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LAB



## FCC TEST REPORT

Report No: STS1802061W01

Issued for

Chiyu Technology Co., Ltd.

No. 293, Siwei Road, Chiayi City 60085, Taiwan

<b>Product Name:</b>	Time Attendance & Access Controller
<b>Brand Name:</b>	 CHIYU SMART SECURITY
<b>Model Name:</b>	CSS-E-R11
<b>Series Model:</b>	CSS-E-R12, CSS-E-R13, CSS-E-R14, CSS-E-R15, CSS-E-R16, CSS-E-R17, CSS-E-R18, CSS-E-R19, WebPass II-E
<b>FCC ID:</b>	ZDZCSS-E-R11
<b>Test Standard:</b>	FCC Part 15 Subpart C

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**TEST RESULT CERTIFICATION**

Applicant's name .....: Chiyu Technology Co., Ltd.

Address .....: No. 293, Siwei Road, Chiayi City 60085, Taiwan

Manufacture's Name .....: Chiyu Technology Co., Ltd.

Address .....: No. 293, Siwei Road, Chiayi City 60085, Taiwan

**Product description**

Product Name .....: Time Attendance & Access Controller

Brand Name .....:

Model Name .....: CSS-E-R11

Series Model .....: CSS-E-R12,CSS-E-R13,CSS-E-R14,  
CSS-E-R15,CSS-E-R16, CSS-E-R17,  
CSS-E-R18,CSS-E-R19,WebPass II-E

**Test Standards** .....: FCC Part 15 Subpart C

Test Procedure : ANSI C63.10-2013

This device described above has been tested by STS, 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: 27 Feb. 2018 ~01 Mar. 2018

Date of Issue : 01 Mar. 2018

Test Result : **Pass**

Testing Engineer :

( Chris chen )

Technical Manager :

( Sean she )

Authorized Signatory :

(Vita Li)





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**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	01 Mar. 2018	STS1802061W01	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

CNAS Registration No.: L7649; FCC Registration No.: 6255569

IC Registration No.: 12108A; A2LA Certificate No.: 4338.01;

### 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

Product Name	Time Attendance & Access Controller
Trade Name	<b>CSS</b> CHIYU SMART SECURITY
Model Name	CSS-E-R11
Series Model	CSS-E-R12, CSS-E-R13, CSS-E-R14, CSS-E-R15, CSS-E-R16, CSS-E-R17, CSS-E-R18, CSS-E-R19, WebPass II-E
Model Difference	Only the model name is different, others are consistent, different models represent different sales areas.
Channel List	Please refer to the Note 2.
Equipment Category	Non-ISM frequency
Operating frequency	125KHz
Modulation Type	ASK
Antenna Gain	0dBi
Power Rating	Input: DC 9-24V, 500mA
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)	Channel	Frequency (KHz)	Channel	Frequency (KHz)
00	125				

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	NOTE
1	<b>CSS</b> CHIYU SMART SECURITY	CSS-E-R11	Integral Antenna	NA	Antenna



## 2.2 DESCRIPTION OF TEST MODES

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.

Pretest Mode	Description
Mode 1	TX Mode

<b>For Conducted Emission</b>	
Final Test Mode	Description
Mode 1	TX Mode

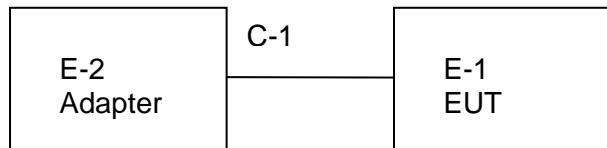
<b>For Radiated Emission</b>	
Final Test Mode	Description
Mode 1	TX Mode

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

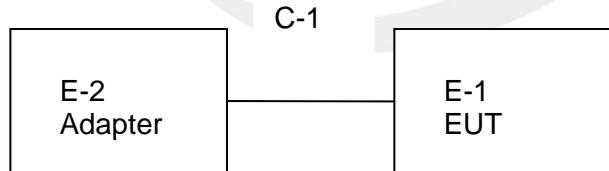
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final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

Conducted Emission Test

CSS-E-R11



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	Time Attendance & Access Controller	 CHIYU SMART SECURITY	CSS-E-R11	N/A	EUT
E-2	Adapter	N/A	DSA-12PFA-09	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	unshielded	N/A	100cm	N/A

