

Application for FCC Certificate  
On Behalf of  
Hisense Electric Co., Ltd.

LED LCD TV

Model No.	Brand
LHD32K220WUS	Hisense
32H5B	

FCC ID : W9HLCDC0033

Prepared For : Hisense Electric Co., Ltd.  
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Report No. : ACI-F15080  
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## TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.  
 Manufacturer : Hisense Electric Co., Ltd.  
 Factory #1 : Hisense Electric Co., Ltd.  
 Factory #2 : Tatung Mexico S.A. de C.V.  
 EUT Description : LED LCD TV

Model No.	Brand	Power Supply
Refer to Sec2.1	Hisense	120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2014  
AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B (Class B) limits both radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: Refer to Sec2.1) which was tested in 3m anechoic chamber Apr 18 – 20, 2015 is technically compliance with the FCC official limits also.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report contains data that are not covered by the NVLAP accreditation.


This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.


***The test results for EUT's TV functions are contained in Nso.F15081, a Verification report.***

Date of Test : Apr 18 – 20, 2015 Date of Report : May 06, 2015

Producer :   
 KATHY WANG / Assistant

Review :   
 SAMMY CHEN / Manager

 For and on behalf of  
 Audix Technology (Shanghai) Co., Ltd.

Signatory :   
 Authorized Signature EMC BYRON KWO / Assistant General Manager

# 1 SUMMARY OF STANDARDS AND RESULTS

## 1.1 Description of Standards and Results

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

Description of Test Item	Standard	Limits	Results
<b>EMISSION</b>			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2014 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2014 AND ANSI C63.4-2003	15.109(a) Class B	Pass

## 2 GENERAL INFORMATION

### 2.1 Description of Equipment Under Test

Description	:	LED LCD TV
Type of EUT	:	<input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	LHD32K220WUS, 32H5B
Note	:	The above models are all the same except for model name. LHD32K220WUS model is tested and recorded in the report.
Brand Name	:	Hisense
Applicant	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Manufacturer	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Factory #1	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Factory #2	:	Tatung Mexico S.A. de C.V. Miguel Catalán 420, Parque Industrial Rio Bravo, Cd. Juarez, Chih., CP 32557
LCD Panel	:	Manufacturer : Hisense M/N : HD315DH-B12\L1\S0\ROH
Max Resolution	:	1920*1080@60Hz
HDMI Cable*2 (Lab provide)	:	Shielded, Detachable, 1.00m, with two cores
Power Cord	:	Unshielded, Detachable, 1.80m, without core
LAN Cable (Lab provide)	:	Unshielded, Detachable, 1.50m, without core
USB Cable (Lab provide)	:	Shielded, Detachable, 1.50m, without core

**Remark:**

The EUT is a LED LCD TV which input/output ports as follows:

Back Port:

- (1) One USB Port : Connected with U-Disk
- (2) One Audio out Port : Connected with Earphone
- (3) One component of Video/YPbPr Port : Connected with DVD PLAYER

Side Port:

- (1) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG
- (2) One HDMI2/ARC Port : Connected with DVD PLAYER
- (3) One HDMI1/DVI Port : Connected with PC
- (4) One DVI Audio In Port : Connected with PC
- (5) One LAN Port : Connected with PC
- (6) One Digital Audio out Port : Connected with DVD PLAYER

## 2.2 Peripherals

### 2.2.1 PC

Manufacturer : HP  
Model Number : dx7200MT  
Serial Number : CNG622017W  
Power Cord : Unshielded, Detachable, 1.8m  
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick;  
BSMI, 3C, MIC

### 2.2.2 Printer

Manufacturer : HP  
Model Number : P1007  
Serial Number : VNFN713831  
Data Cable : Shielded, detachable, 1.8m  
Certificate : GS, CE/EMC, C-Tick, FCC DoC

### 2.2.3 Keyboard

Manufacturer : HP  
Model Number : CS105  
Serial Number : 9GTRNB1300120632  
Data Cable : Shielded, undetachable, 1.8m  
Certificate : CE/EMC, FCC DoC, VCCI, MIC,  
C-Tick, BSMI

### 2.2.4 Mouse

Manufacturer : HP  
Model Number : CS105  
Serial Number : 9GTRNB1300120632  
Data Cable : Shielded, Undetachable, 1.8m.  
Certificate : CE/EMC, FCC DoC, VCCI, MIC,  
C-Tick, BSMI

### 2.2.5 Modem

Manufacturer : TP-LINK  
Model Number : TM-EC5658V  
Serial Number : 07123301053  
Data Cable : Shielded, Detachable, 1.8m  
Certificate : FCC DoC, CE/EMC, CCC

### 2.2.6 Earphone

Manufacturer : audio-technica  
Model Number : ATH-CKL200

### 2.2.7 TV Signal Generator

Manufacturer : FLUKE  
Model Number : 54200m01  
Serial Number : 814008  
Data Cable : Shielded, detachable, 2.0m  
Power Cord : Unshielded, detachable, 2.0m  
Certificate : CE/EMC, FCC DoC, CCC

