



**Hisense Electric Co., Ltd.**

Application  
For  
Certification  
**FCC ID: W9HLCDD0044**

**LED LCD TV**

**Model: LTDN40D50US**  
**Additional Model: 40D50, 40H3B, 40H3B \* (where "\*" would be replaced by any Arabian number or English letter or blank)**

Computer Peripheral

**Class II Permissive Change**

Report No.: 151221026SZN-002

Prepared and Checked by:

Approved by:

Sign on file

Jenner Liu  
Engineer

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Andy Yan  
Technical Supervisor  
Date: January 06, 2016

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF No.: FCC 15C\_PC\_b

**Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch**  
6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China  
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: [www.china.intertek-etlsemko.com](http://www.china.intertek-etlsemko.com)

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## INTERTEK TESTING SERVICES

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### LIST OF EXHIBITS

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## INTERTEK TESTING SERVICES

### MEASUREMENT / TECHNICAL REPORT

**Hisense Electric Co., Ltd.**

**MODEL: LTDN40D50US**

**Additional Model: 40D50, 40H3B, 40H3B \* (where "\*" would be replaced by any Arabian number or English letter or blank)**

**FCC ID: W9HLCDD0044**

This report concerns (check one:)      Original Grant \_\_\_\_\_      Class II Change   X  

Equipment Type: JBP-Class B Computing Device Peripheral

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?      Yes \_\_\_\_\_      No   X  

If yes, defer until: \_\_\_\_\_  
date

Company Name agrees to notify the Commission by: \_\_\_\_\_  
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37?      Yes \_\_\_\_\_      No   X  

If no, assumed Part 15, Subpart B for unintentional radiator – the new 47 CFR [10-01-14 Edition] provision.

Report prepared by:

Jenner Liu  
Intertek Testing Services Shenzhen Ltd.  
Kejiyuan Branch  
6F, D Block, Huahan Building, Langshan Road  
Nanshan District, Shenzhen, P. R. China  
Phone: (86 755) 8614 0639  
Fax: (86 755) 8601 6751

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# INTERTEK TESTING SERVICES

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## INTERTEK TESTING SERVICES

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### List of attached file

Exhibit Type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated photos	radiated photos.pdf
Test Setup Photo	Conducted photos	conducted photos.pdf
External Photo	External Photos	external photos.pdf
Internal Photo	Internal Photos	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
ID Label / Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidential Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf

# **INTERTEK TESTING SERVICES**

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## **EXHIBIT 1**

### **GENERAL DESCRIPTION**

## INTERTEK TESTING SERVICES

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### 1.0 **General Description**

#### 1.1 Product Description

The Equipment Under Test (EUT) is a LED LCD TV. The device can be used to connect PC by HDMI and VGA port. The EUT is powered by 120V/60Hz.

This report is based on previous report with report number 150213027SZN-001 dated March 10, 2015 (original signatory: Jenner Liu, Andy Yan on file). Due to it has been changed the panel. Fully tests have been re-conducted.

The Models: 40D50, 40H3B, 40H3B \* (where "\*" would be replaced by any Arabian number or English letter or blank) are the same as the Model: LTDN40D50US in hardware and electronic aspect. The difference in model number serves as marketing strategy.

#### 1.2 Related Submittal(s) Grants

This is an application for certification of a computer peripheral. Other digital functions were reported in the verification report: 151221026SZN-001.

## INTERTEK TESTING SERVICES

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### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2014). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

### 1.4 Test Facility

The Semi-anechoic chamber and shielding room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 2**

### **SYSTEM TEST CONFIGURATION**

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## INTERTEK TESTING SERVICES

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### 2.0 **System Test Configuration**

#### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2014).

The device was powered by AC 120V/60Hz during the test. The worst case data was reported in this report.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The frequency range from 30MHz to 2GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

#### 2.2 EUT Exercising Software

N/A

#### 2.3 Special Accessories

N/A

#### 2.4 Equipment Modification

Any modifications installed previous to testing by Hisense Electric Co., Ltd. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

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## INTERTEK TESTING SERVICES

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### 2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

