

# FCC PART 15.225

# **TEST REPORT**

For

# Advanced Mobile Payment Inc.

Units 401-403, 15 Wertheim Court. Richmond Hill, Ontario L4B 3H7 Canada

FCC ID: 2AKJB-AMP7000-1

Report Type: Product Type:

Original Report POS Payment Terminal

**Report Number:** RSZ161123003-00D

**Report Date:** 2017-02-27

Oscar Ye

Reviewed By: Engineer

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**Note**: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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#### **GENERAL INFORMATION**

#### **Product Description for Equipment under Test (EUT)**

The Advanced Mobile Payment Inc.'s product, model number: AMP 7000-BD (FCC ID: 2AKJB-AMP7000-1) in this report is a POS Payment Terminal, which was measured approximately: 194 mm (L) \* 90 mm (W) \*57 mm (H), rated with input voltage: DC 7.4V battery or DC 9.5V from adapter.

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Adapter Information:

Model: ADS-25SG-12-2 09524E

Input: AC 100-240V, 50/60Hz, 0.7A max

Output: DC 9.5V, 2.5A

\* All measurement and test data in this report was gathered from production sample serial number: 1603742 (Assigned by BACL, Kunshan). The EUT supplied by the applicant was received on 2016-11-30.

#### **Objective**

This Type approval report is prepared on behalf of *Advanced Mobile Payment Inc.* in accordance with Part 2- Subpart J, and Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine the compliance of the EUT with FCC rules, sec 15.203, 15.205, 15.207, 15.209 and 15.225.

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

Part 15.247 DTS, Part 22H & 24E PCB and Part 15B JBP submissions with FCC ID: 2AKJB-AMP7000-1.

#### **Test Methodology**

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

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#### **Measurement Uncertainty**

|                                    | Item                 | Uncertainty |
|------------------------------------|----------------------|-------------|
| AC Power Lines Conducted Emissions |                      | ±3.26 dB    |
| RF conducted test with spectrum    |                      | ±0.9dB      |
| RF Output Po                       | wer with Power meter | ±0.5dB      |
| D. Fata Laurianian                 | 30MHz~1GHz           | ±5.91dB     |
| Radiated emission                  | Above 1G             | ±4.92dB     |
| Occupi                             | ied Bandwidth        | ±0.5kHz     |
| Temperature                        |                      | ±1.0℃       |
| H                                  | Iumidity             | ±6%         |

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#### **Test Facility**

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Test site at Bay Area Compliance Laboratories Corp. (Kunshan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10-2013.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

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# **SYSTEM TEST CONFIGURATION**

#### **Justification**

The system was configured for testing in a typical fashion (as normally used by a typical user).

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#### **EUT Exercise Software**

No Exercise Software.

#### **Equipment Modifications**

No modification on the EUT.

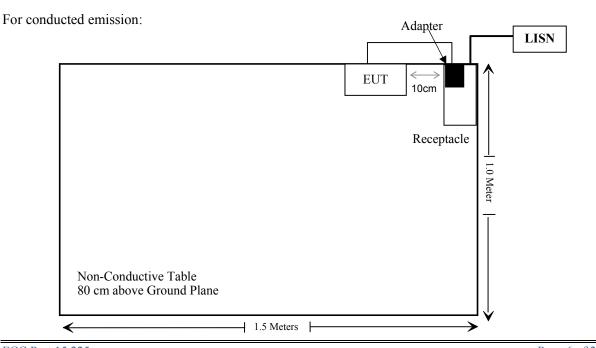
#### **Local Support Equipment**

| Manufacturer | Manufacturer Description |     | Serial Number |  |
|--------------|--------------------------|-----|---------------|--|
| N/A          | N/A                      | N/A | N/A           |  |

#### **External I/O Cable**

| Cable Description                 | Length (m) | From/Port | То      |  |
|-----------------------------------|------------|-----------|---------|--|
| Un-shielding Detachable USB Cable | 1.5        | EUT       | Adapter |  |

