FCC Test Report

APPLICANT : BlackBerry Limited

EQUIPMENT : Smart Phone
BRAND NAME : BlackBerry
MODEL NAME : STJ100-2

MARKETING NAME : Z3

FCC ID : L6ARHJ80UW

STANDARD : FCC 47 CFR FCC Part 15 Subpart B

CLASSIFICATION: Certification

The product was received on Nov. 18, 2014 and testing was completed on Nov. 28, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2009 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., the test report shall not be reproduced except in full.

Reviewed by: Louis Wu / Manager

Louis Wu

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 1 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

1190

Report No.: FC431831-04

TABLE OF CONTENTS

| RE | EVISION HISTORY3 | | | | | | |
|-----|--|---|----------|--|--|--|--|
| SII | МΜΔΕ | RY OF TEST RESULT | | | | | |
| | | ERAL DESCRIPTION | | | | | |
| | 1.1. 1.2. 1.3. 1.4. 1.5. 1.6. | Applicant Manufacturer Product Feature of Equipment Under Test Product Specification subjective to this standard | 5 6 | | | | |
| 2. | 2.1. 2.2. 2.3. 2.4. | Test Mode Connection Diagram of Test System Support Unit used in test configuration and system EUT Operation Test Setup | 10 11 | | | | |
| 3. | 3.1. 3.2. | Test of AC Conducted Emission Measurement Test of Radiated Emission Measurement | 12 | | | | |
| | | OF MEASURING EQUIPMENT | | | | | |
| ΑP | PEND | IX A. SETUP PHOTOGRAPHS | | | | | |

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 2 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|-------------|---------|-------------------------|---------------|
| FC431831-04 | Rev. 01 | Initial issue of report | Dec. 24, 2014 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 3 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|----------------|----------|-----------------------|-----------------|--------|-------------|
| | | | | | Under limit |
| 3.1 | 15.107 | AC Conducted Emission | < 15.107 limits | PASS | 7.00 dB at |
| | | | | | 0.182 MHz |
| | | | | | Under limit |
| 3.2 | 15.109 | Radiated Emission | < 15.109 limits | PASS | 7.02 dB at |
| | | | | | 30.000 MHz |

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 4 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

1. General Description

1.1. Applicant

BlackBerry Limited

2300 University Ave E., Waterloo, ON, CAN. N2K0A2

1.2. Manufacturer

FIH Mobile Limited

538 Castle Peak Rd. 8F, Cheung Sha Wan, Kowloon, Hong Kong

1.3. Product Feature of Equipment Under Test

| | Product Feature |
|---------------------------------|-----------------------|
| Equipment | Smart Phone |
| Brand Name | BlackBerry |
| Model Name | STJ100-2 |
| Marketing Name | Z3 |
| FCC ID | L6ARHJ80UW |
| | GSM/EGPRS/WCDMA/HSPA |
| EUT supports Radios application | WLAN 11b/g/n HT20 |
| | Bluetooth v4.0 EDR/LE |
| HW Version | MP |
| SW Version | 10.2.1.3430 |
| EUT Stage | Production Unit |

Remark:

The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 5 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

