

TEST REPORT

Report No.: BCTC2607310566-4E

Applicant: Shenzhen Sunell Technology Corporation

Product Name: Face Recognition Terminal

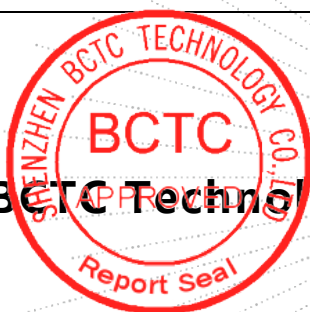
Test Model: SN-M3207U-B

Tested Date: 2026-07-08 to 2026-08-13

Issued Date: 2026-09-17



Shenzhen BCTC Technology Co., Ltd.



FCC ID: 2BSAY-SN-M3207U-B

Product Name: Face Recognition Terminal

Trademark: N/A

Model/Type Reference: SN-M3207U-B, SN-M3204V-B

Prepared For: Shenzhen Sunell Technology Corporation

Address: 22-23F, Bldg. 2, Nanshan I Park Chongwen, 3370 Liuxian Avenue, Nanshan District, Shenzhen, China, 518052

Manufacturer: Shenzhen Sunell Technology Corporation

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Prepared By: Shenzhen BCTC Technology Co., Ltd.

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Sample Received Date: 2026-07-08

Sample Tested Date: 2026-07-08 to 2026-08-13

Report No.: BCTC2607310566-4E

Test Standards: 47 CFR Part 15 Subpart C (clause 15.225)
ANSI C63.10-2020

Test Results: PASS

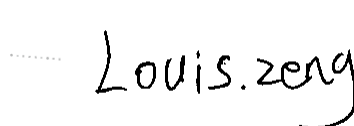
Remark: This is NFC radio test report.

Prepared by :



Mike Zheng

Reviewer by :



Louis Zeng

Approved by:



Sewen Guo

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Table Of Content

Test Report Declaration	Page
1. Version	4
2. Test Summary	5
3. Measurement Uncertainty	6
4. Product Information And Test Setup	7
4.1 Product Information	7
4.2 Test Setup Configuration	8
4.3 Support Equipment	8
4.4 Channel List	9
4.5 Test Mode	9
5. Test Facility And Test Instrument Used	10
5.1 Test Facility	10
5.2 Test Instrument Used	10
6. Conducted Emissions	13
6.1 Block Diagram Of Test Setup	13
6.2 Limit	13
6.3 Test Procedure	13
6.5 Test Result	14
7. Radiated Emissions	16
7.1 Block Diagram Of Test Setup	16
7.2 Limit	17
7.3 EUT Operating Conditions	18
7.4 Test Result	18
8. Radiated Band Emission Measurement	26
8.1 Block Diagram Of Test Setup	26
8.2 Limit	26
8.3 Test Procedure	27
8.4 EUT Operating Conditions	28
8.5 Test Result	28
9. Bandwidth Test	29
9.1 Block Diagram Of Test Setup	29
9.2 Test Procedure	29
9.3 EUT Operation Conditions	29
9.4 Test Result	30
10. Transmitter Frequency Stability	31
10.1 Block Diagram Of Test Setup	31
10.2 Limit	31
10.3 Test Procedure	31
10.4 EUT Operating Conditions	32
10.5 Test Result	33
11. Antenna Requirement	34
11.1 Standard Requirement	34
11.2 EUT Antenna	34
12. EUT Test Setup Photographs	35

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2607310566-4E	2026-09-17	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No	Results
1	Conducted Emission	15.207	PASS*
2	Radiated Spurious Emission	Part 15.209(a), 15.225(d)	PASS*
3	20dB Occupied Bandwidth	15.215	PASS*
4	Band Edge Emission	Part 15.209(a), 15.225(a)(b)(c)	PASS*
5	Transmitter Frequency Stability (Temperature & Voltage Variation)	Part 15.225(e)	PASS*
6	Antenna Requirement	15.203	PASS
NOTE1: N/A (Not Applicable) NOTE2:"*" indicates that the test results are determined base on 47 CFR Part 15 Subpart C (clause 15.225). And the test results are took into account measurement uncertainty (see section 3 for measurement uncertainty information)			

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2:2011/AMD2:2018. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=5.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=5.0dB
5	Conducted Emission(150kHz-30MHz)	U=3.0dB
6	Power Spectral Density	U=3.46dB
7	Peak Power	U=0.31dB
8	Occupied Bandwidth/Frequency Range	U=3.46%
9	Conducted output power uncertainty	U=0.55dB
10	Frequency Error	U= 53.50 Hz
11	Frequency Drift	U=0.64 KHz
12	Temperature	U= 0.59 °C
13	Humidity	U= 5.3 %

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4. Product Information And Test Setup

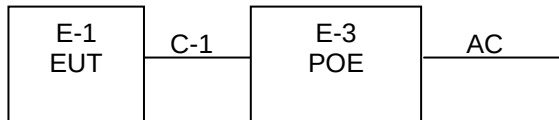
4.1 Product Information

Model/Type Reference:	SN-M3207U-B, SN-M3204V-B
Model Differences:	The units we produce in the following models are the same in terms of electrical, mechanical, and physical structure; the only differences are the model name and color. In the end, we have the SN-M3207U-B as the test model.
Operation Frequency:	13.56 MHz
Modulation Type:	ASK
Number Of Channel	1 CH
Antenna installation:	Internal antenna
Ratings:	INPUT:DC 12V or POE 50-57V
Remark:	Remark: ☒ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. The laboratory assumes no responsibility for its authenticity. ☐ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information. The laboratory assumes no responsibility for its authenticity.

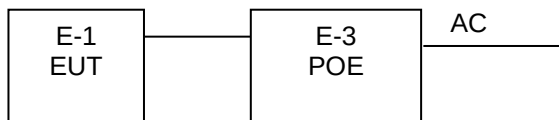
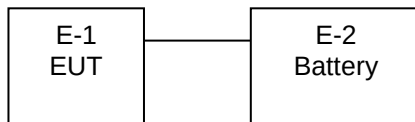
4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission



Radiated Spurious Emission



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	Face Recognition Terminal	N/A	SN-M3207U-B	N/A	EUT
E-2	Battery	N/A	N/A	N/A	Auxiliary
E-3	POE	N/A	DGS-1210-10P	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
N/A	N/A	N/A	N/A	N/A

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

Channel List	
Channel	Frequency(MHz)
01	13.56

4.5 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

For All Mode	Description
Mode 1	TX Mode

Link mode (Conducted emission and Radiated emission)	
Final Test Mode	Description
Mode 1	TX Mode

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Technology Co., Ltd.

Address: Room 101M, Unit 1, Building1, Pengyuan, No.18, Lilang Road, Shanglilang, Nanwan Subdistrict, Longgang District, Shenzhen, Guangdong, China.

The site and apparatus are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-1:2019 other equivalent standards.

FCC Test Firm Registration Number: 754702

ANAB certificate registration number is: CN3479

5.2 Test Instrument Used

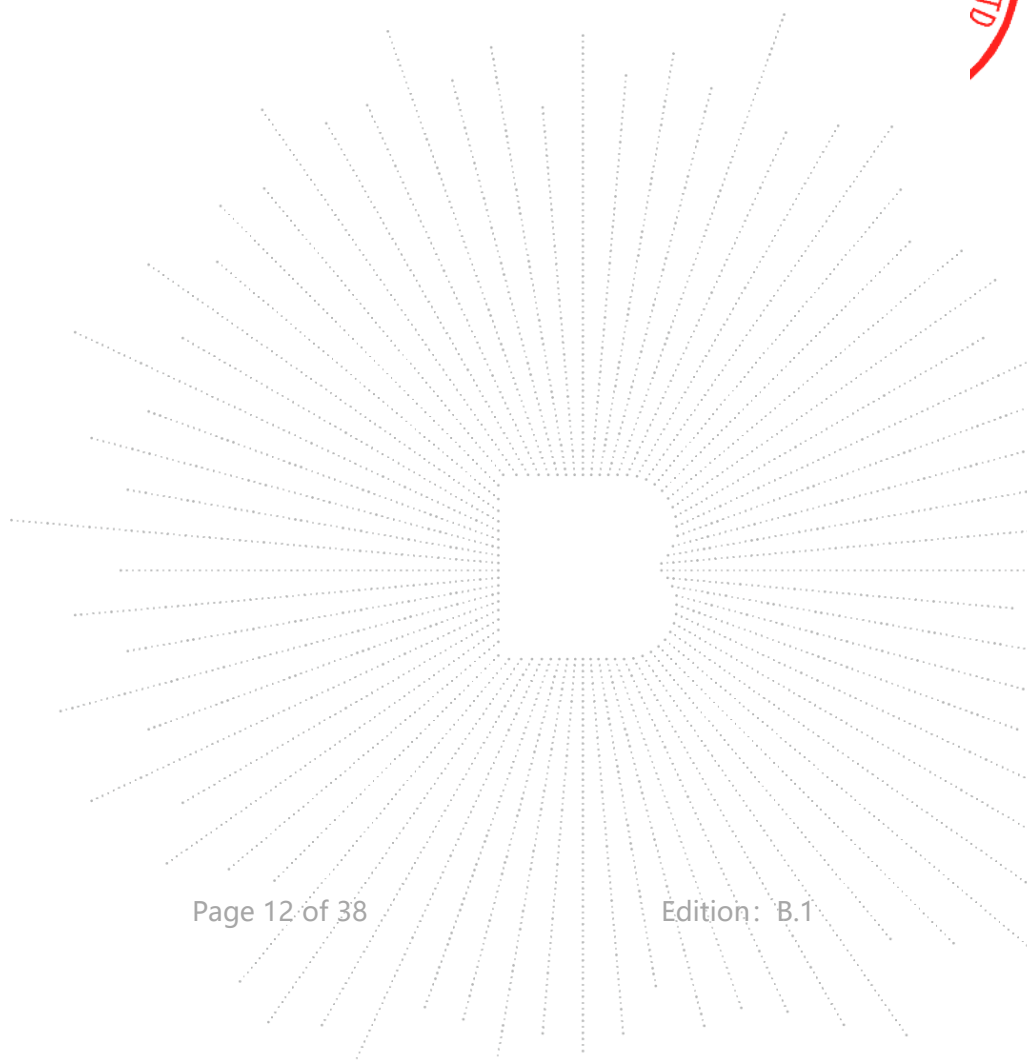
Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESCI	101421	2025.08.30	2026.08.29
AMN	SCHWHRZBECK	NSLK8128	05152	2026.01.22	2027.01.21
AMN	SCHWHRZBECK	NSLK8127	8127739	2025.09.16	2026.09.15
Pulse Limiter	SCHWHRZBECK	VTSD 9561-F-N	00547	2025.08.30	2026.08.29
Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Software	EZ-EMC	Ver.EMC-CON 3A1	/	/	/

