FCC Test Report

Report No: WD-RF-R-240378-B0

Product Name	**:**	RFID Reader
Model Name	**:**	MP30TH-00
Series Model Name	**:**	MP30TR-00
FCC ID	**:**	WXAMP30T
Applicant	**:**	GIGA-TMS INC.
Received Date	**:**	Nov. 05, 2024
Tested Date	**:**	Dec. 16, 2024 ~ Dec. 25, 2024
Applicable Standard	**:**	47 CFR FCC Part 15, Subpart C (Section 15.209) 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.

Test Report

Issued Date: December 26, 2024

Project No.: 24Q102804

Product Name	RFID Reader
Trade Name	PROMAG
Model Name	MP30TH-00
Series Model Name	MP30TR-00
FCC ID	WXAMP30T
Applicant	GIGA-TMS INC.
Manufacturer	GIGA-TMS INC.
EUT Rated Voltage	USB 5V
EUT Test Voltage	USB 5V
EUT Supports Radios Application	RFID 13.56 MHz RFID 125 kHz
Applicable Standard	47 CFR FCC Part 15, Subpart C (Section 15.209) ANSI C63.10 : 2013
Test Result	Complied

Documented : Emma Lu

(Specialist / Emma Lu)

Technical Engineer : Jason Hsieh

(Assistant Section Manager / Jason Hsieh)

Approved : Gary Wu

(Project Manager / Gary Wu)

Table of Contents

Document Revision History

Report No.	Issue date	Description
WD-RF-R-240378-B0	December 26, 2024	Initial report

Summary of Test Result

Ref. Std. Clause	Test Items	Result
15.203	Antenna Requirement	Pass
15.209	Radiated Emissions	Pass
15.207	AC Conducted Emission	Pass

1 Generation Information

1.1 Applicant

GIGA-TMS INC.
8F, NO.31, LANE 169, KANG-NING ST.,HSI-CHIH, NEW TAIPEI CITY, 22180 TAIWAN

1.2 Manufacturer

GIGA-TMS INC.
8F, NO.31, LANE 169, KANG-NING ST.,HSI-CHIH, NEW TAIPEI CITY, 22180 TAIWAN

1.3 Description of Equipment under Test

Product Name	RFID Reader
Model No.	MP30TH-00
Series Model No.	MP30TR-00
Model Difference	MP30TH-00：TH = USB port, 00 = 125kHz+13.56MHz MP30TR-00：TR = RS232 port, 00 = 125kHz+13.56MHz
FCC ID	WXAMP30T
Frequency Range	125 kHz
Type of Modulation	ASK
Antenna Information	Refer to the table “Antenna List”
EUT Supports Radios Application	RFID 13.56 MHz RFID 125 kHz
EUT Rated Voltage	USB 5V
EUT Test Voltage	USB 5V

Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	SZXLF	JJ-A-003	Loop Antenna	N/A

Channel List

Channel	Frequency (kHz)
01	125

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.

Firmware / Software Version

1	**Product Name**	RFID Reader
2	**Model No.**	MP30TH-00
3	**Test SW Version**	MP Studio Ver.8.7R1 & MP Programmer V2.0.2
4	**RF power setting in TEST SW**	☒ RF power setting was not able to alter during testing. ☐ RF power setting was able to alter during testing. (See the following table)

Parameters of test software setting

Type of Modulation	Channel	Frequency (kHz)	Set Value
ASK	01	125	Default

The EUT has been pre-tested under the following test modes, and test mode B was the worst case for final test.

The EUT has the following different models, and the difference is shown in the series difference. After laboratory evaluation, the worst mode must be found by pre-test results of radiation 30M-1GHz.

