

# TEST REPORT

|                                        |                                                                                                                                               |                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| FCC ID. .... :                         | 2AT3DORION                                                                                                                                    |                                                                                       |
| Test Report No..... :                  | TCT210204E051                                                                                                                                 |                                                                                       |
| Date of issue..... :                   | Jun. 23, 2021                                                                                                                                 |                                                                                       |
| Testing laboratory .....               | SHENZHEN TONGCE TESTING LAB                                                                                                                   |                                                                                       |
| Testing location/ address:             | TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China |                                                                                       |
| Applicant's name..... :                | CT Cellutions, Inc                                                                                                                            |                                                                                       |
| Address..... :                         | 5705 Commerce Blvd, Alpharetta, Georgia, 30004 United States                                                                                  |                                                                                       |
| Manufacturer's name ... :              | ZTECH COMMUNICATION(SZ) CO LTD                                                                                                                |                                                                                       |
| Address..... :                         | FL 7 BLOCK D BAO'AN ZHIGU INNOVATION PARK YIN'TIAN ROAD NO.4 XI'XIANG STR' BAO'AN DISTRICT SZ CHINA                                           |                                                                                       |
| Standard(s) .....                      | FCC CFR Title 47 Part 2<br>FCC CFR Title 47 Part22<br>FCC CFR Title 47 Part24<br>FCC CFR Title 47 Part27                                      |                                                                                       |
| Test item description .....            | Mobile phone                                                                                                                                  |                                                                                       |
| Trade Mark .....                       | CELLUTION                                                                                                                                     |                                                                                       |
| Model/Type reference..... :            | ORION                                                                                                                                         |                                                                                       |
| Rating(s) .....                        | Refer to EUT description of page 4                                                                                                            |                                                                                       |
| Date of receipt of test item .....     | Feb. 04, 2021                                                                                                                                 |                                                                                       |
| Date (s) of performance of test..... : | See dates for each test case                                                                                                                  |                                                                                       |
| Tested by (+signature) ... :           | Kevin Huang                                                                                                                                   |  |
| Check by (+signature).... :            | Beryl Zhao                                                                                                                                    |  |
| Approved by (+signature):              | Tomsin                                                                                                                                        |  |

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**Appendix A: Photographs of Test Setup**

**Appendix B: Photographs of EUT**

**Test Data: Refer to Appendix For LTE Band 2, Appendix For LTE Band 4,  
Appendix For LTE Band 5, Appendix For LTE Band 7,  
Appendix For LTE Band 12, Appendix For LTE Band 17  
Appendix For LTE Band 66 and Appendix For LTE Band 71**

## 1. General Product Information

### 1.1. EUT description

|                                      |                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test item description .....          | Mobile phone                                                                                                                                                                                                                                                                                                                                                        |
| Model/Type reference.....            | ORION                                                                                                                                                                                                                                                                                                                                                               |
| Sample Number.....                   | TCT210204E021-0101                                                                                                                                                                                                                                                                                                                                                  |
| 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: 2500 MHz ~ 2570 MHz<br>LTE Band 12: 699 MHz ~ 716 MHz<br>LTE Band 17: 704 MHz ~ 716 MHz<br>LTE Band 66: 1710 MHz ~ 1780 MHz<br>LTE Band 71: 663 MHz ~ 698 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: 2620 MHz ~ 2690 MHz<br>LTE Band 12: 729 MHz ~ 746 MHz<br>LTE Band 17: 734 MHz ~ 746 MHz<br>LTE Band 66: 2110 MHz ~ 2180 MHz<br>LTE Band 71: 617 MHz ~ 652 MHz                                                                                    |
| Bandwidth.....                       | LTE Band 2: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz<br>LTE Band 4: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz<br>LTE Band 5: 1.4MHz /3MHz /5MHz /10MHz<br>LTE Band 7: 5MHz /10MHz/15MHz /20MHz<br>LTE Band 12: 1.4MHz /3MHz /5MHz /10MHz<br>LTE Band 17: 5MHz /10MHz<br>LTE Band 66: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz<br>LTE Band 71: 5MHz /10MHz /15MHz /20MHz |
| Maximum Output Power to Antenna..... | LTE Band 2: 23.97dBm<br>LTE Band 4: 23.23dBm<br>LTE Band 5: 23.80dBm<br>LTE Band 7: 23.20dBm<br>LTE Band 12: 23.05dBm<br>LTE Band 17: 23.05dBm<br>LTE Band 66: 23.44dBm<br>LTE Band 71: 25.44dBm                                                                                                                                                                    |

|                                     |                                                                                                                                                                                             |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>99% Occupied Bandwidth.....:</b> | LTE Band 2: 17M9G7D<br>LTE Band 4: 17M9G7D<br>LTE Band 5: 8M96G7D<br>LTE Band 7: 17M9G7D<br>LTE Band 12: 8M96G7D<br>LTE Band 17: 8M95G7D<br>LTE Band 66: 17M9G7D<br>LTE Band 71: 39M7G7D    |
| <b>Type of Modulation.....:</b>     | QPSK/16QAM                                                                                                                                                                                  |
| <b>Antenna Type.....:</b>           | PIFA Antenna                                                                                                                                                                                |
| <b>Antenna Gain.....:</b>           | LTE Band 2: 1.27dBi<br>LTE Band 4: 1.38dBi<br>LTE Band 5: -3.02dBi<br>LTE Band 7: 0.87dBi<br>LTE Band 12: -4.29dBi<br>LTE Band 17: -4.36dBi<br>LTE Band 66: 1.62dBi<br>LTE Band 71: 0.52dBi |
| <b>Rating(s) .....</b>              | Adapter Information:<br>Model: ORION<br>Input: AC 100-240V, 50/60Hz, 0.2A<br>Output: DC 5V, 1A<br>Rechargeable Li-ion Battery DC 3.8V                                                       |
| <b>Remark.....:</b>                 | /                                                                                                                                                                                           |

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

## 1.2. Model(s) list

None.

### 1.3. 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        | 1M08G7D                      | 0.334           | 1M08W7D                      | 0.273           |
| 3          | 2M68G7D                      | 0.300           | 2M68W7D                      | 0.247           |
| 5          | 4M48G7D                      | 0.308           | 4M48W7D                      | 0.249           |
| 10         | 8M96G7D                      | 0.306           | 8M94W7D                      | 0.247           |
| 15         | 13M4G7D                      | 0.307           | 13M4W7D                      | 0.252           |
| 20         | 17M9G7D                      | 0.308           | 17M9W7D                      | 0.251           |
|            |                              |                 |                              |                 |
| LTE Band 4 | QPSK                         |                 | 16QAM                        |                 |
| BW(MHz)    | Emission Designator (99%OBW) | Maximum EIRP(W) | Emission Designator (99%OBW) | Maximum EIRP(W) |
| 1.4        | 1M08G7D                      | 0.397           | 1M08W7D                      | 0.377           |
| 3          | 2M68G7D                      | 0.275           | 2M68W7D                      | 0.223           |
| 5          | 4M48G7D                      | 0.279           | 4M48W7D                      | 0.227           |
| 10         | 8M95G7D                      | 0.282           | 8M95W7D                      | 0.229           |
| 15         | 13M4G7D                      | 0.276           | 13M4W7D                      | 0.230           |
| 20         | 17M9G7D                      | 0.288           | 17M9W7D                      | 0.231           |
|            |                              |                 |                              |                 |
| LTE Band 5 | QPSK                         |                 | 16QAM                        |                 |
| BW(MHz)    | Emission Designator (99%OBW) | Maximum ERP(W)  | Emission Designator (99%OBW) | Maximum ERP(W)  |
| 1.4        | 1M08G7D                      | 0.073           | 1M08W7D                      | 0.057           |
| 3          | 2M68G7D                      | 0.069           | 2M68W7D                      | 0.055           |
| 5          | 4M48G7D                      | 0.070           | 4M48W7D                      | 0.056           |
| 10         | 8M96G7D                      | 0.071           | 8M94W7D                      | 0.057           |
|            |                              |                 |                              |                 |
| LTE Band 7 | QPSK                         |                 | 16QAM                        |                 |
| BW(MHz)    | Emission Designator (99%OBW) | Maximum EIRP(W) | Emission Designator (99%OBW) | Maximum EIRP(W) |
| 5          | 4M48G7D                      | 0.243           | 4M48W7D                      | 0.193           |
| 10         | 8M96G7D                      | 0.248           | 8M95W7D                      | 0.202           |
| 15         | 13M4G7D                      | 0.245           | 13M4W7D                      | 0.207           |
| 20         | 17M9G7D                      | 0.258           | 17M9W7D                      | 0.202           |

| LTE Band 12 |                              |                 |                              |                 |
|-------------|------------------------------|-----------------|------------------------------|-----------------|
|             |                              | QPSK            | 16QAM                        |                 |
| BW(MHz)     | Emission Designator (99%OBW) | Maximum ERP(W)  | Emission Designator (99%OBW) | Maximum ERP(W)  |
| 1.4         | 1M08G7D                      | 0.046           | 1M08W7D                      | 0.037           |
| 3           | 2M68G7D                      | 0.045           | 2M68W7D                      | 0.037           |
| 5           | 4M47G7D                      | 0.045           | 4M48W7D                      | 0.037           |
| 10          | 8M96G7D                      | 0.045           | 8M95W7D                      | 0.037           |
|             |                              |                 |                              |                 |
| LTE Band 17 |                              |                 |                              |                 |
|             |                              | QPSK            | 16QAM                        |                 |
| BW(MHz)     | Emission Designator (99%OBW) | Maximum ERP(W)  | Emission Designator (99%OBW) | Maximum ERP(W)  |
| 5           | 4M48G7D                      | 0.045           | 4M48W7D                      | 0.037           |
| 10          | 8M95G7D                      | 0.045           | 8M95W7D                      | 0.037           |
|             |                              |                 |                              |                 |
| LTE Band 66 |                              |                 |                              |                 |
|             |                              | QPSK            | 16QAM                        |                 |
| BW(MHz)     | Emission Designator (99%OBW) | Maximum EIRP(W) | Emission Designator (99%OBW) | Maximum EIRP(W) |
| 1.4         | 1M08G7D                      | 0.204           | 1M08W7D                      | 0.172           |
| 3           | 2M68G7D                      | 0.193           | 2M69W7D                      | 0.156           |
| 5           | 4M49G7D                      | 0.201           | 4M48W7D                      | 0.162           |
| 10          | 8M95G7D                      | 0.207           | 8M95W7D                      | 0.179           |
| 15          | 13M4G7D                      | 0.198           | 13M4W7D                      | 0.152           |
| 20          | 17M9G7D                      | 0.221           | 17M9W7D                      | 0.188           |
|             |                              |                 |                              |                 |
| LTE Band 71 |                              |                 |                              |                 |
|             |                              | QPSK            | 16QAM                        |                 |
| BW(MHz)     | Emission Designator (99%OBW) | Maximum ERP(W)  | Emission Designator (99%OBW) | Maximum ERP(W)  |
| 5           | 6M02G7D                      | 0.237           | 4M63W7D                      | 0.222           |
| 10          | 11M02G7D                     | 0.240           | 9M16W7D                      | 0.207           |
| 15          | 17M6G7D                      | 0.229           | 13M9W7D                      | 0.178           |
| 20          | 20M5G7D                      | 0.227           | 39M7W7D                      | 0.179           |

