

# **TEST REPORT**

Product Name Model Numbe	e er	: LCD Monitor SC-24xxxxxx(x=0-9, A-Z, a-z or "+", "-", "/", : "\"blank)
Prepared for Address	:	Associated Industries China, Inc. 5F-1, No.3-1, Park Street, Nangang District, Taipei, Taiwan
Prepared by Address	::	EMTEK (Dongguan) Co., Ltd. -1&2F., Building 2, Zone A, Zhongda Marine Biotechnology Research and Development Base, No. 9, Xincheng Avenue, Songshanhu High-technology Industrial Development Zone, Dongguan, Guangdong, China Tel : +86-0769-22807078 Fax: +86-0769-22807079
Report Number Date(s) of Tests	:	EDG2109020345E00101R September 02, 2021 to September 07, 2021

Date of issue : September 08, 2021



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# **TEST REPORT DESCRIPTION**

Applicant	:	Associated Industries China, Inc.
Manufacturer	:	Associated Industries China, Inc.
Factory	:	Weihai Daewoo Electronics Co.,Ltd.
Trade Mark	:	ESOTERIC
EUT	:	LCD Monitor
Model No.	:	SC-24xxxxxx(x=0-9, A-Z, a-z or "+", "-", "/", "\"blank)
Power Supply	:	AC 120V 60Hz

#### **Measurement Procedure Used:**

FCC CFR Title 47, Part 15, Subpart B ANSI C63.4-2014

The device described above is tested by EMTEK (Dongguan) Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (Dongguan) Co., Ltd. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (Dongguan) Co., Ltd.

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# **Modified Information**

Version	Report No.	Revision Data	Summary
EDG2109020345E00101R		1	Original Version



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# **1. SUMMARY OF TEST RESULTS**

EMISSION					
Description of Test Item	Standard & Limits	Results			
Conducted Emission at Mains Terminals	FCC Part 15, Subpart B, Class B ANSI C63.4-2014	Pass			
Radiated Emission	FCC Part 15, Subpart B, Class B ANSI C63.4-2014	Pass			



 

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# 2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	LCD Monitor			
Model Number	:	SC-24xxxxxx(x=0-9, A-Z, a-z or "+", "-", "/", "\"blank)			
Test Voltage	:	AC 120V 60Hz			
Applicant	:	Associated Industries China, Inc.			
Address	:	5F-1, No.3-1, Park Street, Nangang District, Taipei, Taiwan			
Manufacturer	:	Associated Industries China, Inc.			
Address	:	5F-1, No.3-1, Park Street, Nangang District, Taipei, Taiwan			
Factory	:	Weihai Daewoo Electronics Co.,Ltd.			
Address	:	No.26, HongKong Road, Economic&Technical Development Zone, Weihai, P.R.C.			
Date of Received	:	September 02, 2021			
Date of Test	:	September 02, 2021 to September 07, 2021			

# 2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
0	Enclosure	N/E			None
1	DC Power Port	DC			1 Port
2	HDMI	I/O			1 Port
3	VGA	I/O			1 Port
4	Headphone	I/O			1 Port

\* Note: Use abbreviations:

AC= AC Power Port

DC= DC Power Port

N/E= Non-Electrical

I/O= Signal Input or Output Port (Not Involved in Process Control)

**TP=** Telecommunication Ports

### 2.3. Independent Operation Modes

- A. HDMI
- B. VGA

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### 2.4. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted Emission	AC 120V 60Hz	Mode A&B	Mode A
Radiated Emission (Up to 1GHz)	AC 120V 60Hz	Mode A&B	Mode A
Radiated Emission (Above 1GHz)	AC 120V 60Hz	Mode A&B	Mode A

