



FCC RADIO TEST REPORT

Applicant : Partner Tech Corp.
Address : 10FL, 233-1, Baoqiao Road, Xindian,
New Taipei City, Taiwan
Equipment : POS Terminal
Model No. : C10-1R, C14-1R, C1XXXXXXXX (X could be 0-9,
-, A-Z or blank for marketing purpose)
Trade Name : PARTNER
FCC ID : NDPC10-1R

I HEREBY CERTIFY THAT :

The sample was received on Jun. 15, 2023 and the testing was completed on Jun. 27, 2023 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Vic Hsiao / Supervisor

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





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1. Summary of Test Procedure and Test Results

1.1. Applicable Standards

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart C §15.225

FCC Rule	Description of Test	Result
15.203	Antenna Requirement	PASS
15.207	AC Power Line Conducted Emission	PASS
15.209 15.225	Radiated Emission	PASS
15.225	20dB Bandwidth	PASS
15.225(e)	Frequency Stability	PASS

*The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement, measurement uncertainty evaluation is not considered.



2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Operation Frequency Range	13.553MHz ~ 13.567MHz
Center Frequency Range	13.56MHz
Modulation Type	ASK
Antenna Type	PCB
Antenna Gain	0.6dBi
Adapter	EDAC \ EA10681V-240
RS232 to RJ45 Cable	CHING FUNG \ PJ8P+DSUB9M

Note: For more details, please refer to the User’s manual of the EUT.

Difference Description

Model No.	Description
C10-1R	10.1”, Resolution 800 x 1280
C14-1R	14”, Resolution 1366 x 768
C1XXXXXXXX (X could be 0-9, -, A-Z or blank for marketing purpose)	Marketing purpose.

2.2. Carrier Frequency of Channels

Channel	Frequency(MHz)
*1	13.56

Note: Channel remarked “*” is selected to perform test.



2.3. Test Mode and Test Software

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
- c. Hardware control was executed to transmit and receive data via NFC.
- d. The test modes of RF test as follow:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	AC 120V, Model No.: C10-1R, NFC-V ISO15693, TX Mode
2	AC 240V, Model No.: C10-1R, NFC-V ISO15693, TX Mode
3	AC 120V, Model No.: C14-1R, NFC-V ISO15693, TX Mode
4	AC 240V, Model No.: C14-1R, NFC-V ISO15693, TX Mode
caused "Test Mode 2,4" generated the worst case, they were reported as the final data.	
Radiation Emissions (9kHz ~ 30MHz)	
Test Mode	Operating Description
1	AC 120V, Model No.: C14-1R, NFC-A ISO15693, TX Mode
2	AC 120V, Model No.: C14-1R, NFC-B ISO15693, TX Mode
3	AC 120V, Model No.: C14-1R, NFC-F Felica, TX Mode
4	AC 120V, Model No.: C14-1R, NFC-V ISO15693, TX Mode
caused "Test Mode 4" generated the worst case, it was reported as the final data.	
Radiation Emissions (30MHz ~ 1GHz)	
Test Mode	Operating Description
1	AC 120V, Model No.: C10-1R, NFC-V ISO15693, TX Mode
2	AC 240V, Model No.: C10-1R, NFC-V ISO15693, TX Mode
3	AC 120V, Model No.: C14-1R, NFC-V ISO15693, TX Mode
4	AC 240V, Model No.: C14-1R, NFC-V ISO15693, TX Mode
caused "Test Mode 2,4" generated the worst case, they were reported as the final data.	

**2.4. Description of Test System**

Frequency Stability				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
NFC Card	Tiananxin	NFC Tag Kit	N/A	N/A

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
NFC Card	Tiananxin	NFC Tag Kit	N/A	N/A
Mouse	ASUS	MOBTUO	1m / NS	N/A
Keyboard	DELL	KB216t	1.85m / NS	N/A
Modem*4	ACEEX	DM-1414	1.5m / NS	1.8m /Adapter/NS
USB 3.0 HDD*4	Transcend	TS1TSJ25M3S	0.5m / NS	N/A
Cash Drawer	PARTNER	5E415	1.8m / NS	N/A
HDMI Cable	Cerpass	H2	1.8m / S	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	15m / NS	N/A
RS232*4	TETC	DB9 to DB25	1.8m / S	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
Monitor	LG	27UP850	N/A	1.8m/Adapter/NS
Micro-B USB Cable*4	Kolin	KEX-DLCP07	1m / NS	N/A

AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
NFC Card	Tiananxin	NFC Tag Kit	N/A	N/A
Mouse	ASUS	MOBTUO	1m / NS	N/A
Keyboard	DELL	KB216t	1.85m / NS	N/A
Modem*4	ACEEX	DM-1414	1.5m / NS	1.8m /Adapter/NS
USB 3.0 HDD*4	Transcend	TS1TSJ25M3S	0.5m / NS	N/A
Cash Drawer	PARTNER	5E415	1.8m / NS	N/A
HDMI Cable	Cerpass	H2	1.8m / S	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	15m / NS	N/A
RS232*4	TETC	DB9 to DB25	1.8m / S	N/A
Monitor	ASUS	PA279	N/A	1.8m/Adapter/NS
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
Micro-B USB Cable	Kolin	KEX-DLCP07	1m / NS	N/A



2.5. General Information of Test

Test Site	CerpPASS Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881	
	FCC	TW1439, TW1079
	IC	4934E-1, 4934E-2
	VCCI	T-12205 for Telecommunication test C-14663 for Conducted emission test R-14218 for Radiated emission test G-10812, G-10813 for radiated disturbance above 1GHz
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 1,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

Test Item	Test Site	Test period	Environmental Conditions	Tested By
Frequency Stability	RFCON01-NK	2023/06/27	25°C / 52%	Leon Huang
Radiated Emissions	3M02-NK	2023/6/20 ~ 2023/6/23	24°C ~ 27°C / 36~39%	Leon Huang
AC Power Line Conducted Emission	CON01-NK	2023/06/23	22.3°C / 61%	Leon Huang

2.6. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.28dB
Radiated Spurious Emission(9KHz~30MHz)	±3.5dB
Radiated Spurious Emission(30MHz~1GHz)	±5.1dB
20dB Bandwidth	±4.4%
Occupied Bandwidth	±4.5%
Frequency Stability	±0.23KHz



