TEST REPORT

LED LIGHT

Model No. : GLRB-W; GLRB

FCC ID: 2AUSTAPLUSMDG01

Prepared for: APLUS MOULDINGS LIMITED
Bdg. 14 , Buyong Industrial C area , Shajing Town, Baoan District , Shenzhen ,China

Prepared By: Audix Technology (Shenzhen) Co., Ltd.
No. 6, Kefeng Road, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China

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Testing Laboratory
1418

TESTING
NVLAP LAB CODE 200372-0

Report Number	:	ACS-F19184
Date of Test	:	Sep.30~Oct.17,2019
Date of Report	:	Nov.01,2019

The test report is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, TAF, or any agency of the U.S. Government.

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TEST REPORT

Applicant	: APLUS MOULDINGS LIMITED
Product	: LED LIGHT
Model No.	: GLRB-W; GLRB
FCC ID	: 2AUSTAPLUSMDG01
Report No.	: ACS-F19184
Test Voltage	: AC 120V/60Hz

Rules of Compliance and Applicable Standards:

47 CFR FCC Part 15 Subpart B, Class B Limit
ANSI C63.4:2014

The device described above was tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. All of the tests were requested by the applicant and the results thereof based upon the information that the applicant provided to us. We, Audix Technology (Shenzhen) Co., Ltd. assume full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT is compliance with the requirements of 47 CFR FCC Part 2 standards.

No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test : Sep.30~Oct.17,2019 Report of date: Nov.01,2019

Prepared by : Brave Zhang / Assistant

Reviewed by : Sunny Lu / Deputy Manager

AUDIX® 信華科技（深圳）有限公司
Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
Stamp only for EMC Dept. Report

Approved & Authorized Signer : Signature: David Jin
David Jin / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	**Standard**	**Results**	**Remarks**
Power Line Conducted Emission Test	47 CFR FCC Part 15 Subpart B ANSI C63.4: 2014	PASS	Minimum passing margin is 6.22dB at 0.330MHz
Radiated Emission Test (30-1000MHz)	47 CFR FCC Part 15 Subpart B ANSI C63.4: 2014	PASS	Minimum passing margin is 9.33dB at 30.970MHz
Radiated Emission Test (Above 1GHz)	47 CFR FCC Part 15 Subpart B ANSI C63.4: 2014	PASS	Minimum passing margin is 19.28dB at 4955.540MHz

2. GENERAL INFORMATION

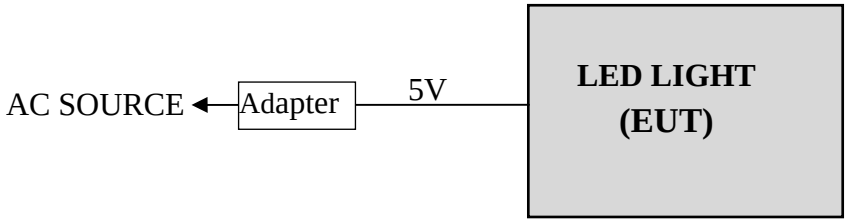
2.1.Description of Device (EUT)

Product	:	LED LIGHT
Model No.	:	GLRB-W; GLRB Only the color is different.
Test Model	:	GLRB-W
FCC ID	:	2AUSTAPLUSMDG01
Operation frequency	:	433.92MHz
Modulation Type	:	ASK
Applicant	:	APLUS MOULDINGS LIMITED Bdg. 14 , Buyong Industrial C area , Shajing Town, Baoan District , Shenzhen ,China
Manufacturer	:	APLUS MOULDINGS LIMITED Bdg. 14 , Buyong Industrial C area , Shajing Town, Baoan District , Shenzhen ,China
Power Adapter	:	M/N: LQ-Y050100A Input:100-120VAC~ 50/60Hz 0.2A Output:5.0V, 1.0A Manufacture: FOSHAN CITY SHUNDE DISTRICT YANGWEI ELECTRONIC APPLIANCE CO., LTD.
Date of Test	:	Sep.30~Oct.17,2019
Date of Receipt	:	Sep.17,2019
Sample Type	:	Prototype production

2.2.Tested Supporting System Details

None.

2.3.Block diagram of connection between the EUT and simulators



(EUT: LED LIGHT)

2.4.Test Facility

Site Description

Name of Firm	Audix Technology (Shenzhen) Co., Ltd. No. 6, Kefeng Road, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China
EMC Lab.	Certificated by DAkkS, Germany Registration No: D-PL-12151-01-00 Valid Date: Dec.07, 2021 Accredited by NVLAP, USA NVLAP Code: 200372-0 Valid Date: Mar.31, 2020 Certificated by FCC, USA Designation No: CN5022 Valid Date: Mar.31, 2020 Certificated by TAF, Taiwan Registration No: 1418 Valid Date: Nov.08, 2020

2.5.Measurement Uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	2.6dB(150kHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.6dB(30~200MHz, Polarization: H)
	4.0dB(30~200MHz, Polarization: V)
	3.6dB(200M~1GHz, Polarization: H)
	3.8dB(200M~1GHz, Polarization: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-40GHz)	5.0dB(1~6GHz, Distance: 3m)
	5.0dB(6~18GHz, Distance: 3m)
	5.0dB(18~40GHz, Distance: 3m)
Uncertainty for test site temperature and humidity and Pressure	0.6℃
	3%
	1kPa

