

EMC TEST REPORT
for
Azlan Logistics Limited

TECHCONNECT TC-HDMIIP
Model No.: TC-HDMIIP

Prepared for : Azlan Logistics Limited

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Date of Test : May 15~Jun. 24, 2017

Date of Report : Jun. 24, 2017

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APPENDIX I (Photos of EUT) (4 Pages)

TEST REPORT VERIFICATION

Applicant : Azlan Logistics Limited
Manufacturer : Azlan Logistics Limited
EUT : TECHCONNECT TC-HDMIIP
Model No. : TC-HDMIIP
Rating : Input: 5V \equiv 2A
Trade Mark : VISION

Measurement Procedure Used:

EN 55032: 2015;
EN 61000-3-2: 2014;
EN 61000-3-3: 2013;
EN 55020: 2007+A11: 2011+A12: 2016;
(IEC 61000-4-2; IEC 61000-4-4)

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited 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 Shenzhen Anbotek Compliance Laboratory Limited 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 EN 55032, EN 55020, EN 61000-3-2 and EN 61000-3-3 requirements. The Project in EN 55020 was tested in Shenzhen EMTEK Co., Ltd.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Test Date: May 15~Jun. 24, 2017

Prepared by :



Baron Wen
(Engineer/ Baron Wen)

Reviewer :

Oliay Yang
(Project Manager/ Oliay Yang)

Approved & Authorized Signer :

Tom Chen
(Manager/ Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	: TECHCONNECT TC-HDMIIP
Model Number	: TC-HDMIIP
Test Power Supply	: DC 5V via adapter AC 230V, 50Hz/ DC 5V via adapter AC 110V, 50Hz
Applicant	: Azlan Logistics Limited
Address	: Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG24 8WQ, United Kingdom
Manufacturer	: Azlan Logistics Limited
Address	: Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG24 8WQ, United Kingdom
Factory	: Azlan Logistics Limited
Address	: Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG24 8WQ, United Kingdom

1.2 Auxiliary Equipment Used during Test

TV	: Manufacturer: SONY M/N: KDL-26EX550 S/N: 1012240 CE , FCC: DOC
DVD	: Manufacturer: SONY M/N: BDP-S380 S/N: 4065848 CE , FCC
Adapter	: Manufacturer: SHENZHEN FUJIA APPLIANCE CO., LTD. Model: FJ-SW1260502000DN Input: 100-240V~ 50/60Hz, 0.4A max. Output: 5Vd.c., 2000mA

1.3. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 06, 2016.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A-1, Jun. 13, 2016.

CNAS - LAB Code: L3503

Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing Laboratories.

Test Location

All Emissions tests were performed

Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

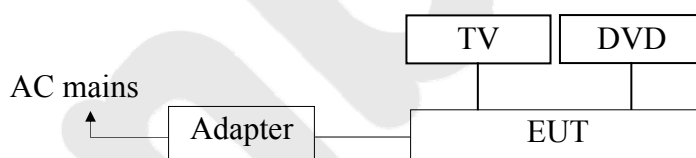
1.4. Measurement Uncertainty

Radiation Uncertainty : $U_r = 4.1\text{dB}$ (Horizontal)
 $U_r = 4.3\text{dB}$ (Vertical)
 Disturbance Uncertainty : $U_d = 2.6\text{ dB}$
 Conduction Uncertainty : $U_c = 3.4\text{ dB}$

1.5. Description of Test Mode

Pretest Mode	Description
Mode 1	On

For Mode 1 Block Diagram of Test Setup



1.6 Test Summary

Test Items	Test Mode	Status
Disturbance Voltage at The Mains Terminals (150KHz To30MHz)	Mode 1	P
Disturbance Power (30MHz To300MHz)	/	N
Radiated Disturbances (30MHz To 1000MHz)	Mode 1	P
Disturbance Voltage at The Antenna Terminals (30MHz To 2150MHz)	/	N
Wanted signal and disturbance voltage at the RF output of equipment (30MHz To 2150MHz)	/	N
Radiated Power (1GHz To 3GHz)	/	N
Harmonic Current Test	Mode 1	P
Voltage Fluctuations and Flicker Test	Mode 1	P
Input immunity at antenna terminal (S1)	/	N
Immunity Conducted Voltages (S2a)	/	N
Immunity Conducted Currents (S2b)	/	N
Immunity Radiated Fields (S3)	/	N
Screening effectiveness (S4)	/	N
Immunity to radiated fields (S5) 900MHz ±5MHz 3V/M	/	N
Immunity to Electrical transients	Mode 1	P
Electrostatic discharge Immunity	Mode 1	P

P) Indicates that the through the test.

N) Don't test.

1.7. EMS Performance Criteria

- √ A: Normal performance within the specification limits
- √ B: Temporary degradation or loss of function or performance which is self-recoverable
- √ C: Temporary degradation or loss of function or performance which requires operator intervention or system reset
- √ D: Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data

Note: The manufacturer's specification may define effects on the EUT which may be considered insignificant, and therefore acceptable.

This classification may be used as a guide in formulating performance criteria, by committees responsible for generic, product and product-family standards, or as a framework for the agreement on performance criteria between the manufacturer and the purchaser, for example where no suitable generic, product or product-family standard exists.

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1. Conducted Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Jul. 19, 2016	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Jun. 17, 2017	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Jun. 17, 2017	1 Year

2.2. Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Jun. 17, 2017	1 Year
2.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	May 06, 2017	1 Year
3.	Pre-amplifier	SONOMA	310N	186860	Jun. 17, 2017	1 Year

2.3. Harmonic Current/Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Programmable AC Power source	SOPH POWER	PAG-1050	630250	Jun. 17, 2016	1 Year
2.	Harmonic and Flicker Analyzer	EMC-PARTNER	HRRMOIN CS-1000-1P	164	Jun. 17, 2016	1 Year

2.4. Electrostatic Discharge Measurement

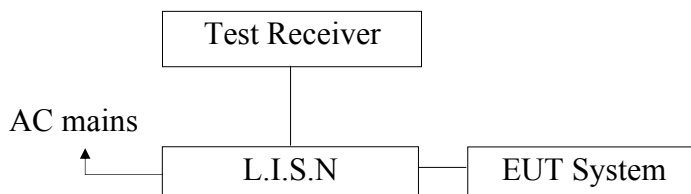
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Simulators	3ctest	ESD-30T	ES0131505	Jun. 17, 2017	1 Year

2.5. Electrical Fast Transient /Burst Immunity Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.1	EFT Burst Simulator	PRIMA	EFT61004B	PR10114282	Jul. 12, 2016	1 Year
1.2	EFT-Clamp	PRIMA	EFT-Clamp	/	Jul. 12, 2016	1 Year
2.1	EFT Burst Simulator	TESEQ	NSG 3060-1	1480	Mar. 30, 2017	1 Year
2.2	CDN	TESEQ	CDN 3061	1408	Apr. 05, 2017	1 Year

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Block Diagram of Test Setup



3.2. Measuring Standard

EN 55032

3.3. Power Line Conducted Emission Limits

Frequency (MHz)	Limit (dB μ V)	
	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.

3.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 55032 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown on Section 3.1.

3.5.2. Turn on the power of all equipments.

3.5.3. Let the EUT work in measuring mode and measure it.

3.6. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N).

This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCI) is set at 9KHz in 150KHz~30MHz.

The frequency range from 150kHz to 30MHz is investigated for AC mains.

The test results are listed in Section 3.7.

