LABCODE: 500069-0

FCC PART 15.239

MEASUREMENT AND TEST REPORT

For

Action Electronics Co Ltd.

No. 198, Chung Yuan Road Chung, Chung Li, Taiwan

FCC ID: ATI9R3ODM21012

Report Type: Original Report	**Product Type:** Overhead LCD monitor with DVD player

Test Engineer:	Leon Chen
Report Number:	R2DG130306002-00A
Report Date:	2013-04-18
Reviewed By:	Ivan Cao RF Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Action Electronics Co Ltd.*'s product, model number: *ODM21012, ODM30901 (FCC ID: ATI9R3ODM21012) or* ("EUT") in this report is a *Overhead LCD monitor with DVD player*, which was measured approximately: 28.2 cm (L) x 24.3 cm (W) x 5 cm (H) for model *ODM30901*, 29.3 cm (L) x 24.5 cm (W) x 4.6 cm (H) for model *ODM21012*, rated input voltage: DC 12V from system.

Note: the series product, model ADVDLX10, VODDLX10, ODM21012, ADVDLX9, VODDLX9, ODM30901 are electrically identical except for model name, interface position, the order of pins and the screen size, model ODM21012 and ODM30901 were tested by BACL and the difference between them please refers to the attached declaration letter.

Technical Specification:

FM Transmitter		
1	Operating Frequency Band	88.1~107.9 MHz
2	Channel Step	200kHz
3	Output power	47.15dBμV@3m
4	Antenna	Wire Antenna

**All measurement and test data in this report was gathered from production sample serial number: 130306002 (Assigned by BACL, Dongguan). The EUT was received on 2013-03-14.*

Objective

This report is prepared on behalf of *Action Electronics Co Ltd.* in accordance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209, and 15.239 rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).

The current scope of accreditations can be found at http://ts.nist.gov/standards/scopes/5000690.htm

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

No software was used in the test.

Equipment Modifications

No modification was made to the unit tested.

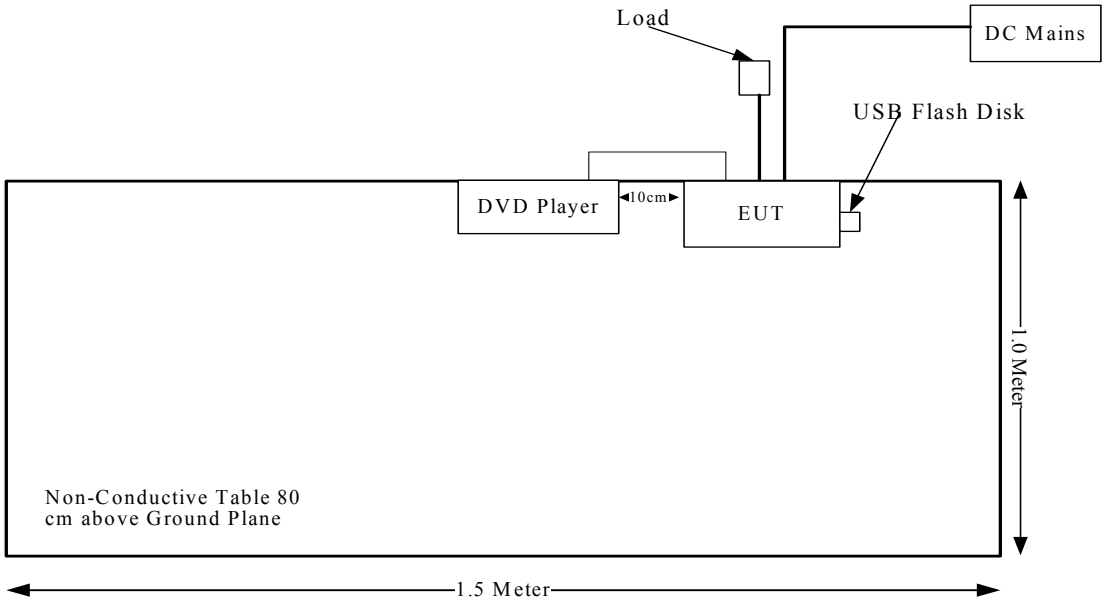
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Philips	DVD player	DVP3560K/93	KX1C1108079973
Data Traveler	USB flash disk	/	/

External Cable

Cable Description	Length (m)	From Port	To
Video Cable	0.8	DVD player	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Test Result
§15.203	Antenna Requirement	Compliance
§15.207	Conducted Emissions	Not Applicable*
§15.205,§15.209, §15.239	Radiated Emissions	Compliance
§15.239 (a)	Emission Bandwidth	Compliance

Not Applicable*: the EUT was powered by 12 V_{DC}

§15.203 - ANTENNA REQUIREMENT

Applicable Standard

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

Antenna Connector Construction

The EUT has a wire antenna permanently soldering on the printed circuit boards, which complied with 15.203, Please refer to the internal photos.

