

FCC TEST REPORT

Report No: STS1703272F01

Issued for

ZHONGSHAN KINGRONG ELECTRONICS CO., LTD

32, CuiHuJu, YangGuangMeiJia, No.138 MinAn Rd South,
XiaoLan, ZhongShan City, GuangDong, 528415 China

Product Name:	Quick wireless charger
Brand Name:	KRECO
Model Name:	KRE-A01
Series Model:	KRE-A02, KRE-A03, KRE-A04, KRE-A05, KRE-A06, KRE-A07, KRE-A08, KRE-A09, KRE-A10, KRE-A11, KRE-A12
FCC ID:	2ALPO-KRE-A01
Test Standard:	FCC Part 18 Subpart C

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TEST RESULT CERTIFICATION

Applicant's name : ZHONGSHAN KINGRONG ELECTRONICS CO., LTD

Address : 32, CuiHuJu, YangGuangMeiJia, No.138 MinAn Rd
South, XiaoLan, ZhongShan City,
GuangDong, 528415 China

Manufacture's Name : ZHONGSHAN KINGRONG ELECTRONICS CO., LTD

Address : 32, CuiHuJu, YangGuangMeiJia, No.138 MinAn Rd
South, XiaoLan, ZhongShan City,
GuangDong, 528415 China

Product description

Product name : Quick wireless charger

Brand name : KRECO

Model and/or type reference : KRE-A01

Standards : FCC Part 15 Subpart C

Test Procedure : ANSI C63.10-2013

This device described above has been tested by BZT, 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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Date of performance of tests: 31 Mar. 2017 ~ 09 May. 2017

Date of Issue : 13 May. 2017

Test Result : **Pass**

Testing Engineer :



(Sean she)

Technical Manager :



(Tony liu)

Authorized Signatory :



(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	13 Apr. 2017	STS1703272F01	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part18			
Standard Section	Test Item	Judgment	Remark
18.307(b)	Conducted Emission	PASS	
18.305(b)	Radiated emission, Spurious Emission	PASS	

1.1 TEST FACTORY

BZT Testing Technology Co., Ltd
 Add. : Buliding 17, Xinghua Road Xingwei industrial Park Fuyong,
 Baoan District, Shenzhen, Guangdong, China
 FCC Registration No.: 701733

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 (9KHz-150KHz)	$\pm 2.88\text{dB}$
2	Conducted Emission (150KHz-30MHz)	$\pm 2.67\text{ dB}$
3	All emissions,radiated(<1G) 30MHz-200MHz	$\pm 2.83\text{dB}$
4	All emissions,radiated(<1G) 200MHz-1000MHz	$\pm 2.94\text{dB}$
5	Temperature	$\pm 0.5^{\circ}\text{C}$
6	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Quick wireless charger
Trade Name	KRECO
Model Name	KRE-A01
Series Model	KRE-A02,KRE-A03,KRE-A04, KRE-A05,KRE-A06,KRE-A07, KRE-A08,KRE-A09,KRE-A10, KRE-A11,KRE-A12
Model Difference	Only different in model name
Equipment Category	Non-ISM frequency
Operating frequency	6.78MHz
Modulation Type	ASK
Power Adapter	Power supply and ADP(rating): Input: AC 100-240V, 700mA, 50/60 Hz Outout: DC 15V,1500mA
Hardware version number	N/A
Software version number	N/A
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

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

2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	6.78				

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	NOTE
1	KRECO	KRECO	Coil	NA	Antenna

The EUT antenna is Coil Antenna. No antenna other than that furnished by the responsible party shall be used with the device.

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.

Test Model	
Final Test Mode	Description
Mode 1	FULL LOAD +TX Mode
Mode 2	HALF LOAD+TX Mode

For Radiation Emission	
Final Test Mode	Description
Mode 1	FULL LOAD +TX Mode
Mode 2	HALF LOAD+TX Mode

For Conducted Emission	
Final Test Mode	Description
Mode 1	FULL LOAD +TX Mode
Mode 2	HALF LOAD+TX Mode

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Conducted Emission Test



Radiated EmissionTest



2.4 DESCRIPTION OF SUPPORT UNITS

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.	Serial No.	Note
E-1	Quick wireless charger	KRECO	KRE-A01	N/A	EUT
E-2	Adapter	N/A	HJ-AD24-150150	N/A	N/A
E-3	Mobile phone	I Phone	I Phone 6	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
C-1	USB Cable (FTP)	NO	50cm	/

Note:

- (1) FCC DOC approved.
- (2) FTP is Foiled Twisted Pair.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2016.10.23	2017.10.22
Test Receiver	R&S	ESCI	101427	2016.10.23	2017.10.22
Bilog Antenna	TESEQ	CBL6111D	34678	2014.11.24	2017.11.23
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.10.23	2017.10.22
PreAmplifier	Agilent	8449B	60538	2016.10.23	2017.10.22
Loop Antenna	EMCO	6502	9003-2485	2016.03.06	2019.03.05
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2016.10.23	2017.10.22

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	102086	2016.10.23	2017.10.22
LISN	R&S	ENV216	101242	2016.10.23	2017.10.22
LISN	EMCO	3810/2NM	000-23625	2016.10.23	2017.10.22