Pretest Mode

Mode A：MP30TH-00
Mode B：MP30TR-00

Test Mode

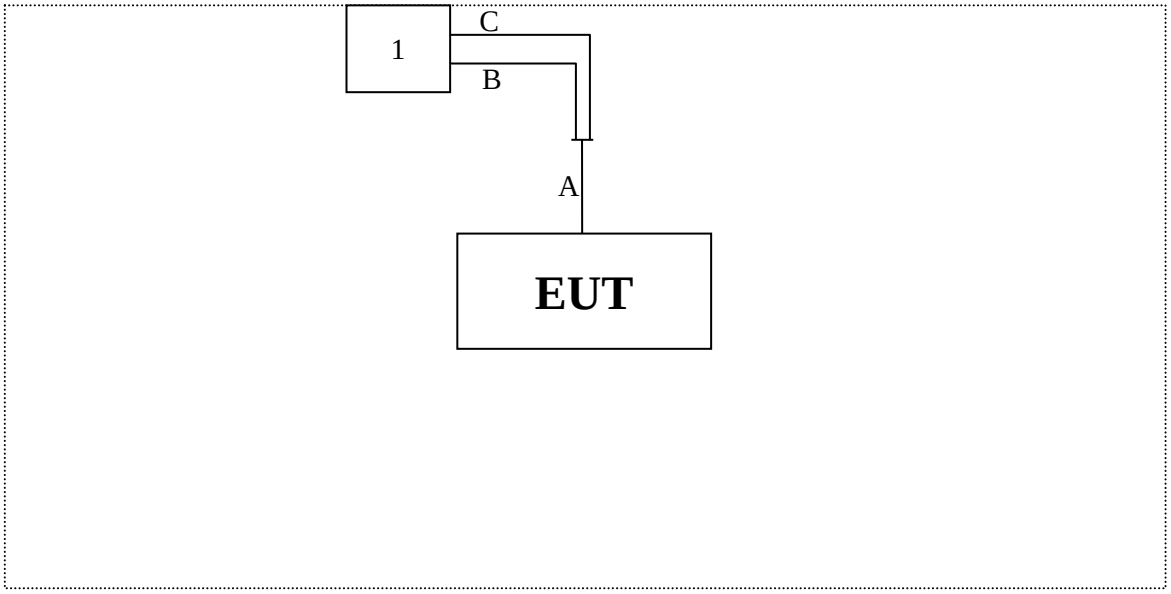
Mode 1：Transmit
Mode 2：Standby

Note:

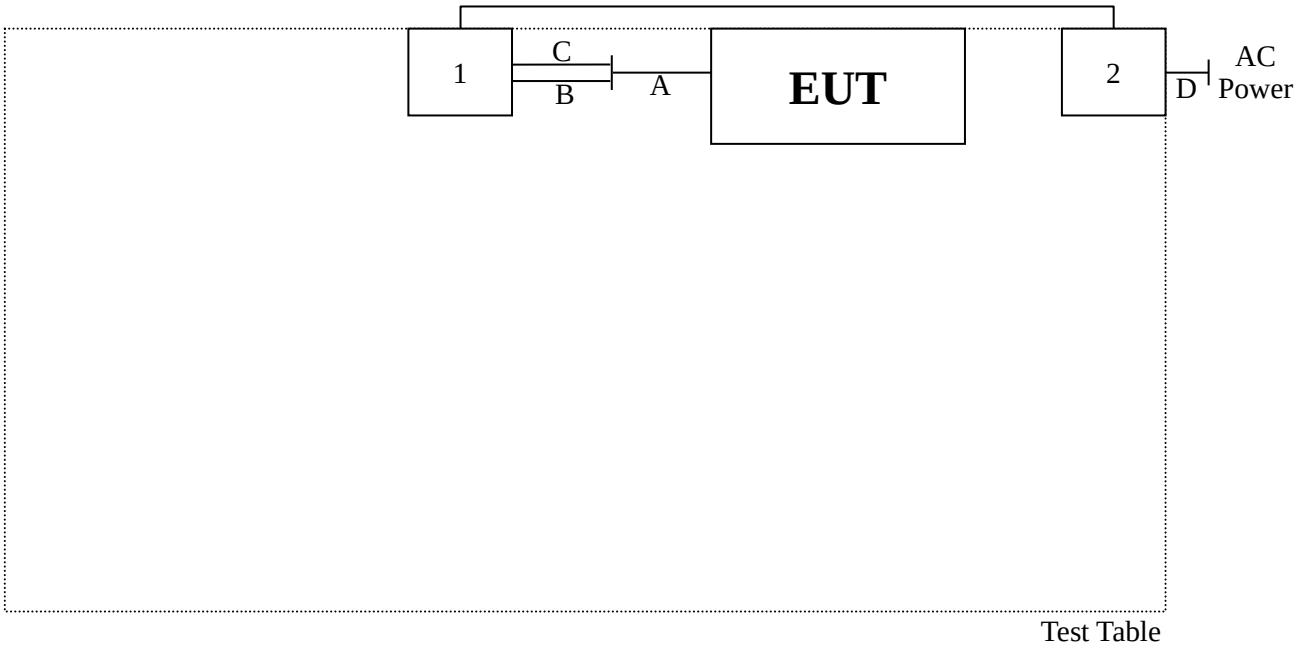
1. This device is a RFID Reader with a built-in RFID 13.56MHz、and RFID 125kHz transceiver.
2. These tests were performed on a sample of equipment to demonstrate compliance with 47 CFR FCC Part 15, Subpart C (Section 15.209).
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the X axis worst case is shown in the report.

1.4 Configuration of Tested System

Radiation



AC Conduction



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.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	acer	N16Q1	NXVD4TA023742254707600	N/A
2	Adapter	Acer	A13-045N2A	F262161724061099	Non-shielded, 1 Core, 1.5m

No.	Signal Cable Type	Signal cable Description
A	RS232 Cable	Non-shielded, Non-Core, 0.4m
B	RS232 to Type-A Cable	Shielded, Non-Core, 0.3m
C	USB Cable	Non-shielded, Non-Core, 1.5m
D	AC Power Cable	Non-shielded, Non-Core, 1m

Accessories:

No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
A	RS232 Cable	EVERBIZ INDUSTRIAL CO., LTD.	WAS-T0625	N/A	Non-shielded, Non-Core, 0.4m
--	USB Cable	EVERBIZ INDUSTRIAL CO., LTD.	WAS-T0624	N/A	Non-shielded, Non-Core, 0.4m

1.7 Test Facility

Items	Required (IEC 60068-1)
Temperature (°C)	15-35
Humidity (% RH)	25-75
Barometric pressure (mbar)	860-1060

