



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

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

Telephone: +86 (0) 755 2601 2053
Fax: +86 (0) 755 2671 0594
Email: ee.shenzhen@sgs.com

Report No.: SZEM170900938304
Page: 1 of 30

TEST REPORT

Application No.: SZEM1709009383CR(GZEM1708005147CR)
Applicant: birde Pty Ltd
Address of Applicant: PO BOX 265 St Leonards 1590 Australia
Manufacturer: birde Pty Ltd
Address of Manufacturer: PO BOX 265 St Leonards 1590 Australia
Factory: Foshan Sun Cupid Electronics FTY Ltd.
Address of Factory: Block 7, No. 127, Zhangcha 1st Rd, Changcheng District, Foshan City, Guangdong, China.
Equipment Under Test (EUT):
EUT Name: Portable Media console for Children
Model No.: BC800
FCC ID: FCC ID: 2ANOV-BC01
Standards: 47 CFR Part 15, Subpart C 15.225
Date of Receipt: 2017-09-05
Date of Test: 2017-09-14 to 2017-09-22
Date of Issue: 2017-09-29

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

* In the configuration tested, the EUT complied with the standards specified above.



Jack Zhang
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.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2017-09-29		Original

Authorized for issue by:				
		<i>Vincent Chen</i>		
		Vincent Chen /Project Engineer		
		<i>Eric Fu</i>		
		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 Disturbance 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
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
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
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
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



3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	3
3 CONTENTS	4
4 GENERAL INFORMATION	5
4.1 DETAILS OF E.U.T.	5
4.2 DESCRIPTION OF SUPPORT UNITS	5
4.3 MEASUREMENT UNCERTAINTY	5
4.4 TEST LOCATION	6
4.5 TEST FACILITY	6
4.6 DEVIATION FROM STANDARDS	6
4.7 ABNORMALITIES FROM STANDARD CONDITIONS	6
5 EQUIPMENT LIST	7
6 RADIO SPECTRUM TECHNICAL REQUIREMENT	9
6.1 ANTENNA REQUIREMENT	9
6.1.1 Test Requirement	9
6.1.2 Conclusion	9
7 RADIO SPECTRUM MATTER TEST RESULTS	10
7.1 CONDUCTED DISTURBANCE AT AC POWER LINE(150kHz-30MHz)	10
7.1.1 E.U.T. Operation	10
7.1.2 Test Setup Diagram	10
7.1.3 Measurement Procedure and Data	11
7.2 EMISSION MASK	14
7.2.1 E.U.T. Operation	14
7.2.2 Test Setup Diagram	14
7.2.3 Measurement Procedure and Data	15
7.3 RADIATED EMISSIONS(9kHz-30MHz)	18
7.3.1 E.U.T. Operation	19
7.3.2 Test Setup Diagram	19
7.3.3 Measurement Procedure and Data	19
7.4 RADIATED EMISSIONS(30MHz-1GHz)	23
7.4.1 E.U.T. Operation	23
7.4.2 Test Setup Diagram	23
7.4.3 Measurement Procedure and Data	24
7.5 FREQUENCY TOLERANCE	27
7.5.1 E.U.T. Operation	27
7.5.2 Test Setup Diagram	27
7.5.3 Measurement Data	27
7.6 20dB BANDWIDTH	29
7.6.1 E.U.T. Operation	29
7.6.2 Test Setup Diagram	29
7.6.3 Measurement Data	29-30



4 General Information

4.1 Details of E.U.T.

Operation Frequency:	13.56MHz
Antenna type:	Loop Antenna
Power supply:	DC 3.7V from Rechargeable lithium battery

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Foshan Sun Cupid Electronics FTY Ltd.	IN-CA-09	NA
wireless charge base	Foshan Sun Cupid Electronics FTY Ltd.	BB800	NA
USB cable	Foshan Sun Cupid Electronics FTY Ltd.	NA	NA
NFC card	Foshan Sun Cupid Electronics FTY Ltd.	NA	NA

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 (30MHz-1GHz)
		4.8dB (1GHz-18GHz)
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 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **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

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	2018-05-10
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
LISN	Rohde & Schwarz	ENV216	SEM007-01	2016-10-09	2017-10-09
LISN	ETS-LINDGREN	3816/2	SEM007-02	2017-04-14	2018-04-13
8-Wire ISN CAT 6	SCHWARZBECK MESS- ELEKTRONIK	NTFM 8158	EMC2123	2017-06-23	2018-06-22
CAT5 8158 ISN 8Wire	SCHWARZBECK MESS- ELEKTRONIK	CAT5 8158	EMC2124	2017-06-23	2018-06-22
8-Wire ISN CAT 3	SCHWARZBECK MESS- ELEKTRONIK	CAT3 8158	EMC2126	2017-06-23	2018-06-22
Coaxial Cable	SGS	N/A	SEM024-01	2017-07-13	2018-07-12

Radiated Emissions(9kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2017-05-10	2018-05-10
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
EMI Test Receiver (9kHz-3GHz)	Rohde & Schwarz	ESCI	SEM004-01	2017-04-14	2018-04-13
Trilog-Broadband Antenna(30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-17	2016-01-26	2019-01-26
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2017-06-05	2018-06-04
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21
Coaxial Cable	SGS	N/A	SEM024-01	2017-07-13	2018-07-12

Radiated Emissions(30MHz-1GHz)					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-05-10	2018-05-10



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

Report No.: SZEM170900938304

Page: 8 of 30

MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2016-10-09	2017-10-09
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-02	2017-03-05	2020-03-05
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2017-04-14	2018-04-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2017-07-13	2018-07-12

Frequency tolerance

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2016-10-09	2017-10-09
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2016-10-09	2017-10-09
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12

20dB Bandwidth

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2016-10-09	2017-10-09
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2016-10-09	2017-10-09
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12

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	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2016-10-12	2017-10-12
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-18



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 integrated on the main PCB and no consideration of replacement.

