

Application for FCC Certificate  
On Behalf of

TTE Technology, Inc.

LCD TV

Model Number: 49R81

Additional Model: 49D1800, 49RH1

FCC ID: W8U49R81

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-F1711049
Date of Test:	November 22~28, 2017
Date of Report:	November 29, 2017

## TABLE OF CONTENTS

Test Report Declaration	Page
<b>1. GENERAL PRODUCT INFORMATION .....</b>	<b>4</b>
1.1. Product Function .....	4
1.2. Difference between Model Numbers .....	4
1.3. Independent Operation Modes .....	4
<b>2. TEST SITES.....</b>	<b>5</b>
2.1. Description of Standards and Results.....	5
2.2. Test Facilities .....	6
2.3. List of Test and Measurement Instruments .....	7
<b>3. TEST SET-UP AND OPERATION MODES .....</b>	<b>8</b>
3.1. Principle of Configuration Selection.....	8
3.2. Block Diagram of Test Set-up.....	8
3.3. Test Operation Mode and Test Software.....	9
3.4. Special Accessories and Auxiliary Equipment .....	9
3.5. Countermeasures to Achieve EMC Compliance.....	9
<b>4. EMISSION TEST RESULTS.....</b>	<b>10</b>
4.1. Conducted Emission at the Mains Terminals Test.....	10
4.2. Radiated Emission Test.....	13
<b>5. PHOTOGRAPHS OF TEST SET-UP .....</b>	<b>19</b>
5.1. Set-up for conducted emission at the mains terminals test.....	19
5.2. Set-up for radiated emission test (30-1000MHz) .....	20
5.3. Set-up for radiated emission test (Above 1GHz) .....	21
<b>6. PHOTOGRAPHS OF THE EUT .....</b>	<b>22</b>



## EST Technology Co., Ltd.

<b>Applicant:</b>	TTE Technology, Inc.		
<b>Address:</b>	2455 Anselmo Drive Suite 101 Corona California United States		
<b>Manufacturer Address:</b>	TCL King Electrical Appliances (Huizhou) Co., Ltd Section 19, ZhongKai New and High-tech Industries Development Zone, Huizhou. Guangdong, P.R.China		
<b>E.U.T:</b>	LCD TV		
<b>Model Number:</b>	49R81		
<b>Additional Model:</b>	49D1800, 49RH1 Note: products are only different models and sales methods.		
<b>Trade Name:</b>	HITACHI, TCL	<b>Serial No.:</b>	-----
<b>Date of Receipt:</b>	November 22, 2017	<b>Date of Test:</b>	November 22~28, 2017
<b>Test Specification:</b>	FCC Rules and Regulations Part 15 Subpart B:2016 ANSI C63.4:2014		
<b>Test Result:</b>	<p>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.</p> <p style="text-align: right;"><b>Issue Date:</b> November 29, 2017</p>		
<b>Prepared by:</b>		<b>Reviewed by:</b>	
Amy / Assistant		Tony / Engineer	<b>Approved by:</b>  Iceman Hu / Manager
<b>Other Aspects:</b>	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. Difference between Model Numbers

Note: products are only different models and sales methods.

## 1.3. Independent Operation Modes

### 1.3.1. Conducted Modes

1	HDMI(3840*2160+Running "H" Pattern)	Worst case
2	HDMI(1920*1080+Running "H" Pattern)	
3	HDMI(800*600+Running "H" Pattern)	
4	Connect to PC	
Note: The worst case will be recorded in this report.		

### 1.3.2. Radiated Modes

30MHz~1GHz		
1	HDMI(3840*2160+Running "H" Pattern)	Worst case
2	HDMI(1920*1080+Running "H" Pattern)	
3	HDMI(800*600+Running "H" Pattern)	
4	Connect to PC	
Above 1GHz		
1	HDMI(3840*2160+Running "H" Pattern)	Worst case
2	HDMI(1920*1080+Running "H" Pattern)	
3	HDMI(800*600+Running "H" Pattern)	
4	Connect to PC	
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:2016 ANSI C63.4:2014	15.107(a) Class B	PASS
		Minimum passing margin is 11.46dB at 0.15MHz	
Radiated Emission Test	FCC Rules and Regulations Part 15 Subpart B:2016 ANSI C63.4:2014	15.109(a) Class B	PASS
		Minimum passing margin is 11.41dB at 115.360MHz for 30-1000MHz; Minimum passing margin is 11.47dB at 1590.00MHz for above 1GHZ;	



