CE EMC Test Report

Report No.	:	BTL-EMC-1-2505T096
Equipment	:	D200P U.2
Model Name	:	PX1AE-25X
Brand Name	:	Apacer Technology Inc.
Applicant	:	Apacer Technology Inc.
Address	:	1F., No.32, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan (R.O.C)
Standard(s)	:	EN 55032:2015+A1:2020 Class B BS EN 55032:2015+A1:2020 Class B EN 55035:2017+A11:2020 BS EN 55035:2017+A11:2020
Date of Receipt	:	2024/3/11
Date of Test	:	2024/3/15 ~ 2024/3/21
Issued Date	:	2025/6/10

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

BTL Inc.
No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan
Tel: +886-2-2657-3299 Fax: +886-2-2657-3331 Web: www.newbtl.com Service mail: btl_qa@newbtl.com

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-EMC-1-2505T096	R00	Original Report.	2025/6/10	Valid

1 SUMMARY OF TEST RESULTS

Emission			
Standard	Test Item	Limit	Judgment
EN 55032:2015+A1:2020 BS EN 55032:2015+A1:2020	Radiated emissions up to 1 GHz	Class B	PASS
	Radiated emissions above 1 GHz	Class B	PASS
	Radiated emissions from FM receivers	------	N/A
	Outdoor units of home satellite receiving systems	------	N/A
	Conducted emissions from the AC mains power ports	Class B	PASS
	Asymmetric mode conducted emissions	------	N/A
	Conducted differential voltage emissions	------	N/A

Immunity				
Standard	Reference Standard / Clause	Environmental phenomenon	Performance Criterion Limit	Judgment
EN 55035:2017+A11:2020 BS EN 55035:2017+A11:2020	EN 61000-4-2:2009	Electrostatic discharge	B	PASS
	EN IEC 61000-4-3:2020	Continuous RF electromagnetic field disturbances	A	PASS
	EN 61000-4-4:2012	Electrical fast transients / burst	------	N/A
	EN 61000-4-5:2014 +A1:2017	Surges	------	N/A
	EN 61000-4-6:2014 +AC:2015	Continuous induced RF disturbances	------	N/A
	EN 61000-4-8:2010	Power frequency magnetic field	A	PASS
	EN IEC 61000-4-11:2020 +AC:2020-06	Voltage dips and Voltage interruptions	------	N/A
	4.2.7	Broadband impulse noise disturbances, repetitive	------	N/A
	4.2.7	Broadband impulse noise disturbances, isolated	------	N/A

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) For DC network and AC mains power ports is Criterion B.
For analogue/digital data ports:
Port type: unshielded symmetrical is Criterion C.
Port type: coaxial or shielded is Criterion B.
(3) For voltage dips residual voltage < 5 % is Criterion B.
For voltage dips residual voltage 70 % is Criterion C.
For voltage interruptions residual voltage < 5 % is Criterion C.
(4) Both of specific and the latest version of the basic standard are referenced to fulfill the requirements.
(5) The report format version is TP.1.1.1.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report:

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

No. 68-2, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
☒ CB17 ☐ SR01 ☒ SR02 ☐ SR05 ☐ SR09

No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
☒ C06

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. Radiated emissions up to 1 GHz test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
CB08 (10m)	CISPR	30 MHz ~ 200 MHz	V	3.12
		30 MHz ~ 200 MHz	H	3.26
		200 MHz ~ 1,000 MHz	V	3.22
		200 MHz ~ 1,000 MHz	H	3.12

B. Radiated emissions above 1 GHz test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
CB11	CISPR	1 GHz ~ 6 GHz	V	4.44
		1 GHz ~ 6 GHz	H	4.40

C. Conducted emissions from the AC mains power ports test:

Test Site	Method	Measurement Frequency Range	U (dB)
C05	CISPR	150 kHz ~ 30 MHz	3.44

D. Immunity tests:

Test Site	Method	Test Item	U
SR02	EN 61000-4-2	Rise time	≤12.5 %
		Peak Current	≤6.0 %
		Current at 30ns	≤6.0 %
		Current at 60ns	≤6.0 %
CB17	EN IEC 61000-4-3	General test 80 MHz~1 GHz 1 GHz~6 GHz	 3.68 dB 3.68 dB
C06	EN 61000-4-8	PFMF mG Calibration	8.33 %

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
EN 55032		
Radiated emissions up to 1 GHz	25°C, 58%	Steve Yang
Radiated emissions above 1 GHz	22°C, 66%	Eric Tai
Conducted emissions from the AC mains power ports	15°C, 56%	Bruce Lu
EN 55035		
Electrostatic discharge	21°C, 50%, 1020hPa	Steve Yang
Continuous RF electromagnetic field disturbances	21°C, 50%	Steve Yang
Power frequency magnetic field	21°C, 50%	Steve Yang

2 GENERAL INFORMATION

2.1 EUT INFORMATION

Equipment	D200P U.2
Model Name	PX1AE-25X
Brand Name	Apacer Technology Inc.
Model Difference	N/A
Power Source	DC voltage supplied from host system.
Power Rating	DC 12V, 2.5A
Products Covered	N/A
PCBA PN	Q2190X23X00G403H, Q2190X23X00G40XXXXXXX (X=0~9; A~Z)
Test Model	PX1AE-25X
Sample Status	Engineering Sample
Highest Internal Frequency	16 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-EMC-1- 2403T060 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	SSD R/W

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

Radiated emissions up to 1 GHz test	
Final Test Mode	Description
Mode 1	SSD R/W

Radiated emissions above 1 GHz test	
Final Test Mode	Description
Mode 1	SSD R/W

Conducted emissions from the AC mains power ports test	
Final Test Mode	Description
Mode 1	SSD R/W

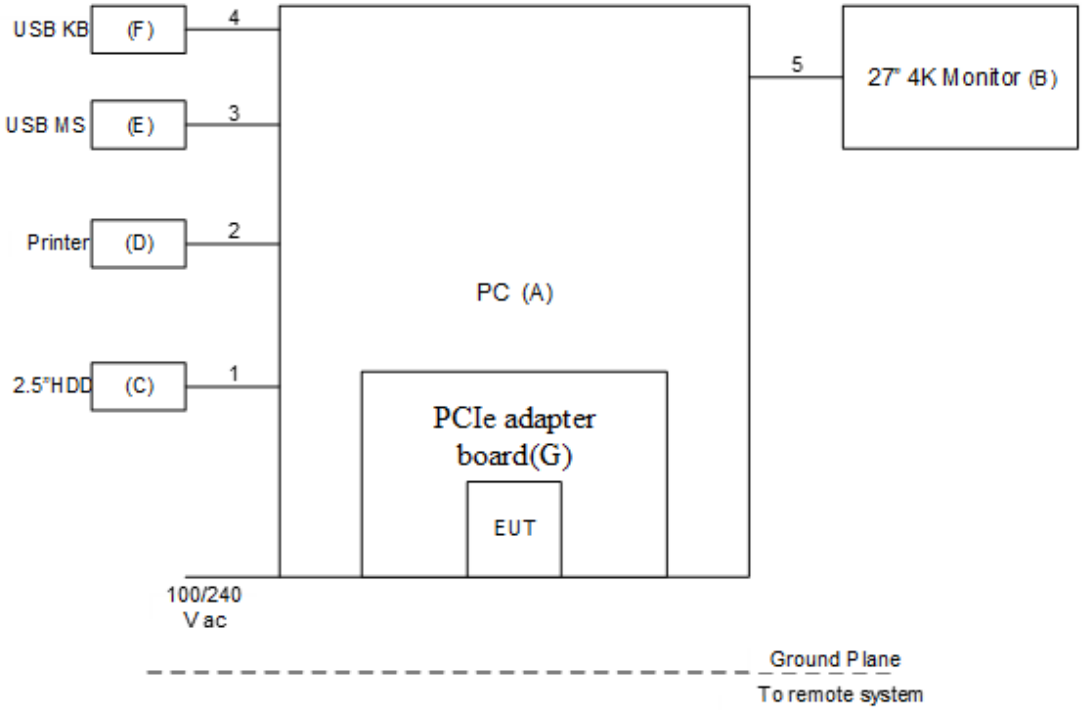
Immunity tests	
Final Test Mode	Description
Mode 1	SSD R/W

2.3 EUT OPERATING CONDITION

The PC exercise program 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.



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-WSL0 0-35I-526L-A03	Furnished by test lab.
B (EMS)	27" 4K Monitor	DELL	U2720Q	CN-083VF-WSL00-0B7-332L	Furnished by test lab.
C	USB 3.0 HDD (My Passport Ultra)	WD	WDBC3C0010BSL-0B	WX81A88ALJUC	Furnished by test lab.
C (EMS)	USB 3.1 HDD	AKiTiO	SK2-U31AS-AKT	SK21D1621D003F	Furnished by test lab.
D	Printer	HP	SNPRH-1504	N/A	Furnished by test lab.
E	USB Mouse	DELL	MOCZUL	CN-049TWY-PRC0 0-79E-01HA	Furnished by test lab.
F	USB K/B	DELL	KB216t	CN-0W33XP-L030 0-797-05TY-A03	Furnished by test lab.
G	PCIe adapter board	N/A	N/A	N/A	Supplied by test requester.

Item	Cable Type	Shielded	Ferrite Core	Length	Remarks
1	USB Cable	YES	NO	1.5m	Type: USB 3.2 Gen1 Furnished by test lab.
2	USB Cable	YES	NO	1.7m	Type: USB 2.0 Furnished by test lab.
3	USB Cable	YES	NO	1.7m	Type: USB 2.0 Furnished by test lab.
4	USB Cable	YES	NO	1.7m	Type: USB 2.0 Furnished by test lab.
5	DP Cable	YES	NO	1.8m	Furnished by test lab.

3 EMC EMISSION TEST

3.1 RADIATED EMISSIONS UP TO 1 GHZ TEST

3.1.1 LIMITS

Table A.2 – Requirements for radiated emissions at frequencies up to 1 GHz for class A equipment

Table clause	Frequency range MHz	Measurement			Class A limits dB(μV/m)
		Facility (see Table A.1)	Distance m	Detector type / bandwidth	
A2.1	30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	40
	230 to 1 000				47
A2.2	30 to 230	OATS/SAC	3		50
	230 to 1 000				57
A2.3	30 to 230	FAR	10	Quasi Peak / 120 kHz	42 to 35
	230 to 1 000				42
A2.4	30 to 230	FAR	3		52 to 45
	230 to 1 000				52
Apply only A2.1 or A2.2 or A2.3 or A2.4 across the entire frequency range.					

Table A.4 – Requirements for radiated emissions at frequencies up to 1 GHz for class B equipment

Table clause	Frequency range MHz	Measurement			Class B limits dB(μV/m)
		Facility (see Table A.1)	Distance m	Detector type / bandwidth	
A4.1	30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	30
	230 to 1 000				37
A4.2	30 to 230	OATS/SAC	3		40
	230 to 1 000				47
A4.3	30 to 230	FAR	10	Quasi Peak / 120 kHz	32 to 25
	230 to 1 000				32
A4.4	30 to 230	FAR	3		42 to 35
	230 to 1 000				42
Apply only table clause A4.1 or A4.2 or A4.3 or A4.4 across the entire frequency range. These requirements are not applicable to the local oscillator and harmonics frequencies of equipment covered by Table A.6.					

Table 1 – Required highest frequency for radiated measurement

Highest internal frequency (F_x)	Highest measured frequency
$F_x \leq 108$ 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	$5 \times F_x$ up to a maximum of 6 GHz

NOTE 1 For FM and TV broadcast receivers, F_x is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.