7 Radio Spectrum Matter Test Results

7.1 Conducted Disturbance 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.		

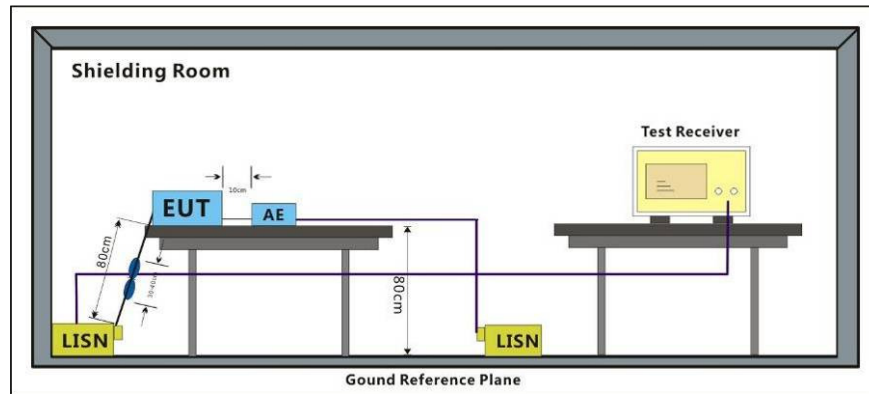
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1015 mbar

Test mode: e:TX mode_Keep the EUT in transmitting mode(NFC)

7.1.2 Test Setup Diagram

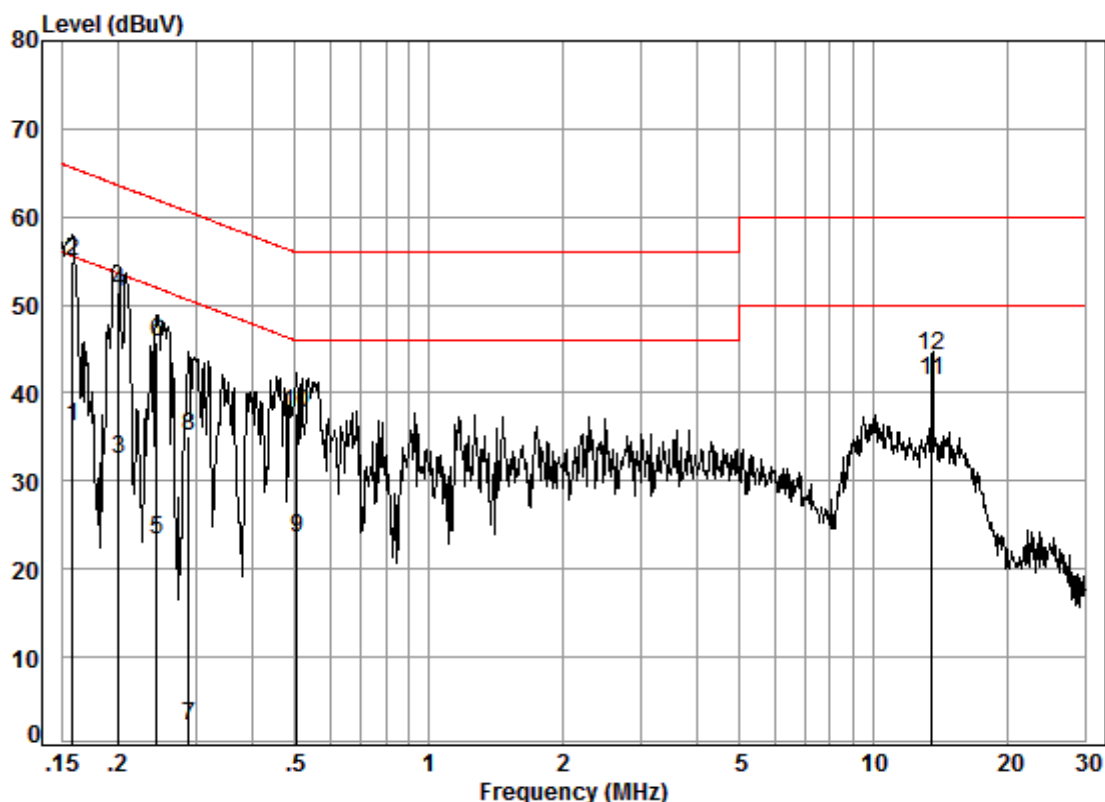




7.1.3 Measurement Procedure and Data

- 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.

