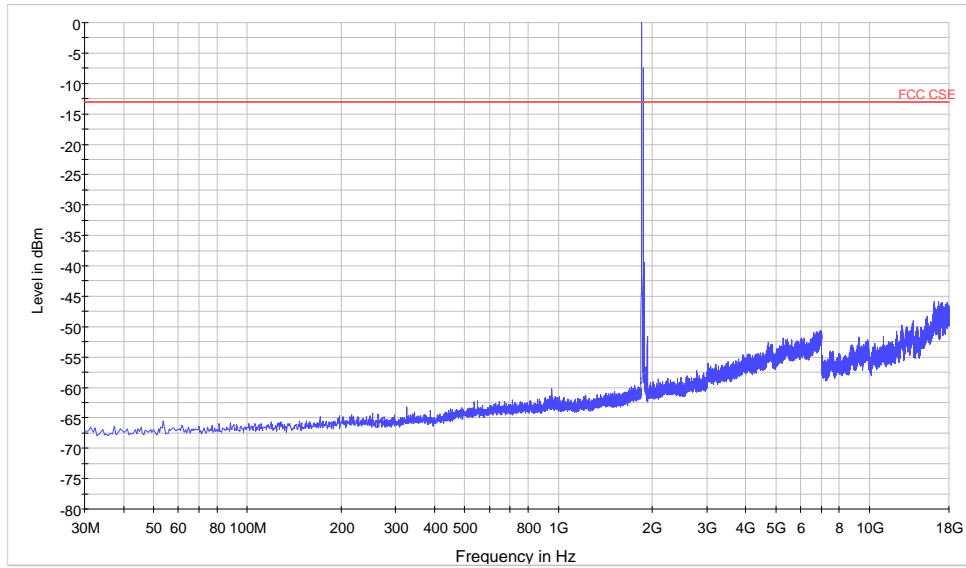
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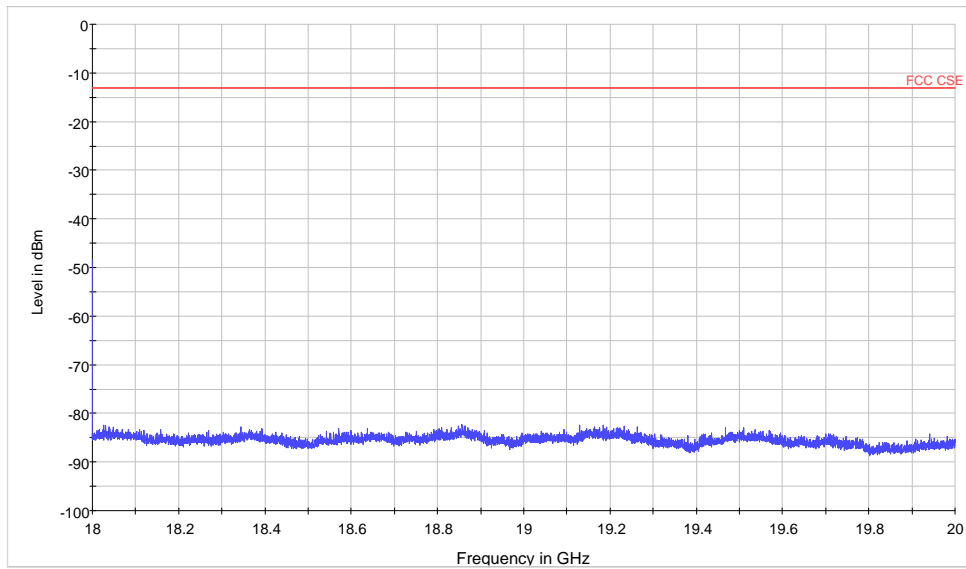
### Test Result

#### CDMA PCS CH25



Note: The signal beyond the limit is carrier.

