CE EMC Test Report

(Declaration of Conformity)

For

Electromagnetic compatibility

Of

Product： Tri-color controller

Trade Mark： BX

Model Number： BX-6M1-YY, BX-6UT, BX-6U0, BX-6U1, BX-6U2, BX-6U3, BX-6MT, BX-6M0, BX-6M1, BX-6M2, BX-6M3, BX-6E1, BX-6E2, BX-6E3, BX-6U0-YY, BX-6U1-YY, BX-6U2-YY, BX-6U3-YY, BX-6M0-YY, BX-6M2-YY, BX-6M3-YY, BX-YY, BX-5K1Q-YY

Prepared for

Shanghai ONBON Technology Inc

Floor 7, Tower 88, 1199#, North Qinzhou Road, Xuhui District, Shanghai China

Prepared by

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TEST RESULT CERTIFICATION

Applicant's Name ..... :	Shanghai ONBON Technology Inc
Address ..... :	Floor 7, Tower 88, 1199#, North Qinzhou Road, Xuhui District, Shanghai China
Manufacturer's Name ..... :	Shanghai ONBON Technology Inc
Address ..... :	Floor 7, Tower 88, 1199#, North Qinzhou Road, Xuhui District, Shanghai China
Factory's Name ..... :	ONBON (Jiangsu) Optoelectronic Industrial Co.,LTD.
Address ..... :	1299#, Fuchun Jiang Road, Kunshan City, Jiangsu Province, China
Product description	
Product name ..... :	Tri-color controller
Model and/or type reference .:	BX-6M1-YY, BX-6UT, BX-6U0, BX-6U1, BX-6U2, BX-6U3, BX-6MT, BX-6M0, BX-6M1, BX-6M2, BX-6M3, BX-6E1, BX-6E2, BX-6E3, BX-6U0-YY, BX-6U1-YY, BX-6U2-YY, BX-6U3-YY, BX-6M0-YY, BX-6M2-YY, BX-6M3-YY, BX-YY, BX-5K1Q-YY
Standards ..... :	EN 55032:2015 EN 55024:2010+A1:2015

Date of Test ..... :	
Date (s) of performance of tests ..... :	21 Nov. 2017~28 Dec. 2017
Date of Issue ..... :	28 Dec. 2017
Test Result ..... :	**Pass**

Testing Engineer : Allen Huang
(Allen Huang)

Technical Manager : Sky Zhang
(Sky Zhang)

Authorized Signatory : Sam Chen
(Sam Chen)

Shenzhen NTEK Testing Technology Co., Ltd. Report Seal

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
EN 55032: 2015	Conducted Emission On AC And Telecom Port 150kHz to 30MHz	Class B	PASS	
	Disturbance Voltage at The Antenna Terminals (30MHz To 2150MHz)	------	N/A	
	Wanted signal and disturbance voltage at the RF output terminals (30MHz To 2150MHz)	------	N/A	
	Radiated Emission 30MHz to 1000MHz	Class B	PASS	
	Radiated Emission 1GHz to 6GHz	------	N/A	**NOTE (1)**
EMC Immunity				
Section EN 55024:2010+A1:2015	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2	Electrostatic Discharge	B	PASS	
EN 61000-4-3	RF electromagnetic field	A	PASS	
EN 61000-4-4	Fast transients	B	PASS	
EN 61000-4-5	Surges	B	PASS	
EN 61000-4-6	Continuous radio frequency disturbances	A	PASS	
EN 61000-4-8	Power Frequency Magnetic Field	A	PASS	
EN 61000-4-11	Volt. Interruptions Volt. Dips	B / C / C	N/A	**NOTE (2)**

NOTE:

(1) If the highest frequency of the internal sources of the EUT is less than 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, 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 6 GHz, whichever is less.

(2) Voltage Interruption: 100% reduction – Performance Criteria **B**
Voltage dip: 30% reduction – Performance Criteria **C**
Voltage Interruption: 100% Interruption – Performance Criteria **C**

(3) “N/A” denotes test is not applicable in this Test Report

(4) For client’s request and manual description, the test will not be executed.

1.1 TEST FACILITY

Shenzhen NTEK Testing Technology Co., Ltd.
Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen 518126 P.R. China

CNAS-Lab. : The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
The Certificate Registration Number is L5516

IC-Registration : The Certificate Registration Number is 9270A-1

FCC- Accredited : Test Firm Registration Number: 463705
Designation Number: CN1184

A2LA-Lab. : The Certificate Registration Number is 4298.01
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

Test Item	Measurement Frequency Range	K	U(dB)
AC Mains Conducted Emission	0.009kHz ~ 0.15MHz	2	2.66
AC Mains Conducted Emission	0.15MHz ~ 30MHz	2	2.80
Telecom Conducted Emission (Cat 3)	0.15MHz ~ 30MHz	2	2.40
Telecom Conducted Emission (Cat 5)	0.15MHz ~ 30MHz	2	2.58
Radiated Emission	30MHz ~ 1000MHz	2	2.64
Radiated Emission	1000MHz ~ 6000MHz	2	2.40
Radiated Emission	6000MHz ~ 18000MHz	2	2.52
Power Clamp	30MHz ~ 300MHz	2	2.20

Revision History

Report No.	Version	Description	Issued Date
SEE171121606001E	Rev.01	Initial issue of report	Dec. 28, 2017

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>Tri-color controller</td></tr>
<tr><td>Model Name</td><td>BX-6M1-YY</td></tr>
<tr><td>Additional Model Number(s)</td><td>BX-6UT, BX-6U0, BX-6U1, BX-6U2, BX-6U3, BX-6MT, BX-6M0, BX-6M1, BX-6M2, BX-6M3, BX-6E1, BX-6E2, BX-6E3, BX-6U0-YY, BX-6U1-YY, BX-6U2-YY, BX-6U3-YY, BX-6M0-YY, BX-6M2-YY, BX-6M3-YY, BX-YY, BX-5K1Q-YY</td></tr>
<tr><td>Model Difference</td><td>All models are identical except model name and color.</td></tr>
<tr><td>Product Description</td><td>The EUT is a Tri-color controller.
<table><tr><td>Operating frequency:</td><td>25 MHz (Declaration by factory)</td></tr><tr><td>Connecting I/O port:</td><td>USB/RS458/COM/RJ45</td></tr></table>Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.</td></tr>
<tr><td>Power Source</td><td>DC Voltage</td></tr>
<tr><td>Power Rating</td><td>DC 5V, 0.4A powered by DC Source</td></tr>
</table>

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	LAN Playing
Mode 2	USB Playing

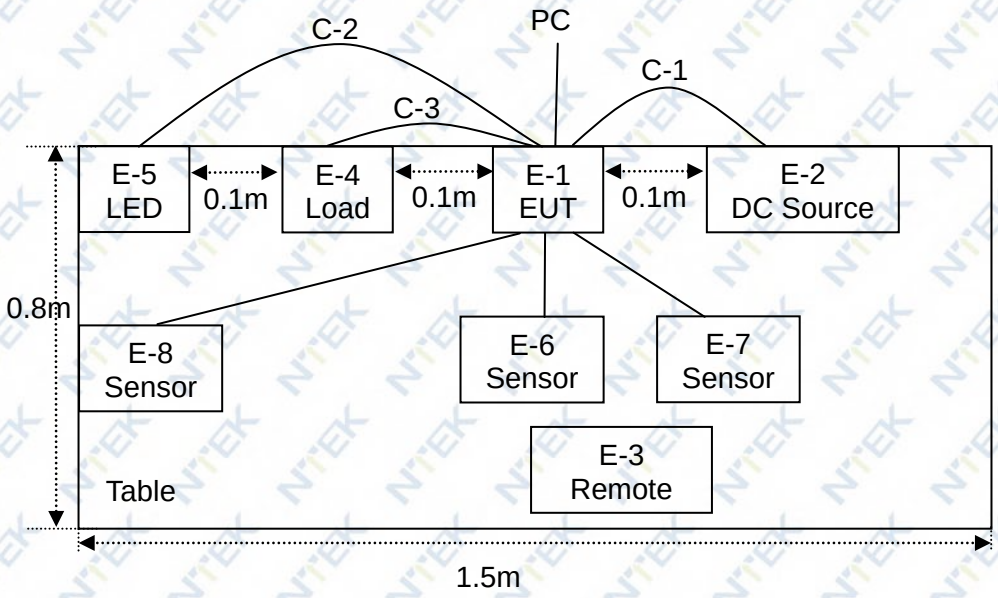
For Conducted Test	
Final Test Mode	Description
Mode 1	LAN Playing

For Radiated Test	
Final Test Mode	Description
Mode 1	LAN Playing
Mode 2	USB Playing

For EMS Test	
Final Test Mode	Description
Mode 1	LAN Playing
Mode 2	USB Playing

2.3 DESCRIPTION OF TEST SETUP

Mode RE: LAN Playing



2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	Tri-color controller	BX	BX-6M1-YY	N/A	EUT
E-2	DC Source	N/A	N/A	N/A	
E-3	Remote	N/A	N/A	N/A	
E-4	Load	N/A	100W4RJ	N/A	
E-5	LED	N/A	N/A	N/A	
E-6	Sensor	N/A	N/A	N/A	
E-7	Sensor	N/A	N/A	N/A	
E-8	Sensor	N/A	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	80cm	
C-2	NO	NO	30cm	
C-3	NO	NO	20cm	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.5 MEASUREMENT INSTRUMENTS LIST