3.7. Measuring Results

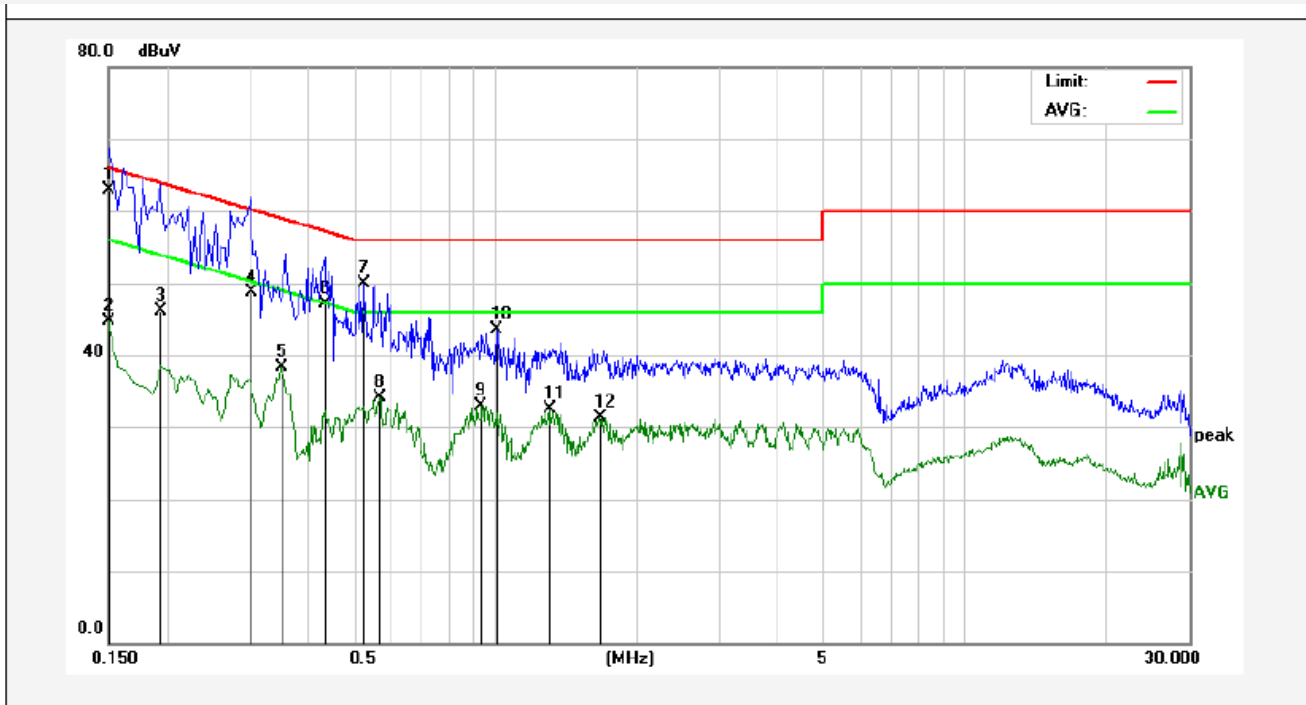
PASS

The frequency range 150kHz to 30MHz is investigated

Test data see following pages.

CONDUCTED EMISSION TEST DATA

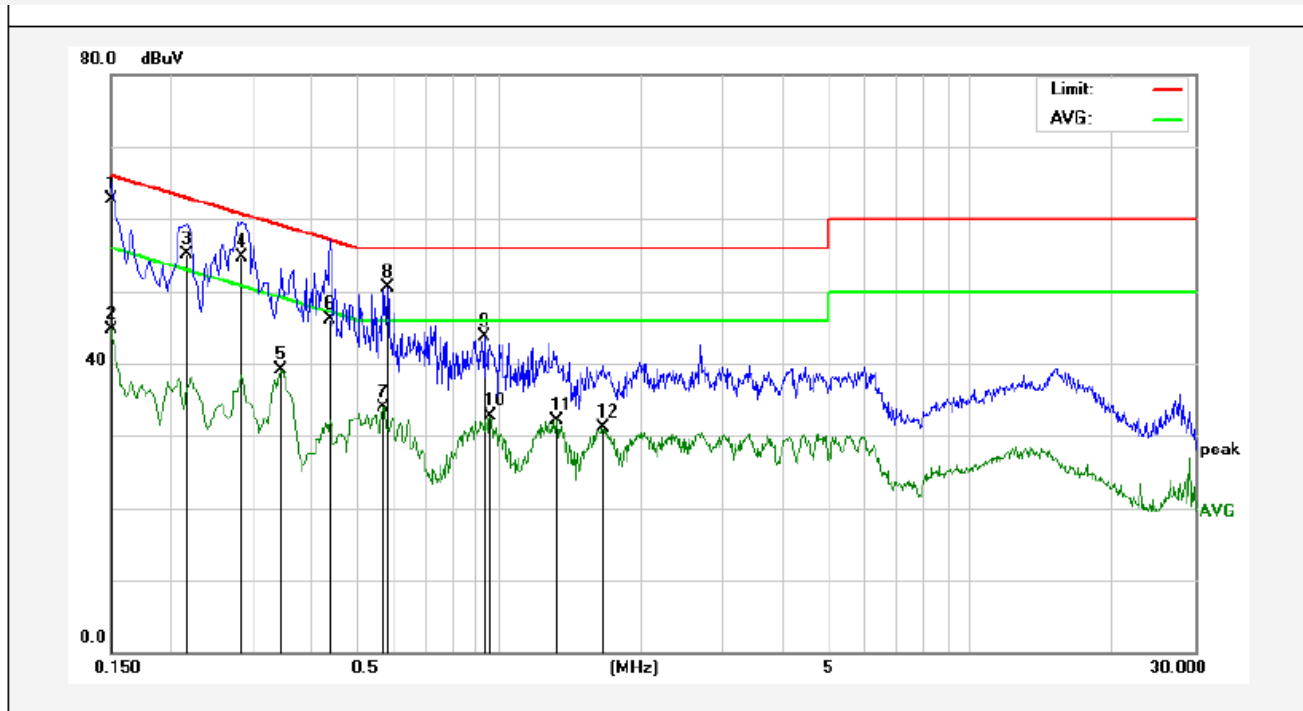
Test Site: 1# Shielded Room
 Test Specification: DC 5V via adapter AC 230V, 50Hz
 Comment: L
 Temp.: 22.2°C Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	43.04	19.90	62.94	65.99	-3.05	QP	
2	0.1500	24.73	19.90	44.63	55.99	-11.36	AVG	
3	0.1940	26.24	19.90	46.14	63.86	-17.72	QP	
4	0.3020	28.91	19.89	48.80	60.19	-11.39	QP	
5	0.3500	18.45	19.91	38.36	48.96	-10.60	AVG	
6	0.4340	27.23	19.95	47.18	57.18	-10.00	QP	
7	0.5260	30.01	19.99	50.00	56.00	-6.00	QP	
8	0.5700	14.01	20.00	34.01	46.00	-11.99	AVG	
9	0.9380	12.84	20.10	32.94	46.00	-13.06	AVG	
10	1.0060	23.30	20.12	43.42	56.00	-12.58	QP	
11	1.3060	12.42	20.13	32.55	46.00	-13.45	AVG	
12	1.6700	11.22	20.13	31.35	46.00	-14.65	AVG	

CONDUCTED EMISSION TEST DATA

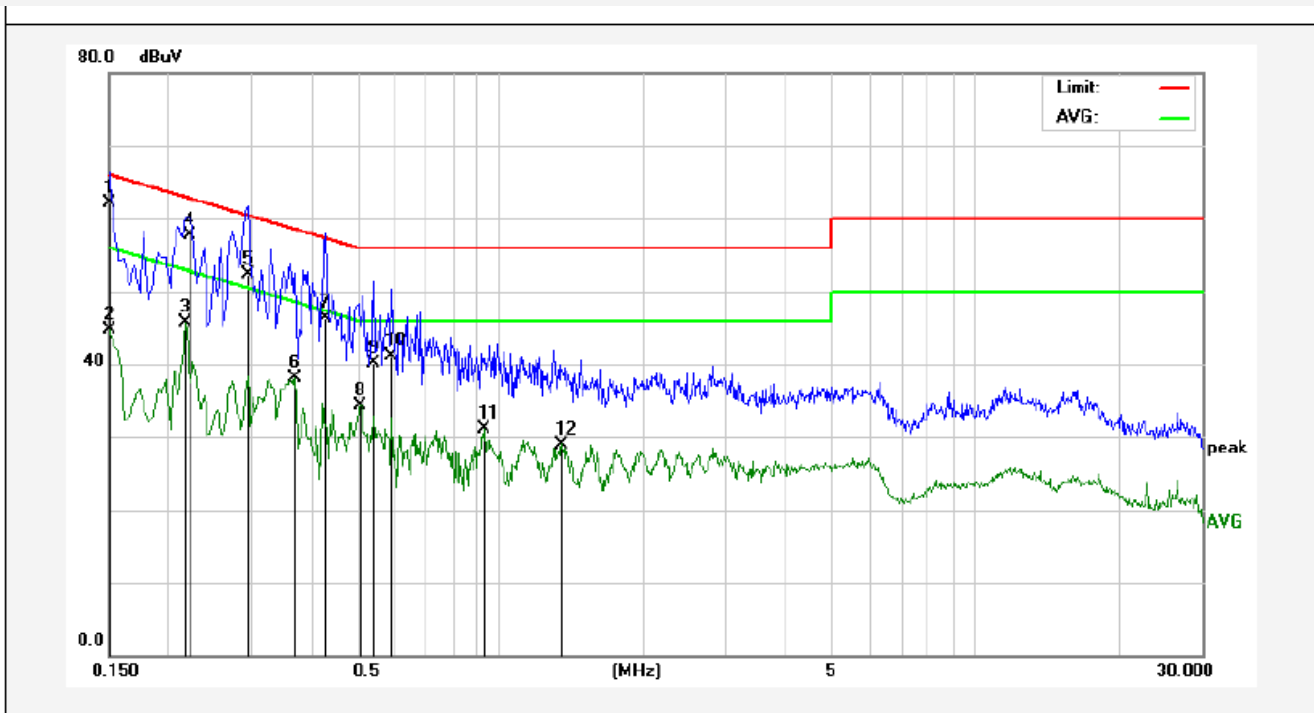
Test Site: 1# Shielded Room
 Test Specification: DC 5V via adapter AC 230V, 50Hz
 Comment: N
 Temp.: 22.2°C Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	42.77	19.90	62.67	65.99	-3.32	QP	
2	0.1500	24.87	19.90	44.77	55.99	-11.22	AVG	
3	0.2180	35.19	19.90	55.09	62.89	-7.80	QP	
4	0.2860	34.87	19.89	54.76	60.64	-5.88	QP	
5	0.3460	19.28	19.91	39.19	49.06	-9.87	AVG	
6	0.4380	26.17	19.95	46.12	57.10	-10.98	QP	
7	0.5700	13.96	20.00	33.96	46.00	-12.04	AVG	
8	0.5820	30.52	20.00	50.52	56.00	-5.48	QP	
9	0.9380	23.68	20.10	43.78	56.00	-12.22	QP	
10	0.9620	12.56	20.11	32.67	46.00	-13.33	AVG	
11	1.3300	11.90	20.13	32.03	46.00	-13.97	AVG	
12	1.6580	10.91	20.13	31.04	46.00	-14.96	AVG	

