Underwriters Laboratories Inc.



www.ul.com/emc www.ulk.co.kr

Order No: 10140639

Report No: 13-10140639-FCC

Date: December 30, 2013

Model No: AMM215MPWTD

Electromagnetic Compatibility Test Report

For

LCD Color Medical Monitor

ADVAN INT'L CORP 47817 Fremont Blvd., Fremont, CA 94538 U.S.A.

Copyright © 2005 Underwriters Laboratories Inc.

Underwriters Laboratories Inc. authorizes the above-named company to reproduce this Report provided it is reproduced in its entirety.

Only those products bearing the UL Mark should be considered as being covered by UL.

Order Number: 10140639 Page 2 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

Summary of Test Results:

The following tests were performed on a sample submitted for evaluation of compliance 47 CFR Part	
15.107 (a) / 47 CFR Part 15.109 (a) Class B.	

Test #	Test Name Test Requirement/Specification	Compliant	Not Compliant	See Remark
1	AC Power line Conducted Emission Test	X	-	-
2	Radiated Emission Test	X	-	-

^{*}Note: No modifications were made to the EUT in order to achieve and maintain compliance to the standards described in this report.

Conclusion:

The tests listed in the Summary of Testing section of this report have been performed as a witness testing and the results recorded by UL Korea Ltd. in accordance with the procedures stated in each test requirement and specification. The test list was determined by the Applicant as being applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

The equipment under test has	
☐ Met the technical requirements	

- Met the technical requirements under the limited condition
- ☐ Not met the technical requirements

Witnessed by

Changmin, Kim, WiSE Engineer

UL Verification Services – 3014ASEO

UL Korea Ltd.

December 30, 2013

Reviewed by

Jeawoon, Choi, WiSE Operations Manager

UL Verification Services- 3014ASEO

UL Korea Ltd.

December 30, 2013

Order Number: 10140639 Page 3 of 29

Model Number: AMM215MPWTD
Client Name: ADVAN INT'L CORP.

Test Report Details

Test report No: 13-10140639-FCC

Witnessed By: UL Korea Ltd.

33rd FL. GFC Bldg. 737 Yeoksam-dong, Kangnam-ku, Seoul, 135-984,

Korea

Test Site: EMC Compliance Ltd.

480-5 Sin-dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, 443-390,

Korea

Applicant: ADVAN INT'L CORP

47817 Fremont Blvd., Fremont, CA 94538 U.S.A.

Manufacturer: ADVAN INT'L CORP

47817 Fremont Blvd., Fremont, CA 94538 U.S.A.

Factory: D&T Inc.

(JANG-DONG, (DAEDEOK VALLEY))

26-121 GAJEONGBUK-RO, YUSEONG-GU, DAEJEON 305-343,

KOREA

Applicant Contact: Jun Ho Jang

Phone: 82-70-7842-8018

E-mail: andyjang@advancorp.com
Product Type: LCD Color Medical Monitor

Model Number: AMM215MPWTD

Multi-listing model number: N/A

The manufacturer has declared to all the multiple model names into the basic

model without any further evaluation by UL.

FCC ID: QVXAMM215MPWTD

Trademark: N/A

Product standards: FCC Part 15 Subpart B
Test Procedure: ANSI C63.4: 2003

Sample Serial Number: N/A

Sample Receive Date: December 03, 2013
Testing Start Date: December 06, 2013
Date Testing Complete: December 26, 2013

Overall Results: Pass

UL Korea Ltd. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. UL Korea Ltd. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from UL Korea Ltd. issued reports.

Order Number: 10140639 Page 4 of 29

Model Number: AMM215MPWTD
Client Name: ADVAN INT'L CORP.

