

# FCC Part 15B

## Measurement and Test Report

For

**TECHCity Technology Co., Ltd.**

**4F., No.4, Aly. 1, Siwei Ln., Zhongzheng Rd., Xindian Dist.,**

**New Taipei City 231, Taiwan( R.O.C.)**

**FCC ID: UQOLC-330C**

**Test Standards:** FCC Part 15 Subpart B

**Product Description:** Curtain Controller

**Tested Model:** LC-330C

**Report No.:** STR12108166I

**Tested Date:** 2012-10-22 to 2012-12-24

**Issued Date:** 2013-01-16

**Tested By:** Daniel Liu / Engineer

*Daniel Liu*

**Reviewed By:** Lahm Peng / EMC Manager

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**Approved & Authorized By:** Jandy so / PSQ Manager

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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: TECHCity Technology Co., Ltd.  
Address of applicant: 4F., No.4, Aly. 1, Siwei Ln., Zhongzheng Rd.,  
Xindian Dist., New Taipei City 231, Taiwan( R.O.C.)  
Manufacturer: TECHCity Technology Co., Ltd.  
Address of manufacturer: 4F., No.4, Aly. 1, Siwei Ln., Zhongzheng Rd.,  
Xindian Dist., New Taipei City 231, Taiwan( R.O.C.)

General Description of EUT	
Product Name:	Curtain Controller
Trade Name:	e-live
Model No.:	LC-330C
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	433.92 MHz (Rx)
Antenna Type:	Integral Antenna
Modulation:	ASK
Rated Voltage:	AC 100~240V
Rated Current:	2A
Rated Power:	480W
Lowest Internal Frequency:	4MHz

## 1.2 Test Standards

The following report is prepared on behalf of the TECHCity Technology Co., Ltd. in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 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.

## 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

## 1.4 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

## 1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Operating	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

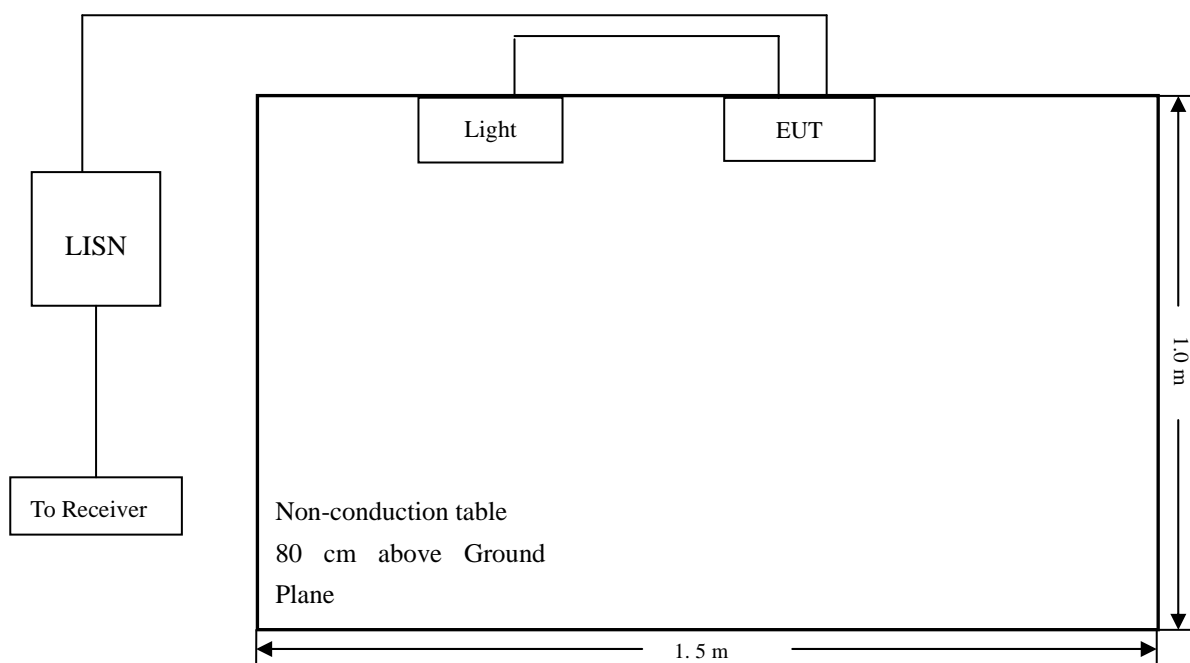
N/A: not applicable

### 3.1 Measurement Uncertainty

### 3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2012-03-28	2013-03-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2012-03-28	2013-03-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2012-03-28	2013-03-27