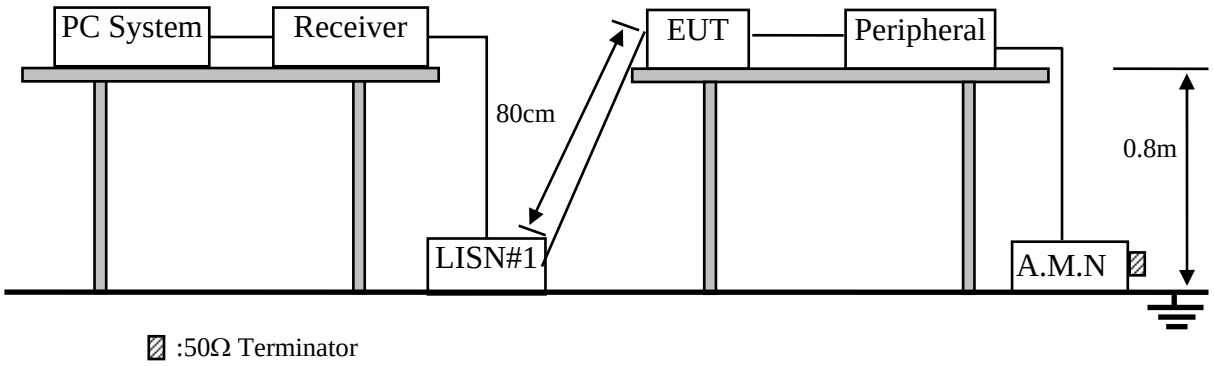
Note: EMI uncertainty is evaluated by CISPR16-4-2.
The value of measurement uncertainty of EMI is less than U_{CISPR}.
The value is not calculated in the test results.

3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	1# Shielding Room	AUDIX	N/A	N/A	May.17,18	3 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100842	Apr.14,19	1 Year
3.	L.I.S.N.#1	Rohde & Schwarz	ENV216	102160	Dec.01,18	1 Year
4.	A.M.N	Kyoritsu	K NW-403D	8-1750-2	Apr.18,19	1 Year
5.	Terminator	Hubersuhner	50Ω	No.1	Apr.14,19	1 Year
6.	Terminator	Hubersuhner	50Ω	No.2	Apr.14,19	1 Year
7.	RF Cable	Fujikura	RG55/U	No.1	Apr.13,19	1 Year
8.	Test Software	AUDIX	e3	6.100913a	N/A	N/A
Note: N/A means Not applicable.						

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Class B Limits

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

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. EUT's Configuration during Compliance Measurement

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. LED LIGHT (EUT)

Model No. : GLRB-W

3.4.2. Support Equipment : As Tested Supporting System Detail, in Section 2.2.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipments.

3.5.3. Let the EUT worked in test mode (RX Mode) and measured it.

3.6. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #1). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N. #2).Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2014 on conducted Emission test.

The bandwidth of the test receiver (R&S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked. The test results are reported on Section 3.7.

3.7. Power Line Conducted Emission Measurement Results

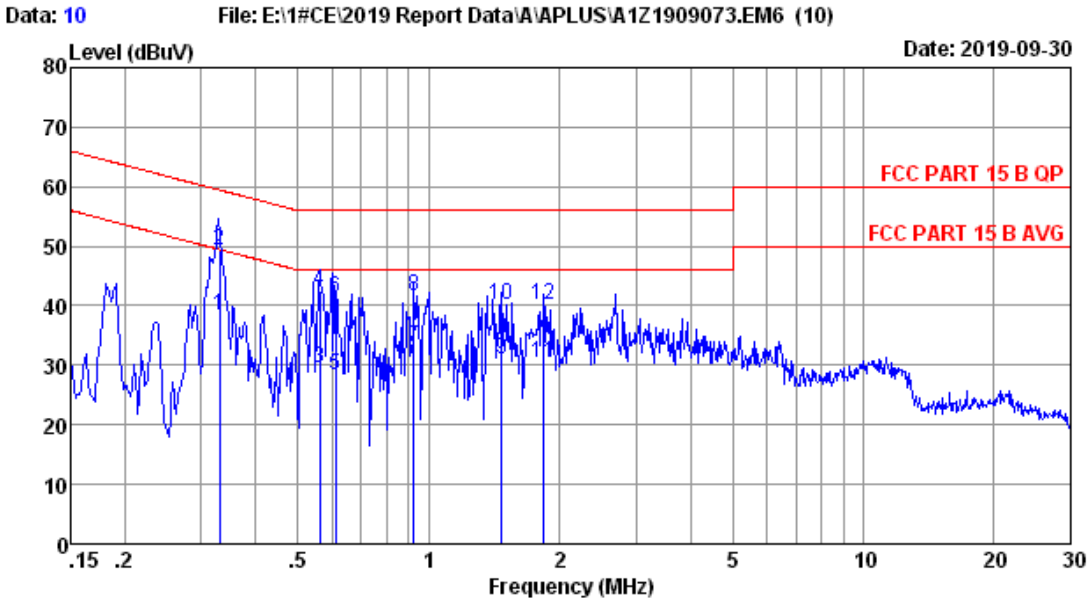
PASS. (All emissions not reported below are too low against the prescribed limits.)

