

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
limoss (Shenzhen) Co., Ltd.

Cinema Control System Wall Unit

Model No.: HC373

FCC ID: 2AH9H-HC373

IC: 21543-HC373

Prepared for : limoss (Shenzhen) Co., Ltd.
Address : 1/F & 2/F- 3/F South Wing of Block A, 1/F North
Wing of Block E, Hourui Third Industrial Park,
Hangcheng street, Bao'an District, Shenzhen City,
Guangdong

Prepared by : Shenzhen Accurate Technology Co., Ltd.
Address : 1/F., Building A, Changyuan New Material Port,
Science & Industry Park, Nanshan District,
Shenzhen, Guangdong, P.R. China.

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Report Number : ATE20181268
Date of Test : June 08, 2018--June 13, 2018
Date of Report : June 14, 2018

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Test Report Certification

Applicant : limoss (Shenzhen) Co., Ltd.
Address : 1/F & 2/F- 3/F South Wing of Block A, 1/F North Wing of Block E,
Hourui Third Industrial Park, Hangcheng street, Bao'an District,
Shenzhen City, Guangdong
Manufacturer : limoss (Shenzhen) Co., Ltd.
Address : 1/F & 2/F- 3/F South Wing of Block A, 1/F North Wing of Block E,
Hourui Third Industrial Park, Hangcheng street, Bao'an District,
Shenzhen City, Guangdong
Product : Cinema Control System Wall Unit
Model No. : HC373
Trade name : 

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.249

ANSI C63.10: 2013

RSS-210 Issue 9, August 2016

RSS-Gen Issue 5 April 2018

The EUT was tested according to FCC 47CFR 15.249 for compliance to FCC 47CFR 15.249 requirements

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.249 and RSS-210 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

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

Date of Test : June 08, 2018--June 13, 2018
Date of Report : June 14, 2017

Prepared by :
(Timothy G. Engler)

Approved & Authorized Signer :
(Sean Liu, Manager)



A handwritten signature in black ink, appearing to read 'Sean Liu', written over a horizontal line.

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Cinema Control System Wall Unit
Model No.	:	HC373
HVIN	:	HC373
Power Supply	:	AC 120V/60Hz
Operate Frequency	:	2422.999969MHz, 2448.393768MHz, 2473.987518MHz
Number of channel	:	3
Modulation mode	:	MSK
Antenna Gain	:	3dBi
Antenna type	:	Monopole antenna
Applicant	:	limoss (Shenzhen) Co., Ltd.
Address	:	1/F & 2/F- 3/F South Wing of Block A, 1/F North Wing of Block E, Hourui Third Industrial Park, Hangcheng street, Bao'an District, Shenzhen City, Guangdong
Manufacturer	:	limoss (Shenzhen) Co., Ltd.
Address	:	1/F & 2/F- 3/F South Wing of Block A, 1/F North Wing of Block E, Hourui Third Industrial Park, Hangcheng street, Bao'an District, Shenzhen City, Guangdong
Date of sample received	:	June 08, 2018
Date of Test	:	June 08, 2018-June 13, 2018

1.2. Special Accessory and Auxiliary Equipment

N/A

1.3. Description of Test Facility

EMC Lab	: Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISED) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	: Shenzhen Accurate Technology Co., Ltd.
Site Location	: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 06, 2018	One Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 06, 2018	One Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 06, 2018	One Year
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 06, 2018	One Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 06, 2018	One Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 06, 2018	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 06, 2018	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan. 06, 2018	One Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 06, 2018	One Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 06, 2018	One Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 06, 2018	One Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 06, 2018	One Year

3. OPERATION OF EUT DURING TESTING

3.1. Operating Mode

The mode is used: **Transmitting mode**

Low Channel: 2422.999969MHz

Middle Channel: 2448.393768MHz

High Channel: 2473.987518MHz

3.2. Configuration and peripherals

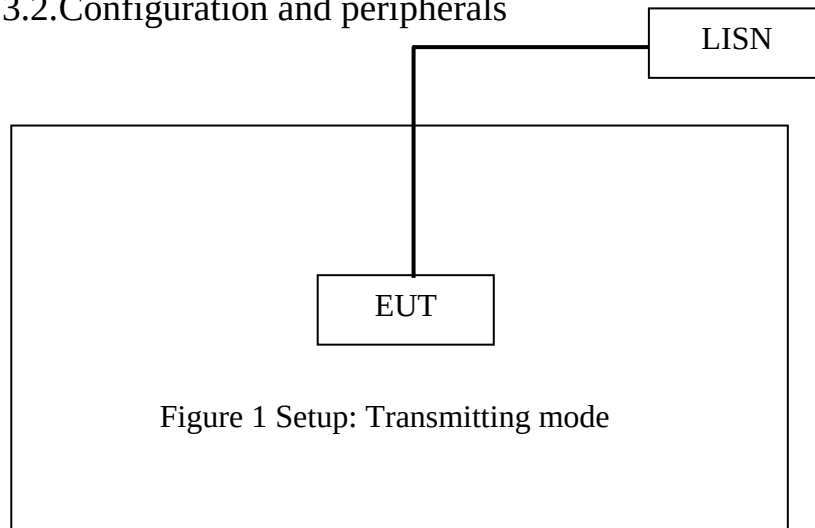


Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.215(c)	20dB Bandwidth	Compliant
RSS-Gen Section 6.7	99% Bandwidth	Compliant
Section 15.249(d) RSS-Gen 8.10	Band Edge Compliance Test	Compliant
Section 15.205(a), Section 15.209(a), Section 15.249, Section 15.35 RSS-210 Annex B B.10 RSS-Gen 6.13 RSS-Gen 8.9	Radiated Spurious Emission Test	Compliant
Section 15.207 RSS-Gen Section 8.8	AC Power Line Conducted Emission Test	Compliant
Section 15.203 RSS-Gen 6.8	Antenna Requirement	Compliant

5. 20DB BANDWIDTH MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. The Requirement For Section 15.215(c)

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long-term distribution appears evenly distributed.

5.3. Operating Condition of EUT

5.3.1. Setup the EUT and simulator as shown as Section 5.1.

5.3.2. Turn on the power of all equipment.

5.3.3. Let the EUT work in TX modes. The transmit frequency are 2422.999969, 2448.393768, 2473.987518MHz.

5.4. Test Procedure

5.4.1. Place the EUT on the table and set it in transmitting mode.

5.4.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

5.4.3. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz, Detector function=peak, Trace=max hold, Sweep=auto.

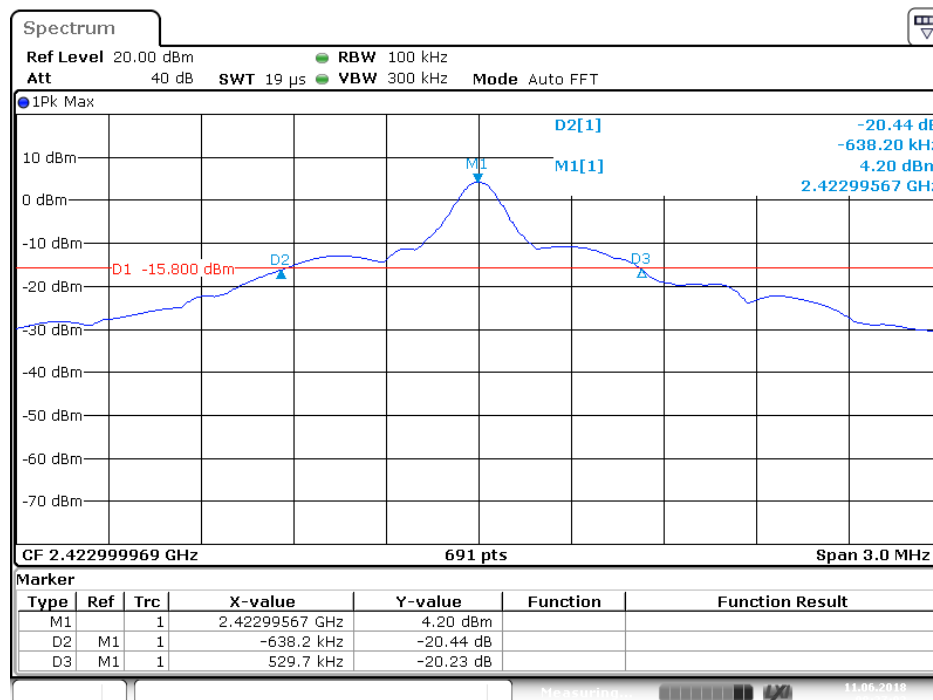
5.4.4. Set the measured low, middle and high frequency and test 20dB bandwidth with spectrum analyzer.

5.5.Test Result

Channel	Frequency(MHz)	20 dB Bandwidth(MHz)
Low	2422.999969	1.1679
Middle	2448.393768	1.0941
High	2473.987518	1.1939

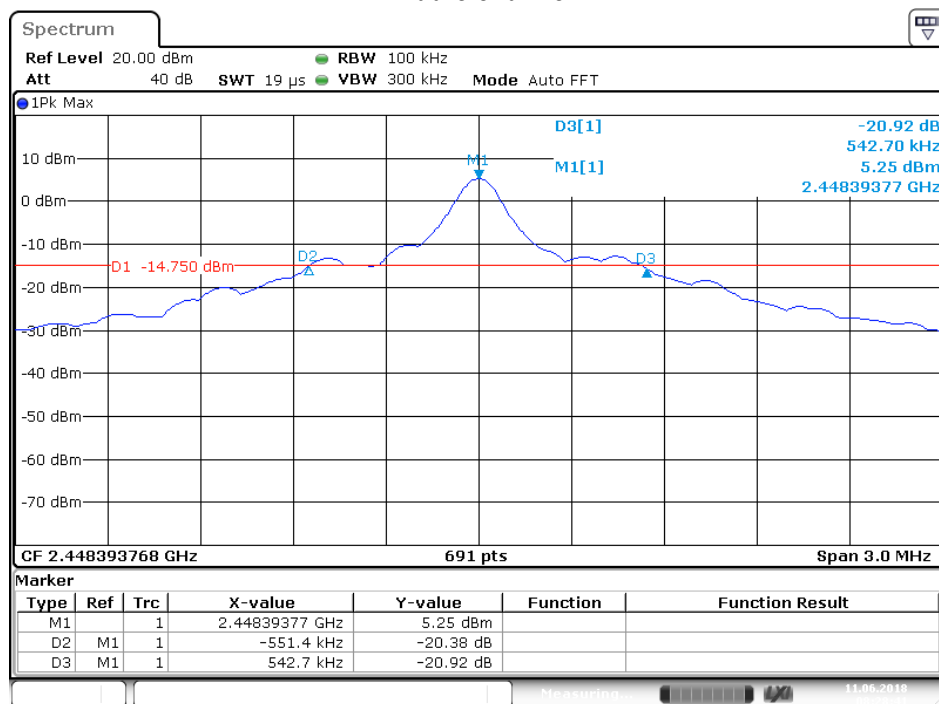
The spectrum analyzer plots are attached as below.

Low channel



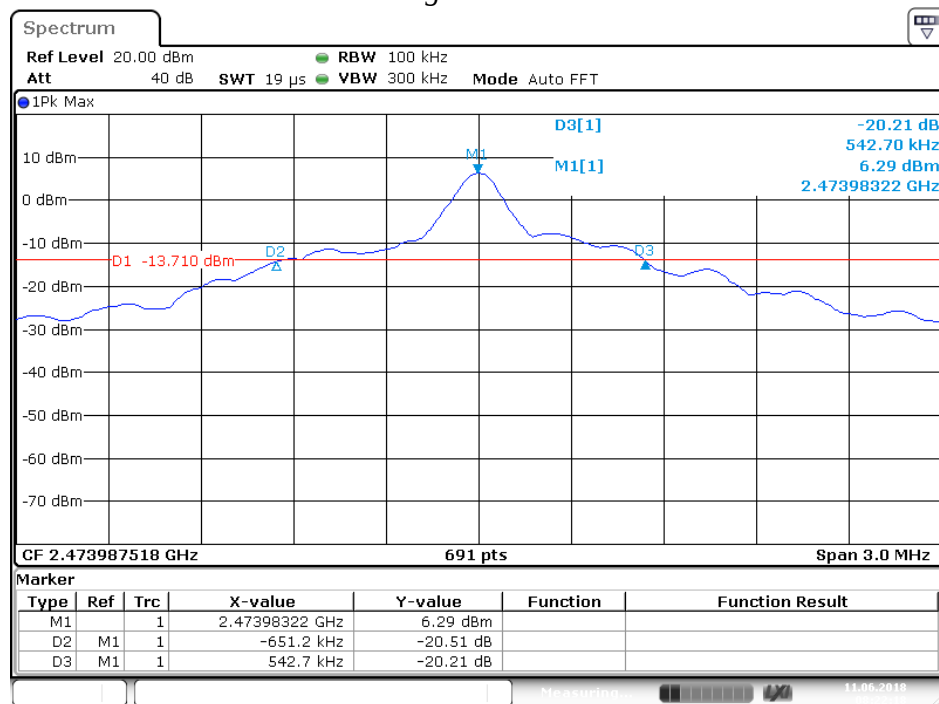
Date: 11.JUN.2018 08:27:03

Middle channel



Date: 11.JUN.2018 08:28:41

High channel



Date: 11.JUN.2018 08:22:18

6. 99% OCCUPIED BANDWIDTH

6.1. Block Diagram of Test Setup



6.2. The Requirement For RSS- Gen Clause 6.7

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth. When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth

6.3. Operating Condition of EUT

6.3.1. Setup the EUT and simulator as shown as Section 6.1.

6.3.2. Turn on the power of all equipment.

6.3.3. Let the EUT work in TX modes. The transmit frequency are 2422.999969, 2448.393768, 2473.987518MHz.

6.4. Test Procedure

6.4.1. Place the EUT on the table and set it in transmitting mode.

6.4.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

6.4.3. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

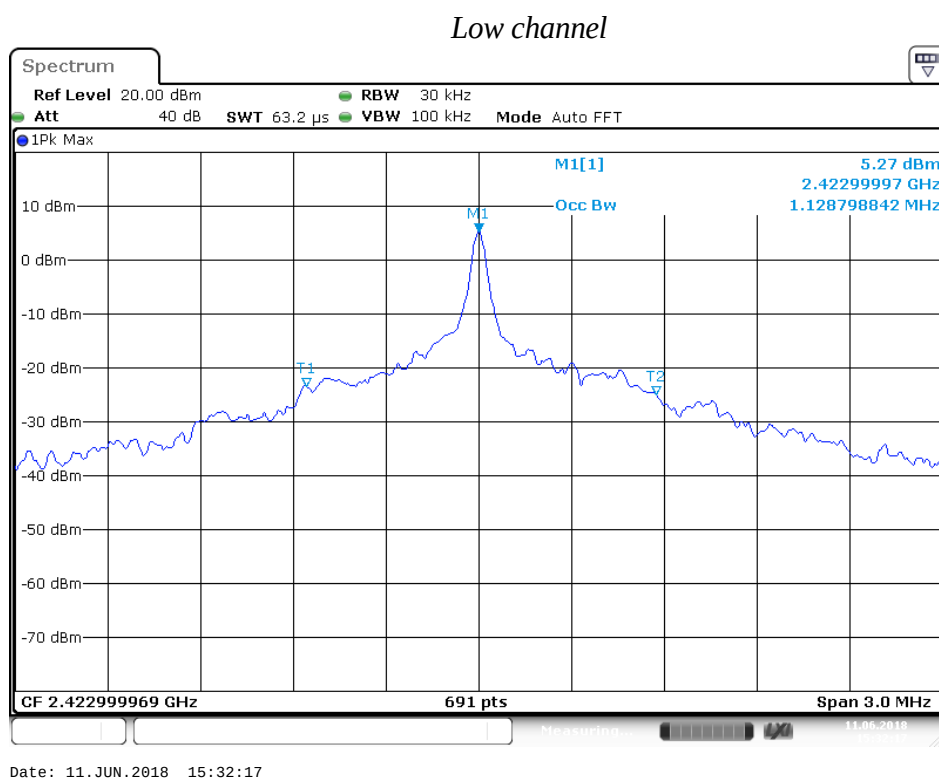
6.4.4. Set RBW of spectrum analyzer to 30kHz and VBW to 100kHz, Detector function=peak, Trace=max hold, Sweep=auto.