### 2.2.8 ATSC Signal Generator

Manufacturer : SENCORE  
Model Number : ATSC997  
Serial Number : 6790071

### 2.2.9 DVD PLAYER

Manufacturer : PHILIPS  
Model Number : DVP3986K/93  
Serial Number : KX1A0902120108  
Certificate : FCC DoC, CE/EMC, CCC

### 2.2.10 U-Disk

Manufacturer : Kingmax  
Model Number : 8G  
Certificate : CE/EMC, FCC DoC, IC

## 2.3 Description of Test Facility

Site Description (No.3 3m Chamber)	:	Sept. 17, 1998 file on Jan.15, 2015 Renewed Federal Communications Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, USA
Name of Firm	:	Audix Technology (Shanghai) Co., Ltd.
Site Location	:	3F 34Bldg 680 Guiping Rd, Caohejing Hi-Tech Park, Shanghai 200233, China
NVLAP Lab Code	:	200371-0

## 2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty :	U = 2.8dB
Radiated Emission Expanded Uncertainty (30-200MHz):	U = 4.4dB (Horizontal) U = 4.4dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):	U = 4.4dB (Horizontal) U = 5.5dB (Vertical)
Radiated Emission Expanded Uncertainty (1GHz-6GHz):	U = 5.1dB



### 3 CONDUCTED EMISSION TEST

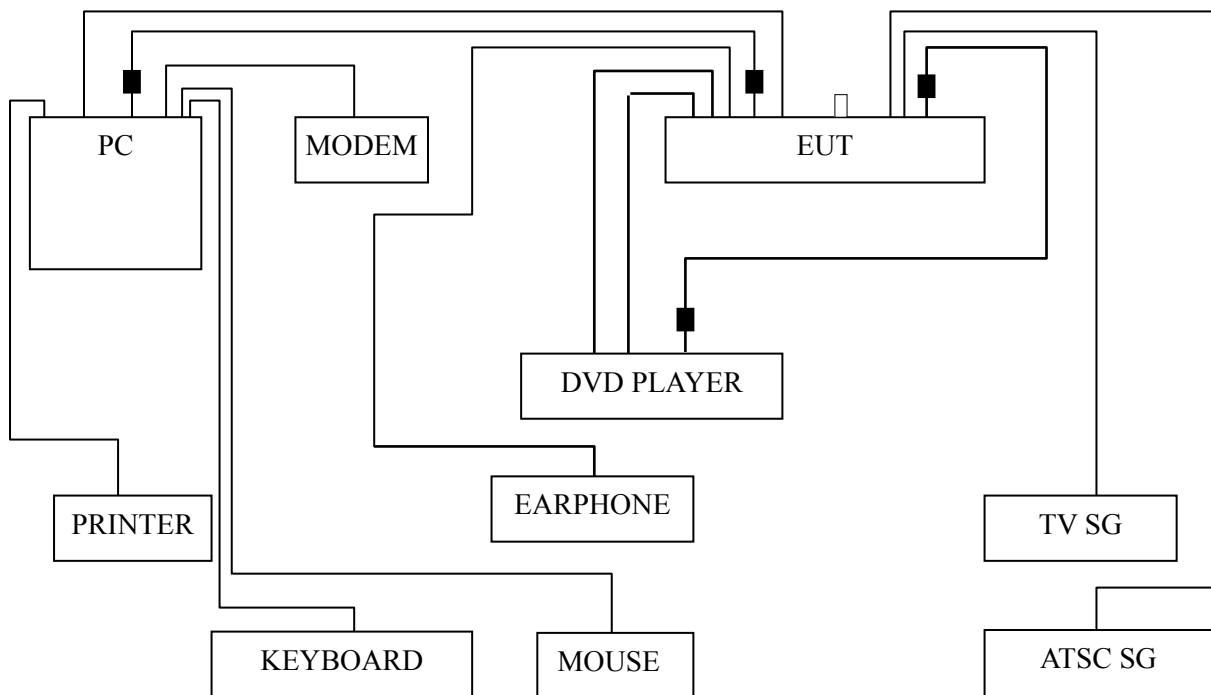
#### 3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101303	Sep 11, 2014	Sep 10, 2015
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2014	Jun 26, 2015
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2015	Mar 19, 2016
4.	50Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2015	Sep 17, 2015
5.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2015	Mar 19, 2016
6.	Software	Audix	E3	6.111206	--	--

