# TEST REPORT

**REPORT NUMBER: I23W00054-MPE-FCC**

**ON**

| | |
|---|---|
| **Type of Equipment:** | 5G CPE |
| **Type of Designation:** | PW550, PW571,PW512,JW515, PW550-NA |
| **Manufacturer:** | Asiatelco Technologies Co. |
| **Brand Name:** | ATEL |
| **FCC ID:** | XYO-PW550 |

**ACCORDING TO**

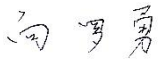
**FCC CFR 47 Part 2.1091-2022**
**KDB 447498 D01**
**IEEE C95.1-2019**

**Chongqing Academy of Information and Communication Technology**

***Month date, year***

*Sep20, 2023*

***Signature***



**Xiang Luoyong**

***Director***

**Note:**
The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

**Revision Version**

| Report Number | Revision | Date |
|---|---|---|
| I23W00054-MPE-FCC | 00 | 2023-09-20 |

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# 1. Test Laboratory

## 1.1. Testing Location

| | |
|---|---|
| Company Name: | Chongqing Academy of Information and Communications Technology |
| Designation Number: | CN1239 |
| Address: | Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China |
| Postal Code: | 401336 |
| Telephone: | 0086-23-88069965 |
| Fax: | 0086-23-88608777 |

## 1.2. Testing Environment

| | |
|---|---|
| Normal Temperature: | -- |
| Relative Humidity: | -- |

## 1.3. Project Data

| | |
|---|---|
| Testing Start Date: | -- |
| Testing End Date: | -- |

## 1.4. Signature

胡波

**2023-09-20**

**Hu Bo**
**(Prepared this test report)**

**Date**

喻春

**2023-09-20**

**Yu Chun**
**(Reviewed this test report)**

**Date**

向罗勇

**2023-09-20**

**Xiang Luoyong**
**Director of the laboratory**
**(Approved this test report)**

**Date**

# 2. Client Information

## 2.1. Applicant Information

| | |
|---|---|
| Company Name: | Asiatelco Technologies Co. |
| Address /Post: | #68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China |
| Country: | CHINA |
| Telephone: | -- |
| Fax: | -- |
| Email: | xsfeng@asiatelco.com |
| Contact Person: | xiaosheng.feng |

## 2.2. Manufacturer Information

| | |
|---|---|
| Company Name: | Asiatelco Technologies Co. |
| Address /Post: | #68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China |
| Country: | CHINA |
| Telephone: | -- |
| Fax: | -- |
| Email: | xsfeng@asiatelco.com |
| Contact Person: | xiaosheng.feng |

# 3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

## 3.1. About EUT

| | |
|---|---|
| EUT Description: | 5G CPE |
| Model name: | PW550, PW571,PW512,JW515, PW550-NA |
| Brand name: | ATEL |
| Frequency Band: | WCDMA Band Ⅱ/Ⅳ/Ⅴ<br>LTE Band 2/4/5/7/12/13/14/17/25/26/30/41/48/66/71, CA_41C<br>NR SA n2/5/7/12/14/25/30/41/66/71/77/78<br>NR MIMO: n41/n77/n78 |
| Type of modulation | WCDMA: QPSK/16 QAM<br>LTE: QPSK/16 QAM/64 QAM/256 QAM<br>NR: CP-OFDM QPSK/16 QAM/64 QAM/256 QAM<br>DFT-s-OFDM QPSK/16 QAM/64 QAM/256 QAM<br>BLE: GFSK |
| Note：Photographs of EUT are shown in ANNEX A of this test report. | |

## 3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version | Date of receipt |
|---|---|---|---|---|
| -- | -- | PW55-P1 | CPE5_PW550_N0_00_v1.0.2 | 2023-09-13 |

*EUT ID: is used to identify the test sample in the lab internally.

## 3.3. Internal Identification of AE used during the test

| EUT ID* | SN | Description |
|---|---|---|
| -- | -- | -- |

*AE ID: is used to identify the test sample in the lab internally.

# 4. Reference Documents

## 4.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091-2022.

**FCC CFR 47 Part 2.1091-2022:** Radio frequency radiation exposure evaluation: mobile devices

**KDB447498 D01: General RF Exposure Guidance v06:** RF Exposure Procedures and Equipment Authorization Policies For Mobile and Portable Devices.

**IEEE C95.1:2019:** IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz.

Note: KDB 447498 D01 and FCC CFR 47 Part 2.1091-2022 are not approved by A2LA.