1.4. Product Specification subjective to this standard

| Product Specification subjective to this standard | | | | | | |
|---|---|--|--|--|--|--|
| i roudet opeen | GSM850 : 824.2 MHz ~ 848.8 MHz | | | | | |
| | GSM1900 : 1850.2 MHz ~ 1909.8MHz | | | | | |
| | WCDMA Band V: 826.4 MHz ~ 846.6 MHz | | | | | |
| Tx Frequency | 110211111211111111111111111111111111111 | | | | | |
| | WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz | | | | | |
| | 802.11b/g/n: 2412 MHz ~ 2462 MHz | | | | | |
| | Bluetooth: 2402 MHz ~ 2480 MHz | | | | | |
| | GSM850: 869.2 MHz ~ 893.8 MHz | | | | | |
| | GSM1900: 1930.2 MHz ~ 1989.8 MHz | | | | | |
| | WCDMA Band V: 871.4 MHz ~ 891.6 MHz | | | | | |
| Rx Frequency | WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz | | | | | |
| | 802.11b/g/n: 2412 MHz ~ 2462 MHz | | | | | |
| | Bluetooth: 2402 MHz ~ 2480 MHz | | | | | |
| | GPS : 1.57542 GHz | | | | | |
| | GSM / WCDMA : PIFA Antenna | | | | | |
| Antenna Type | WLAN : PIFA Antenna | | | | | |
| Antenna Type | Bluetooth: PIFA Antenna | | | | | |
| | GPS: PIFA Antenna | | | | | |
| | GSM: GMSK | | | | | |
| | GPRS: GMSK | | | | | |
| | EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK | | | | | |
| | WCDMA: QPSK (Uplink) | | | | | |
| | HSDPA: QPSK (Uplink) | | | | | |
| | HSUPA: QPSK (Uplink) | | | | | |
| Type of Modulation | 802.11b: DSSS (DBPSK / DQPSK / CCK) | | | | | |
| | 802.11g/n: OFDM (BPSK/QPSK/16QAM/64QAM) | | | | | |
| | Bluetooth LE : GFSK | | | | | |
| | Bluetooth (1Mbps) : GFSK | | | | | |
| | Bluetooth (2Mbps) : π /4-DQPSK | | | | | |
| | Bluetooth (3Mbps) : 8-DPSK | | | | | |
| | GPS: BPSK | | | | | |

1.5. Modification of EUT

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

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 6 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

1.6. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

| Test Site | SPORTON INTERNATIONAL INC. | | | | |
|--------------------|---|-----------|--|--|--|
| | No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, | | | | |
| Took Cita Logation | Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. | | | | |
| Test Site Location | TEL: +886-3-327-3456 | | | | |
| | FAX: +886-3-328-4978 | | | | |
| Toot Site No | Sporton | Site No. | | | |
| Test Site No. | CO05-HY | 03CH06-HY | | | |

1.7. Applicable Standards

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

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2009

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 7 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

| | | Test Condition | | | |
|------|-----------------------------------|----------------|-------------|-------------|--|
| Item | EUT Configuration | EMI | EMI | EMI | |
| | | AC | RE<1G | RE≥1G | |
| 1. | Charging Mode (EUT with adapter) | \boxtimes | \boxtimes | \boxtimes | |
| 2. | Data application transferred mode | \square | \boxtimes | Note 1 | |
| | (EUT connected with notebook) | | | Note i | |

Abbreviations:

EMI AC: AC conducted emissions

EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz

• EMI RE < 1G: EUT radiated emissions < 1GHz

Note 1: Testing for this mode is not required or not the worst case.

Remark: For signal above 1GHz, the worst case was test item 1.

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 8 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

| Test Items | EUT Configure Mode | Function Type |
|------------------------------|--------------------------|---|
| | 1/2 | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + FM Rx + USB Cable 1 (Charging from Adapter 1) |
| AC Conducted | | Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + MPEG4 + USB Cable 2 (Charging from Adapter 2) |
| Emission | | Mode 3: GSM1900 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + Camera + USB Cable 1 (Charging from Adapter 1) |
| | | Mode 4: GSM850 Idle + Bluetooth Idle + WLAN(2.4GHz) Idle + Earphone + GPS Rx + USB Cable 2 (Data Link with Notebook) |
| | | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + FM Rx + USB Cable 1 (Charging from Adapter 1) |
| Radiated | Radiated sions < 1GHz | Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + MPEG4 + USB Cable 2 (Charging from Adapter 2) |
| Emissions < 1GHz | | Mode 3: GSM1900 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + Camera + USB Cable 1 (Charging from Adapter 1) |
| | | Mode 4: GSM850 Idle + Bluetooth Idle + WLAN(2.4GHz) Idle + Earphone + GPS Rx + USB Cable 2 (Data Link with Notebook) |
| Radiated Emissions ≥ 1GHz | 1 | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + FM Rx + USB Cable 1 (Charging from Adapter 1) |