2.5.1 CONDUCTED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	101490	Oct. 19, 2017	Oct. 18, 2018	1 year
2	LISN	R&S	ENV216	101313	Apr. 19, 2017	Apr. 18, 2018	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	Jun. 06, 2017	Jun. 05, 2018	1 year
4	50Ω Switch	Anritsu	MP59B	6200983704	Jun. 06, 2017	Jun. 05, 2018	1 year
5	Low frequency cable	N/A	C-01	N/A	Jun. 06, 2017	Jun. 05, 2020	3 years
6	EMI Test Receiver	R&S	ESCI	101160	Jun. 06, 2017	Jun. 05, 2018	1 year
7	Impedance Stabilisation Network	SCHWARZBECK	NTFM8158	8158-0090	Jun. 06, 2017	Jun. 05, 2018	1 year
8	Impedance Stabilisation Network	SCHWARZBECK	ISN S8	29	Aug. 07, 2017	Aug. 06, 2018	1 year

2.5.2 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Bilog Antenna	TESEQ	CBL6111D	31216	Apr. 09, 2017	Apr. 08, 2018	1 year
2	Test Cable	N/A	R-03	N/A	Jun. 26, 2016	Jun. 25, 2019	3 years
3	Test Cable	N/A	R-01	N/A	Aug. 08, 2016	Aug. 07, 2019	3 years
4	EMI Test Receiver	R&S	ESCI	101160	Jun. 06, 2017	Jun. 05, 2018	1 year
5	Spectrum Analyzer	Agilent	E4440A	MY41000130	Apr. 10, 2017	Apr. 09, 2018	1 year
6	Antenna Mast	SKET	N/A	N/A	N/A	N/A	N/A
7	Antenna Mast	EM	SC100	N/A	Apr. 26, 2017	Apr. 25, 2020	3 years
8	Turn Table	EM	SC100 _1	60531	Apr. 26, 2017	Apr. 25, 2020	3 years
9	50Ω Switch	Anritsu	MP59B	6200983705	Jun. 06, 2017	Jun. 05, 2018	1 year
10	Broadband Horn Antenna	EM	EM-AH-10180	2011071402	Apr. 09, 2017	Apr. 08, 2018	1 year
11	Pre-Amplifier	EMC	EMC051835SE	980246	Aug. 07, 2017	Aug. 06, 2018	1 year

2.5.3 ESD

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	ESD TEST GENERATOR	Lioncel	ESD-203B	ESD203B0150402	Oct. 30, 2017	Oct. 29, 2018	1 year

2.5.4 RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Signal Generator	Agilent	N5182A	MY47071034	Jan. 05, 2017	Jan. 04, 2018	1 year
2	Stacked double Log.-Per.Antenna	Schwarzbeck	STLP 9128ES	#138	Oct. 19, 2016	Oct. 19, 2019	3 years
3	Broadband Horn Antenna	Schwarzbeck	BBHA 9120	00032	Oct. 19, 2016	Oct. 19, 2019	3 years
4	Power Meter	Agilent	E4417A	MY50000277	Jan. 05, 2017	Jan. 04, 2018	1 year
5	Dual Band Amplifier	AR	500W1000B	346550	Aug. 01, 2016	Jul. 31, 2018	2 years
6	Power Amplifier	IFI	S41-250	U2075-1116	Aug. 31, 2017	Aug. 30, 2018	1 years
7	Power Amplifier	AR	15S1G16	348184	Feb. 20, 2017	Feb. 19, 2018	1 years
8	3M Semi Anechoic Chamber	N/A	8*4*4	N/A	Jul. 13, 2017	Jul. 12, 2020	3 years

2.5.5 SURGE, EFT/BURST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Surge Generator	EVERFINE	EMS61000-5A-V1	1101002	Jun. 06, 2017	Jun. 05, 2018	1 year
2	EFT/B Generator	EVERFINE	EMS61000-4A-V2	1012005	Jun. 06, 2017	Jun. 05, 2018	1 year

2.5.6 CONTINUOUS RADIO FREQUENCY DISTURBANCES

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Signal Generator	R&S	SML03	100954	Jun. 26, 2017	Jun. 25, 2018	1 year
2	Power Amplifier	TESEQ	CBA 230M-080	T44376	Jul. 31, 2017	Jul. 30, 2018	1 year
3	Coupling and Decoupling Network	TESEQ	CDN M016	38722	Oct. 19, 2017	Oct. 18, 2018	1 year
4	Attenuator	TESEQ	ATN 6075	38411	N/A	N/A	N/A
5	RF Cable	TESEQ	RF Cable	N/A	N/A	N/A	N/A

2.5.7 MF

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Generator	EVERFINE	EMS61000-8K	1007001	Jun. 06, 2017	Jun. 05, 2018	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150kHz-30MHz)

Table A.8 – Requirements for conducted emissions from the AC mains power ports of Class A equipment

Applicable to 1. AC mains power ports (3.1.1)				
Table clause	**Frequency range** MHz	**Coupling device** (see Table A.7)	**Detector type / bandwidth**	**Class A limits dB(μV)**
A8.1	0,15 – 0,5	AMN	Quasi Peak / 9 kHz	79
	0,5 – 30			73
A8.2	0,15 – 0,5	AMN	Average / 9 kHz	66
	0,5 – 30			60
Apply A8.1 and A8.2 across the entire frequency range.				

Table A.9 – Requirements for conducted emissions from the AC mains power ports of Class B equipment

Applicable to 1. AC mains power ports (3.1.1)				
Table clause	**Frequency range** MHz	**Coupling device** (see Table A.7)	**Detector type / bandwidth**	**Class B limits dB(μV)**
A9.1	0,15 – 0,5	AMN	Quasi Peak / 9 kHz	66 – 56
	0,5 – 5			56
	5 – 30			60
A9.2	0,15 – 0,5	AMN	Average / 9 kHz	56 – 46
	0,5 – 5			46
	5 – 30			50
Apply A9.1 and A9.2 across the entire frequency range.				

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.1.2 TELECOMMUNICATION PORT CONDUCTED EMISSION(VOLTAGE LIMITS) (Frequency Range 150kHz-30MHz)

Table A.10 – Requirements for asymmetric mode conducted emissions from Class A equipment

Applicable to

1. wired network ports (3.1.30)
2. optical fibre ports (3.1.24) with metallic shield or tension members
3. antenna ports (3.1.3)

Table clause	Frequency range MHz	Coupling device (see Table A.7)	Detector type / bandwidth	Class A voltage limits dB(µV)	Class A current limits dB(µA)
A10.1	0,15 – 0,5	AAN	Quasi Peak / 9 kHz	97 – 87	n/a
	0,5 – 30			87	
	0,15 – 0,5	AAN	Average / 9 kHz	84 – 74	
	0,5 – 30			74	
A10.2	0,15 – 0,5	CVP and current probe	Quasi Peak / 9 kHz	97 – 87	53 – 43
	0,5 – 30			87	43
	0,15 – 0,5	CVP and current probe	Average / 9 kHz	84 – 74	40 – 30
	0,5 – 30			74	30
A10.3	0,15 – 0,5	Current Probe	Quasi Peak / 9 kHz	n/a	53 – 43
	0,5 – 30				43
	0,15 – 0,5	Current Probe	Average / 9 kHz		40 – 30
	0,5 – 30				30

The choice of coupling device and measurement procedure is defined in Annex C.

AC mains ports that also have the function of a wired network port shall meet the limits given in Table A.8.

The test shall cover the entire frequency range.

The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to Table C.1 for applicability.

Testing is required at only one EUT supply voltage and frequency.

Applicable to ports listed above and intended to connect to cables longer than 3 m.

Table A.11 – Requirements for asymmetric mode conducted emissions from Class B equipment

Applicable to

1. wired network ports (3.1.30)
2. optical fibre ports (3.1.24) with metallic shield or tension members
3. broadcast receiver tuner ports (3.1.8)
4. antenna ports (3.1.3)

Table clause	Frequency range MHz	Coupling device (see Table A.7)	Detector type / bandwidth	Class B voltage limits dB(µV)	Class B current limits dB(µA)
A11.1	0,15 – 0,5	AAN	Quasi Peak / 9 kHz	84 – 74	n/a
	0,5 – 30			74	
	0,15 – 0,5	AAN	Average / 9 kHz	74 – 64	
	0,5 – 30			64	
A11.2	0,15 – 0,5	CVP and current probe	Quasi Peak / 9 kHz	84 – 74	40 – 30
	0,5 – 30			74	30
	0,15 – 0,5	CVP and current probe	Average / 9 kHz	74 – 64	30 – 20
	0,5 – 30			64	20
A11.3	0,15 – 0,5	Current Probe	Quasi Peak / 9 kHz	n/a	40 – 30
	0,5 – 30				30
	0,15 – 0,5	Current Probe	Average / 9 kHz		30 – 20
	0,5 – 30				20

The choice of coupling device and measurement procedure is defined in Annex C.

Screened ports including TV broadcast receiver tuner ports are tested with a common-mode impedance of 150 Ω. This is typically accomplished with the screen terminated by 150 Ω to earth.

AC mains ports that also have the function of a wired network port shall meet the limits given in Table A.**9**.

The test shall cover the entire frequency range.

The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to Table C.1 for applicability.

Testing is required at only one EUT supply voltage and frequency.

Applicable to ports listed above and intended to connect to cables longer than 3 m.

Table A.12 – Requirements for conducted differential voltage emissions from Class B equipment

Applicable to
1. TV broadcast receiver tuner ports (3.1.8) with an accessible connector
2. RF modulator output ports (3.1.27)
3. FM broadcast receiver tuner ports (3.1.8) with an accessible connector

Table clause	Frequency range MHz	Detector type/ bandwidth	Class B limits dB(μV) 75 Ω			Applicability
			Other	Local Oscillator Fundamental	Local Oscillator Harmonics	
A12.1	30 – 950	For frequencies ≤1 GHz Quasi Peak/ 120 kHz	46	46	46	See a)
	950 – 2 150		46	54	54	
A12.2	950 – 2 150		46	54	54	See b)
A12.3	30 – 300		46	54	50	See c)
	300 – 1 000				52	
A12.4	30 – 300	For frequencies ≥1 GHz Peak/ 1 MHz	46	66	59	See d)
	300 – 1 000				52	
A12.5	30 – 950		46	76	46	See e)
	950 – 2 150			n/a	54	

a) Television receivers (analogue or digital), video recorders and PC TV broadcast receiver tuner cards working in channels between 30 MHz and 1 GHz, and digital audio receivers.

b) Tuner units (not the LNB) for satellite signal reception.

c) Frequency modulation audio receivers and PC tuner cards.

d) Frequency modulation car radios.

e) Applicable to EUTs with RF modulator output ports (for example DVD equipment, video recorders, camcorders and decoders etc.) designed to connect to TV broadcast receiver tuner ports.

