# FCC REPORT
## (LTE)

| | |
|---|---|
| **Applicant:** | SWAGTEK |
| **Address of Applicant:** | 10205 NW 19th St. Suite 101, Miami, FL, 33172 |

**Equipment Under Test (EUT)**

| | |
|---|---|
| Product Name: | 4.0 inch 4G Smart Phone |
| Model No.: | L4T, UN40, RUSH |
| Trade mark: | LOGIC, iSWAG, UNONU |
| **FCC ID:** | O55402220 |
| **Applicable standards:** | FCC CFR Title 47 Part 2<br>FCC CFR Title 47 Part 22 Subpart H<br>FCC CFR Title 47 Part 24 Subpart E<br>FCC CFR Title 47 Part 27 Subpart L<br>FCC CFR Title 47 Part 27 Subpart M<br>FCC CFR Title 47 Part 27 Subpart H |
| **Date of sample receipt:** | 13 Sep., 2021 |
| **Date of Test:** | 14 Sep., to 24 Sep., 2021 |
| **Date of report issued:** | 26 Sep., 2021 |
| **Test Result:** | PASS* |

*In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Bruce Zhang
Laboratory Manager

## 2. Version

| Version No. | Date | Description |
|---|---|---|
| *00* | *26 Sep., 2021* | *Original* |
| | | |
| | | |
| | | |

*Remark:*
*This report was amended on FCC ID: O55402220 follow FCC Class II Permissive Change. The differences between them as below: The screen was replaced. The frequency LTE Band2 are added, and EMC and frequency band tests need to be supplemented.*

***Tested by:*** Mike.ou ***Date:*** *26 Sep., 2021*

***Test Engineer***

***Reviewed by:*** Winner Zhang ***Date:*** *26 Sep., 2021*

***Project Engineer***

# 3. Contents

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# 4. Test Summary

| Test Items | Section in CFR 47 | Result |
|---|---|---|
| RF Exposure (SAR) | Part 1.1307<br>Part 2.1093 | Passed<br>(Please refer to SAR Report) |
| RF Output Power | Part 2.1046<br>Part 22.913 (a)(5)<br>Part 24.232 (c)<br>Part 27.50 (c)(10)<br>Part 27.50 (d)(4)<br>Part 27.50 (h)(2) | Appendix A – LTE |
| Peak-to-Average Ratio | Part 24.232 (d)<br>Part 22.913 (d)<br>Part 27.50(d)(5) | Appendix B – LTE |
| Modulation Characteristics | Part 2.1047 | Pass |
| 99% & -26 dB Occupied Bandwidth | Part 2.1049<br>Part 22.917(b)<br>Part 24.238(b)<br>Part 27.53(g)<br>Part 27.53(h)<br>Part 27.53(m) | Appendix C – LTE |
| Out of band emission at antenna terminals | Part 2.1053<br>Part 22.917(a)<br>Part 24.238 (a)<br>Part 27.53 (g)<br>Part 27.53 (h)<br>Part 27.53(m) | Appendix D – LTE<br>Appendix E – LTE |
| Field strength of spurious radiation | Part 22.917(a)<br>Part 24.238 (a)<br>Part 27.53 (g)<br>Part 27.53 (h)<br>Part 27.53(m) | Pass |
| Frequency stability vs. temperature | Part 22.355<br>Part 24.235<br>Part 27.54<br>Part 2.1055(a)(1)(b) | Appendix F – LTE |
| Frequency stability vs. voltage | Part 22.355<br>Part 24.235<br>Part 27.54<br>Part 2.1055(d)(2) | Appendix F – LTE |

***Remark:***

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB(Fundamental Frequency below 1GHz)/1.0dB(Fundamental Frequency above 1GHz) (provided by the customer).*
3. *Pass*: refer to the FCC ID: O55402220, Report No.: CCISE200600504.*

| ***Test Method:*** | *ANSI/TIA-603-E-2016*<br>*ANSI C63.26-2015* |
|---|---|

# 5. General Information

## 5.1 Client Information

| | |
|---|---|
| Applicant: | SWAGTEK |
| Address: | 10205 NW 19th St. Suite 101, Miami, FL, 33172 |
| Manufacturer: | SWAGTEK |
| Address: | 10205 NW 19th St. Suite 101, Miami, FL, 33172 |

