



FCC Part 15B Test Report

FCC ID: XNBRS3312DC3BB

Product Name:	Radio Controlled Clock
Trademark:	N/A
Model Name :	RS3312DC3B
Prepared For :	FUZHOU RISE ELECTRONIC CO., LTD.
Address :	Bldg 15,Zone C,Pushang Industrial Area,No.6,Hongjiang RD,Fuzhou,Fujian,China
Prepared By :	Shenzhen BCTC Technology Co., Ltd.
Address :	BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Date:	Oct. 23 –Oct. 25, 2017
Date of Report :	Oct. 25, 2017
Report No.:	BCTC-LH171003847E



TEST RESULT CERTIFICATION

Applicant's name..... : FUZHOU RISE ELECTRONIC CO., LTD.

Address..... : Bldg 15,Zone C,Pushang Industrial Area,No.6,Hongjiang
RD,Fuzhou,Fujian,China

Manufacture's Name..... : FUZHOU RISE ELECTRONIC CO., LTD.

Address..... : Bldg 15,Zone C,Pushang Industrial Area,No.6,Hongjiang
RD,Fuzhou,Fujian,China

Product description

Product name..... : Radio Controlled Clock

Trademark..... : N/A

Model and/or type reference : RS3312DC3B

Standards..... : FCC Part15B
ANSI C63.4-2014

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Prepared by(Engineer): Snow Zeng

Reviewer(Supervisor): Jade Yang

Approved(Manager): Carson Zhang





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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15			
Standard Section	Test Item	Judgment	Remark
Part 15.107	Conducted Emission	N/A	
Part 15.109	Radiated Spurious Emission	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen BCTC Technology Co., Ltd.

Add. : BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China

A2LA Certificate No.: 4474.01

IC Registered No.: 12655A

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Radio Controlled Clock
Trade Name	N/A
Model Name	RS3312DC3B
Model Difference	N/A
Product Description	The EUT is a Radio Controlled Clock Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Power	DC 3.0V
Adapter	--
hardware version	--
Software version	--
Serial number	--
Connecting I/O Port(s)	Please refer to the User's Manual
Max Operation Frequency	433.92MHz(RX)

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	RX Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	RX Mode

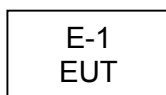
Note:

(1) The measurements are performed at the highest, middle, lowest available channels.



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Radio Controlled Clock	N/A	RS3312DC3B	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C1	No	No	0.8m	DC Line

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	MY45109572	2017.08.25	2018.08.24
2	Test Receiver	R&S	ESPI	101396	2017.08.25	2018.08.24
3	Bilog Antenna	SCHWARZBECK	VULB9160	VULB9160-3369	2017.08.25	2018.08.24
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2017.08.25	2018.08.24
5	Spectrum Analyzer	Agilent	N9020A	MY5051041	2017.08.25	2018.08.24
6	Horn Antenna	SCHWARZBECK	9120D	9120D-1275	2017.08.29	2018.08.28
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2017.08.25	2018.08.24
8	Amplifier	SCHWARZBECK	BBV9718	9718-270	2017.08.25	2018.08.24
9	Amplifier	SCHWARZBECK	BBV9743	9743-119	2017.08.25	2018.08.24
10	Loop Antenna	ARA	PLKMI-BTH0730/B	1029	2017.09.06	2017.09.06
11	Power Meter	R&S	NRVS	100696	2017.08.25	2018.08.24
12	Power Sensor	R&S	URV5-Z4	0395.1619.05	2017.08.25	2018.08.24
13	RF cables	R&S	N/A	N/A	2017.08.25	2018.08.24
14	966 chamber	ChengYu	966 Room	966	2017.08.25	2018.08.24

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESCI	1166.5950K03-101165-ha	2017.08.25	2018.08.24
2	LISN	R&S	NSLK8126	8126466	2017.08.25	2018.08.24
3	LISN	R&S	NSLK8126	8126487	2017.08.25	2018.08.24
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2017.08.25	2018.08.24
5	RF cables	R&S	R204	R20X	2017.08.25	2018.08.24



