

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test Report No. : W153R-D006
AGR No. : A152A-137
Applicant : BLUEBIRD INC.
Address : (Dogok-dong, SEI Tower 13,14) 39, Eonjuro30-gil, Gangnam-gu, Seoul, South Korea
Manufacturer : BLUEBIRD INC.
Address : (Dogok-dong, SEI Tower 13,14) 39, Eonjuro30-gil, Gangnam-gu, Seoul, South Korea
Type of Equipment : Premium Enterprise Tablet
FCC ID : SS4ET100
Model Name : ET100
Serial number : N/A
Total page of Report : 24 pages (including this page)
Date of Incoming : February 12, 2015
Date of Issuing : March 12, 2015

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART C, SECTION 15.225 and FCC Part 15 Subpart C Section 15.209 and 15.207.**

This test report contains only the result of a single test of the sample supplied for the examination.

It is not a general valid assessment of the features of the respective products of the mass-production.

Reviewed by: 

 Jae-Ho, Lee / Chief Engineer
 ONETECH Corp.

Approved by: 

 Sung-Ik, Han/ Managing Director
 ONETECH Corp.

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Revision History

| Issue Report No. | Issued Date | Revisions | Effect Section |
|------------------|----------------|-----------------|----------------|
| W153R-D006 | March 12, 2015 | Initial Release | All |
| | | | |
| | | | |

1. VERIFICATION OF COMPLIANCE

- APPLICANT : BLUEBIRD INC.
- ADDRESS : (Dogok-dong, SEI Tower 13,14) 39, Eonjuro30-gil, Gangnam-gu, Seoul, South Korea
- CONTACT PERSON : Jaeho, Lee / Research Engineer
- TELEPHONE NO : +82-70-7730-8210
- FCC ID : SS4ET100
- MODEL NO/NAME : ET100
- SERIAL NUMBER : N/A
- DATE : March 12, 2015

| | |
|--|---|
| DEVICE TYPE | DXX - Low Power Communication Device Transmitter |
| E.U.T. DESCRIPTION | Premium Enterprise Tablet |
| THIS REPORT CONCERNS | Original Grant |
| MEASUREMENT PROCEDURES | ANSI C63.10: 2009 |
| TYPE OF EQUIPMENT TESTED | Pre-Production |
| KIND OF EQUIPMENT AUTHORIZATION REQUESTED | Certification |
| EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S) | FCC PART 15 SUBPART C Section 15.225, 15.209 and 15.207 |
| MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE | None |
| FINAL TEST WAS CONDUCTED ON | 10 m Semi Anechoic Chamber |

- The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The BLUEBIRD INC., Model ET100 (referred to as the EUT in this report) is a Premium Enterprise Tablet, Product specification information described herein was obtained from product data sheet or user’s manual.

| | |
|---|--|
| DEVICE TYPE | Portable Device |
| MODULATION | ASK |
| TRANSMITTING FREQUENCY | 13.560 9 MHz |
| LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1 MHz) | 27.12 MHz, 26 M, 25 MHz , 12 MHz, 8 MHz |
| ANTENNA TYPE | WWAN, WLAN : PiFA BT : Chip antenna NFC : PCB antenna |
| USED AC/DC ADAPTER | Output: DC 12 V, 4.17 A Model No: KPL-050F Manufacturer: Ningbo ISO Electronic Co., Ltd. |
| EXTERNAL CONNECTOR | DC IN, Micro SD slot, USIM slot, USB port, AUX port |

2.2 Model Differences:

-. None

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in section 15.225, 15.209 and 15.207

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2009. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 301-14, Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-862 Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-4112/ C-4617/ G-666/ T-1842 IC (Industry Canada) – Registration No. Site# 3736-3

-. Site Accreditation:

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation No. 85

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

| DEVICE TYPE | MANUFACTURER | MODEL/PART NUMBER | FCC ID |
|--------------------|---|------------------------------|-----------|
| Mother board | N/A | PCB-BP80S-MAIN-REV.0.2 | N/A |
| LCD panel | Innolux Display | EJ1011A-01G | N/A |
| Card slot board | N/A | FPCB-BP80S-SD-SIMSAM-REV.0.1 | N/A |
| Flash LED board | N/A | PCB-BP80S-FLASH-LED-REV.0.1 | N/A |
| Battery | XIAMEN POWERLONG INDUSTRY JOINT-STOCK CO., LTD. | PL8046135/3.7V | N/A |
| Light sensor board | N/A | LIGHT-SENSOR-REV.0.1 | N/A |
| Camera module | N/A | HU106-B | N/A |
| SSD | N/A | MS-0460SSN | N/A |
| Touch sensor board | N/A | BP80_REV05 | N/A |
| GPS antenna | N/A | PE8G4006GB1_Rev1.0 | N/A |
| Value sub board | N/A | PCB-BP80S-VALUE-SUB-REV01 | N/A |
| Wireless module | CINTERION | PHS8-P | QIPPHS8-P |
| WLAN module | INTEL | 7265NGW | PD97265NG |
| WWAN antenna | DONGNAM | BP80S (MAIN) | N/A |
| WLAN antenna | DONGNAM | BP80S (WiFi) | N/A |
| NFC antenna | N/A | N/A | N/A |
| Adaptor | Ningbo Electronic Co., Ltd. | KPL-050F | N/A |

3.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

| Model | Manufacturer | Description | Connected to |
|----------|-----------------------------|---------------------------------|--------------|
| ET100 | Bluebird Inc. | Premium Enterprise Tablet (EUT) | - |
| KPL-050F | Ningbo Electronic Co., Ltd. | Adaptor | EUT |

3.3 Mode of operation during the test

The EUT was operated during the test as following operating mode.