#### **Block Diagram of Test Setup**



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# **SUMMARY OF TEST RESULTS**

| FCC Rules                     | Description of Test        | Result     |
|-------------------------------|----------------------------|------------|
| §15.203                       | Antenna Requirement        | Compliance |
| §15.207                       | AC Line Conducted Emission | Compliance |
| \$15.225<br>\$15.209 \$15.205 | Radiated Emission Test     | Compliance |
| §15.225(e)                    | Frequency Stability        | Compliance |
| §15.215(c)                    | 20dB Emission Bandwidth    | Compliance |

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# TEST EQUIPMENT LIST

| Manufacturer           | Description       | Model Serial Numb          |             | Calibration<br>Date | Calibration<br>Due Date |  |  |  |
|------------------------|-------------------|----------------------------|-------------|---------------------|-------------------------|--|--|--|
| AC Line Conducted test |                   |                            |             |                     |                         |  |  |  |
| Rohde & Schwarz        | EMI Test Receiver | ESCS30                     | 834115/007  | 2016-11-25          | 2017-11-25              |  |  |  |
| Rohde & Schwarz        | LISN              | ESH3-Z5                    | 862770/011  | 2016-10-10          | 2017-10-10              |  |  |  |
| Rohde & Schwarz        | Pulse limiter     | ESH3-Z2                    | 879940/0058 | 2016-06-18          | 2017-06-17              |  |  |  |
| MICRO-COAX             | Coaxial line      | UFB-293B-1-<br>0480-50X50  | 97F0173     | 2016-09-08          | 2017-09-08              |  |  |  |
| Rohde & Schwarz        | CE Test software  | EMC 32                     | V 09.10.0   | NCR                 | NCR                     |  |  |  |
|                        | I                 | Radiation test             |             |                     |                         |  |  |  |
| Sonoma Instrunent      | Amplifier         | 330                        | 171377      | 2016-12-12          | 2017-12-12              |  |  |  |
| Rohde & Schwarz        | EMI Test Receiver | ESCI                       | 100195      | 2016-11-25          | 2017-11-25              |  |  |  |
| Sunol Sciences         | Broadband Antenna | JB3                        | A090314-2   | 2016-01-09          | 2019-01-08              |  |  |  |
| Narda Pre-amplifier    |                   | AFS42-<br>00101800 2001270 |             | 2016-09-08          | 2017-09-08              |  |  |  |
| ETS-LINDGREN           | PASSIVE LOOP      | 6512                       | 108100      | 2016-01-09          | 2019-01-08              |  |  |  |
| R&S                    | V 09.10.0         | NCR                        | NCR         |                     |                         |  |  |  |
| haojintech             | Coaxial Cable     | Cable-1                    | 001         | 2016-12-12          | 2017-12-12              |  |  |  |
| haojintech             | Coaxial Cable     | Cable-2                    | 002         | 2016-12-12          | 2017-12-12              |  |  |  |
| haojintech             | Coaxial Cable     | Cable-3                    | 003         | 2016-12-12          | 2017-12-12              |  |  |  |

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<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

### FCC§15.203 - ANTENNA REQUIREMENT

#### **Applicable Standard**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

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#### **Antenna Connected Construction**

The EUT has a printed antenna on PCB, fulfill the requirement of this section. Please see EUT photo for details.

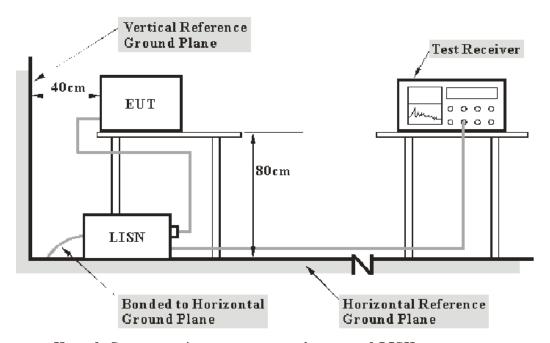
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## FCC §15.207 – AC LINE CONDUCTED EMISSION