# 2.5. Description of Test Facility

Site Description EMC Lab.	Accredited by CNAS, 2020.08.27 The certificate is valid until 2024.07.05 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2018 The Certificate Registration Number is L3150
	Accredited by FCC Designation Number: CN1300 Test Firm Registration Number: 945551
	Accredited by A2LA, April 05, 2021 The Certificate Registration Number is 4321.02
	Accredited by Industry Canada The Certificate Registration Number is CN0113
Name of Firm Site Location	<ul> <li>EMTEK (Dongguan) Co., Ltd.</li> <li>-1&amp;2/F.,Buiding 2,Zone A,Zhongda Marine Biotechnology Research and Development Base,N.9,Xincheng Avenue,Songshanhu High-technology Industrial Development Zone, Dongguan, Guangdong, China</li> </ul>
2.6. Test Software	
Item	Software
Conducted Emission	EMTEK(Ver.CON-03A1)-Shenzhen
Radiated Emission	EMTEK(Ver.RA-03A1)-Shenzhen
2.7. Description of Su	oport Device
PC	: Manufacturer: LENOVO M/N: ThinkCentre M8400t S/N: EA08228210 CE_ECC: DOC
Mouse	: Manufacturer: DELL M/N: M-UAR DEL7 S/N: XN966 CE_ECC: DOC
Keyboard	: Manufacturer: DELL M/N: L30U S/N: ON277F
Headphone	: Manufacturer: eKids, LLC. / KIDDESIGNS M/N: TR-140 S/N: N/A CE, FCC: DOC

 

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### 2.8. Measurement Uncertainty

<sup>-</sup> est Item Conducted Emission Uncertainty		Uncertainty 2.08dB(9k~150kHz Conduction 1#) 2.42dB(150k-30MHz Conduction 1#)		
Radiated Emission Uncertainty (3m Chamber)	:	3.32dB (30M~1GHz Polarize: H) 3.34dB (30M~1GHz Polarize: V) 4.98dB (1~6GHz) 5.20dB (6~18GHz)		



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# 3. MEASURING DEVICE AND TEST EQUIPMENT

### 3.1. For Power Line Conducted Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Ø	Test Receiver	Rohde& Schwarz	ESCI	100137	2021/5/20	1 Year
Ø	L.I.S.N.	Rohde& Schwarz	ENV216	100017	2021/5/20	1 Year

### 3.2. For Radiated Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Ø	EMI Test Receiver	Rohde & Schwarz	ESCI	101415	2021/5/20	1Year
$\checkmark$	Bilog Antenna	Schwarzbeck	VULB9163	141	2021/5/23	1 Year
V	Power Amplifier	HP	8447F	OPTH64	2021/5/20	1 Year
V	Cable	N/A	CIL02	A0783566	2021/5/20	1 Year
V	Cable	N/A	RG 223/U	525178	2021/5/20	1 Year
V	Cable	N/A	RG 223/U	525179	2021/5/20	1 Year
M	Signal Analyzer	R&S	FSV30	103039	2021/5/20	1 Year
Ø	Horn Antenna	Schwarzbeck	BBHA9120 D	1272	2021/5/23	1 Year
Ø	High frequency horn antenna	Schwarzbeck	BBHA9170	9170-567	2021/5/20	1 Year
Ø	Power Amplifier	LUNAR EM	LNA1G18-4 0	J101000008 1	2021/5/20	1 Year
V	Cable	N/A	CBL-26	D1245	2021/5/24	1 Year
M	Cable	N/A	CBL-26	D8503	2021/5/24	1 Year
M	Cable	N/A	CBL-26	N/A	2021/5/24	1 Year

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# 4. POWER LINE CONDUCTED EMISSION MEASUREMENT

### 4.1. Block Diagram of Test Setup



LISN: Line Impedance Stabilization Network AE: Associated equipment EUT: Equipment under test

#### 4.2. Limits

FCC Part 15, Subpart B, Class B

	Freque	ncy	Limit	(dBµV)
	(MHz	<u>z</u> )	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.

#### 4.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a line impedance stabilization network (LISN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other LISN.

The LISN provides 50 ohm coupling impedance for the measuring instrument.

Both sides of AC line were checked for maximum conducted interference.

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The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

Test results were obtained from the following equation: Emission Level (dBµV) = LISN Factor (dB) + Cable Loss (dB) + Reading (dBµV) Margin (dB) = Emission Level (dB $\mu$ V) - Limit (dB $\mu$ V)

4.4. Measuring Results

#### PASS.

The worst test data are attach on following pages.



