

# FCC RADIO TEST REPORT

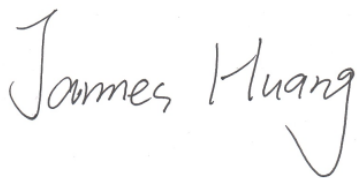
FCC ID : 2AJN7-TP00110AUC  
Equipment : Notebook Computer  
Brand Name : Lenovo  
Model Name : TP00110A  
Applicant : LC Future Center Limited Taiwan Branch  
7F., No. 780, Bei'an Rd., Zhongshan Dist.,  
Taipei City 104, Taiwan (R.O.C.)  
Manufacturer : LC Future Center Limited Taiwan Branch  
7F., No. 780, Bei'an Rd., Zhongshan Dist.,  
Taipei City 104, Taiwan (R.O.C.)  
Standard : 47 CFR Part 2, 22(H), 24(E), 27(L)

Equipment: Fibocom L860-GL and Intel 9560D2W tested inside of Lenovo Notebook Computer.

The product was received on Mar. 13, 2019 and testing was started from Apr. 05, 2019 and completed on Apr. 05, 2019. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP or any agency of government.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Approved by: James Huang / Manager

**Sporton International (Kunshan) Inc.**

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone,  
Jiangsu Province 215335, China**



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## History of this test report

| Report No. | Version | Description             | Issued Date  |
|------------|---------|-------------------------|--------------|
| FG931313A  | 01      | Initial issue of report | May 03, 2019 |
|            |         |                         |              |
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|            |         |                         |              |

## Summary of Test Result

| Report Clause | Ref Std. Clause                                     | Test Items                           | Result (PASS/FAIL) | Remark                                     |
|---------------|-----------------------------------------------------|--------------------------------------|--------------------|--------------------------------------------|
| 3.2           | §2.1046                                             | Conducted Output Power               | Pass               | -                                          |
|               | §22.913 (a)(2)                                      | Effective Radiated Power             |                    |                                            |
|               | §24.232 (c)                                         | Equivalent Isotropic Radiated Power  |                    |                                            |
|               | §27.50 (d)(4)                                       | Equivalent Isotropic Radiated Power  |                    |                                            |
| 4.4           | §2.1053<br>§22.917 (a)<br>§24.238 (a)<br>§27.53 (h) | Field Strength of Spurious Radiation | Pass               | Under limit<br>32.19 dB at<br>5198.000 MHz |

### Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

### Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Jason Jia**

**Report Producer: Echo Wu**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------|
| Equipment                       | Notebook Computer                                                                                            |
| Brand Name                      | Lenovo                                                                                                       |
| Model Name                      | TP00110A                                                                                                     |
| FCC ID                          | 2AJN7-TP00110AUC                                                                                             |
| Sample 1                        | EUT with Amphenol Antenna                                                                                    |
| Sample 2                        | EUT with SPEEDWIRE Antenna                                                                                   |
| EUT supports Radios application | WCDMA/HSPA/LTE/GNSS<br>WLAN 11a/b/g/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80/VHT160<br>Bluetooth BR/EDR/LE |
| EUT Stage                       | Production Unit                                                                                              |

**Remark:**

1. The above EUT's information was declared by manufacturer.
2. Equipment: Fibocom L860-GL and Intel 9560D2W tested inside of Lenovo Notebook Computer.
3. All test items were performed with Sample 1.

| Antenna Information |              |                     |           |              |
|---------------------|--------------|---------------------|-----------|--------------|
| WWAN                |              |                     |           | 3G&LTE (dBi) |
| Antenna 1           | Manufacturer | Amphenol            | Peak gain | 2.30         |
|                     | Part number  | LX9865-16-000-C     | Type      | PIFA         |
| Antenna 2           | Manufacturer | SPEEDWIRE           | Peak gain | 2.07         |
|                     | Part number  | F.0G.ZV-0008-001-00 | Type      | PIFA         |