#### **Applicable Standard**

FCC§15.207

#### **EUT Setup**



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Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

#### **EMI Test Receiver Setup**

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range  | IF B/W |  |  |
|------------------|--------|--|--|
| 150 kHz – 30 MHz | 9 kHz  |  |  |

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#### **Test Procedure**

During the conducted emission test, the host PC was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

#### **Corrected Factor & Margin Calculation**

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

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Margin = Limit - Corrected Amplitude

#### **Test Results Summary**

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_{\rm m} + U_{(L{\rm m})} \leq L_{\rm lim} + U_{\rm cispr}$$

In BACL,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

#### **Test Data**

#### **Environmental Conditions**

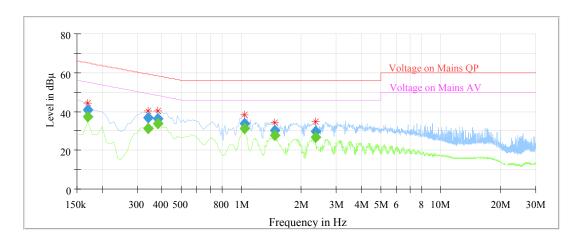
| Temperature:       | 24 ℃      |
|--------------------|-----------|
| Relative Humidity: | 49 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Layne Li on 2017-01-21.

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EUT operation mode: Reading Card

#### AC 120 V/60 Hz, Line:

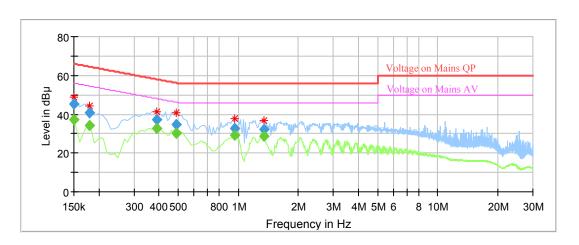


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| Frequency<br>(MHz) | QuasiPeak<br>(dBµV) | Average<br>(dB \mu V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit<br>(dBµV) | Comment    |
|--------------------|---------------------|-----------------------|-----------------|------|------------|-------------|-----------------|------------|
| 0.170000           |                     | 37.21                 | 9.000           | L1   | 10.0       | 17.75       | 54.96           | Compliance |
| 0.170000           | 40.73               |                       | 9.000           | L1   | 10.0       | 24.23       | 64.96           | Compliance |
| 0.340000           |                     | 31.40                 | 9.000           | L1   | 10.0       | 17.80       | 49.20           | Compliance |
| 0.340000           | 36.75               |                       | 9.000           | L1   | 10.0       | 22.45       | 59.20           | Compliance |
| 0.380000           |                     | 33.95                 | 9.000           | L1   | 10.1       | 14.33       | 48.28           | Compliance |
| 0.380000           | 36.23               |                       | 9.000           | L1   | 10.1       | 22.05       | 58.28           | Compliance |
| 1.040000           |                     | 30.95                 | 9.000           | L1   | 9.8        | 15.05       | 46.00           | Compliance |
| 1.040000           | 33.80               |                       | 9.000           | L1   | 9.8        | 22.20       | 56.00           | Compliance |
| 1.480000           |                     | 27.59                 | 9.000           | L1   | 9.8        | 18.41       | 46.00           | Compliance |
| 1.480000           | 30.32               |                       | 9.000           | L1   | 9.8        | 25.68       | 56.00           | Compliance |
| 2.350000           |                     | 26.47                 | 9.000           | L1   | 9.9        | 19.53       | 46.00           | Compliance |
| 2.350000           | 29.58               |                       | 9.000           | L1   | 9.9        | 26.42       | 56.00           | Compliance |

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#### AC 120V/60 Hz, Neutral:



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| Frequency<br>(MHz) | QuasiPeak<br>(dBµV) | Average<br>(dB \mu V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit<br>(dBµV) | Comment    |
|--------------------|---------------------|-----------------------|-----------------|------|------------|-------------|-----------------|------------|
| 0.150000           |                     | 37.39                 | 9.000           | N    | 10.1       | 18.61       | 56.00           | Compliance |
| 0.150000           | 45.06               |                       | 9.000           | N    | 10.1       | 20.94       | 66.00           | Compliance |
| 0.180000           |                     | 34.40                 | 9.000           | N    | 10.3       | 20.09       | 54.49           | Compliance |
| 0.180000           | 40.80               |                       | 9.000           | N    | 10.3       | 23.69       | 64.49           | Compliance |
| 0.390000           |                     | 32.54                 | 9.000           | N    | 10.1       | 15.52       | 48.06           | Compliance |
| 0.390000           | 37.05               |                       | 9.000           | N    | 10.1       | 21.01       | 58.06           | Compliance |
| 0.490000           |                     | 29.96                 | 9.000           | N    | 10.1       | 16.21       | 46.17           | Compliance |
| 0.490000           | 34.57               |                       | 9.000           | N    | 10.1       | 21.60       | 56.17           | Compliance |
| 0.960000           |                     | 29.02                 | 9.000           | N    | 9.9        | 16.98       | 46.00           | Compliance |
| 0.960000           | 32.50               |                       | 9.000           | N    | 9.9        | 23.50       | 56.00           | Compliance |
| 1.350000           |                     | 28.82                 | 9.000           | N    | 9.9        | 17.18       | 46.00           | Compliance |
| 1.350000           | 32.25               |                       | 9.000           | N    | 9.9        | 23.75       | 56.00           | Compliance |

1) Correction Factor =LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation

2) Corrected Amplitude = Reading + Correction Factor
3) Margin = Limit – Corrected Amplitude

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# FCC§15.225, §15.205 & §15.209 - RADIATED EMISSIONS TEST

#### **Applicable Standard**

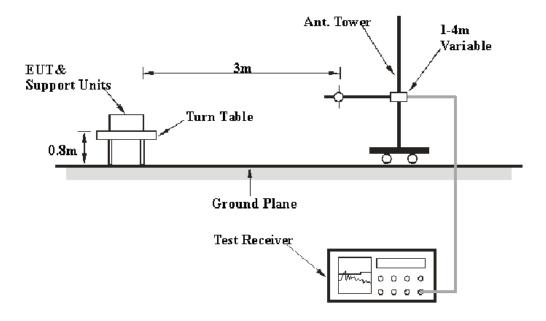
As per FCC Part 15.225

- (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

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- (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in  $\S15.209$ .

#### **EUT Setup**



The radiated emission tests were performed in the 3-meter chamber a test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

The spacing between the peripherals was 10 cm.

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#### **EMI Test Receiver Setup**

According to FCC Rules, 47 CFR 15.33, the EUT emissions were investigated up to 1000 MHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

| Frequency Range   | RBW     | Video B/W | IF B/W | Detector |
|-------------------|---------|-----------|--------|----------|
| 9 kHz – 150 kHz   | 300 Hz  | 1 kHz     | /      | QP       |
| 150 kHz –30 MHz   | 10 kHz  | 30 kHz    | /      | QP       |
| 30 MHz – 1000 MHz | 100 kHz | 300 kHz   | /      | QP       |

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#### **Corrected Amplitude & Margin Calculation**

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Factor = Antenna Factor + Cable Loss- Amplifier Gain Corrected Amplitude = Meter Reading + Corrected Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

#### **Test Results Summary**

According to the data in the following table, the EUT complied with the FCC §15.209.

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_{\rm m} + U_{(L{\rm m})} \leq L_{\rm lim} + U_{\rm cispr}$$

In BACL,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

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#### **Test Data**

#### **Environmental Conditions**

| Temperature:       | 24 ℃      |
|--------------------|-----------|
| Relative Humidity: | 49 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Layne Li on 2017-02-26.

