



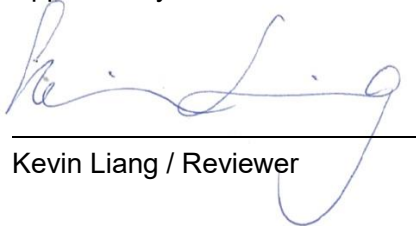
RADIO TEST REPORT

Applicant : Ubiquiti Inc.
Address : 685 Third Avenue, New York, New York 10017,
USA
Equipment : Retrofit Reader
Model No. : UA-Retrofit-Reader-W, UA-Retrofit-Reader-B
Trade Name : UBIQUITI
FCC ID : SWX-UARR

I HEREBY CERTIFY THAT :

The sample was received on Aug. 28, 2025 and the testing was completed on Sep. 09, 2025 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:


Kevin Liang / Reviewer

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





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History of this test report

Report No.	Issued Date	Description
25070579-TRFCC01	Sep. 16, 2025	Original



1. Summary of Test Procedure and Test Results

1.1. Applicable Standards

ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024

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

Frequency Range	BLE: 2400MHz-2483.5MHz NFC: 13.553MHz-13.567MHz
Center Frequency Range	BLE: 2402-2480MHz NFC: 13.56MHz
Modulation Type	BLE: GFSK NFC: ASK
Modulation Technology	BLE: DTS
Data Rate	BLE: GFSK: 1Mbps
Antenna Type	BLE: PIFA Antenna NFC: Loop Antenna
Antenna Gain	BLE: 5.0 dBi NFC: 0 dBi

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

Difference description:

Model No.	External Color
UA-Retrofit-Reader-W	White
UA-Retrofit-Reader-B	Black

*Model No.: UA-Retrofit-Reader-W is the test sample.

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.
- d. Hardware control was executed to transmit and receive data via NFC.
- c. The test Model No. is UA-Retrofit-Reader-W. The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode 1	TX Mode, DC 12V from DC Power Supply AC 120V/60Hz
Test Mode 2	TX Mode, DC 12V from DC Power Supply AC 240V/60Hz
caused "Test Mode 2" generated the worst case, it was reported as the final data.	
Radiation Emissions (9kHz ~ 30MHz)	
Test Mode 1	R/W Free ISO 14443A, DC 12V from DC Power Supply AC 120V/60Hz
Test Mode 2	R/W Free ISO 14443B, DC 12V from DC Power Supply AC 120V/60Hz
Test Mode 3	Locked ISO 15693, DC 12V from DC Power Supply AC 120V/60Hz
caused "Test Mode 2" generated the worst case, it was reported as the final data.	
Radiation Emissions (30MHz ~ 1GHz)	
Test Mode 1	TX Mode, DC 12V from DC Power Supply AC 120V/60Hz
Test Mode 2	TX Mode, DC 12V from DC Power Supply AC 240V/60Hz
caused "Test Mode 2" generated the worst case, it was reported as the final data.	

**2.4. Description of Test System**

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
DC Power Supply	Gwinstek	GPR-360600	N/A	N/A
NFC Card	Tiananxin	RW Free ISO14443-4A	N/A	N/A

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
DC Power Supply	Gwinstek	GPR-360600	N/A	N/A
NFC Card	Tiananxin	RW Free ISO14443-4A	N/A	N/A
NFC Card	Tiananxin	RW Free ISO14443-4B	N/A	N/A
NFC Card	Tiananxin	Locked ISO15693	N/A	N/A

AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
DC Power Supply	Gwinstek	GPR-360600	N/A	N/A
NFC Card	Tiananxin	RW Free ISO14443-4B	N/A	N/A



2.5. General Information of Test

Organization	CerpPASS Technology Corp.		
☒ 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	
Frequency Range Investigated	Conducted: from 150kHz to 30 MHz Radiation: from 9kHz to 10,000MHz		
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
Test Item Frequency Stability	RFCON01-NK	2025/09/09	24.2°C / 51%	Leon Huang
Radiated Emissions	3M02-NK	2025/09/08	18.6°C / 62%	Park Chen
AC Power Line Conducted Emission	CON02-NK	2025/09/08	26.1°C / 59%	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
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	369	2025/02/17	2026/02/16
Active Loop Antenna	Schwarzbeck	FMZB 1513	00414	2025/02/18	2026/02/17
Horn Antenna	EMCO	3115	31589	2025/02/20	2026/02/19
Horn Antenna	EMCO	3116	31974	2025/02/20	2026/02/19
EMI Receiver	R&S	ESR 7	101906	2025/05/19	2026/05/18
Spectrum Analyzer	R&S	FSV3044	101744	2025/04/23	2026/04/22
Preamplifier	Agilent	8449B	3008A01954	2025/02/12	2026/02/11
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2024/10/15	2025/10/14
Preamplifier	EM Electronics corp.	EM330	60659	2024/12/16	2025/12/15
Cable-4m (9k-3G)	EMEC	RG-223	18274M	2025/07/02	2026/07/01
Cable-3in1 (30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2025/02/21	2026/02/20
Cable-0.5m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2025/02/26	2026/02/25
Cable-3m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2025/02/26	2026/02/25
Cable-8m (1G-26.5G)	WOKEN	WCBA-WCA2 03SM	CCE1374	2025/02/26	2026/02/25
Cable-3m (10M-40G)	HUBER SUHNER	SF102	804619/2	2024/10/14	2025/10/13
Cable-1m (10M-40G)	HUBER SUHNER	SF102	804398/2	2024/10/14	2025/10/13
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA
High Pass Filter	WOKEN	WFIL-H3000-18000F-03	WR377WC2B1	2024/10/15	2025/10/14
Notch Filter	Warison	WFIL-N5925-7125F-04	WRQ4BFWC4M1	2025/02/21	2026/02/20
Hipass Filter	Warison	WFIL-H7500-18000F	WRQ4BFWC2J1	2025/02/21	2026/02/20



Test Item	RF Conducted				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2025/04/23	2026/04/22
TEMP & HUMI CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2025/07/21	2026/07/20

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	ESR 7	101906	2025/05/19	2026/05/18
LISN	Schwarzbeck	NSLK 8127	1197	2025/02/26	2026/02/25
Two-Line V-Network	R&S	ENV216	101584	2025/02/26	2026/02/25
Cable-4m (9k-3G)	EMEC	RG-223	18274M	2025/07/02	2026/07/01
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	Loop Antenna
Antenna Gain	0 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 C63.10-2020+Cor.1-2023 and ANSI C63.10a-2024. 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

