



TEST REPORT

Application No.: SZEM2010010640CR
Applicant: Dspread Technology (Beijing) Inc
Address of Applicant: Rm.407, B12C, #10(Universal Business Park), Jiuxianqiao Road, Chaoyang District, Beijing, 100027 China
Manufacturer: Dspread Technology (Beijing) Inc
Address of Manufacturer: Rm.407, B12C, #10(Universal Business Park), Jiuxianqiao Road, Chaoyang District, Beijing, 100027 China
Factory: Sichuan DOOV PTY Co., Ltd.
Address of Factory: Duo Wei Yun Gu Industrial Demonstration Park, No.35, west section of Gangyuan Road, Guoxing Avenue, Lingang Economic Development Zone, Yibin City, Sichuan Province

Equipment Under Test (EUT):

EUT Name: Smart PoS
Model No.: D20
Trade mark: Dspread
FCC ID: 2AGQ6-D20
Standard(s) : 47 CFR Part 15, Subpart C 15.225
Date of Receipt: 2020-10-26
Date of Test: 2020-10-27 to 2020-12-16
Date of Issue: 2020-12-18

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

Kenx. Xu

Kenx Xu
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-12-18		Original

Authorized for issue by:			
			
		Calvin Weng/Project Engineer	
			
		Eric Fu/Reviewer	

2 Test Summary

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
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
Conducted Emissions at Mains Terminals (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
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 (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
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

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4 General Information

4.1 Details of E.U.T.

Rated voltage:	DC3.8V
Power adapter:	Adapter M/N: TPA-46B050100UU Adapter input: AC100-240V, 50/60Hz, 0.2A Adapter output: DC5V/1A
Battery:	DC3.8V li-ion battery(2450mAh)
Operation Frequency:	13.56MHz
Modulation Type:	ASK
Antenna Type:	Loop Antenna

4.2 Cable

Cable	Length	Shielding	Core
USB cable	1m	Shielded	Non-Core

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--

The EUT has been tested as an independent unit.

4.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
20dB Bandwidth	$\pm 3\%$
Conducted Emissions at Mains Terminals (150kHz-30MHz)	$\pm 3.0\text{dB}$
Emission Mask	$\pm 4.5\text{dB}$ (Below 1GHz)
Frequency tolerance	$\pm 3\%$
Radiated Emissions (30MHz-1GHz)	$\pm 4.5\text{dB}$ (Below 1GHz)
Radiated Emissions (9kHz-30MHz)	$\pm 4.5\text{dB}$ (Below 1GHz)

Remark:

The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

4.5 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.

4.6 Test Facility

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

• **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.

• **Innovation, Science and Economic Development Canada**

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

CAB identifier: CN0006.

IC#: 4620C.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

20dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2020-05-21	2021-05-20
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2020-05-21	2021-05-20

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2020-03-24	2021-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2020-07-10	2021-07-09
LISN	Rohde&Schwarz	ENV216	SEM007-01	2020-09-23	2021-09-22
LISN	ETS-LINDGREN	3816/2	SEM007-02	2020-04-01	2021-03-31

Emission Mask					
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
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-16	2020-11-02	2021-11-01
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-18	2019-08-08	2022-08-07
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2020-04-09	2021-04-08
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2020-08-14	2023-08-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2020-07-10	2021-07-09

Frequency tolerance					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2020-05-21	2021-05-20
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2020-05-21	2021-05-20
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24

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
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-16	2020-11-02	2021-11-01
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-18	2019-08-08	2022-08-07
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2020-04-09	2021-04-08
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2020-07-10	2021-07-09

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
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-16	2020-11-02	2021-11-01
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2020-04-09	2021-04-08
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2020-08-14	2023-08-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2020-07-10	2021-07-09



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General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-07	2021-04-06



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6 Radio Spectrum Matter Test Results

6.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215

Test Method: ANSI C63.10 (2013) Section 6.9

6.1.1 E.U.T. Operation

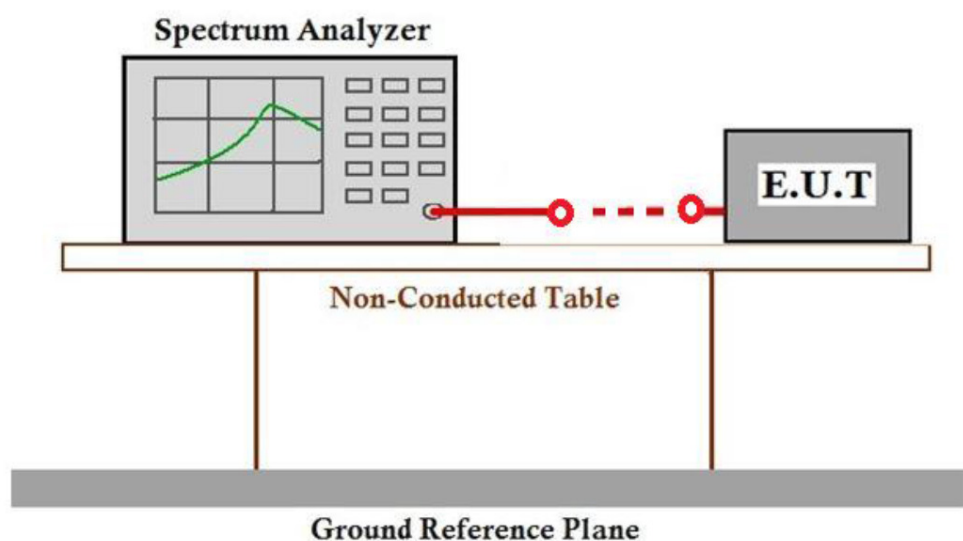
Operating Environment:

Temperature: 23.2 °C Humidity: 54.9 % RH Atmospheric Pressure: 1015 mbar

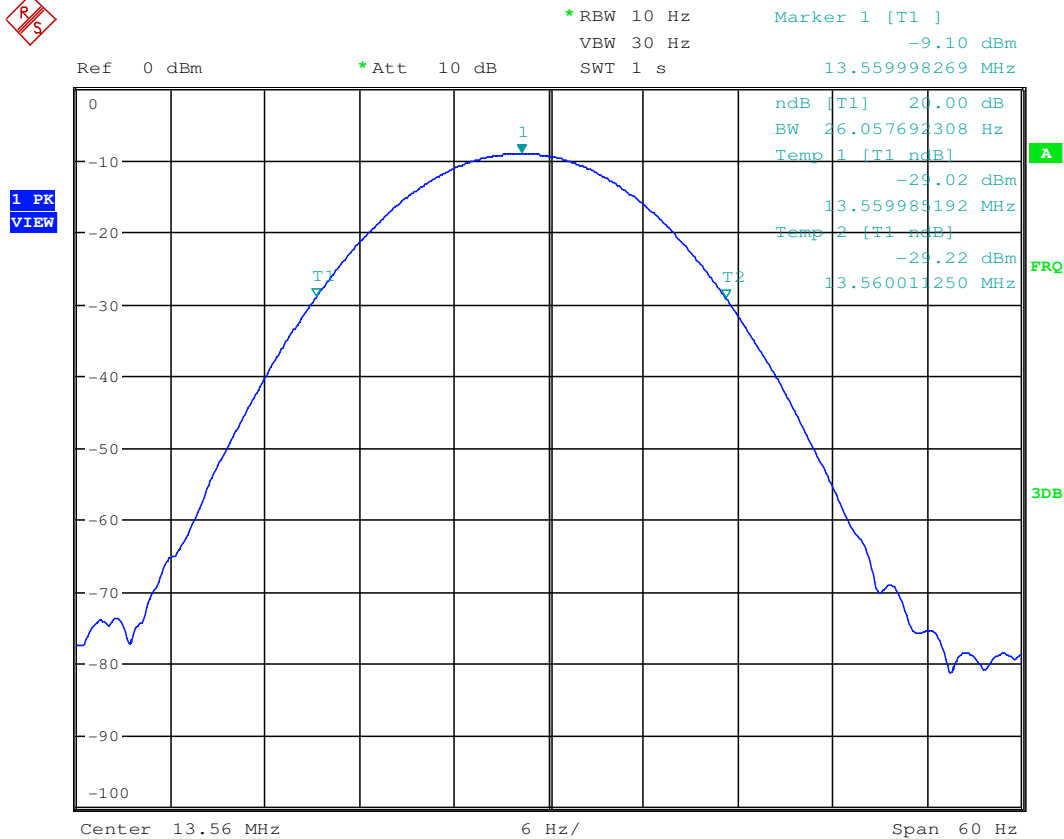
6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	16	TX mode with modulation

6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data



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6.2 Conducted Emissions at Mains Terminals (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.

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

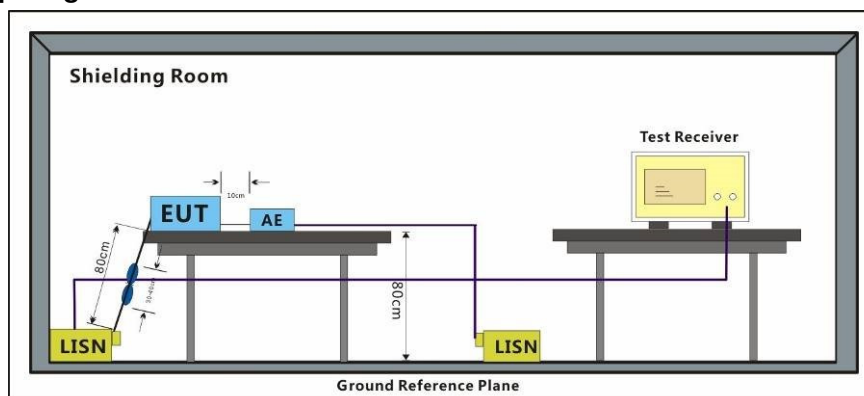
Humidity: 54.8 % RH

Atmospheric Pressure: 1015 mbar

6.2.2 Test Mode Description

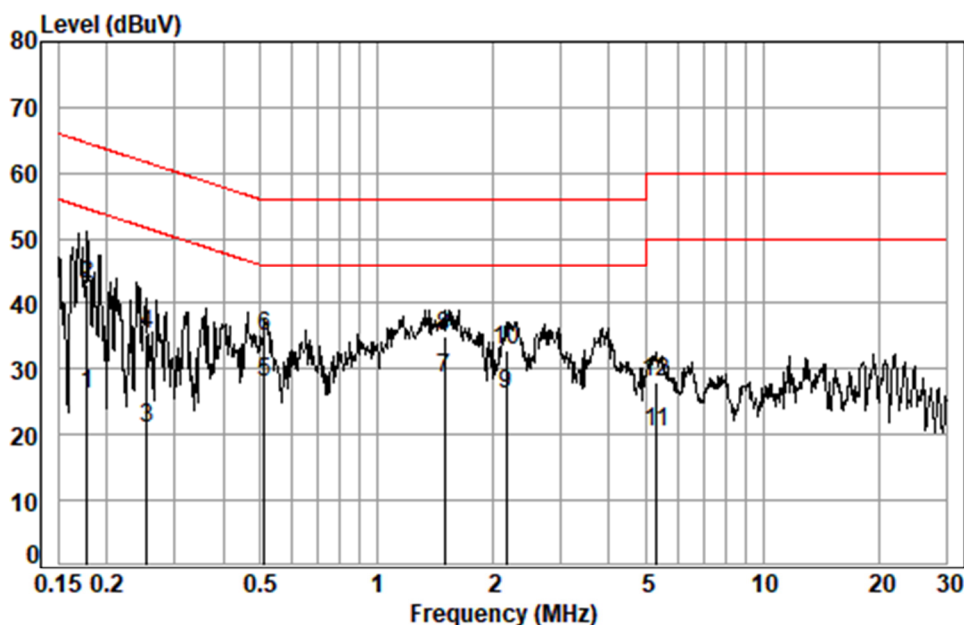
Pre-scan / Final test	Mode Code	Description
Final test	16	TX mode with modulation

