FCC RADIO TEST REPORT

FCC ID : PY7-72623E

Equipment : GSM/WCDMA/LTE Phone with BT, DTS/UNII

a/b/g/n/ac, GPS, FM Receiver and NFC

Brand Name : SONY

Applicant : Sony Corporation

1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan

Report No. : FG101908

Manufacturer : Sony Corporation

1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan

Standard : FCC 47 CFR Part 2, 27(L)
Test Date(s) : Nov. 04, 2021 ~ Nov. 19, 2021

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

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

Reviewed by: Jason Jia / Supervisor

JasonJia

Approved by: Alex Wang / Manager

Sporton International Inc. (Kunshan)

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300

People's Republic of China

Sporton International Inc. (Kunshan)
TEL: +86-512-57900158

FAX: +86-512-57900158

Page Number : 1 of 20 Issued Date : Jan. 13, 2022

Report Version : 01

Cert #5145.02

Report Template No.: BU5-FG27 Version 2.4

Table of Contents

| His | tory o | of this test report | 3 |
|-----|--------|--|----|
| | | y of Test Result | |
| 1 | Gene | ral Description | 5 |
| | 1.1 | Product Feature of Equipment Under Test | 5 |
| | 1.2 | Modification of EUT | 5 |
| | 1.3 | Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator | 5 |
| | 1.4 | Testing Location | 6 |
| | 1.5 | Applicable Standards | 6 |
| 2 | Test | Configuration of Equipment Under Test | 7 |
| | 2.1 | Test Mode | 7 |
| | 2.2 | Connection Diagram of Test System | 7 |
| | 2.3 | Support Unit used in test configuration | 8 |
| | 2.4 | Measurement Results Explanation Example | 8 |
| | 2.5 | Frequency List of Low/Middle/High Channels | 8 |
| 3 | Cond | lucted Test Result | |
| | 3.1 | Measuring Instruments | g |
| | 3.2 | Conducted Output Power and and ERP/EIRP | 10 |
| | 3.3 | Peak-to-Average Ratio | 11 |
| | 3.4 | 99% Occupied Bandwidth and 26dB Bandwidth Measurement | 12 |
| | 3.5 | Conducted Band Edge | 13 |
| | 3.6 | Conducted Spurious Emission | 14 |
| | 3.7 | Frequency Stability | 15 |
| 4 | Radia | ated Test Items | 16 |
| | 4.1 | Measuring Instruments | 16 |
| | 4.2 | Test Setup | 16 |
| | 4.3 | Test Result of Radiated Test | 17 |
| | 4.4 | Field Strength of Spurious Radiation Measurement | 18 |
| 5 | List c | of Measuring Equipment | 19 |
| 6 | | rtainty of Evaluation | |
| Αp | | x A. Test Results of Conducted Test | |
| • | • | v R. Tost Results of and Radiated Test | |

Sporton International Inc. (Kunshan)

TEL: +86-512-57900158 FAX: +86-512-57900958 Page Number : 2 of 20 Issued Date : Jan. 13, 2022

Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

History of this test report

| Report No. | Version | Description | Issued Date |
|------------|---------|-------------------------|---------------|
| FG1O1908 | 01 | Initial issue of report | Jan. 13, 2022 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

 Sporton International Inc. (Kunshan)
 Page Number
 : 3 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|--------------------------|--|---|-----------------------|--|
| | §2.1046 | Conducted Output Power | | |
| 3.2 | §27.50(d)(4) | Equivalent Isotropic Radiated Power (WCDMA Band IV) | Pass | - |
| 3.3 | N/A | Peak-to-Average Ratio | Reporting only | |
| 3.4 | §2.1049 | Occupied Bandwidth (WCDMA Band IV) | Pass | - |
| 3.5 | §2.1051 §27.53(h) | 9 | | - |
| 3.6 | §2.1051 Conducted Emission §27.53(h) (WCDMA Band IV) | | Pass | - |
| 3.7 | §2.1055 Frequency Stability §27.54 Temperature & Voltage | | Pass | - |
| 4.4 §2.1053 Field Streng | | Field Strength of Spurious Radiation (WCDMA Band IV) | Pass | Under limit 38.83 dB at 7008.000 MHz |