NOTE 2 F_x is defined in 3.1.18.

NOTE 3 For outdoor units of home satellite receiving systems highest measured frequency shall be 18 GHz.

Where F_x is unknown, the radiated emission measurements shall be performed up to 6 GHz.

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)
19.11	+	2.11	=	21.22

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

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Log-Bicon Antenna	Schwarzbeck	VULB 9168	9168-641	2024/2/23	2025/2/22
2	Attenuator	Inmet	EMCI-N-6-05	AT-N0507	2024/2/23	2025/2/22
3	Pre-Amplifier	EMCI	EMC 9135	980282	2023/9/19	2024/9/18
4	Test Cable	EMCI	EMC104-SM-SM-800	230906	2023/9/19	2024/9/18
5	Test Cable	EMCI	EMCCFD400-NM-NM-8000	230903	2023/9/19	2024/9/18
6	Test Cable	EMCI	EMCCFD400-NM-NM-3500	230904	2023/9/19	2024/9/18
7	Test Cable	EMCI	EMC104-NM-SM-2500	230908	2023/9/19	2024/9/18
8	EMI Test Receiver	Keysight	N9038A	MY56400090	2023/6/1	2024/5/31
9	Log-Bicon Antenna	Schwarzbeck	VULB 9168	9168-673	2024/2/23	2025/2/22
10	Attenuator	Inmet	EMCI-N-6-06	AT-N0615	2024/2/23	2025/2/22
11	Pre-Amplifier	EMCI	EMC 9135	980281	2023/9/19	2024/9/18
12	Test Cable	EMCI	EMC104-SM-SM-1000	230905	2023/9/19	2024/9/18
13	Test Cable	EMCI	EMC104-SM-SM-2500	230907	2023/9/19	2024/9/18
14	Test Cable	EMCI	EMCCFD400-NM-NM-8000	230902	2023/9/19	2024/9/18
15	Test Cable	EMCI	EMCCFD400-NM-NM-11000	230901	2023/9/19	2024/9/18
16	EXA Signal Analyzer	Keysight	N9010A	MY54200483	2023/11/15	2024/11/14
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.

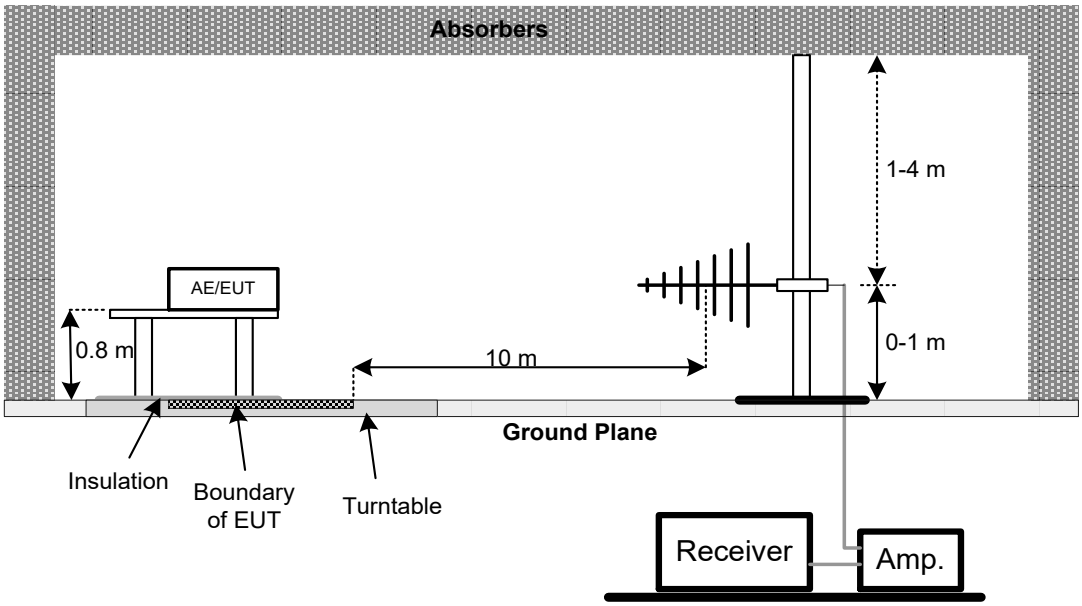
3.1.3 TEST PROCEDURE

a. The separation distance of 10 m was used for measurements up to 1 GHz.
The EUT was placed on the top of a table 0.8 m above the rotating ground in a 10 m semi-anechoic chamber.
b. Cables connecting to AE located outside the measurement area drop directly to, but be insulated from, the RGP (or turntable where applicable), and then be routed directly to the place where they leave the test site. However, cables which would normally be bonded to ground should be bonded to the RGP in accordance with normal practice or the manufacturer's recommendation.
c. The rotating ground was rotated 360 degrees to determine the position of the highest radiation.
d. The height of the receive antenna was varied between 1 m and 4 m. Both horizontal and vertical polarizations of the antenna were checked.
e. For each suspected emission, the EUT was arranged at its worst case and then the antenna was scanned in height to find the maximum.
f. The receiver was set to quasi-peak detect function and specified bandwidth with maximum hold mode.
g. 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 MEASUREMENT DISTANCE

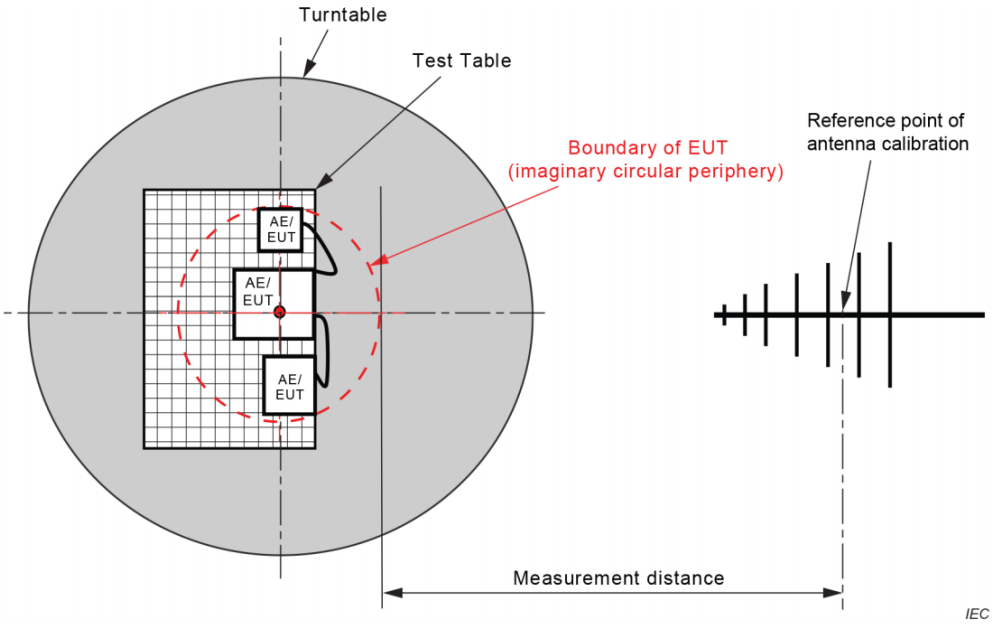


Figure C.1 – Measurement distance

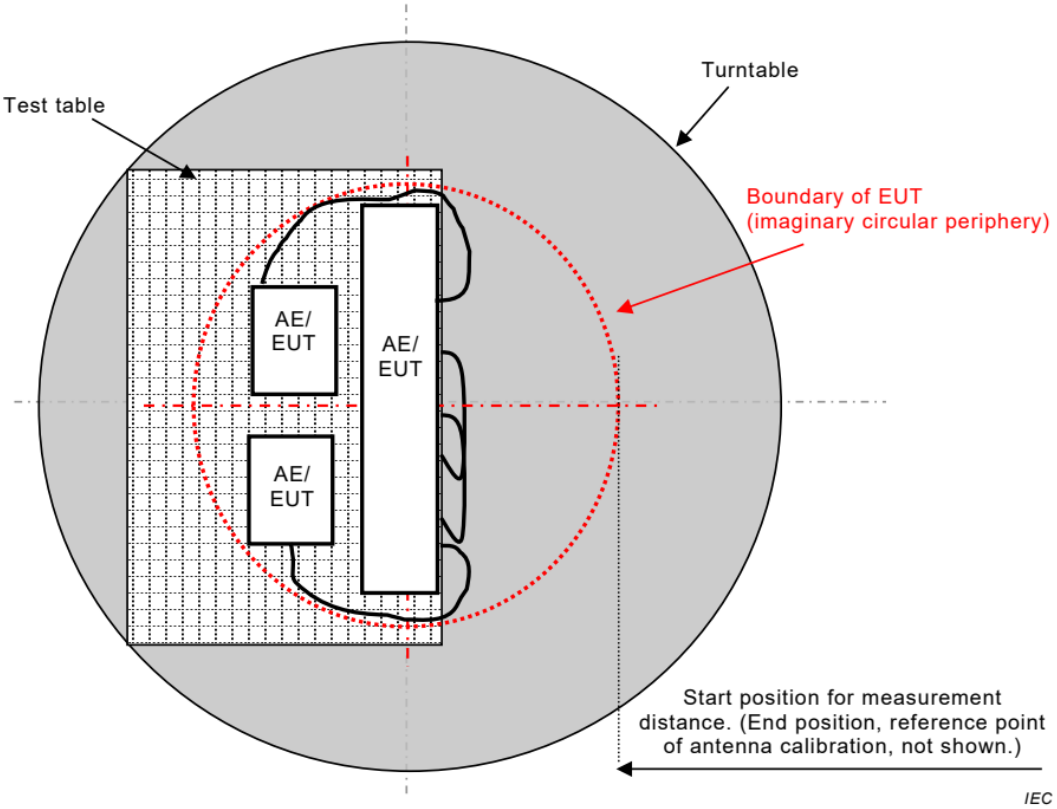
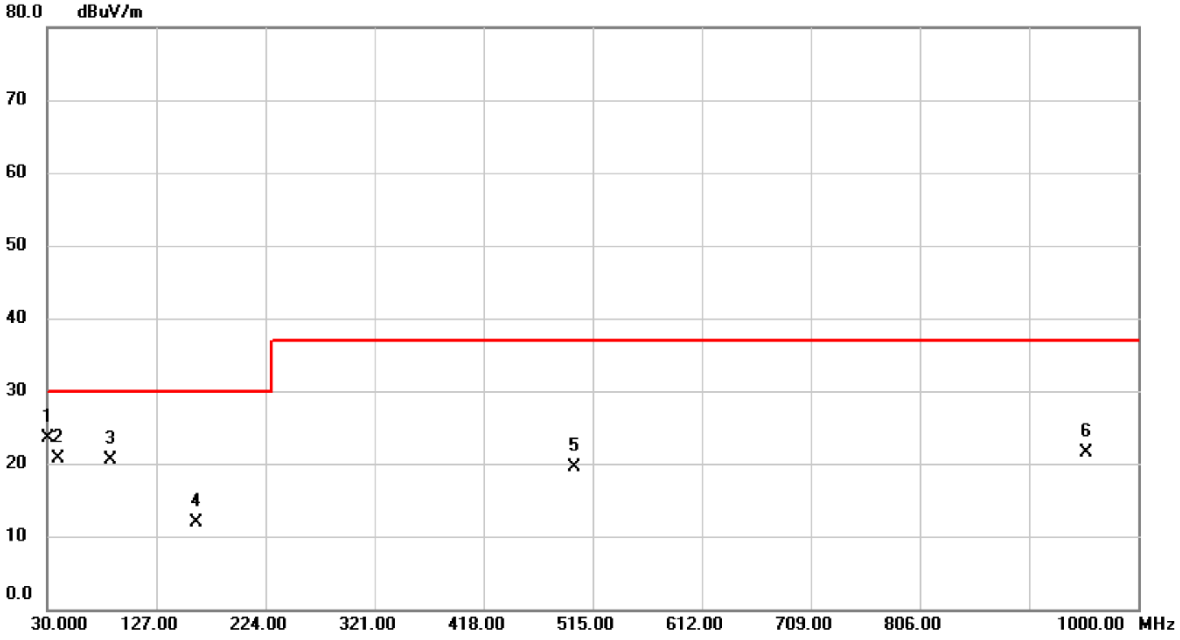