6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

Test Mode: 16; Line: Live line



Site : Shielding Room

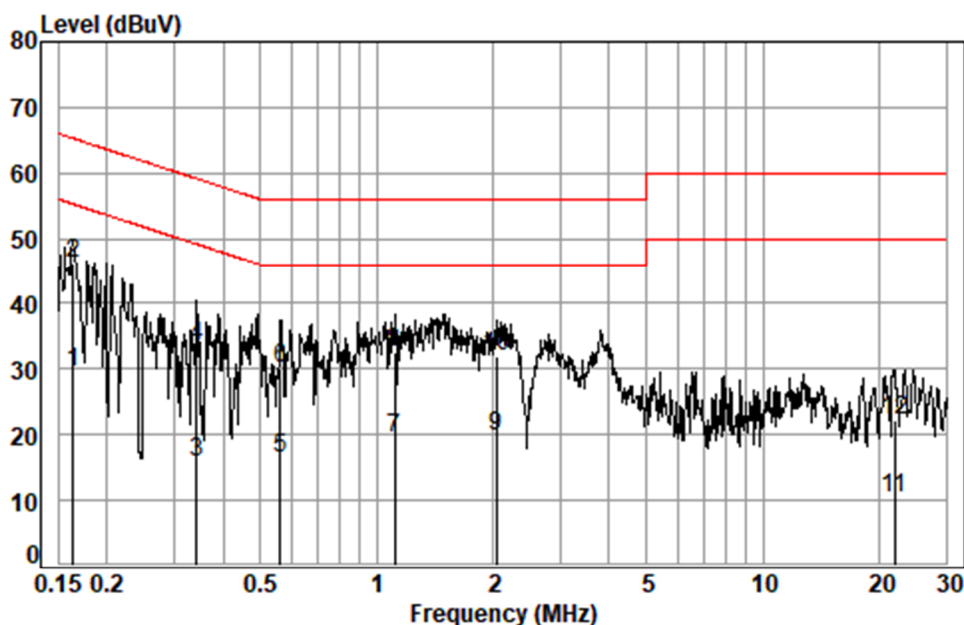
Condition: Line

Job No. : 10640CR

Test mode: 16

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1777	0.02	9.63	16.42	26.07	54.59	-28.52	Average
2	0.1777	0.02	9.63	33.36	43.01	64.59	-21.58	QP
3	0.2535	0.03	9.65	11.36	21.04	51.64	-30.60	Average
4	0.2535	0.03	9.65	25.46	35.14	61.64	-26.50	QP
5	0.5128	0.06	9.69	18.19	27.94	46.00	-18.06	Average
6	0.5128	0.06	9.69	25.26	35.01	56.00	-20.99	QP
7	1.4953	0.13	9.69	18.71	28.53	46.00	-17.47	Average
8	1.4953	0.13	9.69	25.04	34.86	56.00	-21.14	QP
9	2.1668	0.16	9.70	16.43	26.29	46.00	-19.71	Average
10	2.1668	0.16	9.70	22.93	32.79	56.00	-23.21	QP
11	5.3050	0.17	9.78	10.56	20.51	50.00	-29.49	Average
12	5.3050	0.17	9.78	18.15	28.10	60.00	-31.90	QP

Test Mode: 16; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 10640CR
Test mode: 16

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1633	0.01	9.63	19.73	29.37	55.30	-25.93	Average
2	0.1633	0.01	9.63	36.65	46.29	65.30	-19.01	QP
3	0.3410	0.04	9.66	6.00	15.70	49.18	-33.48	Average
4	0.3410	0.04	9.66	23.86	33.56	59.18	-25.62	QP
5	0.5641	0.07	9.67	6.81	16.55	46.00	-29.45	Average
6	0.5641	0.07	9.67	20.30	30.04	56.00	-25.96	QP
7	1.1114	0.10	9.67	9.74	19.51	46.00	-26.49	Average
8	1.1114	0.10	9.67	22.75	32.52	56.00	-23.48	QP
9	2.0441	0.16	9.68	9.98	19.82	46.00	-26.18	Average
10	2.0441	0.16	9.68	22.11	31.95	56.00	-24.05	QP
11	21.9463	0.25	10.00	0.22	10.47	50.00	-39.53	Average
12	21.9463	0.25	10.00	11.95	22.20	60.00	-37.80	QP

6.3 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: 3m

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.

Below 30MHz

The test was performed at a 10m test site.

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 dBμV/m
 FS_{max} is the measured field strength, expressed in dBμV/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

The limit at 10m test distance is below:

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 103.08 dBμV/m at 10 meters.

