



FCC&ISED EMC Test Report

Project No. : 2408C100
Equipment : Industrial Personal Computer
Brand Name : SINSEGYE
Test Model : SX5820
Series Model : SX5820-0001, SX5820-0002 , SX5821-1001, SX5821-1002
Applicant : SINSEGYE(Shenzhen) Computer System Co.,Ltd.
Address : 14th Floor, West Tower of Baidu International Building, 1st Haitian Road, Nanshan District, Shenzhen,China.
Manufacturer : SINSEGYE(Shenzhen) Computer System Co.,Ltd.
Address : 14th Floor, West Tower of Baidu International Building, 1st Haitian Road, Nanshan District, Shenzhen,China.
Date of Receipt : Dec. 10, 2024
Date of Test : Dec. 12, 2024 ~ Dec. 26, 2024
Issued Date : Jan. 10, 2025
Report Version : R00
Test Sample : Engineering Sample No.: DG2024121039
Standard(s) : FCC CFR Title 47, Part 15, Subpart B
ICES-003 Issue 7: October 2020

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

Prepared by : Lea Lu
Lea Lu

Approved by : Kang Zhang
Kang Zhang

Room 108-116, 309-310, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China

Tel: +86-769-8318-3000 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.

The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the U.S. Government.

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: 2017 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.

Table of Contents	Page
REPORT ISSUED HISTORY	4
1 . SUMMARY OF TEST RESULTS	5
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6
1.3 TEST ENVIRONMENT CONDITIONS	6
2 . GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	8
2.3 EUT OPERATING CONDITIONS	9
2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	9
2.5 DESCRIPTION OF SUPPORT UNITS	9
3 . EMC EMISSION TEST	10
3.1 DC POWER LINE CONDUCTED EMISSIONS TEST	10
3.1.1 LIMIT	10
3.1.2 MEASUREMENT INSTRUMENTS LIST	10
3.1.3 TEST PROCEDURE	10
3.1.4 DEVIATION FROM TEST STANDARD	10
3.1.5 TEST SETUP	11
3.1.6 TEST RESULTS	11
3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ	14
3.2.1 LIMIT	14
3.2.2 MEASUREMENT INSTRUMENTS LIST	14
3.2.3 TEST PROCEDURE	15
3.2.4 DEVIATION FROM TEST STANDARD	15
3.2.5 TEST SETUP	15
3.2.6 TEST RESULTS	15
3.3 RADIATED EMISSIONS ABOVE 1 GHZ	20
3.3.1 LIMIT	20
3.3.2 MEASUREMENT INSTRUMENTS LIST	20
3.3.3 TEST PROCEDURE	21
3.3.4 DEVIATION FROM TEST STANDARD	21
3.3.5 TEST SETUP	21
3.3.6 TEST RESULTS	22
4 . EUT TEST PHOTO	27

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FICE-1-2408C100	R00	Original Report.	Jan. 10, 2025	Valid

1. SUMMARY OF TEST RESULTS

Emission		
Standard(s)	Test Item	Result
FCC CFR Title 47, Part 15, Subpart B ANSI C63.4-2014 ICES-003 Issue 7: October 2020 ANSI C63.4-2014 amended as per ANSI C63.4a-2017	DC Power Line Conducted Emissions	PASS
	Radiated Emissions 30 MHz to 1 GHz	PASS
	Radiated Emissions Above 1 GHz	PASS

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of 1-2/F, 4/F, Building A, 1-2/F, Building B, 3/F, Building C, No.3, Jinshagang 1st Road, Dalang Town, Dongguan City, Guangdong People's Republic of China.

1.2 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 ($k=2$))

The BTL measurement uncertainty as below table:

A. DC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U , (dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.88

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)
DG-CB01 (3m)	CISPR	30MHz ~ 200MHz	V	4.92
		30MHz ~ 200MHz	H	3.94
		200MHz ~ 1,000MHz	V	4.60
		200MHz ~ 1,000MHz	H	4.32

Test Site	Method	Measurement Frequency Range	U , (dB)
DG-CB01 (3m)	CISPR	1GHz ~ 6GHz	4.56
		6GHz ~ 18GHz	4.70

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	Temperature	Humidity	Tested By	Test Date
DC Power Line Conducted Emissions	25°C	48%	Axel Huang	Dec. 18, 2024
Radiated emissions 30 MHz to 1 GHz	24°C	48%	Parker Mai	Dec. 17, 2024
Radiated emissions above 1 GHz	24°C	48%	Parker Mai	Dec. 17, 2024

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Industrial Personal Computer
Brand Name	SINSEGYE
Test Model	SX5820
Series Model	SX5820-0001, SX5820-0002, SX5821-1001, SX5821-1002
Model Difference(s)	SX5820-0001cpu main frequency locked at 1.4G and 4GB memory through BIOS. SX5820-0002cpu main frequency locked at 2.0G and 4GB memory through BIOS. SX5821-1001cpu clock speed locked at 1.4G through BIOS, 8GB memory. SX5821-1002cpu clock speed locked at 2.0G through BIOS, 8GB memory.
Identification No. of EUT(S/N)	SX58A0124100035
Dimensions and mass	210 x 100 x 90 mm
Component unit of EUT	<input checked="" type="checkbox"/> Single unit <input type="checkbox"/> Multiple unit
Sample Status	<input type="checkbox"/> Engineering sample <input checked="" type="checkbox"/> Final shipment prototype
Power Source	DC power supply.
Power Rating	DC 24V
Connecting I/O Port(s)	Please refer to EUT photos.
Classification of EUT	Class A
Highest Internal Frequency(Fx)	2.0GHz

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	FULL SYSTEM

DC Power Line Conducted Emissions Test	
Final Test Mode	Description
Mode 1	FULL SYSTEM

Radiated Emissions 30 MHz to 1 GHz Test	
Final Test Mode	Description
Mode 1	FULL SYSTEM

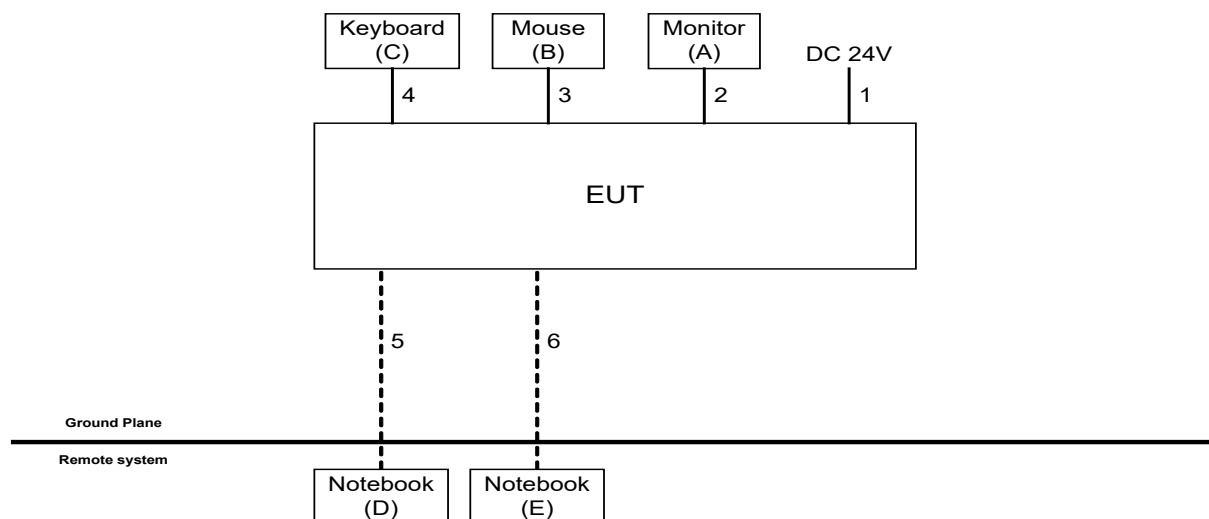
Radiated emissions above 1 GHz Test	
Final Test Mode	Description
Mode 1	FULL SYSTEM

2.3 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The standard test signals and output signal as following:

1. Keyboard and Mouse connected to EUT via USB Cable.
2. EUT connected to Monitor via HDMI Cable.
3. EUT connected to Notebook(D&E) via RJ45 Cable.

