

# TEST REPORT

Report No.: BCTC2304073080-2E

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Applicant: SEEWORLD Technology Co.,Ltd

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Product Name: GPS Tracker

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Model/Type  
reference: S21L

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Tested Date: 2023-05-04 to 2023-05-31

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Issued Date: 2023-06-01

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**Shenzhen BCTC Testing Co., Ltd.**



## FCC ID: 2AWTV-S21L

Product Name: GPS Tracker

Trademark: N/A

Model/Type reference: S21L  
R12,R12LPro,R18L,R36L,S11L,S106,S24L,S25L,S26L,S208L,S708L,S711L,  
S712L,S718L,S722L,V7,V8,W12L,W20L

Prepared For: SEEWORLD Technology Co.,Ltd

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Guangdong Province, China

Manufacturer: SEEWORLD Technology Co.,Ltd

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Sample Received Date: 2023-05-04

Sample tested Date: 2023-05-04 to 2023-05-31

Issue Date: 2023-06-01

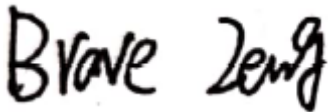
Report No.: BCTC2304073080-2E

Test Standards: FCC CFR Title 47 Part 2  
FCC CFR Title 47 Part 22  
FCC CFR Title 47 Part 24  
FCC CFR Title 47 Part 27

Test Results: PASS

Remark: This is radio test report for 4G in US full bands.

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

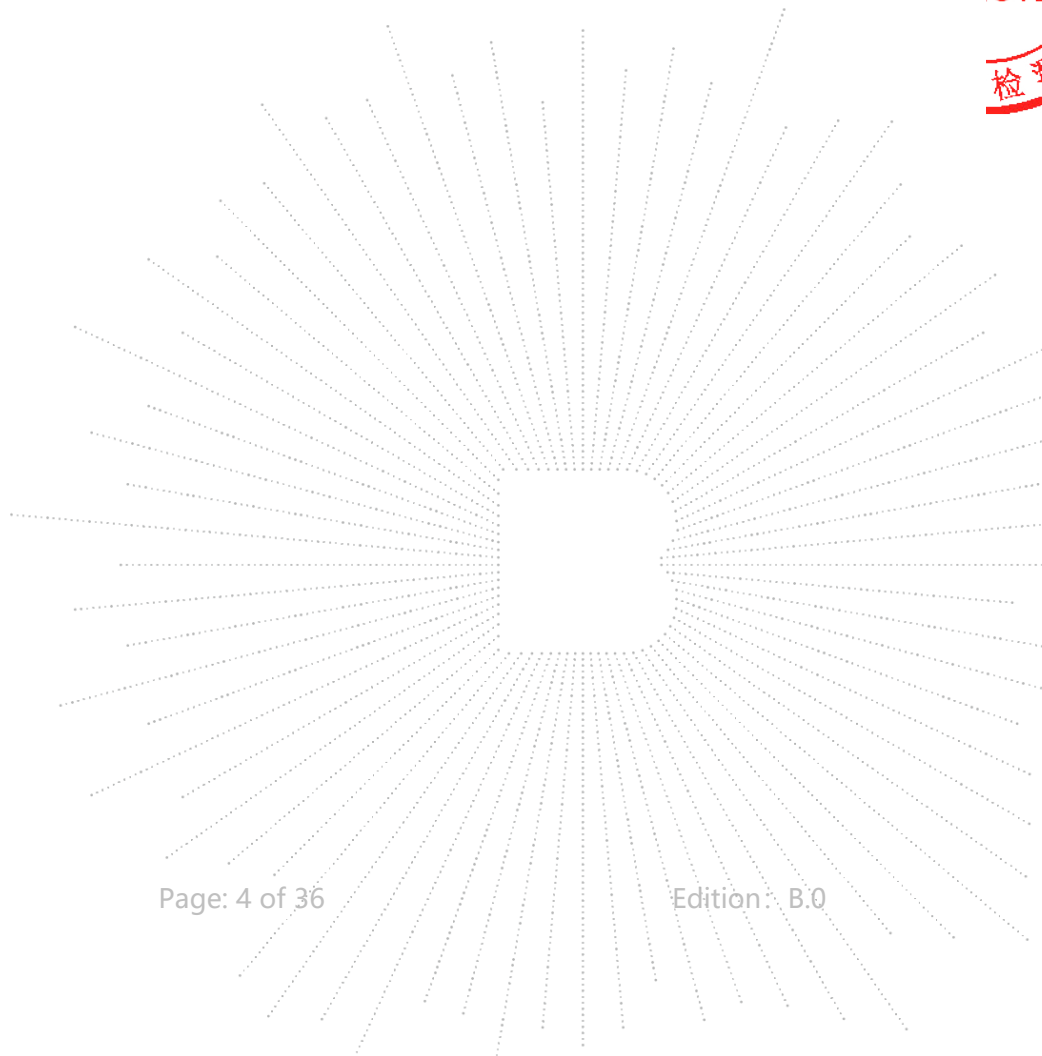
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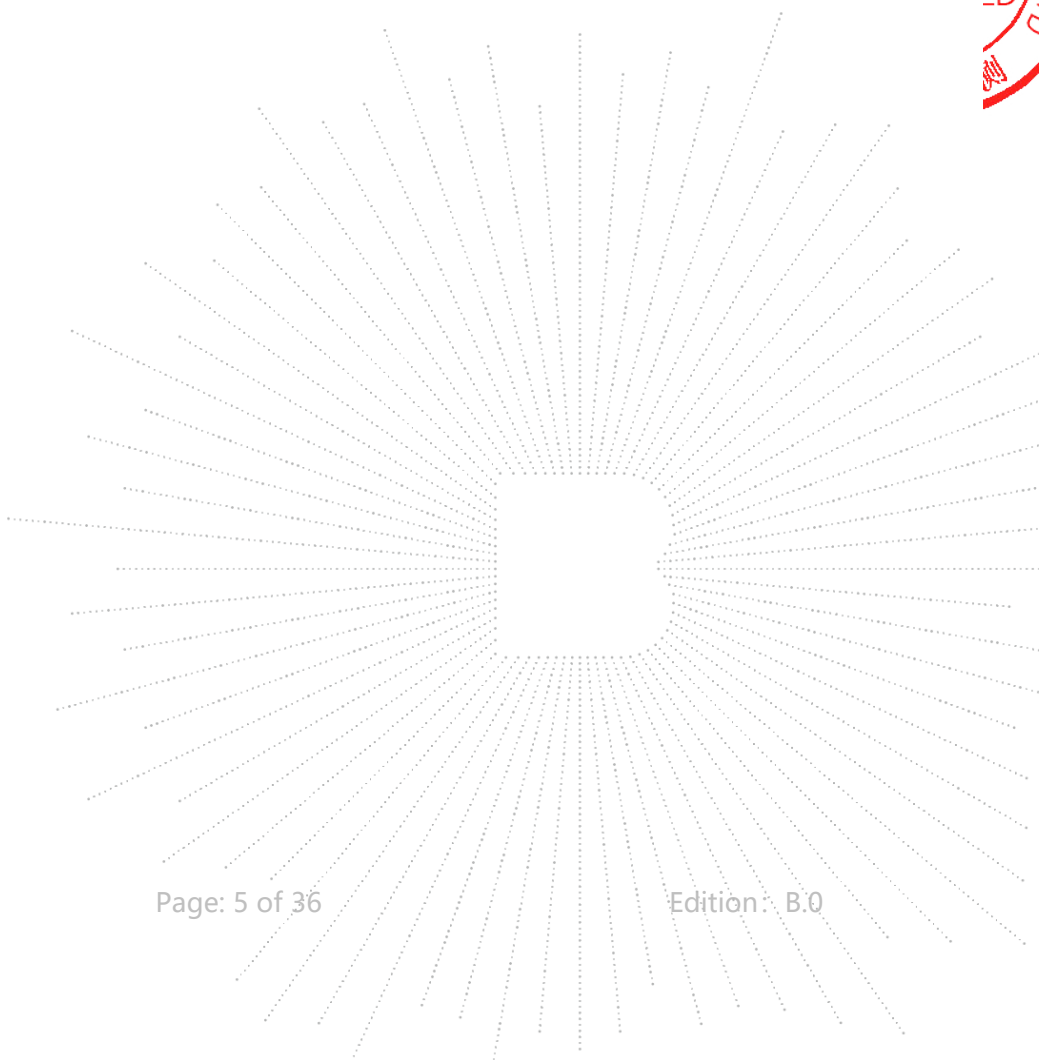
(Note: N/A Means Not Applicable)

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**1. Version**

| Report No.        | Issue Date | Description | Approved |
|-------------------|------------|-------------|----------|
| BCTC2304073080-2E | 2023-06-01 | Original    | Valid    |
|                   |            |             |          |



## 2. Test Summary

The Product has been tested according to the following specifications:

| No. | Test Parameter                            | Clause No                                                               | Results |
|-----|-------------------------------------------|-------------------------------------------------------------------------|---------|
| 1   | RF Exposure                               | §1.1307, §2.1093                                                        | PASS    |
| 2   | RF Output Power                           | §2.1046; §22.913;<br>§24.232(c); §27.50(d);<br>§27.50(c); §27.50(b);    | PASS    |
| 3   | Peak-to-average Ratio(PAR) of Transmitter | §2.1046; §24.232(d)<br>§27.50(d); §27.50(c);<br>§27.50(b);              | PASS    |
| 4   | Emission Bandwidth                        | §2.1049; §24.238(b); §27.53;                                            | PASS    |
| 5   | Spurious Emissions at Antenna Terminal    | §22.917 (a), §24.238 (a),<br>§27.53(g), §27.53(h)                       | PASS    |
| 6   | Spurious Radiation Emissions              | §2.1051; §22.917(a);<br>§27.53(h); §27.53(g);<br>§27.53(c); §24.238(a); | PASS    |
| 7   | Out of Band Emissions                     | §2.1051; §22.917(a);<br>§27.53(h); §27.53(c); §27.53(g);<br>§24.238(a); | PASS    |
| 8   | Frequency Stability                       | §2.1055; §22.355;<br>§27.54; §24.235;                                   | PASS    |