6.4.5.Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

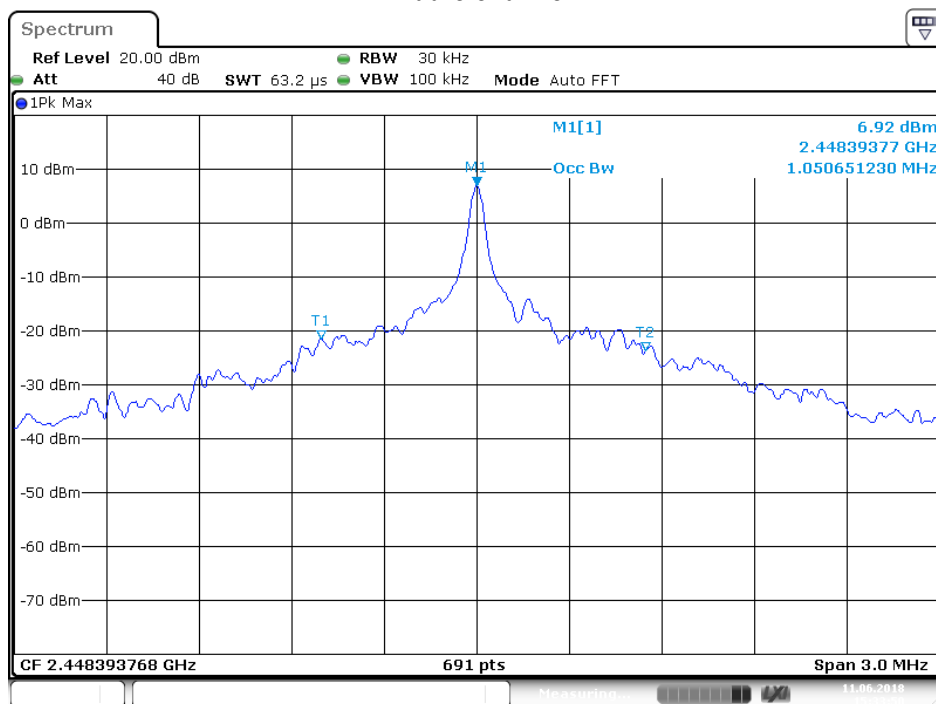
6.5.Measurement Result

Channel	Frequency(MHz)	99% Bandwidth (MHz)
Low	2422.999969	1.129
Middle	2448.393768	1.051
High	2473.987518	1.146

The spectrum analyzer plots are attached as below.

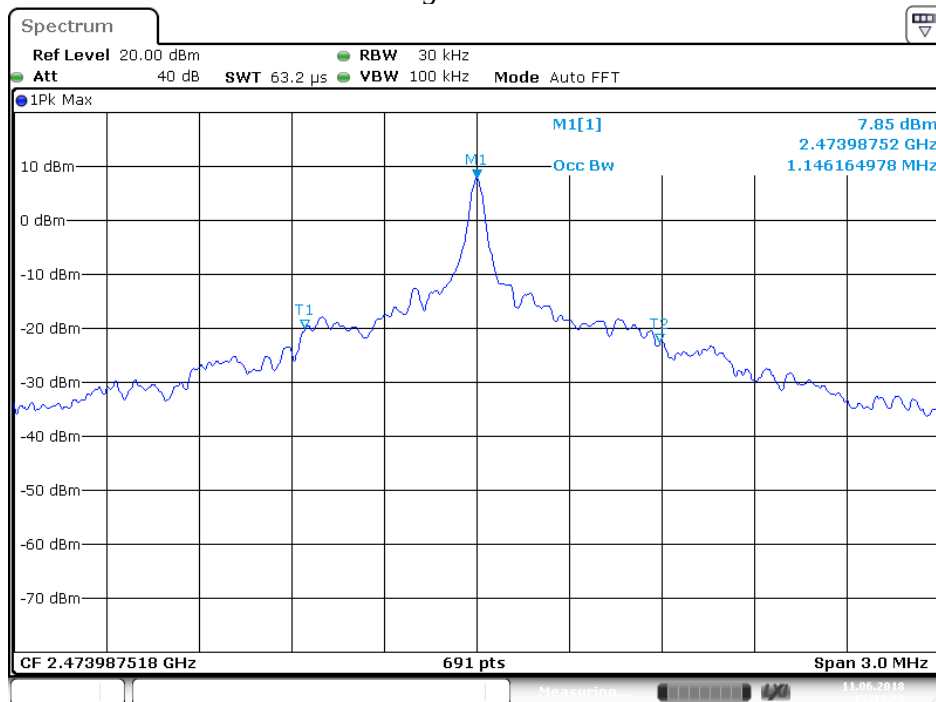


Middle channel



Date: 11.JUN.2018 15:33:50

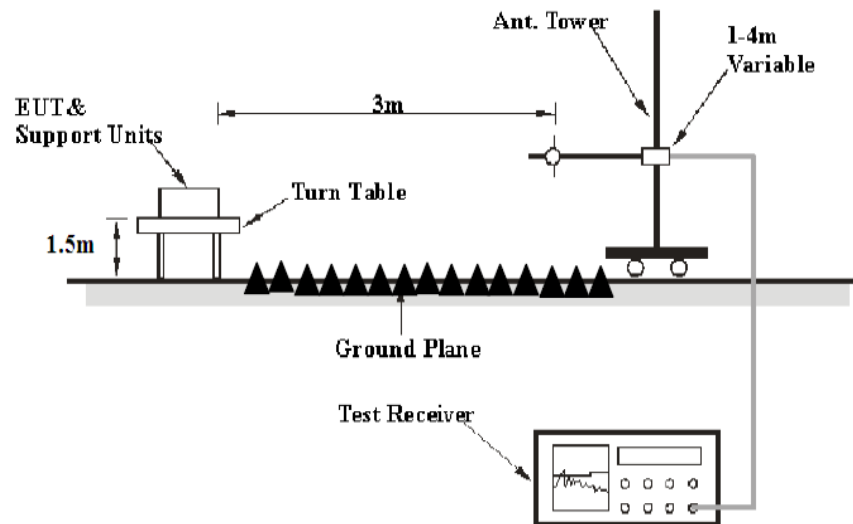
High channel



Date: 11.JUN.2018 15:34:29

7. BAND EDGE COMPLIANCE TEST

7.1. Block Diagram of Test Setup



7.2. The Requirement For Section 15.249

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

7.3.Restricted bands of operation

7.3.1.RSS-Gen Section 8.10 Table 6: Restricted Frequency Bands

Restricted bands, identified in Table 6, are designated primarily for safety-of-life services (distress calling and certain aeronautical bands), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following restrictions apply:

(a) Fundamental components of modulation of licence-exempt radio apparatus shall not fall within the restricted bands of Table 6 except for apparatus complying under RSS-287; (b) Unwanted emissions that fall into restricted bands of Table 6 shall comply with the limits specified in RSS-Gen; and (c) Unwanted emissions that do not fall within the restricted frequency bands of Table 6 shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen.

Table 6 – Restricted Frequency Bands *

MHz	MHz	GHz
0.090-0.110	240-285	9.0-9.2
2.1735-2.1905	322-335.4	9.3-9.5
3.020-3.026	399.9-410	10.6-12.7
4.125-4.128	608-614	13.25-13.4
4.17725-4.17775	960-1427	14.47-14.5
4.20725-4.20775	1435-1626.5	15.35-16.2
5.677-5.683	1645.5-1646.5	17.7-21.4
6.215-6.218	1660-1710	22.01-23.12
6.26775-6.26825	1718.8-1722.2	23.6-24.0
6.31175-6.31225	2200-2300	31.2-31.8
8.291-8.294	2310-2390	36.43-36.5
8.362-8.366	2655-2900	Above 38.6
8.37625-8.38675	3260-3267	
8.41425-8.41475	3332-3339	
12.29-12.293	3345.8-3358	
12.51975-12.52025	3500-4400	
12.57675-12.57725	4500-5150	
13.36-13.41	5350-5460	
16.42-16.423	7250-7750	
16.69475-16.69525	8025-8500	
16.80425-16.80475		
25.5-25.67		
37.5-38.25		
73-74.6		
74.8-75.2		
108-138		
156.52475-156.52525		
156.7-156.9		

* Certain frequency bands listed in Table 6 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200- and 300-series of RSSs, such as RSS-210 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.

7.4.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.5.Operating Condition of EUT

7.5.1.Setup the EUT and simulator as shown as Section 7.1.

7.5.2.Turn on the power of all equipment.

7.5.3.Let the EUT work in TX mode. The transmit frequency are 2422.999969, 2473.987518MHz.

7.6.Test Procedure

Radiate Band Edge:

7.6.1. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.

7.6.2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

7.6.3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

7.6.4.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

7.6.5.The band edges was measured and recorded.

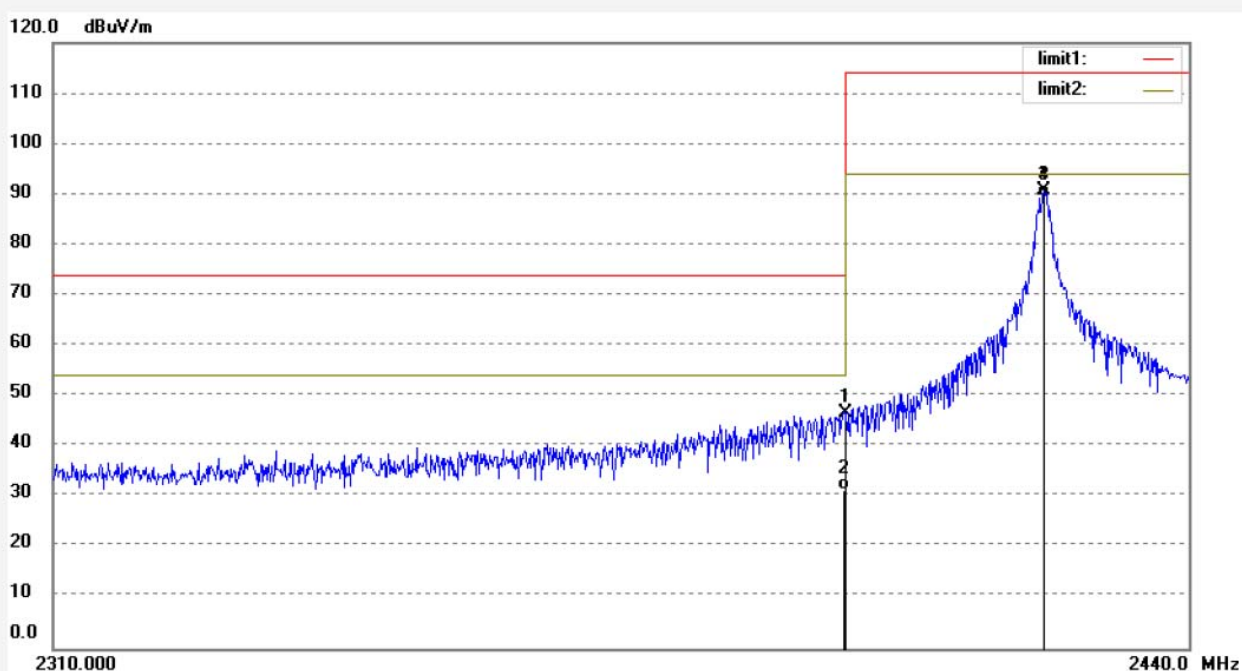
7.7.Test Result

The spectrum analyzer plots are attached as below.

Job No.: TUV2018 #175
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Cinema Control System Wall Unit
Mode: TX 2422.999969MHz
Model: HC373
Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/06/08/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2400.000	45.88	0.88	46.76	74.00	-27.24	peak			
2	2400.000	30.36	0.88	31.24	54.00	-22.76	AVG			
3	2423.000	89.90	0.98	90.88	114.00	-23.12	peak			
4	2423.000	88.70	0.98	89.68	94.00	-4.32	AVG			

Job No.: TUV2018 #176

Standard: FCC (Band Edge)

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2422.999969MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

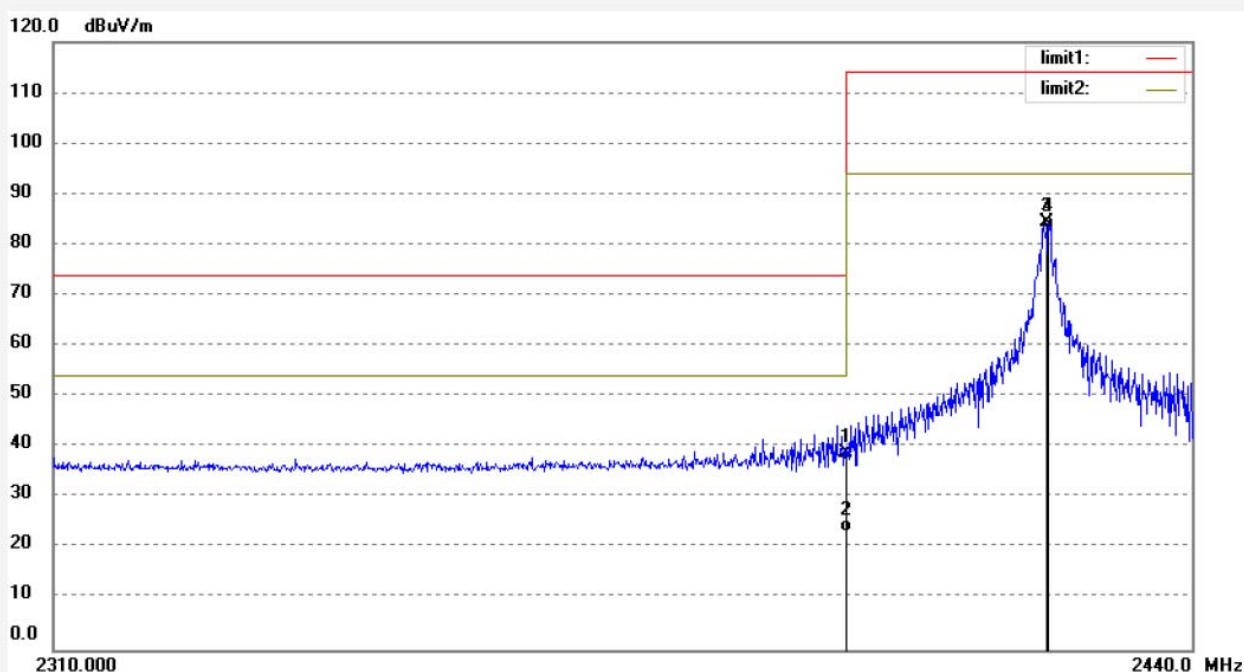
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2400.000	37.84	0.88	38.72	74.00	-35.28	peak			
2	2400.000	22.36	0.88	23.24	54.00	-30.76	AVG			
3	2423.000	83.51	0.98	84.49	114.00	-29.51	peak			
4	2423.000	82.31	0.98	83.29	94.00	-10.71	AVG			

Job No.: TUV2018 #182

Standard: FCC (Band Edge)

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2473.987518MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

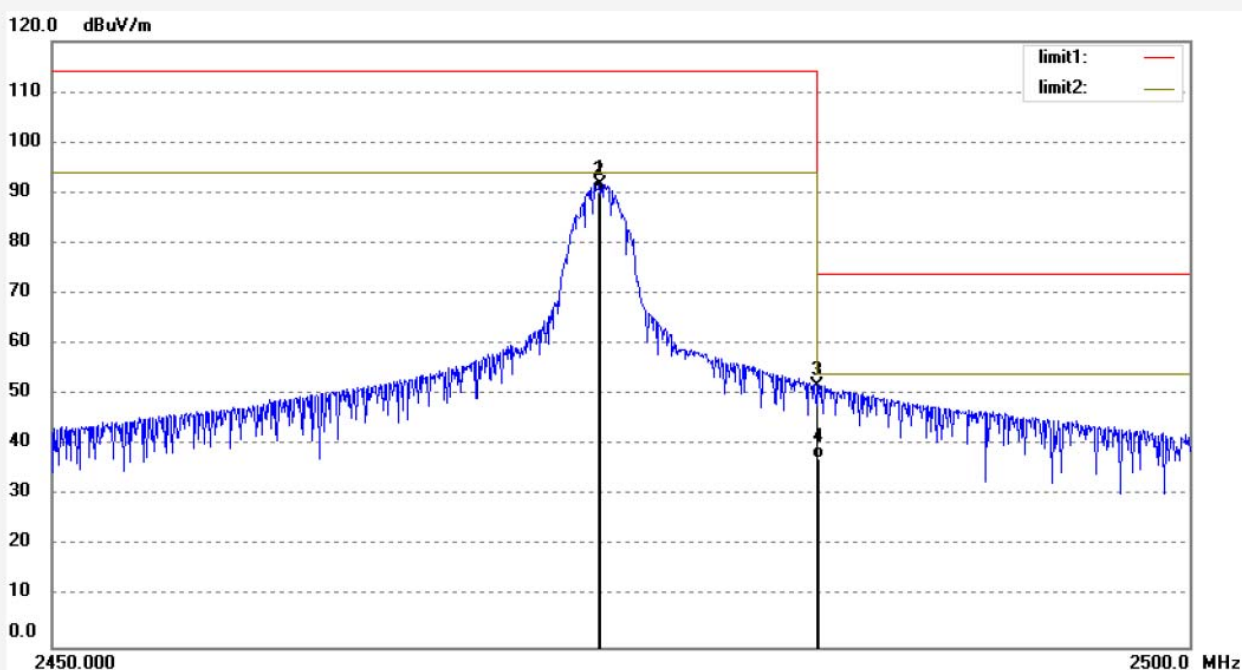
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:

