FCC Test Report

APPLICANT : Bullitt Group

EQUIPMENT: Rugged Smart Phone

BRAND NAME : CAT MODEL NAME : S31

FCC ID : ZL5S31

STANDARD : FCC 47 CFR FCC Part 15 Subpart B

CLASSIFICATION: Certification

The product was received on Aug. 06, 2017 and testing was completed on Sep. 15, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 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





Report No.: FC770420-02

1190

SPORTON INTERNATIONAL INC.

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

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REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|-------------|---------|-------------------------|---------------|
| FC770420-02 | Rev. 01 | Initial issue of report | Sep. 28, 2017 |
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SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|-------------------|----------|--------------------------|-----------------|--------|-----------------------|
| 3.1 | 15.107 | AC Conducted Emission | < 15.107 limits | PASS | Under limit |
| 3.1 | | | | FAGG | 11.70 dB at 0.198 MHz |
| | | | | | Under limit |
| 3.2 | 15.109 | 15.109 Radiated Emission | < 15.109 limits | PASS | 3.04 dB at 30.000 MHz |
| | | | | | for Quasi-Peak |

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1. General Description

1.1. Applicant

Bullitt Group

One Valpy, Valpy Street, Reading, Berkshire, England RG1 1AR

1.2. Manufacturer

Compal Electronics, INC.

No. 385, Yangguang St. Neihu District, Taipei City 11491, Taiwan, R.O.C

1.3. Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, FM Receiver, and GPS

| Product Specification subjective to this standard | | | | | | | |
|---|---|--|--|--|--|--|--|
| | WWAN: Coupling type (LDS) Antenna WLAN: PIFA Antenna | | | | | | |
| Antenna Type | Bluetooth: PIFA Antenna GPS / Glonass / BDS: PIFA Antenna | | | | | | |
| | FM: Integral Antenna | | | | | | |
| | (Earphone acting as FM antenna deemed as an integral antenna) | | | | | | |

<Sample information>

| S31 has 2 different Variant | | | | | |
|---|------------|--|--|--|--|
| Sample 1 Dual SIM | | | | | |
| Sample 2 | Single SIM | | | | |
| For Dual-SIM or Single-SIM control by SW, The HW difference is SIM holder | | | | | |

Remark: All test items were performed with Sample 1.

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1.4. Modification of EUT

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

1.5. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1093 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 District, Tao Yuan City, 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 | | | |

1.6. 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 C63.4-2014

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

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2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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

| Test Items | Function Type |
|-----------------|--|
| | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + NFC on + MPEG4 + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| | Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + NFC on + Camera (Front) + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| AC Conducted | Mode 3: LTE Band 12 Idle + Bluetooth Idle + WLAN Idle + NFC on + Camera (Rear) + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| Emission | Mode 4: LTE Band 7 Idle + Bluetooth Idle + WLAN Idle + NFC on + FM Rx (98MHz) + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| | Mode 5: Flight mode + Earphone + Battery + USB Cable (Data Link with Notebook) + SIM 1 |
| | Mode 6: Flight mode + Earphone + Battery + USB Cable (Data Link with Notebook) + SIM 2 |
| | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| | Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + Camera (Front) + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| Radiated | Mode 3: LTE Band 12 Idle + Bluetooth Idle + WLAN Idle + Camera (Rear) + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| Emissions | Mode 4: LTE Band 7 Idle + Bluetooth Idle + WLAN Idle + FM Rx (98MHz) + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 1 |
| | Mode 5: Flight mode + Earphone + Battery + USB Cable (Data Link with Notebook) + SIM 1 |
| | Mode 6: GSM850 Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + Battery + USB Cable (Charging from Adapter) + SIM 2 |

Remark:

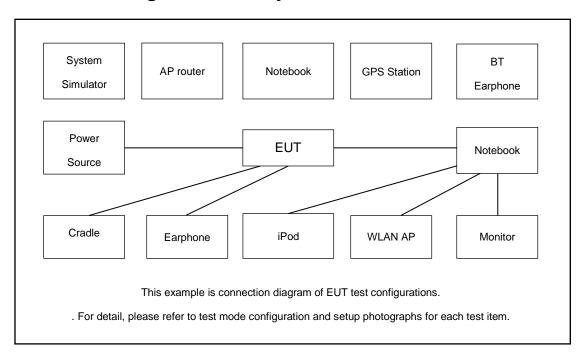
- 1. The worst case of AC is mode 5; only the test data of this mode was reported.
- 2. The worst case of RE is mode 1; only the test data of this mode was reported.
- 3. The USB Link mode of RE is mode 5; the test data of this mode was reported.
- 4. Data Link with Notebook means data application transferred mode between EUT and Notebook.

