FCC TEST REPORT
FCC ID:2BCUW-B02

Report Number.....:	**ZKT-240604L6247-2**
Date of Test.....	Jun. 04, 2024 to Jun. 19, 2024
Date of issue.....:	Jun. 19, 2024
Total number of pages.....	23
Test Result .....:	PASS
Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address .....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name .....:	**Shenzhen Tingrui Technology Co., Ltd**
Address .....:	A808, Jieshun Technology Center, No. 5, Guansheng Second Road, Luhu Community, Guanhu Street, Longhua District, Shenzhen
Manufacturer's name .....:	**Shenzhen Tingrui Technology Co., Ltd**
Address .....:	A808, Jieshun Technology Center, No. 5, Guansheng Second Road, Luhu Community, Guanhu Street, Longhua District, Shenzhen
Test specification:	
Standard.....:	FCC CFR Title 47 Part 15 Subpart C
Test procedure.....:	/
Non-standard test method .....:	N/A
Test Report Form No.....:	TRF-EL-107_V0
Test Report Form(s) Originator.....:	ZKT Testing
Master TRF .....:	Dated: 2020-01-06

This device described above has been tested by ZKT, 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.
This report shall not be reproduced except in full, without the written approval of ZKT, this document may be altered or revised by ZKT, personal only, and shall be noted in the revision of the document.

Product name.....:	**Wireless Charging Alarm Clock**
Trademark .....:	N/A
Model/Type reference.....:	B02
Ratings.....:	Input voltage/current：DC12V 2A Wireless Charging Output voltage：5W, 7.5W, 10W, 15W

Testing procedure and testing location:

Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address.....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Tested by (name + signature).....:	Alen He
Reviewer (name + signature).....:	Joe Liu
Approved (name + signature).....:	Lake Xie

TABLE OF CONTENTS

1. VERSION **4**
2. TEST SUMMARY **5**
2.1 TEST FACILITY 6
2.2 MEASUREMENT UNCERTAINTY 6
3. GENERAL INFORMATION **7**
3.1 GENERAL DESCRIPTION OF EUT 7
3.2 Test mode 7
3.3 Block Diagram of EUT Configuration 8
3.4 Test Conditions 8
3.5 Description Of Support Units (Conducted Mode) 8
3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS 9
4. CONDUCTED EMISSION TEST **11**
4.1 CONDUCTED EMISSION MEASUREMENT 11
4.1.1 POWER LINE CONDUCTED EMISSION Limits 11
4.1.2 TEST PROCEDURE 11
4.1.3 DEVIATION FROM TEST STANDARD 11
4.1.4 TEST SETUP 12
4.1.5 EUT OPERATING CONDITIONS 12
4.1.6 Test Result 13
5. RADIATED EMISSION MEASUREMENT **15**
5.1 Radiated Emission Limits 15
5.2 Anechoic Chamber Test Setup Diagram 16
5.3 Test Procedure 16
5.4 DEVIATION FROM TEST STANDARD 16
5.5 Test Result 17
6. BANDWIDTH TEST **20**
7. ANTENNA REQUIREMENT **22**
8. TEST SETUP PHOTO **23**
9. EUT CONSTRUCTIONAL DETAILS **23**

1. VERSION

Report No.	Version	Description	Approved
ZKT-240604L6247-2	Rev.01	Initial issue of report	Jun. 19, 2024

2. TEST SUMMARY

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Spurious Emission	15.209(a)(f)	Pass
20dB Bandwidth	15.215	Pass

NOTE:

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

2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033
CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± 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	3m camber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m camber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8Hz
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59℃

