

Application for FCC Certificate
On Behalf of

TTE Technology, Inc.

LCD TV

Model Number: 32S321

Additional Model: 32S325, 32S323, 32S325-MX, 32S325-CA

FCC ID: W8U32S321

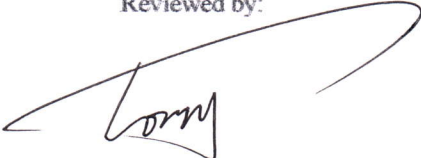
Prepared for:	TTE Technology, Inc.
	2455 Anselmo Drive Suite 101 Corona California United States
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
	Tel: 86-769-83081888-808

Report Number:	ESTE-F1806007
Date of Test:	May 30~Jun. 04, 2018
Date of Report:	Jun. 04, 2018

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EST Technology Co., Ltd.

Applicant:	TTE Technology, Inc.		
Address:	2455 Anselmo Drive Suite 101 Corona California United States		
Manufacturer	TCL King Electrical Appliances(Huizhou) Co.,Ltd.		
Address:	Section19,ZhongKai New and High-tech Industries Development Zone,Huizhou.Guangdong,P.R.China		
E.U.T:	LCD TV		
Model Number:	32S321		
Additional Model:	32S325, 32S323, 32S325-MX, 32S325-CA (They are identical except model name only.)		
Trade Name:	TCL	Serial No.:	-----
Date of Receipt:	May 30, 2018	Date of Test:	May 30~Jun. 04, 2018
Test Specification:	FCC Rules and Regulations Part 15 Subpart B:2017 ANSI C63.4:2014		
Test Result:	The device described above is tested by EST Technology Co., Ltd.. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart B requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.		
		Issue Date: Jun. 04, 2018	
Prepared by:	Reviewed by:	Approved by:	
 Ring / Assistant	 Tony / Engineer	 Iceman Hu / Manager	
Other Aspects:			
None.			
Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested			

1. GENERAL PRODUCT INFORMATION

1.1. Product Function

Refer to Technical Construction Form and User Manual.

1.2. Description of Device (EUT)

Description : LCD TV
 Model No. : 32S321
 Screen No. A05-8
 System Input Voltage : AC 120V/60Hz
 Power : 45W

1.3. Difference between Model Numbers

Note: The Product only different model number,
 But the PCB board inside are identical.

1.4. Independent Operation Modes

1.4.1. Conducted Modes

1	ATSC (CH2/34/69)	
2	NTSC (CH2/14/125)	
3	USB Play	
4	AV IN	Worst case
5	HDMI (1920*1080/1600*900/800*600)	
Note: The worst case will be recorded in this report.		

1.4.2. Radiated Modes

30MHz~1GHz		
1	ATSC (CH2/34/69)	
2	NTSC (CH2/14/125)	
3	USB Play	Worst case
4	AV IN	
5	HDMI (1920*1080/1600*900/800*600)	
Above 1GHz		
1	ATSC (CH2/34/69)	
2	NTSC (CH2/14/125)	
3	USB Play	
4	AV IN	Worst case
5	HDMI (1920*1080/1600*900/800*600)	
Note: The worst case will be recorded in this report.		

2. TEST SITES

2.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC Rules and Regulations Part 15 Subpart B:2017 ANSI C63.4:2014	15.107(a) Class B	PASS
		Minimum passing margin is 7.42dB at 7.69MHz	
Radiated Emission Test	FCC Rules and Regulations Part 15 Subpart B:2017 ANSI C63.4:2014	15.109(a) Class B	PASS
		Minimum passing margin is 6.60dB at 147.370MHz for 30-1000MHz; Minimum passing margin is 10.06dB at 2690MHz for above 1GHZ;	

2.2. Test Facilities

EMC Lab	:	Certificated by CNAS, CHINA Registration No.: L5288 Date of registration: November 13, 2017 Certificated by A2LA, USA Registration No.: 4366.01 Date of registration: November 07, 2017 Certificated by FCC, USA Designation Number: CN1215 Registration No.: 722932 Date of registration: November 21, 2017 Certificated by Industry Canada Registration No.: 9405A Date of registration: December 03, 2015 Certificated by VCCI, Japan Registration No.: R-13663; C-14103 Date of registration: July 25, 2017 This Certificate is valid until: July 24, 2020 Certificated by TUV Rheinland, Germany Registration No.: UA 50195514 0001 Date of registration: February 07, 2015 Certificated by TUV/PS, Shenzhen Registration No.: SCN1017 Date of registration: January 27, 2011 Certificated by Intertek ETL SEMKO Registration No.: 2011-RTL-L2-64 Date of registration: April 28, 2011 Certificated by Nemko, Hong Kong Registration No.: 175193 Date of registration: May 4, 2011
Name of Firm	:	EST Technology Co., Ltd.
Site Location	:	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

2.3. List of Test and Measurement Instruments

2.3.1. For conducted emission at the mains terminals test (844 Room)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	June 17,17	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	101260	June 17,17	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	June 17,17	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

2.3.2. For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	101780	June 17,17	1 Year
Bilog Antenna	Teseq	CBL 6111D	37062	June 08,17	1 Year
Horn Antenna	SCHWARZBECK	BBHA9120D	8128-290	June 08,17	3 Year
Signal Amplifier	SCHWARZBECK	BBV9718	9718-212	June 08,17	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

Note: All calibration reports of the equipment were provided by CEPREI calibration and Test Center