CONDUCTED EMISSION TEST DATA

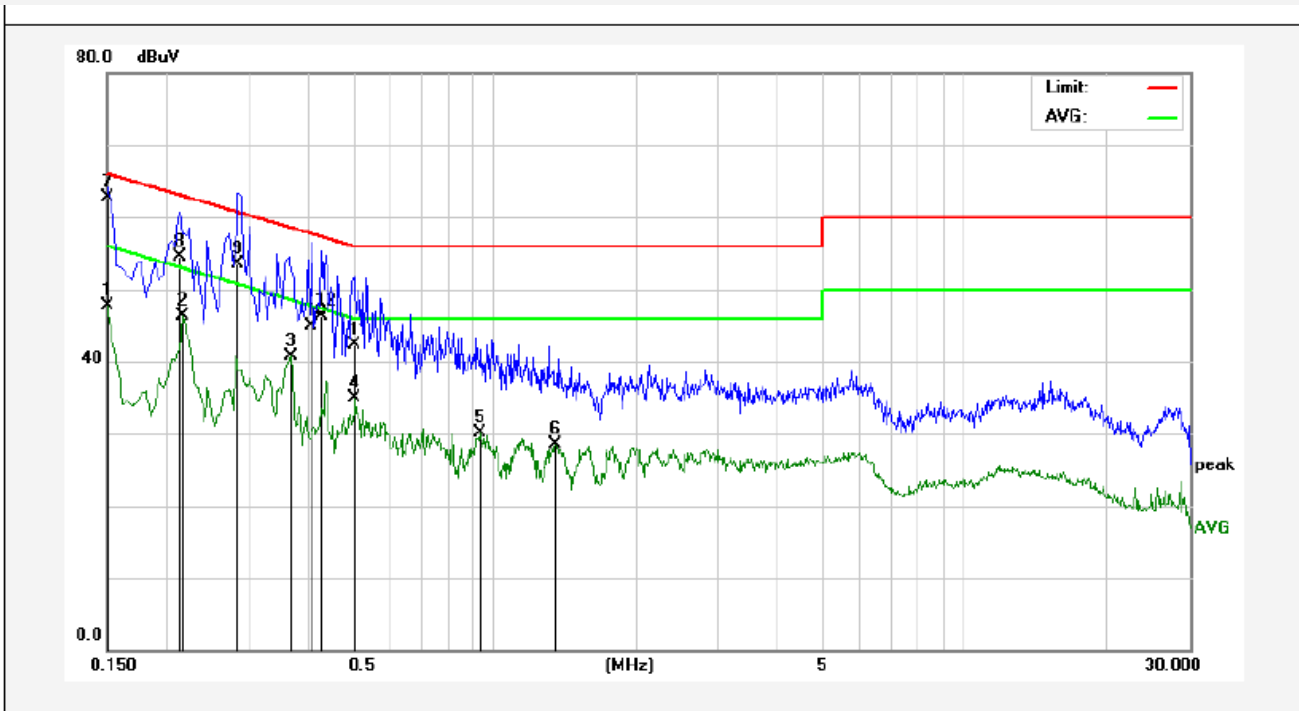
Test Site: 1# Shielded Room
 Test Specification: DC 5V via adapter AC 110V, 50Hz
 Comment: L
 Temp.: 22.2°C Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	42.27	19.90	62.17	65.99	-3.82	QP	
2	0.1500	24.75	19.90	44.65	55.99	-11.34	AVG	
3	0.2180	25.72	19.90	45.62	52.89	-7.27	AVG	
4	0.2220	37.87	19.90	57.77	62.74	-4.97	QP	
5	0.2940	32.42	19.89	52.31	60.41	-8.10	QP	
6	0.3700	18.25	19.92	38.17	48.50	-10.33	AVG	
7	0.4300	26.39	19.95	46.34	57.25	-10.91	QP	
8	0.5100	14.30	19.98	34.28	46.00	-11.72	AVG	
9	0.5420	20.09	19.99	40.08	56.00	-15.92	QP	
10	0.5899	21.10	20.01	41.11	56.00	-14.89	QP	
11	0.9260	10.95	20.10	31.05	46.00	-14.95	AVG	
12	1.3460	8.87	20.13	29.00	46.00	-17.00	AVG	

CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room
 Test Specification: DC 5V via adapter AC 110V, 50Hz
 Comment: N
 Temp.: 22.2°C Hum.: 60%

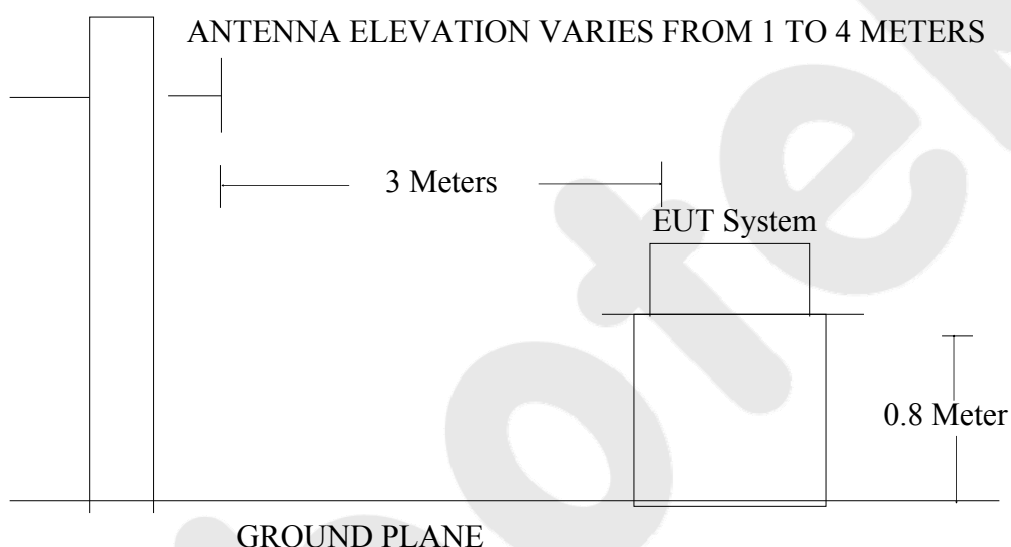


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	27.79	19.90	47.69	55.99	-8.30	AVG	
2	0.2180	26.47	19.90	46.37	52.89	-6.52	AVG	
3	0.3700	20.87	19.92	40.79	48.50	-7.71	AVG	
4	0.5060	14.85	19.98	34.83	46.00	-11.17	AVG	
5	0.9300	9.93	20.10	30.03	46.00	-15.97	AVG	
6	1.3500	8.41	20.13	28.54	46.00	-17.46	AVG	
7	0.1500	42.86	19.90	62.76	65.99	-3.23	QP	
8	0.2140	34.53	19.90	54.43	63.04	-8.61	QP	
9	0.2860	33.68	19.89	53.57	60.64	-7.07	QP	
10	0.4100	24.88	19.94	44.82	57.65	-12.83	QP	
11	0.5020	22.39	19.98	42.37	56.00	-13.63	QP	
12	0.4300	26.29	19.95	46.24	57.25	-11.01	QP	

4. RADIATED EMISSION TEST

4.1. Block Diagram of Test

4.1.1. Block diagram of test setup (In chamber)



4.2. Measuring Standard

EN 55032

4.3. Radiated Emission Limits

All emanations from an EN 55032 device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY MHz	DISTANCE Meters	Limit Values	
		dB(μ V)/m	
≤ 1000	3	Fundamental	57
30~300	3	Harmonics	52
300~1000	3	Harmonics	56
30~230	3	Other	40
230~1000	3	Other	47

- Note:
- (1) The smaller limit shall apply at the combination point between two frequency bands.
 - (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.4. EUT Configuration on Test

The EN 55032 regulation test method must be used to find the maximum emission during radiated emission measurement.