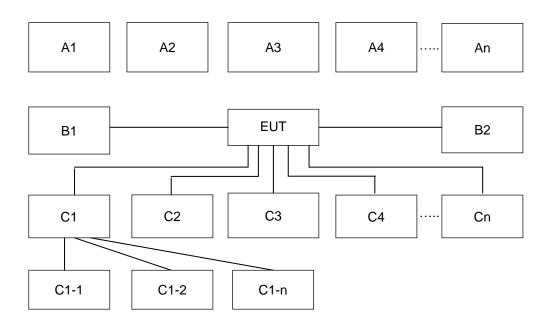
Remark:

- 1. The worst case of AC is mode 4; only the test data of this mode was reported.
- 2. The worst case of RE < 1G is mode 1; only the test data of this mode was reported.
- **3.** Data Link with Notebook means data application transferred mode between EUT and Notebook.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 9 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

2.2. Connection Diagram of Test System



| | Conduction and Radiation Test Setup | | | | | | | | |
|------|-------------------------------------|-------------------|-----------|---|---|---|---|---|---|
| Na | Window Station | Connection Type | Test Mode | | | | | | |
| No. | Wireless Station | Connection Type | 1 | 2 | 3 | 4 | - | - | - |
| A1 | BT Earphone | Bluetooth | Х | Х | Х | Х | | | |
| A2 | System Simulator | GSM / WCDMA | Х | Х | Х | Х | | | |
| А3 | GPS Station | GPS | | | | Х | | | |
| A4 | AP router | WiFi X | | Х | Х | Х | | | |
| No. | Power Source | Connection Type | 1 | 2 | 3 | 4 | - | - | - |
| B1 | AC: 120V/60Hz | AC Power Cable | Х | Х | Х | Х | | | |
| No. | Setup Peripherals | Connection Type | 1 | 2 | 3 | 4 | - | - | - |
| C1 | Notebook | USB cable | | | | Х | | | |
| C1-1 | IPod | USB Cable to C1 | | | | Х | | | |
| C1-2 | AP router | RJ-45 Cable to C1 | | | | Х | | | |
| C2 | Earphone | Earphone jack | Х | Х | Х | Х | | | |
| C3 | SD card | SD I/O interface | V | х | х | х | | | |
| CS | 3D Calu | without cable | X | ^ | ^ | ^ | | | |

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 10 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

2.3. Support Unit used in test configuration and system

| Item | Equipment | Trade Name | Model Name | FCC ID | Data Cable | Power Cord |
|------|-----------------------|------------------|-------------------|--|-----------------|--|
| 1. | System Simulator | R&S | CMU 200 | N/A | N/A | Unshielded, 1.8 m |
| 2. | System Simulator | Anritsu | MT8820C | N/A | N/A | Unshielded, 1.8 m |
| 3. | GPS Station | Pendulum | GSG-54 | N/A | N/A | Unshielded, 1.8 m |
| 4. | WLAN AP | D-Link | DIR-865L | KA2IR865LA1 | N/A | Unshielded, 1.8 m |
| 5. | WLAN AP | D-Link | DIR-628 | KA2DIR628A2 | N/A | Unshielded, 1.8 m |
| 6. | Notebook | DELL | Latitude E6320 | FCC DoC/ Contains FCC ID: QDS-BRCM1054 | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 7. | Bluetooth Earphone | Sony Ericsson | MW600 | PY7DDA-2029 | N/A | N/A |
| 8. | iPod | Apple | A1285 | FCC DoC | Shielded, 1.0 m | N/A |
| 9. | iPod | Apple | A1199 | FCC DoC | Shielded, 1.0 m | N/A |
| 10. | SD Card | SanDisk | MicroSD HC | FCC DoC | N/A | N/A |

2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA idle mode during the testing. The EUT was synchronized to the BCCH, and was in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

- 1. Data application is transferred between Laptop and EUT via USB cable.
- 2. Execute "GPS Test" to make the EUT receive continuous signals from GPS station.
- 3. Execute "Video Player" to play MPEG4 files.
- 4. Turn on camera to capture images.