Figure C.2 – Boundary of EUT, Local AE and associated cabling

3.1.7 TEST RESULT

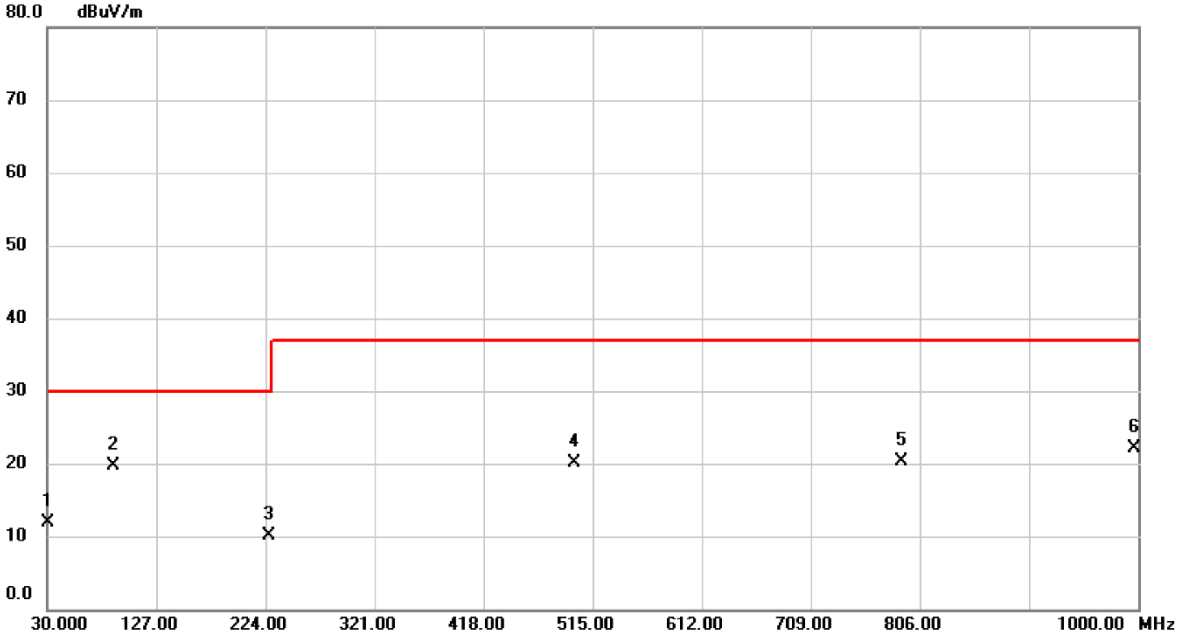
Test Mode	Mode 1	Tested Date	2024/3/16
Test Voltage	AC 230V/50Hz	Polarization	Vertical



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	*	30.9700	42.67	-19.07	23.60	30.00	-6.40	QP	100	130	
2		39.7000	38.22	-17.44	20.78	30.00	-9.22	QP	101	0	
3		86.2600	43.04	-22.55	20.49	30.00	-9.51	QP	100	260	
4		161.9200	28.75	-16.79	11.96	30.00	-18.04	QP	100	225	
5		498.5100	31.16	-11.64	19.52	37.00	-17.48	QP	100	86	
6		953.4400	26.56	-5.04	21.52	37.00	-15.48	QP	300	360	

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

Test Mode	Mode 1	Tested Date	2024/3/16
Test Voltage	AC 230V/50Hz	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		30.9700	31.23	-19.24	11.99	30.00	-18.01	QP	100	360	
2	*	89.1700	42.74	-23.08	19.66	30.00	-10.34	QP	400	188	
3		226.9100	30.01	-19.82	10.19	30.00	-19.81	QP	400	333	
4		498.5100	32.14	-12.13	20.01	37.00	-16.99	QP	100	288	
5		789.5100	27.80	-7.49	20.31	37.00	-16.69	QP	100	280	
6		996.1200	27.08	-4.89	22.19	37.00	-14.81	QP	300	82	

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

3.2 RADIATED EMISSIONS ABOVE 1 GHZ TEST

3.2.1 LIMITS

Table A.3 – Requirements for radiated emissions at frequencies above 1 GHz for class A equipment

Table clause	Frequency range MHz	Measurement			Class A limits dB(μV/m)
		Facility (see table A.1)	Distance m	Detector type / bandwidth	
A3.1	1 000 to 6 000	FSOATS	3	Average / 1 MHz	60
A3.2	1 000 to 6 000			Peak / 1 MHz	80
Apply A3.1 and A3.2 across the frequency range from 1 000 MHz to the highest required frequency of measurement derived from Table 1.					

Table A.5 – Requirements for radiated emissions at frequencies above 1 GHz for class B equipment

Table clause	Frequency range MHz	Measurement			Class B limits dB(μV/m)
		Facility (see table A.1)	Distance m	Detector type/ bandwidth	
A5.1	1 000 to 6 000	FSOATS	3	Average/ 1 MHz	54
A5.2	1 000 to 6 000			Peak/ 1 MHz	74
Apply A5.1 and A5.2 across the frequency range from 1 000 MHz to the highest required frequency of measurement derived from Table 1 . These requirements are not applicable to the local oscillator and harmonics frequencies of equipment covered by Table A.7.					

Table 1 – Required highest frequency for radiated measurement

Highest internal frequency (F_x)	Highest measured frequency
$F_x \leq 108$ 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	$5 \times F_x$ up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, F_x is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies. NOTE 2 F_x is defined in 3.1.18. NOTE 3 For outdoor units of home satellite receiving systems highest measured frequency shall be 18 GHz.	

Where F_x is unknown, the radiated emission measurements shall be performed up to 6 GHz.

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

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Horn Antenna	RFSPIN	DRH18-E	210108A18E	2023/5/5	2024/5/4
2	Pre-Amplifier	EMCI	EMC012645SE	980411	2024/1/20	2025/1/19
3	Test Cable	EMCI	EMC104-SM-SM-2500	150306	2023/11/17	2024/11/16
4	Test Cable	EMCI	EMC104-SM-SM-7000	230909	2023/11/17	2024/11/16
5	Test Cable	EMCI	EMC104-SM-SM-800	150332	2023/11/17	2024/11/16
6	EMI Test Receiver	Keysight	N9038A	MY51210215	2023/11/23	2024/11/22
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.

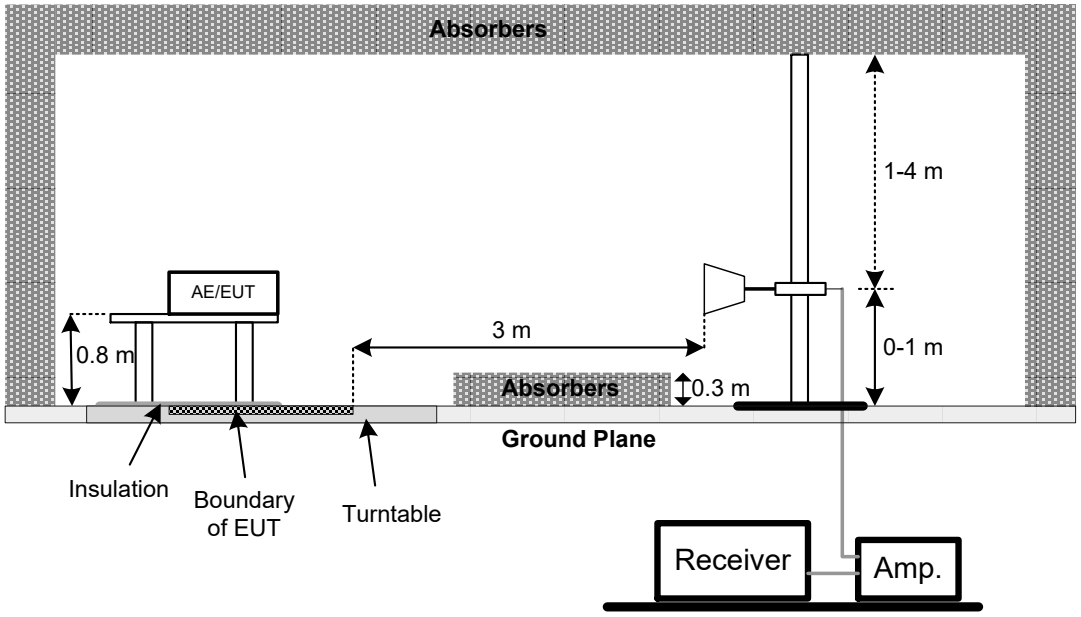
3.2.3 TEST PROCEDURE

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. Cables connecting to AE located outside the measurement area drop directly to, but be insulated from, the RGP (or turntable where applicable), and then be routed directly to the place where they leave the test site. However, cables which would normally be bonded to ground should be bonded to the RGP in accordance with normal practice or the manufacturer’s recommendation.
c. The rotating ground was rotated 360 degrees to determine the position of the highest radiation.
d. The height of the receive antenna was varied between 1 m and 4 m. Both horizontal and vertical polarizations of the antenna were checked.
e. 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.
f. The receiver/spectrum analyzer was set to peak and average detect function and specified bandwidth with maximum hold mode.
g. For the actual test configuration, please refer to the related Item - TEST PHOTOS.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation.