## 1.2 Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                                                                        |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Tx Frequency                            | <b>WCDMA:</b><br>Band V: 826.4 MHz ~ 846.6 MHz<br>Band II: 1852.4 MHz ~ 1907.6 MHz<br>Band IV: 1712.4 MHz ~ 1752.6 MHz |
| Rx Frequency                            | <b>WCDMA:</b><br>Band V: 871.4 MHz ~ 891.6 MHz<br>Band II: 1932.4 MHz ~ 1987.6 MHz<br>Band IV: 2112.4 MHz ~ 2152.6 MHz |
| Maximum Output Power to Antenna         | <b>WCDMA:</b><br>Band V: 23.48 dBm<br>Band II: 23.57 dBm<br>Band IV: 23.57 dBm                                         |
| Type of Modulation                      | WCDMA: BPSK (Uplink)<br>HSDPA: 64QAM (Downlink)<br>HSUPA: QPSK (Uplink)                                                |

### 1.3 Modification of EUT

No modifications are made to the EUT during all test items.

### 1.4 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0).

|                    |                                                                                                |                     |                                |
|--------------------|------------------------------------------------------------------------------------------------|---------------------|--------------------------------|
| Test Site          | Sporton International (Kunshan) Inc.                                                           |                     |                                |
| Test Site Location | No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China |                     |                                |
| Test Site No.      | Sporton Site No.                                                                               | FCC designation No. | FCC Test Firm Registration No. |
|                    | 03CH06-KS                                                                                      | CN5013              | 630927                         |
| Test Engineer      | Level Zhao                                                                                     |                     |                                |
| Temperature        | 23~24 °C                                                                                       |                     |                                |
| Relative Humidity  | 63~66 %                                                                                        |                     |                                |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

### 1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ 47 CFR Part 2, 22(H), 24(E), 27(L)
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z for table mode and notebook mode. The worst cases (Notebook mode for WCDMA Band II and Band IV, Y plane for WCDMA Band V) were recorded in this report.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 9000 MHz for WCDMA Band V.
2. 30 MHz to 18000 MHz for WCDMA Band IV.
3. 30 MHz to 19100 MHz for WCDMA Band II.

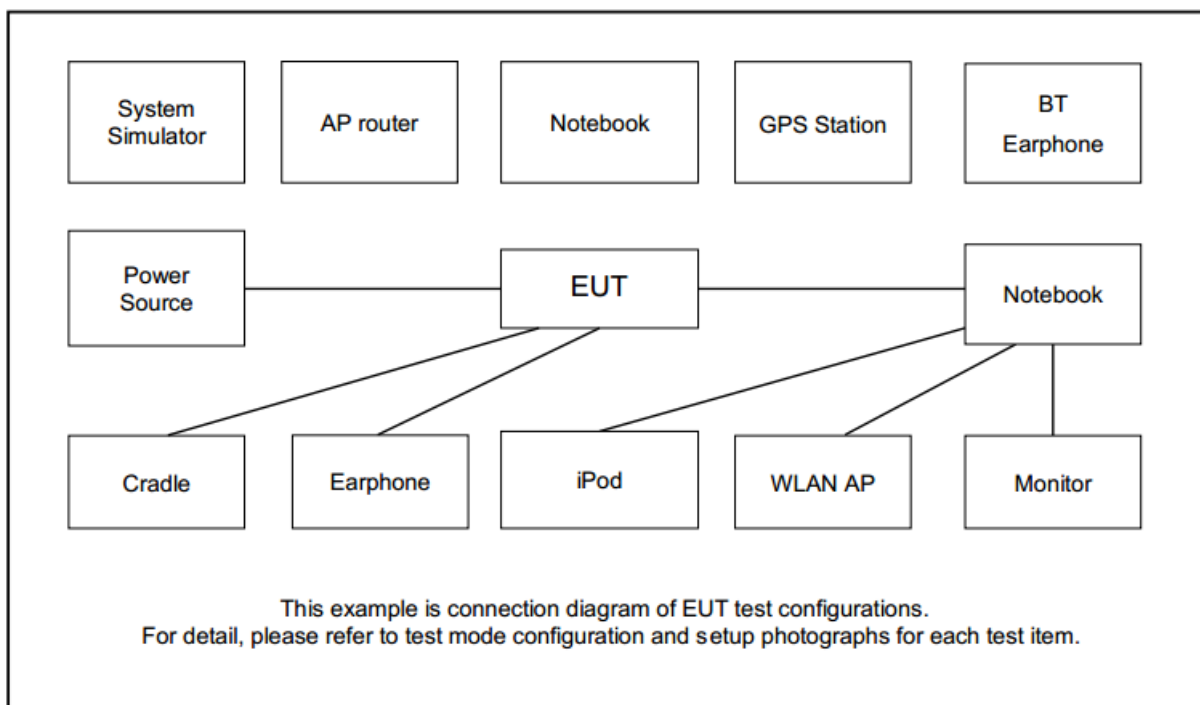
All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