EUT: LED LIGHT Model No. : GLRB-W

Test Date: Sep.30, 2019 Temperature: 23.7℃ Humidity: 45%

The details of test mode are as follows：

No.	Test Mode	Reference Test Data No.	
		Line	Neutral
1.	RX Mode	#4	#3

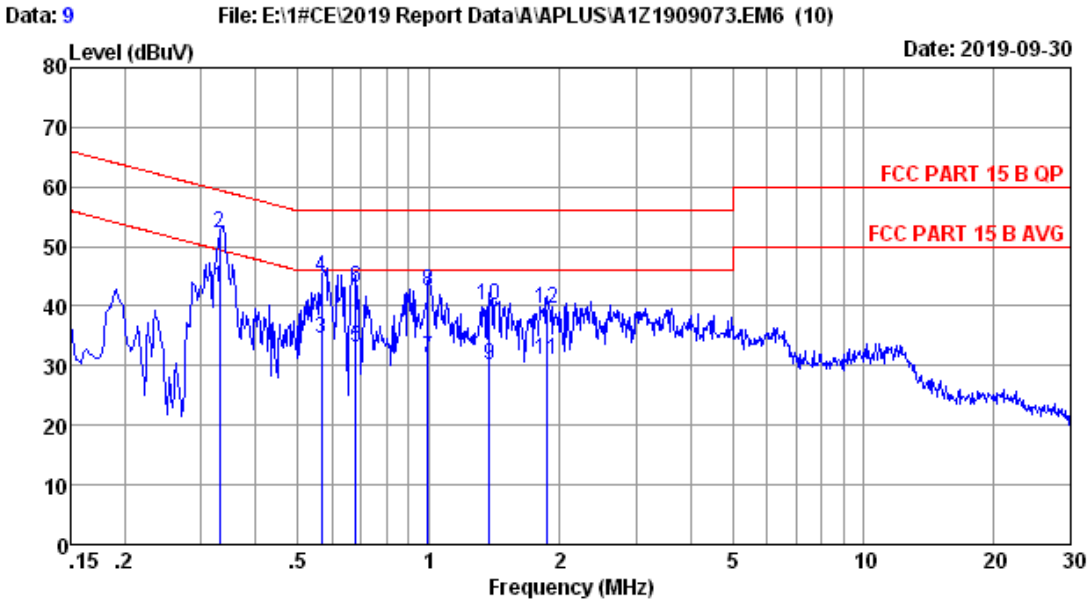


Site no :1# Conduction
Dis./Lisn :2018 ENV216-L
Limit :FCC PART 15 B QP
Env./Ins. :Temp:23.7*C Humi:45%
EUT :M/N:GLRB-W
Power Rating :AC 120V/60Hz
Test Mode :Rx Mode

Data No :10
LISN phase:
Engineer :Evan

No	Freq (MHz)	LISN Factor (dB)	Cable loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.330	9.40	0.03	29.00	38.43	49.45	11.02	Average
2	0.330	9.40	0.03	40.00	49.43	59.45	10.02	QP
3	0.562	9.40	0.02	20.00	29.42	46.00	16.58	Average
4	0.562	9.40	0.02	33.00	42.42	56.00	13.58	QP
5	0.610	9.40	0.02	19.00	28.42	46.00	17.58	Average
6	0.610	9.40	0.02	32.00	41.42	56.00	14.58	QP
7	0.923	9.40	0.03	23.60	33.03	46.00	12.97	Average
8	0.923	9.40	0.03	32.14	41.57	56.00	14.43	QP
9	1.472	9.45	0.04	21.59	31.08	46.00	14.92	Average
10	1.472	9.45	0.04	30.60	40.09	56.00	15.91	QP
11	1.839	9.49	0.04	20.79	30.32	46.00	15.68	Average
12	1.839	9.49	0.04	30.48	40.01	56.00	15.99	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Site no :1# Conduction
Dis./Lisn :2018 ENV216-N
Limit :FCC PART 15 B QP
Env./Ins. :Temp:23.7*C Humi:45%
EUT :M/N:GLRB-W
Power Rating :AC 120V/60Hz
Test Mode :Rx Mode

Data No :9
LISN phase:
Engineer :Evan

No	Freq (MHz)	LISN Factor (dB)	Cable loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.330	9.40	0.03	33.80	43.23	49.45	6.22	Average
2	0.330	9.40	0.03	42.80	52.23	59.45	7.22	QP
3	0.566	9.40	0.02	25.00	34.42	46.00	11.58	Average
4	0.566	9.40	0.02	35.50	44.92	56.00	11.08	QP
5	0.679	9.40	0.02	23.60	33.02	46.00	12.98	Average
6	0.679	9.40	0.02	33.80	43.22	56.00	12.78	QP
7	0.994	9.40	0.03	22.00	31.43	46.00	14.57	Average
8	0.994	9.40	0.03	33.00	42.43	56.00	13.57	QP
9	1.381	9.40	0.03	20.60	30.03	46.00	15.97	Average
10	1.381	9.40	0.03	30.65	40.08	56.00	15.92	QP
11	1.868	9.40	0.04	21.50	30.94	46.00	15.06	Average
12	1.868	9.40	0.04	30.18	39.62	56.00	16.38	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. RADIATED EMISSION MEASUREMENT