3.2.5 TEST SETUP



3.2.6 MEASUREMENT DISTANCE

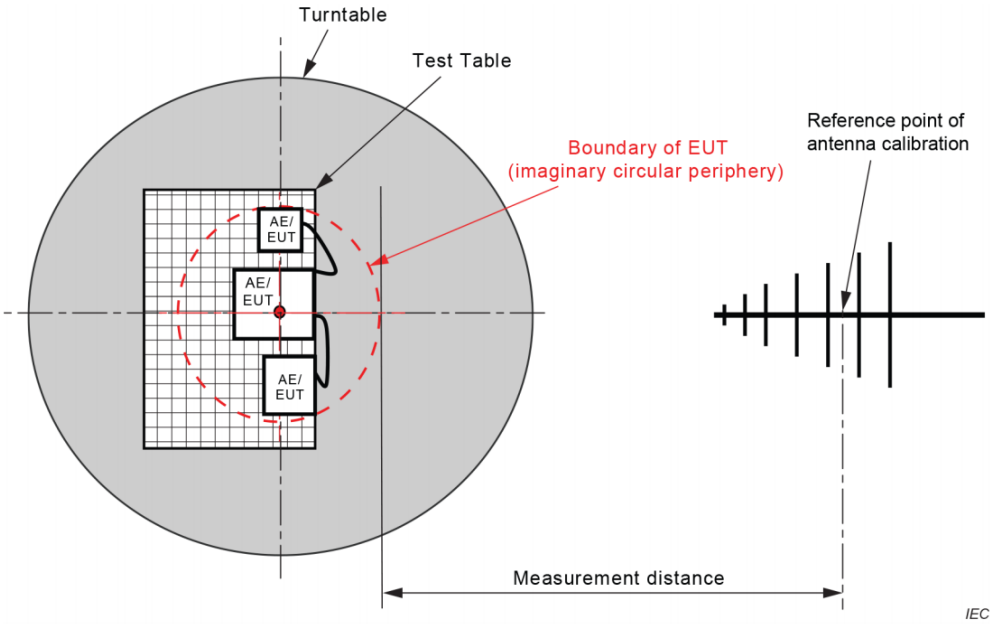


Figure C.1 – Measurement distance

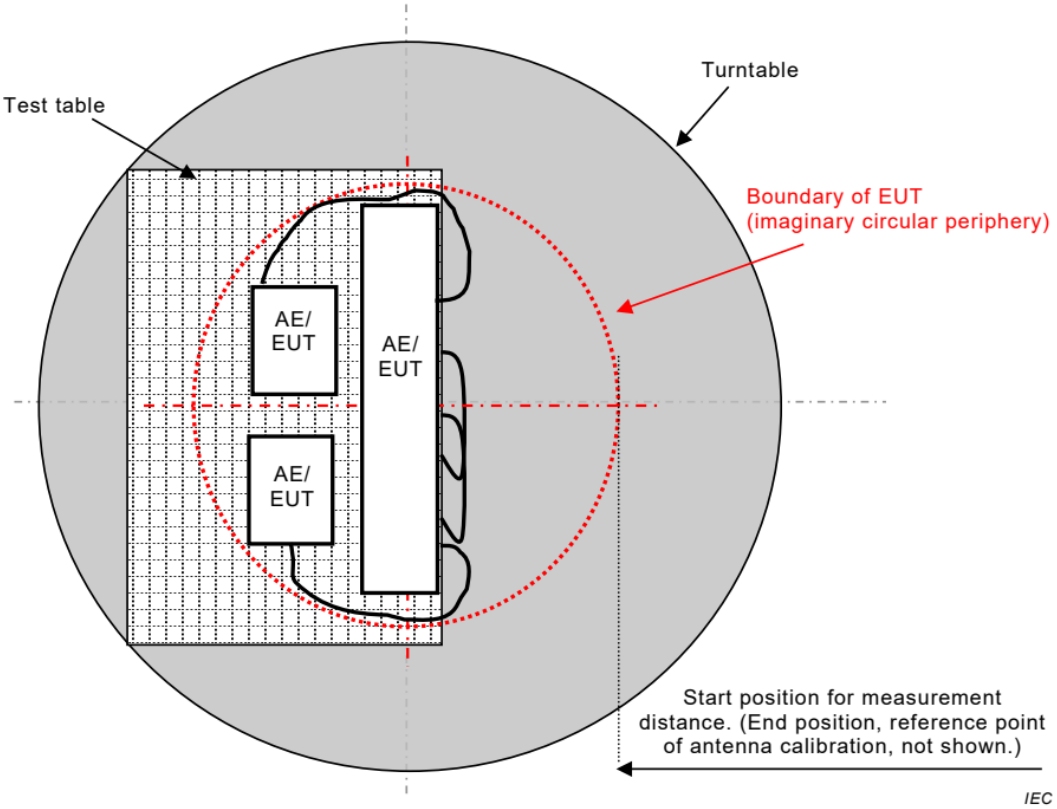
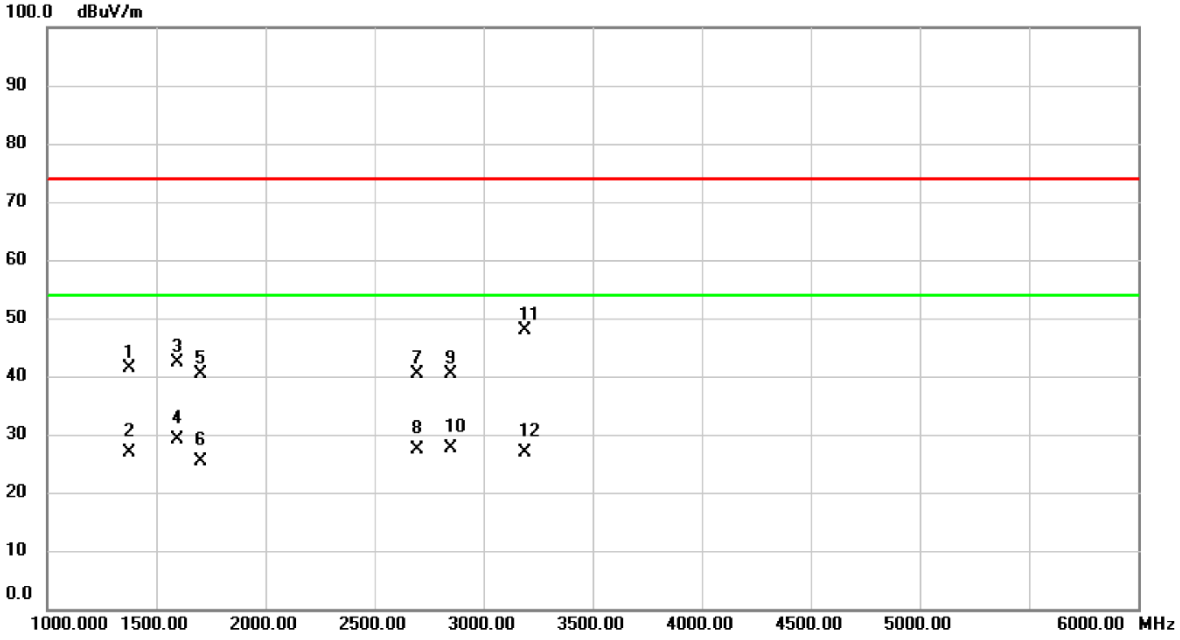


Figure C.2 – Boundary of EUT, Local AE and associated cabling

3.2.7 TEST RESULT

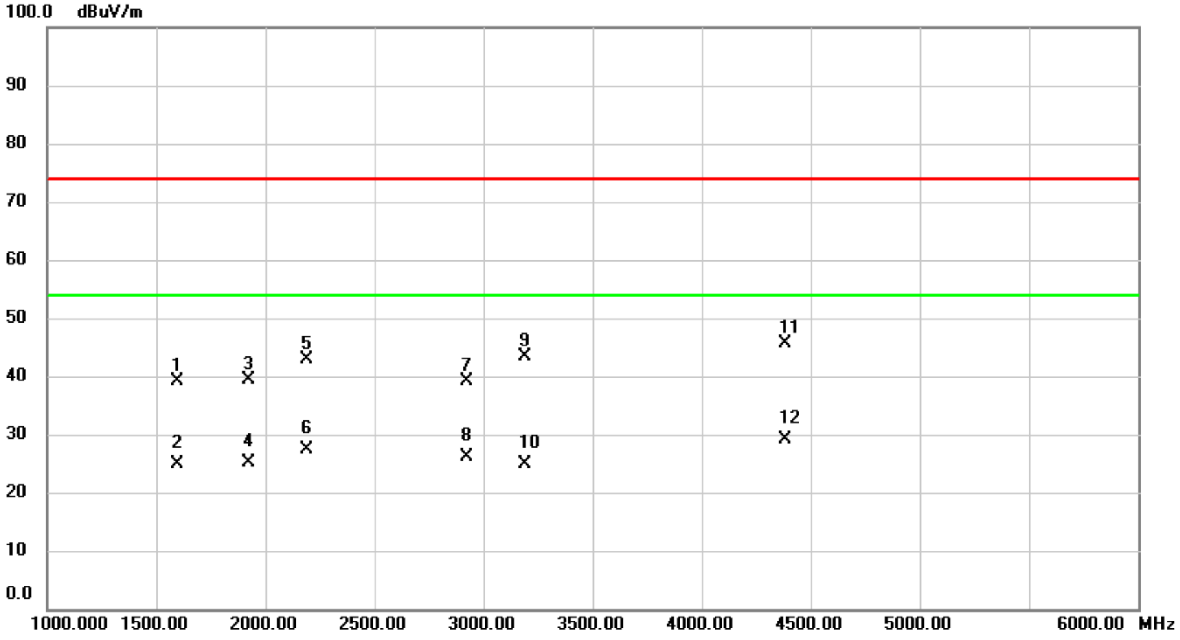
Test Mode	Mode 1	Tested Date	2024/3/15
Test Voltage	AC 230V/50Hz	Polarization	Vertical



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		1375.000	63.47	-22.20	41.27	74.00	-32.73	peak	100	128	
2		1375.000	49.16	-22.20	26.96	54.00	-27.04	AVG	100	128	
3		1595.000	63.38	-21.11	42.27	74.00	-31.73	peak	100	167	
4	*	1595.000	50.25	-21.11	29.14	54.00	-24.86	AVG	100	167	
5		1700.000	60.84	-20.51	40.33	74.00	-33.67	peak	100	173	
6		1700.000	45.81	-20.51	25.30	54.00	-28.70	AVG	100	173	
7		2695.000	56.96	-16.57	40.39	74.00	-33.61	peak	100	197	
8		2695.000	43.85	-16.57	27.28	54.00	-26.72	AVG	100	197	
9		2850.000	56.31	-15.97	40.34	74.00	-33.66	peak	100	145	
10		2850.000	43.51	-15.97	27.54	54.00	-26.46	AVG	100	145	
11		3190.000	62.90	-14.94	47.96	74.00	-26.04	peak	100	202	
12		3190.000	41.72	-14.94	26.78	54.00	-27.22	AVG	100	202	

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

Test Mode	Mode 1	Tested Date	2024/3/15
Test Voltage	AC 230V/50Hz	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		1595.000	60.26	-21.11	39.15	74.00	-34.85	peak	100	228	
2		1595.000	46.09	-21.11	24.98	54.00	-29.02	AVG	100	228	
3		1925.000	58.48	-19.19	39.29	74.00	-34.71	peak	200	45	
4		1925.000	44.28	-19.19	25.09	54.00	-28.91	AVG	200	45	
5		2190.000	61.10	-18.22	42.88	74.00	-31.12	peak	200	323	
6		2190.000	45.62	-18.22	27.40	54.00	-26.60	AVG	200	323	
7		2925.000	54.74	-15.68	39.06	74.00	-34.94	peak	100	318	
8		2925.000	41.77	-15.68	26.09	54.00	-27.91	AVG	100	318	
9		3190.000	58.38	-14.94	43.44	74.00	-30.56	peak	100	130	
10		3190.000	39.86	-14.94	24.92	54.00	-29.08	AVG	100	130	
11		4385.000	57.07	-11.51	45.56	74.00	-28.44	peak	100	0	
12	*	4385.000	40.55	-11.51	29.04	54.00	-24.96	AVG	100	0	

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

3.3 CONDUCTED EMISSIONS MEASUREMENT AT AC MAINS POWER PORTS TEST

3.3.1 LIMITS

Table A.9 – Requirements for conducted emissions from the AC mains power ports of Class A equipment

Applicable to 1. AC mains power ports (3.1.1)				
Table clause	**Frequency range MHz**	**Coupling device** (see Table A.8)	**Detector type / bandwidth**	**Class A limits dB(µV)**
A9.1	0,15 to 0,5	AMN	Quasi Peak / 9 kHz	79
	0,5 to 30			73
A9.2	0,15 to 0,5	AMN	Average / 9 kHz	66
	0,5 to 30			60
Apply A9.1 and A9.2 across the entire frequency range.				