CDMA PCS CH25 30MHz~18GHz



CDMA PCS CH25 18GHz ~20GHz



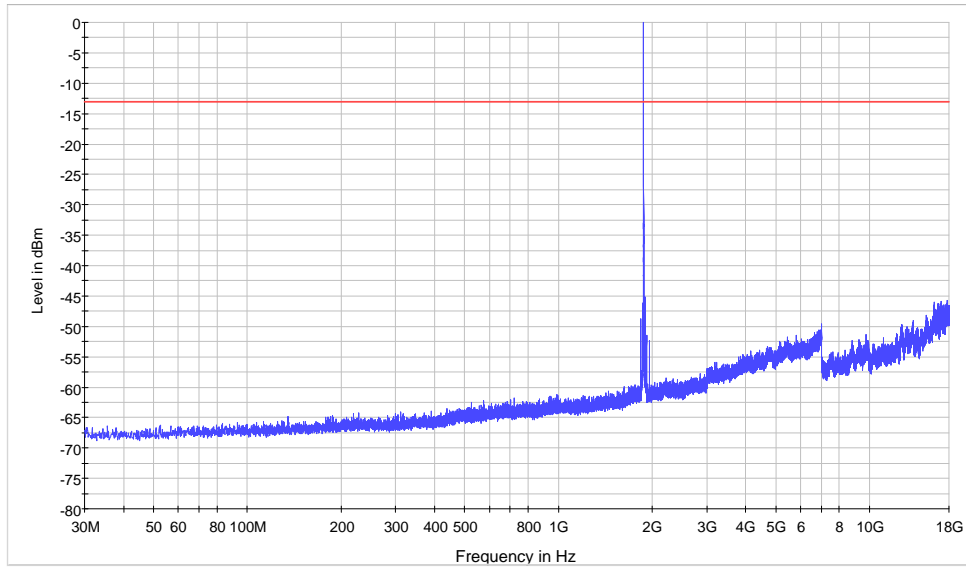
# TA Technology (Shanghai) Co., Ltd.

## Test Report

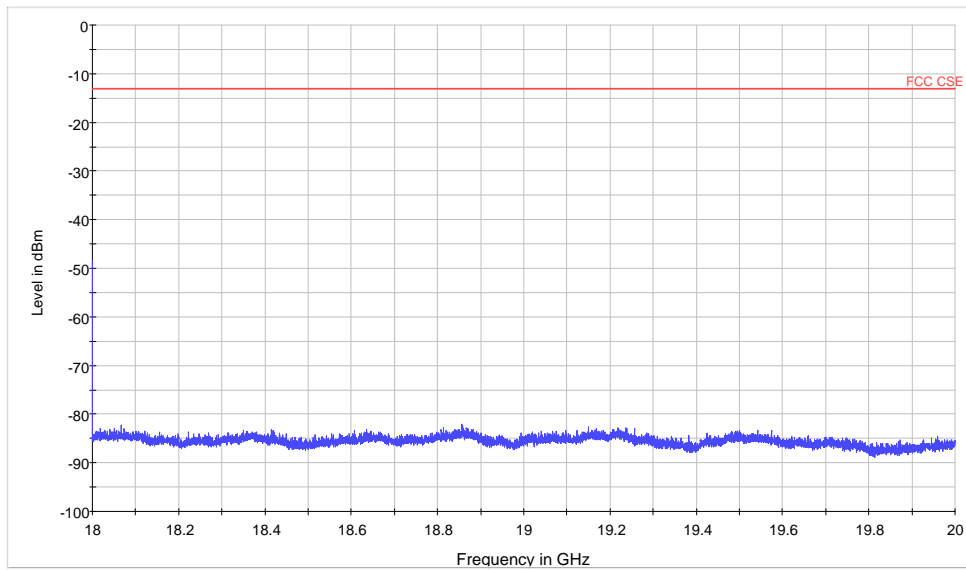
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### CDMA PCS CH600



