

TEST REPORT

Report No.: **BCTC2409500313-1E**

Applicant: **Chongqing Radiance Energy Technology Co.,Ltd.**

Product Name: **Portable Power Station**

Test Model: **E3600**

Tested Date: **2024-09-20 to 2024-10-16**

Issued Date: **2024-10-21**

Shenzhen BCTC Testing Co., Ltd.



FCC ID: 2BBM4-E3600

Product Name:

Portable Power Station

Trademark:



Model/Type Reference:

E3600

Prepared For:

Chongqing Radiance Energy Technology Co.,Ltd.

Address:

No.27-3 Feng Sheng Road, Jiu Long Po District, Chongqing City,China.

Manufacturer:

Chongqing Radiance Energy Technology Co.,Ltd.

Address:

No.27-3 Feng Sheng Road, Jiu Long Po District, Chongqing City,China.

Prepared By:

Shenzhen BCTC Testing Co., Ltd.

Address:

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Sample Received Date:

2024-09-19

Sample Tested Date:

2024-09-20 to 2024-10-16

Issue Date:

2024-10-21

Report No.:

BCTC2409500313-1E

Test Standards:

FCC Part15.209
ANSI C63.10-2013

Test Results:

PASS

Tested by:



Eric Yang/Project Handler

Approved by:



Zero Zhou/Reviewer

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(Note: N/A Means Not Applicable)

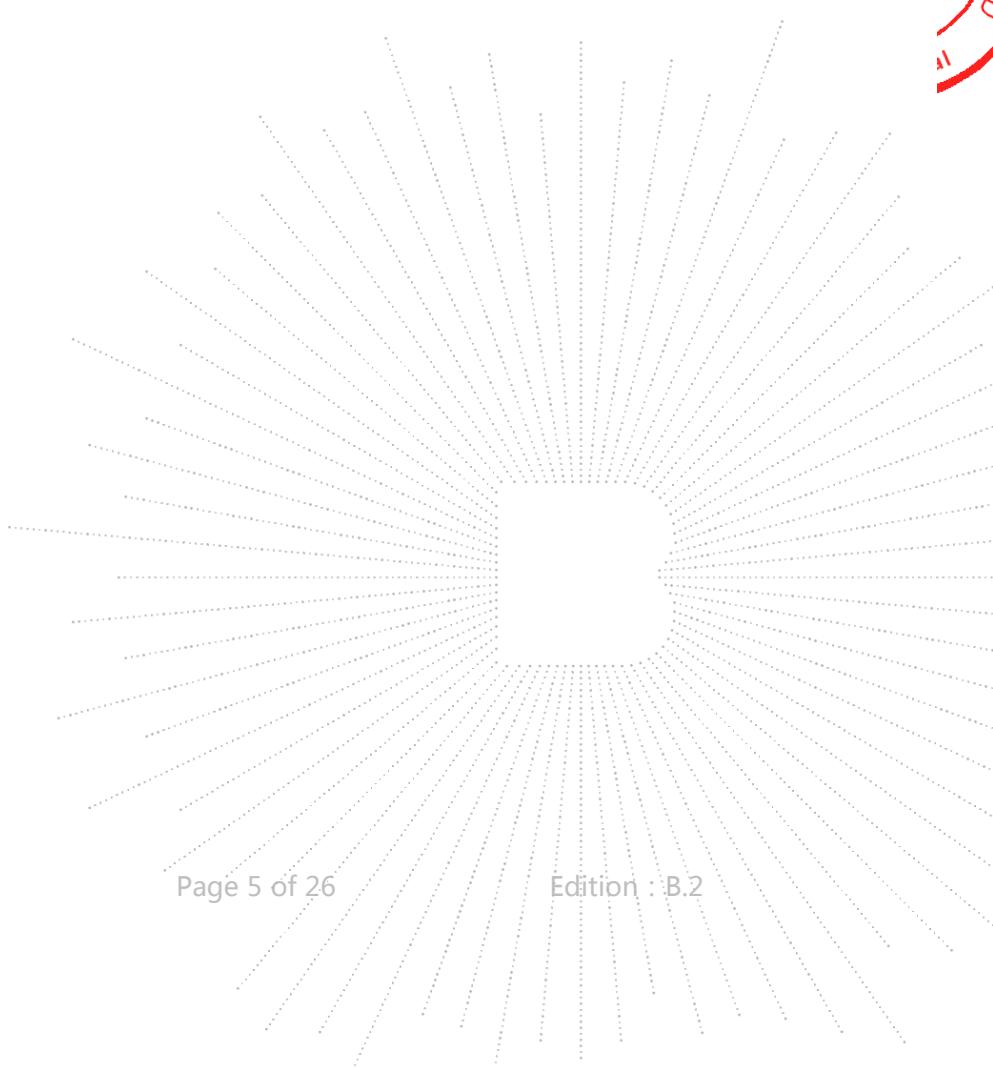
1. Version

Report No.	Issue Date	Description	Approved
BCTC2409500313-1E	2024-10-21	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
1	Conducted Emission	15.207	PASS
2	Radiated Emission	15.209	PASS
3	20dB Bandwidth	15.215	PASS
4	Antenna Requirement	15.203	PASS



3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	$U=4.3\text{dB}$
2	Conducted Emission (150kHz-30MHz)	$U=3.2\text{dB}$
3	humidity uncertainty	$U=5.3\%$
4	Temperature uncertainty	$U=0.59\text{ }^{\circ}\text{C}$

2024

4. Product Information And Test Setup

4.1 Product Information

Model/Type Reference: E3600

Model Differences: N/A

Modulation: MSK

Operation Frequency: 115kHz-205kHz

Antenna installation: loop coil antenna

Ratings: Capacity: 3686Wh, 51.2V, 72Ah

INPUT:

AC Input: 120V/15A/60HZ, 1800W max

Solar Input: 12~60VDC, 1200W max

CAR Input: 13VDC, 10A

OUTPUT:

USB-C Output: 60W*1 5V-3A, 9V-3A, 12V-3A, 15V-3A, 20V-3A
100W*1 5V-3A, 9V-3A, 12V-3A, 15V-3A, 20V-5A

USB Output: USB-A(x2)5V-2.4A

USB-A Fast Charge(x2):5V-3A, 9V-2A, 12V-1.5A 18W max

AC Output: (x3): 120VAC/20A 60Hz 2400W
(x1): 120VAC/30A 60Hz 3600W

Wireless: 15W

Anderson Output: 12VDC-18A

DC 5521 Port(x2): 12V-5A

Car cigarette lighter Port: 12V-10A

Discharging temperature: 5°F-104°F(-15°C-40°C)

Charging temperature: 35.6°F-104°F(2°C-40°C)

DC Total output: 570W

AC Total output: 3600W

4.2 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-3	Dummy load	N/A	DL01	N/A	Auxiliary

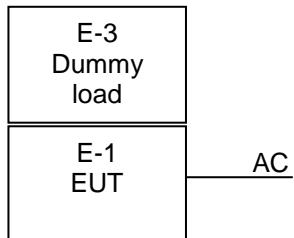
Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

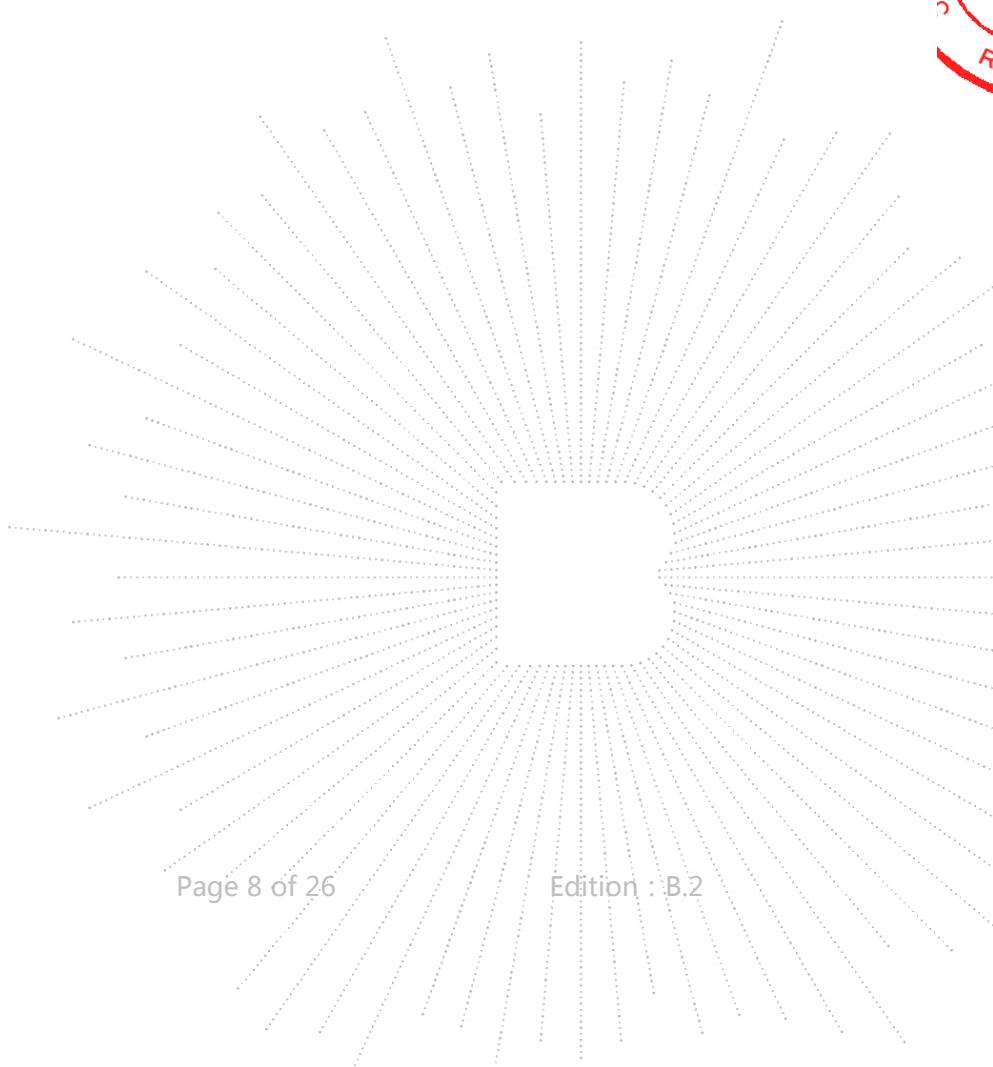
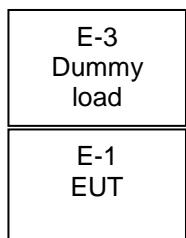
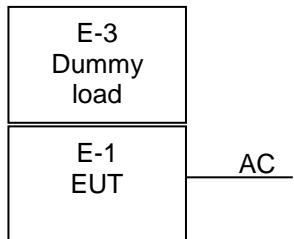
4.3 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission:



Radiated Spurious Emission:



4.4 Test Mode

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

AC Mode	Mode 1	Charging+ Wireless charger(15W)
	Mode 2	Charging
DC Mode	Mode 3	Charging+ Wireless charger(15W)
	Mode 4	Charging
	Mode 5	Wireless charger(15W)

Note: All test mode were tested and passed, only shows the worst case mode which were recorded in this report.