Mode:e; Line:Live Line



Site : Shielding Room

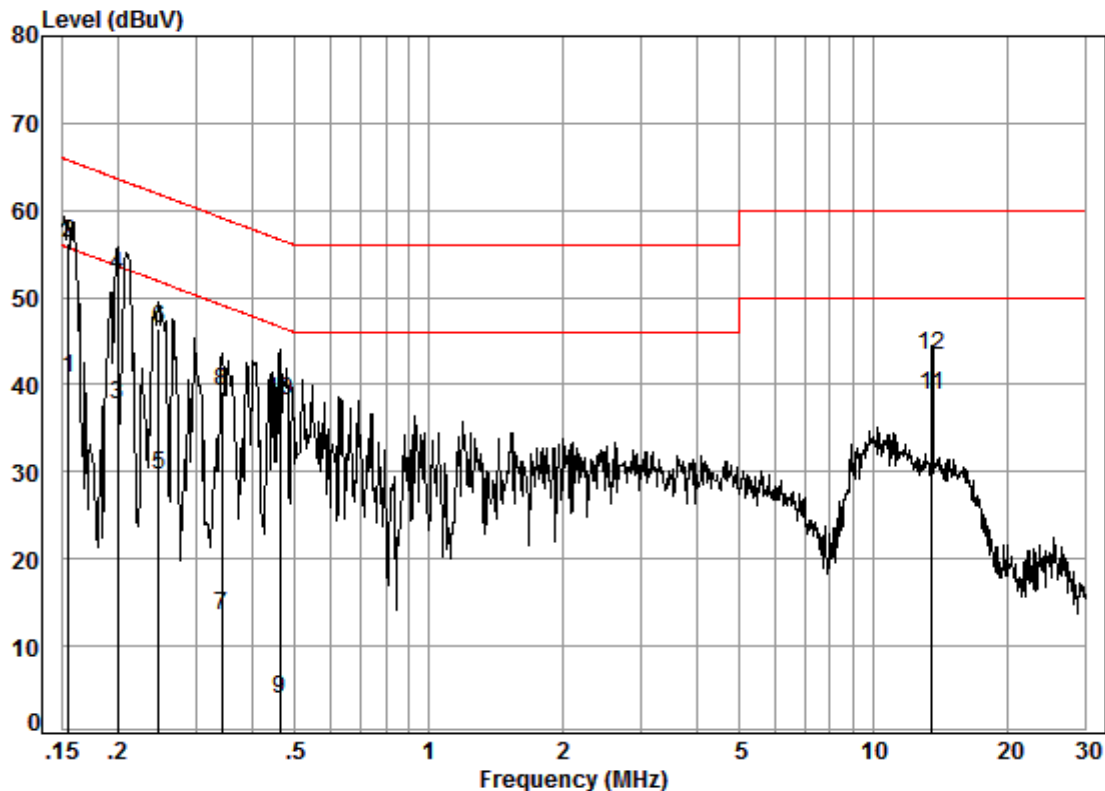
Condition: Line

Job No. : 09383CR

Test mode: e

	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	9.64	26.53	36.19	55.56	-19.37	Average
2	0.16	0.02	9.64	45.25	54.91	65.56	-10.65	QP
3	0.20	0.02	9.63	22.85	32.50	53.58	-21.08	Average
4	0.20	0.02	9.63	41.82	51.47	63.58	-12.11	QP
5	0.24	0.01	9.63	13.69	23.33	51.95	-28.62	Average
6	0.24	0.01	9.63	36.09	45.73	61.95	-16.22	QP
7	0.29	0.01	9.63	-7.44	2.20	50.59	-48.39	Average
8	0.29	0.01	9.63	25.43	35.07	60.59	-25.52	QP
9	0.50	0.01	9.63	13.88	23.52	46.00	-22.48	Average
10	0.50	0.01	9.63	27.98	37.62	56.00	-18.38	QP
11	13.56	0.01	9.94	31.48	41.43	50.00	-8.57	Average
12	13.56	0.01	9.94	34.35	44.30	60.00	-15.70	QP

Mode:e; Line:Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 09383CR
Test mode: e

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.15	0.02	9.64	31.20	40.86	55.74	-14.88	Average
2	0.15	0.02	9.64	46.62	56.28	65.74	-9.46	QP
3	0.20	0.02	9.63	28.04	37.69	53.62	-15.93	Average
4	0.20	0.02	9.63	42.83	52.48	63.62	-11.14	QP
5	0.25	0.01	9.63	19.94	29.58	51.86	-22.28	Average
6	0.25	0.01	9.63	36.73	46.37	61.86	-15.49	QP
7	0.34	0.01	9.63	3.83	13.47	49.13	-35.66	Average
8	0.34	0.01	9.63	29.50	39.14	59.13	-19.99	QP
9	0.46	0.01	9.63	-5.75	3.89	46.63	-42.74	Average
10	0.46	0.01	9.63	28.47	38.11	56.63	-18.52	QP
11	13.56	0.01	9.94	28.90	38.85	50.00	-11.15	Average
12	13.56	0.01	9.94	33.53	43.48	60.00	-16.52	QP

7.2 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.

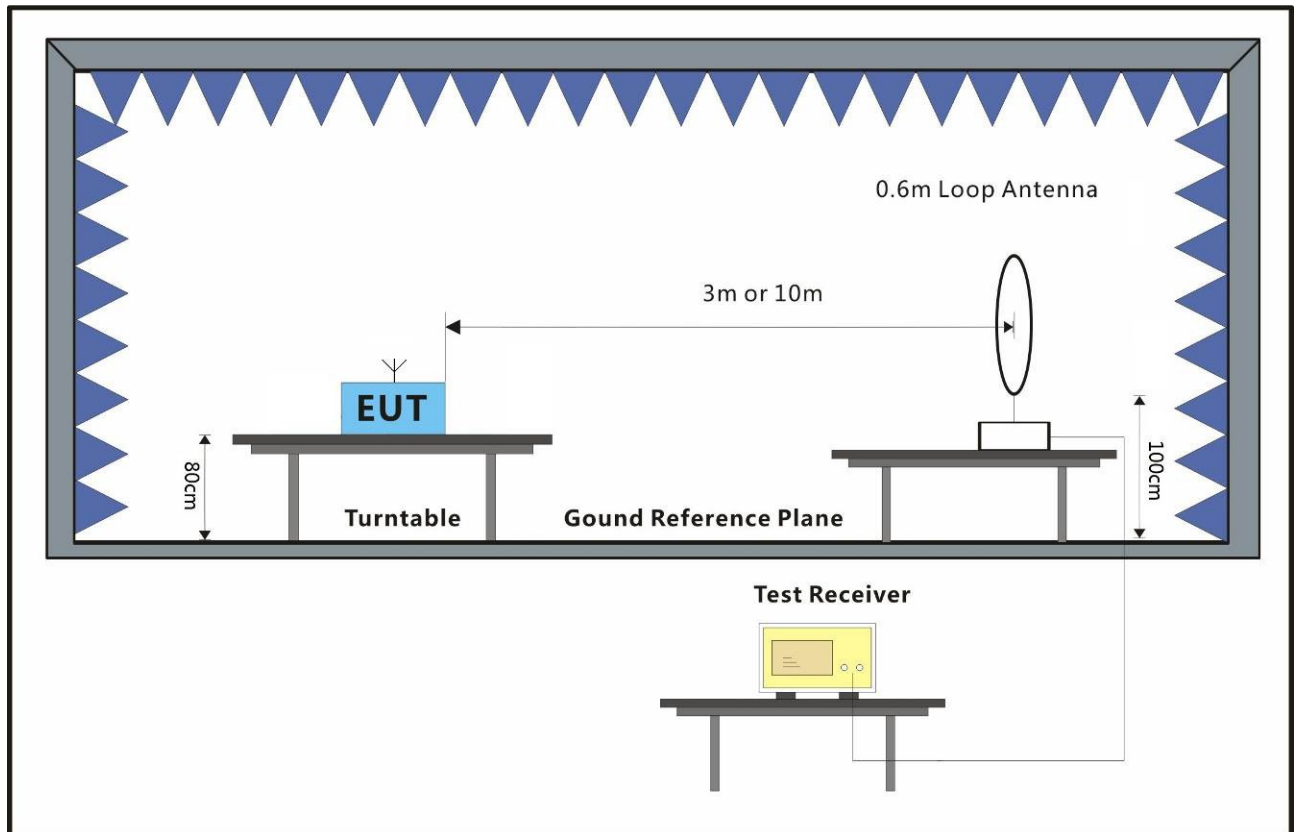
7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar

Test mode: e:TX mode_Keep the EUT in transmitting mode(NFC)

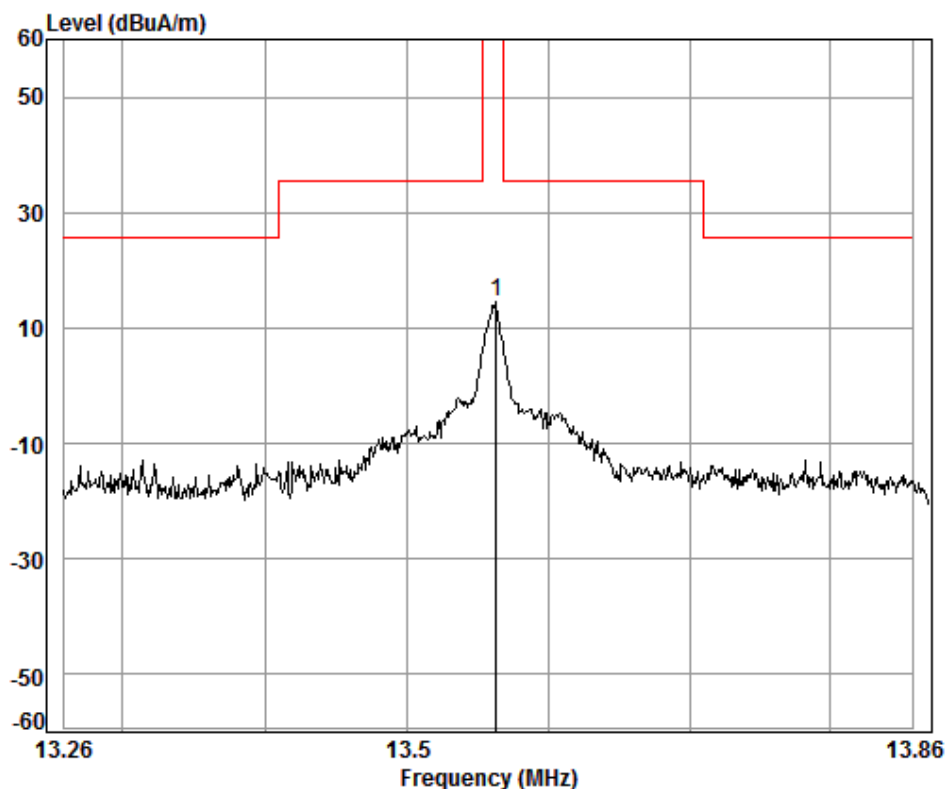
7.2.2 Test Setup Diagram





7.2.3 Measurement Procedure and Data

For testing performed with the loop antenna, the bottom 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.



Condition: 10m
Job No. : 09383CR
Test Mode: TX

	Freq	Cable Loss	Ant Factor	Preamplifier Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuA	dBuA/m	dBuA/m	dB
1 pp	13.56	0.57	10.47	32.50	36.08	14.62	69.10	-54.48



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)	Level @ 10m (dB μ A/m)	Level @ 10m (dB μ V/m)	Limit @ 30m (dB μ V/m)	Factor (dB)	Level @ 30m (dB μ V/m)	Margin (dB)
13.56	14.62	66.12	84.00	19.08	47.04	-36.96



7.3 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

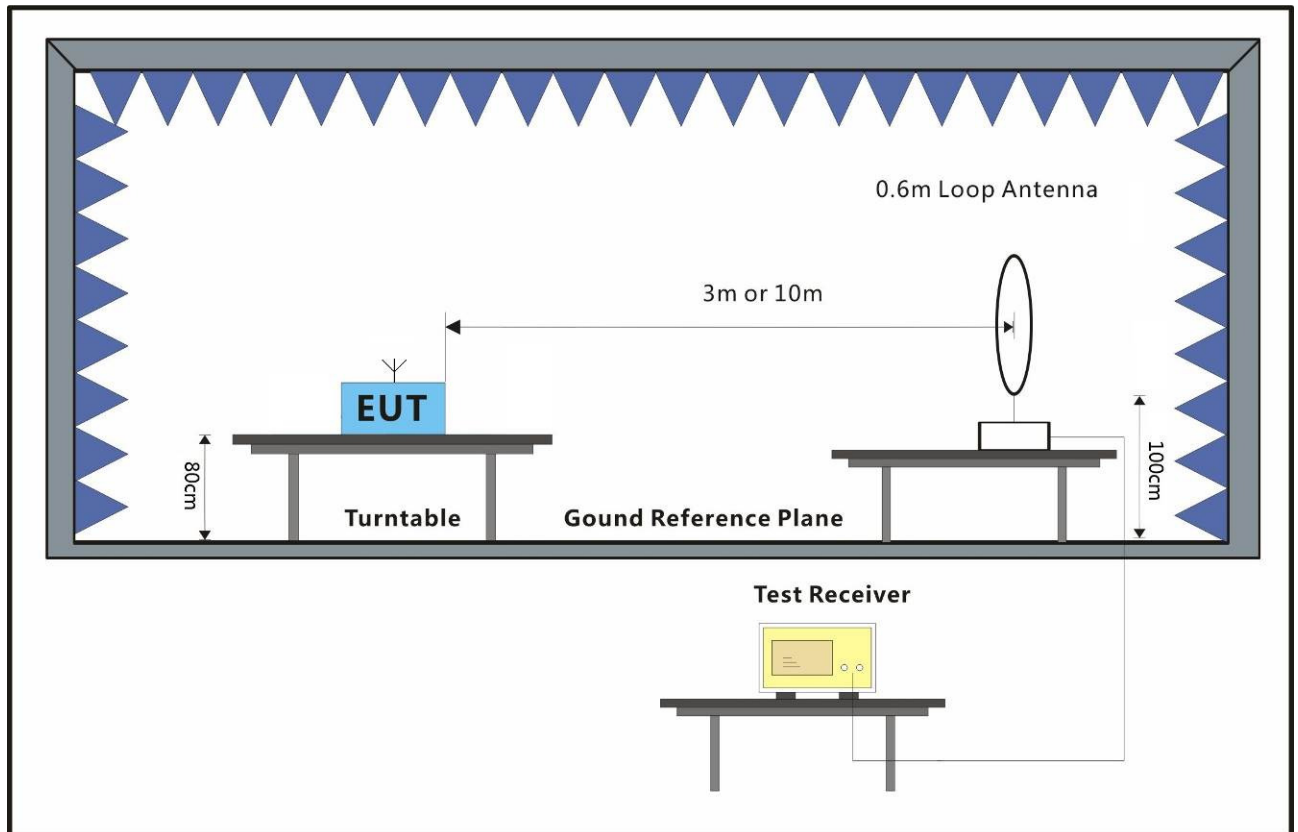
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar

Test mode: e:TX mode_Keep the EUT in transmitting mode(NFC)

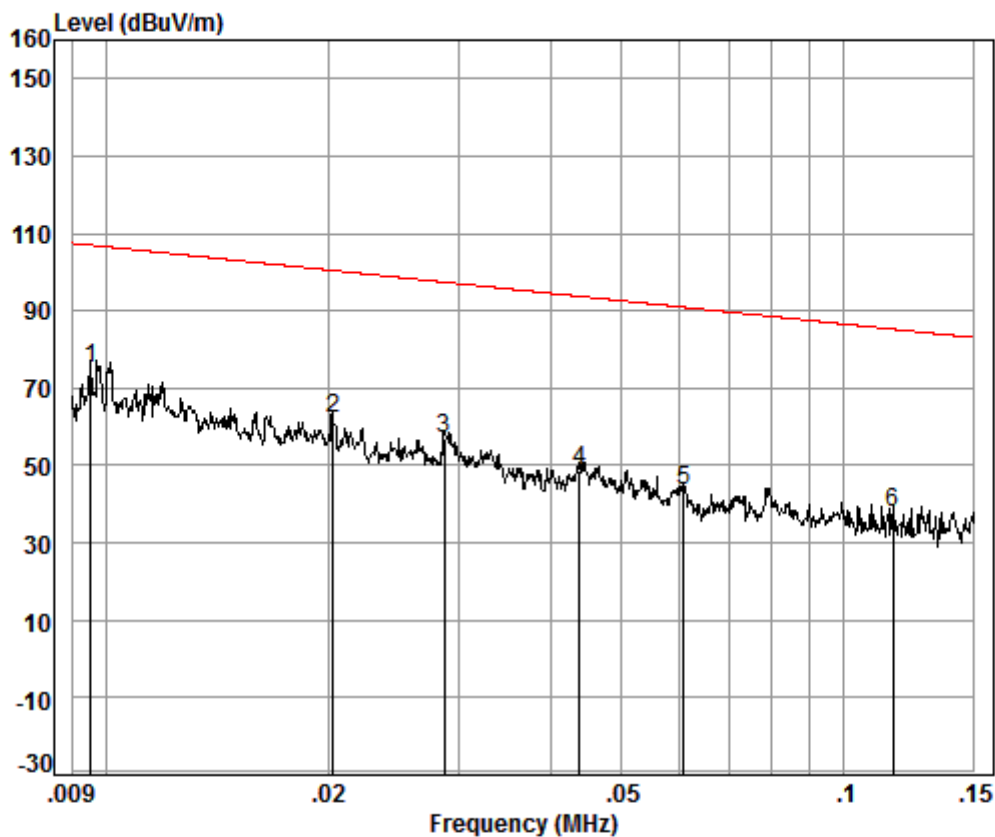
7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

For testing performed with the loop antenna, the bottom 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 e



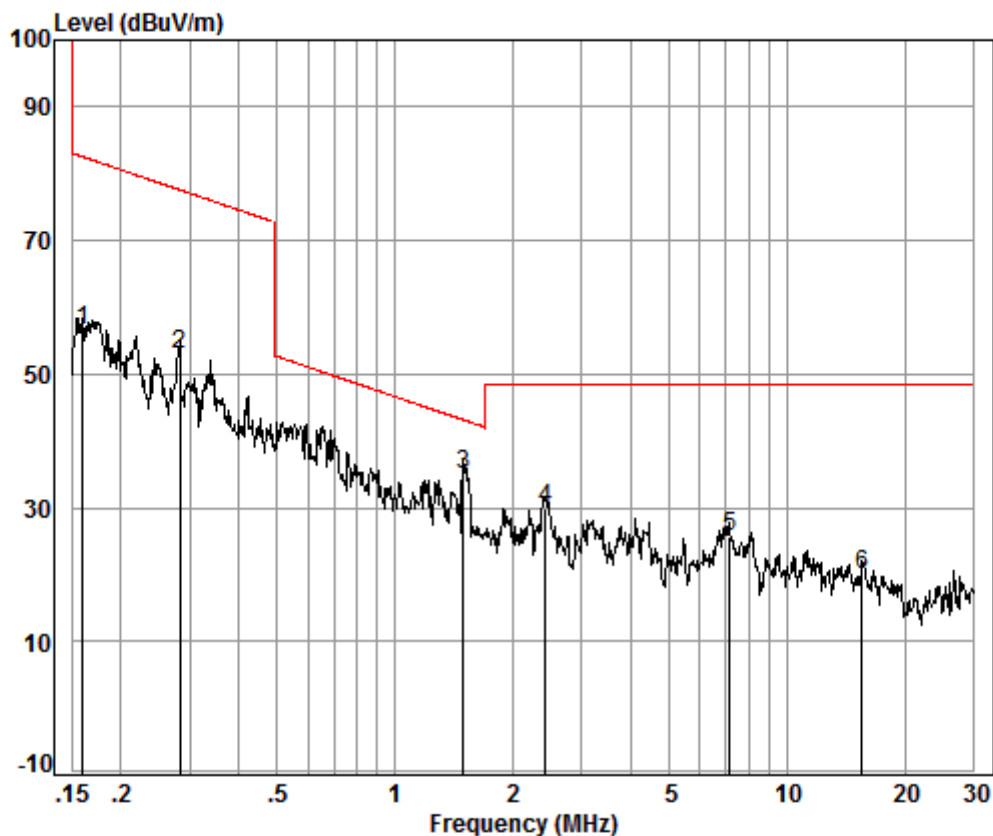
Condition: 10m

Job No. : 09383CR

Test Mode: e

	Freq	Cable Loss	Ant Factor	Preamplifier Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	0.01	0.29	19.63	32.29	87.61	75.24	107.01	-31.77
2	0.02	0.22	14.96	32.49	79.30	61.99	100.44	-38.45
3	0.03	0.18	13.97	32.50	75.36	57.01	97.41	-40.40
4	0.04	0.14	12.77	32.51	68.46	48.86	93.75	-44.89
5	0.06	0.10	12.26	32.51	63.65	43.50	90.94	-47.44
6	0.12	0.06	11.89	32.51	58.43	37.87	85.27	-47.40