| Test Modes    |                     |                     |
|---------------|---------------------|---------------------|
| Band          | Radiated TCs        | Conducted TCs       |
| WCDMA Band V  | ■ RMC 12.2Kbps Link | ■ RMC 12.2Kbps Link |
| WCDMA Band II | ■ RMC 12.2Kbps Link | ■ RMC 12.2Kbps Link |
| WCDMA Band IV | ■ RMC 12.2Kbps Link | ■ RMC 12.2Kbps Link |

**Remark:** All the radiated test cases were performed with Adapter 1.

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration

| Item | Equipment        | Trade Name | Model No. | FCC ID | Data Cable        | Power Cord        |
|------|------------------|------------|-----------|--------|-------------------|-------------------|
| 1.   | System Simulator | Anritsu    | 8820C     | N/A    | N/A               | Unshielded, 1.8 m |
| 2.   | Earphone         | zyia       | N/A       | N/A    | Unshielded, 1.2 m | N/A               |

## 2.4 Frequency List of Low/Middle/High Channels

| Frequency List |                        |        |        |         |
|----------------|------------------------|--------|--------|---------|
| Band           | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| WCDMA Band V   | Channel                | 4132   | 4182   | 4233    |
|                | Frequency              | 826.4  | 836.4  | 846.6   |
| WCDMA Band II  | Channel                | 9262   | 9400   | 9538    |
|                | Frequency              | 1852.4 | 1880.0 | 1907.6  |
| WCDMA Band IV  | Channel                | 1312   | 1413   | 1513    |
|                | Frequency              | 1712.4 | 1732.6 | 1752.6  |



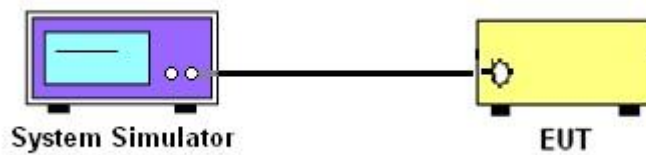
### 3 Conducted Test Result

#### 3.1 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.1 Test Setup

##### 3.1.2 Conducted Output Power



##### 3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

## 3.2 Conducted Output Power and ERP/EIRP

### 3.2.1 Description of the Conducted Output Power and ERP/EIRP

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for GSM850 and WCDMA Band V.

The EIRP of mobile transmitters must not exceed 2 Watts for GSM1900 and WCDMA Band II.