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

A2LA certificate registration number is: CN1212

ISED Registered No.: 23583

ISED CAB identifier: CN0017

5.2 Test Instrument Used

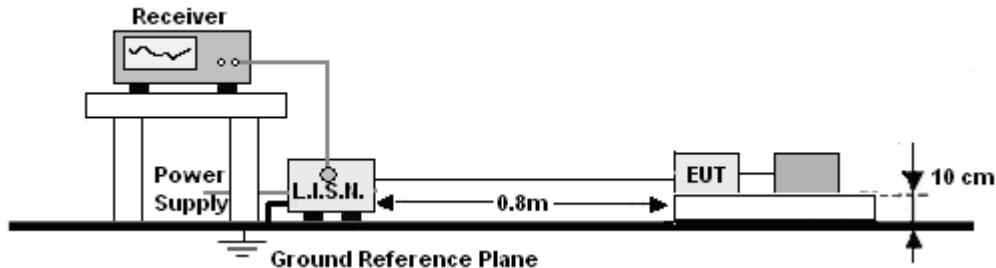
Conducted Emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
LISN	R&S	ENV216	101375	May 16, 2024	May 15, 2025
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Pulse limiter	Schwarzbeck	VTSD9561-F	01323	May 16, 2024	May 15, 2025

RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power Meter	Keysight	E4419	\	May 16, 2024	May 15, 2025
Power Sensor (AV)	Keysight	E9300A	\	May 16, 2024	May 15, 2025
Signal Analyzer 20kHz-26.5G Hz	Keysight	N9020A	MY49100060	May 16, 2024	May 15, 2025
Spectrum Analyzer 9kHz-40GHz	R&S	FSP 40	\	May 16, 2024	May 15, 2025

Radiated Emissions Test (966 Chamber01)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
Receiver	R&S	ESRP	101154	May 16, 2024	May 15, 2025
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 16, 2024	May 15, 2025
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 21, 2024	May 20, 2025
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 21, 2024	May 20, 2025
Amplifier	SKET	LAPA_01G1 8G-45dB	SK202104090 1	May 16, 2024	May 15, 2025
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 21, 2024	May 20, 2025
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 16, 2024	May 15, 2025
Horn Antenn(18GH z-40GHz)	Schwarzbeck	BBHA9170	00822	May 21, 2024	May 20, 2025
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 16, 2024	May 15, 2025
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

Frequency (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Notes:

1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

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

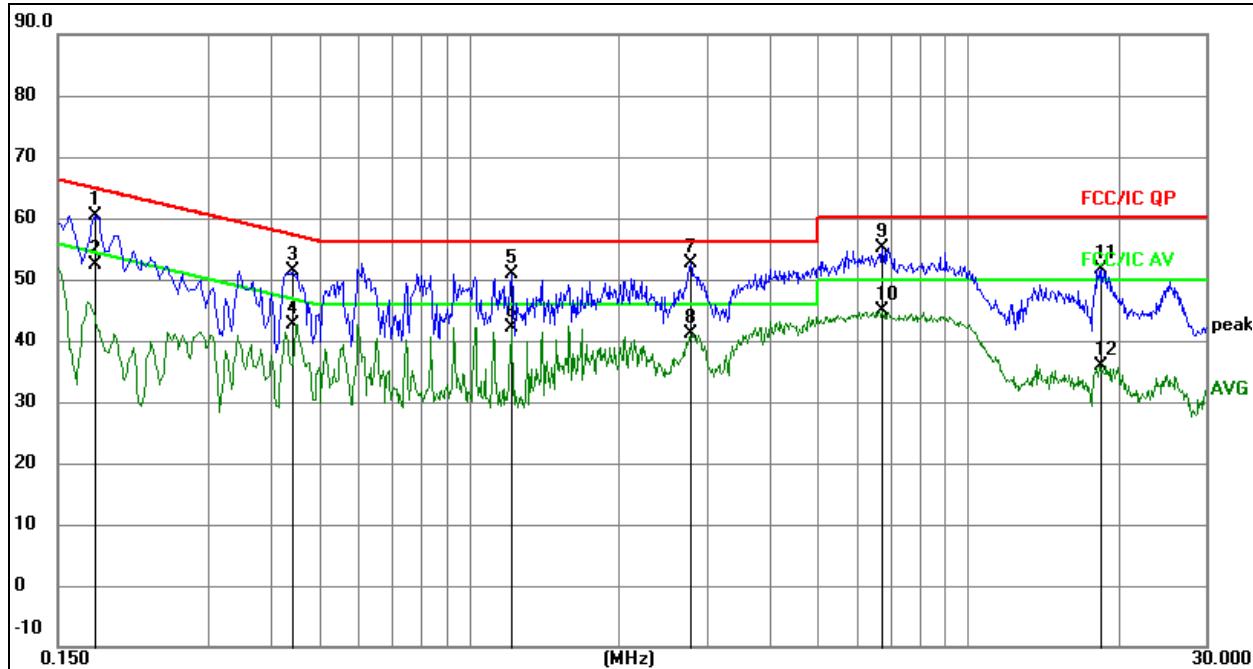
- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N.).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 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.

