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Report No.: SZEM180100053702
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TEST REPORT

Application No.: SZEM1801000537CR
Applicant: Xiamen Leelen Technology Co.,Ltd.
Address of Applicant: 65 Sunban South Rd., Jimei North Industrial Zone, Xiamen China. P.C. 361021
Manufacturer / Factory: Xiamen Leelen Technology Co.,Ltd.
Address of Manufacturer / Factory: 65 Sunban South Rd., Jimei North Industrial Zone, Xiamen China. P.C. 361021
Equipment Under Test (EUT):
EUT Name: Model 15 Two Wires Digital Outdoor Unit
Model No.: EH2W-OS-M55-002, EH2W-OS-M55-004♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
FCC ID: 2AFVB-EH2W-OS-M55
Trade mark: LEELEN
Standard(s) : 47 CFR Part 15, Subpart C 15.225
Date of Receipt: 2018-01-18
Date of Test: 2018-02-12 to 2018-05-15
Date of Issue: 2018-05-16

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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<i>Revision Record</i>				
<i>Version</i>	<i>Chapter</i>	<i>Date</i>	<i>Modifier</i>	<i>Remark</i>
01		2018-05-16		Original

Authorized for issue by:				
				
		<hr/>		
		Leo Lai /Project Engineer		
				
		<hr/>		
		Eric Fu /Reviewer		



2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.225	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass
Emission Mask	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.4	47 CFR Part 15, Subpart C 15.225(a)&(b)&(C)	Pass
Frequency tolerance	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart C 15.225(e)	Pass
Radiated Emissions (9kHz-30MHz)	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.225(d) & 15.209	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.225(d) & 15.209	Pass

Remark:

Model No.: EH2W-OS-M55-002, EH2W-OS-M55-004

Only the model EH2W-OS-M55-002 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on model No., buttons and appearance.



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 18V
Internal source:	13.56MHz
Channel numbers:	1
Adaptive Type	ASK

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC power	ZHAOXIN	RXN-305D	REF. No.SEA2700
Signal Cable	Applicant	N/A	3m long
V31 Two Wires Digital Indoor Unit	LEELEN	EH2W-IS-V31-001	N/A

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.25×10^{-8}
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	2.84dB
6	Conducted Spurious emissions	0.75dB
7	RF Radiated power	4.5dB (below 1GHz)
		4.8dB (above 1GHz)
8	Radiated Spurious emission test	4.5dB (Below 1GHz)
		4.8dB (Above 1GHz)
9	Temperature test	1 °C
10	Humidity test	3%
11	Supply voltages	1.5%
12	Time	3%



4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

RF conducted test					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DC Power Supply	ZhaoXin	PS-3005D	SEM011-05	2017-09-27	2018-09-26
Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2018-04-13	2019-04-12
Signal Generator (9kHz-40GHz)	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.6	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Humidity/ Temperature Indicator	Anymetre	TH101B	SEM002-11	2017-07-23	2018-07-23

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2017-05-10	2020-05-09
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2017-07-13	2018-07-12
LISN	Rohde & Schwarz	ENV216	SEM007-01	2017-09-27	2018-09-26
LISN	ETS-LINDGREN	3816/2	SEM007-02	2018-04-02	2019-04-01
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2018-04-02	2019-04-01

Radiated Emissions(9kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2018-03-31	2021-03-30
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2017-07-13	2018-07-12
EMI Test Receiver (9kHz-3GHz)	Rohde & Schwarz	ESR	SEM004-03	2018-04-02	2019-04-01
Trilog-Broadband Antenna (30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-01-26	2019-01-25
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2018-04-13	2019-04-12
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21

Radiated Emissions(30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2018-03-31	2021-03-30



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Shenzhen Branch**

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Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2017-07-13	2018-07-12
EMI Test Receiver (9kHz-3GHz)	Rohde & Schwarz	ESR	SEM004-03	2018-04-02	2019-04-01
Trilog-Broadband Antenna (30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-01-26	2019-01-25
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2018-04-13	2019-04-12
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

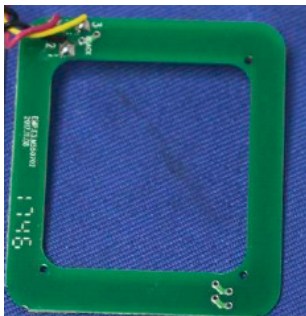
47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

Standard 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 antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an 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 a loop antenna and no consideration of replacement.

7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207
Test Method: ANSI C63.10 (2013) Section 6.2
Limit:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

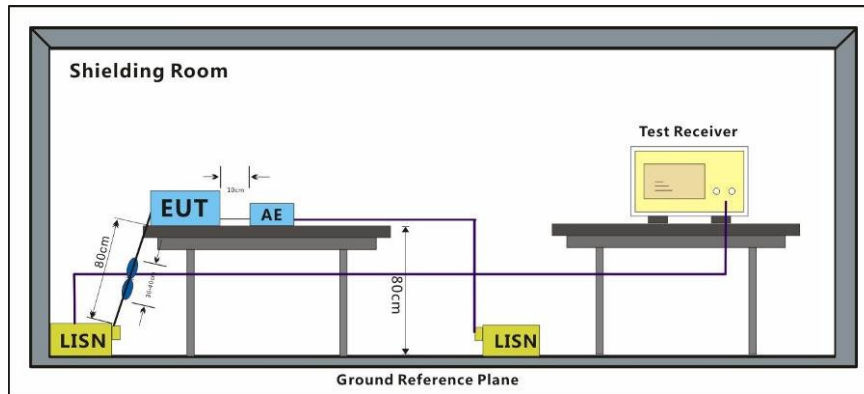
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.3 °C Humidity: 55 % RH Atmospheric Pressure: 1015 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.1.2 Test Setup Diagram