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Remark
A	Monitor	Lenovo	A16270UP0	1S61CBGCR1CSU3336 W6N	For Conducted item
	Monitor	DELL	U2718Q	CN-05DWRH-QDC00-7 AU-0G0L-A02	For Radiated items
B	Mouse	DELL	MS111-P	CN011D3V71581279OL OT	/
C	Keyboard	DELL	KB212-B	CN0HTXH97158125004 DXA01	/
D	Notebook	Lenovo	V310-14ISK	LR07GZHC	/
E	Notebook	Lenovo	V310-14ISK	LR07GZML	/

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.8m
2	HDMI Cable	YES	NO	1.8m
3	USB Cable	YES	NO	1.8m
4	USB Cable	YES	NO	1.8m
5-6	RJ45 Cable	YES	NO	1.5m

3. EMC EMISSION TEST

3.1 DC POWER LINE CONDUCTED EMISSIONS TEST

3.1.1 LIMIT

Frequency of Emission (MHz)	Class A (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	79	66
0.5 - 5	73	60
5 - 30	73	60

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

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI TEST RECEIVER	R&S	ESCI	100382	Dec. 06, 2025
2	TWO-LINE V-NETWORK	R&S	ENV216	102974	Dec. 06, 2025
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	Dec. 06, 2025
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	Cable	N/A	SFT205-NMNM-9M-001	9M	Nov. 11, 2025

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

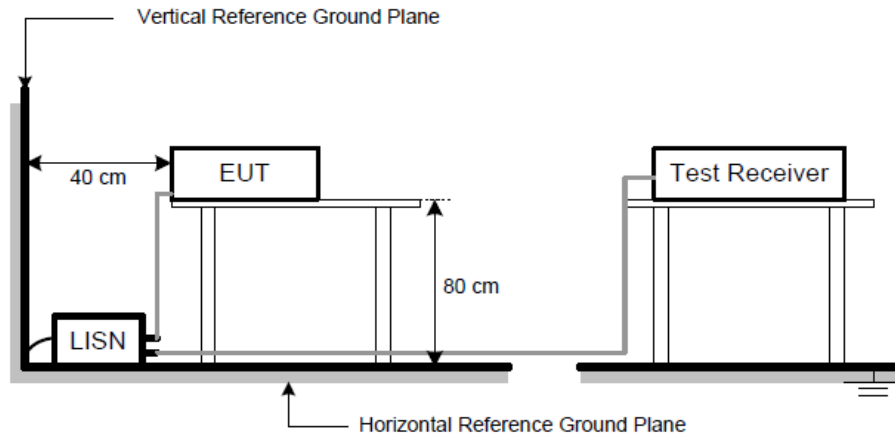
3.1.3 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling 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 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.
- f. Measuring frequency range from 150KHz to 30MHz.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP

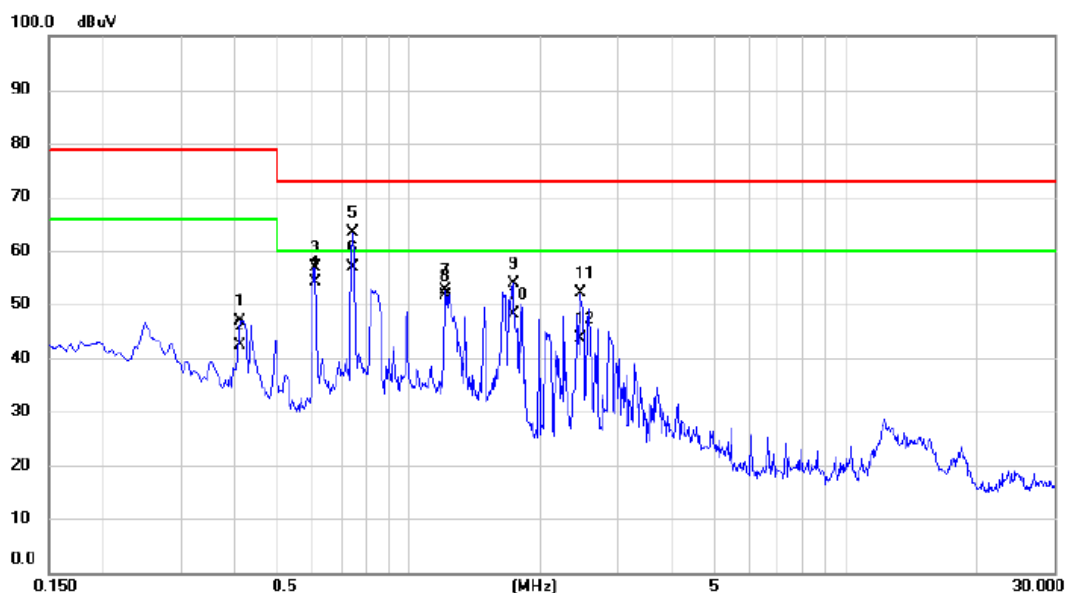


3.1.6 TEST RESULTS

Remark:

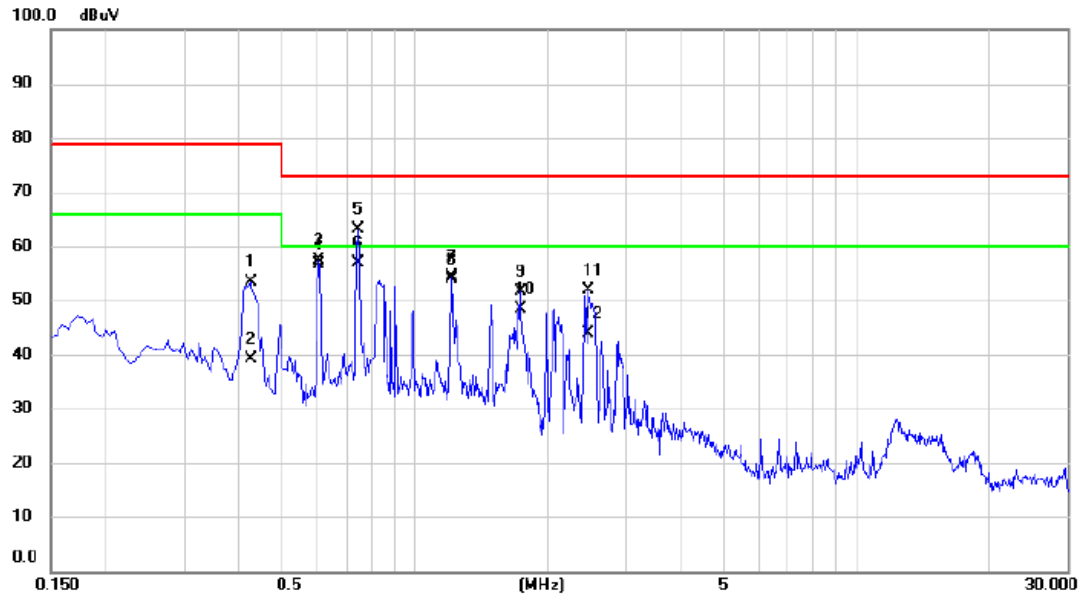
- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a “*” marked in AVG Mode column of Interference Voltage Measured.

