

FCC Part 15B Test Report

Application No. : HX211102016853
Applicant : Maxtop Technology Industrial Company Limited.
Equipment Under Test (EUT)
EUT Name : Outdoor P5 LED Display
Model No. : Outdoor P5
Serial No. : See Page 3
Trademark : N/A
Receipt Date : 2021-11-15
Test Date : 2021-11-15 to 2021-11-19
Issue Date : 2021-11-19
Standards : FCC Part 15: 2019 Subpart B
Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above. The EUT technically complies with the FCC requirements

Test/Witness Engineer : *Tim Chen*

Approved & Authorized : *Andy Zhang*



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

Contents

CONTENTS.....	2
1. GENERAL INFORMATION.....	3
1.1 Client Information.....	3
1.2 General Description of EUT (Equipment Under Test).....	3
1.3 Block Diagram Showing The Configuration of System Tested.....	3
1.4 Description of Test Modes.....	3
1.5 Test standards.....	4
1.6 Equipment Used Test.....	4
1.7 Test Facility.....	5
2. TEST SUMMARY.....	6
3. CONDUCTED EMISSION TEST.....	7
3.1 Test Standard and Limit.....	7
3.2 Test Setup.....	7
3.3 Test Procedure.....	7
3.4 Test Data.....	8
4. RADIATED EMISSION TEST.....	11
4.1 Test Standard and Limit.....	11
4.2 Test Setup.....	11
4.3 Test Procedure.....	12
4.4 Test Condition.....	12
4.5 Test Data.....	12
5. PHOTOGRAPHS - CONSTRUCTIONAL DETAILS.....	15

1. General Information

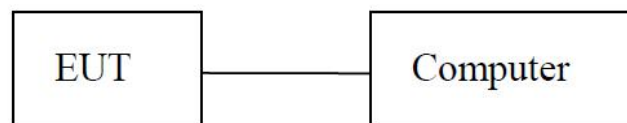
1.1 Client Information

Applicant	:	Maxtop Technology Industrial Company Limited.
Address	:	Room 401, No.126, Industrial Blvd, Fucheng' Ao Community, Pinghu Sub_District, Longgang District, Shenzhen City, China
Manufacturer	:	Maxtop Technology Industrial Company Limited.
Address	:	Room 401, No.126, Industrial Blvd, Fucheng' Ao Community, Pinghu Sub_District, Longgang District, Shenzhen City, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Outdoor P5 LED Display
Model No.	:	Outdoor P5
Serial No.	:	P1.56, P1.953, P2.604, P3.076, P3.91, P4.81, P6.67, P8, P10
Trademark	:	N/A
Power Supply	:	AC 100-230V, 960W, 50/60Hz
Remark: All above models are identical in schematic, structure and critical components except for only different appearance; therefore, FCC testing was performed with Outdoor P5 only.		

1.3 Block Diagram Showing The Configuration of System Tested



1.4 Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible 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	Normal

For Conducted Test	
Final Test Mode	Description
Mode	Normal

For Radiated Test	
Final Test Mode	Description
Mode	Normal

1.5 Test standards

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.107, 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.6 Equipment Used Test

1.6.1 Test Equipment Used to Measure Conducted Emission

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HX-EMC001	EMI Test Receiver	Rohde & Schwarz	ESCS30	Jan. 04, 2021	1 Year
HX-EMC002	AMN	Rohde & Schwarz	ENV216	Jan. 04, 2021	1 Year
HX-EMC003	AMN	SCHWARZBECK	NNBL 8226-2	Jan. 04, 2021	1 Year

1.6.2 Test Equipment Used to Measure Radiated Emission

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HX-EMC004	EMI Test Receiver	Rohde & Schwarz	ESI26	Jan. 04, 2021	1 Year
HX-EMC005	Bilog Antenna	SCHWARZBECK	VULB9163	Jan. 04, 2021	1 Year
HX-EMC006	Positioning Controller	C&C	CC-C-1F	N/A	N/A

1.7 Test Facility

The testing report were performed by the Shenzhen HX Detect Certification Co., Ltd., in their facilities located at 2/F, bostai, building 22, Tangxi Yongli Industrial Zone, guxing community, Xixiang street, Bao'an District, Shenzhen.