4.5. Operating Condition of EUT

4.5.1. Turn on the power.

4.5.2. Let the EUT work in measuring mode and measure it.

4.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESCI) is set at 120kHz.

The EUT is tested in 9*6*6 Chamber.

The test results are listed in Section 4.7.

4.7. Measuring Results

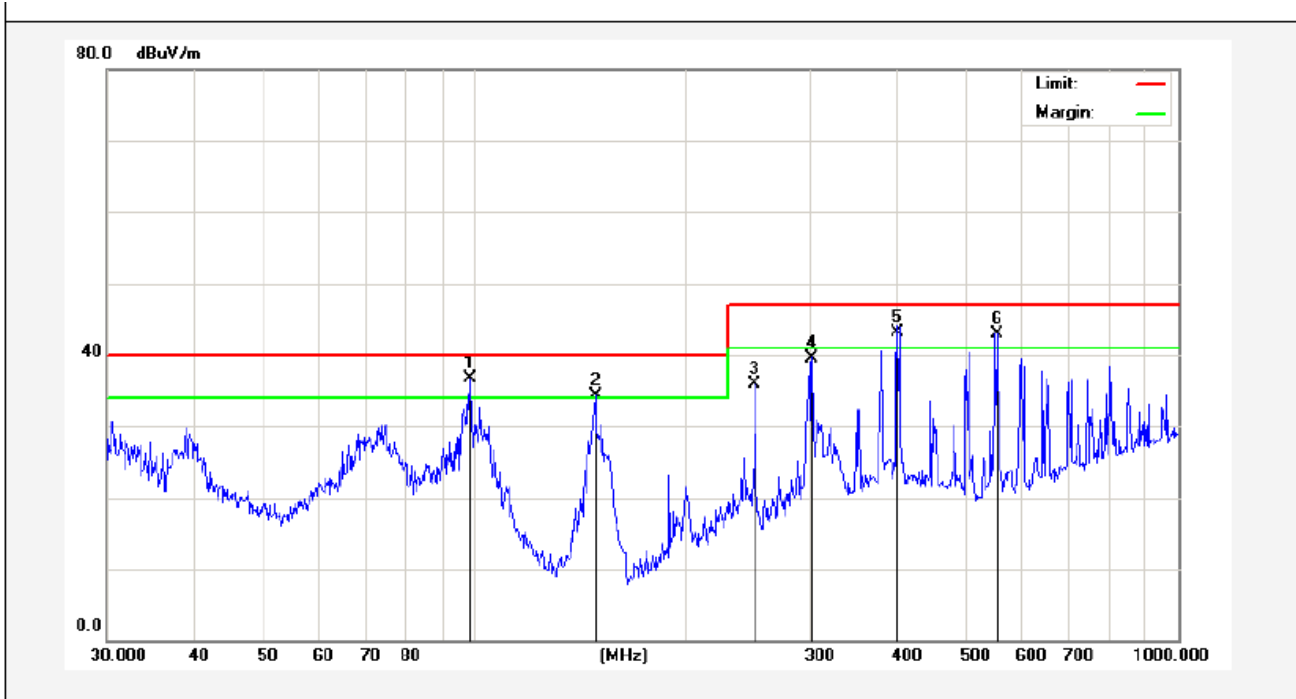
PASS

The frequency range from 30MHz to 1000MHz is investigated.

The test curves are shown in the following pages.

Test item: Radiation Test Polarization: Horizontal
 Standard: (RE)EN 55032 Power Source: DC 5V via adapter AC 230V, 50Hz
 Distance: 3m Temp.(°C)/Hum.(%RH): 24.3(°C)/55%RH

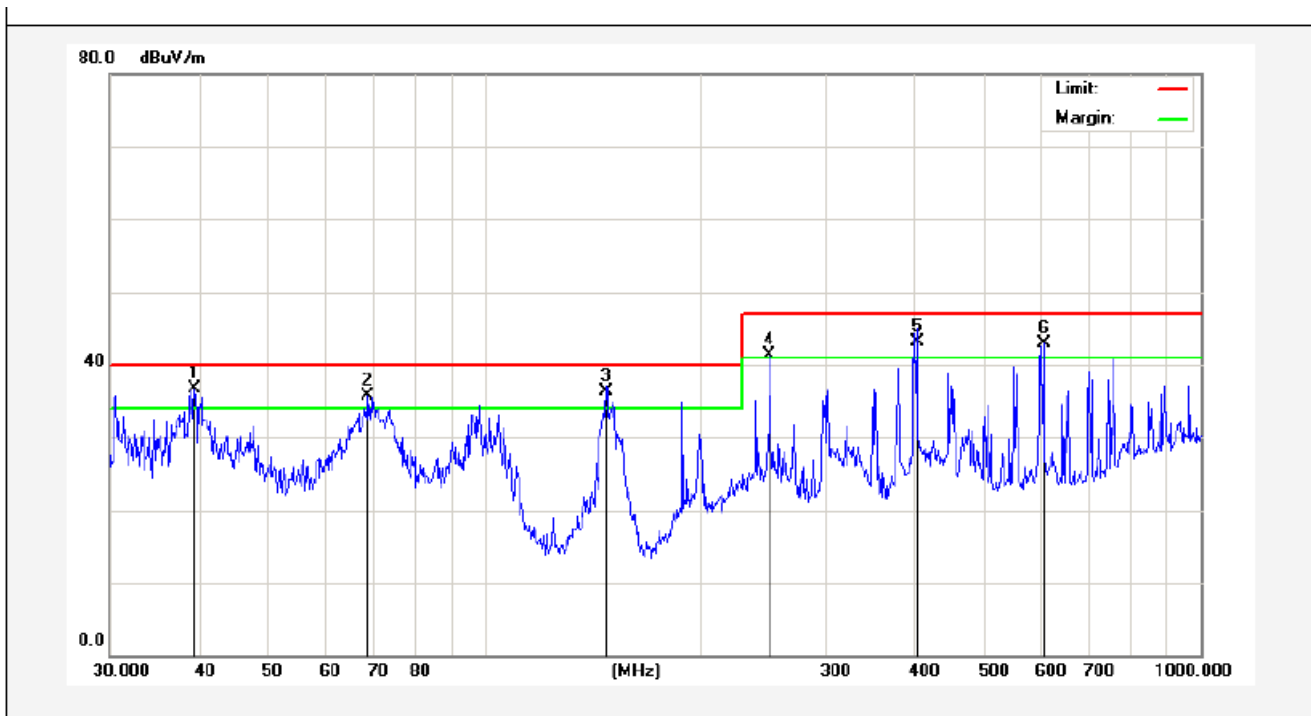
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	98.4865	57.59	-20.85	36.74	40.00	-3.26	QP	100	360	
2	148.4410	57.63	-23.36	34.27	40.00	-5.73	QP	100	0	
3	250.3010	54.54	-18.56	35.98	47.00	-11.02	peak			
4	301.4223	57.11	-17.51	39.60	47.00	-7.40	peak			
5	399.0300	55.95	-12.88	43.07	47.00	-3.93	QP	100	0	
6	552.8831	54.08	-11.10	42.98	47.00	-4.02	QP	100	360	

Test item: Radiation Test Polarization: Vertical
 Standard: (RE)EN 55032 Power Source: DC 5V via adapter AC 230V, 50Hz
 Distance: 3m Temp.(°C)/Hum.(%RH): 24.3(°C)/55%RH