3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2022/11/18	2023/11/17
Active Loop Antenna	Schwarzbeck	FMZB 1513	414	2023/02/03	2024/02/02
Horn Antenna	EMCO	3115	31589	2023/03/23	2024/03/22
Horn Antenna	EMCO	3116	31970	2023/03/03	2024/03/02
EMI Receiver	R&S	ESCI	101423	2022/07/05	2023/07/04
Spectrum Analyzer	R&S	FSV 40-N	102151	2022/08/19	2023/08/18
Preamplifier	Agilent	8449B	3008A01954	2023/03/08	2024/03/07
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2022/11/11	2023/11/10
Preamplifier	EM Electronics corp.	EM330	60659	2023/03/10	2024/03/09
Cable-4m (9kHz-3GHz)	EMEC	RG-223	18274M	2022/07/27	2023/07/26
Cable-3in1 (30MHz-1GHz)	HARBOUR INDUSTRIES	LL142	CCE1315	2023/02/25	2024/02/24
Cable-0.5m (1GHz-40GHz)	HUBER SUHNER	SUCOFLEX 104	805443/4	2023/03/07	2024/03/06
Cable-3m (1GHz-40GHz)	HUBER SUHNER	SUCOFLEX 104	805796/4	2023/03/07	2024/03/06
Cable-8m (1GHz-26.5GHz)	WOKEN	WCBA-WCA203SM	CCE1374	2023/03/07	2024/03/06
Cable-0.5m (30MHz-40GHz)	HUBER SUHNER	SUCOFLEX 102	28420/2	2023/03/07	2024/03/06
Cable-3m (30MHz-40GHz)	HUBER SUHNER	SUCOFLEX 102	MY2608/2	2023/03/07	2024/03/06
Cable-0.5m (1GHz-40GHz)	Rapidtek	40GHZ 50CM	38MS-38MS50314	2023/03/07	2024/03/06
Cable-3m (1GHz-40GHz)	Rapidtek	40GHZ 300CM	38MS-38MS300314	2023/03/07	2024/03/06
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA

Test Item	Frequency Stability				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2022/11/29	2023/11/28
TEMP & HUMIDITY CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2022/08/15	2023/08/14



Test Item	AC Power Line Conducted Emission				
Test Site	CON02-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI	101423	2022/07/05	2023/07/04
TWO-LINE V-NETWORK	R&S	ENV216	102185	2022/08/24	2023/08/23
Cable-4m (9kHz-3GHz)	EMEC	RG-223	18274M	2022/07/27	2023/07/26
E3	AUDIX	v8.2014-8-6	RK-000536	NA	NA



4. Antenna Requirements

4.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

And according to FCC 47 CFR Section 15.249, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2. Antenna Construction and Directional Gain

Antenna Type	PCB Antenna
Antenna Gain	0.6 dBi



5. Test of AC Power Line Conducted Emission

5.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.10-2013. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

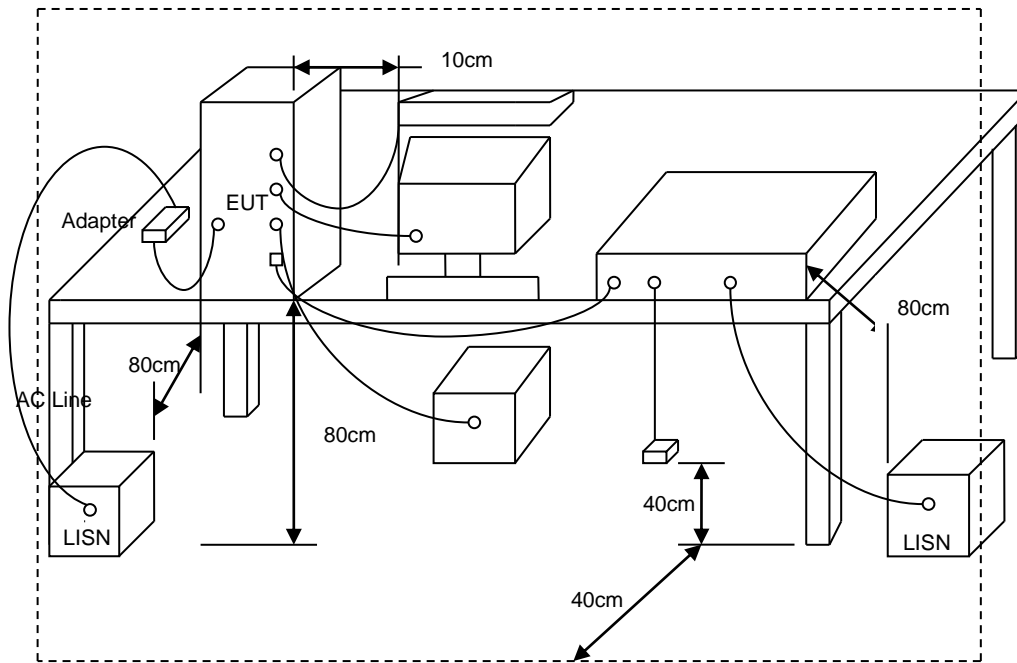
*Decreases with the logarithm of the frequency.