#### 3.2 Block Diagram of Test Setup

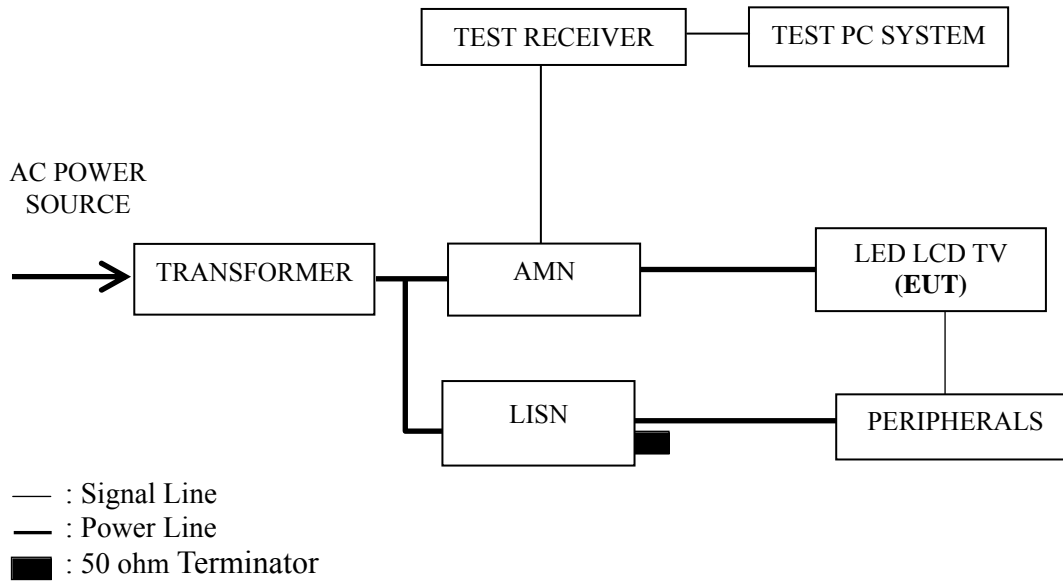
##### 3.2.1 EUT & Peripherals



□ : U-Disk

■ : Ferrite Core

### 3.2.2 Conducted Disturbance Test Setup



### 3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB ( $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE 1 – The lower limit shall apply at the transition frequencies.  
 NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz

### 3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

### 3.5 Operating Condition of EUT

3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via HDMI Input).

3.5.5 PC system sent the 1kHz audio signal to EUT through audio port, the EUT speak out 1kHz audio signal.

3.5.6 In USB Play mode, set the EUT play digital media from U-Disk.

3.5.7 In LAN Play mode, set the EUT play digital media through LAN port.

3.5.8 The other peripherals devices were driven and operated during the test.

3.5.9 The test modes are as follows:

Test Mode
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
USB Play
LAN Play

### 3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

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

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

### 3.7 Test Results

< **PASS** >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1kHz playing	P13
HDMI 1280*1024@60Hz & 1kHz playing	P14
HDMI 640*480@60Hz & 1kHz playing	P15
USB Play	P16
LAN Play	P17

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 – The worst case is for HDMI 1920\*1080@60Hz & 1kHz playing test mode. The worst emission is detected at 6.200 MHz (Quasi-Peak Value) with corrected signal level of 40.29 dB ( $\mu$ V) (limit is 50.00 dB ( $\mu$ V)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 48%RH

Test Mode : HDMI 1920\*1080@60Hz Date of Test : Apr 20, 2015  
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.167	38.70	10.56	49.26	65.09	15.83	QP
	0.195	39.29	10.55	49.84	63.80	13.96	
	0.257	30.10	10.51	40.61	61.53	20.92	
	4.328	25.01	10.45	35.46	56.00	20.54	
	6.987	29.00	10.45	39.45	60.00	20.55	
	25.480	28.70	10.79	39.49	60.00	20.51	AV
	0.167	24.30	10.56	34.86	55.09	20.23	
	0.195	26.59	10.55	37.14	53.80	16.66	
	0.257	13.50	10.51	24.01	51.53	27.52	
	4.328	24.61	10.45	35.06	46.00	10.94	
6.987	27.60	10.45	38.05	50.00	11.95	QP	
25.480	24.00	10.79	34.79	50.00	15.21		
0.168	38.90	10.56	49.46	65.06	15.60		
0.193	39.90	10.54	50.44	63.92	13.48		
0.323	26.30	10.47	36.77	59.63	22.86		
Neutral	4.328	25.20	10.51	35.71	56.00	20.29	QP
	6.200	31.10	10.49	41.59	60.00	18.41	
	25.470	29.30	10.90	40.20	60.00	19.80	
	0.168	22.80	10.56	33.36	55.06	21.70	
	0.193	26.60	10.54	37.14	53.92	16.78	
	0.323	11.60	10.47	22.07	49.63	27.56	AV
	4.328	24.40	10.51	34.91	46.00	11.09	
	<b>6.200</b>	<b>29.80</b>	<b>10.49</b>	<b>40.29</b>	<b>50.00</b>	<b>9.71</b>	
	25.470	24.30	10.90	35.20	50.00	14.80	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 48%RH

