

EMC TEST REPORT

For

CHROMATEQ SARL

DMX Lighting Controller

Model No.: CQSA-E 1024

Additional Model No.: CQSA-E 1024 PRO

Prepared for	:	CHROMATEQ SARL
Address	:	191 allée de Lauzard, 34980 Saint Gely du Fesc, FRANCE
Prepared by	:	Guangzhou LCS Compliance Testing Laboratory Ltd.
Address	:	No 44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China
Tel	:	+(86)020-39166689
Fax	:	+(86)020-39166619
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	March 24, 2021
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	March 26, 2021 ~ March 27, 2021
Date of Report	:	May 06, 2021



EMC TEST REPORT**EN 55032: 2015**

Information technology equipment-Radio disturbance characteristics-Limits of measurement

EN 55035: 2017+A11: 2020

Information technology equipment-Immunity characteristics-Limits and methods of measurement of measurement

Report Reference No.: LCS210323005CE

Date Of Issue.....: May 06, 2021

Testing Laboratory Name.....: Guangzhou LCS Compliance Testing Laboratory Ltd.

Address: No 44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

Testing Location/ Procedure: Full application of Harmonised standards ■
Partial application of Harmonised standards □
Other standard testing method □**Applicant's Name: CHROMATEQ SARL**

Address: 191 allée de Lauzard, 34980 Saint Gely du Fesc, FRANCE

Test Specification:Standard: EN 55032: 2015+A11: 2020
EN 55035: 2017+A11: 2020
EN IEC 61000-3-2: 2019
EN 61000-3-3: 2013+A1: 2019

Test Report Form No.....: GLCSEMC-1.0

TRF Originator.....: Guangzhou LCS Compliance Testing Laboratory Ltd.

Master TRF: Dated 2017-08

Guangzhou LCS Compliance Testing Laboratory Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the GUANGZHOU LCS COMPLIANCE TESTING LABORATORY LTD. is acknowledged as copyright owner and source of the material. GUANGZHOU LCS COMPLIANCE TESTING LABORATORY LTD. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test Item Description.....: DMX Lighting Controller

Trade Mark.....: N/A

Model/ Type Reference: CQSA-E 1024

Ratings: For controller: DC5V, 1A

Result: Positive**Compiled by:**

Loki Chen

Loki Chen/ File administrators

Supervised by:

Andy Yang

Andy Yang/Technique principal



Kizard Zhang / Manager

EMC -- TEST REPORT**Test Report No. : LCS210323005CE**May 06, 2021

Date of issue

Type/ Model..... : CQSA-E 1024

EUT..... : DMX Lighting Controller

Applicant..... : CHROMATEQ SARL

Address..... : 191 allée de Lauzard, 34980 Saint Gely du Fesc, FRANCE

Telephone..... : /

Fax..... : /

Manufacturer..... : CHROMATEQ SARL

Address..... : 191 allée de Lauzard, 34980 Saint Gely du Fesc, FRANCE

Telephone..... : /

Fax..... : /

Factory..... : CHROMATEQ SARL

Address..... : 191 allée de Lauzard, 34980 Saint Gely du Fesc, FRANCE

Telephone..... : /

Fax..... : /

Test Result according to the standards on page 7: **Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	May 06, 2021	Initial Issue	Kizard Zhang

TABLE OF CONTENT

Test Report Description	Page
1. SUMMARY OF STANDARDS AND RESULTS.....	7
1.1.Description of Standards and Results.....	7
1.2.Description of Performance Criteria	8
2. GENERAL INFORMATION	9
2.1.Description of Device (EUT)	9
2.2.Statement of the measurement uncertainty.....	9
2.3.Measurement Uncertainty	10
3. measuring Devices and test equipment.....	11
4. POWER LINE CONDUCTED EMISSION MEASUREMENT	13
4.1.Block Diagram of Test Setup	13
4.2.Test Standard	13
4.3.EUT Configuration on Test	13
4.4.Operating Condition of EUT.....	13
4.5.Test Procedure	14
4.6.Test Results	14
5. RADIATED EMISSION MEASUREMENT	17
5.1.Block Diagram of Test Setup	17
5.2.Measuring Standard.....	17
5.3.Radiated Emission Limits	17
5.4.EUT Configuration on Test	18
5.5.Operating Condition of EUT.....	18
5.6.Test Procedure	18
5.7.Test Results	18
6. HARMONIC CURRENT EMISSION MEASUREMENT.....	27
6.1.Block Diagram of Test Setup	27
6.2.Test Standard	27
6.3.Operation Condition of EUT.....	27
6.4.Test Results	27
7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT.....	28
7.1.Block Diagram of Test Setup	28
7.2.Measuring Standard.....	28
7.3.Operation Condition of EUT.....	28
7.4.Test Results	28
8. ELECTROSTATIC DISCHARGE IMMUNITY TEST.....	29
8.1.Block Diagram of Test Setup	29
8.2.Test Standard	29
8.3.Severity Levels and Performance Criterion	29
8.4.EUT Configuration on Test	29
8.5.Operating Condition of EUT.....	29
8.6.Test Procedure	30
8.7.Test Results	30
9. RF FIELD STRENGTH SUSCEPTIBILITY TEST	32
9.1.Block Diagram of Test	32
9.2.Test Standard	32
9.3.Severity Levels and Performance Criterion	32
9.4.EUT Configuration on Test	33
9.5.Operating Condition of EUT.....	33
9.6.Test Procedure	33
9.7.Test Results	33
10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST	35
10.1.Block Diagram of Test Setup	35
10.2.Test Standard	35

10.3.Severity Levels and Performance Criterion	35
10.4.EUT Configuration on Test	35
10.5.Operating Condition of EUT	35
10.6.Test Procedure	36
10.7.Test Results	36
11. SURGE IMMUNITY TEST	38
11.1.Block Diagram of Test Setup.....	38
11.2.Test Standard	38
11.3.Severity Levels and Performance Criterion.....	38
11.4.EUT Configuration on Test	38
11.5.Operating Condition of EUT	39
11.6.Test Procedure	39
11.7.Test Results.....	39
12. INJECTED CURRENTS SUSCEPTIBILITY TEST	41
12.1.Block Diagram of Test Setup	41
12.2.Test Standard	41
12.3.Severity Levels and Performance Criterion	41
12.4.EUT Configuration on Test	41
12.5.Operating Condition of EUT.....	42
12.6.Test Procedure	42
12.7.Test Results	42
13. MAGNETIC FIELD SUSCEPTIBILITY TEST	44
13.1.Block Diagram of Test Setup	44
13.2.Test Standard	44
13.3.Severity Levels and Performance Criterion	44
13.4.EUT Configuration on Test	44
13.5.Test Procedure	45
13.6.Test Results	45
14. VOLTAGE DIPS AND INTERRUPTIONS TEST	47
14.1.Block Diagram of Test Setup	47
14.2.Test Standard	47
14.3.Severity Levels and Performance Criterion	47
14.4.EUT Configuration on Test	47
14.5.Operating Condition of EUT	48
14.6.Test Procedure	48
14.7.Test Results	48
15. Photographs	50
16. EXTERNAL AND INTERNAL PHOTOS OF THE EUT.....	54

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

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

Emission (EN 55032: 2015+A11: 2020)			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	EN 55032: 2015+A11: 2020	Class B	PASS
Conducted disturbance at telecommunication port	EN 55032: 2015+A11: 2020	Class B	N/A
Radiated disturbance	EN 55032: 2015+A11: 2020	Class B	PASS
Harmonic current emissions	EN IEC 61000-3-2: 2019	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3: 2013+A1: 2019	-----	PASS
Immunity (EN 55035: 2017+A11: 2020)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input a.c. power ports)	EN 61000-4-5: 2014+A1: 2017	B	PASS
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004+A1: 2017	B	PASS
Voltage dips, 30% reduction		C	PASS
Voltage interruptions		C	PASS
***Note: N/A is an abbreviation for Not Applicable.			

1.2. Description of Performance Criteria

General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution;
- quality of data display and transmission;
- quality of speech transmission.

1.2.1. Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.2. Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.3. Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacture's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : DMX Lighting Controller

Trade Mark : N/A

Model Number : CQSA-E 1024

Power Supply : For controller: DC5V, 1A

EUT Clock Frequency : $\leq 108\text{MHz}$

2.2. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.3.Measurement Uncertainty

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	2.6 dB 2.4 dB	4.0 dB 3.6 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	3.7 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	3.5 dB	5.2 dB
Radiated Emission	Level accuracy (above 1000MHz)	3.9 dB	N/A
Mains Harmonic	Voltage	0.51%	N/A
Voltage Fluctuations & Flicker	Voltage	0.51%	N/A

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a ON distribution corresponds to a coverage probability of approximately 95%.

3. MEASURING DEVICES AND TEST EQUIPMENT

3.1. Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR3	102312	2021.06.01
2	10dB Attenuator	SCHWARZBECK	MTS-IMP136	61115-001-0032	2022.03.15
3	Artificial Mains Network	ROHDE & SCHWARZ	ESH2-Z5	100030	2022.03.15
4	EMI Test Software	Farad	EZ-EMC	/	N/A

3.2. Disturbance Power

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR3	102312	2021.06.01
2	Absorbing clamp	Com-Power	CLA-050	431060	2022.03.15
3	EMI Test Software	Farad	EZ-EMC	/	/
4	6dB Attenuator	/	/	/	2022.03.15

3.3. Radiated Disturbance (Electric Field)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	3m Semi Anechoic Chamber	Mao Rui	/	/	2024.03.06
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102311	2021.06.01
3	Biconical Antenna	ROHDE & SCHWARZ	VHBB 9124	01015	2021.05.30
4	Log Periodic Broadband Antenna	ROHDE & SCHWARZ	VULP 9118B	873	2021.05.30
5	EMI Test Software	Farad	EZ-EMC	/	/

3.4. Harmonic Current

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2021.06.01

3.5. Voltage fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2021.06.01

3.6. Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	ESD Simulator	Teseq	NSG437	1211	2021.06.01

3.7. RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	SIGNAL GENERATOR	R&S	SMB100A	105942	2021.09.12
2	Log-periodic Antenna	SCHWARZBECK	STLP9128D	043	2021.09.12
3	RF Power Amplifier	BONN Elektronik	BLWA0830-160/100/40D	128740	2021.09.12
4	Power Meter	R&S	102031	16829	2021.09.12

3.8. Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
------	----------------	--------------	-----------	------------	-----------

1	Immunity tester	EMC-Partner	Transient 2000	584	2022.03.15
---	-----------------	-------------	----------------	-----	------------

3.9.Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	Immunity tester	EMC-Partner	Transient 2000	584	2022.03.15

3.10.Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	Simulator	FRANKONIA	CIT-10	A126A1195	2021.09.12
2	CDN	FRANKONIA	CDN-M2	5100100100	2021.09.12
3	CDN	FRANKONIA	CDN-M3	0900-11	2021.09.12
4	Attenuator	FRANKONIA	ATT6	0010222A	2021.09.12
5	Infuse tongs	EMTEST	EM-Clamp	0513A031201	2021.09.12

3.11.Voltage Dips

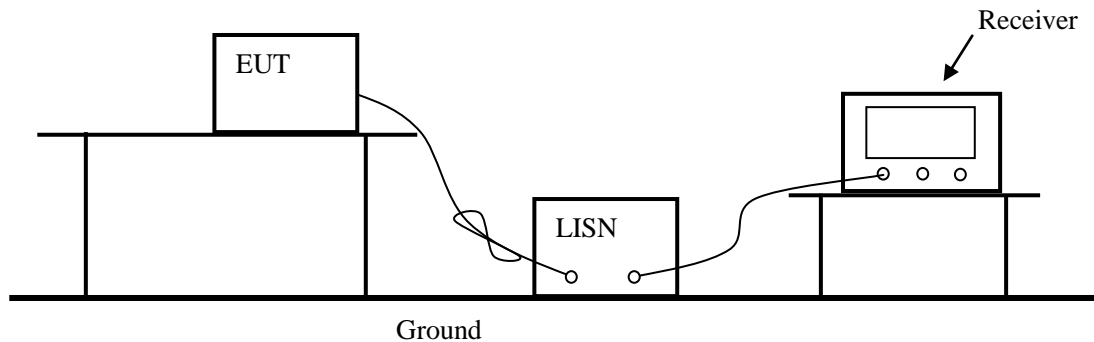
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	Immunity tester	EMC-Partner	Transient 2000	584	2021.09.12

3.12.Voltage Short Interruptions

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Until
1	Immunity tester	EMC-Partner	Transient 2000	584	2021.09.12

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



4.2. Test Standard

EN 55032: 2015+A11: 2020 Class B

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.
NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

4.3. EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see EN 55032 requirements and operating in a manner which tends to maximize its emission characteristics in ON application.