3.CONDUCTED EMISSION TEST RESULT

3.1 POWER LINE CONDUCTED EMISSION LIMITS

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-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

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. Based on §18.307(e), conduction limits in the table above apply only outside the frequency bands specified in §18.301. Therefore, emissions at 6.78 MHz, 13.56 MHz, and 27.12 MHz are not subject to the conduction limits of §18.307

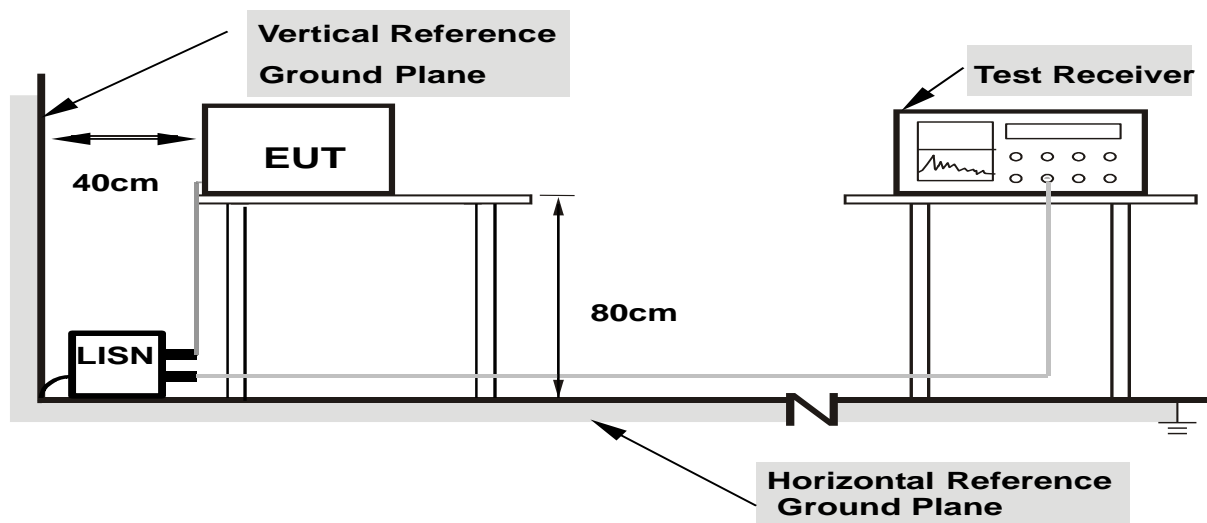
The following table is the setting of the receiver

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

3.2 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.

3.3 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

3.4 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.

3.5 TEST RESULTS

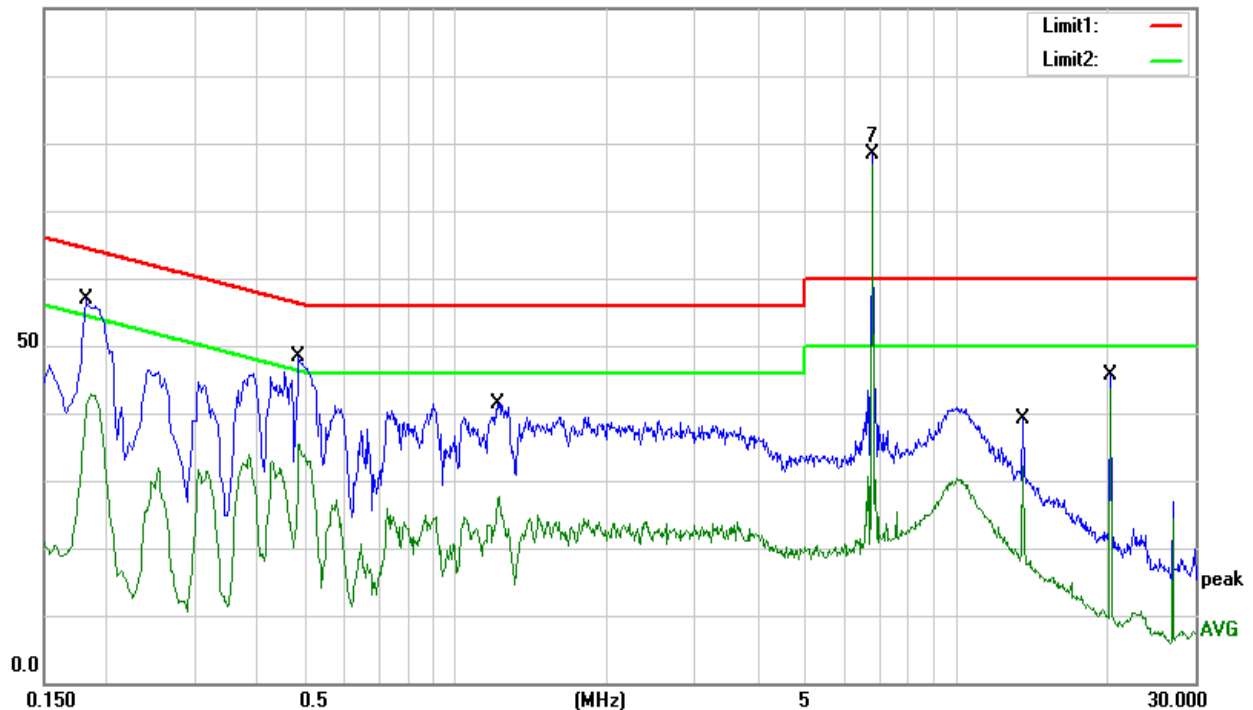
Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1806	47.56	9.23	56.79	64.46	-7.67	QP
2	0.1806	28.44	9.23	37.67	54.46	-16.79	AVG
3	0.4860	39.28	9.18	48.46	56.24	-7.78	QP
4	0.4860	26.16	9.18	35.34	46.24	-10.90	AVG
5	1.2100	32.14	9.17	41.31	56.00	-14.69	QP
6	1.2100	18.04	9.17	27.21	46.00	-18.79	AVG
7	6.7800*	69.15	9.28	78.43	--	--	--
8	13.5620	29.72	9.45	39.17	60.00	-20.83	QP
9	13.5620	22.79	9.45	32.24	50.00	-17.76	AVG
10	20.3420	35.77	9.95	45.72	60.00	-14.28	QP
11	20.3420	33.67	9.95	43.62	50.00	-6.38	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit
3. "*" Fundamental frequency do not apply the limit.