6.5 Test Result

Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Phase :	L
Test Mode:	Mode 1 (The worst data)	Test Voltage:	AC 120V/60Hz

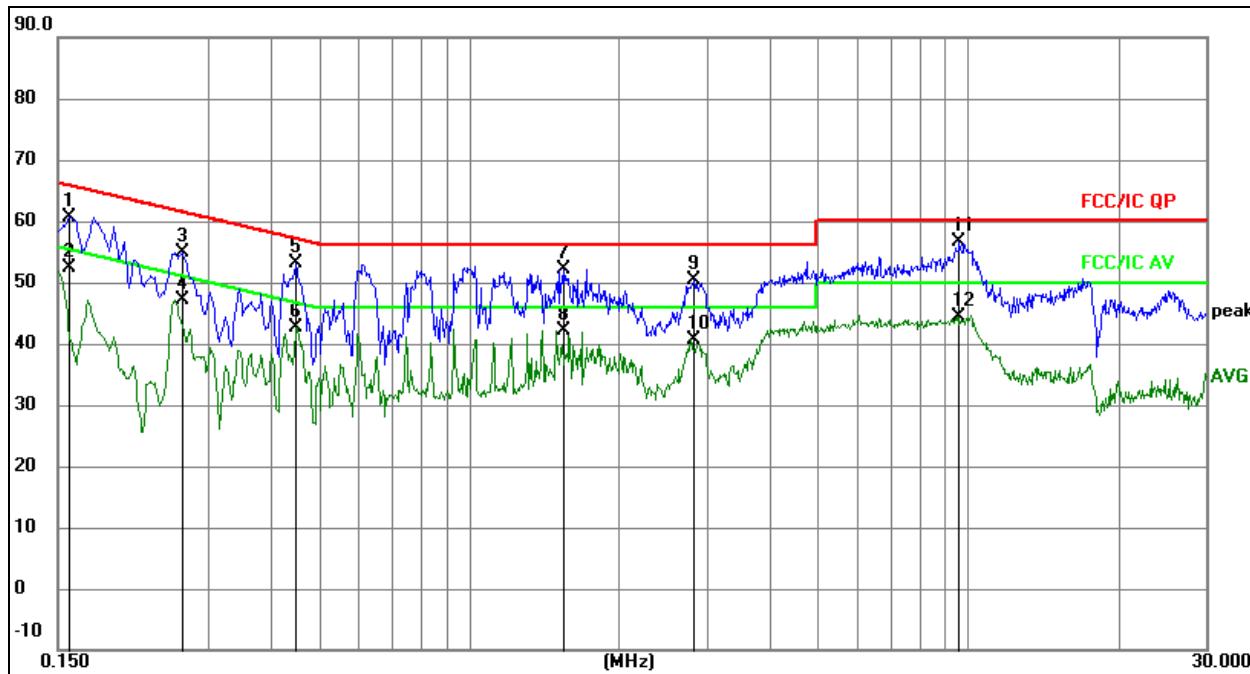


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment		Over	
					MHz	dB	dBuV	dBuV
1		0.1777	40.28	20.07	60.35	64.59	-4.24	QP
2	*	0.1777	32.33	20.07	52.40	54.59	-2.19	AVG
3		0.4420	31.29	20.08	51.37	57.02	-5.65	QP
4		0.4420	22.53	20.08	42.81	47.02	-4.41	AVG
5		1.2161	30.87	20.09	50.96	56.00	-5.04	QP
6		1.2161	22.15	20.09	42.24	46.00	-3.76	AVG
7		2.7794	32.51	20.12	52.63	56.00	-3.37	QP
8		2.7794	20.99	20.12	41.11	46.00	-4.89	AVG
9		6.7333	34.99	20.16	55.15	60.00	-4.85	QP
10		6.7333	24.81	20.16	44.97	50.00	-5.03	AVG
11		18.5236	31.38	20.32	51.70	60.00	-8.30	QP
12		18.5236	15.60	20.32	35.92	50.00	-14.08	AVG

Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Phase :	N
Test Mode:	Mode 1 (The worst data)	Test Voltage:	AC 120V/60Hz


Remark:

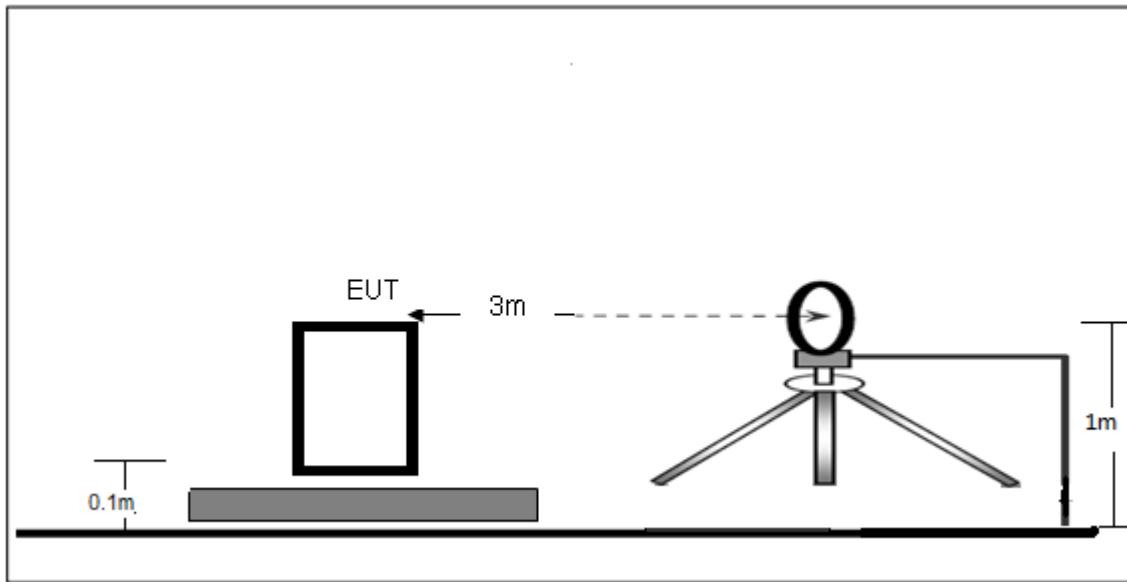
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector
			Level	Factor	ment			
			MHz	dB	dBuV	dBuV	dB	
1		0.1581	40.65	20.07	60.72	65.56	-4.84	QP
2	*	0.1581	32.25	20.07	52.32	55.56	-3.24	AVG
3		0.2658	34.85	20.07	54.92	61.25	-6.33	QP
4		0.2658	26.96	20.07	47.03	51.25	-4.22	AVG
5		0.4491	32.96	20.08	53.04	56.89	-3.85	QP
6		0.4491	22.62	20.08	42.70	46.89	-4.19	AVG
7		1.5518	31.96	20.10	52.06	56.00	-3.94	QP
8		1.5518	22.14	20.10	42.24	46.00	-3.76	AVG
9		2.8239	30.30	20.12	50.42	56.00	-5.58	QP
10		2.8239	20.47	20.12	40.59	46.00	-5.41	AVG
11		9.6028	36.55	20.17	56.72	60.00	-3.28	QP
12		9.6028	24.33	20.17	44.50	50.00	-5.50	AVG