Declaration of Conformity:

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

Comments and Explanations:

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

 Sporton International Inc. (Kunshan)
 Page Number
 : 4 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac/ax, NFC, FM Receiver, and GNSS.

| Product Specification subjective to this standard | | | | |
|---|--|--------------------|--|--|
| Antenna Type | | PIFA Antenna | | |
| Antenna Gain | | AWS Band: 1.60 dBi | | |

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

| EUT Information List | | | | | | |
|-----------------------|------------|------------|----------------------------|--|--|--|
| HW Version SW Version | | S/N | Performed Test Item | | | |
| | 0.113 HQ61 | | Conducted Measurement | | | |
| Α | 0.150 | HQ61B201C3 | Radiated Spurious Emission | | | |
| | 0.150 | HQ61B201C3 | ERP Test | | | |

Note: For other wireless features of this EUT, test report will be issued separately.

1.2 Modification of EUT

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

1.3 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

| FCC Rule | Frequency Range (MHz) | System | Type of Modulation | Maximum EIRP (W) | Frequency Tolerance (ppm) | Emission Designator |
|----------|-----------------------------|---------------|--------------------|------------------------|---------------------------|------------------------|
| Part 27 | 1712.4 ~ 1752.6 | WCDMA Band IV | QPSK | 0.0813 | 0.0417 ppm | 4M17F9W |

 Sporton International Inc. (Kunshan)
 Page Number
 : 5 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

1.4 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

| Test Firm | Sporton International Inc. (Kunshan) | | | | | |
|--------------------|--|----------------------|------------------|--|--|--|
| | No. 1098, Pengxi North Road, Kunshan Economic Development Zone | | | | | |
| Test Site Location | Jiangsu Province 215300 People's Republic of China | | | | | |
| rest Site Location | TEL: +86-512-57900158 | | | | | |
| | FAX: +86-512-57900958 | | | | | |
| | Sporton Site No. | FCC Designation No. | FCC Test Firm | | | |
| Test Site No. | Sporton Site No. | i CC Designation No. | Registration No. | | | |
| | 03CH04-KS TH01-KS | CN1257 | 314309 | | | |

1.5 Applicable Standards

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

- + ANSI C63.26-2015
- ANSI / TIA-603-E
- FCC 47 CFR Part 2, 27(L)
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- FCC KDB 414788 D01 Radiated Test Site v01r01

Remark:

- **1.** All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

 Sporton International Inc. (Kunshan)
 Page Number
 : 6 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and find Y plane as worst plane.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 10th for WCDMA Band IV

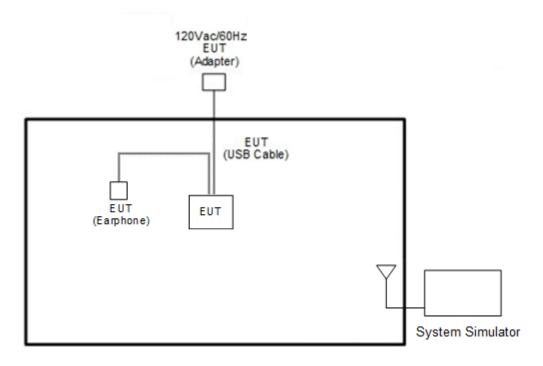
All modes, data rates and positions were investigated.