- The EUT has 13.560 9 MHz RF boards for transmission signal and program was used for making continuous transmission mode during the test. (Portable mode / Charging mode)
- Portable mode: The EUT was operated with NFC signal continuous transmission state continuously during the test.
- Charging mode: The EUT was connected to the adaptor and then the EUT was operated with NFC signal continuous transmission state continuously during the test.

3.4 Equipment Modifications

- None

3.5 Configuration of Test System

Line Conducted Test : The EUT was connected to adaptor and the power of adaptor was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2009 to determine the worse operating conditions.

Radiated Emission Test : Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2009 to determine the worse operating conditions. The radiated emissions measurements were performed on the 10 m Semi Anechoic Chamber.
For frequencies from 150 kHz to 30 MHz measurements were made of the magnetic H field. The measuring antenna is an electrically screened loop antenna.
The frequency spectrum from 30 MHz to 1 000 MHz was scanned and maximum emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

3.6 Antenna Requirement

For intentional device, according to §15.203, 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.

Antenna Construction:

The transmitter antenna of the EUT is an INTENNA so there is no consideration of replacement by the user.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

| Operation Mode | The Worse operating condition (Please check one only) |
|--|---|
| Transmitting Mode(Portable mode / Charging mode) | X |

4.2 Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

| Operation Mode | The Worse operating condition (Please check one only) |
|--|---|
| Transmitting Mode(Portable mode / Charging mode) | X |

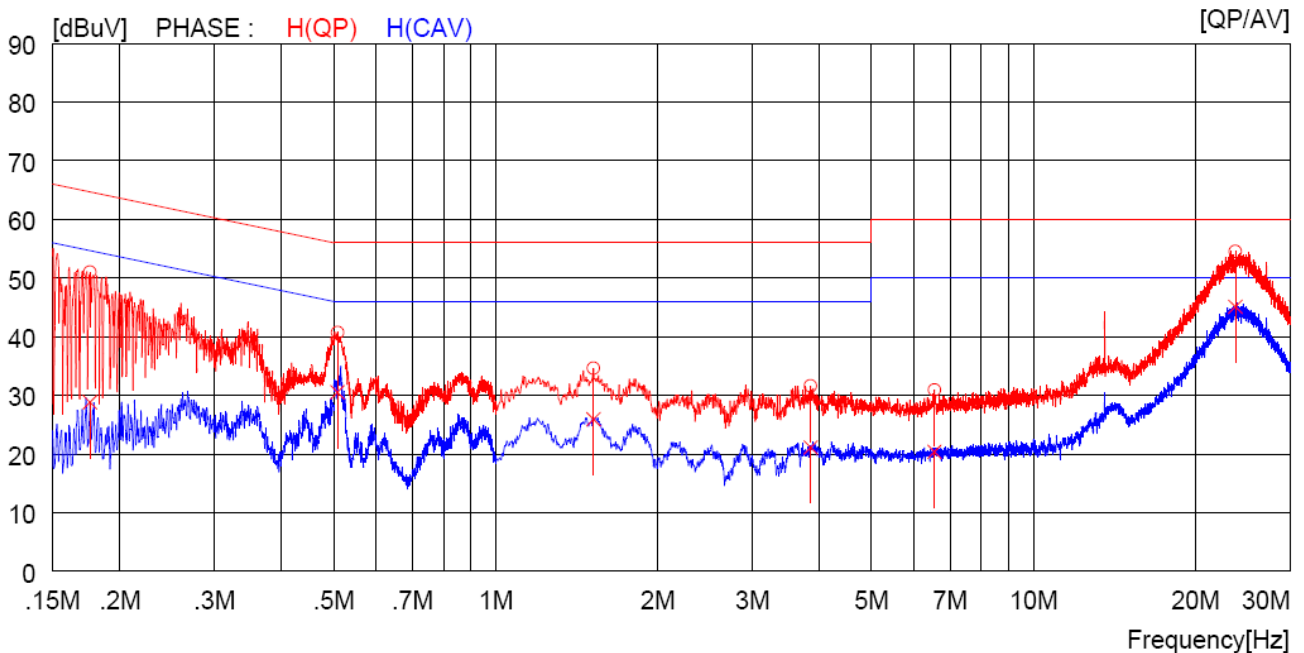
5. FINAL RESULT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level.