Result: Compliance.

§15.205, §15.209, §15.239- RADIATED EMISSIONS

Applicable Standard

FCC §15.239(a)(b)(c); §15.209; §15.205;

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:
- compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

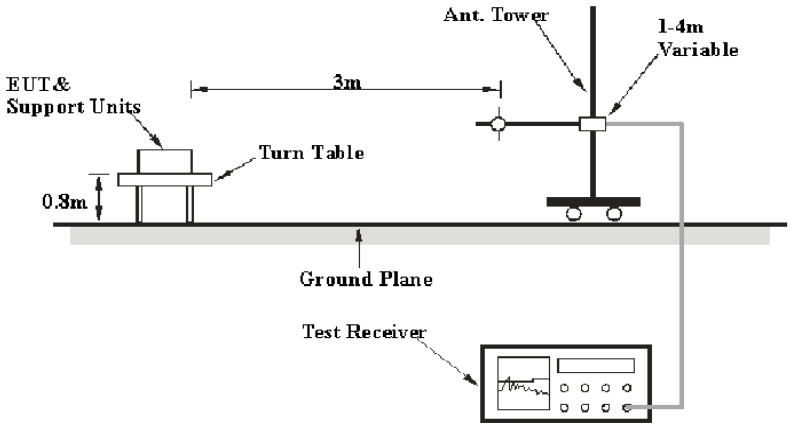
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 5.0 dB
200M~1GHz: 6.2 dB
1G~6GHz: 4.45 dB
6G~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4 - 2003. The specification used was the FCC Part 15.209 and FCC Part 15.239.

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

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	***RBW***	***Video BW***	***Detector***
30 MHz – 1000 MHz	100 kHz	300 kHz	QP

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECIEVER	ESCI	100224	2012-5-14	2013-5-13
Sunol Sciences	Antenna	JB3	A060611-1	2012-9-6	2015-9-5
HP	HP AMPLIFIER	8447E	2434A02181	N/A	N/A
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-9-4	2013-9-3
ETS LINDGREN	horn antenna	3115	000 527 35	2012-9-6	2015-9-5
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	N/A	N/A

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 5.8dB means the emission is 5.8dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209 and 15.239, with the worst margin reading of:

1.59 dB at **107.9 MHz** in the **Horizontal** polarization of model ODM21012

Test Data

Environmental Conditions

Temperature:	24.6°C
Relative Humidity:	65%
ATM Pressure:	100.8kPa

The testing was performed by Leon Chen on 2013-04-01.

