

# FCC EMC Test Report

**Project No.** : 2106C056  
**Equipment** : LCD Monitor  
**Brand Name** : N/A  
**Test Model** : \*\*274Q\*\*\*\*\*(\*=0-9,A-Z,a-z,+,-,/,\ 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** : Jun. 09, 2021  
**Date of Test** : Jun. 09, 2021 ~ Jul. 05, 2021  
**Issued Date** : Jul. 20, 2021  
**Report Version** : R00  
**Test Sample** : Engineering Sample No.: DG20210608185  
**Standard(s)** : FCC CFR Title 47,Part 15,Subpart B

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

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TESTING CERT #5123.02

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**Declaration**

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

**BTL's** reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** 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.

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**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.

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**REPORT ISSUED HISTORY**

Report Version	Description	Issued Date
R00	Original Issue.	Jul. 20, 2021

**1. SUMMARY OF TEST RESULTS**

Emission		
Ref Standard(s)	Test Item	Result
FCC CFR Title 47,Part 15,Subpart B	AC 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 at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town, Dongguan City, Guangdong, People's Republic of China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

### 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	3.18

#### B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB08 (10m)	CISPR	30MHz ~ 200MHz	V	4.44
		30MHz ~ 200MHz	H	3.44
		200MHz ~ 1,000MHz	V	4.28
		200MHz ~ 1,000MHz	H	3.52

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB08 (3m)	CISPR	1GHz ~ 6GHz	4.36

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	53%	Jayce Yao
Radiated emissions 30 MHz to 1 GHz	25°C	60%	Kay Zhu
Radiated emissions above 1 GHz	25°C	60%	Kay Zhu

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	LCD Monitor
Brand Name	N/A
Test Model	**274Q*****(*=0-9,A-Z,a-z,+,-,/,\ or blank)
Series Model	N/A
Model Difference(s)	Only differ in model name due to marketing purpose
Power Source	DC voltage supplied from AC/DC adapter. Model: ADP-330CB B
Power Rating	I/P: 100-240V~ 4.4A 50-60Hz O/P: 19.5V 16.9A 329.6W
Connecting I/O Port(s)	Please refer to EUT photo.
Classification Of EUT	Class B
Highest Internal Frequency(Fx)	646.64MHz

Cable Type	Shielded Type	Ferrite Core	Length(m)	Note
AC Power Cord	Non-shielded	NO	1.8/1.5	1.8m is worst case Detachable
HDMI	Shielded	NO	1.8/1.5	-
DP	Shielded	NO	1.8/1.5	-
Type-C	Shielded	NO	1.8/1.5	-
USB	Shielded	NO	1.8/1.5	-

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. Power cable 1.8m, 1.5m length, worst case is Power cable 1.8m with HDMI+DP+USB+Type-C 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	TYPE-C 2560*1440/170Hz 1.8m
Mode 2	HDMI 1 2560*1440/144Hz 1.8m+ TYPE-C R/W
Mode 3	HDMI 2 2560*1440/144Hz 1.8m+ TYPE-C OUT 20V4.5A
Mode 4	DP 1 2560*1440/170Hz 1.8m + TYPE-C R/W
Mode 5	HDMI 1 1080P 1.8m+ TYPE-C R/W
Mode 6	HDMI 2 1080P 1.8m+ TYPE-C R/W
Mode 7	TYPE-C 1280*1024/75Hz 1.8m
MODE 8	TYPE-C 640*480/75Hz 1.8m
MODE 9	TYPE-C 2560*1440/170Hz 1.5m
MODE 10	TYPE-C 2560*1440/170Hz 1.8m without earphone

AC Power Line Conducted Emissions test	
Final Test Mode	Description
Mode 1	TYPE-C 2560*1440/170Hz 1.8m
Mode 2	HDMI 1 2560*1440/144Hz 1.8m+ TYPE-C R/W
Mode 5	HDMI 1 1080P 1.8m+ TYPE-C R/W

Radiated emissions 30 MHz to 1 GHz test	
Final Test Mode	Description
Mode 1	TYPE-C 2560*1440/170Hz 1.8m
Mode 2	HDMI 1 2560*1440/144Hz 1.8m+ TYPE-C R/W
Mode 5	HDMI 1 1080P 1.8m+ TYPE-C R/W
MODE 10	TYPE-C 2560*1440/170Hz 1.5m without earphone

Radiated emissions Above 1 GHz test	
Final Test Mode	Description
Mode 1	TYPE-C 2560*1440/170Hz 1.8m
Mode 2	HDMI 1 2560*1440/144Hz 1.8m+ TYPE-C R/W
Mode 5	HDMI 1 1080P 1.8m+ TYPE-C R/W
MODE 10	TYPE-C 2560*1440/170Hz 1.5m without earphone

Evaluation description:

1. Pretest Mode 1-6. The worst case is Mode 1 and evaluated the middle and low resolution Mode 7 and Mode 8.
2. According to the client's requirement, choose Mode 1, Mode 2, Mode 5 and recorded in test report.

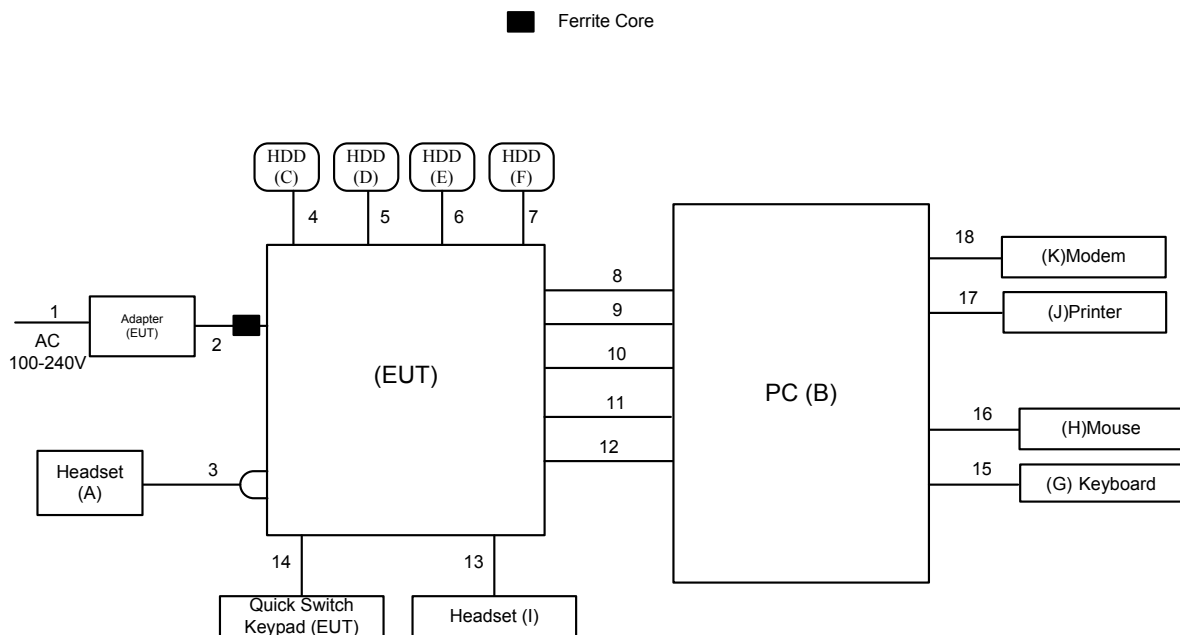


### 2.3 EUT OPERATING CONDITIONS

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&DP&Type-C&USB cable.
2. Mouse and Keyboard connected to PC via USB cable.
3. Modem connected to PC via RS232 cable.
4. Printer connected to PC via Parallel cable.
5. EUT connected to USB3.0 Hard Disk via USB cable.
6. EUT connected to Headset via Audio or Earphone cable.
7. EUT connected to Quick switch Keypad via USB 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	Headset	PHILIPS	SHMI500	N/A
B	PC	DELL	Vostro 470	24454162837
C	USB3.0 Hard Disk	LACIE	Lacie S.A	NL34BFER
D	USB3.0 Hard Disk	LACIE	Lacie S.A	NL34BJSM
E	USB3.0 Hard Disk	LACIE	Lacie S.A	NL33PVLS
F	USB3.0 Hard Disk	LACIE	Lacie S.A	NL34BJRF
G	Keyboard	DELL	KB212-B	CN0HTXH97158125004DXA01
H	Mouse	DELL	MS111-P	CN011D3V71581279OLOT
I	Headset	PHILIPS	SHMI500	N/A
J	Modem	ACEEX	DM-1414V	603002131
K	Printer	SII	DPU-414	3018507 B

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	AC Cable	NO	NO	1.8/1.5m
2	DC Cable	NO	YES	1m
3	Audio Cable	NO	NO	1.8m
4	USB Cable	YES	NO	1m
5	USB Cable	YES	NO	1m
6	USB Cable	YES	NO	1m
7	USB Cable	YES	NO	1m
8	HDMI Cable	YES	NO	1.8/1.5m
9	HDMI Cable	YES	NO	1.8/1.5m
10	DP Cable	YES	NO	1.8/1.5m
11	Type-C Cable	YES	NO	1.8/1.5m
12	USB Cable	YES	NO	1.8/1.5m
13	Earphone Cable	YES	NO	1.2m
14	USB Cable	YES	NO	1.2m
15	USB Cable	YES	NO	1.8m
16	USB Cable	YES	NO	1.8m
17	Parallel Cable	YES	NO	1.8m
18	RS232 Cable	YES	NO	1.8m

### 3. EMC EMISSION TEST

#### 3.1 AC POWER LINE CONDUCTED EMISSIONS TEST

##### 3.1.1 LIMIT

Frequency of Emission (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56 *	56 - 46 *
0.5 - 5.0	56.00	46.00
5.0 - 30.0	60.00	50.00

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	Nov. 04, 2021
2	EMI Test Receiver	R&S	ESR3	101862	Jul. 25, 2021
3	Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Feb. 28, 2022
4	Cable	N/A	RG400	N/A(12m)	Mar. 09, 2022
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

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

All calibration period of equipment list is one year.