5.1 Conducted Emission Test

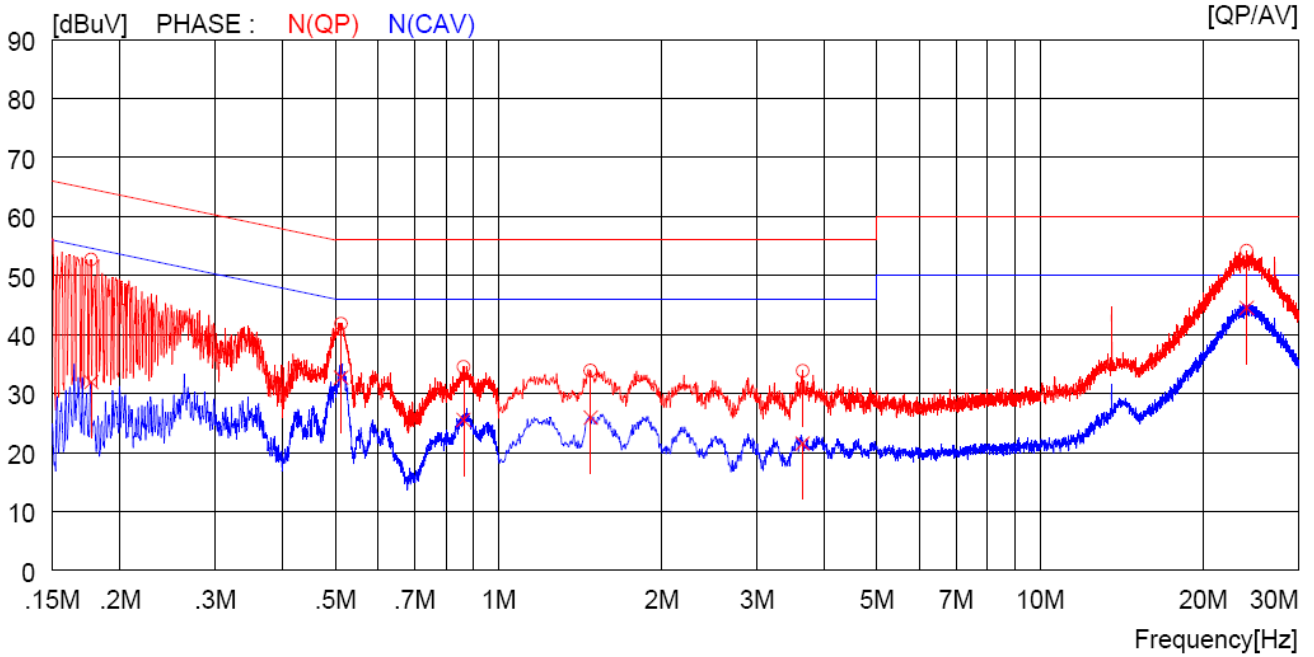
Humidity Level : (41 ~ 42) % R.H. Temperature: 22 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.207(a)
 Result : PASSED

EUT : Premium Enterprise Tablet Date: March 09, 2015
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)
 Tested Line : HOT LINE



| NO | FREQ [MHz] | READING | | C. FACTOR [dB] | RESULT | | LIMIT | | MARGIN | | PHASE |
|----|---------------|--------------|--------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
| | | QP [dBuV] | AV [dBuV] | | QP [dBuV] | AV [dBuV] | QP [dBuV] | AV [dBuV] | QP [dBuV] | AV [dBuV] | |
| 1 | 0.17600 | 41.0 | ---- | 10.0 | 51.0 | ---- | 64.7 | ---- | 13.7 | ---- | H(QP) |
| 2 | 0.50800 | 30.7 | ---- | 10.0 | 40.7 | ---- | 56.0 | ---- | 15.3 | ---- | H(QP) |
| 3 | 1.52000 | 24.6 | ---- | 10.0 | 34.6 | ---- | 56.0 | ---- | 21.4 | ---- | H(QP) |
| 4 | 3.85200 | 21.6 | ---- | 10.0 | 31.6 | ---- | 56.0 | ---- | 24.4 | ---- | H(QP) |
| 5 | 6.54500 | 20.8 | ---- | 10.1 | 30.9 | ---- | 60.0 | ---- | 29.1 | ---- | H(QP) |
| 6 | 23.73000 | 44.3 | ---- | 10.2 | 54.5 | ---- | 60.0 | ---- | 5.5 | ---- | H(QP) |
| 7 | 0.17600 | ---- | 18.8 | 10.0 | ---- | 28.8 | ---- | 54.7 | ---- | 25.9 | H(CAV) |
| 8 | 0.50800 | ---- | 20.5 | 10.0 | ---- | 30.5 | ---- | 46.0 | ---- | 15.5 | H(CAV) |
| 9 | 1.52000 | ---- | 15.9 | 10.0 | ---- | 25.9 | ---- | 46.0 | ---- | 20.1 | H(CAV) |
| 10 | 3.85200 | ---- | 11.1 | 10.0 | ---- | 21.1 | ---- | 46.0 | ---- | 24.9 | H(CAV) |
| 11 | 6.54500 | ---- | 10.3 | 10.1 | ---- | 20.4 | ---- | 50.0 | ---- | 29.6 | H(CAV) |
| 12 | 23.73000 | ---- | 34.9 | 10.2 | ---- | 45.1 | ---- | 50.0 | ---- | 4.9 | H(CAV) |

