Declaration of Conformity Certificate

With The 47 CFR, Part15 Of FCC Requirement

Product Description	: LCD Color Display
Model No.	: AMM240ED
Applicant	: BARCO, INC
Manufacturer	: BARCO, INC
Address	: 47817 FREMONT BLVD, FREMONT, CA 94538 U.S.A
Test Report Number(s)	: KTC2017-00551(R2)
Date of Issue	: February 05, 2018
Date of Receipt	: December 28, 2017
Date of Test	: February 01, 2018 to February 03, 2018
Test Required	: FCC Part15, Subpart B ANSI C 63.4 : 2014 CISPR32 : 2015

This document is the proof that above product, system, and also relates OEM models are complying with FCC requirement. We, KTC is the accredited EMC laboratory for , RRL(KOREA).
We certify that the above products had performed test on our laboratory and it was confirmed to comply with FCC requirement. These products might be marketed at the US accordance to DoC of FCC Rule based on the standard 47 CFR 15. The test was performed accordance to the procedures from ANSI C63.4-2014. Test data and results are issue on the EMC test report No. as follows.

Reference Endorsed Test Report No. is KTC2017-00551(R2)

Date: February 05, 2018

TEST REPORT

This laboratory is accredited by Radio Research Laboratory and National Voluntary Laboratory Accreditation Program.
The tests reported herein have been performed in accordance with its terms of accreditation.

Test Report No.	:	**KTC2017-00551(R2)**
Issue Date	:	**2018. 02. 05**
Applied Standard	:	**FCC Part 15, Subpart B** **ANSI C 63.4 : 2014** **CISPR 32 : 2015**
Trade Name	:	**-**
Category	:	**-**
Product Name	:	**LCD Color Display**
Model Name	:	**AMM240ED**
Serial Number	:	**-**

Signature

Tested by Seok-Hyeon Woo

Approved by Yong-Sung, Kim

This report details the results of the testing carried out only one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
This report must not be used by the client to claim product certification, approval or endorsement by agency of the federal government.

Contents

1. General Information

1.1 Client Information

Applicant	: BARCO, INC
Address of Applicant	: 47817 FREMONT BLVD, FREMONT, CA 94538 U.S.A
Manufacturer	: BARCO, INC
Address of Manufacturer	: 47817 FREMONT BLVD, FREMONT, CA 94538 U.S.A

1.2 Test Laboratory

Name and Address	: KTC(Korea Testing Certification) 22 Heungan-daero 27beon-gil, Gunpo-City, Gyeonggi-Do, 435-862, KOREA REPUBLIC OF
FCC Designation No.	: KR0006
Phone	: + 82 31 459 9708
Fax	: + 82 31 455 0606
e-mail	: shwoo0301@ktc.re.kr

1.3 General Information of E.U.T.

Product Name	LCD Color Display
Model Name	AMM240ED
Alt. Model Name	-
Model Difference	-
Serial No.	N/A
FCC ID	QVXAMM240ED
EMI Classification	B
Highest Internal Frequency	154 MHz
Test Voltage	AC 120 V, 60 Hz DC input : DC24 V
Battery	None

1.4 The information about the condition of the item tested

- Engineering sample

1.5 Operating Modes and Conditions

Operating mode	Operating condition
DVI Input Mode	The EUT was connected to DVI output of PC and then the EUT displayed a pattern of a full screen of scrolling letter-H characters on the main & external monitor screen continuously during test. (Resolution 1920 (H) x 1200 (V) @ 60 Hz
RGB Input Mode	The EUT was connected to RGB output of PC and then the EUT displayed a pattern of a full screen of scrolling letter-H characters on the main & external monitor screen continuously during test. (Resolution 1920 (H) x 1200 (V) @ 60 Hz

1.6 Auxiliary Equipments

Use*	Product Type	Manufacturer	Model	Comments
EUT	LCD Color Display	BARCO, INC	AMM240ED	Main body
AE	a.c.-d.c. Adaptor	Bridge power Corp.	BM060S24F	External power supply of EUT
AE	DC Extension cable	Bridge power Corp.	1501047***	75 ft length (*** is blank or 001-999)
AE	PC	SAMSUNG Electronics	DM500T4T-A50S	Desk-top computer
AE	31-Inch UHD 4K Surgical Color Display	BARCO NV	MDSC-8331	External LCD Monitor
AE	a.c.-d.c. Adaptor	Bridge power Corp.	BPM150S24F**	External power supply of External monitor
AE	Bluray Player	SONY	BDP-S350	
AE	SDI Generator	I & X Integrated	ISG-1000	Generator unit
AE	a.c.-d.c. Adaptor	Bridge power Corp.	JPW160KA1249101	External power supply of Gen.
AE	SDI Convertor	Gefen	-	Convertor unit
AE	a.c.-d.c. Adaptor	Gefen	HK-I150-A05	External power supply of Convertor
AE	Keyboard	DONGGUAN PRIMAX ELECTRONIC & TELECO-MMUNICAION PRODUCTS LTD	KB6011A	Connect to the Computer
AE	Mouse	Acrox Technologies Co., Ltd	AA-SM7PCP	Connect to the Computer

Note: * Use one of the following:

EUT - Equipment Under Test **AE** - Auxiliary/Associated Equipment **SIM** - Simulator (Not Subjected to Test) *Note: Use abbreviations:

Note: Auxiliary equipments are declared according to FCC procedure.