## 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 17,17	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

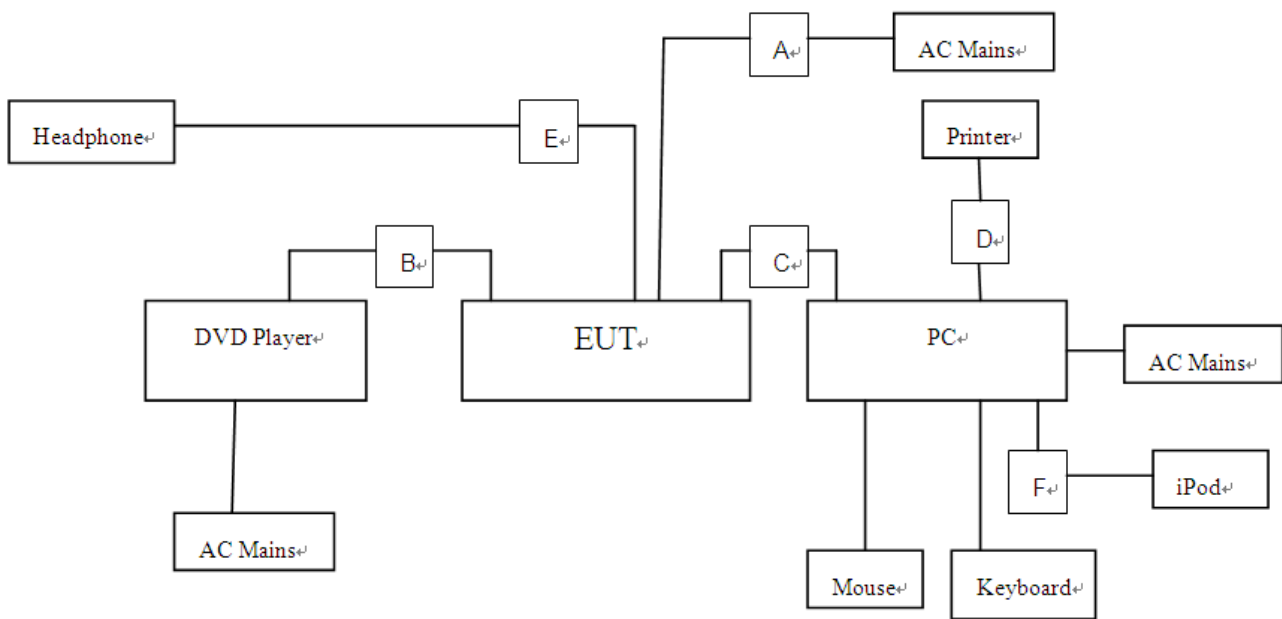
### 3. TEST SET-UP AND OPERATION MODES

#### 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 1.2m
B	AV IN	Unshielded, Detachable 1.2m
C	HDMI	Shielded, Detachable 1.2m
D	USB Cabel	Shielded, Detachable 1.8m
F	USB Cabel	Shielded, Detachable 1.0m



### 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. PC

M / N : VOSTRO  
Manufacturer : DELL  
Power Cord : Unshielded, Detachable, 1.6m

#### 3.4.2. DVD Player

M / N : DVDHDMI01  
Manufacturer : SAMWIN  
Data Cable : Shielded, Undetachable, 1.6m

#### 3.4.3. Printer

M / N : HP1020  
Manufacturer : HP  
Data Cable : Non-shielded, Detachable, 1.5m

#### 3.4.4. Mouse

M / N : MOL5VO  
S / N : JOQ03RNT  
Manufacturer : Dell  
cable : Shielded, Undetachable, 1.5m

#### 3.4.5. Keyboard

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

#### 3.4.6. iPod

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

### 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 15:2016 Class B

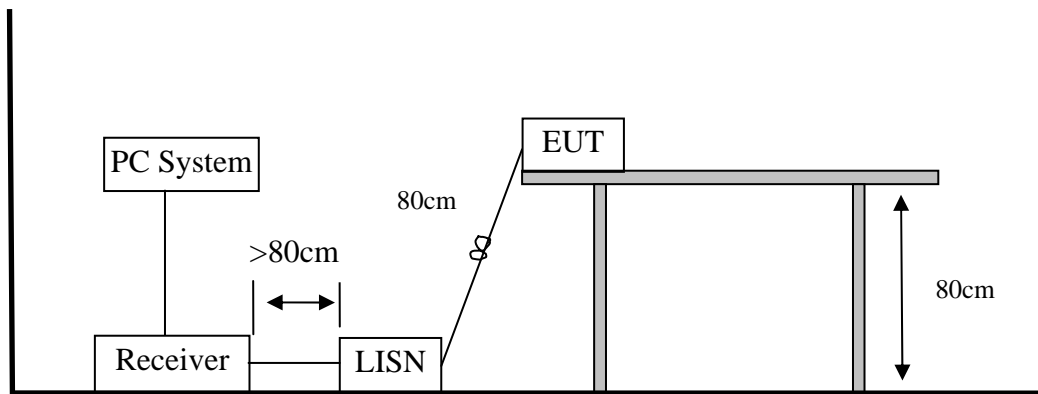
#### Test Setup

Date of Test : November 27, 2017  
M/N : 49R81  
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.



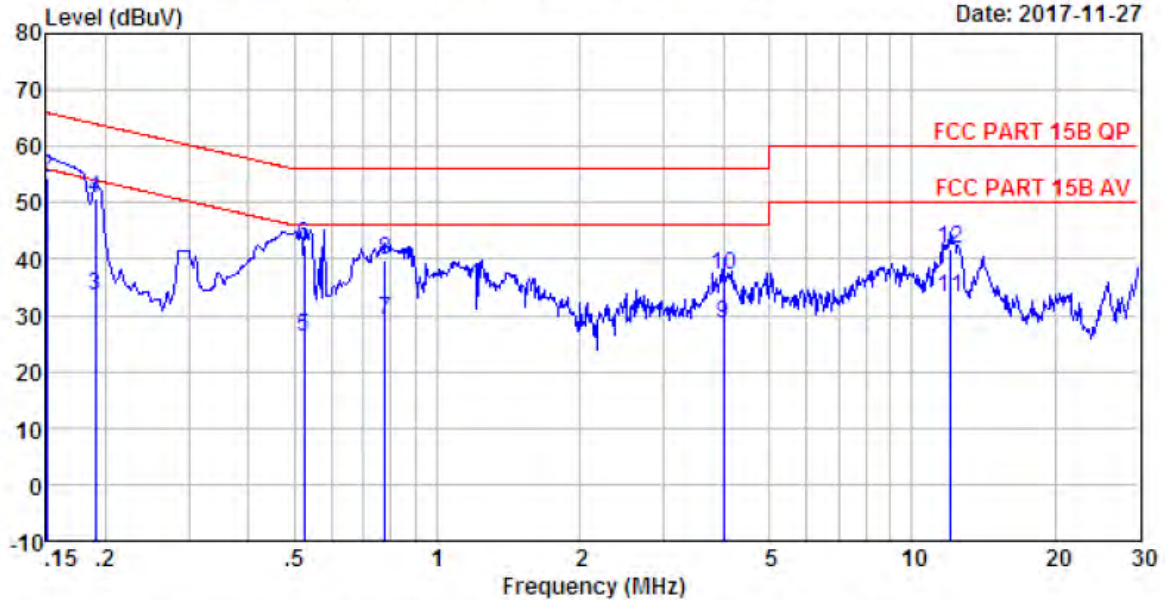
**Note: Measurement Uncertainty:  $\pm 3.48$  dB at a level of confidence of 95%.**