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
Test Receiver	R&S	ESCI	101427	2017.10.15	2018.10.14
Bilog Antenna	TESEQ	CBL6111D	34678	2017.03.24	2018.03.23
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2017.10.15	2018.10.14
PreAmplifier	Agilent	8449B	60538	2017.10.15	2018.10.14
Loop Antenna	EMCO	6502	9003-2485	2017.10.15	2018.10.14
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2017.10.15	2018.10.14

### Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2017.10.15	2018.10.14
LISN	R&S	ENV216	101242	2017.10.15	2018.10.14
LISN	EMCO	3810/2NM	000-23625	2017.10.15	2018.10.14



### 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.

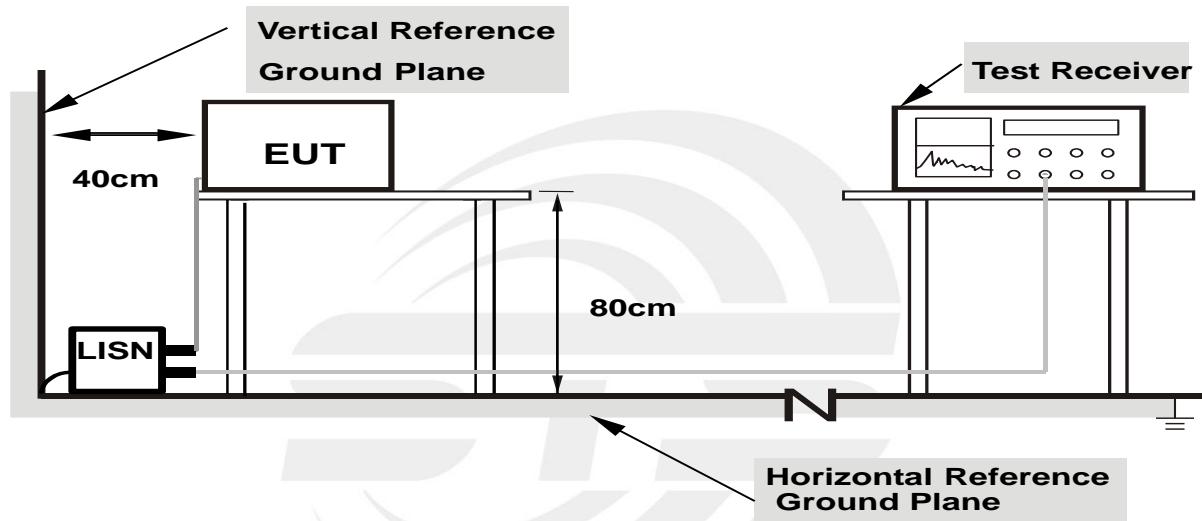
The following table is the setting of the receiver

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

### 3.2 TEST PROCEDURE

- 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 cm 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.

