FCC/ISED EMC Test Report

Report No.	:	BTL-FCCE-1-2503T017
Equipment	:	Advanced Linux Edge Gateway
Model Name	:	CS-EDGE
Brand Name	:	RF Controls, LLC
Applicant	:	RF Controls, LLC.
Address	:	4555 Gustine Avenue Saint Louis, Missouri 63116
FCC Rule Part(s)	:	FCC CFR Title 47, Part 15, Subpart B Class A
ISED Standard(s)	:	ICES-003, Issue 7, October 15, 2020 Class A
Measurement Procedure(s)	:	ANSI C63.4-2014 ANSI C63.4a-2017
Date of Receipt	:	2025/2/21
Date of Test	:	2025/2/21 ~ 2025/2/27
Issued Date	:	2025/3/19

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by : Steve Yang
Steve Yang, Engineer

Approved by : Jack Kao
Jack Kao, Manager

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. BTL assumes no responsibility for the data provided by the Customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by BTL.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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

CONTENTS

REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCE-1-2503T017	R00	Original Report.	2025/3/19	Valid

1 SUMMARY OF TEST RESULTS

Emission			
Standard	Test Item	Limit	Judgment
FCC CFR Title 47, Part 15, Subpart B ICES-003, Issue 7, October 15, 2020	AC power line conducted emissions	Class A	PASS
	Radiated emissions below 1 GHz NOTE (2)	Class A	PASS
	Radiated emissions above 1 GHz	Class A	PASS

Statement of Conformity
The statement of conformity is based on the binary decision rule according to IEC Guide 115 and ILAC G8 "simple acceptance" principle. Without considering measurement uncertainty, its specific risk is less than 50% PFA. (PFA: Probability of False Accept)

NOTE:
(1) ”N/A” denotes test is not applicable in this Test Report.
(2) Due to the limits of applied standards are different, but the test setup and test procedure are identical, the test results of this item are multiple recorded with correspond limits.
(3) The report format version is TP.1.1.3.

1.1 TEST FACILITY

TAF Accreditation Number is 0659
The facilities used to collect the test data in this report are:

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
FCC Designation Number is TW1099.
☒ C05 ☒ CB08 ☒ CB11

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k = 2**, providing a level of confidence of approximately **95 %**. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

A. AC power line conducted emissions test:

Test Site	Measurement Frequency Range	U_{Lab} (dB)	U_{CISPR} (dB)
C05	150 kHz ~ 30 MHz	3.06	3.44

B. Radiated emissions below 1 GHz test:

Test Site	Measurement Frequency Range	Ant. H / V	U_{Lab} (dB)	U_{CISPR} (dB)
CB08 (10 m)	30 MHz ~ 200 MHz	V	4.32	5.03
	30 MHz ~ 200 MHz	H	3.78	5.05
	200 MHz ~ 1000 MHz	V	4.06	5.21
	200 MHz ~ 1000 MHz	H	3.68	5.20

C. Radiated emissions above 1 GHz test:

Test Site	Measurement Frequency Range	Ant. H / V	U_{Lab} (dB)	U_{CISPR} (dB)
CB11 (3 m)	1 GHz ~ 6 GHz	V	4.86	5.18
	1 GHz ~ 6 GHz	H	4.44	5.18
	6 GHz ~ 18 GHz	V	4.68	5.48
	6 GHz ~ 18 GHz	H	4.56	5.48

NOTE:
Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Environment Condition	Tested by
Conducted emissions	22°C, 65%	Glay Wu
Radiated emissions below 1 GHz	19°C, 62%	Steve Yang
Radiated emissions above 1 GHz	22°C, 54%	Eric Tai

2 GENERAL INFORMATION

2.1 EUT INFORMATION

Equipment	Advanced Linux Edge Gateway
Model Name	CS-EDGE
Brand Name	RF Controls, LLC
Model Difference	N/A
Power Source	DC voltage supplied from AC/DC Adapter.
Power Rating	For Adapter(Lite-on / PA-1650-50): I/P: 100-240V~1.6A, 50-60Hz O/P: 19.0V⎓3.42A 65.0W
Products Covered	1 * Adapter: Lite-on / PA-1650-50
Test Model	CS-EDGE
Sample Status	Engineering Sample
Highest Internal Frequency	2.7 GHz
EUT Modification(s)	N/A

NOTE:
(1) The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.
(2) In this report, all the test results refer to BTL-FCCE-1-2502T112 report due to the device is identical to the referencing report and, after evaluated, no need to re-test.

2.2 TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation modes according to test plan.

Pretest Mode	Description
Mode 1	Full system + HDMI 1920*1080/60Hz + Lan1/Lan2 1G

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test	
Final Test Mode	Description
Mode 1	Full system + HDMI 1920*1080/60Hz + Lan1/Lan2 1G

Radiated emissions below 1 GHz test	
Final Test Mode	Description
Mode 1	Full system + HDMI 1920*1080/60Hz + Lan1/Lan2 1G

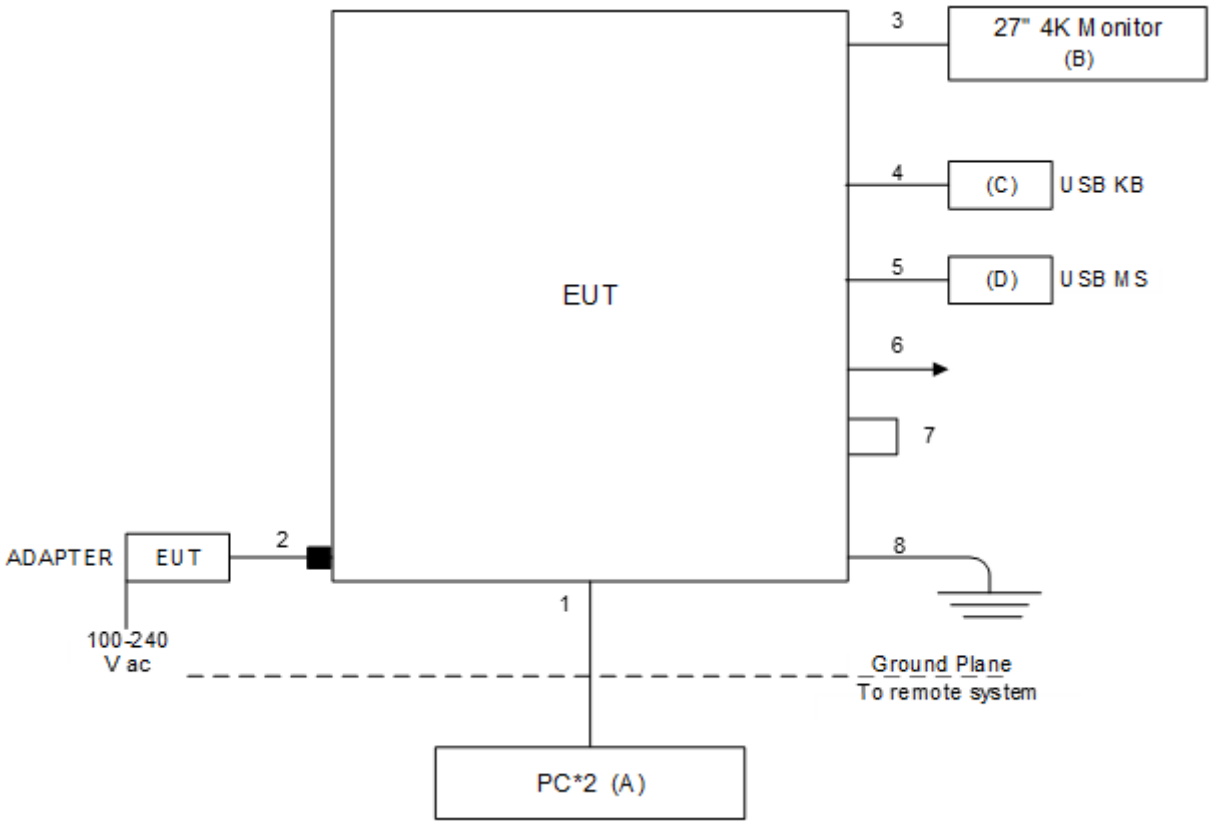
Radiated emissions above 1 GHz test	
Final Test Mode	Description
Mode 1	Full system + HDMI 1920*1080/60Hz + Lan1/Lan2 1G

2.3 EUT OPERATING CONDITION

The EUT exercise program (PLAY H-Pattern) used during radiated and/or conducted emissions measurement was designed to exercise the various system components in a manner similar to a typical use.