Test Data

EST Technology

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

Data: 512 File: \\Emc-ce-2\Test Data\2017\T\TCL-1.EM6 (547) Date: 2017-11-27



Site no. : 2# Conduction Shield Room Data no. : 512  
 Dis. / Ant. : Temp:20.2'C Humi:38% Press:101.50kPa Ant. pol. : NEUTRAL  
 Limit : FCC PART 15B QP  
 Env. / Ins. : Temp:20.2'C Humi:38% Press:101.50kPa  
 Engineer : Bible  
 EUT : LCD TV  
 Power : AC 120V/60Hz  
 M/N : 49R81  
 Test Mode : HDMI(3840\*2160+Running "H" Pattern)

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	9.64	0.04	32.54	42.22	56.00	13.78	Average
2	0.15	9.64	0.04	44.86	54.54	66.00	11.46	QP
3	0.19	9.66	0.04	23.87	33.57	54.02	20.45	Average
4	0.19	9.66	0.04	41.12	50.82	64.02	13.20	QP
5	0.52	9.76	0.05	16.32	26.13	46.00	19.87	Average
6	0.52	9.76	0.05	32.56	42.37	56.00	13.63	QP
7	0.78	9.80	0.05	19.22	29.07	46.00	16.93	Average
8	0.78	9.80	0.05	30.11	39.96	56.00	16.04	QP
9	4.01	9.89	0.07	18.52	28.48	46.00	17.52	Average
10	4.01	9.89	0.07	27.27	37.23	56.00	18.77	QP
11	12.00	10.02	0.08	22.97	33.07	50.00	16.93	Average
12	12.00	10.02	0.08	31.63	41.73	60.00	18.27	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.  
 2. 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.



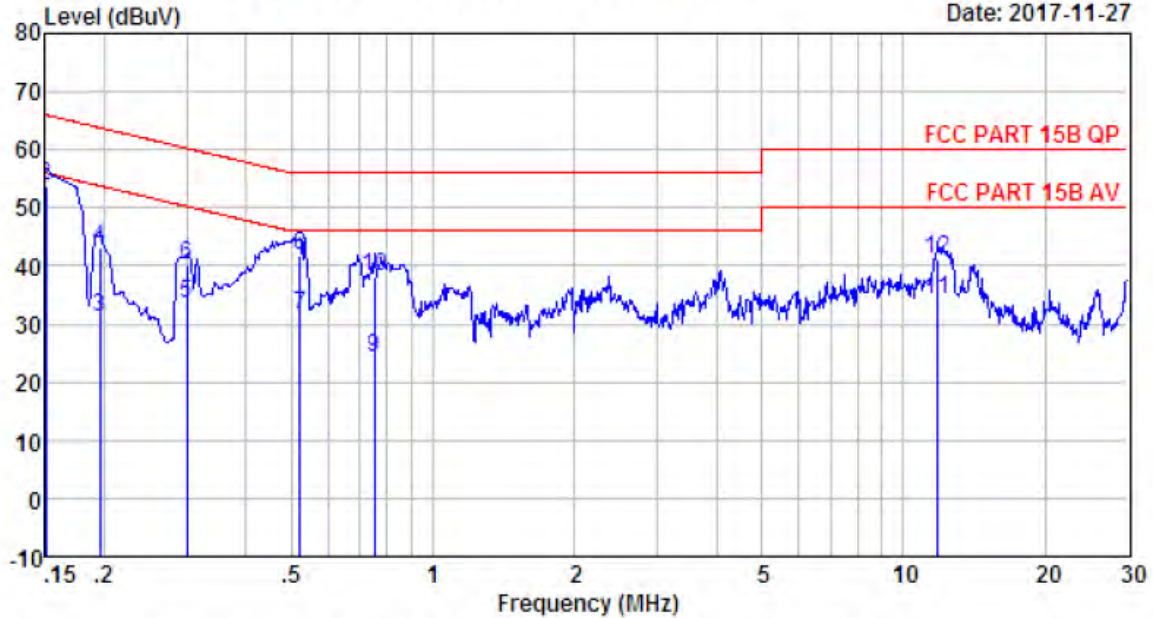
# EST Technology

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

Data: 514

File: \\Emc-ce-2\Test Data\2017\T\TCL-1.EM6 (547)

Date: 2017-11-27



Site no. : 2# Conduction Shield Room  
 Dis. / Ant. : Temp:20.2'C Humi:38% Press:101.50kPa  
 Limit : FCC PART 15B QP  
 Env. / Ins. : Temp:20.2'C Humi:38% Press:101.50kPa  
 Engineer : Bible  
 EUT : LCD TV  
 Power : AC 120V/60Hz  
 M/N : 49R81  
 Test Mode : HDMI(3840\*2160+Running "H" Pattern)

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	9.66	0.04	26.48	36.18	56.00	19.82	Average
2	0.15	9.66	0.04	44.20	53.90	66.00	12.10	QP
3	0.20	9.67	0.04	21.58	31.29	53.80	22.51	Average
4	0.20	9.67	0.04	33.55	43.26	63.80	20.54	QP
5	0.30	9.71	0.04	23.81	33.56	50.24	16.68	Average
6	0.30	9.71	0.04	30.28	40.03	60.24	20.21	QP
7	0.52	9.76	0.05	21.57	31.38	46.00	14.62	Average
8	0.52	9.76	0.05	32.08	41.89	56.00	14.11	QP
9	0.75	9.78	0.05	14.33	24.16	46.00	21.84	Average
10	0.75	9.78	0.05	28.26	38.09	56.00	17.91	QP
11	11.87	9.91	0.08	24.09	34.08	50.00	15.92	Average
12	11.87	9.91	0.08	31.08	41.07	60.00	18.93	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.  
 2. 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 15:2016 Class B

### Test Setup

Date of Test : November 27, 2017  
M/N : 49R81  
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.