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

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

2.2 Connection Diagram of Test System

<EUT With Accessory>



Sporton International Inc. (Kunshan)
TEL: +86-512-57900158

FAX: +86-512-57900958

Page Number : 7 of 20 Issued Date : Jan. 13, 2022

Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

2.3 Support Unit used in test configuration

| Item | Equipment | Brand Name | Model No. | FCC ID | Data Cable | Power Cord |
|------|------------------|------------|-----------|--------|------------|-------------------|
| 1. | System Simulator | R&S | CMU 200 | N/A | N/A | Unshielded, 1.8 m |

2.4 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.

The following shows an offset computation example with RF cable loss 5.3 dB and a 10 dB attenuator.

Example:

Offset(dB) = RF cable loss(dB) + attenuator factor(dB). = 5.3 + 10 = 15.3 (dB)

2.5 Frequency List of Low/Middle/High Channels

| Frequency List | | | | | | |
|----------------|------------------------|--------|--------|---------|--|--|
| Band | Channel/Frequency(MHz) | Lowest | Middle | Highest | | |
| WCDMA | Channel | 1312 | 1413 | 1513 | | |
| Band IV | Frequency | 1712.4 | 1732.6 | 1752.6 | | |

 Sporton International Inc. (Kunshan)
 Page Number
 : 8 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

3 Conducted Test Result

3.1 Measuring Instruments

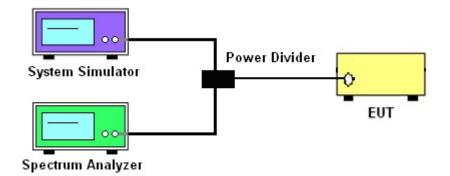
See list of measuring instruments of this test report.

3.1.1 Test Setup

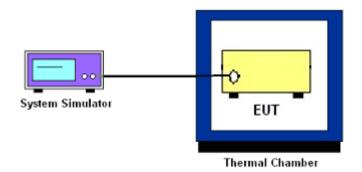
3.1.2 Conducted Output Power



3.1.3 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

Sporton International Inc. (Kunshan)

TEL: +86-512-57900158 FAX: +86-512-57900958 Page Number : 9 of 20 Issued Date : Jan. 13, 2022

Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

3.2 Conducted Output Power and and ERP/EIRP

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

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

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

According to KDB 412172 D01 Power Approach,

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

 P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.2.2 Test Procedures

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

 Sporton International Inc. (Kunshan)
 Page Number
 : 10 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- 2. Set EUT to transmit at maximum output power.
- 3. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
- 4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer.
- 5. Record the maximum PAPR level associated with a probability of 0.1%.

 Sporton International Inc. (Kunshan)
 Page Number
 : 11 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
 The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
- 3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- 4. Set the detection mode to peak, and the trace mode to max hold.
- Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
 (This is the reference value)
- 6. Determine the "-26 dB down amplitude" as equal to (Reference Value X).
- 7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "-X dB down amplitude" determined in step 6. If a marker is below this "-X dB down amplitude" value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
- 8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

 Sporton International Inc. (Kunshan)
 Page Number
 : 12 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

- 1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
- 2. 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.
- 3. The band edges of low and high channels for the highest RF powers were measured.
- 4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 5. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

 Sporton International Inc. (Kunshan)
 Page Number
 : 13 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

- 1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
- 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.
- 3. The middle channel for the highest RF power within the transmitting frequency was measured.
- 4. The conducted spurious emission for the whole frequency range was taken.
- 5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

 Sporton International Inc. (Kunshan)
 Page Number
 : 14 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

- 1. The EUT was set up in the thermal chamber and connected with the system simulator.
- 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.
- 3. 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.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

- 1. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
- The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
- 3. The variation in frequency was measured for the worst case.