Test Mode: Transmitting

Model: ODM21012

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.239	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 88.1(MHz)									
88.1	58.32	AV	H	7.68	1.21	21.40	45.81	48.00	2.19*
88.1	56.17	AV	V	7.68	1.21	21.40	43.66	48.00	4.34*
88.1	60.47	PK	H	7.68	1.21	21.40	47.96	68.00	20.04
88.1	58.44	PK	V	7.68	1.21	21.40	45.93	68.00	22.07
88	30.12	QP	V	7.67	1.21	21.40	17.60	40.00	22.40
88	28.33	QP	V	7.67	1.21	21.40	15.81	40.00	24.19
203.63	43.92	QP	H	12.08	1.71	21.46	36.25	43.50	7.25
305.48	47.39	QP	H	14.22	2.16	21.53	42.24	46.00	3.76*
305.48	48.1	QP	H	14.22	2.16	21.53	42.95	46.00	3.05*
612	39.67	QP	H	19.43	3.03	22.27	39.86	46.00	6.14
868.08	33.18	QP	H	22.51	3.59	22.23	37.05	46.00	8.95
510.15	36.97	QP	V	18.08	2.76	22.05	35.76	46.00	10.24
612	42.22	QP	V	19.43	3.03	22.27	42.41	46.00	3.59*
663.41	37.77	QP	V	20.08	3.13	22.30	38.68	46.00	7.32
714.82	37.67	QP	V	20.77	3.26	22.32	39.38	46.00	6.62
816.67	32.13	QP	V	22.08	3.47	22.32	35.36	46.00	10.64
Middle Channel: 98.1(MHz)									
98.1	56.44	AV	H	9.99	1.24	21.40	46.27	48.00	1.73*
98.1	54.73	AV	V	9.99	1.24	21.40	44.56	48.00	3.44*
98.1	58.47	PK	H	9.99	1.24	21.40	48.30	68.00	19.70
98.1	56.82	PK	V	9.99	1.24	21.40	46.65	68.00	21.35
195.87	44.95	QP	H	12.06	1.68	21.46	37.23	43.50	6.27
305.48	46	QP	H	14.22	2.16	21.53	40.85	46.00	5.15*
401.51	47.21	QP	H	16.23	2.43	21.77	44.10	46.00	1.90*
612	37.92	QP	H	19.43	3.03	22.27	38.11	46.00	7.89
900.09	32.4	QP	H	22.94	3.71	22.17	36.88	46.00	9.12
510.15	36.54	QP	V	18.08	2.76	22.05	35.33	46.00	10.67
612	42.4	QP	V	19.43	3.03	22.27	42.59	46.00	3.41*
663.41	37.34	QP	V	20.08	3.13	22.30	38.25	46.00	7.75
714.82	37.59	QP	V	20.77	3.26	22.32	39.30	46.00	6.70
816.67	31.87	QP	V	22.08	3.47	22.32	35.10	46.00	10.90

High Channel: 107.9(MHz)									
107.9	54.05	AV	H	12.50	1.26	21.40	46.41	48.00	1.59*
107.9	53.15	AV	V	12.50	1.26	21.40	45.51	48.00	2.49*
107.9	56.49	PK	H	12.50	1.26	21.40	48.85	68.00	19.15
107.9	55.03	PK	V	12.50	1.26	21.40	47.39	68.00	20.61
108	32.55	QP	H	12.52	1.26	21.40	24.93	43.50	18.57
108	30.17	QP	V	12.52	1.26	21.40	22.55	43.50	20.95
203.63	44.43	QP	H	12.08	1.71	21.46	36.76	43.50	6.74
255.04	44.56	QP	H	12.20	1.93	21.49	37.20	46.00	8.80
305.48	46.25	QP	H	14.22	2.16	21.53	41.10	46.00	4.90*
392.78	47.72	QP	H	15.97	2.40	21.75	44.34	46.00	1.66*
612	37.8	QP	H	19.43	3.03	22.27	37.99	46.00	8.01
510.15	36.68	QP	V	18.08	2.76	22.05	35.47	46.00	10.53
612	42.46	QP	V	19.43	3.03	22.27	42.65	46.00	3.35*
663.41	37.33	QP	V	20.08	3.13	22.30	38.24	46.00	7.76
714.82	36.9	QP	V	20.77	3.26	22.32	38.61	46.00	7.39
816.67	32.75	QP	V	22.08	3.47	22.32	35.98	46.00	10.02

*Within measurement uncertainty!

Note: no emissions were detected at above 1GHz.