Radiated disturbance 1#					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Shielded room	CRT	9*6*6	/	2023.08.02	2026.08.01
				2026.07.24	2029.07.23
Broadband antenna	Schwarzbeck	VULB9160	3369	2026.05.16	2027.05.15
Receiver	R&S	ESPI	101396	2025.08.30	2026.08.29
Preamplifier	Schwarzbeck	BBV9744	00342	2025.08.30	2026.08.29
Loop Antenna	Schwarzbeck	FMZB1519B	00014	2026.01.05	2027.01.04
RF cable 5# (9kHz-6GHz)	Yunyi	3M	/	2025.08.30	2026.08.29
RF cable 8# (9kHz-1GHz)	Yunyi	7M	/	2025.10.28	2026.10.27
Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Software	EZ-EMC	Ver.FA-03A2	/	/	/

Radiated Emissions Test (966 Chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	2023.09.25	2026.09.24
Loop Antenna	Schwarzbeck	FMZB1519B	00014	2026.01.05	2027.01.04
Broadband antenna	SCHWHRZBECK	VULB9168	01620	2025.08.29	2026.08.28
Horn antenna (1 GHz -18GHz)	SCHWARZBECK	BBHA 9120 D	2792	2025.08.29	2026.08.28
Horn antenna (18 GHz -40GHz)	SCHWARZBECK	BBHA9170	00822	2025.12.29	2026.12.28
Receiver	R&S	ESR	1316	2025.08.30	2026.08.29
Spectrum Analyzer	R&S	FSV40	101328	2026.01.22	2027.01.21
Amplifier	SCHWHRZBECK	BBV9744	568	2025.08.30	2026.08.29
Amplifier	EMC INSTRUMENTS CORPORATION	EMC0518A45 SEE	EMT-SZ2233	2025.08.30	2026.08.29
Amplifier (18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	2026.05.09	2027.05.08
Band 2.4G-2.5G Filter	COM-MW	ZBSF6-C5150 -5350-1117	2220980	2025.08.30	2026.08.29
RF cable 3# (9kHz-6GHz)	Yunyi	10M	/	2025.08.30	2026.08.29
RF cable 9# (9kHz-1GHz)	Yunyi	2M	/	2025.10.28	2026.10.27
RF cable 5# (1GHz -18GHz)	SKET	9M	18038626	2025.08.30	2026.08.29
RF cable 6# (1GHz -18GHz)	SKET	5M	#10	2025.09.05	2026.09.04
RF cable 10# (18GHz-40GHz)	/	2M	2M	2026.05.09	2027.05.08
RF cable 11# (18GHz-40GHz)	/	2.5M	2.5M	2026.05.09	2027.05.08
Temperature & Humidity	Wetest	HTC-1	/	2025.09.05	2026.09.04
Communication test set	R&S	CMW500	157483	2025.08.30	2026.08.29
Software	EZ-EMC	Ver.FA-03A2	/	/	/

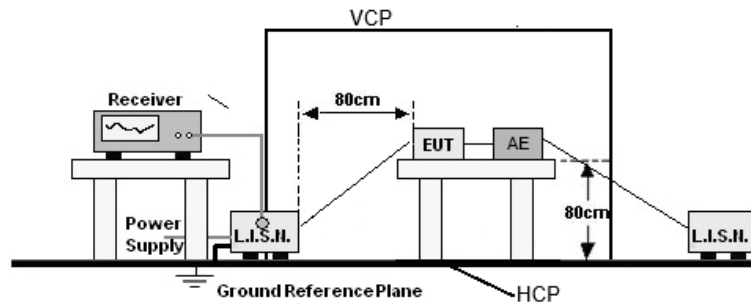


RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Spectrum Analyzer	Keysight	N9020A	MY51287403	2025.08.30	2026.08.29
Signal Generator	Keysight	N5182A	MY50144088	2025.08.30	2026.08.29
Power Sensor	Keysight	U2001	MY51250006	2025.10.28	2026.10.27
Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Communication test set	R&S	CMW500	157483	2025.08.30	2026.08.29
Radio frequency control box	MWRFtest	MW100-RFCB	\	\	\
Software	MWRFtest	MTS 8310	V 3.0.0.0	\	\
D.C. Power Supply	Elektro-Automatik GmbH & Co.KG	D-41747 Viersen	6230316	2025.09.30	2026.08.29
Temperature and humidity test chamber	Auchno	OJN-9606-408 L	19120183	2025.07.09	2026.07.08
				2026.07.07	2027.07.06



6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

Frequency (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Notes:

- *Decreasing linearly with logarithm of frequency.
- The lower limit shall apply at the transition frequencies.

6.3 Test Procedure

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

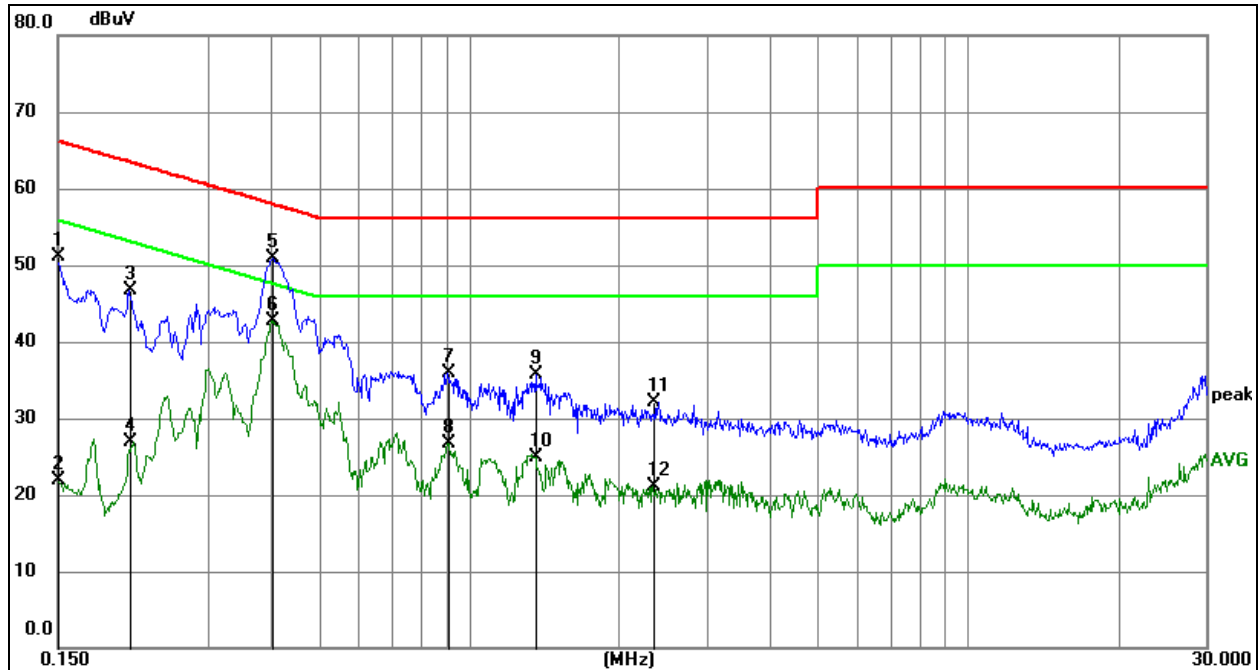
- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N.).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

6.5 Test Result

Temperature:	24.5 °C	Relative Humidity:	50%
Pressure:	101KPa	Test Voltage:	POE 54V
Test Mode:	Mode 1	Polarization:	L