Description: Accredited by TAF
Accredited Number: 2965

Issued by: Wendell Industrial Co., Ltd

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

Test Lab: Wendell EMC & RF Laboratory

Lab Address: 5F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

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	± 3.7 dB
	30 ~ 1000 MHz	± 3.9 dB
	1000 ~ 18000 MHz	± 4.5 dB
	18000 ~ 40000 MHz	± 4.3 dB
RF Power, Conducted	Conducted Measuring	± 0.75 dB
Occupied Bandwidth	Conducted Measuring	± 2.4 %
Power Density	Conducted Measuring	± 1.2 dB
Duty Cycle and Dwell Time	Conducted Measuring	± 0.9 %
Conducted Unwanted Emission Strength	Conducted Measuring	± 1.4 dB
DC Power Supply	--	± 2.0 %
Temperature	--	± 0.55 °C
Humidity	--	± 3.1 %

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 AC Conduction measurements / W08-CE

Equipment		Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	EMI Test Receiver	R&S	ESR3	102309	2024/06/21	2025/06/20
✓	2-Line V-Network LISN	R&S	ENV216	101185	2024/06/20	2025/06/19
✓	LISN	SCHWARZBECK	NSLK 8127RC	05028	2024/06/20	2025/06/19
✓	Transient Limiter	EM Electronics Corporation	EM-7600	857	2024/06/24	2025/06/23
✓	50ohm Cable	EMCI	EMCCFD300-BM-BM-5000	170612	2024/06/24	2025/06/23
✓	50 ohm terminal impedance	HUBER+SUHNER	50 ohm terminal impedance	CT-1-109-1	2024/06/20	2025/06/19

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	2024/08/21	2025/08/20
✓	Spectrum Analyzer	Keysight	N9010A	MY52220228	2024/08/19	2025/08/18
✓	Loop Antenna	EMCI	FMZB 1513-60B	00033	2024/05/02	2025/05/01
✓	TRILOG super broad Antenna	Schwarzbeck	VULB 9168	VULB 9168-700 & 20E03	2024/07/23	2025/07/22
	Horn Antenna	Schwarzbeck	BBHA 9120D	01767	2024/08/15	2025/08/14
	Horn Antenna	Schwarzbeck	BBHA 9170	703	2024/08/15	2025/08/14
✓	Pre-Amplifier	EMEC	EMC330	060774	2024/08/16	2025/08/15
	Pre-Amplifier	EMEC	EM01G18G	060648	2024/08/16	2025/08/15
	Pre-Amplifier	JPT	JPA0118-55-303K	1910001800055003	2024/08/20	2025/08/19
	Pre-Amplifier	EMCI	EMC184045SE	980515	2024/08/16	2025/08/15
✓	Cable	EMEC	EM-CB400	105060103	2024/08/21	2025/08/20
✓	Cable	EMEC	EM-CB400	105060102	2024/08/21	2025/08/20
✓	Cable	EMEC	EM-CB400	105060101	2024/08/21	2025/08/20
	RF Cable	HUBER+SUHNER	SF102	MY2752/2	2024/08/21	2025/08/20
	RF Cable	MVE	280280.LL266.1200	C90177C	2024/08/21	2025/08/20
	RF Cable	EMCI	EMC102-KM-KM-600	190646	2024/08/21	2025/08/20
	RF Cable	MVE	140140.LL404.700	B90014C	2024/08/21	2025/08/20
	RF Cable	MVE	140140.LL404.300	B90006C	2024/08/21	2025/08/20
	RF Filter	EMEC	BRF-2400-2500	002	2024/08/26	2026/08/25
	RF Filter	EMEC	BRF-5150-5350	104	2024/08/26	2026/08/25
	RF Filter	EMEC	BRF-5470-5725	092	2024/08/26	2026/08/25
	RF Filter	EMEC	BRF-5725-5875	091	2024/08/26	2026/08/25
	RF Filter	EMEC	HPF-2800	002	2024/08/26	2026/08/25
	RF Filter	EMEC	HPF-5850	059	2024/08/26	2026/08/25
	SMA Notch Filter	MVE	MFN-902.928.S1	190604001	2024/08/21	2026/08/20

Remark:

1. The equipments are calibrated every one year.

2. The Filter calibrated every two year.
3. The test instruments marked with "✓" are used to measure the final test results.
4. 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.