Test Mode : HDMI 1280\*1024@60Hz & 1kHz Playing Date of Test : Apr 20, 2015

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark	
Line	0.166	39.56	10.57	50.13	65.16	15.03	QP	
	0.197	39.54	10.54	50.08	63.76	13.68		
	0.325	26.93	10.48	37.41	59.57	22.16		
	4.426	23.80	10.46	34.26	56.00	21.74		
	6.194	31.30	10.41	41.71	60.00	18.29		
	25.470	28.50	10.79	39.29	60.00	20.71		
	Line	0.166	25.60	10.57	36.17	55.16	18.99	AV
		0.197	27.20	10.54	37.74	53.76	16.02	
		0.325	11.80	10.48	22.28	49.57	27.29	
		4.426	22.20	10.46	32.66	46.00	13.34	
6.194		29.40	10.41	39.81	50.00	10.19		
25.470		22.30	10.79	33.09	50.00	16.91		
Neutral	0.169	39.80	10.56	50.36	65.03	14.67	QP	
	0.197	39.60	10.53	50.13	63.74	13.61		
	0.325	26.20	10.47	36.67	59.57	22.90		
	4.328	24.70	10.51	35.21	56.00	20.79		
	6.195	31.20	10.49	41.69	60.00	18.31		
	25.470	29.00	10.90	39.90	60.00	20.10		
	Neutral	0.169	25.10	10.56	35.66	55.03	19.37	AV
		0.197	27.70	10.53	38.23	53.74	15.51	
		0.325	11.70	10.47	22.17	49.57	27.40	
		4.328	23.90	10.51	34.41	46.00	11.59	
<b>6.195</b>		<b>29.60</b>	<b>10.49</b>	<b>40.09</b>	<b>50.00</b>	<b>9.91</b>		
25.470	23.90	10.90	34.80	50.00	15.20			

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 48%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : Apr 20, 2015

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.169	39.38	10.56	49.94	65.03	15.09	QP
	0.199	39.36	10.54	49.90	63.67	13.77	
	0.327	26.85	10.47	37.32	59.53	22.21	
	4.424	24.30	10.46	34.76	56.00	21.24	
	6.194	31.30	10.41	41.71	60.00	18.29	
	25.460	29.00	10.79	39.79	60.00	20.21	AV
	0.169	25.70	10.56	36.26	55.03	18.77	
	0.199	27.30	10.54	37.84	53.67	15.83	
	0.327	11.21	10.47	21.68	49.53	27.85	
	4.424	22.60	10.46	33.06	46.00	12.94	
	<b>6.194</b>	<b>29.30</b>	<b>10.41</b>	<b>39.71</b>	<b>50.00</b>	<b>10.29</b>	
	25.460	22.30	10.79	33.09	50.00	16.91	
Neutral	0.167	40.89	10.56	51.45	65.12	13.67	QP
	0.198	40.30	10.53	50.83	63.71	12.88	
	0.323	27.88	10.47	38.35	59.62	21.27	
	4.424	24.49	10.52	35.01	56.00	20.99	
	6.194	31.10	10.49	41.59	60.00	18.41	
	25.460	29.10	10.90	40.00	60.00	20.00	AV
	0.167	25.90	10.56	36.46	55.12	18.66	
	0.198	27.40	10.53	37.93	53.71	15.78	
	0.323	11.60	10.47	22.07	49.62	27.55	
	4.424	22.59	10.52	33.11	46.00	12.89	
	6.194	29.00	10.49	39.49	50.00	10.51	
	25.460	23.10	10.90	34.00	50.00	16.00	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C  
 Model No. : LHD32K220WUS Humidity : 48%RH  
 Test Mode : USB Play Date of Test : Apr 20, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.168	39.25	10.56	49.81	65.08	15.27	QP
	0.198	39.43	10.54	49.97	63.71	13.74	
	0.327	26.84	10.47	37.31	59.53	22.22	
	4.420	23.80	10.46	34.26	56.00	21.74	
	6.190	31.20	10.41	41.61	60.00	18.39	
	25.350	28.00	10.78	38.78	60.00	21.22	
	0.168	25.60	10.56	36.16	55.08	18.92	AV
	0.198	27.80	10.54	38.34	53.71	15.37	
	0.327	11.61	10.47	22.08	49.53	27.45	
	4.420	21.30	10.46	31.76	46.00	14.24	
	<b>6.190</b>	<b>29.40</b>	<b>10.41</b>	<b>39.81</b>	<b>50.00</b>	<b>10.19</b>	
	25.350	24.00	10.78	34.78	50.00	15.22	
Neutral	0.167	40.93	10.56	51.49	65.12	13.63	QP
	0.194	40.39	10.54	50.93	63.84	12.91	
	0.325	27.56	10.47	38.03	59.57	21.54	
	4.422	24.09	10.52	34.61	56.00	21.39	
	6.194	30.90	10.49	41.39	60.00	18.61	
	25.430	27.30	10.90	38.20	60.00	21.80	
	0.167	25.60	10.56	36.16	55.12	18.96	AV
	0.194	27.19	10.54	37.73	53.84	16.11	
	0.325	11.50	10.47	21.97	49.57	27.60	
	4.422	21.69	10.52	32.21	46.00	13.79	
	6.194	28.90	10.49	39.39	50.00	10.61	
	25.430	19.80	10.90	30.70	50.00	19.30	