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 11 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report No.: FC431831-04

3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of emission | Conducted limit (dBuV) | | | | |
|-----------------------|------------------------|-----------|--|--|--|
| (MHz) | Quasi-peak | Average | | | |
| 0.15-0.5 | 66 to 56* | 56 to 46* | | | |
| 0.5-5 | 56 | 46 | | | |
| 5-30 | 60 | 50 | | | |

^{*}Decreases with the logarithm of the frequency.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedure

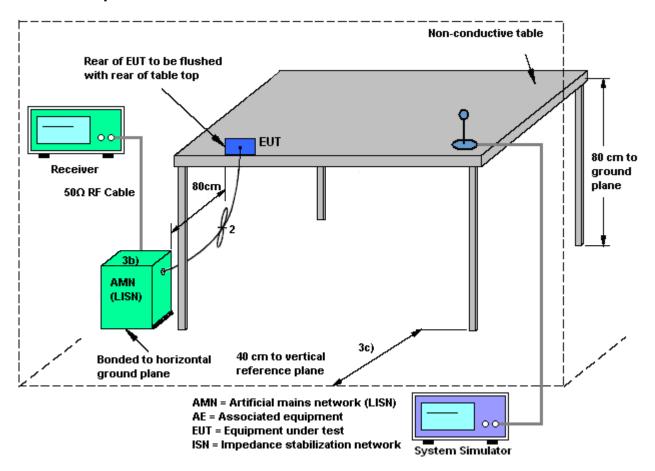
- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 12 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report No.: FC431831-04

C Test Report No.: FC431831-04

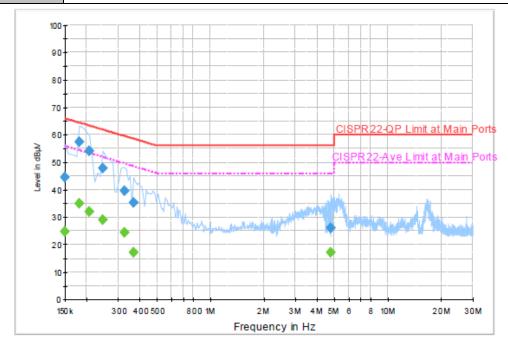
3.1.4 Test Setup



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 13 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

3.1.5 Test Result of AC Conducted Emission

| Test Mode : | Mode 4 | Temperature : | 21~23℃ | | | |
|-----------------|--|---------------------|--------|--|--|--|
| Test Engineer : | Eric Jeng | Relative Humidity : | 46~48% | | | |
| Test Voltage : | 120Vac / 60Hz | Phase : | Line | | | |
| Function Type | GSM850 Idle + Bluetooth Idle + WLAN(2.4GHz) Idle + Earphone + GPS Rx + USB | | | | | |
| Function Type : | Cable 2 (Data Link with Note | ebook) | | | | |



Final Result : Quasi-Peak

| Frequency | Quasi-Peak | Filter | Line | Corr. | Margin | Limit |
|-----------|------------|--------|------|-------|--------|--------|
| (MHz) | (dBµV) | Filler | Line | (dB) | (dB) | (dBµV) |
| 0.150000 | 44.6 | Off | L1 | 19.4 | 21.4 | 66.0 |
| 0.182000 | 57.4 | Off | L1 | 19.4 | 7.0 | 64.4 |
| 0.206000 | 54.2 | Off | L1 | 19.4 | 9.2 | 63.4 |
| 0.246000 | 47.9 | Off | L1 | 19.5 | 14.0 | 61.9 |
| 0.326000 | 39.7 | Off | L1 | 19.5 | 19.9 | 59.6 |
| 0.366000 | 35.4 | Off | L1 | 19.5 | 23.2 | 58.6 |
| 4.766000 | 26.0 | Off | L1 | 19.6 | 30.0 | 56.0 |

