FCC Test Report

Report No: WD-RF-R-220267-A0

Product Name	**:**	RFID Reader
Model Name	**:**	AC908A-00
Series Model Name	**:**	AC908A-F1020
FCC ID	**:**	WXAAC908A
Applicant	**:**	GIGA-TMS INC
Received Date	**:**	Mar. 08, 2022
Tested Date	**:**	Jul. 12, 2022 ~ Aug. 22, 2022
Applicable Standard	**:**	47 CFR FCC Part 15, Subpart C (Section 15.225) ANSI C63.10 : 2013

Testing Laboratory
2965

Wendell Industrial Co., Ltd
Wendell EMC & RF Laboratory

Caution:
This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted.
The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment.
Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.
This report must not be used to claim product endorsement by TAF or any agency of the government.
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Test Report

Issued Date: August 23, 2022

Project No.: 22Q030802

Product Name	RFID Reader
Trade Name	PROMAG, GIGATEK, ProxData
Model Name	AC908A-00
Series Model Name	AC908A-F1020
FCC ID	WXAAC908A
Applicant	GIGA-TMS INC
Manufacturer	GIGATEK INC.
EUT Rated Voltage	DC 9V ~ 24V
EUT Test Voltage	DC 12V
EUT Supports Radios Application	Bluetooth LE RFID 13.56MHz
Applicable Standard	47 CFR FCC Part 15, Subpart C (Section 15.225) ANSI C63.10 : 2013
Test Result	Complied

Documented : Emma Lu

(Specialist / Emma Lu)

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(Section Manager / Jack Chang)

Approved : Gary Wu

(Project Manager / Gary Wu)

Table of Contents

Document Revision History

Report No.	Issue date	Description
WD-RF-R-220267-A0	August 23, 2022	Initial report

Summary of Test Result

Ref. Std. Clause	Test Items	Result
15.203	Antenna Requirement	Pass
15.215(c)	20dB Spectrum Bandwidth	Pass
15.225(e)	Frequency Stability	Pass
15.225 (a)(b)(c)	Field Strength of Fundamental Emissions	Pass
15.225(d)	Radiated Spurious Emissions	Pass
15.207	AC Conducted Emission	N/A

1 Generation Information

1.1 Applicant

GIGA-TMS INC
8F. NO.31, Lane 169, Kang-Ning St., His-Chih, New Taipei City 22180, Taiwan, R.O.C

1.2 Manufacturer

GIGATEK INC.
NO.47, Hsiang Ho Road, Tantzu Dist., Taichung City 42741, Taiwan R.O.C.

1.3 Description of Equipment under Test

Product Name	RFID Reader
Model No.	AC908A-00
Series Model Name	AC908A-F1020
Model Difference	Trademark differences
FCC ID	WXAAC908A
Frequency Range	13.56 MHz
Type of Modulation	ASK
Antenna Information	Loop Antenna
EUT Supports Radios Application	Bluetooth LE RFID 13.56MHz
EUT Rated Voltage	DC 9V ~ 24V
EUT Test Voltage	DC 12V

Channel List

Channel	Frequency (MHz)
01	13.56

Test Frequencies in each operating band

Frequency range over which the device operates in each operating band (Note 1)	Number of test frequencies required	Location of test frequencies inside the operating frequency range (Note 1,2)
≤ 1 MHz	1	near centre
> 1 MHz and ≤ 10 MHz	2	1 near high end, 1 near low end
> 10 MHz	3	1 near high end, 1 near centre, and 1 near low end

Note 1: The frequency range over which the device operates in a given operating band is the difference between the highest and lowest frequencies on which the device can be tuned within that given operating band. The frequency range can be smaller than or equal to the operating band, but cannot be greater than the operating band.

Note 2: In the third column of table 1, “near” means as close as possible to or at the centre / low end / high end of the frequency range over which the device operates.

Test Mode

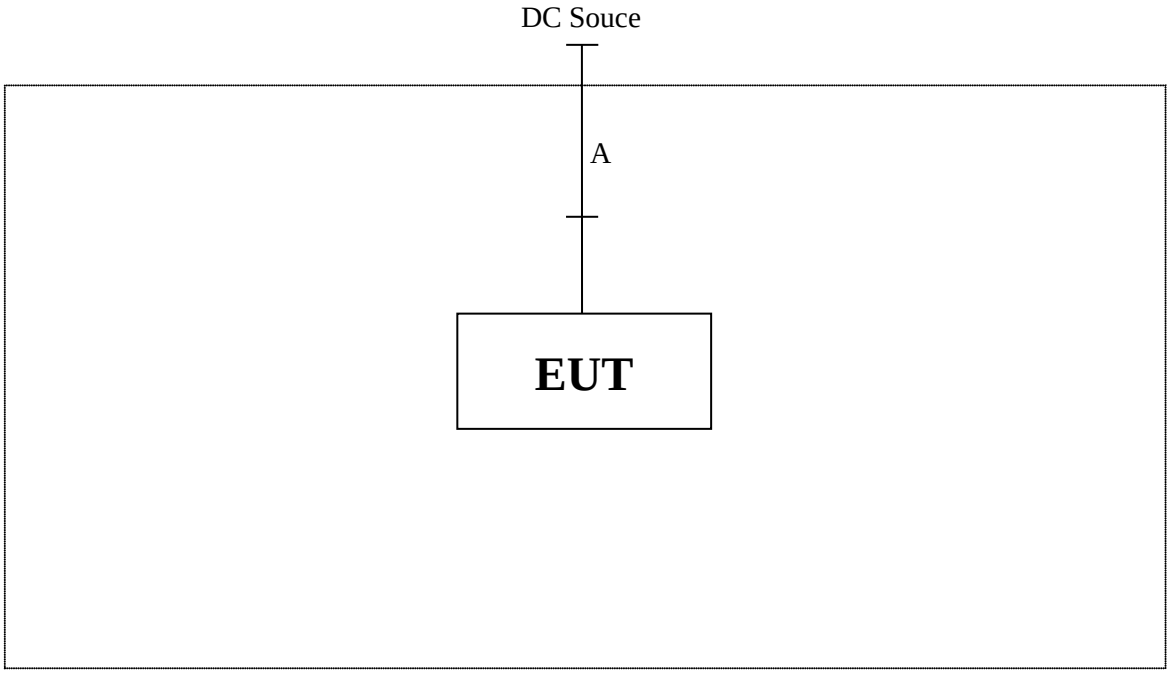
Mode 1	Transmit RFID

Note:

1. This device is a RFID Reader with a built-in RFID transceiver.
2. These tests were performed on a sample of equipment to demonstrate compliance with 47 CFR FCC Part 15, Subpart C (Section 15.225).
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the X axis worst case is shown in the report.