6.3.1 E.U.T. Operation

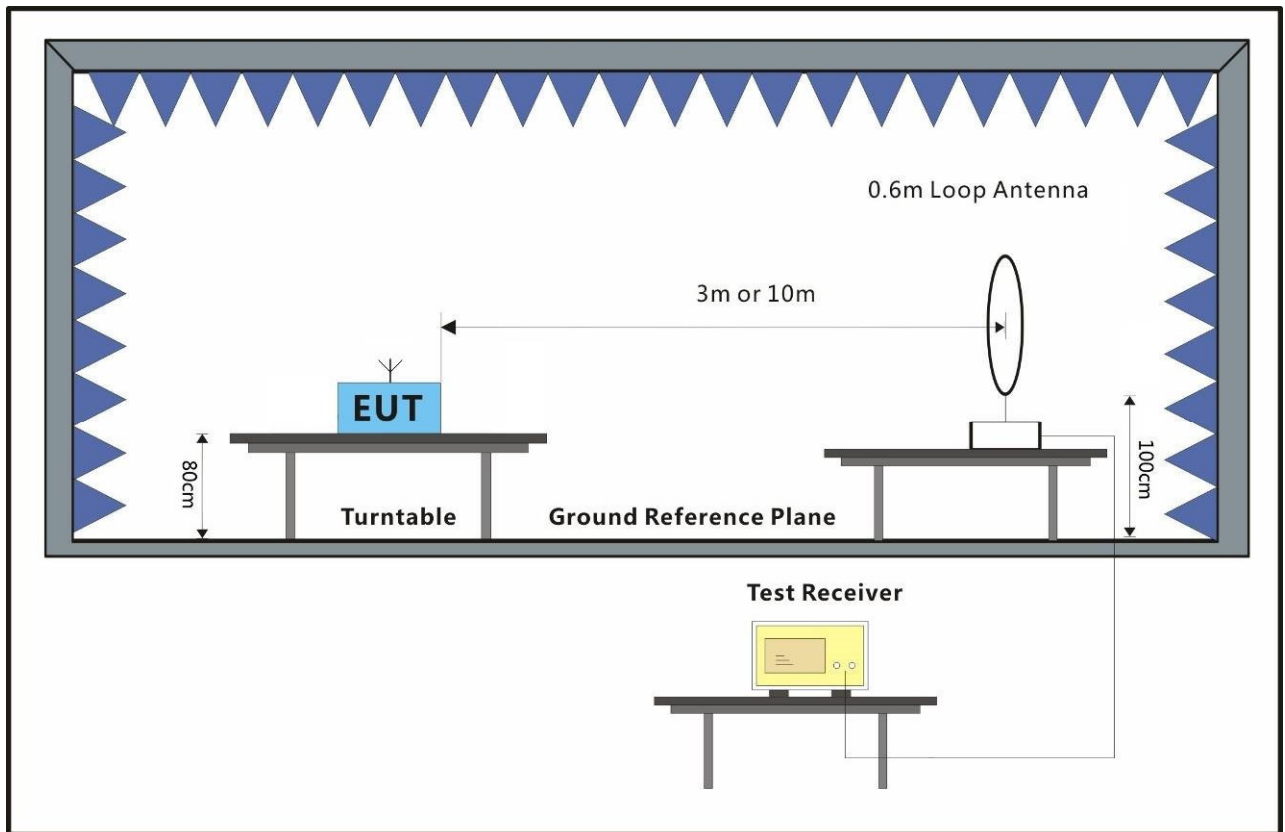
Operating Environment:

Temperature: 23.1 °C Humidity: 50 % RH Atmospheric Pressure: 1015 mbar

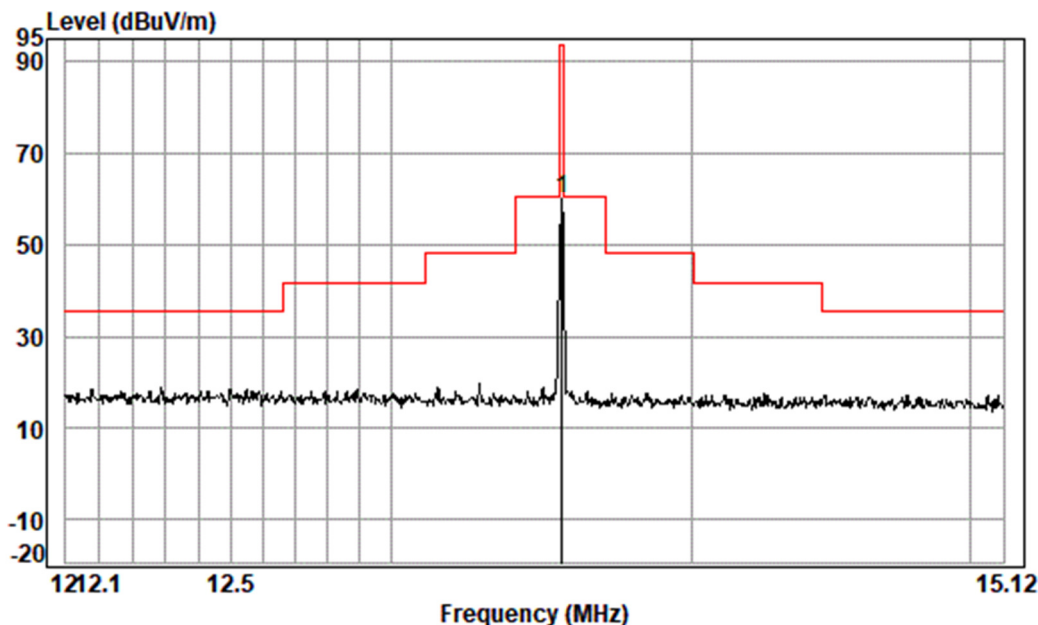
6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	16	TX mode with modulation

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data



Condition: 3m

Job No. : 10640CR

Test Mode: 16

		Read	Ant	Cable	Preamp		Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	13.561	83.07	8.88	0.62	32.35	60.22	93.50	-33.28	QP

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

6.4 Frequency tolerance

Test Requirement 47 CFR Part 15, Subpart C 15.225(e)