2.4 TESTED CONFIGURATION DIAGRAM

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.5.



■ Ferrite core

2.5 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	PC	DELL	Precision 3660	CT16K A00	Furnished by test lab.
B	27” 4K Monitor	DELL	U2723Q	CN-0822F2-WSL00-35I-526L-A03	Furnished by test lab.
C	USB K/B	DELL	KB216t	CN-0W33XP-L0300-797-05TY-A03	Furnished by test lab.
D	USB Mouse	DELL	MOCZUL	CN-049TWY-PRC00-79E-01HA	Furnished by test lab.

Item	Cable Type	Shielded	Ferrite Core	Length	Remarks
1	RJ-45 CABLE*2	NO	NO	10m	Type: Cat.5e 4-pair (8-wire) Furnished by test lab.
2	Power Cable	YES	YES	1.2m	Supplied by test requester.
3	HDMI cable	YES	NO	1.8m	Type: HDMI 2.0 Furnished by test lab.
4	USB Cable	YES	NO	1.7m	Type: USB 2.0 Furnished by test lab.
5	USB Cable	YES	NO	1.7m	Type: USB 2.0 Furnished by test lab.
6	Type-C Cable	YES	NO	1.0m	Type: USB 2.0 Supplied by test requester.
7	DI/DO Cable	NO	NO	0.1m	Supplied by test requester.
8	GND Cable	NO	NO	2.0m	Furnished by test lab.

3 EMC EMISSION TEST

3.1 CONDUCTED EMISSIONS TEST

3.1.1 LIMITS

Frequency (MHz)	Class A (dBµV)		Class B (dBµV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56 *	56 - 46 *
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:
(1) The tighter limit applies at the band edges.
(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)
Margin Level = Measurement Value – Limit Value
Calculation example:

Reading Level (dBµV)		Correct Factor (dB)		Measurement Value (dBµV)
38.22	+	3.45	=	41.67

Measurement Value (dBµV)		Limit Value (dBµV)		Margin Level (dB)
41.67	-	60	=	-18.33

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	TWO-LINE V-NETWORK	R&S	ENV216	101521	2024/9/5	2025/9/4
2	Test Cable	EMCI	EMCCFD300-BM-BMR-5000	220331	2024/3/30	2025/3/29
3	EMI Test Receiver	R&S	ESR7	101433	2024/11/7	2025/11/6
4	Measurement Software	Farad	EZ_EMC (Ver. NB-03A1-01)	N/A	N/A	N/A

REMARK:
(1) “N/A” denotes no model name, no serial no. or no calibration specified.
(2) All calibration period of equipment list is one year.

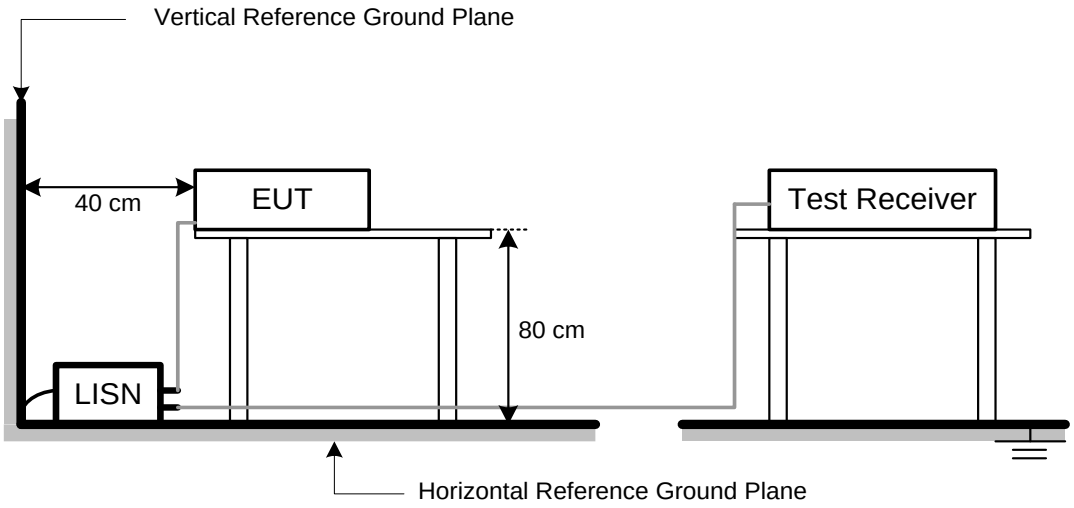
3.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
All other support equipment were powered from an additional LISN(s).
The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle to keep the cable above 40 cm.
c. Excess I/O cables that are not connected to a peripheral shall be bundled in the center.
The end of the cable will be terminated, using the correct terminating impedance.
The overall length shall not exceed 1 m.
d. The LISN is spaced at least 80 cm from the nearest part of the EUT chassis.
e. The receiver was set to quasi-peak and average detect function and specified bandwidth with maximum hold mode.
f. For the actual test configuration, please refer to the related Item - TEST PHOTOS.

3.1.4 DEVIATION FROM TEST STANDARD

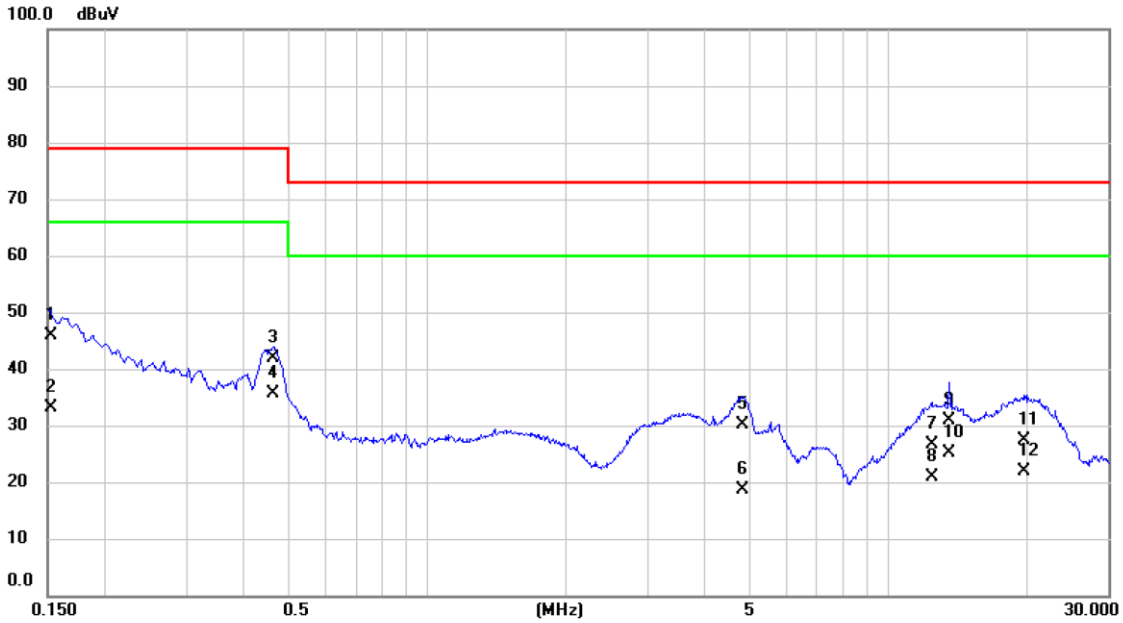
No deviation.