2. Test Summary

Test Items	Test Requirement	Test Method	Result
Conducted Emission	FCC Part 15: 2019 Subpart B	ANSI C63.4	Pass
Radiated Emission	FCC Part 15: 2019 Subpart B	ANSI C63.4	Pass

Note: N/A is an abbreviation for Not Applicable.

3. Conducted Emission Test

3.1 Test Standard and Limit

3.1.1 Test Standard

FCC Part 15 B: 2019

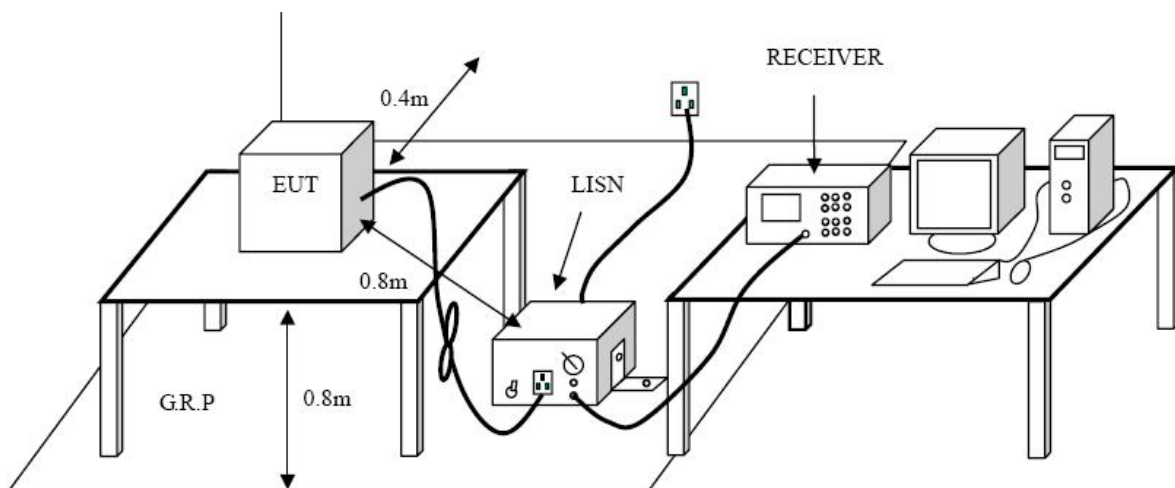
3.1.2 Test Limit

Conducted Emission Test Limit (Class B)

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

*decreasing linearly with logarithm of the frequency

3.2 Test Setup



3.3 Test Procedure

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 equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

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.

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.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