REPORT DIRECTORY

1. G	ENERAL PRODUCT DESCRIPTION:	5
1.1	REPORT REVISION HISTORY:	5
1.2	EQUIPMENT DESCRIPTION:	5
1.3	DETAILS OF EQUIPMENT UNDER TEST (EUT):	5
1.4	TECHNICAL DATA:	6
1.5	EUT INTERNAL OPERATING FREQUENCY:	7
1.6	TECHNICAL DESCRIPTIONS AND DOCUMENTS:	7
1.7	DETAIL INFORMATION OF MULTI-LISTING MODEL:	7
1.8	EQUIPMENT MARKING PLATE OF PRODUCT:	8
2. T	EST CONDITION:	9
2.1	EQUIPMENT USED DURING TEST:	9
2.2	INPUT/OUTPUT PORTS:	
2.3	POWER INTERFACE:	10
2.4	TEST OPERATING MODE:	10
2.5	MODES OF VIDEO RESOLUTION:	11
2.6	USED D.C. EXTENSION CABLE FOR TEST:	11
2.7	TEST CONFIGURATION:	12
2.8	RESULT OF TESTING:	12
3. T	EST CONDITION AND RESULTS:	13
3.1	MAINS TERMINAL DISTURBANCE VOLTAGE TEST:	13
3 2	DADIATED DISTUDRANCE.	18

Order Number: 10140639 Page 5 of 29

Model Number: AMM215MPWTD
Client Name: ADVAN INT'L CORP.

1. GENERAL PRODUCT DESCRIPTION

1.1 Report Revision History:

Revision Date	Description	Remarks
-	Original	-

1.2 Equipment Description:

Description:	
Auto - Scanning with digital control LCD color medical monitor	

1.3 Details of Equipment Under Test (EUT):

	Equipment Configuration:					
No.	Product Type	Manufacturer	Model	Comments		
1	LCD Color Medical Monitor	ADVAN Int'l Corp.	AMM215MPWTD	-		
2	AC/DC Adapter	Bridgepower	JMW1100KB1800F02	1 EA		
3	DC Extension Cable		CB-47D2001P50MF	5 ft		
4	DC Extension Cable		CB-47D2004P57MF	15 ft		
5	DC Extension Cable		CB-47D2022P86MF	75 ft		
6	DVI-D cable	-	-	1 EA		
7	HD15 VGA cable	-	-	1 EA		
8	Hospital-grade AC power cord	-	-	1 EA		

Order Number: 10140639 Page 6 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

1.4 Technical Data:

Model	AMM215MPWTD				
Client					
Processor	TERA2321 PCoIP Client Processor				
Memory	512MB DDR3				
LCD Panel					
Description	a-Si TFT Active Matrix, LED Backlight				
Active Screen Size	21.46 inches (545.22mm) diagonal				
Resolution	1920 (H) x 1080 (V) @60Hz				
Pixel Pitch	0.2475 mm				
Display Color	16.7M colors				
Color Tone	Up to 256 color tone				
Response Time	<25ms (Typ.)				
Face Finishing	Protective Filter with Anti-Reflected Hard Coated				
Viewing Angle	R/L 178°, U/D 178° (CR > 10)				
Brightness**	250 cd/m2 (Typ.)				
Contrast Ratio	1000:1 (Typ.)				
Input	1000.1 (1)p.)				
	15pin D-Sub x 1				
VGA	R/G/B : 0.7 ± 0.1 Vp-p				
	H/V Sync : TTL Level (V high ≥2.3V, V low ≤0.5V)				
DVI1	DVI-I x 1				
DVI2 / Optional Input	DVI-I x 1				
Remote Input	9-pin D-Sub (RS-232C) x 1				
Audio In	Stereo Phone Jack				
	20~20,000hz Audio signal, Max 1 Vrms stereo signal				
MIC In	Stereo Phone Jack				
	20~20,000hz Audio signal				
USB In	A-type USB Receptacle. x 4				
	USB 2.0 Interface, support up to 500mA per USB port.				
Ethernet	RJ45 x 1				
Scanning Frequency	Horizontal: 31.47~80.0Khz Vertical: 50~85Hz				
Output					
DVI	DVI-I x 1				
Headphone	Stereo Phone Jack				
Пеаципопе	60mW at 32 ohm head phone load				
Speaker	Dynamic Speaker x 2				
Эреакеі	1.3W (Max)/8ohm				
General					
	AC 100 ~ 240V 50-60Hz, 2.0A				
Power Adaptor	DC 13V, 6.92A				
Dower Consumption	· · · · · · · · · · · · · · · · · · ·				
Power Consumption Dimension	60W				
Dimension	523 (W) x 321 (H) x 110 (D) mm				
Weight	Monitor: 5.42Kg (Approximately)				
	AC adaptor: 720g				
VESA Mounting	100mm x 100mm				
Operating/Storage En	vironment				
Operating Temperature	32° ~ 95°F (0° - 35°C)				
Operating Humidity	20% ~ 80%, non-condensing				
Storage Temperature	-4° ~ 140°F (-20° - 60°C)				
Storage Humidity	10 ~ 85%RH (without condensation)				
Compliance &Certificat					
Safety	UL (UL60601-1), cUL (CAN/CSA-C22.2 No.6011-M90), CE (EN60601-1), AS/NZS 3200-CCC (GB4943-2001), CB-ITE (IEC60950-1), IP23 Compliance				
EMC	FCC (Part 15 Class B), CE (EN60601-1-2), AS/NZS 3200-1-2, VCCI (Class B), CCC (GB9254, GB17625.1)				
Optional Module					
DC Extension Cable	5ft, 15ft, 75ft length				