1.7 Cable List

Port No.	Name	Type*	Cable Max. >3m	Cable Shielded	Comments (Sip/Sop lines must include description of use)
0	Enclosure	N/E	—	—	None
1	Mains	AC	1.8	Unshielded	AC power Port of External power supply
2	DVI out	Sop	1.8	Shielded	External LCD Monitor
3	DVI in	Sop	1.8	Shielded	PC
4	3G-SDI 1 in	Sip	1.8	Shielded	SDI Generator
5	3G-SDI 2 in	Sip	1.8	Shielded	SDI Generator
6	SDI out	Sip	1.8	Shielded	External LCD Monitor
7	D-Sub in	Sip	1.8	Shielded	PC
8	Y/C in	Sip	1.8	Shielded	Bluray player
9	RS-232C	Sip/Sop	-	-	Service port

Supplementary information:

*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical

Batt=Battery

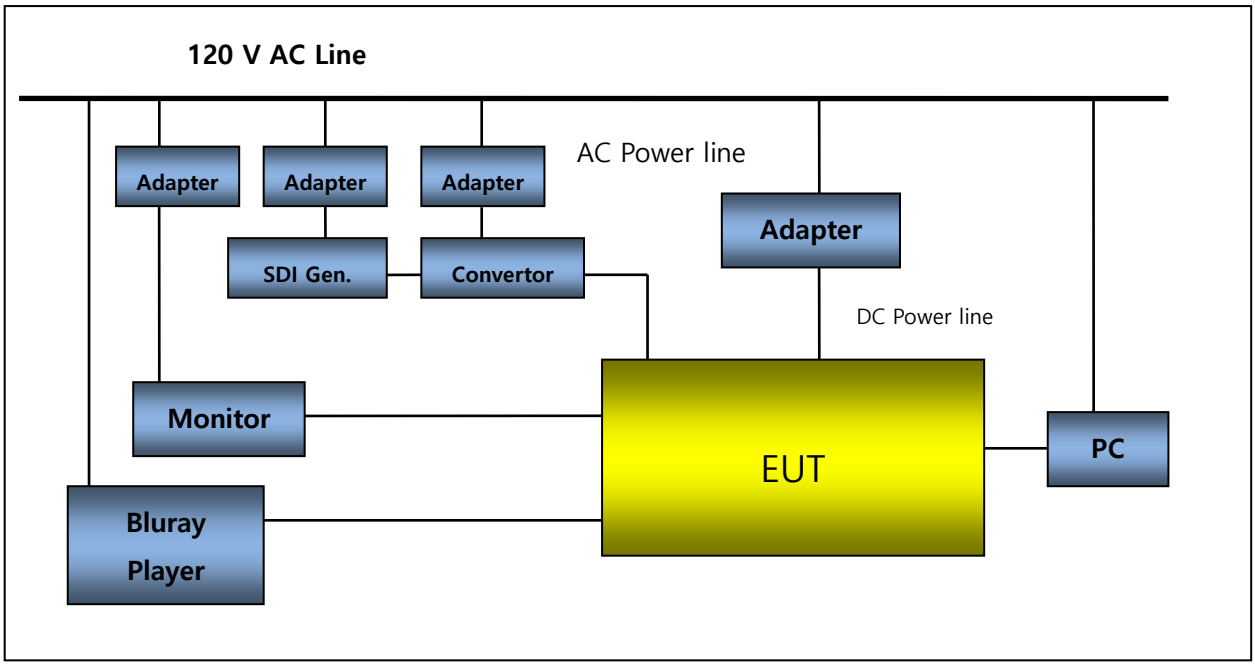
Sip/Sop = Signal Input/output Port PC – Patient-Coupled Cable

TP = Telecommunication Ports

1.8 System Configurations

The EUT was connected to a SDI generator, PC and an external LCD monitor

1.9 Test System Layout



1.10 Modifications

There was no modified item during the test.

1.11 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 : 2017, Subpart B	Applicable	No Deviation

1.12 Summary of Test Results

Test Item	Basic Standards	Results
Conducted Emission	ANSI C63.4 : 2014	Complied
Radiated Emission	ANSI C63.4 : 2014	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

EMISSION

2.1 Test Results

Test Items	Basic Standards	Test Results
Conducted Emission	ANSI C63.4 : 2014	Complied
Radiated Emission	ANSI C63.4 : 2014	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 ㎒ ~ 30 ㎒	9 ㎑	N/A
Radiated Emission	30 ㎒ ~ 1 ㎓	120 ㎑	10 m
Radiated Emission	1 ㎓ ~ 6 ㎓	1 ㎒	3 m

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 ㎒ ~ 1 ㎓. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 ㎒ ~ 1 ㎓ and Class A and Class B equipment above 1 ㎓.