### 2.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Laptop	Lenovo	X1
Laptop	Lenovo	T420
Hard Disk	Smart.drive	HD-003
USB Memory	TOSHIBA	UHYBS-004G-BL
1394 Cable	Smart.drive	Unshielded, Length 180cm
USB Cable	Smart.drive	Unshielded, Length 155cm
Dummy Load	N/A	N/A
VGA Cable	HP	Unshielded, Length 150cm
PC Audio Cable	N/A	Unshielded, Length 180cm
HDMI Cable*3	N/A	UnShielded, Length 180cm
AV Cable	N/A	Unshielded, Length 120cm
YPbPr Cable	N/A	Unshielded, Length 120cm
Digital Audio Out Cable	N/A	Unshielded, Length 120cm
Tuner Resister	N/A	75ohm
Headphone	N/A	Unshielded, Length 110cm
Remote controller	Hisense	N/A

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 3**

### **EMISSION RESULTS**

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### 3.0 **Emission Results**

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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## INTERTEK TESTING SERVICES

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### 3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG$$

where FS = Field Strength in dB $\mu$ V/m

RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB/m

AG = Amplifier Gain in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG$$

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### 3.1 Field Strength Calculation (cont'd)

#### Example

Assume a receiver reading of 62.0dB $\mu$ V is obtained. The antenna factor of 7.4dB/m and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The net field strength for comparison to the appropriate emission limit is 42dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 62.0\text{dB}\mu\text{V}$$

$$AF = 7.4\text{dB/m}$$

$$CF = 1.6\text{dB}$$

$$AG = 29.0\text{dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 = 42\text{dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(42\text{dB}\mu\text{V/m})/20] = 125.9\mu\text{V/m}$$

## **INTERTEK TESTING SERVICES**

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### 3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission  
At  
742.508MHz (HDMI In Mode)

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

## INTERTEK TESTING SERVICES

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### 3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 2.3dB margin (HDMI In Mode)

#### **TEST PERSONNEL:**

*Sign on file*

Jenner Liu Engineer  
*Typed/Printed Name*

December 31, 2015  
*Date*

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## INTERTEK TESTING SERVICES

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Company: Hisense Electric Co., Ltd.

Date of Test: December 31, 2015

Model: LTDN40D50US

Operating Mode: HDMI In

**Table 1**

**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	191.990	44.0	20.0	11.4	35.4	43.5	-8.1
Horizontal	297.720	40.5	20.0	15.6	36.1	46.0	-9.9
Horizontal	742.508	38.7	20.0	25.0	43.7	46.0	-2.3
Horizontal	1002.000	32.1	20.0	22.9	35.0	54.0	-19.0
Horizontal	1700.000	32.8	20.0	27.4	40.2	54.0	-13.8
Horizontal	1900.920	31.5	20.0	29.0	40.5	54.0	-13.5
Vertical	49.400	41.9	20.0	8.1	30.0	40.0	-10.0
Vertical	149.310	38.7	20.0	10.7	29.4	43.5	-14.1
Vertical	742.484	36.6	20.0	25.0	41.6	46.0	-4.4
Vertical	1001.000	32.7	20.0	22.3	35.0	54.0	-19.0
Vertical	1500.000	34.5	20.0	25.6	40.1	54.0	-13.9
Vertical	1900.000	31.9	20.0	28.4	40.3	54.0	-13.7

**NOTES:**

1. Quasi-Peak detector is used for frequency up to 1GHz and Peak detector is used for frequency from 1-2GHz.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.
4. All emissions up to 1GHz are below the QP limit and all emissions between 1-2GHz are below the AV limit.

Test Engineer: Jenner Liu

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## INTERTEK TESTING SERVICES

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Company: Hisense Electric Co., Ltd.

Date of Test: December 31, 2015

Model: LTDN40D50US

Operating Mode: VGA

**Table 1**

**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	169.619	48.4	20.0	10.8	39.2	43.5	-4.3
Horizontal	180.350	42.8	20.0	11.4	34.2	43.5	-9.3
Horizontal	275.895	42.1	20.0	14.8	36.9	46.0	-9.1
Horizontal	1001.000	32.1	20.0	22.9	35.0	54.0	-19.0
Horizontal	1700.800	32.9	20.0	27.4	40.3	54.0	-13.7
Horizontal	2000.000	30.3	20.0	29.8	40.1	54.0	-13.9
Vertical	31.455	33.7	20.0	16.7	30.4	40.0	-9.6
Vertical	47.940	40.4	20.0	8.7	29.1	40.0	-10.9
Vertical	671.640	32.2	20.0	24.4	36.6	46.0	-9.4
Vertical	1300.000	30.8	20.0	24.2	35.0	54.0	-19.0
Vertical	1501.000	34.7	20.0	25.6	40.3	54.0	-13.7
Vertical	1700.000	33.8	20.0	27.0	40.8	54.0	-13.2

**NOTES:**

1. Quasi-Peak detector is used for frequency up to 1GHz and Peak detector is used for frequency from 1-2GHz.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.
4. All emissions up to 1GHz are below the QP limit and all emissions between 1-2GHz are below the AV limit.