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### 3. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                                               | Uncertainty |
|-----|----------------------------------------------------|-------------|
| 1   | 3m chamber Radiated spurious emission(30MHz-1GHz)  | U=4.3dB     |
| 2   | 3m chamber Radiated spurious emission(9KHz-30MHz)  | U=3.7dB     |
| 3   | 3m chamber Radiated spurious emission(1GHz-18GHz)  | U=4.5dB     |
| 4   | 3m chamber Radiated spurious emission(18GHz-40GHz) | U=3.34dB    |
| 5   | Conducted Emission (150kHz-30MHz)                  | U=3.20dB    |
| 6   | Conducted Adjacent channel power                   | U=1.38dB    |
| 7   | Conducted output power uncertainty Above 1G        | U=1.576dB   |
| 8   | Conducted output power uncertainty below 1G        | U=1.28dB    |
| 9   | humidity uncertainty                               | U=5.3%      |
| 10  | Temperature uncertainty                            | U=0.59℃     |

## 4. Product Information And Test Setup

### 4.1 Product Information

|                                  |                                                                                                                                                                                       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model/Type reference:            | S21L<br>R12,R12LPro,R18L,R36L,S11L,S106,S24L,S25L,S26L,S208L,S708L,S711L,<br>S712L,S718L,S722L,V7,V8,W12L,W20L                                                                        |
| Model differences:               | All the model are the same circuit and RF module, except model names.                                                                                                                 |
| Hardware Version:                | N/A                                                                                                                                                                                   |
| Software Version:                | N/A                                                                                                                                                                                   |
| Tx Frequency:                    | LTE Band 2: 1850 MHz ~ 1910 MHz<br>LTE Band 4: 1710 MHz ~ 1755 MHz<br>LTE Band 5: 824 MHz ~ 849 MHz<br>LTE Band 7: 2500MHz-2570MHz<br>LTE Band 66: 1710 MHz ~ 1780 MHz                |
| Rx Frequency:                    | LTE Band 2: 1930 MHz ~ 1990 MHz<br>LTE Band 4: 2110 MHz ~ 2155 MHz<br>LTE Band 5: 869 MHz ~ 894 MHz<br>LTE Band 7: 2620MHz-2690MHz<br>LTE Band 66: 2110 MHz ~ 2180 MHz                |
| Bandwidth:                       | LTE Band 2: 1.4MHz /3MHz /5MHz /10MHz<br>LTE Band 4: 1.4MHz /3MHz /5MHz /10MHz<br>LTE Band 5: 1.4MHz /3MHz /5MHz /10MHz<br>LTE Band 7: 5MHz /10MHz<br>LTE Band 66: 1.4MHz /3MHz /5MHz |
| Maximum Output Power to Antenna: | LTE Band 2: 23.47 dBm<br>LTE Band 4: 23.31 dBm<br>LTE Band 5: 21.49 dBm<br>LTE Band 7: 22.3 dBm<br>LTE Band 66: 24.06 dBm                                                             |
| 99% Occupied Bandwidth:          | LTE Band 2: 9M00G7D<br>LTE Band 4: 8M96G7D<br>LTE Band 5: 8M96G7D<br>LTE Band 7: 9M00G7D<br>LTE Band 66: 9M00G7D                                                                      |
| Type of Modulation:              | QPSK/16QAM                                                                                                                                                                            |
| Antenna Type:                    | Internal Antenna                                                                                                                                                                      |
| Antenna Gain:                    | LTE Band 2: 1.2 dBi<br>LTE Band 4: 1.2 dBi<br>LTE Band 5: 1.2 dBi<br>LTE Band 7: 1.2 dBi<br>LTE Band 66: 1.2 dBi                                                                      |
| Connecting I/O Port(s):          | Please refer to the User's Manual                                                                                                                                                     |
| Ratings:                         | DC 5V from adapter                                                                                                                                                                    |

### 4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

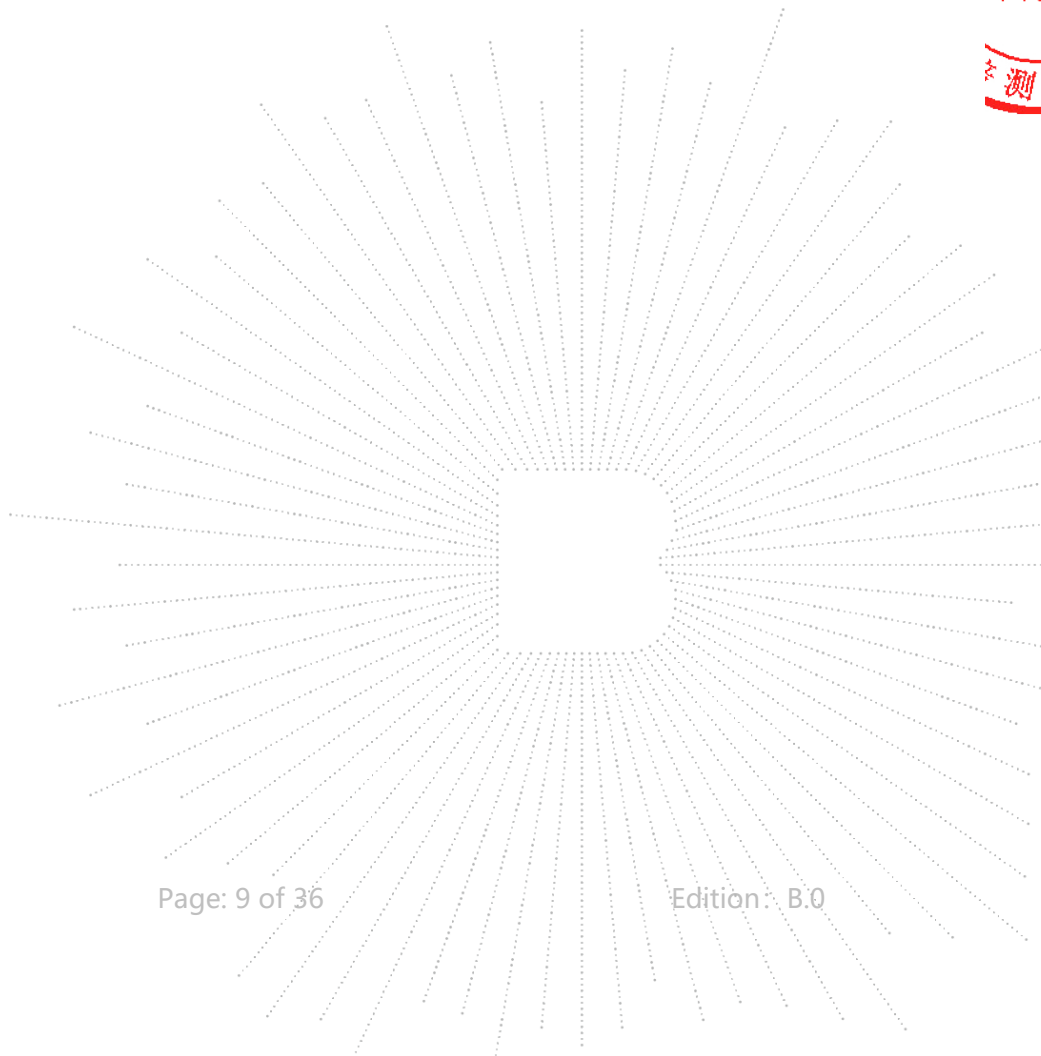


## 4.2 Emission Designator

| LTE Band 2 | QPSK                         |                 | 16QAM                        |                 |
|------------|------------------------------|-----------------|------------------------------|-----------------|
| BW(MHz)    | Emission Designator (99%OBW) | Maximum EIRP(W) | Emission Designator (99%OBW) | Maximum EIRP(W) |
| 1.4        | 1M11G7D                      | 0.215           | 1M10W7D                      | 0.169           |
| 3          | 2M71G7D                      | 0.205           | 2M70W7D                      | 0.174           |
| 5          | 4M51G7D                      | 0.222           | 4M52W7D                      | 0.190           |
| 10         | 9M00G7D                      | 0.220           | /                            | /               |

| LTE Band 4 | QPSK                         |                 | 16QAM                        |                 |
|------------|------------------------------|-----------------|------------------------------|-----------------|
| BW(MHz)    | Emission Designator (99%OBW) | Maximum EIRP(W) | Emission Designator (99%OBW) | Maximum EIRP(W) |
| 1.4        | 1M10G7D                      | 0.196           | 1M10W7D                      | 0.167           |
| 3          | 2M71G7D                      | 0.203           | 2M70W7D                      | 0.166           |
| 5          | 4M53G7D                      | 0.214           | 4M52W7D                      | 0.196           |
| 10         | 8M96G7D                      | 0.211           | /                            | /               |

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| LTE Band 5 | QPSK                         |                | 16QAM                        |                |
|------------|------------------------------|----------------|------------------------------|----------------|
| BW(MHz)    | Emission Designator (99%OBW) | Maximum ERP(W) | Emission Designator (99%OBW) | Maximum ERP(W) |
| 1.4        | 1M10G7D                      | 0.132          | 1M10W7D                      | 0.107          |
| 3          | 2M70G7D                      | 0.129          | 2M70W7D                      | 0.110          |
| 5          | 4M51G7D                      | 0.136          | 4M52W7D                      | 0.115          |
| 10         | 8M96G7D                      | 0.141          | /                            | /              |

| LTE Band 7 | QPSK                         |                | 16QAM                        |                |
|------------|------------------------------|----------------|------------------------------|----------------|
| BW(MHz)    | Emission Designator (99%OBW) | Maximum ERP(W) | Emission Designator (99%OBW) | Maximum ERP(W) |
| 5          | 4M51G7D                      | 0.167          | 4M51W7D                      | 0.153          |
| 10         | 9M00G7D                      | 0.170          | /                            | /              |

| LTE Band 66 | QPSK                         |                 | 16QAM                        |                 |
|-------------|------------------------------|-----------------|------------------------------|-----------------|
| BW(MHz)     | Emission Designator (99%OBW) | Maximum EIRP(W) | Emission Designator (99%OBW) | Maximum EIRP(W) |
| 1.4         | 1M10G7D                      | 0.211           | 1M10W7D                      | 0.179           |
| 3           | 2M72G7D                      | 0.222           | 2M70W7D                      | 0.201           |
| 5           | 4M53G7D                      | 0.262           | 4M50W7D                      | 0.244           |
| 10          | 9M00G7D                      | 0.255           | /                            | /               |

Note: The entire LTE band does not support 15M/20M bandwidth, and does not support 10 16QAM, the customer chip reason, said that it does not support these bandwidths.