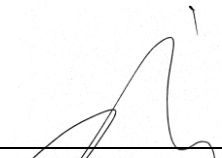
Tested Line : NEUTRAL LINE



| NO | FREQ [MHz] | READING | | C. FACTOR [dB] | RESULT | | LIMIT | | MARGIN | | PHASE |
|----|---------------|--------------|--------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
| | | QP [dBuV] | AV [dBuV] | | QP [dBuV] | AV [dBuV] | QP [dBuV] | AV [dBuV] | QP [dBuV] | AV [dBuV] | |
| 1 | 0.17700 | 42.7 | ---- | 10.0 | 52.7 | ---- | 64.6 | ---- | 11.9 | ---- | N(QP) |
| 2 | 0.51200 | 31.8 | ---- | 10.0 | 41.8 | ---- | 56.0 | ---- | 14.2 | ---- | N(QP) |
| 3 | 0.86200 | 24.5 | ---- | 10.0 | 34.5 | ---- | 56.0 | ---- | 21.5 | ---- | N(QP) |
| 4 | 1.48000 | 23.9 | ---- | 10.0 | 33.9 | ---- | 56.0 | ---- | 22.1 | ---- | N(QP) |
| 5 | 3.64400 | 23.8 | ---- | 10.0 | 33.8 | ---- | 56.0 | ---- | 22.2 | ---- | N(QP) |
| 6 | 24.08000 | 44.0 | ---- | 10.2 | 54.2 | ---- | 60.0 | ---- | 5.8 | ---- | N(QP) |
| 7 | 0.17700 | ---- | 21.9 | 10.0 | ---- | 31.9 | ---- | 54.6 | ---- | 22.7 | N(CAV) |
| 8 | 0.51200 | ---- | 22.7 | 10.0 | ---- | 32.7 | ---- | 46.0 | ---- | 13.3 | N(CAV) |
| 9 | 0.86200 | ---- | 15.5 | 10.0 | ---- | 25.5 | ---- | 46.0 | ---- | 20.5 | N(CAV) |
| 10 | 1.48000 | ---- | 15.9 | 10.0 | ---- | 25.9 | ---- | 46.0 | ---- | 20.1 | N(CAV) |
| 11 | 3.64400 | ---- | 11.5 | 10.0 | ---- | 21.5 | ---- | 46.0 | ---- | 24.5 | N(CAV) |
| 12 | 24.08000 | ---- | 34.3 | 10.2 | ---- | 44.5 | ---- | 50.0 | ---- | 5.5 | N(CAV) |

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.


Tested by: Jun-Hui, Lee / Senior Engineer

5.2 Radiated Emission Test

5.2.1 Operation frequency band: (13.553 ~ 13.567) MHz

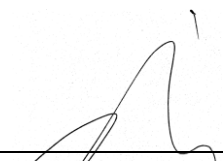
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 40.3 % R.H. Temperature: 21 °C
 Limits apply to : PART 15, SUBPART C, SECTION 15.225(a)
 Type of Test : Low Power Communication Device Transmitter
 Result : PASSED

EUT : Premium Enterprise Tablet Date: March 10, 2015
 Operating Condition : Transmitting Mode
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)
 Distance : 3 m

| Radiated Emission | | Ant | Correction Factors | | Total | FCC | |
|-------------------|------------------|------|--------------------|------------|--------------------|----------------|-------------|
| Freq. (MHz) | Amplitude (dBµV) | Pol. | Antenna (dB/m) | Cable (dB) | Amplitude (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
| 13.560 9 | 42.28 | H | 18.4 | 0.3 | 61.98 | 124 | 62.02 |
| 13.560 9 | 42.26 | V | 18.4 | 0.3 | 61.96 | 124 | 62.04 |

Remark. The EUT was tested at 3 m, so conversation factor was included at above limit.



Tested by: Jun-Hui, Lee / Senior Engineer

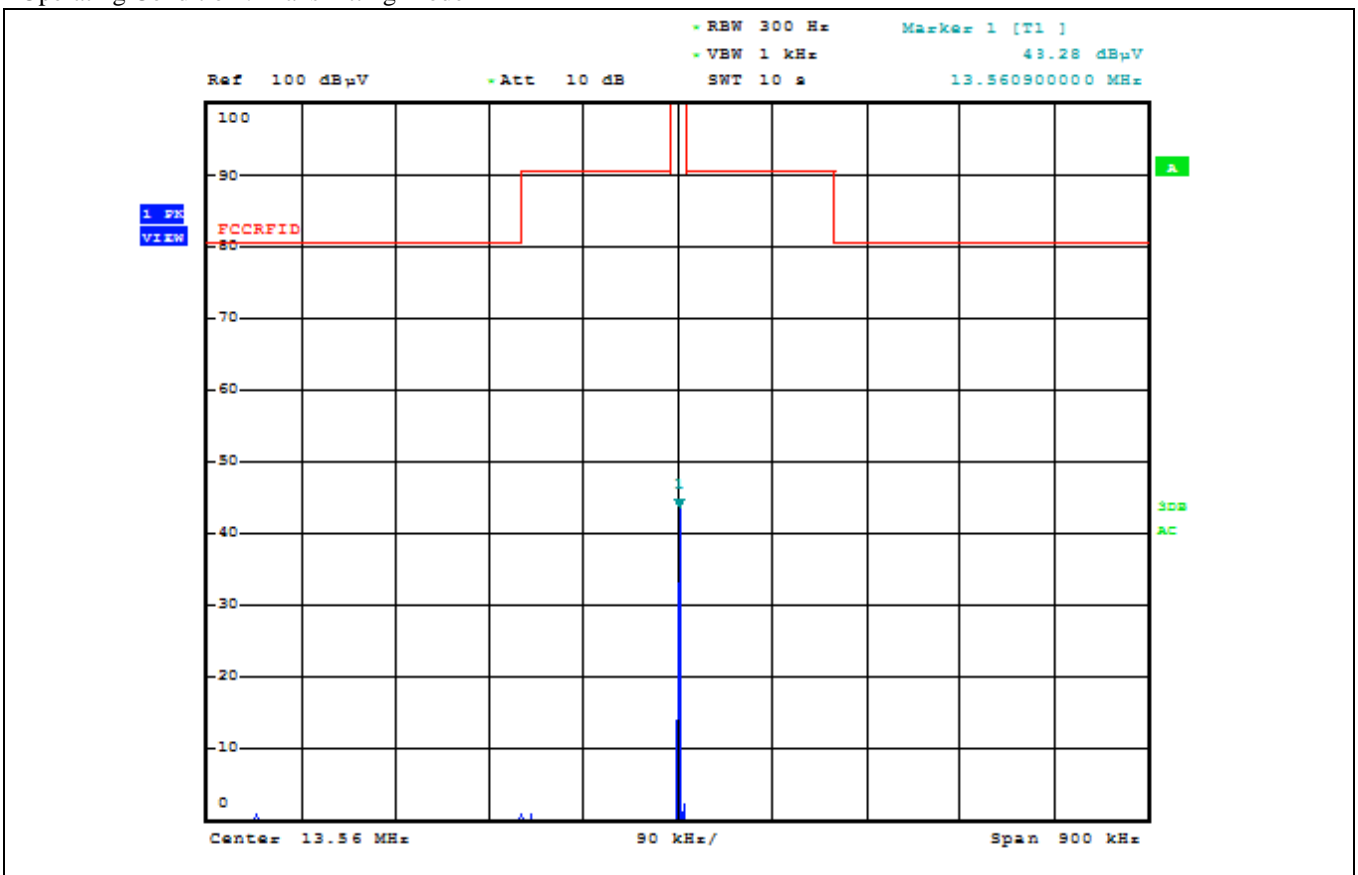
5.2.2 Operation frequency band: Below 13.553 MHz and above 13.567 MHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 40.3 % R.H. Temperature: 21 °C
 Limits apply to : PART 15, SUBPART C, SECTION 15.225(b) and (c)
 Type of Test : Low Power Communication Device Transmitter
 Result : PASSED