Table A.10 – Requirements for conducted emissions from the AC mains power ports of Class B equipment

Applicable to 1. AC mains power ports (3.1.1)				
Table clause	**Frequency range MHz**	**Coupling device** (see Table A.8)	**Detector type / bandwidth**	**Class B limits dB(µV)**
A10.1	0,15 to 0,5	AMN	Quasi Peak / 9 kHz	66 to 56
	0,5 to 5			56
	5 to 30			60
A10.2	0,15 to 0,5	AMN	Average / 9 kHz	56 to 46
	0,5 to 5			46
	5 to 30			50
Apply A10.1 and A10.2 across the entire frequency range.				

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

3.3.2 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	2023/9/11	2024/9/10
2	Test Cable	EMCI	EMCCFD300-BM-BMR-5000	220331	2023/3/30	2024/3/29
3	EMI Test Receiver	R&S	ESR7	101433	2023/11/10	2024/11/9
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.

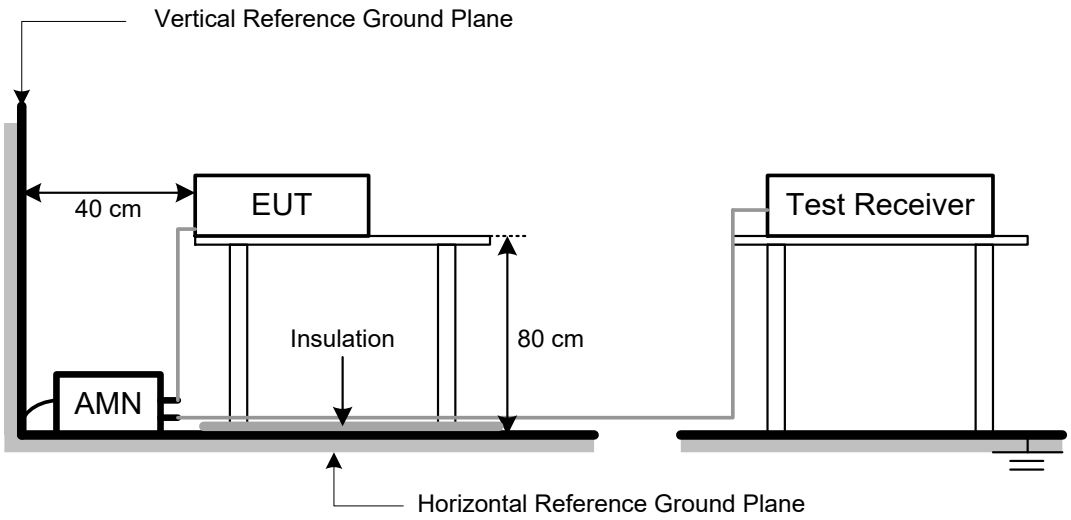
3.3.3 TEST PROCEDURE

a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through an AMN.
All other support equipment were powered from an additional AMN.
The AMN 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. Cables connecting to AE located outside the measurement area drop directly to, but be insulated from, the RGP (or turntable where applicable), and then be routed directly to the place where they leave the test site. However, cables which would normally be bonded to ground should be bonded to the RGP in accordance with normal practice or the manufacturer’s recommendation.
e. The AMN is spaced at least 80 cm from the nearest part of the EUT chassis.
f. The receiver was set to quasi-peak and average detect function and specified bandwidth with maximum hold mode.
g. For the actual test configuration, please refer to the related Item - TEST PHOTOS.

3.3.4 DEVIATION FROM TEST STANDARD

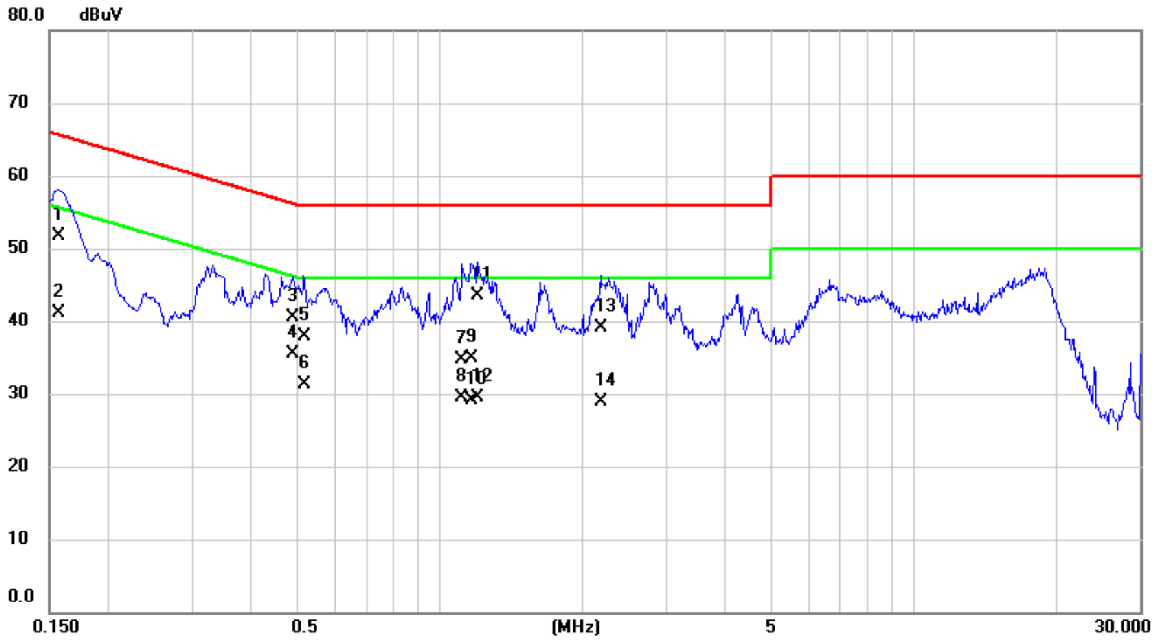
No deviation.

3.3.5 TEST SETUP



3.3.6 TEST RESULT

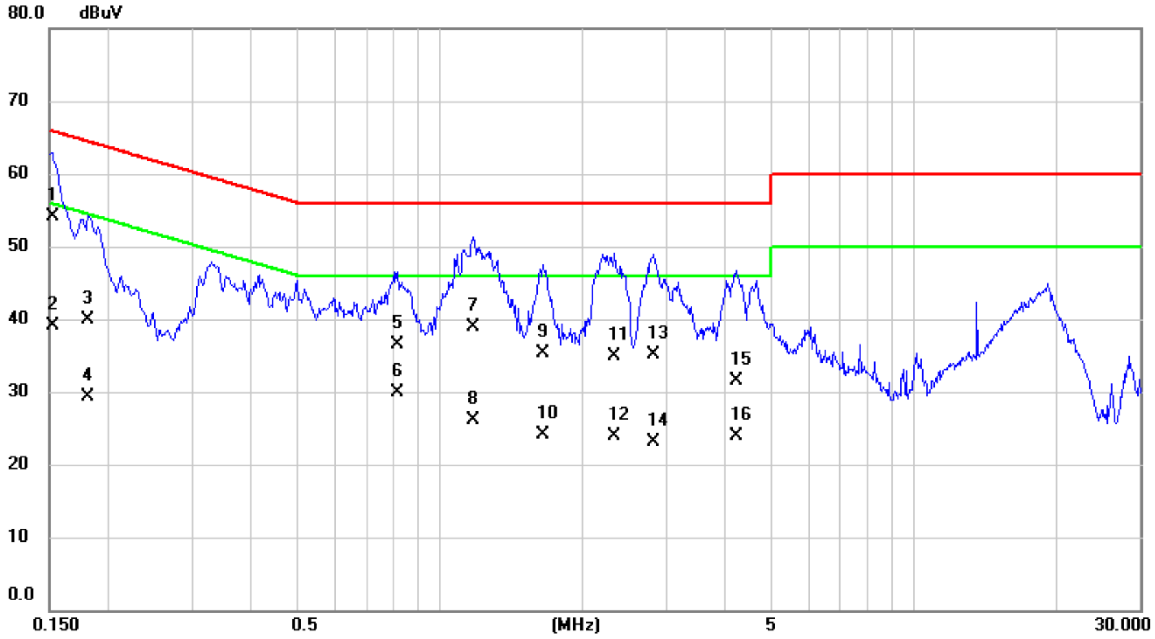
Test Mode	Mode 1	Tested Date	2024/3/21
Test Voltage	AC 230V/50Hz	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1568	42.10	9.60	51.70	65.63	-13.93	QP	
2		0.1568	31.50	9.60	41.10	55.63	-14.53	AVG	
3		0.4897	31.00	9.58	40.58	56.17	-15.59	QP	
4	*	0.4897	26.00	9.58	35.58	46.17	-10.59	AVG	
5		0.5167	28.40	9.58	37.98	56.00	-18.02	QP	
6		0.5167	21.80	9.58	31.38	46.00	-14.62	AVG	
7		1.1152	25.20	9.59	34.79	56.00	-21.21	QP	
8		1.1152	20.00	9.59	29.59	46.00	-16.41	AVG	
9		1.1647	25.40	9.59	34.99	56.00	-21.01	QP	
10		1.1647	19.50	9.59	29.09	46.00	-16.91	AVG	
11		1.2030	33.90	9.59	43.49	56.00	-12.51	QP	
12		1.2030	20.00	9.59	29.59	46.00	-16.41	AVG	
13		2.1840	29.50	9.65	39.15	56.00	-16.85	QP	
14		2.1840	19.20	9.65	28.85	46.00	-17.15	AVG	

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

Test Mode	Mode 1	Tested Date	2024/3/21
Test Voltage	AC 230V/50Hz	Phase	Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1522	44.50	9.59	54.09	65.88	-11.79	QP	
2		0.1522	29.60	9.59	39.19	55.88	-16.69	AVG	
3		0.1815	30.30	9.59	39.89	64.42	-24.53	QP	
4		0.1815	19.80	9.59	29.39	54.42	-25.03	AVG	
5		0.8137	26.90	9.57	36.47	56.00	-19.53	QP	
6		0.8137	20.40	9.57	29.97	46.00	-16.03	AVG	
7		1.1737	29.40	9.58	38.98	56.00	-17.02	QP	
8		1.1737	16.60	9.58	26.18	46.00	-19.82	AVG	
9		1.6530	25.60	9.62	35.22	56.00	-20.78	QP	
10		1.6530	14.50	9.62	24.12	46.00	-21.88	AVG	
11		2.3370	25.20	9.63	34.83	56.00	-21.17	QP	
12		2.3370	14.20	9.63	23.83	46.00	-22.17	AVG	
13		2.8275	25.50	9.62	35.12	56.00	-20.88	QP	
14		2.8275	13.50	9.62	23.12	46.00	-22.88	AVG	
15		4.2338	21.80	9.63	31.43	56.00	-24.57	QP	
16		4.2338	14.20	9.63	23.83	46.00	-22.17	AVG	