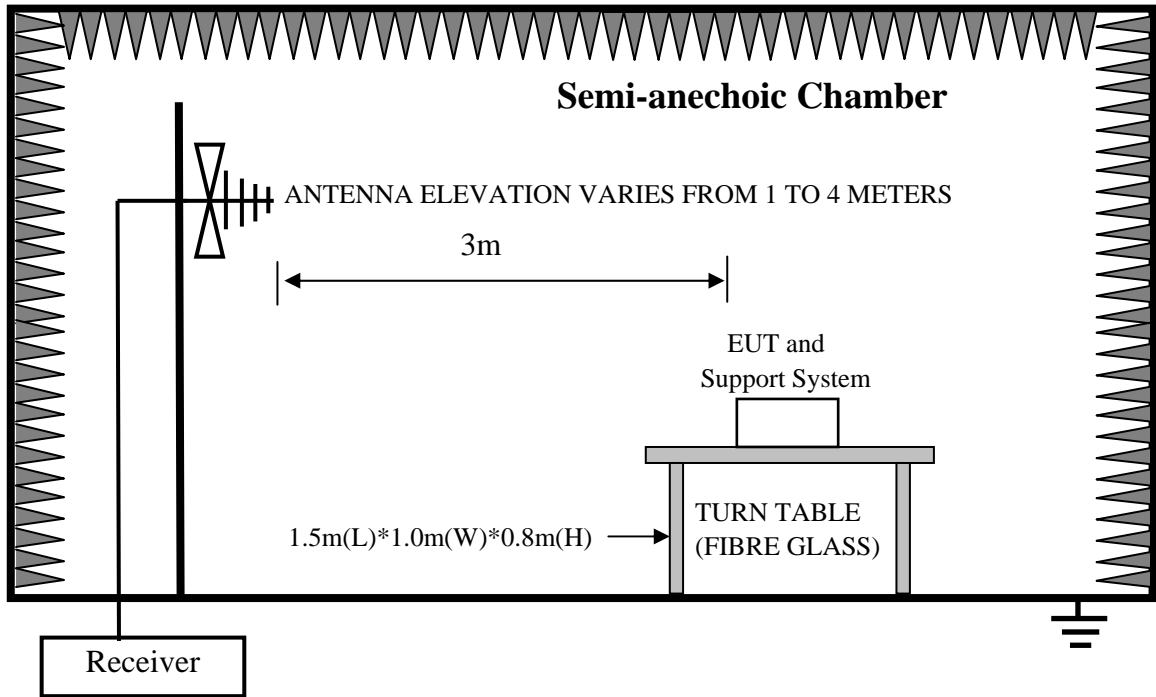
The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth setting on the test receiver was 120 kHz.

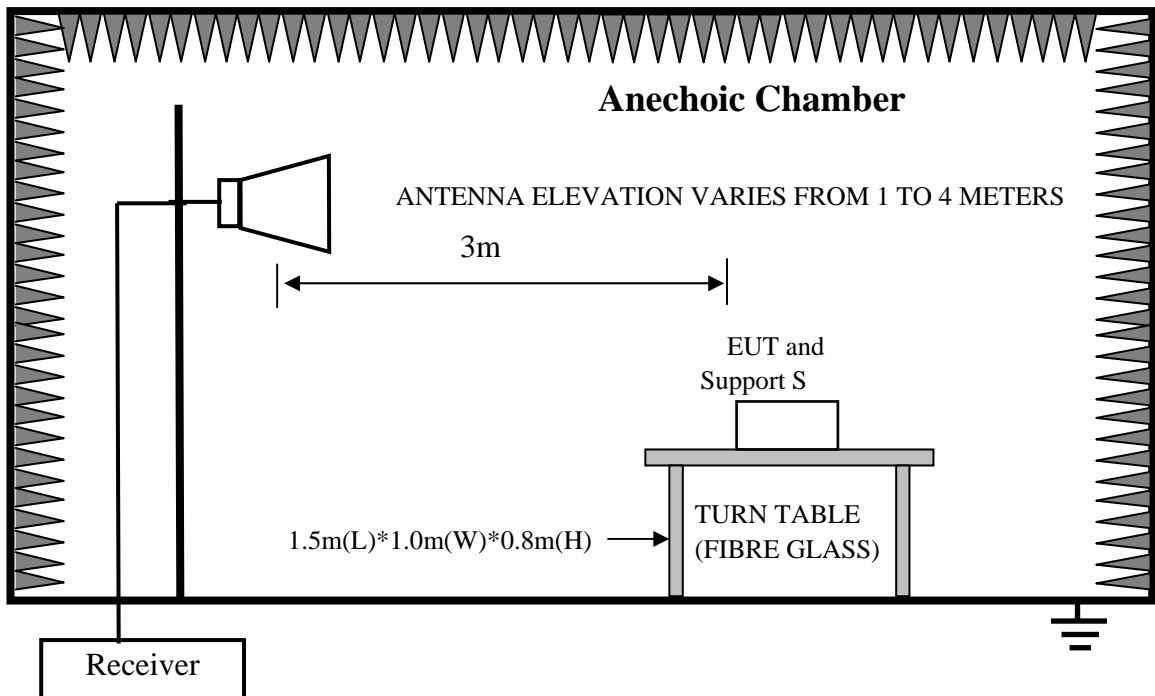
The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