## 4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a mannerthat ensures that the public is not exposed to radio frequency energy level in excesslimit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2Subpart J, section 2.1091 this device has been defined as a mobile device whereby adistance of 0.2 m normally can be maintained between the user and the device.

MPE for the upper tier (people in controlled environments)

| Frequency Range [MHz] | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| (A) Limits for Occupational/Controlled Exposure | | | | |
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842/f | 4.89/f | ($900/f^2$)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | -- | -- | f/300 | 6 |
| 1500-100000 | -- | -- | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | ($180/f^2$)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100000 | -- | -- | 1.0 | 30 |

Note: f=frequency in MHz; *Plane-wave equivalent power density

For the DUT, the limits for the general public when an RF safety program is unavailable.

# 5. Test Results

## 5.1. Tune Up Power and Antenna Gain

| Antenna | Frequency Band | Highest Averaged Tune Up Power(dBm) | Highest Frame-Averaged Tune Up Power (dBm) | Antenna Gain(dBi) |
|---|---|---|---|---|
| ANT 8 | WCDMA Band Ⅱ(1850MHz-1910MHz) | 25.00 | 25.00 | 1.70 |
| ANT 8 | WCDMA Band Ⅳ(1710MHz-1755MHz) | 25.00 | 25.00 | 1.82 |
| ANT 8 | WCDMA Band Ⅴ(824MHz-849MHz) | 25.00 | 25.00 | 1.56 |
| ANT 8 | LTE Band 2(1850MHz-1910MHz) | 24.50 | 24.50 | 1.70 |
| ANT 8 | LTE Band 4(1710MHz-1755MHz) | 24.50 | 24.50 | 1.82 |
| ANT 8 | LTE Band 5(824MHz-849MHz) | 24.50 | 24.50 | 1.56 |
| ANT 8 | LTE Band 7(2500MHz-2570MHz) | 24.50 | 24.50 | 1.07 |
| ANT 8 | LTE Band 12(699MHz-716MHz) | 24.50 | 24.50 | 0.92 |
| ANT 8 | LTE Band 13(777MHz-787MHz) | 24.50 | 24.50 | 0.43 |
| ANT 8 | LTE Band 14(788MHz-798MHz) | 24.50 | 24.50 | 0.43 |
| ANT 8 | LTE Band 17(704MHz-716MHz) | 24.50 | 24.50 | 0.92 |
| ANT 8 | LTE Band 25(1850MHz-1915MHz) | 24.50 | 24.50 | 1.70 |
| ANT 8 | LTE Band 26(814MHz-849MHz) | 24.50 | 24.50 | 1.56 |
| ANT 8 | LTE Band 30(2305MHz-2315MHz) | 23.50 | 23.50 | 0.22 |
| ANT 3 | LTE Band 41(2496MHz-2690MHz) | 27.50 | 27.50 | 1.92 |
| ANT 6 | LTE Band 48(3550MHz-3700MHz) | 22.00 | 22.00 | 1.84 |
| ANT 8 | LTE Band 66(1710MHz-1780MHz) | 24.50 | 24.50 | 1.82 |
| ANT 8 | LTE Band 71(663MHz-698MHz) | 24.50 | 24.50 | 0.92 |
| ANT 3 | LTE CA_41C(2496MHz-2690MHz) | 27.50 | 27.50 | 1.92 |
| ANT 8 | NR n2(1850MHz-1910MHz) | 24.50 | 24.50 | 1.70 |
| ANT 8 | NR n5(824MHz-849MHz) | 24.50 | 24.50 | 1.56 |
| ANT 8 | NR n7(2500MHz-2570MHz) | 24.50 | 24.50 | 1.07 |
| ANT 8 | NR n12(699MHz-716MHz) | 24.50 | 24.50 | 0.92 |
| ANT 8 | NR n14(788MHz-798MHz) | 24.50 | 24.50 | 0.43 |
| ANT 8 | NR n25(1850MHz-1915MHz) | 24.50 | 24.50 | 1.70 |
| ANT 8 | NR n30(2305MHz-2315MHz) | 23.50 | 23.50 | 0.22 |
| ANT 3 | NR n41(2496MHz-2690MHz) | 27.50 | 27.50 | 1.92 |
| ANT 8 | NR n66(1710MHz-1780MHz) | 24.50 | 24.50 | 1.82 |
| ANT 8 | NR n71(663MHz-698MHz) | 24.50 | 24.50 | 0.92 |
| ANT 6 | NR n77(3300MHz-4200MHz) | 27.50 | 27.50 | 1.84 |