Final Result : Average

| Frequency | Average | Filter | Line | Corr. | Margin | Limit |
|-----------|---------|--------|------|-------|--------|--------|
| (MHz) | (dBµV) | Filter | Line | (dB) | (dB) | (dBµV) |
| 0.150000 | 24.8 | Off | L1 | 19.4 | 31.2 | 56.0 |
| 0.182000 | 35.1 | Off | L1 | 19.4 | 19.3 | 54.4 |
| 0.206000 | 32.1 | Off | L1 | 19.4 | 21.3 | 53.4 |
| 0.246000 | 29.2 | Off | L1 | 19.5 | 22.7 | 51.9 |
| 0.326000 | 24.6 | Off | L1 | 19.5 | 25.0 | 49.6 |
| 0.366000 | 17.3 | Off | L1 | 19.5 | 31.3 | 48.6 |
| 4.766000 | 17.0 | Off | L1 | 19.6 | 29.0 | 46.0 |

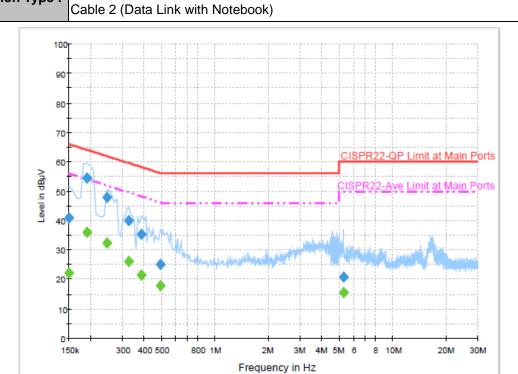
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 14 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

Report No. : FC431831-04

| Test Mode : | Mode 4 | Temperature : | 21~23℃ |
|-----------------|----------------------------|-----------------------|-----------------------------|
| Test Engineer : | Eric Jeng | Relative Humidity : | 46~48% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Neutral |
| Function Type : | GSM850 Idle + Bluetooth Id | le + WLAN(2.4GHz) Idl | e + Earphone + GPS Rx + USB |



Final Result : Quasi-Peak

| Frequency (MHz) | Quasi-Peak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------------|--------|------|---------------|----------------|-----------------|
| 0.150000 | 40.8 | Off | N | 19.5 | 25.2 | 66.0 |
| 0.190000 | 54.6 | Off | N | 19.5 | 9.4 | 64.0 |
| 0.246000 | 48.0 | Off | N | 19.5 | 13.9 | 61.9 |
| 0.326000 | 40.0 | Off | N | 19.5 | 19.6 | 59.6 |
| 0.382000 | 35.2 | Off | N | 19.5 | 23.0 | 58.2 |
| 0.494000 | 25.1 | Off | N | 19.5 | 31.0 | 56.1 |
| 5.270000 | 20.7 | Off | N | 19.6 | 39.3 | 60.0 |

Final Result : Average

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|--------------------|-------------------|--------|------|---------------|----------------|-----------------|
| 0.150000 | 22.0 | Off | N | 19.5 | 34.0 | 56.0 |
| 0.190000 | 36.0 | Off | N | 19.5 | 18.0 | 54.0 |
| 0.246000 | 32.3 | Off | N | 19.5 | 19.6 | 51.9 |
| 0.326000 | 26.1 | Off | N | 19.5 | 23.5 | 49.6 |
| 0.382000 | 21.4 | Off | N | 19.5 | 26.8 | 48.2 |
| 0.494000 | 17.8 | Off | N | 19.5 | 28.3 | 46.1 |
| 5.270000 | 15.5 | Off | N | 19.6 | 34.5 | 50.0 |