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

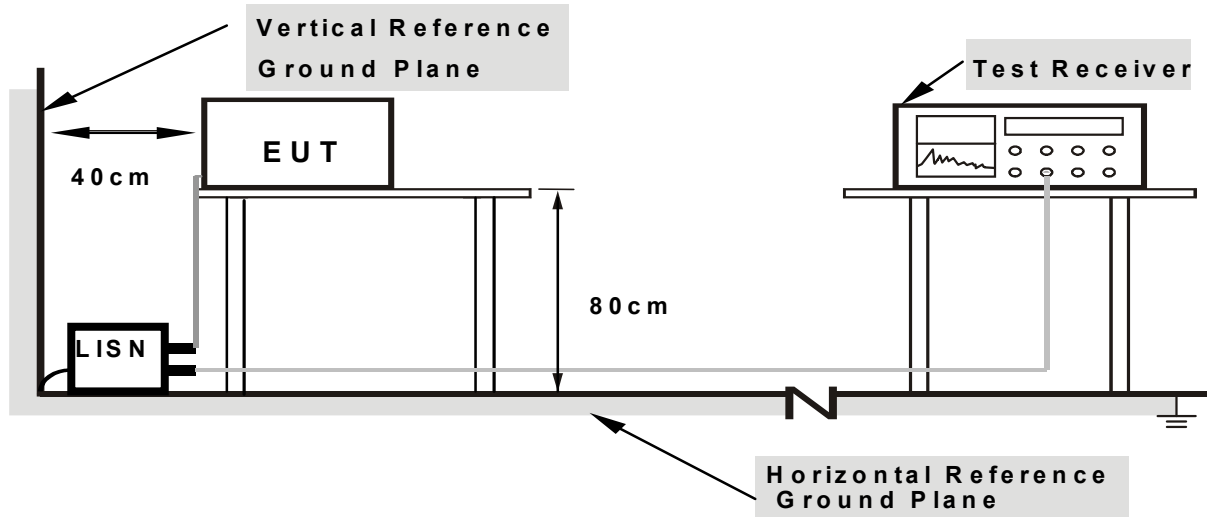
3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



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

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

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

The EUT's power provide by battery, no requirments for this item.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

1. In case the emission fall within the restricted band specified on 15.205(a), then the 15.109(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolt/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

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

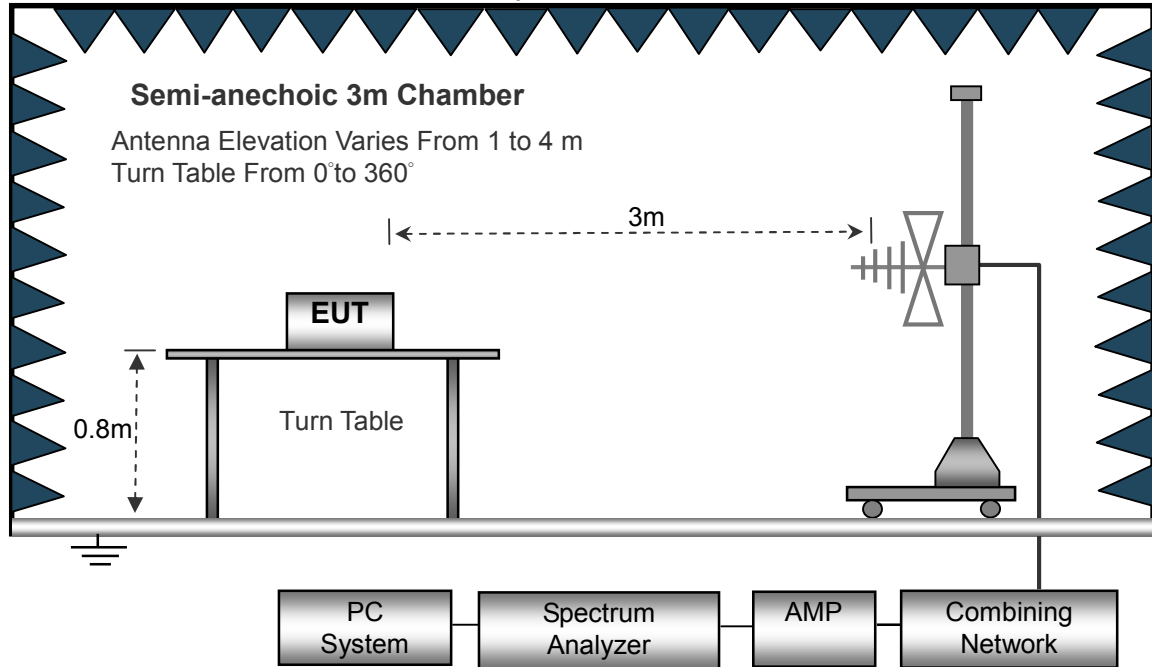
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