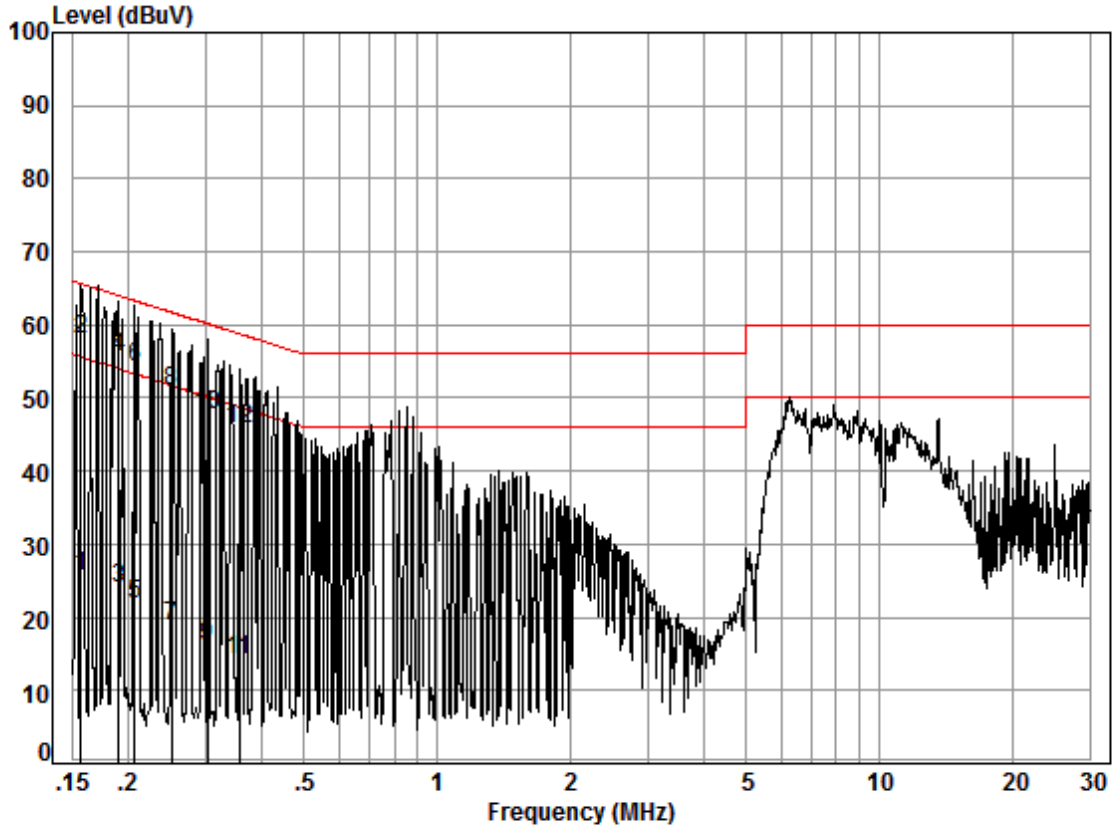


7.1.3 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor

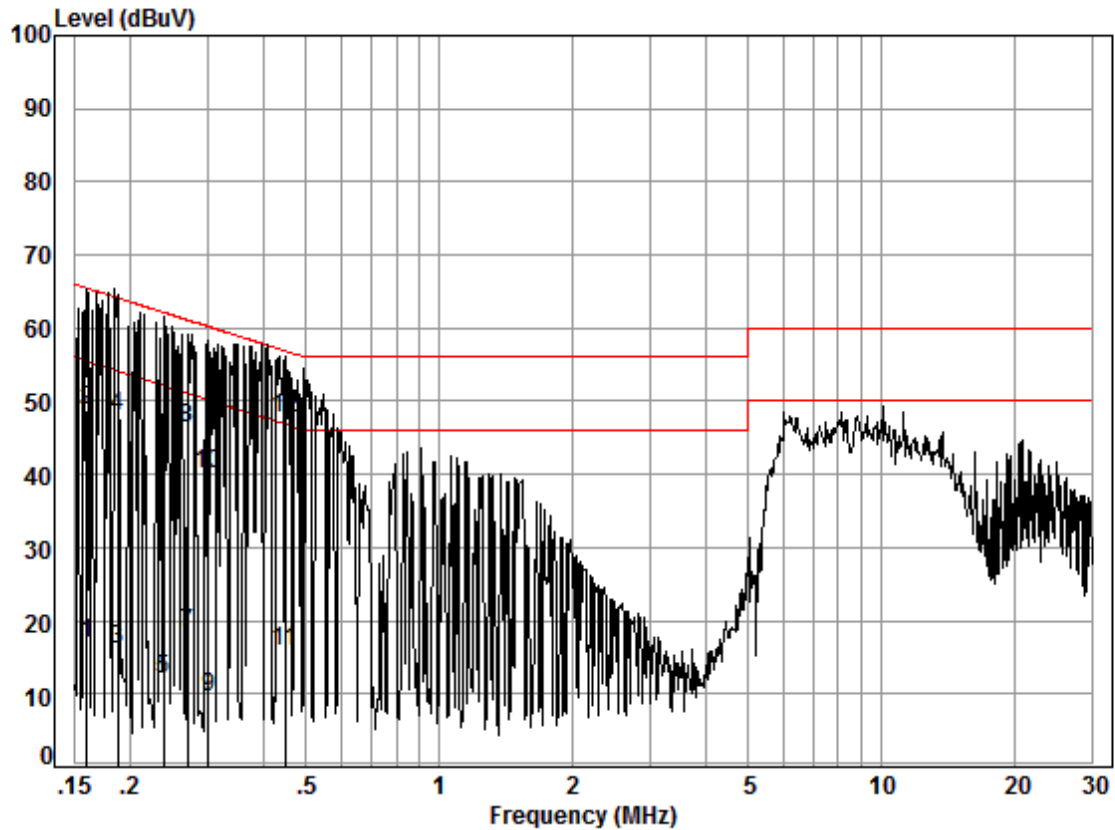
Mode:a; Line:Live Line



Site : Shielding Room
 Condition: Line
 Job No. : 00537CR
 Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.02	9.51	16.06	25.59	55.65	-30.06	Average
2	0.16	0.02	9.51	48.42	57.95	65.65	-7.70	QP
3	0.19	0.02	9.51	14.33	23.86	54.02	-30.16	Average
4	0.19	0.02	9.51	46.13	55.66	64.02	-8.36	QP
5	0.21	0.02	9.50	12.24	21.76	53.32	-31.56	Average
6	0.21	0.02	9.50	44.72	54.24	63.32	-9.08	QP
7	0.25	0.01	9.51	9.23	18.75	51.73	-32.98	Average
8	0.25	0.01	9.51	41.35	50.87	61.73	-10.86	QP
9	0.30	0.01	9.51	6.43	15.95	50.19	-34.24	Average
10	0.30	0.01	9.51	38.30	47.82	60.19	-12.37	QP
11	0.36	0.01	9.50	4.70	14.21	48.78	-34.57	Average
12	0.36	0.01	9.50	36.31	45.82	58.78	-12.96	QP

Mode:a; Line:Neutral Line



Site : Shielding Room
 Condition: Neutral
 Job No. : 00537CR
 Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.02	9.59	7.33	16.94	55.47	-38.53	Average
2	0.16	0.02	9.59	39.22	48.83	65.47	-16.64	QP
3	0.19	0.02	9.58	6.40	16.00	54.15	-38.15	Average
4	0.19	0.02	9.58	38.24	47.84	64.15	-16.31	QP
5	0.24	0.01	9.58	2.38	11.97	52.17	-40.20	Average
6	0.24	0.01	9.58	34.99	44.58	62.17	-17.59	QP
7	0.27	0.01	9.58	8.58	18.17	51.12	-32.95	Average
8	0.27	0.01	9.58	36.74	46.33	61.12	-14.79	QP
9	0.30	0.01	9.58	0.00	9.59	50.24	-40.65	Average
10	0.30	0.01	9.58	30.45	40.04	60.24	-20.20	QP
11	0.45	0.01	9.60	6.17	15.78	46.89	-31.11	Average
12	0.45	0.01	9.60	38.01	47.62	56.89	-9.27	QP