Test Method: ANSI C63.10 (2013) Section 6.8

Limit:

± 0.01

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.2 °C

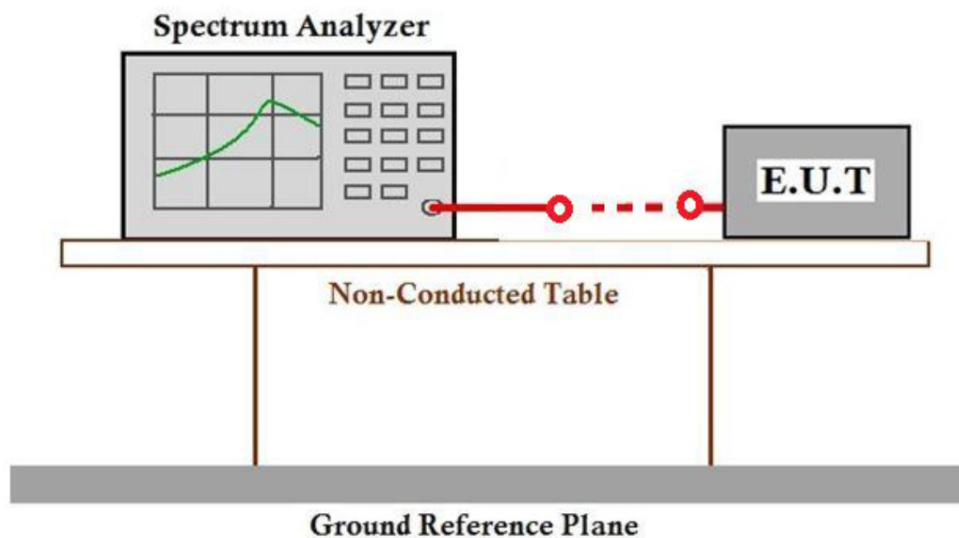
Humidity: 54.9 % RH

Atmospheric Pressure: 1015 mbar

6.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	16	TX mode with modulation

6.4.3 Test Setup Diagram



6.4.4 Measurement Procedure and Data

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

Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Frequency Tolerance (%)	Limit (%)	Result
50	3.80	13.559987	-0.000096	±0.01	Pass
40		13.559987	-0.000096		Pass
30		13.559988	-0.000088		Pass
20		13.559983	-0.000125		Pass
10		13.559982	-0.000133		Pass
0		13.559984	-0.000118		Pass
-10		13.559988	-0.000088		Pass
-20		13.559984	-0.000118		Pass
20	4.35	13.559985	-0.000111		Pass
	3.4	13.559988	-0.000088		Pass



6.5 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(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

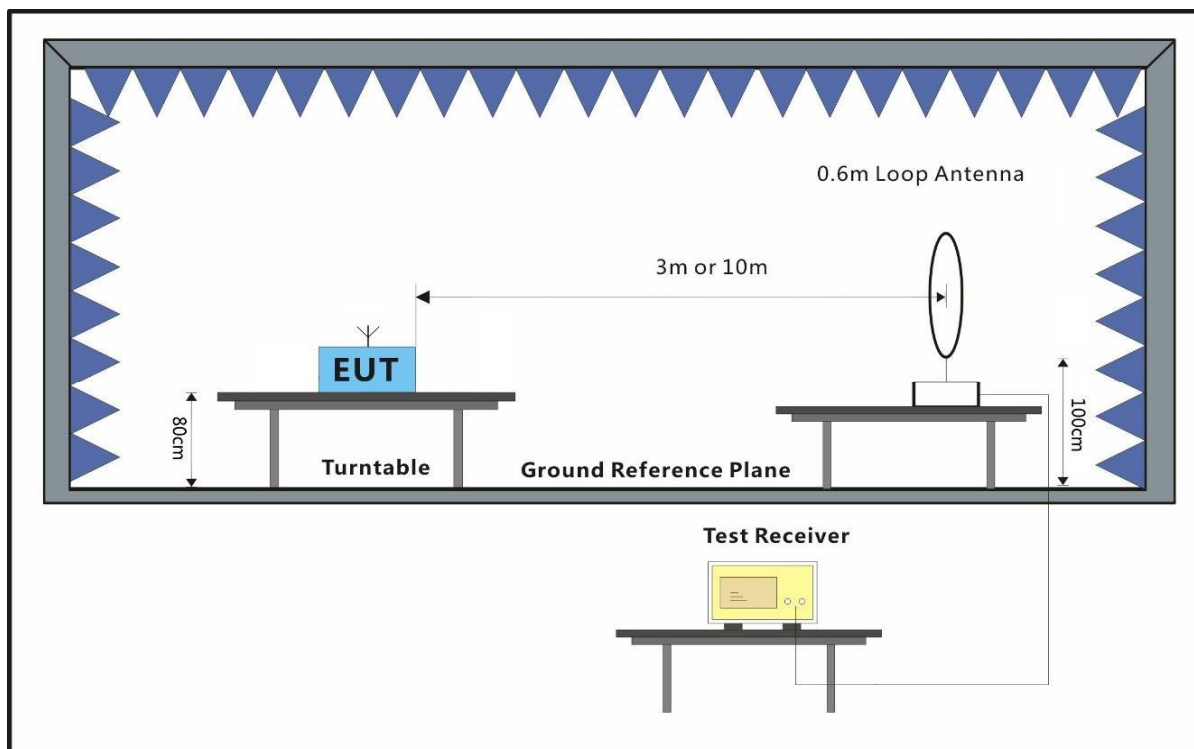
Humidity: 51 % RH

Atmospheric Pressure: 1015 mbar

6.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	16	TX mode with modulation