## 1.4. Test 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 2(15MHz)  |                 | LTE Band 2(20MHz) |                 |
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 18675              | 1857.5          | 18700             | 1860            |
| 18900              | 1880            | 18900             | 1880            |
| 19125              | 1902.5          | 19100             | 1900            |

| 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 4(15MHz)  |                 | LTE Band 4(20MHz) |                 |
| Channel            | Frequency (MHz) | Channel           | Frequency (MHz) |
| 20025              | 1717.5          | 20050             | 1720            |
| 20175              | 1732.5          | 20175             | 1732.5          |
| 20325              | 1747.5          | 20300             | 1745            |

| 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             | 2505.0          |
| 21100             | 2535            | 21100             | 2535            |
| 21425             | 2567.5          | 21400             | 2565.0          |
| LTE Band 7(15MHz) |                 | LTE Band 7(20MHz) |                 |
| Channel           | Frequency (MHz) | Channel           | Frequency (MHz) |
| 20825             | 2507.5          | 20850             | 2510.0          |
| 21100             | 2535            | 21100             | 2535            |
| 21375             | 2562.5          | 21350             | 2560.0          |

| LTE Band 12(1.4MHz) |                 | LTE Band 12(3MHz)  |                 |
|---------------------|-----------------|--------------------|-----------------|
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 23017               | 699.7           | 23025              | 700.5           |
| 23095               | 707.5           | 23095              | 707.5           |
| 23173               | 715.3           | 23165              | 714.5           |
| LTE Band 12(5MHz)   |                 | LTE Band 12(10MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 23035               | 701.5           | 23060              | 704             |
| 23095               | 707.5           | 23095              | 707.5           |
| 23155               | 713.5           | 23130              | 711             |

| LTE Band 17(5MHz) |                 | LTE Band 17(10MHz) |                 |
|-------------------|-----------------|--------------------|-----------------|
| Channel           | Frequency (MHz) | Channel            | Frequency (MHz) |
| 23755             | 706.5           | 23780              | 709             |
| 23790             | 710             | 23790              | 710             |
| 23825             | 713.5           | 23800              | 711             |

| LTE Band 66(1.4MHz) |                 | LTE Band 66(3MHz)  |                 |
|---------------------|-----------------|--------------------|-----------------|
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 131979              | 1710.7          | 131987             | 1711.5          |
| 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            |
| 132422              | 1755            | 132422             | 1755            |
| 132647              | 1777.5          | 132622             | 1775            |
| LTE Band 66(15MHz)  |                 | LTE Band 66(20MHz) |                 |
| 132047              | 1717.5          | 132072             | 1720            |
| 132422              | 1755            | 132422             | 1755            |
| 132597              | 1772.5          | 132572             | 1770            |

| LTE Band 71(5MHz)  |                 | LTE Band 71(10MHz) |                 |
|--------------------|-----------------|--------------------|-----------------|
| Channel            | Frequency (MHz) | Channel            | Frequency (MHz) |
| 133147             | 665.5           | 133172             | 668             |
| 133297             | 680.5           | 133297             | 680.5           |
| 133447             | 695.5           | 133422             | 693             |
| LTE Band 71(15MHz) |                 | LTE Band 71(20MHz) |                 |
| 133197             | 670.5           | 133222             | 673             |
| 133297             | 680.5           | 133322             | 683             |
| 133397             | 690.5           | 133372             | 688             |

## 2. Test Result Summary

| Requirement                                   | CFR 47 Section                                                           | Result |
|-----------------------------------------------|--------------------------------------------------------------------------|--------|
| Conducted Output Power                        | §2.1046; §22.913;<br>§24.232(c); §27.50(d);<br>§27.50(c); §27.50(b);     | PASS   |
| Peak-to-Average Ratio                         | §2.1046; §24.232(d)<br>§27.50(d); §27.50(c);<br>§27.50(b);               | PASS   |
| Effective Radiated Power                      | §2.1046; §22.913;<br>§24.232(c); §27.50(d);<br>§27.50(c); §27.50(b);     | PASS   |
| Equivalent Isotropic Radiated Power           | §2.1046; §22.913;<br>§24.232(c); §27.50(d);<br>§27.50(c); §27.50(b);     | PASS   |
| Occupied Bandwidth                            | §2.1049; §24.238(b);<br>§27.53;                                          | PASS   |
| Band Edge                                     | §2.1051; §22.917(a);<br>§27.53(h); §27.53(c);<br>§27.53(g); §24.238(a);  | PASS   |
| Conducted Spurious Emission                   | §2.1051; §22.917(a);<br>§27.53(h); §27.53(g);<br>§27.53(c); §24.238(a);  | PASS   |
| Field Strength of Spurious Radiation          | §2.1053; §22.917(a);<br>§27.53(g) ; §27.53(c);<br>§27.53(h); §24.238(a); | PASS   |
| Frequency Stability for Temperature & Voltage | §2.1055; §22.355;<br>§27.54; §24.235;                                    | PASS   |

**Note:**

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.
5. After pre-testing of two samples with different memory chip, we found that the one with ISOCOM memory chip is the worst case, so the results are recorded in this report.

### 3. General Information

#### 3.1. Test environment and mode

##### Operating Environment:

|                       |           |
|-----------------------|-----------|
| Temperature:          | 25.0 °C   |
| Humidity:             | 56 % RH   |
| Atmospheric Pressure: | 1010 mbar |

Remark: This product has a built-in rechargeable battery, so in an independent test, the EUT battery was fully-charged. This EUT owns two SIM cards, after we perform the pretest for these two SIM card; we found the SIM 1 is the worst case, so its result is recorded in this report.

Keep the EUT in communication with CMW500 and select channel with modulation 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 / 15MHz / 20MHz) | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz) |
| LTE Band 4  | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz) | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz) |
| LTE Band 5  | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz)                 | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz)                 |
| LTE Band 7  | QPSK Link<br>(5MHz / 10MHz / 15MHz / 20MHz)                 | 16QAM Link<br>(5MHz / 10MHz / 15MHz / 20MHz)                 |
| LTE Band 12 | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz)                 | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz)                 |
| LTE Band 17 | QPSK Link<br>(5MHz / 10MHz)                                 | 16QAM Link<br>(5MHz / 10MHz)                                 |
| LTE Band 66 | QPSK Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz) | 16QAM Link<br>(1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz) |
| LTE Band 71 | QPSK Link<br>(5MHz / 10MHz / 15MHz / 20MHz)                 | 16QAM Link<br>(5MHz / 10MHz / 15MHz / 20MHz)                 |

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

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission. The sample was placed 0.8m/1.5m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarization. The emissions worst-case are shown in Test Results of the following pages.

| 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            | V | V |
|                        | 4    | V               | V | 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            | V | V |
|                        | 12   | V               | V | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 17   | -               | - | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 66   | V               | V | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 71   | -               | - | 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            | V | V |
|                        | 4    | V               | V | 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            | V | V |
|                        | 12   | V               | V | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 17   | -               | - | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 66   | V               | V | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 71   | -               | - | 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            | V | V |
|                        | 4    | V               | V | 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            | V | V |
|                        | 12   | V               | V | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 17   | -               | - | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 66   | V               | V | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | V | V |
|                        | 71   | -               | - | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | V | V |

| Test Items                        | Band | Bandwidth (MHz) |   |   |    |    |    | Modulation |       | RB # |      |      | Test Channel |   |   |
|-----------------------------------|------|-----------------|---|---|----|----|----|------------|-------|------|------|------|--------------|---|---|
|                                   |      | 1.4             | 3 | 5 | 10 | 15 | 20 | QPSK       | 16QAM | 1    | Half | Full | L            | M | H |
| Conducted<br>Band Edge            | 2    | V               | 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            | - | V |
|                                   | 5    | V               | V | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | - | V |
|                                   | 7    | -               | - | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | - | V |
|                                   | 12   | V               | V | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                                   | 17   | -               | - | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | - | V |
|                                   | 66   | V               | V | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | - | V |
|                                   | 71   | -               | - | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | - | V |
| Conducted<br>Spurious<br>Emission | 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 |
|                                   | 7    | -               | - | V | V  | V  | V  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 12   | V               | V | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                                   | 17   | -               | - | V | V  | -  | -  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 66   | V               | V | V | V  | V  | V  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 71   | -               | - | V | V  | V  | V  | V          | V     | V    | -    | -    | V            | V | V |
| Frequency<br>Stability            | 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 |
|                                   | 12   | V               | - | - | -  | -  | -  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 17   | -               | - | V | -  | -  | -  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 66   | V               | - | - | -  | -  | -  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 71   | -               | - | - | -  | -  | -  | 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            | V | V |
|                                   | 4    | V               | V | 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            | V | V |
|                                   | 12   | V               | V | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                                   | 17   | -               | - | V | V  | -  | -  | V          | V     | V    | V    | V    | V            | V | V |
|                                   | 66   | V               | V | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | V | V |
|                                   | 71   | -               | - | V | V  | V  | V  | V          | V     | V    | V    | V    | V            | V | V |
| Radiated<br>Spurious              | 2    | V               | - | - | -  | -  | -  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 4    | V               | - | - | -  | -  | -  | V          | V     | V    | -    | -    | V            | V | V |
|                                   | 5    | V               | - | - | -  | -  | -  | V          | V     | V    | -    | -    | V            | V | V |

|          |                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Emission | 7                                                                   | - | - | v | - | - | - | v | v | v | - | - | v | v | v |
|          | 12                                                                  | v | - | - | - | - | - | v | v | v | - | - | v | v | v |
|          | 17                                                                  | - | - | v | - | - | - | v | v | v | - | - | v | v | v |
|          | 66                                                                  | v | - | - | - | - | - | v | v | v | - | - | v | v | v |
|          | 71                                                                  | - | - | - | - | - | - | v | v | v | - | - | v | v | v |
| Note     | 1. The mark "v" means that this configuration is chosen for testing |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|          | 2. The mark "-" means that this bandwidth is not supported.         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