4.4. Operating Condition of EUT

4.4.1. Setup the EUT as shown on Section 4.1.

4.4.2. Turn on the power of all equipments.

4.4.3. Let the EUT work in measuring mode (work) and measure it.

4.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

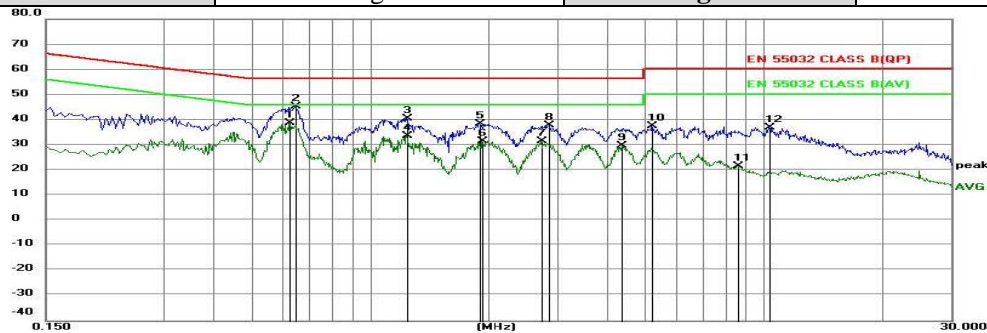
The frequency range from 150kHz to 30MHz is investigated

4.6. Test Results

PASS.

The test result please refer to the next page.

Model No.	CQSA-E 1024	Test Mode	SA
Environmental Conditions	21.5°C, 51.8% RH	Detector Function	Quasi-peak
Pol	Line	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz

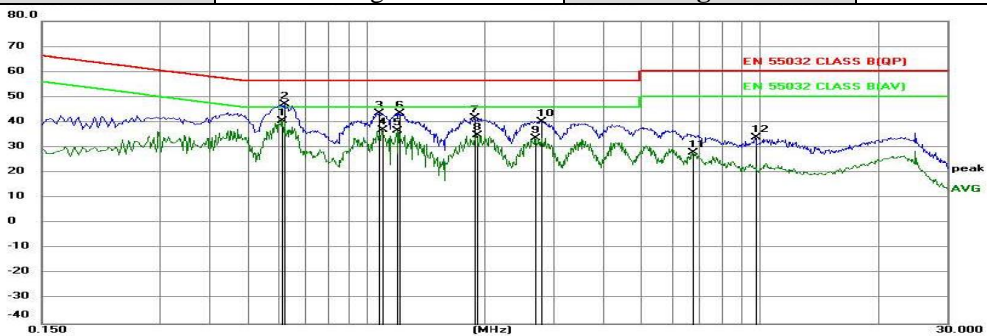


Site: LAB
Limit: EN 55032 CLASS B (QP)
EUT: DMX light controller
M/N: CQSA-E 1024
Mode: SA
Note:

Phase: L1
Power: AC230V/50Hz
Temperature: 21.5 °C
Humidity: 51.8 %

No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.6270	26.58	12.11	38.69	46.00	-7.31	AVG	
2		0.6495	33.36	12.11	45.47	56.00	-10.53	QP	
3		1.2390	28.45	12.07	40.52	56.00	-15.48	QP	
4		1.2390	21.68	12.07	33.75	46.00	-12.25	AVG	
5		1.8958	26.55	12.05	38.60	56.00	-17.40	QP	
6		1.9274	19.54	12.05	31.59	46.00	-14.41	AVG	
7		2.7239	19.39	12.04	31.43	46.00	-14.57	AVG	
8		2.8544	25.84	12.03	37.87	56.00	-18.13	QP	
9		4.3754	17.78	11.99	29.77	46.00	-16.23	AVG	
10		5.2080	25.43	11.98	37.41	60.00	-22.59	QP	
11		8.5559	9.79	11.88	21.67	50.00	-28.33	AVG	
12		10.3245	25.17	11.82	36.99	60.00	-23.01	QP	

Model No.	CQSA-E 1024	Test Mode	SA
Environmental Conditions	24.0°C, 46.0% RH	Detector Function	Quasi-peak
Pol	Neutral	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz

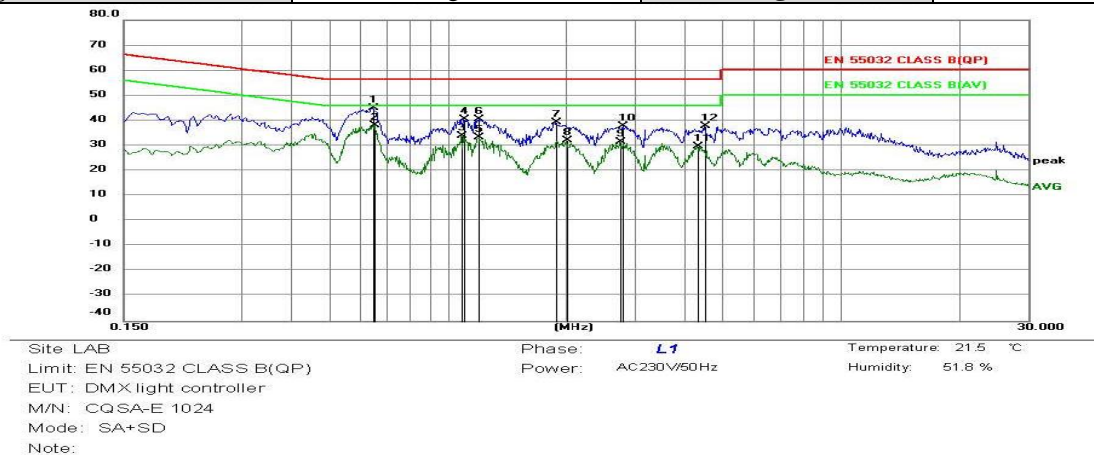


Site: LAB
Limit: EN 55032 CLASS B (QP)
EUT: DMX light controller
M/N: CQSA-E 1024
Mode: SA
Note:

Phase: N
Power: AC230V/50Hz
Temperature: 21.5 °C
Humidity: 51.8 %

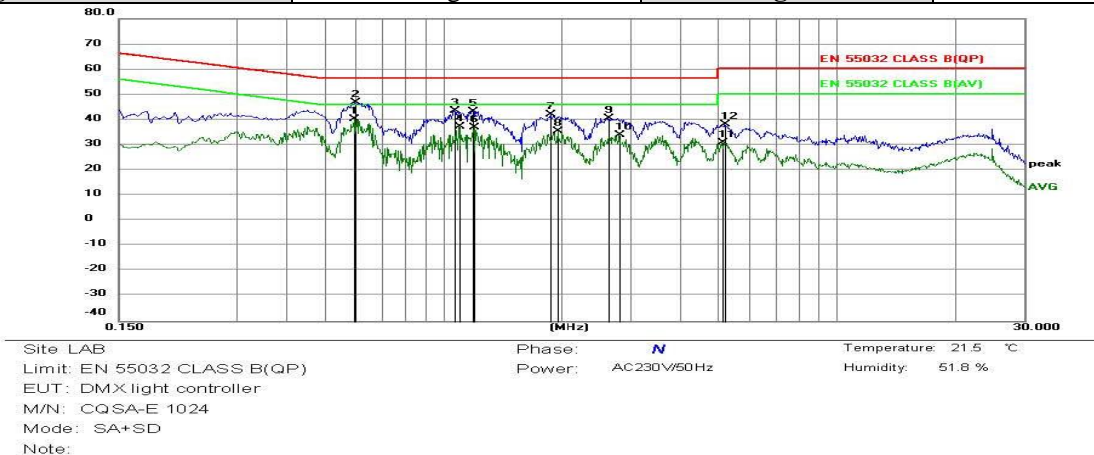
No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.6134	28.37	12.07	40.44	46.00	-5.56	AVG	
2		0.6225	34.94	12.07	47.01	56.00	-8.99	QP	
3		1.0770	31.67	12.01	43.68	56.00	-12.32	QP	
4		1.0950	24.95	12.01	36.96	46.00	-9.04	AVG	
5		1.2028	24.55	11.99	36.54	46.00	-9.46	AVG	
6		1.2118	31.66	11.99	43.65	56.00	-12.35	QP	
7		1.8824	29.93	11.91	41.84	56.00	-14.16	QP	
8		1.9004	22.87	11.90	34.77	46.00	-11.23	AVG	
9		2.7058	21.87	11.81	33.68	46.00	-12.32	AVG	
10		2.8050	28.59	11.79	40.38	56.00	-15.62	QP	
11		6.7335	16.54	11.36	27.90	50.00	-22.10	AVG	
12		9.7394	22.81	11.18	33.99	60.00	-26.01	QP	

Model No.	CQSA-E 1024	Test Mode	SA+SD
Environmental Conditions	24.0°C, 46.0% RH	Detector Function	Quasi-peak
Pol	Line	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.6450	32.81	12.11	44.92	56.00	-11.08	QP	
2	*	0.6540	26.19	12.11	38.30	46.00	-7.70	AVG	
3		1.0859	21.77	12.08	33.85	46.00	-12.15	AVG	
4		1.0948	28.48	12.08	40.56	56.00	-15.44	QP	
5		1.2028	21.26	12.07	33.33	46.00	-12.67	AVG	
6		1.2030	28.57	12.07	40.64	56.00	-15.36	QP	
7		1.8824	27.34	12.05	39.39	56.00	-16.61	QP	
8		2.0083	20.05	12.06	32.11	46.00	-13.89	AVG	
9		2.7554	19.64	12.03	31.67	46.00	-14.33	AVG	
10		2.8050	25.85	12.03	37.88	56.00	-18.12	QP	
11		4.3259	17.68	11.99	29.67	46.00	-16.33	AVG	
12		4.5240	25.75	11.99	37.74	56.00	-18.26	QP	