3.2.3 DEVIATION FROM TEST STANDARD

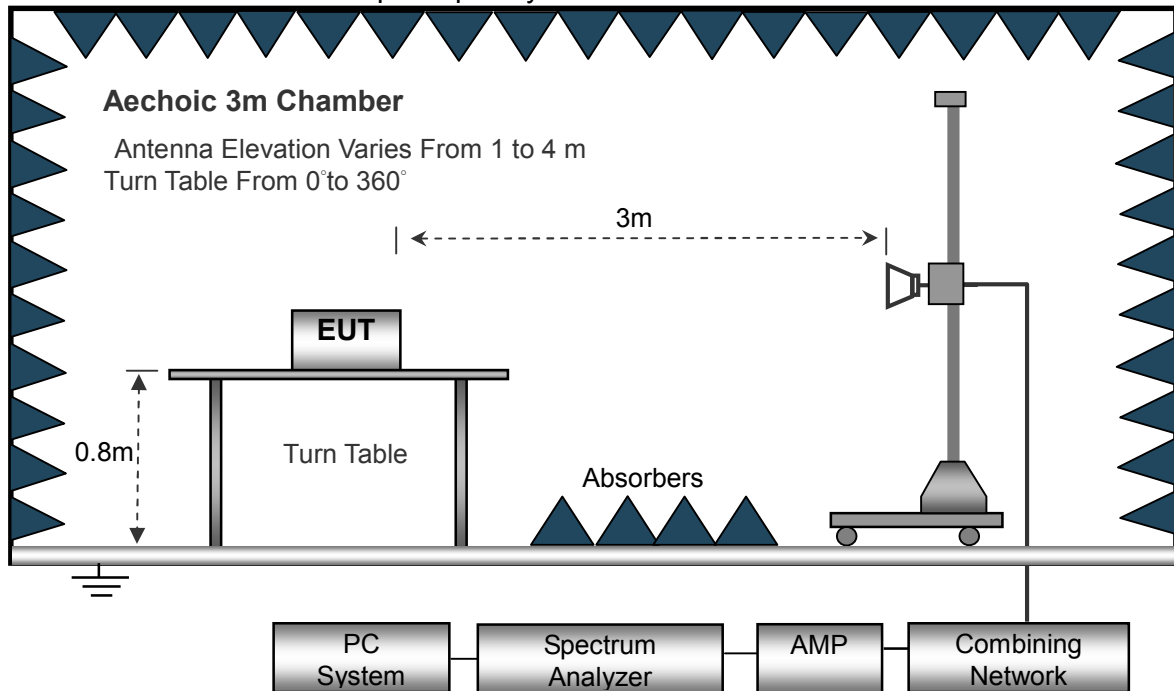
No deviation

3.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency 30MHz~1GHz



(B) Radiated Emission Test-Up Frequency Above 1GHz



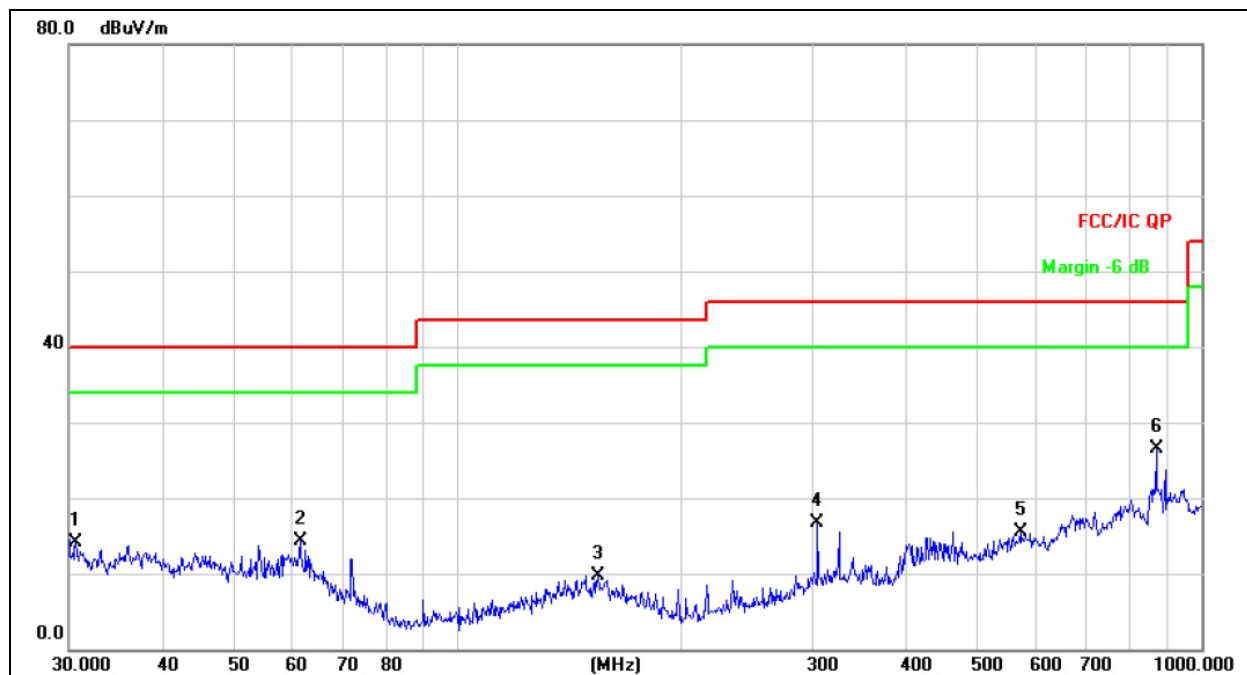
3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



3.2.6 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 3.0V		