| | | | | |
|---|---|---|---|---|
| ANT 6 | NR n78(3300MHz-3800MHz) | 27.50 | 27.50 | 1.84 |
| ANT 3 | NR n41 MIMO(2496MHz-2690MHz) | 23.50 | 23.50 | 1.92 |
| ANT 8 | | 23.50 | 23.50 | 1.77 |
| ANT 1 | NR n77 MIMO(3300MHz-4200MHz) | 23.50 | 23.50 | 1.91 |
| ANT 6 | | 23.50 | 23.50 | 1.84 |
| ANT 1 | NR n78 MIMO(3300MHz-3800MHz) | 23.50 | 23.50 | 1.61 |
| ANT 6 | | 23.50 | 23.50 | 1.84 |
| BT | BLE(2402MHz-2480MHz) | 5.50 | 5.50 | 3.87 |
| Notes:<br>1) Disclaimers： The highest tune up power and antenna gain in the above table are provided by the customer | | | | |

## 5.2. Calculation Information

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

$$S = \frac{PG}{4\pi d^2}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

## 5.3. Results

**Table 5.3-1: Standalone Evaluation**

| Antenna | Frequency Band | Limit ($mW/cm^2$) | Results ($mW/cm^2$) | Results /Limit | Verdict |
|---|---|---|---|---|---|
| ANT 8 | WCDMA Band Ⅱ(1850MHz-1910MHz) | 1.000 | 0.093 | 0.093 | PASS |
| ANT 8 | WCDMA Band Ⅳ(1710MHz-1755MHz) | 1.000 | 0.096 | 0.096 | PASS |
| ANT 8 | WCDMA Band Ⅴ(824MHz-849MHz) | 0.549 | 0.090 | 0.164 | PASS |
| ANT 8 | LTE Band 2(1850MHz-1910MHz) | 1.000 | 0.083 | 0.083 | PASS |
| ANT 8 | LTE Band 4(1710MHz-1755MHz) | 1.000 | 0.085 | 0.085 | PASS |
| ANT 8 | LTE Band 5(824MHz-849MHz) | 0.549 | 0.080 | 0.146 | PASS |
| ANT 8 | LTE Band 7(2500MHz-2570MHz) | 1.000 | 0.072 | 0.072 | PASS |
| ANT 8 | LTE Band 12(699MHz-716MHz) | 0.466 | 0.069 | 0.148 | PASS |
| ANT 8 | LTE Band 13(777MHz-787MHz) | 0.518 | 0.062 | 0.120 | PASS |
| ANT 8 | LTE Band 14(788MHz-798MHz) | 0.525 | 0.062 | 0.118 | PASS |
| ANT 8 | LTE Band 17(704MHz-716MHz) | 0.469 | 0.069 | 0.147 | PASS |
| ANT 8 | LTE Band 25(1850MHz-1915MHz) | 1.000 | 0.083 | 0.083 | PASS |
| ANT 8 | LTE Band 26(814MHz-849MHz) | 0.543 | 0.080 | 0.147 | PASS |
| ANT 8 | LTE Band 30(2305MHz-2315MHz) | 1.000 | 0.047 | 0.047 | PASS |
| ANT 3 | LTE Band 41(2496MHz-2690MHz) | 1.000 | 0.174 | 0.174 | PASS |
| ANT 6 | LTE Band 48(3550MHz-3700MHz) | 1.000 | 0.048 | 0.048 | PASS |
| ANT 8 | LTE Band 66(1710MHz-1780MHz) | 1.000 | 0.085 | 0.085 | PASS |
| ANT 8 | LTE Band 71(663MHz-698MHz) | 0.442 | 0.069 | 0.156 | PASS |
| ANT 3 | LTE CA_41C(2496MHz-2690MHz) | 1.000 | 0.174 | 0.174 | PASS |
| ANT 8 | NR n2(1850MHz-1910MHz) | 1.000 | 0.083 | 0.083 | PASS |
| ANT 8 | NR n5(824MHz-849MHz) | 0.549 | 0.080 | 0.146 | PASS |
| ANT 8 | NR n7(2500MHz-2570MHz) | 1.000 | 0.072 | 0.072 | PASS |
| ANT 8 | NR n12(699MHz-716MHz) | 0.466 | 0.069 | 0.148 | PASS |
| ANT 8 | NR n14(788MHz-798MHz) | 0.525 | 0.062 | 0.118 | PASS |
| ANT 8 | NR n25(1850MHz-1915MHz) | 1.000 | 0.083 | 0.083 | PASS |
| ANT 8 | NR n30(2305MHz-2315MHz) | 1.000 | 0.047 | 0.047 | PASS |
| ANT 3 | NR n41(2496MHz-2690MHz) | 1.000 | 0.174 | 0.174 | PASS |
| ANT 8 | NR n66(1710MHz-1780MHz) | 1.000 | 0.085 | 0.085 | PASS |
| ANT 8 | NR n71(663MHz-698MHz) | 0.442 | 0.069 | 0.156 | PASS |
| ANT 6 | NR n77(3300MHz-4200MHz) | 1.000 | 0.171 | 0.171 | PASS |