 Sporton International Inc. (Kunshan)
 Page Number
 : 15 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

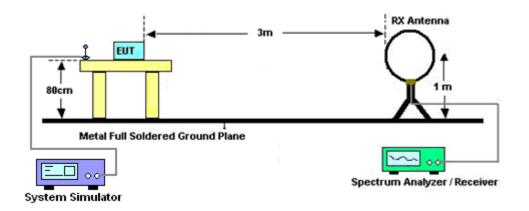
4 Radiated Test Items

4.1 Measuring Instruments

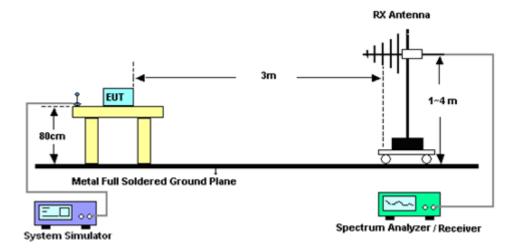
See list of measuring instruments of this test report.

4.2 Test Setup

For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



Sporton International Inc. (Kunshan)

TEL: +86-512-57900158 FAX: +86-512-57900958 Page Number Issued Date : 16 of 20 : Jan. 13, 2022

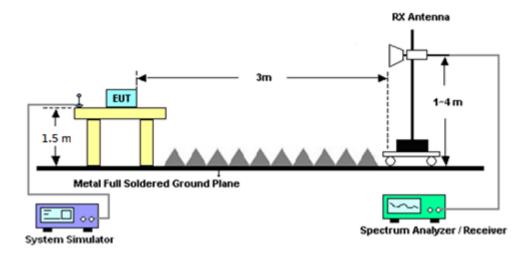
Report Version

: 01

Report No.: FG101908

Report Template No.: BU5-FG27 Version 2.4

For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

Sporton International Inc. (Kunshan)

TEL: +86-512-57900158 FAX: +86-512-57900958 Page Number : 17 of 20 Issued Date : Jan. 13, 2022

Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

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

4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

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

 Sporton International Inc. (Kunshan)
 Page Number
 : 18 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

5 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|--------------------------------|--------------|--------------------------------|-------------|-------------------------|---------------------|---------------|---------------|--------------------------|
| Spectrum Analyzer | R&S | FSV40 | 101040 | 10Hz~40GHz | Oct. 14, 2021 | Nov. 19, 2021 | Oct. 13, 2022 | Conducted (TH01-KS) |
| Power divider | STI | STI08-0055 | - | 0.5~40GHz | Aug. 26, 2021 | Nov. 19, 2021 | Aug. 25, 2022 | Conducted (TH01-KS) |
| Temperature & humidity chamber | Hongzhan | LP-150U | H2014011440 | -40~+150°C 20%~95%RH | Jul. 12, 2021 | Nov. 19, 2021 | Jul. 11, 2022 | Conducted (TH01-KS) |
| EXA Spectrum Analyzer | Keysight | N9010A | MY55150244 | 10Hz-44G,MAX 30dB | Apr. 13, 2021 | Nov. 04, 2021 | Apr. 12, 2022 | Radiation (03CH04-KS) |
| Loop Antenna | R&S | HFH2-Z2 | 100321 | 9kHz~30MHz | Oct. 30, 2021 | Nov. 04, 2021 | Oct. 29, 2022 | Radiation (03CH04-KS) |
| Bilog Antenna | TeseQ | CBL6111D | 49922 | 30MHz-1GHz | May 30, 2021 | Nov. 04, 2021 | May 29, 2022 | Radiation (03CH04-KS) |
| Horn Antenna | Schwarzbeck | BBHA9120D | 1356 | 1GHz~18GHz | Apr. 18, 2021 | Nov. 04, 2021 | Apr. 17, 2022 | Radiation (03CH04-KS) |
| SHF-EHF Horn | Com-power | AH-840 | 101070 | 18GHz~40GHz | Jan. 06, 2021 | Nov. 04, 2021 | Jan. 05, 2022 | Radiation (03CH04-KS) |
| Amplifier | SONOMA | 310N | 187289 | 9KHz-1GHz | Jan. 06, 2021 | Nov. 04, 2021 | Jan. 05, 2022 | Radiation (03CH04-KS) |
| Amplifier | MITEQ | EM18G40G GA | 060728 | 18~40GHz | Jan. 07, 2021 | Nov. 04, 2021 | Jan. 06, 2022 | Radiation (03CH04-KS) |
| high gain Amplifier | MITEQ | AMF-7D-00 101800-30-1 0P | 2025788 | 1Ghz-18Ghz | Jan. 06, 2021 | Nov. 04, 2021 | Jan.05, 2022 | Radiation (03CH04-KS) |
| Amplifier | Keysight | 83017A | MY57280106 | 500MHz~26.5GHz | Oct. 13, 2021 | Nov. 04, 2021 | Oct. 12, 2022 | Radiation (03CH04-KS) |
| AC Power Source | Chroma | 61601 | F104090004 | N/A | NCR | Nov. 04, 2021 | NCR | Radiation (03CH04-KS) |
| Turn Table | ChamPro | EM 1000-T | 060762-T | 0~360 degree | NCR | Nov. 04, 2021 | NCR | Radiation (03CH04-KS) |
| Antenna Mast | ChamPro | EM 1000-A | 060762-A | 1 m~4 m | NCR | Nov. 04, 2021 | NCR | Radiation (03CH04-KS) |