100.0 dBuV



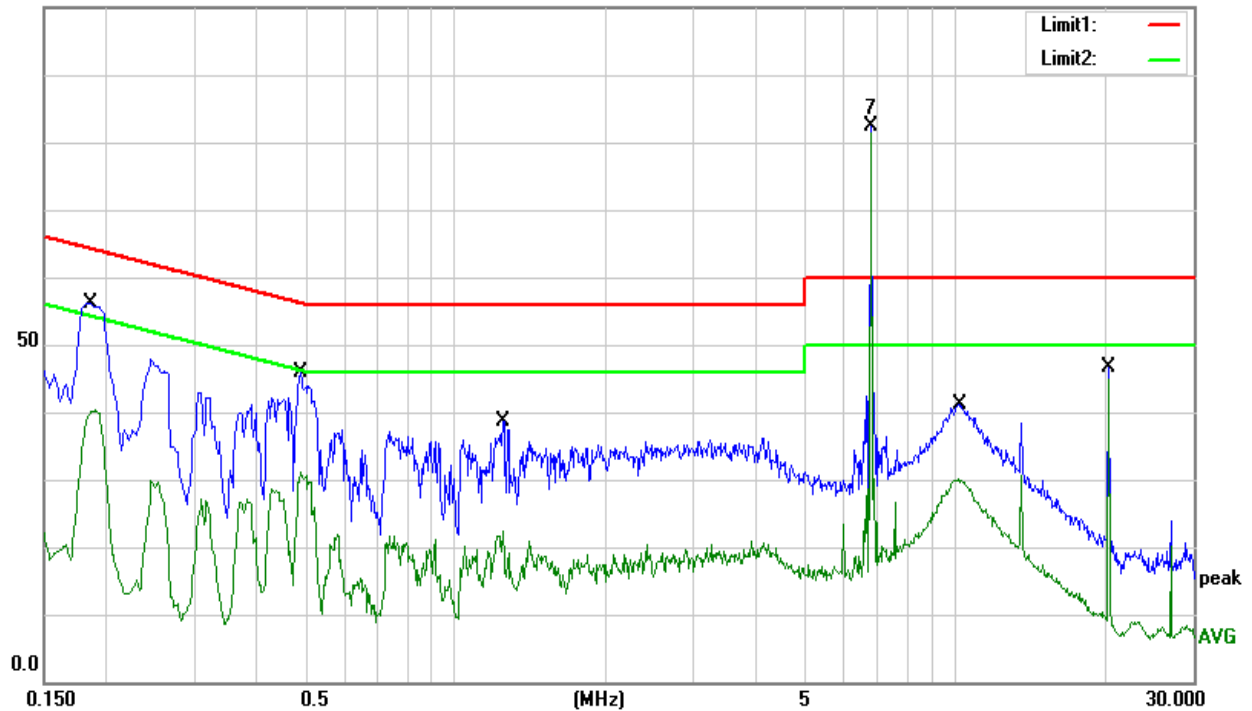
Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1860	46.97	9.23	56.20	64.21	-8.01	QP
2	0.1860	30.79	9.23	40.02	54.21	-14.19	AVG
3	0.4900	36.85	9.15	46.00	56.17	-10.17	QP
4	0.4900	20.55	9.15	29.70	46.17	-16.47	AVG
5	1.2460	29.34	9.25	38.59	56.00	-17.41	QP
6	1.2460	13.09	9.25	22.34	46.00	-23.66	AVG
7*	6.7800	73.03	9.28	82.31	--	--	--
8	10.2220	31.78	9.40	41.18	60.00	-18.82	QP
9	10.2220	20.49	9.40	29.89	50.00	-20.11	AVG
10	20.3420	36.91	9.78	46.69	60.00	-13.31	QP
11	20.3420	35.08	9.78	44.86	50.00	-5.14	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit
3. "*" Fundamental frequency do not apply the limit.