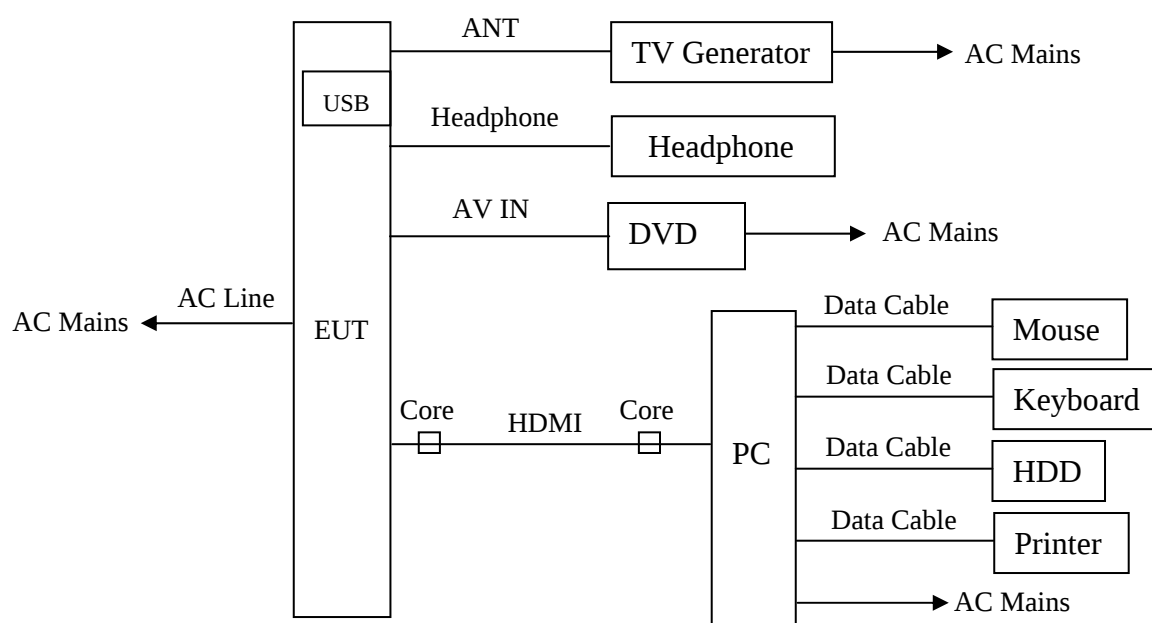
3. TEST SET-UP AND OPERATION MODES

3.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(EUT: LCD TV)

A	AC Line	Unshielded, Undetachable 1.5m
B	AV IN	Unshielded, Detachable 1.2m
C	Headphone	Shielded, Detachable 1.2m
D	HDMI	Shielded, Detachable 1.2m

3.3. Test Operation Mode and Test Software

Refer to Test Setup in clause 4.

3.4. Special Accessories and Auxiliary Equipment

3.4.1. DELL PC (4K)

M / N : Precision Tower 3620
S / N : 23TH6H2
Manufacturer : DELL

3.4.2. Keyboard

M / N : L100
S / N : CN-0RH656-65890-01M-070T
Manufacturer : Dell
Data Cable : Shielded, Undetachable, 1.8m

3.4.3. Mouse

M / N : L100
S / N : CN-0RH656-65890-01M-070T
Manufacturer : Dell
Data Cable : Shielded, Undetachable, 1.8m

3.4.4. Printer

M / N : HP LaserJet 1020 Plus
Manufacturer : HP
AC Line : Unshielded, Detachable 1.2m
USB Line : Unshielded, Detachable 1.2m

3.4.5. iPod

M / N : A1238
S / N : 8K044D2Z9ZU
Manufacturer : Apple

3.4.6. U Disc

M / N : SDCZ7-4096
S / N : BH0701AGOB
Manufacturer : SanDisk

3.4.7. TV Generator

M / N : SFE
S / N : 121120
Manufacturer : R&S
Data Cable : Shielded, Detachable, 1.6m

3.4.8. Headphone

M / N : K800
S / N : K6325HP-C
Manufacturer : HP
Data Cable : Shielded, Detachable, 1.2m

3.5. Countermeasures to Achieve EMC Compliance

None.

4. EMISSION TEST RESULTS

4.1. Conducted Emission at the Mains Terminals Test

RESULT : **Pass**
 Test Procedure : ANSI C63.4:2014
 Frequency Range : 0.15 to 30MHz
 Test Site : Shielded Room
 Limits : FCC Part 15:2017 Class B

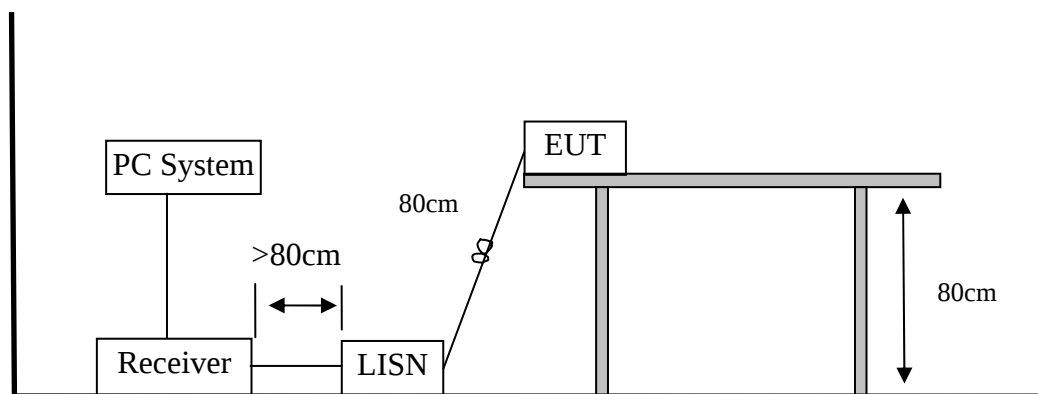
Test Setup

Date of Test : May 28, 2018
 M/N : 32S321
 Input Voltage : AC 120V/60Hz
 Operation Mode : HDMI

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

The bandwidth of the test receiver was set at 9 kHz.

The test data of the worst case condition(s) was reported on the following page.



Note: Measurement Uncertainty: ± 3.48 dB at a level of confidence of 95%.

Test Data

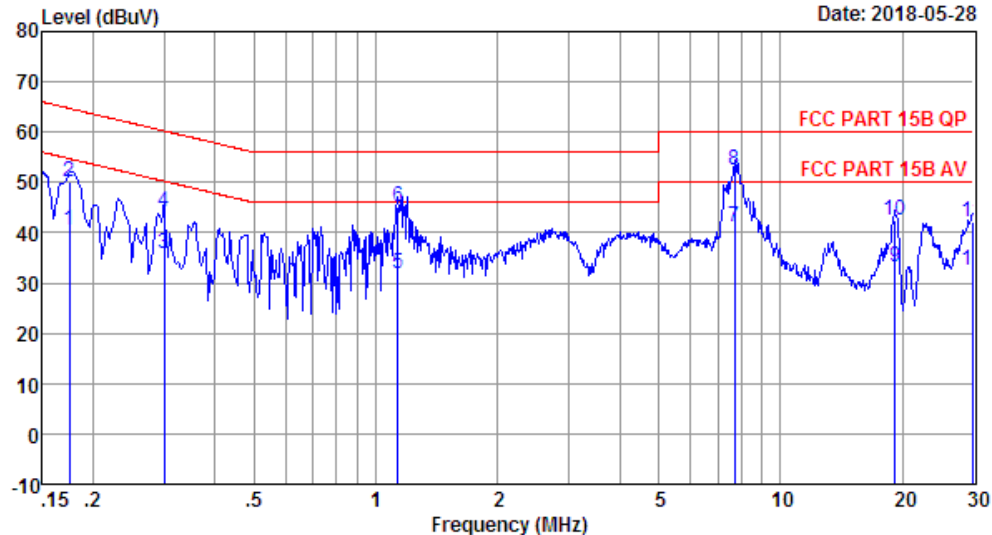
EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan, Guangdong, China
Tel: +86-769-83081888
Fax: +86-769-83081878