Test Voltage	DC 24V	Phase	Positive
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.4110	37.20	9.78	46.98	79.00	-32.02	QP	
2		0.4110	32.60	9.78	42.38	66.00	-23.62	AVG	
3		0.6090	47.07	9.81	56.88	73.00	-16.12	QP	
4		0.6090	44.20	9.81	54.01	60.00	-5.99	AVG	
5		0.7440	53.56	9.83	63.39	73.00	-9.61	QP	
6	*	0.7440	47.00	9.83	56.83	60.00	-3.17	AVG	
7		1.2120	42.70	9.87	52.57	73.00	-20.43	QP	
8		1.2120	41.70	9.87	51.57	60.00	-8.43	AVG	
9		1.7340	43.98	9.90	53.88	73.00	-19.12	QP	
10		1.7340	38.30	9.90	48.20	60.00	-11.80	AVG	
11		2.4630	42.21	9.94	52.15	73.00	-20.85	QP	
12		2.4630	33.80	9.94	43.74	60.00	-16.26	AVG	

Test Voltage	DC 24V	Phase	Negative
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.4245	43.77	9.65	53.42	79.00	-25.58	QP	
2		0.4245	29.60	9.65	39.25	66.00	-26.75	AVG	
3		0.6045	47.62	9.67	57.29	73.00	-15.71	QP	
4		0.6045	47.00	9.67	56.67	60.00	-3.33	AVG	
5		0.7440	53.55	9.70	63.25	73.00	-9.75	QP	
6	*	0.7440	47.20	9.70	56.90	60.00	-3.10	AVG	
7		1.2120	44.56	9.73	54.29	73.00	-18.71	QP	
8		1.2120	44.10	9.73	53.83	60.00	-6.17	AVG	
9		1.7340	41.96	9.76	51.72	73.00	-21.28	QP	
10		1.7340	38.50	9.76	48.26	60.00	-11.74	AVG	
11		2.4630	42.11	9.79	51.90	73.00	-21.10	QP	
12		2.4630	34.10	9.79	43.89	60.00	-16.11	AVG	

3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ

3.2.1 LIMIT

Limits For FCC CFR Title 47, Part 15, Subpart B

Frequency (MHz)	Class A (at 10m)	Class A (at 3m)
	($\mu\text{V/m}$) Quasi-peak	(dB $\mu\text{V/m}$) Quasi-peak
30 - 88	90	49.54
88 - 216	150	53.97
216 - 960	210	56.90
960 - 1000	300	60.00

Limits For ICES-003 Issue 7: October 2020

Frequency (MHz)	Class A (at 3m)
	(dB $\mu\text{V/m}$) Quasi-peak
30 - 88	50.0
88 - 216	54.0
216 - 230	56.9
230 - 960	57.0
960 - 1000	60.0

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dB $\mu\text{V/m}$) = $20\log$ Emission level ($\mu\text{V/m}$).
3m Emission level = 10m Emission level + $20\log(10\text{m}/3\text{m})$.
- (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

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMC INSTRUMENT	EMC001330	980987	May 31, 2025
2	MXE EMI Receiver	Keysight	N9038A	MY56400091	Dec. 22, 2024
3	Cable	RW	LMR-400(30MHz-1GHz)(12m+9.5m+0.8M)	N/A	Nov. 26, 2025
4	Controller	ETS-Lindgren	2090	N/A	N/A
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	01585	May 24, 2025
7	Attenuator	HUBER+SUHNER	6806_N-50-1	N/A	May 24, 2025

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

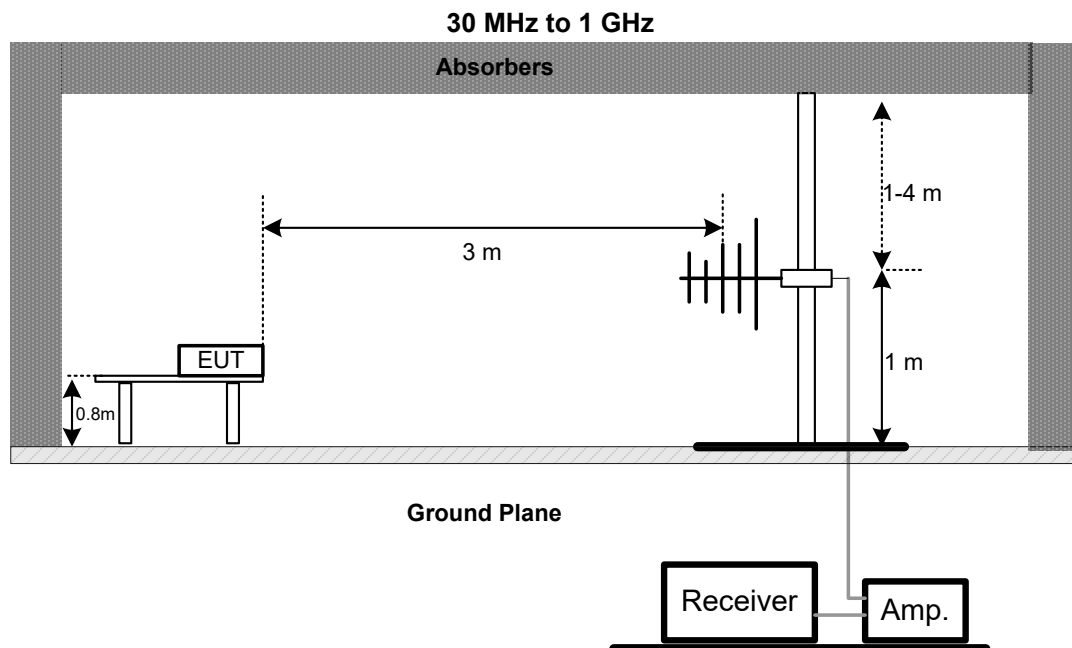
3.2.3 TEST PROCEDURE

- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- For the actual test configuration, please refer to the related Item - EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP



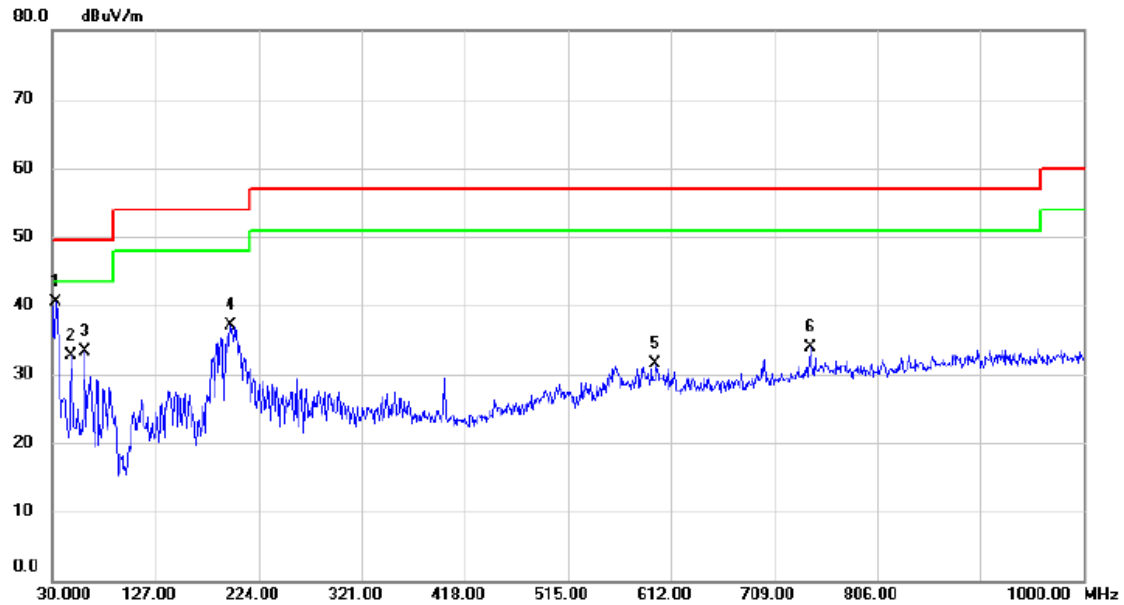
3.2.6 TEST RESULTS

Remark:

- (1) Measuring frequency range from 30 MHz to 1000 MHz
- (2) If the peak scan value lower limit more than 20 dB, then this signal data does not show in table.