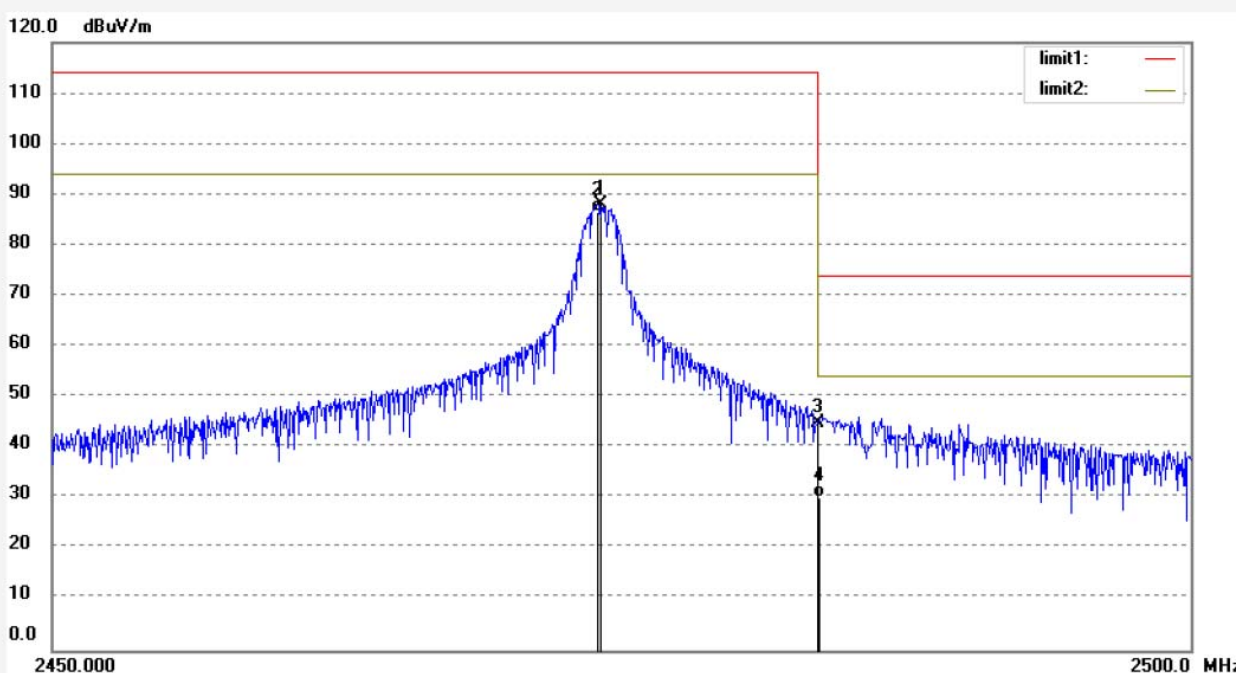


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2474.000	90.59	1.09	91.68	114.00	-22.32	peak			
2	2474.000	89.09	1.09	90.18	94.00	-3.82	AVG			
3	2483.500	50.57	1.10	51.67	74.00	-22.33	peak			
4	2483.500	36.14	1.10	37.24	54.00	-16.76	AVG			

Job No.: TUV2018 #181
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Cinema Control System Wall Unit
Mode: TX 2473.987518MHz
Model: HC373
Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/06/08/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2474.000	86.85	1.09	87.94	114.00	-26.06	peak			
2	2474.000	85.35	1.09	86.44	94.00	-7.56	AVG			
3	2483.500	43.70	1.10	44.80	74.00	-29.20	peak			
4	2483.500	29.14	1.10	30.24	54.00	-23.76	AVG			

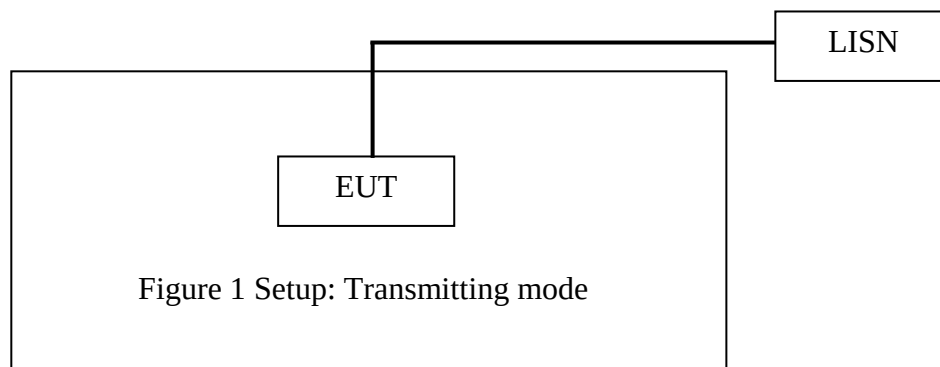
Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor
3. Display the measurement of peak values.
4. The average measurement was not performed when peak measured data under the limit of average detection.

8. RADIATED SPURIOUS EMISSION TEST

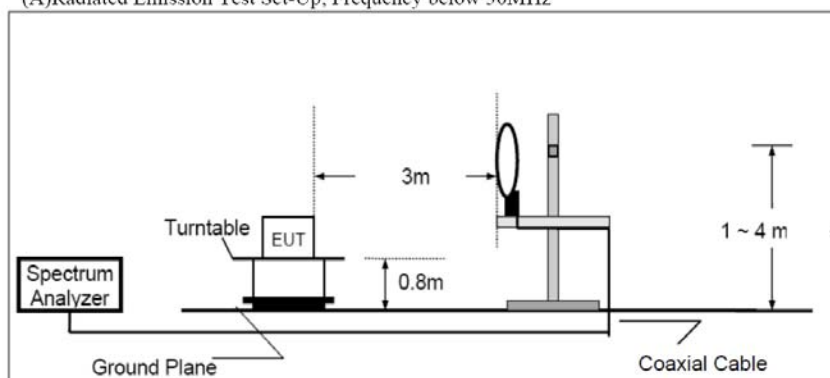
8.1. Block Diagram of Test Setup

8.1.1. Block diagram of connection between the EUT and peripherals

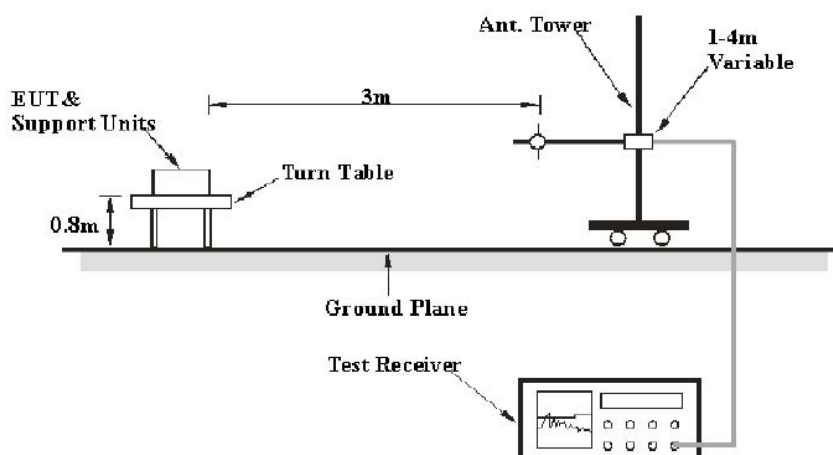


8.1.2. Semi-Anechoic Chamber Test Setup Diagram

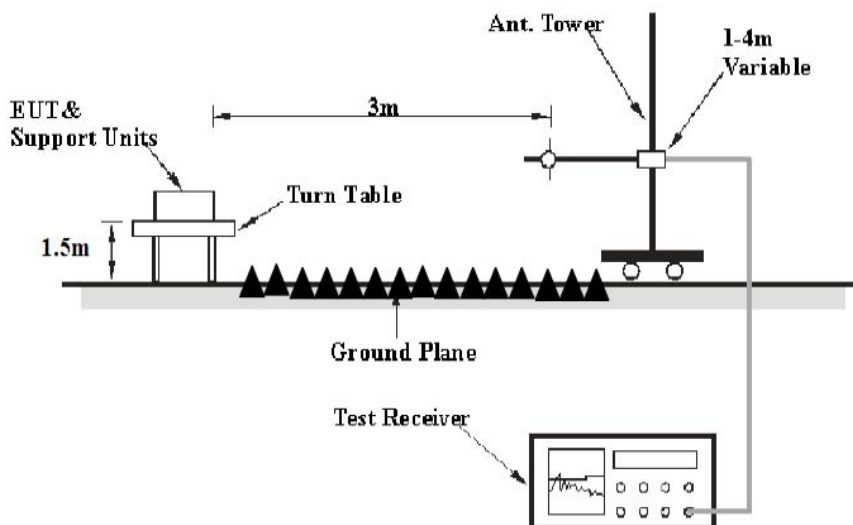
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



8.2.The Limit For Section 15.249

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph A8.4(4), the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

8.3.The Limit For RSS-Gen Section 8.9

8.3.1.Measurement Limits According to RSS-Gen Section 8.9

Table 5 – General Field Strength Limits for Licence-Exempt Transmitters at Frequencies Below 30 MHz

Frequency	Electric Field Strength ($\mu\text{V/m}$)	Magnetic Field Strength (H-Field) ($\mu\text{A/m}$)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/377F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1,705-30 MHz	30	N/A	30

Table 4 – General Field Strength Limits for Licence-Exempt Transmitters at Frequencies Above 30 MHz

Frequency (MHz)	Field Strength (µv/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960*	500

8.4.Restricted bands of operation

8.4.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

8.5. Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.6. Operating Condition of EUT

8.6.1. Setup the EUT and simulator as shown as Section 8.1.

8.6.2. Turn on the power of all equipment.

8.6.3. Let the EUT work in TX modes and measure it. The transmit frequency are 2422.999969, 2448.393768, 2473.987518MHz.

8.7. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter (Below 1GHz) and 1.5m (above 1GHz) high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated emission measurement. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

The bandwidth of test receiver is set at 9 kHz in below 30MHz. and set at 120 kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9 kHz to 26.5GHz is checked.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz

Peak detector above 1GHz

RBW (1 MHz), VBW (3MHz) for Peak measurement

RBW (1 MHz), VBW (10Hz) for AV measurement

8.8.Data Sample

Frequency (MHz)	Reading (dB μ v)	Factor (dB/m)	Result (dB μ v/m)	Limit (dB μ v/m)	Margin (dB)	Remark
X.XX	48.69	-13.35	35.34	46	-7	QP

Frequency(MHz) = Emission frequency in MHz

Reading(dB μ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain

Result(dB μ v/m) = Reading(dB μ v) + Factor(dB/m)

Limit (dB μ v/m) = Limit stated in standard

Margin (dB) = Result(dB μ v/m) - Limit (dB μ v/m)

QP = Quasi-peak Reading

Calculation Formula:

Margin(dB) = Result (dB μ V/m)–Limit(dB μ V/m)

Result(dB μ V/m)= Reading(dB μ V)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

8.9.The Field Strength of Radiation Emission Measurement Results

PASS.

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. The EUT is tested radiation emission in three axes. The worst emissions are reported in all channels.

3. The average measurement was not performed when peak measured data under the limit of average detection.

The spectrum analyzer plots are attached as below.

Below 30MHz

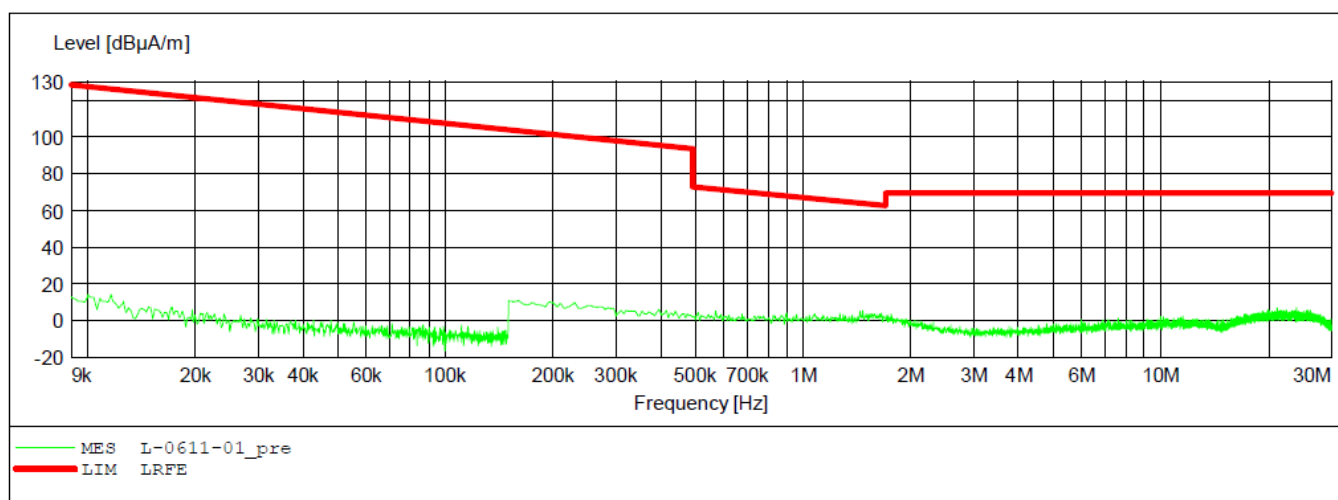
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2422.999969MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



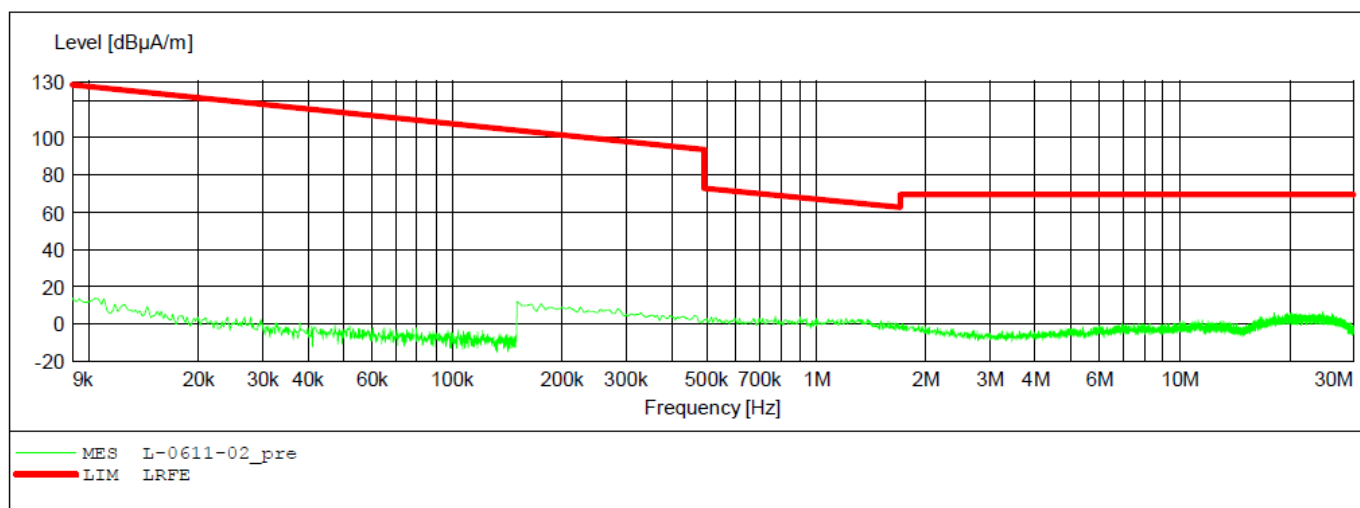
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2422.999969MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