4.1.Test Equipments

4.1.1.For frequency range 30MHz~1GHz (In 3m Anechoic Chamber)

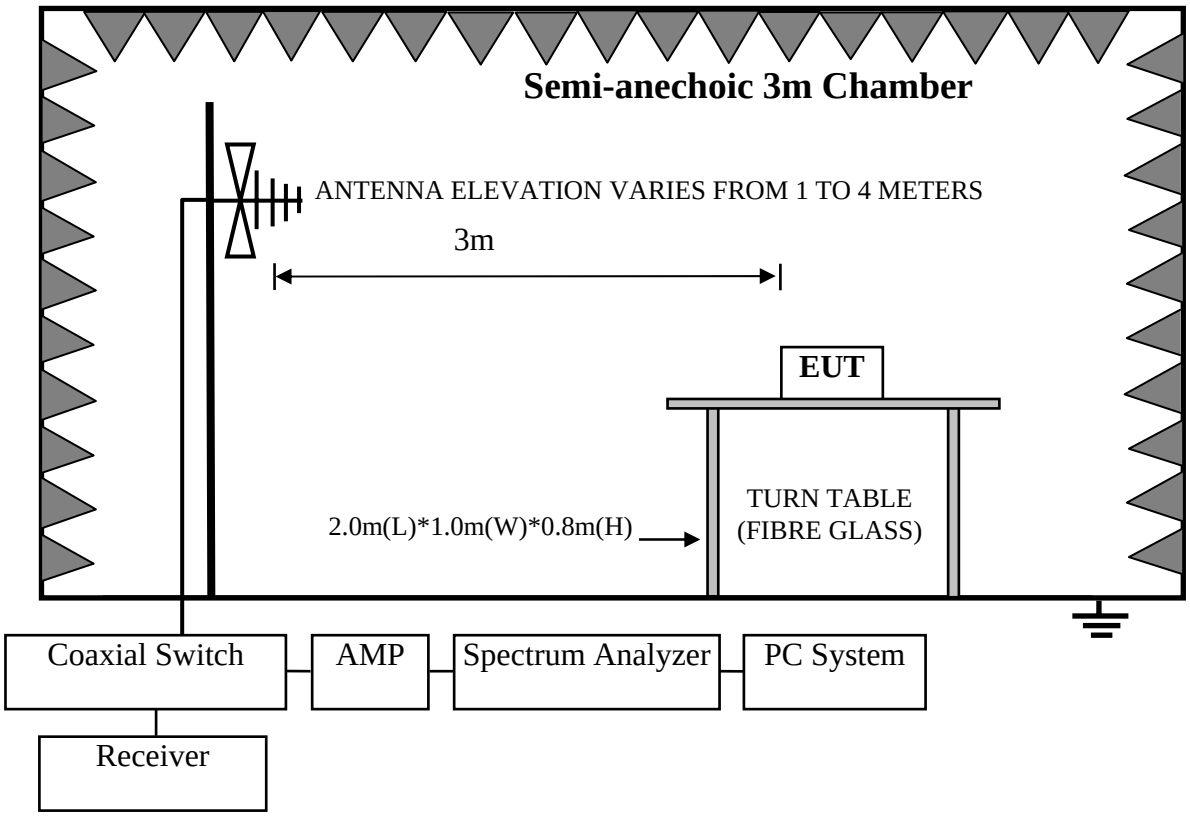
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber(NSA)	AUDIX	N/A	N/A	May.10,19	1 Year
2.	3#Chamber(SE)	AUDIX	N/A	N/A	May.17,18	3 Year
3.	Signal Analyzer	Rohde & Schwarz	FSV30	104050	Apr.14,19	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR7	101547	Apr.14,19	1 Year
5.	Amplifier	HP	8447D	2648A04738	Apr.14,19	1 Year
6.	Tri-log-Broadband Antenna	Schwarzbeck	VULB 9168	493	Jul.24,19	1 Year
7.	NSA Cable	HUBER+SUHNER	CFD400NL-LW	No.3	Dec.01,18	1 Year
8.	Coaxial Switch	Anritsu	MP59B	6201397222	Apr.14,19	1 Year
9.	Test Software	AUDIX	e3	6.2009-5-21a(n)	N/A	N/A
Note: N/A means Not applicable.						