## 5.2 General Description of E.U.T.

| | | | |
|---|---|---|---|
| Product Name: | 4.0 inch 4G Smart Phone | | |
| Model No.: | L4T, UN40, RUSH | | |
| Operation Frequency range: | LTE Band 2: TX: 1850MHz-1910MHz RX: 1930MHz-1990MHz<br>LTE Band 4: TX: 1710MHz-1755MHz RX: 2110MHz-2155MHz<br>LTE Band 5: TX: 824MHz-849MHz RX: 869MHz-894MHz<br>LTE Band 7: TX: 2500MHz-2570MHz RX: 2620MHz-2690MHz<br>LTE Band 12: TX: 699MHz-716MHz RX: 729MHz-746MHz | | |
| Modulation type: | ☒QPSK | ☒16QAM | ☒64QAM |
| Antenna type: | Internal Antenna | | |
| Antenna gain: | LTE Band 2: 0.6 dBi(declare by Applicant)<br>LTE Band 4: 0.37 dBi(declare by Applicant)<br>LTE Band 5: 0.23 dBi(declare by Applicant)<br>LTE Band 7: 0.35 dBi(declare by Applicant)<br>LTE Band 12: -0.22 dBi(declare by Applicant) | | |
| Power supply: | Rechargeable Li-ion Battery DC3.7V, 1400mAh | | |
| AC adapter: | Model: LM-FU050070USBO1<br>Input: AC100-240V, 50/60Hz, 0.15A<br>Output: DC 5.0V, 700mA | | |
| Remark: | Model No.: L4T, UN40, RUSH were identical inside, the electrical circuit design, layout, components used and internal wiring.<br>L4T model corresponds to the trademark LOGIC.<br>UN40 model correspond to the trademark iSWAG.<br>RUSH model corresponds to the trademark UNONU. | | |
| Test Sample Condition: | The applicant provided engineering samples for staying in continuously transmitting for testing. | | |

**Operation Frequency List:**

| LTE Band 2 (1.4MHz) | | LTE Band 2 (3MHz) | |
|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 18607 | 1850.70 | 18615 | 1851.50 |
| 18608 | 1850.80 | 18616 | 1851.60 |
| …. | …. | …. | …. |
| 18899 | 1879.90 | 18899 | 1879.90 |
| 18900 | 1880.00 | 18900 | 1880.00 |
| 18901 | 1880.10 | 18901 | 1880.10 |
| … | … | … | … |
| 19193 | 1909.20 | 19185 | 1908.40 |
| 19194 | 1909.30 | 19186 | 1908.50 |
| LTE Band 2 (5MHz) | | LTE Band 2 (10MHz) | |
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 18625 | 1852.50 | 18650 | 1855.00 |
| 18626 | 1852.60 | 18651 | 1855.10 |
| …. | …. | …. | …. |
| 18899 | 1879.90 | 18899 | 1879.90 |
| 18900 | 1880.00 | 18900 | 1880.00 |
| 18901 | 1880.10 | 18901 | 1880.10 |
| … | … | … | … |
| 19175 | 1907.40 | 19150 | 1904.90 |
| 19176 | 1907.50 | 19151 | 1905.00 |
| LTE Band 2 (15MHz) | | LTE Band 2 (20MHz) | |
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 18675 | 1857.50 | 18700 | 1860.00 |
| 18676 | 1857.60 | 18701 | 1860.10 |
| …. | …. | …. | …. |
| 18899 | 1879.90 | 18899 | 1879.90 |
| 18900 | 1880.00 | 18900 | 1880.00 |
| 18901 | 1880.10 | 18901 | 1880.10 |
| … | … | … | … |
| 19125 | 1902.40 | 19100 | 1899.90 |
| 19126 | 1902.50 | 19101 | 1900.00 |

