TEST REPORT

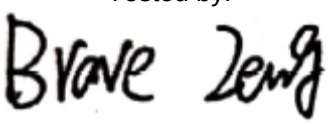
Report No.:	BCTC2309807299-1E
Applicant:	LONGCONN ELECTRONICS (SHENZHEN) CO LTD
Product Name:	BALANCE 3-in-1 Wireless Charger
Model/Type Ref.:	W328
Tested Date:	2023-09-18 to 2023-10-18
Issued Date:	2023-11-28

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2AXAX-W328

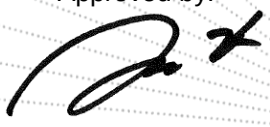
Product Name:	BALANCE 3-in-1 Wireless Charger
Trademark:	ZECHIN
Model/Type Ref.:	W328
Prepared For:	LONGCONN ELECTRONICS (SHENZHEN) CO LTD
Address:	Floor 3,B1 Block ,Xu Jing Chang Industrial Park, NO.39 HaoyeRoad,FuhaiStreet, Bao'an, Shenzhen
Manufacturer:	LONGCONN ELECTRONICS (SHENZHEN) CO LTD
Address:	Floor 3,B1 Block ,Xu Jing Chang Industrial Park, NO.39 HaoyeRoad,FuhaiStreet, Bao'an, Shenzhen
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2023-09-18
Sample tested Date:	2023-09-18 to 2023-10-18
Report No.:	BCTC2309807299-1E
Test Standards:	FCC Part15.209 ANSI C63.10-2013
Test Results:	PASS

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

Table of Content

1. Version

Report No.	Issue Date	Description	Approved
BCTC2309807299-1E	2023-11-28	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(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission(150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59℃

4. Product Information and Test Setup

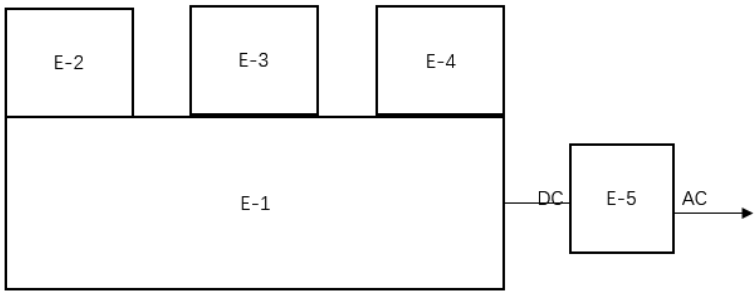
4.1 Product Information

Model/Type reference:	W328
Model differences:	N/A
Hardware Version:	N/A
Software Version:	N/A
Type of Modulation:	ASK
Operation Frequency:	112-205KHz for Charging Pad 320-327kHz for Watch
Antenna installation:	Loop coil antenna
Ratings:	Input : 5V/3A/9V3A,12V2.5A Wireless1:15W Wireless2:15W Wireless3:5W

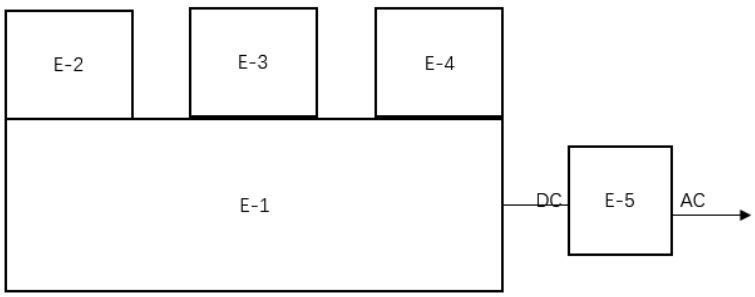
4.2 Test Setup Configuration

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

Conducted Emission



Radiated Spurious Emission:



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	BALANCE 3-in-1 Wireless Charger	N/A	W328	N/A	EUT
E-2	Dummy load	N/A	DL01	N/A	Dummy load
E-3	Dummy load	N/A	DL02	N/A	Dummy load
E-4	Dummy load	N/A	DL03	N/A	Dummy load
E-5	Adapter	N/A	KA3601A-1252880 US	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.

4.4 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 confit

Test Modes 1	Wireless 1:15W(Magnetic Charging Pad)
Test Modes 2	Wireless 2:15W(Magnetic Charging Pad)
Test Modes 3	Wireless 3:5W(Watch)
Test Modes 4	Wireless1:15W(Magnetic Charging Pad) + Wireless 3:5W(Watch)
Test Modes 5	Wireless2: 15W(Magnetic Charging Pad)+ Wireless 3: 5W(Watch)
Test Modes 6	Wireless1:15W(Magnetic Charging Pad)+ Wireless 2:15W(Magnetic Charging Pad)
Test Modes 7	Wireless1:15W(Magnetic Charging Pad)+ Wireless2:15W(Magnetic Charging Pad)+Wireless3:5W(Watch)

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

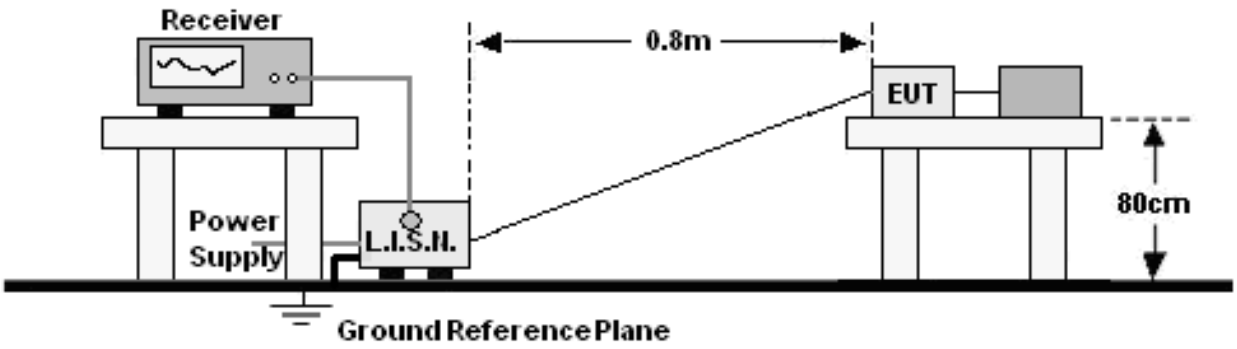
Conducted Emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
LISN	R&S	ENV216	101375	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB C-6GHz	1650	May 15, 2023	May 14, 2024