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

### 3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

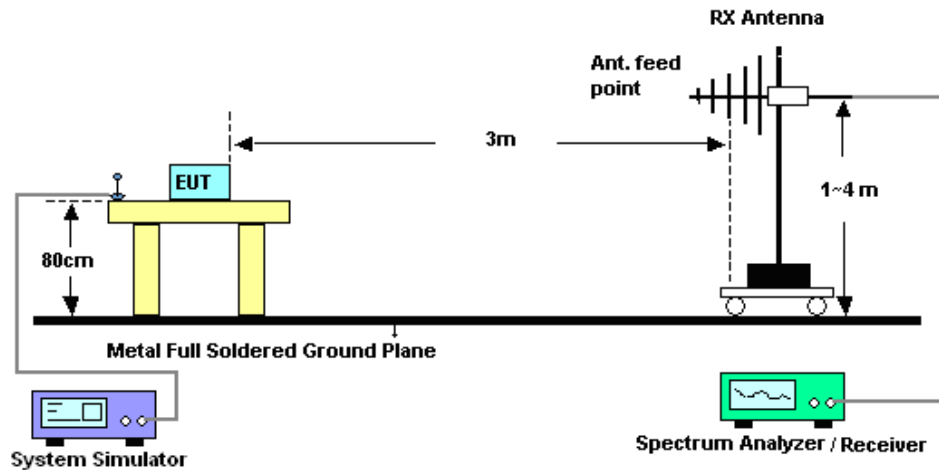
## 4 Radiated Test Items

### 4.1 Measuring Instruments

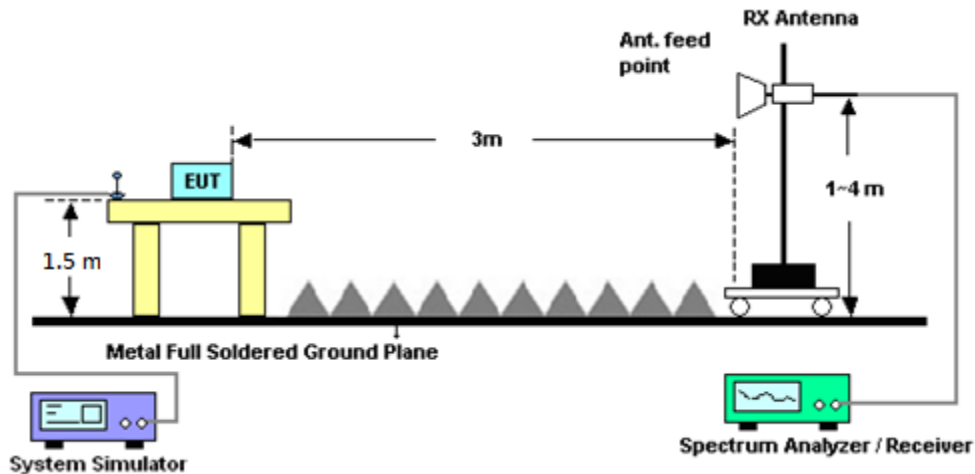
See list of measuring instruments of this test report.

### 4.2 Test Setup

For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



### 4.3 Test Result of Radiated Test

Please refer to Appendix B.

## 4.4 Field Strength of Spurious Radiation Measurement

### 4.4.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

### 4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a rotatable wooden table 0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz above the ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10.  $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11.  $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)