100.0 dBuV

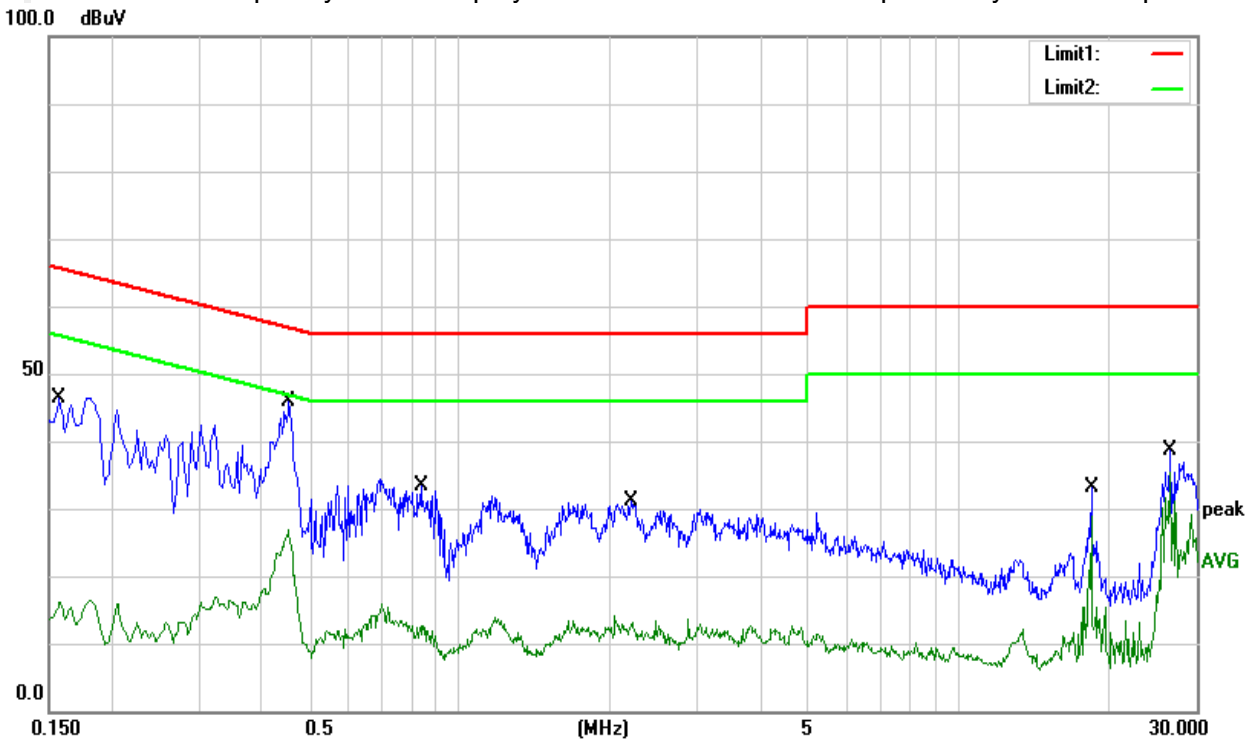


Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1580	37.25	9.23	46.48	65.57	-19.09	QP
2	0.1580	6.91	9.23	16.14	55.57	-39.43	AVG
3	0.4540	36.51	9.28	45.79	56.80	-11.01	QP
4	0.4540	17.53	9.28	26.81	46.80	-19.99	AVG
5	0.8380	24.27	9.20	33.47	56.00	-22.53	QP
6	0.8380	2.11	9.20	11.31	46.00	-34.69	AVG
7	2.2100	21.84	9.26	31.10	56.00	-24.90	QP
8	2.2100	3.30	9.26	12.56	46.00	-33.44	AVG
9	18.4340	23.31	9.80	33.11	60.00	-26.89	QP
10	18.4340	3.39	9.80	13.19	50.00	-36.81	AVG
11	26.6100	28.90	9.80	38.70	60.00	-21.30	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit
3. Fundamental frequency do not display since the coil antenna is replaced by 50ohm impedance.