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Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2380	37.67	10.43	48.10	62.17	-14.07	QP	
2		0.2380	20.36	10.43	30.79	52.17	-21.38	AVG	
3		0.5100	38.29	10.13	48.42	56.00	-7.58	QP	
4	*	0.5100	34.93	10.13	45.06	46.00	-0.94	AVG	
5		0.8260	36.22	10.12	46.34	56.00	-9.66	QP	
6		0.8260	23.58	10.12	33.70	46.00	-12.30	AVG	
7		2.3980	38.84	10.10	48.94	56.00	-7.06	QP	
8		2.3980	21.77	10.10	31.87	46.00	-14.13	AVG	
9		4.3220	39.62	10.06	49.68	56.00	-6.32	QP	
10		4.3220	26.05	10.06	36.11	46.00	-9.89	AVG	
11		16.2060	41.02	10.03	51.05	60.00	-8.95	QP	
12		16.2060	30.53	10.03	40.56	50.00	-9.44	AVG	

\*:Maximum data

x:Over limit l:over margin Comment: Factor build in receiver.

Operator: XIA

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Mode: HDMI Note:

Reading Correct Measure-Limit Over No. Mk. Freq. Level Factor ment MHz dBuV dB dBuV dBuV dB Detector Comment 0.2380 39.65 62.17 -12.09 QP 10.43 50.08 1 2 0.2380 37.37 10.43 47.80 52.17 -4.37 AVG 3 0.5220 39.11 10.13 49.24 56.00 -6.76 QP 0.5220 26.08 10.13 36.21 46.00 -9.79 AVG 4 36.34 QP 5 1.0980 10.12 46.46 56.00 -9.54 6 1.0980 28.17 10.12 38.29 46.00 -7.71 AVG 7 2.6060 39.59 10.09 56.00 -6.32 QP 49.68 2.6060 23.20 33.29 46.00 -12.71 8 10.09 AVG 9 4.3340 36.35 10.06 46.41 56.00 -9.59 QP 10 4.3340 24.87 10.06 34.93 46.00 -11.07 AVG 11 15.8740 34.76 10.03 44.79 60.00 -15.21 QP 12 15.8740 23.75 10.03 33.78 50.00 -16.22 AVG

\*:Maximum data

x:Over limit I:over margin Comment: Factor build in receiver.

Operator: XIA

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# 5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



#### 5.2. Radiated Limit

FCC Part 15, Subpart B, Class B

	Freque	ncy	Distance	Field Strengths Limit			
MHz			Meters	μV/m	dB(μV)/m		
30	~	88	3	100	40.0		
88	~	216	3	150	43.5		
216	~	960	3	200	46.0		
960	~	1000	3	500	54.0		

#### 5.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.

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Test results were obtained from the following equation: Emission level (dBµV/m) = Antenna Factor - Amp Factor + Cable Loss + Reading Margin (dB) = Emission Level (dB $\mu$ V/m) - Limit (dB $\mu$ V/m)

5.4. Measuring Results

PASS.

The worst test data are attach on following pages.



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Note:

No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		35.7490	46.77	-15.07	31.70	40.00	-8.30	QP			
2		148.4410	54.43	-19.50	34.93	43.50	-8.57	QP			
3	<u>.</u>	226.0994	46.83	-15.16	31.67	46.00	-14.33	QP			
4		397.6334	49.86	-12.14	37.72	46.00	-8.28	QP			
5	8	742.2587	44.35	-6.11	38.24	46.00	-7.76	QP			
6	*	890.7278	45.19	-3.74	41.45	46.00	-4.55	QP			

\*:Maximum data x:Over limit l:over margin Operator: Ccyf

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Note:

No.	Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	5
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	47.73	-18.81	28.92	40.00	-11.08	QP			
2		35.8746	44.77	-18.06	26.71	40.00	-13.29	QP			
3		54.6430	40.43	-16.19	24.24	40.00	-15.76	QP			
4		162.6106	47.08	-18.50	28.58	43.50	-14.92	QP			
5	*	397.6334	53.36	-12.14	41.22	46.00	-4.78	QP			
6	1	890.7278	44.24	-3.74	40.50	46.00	-5.50	QP			