2.2.2 Test Limits

- Conducted Emission Limits

Frequency Range	Limits (㏈(㎶))		Class
	Quasi-peak	Average	
0.15 ㎒ ~ 0.5 ㎒	79	66	**Class A**
0.5 ㎒ ~ 30 ㎒	73	60	
0.15 ㎒ ~ 0.5 ㎒	66 to 56	56 to 46	**Class B**
0.5 ㎒ ~ 5 ㎒	56	46	
5 ㎒ ~ 30 ㎒	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 ㎒ to 0.5 ㎒.

- Radiated Emission Limits below 1 ㎓

Frequency Range	Limits (㎶/m)	Measuring Distance
	Quasi-peak	
30 ㎒ ~ 88 ㎒	100	**Class B 3m**
88 ㎒ ~ 216 ㎒	150	
216 ㎒ ~ 960 ㎒	200	
960 ㎒ ~ 1 ㎓	500	
30 ㎒ ~ 88 ㎒	90	**Class A 10m**
88 ㎒ ~ 216 ㎒	150	
216 ㎒ ~ 960 ㎒	210	
960 ㎒ ~ 1 ㎓	300	

-Radiated Emission Limits above 1 ㎓

Frequency Range [GHz]	Detector type / bandwidth	Limits (㎶/m)	Measuring Distance
1 ~ 3	Average / 1 MHz	54	**Class B 3m**
3 ~ 6		54	
1 ~ 3	Peak / 1 MHz	74	
3 ~ 6		74	
1 ~ 3	Average / 1 MHz	50	**Class A 10m**
3 ~ 6		50	
1 ~ 3	Peak / 1 MHz	70	
3 ~ 6		70	

2.3 Conducted Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(0.15 MHz to 30 MHz) using a max hold mode incorporating a Peak detector and Average detector and using the software of EP5/CE (Version 5.4.12 from TOYO). The final test data was measured using a Quasi-Peak detector and Average detector.

2.3.1 Test Equipments

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Test Receiver	Agilent	N9038A	MY51100116	2017-09-05	2018-09-05
LISN	Rohde/schwarz	ENV4200	100212	2017-09-26	2018-09-26
PULSE LIMTER	Rohde/schwarz	ESH3-Z2	101960	2017-02-06	2018-02-06

Note : The calibration period of every equipment is 1 year.

2.3.2 Test Site

EMI Test Room1 in KTC Laboratory

2.3.3 Environment Conditions

Temperature : 22 ℃

Humidity : 42 %R.H.

Atmospheric Pressure : 100.9 kPa

2.3.4 Test Results

Test Date : 2018.02.03

- DVI Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)

Freq.	Line	Level [dBµV]		C.F	Result [dBµV]		Limit [dBµV]		Margin [dB]	
[MHz]	[L/N]	QP	AV	[dB]	QP	AV	QP	AV	QP	AV
0.15	L	19.7	9.6	20.7	40.4	30.3	66.0	56.0	25.6	25.7
0.33	N	21.3	12.3	20.3	41.6	32.6	59.4	49.4	17.8	16.8
0.34	N	21.8	15.7	20.3	42.1	36.0	59.2	49.2	17.1	13.2
3.26	L	16.1	5.0	20.2	36.3	25.2	56.0	46.0	19.7	20.8
5.89	L	14.5	7.7	20.2	34.7	27.9	60.0	50.0	25.3	22.1
12.89	N	19.3	13.6	20.3	39.6	33.9	60.0	50.0	20.4	16.1
12.22	N	18.8	13.2	20.2	39.0	33.4	60.0	50.0	21.0	16.6

Measurement Uncertainty : ± 2.5 dB (The confidential level is about 95 %, *k* = 2)

Note : • C.F: Cable Loss + LISN Factor • Result = Level + C.F

• Margin = Limit – Result

- **RGB Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)**

Freq.	Line	Level [dBµV]		C.F	Result [dBµV]		Limit [dBµV]		Margin [dB]	
[MHz]	[L/N]	QP	AV	[dB]	QP	AV	QP	AV	QP	AV
0.24	N	19.9	14.4	20.4	40.3	34.8	61.9	51.9	21.6	17.1
0.34	N	22.7	16.6	20.3	43.0	36.9	59.3	49.3	16.3	12.4
3.09	L	14.2	4.8	20.2	34.4	25.0	56.0	46.0	21.6	21.0
3.26	L	16.5	5.6	20.2	36.7	25.8	56.0	46.0	19.3	20.2
6.01	N	15.3	7.6	20.2	35.5	27.8	60.0	50.0	24.5	22.2
13.15	N	19.3	13.6	20.3	39.6	33.9	60.0	50.0	20.4	16.1
13.55	N	19.2	13.6	20.3	39.5	33.9	60.0	50.0	20.5	16.1

Measurement Uncertainty : ± 2.3 dB (The confidential level is about 95 %, *k* = 2)

Note : • C.F: Cable Loss + LISN Factor • Result = Level + C.F

• Margin = Limit – Result

See Appendix A (Conducted Emission)

2.4 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(30 MHz to 6 GHz) using a max hold mode incorporating a Peak detector and using the software of Radiated Emission Measurement Software EP5/RE(Version 6.0.10 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 GHz and a Peak and Average detector above 1 GHz. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.4.1 Test Equipments