Test Mode :	Mode 1		



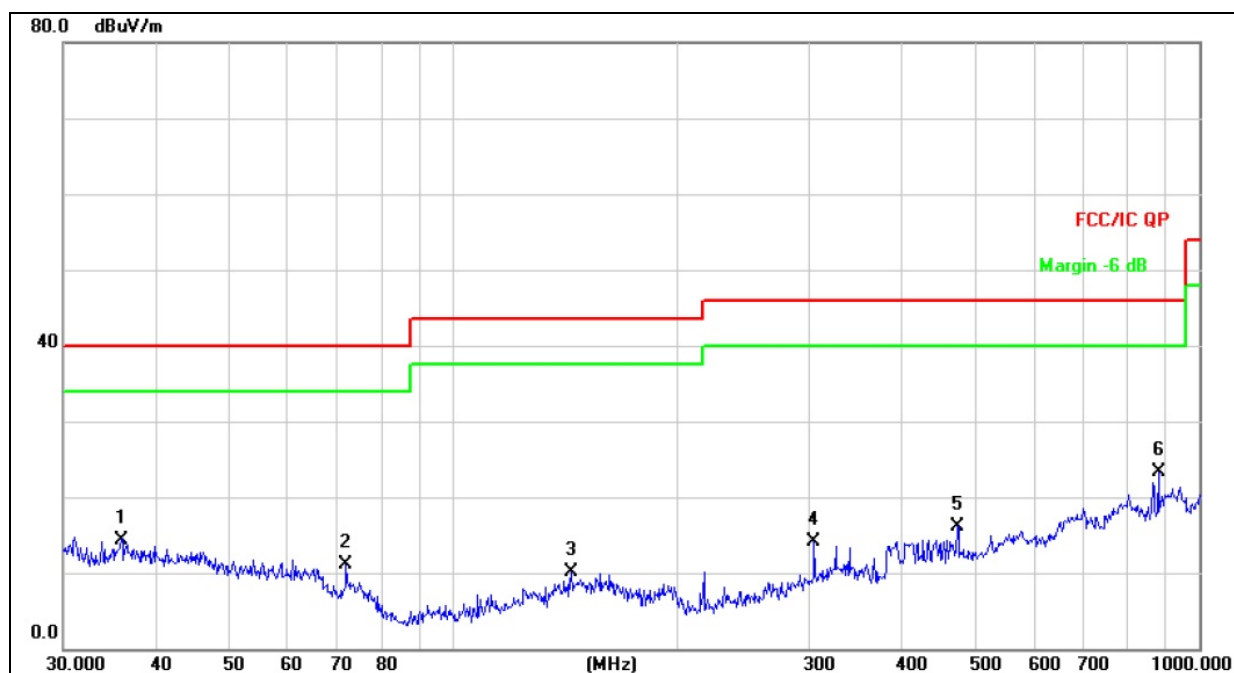
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		30.6379	22.25	-8.11	14.14	40.00	-25.86	QP
2		61.3463	26.06	-11.78	14.28	40.00	-25.72	QP
3		154.2786	22.59	-12.86	9.73	43.50	-33.77	QP
4		304.6099	29.25	-12.47	16.78	46.00	-29.22	QP
5		570.6100	22.06	-6.54	15.52	46.00	-30.48	QP
6	*	869.1302	28.61	-2.05	26.56	46.00	-19.44	QP