\*:Maximum data x:Over limit I:over margin Operator: Ccyf

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# 6. RADIATED EMISSION MEASUREMENT (ABOVE 1GHZ)

### 6.1 Block Diagram of Test Setup



## 6.2 Radiated Limit

FCC Part 15, Subpart B, Class B

Frequency range	Average limit	Peak limit
GHz	dB(µV/m)	dB(µV/m)
Above 1000	54	74

Note: The highest internal source of an EUT is defined as the highest frequency generated or used in the device or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 1.705 MHz, the measurement shall only be made up to 30 MHz. If the highest frequency of the internal sources of the EUT is between 1.705 MHz and 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less.

### 6.3 Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the

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maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with peak detector for peak values, and use RBW=1 MHz and VBW=10 Hz with peak detector for Average Values.

Test results were obtained from the following equation: Emission level (dBµV/m) = Antenna Factor - Amp Factor +Cable Loss + Reading Margin (dB) = Emission Level (dB $\mu$ V/m) - Limit (dB $\mu$ V/m)

6.4 Measuring Results

#### PASS.

The worst test data are attached in the following pages.

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Mode: HDMI

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	2	7494.000	49.17	3.33	52.50	74.00	-21.50	peak			
2	1	7494.000	35.38	3.33	38.71	54.00	-15.29	AVG			
3	8	8582.000	48.86	5.32	54.18	74.00	-19.82	peak			
4	1	8582.000	35.05	5.32	40.37	54.00	-13.63	AVG			
5	1	9806.000	46.09	7.09	53.18	74.00	-20.82	peak			
6	1	9806.000	32.30	7.09	39.39	54.00	-14.61	AVG			
7	3	13172.00	47.61	6.54	54.15	74.00	-19.85	peak			
8	1	13172.00	33.82	6.54	40.36	54.00	-13.64	AVG			
9	18	14464.00	47.65	6.82	54.47	74.00	-19.53	peak			
10	*	14464.00	33.85	6.82	40.67	54.00	-13.33	AVG			
11	9	15858.00	51.20	3.22	54.42	74.00	-19.58	peak			
12	1	15858.00	37.40	3.22	40.62	54.00	-13.38	AVG			

\*:Maximum data x:Over limit !:over margin Operator: Ccyf

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Mode: HDMI

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	1.3	5658.000	47.75	-1.24	46.51	74.00	-27.49	peak			
2	8	5658.000	33.96	-1.24	32.72	54.00	-21.28	AVG			
3	6	6576.000	48.38	1.53	49.91	74.00	-24.09	peak			
4	13	6576.000	34.59	1.53	36.12	54.00	-17.88	AVG			
5	1	8038.000	47.18	4.56	51.74	74.00	-22.26	peak			
6	13	8038.000	33.39	4.56	37.95	54.00	-16.05	AVG			
7	18	10282.00	49.30	5.42	54.72	74.00	-19.28	peak			
8	33	10282.00	35.51	5.42	40.93	54.00	-13.07	AVG			
9	8	14328.00	46.32	7.21	53.53	74.00	-20.47	peak			
10	s	14328.00	32.53	7.21	39.74	54.00	-14.26	AVG			
11	ş	15416.00	50.52	4.45	54.97	74.00	-19.03	peak			
12	*	15416.00	36.73	4.45	41.18	54.00	-12.82	AVG			

\*: Maximum data

x:Over limit l:over margin Operator: Ccyf

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# 7. PHOTOGRAPHS

7.1. Photos of Conducted Emission Measurement





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7.2. Photos of Radiation Emission Measurement

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# APPENDIX A: Label Requirements

(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under part 73 of this chapter, land mobile operation under part 90 of this chapter, etc., 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 condition that this device does not cause harmful

interference.

(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules for use with cable television service.

(3) All other devices 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.

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# APPENDIX B: Warning Statement

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device. pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



# **APPENDIX C: Photos of EUT**





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\*\*\* End of Report \*\*\*

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