RF Conducted Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power Metter	Keysight	E4419	\	May 15, 2023	May 14, 2024
Power Sensor (AV)	Keysight	E9300A	\	May 15, 2023	May 14, 2024
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 15, 2023	May 14, 2024
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 15, 2023	May 14, 2024

Radiated Emissions Test (966 Chamber01)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	Jun. 05. 2023	Jun. 04, 2024
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
Receiver	R&S	ESRP	101154	May 15, 2023	May 14, 2024
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 15, 2023	May 14, 2024
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 15, 2023	May 14, 2024
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	May 15, 2023	May 14, 2024
Amplifier	SKET	LAPA_01G18G-45dB	\	May 15, 2023	May 14, 2024
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 15, 2023	May 14, 2024
Amplifier(18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 15, 2023	May 14, 2024
Horn Antenn(18GHz-40GHz)	Schwarzbeck	BBHA9170	00822	May 15, 2023	May 14, 2024
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 15, 2023	May 14, 2024
Communication test set	R&S	CMW500	126173	Nov. 08, 2022	Nov. 07, 2023
Software	Frad	EZ-EMC	FA-03A2 RE	\	\
Signal Analyzer20kHz-26.5GHz	Keysight	N9010A	MY53300855	May 15, 2023	May 14, 2024
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 15, 2023	May 14, 2024

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

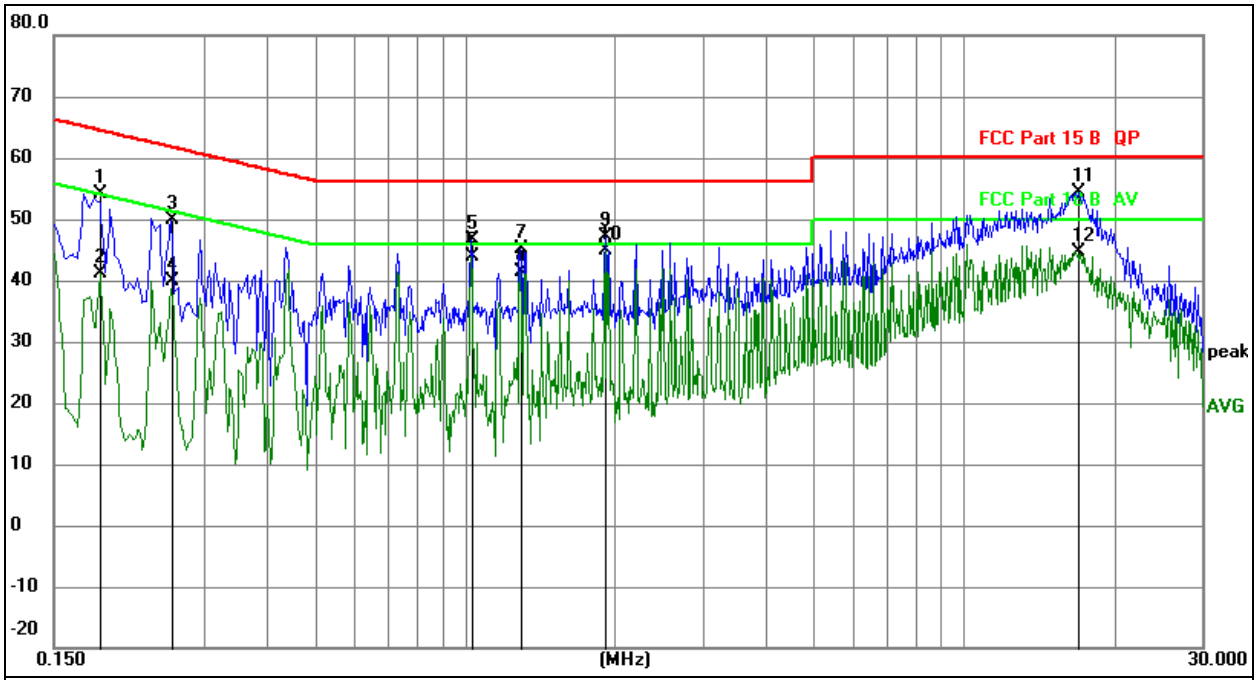
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak 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.
c. 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