4.1.2.For frequency range for above 1GHz (In 3m Anechoic Chamber)

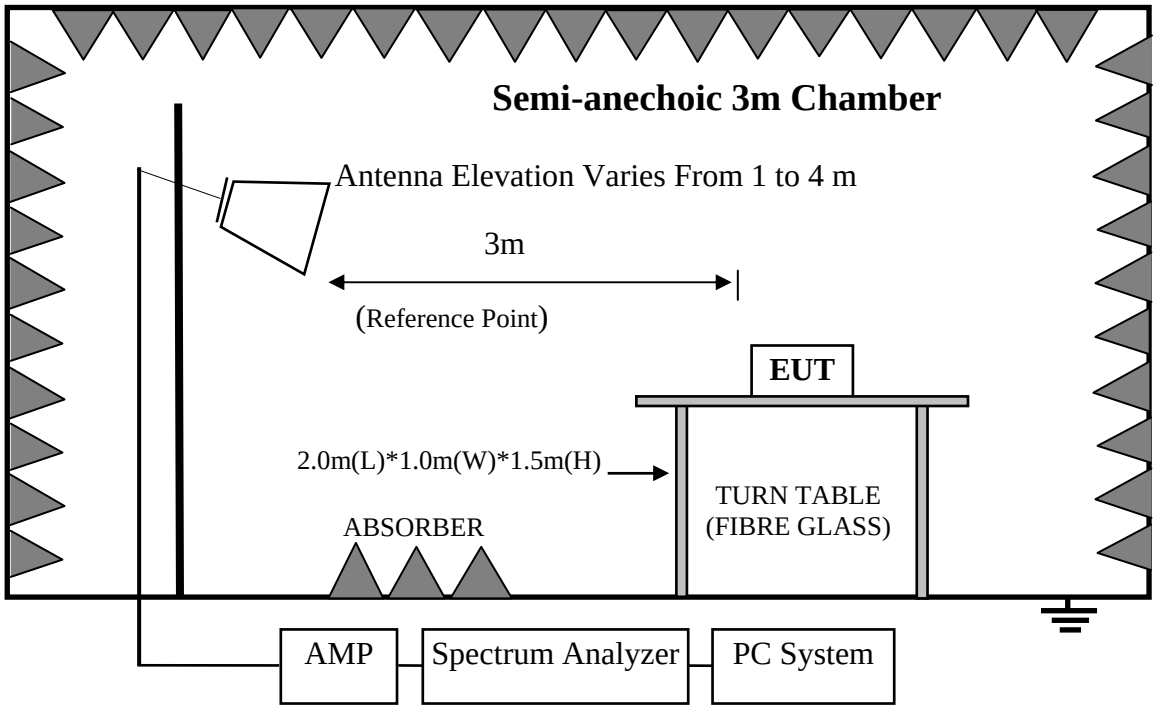
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber(Svswr)	AUDIX	N/A	N/A	Apr.18,19	1 Year
2.	3#Chamber(SE)	AUDIX	N/A	N/A	May.17,18	3 Year
3.	Signal Analyzer	Rohde & Schwarz	FSV30	104050	Apr.14,19	1 Year
4.	Horn Antenna	ETS	3115	9607-4877	Dec.13,18	1 Year
5.	Amplifier	Agilent	83017A	MY53270084	Oct.14,18	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX106	505238/6	Apr.13,19	1 Year
7.	Test Software	AUDIX	e3	6.2009-5-21a(n)	N/A	N/A
Note: N/A means Not applicable.						

4.2.Block Diagram of Test Setup

4.2.1.In 3m Anechoic Chamber Test Setup Diagram for 30-1000MHz



4.2.2.In 3m Anechoic Chamber Test Setup Diagram for Above 1GHz



4.3.Radiated Emission Class B Limit

All emanations from a devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μV)/m
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0
1000 ~ 18000	3	74.0(Peak), 54.0(Average)

Notes: (1) Emission level = Antenna Factor + Cable Loss + Reading
Emission level = Antenna Factor -Amp Factor +Cable Loss + Reading (above 1000MHz)
(2) The tighter limit shall apply at the edge between two frequency bands.
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.4.EUT 's Configuration during Compliance Measurement

The configurations of EUT are listed in Section 3.5.

4.5.Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 4.2.

4.6.Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2014 on Radiated Emission test.
The bandwidth of the R&S Test Receiver ESR7 was set at 120kHz. (For 30MHz to 1000MHz)
The resolution bandwidth of the Agilent EMC Analyzer FSV30 was set at 1MHz.
The frequency range from 1GHz to 6GHz was checked and all final readings of measurement were with Peak and Average detector, measurement distance was 3m at semi-anechoic chamber. The EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. The portion of the test volume that was obstructed by absorber placed on the floor (30cm maximum).
Finally, selected operating situations at Anechoic Chamber measurement, all the test results are listed in section 4.7.

4.7.Radiated Emission Measurement Result

PASS. (All emissions not reported below are too low against the prescribed limits.)

