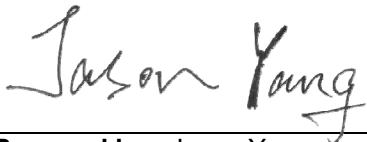


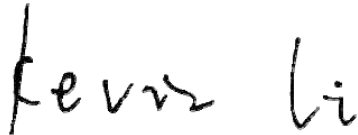
ISED EMC Test Report

Project No. : 2204C047
Equipment : LCD Monitor
Brand Name : AG neovo
Test Model : QM-6502*(*=A-Z,a-z,0-9,/, +,-,\ or blank)
Series Model : N/A
Applicant : TPV Electronics (Fujian) Co., Ltd.
Address : Rongqiao Economic and Technological Development Zone, Fuqing
City, Fujian Province, P.R. China
Date of Receipt : Apr. 13, 2022
Date of Test : Apr. 14, 2022 ~ Apr. 26, 2022
Issued Date : May 07, 2022
Report Version : R00
Test Sample : Engineering Sample No.: DG202204141
Standard(s) : 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 : Jason Yang



Approved by : Kevin Li



TESTING CERT #5123.02

Add: No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792

People's Republic of China.

Tel: +86-769-8318-3000

Web: www.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** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NIST, 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** 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	10
2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	10
2.5 DESCRIPTION OF SUPPORT UNITS	11
3 . EMC EMISSION TEST	12
3.1 AC POWER LINE CONDUCTED EMISSIONS TEST	12
3.1.1 LIMIT	12
3.1.2 MEASUREMENT INSTRUMENTS LIST	12
3.1.3 TEST PROCEDURE	12
3.1.4 DEVIATION FROM TEST STANDARD	13
3.1.5 TEST SETUP	13
3.1.6 TEST RESULTS	13
3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ	20
3.2.1 LIMIT	20
3.2.2 MEASUREMENT INSTRUMENTS LIST	20
3.2.3 TEST PROCEDURE	21
3.2.4 DEVIATION FROM TEST STANDARD	21
3.2.5 TEST SETUP	21
3.2.6 TEST RESULTS-BELOW 1 GHZ	21
3.3 RADIATED EMISSIONS ABOVE 1 GHZ	30
3.3.1 LIMIT	30
3.3.2 MEASUREMENT INSTRUMENTS LIST	30
3.3.3 TEST PROCEDURE	31
3.3.4 DEVIATION FROM TEST STANDARD	31
3.3.5 TEST SETUP	31
3.3.6 TEST RESULTS-ABOVE 1 GHZ	32
4 . EUT TEST PHOTO	41

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-ISEDE-1-204C047	R00	Original Report.	May 07, 2022	Valid

1. SUMMARY OF TEST RESULTS

Emission		
Ref Standard(s)	Test Item	Result
ICES-003 Issue 7: October 2020	AC Power Line Conducted Emissions	PASS
ANSI C63.4-2014	Radiated Emissions 30 MHz to 1 GHz	PASS
ANSI C63.4-2014 amended as per ANSI C63.4a-2017	Radiated Emissions Above 1 GHz	PASS

1.1 TEST FACILITY

The test facilities used to collect the test data in this report at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.

BTL's Company Number for ISED: 4428B

BTL's CAB Identifier for ISED: CN0042

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. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-C01	CISPR	150kHz ~ 30MHz	2.86

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB08 (10m)	CISPR	30MHz ~ 200MHz	V	4.72
		30MHz ~ 200MHz	H	4.40
		200MHz ~ 1,000MHz	V	4.58
		200MHz ~ 1,000MHz	H	3.70

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB08 (3m)	CISPR	1GHz ~ 6GHz	3.94

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
AC Power Line Conducted Emissions	25°C	42%	Jolly Su
Radiated emissions 30 MHz to 1 GHz	22°C	51%	Hans Wang
Radiated emissions above 1 GHz	25°C	59%	Larry Yuan

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LCD Monitor
Brand Name	AG neovo
Test Model	QM-6502*(*=A-Z,a-z,0-9,/ , +,-,\ or blank)
Series Model	N/A
Model Difference(s)	Only differ in model name due to marketing purpose.
Power Source	AC Mains.
Power Rating	AC 100-240V~50-60Hz
Connecting I/O Port(s)	1* AC port 3* HDMI port 1* D-SUB port 3* Audio port 1* IR OUT port 1* LAN port 1* USB port 1* RS232 port
Classification Of EUT	Class A
Highest Internal Frequency(Fx)	600MHz

Cable Type	Shielded Type	Ferrite Core	Length(m)	Note
AC Power Cord	Non-shielded	NO	3/2.5/2/1.8/1.5	3m is worst case Detachable
HDMI	Shielded	NO	1.8/1.5/1.2	-
D-SUB	Shielded	YES	1.8/1.5/1.2	Bonded Two Ferrite Cores
Audio	Non-shielded	NO	1.8/1.5/1.2	-

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- Power cable 3m, 2.5m, 2m, 1.8m, 1.5m length, HDMI, D-SUB, Audio cable 1.8m, 1.5m and 1.2m length, worst case is Power cable 3m with HDMI+D-SUB+Audio length testing and recording in test report.

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	HDMI1 3840*2160/75Hz 3m(PC)
Mode 2	HDMI2 3840*2160/75Hz 3m(PC)
Mode 3	HDMI3 3840*2160/75Hz 3m(PC)
Mode 4	D-SUB 1920/1080/60Hz 3m(PC)
Mode 5	HDMI1 4K (DVD) 3m
Mode 6	USB
Mode 7	LAN
Mode 8	HDMI1 1920*1080/75Hz 3m(PC)
Mode 9	HDMI1 640*480/75Hz 3m(PC)
Mode 10	HDMI1 3840*2160/75Hz 2.5m(PC)
Mode 11	HDMI1 3840*2160/75Hz 2m(PC)
Mode 12	HDMI1 3840*2160/75Hz 1.8m(PC)
Mode 13	HDMI1 3840*2160/75Hz 1.5m(PC)
Mode 14	HDMI1 3840*2160/75Hz 1.2m(PC)
Mode 15	HDMI1 3840*2160/75Hz 3m(PC)(Without Earphone)

AC Power Line Conducted Emissions test	
Final Test Mode	Description
Mode 1	HDMI1 3840*2160/75Hz 3m(PC)
Mode 4	D-SUB 1920/1080/60Hz 3m(PC)
Mode 5	HDMI1 4K (DVD) 3m

Radiated emissions 30 MHz to 1 GHz test	
Final Test Mode	Description
Mode 1	HDMI1 3840*2160/75Hz 3m(PC)
Mode 4	D-SUB 1920/1080/60Hz 3m(PC)
Mode 5	HDMI1 4K (DVD) 3m
Mode 15	HDMI1 3840*2160/75Hz 3m(PC)(Without Earphone)

Radiated emissions Above 1 GHz test	
Final Test Mode	Description
Mode 1	HDMI1 3840*2160/75Hz 3m(PC)
Mode 4	D-SUB 1920/1080/60Hz 3m(PC)
Mode 5	HDMI1 4K (DVD) 3m
Mode 15	HDMI1 3840*2160/75Hz 3m(PC)(Without Earphone)

Evaluation description:

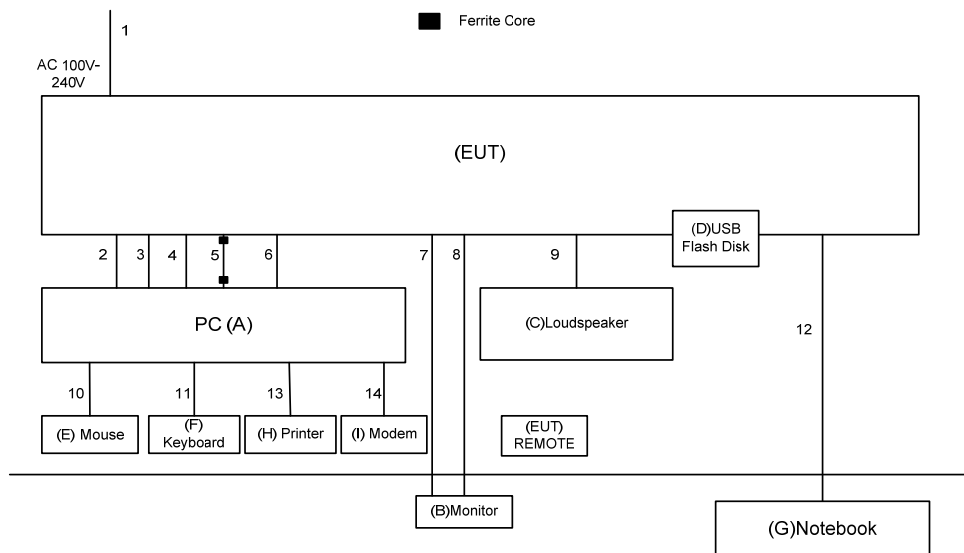
1. The maximum resolution is evaluated Mode 1-7. The worst case is Mode 1 and evaluated the middle and low resolution Mode 8 and Mode 9. At last, evaluated the Mode 10 – Mode 15.
2. According to the client's requirement, choose Mode 1, Mode 4, Mode 5 for conducted emissions, Mode 1, Mode 4, Mode 5, Mode 15 for radiated emissions and recorded in test report.

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. EUT connected to PC via HDMI & D-SUB & Audio cable.
2. EUT connected to Monitor via IR OUT & RS232 cable.
3. Mouse and Keyboard connected to PC via USB cable.
4. EUT connected to Loudspeaker via Audio cable.
5. EUT connected to Notebook via RJ45 cable.
6. USB Flash Disk was plugged into EUT.
7. Modem connected to PC via RS232 cable.
8. Printer connected to PC via Parallel 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.
A	PC	DELL	8920-D16N8S	GZS91L2
B	Monitor	N/A	N/A	N/A
C	Loudspeaker	Behringer Holdings	MS20	S1105384274
D	USB Flash Disk	Kingston	N/A	N/A
E	Mouse	DELL	MS111-P	CN011D3V71581279OLOT
F	Keyboard	DELL	KB212-B	CN0HTXH97158125004DXA01
G	Notebook	Lenovo	V310-14IKB	LR07SH32
H	Printer	SII	DPU-414	018507 B
I	Modem	ACEEX	DM-1414V	0603002131

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	AC Cable	NO	NO	3/2.5/2/1.8/1.5m
2	HDMI Cable	YES	NO	1.8/1.5/1.2m
3	HDMI Cable	YES	NO	1.8/1.5/1.2m
4	HDMI Cable	YES	NO	1.8/1.5/1.2m
5	D-SUB Cable	YES	YES	1.8/1.5/1.2m
6	Audio Cable	NO	NO	1.8/1.5/1.2m
7	IR OUT Cable	YES	NO	10m
8	RS232 Cable	NO	NO	10m
9	Audio Cable	NO	NO	1.2m
10	USB Cable	YES	NO	1.8m
11	USB Cable	YES	NO	1.8m
12	RJ45 Cable	NO	NO	10m
13	Parallel Cable	YES	NO	1.5m
14	RS232 Cable	YES	NO	1.5m

3. EMC EMISSION TEST

3.1 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1.1 LIMIT

Frequency of Emission (MHz)	Class A (dBuV)	
	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	TWO-LINE V-NETWORK	R&S	ENV216	100526	Jul. 10, 2022
2	EMI Test Receiver	R&S	ESR3	101862	Jan. 23, 2023
3*	Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Feb. 28, 2024
4	Cable	N/A	RG400	N/A(12m)	Mar. 08, 2023
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	50Ω Terminator	SHX	TF2-3G-A	8122901	Jan. 23, 2023

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

"*" calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.