3.4 Test Data

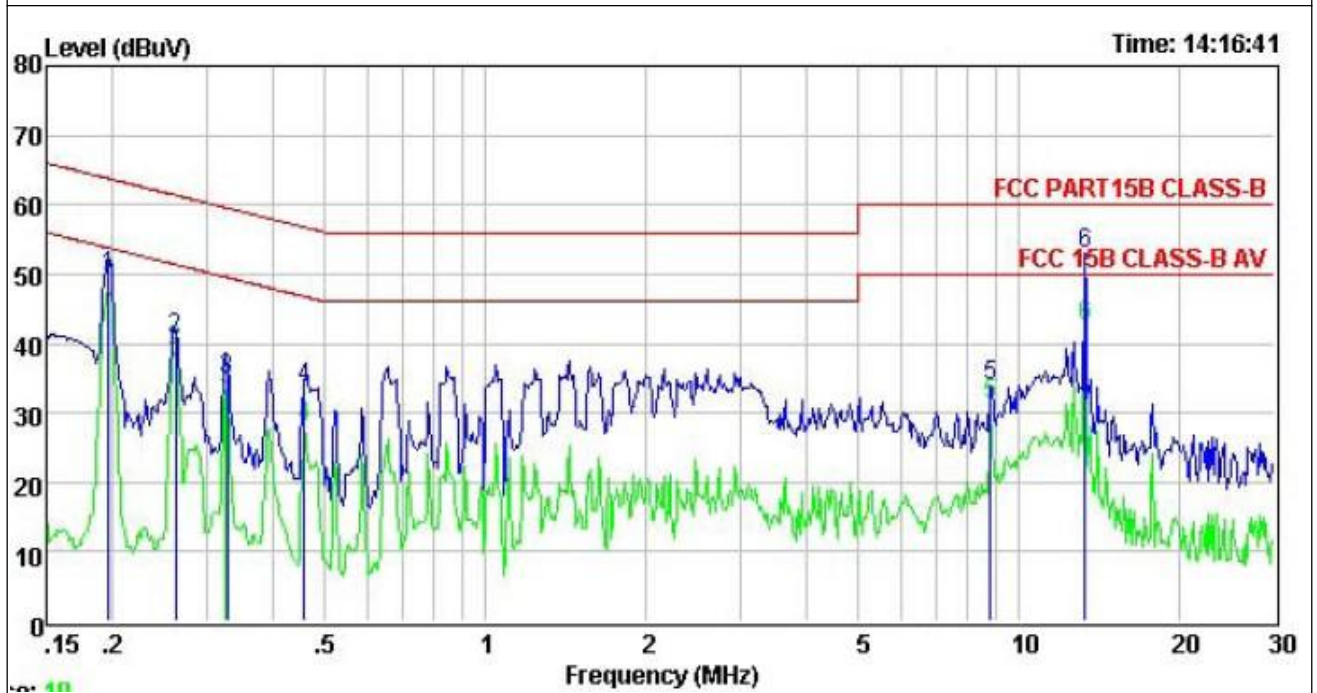
Please refer to the following pages.

EUT :	Outdoor P5 LED Display	Model Name:	Outdoor P5
Temperature :	22 °C	Relative Humidity:	54%
Pressure :	101 Kpa	Test Mode	L
Test Voltage :	AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Emission Level (dBμV/m)		Limits (dBμV/m)		Margin (dB)		Detector Type	
0.20*	39.75	38.16	9.86	49.61	48.02	63.76	53.76	-14.15	-5.74	QP	AV
0.26	30.94	29.00	9.88	40.82	38.88	61.38	51.38	-20.56	-12.50	QP	AV
0.33	25.03	23.38	9.88	34.91	33.26	59.53	49.57	-24.62	-16.31	QP	AV
0.46	23.68	18.09	9.89	33.57	27.98	56.76	46.76	-23.19	-18.78	QP	AV
8.82	23.27	20.49	10.67	33.94	31.16	60.00	50.00	-26.06	-18.84	QP	AV
13.27	42.31	31.93	10.70	53.01	42.63	60.00	50.00	-6.99	-7.37	QP	AV