Test Engineer: Jenner Liu

## **INTERTEK TESTING SERVICES**

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3.4 Conducted Emission at Mains Terminal

3.5 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration  
at  
0.294 MHz(VGA Mode)

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

## INTERTEK TESTING SERVICES

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### 3.6 Conducted Emission Data

Judgement: Passed by 3.9 dB margin (VGA Mode)

#### **TEST PERSONNEL:**

*Sign on file*

Jenner Liu Engineer

*Typed/Printed Name*

December 31, 2015

*Date*

## INTERTEK TESTING SERVICES

Company: Hisense Electric Co., Ltd.

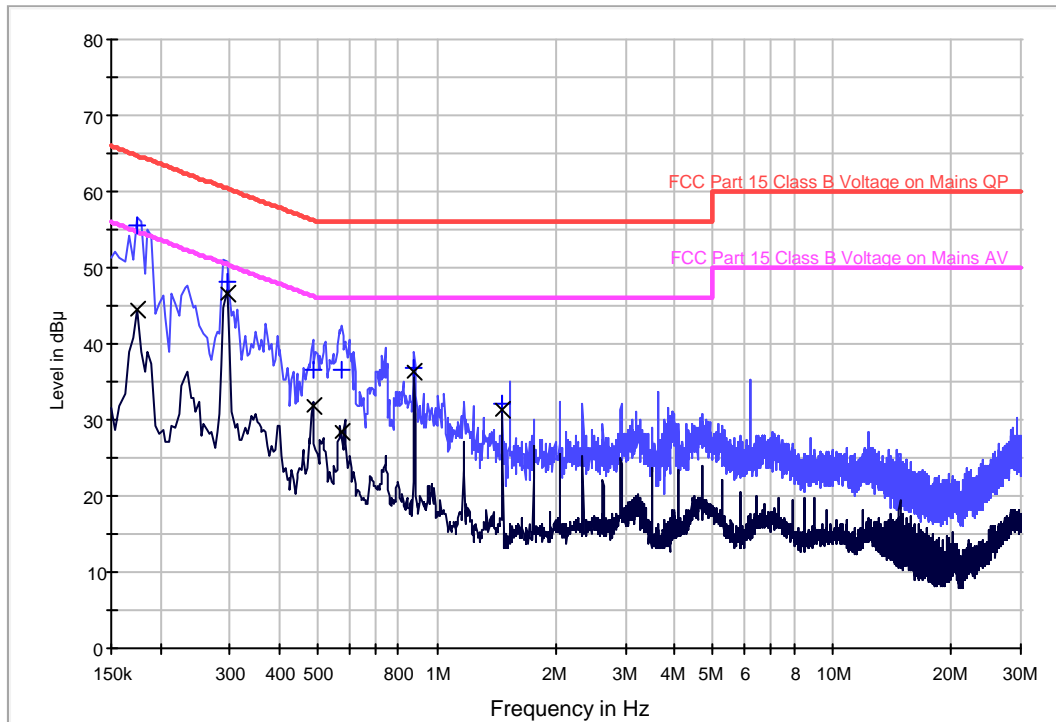
Date of Test: December 31, 2015

Model: LTDN40D50US

Operating Mode: VGA

Phase: Live

### Conducted Emission Test - FCC



#### Result Table QP

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.174	55.6	L1	9.8	9.2	64.8
0.294	48.1	L1	9.9	12.3	60.4
0.486	36.6	L1	9.9	19.6	56.2
0.574	36.6	L1	10.0	19.4	56.0
0.878	36.8	L1	10.0	19.2	56.0
1.462	32.1	L1	9.9	23.9	56.0

#### Result Table AV

Frequency (MHz)	Average (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.174	44.5	L1	9.8	10.3	54.8
0.294	46.5	L1	9.9	3.9	50.4
0.486	31.9	L1	9.9	14.3	46.2
0.574	28.4	L1	10.0	17.6	46.0
0.878	36.2	L1	10.0	9.8	46.0
1.462	31.3	L1	9.9	14.7	46.0

Test Engineer: Jenner Liu

TRF No.: FCC 15C\_PC\_b

FCC ID: W9HLCDD0044

## INTERTEK TESTING SERVICES

Company: Hisense Electric Co., Ltd.