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

4 IMMUNITY TEST

4.1 STANDARD COMPLIANCE/SEVERITY LEVEL/CRITERION

Environmental phenomenon and Reference Standard	Test Specification	Test Ports	Performance Criteria
Electrostatic discharges EN 61000-4-2 IEC 61000-4-2 (ESD)	±8 kV air discharge ±4 kV contact discharge	Enclosure ports (Direct Mode)	B
	±4 kV HCP discharge ±4 kV VCP discharge	Enclosure ports (Indirect Mode)	B
Continuous RF electromagnetic field disturbances, swept test EN IEC 61000-4-3 IEC 61000-4-3 (RS)	80 MHz to 1000 MHz 3 V/m (unmodulated, rms), 1 kHz, 80 %, AM modulated	Enclosure ports	A
Continuous RF electromagnetic field disturbances, spot test EN IEC 61000-4-3 IEC 61000-4-3 (RS)	1800 MHz ±1 % MHz, 2600 MHz ±1 % MHz, 3500 MHz ±1 % MHz, 5000MHz ±1 % MHz 3 V/m (unmodulated, rms), 1 kHz, 80 %, AM modulated	Enclosure ports	A
Electrical fast transients / burst EN 61000-4-4 IEC 61000-4-4 (EFT/BURST)	±0.5 kV(peak), 5/50 ns Tr/Th 5 kHz Repetition Frequency For CPE xDSL ports repetition frequency is 100 kHz.	Analogue/digital data ports **NOTE (1)**	B
	±0.5 kV(peak), 5/50 ns Tr/Th 5 kHz Repetition Frequency	DC network power ports	B
	±1 kV(peak), 5/50 ns Tr/Th 5 kHz Repetition Frequency	AC mains power ports	B
Surges EN 61000-4-5 IEC 61000-4-5	Port type: unshielded symmetrical Apply: lines to ground		
	Apply where primary protection is intended ±1 kV and ±4 kV, 10/700 (5/320) µs Tr/Th	Analogue/digital data ports **NOTE (1)(3)**	C
	Apply where primary protection is not intended ±1 kV, 10/700 (5/320) µs Tr/Th	Analogue/digital data ports **NOTE (1)(3)**	C
	Port type: coaxial or shielded Apply: shield to ground		
	±0.5 kV, 1.2/50 (8/20) µs Tr/Th	Analogue/digital data ports **NOTE(1)**	B
	Surges are applied line to reference ground for each individual line ±0.5 kV, 1.2/50 (8/20) µs Tr/Th	DC network power ports **NOTE (1)(2)**	B
	Apply between line and line ±1 kV, 1.2/50 (8/20) µs Tr/Th Apply between line and earth (ground) ±2 kV, 1.2/50 (8/20) µs Tr/Th	AC mains power ports	B

Environmental phenomenon and Reference Standard or Clause	Test Specification	Test Ports	Performance Criteria
Continuous induced RF disturbances EN 61000-4-6 IEC 61000-4-6 (CS)	0.15 MHz to 10 MHz, 3 V 10 MHz to 30 MHz, 3 V to 1 V 30 MHz to 80 MHz, 1 V (unmodulated, rms), 80 % AM (1 kHz)	Analogue/digital data ports **NOTE (1)**	A
	0.15 MHz to 10 MHz, 3 V 10 MHz to 30 MHz, 3 V to 1 V 30 MHz to 80 MHz, 1 V (unmodulated, rms), 80 % AM (1 kHz)	DC network power ports **NOTE (1)**	A
	0.15 MHz to 10 MHz, 3 V 10 MHz to 30 MHz, 3 V to 1 V 30 MHz to 80 MHz, 1 V (unmodulated, rms), 80 % AM (1 kHz)	AC mains power ports	A
Power frequency magnetic field EN 61000-4-8 IEC 61000-4-8 (PFMF)	50, 60 Hz, 1 A/m	Enclosure ports	A
Voltage dips and Voltage interruptions EN IEC 61000-4-11 IEC 61000-4-11	Voltage dips Residual voltage <5 %, 0.5 cycles	AC mains power ports	B
	Voltage dips Residual voltage 70 %, 25 cycles for 50 Hz, 30 cycles for 60 Hz	AC mains power ports **NOTE (4)**	C
	Voltage interruptions Residual voltage <5 %, 250 cycles for 50 Hz, 300 cycles for 60 Hz	AC mains power ports **NOTE (4)**	C
Broadband impulse noise disturbances, repetitive 4.2.7	Impulse frequency and Test Level 0.15 MHz to 0.5 MHz, 107 dBµV 0.5 MHz to 10.5 MHz, 107 dBµV to 36 dBµV 10 MHz to 30 MHz, 36 dBµV to 30 dBµV	Analogue/digital data ports **NOTE (1)(5)(6)**	A
	Burst duration and Burst period 0.70 ms 8.3 ms (for 60 Hz) 10 ms (for 50 Hz)		
Broadband impulse noise disturbances, isolated 4.2.7	Impulse frequency and Test Level 0.15 MHz to 30 MHz, 110 dBµV	Analogue/digital data ports **NOTE (1)(5)(7)**	B
	Burst duration 0.24 ms, 10 ms, 300 ms		

NOTE:
(1) Applicable only to ports which, according to the manufacturer's specification, support cable lengths greater than 3 m.
(2) Applicable only to ports which, according to the manufacturer's specification, may connect directly to outdoor cables.
(3) Where the surge coupling network for the 10/700 (5/320) µs waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20) µs waveform and appropriate coupling network.
(4) Apply at only one supply frequency of the MME.
(5) Applicable only to CPE xDSL ports.
(6) Apply period based on the AC mains frequency.
(7) Apply all burst durations.

4.2 GENERAL PERFORMANCE CRITERIA

According to EN 55035 standard, the general performance criteria as following:

Criterion A (Clause 8.2)	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B (Clause 8.3)	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion C (Clause 8.4)	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

4.3 ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

4.3.1 TEST SPECIFICATION

Reference Standard	EN 61000-4-2 / IEC 61000-4-2
Discharge Impedance	330 ohm / 150 pF
Required Performance Criterion	B
Discharge Voltage	Contact Discharge: ±4 kV
Polarity	Positive & Negative
Number of Discharge	Minimum 20 times at each test point
Discharge Mode	Single Discharge
Discharge Period	1 s minimum

4.3.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	ESD Simulator	NoiseKen	GT-30RA	ESS20X2776	2023/12/6	2024/12/5

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.

4.3.3 TEST PROCEDURE

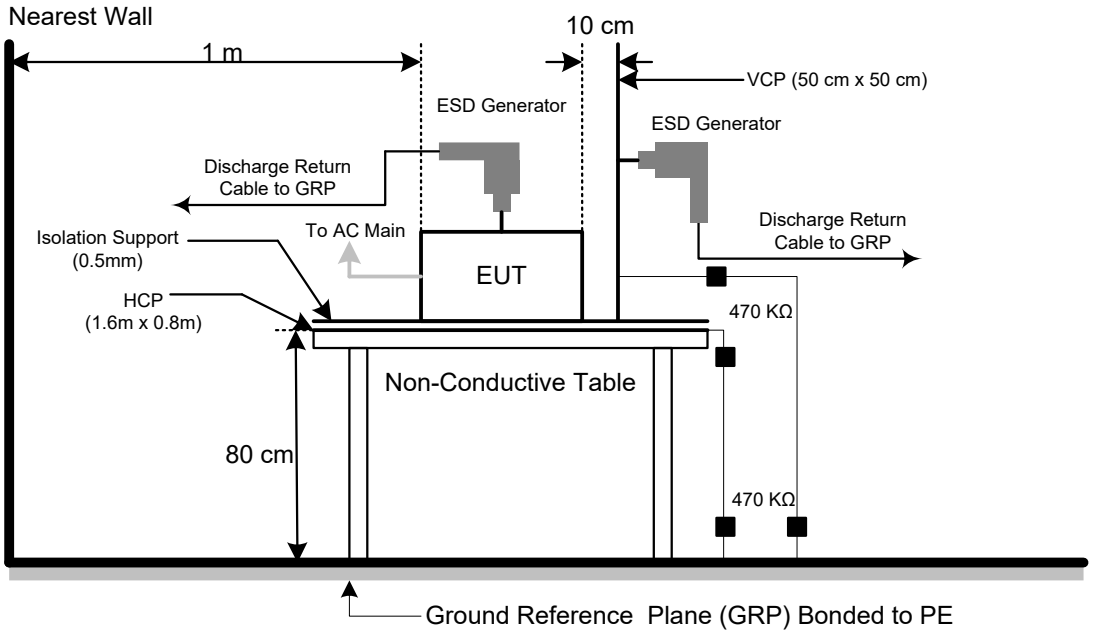
The configuration consisted of a wooden table 0.8 m high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25 mm thick, and 2.5 m square connected to the protective grounding system. A Horizontal Coupling Plane (1.6 m x 0.8 m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test was installed in a representative system as described in EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5 mm thickness. A distance of 1 m minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.
The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. The test shall be performed with single discharges. On each pre-selected point at least 10 single discharges (in the most sensitive polarity) shall be applied.
   NOTE 1 The minimum number of discharges applied is depending on the EUT; for products with synchronized circuits the number of discharges should be larger.
   For the time interval between successive single discharges an initial value of 1 s is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
   NOTE 2 The points to which the discharges should be applied may be selected by means of an exploration carried out at a repetition rate of 20 discharges per second, or more.
   Vertical Coupling Plane (VCP):
   The coupling plane, of dimensions 0.5 m x 0.5 m, is placed parallel to, and positioned at a distance 0.1 m from, the EUT, with the Discharge Electrode touching the coupling plane.
   The four faces of the EUT will be performed with electrostatic discharge.
   Horizontal Coupling Plane (HCP):
   The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1 m from the EUT, with the Discharge Electrode touching the coupling plane.
   The four faces of the EUT will be performed with electrostatic discharge.
b. Air discharges at insulation surfaces of the EUT.
   It was at least ten single discharges with positive and negative at the same selected point.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



4.3.6 TEST RESULT

Test Mode	Mode 1		
Test Voltage	AC 230V/50Hz	Test Date	2024/3/18

Mode	Air Discharge								Contact Discharge							
Level	2 kV		4 kV		8 kV		kV		4 kV		kV		kV		kV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perform Criterion	B						-		B		-					
Result	-						-		-		-					
Judgment	N/A						-		N/A		-					

Mode	HCP Discharge								VCP Discharge							
Level	4 kV		kV		kV		kV		4 kV		kV		kV		kV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1	A	A	-	-	-	-	-	-	A	A	-	-	-	-	-	-
2	A	A	-	-	-	-	-	-	A	A	-	-	-	-	-	-
3	A	A	-	-	-	-	-	-	A	A	-	-	-	-	-	-
4	A	A	-	-	-	-	-	-	A	A	-	-	-	-	-	-
Perform Criterion	B		-						B		-					
Result	A		-						A		-					
Judgment	PASS		-						PASS		-					

NOTE:
(1) “P/N” denotes the Positive (P) or Negative (N) polarity of the output voltage.
(2) The Indirect (HCP/VCP) discharges description of test point as following:
1. left side; 2.right side; 3.front side; 4.rear side.
(3) ”N/A” denotes test is not applicable in device.
(4) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s).

Photo(s) shown the location(s) of ESD evaluated

4.4 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST (RS)

4.4.1 TEST SPECIFICATION

Reference Standard	EN IEC 61000-4-3 / IEC 61000-4-3
Required Performance Criterion	A
Frequency Range	80 MHz to 1000 MHz 1800 MHz ±1 % MHz, 2600 MHz ±1 % MHz, 3500 MHz ±1 % MHz, 5000 MHz ±1 % MHz
Field Strength	3 V/m (unmodulated, rms)
Modulation	1 kHz Sine Wave, 80 %, AM Modulation
Frequency Step	1 % of fundamental
Polarity of Antenna	Horizontal and Vertical
Test Distance	3 m
Antenna Height	1.15 m
Dwell Time	at least 3 s

4.4.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Signal Generator	KEYSIGHT	N5172B	MY56200462	2023/8/4	2024/8/3
2	Antenna	AR	AT1080	320290	N/A	N/A
3	Power Amplifier	MILMEGA	80RF1000-300	1079823	N/A	N/A
4	Antenna	SCHWARZBECK	STLP 9149	524	N/A	N/A
5	Power Amplifier	MILMEGA	AS0860B-50/50	1079824	N/A	N/A
6	Readout Unit	WAVECONTROL	SMP2	19SN1139	2024/1/25	2025/1/24
7	E-Field Probe	WAVECONTROL	WPF8	19WP041003	2024/1/25	2025/1/24
8	RF Power Meter	BOONTON	4232A	12871	2023/11/14	2024/11/13
9	Power Sensor	BOONTON	51075A	36942	2023/11/14	2024/11/13
10	Power Sensor	BOONTON	51075A	36943	2023/11/14	2024/11/13
11	Measurement Software	AUDIX	i2 (Ver. 5.161006)	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.