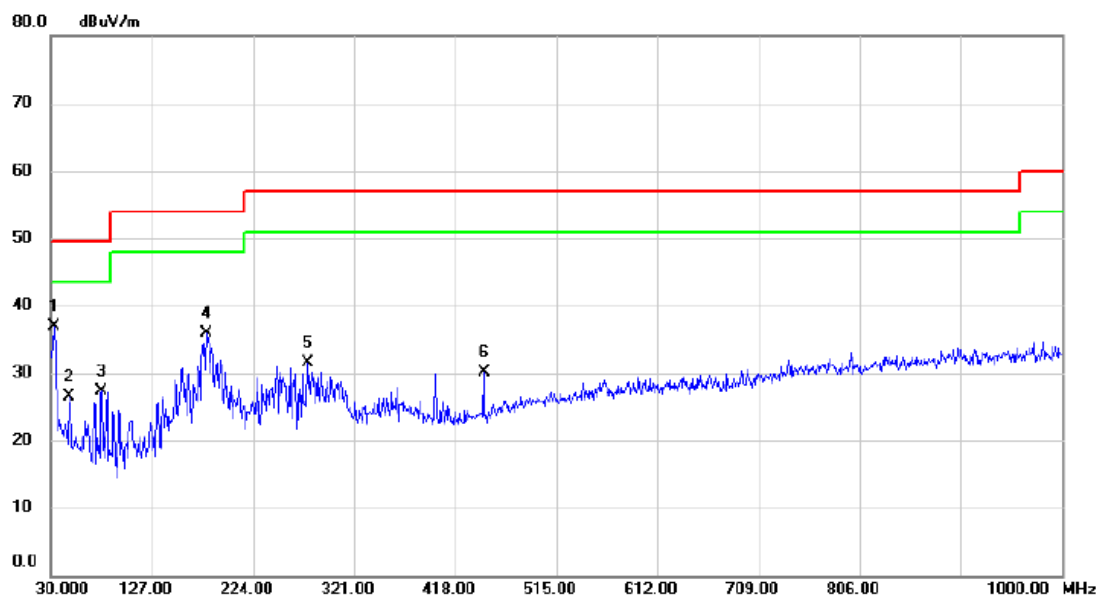
For FCC CFR Title 47, Part 15, Subpart B

Test Voltage	DC 24V	Polarization	Vertical
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	32.9100	52.79	-12.23	40.56	49.54	-8.98	QP	
2		47.4600	43.70	-10.95	32.75	49.54	-16.79	QP	
3		60.0700	44.75	-11.45	33.30	49.54	-16.24	QP	
4		196.8400	50.62	-13.49	37.13	53.97	-16.84	QP	
5		597.4500	34.32	-2.86	31.46	56.90	-25.44	QP	
6		742.9500	34.13	-0.17	33.96	56.90	-22.94	QP	

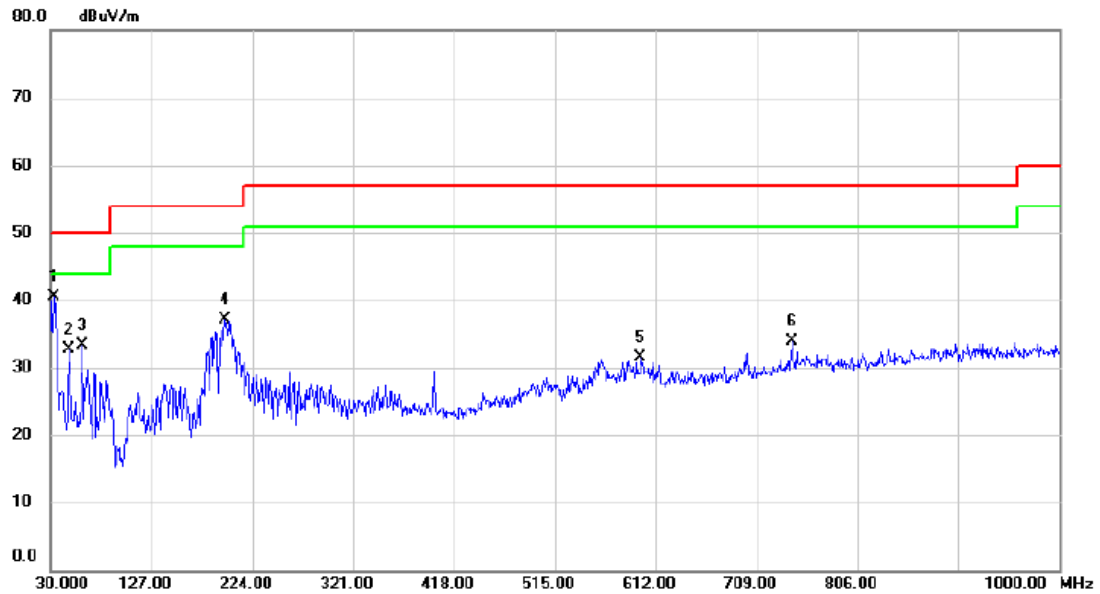
Test Voltage	DC 24V	Polarization	Horizontal
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	32.9100	49.11	-12.23	36.88	49.54	-12.66	QP	
2		47.4600	37.38	-10.95	26.43	49.54	-23.11	QP	
3		78.5000	42.29	-15.01	27.28	49.54	-22.26	QP	
4		179.3800	47.90	-11.90	36.00	53.97	-17.97	QP	
5		276.3800	41.90	-10.49	31.41	56.90	-25.49	QP	
6		445.1600	36.29	-6.12	30.17	56.90	-26.73	QP	

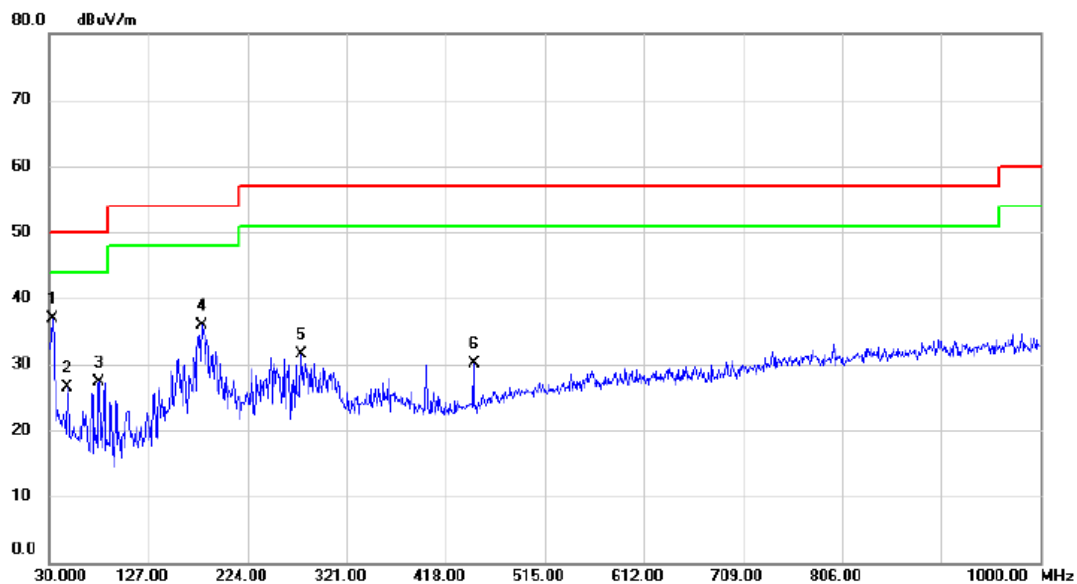
For ICES-003 Issue 7: October 2020:

Test Voltage	DC 24V	Polarization	Vertical
Test Mode	Mode 1		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	32.9100	52.79	-12.23	40.56	50.00	-9.44	QP	
2		47.4600	43.70	-10.95	32.75	50.00	-17.25	QP	
3		60.0700	44.75	-11.45	33.30	50.00	-16.70	QP	
4		196.8400	50.62	-13.49	37.13	54.00	-16.87	QP	
5		597.4500	34.32	-2.86	31.46	57.00	-25.54	QP	
6		742.9500	34.13	-0.17	33.96	57.00	-23.04	QP	

Test Voltage	DC 24V	Polarization	Horizontal
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	32.9100	49.11	-12.23	36.88	50.00	-13.12	QP	
2		47.4600	37.38	-10.95	26.43	50.00	-23.57	QP	
3		78.5000	42.29	-15.01	27.28	50.00	-22.72	QP	
4		179.3800	47.90	-11.90	36.00	54.00	-18.00	QP	
5		276.3800	41.90	-10.49	31.41	57.00	-25.59	QP	
6		445.1600	36.29	-6.12	30.17	57.00	-26.83	QP	

3.3 RADIATED EMISSIONS ABOVE 1 GHZ

3.3.1 LIMIT

Frequency (MHz)	Class A	
	(dBuV/m) (at 3m)	
	Peak	Average
Above 1000	80	60

FREQUENCY RANGE OF RADIATED MEASUREMENT (FOR UNINTENTIONAL RADIATORS)

Highest internal frequency (F _x)	Highest measurement frequency (F _M)
F _x ≤ 108 MHz	1 GHz
108 MHz < F _x ≤ 500 MHz	2 GHz
500 MHz < F _x ≤ 1 GHz	5 GHz
F _x > 1 GHz	5 x F _x up to a maximum of 40 GHz
Note: F _x is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.	

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m) = 20log Emission level (uV/m).
1m Emission level = 3m Emission level + 20log(3m/1m).
- (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

3.3.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Cable	RW	LMR-400(1GHz-18GHz) (9.5m+2.5m+1M)	N/A	Oct. 27, 2025
2	Controller	ETS-Lindgren	2090	N/A	N/A
3	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
4	Double-Ridged Waveguide Horn Antennas	ETS-LINDGREN	3117-PA	00224991	Apr. 24, 2025
5	MXA Signal Analyzer	Keysight	N9020B	MY57100162	Dec. 22, 2024
6	Preamplifier	ETS-LINDGREN	3117-PA	00224991	May 31, 2025

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

3.3.3 TEST PROCEDURE

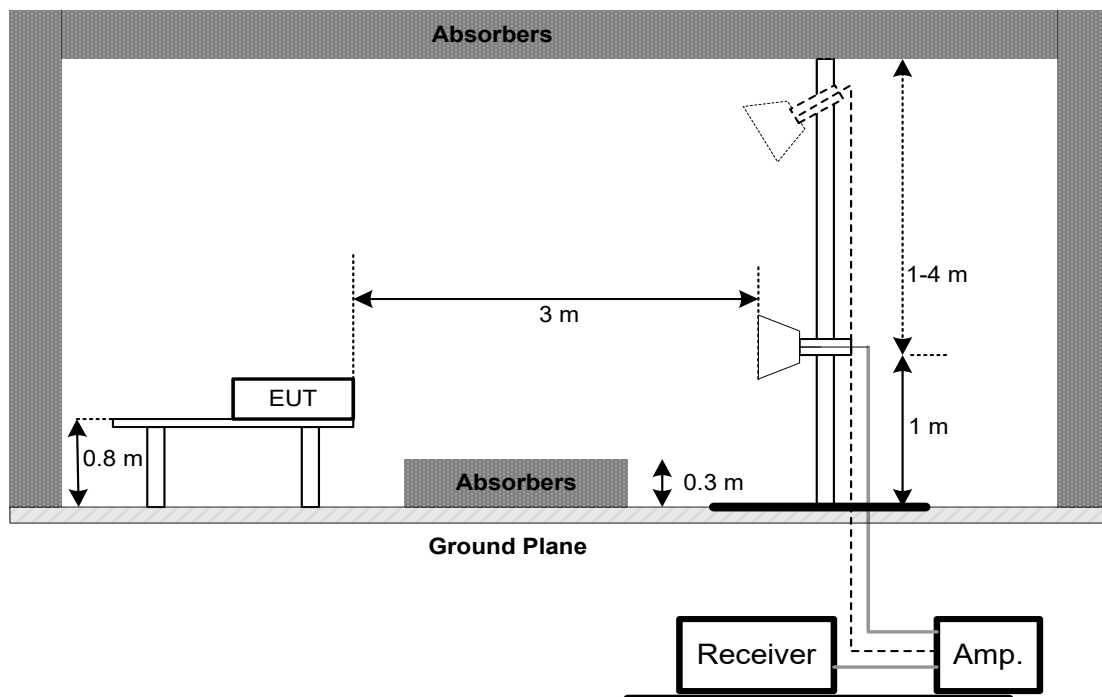
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then AVG detector mode re-measured.
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform.
- For the actual test configuration, please refer to the related Item - EUT Test Photos.

3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

3.3.5 TEST SETUP

Above 1 GHz

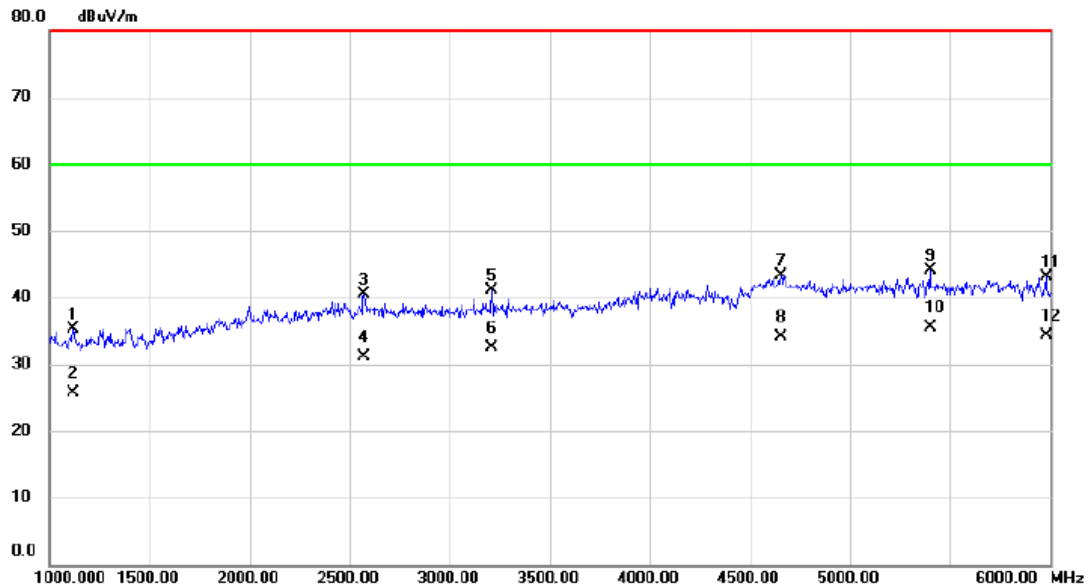


3.3.6 TEST RESULTS

Remark:

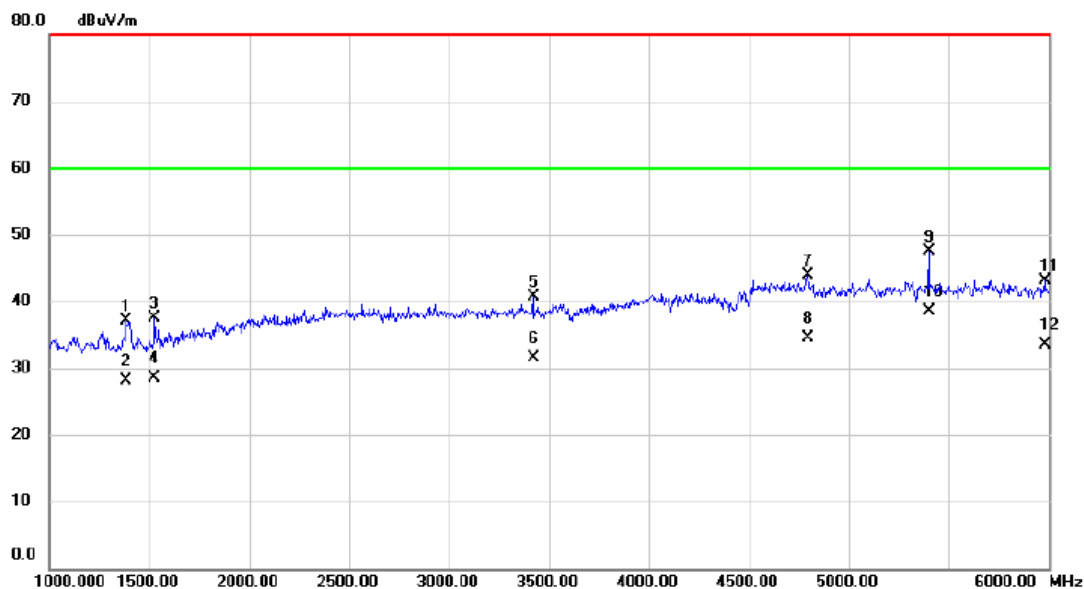
- (1) Radiated emissions measured in frequency range above 1000 MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (2) Data of measurement within this frequency range shown “*” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
- (3) A preamp was used for this test in order to provide sufficient measurement sensitivity.

Test Voltage	DC 24V	Polarization	Vertical
Test Mode	Mode 1		



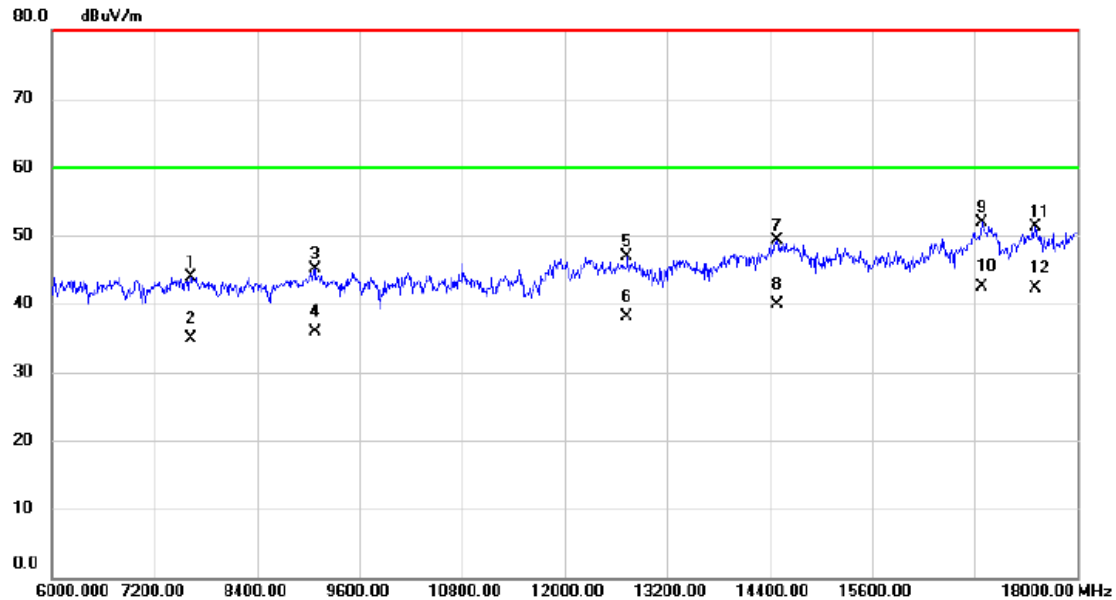
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1115.000	50.91	-15.63	35.28	80.00	-44.72	peak	
2		1115.000	41.37	-15.63	25.74	60.00	-34.26	AVG	
3		2570.000	49.64	-9.15	40.49	80.00	-39.51	peak	
4		2570.000	40.26	-9.15	31.11	60.00	-28.89	AVG	
5		3210.000	49.23	-8.17	41.06	80.00	-38.94	peak	
6		3210.000	40.58	-8.17	32.41	60.00	-27.59	AVG	
7		4655.000	46.40	-3.16	43.24	80.00	-36.76	peak	
8		4655.000	37.24	-3.16	34.08	60.00	-25.92	AVG	
9		5400.000	47.19	-3.13	44.06	80.00	-35.94	peak	
10	*	5400.000	38.69	-3.13	35.56	60.00	-24.44	AVG	
11		5980.000	45.64	-2.50	43.14	80.00	-36.86	peak	
12		5980.000	36.75	-2.50	34.25	60.00	-25.75	AVG	

Test Voltage	DC 24V	Polarization	Horizontal
Test Mode	Mode 1		



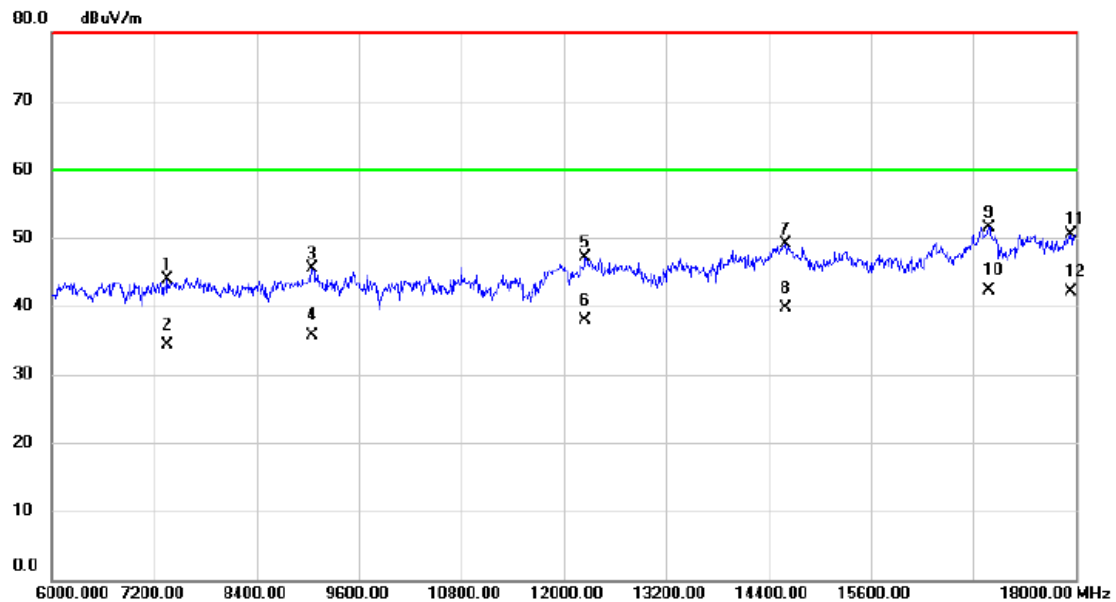
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1385.000	52.37	-15.36	37.01	80.00	-42.99	peak	
2		1385.000	43.53	-15.36	28.17	60.00	-31.83	AVG	
3		1525.000	52.62	-15.05	37.57	80.00	-42.43	peak	
4		1525.000	43.62	-15.05	28.57	60.00	-31.43	AVG	
5		3420.000	48.41	-7.69	40.72	80.00	-39.28	peak	
6		3420.000	39.12	-7.69	31.43	60.00	-28.57	AVG	
7		4795.000	46.92	-2.93	43.99	80.00	-36.01	peak	
8		4795.000	37.48	-2.93	34.55	60.00	-25.45	AVG	
9		5400.000	50.71	-3.13	47.58	80.00	-32.42	peak	
10	*	5400.000	41.65	-3.13	38.52	60.00	-21.48	AVG	
11		5980.000	45.52	-2.50	43.02	80.00	-36.98	peak	
12		5980.000	36.08	-2.50	33.58	60.00	-26.42	AVG	