**Note：** LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

Regards to the operating frequency range, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channels as below:

| LTE Band 2 (1.4MHz) | | | LTE Band 2 (3MHz) | | |
|---|---|---|---|---|---|
| Channel | | Frequency (MHz) | Channel | | Frequency (MHz) |
| Lowest channel | 18607 | 1850.70 | Lowest channel | 18615 | 1851.50 |
| Middle channel | 18900 | 1880.00 | Middle channel | 18900 | 1880.00 |
| Highest channel | 19193 | 1909.30 | Highest channel | 19185 | 1908.50 |
| LTE Band 2 (5MHz) | | | LTE Band 2 (10MHz) | | |
| Channel | | Frequency (MHz) | Channel | | Frequency (MHz) |
| Lowest channel | 18625 | 1852.50 | Lowest channel | 18650 | 1855.00 |
| Middle channel | 18900 | 1880.00 | Middle channel | 18900 | 1880.00 |
| Highest channel | 19175 | 1907.50 | Highest channel | 19150 | 1905.00 |
| LTE Band 2 (15MHz) | | | LTE Band 2 (20MHz) | | |
| Channel | | Frequency (MHz) | Channel | | Frequency (MHz) |
| Lowest channel | 18675 | 1857.50 | Lowest channel | 18700 | 1860.00 |
| Middle channel | 18900 | 1880.00 | Middle channel | 18900 | 1880.00 |
| Highest channel | 19125 | 1902.50 | Highest channel | 19100 | 1900.00 |

**Note：** LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

## 5.3 Test environment and mode, and test samples plans

| | |
|---|---|
| **Operating Environment:** | |
| Temperature: | Normal: 15℃ ~ 35℃, Extreme: -30℃ ~ +50℃ |
| Humidity: | 20 % ~ 75 % RH |
| Atmospheric Pressure: | 1008 mbar |
| Voltage: | Nominal: 3.7Vdc, Extreme: Low 3.5Vdc, High 4.2Vdc |
| **Test mode:** | |
| LTE QPSK mode | Keep the EUT communication with simulated station in QPSK mode |
| LTE 16-QAM mode | Keep the EUT communication with simulated station in 16-QAM mode |
| Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report. | |

## 5.4 Description of Support Units

| Test Equipment | Manufacturer | Model No. | Serial No. |
|---|---|---|---|
| Simulated Station | Anritsu | MT8820C | 6201026545 |

## 5.5 Measurement Uncertainty

| Parameter | Expanded Uncertainty (Confidence of 95%) |
|---|---|
| Radiated Emission (9kHz ~ 30MHz electric field) for 3m SAC | 3.13 dB |
| Radiated Emission (9kHz ~ 30MHz magnetic field) for 3m SAC | 3.13 dB |
| Radiated Emission (30MHz ~ 1GHz) for 3m SAC | 4.45 dB |
| Radiated Emission (1GHz ~ 18GHz) for 3m SAC | 5.34 dB |
| Radiated Emission (18GHz ~ 40GHz) for 3m SAC | 5.34 dB |

