

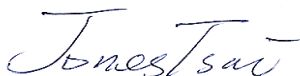
# FCC RADIO TEST REPORT

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

Report No.	Version	Description	Issued Date
FR841912B	01	Initial issue of report	Jan. 16, 2019

## 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	-
<b>Remark:</b> 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

Sporton 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.	Sporton Site No.	
	TH03-HY	03CH07-HY
Test Engineer	Louis Chung	Jesse Wang
Temperature	22~24°C	21~23°C
Relative Humidity	53~55%	51~54%

**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**

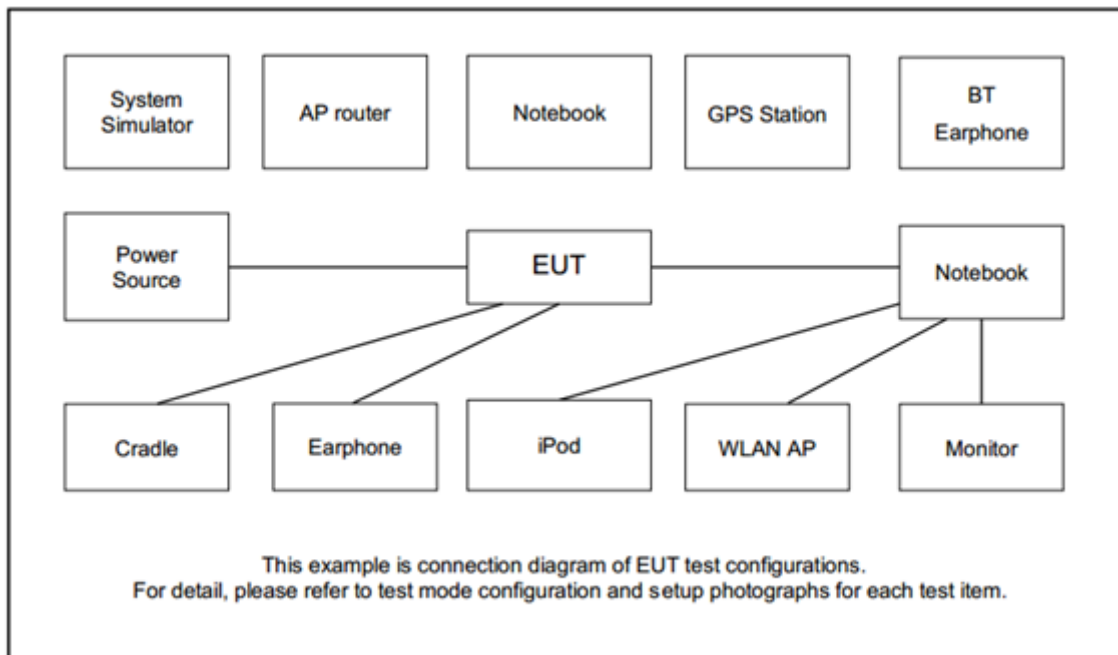
The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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.

<b>Test Items</b>	<b>Function Type</b>
<b>Radiated Emission</b>	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

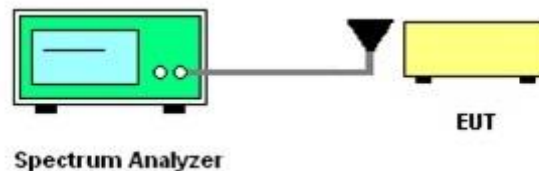
##### **3.1.2 Measuring Instruments**

See list of measuring instruments of this test report.