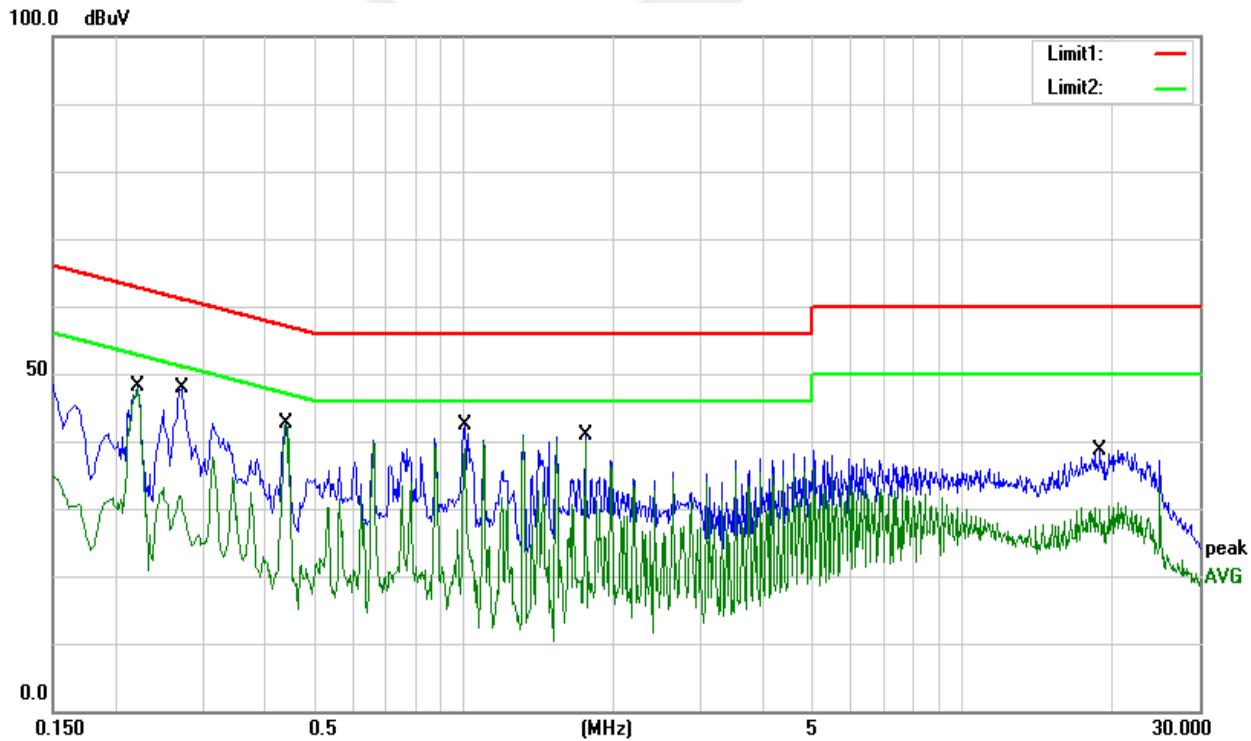
### 3.5 TEST RESULTS

Temperature:	23.5 °C	Relative Humidity:	59%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2220	38.15	9.88	48.03	62.74	-14.71	QP
2	0.2220	35.96	9.88	45.84	52.74	-6.90	AVG
3	0.2714	37.71	10.10	47.81	61.07	-13.26	QP
4	0.2714	19.21	10.10	29.31	51.07	-21.76	AVG
5	0.4420	32.68	10.03	42.71	57.02	-14.31	QP
6	0.4420	32.40	10.03	42.43	47.02	-4.59	AVG
7	1.0060	32.68	9.80	42.48	56.00	-13.52	QP
8	1.0060	17.67	9.80	27.47	46.00	-18.53	AVG
9	1.7580	31.02	9.78	40.80	56.00	-15.20	QP
10	1.7580	5.62	9.78	15.40	46.00	-30.60	AVG
11	18.9260	28.33	10.41	38.74	60.00	-21.26	QP
12	18.9260	19.57	10.41	29.98	50.00	-20.02	AVG

#### Remark:

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



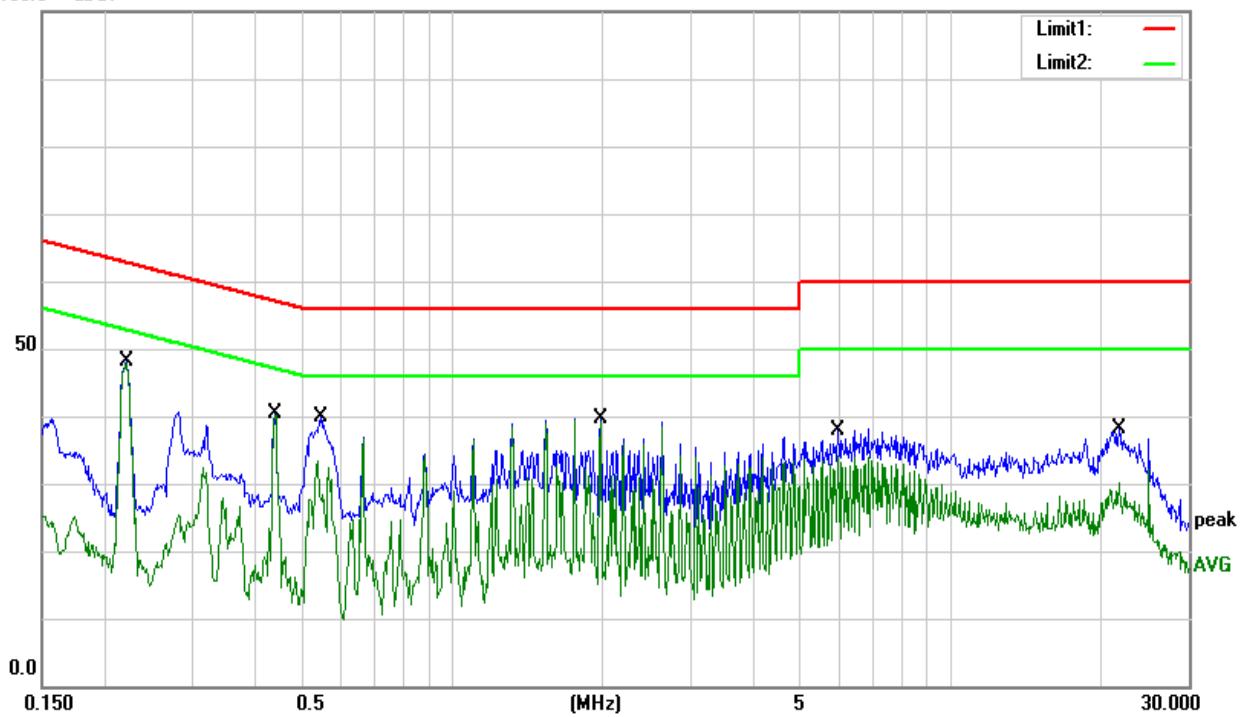
Temperature:	23.5 °C	Relative Humidity:	59%
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2220	38.19	9.96	48.15	62.74	-14.59	QP
2	0.2220	35.71	9.96	45.67	52.74	-7.07	AVG
3	0.4420	30.41	10.03	40.44	57.02	-16.58	QP
4	0.4420	22.84	10.03	32.87	47.02	-14.15	AVG
5	0.5460	29.95	9.95	39.90	56.00	-16.10	QP
6	0.5460	18.49	9.95	28.44	46.00	-17.56	AVG
7	1.9820	29.85	9.87	39.72	56.00	-16.28	QP
8	1.9820	29.26	9.87	39.13	46.00	-6.87	AVG
9	5.9460	28.02	9.91	37.93	60.00	-22.07	QP
10	5.9460	24.33	9.91	34.24	50.00	-15.76	AVG
11	21.8060	27.68	10.40	38.08	60.00	-21.92	QP
12	21.8060	17.70	10.40	28.10	50.00	-21.90	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