| | | | | | |
|---|---|---|---|---|---|
| ANT 6 | NR n78(3300MHz-3800MHz) | 1.000 | 0.171 | 0.171 | PASS |
| ANT 3 | NR n41 MIMO(2496MHz-2690MHz) | 1.000 | 0.069 | 0.069 | PASS |
| ANT 8 | | 1.000 | 0.067 | 0.067 | PASS |
| ANT 1 | NR n77 MIMO(3300MHz-4200MHz) | 1.000 | 0.069 | 0.069 | PASS |
| ANT 6 | | 1.000 | 0.068 | 0.068 | PASS |
| ANT 1 | NR n78 MIMO(3300MHz-3800MHz) | 1.000 | 0.065 | 0.065 | PASS |
| ANT 6 | | 1.000 | 0.068 | 0.068 | PASS |
| BT | BLE(2402MHz-2480MHz) | 1.000 | 0.002 | 0.002 | PASS |

**Table 5.3-2: Simultaneous transmission evaluation**

| Antenna | Frequency range | Worst case ratios: (Results/Limit) | Sum of Ratios | Limit of Ratios | Verdict |
|---|---|---|---|---|---|
| ANT 3 | LTE Band 41/CA_41C | 0.174 | 0.176 | 1.000 | Pass |
| BT | BLE | 0.002 | | | |
| ANT 3 | NR n41 | 0.174 | 0.176 | 1.000 | Pass |
| BT | BLE | 0.002 | | | |
| ANT 3 | NR n41 MIMO | 0.069 | 0.138 | 1.000 | Pass |
| ANT 8 | | 0.067 | | | |
| BT | BLE | 0.002 | | | |
| ANT 1 | NR n77 MIMO | 0.069 | 0.139 | 1.000 | Pass |
| ANT 6 | | 0.068 | | | |
| BT | BLE | 0.002 | | | |
| ANT 1 | NR n78 MIMO | 0.065 | 0.135 | 1.000 | Pass |
| ANT 6 | | 0.068 | | | |
| BT | BLE | 0.002 | | | |

Conclusion: The Sum of the Ratios is smaller than 1, and simultaneous transmissions is compliant.

### 5.4. Result of ANT 8

**WCDMA Band Ⅱ Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850 MHz～1910 MHz; The maximum conducted is 25.00 dBm. The maximum gain is 1.70 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.093 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**WCDMA Band Ⅳ Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710 MHz～1755 MHz; The maximum conducted is 25.00 dBm. The maximum gain is 1.82 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.096 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**WCDMA Band Ⅴ Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824 MHz～849 MHz; The maximum conducted is 25.00 dBm. The maximum gain is 1.56 dBi. Therefore, maximum limit for general public RF exposure: 0.549 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.090 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.549 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 2 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850 MHz～1910 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.70 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）
G = antenna gain（numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm
S=0.083 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 4 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710 MHz～1755 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.82 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）
G = antenna gain（numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm
S=0.085 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 5 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824 MHz～849 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.56 dBi. Therefore, maximum limit for general public RF exposure: 0.549 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）
G = antenna gain（numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm
S=0.080 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.549 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 7 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2500 MHz～2570 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.07 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）
G = antenna gain（numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm
S=0.072 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 12 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 699 MHz～716 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.92 dBi. Therefore,