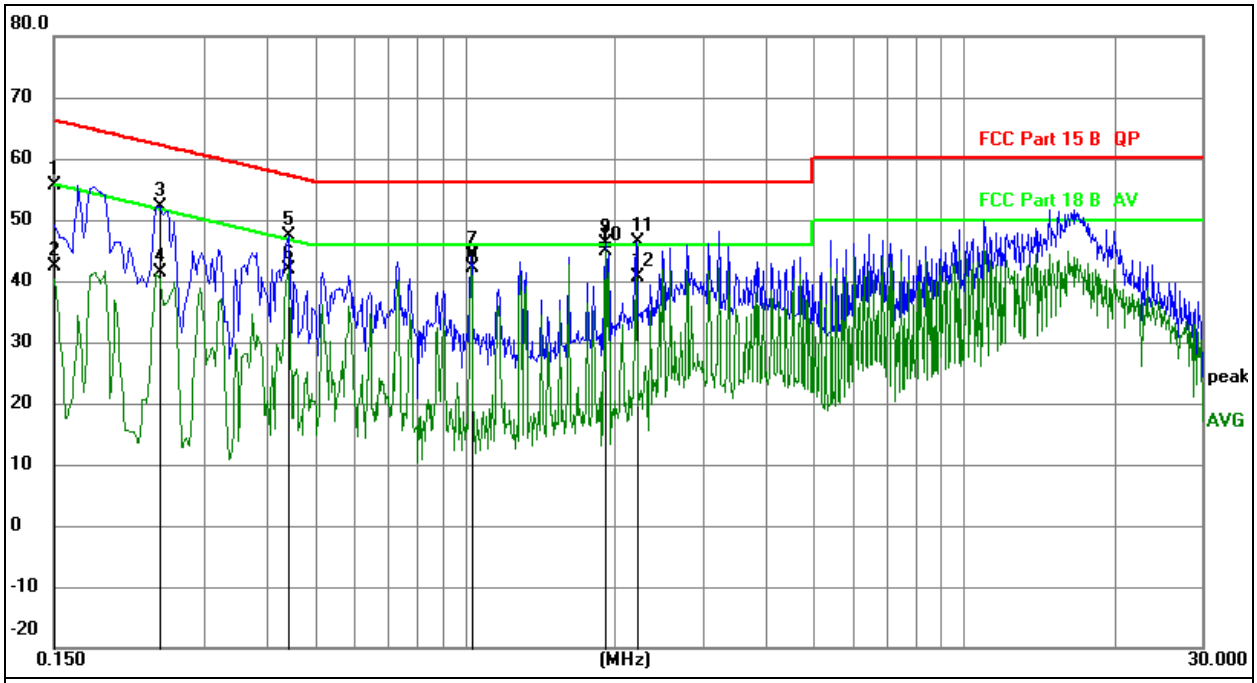
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase:	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 7



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	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1		0.1860	43.86	10.19	54.05	64.21	-10.16	QP	
2		0.1860	30.96	10.19	41.15	54.21	-13.06	AVG	
3		0.2580	39.62	10.19	49.81	61.50	-11.69	QP	
4		0.2580	29.67	10.19	39.86	51.50	-11.64	AVG	
5		1.0275	36.46	10.21	46.67	56.00	-9.33	QP	
6		1.0275	33.62	10.21	43.83	46.00	-2.17	AVG	
7		1.2930	34.98	10.17	45.15	56.00	-10.85	QP	
8		1.2930	31.24	10.17	41.41	46.00	-4.59	AVG	
9		1.9095	37.09	10.10	47.19	56.00	-8.81	QP	
10	*	1.9095	34.69	10.10	44.79	46.00	-1.21	AVG	
11		17.0160	44.04	10.46	54.50	60.00	-5.50	QP	
12		17.0160	34.14	10.46	44.60	50.00	-5.40	AVG	

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase:	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 7



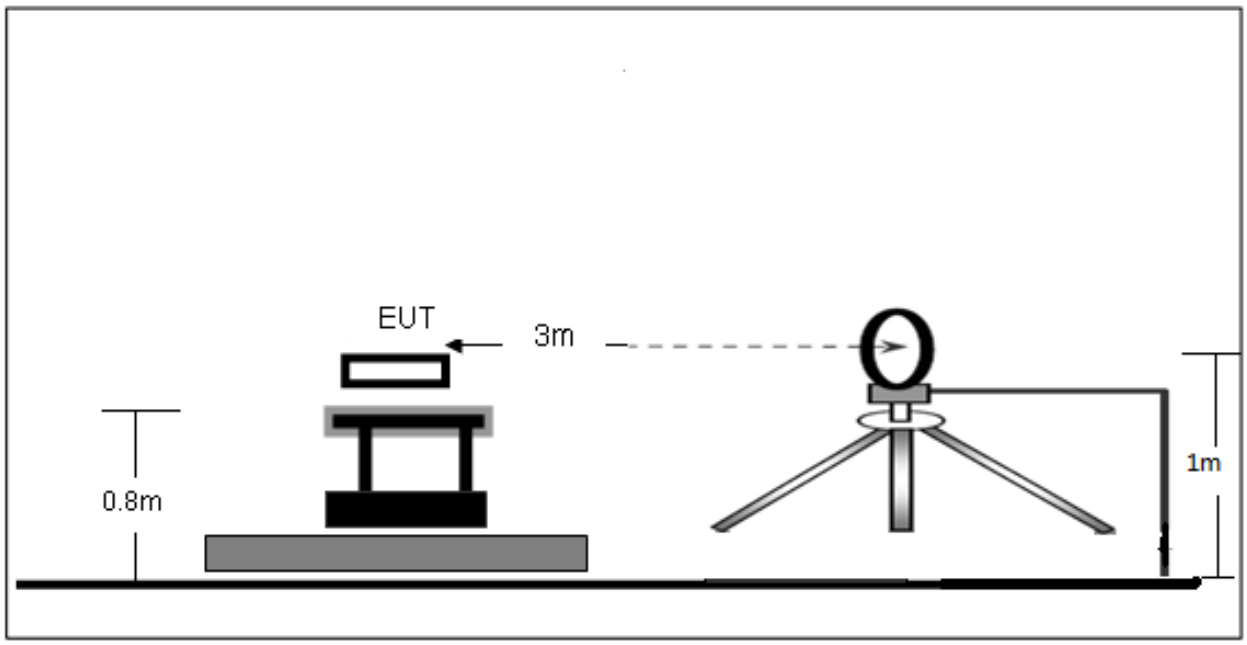
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over=Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	45.42	10.18	55.60	66.00	-10.40	QP	
2		0.1500	32.15	10.18	42.33	56.00	-13.67	AVG	
3		0.2445	41.84	10.19	52.03	61.94	-9.91	QP	
4		0.2445	31.12	10.19	41.31	51.94	-10.63	AVG	
5		0.4425	37.15	10.18	47.33	57.01	-9.68	QP	
6		0.4425	31.82	10.18	42.00	47.01	-5.01	AVG	
7		1.0275	33.87	10.21	44.08	56.00	-11.92	QP	
8		1.0275	32.04	10.21	42.25	46.00	-3.75	AVG	
9		1.9095	36.11	10.10	46.21	56.00	-9.79	QP	
10	*	1.9095	34.81	10.10	44.91	46.00	-1.09	AVG	
11		2.2065	36.37	10.11	46.48	56.00	-9.52	QP	
12		2.2065	30.42	10.11	40.53	46.00	-5.47	AVG	