NCR: No Calibration Required

Sporton International Inc. (Kunshan)Page NumberTEL: +86-512-57900158Issued Date

Report Template No.: BU5-FG27 Version 2.4

: 19 of 20



6 Uncertainty of Evaluation

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

| Measuring Uncertainty for a Level of | 3.3dB |
|--------------------------------------|-------|
| Confidence of 95% (U = 2Uc(y)) | 3.3db |

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

| Measuring Uncertainty for a Level of | 2.8dB |
|--------------------------------------|-------|
| Confidence of 95% (U = 2Uc(y)) | 2.005 |

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

| Measuring Uncertainty for a Level of | 2.8dB |
|--------------------------------------|-------|
| Confidence of 95% (U = 2Uc(y)) | 2.005 |

 Sporton International Inc. (Kunshan)
 Page Number
 : 20 of 20

 TEL: +86-512-57900158
 Issued Date
 : Jan. 13, 2022

FAX: +86-512-57900958 Report Version : 01

Report Template No.: BU5-FG27 Version 2.4

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) and ERP&EIRP

Report No.: FG101908

| | Band | | WCDMA IV | | | | |
|-------------|--------------------|--------|----------|--------|---------|--------|--------|
| | TX Channel | 1312 | 1413 | 1513 | EIRP(W) | | |
| | Rx Channel | 1537 | 1638 | 1738 | | | |
| Fre | equency (MHz) | 1712.4 | 1732.6 | 1752.6 | L M H | | Н |
| 3GPP Rel 99 | AMR 12.2Kbps | 17.45 | 17.47 | 17.42 | 0.0804 | 0.0807 | 0.0798 |
| 3GPP Rel 99 | RMC 12.2Kbps | 17.48 | 17.50 | 17.44 | 0.0809 | 0.0813 | 0.0802 |
| 3GPP Rel 6 | HSDPA Subtest-1 | 16.52 | 16.53 | 16.47 | 0.0649 | 0.0650 | 0.0641 |
| 3GPP Rel 6 | HSDPA Subtest-2 | 16.56 | 16.62 | 16.48 | 0.0655 | 0.0664 | 0.0643 |
| 3GPP Rel 6 | HSDPA Subtest-3 | 16.03 | 16.02 | 15.98 | 0.0579 | 0.0578 | 0.0573 |
| 3GPP Rel 6 | HSDPA Subtest-4 | 16.08 | 16.02 | 15.99 | 0.0586 | 0.0578 | 0.0574 |
| 3GPP Rel 8 | DC-HSDPA Subtest-1 | 16.62 | 16.42 | 16.54 | 0.0664 | 0.0634 | 0.0652 |
| 3GPP Rel 8 | DC-HSDPA Subtest-2 | 16.53 | 16.50 | 16.54 | 0.0650 | 0.0646 | 0.0652 |
| 3GPP Rel 8 | DC-HSDPA Subtest-3 | 16.13 | 16.05 | 16.09 | 0.0593 | 0.0582 | 0.0587 |
| 3GPP Rel 8 | DC-HSDPA Subtest-4 | 15.99 | 16.03 | 16.08 | 0.0574 | 0.0579 | 0.0586 |
| 3GPP Rel 6 | HSUPA Subtest-1 | 16.40 | 16.48 | 16.54 | 0.0631 | 0.0643 | 0.0652 |
| 3GPP Rel 6 | HSUPA Subtest-2 | 14.50 | 14.51 | 14.37 | 0.0407 | 0.0408 | 0.0395 |
| 3GPP Rel 6 | HSUPA Subtest-3 | 15.49 | 15.44 | 15.51 | 0.0512 | 0.0506 | 0.0514 |
| 3GPP Rel 6 | HSUPA Subtest-4 | 14.46 | 14.54 | 14.47 | 0.0404 | 0.0411 | 0.0405 |
| 3GPP Rel 6 | HSUPA Subtest-5 | 16.50 | 16.53 | 16.46 | 0.0646 | 0.0650 | 0.0640 |

