

FCC PART 15 CLASS B
EMI MEASUREMENT AND TEST REPORT
For

Ningbo Yinzhou Wireless Electronic Limited Company
Shanglijia Village, Yunlong Town, Yinzhou District, Ningbo City, China

FCC ID: SM7WRS-BMT

April 1, 2013

This Report Concerns: Original Report	Equipment Type: Electric winch wireless receiver
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Report No.:	SHBST2013031506-1Y-1ER-3
Receive EUT Date/Test Date:	March 27, 2013 / March 28 - April 1, 2013
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1. GENERAL INFORMATION

1.1. Test Facility

The test site used to collect the radiated data is located on the address of
Global United Technology Service Co., Ltd
(FCC Registered Test Site Number: 600491) on
2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District,
Shenzhen, China 518102

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

(95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Conduction emission test	1.38dB
Uncertainty for Radiation Emission test (below 1GHz)	4.68dB
Uncertainty for Radiation Emission test (above 1GHz)	4.89dB
Uncertainty for radio frequency	1×10^{-9}
Uncertainty for test site temperature and humidity	0.5°C
	2%

2. PRODUCT DESCRIPTION

2.1. EUT Description

Applicant : Ningbo Yinzhou Wireless Electronic Limited Company
 Address : Shanglijia Village, Yunlong Town, Yinzhou District, Ningbo City, China

 Manufacturer : Ningbo Yinzhou Wireless Electronic Limited Company
 Address : Shanglijia Village, Yunlong Town, Yinzhou District, Ningbo City, China

 EUT Description : Electric winch wireless receiver

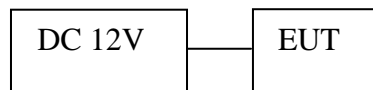
 Trade Name : WRS

 Model Number : WRS-BMT

 Receiver frequency : 315MHz

 Power Supply : DC 12V

2.2. Block Diagram of EUT Configuration



2.3. Support Equipment List

Name	Model No	S/N	Manufacturer	Used "Yes/No"
N/A				

Remark: "N/A" means "Not applicable."

2.4. Test Conditions

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-25
Humidity (%RH)	25-75	50-63
Barometric pressure (mbar)	860-1060	950-1000

3. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	Test Results
Conducted disturbance	N/A
Radiated disturbance	Pass

Remark: “N/A” means “Not applicable.”

4. TEST EQUIPMENT USED

EQUIPMENT/FACILITIES	MANUFACTURER	MODEL	SERIAL NO.	DATE OF CAL.	CAL. INTERVAL
3m Semi-Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 20 2013	1 Year
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 04 2012	1 Year
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRO NIK	VULB9163	GTS214	Feb. 25 2013	1 Year
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRO NIK	9120D-829	GTS208	June 30 2012	1 Year
Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 20 2013	1 Year
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Cable	Resenberger	N/A	NO.1	Mar. 20 2013	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar. 20 2013	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar. 20 2013	1 Year
Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2012	1 Year
Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2012	1 Year
Amplifier (18-26GHz)	R&S	AFS33-1800 2 650-30-8P-4 4	GTS218	June 30 2012	1 Year
Band filter	Amindeon	82346	GTS219	Mar. 20 2013	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	GTS215	Mar. 20 2013	1 Year
Power Meter	R&S	NRVS	GTS216	Mar. 20 2013	1 Year
Power Sensor	R&S	NRV-Z33	GTS220	Mar. 20 2013	1 Year
Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS264	Sep. 08 2012	1 Year
EMI Test Receiver	R&S	ESCS30	GTS223	Jul. 04 2012	1 Year
10dB Pulse Limita	R&S	N/A	GTS224	Jul. 04 2012	1 Year
Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 04 2012	1 Year
LISN	SCHWARZBECK MESS-ELEKTRO NIK	NSLK 8127	GTS226	Jul. 04 2012	1 Year
Coaxial Cable	SCHWARZBECK	N/A	NO.4	Mar. 20 2013	1 Year
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Spectrum analyzer	agilent	E4440A	GTS251	N/A	N/A