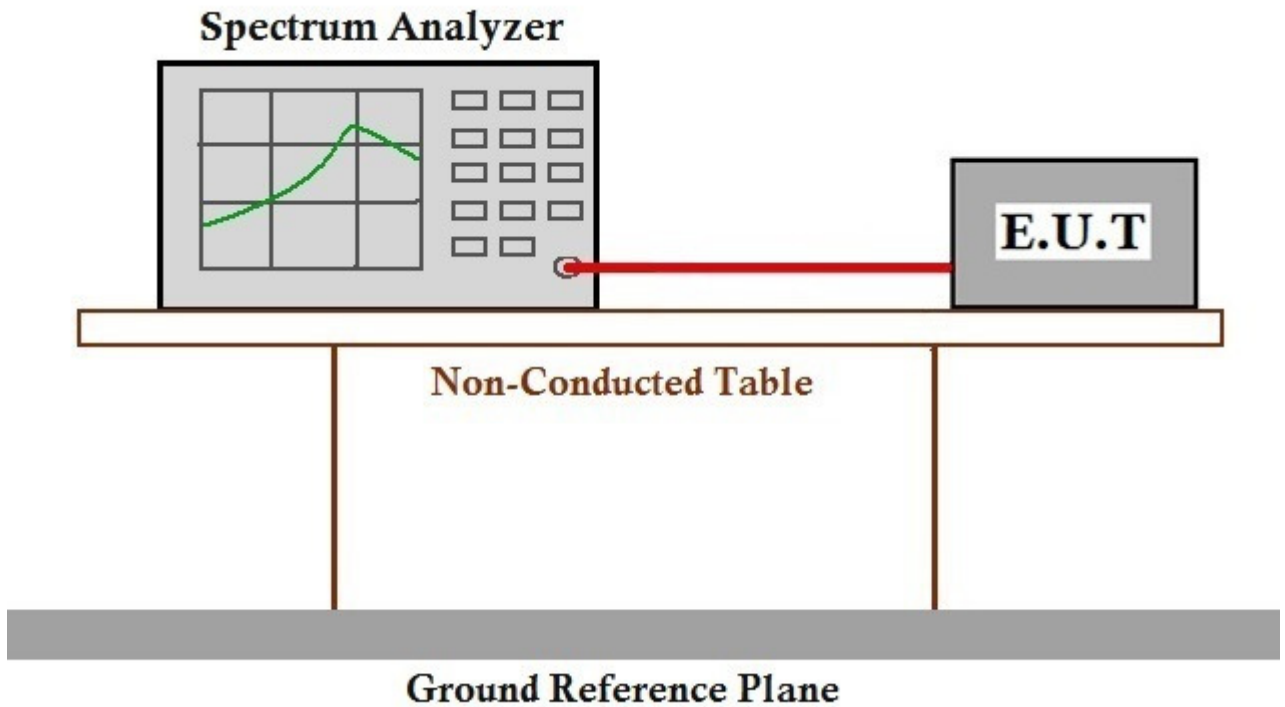
7.2 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215
 Test Method: ANSI C63.10 (2013) Section 6.9
 Measurement Distance: 10m
 Limit: N/A

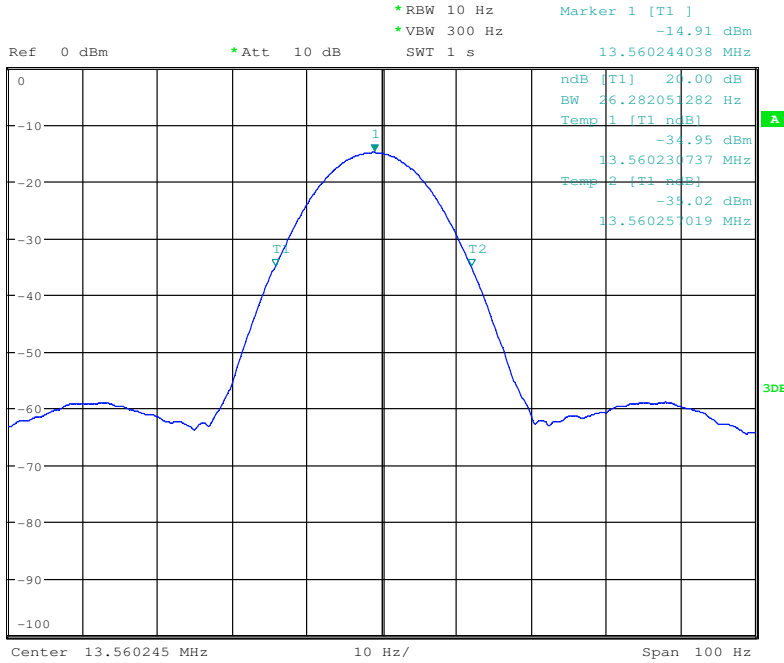
7.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar
 Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data





7.3 Emission Mask

Test Requirement 47 CFR Part 15, Subpart C 15.225(a)&(b)&(C)

Test Method: ANSI C63.10 (2013) Section 6.4

Measurement Distance: 10m

Limit:

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15.848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

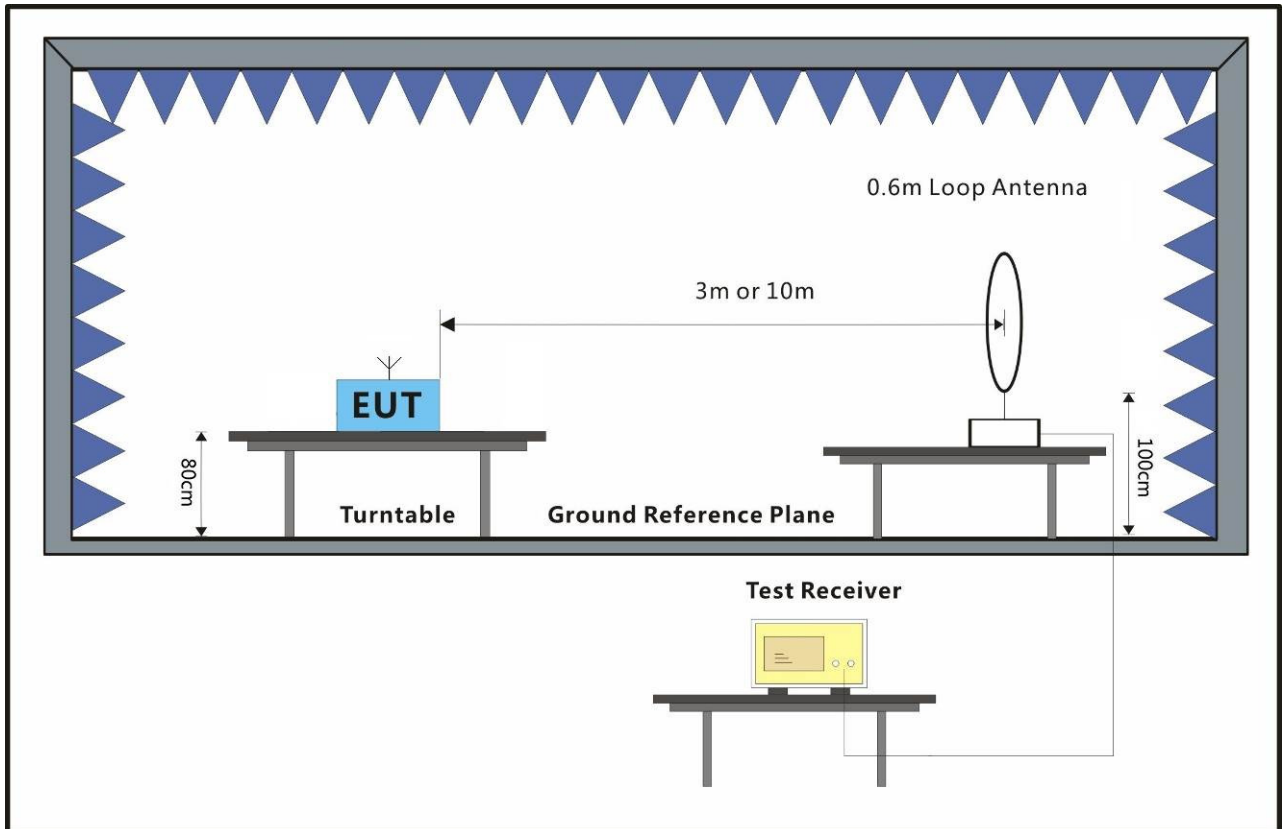
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.3.2 Test Setup Diagram