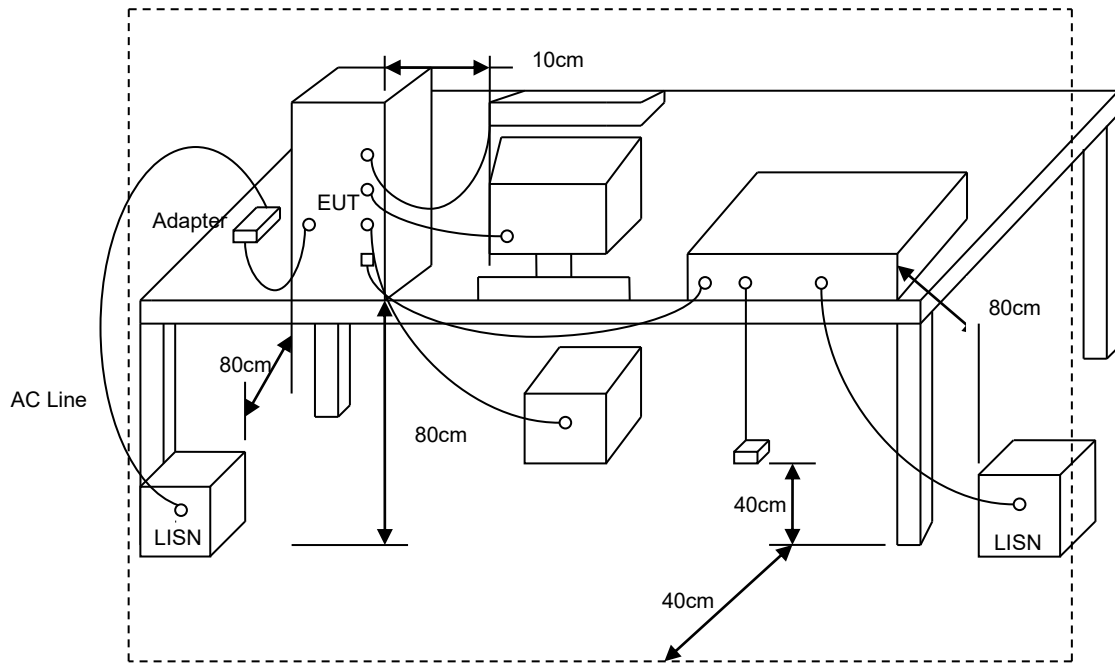
*Decreases with the logarithm of the frequency.

5.2. Test Procedures

- 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.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