### 4.3 Description Operation Frequency

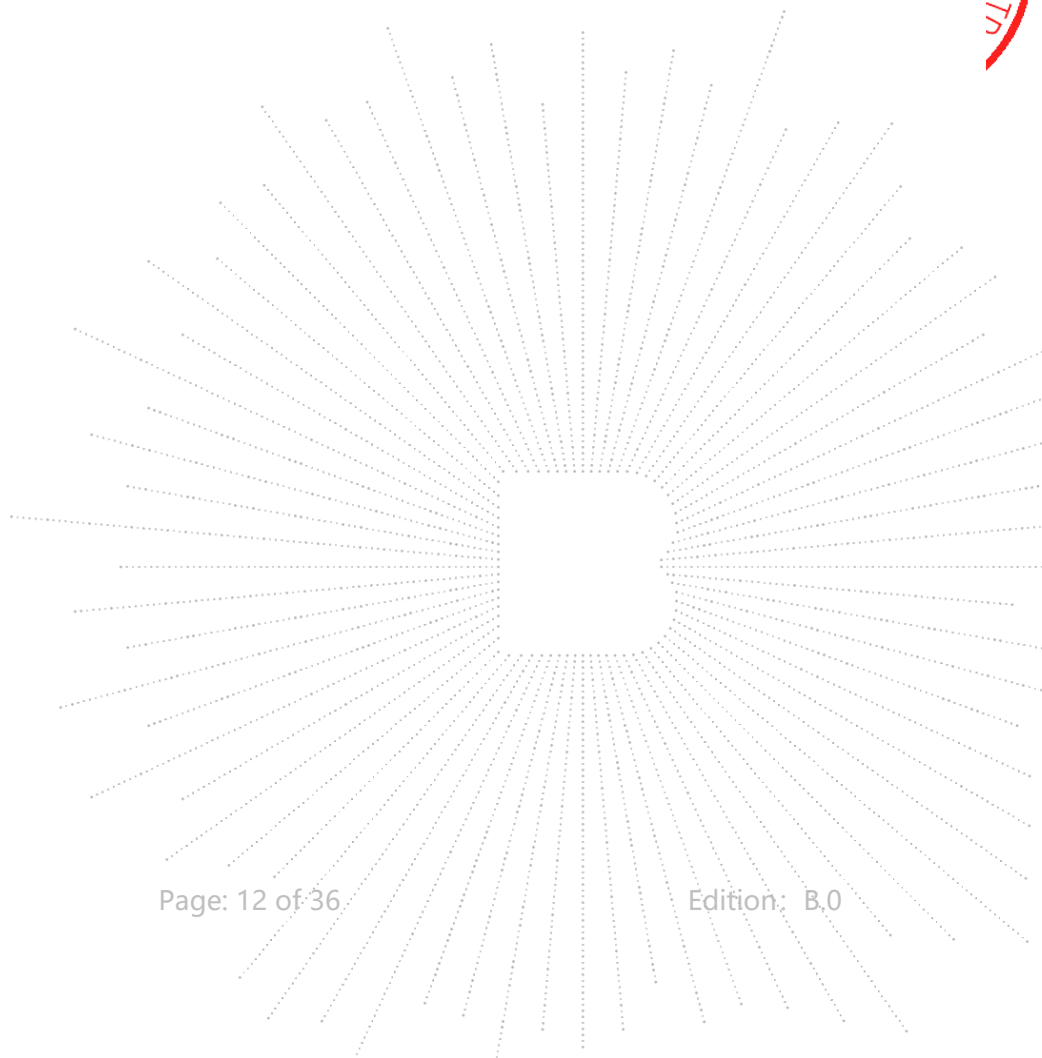
| LTE Band 2(1.4MHz) |                 | LTE Band 2(3MHz)  |                 |
|--------------------|-----------------|-------------------|-----------------|
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 18607              | 1850.7          | 18615             | 1851.5          |
| 18900              | 1880            | 18900             | 1880            |
| 19193              | 1909.3          | 19185             | 1908.5          |
| LTE Band 2(5MHz)   |                 | LTE Band 2(10MHz) |                 |
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 18625              | 1852.5          | 18650             | 1855            |
| 18900              | 1880            | 18900             | 1880            |
| 19175              | 1907.5          | 19150             | 1905            |

| LTE Band 4(1.4MHz) |                 | LTE Band 4(3MHz)  |                 |
|--------------------|-----------------|-------------------|-----------------|
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 19957              | 1710.7          | 19965             | 1711.5          |
| 20175              | 1732.5          | 20175             | 1732.5          |
| 20393              | 1754.3          | 20385             | 1753.5          |
| LTE Band 4(5MHz)   |                 | LTE Band 4(10MHz) |                 |
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 19975              | 1712.5          | 20000             | 1715            |
| 20175              | 1732.5          | 20175             | 1732.5          |
| 20375              | 1752.5          | 20350             | 1750            |

| LTE Band 5(1.4MHz) |                 | LTE Band 5(3MHz)  |                 |
|--------------------|-----------------|-------------------|-----------------|
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 20407              | 824.7           | 20415             | 825.5           |
| 20525              | 836.5           | 20525             | 836.5           |
| 20643              | 848.3           | 20635             | 847.5           |
| LTE Band 5(5MHz)   |                 | LTE Band 5(10MHz) |                 |
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 20425              | 826.5           | 20450             | 829             |
| 20525              | 836.5           | 20525             | 836.5           |
| 20625              | 846.5           | 20600             | 844             |

| LTE Band 7(5MHz) |                 | LTE Band 7(10MHz) |                 |
|------------------|-----------------|-------------------|-----------------|
| Channel          | Frequency (MHz) | Channel           | Frequency (MHz) |
| 20775            | 2502.5          | 20800             | 2505            |
| 21100            | 2535            | 21100             | 2535            |
| 21425            | 2567.5          | 21400             | 2565            |
| 21375            | 2562.5          | 21350             | 2560            |

| LTE Band 66(1.4MHz) |                 | LTE Band 66(3MHz)  |                 |
|---------------------|-----------------|--------------------|-----------------|
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 131979              | 1710.7          | 131987             | 1711.5          |
| 132322              | 1745            | 132322             | 1745            |
| 132422              | 1755            | 132422             | 1755            |
| 132665              | 1779.3          | 132657             | 1778.5          |
| LTE Band 66(5MHz)   |                 | LTE Band 66(10MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 131997              | 1712.5          | 132022             | 1715            |
| 132322              | 1745            | 132322             | 1745            |
| 132422              | 1755            | 132422             | 1755            |
| 132647              | 1777.5          | 132622             | 1775            |



#### 4.4 Test Mode

All modes and data rates and positions were investigated.

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

| Test Mode   |                                             |                                      |
|-------------|---------------------------------------------|--------------------------------------|
| Band        | Radiated TCs                                | Conducted TCs                        |
| LTE Band 2  | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz) | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz) |
| LTE Band 4  | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz) | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz) |
| LTE Band 5  | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz) | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz) |
| LTE Band 7  | QPSK Link<br>(5MHz / 10MHz)                 | 16QAM Link<br>(5MHz)                 |
| LTE Band 66 | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz) | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz) |

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas License Digital Systems v03 with maximum output power.

EUT Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|-------------------|------------|---------------------|------------------------|
| /                 | /          | /                   | /                      |
| /                 | /          | /                   | /                      |

Auxiliary Equipment List and Details

| Description | Manufacturer | Model | Serial Number |
|-------------|--------------|-------|---------------|
| /           | /            | /     | /             |

Special Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|-------------------|------------|---------------------|------------------------|
| /                 | /          | /                   | /                      |

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

| Test Items                  | Band | Bandwidth (MHz) |   |   |    |    |    | Modulation |       | RB # |      |      | Test Channel |   |   |
|-----------------------------|------|-----------------|---|---|----|----|----|------------|-------|------|------|------|--------------|---|---|
|                             |      | 1.4             | 3 | 5 | 10 | 15 | 20 | QPSK       | 16QAM | 1    | Half | Full | L            | M | H |
| Max.Output Power            | 2    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 4    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 5    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 7    | -               | - | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 66   | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
| Peak-to-Average Ratio       | 2    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 4    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 5    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 7    |                 |   | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 66   | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
| 26dB and 99% Bandwidth      | 2    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 4    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 5    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 7    |                 |   | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 66   | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
| Conducted Band Edge         | 2    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | - | v |
|                             | 4    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | - | v |
|                             | 5    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | - | v |
|                             | 7    |                 |   | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 66   | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | - | v |
| Conducted Spurious Emission | 2    | v               | v | v | v  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
|                             | 4    | v               | v | v | v  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
|                             | 5    | v               | v | v | v  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
|                             | 7    |                 |   | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 66   | v               | v | v | v  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
| Frequency tability          | 2    | v               | - | - | -  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
|                             | 4    | v               | - | - | -  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
|                             | 5    | v               | - | - | -  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
|                             | 7    | v               |   |   |    | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
|                             | 66   | v               | - | - | -  | -  | -  | v          | v     | v    | -    | -    | v            | v | v |
| E.R.P./ E.I.R.P.            | 2    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |
|                             | 4    | v               | v | v | v  | -  | -  | v          | v     | v    | v    | v    | v            | v | v |

|                            |                                                                                                                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                            | 5                                                                                                                                 | v | v | v | v | - | - | v | v | v | v | v | v | v | v |
|                            | 7                                                                                                                                 |   |   | v | v | - | - | v | v | v | v | v | v | v | v |
|                            | 66                                                                                                                                | v | v | v | v | - | - | v | v | v | v | v | v | v | v |
| Radiated Spurious Emission | 2                                                                                                                                 | v | - | - | - | - | - | v | v | v | - | - | v | v | v |
|                            | 4                                                                                                                                 | v | - | - | - | - | - | v | v | v | - | - | v | v | v |
|                            | 5                                                                                                                                 | v | - | - | - | - | - | v | v | v | - | - | v | v | v |
|                            | 7                                                                                                                                 | v |   |   |   | - | - | v | v | v |   |   | v | v | v |
|                            | 66                                                                                                                                | v | - | - | - | - | - | v | v | v | - | - | v | v | v |
| Note                       | 1.The mark “v ” means that this configuration is chosen for testing<br>2.The mark “-“ means that this bandwidth is not supported. |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

#### 4.5 Support Equipment

| No. | Device Type | Brand | Model | Series No. | Note |
|-----|-------------|-------|-------|------------|------|
| E-1 | Gps Tracker | N/A   | S21L  | N/A        | EUT  |
| E-2 | N/A         | N/A   | N/A   | N/A        | N/A  |

| Item | Shielded Type | Ferrite Core | Length | Note                 |
|------|---------------|--------------|--------|----------------------|
| C-1  | N/A           | N/A          | 0.5M   | USB cable unshielded |

##### Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

#### 4.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level. The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Offset = RF cable loss + attenuator factor.