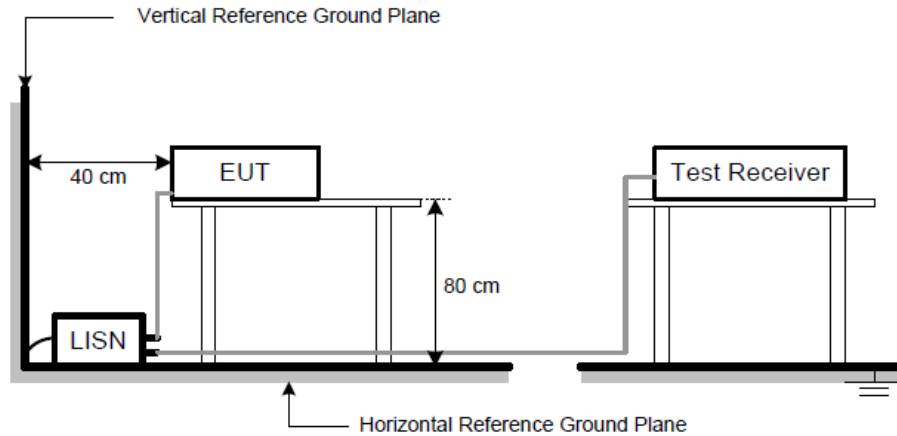
3.1.3 TEST PROCEDURE

- 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

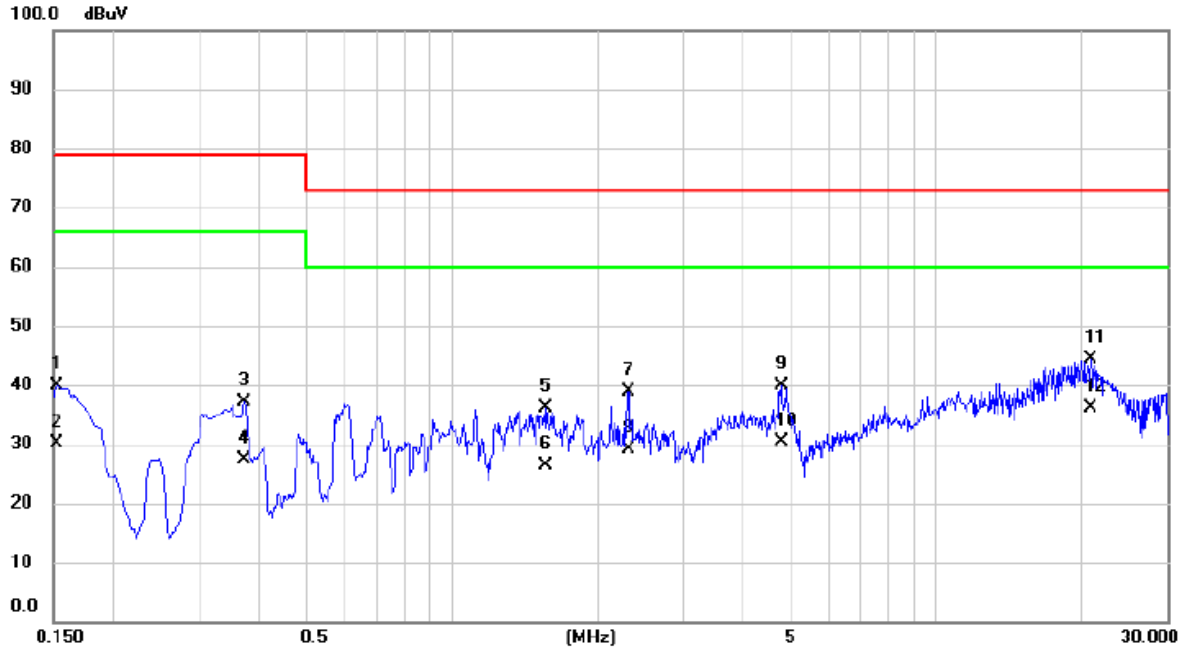


3.1.6 TEST RESULTS

Remark

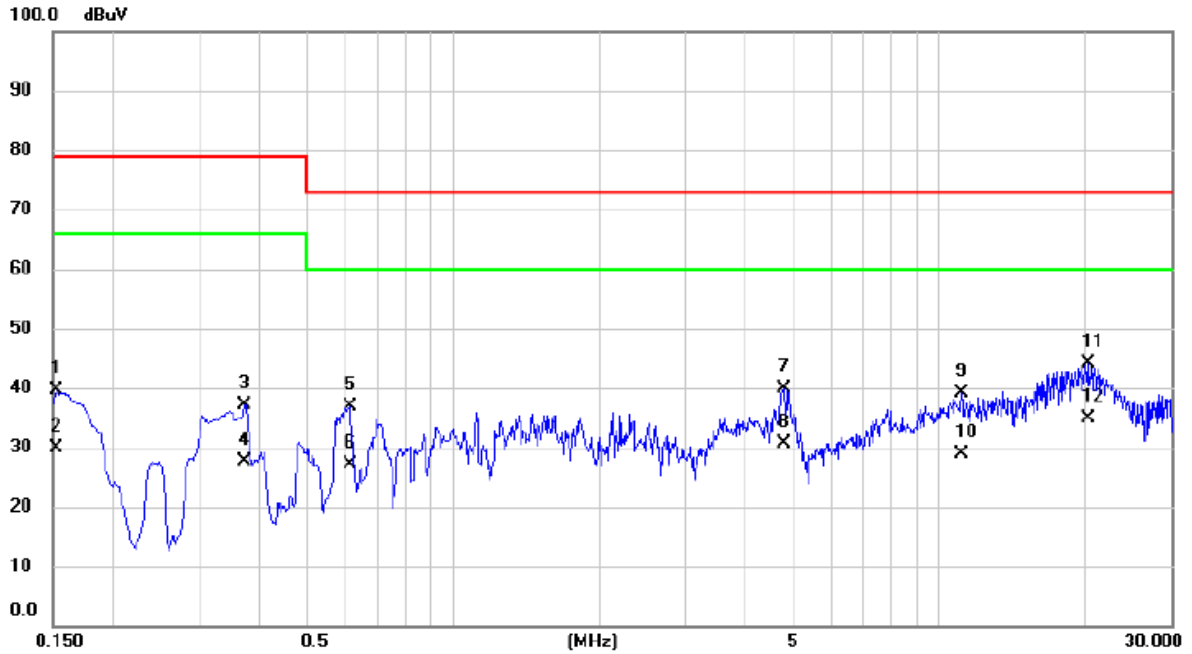
- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. 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	AC 120V/60Hz	Phase	Line
Test Mode	Mode 1		



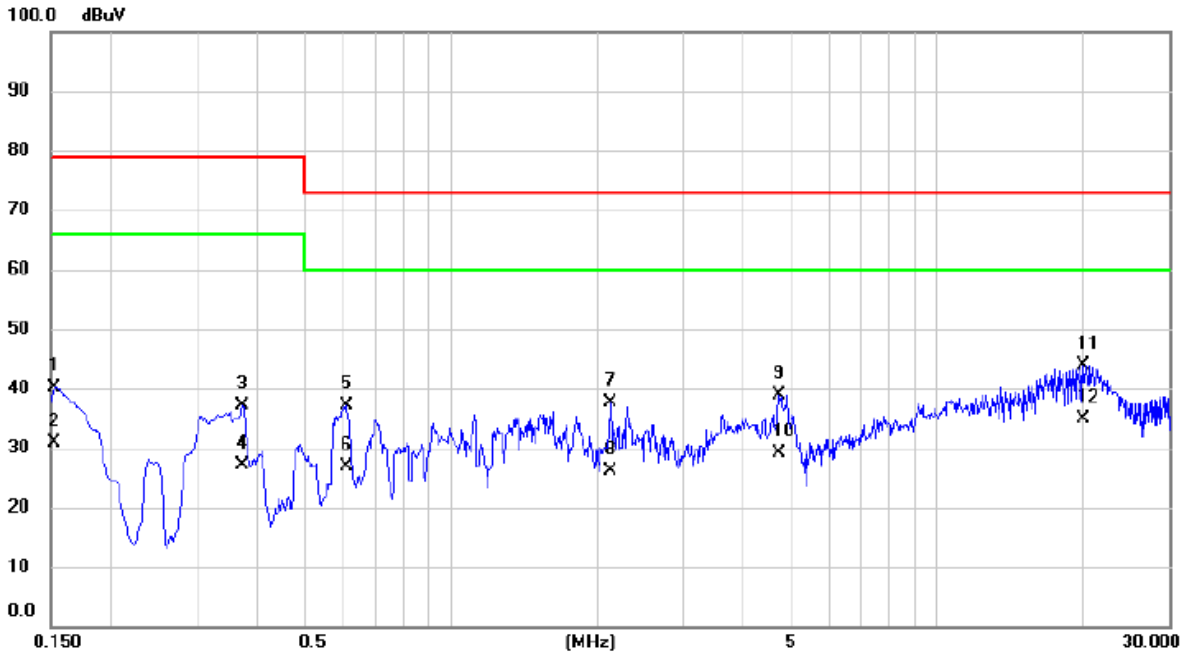
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1522	30.32	9.66	39.98	79.00	-39.02	QP	
2		0.1522	20.50	9.66	30.16	66.00	-35.84	AVG	
3		0.3727	27.40	9.71	37.11	79.00	-41.89	QP	
4		0.3727	17.60	9.71	27.31	66.00	-38.69	AVG	
5		1.5630	26.21	9.83	36.04	73.00	-36.96	QP	
6		1.5630	16.50	9.83	26.33	60.00	-33.67	AVG	
7		2.3100	28.97	9.89	38.86	73.00	-34.14	QP	
8		2.3100	19.20	9.89	29.09	60.00	-30.91	AVG	
9		4.7895	29.94	10.05	39.99	73.00	-33.01	QP	
10		4.7895	20.30	10.05	30.35	60.00	-29.65	AVG	
11		20.8613	33.75	10.54	44.29	73.00	-28.71	QP	
12	*	20.8613	25.60	10.54	36.14	60.00	-23.86	AVG	

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 1		



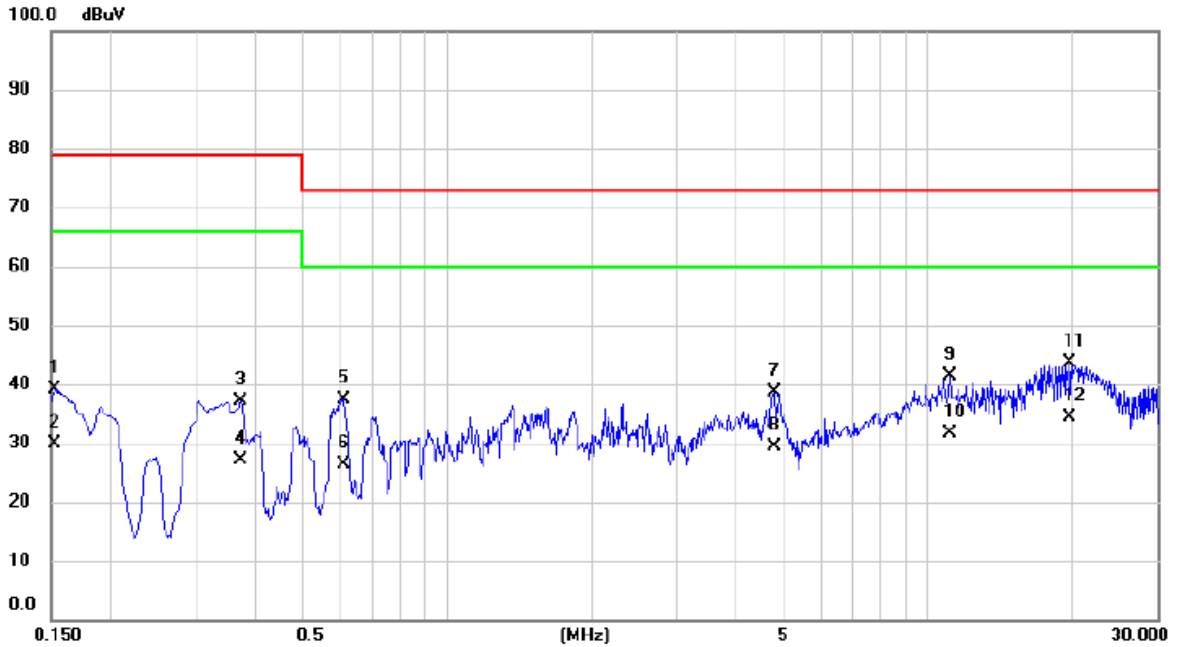
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1522	30.00	9.66	39.66	79.00	-39.34	QP	
2		0.1522	20.30	9.66	29.96	66.00	-36.04	AVG	
3		0.3727	27.45	9.71	37.16	79.00	-41.84	QP	
4		0.3727	17.90	9.71	27.61	66.00	-38.39	AVG	
5		0.6134	27.19	9.74	36.93	73.00	-36.07	QP	
6		0.6134	17.50	9.74	27.24	60.00	-32.76	AVG	
7		4.7873	29.77	10.05	39.82	73.00	-33.18	QP	
8		4.7873	20.50	10.05	30.55	60.00	-29.45	AVG	
9		11.1210	28.86	10.32	39.18	73.00	-33.82	QP	
10		11.1210	18.60	10.32	28.92	60.00	-31.08	AVG	
11		20.2515	33.60	10.50	44.10	73.00	-28.90	QP	
12	*	20.2515	24.30	10.50	34.80	60.00	-25.20	AVG	

Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	Mode 4		



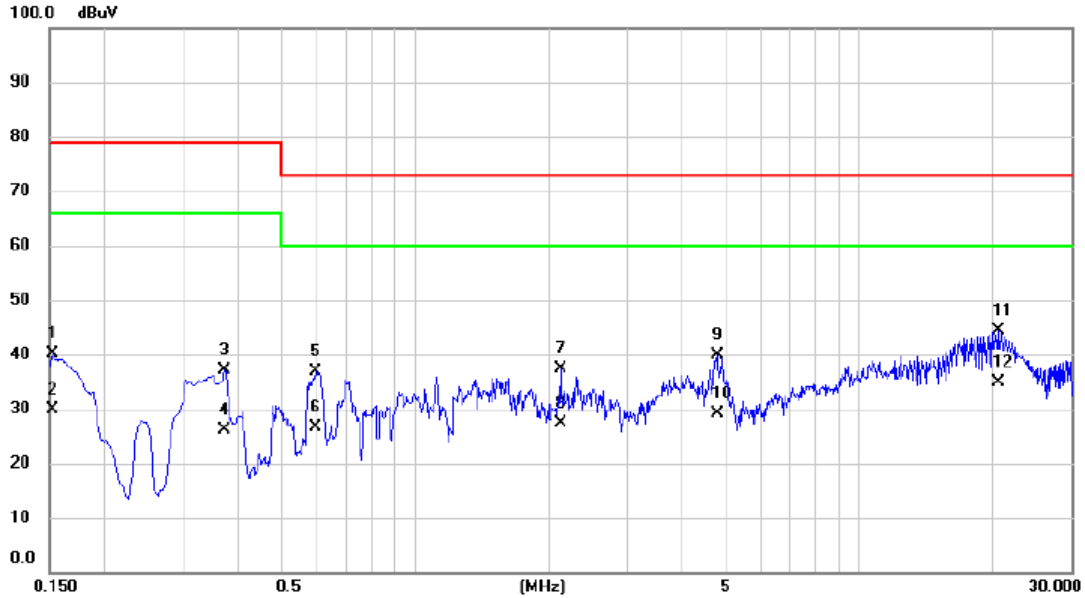
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1522	30.43	9.66	40.09	79.00	-38.91	QP	
2		0.1522	21.30	9.66	30.96	66.00	-35.04	AVG	
3		0.3727	27.47	9.71	37.18	79.00	-41.82	QP	
4		0.3727	17.50	9.71	27.21	66.00	-38.79	AVG	
5		0.6090	27.34	9.74	37.08	73.00	-35.92	QP	
6		0.6090	17.20	9.74	26.94	60.00	-33.06	AVG	
7		2.1278	27.69	9.88	37.57	73.00	-35.43	QP	
8		2.1278	16.30	9.88	26.18	60.00	-33.82	AVG	
9		4.7400	28.90	10.04	38.94	73.00	-34.06	QP	
10		4.7400	19.20	10.04	29.24	60.00	-30.76	AVG	
11		19.9613	33.41	10.50	43.91	73.00	-29.09	QP	
12	*	19.9613	24.30	10.50	34.80	60.00	-25.20	AVG	

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 4		



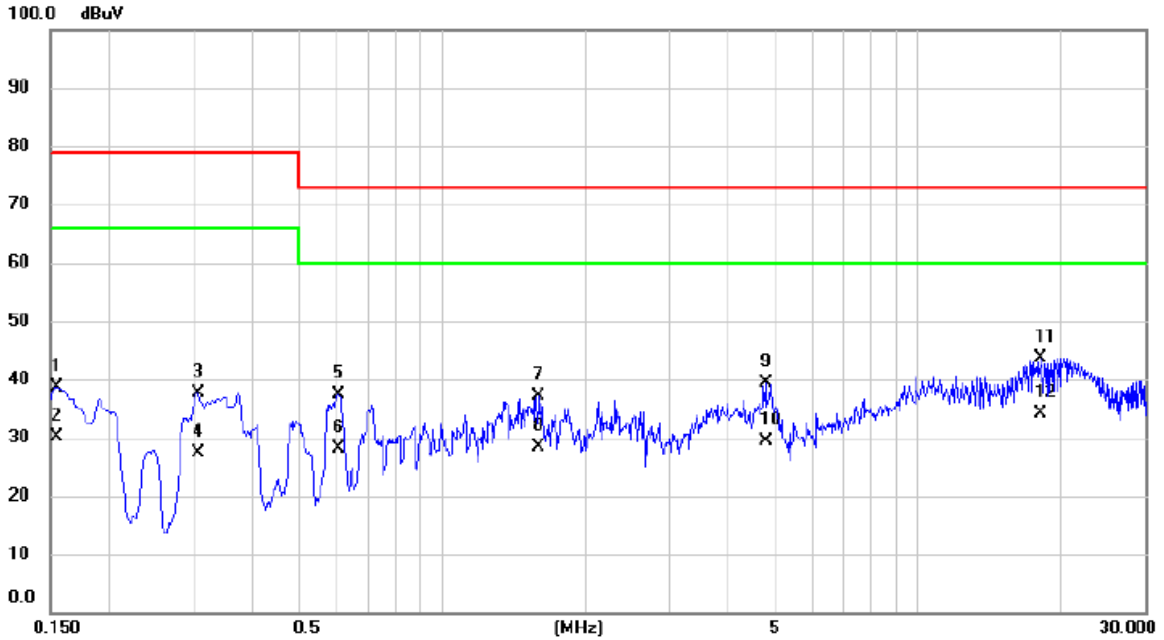
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1522	29.48	9.63	39.11	79.00	-39.89	QP	
2		0.1522	20.30	9.63	29.93	66.00	-36.07	AVG	
3		0.3727	27.45	9.67	37.12	79.00	-41.88	QP	
4		0.3727	17.50	9.67	27.17	66.00	-38.83	AVG	
5		0.6090	27.79	9.70	37.49	73.00	-35.51	QP	
6		0.6090	16.80	9.70	26.50	60.00	-33.50	AVG	
7		4.7963	28.65	10.05	38.70	73.00	-34.30	QP	
8		4.7963	19.30	10.05	29.35	60.00	-30.65	AVG	
9		11.1233	30.87	10.42	41.29	73.00	-31.71	QP	
10		11.1233	21.20	10.42	31.62	60.00	-28.38	AVG	
11		19.6553	32.83	10.80	43.63	73.00	-29.37	QP	
12	*	19.6553	23.50	10.80	34.30	60.00	-25.70	AVG	

Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	Mode 5		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1522	30.43	9.66	40.09	79.00	-38.91	QP	
2		0.1522	20.30	9.66	29.96	66.00	-36.04	AVG	
3		0.3727	27.48	9.71	37.19	79.00	-41.81	QP	
4		0.3727	16.50	9.71	26.21	66.00	-39.79	AVG	
5		0.5977	27.10	9.74	36.84	73.00	-36.16	QP	
6		0.5977	16.80	9.74	26.54	60.00	-33.46	AVG	
7		2.1278	27.57	9.88	37.45	73.00	-35.55	QP	
8		2.1278	17.60	9.88	27.48	60.00	-32.52	AVG	
9		4.7918	29.72	10.05	39.77	73.00	-33.23	QP	
10		4.7918	19.20	10.05	29.25	60.00	-30.75	AVG	
11		20.5778	33.76	10.52	44.28	73.00	-28.72	QP	
12	*	20.5778	24.30	10.52	34.82	60.00	-25.18	AVG	

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 5		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1545	29.10	9.63	38.73	79.00	-40.27	QP	
2		0.1545	20.40	9.63	30.03	66.00	-35.97	AVG	
3		0.3075	28.06	9.66	37.72	79.00	-41.28	QP	
4		0.3075	17.60	9.66	27.26	66.00	-38.74	AVG	
5		0.6045	27.56	9.70	37.26	73.00	-35.74	QP	
6		0.6045	18.50	9.70	28.20	60.00	-31.80	AVG	
7		1.5945	27.29	9.88	37.17	73.00	-35.83	QP	
8		1.5945	18.50	9.88	28.38	60.00	-31.62	AVG	
9		4.7828	29.45	10.05	39.50	73.00	-33.50	QP	
10		4.7828	19.30	10.05	29.35	60.00	-30.65	AVG	
11		18.1388	32.99	10.74	43.73	73.00	-29.27	QP	
12	*	18.1388	23.40	10.74	34.14	60.00	-25.86	AVG	

3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ

3.2.1 LIMIT

Frequency (MHz)	Class A (at 10m)
	(dBuV/m) Quasi-peak
30 - 88	40.0
88 - 216	43.5
216 - 230	46.4
230 - 960	47.0
960 - 1000	49.5

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m) = 20log Emission level (uV/m).
3m Emission level = 10m Emission level + 20log(10m/3m).
- (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	Receiver	Keysight	N9038A	MY54450004	Jul. 10, 2022
2	MXE EMI Receiver	Agilent	N9038A	MY53220133	Jan. 22, 2023
3	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980284	Jul. 10, 2022
4	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980283	Jul. 10, 2022
5	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	947	Oct. 19, 2022
6	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	946	Sep. 11, 2022
7	Cable	emci	LMR-400(5m+8m+8m)	N/A	Jan. 06, 2023
8	Cable	emci	LMR-400(5m+8m+8m)	N/A	Jan. 06, 2023
9	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A
10	Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
11	Controller	MF	MF-7802	MF780208159	N/A
12	Attenuator	EMCI	EMCI-N-6-06	AT-N0671	Sep. 11, 2022
13	Attenuator	EMCI	EMCI-N-6-06	AT-N0670	Oct. 19, 2022

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

All calibration period of equipment list is one year.