3.1.5 TEST SETUP



3.1.6 TEST RESULT

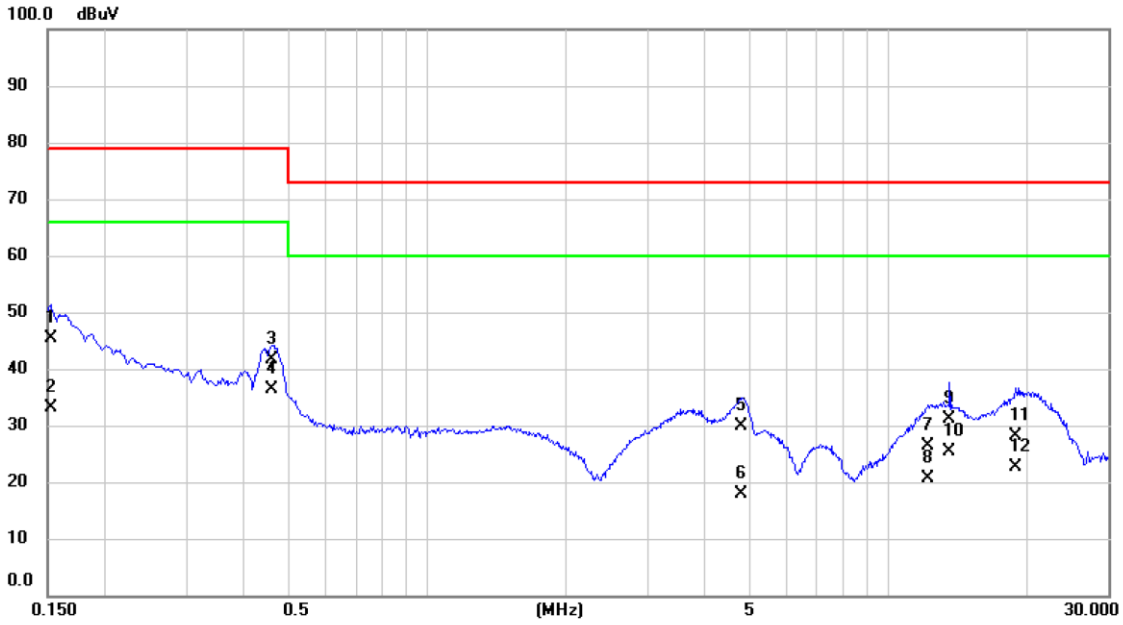
Test Mode	Mode 1	Tested Date	2025/2/26
Test Voltage	AC 120V/60Hz	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1522	36.10	9.68	45.78	79.00	-33.22	QP	
2		0.1522	23.40	9.68	33.08	66.00	-32.92	AVG	
3		0.4627	32.30	9.58	41.88	79.00	-37.12	QP	
4	*	0.4627	26.10	9.58	35.68	66.00	-30.32	AVG	
5		4.8255	20.50	9.72	30.22	73.00	-42.78	QP	
6		4.8255	8.80	9.72	18.52	60.00	-41.48	AVG	
7		12.4080	17.00	9.69	26.69	73.00	-46.31	QP	
8		12.4080	11.30	9.69	20.99	60.00	-39.01	AVG	
9		13.5600	21.10	9.70	30.80	73.00	-42.20	QP	
10		13.5600	15.50	9.70	25.20	60.00	-34.80	AVG	
11		19.6913	17.60	9.76	27.36	73.00	-45.64	QP	
12		19.6913	12.20	9.76	21.96	60.00	-38.04	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	Mode 1	Tested Date	2025/2/26
Test Voltage	AC 120V/60Hz	Phase	Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1522	35.80	9.66	45.46	79.00	-33.54	QP	
2		0.1522	23.50	9.66	33.16	66.00	-32.84	AVG	
3		0.4605	32.10	9.57	41.67	79.00	-37.33	QP	
4	*	0.4605	26.80	9.57	36.37	66.00	-29.63	AVG	
5		4.8120	20.20	9.74	29.94	73.00	-43.06	QP	
6		4.8120	8.10	9.74	17.84	60.00	-42.16	AVG	
7		12.2258	16.60	9.72	26.32	73.00	-46.68	QP	
8		12.2258	10.90	9.72	20.62	60.00	-39.38	AVG	
9		13.5600	21.40	9.75	31.15	73.00	-41.85	QP	
10		13.5600	15.70	9.75	25.45	60.00	-34.55	AVG	
11		18.9105	18.30	9.82	28.12	73.00	-44.88	QP	
12		18.9105	12.80	9.82	22.62	60.00	-37.38	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

3.2 RADIATED EMISSIONS BELOW 1 GHZ TEST

3.2.1 LIMITS - FCC

FCC CFR Title 47, Part 15, Subpart B:

Frequency (MHz)	Class A (at 10 m)		Class A (at 3 m)*	Class B (at 3 m)	
	(uV/m) Field strength	(dBuV/m) Field strength	(dBuV/m) Field strength	(uV/m) Field strength	(dBuV/m) Field strength
30 - 88	90	39	49.46	100	40
88 - 216	150	43.5	53.96	150	43.5
216 - 960	210	46.4	56.86	200	46
Above 960	300	49.5	59.96	500	54
* FCC CFR Title 47, Part 15, Subpart A, section 15.31(f)(1), the distance could be extrapolated by using 20 dB/decade factor.					

Alternative Limits:

Frequency (MHz)	Class A (at 10 m)	Class B (at 10 m)
	dBµV/m	dBµV/m
30 - 230	40	30
230 - 1000	47	37
FCC CFR Title 47, Part 15, Subpart B, section 15.109(g) provides, as an alternative, compliance to the CISPR 22 (Third Edition) radiated emission limits in the 30 MHz to 1000 MHz range.		

Frequency range of radiated measurements (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

NOTE:
(1) The tighter limit applies at the band edges.
(2) Emission level (dBuV/m) = 20log Emission level (uV/m).
3 m Emission level = 10 m Emission level + 20log(10 m/3 m).
(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain (if use)
Margin Level = Measurement Value - Limit Value
Calculation example:

Reading Level (dBµV)		Correct Factor (dB/m)		Measurement Value (dBµV/m)
19.11	+	2.11	=	21.22

Measurement Value (dBµV/m)		Limit Value (dBµV/m)		Margin Level (dB)
21.22	-	40	=	-18.78

3.2.2 LIMITS - ICES

Frequency range (MHz)	Class A		Class B	
	Quasi-peak		Quasi-peak	
	(dBuV/m) (at 3 m)	(dBuV/m) (at 10 m)	(dBuV/m) (at 3 m)	(dBuV/m) (at 10 m)
30 – 88	50.0	40.0	40.0	30.0
88 – 216	54.0	43.5	43.5	33.1
216 – 230	56.9	46.4	46.0	35.6
230 – 960	57.0	47.0	47.0	37.0
960 – 1000	60.0	49.5	54.0	43.5

Required highest measurement frequency for radiated emissions

Highest internal frequency (F_X)	Highest measurement frequency (F_M)
$F_X \leq 108$ MHz	1 GHz
108 MHz < $F_X \leq 500$ MHz	2 GHz
500 MHz < $F_X \leq 1$ GHz	5 GHz
$F_X > 1$ GHz	5 x F_X up to a maximum of 40 GHz

NOTE:
(4) The more stringent limit applies at transition frequencies.
(5) F_X is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.
(6) Emission level (dBμV/m) = 20log Emission level (uV/m).
3 m Emission level = 10 m Emission level + 20log(10 m/3 m).
(7) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain (if use)
Margin Level = Measurement Value - Limit Value
Calculation example:

Reading Level (dBμV)		Correct Factor (dB/m)		Measurement Value (dBμV/m)
19.11	+	2.11	=	21.22

Measurement Value (dBμV/m)		Limit Value (dBμV/m)		Margin Level (dB)
21.22	-	40	=	-18.78

3.2.3 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Log-Bicon Antenna	Schwarzbeck	VULB 9168	9168-789	2024/4/12	2025/4/11
2	Attenuator	Inmet	EMCI-N-6-05	AT-N0626	2024/4/12	2025/4/11
3	Pre-Amplifier	EMCI	EMC 9135	980282	2024/9/13	2025/9/12
4	Test Cable	EMCI	EMC104-SM-SM-800	230906	2024/9/13	2025/9/12
5	Test Cable	EMCI	EMCCFD400-NM-NM-8000	230903	2024/9/13	2025/9/12
6	Test Cable	EMCI	EMCCFD400-NM-NM-3500	230904	2024/9/13	2025/9/12
7	Test Cable	EMCI	EMC104-NM-SM-2500	230908	2024/9/13	2025/9/12
8	EMI Test Receiver	Keysight	N9038A	MY57190113	2024/3/18	2025/3/17
9	Log-Bicon Antenna	Schwarzbeck	VULB 9168	9168-364	2024/4/12	2025/4/11
10	Attenuator	Inmet	EMCI-N-6-05	02	2024/4/12	2025/4/11
11	Pre-Amplifier	EMCI	EMC 9135	980281	2024/9/13	2025/9/12
12	Test Cable	EMCI	EMC104-SM-SM-1000	230905	2024/9/13	2025/9/12
13	Test Cable	EMCI	EMC104-SM-SM-2500	230907	2024/9/13	2025/9/12
14	Test Cable	EMCI	EMCCFD400-NM-NM-8000	230902	2024/9/13	2025/9/12
15	Test Cable	EMCI	EMCCFD400-NM-NM-11000	230901	2024/9/13	2025/9/12
16	EXA Signal Analyzer	Keysight	N9010A	MY54200483	2024/11/21	2025/11/20
17	Measurement Software	Farad	EZ_EMC (Ver. NB-03A1-01)	N/A	N/A	N/A

REMARK:
(1) “N/A” denotes no model name, no serial no. or no calibration specified.
(2) All calibration period of equipment list is one year.