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case

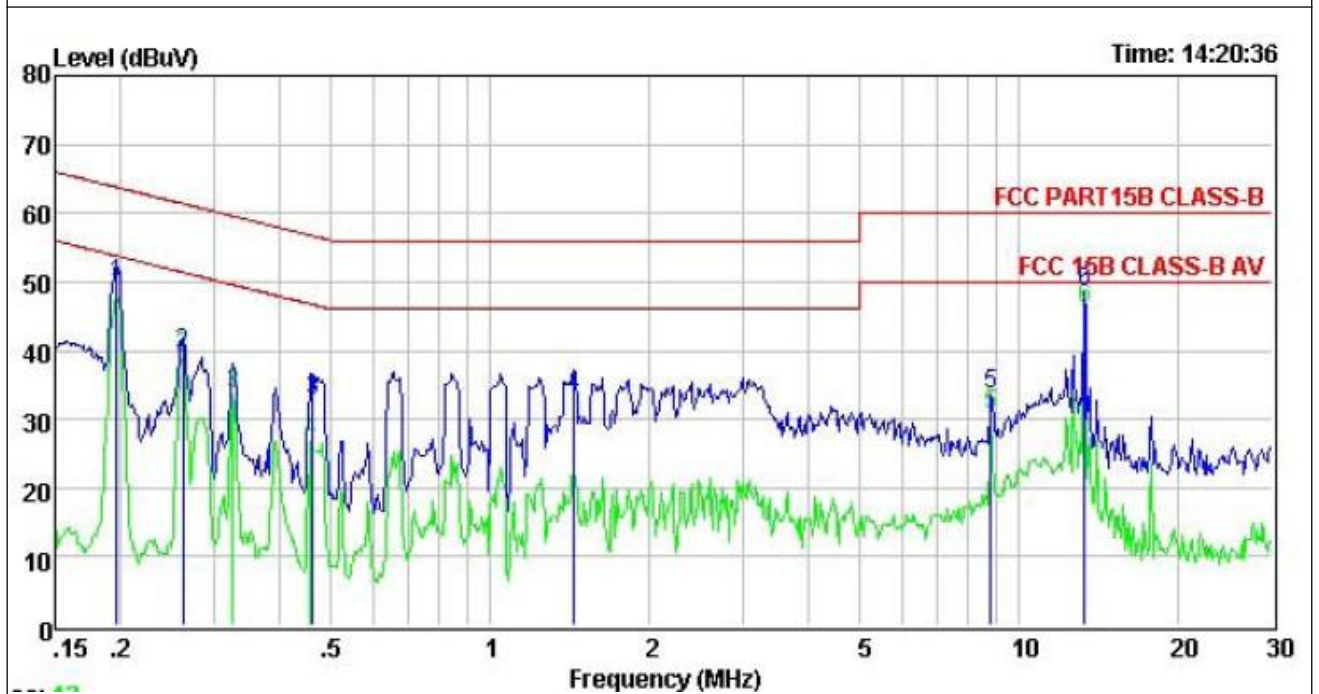


EUT :	Outdoor P5 LED Display	Model Name:	Outdoor P5
Temperature :	22 °C	Relative Humidity:	54%
Pressure :	101 Kpa	Test Mode	N
Test Voltage :	AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Emission Level (dBμV/m)		Limits (dBμV/m)		Margin (dB)		Detector Type	
0.20	39.91	38.21	9.82	49.73	48.03	63.76	53.76	-14.03	-5.73	QP	AV
0.26	29.69	29.02	9.85	39.54	38.87	61.38	51.38	-21.84	-12.51	QP	AV
0.46	22.77	23.59	9.89	32.66	33.48	56.67	49.57	-24.01	-16.09	QP	AV
1.44	23.12	16.65	10.25	33.37	26.90	56.00	46.76	-22.63	-19.86	QP	AV
8.82	22.97	20.08	10.68	33.65	30.76	60.00	50.00	-26.35	-19.24	QP	AV
13.27*	37.83	35.45	10.72	48.55	46.17	60.00	50.00	-11.45	-3.83	QP	AV

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case



4. Radiated Emission Test

4.1 Test Standard and Limit

4.1.1 Test Standard

FCC Part 15 B: 2019

4.1.2 Test Limit

LIMITS OF RADIATED EMISSION MEASUREMENT(Below 1000MHz)