1.4 Configuration of Tested System

Radiation



1.5 EUT Exercise Software

1. Setup the EUT as shown in Section 1.4
2. Turn on the power of all equipment.
3. Using tag to trigger RFID continuous transmission.
4. Verify that the EUT works properly.

1.6 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

No.	Signal Cable Type	Signal cable Description
A	Power Cable	Non-shielded, Non-Core, 1m

1.7 Test Facility

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20~25
Humidity (% RH)	25-75	45~55
Barometric pressure (mbar)	860-1060	990~1020

Description: Accredited by TAF
Accredited Number: 2965

Issued by: Wendell Industrial Co., Ltd

Lab Address: 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Lab: Wendell EMC & RF Laboratory

Test Location: No. 119, Wugong 3rd Rd., Wugu Dist.,
New Taipei City 248, Taiwan (R.O.C.)

Designation Number: TW0025

Test Firm Registration Number: 665221

1.8 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 Project	Condition	Expended Uncertainty
AC Conducted Emission	0.150 ~ 30 MHz	2.64 dB
Radiated Emission	0.009 ~ 30 MHz	± 4.2 dB
	30 ~ 1000 MHz	± 3.9 dB
	1000 ~ 18000 MHz	± 4.1 dB
	18000 ~ 40000 MHz	± 3.9 dB
RF Power, Conducted	Conducted Measuring	± 0.5 dB
Occupied Bandwidth	Conducted Measuring	± 2.4 %
Power Density	Conducted Measuring	± 1.7 dB
Duty Cycle and Dwell Time	Conducted Measuring	± 1.3 %
Conducted Unwanted Emission Strength	Conducted Measuring	± 1.8 dB
DC Power Supply	--	± 3.2 %
Temperature	--	± 1.1 ℃
Humidity	--	± 3.4 %

Note: Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

1.9 List of Test Equipment

For Conducted measurements / W08-Conducted Measurement

Equipment		Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	Spectrum analyzer	Keysight	N9010A	SG50420005	2022/08/01	2023/07/31
	Wideband Peak Power Meter	Anritsu	ML2495A	1733007	2021/09/07	2022/09/06
	Pulse Power Sensor + Precision Adaptor	Anritsu	MA2411B	1726022	2021/09/07	2022/09/06
✓	Temperature Chamber	TAICHY	MHK-225LK	1061121	2022/04/22	2023/04/21
	Wireless Connectivity Tester	R&S	CMW270	101307	2022/05/23	2023/05/22
	Attenuator	MVE	MVE2211-10	CT-9-056	2022/08/10	2023/08/09
	Attenuator	MVE	MVE2211-20	CT-9-057	2022/08/10	2023/08/09
	Attenuator	MVE	MVE2211-30	CT-9-058	2022/08/10	2023/08/09
	Power Divider	MVE	MVE8546	170826003	2022/08/11	2023/08/10
	Power Splitter	MVE	MVE8547	170302047	2022/08/10	2023/08/09
	DC Power Supply	GW INSTEK	GPC-3060D	GER817636	2022/08/09	2023/08/08

Remark:

1. All equipments are calibrated every one year.
2. The test instruments marked with "✓" are used to measure the final test results.

For AC Conduction measurements / W08-CE

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
	EMI Test Receiver	R&S	ESR3	102309	2022/6/15	2023/6/14
	2-Line V-Network LISN	R&S	ENV216	101185	2022/6/20	2023/6/19
	LISN	SCHWARZBECK	NSLK 8127RC	05028	2022/6/20	2023/6/19
	Transient Limiter	EM Electronics Corporation	EM-7600	857	2022/6/20	2023/6/19
	50ohm Cable	EMCI	EMCCFD300-BM-BM-5000	170612	2022/6/17	2023/6/16
	50 ohm terminal impedance	HUBER+SUHNER	50 ohm terminal impedance	CT-1-109-1	2022/6/17	2023/6/16

Remark:

1. All equipments are calibrated every one year.
2. The test instruments marked with "✓" are used to measure the final test results.
3. Test Software version: FARAD EZ-EMC Ver.EMC-CON 3A1

For Radiated measurements / W08-996-2

Equipment		Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	EMI Receiver	Keysight	N9038A	MY51210173	2021/08/20	2022/08/19
✓	Spectrum Analyzer	Keysight	N9010A	MY52220228	2021/08/24	2022/08/23
✓	Loop Antenna	EMCI	LPA600	277	2021/09/02	2022/09/01
✓	TRILOG super broad Antenna	Schwarzbeck	VULB 9168	VULB 9168-700 & 1421	2021/08/11	2022/08/10
	Horn Antenna	Schwarzbeck	BBHA 9120D	01767	2021/08/11	2022/08/10
	Horn Antenna	Schwarzbeck	BBHA 9170	703	2021/12/17	2022/12/16
✓	Pre-Amplifier	EM	EMC330	060774	2021/08/24	2022/08/23
	Pre-Amplifier	EMEC	EM01G18G	060648	2021/08/24	2022/08/23
	Pre-Amplifier	JPT	JPA0118-55-303K	1910001800055003	2021/08/25	2022/08/24
	Pre-Amplifier	EMCI	EMC184045SE	980515	2021/08/24	2022/08/23
✓	Cable	EMEC	EM-CB400	105060103	2021/08/24	2022/08/23
✓	Cable	EMEC	EM-CB400	105060102	2021/08/24	2022/08/23
✓	Cable	EMEC	EM-CB400	105060101	2021/08/24	2022/08/23
	RF Cable	HUBER+SUHNER	SF102	MY2752/2	2021/08/24	2022/08/23
	Cable	MVE	280280.LL266.1200	B60028C	2021/08/24	2022/08/23
	RF Cable	HUBER+SUHNER	SF102	MY2751/2	2021/08/24	2022/08/23
	Cable	EMCI	EMC102-KM-KM-600	190646	2021/10/04	2022/10/03
	RF Filter	EMEC	BRF-2400-2500	002	2021/08/26	2022/08/25
	RF Filter	EMEC	BRF-5150-5350	104	2021/08/26	2022/08/25
	RF Filter	EMEC	BRF-5470-5725	092	2021/08/26	2022/08/25
	RF Filter	EMEC	BRF-5725-5875	091	2021/08/26	2022/08/25
	RF Filter	EMEC	HPF-2800	002	2021/08/26	2022/08/25
	RF Filter	EMEC	HPF-5850	059	2021/08/26	2022/08/25
	SMA Notch Filter	MVE	MFN-902.928.S1	190604001	2021/09/02	2022/09/01