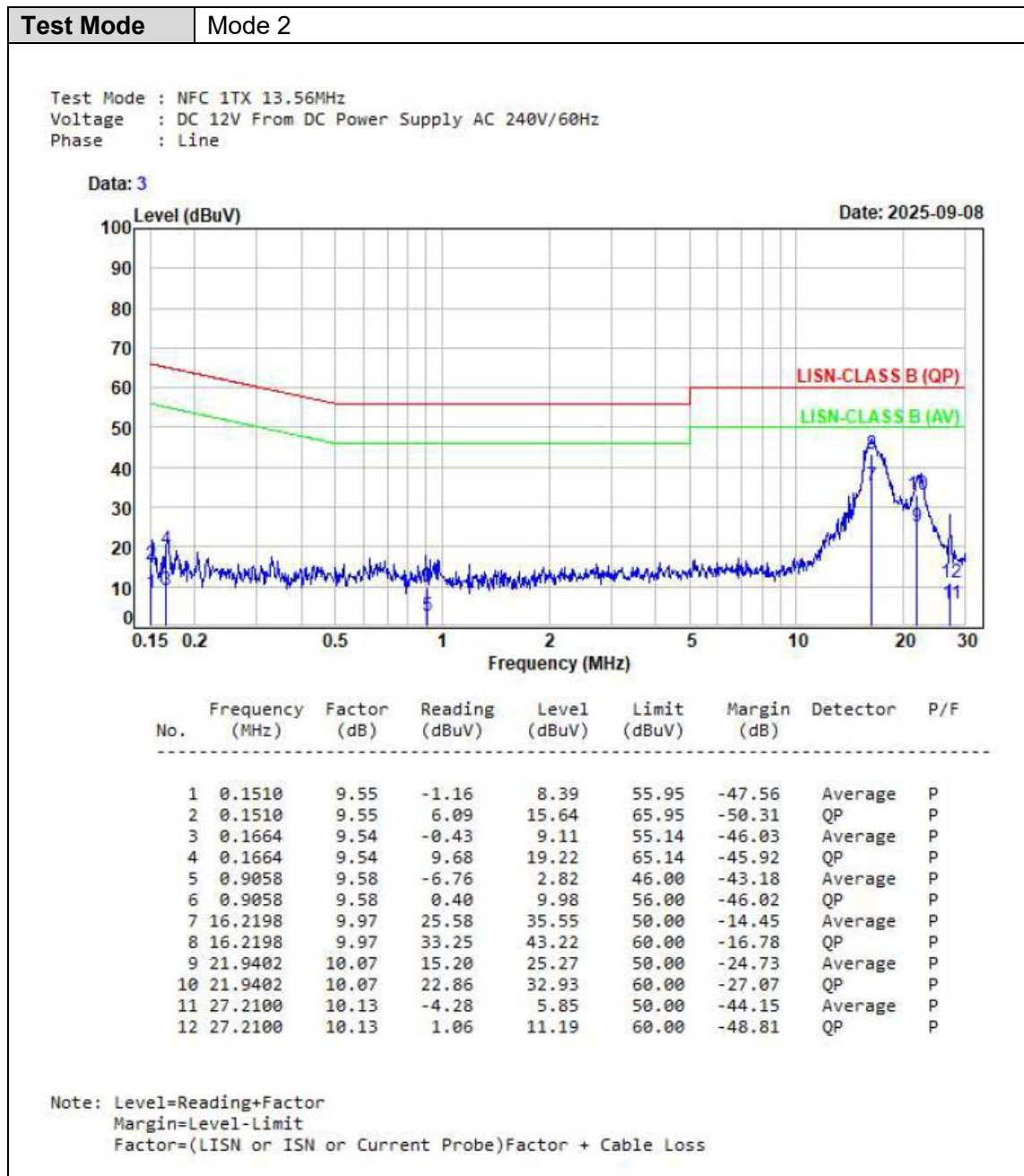


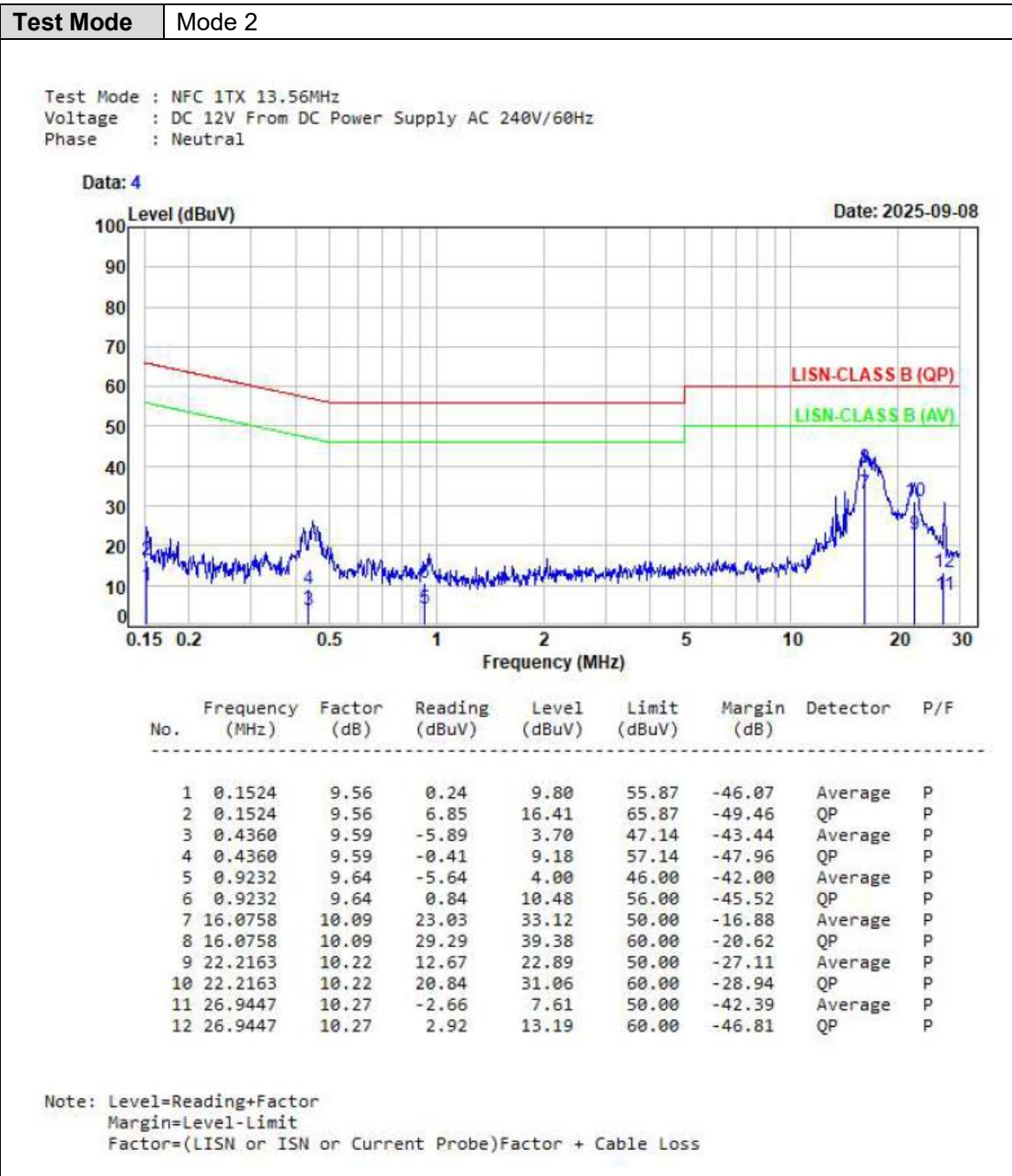
5.3. Typical Test Setup





5.4. Test Result and Data







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

Note 1: When the measurement frequency is less than 30 MHz, the distance factor of 300m to 3m is $40 \cdot \log(300/3)=80\text{dB}$, and the limit value needs to compensate the distance factor of 80dB.