## 5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

## 5.7 Additions to, deviations, or exclusions from the method

No

## 5.8 Laboratory Facility

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

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

## 5.9 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://www.ccis-cb.com

## 5.10 Test Instruments list

**Radiated Emission:**

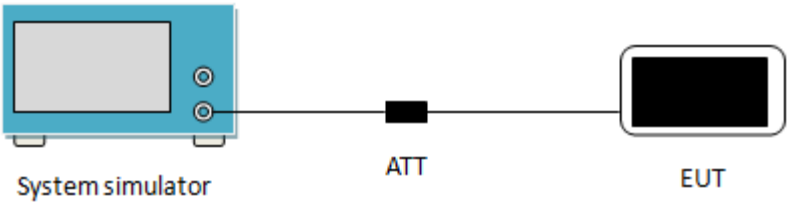
| Test Equipment | Manufacturer | Model No. | Serial No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|---|---|---|---|---|---|
| 3m SAC | ETS | RFD-100 | Q1984 | 04-14-2021 | 04-13-2024 |
| Loop Antenna | SCHWARZBECK | FMZB 1519 B | 1519B-044 | 03-07-2021 | 03-06-2022 |
| BiConiLog Antenna | SCHWARZBECK | VULB9163 | 9163-1246 | 03-07-2021 | 03-06-2022 |
| Biconical Antenna | SCHWARZBECK | VUBA 9117 | 9117#359 | 06-17-2021 | 06-17-2022 |
| Horn Antenna | SCHWARZBECK | BBHA9120D | 912D-916 | 03-07-2021 | 03-06-2022 |
| Broad-Band Horn Antenna | SCHWARZBECK | BBHA9170 | 1067 | 04-02-2021 | 04-01-2022 |
| Broad-Band Horn Antenna | SCHWARZBECK | BBHA9170 | 1068 | 04-02-2021 | 04-01-2022 |
| EMI Test Receiver | Rohde & Schwarz | ESRP7 | 101070 | 03-03-2021 | 03-02-2022 |
| Spectrum analyzer | Rohde & Schwarz | FSP30 | 101454 | 03-03-2021 | 03-02-2022 |
| Spectrum analyzer | Keysight | N9010B | MY60240202 | 11-27-2020 | 11-26-2021 |
| Simulated Station | Anritsu | MT8820C | 6201026545 | 03-03-2021 | 03-02-2022 |
| Low Pre-amplifier | SCHWARZBECK | BBV9743B | 00305 | 03-07-2021 | 03-06-2022 |
| High Pre-amplifier | SKET | LNPA_0118G-50 | MF280208233 | 03-07-2021 | 03-06-2022 |
| Cable | Qualwave | JYT3M-1G-NN-8M | JYT3M-1 | 03-07-2021 | 03-06-2022 |
| Cable | Qualwave | JYT3M-18G-NN-8M | JYT3M-2 | 03-07-2021 | 03-06-2022 |
| Cable | Qualwave | JYT3M-1G-BB-5M | JYT3M-3 | 03-07-2021 | 03-06-2022 |
| Cable | Bost | JYT3M-40G-SS-8M | JYT3M-4 | 04-02-2021 | 04-01-2022 |
| EMI Test Software | Tonscend | TS+ | Version:3.0.0.1 | | |

**Conducted method:**

| Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
|---|---|---|---|---|---|
| Spectrum Analyzer | Keysight | N9020B | MY57431500 | 07-02-2021 | 07-01-2022 |
| Simulated Station | Rohde & Schwarz | CMW500 | 108209 | 07-02-2021 | 07-01-2022 |
| RF Control Unit | Tonscend | JS0806-1 | N/A | N/A | N/A |
| Band Reject Filter Group | Tonscend | JS0806-F | 21A8060360 | N/A | N/A |
| Test Software | Tonscend | TS+ | Version: 2.6.9.0526 | | |

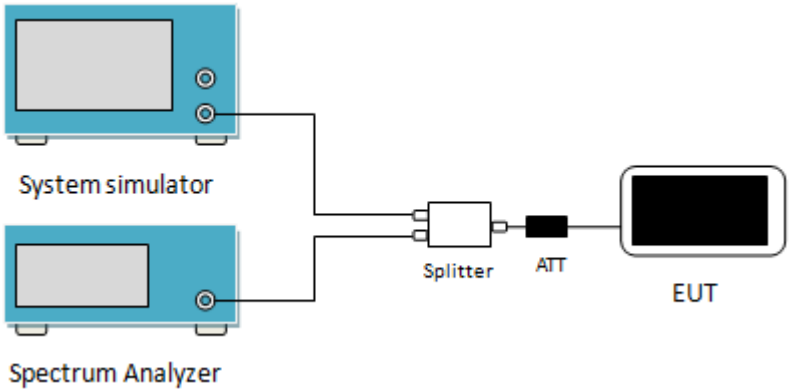
# 6. Test results

## 6.1 Conducted Output Power, ERP and EIRP

| | |
|---|---|
| Test Requirement: | Part 22.913(a)(5), Part 24.232(c), part 27.50(c)(10), Part 27.50(d)(4), Part 27.50 (h)(2) |
| Limit: | LTE Band 2: 2W, LTE Band 4: 1W, LTE Band 5: 7W, LTE Band 7: 2W, LTE Band 12: 3W, LTE Band 17: 3W |
| Test Setup: |  |
| Test Procedure: | The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the CMW500. Transmitter output power was read off in dBm. |
| Test Instruments: | Refer to section 5.10 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