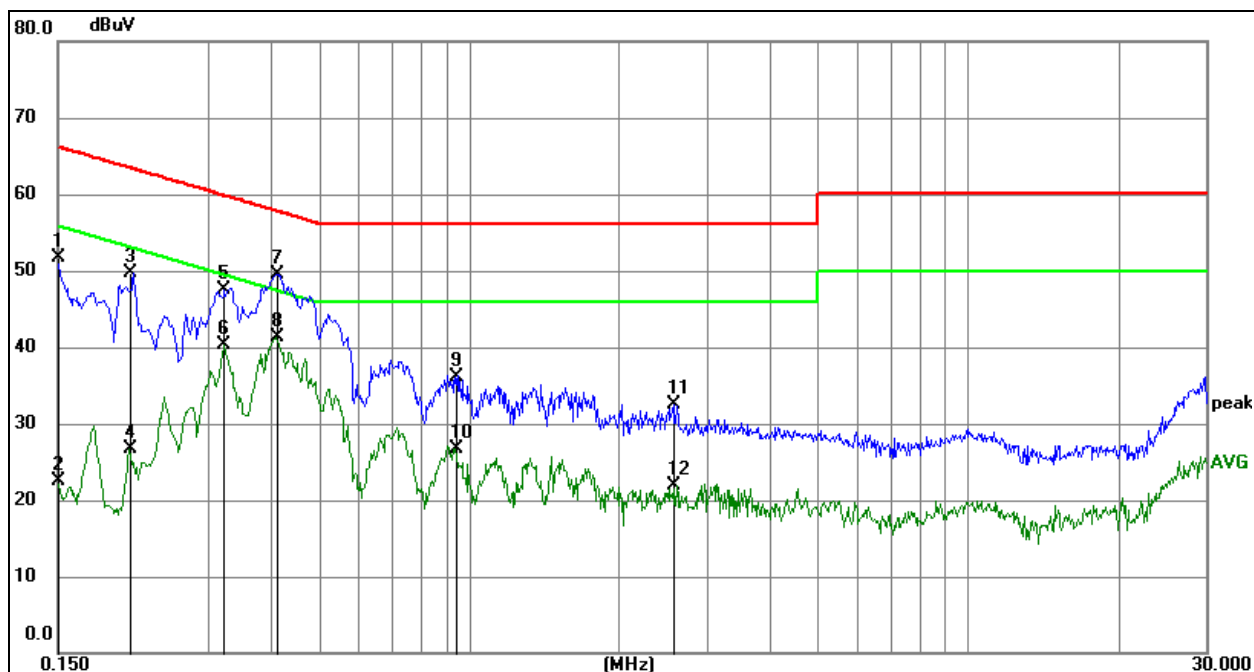
Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = LISN factor + Cable Loss+ Limiter (10dB).
3. Margin = (Reading+ Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	40.48	10.61	51.09	66.00	-14.91	QP
2	0.1500	11.37	10.61	21.98	56.00	-34.02	AVG
3	0.2084	36.17	10.51	46.68	63.27	-16.59	QP
4	0.2084	16.49	10.51	27.00	53.27	-26.27	AVG
5	0.4040	40.44	10.52	50.96	57.77	-6.81	QP
6 *	0.4040	32.22	10.52	42.74	47.77	-5.03	AVG
7	0.9059	25.31	10.53	35.84	56.00	-20.16	QP
8	0.9059	16.22	10.53	26.75	46.00	-19.25	AVG
9	1.3559	25.08	10.53	35.61	56.00	-20.39	QP
10	1.3559	14.46	10.53	24.99	46.00	-21.01	AVG
11	2.3368	21.63	10.55	32.18	56.00	-23.82	QP
12	2.3368	10.48	10.55	21.03	46.00	-24.97	AVG

* Indicates the worst data.

Temperature:	24.5 °C	Relative Humidity:	50%
Pressure:	101KPa	Test Voltage:	POE 54V
Test Mode:	Mode 1	Polarization:	N


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = LISN factor + Cable Loss+ Limiter (10dB).
3. Margin = (Reading+ Factor)–Limit

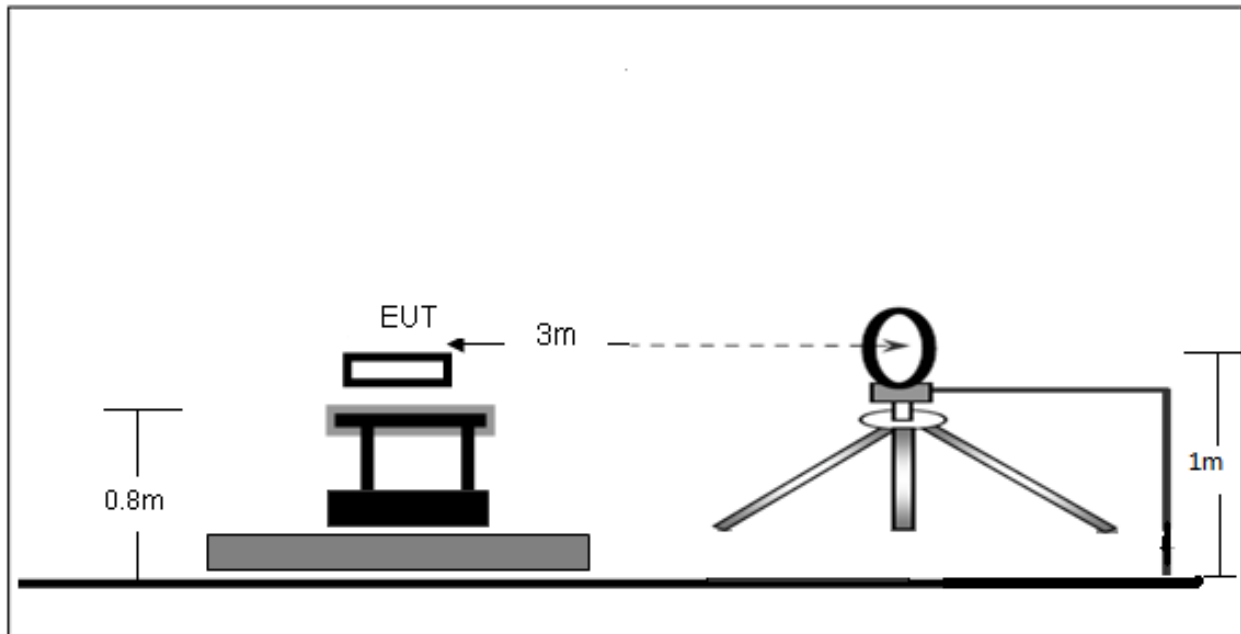
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	41.10	10.61	51.71	66.00	-14.29	QP
2	0.1500	11.91	10.61	22.52	56.00	-33.48	AVG
3	0.2084	39.19	10.51	49.70	63.27	-13.57	QP
4	0.2084	16.11	10.51	26.62	53.27	-26.65	AVG
5	0.3234	37.09	10.51	47.60	59.62	-12.02	QP
6	0.3234	29.71	10.51	40.22	49.62	-9.40	AVG
7	0.4109	38.94	10.52	49.46	57.63	-8.17	QP
8 *	0.4109	30.86	10.52	41.38	47.63	-6.25	AVG
9	0.9418	25.67	10.53	36.20	56.00	-19.80	QP
10	0.9418	16.12	10.53	26.65	46.00	-19.35	AVG
11	2.5800	21.93	10.55	32.48	56.00	-23.52	QP
12	2.5800	11.41	10.55	21.96	46.00	-24.04	AVG

* Indicates the worst data.

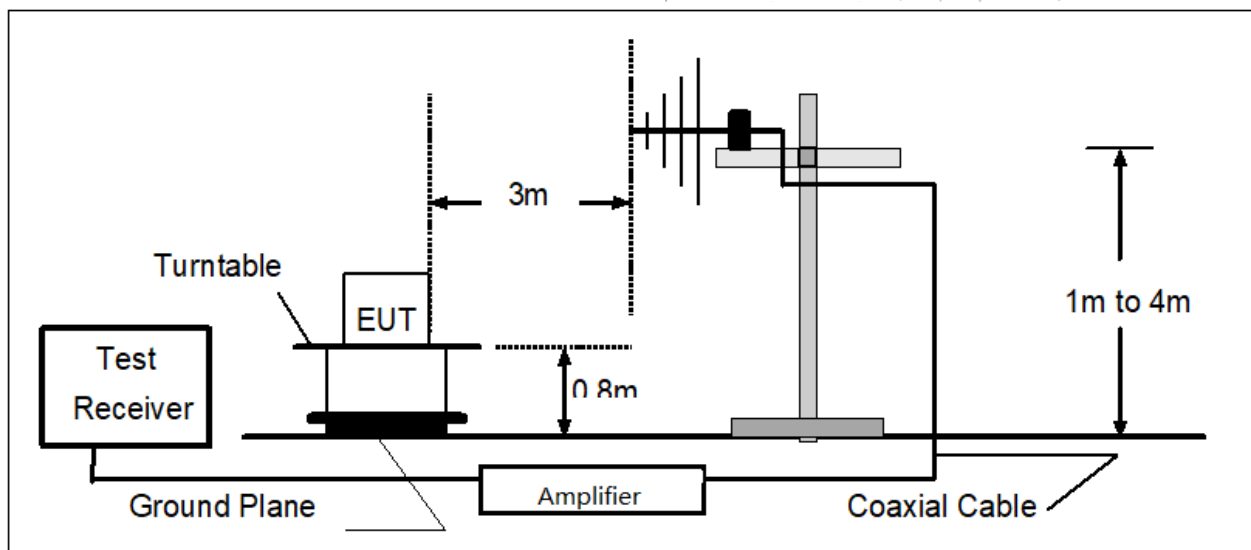
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



7.2 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance	
(MHz)	uV/m	(m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	$10000 * 2400/F(kHz)$	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	$100 * 24000/F(kHz)$	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

Below 1GHz test procedure as below:

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel.