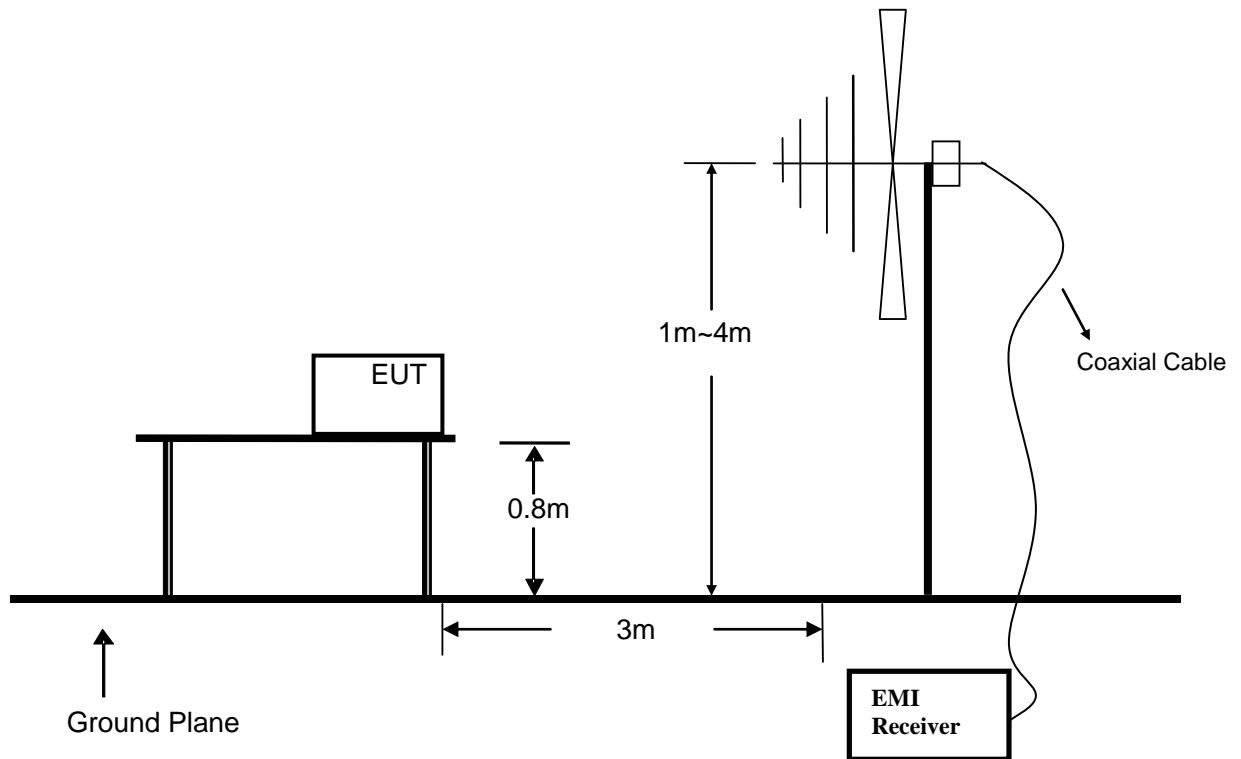
Model No.	CQSA-E 1024	Test Mode	SA+SD
Environmental Conditions	24.0°C, 46.0% RH	Detector Function	Quasi-peak
Pol	Neutral	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.5955	28.06	12.07	40.13	46.00	-5.87	AVG	
2		0.6000	34.66	12.07	46.73	56.00	-9.27	QP	
3		1.0680	31.53	12.01	43.54	56.00	-12.46	QP	
4		1.0950	25.29	12.01	37.30	46.00	-8.70	AVG	
5		1.1849	31.35	11.99	43.34	56.00	-12.66	QP	
6		1.2028	25.04	11.99	37.03	46.00	-8.97	AVG	
7		1.8689	30.06	11.91	41.97	56.00	-14.03	QP	
8		1.9589	23.68	11.90	35.58	46.00	-10.42	AVG	
9		2.6474	28.78	11.81	40.59	56.00	-15.41	QP	
10		2.8140	22.08	11.79	33.87	46.00	-12.13	AVG	
11		5.1269	19.54	11.53	31.07	50.00	-18.93	AVG	
12		5.2169	26.49	11.52	38.01	60.00	-21.99	QP	

5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. Measuring Standard

EN 55032: 2015+A11: 2020 Class B

5.3. Radiated Emission Limits

EN 55032 Limits:

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

Limits for radiated disturbance Blow 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.4.EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.5.Operating Condition of EUT

5.5.1.Turn on the power.

5.5.2.After that, let the EUT work in test mode (work) and measure it.

5.6.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

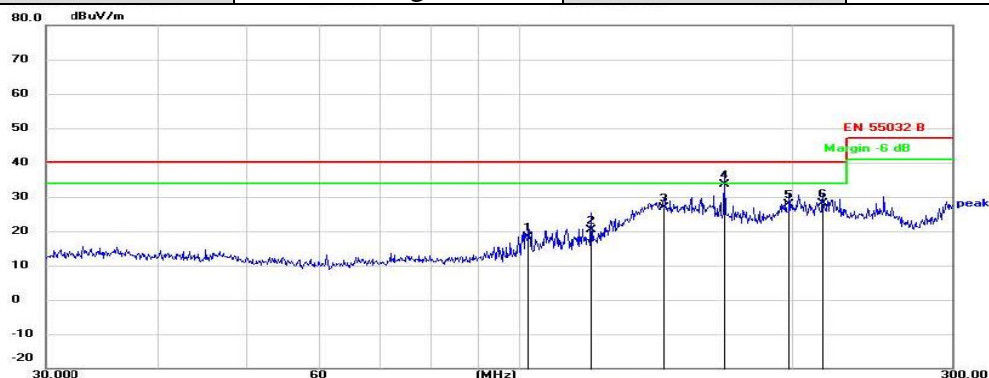
The frequency range from 30MHz to 1000MHz is investigated.

5.7.Test Results

PASS.

The test result please refer to the next page.

Model No.	CQSA-E 1024	Test Mode	PC
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	5V



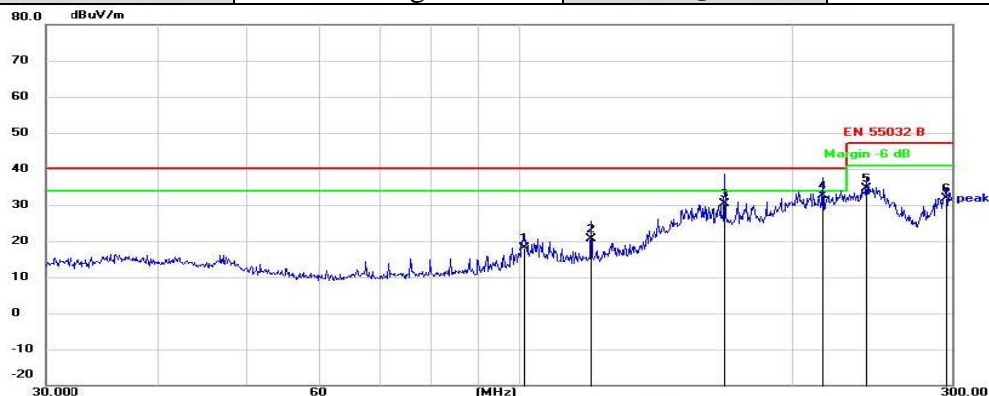
Site LAB
Limit: EN 55032 B
EUT: DMX light controller
M/N: CQSA-E 1024
Mode: PC
Note:

Polarization: **Vertical**
Power: DC5V
Distance: 3m

Temperature: 22.1(C)
Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		102.3578	4.72	13.65	18.37	40.00	-21.63	QP	
2		119.9834	6.20	14.30	20.50	40.00	-19.50	QP	
3		144.2518	11.78	15.01	26.79	40.00	-13.21	QP	
4	*	167.9273	16.15	17.56	33.71	40.00	-6.29	QP	
5		198.6649	9.40	18.37	27.77	40.00	-12.23	QP	
6		216.3322	8.82	19.28	28.10	40.00	-11.90	QP	

Model No.	CQSA-E 1024	Test Mode	PC
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	5V



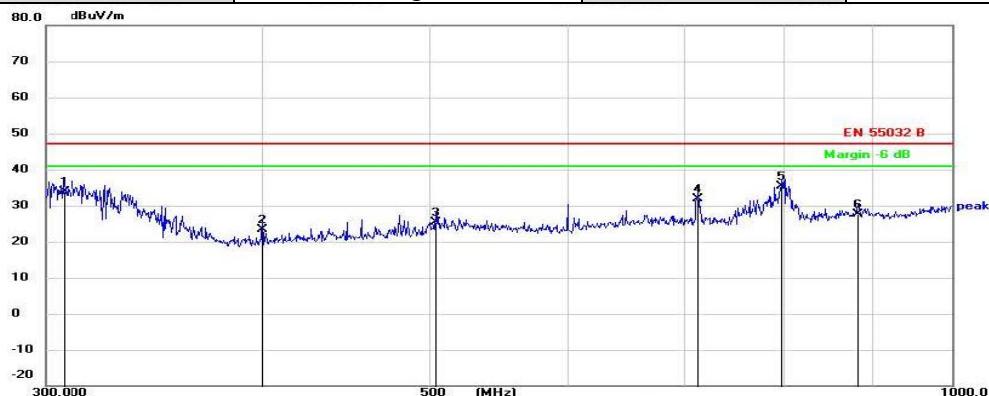
Site LAB
Limit: EN 55032 B
EUT: DMX light controller
M/N: CQSA-E 1024
Mode: PC
Note:

Polarization: **Horizontal**
Power: DC5V
Distance: 3m

Temperature: 22.1(C)
Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		101.1861	5.58	12.43	18.01	40.00	-21.99	QP	
2		119.9834	6.56	14.10	20.66	40.00	-19.34	QP	
3		167.9273	13.99	16.31	30.30	40.00	-9.70	QP	
4	*	216.3322	13.78	18.94	32.72	40.00	-7.28	QP	
5		241.6135	11.29	23.37	34.66	47.00	-12.34	QP	
6		295.8838	7.53	24.36	31.89	47.00	-15.11	QP	

Model No.	CQSA-E 1024	Test Mode	PC
Environmental Conditions	22.1 °C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	5V



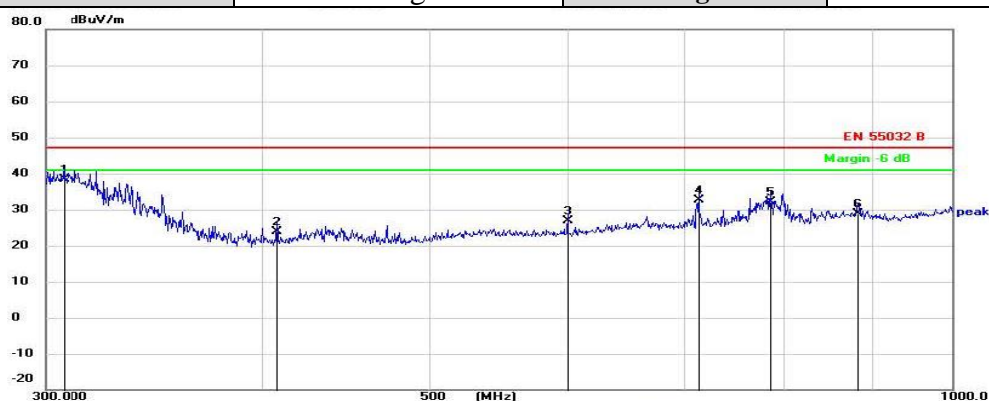
Site: LAB
Limit: EN 55032 B
EUT: DMX light controller
M/N: CQSA-E 1024
Mode: PC
Note:

Polarization: **Vertical**
Power: DC5V
Distance: 3m

Temperature: 22.1(C)
Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		307.6817	14.06	19.88	33.94	47.00	-13.06	QP	
2		400.0269	2.18	21.18	23.36	47.00	-23.64	QP	
3		504.0597	2.97	22.49	25.46	47.00	-21.54	QP	
4		712.9696	6.27	25.50	31.77	47.00	-15.23	QP	
5	*	798.4021	8.50	26.99	35.49	47.00	-11.51	QP	
6		883.3717	-0.96	28.69	27.73	47.00	-19.27	QP	

Model No.	CQSA-E 1024	Test Mode	PC
Environmental Conditions	22.1 °C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	5V