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2.2. Connection Diagram of Test System



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 | Anritsu | MT8820C | N/A | N/A | Unshielded, 1.8 m |
| 2. | System Simulator | R&S | CMU 200 | N/A | N/A | Unshielded, 1.8 m |
| 3. | Bluetooth Earphone | Sony Ericsson | MW600 | PY7DDA-2029 | N/A | N/A |
| 4. | WLAN AP | ASUS | RT-AC66U | MSQ-RTAC66U | N/A | Unshielded,1.8m |
| 5. | iPod | Apple | A1285 | FCC DoC | Shielded, 1.0 m | N/A |
| 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. | SD Card | SanDisk | MicroSD HC | FCC DoC | N/A | N/A |

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2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA or LTE idle mode during the testing. The EUT was synchronized to the BCCH, and is 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 "Video Player" to play MPEG4 files.
- 3. Turn on FM function.
- 4. Turn on GPS function to make the EUT receive continuous signals from system simulator.
- 5. Turn on camera to capture images.

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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

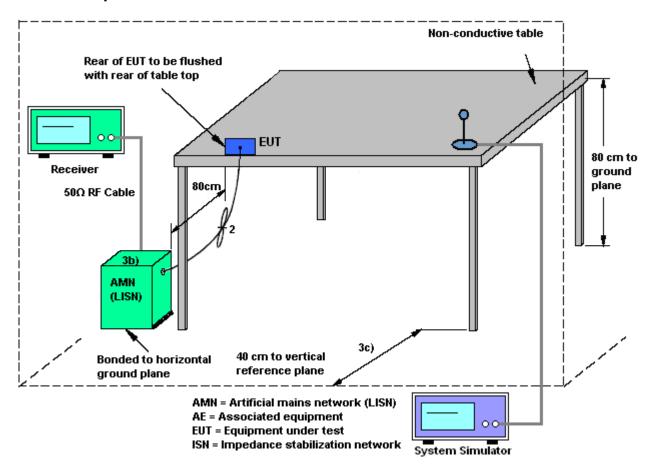
- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other 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.

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C Test Report No. : FC770420-02

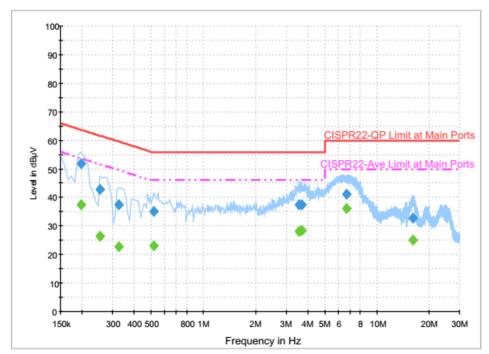
3.1.4 Test Setup



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3.1.5 Test Result of AC Conducted Emission

| Test Engineer : | Sharoof Vi | Temperature : | 26~27℃ |
|-----------------|---------------|---------------------|--------|
| rest Engineer. | Shareer fu | Relative Humidity : | 58~62% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Line |



Final Result : Quasi-Peak

| Frequency (MHz) | Quasi-Peak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|--------------------|----------------------|--------|------|---------------|----------------|-----------------|
| 0.198000 | 52.0 | Off | L1 | 19.5 | 11.7 | 63.7 |
| 0.254000 | 42.8 | Off | L1 | 19.5 | 18.8 | 61.6 |
| 0.326000 | 37.3 | Off | L1 | 19.5 | 22.3 | 59.6 |
| 0.518000 | 35.0 | Off | L1 | 19.5 | 21.0 | 56.0 |
| 3.566000 | 37.5 | Off | L1 | 19.6 | 18.5 | 56.0 |
| 3.702000 | 37.5 | Off | L1 | 19.6 | 18.5 | 56.0 |
| 6.662000 | 41.0 | Off | L1 | 19.6 | 19.0 | 60.0 |
| 16.182000 | 32.6 | Off | L1 | 19.7 | 27.4 | 60.0 |