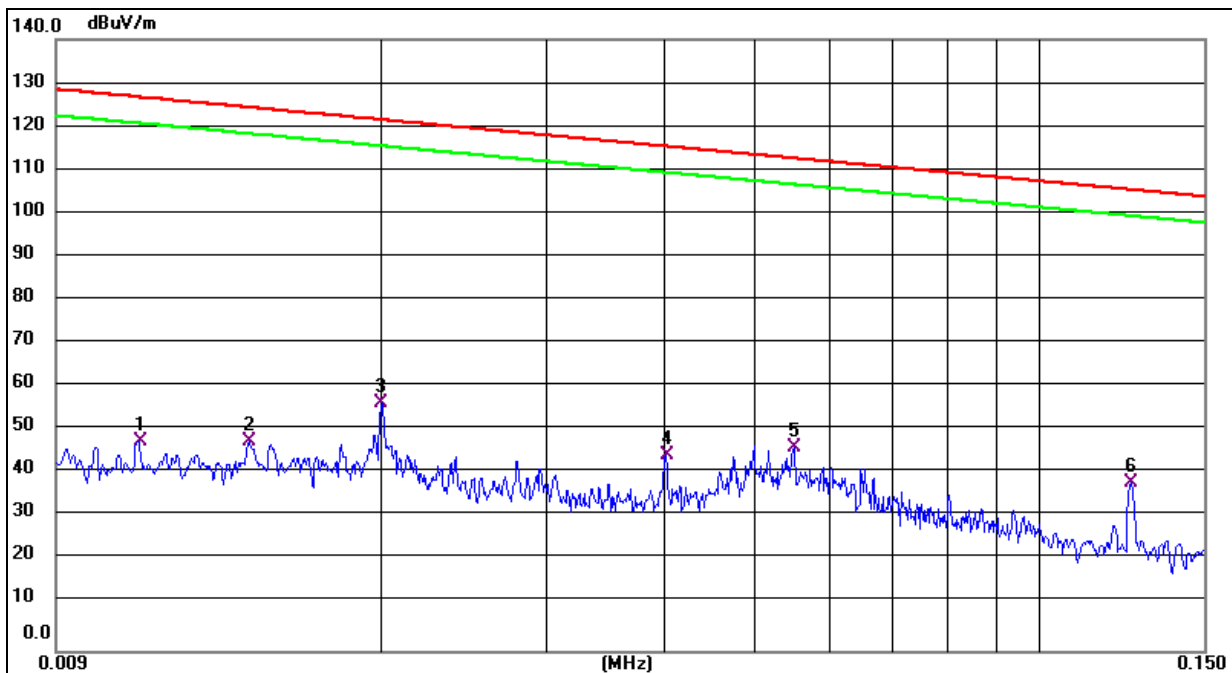
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

7.3 EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

7.4 Test Result

Temperature:	23.1°C	Relative Humidity:	55%
Pressure:	101 kpa	Test Voltage:	DC 12V
Test Mode:	Mode 1	Polarization:	Coaxial



Remark:

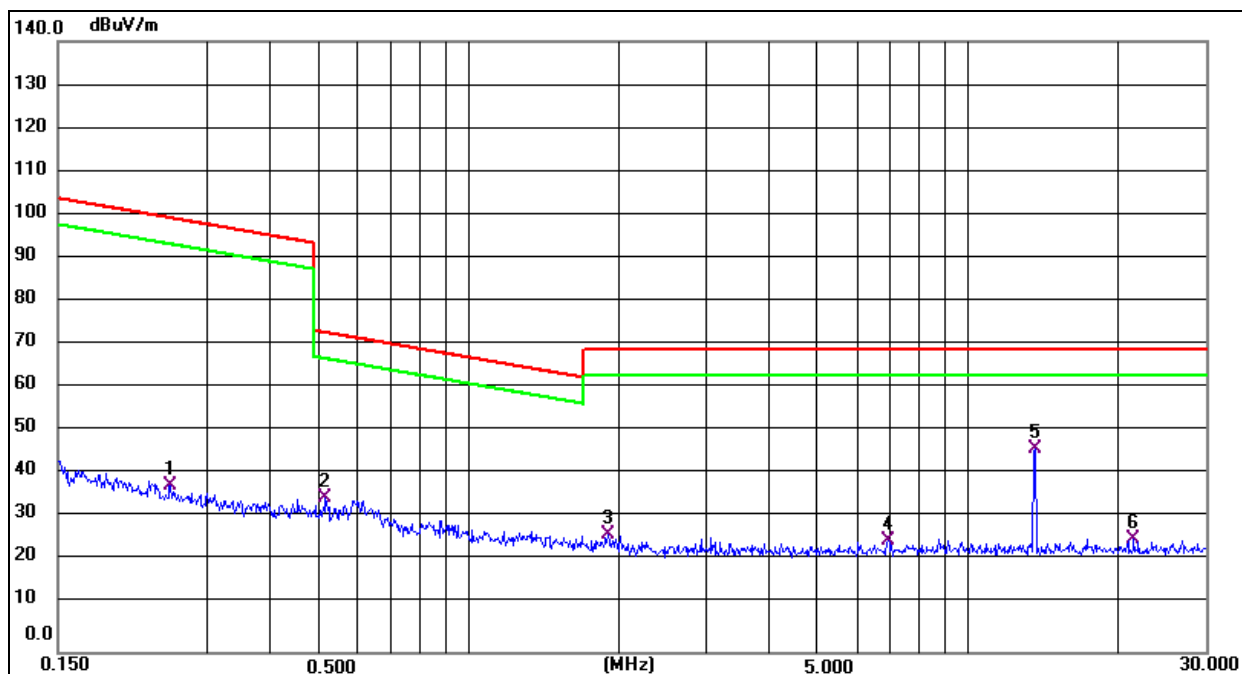
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0110	59.87	-11.67	48.20	126.76	-78.56	QP
2	0.0144	59.61	-11.63	47.98	124.42	-76.44	QP
3 *	0.0200	68.44	-11.52	56.92	121.57	-64.65	QP
4	0.0401	56.41	-11.44	44.97	115.53	-70.56	QP
5	0.0549	58.44	-11.54	46.90	112.80	-65.90	QP
6	0.1253	49.85	-11.17	38.68	105.64	-66.96	QP

* Indicates the worst data.

Temperature:	23.1°C	Relative Humidity:	55%
Pressure:	101 kpa	Test Voltage:	DC 12V
Test Mode:	Mode 1	Polarization:	Coaxial



Remark:

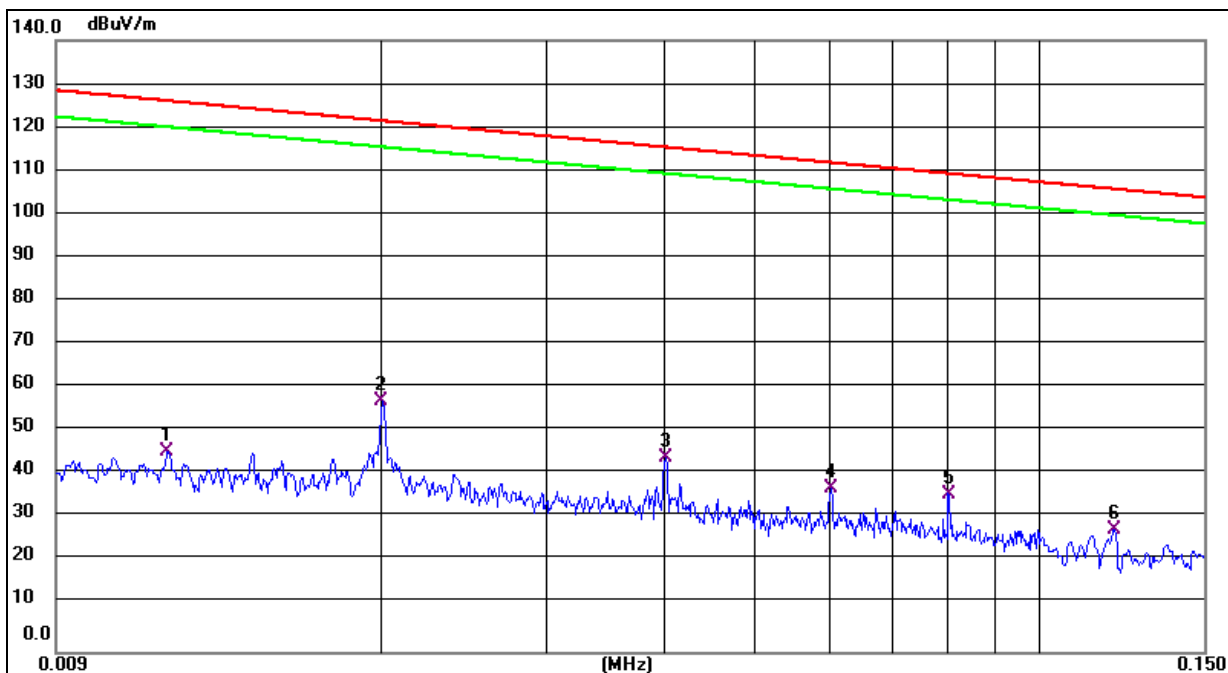
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2521	49.51	-11.05	38.46	99.57	-61.11	QP
2	0.5155	47.05	-11.40	35.65	73.36	-37.71	QP
3	1.8979	38.45	-11.38	27.07	69.54	-42.47	QP
4	6.9141	36.69	-10.84	25.85	69.54	-43.69	QP
5 *	13.6228	57.35	-10.72	46.63	69.54	-22.91	QP
6	21.4860	36.37	-10.37	26.00	69.54	-43.54	QP

* Indicates the worst data.