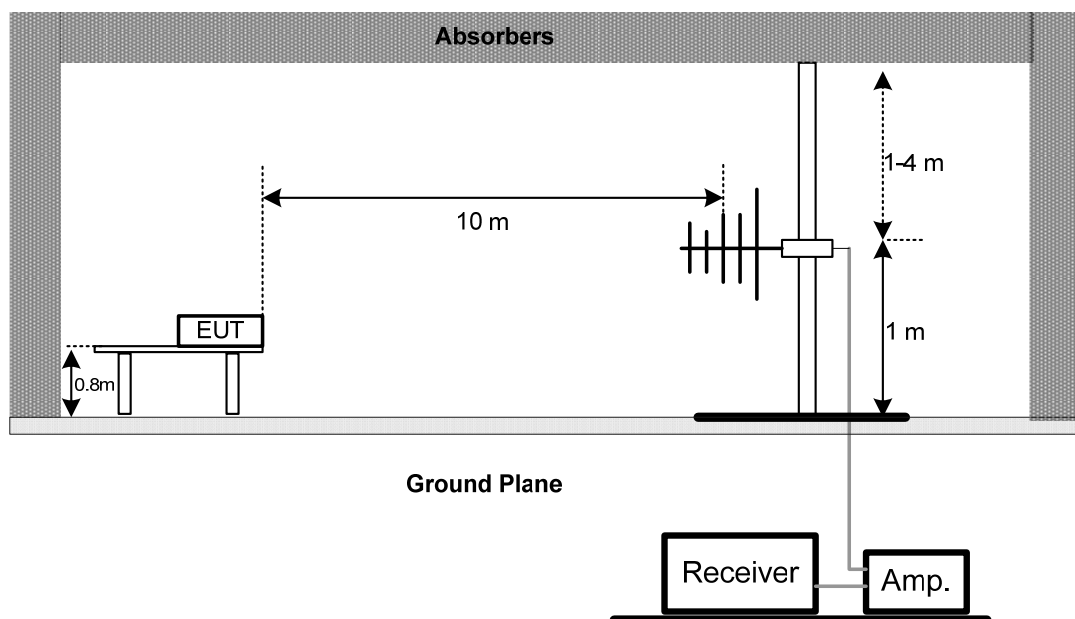
3.2.3 TEST PROCEDURE

- The measuring distance of 10 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 10 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 - Block Diagram of system tested.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP

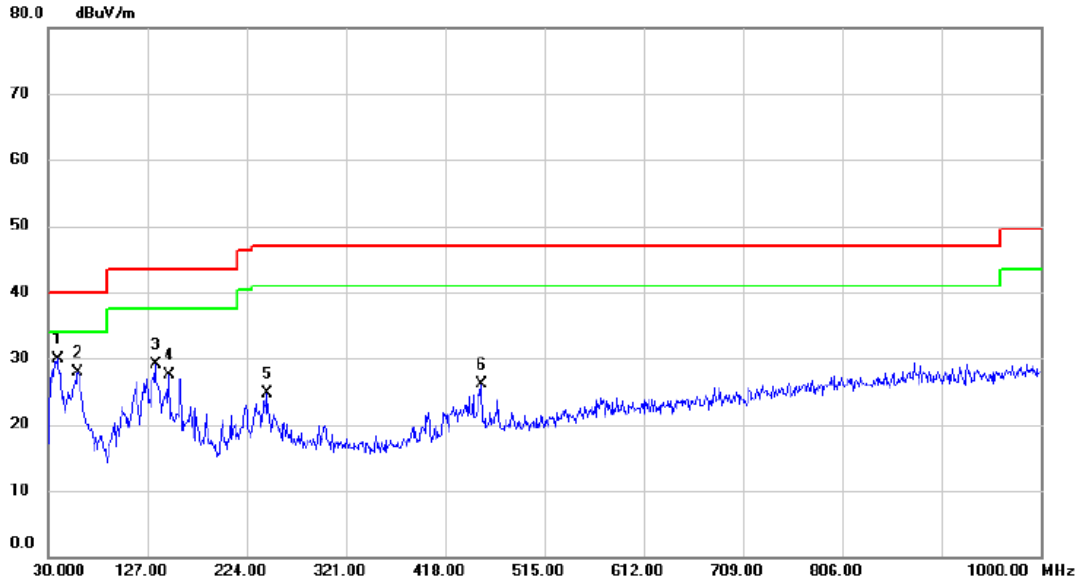


3.2.6 TEST RESULTS-BELOW 1 GHZ

Remark :

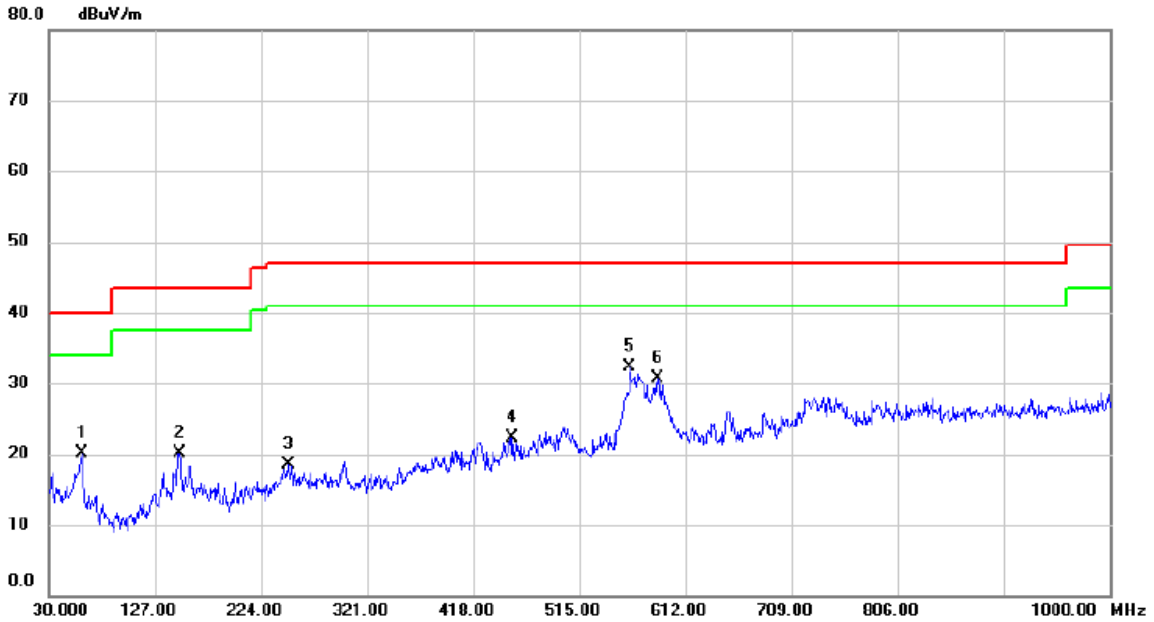
- (1) Measuring frequency range from 30 MHz to 1000 MHz
- (2) If the peak scan value lower limit more than 20 dB, then this signal data does not show in table.

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 1		



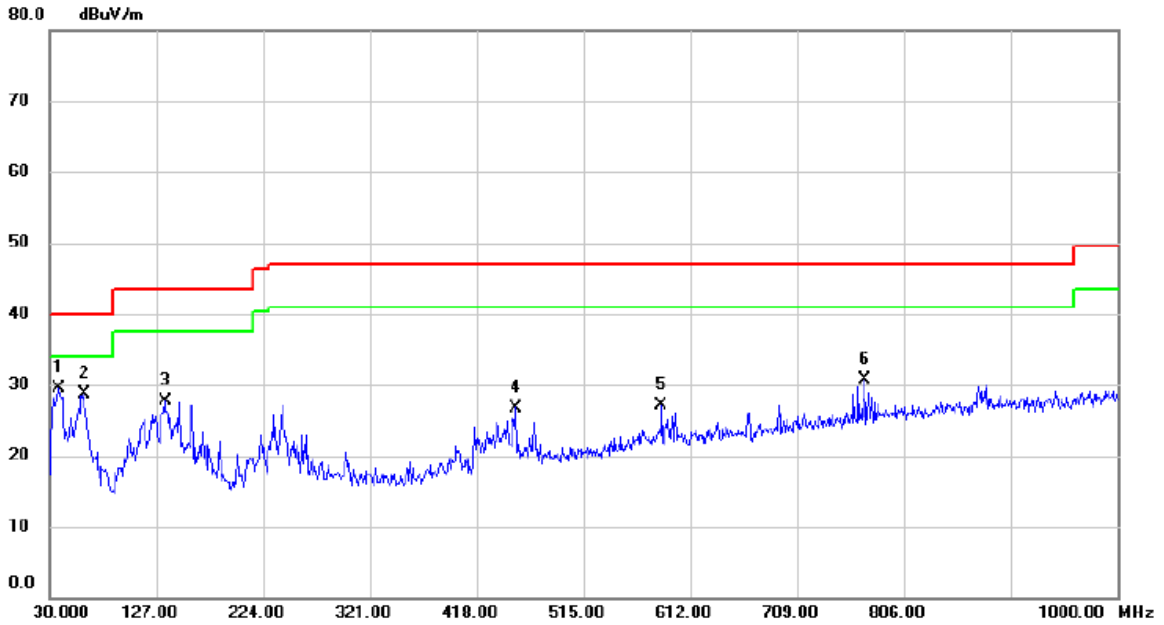
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	39.2150	47.69	-17.75	29.94	40.00	-10.06	QP	
2		59.1000	45.27	-17.39	27.88	40.00	-12.12	QP	
3		134.7600	46.43	-17.30	29.13	43.50	-14.37	QP	
4		148.3400	44.16	-16.62	27.54	43.50	-15.96	QP	
5		243.4000	41.57	-16.93	24.64	47.00	-22.36	QP	
6		452.9200	36.78	-10.74	26.04	47.00	-20.96	QP	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 1		



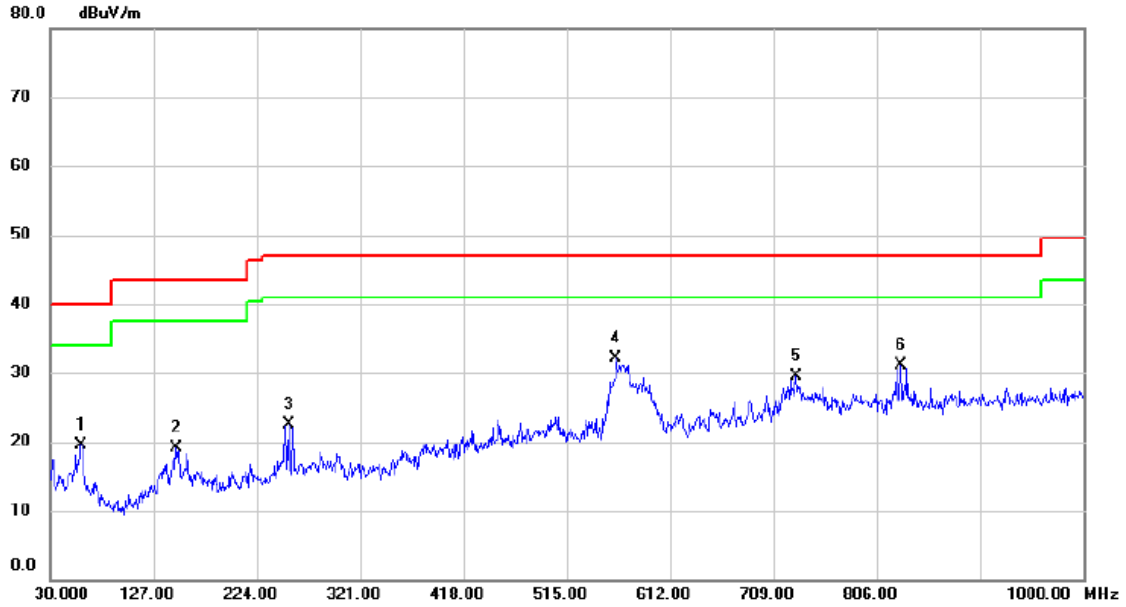
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	60.0700	38.64	-18.56	20.08	40.00	-19.92	QP	
2	149.3100	36.47	-16.29	20.18	43.50	-23.32	QP	
3	249.2200	34.87	-16.40	18.47	47.00	-28.53	QP	
4	453.8900	33.51	-11.27	22.24	47.00	-24.76	QP	
5 *	561.5600	42.12	-9.80	32.32	47.00	-14.68	QP	
6	586.7800	39.74	-9.04	30.70	47.00	-16.30	QP	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 4		