Mode e:



Condition: 10m

Job No. : 09383CR

Test Mode: e

	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	0.16	0.07	11.74	32.50	77.12	56.43	82.52	-26.09
2	0.28	0.09	11.95	32.52	73.45	52.97	77.60	-24.63
3 pp	1.50	0.29	12.06	32.46	55.06	34.95	43.14	-8.19
4	2.42	0.36	12.15	32.47	49.75	29.79	48.50	-18.71
5	7.14	0.46	11.28	32.48	46.39	25.65	48.50	-22.85
6	15.55	0.61	10.29	32.51	41.68	20.07	48.50	-28.43



Below 30MHz

The test was performed at a 10m test site.

The level at 30m/300m 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)	Level @ 10m (dB μ V/m)	Limit @ 300m (dB μ V/m)	Limit @ 30m (dB μ V/m)	Factor (dB)	Level @ 300m (dB μ V/m)	Level @ 30m (dB μ V/m)	Margin (dB)
0.01	75.24	47.60	–	59.08	16.16	–	–31.44
0.02	61.99	41.60	–	59.08	2.91	–	–38.69
0.03	57.01	38.10	–	59.08	–2.07	–	–40.17
0.04	48.86	35.60	–	59.08	–10.22	–	–45.82
0.06	43.5	32.00	–	59.08	–15.58	–	–47.58
0.12	37.87	26.00	–	59.08	–21.21	–	–47.21
0.16	56.43	23.52	–	59.08	–2.65	–	–26.17
0.28	52.97	18.66	–	59.08	–6.11	–	–24.77
1.5	34.95	–	24.08	19.08	–	15.87	–8.21
2.42	29.79	–	29.54	19.08	–	10.71	–18.84
7.14	25.65	–	29.54	19.08	–	6.57	–22.98
15.55	20.07	–	29.54	19.08	–	0.99	–28.56

7.4 Radiated Emissions(30MHz-1GHz)

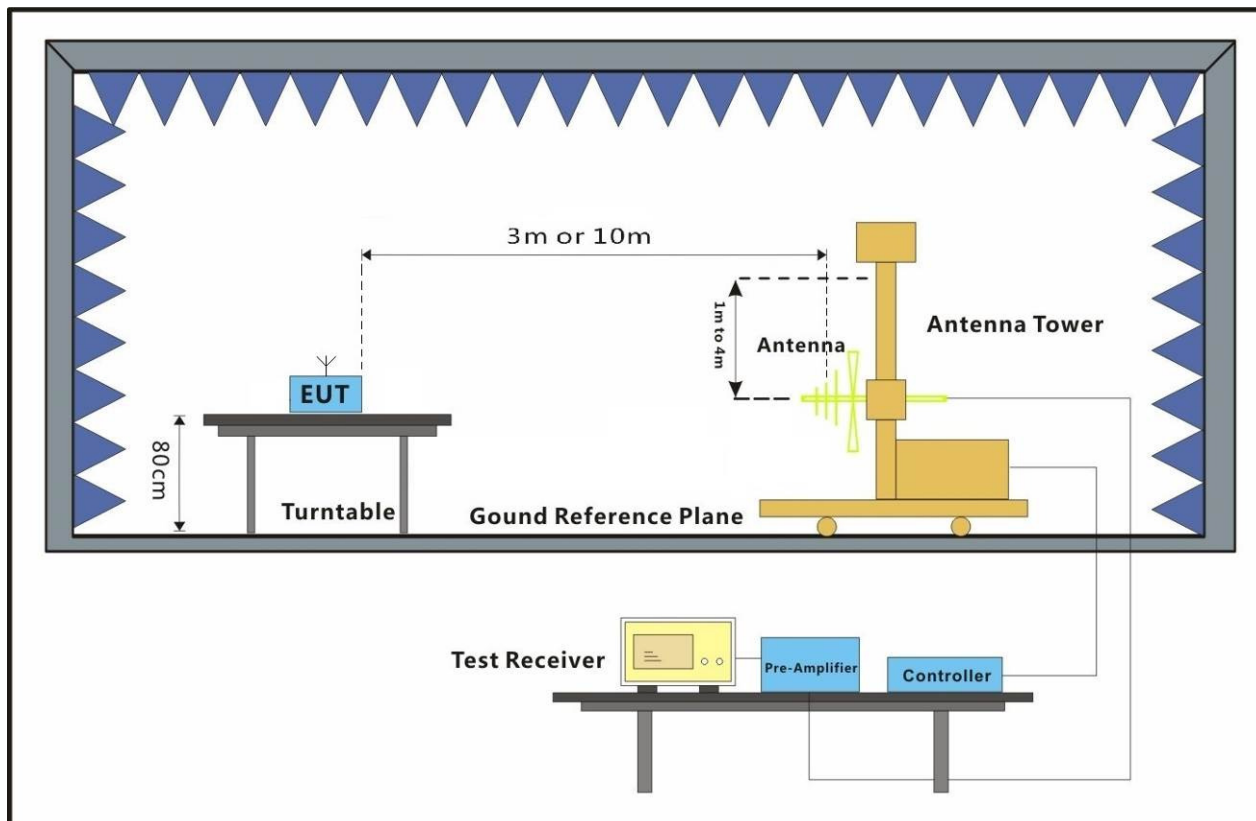
Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209
Test Method: ANSI C63.10 (2013) Section 6.4&6.5
Measurement Distance: 3m
Limit:

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

7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar
Test mode: e:TX mode_Keep the EUT in transmitting mode(NFC)