Test Voltage	DC 24V	Polarization	Vertical
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		7620.000	44.60	-0.65	43.95	80.00	-36.05	peak	
2		7620.000	35.54	-0.65	34.89	60.00	-25.11	AVG	
3		9072.000	46.49	-1.38	45.11	80.00	-34.89	peak	
4		9072.000	37.21	-1.38	35.83	60.00	-24.17	AVG	
5		12732.00	41.38	5.48	46.86	80.00	-33.14	peak	
6		12732.00	32.62	5.48	38.10	60.00	-21.90	AVG	
7		14484.00	41.83	7.46	49.29	80.00	-30.71	peak	
8		14484.00	32.47	7.46	39.93	60.00	-20.07	AVG	
9		16884.00	41.41	10.52	51.93	80.00	-28.07	peak	
10	*	16884.00	32.08	10.52	42.60	60.00	-17.40	AVG	
11		17508.00	40.07	11.17	51.24	80.00	-28.76	peak	
12		17508.00	31.12	11.17	42.29	60.00	-17.71	AVG	

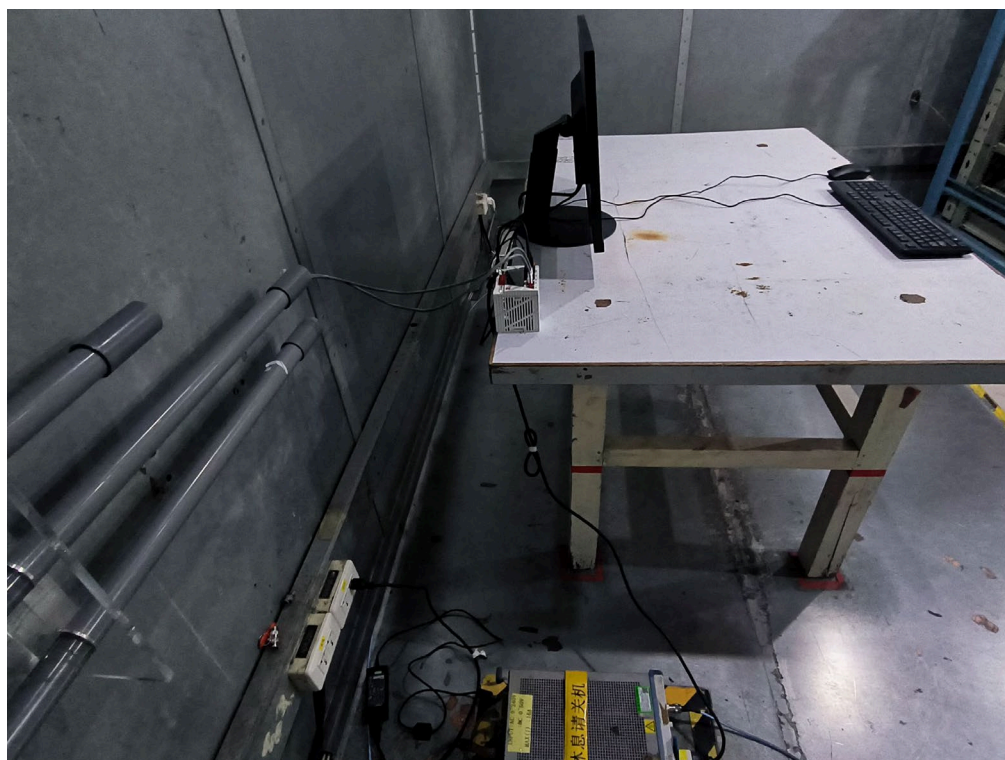
Test Voltage	DC 24V	Polarization	Horizontal
Test Mode	Mode 1		



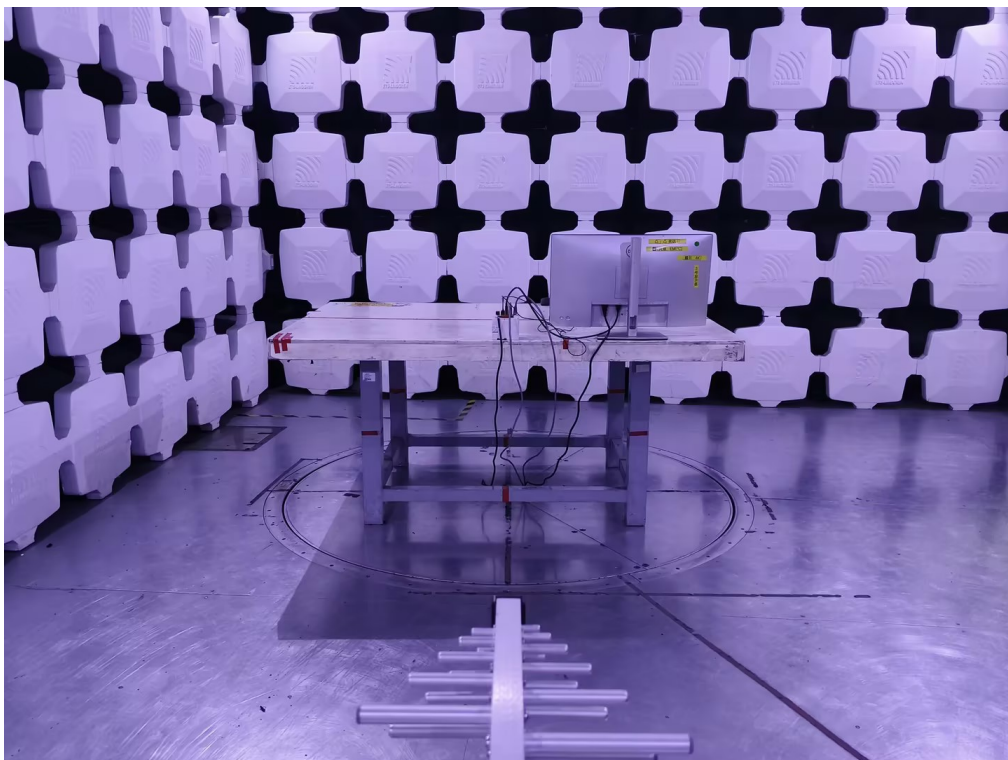
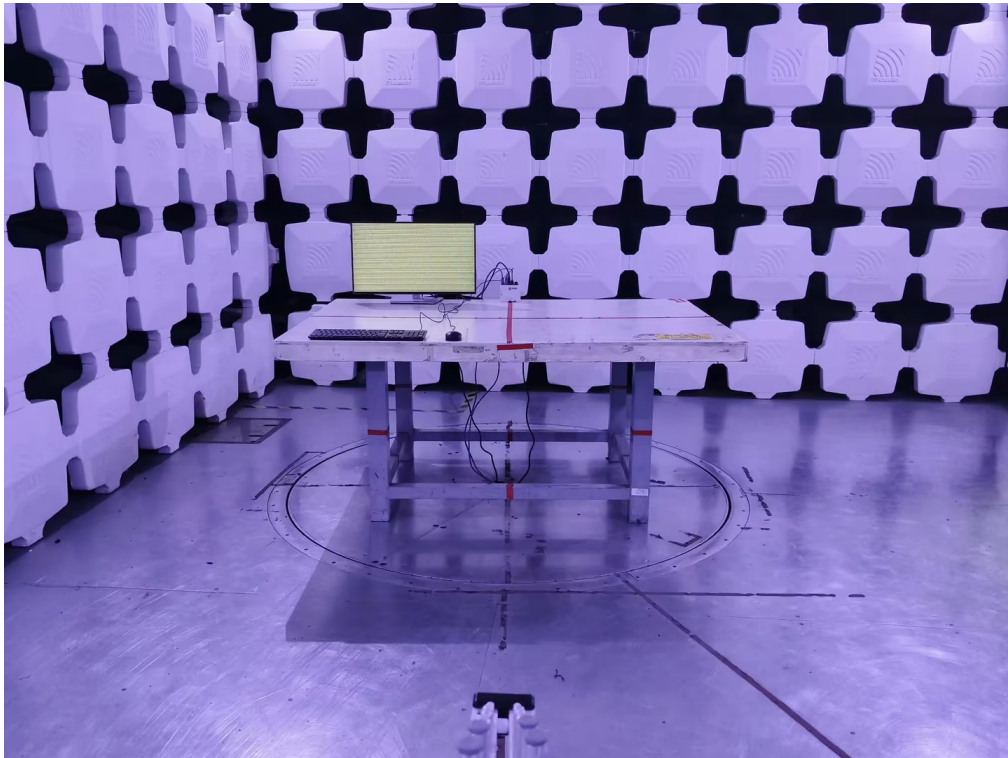
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		7356.000	44.58	-0.76	43.82	80.00	-36.18	peak	
2		7356.000	35.15	-0.76	34.39	60.00	-25.61	AVG	
3		9048.000	46.92	-1.42	45.50	80.00	-34.50	peak	
4		9048.000	37.21	-1.42	35.79	60.00	-24.21	AVG	
5		12252.00	42.78	4.41	47.19	80.00	-32.81	peak	
6		12252.00	33.58	4.41	37.99	60.00	-22.01	AVG	
7		14604.00	41.93	7.17	49.10	80.00	-30.90	peak	
8		14604.00	32.62	7.17	39.79	60.00	-20.21	AVG	
9		16980.00	40.84	10.66	51.50	80.00	-28.50	peak	
10	*	16980.00	31.74	10.66	42.40	60.00	-17.60	AVG	
11		17940.00	38.53	11.90	50.43	80.00	-29.57	peak	
12		17940.00	30.18	11.90	42.08	60.00	-17.92	AVG	

