



FCC RADIO TEST REPORT

FCC ID : 2AP6E-PROXYPRO-01
Equipment : Proxy Reader Pro
Brand Name : Proxy
Model Name : Proxy Reader Pro
Applicant : Proxy Technologies, Inc.
500 3rd St, San Francisco, CA 94107
Manufacturer : Wistron NeWeb Corp.
20 Park Avenue II, Hsinchu Science Park,
Hsinchu 308, Taiwan, R.O.C
Standard : FCC Part 15 Subpart C §15.209

The product was received on Apr. 19, 2018 and testing was started from May 08, 2018 and completed on May 18, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Jones Tsai

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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History of this test report



Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---------------|-----------------|-----------------------------|--------------------|--|
| 3.1 | 2.1049 | 20dB Spectrum Bandwidth | Reporting Only | - |
| | 2.1049 | 99% OBW Spectrum Bandwidth | Reporting Only | - |
| 3.2 | 15.209 | Radiated Spurious Emissions | Pass | Under limit 4.32 dB at 65.100MHz |
| - | 15.207 | AC Conducted Emission | Not Required | - |
| 3.3 | 15.203 | Antenna Requirements | Pass | - |

Remark: Not required means after assessing, test items are not necessary to carry out.

Reviewed by: Louis Wu

Report Producer: Natasha Hsieh



1. General Description

1.1 Feature of Equipment Under Test

RFID.

| Product Specification subjective to this standard | |
|---|--------------------|
| Antenna Type | RFID: Loop Antenna |

1.2 Modification of EUT

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



1.3 Testing Location

Sportun Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

| | | |
|---|---|-----------|
| Test Site | SPORTON INTERNATIONAL INC. | |
| Test Site Location | No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978 | |
| Test Site No. | Sportun Site No. | |
| | TH03-HY | 03CH07-HY |
| Test Engineer | Louis Chung | |
| Temperature | 22~24°C | |
| Relative Humidity | 53~55% | |
| Note: The test site complies with ANSI C63.4 2014 requirement. | | |

1.4 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.209
- ♦ ANSI C63.10-2013



2. Test Configuration of Equipment Under Test

2.1 Test Mode

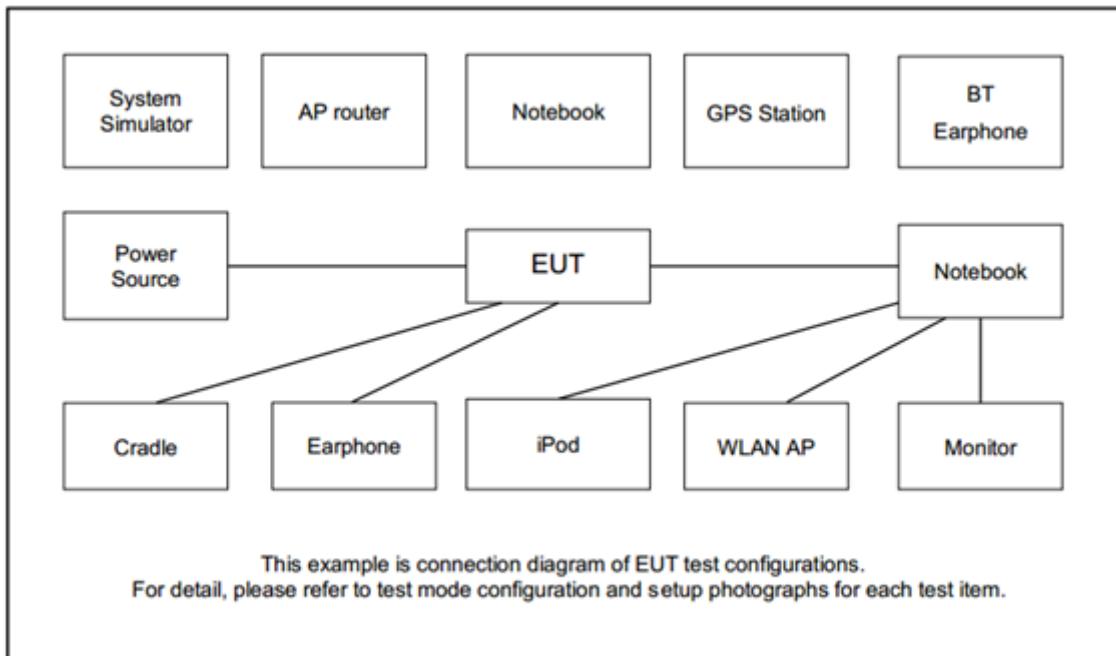
The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: radiation (9 kHz to the 1000 MHz).