EUT : Premium Enterprise Tablet Date: March 10, 2015

Operating Condition : Transmitting Mode



cc. to above test data, the field strength level of 13.558 7 MHz is 56.98 dBuV/m and the worst limit subject to 15.225 (b) and (c) is 80.5 dBuV/m, so the EUT meets the requirement.

(Signature)
Tested by: Jun-Hui, Lee / Senior Engineer

5.3 Spurious Emission Test

5.3.1 Test data for Adapter

5.3.1.1 Spurious Radiated Emission Below 30 MHz

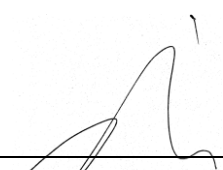
Humidity Level : (41 ~ 42) % R.H. Temperature: (22 ~ 23) °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.225(d)
 Type of Test : Low Power Communication Device Transmitter
 Frequency Range : 9 kHz ~ 30 MHz
 Result : PASSED

EUT : Premium Enterprise Tablet Date: March 10, 2015

Operating Condition : Transmitting Mode

Distance : 3 m

| Frequency (MHz) | Reading (dB μ V) | Ant. Pol. (H/V) | Ant. Height (m) | Angle (°) | Ant. Factor (dB/m) | Cable Loss | Emission Level(dB μ V/m) | Limits (dB μ V/m) | Margin (dB) |
|---|----------------------|-----------------|-----------------|-----------|--------------------|------------|------------------------------|-----------------------|-------------|
| It was not observed any emissions from the EUT. | | | | | | | | | |



Tested by: Jun-Hui, Lee / Senior Engineer

5.3.1.2 Spurious Radiated Emission below 1 GHz

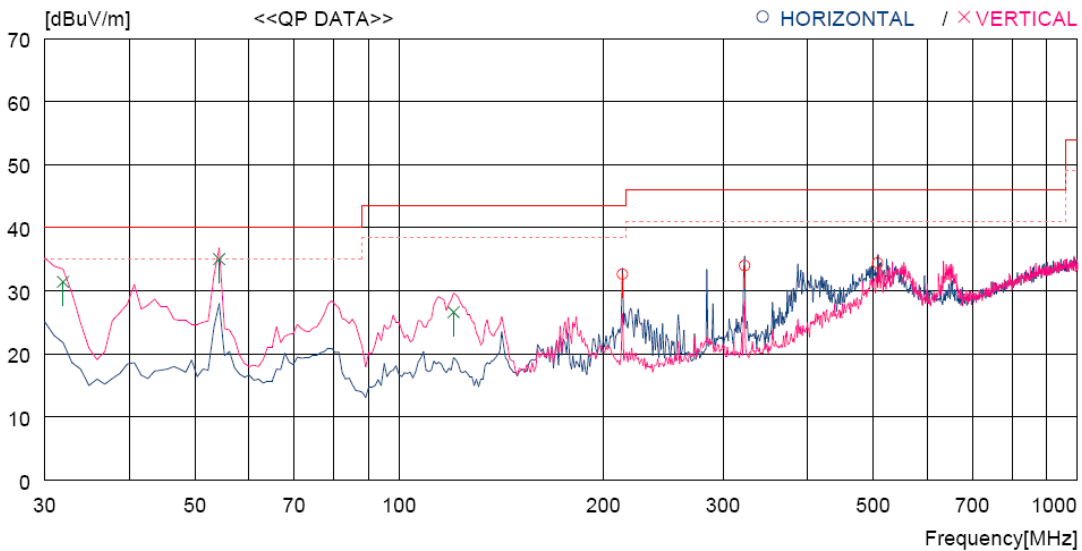
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : (41 ~ 42) % R.H. Temperature: (22 ~ 23) °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.225(d)
 Type of Test : Low Power Communication Device Transmitter
 Frequency range : 30 MHz ~ 1 000 MHz
 Result : PASSED