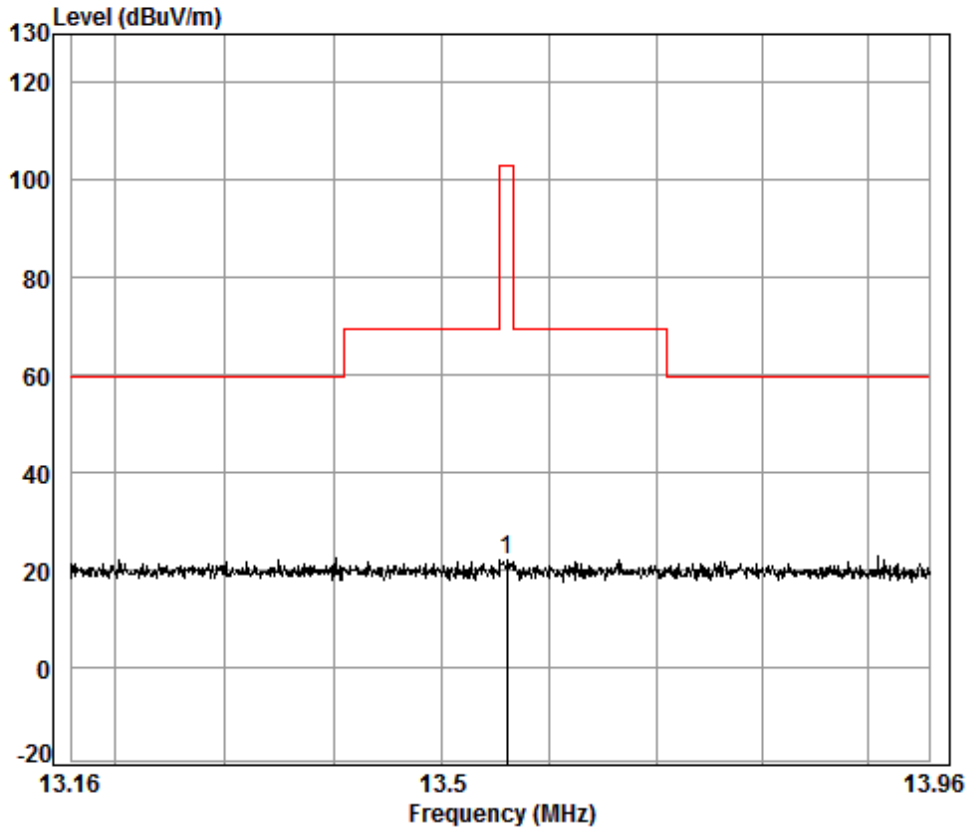


7.3.3 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.



Mode:a



Condition: 10m
Job No. : 00537CR
Test Mode: a

	Cable	Ant	Preamp	Read	Limit	Over		
Freq	Loss	Factor	Factor	Level	Level	Limit		
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m		
1 pp	13.56	0.57	10.47	0.00	11.10	22.14	103.08	-80.94

Below 30MHz

The test was performed at a 10m test site.

The level at 30m test distance is below:

The factor calculated by the following equation:

$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

where

- FS_{limit} is the calculation of field strength at the limit distance, expressed in dB μ V/m
- FS_{max} is the measured field strength, expressed in dB μ V/m
- d_{measure} is the distance of the measurement point from the EUT
- d_{limit} is the reference distance or the distance of the $\lambda/2\pi$ point

Frequency (MHz)	Cable loss (dB)	ANT Factor (dB)	Read Level @ 10m	Level @ 10m (dB μ V/m)	Level @ 30m (dB μ V/m)	Limit @ 30m (dB μ V/m)	Margin (dB)
13.56	0.57	10.47	11.1	22.14	3.06	84.00	-80.94