## 5. Test Facility And Test Instrument Used

### 5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

A2LA certificate registration number is: CN1212

ISED Registered No.: 23583

ISED CAB identifier: CN0017

### 5.2 Test Instrument Used

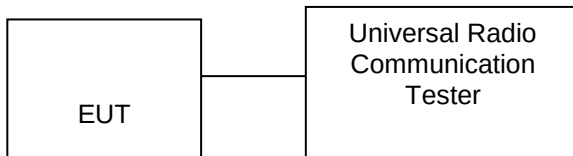
| Radiated Emissions Test (966 Chamber01) |              |                   |            |               |               |
|-----------------------------------------|--------------|-------------------|------------|---------------|---------------|
| Equipment                               | Manufacturer | Model#            | Serial#    | Last Cal.     | Next Cal.     |
| 966 chamber                             | ChengYu      | 966 Room          | 966        | Jun. 06. 2020 | Jun. 05, 2023 |
| Receiver                                | R&S          | ESR3              | 102075     | May 15, 2023  | May 14, 2024  |
| Receiver                                | R&S          | ESRP              | 101154     | May 15, 2023  | May 14, 2024  |
| Amplifier                               | Schwarzbeck  | BBV9744           | 9744-0037  | May 15, 2023  | May 14, 2024  |
| TRILOG Broadband Antenna                | Schwarzbeck  | VULB9163          | 942        | May 15, 2023  | May 14, 2024  |
| Loop Antenna(9KHz -30MHz)               | Schwarzbeck  | FMZB1519B         | 00014      | May 15, 2023  | May 14, 2024  |
| Amplifier                               | SKET         | LAPA_01G18 G-45dB | \          | May 15, 2023  | May 14, 2024  |
| Horn Antenna                            | Schwarzbeck  | BBHA9120D         | 1541       | May 15, 2023  | May 14, 2024  |
| Amplifier(18G Hz-40GHz)                 | MITEQ        | TTA1840-35-HG     | 2034381    | May 15, 2023  | May 14, 2024  |
| Horn Antenna(18G Hz-40GHz)              | Schwarzbeck  | BBHA9170          | 00822      | May 15, 2023  | May 14, 2024  |
| Spectrum Analyzer9kHz-40GHz             | R&S          | FSP40             | 100363     | May 15, 2023  | May 14, 2024  |
| Software                                | Frad         | EZ-EMC            | FA-03A2 RE | \             | \             |



## 6. RF Output Power

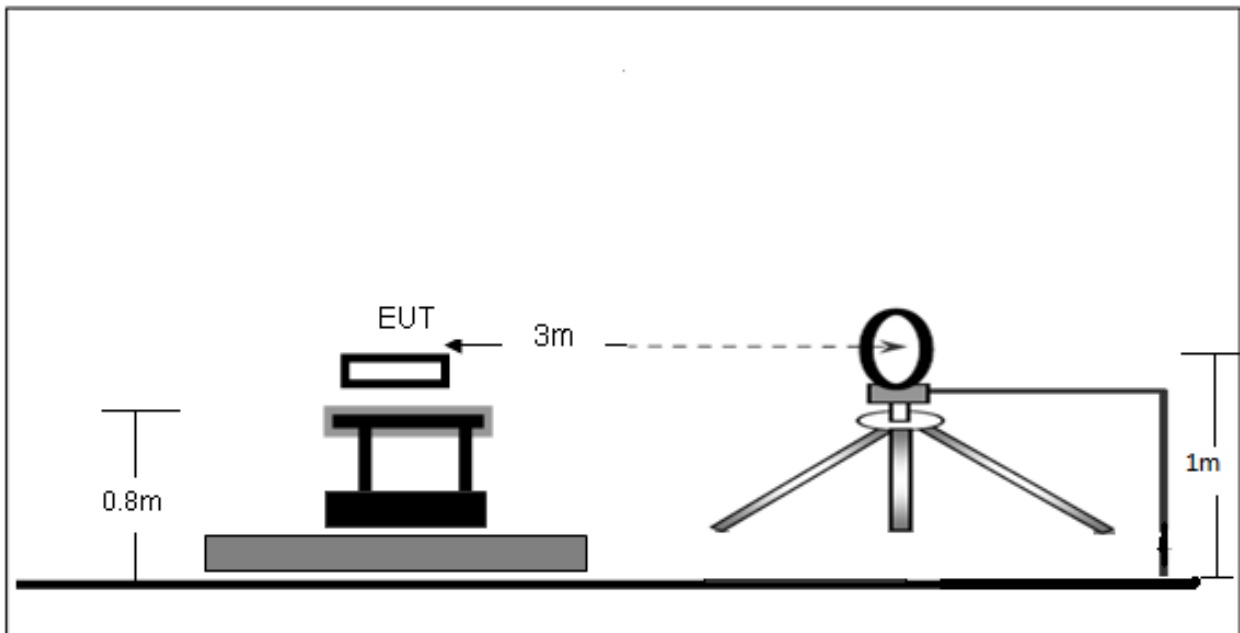
### 6.1 Block Diagram Of Test Setup

Conducted output power test method:

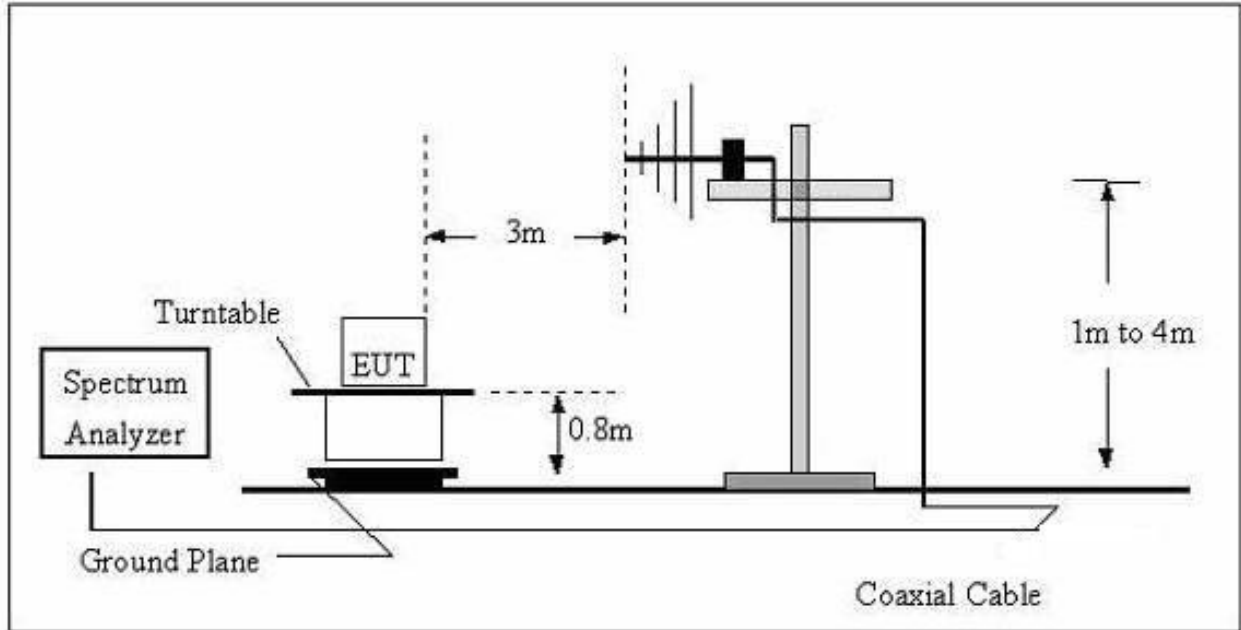


Radiated power test method:

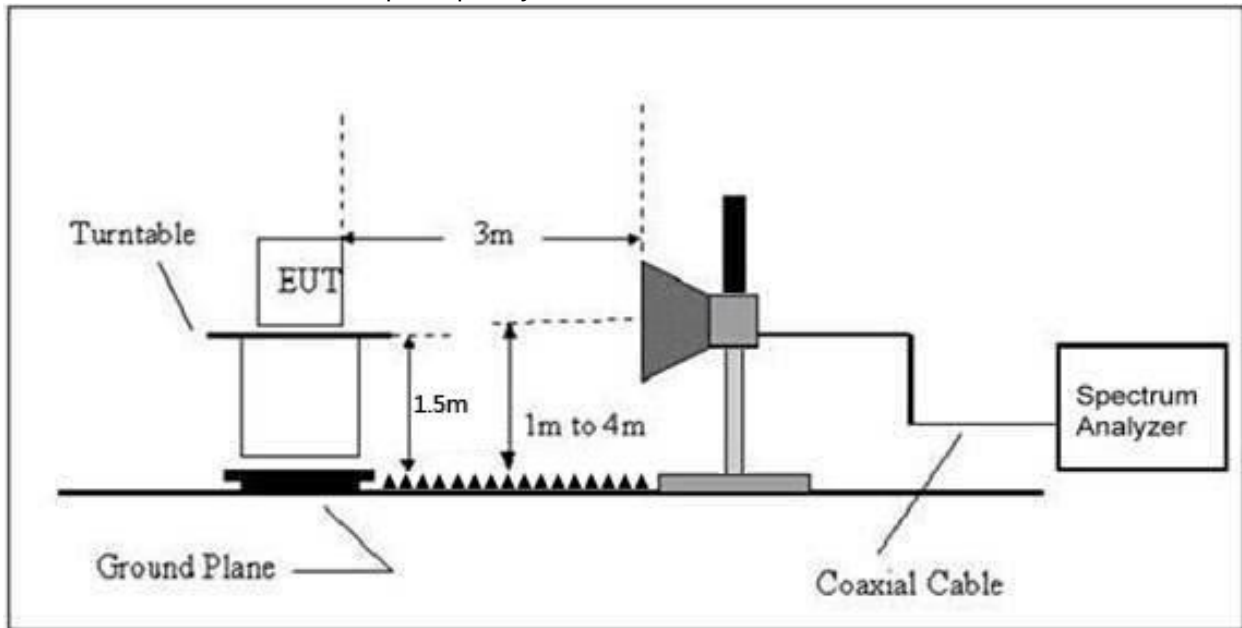
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



