

FCC&ISED EMC Test Report

Project No. : 1910C075
Equipment : LCD Monitor
Brand Name : N/A
Test Model : **27G2*****(*=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 : Oct. 16, 2019
Date of Test : Oct. 16, 2019 ~ Oct. 30, 2019
Issued Date : Dec. 05, 2019
Report Version : R00
Test Sample : Engineering Sample No.: DG2019101655
Standard(s) : FCC Part 15, Subpart B
ICES-003 Issue 6:2016
ICES-003 Issue 6:2016 (updated April 2019)

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

Derek Tong

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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.	Dec. 05, 2019

1. SUMMARY OF TEST RESULTS

Emission		
Ref Standard(s)	Test Item	Result
ANSI C63.4-2014	AC Power Line Conducted Emissions	PASS
	Radiated Emissions 30 MHz to 1 GHz	PASS
	Radiated Emissions Above 1 GHz	PASS

NOTE:

- (1) "N/A" denotes test is not applicable to this device.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

BTL's Test Firm Registration Number for ISED: 4428B

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-C02	CISPR	150kHz ~ 30MHz	2.60

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%	Lorry Lao
Radiated emissions 30 MHz to 1 GHz	25°C	60%	Promise Yin
Radiated emissions above 1 GHz	25°C	60%	Promise Yin

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LCD Monitor
Brand Name	N/A
Test Model	**27G2*****(*=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	100-240V~ 50/60Hz
Connecting I/O Port(s)	1* AC port 1* DP port 2* HDMI port 1* Earphone port
Classification Of EUT	Class B
Highest Internal Frequency(Fx)	600MHz

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(3 Pin)
DP	Shielded	NO	1.8/1.5	-
HDMI	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 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 2560*1440/75Hz
Mode 2	HDMI2 2560*1440/75Hz
Mode 3	DP 2560*1440/75Hz
Mode 4	HDMI1 1080P
Mode 5	HDMI1 1080P
Mode 6	HDMI1 1280*1024/75Hz
Mode 7	HDMI1 640*480/75Hz

AC Power Line Conducted Emissions test	
Final Test Mode	Description
Mode 1	HDMI1 2560*1440/75Hz
Mode 3	DP 2560*1440/75Hz
Mode 4	HDMI1 1080P

Radiated emissions 30 MHz to 1 GHz test	
Final Test Mode	Description
Mode 1	HDMI1 2560*1440/75Hz
Mode 3	DP 2560*1440/75Hz
Mode 4	HDMI1 1080P

Radiated emissions Above 1 GHz test	
Final Test Mode	Description
Mode 1	HDMI1 2560*1440/75Hz
Mode 3	DP 2560*1440/75Hz
Mode 4	HDMI1 1080P

Evaluation description:

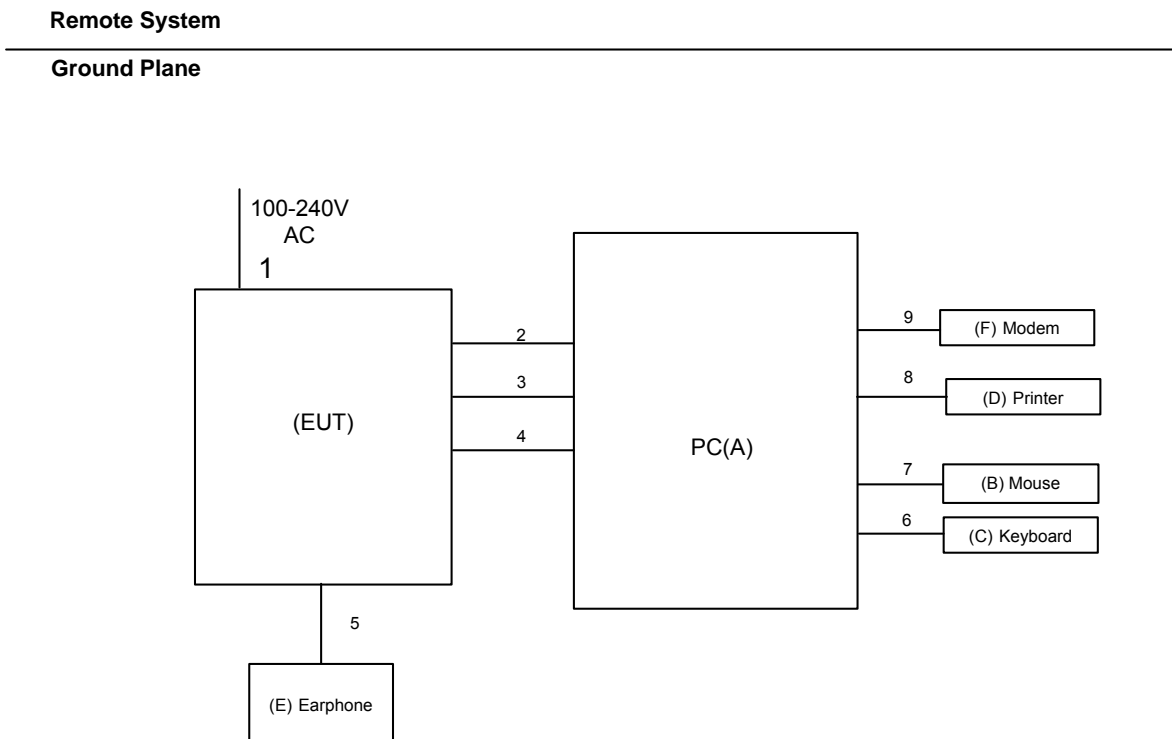
1. The maximum resolution is evaluated Mode 1-5. The worst case is Mode 1 and evaluated the middle and low resolution Mode 6 and Mode 7.
2. According to the client's requirement, choose Mode 1, Mode 3, Mode 4 and recorded in test report.

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 DP & HDMI cable.
2. EUT connected to Earphone via Earphone cable.
3. Mouse and Keyboard connected to PC via USB cable.
4. Printer connected to PC via RS232 cable.
5. Modem 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	Vostro 470	28747261333
B	Mouse	DELL	MS111-P	CN011D3V71581279OLOT
C	Keyboard	DELL	KB212-B	CN0HTXH97158125004DXA01
D	Earphone	Apple	N/A	N/A
E	Printer	SII	DPU-414	3018507 B
F	Modem	ACEEX	DM-1414V	603002131

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	AC cable	NO	NO	1.8m/1.5m
2	DP cable	YES	NO	1.8m/1.5m
3	HDMI cable	YES	NO	1.8m/1.5m
4	HDMI cable	YES	NO	1.8m/1.5m
5	Earphone cable	NO	NO	1.2m
6	USB cable	YES	NO	1.8m
7	USB cable	YES	NO	1.8m
8	RS232 cable	YES	NO	1.5m
9	Parallel 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 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	EMI Test Receiver	R&S	ESCI	100382	Mar. 10, 2020
2	LISN	EMCO	3816/2	52765	Mar. 10, 2020
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	May. 19, 2020
4	50Ω Terminator	SHX	TF5-3	15041305	Mar. 10, 2020
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1 -01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 12, 2020

Remark: "N/A" denotes no model name, serial no. or calibration specified.
 All calibration period of equipment list is one year.