Remark:

1. All equipments are calibrated every one year.
2. The test instruments marked with "✓" are used to measure the final test results.
3. Test Software version: FARAD EZ-EMC Ver.WD-03A1-1

2 Test Result

2.1 Antenna Requirement

2.1.1 Applicable Standard

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.

2.1.2 Antenna Connected Construction

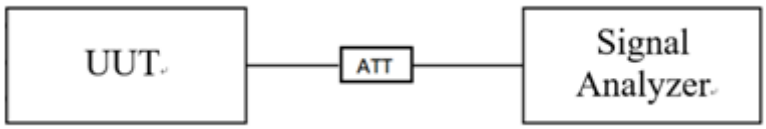
Non-standard antenna connector is used.

2.2 20dB Spectrum Bandwidth Measurement

2.2.1 Limit

Intentional radiators must be designed to ensure that the 20dB emission bandwidth in the specific band 13.553~13.567MHz.

2.2.2 Test Setup



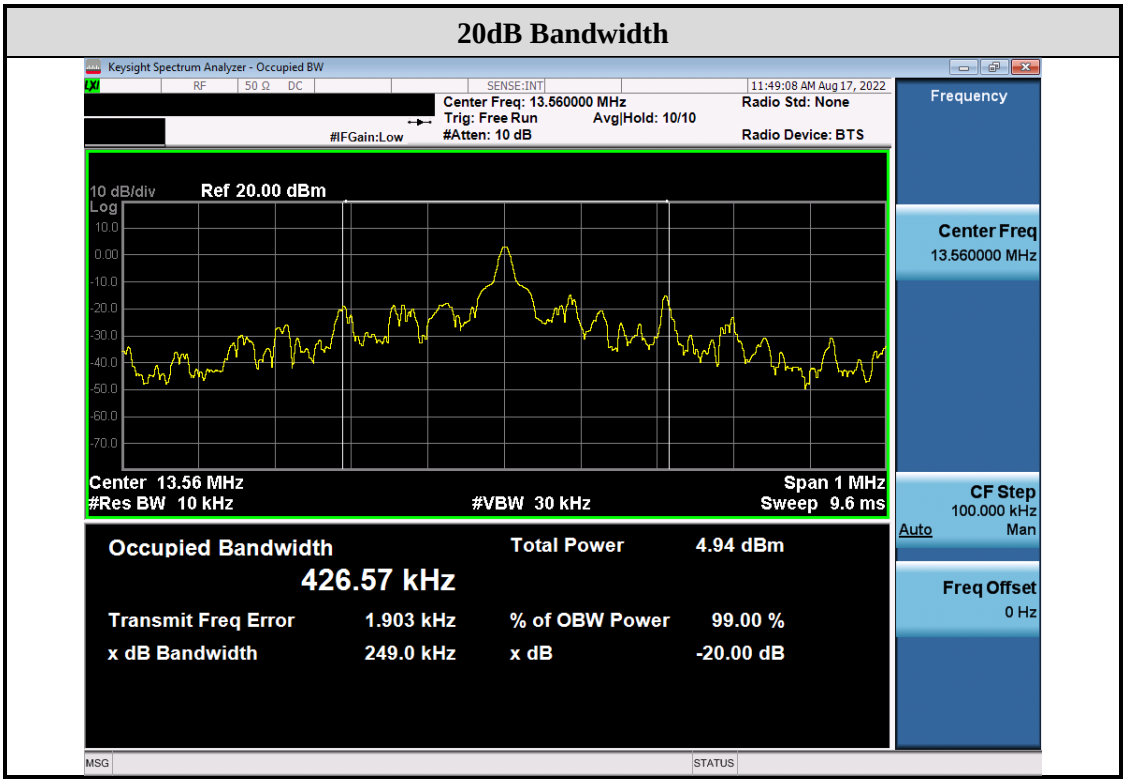
2.2.3 Test Procedure

Refer to ANSI C63.10 : 2013 clause 6.9

2.2.4 Test Result

Operating Frequency Band：13.553~13.567 MHz

20dB Bandwidth

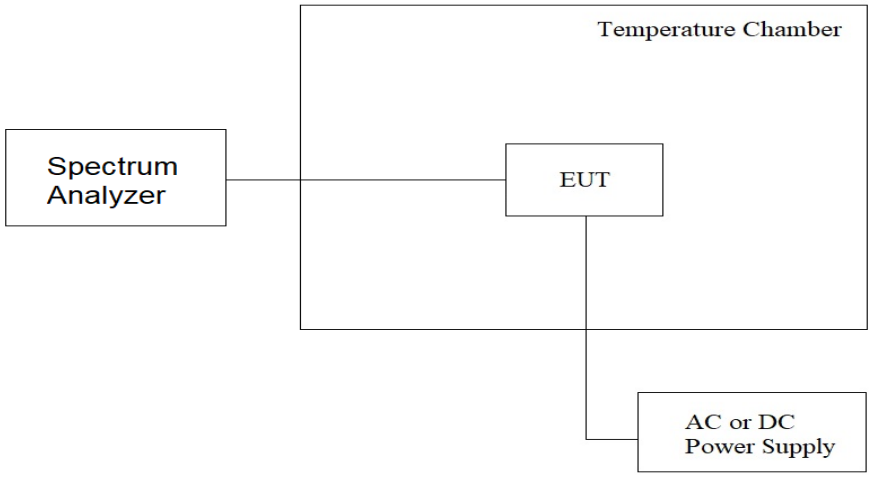


2.3 Frequency Stability Measurement

2.3.1 Limit

The frequency tolerance of the carrier signal shall be maintained within ± 0.01% (100ppm) of the operating frequency over a temperature variation of -20℃ to +50℃ 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 ℃.