Data: 211

File: \\Emc-ce-2\Test Data\2018\TCL\EM6 (380)

Date: 2018-05-28



Site no : 2# Conduction Shield Room Data no. : 211
 Env. / Ins. : Temp:25.1°C Humi:51% Press:101.50kPa LINE Phase : LINE
 Limit : FCC PART 15B QP
 Engineer : Bible
 EUT : LCD TV
 Power : AC 120V/60Hz
 M/N : 32S321
 Test Mode : AV IN
 Screen NO:A05-F

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17	9.67	0.04	30.81	40.52	54.72	14.20	Average
2	0.17	9.67	0.04	40.42	50.13	64.72	14.59	QP
3	0.30	9.71	0.04	26.11	35.86	50.24	14.38	Average
4	0.30	9.71	0.04	34.25	44.00	60.24	16.24	QP
5	1.14	9.80	0.06	22.01	31.87	46.00	14.13	Average
6	1.14	9.80	0.06	35.31	45.17	56.00	10.83	QP
7	7.69	9.88	0.08	31.12	41.08	50.00	8.92	Average
8	7.69	9.88	0.08	42.62	52.58	60.00	7.42	QP
9	19.22	9.94	0.09	23.12	33.15	50.00	16.85	Average
10	19.22	9.94	0.09	32.43	42.46	60.00	17.54	QP
11	30.00	9.94	0.09	22.42	32.45	50.00	17.55	Average
12	30.00	9.94	0.09	31.99	42.02	60.00	17.98	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. If the average limit is met when using a quasi-peak detector,
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

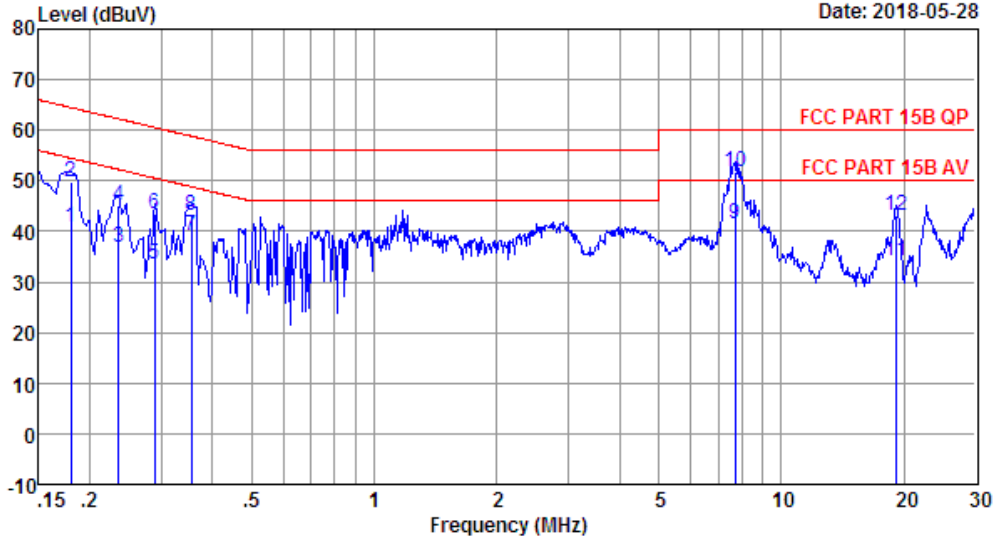
EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan, Guangdong, China
Tel: +86-769-83081888
Fax: +86-769-83081878

Data: 213

File: \\Emc-ce-2\Test Data\2018\TCL\EM6 (380)

Date: 2018-05-28



Site no : 2# Conduction Shield Room Data no. : 213
 Env. / Ins. : Temp:25.1°C Humi:51% Press:101.50kPa LINE Phase : NEUTRAL
 Limit : FCC PART 15B QP
 Engineer : Bible
 EUT : LCD TV
 Power : AC 120V/60Hz
 M/N : 32S321
 Test Mode : AV IN
 Screen NO:A05-F

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.18	9.66	0.04	31.03	40.73	54.50	13.77	Average
2	0.18	9.66	0.04	40.16	49.86	64.50	14.64	QP
3	0.24	9.68	0.04	26.97	36.69	52.26	15.57	Average
4	0.24	9.68	0.04	35.46	45.18	62.26	17.08	QP
5	0.29	9.68	0.04	23.74	33.46	50.54	17.08	Average
6	0.29	9.68	0.04	33.61	43.33	60.54	17.21	QP
7	0.36	9.72	0.05	29.45	39.22	48.83	9.61	Average
8	0.36	9.72	0.05	33.53	43.30	58.83	15.53	QP
9	7.69	9.95	0.08	31.52	41.55	50.00	8.45	Average
10	7.69	9.95	0.08	41.88	51.91	60.00	8.09	QP
11	19.22	10.13	0.09	23.82	34.04	50.00	15.96	Average
12	19.22	10.13	0.09	33.03	43.25	60.00	16.75	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. If the average limit is met when using a quasi-peak detector,
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

4.2. Radiated Emission Test

RESULT : **Pass**
Test Procedure : ANSI C63.4:2014
Frequency Range : 30-1000 MHz;1-6 GHz
Test Site : 966 Chamber
Limits : FCC Part 15:2017 Class B

Test Setup

Date of Test : May 28, 2018
M/N : 32S321
Input Voltage : AC 120V/60Hz
Operation Mode : HDMI