EUT: LED LIGHT **Model No. : GLRB-W**

For frequency range 30MHz~1000MHz

Test Date: Oct.17, 2019 Temperature: 25.3℃ Humidity: 55%

The details of test mode are as follows：

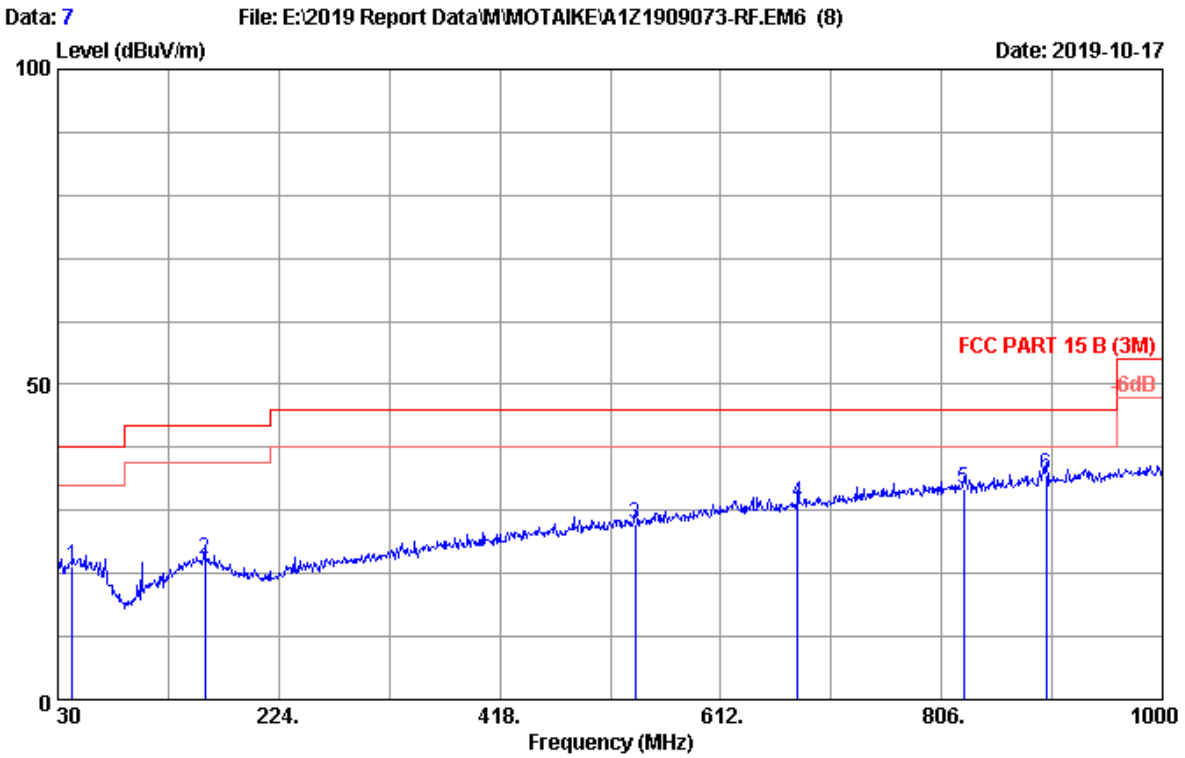
No.	Test Mode	Reference Test Data No.	
		Horizontal	Vertical
1.	RX Mode	#4	#3

For frequency range 1GHz~6GHz

Test Date: Oct.08, 2019 Temperature: 21.6℃ Humidity: 56%

The details of test mode are as follows：

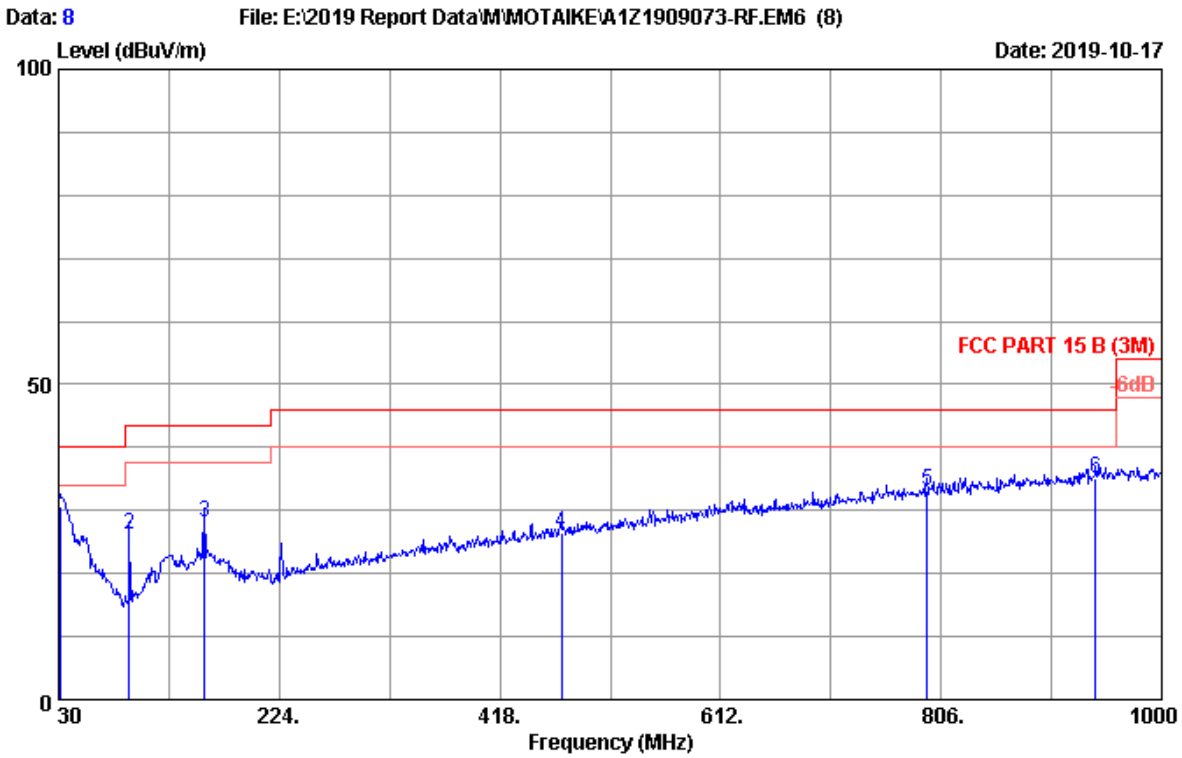
No.	Test Mode	Reference Test Data No.	
		Horizontal	Vertical
1.	RX Mode	#4	#3