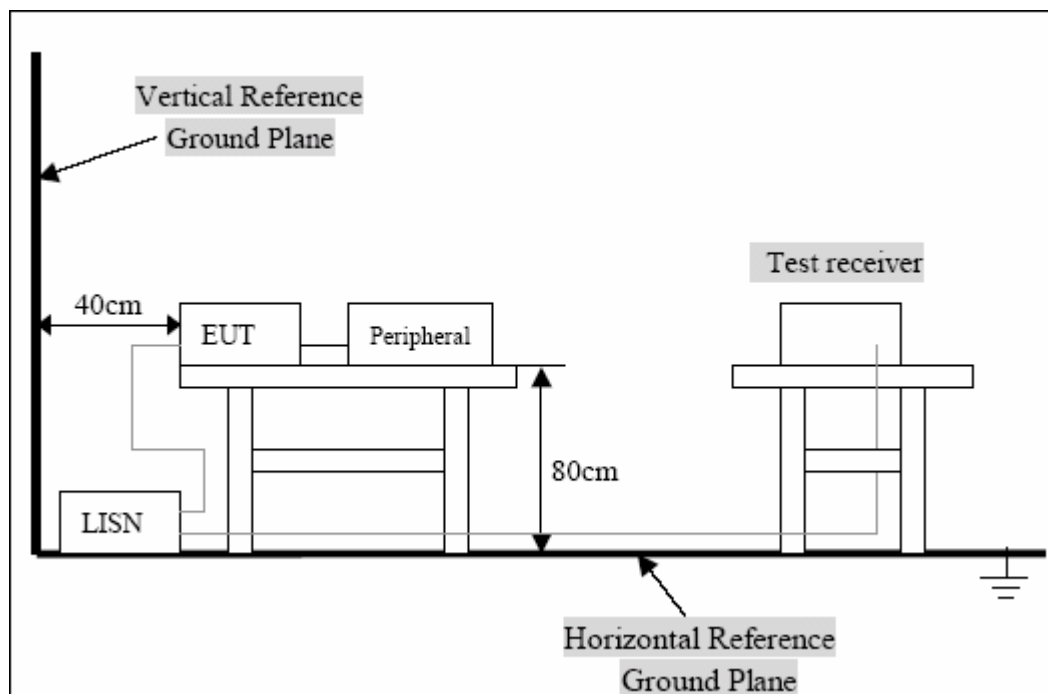
5. CONDUCTED EMISSION TEST

5.1. Block Diagram of Test Setup

5.1.1. Block Diagram of connection between the EUT and the simulators



5.1.2. Test Setup Diagram



5.2. Test Standard

FCC Part 15 CLASS B

ANSI C63.4 2003

5.3. Conducted Emission Limit(Class B)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

5.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC Part 15 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.5. Operating Condition of EUT

5.5.1.Setup the EUT and simulators as shown in Section 5.1.

5.5.2.Turn on the power of all equipments.

5.5.3.Let the EUT work in test mode and test it.

5.6. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

5.7. Test Result

N/A.

This EUT is only powered by the battery, therefore this test item is not applicable.