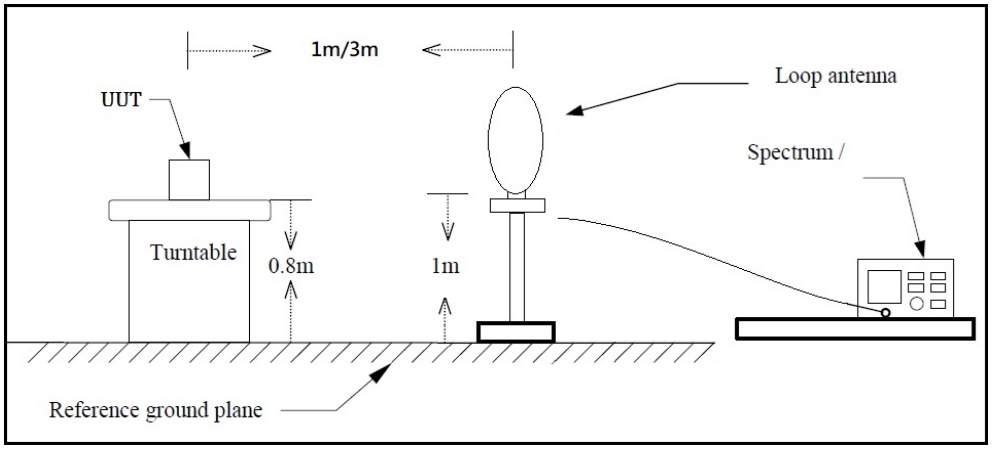
2.2 Radiated Emissions Measurement

2.2.1 Limit

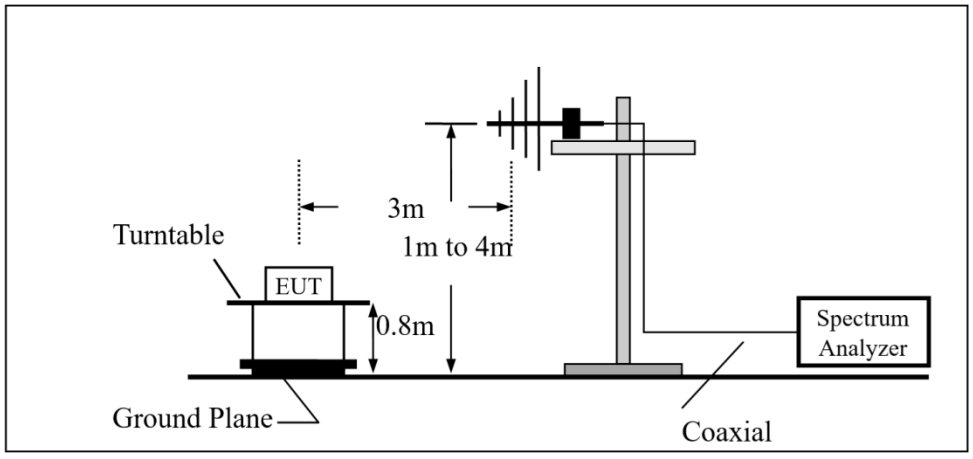
Frequency (MHz)	Field Strength (microvolts / meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400 / F(kHz)	300
0.490 ~ 1.705	24000 / F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

2.2.2 Test Setup

Below 30MHz



Above 30MHz



2.2.3 Test Procedure

The EUT was setup according to ANSI C63.10, 2013 for compliance to FCC 47CFR 15.209 requirements.

The following bandwidths were used during emissions testing.

Frequency	RBW	VBW
9 kHz to 150 kHz	200 Hz to 300 Hz	3 × RBW
0.15 MHz to 30 MHz	9 kHz to 10 kHz	3 × RBW
30 MHz to 1000 MHz	100 kHz to 120 kHz	3 × RBW
>1000 MHz	1 MHz	3 × RBW

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.

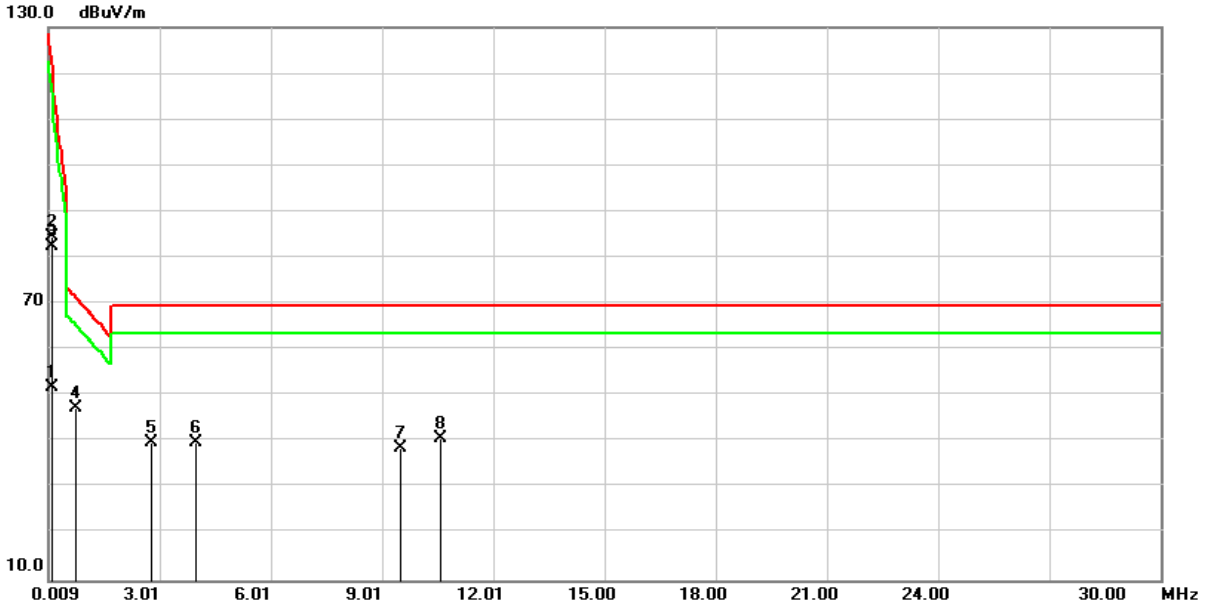
(4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