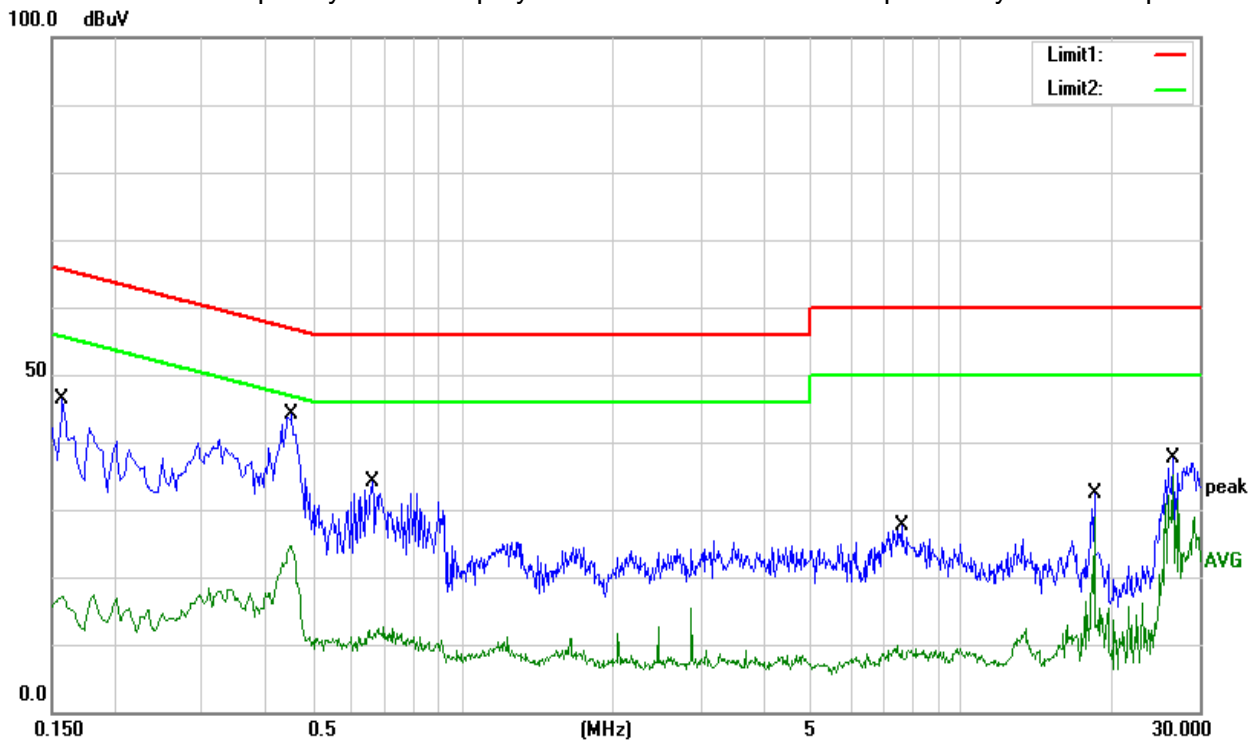


Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB)	Result (dBUV)	Limit (dBUV/m)	Margin (dB)	Detector
1	0.1580	37.07	9.23	46.30	65.57	-19.27	QP
2	0.1580	7.96	9.23	17.19	55.57	-38.38	AVG
3	0.4540	34.86	9.19	44.05	56.80	-12.75	QP
4	0.4540	15.33	9.19	24.52	46.80	-22.28	AVG
5	0.6580	24.90	9.22	34.12	56.00	-21.88	QP
6	0.6580	1.55	9.22	10.77	46.00	-35.23	AVG
7*	7.5780	18.36	9.31	27.67	60.00	-32.33	QP
8	7.5780	-1.15	9.31	8.16	50.00	-41.84	AVG
9	18.4340	22.59	9.67	32.26	60.00	-27.74	QP
10	18.4340	2.94	9.67	12.61	50.00	-37.39	AVG
11	26.4860	27.64	9.96	37.60	60.00	-22.40	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit
3. Fundamental frequency do not display since the coil antenna is replaced by 50ohm impedance.



4. RADIATED& FIELD EMISSION TEST RESULT

4.1 Limit

a. ISM equipment operating on a frequency specified in §18.301 is permitted unlimited radiated energy in the band specified for that frequency.

ISM frequency	Tolerance
6.78 MHz	± 15 kHz

(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ 300m)	Field Strength (dB $\mu\text{V/m}$ 300m)	Field Strength ($\mu\text{V/m}$ 3m)	Field Strength (dB $\mu\text{V/m}$ 3m)
0.009 - 1000	25	27.96	2500	67.96

Note:

According to the article 18.305(b), the operating frequency is ISM frequency, RF power generated by equipment is below 500 (watts).

4.2. Test procedure

Below 30MHz :

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT. All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Above 30MHz :

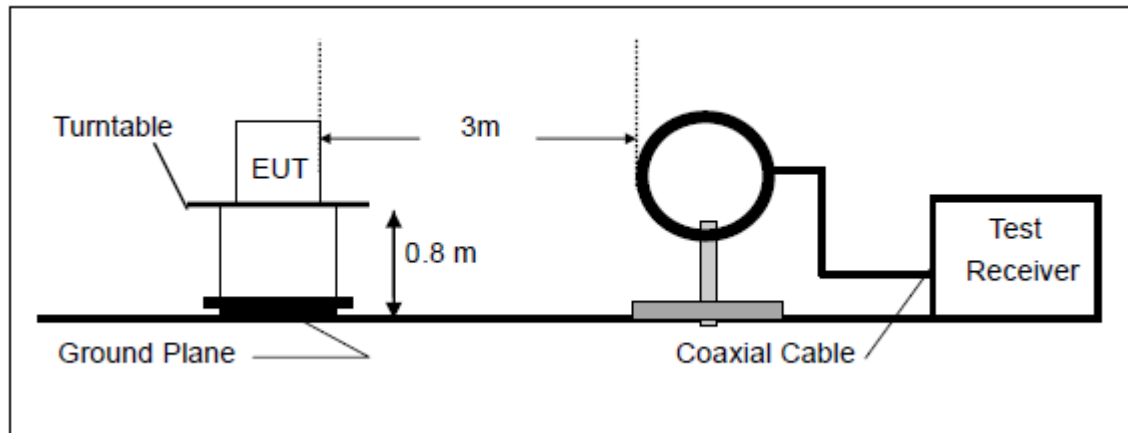
The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) and horn antenna are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver is set at 120kHz in frequency range from 30MHz to 1000 MHz.