 $^{^{\}star}$ All contents are subject to change without notice.

Order Number: 10140639 Page 7 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

1.5 EUT Internal Operating Frequency

Frequency (MHz)	Description	Frequency (MHz)	Description
192.38 MHz	Memory Clock	27.000 MHz	System Clock
142 MHz	Display Clock	28.322 MHz	System Clock
25 MHz	LAN chip Clock		

1.6 Technical descriptions and documents:

No.	Document Title and Description			
1	AMM215MPWTD User manual			
*Note: The manufacturer provided the following document.				

1.7 Detail information of Multi-listing model:

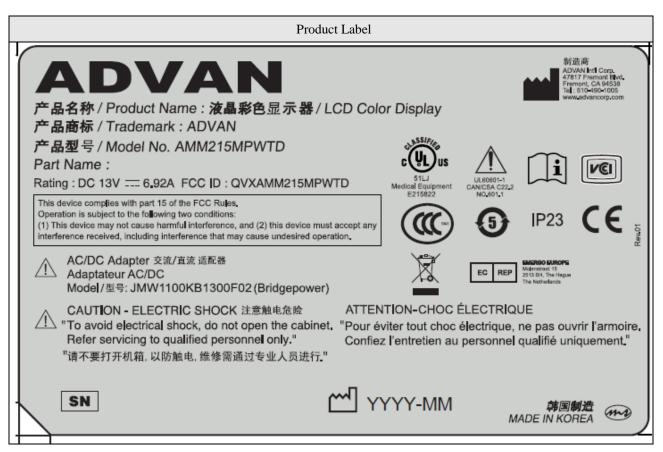
-	Model	Description	Comment
1	-	-	-

^{*}Note: The manufacturer has declared to all the multiple model names into the basic model without any further evaluation by UL.

Order Number: 10140639 Page 8 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

1.8 Equipment Marking Plate of Product:



Order Number: 10140639 Page 9 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

2. TEST CONDITION

2.1 Equipment Used During Test:

Use*	Product Type	Manufacturer	Model	Certify No.	Comments
EUT	LCD Color Medical Monitor	ADVAN Int'l Corp.	AMM215MPWTD	-	-
EUT	AC/DC Adapter	Bridge power	JMW1100KB1300F02	-	-
EUT	DC Extension Cable	-	CB-47D2001P50MF	-	5 ft
EUT	DC Extension Cable	-	CB-47D2004P57MF	-	15 ft
EUT	DC Extension Cable	-	CB-47D2022P86MF	-	75 ft
AE	PC 1	SAMSUNG	DM-V600	FCC DoC	-
AE	PC 2	SAMSUNG	DB-A150	FCC DoC	-
AE	Monitor	HP	HSTND-2681-W	FCC DoC	-
AE	USB Mouse #1	Microsoft	1088	FCC DoC	-
AE	USB Mouse #2	Microsoft	1088	FCC DoC	-
AE	USB Mouse #3	Microsoft	1088	FCC DoC	-
AE	USB Mouse #4	Microsoft	1088	FCC DoC	-
AE	USB Keyboard #1	SAMSUNG	SKG-3000UB	FCC DoC	-
AE	USB Keyboard #2	SAMSUNG	SKG-3000UB	FCC DoC	-
AE	Headset #1	SAMSUNG	SHS-250V	FCC DoC	-
AE	Headset #2	SAMSUNG	SHS-250V	FCC DoC	-
AE	HUB		-	FCC DoC	-