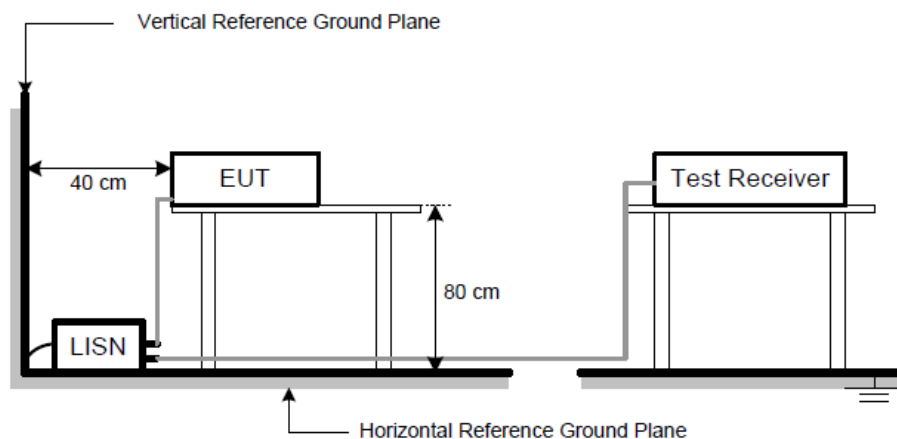
3.1.3 TEST PROCEDURE

- 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

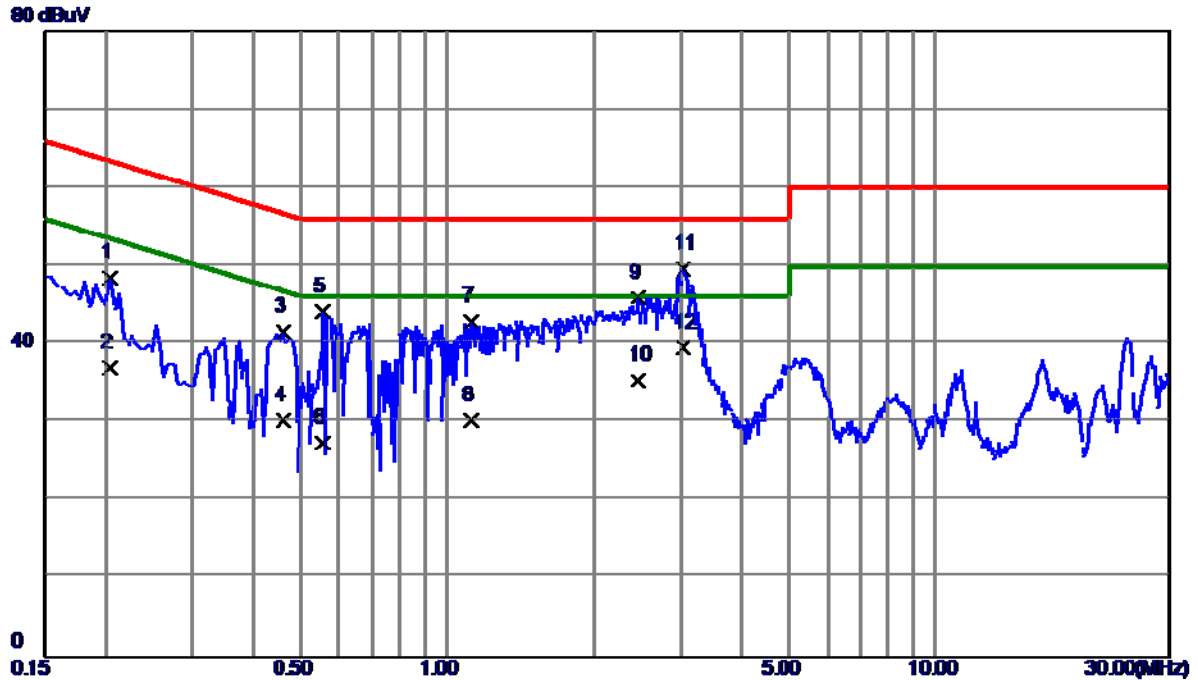


4.1.6 TEST RESULTS

Remark

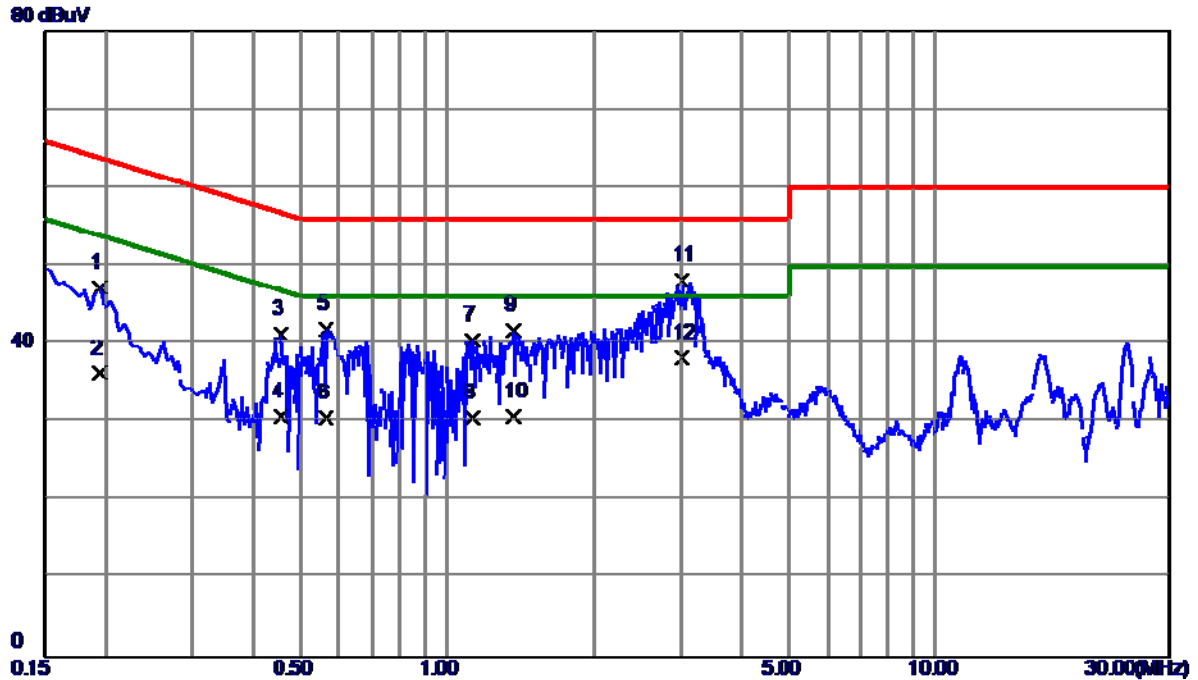
- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. 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	HDMI1 2560*1440/75Hz		



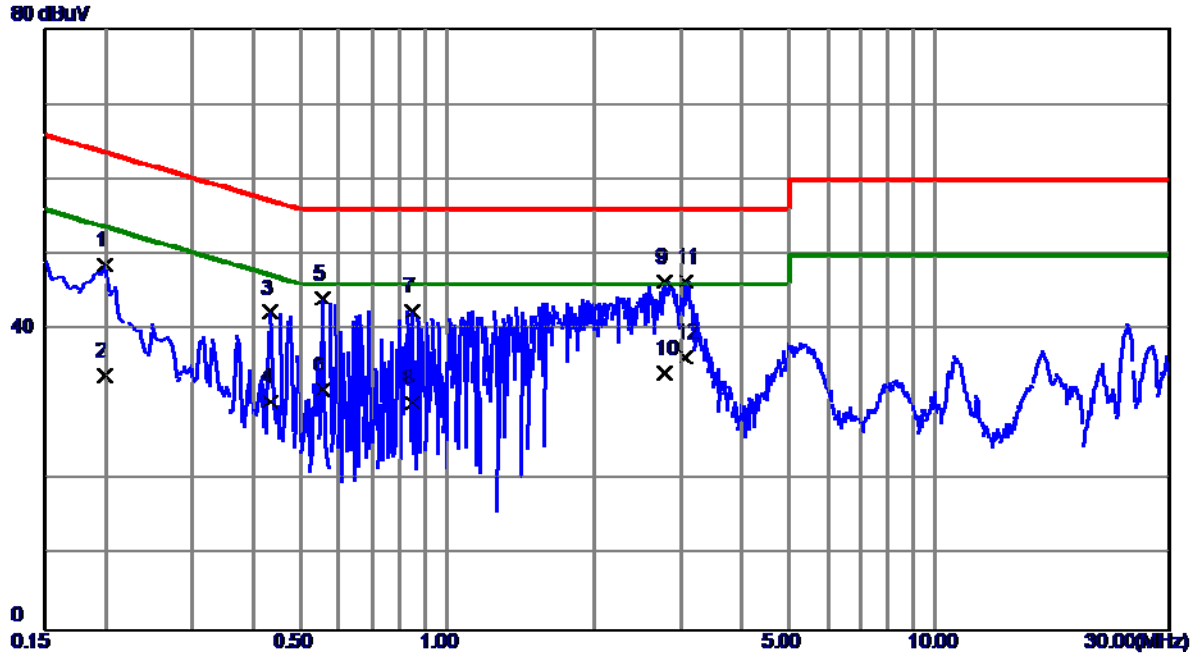
No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector
1	0.2040	38.67	9.81	48.48	63.45	-14.97	QP
2	0.2040	27.14	9.81	36.95	53.45	-16.50	AVG
3	0.4605	31.71	9.87	41.58	56.68	-15.10	QP
4	0.4605	20.41	9.87	30.28	46.68	-16.40	AVG
5	0.5550	34.32	9.89	44.21	56.00	-11.79	QP
6	0.5550	17.50	9.89	27.39	46.00	-18.61	AVG
7	1.1174	32.91	9.93	42.84	56.00	-13.16	QP
8	1.1174	20.35	9.93	30.28	46.00	-15.72	AVG
9	2.4539	35.84	10.02	45.86	56.00	-10.14	QP
10	2.4539	25.28	10.02	35.30	46.00	-10.70	AVG
11 *	3.0344	39.59	10.06	49.65	56.00	-6.35	QP
12	3.0344	29.47	10.06	39.53	46.00	-6.47	AVG

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	HDMI1 2560*1440/75Hz		



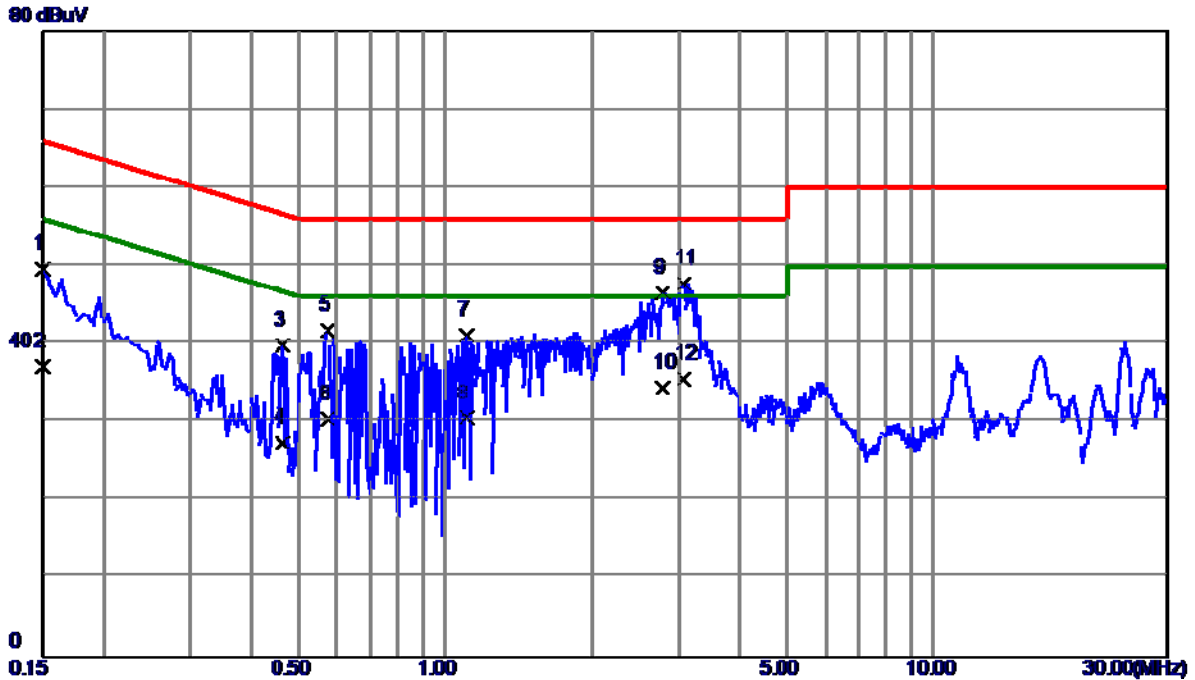
No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector
1	0.1949	37.25	9.90	47.15	63.83	-16.68	QP
2	0.1949	26.34	9.90	36.24	53.83	-17.59	AVG
3	0.4560	31.24	10.02	41.26	56.77	-15.51	QP
4	0.4560	20.63	10.02	30.65	46.77	-16.12	AVG
5	0.5639	31.83	10.04	41.87	56.00	-14.13	QP
6	0.5639	20.45	10.04	30.49	46.00	-15.51	AVG
7	1.1265	30.35	10.13	40.48	56.00	-15.52	QP
8	1.1265	20.41	10.13	30.54	46.00	-15.46	AVG
9	1.3650	31.54	10.15	41.69	56.00	-14.31	QP
10	1.3650	20.53	10.15	30.68	46.00	-15.32	AVG
11	3.0210	37.89	10.25	48.14	56.00	-7.86	QP
12 *	3.0210	28.01	10.25	38.26	46.00	-7.74	AVG

Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	DP 2560*1440/75Hz		



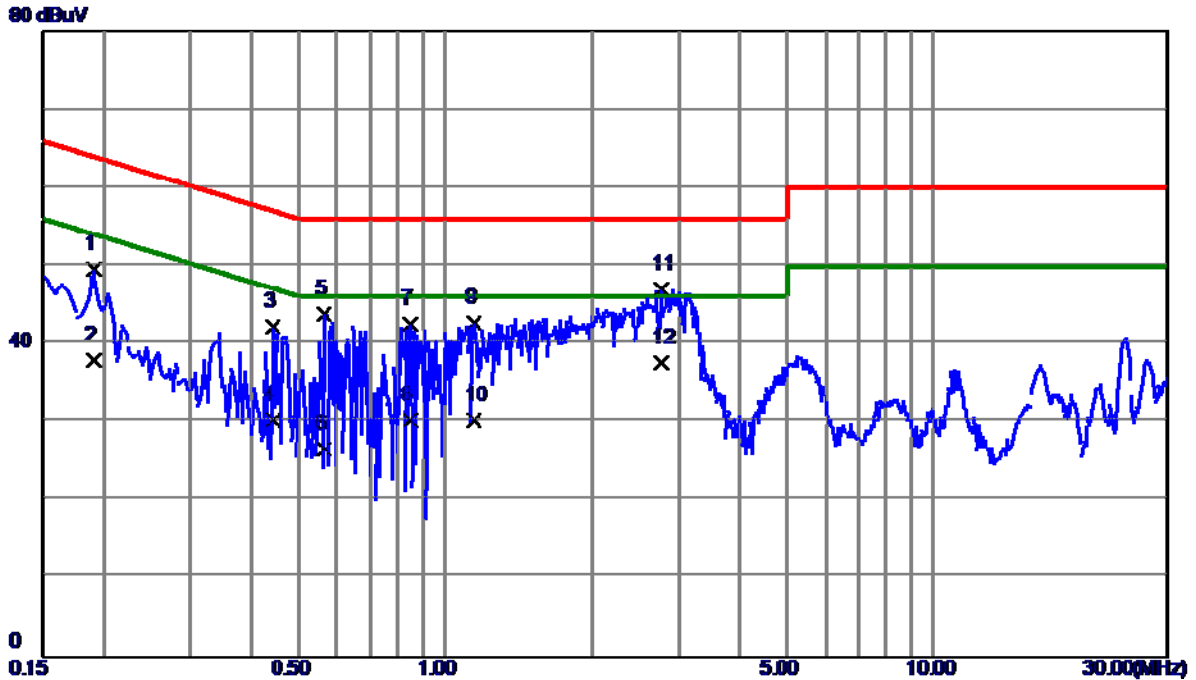
No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector
1	0.1995	38.78	9.81	48.59	63.63	-15.04	QP
2	0.1995	24.14	9.81	33.95	53.63	-19.68	AVG
3	0.4335	32.45	9.87	42.32	57.19	-14.87	QP
4	0.4335	20.53	9.87	30.40	47.19	-16.79	AVG
5	0.5550	34.23	9.89	44.12	56.00	-11.88	QP
6	0.5550	22.14	9.89	32.03	46.00	-13.97	AVG
7	0.8475	32.57	9.91	42.48	56.00	-13.52	QP
8	0.8475	20.36	9.91	30.27	46.00	-15.73	AVG
9 *	2.7780	36.43	10.04	46.47	56.00	-9.53	QP
10	2.7780	24.16	10.04	34.20	46.00	-11.80	AVG
11	3.0795	36.35	10.07	46.42	56.00	-9.58	QP
12	3.0795	26.23	10.07	36.30	46.00	-9.70	AVG

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	DP 2560*1440/75Hz		



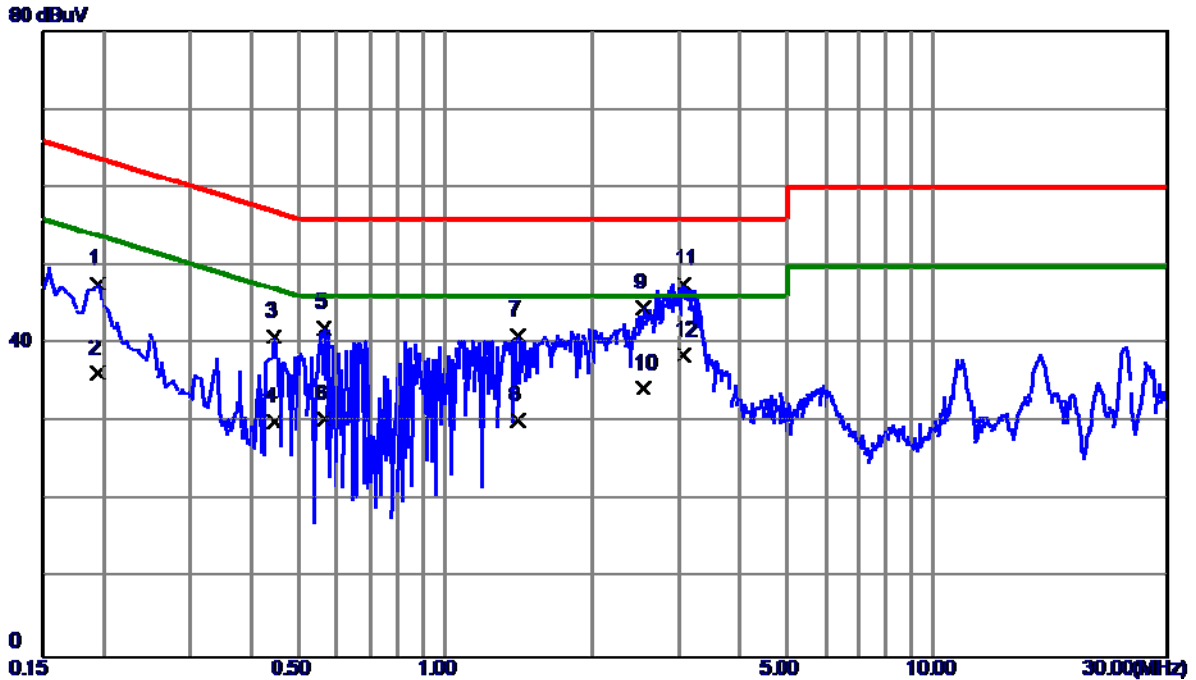
No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector
1	0.1500	39.67	9.91	49.58	66.00	-16.42	QP
2	0.1500	27.14	9.91	37.05	56.00	-18.95	AVG
3	0.4650	29.79	10.02	39.81	56.60	-16.79	QP
4	0.4650	17.27	10.02	27.29	46.60	-19.31	AVG
5	0.5730	31.71	10.04	41.75	56.00	-14.25	QP
6	0.5730	20.42	10.04	30.46	46.00	-15.54	AVG
7	1.1040	30.94	10.13	41.07	56.00	-14.93	QP
8	1.1040	20.35	10.13	30.48	46.00	-15.52	AVG
9	2.7825	36.39	10.23	46.62	56.00	-9.38	QP
10	2.7825	24.16	10.23	34.39	46.00	-11.61	AVG
11 *	3.0750	37.45	10.26	47.71	56.00	-8.29	QP
12	3.0750	25.33	10.26	35.59	46.00	-10.41	AVG

Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	HDMI1 1080P		



No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector
1	0.1905	39.73	9.81	49.54	64.01	-14.47	QP
2	0.1905	28.14	9.81	37.95	54.01	-16.06	AVG
3	0.4425	32.44	9.87	42.31	57.01	-14.70	QP
4	0.4425	20.35	9.87	30.22	47.01	-16.79	AVG
5	0.5639	33.98	9.89	43.87	56.00	-12.13	QP
6	0.5639	16.60	9.89	26.49	46.00	-19.51	AVG
7	0.8475	32.66	9.91	42.57	56.00	-13.43	QP
8	0.8475	20.31	9.91	30.22	46.00	-15.78	AVG
9	1.1445	32.84	9.93	42.77	56.00	-13.23	QP
10	1.1445	20.35	9.93	30.28	46.00	-15.72	AVG
11	2.7645	37.03	10.04	47.07	56.00	-8.93	QP
12 *	2.7645	27.61	10.04	37.65	46.00	-8.35	AVG

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	HDMI1 1080P		



No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector
1	0.1949	37.82	9.90	47.72	63.83	-16.11	QP
2	0.1949	26.34	9.90	36.24	53.83	-17.59	AVG
3	0.4470	30.92	10.02	40.94	56.93	-15.99	QP
4	0.4470	20.09	10.02	30.11	46.93	-16.82	AVG
5	0.5639	32.07	10.04	42.11	56.00	-13.89	QP
6	0.5639	20.34	10.04	30.38	46.00	-15.62	AVG
7	1.4010	31.02	10.15	41.17	56.00	-14.83	QP
8	1.4010	20.14	10.15	30.29	46.00	-15.71	AVG
9	2.5440	34.39	10.22	44.61	56.00	-11.39	QP
10	2.5440	24.10	10.22	34.32	46.00	-11.68	AVG
11	3.0660	37.50	10.25	47.75	56.00	-8.25	QP
12 *	3.0660	28.37	10.25	38.62	46.00	-7.38	AVG

3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ

3.2.1 LIMIT

30 MHz to 1 GHz

Frequency (MHz)	Class B (at 3m)	
	(μ V/m) Field strength	(dB μ V/m) Field strength
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dB μ V/m) = 20log Emission level (μ V/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	Aug. 03, 2020
2	MXE EMI Receiver	Agilent	N9038A	MY53220133	Mar. 10, 2020
3	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980284	Mar. 10, 2020
4	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980283	Mar. 10, 2020
5	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	946	Nov. 24, 2019
6	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	947	Nov. 24, 2019
7	Cable	emci	LMR-400(5m+11m+15m)	N/A	Aug. 06, 2020
8	Cable	emci	LMR-400(5m+8m+8m)	N/A	Aug. 06, 2020
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	Attenuator	EMCI	EMCI-N-6-06	N0670	Nov. 24, 2019
12	Attenuator	EMCI	EMCI-N-6-06	N0671	Nov. 24, 2019

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

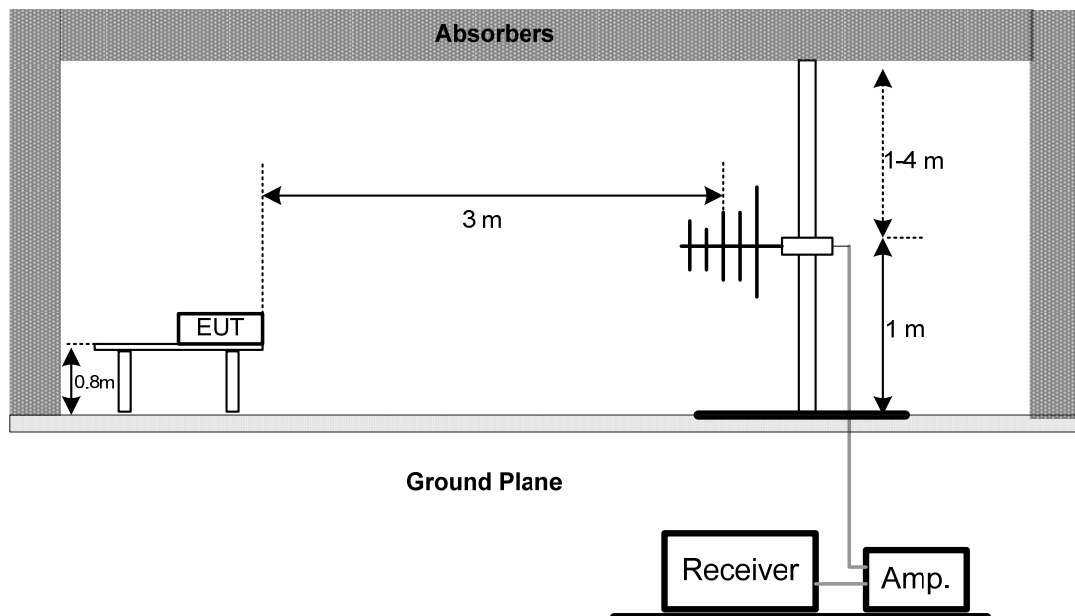
3.2.3 TEST PROCEDURE

- 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. 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.
- f. 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