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

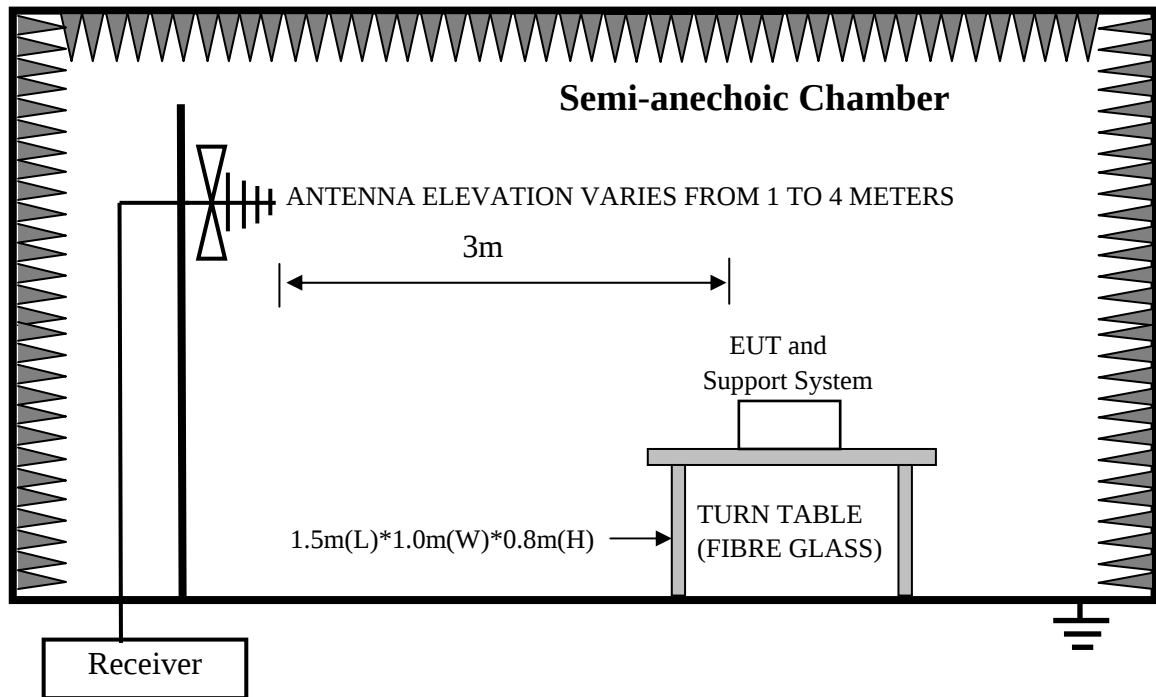
The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth setting on the test receiver was 120 kHz.

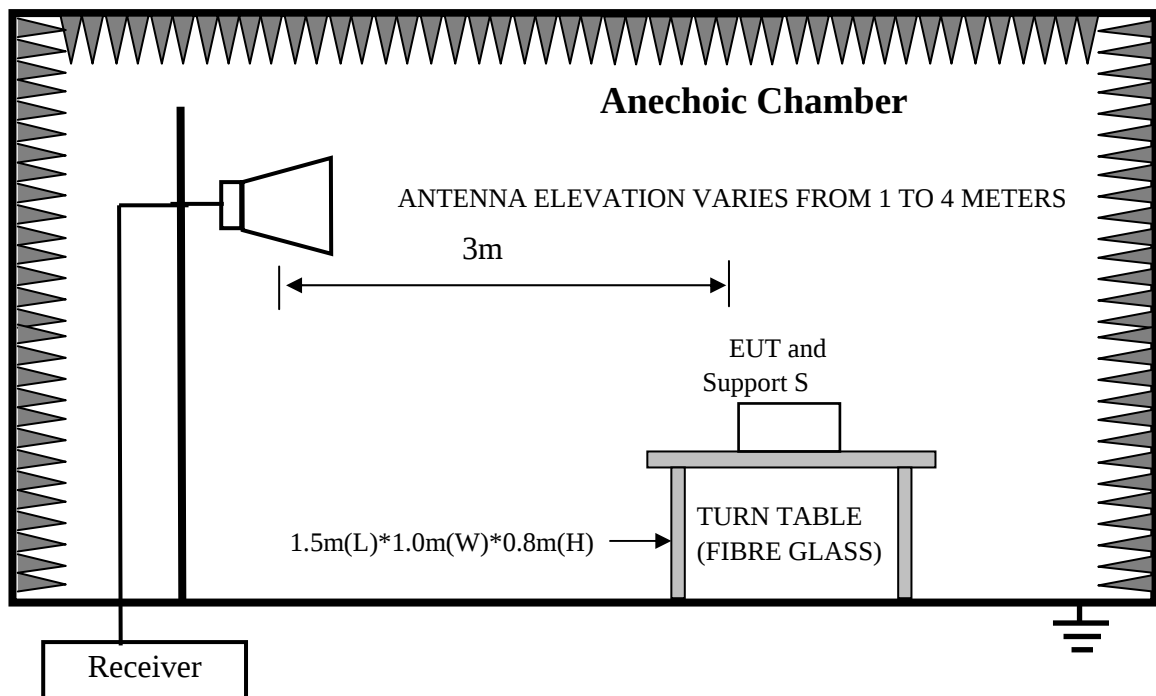
The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

The test data of the worst case condition(s) was reported on the following page.