### 3.4 Basic Test Setup Block Diagram



### 3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

### 3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

**-7.98dB** at **0.158 MHz** in the **Line, Quasi Peak** detector, 0.15-30MHz

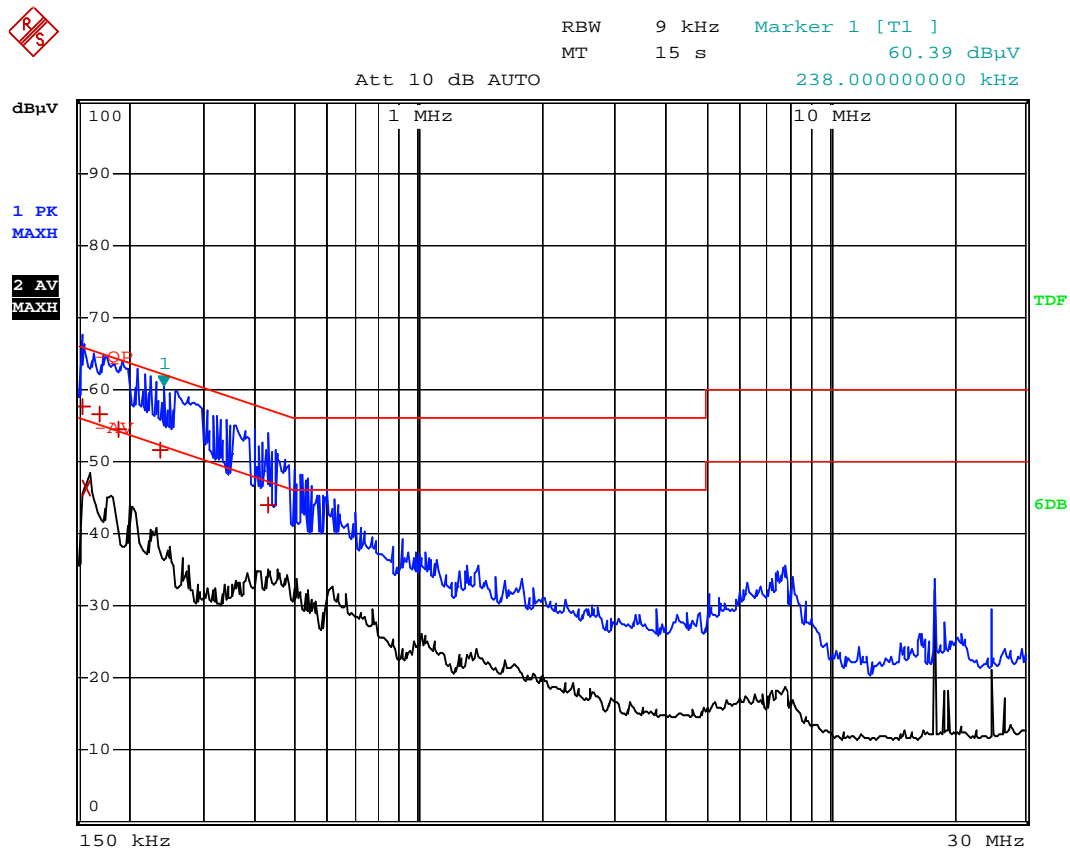
### 3.7 Conducted Emissions Test Data



Plot of Conducted Emissions Test Data

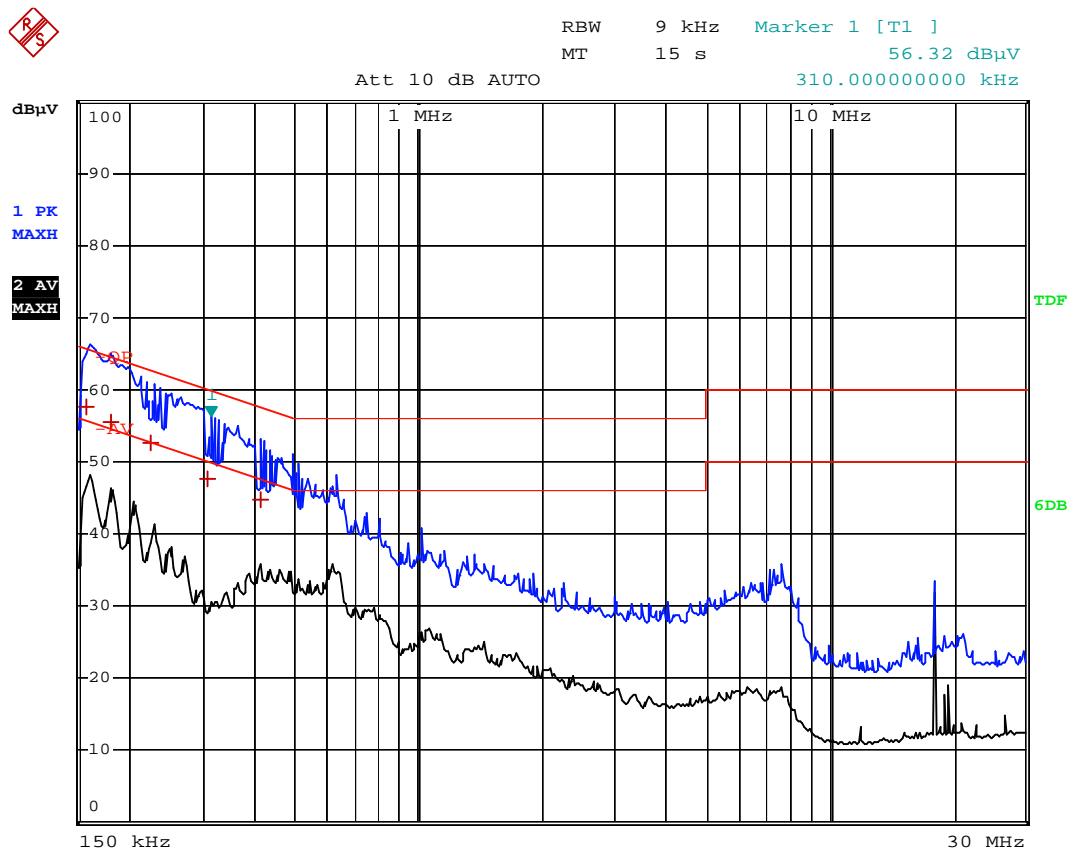
EUT: Curtain Controller  
Tested Model: LC-330C  
Operating Condiation: Operating  
Comment: AC 120V/60Hz

Test Specification: Neutral



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	154 kHz	57.48	-8.29
2 Average	158 kHz	46.28	-9.28
1 Quasi Peak	170 kHz	56.53	-8.42