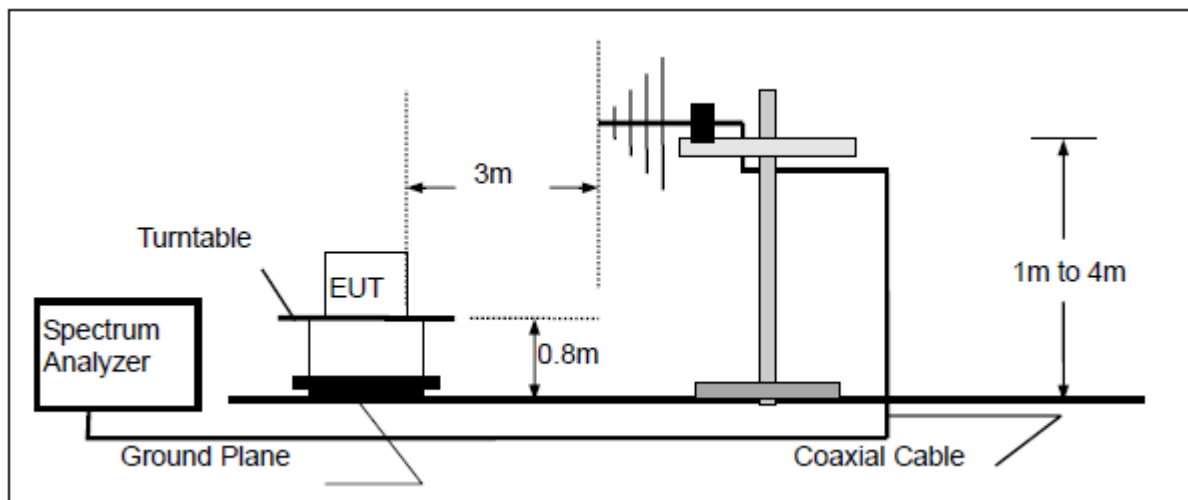
The frequency range from 30MHz to 1000MHz is investigated

4.3 TEST SETUP

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



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



4.4 TEST RESULTS

Temperature :	26°C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode		

4.4.1 Spurious Radiated Emission Below 30 MHz

Frequency	Reading	Ant. Factor	Cable	Emission	Limits	Margin
(KHz)	(dBμV)	(dB/m)	Loss	Level (dBμV/m)	(dBμV/m)	(dB)
9	29.43	28.16	0.1	57.69	67.96	-10.27
23	23.16	28.21	0.1	51.47	67.96	-16.49
36	24.36	22.03	0.1	46.49	67.96	-21.47
45	31.26	21.25	0.1	52.61	67.96	-15.35
110	40.27	10.04	0.1	50.41	67.96	-17.55
175	30.45	9.57	0.1	40.12	67.96	-27.84
6780*	50.36	9.43	0.2	59.99	--	--
15240	48.24	-16.36	0.5	32.38	67.96	-35.58
23214	48.63	-17.90	0.9	31.63	67.96	-36.33

1. “*” Means Fundamental frequency
2. Emission Level [dBμV/m] = Reading [dBμV] + Ant. Factor [dB/m] + Cable Loss [dB]
3. Margin [dB] = Emission Level [dBμV/m] – Limit [dBμV/m]
4. Limit calculation: Limit at specified distance + $40\log(300/3)$ = Limit + 80 dB for up to 0.49 MHz
Limit at specified distance + $40\log(30/3)$ = Limit + 40 dB for above 0.49 MHz, Below 30 MHz