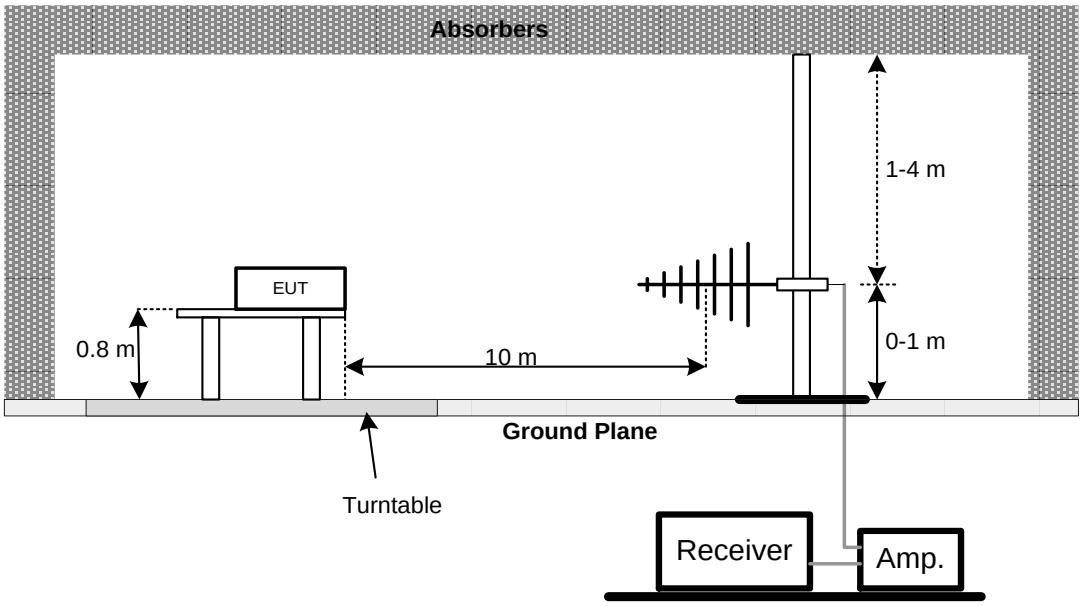
3.2.4 TEST PROCEDURE

a. The separation distance of 10 m was used for measurements below 1 GHz.
The EUT was placed on the top of a rotating table 0.8 m above the ground in a 10 m semi-anechoic chamber.
b. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the receive antenna was varied between 1 m and 4 m. Both horizontal and vertical polarizations of the antenna were checked.
d. For each suspected emission, the EUT was arranged at its worst case and then the antenna was scanned in height to find the maximum. The tower Bore sight function was used.
e. The receiver was set to quasi-peak detect function and specified bandwidth with maximum hold mode.
f. For the actual test configuration, please refer to the related Item - TEST PHOTOS.

3.2.5 DEVIATION FROM TEST STANDARD

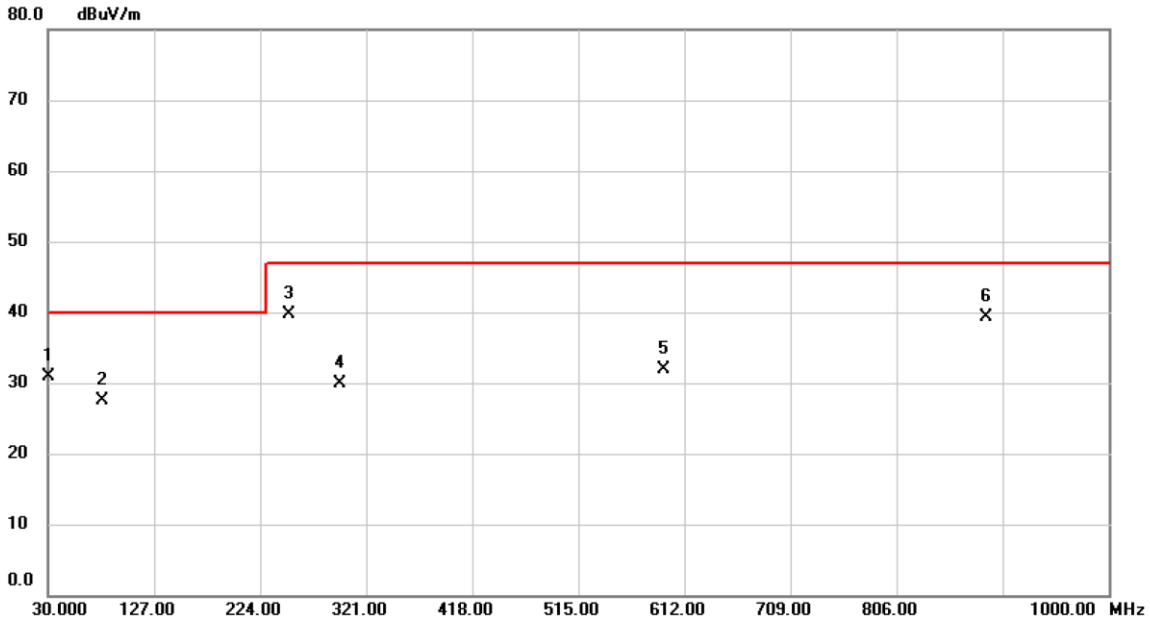
No deviation.

3.2.6 TEST SETUP



3.2.7 TEST RESULT - FCC

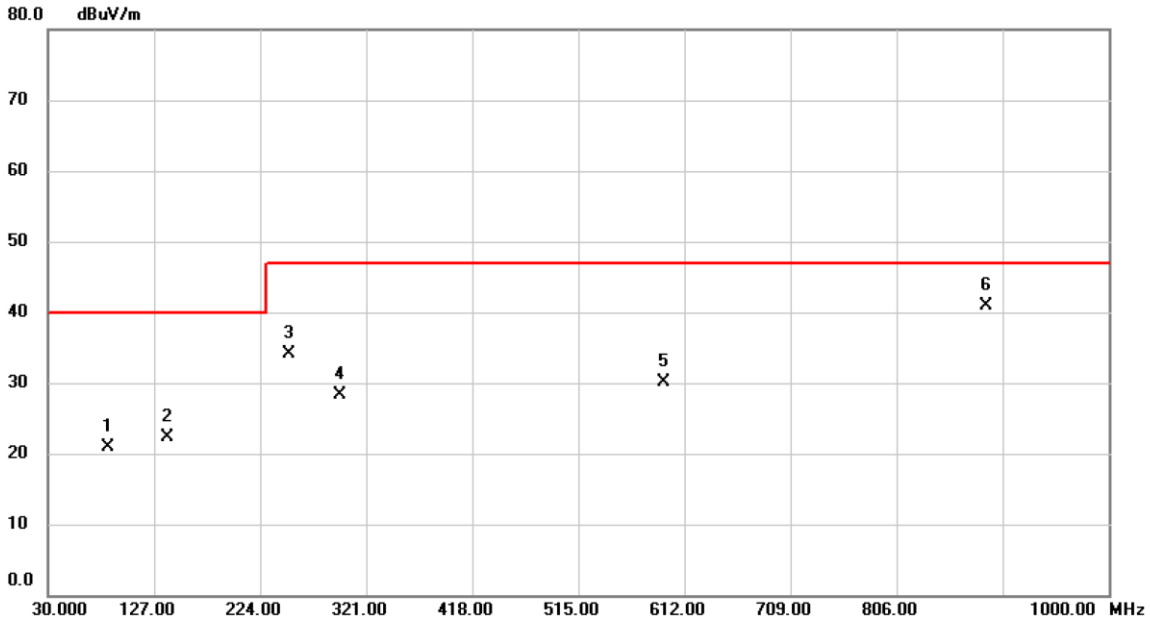
Test Mode	Mode 1	Tested Date	2025/2/21
Test Voltage	AC 120V/60Hz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	49.32	-18.45	30.87	40.00	-9.13	QP	100	316	
2		79.4700	48.73	-21.16	27.57	40.00	-12.43	QP	100	143	
3	*	250.1900	56.64	-17.01	39.63	47.00	-7.37	QP	100	293	
4		296.7500	45.17	-15.27	29.90	47.00	-17.10	QP	100	309	
5		592.6000	40.28	-8.28	32.00	47.00	-15.00	QP	100	233	
6		888.4500	43.51	-4.23	39.28	47.00	-7.72	QP	399	198	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	Mode 1	Tested Date	2025/2/21
Test Voltage	AC 120V/60Hz	Polarization	Horizontal