##### **3.1.3 Test Procedures**

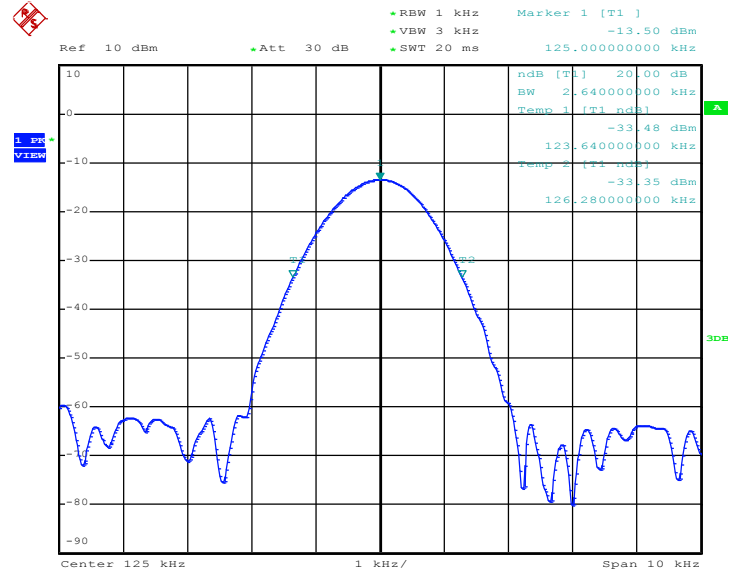
1. The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT in peak Max hold mode.
2. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
3. For Bandwidth measurement, the RBW= 10kHz, and VBW = 30kHz. Sweep = 20ms;
4. Measure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

##### **3.1.4 Test Setup**

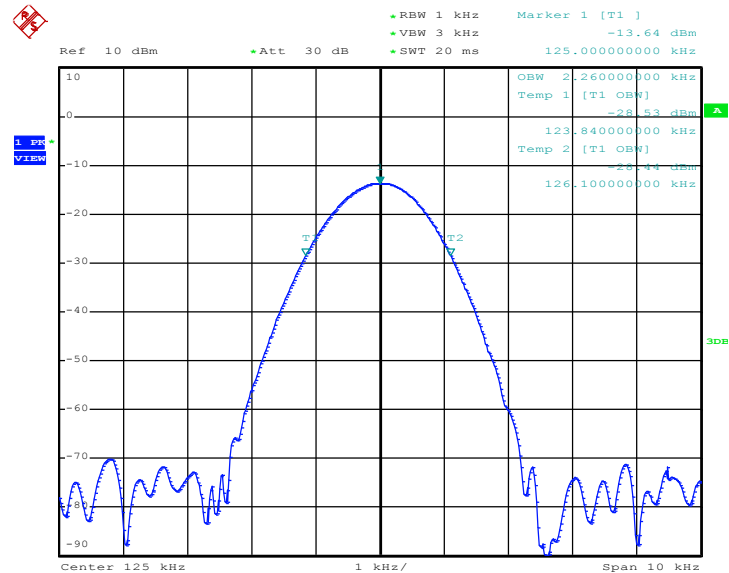


**3.1.5 Test Result of 20dB and 99% Bandwidth**

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>**

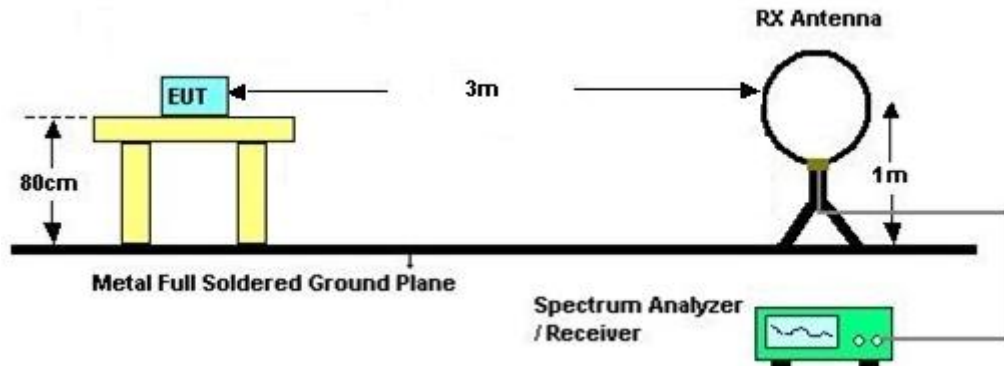
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 1 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was 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.