2.3.2 Test Setup



2.3.3 Test Procedure

1. Set the spectrum analyzer span to view the entire emissions bandwidth.
2. The fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±100ppm.
3. Extreme temperature rule is -20°C~50°C.

2.3.4 Test Result

Temperature (°C)	Voltage	Observe Time	Frequency	Delta Frequency (Hz)	Delta Frequency (%)	Limit (%)	Result
20	Normal	start	13.559600	-400	-0.0029	±0.01%	Pass
		2 min	13.559200	-800	-0.0059	±0.01%	Pass
		5 min	13.559600	-400	-0.0029	±0.01%	Pass
		10 min	13.559200	-800	-0.0059	±0.01%	Pass
20	High(+15%)	start	13.559500	-500	-0.0037	±0.01%	Pass
		2 min	13.559200	-800	-0.0059	±0.01%	Pass
		5 min	13.559300	-700	-0.0052	±0.01%	Pass
		10 min	13.560300	300	0.0022	±0.01%	Pass
20	Low(-15%)	start	13.559100	-900	-0.0066	±0.01%	Pass
		2 min	13.560900	900	0.0066	±0.01%	Pass
		5 min	13.559700	-300	-0.0022	±0.01%	Pass
		10 min	13.560400	400	0.0029	±0.01%	Pass
50	Normal	start	13.560700	700	0.0052	±0.01%	Pass
		2 min	13.560000	0	0.0000	±0.01%	Pass
		5 min	13.560300	300	0.0022	±0.01%	Pass
		10 min	13.560500	500	0.0037	±0.01%	Pass
40	Normal	start	13.559300	-700	-0.0052	±0.01%	Pass
		2 min	13.560500	500	0.0037	±0.01%	Pass
		5 min	13.560400	400	0.0029	±0.01%	Pass
		10 min	13.560800	800	0.0059	±0.01%	Pass
30	Normal	Start	13.559900	-100	-0.0007	±0.01%	Pass
		2 min	13.560500	500	0.0037	±0.01%	Pass
		5 min	13.559500	-500	-0.0037	±0.01%	Pass
		10 min	13.560100	100	0.0007	±0.01%	Pass
10	Normal	Start	13.559000	-1000	-0.0074	±0.01%	Pass
		2 min	13.560100	100	0.0007	±0.01%	Pass
		5 min	13.559400	-600	-0.0044	±0.01%	Pass
		10 min	13.560300	300	0.0022	±0.01%	Pass
0	Normal	start	13.559700	-300	-0.0022	±0.01%	Pass
		2 min	13.559900	-100	-0.0007	±0.01%	Pass
		5 min	13.559400	-600	-0.0044	±0.01%	Pass
		10 min	13.559900	-100	-0.0007	±0.01%	Pass

-10	Normal	start	13.560200	200	0.0015	±0.01%	Pass
		2 min	13.559600	-400	-0.0029	±0.01%	Pass
		5 min	13.559600	-400	-0.0029	±0.01%	Pass
		10 min	13.560200	200	0.0015	±0.01%	Pass
-20	Normal	star	13.560300	300	0.0022	±0.01%	Pass
		2 min	13.560900	900	0.0066	±0.01%	Pass
		5 min	13.559500	-500	-0.0037	±0.01%	Pass
		10 min	13.559800	-200	-0.0015	±0.01%	Pass

2.4 Field Strength of Fundamental Emissions Measurement

2.4.1 Limit

Rules and specifications	FCC Part 15 Subpart C Paragraph 15.225 Limits		
Freq. of Emission (MHz)	Field Strength (μV/m) at 30m	Field Strength (dBμV/m) at 30m	Field Strength (dBμV/m) at 3m
13.553~13.567	15848	84.0	124.0
13.410 – 13.553 and 13.567 – 13.710	334	50.5	90.5
13.110 – 13.410 and 13.710 – 14.010	106	40.5	80.5
Outside of the 13.110 – 14.010	See 15.209 Limits		

Remark:

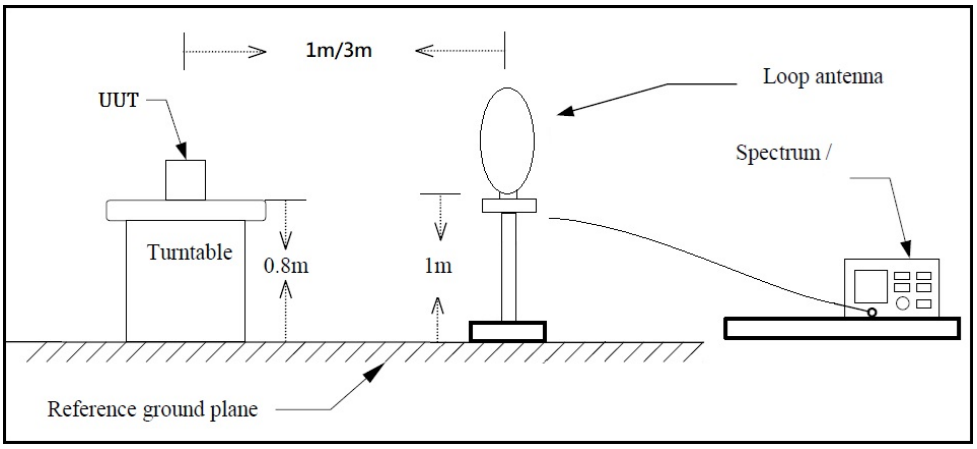
1. Emission level (dBμV/m) = 20 log Emission level (μV/m)
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an quasi-peak detector.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency (MHz)	**Field Strength (μV/m)**	**Measurement Distance (m)**
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Remark:

1. Emission level (dBμV/m) = 20 log Emission level (μV/m)
2. In the Above Table, the tighter limit applies at the band edges.
3. The emission limit in this paragraph is based on a measurement frequency below 1GHz instrumentation employing a quasi-peak detector.

