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## FCC TEST REPORT

Report No: STS1611247F01

Issued for

Shenzhen Junlei Technology Co.,Ltd.

Room 216, Xinda Building, Fenghuanggang the first  
Industrial Zone, Xixiang, Bao'an District, Shenzhen China

<b>Product Name:</b>	Wireless Charging Navigational Bracket
<b>Brand Name:</b>	N/A
<b>Model Name:</b>	JL--01
<b>Series Model:</b>	N/A
<b>FCC ID:</b>	2AKI6-JL-01
<b>Test Standard:</b>	FCC Part 15 Subpart C

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**TEST RESULT CERTIFICATION**

**Applicant's name :** Shenzhen Junlei Technology Co.,Ltd.  
**Address :** Room 216, Xinda Building, Fenghuanggang the first Industrial Zone, Xixiang, Bao'an District, Shenzhen China  
**Manufacture's Name :** Shenzhen Junlei Technology Co.,Ltd.  
**Address :** Room 216, Xinda Building, Fenghuanggang the first Industrial Zone, Xixiang, Bao'an District, Shenzhen China

**Product description**

**Product name :** Wireless Charging Navigational Bracket  
**Brand name :** N/A  
**Model and/or type reference :** JL--01  
**Standards :** FCC Part 15 Subpart C  
**Test Procedure :** ANSI C63.10-2013

This device described above has been tested by STS, 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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**Date of performance of tests:** 30 Nov. 2016 ~12 Dec. 2016

**Date of Issue :** 13 Dec. 2016

**Test Result :** **Pass**

**Testing Engineer :**

(Sean she)

**Technical Manager :**

(Tony liu)

**Authorized Signatory :**

(Bovey Yang)





Table of Contents	Page
<b>1. SUMMARY OF TEST RESULTS</b>	<b>5</b>
1.1 TEST FACTORY	5
1.2 MEASUREMENT UNCERTAINTY	5
<b>2. GENERAL INFORMATION</b>	<b>6</b>
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	7
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	8
2.4 DESCRIPTION OF SUPPORT UNITS	9
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	10
<b>3.CONDUCTED EMISSION TEST RESULT(SECTION 15.207)</b>	<b>11</b>
3.1 POWER LINE CONDUCTED EMISSION LIMITS	11
3.2 TEST PROCEDURE	12
3.3 TEST SETUP	12
3.4 EUT OPERATING CONDITIONS	12
3.5TEST RESULTS	13
<b>4. RADIATED&amp; FIELD EMISSION TEST RESULT(SECTIOU 15.209 )</b>	<b>15</b>
4.1 LIMIT	15
4.2 TEST PROCEDURE	15
4.3 TEST SETUP	16
4.4 TEST RESULTS	17
<b>5. 20 DB BANDWIDTH TEST</b>	<b>20</b>
5.1 LIMIT	20
5.2 TEST SETUP	20
5.3 TEST RESULTS	20
<b>APPENDIX-PHOTOS OF TEST SETUP</b>	<b>21</b>

**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	13 Dec. 2016	STS1611247F01	ALL	Initial Issue



## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.209 (a)	Radiated emission, Spurious Emission	PASS	
2.1049	20 dB Bandwidth	PASS	

### 1.1 TEST FACTORY

Shenzhen STS Test Services Co., Ltd.

Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,  
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

FCC Registration No.: 842334; IC Registration No.: 12108A-1

### 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	Wireless Charging Navigational Bracket
Trade Name	N/A
Model Name	JL--01
Series Model	N/A
Model Difference	N/A
Channel List	Please refer to the Note 2.
Equipemnt Category	Non-ISM frequency
Operating frequency	123.1KHz
Modulation Type	ASK
Power rating:	DC 5V
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(KHz)
01	123.1

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	NOTE
1	N/A	JL--01	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.