maximum limit for general public RF exposure: 0.466 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.069 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.466 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 13 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 777 MHz～787 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.43 dBi. Therefore, maximum limit for general public RF exposure: 0.518 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.062 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.518 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 14 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 788 MHz～798 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.43 dBi. Therefore, maximum limit for general public RF exposure: 0.525 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.062 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.525 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 17 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 704 MHz～716 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.92 dBi. Therefore, maximum limit for general public RF exposure: 0.469 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.069 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.469 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 25 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850 MHz～1915 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.70 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.083 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 26 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 814 MHz～849 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.56 dBi. Therefore, maximum limit for general public RF exposure: 0.543 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.080 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.543 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 30 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2305 MHz～2315 MHz; The maximum conducted is 23.50 dBm. The maximum gain is 0.22 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.047 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 66 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710 MHz～1780 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.82 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.085 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**LTE Band 71 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 663 MHz～698 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.92 dBi. Therefore, maximum limit for general public RF exposure: 0.442 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.069 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.442 mW/cm$^2$ limit for uncontrolled exposure.

**NR n2 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850 MHz～1910 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.70 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.083 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n5 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824 MHz～849 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.56 dBi. Therefore, maximum limit for general public RF exposure: 0.549 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.080 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.549 mW/cm$^2$ limit for uncontrolled exposure.

**NR n7 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2500 MHz～2570 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.07 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.072 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n12 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 699 MHz～716 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.92 dBi. Therefore, maximum limit for general public RF exposure: 0.466 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.069 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.466 mW/cm$^2$ limit for uncontrolled exposure.

**NR n14 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 788 MHz～798 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.43 dBi. Therefore, maximum limit for general public RF exposure: 0.525 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.062 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.525 mW/cm$^2$ limit for uncontrolled exposure.

**NR n25 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850 MHz～1915 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.70 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.083 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n30 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2305 MHz～2315 MHz;

The maximum conducted is 23.50 dBm. The maximum gain is 0.22 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.047 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n66 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710 MHz～1780 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 1.82 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.085 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n71 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 663 MHz～698 MHz; The maximum conducted is 24.50 dBm. The maximum gain is 0.92 dBi. Therefore, maximum limit for general public RF exposure: 0.442 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.069 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 0.442 mW/cm$^2$ limit for uncontrolled exposure.

**NR n41 MIMO Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2496 MHz～2690 MHz; The maximum conducted is 23.50 dBm. The maximum gain is 1.77 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.067 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm$^2$ limit for uncontrolled exposure.

### 5.5. Result of ANT 3

**LTE Band 41 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2496 MHz～2690 MHz; The maximum conducted is 27.50 dBm. The maximum gain is 1.92 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.174 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**LTE CA_41C Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2496 MHz～2690 MHz; The maximum conducted is 27.50 dBm. The maximum gain is 1.92 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.174 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n41 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2496 MHz～2690 MHz; The maximum conducted is 27.50 dBm. The maximum gain is 1.92 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.174 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n41 MIMO Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2496 MHz～2690 MHz; The maximum conducted is 23.50 dBm. The maximum gain is 1.92 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.069 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

## 5.6. Result of ANT 6

**LTE Band 48 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 3350 MHz～3700MHz; The maximum conducted is 22.00 dBm. The maximum gain is 1.84 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.048 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n77 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 3300 MHz～4200MHz; The maximum conducted is 27.50 dBm. The maximum gain is 1.84 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.171 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n77 MIMO Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 3300 MHz～4200MHz; The maximum conducted is 23.50 dBm. The maximum gain is 1.84 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.068 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n78 Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 3300 MHz～3800MHz; The maximum conducted is 27.50 dBm. The maximum gain is 1.84 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.171 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n78 MIMO Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 3300 MHz～3800MHz; The maximum conducted is 23.50 dBm. The maximum gain is 1.84 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.068 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

## 5.7. Result of ANT 1

**NR n77 MIMO Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 3300 MHz～4200 MHz; The maximum conducted is 23.50 dBm. The maximum gain is 1.91 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.069 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

**NR n78 MIMO Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 3300 MHz～3800 MHz; The maximum conducted is 23.50 dBm. The maximum gain is 1.61 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.065 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

## 5.8. Result of BLE

**BT Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 2402 MHz～2480 MHz; The maximum conducted is 5.50 dBm. The maximum gain is 3.87 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm$^2$.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（mW）

G = antenna gain（numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.002 mW/cm$^2$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm$^2$ limit for uncontrolled exposure.

## ANNEX A: EUT photograph

See the document “5G CPE Photos”.

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