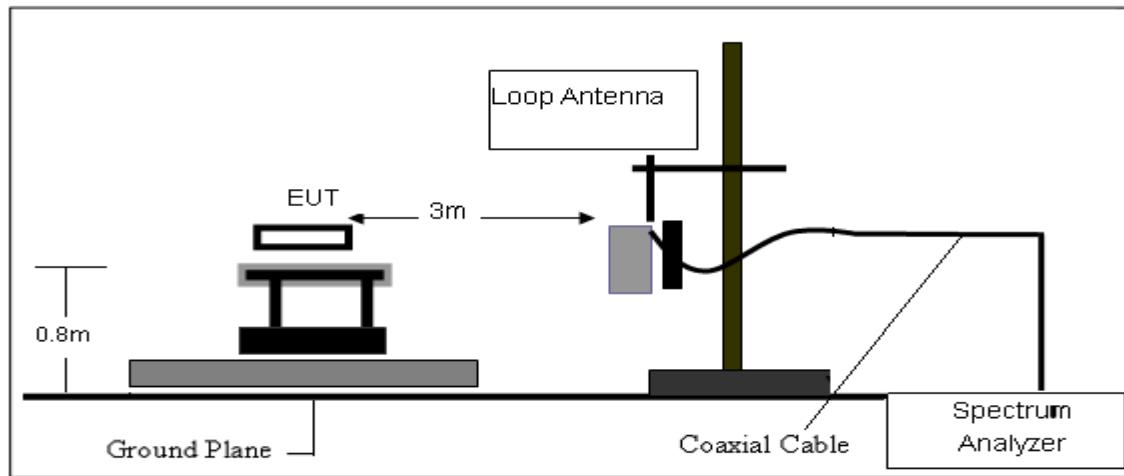
- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 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:

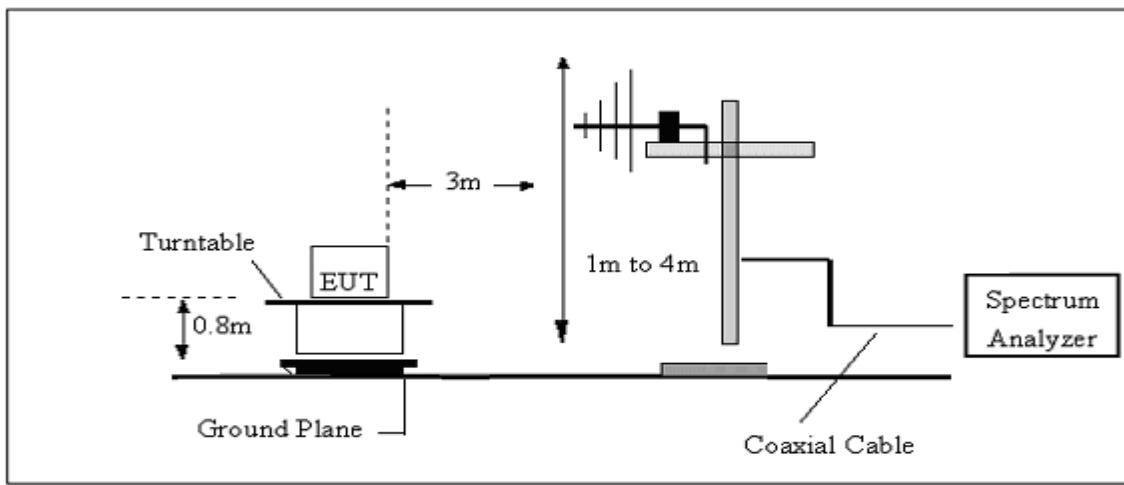
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