Temperature:	23.1°C	Relative Humidity:	55%
Pressure:	101 kpa	Test Voltage:	POE 54V
Test Mode:	Mode 1	Polarization:	Coaxial



Remark:

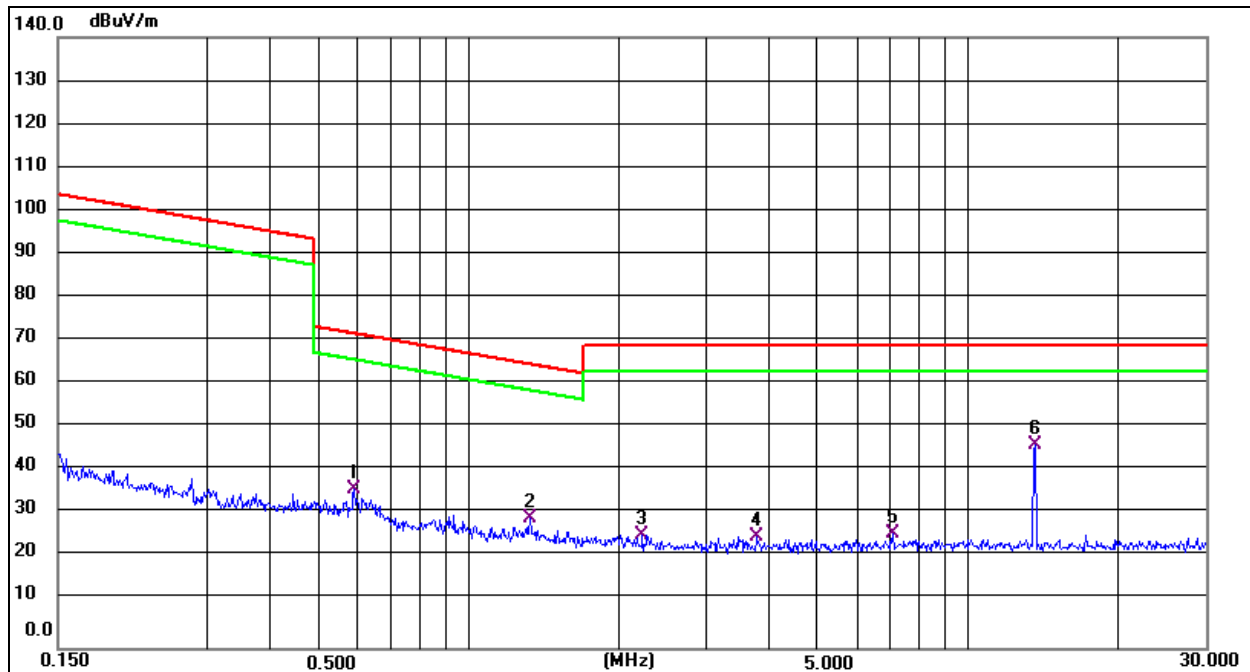
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0118	57.66	-11.65	46.01	126.15	-80.14	QP
2 *	0.0200	69.05	-11.52	57.53	121.57	-64.04	QP
3	0.0401	55.92	-11.44	44.48	115.53	-71.05	QP
4	0.0601	49.21	-11.56	37.65	112.02	-74.37	QP
5	0.0803	47.68	-11.28	36.40	109.50	-73.10	QP
6	0.1204	39.33	-11.20	28.13	105.98	-77.85	QP

* Indicates the worst data.

Temperature:	23.1°C	Relative Humidity:	55%
Pressure:	101 kpa	Test Voltage:	DC 12V
Test Mode:	Mode 1	Polarization:	Coaxial



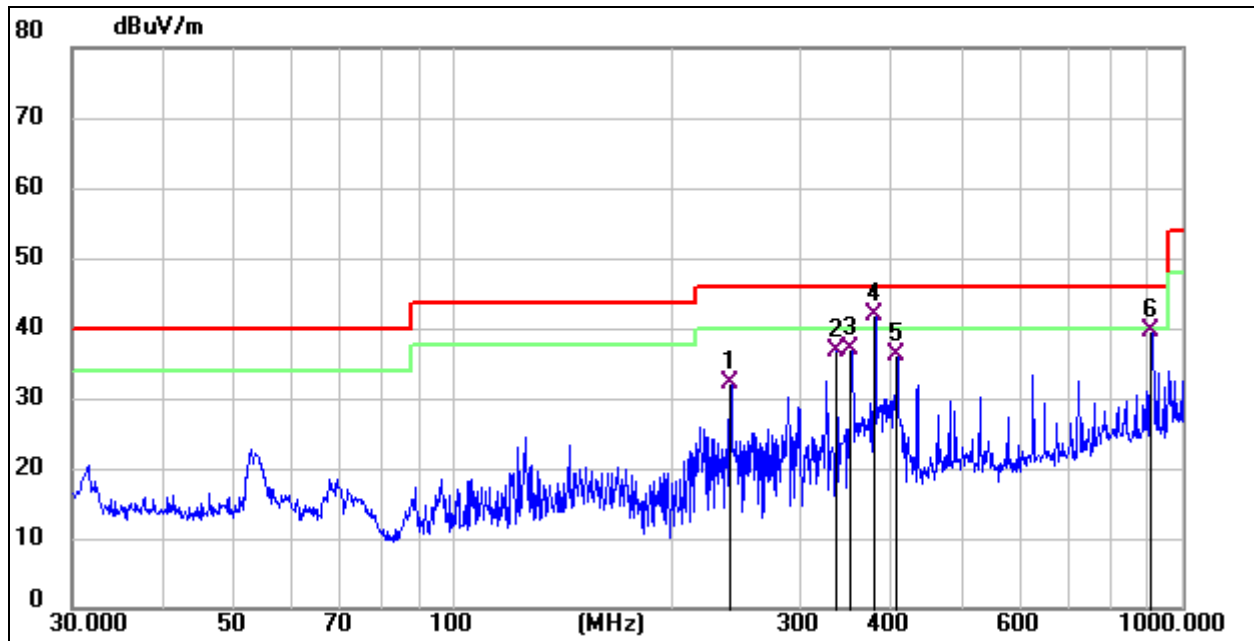
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.5885	47.94	-11.24	36.70	72.21	-35.51	QP
2	1.3237	41.31	-11.44	29.87	65.19	-35.32	QP
3	2.2249	37.54	-11.34	26.20	69.54	-43.34	QP
4	3.7793	36.79	-11.21	25.58	69.54	-43.96	QP
5	7.0622	37.32	-10.83	26.49	69.54	-43.05	QP
6 *	13.6228	57.39	-10.72	46.67	69.54	-22.87	QP

* Indicates the worst data.

Between 30MHz – 1GHz

Temperature:	25.7 °C	Relative Humidity:	59%
Pressure:	101KPa	Test Voltage :	DC 12V
Test Mode:	Mode 1	Polarization :	Horizontal

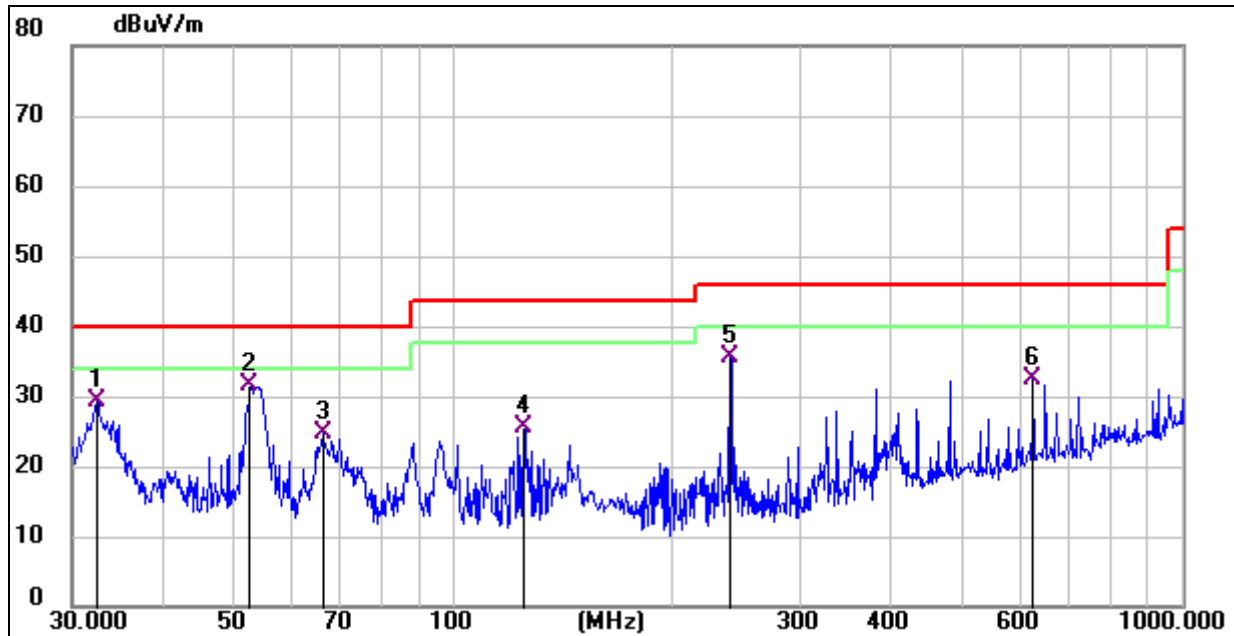


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	240.0154	44.38	-12.30	32.08	46.00	-13.92	QP
2	335.9959	47.20	-10.46	36.74	46.00	-9.26	QP
3	352.5723	47.12	-9.98	37.14	46.00	-8.86	QP
4 *	379.6922	51.03	-9.25	41.78	46.00	-4.22	QP
5	406.8482	44.62	-8.41	36.21	46.00	-9.79	QP
6	907.1184	38.85	0.71	39.56	46.00	-6.44	QP

* Indicates the worst data.