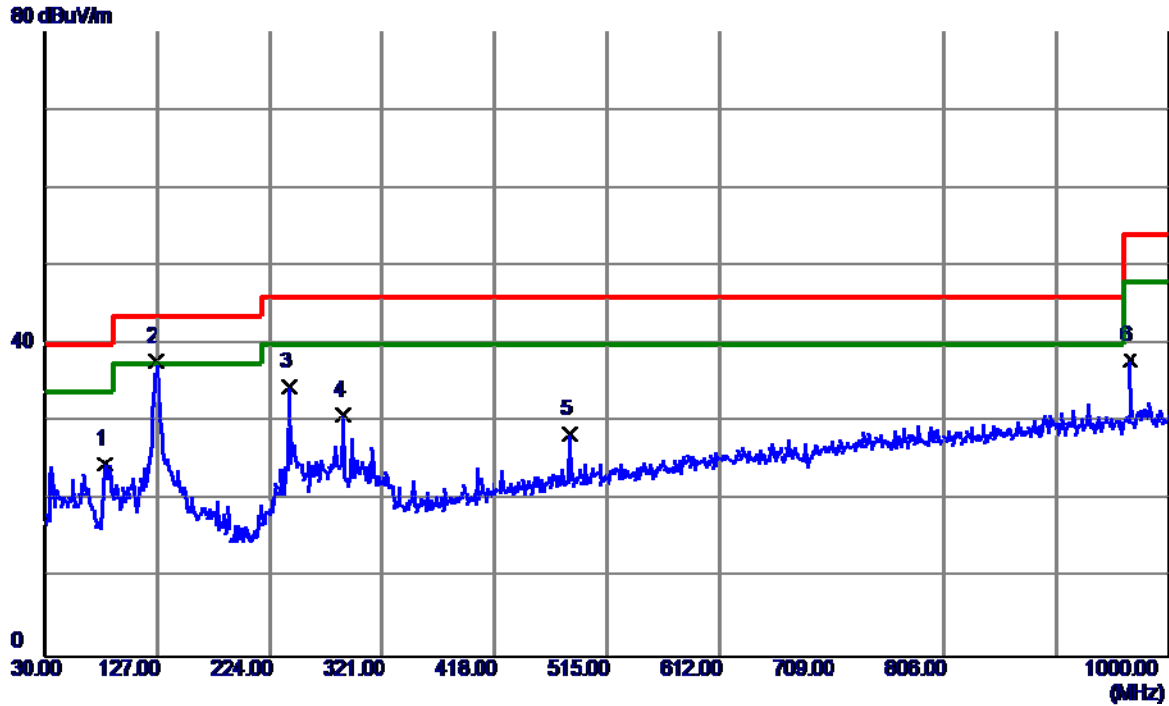


4.2.6 TEST RESULTS-BELOW 1 GHZ

Remark :

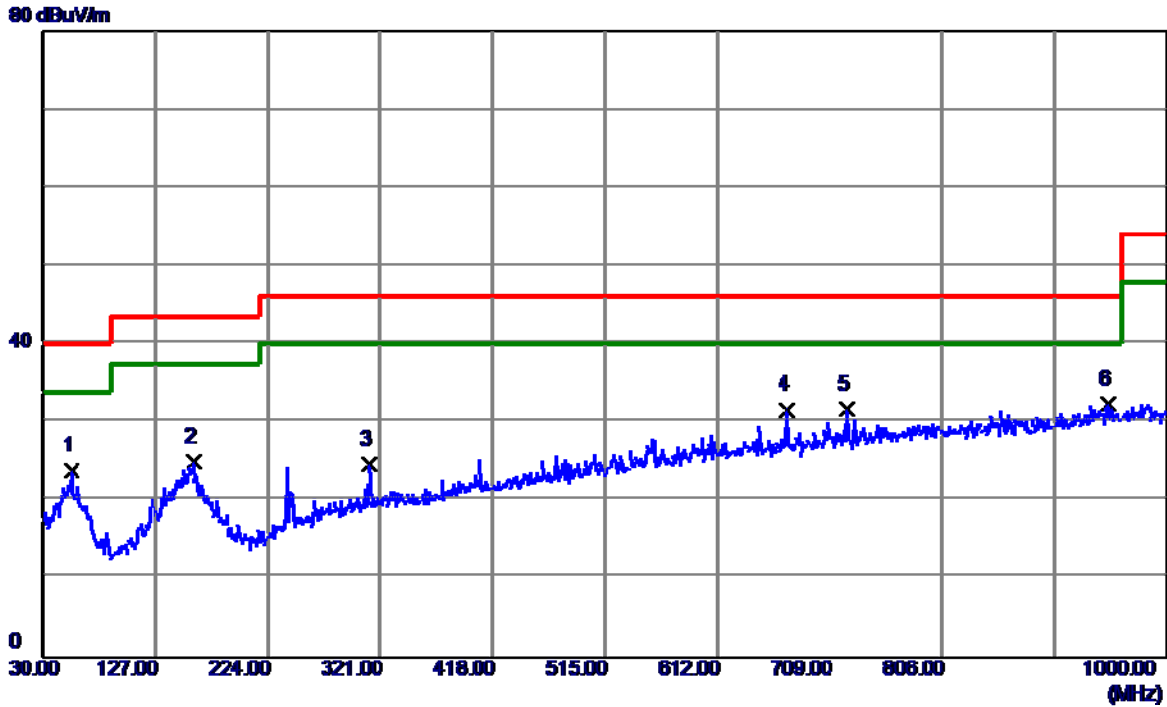
- (1) Measuring frequency range from 30 MHz to 1000 MHz
- (2) If the peak scan value lower limit more than 20 dB, then this signal data does not show in table.

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	HDMI1 2560*1440/75Hz		



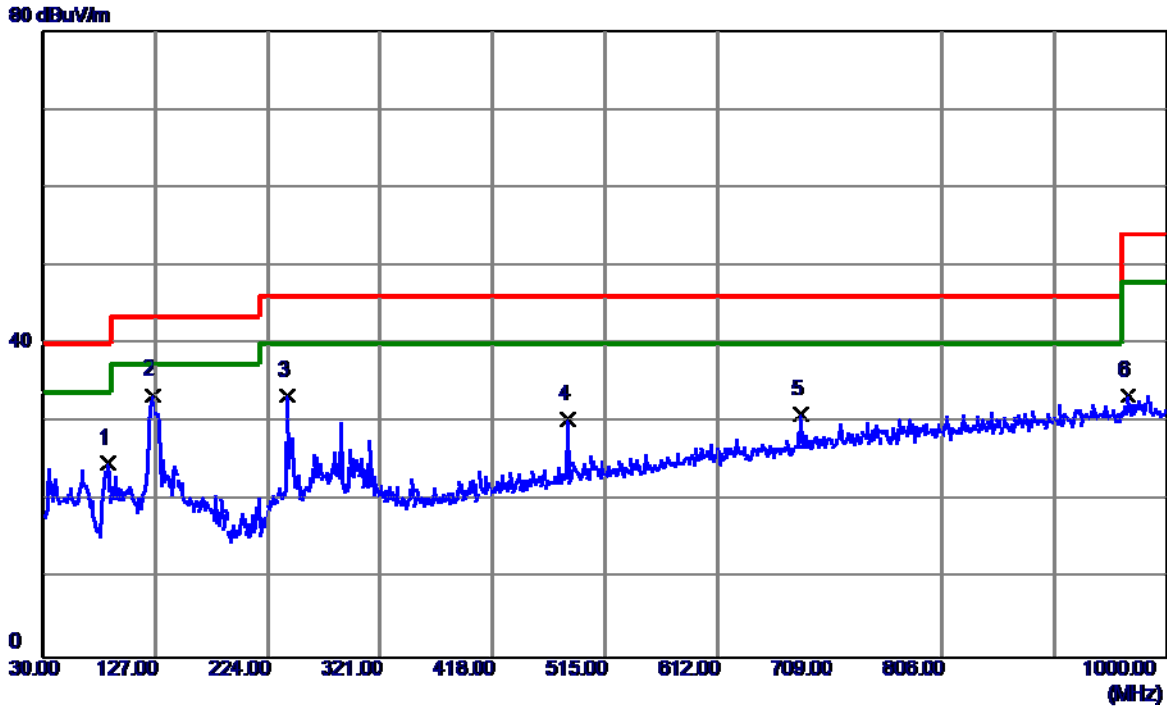
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	81.4100	46.15	-21.51	24.64	40.00	-15.36	QP
2 *	126.0300	55.83	-18.05	37.78	43.50	-5.72	QP
3	241.4600	51.92	-17.35	34.57	46.00	-11.43	QP
4	288.0200	46.39	-15.48	30.91	46.00	-15.09	QP
5	482.9900	39.39	-10.94	28.45	46.00	-17.55	QP
6	966.0500	41.25	-3.34	37.91	54.00	-16.09	QP

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	HDMI1 2560*1440/75Hz		



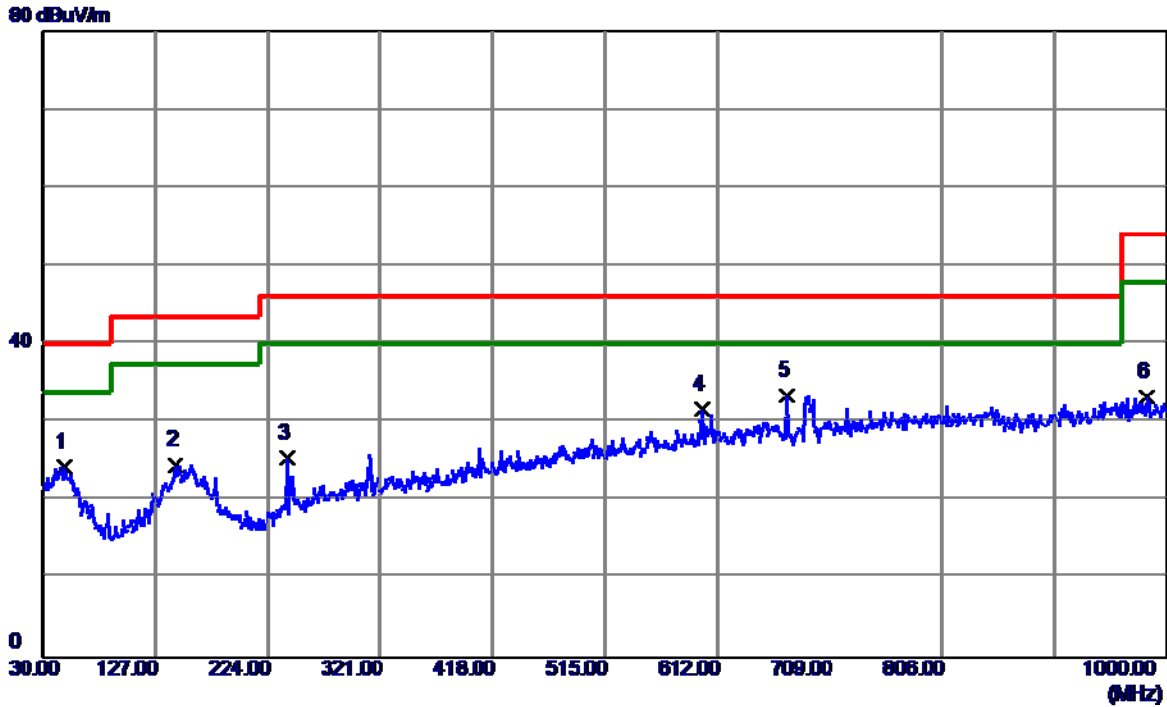
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	54.7350	40.60	-16.71	23.89	40.00	-16.11	QP
2	159.9800	40.97	-16.00	24.97	43.50	-18.53	QP
3	311.3000	39.28	-14.71	24.57	46.00	-21.43	QP
4	672.1400	39.11	-7.51	31.60	46.00	-14.40	QP
5	724.5200	38.24	-6.63	31.61	46.00	-14.39	QP
6 *	949.5600	36.14	-3.80	32.34	46.00	-13.66	QP