Model: ODM30901

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.239	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 88.1(MHz)									
88.1	57.86	AV	H	7.68	1.21	21.40	45.35	48.00	2.65*
88.1	53.38	AV	V	7.68	1.21	21.40	40.87	48.00	7.13
88.1	60.42	PK	H	7.68	1.21	21.40	47.91	68.00	20.09
88.1	55.74	PK	V	7.68	1.21	21.40	43.23	68.00	24.77
88	30.57	QP	V	7.67	1.21	21.40	18.05	40.00	21.95
88	28.04	QP	V	7.67	1.21	21.40	15.52	40.00	24.48
110.51	40.9	QP	H	12.97	1.28	21.41	33.74	43.50	9.76
122.15	43.1	QP	H	14.23	1.36	21.41	37.28	43.50	6.22
408.3	42.5	QP	H	16.42	2.45	21.79	39.58	46.00	6.42
34.85	34.7	QP	V	18.46	0.79	21.42	32.53	40.00	7.47
73.65	44.6	QP	V	8.52	1.07	21.41	32.78	40.00	7.22
81.41	45.3	QP	V	7.92	1.13	21.41	32.94	43.50	10.56
142.52	44.1	QP	V	13.06	1.45	21.43	37.18	43.50	6.32
Middle Channel: 98.1(MHz)									
98.1	52.14	AV	H	9.99	1.24	21.40	41.97	48.00	6.03
98.1	48.57	AV	V	9.99	1.24	21.40	38.40	48.00	9.60
98.1	54.42	PK	H	9.99	1.24	21.40	44.25	68.00	23.75
98.1	51.39	PK	V	9.99	1.24	21.40	41.22	68.00	26.78
111.48	43.3	QP	H	13.11	1.28	21.41	36.28	43.50	7.22
122.15	41.7	QP	H	14.23	1.36	21.41	35.88	43.50	7.62
408.3	40.8	QP	H	16.42	2.45	21.79	37.88	46.00	8.12
34.85	34.4	QP	V	18.46	0.79	21.42	32.23	40.00	7.77
81.41	45.3	QP	V	7.92	1.13	21.41	32.94	40.00	7.06
103.72	45	QP	V	11.51	1.26	21.40	36.37	43.50	7.13
142.52	42.6	QP	V	13.06	1.45	21.43	35.68	43.50	7.82
High Channel: 107.9(MHz)									
107.9	52.08	AV	H	12.50	1.26	21.40	44.44	48.00	3.56*
107.9	46.35	AV	V	12.50	1.26	21.40	38.71	48.00	9.29
107.9	53.82	PK	H	12.50	1.26	21.40	46.18	68.00	21.82
107.9	48.67	PK	V	12.50	1.26	21.40	41.03	68.00	26.97
108	31.69	QP	H	12.52	1.26	21.40	24.07	43.50	19.43
108	29.84	QP	V	12.52	1.26	21.40	22.22	43.50	21.28
122.15	42.7	QP	H	14.23	1.36	21.41	36.88	43.50	6.62
408.3	39.5	QP	H	16.42	2.45	21.79	36.58	46.00	9.42
34.85	34.2	QP	H	18.46	0.79	21.42	32.03	40.00	7.97
81.41	45.2	QP	H	7.92	1.13	21.41	32.84	43.50	10.66
141.55	42.7	QP	V	13.12	1.45	21.42	35.85	43.50	7.65

*Within measurement uncertainty!

Note: no emissions were detected at above 1GHz.

§15.239(A) – EMISSION BANDWIDTH

Standard applicable

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88–108 MHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

With the EUT's antenna attached, the EUT's radiated emission power was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

Test Data

Environmental Conditions

Temperature:	27.9 ° C
Relative Humidity:	52%
ATM Pressure:	100.6 kPa

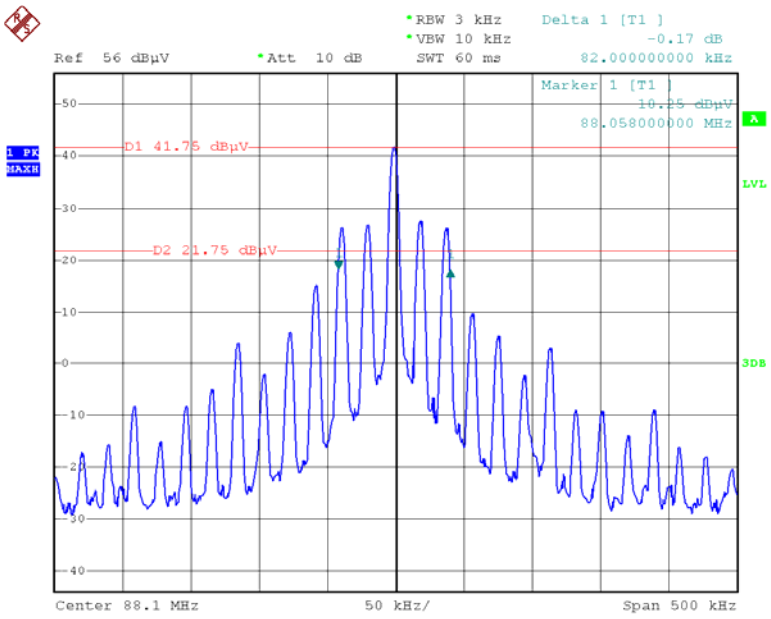
The testing was performed by Leon Chen on 2013-04-17

Please refer to the following table and plots.