1 Quasi Peak	190 kHz	54.42	-9.61
1 Quasi Peak	238 kHz	51.64	-10.51
1 Quasi Peak	430 kHz	43.94	-13.30

Test Specification: Line



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Quasi Peak	158 kHz	57.57	-7.98
1 Quasi Peak	182 kHz	55.57	-8.82
1 Quasi Peak	226 kHz	52.50	-10.08
1 Quasi Peak	310 kHz	47.53	-12.43
1 Quasi Peak	410 kHz	44.64	-13.00

## 4. Radiated Emissions

### 4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is  $\pm 5.10$  dB.

### 4.2 Test Equipment List and Details

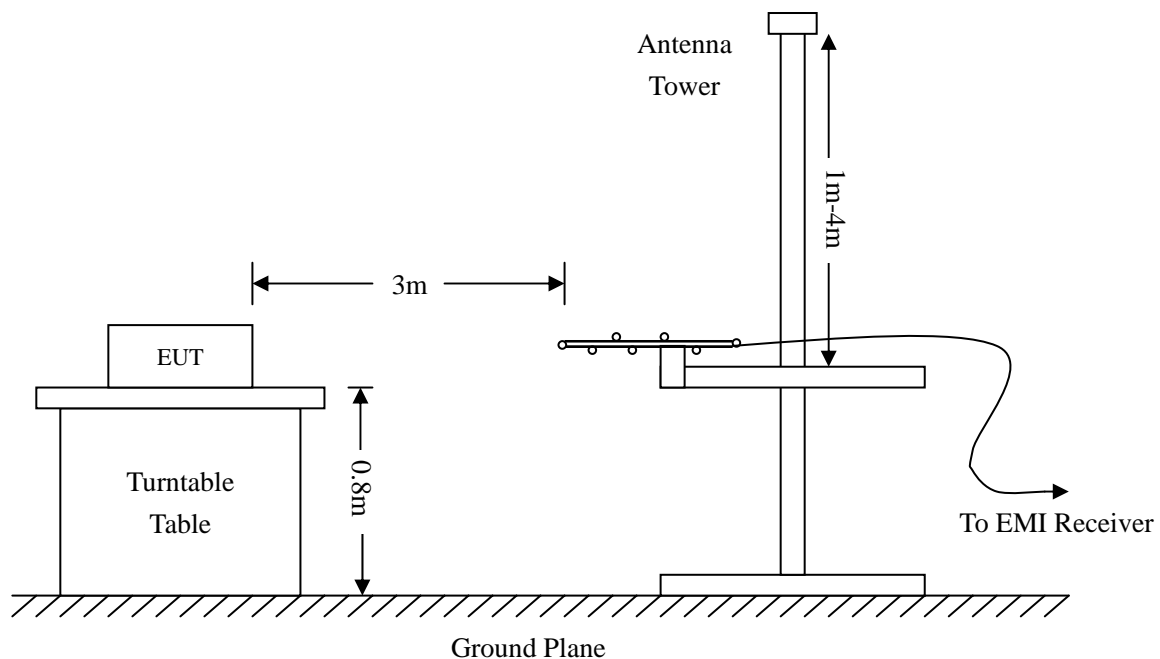
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	2013-03-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24