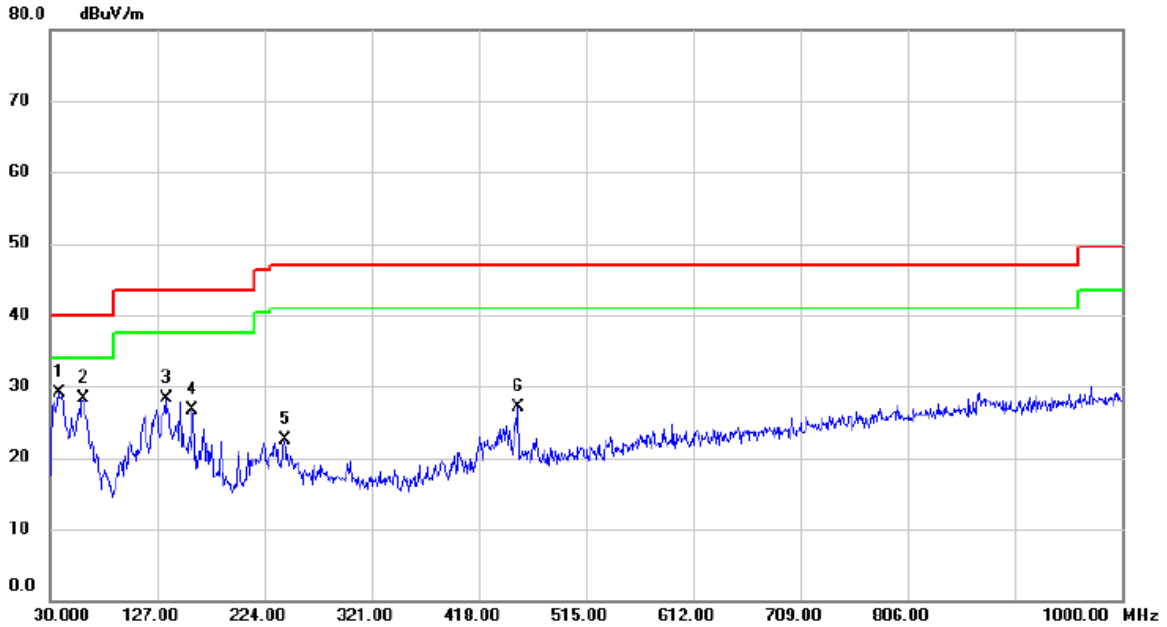
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	37.7600	47.33	-17.79	29.54	40.00	-10.46	QP	
2		61.0400	46.30	-17.51	28.79	40.00	-11.21	QP	
3		134.7600	44.96	-17.30	27.66	43.50	-15.84	QP	
4		453.8900	37.51	-10.71	26.80	47.00	-20.20	QP	
5		585.8100	35.26	-8.10	27.16	47.00	-19.84	QP	
6		770.1100	36.62	-5.88	30.74	47.00	-16.26	QP	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 4		



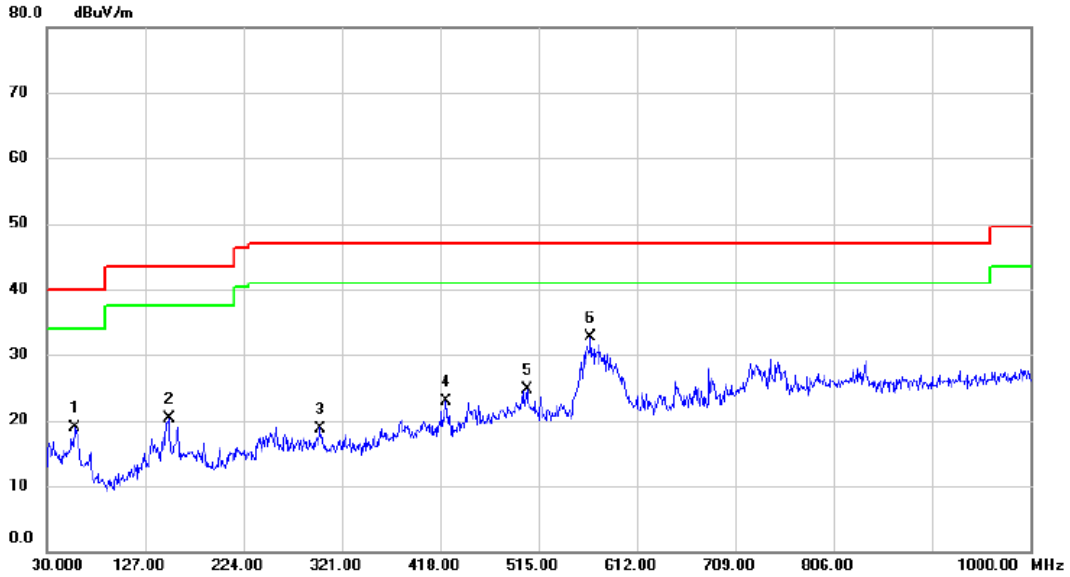
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		59.1000	38.07	-18.50	19.57	40.00	-20.43	QP	
2		148.3400	35.41	-16.39	19.02	43.50	-24.48	QP	
3		254.0700	38.81	-16.39	22.42	47.00	-24.58	QP	
4	*	561.5600	41.85	-9.80	32.05	47.00	-14.95	QP	
5		730.3400	37.02	-7.43	29.59	47.00	-17.41	QP	
6		828.3100	37.76	-6.61	31.15	47.00	-15.85	QP	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 5		



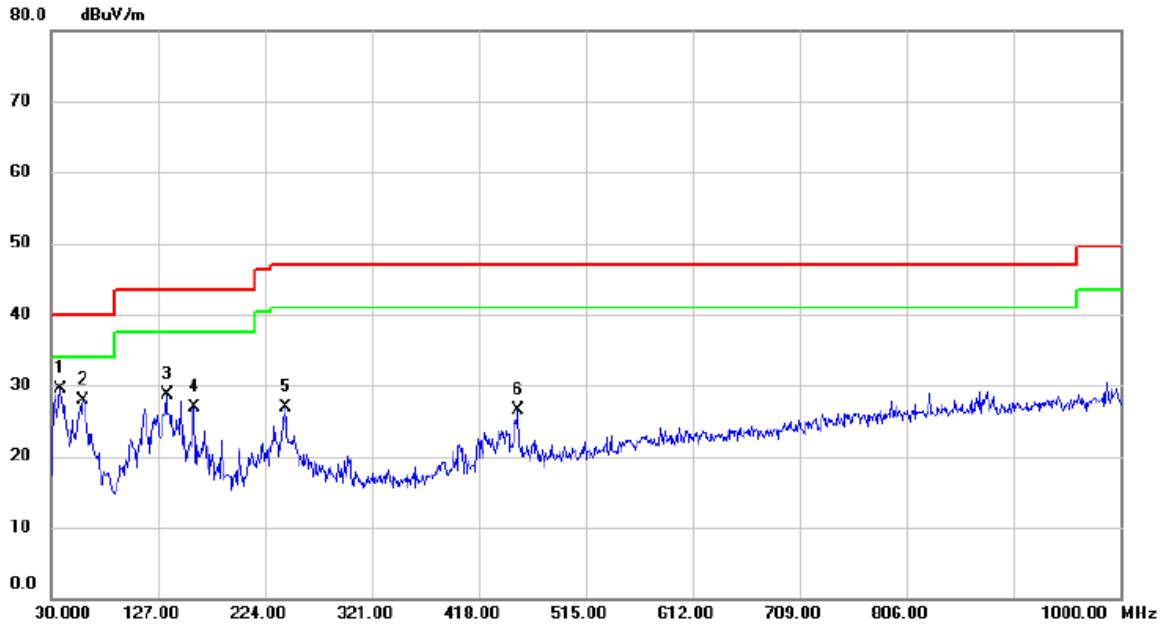
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	37.7600	46.90	-17.79	29.11	40.00	-10.89	QP	
2		60.0700	45.75	-17.43	28.32	40.00	-11.68	QP	
3		134.7600	45.55	-17.30	28.25	43.50	-15.25	QP	
4		159.0100	43.03	-16.33	26.70	43.50	-16.80	QP	
5		242.4300	39.45	-16.95	22.50	47.00	-24.50	QP	
6		453.8900	37.76	-10.71	27.05	47.00	-19.95	QP	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 5		



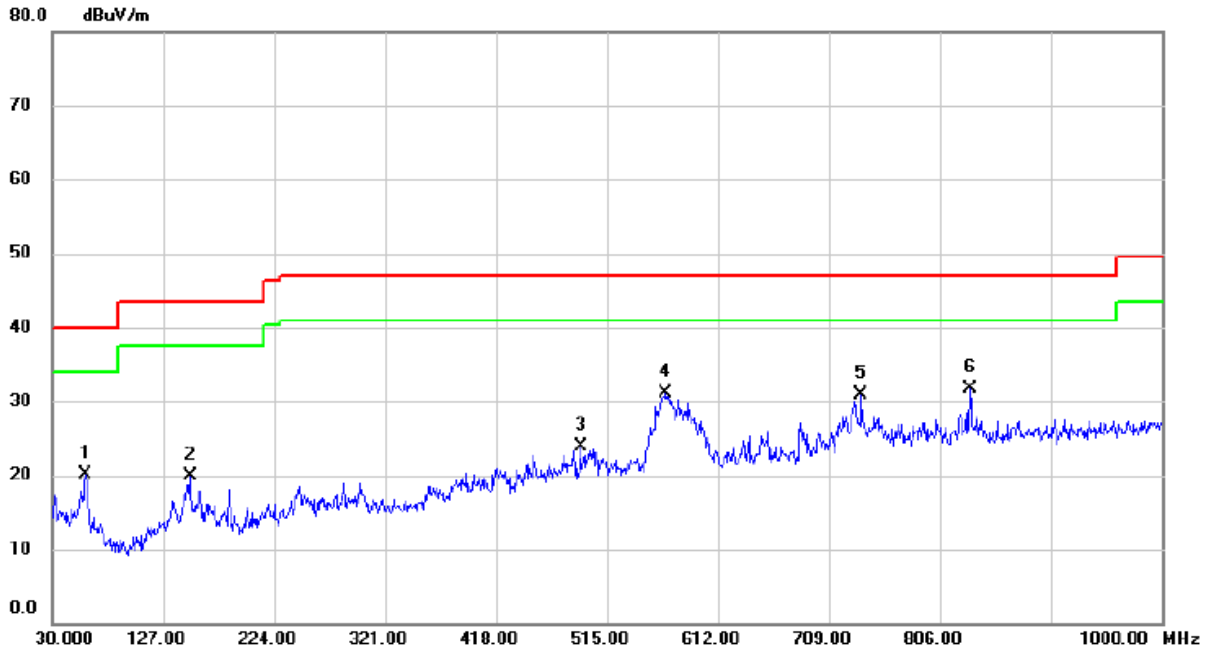
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	58.1300	37.33	-18.42	18.91	40.00	-21.09	QP	
2	150.2800	36.59	-16.22	20.37	43.50	-23.13	QP	
3	299.6600	34.01	-15.21	18.80	47.00	-28.20	QP	
4	423.8200	34.90	-12.09	22.81	47.00	-24.19	QP	
5	503.3600	35.37	-10.65	24.72	47.00	-22.28	QP	
6 *	566.4100	42.37	-9.66	32.71	47.00	-14.29	QP	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 15		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	37.7600	47.38	-17.79	29.59	40.00	-10.41	QP	
2		59.1000	45.26	-17.39	27.87	40.00	-12.13	QP	
3		134.7600	45.99	-17.30	28.69	43.50	-14.81	QP	
4		159.9800	43.28	-16.30	26.98	43.50	-16.52	QP	
5		242.4300	43.80	-16.95	26.85	47.00	-20.15	QP	
6		453.8900	37.28	-10.71	26.57	47.00	-20.43	QP	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 15		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		59.1000	38.53	-18.50	20.03	40.00	-19.97	QP	
2		150.2800	36.11	-16.22	19.89	43.50	-23.61	QP	
3		491.7200	34.72	-10.78	23.94	47.00	-23.06	QP	
4		566.4100	40.69	-9.66	31.03	47.00	-15.97	QP	
5		737.1300	38.27	-7.31	30.96	47.00	-16.04	QP	
6	*	832.1900	38.33	-6.60	31.73	47.00	-15.27	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).
3m Emission level = 10m Emission level + 20log(10m/3m).
- (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	Horn Antenna	EMCO	3115	9605-4803	May 26, 2022
2	Amplifier	Agilent	8449B	3008A02333	Jan. 22, 2023
3	MXE EMI Receiver	Agilent	N9038A	MY53220133	Jan. 22, 2023
4	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A
5	Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
6	Controller	MF	MF-7802	MF780208159	N/A
7	Cable	Micable	RWLP50-4.0A-SMSM-12 M-KJ	20191107 002	Mar. 04, 2023

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

All calibration period of equipment list is one year.