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

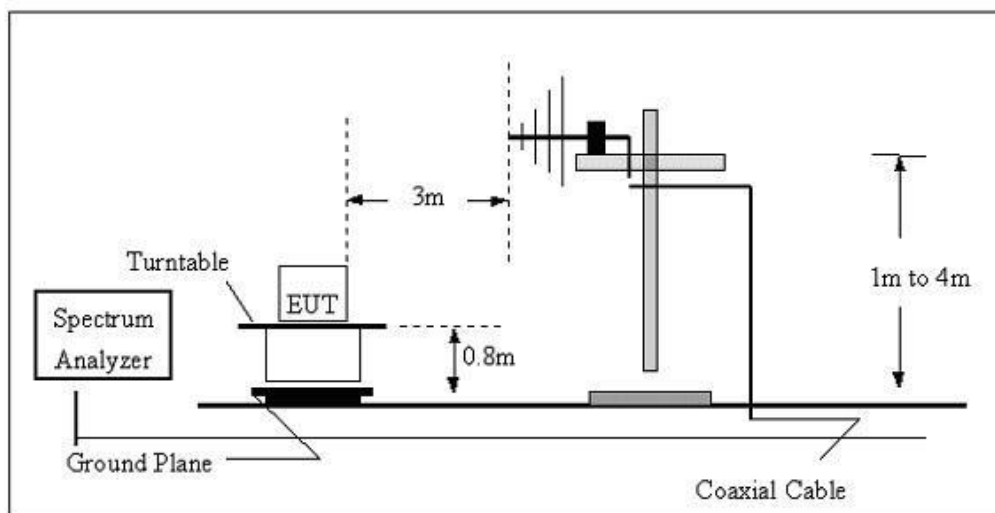
FREQUENCY (MHz)	Class A (at 3m) dBuV/m		Class B (at 3m) dBuV/m	
	Peak	Avg	Peak	Avg
Above 1000	80	60	74	54

* The lower limit shall apply at the transition frequency.

* The test distance is 3m.

4.2 Test Setup

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



4.3 Test Procedure

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. 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.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.4 Test Condition

Temperature	:	25 °C
Relative Humidity	:	48 %
Pressure	:	1010 hPa
Test Power	:	AC 120V/60Hz

4.5 Test Data

Please refer to the following pages.

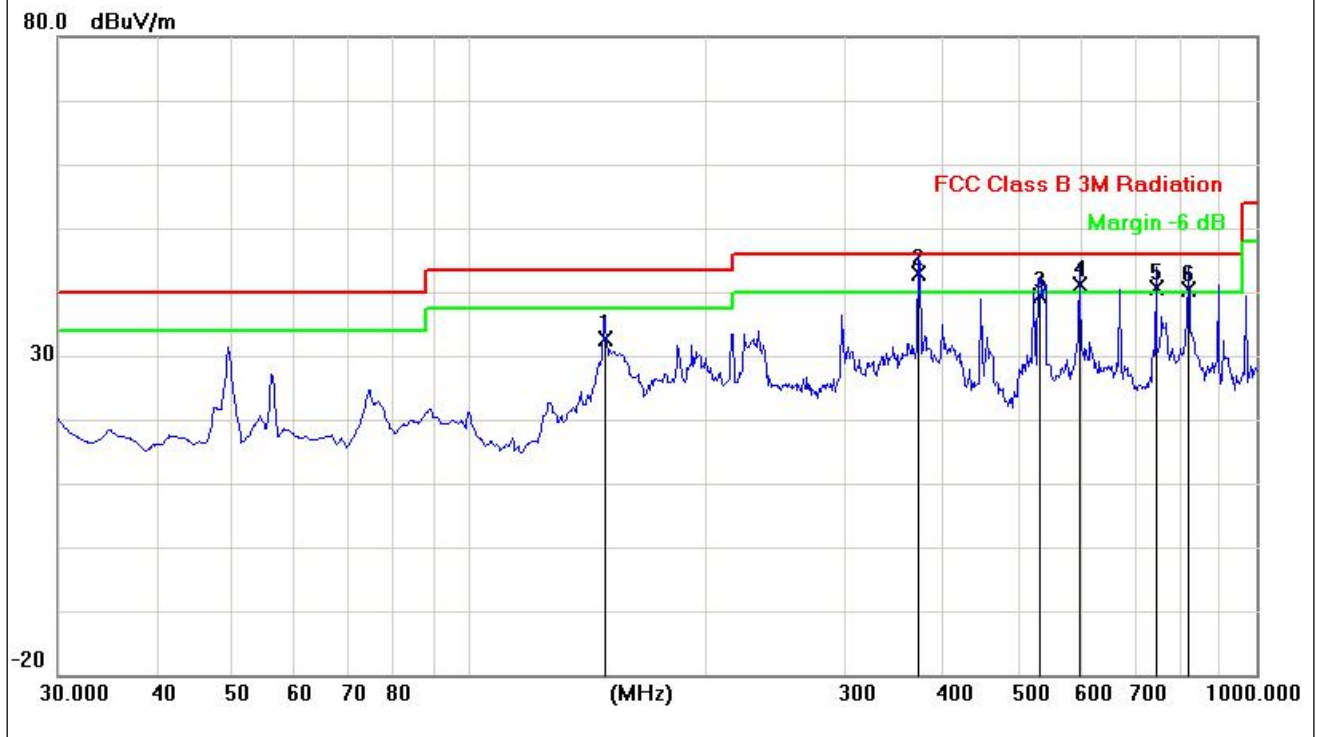
Test Results (30~1000MHz)