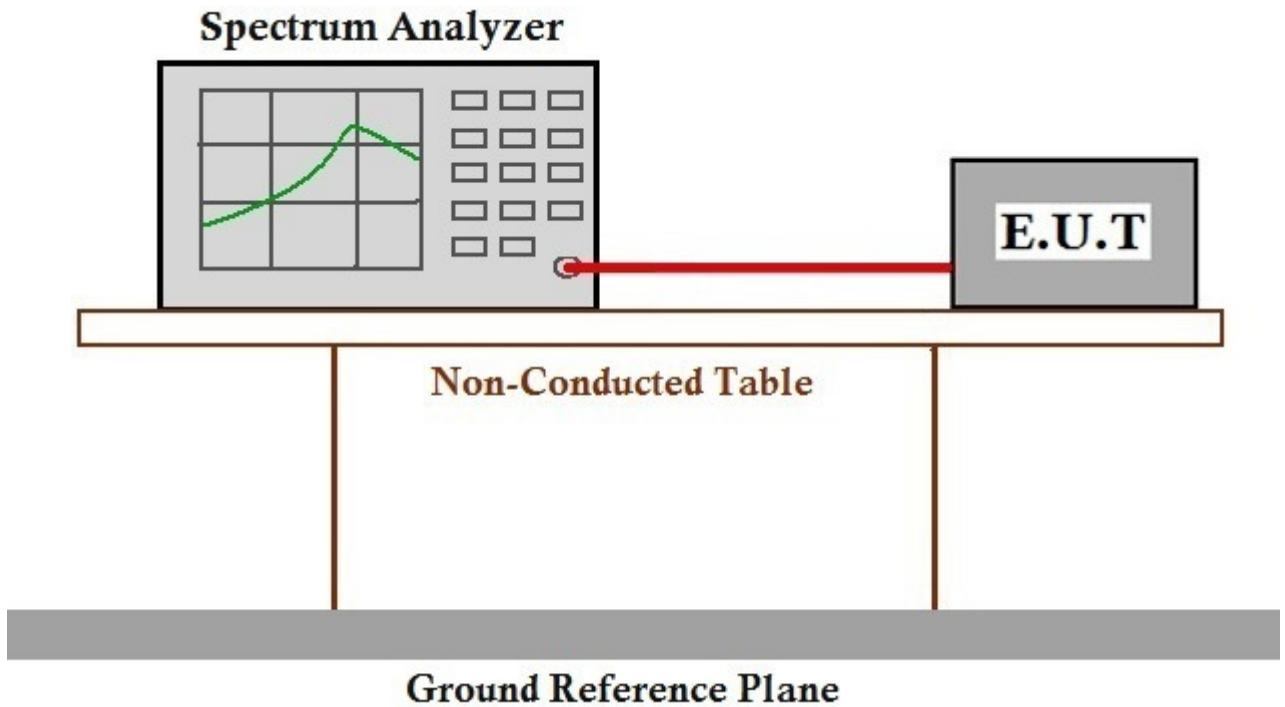
7.4 Frequency tolerance

Test Requirement 47 CFR Part 15, Subpart C 15.225(e)
 Test Method: ANSI C63.10 (2013) Section 6.8
 Measurement Distance: 10m
 Limit: 1.356kHz

7.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar
 Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.4.2 Test Setup Diagram



7.4.3 Measurement Procedure and Data



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Shenzhen Branch**

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Declared Frequency (MHz)	13.56MHz
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Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Frequency Tolerance (%)	Limit (%)	Result
50	18	13.560276	0.0020	±0.01	Pass
40		13.560342	0.0025		Pass
30		13.560247	0.0018		Pass
20		13.560224	0.0017		Pass
10		13.560158	0.0012		Pass
0		13.560215	0.0016		Pass
-10		13.560150	0.0011		Pass
-20		13.560190	0.0014		Pass
20		20.7	13.560327		0.0024
	15.3	13.560108	0.0008	Pass	



7.5 Radiated Emissions(9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5

Measurement Distance: 10m

Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	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	40.0	QP	3
88-216	150	43.5	QP	3
216-960	200	46.0	QP	3
960-1000	500	54.0	QP	3
Above 1000	500	54.0	AV	3

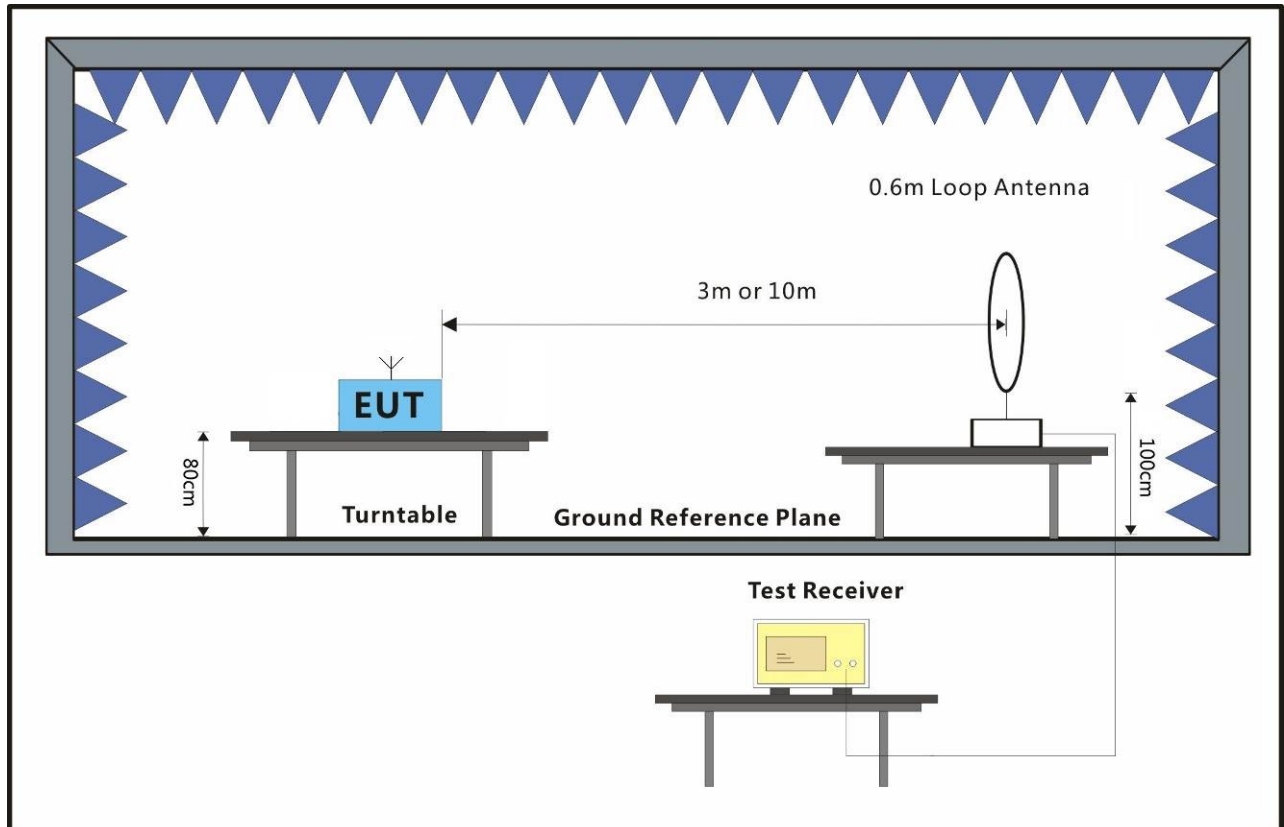
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.5.2 Test Setup Diagram