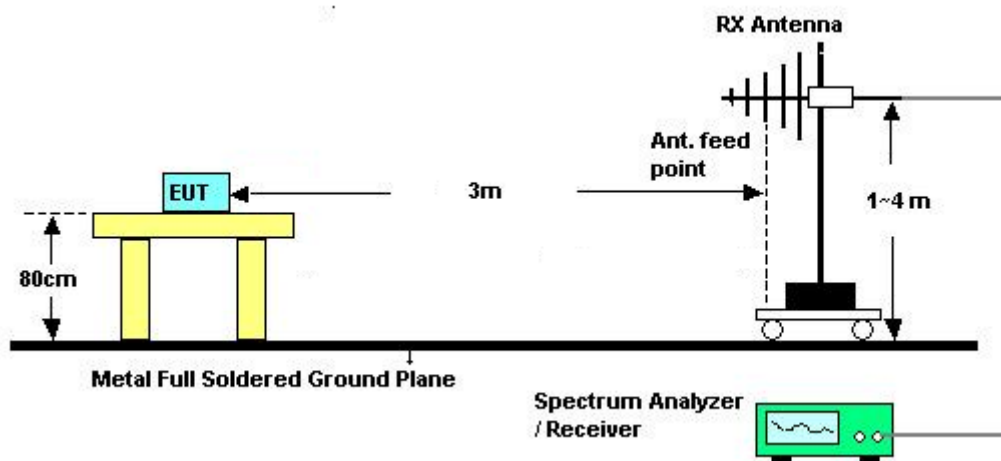
### 3.2.5 Test Setup

For radiated emissions below 30MHz



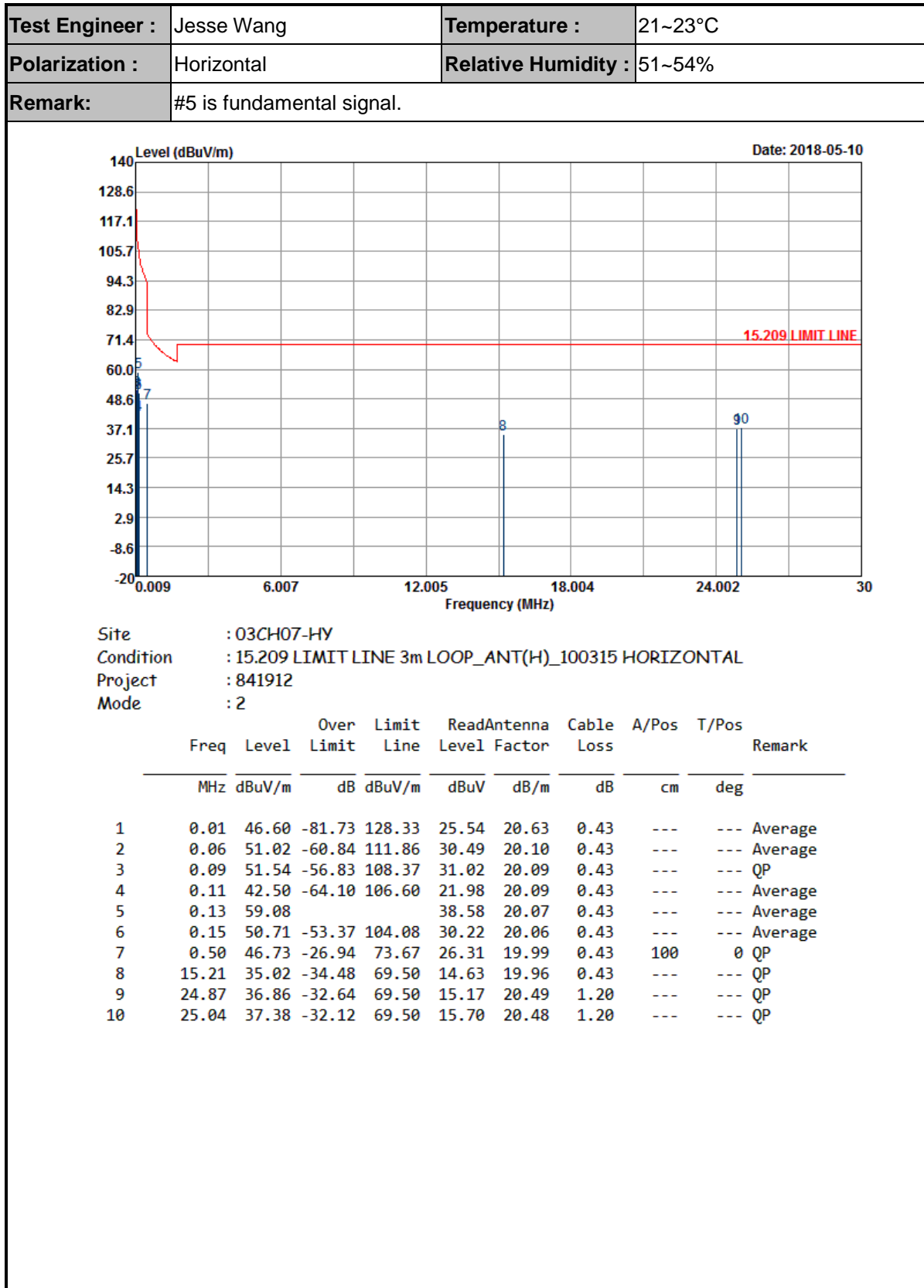
**Note:** There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