Pretest Mode	Description
Mode 1	Charging+TX Mode

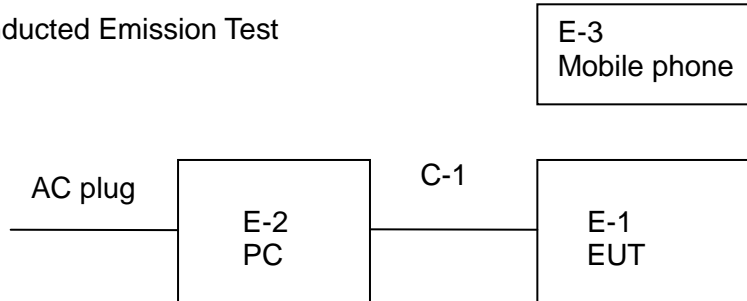
For Conducted Emission	
Final Test Mode	Description
Mode 1	Charging+TX Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	Charging+TX Mode

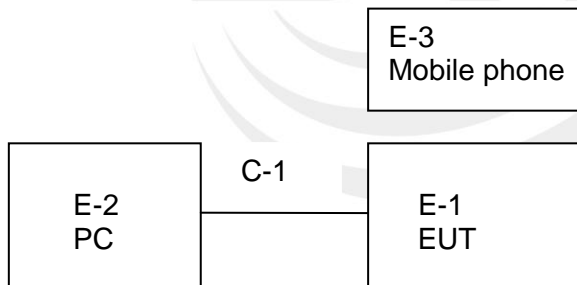
### 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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 Emission Test







## 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	Wireless Charging Navigational Bracket	N/A	JL--01	N/A	EUT
E-2	PC	4CV428DQXR	500-320cx	4CV428DQYN	N/A
E-3	Mobile phone	N/A	N/A	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	2016.06.06	2017.06.05
PreAmplifier	Agilent	8449B	60538	2016.10.23	2017.10.22
Loop Antenna	EMCO	6502	9003-2485	2016.03.06	2019.03.03
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(SECTION 15.207)

#### 3.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.207 limit in the table below has to be followed.

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 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.

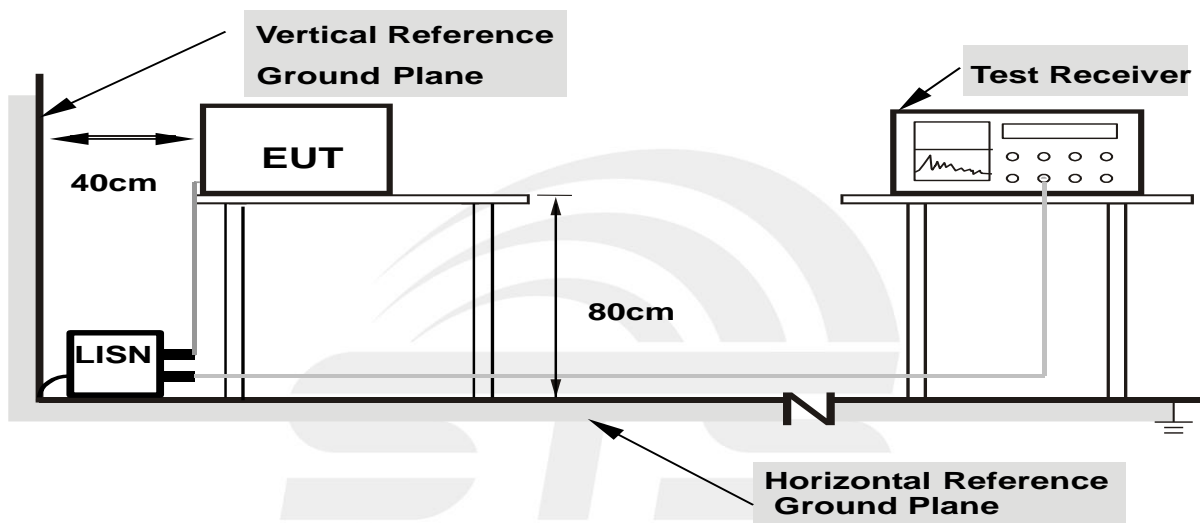
The following table is the setting of the receiver

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

### 3.2 TEST PROCEDURE

- 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- 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