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

2.2.4 Test Result

Below 30 MHz Data

Test Mode :	Mode 1: Transmit	**Test Date :**	2024/12/23
Test Frequency:	125 KHz.	**Temperature :**	20.8 °C
Polarization :	X axis; Horizontal	**Relative Humidity :**	57 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Near-Field Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0961	33.12	18.69	51.81	107.95	-56.14	QP
2	0.1250	65.74	18.84	84.58	105.67	-21.09	Peak
3	0.1250	63.67	18.84	82.51	105.67	-23.16	AVG
4	0.7470	27.84	19.37	47.21	70.14	-22.93	QP
5	2.8066	20.62	19.12	39.74	69.54	-29.80	QP
6	3.9708	20.19	19.53	39.72	69.54	-29.82	QP
7	9.5230	17.89	20.91	38.80	69.54	-30.74	QP
8	10.5970	19.63	21.24	40.87	69.54	-28.67	QP

Remark：

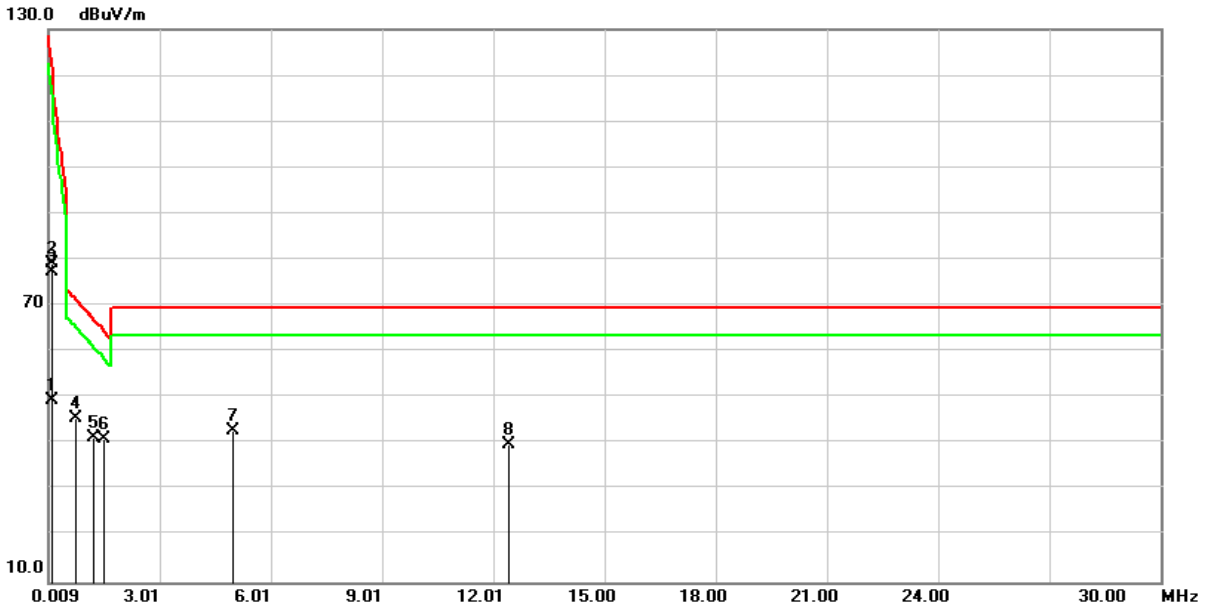
(1) Correction Factor = Antenna factor + Cable loss – Amplifier gain

(2) Near-Field Result = Reading Level + Correct Factor

(3) Margin Level = Derived Value – Limit Value

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

Test Mode :	Mode 1: Transmit	Test Date :	2024/12/23
Test Frequency:	125 KHz.	Temperature :	20.8 °C
Polarization :	X axis; Vertical	Relative Humidity :	57 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Near-Field Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1045	30.66	18.72	49.38	107.22	-57.84	QP
2	0.1250	60.35	18.84	79.19	105.67	-26.48	Peak
3	0.1250	58.42	18.84	77.26	105.67	-28.41	AVG
4	0.7470	26.15	19.37	45.52	70.14	-24.62	QP
5	1.2245	21.98	19.22	41.20	65.85	-24.65	QP
6	1.5231	21.97	19.20	41.17	63.95	-22.78	QP
7	4.9856	23.07	19.68	42.75	69.54	-26.79	QP
8	12.4180	18.49	21.37	39.86	69.54	-29.68	QP