Sporton International Inc. (Kunshan) Page Number : A1 of A10

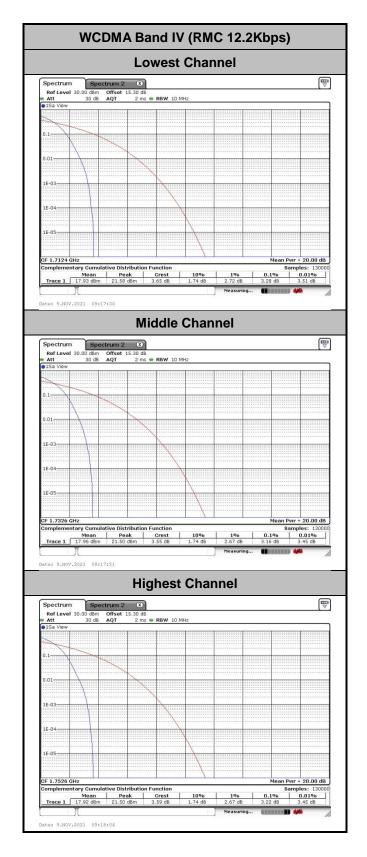
Peak-to-Average Ratio

| Mode | WCDMA Band IV | Limit: 13dB |
|------------|---------------|-------------|
| Mod. | RMC 12.2Kbps | Result |
| Lowest CH | 3.28 | |
| Middle CH | 3.16 | PASS |
| Highest CH | 3.22 | |

Report No. : FG101908

Sporton International Inc. (Kunshan) Page Number : A2 of A10



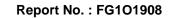


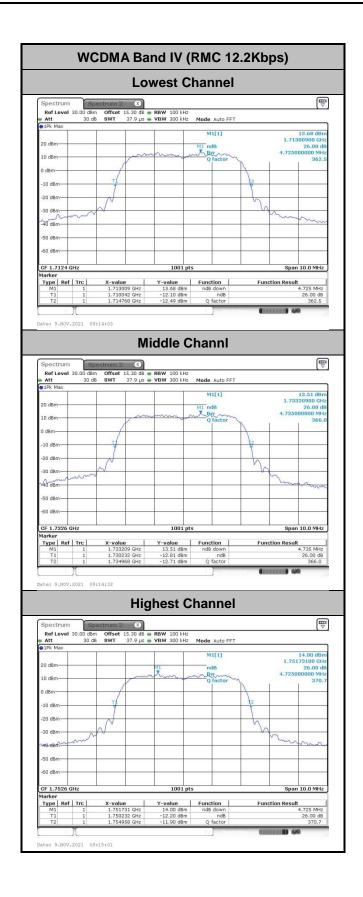
26dB Bandwidth

| Mode | WCDMA Band IV |
|------------|---------------|
| Mod. | RMC 12.2Kbps |
| Lowest CH | 4.725 |
| Middle CH | 4.735 |
| Highest CH | 4.725 |