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 3.0V		
Test Mode :	Mode 1		



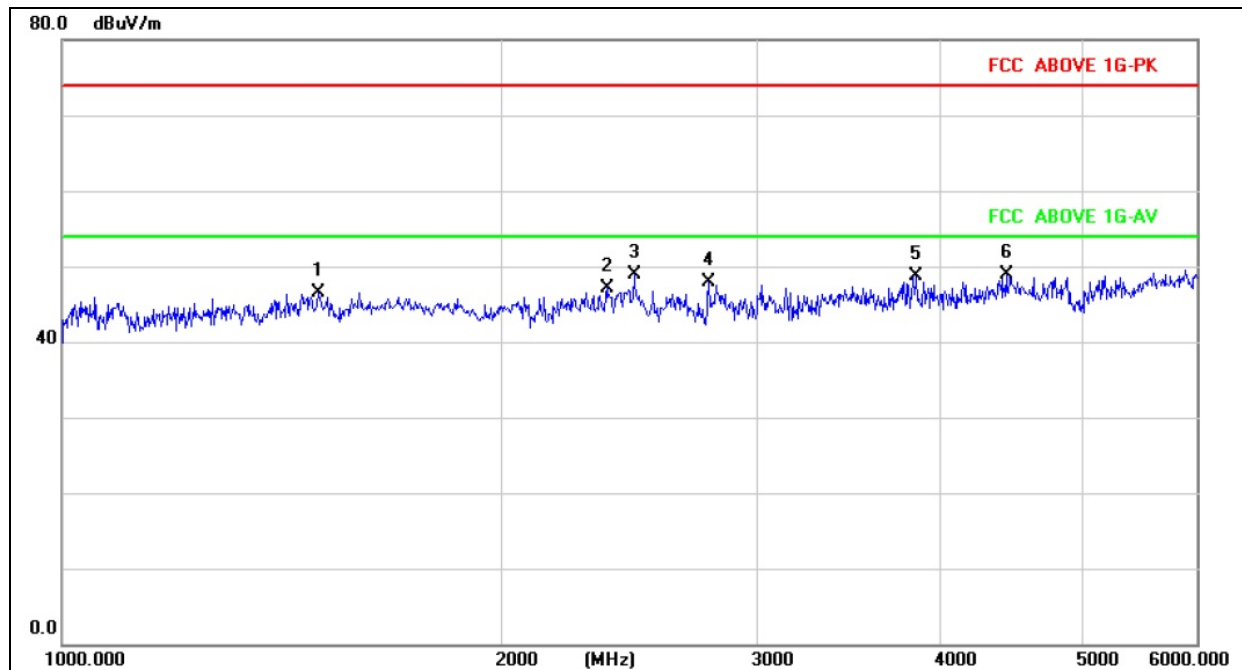
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		35.8746	22.98	-8.58	14.40	40.00	-25.60	QP
2		71.8320	26.36	-15.19	11.17	40.00	-28.83	QP
3		143.8295	23.36	-13.18	10.18	43.50	-33.32	QP
4		304.6099	26.56	-12.47	14.09	46.00	-31.91	QP
5		473.8347	24.63	-8.56	16.07	46.00	-29.93	QP
6	*	881.4067	25.04	-1.68	23.36	46.00	-22.64	QP



Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 3.0V		
Test Mode :	Mode 1		



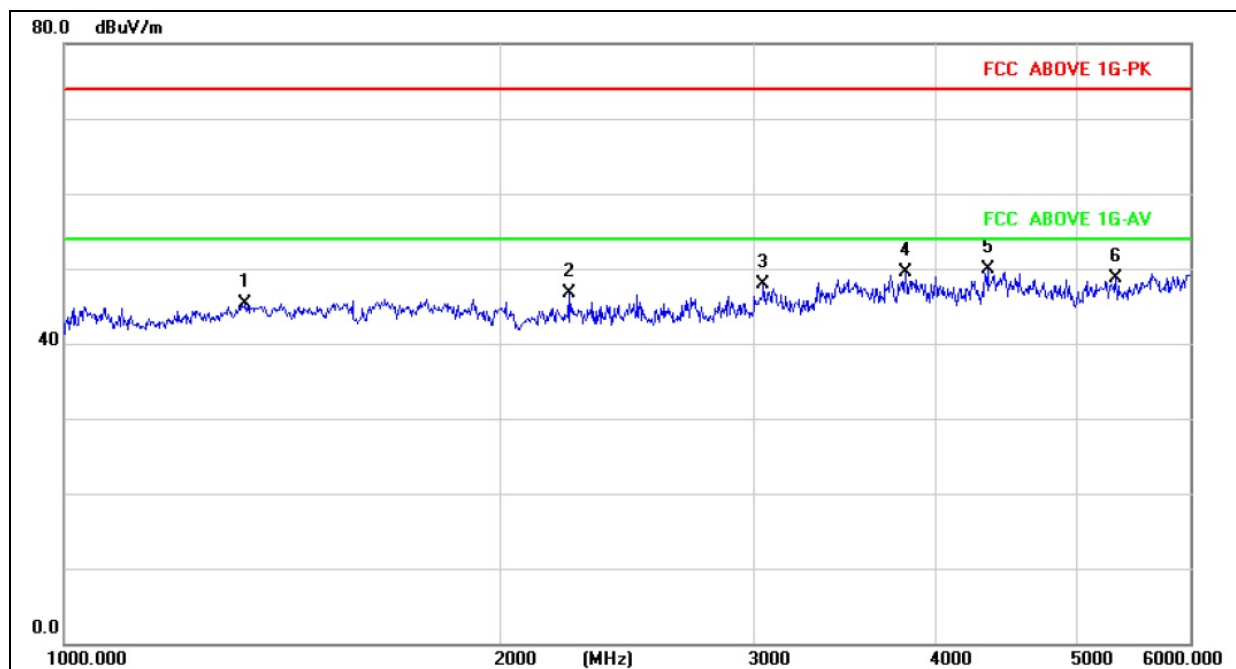
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1499.209	38.92	7.55	46.47	74.00	-27.53	peak
2		2363.266	38.65	8.55	47.20	74.00	-26.80	peak
3	*	2467.108	40.12	8.80	48.92	74.00	-25.08	peak
4		2776.810	38.38	9.57	47.95	74.00	-26.05	peak
5		3854.321	35.31	13.45	48.76	74.00	-25.24	peak
6		4440.397	34.19	14.73	48.92	74.00	-25.08	peak