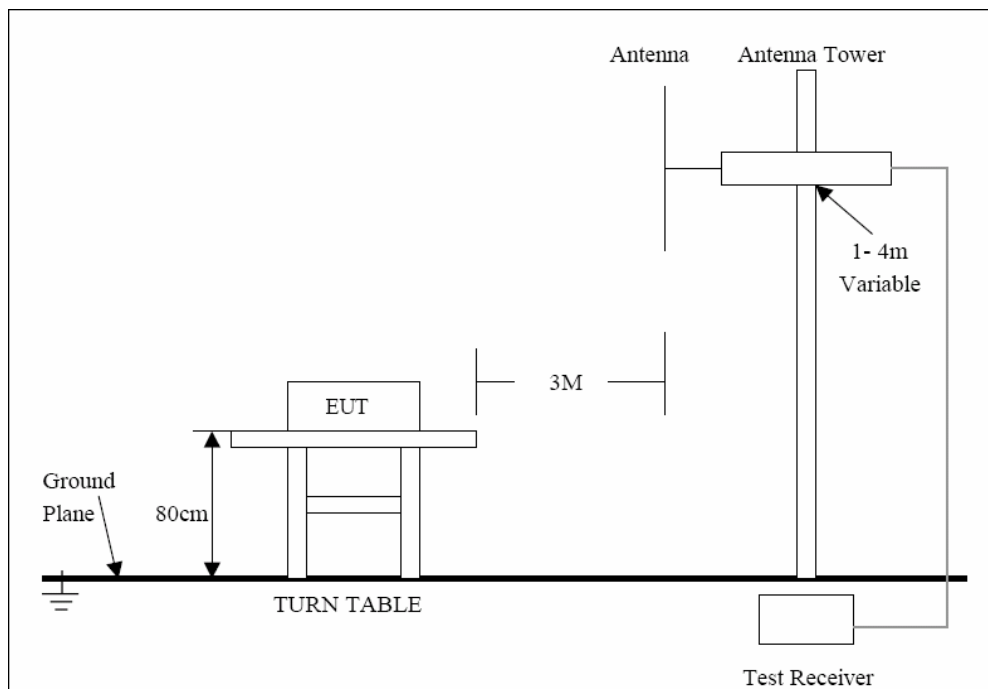
6. RADIATED EMISSION MEASUREMENT

6.1. Block Diagram of EUT Configuration

6.1.1. Block Diagram of connection between the EUT and the simulators



6.1.2. Semi-anechoic Chamber Test Setup Diagram



6.2. Test Standard

FCC Part 15 CLASS B
ANSI C63.4 2003

6.3. Radiated Emission Limit(Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
Above 1000	3	54.0

Note:(1) The smaller limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or system.

6.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the Commission requirements and operating regulations in a manner which tends to maximize Its emission characteristics in normal application.

6.5. Operating Condition of EUT

6.5.1.Setup the EUT as shown on Section 6.1

6.5.2.Turn on the power of all equipments.

6.5.3.Let the EUT work in test mode and test it.

6.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz. and set at 1000kHz above 1000MHz.

The final measurement in band above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The frequency range from 30MHz to 2000MHz is checked. All the test results are listed in Section 6.7. The measurements greater than 20dB below the limit are not report.