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 15 of 21 Report Issued Date: Dec. 24, 2014 Report Version : Rev. 01

3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency | Field Strength | Measurement Distance |
|-----------|--------------------|----------------------|
| (MHz) | (microvolts/meter) | (meters) |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

3.2.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

- 1. The EUT was placed on a turntable with 0.8 meter above ground.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest radiation.
- 4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
- 7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
- 8. Emission level (dB μ V/m) = 20 log Emission level (μ V/m)
- 9. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level

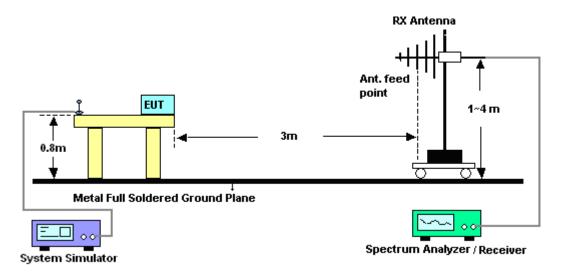
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 16 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

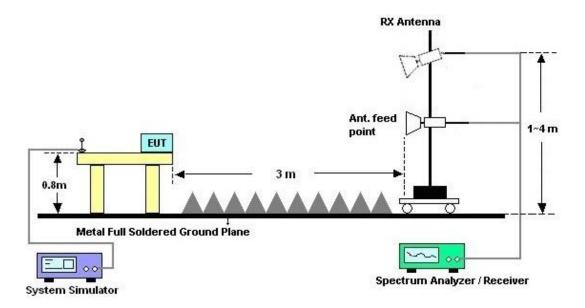
Report No.: FC431831-04

3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



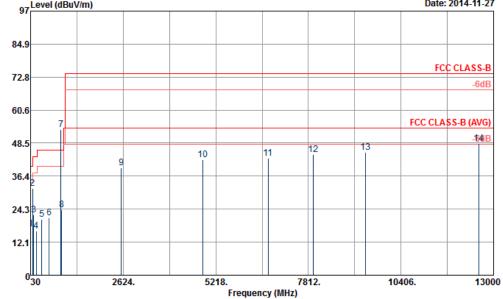
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 17 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

3.2.5. Test Result of Radiated Emission

| Test Mode : | Mode 1 | Temperature : | 20~23°C | | | | |
|-----------------|--|-------------------------|------------------|--|--|--|--|
| Test Engineer : | Daniel Lee | Relative Humidity : | 50~53% | | | | |
| Test Distance : | 3m | Horizontal | | | | | |
| Eunatian Type | GSM850 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + FM Rx + USB | | | | | | |
| Function Type : | Cable 1 (Charging from Adapter 1) | | | | | | |
| Remark : | #7 is system simulator sigr | al which can be ignored | d. | | | | |
| 97Leve | l (dBuV/m) | | Date: 2014-11-27 | | | | |
| 31 | | | | | | | |
| 84.9 | | | | | | | |