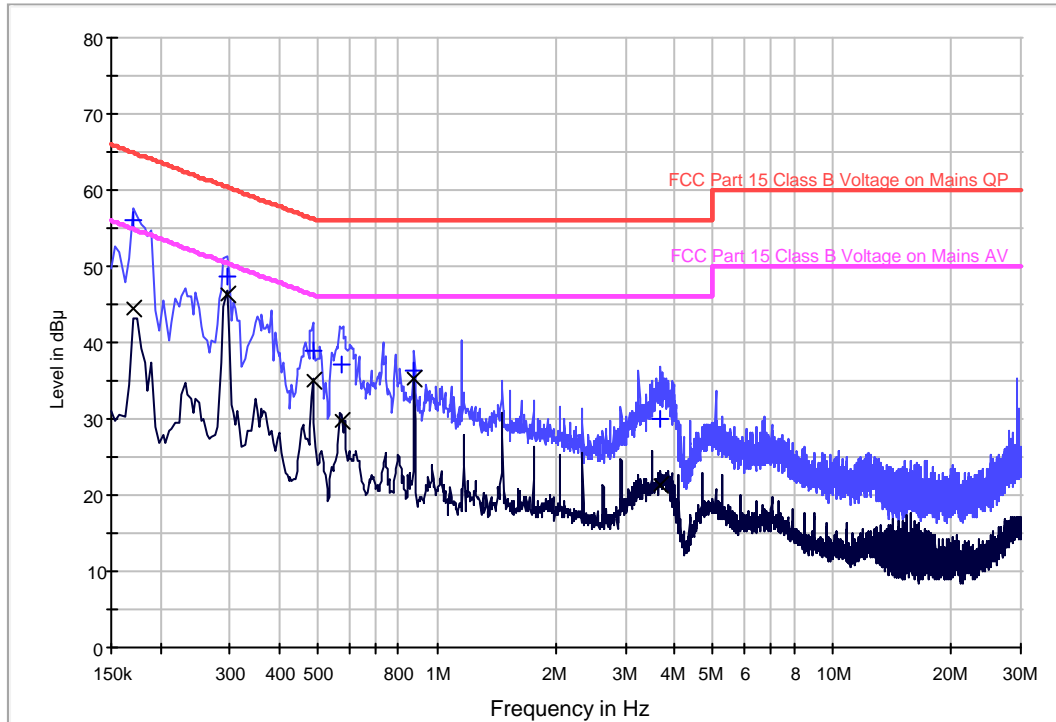
Date of Test: December 31, 2015

Model: LTDN40D50US

Operating Mode: VGA

Phase: Neutral

### Conducted Emission Test - FCC



### Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.170	56.0	N	10.2	9.0	65.0
0.294	48.8	N	10.2	11.6	60.4
0.486	38.8	N	10.2	17.4	56.2
0.574	37.2	N	10.3	18.8	56.0
0.878	36.4	N	10.3	19.6	56.0
3.682	30.1	N	10.3	25.9	56.0

### Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.170	44.4	N	10.2	10.6	55.0
0.294	46.4	N	10.2	4.0	50.4
0.486	35.0	N	10.2	11.2	46.2
0.574	29.7	N	10.3	16.3	46.0
0.878	35.3	N	10.3	10.7	46.0
3.682	21.4	N	10.3	24.6	46.0

Test Engineer: Jenner Liu

TRF No.: FCC 15C\_PC\_b

FCC ID: W9HLCDD0044

## INTERTEK TESTING SERVICES

Company: Hisense Electric Co., Ltd.