## 6.2 Limit

According to §22.913(a)(2), The ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §24.232 (c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §27.50(d)(4), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

## 6.3 Test procedure

Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA Standard 603D and ANSI C63.4-2014 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

## 6.4 Test Result

**Max Radiated Power:**  
FDD-LTE Band 2

| Channel Bandwidth: 1.4MHz |         |              |         |
|---------------------------|---------|--------------|---------|
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.33        | PASS    |
|                           | MCK     | 21.61        | PASS    |
|                           | HCH     | 21.67        | PASS    |
| 16QAM                     | LCH     | 22.28        | PASS    |
|                           | MCK     | 20.79        | PASS    |
|                           | HCH     | 20.5         | PASS    |
| Channel Bandwidth: 3MHz   |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.12        | PASS    |
|                           | MCK     | 21.58        | PASS    |
|                           | HCH     | 22.18        | PASS    |
| 16QAM                     | LCH     | 22.4         | PASS    |
|                           | MCK     | 20.84        | PASS    |
|                           | HCH     | 21           | PASS    |
| Channel Bandwidth: 5MHz   |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.47        | PASS    |
|                           | MCK     | 22           | PASS    |
|                           | HCH     | 22.93        | PASS    |
| 16QAM                     | LCH     | 22.79        | PASS    |
|                           | MCK     | 21.42        | PASS    |
|                           | HCH     | 22.19        | PASS    |
| Channel Bandwidth: 10MHz  |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.42        | PASS    |
|                           | MCK     | 22.41        | PASS    |
|                           | HCH     | 23.2         | PASS    |

## FDD-LTE Band 4

| Channel Bandwidth: 1.4MHz |         |              |         |
|---------------------------|---------|--------------|---------|
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 21.76        | PASS    |
|                           | MCK     | 20.87        | PASS    |
|                           | HCH     | 22.93        | PASS    |
| 16QAM                     | LCH     | 21.12        | PASS    |
|                           | MCK     | 20.23        | PASS    |
|                           | HCH     | 22.22        | PASS    |
| Channel Bandwidth: 3MHz   |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 22.66        | PASS    |
|                           | MCK     | 21.34        | PASS    |
|                           | HCH     | 23.07        | PASS    |
| 16QAM                     | LCH     | 22.2         | PASS    |
|                           | MCK     | 20.59        | PASS    |
|                           | HCH     | 21.99        | PASS    |
| Channel Bandwidth: 5MHz   |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.31        | PASS    |
|                           | MCK     | 21.54        | PASS    |
|                           | HCH     | 22.87        | PASS    |
| 16QAM                     | LCH     | 22.92        | PASS    |
|                           | MCK     | 20.84        | PASS    |
|                           | HCH     | 22.44        | PASS    |
| Channel Bandwidth: 10MHz  |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.24        | PASS    |
|                           | MCK     | 21.7         | PASS    |
|                           | HCH     | 22.72        | PASS    |

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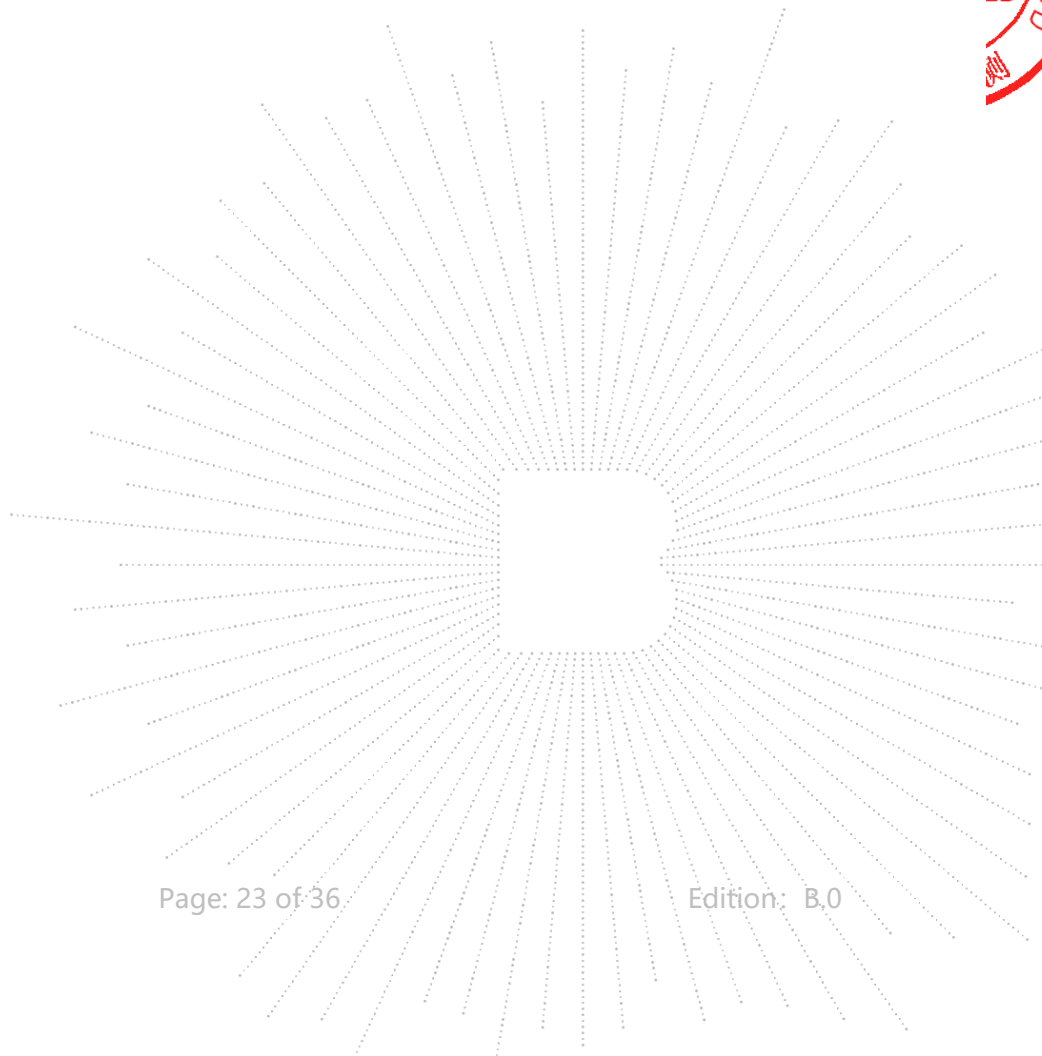
## FDD-LTE Band 5

| Channel Bandwidth: 1.4MHz |         |            |         |
|---------------------------|---------|------------|---------|
| Modulation                | Channel | E.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 21.22      | PASS    |
|                           | MCK     | 21.16      | PASS    |
|                           | HCH     | 20.42      | PASS    |
| 16QAM                     | LCH     | 20.28      | PASS    |
|                           | MCK     | 20.3       | PASS    |
|                           | HCH     | 19.55      | PASS    |
| Channel Bandwidth: 3MHz   |         |            |         |
| Modulation                | Channel | E.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 21.01      | PASS    |
|                           | MCK     | 21.1       | PASS    |
|                           | HCH     | 20.54      | PASS    |
| 16QAM                     | LCH     | 20.41      | PASS    |
|                           | MCK     | 20.28      | PASS    |
|                           | HCH     | 19.43      | PASS    |
| Channel Bandwidth: 5MHz   |         |            |         |
| Modulation                | Channel | E.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 21.25      | PASS    |
|                           | MCK     | 21.35      | PASS    |
|                           | HCH     | 20.93      | PASS    |
| 16QAM                     | LCH     | 20.61      | PASS    |
|                           | MCK     | 20.58      | PASS    |
|                           | HCH     | 20.19      | PASS    |
| Channel Bandwidth: 10MHz  |         |            |         |
| Modulation                | Channel | E.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 21.19      | PASS    |
|                           | MCK     | 21.44      | PASS    |
|                           | HCH     | 21.49      | PASS    |

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## FDD-LTE Band 7

| Channel Bandwidth: 5MHz  |         |            |         |
|--------------------------|---------|------------|---------|
| Modulation               | Channel | E.R.P(dBm) | Verdict |
| QPSK                     | LCH     | 20.96      | PASS    |
|                          | MCK     | 21.2       | PASS    |
|                          | HCH     | 22.24      | PASS    |
| 16QAM                    | LCH     | 20.28      | PASS    |
|                          | MCK     | 20.6       | PASS    |
|                          | HCH     | 21.84      | PASS    |
| Channel Bandwidth: 10MHz |         |            |         |
| Modulation               | Channel | E.R.P(dBm) | Verdict |
| QPSK                     | LCH     | 21.74      | PASS    |
|                          | MCK     | 21.74      | PASS    |
|                          | HCH     | 22.3       | PASS    |



## FDD-LTE Band 66

| Channel Bandwidth: 1.4MHz |         |              |         |
|---------------------------|---------|--------------|---------|
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.13        | PASS    |
|                           | MCK     | 22.33        | PASS    |
|                           | HCH     | 23.24        | PASS    |
| 16QAM                     | LCH     | 22.4         | PASS    |
|                           | MCK     | 21.76        | PASS    |
|                           | HCH     | 22.52        | PASS    |
| Channel Bandwidth: 3MHz   |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 23.47        | PASS    |
|                           | MCK     | 22.54        | PASS    |
|                           | HCH     | 23.43        | PASS    |
| 16QAM                     | LCH     | 23.03        | PASS    |
|                           | MCK     | 21.96        | PASS    |
|                           | HCH     | 22.44        | PASS    |
| Channel Bandwidth: 5MHz   |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 24.19        | PASS    |
|                           | MCK     | 23.2         | PASS    |
|                           | HCH     | 23.48        | PASS    |
| 16QAM                     | LCH     | 23.88        | PASS    |
|                           | MCK     | 22.66        | PASS    |
|                           | HCH     | 22.96        | PASS    |
| Channel Bandwidth: 10MHz  |         |              |         |
| Modulation                | Channel | E.I.R.P(dBm) | Verdict |
| QPSK                      | LCH     | 24.06        | PASS    |
|                           | MCK     | 23.33        | PASS    |
|                           | HCH     | 23.5         | PASS    |

**Max Conducted output Power:**

Please refer to appendix A: Conducted Output Power

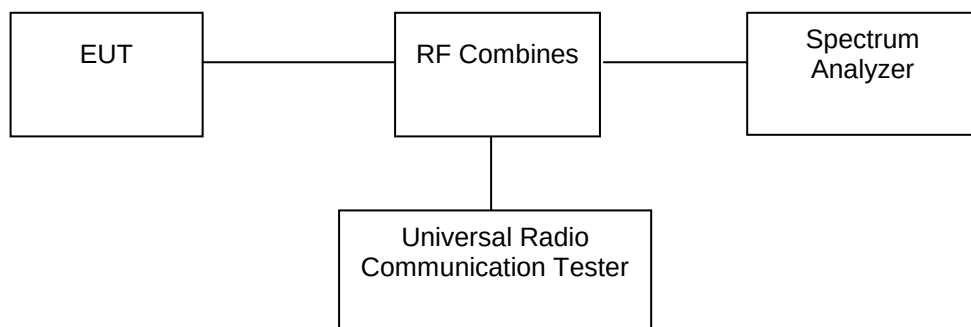
Test Result: Pass

CO., LTD.