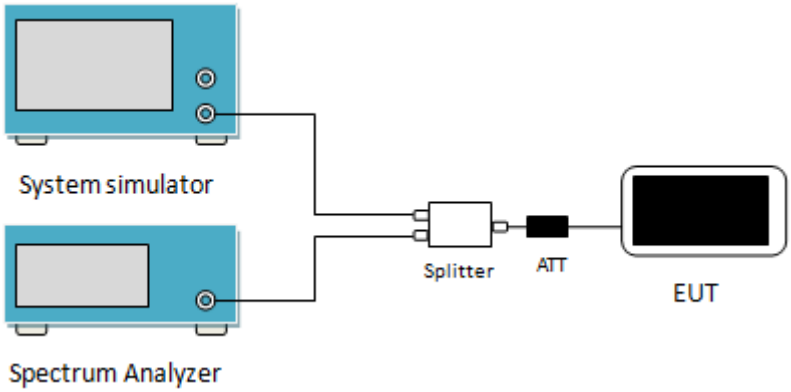
**Measurement Data:** LTE Band 2 test data reference Appendix A – LTE; LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

## 6.2 Peak-to-Average Ratio

| | |
|---|---|
| Test Requirement: | Part 24.232 (d), Part 27.50(d)(5) |
| Limit: | The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB. |
| Test Setup: |  |
| Test Procedure: | 1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.<br>2 Set the CCDF option in spectrum analyzer, RBW ≥ OBW,<br>3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.<br>4 Repeat step 1~3 at other frequency and modulations. |
| Test Instruments: | Refer to section 5.10 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

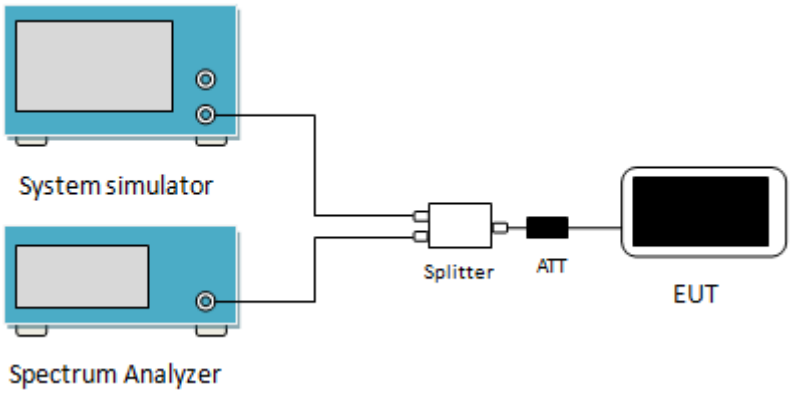
**Measurement Data:** LTE Band 2 test data reference Appendix B – LTE; LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

## 6.3 Occupy Bandwidth

| | |
|---|---|
| Test Requirement: | Part 22.917(b), Part 24.238(b), Part 27.53(g), Part 27.53(h), Part 27.53(m) |
| Test Setup: |  |
| Test Procedure: | 1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer<br>2. RBW was set to about 1% ~ 5% of emission BW, VBW= 3 times RBW.<br>3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. |
| Test Instruments: | Refer to section 5.10 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**Measurement Data:** LTE Band 2 test data reference Appendix C – LTE; LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