Temperature:	25.7 °C	Relative Humidity:	59%
Pressure:	101KPa	Test Voltage :	DC 12V
Test Mode:	Mode 1	Polarization :	Vertical

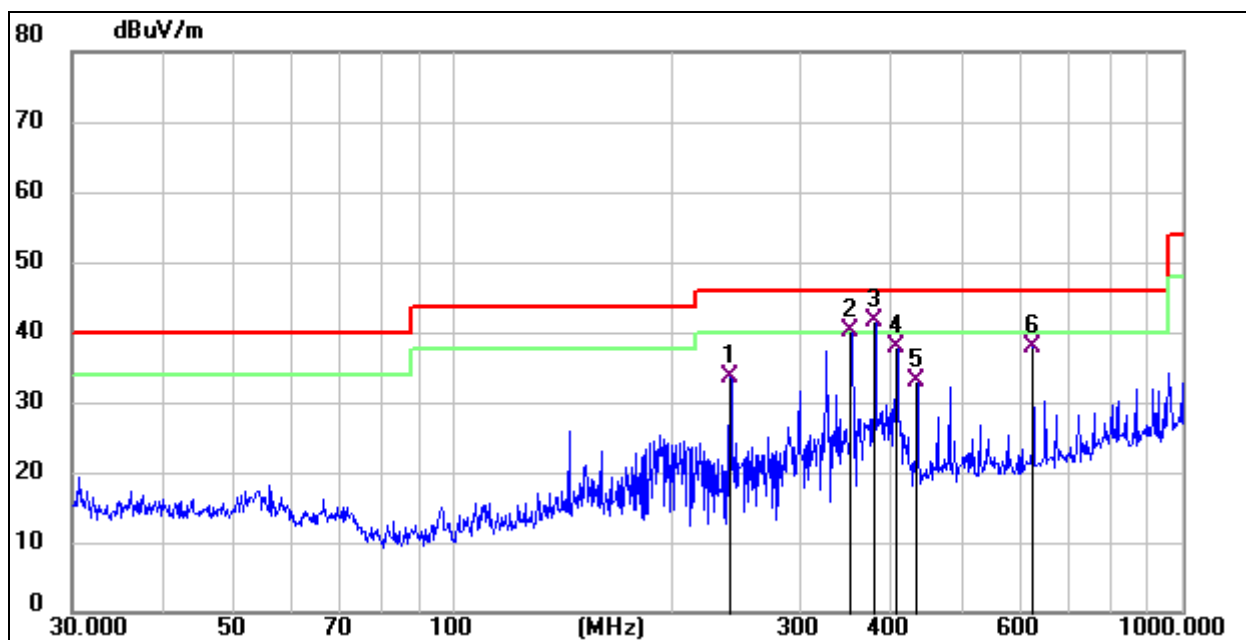


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	32.3075	40.95	-11.69	29.26	40.00	-10.74	QP
2 *	52.5815	42.23	-10.75	31.48	40.00	-8.52	QP
3	66.2662	37.79	-13.02	24.77	40.00	-15.23	QP
4	125.3724	36.79	-11.20	25.59	43.50	-17.91	QP
5	240.0154	47.93	-12.30	35.63	46.00	-10.37	QP
6	624.0560	36.38	-3.99	32.39	46.00	-13.61	QP

* Indicates the worst data.

Temperature:	257 °C	Relative Humidity:	59%
Pressure:	101KPa	Test Voltage :	POE 54V
Test Mode:	Mode 1	Polarization :	Horizontal



Remark:

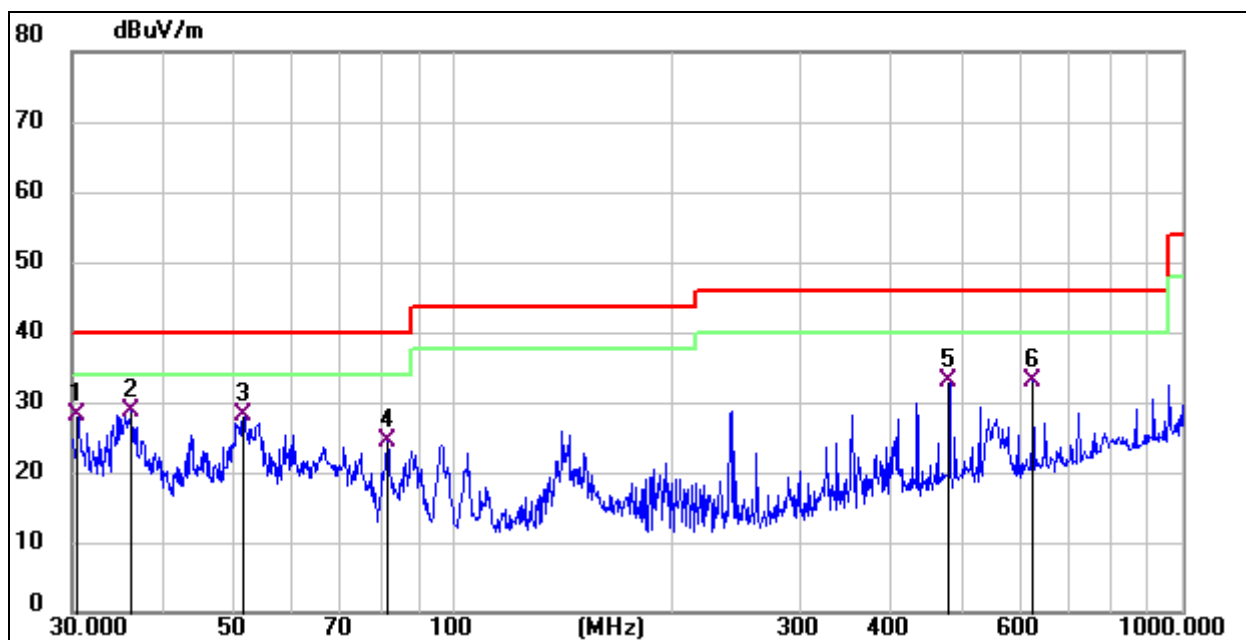
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	240.0154	45.88	-12.30	33.58	46.00	-12.42	QP
2 !	352.5723	50.03	-9.98	40.05	46.00	-5.95	QP
3 *	379.6922	50.77	-9.25	41.52	46.00	-4.48	QP
4	406.8482	46.28	-8.41	37.87	46.00	-8.13	QP
5	433.9636	40.27	-7.25	33.02	46.00	-12.98	QP
6	624.0560	41.90	-3.99	37.91	46.00	-8.09	QP

* Indicates the worst data.

Temperature:	25.7 °C	Relative Humidity:	59%
Pressure:	101KPa	Test Voltage :	POE 54V
Test Mode:	Mode 1	Polarization :	Vertical



Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Margin = (Reading + Factor) – Limit