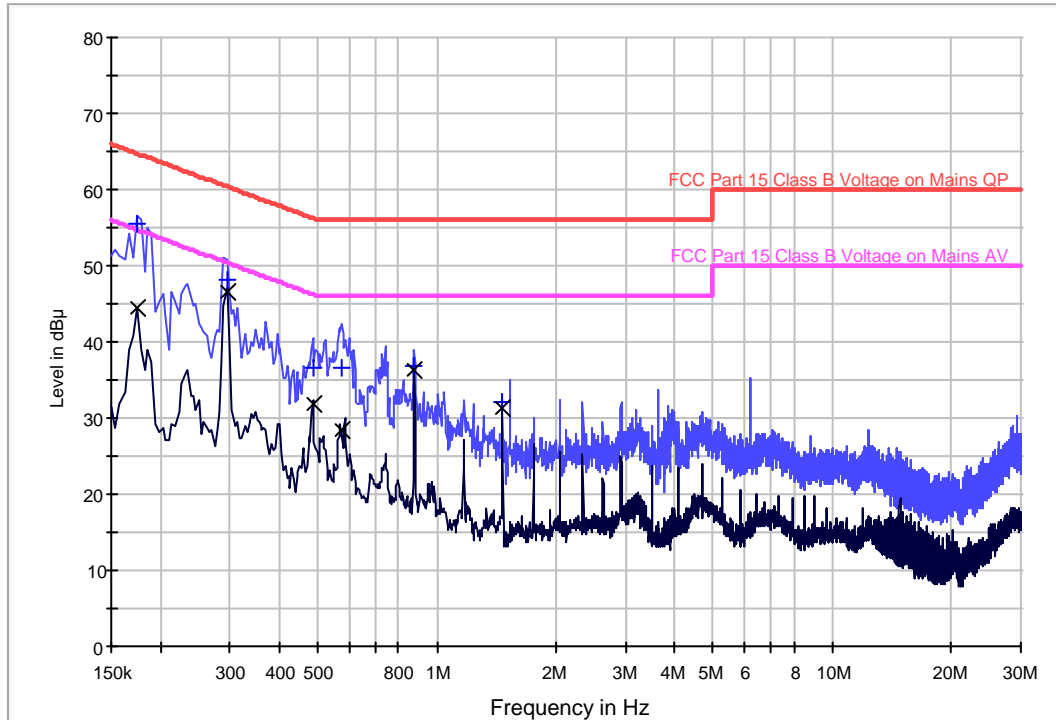
Date of Test: December 31, 2015

Model: LTDN40D50US

Operating Mode: HDMI In

Phase: Live

### Conducted Emission Test - FCC



### Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.174	55.5	L1	9.8	9.3	64.8
0.294	48.0	L1	9.9	12.4	60.4
0.486	36.6	L1	9.9	19.6	56.2
0.574	36.6	L1	10.0	19.4	56.0
0.878	36.8	L1	10.0	19.2	56.0
1.462	32.1	L1	9.9	23.9	56.0

### Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.174	44.3	L1	9.8	10.5	54.8
0.294	46.3	L1	9.9	4.1	50.4
0.486	31.9	L1	9.9	14.3	46.2
0.574	28.4	L1	10.0	17.6	46.0
0.878	36.2	L1	10.0	9.8	46.0
1.462	31.3	L1	9.9	14.7	46.0

Test Engineer: Jenner Liu

TRF No.: FCC 15C\_PC\_b

FCC ID: W9HLCDD0044

## INTERTEK TESTING SERVICES

Company: Hisense Electric Co., Ltd.