Final Result : Average

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|--------------------|-------------------|--------|------|---------------|----------------|-----------------|
| 0.198000 | 37.5 | Off | L1 | 19.5 | 16.2 | 53.7 |
| 0.254000 | 26.3 | Off | L1 | 19.5 | 25.3 | 51.6 |
| 0.326000 | 22.8 | Off | L1 | 19.5 | 26.8 | 49.6 |
| 0.518000 | 23.2 | Off | L1 | 19.5 | 22.8 | 46.0 |
| 3.566000 | 28.2 | Off | L1 | 19.6 | 17.8 | 46.0 |
| 3.702000 | 28.6 | Off | L1 | 19.6 | 17.4 | 46.0 |
| 6.662000 | 36.0 | Off | L1 | 19.6 | 14.0 | 50.0 |
| 16.182000 | 25.0 | Off | L1 | 19.7 | 25.0 | 50.0 |

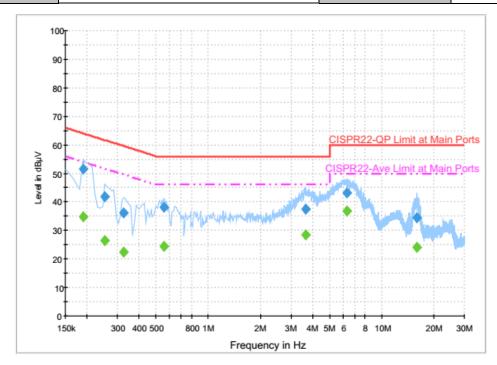
SPORTON INTERNATIONAL INC.

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| Toot Engineer | | Temperature : | 26~27℃ |
|----------------|---------------------|---------------------|---------|
| rest Engineer. | ngineer: Shareef Yu | Relative Humidity : | 58~62% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Neutral |



Final Result : Quasi-Peak

| Frequency (MHz) | Quasi-Peak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|--------------------|----------------------|--------|------|---------------|----------------|-----------------|
| 0.190000 | 51.5 | Off | N | 19.5 | 12.5 | 64.0 |
| 0.254000 | 41.9 | Off | N | 19.5 | 19.7 | 61.6 |
| 0.326000 | 36.2 | Off | N | 19.5 | 23.4 | 59.6 |
| 0.558000 | 38.0 | Off | N | 19.5 | 18.0 | 56.0 |
| 3.646000 | 37.6 | Off | N | 19.5 | 18.4 | 56.0 |
| 6.302000 | 43.2 | Off | N | 19.6 | 16.8 | 60.0 |
| 15.974000 | 34.6 | Off | N | 19.8 | 25.4 | 60.0 |

Final Result : Average

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|--------------------|-------------------|--------|------|---------------|----------------|-----------------|
| 0.190000 | 34.7 | Off | N | 19.5 | 19.3 | 54.0 |
| 0.254000 | 26.6 | Off | N | 19.5 | 25.0 | 51.6 |
| 0.326000 | 22.5 | Off | N | 19.5 | 27.1 | 49.6 |
| 0.558000 | 24.4 | Off | N | 19.5 | 21.6 | 46.0 |
| 3.646000 | 28.4 | Off | N | 19.5 | 17.6 | 46.0 |
| 6.302000 | 36.8 | Off | N | 19.6 | 13.2 | 50.0 |
| 15.974000 | 24.0 | Off | N | 19.8 | 26.0 | 50.0 |

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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