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Agilent	N9038A	MY53290083	2017-09-05	2018-09-05
EMI Test Receiver	Rohde/schwarz	ESR7	101368	2017-09-04	2018-09-04
Pre amplifier	Sonoma Instrument Co.	310N	340214	2017-04-14	2018-04-14
Pre amplifier	Sonoma Instrument Co.	310N	340215	2017-04-14	2018-04-14
Pre amplifier	H.P	8449B	3008A00121	2017-03-14	2018-03-14
BiconiLog Antenna	Schwarzbeck	VULB9163	498	2017-04-25	2019-04-25
BiconiLog Antenna	Schwarzbeck	VULB9163	385	2017-02-27	2019-02-27
High Gain Horn Antenna	Schwarzbeck	BBHA9120D	918	2017-08-02	2019-08-02
Antenna Master	innco systems	MA 4000-EP	201/16140507/L	-	-
Antenna Master	innco systems	MA 4000-EP	243/21551208/L	-	-
Antenna Mast	Maturo	AM2.0	-	-	-
Turn Table	innco systems	DT3000-3t	-	-	-

Note : Only the calibration period of Antennas is 2 years but the period of every equipment is 1 year.

2.4.2 Test Site

10 m Semi-Anechoic Chamber in KTC Laboratory

2.4.3 Environment Conditions

Below 1 GHz (10 m method)

Temperature : 22 ℃
Humidity : 43 %R.H.
Atmospheric Pressure : 100.8 kPa

Above 1 GHz (3 m method)

Temperature : 22 ℃
Humidity : 43 %R.H.
Atmospheric Pressure : 100.8 kPa

2.4.4 Test Results

Below 1 GHz (10 m method)

Test Date : 2018.01.08

-DVI Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)

Freq. [MHz]	Pol. [H/V]	Level [dBμV]	Angle [°]	Height [cm]	C.F AF[dB/m] + CL[dB] + Amp[dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]
42.8	V	39.7	236	190	-16.8	22.9	30.0	7.1
115.21	V	36.2	276	100	-19.6	16.6	30.0	13.4
228.77	H	33.9	29	263	-15.3	18.6	30.0	11.4
617.09	V	31.2	278	100	-6.4	24.8	37.0	12.2
771.28	H	32.5	126	130	-2.3	30.2	37.0	6.8
799.67	H	30.2	93	100	-1.8	28.4	37.0	8.6
891.07	H	26.9	214	100	0.9	27.8	37.0	9.2

Measurement Uncertainty : 3.3 dB (The confidential level is about 95 %, *k* = 2)

Note:
- C.F = Cable Loss + Amplifier Gain + Antenna Factor
- Pol.(H) = Horizontal
- Pol.(V) = Vertical
- Margin = Limit – Reuslt

-RGB Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)

Freq. [MHz]	Pol. [H/V]	Level [dBμV]	Angle [°]	Height [cm]	C.F AF[dB/m] + CL[dB] + Amp[dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]
42.83	V	41.8	241	111	-16.8	25.0	30.0	5.0
102.87	H	39.8	125	400	-17.3	22.5	30.0	7.5
120.03	V	42.7	168	100	-20.5	22.2	30.0	7.8
205.71	V	40.2	173	100	-17.0	23.2	30.0	6.8
257.14	H	36.9	90	344	-14.3	22.6	37.0	14.4
771.29	H	32.3	124	125	-2.3	30.0	37.0	7.0
799.75	H	30.4	95	100	-1.8	28.6	37.0	8.4

Measurement Uncertainty : 3.3 ㏈ (The confidential level is about 95 %, *k* = 2)

Note: • C.F = Cable Loss + Amplifier Gain + Antenna Factor • Pol.(H) = Horizontal
• Pol.(V) = Vertical • Margin = Limit – Reuslt

Above 1 ㎓ (3 m method)

Test Date : 2018.01.08

-DVI Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)

Freq.	Pol.	Level [dBμV]		C.F	Result [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Height	Angle
[MHz]	[H/V]	PK	AV	[dB/m]	PK	AV	PK	AV	PK	AV	[cm]	[°]
1633.74	H	46.3	32.5	3.3	49.6	35.8	74.0	54.0	24.4	18.2	100	208
2313.88	H	46.5	31.7	7.1	53.6	38.8	74.0	54.0	20.4	15.2	100	171
2472.80	H	43.3	29.5	8.2	51.5	37.7	74.0	54.0	22.5	16.3	100	115
3404.19	H	42.6	29.1	11.9	54.5	41.0	74.0	54.0	19.5	13.0	100	172
3869.46	V	42.6	28.9	13.6	56.2	42.5	74.0	54.0	17.8	11.5	100	63
5998.43	V	40.5	25.8	19.6	60.1	45.4	74.0	54.0	13.9	8.6	100	0

Measurement Uncertainty : 4.7 ㏈ (The confidential level is about 95 %, *k* = 2)

Note: • C.F = Cable Loss + Amplifier Gain + Antenna Factor • Pol.(H) = Horizontal
• Pol.(V) = Vertical • Margin = Limit – Reuslt

-RGB Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)