Note 2: When the measurement frequency is less than 30 MHz, the distance factor of 30m to 3m is $40 \cdot \log(30/3)=40\text{dB}$, and the limit value needs to compensate the distance factor of 40dB.

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.

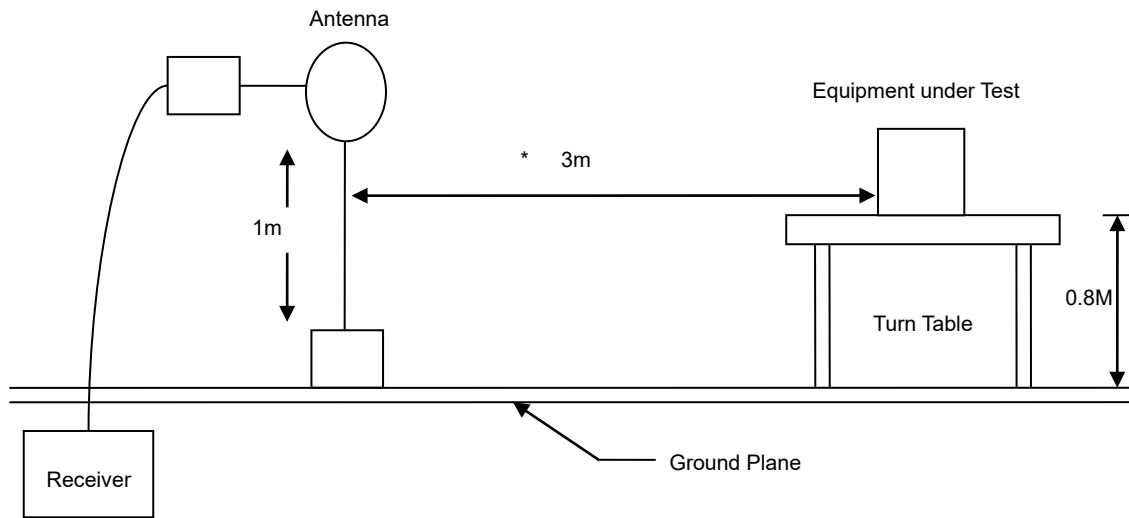
Note:

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

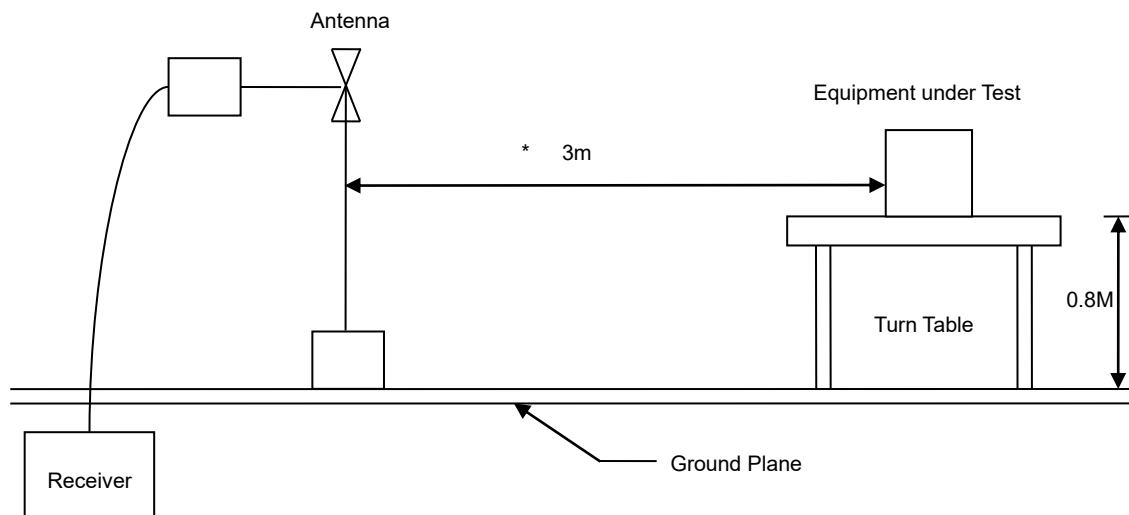


6.3. Typical Test Setup Layout of Radiated Emission

Below 30MHz test setup



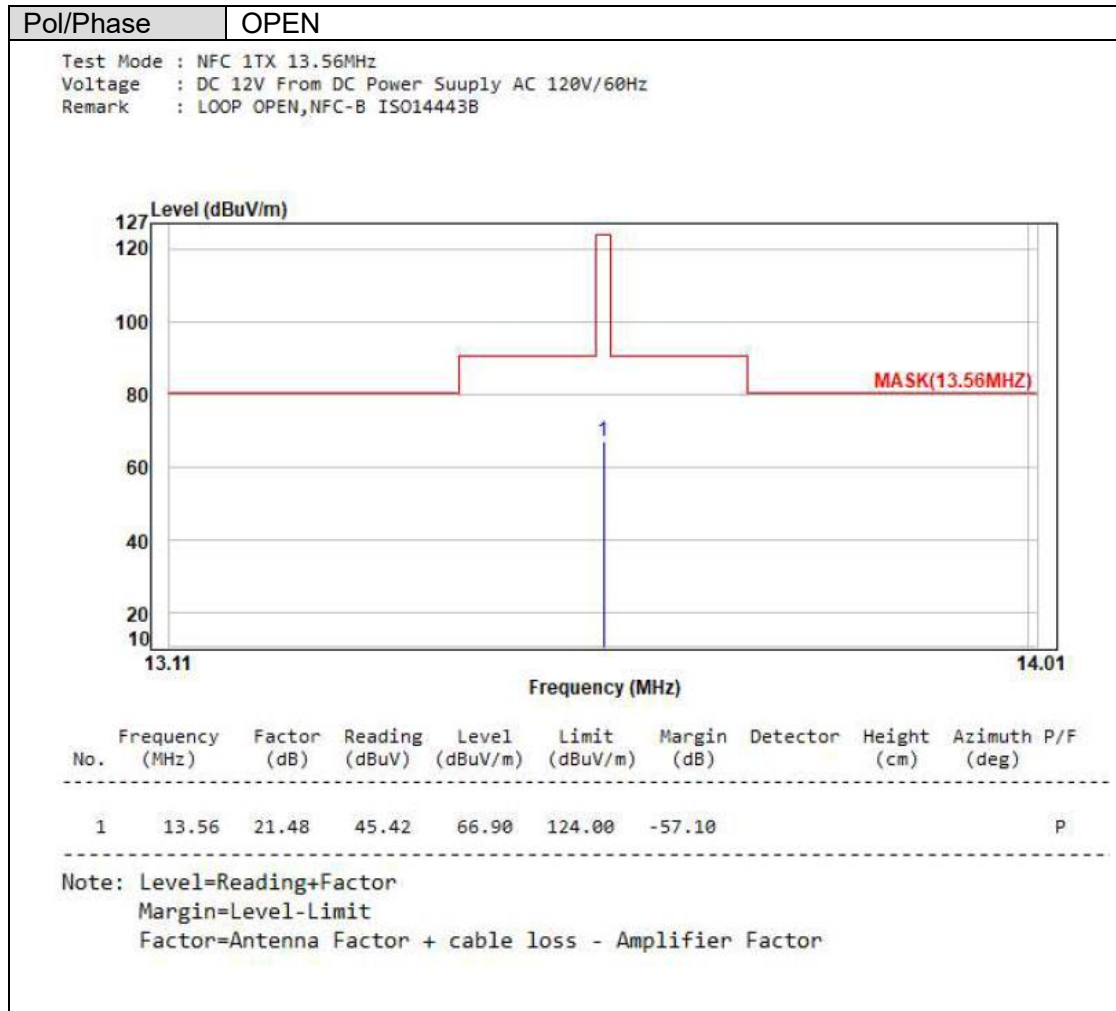