4.4.3 TEST PROCEDURE

The testing was performed in a fully-anechoic chamber.
The testing distance from antenna to the EUT was 3 m.

The EUT installed in a representative system as described in EN IEC 61000-4-3 / IEC 61000-4-3 was placed on a non-conductive table 0.8 m in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

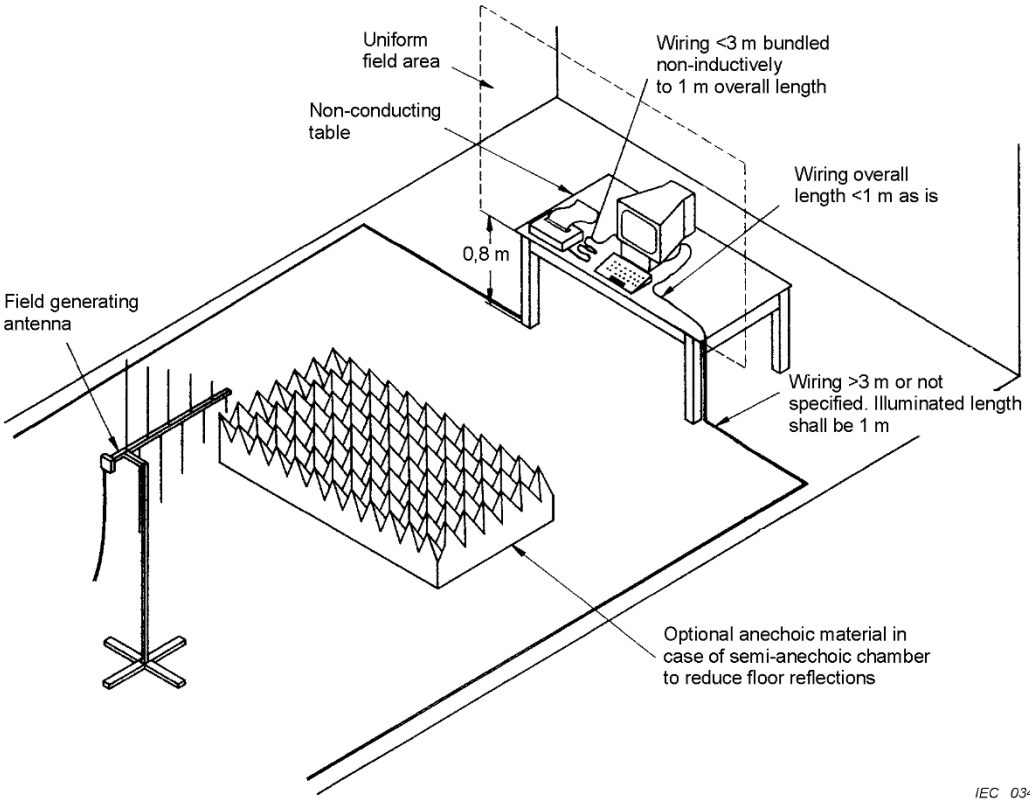
The other condition as following manner:

a. The field strength is 3 V/m (unmodulated, rms).
b. The frequency ranges are swept from 80 MHz to 1000 MHz, 1800 MHz ±1 % MHz, 2600 MHz ±1 % MHz, 3500 MHz ±1 % MHz and 5000 MHz ±1 % MHz with the signal 80 % amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5 x 10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1 % of fundamental.
c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 TEST RESULT

Test Mode	Mode 1		
Test Voltage	AC 230V/50Hz	Test Date	2024/3/18

Frequency (MHz)	Applied Voltage(V/m) – 80% AM 1kHz	Polarity	Azimuth	Criterion	Observation	Result	Remark
80~1000	3	V & H	Rear	A	A	PASS	
			Front		A		
			Left		A		
			Right		A		
1800±1% 2600±1% 3500±1% 5000±1%	3	V & H	Rear	A	A	PASS	
			Front		A		
			Left		A		
			Right		A		

NOTE:
(1) ”N/A” denotes test is not applicable in device.

4.5 POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST (PFMF)

4.5.1 TEST SPECIFICATION

Reference Standard	EN 61000-4-8 / IEC 61000-4-8
Required Performance Criterion	A
Frequency Range	50 or 60 Hz
Field Strength	1 A/m
Observation Time	1 minute
Inductance Coil	Rectangular type, 1 m x 1 m

4.5.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Triaxial ELF Magnetic Field Meter	F.W. BELL	4190	0932008	2023/8/2	2024/8/1
2	Magnetic Field Test Generator	TESEQ	MFO 6501	1010	2023/10/23	2024/10/22
3	Magnetic Field Immunity Loop	TESEQ	INA 702	334	2023/10/23	2024/10/22
4	Clamp Meter	Fluke	317	22050035	2023/5/3	2024/5/2

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.

4.5.3 TEST PROCEDURE

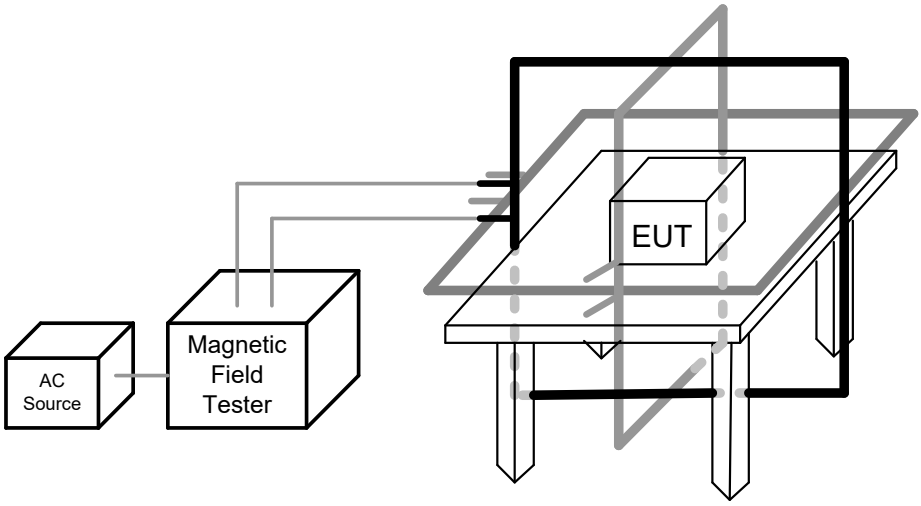
The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

The other condition as following manner:
a. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
b. The cables supplied or recommended by the equipment manufacturer shall be used. 1 m of all cables used shall be exposed to the magnetic field.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

4.5.5 TEST SETUP



4.5.6 TEST RESULT

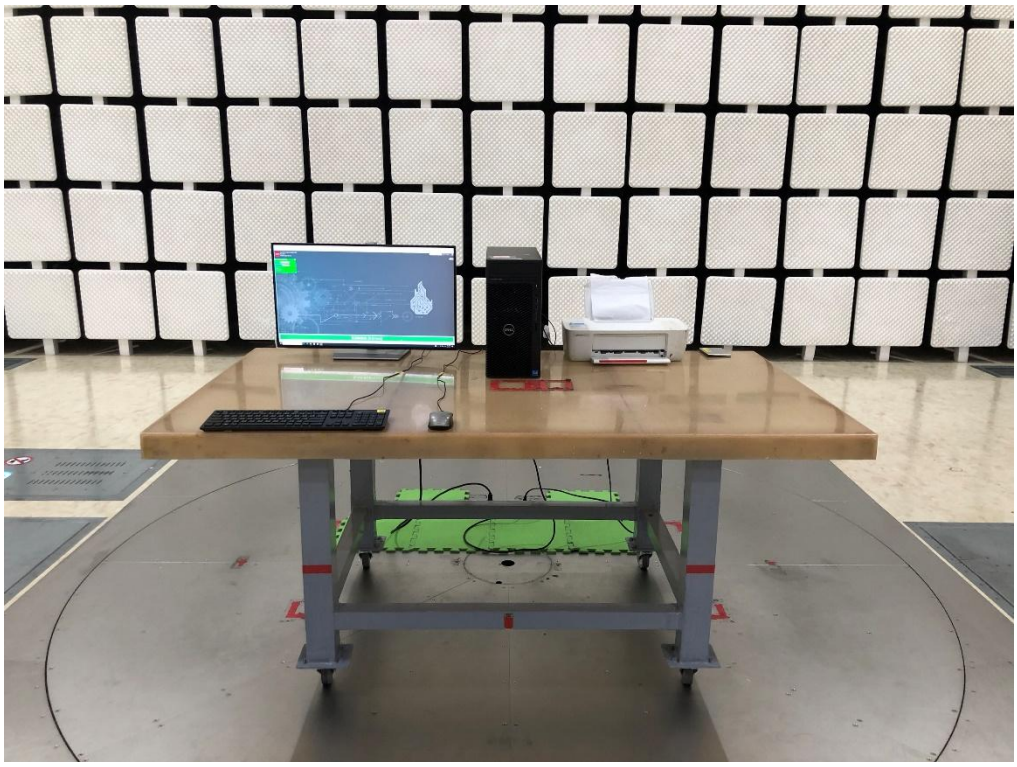
Test Mode	Mode 1		
Test Voltage	AC 230V/50Hz	Test Date	2024/3/18

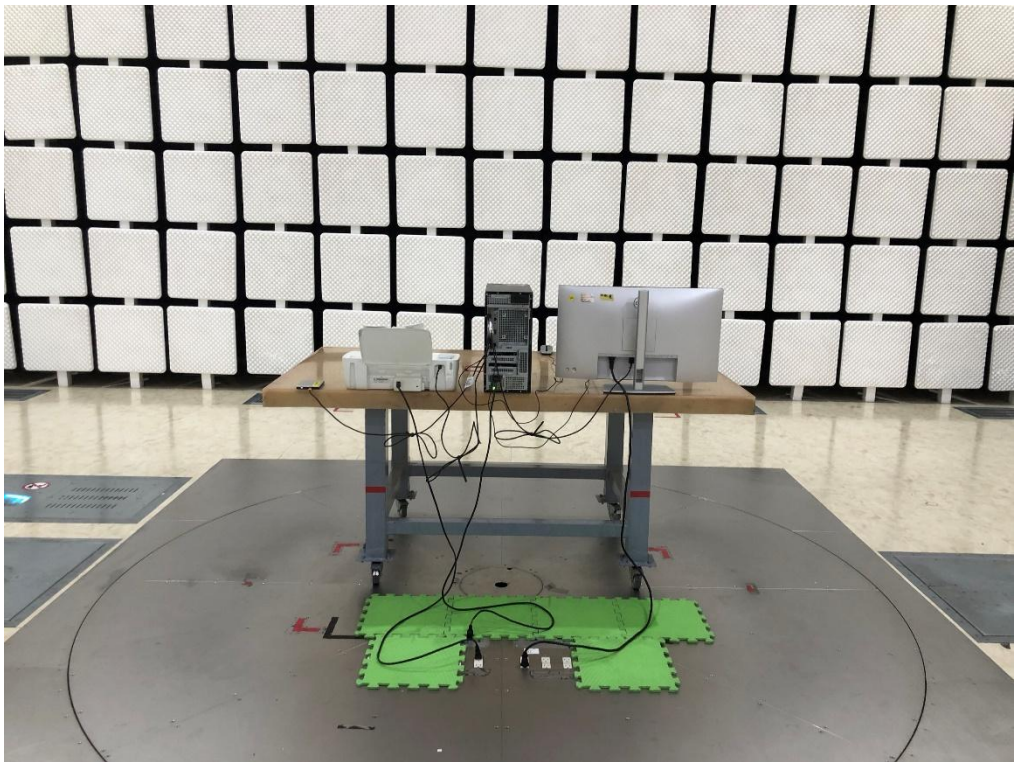
Test Frequency (Hz)	Magnetic Field (A/m)	Direction	Criterion	Observation	Result
50	1	X Y Z	A	A	PASS
60	1	X Y Z	A	A	PASS

NOTE:
(1) ”N/A” denotes test is not applicable in device.