EUT :	Outdoor P5 LED Display	Model Name:	Outdoor P5
Temperature :	22 °C	Relative Humidity:	54%
Pressure :	101 Kpa	Test Mode	Normal
Test Voltage :	AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
148.4410	52.30	-19.73	32.57	43.50	-10.93	Quasi-Peak
372.4100*	57.16	-14.26	42.90	46.00	-3.10	Quasi-Peak
530.5198	50.44	-11.04	39.40	46.00	-6.60	Quasi-Peak
596.4800	51.03	-9.93	41.10	46.00	-4.90	Quasi-Peak
745.8600	48.82	-8.22	40.60	46.00	-5.40	Quasi-Peak
820.5500	47.30	-6.90	40.40	46.00	-5.60	Quasi-Peak

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case

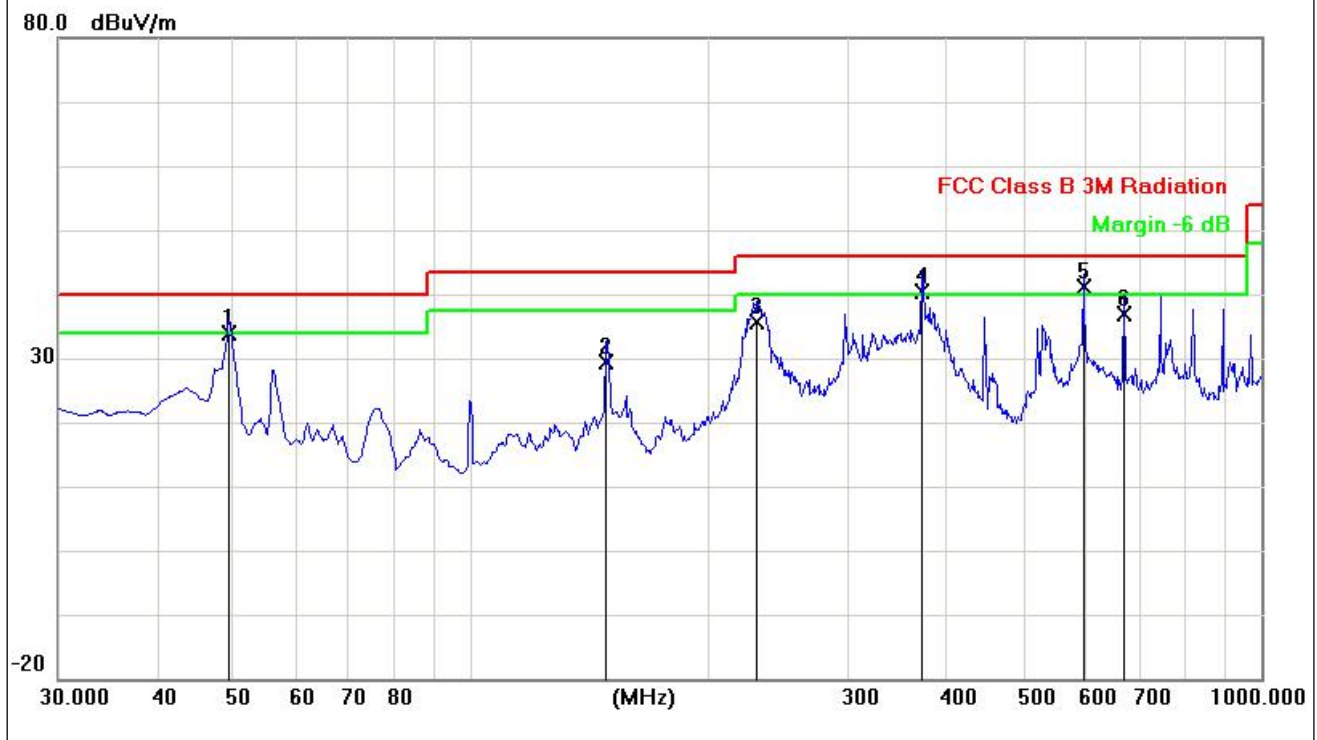


EUT :	Outdoor P5 LED Display	Model Name :	Outdoor P5