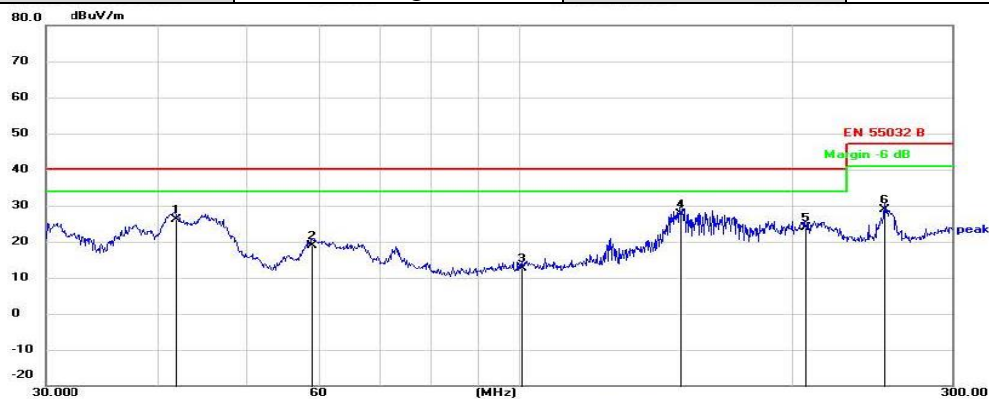
Site: LAB
Limit: EN 55032 B
EUT: DMX light controller
M/N: CQSA-E 1024
Mode: PC
Note:

Polarization: **Horizontal**
Power: DC5V
Distance: 3m

Temperature: 22.1(C)
Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1	*	307.3115	18.67	19.81	38.48	47.00	-8.52	QP	
2		407.8076	2.56	21.44	24.00	47.00	-23.00	QP	
3		600.2047	3.06	23.78	26.84	47.00	-20.16	QP	
4		713.8286	7.09	25.52	32.61	47.00	-14.39	QP	
5		786.0030	5.18	27.07	32.25	47.00	-14.75	QP	
6		882.3087	0.08	28.68	28.76	47.00	-18.24	QP	

Model No.	CQSA-E 1024	Test Mode	SA
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



Site: LAB

Limit: EN 55032 B

EUT: DMX light controller

M/N: CQSA-E 1024

Mode: SA

Note:

Polarization: **Vertical**

Power: AC230V/50Hz

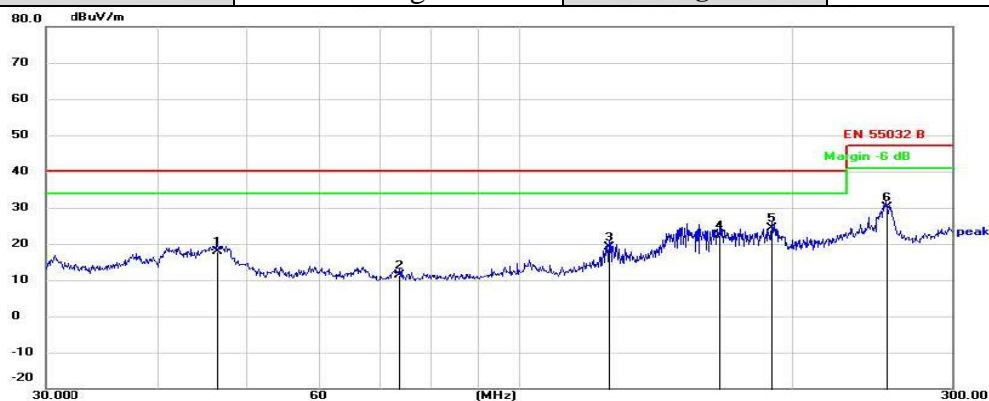
Distance: 3m

Temperature: 22.1(C)

Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		41.6986	12.94	13.16	26.10	40.00	-13.90	QP	
2		59.0364	7.70	11.29	18.99	40.00	-21.01	QP	
3		100.7211	-0.83	13.50	12.67	40.00	-27.33	QP	
4	*	150.0104	11.90	15.71	27.61	40.00	-12.39	QP	
5		207.0717	5.24	18.75	23.99	40.00	-16.01	QP	
6		253.0004	7.70	21.23	28.93	47.00	-18.07	QP	

Model No.	CQSA-E 1024	Test Mode	SA
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



Site: LAB

Limit: EN 55032 B

EUT: DMX light controller

M/N: CQSA-E 1024

Mode: SA

Note:

Polarization: **Horizontal**

Power: AC230V/50Hz

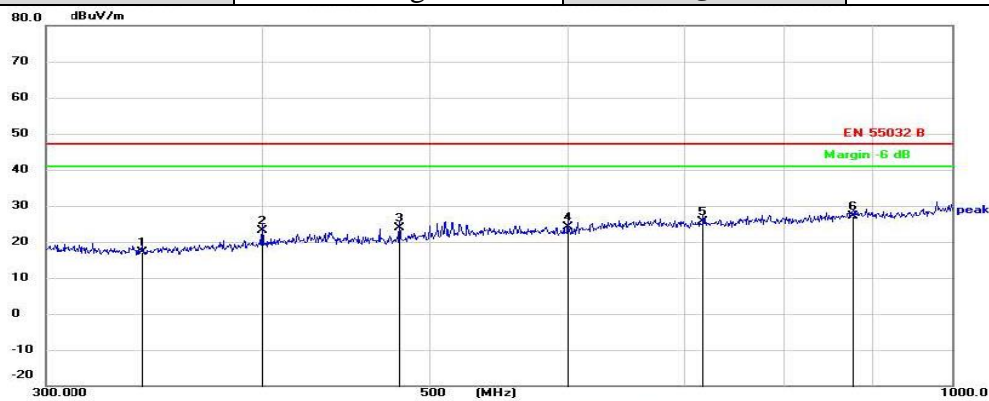
Distance: 3m

Temperature: 22.1(C)

Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		46.4643	4.28	13.66	17.94	40.00	-22.06	QP	
2		73.6410	0.53	10.93	11.46	40.00	-28.54	QP	
3		125.6380	4.12	15.08	19.20	40.00	-20.80	QP	
4		166.0050	5.92	16.44	22.36	40.00	-17.64	QP	
5	*	190.1609	7.93	16.50	24.43	40.00	-15.57	QP	
6		253.5837	6.26	23.82	30.08	47.00	-16.92	QP	

Model No.	CQSA-E 1024	Test Mode	SA
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



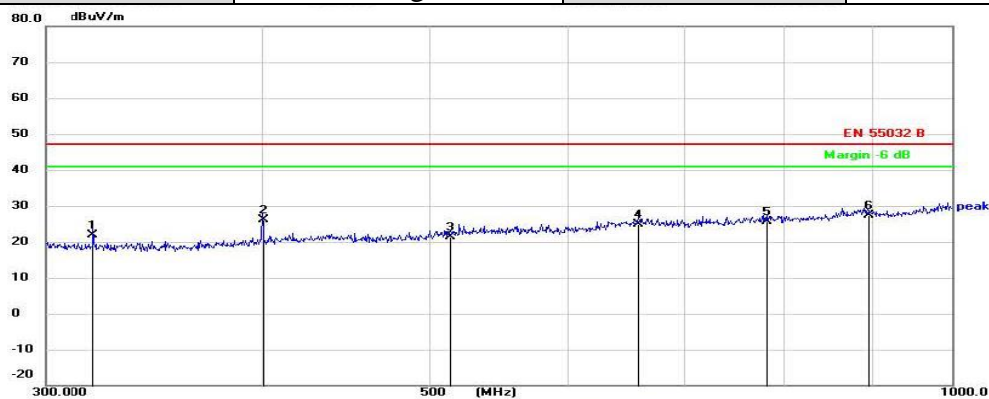
Site: LAB
 Limit: EN 55032 B
 EUT: DMX light controller
 M/N: CQSA-E 1024
 Mode: SA
 Note:

Polarization: **Vertical**
 Power: AC230V/50Hz
 Distance: 3m

Temperature: 22.1(C)
 Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		341.2472	-2.13	19.30	17.17	47.00	-29.83	QP	
2		400.0269	1.86	21.18	23.04	47.00	-23.96	QP	
3		479.7820	2.12	21.73	23.85	47.00	-23.15	QP	
4		600.2047	0.40	23.78	24.18	47.00	-22.82	QP	
5		718.1387	0.04	25.57	25.61	47.00	-21.39	QP	
6	*	877.0132	-1.35	28.57	27.22	47.00	-19.78	QP	

Model No.	CQSA-E 1024	Test Mode	SA
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



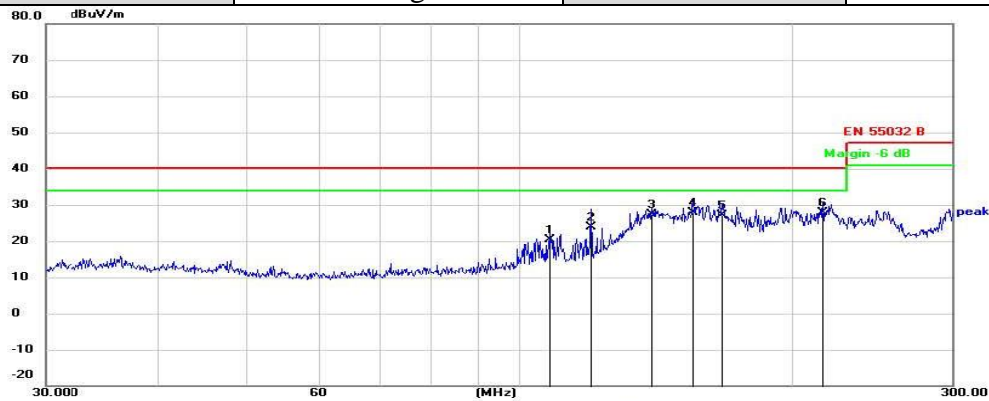
Site: LAB
 Limit: EN 55032 B
 EUT: DMX light controller
 M/N: CQSA-E 1024
 Mode: SA
 Note:

Polarization: **Horizontal**
 Power: AC230V/50Hz
 Distance: 3m

Temperature: 22.1(C)
 Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		319.7671	2.27	19.50	21.77	47.00	-25.23	QP	
2		400.0270	4.96	21.18	26.14	47.00	-20.86	QP	
3		513.8637	-1.49	22.92	21.43	47.00	-25.57	QP	
4		659.3013	-1.05	25.87	24.82	47.00	-22.18	QP	
5		782.2268	-1.55	27.10	25.55	47.00	-21.45	QP	
6	*	894.0716	-1.46	28.77	27.31	47.00	-19.69	QP	

Model No.	CQSA-E 1024	Test Mode	PC+SD
Environmental Conditions	22.1 °C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	5V	5V



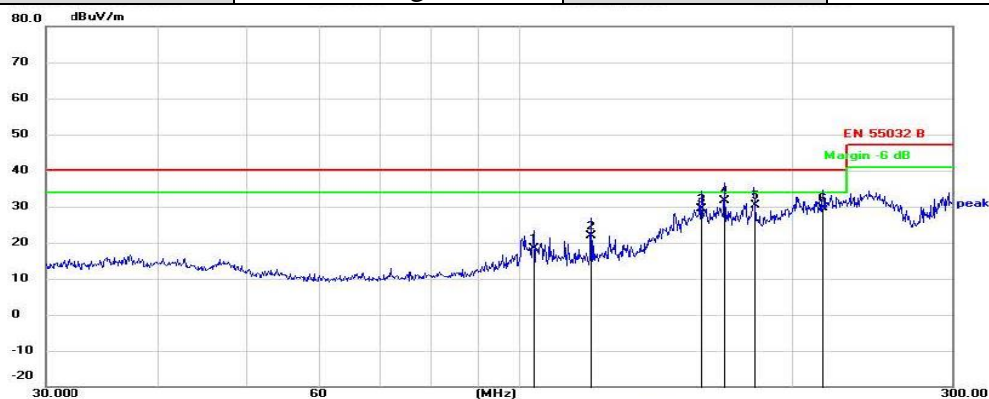
Site: LAB
 Limit: EN 55032 B
 EUT: DMX light controller
 M/N: CQSA-E 1024
 Mode: PC+SD
 Note:

Polarization: **Vertical**
 Power: DC5V
 Distance: 3m

Temperature: 22.1(C)
 Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		108.1735	6.28	14.11	20.39	40.00	-19.61	QP	
2		119.9834	9.53	14.30	23.83	40.00	-16.17	QP	
3		139.9978	12.83	14.64	27.47	40.00	-12.53	QP	
4		155.2820	11.32	16.47	27.79	40.00	-12.21	QP	
5		167.1557	9.55	17.52	27.07	40.00	-12.93	QP	
6	*	216.3322	8.59	19.28	27.87	40.00	-12.13	QP	

Model No.	CQSA-E 1024	Test Mode	PC+SD
Environmental Conditions	22.1 °C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	5V



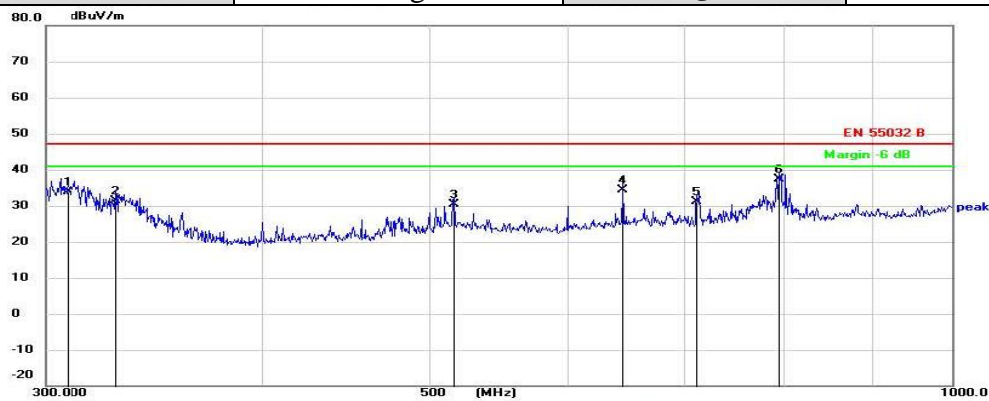
Site: LAB
 Limit: EN 55032 B
 EUT: DMX light controller
 M/N: CQSA-E 1024
 Mode: PC+SD
 Note:

Polarization: **Horizontal**
 Power: DC5V
 Distance: 3m

Temperature: 22.1(C)
 Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		103.7818	5.39	12.88	18.27	40.00	-21.73	QP	
2		119.9834	7.77	14.10	21.87	40.00	-18.13	QP	
3		158.5335	13.84	15.56	29.40	40.00	-10.60	QP	
4	*	167.9273	15.38	16.31	31.69	40.00	-8.31	QP	
5		181.6023	13.76	16.67	30.43	40.00	-9.57	QP	
6		216.3322	10.71	18.94	29.65	40.00	-10.35	QP	

Model No.	CQSA-E 1024	Test Mode	PC+SD
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	5V



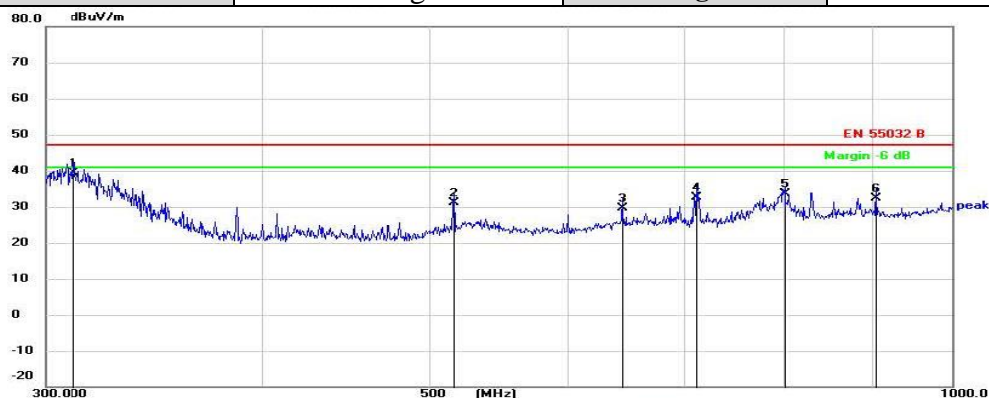
Site: LAB
 Limit: EN 55032 B
 EUT: DMX light controller
 M/N: CQSA-E 1024
 Mode: PC+SD
 Note:

Polarization: **Vertical**
 Power: DC5V
 Distance: 3m

Temperature: 22.1(C)
 Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		308.7951	14.02	19.85	33.87	47.00	-13.13	QP	
2		329.5382	12.03	19.24	31.27	47.00	-15.73	QP	
3		516.3444	7.43	23.03	30.46	47.00	-16.54	QP	
4		645.9442	8.81	25.62	34.43	47.00	-12.57	QP	
5		712.1118	5.69	25.49	31.18	47.00	-15.82	QP	
6	*	795.5235	10.42	27.00	37.42	47.00	-9.58	QP	

Model No.	CQSA-E 1024	Test Mode	PC+SD
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	5V



Site: LAB
 Limit: EN 55032 B
 EUT: DMX light controller
 M/N: CQSA-E 1024
 Mode: PC+SD
 Note:

Polarization: **Horizontal**
 Power: DC5V
 Distance: 3m

Temperature: 22.1(C)
 Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1	*	311.4085	19.72	19.71	39.43	47.00	-7.57	QP	
2		516.3444	8.14	23.03	31.17	47.00	-15.83	QP	
3		645.1669	3.98	25.59	29.57	47.00	-17.43	QP	
4		712.1118	7.04	25.49	32.53	47.00	-14.47	QP	
5		801.2910	6.57	26.98	33.55	47.00	-13.45	QP	
6		903.8121	3.77	28.67	32.44	47.00	-14.56	QP	

Model No.	CQSA-E 1024	Test Mode	SA+SD
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



Site: LAB

Limit: EN 55032 B

EUT: DMX light controller

M/N: CQSA-E 1024

Mode: SA+SD

Note:

Polarization: **Vertical**

Power: AC230V/50Hz

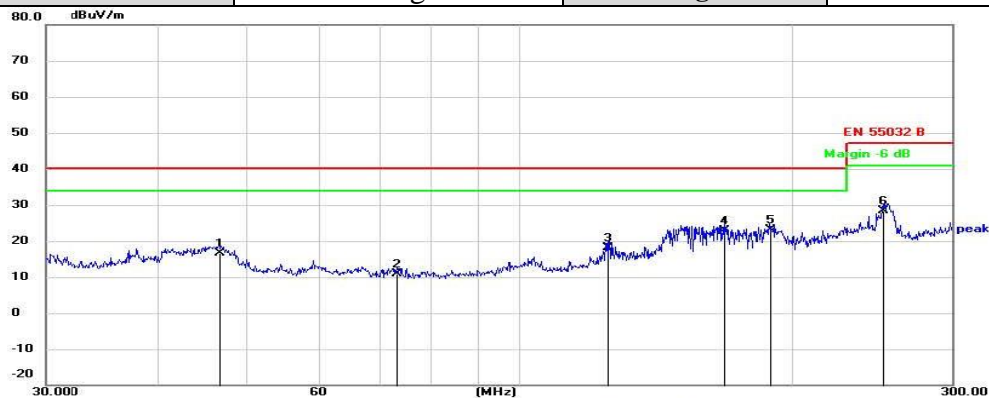
Distance: 3m

Temperature: 22.1(C)

Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		31.1258	9.26	13.36	22.62	40.00	-17.38	QP	
2		45.5115	13.05	12.74	25.79	40.00	-14.21	QP	
3		59.0364	7.43	11.29	18.72	40.00	-21.28	QP	
4		125.6380	3.16	14.44	17.60	40.00	-22.40	QP	
5	*	149.6653	12.23	15.67	27.90	40.00	-12.10	QP	
6		200.0420	6.35	18.46	24.81	40.00	-15.19	QP	

Model No.	CQSA-E 1024	Test Mode	SA+SD
Environmental Conditions	22.1°C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



Site: LAB

Limit: EN 55032 B

EUT: DMX light controller

M/N: CQSA-E 1024

Mode: SA+SD

Note:

Polarization: **Horizontal**

Power: AC230V/50Hz

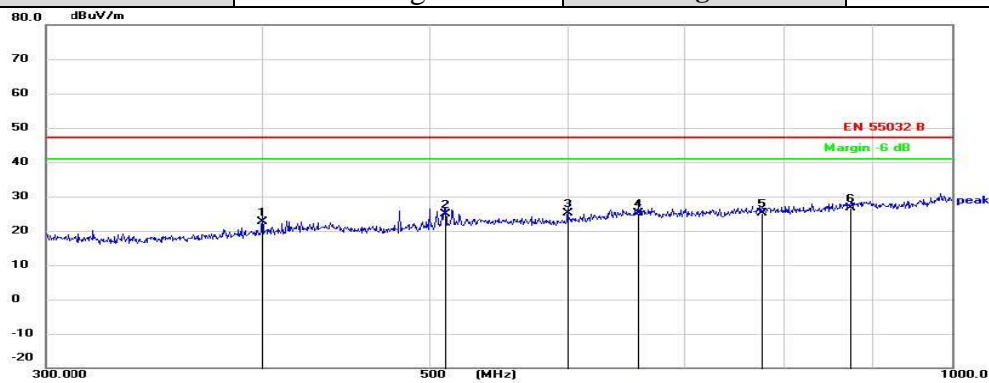
Distance: 3m

Temperature: 22.1(C)

Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		46.6788	2.98	13.62	16.60	40.00	-23.40	QP	
2		73.1342	-0.12	10.94	10.82	40.00	-29.18	QP	
3		125.3491	3.12	15.06	18.18	40.00	-21.82	QP	
4		167.9270	6.57	16.31	22.88	40.00	-17.12	QP	
5	*	188.8519	6.65	16.50	23.15	40.00	-16.85	QP	
6		251.8380	4.43	23.95	28.38	47.00	-18.62	QP	

Model No.	CQSA-E 1024	Test Mode	SA+SD
Environmental Conditions	22.1 °C, 54.5% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



Site LAB

Limit: EN 55032 B

EUT: DMX light controller

M/N: CQSA-E 1024

Mode: SA+SD

Note:

Polarization: **Vertical**

Power: AC230V/50Hz

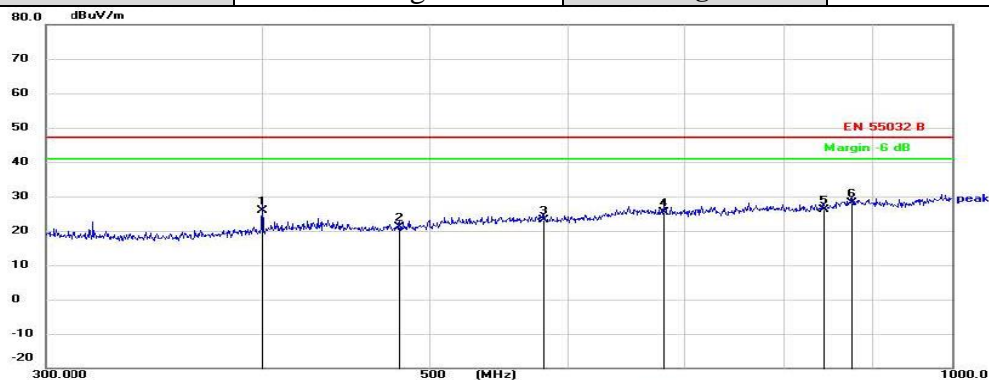
Distance: 3m

Temperature: 22.1(C)

Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		400.0269	1.35	21.18	22.53	47.00	-24.47	QP	
2		510.7797	2.01	22.79	24.80	47.00	-22.20	QP	
3		600.2047	1.40	23.78	25.18	47.00	-21.82	QP	
4		659.3012	-0.67	25.87	25.20	47.00	-21.80	QP	
5		777.5321	-2.04	27.12	25.08	47.00	-21.92	QP	
6	*	874.9040	-1.88	28.52	26.64	47.00	-20.36	QP	

Model No.	CQSA-E 1024	Test Mode	SA+SD
Environmental Conditions	22.1 °C, 54.5% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Yunfei Zhong	Test Voltage	230V/50Hz



Site LAB

Limit: EN 55032 B

EUT: DMX light controller

M/N: CQSA-E 1024

Mode: SA+SD

Note:

Polarization: **Horizontal**

Power: AC230V/50Hz

Distance: 3m

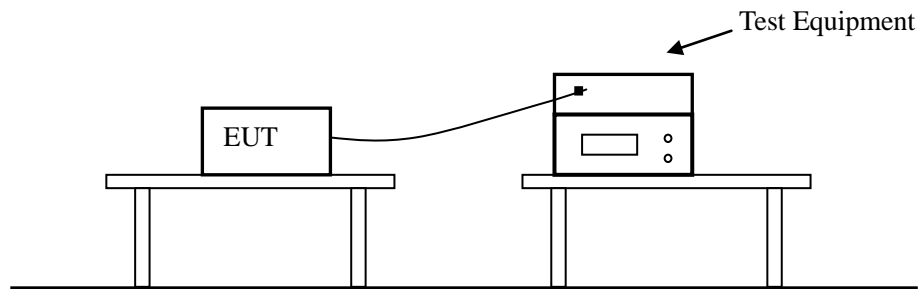
Temperature: 22.1(C)

Humidity: 54.5 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Comment
1		400.0269	4.81	21.18	25.99	47.00	-21.01	QP	
2		479.7819	-0.63	21.73	21.10	47.00	-25.90	QP	
3		581.7073	-0.32	23.51	23.19	47.00	-23.81	QP	
4		681.9059	-0.15	25.52	25.37	47.00	-21.63	QP	
5		843.8671	-1.23	27.36	26.13	47.00	-20.87	QP	
6	*	875.9580	-0.48	28.55	28.07	47.00	-18.93	QP	

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Test Standard

EN IEC 61000-3-2: 2019

6.3. Operation Condition of EUT

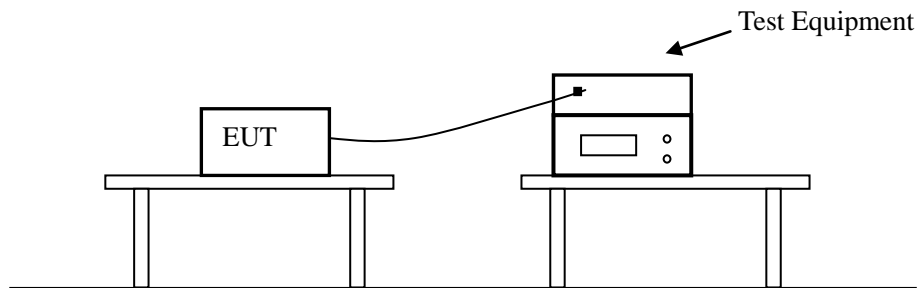
Same as Section 4.4, except the test setup replaced as Section 6.1.

6.4. Test Results

N/A

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

EN 61000-3-3: 2013+A1: 2019

7.3. Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 7.1.

7.4. Test Results

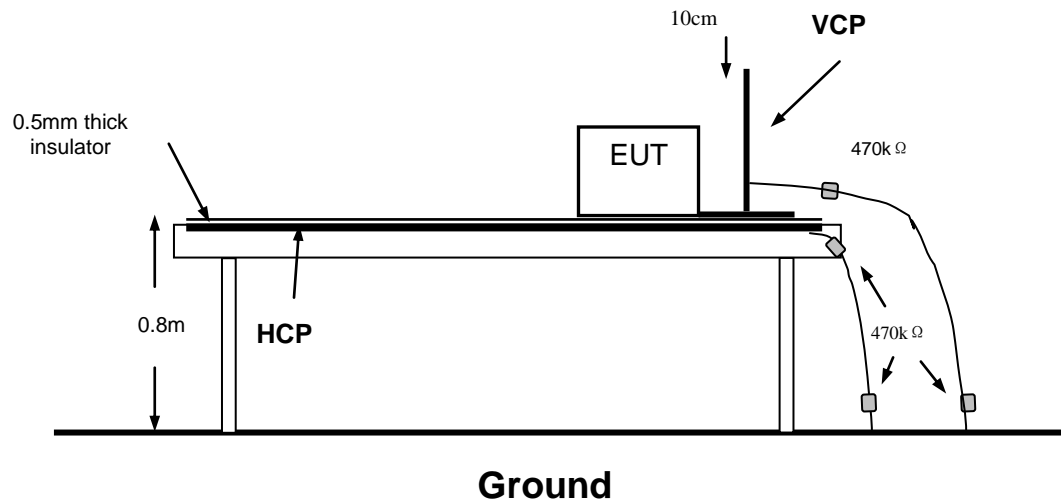
PASS.

Overall Result	Notes:
PASS	Measurement method - Voltage

	Pst	dc (%)	dmax (%)	Tmax(> 3.3%)(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.088	0.005	0.190	0

8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

8.1. Block Diagram of Test Setup



8.2. Test Standard

EN 55024: 2010 (EN 61000-4-2: 2009, Severity Level: 3 / Air Discharge: $\pm 8\text{KV}$, Level: 2 / Contact Discharge: $\pm 4\text{KV}$)

8.3. Severity Levels and Performance Criterion

8.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	± 2	± 2
2.	± 4	± 4
3.	± 6	± 8
4.	± 8	± 15
X	Special	Special

8.3.2. Performance Criterion: B

8.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4.3.

8.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 8.1.

8.6.Test Procedure

8.6.1.Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

8.6.2.Contact Discharge

All the procedure shall be same as Section 8.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

8.6.3.Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

8.6.4.Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

8.7.Test Results

PASS.

Please refer to the following pages

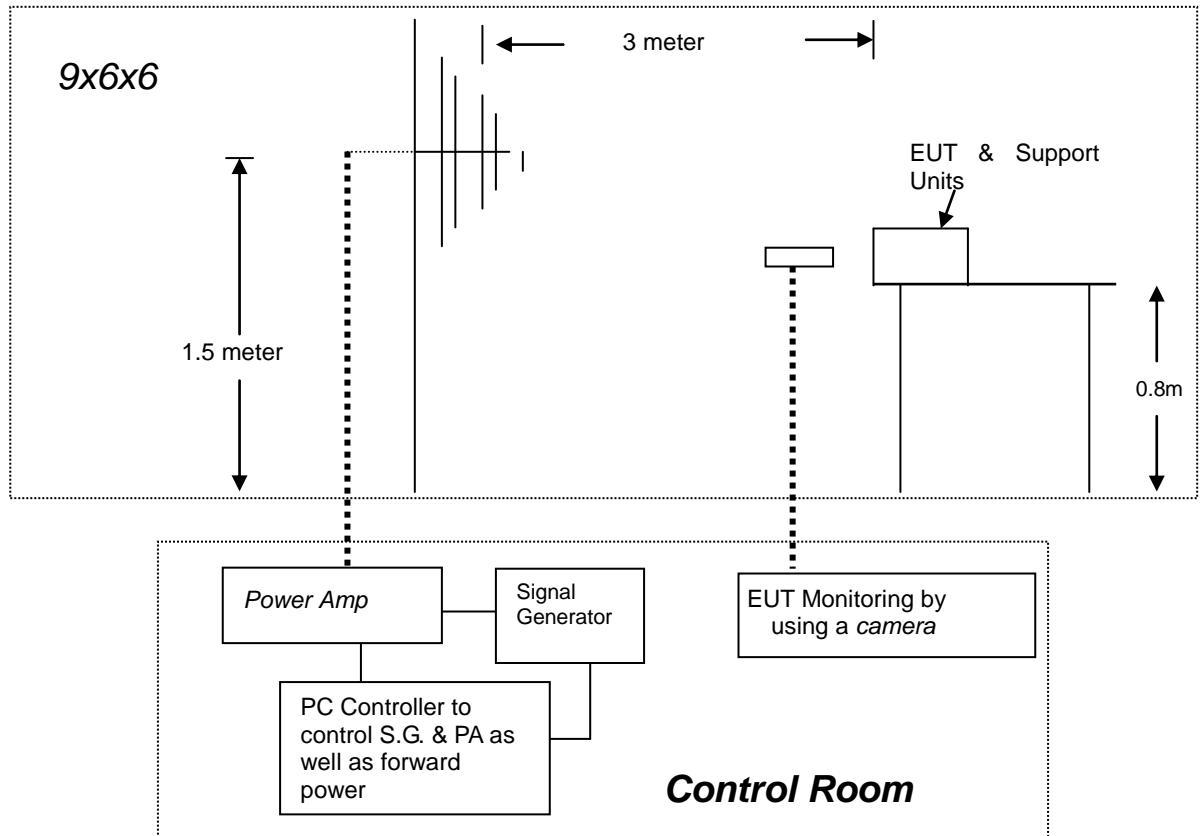
Electrostatic Discharger Test Results

Standard	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2		
Applicant	CHROMATEQ SARL		
EUT	DMX Lighting Controller	Temperature	22.5℃
M/N	CQSA-E 1024	Humidity	45.5%
Criterion	B	Test Engineer	Yunfei Zhong
Test Mode	work		

Air Discharge							
Test Points	Test Levels			Results			
	± 2KV	± 4KV	± 8KV	Passed	Fail	Performance Criterion	
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Contact Discharge							
Test Points	Test Levels		Results				
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion		
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Discharge To Horizontal Coupling Plane							
Side of EUT	Test Levels		Results				
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion		
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Discharge To Vertical Coupling Plane							
Side of EUT	Test Levels		Results				
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion		
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	

9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

9.1. Block Diagram of Test



9.2. Test Standard

EN 55024: 2010 (EN 61000-4-3: 2006+A1: 2010 Severity Level: 2, 3V / m)

9.3. Severity Levels and Performance Criterion

9.3.1. Severity Levels

Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X.	Special

9.3.2. Performance Criterion: A

9.4.EUT Configuration on Test

The configuration of the EUT is same as Section 4.3.

9.5.Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.1, except the test setup replaced as Section 9.1.

9.6.Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD Recording is used to monitor its screen. All the scanning conditions are as following:

Condition of Test	Remark
-----	-----
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	3 Sec.