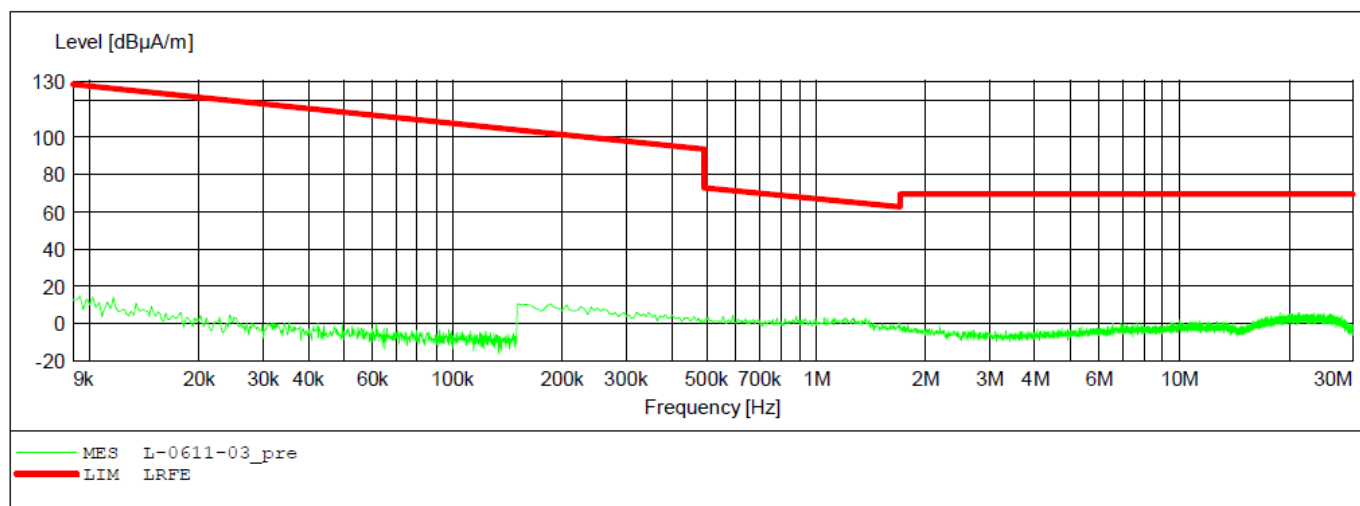
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2422.999969MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



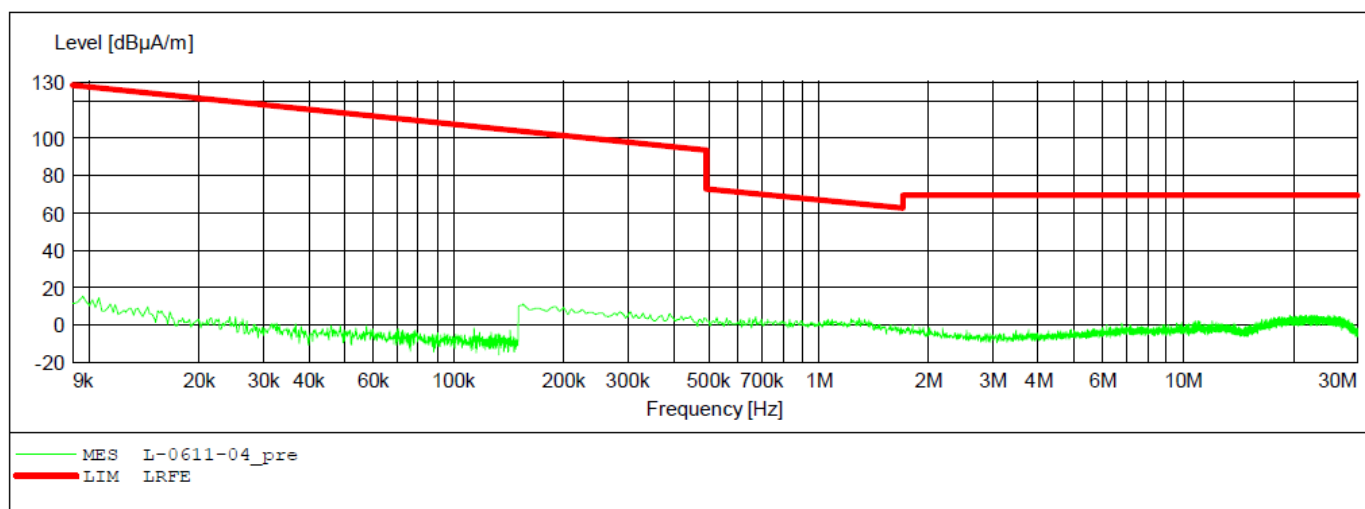
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2448.393768MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



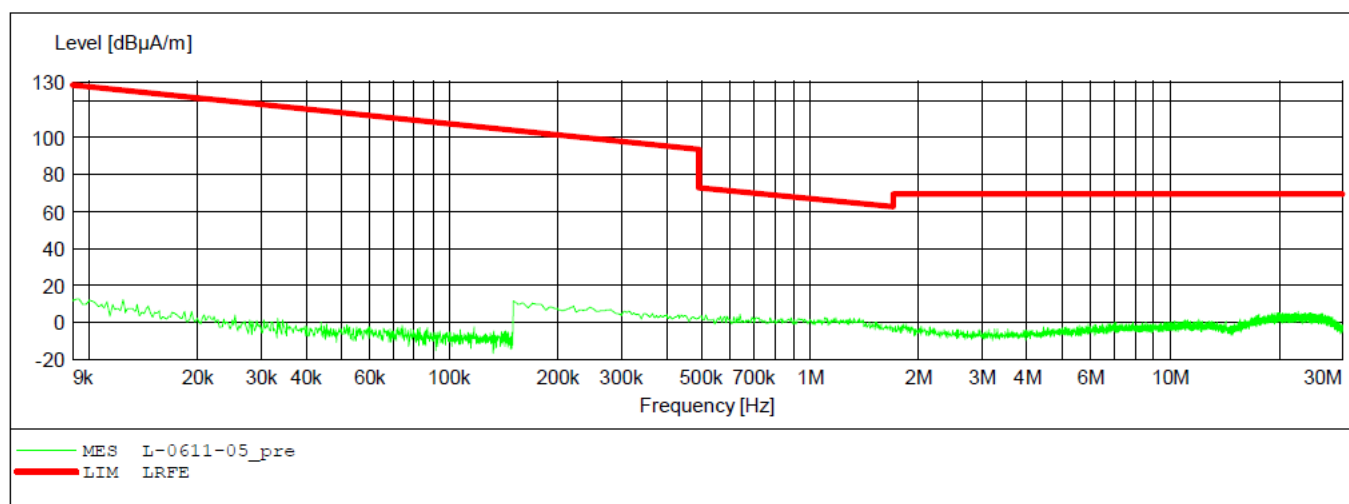
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2448.393768MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

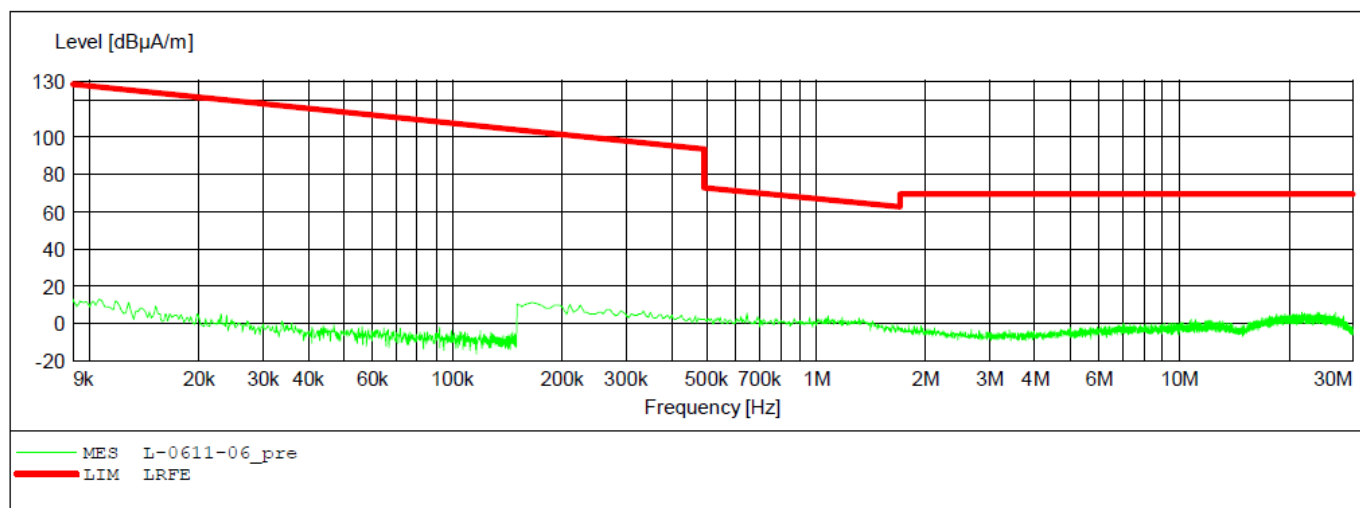
EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2448.393768MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:

SUB STD VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



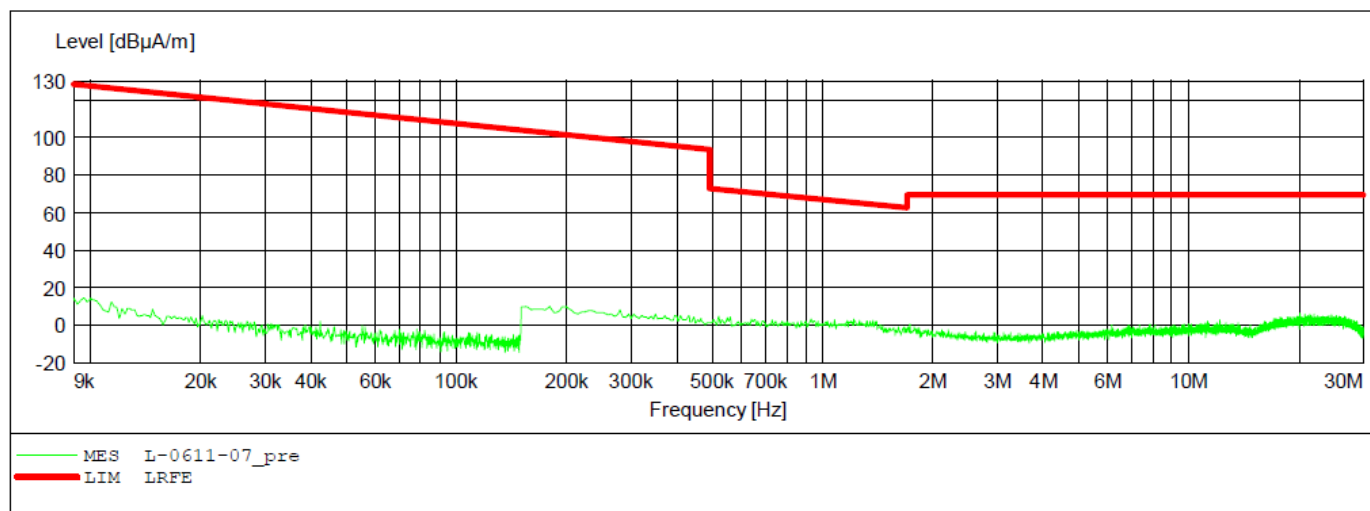
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2473.987518MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



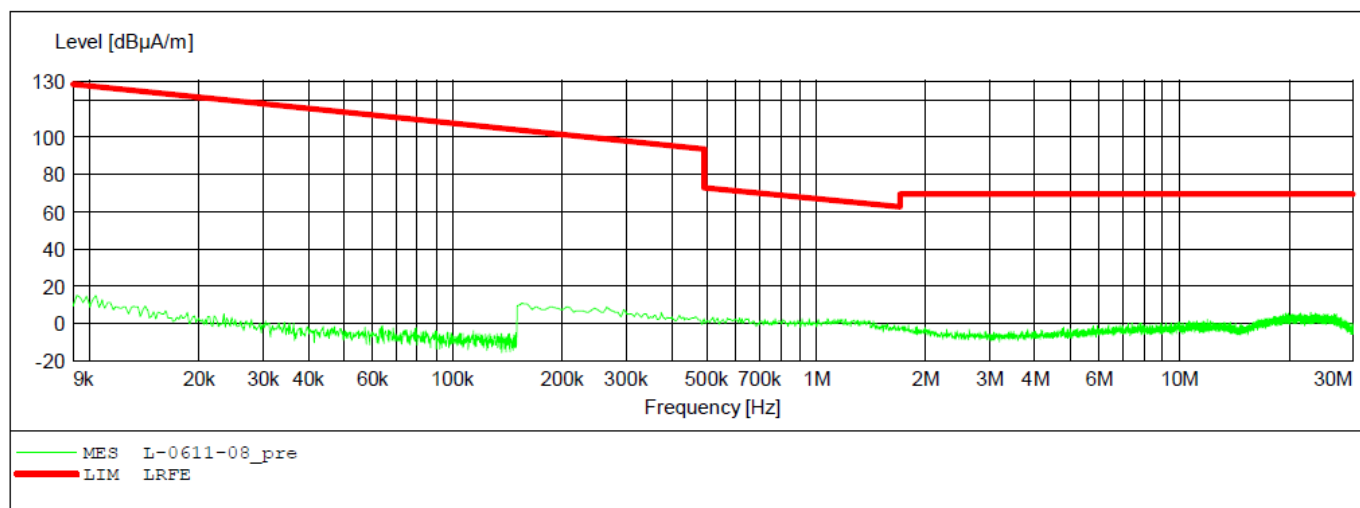
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2473.987518MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



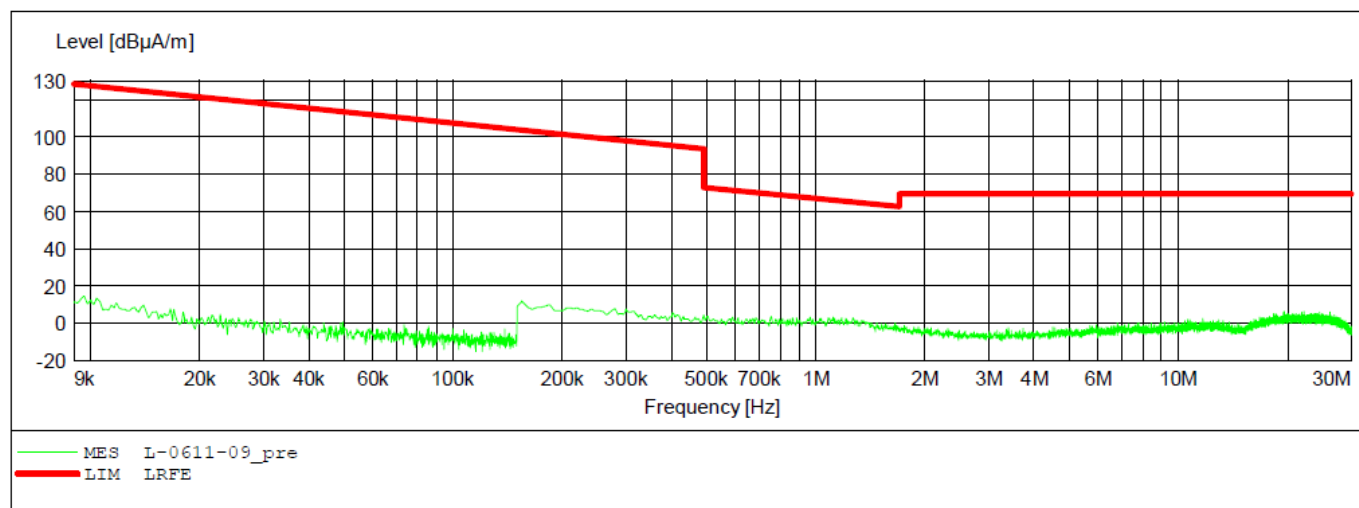
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX 2473.987518MHz
 Test Site: 2# Chamber
 Operator: WADE
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2018-06-11 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2 1.70			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