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

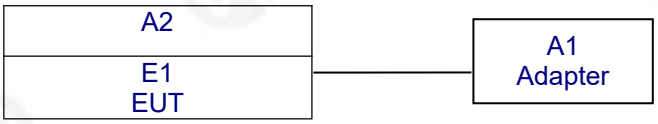
Product Name:	Wireless Charging Alarm Clock
Model No.:	B02
Model Difference:	N/A
Serial No.:	N/A
Hardware version:	V1.0
Software version:	V1.0
Operation Frequency:	wireless charging Coil :110.5K-205KHz
Modulation type:	MSK
Antenna Type:	Inductive loop coil Antenna
Antenna gain:	0dBi
Power supply:	Input voltage/current：DC12V 2A Wireless Charging Output voltage：5W, 7.5W, 10W, 15W
Test description:	cellphone Battery > 98%, =50% and < 1% are tested, and the worst is < 1%.

3.2 Test mode

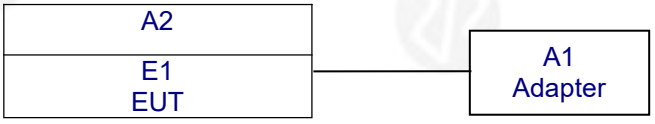
Test Modes:		Description:	
Mode	Wireless charging	Mode 1: cellphone charging(15W) Only	Record
		Mode 2 :cellphone charging(10W) Only	
		Mode 3 :cellphone charging(7.5W) Only	
		Mode 4 :cellphone charging(5W) Only	
Note:only worst case Mode 1 Record in this report			

3.3 Block Diagram of EUT Configuration

Conducted Emission



Radiated Emission



3.4 Test Conditions

Temperature: 23~26℃

Relative Humidity: 54~63 %

3.5 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
E1	EUT	N/A	B02	N/A	EUT
A1	AC/DC adapter	N/A	KA24D-1202000US	N/A	Auxiliary
A2	cellphone	Xiaomi	14 Pro	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	1.0M	DC cable unshielded

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation emissions& Radio Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Nov. 02, 2023	Nov. 01, 2024
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Nov. 13, 2023	Nov. 12, 2024
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Nov. 13, 2023	Nov. 12, 2024
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Nov. 13, 2023	Nov. 12, 2024
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Nov. 16, 2023	Nov. 15, 2024
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Nov. 02, 2023	Nov. 01, 2024
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Nov. 02, 2023	Nov. 01, 2024
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Test Cable	N/A	R-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
12	Test Cable	N/A	R-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
13	Test Cable	N/A	R-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
14	Test Cable	N/A	RF-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
15	Test Cable	N/A	RF-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
16	Test Cable	N/A	RF-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
17	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Nov. 02, 2023	Nov. 01, 2024
18	Signal Generator	Agilent	N5182A	N/A	A.01.87	Nov. 02, 2023	Nov. 01, 2024
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2023	Nov. 15, 2024
20	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Nov. 02, 2023	Nov. 01, 2024
21	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
22	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
23	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
24	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
25	Turntable	MF	MF-7802BS	N/A	N/A	\	\
26	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Nov. 14, 2023	Nov. 13, 2024
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	C-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	C-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	C-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Nov. 02, 2023	Nov. 01, 2024
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Nov. 07, 2023	Nov. 06, 2024
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

4. CONDUCTED EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quas-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) *Decreases with the logarithm of the frequency.