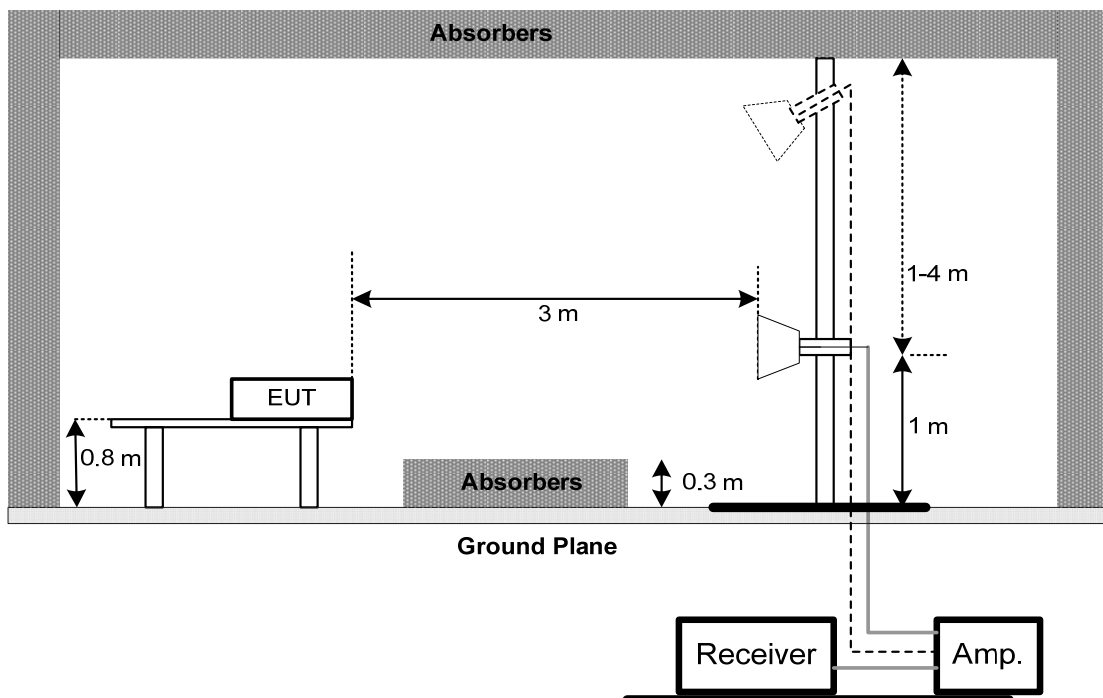
3.3.3 TEST PROCEDURE

- a. 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 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. 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.
- c. 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).
- d. 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.
- e. 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.
- f. 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.
- g. For the actual test configuration, please refer to the related Item - Block Diagram of system tested.

3.3.4 DEVIATION FROM TEST STANDARD

No deviation

3.3.5 TEST SETUP

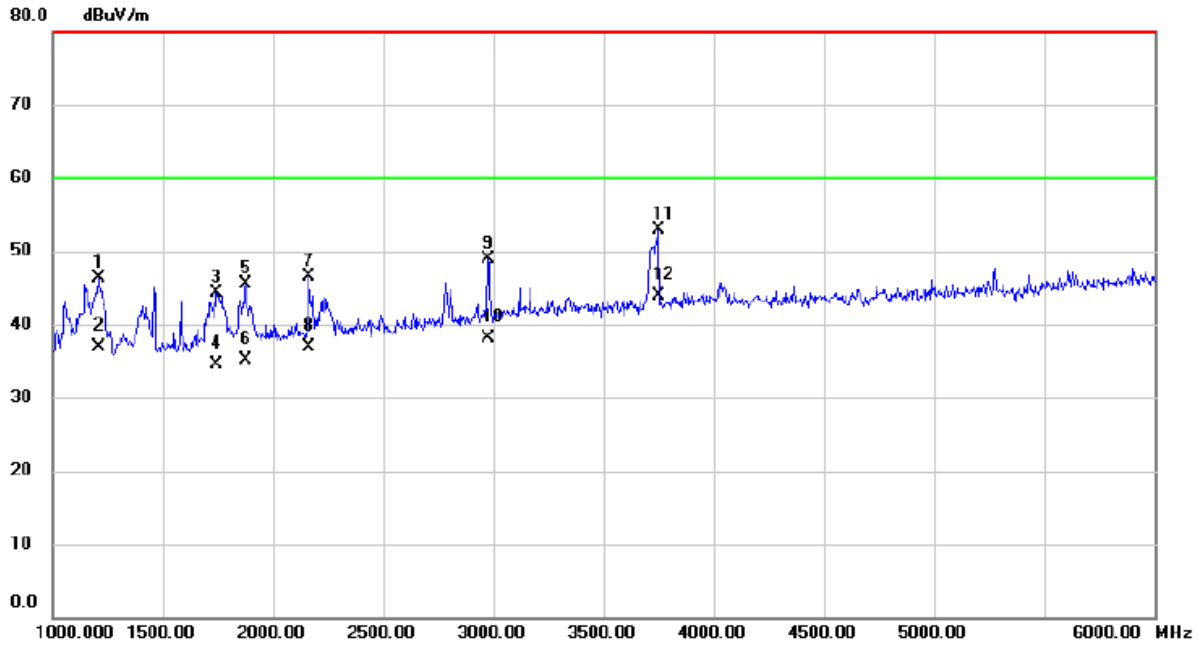


3.3.6 TEST RESULTS-ABOVE 1 GHZ

Remark :

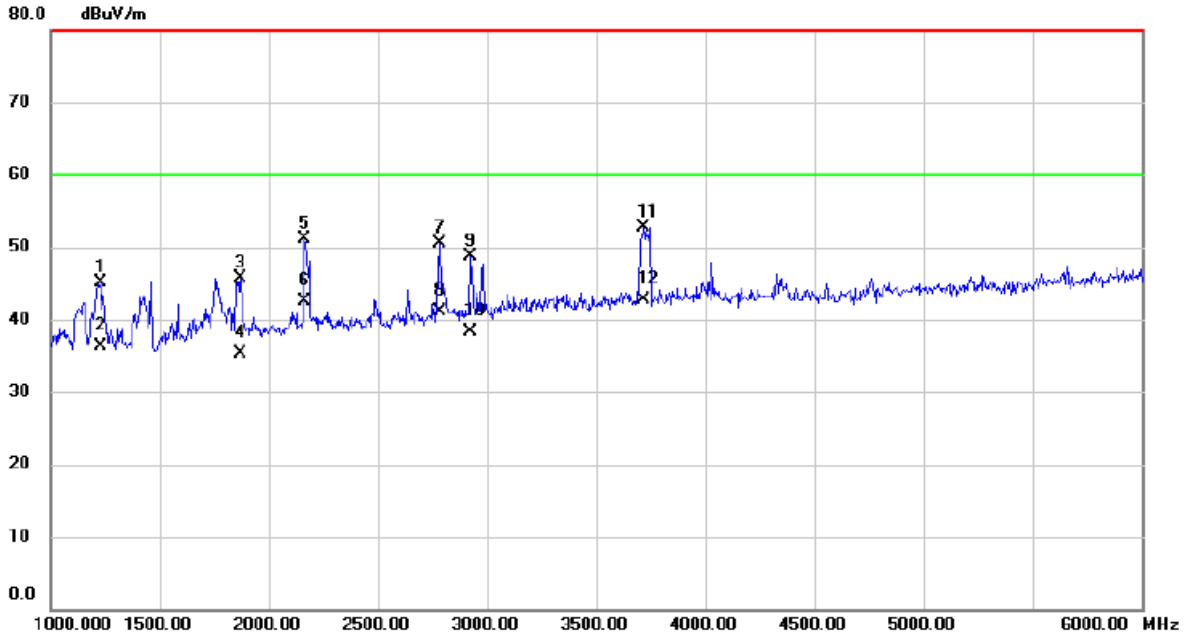
- (1) Radiated emissions measured in frequency range above 1000 MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (2) Data of measurement within this frequency range shown “ * ” in the table above means the reading of emissions are attenuated more than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

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 1		



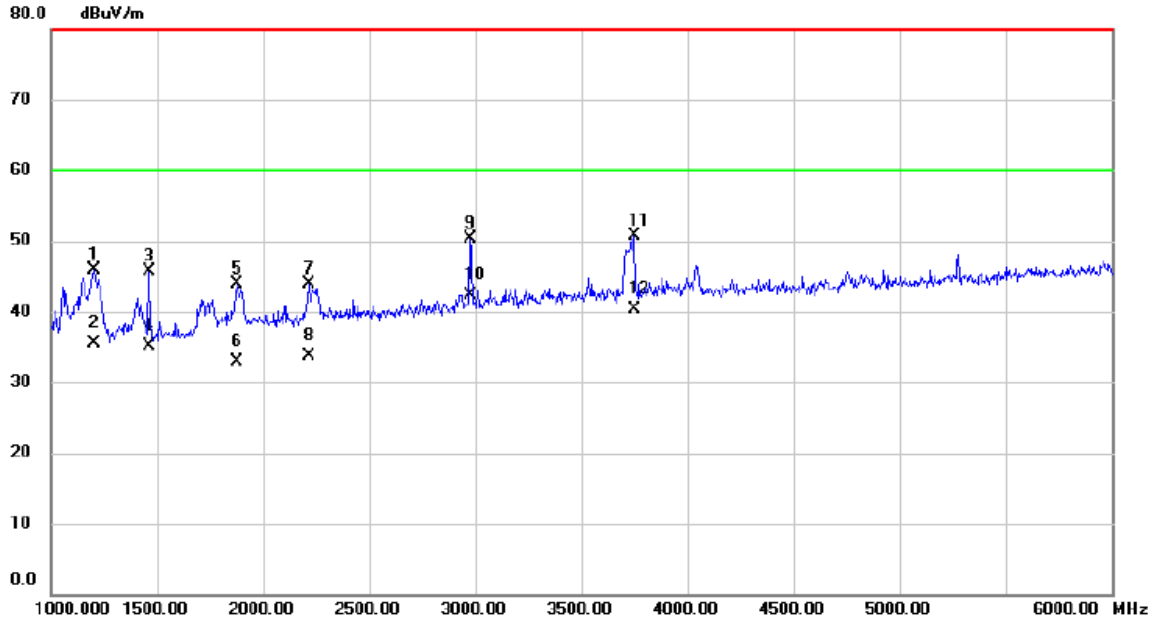
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1207.500	49.48	-3.24	46.24	80.00	-33.76	peak	
2		1207.500	40.11	-3.24	36.87	60.00	-23.13	AVG	
3		1745.000	44.44	-0.21	44.23	80.00	-35.77	peak	
4		1745.000	34.81	-0.21	34.60	60.00	-25.40	AVG	
5		1875.000	44.79	0.71	45.50	80.00	-34.50	peak	
6		1875.000	34.49	0.71	35.20	60.00	-24.80	AVG	
7		2160.000	44.32	2.18	46.50	80.00	-33.50	peak	
8		2160.000	34.81	2.18	36.99	60.00	-23.01	AVG	
9		2977.500	43.16	5.66	48.82	80.00	-31.18	peak	
10		2977.500	32.46	5.66	38.12	60.00	-21.88	AVG	
11		3750.000	44.31	8.69	53.00	80.00	-27.00	peak	
12	*	3750.000	35.20	8.69	43.89	60.00	-16.11	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 1		