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

Test Data

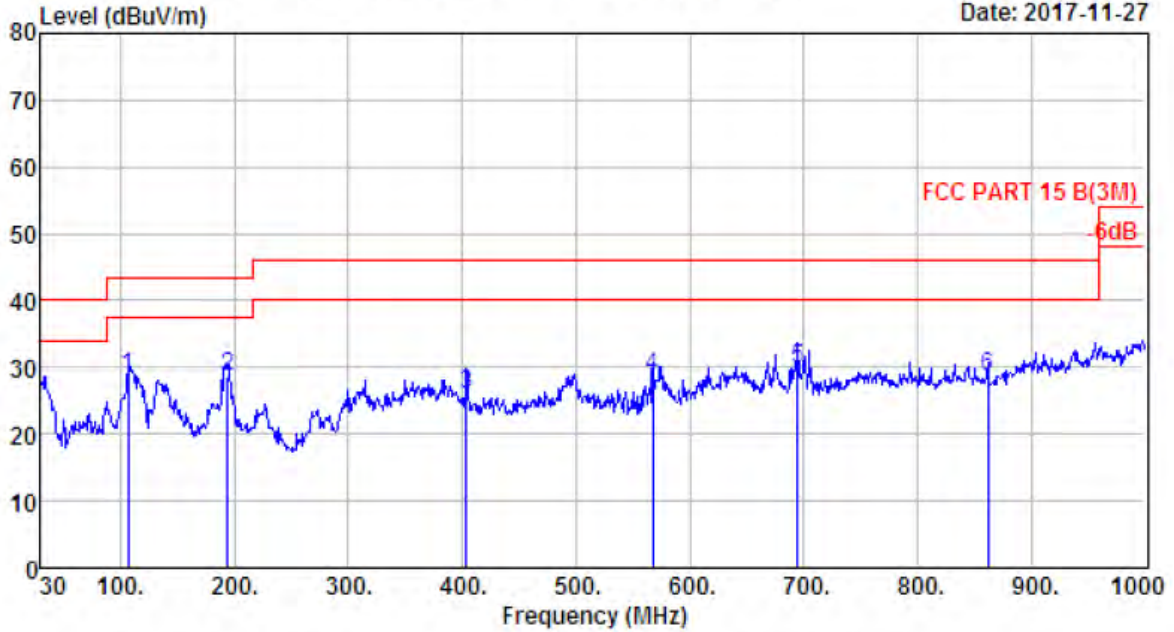
30MHz-1GHz

EST Technology

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

Data: 57 File: \\Emc-966-1\test data\2017\EMC\T\TCL-1.EM6 (86)

Date: 2017-11-27



Site no : 1# 966 Chamber Data no. : 57  
 Env. / Ins. : Temp:24.7'; Humi:52%; Press:101.52kPa LINE Phase : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Engineer : Bible  
 EUT : LCD TV  
 Power : AC 120V/60Hz  
 M/N : 49R81  
 Test Mode : HDMI(3840\*2160+Running "H" Pattern)

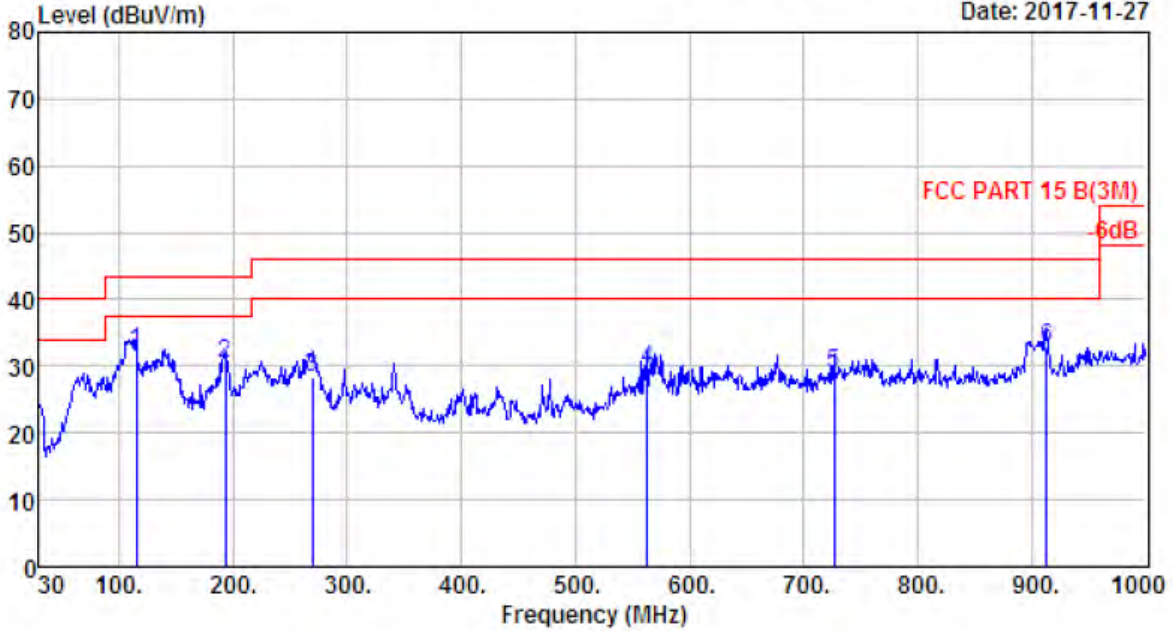
	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	106.630	10.60	1.10	17.08	28.78	43.50	14.72	QP
2	193.930	8.44	1.46	18.64	28.54	43.50	14.96	QP
3	403.450	16.11	2.30	7.49	25.90	46.00	20.10	QP
4	567.380	19.47	3.09	6.01	28.57	46.00	17.43	QP
5	694.450	21.25	3.47	4.98	29.70	46.00	16.30	QP
6	862.260	23.40	3.98	1.33	28.71	46.00	17.29	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.