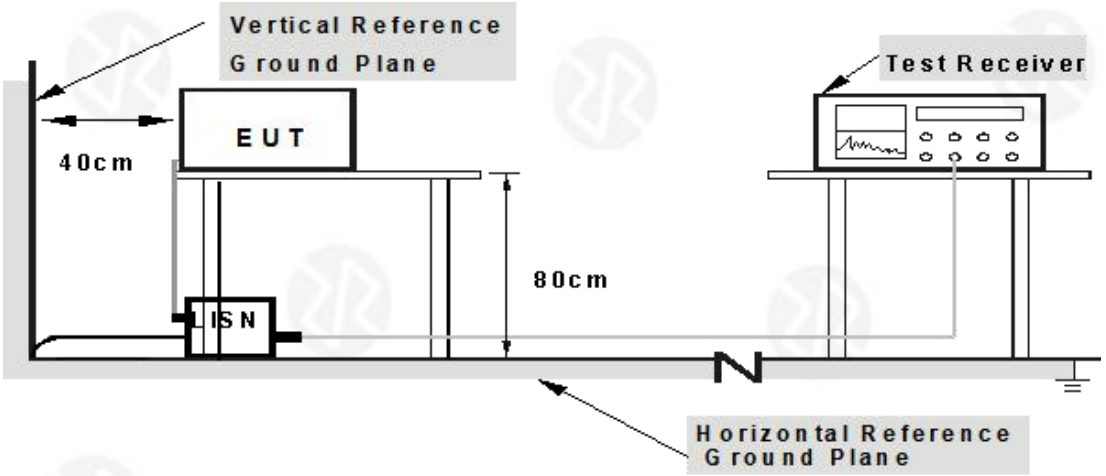
4.1.2 TEST PROCEDURE

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.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



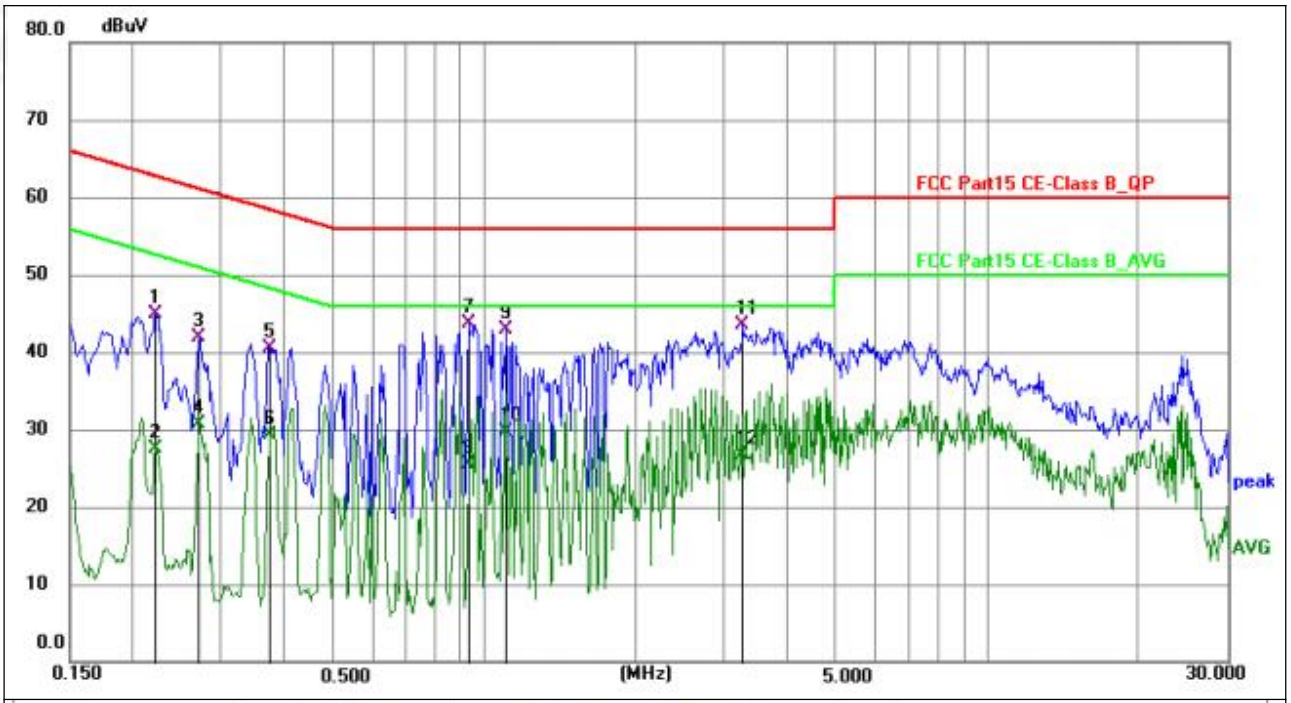
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.5 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.