## 6.4 Out of band emission at antenna terminals

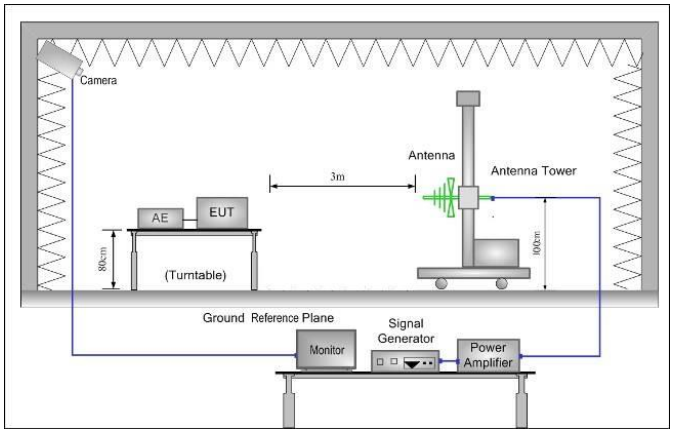
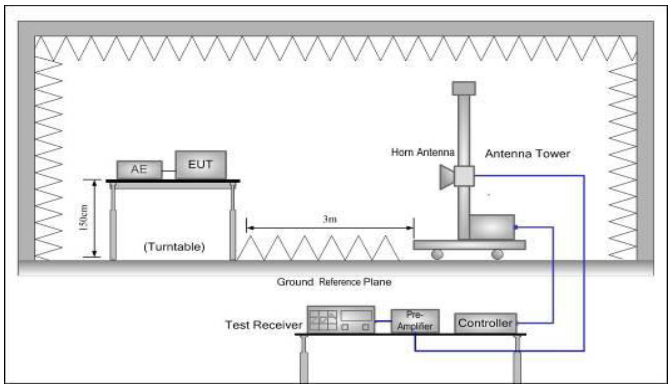
| | |
|---|---|
| Test Requirement: | Part 22.917(a), Part 24.238 (a), part 27.53(g), part 27.53(h), Part 27.53(m) |
| Limit: | LTE Band 2 & 4 & 5 & 12:<br>The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$(P) dB (-13 dBm).<br>LTE Band 7:<br>For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. |
| Test Setup: |  |
| Test Procedure: | 1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.<br>2 For the out of band: For Band 5 & 12 set the RBW=100 kHz, VBW=300 kHz and for Band 2 & 4 & 7 set the RBW=1 MHz, VBW=3 MHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic.<br>3 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. |
| Test Instruments: | Refer to section 5.10 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |
| Remark: | Pre-scan all RB Size and offset, and found the RB Size and offset of worst case, so the report shows only the worst case test data. |

**Measurement Data:**

**Band edge emission:** LTE Band 2 refer to Appendix D – LTE; LTE Band 4/5/7/12 refer to FCC ID: O55402220, Report No.: CCISE200600504.

**Spurious emission:** LTE Band 2 refer to Appendix E – LTE; LTE Band 4/5/7/12 refer to FCC ID: O55402220, Report No.: CCISE200600504.

## 6.5 Field strength of spurious radiation measurement

| | |
|---|---|
| Test Requirement: | Part 22.917(a), Part 24.238 (a), Part 27.53(g), Part 27.53(m), Part 27.53(h) |
| Limit: | LTE Band 2 & 4 & 5 & 12:<br>The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$(P) dB (-13 dBm).<br>LTE Band 7:<br>For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. |
| Test setup: | Below 1GHz<br>  <br><br>Above 1GHz<br>  <br> |
| Test Procedure: | 1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter camber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.<br>2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.<br>3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission |

| | |
|---|---|
| | was determined using the substitution method.<br>4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.<br>ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB) |
| Test Instruments: | Refer to section 5.10 for details |
| Test mode: | Refer to section 5.3 for details. |
| Test results: | Passed |