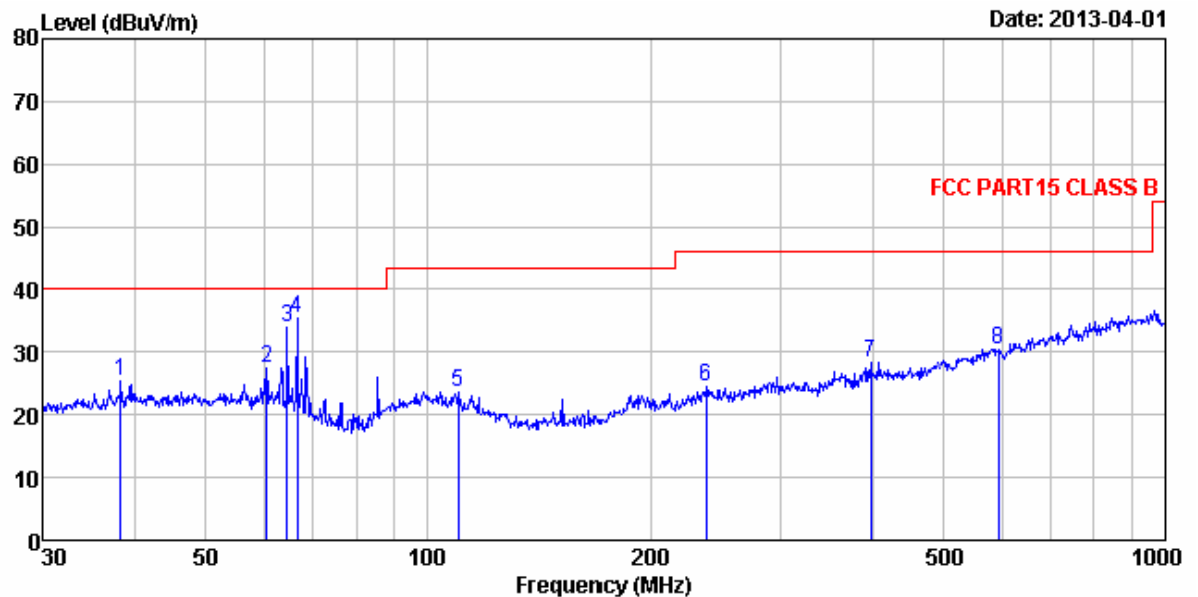
6.7. Test Result

PASS

The frequency range from 30MHz to 2000MHz is checked.

For 30MHz-1000MHz Spurious

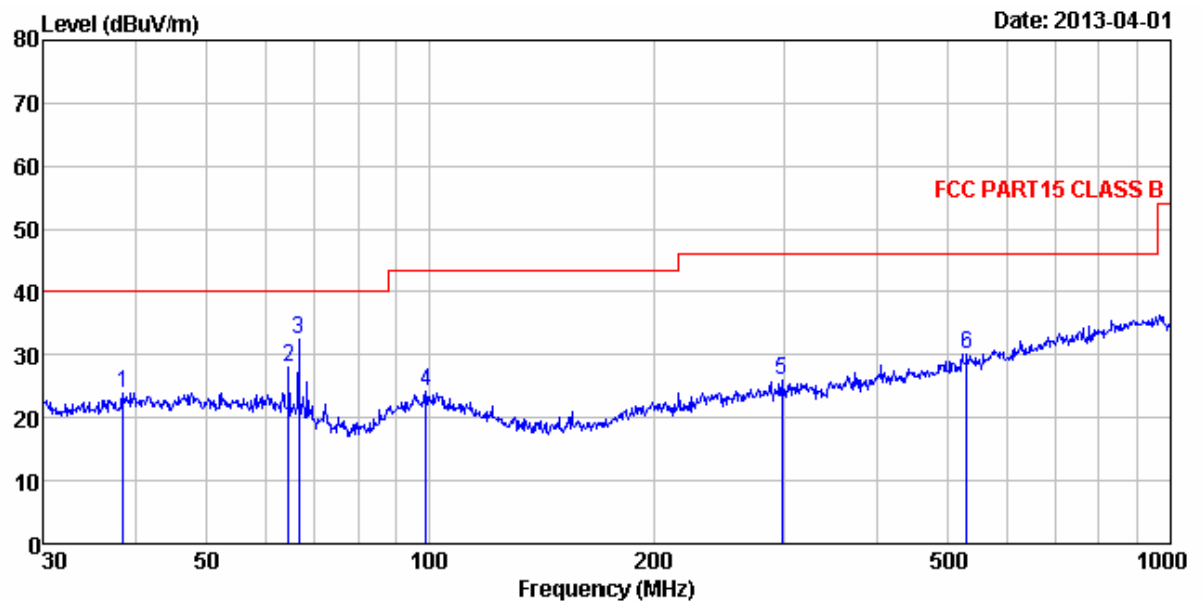
Horizontal



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 -2012-05 HORIZONTAL
 EUT :
 Model :
 Test mode : RX mode
 Power Rating :
 Test Engineer: Edward
 Remark : 大接收