EUT : Premium Enterprise Tablet Date: March 10, 2015

Operating Condition : Transmitting Mode

Distance : 3 m



| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA TABLE [cm] | TABLE [DEG] |
|------------------------|---------------|-------------------------|-----------------------|--------------|--------------|--------------------|-------------------|----------------|--------------------------|----------------|
| ----- Horizontal ----- | | | | | | | | | | |
| 1 | 213.330 | 44.1 | 12.6 | 8.9 | 33.0 | 32.6 | 43.5 | 10.9 | 200 | 153 |
| 2 | 322.940 | 42.1 | 15.3 | 9.6 | 33.0 | 34.0 | 46.0 | 12.0 | 100 | 0 |
| 3 | 507.241 | 38.3 | 18.6 | 10.6 | 33.1 | 34.4 | 46.0 | 11.6 | 200 | 359 |
| ----- Vertical ----- | | | | | | | | | | |
| 4 | 31.940 | 44.5 | 13.1 | 7.0 | 33.2 | 31.4 | 40.0 | 8.6 | 100 | 359 |
| 5 | 54.250 | 46.1 | 14.7 | 7.4 | 33.2 | 35.0 | 40.0 | 5.0 | 100 | 202 |
| 6 | 120.210 | 40.2 | 11.4 | 8.1 | 33.1 | 26.6 | 43.5 | 16.9 | 100 | 173 |

(Signature)
Tested by: Jun-Hui, Lee / Senior Engineer

5.3.2 Test data for Portable

5.3.2.1 Spurious Radiated Emission Below 30 MHz

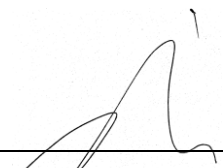
Humidity Level : (41 ~ 42) % R.H. Temperature: (22 ~ 23) °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.225(d)
 Type of Test : Low Power Communication Device Transmitter
 Frequency Range : 9 kHz ~ 30 MHz
 Result : PASSED

EUT : Premium Enterprise Tablet Date: March 10, 2015

Operating Condition : Transmitting Mode

Distance : 3 m

| Frequency (MHz) | Reading (dBµV) | Ant. Pol. (H/V) | Ant. Height (m) | Angle (°) | Ant. Factor (dB/m) | Cable Loss | Emission Level(dBµV/m) | Limits (dBµV/m) | Margin (dB) |
|---|----------------|-----------------|-----------------|-----------|--------------------|------------|------------------------|-----------------|-------------|
| It was not observed any emissions from the EUT. | | | | | | | | | |



Tested by: Jun-Hui, Lee / Senior Engineer

5.3.2.2 Spurious Radiated Emission below 1 GHz

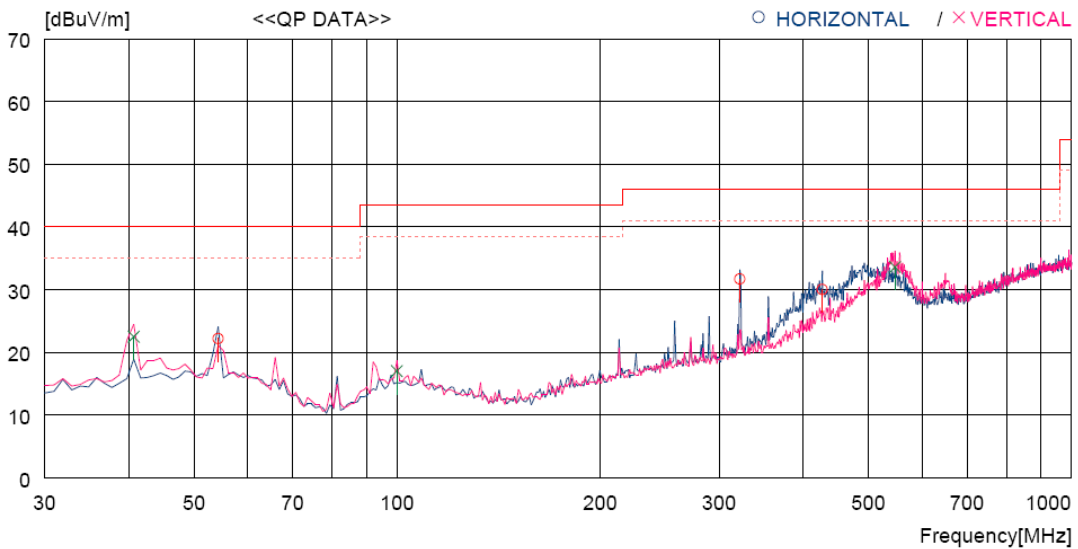
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : (41 ~ 42) % R.H. Temperature: (22 ~ 23) °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.225(d)
 Type of Test : Low Power Communication Device Transmitter
 Frequency range : 30 MHz ~ 1 000 MHz
 Result : PASSED

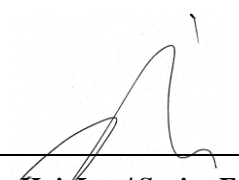
EUT : Premium Enterprise Tablet Date: March 10, 2015

Operating Condition : Transmitting Mode

Distance : 3 m



| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA [cm] | TABLE [DEG] |
|------------------------|---------------|-------------------------|-----------------------|--------------|--------------|--------------------|-------------------|----------------|-----------------|----------------|
| ----- Horizontal ----- | | | | | | | | | | |
| 1 | 54.250 | 33.3 | 14.7 | 7.4 | 33.2 | 22.2 | 40.0 | 17.8 | 400 | 359 |
| 2 | 321.970 | 39.9 | 15.2 | 9.6 | 33.0 | 31.7 | 46.0 | 14.3 | 100 | 123 |
| 3 | 426.731 | 35.5 | 17.3 | 10.2 | 33.0 | 30.0 | 46.0 | 16.0 | 200 | 359 |
| ----- Vertical ----- | | | | | | | | | | |
| 4 | 40.670 | 33.6 | 14.9 | 7.2 | 33.2 | 22.5 | 40.0 | 17.5 | 100 | 359 |
| 5 | 99.840 | 28.5 | 13.6 | 8.0 | 33.1 | 17.0 | 43.5 | 26.5 | 100 | 359 |
| 6 | 547.010 | 36.7 | 19.3 | 10.8 | 33.2 | 33.6 | 46.0 | 12.4 | 100 | 359 |