## 5 List of Measuring Equipment

| Instrument                   | Manufacturer                       | Model No.                  | Serial No.      | Characteristics           | Calibration Date | Test Date     | Due Date      | Remark                |
|------------------------------|------------------------------------|----------------------------|-----------------|---------------------------|------------------|---------------|---------------|-----------------------|
| LTE Base Station             | Anritsu                            | MT8820C                    | KS141204JCG S01 | 6201432836                | Jan. 14, 2019    | Apr. 05, 2019 | Jan. 13, 2020 | Radiation (03CH06-KS) |
| EXA Spectrum Analyzer        | Keysight                           | N9010A                     | MY55370528      | 10Hz-44GHz                | Oct. 10, 2018    | Apr. 05, 2019 | Oct. 09, 2019 | Radiation (03CH06-KS) |
| Bilog Antenna                | TeseQ                              | CBL6112D                   | 35406           | 30MHz-1GHz                | Apr. 19, 2018    | Apr. 05, 2019 | Apr. 18, 2019 | Radiation (03CH06-KS) |
| Broad-Band Horn Antenna      | Schwarzbeck<br>MESS-ELEKT<br>RONIK | BBHA9120D                  | 01648           | 1GHz~18GHz                | Jan. 27, 2019    | Apr. 05, 2019 | Jan. 26, 2020 | Radiation (03CH06-KS) |
| Amplifier                    | SONOMA                             | 310N                       | 380827          | 9KHz-1GHz<br>Gain 32dB    | Aug. 03, 2018    | Apr. 05, 2019 | Aug. 02, 2019 | Radiation (03CH06-KS) |
| Amplifier                    | MITEQ                              | AMF-7D-0010<br>1800-30-10P | 2025788         | 100MHz-18GHz<br>Gain 55dB | Apr. 17, 2018    | Apr. 05, 2019 | Apr. 16, 2019 | Radiation (03CH06-KS) |
| Preamplifier                 | Keysight                           | 83017A                     | MY53270319      | 0.5G-26.5GHz              | Oct. 12, 2018    | Apr. 05, 2019 | Oct. 11, 2019 | Radiation (03CH06-KS) |
| SHF-EHF Horn                 | Schwarzbeck                        | BBHA 9170                  | BBHA170249      | 15-40GHz                  | Feb. 07, 2019    | Apr. 05, 2019 | Feb. 06, 2020 | Radiation (03CH06-KS) |
| Amplifier                    | MITEQ                              | TTA1840-35-H<br>G          | 1887435         | 18~40GHz,45dB<br>Min      | Feb. 08, 2019    | Apr. 05, 2019 | Feb. 07, 2020 | Radiation (03CH06-KS) |
| Radio communication analyzer | Anritsu                            | MT8820C                    | KS141204JCG S01 | 6201432836                | Jan. 14, 2019    | Apr. 05, 2019 | Jan. 13, 2020 | Radiation (03CH06-KS) |

## 6 Uncertainty of Evaluation

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.50 |
|-------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.10 |
|-------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.10 |
|-------------------------------------------------------------------------|------|



## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power)

| Conducted Power (*Unit: dBm) |              |       |       |               |       |        |
|------------------------------|--------------|-------|-------|---------------|-------|--------|
| Band                         | WCDMA Band V |       |       | WCDMA Band II |       |        |
| Channel                      | 4132         | 4182  | 4233  | 9262          | 9400  | 9538   |
| Frequency                    | 826.4        | 836.4 | 846.6 | 1852.4        | 1880  | 1907.6 |
| RMC 12.2K                    | 23.37        | 23.46 | 23.48 | 23.52         | 23.57 | 23.52  |
| HSDPA Subtest-1              | 23.28        | 23.40 | 23.41 | 23.48         | 23.51 | 23.51  |
| HSDPA Subtest-2              | 22.67        | 23.07 | 22.77 | 22.69         | 22.76 | 22.68  |
| HSDPA Subtest-3              | 22.05        | 22.59 | 22.19 | 22.02         | 22.15 | 22.17  |
| HSDPA Subtest-4              | 22.07        | 22.54 | 22.26 | 22.03         | 22.10 | 22.25  |
| HSUPA Subtest-1              | 22.60        | 22.82 | 22.74 | 22.60         | 22.76 | 22.82  |
| HSUPA Subtest-2              | 20.66        | 20.96 | 20.86 | 20.56         | 20.61 | 20.81  |
| HSUPA Subtest-3              | 21.52        | 21.51 | 22.05 | 21.73         | 21.76 | 21.86  |
| HSUPA Subtest-4              | 20.58        | 20.79 | 20.59 | 20.50         | 20.74 | 20.87  |
| HSUPA Subtest-5              | 22.54        | 22.83 | 22.63 | 22.57         | 22.70 | 22.74  |

| Conducted Power (*Unit: dBm) |               |        |        |
|------------------------------|---------------|--------|--------|
| Band                         | WCDMA Band IV |        |        |
| Channel                      | 1312          | 1413   | 1513   |
| Frequency                    | 1712.4        | 1732.6 | 1752.6 |
| RMC 12.2K                    | 23.28         | 23.50  | 23.57  |
| HSDPA Subtest-1              | 23.22         | 23.45  | 23.27  |
| HSDPA Subtest-2              | 22.52         | 23.01  | 22.91  |
| HSDPA Subtest-3              | 22.05         | 22.21  | 22.12  |
| HSDPA Subtest-4              | 22.02         | 22.20  | 22.08  |
| HSUPA Subtest-1              | 22.55         | 22.89  | 22.71  |
| HSUPA Subtest-2              | 20.56         | 20.73  | 20.53  |
| HSUPA Subtest-3              | 21.55         | 21.72  | 21.61  |
| HSUPA Subtest-4              | 20.54         | 20.64  | 20.58  |
| HSUPA Subtest-5              | 22.58         | 22.77  | 22.65  |