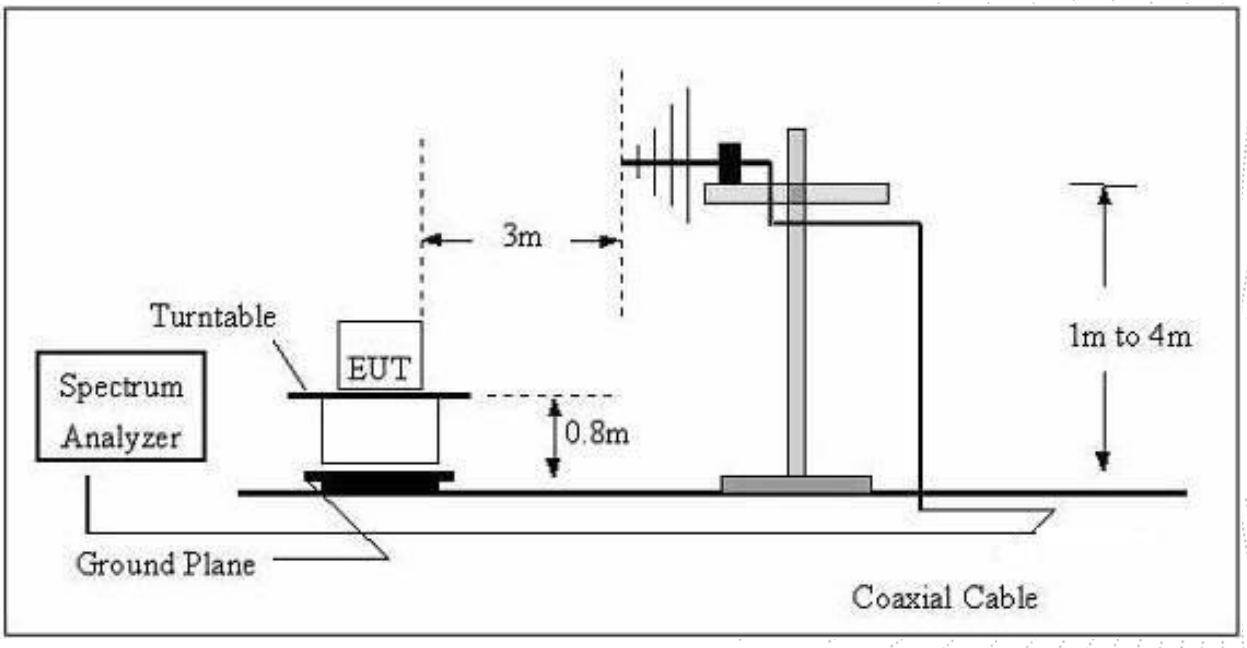
7. Radiated Emissions

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.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance	
(MHz)	uV/m	(m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))}$ + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))}$ + 40
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)}$ + 40
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.3 Test Procedure

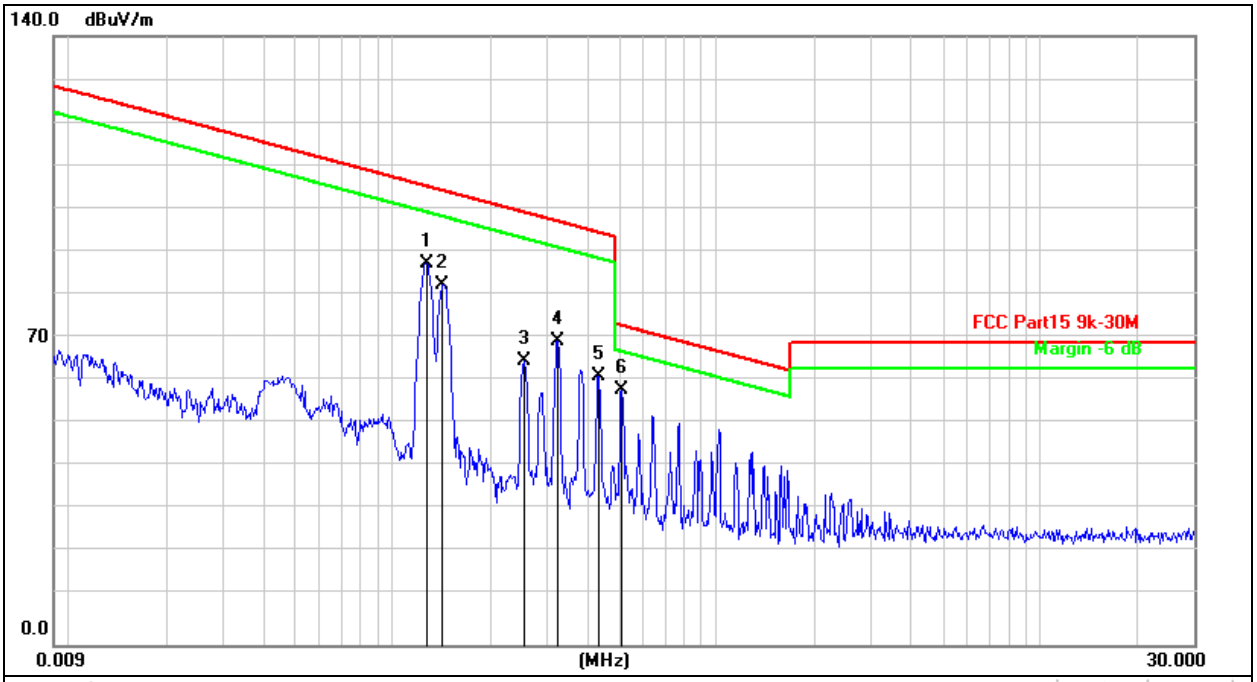
Receiver Parameter	Setting
Attenuation	Auto
9kHz~150kHz	RBW 200Hz for QP
150kHz~30MHz	RBW 9kHz for QP
30MHz~1000MHz	RBW 120kHz for QP

Below 1GHz test procedure as below:
a. 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.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. 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.
d. 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.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. 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.
g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel.