Site no. : 3m Chamber
Data no. : 7
Dis. / Ant. : 3m 2019 VULB9168-493
Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B (3M)
Env. / Ins. : 25.3*C/55%
Engineer : Andy
EUT :
Power rating : AC 120V/60Hz
Test Mode : Rx Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	42.610	20.00	0.62	0.63	21.25	40.00	18.75	QP
2	159.010	19.60	1.22	1.39	22.21	43.50	21.29	QP
3	537.310	24.74	2.43	0.55	27.72	46.00	18.28	QP
4	679.900	26.90	2.81	1.39	31.10	46.00	14.90	QP
5	825.400	28.60	3.17	1.56	33.33	46.00	12.67	QP
6	898.150	29.24	3.32	3.07	35.63	46.00	10.37	QP*

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The worst emission was detected at 898.150MHz with corrected signal level of 35.63dBμV/m (Antenna height 1.2m; Turntable degree 211°).
4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna

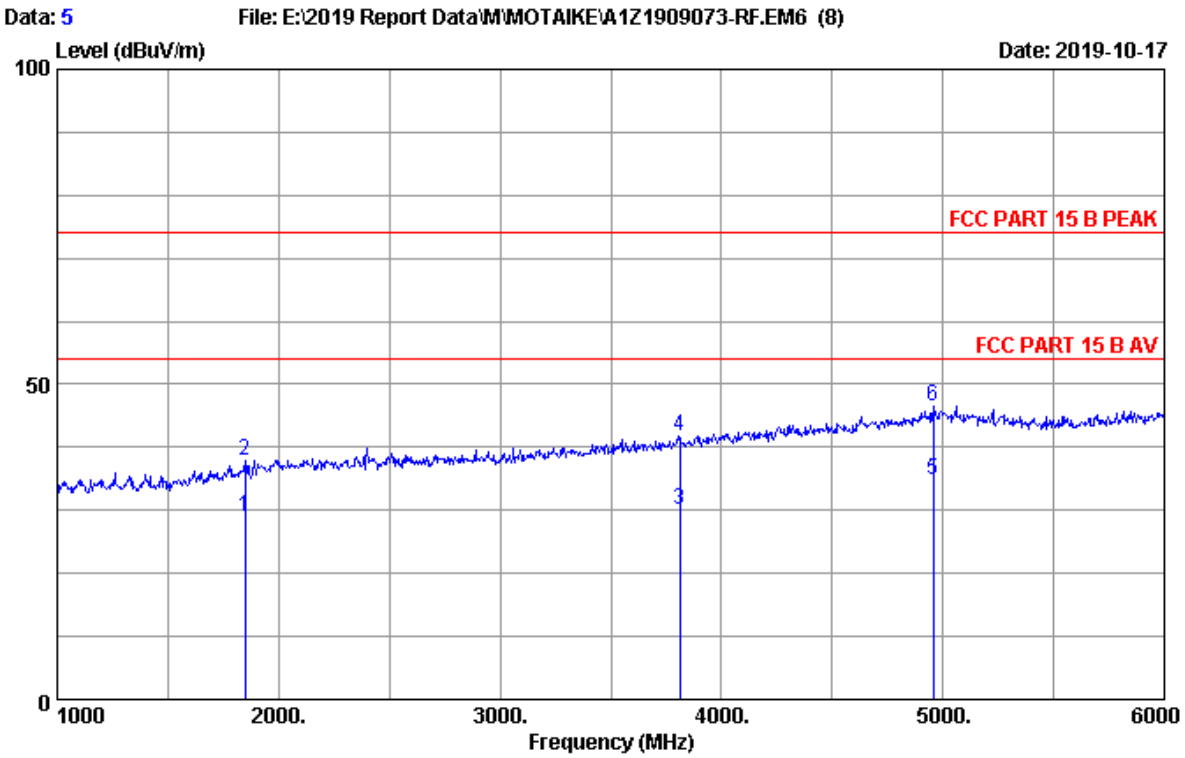


Site no. : 3m Chamber
Dis. / Ant. : 3m 2019 VULB9168-493
Limit : FCC PART 15 B (3M)
Env. / Ins. : 25.3*C/55%
EUT :
Power rating : AC 120V/60Hz
Test Mode : Rx Mode

Data no. : 8
Ant. pol. : VERTICAL
Engineer : Andy

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.970	19.50	0.54	10.63	30.67	40.00	9.33	QP*
2	92.080	13.70	0.94	11.53	26.17	43.50	17.33	QP
3	158.040	19.60	1.22	7.42	28.24	43.50	15.26	QP
4	472.320	23.58	2.23	0.71	26.52	46.00	19.48	QP
5	793.390	28.48	3.10	1.57	33.15	46.00	12.85	QP
6	941.800	29.90	3.45	1.62	34.97	46.00	11.03	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The worst emission was detected at 30.970MHz with corrected signal level of 30.67dBμV/m (Antenna height 1.5m; Turntable degree 156°).
4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