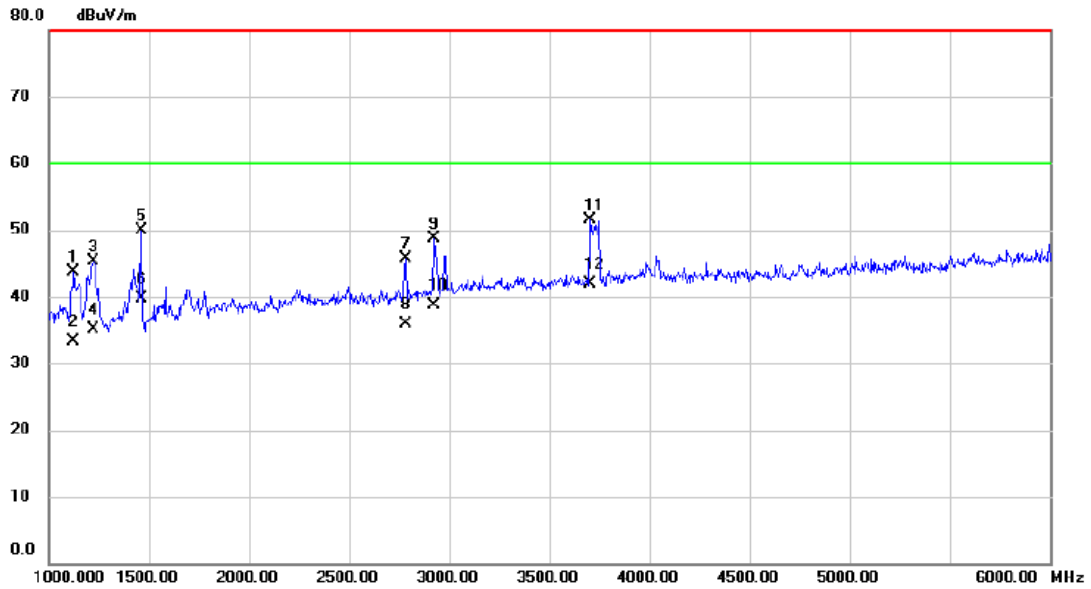
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1227.500	48.33	-3.15	45.18	80.00	-34.82	peak	
2		1227.500	39.48	-3.15	36.33	60.00	-23.67	AVG	
3		1872.500	45.13	0.67	45.80	80.00	-34.20	peak	
4		1872.500	34.65	0.67	35.32	60.00	-24.68	AVG	
5		2162.500	48.85	2.20	51.05	80.00	-28.95	peak	
6		2162.500	40.26	2.20	42.46	60.00	-17.54	AVG	
7		2780.000	45.79	4.77	50.56	80.00	-29.44	peak	
8		2780.000	36.26	4.77	41.03	60.00	-18.97	AVG	
9		2922.500	43.19	5.42	48.61	80.00	-31.39	peak	
10		2922.500	32.91	5.42	38.33	60.00	-21.67	AVG	
11		3717.500	44.14	8.57	52.71	80.00	-27.29	peak	
12	*	3717.500	34.16	8.57	42.73	60.00	-17.27	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 4		



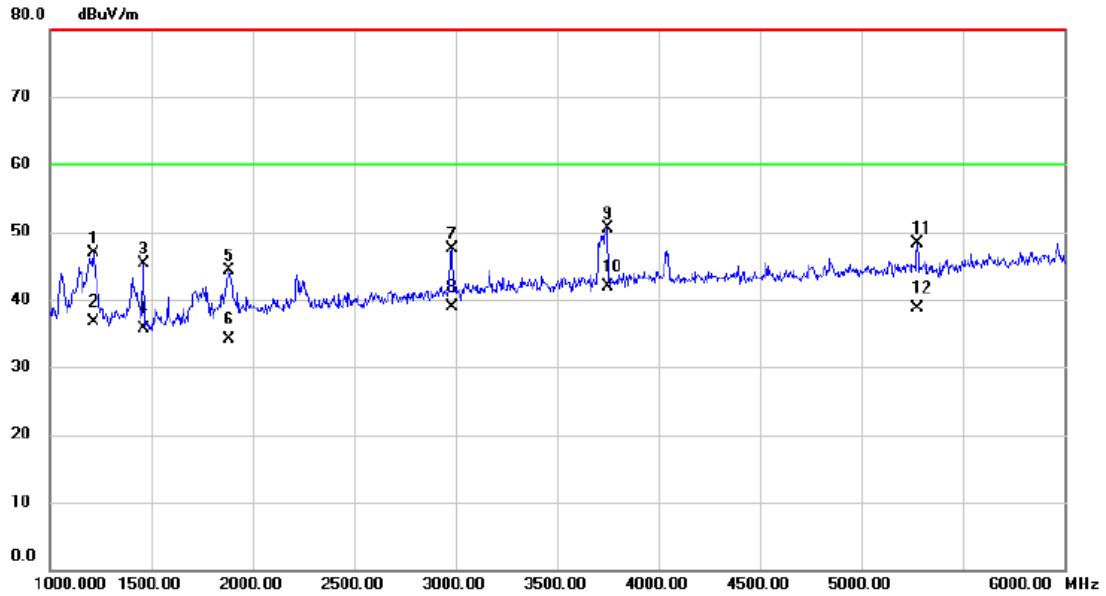
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1205.000	49.17	-3.25	45.92	80.00	-34.08	peak	
2		1205.000	38.72	-3.25	35.47	60.00	-24.53	AVG	
3		1460.000	47.83	-2.10	45.73	80.00	-34.27	peak	
4		1460.000	37.26	-2.10	35.16	60.00	-24.84	AVG	
5		1877.500	43.10	0.72	43.82	80.00	-36.18	peak	
6		1877.500	32.26	0.72	32.98	60.00	-27.02	AVG	
7		2217.500	41.57	2.41	43.98	80.00	-36.02	peak	
8		2217.500	31.28	2.41	33.69	60.00	-26.31	AVG	
9		2977.500	44.58	5.66	50.24	80.00	-29.76	peak	
10	*	2977.500	36.67	5.66	42.33	60.00	-17.67	AVG	
11		3750.000	42.00	8.69	50.69	80.00	-29.31	peak	
12		3750.000	31.68	8.69	40.37	60.00	-19.63	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 4		



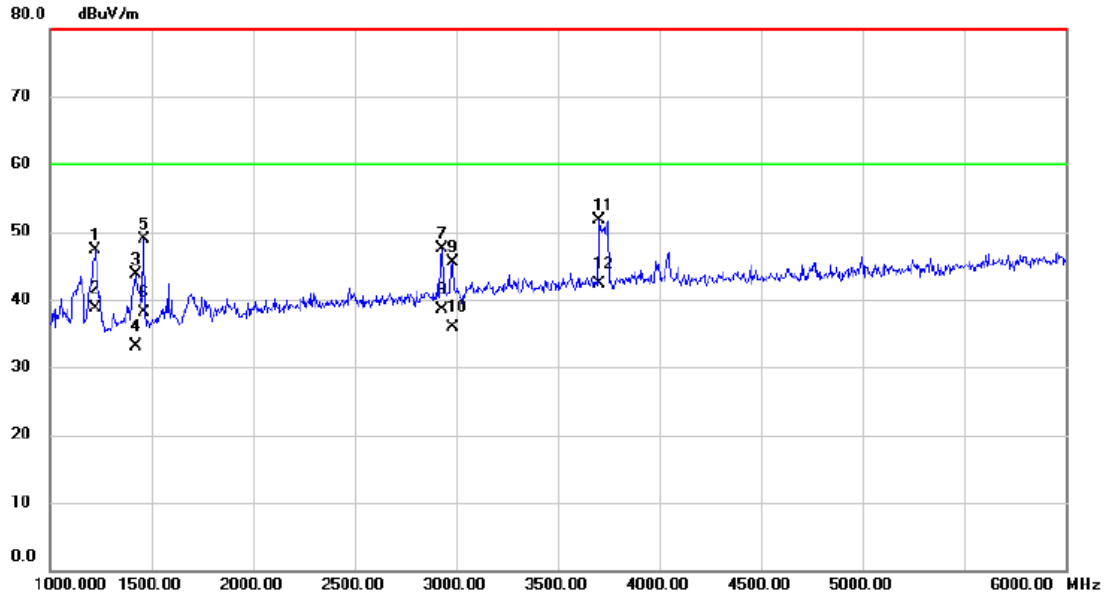
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1125.000	47.34	-3.60	43.74	80.00	-36.26	peak	
2		1125.000	36.86	-3.60	33.26	60.00	-26.74	AVG	
3		1220.000	48.52	-3.18	45.34	80.00	-34.66	peak	
4		1220.000	38.29	-3.18	35.11	60.00	-24.89	AVG	
5		1465.000	51.92	-2.08	49.84	80.00	-30.16	peak	
6		1465.000	41.86	-2.08	39.78	60.00	-20.22	AVG	
7		2782.500	40.97	4.78	45.75	80.00	-34.25	peak	
8		2782.500	31.14	4.78	35.92	60.00	-24.08	AVG	
9		2925.000	43.20	5.42	48.62	80.00	-31.38	peak	
10		2925.000	33.24	5.42	38.66	60.00	-21.34	AVG	
11		3705.000	42.99	8.52	51.51	80.00	-28.49	peak	
12	*	3705.000	33.37	8.52	41.89	60.00	-18.11	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 5		



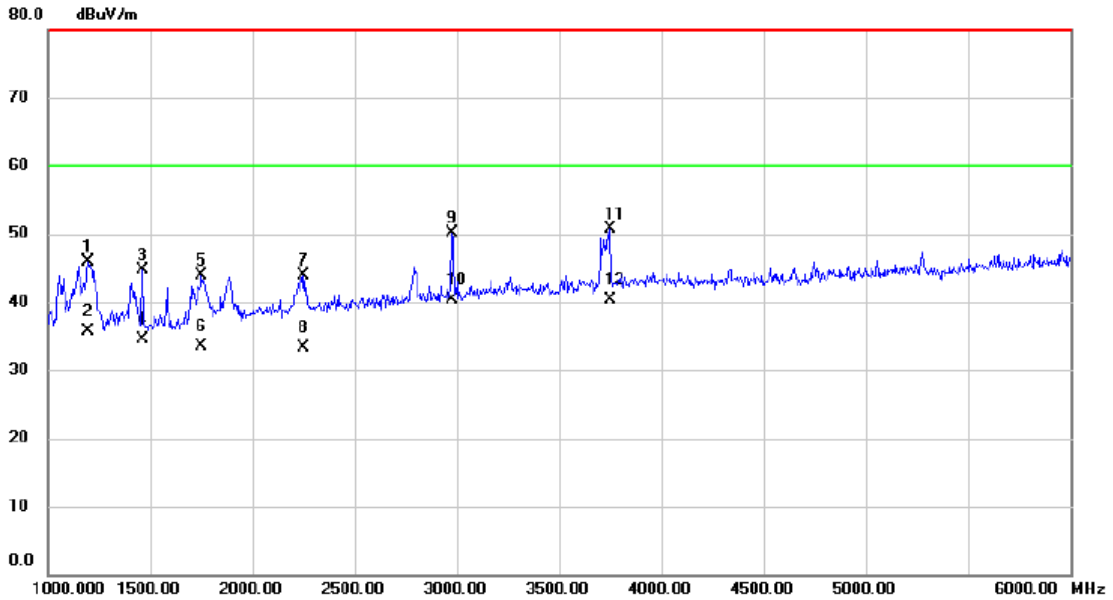
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1217.500	50.13	-3.20	46.93	80.00	-33.07	peak	
2		1217.500	39.93	-3.20	36.73	60.00	-23.27	AVG	
3		1465.000	47.34	-2.08	45.26	80.00	-34.74	peak	
4		1465.000	37.72	-2.08	35.64	60.00	-24.36	AVG	
5		1880.000	43.65	0.74	44.39	80.00	-35.61	peak	
6		1880.000	33.46	0.74	34.20	60.00	-25.80	AVG	
7		2980.000	41.87	5.68	47.55	80.00	-32.45	peak	
8		2980.000	33.23	5.68	38.91	60.00	-21.09	AVG	
9		3750.000	41.88	8.69	50.57	80.00	-29.43	peak	
10	*	3750.000	33.31	8.69	42.00	60.00	-18.00	AVG	
11		5277.500	35.53	12.77	48.30	80.00	-31.70	peak	
12		5277.500	25.85	12.77	38.62	60.00	-21.38	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 5		