	Freq	ReadAntenna	Cable	Preamp		Limit	Over	
		Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	38.346	40.40	16.44	0.64	32.06	25.42	40.00	-14.58 Peak
2	60.492	42.94	15.65	0.86	31.94	27.51	40.00	-12.49 Peak
3	64.433	50.41	14.60	0.90	31.91	34.00	40.00	-6.00 Peak
4	66.499	52.55	13.78	0.91	31.90	35.34	40.00	-4.66 Peak
5	110.182	39.64	14.55	1.28	31.81	23.66	43.50	-19.84 Peak
6	237.476	39.71	15.04	2.06	32.16	24.65	46.00	-21.35 Peak
7	397.633	40.32	17.06	2.84	31.90	28.32	46.00	-17.68 Peak
8	593.050	37.54	20.35	3.70	31.07	30.52	46.00	-15.48 Peak

Vertical

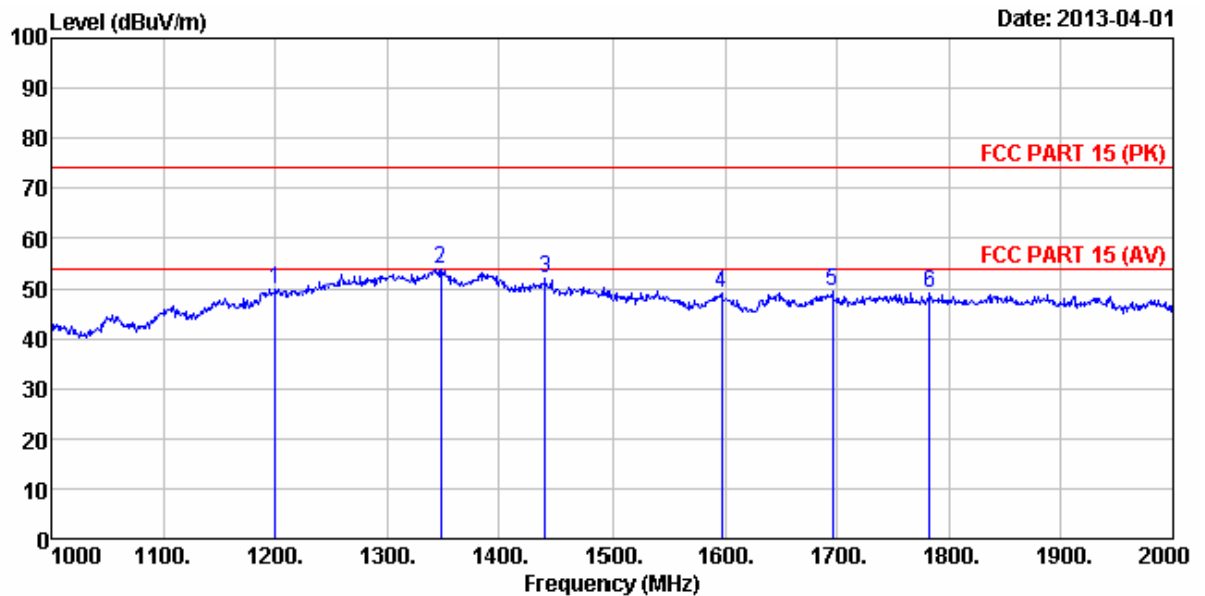


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 -2012-05 VERTICAL
 EUT :
 Model :
 Test mode : RX mode
 Power Rating :
 Test Engineer: Edward
 Remark : 大接收

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	38.481	38.92	16.48	0.65	32.06	23.99	40.00	-16.01	Peak
2	64.433	44.37	14.60	0.90	31.91	27.96	40.00	-12.04	Peak
3	66.499	49.74	13.78	0.91	31.90	32.53	40.00	-7.47	Peak
4	98.833	38.56	16.16	1.18	31.76	24.14	43.50	-19.36	Peak
5	298.268	39.71	16.03	2.35	32.18	25.91	46.00	-20.09	Peak
6	530.101	38.98	19.23	3.44	31.40	30.25	46.00	-15.75	Peak