*Note: EUT - Equipment Under Test,

 \boldsymbol{AE} - Auxiliary/Associated Equipment,

SIM - Simulator (Not Subjected to Test)

Order Number: 10140639 Page 10 of 29

Model Number: AMM215MPWTD
Client Name: ADVAN INT'L CORP.

2.2 Input/Output Ports:

Port	Name	Type*	Cable	Cable	Comments
#			Max. >3m	Shielded	
1	A.C. input port	AC	1.8	Unshielded	A.C. Power Cord
2	Audio In	I/O	1.2	Unshielded	Connected to the PC 2
3	DVI In	I/O	1.0	shielded	Connected to the PC 2
4	D-SUB In	I/O	1.0	shielded	Connected to the PC 2
5	DVI Out #1	I/O	1.5	shielded	Connected to the Monitor
6	USB#1~#3	I/O	1.5	shielded	Connected to the USB Mouse#1~#3
7	USB	I/O	1.7	shielded	Connected to the USB Keyboard #1
8	LAN(RJ-45)	TP	3.0	Shielded(FTP)	Connected to the HUB
9	Audio In/Out	I/O	1.8	Unshielded	Connected to the Headset #1
10	RS-232	-	-	-	Not user port
11	DVI IN #2	I/O	1.5	Shielded	Open
12	LAN(RJ-45)	TP	3.0	shielded	Connected to the PC #1, HUB

Note: *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, * RS-232 port is used for service purpose only. No user interface port.

2.3 Power Interface:

N	Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Comments
F	Rated	AC 100-240 V	2 A	-	50-60Hz	Rated of Power Supply
	1	AC 120 V	-	-	60Hz	-

2.4 Test Operating Mode:

Mode #	Mode	Comments				
1	DVI Mode #1,#2	-				
2	PCoIP	Worst case condition				
3	VGA Mode	Worst case condition				
* Note: E	* Note: EUT have been performed under continuous displaying "H" Patten for configuration Modes of 1 to 3.					

Order Number: 10140639 Page 11 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

2.5 Modes of Video Resolution:

Mode #		Resolution	Comments
1	VGA Mode	640 x 350 @70Hz	-
2		1024 x 768 @75Hz	-
3		1920 x 1080@60Hz	Worst case condition (Range of Brightness: 100, Range of contrast: 100 And range of backlight: 100.
4	DVI Mode	640 x 350 @70Hz	-
5		1024 x 768 @75Hz	-
6		1920 x 1080@60Hz	Worst case condition (Range of Brightness: 100, Range of contrast: 100 And range of backlight: 100.
7	PCoIP Mode	640 x 350 @70Hz	-
8		1024 x 768 @75Hz	-
9		1920 x 1080@60Hz	Worst case condition (Range of Brightness: 100, Range of contrast: 100 And range of backlight: 100.

Only those products bearing the UL Mark should be considered as being covered by UL.

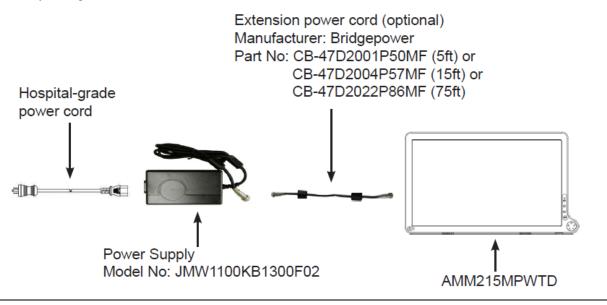
Order Number: 10140639 Page 12 of 29

Model Number: AMM215MPWTD
Client Name: ADVAN INT'L CORP.

2.6 Used D.C. Extension Cable for Test:

No.	Cable Length	Preliminary Test	Comment
1	5ft	DVI, PCoIP, VGA Mode.	-
2	15ft		-
3	75ft		Worst case condition

* **Note:** Radiated emission and conducted emission test were performed for all extension power cable during the preliminary testing and selected worst-case condition (75ft) for final measurements.