Testing is required at only one EUT supply voltage and frequency.

The term 'other' refers to all emissions other than the fundamental and the harmonics of the local oscillator.

The test shall be performed with the device operating at each reception channel.

The test shall cover the entire frequency range.

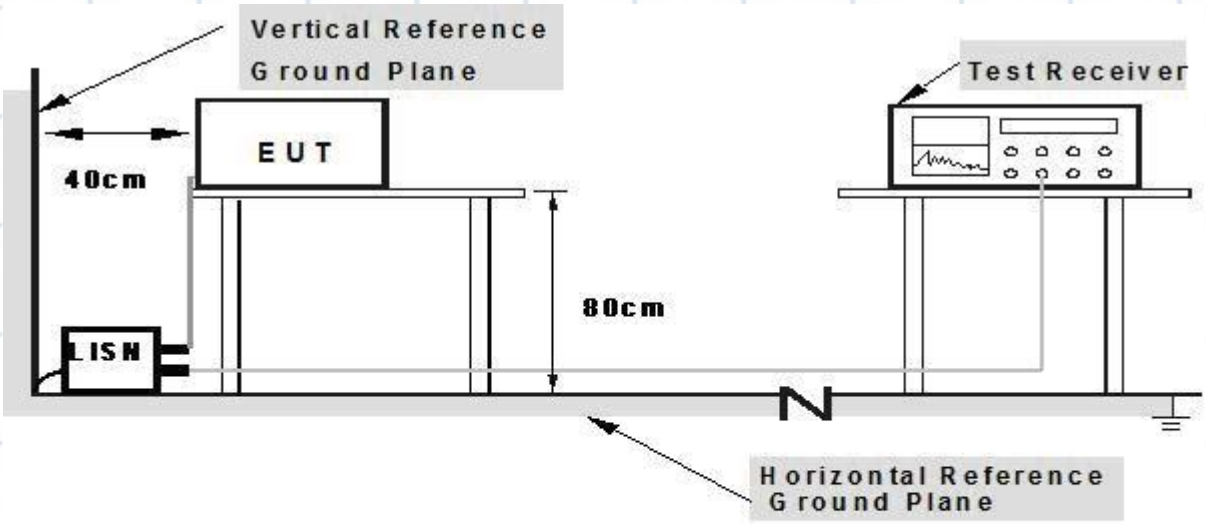
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.4 TEST SETUP



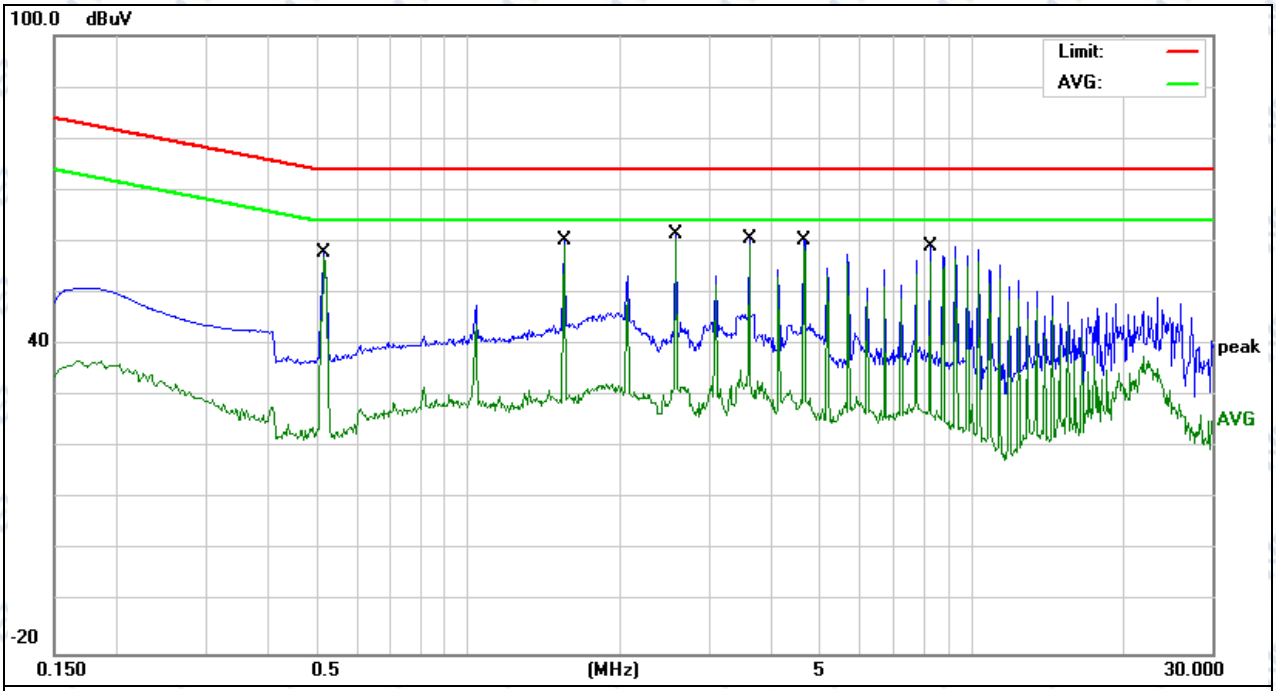
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.6 TEST RESULTS

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	23℃	Relative Humidity：	44%
Pressure：	1010hPa	Test Date：	2017-12-02
Test Mode：	LAN Playing	Phase：	LAN
Test Voltage:	DC 5V powered by DC Source		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.5180	48.29	9.51	57.80	74.00	-16.20	QP	
2		0.5180	47.40	9.51	56.91	64.00	-7.09	AVG	
3		1.5500	50.51	9.79	60.30	74.00	-13.70	QP	
4		1.5500	49.65	9.79	59.44	64.00	-4.56	AVG	
5		2.5819	51.44	9.91	61.35	74.00	-12.65	QP	
6	*	2.5819	50.50	9.91	60.41	64.00	-3.59	AVG	
7		3.6139	50.50	9.97	60.47	74.00	-13.53	QP	
8		3.6139	49.36	9.97	59.33	64.00	-4.67	AVG	
9		4.6459	50.28	10.03	60.31	74.00	-13.69	QP	
10		4.6459	49.00	10.03	59.03	64.00	-4.97	AVG	
11		8.2576	48.88	10.09	58.97	74.00	-15.03	QP	
12		8.2576	46.05	10.09	56.14	64.00	-7.86	AVG	

Remark:
Factor = Insertion Loss + Cable Loss.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

Table A.2 – Requirements for radiated emissions at frequencies up to 1 GHz for Class A equipment

Table clause	Frequency range MHz	Measurement		Class A limits dB(μV/m)
		Distance m	Detector type/ bandwidth	OATS/SAC (see Table A.1)
A2.1	30 – 230	10	Quasi Peak / 120 kHz	40
	230 – 1 000			47
A2.2	30 – 230	3		50
	230 – 1 000			57
Apply only A2.1 or A2.2 across the entire frequency range.				

Table A.4 – Requirements for radiated emissions at frequencies up to 1 GHz for Class B equipment

Table clause	Frequency range MHz	Measurement		Class B limits dB(μV/m)
		Distance m	Detector type/ bandwidth	OATS/SAC (see Table A.1)
A4.1	30 – 230	10	Quasi Peak / 120 kHz	30
	230 – 1 000			37
A4.2	30 – 230	3		40
	230 – 1 000			47
Apply only table clause A4.1 or A4.2 across the entire frequency range.				

Table A.6 – Requirements for radiated emissions from FM receivers

Table clause	Frequency range MHz	Measurement		Class B limit dB(μV/m)	
		Distance m	Detector type/ bandwidth	Fundamental	Harmonics
				OATS/SAC (see Table A.1)	OATS/SAC (see Table A.1)
A6.1	30 – 230	10	Quasi peak/ 120 kHz	50	42
	230 – 300				42
	300 – 1 000				46
A6.2	30 – 230	3		60	52
	230 – 300				52
	300 – 1 000				56
Apply only A.6.1 or A.6.2 across the entire frequency range. These relaxed limits apply only to emissions at the fundamental and harmonic frequencies of the local oscillator. Signals at all other frequencies shall be compliant with the limits given in Table A.4.					

3.2.2 LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

Table A.3 – Requirements for radiated emissions at frequencies above 1 GHz for Class A equipment

Table clause	Frequency range MHz	Measurement		Class A limits dB(μV/m)
		Distance m	Detector type/ bandwidth	FSOATS (see Table A.1)
A3.1	1 000 – 3 000	3	Average / 1 MHz	56
	3 000 – 6 000			60
A3.2	1 000 – 3 000		Peak / 1 MHz	76
	3 000 – 6 000			80
Apply A3.1 and A3.2 across the frequency range from 1 000 MHz to the highest required frequency of measurement derived from Table 1.				

Table A.5 – Requirements for radiated emissions at frequencies above 1 GHz for Class B equipment

Table clause	Frequency range MHz	Measurement		Class B limits dB(μV/m)
		Distance m	Detector type/ bandwidth	FSOATS (see Table A.1)
A5.1	1 000 – 3 000	3	Average/ 1 MHz	50
	3 000 – 6 000			54
A5.2	1 000 – 3 000		Peak/ 1 MHz	70
	3 000 – 6 000			74
Apply A5.1 and A5.2 across the frequency range from 1 000 MHz to the highest required frequency of measurement derived from Table 1.				