For radiated emissions above 30MHz



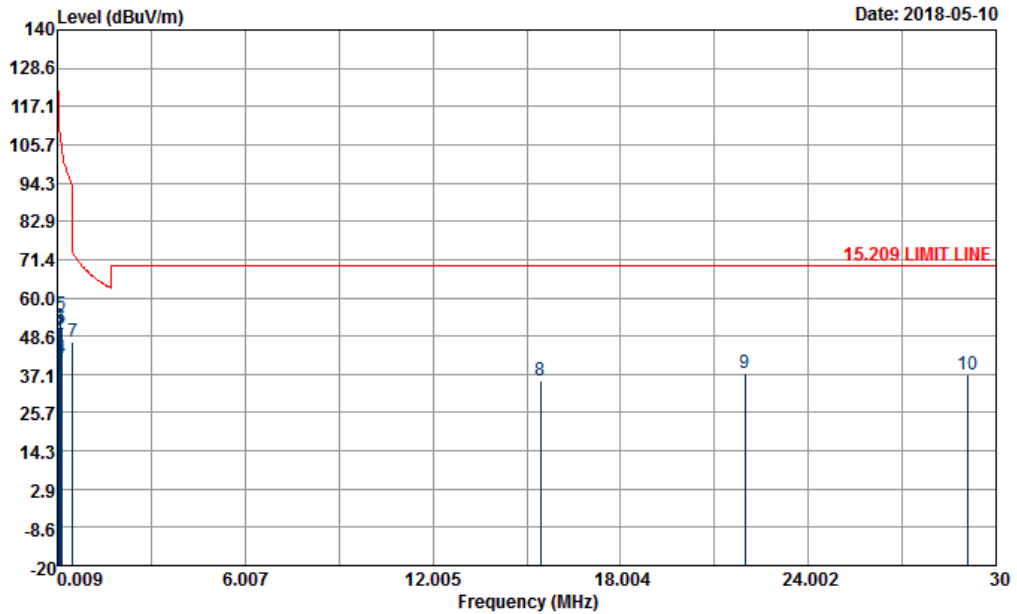


## 3.2.6 Test Result of Radiated Emission (9kHz ~ 30MHz)





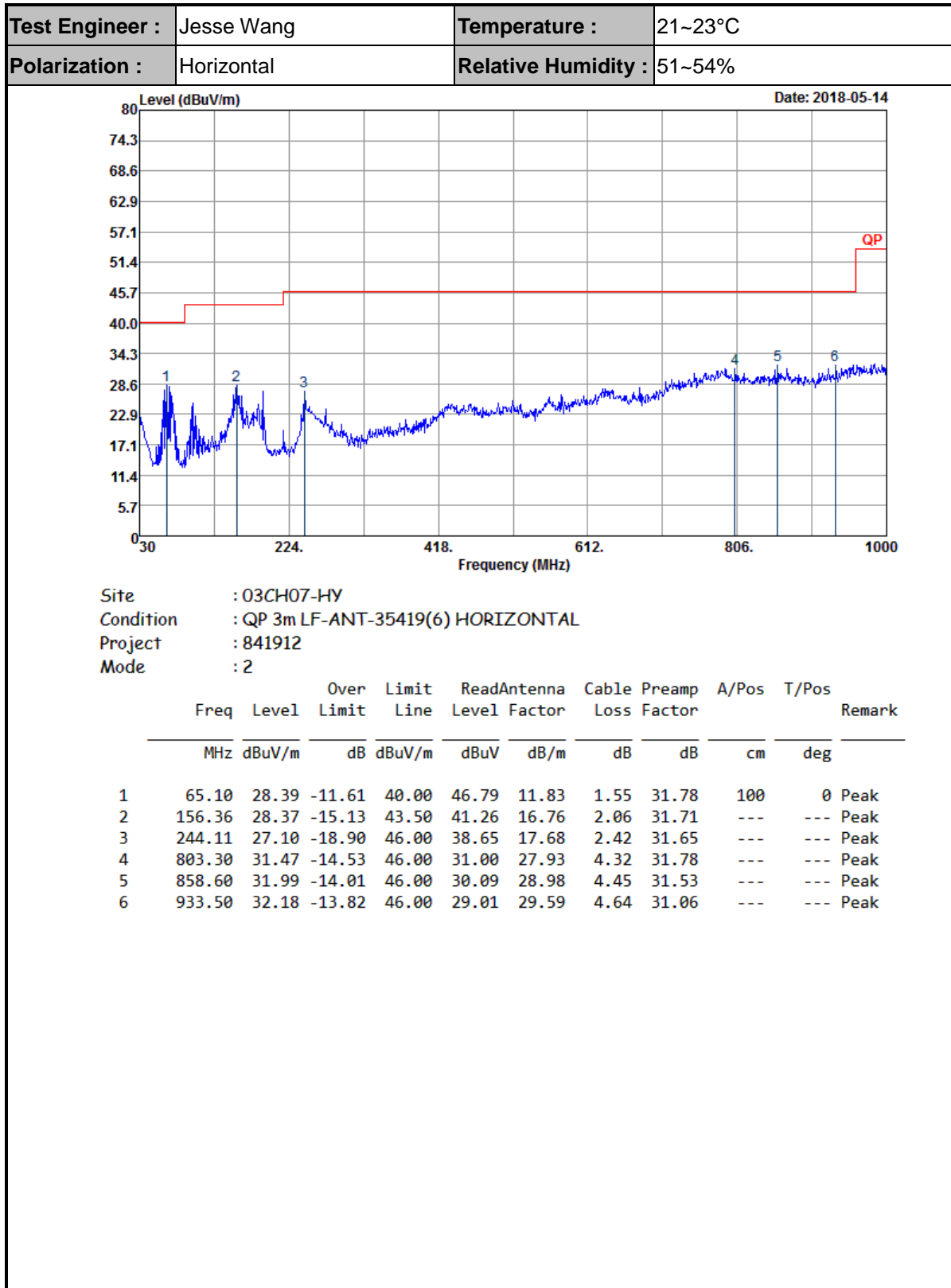
Test Engineer :	Jesse Wang	Temperature :	21~23°C
Polarization :	Vertical	Relative Humidity :	51~54%
Remark:	#5 is fundamental signal.		