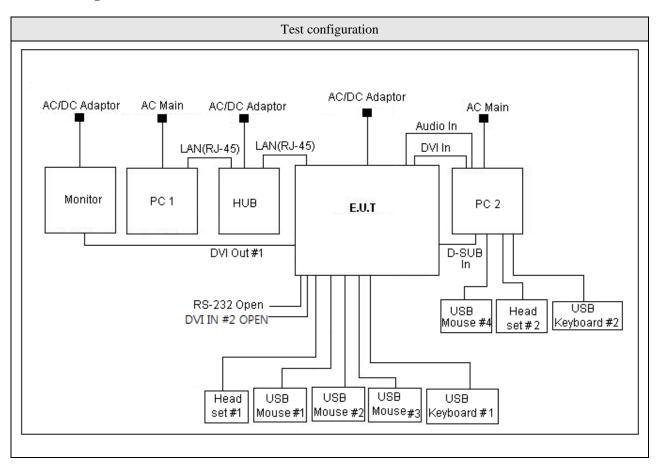


Only those products bearing the UL Mark should be considered as being covered by UL.

Order Number: 10140639 Page 13 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

2.7 Test Configuration:



2.8 Result of Testing:

No	Test requirements	Standard	Results	Verdict
1	AC Power line Conducted Emission Test	47 CFR Part 15.107(a) / 47 CFR Part 15.109(a) Class B	Met limit Class B	Complied
2	Radiated Emission Test	7 az (20120) (a) esass 2	Met limit Class B	Complied

^{*} **Note:** This product has been tested in accordance with the measurement procedures specified 47 CFR Part 15.107 (a) / 47 CFR Part 15.109 (a) Class B at the EMC Compliance Laboratory and the test results has been shown to be complied with the EMC requirements specified in the standard above.

Order Number: 10140639 Page 14 of 29

Model Number: AMM215MPWTD
Client Name: ADVAN INT'L CORP.