Note: The signal beyond the limit is carrier.  
CDMA PCS CH600 30MHz~18GHz



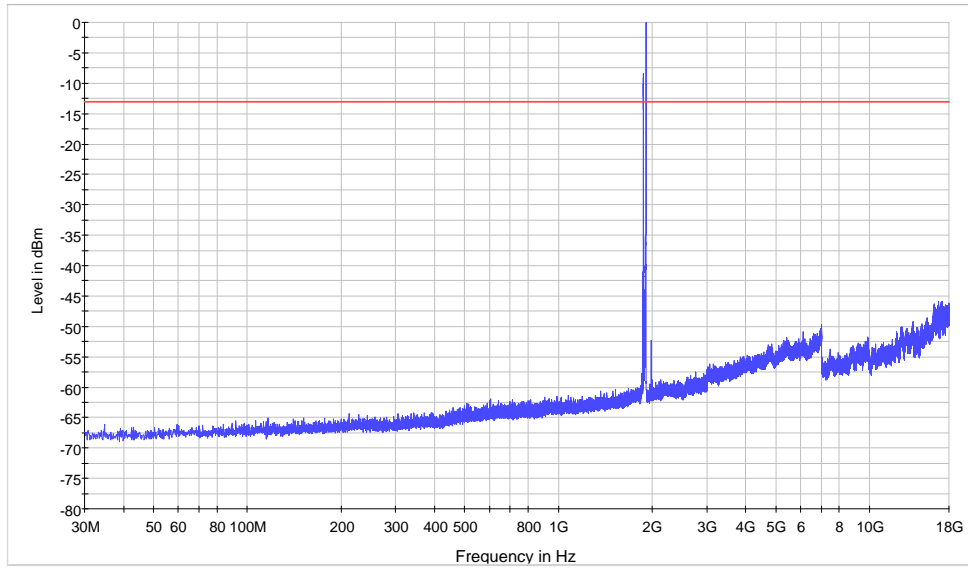
CDMA PCS CH600 18GHz ~20GHz

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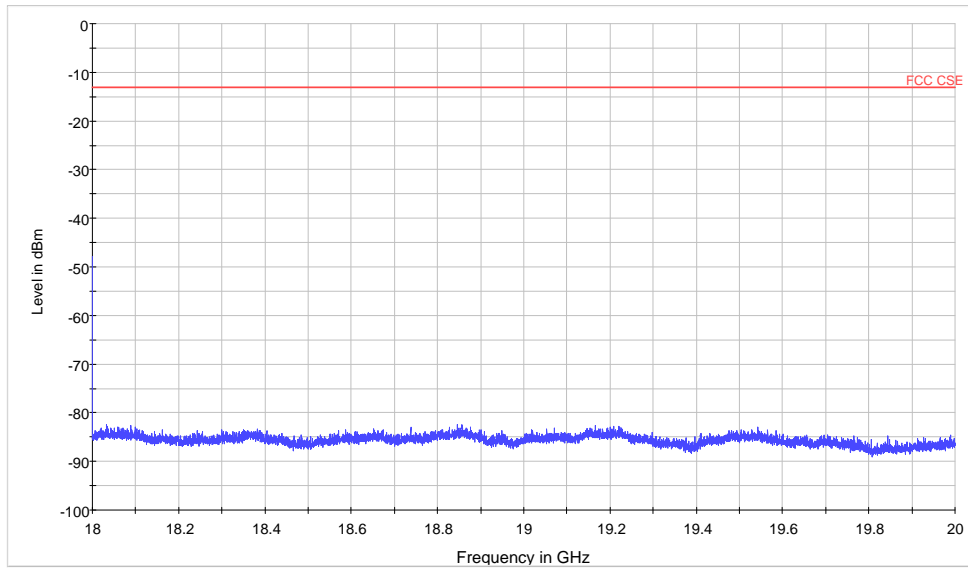
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CDMA PCS CH1175



Note: The signal beyond the limit is carrier.  
CDMA PCS CH1175 30MHz~18GHz



CDMA PCS CH1175 18GHz ~20GHz

## 2.8 Radiates Spurious Emission

### Ambient condition

|             |                   |          |
|-------------|-------------------|----------|
| Temperature | Relative humidity | Pressure |
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