5.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



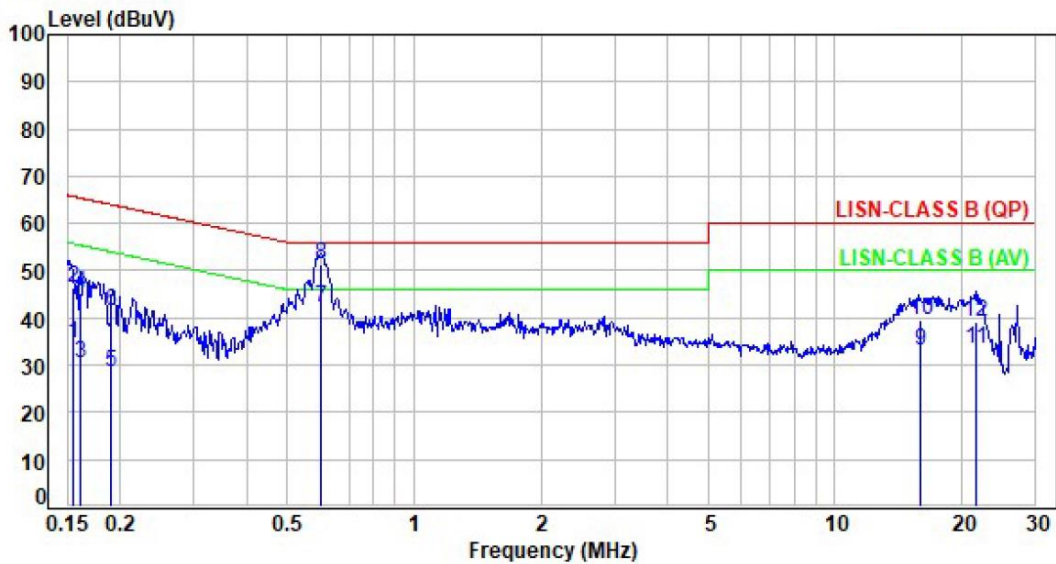
5.3. Typical Test Setup





5.4. Test Result and Data

Power	: AC 240V	Pol/Phase	: LINE
Test Mode	: Mode 2		

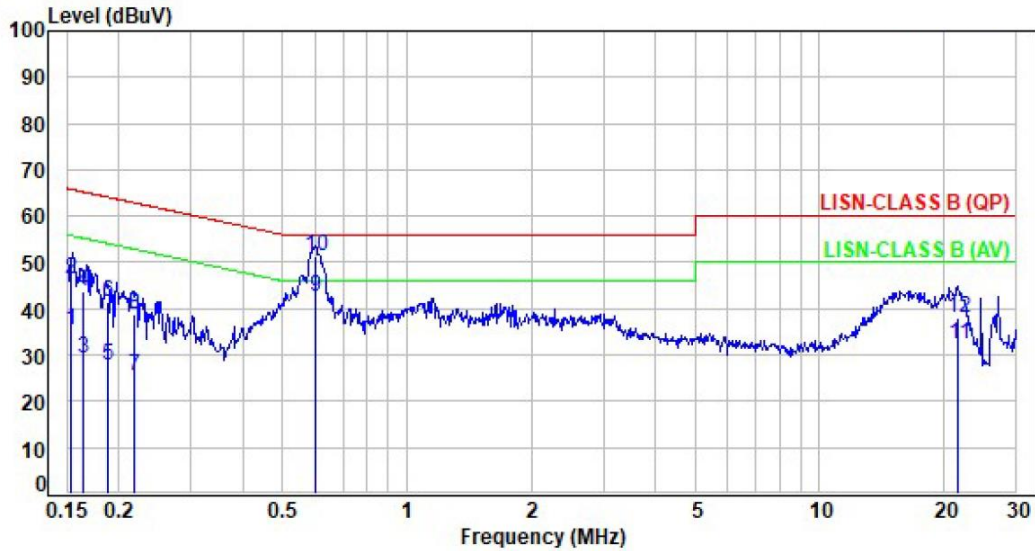


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.62	24.86	34.48	55.71	-21.23	Average	P
2	0.16	9.62	36.74	46.36	65.71	-19.35	QP	P
3	0.16	9.62	20.83	30.45	55.43	-24.98	Average	P
4	0.16	9.62	35.54	45.16	65.43	-20.27	QP	P
5	0.19	9.61	18.84	28.45	54.04	-25.59	Average	P
6	0.19	9.61	31.88	41.49	64.04	-22.55	QP	P
7	0.60	9.63	32.62	42.25	46.00	-3.75	Average	P
8	0.60	9.63	41.55	51.18	56.00	-4.82	QP	P
9	15.97	9.90	23.23	33.13	50.00	-16.87	Average	P
10	15.97	9.90	29.49	39.39	60.00	-20.61	QP	P
11	21.55	9.92	23.44	33.36	50.00	-16.64	Average	P
12	21.55	9.92	29.15	39.07	60.00	-20.93	QP	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 240V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 2		

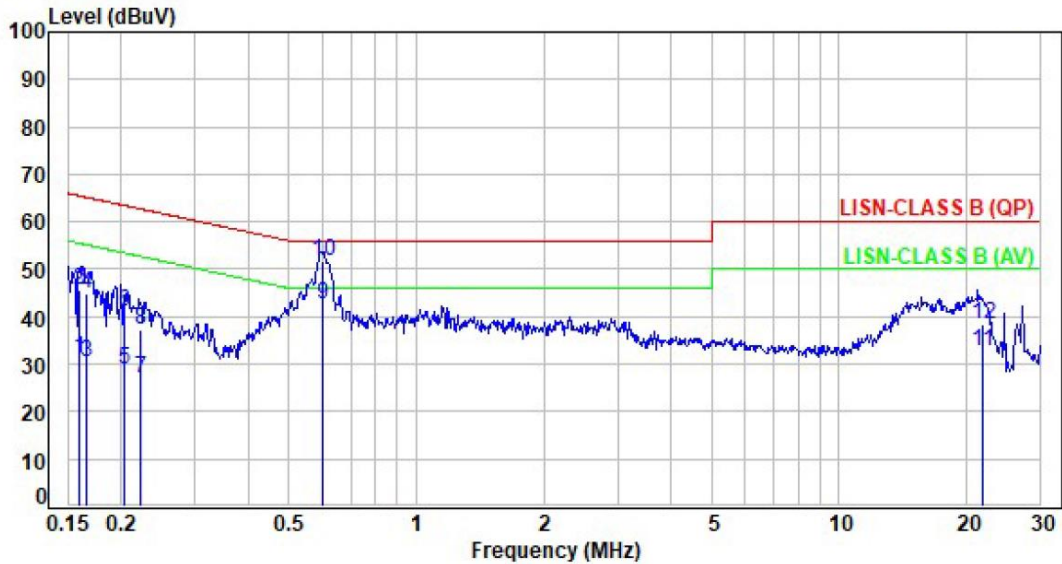


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.63	25.65	35.28	55.81	-20.53	Average	P
2	0.15	9.63	36.94	46.57	65.81	-19.24	QP	P
3	0.16	9.63	19.71	29.34	55.25	-25.91	Average	P
4	0.16	9.63	33.95	43.58	65.25	-21.67	QP	P
5	0.19	9.62	18.17	27.79	54.14	-26.35	Average	P
6	0.19	9.62	31.68	41.30	64.14	-22.84	QP	P
7	0.22	9.62	15.96	25.58	52.88	-27.30	Average	P
8	0.22	9.62	29.12	38.74	62.88	-24.14	QP	P
9	0.60	9.63	32.85	42.48	46.00	-3.52	Average	P
10	0.60	9.63	41.54	51.17	56.00	-4.83	QP	P
11	21.74	9.96	22.54	32.50	50.00	-17.50	Average	P
12	21.74	9.96	28.16	38.12	60.00	-21.88	QP	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 240V	Pol/Phase	: LINE
Test Mode	: Mode 4		:

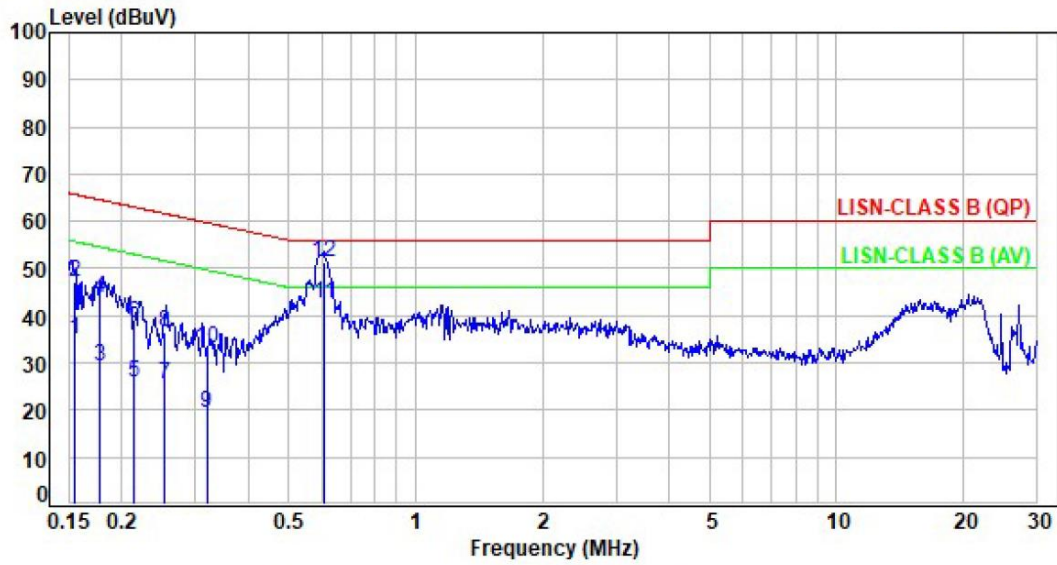


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.62	21.69	31.31	55.51	-24.20	Average	P
2	0.16	9.62	36.17	45.79	65.51	-19.72	QP	P
3	0.17	9.62	20.75	30.37	55.19	-24.82	Average	P
4	0.17	9.62	35.28	44.90	65.19	-20.29	QP	P
5	0.20	9.61	19.16	28.77	53.47	-24.70	Average	P
6	0.20	9.61	31.57	41.18	63.47	-22.29	QP	P
7	0.22	9.61	17.46	27.07	52.72	-25.65	Average	P
8	0.22	9.61	27.84	37.45	62.72	-25.27	QP	P
9	0.60	9.63	32.86	42.49	46.00	-3.51	Average	P
10	0.60	9.63	41.97	51.60	56.00	-4.40	QP	P
11	21.82	9.93	22.94	32.87	50.00	-17.13	Average	P
12	21.82	9.93	28.51	38.44	60.00	-21.56	QP	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 240V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 4		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.63	25.41	35.04	55.77	-20.73	Average	P
2	0.15	9.63	37.33	46.96	65.77	-18.81	QP	P
3	0.18	9.62	19.60	29.22	54.58	-25.36	Average	P
4	0.18	9.62	34.17	43.79	64.58	-20.79	QP	P
5	0.21	9.62	16.34	25.96	53.08	-27.12	Average	P
6	0.21	9.62	28.68	38.30	63.08	-24.78	QP	P
7	0.25	9.63	15.66	25.29	51.63	-26.34	Average	P
8	0.25	9.63	26.71	36.34	61.63	-25.29	QP	P
9	0.32	9.63	9.94	19.57	49.74	-30.17	Average	P
10	0.32	9.63	23.41	33.04	59.74	-26.70	QP	P
11	0.60	9.63	33.11	42.74	46.00	-3.26	Average	P
12	0.60	9.63	41.64	51.27	56.00	-4.73	QP	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



6. Test of Radiated Emission

6.1. Test 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.

Frequency (MHz)	Distance	Limit (µV/ m)
0.09 ~ 0.490	300m	2400/F(kHz)
0.490 ~ 1.705	30m	24000/ F(kHz)
1.705 ~ 30	30m	30
30 ~ 88	3m	100
88 ~ 216	3m	150
216 ~ 960	3m	200
Above 960	3m	500

15.215 Additional provisions to the general radiated emission limitations.:

- (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.



6.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. "Cone of radiation" has been considered to be 3dB beamwidth of the measurement antenna.

Note:

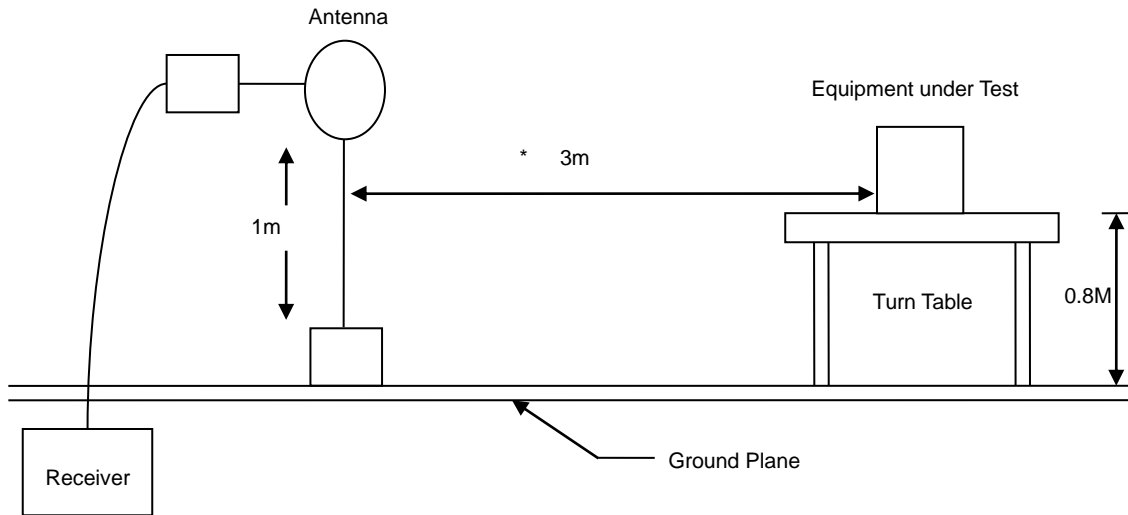
- 1. The resolution bandwidth of test receiver/spectrum analyzer is 300Hz or CISPS 200Hz(QP detector) at frequency Below 150 kHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 10KHz or CISPS 9KHz(QP detector) at frequency 150 kHz to 30 MHz.
- 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.

Note: The supporting fixture shall permit orientation of the EUT in each of three orthogonal axis positions such that emissions from the EUT are maximized. (Z-AXIS is the worst.)