Freq.	Pol.	Level [dBμV]		C.F	Result [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Height	Angle
[MHz]	[H/V]	PK	AV	[dB/m]	PK	AV	PK	AV	PK	AV	[cm]	[°]
1633.43	H	46.1	33.2	3.3	49.4	36.5	74.0	54.0	24.6	17.5	100	208
2821.21	H	42.3	28.1	10.3	52.6	38.4	74.0	54.0	21.4	15.6	100	170
3392.06	V	43.3	29.5	11.9	55.2	41.4	74.0	54.0	18.8	12.6	100	297
4382.13	V	40.4	26.9	15.5	55.9	42.4	74.0	54.0	18.1	11.6	100	63
5031.61	H	39.8	26.0	17.7	57.5	43.7	74.0	54.0	16.5	10.3	100	172
5918.69	V	40.5	26.8	19.2	59.7	46.0	74.0	54.0	14.3	8.0	100	207

Measurement Uncertainty : 4.7 dB (The confidential level is about 95 %, *k* = 2)

Note:
- C.F = Cable Loss + Amplifier Gain + Antenna Factor
- Pol.(H) = Horizontal
- Pol.(V) = Vertical
- Margin = Limit – Reuslt

See Appendix B (Radiated Emission)

3.0 Product Picture

N/A
Front
N/A
Rear

Note) Test setup picture (or EUT picture) was not attached, that reason for keep customer's confidential.

N/A
UP
N/A
Bottom

Note) Test setup picture (or EUT picture) was not attached, that reason for keep customer's confidential.

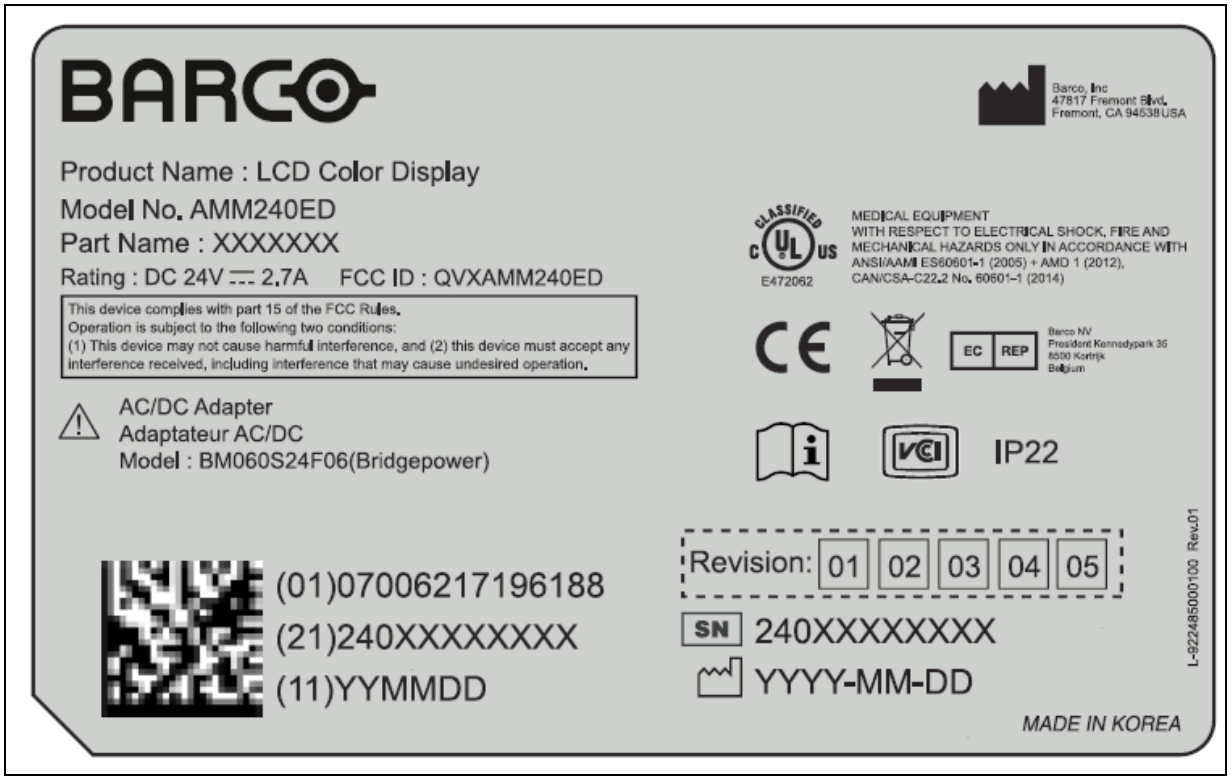
N/A
Left
N/A
Right

Note) Test setup picture (or EUT picture) was not attached, that reason for keep customer's confidential.

