TEST REPORT For FCC

Test Report No.	: TK-FR9018
Date of Issue	: 09/24/2009
Description of Product	: CEILING MONITOR
Model No.	: XM-1210
Applicant	: **XM.CO.,LTD.** 6-4B,1L, 4-Complex,Gumi National Industrial, SinDang-ri, Sandong-myein, Gumi-city, Gyeongbuk, KOREA
Manufacturer	: **XM.CO.,LTD.** 6-4B,1L, 4-Complex,Gumi National Industrial, SinDang-ri, Sandong-myein, Gumi-city, Gyeongbuk, KOREA
Standards	: FCC Part 15 Subpart C §15.239
Test Date	: 09/25/2009 ~ 10/09/2009
Test Results	: ☒ PASS ☐ FAIL

The test results relate only to the items tested.

Tested by:
Kyu-Chul Shin
Test Engineer
Date:10/09/2009

Reviewed by:
KT Kang
Technical Manager
Date: 10/09/2009

THRU-KES CO.,LTD.
477-6, Hager-Ri, Yoju-Up, Yoju-Gun Kyunggi-Do,469-803, Korea
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1.0 General Product Description

Product	: CEILING MONITOR
Equipment model name	: XM-1210
Serial number	: Prototype
Antenna designation	:Internal Fixed Antenna
Antenna type	: Wire Antenna
Frequency Range	: 88.3MHz – 90.1MHz
Number of channels	: 18
Type of Modulation	: F3E
Operating Voltage	: DC 12V
Modulation Technique	: FM

Note:
1. The product is a Transmitter. This submittal(s) (test report) is intended for FCC ID: XSSXM-1210 filing to comply with Section 15.239 of the FCC Part 15 Subpart C Rules.
2. The composite system (digital device) is in compliance with subpart B under a DOC procedure.
3. The lowest channel is 88.3MHz, and the highest channel is 90.1MHz. The tuning controls were manually adjusted to verify maximum tuning range.

1.1 Model Differences

Not applicable

1.2 Device Modifications

Not applicable

1.3 EUT Configuration(s)

The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC
EUT	XM.CO.,Ltd.	XM-1210	-	-

1.4 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☐ Standby
☐ Display circles pattern
☒ Practice operation
☐ Scrolling 'H'
☐ Read / Write

1. The following test mode(s) were scanned during the preliminary test Mode(s):
   1) Audio Mode

Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items. The MP3 Player played a music MP3 and set the volume to Max.

There are 18 channels on EUT. All 18 channels are pre-tested and choose three channels, low (88.3MHz), middle (89.3MHz), high (90.1MHz), for final test.

1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.7 Test Facility

THRU-KES Co.,Ltd. (Test Site # : 343818)
477-6, Hager-Ri, Yoju-Up, Yoju-Gun Kyunggi-Do,469-803, Korea

1.8 Measurement Procedure

Preliminary radiated emissions test were performed open site (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-2003 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

☐ EN 61000-6-3:2001	☐ Class A	☐ Class B
☐ EN 61000-6-4:2001	☐ Class A	☐ Class B
☐ EN 50083-2:2001		
☐ EN 55011:1998 +A1:1999 +A2:2002	☐ Group 1 ☐ Class A	☐ Group 2 ☐ Class B
☐ EN 55013:2001 +A1:2003		
☐ EN 55014-1:2000 +A1:2001 +A2:2002		
☐ EN 55015:2000 +A1:2001 +A2:2002		
☐ EN 61204-3:2000	☐ Class A	☐ Class B
☐ EN 55022:1994 +A1:1995 +A2:1997	☐ Class A	☐ Class B
☐ EN 55022:1998	☐ Class A	☐ Class B
☐ EN 55022:1998 +A1:2000	☐ Class A	☐ Class B
☐ EN 55022:1998 +A1:2000 +A2:2003	☐ Class A	☐ Class B
☐ EN 61000-3-2:2000		
☐ EN 61000-3-3:1995 +A1:2001		
☐ VCCI V-3/2004.04	☐ Class A	☐ Class B
☐ AS/NZS 3548:1995 +A1:1997 +A2:1997	☐ Class A	☐ Class B
☒ FCC Part 15 Subpart C		
☐ CISPR 22:1997	☐ Class A	☐ Class B
☐ CISPR 22:1997 +A1:2000	☐ Class A	☐ Class B

The unit was tested to CISPR 22 and complied with the alternate methods allowed by FCC under paragraphs 15.107 and 15.109.