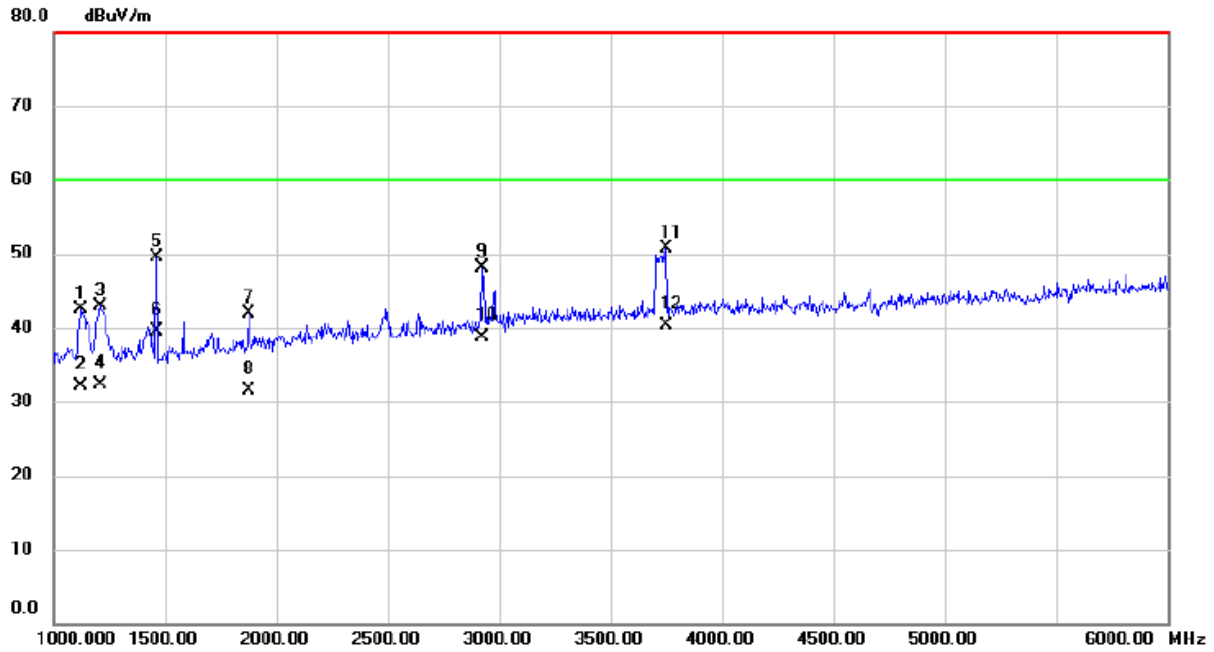
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	1225.000	50.51	-3.16	47.35	80.00	-32.65	peak	
2	1225.000	41.85	-3.16	38.69	60.00	-21.31	AVG	
3	1422.500	45.93	-2.27	43.66	80.00	-36.34	peak	
4	1422.500	35.47	-2.27	33.20	60.00	-26.80	AVG	
5	1465.000	50.90	-2.08	48.82	80.00	-31.18	peak	
6	1465.000	40.19	-2.08	38.11	60.00	-21.89	AVG	
7	2927.500	42.01	5.44	47.45	80.00	-32.55	peak	
8	2927.500	33.07	5.44	38.51	60.00	-21.49	AVG	
9	2980.000	39.86	5.68	45.54	80.00	-34.46	peak	
10	2980.000	30.25	5.68	35.93	60.00	-24.07	AVG	
11	3705.000	43.12	8.52	51.64	80.00	-28.36	peak	
12 *	3705.000	33.84	8.52	42.36	60.00	-17.64	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 15		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1195.000	49.11	-3.30	45.81	80.00	-34.19	peak	
2		1195.000	38.91	-3.30	35.61	60.00	-24.39	AVG	
3		1462.500	46.87	-2.09	44.78	80.00	-35.22	peak	
4		1462.500	36.62	-2.09	34.53	60.00	-25.47	AVG	
5		1752.500	44.14	-0.16	43.98	80.00	-36.02	peak	
6		1752.500	33.72	-0.16	33.56	60.00	-26.44	AVG	
7		2250.000	41.38	2.53	43.91	80.00	-36.09	peak	
8		2250.000	30.76	2.53	33.29	60.00	-26.71	AVG	
9		2975.000	44.48	5.66	50.14	80.00	-29.86	peak	
10		2975.000	34.60	5.66	40.26	60.00	-19.74	AVG	
11		3750.000	42.06	8.69	50.75	80.00	-29.25	peak	
12	*	3750.000	31.62	8.69	40.31	60.00	-19.69	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 15		



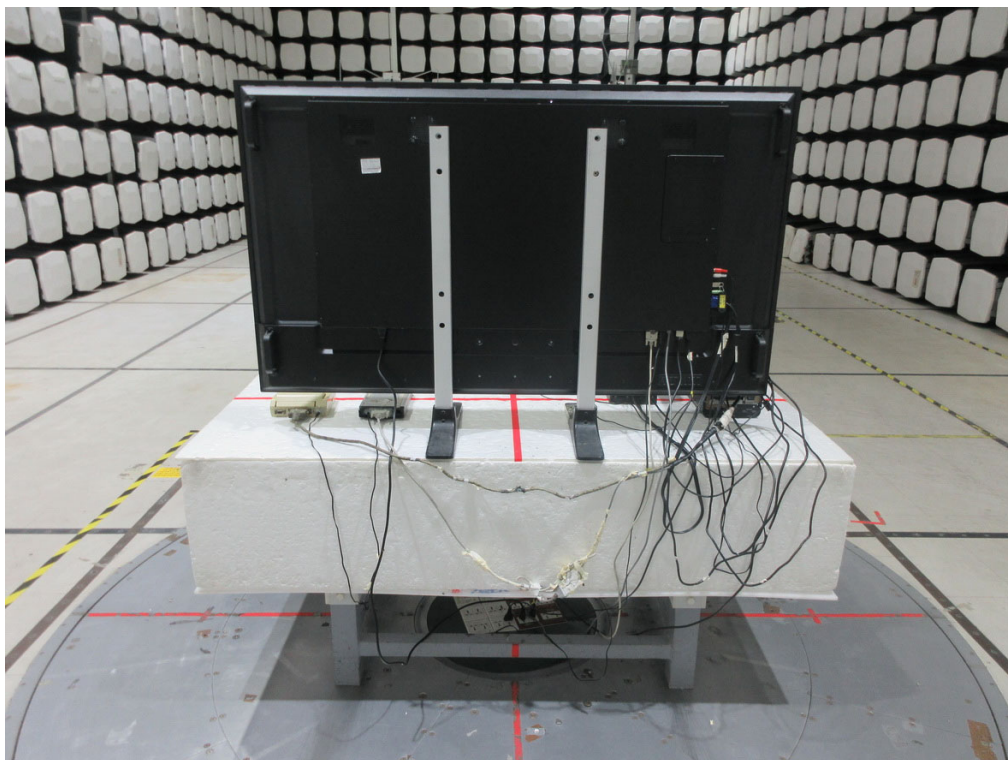
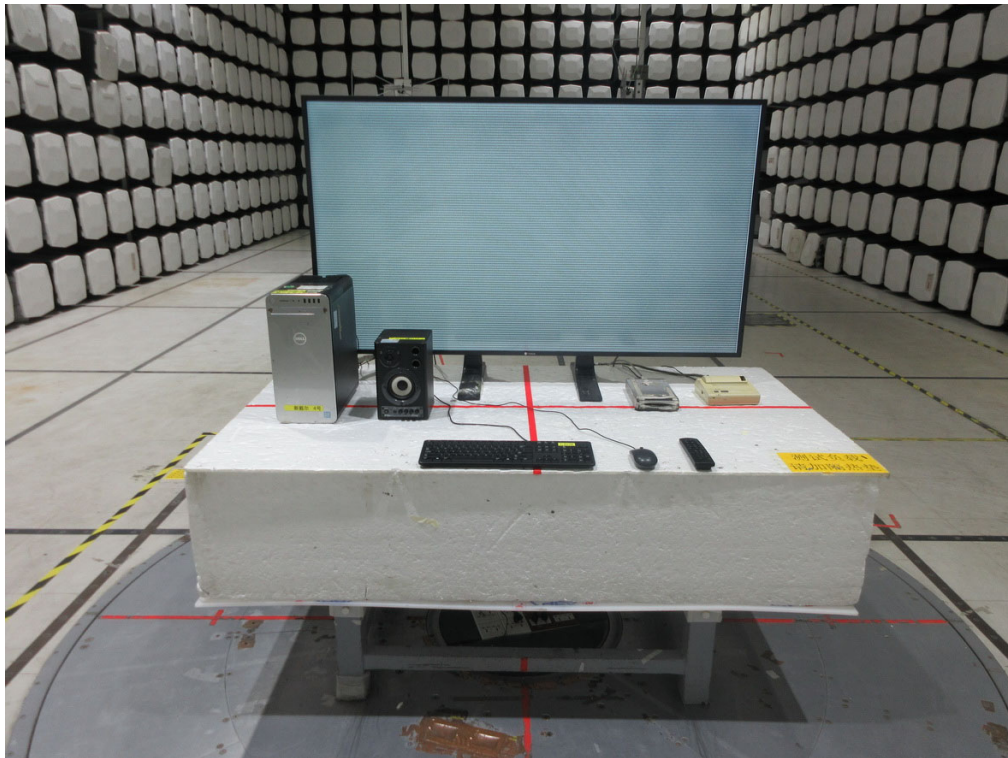
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1125.000	46.10	-3.60	42.50	80.00	-37.50	peak	
2		1125.000	35.61	-3.60	32.01	60.00	-27.99	AVG	
3		1207.500	46.12	-3.24	42.88	80.00	-37.12	peak	
4		1207.500	35.56	-3.24	32.32	60.00	-27.68	AVG	
5		1465.000	51.52	-2.08	49.44	80.00	-30.56	peak	
6		1465.000	41.52	-2.08	39.44	60.00	-20.56	AVG	
7		1875.000	41.17	0.71	41.88	80.00	-38.12	peak	
8		1875.000	30.86	0.71	31.57	60.00	-28.43	AVG	
9		2920.000	42.77	5.41	48.18	80.00	-31.82	peak	
10		2920.000	33.21	5.41	38.62	60.00	-21.38	AVG	
11		3750.000	41.98	8.69	50.67	80.00	-29.33	peak	
12	*	3750.000	31.55	8.69	40.24	60.00	-19.76	AVG	

4. EUT TEST PHOTO

AC Power Line Conducted Emissions



Radiated Emissions 30 MHz to 1 GHz



Radiated Emissions Above 1 GHz