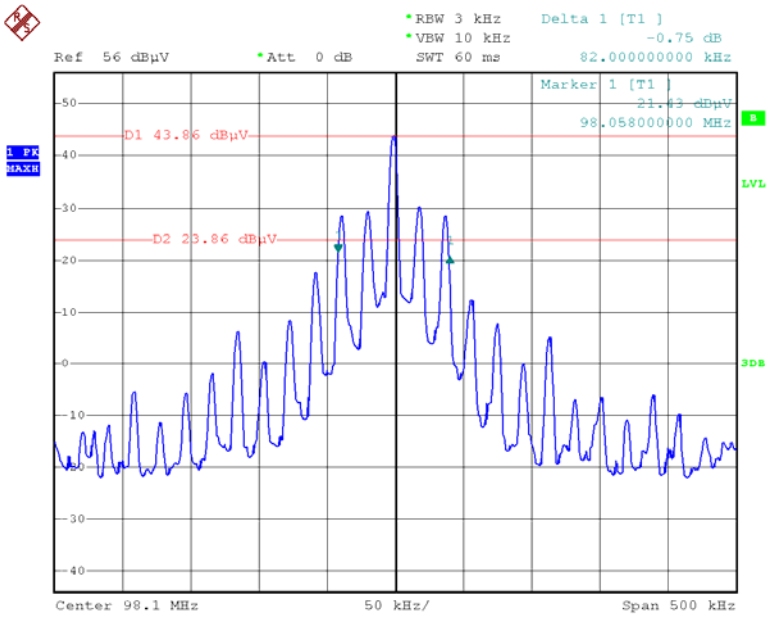
Model: ODM21012

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)
Low	88.1	82	200
Middle	98.1	82	200
high	107.9	82	200

Low Channel



Middle Channel



High Channel

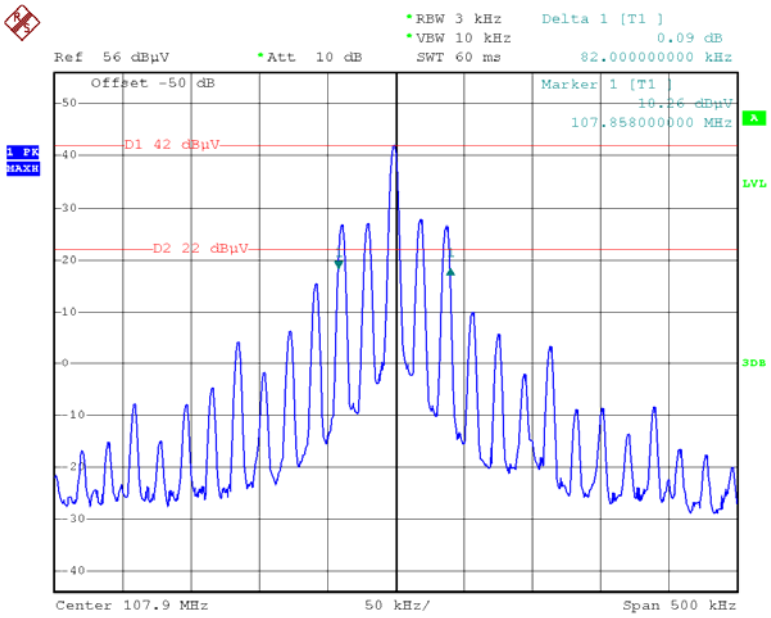


EXHIBIT A - DECLARATION OF SIMILARITY LETTER

Action Electronics Co Ltd.
ADD: No. 198, Chung Yuan Road Chung, Chung Li, Taiwan
Tel: 88634515494 Fax: 88634629341

DECLARATION OF SIMILARITY

Date: 2013-3-26

To:
Bay Area Compliance Laboratories Corp.
1274 Anvilwood Ave.
Sunnyvale, CA 94089
Phone: 408-732-9162, Fax: 408-732-9164
http://www.baclcorp.com

Dear Sir or Madam:

We, Action Electronics Co Ltd., hereby declare that product: Overhead LCD monitor with DVD player, models: ADVDLX10, VODDLX10, ADVDLX9, VODDLX9 are electrically identical with the models: ODM21012, ODM30901 which were tested by BACL with the same electromagnetic emissions and electromagnetic compatibility characteristics. The results of which are featured in BACL project: R2DG130306002.
A description of the difference among the six models and those that are declared similar are as follows:

They have different model name, interface position, and the order of pins. And the screen size of ADVDLX10, VODDLX10, and ODM21012 is 10.1 inch, the screen size of ADVDLX9, VODDLX9, and ODM30901 is 9 inch, the rest are the same, for more detail information, please check the reports.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Tanliang Lee
RD Manager

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