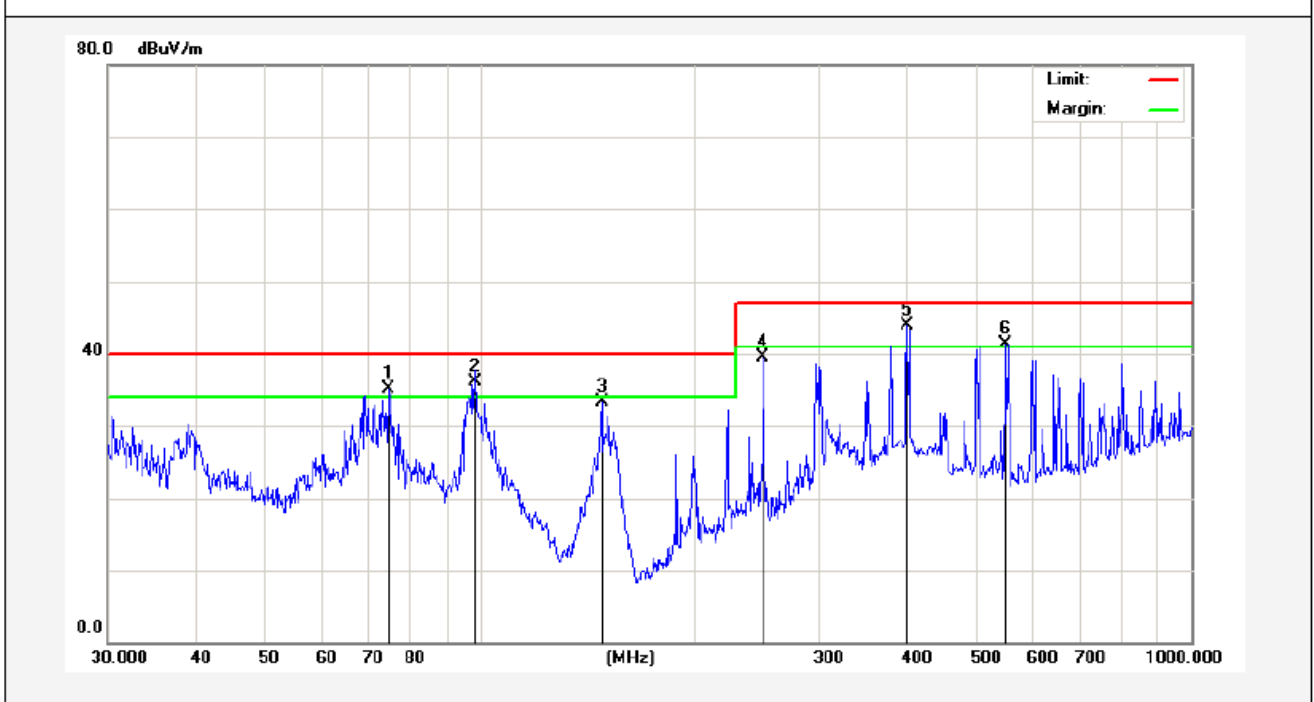
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.4371	47.41	-10.80	36.61	40.00	-3.39	QP	100	0	
2	68.8721	54.76	-19.14	35.62	40.00	-4.38	QP	100	360	
3	147.9214	54.73	-18.37	36.36	40.00	-3.64	QP	100	0	
4	250.3011	55.29	-14.04	41.25	47.00	-5.75	QP	100	0	
5	401.8385	54.87	-11.81	43.06	47.00	-3.94	QP	100	0	
6	603.5392	52.03	-9.21	42.82	47.00	-4.18	QP	100	360	

Test item: Radiation Test Polarization: Horizontal
 Standard: (RE)EN 55032 Power Source: DC 5V via adapter AC 110V, 50Hz
 Distance: 3m Temp.(°C)/Hum.(%RH): 24.3(°C)/55%RH

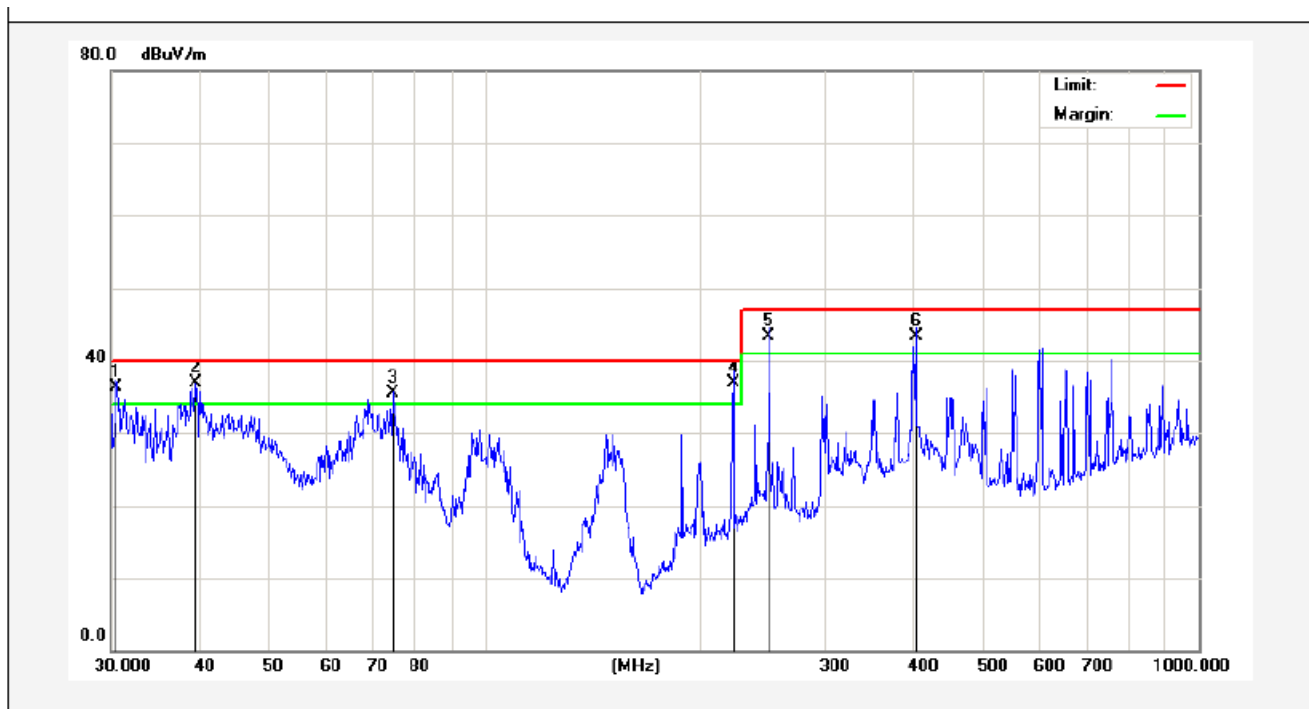
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	74.3954	55.67	-20.48	35.19	40.00	-4.81	QP	300	0	
2	98.4865	56.86	-20.85	36.01	40.00	-3.99	QP	300	360	
3	148.4410	56.72	-23.36	33.36	40.00	-6.64	peak			
4	250.3011	58.08	-18.56	39.52	47.00	-7.48	peak			
5	399.0300	56.76	-12.88	43.88	47.00	-3.12	QP	300	360	
6	549.0193	52.42	-11.08	41.34	47.00	-5.66	QP	300	0	

Test item: Radiation Test Polarization: Vertical
 Standard: (RE)EN 55032 Power Source: DC 5V via adapter AC 110V, 50Hz
 Distance: 3m Temp.(°C)/Hum.(%RH): 24.3(°C)/55%RH

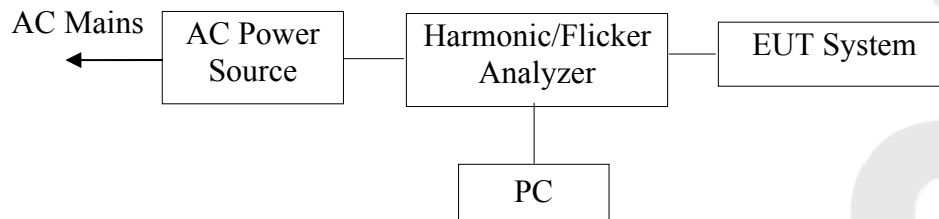
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.5306	52.89	-16.66	36.23	40.00	-3.77	QP	100	0	
2	39.4371	47.76	-10.80	36.96	40.00	-3.04	QP	100	360	
3	74.3955	56.08	-20.48	35.60	40.00	-4.40	QP	100	0	
4	222.9502	51.94	-14.97	36.97	40.00	-3.03	QP	100	360	
5	250.3012	57.33	-14.04	43.29	47.00	-3.71	QP	100	0	
6	401.8385	55.17	-11.81	43.36	47.00	-3.64	QP	100	0	

5. HARMONIC CURRENT EMISSION TEST

5.1. Block Diagram of Test Setup



5.2. Measuring Standard

EN 61000-3-2

5.3. Operation Condition of EUT

- 5.3.1. Setup the EUT as shown on Section 5.1.
- 5.3.2. Turn on the power of all equipments.
- 5.3.3. After that, let the EUT work and measure it.