2.4.2 Test Setup

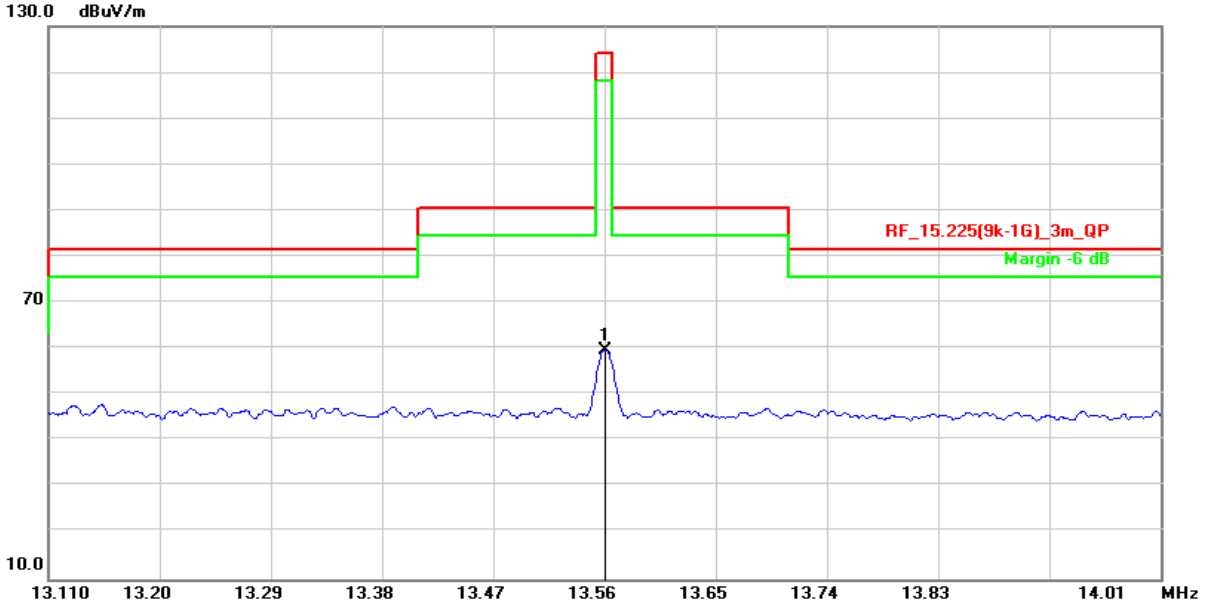


2.4.3 Test Procedure

1. For Fundamental emissions, use the receiver to measure QP reading.
2. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
4. Compliance with the spectrum mask is tested with RBW = 9kHz.

2.4.4 Test Result

Test Mode :	Mode 1 ; Transmit RFID	**Test Date :**	2022/07/12
Test Frequency :	13.56 MHz	**Temperature :**	25.8 ℃
Polarization :	Horizontal ; X axis	**Relative Humidity :**	30 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	13.5600	21.37	38.34	59.71	124.00	-64.29	peak

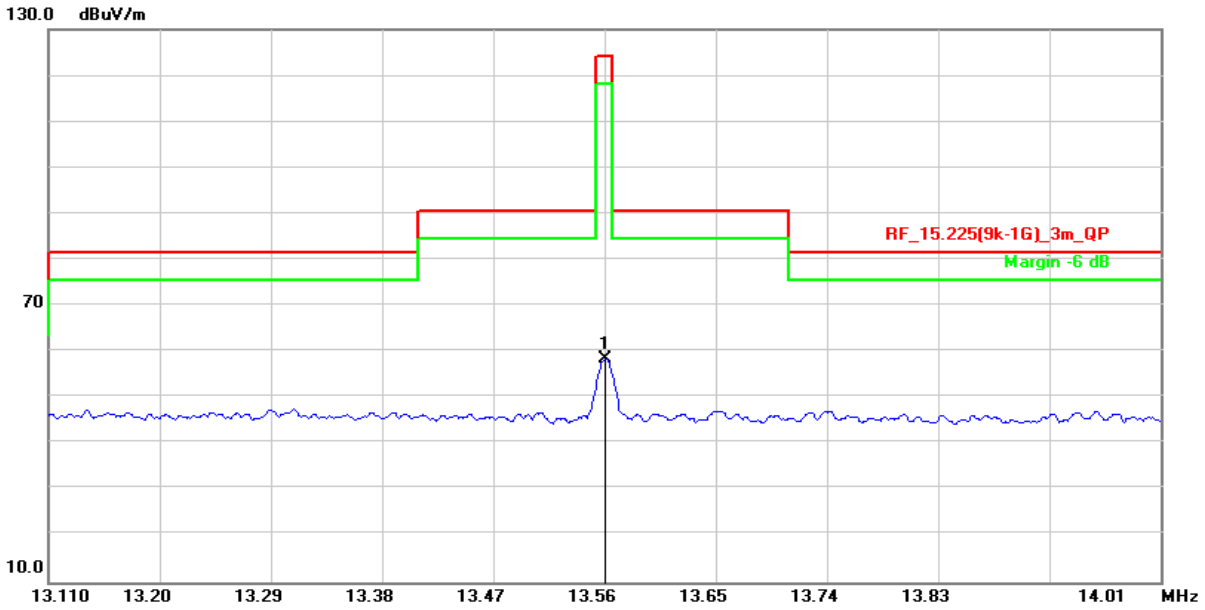
Remark：

(1) Correction Factor = Antenna factor + Cable loss – Amplifier gain

(2) Result Value = Reading Level + Correct Factor

(3) Margin Level = Measurement Value – Limit Value

Test Mode :	Mode 1 ; Transmit RFID	Test Date :	2022/07/12
Test Frequency :	13.56 MHz	Temperature :	25.8 ℃
Polarization :	Vertical ; X axis	Relative Humidity :	30 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	13.5610	20.04	38.34	58.38	124.00	-65.62	peak