Report No. : FG101908

Sporton International Inc. (Kunshan) Page Number : A4 of A10



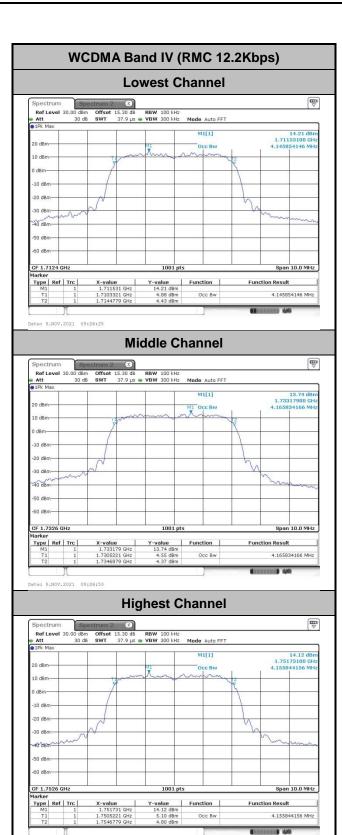


Occupied Bandwidth

| Mode | WCDMA Band IV |
|------------|---------------|
| Mod. | RMC 12.2Kbps |
| Lowest CH | 4.15 |
| Middle CH | 4.17 |
| Highest CH | 4.16 |

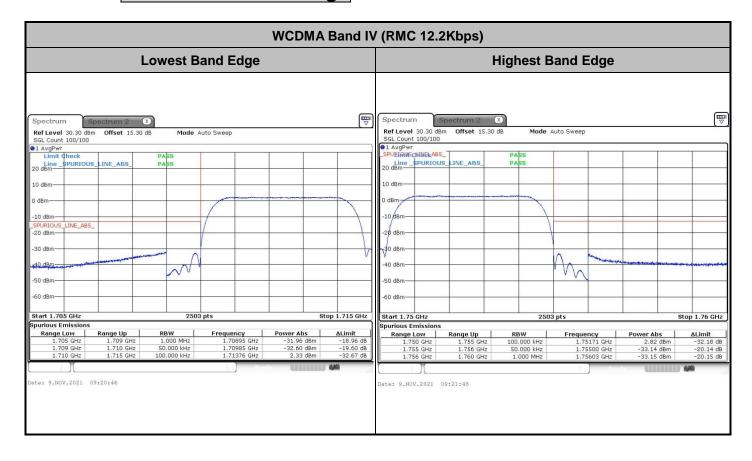
Report No. : FG101908

Sporton International Inc. (Kunshan) Page Number : A6 of A10



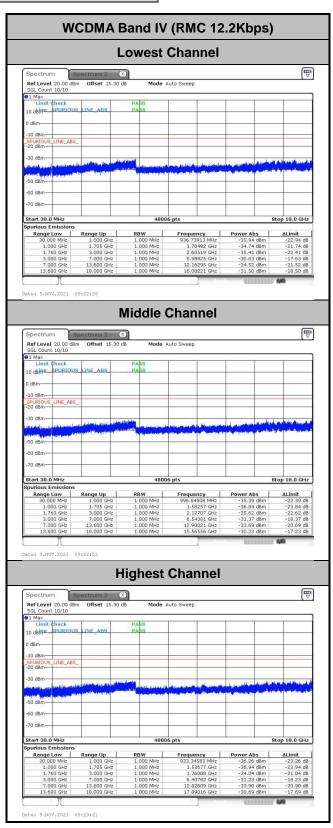
TEL: +86-512-57900158 FAX: +86-512-57900958