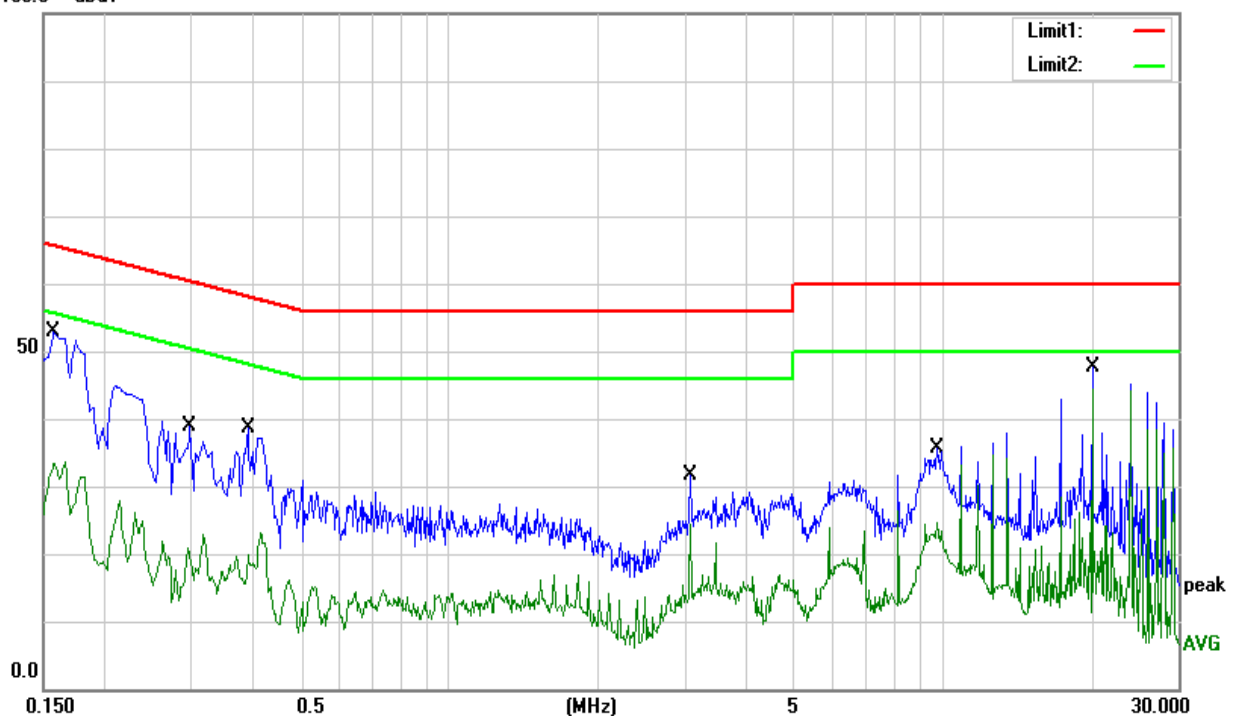
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1580	43.66	9.23	52.89	65.57	-12.68	QP
2	0.1580	24.15	9.23	33.38	55.57	-22.19	AVG
3	0.2980	29.71	9.13	38.84	60.30	-21.46	QP
4	0.2980	10.44	9.13	19.57	50.30	-30.73	AVG
5	0.3900	29.14	9.41	38.55	58.06	-19.51	QP
6	0.3900	9.92	9.41	19.33	48.06	-28.73	AVG
7	3.0860	22.35	9.26	31.61	56.00	-24.39	QP
8	3.0860	15.18	9.26	24.44	46.00	-21.56	AVG
9	9.7140	26.25	9.48	35.73	60.00	-24.27	QP
10	9.7140	15.19	9.48	24.67	50.00	-25.33	AVG
11	20.0660	37.62	9.97	47.59	60.00	-12.41	QP
12	20.0660	4.34	9.97	14.31	50.00	-35.69	AVG

## Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor )-Limit

100.0 dBuV





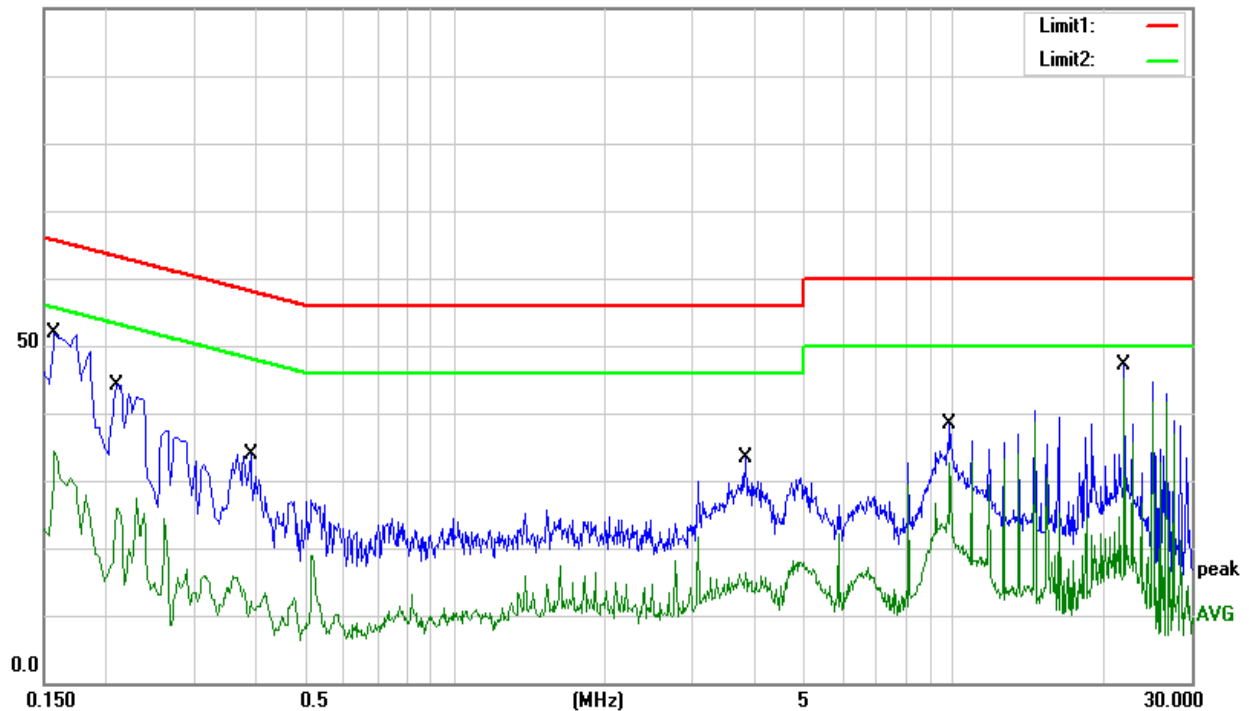
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1580	42.58	9.23	51.81	65.57	-13.76	QP
2	0.1580	25.15	9.23	34.38	55.57	-21.19	AVG
3	0.2100	34.92	9.22	44.14	63.21	-19.07	QP
4	0.2100	16.77	9.22	25.99	53.21	-27.22	AVG
5	0.3900	24.67	9.23	33.90	58.06	-24.16	QP
6	0.3900	2.48	9.23	11.71	48.06	-36.35	AVG
7	3.8380	24.12	9.26	33.38	56.00	-22.62	QP
8	3.8380	7.02	9.26	16.28	46.00	-29.72	AVG
9	9.8580	28.92	9.40	38.32	60.00	-21.68	QP
10	9.8580	23.15	9.40	32.55	50.00	-17.45	AVG
11	21.9660	37.37	9.82	47.19	60.00	-12.81	QP
12	21.9660	35.28	9.82	45.10	50.00	-4.90	AVG

## Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) - Limit

100.0 dBuV



#### 4. RADIATED& FIELD EMISSION TEST RESULT(SECTIOU 15.209 )

##### 4.1 Limit

Frequency [MHz]	Field Strength [uV/m]	Measurement Distance [Meters]
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

§ 15.209(d)The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

##### 4.2 TEST PROCEDURE

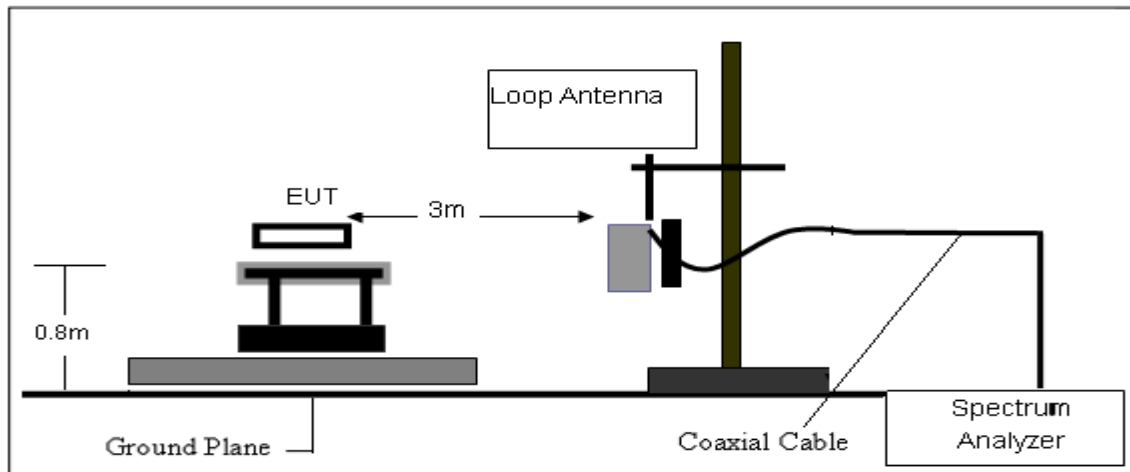
- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- d. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