Notes:

(1) The limit for radiated test was performed according to as following: CISPR 32.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBμV/m)=20log Emission level (uV/m).

3.2.3 TEST PROCEDURE

a. The measuring distance of at 3m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

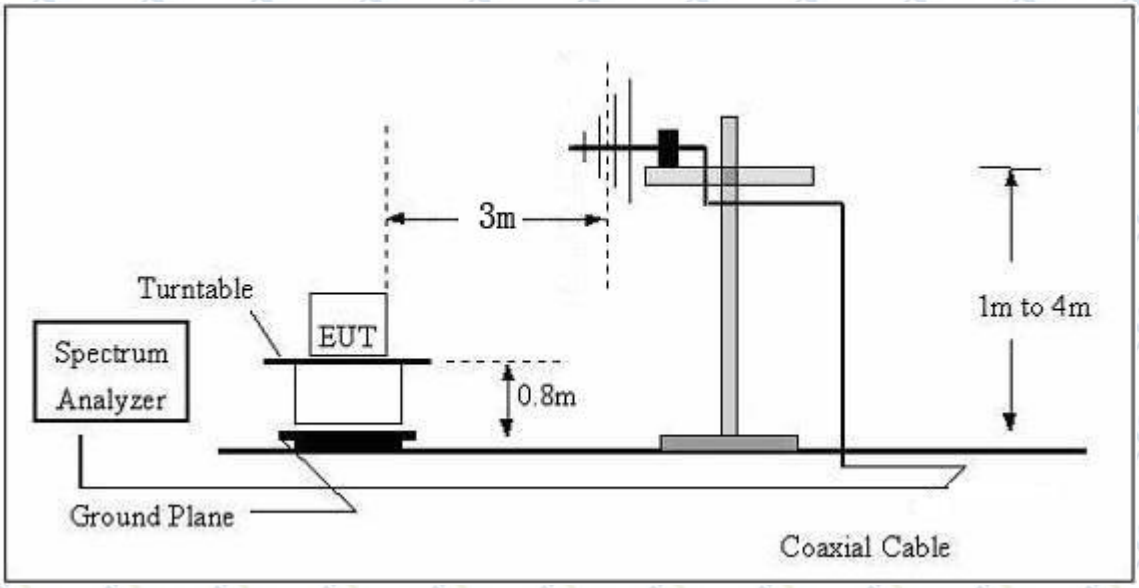
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.

e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.

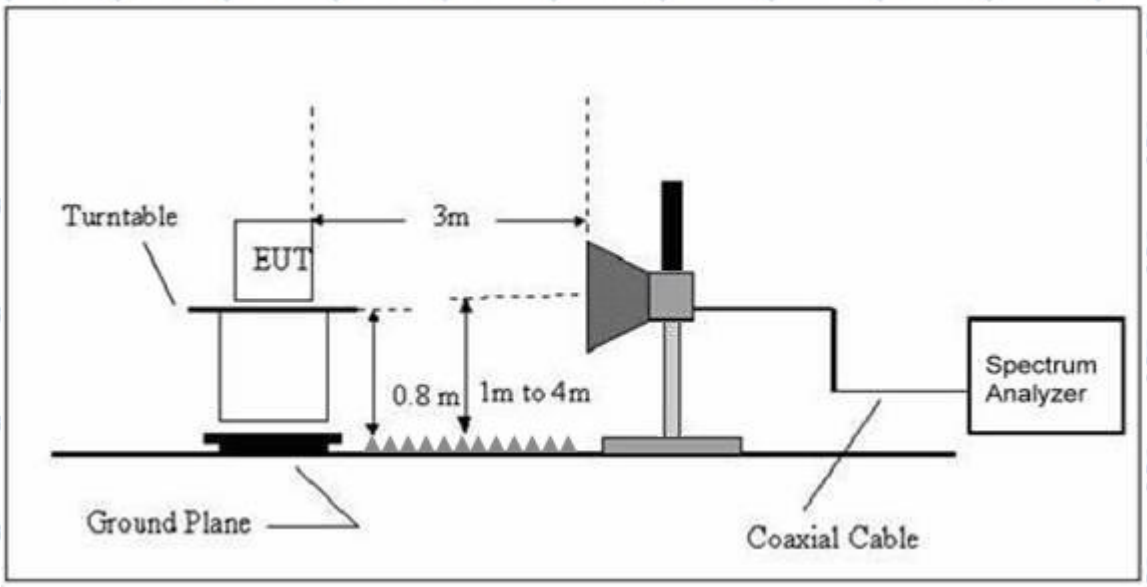
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz

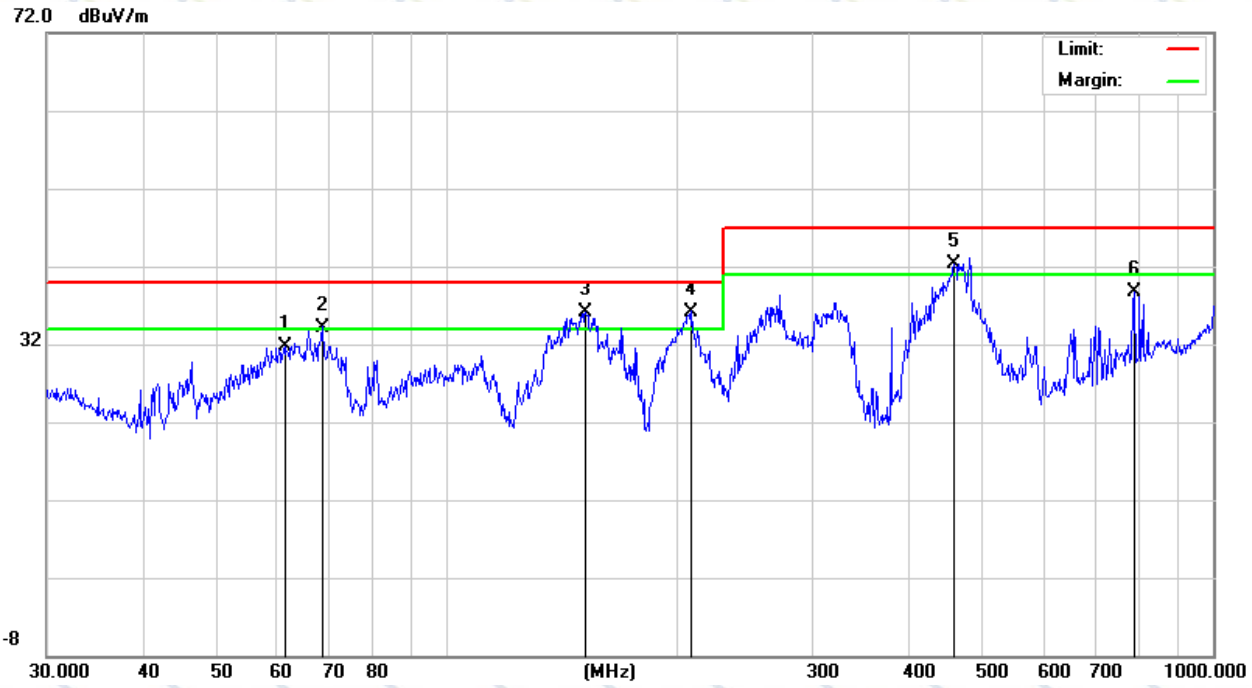


3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS(30-1000MHz)

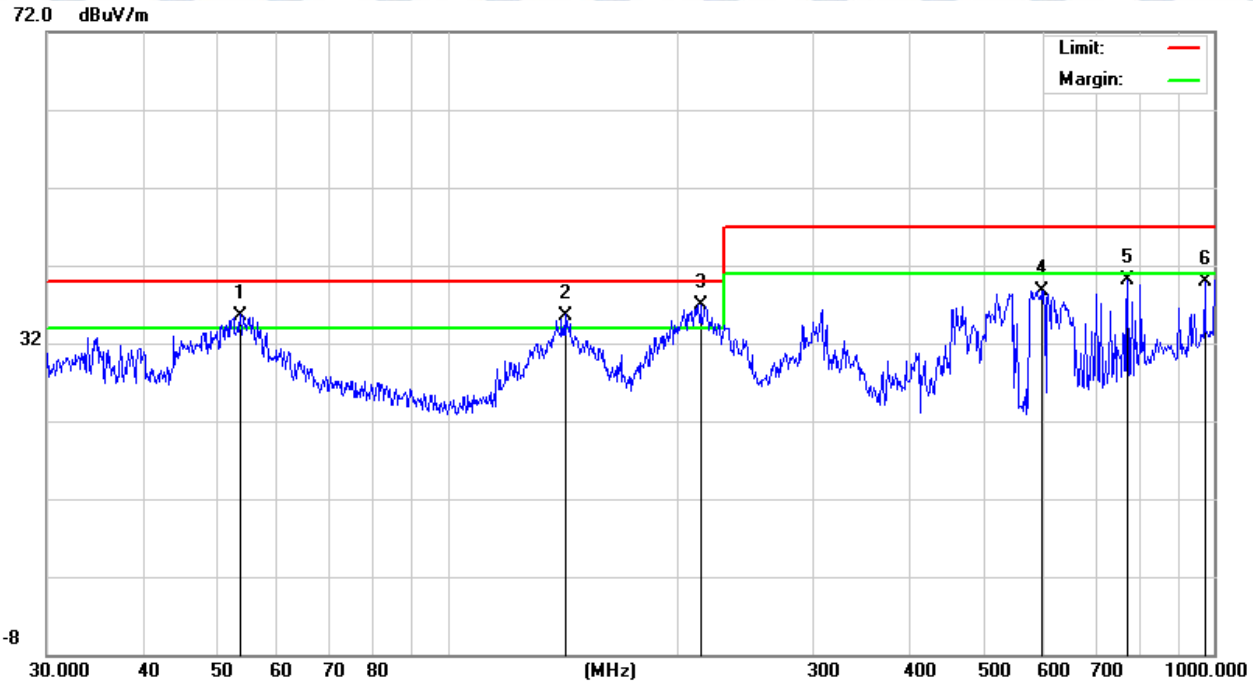
EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	23℃	Relative Humidity：	32%
Pressure：	1010hPa	Test Date：	2017-12-23
Test Mode:	LAN Playing	Polarization：	Horizontal
Test Power:	DC 5V powered by DC Source		



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		61.3462	21.85	9.85	31.70	40.00	-8.30	QP			
2	!	68.6310	24.14	10.06	34.20	40.00	-5.80	QP			
3	*	151.5971	24.98	11.22	36.20	40.00	-3.80	QP			
4	!	208.5801	22.75	13.45	36.20	40.00	-3.80	QP			
5	!	459.1143	25.96	16.44	42.40	47.00	-4.60	QP			
6		787.8513	15.38	23.42	38.80	47.00	-8.20	QP			

Remark:
Factor = Antenna Factor + Cable Loss.