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

| Test Items | Function Type |
|-------------------|---------------------------|
| Radiated Emission | Mode 1: RFID Tx (125 kHz) |

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

| Equipment | Trade Name | Model Name | FCC ID | Data Cable | Power Cord |
|-----------|------------|------------|--------|------------|------------|
| NFC Card | Winso | Type A | N/A | N/A | N/A |

3. Test Results

3.1 20dB and 99% OBW Spectrum Bandwidth Measurement

3.1.1 Limit of 20dB and 99% Occupied Bandwidth

Reporting only

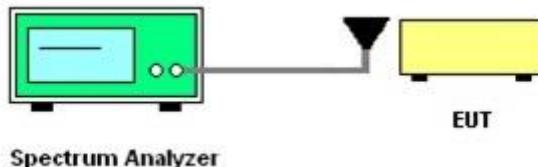
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT in peak Max hold mode.
2. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
3. For Bandwidth measurement, the RBW= 10kHz, and VBW = 30kHz. Sweep = 20ms;
4. Measure and record the results in the test report.

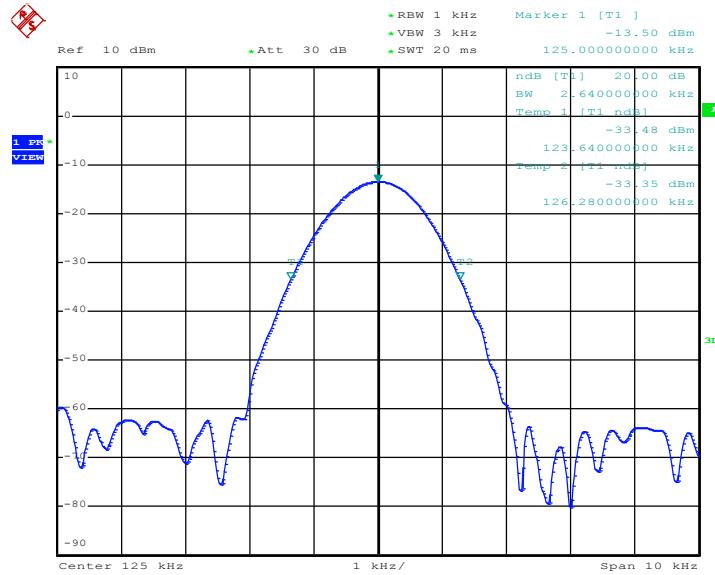
3.1.4 Test Setup



3.1.5 Test Result of 20dB and 99% Bandwidth

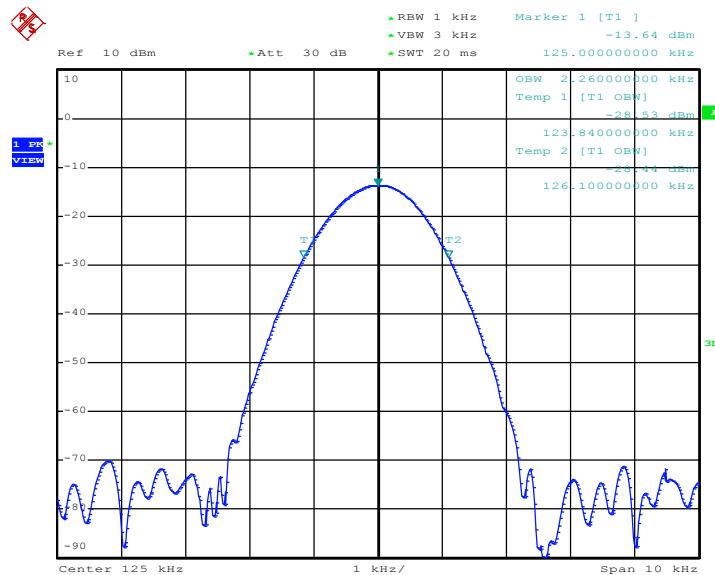
| | | | |
|------------------------|-------------|----------------------------|---------|
| Test Engineer : | Louis Chuug | Temperature : | 22~24°C |
| | | Relative Humidity : | 53~55% |

