FCC Part 15 Subpart C TEST REPORT

of

E.U.T. :9" DIGITAL AUDIO VIDEO PLAYER
FCC ID. :ATI9R3ODM10907
MODEL :ADV900S,ADV900P,JS009010HD, ODM00901CR,ODM90902CR,ODM10907, ODM10907A,OHM938LN,JSD009010HD, JS9010HDG,JS9010HDB 08545-LC2A8-13E1,TROMAM-HM938
Working Frequency : 88.1~91.1 MHz

for

- APPLICANT : ACTION INDUSTRIES (M) SDN BHD
- ADDRESS : 2480,TINGKAT PERUSAHAAN ENAM,PRAI FREE TRADE ZONE, 13600,PERAI,PENANG,MALAYSIA.

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN

NO. 34. LIN 5. DINGFU, LINKOU DIST., NEW TAIPEI CITY, TAIWAN, 24442, R.O.C. http://www.etc.org.tw ; e-mail : emc@etc.org.tw Tel:(02)26023052 Fax:(02)26010910

Report Number: 12-09-RBF-013-02

TEST REPORT CERTIFICATION

Applicant	: ACTION INDUSTRIES (M) SDN BHD
	2480,TINGKAT PERUSAHAAN ENAM,PRAI FREE TRADE
	ZONE, 13600, PERAI, PENANG, MALAYSIA.
Manufacturer	: (1)ACTION INDUSTRIES (M) SDN BHD
	(2)Action Asia(shenzhen)Co,ltd
	(1)2480,TINGKAT PERUSAHAAN ENAM,PRAI FREE TRADE
	ZONE, 13600, PERAI, PENANG, MALAYSIA.
	(2)DeDe industrial Park, Jian'an Road, High-Tech industrial
	Park, Fuyong Town, Bao'an District, Shenzhen 518103 China
Description of EUT	
a) Type of EUT	: 9" DIGITAL AUDIO VIDEO PLAYER
b) Trade Name	
c) Model No	: ADV900S,ADV900P,JS00901OHD,
	ODM00901CR,ODM90902CR,ODM10907,
	ODM10907A,OHM938LN,JSD00901OHD,
	JS9010HDG,JS9010HDB
	08545-LC2A8-13E1,TROMAM-HM938
	uency : 88.1~91.1 MHz
e) Power Supply	: DC 12V

Regulation Applied : FCC Rules and Regulations Part 15 Subpart C

I HEREBY CERTIFY THAT; The data shown in this report were made in accordance with the procedures given in ANSI C63.4 and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Summary of Tests

Test	Results
Radiated Emission	Pass
Conducted Emission	N/A
Emission Band Requirement	Pass

Date Test Item Received	:	Sep. 17, 2012
Date Test Campaign Completed	:	Oct. 17, 2012
Date of Issue	:	Nov. 01, 2012

Jopping Chen

Test Engineer :

(Jiapeng Chen, Engineer)

Approve & Authorized :

S. S. Lion

S. S. Liou, Section Manager EMC Dept. II of ELECTRONICS TESTING CENTER, TAIWAN

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1. GENERAL INFORMATION

1.1 Product Description

a) Type of EUT	: 9" DIGITAL AUDIO VIDEO PLAYER
b) Trade Name	ADVENT, AXION , JENSEN , ACTION
c) Model No.	: ADV900S,ADV900P,JS00901OHD,
	ODM00901CR,ODM90902CR,ODM10907,
	ODM10907A,OHM938LN,JSD00901OHD,
	JS9010HDG,JS9010HDB
	08545-LC2A8-13E1,TROMAM-HM938
d) Frequency Modulation	: 88.1~91.1 MHz
e) Power Supply	: DC 12V
f) Model difference	: The only difference between serial models is the model /
declared by the	brand name. They are electronically identical.
manufacturer	

1.2 Test Methodology

Both conducted and radiated testing was performed according to the procedures in chapter 13 of ANSI C63.4 (2003)

The EUT was operated in its normal operating mode for the purpose of the measurements. The EUT has several functions and the following test modes were prelimilary tested.

- (A) Connected to DVD players for auxiliary audio/video in and playing DVD (music and video) and the volume control was set to maximum,
- (B) Playing DVD (music and video) with built-in DVD player,
- (C) Playing MP3 music from internal SD card,
- (D) Connected to MP3 players with USB connector and playing MP3 music.

When testing, the volume control was set to maximum. Test mode (D) was found the worst case of the prelimilary test, so it was chosen for the final test.