Data: 58 File: \\Emc-966-1\test data\2017\EMC\T\TCL-1.EM6 (86)

Date: 2017-11-27



Site no : 1# 966 Chamber Data no. : 58  
 Env. / Ins. : Temp:24.7'; Humi:52%; Press:101.52kPa LINE Phase : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Engineer : Bible  
 EUT : LCD TV  
 Power : AC 120V/60Hz  
 M/N : 49R81  
 Test Mode : HDMI(3840\*2160+Running "H" Pattern)

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	115.360	11.30	1.12	19.67	32.09	43.50	11.41	QP
2	192.960	8.48	1.46	20.36	30.30	43.50	13.20	QP
3	269.590	13.10	1.93	13.25	28.28	46.00	17.72	QP
4	563.500	19.44	3.08	6.93	29.45	46.00	16.55	QP
5	726.460	21.63	3.70	3.61	28.94	46.00	17.06	QP
6	912.700	24.13	4.13	4.37	32.63	46.00	13.37	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.



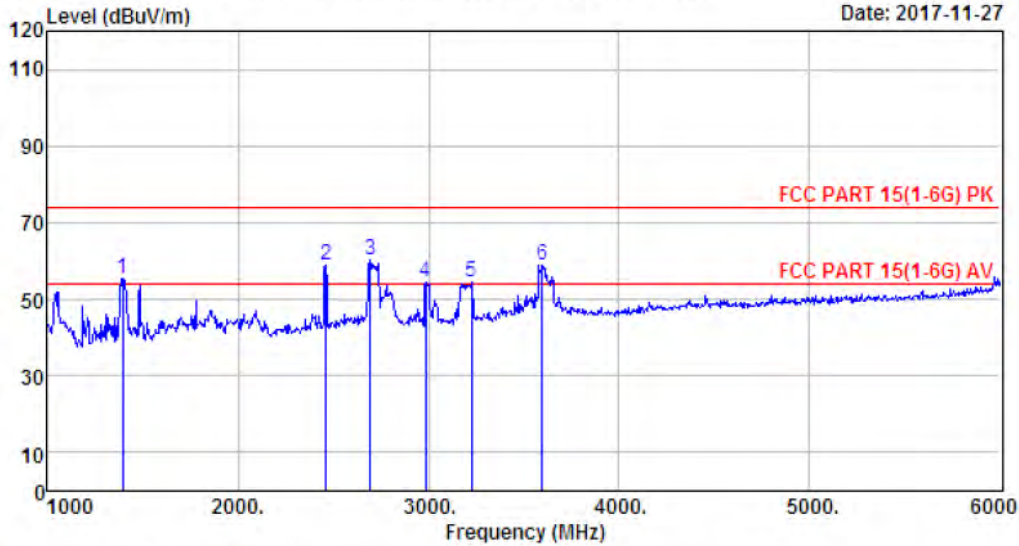
Above 1GHz

EST Technology

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

Data: 77 File: \\Emc-966-1\test data\2017\EMC\TCL-1.EM6 (86)

Date: 2017-11-27



Site no. : 1# 966 Chamber Data no. : 77  
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15(1-6G) PK  
 Env. / Ins. : Temp:28.1°;Humi:50%;Press:101.52kPa  
 Engineer : Bible  
 EUT : LCD TV  
 Power : AC 120V/60Hz  
 M/N : 49R81  
 Test Mode : HDMI(3840\*2160+Running "H" Pattern)

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1395.00	25.39	2.50	27.54	55.43	74.00	18.57	Peak
2	2460.00	27.52	3.27	28.20	58.99	74.00	15.01	Peak
3	2695.00	27.92	3.45	28.98	60.35	74.00	13.65	Peak
4	2985.00	28.37	3.60	22.37	54.34	74.00	19.66	Peak
5	3225.00	28.85	3.74	21.84	54.43	74.00	19.57	Peak
6	3595.00	29.59	3.99	25.35	58.93	74.00	15.07	Peak

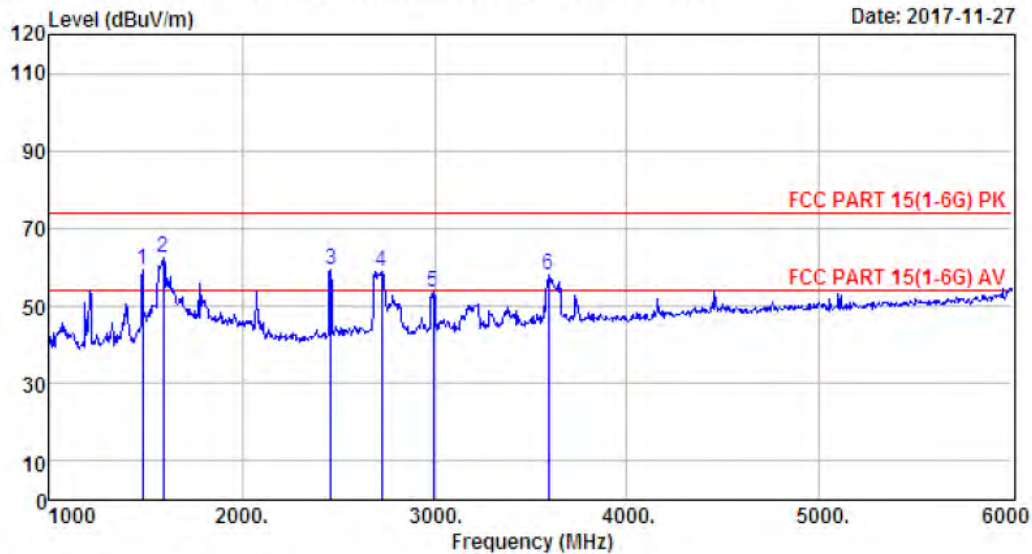
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. The emission levels that are 20dB below the official limit are not reported.