7.4 Test Result

Below 30MHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 7	Polarization:	Coaxial

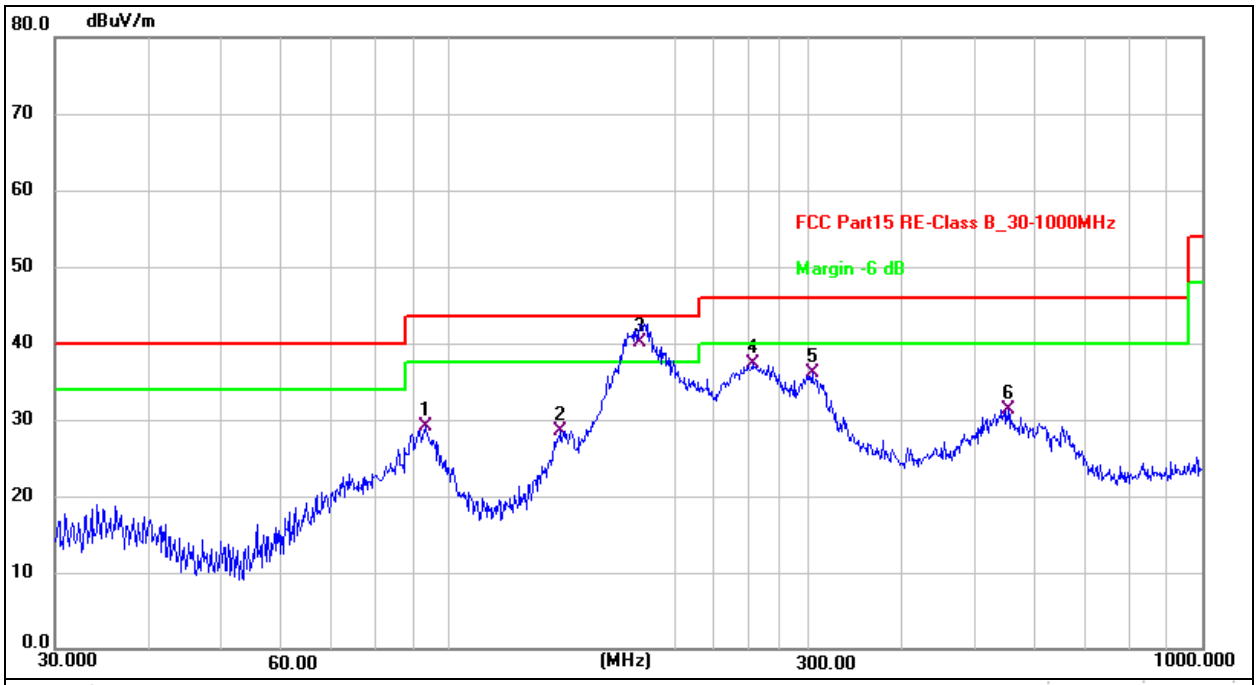


Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over=Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		0.1276	95.13	-7.54	87.59	105.4	-17.90	peak
2		0.1431	90.37	-7.57	82.80	104.4	-21.69	peak
3		0.2545	73.14	-7.74	65.40	99.49	-34.09	peak
4		0.3246	77.41	-7.69	69.72	97.38	-27.66	peak
5		0.4347	69.47	-7.62	61.85	94.84	-32.99	peak
6	*	0.5113	66.26	-7.56	58.70	73.43	-14.73	peak

Between 30MHz – 1GHz

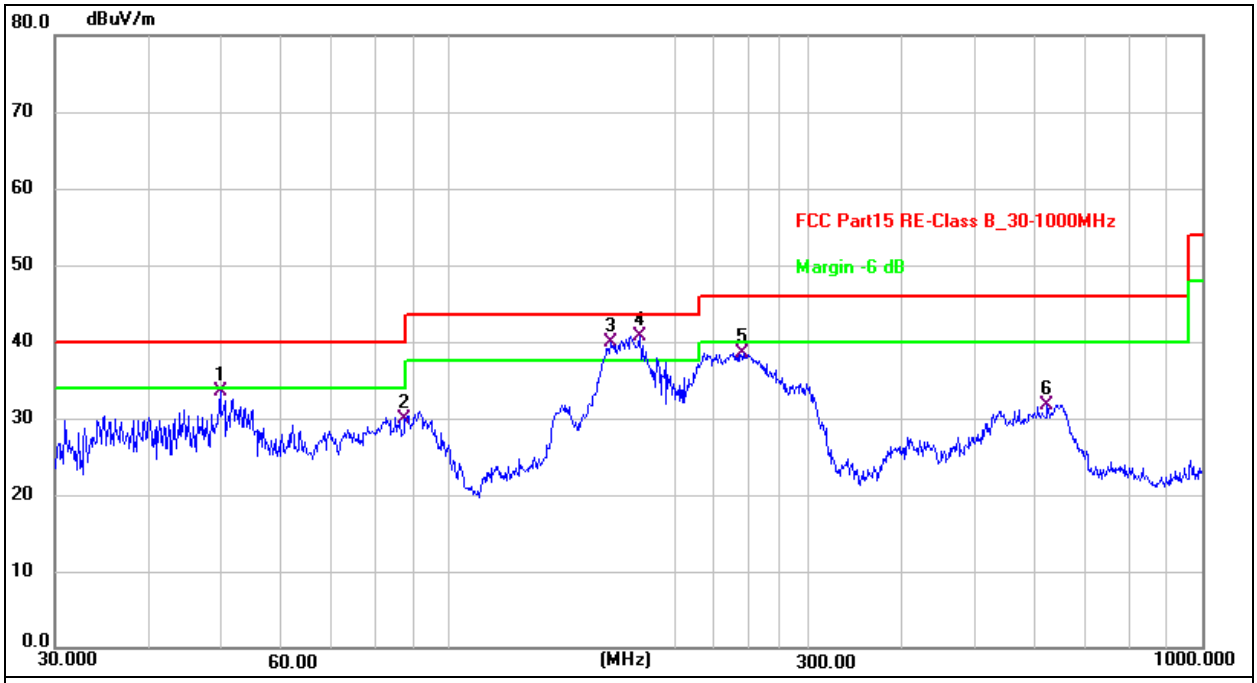
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz
Test Mode:	Mode 7	Polarization:	Horizontal