The receiving antenna polarized horizontally was varied from 1 to 4 meters and the wooden turntable was rotated through 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer. And also, each emission was to be maximized by changing the orientation of the EUT.

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at NO. 34. LIN 5. DINGFU, LINKOU DIST., NEW TAIPEI CITY, TAIWAN, 24442, R.O.C.

This site has been fully described in a report submitted to your office, and accepted in a letter dated Jan 11, 2011.

2. DEFINITION AND LIMITS

2.1 Definition

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Restricted Bands of Operation

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
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	2655-2900	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	3360-4400	Above 38.6
13.36-13.41			

Remark "**": Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.3 Limitation

(1) Conducted Emission Limits :

Except for Class A digital devices, for equpment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency MHz	Quasi Peak dB µ V	Average dB µ V
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

* Decreases with the logarithm of the frequency

(2) Radiated Emission Limits :

According to 15.239 the field strength of emissions from intentional radiators operated under these frequency bands shall not exceed the following:

Fundamental Frequency	Field Strength of Fundamental		
(MHz)	μV/meter	dBµV/meter	
88-108	250	48	

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209,as following table:

Other Frequencies	Field Strength of Fundamental		
(MHz)	μV/meter	dBµV/meter	
30 - 88	100	40.0	
88 - 216	150	43.5	
216 - 960	200	46.0	
Above 960	500	54.0	

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

(3) Antenna Requirement :

For intentional device, according to §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.

(4) Emissions Band Limits :

According to 15.239(a), emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For both radiated and conducted emissions, the system was configured for testing in a typical fashion as a customer would normally use it. The peripherals other than EUT were connected in normally standing by situation.

All measurement were intentional to maximum the emissions from EUT by varying the connection cables, therefore, the test result is sure to meet the applicable requirement.

3.2 Devices for Tested System

Device	Manufacture	Model / FCC ID.	Description
9" DIGITAL AUDIO VIDEO PLAYER *		DV900S,ADV900P,JS00901OHD, ODM00901CR,ODM90902CR, ODM10907,ODM10907A, OHM938LN,JSD00901OHD, JS9010HDG,JS9010HDB 08545-LC2A8-13E1, TROMAM-HM938/ ATI9R30DM10907	2.5m Unshielded DC Power Line 1.6m Unshielded AV Cable*3
Battery	YUASA	YTX9-BS	1.5m Unshielded DC Power Line
DVD Play	SONY	DVP-NS530	1.5m Unshielded AC Power Core
DVD Player	SONY	BDP-S350	1.5m Unshielded AC Power Cord
LCD Monitor	Esonic	HD-0701	1.5m Unshielded AC Adaptor

Remark "*" means equipment under test.

4 RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For intentional radiators, the radiated emission shall comply with §15.209(a).

4.2 Measurement Procedure

- 1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.
- 2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
- 3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
- 4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0° to 360° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
- 5. Repeat step 4 until all frequencies need to be measured were complete.
- 6. Repeat step 5 with search antenna in vertical polarized orientations.
- 7. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

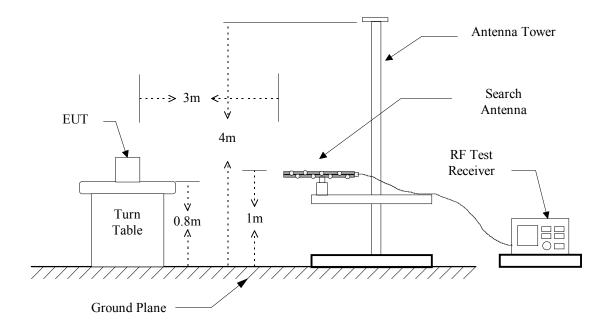
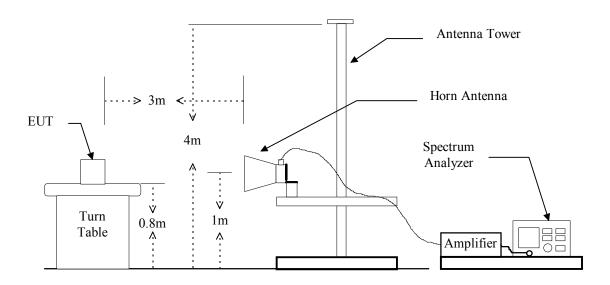