# EST Technology

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

Data: 78 File: \\Emc-966-1\test data\2017\EMC\TCL-1.EM6 (86) Date: 2017-11-27



Site no. : 1# 966 Chamber Data no. : 78  
 Dis. / Ant. : 3m ANI9120D 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15(1-6G) PK  
 Env. / Ins. : Temp:28.1';Humi:50%;Press:101.52kPa  
 Engineer : Bible  
 EUI : LCD TV  
 Power : AC 120V/60Hz  
 M/N : 49R81  
 Test Mode : HDMI(3840\*2160+Running "H" Pattern)

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Remark
1	1485.00	25.60	2.50	31.09	59.19	74.00	14.81	Peak
2	1590.00	25.76	2.57	34.20	62.53	74.00	11.47	Peak
3	2460.00	27.52	3.27	28.61	59.40	74.00	14.60	Peak
4	2725.00	27.95	3.46	27.59	59.00	74.00	15.00	Peak
5	2995.00	28.37	3.60	21.62	53.59	74.00	20.41	Peak
6	3590.00	29.56	3.97	24.62	58.15	74.00	15.85	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

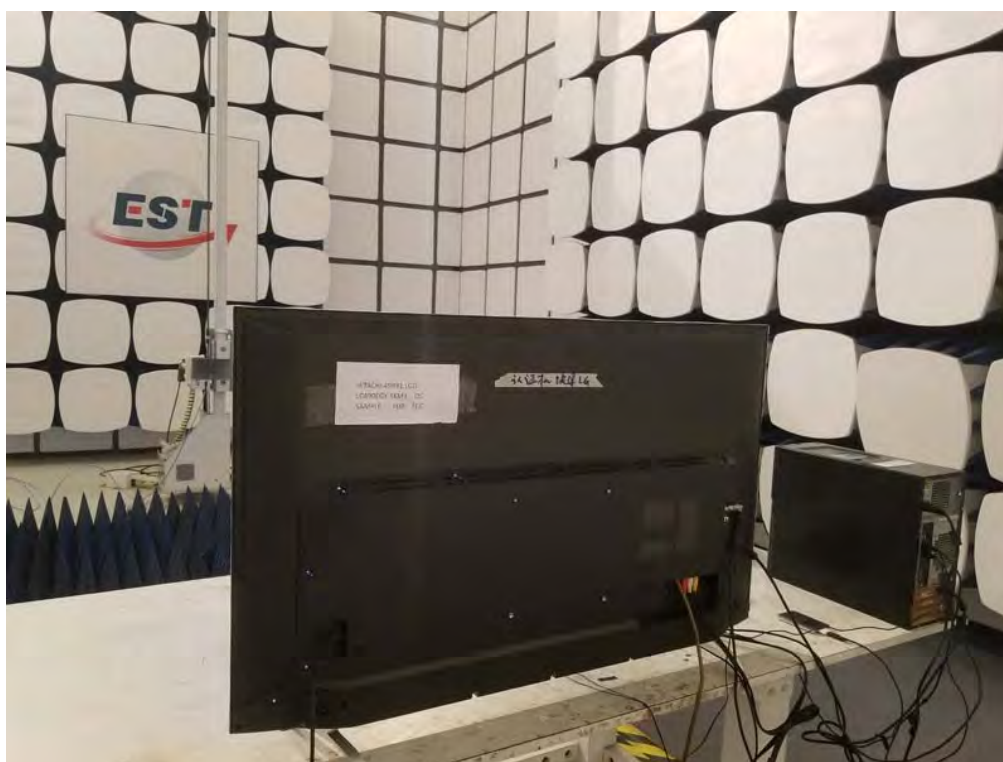
### 5.1. Set-up for conducted emission at the mains terminals test