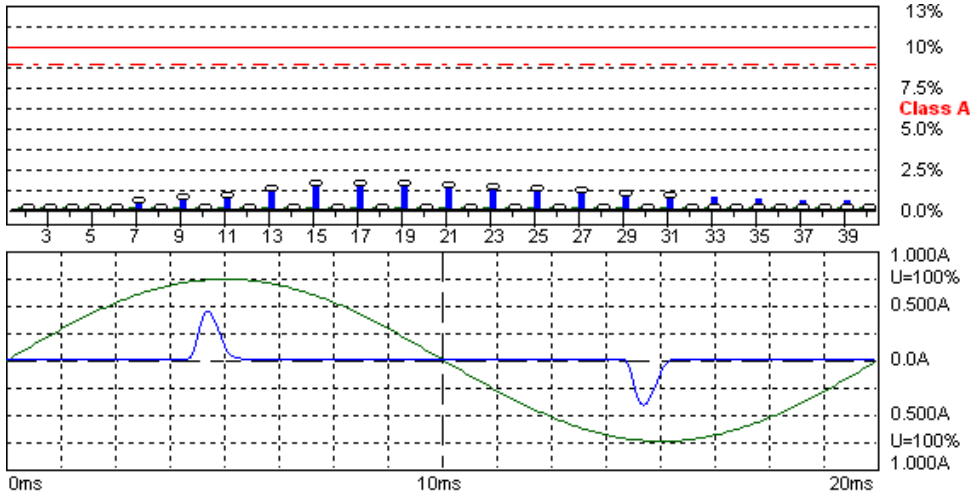
5.4. Measuring Results

PASS

Test data see following pages.

Harmonic Current Test Result Summary (Run time)

Tested On : Jun. 21, 2017 10:46:01 V4.22



Harmonic Emission - IEC 61000-3-2, EN 61000-3-2, (EN60555-2)

Urms =	229.5 V	P =	7.706 W	THC =	0.082 A	Range:	1 A
Irms =	0.086 A	pf =	0.391			V-nom:	230 V

Test aborted, Result: PASSED

HAR-1000 EMC-Parber

Full Bar : Actual Values
Empty Bar : Maximum Values
Blue : Current , Green : Voltage , Red : Failed

Harmonic Current Test Result Summary (Run time)

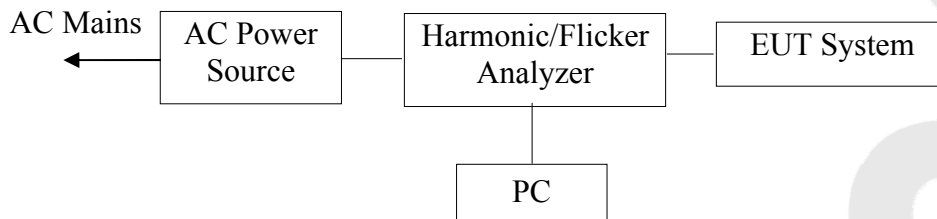
Tested On : Jun. 21, 2017 10:46:01 V4.22

Urms = 229.5V Freq = 50.013 Range: 1 A
 Irms = 0.086A Ipk = 0.461A cf = 5.369
 P = 7.706W S = 19.72VA pf = 0.391
 THDi = 243 % THDu = 0.10 % Class A
 Test - Time : 2min (100 %)

Order	Freq. [Hz]	Iavg [A]	Iavg%L [%]	Imax [A]	Imax%L [%]	Limit [A]	Status
1	50	0.0335		0.0338			
2	100	0.0000	0.0000	0.0006	0.0565	1.0800	
3	150	0.0311	1.3516	0.0313	1.3587	2.3000	
4	200	0.0000	0.0000	0.0006	0.1419	0.4300	
5	250	0.0304	2.6631	0.0305	2.6770	1.1400	
6	300	0.0000	0.0000	0.0006	0.2035	0.3000	
7	350	0.0293	3.8073	0.0295	3.8286	0.7700	
8	400	0.0000	0.0000	0.0007	0.2919	0.2300	
9	450	0.0279	6.9662	0.0280	7.0038	0.4000	
10	500	0.0000	0.0000	0.0007	0.3649	0.1840	
11	550	0.0261	7.9213	0.0262	7.9531	0.3300	
12	600	0.0000	0.0000	0.0007	0.4379	0.1533	
13	650	0.0242	11.503	0.0243	11.568	0.2100	
14	700	0.0000	0.0000	0.0007	0.5108	0.1314	
15	750	0.0220	14.663	0.0221	14.730	0.1500	
16	800	0.0000	0.0000	0.0007	0.5838	0.1150	
17	850	0.0197	14.890	0.0198	14.988	0.1324	
18	900	0.0000	0.0000	0.0007	0.6568	0.1022	
19	950	0.0174	14.673	0.0175	14.741	0.1184	
20	1000	0.0000	0.0000	0.0007	0.7298	0.0920	
21	1050	0.0151	14.049	0.0151	14.128	0.1071	
22	1100	0.0000	0.0000	0.0006	0.7298	0.0836	
23	1150	0.0128	13.081	0.0129	13.165	0.0978	
24	1200	0.0000	0.0000	0.0006	0.7961	0.0767	
25	1250	0.0107	11.854	0.0107	11.936	0.0900	
26	1300	0.0000	0.0000	0.0005	0.7762	0.0708	
27	1350	0.0087	10.463	0.0089	10.620	0.0833	
28	1400	0.0000	0.0000	0.0005	0.8359	0.0657	
29	1450	0.0070	9.0224	0.0071	9.2041	0.0776	
30	1500	0.0000	0.0000	0.0005	0.7961	0.0613	
31	1550	0.0056	7.6561	0.0057	7.8206	0.0726	
32	1600	0.0000	0.0000	0.0004	0.7430	0.0575	
33	1650	0.0000	0.0000	0.0046	6.7139	0.0682	
34	1700	0.0000	0.0000	0.0004	0.7895	0.0541	
35	1750	0.0000	0.0000	0.0038	5.8865	0.0643	
36	1800	0.0000	0.0000	0.0004	0.8359	0.0511	
37	1850	0.0000	0.0000	0.0033	5.4199	0.0608	
38	1900	0.0000	0.0000	0.0004	0.7563	0.0484	
39	1950	0.0000	0.0000	0.0031	5.2897	0.0577	
40	2000	0.0000	0.0000	0.0004	0.7961	0.0460	

6. VOLTAGE FLUCTUATION AND FLICKER TEST

6.1. Block Diagram of Test Setup



6.2. Measuring Standard

EN 61000-3-3

6.3. Operation Condition of EUT

6.3.1. Setup the EUT as shown on Section 6.1.

6.3.2. Turn on the power of all equipments.

6.3.3. After that, let the EUT work and measure it.

6.4. Measuring Results

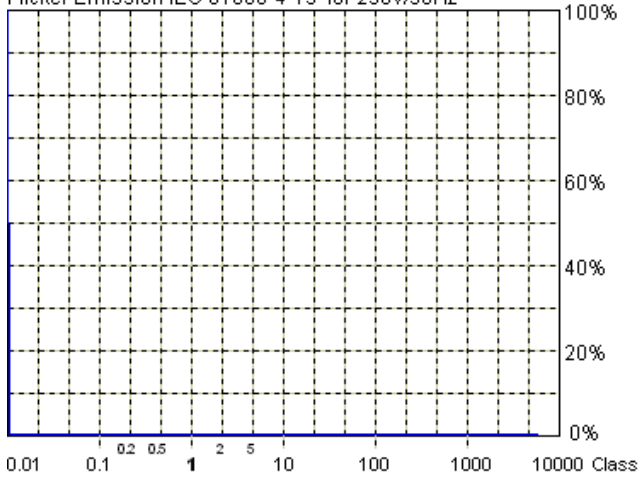
PASS

Test data see following pages.