Remark：

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

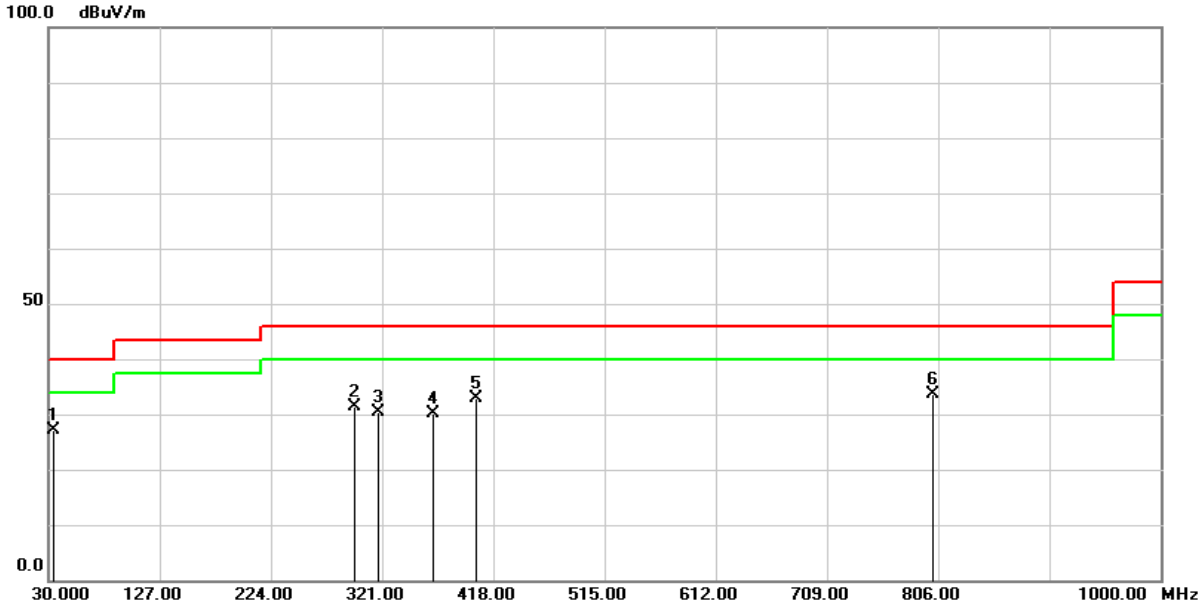
(2) Near-Field Result = Reading Level + Correct Factor

(3) Margin Level = Derived Value – Limit Value

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

Above 30MHz Data

Test Mode :	Mode 1: Transmit	Test Date :	2024/12/23
Test Frequency:	125 KHz	Temperature :	20.8 °C
Polarization :	Horizontal	Relative Humidity :	57 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	34.8500	39.38	-12.33	27.05	40.00	-12.95	QP
2	296.7500	40.71	-9.30	31.41	46.00	-14.59	QP
3	317.1200	39.16	-8.71	30.45	46.00	-15.55	QP
4	365.6200	37.39	-7.33	30.06	46.00	-15.94	QP
5	402.4800	38.97	-5.99	32.98	46.00	-13.02	QP
6	801.1500	30.48	3.24	33.72	46.00	-12.28	QP

Remark：

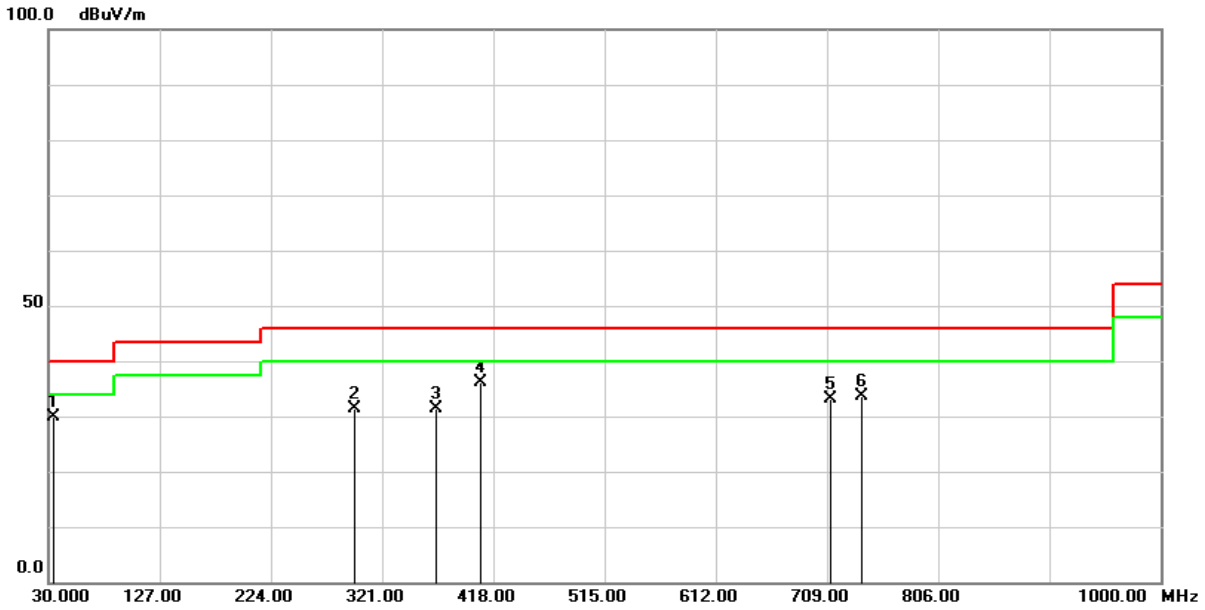
(1) Correction Factor = Antenna factor + Cable loss –Amplifier gain

(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	Test Date :	2024/12/23
Test Frequency:	125 KHz	Temperature :	20.8 °C
Polarization :	Vertical	Relative Humidity :	57 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	34.8500	42.19	-12.33	29.86	40.00	-10.14	QP
2	296.7500	40.63	-9.30	31.33	46.00	-14.67	QP
3	368.5300	38.68	-7.20	31.48	46.00	-14.52	QP
4	406.3600	42.12	-5.88	36.24	46.00	-9.76	QP
5	711.9100	31.63	1.46	33.09	46.00	-12.91	QP
6	739.0700	31.28	2.27	33.55	46.00	-12.45	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