4.1.6 Test Result

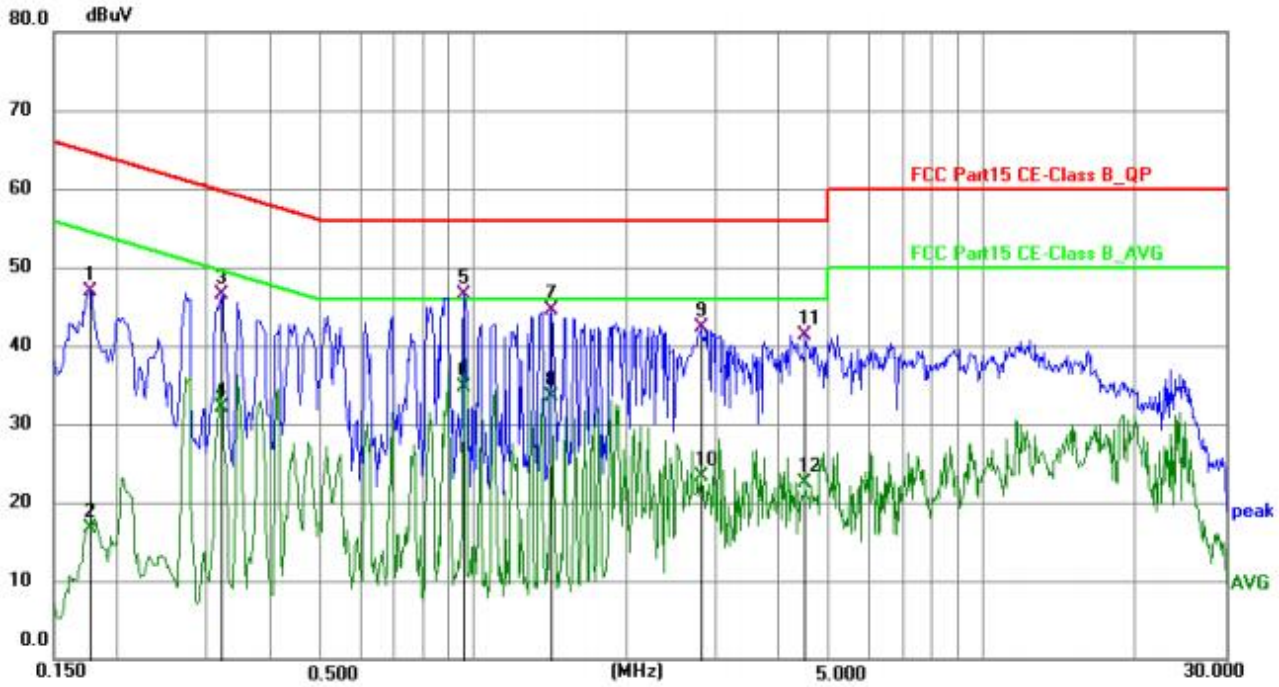
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2220	35.29	9.70	44.99	62.74	-17.75	QP	P	
2	0.2220	17.90	9.70	27.60	52.74	-25.14	AVG	P	
3	0.2714	32.25	9.69	41.94	61.07	-19.13	QP	P	
4	0.2714	21.03	9.69	30.72	51.07	-20.35	AVG	P	
5	0.3750	30.95	9.65	40.60	58.39	-17.79	QP	P	
6	0.3750	19.70	9.65	29.35	48.39	-19.04	AVG	P	
7 *	0.9284	34.05	9.57	43.62	56.00	-12.38	QP	P	
8	0.9284	15.91	9.57	25.48	46.00	-20.52	AVG	P	
9	1.1085	33.34	9.54	42.88	56.00	-13.12	QP	P	
10	1.1085	20.13	9.54	29.67	46.00	-16.33	AVG	P	
11	3.2683	33.93	9.60	43.53	56.00	-12.47	QP	P	
12	3.2683	17.02	9.60	26.62	46.00	-19.38	AVG	P	