TEST ENGINEER: WENCY YANG



EUT : LED LCD TV Temperature : 22°C  
 Model No. : LHD32K220WUS Humidity : 48%RH  
 Test Mode : LAN Play Date of Test : Apr 20, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.165	39.55	10.57	50.12	65.21	15.09	QP
	0.198	39.40	10.54	49.94	63.71	13.77	
	0.330	26.72	10.47	37.19	59.44	22.25	
	4.421	24.30	10.46	34.76	56.00	21.24	
	6.191	31.20	10.41	41.61	60.00	18.39	
	25.350	28.70	10.78	39.48	60.00	20.52	
	0.165	25.50	10.57	36.07	55.21	19.14	AV
	0.198	27.40	10.54	37.94	53.71	15.77	
	0.330	11.31	10.47	21.78	49.44	27.66	
	4.421	22.10	10.46	32.56	46.00	13.44	
	6.191	29.10	10.41	39.51	50.00	10.49	
	25.350	23.90	10.78	34.68	50.00	15.32	
Neutral	0.168	41.03	10.56	51.59	65.08	13.49	QP
	0.194	40.30	10.54	50.84	63.84	13.00	
	0.322	28.06	10.48	38.54	59.66	21.12	
	4.419	23.19	10.52	33.71	56.00	22.29	
	6.191	30.80	10.49	41.29	60.00	18.71	
	25.350	28.01	10.89	38.90	60.00	21.10	
	0.168	25.60	10.56	36.16	55.08	18.92	AV
	0.194	27.49	10.54	38.03	53.84	15.81	
	0.322	11.39	10.48	21.87	49.66	27.79	
	4.419	20.79	10.52	31.31	46.00	14.69	
	<b>6.191</b>	<b>29.40</b>	<b>10.49</b>	<b>39.89</b>	<b>50.00</b>	<b>10.11</b>	
	25.350	22.81	10.89	33.70	50.00	16.30	

TEST ENGINEER: WENCY YANG

## 4 RADIATED EMISSION TEST

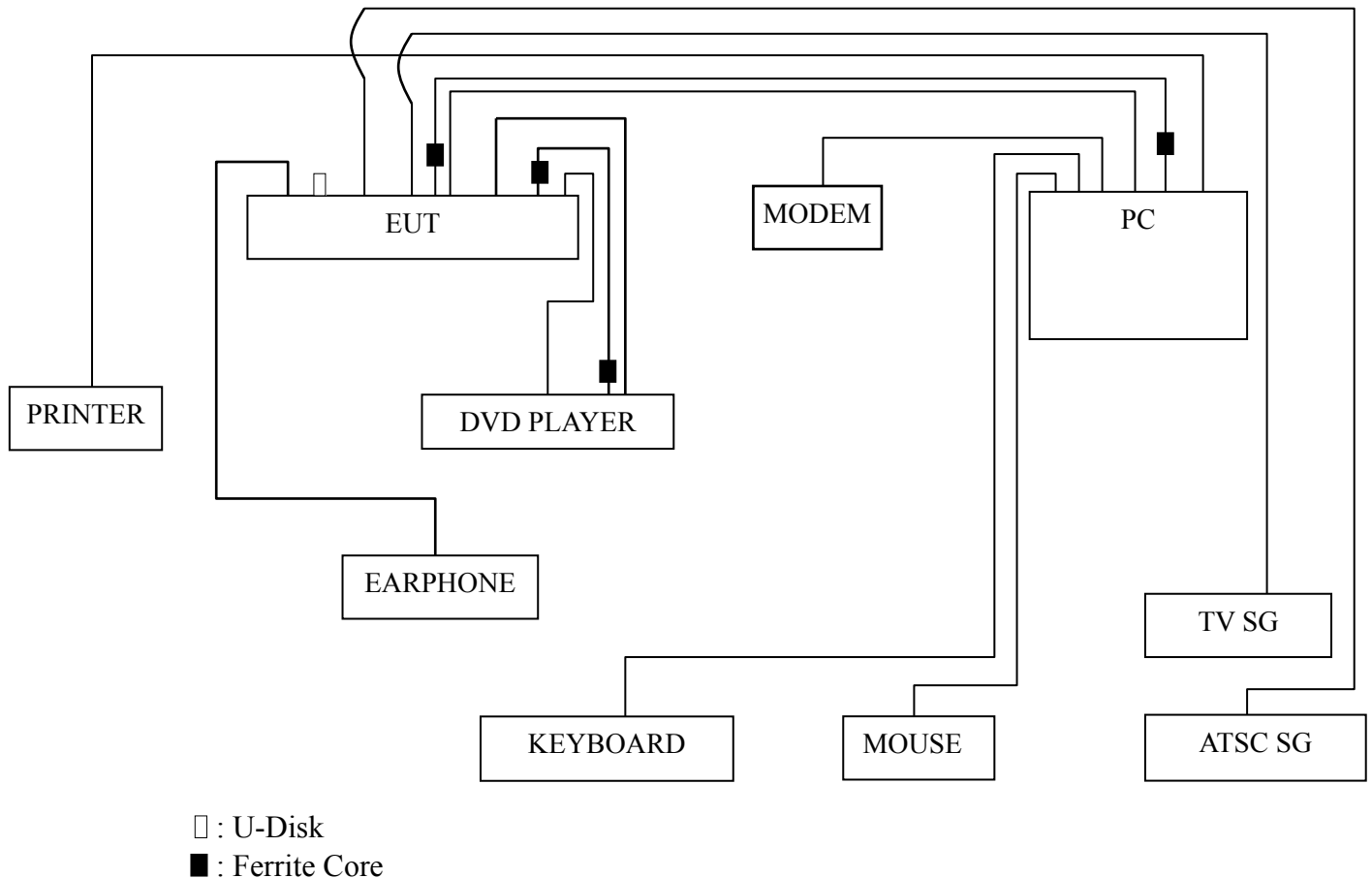
### 4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