1、 In Semi-anechoic Chamber Test Setup Diagram for 30MHz~1000MHz



2、 In Anechoic Chamber Test Setup Diagram for 1-6GHz



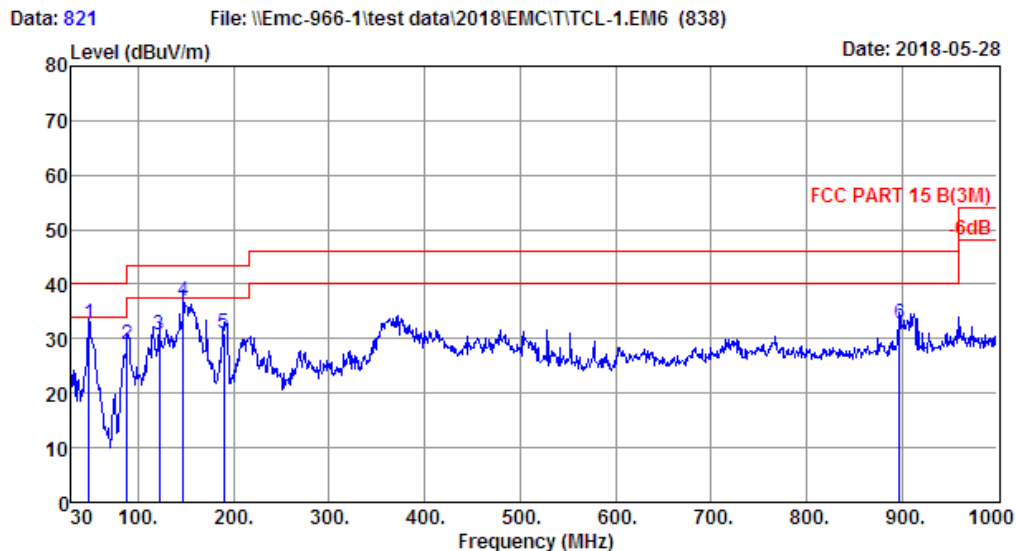
Note: Test uncertainty: ± 4.6 dB (H); ± 4.68 dB (V) at a level of confidence of 95%(30MHz ~ 1GHz); Test uncertainty: ± 4.96 dB at a level of confidence of 95%(Above 1GHz).

Test Data

30MHz-1GHz

EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan, Guangdong, China
Tel: +86-769-83081888
Fax: +86-769-83081878



Site no. : site Data no. : 821
 Dis. / Ant. : 3m 37062 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:26.2'; Humi:54.1%; Press:101.52kPa
 Engineer : Bible
 EUT : LCD TV
 Power : AC 120V/60Hz
 M/N : 32S321
 Test Mode : USB Play
 Screen No: A05-F

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	48.43	9.10	0.46	23.17	32.73	40.00	7.27	QP
2	88.20	8.56	1.02	19.36	28.94	43.50	14.56	QP
3	122.15	11.68	1.13	17.86	30.67	43.50	12.83	QP
4	147.37	11.72	1.29	23.89	36.90	43.50	6.60	QP
5	190.05	8.60	1.43	20.94	30.97	43.50	12.53	QP
6	897.18	23.84	4.06	5.01	32.91	46.00	13.09	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

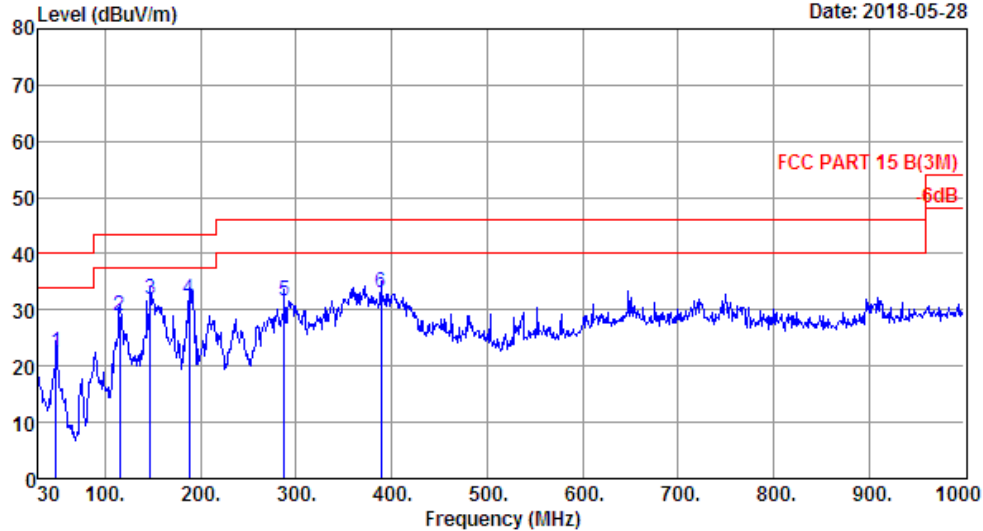
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Chilingxiang, Qishantou, Santun,
Houjie, Dongguan, Guangdong, China
Tel: +86-769-83081888
Fax: +86-769-83081878

Data: 822

File: \\Emc-966-1\test data\2018\EMC\TCL-1.EM6 (838)

Date: 2018-05-28



Site no. : 1# 966 Chamber Data no. : 822
 Dis. / Ant. : 3m 37062 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:26.2'; Humi:54.1%; Press:101.52kPa
 Engineer : Bible
 EUT : LCD TV
 Power : AC 120V/60Hz
 M/N : 32S321
 Test Mode : USB Play
 Screen No: A05-F

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	48.43	9.10	0.46	13.01	22.57	40.00	17.43	QP
2	115.36	11.30	1.12	16.51	28.93	43.50	14.57	QP
3	147.37	11.72	1.29	18.91	31.92	43.50	11.58	QP
4	188.11	8.76	1.47	21.61	31.84	43.50	11.66	QP
5	288.02	13.18	2.02	16.40	31.60	46.00	14.40	QP
6	388.90	15.77	2.34	15.03	33.14	46.00	12.86	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

Above 1GHz

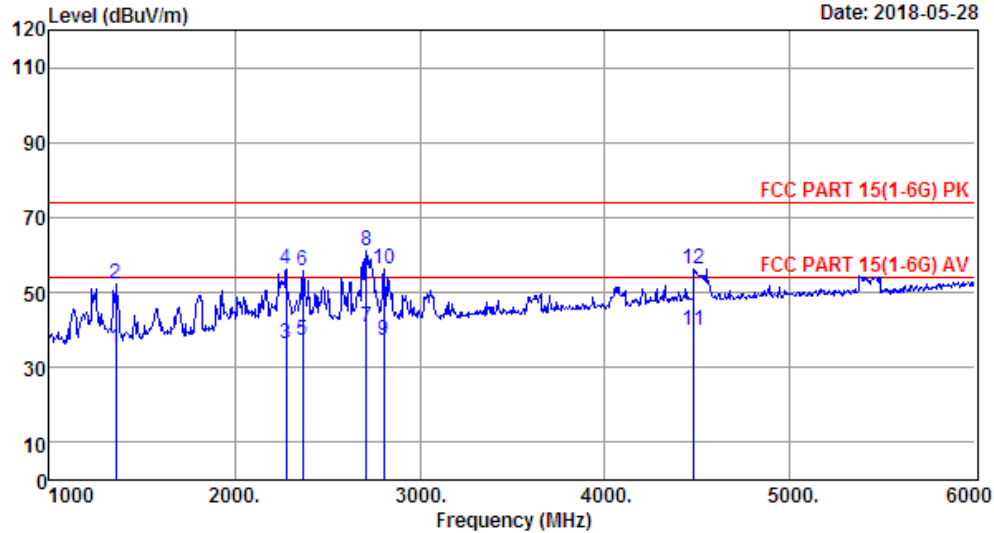
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Chilingxiang, Qishantou, Santun,
Houjie, Dongguan, Guangdong, China
Tel: +86-769-83081888
Fax: +86-769-83081878