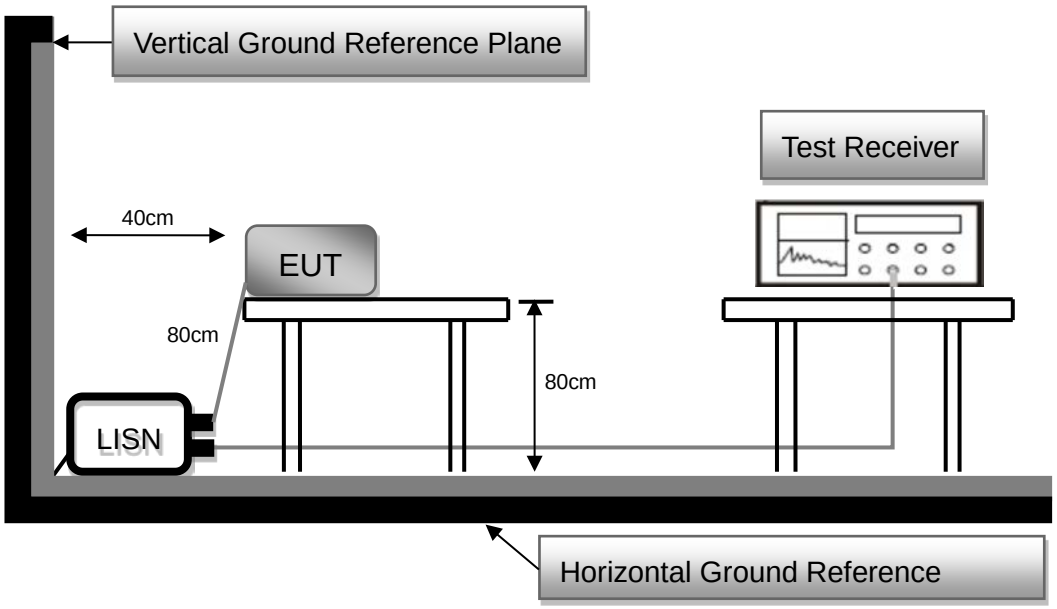
2.3 AC Conducted Emissions Measurement

2.3.1 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

2.3.2 Test Setup

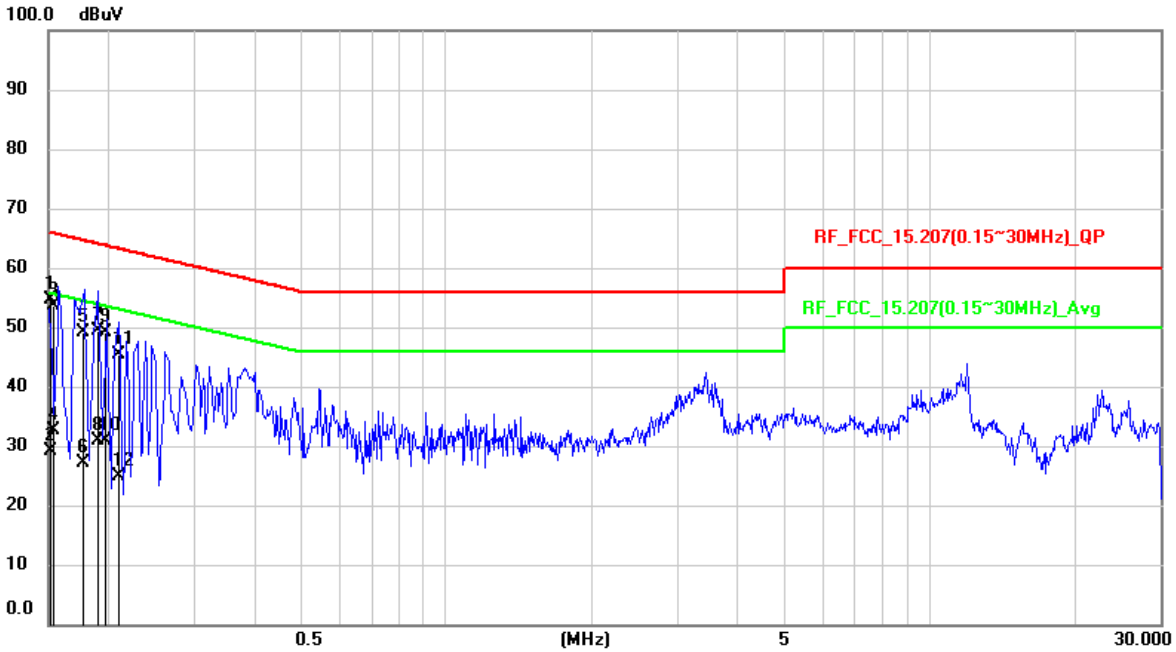


2.3.3 Test Procedure

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.