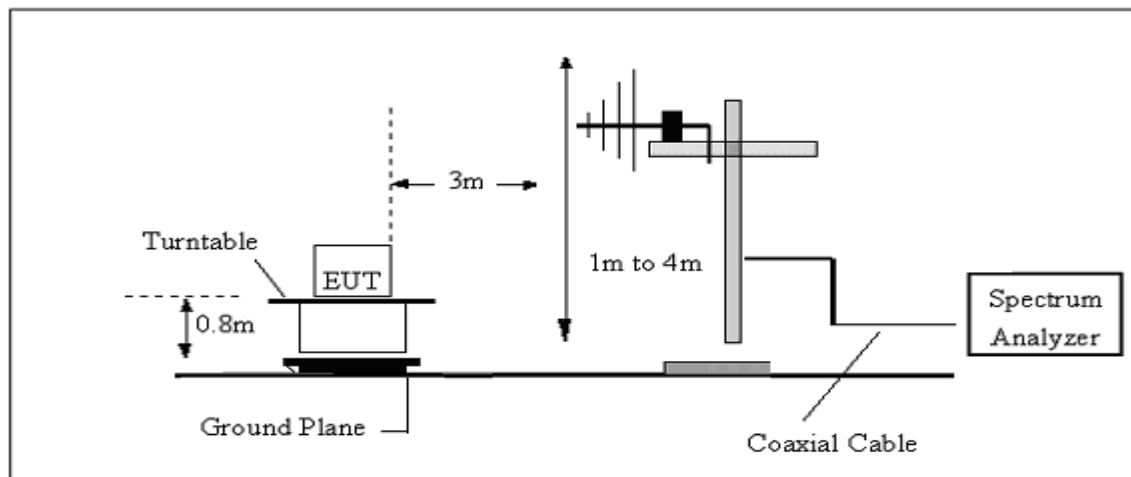
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

### 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 :	25 °C	Relative Humidity :	50%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode		

## 4.4.1 Spurious Radiated Emission Below 30 MHz

Frequency	Reading	Detector	Ant. Factor	Cable	Emission	Limits	Margin
(MHz)	(dBμV)	(PK/QP/AV)	(dB/m)	Loss	Level (dBμV/m)	(dBμV/m)	(dB)
9	61.57	AV	28.16	0.1	89.83	128.52	-38.69
23	60.42	AV	28.21	0.1	88.73	120.37	-31.64
36	53.45	AV	22.03	0.1	75.58	116.48	-40.90
45	54.63	AV	21.25	0.1	75.98	114.54	-38.56
110	60.41	AV	10.04	0.1	70.55	106.78	-36.23
175	70.51	AV	9.57	0.1	80.18	102.74	-22.56
205	60.67	AV	9.43	0.1	70.20	101.37	-31.17
554	53.35	QP	-16.36	0.1	37.09	72.73	-35.64
23214	41.38	QP	-17.9	0.9	24.38	53.98	-29.60

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 :	25 °C	Relative Humidity :	50%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 1		