Data: 53

File: \\Emc-966-1\\test data\\2018\\EMC\\TCL.EM6 (243)

Date: 2018-05-28



Site no. : 1# 966 Chamber Data no. : 53
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15(1-6G) PK
 Env. / Ins. : Temp:26.4°; Humi:52.4%; Press:101.52kPa
 Engineer : Bible
 EUT : LCD TV
 Power : AC 120V/60Hz
 M/N : 32S321
 Test Mode : AV IN

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1360.00	25.32	2.40	7.32	35.04	54.00	18.96	Average
2	1360.00	25.32	2.40	24.36	52.08	74.00	21.92	Peak
3	2280.00	27.06	3.10	6.26	36.42	54.00	17.58	Average
4	2280.00	27.06	3.10	25.91	56.07	74.00	17.93	Peak
5	2370.00	27.31	3.20	6.83	37.34	54.00	16.66	Average
6	2370.00	27.31	3.20	25.13	55.64	74.00	18.36	Peak
7	2710.00	27.95	3.46	9.12	40.53	54.00	13.47	Average
8	2710.00	27.95	3.46	29.70	61.11	74.00	12.89	Peak
9	2805.00	28.08	3.53	5.64	37.25	54.00	16.75	Average
10	2805.00	28.08	3.53	24.52	56.13	74.00	17.87	Peak
11	4480.00	31.46	4.68	3.80	39.94	54.00	14.06	Average
12	4480.00	31.46	4.68	20.08	56.22	74.00	17.78	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

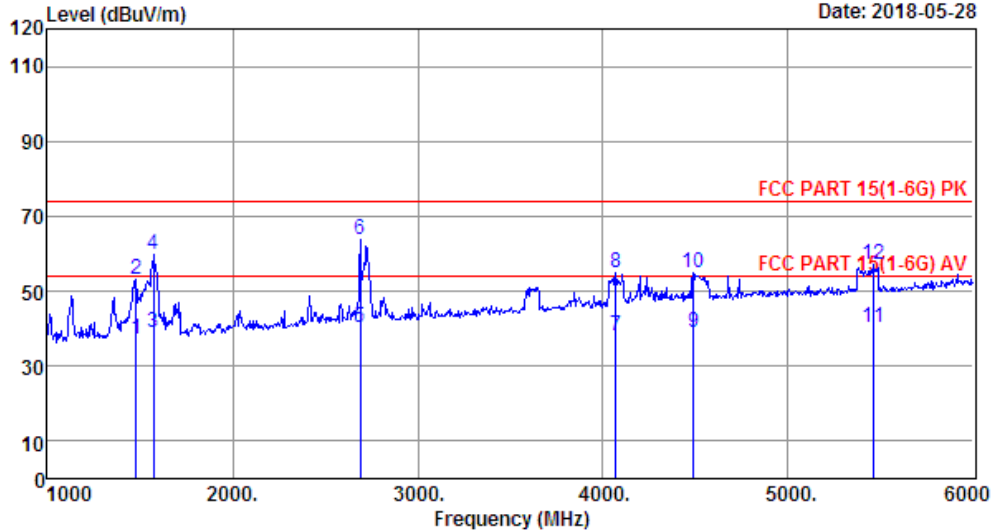
EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan, Guangdong, China
Tel: +86-769-83081888
Fax: +86-769-83081878

Data: 54

File: \\Emc-966-1\test data\2018\EMC\TTCLE.M6 (243)

Date: 2018-05-28



Site no. : 1# 966 Chamber Data no. : 54
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15(1-6G) PK
 Env. / Ins. : Temp:26.4'; Humi:52.4%; Press:101.52kPa
 Engineer : Bible
 EUT : LCD TV
 Power : AC 120V/60Hz
 M/N : 32S321
 Test Mode : AV IN

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1480.00	25.57	2.50	9.25	37.32	54.00	16.68	Average
2	1480.00	25.57	2.50	25.04	53.11	74.00	20.89	Peak
3	1575.00	25.73	2.55	10.67	38.95	54.00	15.05	Average
4	1575.00	25.73	2.55	31.31	59.59	74.00	14.41	Peak
5	2690.00	27.89	3.44	8.98	40.31	54.00	13.69	Average
6	2690.00	27.89	3.44	32.61	63.94	74.00	10.06	Peak
7	4070.00	30.50	4.30	3.33	38.13	54.00	15.87	Average
8	4070.00	30.50	4.30	20.00	54.80	74.00	19.20	Peak
9	4490.00	31.46	4.68	2.98	39.12	54.00	14.88	Average
10	4490.00	31.46	4.68	18.66	54.80	74.00	19.20	Peak
11	5460.00	32.94	5.09	2.43	40.46	54.00	13.54	Average
12	5460.00	32.94	5.09	19.22	57.25	74.00	16.75	Peak