**Measurement Data:**

**LTE Band 2 part:**

| Band 2 (1.4MHz) | | | | | | |
|---|---|---|---|---|---|---|
| **Lowest channel** | | | | | | |
| Frequency (MHz) | Spurous Emission level (dBm) | Factor (dB) | Level at antenna terminals (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
| 3701.40 | -47.01 | -1.40 | -48.41 | -13.00 | 35.41 | Vertical |
| 5552.10 | -41.22 | 5.27 | -35.95 | -13.00 | 22.95 | Vertical |
| 7402.00 | -36.41 | 13.00 | -23.41 | -13.00 | 10.41 | Vertical |
| 3701.40 | -49.28 | -1.40 | -50.68 | -13.00 | 37.68 | Horizontal |
| 5552.10 | -43.98 | 5.27 | -38.71 | -13.00 | 25.71 | Horizontal |
| 7402.00 | -35.97 | 13.00 | -22.97 | -13.00 | 9.97 | Horizontal |
| **Middle channel** | | | | | | |
| Frequency (MHz) | Spurous Emission level (dBm) | Factor (dB) | Level at antenna terminals (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
| 3760.00 | -47.41 | -1.03 | -48.44 | -13.00 | 35.44 | Vertical |
| 5640.00 | -41.02 | 6.06 | -34.96 | -13.00 | 21.96 | Vertical |
| 7520.00 | -35.93 | 13.29 | -22.64 | -13.00 | 9.64 | Vertical |
| 3760.00 | -48.86 | -1.03 | -49.89 | -13.00 | 36.89 | Horizontal |
| 5640.00 | -43.84 | 6.06 | -37.78 | -13.00 | 24.78 | Horizontal |
| 7520.00 | -36.14 | 13.29 | -22.85 | -13.00 | 9.85 | Horizontal |
| **Highest channel** | | | | | | |
| Frequency (MHz) | Spurous Emission level (dBm) | Factor (dB) | Level at antenna terminals (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
| 3816.60 | -47.18 | -0.83 | -48.01 | -13.00 | 35.01 | Vertical |
| 5724.90 | -41.72 | 6.82 | -34.90 | -13.00 | 21.90 | Vertical |
| 7633.20 | -36.56 | 13.44 | -23.12 | -13.00 | 10.12 | Vertical |
| 3816.60 | -49.23 | -0.83 | -50.06 | -13.00 | 37.06 | Horizontal |
| 5724.90 | -43.98 | 6.82 | -37.16 | -13.00 | 24.16 | Horizontal |
| 7633.20 | -35.76 | 13.44 | -22.32 | -13.00 | 9.32 | Horizontal |

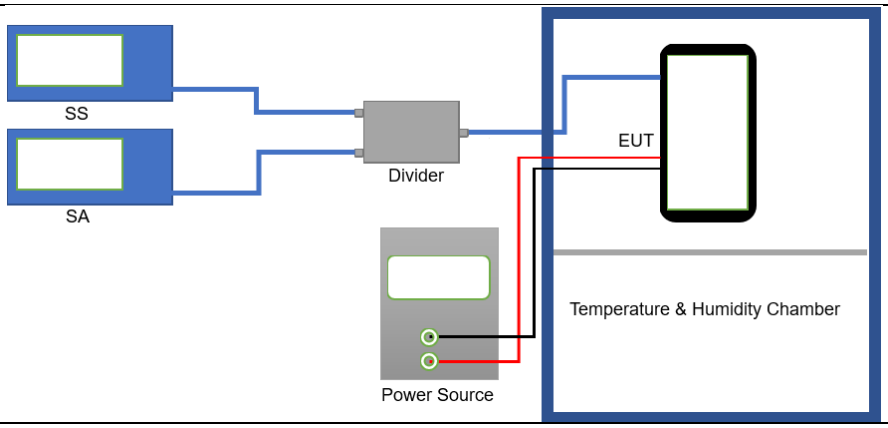
*Remark:*

*The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.*

| Band 2 (20MHz) | | | | | | |
|---|---|---|---|---|---|---|
| **Lowest channel** | | | | | | |
| Frequency (MHz) | Spurous Emission level (dBm) | Factor (dB) | Level at antenna terminals (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
| 3720.00 | -48.18 | -1.28 | -49.46 | -13.00 | 36.46 | Vertical |
| 5580.00 | -41.78 | 5.36 | -36.42 | -13.00 | 23.42 | Vertical |
| 7440.00 | -36.12 | 13.04 | -23.08 | -13.00 | 10.08 | Vertical |
| 3720.00 | -49.02 | -1.28 | -50.30 | -13.00 | 37.30 | Horizontal |
| 5580.00 | -44.33 | 5.36 | -38.97 | -13.00 | 25.97 | Horizontal |
| 7440.00 | -35.74 | 13.04 | -22.70 | -13.00 | 9.70 | Horizontal |
| **Middle channel** | | | | | | |
| Frequency (MHz) | Spurous Emission level (dBm) | Factor (dB) | Level at antenna terminals (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
| 3760.00 | -47.73 | -1.03 | -48.76 | -13.00 | 35.76 | Vertical |
| 5640.00 | -42.22 | 6.06 | -36.16 | -13.00 | 23.16 | Vertical |
| 7520.00 | -36.42 | 13.29 | -23.13 | -13.00 | 10.13 | Vertical |
| 3760.00 | -49.06 | -1.03 | -50.09 | -13.00 | 37.09 | Horizontal |
| 5640.00 | -44.58 | 6.06 | -38.52 | -13.00 | 25.52 | Horizontal |
| 7520.00 | -36.20 | 13.29 | -22.91 | -13.00 | 9.91 | Horizontal |
| **Highest channel** | | | | | | |
| Frequency (MHz) | Spurous Emission level (dBm) | Factor (dB) | Level at antenna terminals (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
| 3800.00 | -47.23 | -0.83 | -48.06 | -13.00 | 35.06 | Vertical |
| 5700.00 | -42.11 | 6.62 | -35.49 | -13.00 | 22.49 | Vertical |
| 7600.00 | -36.31 | 13.71 | -22.60 | -13.00 | 9.60 | Vertical |
| 3800.00 | -49.55 | -0.83 | -50.38 | -13.00 | 37.38 | Horizontal |
| 5700.00 | -44.35 | 6.62 | -37.73 | -13.00 | 24.73 | Horizontal |
| 7600.00 | -36.26 | 13.71 | -22.55 | -13.00 | 9.55 | Horizontal |
| *Remark:*<br>*The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.* | | | | | | |