4.4.2 Spurious Radiated Emission below 1 GHz

Temperature :	26 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 1		

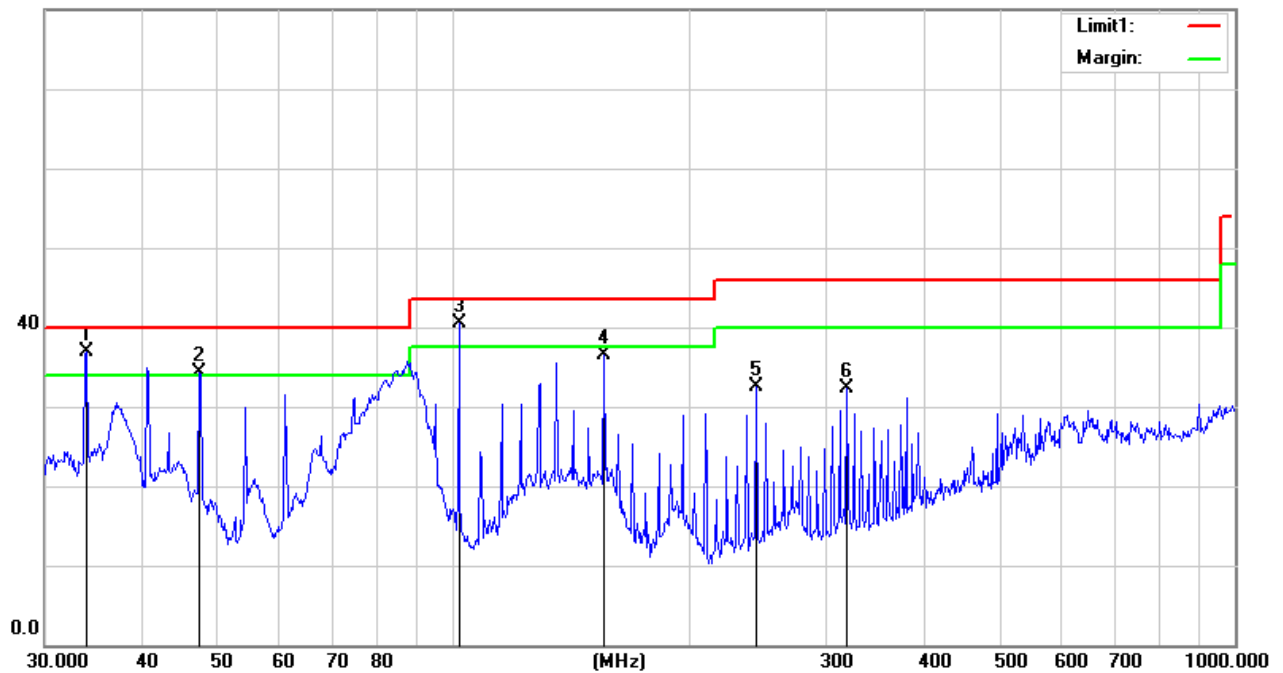
The following table shows the highest levels of radiated emissions on polarizations of vertical

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
33.9174	50.11	-13.20	36.91	40.00	-3.09	QP
47.3255	54.42	-20.10	34.32	40.00	-5.68	QP
101.6443	59.46	-19.05	40.41	43.50	-3.09	QP
155.9100	54.77	-18.28	36.49	43.50	-7.01	QP
244.2321	49.69	-17.15	32.54	46.00	-13.46	QP
318.8170	46.48	-14.21	32.27	46.00	-13.73	QP

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit

80.0 dBuV/m



Temperature :	26 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 1		

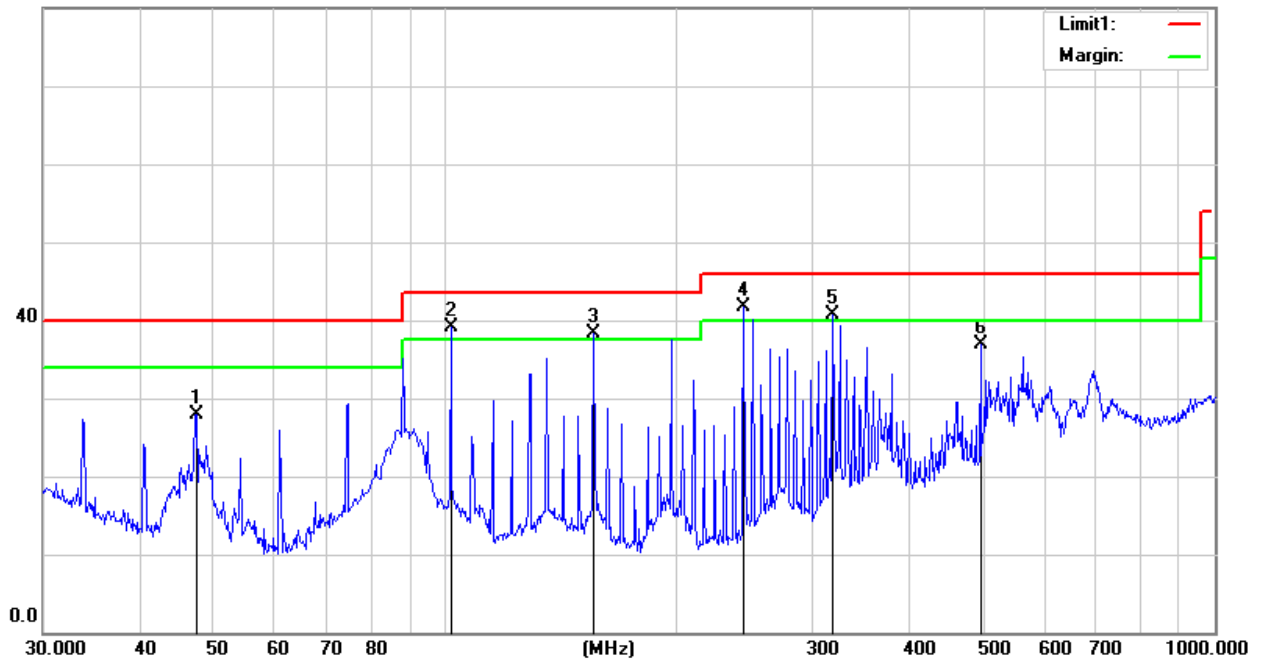
The following table shows the highest levels of radiated emissions on polarizations of horizontal