Remark：

(1) Correction Factor = Antenna factor + Cable loss – Amplifier gain

(2) Result Value = Reading Level + Correct Factor

(3) Margin Level = Measurement Value – Limit Value

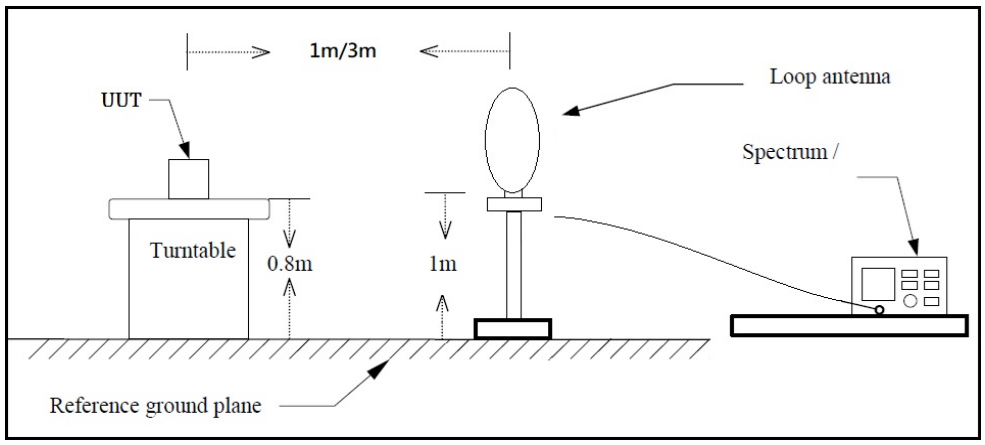
2.5 Radiated Emissions Measurement

2.5.1 Limit

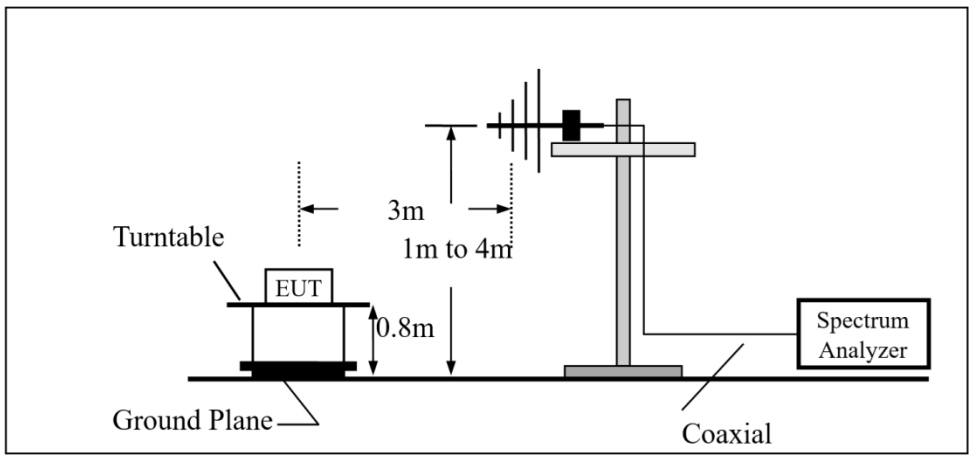
The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in Section 15.209. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209

2.5.2 Test Setup

Below 30MHz



Above 30MHz



2.5.3 Test Procedure

The EUT was setup according to ANSI C63.10, 2013 for compliance to FCC 47CFR 15.225 requirements.

For Radiated emission below 30MHz

(1) The EUT was placed on the top of a rotating table 0.8 meters above the ground in a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

(3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

(4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

(5) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

For Radiated emission Above 30MHz

(1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for the test. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) The EUT was set 3 meters away from the interference-receiving antenna, the height of the antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength.

(3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

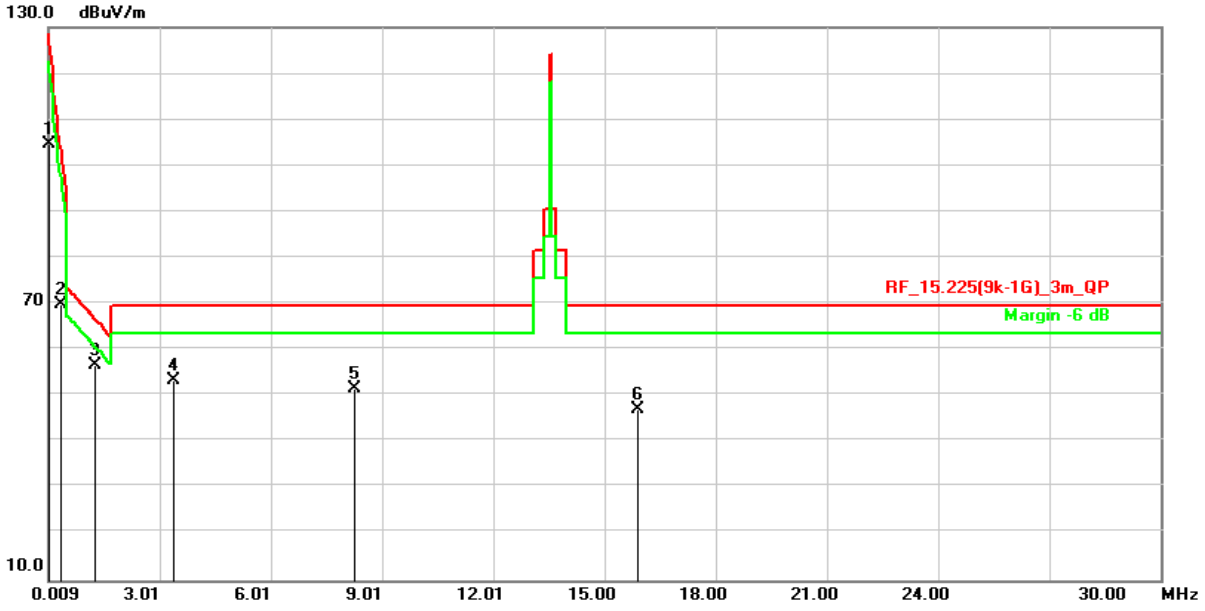
(4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