**Appendix B. Test Results of ERP/EIRP and Radiated Test****ERP/EIRP**

| Channel | Mode                | Conducted   |               | ERP      |        |
|---------|---------------------|-------------|---------------|----------|--------|
|         |                     | Power (dBm) | Power (Watts) | ERP(dBm) | ERP(W) |
| Lowest  | WCDMA Band V        | 23.37       | 0.2173        | 22.39    | 0.1734 |
| Middle  | RMC 12.2Kbps        | 23.46       | 0.2218        | 22.48    | 0.1770 |
| Highest | (GT - LC = 1.17 dB) | 23.48       | 0.2228        | 22.50    | 0.1778 |
| Limit   | ERP < 7W            | Result      |               | PASS     |        |

| Channel | Mode                | Conducted   |               | EIRP      |         |
|---------|---------------------|-------------|---------------|-----------|---------|
|         |                     | Power (dBm) | Power (Watts) | EIRP(dBm) | EIRP(W) |
| Lowest  | WCDMA Band II       | 23.52       | 0.2249        | 24.96     | 0.3133  |
| Middle  | RMC 12.2Kbps        | 23.57       | 0.2275        | 25.01     | 0.3170  |
| Highest | (GT - LC = 1.44 dB) | 23.52       | 0.2249        | 24.96     | 0.3133  |
| Limit   | EIRP < 2W           | Result      |               | PASS      |         |

| Channel | Mode               | Conducted   |               | EIRP      |         |
|---------|--------------------|-------------|---------------|-----------|---------|
|         |                    | Power (dBm) | Power (Watts) | EIRP(dBm) | EIRP(W) |
| Lowest  | WCDMA Band IV      | 23.28       | 0.2128        | 24.38     | 0.2742  |
| Middle  | RMC 12.2Kbps       | 23.50       | 0.2239        | 24.60     | 0.2884  |
| Highest | (GT - LC = 1.1 dB) | 23.57       | 0.2275        | 24.67     | 0.2931  |
| Limit   | EIRP < 1W          | Result      |               | PASS      |         |