20 dB Bandwidth Plot



Date: 18.MAY.2018 15:50:03

99% Occupied Bandwidth Plot



Date: 18.MAY.2018 14:35:30



3.2 Radiated Emissions Measurement

3.2.1 Limit of Radiated Emission

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

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009 – 0.490 | 2400/F(kHz) | 300 |
| 0.490 – 1.705 | 24000/F(kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Measuring Instrument Setting

The following table is the setting of receiver:

| Receiver Parameter | Setting |
|--------------------------------|---------------------|
| Attenuation | Auto |
| Frequency Range: 9kHz~150kHz | RBW 200Hz for QP |
| Frequency Range: 150kHz~30MHz | RBW 9kHz for QP |
| Frequency Range: 30MHz~1000MHz | RBW 120kHz for Peak |

Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz and 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.



3.2.4 Test Procedures

<9kHz-30MHz>

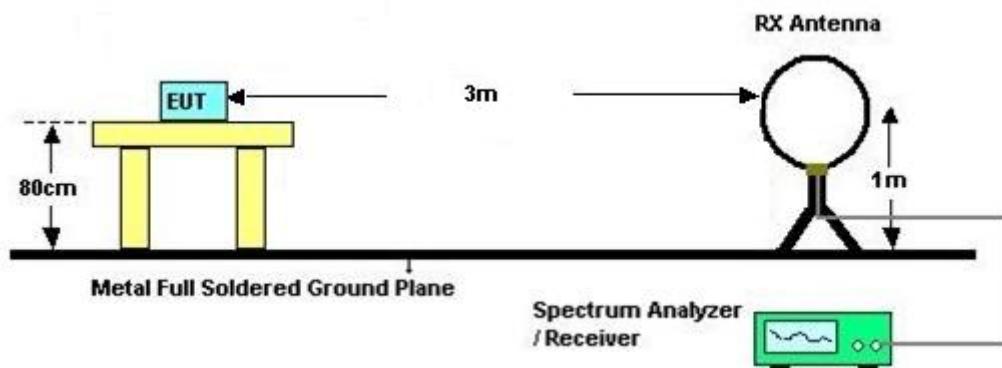
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 1 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the receiving antenna was fixed at one meter above ground to find the maximum emissions field strength.
4. For emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver.
5. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