### 3.2. Description of Support Units

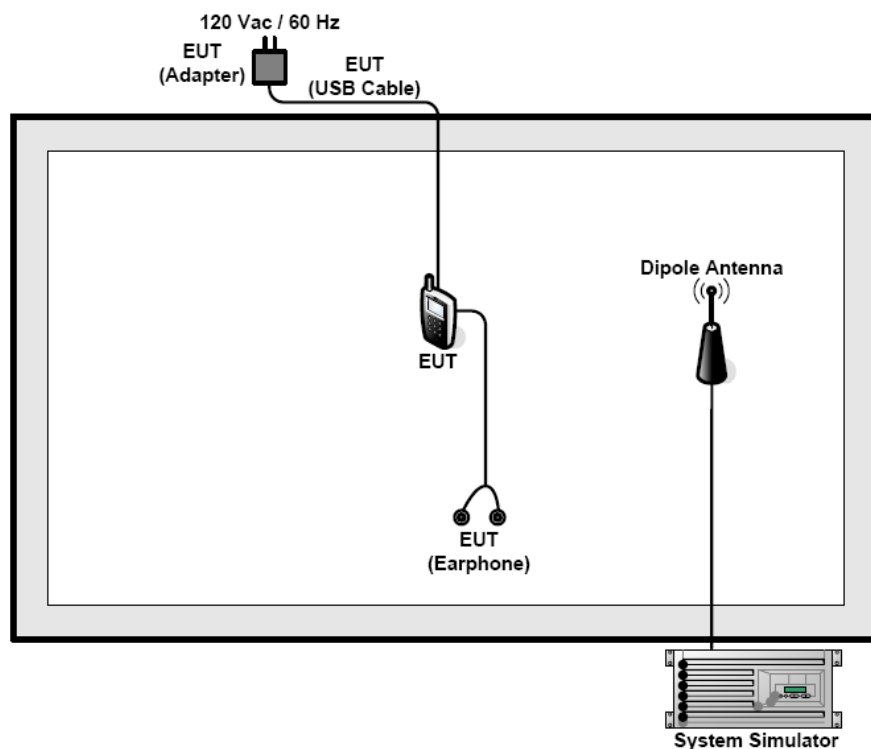
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Equipment | Model No. | Serial No. | FCC ID | Trade Name |
|-----------|-----------|------------|--------|------------|
| /         | /         | /          | /      | /          |

**Note:**

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.

### 3.3. Configuration of Tested System



### 3.4. 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.  
 $Offset = RF\ cable\ loss + attenuator\ factor.$

## 4. Facilities and Accreditations

### 4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

### 4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: TCT Testing Industrial Park, Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: 86-755-27673339

### 4.3. Measurement Uncertainty

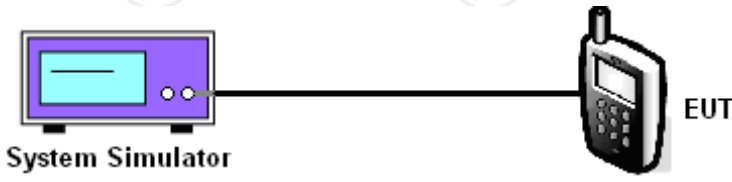
The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                          | MU                        |
|-----|-------------------------------|---------------------------|
| 1   | Conducted Emission            | $\pm 2.56\text{dB}$       |
| 2   | RF power, conducted           | $\pm 0.12\text{dB}$       |
| 3   | Spurious emissions, conducted | $\pm 0.11\text{dB}$       |
| 4   | All emissions, radiated(<1G)  | $\pm 3.92\text{dB}$       |
| 5   | All emissions, radiated(>1G)  | $\pm 4.28\text{dB}$       |
| 6   | Temperature                   | $\pm 0.1^{\circ}\text{C}$ |
| 7   | Humidity                      | $\pm 1.0\%$               |

## 5. Test Results and Measurement Data

### 5.1. Effective Radiated Power and Effective Isotropic Radiated Power Measurement

#### 5.1.1. Test Specification

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC part 27.50(c), FCC part 27.50(d) and FCC part 27.50(h), FCC part 24.232(c), FCC part 22.913;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Test Method:</b>      | FCC part 2.1046                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Limit:</b>            | LTE Band 2: 2W<br>LTE Band 4: 1W<br>LTE Band 5: 7W<br>LTE Band 7: 2W<br>LTE Band 12: 3W<br>LTE Band 17: 3W<br>LTE Band 66: 1W<br>LTE Band 71: 3W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Test Setup:</b>       |  <p>The diagram illustrates the test setup. On the left is a 'System Simulator' represented by a purple box with a screen and two ports. A black line connects one of these ports to a mobile phone on the right, which is labeled 'EUT' (Equipment Under Test).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Test Procedure:</b>   | <ol style="list-style-type: none"> <li>1. The transmitter output port was connected to the system simulator.</li> <li>2. Set EUT at maximum power through system simulator.</li> <li>3. Select lowest, middle, highest channels for each band and different modulation.</li> <li>4. Measure and record the power level from the system simulator.</li> <li>5. Calculate the ERP and EIRP</li> </ol> <p>The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:</p> $\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$ <p>where:</p> <p>ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as <math>P_{\text{Meas}}</math>, typically dBW or dBm);</p> <p><math>P_{\text{Meas}}</math> = measured transmitter output power or PSD, in dBm or dBW;</p> <p><math>G_T</math> = gain of the transmitting antenna, in dBd (ERP) or</p> |

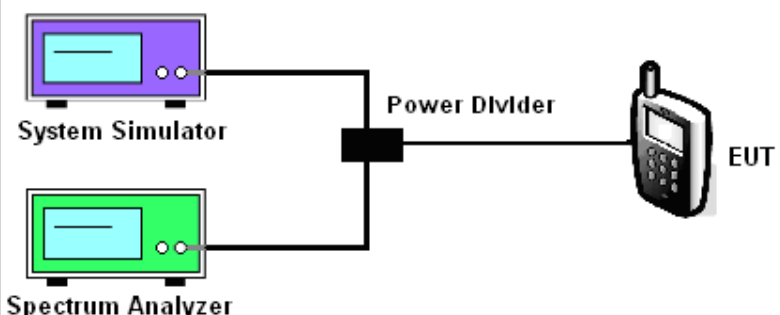
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <p>dBi (EIRP);</p> <p><math>L_C</math> = signal attenuation in the connecting cable between the transmitter and antenna, in dB.</p> <p><i>Note: For personal/portable radios utilizing an integral antenna, the factor <math>L_C</math> is typically negligible. However, in a fixed station transmit system that utilizes a long cable run between the transmitter and the transmitting antenna, this factor can be significant.</i></p> |
| <b>Test Result:</b> | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 5.1.2. Test Instruments

| Equipment                           | Manufacturer | Model  | Serial Number | Calibration Due |
|-------------------------------------|--------------|--------|---------------|-----------------|
| Wideband Radio Communication Tester | R&S          | CMW500 | 114220        | Jul. 27, 2021   |
| RF cable (9kHz-40GHz)               | TCT          | RE-05  | N/A           | Sep. 02, 2021   |
| Antenna Connector                   | TCT          | RFC-02 | N/A           | Sep. 02, 2021   |

## 5.2. Peak to Average Ratio

### 5.2.1. Test Specification

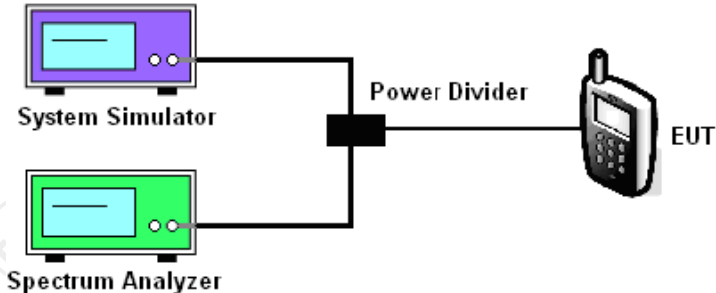
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC part 2.1046; 22.913; 24.232; 27.50(d); 27.50(c); 27.50(b)                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Test Method:</b>      | FCC KDB 971168 D01v03                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Limit:</b>            | The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Test Setup:</b>       |  <p>The diagram illustrates the test setup. A System Simulator (represented by a purple monitor icon) and a Spectrum Analyzer (represented by a green monitor icon) are both connected to a central Power Divider (represented by a black square icon). The Power Divider is then connected to the EUT (Equipment Under Test, represented by a mobile phone icon).</p>    |
| <b>Test Procedure:</b>   | <ol style="list-style-type: none"> <li>1. The testing follows FCC KDB 971168 D01v03 Section 5.7.1.</li> <li>2. The EUT was connected to spectrum analyzer and system simulator via a power divider.</li> <li>3. Set EUT to transmit at maximum output power.</li> <li>4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer.<br/>Record the maximum PAPR level associated with a probability of 0.1%.</li> </ol> |
| <b>Test Result:</b>      | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### 5.2.2. Test Instruments

| Equipment                           | Manufacturer | Model  | Serial Number | Calibration Due |
|-------------------------------------|--------------|--------|---------------|-----------------|
| Wideband Radio Communication Tester | R&S          | CMW500 | 114220        | Jul. 27, 2021   |
| Spectrum Analyzer                   | Agilent      | N9020A | MY49100619    | Sep. 11, 2021   |
| RF cable (9kHz-40GHz)               | TCT          | RE-05  | N/A           | Sep. 02, 2021   |
| Antenna Connector                   | TCT          | RFC-02 | N/A           | Sep. 02, 2021   |