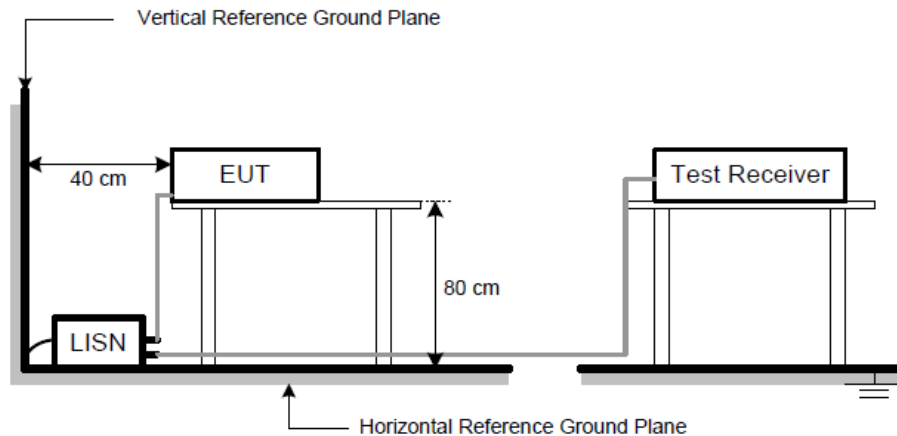
### 3.1.3 TEST PROCEDURE

- 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

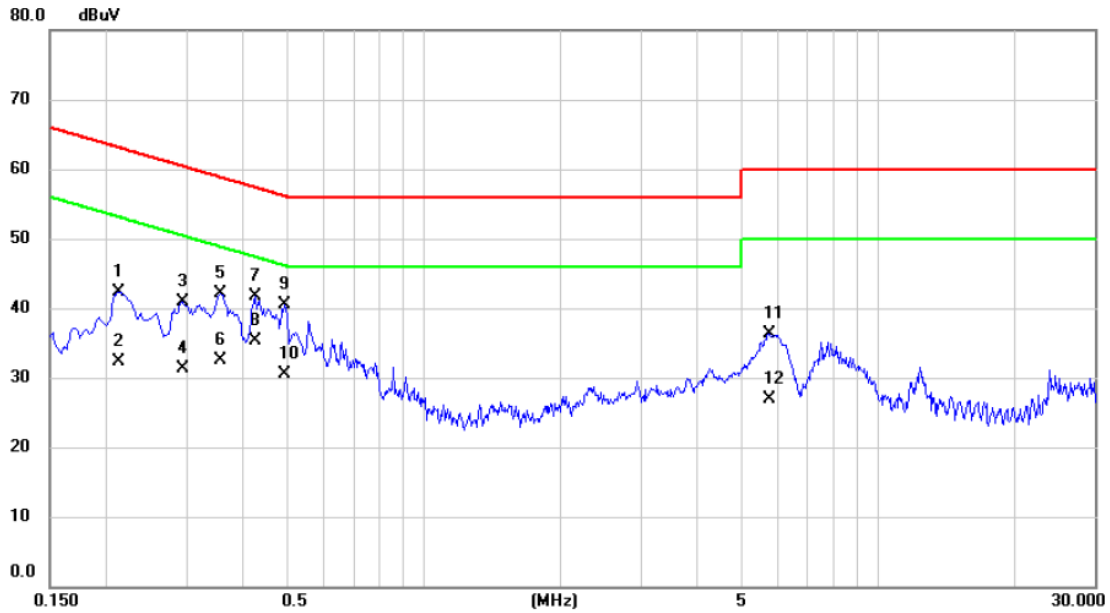


### 3.1.6 TEST RESULTS

Remark

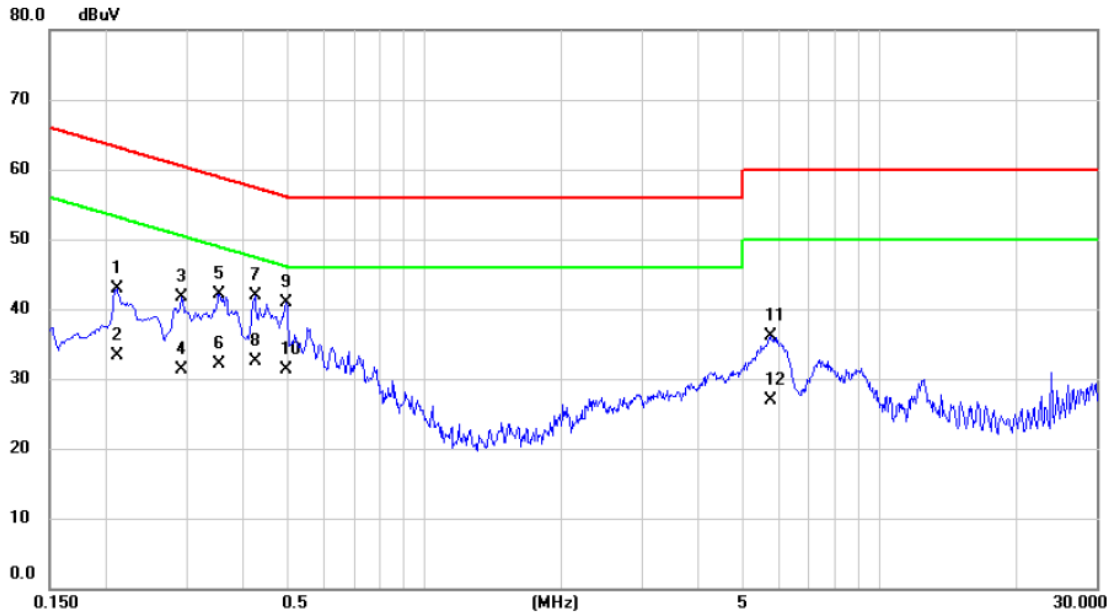
- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp.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



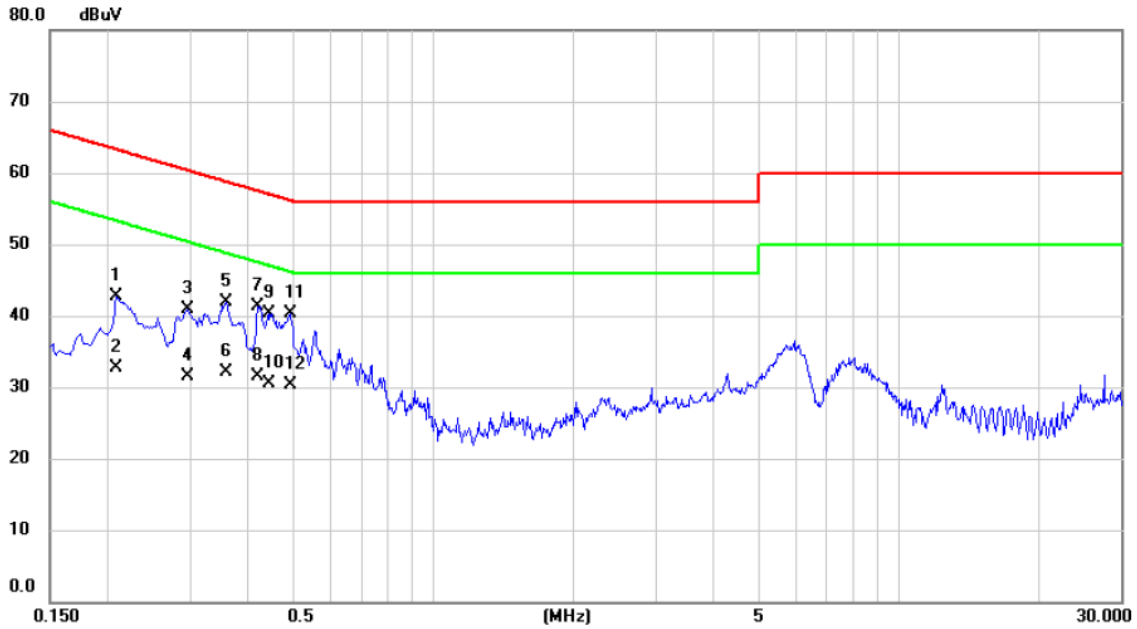
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2130	32.64	9.65	42.29	63.09	-20.80	QP	
2		0.2130	22.70	9.65	32.35	53.09	-20.74	AVG	
3		0.2940	31.17	9.66	40.83	60.41	-19.58	QP	
4		0.2940	21.60	9.66	31.26	50.41	-19.15	AVG	
5		0.3570	32.40	9.68	42.08	58.80	-16.72	QP	
6		0.3570	22.90	9.68	32.58	48.80	-16.22	AVG	
7		0.4245	32.05	9.68	41.73	57.36	-15.63	QP	
8	*	0.4245	25.57	9.68	35.25	47.36	-12.11	AVG	
9		0.4920	30.90	9.68	40.58	56.13	-15.55	QP	
10		0.4920	20.80	9.68	30.48	46.13	-15.65	AVG	
11		5.7660	26.35	10.02	36.37	60.00	-23.63	QP	
12		5.7660	16.80	10.02	26.82	50.00	-23.18	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		0.2108	33.17	9.65	42.82	63.17	-20.35	QP	
2		0.2108	23.60	9.65	33.25	53.17	-19.92	AVG	
3		0.2917	31.97	9.66	41.63	60.48	-18.85	QP	
4		0.2917	21.70	9.66	31.36	50.48	-19.12	AVG	
5		0.3547	32.46	9.68	42.14	58.85	-16.71	QP	
6		0.3547	22.50	9.68	32.18	48.85	-16.67	AVG	
7		0.4245	32.26	9.68	41.94	57.36	-15.42	QP	
8		0.4245	22.80	9.68	32.48	47.36	-14.88	AVG	
9		0.4965	31.31	9.68	40.99	56.06	-15.07	QP	
10	*	0.4965	21.60	9.68	31.28	46.06	-14.78	AVG	
11		5.7614	26.12	10.03	36.15	60.00	-23.85	QP	
12		5.7614	16.90	10.03	26.93	50.00	-23.07	AVG	

Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	Mode 2		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2085	33.03	9.65	42.68	63.26	-20.58	QP	
2		0.2085	23.00	9.65	32.65	53.26	-20.61	AVG	
3		0.2962	31.18	9.66	40.84	60.35	-19.51	QP	
4		0.2962	21.80	9.66	31.46	50.35	-18.89	AVG	
5		0.3592	32.22	9.68	41.90	58.75	-16.85	QP	
6		0.3592	22.50	9.68	32.18	48.75	-16.57	AVG	
7		0.4200	31.72	9.68	41.40	57.45	-16.05	QP	
8		0.4200	21.90	9.68	31.58	47.45	-15.87	AVG	
9		0.4425	30.64	9.68	40.32	57.01	-16.69	QP	
10		0.4425	20.80	9.68	30.48	47.01	-16.53	AVG	
11		0.4920	30.64	9.68	40.32	56.13	-15.81	QP	
12	*	0.4920	20.70	9.68	30.38	46.13	-15.75	AVG	

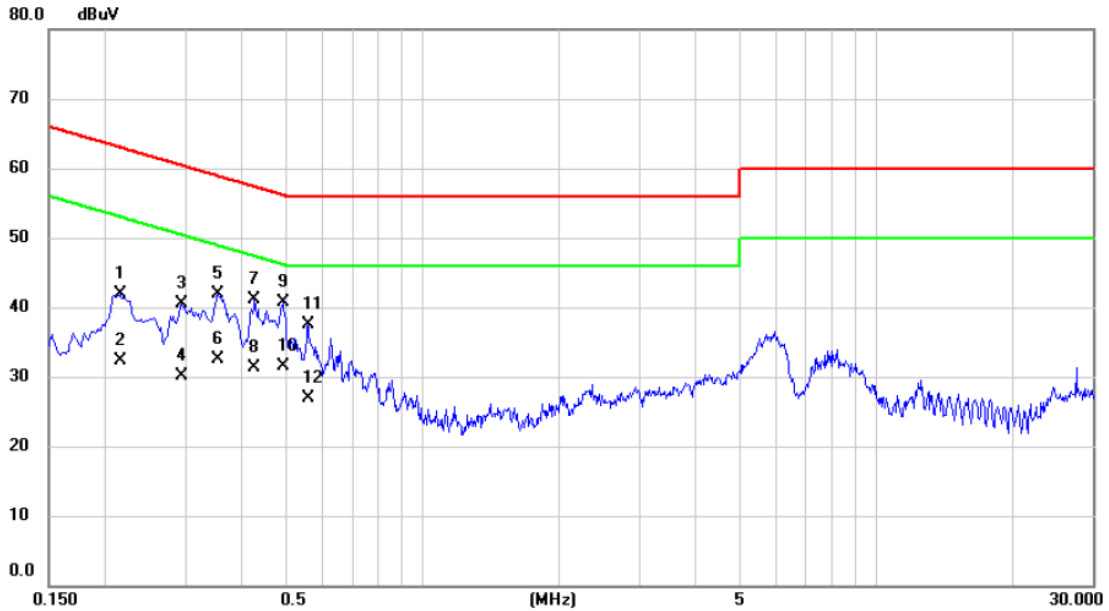
Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 2		