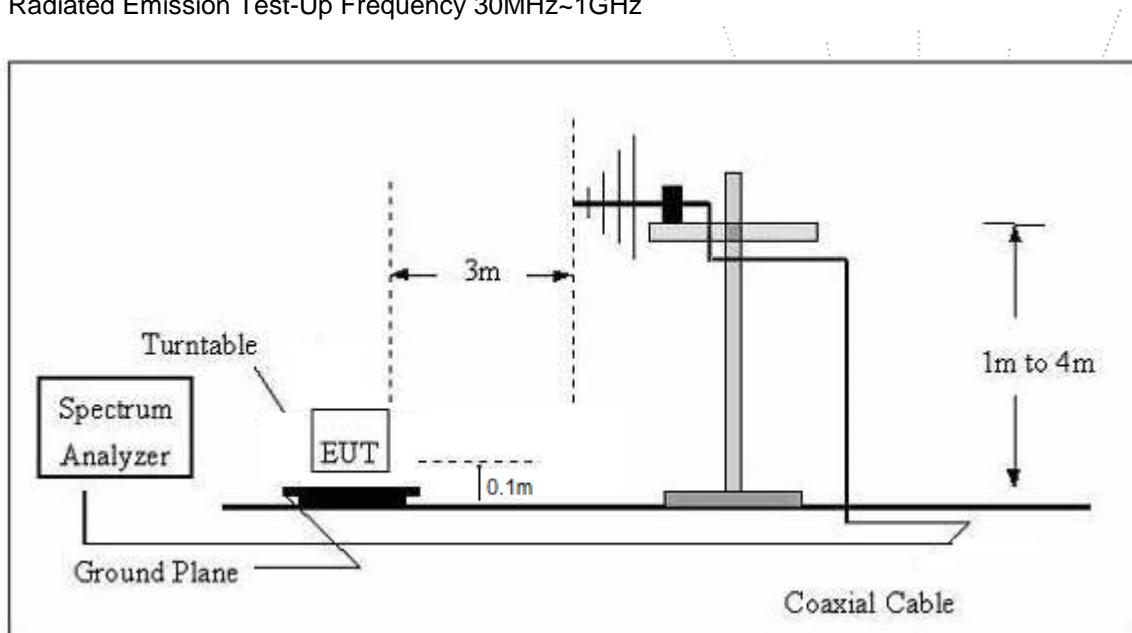
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

(A) Radiated Emission Test-Up Frequency Below 30MHz



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



7.2 Limit

FCC §15.209; §15.205.

Test Standard	FCC Part15 C Section 15.209 and 15.205				
	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
Test Limit	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz~1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz~30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
	-	74.0	Peak		3

7.3 Test procedure

Receiver Parameter	Setting
Attenuation	Auto
9kHz~150kHz	RBW 200Hz for QP
150kHz~30MHz	RBW 9kHz for QP
30MHz~1000MHz	RBW 120kHz for QP

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.

Above 1GHz test procedure as below:

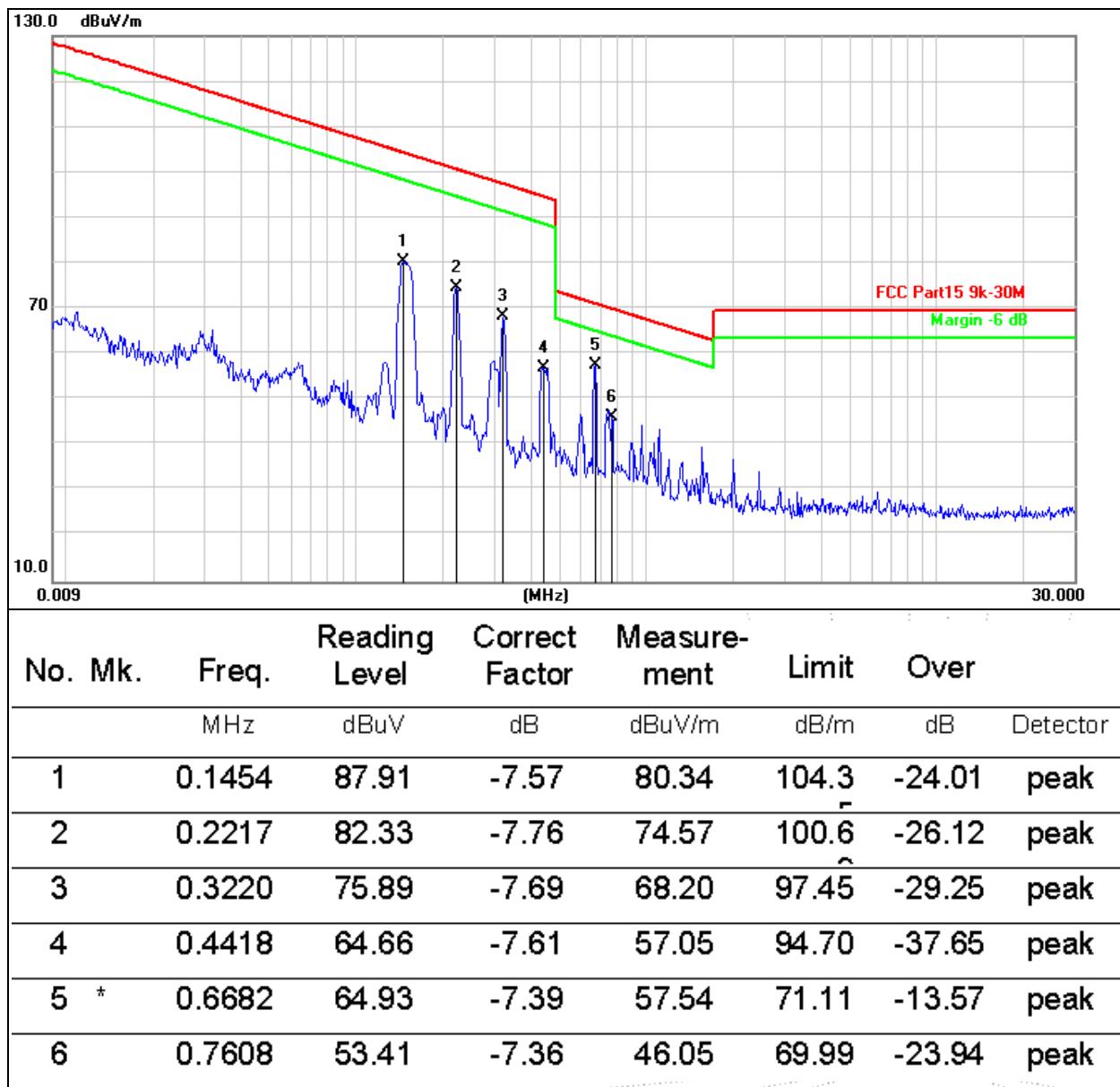
- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change from 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel.

Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

7.4 Test Result

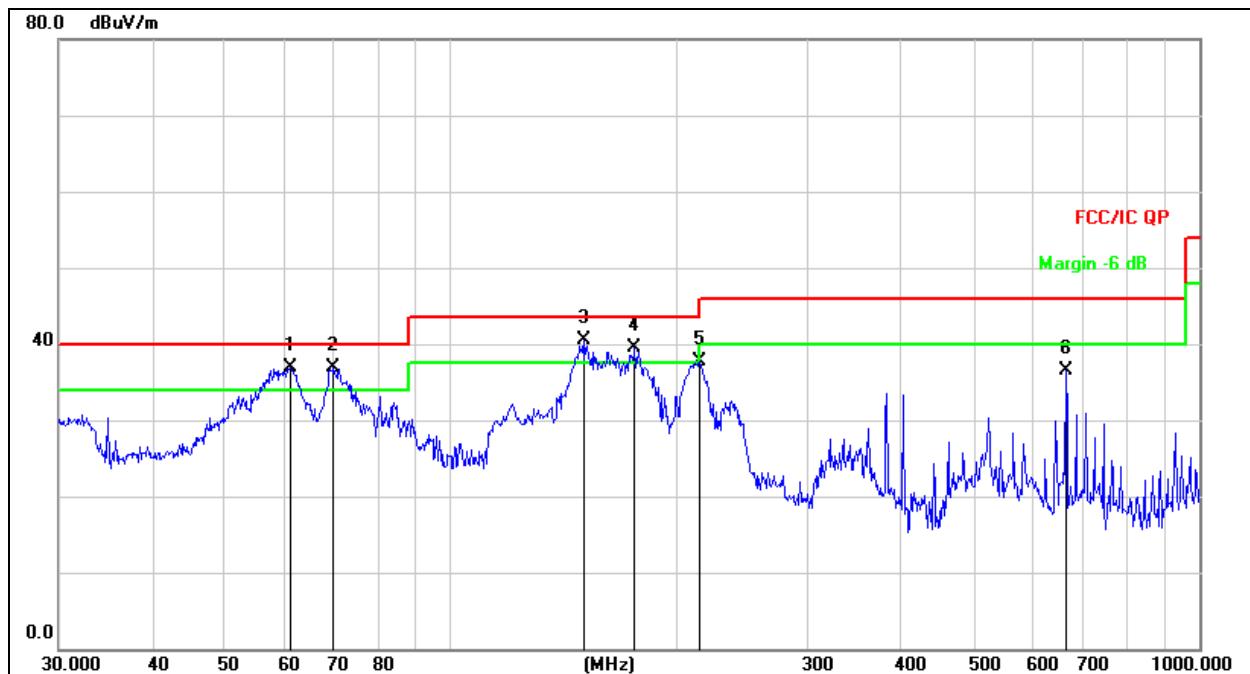
9kHz-30MHz

Temperature:	26°C	Relative Humidity:	54%RH
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz
Test Mode:	Mode 3 (The worst data)	Polarization:	Coaxial(Worst)



Between 30MHz – 1GHz

Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Phase:	Horizontal
Test Mode:	Mode 3	Test Voltage:	AC 120V/60Hz