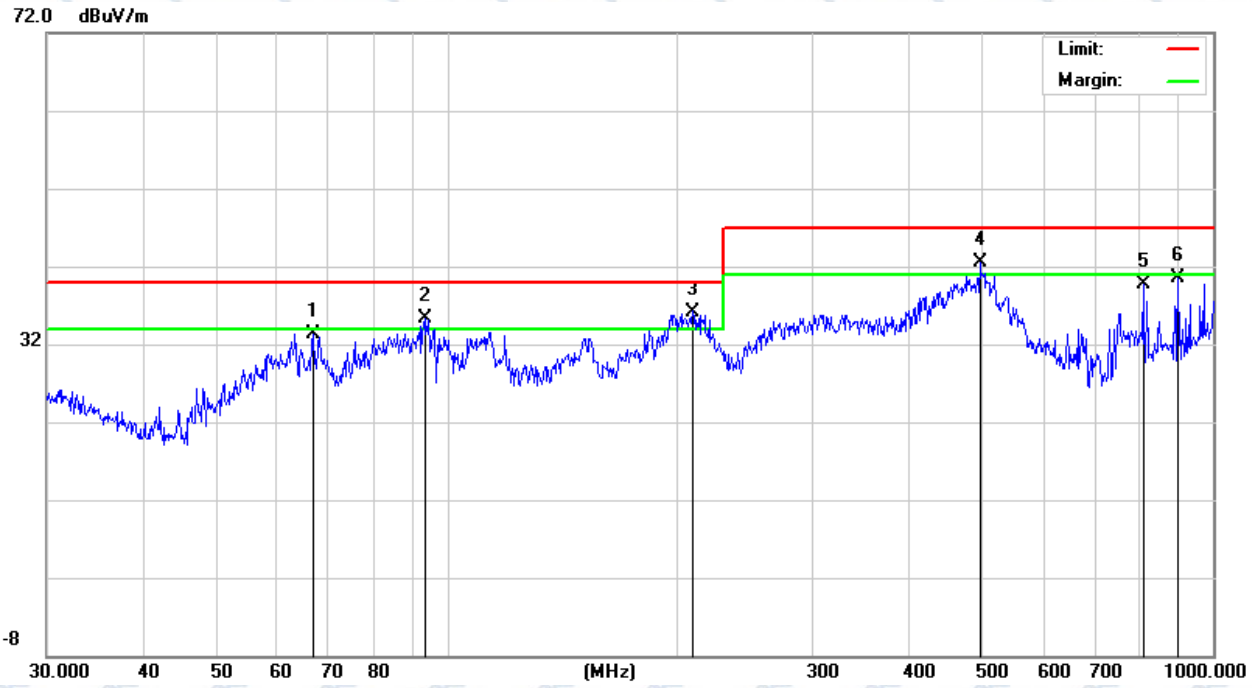
EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	23℃	Relative Humidity：	32%
Pressure：	1010hPa	Test Date：	2017-12-23
Test Mode:	LAN Playing	Polarization：	Vertical
Test Power:	DC 5V powered by DC Source		



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	!	53.6931	23.17	12.43	35.60	40.00	-4.40	QP			
2	!	142.3240	24.24	11.36	35.60	40.00	-4.40	QP			
3	*	213.7632	23.70	13.30	37.00	40.00	-3.00	QP			
4		595.1326	19.96	18.84	38.80	47.00	-8.20	QP			
5		771.4486	17.74	22.35	40.09	47.00	-6.91	QP			
6		972.3374	12.57	27.28	39.85	47.00	-7.15	QP			

Remark:
Factor = Antenna Factor + Cable Loss.

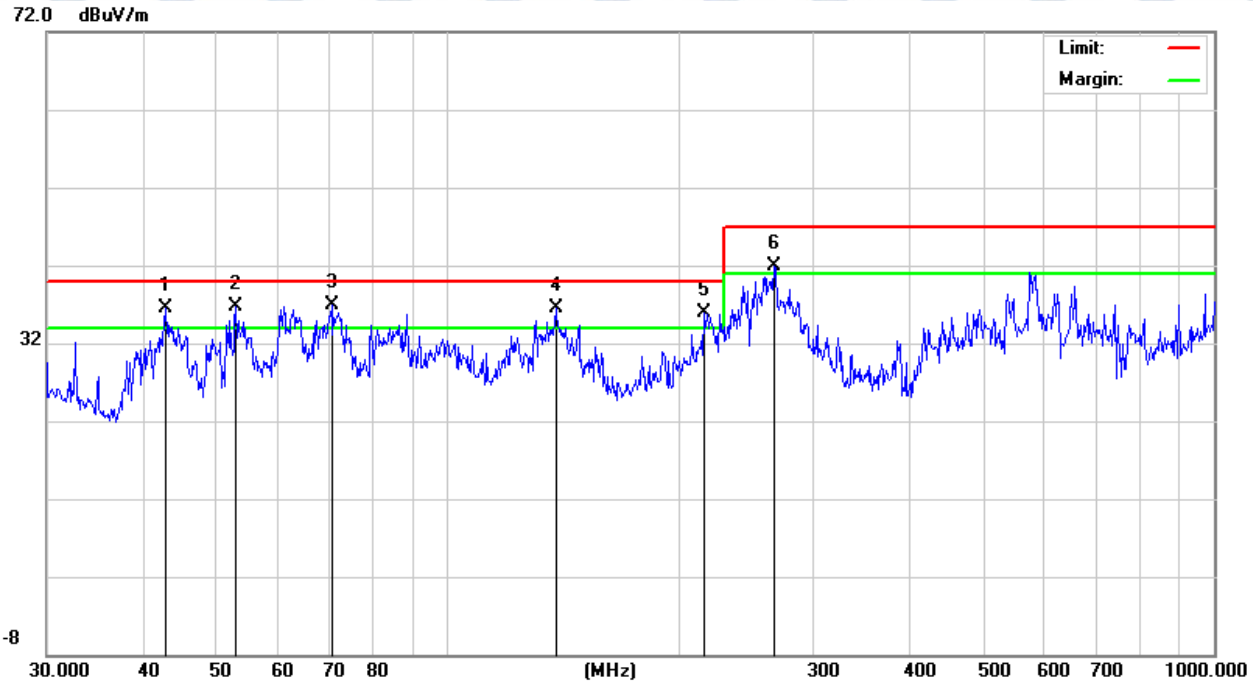
EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	23℃	Relative Humidity：	32%
Pressure：	1010hPa	Test Date：	2017-12-23
Test Mode:	USB Playing	Polarization：	Horizontal
Test Power:	DC 5V powered by DC Source		



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		66.7325	25.07	8.33	33.40	40.00	-6.60	QP			
2	!	93.7685	23.27	12.03	35.30	40.00	-4.70	QP			
3	*	209.3129	22.84	13.36	36.20	40.00	-3.80	QP			
4	!	495.9343	24.96	17.54	42.50	47.00	-4.50	QP			
5		810.2653	15.51	24.17	39.68	47.00	-7.32	QP			
6		900.1471	16.01	24.52	40.53	47.00	-6.47	QP			

Remark:
Factor = Antenna Factor + Cable Loss.

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	23℃	Relative Humidity：	32%
Pressure：	1010hPa	Test Date：	2017-12-23
Test Mode:	USB Playing	Polarization：	Vertical
Test Power:	DC 5V powered by DC Source		



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	!	42.8997	21.49	15.00	36.49	40.00	-3.51	QP			
2	!	52.9453	23.90	12.80	36.70	40.00	-3.30	QP			
3	*	70.5836	26.33	10.57	36.90	40.00	-3.10	QP			
4	!	138.3873	25.04	11.46	36.50	40.00	-3.50	QP			
5	!	216.0240	22.81	13.09	35.90	40.00	-4.10	QP			
6	!	266.6089	28.67	13.33	42.00	47.00	-5.00	QP			

Remark:
Factor = Antenna Factor + Cable Loss.