### 5.3. 99% Occupied Bandwidth and 26dB Bandwidth Measurement

#### 5.3.1. Test Specification

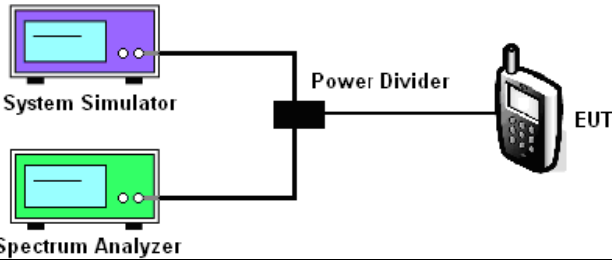
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC part 27.53(h)(3) and FCC part 27.53(m)(6),<br>FCC part 24.238(b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Test Method:</b>      | FCC part 2.1049                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Limit:</b>            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Test Setup:</b>       |  <p>The diagram illustrates the test setup. A System Simulator (represented by a purple monitor icon) and a Spectrum Analyzer (represented by a green monitor icon) are connected to a central Power Divider (represented by a black square icon). The Power Divider is then connected to the EUT (Equipment Under Test, represented by a mobile phone icon).</p>                                                                                                                                                                                     |
| <b>Test Procedure:</b>   | <ol style="list-style-type: none"> <li>1. The testing follows FCC KDB 971168 D01v03 Section 4.2.</li> <li>2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.</li> <li>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.</li> <li>4. The 99% occupied bandwidth were measured, set RBW= 1% of OBW, VBW= 3*RBW, sample detector, trace maximum hold.</li> <li>5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.</li> </ol> |
| <b>Test Result:</b>      | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### 5.3.2. Test Instruments

| Equipment                           | Manufacturer | Model  | Serial Number | Calibration Due |
|-------------------------------------|--------------|--------|---------------|-----------------|
| Wideband Radio Communication Tester | R&S          | CMW500 | 114220        | Jul. 27, 2021   |
| Spectrum Analyzer                   | Agilent      | N9020A | MY49100619    | Sep. 11, 2021   |
| RF cable (9kHz-40GHz)               | TCT          | RE-05  | N/A           | Sep. 02, 2021   |
| Antenna Connector                   | TCT          | RFC-02 | N/A           | Sep. 02, 2021   |

## 5.4. Band Edge and Conducted Spurious Emission Measurement

### 5.4.1. Test Specification

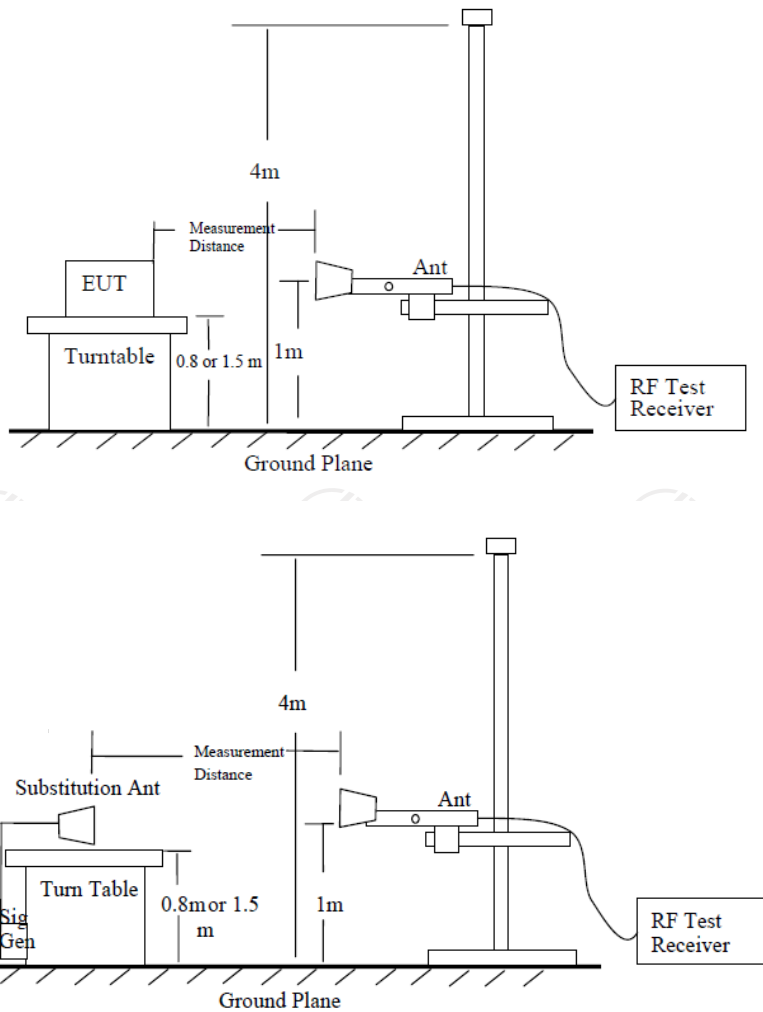
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC part 27.53(h), FCC part 27.53(g) ,<br>FCC part 27.53(m)(4), FCC part 24.238(a), 22.917(a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Test Method:</b>      | FCC part2.1051                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Limit:</b>            | -13dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Test Setup:</b>       |  <p>The diagram shows a System Simulator (purple box) and a Spectrum Analyzer (green box) connected to a Power Divider (black box). The Power Divider is also connected to the EUT (Equipment Under Test, represented by a mobile phone icon).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Test Procedure:</b>   | <ol style="list-style-type: none"> <li>1. The testing follows FCC KDB 971168 D01v03 Section 6.0.</li> <li>2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.</li> <li>3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>4. The band edges of low and high channels for the highest RF powers were measured.</li> <li>5. The conducted spurious emission for the whole frequency range was taken.</li> <li>6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.</li> <li>7. The limit line is derived from <math>43 + 10\log(P)</math> dB below the transmitter power<br/> <math>P(\text{Watts}) = P(W) - [43 + 10\log(P)] \text{ (dB)} = [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} = -13\text{dBm}</math>.<br/> For Band 17, the limit line is derived from <math>55 + 10\log(P)</math> dB below the transmitter power</li> </ol> |
| <b>Test Result:</b>      | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**5.4.2. Test Instruments**

| Equipment                           | Manufacturer | Model  | Serial Number | Calibration Due |
|-------------------------------------|--------------|--------|---------------|-----------------|
| Wideband Radio Communication Tester | R&S          | CMW500 | 114220        | Jul. 27, 2021   |
| Spectrum Analyzer                   | Agilent      | N9020A | MY49100619    | Sep. 11, 2021   |
| RF cable (9kHz-40GHz)               | TCT          | RE-05  | N/A           | Sep. 02, 2021   |
| Antenna Connector                   | TCT          | RFC-02 | N/A           | Sep. 02, 2021   |

## 5.5. Field Strength of Spurious Radiation Measurement

### 5.5.1. Test Specification

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC part 27.53(g) ,FCC part 27.53(h),<br>FCC part 27.53(m)(4), FCC part 22.917(a), 24.238(b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Test Method:</b>      | FCC part 2.1053                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Limit:</b>            | 30MHz~20GHz -13dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Test setup:</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Test Procedure:</b>   | <ol style="list-style-type: none"> <li>1. The testing follows FCC KDB 971168 D01v03 Section 5.8 and ANSI / TIA-603-D-2010Section 2.2.12.</li> <li>2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.</li> <li>3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.</li> <li>4. The table was rotated 360 degrees to determine the position of the highest spurious emission.</li> <li>5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum</li> </ol> |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | <p>spurious emission for both horizontal and vertical polarizations.</p> <ol style="list-style-type: none"> <li>6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.</li> <li>7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.</li> <li>8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.</li> <li>9. Taking the record of output power at antenna port.</li> <li>10. Repeat step 7 to step 8 for another polarization.</li> <li>11. <math>EIRP\ (dBm) = S.G.\ Power - Tx\ Cable\ Loss + Tx\ Antenna\ Gain</math></li> <li>12. <math>ERP\ (dBm) = EIRP - 2.15</math></li> <li>13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.</li> <li>14. The limit line is derived from <math>43 + 10\log(P)</math> dB below the transmitter power P(Watts) <math display="block">= P(W) - [43 + 10\log(P)]\ (dB)</math> <math display="block">= [30 + 10\log(P)]\ (dBm) - [43 + 10\log(P)]\ (dB)</math> <math display="block">= -13dBm.</math> </li> </ol> |
| <b>Test results:</b> | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Remark:</b>       | All modulations have been tested, but only the worst modulation show in this test item.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.5.2. Test Instruments

| Radiated Emission Test Site (966) |                       |              |               |                 |
|-----------------------------------|-----------------------|--------------|---------------|-----------------|
| Name of Equipment                 | Manufacturer          | Model        | Serial Number | Calibration Due |
| System simulator                  | R&S                   | CMU200       | 110188        | Sep. 11, 2021   |
| Spectrum Analyzer                 | ROHDE&SCHW<br>ARZ     | R&S          | FSQ40         | Sep. 11, 2021   |
| Signal Generator                  | HP                    | 83623B       | 3614A00396    | Sep. 02, 2021   |
| Broadband Antenna                 | Schwarzbeck           | VULB9163     | 340           | Sep. 04, 2022   |
| Horn Antenna                      | Schwarzbeck           | BBHA 9120D   | 631           | Sep. 04, 2022   |
| Broadband Antenna                 | Schwarzbeck           | VULB9163     | 412           | Sep. 04, 2022   |
| Horn Antenna                      | Schwarzbeck           | BBHA 9120D   | 1201          | Sep. 04, 2022   |
| Horn Antenna                      | A-INFO                | LB-180400-KF | J211020657    | Sep. 04, 2022   |
| Dipole Antenna                    | TCT                   | TCT-RF       | N/A           | Sep. 02, 2021   |
| Line-4                            | TCT                   | RE-high-04   | N/A           | Sep. 02, 2021   |
| Line-8                            | TCT                   | RE-01        | N/A           | Jul. 27, 2021   |
| Antenna Mast                      | Keleto                | CC-A-4M      | N/A           | N/A             |
| EMI Test Software                 | Shurple<br>Technology | EZ-EMC       | N/A           | N/A             |

### 5.5.3. Test Data

#### Frequency Range (9 kHz-30MHz)

| Frequency (MHz) | Level@3m (dB $\mu$ V/m) | Limit@3m (dB $\mu$ V/m) |
|-----------------|-------------------------|-------------------------|
| --              | --                      | --                      |
| --              | --                      | --                      |
| --              | --                      | --                      |
| --              | --                      | --                      |