Site : 03CH07-HY  
Condition : 15.209 LIMIT LINE 3m LOOP\_ANT(V)\_100315 VERTICAL  
Project : 841912  
Mode : 2

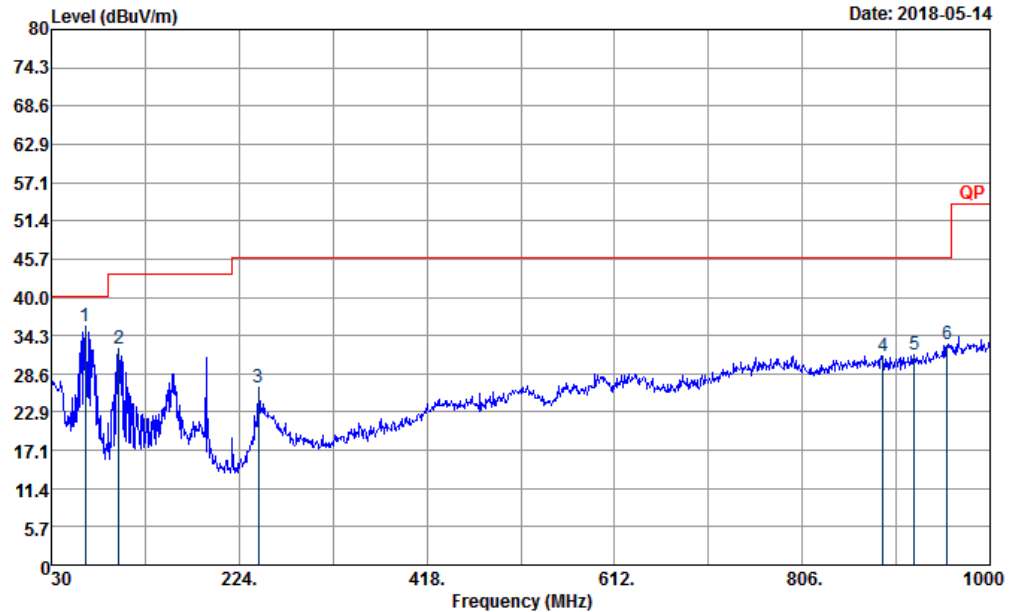
	Freq	Level	Over	Limit	ReadAntenna	Cable	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss		
			dB	dBuV/m	dBuV	dB/m	dB	cm	deg
1	0.01	45.14	-83.04	128.18	24.08	20.63	0.43	---	Average
2	0.06	49.12	-62.77	111.89	28.59	20.10	0.43	---	Average
3	0.09	50.34	-58.09	108.43	29.82	20.09	0.43	---	QP
4	0.12	42.14	-63.77	105.91	21.64	20.07	0.43	---	Average
5	0.13	54.79			34.29	20.07	0.43	---	Average
6	0.15	50.90	-53.16	104.06	30.41	20.06	0.43	---	Average
7	0.50	46.82	-26.85	73.67	26.40	19.99	0.43	100	0 QP
8	15.44	35.43	-34.07	69.50	15.03	19.97	0.43	---	QP
9	21.97	37.28	-32.22	69.50	15.69	20.39	1.20	---	QP
10	29.09	37.03	-32.47	69.50	15.72	20.11	1.20	---	QP



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




<b>Test Engineer :</b>	Jesse Wang	<b>Temperature :</b>	21~23°C
<b>Polarization :</b>	Vertical	<b>Relative Humidity :</b>	51~54%



Site : 03CH07-HY  
Condition : QP 3m LF-ANT-35419(6) VERTICAL  
Project : 841912  
Mode : 2

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	65.10	35.68	-4.32	40.00	54.08	11.83	1.55	31.78	100	0	Peak
2	99.93	32.35	-11.15	43.50	46.73	15.82	1.55	31.75	---	---	Peak
3	244.11	26.52	-19.48	46.00	38.07	17.68	2.42	31.65	---	---	Peak
4	889.40	31.28	-14.72	46.00	29.29	28.81	4.58	31.40	---	---	Peak
5	921.60	31.38	-14.62	46.00	28.70	29.20	4.64	31.16	---	---	Peak
6	955.90	32.89	-13.11	46.00	28.35	30.69	4.71	30.86	---	---	Peak

### **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℃ ~70℃	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	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
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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