4. EMC IMMUNITY TEST

4.1 STANDARD COMPLIANCE/SEVERITY LEVEL/CRITERIA

Tests Standard No.	TEST SPECIFICATION	Test Mode Test Ports	Perform. Criteria
1. ESD IEC/EN 61000-4-2	8kV air discharge 4kV contact discharge	Direct Mode	B
	4kV HCP discharge 4kV VCP discharge	Indirect Mode	B
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz, 1000Hz, 80%, AM modulated	Enclosure	A
3. EFT/Burst IEC/EN 61000-4-4	5/50ns Tr/Th 5kHz Repetition Freq.	Power Supply Port	B
	5/50ns Tr/Th 5kHz Repetition Freq.	CTL/Signal Data Line Port	B
4. Surges IEC/EN 61000-4-5	1.2/50(8/20) Tr/Th us	L-N	B
	1.2/50(8/20) Tr/Th us	L-PE N-PE	B
5. Continuous radio frequency disturbances IEC/EN 61000-4-6	0.15 MHz to 80 MHz, 1000Hz 80% , AM Modulated 150Ω source impedance	CTL/Signal Port	A
	0.15 MHz to 80 MHz, 1000Hz 80% , AM Modulated 150Ω source impedance	AC Power Port	A
	0.15 MHz to 80 MHz, 1000Hz 80% , AM Modulated 150Ω source impedance	DC Power Port	A
6. Power Frequency Magnetic Field IEC/EN 61000-4-8	50 Hz	Enclosure	A

4.2 GENERAL PERFORMANCE CRITERIA

According to **EN 55024** standard, the general performance criteria as following:

Criterion A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B	After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.
Criterion C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

4.3 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

4.4 ESD TESTING

4.4.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330ohm / 150pF
Required Performance:	B
Discharge Voltage:	Air Discharge：2kV/4kV/8kV (Direct) Contact Discharge：2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 200 times in total 50 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

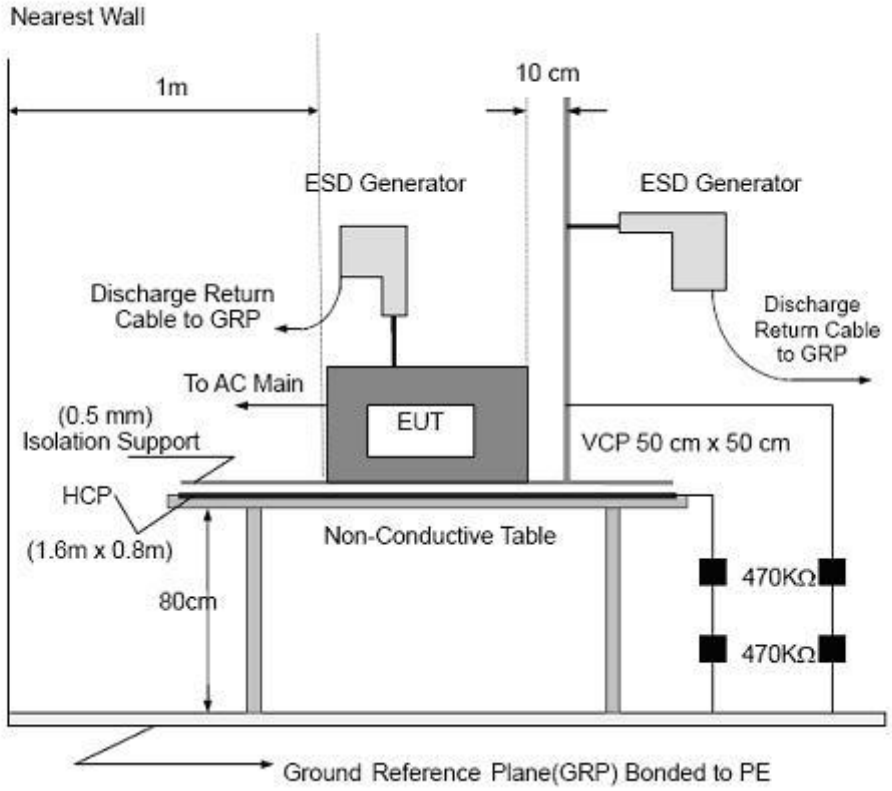
4.4.2 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT.
During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.
If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.
Vertical Coupling Plane (VCP):
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.
Horizontal Coupling Plane (HCP):
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.

b. Air discharges at insulation surfaces of the EUT.
It was at least ten single discharges with positive and negative at the same selected point.

4.4.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

4.4.4 TEST RESULTS

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	22℃	Relative Humidity：	47%
Pressure：	1010hPa	Test Date：	2017-12-04
Test Mode:	LAN Playing / USB Playing		
Test Power:	DC 5V powered by DC Source		

Mode	Contact Discharge (Indirect)							Criterion	Result
Test level(kV)	Test Point	2		4		6			
Test Location		+	-	+	-	+	-		
HCP	Front	P	P	P	P			B	Complies
	Rear	P	P	P	P				
	Left	P	P	P	P				
	Right	P	P	P	P				
VCP	Front	P	P	P	P				
	Rear	P	P	P	P				
	Left	P	P	P	P				
	Right	P	P	P	P				

Mode	Air Discharge								Contact Discharge								Criterion	Result
Test level(kV)	2		4		8		15		2		4		6		8			
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-		
RS232 port									P	P	P	P					B	Complies
USB port									P	P	P	P						
RJ45 port									P	P	P	P						

Note:

1) +/- denotes the Positive/Negative polarity of the output voltage.
2) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
3) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
4) Criteria A: Normal performance within limits specified by the manufacturer, requestor or purchaser.
5) Criteria B: Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention.
6) Criteria C: Temporary loss of function or degradation of performance, the correction of which requires operator intervention.
7) Criteria D: Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

4.5 RS TESTING

4.5.1 TEST SPECIFICATION

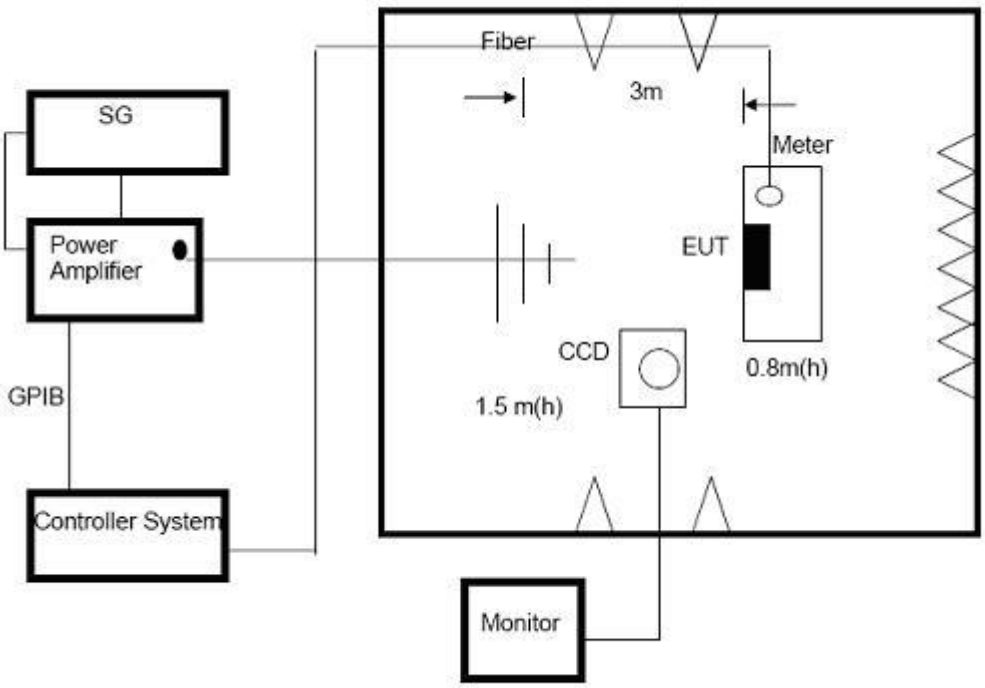
Basic Standard:	IEC/EN 61000-4-3
Required Performance:	A
Frequency Range:	80 MHz - 1000 MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	3 seconds

4.5.2 TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.
The testing distance from antenna to the EUT was 3 meters.
The other condition as following manner:

a. The frequency range is swept from 80 MHz to 1000 MHz with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
b. Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

4.5.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

4.5.4 TEST RESULTS

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	22℃	Relative Humidity：	47%
Pressure：	1010hPa	Test Date：	2017-12-04
Test Mode:	LAN Playing / USB Playing		
Test Power:	DC 5V powered by DC Source		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Perform. Criteria	Results	Judgment
80MHz - 1000MHz	H / V	3 V/m (r.m.s) AM Modulated 1000Hz, 80%	Front	**A**	**P**	**Complies**
			Rear			
			Left			
			Right			

Note:

1) N/A - denotes test is not applicable in this test report.
2) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

4.6 EFT/BURST TESTING

4.6.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-4
Required Performance:	B
Test Voltage:	Power Line：0.5 kV, 1 kV Signal/Control Line：0.5 kV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Wave shape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	2 minutes

4.6.2 TEST PROCEDURE

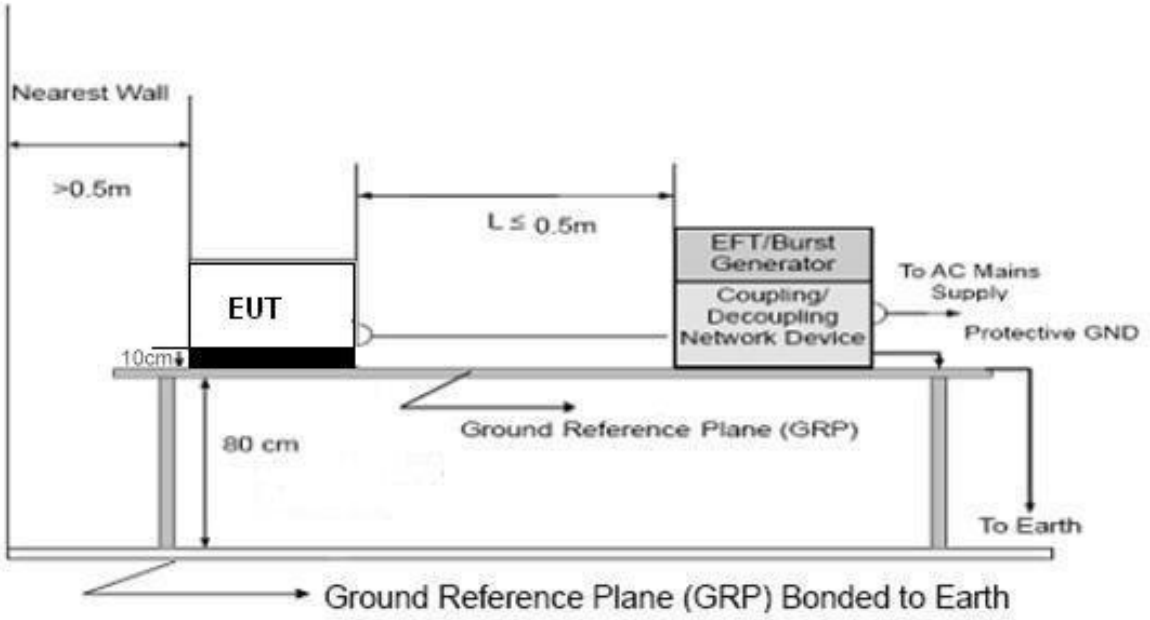
The EUT and its simulators were placed on a ground reference plane and were insulated from it by a wood support 0.1m ± 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. The other condition as following manner:

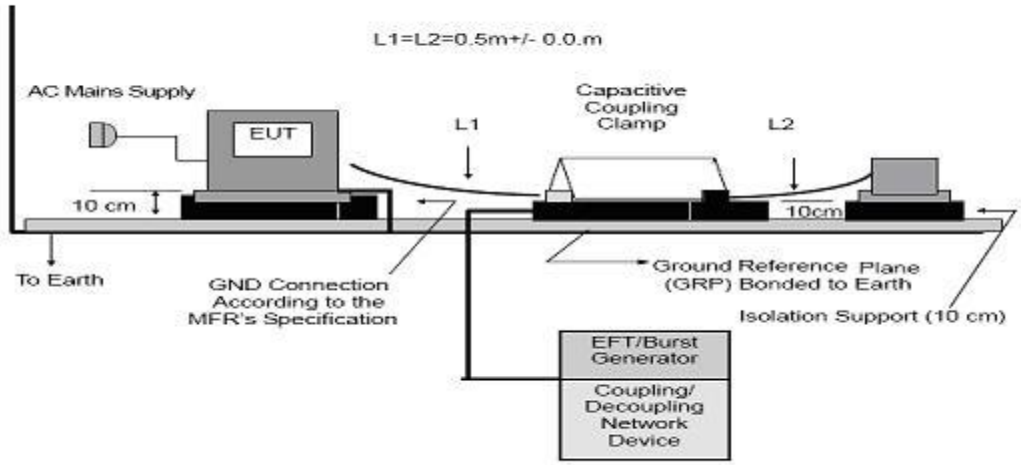
a. The length of power cord between the coupling device and the EUT should not exceed 0.5 meter.

b. Both positive and negative polarity discharges were applied.

c. The duration time of each test sequential was 2 minutes.

4.6.3 TEST SETUP





Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-4 and its cable, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

4.6.4 TEST RESULTS

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	22℃	Relative Humidity：	47%
Pressure：	1010hPa	Test Date：	2017-12-04
Test Mode:	LAN Playing / USB Playing		
Test Power:	DC 5V powered by DC Source		

Coupling Line		Test level (kV)								Criterion	Result
		0.5		1		2		4			
		+	-	+	-	+	-	+	-		
AC line	L									**B**	**Complies**
	N										
	PE										
	L+N										
	L+PE										
	N+PE										
	L+N+PE										
DC Line		P	P								
Signal Line		P	P								

Note:

1) +/- denotes the Positive/Negative polarity of the output voltage.
2) N/A - denotes test is not applicable in this test report
3) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
4) Criteria A: There was no change operated with initial operating during the test.
5) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
6) Criteria C: The system shut down during the test.

4.7 SURGE TESTING

4.7.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5
Required Performance:	B
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage:	Power Line：0.5 kV, 1 kV, 2 kV
Surge Input/Output:	L-N, L-PE, N-PE
Generator Source:	2 ohm between networks
Impedance:	12 ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	0°/90°/180°/270°
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

4.7.2 TEST PROCEDURE

a. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2meters in length (or shorter).

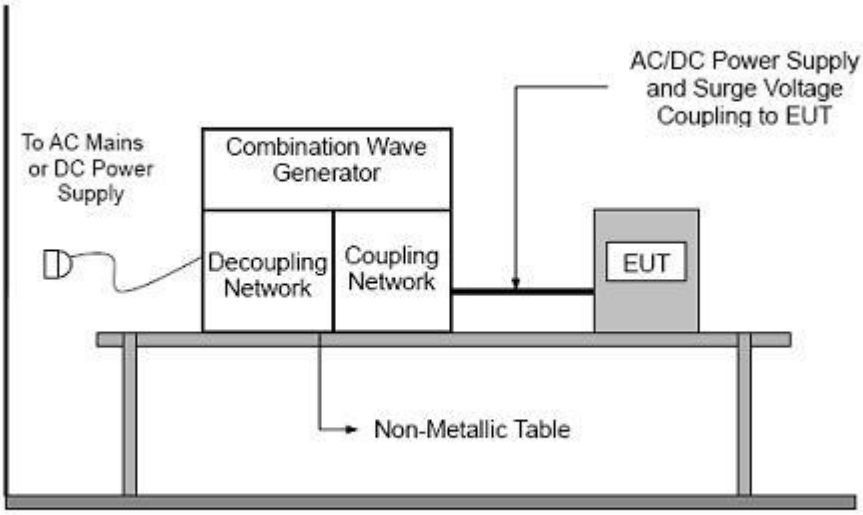
b. For test applied to unshielded asymmetrically operated interconnection lines of EUT:

The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

d. The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

4.7.3 TEST SETUP



4.7.4 TEST RESULTS

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	22℃	Relative Humidity：	47%
Pressure：	1010hPa	Test Date：	2017-12-04
Test Mode:	LAN Playing		
Test Power:	DC 5V powered by DC Source		

Coupling Line			Test level								Criterion	Result
			0.5 kV		1 kV		2 kV		4 kV			
			+	-	+	-	+	-	+	-		
AC line	L-N	0°									B	Complies
		90°										
		180°										
		270°										
	L-PE	0°										
		90°										
		180°										
		270°										
	N-PE	0°										
		90°										
		180°										
		270°										
DC Line												
Signal Line			P	P	P	P						

Note:

1) Polarity and Numbers of Impulses：5 Pst / Ngt at each tested mode
2) N/A - denotes test is not applicable in this Test Report
3) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
4) Criteria A: There was no change operated with initial operating during the test.
5) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
6) Criteria C: The system shut down during the test.

4.8 CONTINUOUS RADIO FREQUENCY DISTURBANCES TESTING

4.8.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-6
Required Performance:	A
Frequency Range:	0.15 MHz - 80 MHz
Field Strength:	3 V r.m.s.
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Dwell Time:	3 seconds

4.8.2 TEST PROCEDURE

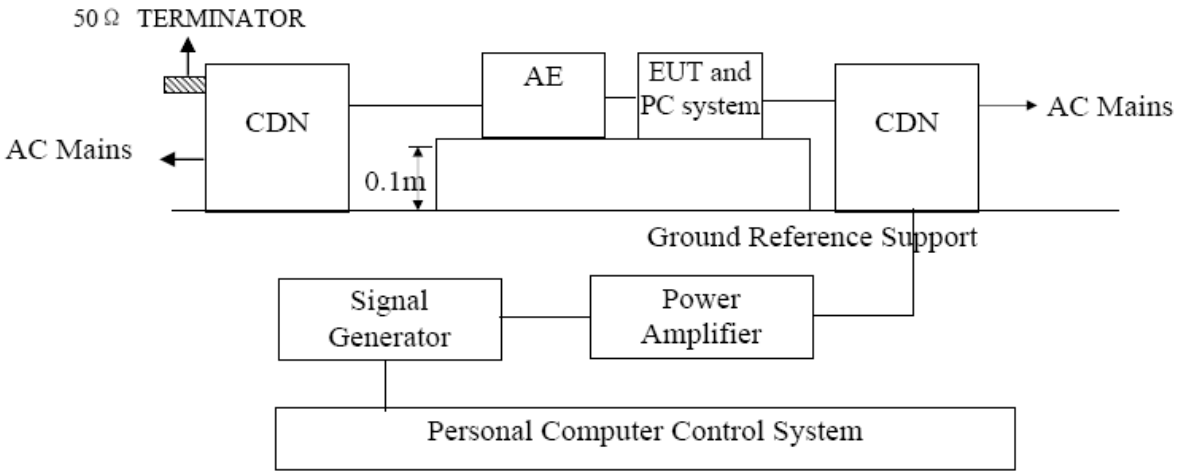
The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50mm (where possible). The disturbance signal described below is injected to EUT through CDN.

The other condition as following manner:

a. The frequency range is swept from 150 kHz to 80 MHz, with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.

b. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

4.8.3 TEST SETUP



NOTE:

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

4.8.4 TEST RESULTS

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	22℃	Relative Humidity：	47%
Pressure：	1010hPa	Test Date：	2017-12-04
Test Mode:	LAN Playing / USB Playing		
Test Power:	DC 5V powered by DC Source		

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.15 --- 80	3V(r.m.s) AM Modulated 1kHz, 80%	**A**	**N/A**	**N/A**
Input/ Output DC. Power Port	0.15 --- 80		**A**	**P**	**Complies**
Signal Line	0.15 --- 80		**A**	**P**	**Complies**

Note:

1) N/A - denotes test is not applicable in this Test Report.
2) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

4.9 POWER FREQUENCY MAGNETIC FIELD TESTING

4.9.1 TEST SPECIFICATION

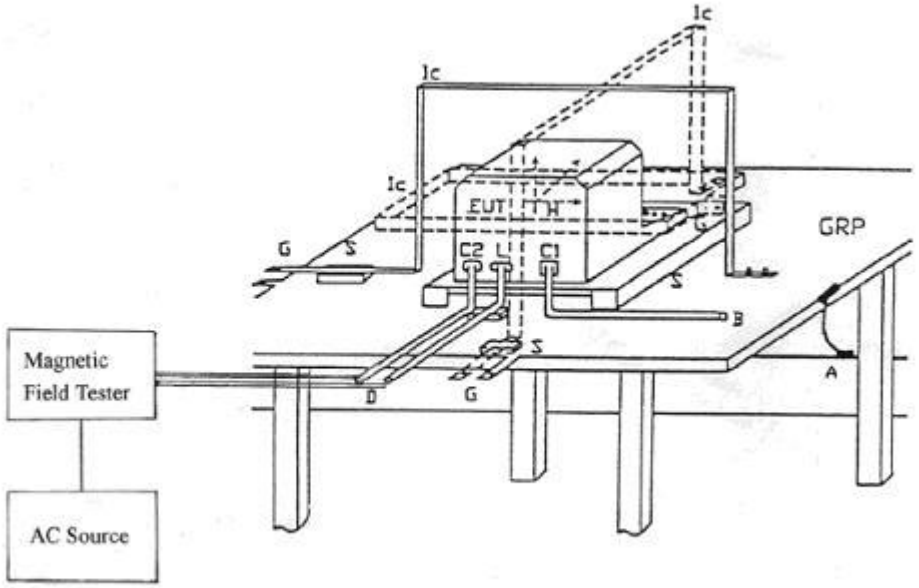
Basic Standard:	IEC/EN 61000-4-8
Required Performance:	A
Frequency Range:	50Hz
Field Strength:	1 A/m
Observation Time:	5 minutes
Inductance Coil:	Rectangular type, 1mx1m

4.9.2 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
The other condition as following manner:

a. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
b. The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.