N/A
Inside 1
N/A
Inside 2

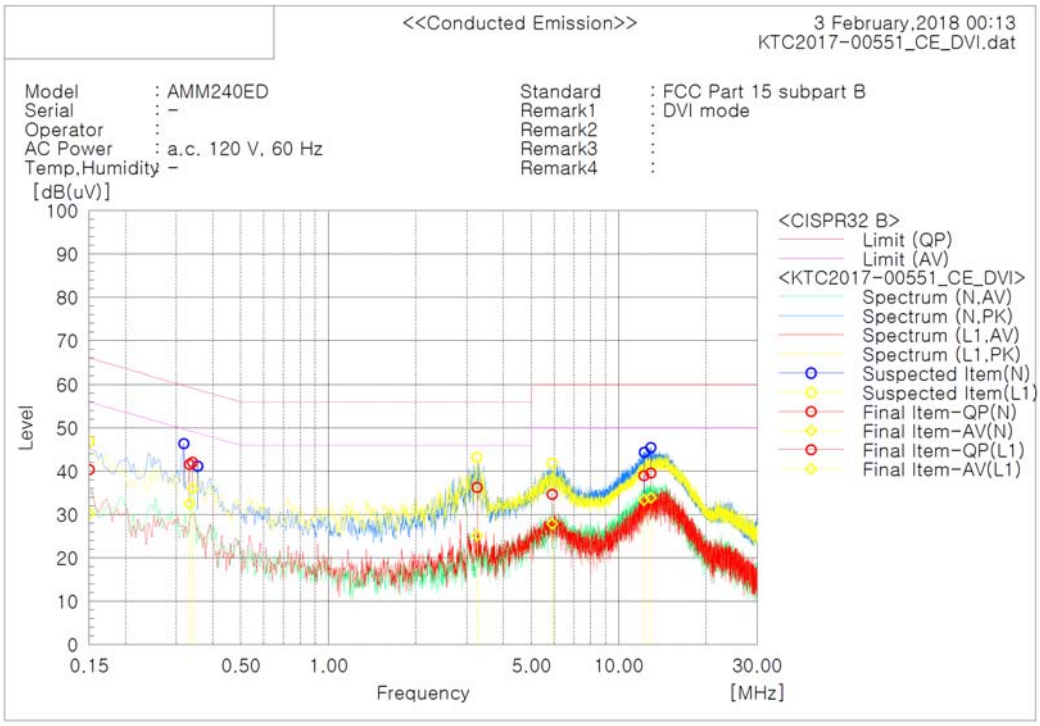
Note) Test setup picture (or EUT picture) was not attached, that reason for keep customer's confidential.

4.0 Product Label

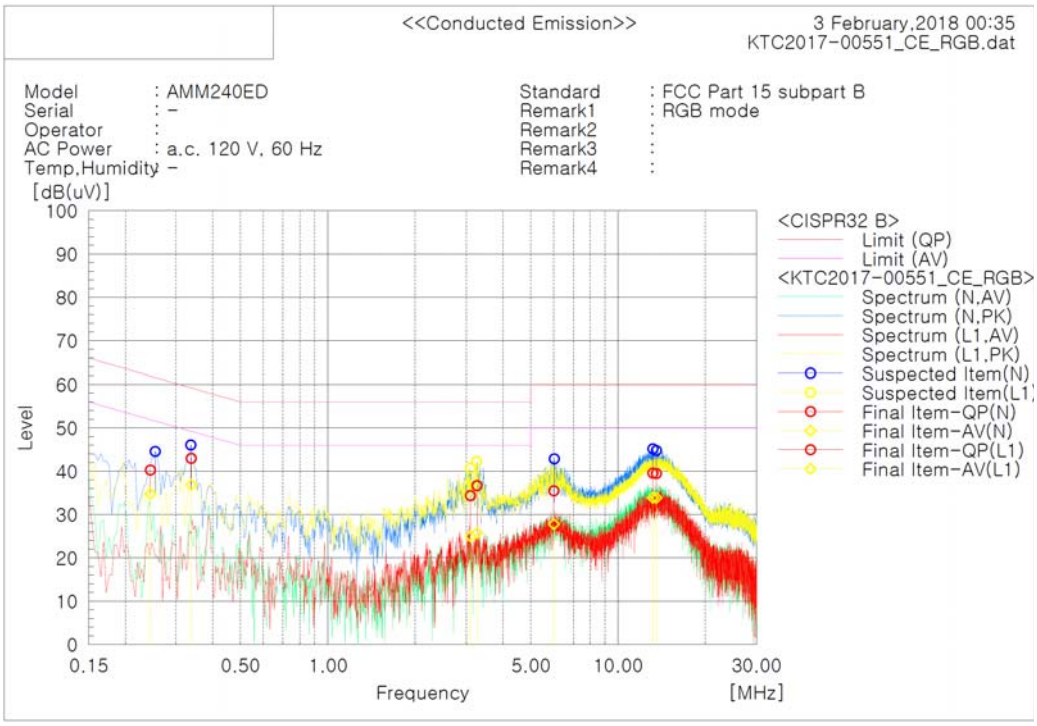


[Appendix A : Conducted Emission]
(Graph of Conducted Emission test)

-DVI Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)



-RGB Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)