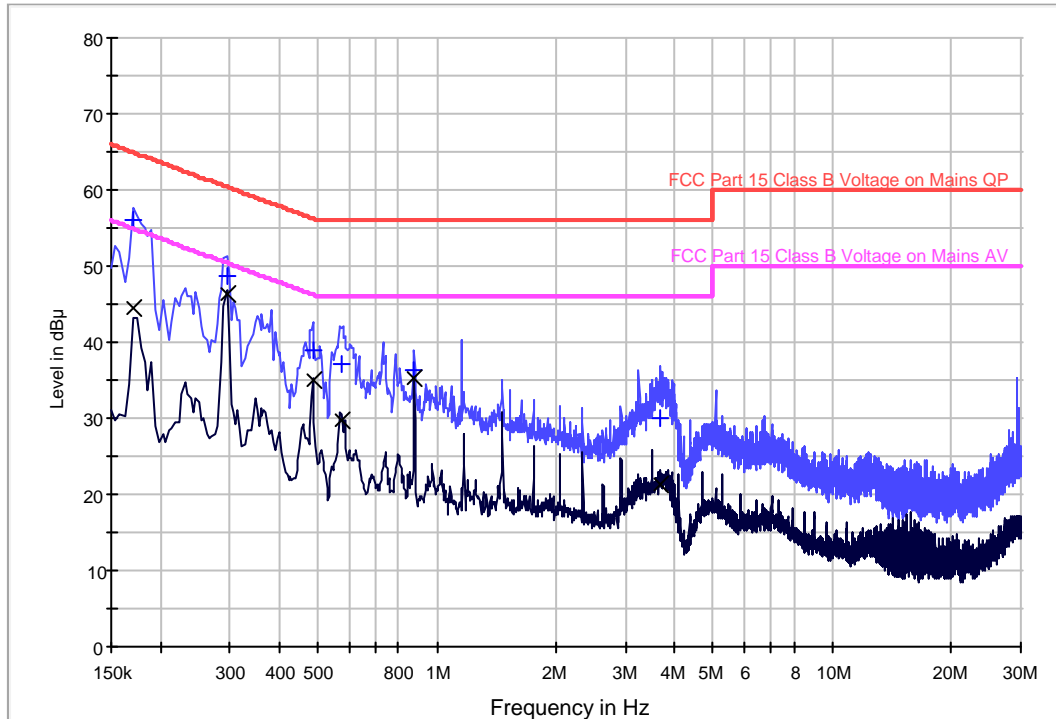
Date of Test: December 31, 2015

Model: LTDN40D50US

Operating Mode: HDMI In

Phase: Neutral

### Conducted Emission Test - FCC



### Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.170	56.1	N	10.2	8.9	65.0
0.294	48.7	N	10.2	11.7	60.4
0.486	38.7	N	10.2	17.5	56.2
0.574	37.0	N	10.3	19.0	56.0
0.878	36.3	N	10.3	19.7	56.0
3.682	30.0	N	10.3	26.0	56.0

### Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.170	44.5	N	10.2	10.5	55.0
0.294	46.2	N	10.2	4.2	50.4
0.486	35.0	N	10.2	11.2	46.2
0.574	29.6	N	10.3	16.4	46.0
0.878	35.2	N	10.3	10.8	46.0
3.682	21.5	N	10.3	24.5	46.0

Test Engineer: Jenner Liu

TRF No.: FCC 15C\_PC\_b

FCC ID: W9HLCDD0044

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 4**

### **EQUIPMENT PHOTOGRAPHS**

## INTERTEK TESTING SERVICES

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### 4.0 **Equipment Photographs**

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 5**

### **PRODUCT LABELLING**

## INTERTEK TESTING SERVICES

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### 5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 6**

### **TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

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### 6.0 **Technical Specifications**

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf.

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 7**

### **INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

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### 7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 8**

### **MISCELLANEOUS INFORMATION**

## INTERTEK TESTING SERVICES

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### 8.0 **Miscellaneous Information**

This miscellaneous information includes emission measuring procedure.

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## INTERTEK TESTING SERVICES

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### 8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of computer peripheral operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2014.

The computer peripheral equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz and in PK & AV mode from frequency band 1GHz to 2GHz with RBW setting 1MHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 30MHz to 2GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz.

## **INTERTEK TESTING SERVICES**

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### **8.1 Emissions Test Procedures (cont'd)**

The EUT is warmed up for 15 minutes prior to the test.

Conducted measurements are made as described in ANSI C63.4 – 2014.

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 9**

### **TEST EQUIPMENT LIST**

## INTERTEK TESTING SERVICES

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### 9.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-12	Biconilog Antenna	ETS	3142E	00166158	15-Sep-2015	15-Sep-2016
SZ061-08	Horn Antenna	ETS	3115	00092346	17-Oct-2015	17-Oct-2016
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	08-Jun-2015	08-Jun-2016
SZ185-01	EMI Receiver	R & S	ESCI	100547	07-Feb-2015	07-Feb-2016
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	19-Apr-2014	19-Apr-2016
SZ062-04	RF Cable	RADIAL	RG 213U	--	28-Dec-2015	28-Jun-2016
SZ062-05	RF Cable	RADIAL	0.04-26.5GHz	--	08-Oct-2015	08-Apr-2016
SZ062-12	RF Cable	RADIAL	0.04-26.5GHz	--	08-Oct-2015	08-Apr-2016
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	03-Nov-2015	03-Nov-2016
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	03-Nov-2015	03-Nov-2016
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	24-Jun-2015	24-Jun-2016
SZ188-03	Shielding Room	ETS	RFD-100	4100	23-Aug-2014	23-Aug-2016