Tested by: Jun-Hui, Lee / Senior Engineer

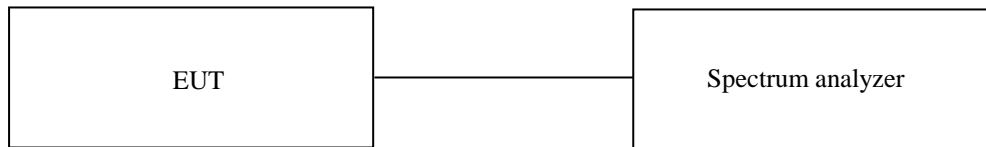
5.4 20 dB BANDWIDTH

5.4.1 Operating environment

Temperature : 22 °C
 Relative humidity : 42 % R.H.

5.4.2 Test set-up

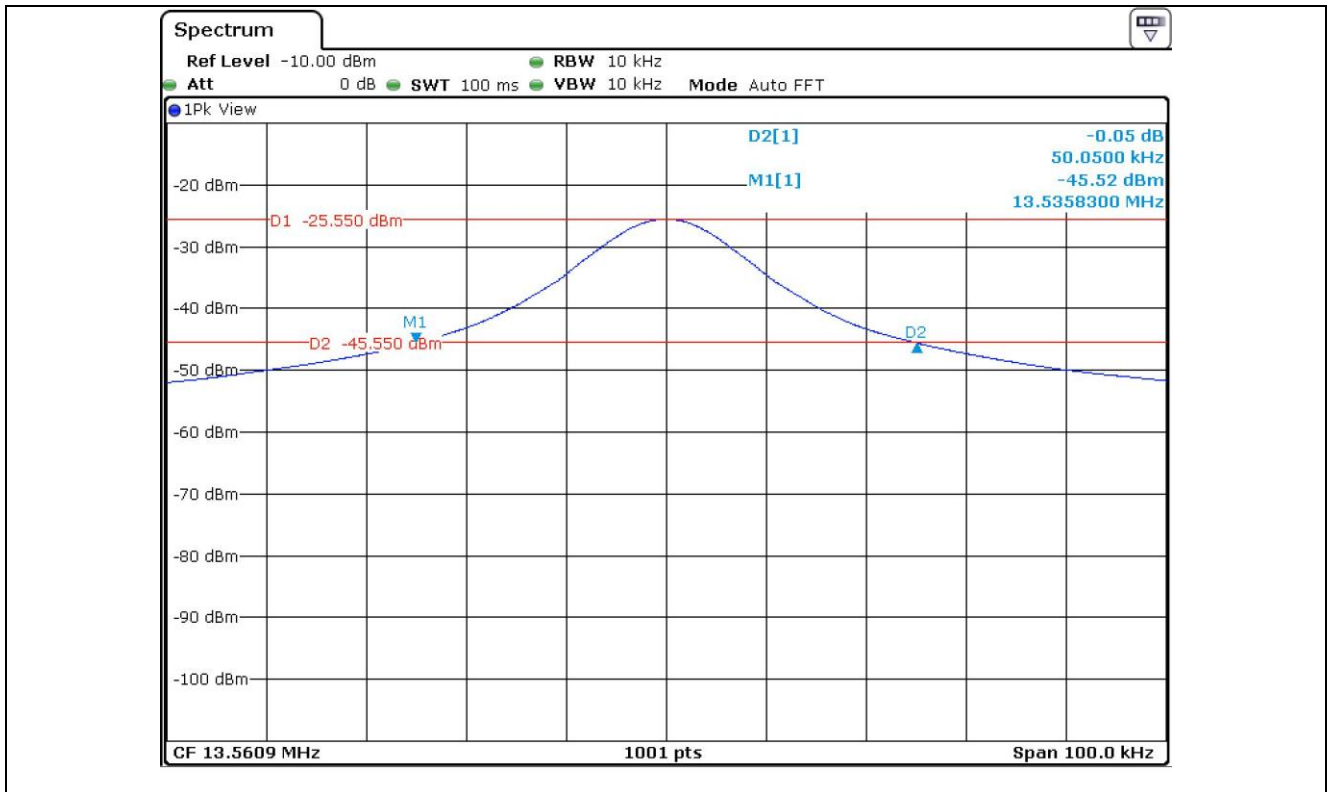
The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 10 kHz, and peak detection was used. The 20 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 20 dB.

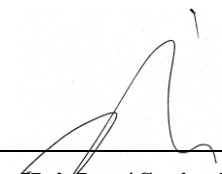


5.4.3 Test data

- Test Date : March 03, 2015
- Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.215(c)

| Operating Freq. (MHz) | Measured Value (kHz) | Assigned Operating Frequency Band (kHz) | Result |
|--------------------------|----------------------|--|-------------|
| 13.560 9 | 50.05 | 900 | PASS |




Tested by: Jun-Hui, Lee / Senior Engineer

5.5 FREQUENCY STABILITY WITH TEMPERATURE VARIATION

5.5.1 Operating environment

Temperature : 22 °C
 Relative humidity : 42 % R.H.