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Tested On : Jun. 22, 2017 10:48:38 V4.22

Flicker Emission IEC 61000-4-15 for 230V/50Hz



Actual Flicker (Fl): 0.00
Short-term Flicker (Pst): 0.07
 Limit (Pst): 1.00
Long-term Flicker (Plt): 0.00
 Limit (Plt): 0.65
Maximum Relative Volt. Change (dmax): 0.00%
 Limit (dmax): 4.00%
Relative Steady-state Voltage Change (dc): 0.01%
 Limit (dc): 3.30%
Tmax 3.30% (dt): 0.00ms
 Limit (dt>Lim): 500ms

Flicker Emission - IEC 61000-3-3, EN 61000-3-3

Urms = 229.5 V P = 7.755 W
 Irms = 0.086 A pf = 0.393

Range: 1 A
 V-nom: 230 V

Test aborted, Result: PASSED

HAR-1000 EMC-Partner

Full Bar : Actual Values
Empty Bar : Maximum Values
Circles : Average Values
Blue : Current, Green : Voltage, Red : Failed

Urms = 229.5V Freq = 50.000 Range: 1 A
 Irms = 0.086A Ipk = 0.455A cf = 5.290
 P = 7.755W S = 19.72VA pf = 0.393

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

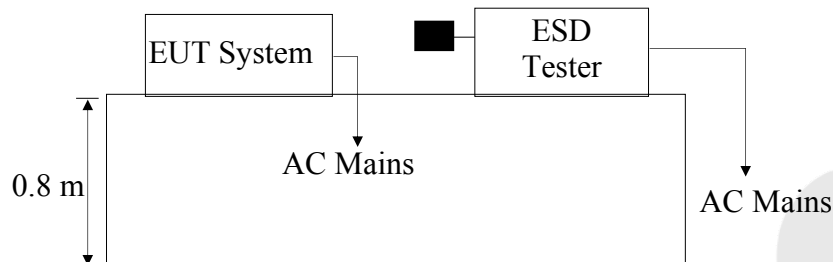
Limits : Plt : 0.65 Pst : 1.00
 dmax : 4.00 % dc : 3.30 %
 dtLim: 3.30 % dt>Lim: 500ms

	dmax	dc	dt>Lim
	[%]	[%]	[ms]
1	0.000	0.010	0.000

7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1. Block Diagram of Test Setup

7.1.1. For block diagram of test setup



7.2. Measuring Standard

EN 55020 (IEC 61000-4-2)

Severity Level: 3 / Air Discharge: ± 8 kV Level: 2 / Contact Discharge: ± 4 kV

7.3. Severity Levels and Performance Criterion

7.3.1. Severity level

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1.	± 2	± 2
2.	± 4	± 4
3.	± 6	± 8
4.	± 8	± 15
X	Special	Special

7.3.2. Performance criterion: **B**

7.4. EUT Configuration

The following equipments are installed on Electrostatic Discharge immunity Measurement to meet EN 55020 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

7.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test set up replaced by Section 7.1.

7.6. Test Procedure

7.6.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 100 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

7.6.2. Contact Discharge:

All the procedure shall be same as Section 7.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3. Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

7.6.4. Indirect discharge for vertical coupling plane

At least 20 single discharge shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

7.7. Measuring Results

PASS

Test data see following pages

Electrostatic Discharge Test Results

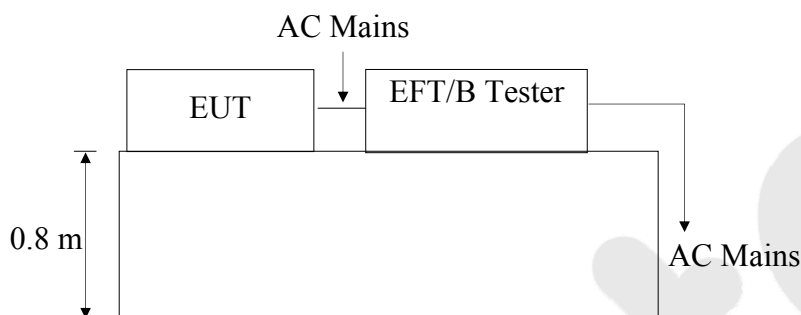
Shenzhen Anbotek Compliance Laboratory Limited

Air discharge :	±8.0kV	Temperature :	25℃
Contact discharge:	±4.0kV	Humidity :	54%
Power Supply :	DC 5V via adapter AC 230V, 50Hz	Criterion required :	B
Number of discharge :	10	Test Result:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Location	Kind A-Air Discharge C-Contact Discharge	Result	
Slot of the EUT	10 points A	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
Others	8 points A	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
USB Ports	4 points A	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
Metal surface of EUT	8 points C	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
HCP	4 points C	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
VCP of front	4 points C	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
VCP of rear	4 points C	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
VCP of left	4 points C	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
VCP of right	4 points C	<input checked="" type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input type="checkbox"/> D
<p>Note: Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).</p>			

8. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

8.1. Block Diagram of Test Setup

8.1.1. EFT Test Setup



8.2. Measuring Standard

EN 55020 (IEC 61000-4-4)
Severity Level 2: 1kV

8.3. Severity Levels and Performance Criterion

8.3.1. Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 kV	0.25 kV
2.	1 kV	0.5 kV
3.	2 kV	1 kV
4.	4 kV	2 kV
X	Special	Special

8.3.2. Performance criterion: **B**

8.4. EUT Configuration

The following equipments are installed on Electrical Fast Transient/Burst Immunity Measurement to meet EN 55020 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

8.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5, except the test set up replaced by Section 8.1.

8.6. Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

8.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

8.6.2. For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

8.6.3. For DC output line ports:

It's unnecessary to test.

8.7. Measuring Results

PASS

Test data see following pages

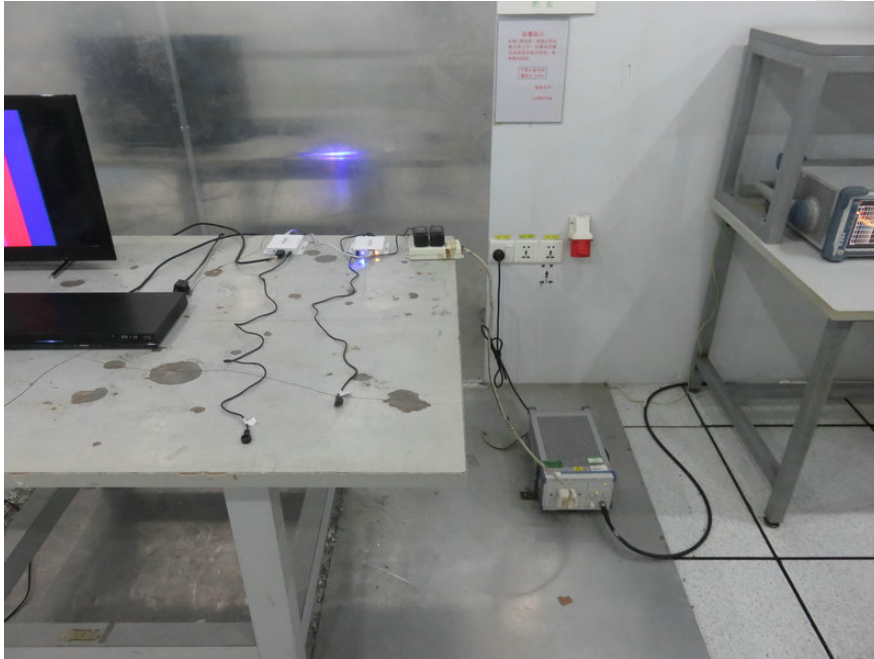
Electrical Fast Transient/Burst Test Results