#### 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%
Test Voltage :	AC 120V/60Hz	Test Mode :	TX Mode

##### 4.4.1 Spurious Radiated Emission Below 30 MHz

Frequency (KHz)	Reading (dB $\mu$ V)	Detector (PK/QP/AV)	Ant. Factor (dB/m)	Cable Loss	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)
9	59.25	AV	28.16	0.1	87.51	128.52	-41.01
23	58.17	AV	28.21	0.1	86.48	120.37	-33.89
36	52.57	AV	22.03	0.1	74.70	116.48	-41.78
45	55.63	AV	21.25	0.1	76.98	114.54	-37.56
110	58.18	AV	10.04	0.1	68.32	106.78	-38.46
125	81.95	AV	9.57	0.1	91.62	105.67	-14.05
205	59.27	AV	9.43	0.1	68.80	101.37	-32.57
576	51.65	QP	-16.36	0.1	35.39	72.40	-37.01
23571	43.16	QP	-17.9	0.9	26.16	69.54	-43.38

1. \*\* Means Fundamental frequency

2. Emission Level [dB $\mu$ V/m] = Reading [dB $\mu$ V] + Ant. Factor [dB/m] + Cable Loss [dB]

3. Margin [dB] = Emission Level [dB $\mu$ V/m] – Limit [dB $\mu$ V/m]

4. Limit calculation: Limit at specified distance + 40log (300/3) = Limit + 80 dB for up to 0.49 MHz

Limit at specified distance + 40log (30/3) = Limit + 40 dB for above 0.49 MHz, Below 30 MHz

#### 4.4.2 Spurious Radiated Emission below 1 GHz

Temperature :	22.1 °C	Relative Humidity :	56%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 1

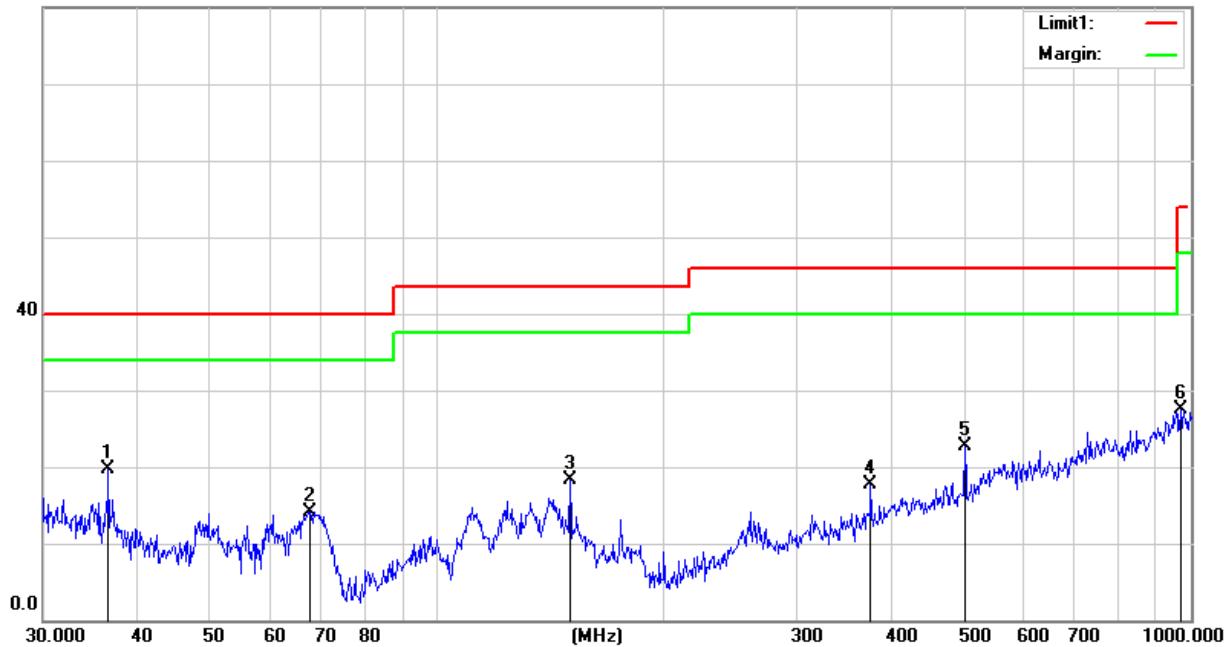
The following table shows the highest levels of radiated emissions on polarizations of vertical