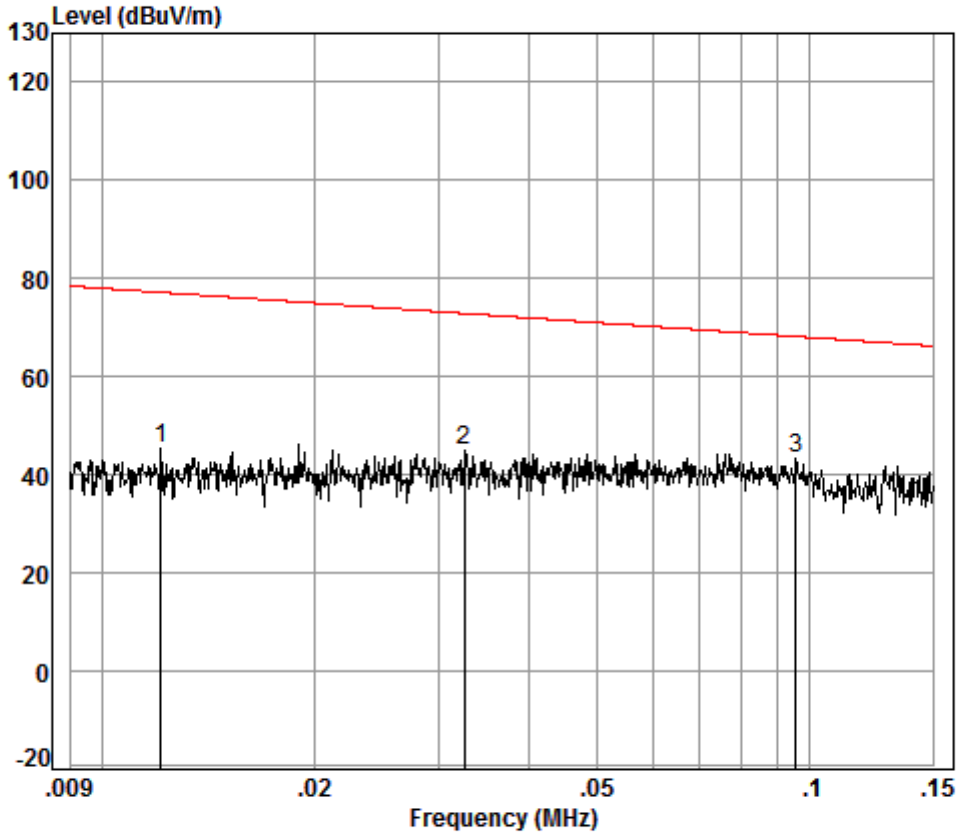


7.5.3 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.



Mode a:
a 0.009-0.15M

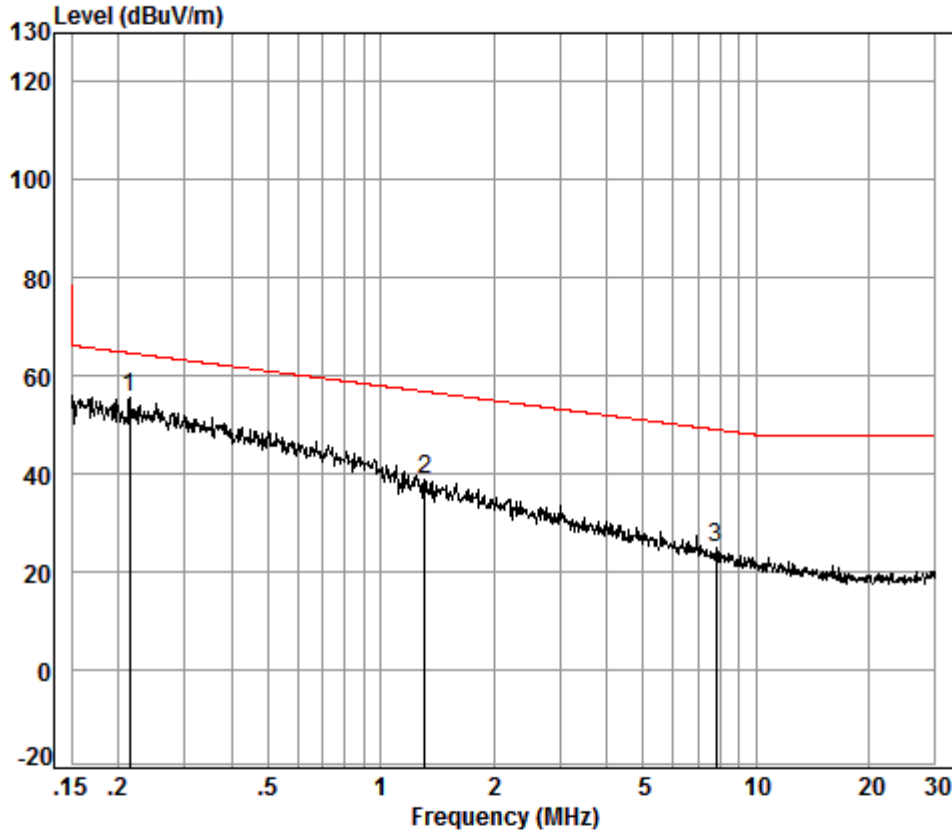


Condition: 10m
Job No. : 00537CR
Test Mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	0.01	0.27	18.10	0.00	27.12	45.49	77.20	-31.71
2	0.03	0.17	13.62	0.00	31.27	45.06	72.91	-27.85
3 pp	0.10	0.05	12.02	0.00	31.42	43.49	68.22	-24.73



Mode a:
0.15-30M



Condition: 10m
Job No. : 00537CR
Test Mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	0.21	0.08	11.91	0.00	43.72	55.71	64.72	-9.01
2	1.31	0.27	12.04	0.00	26.61	38.92	56.84	-17.92
3	7.81	0.47	11.13	0.00	13.39	24.99	49.07	-24.08



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

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Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

Frequency (MHz)	Level @ 10m (dBuV/m)	Limit @ 300m (dBuV/m)	Limit @ 30m (dBuV/m)	Factor (dB)	Level @ 300m (dBuV/m)	Level @ 30m (dBuV/m)	Margin (dB)
0.01	45.59	46.02	-	59.08	-13.49	-	-59.52
0.03	45.06	37.23	-	59.08	-14.02	-	-51.26
0.10	43.49	28.05	-	59.08	-15.59	-	-43.64
0.21	55.71	21.16	-	59.08	-3.37	-	-24.53
1.31	38.92		25.26	19.08	-	19.84	-5.42
7.81	24.99		29.54	19.08	-	5.91	-23.64

7.6 Radiated Emissions(30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209
 Test Method: ANSI C63.10 (2013) Section 6.4&6.5
 Measurement Distance: 10m
 Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3

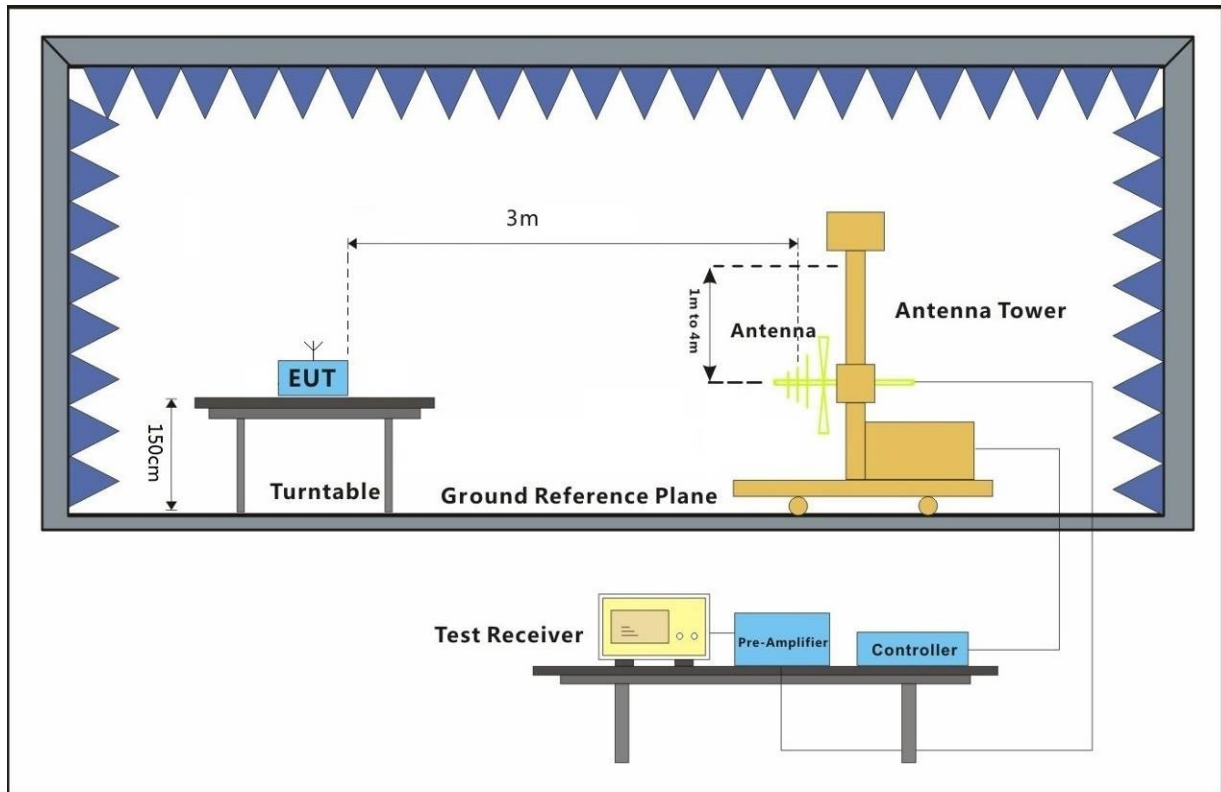
7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.6.2 Test Setup Diagram