Conducted Band Edge



TEL: +86-512-57900158 FAX: +86-512-57900958

Conducted Spurious Emission



TEL: +86-512-57900158 FAX: +86-512-57900958

Frequency Stability

| Test Conditions | Middle Channel | WCDMA Band IV (RMC 12.2Kbps) | Limit Note 2 |
|------------------|-------------------|---------------------------------|-----------------|
| Temperature (°C) | Voltage (Volt) | Deviation (ppm) | Result |
| 50 | Normal Voltage | 0.0152 | |
| 40 | Normal Voltage | 0.0417 | |
| 30 | Normal Voltage | 0.0355 | |
| 20(Ref.) | Normal Voltage | 0.0015 | |
| 10 | Normal Voltage | 0.0065 | |
| 0 | Normal Voltage | 0.0055 | |
| -10 | Normal Voltage | 0.0163 | PASS |
| -20 | Normal Voltage | 0.0243 | |
| -30 | Normal Voltage | 0.0272 | |
| 20 | Maximum Voltage | 0.0158 | |
| 20 | Normal Voltage | 0.0176 | |
| 20 | Battery End Point | 0.0043 | |

Report No.: FG101908

Note:

- 1. Normal Voltage = 3.87V ; Battery End Point (BEP) =3.4V. ; Maximum Voltage =4.45V
- 2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Sporton International Inc. (Kunshan) Page Number : A10 of A10

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

| WCDMA Band IV(RMC 12.2Kbps) | | | | | | | | |
|-----------------------------|--------------------|--------------|------------------|-------------------------|------------------------|----------------------|-----------------------------|-----------------------|
| Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Over Limit (dB) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| | 3426 | -55.90 | -13 | -42.90 | -66.64 | 2.604 | 13.34 | Н |
| | 5136 | -53.75 | -13 | -40.75 | -64.26 | 3.011 | 13.52 | Н |
| Lowest | 6840.63 | -52.10 | -13 | -39.10 | -62.30 | 3.271 | 13.47 | Н |
| Lowest | 3426 | -55.31 | -13 | -42.31 | -66.05 | 2.604 | 13.34 | V |
| | 5136 | -53.73 | -13 | -40.73 | -64.24 | 3.011 | 13.52 | V |
| | 6840.63 | -52.08 | -13 | -39.08 | -62.28 | 3.271 | 13.47 | V |
| | 3465 | -59.12 | -13 | -46.12 | -69.86 | 2.604 | 13.34 | Н |
| | 5199 | -57.27 | -13 | -44.27 | -67.78 | 3.011 | 13.52 | Н |
| Middle | 6936 | -55.70 | -13 | -42.70 | -65.90 | 3.271 | 13.47 | Н |
| | 3465 | -59.97 | -13 | -46.97 | -70.71 | 2.604 | 13.34 | V |
| | 5199 | -57.18 | -13 | -44.18 | -67.69 | 3.011 | 13.52 | V |
| | 6936 | -55.96 | -13 | -42.96 | -66.16 | 3.271 | 13.47 | V |
| | 3504 | -55.78 | -13 | -42.78 | -66.52 | 2.604 | 13.34 | Н |
| Highest | 5259 | -53.85 | -13 | -40.85 | -64.36 | 3.011 | 13.52 | Н |
| | 7008 | -52.39 | -13 | -39.39 | -62.59 | 3.271 | 13.47 | Н |
| | 3504 | -55.15 | -13 | -42.15 | -65.89 | 2.604 | 13.34 | V |
| | 5259 | -52.72 | -13 | -39.72 | -63.23 | 3.011 | 13.52 | V |
| | 7008 | -51.83 | -13 | -38.83 | -62.03 | 3.271 | 13.47 | V |

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



TEL: +86-512-57900158 FAX: +86-512-57900958