2.3.4 Test Result

Test Voltage :	120Vac, 60Hz	**Frequency Range:**	0.15-30 MHz
Test Mode :	Mode 1：Transmit	**6dB Bandwidth :**	9 kHz
Test Date :	2024/12/23	**Phase :**	L
Temperature :	22.6℃	**Humidity :**	42 %

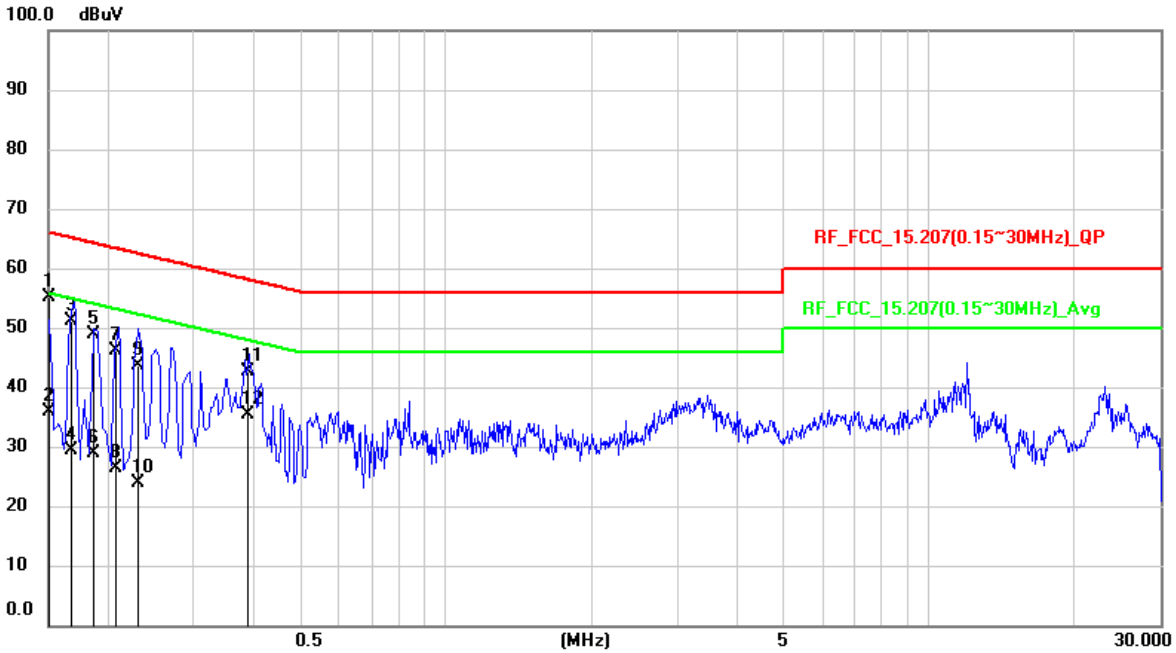


No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1516	44.74	9.82	54.56	65.91	-11.35	QP
2	0.1516	19.39	9.82	29.21	55.91	-26.7	AVG
3	0.1532	43.73	9.82	53.55	65.82	-12.27	QP
4	0.1532	22.8	9.82	32.62	55.82	-23.2	AVG
5	0.1762	39.23	9.81	49.04	64.66	-15.62	QP
6	0.1762	17.31	9.81	27.12	54.66	-27.54	AVG
7	0.1892	39.57	9.81	49.38	64.07	-14.69	QP
8	0.1892	21.09	9.81	30.9	54.07	-23.17	AVG
9	0.1956	39.25	9.81	49.06	63.8	-14.74	QP
10	0.1956	21.03	9.81	30.84	53.8	-22.96	AVG
11	0.2091	35.64	9.81	45.45	63.24	-17.79	QP
12	0.2091	14.97	9.81	24.78	53.24	-28.46	AVG

Remark:

1. QP = Quasi Peak, AVG = Average
2. Correction Factor = Insertion loss of LISN + Cable loss
3. Measurement Value = Reading Level + Correct Factor
4. Margin Level = Measurement Value –Limit Value

Test Voltage :	120Vac, 60Hz	Frequency Range:	0.15-30 MHz
Test Mode :	Mode 1：Transmit	6dB Bandwidth :	9 kHz
Test Date :	2024/12/23	Phase :	N
Temperature :	22.6℃	Humidity :	42 %



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1508	45.32	9.81	55.13	65.96	-10.83	QP
2	0.1508	26	9.81	35.81	55.96	-20.15	AVG
3	0.1667	41.21	9.82	51.03	65.12	-14.09	QP
4	0.1667	19.48	9.82	29.3	55.12	-25.82	AVG
5	0.1847	39.08	9.81	48.89	64.27	-15.38	QP
6	0.1847	19.03	9.81	28.84	54.27	-25.43	AVG
7	0.2065	36.4	9.81	46.21	63.34	-17.13	QP
8	0.2065	16.63	9.81	26.44	53.34	-26.9	AVG
9	0.2289	33.72	9.81	43.53	62.49	-18.96	QP
10	0.2289	14.15	9.81	23.96	52.49	-28.53	AVG
11	0.387	32.92	9.82	42.74	58.13	-15.39	QP
12	0.387	25.6	9.82	35.42	48.13	-12.71	AVG

Remark:

1. QP = Quasi Peak, AVG = Average
2. Correction Factor = Insertion loss of LISN + Cable loss
3. Measurement Value = Reading Level + Correct Factor
4. Margin Level = Measurement Value –Limit Value

- END ---