Test mode: Transmitting

#### 1) Spurious Emissions (9 kHz~30 MHz):

| Indic              | cated                               |                          |                          |                        | Corre                  | ection Fa             | ctor                         |   | FCC Part                 | 15.225 |
|--------------------|-------------------------------------|--------------------------|--------------------------|------------------------|------------------------|-----------------------|------------------------------|---|--------------------------|--------|
| Frequency<br>(MHz) | Maximum<br>Reading<br>(dBμV)<br>@3m | Table<br>Angle<br>Degree | Antenna<br>Height<br>(m) | Detector<br>PK/QP/Ave. | Ant.<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Pre-<br>Amp.<br>Gain<br>(dB) | Corrected<br>Amplitude<br>(dBµV/m)<br>@3m | Limit<br>(dBμV/m)<br>@3m | Result |
| 0.192              | 5.47                                | 108                      | 1.2                      | QP                     | 60.8                   | 0. 1                  | 0                            | 66.37                                     | 101.94                   | Pass   |
| 27.21              | 12.85                               | 95                       | 1.2                      | QP                     | 34.2                   | 0.2                   | 0                            | 47.25                                     | 69.54                    | Pass   |

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# 2) Spurious Emissions (30 MHz ~1 GHz):

| Frequency (MHz) | Corrected<br>Amplitude<br>(dBµV/m) | Detector<br>PK/QP/Ave. | Antenna<br>Height<br>(m) | Antenna<br>Polarity<br>(H/V) | Turntable<br>Position<br>(deg) | Correction<br>Factor<br>(dB) | Limit (dBµV/m) | Margin (dB) |
|-----------------|------------------------------------|------------------------|--------------------------|------------------------------|--------------------------------|------------------------------|----------------|-------------|
| 40.32           | 14.73                              | QP                     | 3.1                      | V                            | 34                             | -10.20                       | 40.00          | 25.27       |
| 473.33          | 22.13                              | QP                     | 2.7                      | V                            | 62                             | -7.21                        | 46.00          | 23.87       |
| 513.83          | 23.73                              | QP                     | 1.2                      | V                            | 164                            | -5.36                        | 46.00          | 22.27       |
| 624.62          | 25.37                              | QP                     | 3.3                      | V                            | 351                            | -5.02                        | 46.00          | 20.63       |
| 837.17          | 32.48                              | QP                     | 3.2                      | Н                            | 268                            | -1.59                        | 46.00          | 13.52       |
| 891.39          | 29.95                              | QP                     | 1.4                      | Н                            | 217                            | -1.23                        | 46.00          | 16.05       |

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### FCC§15.225(a) (b) (c) – FIELD STRENGTH OF RADIATED EMISSIONS

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#### **Applicable Standard**

As per FCC Part 15.225

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

#### **EUT Setup**

The field strength of radiated emissions tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

#### **Test Data**

#### **Environmental Conditions**

| Temperature:       | 24 ℃      |
|--------------------|-----------|
| Relative Humidity: | 49 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Echo Wu on 2017-02-26.