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	DP 2560*1440/75Hz		



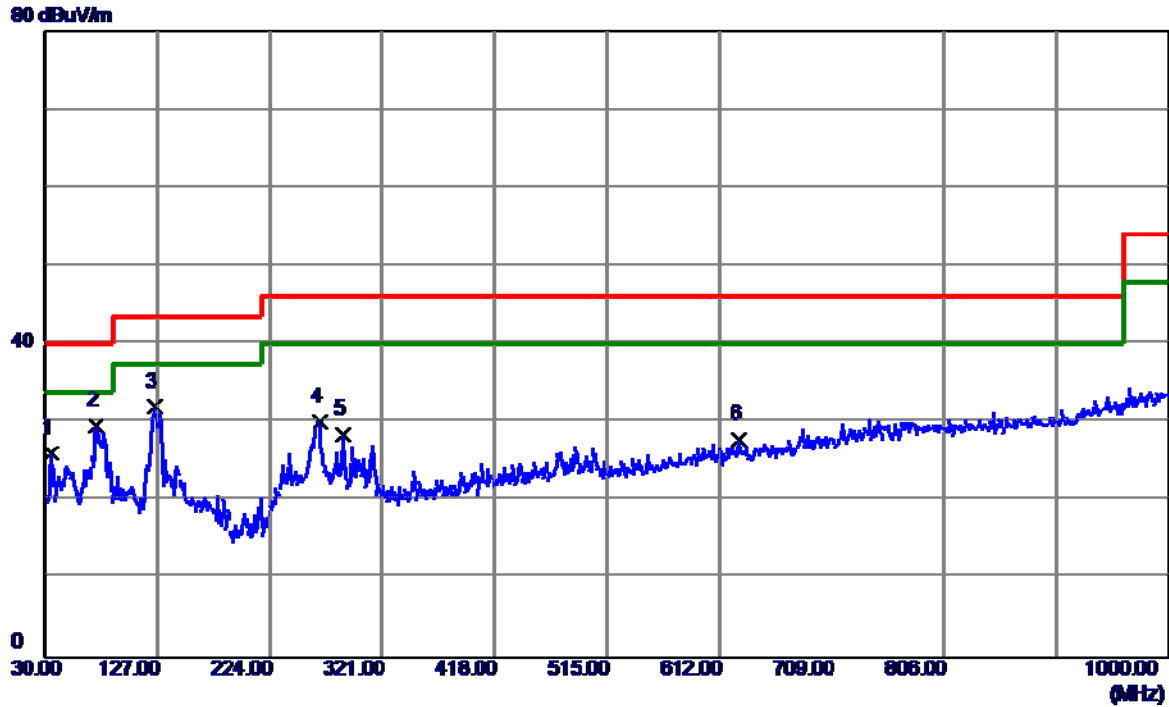
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	86.2600	47.04	-22.23	24.81	40.00	-15.19	QP
2 *	125.0600	51.65	-18.13	33.52	43.50	-9.98	QP
3	241.4600	50.80	-17.35	33.45	46.00	-12.55	QP
4	482.9900	41.41	-10.94	30.47	46.00	-15.53	QP
5	683.7800	38.52	-7.41	31.11	46.00	-14.89	QP
6	966.0500	36.82	-3.34	33.48	54.00	-20.52	QP

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	DP 2560*1440/75Hz		



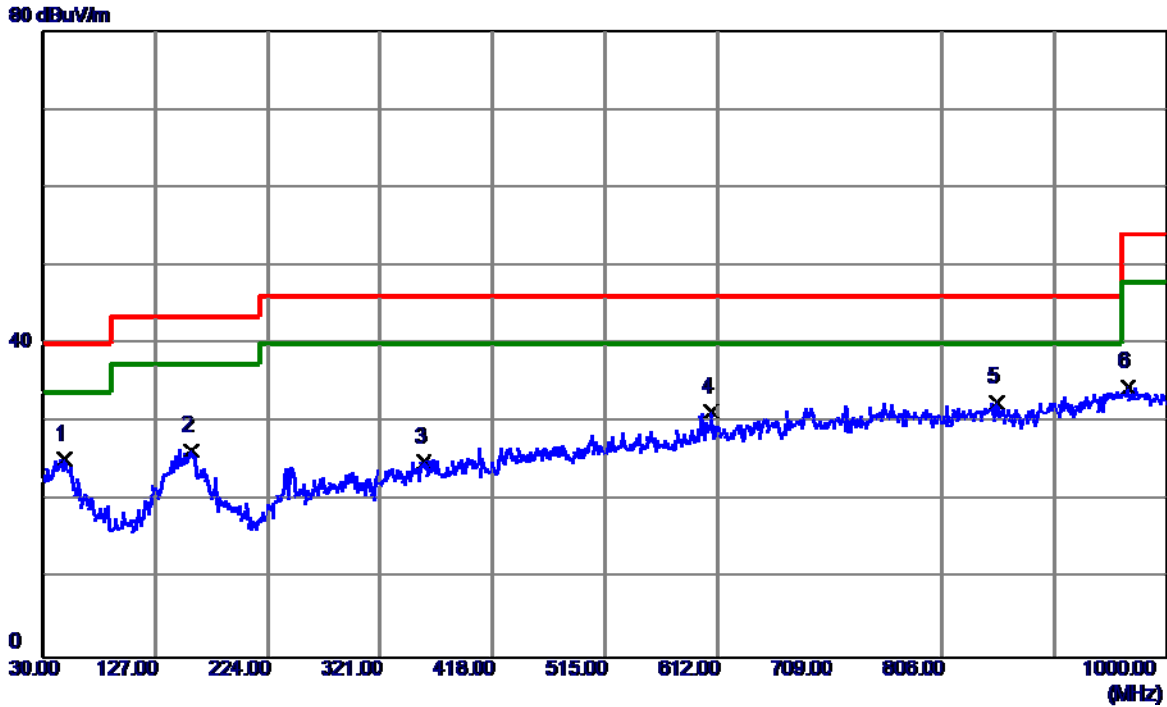
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	48.4300	40.91	-16.65	24.26	40.00	-15.74	QP
2	144.4600	40.75	-16.19	24.56	43.50	-18.94	QP
3	241.4600	42.70	-17.23	25.47	46.00	-20.53	QP
4	599.3900	40.07	-8.46	31.61	46.00	-14.39	QP
5 *	672.1400	40.95	-7.51	33.44	46.00	-12.56	QP
6	982.5400	36.70	-3.41	33.29	54.00	-20.71	QP

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	HDMI1 1080P		



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	35.8200	44.18	-18.10	26.08	40.00	-13.92	QP
2 *	74.6200	49.32	-19.77	29.55	40.00	-10.45	QP
3	125.0600	50.15	-18.13	32.02	43.50	-11.48	QP
4	266.6800	46.46	-16.37	30.09	46.00	-15.91	QP
5	288.0200	43.93	-15.48	28.45	46.00	-17.55	QP
6	629.4600	35.88	-8.10	27.78	46.00	-18.22	QP

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	HDMI1 1080P		



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	48.4300	41.91	-16.65	25.26	40.00	-14.74	QP
2	158.0399	42.39	-15.98	26.41	43.50	-17.09	QP
3	358.8299	38.68	-13.74	24.94	46.00	-21.06	QP
4	606.1800	39.78	-8.37	31.41	46.00	-14.59	QP
5 *	853.5300	37.80	-5.24	32.56	46.00	-13.44	QP
6	966.0500	38.11	-3.60	34.51	54.00	-19.49	QP

3.3 RADIATED EMISSIONS ABOVE 1 GHZ

3.3.1 LIMIT

Above 1 GHz

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 th 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	Mar. 23, 2020
2	Amplifier	Agilent	8449B	3008A02584	Aug. 03, 2020
3	MXE EMI Receiver	Agilent	N9038A	MY53220133	Mar. 10, 2020
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	Mlcable Inc.	B10-01-01-5M	18047123	Mar. 01, 2020
8	Cable	Mlcable Inc.	B10-01-01-10M	18072746	Mar. 01, 2020
9	Cable	N/A	A50-3.5M3.5M-1.5M-AT	18041824	Mar. 01, 2020