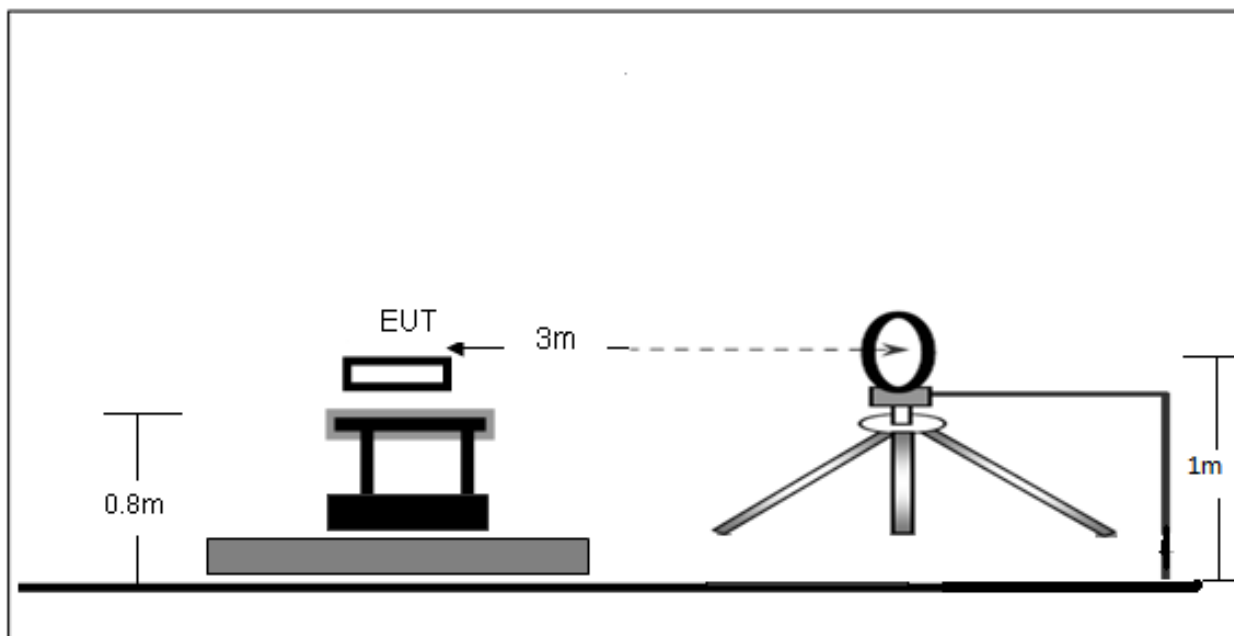
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.6164	39.57	-11.52	28.05	40.00	-11.95	QP
2 *	36.1441	40.13	-11.39	28.74	40.00	-11.26	QP
3	51.8067	38.72	-10.55	28.17	40.00	-11.83	QP
4	81.2212	39.25	-14.90	24.35	40.00	-15.65	QP
5	480.0224	39.20	-6.20	33.00	46.00	-13.00	QP
6	624.0560	36.93	-3.99	32.94	46.00	-13.06	QP

* Indicates the worst data.

8. Radiated Band Emission Measurement

8.1 Block Diagram Of Test Setup

Radiated Emission Test-Up Frequency Below 30MHz



8.2 Limit

FCC Part15 C Section 15.209 and 15.225

LIMITS OF RADIATED EMISSION MEASUREMENT (Below 30MHz)

- (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](#).

Field Strength of Fundamental Emissions and Spectrum Mask					
Emissions	(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m	(dBuV/m)@1m
Fundamental	15848	84.0	103.1	124.0	143.1
Quasi peak measurement of the fundamental.					

Spectrum Mask					
Freq. of Emission (MHz)	(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m	(dBuV/m)@1m
1.705~13.110	30	29.5	48.6	69.5	88.6
13.110~13.410	106	40.5	59.6	80.5	99.6
13.410~13.553	334	50.5	69.6	90.5	109.6
13.553~13.567	15848	84.0	103.1	124.0	143.1
13.567~13.710	334	50.5	69.6	90.5	109.6
13.710~14.010	106	40.5	59.6	80.5	99.6
14.010~30.000	30	29.5	48.6	69.5	88.6

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

8.3 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz for $f < 1$ GHz(30MHz to 1GHz), 200Hz for $f < 150$ KHz(9KHz to 150KHz), 9KHz for $f < 30$ MHz(150KHz to 30KHz)

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

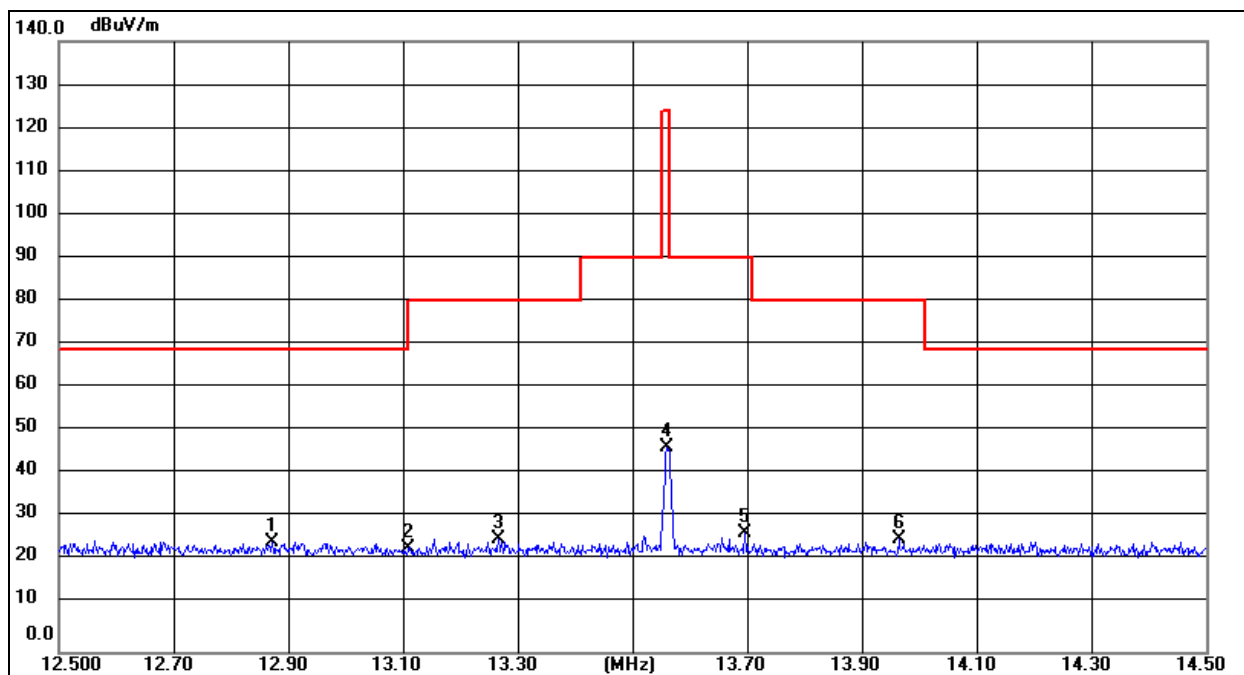
Follow the guidelines in ANSI C63.10-2020 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data. Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

8.4 EUT Operating Conditions

The EUT tested system was configured as the statements of 4.5 Unless otherwise a special operating condition is specified in the follows during the testing. The report only show the worst antenna Polarity's data.

8.5 Test Result



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	12.8720	36.07	-10.73	25.34	69.50	-44.16	QP
2	13.1100	34.87	-10.72	24.15	69.50	-45.35	QP
3	13.2660	36.65	-10.72	25.93	80.50	-54.57	QP
4	13.5600	57.67	-10.72	46.95	124.00	-77.05	QP
5	13.6960	38.17	-10.71	27.46	90.50	-63.04	QP
6	13.9640	36.75	-10.71	26.04	80.50	-54.46	QP

* Indicates the worst data.

9. Bandwidth Test

9.1 Block Diagram Of Test Setup



9.2 Test Procedure

FCC Part15 (15.215)	
Section	Test Item
15.215	Bandwidth

1. Set RBW = 1% to 5% of the OBW
2. Set the video bandwidth (VBW) $\geq$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

9.3 EUT Operation Conditions

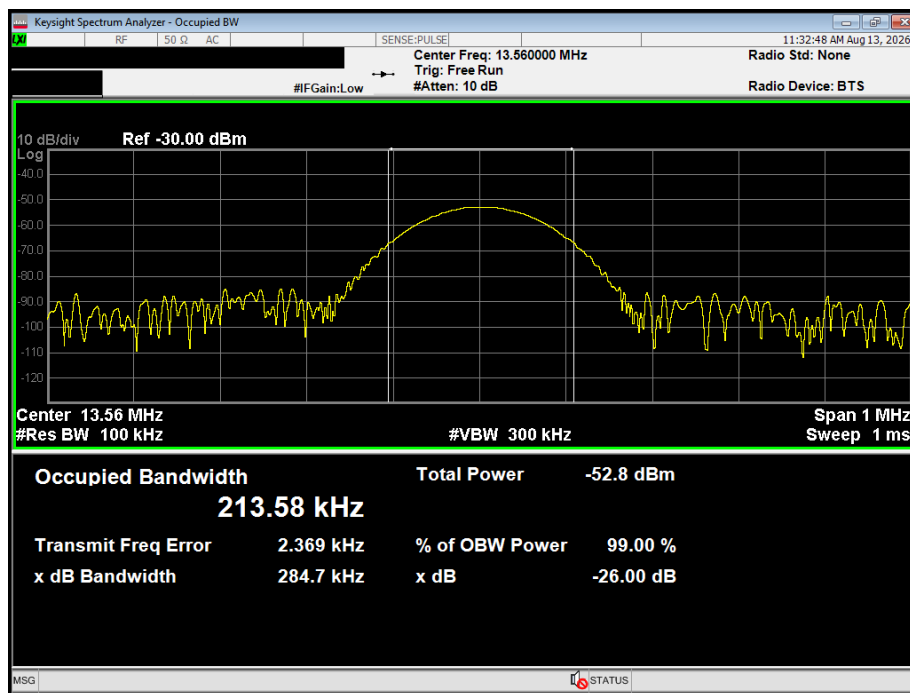
The EUT tested system was configured as the statements of 4.2 Unless otherwise a special operating condition is specified in the follows during the testing.