Temperature :	22 °C	Relative Humidity :	54%
Pressure :	101 Kpa	Test Mode	Normal
Test Voltage :	AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
49.4000	48.97	-15.17	33.80	40.00	-6.20	Quasi-Peak
148.3400	49.12	-19.72	29.40	43.50	-14.10	Quasi-Peak
230.7900	53.30	-17.70	35.60	46.00	-10.40	Quasi-Peak
372.4100	54.66	-14.26	40.40	46.00	-5.60	Quasi-Peak
596.4800*	51.03	-9.93	41.10	46.00	-4.90	Quasi-Peak
671.1698	46.27	-9.47	36.80	46.00	-9.20	Quasi-Peak

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case



5. Photographs - Constructional Details

Photo 1 Appearance of EUT

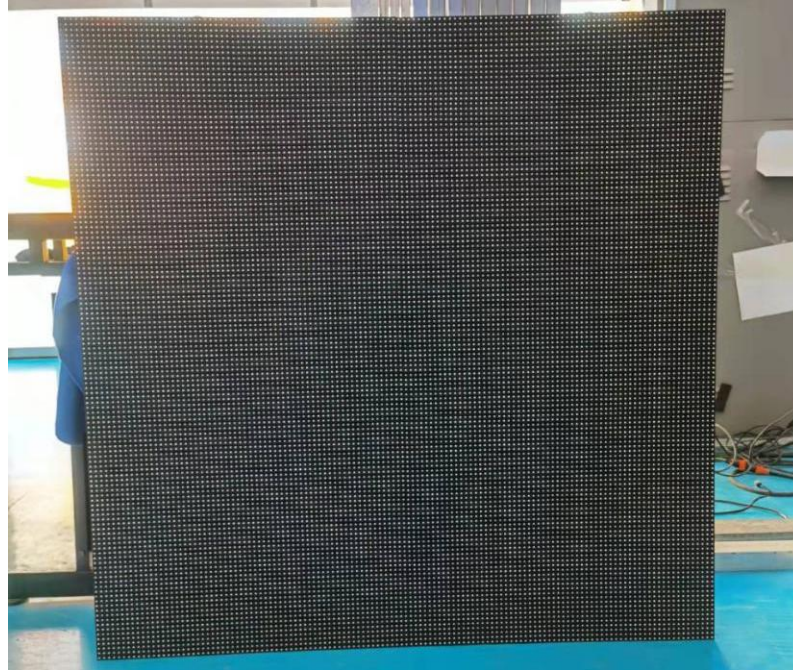


Photo 2 Appearance of EUT



END OF REPORT