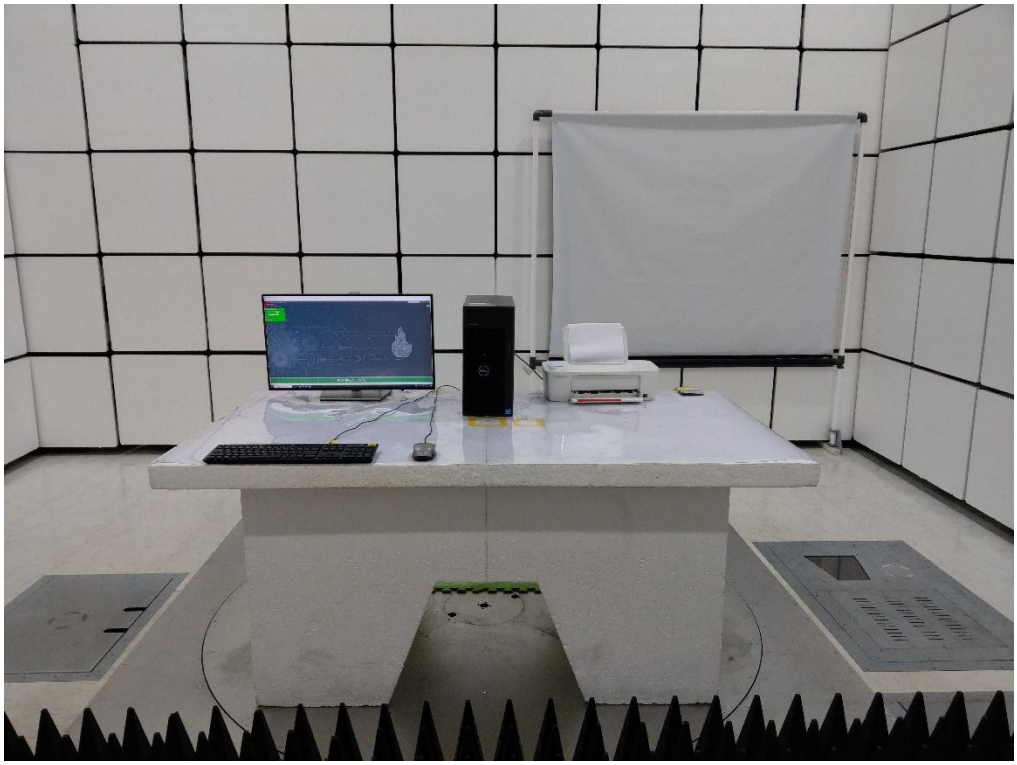
5 TEST PHOTOS

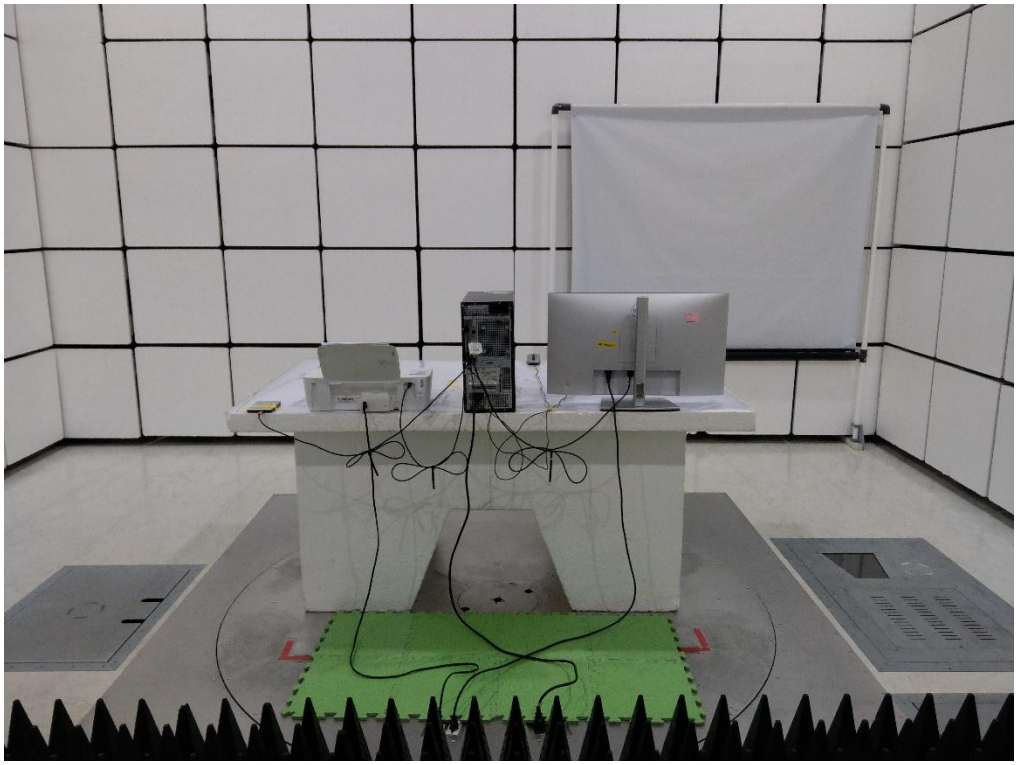
Radiated emissions up to 1 GHz test photos





Radiated emissions above 1 GHz test photos

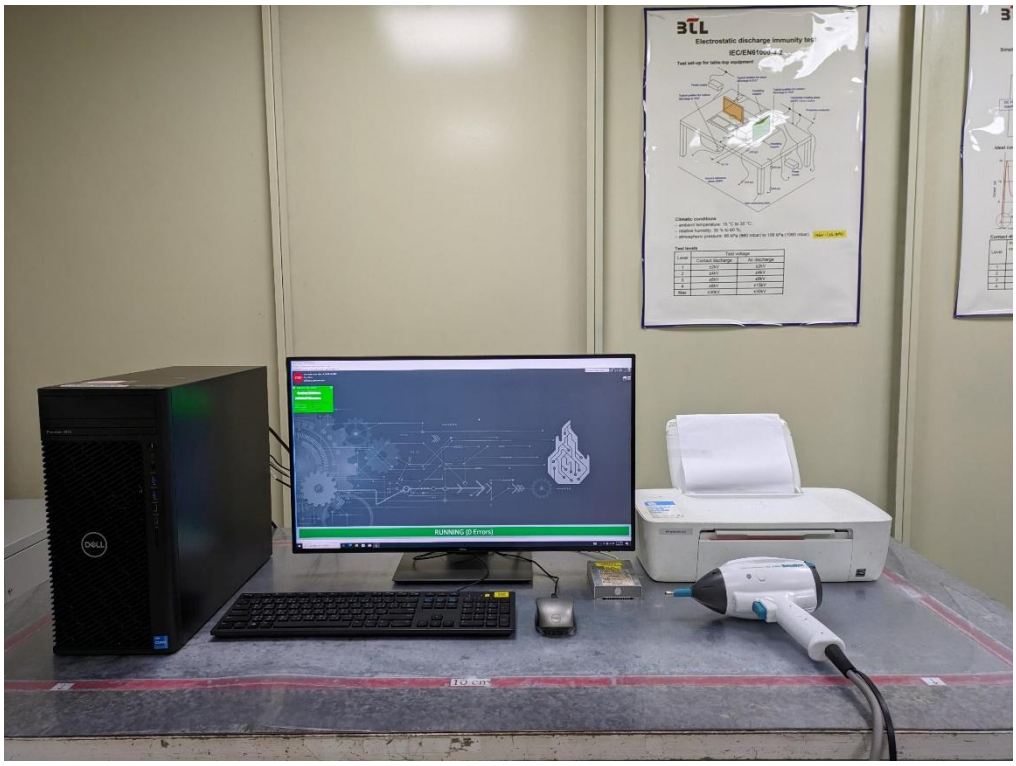




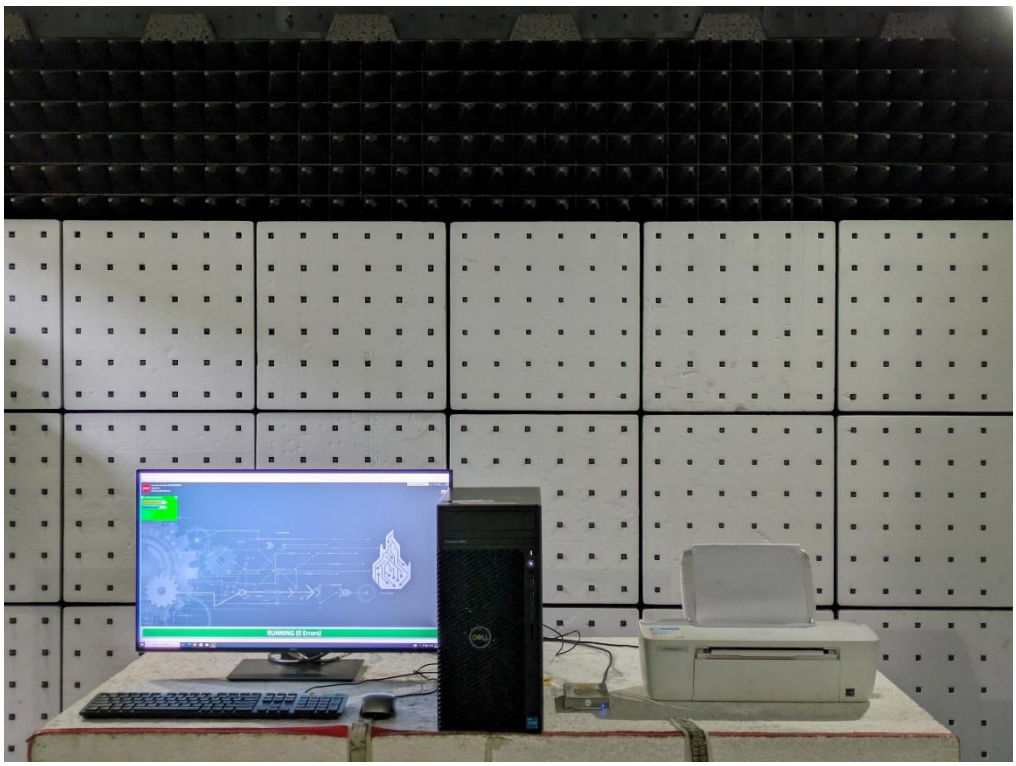
Conducted emissions AC mains power port test photos

Immunity test photos

Electrostatic discharge immunity



Radiated, radio-frequency, electromagnetic field immunity



Power frequency magnetic field immunity

6 EUT PHOTOS

Please refer to document Appendix No.: EP-2505T096-1 (APPENDIX-EUT PHOTOS).

End of Test Report