**<30MHz-1GHz>**

1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

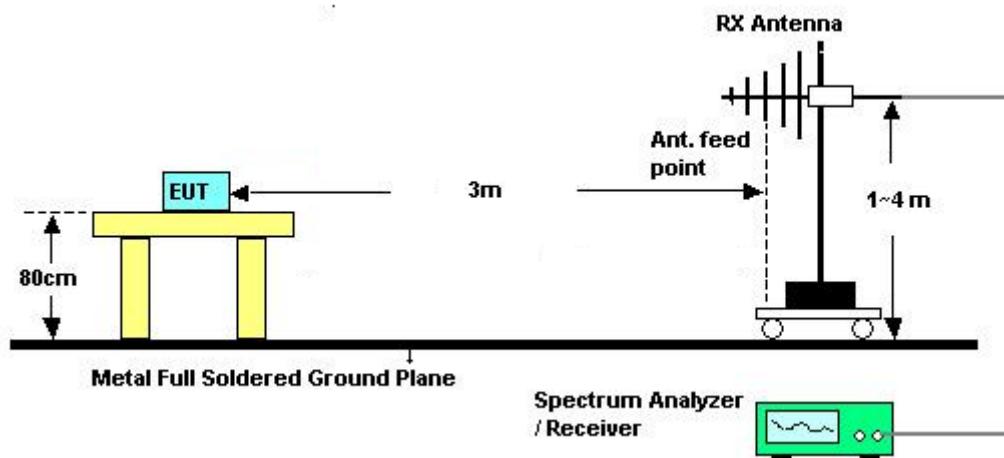
3.2.5 Test Setup

For radiated emissions below 30MHz



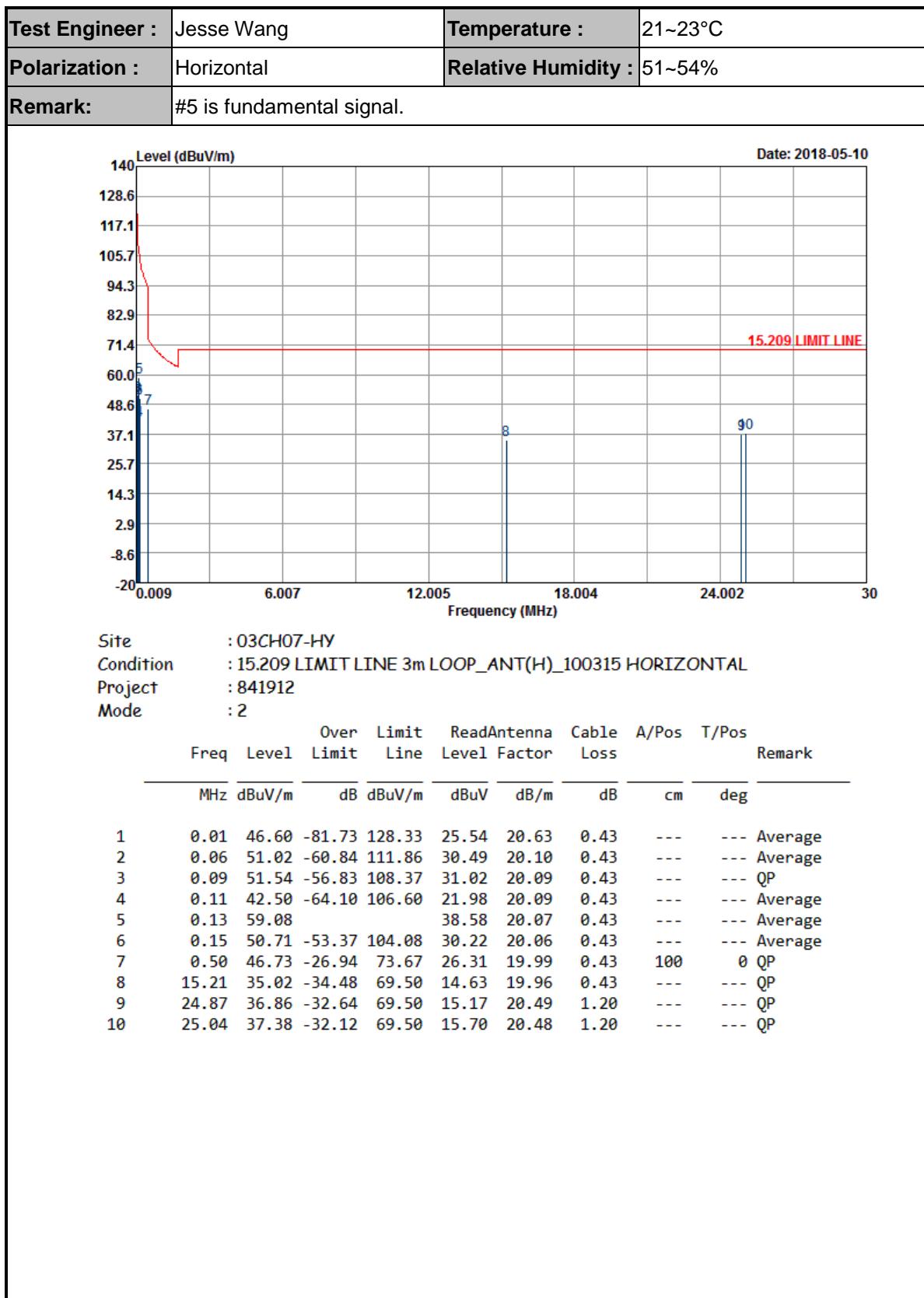
Note: There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