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1768	37.31	9.62	46.93	64.63	-17.70	QP	P	
2	0.1768	7.13	9.62	16.75	54.63	-37.88	AVG	P	
3	0.3209	36.75	9.67	46.42	59.68	-13.26	QP	P	
4	0.3209	22.34	9.67	32.01	49.68	-17.67	AVG	P	
5 *	0.9600	36.95	9.55	46.50	56.00	-9.50	QP	P	
6	0.9600	25.12	9.55	34.67	46.00	-11.33	AVG	P	
7	1.4276	34.94	9.61	44.55	56.00	-11.45	QP	P	
8	1.4276	23.94	9.61	33.55	46.00	-12.45	AVG	P	
9	2.8003	32.64	9.64	42.28	56.00	-13.72	QP	P	
10	2.8003	13.68	9.64	23.32	46.00	-22.68	AVG	P	
11	4.4923	31.78	9.53	41.31	56.00	-14.69	QP	P	
12	4.4923	13.01	9.53	22.54	46.00	-23.46	AVG	P	

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

5. RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 1GHz
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
9KHz-90KHz	Quasi-peak	200Hz	600Hz	Average
90KHz-110KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
110KHz-490KHz	Quasi-peak	200Hz	600Hz	Average
490KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

5.1 Radiated Emission Limits

Limits for frequency below 30MHz

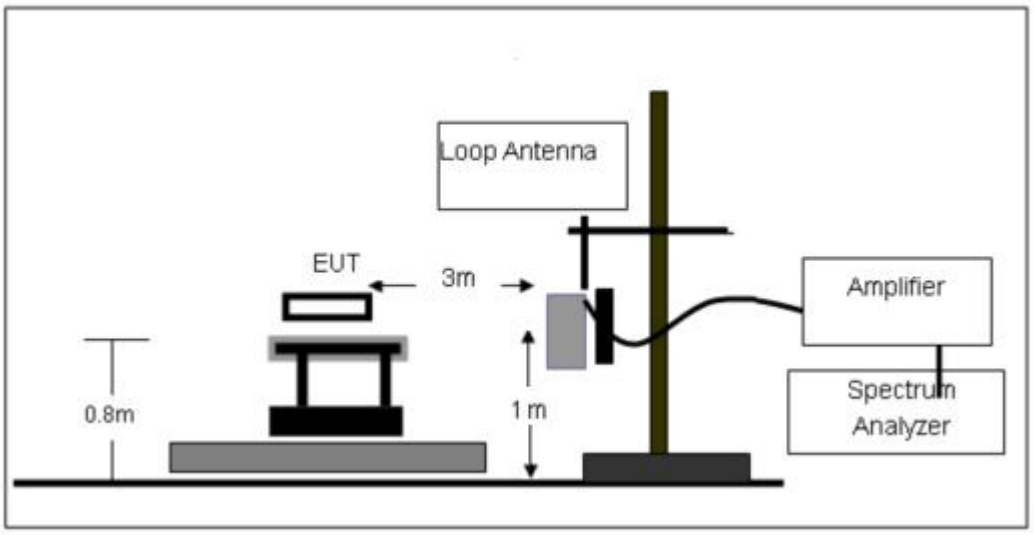
Frequency	Limit (uV/m)	Measurement Distance(m)	Remark
0.009-0.090	2400/F(kHz)	300	AV Value
0.090-0.110	2400/F(kHz)	300	Quasi-peak Value
0.110-0.490	2400/F(kHz)	300	AV Value
0.490-1.705	24000/F(kHz)	30	Quasi-peak Value
1.705-30	30	30	Quasi-peak Value