7.4.2 Test Setup Diagram



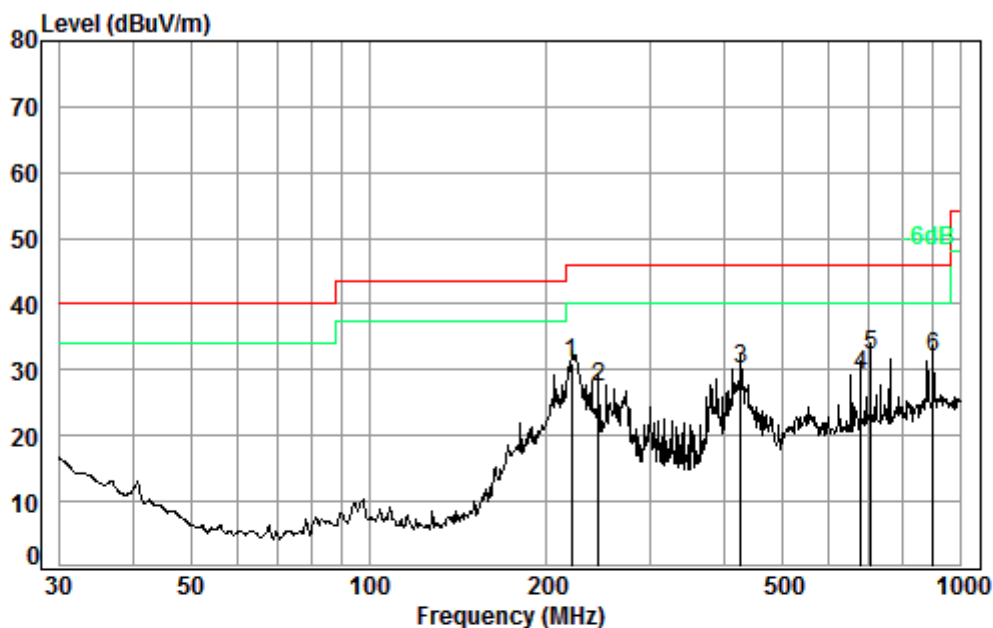


7.4.3 Measurement Procedure and Data

- 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.



Radiated Emission below 1GHz		
30MHz~1GHz (QP)		
Test mode:	Transmitting mode	Horizontal



Condition: 3m HORIZONTAL

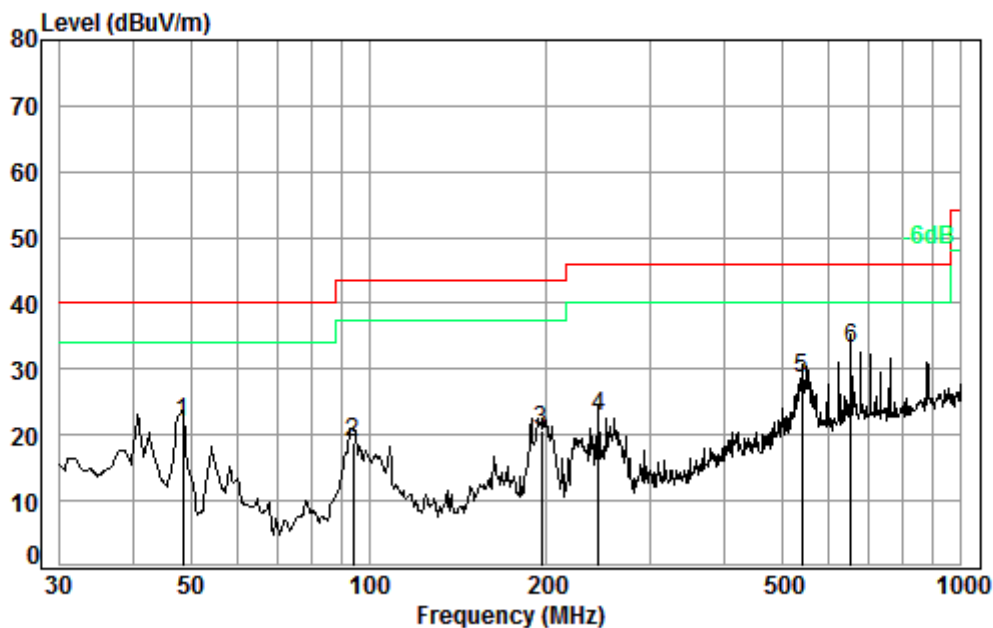
Job No. : 09383CR

Test mode: e

	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	219.84	1.52	11.23	27.53	45.76	30.98	46.00	-15.02
2	244.23	1.65	12.12	27.53	41.04	27.28	46.00	-18.72
3	425.03	2.31	16.40	27.77	39.24	30.18	46.00	-15.82
4	677.58	2.86	21.42	27.58	32.62	29.32	46.00	-16.68
5 pp	704.23	2.92	21.60	27.54	35.11	32.09	46.00	-13.91
6	897.00	3.59	23.18	27.09	32.13	31.81	46.00	-14.19



Test mode:	Transmitting mode	Vertical
------------	-------------------	----------



Condition: 3m VERTICAL

Job No. : 09383CR

Test mode: e

	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	48.50	0.77	9.36	27.60	39.28	21.81	40.00	-18.19
2	94.10	1.14	8.86	27.51	36.37	18.86	43.50	-24.64
3	195.82	1.39	10.16	27.53	36.60	20.62	43.50	-22.88
4	244.23	1.65	12.12	27.53	36.43	22.67	46.00	-23.33
5	539.48	2.64	18.73	27.81	35.05	28.61	46.00	-17.39
6 pp	651.94	2.81	20.66	27.62	37.36	33.21	46.00	-12.79