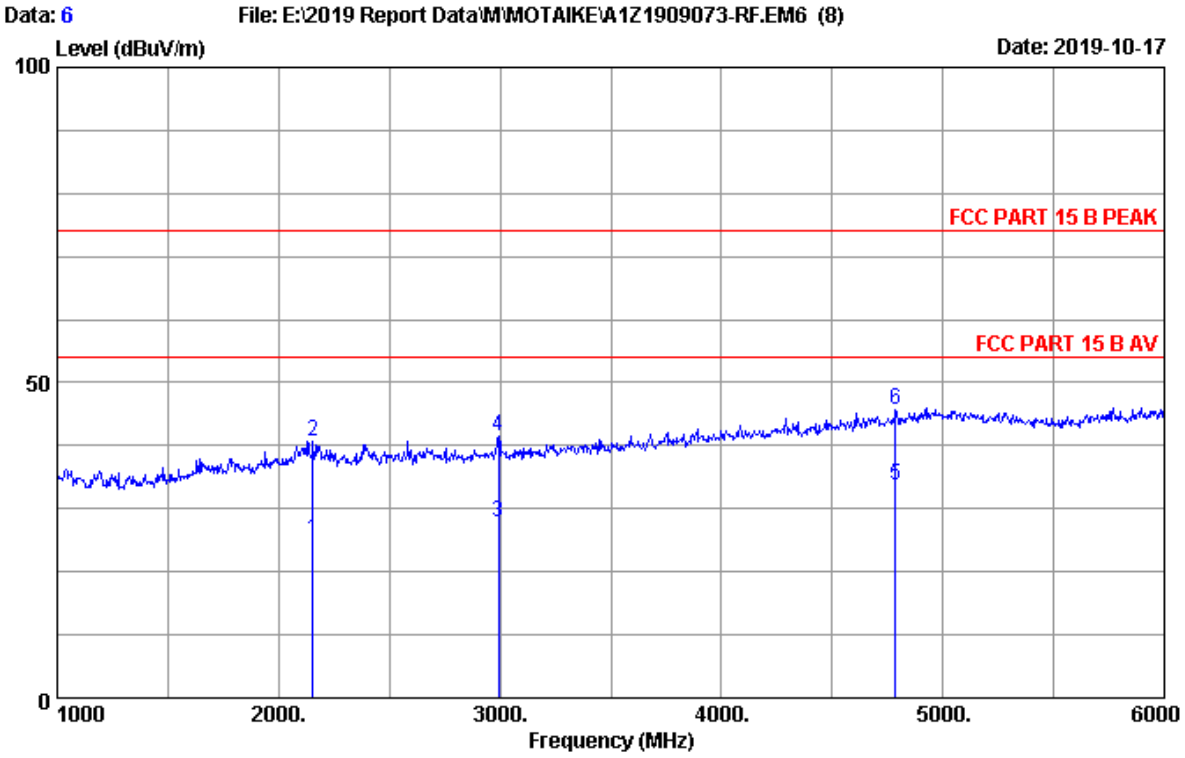


Site no. : 3m Chamber
Dis. / Ant. : 2018 3115-4877
Limit : FCC PART 15 B PEAK
Env. / Ins. : 25.3*C/55%
EUT :
Power rating : AC 120V/60Hz
Test Mode : Rx Mode

Data no. : 5
Ant. pol. : HORIZONTAL
Engineer : Andy

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1850.520	26.60	2.66	32.70	32.43	28.99	54.00	25.01	Average
2	1850.520	26.60	2.66	32.70	41.41	37.97	74.00	36.03	Peak
3	3810.520	31.50	4.45	31.03	25.19	30.11	54.00	23.89	Average
4	3810.520	31.50	4.45	31.03	36.86	41.78	74.00	32.22	Peak
5	4955.540	32.43	5.19	30.83	27.93	34.72	54.00	19.28	Average
6	4955.540	32.43	5.19	30.83	39.70	46.49	74.00	27.51	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber
Dis. / Ant. : 2018 3115-4877
Limit : FCC PART 15 B PEAK
Env. / Ins. : 25.3*C/55%
EUT :
Power rating : AC 120V/60Hz
Test Mode : Rx Mode

Data no. : 6
Ant. pol. : VERTICAL
Engineer : Andy

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2155.000	27.05	2.91	32.16	27.22	25.02	74.00	48.98	Average
2	2155.000	27.05	2.91	32.16	42.82	40.62	74.00	33.38	Peak
3	2995.000	29.34	3.53	31.59	26.58	27.86	74.00	46.14	Average
4	2995.000	29.34	3.53	31.59	40.18	41.46	74.00	32.54	Peak
5	4785.000	32.05	5.10	30.84	27.26	33.57	74.00	40.43	Average
6	4785.000	32.05	5.10	30.84	39.48	45.79	74.00	28.21	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.

5. DEVIATION TO TEST SPECIFICATIONS

[NONE]