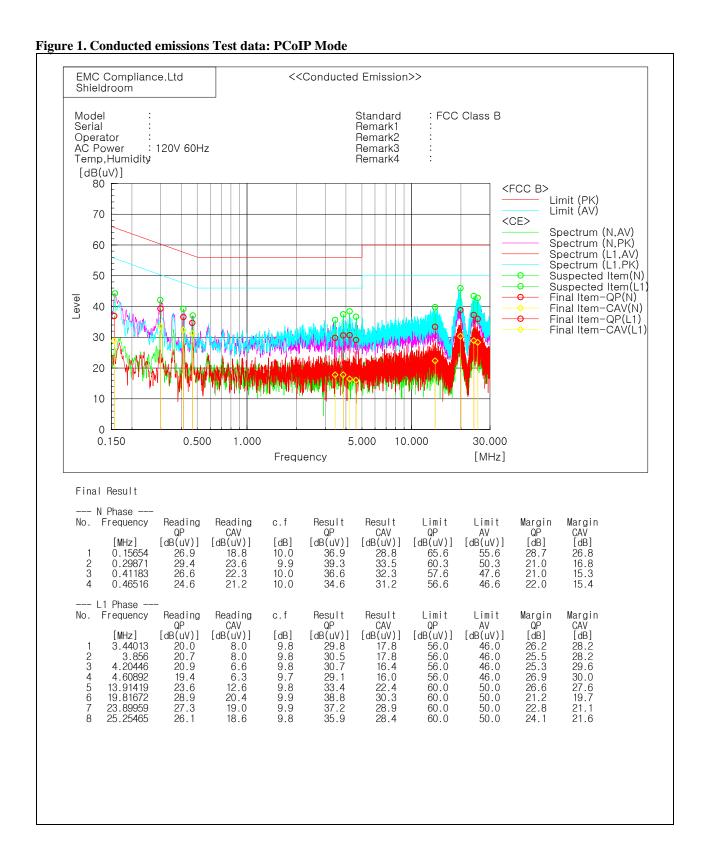
3. TEST CONDITION AND RESULTS

3.1 MAINS TERMINAL DISTURBANCE VOLTAGE TEST

	TEST	: Limi	ts of mains te	rminal distu	ırbance v	oltage			
Method Measurements were made on a ground plane that extends 1-meter minimum beyond all sides of the system under test. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.									
Basic Standard FCC Part 15									
Parameters recorded	during the test	I	Laboratory A	mbient Tem	perature	20.4 °C			
Parameters recorded	during the test	F	Relative Hum	idity		22.9 %			
-		F	requency ran	ige on each	side of li	ne Measurer	nent I	Point	
Fully configured san following frequency		he 1	50 kHz to 30	MHz		AC Input	port	of EUT	
			Limits -	· Class B					
		Limit (dBµV)							
Frequency (MHz)	Quasi-Peak		Result		A	Average		Result	
0.15 to 0.50	66 to 56		Pass 5		56 to 46		Pass		
0.50 to 5	56		Pass		46		Pass		
5 to 30	60		Pass		50		Pass		
		E	UT Configu	ation Setti	ngs:				
Power Interfa	ce Mode #		EUT Opera	tion Mode #	#	EUT Con	figura	tions Mode #	
(See Secti	on 2.3)		(See 2.4)		(See Section 2.7)				
1			2	, 3			1		
	Cor	nducte	ed Emissions	Test Equip	ment us	ed:			
Description	Manufacturer	Mode	1	Identifier		Cal. Date	(Cal. Due	
EMI Test Receiver	R&S		ESCI	1000	01	2013.07.25	5	2014.07.25	
LISN	R&S	E	ENV216	1013	58	2013.10.04	ļ	2014.10.04	
LISN R&S			SH3-Z5	1002	67	2013.07.08	3	2014.07.08	

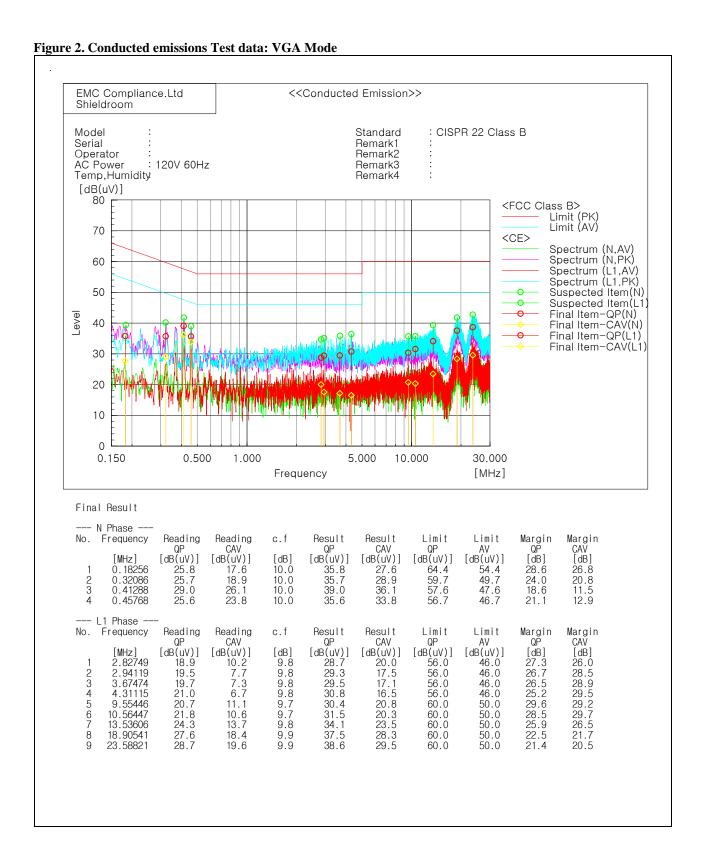
Order Number: 10140639 Page 15 of 29

Model Number: AMM215MPWTD
Client Name: ADVAN INT'L CORP.



Order Number: 10140639 Page 16 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.