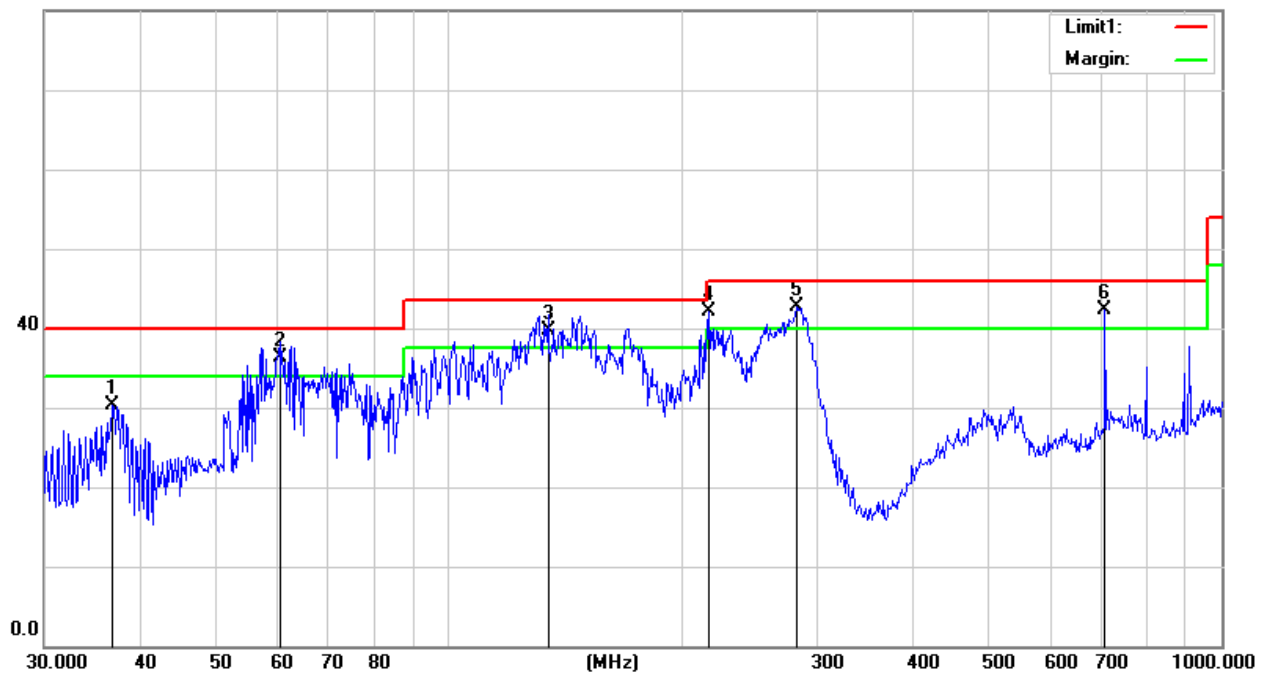
The following table shows the highest levels of radiated emissions on polarizations of vertical

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
36.7661	44.93	-14.66	30.27	40.00	-9.73	QP
60.4920	60.68	-24.33	36.35	40.00	-3.65	QP
134.5592	57.27	-17.54	39.73	43.50	-3.77	QP
217.5440	61.39	-19.27	42.12	46.00	-3.88	QP
281.9945	58.49	-15.72	42.77	46.00	-3.23	QP
706.6997	47.45	-5.12	42.33	46.00	-3.67	QP

Remark:

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

80.0 dBuV/m





Temperature :	25 °C	Relative Humidity :	50%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 1		

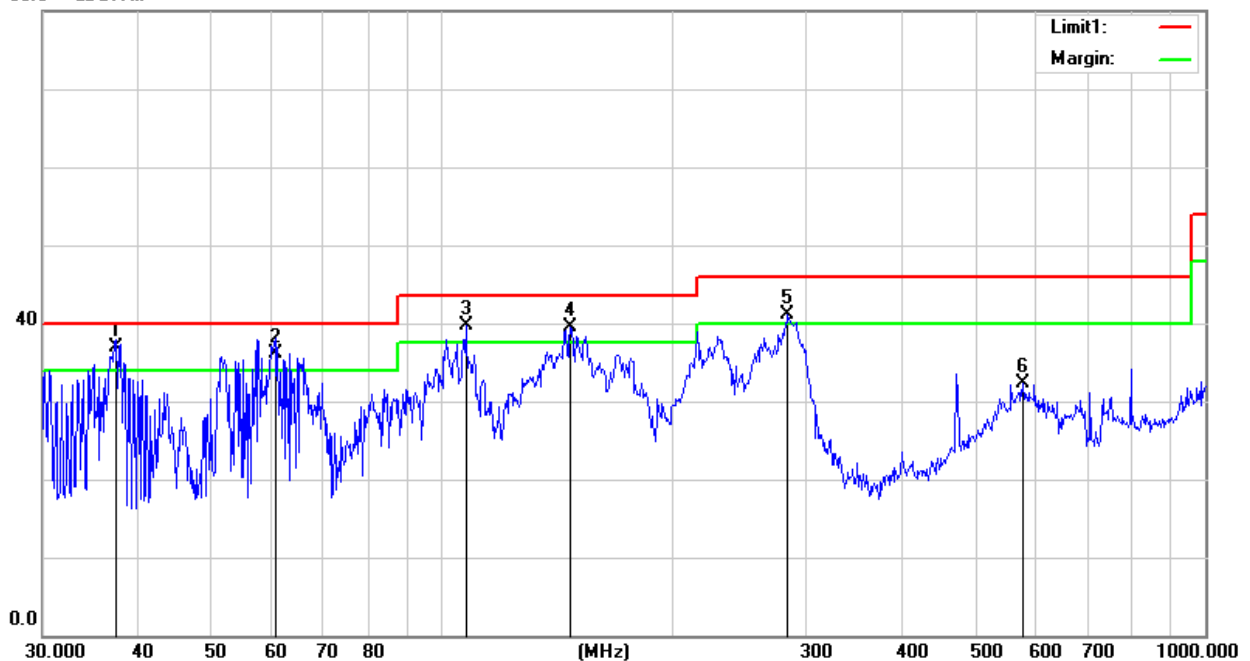
The following table shows the highest levels of radiated emissions on polarizations of horizontal