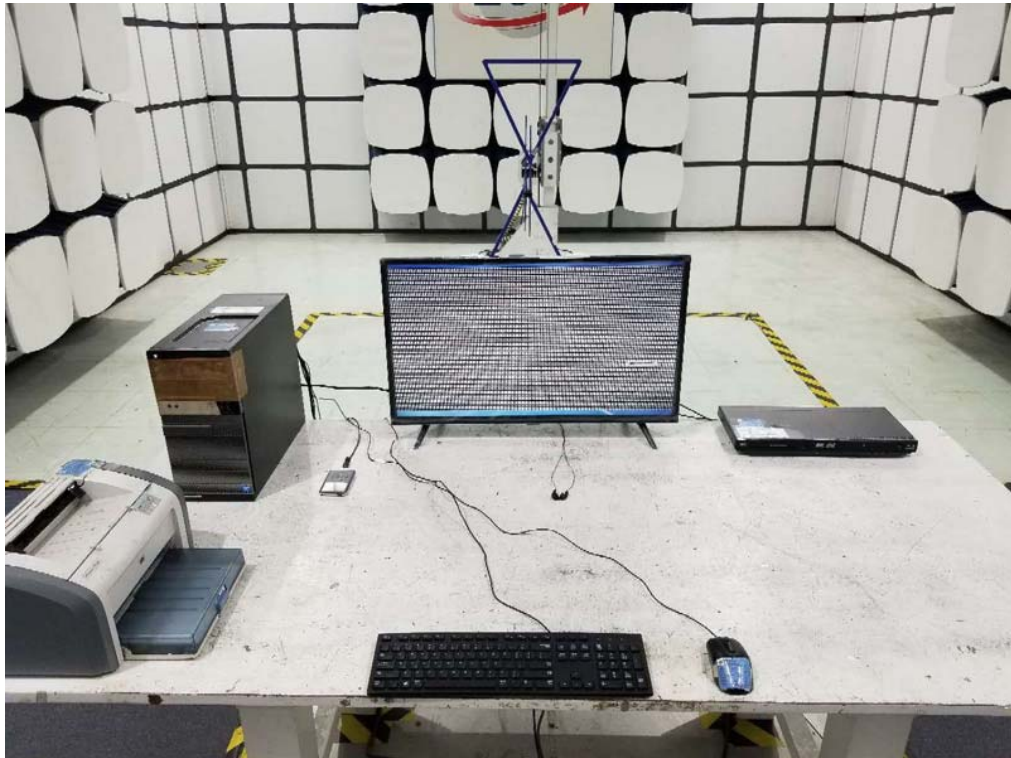
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

5. PHOTOGRAPHS OF TEST SET-UP

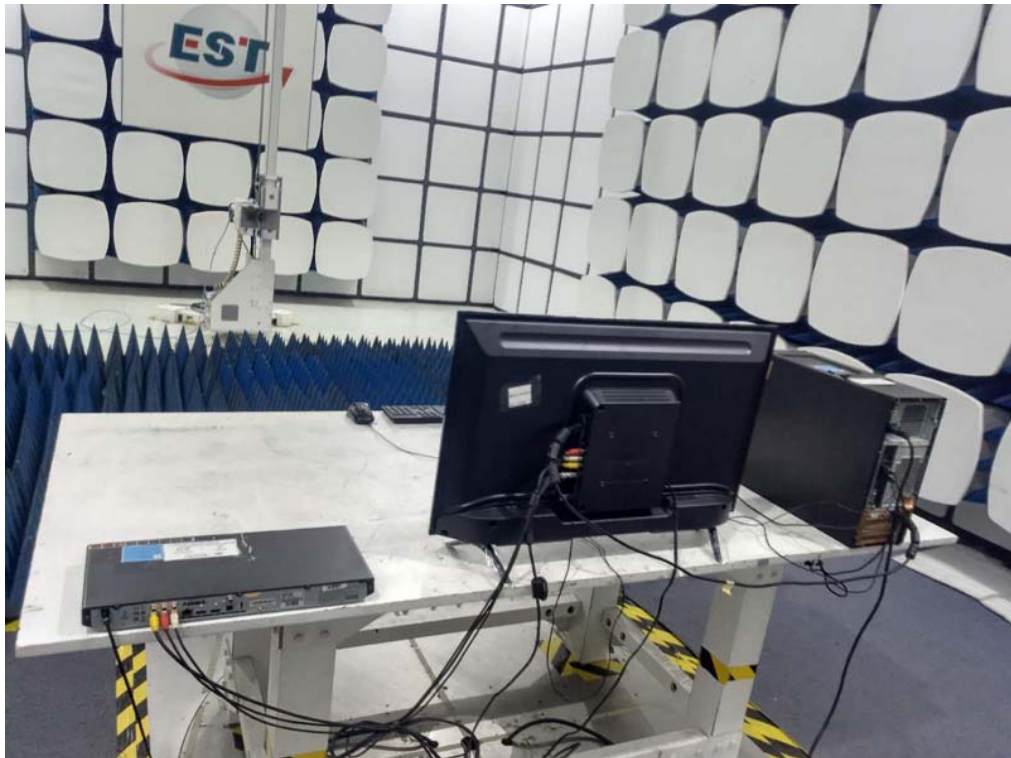
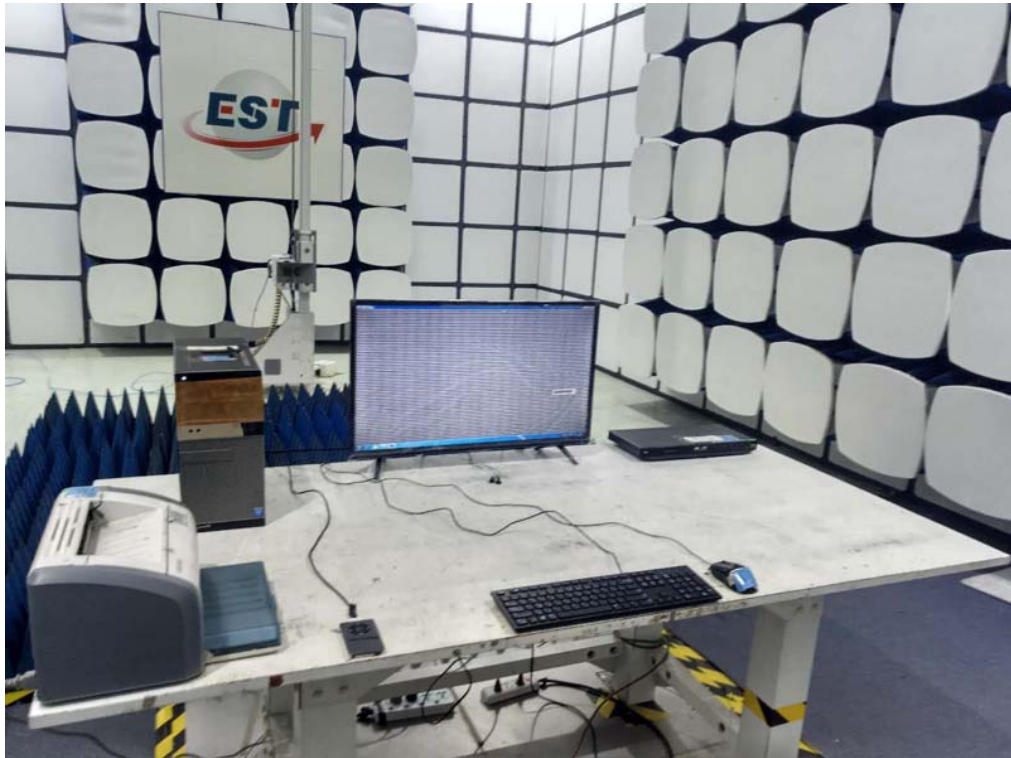
5.1. Set-up for conducted emission at the mains terminals test