Figure 1 : Frequencies measured at 30MHz to 1 GHz configuration

Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Measuring Instrument

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESCI	2012/07/16	2013/07/16
Bi-Log Antenna	ETC	MCTD 2756	2012/01/10	2013/01/09
Log-periodic Antenna	EMCO	3146	2011/11/04	2012/11/03
Biconical Antenna	EMCO	3110B	2011/11/18	2012/11/17
Spectrum	R&S	FSP3	2012/04/06	2013/04/06
Amplifier	HP	8447D	2012/05/16	2013/05/16
Spectrum	Rohde & Schwarz	FSP40	2012/01/10	2013/01/09
Amplifier	HP	83051A	2012/05/16	2013/05/16
Signal generator	HP	HP 83732B	2012/09/06	2013/09/06
Attenuator	WEINSCHEL	AY8986	2012/09/10	2013/09/10
	ENGINEERING			

The following instrument are used for radiated emissions measurement:

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
50 10 1000	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10Hz

4.4 Test Data

4.4.1 Fundamental and Harmonics

(1) Channel Low

A. Fundamental

Fundamental Frequency : <u>88.1</u> MHz Test Date : Oct. 16, 2012 Temperature : <u>26</u> °C Humidity : <u>57</u> %

Frequenc	у	Reading (dBuV)			Factor	Result	:@3m	Limit	@3m	Margin	Table	Ant.
		Н	١	/	(dB)	(dBu	V/m)	(dBu	V/m)		Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave	(dB)	(Deg.)	(m)
88.100	35.3	***	35.9	***	10.8	46.7	***	68.0	48.0	-1.3	133	1.0

B. Harmonics

Fundamental Frequency : 88.1 MHz

Test Date : Oct. 16, 2012 Temperature : <u>26</u> °C Humidity : <u>57</u> %

Frequency	Ant-Pol		Corrected		Limit	Margin	Table	Ant.
(MHz)	H/V	Reading (dBuV)	Factor (Db)	@3m (dBuV/m)	@3m (dBuV/m)	(dB)	Degree (Deg.)	High (m)
176.200	V	27.1	15.0	42.1	43.5	-1.4	171	1.0
264.300	Н	15.8	21.6	37.4	46.0	-8.6	228	1.5
352.400	V	16.2	17.8	34.0	46.0	-12.0	113	1.0
440.500	V	17.1	20.0	37.1	46.0	-8.9	116	1.1
528.600	H/V		22.1		46.0			
616.700	H/V		23.4		46.0			
704.800	H/V		25.3		46.0			
792.900	H/V		26.2		46.0			
881.000	H/V		27.9		46.0			

Note :

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

(2) Channel High

A. Fundamental

Fundamental Frequency : 91.1 MHz

Test Date	: Oct. 16, 2012	Temperature : <u>26</u> °C	Humidity	: <u>57</u> %
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Frequency	Reading (dBuV)			Factor	Result	@3m	Limit	@3m	Margin	Table	Ant.	
	ŀ	ł	١	/	(dB)	(dBu	V/m)	(dBu	V/m)		Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave	(dB)	(Deg.)	(m)
91.100	35.3	***	36.20	***	10.8	47.0	***	68.0	48.0	-1.0	134	1.0

B. Harmonics

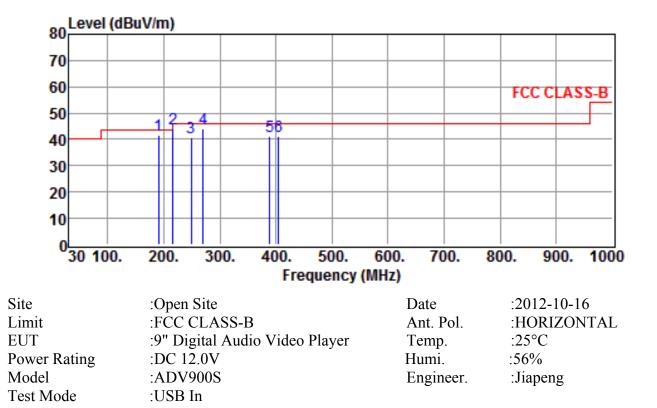
Fundamental Frequency : 91.1 MHzTest Date: Oct. 16, 2012Temperature : 26 °CHumidity: 57 %