5.5.2 Test set-up

Turn EUT off and set chamber temperature to -20 °C and then allow sufficient time (approximately 20 to 30 minutes after chamber reach the assigned temperature) for EUT to stabilize. Turn ON EUT and measure the EUT operating frequency and then turn off the EUT after the measurement. The temperature in the chamber was raised 10 °C step from -20 °C to +50°C. Repeat above method for frequency measurements every 10 °C step and then record all measured frequencies on each temperature step.

5.5.3 Test data

-. Test Date : March 03, 2015
 -. Result : PASSED

| Temperature (°C) | Carrier Freq. (Hz) | Measured Freq. (Hz) | Margin (Hz) | Limit (Hz) |
|------------------|--------------------|---------------------|-------------|------------|
| -20 | 13.560 9 | 13 560 998 | 1 258.09 | ± 1 356.09 |
| -10 | | 13 560 982 | 1 274.09 | |
| 0 | | 13 560 976 | 1 280.09 | |
| 10 | | 13 560 957 | 1 299.09 | |
| 20 | | 13 560 948 | 1 308.09 | |
| 30 | | 13 560 938 | 1 318.09 | |
| 40 | | 13 560 932 | 1 324.09 | |
| 50 | | 13 560 921 | 1 335.09 | |



Tested by: Jun-Hui, Lee / Senior Engineer

5.6 FREQUENCY STABILITY WITH VOLTAGE VARIATION

5.6.1 Operating environment

Temperature : 22 °C
 Relative humidity : 42 % R.H.

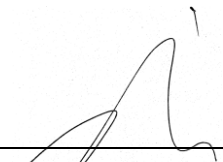
5.6.2 Test set-up

An external DC power supply was connected to the input of the EUT. The voltage of EUT set to 115 % of the nominal value and then was reduced to 85 % of nominal voltage. The output frequency was recorded at each step.

5.6.3 Test data

-. Test Date : March 03, 2015
 -. Result : PASSED

| Voltage (Vdc) | Carrier Freq. (Hz) | Measured Freq. (Hz) | Margin (Hz) | Limit (Hz) |
|---------------|--------------------|---------------------|-------------|------------|
| 6.29(85 %) | 13 560 900 | 13 560 962 | 1 294.09 | ± 1 355.87 |
| 7.40(100 %) | | 13 560 948 | 1 308.09 | |
| 8.51(115%) | | 13 560 931 | 1 325.09 | |



Tested by: Jun-Hui, Lee / Senior Engineer

6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses.

| | |
|--------------------|----------------|
| + Meter reading | (dB μ V) |
| - Amplifier Gain | (dB) |
| + Cable Loss | (dB) |
| - Antenna Factor | (dB/m) |
| <hr/> | |
| = Corrected Result | (dB μ V/m) |

Margin (dB)

| | |
|-----------------------|----------------|
| Specification Limit | (dB μ V/m) |
| - Corrected Result | (dB μ V/m) |
| <hr/> | |
| = dB Relative to Spec | (\pm dB) |

7. LIST OF TEST EQUIPMENT

| No. | EQUIPMENTS | MFR. | MODEL | SER. NO. | LAST CAL | DUE CAL | USE |
|-----|--------------------------|---------------------|------------|----------------|----------------|----------|-----|
| 1. | Test receiver | R/S | ESCI | 101012 | Nov. 03, 2014 | One Year | ■ |
| 2. | | R/S | ESU | 100261 | Apr. 29, 2014 | One Year | ■ |
| 3. | | R/S | ESPI | 101278 | Nov. 16, 2014 | One Year | ■ |
| 4. | Spectrum analyzer | R/S | FSV30 | 101372 | April 28, 2014 | One Year | ■ |
| 5. | Amplifier | Sonoma Instrument | 310N | 312544 | Apr. 28, 2014 | One Year | ■ |
| 6. | Amplifier | Sonoma Instrument | 310N | 312545 | Apr. 28, 2014 | One Year | ■ |
| 7. | TRILOG Broadband Antenna | Schwarzbeck | VULB9163 | 9163-255 | May 02, 2014 | Two Year | ■ |
| 8. | TRILOG Broadband Antenna | Schwarzbeck | VULB9163 | 9163-421 | Jul. 10, 2014 | Two Year | ■ |
| 9. | Controller | Innco System | CO2000 | 619/27030611/L | N/A | N/A | ■ |
| 10. | LISN | EMCO | 3825/2 | 9109-1867 | Apr. 29, 2014 | One Year | ■ |
| | | | | 9109-1869 | Apr. 29, 2014 | One Year | - |
| | | Schwarzbeck | NSLK8126 | 8126-404 | Jul. 11, 2014 | One Year | - |
| | | Schwarzbeck | NSLK8128 | 8128-216 | Apr. 11, 2014 | One Year | ■ |
| 11. | Turn Table | Innco System | DT3000 | 930611 | N/A | N/A | ■ |
| 12. | Antenna Master | Innco System | MA4000-EP | MA4000/332 | N/A | N/A | ■ |
| 13. | Antenna Master | Innco System | MA4000-EP | MA4000/335 | N/A | N/A | ■ |
| 14. | Loop Antenna | R/S | HFH2-Z2 | 879285/26 | Dec. 09, 2014 | Two Year | ■ |
| 15. | Frequency Counter | HP | 53152A | US39270295 | Oct. 08, 2014 | One Year | ■ |
| 16. | Chamber | Sam Kun | SSE-43CI-A | 060712 | May 15, 2014 | One Year | ■ |
| 17. | DC Power Supply | Digital Electronics | DRP-305DN | 4030195 | Sep. 03, 2014 | One Year | ■ |