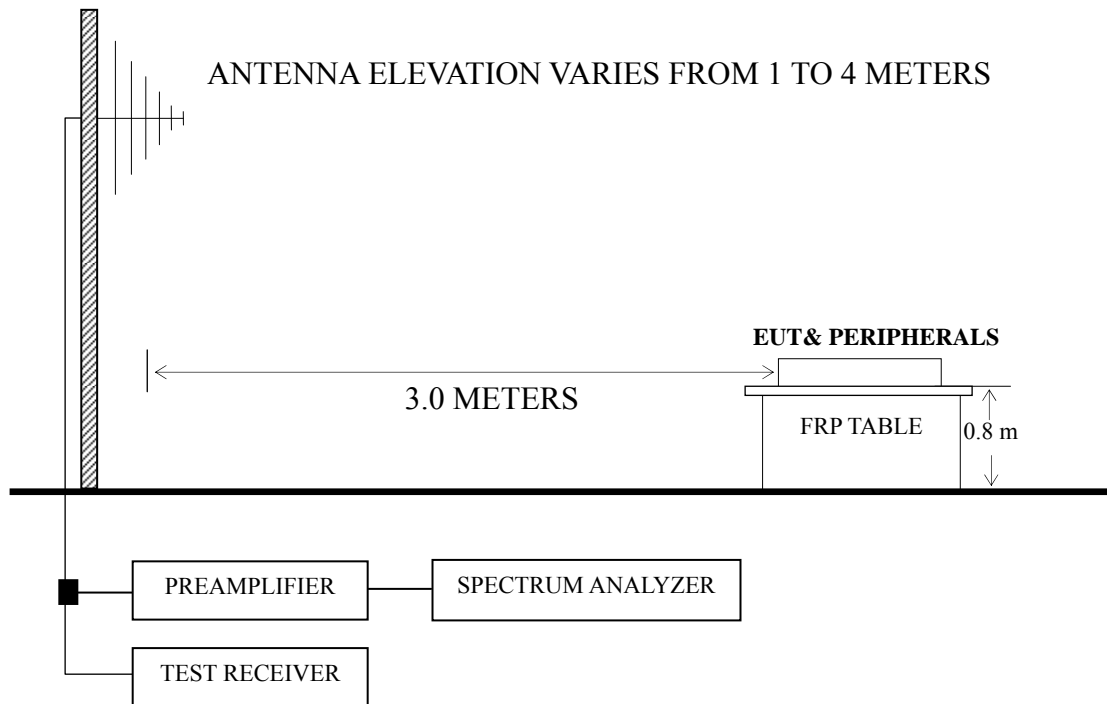
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Mar 18, 2015	Sep 17, 2015
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 20, 2015	Mar 19, 2016
3.	Preamplifier	HP	8449B	3008A00864	May 03, 2014	May 02, 2015
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 11, 2014	May 10, 2015
5.	Horn Antenna	EMCO	3115	9607-4878	Nov 11, 2014	Nov 10, 2015
6.	Spectrum	Agilent	E7405A	MY45106600	Mar 18, 2015	Sep 17, 2015
7.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2015	Sep 17, 2015
8.	Software	Audix	E3	6.2007-9-10	--	--

### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT & Peripherals



#### 4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

#### 4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		( $\mu\text{V}/\text{m}$ )	dB ( $\mu\text{V}/\text{m}$ )
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB ( $\mu\text{V}/\text{m}$ ) = 20 log Emission Level ( $\mu\text{V}/\text{m}$ )

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector.

NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

#### 4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

#### 4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

## 4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESCI was set at 120 kHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

The frequency range from 1 GHz to 2 GHz was checked for the maximum resolution test mode.

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

## 4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1kHz playing	P22
HDMI 1280*1024@60Hz & 1kHz playing	P23 – P24
HDMI 640*480@60Hz & 1kHz playing	P25
USB Play	P26
LAN Play	P27

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading. (< 1GHz);

Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)

NOTE 2 – All readings are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.

NOTE 3 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 4 – The worst case is for HDMI 1280\*1024@60Hz & 1kHz playing test mode. The worst emission at horizontal polarization was detected at 705.360 MHz with corrected signal level of 44.12 dB ( $\mu\text{V}/\text{m}$ ) (limit is 46.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 2.1m height and the turntable was at 123°. The worst emission at vertical polarization was detected at 30.962 MHz with corrected signal level of 36.36 dB ( $\mu\text{V}/\text{m}$ ) (limit is 40.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.00m height and the turntable was at 46°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz & 1kHz Playing Date of Test : Apr 18, 2015

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	78.965	21.88	8.75	0.89	31.52	40.00	8.48
	121.976	20.99	12.02	1.11	34.12	43.50	9.38
	287.760	27.60	10.85	1.75	40.20	46.00	5.80
	368.520	23.40	17.48	1.98	42.86	46.00	3.14
	698.640	19.10	21.20	2.70	43.00	46.00	3.00
	<b>928.140</b>	<b>18.21</b>	<b>21.93</b>	<b>3.08</b>	<b>43.22</b>	<b>46.00</b>	<b>2.78</b>
Vertical	31.480	16.99	17.75	0.55	35.29	40.00	4.71
	73.103	26.99	7.62	0.85	35.46	40.00	4.54
	437.120	17.18	16.78	2.14	36.10	46.00	9.90
	576.644	18.65	17.35	2.45	38.45	46.00	7.55
	699.305	15.48	21.20	2.70	39.38	46.00	6.62
	<b>928.140</b>	<b>17.31</b>	<b>21.93</b>	<b>3.08</b>	<b>42.32</b>	<b>46.00</b>	<b>3.68</b>

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 60%RH

Test Mode : HDMI 1280\*1024@60Hz & 1kHz Playing Date of Test : Apr 18, 2015

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	80.927	22.05	9.14	0.89	--	32.08	40.00	7.92	QP
	121.976	21.45	12.02	1.11	--	34.58	43.50	8.92	
	287.990	28.87	10.98	1.75	--	41.60	46.00	4.40	
	367.760	23.00	17.48	1.98	--	42.46	46.00	3.54	
	675.120	15.50	21.40	2.66	--	39.56	46.00	6.44	
	<b>705.360</b>	<b>20.20</b>	<b>21.20</b>	<b>2.72</b>	--	<b>44.12</b>	<b>46.00</b>	<b>1.88</b>	
	1156.139	53.47	24.02	3.47	36.47	44.49	74.00	29.51	PK
	1211.206	52.39	24.36	3.55	36.38	43.92	74.00	30.08	
	1315.825	52.20	24.98	3.72	36.19	44.71	74.00	29.29	
	1427.049	53.76	25.45	3.87	35.97	47.11	74.00	26.89	
	1584.104	54.87	25.98	4.06	35.72	49.19	74.00	24.81	
	1836.979	52.25	26.93	4.38	35.43	48.13	74.00	25.87	
	1156.139	34.54	24.02	3.47	36.47	25.56	54.00	28.44	AV
	1211.206	34.25	24.36	3.55	36.38	25.78	54.00	28.22	
	1315.825	34.25	24.98	3.72	36.19	26.76	54.00	27.24	
	1427.049	35.46	25.45	3.87	35.97	28.81	54.00	25.19	
	1584.104	36.79	25.98	4.06	35.72	31.11	54.00	22.89	
	1836.979	36.57	26.93	4.38	35.43	32.45	54.00	21.55	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 60%RH