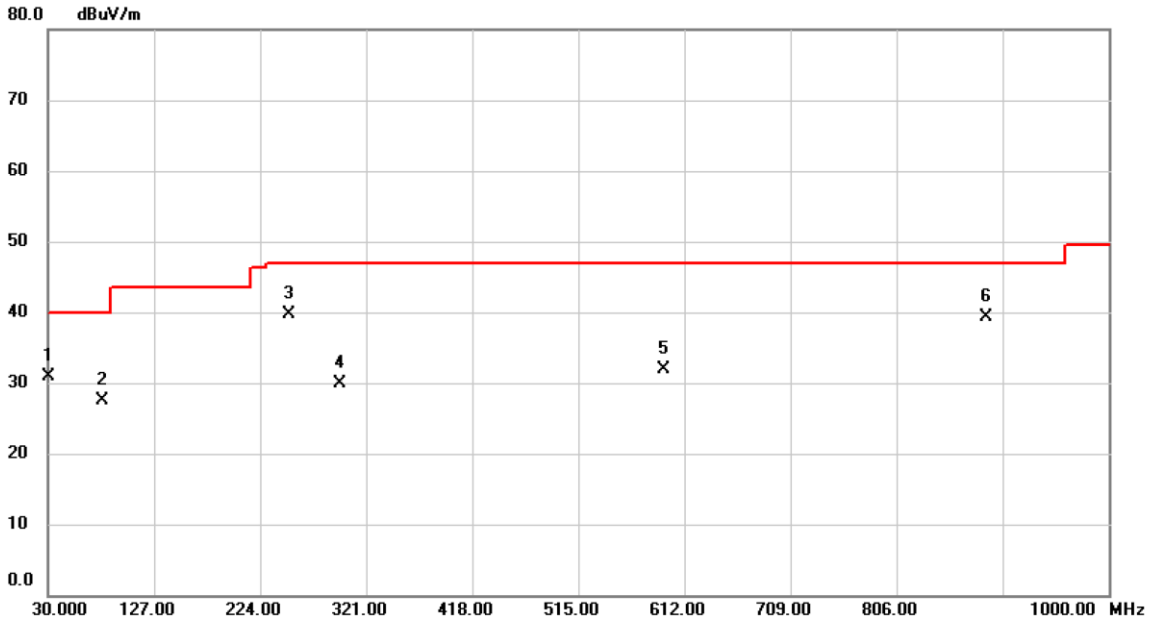


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		84.3200	43.33	-22.36	20.97	40.00	-19.03	QP	399	0	
2		139.6100	39.72	-17.42	22.30	40.00	-17.70	QP	399	2	
3		250.1900	51.75	-17.64	34.11	47.00	-12.89	QP	399	21	
4		296.7500	44.20	-15.84	28.36	47.00	-18.64	QP	399	189	
5		592.6000	39.53	-9.47	30.06	47.00	-16.94	QP	200	87	
6	*	888.4500	46.23	-5.34	40.89	47.00	-6.11	QP	100	358	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

3.2.8 TEST RESULT - ICES

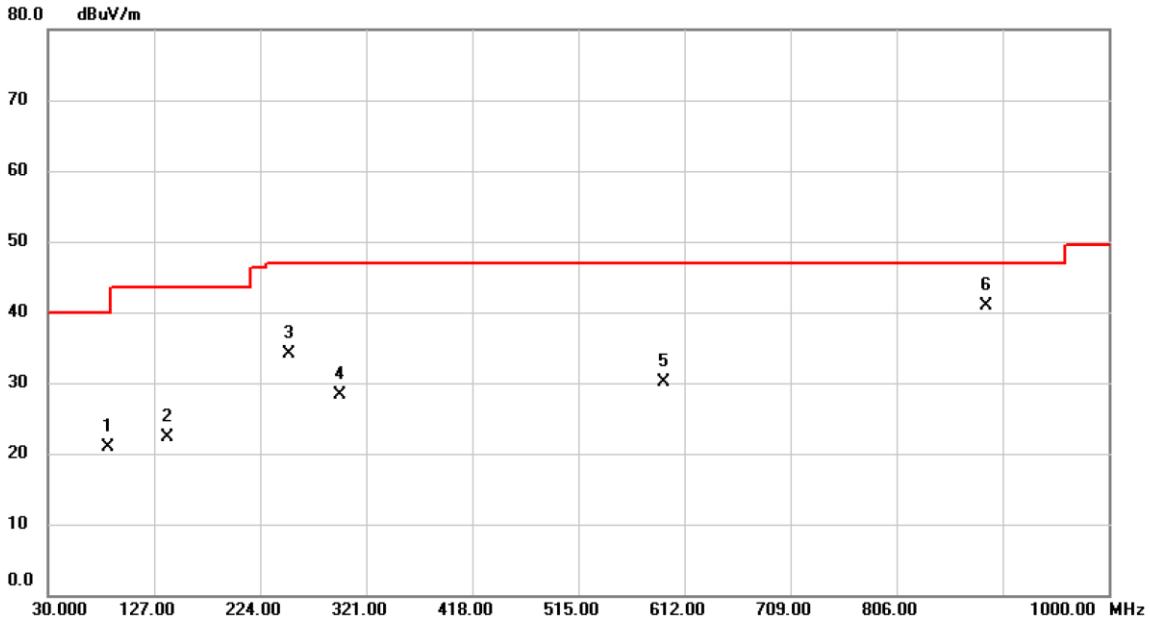
Test Mode	Mode 1	Tested Date	2025/2/21
Test Voltage	AC 120V/60Hz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	49.32	-18.45	30.87	40.00	-9.13	QP	100	316	
2		79.4700	48.73	-21.16	27.57	40.00	-12.43	QP	100	143	
3	*	250.1900	56.64	-17.01	39.63	47.00	-7.37	QP	100	293	
4		296.7500	45.17	-15.27	29.90	47.00	-17.10	QP	100	309	
5		592.6000	40.28	-8.28	32.00	47.00	-15.00	QP	100	233	
6		888.4500	43.51	-4.23	39.28	47.00	-7.72	QP	399	198	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	Mode 1	Tested Date	2025/2/21
Test Voltage	AC 120V/60Hz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		84.3200	43.33	-22.36	20.97	40.00	-19.03	QP	399	0	
2		139.6100	39.72	-17.42	22.30	43.50	-21.20	QP	399	2	
3		250.1900	51.75	-17.64	34.11	47.00	-12.89	QP	399	21	
4		296.7500	44.20	-15.84	28.36	47.00	-18.64	QP	399	189	
5		592.6000	39.53	-9.47	30.06	47.00	-16.94	QP	200	87	
6	*	888.4500	46.23	-5.34	40.89	47.00	-6.11	QP	100	358	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

3.3 RADIATED EMISSIONS ABOVE 1 GHZ TEST

3.3.1 LIMITS - FCC

Frequency (GHz)	Class A				Class B	
	(dBuV/m) (at 3 m)		(dBuV/m) (at 10 m)		(dBuV/m) (at 3 m)	
	Peak	Average	Peak	Average	Peak	Average
Above 1	80	60	69.5	49.5	74	54

Frequency range of radiated measurements (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

NOTE:
(1) The tighter limit applies at the band edges.
(2) Emission level (dBuV/m) = 20log Emission level (uV/m).
(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain (if use)
Margin Level = Measurement Value - Limit Value
Calculation example:

Reading Level (dBµV)		Correct Factor (dB/m)		Measurement Value (dBµV/m)
36.89	+	4.23	=	41.12

Measurement Value (dBµV/m)		Limit Value (dBµV/m)		Margin Level (dB)
41.12	-	54	=	-12.88

3.3.2 LIMITS - ICES

Frequency range (GHz)	Class A		Class B	
	Average (dBµV/m)	Peak (dBµV/m)	Average (dBµV/m)	Peak (dBµV/m)
1 – F_M	60	80	54	74