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 3.0V		
Test Mode :	Mode 1		



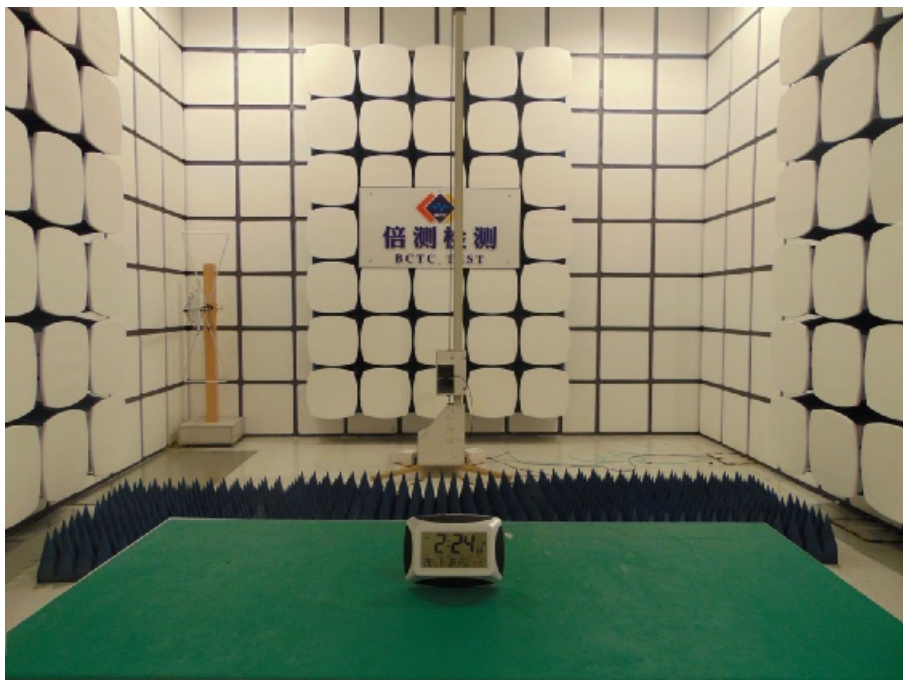
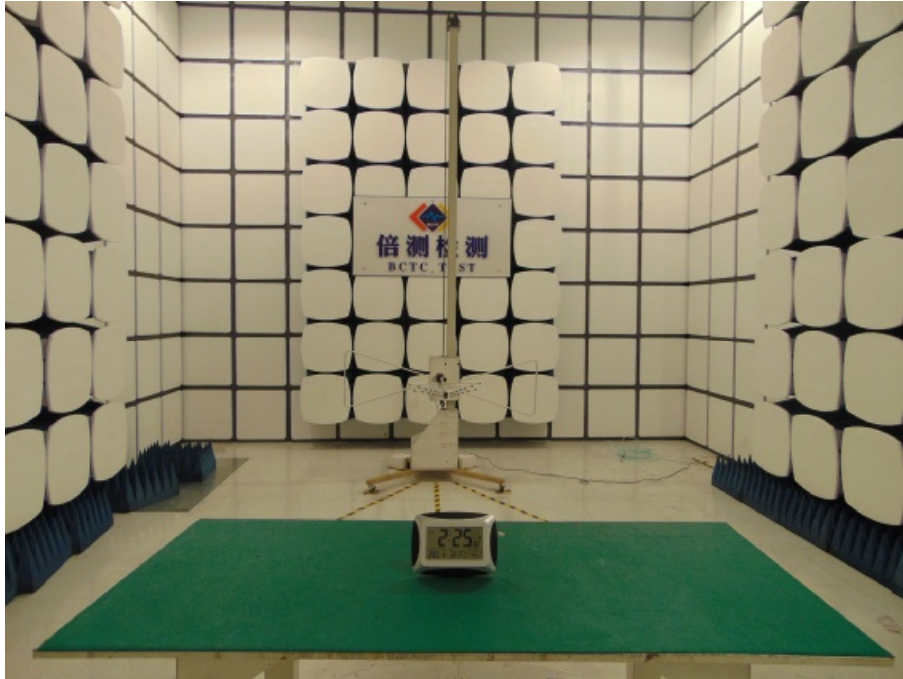
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1334.389	37.80	7.52	45.32	74.00	-28.68	peak
2		2231.576	38.45	8.23	46.68	74.00	-27.32	peak
3		3042.509	37.58	10.28	47.86	74.00	-26.14	peak
4		3813.107	36.30	13.30	49.60	74.00	-24.40	peak
5	*	4345.943	35.24	14.57	49.81	74.00	-24.19	peak
6		5330.811	32.34	16.41	48.75	74.00	-25.25	peak