Shenzhen Anbotek Compliance Laboratory Limited

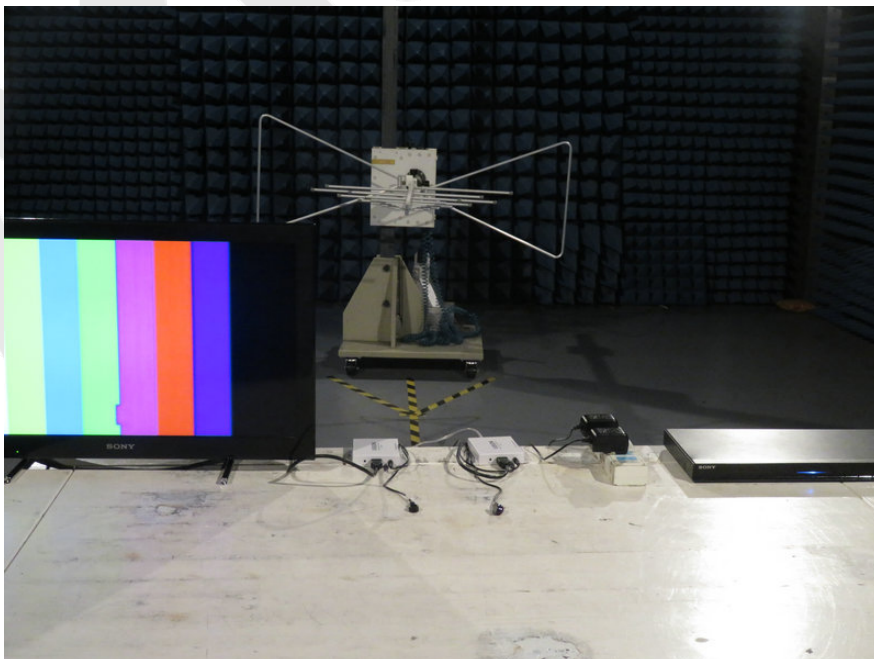
Ambient Condition : <u>24°C</u> <u>55% RH</u>		Criterion required : B	
Power Supply : DC 5V via adapter AC 230V, 50Hz		Test Result : <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	
Inject Line : AC Mains		Inject Method: Direct	Inject Time(s): 120
Line	Polarity	Test Voltage	Result
L	±	1kV	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D
N	±	1kV	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D
PE			
L、N	±	1kV	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D
L、PE			
N、PE			
L、N、PE			
Signal Line			
DC Line			
Note :			
Remark:			

9. PHOTOGRAPH

9.1. Photo of Power Line Conducted Emission Test



9.2. Photo of Radiated Emission Test



9.3. Photo of Flicker/ Harmonic Test



9.4. Photo of Electrostatic Discharge Immunity Test



9.5. Photo of Electrical Fast Transient/Burst Immunity Test



APPENDIX I
(Photos of EUT)

Figure 1
The EUT- Overall View



Figure 2
The EUT- Top View



Figure 3
The EUT- Bottom View



Figure 4
The EUT- Side View



Figure 5
The EUT- Side View



Figure 6
The EUT- Side View

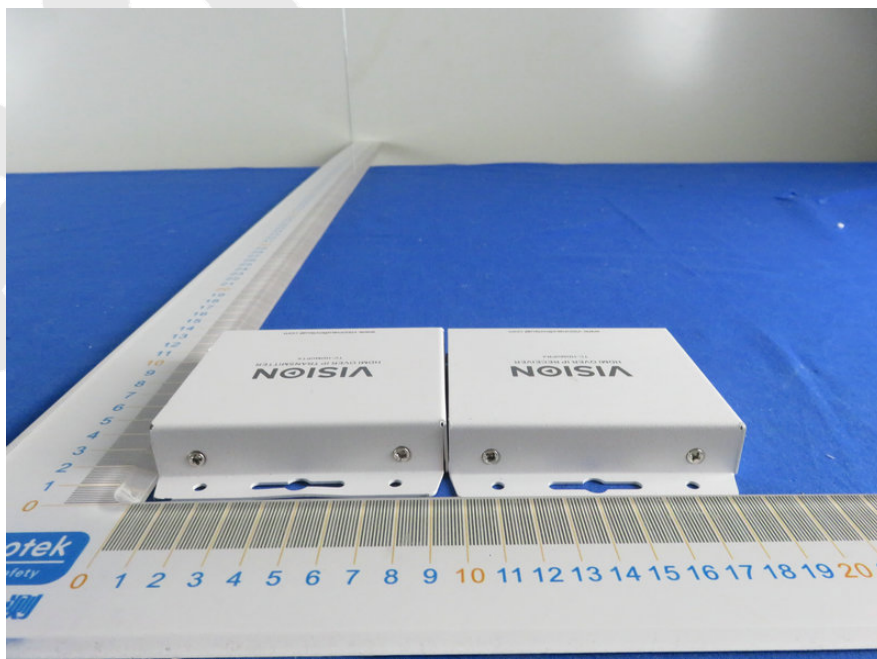


Figure 7
PCB of The EUT View

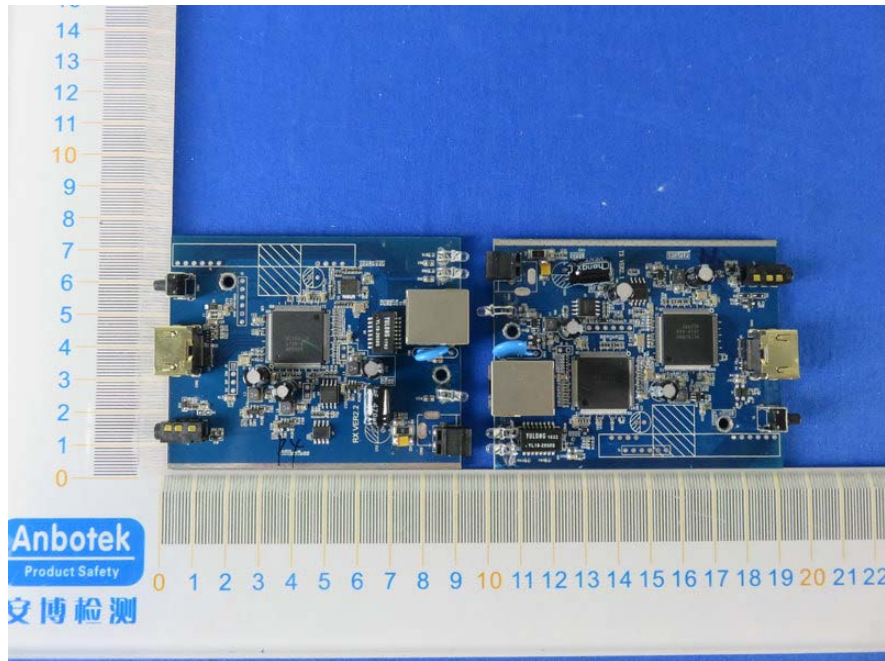
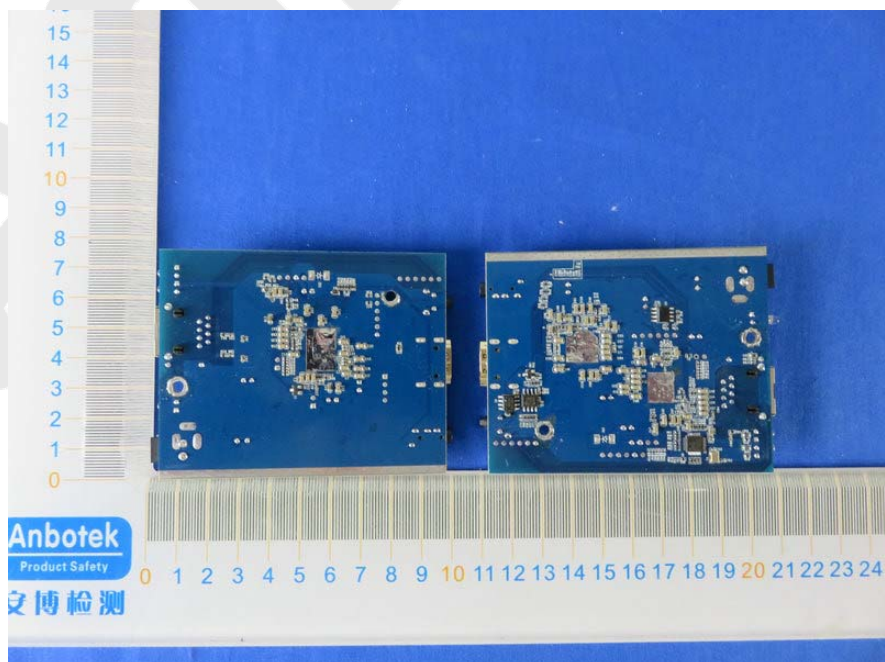


Figure 8
PCB of The EUT View



CE Label

1. The CE conformity marking must consist of the initials 'CE' taking the following form:
If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
2. The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.
3. The CE marking must be affixed to the product or to its data plate. Additionally it must be affixed to the packaging, if any, and to the accompanying documents.
4. The CE marking must be affixed visibly, legibly and indelibly.
It must have the same height as the initials 'CE'.

Anbotek