Required highest measurement frequency for radiated emissions

Highest internal frequency (F_X)	Highest measurement frequency (F_M)
$F_X \leq 108$ MHz	1 GHz
108 MHz < $F_X \leq 500$ MHz	2 GHz
500 MHz < $F_X \leq 1$ GHz	5 GHz
$F_X > 1$ GHz	5 x F_X up to a maximum of 40 GHz

NOTE:
(4) The more stringent limit applies at transition frequencies.
(5) F_X is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.
(6) Emission level (dBµV/m) = 20log Emission level (uV/m).
(7) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain (if use)
Margin Level = Measurement Value - Limit Value
Calculation example:

Reading Level (dBµV)		Correct Factor (dB/m)		Measurement Value (dBµV/m)
36.89	+	4.23	=	41.12

Measurement Value (dBµV/m)		Limit Value (dBµV/m)		Margin Level (dB)
41.12	-	54	=	-12.88

3.3.3 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Horn Antenna	RFSPIN	DRH18-E	210108A18E	2024/5/9	2025/5/8
2	Pre-Amplifier	EMCI	EMC012645SE	980411	2025/2/5	2026/2/4
3	Test Cable	EMCI	EMC104-SM-SM-2500	150306	2024/11/14	2025/11/13
4	Test Cable	EMCI	EMC104-SM-SM-7000	230909	2024/11/14	2025/11/13
5	Test Cable	EMCI	EMC104-SM-SM-800	150332	2024/11/14	2025/11/13
6	EMI Test Receiver	Agilent	N9038A	MY51210215	2024/12/4	2025/12/3
7	Measurement Software	Farad	EZ_EMC (Ver. NB-03A1-01)	N/A	N/A	N/A

REMARK:
(1) “N/A” denotes no model name, no serial no. or no calibration specified.
(2) All calibration period of equipment list is one year.

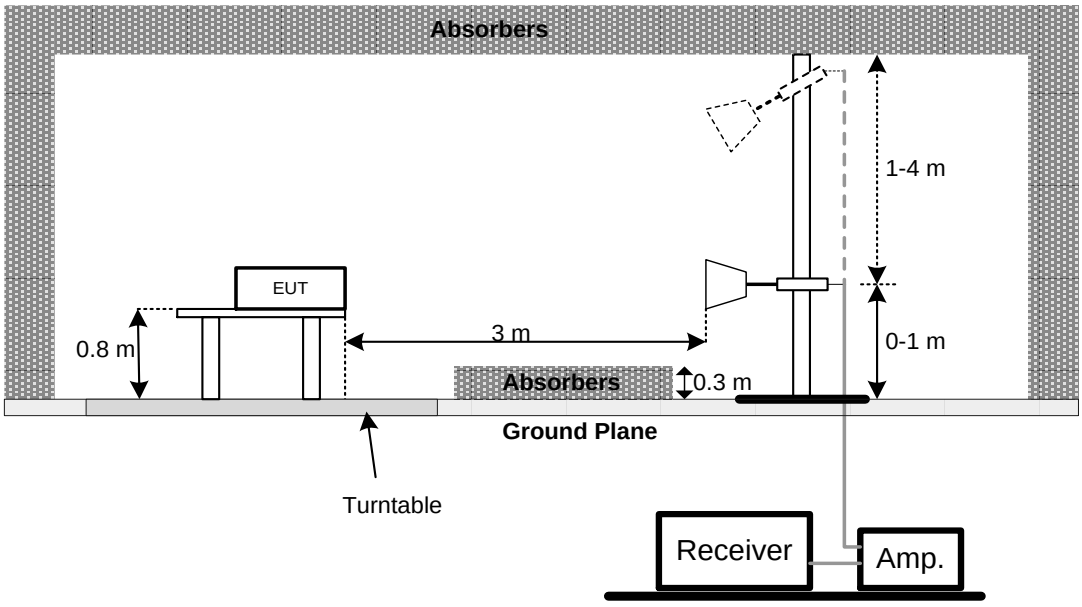
3.3.4 TEST PROCEDURE

a. The separation distance of 3 m was used for measurements above 1 GHz.
The test limits were altered using the 20 dB/decade extrapolation factor.
The EUT was placed on the top of a rotating table 0.8 m above the ground in a 3 m semi-anechoic chamber.
b. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the receive antenna was varied between 1 m and 4 m. Both horizontal and vertical polarizations of the antenna were checked.
d. For each suspected emission, the EUT was arranged at its worst case and then the antenna was scanned in height to find the maximum. The tower Bore sight function was used.
e. The receiver/spectrum analyzer was set to peak and average detect function and specified bandwidth with maximum hold mode.
f. For the actual test configuration, please refer to the related Item - TEST PHOTOS.

3.3.5 DEVIATION FROM TEST STANDARD

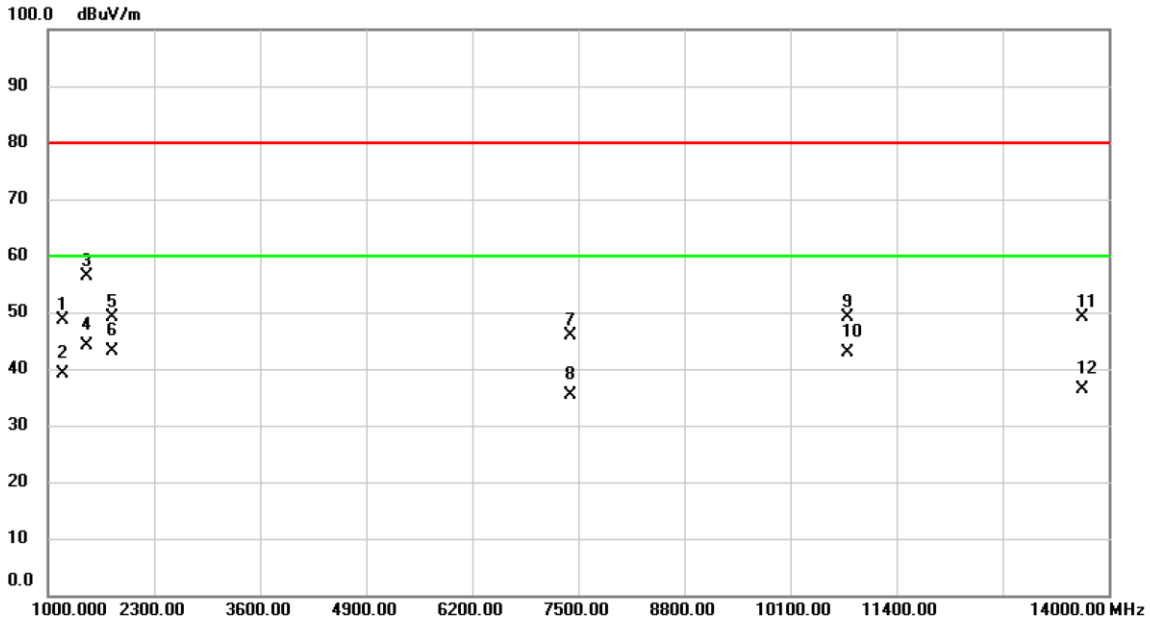
No deviation.