## 7. Peak-To-Average Ratio(PAR) Of Transmitter

### 7.1 Block Diagram Of Test Setup



### 7.2 Limit

According to §24.232(d), Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

### 7.3 Test procedure

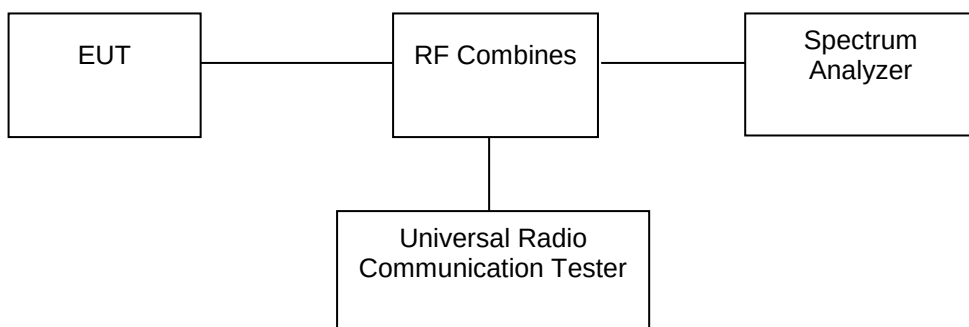
The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 30kHz and the peak-to-average ratio (PAR) of the transmission was recorded. Record the maximum PAPR level associated with a probability of 0.1%.

### 7.4 Test Result

Please refer to Appendix 3: Peak-to-Average Ratio  
Test Result: Pass

## 8. Emission Bandwidth

### 8.1 Block Diagram Of Test Setup



### 8.2 Standard Applicable

According to §22.917(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §24.238(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §27.53, The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### 8.3 Test procedure

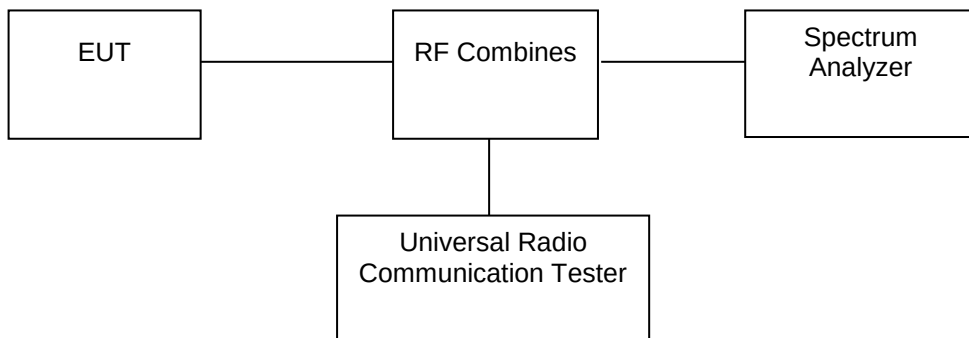
1. The testing follows FCC KDB 971168 D01v03 Section 4.2.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The 99% occupied bandwidth were measured, set RBW= 1% of OBW, VBW= 3\*RBW, sample detector, trace maximum hold.
5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3\*RBW, peak detector, trace maximum hold.

### 8.4 Test Result

Please refer to Appendix 4: Occupied BandWidth  
Test Result: Pass

## 9. Out of Band Emissions at Antenna Terminal

### 9.1 Block Diagram Of Test Setup



### 9.2 Limit

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

### 9.3 Test procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10<sup>th</sup> harmonic.

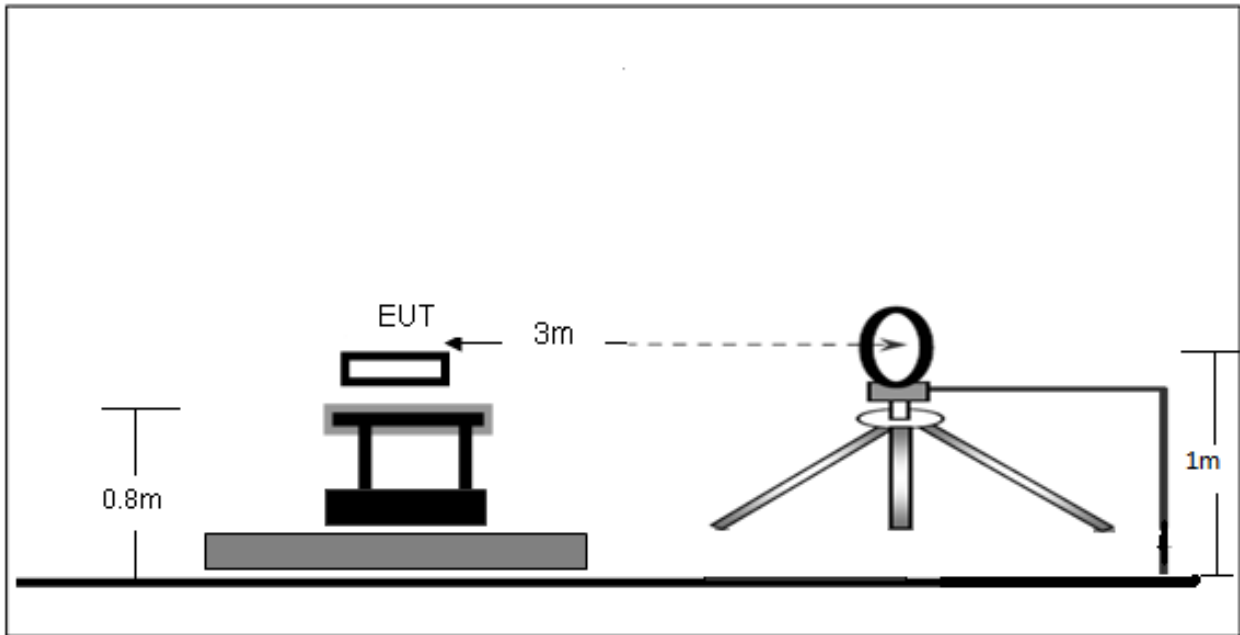
### 9.4 Test Result

Please refer to Appendix 5: Band Edge & Appendix 6: Out-of-band Emissions  
Test Result: Pass