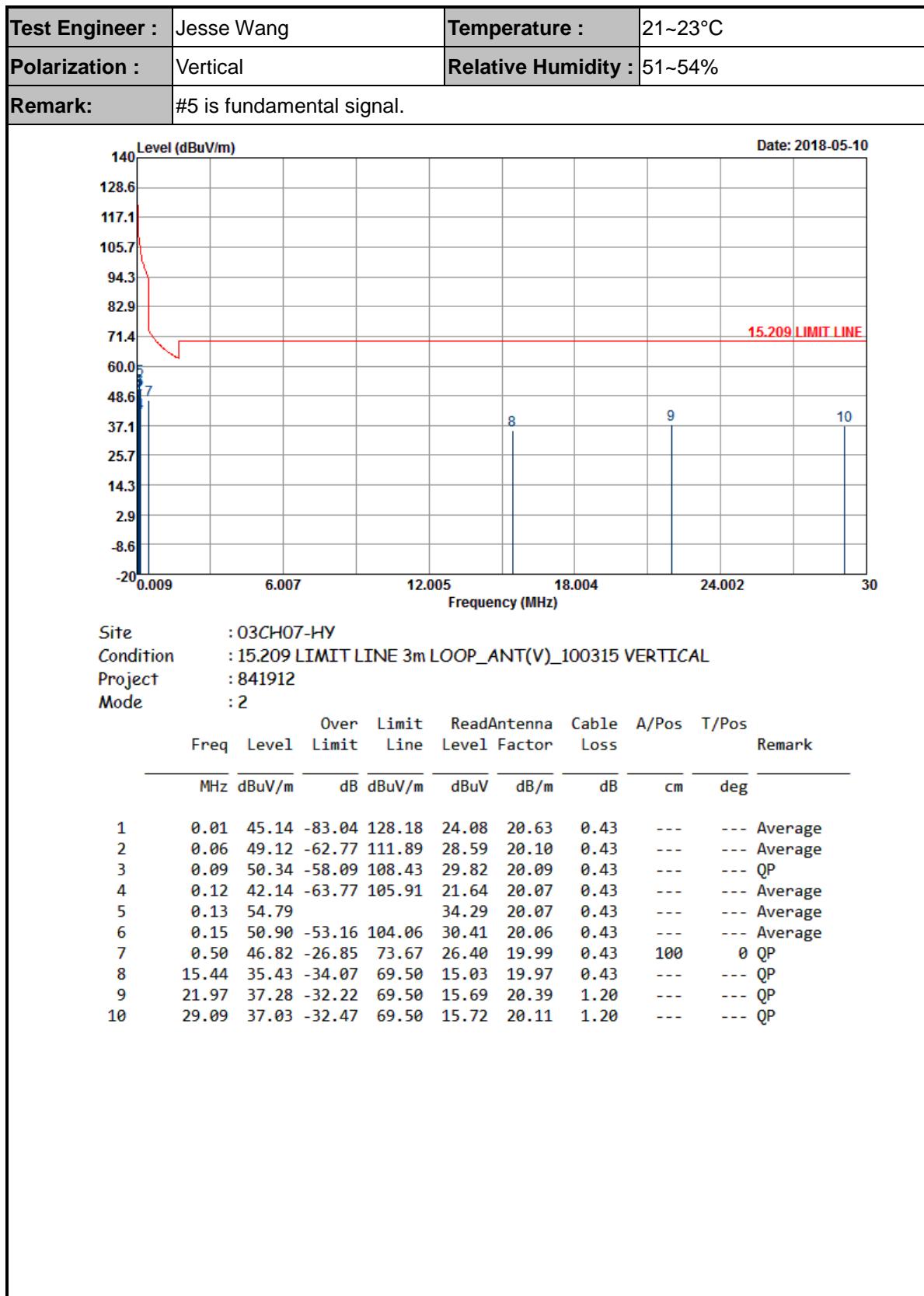
For radiated emissions above 30MHz