30MHz- 1GHz Test Setup

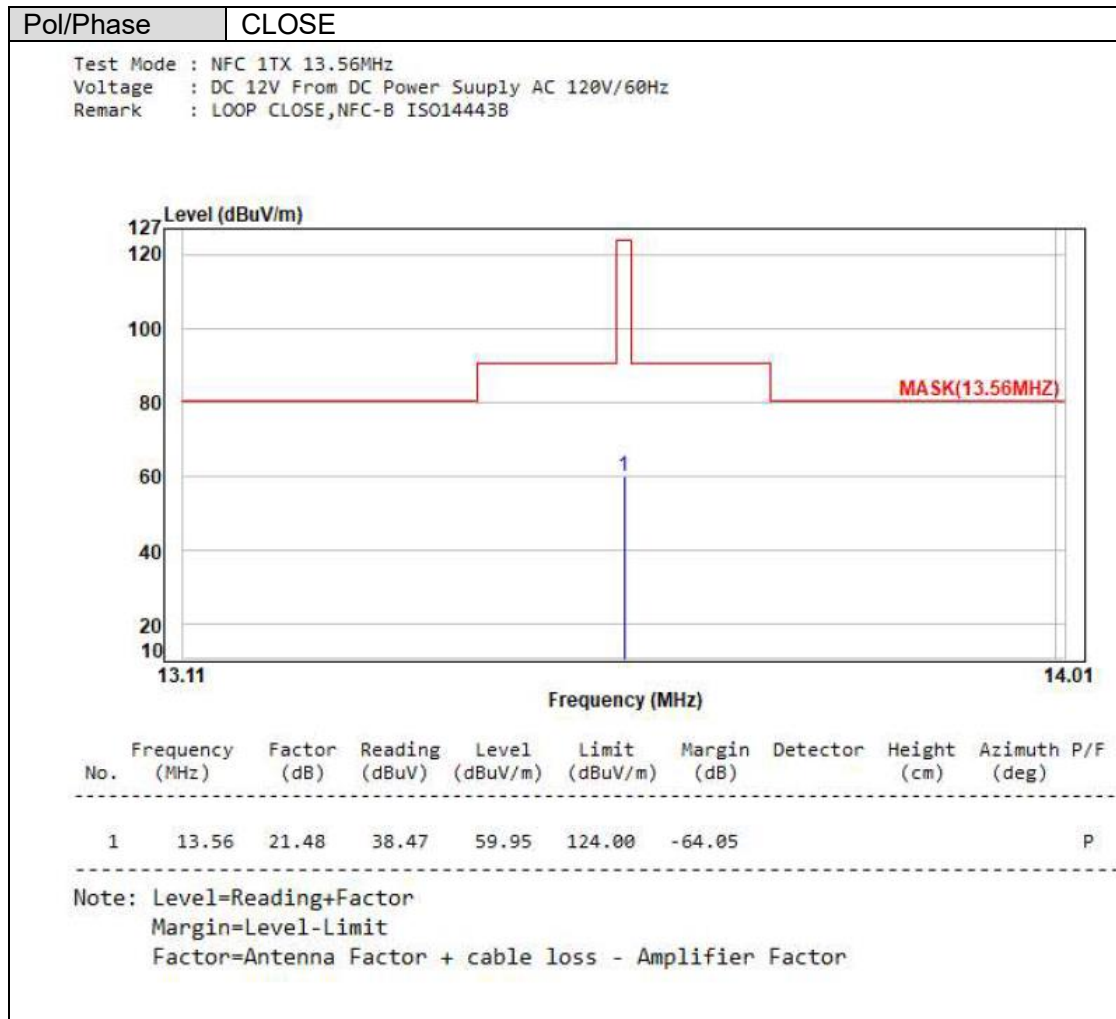




6.4. Test Result and Data

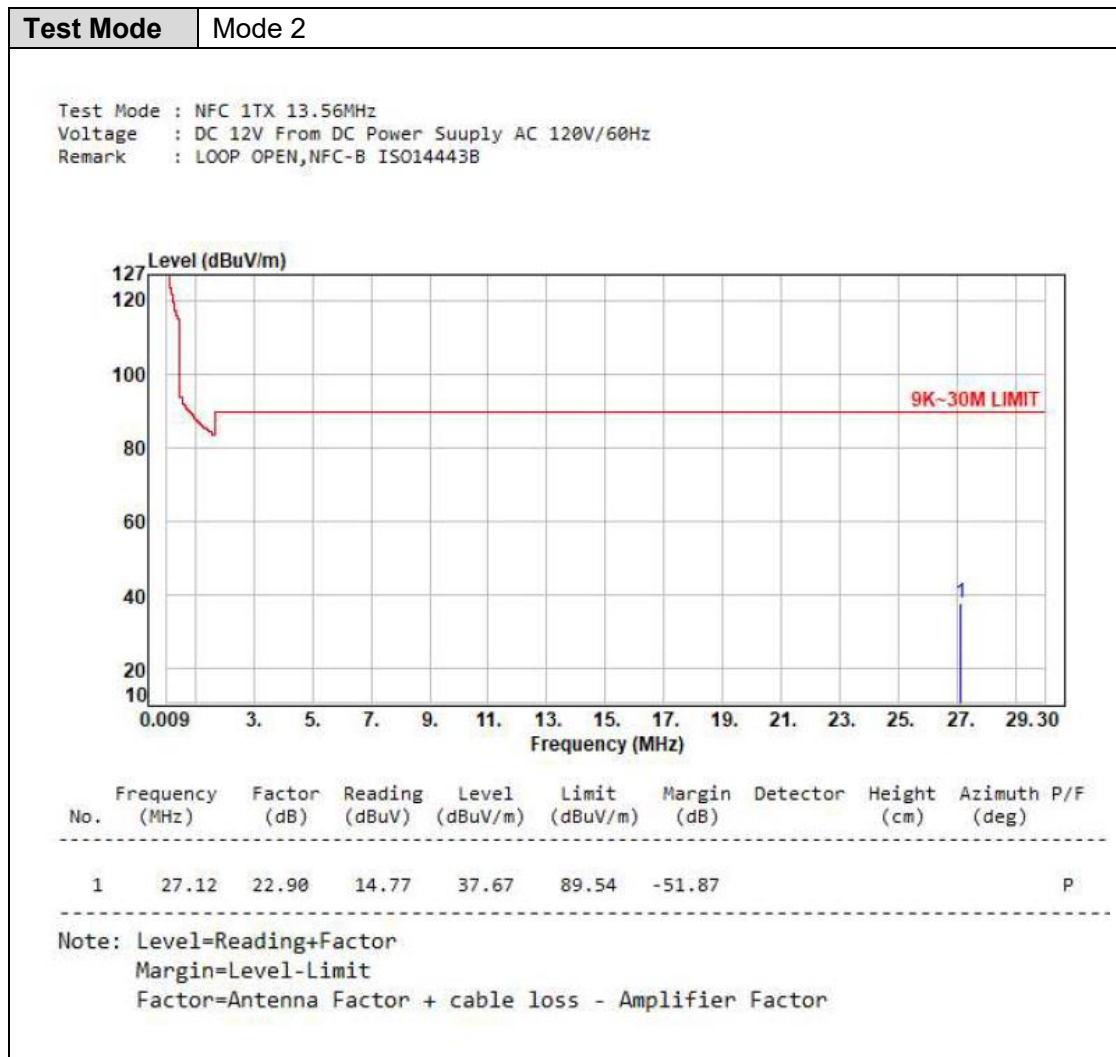
6.4.1. Test Result of Fundamental Emission