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

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	93.1132	49.81	-20.80	29.01	43.50	-14.49	QP
2	140.8350	46.18	-17.63	28.55	43.50	-14.95	QP
3 *	179.3863	58.39	-18.29	40.10	43.50	-3.40	QP
4	252.9482	56.38	-19.03	37.35	46.00	-8.65	QP
5	303.5437	53.28	-17.15	36.13	46.00	-9.87	QP
6	552.8832	42.68	-11.39	31.29	46.00	-14.71	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 7	Polarization:	Vertical



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

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	49.7068	50.14	-16.66	33.48	40.00	-6.52	QP
2	87.4177	50.64	-20.70	29.94	40.00	-10.06	QP
3 !	163.7550	57.11	-17.20	39.91	43.50	-3.59	QP
4 *	179.3863	59.07	-18.29	40.78	43.50	-2.72	QP
5	245.9509	57.95	-19.43	38.52	46.00	-7.48	QP
6	622.8900	41.40	-9.61	31.79	46.00	-14.21	QP

8. Bandwidth Test

1. Set RBW = 1%~5% OBW.

2. Set the video bandwidth (VBW) ≥ 3 x RBW.

3. Detector = Peak.

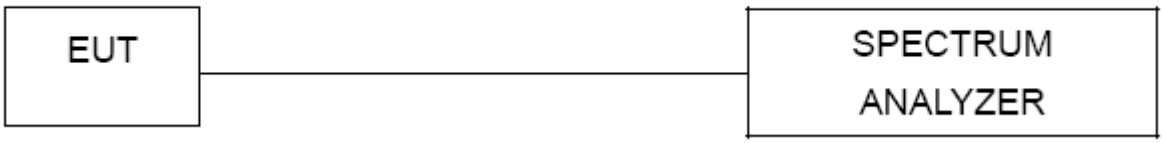
4. Trace mode = max hold.

5. Sweep = auto couple.

6. Allow the trace to stabilize.

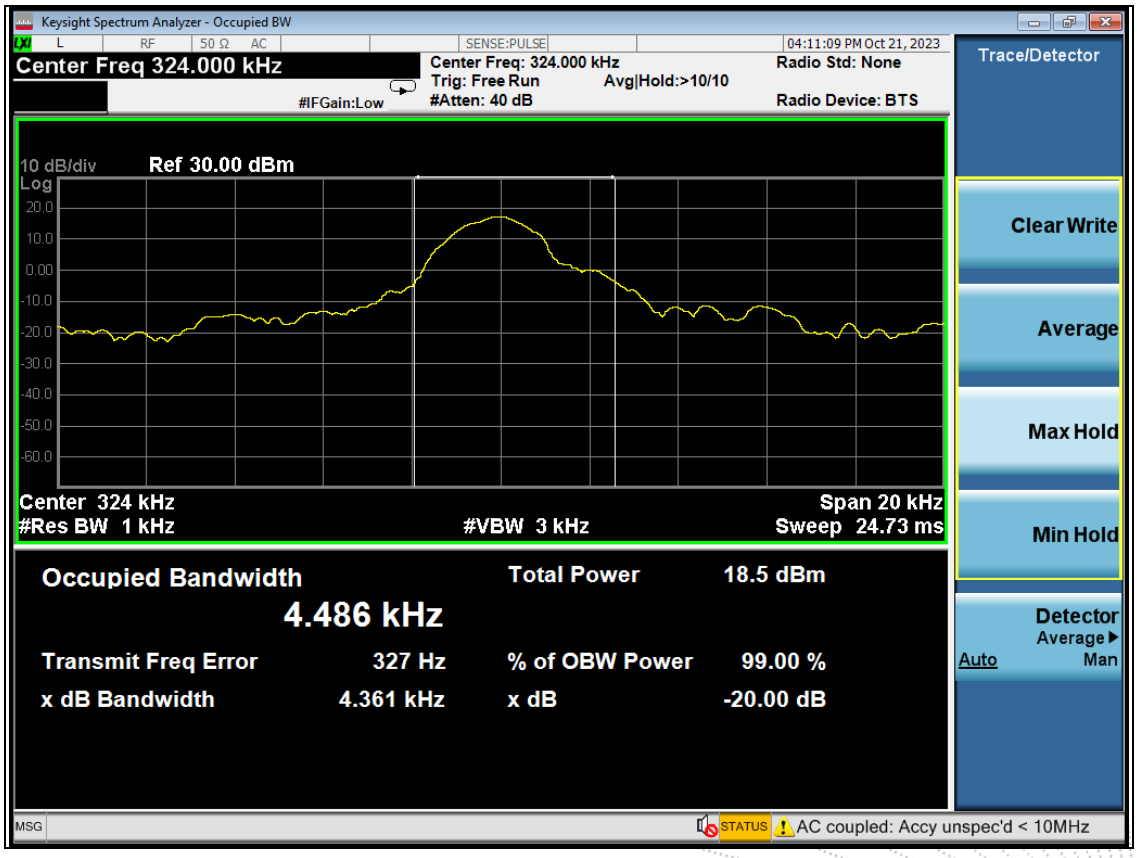
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