Limits for frequency Above 30MHz

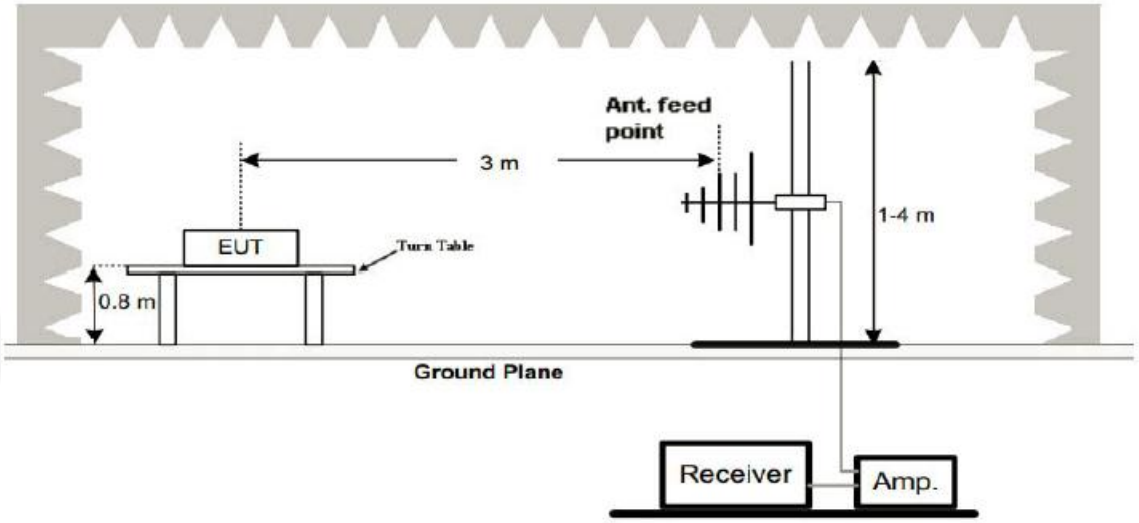
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.00	Quasi-peak Value
88MHz-216MHz	43.50	Quasi-peak Value
216MHz-960MHz	46.00	Quasi-peak Value
960MHz-1GHz	54.00	Quasi-peak Value
Above 1GHz	54.00	Average Value
	74.00	Peak Value

5.2 Anechoic Chamber Test Setup Diagram

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



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



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.205 limits.

5.3 Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5 Test Result

Measurement data:

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80
Limit dBuV/m @3m = Limit dBuV/m @30m + 40
dBuV/m=20 log (uV/m)