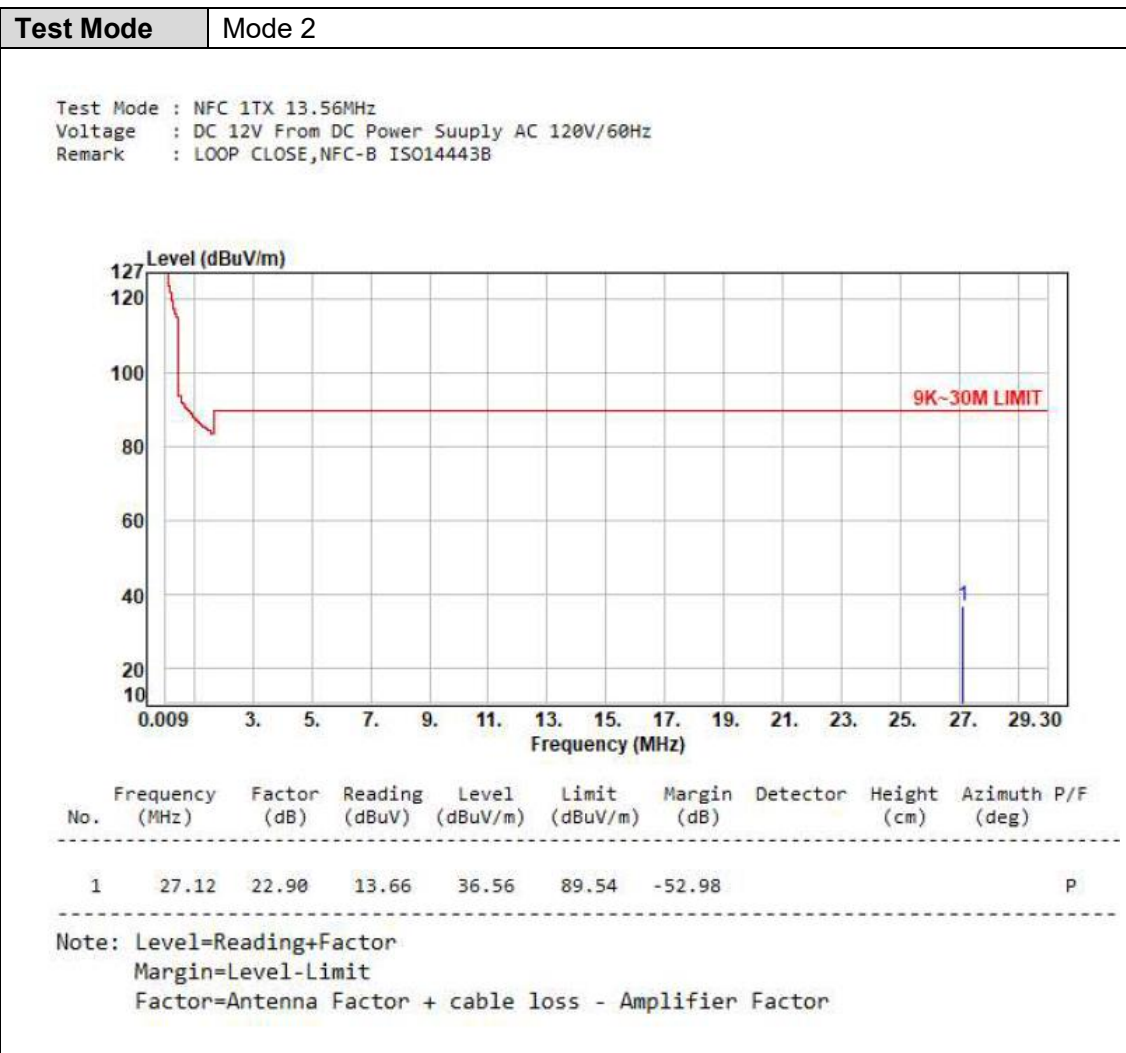






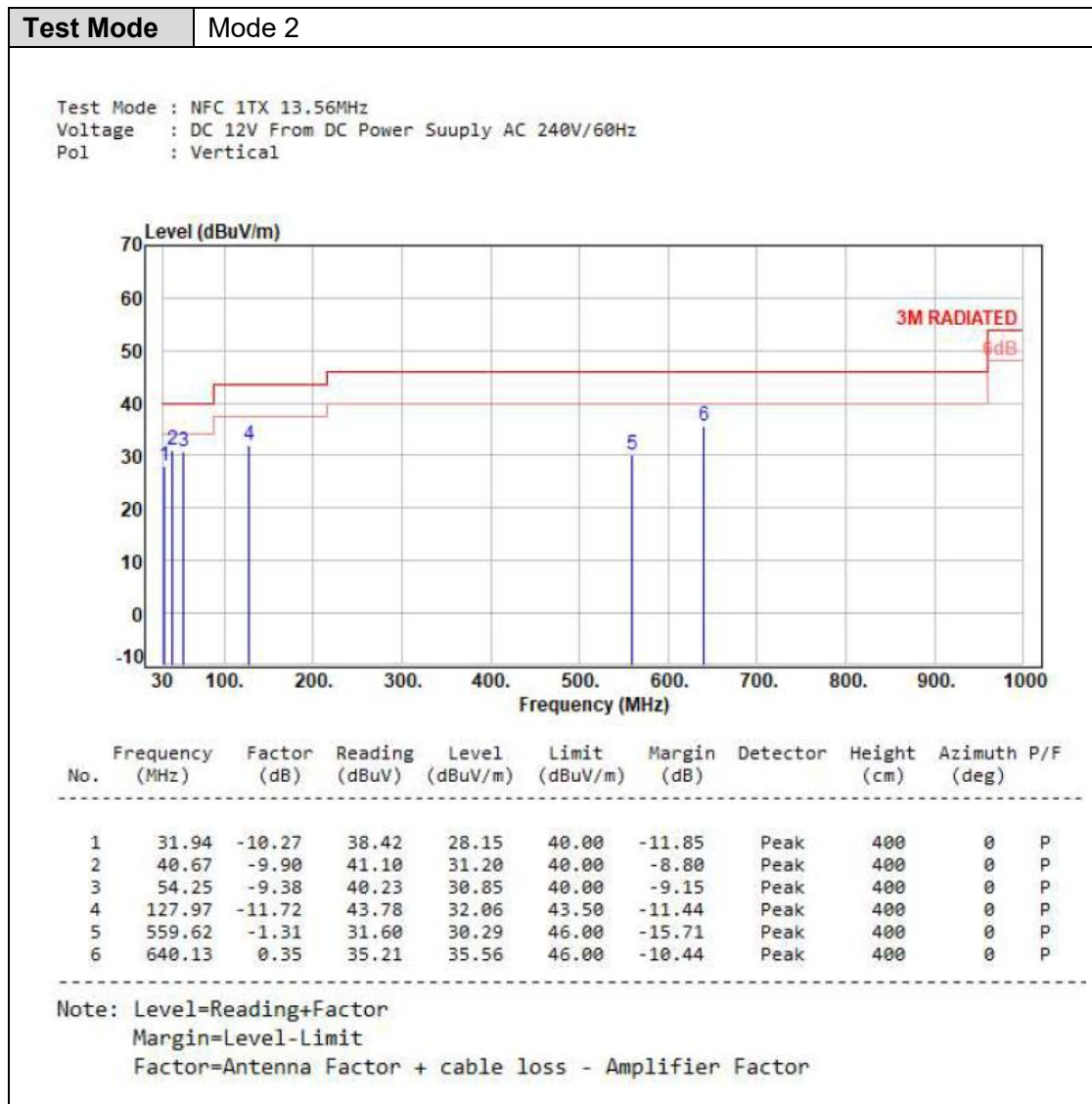
6.4.2. Test Result of Unwanted Spurious emission (9kHz ~ 30MHz)