Site : 03CH06-HY

Condition : FCC CLASS-B 3m HF-ANT_583_140731 HORIZONTAL

Project : 431831-04 Power : 120Vac/60Hz Mode : Mode 1

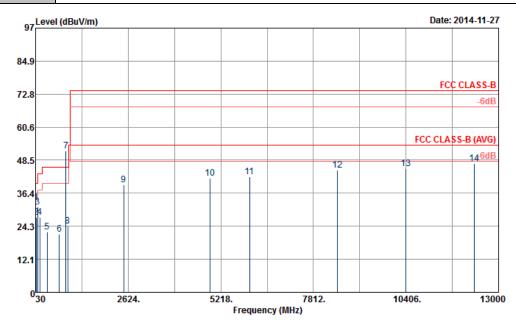
| Mode | | Model | | | | | | | | | |
|---|--|---|--|---|--|--|--|--|-------|-------|--|
| | Freq | Level | Over Limit | Limit Line | | ntenna Factor | | Preamp Factor | A/Pos | T/Pos | Remark |
| - | MHz | $\overline{d}\overline{B}\overline{u}\overline{V}\overline{/m}$ | dB | $\overline{\mathtt{d} \mathtt{B} \mathtt{u} \mathtt{V} /m}$ | dBuV | dB/m | dB | dB | cm | deg | |
| 1 2 3 4 5 6 7 * 8 9 | 31.35 88.32 114.24 192.00 349.00 553.40 881.70 896.40 2576.00 4860.00 | 31.96 22.18 16.16 20.66 21.16 53.42 24.05 | -22.90 -11.54 -21.32 -27.34 -25.34 -24.84 -21.95 -34.48 -31.56 | 40.00 43.50 43.50 43.50 46.00 46.00 46.00 74.00 74.00 | 30.22 54.30 40.90 37.42 36.03 31.80 61.26 31.66 61.54 60.09 | 18.02 8.38 11.85 9.00 14.35 18.80 20.45 20.58 32.13 34.39 | 0.65 1.04 1.18 1.49 2.05 2.56 3.32 3.36 6.43 8.69 | 31.79 31.75 31.75 31.75 31.77 32.00 31.61 31.55 60.58 60.73 | 100 | 123 | Peak Peak Peak Peak Peak Peak Peak Peak |
| 11 12 13 14 | 6682.00 7956.00 9422.00 12582.00 | 43.01 44.34 | -30.99 -29.66 -28.88 -25.51 | 74.00 74.00 74.00 74.00 | 57.81 56.30 56.10 53.38 | 35.80 35.79 36.41 39.33 | 9.87 12.04 13.59 15.65 | 60.47 59.79 60.98 59.87 | 100 | | Peak Peak Peak Peak Peak |

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 18 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

| SPORTON LAB. | FCC Test Report |
|--------------|-----------------|

| Test Mode : | Mode 1 | Temperature : | 20~23°C | | | |
|-----------------|--|-------------------------|----------|--|--|--|
| Test Engineer : | Daniel Lee | Relative Humidity : | 50~53% | | | |
| Test Distance : | 3m | Polarization : | Vertical | | | |
| Function Type : | GSM850 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Earphone + FM Rx + USB | | | | | |
| Function Type : | Cable 1 (Charging from Adapter 1) | | | | | |
| Remark : | #7 is system simulator signa | ll which can be ignored | l. | | | |



Site : 03CH06-HY

: FCC CLASS-B 3m HF-ANT_583_140731 VERTICAL Condition

Project : 431831-04 Power : 120Vac/60Hz Mode : Mode 1

| - | Freq | Level | Over Limit ——————————————————————————————————— | $\begin{array}{c} \text{Limit}\\ \text{Line} \\ \\ \overline{\text{dBuV/m}} \end{array}$ | | ntenna Factor ———————————————————————————————————— | | Preamp Factor dB | A/Pos | T/Pos —————deg | Remark |
|--|--|---|---|--|---|--|--|---|-------------|-------------------|---|
| 1 2 3 4 5 6 7 * 9 | 30.00 43.50 88.32 153.66 357.40 692.70 881.70 937.00 2498.00 | 32.98 27.59 31.30 27.46 22.04 21.33 51.89 24.28 39.34 | -7.02 -12.41 -12.20 -16.04 -23.96 -24.67 -21.72 -34.66 | 40.00 43.50 43.50 46.00 46.00 | 45.74 47.92 53.64 47.35 37.17 31.64 59.73 31.44 61.50 | 18.40 10.70 8.38 10.48 14.56 18.83 20.45 20.67 32.00 | 0.64 0.76 1.04 1.38 2.09 2.88 3.32 3.36 6.34 | 31.80 31.79 31.76 31.75 31.78 32.02 31.61 31.19 60.50 | 100 | | Peak Peak Peak Peak Peak Peak Peak Peak |
| 10 11 12 13 14 | 4918.00 6028.00 8486.00 10408.00 12326.00 | 41.75 42.31 44.89 45.32 | -32.25 -31.69 -29.11 -28.68 -26.68 | 74.00 74.00 74.00 74.00 74.00 | 58.99 57.75 55.95 55.65 52.22 | 34.43 35.33 35.61 37.32 39.13 | 8.94 9.45 12.84 12.99 15.43 | 60.61 60.22 59.51 60.64 59.46 | 100 | | Peak Peak Peak Peak Peak |