**Radiated Spurious Emission****WCDMA 850**

| WCDMA 850 |                      |                |                  |                         |                          |                            |                             |                       |
|-----------|----------------------|----------------|------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel   | Frequency<br>( MHz ) | ERP<br>( dBm ) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | S.G.<br>Power<br>( dBm ) | TX Cable<br>loss<br>( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |
| Lowest    | 1652                 | -55.03         | -13              | -42.03                  | -58.27                   | 1.11                       | 6.50                        | H                     |
|           | 2476                 | -51.50         | -13              | -38.50                  | -54.12                   | 1.43                       | 6.20                        | H                     |
|           | 3306                 | -55.99         | -13              | -42.99                  | -60.43                   | 1.71                       | 8.30                        | H                     |
|           |                      |                |                  |                         |                          |                            |                             | H                     |
|           | 1652                 | -58.05         | -13              | -45.05                  | -61.29                   | 1.11                       | 6.50                        | V                     |
|           | 2476                 | -52.89         | -13              | -39.89                  | -55.51                   | 1.43                       | 6.20                        | V                     |
|           | 3306                 | -59.51         | -13              | -46.51                  | -63.95                   | 1.71                       | 8.30                        | V                     |
|           |                      |                |                  |                         |                          |                            |                             | V                     |
| Middle    | 1672                 | -57.88         | -13              | -44.88                  | -61.12                   | 1.11                       | 6.50                        | H                     |
|           | 2510                 | -52.96         | -13              | -39.96                  | -55.58                   | 1.43                       | 6.20                        | H                     |
|           | 3348                 | -55.27         | -13              | -42.27                  | -59.71                   | 1.71                       | 8.30                        | H                     |
|           |                      |                |                  |                         |                          |                            |                             | H                     |
|           | 1672                 | -57.92         | -13              | -44.92                  | -61.16                   | 1.11                       | 6.50                        | V                     |
|           | 2510                 | -55.32         | -13              | -42.32                  | -57.94                   | 1.43                       | 6.20                        | V                     |
|           | 3348                 | -59.30         | -13              | -46.30                  | -63.74                   | 1.71                       | 8.30                        | V                     |
|           |                      |                |                  |                         |                          |                            |                             | V                     |
| Highest   | 1694                 | -59.98         | -13              | -46.98                  | -63.22                   | 1.11                       | 6.50                        | H                     |
|           | 2540                 | -54.45         | -13              | -41.45                  | -57.07                   | 1.43                       | 6.20                        | H                     |
|           | 3384                 | -58.01         | -13              | -45.01                  | -62.45                   | 1.71                       | 8.30                        | H                     |
|           |                      |                |                  |                         |                          |                            |                             | H                     |
|           | 1694                 | -55.79         | -13              | -42.79                  | -59.03                   | 1.11                       | 6.50                        | V                     |
|           | 2540                 | -55.89         | -13              | -42.89                  | -58.51                   | 1.43                       | 6.20                        | V                     |
|           | 3384                 | -59.64         | -13              | -46.64                  | -64.08                   | 1.71                       | 8.30                        | V                     |
|           |                      |                |                  |                         |                          |                            |                             | V                     |

**Remark:** Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

## WCDMA 1700

| WCDMA 1700 |                      |                 |                  |                         |                          |                            |                             |                       |
|------------|----------------------|-----------------|------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel    | Frequency<br>( MHz ) | EIRP<br>( dBm ) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | S.G.<br>Power<br>( dBm ) | TX Cable<br>loss<br>( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |
| Lowest     | 3420                 | -52.98          | -13              | -39.98                  | -59.30                   | 1.81                       | 8.13                        | H                     |
|            | 5136                 | -53.80          | -13              | -40.80                  | -61.78                   | 2.22                       | 10.20                       | H                     |
|            | 6852                 | -53.03          | -13              | -40.03                  | -61.85                   | 2.54                       | 11.36                       | H                     |
|            |                      |                 |                  |                         |                          |                            |                             | H                     |
|            | 3420                 | -54.01          | -13              | -41.01                  | -60.33                   | 1.81                       | 8.13                        | V                     |
|            | 5136                 | -52.52          | -13              | -39.52                  | -60.50                   | 2.22                       | 10.20                       | V                     |
|            | 6852                 | -53.21          | -13              | -40.21                  | -62.03                   | 2.54                       | 11.36                       | V                     |
|            |                      |                 |                  |                         |                          |                            |                             | V                     |
| Middle     | 3465                 | -48.36          | -13              | -35.36                  | -54.68                   | 1.81                       | 8.13                        | H                     |
|            | 5198                 | -45.19          | -13              | -32.19                  | -53.17                   | 2.22                       | 10.20                       | H                     |
|            | 6930                 | -51.24          | -13              | -38.24                  | -60.06                   | 2.54                       | 11.36                       | H                     |
|            |                      |                 |                  |                         |                          |                            |                             | H                     |
|            | 3465                 | -54.31          | -13              | -41.31                  | -60.63                   | 1.81                       | 8.13                        | V                     |
|            | 5198                 | -51.62          | -13              | -38.62                  | -59.60                   | 2.22                       | 10.20                       | V                     |
|            | 6930                 | -52.49          | -13              | -39.49                  | -61.31                   | 2.54                       | 11.36                       | V                     |
|            |                      |                 |                  |                         |                          |                            |                             | V                     |
| Highest    | 3505                 | -46.94          | -13              | -33.94                  | -53.26                   | 1.81                       | 8.13                        | H                     |
|            | 5258                 | -51.88          | -13              | -38.88                  | -59.86                   | 2.22                       | 10.20                       | H                     |
|            | 7010                 | -51.80          | -13              | -38.80                  | -60.62                   | 2.54                       | 11.36                       | H                     |
|            |                      |                 |                  |                         |                          |                            |                             | H                     |
|            | 3505                 | -53.90          | -13              | -40.90                  | -60.22                   | 1.81                       | 8.13                        | V                     |
|            | 5258                 | -52.61          | -13              | -39.61                  | -60.59                   | 2.22                       | 10.20                       | V                     |
|            | 7010                 | -52.09          | -13              | -39.09                  | -60.91                   | 2.54                       | 11.36                       | V                     |
|            |                      |                 |                  |                         |                          |                            |                             | V                     |