3.3.6 TEST SETUP



3.3.7 TEST RESULT

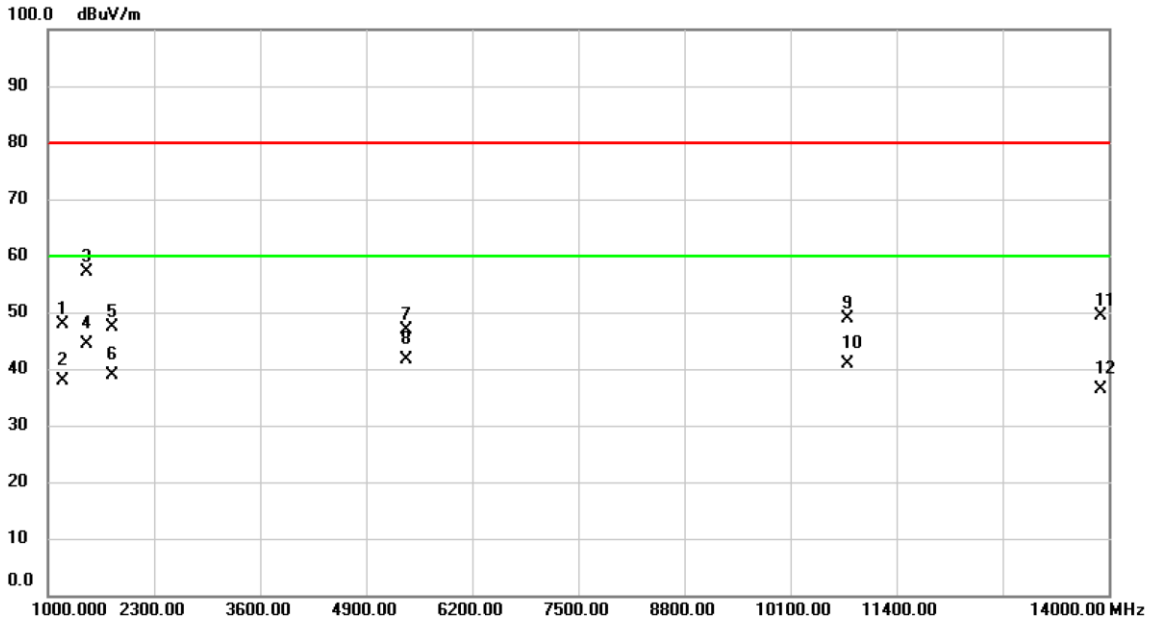
Test Mode	Mode 1	Tested Date	2025/2/27
Test Voltage	AC 120V/60Hz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1182.000	71.31	-22.64	48.67	80.00	-31.33	peak	200	200	
2		1182.000	61.67	-22.64	39.03	60.00	-20.97	AVG	200	200	
3		1481.000	77.94	-21.67	56.27	80.00	-23.73	peak	100	238	
4	*	1481.000	65.72	-21.67	44.05	60.00	-15.95	AVG	100	238	
5		1780.000	69.19	-19.98	49.21	80.00	-30.79	peak	100	190	
6		1780.000	63.08	-19.98	43.10	60.00	-16.90	AVG	100	190	
7		7409.000	50.00	-4.04	45.96	80.00	-34.04	peak	100	173	
8		7409.000	39.40	-4.04	35.36	60.00	-24.64	AVG	100	173	
9		10802.00	49.74	-0.56	49.18	80.00	-30.82	peak	100	203	
10		10802.00	43.43	-0.56	42.87	60.00	-17.13	AVG	100	203	
11		13675.00	45.82	3.38	49.20	80.00	-30.80	peak	200	134	
12		13675.00	33.10	3.38	36.48	60.00	-23.52	AVG	200	134	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	Mode 1	Tested Date	2025/2/27
Test Voltage	AC 120V/60Hz	Polarization	Horizontal

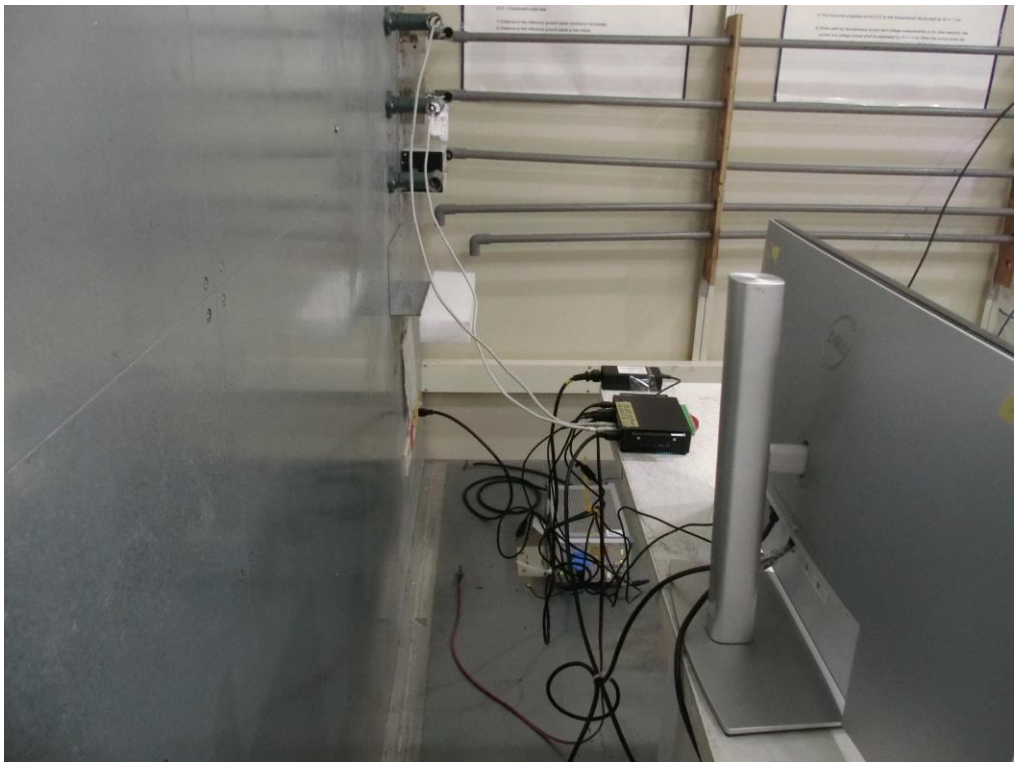


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1182.000	70.58	-22.64	47.94	80.00	-32.06	peak	100	237	
2		1182.000	60.53	-22.64	37.89	60.00	-22.11	AVG	100	237	
3		1481.000	78.75	-21.67	57.08	80.00	-22.92	peak	200	201	
4	*	1481.000	65.95	-21.67	44.28	60.00	-15.72	AVG	200	201	
5		1780.000	67.33	-19.98	47.35	80.00	-32.65	peak	100	248	
6		1780.000	58.89	-19.98	38.91	60.00	-21.09	AVG	100	248	
7		5394.000	56.91	-10.00	46.91	80.00	-33.09	peak	100	237	
8		5394.000	51.53	-10.00	41.53	60.00	-18.47	AVG	100	237	
9		10802.00	49.35	-0.56	48.79	80.00	-31.21	peak	100	213	
10		10802.00	41.33	-0.56	40.77	60.00	-19.23	AVG	100	213	
11		13909.00	45.58	3.78	49.36	80.00	-30.64	peak	200	124	
12		13909.00	32.48	3.78	36.26	60.00	-23.74	AVG	200	124	

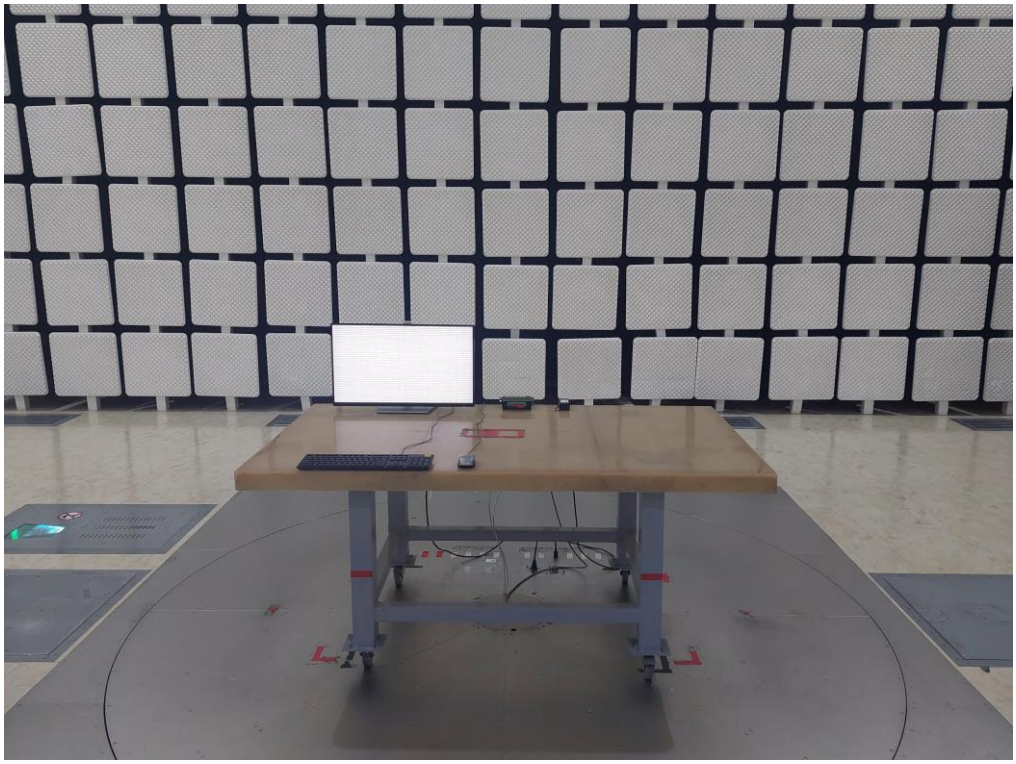
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