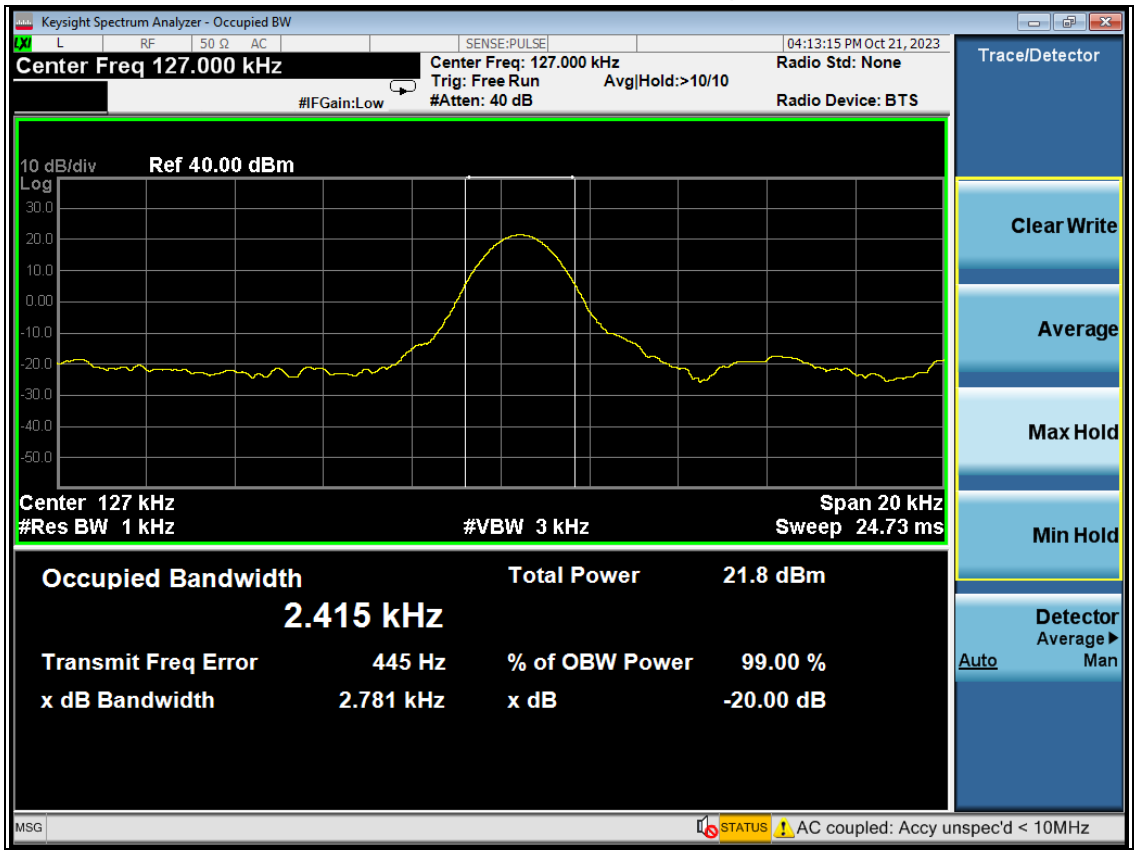
TEST SETUP



Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa		

Frequency (KHz)	20dB bandwidth (KHz)	Result
324	4.361	Pass
127	2.781	Pass




Keysight Spectrum Analyzer - Occupied BW
L
RF
50 Ω AC
SENSE:PULSE
04:13:15 PM Oct 21, 2023
Center Freq 127.000 kHz
Center Freq: 127.000 kHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Trace/Detector
10 dB/div
Log
Ref 40.00 dBm
30.0
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
Center 127 kHz
#Res BW 1 kHz
#VBW 3 kHz
Span 20 kHz
Sweep 24.73 ms
Occupied Bandwidth
2.415 kHz
Total Power
21.8 dBm
Transmit Freq Error
445 Hz
% of OBW Power
99.00 %
x dB Bandwidth
2.781 kHz
x dB
-20.00 dB
Clear Write
Average
Max Hold
Min Hold
Detector
Average
Auto
Man
MSG
STATUS
AC coupled: Accy unspec'd < 10MHz