Order Number: 10140639 Page 17 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

3.2 RADIATED DISTURBANCE

	TEST: Limits for radia	ated disturbance					
Frequency scans were conducted with a peak detector with horizontal and vertical polarization of the antenna. Measurements were done in the frequency range 30-1000 MHz. The main test was then conducted by measurements at each frequency found in the pretest. These measurements were done at an open area test site at 3m distances, with a quasi-peak detector. EUT was positioned on a wooden table 0.8m above the floor, at the edge of the turntable. Cables connected to EUT were fixed to cause maximum emission. A maximum emitting point for each frequency was found by turning EUT 0-360 degrees, and adjust the antenna height between 1-4m. A quasi-peak detector measurement was then done at the maximum emitting point. The measurements (above 1 GHz) were made 3 m distance test site. The EUT was placed on a non-conductive turntable approximately 0.8 m above the ground plane. The turntable with EUT was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.							
The measurements were Basic Standards	FCC Part 15						
Parameters recorded during the test	Laboratory Ambie	ent Temperature	18.0 °C				
	Relative Humidity	7	23.2 %				
-	Frequency range		Measurement Point				
Fully configured sample scanned over t	he 30 MHz – 1.0 GH	Z	3 meter measurement distance				
following frequency range	1.0 GHz ~ 6.0 GH	Z	3 meter measurement distance				
	Limits – Cl	ass B					
Erraguanay (MHz)		Limit ((dBμV/m)				
Frequency (MHz)	Quasi	-Peak	Results				
30 to 88	40	.00	Pass				
88 to 216	43	.52	Pass				
216 to 960	46	.02	Pass				
960 to 1000	53	.97	Pass				
-	Average	Peak	-				
Above 1000	54	74	Pass				
	EUT Configuration	on Settings:					
Power Interface Mode #	EUT Operation	Mode #	EUT Configurations Mode #				
(See Section 2.3)	(See 2.4	.)	(See Section 2.7)				
1	2, 3		1				

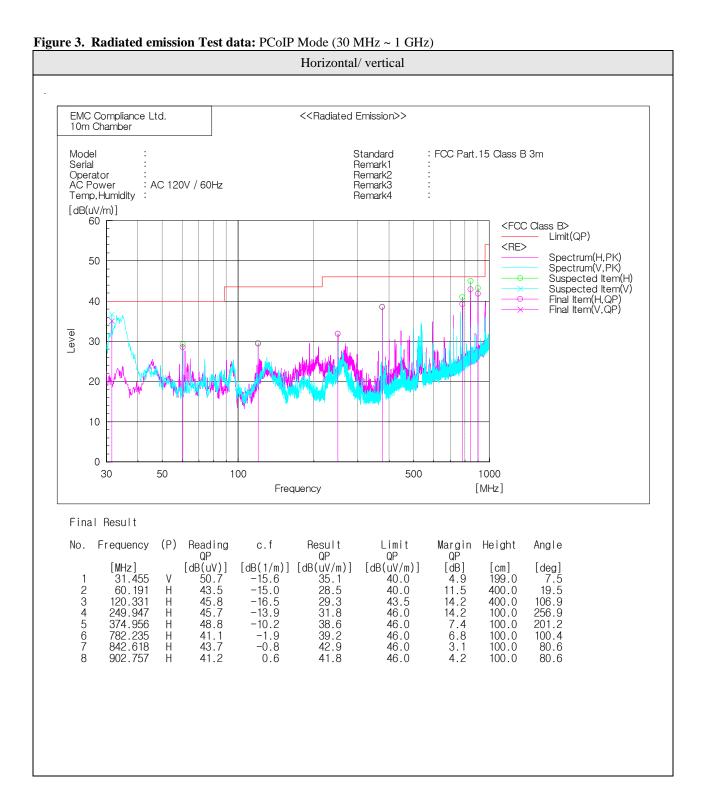
Order Number: 10140639 Page 18 of 29

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

Radiated Emissions Test Equipment:							
Description	Description Manufacturer		Identifier	Cal. Date	Cal. Due		
Test Receiver	R&S	ESCI7	100732	2013.02.18	2014.02.18		
Bi-Log Antenna	SCHWARZBECK	VULB 9168	440	2013.10.16	2015.10.16		
Amplifier	SONOMA INSTRUMENT	310N	293004	2013.10.31	2014.10.31		
3 dB Attenuator	HP	8491B	22981	2013.03.19	2014.03.19		
Antenna Mast	Innco Systems	MA4000-EP	303	-	-		
Turn Table	Innco Systems	DT2000S-1t	079	-	-		
Amplifier	AGILENT	8449B	3008A02343	2013.10.31	2014.10.31		
Horn ANT	3115	00155772	ETS	2013.03.20	2014.03.20		