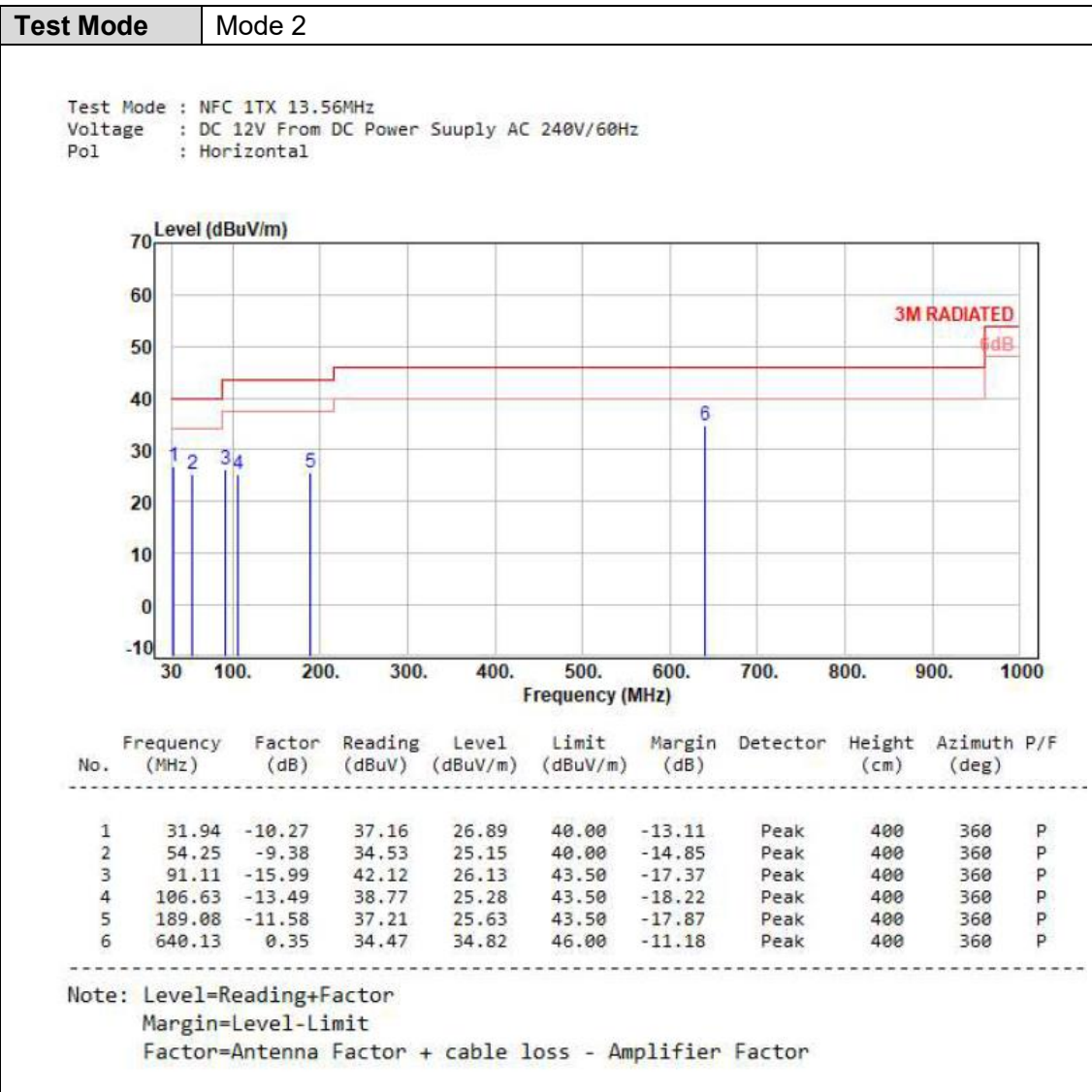






6.4.3. Test Result of Unwanted Spurious emission (30GHz ~ 1GHz)



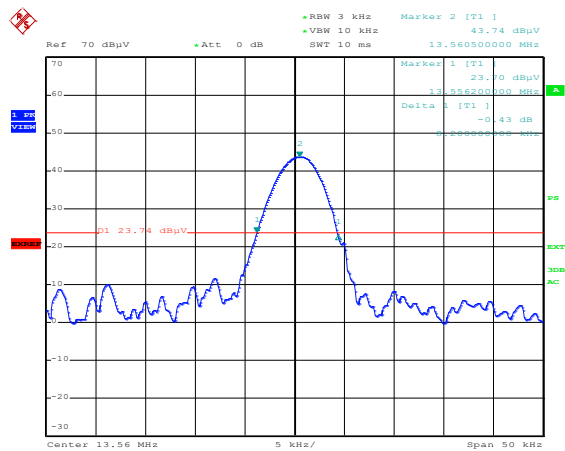




6.5. 20dB Bandwidth

Modulation Mode	Freq. (MHz)	20dB Bandwidth (kHz)	F _L at 20dB BW (MHz)	F _H at 20dB BW (MHz)
RFID	13.56	8.2	13.5562	13.5644
Limit		N/A	13.553	13.567
Result		Pass		

20dB Bandwidth 13.56 MHz



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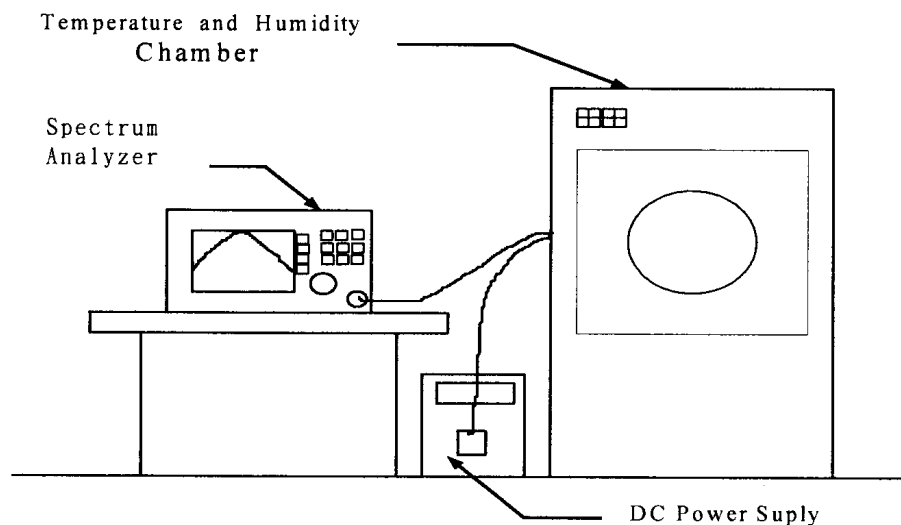
7. Frequency Stability

7.1. Test Procedure

According to the methods defined in ANSI C63.10-2020+Cor.1-2023 and ANSI C63.10a-2024 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)	(%)
50	102	13.5607	0.005383	13.5607	0.005457	13.5608	0.005826	13.5608	0.006121
	120	13.5608	0.006195	13.5608	0.005973	13.5609	0.006932	13.5609	0.006490
	138	13.5608	0.005678	13.5608	0.005531	13.5608	0.006195	13.5609	0.006563
40	102	13.5605	0.003982	13.5606	0.004204	13.5606	0.004056	13.5606	0.004277
	120	13.5606	0.004499	13.5606	0.004204	13.5605	0.003835	13.5606	0.004572
	138	13.5605	0.003909	13.5605	0.003982	13.5606	0.004277	13.5606	0.004499
30	102	13.5605	0.003466	13.5604	0.003097	13.5605	0.003466	13.5604	0.003024
	120	13.5605	0.003319	13.5604	0.002876	13.5604	0.003245	13.5605	0.003614
	138	13.5605	0.003614	13.5605	0.003466	13.5604	0.003097	13.5605	0.003319
20	102	13.5602	0.001622	13.5603	0.001991	13.5602	0.001549	13.5603	0.002065
	120	13.5602	0.001770	13.5603	0.001991	13.5603	0.001844	13.5602	0.001770
	138	13.5603	0.002065	13.5603	0.002139	13.5603	0.001917	13.5603	0.001844
10	102	13.5599	-0.000737	13.5600	-0.000295	13.5599	-0.000442	13.5599	-0.000590
	120	13.5599	-0.000442	13.5600	-0.000295	13.5599	-0.000590	13.5599	-0.000590
	138	13.5600	-0.000221	13.5600	-0.000147	13.5599	-0.000442	13.5600	-0.000147
0	102	13.5598	-0.001180	13.5599	-0.000885	13.5599	-0.001032	13.5598	-0.001401
	120	13.5598	-0.001254	13.5598	-0.001254	13.5599	-0.000885	13.5598	-0.001327
	138	13.5599	-0.000959	13.5598	-0.001327	13.5598	-0.001327	13.5598	-0.001254
-10	102	13.5597	-0.002139	13.5598	-0.001622	13.5597	-0.001917	13.5598	-0.001770
	120	13.5598	-0.001844	13.5598	-0.001770	13.5597	-0.002065	13.5598	-0.001622
	138	13.5598	-0.001549	13.5598	-0.001844	13.5598	-0.001696	13.5597	-0.001917
-20	102	13.5594	-0.004351	13.5595	-0.003835	13.5595	-0.003761	13.5594	-0.004204
	120	13.5594	-0.004499	13.5595	-0.003982	13.5594	-0.004277	13.5595	-0.003909
	138	13.5595	-0.004056	13.5595	-0.003835	13.5595	-0.003982	13.5594	-0.004425
-30	102	13.5592	-0.005752	13.5591	-0.006563	13.5592	-0.006121	13.5592	-0.006121
	120	13.5592	-0.006121	13.5592	-0.006047	13.5593	-0.005310	13.5593	-0.005383
	138	13.5592	-0.006195	13.5592	-0.006047	13.5592	-0.006195	13.5592	-0.005605

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