Photograph for test set-up of EUT

N/A
Conducted Emission Front

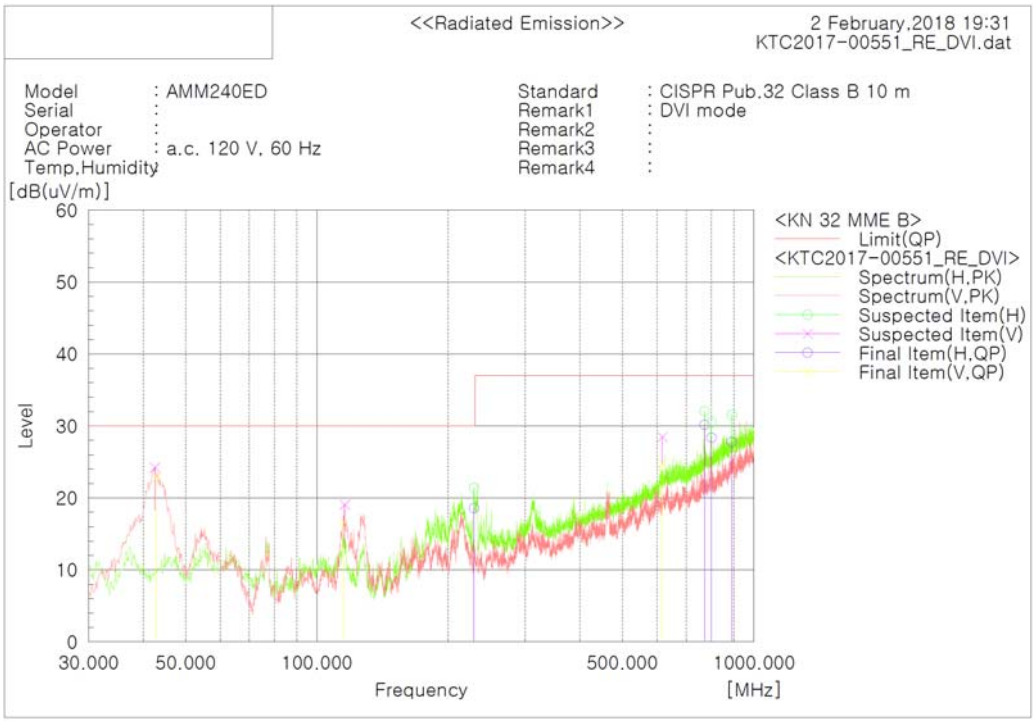
N/A
Conducted Emission Rear

Note) Test setup picture (or EUT picture) was not attached, that reason for keep customer's confidential.

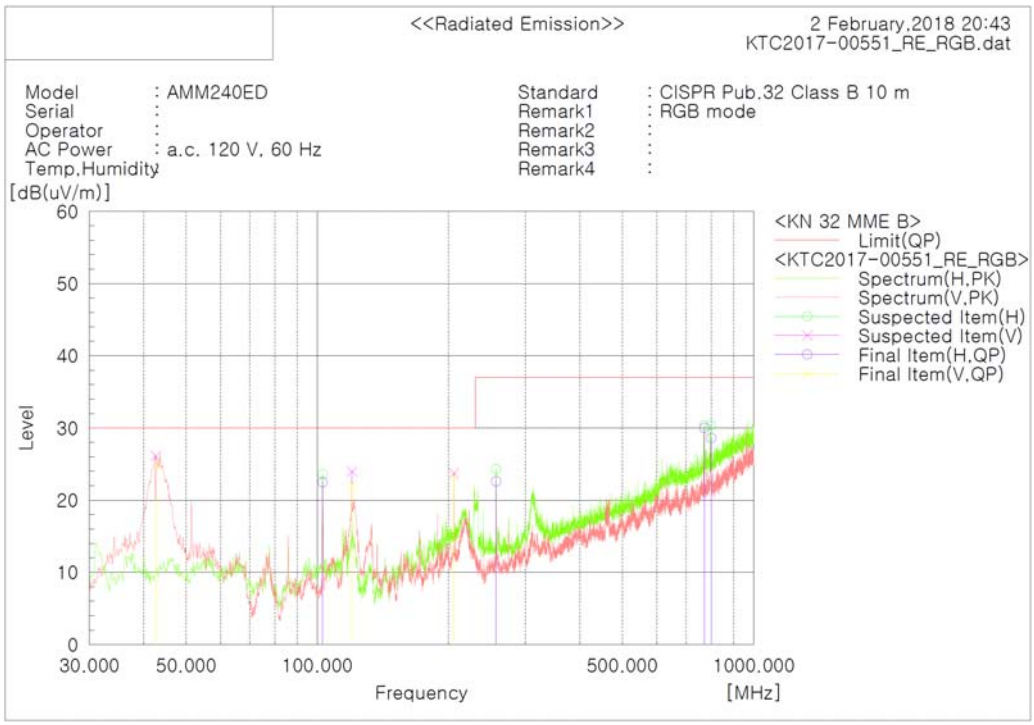
[Appendix B : Radiated Emission]
(Graph of Radiated Emission test)

[Below 1 GHz]

-DVI Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)



-RGB Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)



Photograph for test set-up of EUT

[Below 1 GHz]