### Method of Measurement

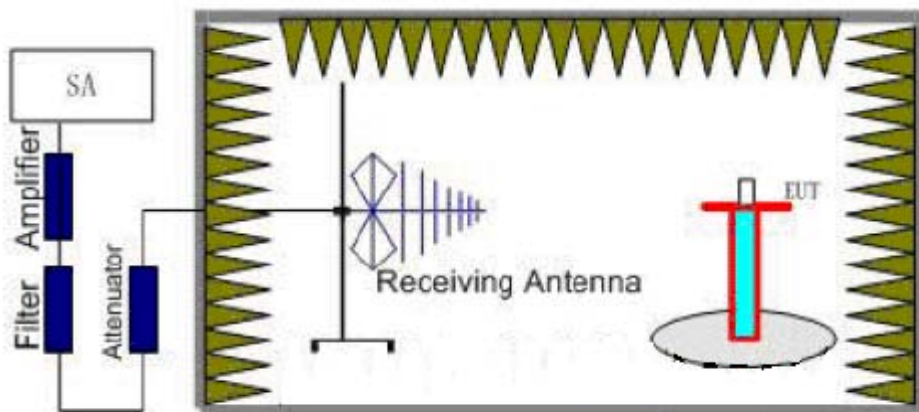
The measurements procedures in TIA -603C are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The procedure of Radiates Spurious Emission is as follows:

#### Step 1:

The measurement is carried out in the semi-anechoic chamber. EUT was placed on a 1.5 meters high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used while RBW and VBW are both set to 3MHz. During the measurement, the highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna moved up and down over a range from 1 to 4 meters in both horizontally and vertically polarized orientations. The test setup refers to figure below.



#### Step 2:

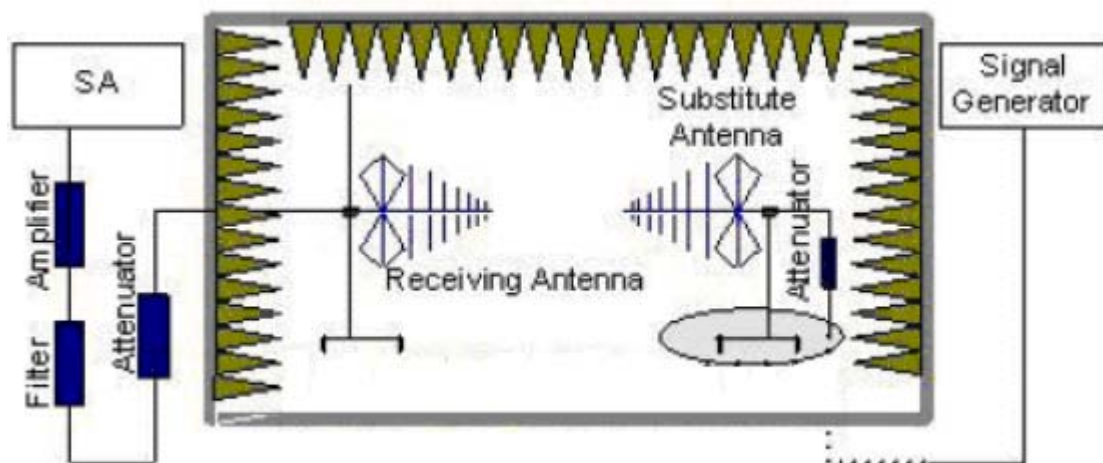
A dipole antenna shall be substituted in place of the EUT. The antenna will be driven by a signal generator with a adjustable S.G. applied through a Tx cable. Adjust the level of the signal generator output until the value of the receiver reach the previously recorded analyzer power level (LVL). Then The E.R.P. /E.I.R.P. of the EUT can be calculated through the level of the signal generator, Tx cable loss and the gain of the substitution antenna. The test setup refers to figure below.

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$E.R.P \text{ (peak power)} = S.G. - Tx \text{ Cable loss} + \text{Substitution antenna gain} - 2.15.$   
 $EIRP = E.R.P + 2.15$

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the antenna is vertical.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

### Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10} (P)$  dB.”

|       |         |
|-------|---------|
| Limit | -13 dBm |
|-------|---------|

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U = 3.55$  dB.