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

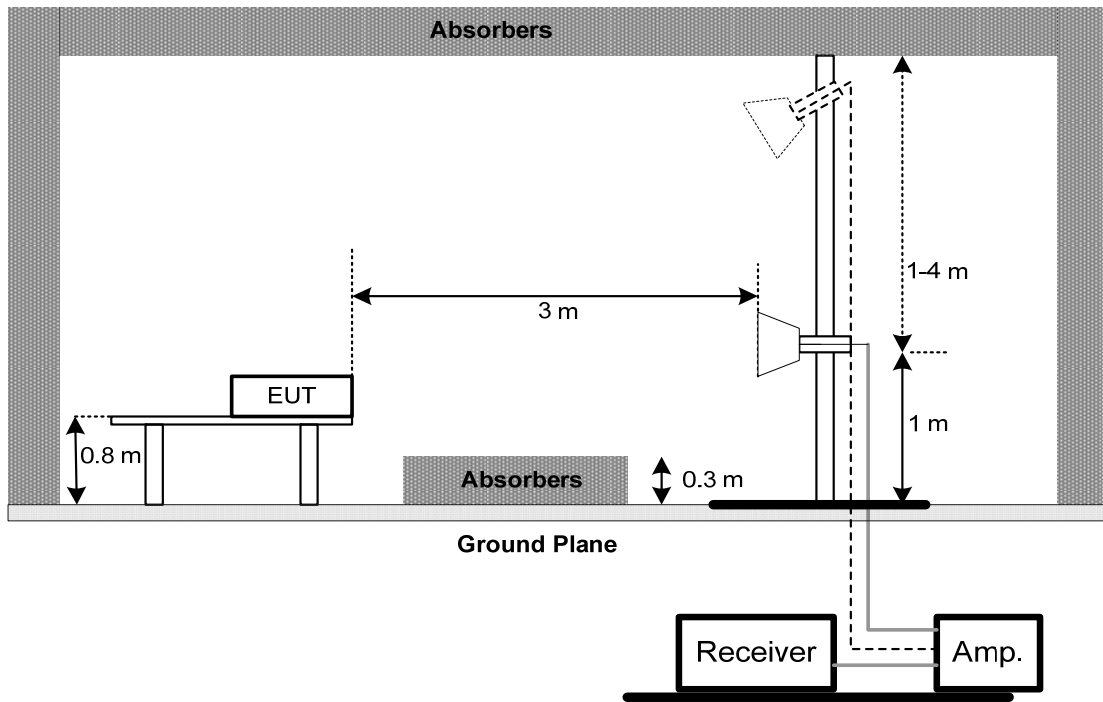
3.3.3 TEST PROCEDURE

- 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



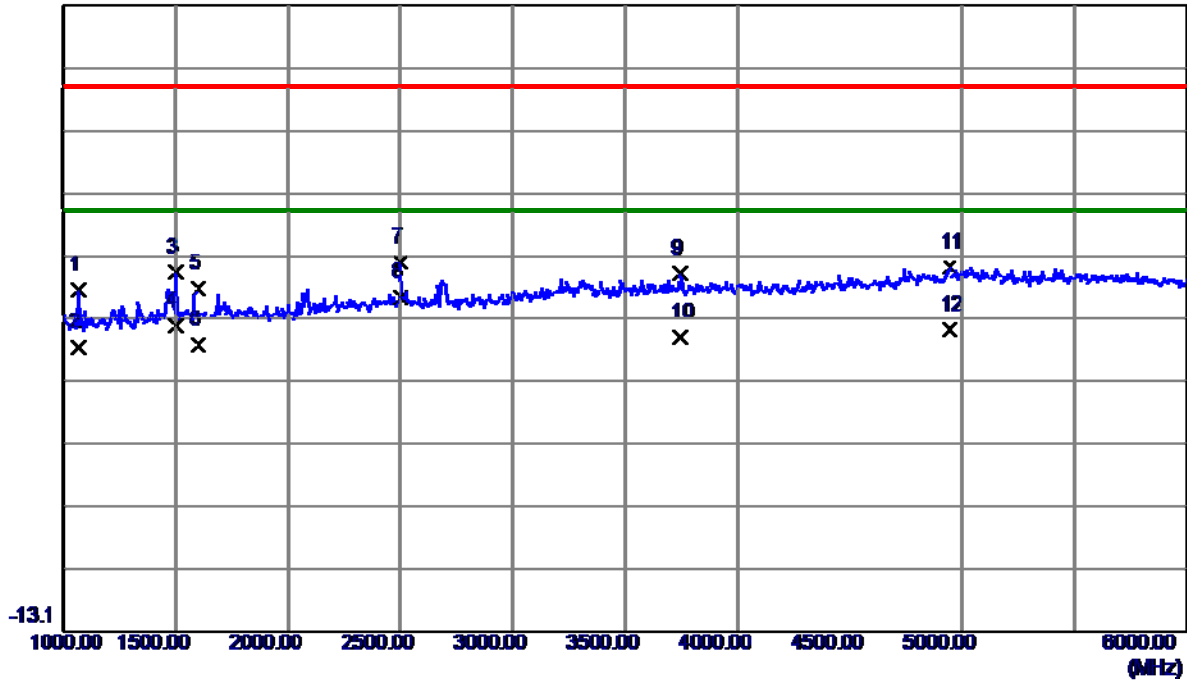
4.2.7 TEST RESULTS-ABOVE 1 GHZ

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	HDMI1 2560*1440/75Hz		

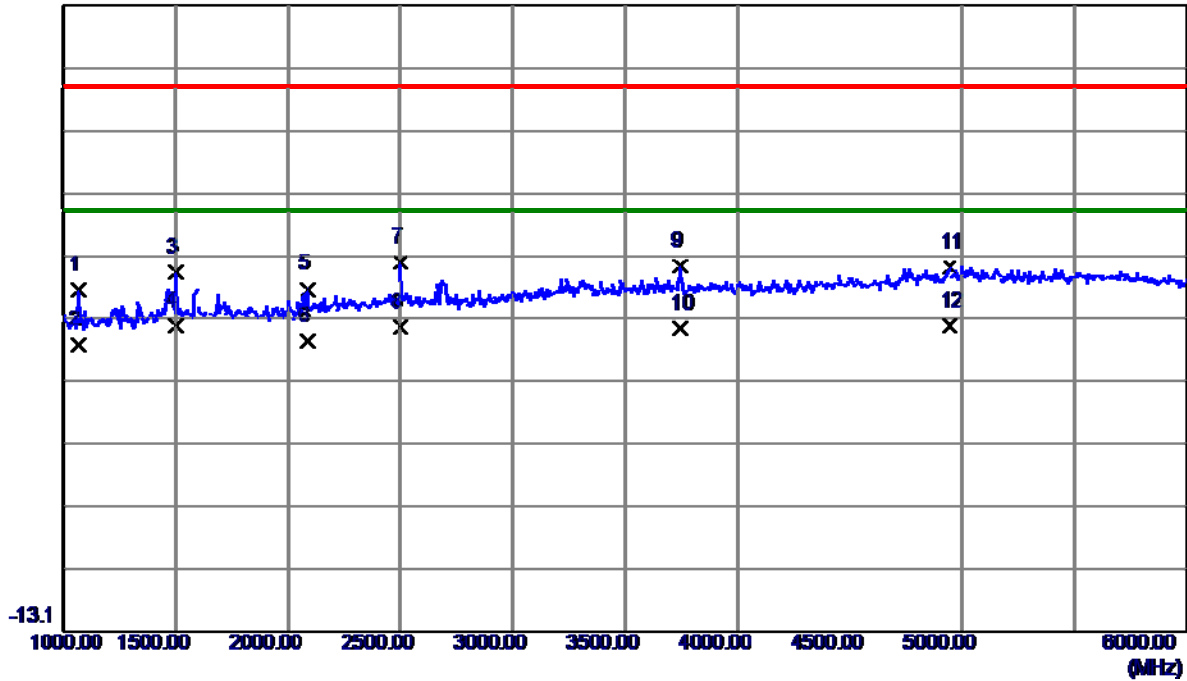
86.9 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	1065.0000	48.05	-6.60	41.45	74.00	-32.55	Peak
2	1065.0000	38.88	-6.60	32.28	54.00	-21.72	AVG
3	1497.5000	47.80	-3.58	44.22	74.00	-29.78	Peak
4	1497.5000	39.27	-3.58	35.69	54.00	-18.31	AVG
5	1597.5000	44.97	-3.23	41.74	74.00	-32.26	Peak
6	1597.5000	35.85	-3.23	32.62	54.00	-21.38	AVG
7	2500.0000	45.62	0.19	45.81	74.00	-28.19	Peak
8 *	2500.0000	40.16	0.19	40.35	54.00	-13.65	AVG
9	3742.5000	40.06	3.99	44.05	74.00	-29.95	Peak
10	3742.5000	29.97	3.99	33.96	54.00	-20.04	AVG
11	4942.5000	37.73	7.44	45.17	74.00	-28.83	Peak
12	4942.5000	27.71	7.44	35.15	54.00	-18.85	AVG

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	HDMI1 2560*1440/75Hz		

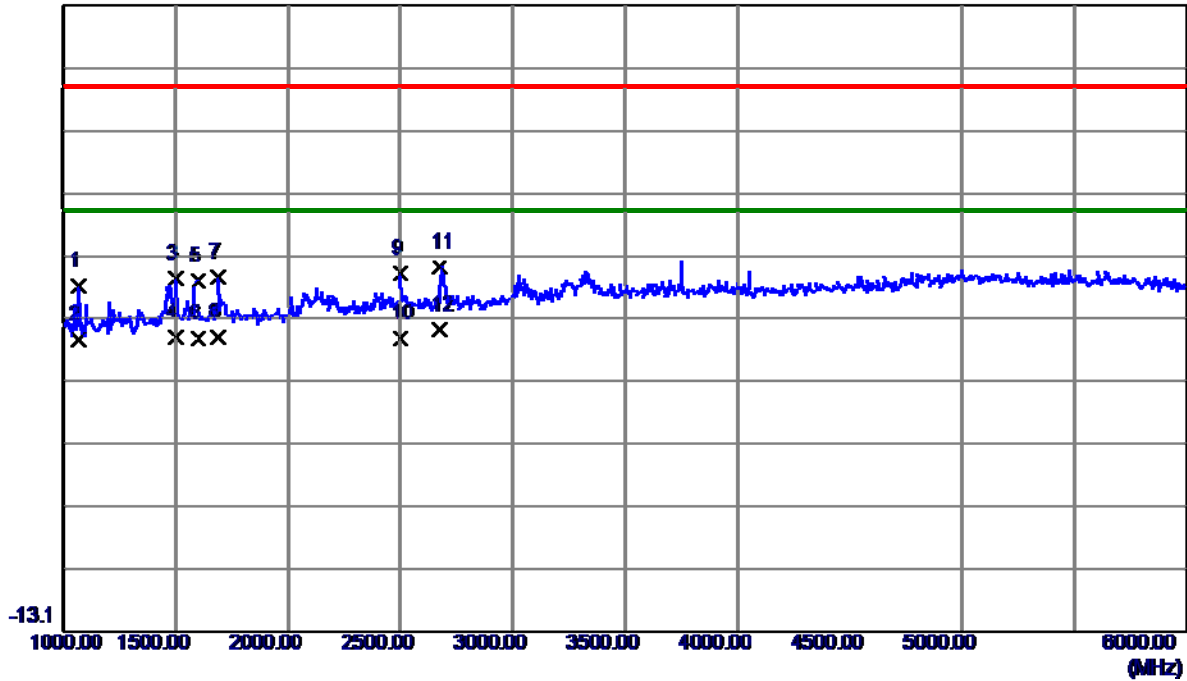
86.9 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	1065.0000	48.05	-6.60	41.45	74.00	-32.55	Peak
2	1065.0000	39.29	-6.60	32.69	54.00	-21.31	AVG
3	1497.5000	47.80	-3.58	44.22	74.00	-29.78	Peak
4 *	1497.5000	39.29	-3.58	35.71	54.00	-18.29	AVG
5	2087.5000	43.09	-1.49	41.60	74.00	-32.40	Peak
6	2087.5000	34.87	-1.49	33.38	54.00	-20.62	AVG
7	2500.0000	45.62	0.19	45.81	74.00	-28.19	Peak
8	2500.0000	35.30	0.19	35.49	54.00	-18.51	AVG
9	3742.5000	41.26	3.99	45.25	74.00	-28.75	Peak
10	3742.5000	31.26	3.99	35.25	54.00	-18.75	AVG
11	4942.5000	37.73	7.44	45.17	74.00	-28.83	Peak
12	4942.5000	28.26	7.44	35.70	54.00	-18.30	AVG