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
37.4164	51.93	-15.00	36.93	40.00	-3.07	QP
60.4920	60.50	-24.33	36.17	40.00	-3.83	QP
107.5100	58.30	-18.55	39.75	43.50	-3.75	QP
147.4036	57.31	-17.85	39.46	43.50	-4.04	QP
283.9791	56.74	-15.64	41.10	46.00	-4.90	QP
576.6443	39.04	-6.69	32.35	46.00	-13.65	QP

Remark:

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

80.0 dBuV/m





## 5. 20 DB BANDWIDTH TEST

### 5.1 Limit

FCC Part 2.1049, Only applicable to report.

### 5.2 TEST SETUP

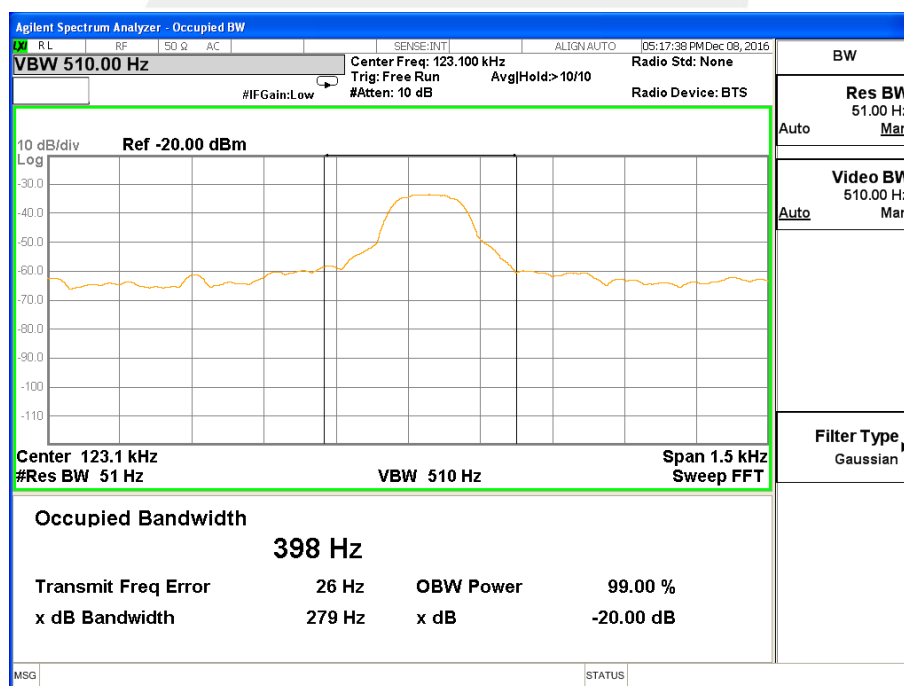
Spectrum Parameter	Setting
Span Frequency	approximately 2 to 3 times the 20 dB bandwidth
RB	greater than 1 % of the 20 dB bandwidth,
VB	equal to the RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