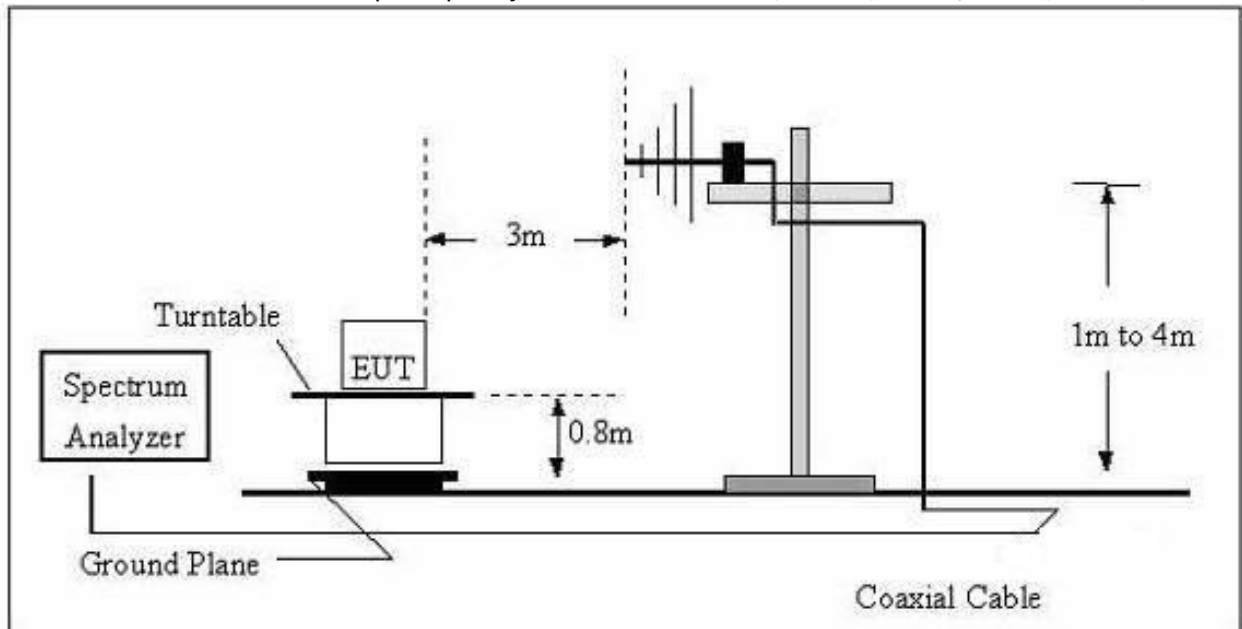
## 10. Spurious Radiated Emissions

### 10.1 Block Diagram Of Test Setup

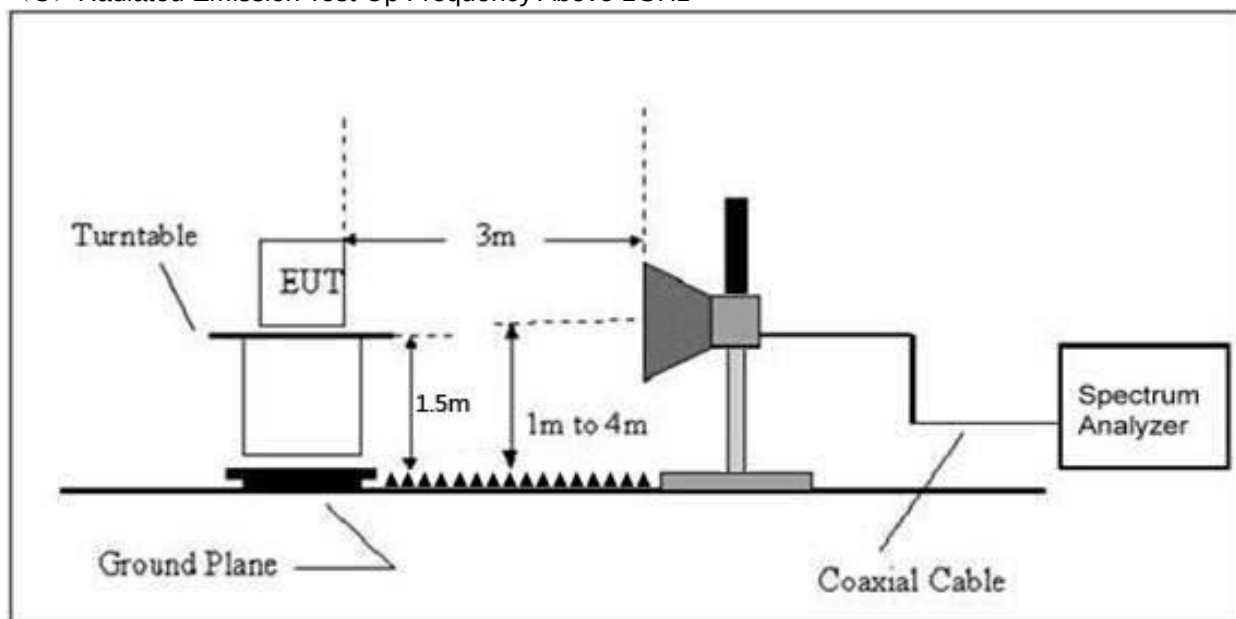
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



### (C) Radiated Emission Test-Up Frequency Above 1GHz



## 10.2 Limit

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

## 10.3 Test procedure

1. The setup of EUT is according with per ANSI/TIA Standard 603D and ANSI C63.4-2014 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious attenuation limit in dB  
 $= 43 + 10 \log_{10}(\text{power out in Watts})$

## 10.4 Test Result

For FDD-LTE Band 2 Mode

| Frequency<br>(MHz)       | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|--------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (1852.5MHz)  |                  |               |                 |                |                |              |
| 66.98                    | -41.46           | -15.67        | -57.13          | -13.00         | -44.13         | H            |
| 3705.00                  | -21.30           | -22.93        | -44.23          | -13.00         | -31.23         | H            |
| 5557.50                  | -26.65           | -22.45        | -49.10          | -13.00         | -36.10         | H            |
| 66.98                    | -42.17           | -15.67        | -57.84          | -13.00         | -44.84         | V            |
| 3705.00                  | -21.29           | -22.93        | -44.22          | -13.00         | -31.22         | V            |
| 5557.50                  | -25.07           | -22.45        | -47.52          | -13.00         | -34.52         | V            |
| Middle Channel (1880MHz) |                  |               |                 |                |                |              |
| 66.98                    | -44.70           | -15.67        | -60.37          | -13.00         | -47.37         | H            |
| 3760.00                  | -18.28           | -22.87        | -41.15          | -13.00         | -28.15         | H            |
| 5640.00                  | -24.91           | -22.50        | -47.41          | -13.00         | -34.41         | H            |
| 66.98                    | -41.57           | -15.67        | -57.23          | -13.00         | -44.23         | V            |
| 3760.00                  | -18.82           | -22.87        | -41.69          | -13.00         | -28.69         | V            |
| 5640.00                  | -26.26           | -22.50        | -48.76          | -13.00         | -35.76         | V            |
| High Channel (1907.5MHz) |                  |               |                 |                |                |              |
| 66.98                    | -42.46           | -15.67        | -58.13          | -13.00         | -45.13         | H            |
| 3815.00                  | -18.14           | -22.79        | -40.93          | -13.00         | -27.93         | H            |
| 5722.50                  | -25.61           | -22.56        | -48.17          | -13.00         | -35.17         | H            |
| 66.98                    | -43.88           | -15.67        | -59.55          | -13.00         | -46.55         | V            |
| 3815.00                  | -19.97           | -22.79        | -42.76          | -13.00         | -29.76         | V            |
| 5722.50                  | -24.17           | -22.56        | -46.73          | -13.00         | -33.73         | V            |

For FDD-LTE Band 4 Mode

| Frequency<br>(MHz)         | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|----------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (1710.7MHz)    |                  |               |                 |                |                |              |
| 71.42                      | -41.71           | -15.73        | -57.44          | -13.00         | -44.44         | H            |
| 3421.40                    | -21.80           | -22.93        | -44.73          | -13.00         | -31.73         | H            |
| 5132.10                    | -26.30           | -22.45        | -48.75          | -13.00         | -35.75         | H            |
| 71.42                      | -41.48           | -15.73        | -57.21          | -13.00         | -44.21         | V            |
| 3421.40                    | -21.07           | -22.93        | -44.00          | -13.00         | -31.00         | V            |
| 5132.10                    | -24.98           | -22.45        | -47.43          | -13.00         | -34.43         | V            |
| Middle Channel (1732.5MHz) |                  |               |                 |                |                |              |
| 71.42                      | -42.54           | -15.73        | -58.27          | -13.00         | -45.27         | H            |
| 3465.00                    | -19.22           | -22.87        | -42.09          | -13.00         | -29.09         | H            |
| 5197.50                    | -23.53           | -22.50        | -46.03          | -13.00         | -33.03         | H            |
| 71.42                      | -42.72           | -15.73        | -58.45          | -13.00         | -45.45         | V            |
| 3465.00                    | -21.91           | -22.87        | -44.78          | -13.00         | -31.78         | V            |
| 5197.50                    | -24.75           | -22.50        | -47.25          | -13.00         | -34.25         | V            |
| High Channel (1754.3MHz)   |                  |               |                 |                |                |              |
| 71.42                      | -41.75           | -15.73        | -57.48          | -13.00         | -44.48         | H            |
| 3508.60                    | -18.94           | -22.79        | -41.73          | -13.00         | -28.73         | H            |
| 5262.90                    | -23.24           | -22.56        | -45.80          | -13.00         | -32.80         | H            |
| 71.42                      | -42.57           | -15.73        | -58.30          | -13.00         | -45.30         | V            |
| 3508.60                    | -20.67           | -22.79        | -43.46          | -13.00         | -30.46         | V            |
| 5262.90                    | -26.51           | -22.56        | -49.07          | -13.00         | -36.07         | V            |

## For FDD-LTE Band 5 Mode

| Frequency<br>(MHz)        | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|---------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (824.7MHz)    |                  |               |                 |                |                |              |
| 81.44                     | -44.70           | -15.87        | -60.57          | -13.00         | -47.57         | H            |
| 1649.40                   | -18.62           | -22.93        | -41.55          | -13.00         | -28.55         | H            |
| 2474.10                   | -25.09           | -22.45        | -47.54          | -13.00         | -34.54         | H            |
| 81.44                     | -43.33           | -15.87        | -59.20          | -13.00         | -46.20         | V            |
| 1649.40                   | -21.56           | -22.93        | -44.49          | -13.00         | -31.49         | V            |
| 2474.10                   | -25.89           | -22.45        | -48.34          | -13.00         | -35.34         | V            |
| Middle Channel (836.5MHz) |                  |               |                 |                |                |              |
| 81.44                     | -42.99           | -15.87        | -58.86          | -13.00         | -45.86         | H            |
| 1673.00                   | -18.27           | -22.87        | -41.14          | -13.00         | -28.14         | H            |
| 2509.50                   | -23.42           | -22.50        | -45.92          | -13.00         | -32.92         | H            |
| 81.44                     | -44.40           | -15.87        | -60.27          | -13.00         | -47.27         | V            |
| 1673.00                   | -19.11           | -22.87        | -41.98          | -13.00         | -28.98         | V            |
| 2509.50                   | -26.19           | -22.50        | -48.69          | -13.00         | -35.69         | V            |
| High Channel (848.3MHz)   |                  |               |                 |                |                |              |
| 81.44                     | -42.96           | -15.87        | -58.83          | -13.00         | -45.83         | H            |
| 1696.60                   | -21.01           | -22.79        | -43.80          | -13.00         | -30.80         | H            |
| 2544.90                   | -25.78           | -22.56        | -48.34          | -13.00         | -35.34         | H            |
| 81.44                     | -42.38           | -15.87        | -58.25          | -13.00         | -45.25         | V            |
| 1696.60                   | -19.46           | -22.79        | -42.25          | -13.00         | -29.25         | V            |
| 2544.90                   | -25.70           | -22.56        | -48.26          | -13.00         | -35.26         | V            |

## For FDD-LTE Band 7 Mode

| Frequency<br>(MHz)       | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|--------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (2502.5MHz)  |                  |               |                 |                |                |              |
| 77.63                    | -43.43           | -15.82        | -59.24          | -25.00         | -34.24         | H            |
| 5005.00                  | -19.19           | -22.93        | -42.12          | -25.00         | -17.12         | H            |
| 7507.50                  | -26.05           | -22.45        | -48.50          | -25.00         | -23.5          | H            |
| 77.63                    | -44.75           | -15.82        | -60.56          | -25.00         | -35.56         | V            |
| 5005.00                  | -20.18           | -22.93        | -43.11          | -25.00         | -18.11         | V            |
| 7507.50                  | -26.54           | -22.45        | -48.99          | -25.00         | -23.99         | V            |
| Middle Channel (2535MHz) |                  |               |                 |                |                |              |
| 77.63                    | -43.55           | -15.82        | -59.36          | -25.00         | -34.36         | H            |
| 5070.00                  | -21.30           | -22.87        | -44.17          | -25.00         | -19.17         | H            |
| 7605.00                  | -26.19           | -22.50        | -48.69          | -25.00         | -23.69         | H            |
| 77.63                    | -44.81           | -15.82        | -60.62          | -25.00         | -35.62         | V            |
| 5070.00                  | -21.56           | -22.87        | -44.43          | -25.00         | -19.43         | V            |
| 7605.00                  | -26.63           | -22.50        | -49.13          | -25.00         | -24.13         | V            |
| High Channel (2567.5MHz) |                  |               |                 |                |                |              |
| 77.63                    | -42.27           | -15.82        | -58.08          | -25.00         | -33.08         | H            |
| 5135.00                  | -21.51           | -22.79        | -44.30          | -25.00         | -19.3          | H            |
| 7702.50                  | -24.31           | -22.56        | -46.87          | -25.00         | -21.87         | H            |
| 77.63                    | -41.26           | -15.82        | -57.07          | -25.00         | -32.07         | V            |
| 5135.00                  | -19.32           | -22.79        | -42.11          | -25.00         | -17.11         | V            |
| 7702.50                  | -26.45           | -22.56        | -49.01          | -25.00         | -24.01         | V            |