30MHz-1GHz



ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: TUV2018 #190

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2422.999969MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

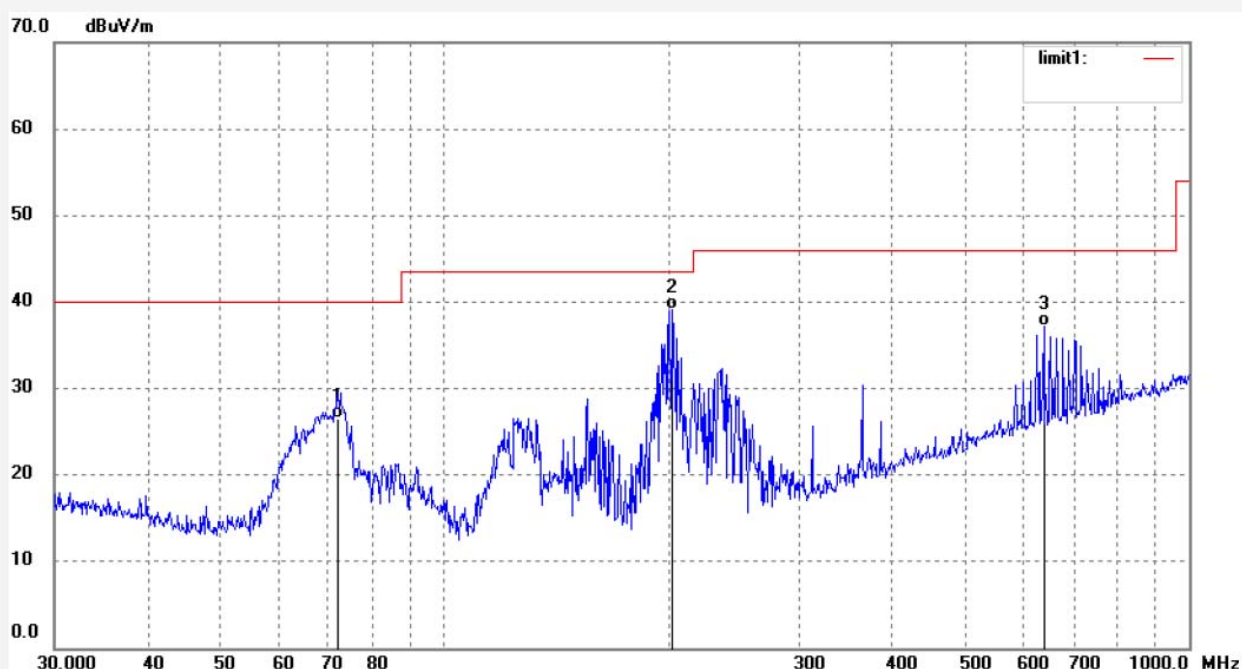
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	72.0841	42.92	-16.34	26.58	40.00	-13.42	QP			
2	202.1005	51.37	-12.21	39.16	43.50	-4.34	QP			
3	638.3686	39.13	-1.91	37.22	46.00	-8.78	QP			

Shenzhen Accurate Technology Co., Ltd.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: TUV2018 #189

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2422.999969MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

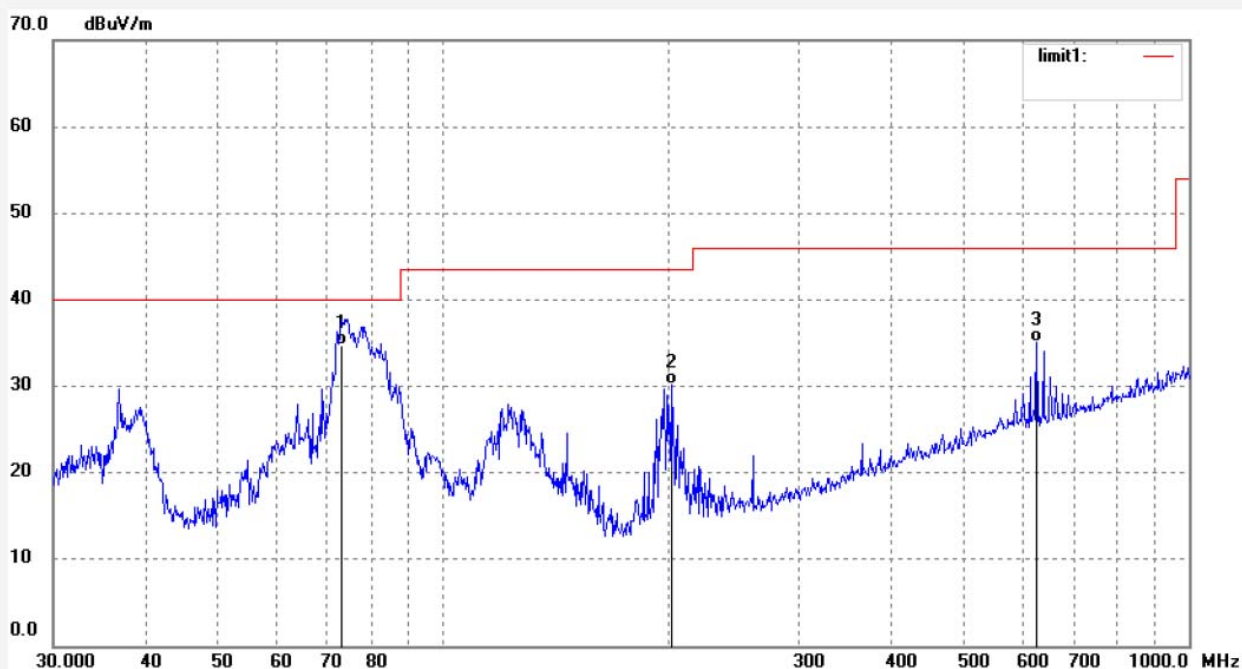
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Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	73.1025	51.27	-16.48	34.79	40.00	-5.21	QP			
2	202.1005	42.32	-12.21	30.11	43.50	-13.39	QP			
3	625.0778	37.02	-2.00	35.02	46.00	-10.98	QP			

Shenzhen Accurate Technology Co., Ltd.

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Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

Http://www.atc-lab.com

Job No.: TUV2018 #191

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2448.393768MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

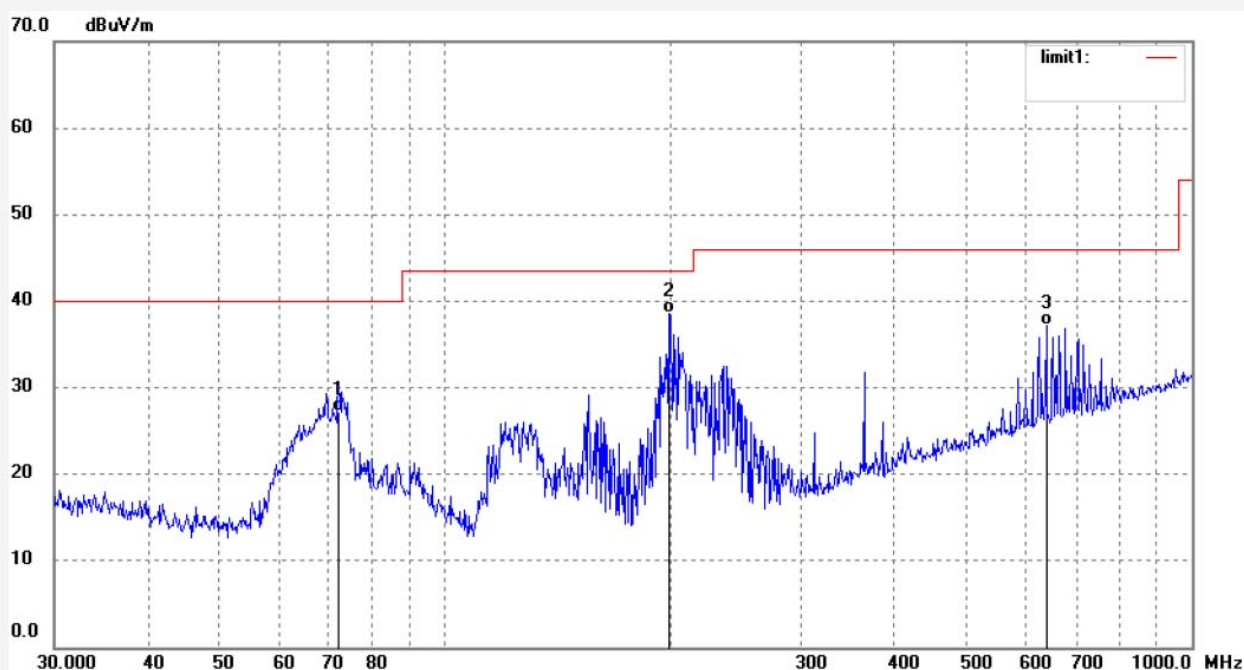
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	72.0841	43.57	-16.34	27.23	40.00	-12.77	QP			
2	199.2855	50.85	-12.28	38.57	43.50	-4.93	QP			
3	638.3686	39.14	-1.91	37.23	46.00	-8.77	QP			

Job No.: TUV2018 #192

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2448.393768MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

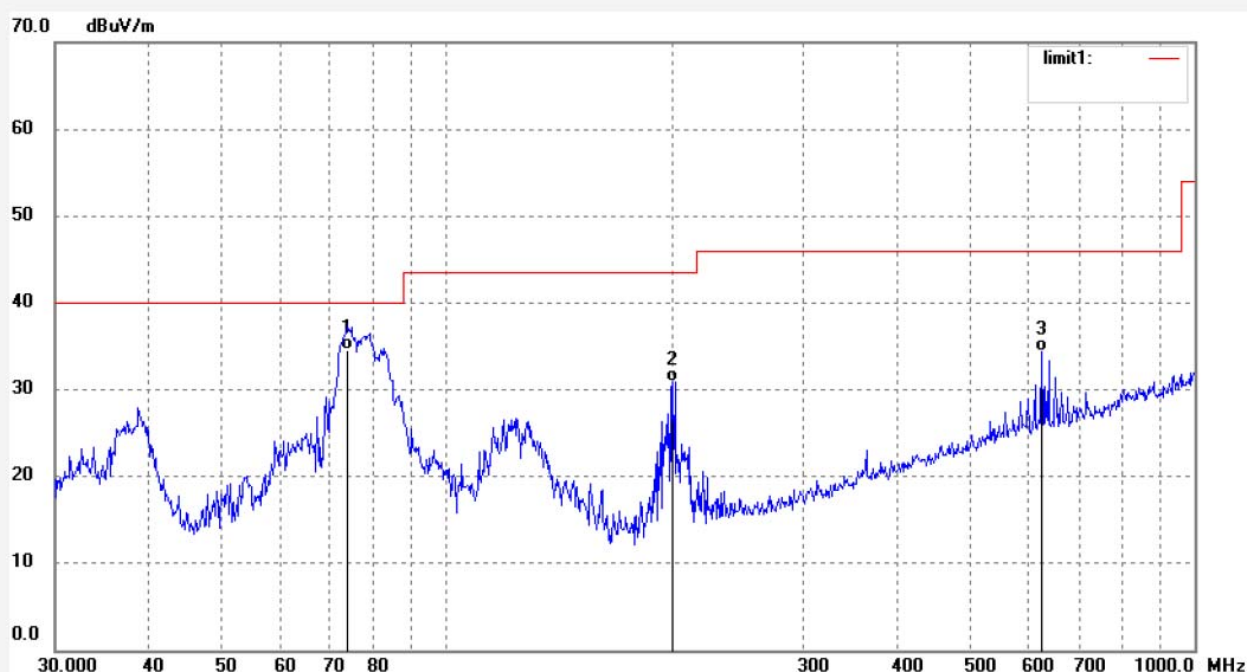
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Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	73.8756	51.05	-16.56	34.49	40.00	-5.51	QP			
2	200.6880	43.08	-12.25	30.83	43.50	-12.67	QP			
3	625.0779	36.37	-2.00	34.37	46.00	-11.63	QP			

Job No.: TUV2018 #194

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2473.987518MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

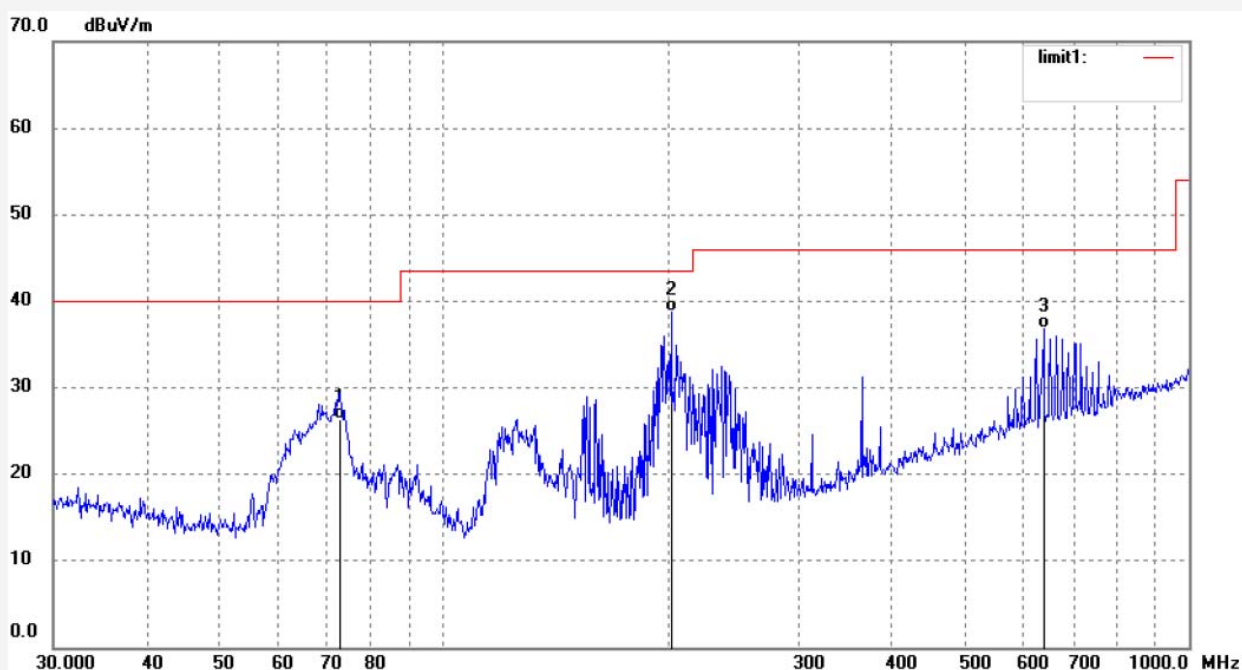
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Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	72.5916	42.82	-16.40	26.42	40.00	-13.58	QP			
2	202.1005	50.91	-12.21	38.70	43.50	-4.80	QP			
3	638.3686	38.79	-1.91	36.88	46.00	-9.12	QP			

Job No.: TUV2018 #193

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2473.987518MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