For Above 1000MHz Spurious

Horizontal

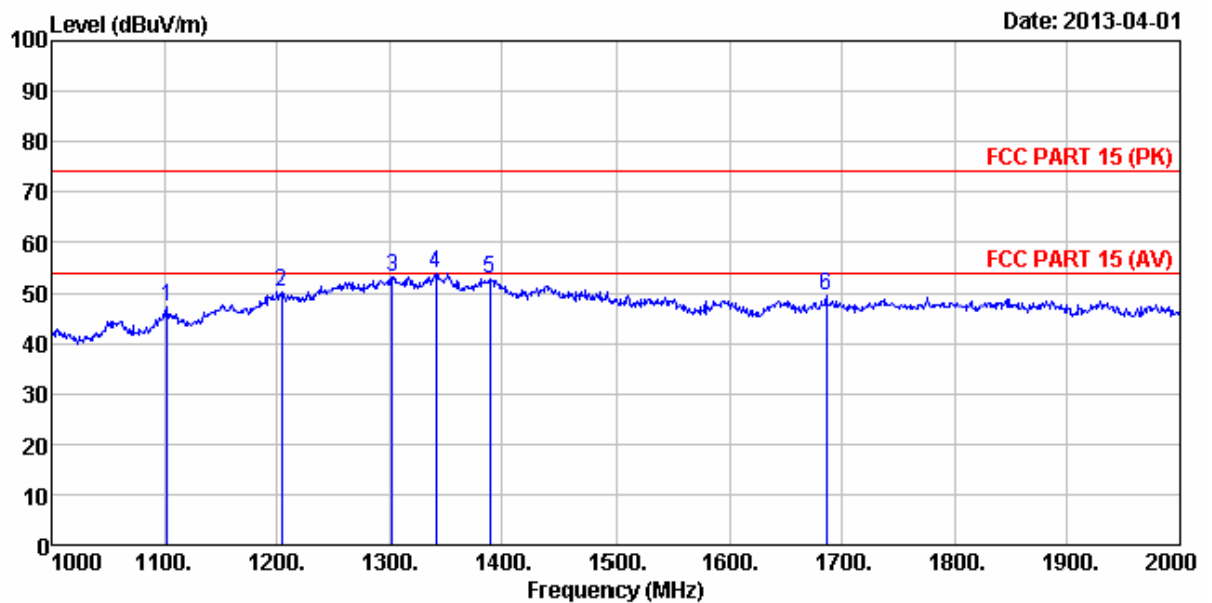


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHz) HORIZONTAL
 EUT :
 Model :
 Test mode : RX mode
 Power Rating :
 Test Engineer: Edward
 Remark : 大接收

	Read	Antenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1200.000	39.17	25.34	4.47	19.09	49.89	74.00	-24.11 Peak
2	1348.000	44.40	25.70	4.58	20.79	53.89	74.00	-20.11 Peak
3	1441.000	44.54	25.38	4.64	22.42	52.14	74.00	-21.86 Peak
4	1597.000	45.37	24.99	4.74	26.15	48.95	74.00	-25.05 Peak
5	1696.000	46.91	24.97	4.80	27.31	49.37	74.00	-24.63 Peak
6	1783.000	47.31	25.21	4.85	28.47	48.90	74.00	-25.10 Peak

Note: The average measurement was not performed when the peak measured data under the limit of average detection.

Vertical



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL
 EUT :
 Model :
 Test mode : RX mode
 Power Rating :
 Test Engineer: Edward
 Remark : 大接收

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	1103.000	36.02	24.78	4.38	17.96	47.22	74.00	-26.78 Peak
2	1204.000	39.37	25.37	4.47	19.09	50.12	74.00	-23.88 Peak
3	1302.000	43.59	25.63	4.54	20.50	53.26	74.00	-20.74 Peak
4	1341.000	44.43	25.70	4.57	20.79	53.91	74.00	-20.09 Peak
5	1389.000	43.87	25.60	4.61	21.35	52.73	74.00	-21.27 Peak
6	1686.000	46.95	24.95	4.80	27.31	49.39	74.00	-24.61 Peak

Note: The average measurement was not performed when the peak measured data under the limit of average detection.