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
36.6375	34.32	-14.59	19.73	40.00	-20.27	QP
67.9130	38.30	-24.15	14.15	40.00	-25.85	QP
150.0108	36.35	-17.97	18.38	43.50	-25.12	QP
375.9385	30.46	-12.73	17.73	46.00	-28.27	QP
501.1790	31.60	-8.90	22.70	46.00	-23.30	QP
968.9338	27.68	-0.13	27.55	54.00	-26.45	QP

Remark:

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

80.0 dBuV



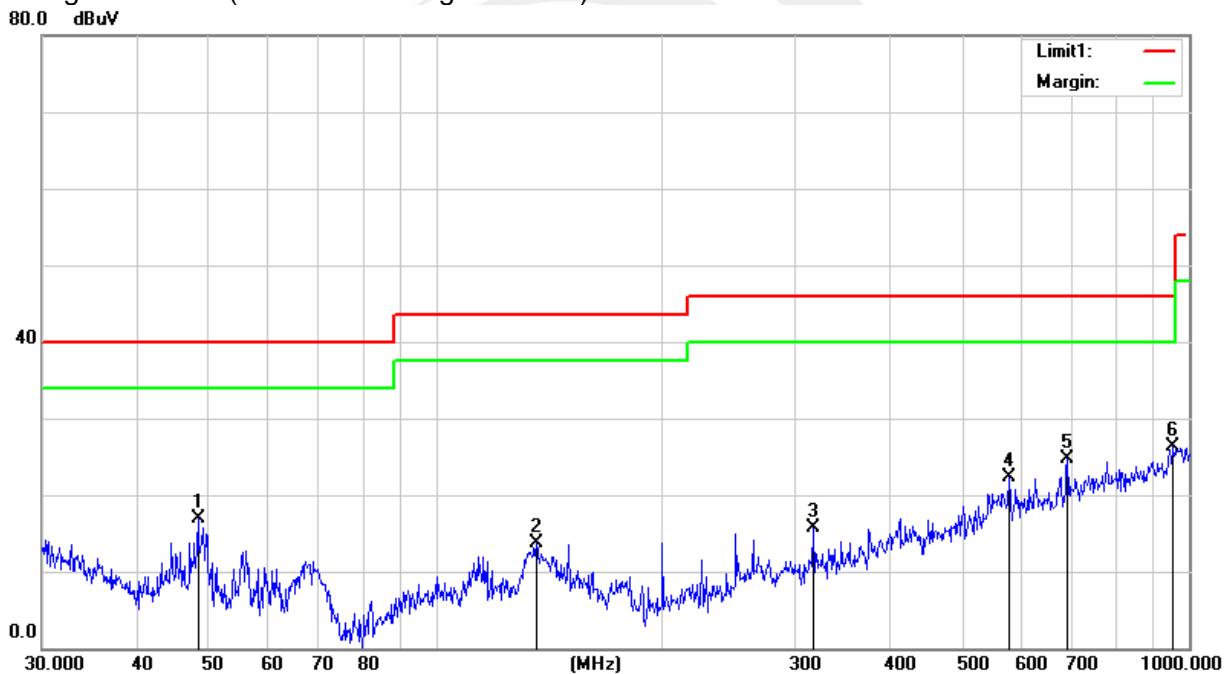
Temperature :	22.1 °C	Relative Humidity :	56%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 1

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

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
48.3318	37.45	-20.62	16.83	40.00	-23.17	QP
135.9822	31.31	-17.52	13.79	43.50	-29.71	QP
316.5890	30.07	-14.28	15.79	46.00	-30.21	QP
576.6443	28.98	-6.69	22.29	46.00	-23.71	QP
689.5644	30.18	-5.57	24.61	46.00	-21.39	QP
952.0937	26.65	-0.36	26.29	46.00	-19.71	QP

Remark:

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



## 5. 20 DB BANDWIDTH TEST

### 5.1 Limit

FCC Part 2.1049, Only applicable to report.