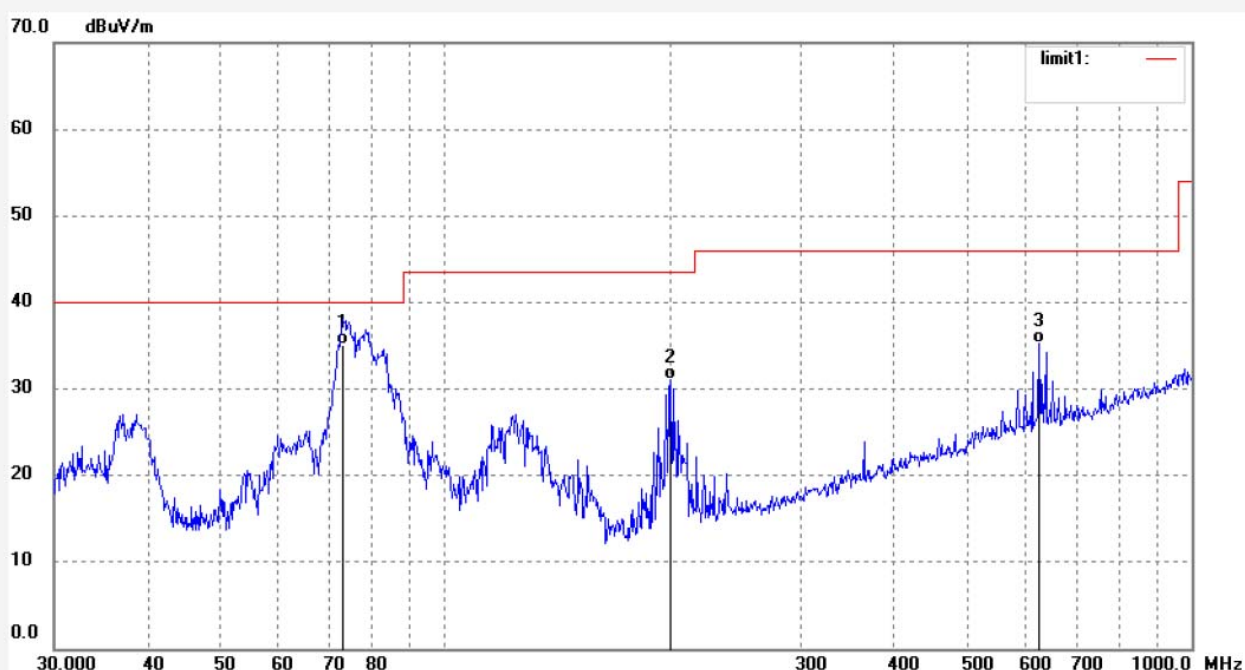
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	73.1025	51.50	-16.48	35.02	40.00	-4.98	QP			
2	200.6880	43.31	-12.25	31.06	43.50	-12.44	QP			
3	625.0779	37.30	-2.00	35.30	46.00	-10.70	QP			

1GHz-18GHz



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: TUV2018 #174

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2422.999969MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

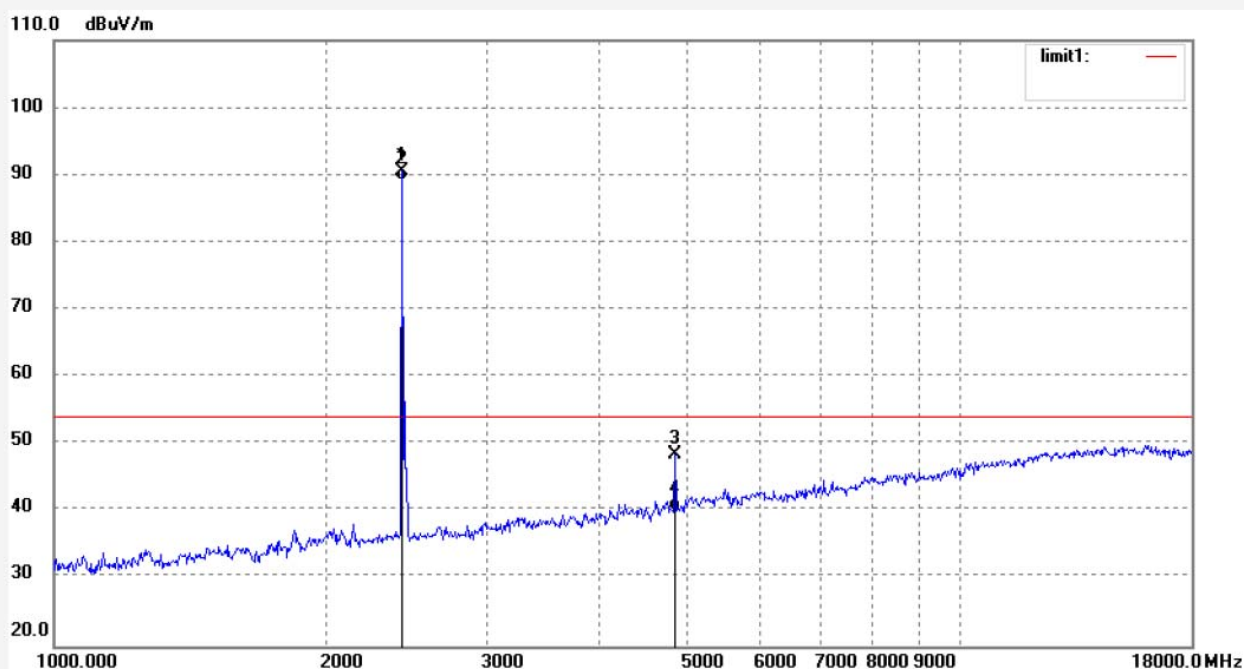
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2422.999	89.46	0.98	90.44	114.00	-23.56	peak			
2	2422.999	88.26	0.98	89.24	94.00	-4.76	AVG			
3	4846.027	40.73	7.78	48.51	74.00	-25.49	peak			
4	4846.027	32.43	7.78	40.21	54.00	-13.79	AVG			

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Report No.: ATE20181268

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Site: 2# Chamber

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Job No.: TUV2018 #173

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2422.999969MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

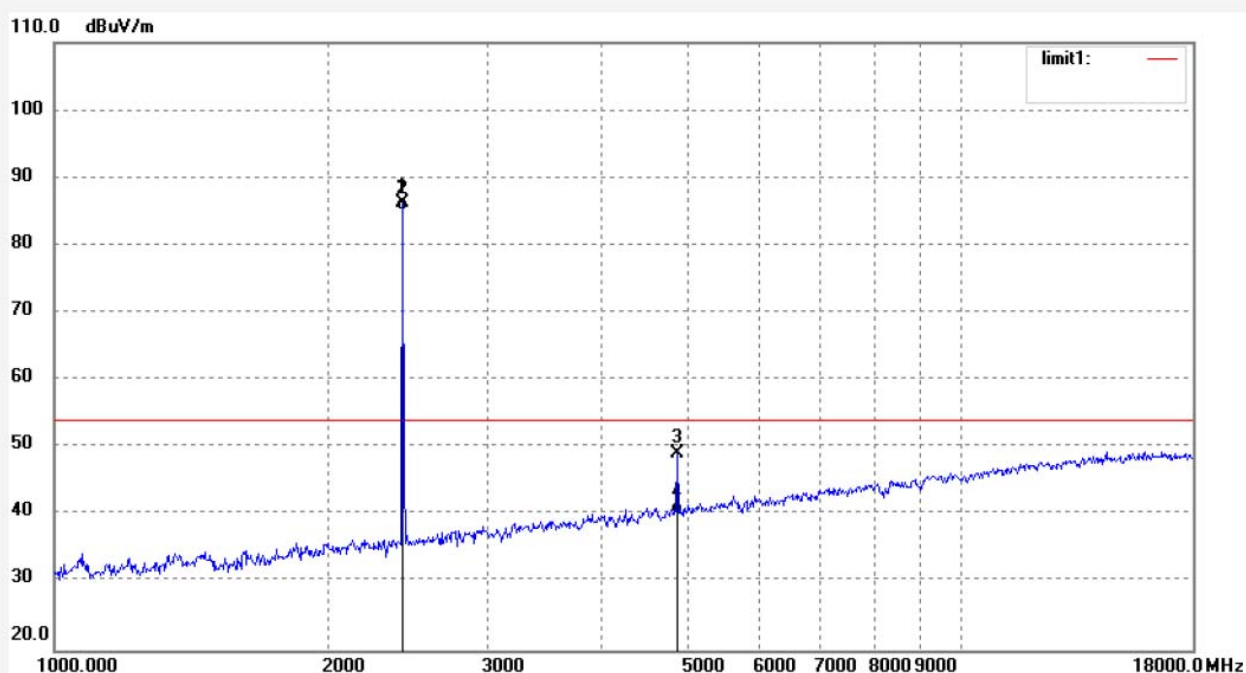
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2422.999	85.27	0.98	86.25	114.00	-27.75	peak			
2	2422.999	84.07	0.98	85.05	94.00	-8.95	AVG			
3	4846.035	41.39	7.78	49.17	74.00	-24.83	peak			
4	4846.035	32.47	7.78	40.25	54.00	-13.75	AVG			

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Job No.: TUV2018 #178

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2448.393768MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

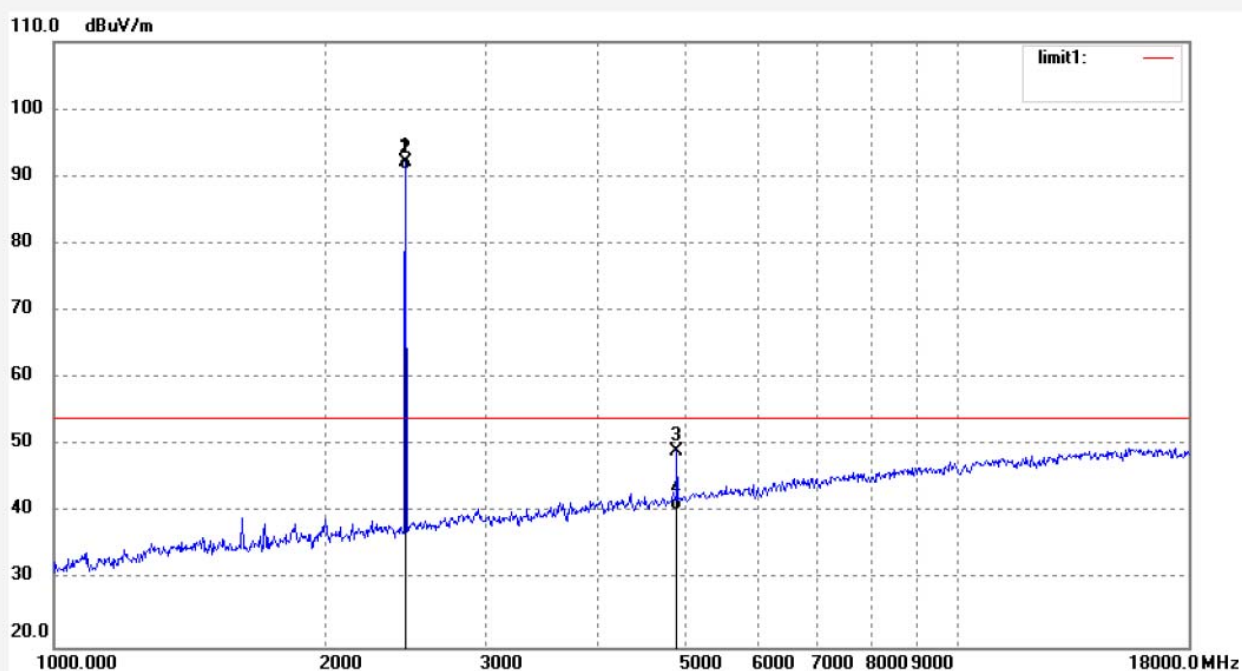
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2448.393	91.04	1.08	92.12	114.00	-21.88	peak			
2	2448.393	89.94	1.08	91.00	94.00	-3.00	AVG			
3	4896.869	40.94	8.24	49.18	74.00	-24.82	peak			
4	4896.869	32.23	8.24	40.47	54.00	-13.53	AVG			

Job No.: TUV2018 #177

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2448.393768MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

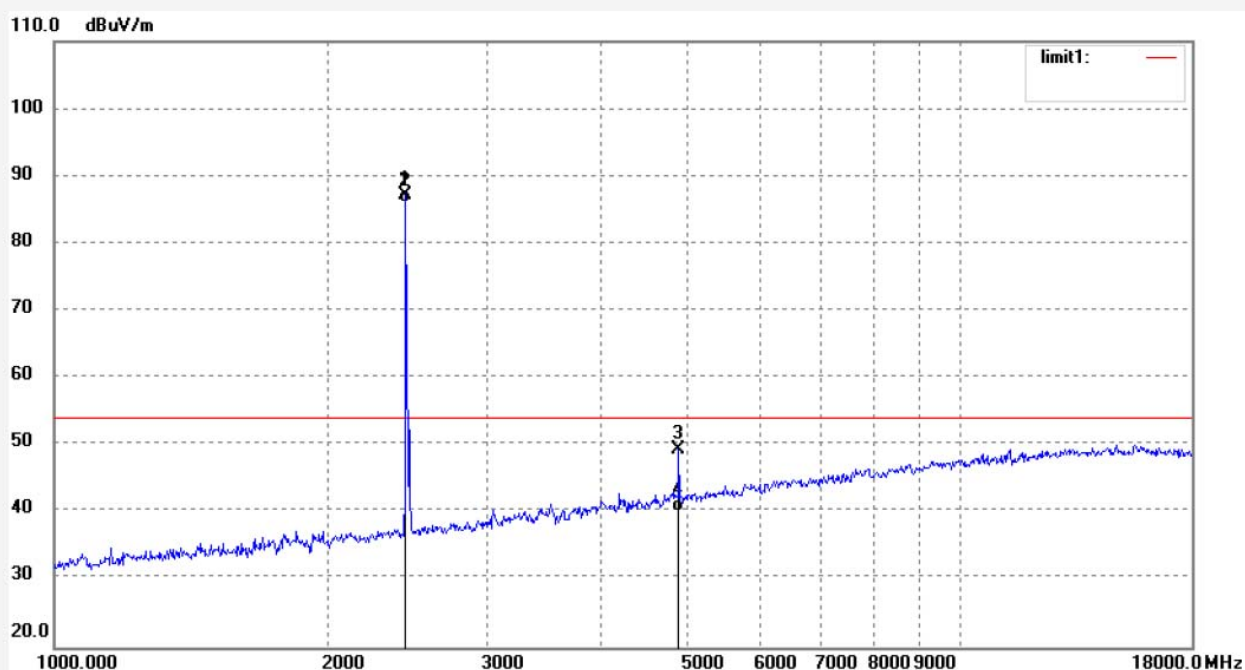
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2448.393	86.07	1.08	87.15	114.00	-26.85	peak			
2	2448.393	84.97	1.08	86.05	94.00	-7.95	AVG			
3	4896.880	41.19	8.24	49.43	74.00	-24.57	peak			
4	4896.880	32.00	8.24	40.24	54.00	-13.76	AVG			



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Job No.: TUV2018 #179

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2473.987518MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

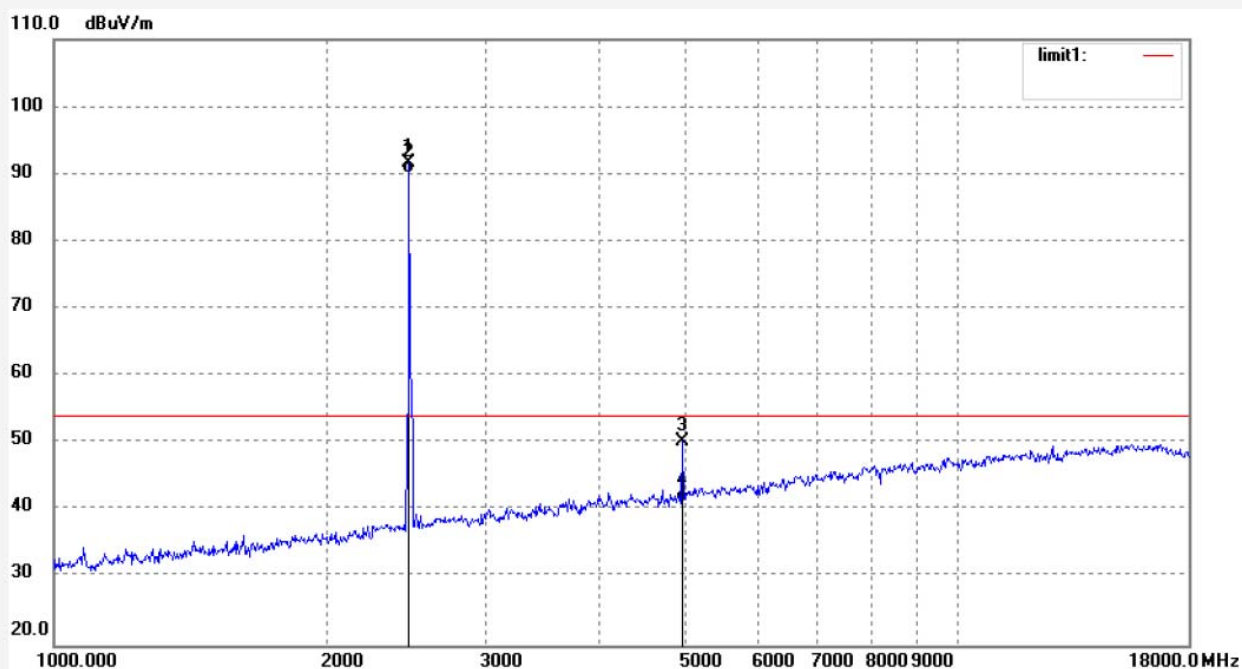
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2474.987	90.53	1.09	91.62	114.00	-22.38	peak			
2	2474.987	89.03	1.09	90.12	94.00	-3.88	AVG			
3	4949.996	41.81	8.53	50.34	74.00	-23.66	peak			
4	4948.996	32.82	8.53	41.35	54.00	-12.65	AVG			