**Note:** 1. Emission Level=Reading+ Cable loss+Antenna factor-Amp factor

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

| Band                                                                                   | Band 2(QPSK, 20MHz) |             |                        |                          | Test channel:      | Lowest  |
|----------------------------------------------------------------------------------------|---------------------|-------------|------------------------|--------------------------|--------------------|---------|
| Test mode:                                                                             |                     |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                     |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                     |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission   |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization        | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 3720.00                                                                                | Vertical            | -57.74      | 23.54                  | -34.2                    | -13.00             | PASS    |
| 5580.00                                                                                | V                   | -62.52      | 23.81                  | -38.71                   |                    |         |
| 7440.00                                                                                | V                   | -78.66      | 23.96                  | -54.70                   |                    |         |
| 3720.00                                                                                | Horizontal          | -55.83      | 23.54                  | -32.29                   |                    |         |
| 5580.00                                                                                | H                   | -62.58      | 23.81                  | -38.77                   |                    |         |
| 7440.00                                                                                | H                   | -75.44      | 23.96                  | -51.48                   |                    |         |
| Band                                                                                   | Band 2(QPSK, 20MHz) |             |                        |                          | Test channel:      | Middle  |
| Test mode:                                                                             |                     |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                     |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                     |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission   |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization        | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 3760.00                                                                                | Vertical            | -57.34      | 23.58                  | -33.76                   | -13.00             | PASS    |
| 5640.00                                                                                | V                   | -68.95      | 23.85                  | -45.10                   |                    |         |
| 7520.00                                                                                | V                   | -76.78      | 23.99                  | -52.79                   |                    |         |
| 3760.00                                                                                | Horizontal          | -56.47      | 23.58                  | -32.89                   |                    |         |
| 5640.00                                                                                | H                   | -62.90      | 23.85                  | -39.05                   |                    |         |
| 7520.00                                                                                | H                   | -77.19      | 23.99                  | -53.20                   |                    |         |
| Band                                                                                   | Band 2(QPSK, 20MHz) |             |                        |                          | Test channel:      | Highest |
| Test mode:                                                                             |                     |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                     |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                     |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission   |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization        | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 3800.00                                                                                | Vertical            | -59.28      | 23.60                  | -35.68                   | -13.00             | PASS    |
| 5700.00                                                                                | V                   | -67.66      | 23.88                  | -43.78                   |                    |         |
| 7600.00                                                                                | V                   | -76.17      | 24.02                  | -52.15                   |                    |         |
| 3800.00                                                                                | Horizontal          | -55.20      | 23.60                  | -31.60                   |                    |         |
| 5700.00                                                                                | H                   | -64.51      | 23.88                  | -40.63                   |                    |         |
| 7600.00                                                                                | H                   | -78.33      | 24.02                  | -54.31                   |                    |         |

| Band       | Band 2(16QAM, 20MHz) | Test channel:      | Lowest |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3720.00         | Vertical          | -57.11      | 23.54                  | -33.57                   | -13.00      | PASS   |
| 5580.00         | V                 | -63.64      | 23.81                  | -39.83                   |             |        |
| 7440.00         | V                 | -76.37      | 23.96                  | -52.41                   |             |        |
| 3720.00         | Horizontal        | -55.89      | 23.54                  | -32.35                   |             |        |
| 5580.00         | H                 | -62.50      | 23.81                  | -38.69                   |             |        |
| 7440.00         | H                 | -74.49      | 23.96                  | -50.53                   |             |        |

|            |                      |                    |        |
|------------|----------------------|--------------------|--------|
| Band       | Band 2(16QAM, 20MHz) | Test channel:      | Middle |
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3760.00         | Vertical          | -58.47      | 23.58                  | -34.89                   | -13.00      | PASS   |
| 5640.00         | V                 | -67.98      | 23.85                  | -44.13                   |             |        |
| 7520.00         | V                 | -75.64      | 23.99                  | -51.65                   |             |        |
| 3760.00         | Horizontal        | -55.20      | 23.58                  | -31.62                   |             |        |
| 5640.00         | H                 | -63.51      | 23.85                  | -39.66                   |             |        |
| 7520.00         | H                 | -77.34      | 23.99                  | -53.35                   |             |        |

|            |                      |                    |         |
|------------|----------------------|--------------------|---------|
| Band       | Band 2(16QAM, 20MHz) | Test channel:      | Highest |
| Test mode: |                      | Temperature :      | 25°C    |
|            |                      | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3800.00         | Vertical          | -59.07      | 23.60                  | -35.47                   | -13.00      | PASS   |
| 5700.00         | V                 | -68.80      | 23.88                  | -44.92                   |             |        |
| 7600.00         | V                 | -77.39      | 24.02                  | -53.37                   |             |        |
| 3800.00         | Horizontal        | -55.72      | 23.60                  | -32.12                   |             |        |
| 5700.00         | H                 | -64.58      | 23.88                  | -40.70                   |             |        |
| 7600.00         | H                 | -78.82      | 24.02                  | -54.80                   |             |        |

|            |                     |                    |        |
|------------|---------------------|--------------------|--------|
| Band       | Band 4(QPSK, 20MHz) | Test channel:      | Lowest |
| Test mode: |                     | Temperature :      | 25°C   |
|            |                     | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3440.00         | Vertical          | -57.47      | 23.40                  | -34.07                   | -13.00      | PASS   |
| 5160.00         | V                 | -62.20      | 23.69                  | -38.51                   |             |        |
| 6880.00         | V                 | -77.66      | 23.75                  | -53.91                   |             |        |
| 3440.00         | Horizontal        | -55.74      | 23.40                  | -32.34                   |             |        |
| 5160.00         | H                 | -62.07      | 23.69                  | -38.38                   |             |        |
| 6880.00         | H                 | -74.98      | 23.75                  | -51.23                   |             |        |

|            |                     |                    |        |
|------------|---------------------|--------------------|--------|
| Band       | Band 4(QPSK, 20MHz) | Test channel:      | Middle |
| Test mode: |                     | Temperature :      | 25°C   |
|            |                     | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3465.00         | Vertical          | -57.17      | 23.42                  | -33.75                   | -13.00      | PASS   |
| 5197.50         | V                 | -68.04      | 23.73                  | -44.31                   |             |        |
| 6930.00         | V                 | -76.32      | 23.79                  | -52.53                   |             |        |
| 3465.00         | Horizontal        | -54.84      | 23.42                  | -31.42                   |             |        |
| 5197.50         | H                 | -62.75      | 23.73                  | -39.02                   |             |        |
| 6930.00         | H                 | -75.66      | 23.79                  | -51.87                   |             |        |

|            |                     |                    |         |
|------------|---------------------|--------------------|---------|
| Band       | Band 4(QPSK, 20MHz) | Test channel:      | Highest |
| Test mode: |                     | Temperature :      | 25°C    |
|            |                     | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3490.00         | Vertical          | -59.73      | 23.46                  | -36.27                   | -13.00      | PASS   |
| 5235.00         | V                 | -68.64      | 23.77                  | -44.87                   |             |        |
| 6980.00         | V                 | -75.35      | 23.81                  | -51.54                   |             |        |
| 3490.00         | Horizontal        | -55.12      | 23.46                  | -31.66                   |             |        |
| 5235.00         | H                 | -64.80      | 23.77                  | -41.03                   |             |        |
| 6980.00         | H                 | -78.05      | 23.81                  | -54.24                   |             |        |

|            |                      |                    |        |
|------------|----------------------|--------------------|--------|
| Band       | Band 4(16QAM, 20MHz) | Test channel:      | Lowest |
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3440.00         | Vertical          | -58.82      | 23.40                  | -35.42                   | -13.00      | PASS   |
| 5160.00         | V                 | -64.10      | 23.69                  | -40.41                   |             |        |
| 6880.00         | V                 | -77.25      | 23.75                  | -53.50                   |             |        |
| 3440.00         | Horizontal        | -56.24      | 23.40                  | -32.84                   |             |        |
| 5160.00         | H                 | -63.17      | 23.69                  | -39.48                   |             |        |
| 6880.00         | H                 | -75.55      | 23.75                  | -51.80                   |             |        |

|            |                      |                    |        |
|------------|----------------------|--------------------|--------|
| Band       | Band 4(16QAM, 20MHz) | Test channel:      | Middle |
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3465.00         | Vertical          | -57.19      | 23.42                  | -33.77                   | -13.00      | PASS   |
| 5197.50         | V                 | -68.40      | 23.73                  | -44.67                   |             |        |
| 6930.00         | V                 | -76.58      | 23.79                  | -52.79                   |             |        |
| 3465.00         | Horizontal        | -55.80      | 23.42                  | -32.38                   |             |        |
| 5197.50         | H                 | -64.31      | 23.73                  | -40.58                   |             |        |
| 6930.00         | H                 | -77.25      | 23.79                  | -53.46                   |             |        |

|            |                      |                    |         |
|------------|----------------------|--------------------|---------|
| Band       | Band 4(16QAM, 20MHz) | Test channel:      | Highest |
| Test mode: |                      | Temperature :      | 25°C    |
|            |                      | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3490.00         | Vertical          | -59.82      | 23.46                  | -36.36                   | -13.00      | PASS   |
| 5235.00         | V                 | -68.51      | 23.77                  | -44.74                   |             |        |
| 6980.00         | V                 | -77.14      | 23.81                  | -53.33                   |             |        |
| 3490.00         | Horizontal        | -55.66      | 23.46                  | -32.20                   |             |        |
| 5235.00         | H                 | -66.18      | 23.77                  | -42.41                   |             |        |
| 6980.00         | H                 | -78.33      | 23.81                  | -54.52                   |             |        |

|            |                     |                    |        |
|------------|---------------------|--------------------|--------|
| Band       | Band 5(QPSK, 10MHz) | Test channel:      | Lowest |
| Test mode: |                     | Temperature :      | 25°C   |
|            |                     | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1658.00         | Vertical          | -58.85      | 23.15                  | -35.70                   | -13.00      | PASS   |
| 2487.00         | V                 | -62.14      | 23.24                  | -38.90                   |             |        |
| 3316.00         | V                 | -77.63      | 23.35                  | -54.28                   |             |        |
| 1658.00         | Horizontal        | -57.99      | 23.15                  | -34.84                   |             |        |
| 2487.00         | H                 | -59.75      | 23.24                  | -36.51                   |             |        |
| 3316.00         | H                 | -75.10      | 23.35                  | -51.75                   |             |        |