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
47.4918	48.15	-20.19	27.96	40.00	-12.04	QP
101.6443	58.19	-19.05	39.14	43.50	-4.36	QP
155.9101	56.63	-18.28	38.35	43.50	-5.15	QP
244.2321	58.83	-17.15	41.68	46.00	-4.32	QP
318.8170	54.95	-14.21	40.74	46.00	-5.26	QP
495.9344	45.89	-9.00	36.89	46.00	-9.11	QP

Remark:

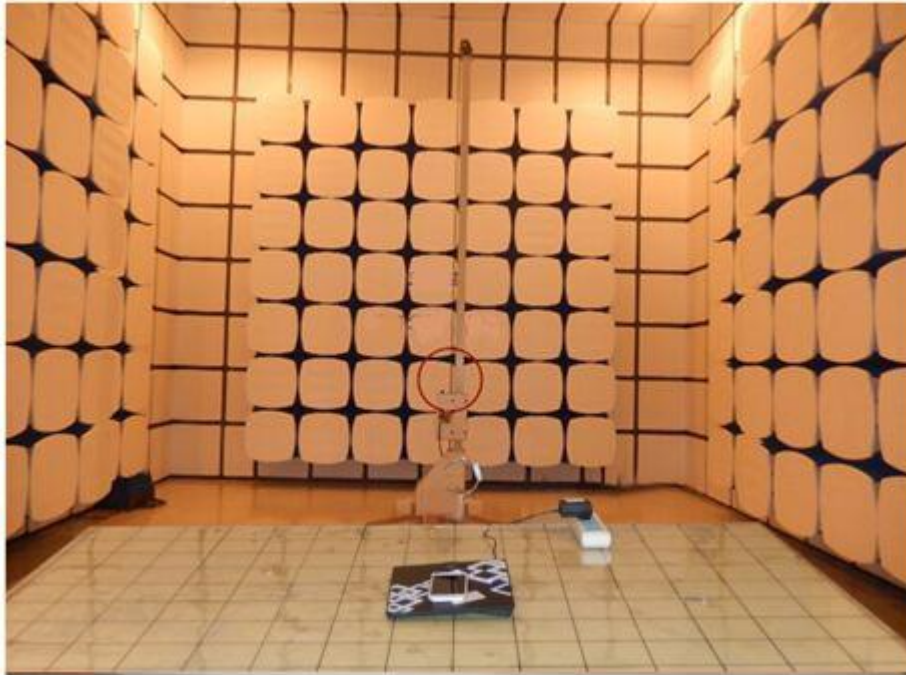
1. Margin = Result (Result =Reading + Factor)–Limit

80.0 dBuV/m

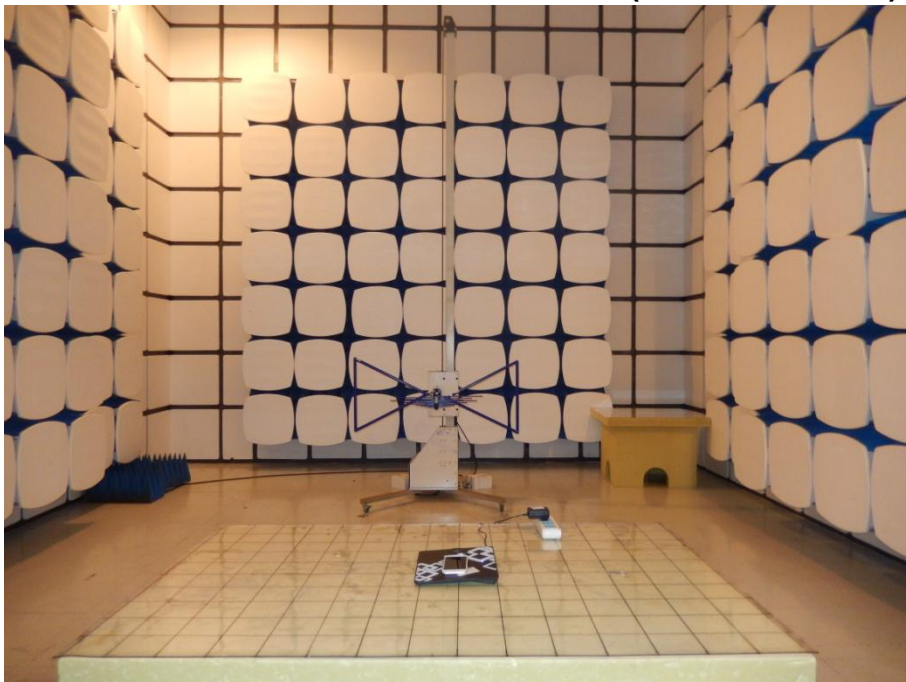


APPENDI-PHOTOS OF TEST SETUP

Radiated emission Measurement Photos(9KHz-30MHz)



Radiated emission Measurement Photos(30MHz-1000MHz)



ConductionMeasurement Photos



※※※※※END OF THE REPORT※※※※※