### 5.2 TEST SETUP

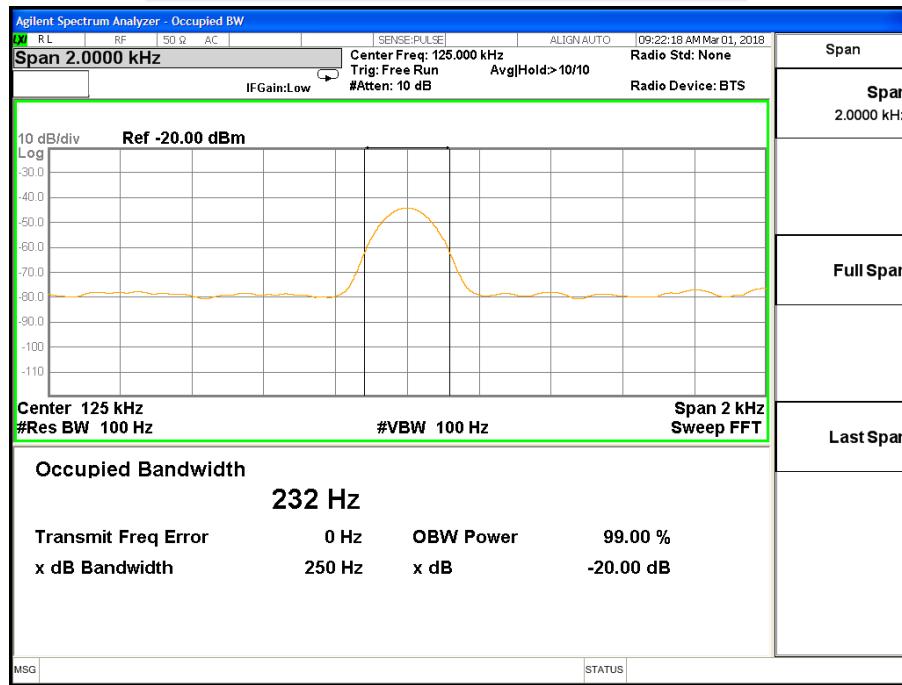
Spectrum Parameter	Setting
Span Frequency	approximately 2 to 3 times the 20 dB bandwidth
RB	greater than 1 % of the 20 dB bandwidth,
VB	equal to the RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

The test program and configuration, Refer to 4.2 and 4.3

### 5.3 TEST RESULTS

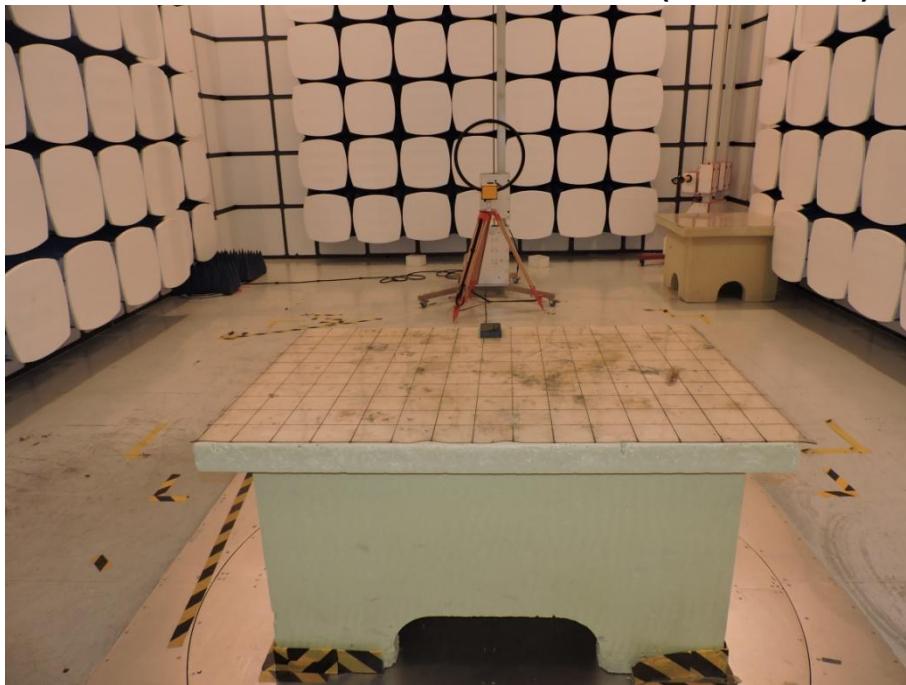
Operating Frequency (kHz)	20 dB Bandwidth(Hz)
125	250