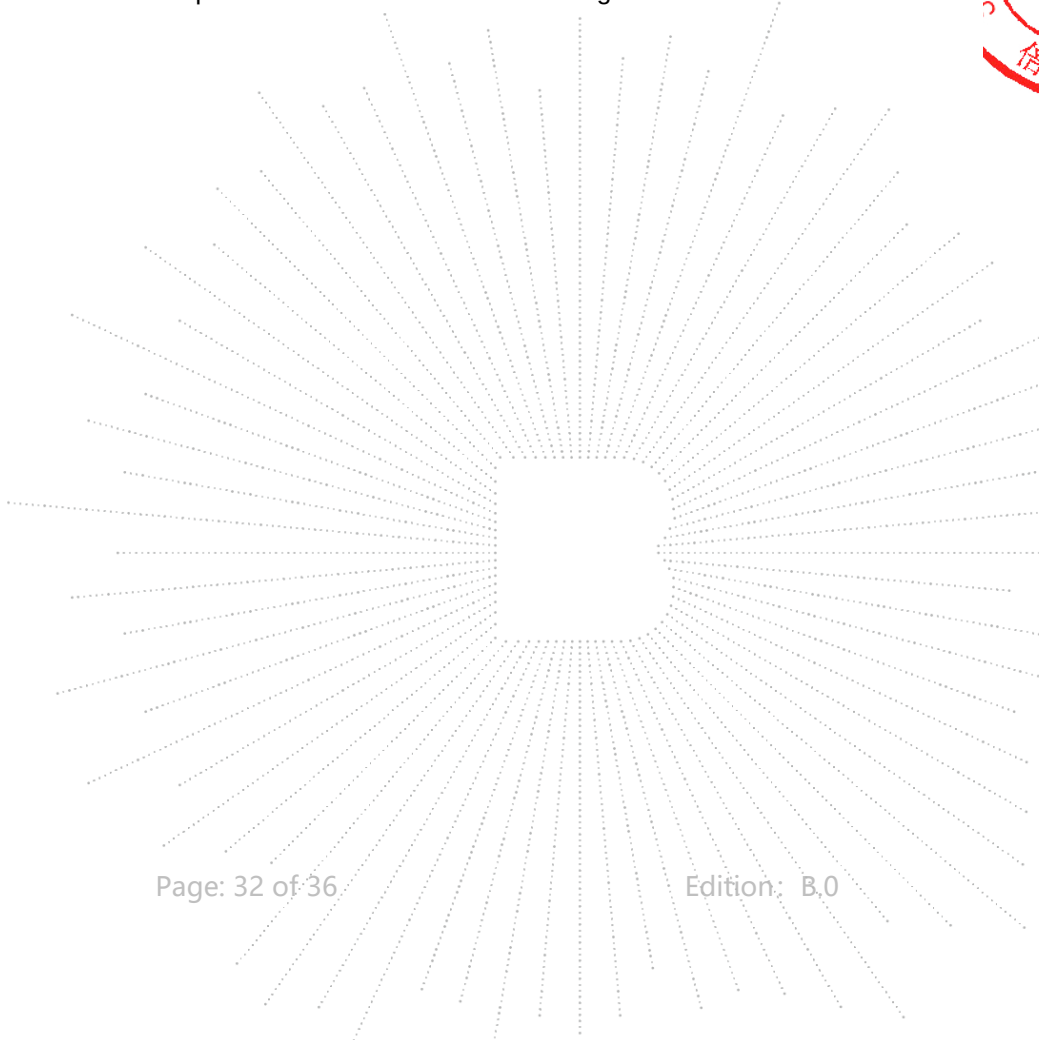


For FDD-LTE Band 66 Mode

| Frequency<br>(MHz)       | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|--------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (1710.7MHz)  |                  |               |                 |                |                |              |
| 85.31                    | -44.64           | -15.92        | -60.57          | -13.00         | -47.57         | H            |
| 3421.40                  | -19.13           | -22.93        | -42.06          | -13.00         | -29.06         | H            |
| 5132.10                  | -25.07           | -22.45        | -47.52          | -13.00         | -34.52         | H            |
| 85.31                    | -44.81           | -15.92        | -60.74          | -13.00         | -47.74         | V            |
| 3421.40                  | -21.83           | -22.93        | -44.76          | -13.00         | -31.76         | V            |
| 5132.10                  | -26.36           | -22.45        | -48.81          | -13.00         | -35.81         | V            |
| Middle Channel (1755MHz) |                  |               |                 |                |                |              |
| 85.31                    | -42.86           | -15.92        | -58.78          | -13.00         | -45.78         | H            |
| 3510.00                  | -19.16           | -22.79        | -41.95          | -13.00         | -28.95         | H            |
| 5265.00                  | -24.28           | -22.56        | -46.84          | -13.00         | -33.84         | H            |
| 85.31                    | -41.71           | -15.92        | -57.64          | -13.00         | -44.64         | V            |
| 3510.00                  | -20.04           | -22.79        | -42.83          | -13.00         | -29.83         | V            |
| 5265.00                  | -24.61           | -22.56        | -47.17          | -13.00         | -34.17         | V            |
| High Channel (1779.3MHz) |                  |               |                 |                |                |              |
| 85.31                    | -42.44           | -15.92        | -58.36          | -13.00         | -45.36         | H            |
| 3558.60                  | -20.16           | -22.68        | -42.84          | -13.00         | -29.84         | H            |
| 5337.90                  | -25.60           | -22.46        | -48.06          | -13.00         | -35.06         | H            |
| 85.31                    | -42.24           | -15.92        | -58.16          | -13.00         | -45.16         | V            |
| 3558.60                  | -18.36           | -22.65        | -41.01          | -13.00         | -28.01         | V            |
| 5337.90                  | -25.89           | -22.47        | -48.36          | -13.00         | -35.36         | V            |

Note: Result=Reading+ Correct, Margin= Result- Limit

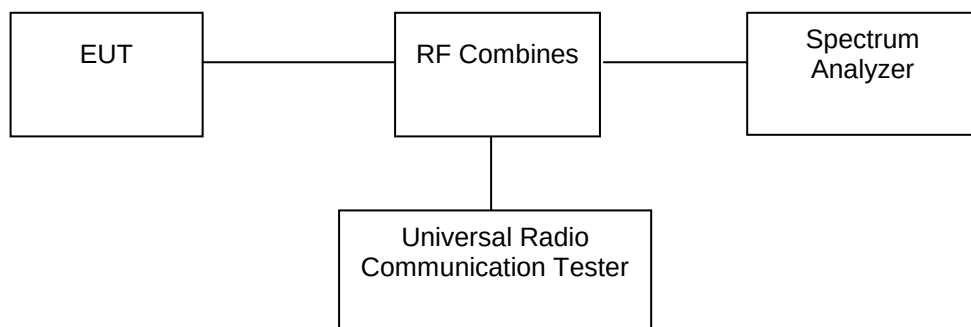
Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.





## 11. Frequency Stability

### 11.1 Block Diagram Of Test Setup



### 11.2 Limit

±2.5 ppm

### 11.3 Test procedure

Test Procedures for Temperature Variation

1. The testing follows FCC KDB 971168 D01v03 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 D01v03 Section 9.0.
2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.
5. The worst case(worst bandwidth) for frequency stability reported in the Test Data.  
The worst bandwidth is as follow:  
1.4M is for LTE Band 2, 1.4M is for LTE Band 4,  
5M is for LTE Band 5, 1.4M is for LTE Band 7,  
1.4M is for LTE Band 66,

### 11.4 Test Result

Please refer to Appendix 2: Frequency Stability  
Test Result: Pass

## 12. EUT Photographs

EUT Photo 1



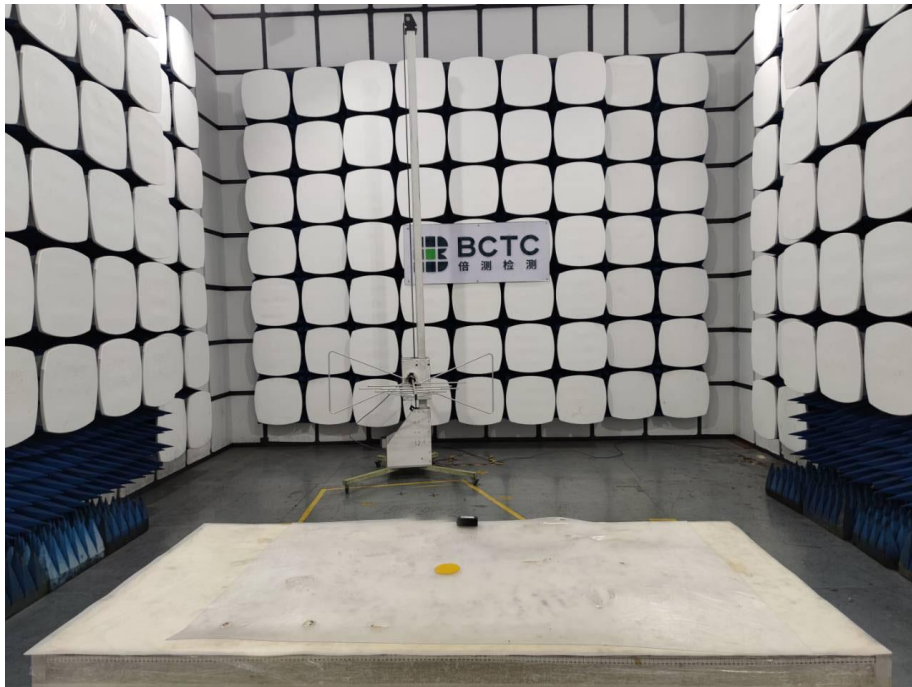
EUT Photo 2



NOTE: Appendix-Photographs Of EUT Constructional Details

### 13. EUT Test Setup Photographs

#### Radiated Measurement Photos





## STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

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