4.9.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50 % of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

4.9.4 TEST RESULTS

EUT：	Tri-color controller	Model Name:	BX-6M1-YY
Temperature：	22℃	Relative Humidity：	47%
Pressure：	1010hPa	Test Date：	2017-12-04
Test Mode:	LAN Playing / USB Playing		
Test Power:	DC 5V powered by DC Source		

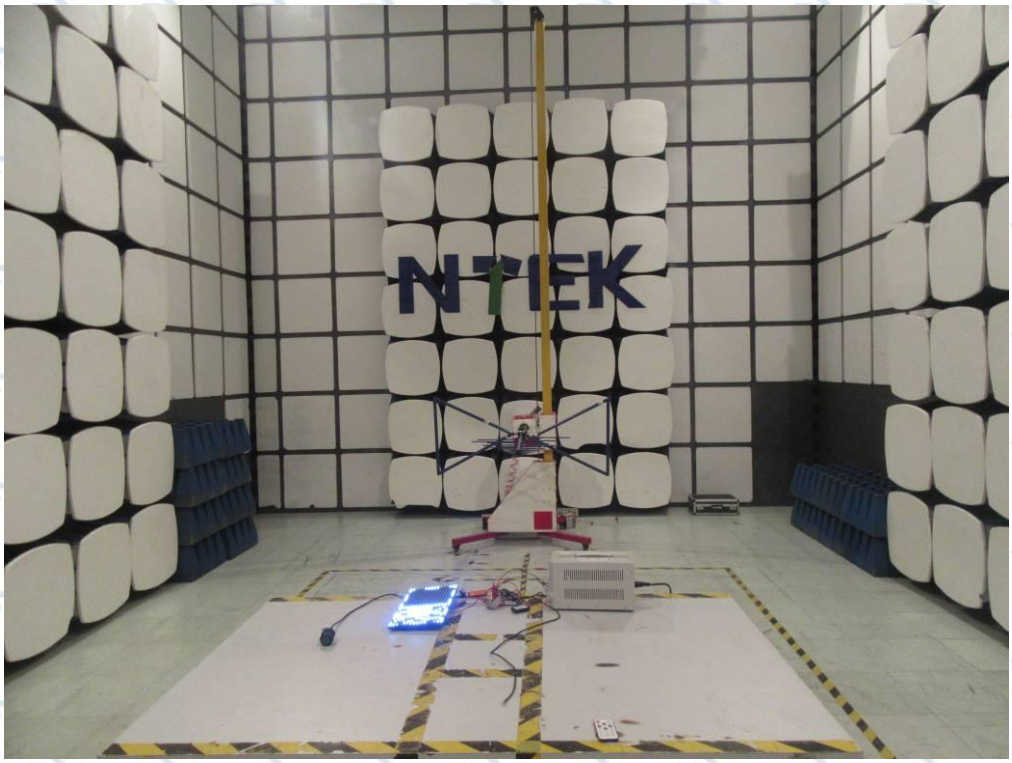
Test Mode	Test Level	Antenna aspect	Duration (s)	Perform Criteria	Results	Judgment
Enclosure	1 A/m	X	300 s	**A**	**P**	**Complies**
Enclosure	1 A/m	Y	300 s	**A**	**P**	
Enclosure	1 A/m	Z	300 s	**A**	**P**	

Note:

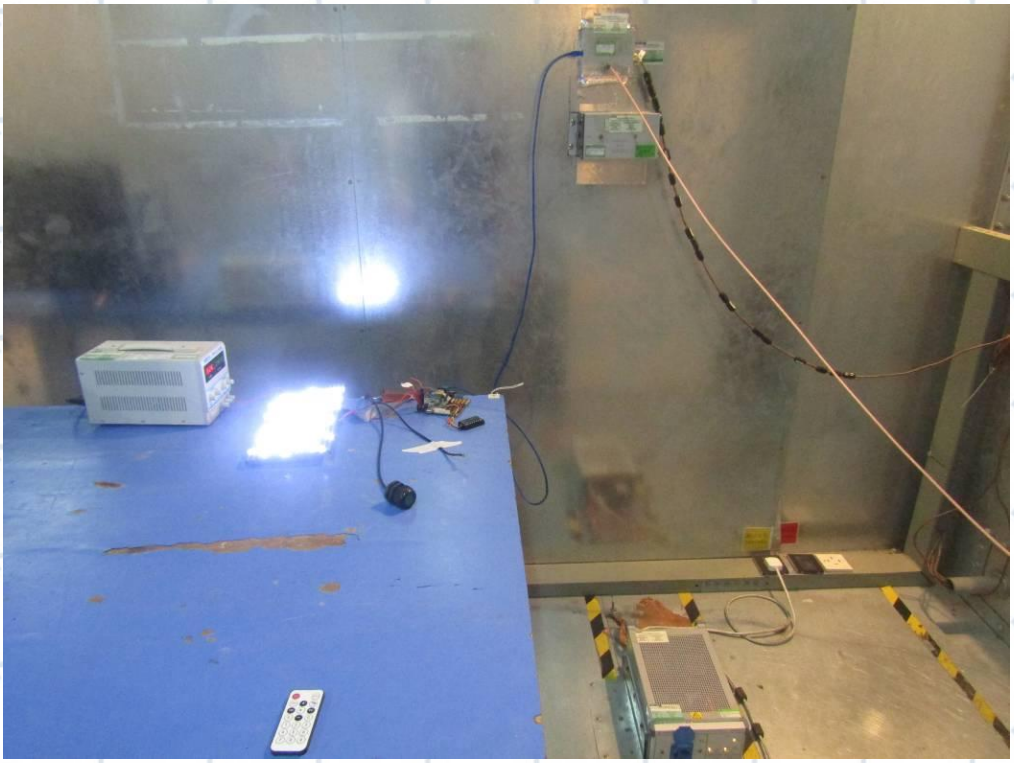
1) N/A - denotes test is not applicable in this test report
2) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

5. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos



ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1

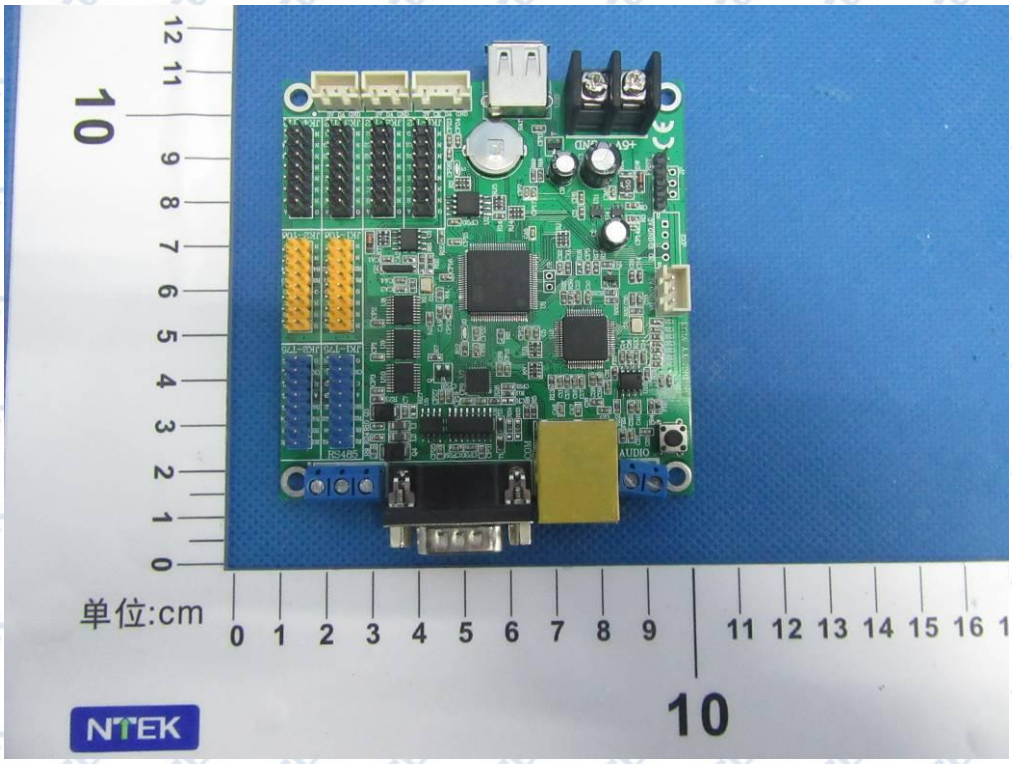


Photo 2