CH00

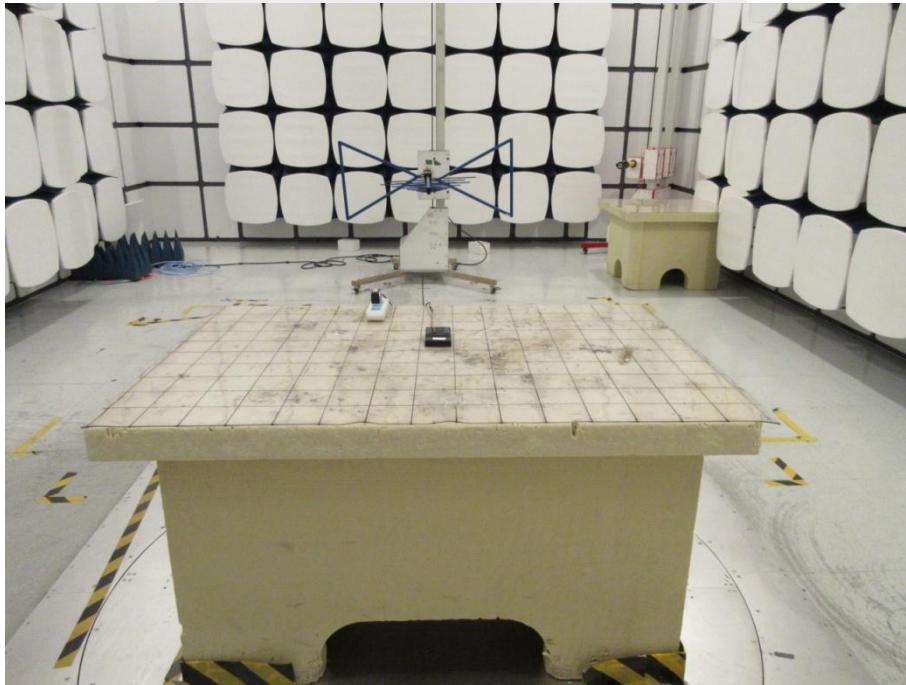


## APPENDIX-PHOTOS OF TEST SETUP

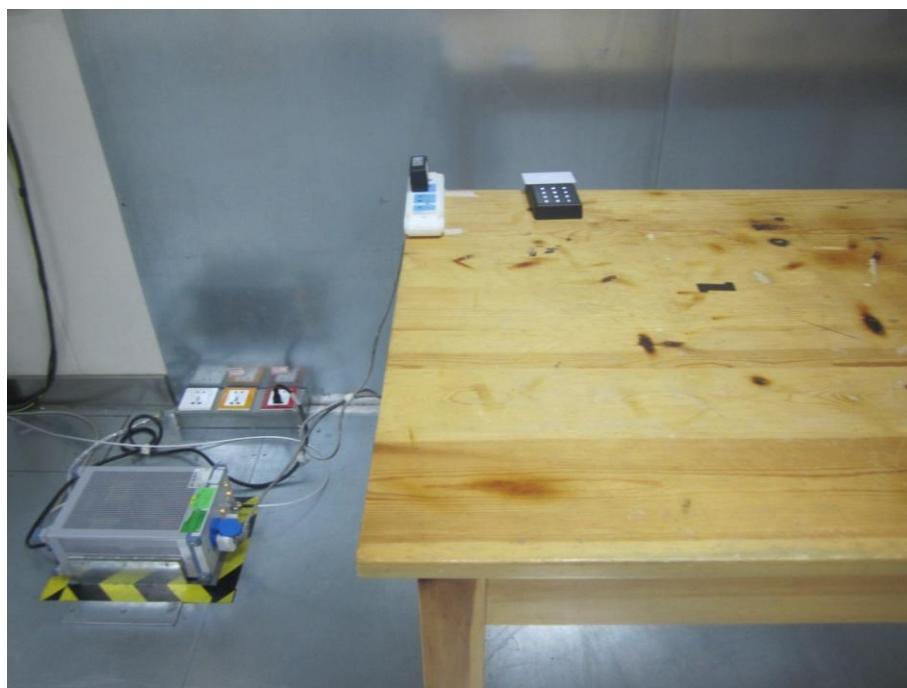
### Radiated emission Measurement Photos(9KHz-30MHz)



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



### Conduction Measurement Photos



\*\*\*\*\* END OF THE REPORT \*\*\*\*\*