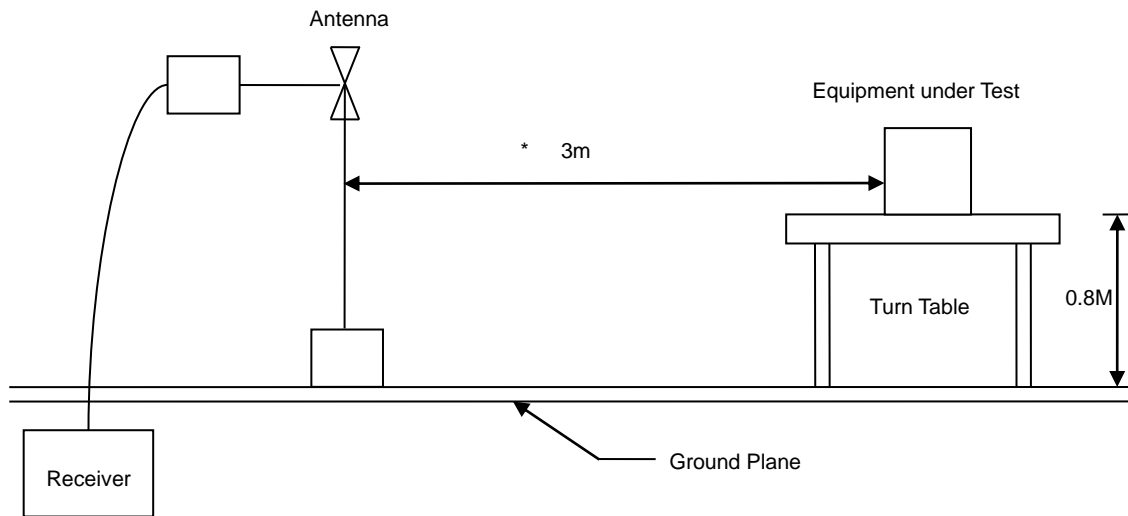


6.3. Typical Test Setup Layout of Radiated Emission

Below 30MHz test setup



30MHz- 1GHz Test Setup

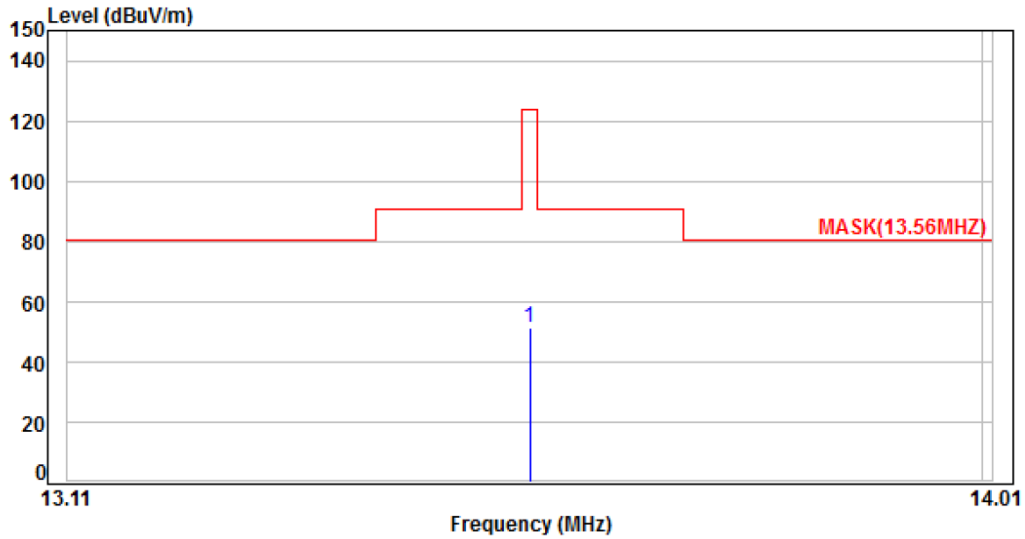




6.4. Test Result and Data

6.4.1. Test Result of Fundamental Emission

Power	: AC 120V	Pol/Phase	: Open
Test Mode	: Mode 4		:

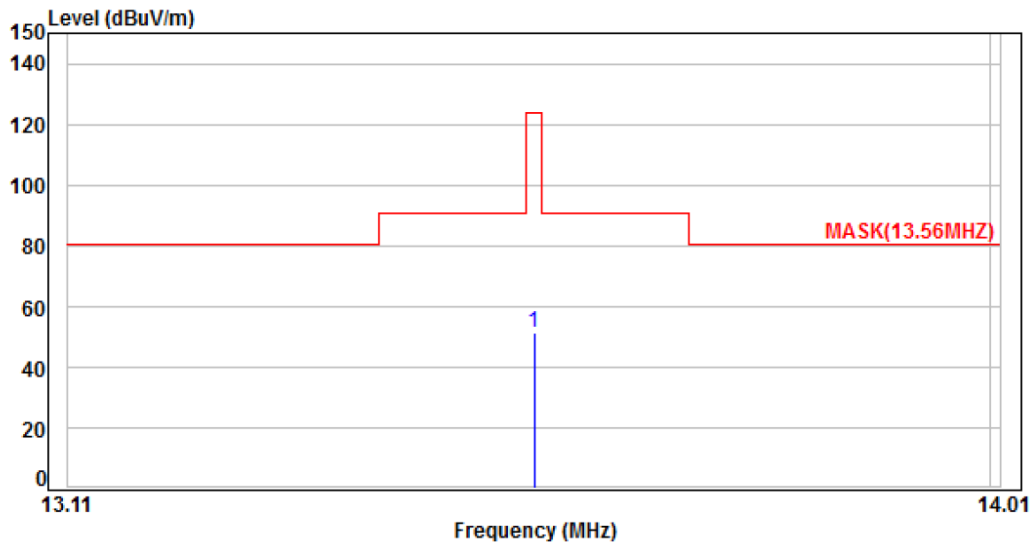


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	13.56	21.72	29.35	51.07	124.00	-72.93		100	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: Close
Test Mode	: Mode 4		:



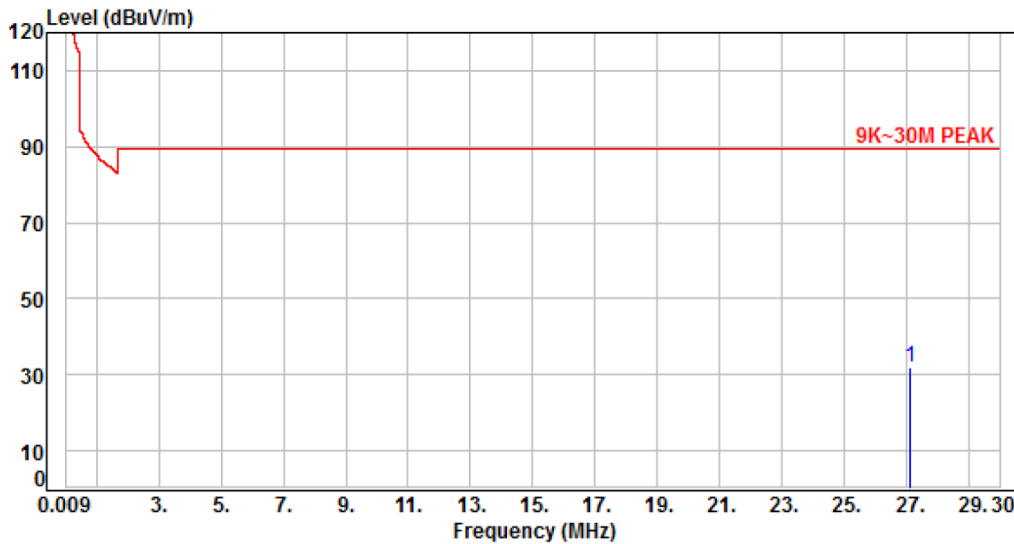
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	13.56	21.72	29.57	51.29	124.00	-72.71		100	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



6.4.2. Test Result of Unwanted Spurious emission (9KHz ~ 30MHz)

Power	: AC 120V	Pol/Phase	: Open
Test Mode	: Mode 4		:

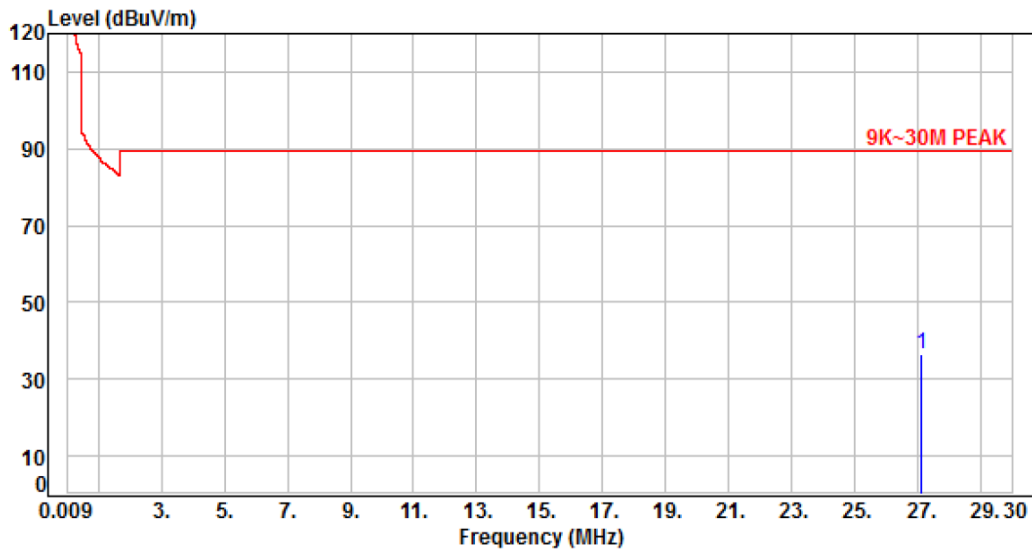


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	27.12	21.99	9.82	31.81	89.54	-57.73		100	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: Close
Test Mode	: Mode 4		:



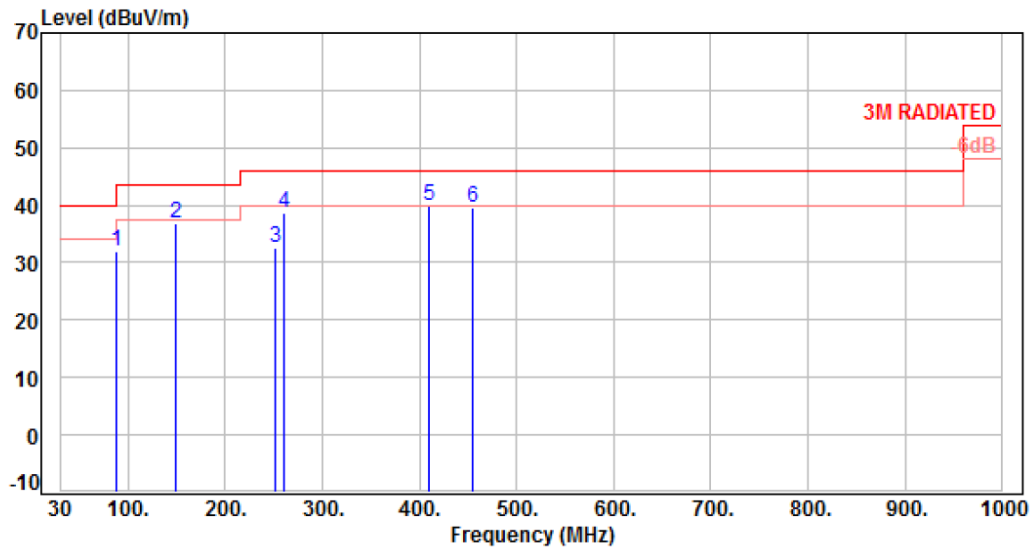
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	27.12	21.99	14.53	36.52	89.54	-53.02		100	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



6.4.3. Test Result of Unwanted Spurious emission (30GHz ~ 1GHz)

Power	: AC 240V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2		:

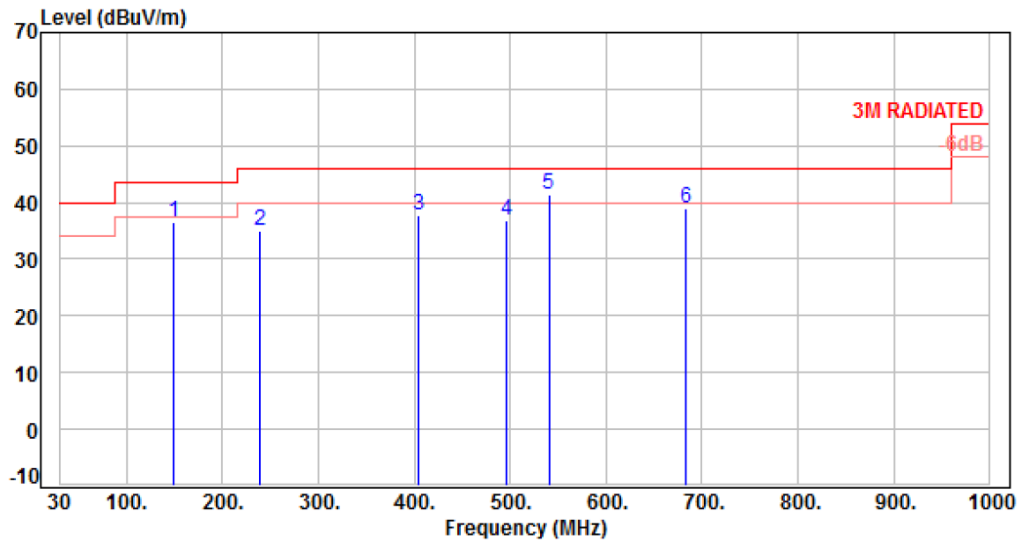


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	88.20	-16.73	48.83	32.10	43.50	-11.40	Peak	400	0	P
2	148.34	-10.86	47.83	36.97	43.50	-6.53	Peak	400	0	P
3	252.13	-11.94	44.50	32.56	46.00	-13.44	Peak	400	0	P
4	260.86	-11.66	50.21	38.55	46.00	-7.45	Peak	400	0	P
5	410.24	-7.31	47.19	39.88	46.00	-6.12	Peak	400	0	P
6	454.86	-5.89	45.52	39.63	46.00	-6.37	Peak	400	0	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 240V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2		:

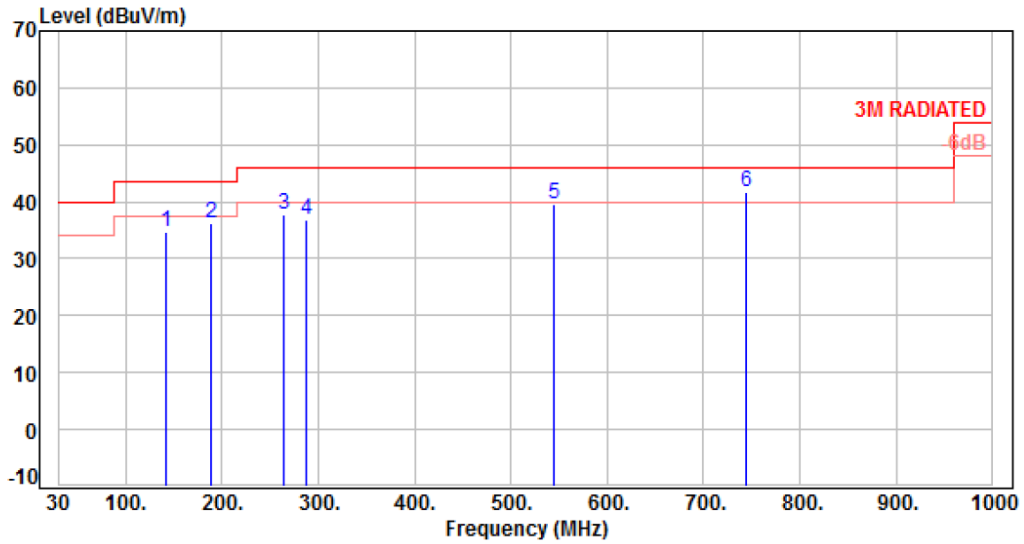


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	148.34	-10.86	47.36	36.50	43.50	-7.00	Peak	400	0	P
2	239.52	-12.61	47.56	34.95	46.00	-11.05	Peak	400	0	P
3	404.42	-7.53	45.41	37.88	46.00	-8.12	Peak	400	0	P
4	495.60	-5.28	42.05	36.77	46.00	-9.23	Peak	400	0	P
5	540.22	-4.31	45.63	41.32	46.00	-4.68	Peak	400	0	P
6	683.78	-1.44	40.47	39.03	46.00	-6.97	Peak	400	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



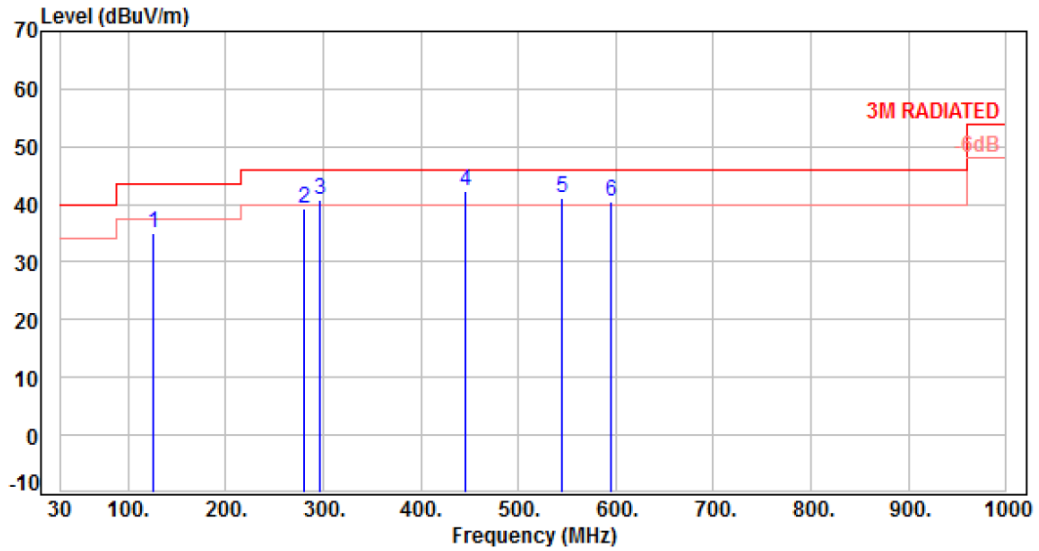
Power	: AC 240V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	142.52	-11.06	45.87	34.81	43.50	-8.69	Peak	400	0	P
2	189.08	-13.58	49.67	36.09	43.50	-7.41	Peak	400	0	P
3	264.74	-11.43	49.12	37.69	46.00	-8.31	Peak	400	0	P
4	288.02	-10.46	47.27	36.81	46.00	-9.19	Peak	400	0	P
5	544.10	-4.29	44.00	39.71	46.00	-6.29	Peak	400	0	P
6	743.92	-0.30	42.00	41.70	46.00	-4.30	Peak	400	0	P



Power	: AC 240V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4		:



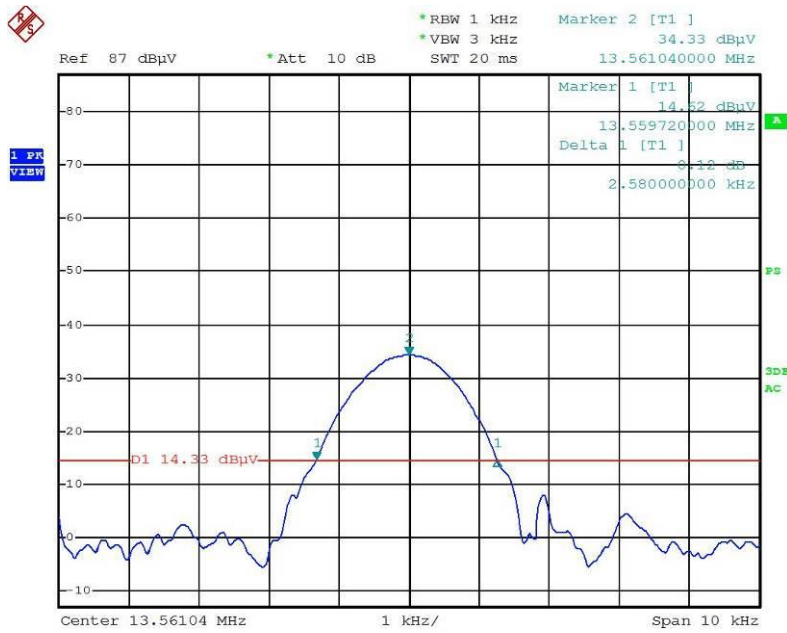
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	125.06	-13.14	48.07	34.93	43.50	-8.57	Peak	400	360	P
2	280.26	-10.74	49.99	39.25	46.00	-6.75	Peak	400	360	P
3	295.78	-10.27	51.03	40.76	46.00	-5.24	Peak	400	360	P
4	445.16	-6.04	48.26	42.22	46.00	-3.78	Peak	400	360	P
5	544.10	-4.29	45.49	41.20	46.00	-4.80	Peak	400	360	P
6	594.54	-3.01	43.47	40.46	46.00	-5.54	Peak	400	360	P



6.5. 20dB Bandwidth & 99% Occupied Bandwidth

Modulation Mode	Freq. (MHz)	20dB Bandwidth (kHz)	F _L at 20dB BW (MHz)	F _H at 20dB BW (MHz)
RFID	13.56	2.58	13.55972	13.5623
Limit		N/A	13.553	13.567
Result		Pass		