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Job No.: TUV2018 #180

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2473.987518MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

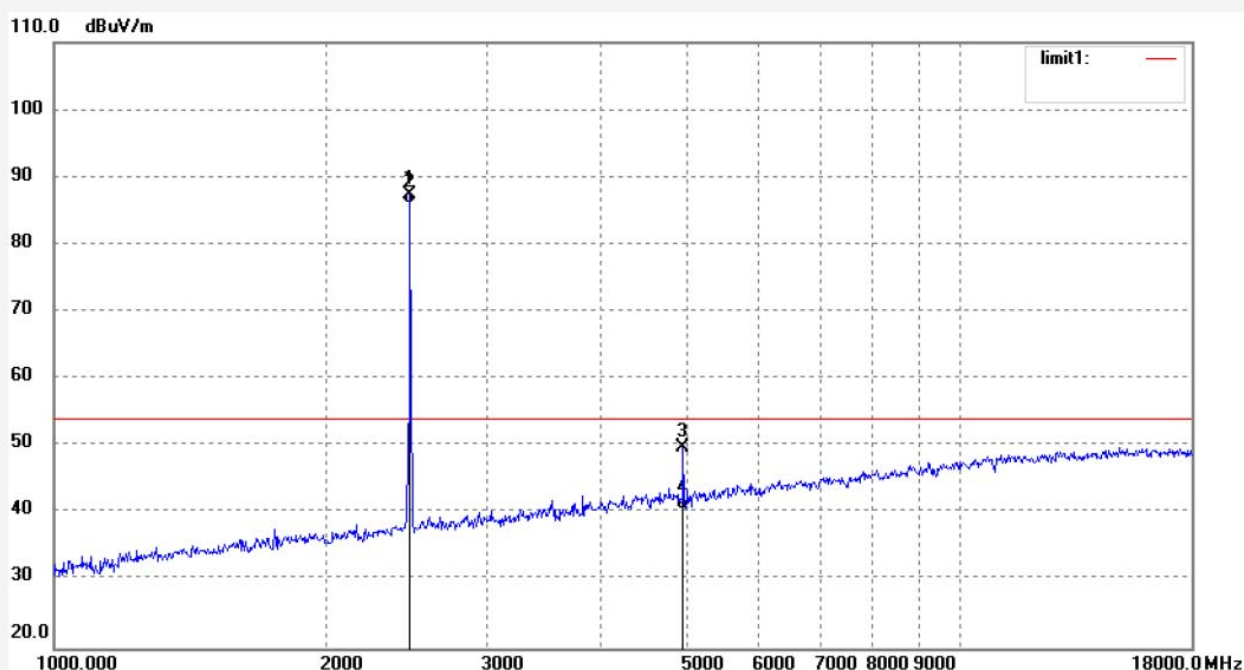
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2474.987	86.37	1.09	87.46	114.00	-26.54	peak			
2	2474.987	84.87	1.09	85.96	94.00	-8.04	AVG			
3	4949.985	41.29	8.53	49.82	74.00	-24.18	peak			
4	4949.985	32.04	8.53	40.57	54.00	-13.43	AVG			

18GHz-26.5GHz


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Job No.: TUV2018 #183

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2422.999969MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

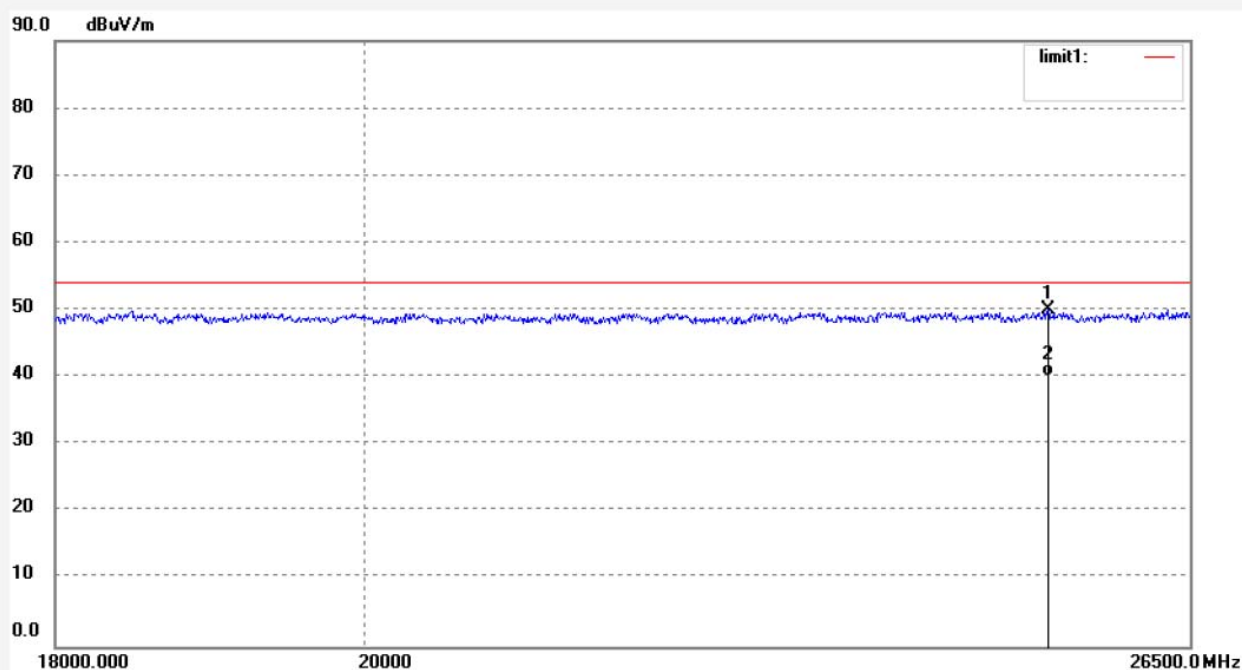
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25249.292	10.28	39.87	50.15	74.00	-23.85	peak			
2	25249.292	0.34	39.87	40.21	54.00	-13.79	AVG			

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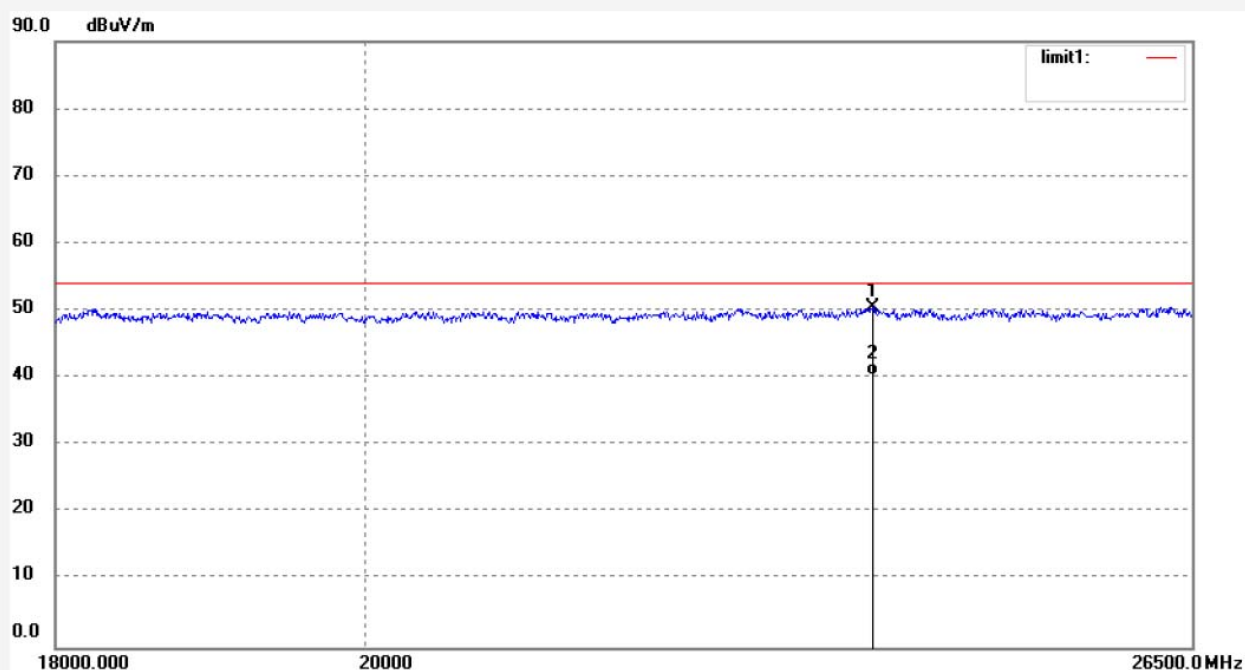
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Job No.: TUV2018 #184
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Cinema Control System Wall Unit
Mode: TX 2422.999969MHz
Model: HC373
Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/06/08/
Time:
Engineer Signature: WADE
Distance: 3m

Note:

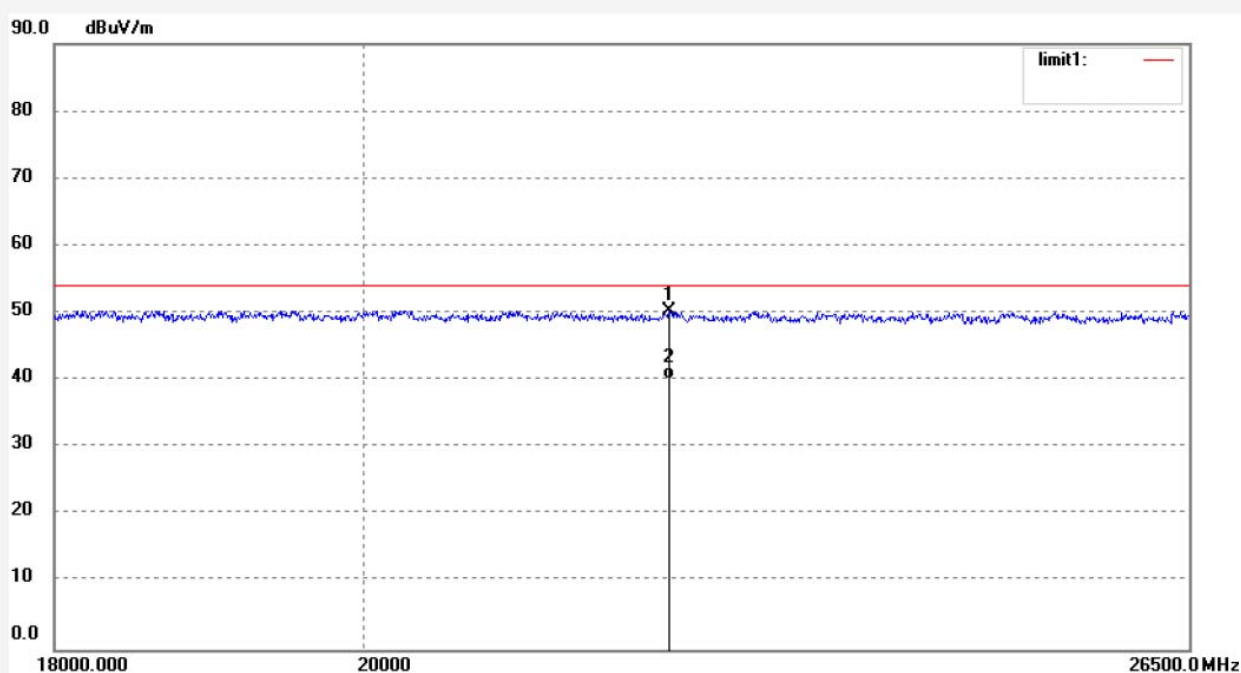


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	23770.885	10.79	39.71	50.50	74.00	-23.50	peak			
2	23770.885	0.65	39.71	40.36	54.00	-13.64	AVG			

Job No.: TUV2018 #186
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Cinema Control System Wall Unit
Mode: TX 2448.393768MHz
Model: HC373
Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/06/08/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22198.011	10.73	39.57	50.30	74.00	-23.70	peak			
2	22198.011	0.68	39.57	40.25	54.00	-13.75	AVG			

Job No.: TUV2018 #185

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2448.393768MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

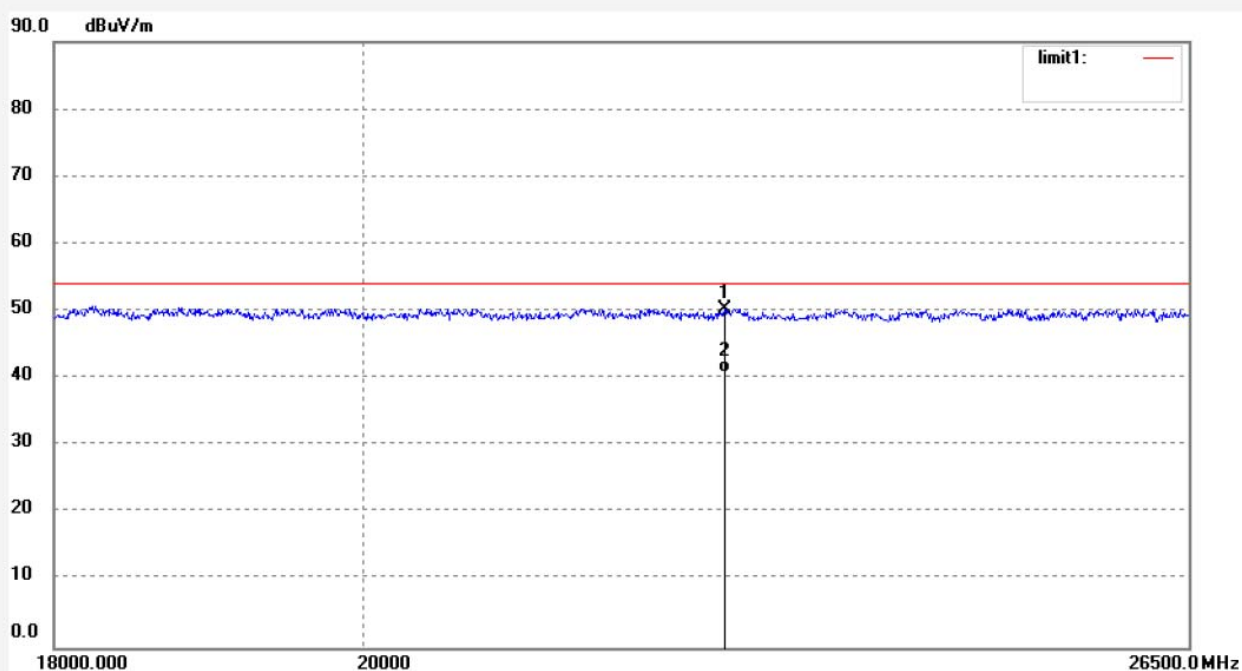
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

Note:

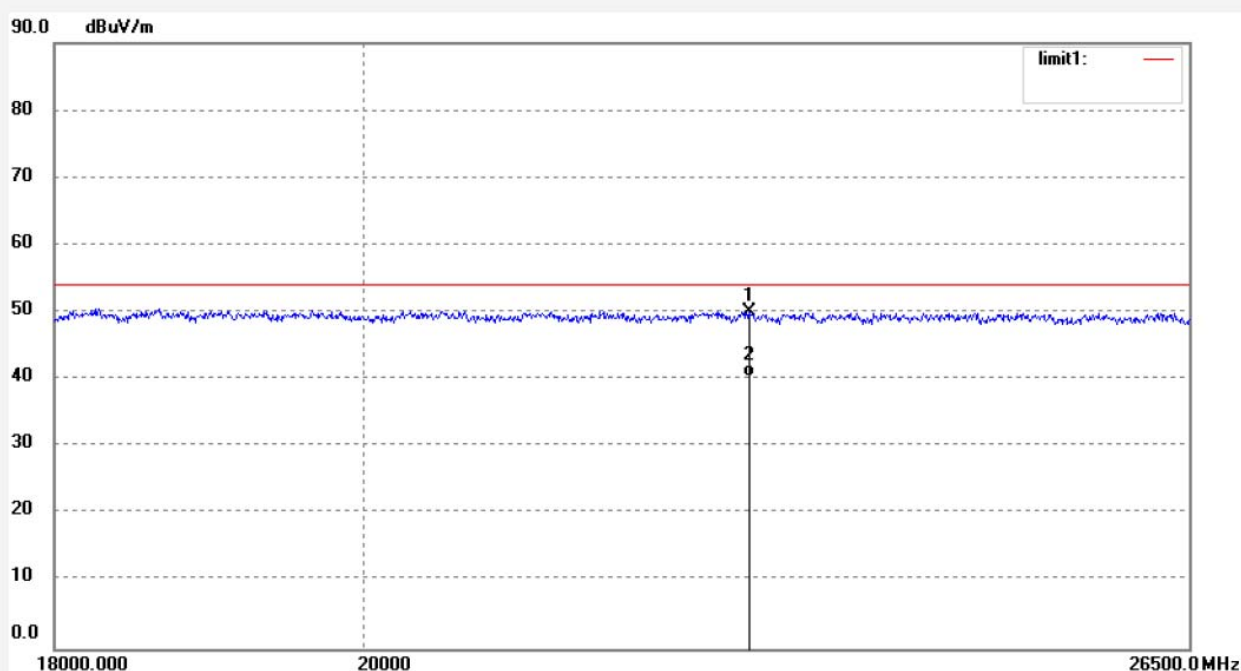


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22622.717	10.77	39.49	50.26	74.00	-23.74	peak			
2	22622.717	1.25	39.49	40.74	54.00	-13.26	AVG			

Job No.: TUV2018 #187
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Cinema Control System Wall Unit
Mode: TX 2473.987518MHz
Model: HC373
Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/06/08/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22807.212	10.34	39.68	50.02	74.00	-23.98	peak			
2	22807.212	0.68	39.68	40.36	54.00	-13.64	AVG			

Job No.: TUV2018 #188

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Cinema Control System Wall Unit

Mode: TX 2473.987518MHz

Model: HC373

Manufacturer: limoss (Shenzhen) Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

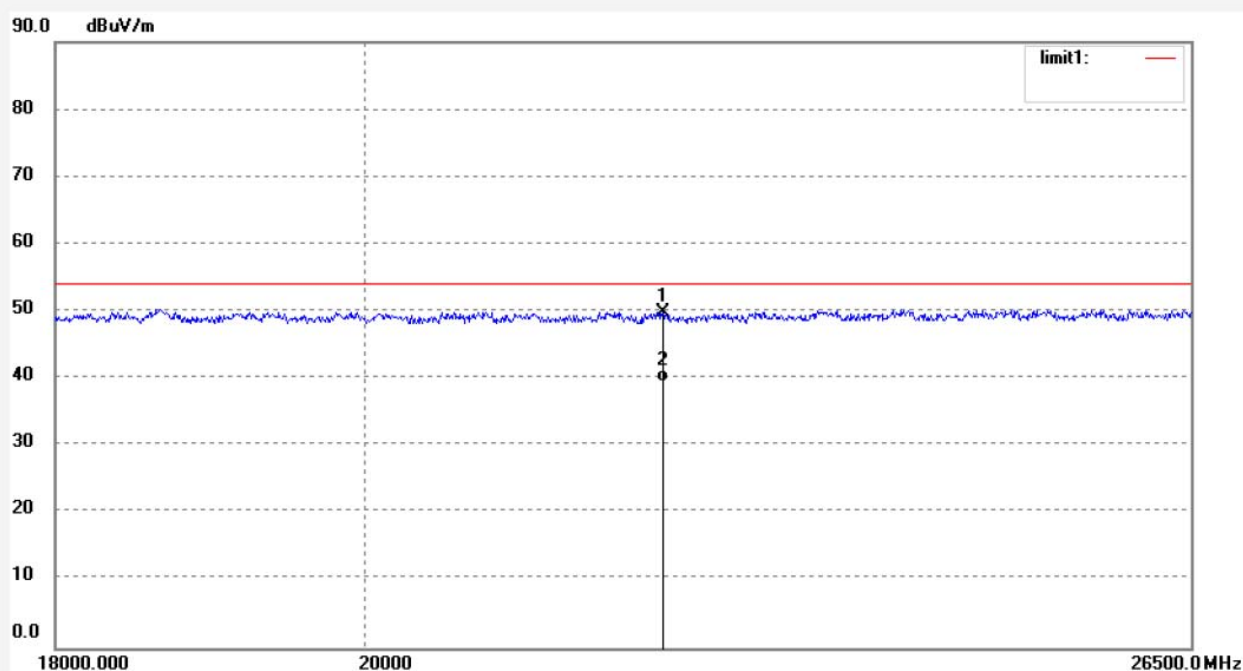
Date: 18/06/08/

Time:

Engineer Signature: WADE

Distance: 3m

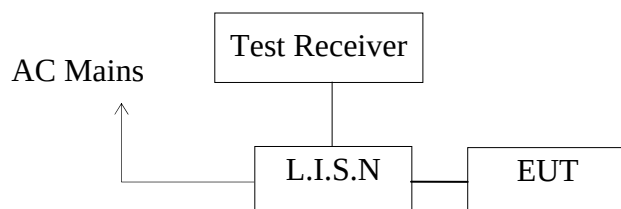
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22137.994	10.53	39.26	49.79	74.00	-24.21	peak			
2	22137.994	0.29	39.26	39.55	54.00	-14.45	AVG			

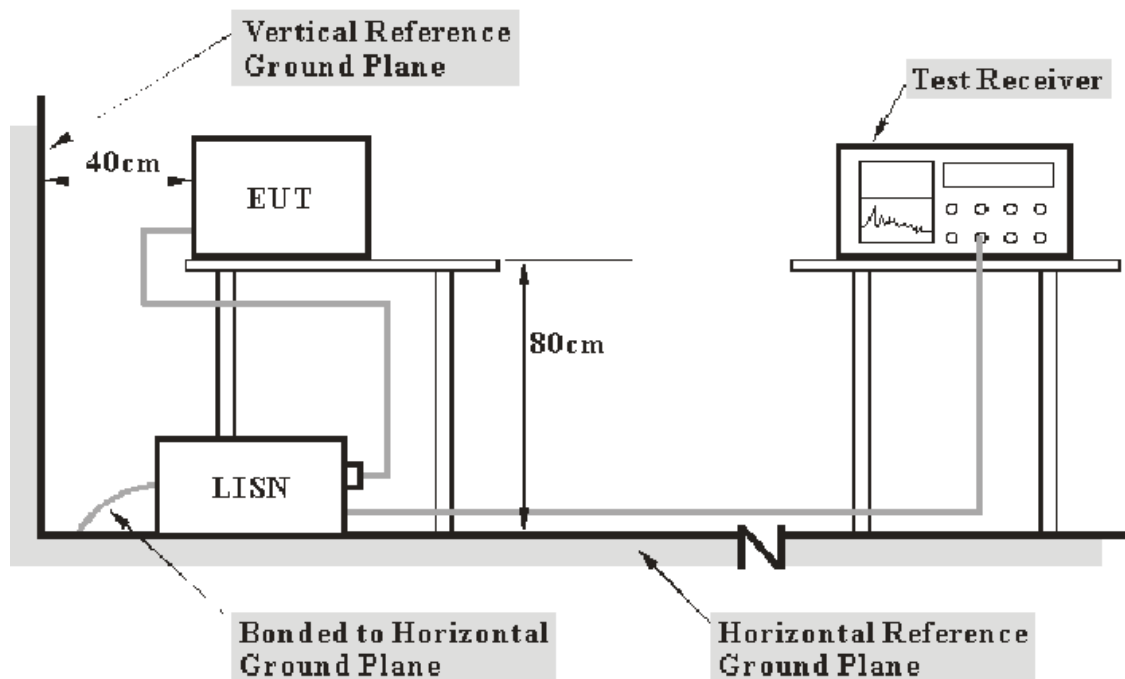
9. AC POWER LINE CONDUCTED EMISSION TEST

9.1. Block Diagram of Test Setup



(EUT: Cinema Control System Wall Unit)

9.2. Test System Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

9.3.The Limits for FCC Section 15.207 & RSS-Gen Section 8.8

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.		

9.4.Configuration of EUT on Measurement

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

9.5.Operating Condition of EUT

9.5.1. Setup the EUT and simulator as shown as Section 9.1.

9.5.2. Turn on the power of all equipment.

9.5.3. Let the EUT work in test mode and measure it.

9.6.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2014 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

9.7.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.5	51.1	34.2	56.0	46.0	4.9	11.8	Pass

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dBμV) = Limit stated in standard

Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:

Margin = Limit (dBμV) - Level (dBμV)

9.8.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Test mode : TX Communication (AC 120V/60Hz)								
MEASUREMENT RESULT: "TUV-0613-2_fin"								
6/13/2018								
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE	
0.165000	54.70	10.5	65	10.5	QP	L1	GND	
0.880000	21.10	10.8	56	34.9	QP	L1	GND	
29.920000	15.70	11.5	60	44.3	QP	L1	GND	
MEASUREMENT RESULT: "TUV-0613-2_fin2"								
6/13/2018								
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE	
0.150000	40.30	10.5	56	15.7	AV	L1	GND	
1.040000	11.80	10.9	46	34.2	AV	L1	GND	
29.140000	8.10	11.5	50	41.9	AV	L1	GND	

MEASUREMENT RESULT: "TUV-0613-1_fin"

6/13/2018

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.155000	56.40	10.5	66	9.3	QP	N	GND
2.050000	21.40	11.0	56	34.6	QP	N	GND
5.130000	16.30	11.2	60	43.7	QP	N	GND

MEASUREMENT RESULT: "TUV-0613-1_fin2"

6/13/2018

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.380000	32.50	10.7	48	15.8	AV	N	GND
1.040000	20.70	10.9	46	25.3	AV	N	GND
5.140000	12.10	11.2	50	37.9	AV	N	GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

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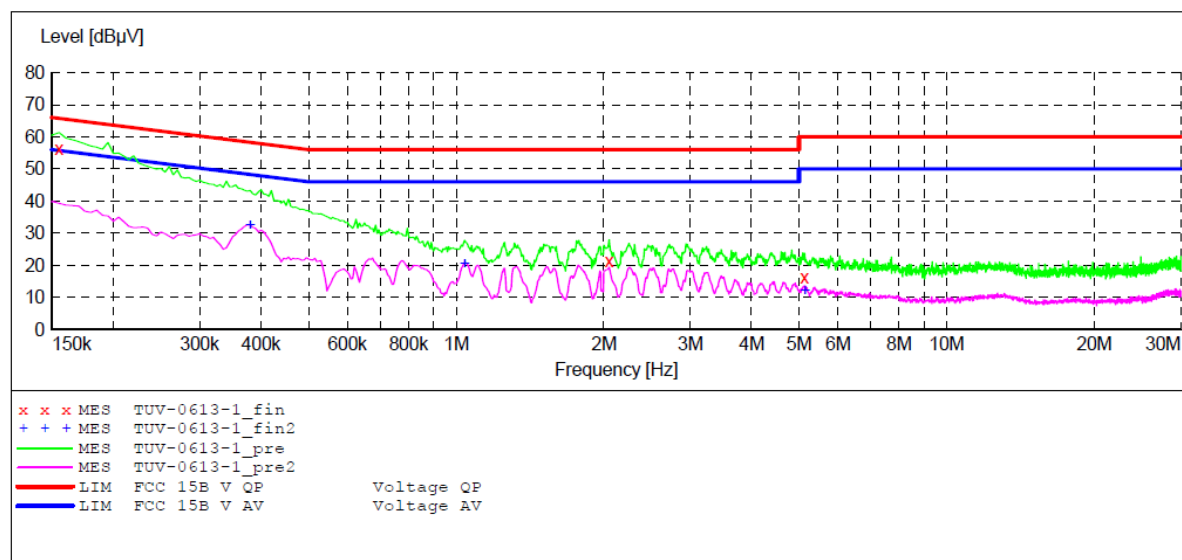
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX
 Test Site: 1#Shielding Room
 Operator: WADE
 Test Specification: N 120V/60Hz
 Comment: Mains port
 Start of Test: 6/13/2018 /

SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	Average			
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



MEASUREMENT RESULT: "TUV-0613-1_fin"

6/13/2018

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.155000	56.40	10.5	66	9.3	QP	N	GND
2.050000	21.40	11.0	56	34.6	QP	N	GND
5.130000	16.30	11.2	60	43.7	QP	N	GND

MEASUREMENT RESULT: "TUV-0613-1_fin2"

6/13/2018

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.380000	32.50	10.7	48	15.8	AV	N	GND
1.040000	20.70	10.9	46	25.3	AV	N	GND
5.140000	12.10	11.2	50	37.9	AV	N	GND

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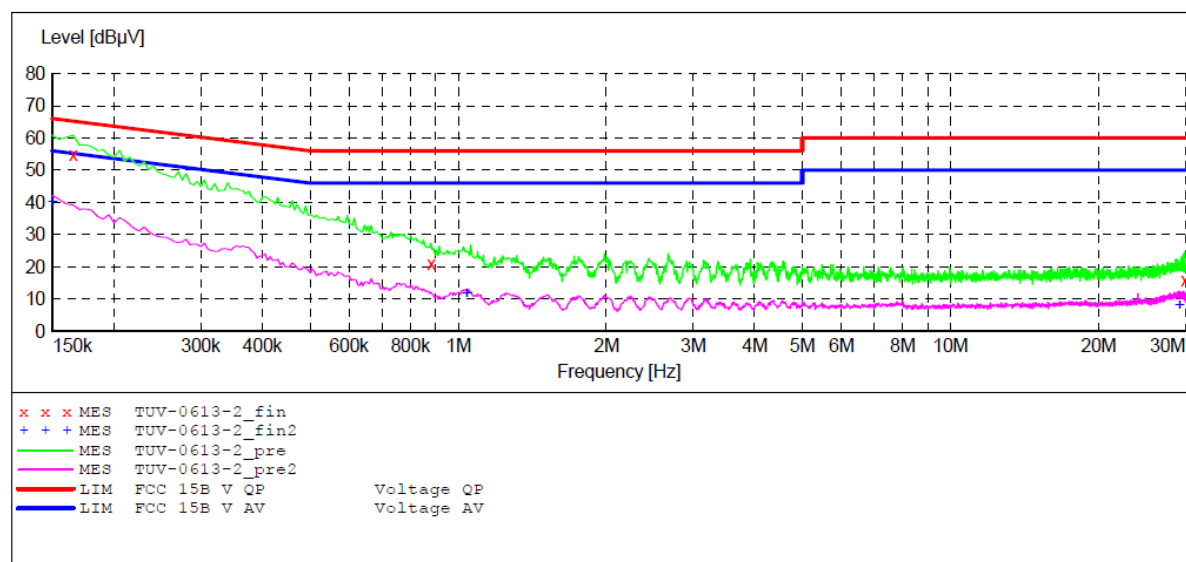
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Cinema Control System Wall Unit M/N:HC373
 Manufacturer: limoss (Shenzhen) Co., Ltd.
 Operating Condition: TX
 Test Site: 1#Shielding Room
 Operator: WADE
 Test Specification: L 120V/60Hz
 Comment: Mains port
 Start of Test: 6/13/2018 /

SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
Average						
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
Average						



MEASUREMENT RESULT: "TUV-0613-2_fin"

6/13/2018

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.165000	54.70	10.5	65	10.5	QP	L1	GND
0.880000	21.10	10.8	56	34.9	QP	L1	GND
29.920000	15.70	11.5	60	44.3	QP	L1	GND

MEASUREMENT RESULT: "TUV-0613-2_fin2"

6/13/2018

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	40.30	10.5	56	15.7	AV	L1	GND
1.040000	11.80	10.9	46	34.2	AV	L1	GND
29.140000	8.10	11.5	50	41.9	AV	L1	GND

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10.ANTENNA REQUIREMENT

10.1.The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

According to Section RSS GEN 6.8, The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

10.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 3dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203 and RSS GEN 6.8

******* End of Test Report *******