Frequency	Ant-Pol	Meter Reading	Corrected Factor	Result @3m	Limit @3m	Margin (dB)	Table Degree	Ant. High
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(UD)	(Deg.)	(m)
182.200	V	26.8	15.5	42.3	43.5	-1.2	163	1.0
273.300	V	11.5	22.3	33.8	46.0	-12.2	127	1.0
364.400	H/V		18.2		46.0			
455.500	H/V		20.4		46.0			
546.600	H/V		22.4		46.0			
637.700	H/V		23.9		46.0			
728.800	H/V		25.6		46.0			
819.900	H/V		26.8		46.0			
911.000	H/V		28.2		46.0			

Note :

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.4.2 Other Emissions



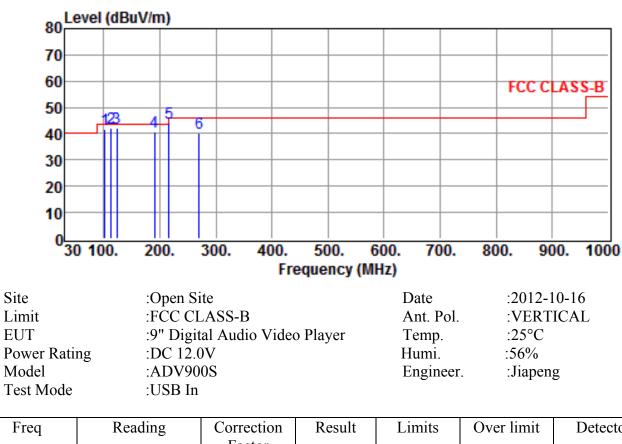
Freq	Reading	Correction	Result	Limits	Over limit	Detector
		Factor				
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
191.0200	39.5	2.1	41.6	43.5	-1.9	QP
216.2400	41.7	2.2	43.9	46.0	-2.1	QP
249.2200	38.5	2.4	40.9	46.0	-5.1	QP
270.5600	41.4	2.5	43.9	46.0	-2.1	QP
388.9000	37.9	3.1	41.0	46.0	-5.0	QP
404.4200	38.2	3.1	41.3	46.0	-4.7	QP

Note :

1. Result = Reading + Corrected Factor

2. Corrected Factor = Antenna Factor + Cable Loss

3. The margin value=Limit - Result



Freq	Reading	Correction	Result	Limits	Over limit	Detector
MHz	dBuV	Factor dB	dBuV/m	dBuV/m	dB	
101.7800	40.1	1.5	41.6	43.5	-1.9	QP
113.4200	40.4	1.6	42.0	43.5	-1.5	QP
123.1200	40.8	1.6	42.4	43.5	-1.1	QP
191.0200	38.4	2.1	40.5	43.5	-3.0	QP
216.2400	42.0	2.2	44.2	46.0	-1.8	QP
270.5600	37.6	2.5	40.1	46.0	-5.9	QP

Note :

1. Result = Reading + Corrected Factor

2. Corrected Factor = Antenna Factor + Cable Loss

3. The margin value=Limit - Result

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

Peak = Reading + Corrected Factor

where

Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)

4.6 Radiated Measurement Photos





5 CONDUCTED EMISSION MEASUREMENT

5.1 Standard Applicable

This EUT is excused from investigation of conducted emission, for it is powered by DC only. According to §15.207 (d), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

6 ANTENNA REQUIREMENT

6.1 Standard Applicable

According to \$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.

6.2 Antenna Construction

The antenna is permanently mounted on EUT, no consideration of replacement.

7 EMISSION BAND MEASUREMENT

7.1 Standard Applicable

According to 15.239(a), emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

7.2 Measurement Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT as shown in figure 1 and measurement the turn on the EUT. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- 3. Set both RBW and VBW of spectrum analyzer to 10 kHz and 100kHz respectively with a convenient frequency span including 200kHz bandwidth of the emission.
- 4. Mark the bandwidth of 200kHz points and plot the graph on spectrum analyzer.
- 5. Repeat above procedures until all measured frequencies were complete.

7.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date	
EMI Test Receiver	Rohde & Schwarz	ESU 40	2012/09/17	2013/09/17	

7.4 Measurement Data

Test Date : Oct. 14, 2012 Temperature : 24 °C Humidity : 56 %

Test result:

The 26 dB bandwidth of 88.1 MHz : 195kHz < 200 kHz.

The 26 dB bandwidth of 91.1 MHz : 199kHz < 200 kHz.

The 200 kHz band lie wholly within the frequency range of 88-108 MHz.

Note :

- **1.** Bandwidth test was done with the EUT was playing MP3 music and the volume control was set to maximum. There is no user controlled function except frequency tuning.
- 2. Please see the following pages for Plotted Data.