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.2108	33.32	9.65	42.97	63.17	-20.20	QP	
2	0.2108	23.40	9.65	33.05	53.17	-20.12	AVG	
3	0.2940	31.99	9.66	41.65	60.41	-18.76	QP	
4	0.2940	21.90	9.66	31.56	50.41	-18.85	AVG	
5	0.3570	33.10	9.68	42.78	58.80	-16.02	QP	
6	0.3570	23.60	9.68	33.28	48.80	-15.52	AVG	
7	0.4245	32.40	9.68	42.08	57.36	-15.28	QP	
8	0.4245	22.80	9.68	32.48	47.36	-14.88	AVG	
9 *	0.4942	32.53	9.68	42.21	56.10	-13.89	QP	
10	0.4942	22.50	9.68	32.18	46.10	-13.92	AVG	
11	5.9527	26.49	10.04	36.53	60.00	-23.47	QP	
12	5.9527	16.40	10.04	26.44	50.00	-23.56	AVG	

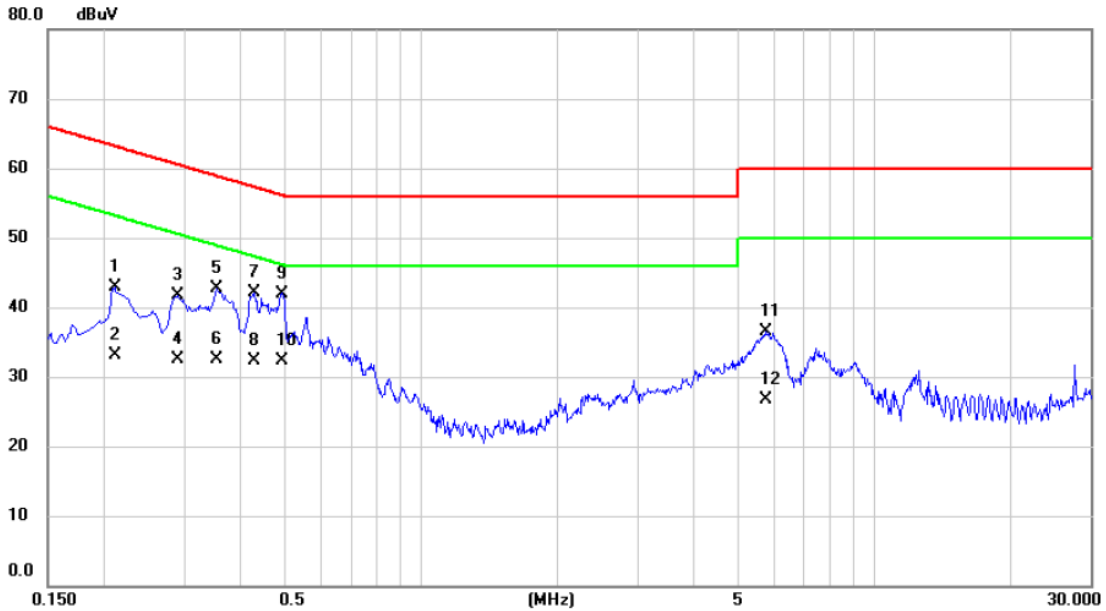


Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	Mode 5		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.2153	32.31	9.65	41.96	63.00	-21.04	QP	
2		0.2153	22.70	9.65	32.35	53.00	-20.65	AVG	
3		0.2940	30.85	9.66	40.51	60.41	-19.90	QP	
4		0.2940	20.40	9.66	30.06	50.41	-20.35	AVG	
5		0.3547	32.19	9.68	41.87	58.85	-16.98	QP	
6		0.3547	22.90	9.68	32.58	48.85	-16.27	AVG	
7		0.4267	31.34	9.68	41.02	57.32	-16.30	QP	
8		0.4267	21.60	9.68	31.28	47.32	-16.04	AVG	
9		0.4920	31.05	9.68	40.73	56.13	-15.40	QP	
10	*	0.4920	21.80	9.68	31.48	46.13	-14.65	AVG	
11		0.5595	27.89	9.69	37.58	56.00	-18.42	QP	
12		0.5595	17.30	9.69	26.99	46.00	-19.01	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		0.2108	33.17	9.65	42.82	63.17	-20.35	QP	
2		0.2108	23.40	9.65	33.05	53.17	-20.12	AVG	
3		0.2895	32.01	9.66	41.67	60.54	-18.87	QP	
4		0.2895	22.80	9.66	32.46	50.54	-18.08	AVG	
5		0.3547	32.95	9.68	42.63	58.85	-16.22	QP	
6		0.3547	22.90	9.68	32.58	48.85	-16.27	AVG	
7		0.4290	32.48	9.68	42.16	57.27	-15.11	QP	
8		0.4290	22.60	9.68	32.28	47.27	-14.99	AVG	
9		0.4920	32.32	9.68	42.00	56.13	-14.13	QP	
10	*	0.4920	22.70	9.68	32.38	46.13	-13.75	AVG	
11		5.7525	26.39	10.03	36.42	60.00	-23.58	QP	
12		5.7525	16.70	10.03	26.73	50.00	-23.27	AVG	

### 3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ

#### 3.2.1 LIMIT

Frequency (MHz)	Class B (at 10m)
	dBuV/m
30 - 230	30
230 - 1000	37

**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. 25, 2021
2	MXE EMI Receiver	Agilent	N9038A	MY53220133	Feb. 28, 2022
3	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980284	Dec. 13, 2021
4	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980283	Dec. 13, 2021
5	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	946	Oct. 16, 2021
6	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	947	Nov. 09, 2021
7	Cable	emci	LMR-400(5m+8m+8m)	N/A	Jan. 06, 2022
8	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A
9	Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
10	Attenuator	EMCI	EMCI-N-6-06	N0670	Nov. 09, 2021
11	Attenuator	EMCI	EMCI-N-6-06	N0671	Oct. 16, 2021
12	Controller	MF	MF-7802	MF780208159	N/A

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

All calibration period of equipment list is one year.

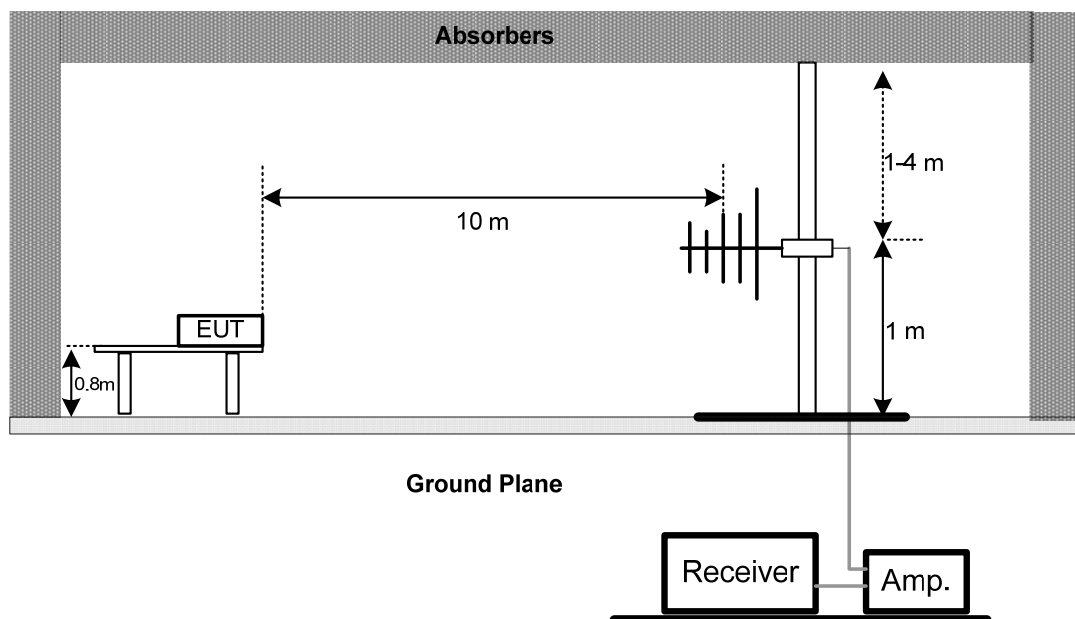
### 3.2.3 TEST PROCEDURE

- 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

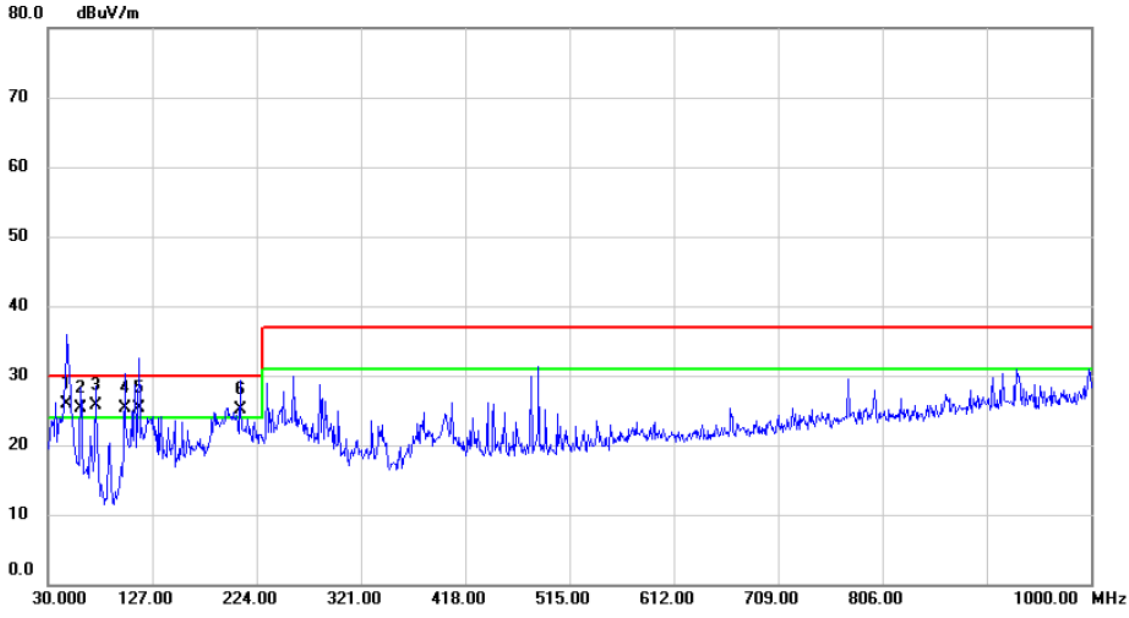


### 3.2.6 TEST RESULTS-BELOW 1 GHZ

Remark :