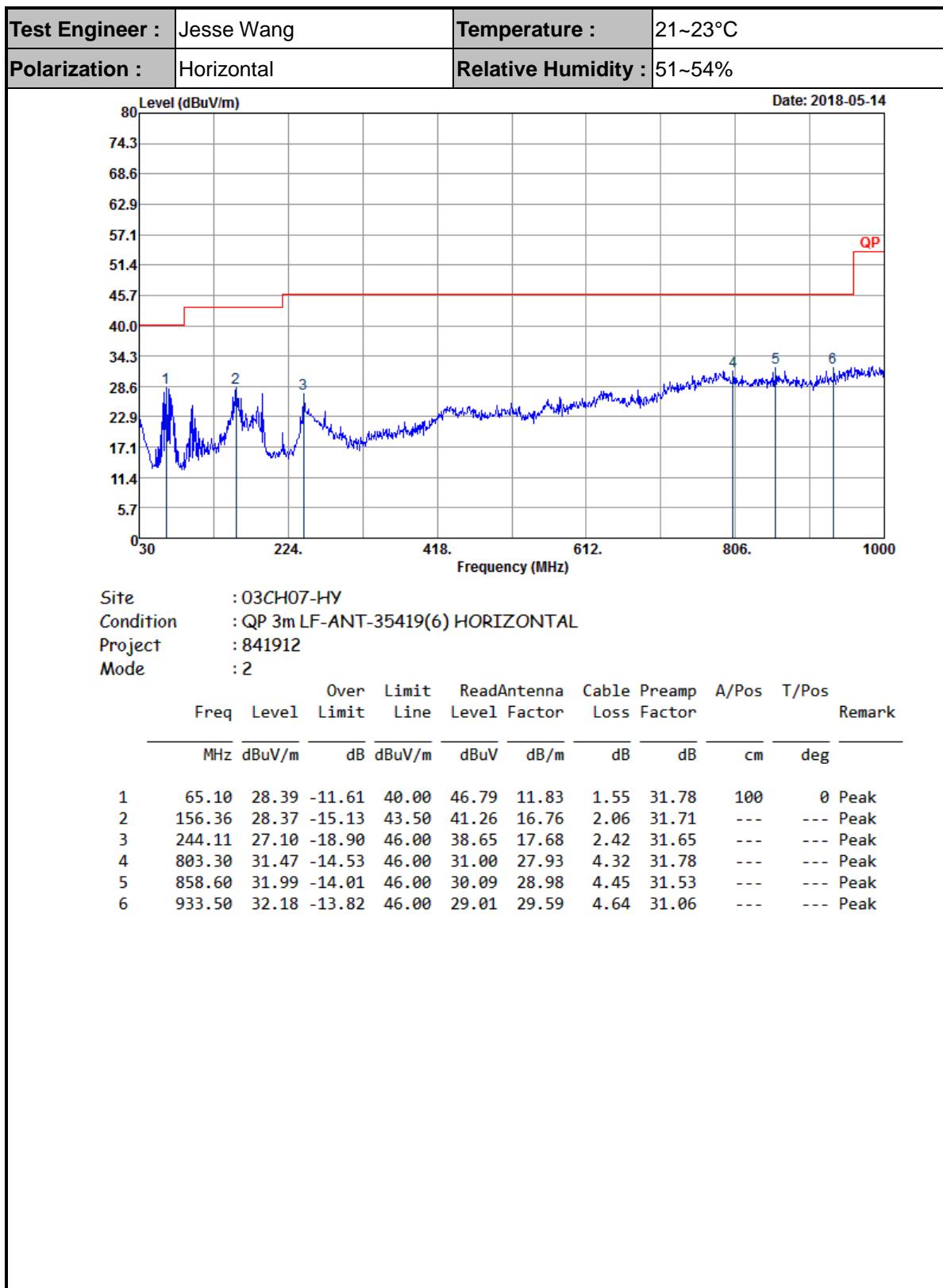
3.2.6 Test Result of Radiated Emission (9kHz ~ 30MHz)