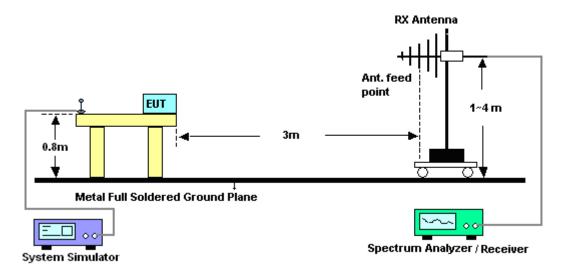
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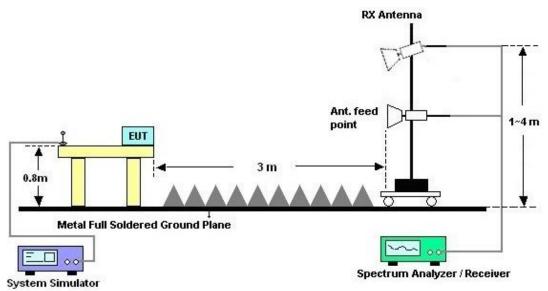
Report No.: FC770420-02

3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

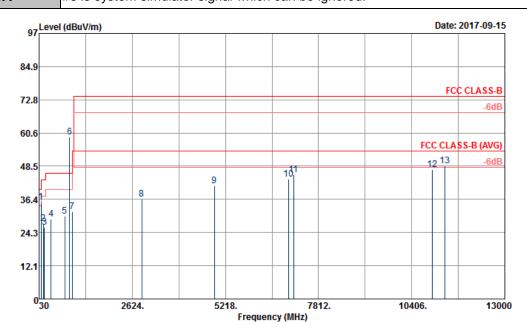


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3.2.5. Test Result of Radiated Emission

| Test Mode : | Mode 1 | Temperature : | 26~27°C | | | | | | |
|-----------------|---|---------------------------|---------|--|--|--|--|--|--|
| Test Engineer : | Kai-Chun Chu and Donny Tang | Relative Humidity : | 51~53% | | | | | | |
| Test Distance : | 3m | Polarization : Horizontal | | | | | | | |
| Remark : | #6 is system simulator signal which can be ignored. | | | | | | | | |



Site : 03CH06-HY

Condition : FCC CLASS-B 3m 9120D_1522_170807 HORIZONTAL

Project : 770420-02 Power : 120Vac/60Hz

Memo : Mode 1

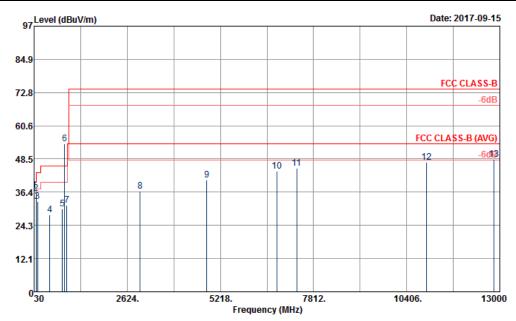
| MICHIO | | MOUE | | | | | | | | | |
|--------|----------|--------|---------------|--------|-------|-------------------|-------|------------------|-------|-------|----------|
| | Frea | Level | Over Limit | | | Intenna Factor | | Preamp Factor | A/Pos | T/Pos | Remark |
| | 11 64 | Level | LIMIT | LINE | Level | raccor | LUSS | i ac coi | | | Kellar K |
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | Cm | deg | |
| 1 | 83.46 | 35.45 | -4.55 | 40.00 | 51.70 | 13.57 | 2.00 | 31.82 | 382 | 282 | QP |
| 2 | 149.88 | 27.64 | -15.86 | 43.50 | 40.32 | 16.99 | 2.12 | 31.79 | | | Peak |
| 3 | 174.99 | 26.32 | -17.18 | 43.50 | 40.95 | 15.13 | 2.02 | 31.78 | | | Peak |
| 4 | 369.30 | 29.07 | -16.93 | 46.00 | 37.77 | 20.73 | 2.35 | 31.78 | | | Peak |
| 5 | 750.10 | 30.23 | -15.77 | 46.00 | 30.60 | 28.27 | 3.40 | 32.04 | | | Peak |
| 6 * | 881.70 | 59.12 | | | 58.17 | 29.22 | 3.36 | 31.63 | | | Peak |
| 7 | 956.60 | 31.87 | -14.13 | 46.00 | 28.83 | 31.03 | 3.06 | 31.05 | | | Peak |
| 8 | 2896.00 | 36.44 | -37.56 | 74.00 | 61.32 | 28.66 | 7.69 | 61.23 | | | Peak |
| 9 | 4912.00 | 41.33 | -32.67 | 74.00 | 57.93 | 31.94 | 10.73 | 59.27 | | | Peak |
| 10 | 6988.00 | 43.82 | -30.18 | 74.00 | 54.02 | 36.26 | 12.75 | 59.21 | | | Peak |
| 11 | 7120.00 | 45.43 | -28.57 | 74.00 | 55.20 | 36.64 | 12.77 | 59.18 | | | Peak |
| 12 | 10974.00 | 47.28 | -26.72 | 74.00 | 48.35 | 39.76 | 16.24 | 57.07 | | | Peak |
| 13 | 11334.00 | 48.65 | -25.35 | 74.00 | 48.54 | 40.20 | 16.58 | 56.67 | 100 | 135 | Peak |
| | | | | | | | | | | | |