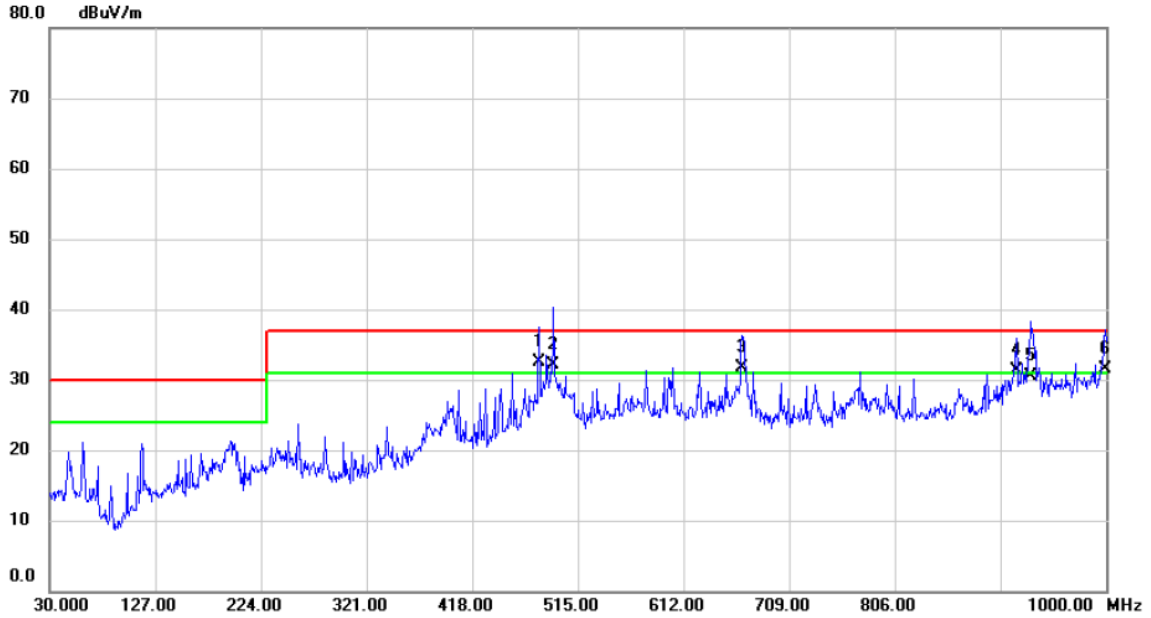
- Measuring frequency range from 30 MHz to 1000 MHz
- If the peak scan value lower limit more than 20 dB, then this signal data does not show in table.

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



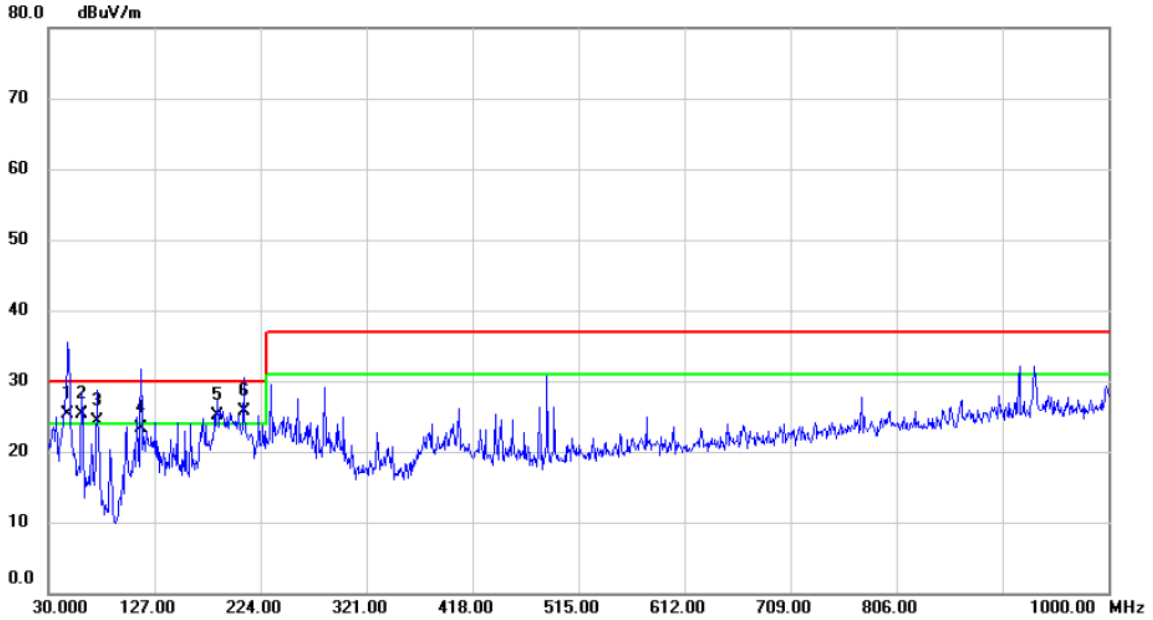
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	47.4600	43.84	-17.85	25.99	30.00	-4.01	QP	
2	!	60.5550	43.29	-17.97	25.32	30.00	-4.68	QP	
3	!	74.1350	45.62	-20.01	25.61	30.00	-4.39	QP	
4	!	101.2950	46.84	-21.52	25.32	30.00	-4.68	QP	
5	!	114.8750	45.49	-20.23	25.26	30.00	-4.74	QP	
6	!	208.9650	44.51	-19.36	25.15	30.00	-4.85	QP	

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



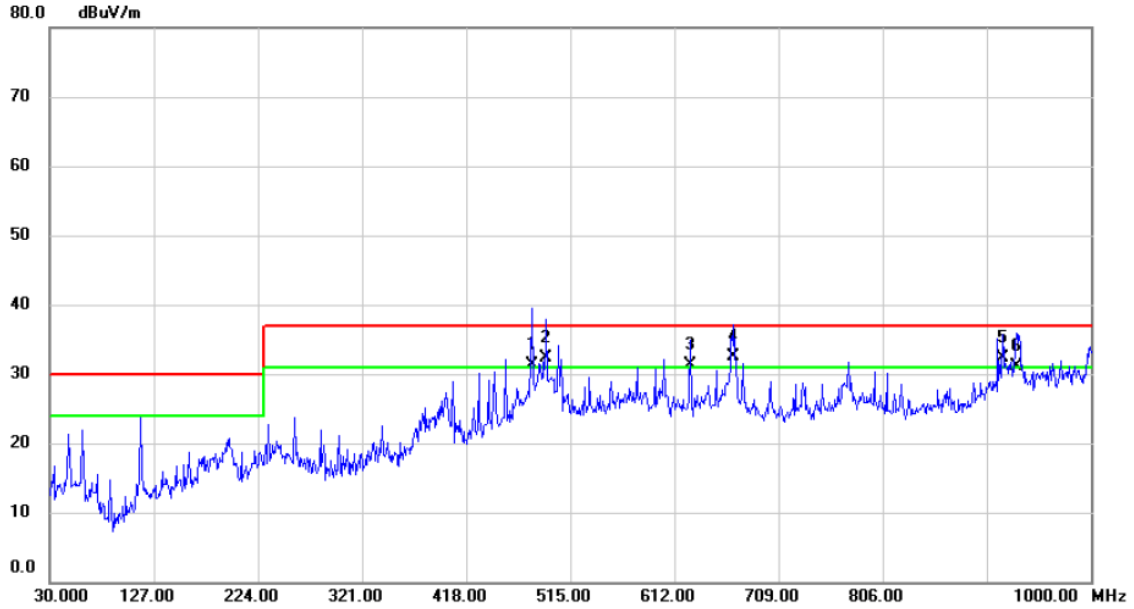
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	479.1100	43.21	-10.76	32.45	37.00	-4.55	QP	
2	!	492.6900	42.67	-10.52	32.15	37.00	-4.85	QP	
3	!	665.8350	39.84	-8.07	31.77	37.00	-5.23	QP	
4	!	918.0350	36.78	-5.53	31.25	37.00	-5.75	QP	
5		931.1300	35.72	-5.20	30.52	37.00	-6.48	QP	
6	!	999.0300	36.05	-4.53	31.52	37.00	-5.48	QP	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 2		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	!	47.9450	43.08	-17.82	25.26	30.00	-4.74	QP	
2	!	60.5550	43.29	-17.97	25.32	30.00	-4.68	QP	
3	!	74.1350	44.27	-20.01	24.26	30.00	-5.74	QP	
4		114.8750	43.49	-20.23	23.26	30.00	-6.74	QP	
5	!	184.2300	43.72	-18.57	25.15	30.00	-4.85	QP	
6	*	208.9650	44.98	-19.36	25.62	30.00	-4.38	QP	

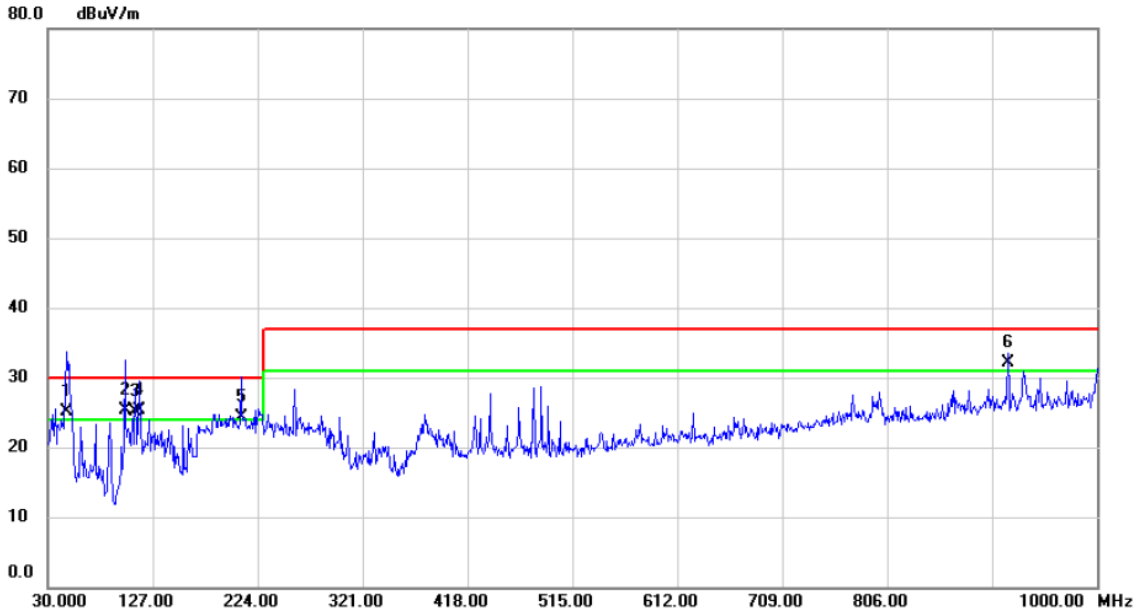
Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 2		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	!	479.1100	42.02	-10.76	31.26	37.00	-5.74	QP	
2	!	492.6900	42.78	-10.52	32.26	37.00	-4.74	QP	
3	!	626.5500	39.66	-8.40	31.26	37.00	-5.74	QP	
4	*	667.2900	40.52	-8.05	32.47	37.00	-4.53	QP	
5	!	918.0350	37.79	-5.53	32.26	37.00	-4.74	QP	
6	!	930.6450	36.27	-5.21	31.06	37.00	-5.94	QP	