|            |                     |                    |        |
|------------|---------------------|--------------------|--------|
| Band       | Band 5(QPSK, 10MHz) | Test channel:      | Middle |
| Test mode: |                     | Temperature :      | 25°C   |
|            |                     | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1673.00         | Vertical          | -57.52      | 23.17                  | -34.35                   | -13.00      | PASS   |
| 2509.50         | V                 | -68.93      | 23.26                  | -45.67                   |             |        |
| 3346.00         | V                 | -75.14      | 23.38                  | -51.76                   |             |        |
| 1673.00         | Horizontal        | -56.71      | 23.17                  | -33.54                   |             |        |
| 2509.50         | H                 | -62.55      | 23.26                  | -39.29                   |             |        |
| 3346.00         | H                 | -76.87      | 23.38                  | -53.49                   |             |        |

|            |                     |                    |         |
|------------|---------------------|--------------------|---------|
| Band       | Band 5(QPSK, 10MHz) | Test channel:      | Highest |
| Test mode: |                     | Temperature :      | 25°C    |
|            |                     | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1688.00         | Vertical          | -60.96      | 23.19                  | -37.77                   | -13.00      | PASS   |
| 2532.00         | V                 | -69.73      | 23.28                  | -46.45                   |             |        |
| 3376.00         | V                 | -81.52      | 23.40                  | -58.12                   |             |        |
| 1688.00         | Horizontal        | -55.48      | 23.19                  | -32.29                   |             |        |
| 2532.00         | H                 | -64.22      | 23.28                  | -40.94                   |             |        |
| 3376.00         | H                 | -79.93      | 23.40                  | -56.53                   |             |        |

| Band       | Band 5(16QAM, 10MHz) | Test channel:      | Lowest |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1658.00         | Vertical          | -56.27      | 23.15                  | -33.12                   | -13.00      | PASS   |
| 2487.00         | V                 | -62.43      | 23.24                  | -39.19                   |             |        |
| 3316.00         | V                 | -78.11      | 23.35                  | -54.76                   |             |        |
| 1658.00         | Horizontal        | -56.68      | 23.15                  | -33.53                   |             |        |
| 2487.00         | H                 | -62.97      | 23.24                  | -39.73                   |             |        |
| 3316.00         | H                 | -76.00      | 23.35                  | -52.65                   |             |        |

|            |                      |                    |        |
|------------|----------------------|--------------------|--------|
| Band       | Band 5(16QAM, 10MHz) | Test channel:      | Middle |
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1673.00         | Vertical          | -57.16      | 23.17                  | -33.99                   | -13.00      | PASS   |
| 2509.50         | V                 | -68.79      | 23.26                  | -45.53                   |             |        |
| 3346.00         | V                 | -76.24      | 23.38                  | -52.86                   |             |        |
| 1673.00         | Horizontal        | -54.30      | 23.17                  | -31.13                   |             |        |
| 2509.50         | H                 | -63.48      | 23.26                  | -40.22                   |             |        |
| 3346.00         | H                 | -76.91      | 23.38                  | -53.53                   |             |        |

|            |                      |                    |         |
|------------|----------------------|--------------------|---------|
| Band       | Band 5(16QAM, 10MHz) | Test channel:      | Highest |
| Test mode: |                      | Temperature :      | 25°C    |
|            |                      | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1688.00         | Vertical          | -59.24      | 23.19                  | -36.05                   | -13.00      | PASS   |
| 2532.00         | V                 | -68.67      | 23.28                  | -45.39                   |             |        |
| 3376.00         | V                 | -76.82      | 23.40                  | -53.42                   |             |        |
| 1688.00         | Horizontal        | -55.73      | 23.19                  | -32.54                   |             |        |
| 2532.00         | H                 | -65.23      | 23.28                  | -41.95                   |             |        |
| 3376.00         | H                 | -79.11      | 23.40                  | -55.71                   |             |        |

| Band                                                                                   | Band 7(QPSK, 20MHz) |             |                        |                          | Test channel:      | Lowest  |
|----------------------------------------------------------------------------------------|---------------------|-------------|------------------------|--------------------------|--------------------|---------|
| Test mode:                                                                             |                     |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                     |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                     |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission   |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization        | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 5020.00                                                                                | Vertical            | -58.45      | 23.11                  | -35.34                   | -25.00             | PASS    |
| 7530.00                                                                                | V                   | -63.24      | 23.25                  | -39.99                   |                    |         |
| 10040.00                                                                               | V                   | -77.38      | 23.38                  | -54.00                   |                    |         |
| 5020.00                                                                                | Horizontal          | -57.75      | 23.11                  | -34.64                   |                    |         |
| 7530.00                                                                                | H                   | -59.88      | 23.25                  | -36.63                   |                    |         |
| 10040.00                                                                               | H                   | -75.71      | 23.38                  | -52.33                   |                    |         |
| Band                                                                                   | Band 7(QPSK, 20MHz) |             |                        |                          | Test channel:      | Middle  |
| Test mode:                                                                             |                     |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                     |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                     |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission   |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization        | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 5070.00                                                                                | Vertical            | -56.95      | 23.14                  | -33.81                   | -25.00             | PASS    |
| 7605.00                                                                                | V                   | -67.46      | 23.23                  | -44.23                   |                    |         |
| 10140.00                                                                               | V                   | -76.89      | 23.34                  | -53.55                   |                    |         |
| 5070.00                                                                                | Horizontal          | -55.57      | 23.14                  | -32.43                   |                    |         |
| 7605.00                                                                                | H                   | -62.44      | 23.23                  | -39.21                   |                    |         |
| 10140.00                                                                               | H                   | -76.50      | 23.34                  | -53.16                   |                    |         |
| Band                                                                                   | Band 7(QPSK, 20MHz) |             |                        |                          | Test channel:      | Highest |
| Test mode:                                                                             |                     |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                     |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                     |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission   |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization        | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 5120.00                                                                                | Vertical            | -59.94      | 23.17                  | -36.77                   | -25.00             | PASS    |
| 7680.00                                                                                | V                   | -69.56      | 23.25                  | -46.31                   |                    |         |
| 10240.00                                                                               | V                   | -81.11      | 23.40                  | -57.71                   |                    |         |
| 5120.00                                                                                | Horizontal          | -56.20      | 23.17                  | -33.03                   |                    |         |
| 7680.00                                                                                | H                   | -64.72      | 23.25                  | -41.47                   |                    |         |
| 10240.00                                                                               | H                   | -79.39      | 23.40                  | -55.99                   |                    |         |

| Band                                                                                   | Band 7(16QAM, 20MHz) |             |                        |                          | Test channel:      | Lowest  |
|----------------------------------------------------------------------------------------|----------------------|-------------|------------------------|--------------------------|--------------------|---------|
| Test mode:                                                                             |                      |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                      |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                      |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission    |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization         | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 5020.00                                                                                | Vertical             | -57.47      | 23.11                  | -34.36                   | -25.00             | PASS    |
| 7530.00                                                                                | V                    | -61.30      | 23.25                  | -38.05                   |                    |         |
| 10040.00                                                                               | V                    | -78.91      | 23.38                  | -55.53                   |                    |         |
| 5020.00                                                                                | Horizontal           | -56.63      | 23.11                  | -33.52                   |                    |         |
| 7530.00                                                                                | H                    | -61.90      | 23.25                  | -38.65                   |                    |         |
| 10040.00                                                                               | H                    | -76.37      | 23.38                  | -52.99                   |                    |         |
| Band                                                                                   | Band 7(16QAM, 20MHz) |             |                        |                          | Test channel:      | Middle  |
| Test mode:                                                                             |                      |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                      |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                      |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission    |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization         | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 5070.00                                                                                | Vertical             | -56.43      | 23.14                  | -33.29                   | -25.00             | PASS    |
| 7605.00                                                                                | V                    | -68.68      | 23.23                  | -45.45                   |                    |         |
| 10140.00                                                                               | V                    | -77.24      | 23.34                  | -53.9                    |                    |         |
| 5070.00                                                                                | Horizontal           | -54.92      | 23.14                  | -31.78                   |                    |         |
| 7605.00                                                                                | H                    | -62.61      | 23.23                  | -39.38                   |                    |         |
| 10140.00                                                                               | H                    | -76.80      | 23.34                  | -53.46                   |                    |         |
| Band                                                                                   | Band 7(16QAM, 20MHz) |             |                        |                          | Test channel:      | Highest |
| Test mode:                                                                             |                      |             |                        |                          | Temperature :      | 25°C    |
|                                                                                        |                      |             |                        |                          | Relative Humidity: | 56%     |
| Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line. |                      |             |                        |                          |                    |         |
| Frequency (MHz)                                                                        | Spurious Emission    |             |                        |                          | Limit (dBm)        | Result  |
|                                                                                        | Polarization         | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |                    |         |
| 5120.00                                                                                | Vertical             | -59.90      | 23.17                  | -36.73                   | -25.00             | PASS    |
| 7680.00                                                                                | V                    | -68.38      | 23.25                  | -45.13                   |                    |         |
| 10240.00                                                                               | V                    | -77.44      | 23.40                  | -54.04                   |                    |         |
| 5120.00                                                                                | Horizontal           | -55.39      | 23.17                  | -32.22                   |                    |         |
| 7680.00                                                                                | H                    | -64.85      | 23.25                  | -41.60                   |                    |         |
| 10240.00                                                                               | H                    | -78.51      | 23.40                  | -55.11                   |                    |         |

| Band       | Band 12(QPSK, 10MHz) | Test channel:      | Lowest |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1408.00         | Vertical          | -58.40      | 23.03                  | -35.37                   | -13.00      | PASS   |
| 2112.00         | V                 | -63.82      | 23.16                  | -40.66                   |             |        |
| 2816.00         | V                 | -78.27      | 23.25                  | -55.02                   |             |        |
| 1408.00         | Horizontal        | -58.29      | 23.03                  | -35.26                   |             |        |
| 2112.00         | H                 | -60.68      | 23.16                  | -37.52                   |             |        |
| 2816.00         | H                 | -76.07      | 23.25                  | -52.82                   |             |        |