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| Test Mode : | Mode 1 | Temperature : | 26~27°C | | | | | |
|-----------------|--|---------------------|----------|--|--|--|--|--|
| Test Engineer : | Kai-Chun Chu and Donny Tang | Relative Humidity : | 51~53% | | | | | |
| Test Distance : | 3m | Polarization : | Vertical | | | | | |
| Remark · | #6 is system simulator signal which can be ignored | | | | | | | |



: 03CH06-HY Site

: FCC CLASS-B 3m 9120D_1522_170807 VERTICAL Condition

: 770420-02 Project :120Vac/60Hz Power : Mode 1 Memo

| | | | 0ver | Limit | Read/ | Antenna | Cable | Preamp | A/Pos | T/Pos | |
|----|----------|--------|--------|--------|-------|---------|-------|--------|-------|-------|--------|
| | Freq | Level | Limit | Line | Level | Factor | Loss | Factor | | | Remark |
| | | | | | | | | | | | |
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 30.00 | 36.96 | -3.04 | 40.00 | 42.60 | 24.30 | 1.90 | 31.84 | 100 | 159 | OD |
| | | | | | | | | | 100 | | • |
| 2 | 81.84 | 35.82 | -4.18 | 40.00 | 52.23 | 13.36 | 2.05 | 31.82 | | | Peak |
| 3 | 130.71 | 33.01 | -10.49 | 43.50 | 45.09 | 17.64 | 2.08 | 31.80 | | | Peak |
| 4 | 468.00 | 28.02 | -17.98 | 46.00 | 33.52 | 23.55 | 2.83 | 31.88 | | | Peak |
| 5 | 822.90 | 30.17 | -15.83 | 46.00 | 29.84 | 28.87 | 3.34 | 31.88 | | | Peak |
| 6 | * 881.70 | 54.04 | | | 53.09 | 29.22 | 3.36 | 31.63 | | | Peak |
| 7 | 943.30 | 31.63 | -14.37 | 46.00 | 28.89 | 30.81 | 3.10 | 31.17 | | | Peak |
| 8 | 2986.00 | 36.67 | -37.33 | 74.00 | 61.24 | 28.86 | 7.86 | 61.29 | | | Peak |
| 9 | 4838.00 | 40.81 | -33.19 | 74.00 | 57.69 | 31.82 | 10.77 | 59.47 | | | Peak |
| 10 | 6784.00 | 44.12 | -29.88 | 74.00 | 55.14 | 35.76 | 12.51 | 59.29 | | | Peak |
| 11 | 7344.00 | 45.02 | -28.98 | 74.00 | 53.75 | 37.27 | 13.13 | 59.13 | | | Peak |
| 12 | 10962.00 | 47.22 | -26.78 | 74.00 | 48.36 | 39.72 | 16.21 | 57.07 | | | Peak |
| 13 | 12840.00 | 48.42 | -25.58 | 74.00 | 49.99 | 39.50 | 17.71 | 58.78 | 100 | 158 | Peak |