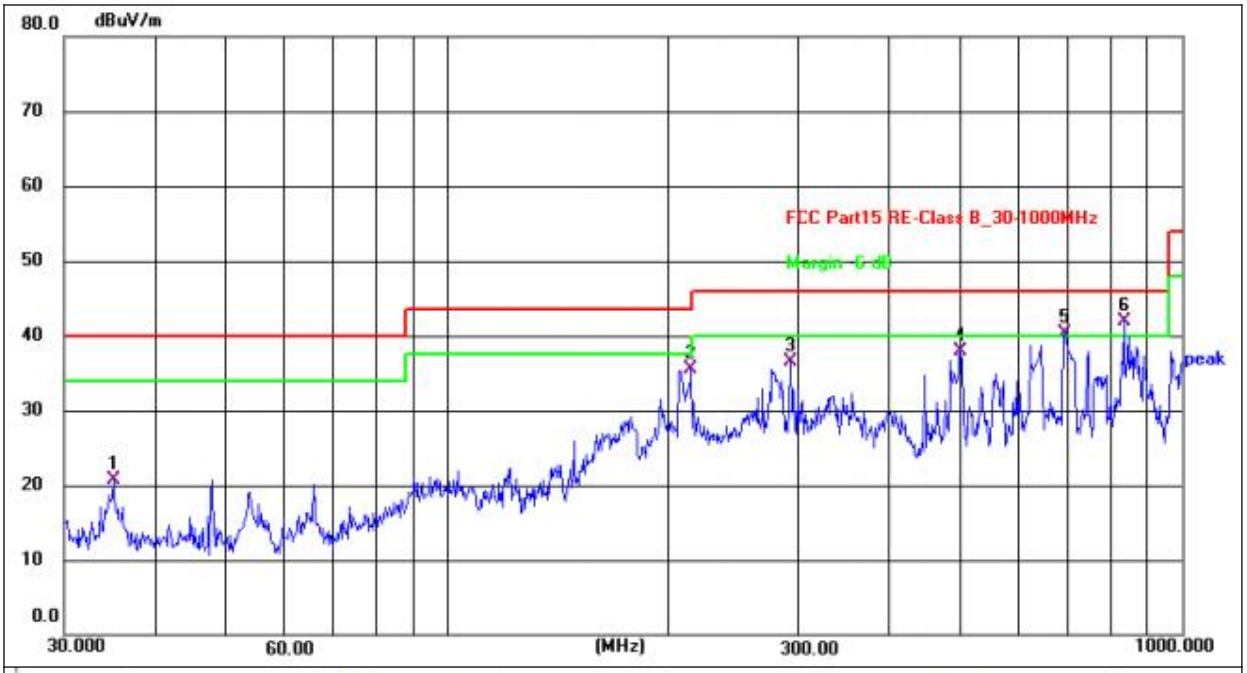
9 kHz~30 MHz

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(kHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
24.83	30.79	20.14	50.93	119.70	-68.77	AV
56.72	42.35	20.33	62.68	112.60	-49.92	AV
112.17*	47.76	20.55	68.31	106.60	-38.29	AV
125.63*	45.32	20.55	65.87	105.60	-39.73	AV
133.77*	46.31	20.55	66.86	105	-38.14	AV
685.35	31.57	20.64	52.21	70.89	-18.68	QP
965.71	35.87	21.26	57.13	67.91	-10.78	QP
1228.35	28.64	22.32	50.96	85.82	-34.86	QP

Note1:
Pre-scan in the all of mode, the worst case in of was recorded.
Factor = antenna factor + cable loss – pre-amplifier.
Margin = Emission Level- Limit.
Note2:*On behalf of the fundamental frequency

30MHz-1GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	35.0048	37.21	-16.43	20.78	40.00	-19.22	QP
2	214.5141	54.64	-19.21	35.43	43.50	-8.07	QP
3	293.0842	52.54	-16.04	36.50	46.00	-9.50	QP
4	499.4245	48.72	-10.89	37.83	46.00	-8.17	QP
5 !	691.9864	47.14	-6.86	40.28	46.00	-5.72	QP
6 *	833.3170	46.19	-4.34	41.85	46.00	-4.15	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	35.6240	51.24	-16.34	34.90	40.00	-5.10	QP
2	47.6584	46.00	-16.30	29.70	40.00	-10.30	QP
3	207.1225	51.98	-19.12	32.86	43.50	-10.64	QP
4	300.3672	51.05	-15.63	35.42	46.00	-10.58	QP
5	356.6757	51.97	-14.82	37.15	46.00	-8.85	QP
6	744.8660	44.41	-5.94	38.47	46.00	-7.53	QP

Remarks:
1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2.The emission levels of other frequencies are very lower than the limit and not show in test report.

6. BANDWIDTH TEST

1. Set RBW = 1 Hz.
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		

Test Coil	Frequency (KHz)	20dB bandwidth (Hz)	Result
cellphone	122.5	133	Pass

Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: 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, 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.	
EUT Antenna:	
The antenna is Loop antenna, the best case gain of the antennas is 0dBi, reference to the appendix II for details	

7. TEST SETUP PHOTO

Reference to the appendix I for details.

8. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※