### 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: 49R81



**External Photos**

M/N: 49R81



**External Photos**  
M/N: 49R81





**External Photos**  
M/N: 49R81

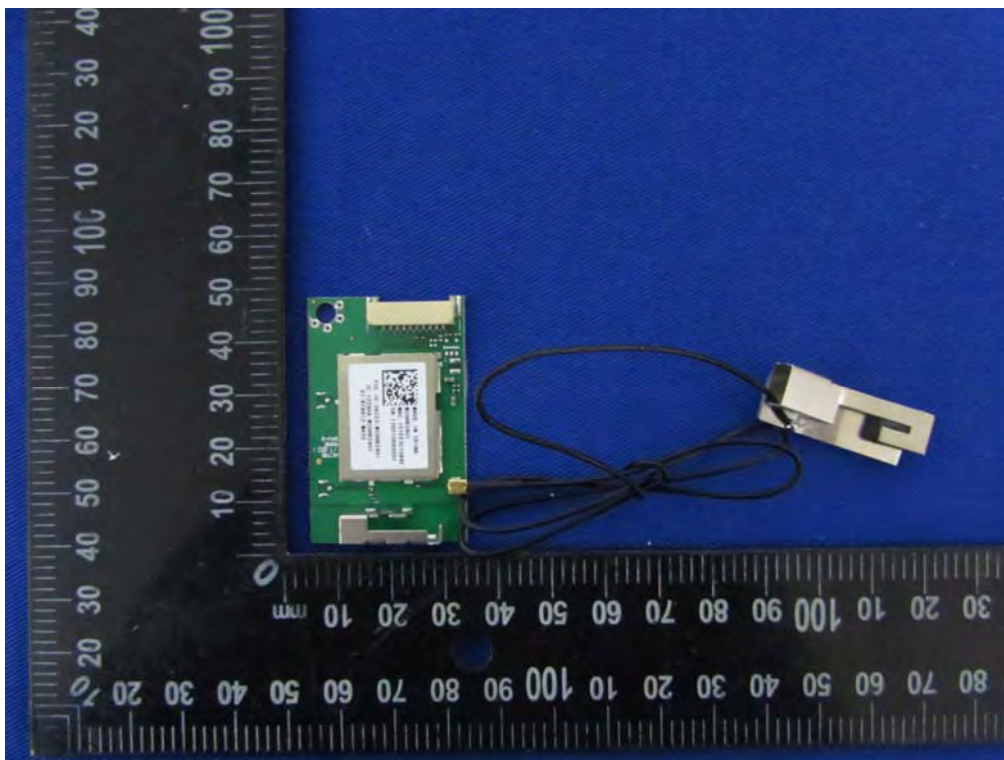


**Internal Photos**  
M/N: 49R81

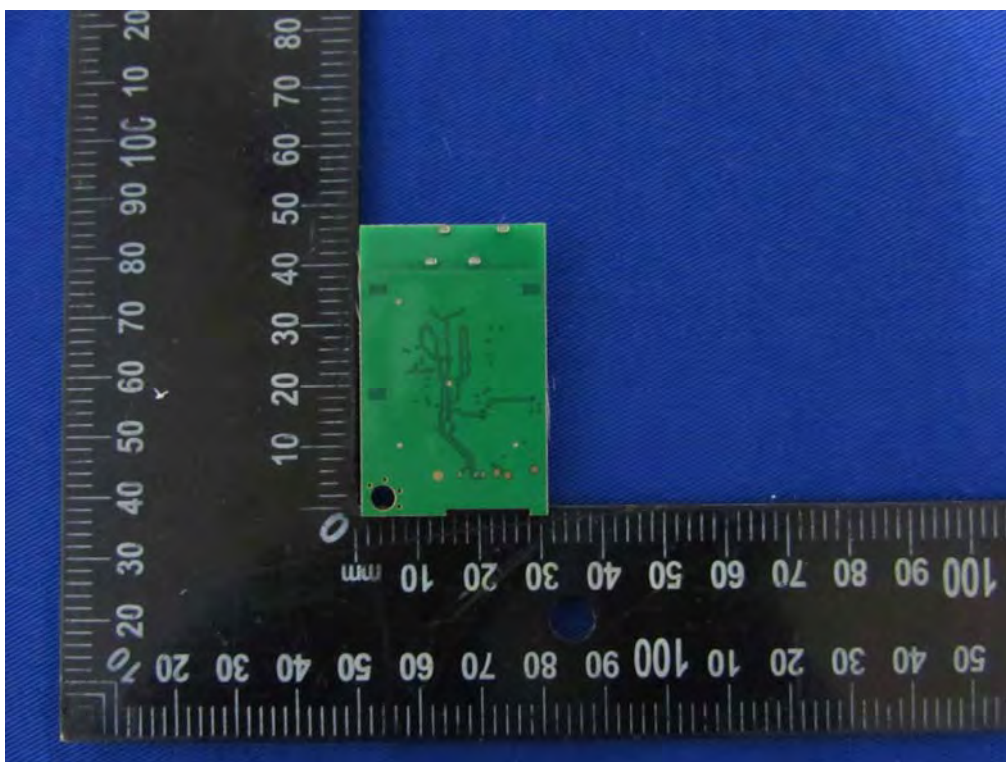
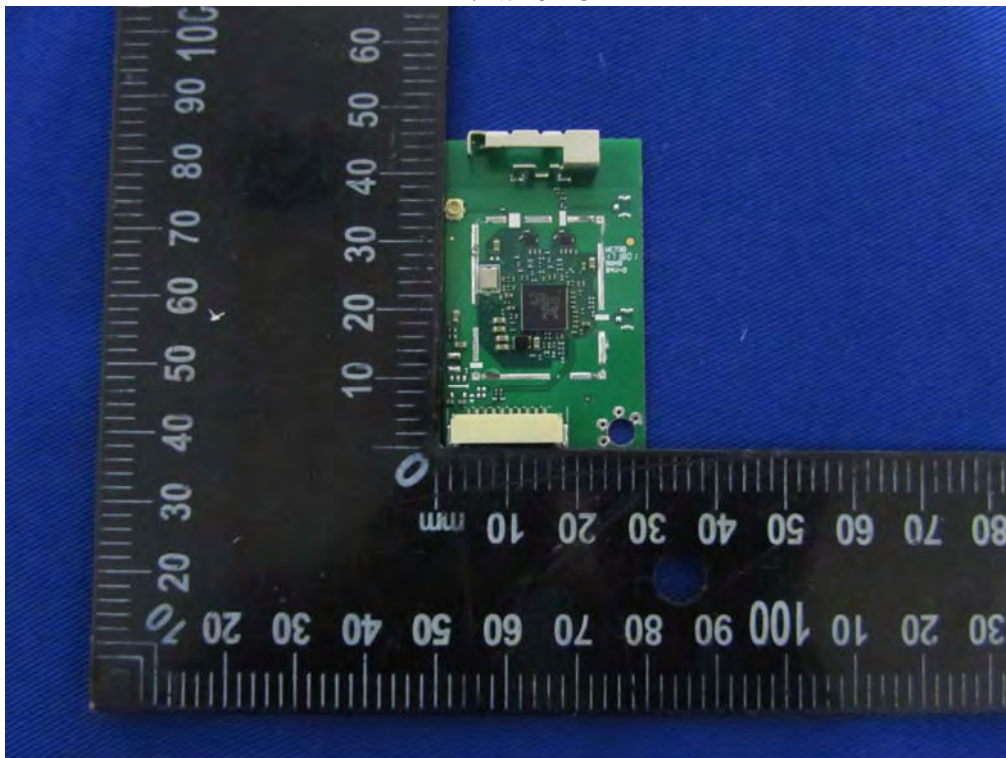




**Internal Photos**  
M/N: 49R81



**Internal Photos**  
M/N: 49R81



**Internal Photos**  
M/N: 49R81