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### Test Result

CDMA Cellular CH1013

| Harmonic | TX ch.1013<br>Frequency<br>(MHz) | SG<br>(dBm) | Cable<br>Loss<br>(dB) | Gain<br>(dBi) | Antenna<br>Polarization | ERP<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Azimuth<br>(deg) |
|----------|----------------------------------|-------------|-----------------------|---------------|-------------------------|-----------------------|----------------|----------------|------------------|
| 2        | 1649.6                           | -45.21      | 2                     | 10.15         | Vertical                | -46.45                | -13            | 33.45          | 270              |
| 3        | 2474.1                           | -66.74      | 2.51                  | 11.35         | Vertical                | -60.05                | -13            | 47.05          | 0                |
| 4        | 3478.5                           | -64.45      | 4.2                   | 10.85         | Vertical                | -46.26                | -13            | 33.26          | 225              |
| 5        | 4123.5                           | -62.89      | 5.2                   | 11.35         | Vertical                | -58.89                | -13            | 45.89          | 90               |
| 6        | 4947.4                           | -63.43      | 5.5                   | 11.95         | Vertical                | -50.39                | -13            | 37.39          | 225              |
| 7        | 5774.6                           | -61.76      | 5.7                   | 13.55         | Vertical                | -42.59                | -13            | 29.59          | 315              |
| 8        | 6594.8                           | -61.10      | 6.3                   | 13.75         | Vertical                | -46.93                | -13            | 33.93          | 270              |
| 9        | 7419.4                           | -61.08      | 6.8                   | 13.85         | Vertical                | -48.08                | -13            | 35.08          | 180              |
| 10       | 8249.6                           | -61.86      | 6.9                   | 14.25         | Vertical                | -39.76                | -13            | 26.76          | 270              |

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.We tested the vertical and horizontal polarization in the preliminary test and the vertical polarization are selected as the worst condition,

CDMA Cellular CH384

| Harmonic | TX ch.384<br>Frequency<br>(MHz) | SG<br>(dBm) | Cable<br>Loss<br>(dB) | Gain<br>(dBi) | Antenna<br>Polarization | ERP<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Azimuth<br>(deg) |
|----------|---------------------------------|-------------|-----------------------|---------------|-------------------------|-----------------------|----------------|----------------|------------------|
| 2        | 1672.3                          | -50.43      | 2                     | 10.75         | Vertical                | -39.66                | -13            | 26.66          | 180              |
| 3        | 2509.56                         | -62.78      | 2.51                  | 11.05         | Vertical                | -56.39                | -13            | 43.39          | 0                |
| 4        | 3526.2                          | -64.61      | 4.2                   | 11.15         | Vertical                | -46.24                | -13            | 33.24          | 180              |
| 5        | 4182.6                          | -62.67      | 5.2                   | 11.15         | Vertical                | -58.87                | -13            | 45.87          | 90               |
| 6        | 5019.12                         | -61.23      | 5.5                   | 11.95         | Vertical                | -56.93                | -13            | 43.93          | 0                |
| 7        | 5856.8                          | -62.70      | 5.7                   | 13.55         | Vertical                | -42.48                | -13            | 29.48          | 315              |
| 8        | 6694.1                          | -61.77      | 6.3                   | 13.75         | Vertical                | -48.78                | -13            | 35.78          | 270              |
| 9        | 7528.68                         | -60.26      | 6.8                   | 13.85         | Vertical                | -55.36                | -13            | 42.36          | 0                |
| 10       | 8365.9                          | -61.88      | 6.9                   | 14.25         | Vertical                | -49.23                | -13            | 36.23          | 270              |

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.We tested the vertical and horizontal polarization in the preliminary test and the vertical polarization are selected as the worst condition,