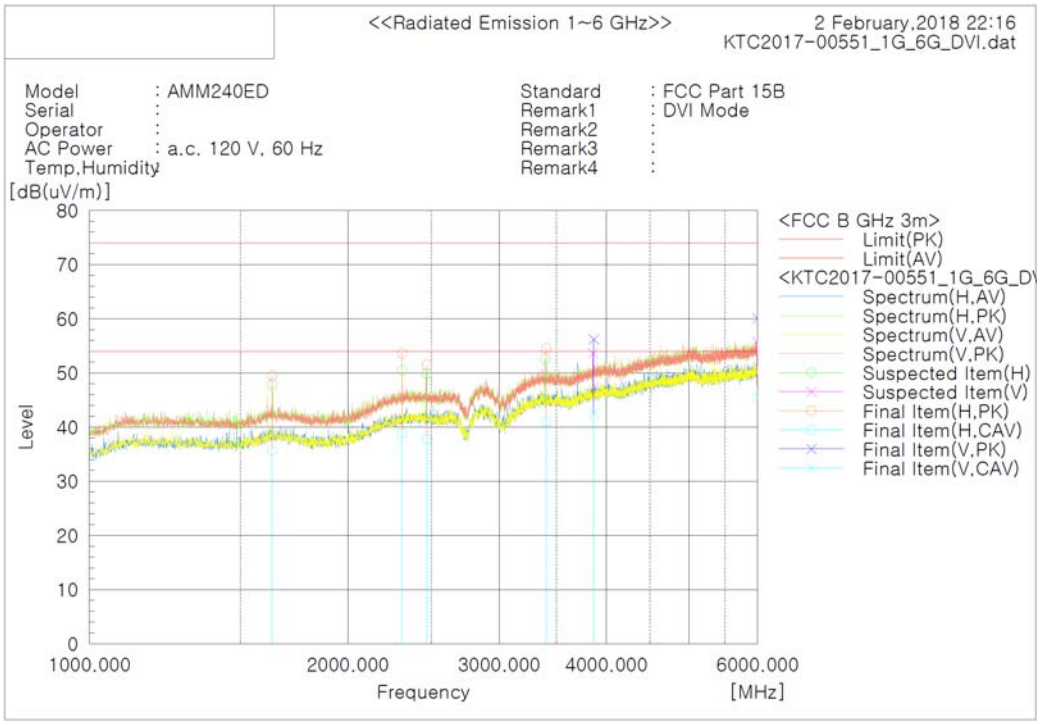
N/A
Radiated Emission Front

N/A
Radiated Emission Rear

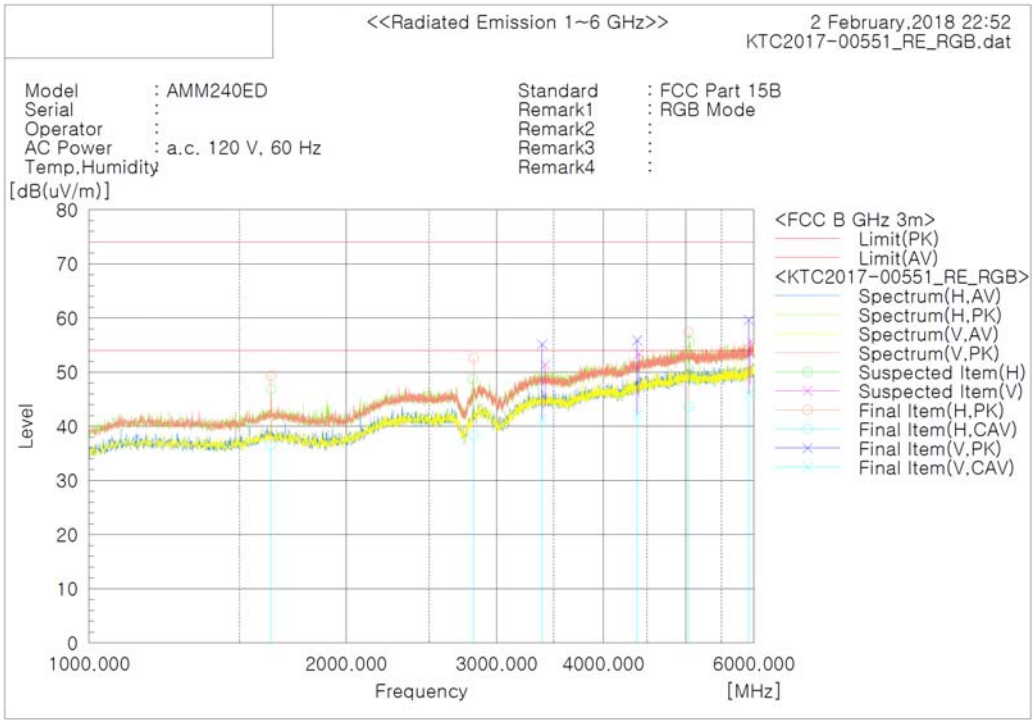
Note) Test setup picture (or EUT picture) was not attached, that reason for keep customer's confidential.

[Above 1 GHz]

-DVI Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)



-RGB Mode (Resolution 1920 (H) x 1200 (V) @ 60 Hz)



Photograph for test set-up of EUT

[Above 1 GHz]

N/A
Radiated Emission Front

N/A
Radiated Emission Rear

Note) Test setup picture (or EUT picture) was not attached, that reason for keep customer's confidential.