6.5.3 Test Setup Diagram



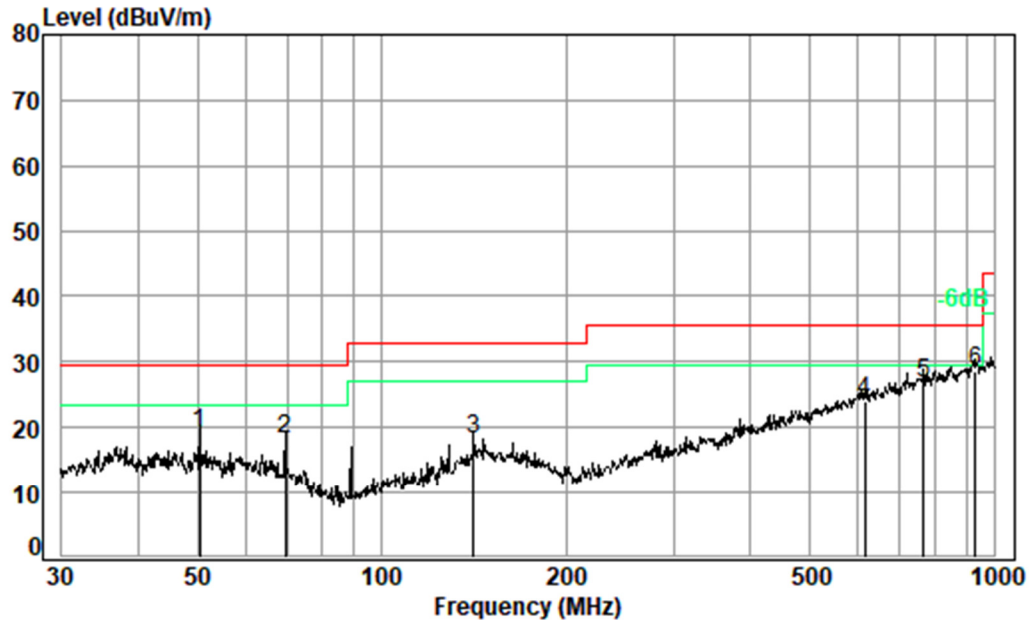
6.5.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. 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.
- e. 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.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. 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.
- h. 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 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Test Mode: 00; Polarity: Horizontal



Condition: 10m HORIZONTAL

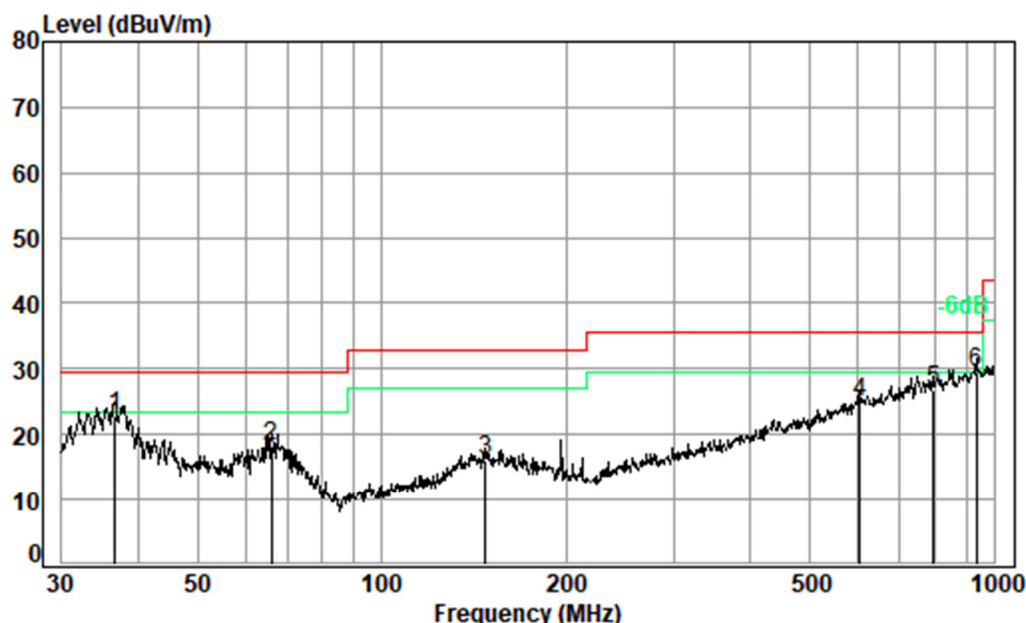
Job No. : 10640CR

Test Mode: 16

		Ant	Preamp	Cable	Read		Limit	Over	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	50.409	20.22	32.46	0.99	30.54	19.29	29.50	-10.21	QP
2	69.600	17.66	32.39	1.08	31.89	18.24	29.50	-11.26	QP
3	141.330	19.77	32.30	1.44	29.31	18.22	33.00	-14.78	QP
4	614.214	26.42	32.06	3.17	26.45	23.98	35.60	-11.62	QP
5	766.057	28.33	32.03	3.27	27.18	26.75	35.60	-8.85	QP
6 pp	932.272	29.80	31.35	3.46	26.56	28.47	35.60	-7.13	QP



Test Mode: 00; Polarity: Vertical



Condition: 10m VERTICAL

Job No. : 10640CR

Test Mode: 16

		Ant	Preamp	Cable	Read		Limit	Over	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	36.637	19.66	32.41	0.90	34.78	22.93	29.50	-6.57	QP
2	66.034	18.29	32.40	1.06	31.21	18.16	29.50	-11.34	QP
3	147.921	20.10	32.30	1.46	26.75	16.01	33.00	-16.99	QP
4	603.539	26.24	32.04	3.16	27.45	24.81	35.60	-10.79	QP
5	796.183	28.56	31.93	3.28	26.94	26.85	35.60	-8.75	QP
6 pp	935.546	29.80	31.33	3.47	27.72	29.66	35.60	-5.94	QP