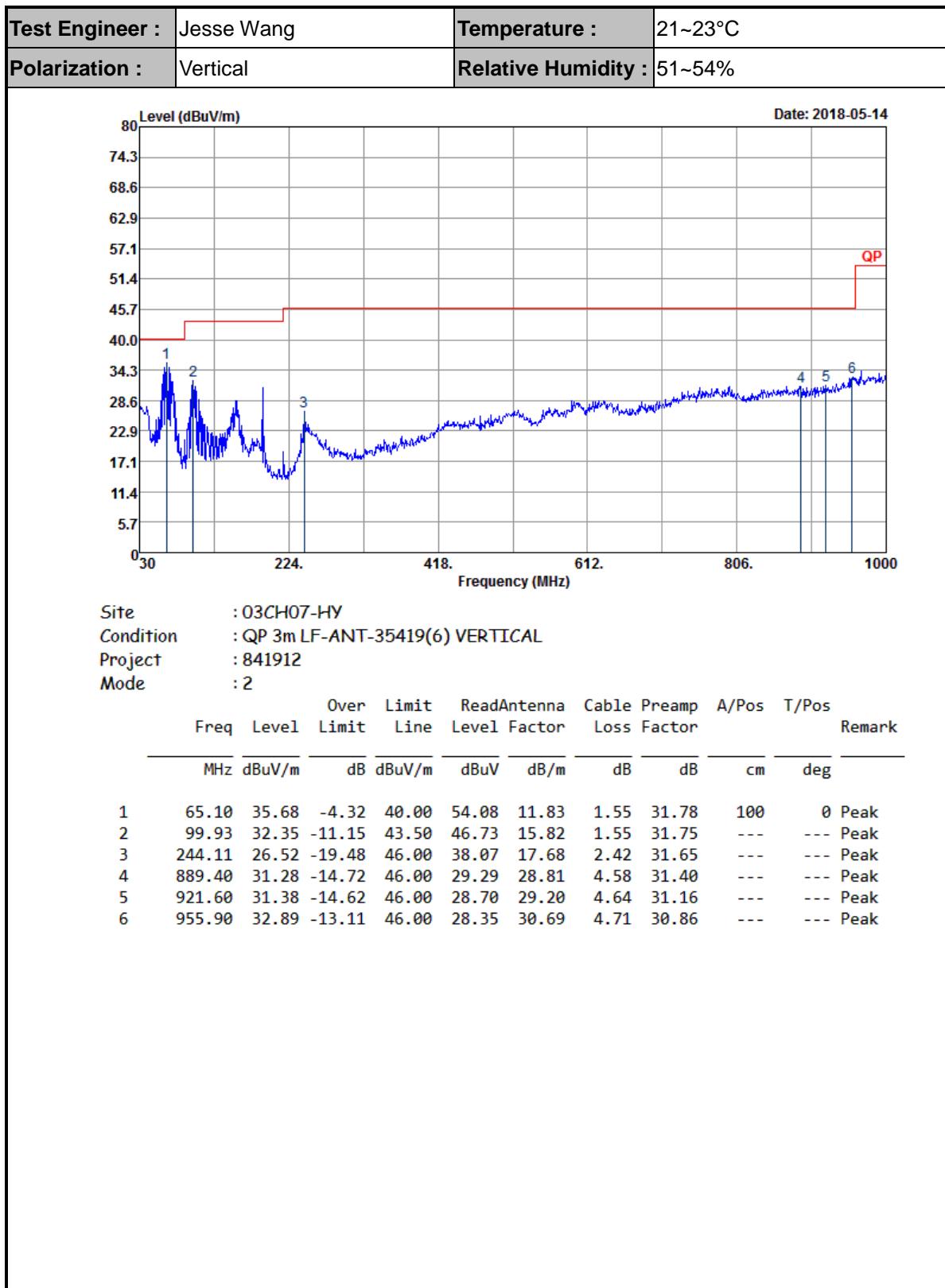






3.2.7 Test Result of Radiated Emission (30MHz ~ 1000MHz)







3.3 Antenna Requirements

3.3.1 Standard Applicable

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

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 rule.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4. List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---------------------------|-----------------|---------------------------------|---|--------------------|------------------|-------------------------------|---------------|--------------------------|
| AC Power Source | AC POWER | AFC-500W | F10407001 1 | 50Hz~60Hz | Mar. 21, 2018 | May 08, 2018~ May 18, 2018 | Mar. 20, 2019 | Conducted (TH03-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSP30 | 101329 | 9kHz~30GHz | Jun. 26, 2017 | May 08, 2018~ May 18, 2018 | Jun. 25, 2018 | Conducted (TH03-HY) |
| Temperature Chamber | ESPEC | SU-641 | 92013721 | -30°C ~70°C | Dec. 06, 2017 | May 08, 2018~ May 18, 2018 | Dec. 05, 2019 | Conducted (TH03-HY) |
| Bilog Antenna | TESEQ | CBL 6111D&00800 N1D01N-06 | 35419&03 | 30MHz to 1GHz | Dec. 18, 2017 | May 10, 2018~ May 14, 2018 | Dec. 17, 2018 | Radiation (03CH07-HY) |
| Double Ridge Horn Antenna | ESCO | 3117 | 00075962 | 1GHz ~ 18GHz | Aug. 23, 2017 | May 10, 2018~ May 14, 2018 | Aug. 22, 2018 | Radiation (03CH07-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9 kHz~30 MHz | Nov. 10, 2017 | May 10, 2018~ May 14, 2018 | Nov. 09, 2018 | Radiation (03CH07-HY) |