| Band       | Band 12(QPSK, 10MHz) | Test channel:      | Middle |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1415.00         | Vertical          | -57.33      | 23.05                  | -34.28                   | -13.00      | PASS   |
| 2122.50         | V                 | -67.71      | 23.18                  | -44.53                   |             |        |
| 2830.00         | V                 | -77.11      | 23.28                  | -53.83                   |             |        |
| 1415.00         | Horizontal        | -54.43      | 23.05                  | -31.38                   |             |        |
| 2122.50         | H                 | -61.56      | 23.18                  | -38.38                   |             |        |
| 2830.00         | H                 | -75.98      | 23.28                  | -52.70                   |             |        |

| Band       | Band 12(QPSK, 10MHz) | Test channel:      | Highest |
|------------|----------------------|--------------------|---------|
| Test mode: |                      | Temperature :      | 25°C    |
|            |                      | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1422.00         | Vertical          | -60.39      | 23.08                  | -37.31                   | -13.00      | PASS   |
| 2133.00         | V                 | -69.77      | 23.20                  | -46.57                   |             |        |
| 2844.00         | V                 | -80.95      | 23.31                  | -57.64                   |             |        |
| 1422.00         | Horizontal        | -55.60      | 23.08                  | -32.52                   |             |        |
| 2133.00         | H                 | -63.82      | 23.20                  | -40.62                   |             |        |
| 2844.00         | H                 | -79.46      | 23.31                  | -56.15                   |             |        |

| Band       | Band 12(16QAM, 10MHz) | Test channel:      | Lowest |
|------------|-----------------------|--------------------|--------|
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1408.00         | Vertical          | -57.92      | 23.03                  | -34.89                   | -13.00      | PASS   |
| 2112.00         | V                 | -61.44      | 23.16                  | -38.28                   |             |        |
| 2816.00         | V                 | -78.67      | 23.25                  | -55.42                   |             |        |
| 1408.00         | Horizontal        | -56.81      | 23.03                  | -33.78                   |             |        |
| 2112.00         | H                 | -62.03      | 23.16                  | -38.87                   |             |        |
| 2816.00         | H                 | -76.96      | 23.25                  | -53.71                   |             |        |

| Band       | Band 12(16QAM, 10MHz) | Test channel:      | Middle |
|------------|-----------------------|--------------------|--------|
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1415.00         | Vertical          | -57.87      | 23.05                  | -34.82                   | -13.00      | PASS   |
| 2122.50         | V                 | -68.13      | 23.18                  | -44.95                   |             |        |
| 2830.00         | V                 | -76.74      | 23.28                  | -53.46                   |             |        |
| 1415.00         | Horizontal        | -56.22      | 23.05                  | -33.17                   |             |        |
| 2122.50         | H                 | -63.75      | 23.18                  | -40.57                   |             |        |
| 2830.00         | H                 | -76.66      | 23.28                  | -53.38                   |             |        |

|            |                       |       |       |                    |         |       |
|------------|-----------------------|-------|-------|--------------------|---------|-------|
| 2500.00    | 11                    | 70.00 | 20.20 | 50.00              | 50.00   | 50.00 |
| Band       | Band 12(16QAM, 10MHz) |       |       | Test channel:      | Highest |       |
| Test mode: |                       |       |       | Temperature :      | 25°C    |       |
|            |                       |       |       | Relative Humidity: | 56%     |       |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1422.00         | Vertical          | -58.72      | 23.08                  | -35.64                   | -13.00      | PASS   |
| 2133.00         | V                 | -68.10      | 23.20                  | -44.90                   |             |        |
| 2844.00         | V                 | -75.99      | 23.31                  | -52.68                   |             |        |
| 1422.00         | Horizontal        | -54.73      | 23.08                  | -31.65                   |             |        |
| 2133.00         | H                 | -64.41      | 23.20                  | -41.21                   |             |        |
| 2844.00         | H                 | -78.22      | 23.31                  | -54.91                   |             |        |

|            |                      |                    |        |
|------------|----------------------|--------------------|--------|
| Band       | Band 17(QPSK, 10MHz) | Test channel:      | Lowest |
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1418.00         | Vertical          | -58.11      | 23.06                  | -35.05                   | -13.00      | PASS   |
| 2127.00         | V                 | -62.76      | 23.17                  | -39.59                   |             |        |
| 2836.00         | V                 | -78.45      | 23.27                  | -55.18                   |             |        |
| 1418.00         | Horizontal        | -57.89      | 23.05                  | -34.84                   |             |        |
| 2127.00         | H                 | -61.24      | 23.18                  | -38.06                   |             |        |
| 2836.00         | H                 | -75.62      | 23.28                  | -52.34                   |             |        |

|            |                      |                    |        |
|------------|----------------------|--------------------|--------|
| Band       | Band 17(QPSK, 10MHz) | Test channel:      | Middle |
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1420.00         | Vertical          | -56.45      | 23.07                  | -33.38                   | -13.00      | PASS   |
| 2130.00         | V                 | -68.33      | 23.19                  | -45.14                   |             |        |
| 2840.00         | V                 | -76.10      | 23.29                  | -52.81                   |             |        |
| 1420.00         | Horizontal        | -55.67      | 23.07                  | -32.60                   |             |        |
| 2130.00         | H                 | -63.42      | 23.19                  | -40.23                   |             |        |
| 2840.00         | H                 | -76.34      | 23.30                  | -53.04                   |             |        |

|            |                      |                    |         |
|------------|----------------------|--------------------|---------|
| Band       | Band 17(QPSK, 10MHz) | Test channel:      | Highest |
| Test mode: |                      | Temperature :      | 25°C    |
|            |                      | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1422.00         | Vertical          | -58.89      | 23.08                  | -35.81                   | -13.00      | PASS   |
| 2133.00         | V                 | -69.24      | 23.20                  | -46.04                   |             |        |
| 2844.00         | V                 | -80.77      | 23.31                  | -57.46                   |             |        |
| 1422.00         | Horizontal        | -54.96      | 23.08                  | -31.88                   |             |        |
| 2133.00         | H                 | -63.25      | 23.20                  | -40.05                   |             |        |
| 2844.00         | H                 | -78.11      | 23.31                  | -54.80                   |             |        |

| Band       | Band 17(16QAM, 10MHz) | Test channel:      | Lowest |
|------------|-----------------------|--------------------|--------|
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1418.00         | Vertical          | -57.48      | 23.06                  | -34.42                   | -13.00      | PASS   |
| 2127.00         | V                 | -62.90      | 23.17                  | -39.73                   |             |        |
| 2836.00         | V                 | -78.55      | 23.27                  | -55.28                   |             |        |
| 1418.00         | Horizontal        | -55.34      | 23.05                  | -32.29                   |             |        |
| 2127.00         | H                 | -63.67      | 23.18                  | -40.49                   |             |        |
| 2836.00         | H                 | -74.92      | 23.28                  | -51.64                   |             |        |

|            |                       |                    |        |
|------------|-----------------------|--------------------|--------|
| Band       | Band 17(16QAM, 10MHz) | Test channel:      | Middle |
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1420.00         | Vertical          | -56.68      | 23.07                  | -33.61                   | -13.00      | PASS   |
| 2130.00         | V                 | -68.11      | 23.19                  | -44.92                   |             |        |
| 2840.00         | V                 | -75.94      | 23.29                  | -52.65                   |             |        |
| 1420.00         | Horizontal        | -55.26      | 23.07                  | -32.19                   |             |        |
| 2130.00         | H                 | -62.85      | 23.19                  | -39.66                   |             |        |
| 2840.00         | H                 | -76.17      | 23.30                  | -52.87                   |             |        |

|            |                       |                    |         |
|------------|-----------------------|--------------------|---------|
| Band       | Band 17(16QAM, 10MHz) | Test channel:      | Highest |
| Test mode: |                       | Temperature :      | 25°C    |
|            |                       | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1422.00         | Vertical          | -59.50      | 23.08                  | -36.42                   | -13.00      | PASS   |
| 2133.00         | V                 | -68.31      | 23.20                  | -45.11                   |             |        |
| 2844.00         | V                 | -76.16      | 23.31                  | -52.85                   |             |        |
| 1422.00         | Horizontal        | -55.87      | 23.08                  | -32.79                   |             |        |
| 2133.00         | H                 | -63.49      | 23.20                  | -40.29                   |             |        |
| 2844.00         | H                 | -77.65      | 23.31                  | -54.34                   |             |        |

| Band       | Band 66(QPSK, 20MHz) | Test channel:      | Lowest |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3440.00         | Vertical          | -59.89      | 23.40                  | -36.49                   | -13.00      | PASS   |
| 5160.00         | V                 | -63.46      | 23.69                  | -39.77                   |             |        |
| 6880.00         | V                 | -80.27      | 23.75                  | -56.52                   |             |        |
| 3440.00         | Horizontal        | -58.15      | 23.40                  | -34.75                   |             |        |
| 5160.00         | H                 | -62.39      | 23.69                  | -38.70                   |             |        |
| 6880.00         | H                 | -75.88      | 23.75                  | -52.13                   |             |        |

| Band       | Band 66(QPSK, 20MHz) | Test channel:      | Middle |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3510.00         | Vertical          | -57.54      | 23.42                  | -34.12                   | -13.00      | PASS   |
| 5265.00         | V                 | -68.96      | 23.73                  | -45.23                   |             |        |
| 7020.00         | V                 | -77.17      | 23.79                  | -53.38                   |             |        |
| 3510.00         | Horizontal        | -55.34      | 23.42                  | -31.92                   |             |        |
| 5265.00         | H                 | -62.25      | 23.73                  | -38.52                   |             |        |
| 7020.00         | H                 | -76.31      | 23.79                  | -52.52                   |             |        |

| Band       | Band 66(QPSK, 20MHz) | Test channel:      | Highest |
|------------|----------------------|--------------------|---------|
| Test mode: |                      | Temperature :      | 25°C    |
|            |                      | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3540.00         | Vertical          | -58.88      | 23.46                  | -35.42                   | -13.00      | PASS   |
| 5310.00         | V                 | -69.54      | 23.77                  | -45.77                   |             |        |
| 7080.00         | V                 | -81.17      | 23.81                  | -57.36                   |             |        |
| 3540.00         | Horizontal        | -55.36      | 23.46                  | -31.90                   |             |        |
| 5310.00         | H                 | -65.59      | 23.77                  | -41.82                   |             |        |
| 7080.00         | H                 | -80.11      | 23.81                  | -56.30                   |             |        |