The test program and configuration, Refer to 4.2 and 4.3

### 5.3 TEST RESULTS

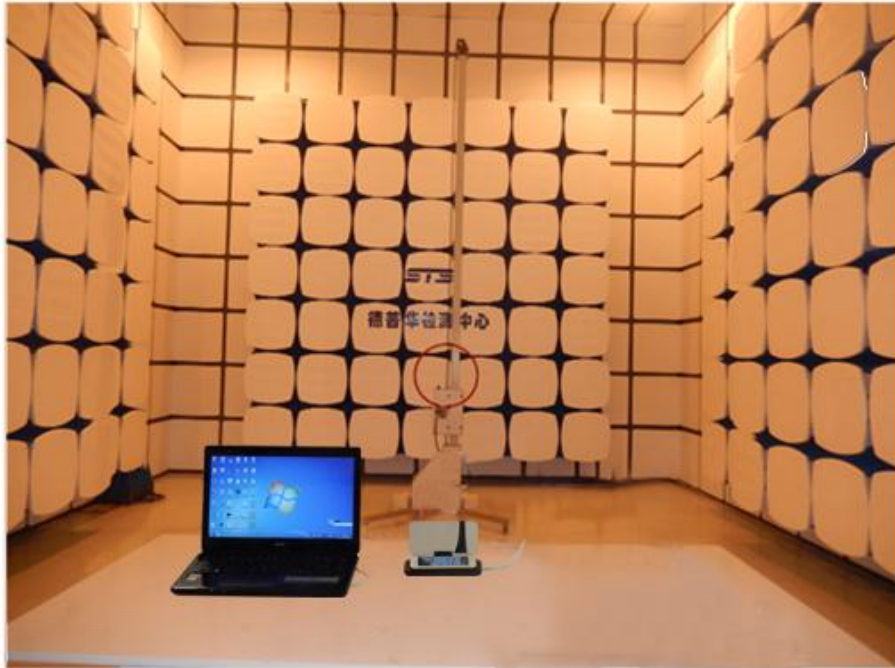
OperatingFrequency (kHz)	20 dB Bandwidth(Hz)
123.1	279

CH01

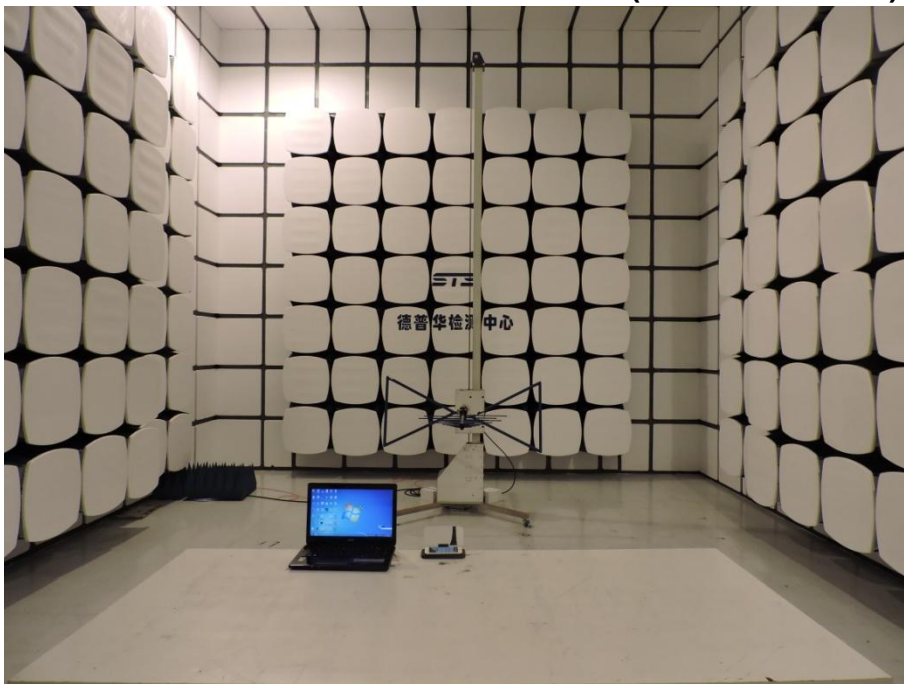


## APPENDIX-PHOTOS OF TEST SETUP

### Radiated emission Measurement Photos(9KHz-30MHz)



### Radiated emission Measurement Photos(30MHz-1000MHz)



### Conduction Measurement Photos



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