### 4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



#### 4.4 Test Receiver Setup

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:

RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:

RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

#### 4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

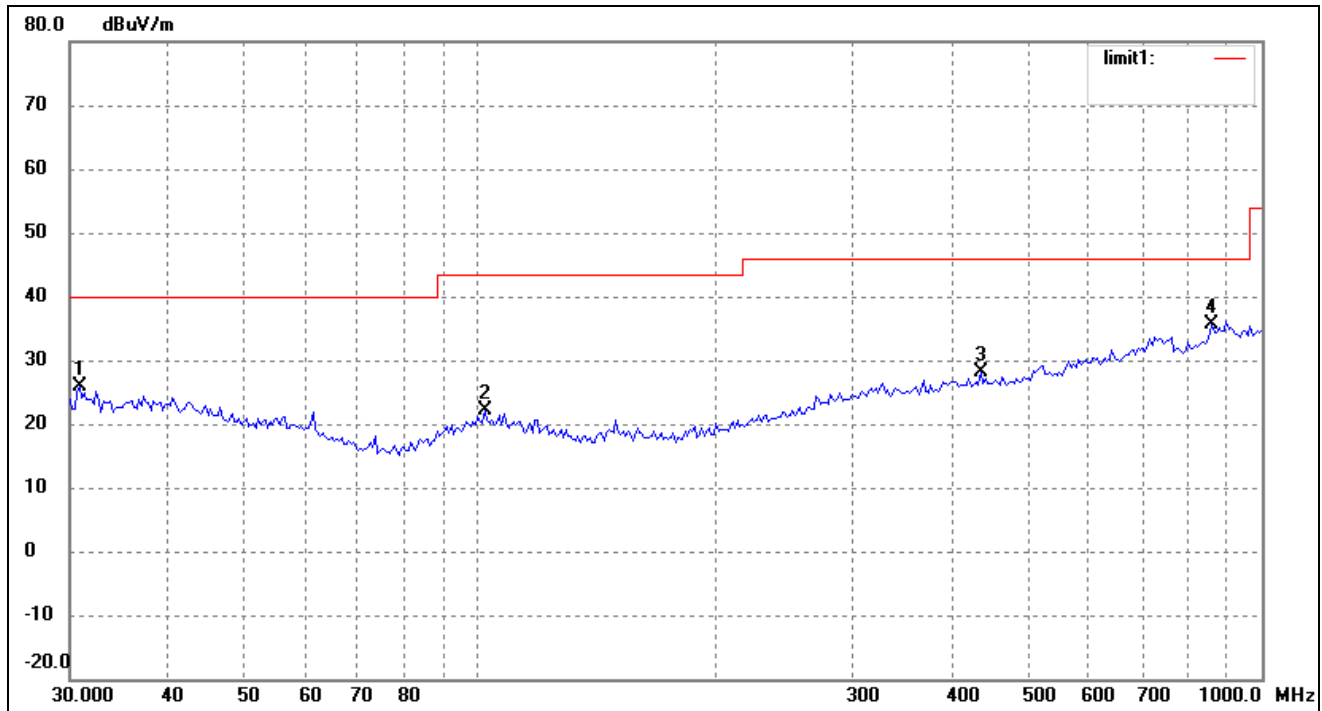
#### 4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