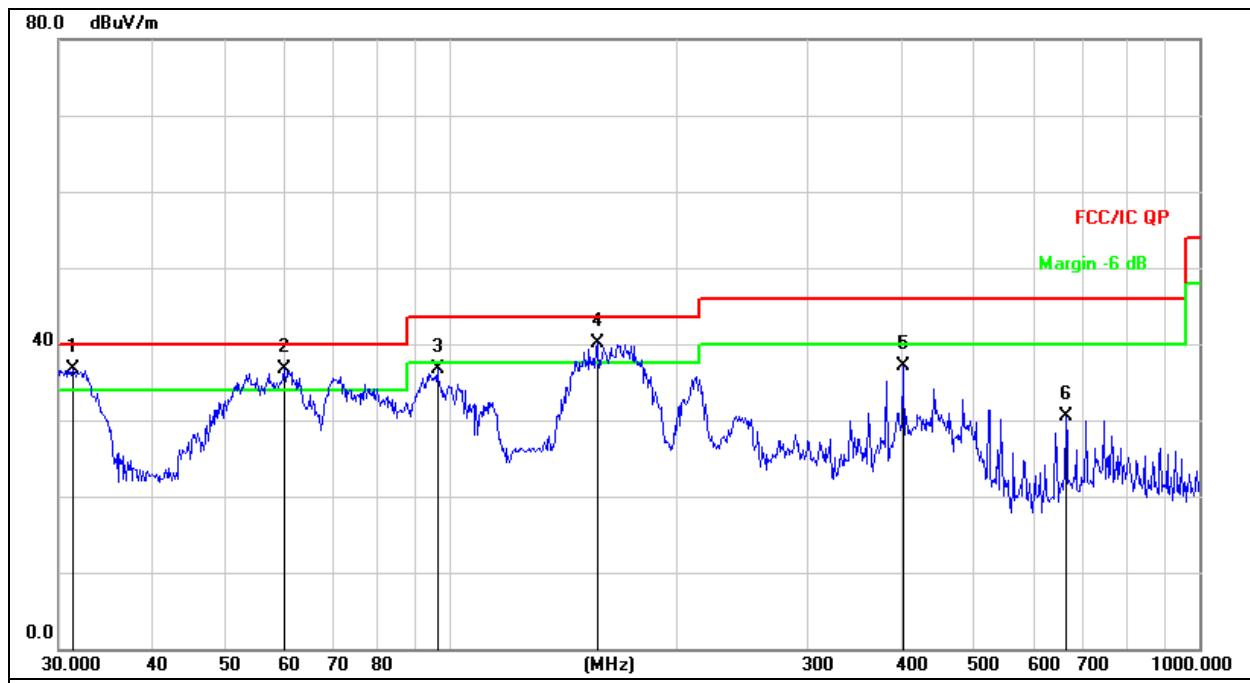


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	61.1315	52.52	-15.56	36.96	40.00	-3.04	QP
2	!	69.8448	54.81	-17.96	36.85	40.00	-3.15	QP
3	!	150.5378	59.84	-19.39	40.45	43.50	-3.05	QP
4	!	176.2684	57.02	-17.48	39.54	43.50	-3.96	QP
5	!	215.2675	52.93	-15.28	37.65	43.50	-5.85	QP
6		663.4728	42.53	-6.04	36.49	46.00	-9.51	QP

Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 3	Test Voltage:	AC 120V/60Hz


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

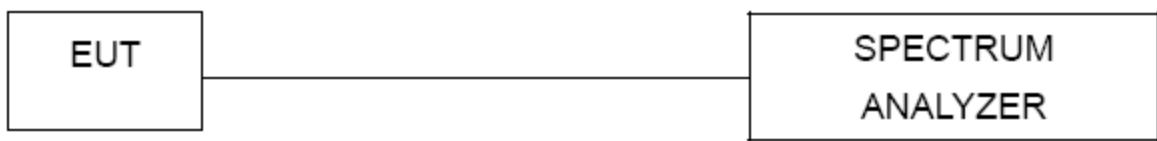
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
			MHz	dBuV	dB	dB/m	dB	Detector
1	*	31.2893	53.13	-16.40	36.73	40.00	-3.27	QP
2	!	60.0690	51.99	-15.27	36.72	40.00	-3.28	QP
3		96.0986	53.19	-16.50	36.69	43.50	-6.81	QP
4	!	157.0072	59.05	-18.91	40.14	43.50	-3.36	QP
5		401.8385	47.98	-10.80	37.18	46.00	-8.82	QP
6		663.4728	36.54	-6.04	30.50	46.00	-15.50	QP