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 19 of 21 Report Issued Date: Dec. 24, 2014 Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

4. List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|--------------------------------------|--------------------|-----------|-----------------|--------------------|---------------------|---------------|---------------|--------------------------|
| EMI Test Receiver | Rohde & Schwarz | ESCS 30 | 100356 | 9kHz ~ 2.75GHz | Nov. 12, 2014 | Nov. 28, 2014 | Nov. 11, 2015 | Conduction (CO05-HY) |
| LISN (for auxiliary equipment) | Rohde & Schwarz | ENV216 | 100081 | 9kHz ~ 30MHz | Dec. 12, 2013 | Nov. 28, 2014 | Dec. 11, 2014 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100080 | 9kHz ~ 30MHz | Dec. 04, 2013 | Nov. 28, 2014 | Dec. 03, 2014 | Conduction (CO05-HY) |
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | Nov. 28, 2014 | N/A | Conduction (CO05-HY) |
| Spectrum Analyzer | R&S | FSP30 | 101067 | 9kHz ~ 30GHz | Nov. 21, 2014 | Nov. 27, 2014 | Nov. 20, 2015 | Radiation (03CH06-HY) |
| Spectrum Analyzer | Agilent | E4408B | MY44211030 | 9kHz ~ 26.5GHz | Dec. 02, 2013 | Nov. 27, 2014 | Dec. 01, 2014 | Radiation (03CH06-HY) |
| EMI Test Receiver | R&S | ESVS10 | 834468/0003 | 20MHz ~ 1000MHz | May 06, 2014 | Nov. 27, 2014 | May 05, 2015 | Radiation (03CH06-HY) |
| Bilog Antenna | Schaffner | CBL6112B | 2885 | 30MHz ~ 2GHz | Sep. 27, 2014 | Nov. 27, 2014 | Sep. 26, 2015 | Radiation (03CH06-HY) |
| Double Ridge Horn Antenna | EMCO | 3117 | 00066583 | 1GHz ~ 18GHz | Jul. 24, 2014 | Nov. 27, 2014 | Jul. 23, 2015 | Radiation (03CH06-HY) |
| Amplifier | SONOMA | 310N | 186713 | 9kHz ~ 1GHz | Apr. 16, 2014 | Nov. 27, 2014 | Apr. 15, 2015 | Radiation (03CH06-HY) |
| Preamplifier | EMCI | EMC051845 | SN980048 | 1GHz ~ 18GHz | Jul. 17, 2014 | Nov. 27, 2014 | Jul. 16, 2015 | Radiation (03CH06-HY) |
| Turn Table | INN-CO | DS2000 | 420/650/00 | 0 ~ 360 degree | N/A | Nov. 27, 2014 | N/A | Radiation (03CH06-HY) |
| Antenna Mast | MF | MF-7802 | MF78020821 2 | 1 m ~ 4 m | N/A | Nov. 27, 2014 | N/A | Radiation (03CH06-HY) |

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 20 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0

5. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

| | 4 |
|--------------------------------------|------|
| Measuring Uncertainty for a Level of | 2.26 |
| Confidence of 95% (U = 2Uc(y)) | 2.20 |

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

| Management III and the formal and of | |
|--------------------------------------|------|
| Measuring Uncertainty for a Level of | 4.50 |
| Confidence of 95% (U = 2Uc(y)) | 4.50 |

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: L6ARHJ80UW Page Number : 21 of 21
Report Issued Date : Dec. 24, 2014
Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0