4. EUT TEST PHOTO

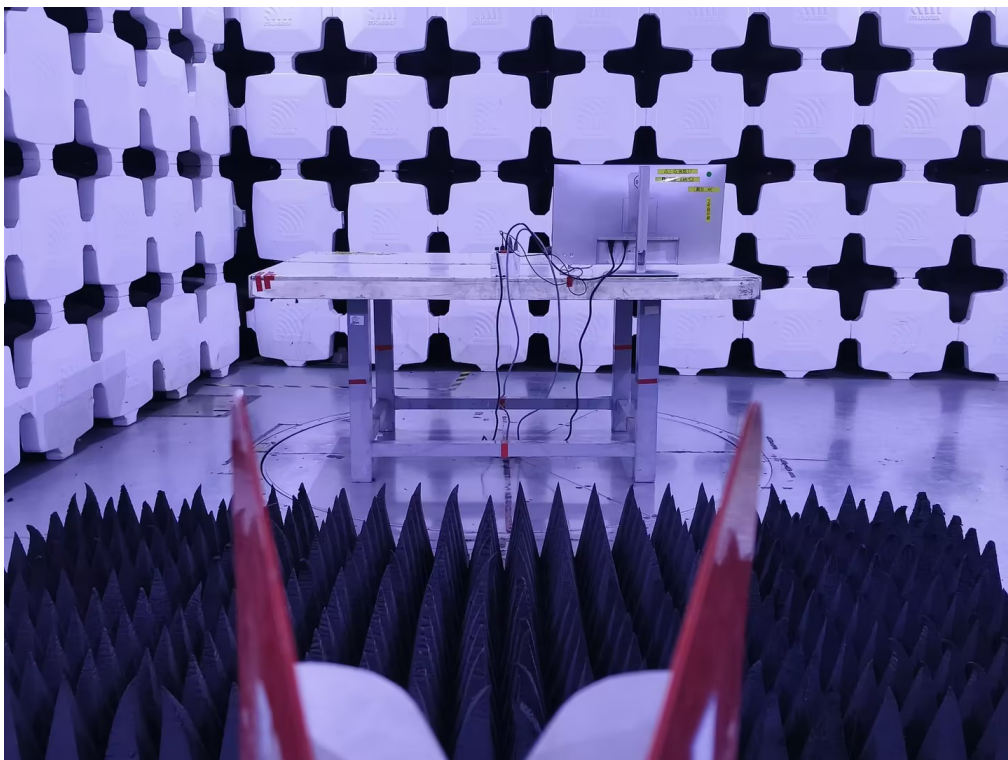
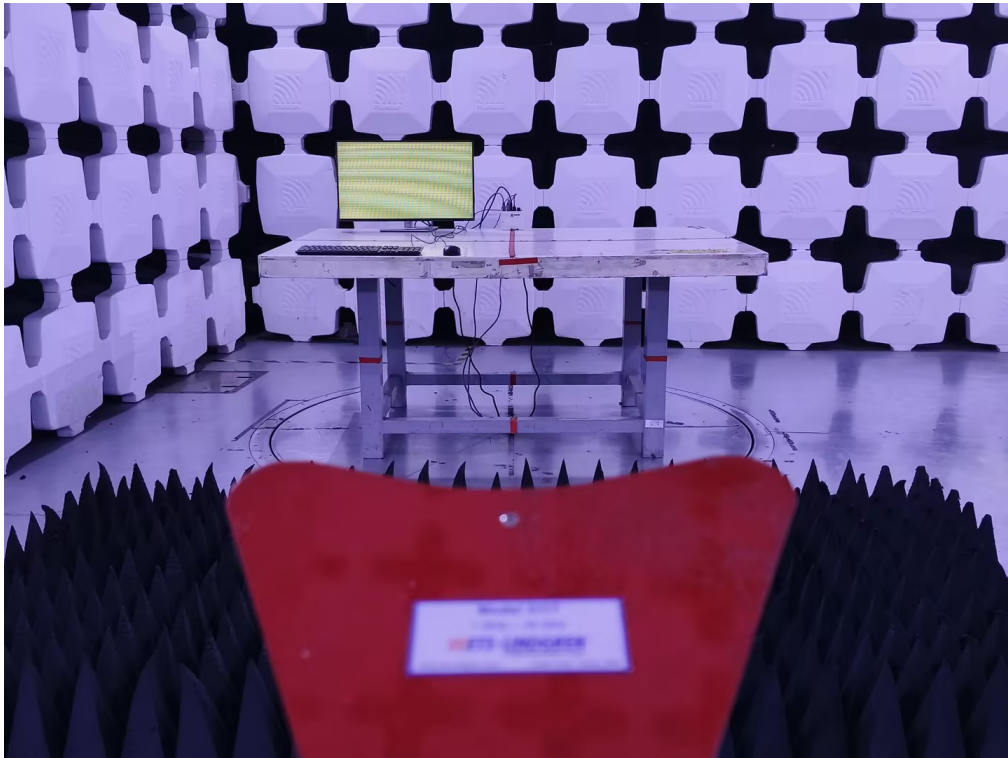
DC Power Line Conducted Emissions



Radiated Emissions 30 MHz to 1 GHz



Radiated Emissions Above 1 GHz



End of Test Report