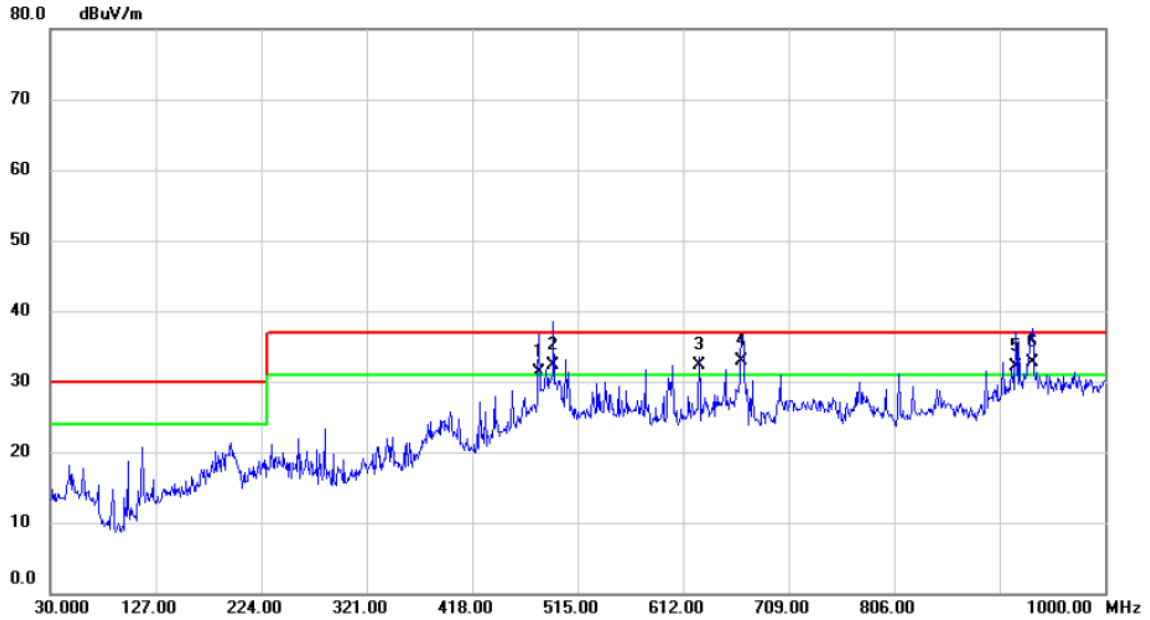


Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 5		



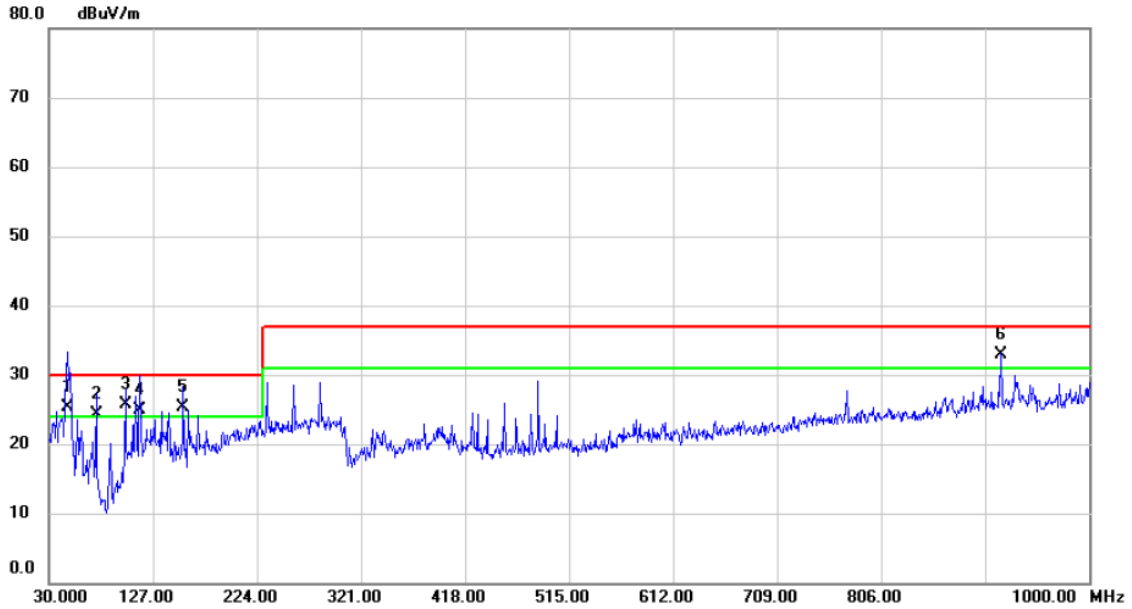
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	!	47.4600	43.00	-17.85	25.15	30.00	-4.85	QP	
2	*	101.2950	46.84	-21.52	25.32	30.00	-4.68	QP	
3	!	110.5100	45.64	-20.49	25.15	30.00	-4.85	QP	
4	!	114.8750	45.55	-20.23	25.32	30.00	-4.68	QP	
5	!	208.9650	43.62	-19.36	24.26	30.00	-5.74	QP	
6	!	918.0350	38.16	-6.01	32.15	37.00	-4.85	QP	

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



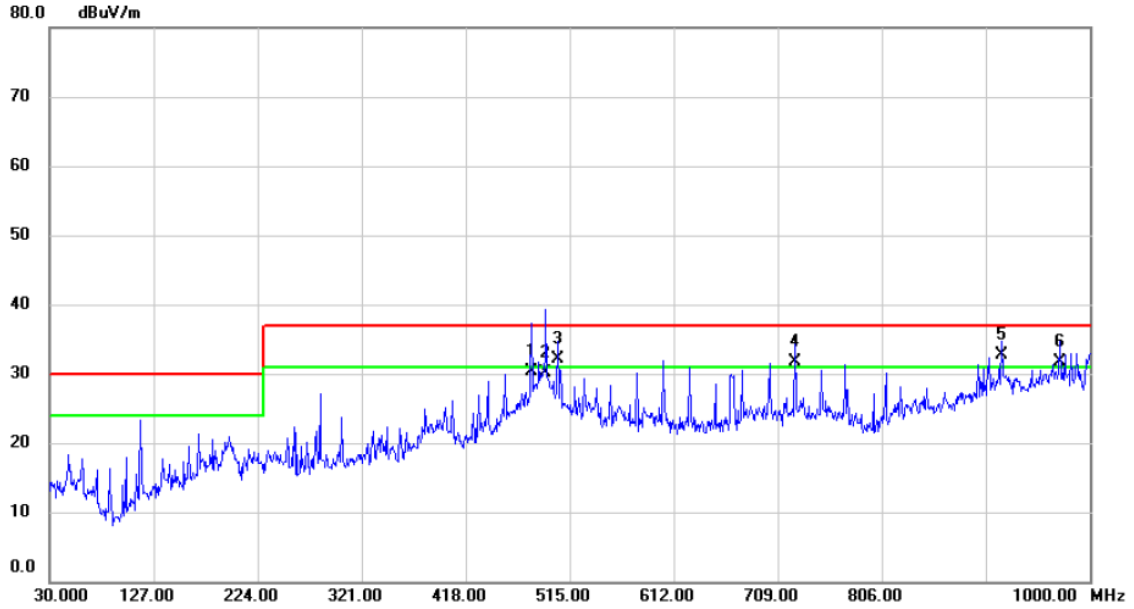
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	!	479.1100	42.02	-10.76	31.26	37.00	-5.74	QP	
2	!	492.6900	42.78	-10.52	32.26	37.00	-4.74	QP	
3	!	626.5500	40.72	-8.40	32.32	37.00	-4.68	QP	
4	*	665.8350	41.00	-8.07	32.93	37.00	-4.07	QP	
5	!	918.0350	37.68	-5.53	32.15	37.00	-4.85	QP	
6	!	933.0700	37.78	-5.16	32.62	37.00	-4.38	QP	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 10		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	!	47.4600	43.11	-17.85	25.26	30.00	-4.74	QP	
2	!	74.1350	44.27	-20.01	24.26	30.00	-5.74	QP	
3	!	101.2950	47.14	-21.52	25.62	30.00	-4.38	QP	
4	!	114.8750	45.15	-20.23	24.92	30.00	-5.08	QP	
5	!	155.1300	42.26	-16.94	25.32	30.00	-4.68	QP	
6	*	918.0350	38.95	-6.01	32.94	37.00	-4.06	QP	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 10		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		479.1100	41.02	-10.76	30.26	37.00	-6.74	QP	
2		492.6900	40.67	-10.52	30.15	37.00	-6.85	QP	
3	!	503.8450	42.51	-10.36	32.15	37.00	-4.85	QP	
4	!	724.5200	39.02	-7.40	31.62	37.00	-5.38	QP	
5	*	918.0350	38.15	-5.53	32.62	37.00	-4.38	QP	
6	!	971.8700	36.25	-4.64	31.61	37.00	-5.39	QP	

### 3.3 RADIATED EMISSIONS ABOVE 1 GHZ

#### 3.3.1 LIMIT

Frequency (MHz)	Class B	
	(dBuV/m) (at 3m)	
	Peak	Average
Above 1000	74	54

#### FREQUENCY RANGE OF RADIATED MEASUREMENT (FOR UNINTENTIONAL RADIATORS)

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

**NOTE:**

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m) = 20log Emission level (uV/m).  
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	Feb. 28, 2022
3	MXE EMI Receiver	Agilent	N9038A	MY53220133	Feb. 28, 2022
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. 31, 2022

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

All calibration period of equipment list is one year.