9.7.Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

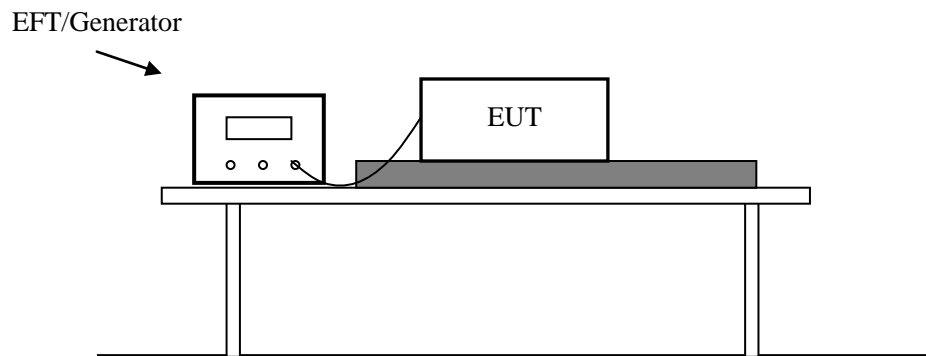
Standard	<input type="checkbox"/> IEC 61000-4-3 <input checked="" type="checkbox"/> EN 61000-4-3		
Applicant	CHROMATEQ SARL		
EUT	DMX Lighting Controller	Temperature	24.0°C
M/N	CQSA-E 1024	Humidity	46.0%
Field Strength	3 V/m	Criterion	A
Test Mode	work	Test Engineer	Yunfei Zhong
Frequency Range	80 MHz to 1000 MHz		
Modulation	<input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1KHz 80%		
Steps	1%		

	Horizontal	Vertical
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Note:N/A

10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1. Block Diagram of Test Setup



10.2. Test Standard

EN 55024: 2010 (EN 61000-4-4: 2012, Severity Level, Level 2: 1KV)

10.3. Severity Levels and Performance Criterion

10.3.1. Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On AC POWER SUPPLY Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

10.3.2. Performance Criterion: B

10.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.3

10.5. Operating Condition of EUT

10.5.1. Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode (work) and measure it.

10.6.Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.6.1.For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

10.6.2.For signal lines and control lines ports: No I/O ports. It's unnecessary to test.

10.6.3.For DC output line ports: It's unnecessary to test.

10.7.Test Results

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

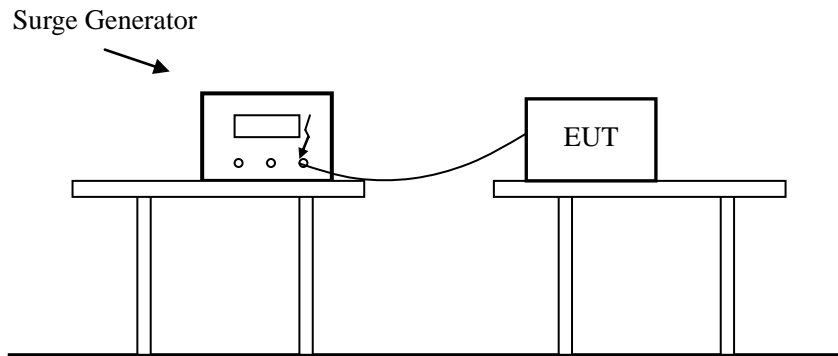
Standard	<input type="checkbox"/> IEC 61000-4-4 <input checked="" type="checkbox"/> EN 61000-4-4		
Applicant	CHROMATEQ SARL		
EUT	DMX Lighting Controller	Temperature	23.5℃
M/N	CQSA-E 1024	Humidity	56.1%
Test Mode	work	Criterion	B
Test Engineer	Yunfei Zhong		

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
L-N	1KV	PASS	PASS

Note:

11. SURGE IMMUNITY TEST

11.1. Block Diagram of Test Setup



11.2. Test Standard

EN 55024: 2010 (EN 61000-4-5: 2014, Severity Level: Line to Line: Level 2, 1.0KV, Line to Earth: Level 3, 2.0KV)

11.3. Severity Levels and Performance Criterion

11.3.1. Severity level

Severity Level	Open-Circuit Test Voltage (KV)
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.3.2. Performance Criterion: B

11.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.3

11.5. Operating Condition of EUT

11.5.1. Setup the EUT as shown in Section 11.1.

11.5.2. Turn on the power of all equipments.

11.5.3. Let the EUT work in test mode (work) and measure it.

11.6. Test Procedure

11.6.1. Set up the EUT and test generator as shown on Section 11.1.

11.6.2. For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge
(at open-circuit condition) and 8/20us current surge to EUT selected points.

11.6.3. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.

11.6.4. Different phase angles are done individually.

11.6.5. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7. Test Results

PASS.

Please refer to the following page.

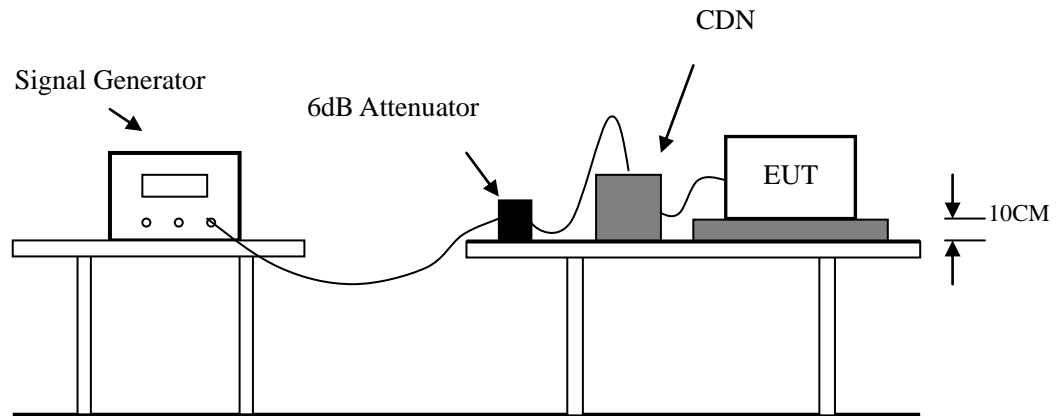
Surge Immunity Test Result

Standard	<input type="checkbox"/> IEC 61000-4-5 <input checked="" type="checkbox"/> EN 61000-4-5		
Applicant	CHROMATEQ SARL		
EUT	DMX Lighting Controller	Temperature	23.5℃
M/N	CQSA-E 1024	Humidity	56.1%
Test Mode	work	Criterion	B
Test Engineer	Yunfei Zhong		

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	90°	5	1.0	PASS
	-	270°	5	1.0	PASS
Note					

12. INJECTED CURRENTS SUSCEPTIBILITY TEST

12.1. Block Diagram of Test Setup



12.2. Test Standard

EN 55024: 2010(EN 61000-4-6: 2014, Severity Level: Level 2, 3V (rms), (0.15MHz ~ 80MHz))

12.3. Severity Levels and Performance Criterion

12.3.1. Severity level

Level	Field Strength (V)
1	1
2	3
3	10
X	Special

12.3.2. Performance Criterion: A

12.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.3

12.5. Operating Condition of EUT

- 12.5.1. Setup the EUT as shown in Section 12.1.
- 12.5.2. Turn on the power of all equipments.
- 12.5.3. Let the EUT work in test mode (work) and measure it.

12.6. Test Procedure

- 12.6.1. Set up the EUT, CDN and test generators as shown on Section 12.1.
- 12.6.2. Let the EUT work in test mode and measure it.
- 12.6.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 12.6.4. The disturbance signal described below is injected to EUT through CDN.
- 12.6.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 12.6.6. The frequency range is swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- 12.6.7. The rate of sweep shall not exceed 1.5×10^{-3} decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 12.6.8. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.7. Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

Standard	<input type="checkbox"/> IEC 61000-4-6 <input checked="" type="checkbox"/> EN 61000-4-6		
Applicant	CHROMATEQ SARL		
EUT	DMX Lighting Controller	Temperature	25.0°C
M/N	CQSA-E 1024	Humidity	49.0%
Test Mode	work	Criterion	A
Test Engineer	Yunfei Zhong		

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 10	AC Mains	3V	A	PASS
10 ~ 30	AC Mains	3-1V	A	PASS
30 ~ 80	AC Mains	1V	A	PASS

Remark:

1. Modulation Signal: 1kHz 80% AM

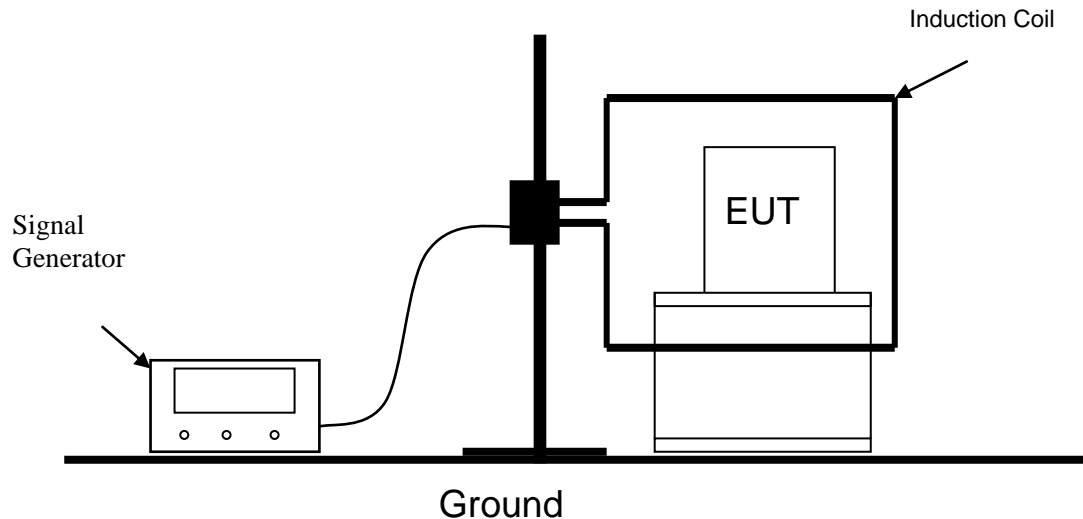
2. Measurement Equipment :

Simulator: CIT-10 (FRANKONIA)

CDN : ☒ CDN-M2 (FRANKONIA)☐ CDN-M3 (FRANKONIA)**Note:**

13. MAGNETIC FIELD SUSCEPTIBILITY TEST

13.1. Block Diagram of Test Setup



13.2. Test Standard

EN 55024: 2010 (EN 61000-4-8: 2010, Severity Level: Level 1, 1A / m)

13.3. Severity Levels and Performance Criterion

13.3.1. Severity Levels

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

13.3.2. Performance Criterion: A

13.4. EUT Configuration on Test

The configuration of the EUT is same as Section 3.3

13.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

13.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

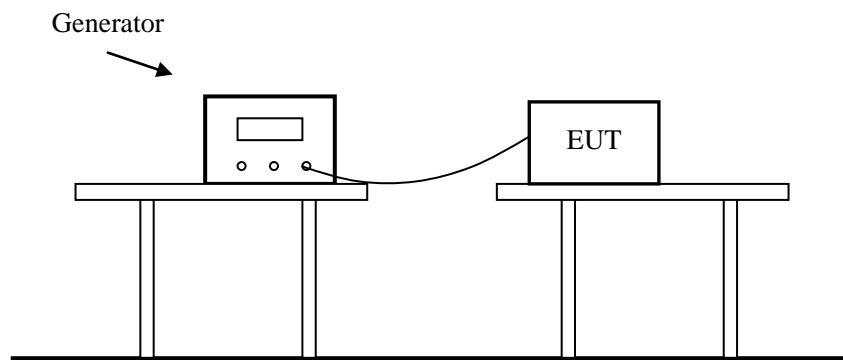
Standard	<input type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> EN 61000-4-8		
Applicant	CHROMATEQ SARL		
EUT	DMX Lighting Controller	Temperature	24.0℃
M/N	CQSA-E 1024	Humidity	46.0%
Test Mode	work	Criterion	A
Test Engineer	Yunfei Zhong		

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
1	5 mins	X	A	PASS
1	5 mins	Y	A	PASS
1	5 mins	Z	A	PASS

Note:

14. VOLTAGE DIPS AND INTERRUPTIONS TEST

14.1. Block Diagram of Test Setup



14.2. Test Standard

EN 55024: 2010 (EN 61000-4-11: 2004)

14.3. Severity Levels and Performance Criterion

14.3.1. Severity level

Test Level (% UT)	Voltage dip and short interruptions (% UT)	Duration (in period)
0	100	0.5
70	30	25
0	100	250

14.3.2. Performance Criterion: B&C

14.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4.3.