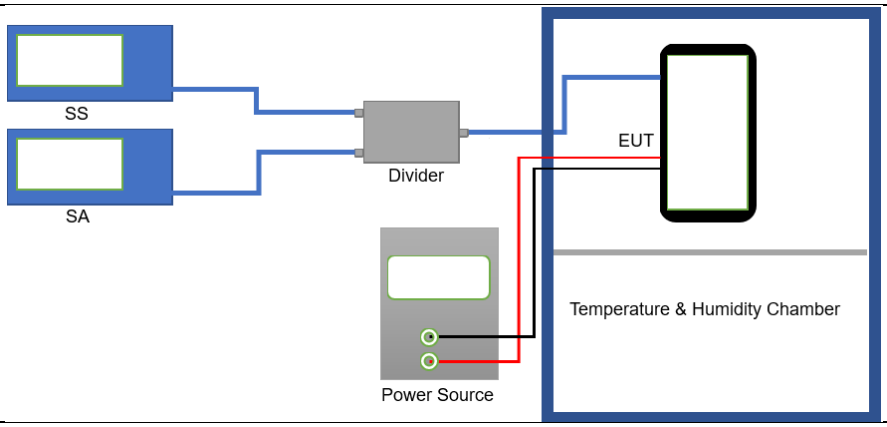
**Note：** LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

## 6.6 Frequency stability V.S. Temperature measurement

| | |
|---|---|
| Test Requirement: | Part 22.355, Part 24.235, Part 27.54, Part 2.1055(a)(1)(b) |
| Limit: | ±2.5 ppm for Band 5<br>Within authorized band for Band 2 & 4 & 7 & 12 |
| Test setup: |  |
| Test procedure: | 1. The equipment under test was connected to an external DC power supply and input rated voltage.<br>2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.<br>3. The EUT was placed inside the temperature chamber.<br>4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency.<br>5. Turn EUT off and set the chamber temperature to –30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency.<br>6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached |
| Test Instruments: | Refer to section 5.10 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**Measurement Data:** LTE Band 2 test data reference Appendix F – LTE; LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

## 6.7 Frequency stability V.S. Voltage measurement

| | |
|---|---|
| Test Requirement: | Part 22.355, Part 24.235, Part 27.54, Part 2.1055(d)(2) |
| Limit: | ±2.5 ppm for Band 5<br>Within authorized band for Band 2 & 4 & 7 & 12 |
| Test setup: |  |
| Test procedure: | 1. Set chamber temperature to 25℃. Use a variable DC power source to power the EUT and set the voltage to rated voltage.<br>2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.<br>3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change. |
| Test Instruments: | Refer to section 5.10 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**Measurement Data:** LTE Band 2 test data reference Appendix F – LTE; LTE Band 4/5/7/12 test data reference FCC ID: O55402220, Report No.: CCISE200600504.

# 8 EUT Constructional Details

Reference to the test report No. JYTSZB-R12-2102006.

------End of report------