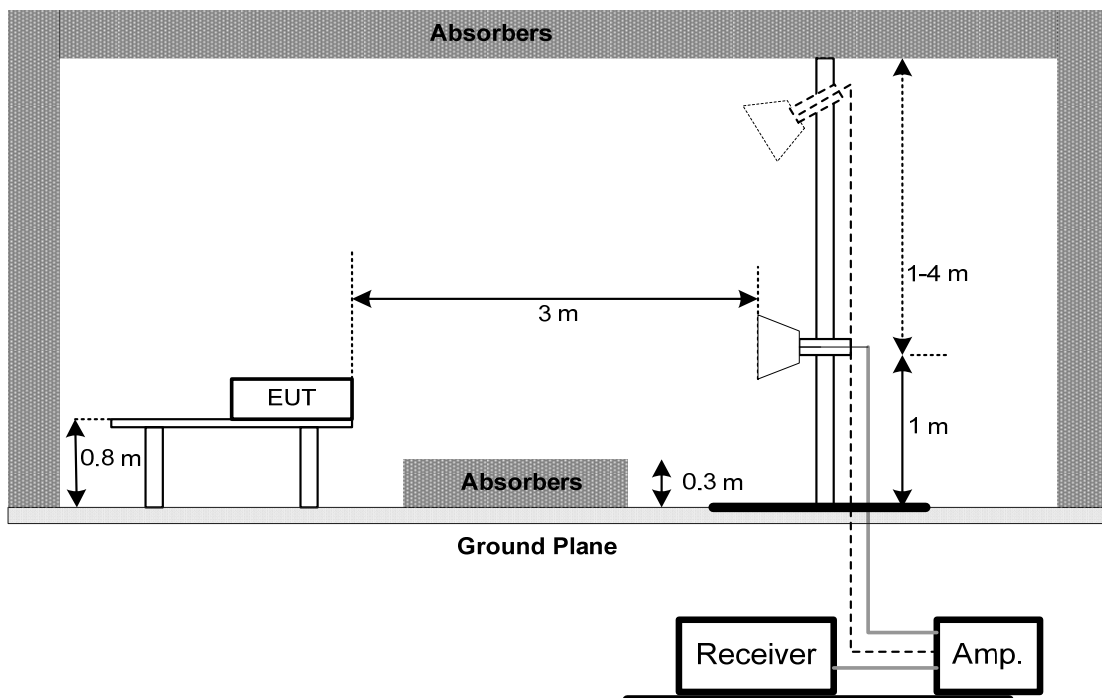
### 3.3.3 TEST PROCEDURE

- 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

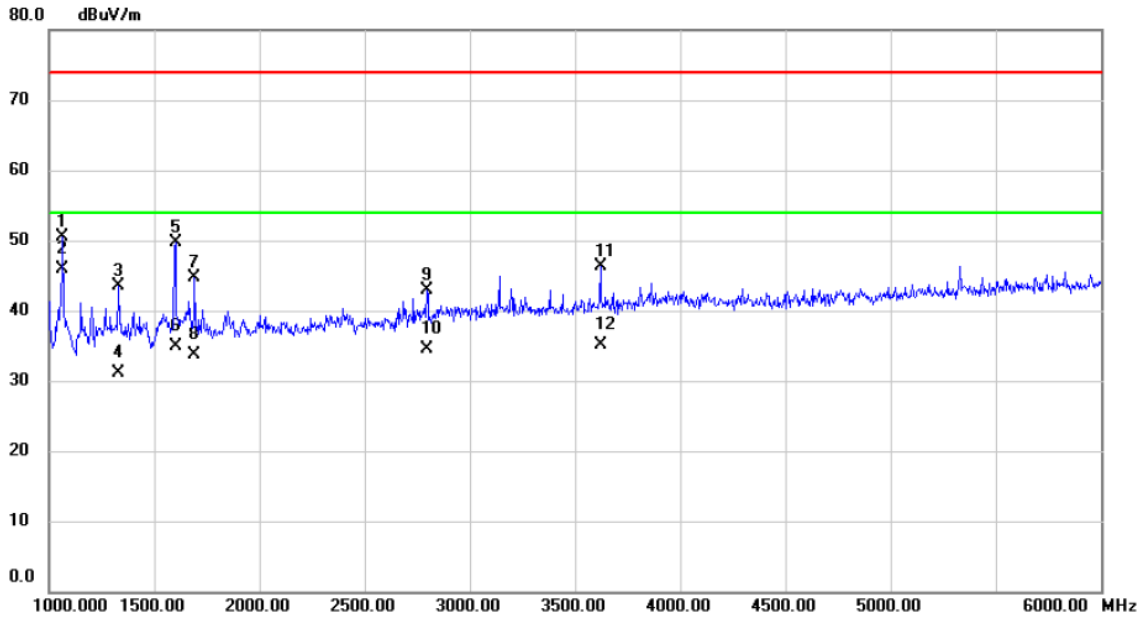


### 3.3.6 TEST RESULTS-ABOVE 1 GHZ

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.

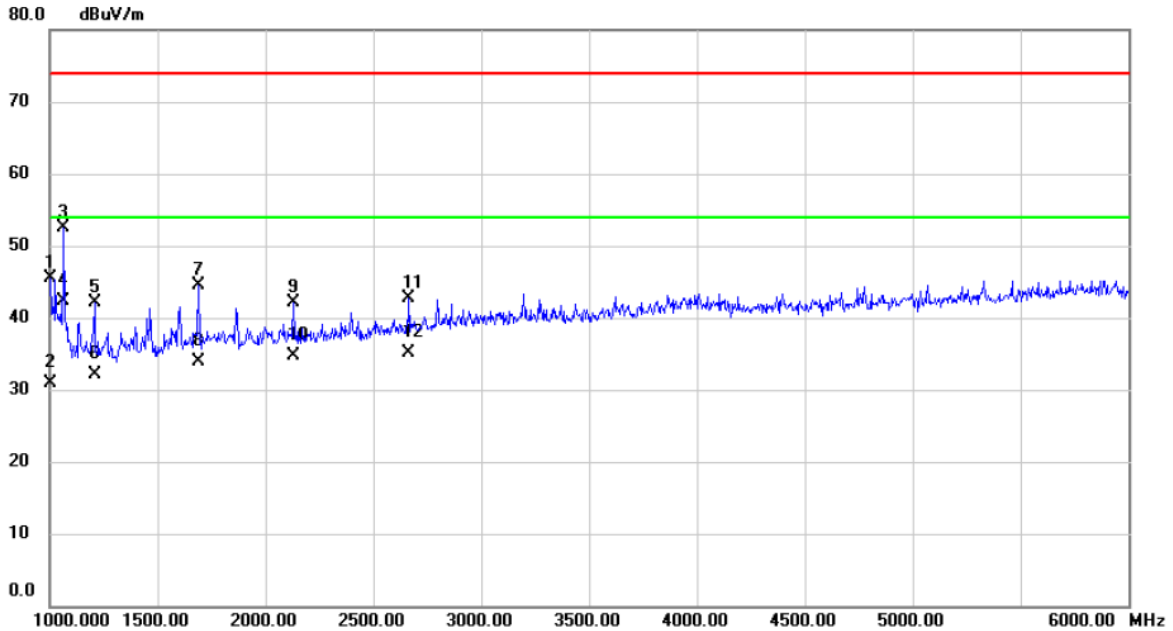
Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1065.000	55.35	-4.81	50.54	74.00	-23.46	peak	
2	*	1065.000	50.72	-4.81	45.91	54.00	-8.09	AVG	
3		1332.500	47.34	-3.77	43.57	74.00	-30.43	peak	
4		1332.500	34.79	-3.77	31.02	54.00	-22.98	AVG	
5		1600.000	52.26	-2.48	49.78	74.00	-24.22	peak	
6		1600.000	37.38	-2.48	34.90	54.00	-19.10	AVG	
7		1690.000	46.67	-1.90	44.77	74.00	-29.23	peak	
8		1690.000	35.66	-1.90	33.76	54.00	-20.24	AVG	
9		2797.500	39.76	3.24	43.00	74.00	-31.00	peak	
10		2797.500	31.34	3.24	34.58	54.00	-19.42	AVG	
11		3622.500	40.07	6.30	46.37	74.00	-27.63	peak	
12		3622.500	28.86	6.30	35.16	54.00	-18.84	AVG	