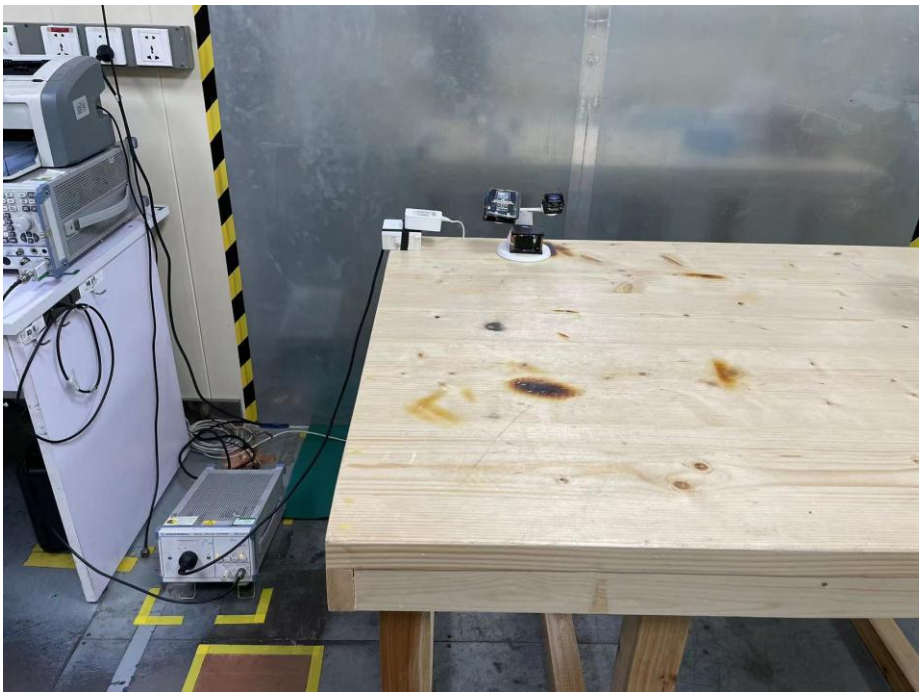
9. Antenna Requirements

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.

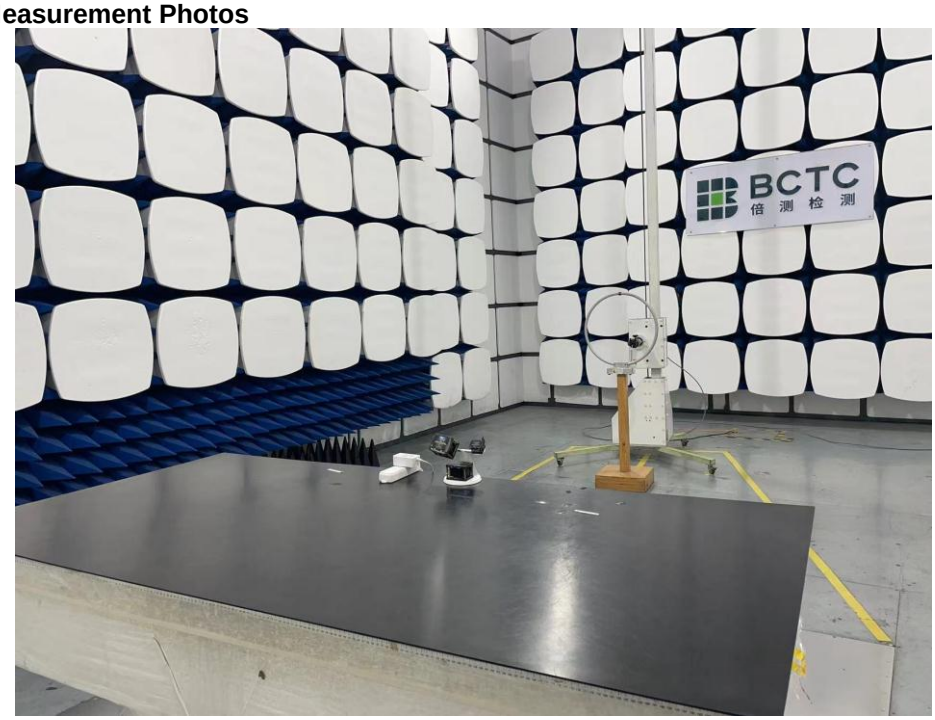
The antenna used for this product is Inductive loop coil antenna.

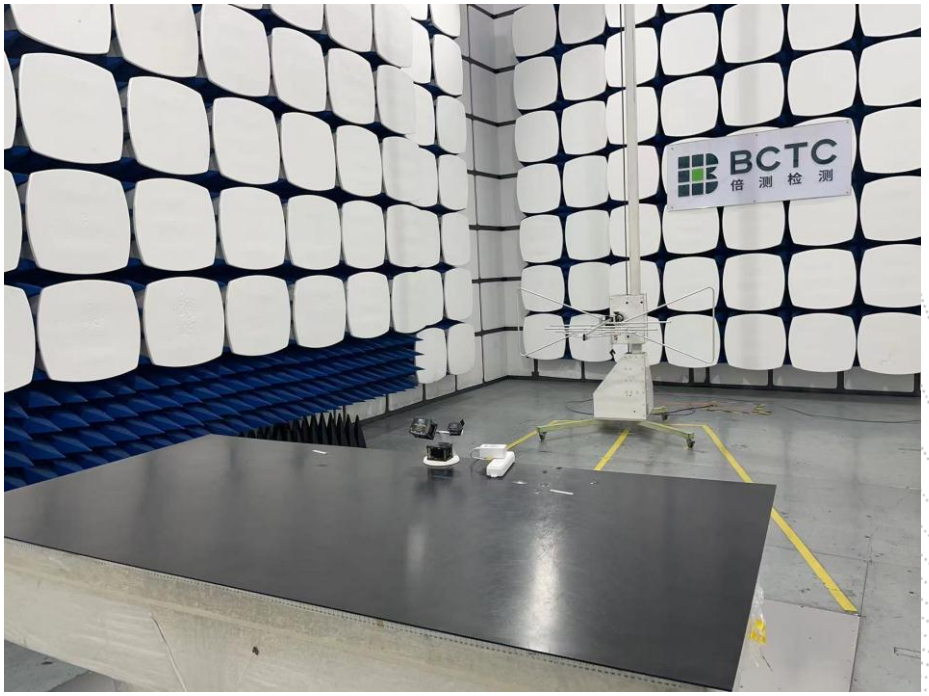
10. EUT Test Setup Photographs

Conducted emissions



Radiated Measurement Photos





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 stamp of laboratory.

4.The test report is invalid without signature of person(s) testing and authorizing.

5.The test process and test result is only related to the Unit Under Test.

6.The quality system of our laboratory is in accordance with ISO/IEC17025.

7.If there is any objection to 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, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL:400-788-9558

P.C.: 518103

FAX:0755-33229357

Website:http://www.chnbctc.com

E-Mail:bctc@bctc-lab.com.cn

※※※※※ **END** ※※※※※