20dB Bandwidth
13.56 MHz





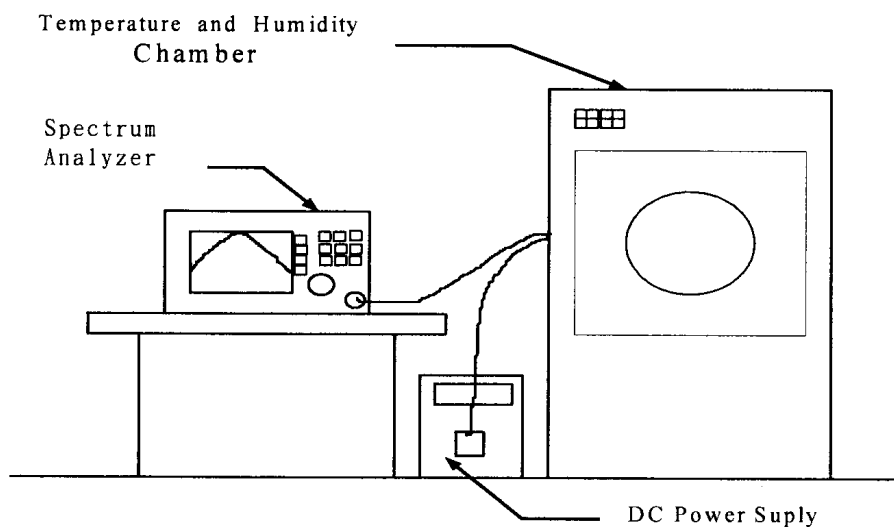
7. Frequency Stability

7.1. Test Procedure

According to the methods defined in ANSI C63.10-2013 Section 6.8

1. The EUT was placed inside the Temperature and Humidity chamber.
2. The transmitter output was connected to spectrum analyzer.
3. Turn the EUT on and couple its output to a spectrum analyzer.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
6. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
7. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

7.2. Test Setup Layout





7.3. Test Result and Data

Operating frequency:13.56MHz									
Temp (°C)	Power supply (V)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
40	102	13.5609	0.006932	13.5610	0.007080	13.5609	0.006932	13.5610	0.007375
	120	13.5610	0.007375	13.5610	0.007522	13.5610	0.007522	13.5610	0.007227
	138	13.5610	0.007522	13.5611	0.007965	13.5610	0.007375	13.5610	0.007375
30	102	13.5610	0.007080	13.5610	0.007375	13.5610	0.007080	13.5610	0.007080
	120	13.5610	0.007375	13.5610	0.007375	13.5610	0.007227	13.5610	0.007227
	138	13.5610	0.007522	13.5610	0.007375	13.5610	0.007522	13.5610	0.007375
20	102	13.5610	0.007080	13.5610	0.007375	13.5609	0.006932	13.5611	0.007817
	120	13.5610	0.007375	13.5610	0.007375	13.5610	0.007227	13.5610	0.007522
	138	13.5610	0.007522	13.5610	0.007522	13.5610	0.007375	13.5611	0.008112
10	102	13.5610	0.007080	13.5610	0.007522	13.5610	0.007375	13.5611	0.008112
	120	13.5610	0.007670	13.5610	0.007227	13.5610	0.007375	13.5610	0.007375
	138	13.5610	0.007670	13.5610	0.007670	13.5610	0.007375	13.5610	0.007227
0	102	13.5610	0.007375	13.5610	0.007227	13.5610	0.007080	13.5610	0.007227
	120	13.5610	0.007670	13.5610	0.007375	13.5610	0.007522	13.5610	0.007227
	138	13.5610	0.007670	13.5610	0.007670	13.5610	0.007670	13.5610	0.007375



8. Radio Frequency Exposure

8.1. Applicable Standards

<input checked="" type="checkbox"/> §1.1307(b)(3)(i)(A)	The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.																																																
<input type="checkbox"/> §1.1307(b)(3)(i)(c)	ERP is below a threshold calculated based on the distance , R between the person and the antenna / radiating structure, where $R > \lambda / 2 \pi$. TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">RF Source Frequency</th> <th colspan="2">Minimum Distance</th> <th>Threshold ERP</th> </tr> <tr> <th>f_L MHz</th> <th></th> <th>f_H MHz</th> <th>$\lambda_L / 2\pi$</th> <th></th> <th>$\lambda_H / 2\pi$</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>0.3</td> <td>–</td> <td>1.34</td> <td>159 m</td> <td>–</td> <td>35.6 m</td> <td>1,920 R²</td> </tr> <tr> <td>1.34</td> <td>–</td> <td>30</td> <td>35.6 m</td> <td>–</td> <td>1.6 m</td> <td>3,450 R²/f²</td> </tr> <tr> <td>30</td> <td>–</td> <td>300</td> <td>1.6 m</td> <td>–</td> <td>159 mm</td> <td>3.83 R²</td> </tr> <tr> <td>300</td> <td>–</td> <td>1,500</td> <td>159 mm</td> <td>–</td> <td>31.8 mm</td> <td>0.0128 R²f</td> </tr> <tr> <td>1,500</td> <td>–</td> <td>100,000</td> <td>31.8 mm</td> <td>–</td> <td>0.5 mm</td> <td>19.2R²</td> </tr> </tbody> </table> <p>Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.</p>	RF Source Frequency			Minimum Distance		Threshold ERP	f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W	0.3	–	1.34	159 m	–	35.6 m	1,920 R ²	1.34	–	30	35.6 m	–	1.6 m	3,450 R ² /f ²	30	–	300	1.6 m	–	159 mm	3.83 R ²	300	–	1,500	159 mm	–	31.8 mm	0.0128 R ² f	1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R ²
RF Source Frequency			Minimum Distance		Threshold ERP																																												
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W																																											
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1.34	–	30	35.6 m	–	1.6 m	3,450 R ² /f ²																																											
30	–	300	1.6 m	–	159 mm	3.83 R ²																																											
300	–	1,500	159 mm	–	31.8 mm	0.0128 R ² f																																											
1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R ²																																											
<input type="checkbox"/> § 1.1307(b)(3)(i)(B).	Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, $\leq P_{th}$ $P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}}(d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$ <p>Where</p> $x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$ <p>and</p> $ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$ <p>d = the separation distance (cm);</p>																																																



8.2. EUT Specification

Frequency band (Operating)	13.553MHz ~ 13.567MHz
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Evaluation applied	<input checked="" type="checkbox"/> Blanket 1 mW Blanket Exemption <input type="checkbox"/> MPE-based Exemption <input type="checkbox"/> SAR-based Exemption
Remark:	
<ol style="list-style-type: none"> The maximum Fundamental Emission is <u>42.56dBuV/m at 13.56MHz (with 0.6dBi antenna gain.)</u> DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance. For mobile or fixed location transmitters, no SAR consideration applied. 	

8.3. Test Results

Channel Frequency (MHz)	Fundamental Emission (dBm)	Antenna Gain (dBi)	Conducted Power (dBm)	Max. Tune up power (dBm)	Fundamental Emission (mW)	Limit (mW)
13.56	-44.54	0.60	-45.14	-44.64	0.00003437	1.00

Antenna Gain (dBi)	Antenna Gain (linear)	Distance (m)	Fundamental Emission (dBuV/m)	Fundamental Emission (V/m)	Fundamental Emission (W)	Fundamental Emission (dBm)
0.6	1.15	3	51.29	0.000367	0.0000000352	-44.54

No non-compliance noted.

-----THE END OF REPORT-----