5.2. Set-up for radiated emission test (30-1000MHz)



5.3. Set-up for radiated emission test (Above 1GHz)



6. PHOTOGRAPHS OF THE EUT

External Photos
M/N: 32S321



External Photos
M/N: 32S321



External Photos
M/N: 32S321



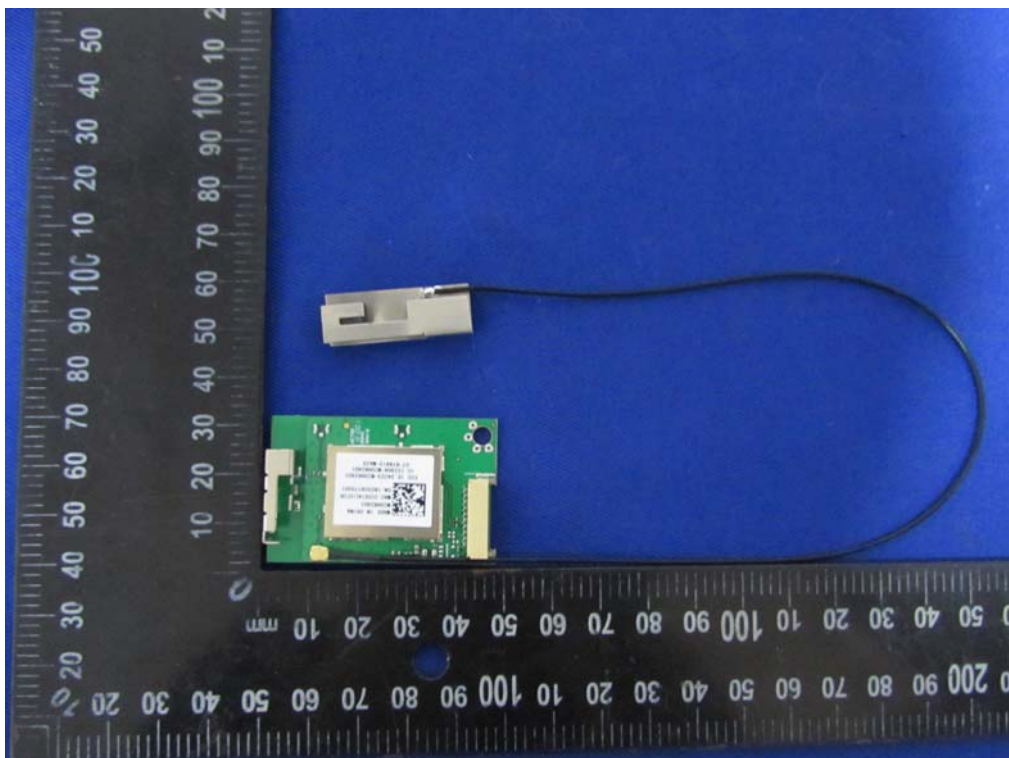
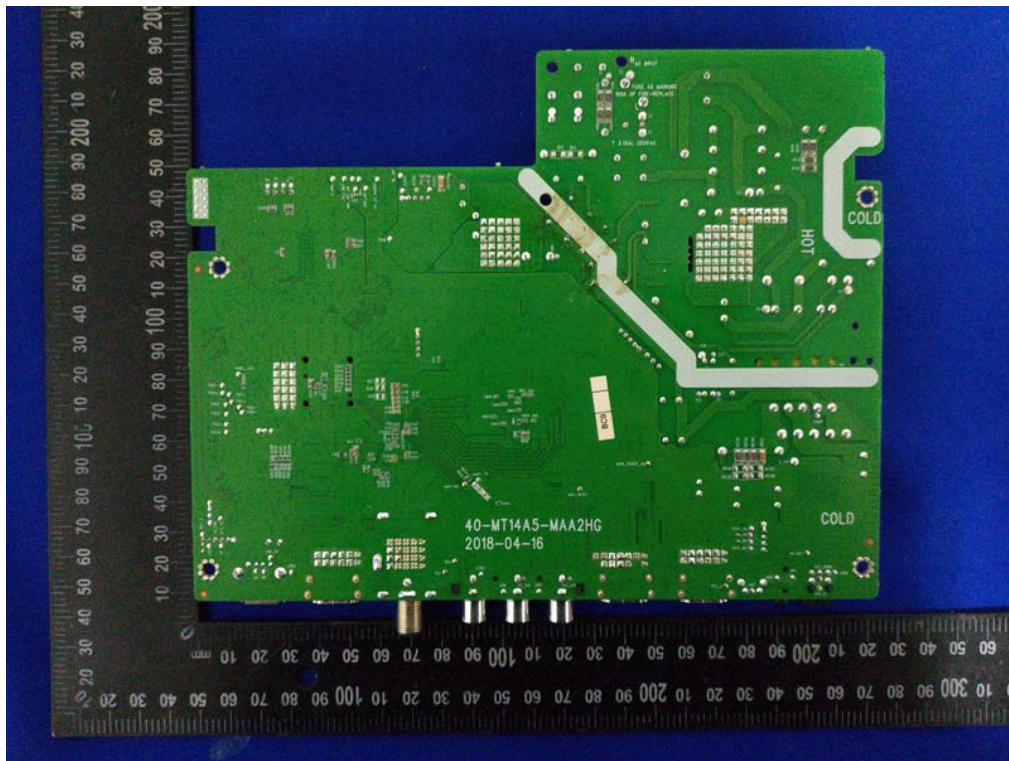
External Photos
M/N: 32S321



Internal Photos
M/N: 32S321



Internal Photos
M/N: 32S321



Internal Photos
M/N: 32S321