| Band       | Band 66(16QAM, 20MHz) | Test channel:      | Lowest |
|------------|-----------------------|--------------------|--------|
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3440.00         | Vertical          | -58.56      | 23.40                  | -35.16                   | -13.00      | PASS   |
| 5160.00         | V                 | -63.89      | 23.69                  | -40.20                   |             |        |
| 6880.00         | V                 | -78.91      | 23.75                  | -55.16                   |             |        |
| 3440.00         | Horizontal        | -55.43      | 23.40                  | -32.03                   |             |        |
| 5160.00         | H                 | -63.52      | 23.69                  | -39.83                   |             |        |
| 6880.00         | H                 | -74.78      | 23.75                  | -51.03                   |             |        |

| Band       | Band 66(16QAM, 20MHz) | Test channel:      | Middle |
|------------|-----------------------|--------------------|--------|
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3510.00         | Vertical          | -57.14      | 23.42                  | -33.72                   | -13.00      | PASS   |
| 5265.00         | V                 | -68.68      | 23.73                  | -44.95                   |             |        |
| 7020.00         | V                 | -76.41      | 23.79                  | -52.62                   |             |        |
| 3510.00         | Horizontal        | -55.00      | 23.42                  | -31.58                   |             |        |
| 5265.00         | H                 | -63.13      | 23.73                  | -39.40                   |             |        |
| 7020.00         | H                 | -76.93      | 23.79                  | -53.14                   |             |        |

| Band       | Band 66(16QAM, 20MHz) | Test channel:      | Highest |
|------------|-----------------------|--------------------|---------|
| Test mode: |                       | Temperature :      | 25°C    |
|            |                       | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 3540.00         | Vertical          | -58.89      | 23.46                  | -35.43                   | -13.00      | PASS   |
| 5310.00         | V                 | -68.64      | 23.77                  | -44.87                   |             |        |
| 7080.00         | V                 | -76.27      | 23.81                  | -52.46                   |             |        |
| 3540.00         | Horizontal        | -55.38      | 23.46                  | -31.92                   |             |        |
| 5310.00         | H                 | -64.91      | 23.77                  | -41.14                   |             |        |
| 7080.00         | H                 | -78.75      | 23.81                  | -54.94                   |             |        |

| Band       | Band 71(QPSK, 20MHz) | Test channel:      | Lowest |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1346.00         | Vertical          | -57.90      | 23.40                  | -34.50                   | -13.00      | PASS   |
| 2019.00         | V                 | -63.71      | 23.69                  | -40.02                   |             |        |
| 2692.00         | V                 | -78.46      | 23.75                  | -54.71                   |             |        |
| 1346.00         | Horizontal        | -57.09      | 23.40                  | -33.69                   |             |        |
| 2019.00         | H                 | -61.10      | 23.69                  | -37.41                   |             |        |
| 2692.00         | H                 | -75.29      | 23.75                  | -51.54                   |             |        |

| Band       | Band 71(QPSK, 20MHz) | Test channel:      | Middle |
|------------|----------------------|--------------------|--------|
| Test mode: |                      | Temperature :      | 25°C   |
|            |                      | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1366.00         | Vertical          | -57.87      | 23.42                  | -34.45                   | -13.00      | PASS   |
| 2049.00         | V                 | -68.90      | 23.73                  | -45.17                   |             |        |
| 2732.00         | V                 | -76.28      | 23.79                  | -52.49                   |             |        |
| 1366.00         | Horizontal        | -55.51      | 23.42                  | -32.09                   |             |        |
| 2049.00         | H                 | -62.34      | 23.73                  | -38.61                   |             |        |
| 2732.00         | H                 | -76.96      | 23.79                  | -53.17                   |             |        |

| Band       | Band 71(QPSK, 20MHz) | Test channel:      | Highest |
|------------|----------------------|--------------------|---------|
| Test mode: |                      | Temperature :      | 25°C    |
|            |                      | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1376.00         | Vertical          | -58.87      | 23.46                  | -35.41                   | -13.00      | PASS   |
| 2064.00         | V                 | -69.43      | 23.77                  | -45.66                   |             |        |
| 2752.00         | V                 | -79.14      | 23.81                  | -55.33                   |             |        |
| 1376.00         | Horizontal        | -55.66      | 23.46                  | -32.20                   |             |        |
| 2064.00         | H                 | -64.75      | 23.77                  | -40.98                   |             |        |
| 2752.00         | H                 | -79.30      | 23.81                  | -55.49                   |             |        |

| Band       | Band 71(16QAM, 20MHz) | Test channel:      | Lowest |
|------------|-----------------------|--------------------|--------|
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1346.00         | Vertical          | -57.86      | 23.40                  | -34.46                   | -13.00      | PASS   |
| 2019.00         | V                 | -62.11      | 23.69                  | -38.42                   |             |        |
| 2692.00         | V                 | -78.47      | 23.75                  | -54.72                   |             |        |
| 1346.00         | Horizontal        | -55.83      | 23.40                  | -32.43                   |             |        |
| 2019.00         | H                 | -63.57      | 23.69                  | -39.88                   |             |        |
| 2692.00         | H                 | -74.33      | 23.75                  | -50.58                   |             |        |

| Band       | Band 71(16QAM, 20MHz) | Test channel:      | Middle |
|------------|-----------------------|--------------------|--------|
| Test mode: |                       | Temperature :      | 25°C   |
|            |                       | Relative Humidity: | 56%    |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1366.00         | Vertical          | -56.57      | 23.42                  | -33.15                   | -13.00      | PASS   |
| 2049.00         | V                 | -67.81      | 23.73                  | -44.08                   |             |        |
| 2732.00         | V                 | -75.22      | 23.79                  | -51.43                   |             |        |
| 1366.00         | Horizontal        | -55.34      | 23.42                  | -31.92                   |             |        |
| 2049.00         | H                 | -64.52      | 23.73                  | -40.79                   |             |        |
| 2732.00         | H                 | -76.45      | 23.79                  | -52.66                   |             |        |

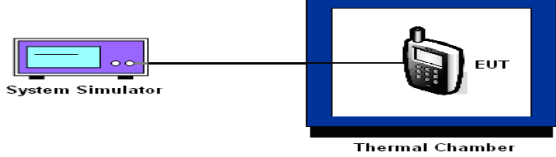
| Band       | Band 71(16QAM, 20MHz) | Test channel:      | Highest |
|------------|-----------------------|--------------------|---------|
| Test mode: |                       | Temperature :      | 25°C    |
|            |                       | Relative Humidity: | 56%     |

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

| Frequency (MHz) | Spurious Emission |             |                        |                          | Limit (dBm) | Result |
|-----------------|-------------------|-------------|------------------------|--------------------------|-------------|--------|
|                 | Polarization      | Level (dBm) | Correction Factor (dB) | Spurious emissions (dBm) |             |        |
| 1376.00         | Vertical          | -58.41      | 23.46                  | -34.95                   | -13.00      | PASS   |
| 2064.00         | V                 | -67.90      | 23.77                  | -44.13                   |             |        |
| 2752.00         | V                 | -76.28      | 23.81                  | -52.47                   |             |        |
| 1376.00         | Horizontal        | -55.46      | 23.46                  | -32.00                   |             |        |
| 2064.00         | H                 | -63.90      | 23.77                  | -40.13                   |             |        |
| 2752.00         | H                 | -78.49      | 23.81                  | -54.68                   |             |        |

## 5.6. Frequency Stability Measurement

### 5.6.1. Test Specification

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC part 27.54, FCC part 22.355, 24.235                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Test Method:</b>      | FCC Part 2.1055                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Limit:</b>            | ±2.5 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Test Setup:</b>       |  <p>The diagram shows a 'System Simulator' connected via a cable to an 'EUT' (Equipment Under Test) which is placed inside a 'Thermal Chamber'.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Test Procedure:</b>   | <p><b>Test Procedures for Temperature Variation</b></p> <ol style="list-style-type: none"> <li>1. The testing follows FCC KDB 971168 D01v03 Section 9.0.</li> <li>2. The EUT was set up in the thermal chamber and connected with the system simulator.</li> <li>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.</li> <li>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.</li> </ol> <p><b>Test Procedures for Voltage Variation</b></p> <ol style="list-style-type: none"> <li>1. The testing follows FCC KDB 971168 D01v03 Section 9.0.</li> <li>2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.</li> <li>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.</li> <li>4. The variation in frequency was measured for the worst case.</li> <li>5. The worst case(worst bandwidth) for frequency stability reported in the Test Data.<br/>The worst bandwidth is as follow:<br/>1.4M is for LTE Band 2, 1.4M is for LTE Band 4,<br/>1.4M is for LTE Band 5, 1.4M is for LTE Band 12,<br/>5M is for LTE Band 17, 1.4M is for LTE Band 66,<br/>5M is for LTE Band 71</li> </ol> |
| <b>Test Result:</b>      | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**5.6.2. Test Instruments**

| Equipment                                   | Manufacturer | Model          | Serial Number | Calibration Due |
|---------------------------------------------|--------------|----------------|---------------|-----------------|
| Wideband Radio Communication Tester         | R&S          | CMW500         | 114220        | Jul. 27, 2021   |
| Programable tempratuce and humidity chamber | JQ           | JQ-2000        | N/A           | Sep. 02, 2021   |
| DC power supply                             | Kingrang     | KR3005K 30V/5A | N/A           | Sep. 02, 2021   |
| RF cable (9kHz-40GHz)                       | TCT          | RE-04          | N/A           | Sep. 02, 2021   |
| Antenna Connector                           | TCT          | RFC-03         | N/A           | Sep. 02, 2021   |

## Appendix A: Photographs of Test Setup

Refer to the test report No. TCT210204E021

## Appendix B: Photographs of EUT

Refer to the test report No. TCT210204E021

**Test Data for Appendix For LTE Band 2, Appendix For LTE Band 4,  
Appendix For LTE Band 5, Appendix For LTE Band 7, Appendix For LTE  
Band 12, Appendix For LTE Band 17, Appendix For LTE Band 66 and  
Appendix For LTE Band 71**

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