**Remark:** Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

## WCDMA 1900

| WCDMA 1900 |                      |                 |                  |                         |                          |                            |                             |                       |
|------------|----------------------|-----------------|------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel    | Frequency<br>( MHz ) | EIRP<br>( dBm ) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | S.G.<br>Power<br>( dBm ) | TX Cable<br>loss<br>( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |
| Lowest     | 3702                 | -55.95          | -13              | -42.95                  | -62.52                   | 1.85                       | 8.42                        | H                     |
|            | 5556                 | -54.14          | -13              | -41.14                  | -62.50                   | 2.32                       | 10.68                       | H                     |
|            | 7410                 | -53.00          | -13              | -40.00                  | -62.33                   | 2.61                       | 11.94                       | H                     |
|            |                      |                 |                  |                         |                          |                            |                             | H                     |
|            | 3702                 | -54.49          | -13              | -41.49                  | -61.06                   | 1.85                       | 8.42                        | V                     |
|            | 5556                 | -53.04          | -13              | -40.04                  | -61.40                   | 2.32                       | 10.68                       | V                     |
|            | 7410                 | -52.06          | -13              | -39.06                  | -61.39                   | 2.61                       | 11.94                       | V                     |
|            |                      |                 |                  |                         |                          |                            |                             | V                     |
| Middle     | 3762                 | -54.22          | -13              | -41.22                  | -60.79                   | 1.85                       | 8.42                        | H                     |
|            | 5640                 | -52.21          | -13              | -39.21                  | -60.57                   | 2.32                       | 10.68                       | H                     |
|            | 7518                 | -51.92          | -13              | -38.92                  | -61.25                   | 2.61                       | 11.94                       | H                     |
|            |                      |                 |                  |                         |                          |                            |                             | H                     |
|            | 3762                 | -54.03          | -13              | -41.03                  | -60.60                   | 1.85                       | 8.42                        | V                     |
|            | 5640                 | -52.68          | -13              | -39.68                  | -61.04                   | 2.32                       | 10.68                       | V                     |
|            | 7518                 | -51.98          | -13              | -38.98                  | -61.31                   | 2.61                       | 11.94                       | V                     |
|            |                      |                 |                  |                         |                          |                            |                             | V                     |
| Highest    | 3816                 | -54.88          | -13              | -41.88                  | -61.45                   | 1.85                       | 8.42                        | H                     |
|            | 5724                 | -54.07          | -13              | -41.07                  | -62.43                   | 2.32                       | 10.68                       | H                     |
|            | 7632                 | -53.20          | -13              | -40.20                  | -62.53                   | 2.61                       | 11.94                       | H                     |
|            |                      |                 |                  |                         |                          |                            |                             |                       |
|            | 3816                 | -54.96          | -13              | -41.96                  | -61.53                   | 1.85                       | 8.42                        | V                     |
|            | 5724                 | -54.18          | -13              | -41.18                  | -62.54                   | 2.32                       | 10.68                       | V                     |
|            | 7632                 | -53.49          | -13              | -40.49                  | -62.82                   | 2.61                       | 11.94                       | V                     |
|            |                      |                 |                  |                         |                          |                            |                             | V                     |

**Remark:** Spurious emissions within 30-1000MHz were found more than 20dB below limit line.