Order Number: 10140639 Page 19 of 29

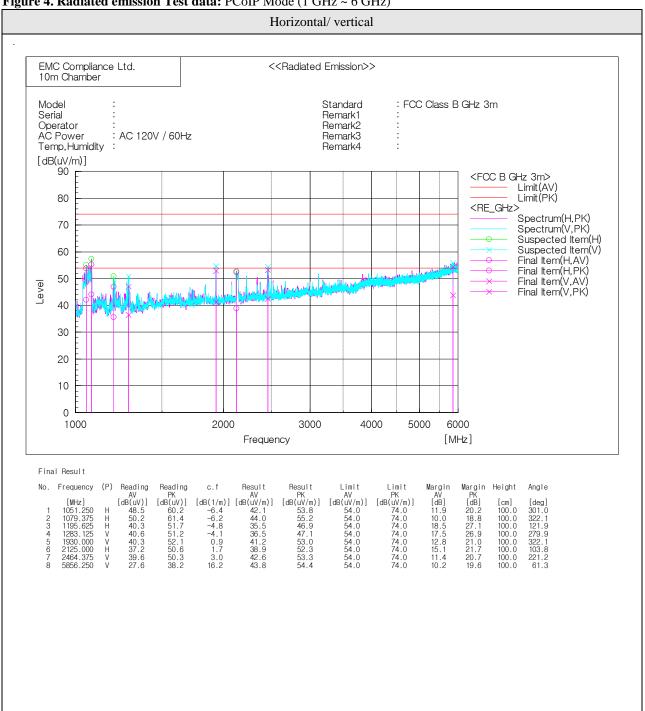
Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.



Order Number: 10140639 20 of 29 Page

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

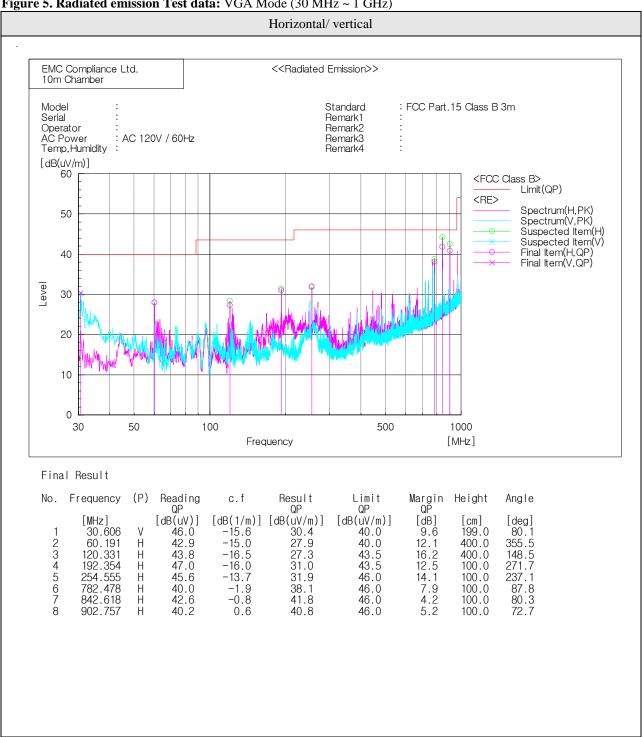
Figure 4. Radiated emission Test data: PCoIP Mode (1 GHz ~ 6 GHz)



Order Number: 10140639 21 of 29 Page

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

Figure 5. Radiated emission Test data: VGA Mode (30 MHz ~ 1 GHz)



Order Number: 10140639 22 of 29 Page

Model Number: AMM215MPWTD Client Name: ADVAN INT'L CORP.

Figure 6. Radiated emission Test data: VGA Mode (1 GHz ~ 6 GHz)