Test Mode: Transmitting

Test Result: Pass

| I                           | ndicated               |                                     |                          |                          |                        | Corr                   | ection Fa             | ctor                         | Corrected                    | FCC Part           | 15.225 |
|-----------------------------|------------------------|-------------------------------------|--------------------------|--------------------------|------------------------|------------------------|-----------------------|------------------------------|------------------------------|--------------------|--------|
| Frequency<br>Range<br>(MHz) | Mark<br>point<br>(MHz) | Maximum<br>Reading<br>(dBμV)<br>@3m | Table<br>Angle<br>Degree | Antenna<br>Height<br>(m) | Detector<br>PK/QP/Ave. | Ant.<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Pre-<br>Amp.<br>Gain<br>(dB) | Amplitude<br>(dBµV/m)<br>@3m | Limit (dBµV/m) @3m | Result |
| 13.110-<br>13.410           | 13.376                 | 12.52                               | 0                        | 1.3                      | QP                     | 35.2                   | 0.2                   | 0                            | 47.92                        | 80.5               | Pass   |
| 13.410-<br>13.553           | 13.539                 | 15.59                               | 0                        | 1.4                      | QP                     | 35.2                   | 0.2                   | 0                            | 50.99                        | 90.5               | Pass   |
| 13.553-<br>13.567           | 13.562                 | 46.28                               | 0                        | 1.5                      | QP                     | 35.2                   | 0.2                   | 0                            | 81.68                        | 124                | Pass   |
| 13.567-<br>13.710           | 13.637                 | 17.25                               | 0                        | 1.4                      | QP                     | 35.2                   | 0.2                   | 0                            | 52.65                        | 90.5               | Pass   |
| 13.710-<br>14.010           | 13.847                 | 14.39                               | 0                        | 1.3                      | QP                     | 35.2                   | 0.2                   | 0                            | 49.79                        | 80.5               | Pass   |

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#### FCC§15.225(e) - FREQUENCY STABILITY

#### **Applicable Standard**

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

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#### **Test Procedure**

Frequency Stability vs. Temperature: The equipment under test was connected to PC, then to an external AC power supply and inductive antenna was connected to a Spectrum Analyzer. The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable AC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

#### **Test Data**

#### **Environmental Conditions**

| Temperature:       | 24 ℃      |
|--------------------|-----------|
| Relative Humidity: | 49 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Echo Wu on 2017-02-26.

Test Mode: Transmitting

Test Result: Pass

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| Power Supply (V <sub>DC</sub> ) | Temperature (°C) | Measured<br>Frequency<br>(MHz) | Frequency<br>Error<br>(%) | Part 15.225<br>Limit |
|---------------------------------|------------------|--------------------------------|---------------------------|----------------------|
|                                 | 0                | 13.56063                       | 0.00464602%               | ±0.01%               |
|                                 | 10               | 13.56029                       | 0.00213864 %              | ±0.01%               |
| 7.4V                            | 20               | 13.56037                       | 0.00272861%               | ±0.01%               |
| / .4 V                          | 30               | 13.56085                       | 0.00626844 %              | ±0.01%               |
|                                 | 40               | 13.56075                       | 0.00553097 %              | ±0.01%               |
|                                 | 50               | 13.56091                       | 0.00671091 %              | ±0.01%               |

Report No.: RSZ161123003-00D

| Temperature<br>(°C) | Power Supply (V <sub>DC</sub> ) | Measured<br>Frequency<br>(MHz) | Frequency<br>Error<br>(%) | Part 15.225<br>Limit |
|---------------------|---------------------------------|--------------------------------|---------------------------|----------------------|
| 20                  | 6.3                             | 13.56061                       | 0.00449853%               | ±0.01%               |
| 20                  | 8.5                             | 13.56037                       | 0.00272861%               | ±0.01%               |

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### FCC§15.215(c) - 20dB EMISSION BANDWIDTH

#### Requirement

Per 15.215 (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

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#### **Test Procedure**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- 3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

#### **Test Data**

#### **Environmental Conditions**

| Temperature:       | 23.6 ℃    |
|--------------------|-----------|
| Relative Humidity: | 49.5 %    |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Echo Wu on 2017-02-27.

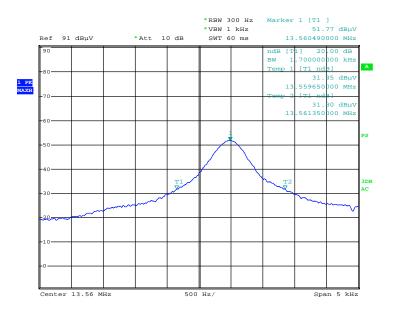
Test Mode: Transmitting

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Test Result: Pass

#### 20 dB Emission Bandwidth

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EUT

Date: 27.FEB.2017 23:00:16

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

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