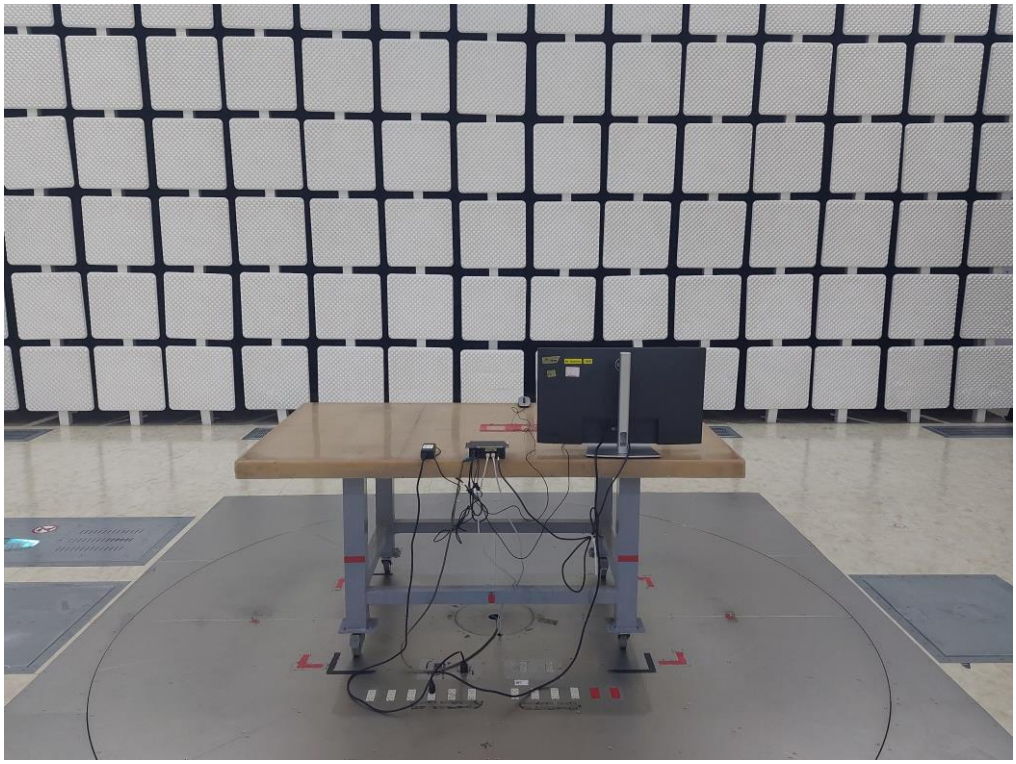
4 TEST PHOTOS

AC power line conducted emissions test photos

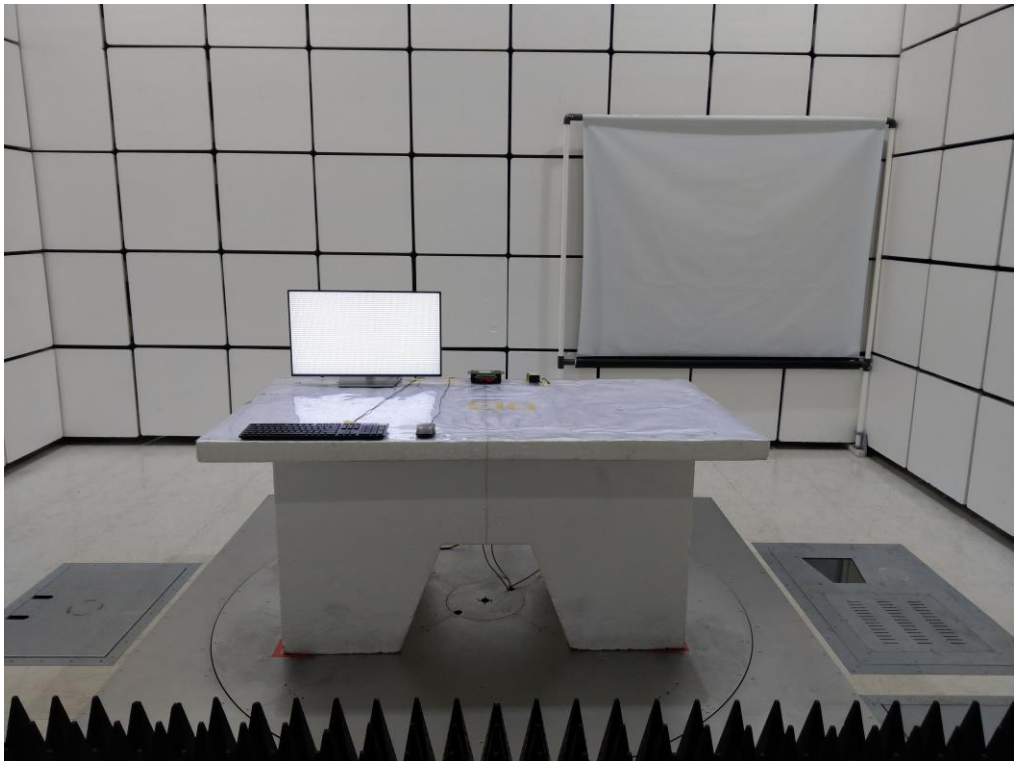


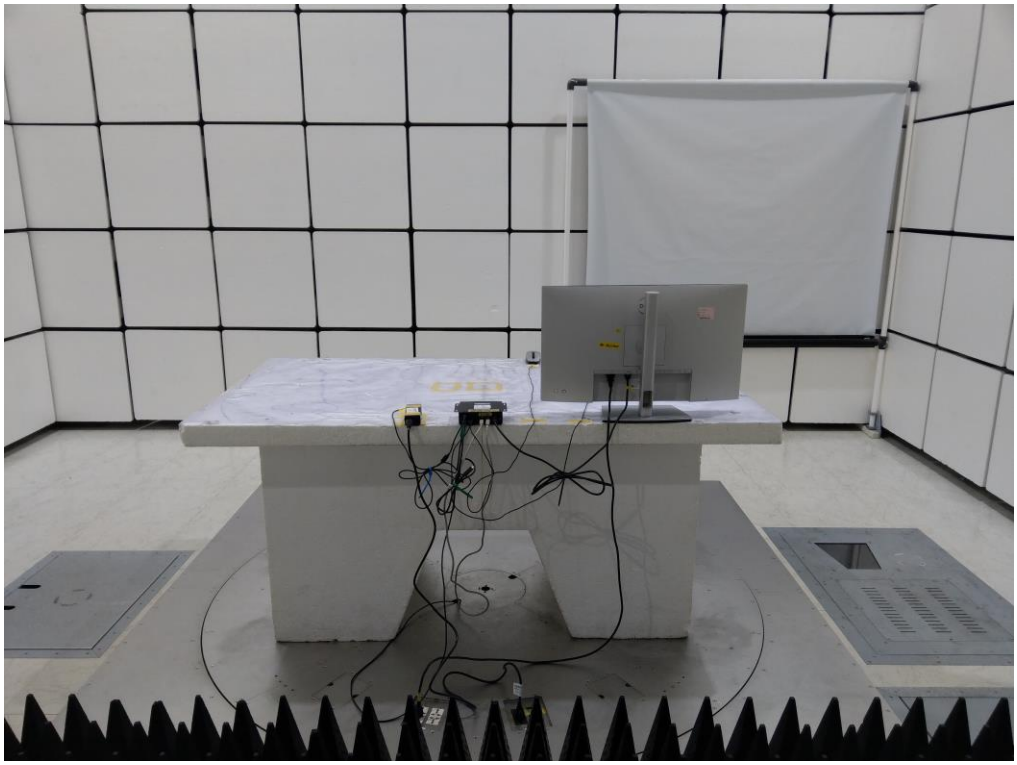
Radiated emissions below 1 GHz test photos





Radiated emissions above 1 GHz test photos





5 EUT PHOTOS

Please refer to document Appendix No.: EP-2503T017-1 (APPENDIX-EUT PHOTOS).

End of Test Report