(5) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

2.5.4 Test Result

Below 30 MHz Data

Test Mode :	Mode 1 ; Transmit RFID	**Test Date :**	2022/07/12
Test Frequency :	13.56 MHz	**Temperature :**	25.8 ℃
Polarization :	Horizontal ; X axis	**Relative Humidity :**	30 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0138	29.63	74.90	104.53	124.81	-20.28	AVG
2	0.3590	21.88	47.97	69.85	96.50	-26.65	AVG
3	1.2843	15.76	41.04	56.80	65.43	-8.63	QP
4	3.3738	15.98	37.38	53.36	69.54	-16.18	QP
5	8.2692	13.61	37.99	51.60	69.54	-17.94	QP
6	15.8810	8.84	38.17	47.01	69.54	-22.53	QP

Remark：

(1) Correction Factor = Antenna factor + Cable loss – Amplifier gain

(2) Result Value = Reading Level + Correct Factor

(3) Margin Level = Measurement Value – Limit Value

(4) The other emission levels were very low against the limit

Test Mode :	Mode 1 ; Transmit RFID	Test Date :	2022/07/12
Test Frequency :	13.56 MHz	Temperature :	25.8 ℃
Polarization :	Vertical ; X axis	Relative Humidity :	30 %

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0361	22.73	67.28	90.01	116.45	-26.44	AVG
2	0.3291	22.19	48.54	70.73	97.26	-26.53	AVG
3	1.1350	18.43	41.35	59.78	66.50	-6.72	QP
4	1.8216	14.79	39.93	54.72	69.54	-14.82	QP
5	2.8962	15.93	37.72	53.65	69.54	-15.89	QP
6	7.4036	51.62	0.00	51.62	69.54	-17.92	QP

Remark：

(1) Correction Factor = Antenna factor + Cable loss – Amplifier gain

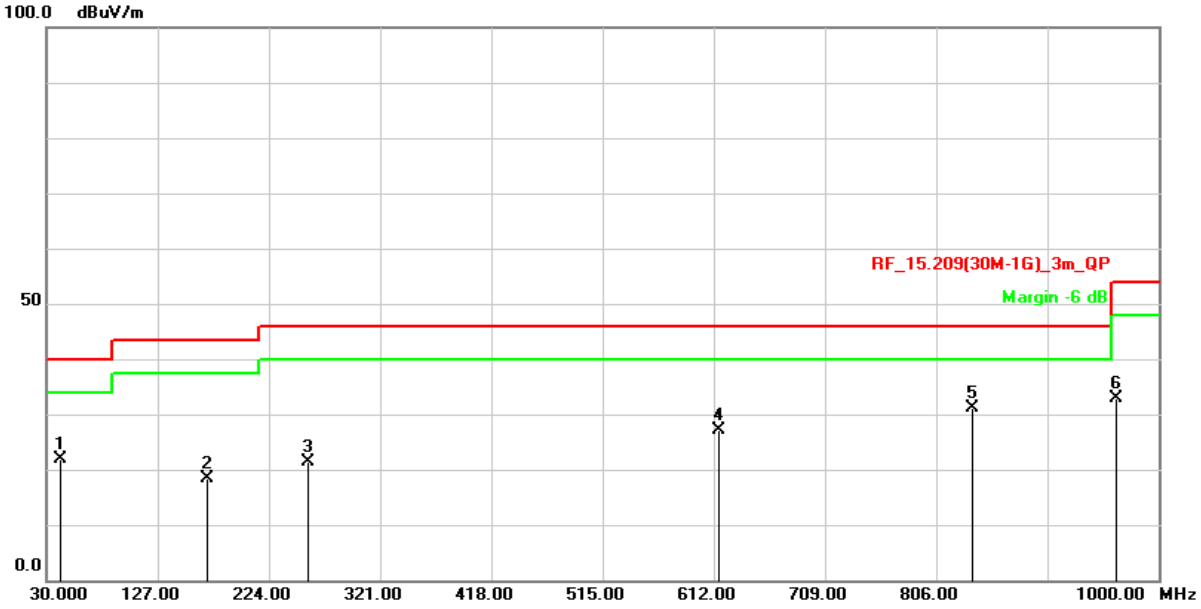
(2) Result Value = Reading Level + Correct Factor

(3) Margin Level = Measurement Value – Limit Value

(4) The other emission levels were very low against the limit

Above 30MHz Data

Test Mode :	Mode 1 ; Transmit RFID	Test Date :	2022/07/12
Test Frequency :	13.56 MHz	Temperature :	25.8 ℃
Polarization :	Horizontal	Relative Humidity :	30 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.6400	33.36	-11.53	21.83	40.00	-18.17	QP
2	169.6800	30.02	-11.59	18.43	43.50	-25.07	QP
3	257.9500	33.51	-12.14	21.37	46.00	-24.63	QP
4	616.8500	29.51	-2.35	27.16	46.00	-18.84	QP
5	838.0100	29.81	1.28	31.09	46.00	-14.91	QP
6	963.1400	29.56	3.21	32.77	53.90	-21.13	QP