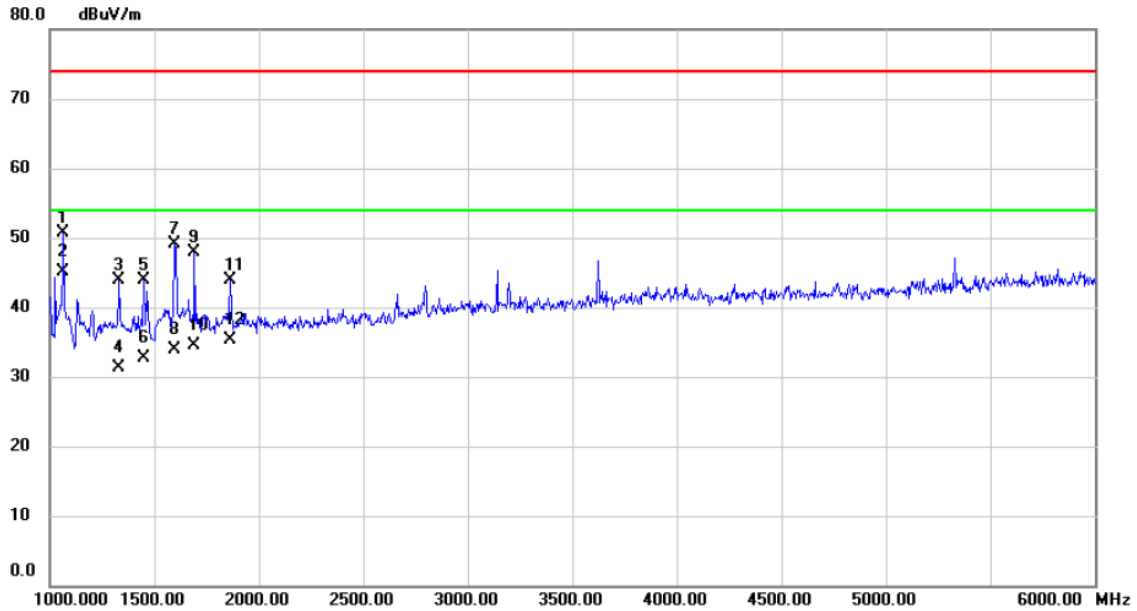


Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 1		



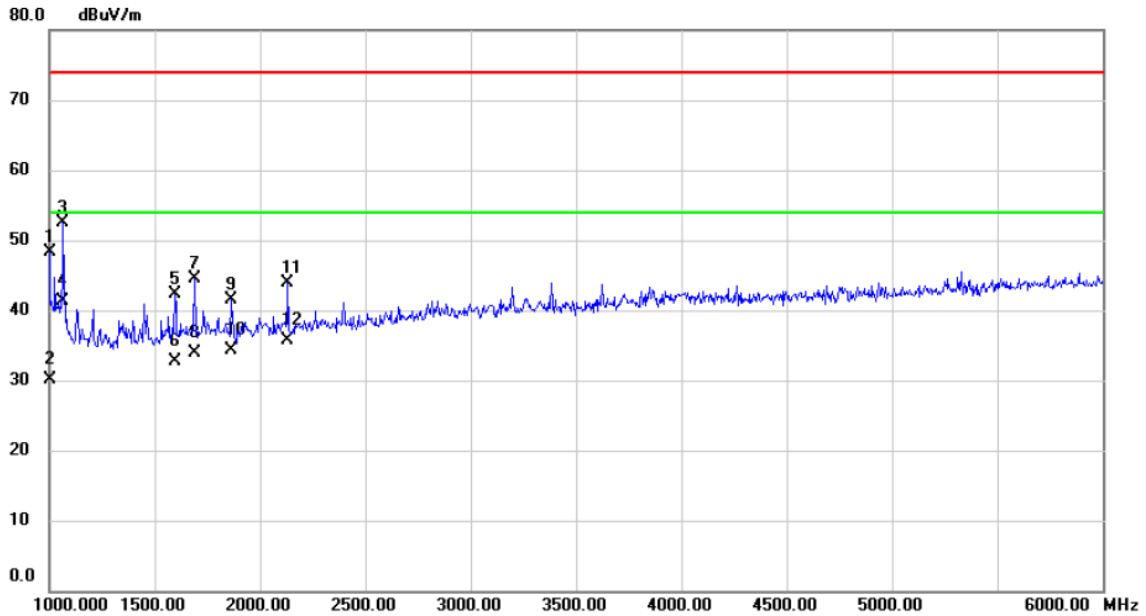
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1000.000	50.62	-5.07	45.55	74.00	-28.45	peak	
2		1000.000	35.89	-5.07	30.82	54.00	-23.18	AVG	
3		1065.000	57.38	-4.81	52.57	74.00	-21.43	peak	
4	*	1065.000	47.16	-4.81	42.35	54.00	-11.65	AVG	
5		1207.500	46.28	-4.26	42.02	74.00	-31.98	peak	
6		1207.500	36.46	-4.26	32.20	54.00	-21.80	AVG	
7		1690.000	46.43	-1.90	44.53	74.00	-29.47	peak	
8		1690.000	35.84	-1.90	33.94	54.00	-20.06	AVG	
9		2132.500	41.49	0.56	42.05	74.00	-31.95	peak	
10		2132.500	34.05	0.56	34.61	54.00	-19.39	AVG	
11		2665.000	40.12	2.66	42.78	74.00	-31.22	peak	
12		2665.000	32.44	2.66	35.10	54.00	-18.90	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 2		



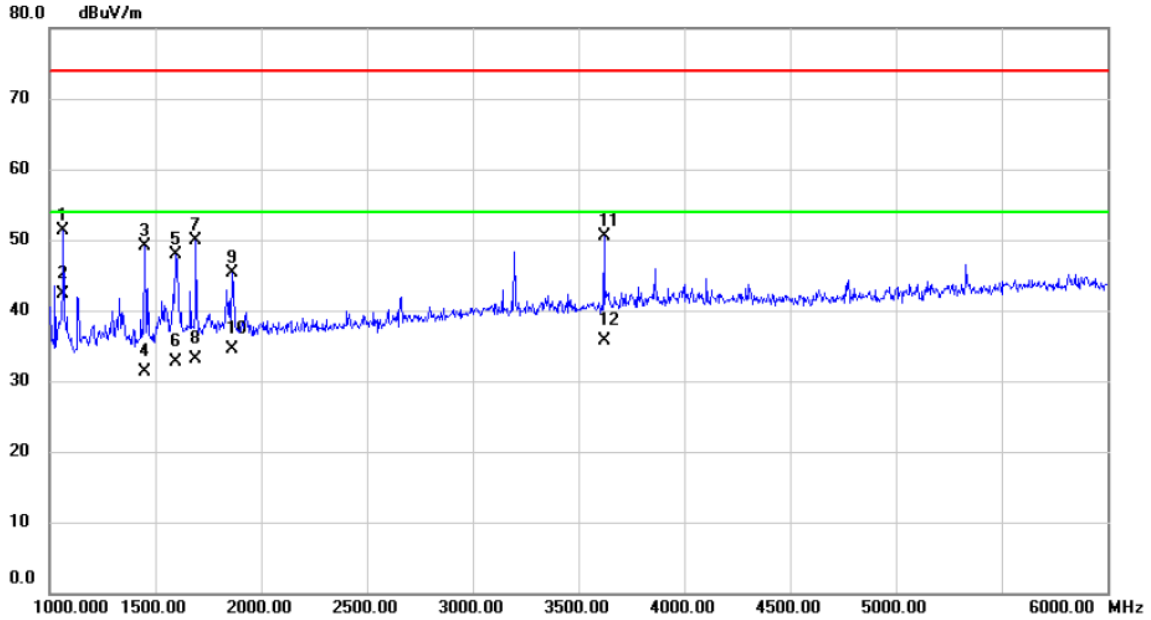
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1065.000	55.55	-4.81	50.74	74.00	-23.26	peak	
2	*	1065.000	49.96	-4.81	45.15	54.00	-8.85	AVG	
3		1332.500	47.58	-3.77	43.81	74.00	-30.19	peak	
4		1332.500	35.04	-3.77	31.27	54.00	-22.73	AVG	
5		1450.000	47.16	-3.32	43.84	74.00	-30.16	peak	
6		1450.000	35.96	-3.32	32.64	54.00	-21.36	AVG	
7		1597.500	51.59	-2.50	49.09	74.00	-24.91	peak	
8		1597.500	36.44	-2.50	33.94	54.00	-20.06	AVG	
9		1690.000	49.73	-1.90	47.83	74.00	-26.17	peak	
10		1690.000	36.48	-1.90	34.58	54.00	-19.42	AVG	
11		1865.000	44.70	-0.79	43.91	74.00	-30.09	peak	
12		1865.000	36.07	-0.79	35.28	54.00	-18.72	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 2		



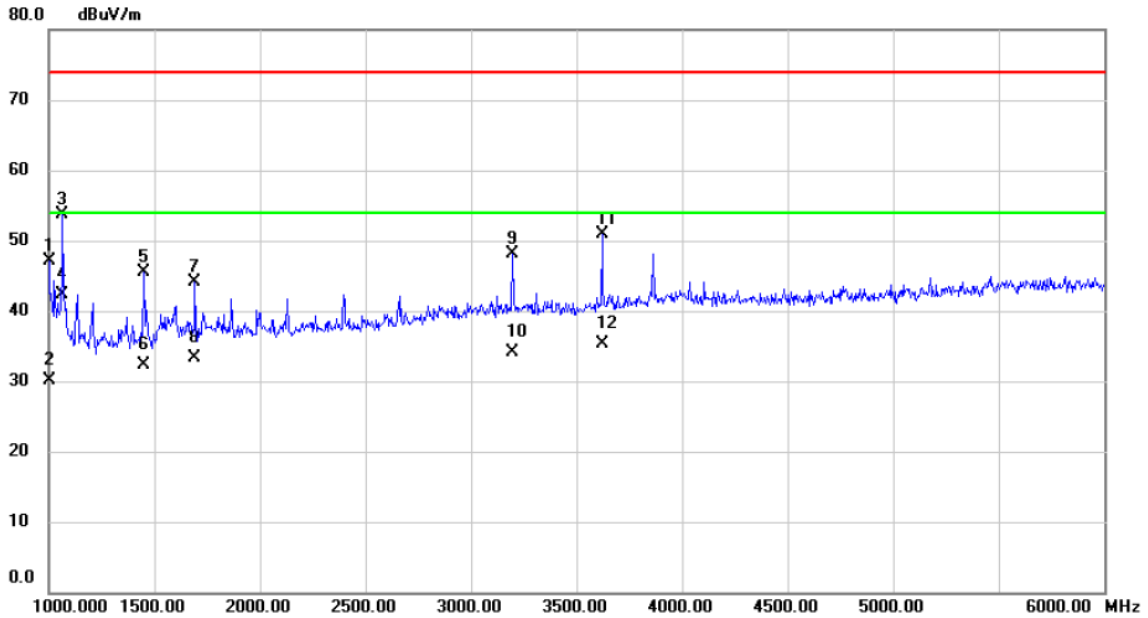
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1000.000	53.39	-5.07	48.32	74.00	-25.68	peak	
2		1000.000	35.23	-5.07	30.16	54.00	-23.84	AVG	
3		1065.000	57.38	-4.81	52.57	74.00	-21.43	peak	
4	*	1065.000	46.06	-4.81	41.25	54.00	-12.75	AVG	
5		1597.500	44.83	-2.50	42.33	74.00	-31.67	peak	
6		1597.500	35.16	-2.50	32.66	54.00	-21.34	AVG	
7		1690.000	46.43	-1.90	44.53	74.00	-29.47	peak	
8		1690.000	35.71	-1.90	33.81	54.00	-20.19	AVG	
9		1862.500	42.24	-0.80	41.44	74.00	-32.56	peak	
10		1862.500	35.05	-0.80	34.25	54.00	-19.75	AVG	
11		2132.500	43.42	0.56	43.98	74.00	-30.02	peak	
12		2132.500	35.07	0.56	35.63	54.00	-18.37	AVG	

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



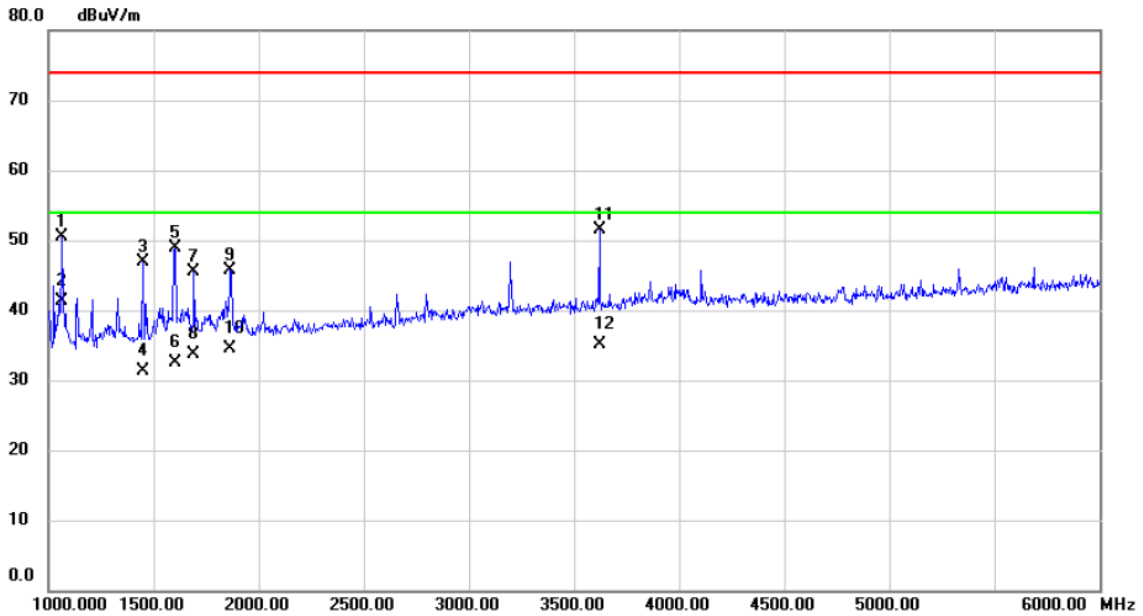
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1065.000	56.19	-4.81	51.38	74.00	-22.62	peak	
2	*	1065.000	47.15	-4.81	42.34	54.00	-11.66	AVG	
3		1450.000	52.35	-3.32	49.03	74.00	-24.97	peak	
4		1450.000	34.55	-3.32	31.23	54.00	-22.77	AVG	
5		1597.500	50.38	-2.50	47.88	74.00	-26.12	peak	
6		1597.500	35.26	-2.50	32.76	54.00	-21.24	AVG	
7		1690.000	51.89	-1.90	49.99	74.00	-24.01	peak	
8		1690.000	35.09	-1.90	33.19	54.00	-20.81	AVG	
9		1865.000	46.18	-0.79	45.39	74.00	-28.61	peak	
10		1865.000	35.35	-0.79	34.56	54.00	-19.44	AVG	
11		3622.500	44.23	6.30	50.53	74.00	-23.47	peak	
12		3622.500	29.46	6.30	35.76	54.00	-18.24	AVG	