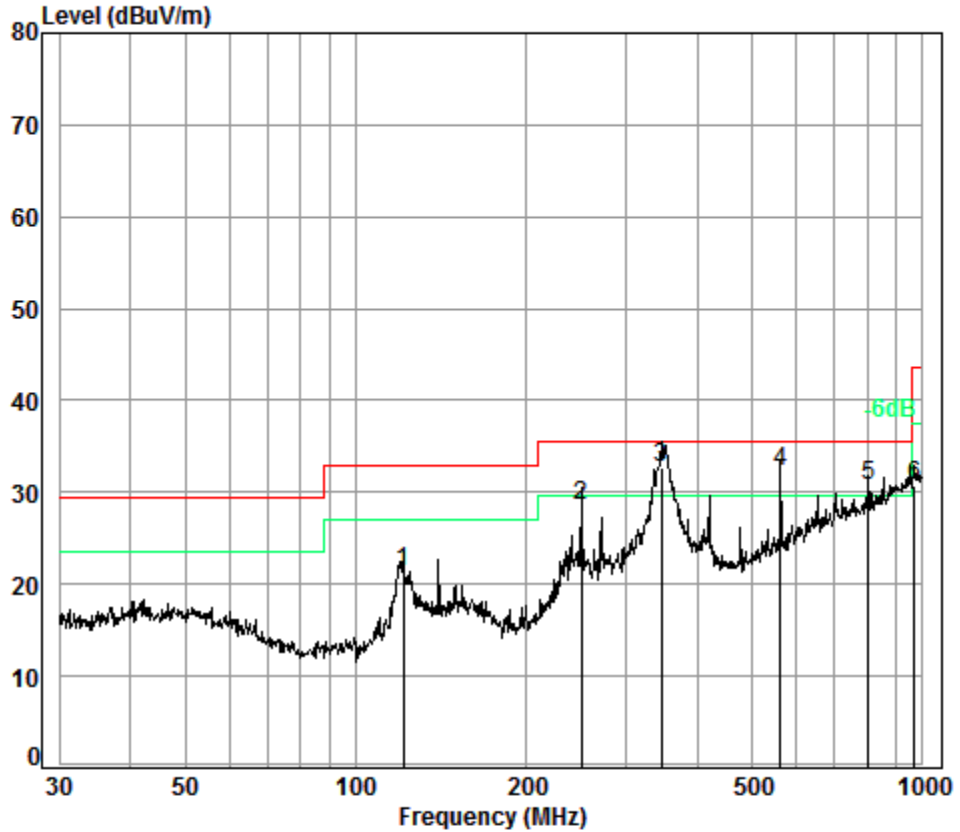


7.6.3 Measurement Procedure and Data

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz 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. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

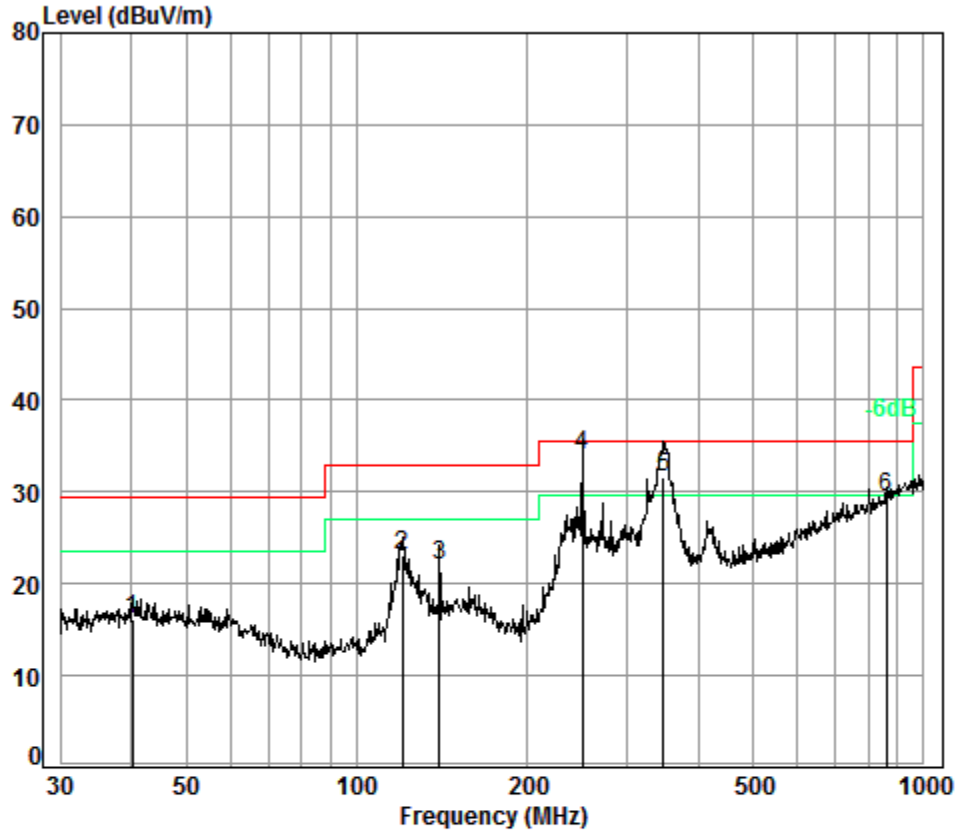
Mode:a 002; Polarization:Horizontal



Condition: 10m HORIZONTAL
 EUT : 00537CR
 Test Mode: a 002

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	121.55	7.31	11.58	32.58	35.10	21.41	33.00	-11.59
2	250.30	7.85	11.25	32.48	41.85	28.47	35.60	-7.13
3 pp	346.00	8.23	13.77	32.43	43.20	32.77	35.60	-2.83
4	560.69	8.80	17.92	32.41	37.91	32.22	35.60	-3.38
5	801.79	9.30	21.24	32.36	32.59	30.77	35.60	-4.83
6	968.93	9.60	22.79	31.01	29.37	30.75	43.50	-12.75