8. Bandwidth Test

8.1 Test Procedure

1. Set RBW = 1%~5% OBW.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

8.2 Test Setup



8.3 Test Result

Frequency (kHz)	20dB bandwidth (Hz)	Result
126.1	6	Pass



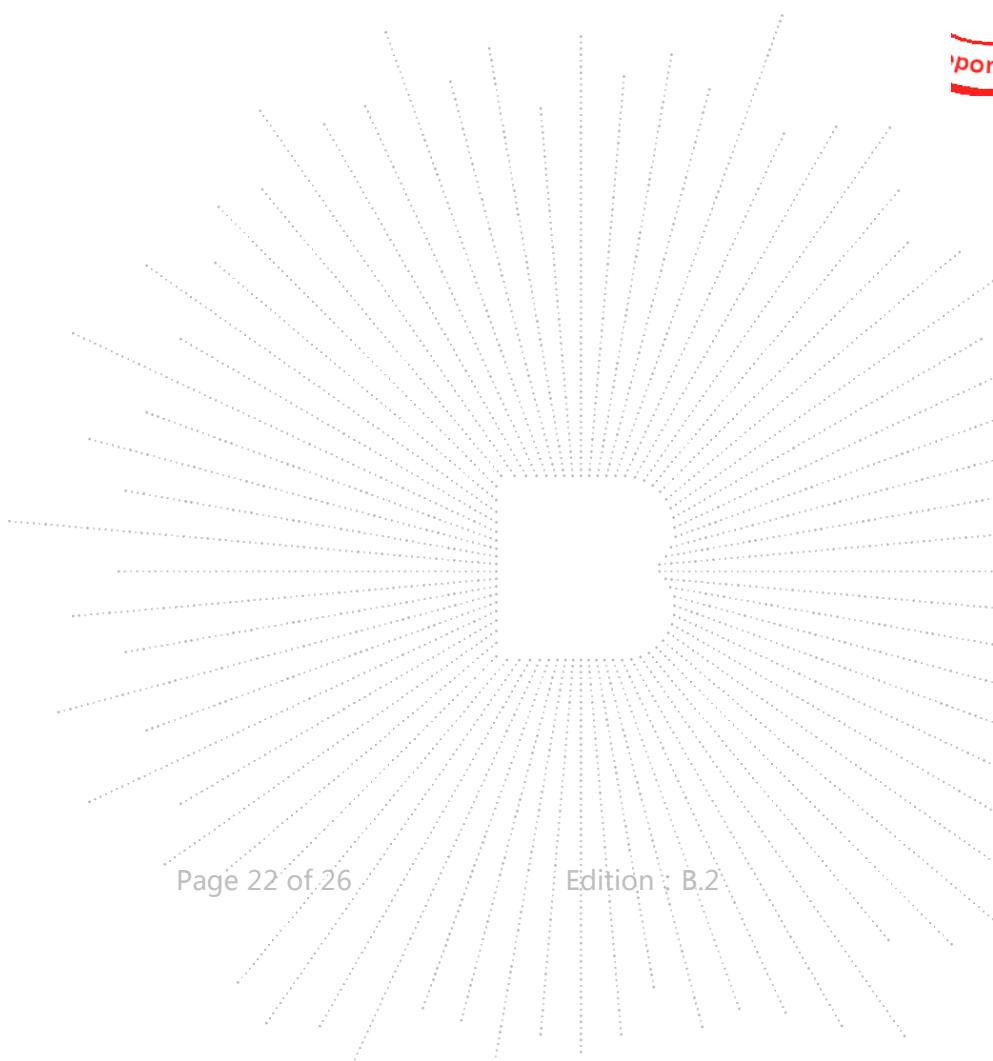
9. Antenna Requirements

9.1 Limit

For intentional device, according to FCC 47 CFR Section 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. 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 a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

9.2 Test Result

The antenna used for this product is Inductive Loop coil antenna.



10. EUT Photographs

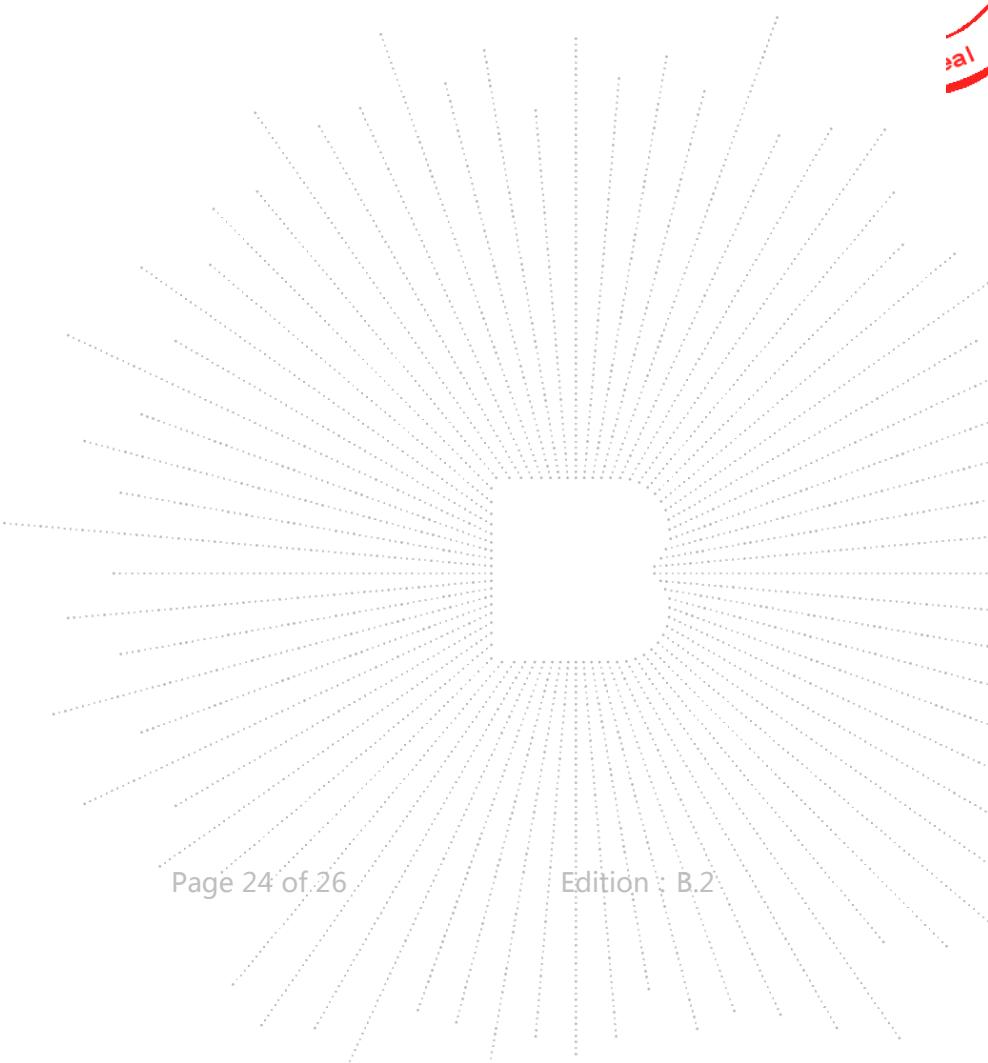
EUT Photo



NOTE: Appendix-Photographs Of EUT Constructional Details

11. EUT Test Setup Photographs

Conducted emissions



Radiated Measurement Photos

9kHz-30MHz



30MHz-1GHz



STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

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***** END *****