9.4 Test Result

Temperature:	26°C	Relative Humidity:	46%
Test Mode:	ASK	Test Voltage:	DC 12V

Frequency (MHz)	20dB bandwidth K(Hz)
13.56	284.7

TX CH 01



10. Transmitter Frequency Stability

10.1 Block Diagram Of Test Setup



10.2 Limit

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Limit: $\pm 0.01\%$ of 13.56MHz=1356Hz

10.3 Test Procedure

According to ANSI C63.10-2020 Section 6.8

Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that

have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 min, 5 min, and 10 min after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more than 10 °C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

10.4 EUT Operating Conditions

The EUT tested system was configured as the statements of 4.5 Unless otherwise a special operating condition is specified in the follows during the testing.

10.5 Test Result

Temperature:	26℃	Relative Humidity:	46%
Pressure:	101kPa	Test Voltage:	DC 12V
Test Mode :	TX Mode		

Test Conditions			Frequency Deviation		Limit(Hz)	Result
Frequency MHz	Power(V)	Temperature (℃)	Measured Freq. (MHz)	Frequency Error(Hz)		
13.56	12	-20	13.5421	-17.9	1356	PASS
	12	-10	13.5463	-13.7	1356	
	12	0	13.5379	-22.1	1356	
	12	10	13.5503	-9.7	1356	
	12	20	13.5416	-18.4	1356	
	12	30	13.5473	-12.7	1356	
	12	40	13.5402	-19.8	1356	
	12	50	13.5455	-14.5	1356	
	10.2	20	13.5496	-10.4	1356	
	13.8	20	13.5396	-20.4	1356	

11. Antenna Requirement

11.1 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 permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

11.2 EUT Antenna

The EUT antenna is internal antenna, It comply with the standard requirement.

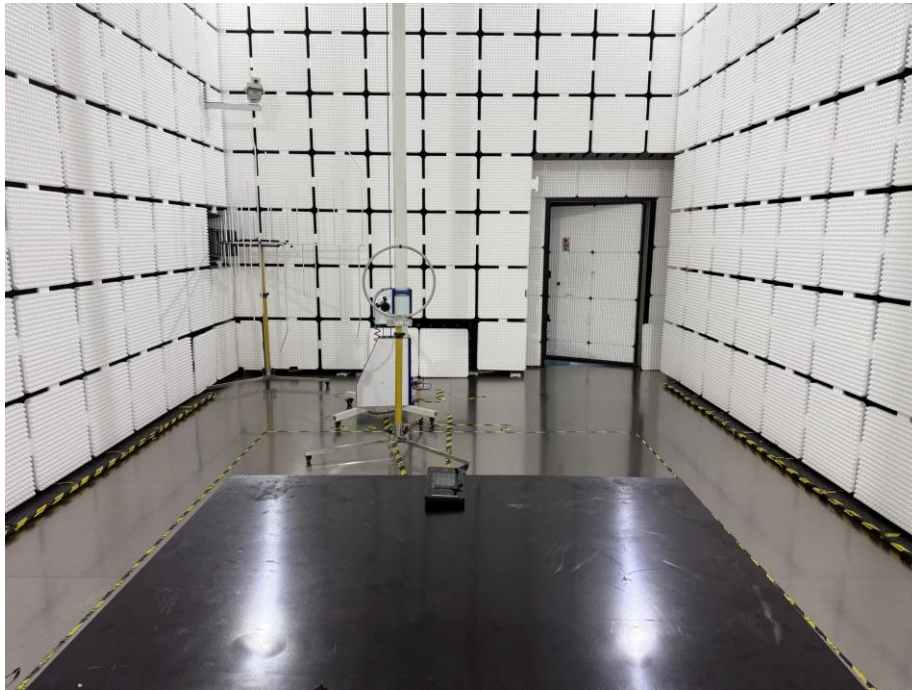
12. EUT Test Setup Photographs

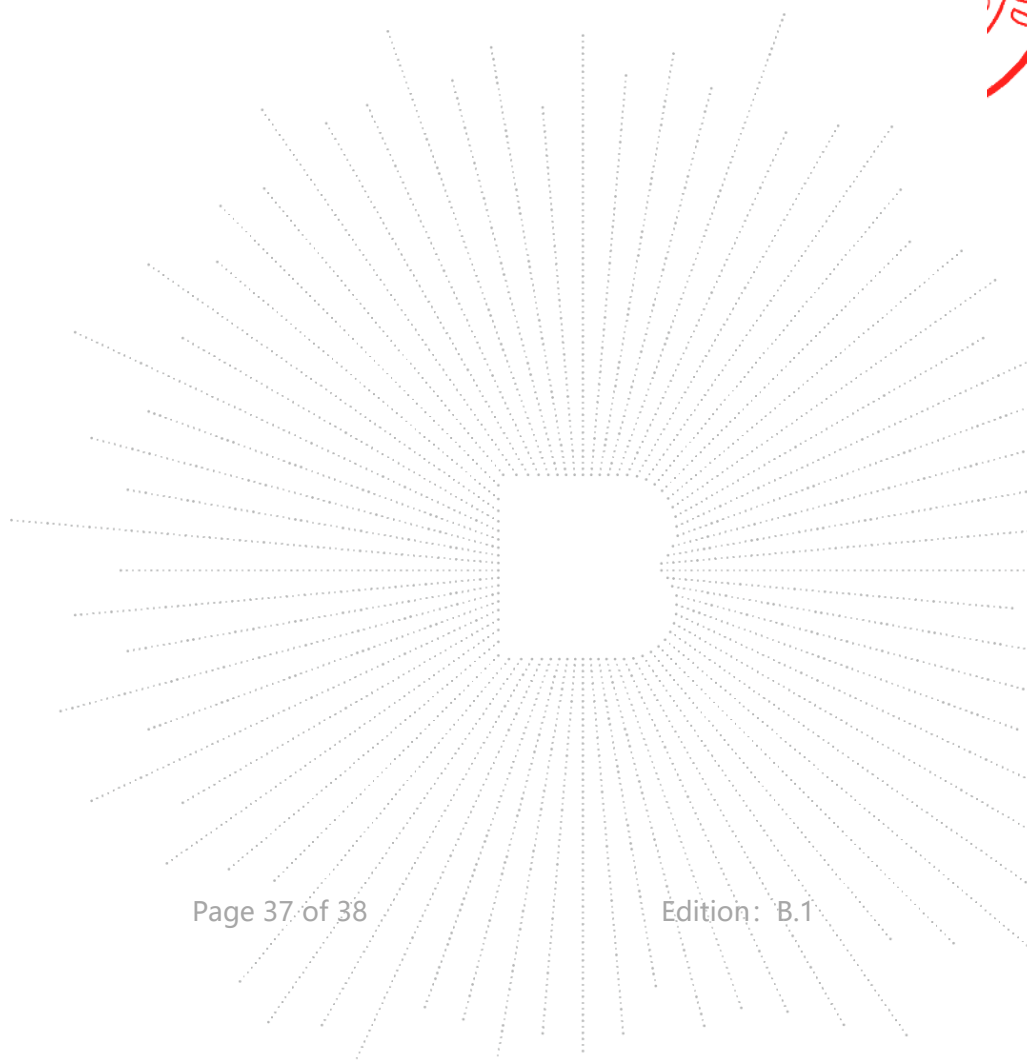
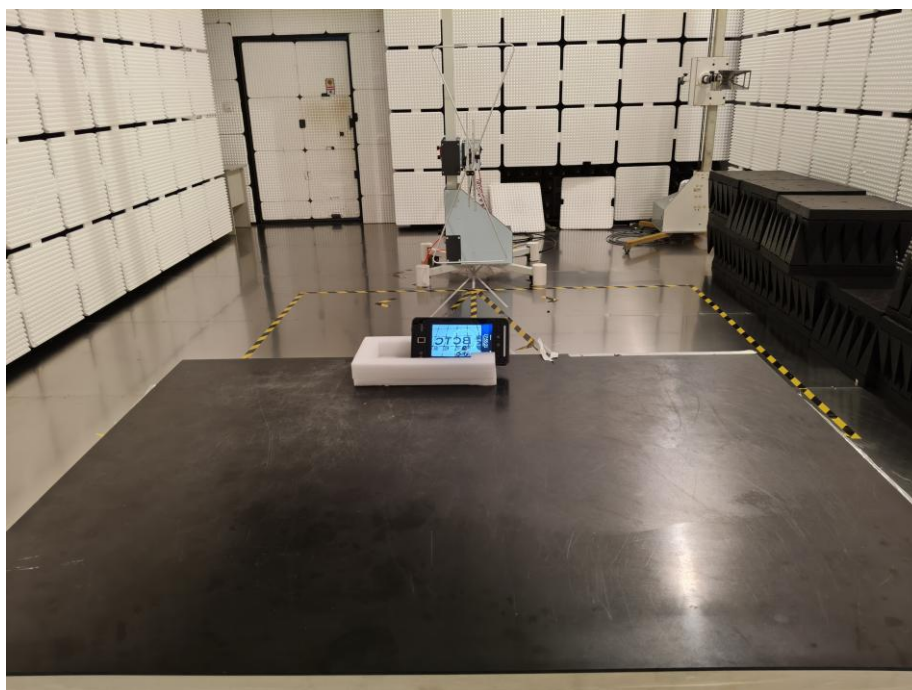
Conducted emissions



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Radiated Measurement





STATEMENT

1. The equipment lists are traceable to the International System of Units (SI)
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC 17025:2017.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****