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



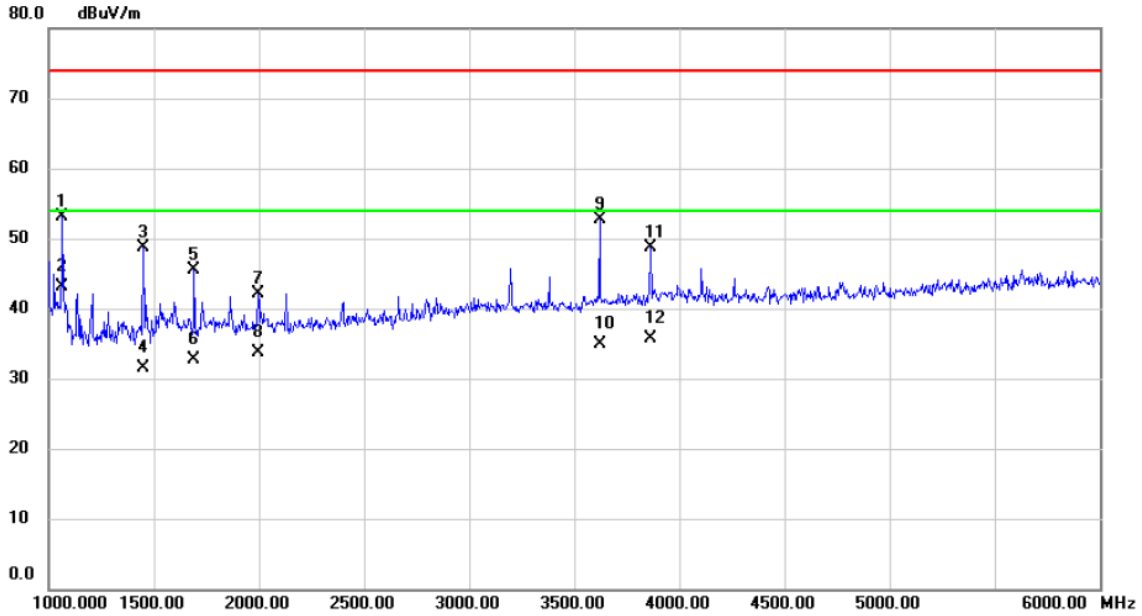
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1000.000	52.15	-5.07	47.08	74.00	-26.92	peak	
2		1000.000	35.23	-5.07	30.16	54.00	-23.84	AVG	
3		1065.000	58.48	-4.81	53.67	74.00	-20.33	peak	
4	*	1065.000	47.16	-4.81	42.35	54.00	-11.65	AVG	
5		1450.000	48.88	-3.32	45.56	74.00	-28.44	peak	
6		1450.000	35.54	-3.32	32.22	54.00	-21.78	AVG	
7		1690.000	45.95	-1.90	44.05	74.00	-29.95	peak	
8		1690.000	35.16	-1.90	33.26	54.00	-20.74	AVG	
9		3197.500	43.34	4.78	48.12	74.00	-25.88	peak	
10		3197.500	29.33	4.78	34.11	54.00	-19.89	AVG	
11		3622.500	44.59	6.30	50.89	74.00	-23.11	peak	
12		3622.500	28.97	6.30	35.27	54.00	-18.73	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 10		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1065.000	55.32	-4.81	50.51	74.00	-23.49	peak	
2	*	1065.000	46.06	-4.81	41.25	54.00	-12.75	AVG	
3		1447.500	50.30	-3.32	46.98	74.00	-27.02	peak	
4		1447.500	34.54	-3.32	31.22	54.00	-22.78	AVG	
5		1600.000	51.37	-2.48	48.89	74.00	-25.11	peak	
6		1600.000	35.05	-2.48	32.57	54.00	-21.43	AVG	
7		1690.000	47.38	-1.90	45.48	74.00	-28.52	peak	
8		1690.000	35.64	-1.90	33.74	54.00	-20.26	AVG	
9		1865.000	46.47	-0.79	45.68	74.00	-28.32	peak	
10		1865.000	35.37	-0.79	34.58	54.00	-19.42	AVG	
11		3622.500	45.18	6.30	51.48	74.00	-22.52	peak	
12		3622.500	28.86	6.30	35.16	54.00	-18.84	AVG	

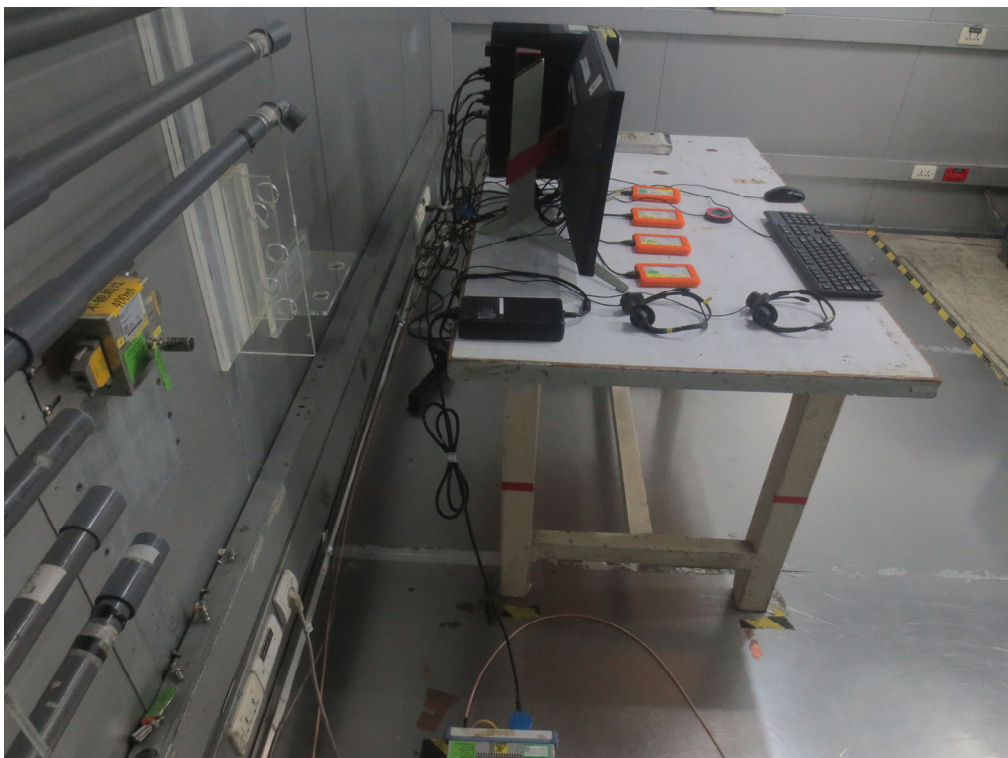
Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 10		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1065.000	57.92	-4.81	53.11	74.00	-20.89	peak	
2	*	1065.000	47.96	-4.81	43.15	54.00	-10.85	AVG	
3		1450.000	52.00	-3.32	48.68	74.00	-25.32	peak	
4		1450.000	34.84	-3.32	31.52	54.00	-22.48	AVG	
5		1690.000	47.42	-1.90	45.52	74.00	-28.48	peak	
6		1690.000	34.51	-1.90	32.61	54.00	-21.39	AVG	
7		1997.500	42.00	0.06	42.06	74.00	-31.94	peak	
8		1997.500	33.70	0.06	33.76	54.00	-20.24	AVG	
9		3622.500	46.37	6.30	52.67	74.00	-21.33	peak	
10		3622.500	28.64	6.30	34.94	54.00	-19.06	AVG	
11		3865.000	41.25	7.36	48.61	74.00	-25.39	peak	
12		3865.000	28.25	7.36	35.61	54.00	-18.39	AVG	

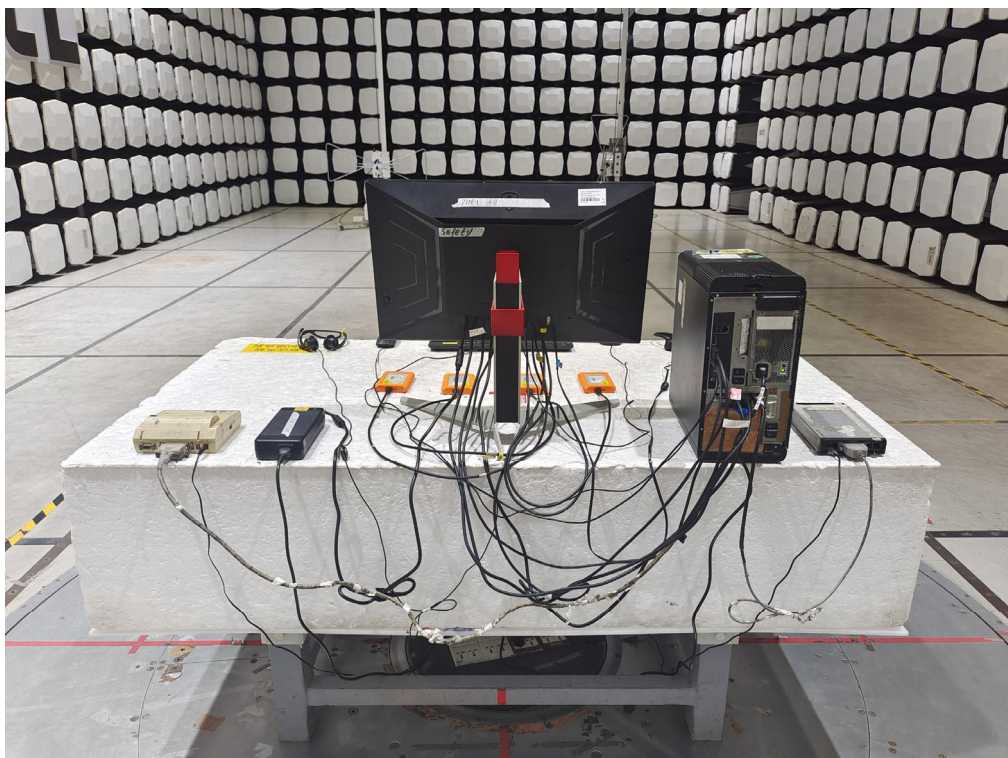
#### 4. EUT TEST PHOTO

##### AC Power Line Conducted Emissions





## Radiated Emissions 30 MHz to 1 GHz



## Radiated Emissions Above 1 GHz

**End of Test Report**