Remark：

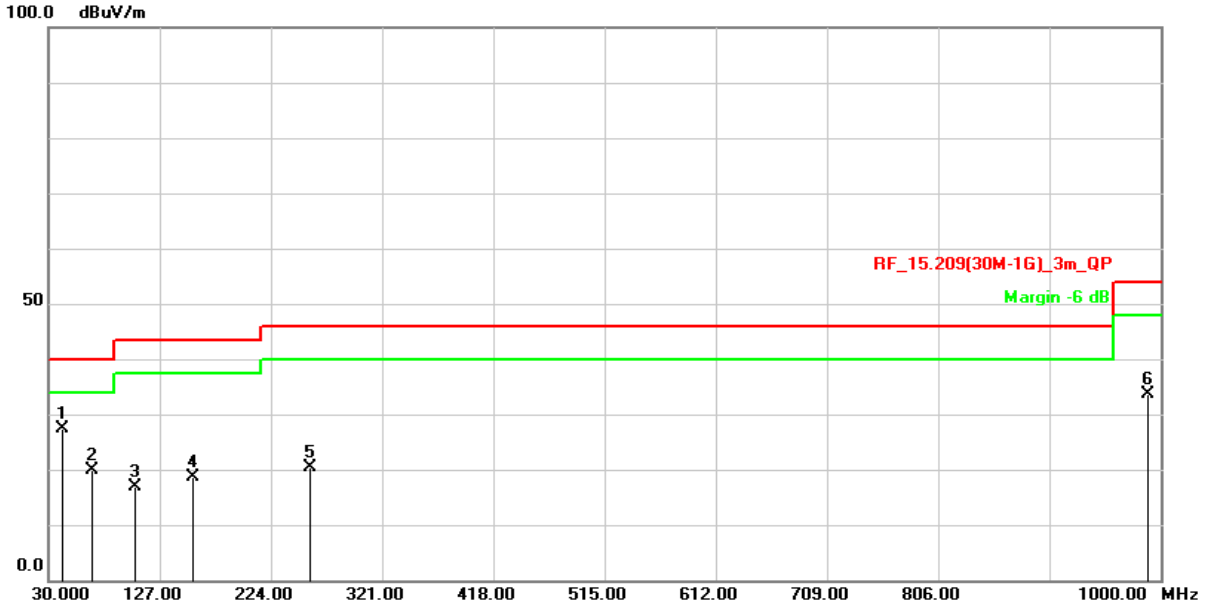
(1) Correction Factor = Antenna factor + Cable loss – Amplifier gain

(2) Result Value = Reading Level + Correct Factor

(3) Margin Level = Measurement Value –Limit Value

(4) The other emission levels were very low against the limit

Test Mode :	Mode 1 ; Transmit RFID	Test Date :	2022/07/12
Test Frequency :	13.56 MHz	Temperature :	25.8 ℃
Polarization :	Vertical	Relative Humidity :	30 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	42.6100	38.73	-11.34	27.39	40.00	-12.61	QP
2	67.8300	32.71	-12.82	19.89	40.00	-20.11	QP
3	105.6600	32.16	-15.16	17.00	43.50	-26.50	QP
4	156.1000	29.74	-11.14	18.60	43.50	-24.90	QP
5	257.9500	32.57	-12.14	20.43	46.00	-25.57	QP
6	988.3600	30.21	3.38	33.59	53.90	-20.31	QP

Remark：

(1) Correction Factor = Antenna factor + Cable loss – Amplifier gain

(2) Result Value = Reading Level + Correct Factor

(3) Margin Level = Measurement Value –Limit Value

(4) The other emission levels were very low against the limit

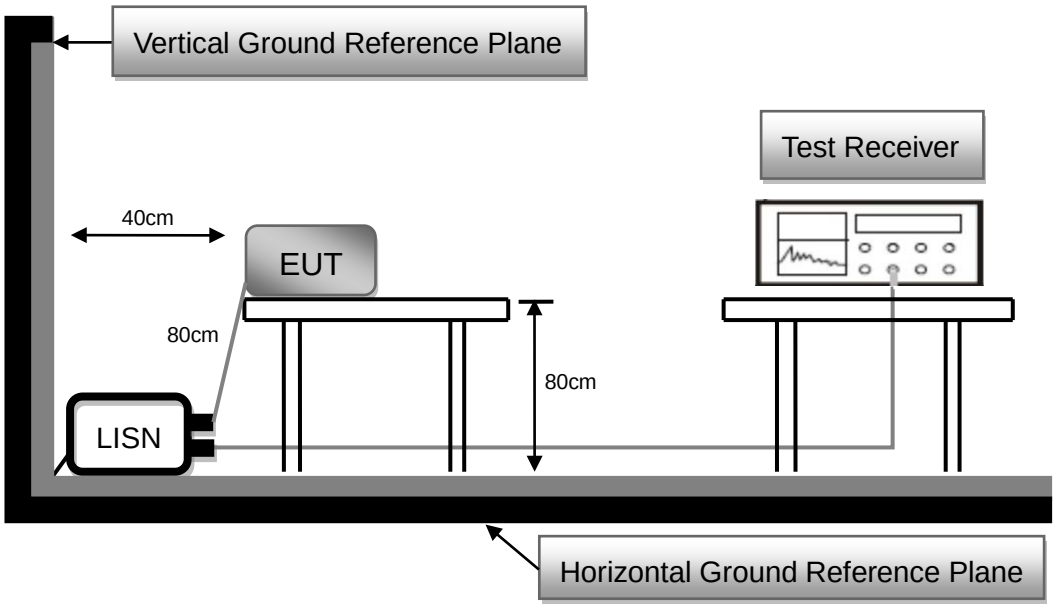
2.6 AC Conducted Emissions Measurement

2.6.1 Limit

Frequency (MHz)	FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50

*Decreases with the logarithm of the frequency

2.6.2 Test Setup



2.6.3 Test Procedure

1. The EUT was placed 0.8 meter height wooden table from the horizontal ground plane with EUT being connected to power source through a line impedance stabilization network (LISN). The LISN at least be 80 cm from nearest chassis of EUT.
2. The line impedance stabilization network (LISN) provides 50 ohm/50uH of coupling impedance for the measuring instrument. All other support equipments powered from additional LISN(s).
3. Interrelating cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle. All I/O cables were positioned to simulate typical usage.
4. All I/O cables that are not connected to a peripheral shall be bundle in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
5. The EMI test receiver connected to LISN powering the EUT. The actual test configuration, please refer to EUT test photos.
6. The receiver scanned from 150kHz to 30MHz for emissions in each of test modes. A scan was taken on both power lines, Line and Neutral, recording at least six highest emissions.
7. The EUT and cable configuration of the above highest emission levels were recorded. The Test Data of the worst case was recorded.

2.6.4 Test Result

Owing to the DC operation of EUT, this test item is not performed.

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