| Antenna Mast | Max-Full | MFA520BS | N/A | 1m~4m | N/A | May 10, 2018~ May 14, 2018 | N/A | Radiation (03CH07-HY) |
| Turn Table | ChainTek | 3000 | N/A | 0~360 Degree | N/A | May 10, 2018~ May 14, 2018 | N/A | Radiation (03CH07-HY) |
| Amplifier | SONOMA | 310N | 187231 | 9kHz~1GHz | Jan. 08, 2018 | May 10, 2018~ May 14, 2018 | Jan. 07, 2019 | Radiation (03CH07-HY) |
| EMI Test Receiver | Agilent | N9038A (MXE) | MY532900 53 | 20Hz to 26.5GHz | Jan. 16, 2018 | May 10, 2018~ May 14, 2018 | Jan. 15, 2019 | Radiation (03CH07-HY) |
| Software | Audix | E3 6.2009-8-24 | N/A | N/A | N/A | May 10, 2018~ May 14, 2018 | N/A | Radiation (03CH07-HY) |
| Filter | Wainwright | WHK20/1000 C7/40SS | SN3 | 20M High Pass | Nov. 21, 2017 | May 10, 2018~ May 14, 2018 | Nov. 20, 2018 | Radiation (03CH07-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY24971/4 ,MY28655/ 4 | 9KHz~30MHz | Jan. 02, 2018 | May 10, 2018~ May 14, 2018 | Jan. 01, 2019 | Radiation (03CH07-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY28655/4 , MY24971/4 , MY15682/4 | 30MHz~1GHz | Feb. 27, 2018 | May 10, 2018~ May 14, 2018 | Feb. 26, 2019 | Radiation (03CH07-HY) |



5. Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (9 kHz ~ 30 MHz)

| | |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$) | 3.40 |
|---|------|

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

| | |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$) | 5.70 |
|---|------|