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CDMA Cellular CH777

| Harmonic | TX ch.777<br>Frequency<br>(MHz) | SG<br>(dBm) | Cable<br>Loss<br>(dB) | Gain<br>(dBi) | Antenna<br>Polarization | ERP<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Azimuth<br>(deg) |
|----------|---------------------------------|-------------|-----------------------|---------------|-------------------------|-----------------------|----------------|----------------|------------------|
| 2        | 1697.1                          | -55.04      | 2                     | 10.15         | Vertical                | -40.51                | -13            | 27.51          | 270              |
| 3        | 2544.93                         | -56.6       | 2.51                  | 11.05         | Vertical                | -50.21                | -13            | 37.21          | 0                |
| 4        | 3573.0                          | -64.16      | 4.2                   | 11.15         | Vertical                | -45.37                | -13            | 32.37          | 0                |
| 5        | 4241.55                         | -61.50      | 5.2                   | 11.15         | Vertical                | -57.70                | -13            | 44.70          | 180              |
| 6        | 5089.86                         | -62.89      | 5.5                   | 11.95         | Vertical                | -58.59                | -13            | 45.59          | 90               |
| 7        | 5936.3                          | -63.04      | 5.7                   | 13.55         | Vertical                | -45.31                | -13            | 32.31          | 0                |
| 8        | 6786.48                         | -60.84      | 6.3                   | 13.75         | Vertical                | -55.54                | -13            | 42.54          | 270              |
| 9        | 7632.8                          | -60.52      | 6.8                   | 13.85         | Vertical                | -47.67                | -13            | 34.67          | 45               |
| 10       | 8483.3                          | -62.22      | 6.9                   | 14.25         | Vertical                | -49.65                | -13            | 36.65          | 225              |

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.We tested the vertical and horizontal polarization in the preliminary test and the vertical polarization are selected as the worst condition,

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### 3. Main Test Instruments

| No. | Name                                 | Type         | Manufacturer | Serial Number | Calibration Date | Expiration Time | Valid Period |
|-----|--------------------------------------|--------------|--------------|---------------|------------------|-----------------|--------------|
| 01  | Base Station Simulator               | CMU200       | R&S          | 118133        | 2014-05-26       | 2015-05-25      | 1 year       |
| 02  | Power Splitter                       | SHX-GF2-2-13 | Hua Xiang    | 10120101      | NA               | NA              | NA           |
| 03  | Spectrum Analyzer                    | E4445A       | Agilent      | MY46181146    | 2014-05-26       | 2015-05-25      | 1 year       |
| 04  | Universal Radio Communication Tester | E5515C       | Agilent      | MY48367192    | 2014-05-26       | 2015-05-25      | 1 year       |
| 05  | Signal Analyzer                      | FSV30        | R&S          | 100815        | 2014-05-26       | 2015-05-25      | 1 year       |
| 06  | Signal generator                     | SMB 100A     | R&S          | 102594        | 2014-05-26       | 2015-05-25      | 1 year       |
| 07  | EMI Test Receiver                    | ESCI         | R&S          | 100948        | 2014-05-26       | 2015-05-25      | 1 year       |
| 08  | Trilog Antenna                       | VUBL 9163    | SCHWARZBECK  | 9163-201      | 2012-06-19       | 2015-06-18      | 3 years      |
| 09  | Trilog Antenna                       | VUBL 9163    | SCHWARZBECK  | 9163-391      | 2012-06-19       | 2015-06-18      | 3 years      |
| 10  | Horn Antenna                         | HF907        | R&S          | 100126        | 2012-07-01       | 2015-06-30      | 3 years      |
| 11  | Horn Antenna                         | HF907        | R&S          | 100125        | 2012-07-01       | 2015-06-30      | 3 years      |
| 12  | Climatic Chamber                     | PT-30B       | Re Ce        | 20101891      | 2014-09-01       | 2017-08-31      | 3 years      |
| 13  | Horn Antenna                         | 3160-09      | ETS-Lindgren | 00102643      | 2012-05-17       | 2015-05-16      | 3 years      |
| 14  | Horn Antenna                         | 3160-09      | ETS-Lindgren | 00102644      | 2012-05-17       | 2015-05-16      | 3 years      |
| 15  | RF Cable                             | SMA 15cm     | Agilent      | 0001          | 2015-02-09       | 2015-04-08      | Two months   |

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

## ANNEX A: EUT Appearance and Test Setup

### A.1 EUT Appearance



Picture 1 EUT and Auxiliary



## **A.2 Test Setup**



**Picture 2: Radiated Spurious Emissions Test setup**