Test Mode : HDMI 1280\*1024@60Hz & 1kHz Playing Date of Test : Apr 18, 2015

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	<b>30.962</b>	<b>17.51</b>	<b>18.31</b>	<b>0.54</b>	--	<b>36.36</b>	<b>40.00</b>	<b>3.64</b>	QP
	73.103	25.47	7.62	0.85	--	33.94	40.00	6.06	
	143.830	24.10	11.50	1.21	--	36.81	43.50	6.69	
	350.477	17.52	16.00	1.94	--	35.46	46.00	10.54	
	432.546	17.59	16.72	2.13	--	36.44	46.00	9.56	
	699.305	15.77	21.20	2.70	--	39.67	46.00	6.33	
	1209.445	56.67	24.36	3.55	36.38	48.20	74.00	25.80	PK
	1320.117	54.61	24.99	3.72	36.18	47.14	74.00	26.86	
	1416.888	55.88	25.42	3.87	36.00	49.17	74.00	24.83	
	1536.709	57.82	25.83	4.01	35.78	51.88	74.00	22.12	
	1760.028	53.69	26.67	4.29	35.50	49.15	74.00	24.85	
	1807.605	52.19	26.84	4.35	35.46	47.92	74.00	26.08	
	1209.445	35.60	24.36	3.55	36.38	27.13	54.00	26.87	AV
	1320.117	36.57	24.99	3.72	36.18	29.10	54.00	24.90	
	1416.888	37.68	25.42	3.87	36.00	30.97	54.00	23.03	
	1536.709	34.55	25.83	4.01	35.78	28.61	54.00	25.39	
	1760.028	37.68	26.67	4.29	35.50	33.14	54.00	20.86	
	1807.605	34.27	26.84	4.35	35.46	30.00	54.00	24.00	

TEST ENGINEER: MARK LI



EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 60%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : Apr 18, 2015

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	110.182	18.93	12.09	1.05	32.07	43.50	11.43
	143.830	22.39	11.50	1.21	35.10	43.50	8.40
	322.880	27.50	13.60	1.86	42.96	46.00	3.04
	365.539	24.10	17.25	1.96	43.31	46.00	2.69
	431.032	22.86	16.72	2.13	41.71	46.00	4.29
	<b>698.720</b>	<b>20.20</b>	<b>21.20</b>	<b>2.70</b>	<b>44.10</b>	<b>46.00</b>	<b>1.90</b>
Vertical	31.955	17.73	17.00	0.55	35.28	40.00	4.72
	<b>72.084</b>	<b>27.63</b>	<b>7.44</b>	<b>0.85</b>	<b>35.92</b>	<b>40.00</b>	<b>4.08</b>
	107.888	25.79	12.10	1.03	38.92	43.50	4.58
	324.456	20.82	13.80	1.86	36.48	46.00	9.52
	431.440	20.20	16.72	2.13	39.05	46.00	6.95
	699.305	15.49	21.20	2.70	39.39	46.00	6.61

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 60%RH

Test Mode : USB Play Date of Test : Apr 18, 2015

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	73.103	21.65	7.62	0.85	30.12	40.00	9.88
	124.133	22.25	12.14	1.12	35.51	43.50	7.99
	185.788	24.35	9.19	1.37	34.91	43.50	8.59
	286.982	27.97	10.85	1.75	40.57	46.00	5.43
	365.000	22.03	17.25	1.96	41.24	46.00	4.76
	<b>930.000</b>	<b>17.98</b>	<b>22.00</b>	<b>3.08</b>	<b>43.06</b>	<b>46.00</b>	<b>2.94</b>
Vertical	<b>34.037</b>	<b>19.93</b>	<b>16.20</b>	<b>0.57</b>	<b>36.70</b>	<b>40.00</b>	<b>3.30</b>
	72.084	28.15	7.44	0.85	36.44	40.00	3.56
	160.000	24.24	10.70	1.27	36.21	43.50	7.29
	225.000	23.71	8.10	1.52	33.33	46.00	12.67
	574.626	18.16	17.50	2.45	38.11	46.00	7.89
	742.259	18.52	20.40	2.78	41.70	46.00	4.30

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K220WUS Humidity : 60%RH

Test Mode : LAN Play Date of Test : Apr 18, 2015

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	30.853	4.86	18.49	0.54	23.89	40.00	16.11
	84.405	17.81	9.86	0.91	28.58	40.00	11.42
	125.000	19.22	12.20	1.12	32.54	43.50	10.96
	290.000	29.34	11.10	1.75	42.19	46.00	3.81
	366.823	22.71	17.37	1.98	42.06	46.00	3.94
	<b>700.000</b>	<b>18.63</b>	<b>21.20</b>	<b>2.70</b>	<b>42.53</b>	<b>46.00</b>	<b>3.47</b>
Vertical	<b>32.520</b>	<b>18.21</b>	<b>16.79</b>	<b>0.56</b>	<b>35.56</b>	<b>40.00</b>	<b>4.44</b>
	71.581	23.36	7.31	0.84	31.51	40.00	8.49
	88.342	21.98	10.51	0.94	33.43	43.50	10.07
	430.000	10.89	16.70	2.13	29.72	46.00	16.28
	580.703	15.02	17.20	2.45	34.67	46.00	11.33
	700.000	14.14	21.20	2.70	38.04	46.00	7.96

TEST ENGINEER: MARK LI

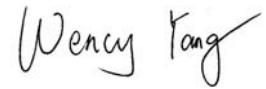
## 5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	JCT-RF-5-0.12-30	Qingdao Joinset Co., Ltd	See Internal Photos Figure 30, 31

Note: We had required the applicant and manufacturer that all electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marked

TEST ENGINEER:



**(WENCY YANG)**

## **6 DEVIATION TO TEST SPECIFICATIONS**

None.