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	DP 2560*1440/75Hz		

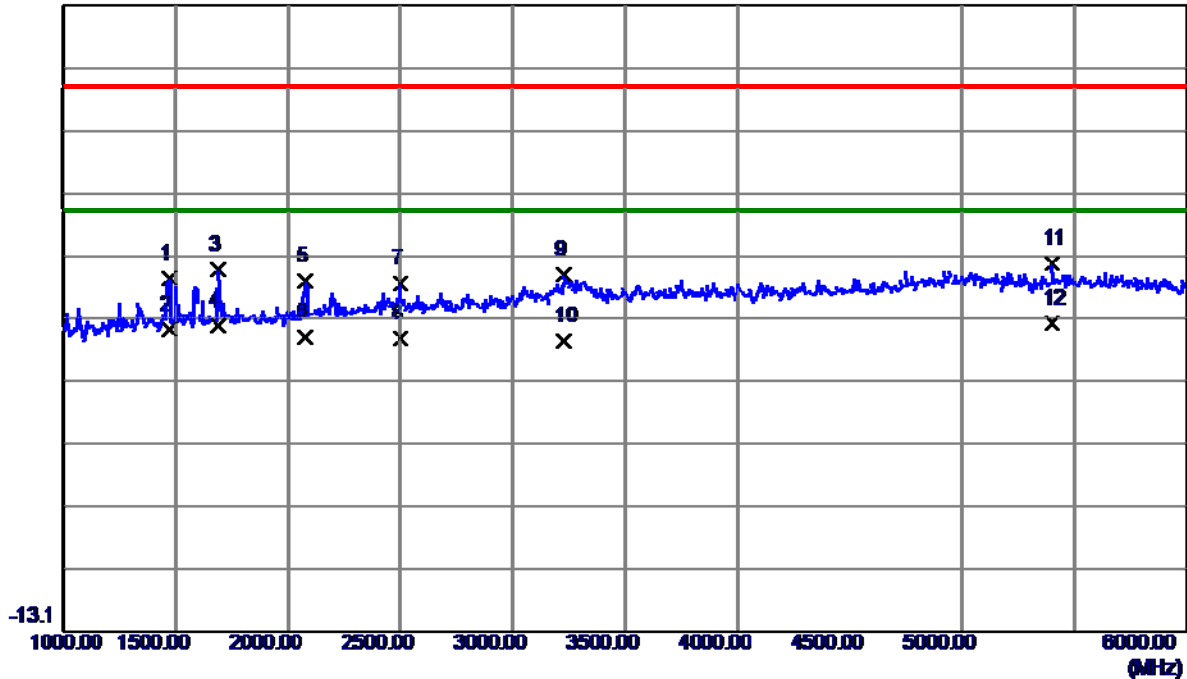
86.9 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	1065.0000	48.70	-6.60	42.10	74.00	-31.90	Peak
2	1065.0000	40.17	-6.60	33.57	54.00	-20.43	AVG
3	1497.5000	46.82	-3.58	43.24	74.00	-30.76	Peak
4	1497.5000	37.42	-3.58	33.84	54.00	-20.16	AVG
5	1597.5000	46.22	-3.23	42.99	74.00	-31.01	Peak
6	1597.5000	36.88	-3.23	33.65	54.00	-20.35	AVG
7	1690.0000	46.45	-2.91	43.54	74.00	-30.46	Peak
8	1690.0000	36.83	-2.91	33.92	54.00	-20.08	AVG
9	2500.0000	43.84	0.19	44.03	74.00	-29.97	Peak
10	2500.0000	33.53	0.19	33.72	54.00	-20.28	AVG
11	2675.0000	44.46	0.68	45.14	74.00	-28.86	Peak
12 *	2675.0000	34.48	0.68	35.16	54.00	-18.84	AVG

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	DP 2560*1440/75Hz		

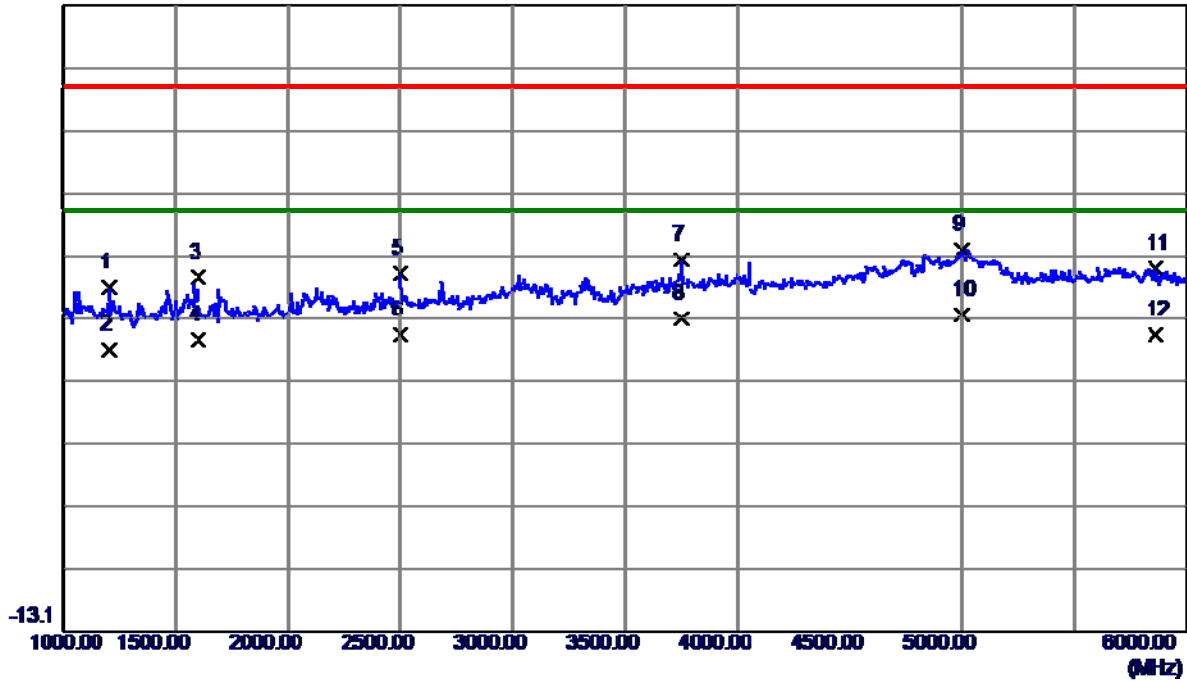
86.9 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	1472.5000	47.01	-3.75	43.26	74.00	-30.74	Peak
2	1472.5000	38.84	-3.75	35.09	54.00	-18.91	AVG
3	1690.0000	47.57	-2.91	44.66	74.00	-29.34	Peak
4	1690.0000	38.56	-2.91	35.65	54.00	-18.35	AVG
5	2080.0000	44.33	-1.52	42.81	74.00	-31.19	Peak
6	2080.0000	35.39	-1.52	33.87	54.00	-20.13	AVG
7	2497.5000	42.25	0.18	42.43	74.00	-31.57	Peak
8	2497.5000	33.56	0.18	33.74	54.00	-20.26	AVG
9	3227.5000	41.48	2.35	43.83	74.00	-30.17	Peak
10	3227.5000	30.94	2.35	33.29	54.00	-20.71	AVG
11	5400.0000	37.74	8.05	45.79	74.00	-28.21	Peak
12 *	5400.0000	28.13	8.05	36.18	54.00	-17.82	AVG

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	HDMI1 1080P		

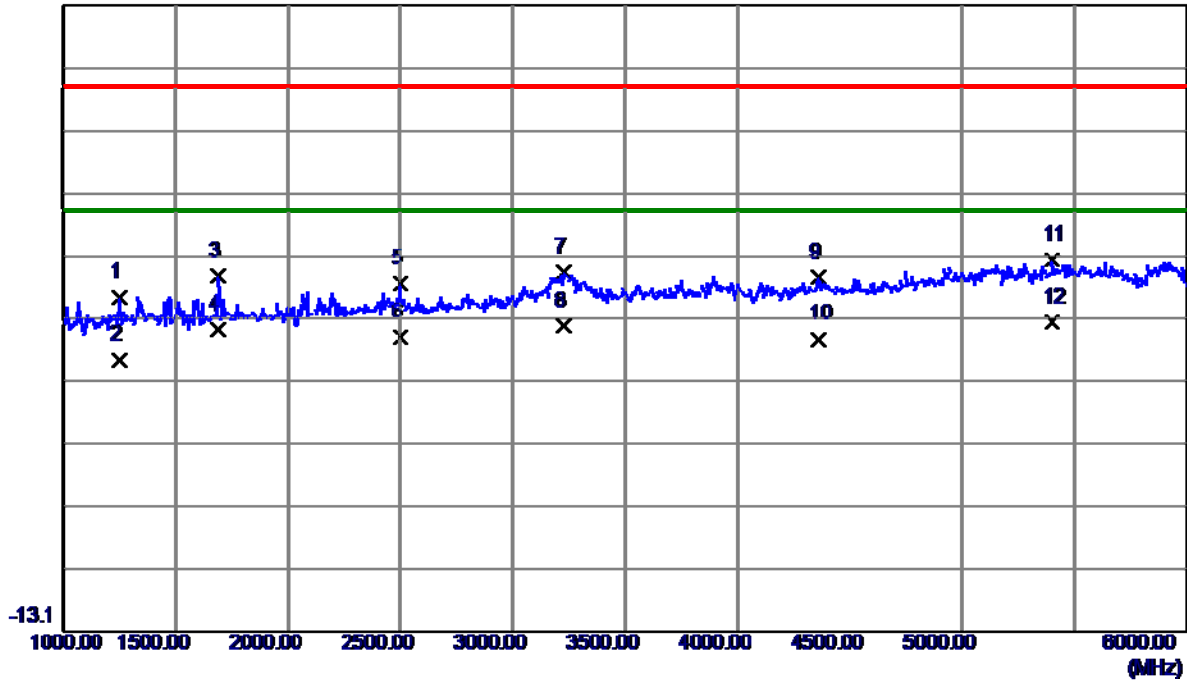
86.9 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	1207.5000	47.55	-5.60	41.95	74.00	-32.05	Peak
2	1207.5000	37.52	-5.60	31.92	54.00	-22.08	AVG
3	1597.5000	46.72	-3.23	43.49	74.00	-30.51	Peak
4	1597.5000	36.76	-3.23	33.53	54.00	-20.47	AVG
5	2500.0000	43.84	0.19	44.03	74.00	-29.97	Peak
6	2500.0000	34.07	0.19	34.26	54.00	-19.74	AVG
7	3747.5000	42.37	4.01	46.38	74.00	-27.62	Peak
8	3747.5000	32.91	4.01	36.92	54.00	-17.08	AVG
9	4997.5000	40.33	7.66	47.99	74.00	-26.01	Peak
10 *	4997.5000	29.86	7.66	37.52	54.00	-16.48	AVG
11	5860.0000	36.20	8.76	44.96	74.00	-29.04	Peak
12	5860.0000	25.50	8.76	34.26	54.00	-19.74	AVG