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26~27°C Test Mode: Mode 5 Temperature: 51~53% Test Engineer: Kai-Chun Chu and Donny Tang Relative Humidity: Test Distance: 3m Polarization: Horizontal 97 Level (dBuV/m) Date: 2017-09-15 FCC CLASS-B 72.8 -6dB 60.6 FCC CLASS-B (AVG) 48.5 8 36.4 24.3 12.1 030 2624. 5218. 7812. 10406. 13000 Frequency (MHz) Site : 03CH06-HY Condition : FCC CLASS-B 3m 9120D_1522_170807 HORIZONTAL Project : 770420-02 Power : Power From System Memo : Mode 5 ReadAntenna Cable Preamp Over Limit A/Pos T/Pos Freq Level Limit Line Level Factor Remark Loss Factor MHz dBuV/m dB dBuV/m dBuV dB/m deg cm46.74 30.15 -9.85 40.00 44.53 15.61 1.85 31.84 --- Peak 1 189.03 36.67 -6.83 43.50 51.79 14.69 1.96 31.77 --- Peak 265.98 40.80 -5.20 46.00 50.74 19.58 131 Peak 3 2.23 31.75 100 342.00 37.43 -8.57 46.00 46.88 20.07 2.25 --- Peak 479.90 36.65 -9.35 46.00 41.96 --- Peak 23.73 31.90 2.86 721.40 32.83 -13.17 46.00 33.84 27.64 3.43 32.08 --- Peak 7 1836.00 44.01 -29.99 74.00 73.10 25.93 5.95 60.97 --- Peak 4922.00 41.27 -32.73 74.00 57.81 6978.00 44.55 -29.45 74.00 54.77 8 31.98 10.71 59.23 --- Peak 36.26 12.73 59.21 --- Peak 7336.00 45.07 -28.93 74.00 53.86 37.27 13.07 --- Peak 10 59.13 10794.00 47.77 -26.23 74.00 49.88 39.30 16.07 57.48 --- Peak

11294.00 48.40 -25.60 74.00 48.40 40.16 16.55 56.71

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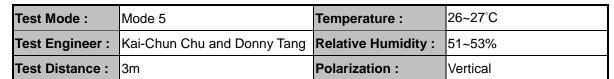
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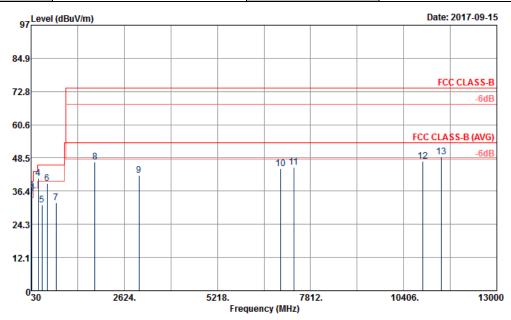
100

160 Peak

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FCC Test Report





Site : 03CH06-HY

Condition $: FCC\ CLASS-B\ 3m\ 9120D_1522_170807\ VERTICAL$

Project : 770420-02

Power : Power From System

Memo : Mode 5

| | | | 0ver | Limit | Read | Antenna | Cable | Preamp | A/Pos | T/Pos | |
|----|----------|--------|--------|--------|-------|---------|-------|--------|-------|-------|--------|
| | Freq | Level | Limit | Line | Level | Factor | Loss | Factor | | | Remark |
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 32.97 | 34.38 | -5.62 | 40.00 | 41.60 | 22.71 | 1.91 | 31.84 | 100 | 217 | QP |
| 2 | 46.74 | 35.62 | -4.38 | 40.00 | 50.00 | 15.61 | 1.85 | 31.84 | 100 | 79 | QP |
| 3 | 52.41 | 36.27 | -3.73 | 40.00 | 52.71 | 13.27 | 2.13 | 31.84 | 100 | 61 | QP |
| 4 | 226.56 | 41.14 | -4.86 | 46.00 | 54.95 | 15.86 | 2.09 | 31.76 | | | Peak |
| 5 | 337.10 | 31.34 | -14.66 | 46.00 | 40.90 | 19.95 | 2.25 | 31.76 | | | Peak |
| 6 | 479.90 | 39.20 | -6.80 | 46.00 | 44.51 | 23.73 | 2.86 | 31.90 | | | Peak |
| 7 | 722.10 | 32.08 | -13.92 | 46.00 | 33.05 | 27.68 | 3.43 | 32.08 | | | Peak |
| 8 | 1810.00 | 46.93 | -27.07 | 74.00 | 76.07 | 25.92 | 5.90 | 60.96 | | | Peak |
| 9 | 3040.00 | 42.09 | -31.91 | 74.00 | 66.57 | 28.89 | 7.94 | 61.31 | | | Peak |
| 10 | 6980.00 | 44.57 | -29.43 | 74.00 | 54.79 | 36.26 | 12.73 | 59.21 | | | Peak |
| 11 | 7340.00 | 45.14 | -28.86 | 74.00 | 53.87 | 37.27 | 13.13 | 59.13 | | | Peak |
| 12 | 10942.00 | 47.16 | -26.84 | 74.00 | 48.41 | 39.68 | 16.21 | 57.14 | | | Peak |
| 13 | 11448.00 | 48.93 | -25.07 | 74.00 | 48.45 | 40.34 | 16.70 | 56.56 | 100 | 107 | Peak |