2.1 Radiated Electric Field Emissions - #1

Reference Standard
FCC Part 15.239

Test Date
October 5, 2009

Test Location
☒ EMI-OATS: Testing was performed at a test distance of 3 m

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☒	Field Strength Meter	Rohde & Schwarz	ESVS 10	826008/014	2010-05-20
☒	Trilog-Broadband Antenna	Rohde & Schwarz	VULB 9168	9168-350	2011-03-27

Frequency Range of Measurement
88.3 MHz to 90.1 MHz

Instrument Settings
IF Band Width: 120 kHz

Test Results
The requirements are:

☒ MET
☐ NOT MET
☐ NOT APPLICABLE

Remarks
See Appendix A for tes

2.2 Radiated Electric Field Emissions - #2

Reference Standard
FCC Part 15.239

Test Date
October 5, 2009

Test Location
☒ EMI-OATS: Testing was performed at a test distance of 3 m

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☒	Field Strength Meter	Rohde & Schwarz	ESVS 10	826008/014	2010-05-20
☒	Trilog-Broadband Antenna	Rohde & Schwarz	VULB 9168	9168-350	2011-03-27

Frequency Range of Measurement
30 MHz to 1000 MHz

Instrument Settings
IF Band Width: 120 kHz

Test Results
The requirements are:

☒ MET
☐ NOT MET
☐ NOT APPLICABLE

Remarks

See Appendix A for test data

Emissions 20dB's below the limit were not necessarily recorded.

2.3 200kHz Bandwidth

Reference Standard
FCC Part 15.239

Test Date
October 5, 2009

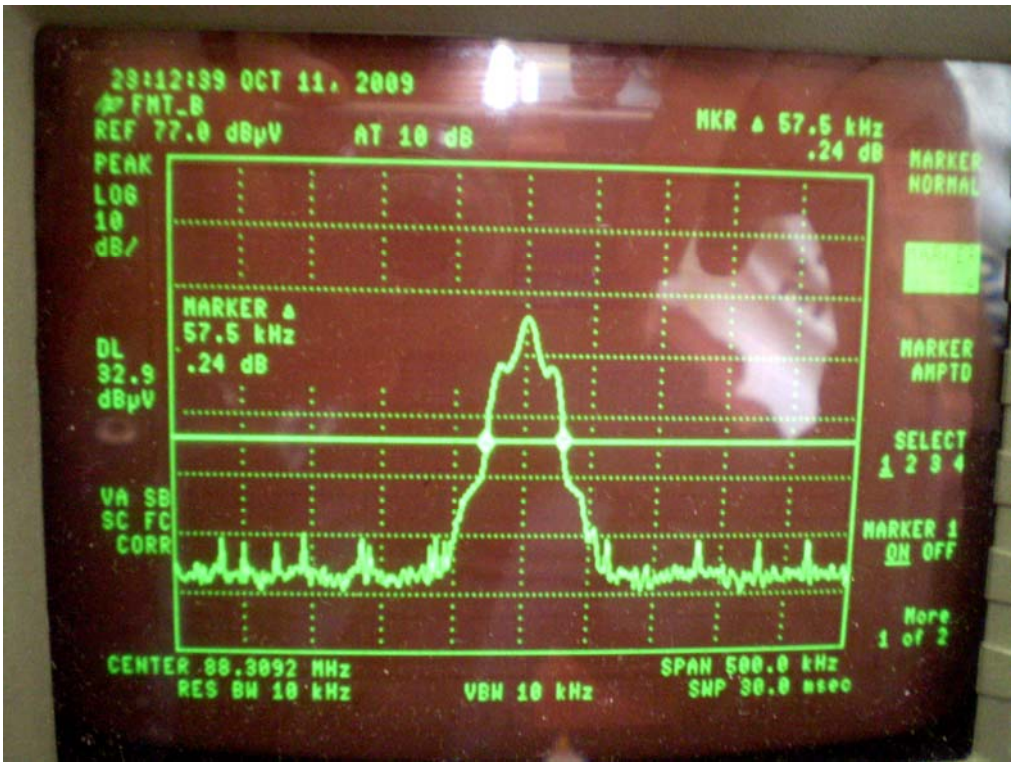
Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☒	Field Strength Meter	HP	8566B	2311A02394	2010-05-15
☒	Trilog-Broadband Antenna	Rohde & Schwarz	VULB 9168	9168-350	2011-03-27