#### 4.7 Summary of Test Results/Plots

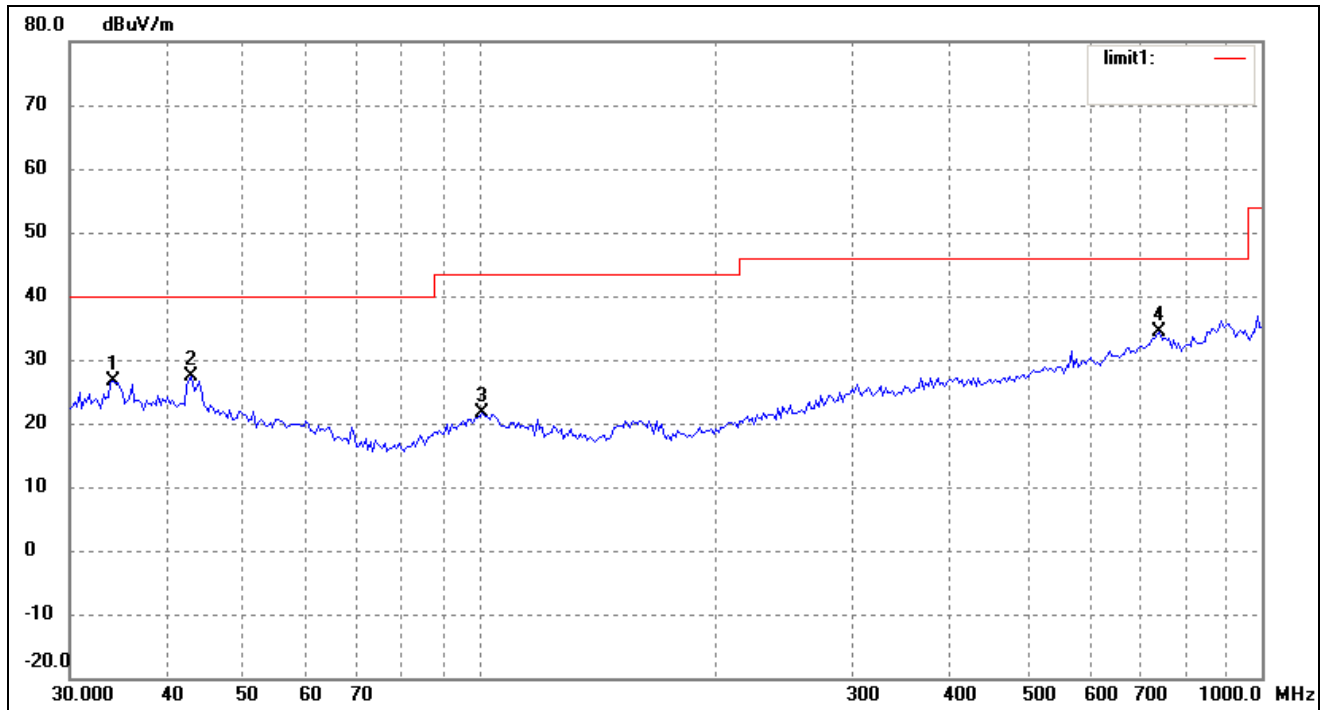
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

**-10.49 dB at 863.0562 MHz in the Horizontal polarization, 9 kHz to 5 GHz, 3Meters**

**Plot of Radiated Emissions Test Data**EUT: *Curtain Controller*Tested Model: *LC-330C*Operating Condition: *Operating*Comment: *AC 120V/60Hz*Test Specification: *Horizontal*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	30.8535	17.65	8.19	25.84	40.00	-14.16	352	100	peak
2	101.6443	15.39	6.67	22.06	43.50	-21.44	301	100	peak
3	437.1199	16.94	11.18	28.12	46.00	-17.88	257	150	peak
4	863.0562	17.24	18.27	35.51	46.00	-10.49	176	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	34.0365	17.98	8.72	26.70	40.00	-13.30	346	100	peak
2	42.8998	18.53	8.79	27.32	40.00	-12.68	311	100	peak
3	100.9340	14.77	6.75	21.52	43.50	-21.98	258	100	peak
4	739.6605	16.41	18.07	34.48	46.00	-11.52	173	100	peak

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5<sup>th</sup> Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz..

\*\*\*\*\* END OF REPORT \*\*\*\*\*