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4. List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|----------------------|--------------------|----------------------------|-------------------|-----------------|---------------------|----------------------------------|---------------|--------------------------|
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | Sep. 08, 2017 ~ Sep. 09, 2017 | N/A | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100080 | 9kHz~30MHz | Nov. 29, 2016 | Sep. 08, 2017 ~ Sep. 09, 2017 | Nov. 28, 2017 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100081 | 9kHz~30MHz | Dec. 06, 2016 | Sep. 08, 2017 ~ Sep. 09, 2017 | Dec. 05, 2017 | Conduction (CO05-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESU26 | 100472 | 20Hz~26.5GHz | Dec. 29, 2016 | Sep. 08, 2017 ~ Sep. 09, 2017 | Dec. 28, 2017 | Conduction (CO05-HY) |
| Bilog Antenna | Schaffner | CBL6111C&N- 6-06 | 2725&AT-N060 1 | 30MHz~1GHz | Oct. 15, 2016 | Sep. 14, 2017 ~ Sep. 15, 2017 | Oct. 14, 2017 | Radiation (03CH06-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESU26 | 100472 | 20Hz~26.5GHz | Dec. 29, 2016 | Sep. 14, 2017 ~ Sep. 15, 2017 | Dec. 28, 2017 | Radiation (03CH06-HY) |
| Preamplifier | SONOMA | 310N | 186713 | 9kHz~1GHz | Apr. 25, 2017 | Sep. 14, 2017 ~ Sep. 15, 2017 | Apr. 24, 2018 | Radiation (03CH06-HY) |
| Preamplifier | MITEQ | AMF-7D-0010 1800-30-10P | 1850117 | 1GHz ~ 18GHz | May 22, 2017 | Sep. 14, 2017 ~ Sep. 15, 2017 | May 21, 2018 | Radiation (03CH06-HY) |
| Antenna Mast | MF | MF-7802 | MF780208212 | 1m~4m | N/A | Sep. 14, 2017 ~ Sep. 15, 2017 | N/A | Radiation (03CH06-HY) |
| Turn Table | INN-CO | DS2000 | 420/650/00 | 0-360 degree | N/A | Sep. 14, 2017 ~ Sep. 15, 2017 | N/A | Radiation (03CH06-HY) |
| Horn Antenna | SCHWARZBE CK | BBHA 9120 D | 9120D-1522 | 1G~18GHz | Mar. 17, 2017 | Sep. 14, 2017 ~ Sep. 15, 2017 | Mar. 16, 2018 | Radiation (03CH06-HY) |

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5. Uncertainty of Evaluation

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

| Measuring Uncertainty for a Level of Confidence | 2.7 |
|---|-----|
| of 95% (U = 2Uc(y)) | 2.1 |

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

| Measuring Uncertainty for a Level of Confidence | 2.0 |
|---|-----|
| of 95% (U = 2Uc(y)) | 3.9 |

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

| Measuring Uncertainty for a Level of Confidence | 4.7 |
|---|-------------|
| of 95% (U = 2Uc(y)) | 4. 7 |

SPORTON INTERNATIONAL INC.

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