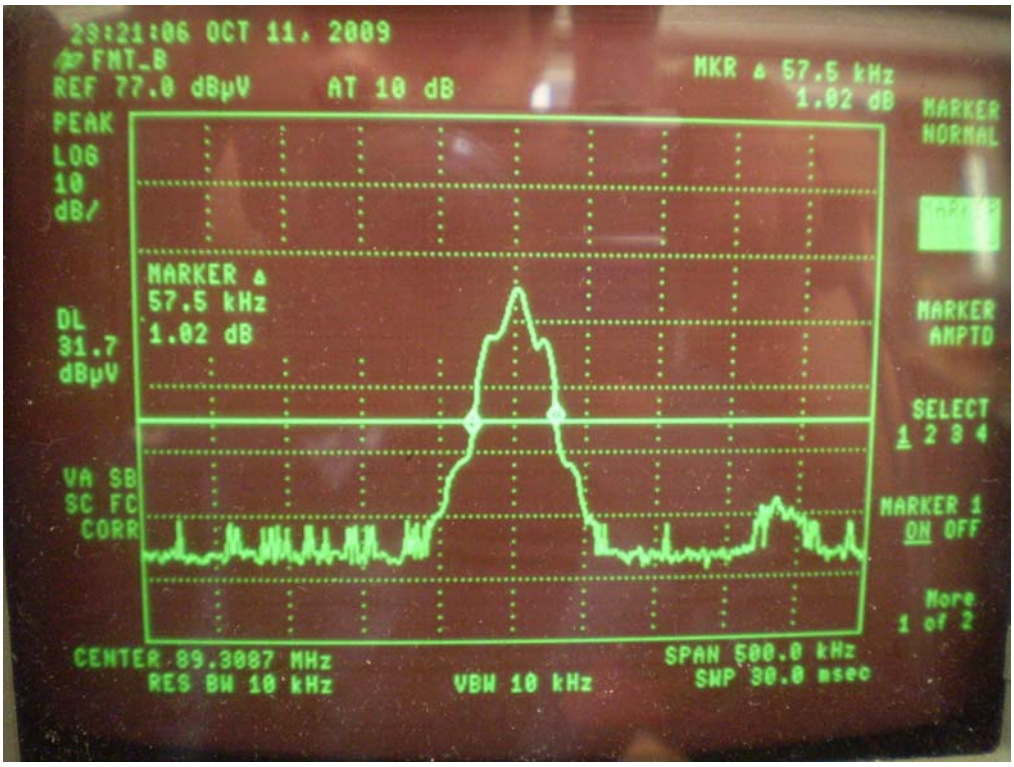
Test Results
The requirements are:

☒ MET
☐ NOT MET
☐ NOT APPLICABLE

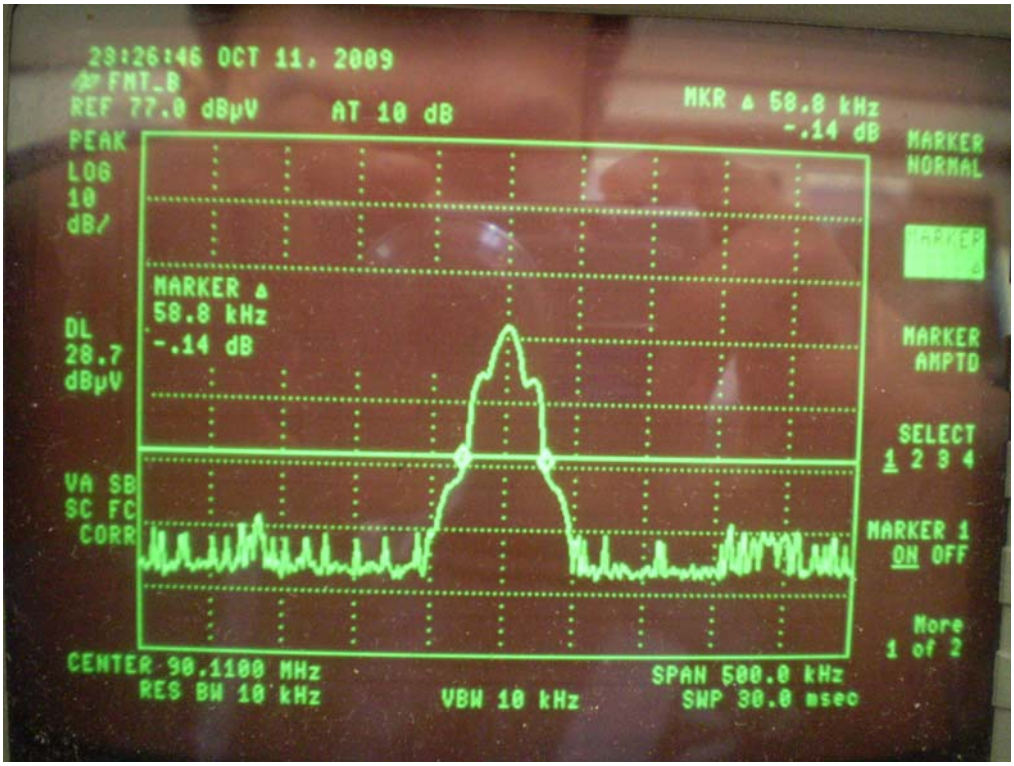
[88.3 MHz]



[89.3 MHz]



[90.1 MHz]



2.4 Conducted Voltage Emissions – 15.207

Reference Standard
FCC Part 15.207

Test Date
Not Applicable

Test Location
Shielded Room

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☐	Field Strength Meter	Rohde & Schwarz	ESHS10	862970/018	2010-05-21
☐	LISN	EMCO	3810/2	2228	2010-05-15

Frequency Range of Measurement
150 kHz to 30 MHz

Conducted Emission limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test Results
The requirements are:

☐ MET
☐ NOT MET
☒ NOT APPLICABLE

Remarks

APPENDIX A – TEST DATA

Radiated Electric Field Emissions - #1

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritr y	Correction Factor dB	Cable Loss dB	Field Strengt h (dBuv/m	Margin (dBuv)	Limit (dBuv/m)
AV	88.30	28.4	H	9.4	2.4	40.2	7.7	47.9
PK	88.30	40.5	H	9.4	2.4	52.3	15.6	67.9
AV	89.30	29.1	H	9.4	2.3	40.9	7.0	47.9
PK	89.30	40.3	H	9.4	2.3	52.1	15.8	67.9
AV	90.10	31.5	H	9.4	2.3	43.2	4.7	47.9
PK	90.10	41.2	H	9.4	2.3	52.9	15.0	67.9

Radiated Electric Field Emissions - #2

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritr y	Correction Factor dB	Cable Loss dB	Field Strengt h (dBuv/m	Margin (dBuv)	Limit (dBuv/m)
1	152.50	23.1	H	14.2	2.7	40.0	3.5	43.5
2	261.30	22.1	V	11.8	3.2	37.1	8.9	46.0
3	278.80	10.6	H	12.3	3.2	26.2	19.8	46.0
4	304.80	17.8	H	12.9	3.3	34.0	12.0	46.0
5	348.30	21.8	V	13.8	3.6	39.2	6.8	46.0
6	385.00	15.1	V	14.6	3.9	33.5	12.5	46.0

APPENDIX B - Test Setup Photos and Configuration

Radiated Electric Field Emissions