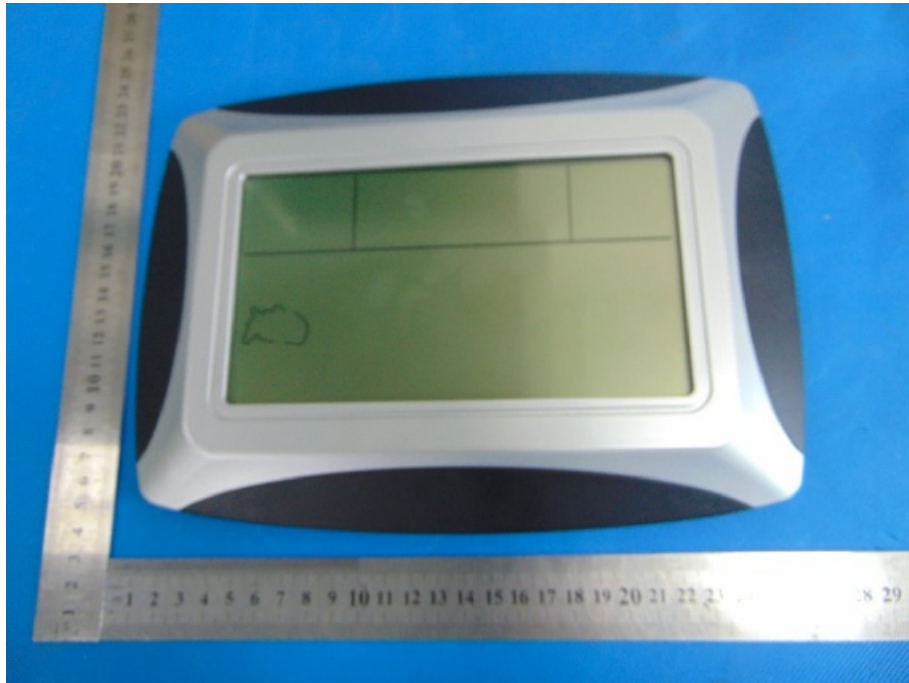
4. TEST SEUUP PHOTO

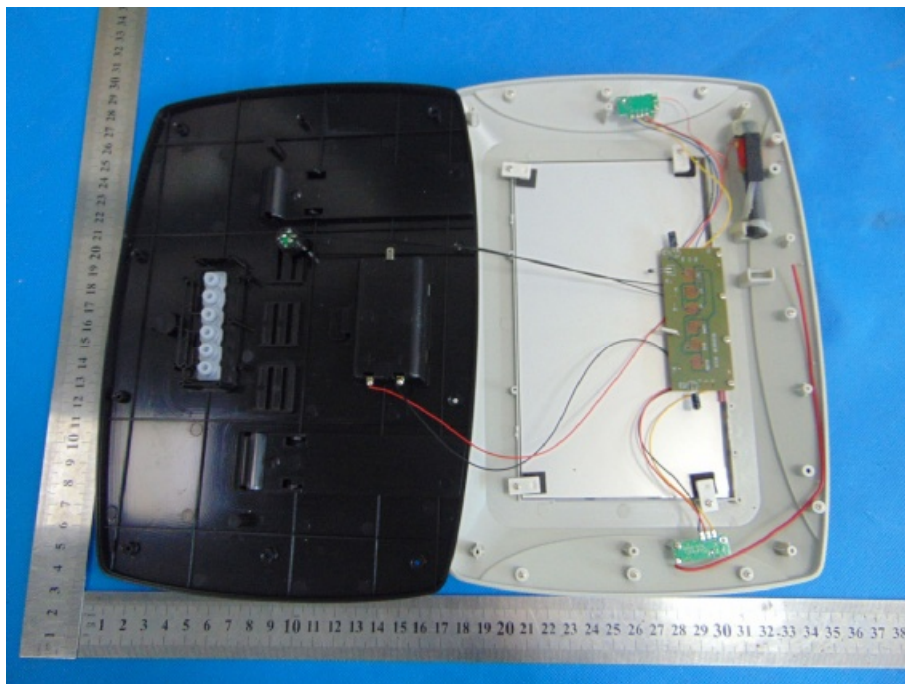
Radiated Measurement Photos





5. EUT PHOTO





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