The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_3 / L_{10} = D_{10} / D_3$$

Note:

L₃: Level @ 3m distance. Unit: uV/m;

L₁₀: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m

D₁₀: 10m distance. Unit: m

The level at 3m test distance is below:

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
50.41	19.29	9.22	30.72	29.75	40.00	-10.25	H
69.60	18.24	8.17	27.22	28.70	40.00	-11.30	H
141.33	18.22	8.15	27.16	28.68	43.50	-14.82	H
614.21	23.98	15.81	52.71	34.44	46.00	-11.56	H
766.06	26.75	21.75	72.51	37.21	46.00	-8.79	H
932.27	28.47	26.52	88.39	38.93	46.00	-7.07	H
36.64	22.93	14.01	46.71	33.39	40.00	-6.61	V
66.03	18.16	8.09	26.97	28.62	40.00	-11.38	V
147.92	16.01	6.32	21.06	26.47	43.50	-17.03	V
603.54	24.81	17.40	57.99	35.27	46.00	-10.73	V
796.18	26.85	22.00	73.35	37.31	46.00	-8.69	V
935.55	29.66	30.41	101.36	40.12	46.00	-5.88	V



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6.6 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: 3m

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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

If field strength is measured at only a single point, then that point shall be at the radial from the EUT that produces the maximum emission at the frequency being measured, as described in 5.4. If that point is closer to the EUT than $\lambda/2\pi$ and the limit distance is greater than $\lambda/2\pi$, the measurement shall be extrapolated to the limit distance by conservatively presuming that the field strength decreases at a 40 dB/decade of distance rate to the $\lambda/2\pi$ distance, and at a 20 dB/decade of distance rate beyond $\lambda/2\pi$. This shall be accomplished using Equation (2):

$$FS_{(10m)} = FS_{(30/300m)} + 40\log\{d_{(near\ field)}/d_{(10m)}\} + 20\log\{d_{(30/300m)}/d_{(near\ field)}\} \quad (2)$$

If the single point measured is at a distance greater than $\lambda/2\pi$, then extrapolation to the limit distance shall be calculated using Equation (3):

$$FS_{(10m)} = FS_{(30/300m)} + 20\log\{d_{(30/300m)}/d_{(10m)}\} \quad (3)$$

If both the single point and the limit distance are equal to or closer to the EUT than $\lambda/2\pi$, then extrapolation to the limit distance shall be calculated using Equation (4):

$$FS_{(10m)} = FS_{(30/300m)} + 40\log\{d_{(30/300m)}/d_{(10m)}\} \quad (4)$$

Remark:

$$d_{near\ field} = 47.77 / f_{MHz}$$

where f_{MHz} is the frequency of the emission being measured in MHz.

6.6.1 E.U.T. Operation

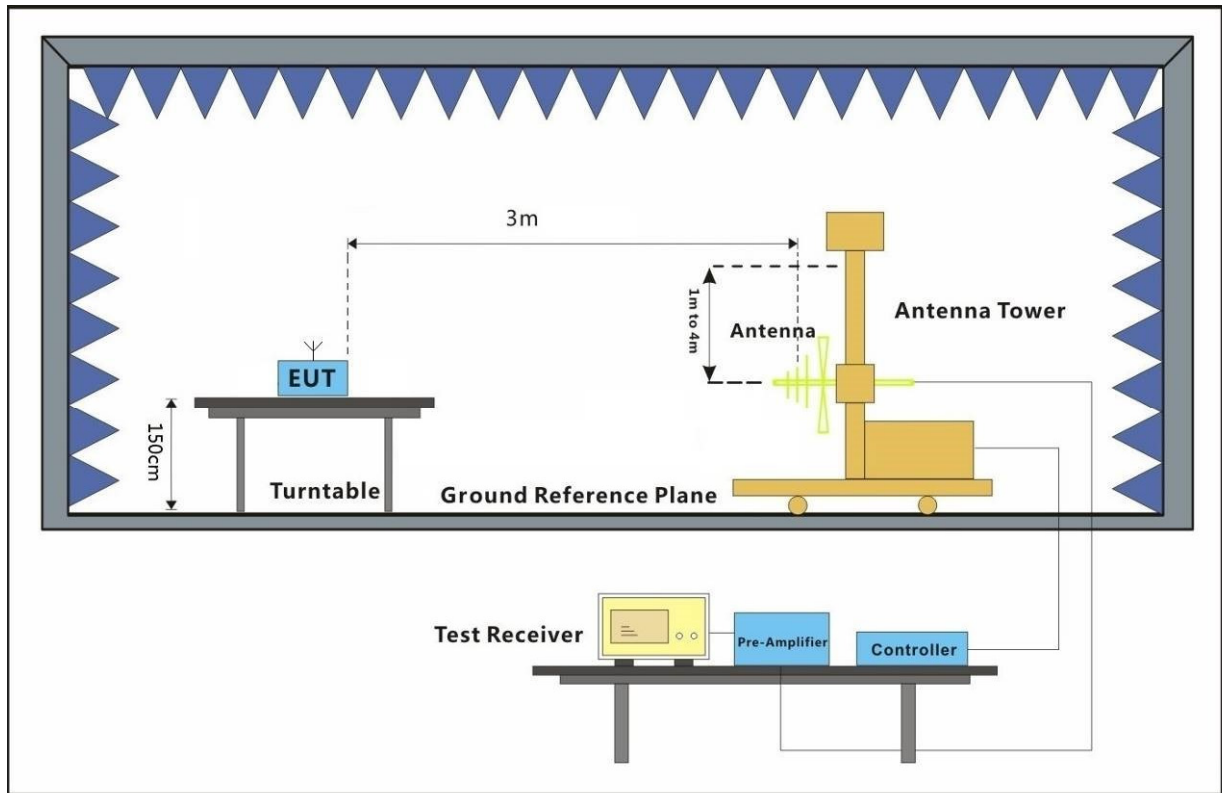
Operating Environment:

Temperature: 23.5 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

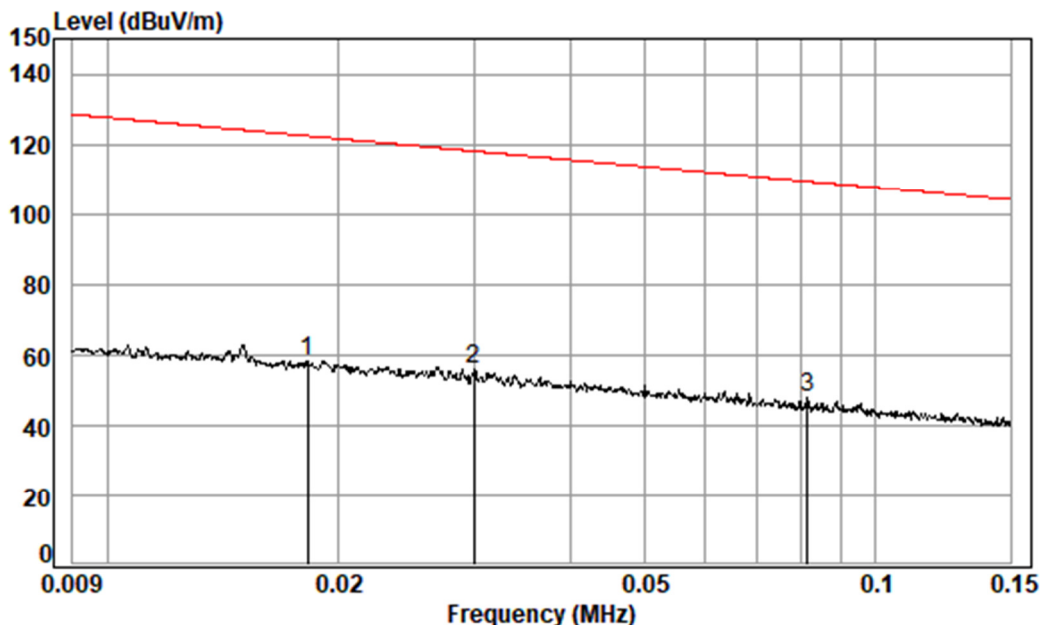
6.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	16	TX mode with modulation

6.6.3 Test Setup Diagram



6.6.4 Measurement Procedure and Data



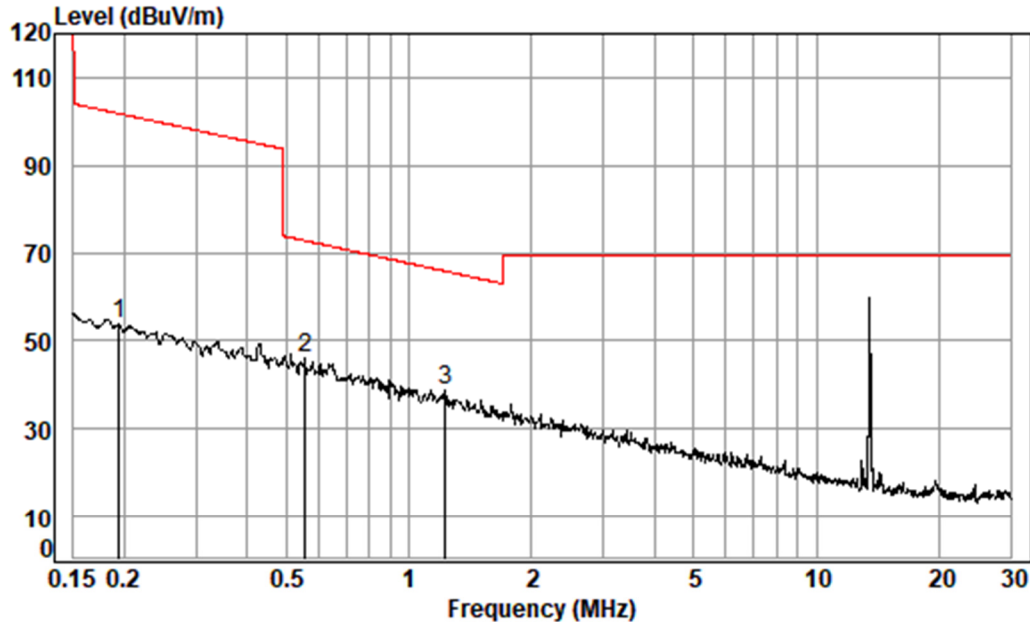
Condition: 3m

Job No. : 10640CR

Test Mode: 16

	Freq	Ant Factor	Preamp Factor	Cable Loss	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	0.018	14.75	31.05	0.01	74.62	58.33	122.37	-64.04	Average
2	0.030	12.65	31.38	0.01	74.42	55.70	118.05	-62.35	Average
3 pp	0.082	11.17	32.05	0.01	68.98	48.11	109.35	-61.24	Average





Condition: 3m

Job No. : 10640CR

Test Mode: 16

		Ant	Preamp	Cable	Read	Limit	Over	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1 av	0.194	10.95	32.21	0.12	74.93	53.79	101.82	-48.03 Average
2 pp	0.558	10.84	32.25	0.53	66.96	46.08	72.66	-26.58 QP
3	1.229	10.87	32.28	0.48	59.53	38.60	65.76	-27.16 QP

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



7 Test Setup Photo

Please refer to setup photos.

8 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

- End of the Report -