14.5. Operating Condition of EUT

- 14.5.1. Setup the EUT as shown in Section 14.1.
- 14.5.2. Turn on the power of all equipments.
- 14.5.3. Let the EUT work in test mode (work) and measure it.

14.6. Test Procedure

- 14.6.1. Set up the EUT and test generator as shown on Section 14.1.
- 14.6.2. The interruptions are introduced at selected phase angles with specified duration.
- 14.6.3. Record any degradation of performance.

14.7. Test Results

PASS.

Please refer to the following page.

Voltage Dips And Interruptions Test Results

Standard	<input type="checkbox"/> IEC 61000-4-11 <input checked="" type="checkbox"/> EN 61000-4-11		
Applicant	CHROMATEQ SARL		
EUT	DMX Lighting Controller	Temperature	24.0°C
M/N	CQSA-E 1024	Humidity	46.0%
Test Mode	work	Criterion	B&C
Test Engineer	Yunfei Zhong		

Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion	Result
0	100	0.5P	B	PASS
70	30	25P	C	PASS
0	100	250P	C	PASS

Note:

15. PHOTOGRAPHS



Fig. 1

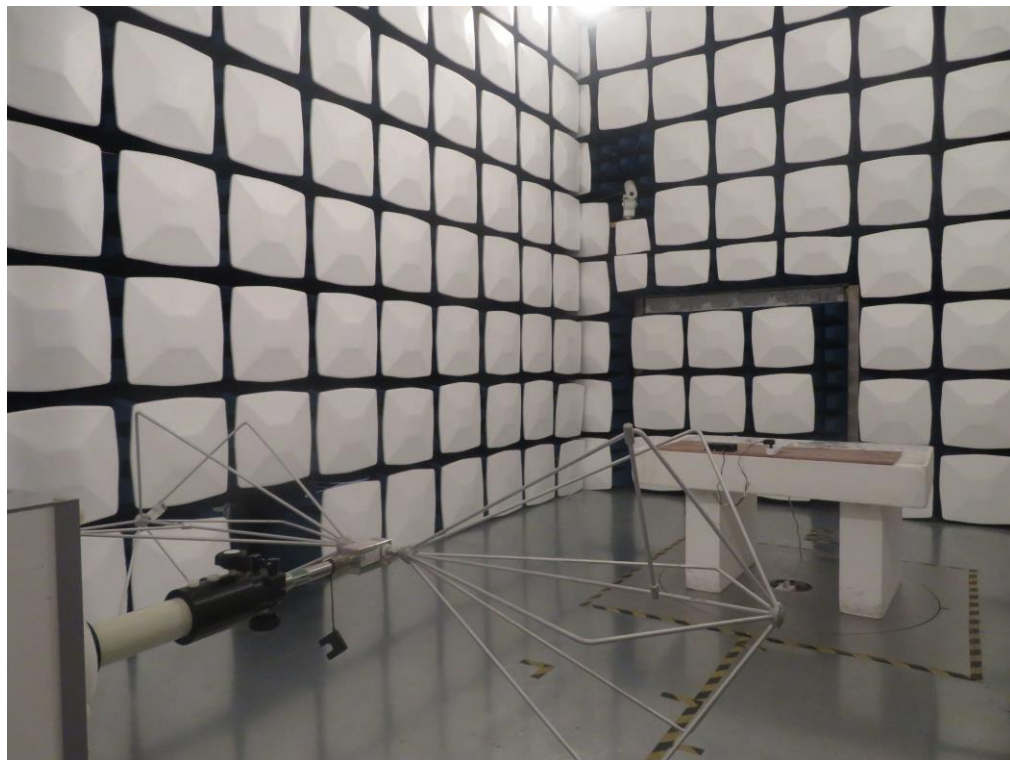


Fig. 2



Fig. 3

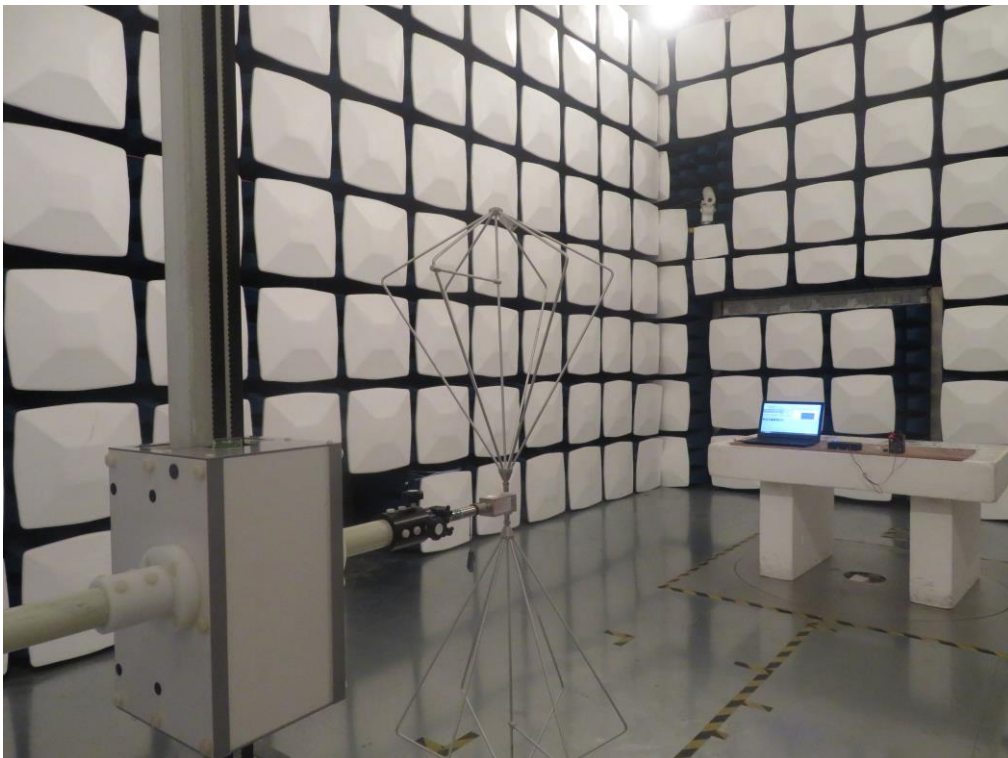


Fig. 4

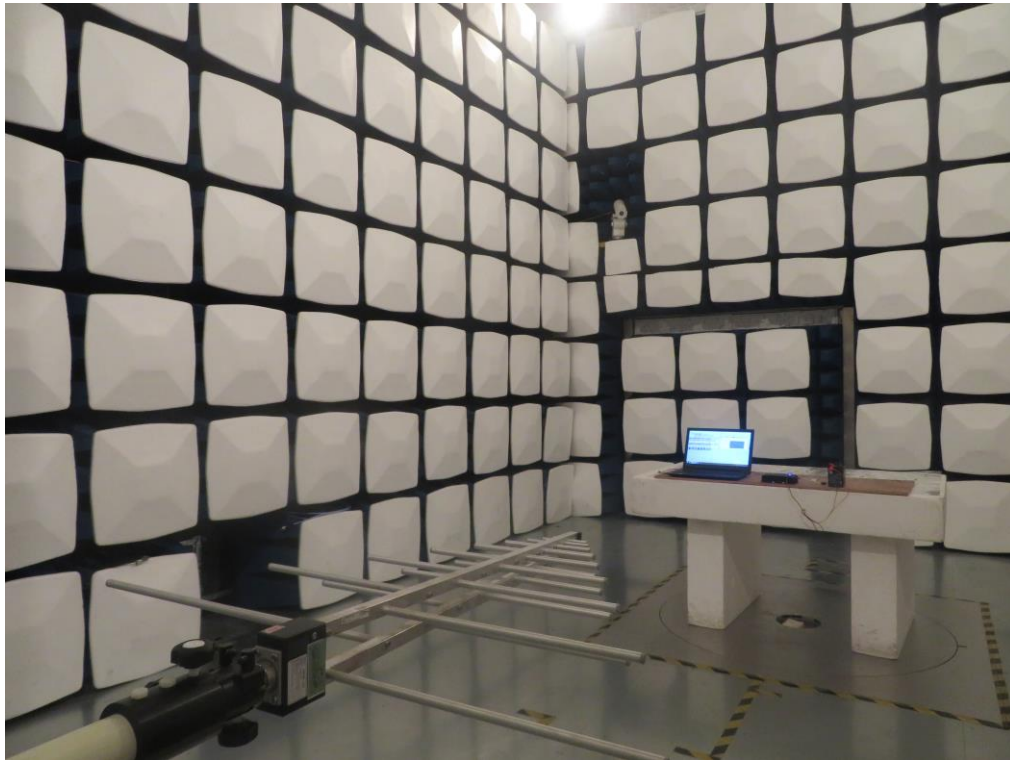


Fig. 5



Fig. 6

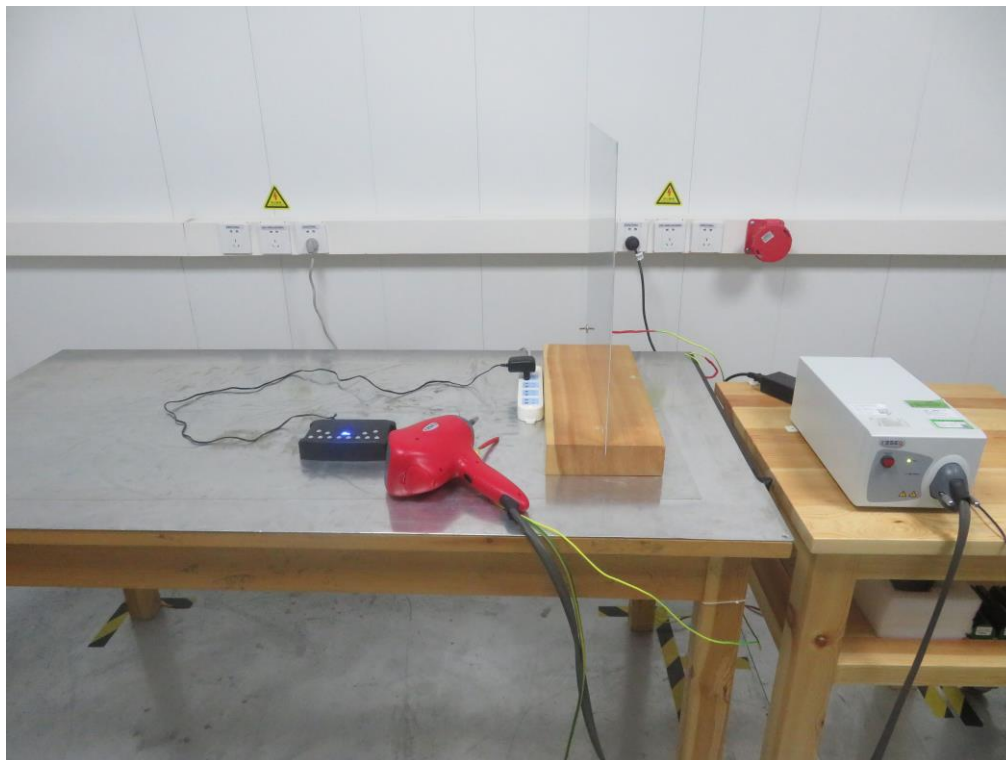


Fig. 7

16. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6

-----THE END OF TEST REPORT-----