Mode:a; Polarization:Vertical



Condition: 10m VERTICAL
 EUT : 00537CR
 Test Mode: a 002

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	40.28	6.80	13.30	32.55	28.64	16.19	29.50	-13.31
2	120.28	7.30	11.51	32.58	36.83	23.06	33.00	-9.94
3	139.85	7.40	12.75	32.53	34.46	22.08	33.00	-10.92
4 pp	250.00	7.85	11.24	32.48	47.30	33.91	35.60	-1.69
5	348.00	8.24	13.80	32.43	42.10	31.71	35.60	-3.89
6	860.04	9.40	21.72	31.86	30.09	29.35	35.60	-6.25



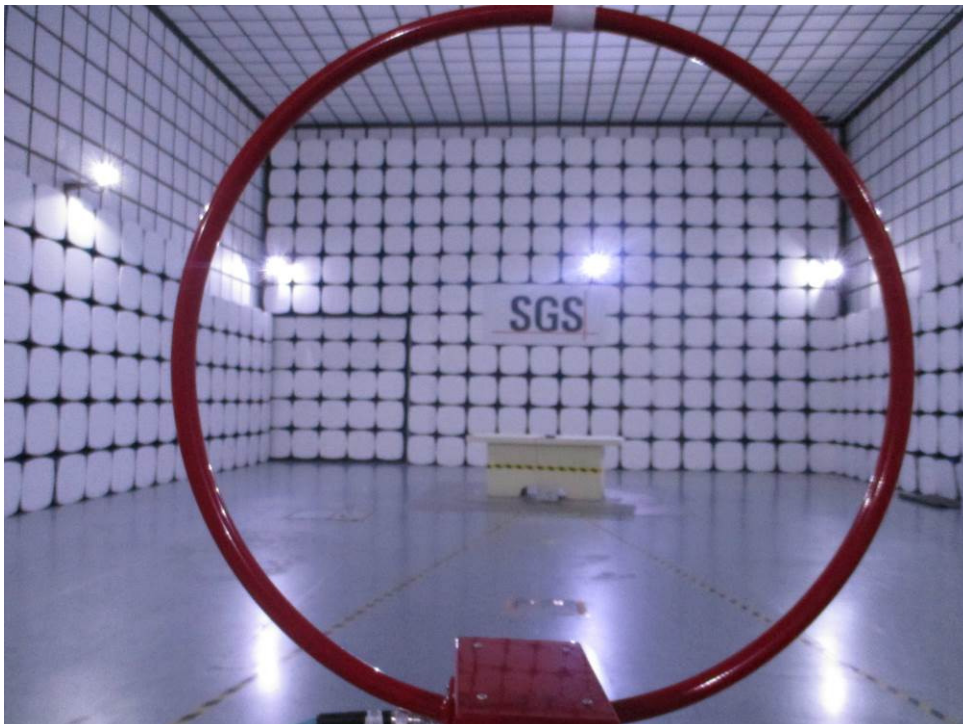
Frequency (MHz)	Level @ 10m (dBuV/m)	Limit @ 3m (dBuV/m)	Factor (dB)	Level @ 3m (dBuV/m)	Margin (dB)	Antenna polarization
121.55	21.41	43.50	-10.46	31.87	-11.63	Horizontal
250.30	28.47	46.00	-10.46	38.93	-7.07	Horizontal
346.00	32.77	46.00	-10.46	43.23	-2.77	Horizontal
560.69	32.22	46.00	-10.46	42.68	-3.32	Horizontal
801.79	30.77	46.00	-10.46	41.23	-4.77	Horizontal
968.93	30.75	54.00	-10.46	41.21	-12.79	Horizontal
40.28	16.19	40.00	-10.46	26.65	-13.35	Vertical
120.28	23.06	43.50	-10.46	33.52	-9.98	Vertical
139.85	22.08	43.50	-10.46	32.54	-10.96	Vertical
250.00	33.91	46.00	-10.46	44.37	-1.63	Vertical
348.00	31.71	46.00	-10.46	42.17	-3.83	Vertical

8 Photographs

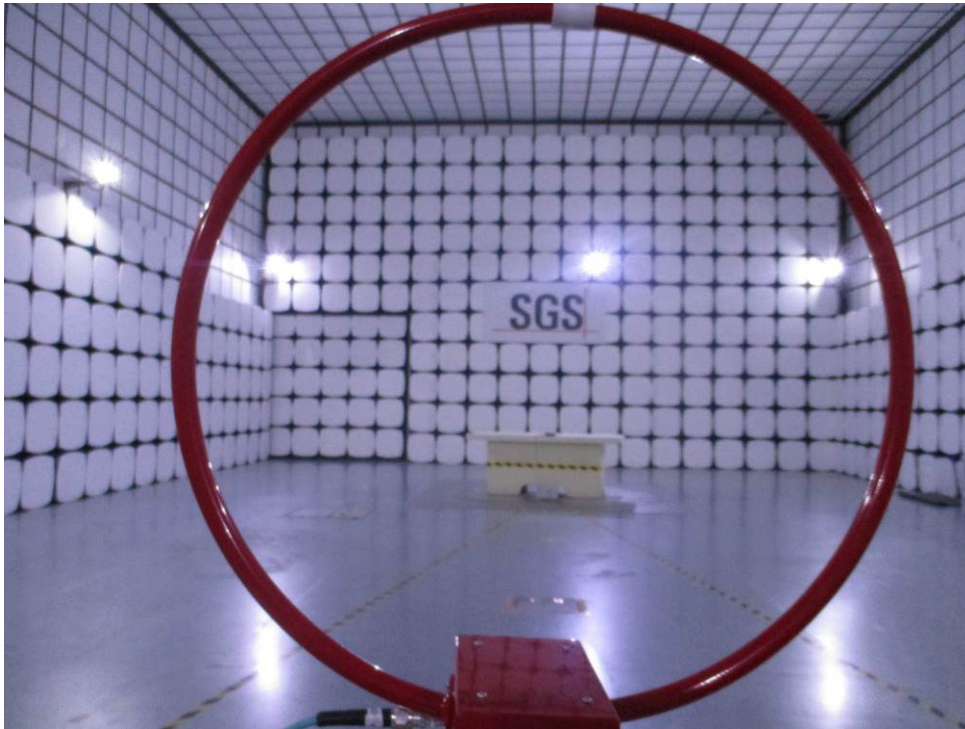
8.1 Conducted Emissions at AC Power Line (150kHz-30MHz) Test Setup



8.2 Emission Mask Test Setup



8.3 Radiated Emissions(9kHz-30MHz) Test Setup



8.4 Radiated Emissions(30MHz-1GHz) Test Setup



8.5 EUT Constructional Details (EUT Photos)

Please refer to external and internal photos for details.

- End of the Report -