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	HDMI1 1080P		

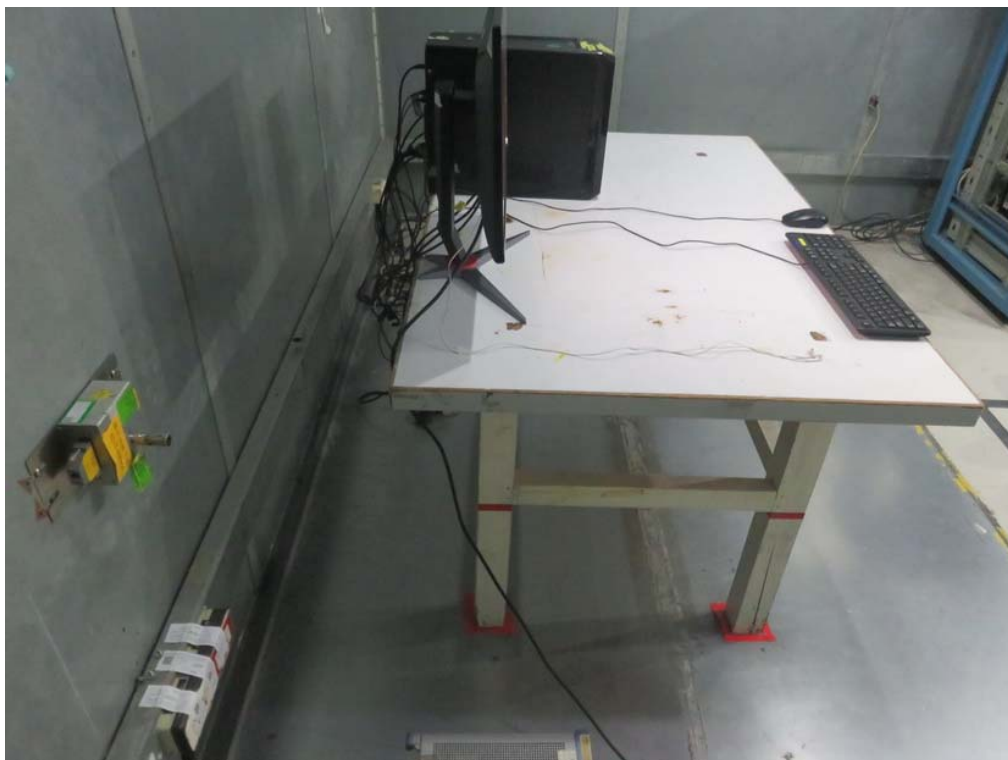
86.9 dBuV/m



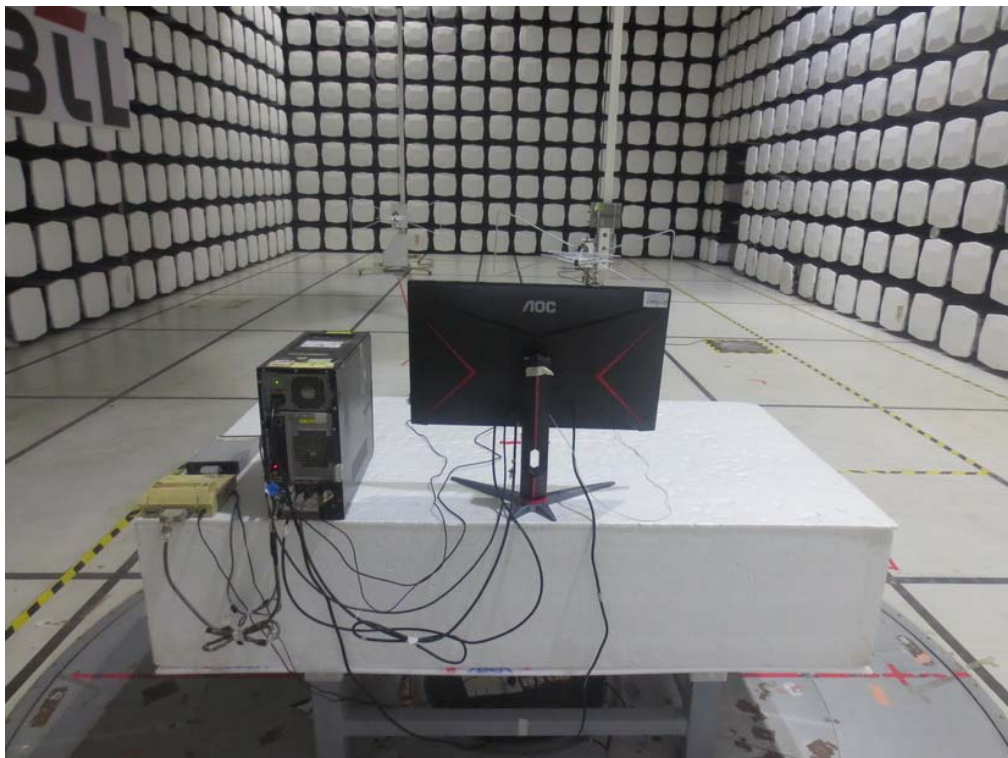
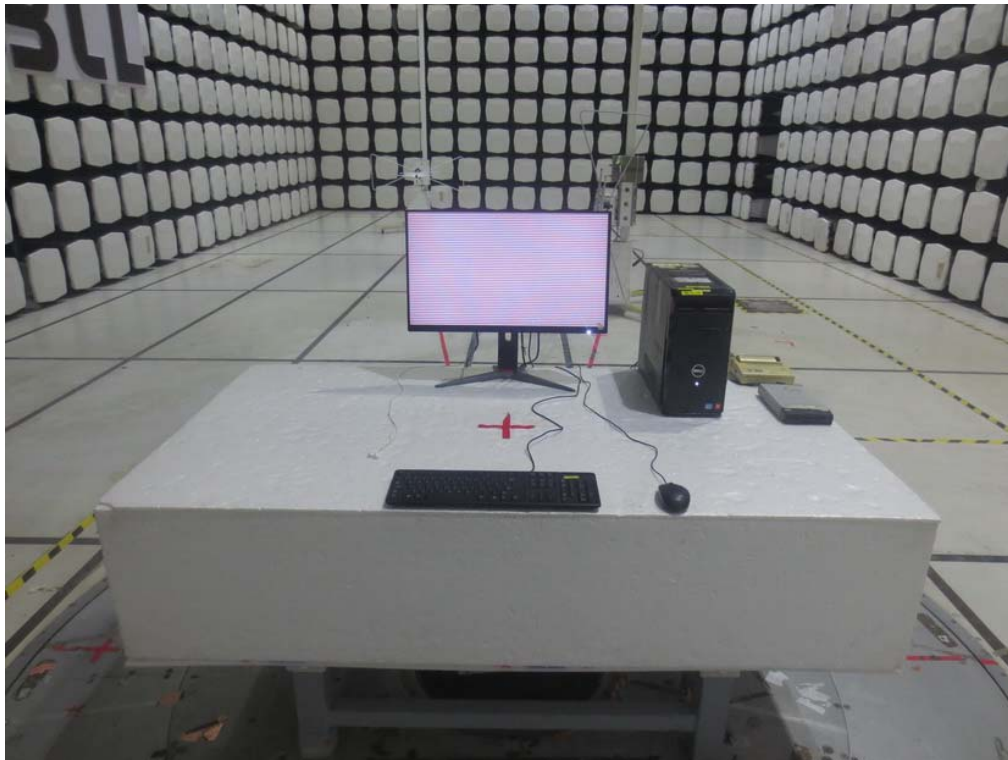
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1	1250.0000	45.68	-5.31	40.37	74.00	-33.63	Peak
2	1250.0000	35.63	-5.31	30.32	54.00	-23.68	AVG
3	1690.0000	46.57	-2.91	43.66	74.00	-30.34	Peak
4	1690.0000	38.07	-2.91	35.16	54.00	-18.84	AVG
5	2497.5000	42.25	0.18	42.43	74.00	-31.57	Peak
6	2497.5000	33.74	0.18	33.92	54.00	-20.08	AVG
7	3227.5000	41.98	2.35	44.33	74.00	-29.67	Peak
8	3227.5000	33.27	2.35	35.62	54.00	-18.38	AVG
9	4360.0000	38.01	5.41	43.42	74.00	-30.58	Peak
10	4360.0000	28.19	5.41	33.60	54.00	-20.40	AVG
11	5400.0000	38.24	8.05	46.29	74.00	-27.71	Peak
12 *	5400.0000	28.21	8.05	36.26	54.00	-17.74	AVG

4. EUT TEST PHOTO

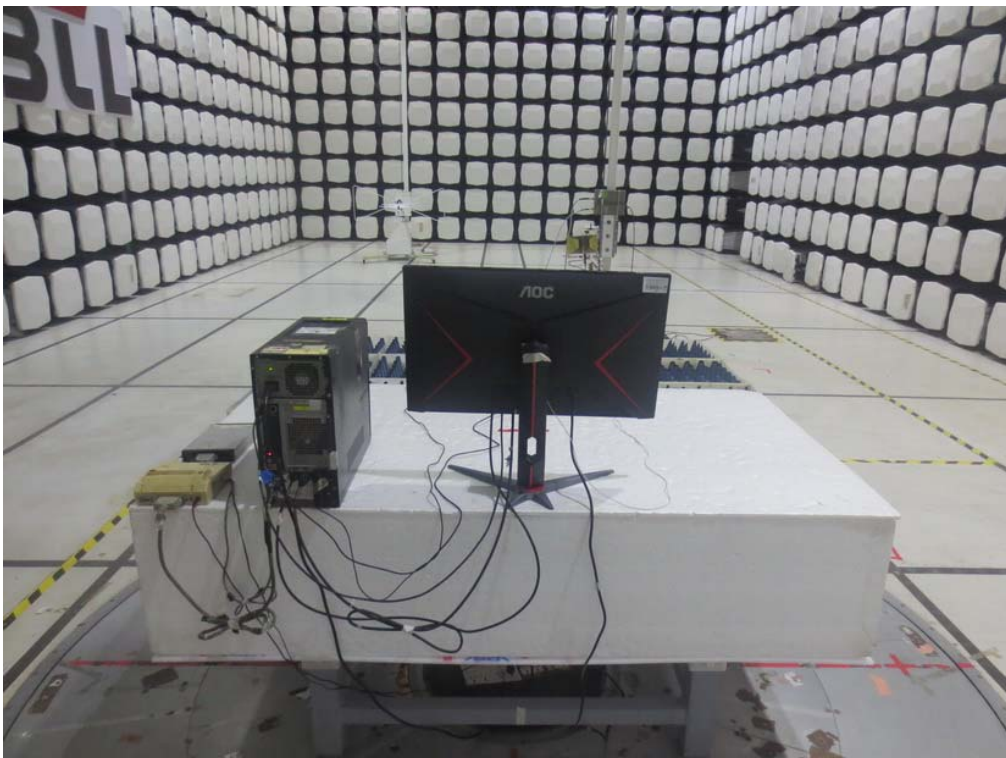
AC Power Line Conducted Emissions



Radiated Emissions 30 MHz to 1 GHz



Radiated Emissions Above 1 GHz



End of Test Report