7.5 Frequency tolerance

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

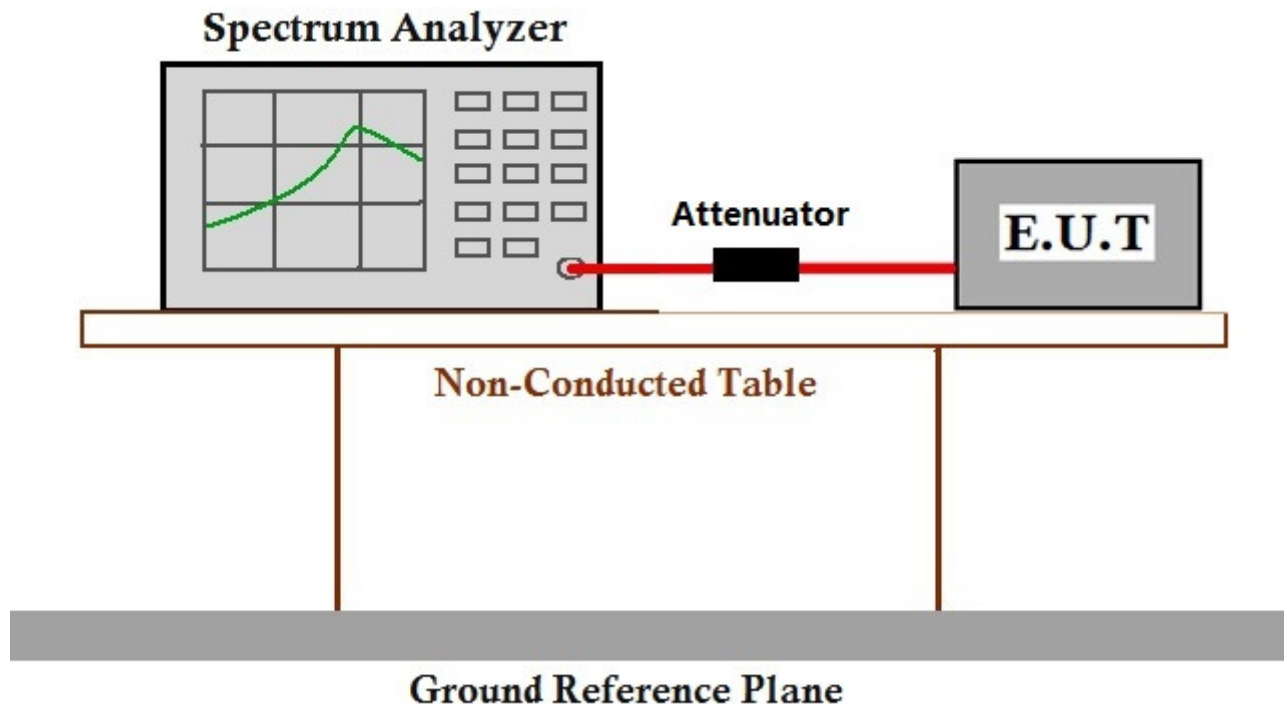
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar

Test mode: e:TX mode_Keep the EUT in transmitting mode(NFC)

7.5.2 Test Setup Diagram



7.5.3 Measurement Data



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

Report No.: SZEM170900938304

Page: 28 of 30

Declared Frequency (MHz)	13.56MHz	
--------------------------	----------	--

Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Frequency Tolerance (%)	Limit (%)	Result
50	3.7	13.5597	-0.0022	±0.01	Pass
40		13.5594	-0.0044		Pass
30		13.5595	-0.0037		Pass
20		13.5596	-0.0029		Pass
10		13.5596	-0.0029		Pass
0		13.5600	0		Pass
-10		13.5599	-0.0007		Pass
-20		13.5595	-0.0037		Pass
20	4.07	13.5598	-0.0015		Pass
	3.33	13.5595	-0.0037		Pass

7.6 20dB Bandwidth

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

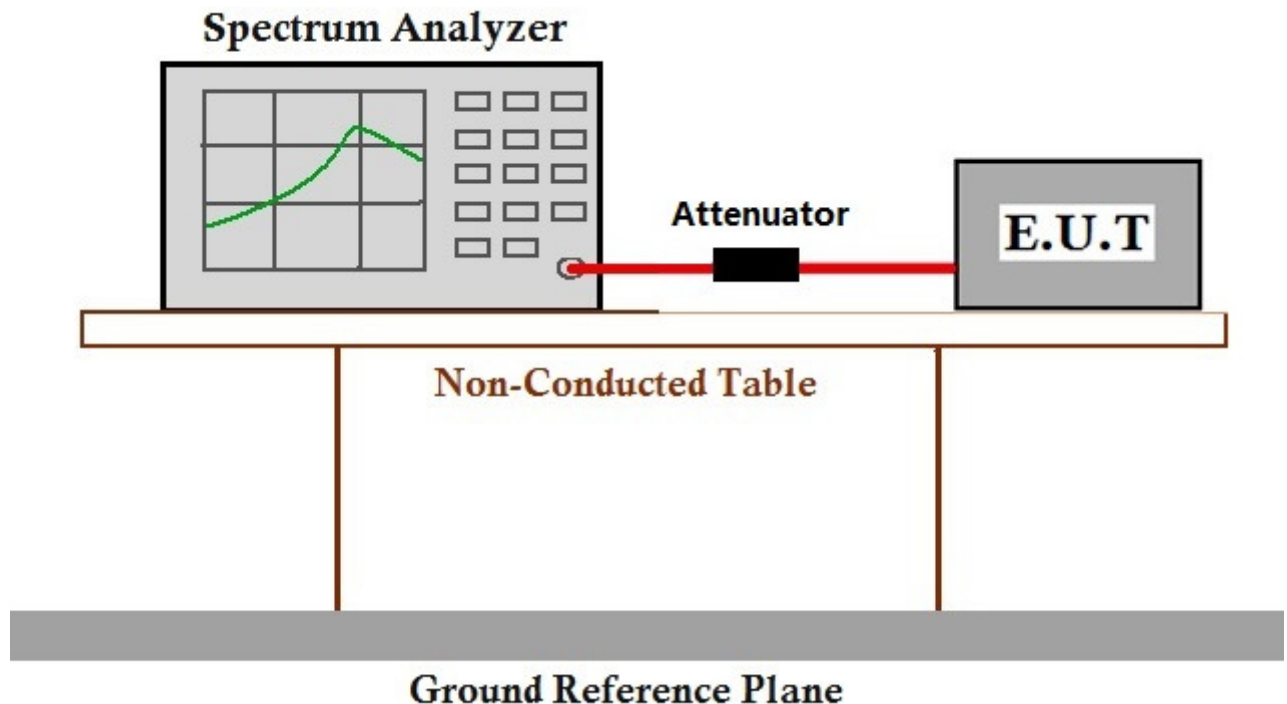
7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar

Test mode: c:TX mode_Keep the EUT in transmitting mode(NFC)

7.6.2 Test Setup Diagram



7.6.3 Measurement Data



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

Report No.: SZEM170900938304

Page: 30 of 30

