

FCC PART 15.247 TEST REPORT

For

Hisense Electric Co., Ltd.

No. 218 Qianwangang Road, Economy & Technology Dev, Qingdao 266071, China

FCC ID: W9HPADP0003

Report Type: Class II Permissive Change	Product Type: Sero 8 Tablet
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Report Number: RSZ140418006-00AA1	
Report Date: 2014-05-16	
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Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
SPECIAL ACCESSORIES.....	5
EQUIPMENT MODIFICATIONS	5
EXTERNAL I/O CABLE.....	5
BLOCK DIAGRAM OF TEST SETUP	5
SUMMARY OF TEST RESULTS	6
FCC §15.247 (i) & §2.1093 – RF EXPOSURE	7
APPLICABLE STANDARD	7
FCC §15.203 – ANTENNA REQUIREMENT.....	8
APPLICABLE STANDARD	8
ANTENNA CONNECTOR CONSTRUCTION	8
FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS.....	9
APPLICABLE STANDARD	9
MEASUREMENT UNCERTAINTY.....	9
EUT SETUP.....	9
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	10
TEST PROCEDURE	10
CORRECTED AMPLITUDE & MARGIN CALCULATION	10
TEST EQUIPMENT LIST AND DETAILS.....	10
TEST RESULTS SUMMARY	11
TEST DATA	11
PRODUCT SIMILARITY DECLARATION LETTER.....	16

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Hisense Electric Co., Ltd.*'s product, model number: *E2281 (FCC ID: W9HPADP0003)* or the "EUT" in this report was a Sero 8 tablet, *named as Sero 8 by applicant*, which was measured approximately: 20.9 cm (L) x 13.0 cm (W) x 1.0 cm (H), rated with input voltage: DC 3.7 V rechargeable Li-ion battery or DC 5.0V from adapter.

Adapter Information:

Model: PS10C050K2000UU

Input: 100-240V~ 50/60 Hz, 0.35A

Output: 5.0V_{DC}, 2000mA

Note: The product Sero 8, models E2281xx (x shall consist of lowercase letters a-z or capital letters A-Z) are electrically identical with the model E2281 that was selected to test, they are just different in model number, which was explained in the attached product similarity declaration letter, and each model contains two type driving plates (M81FP2-01 and M81FP2-06).

**All measurement and test data in this report was gathered from production sample serial number: 1404110 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2014-05-05.*

Objective

This test report is prepared on behalf of *Hisense Electric Co., Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

This is a CIIPC application of the device, the differences between the original device and the current one are as follows:

1. Changing the antenna from PCB antenna to FPC antenna.
2. Adding a LCD driving plate.

For the change made to the device, the test item "radiated emissions" was performed.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submission with FCC ID: W9HPADP0003.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement uncertainty with radiated emission is 5.91 dB for 30MHz-1GHz, and 4.92 dB for above 1GHz, 1.95dB for conducted measurement.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode which was controlled by Ampak RFTestTool, Ver: 4.3.

EUT Exercise Software

Ampak RFTestTool, Ver: 4.3

Special Accessories

The special accessory was provided by manufacturer

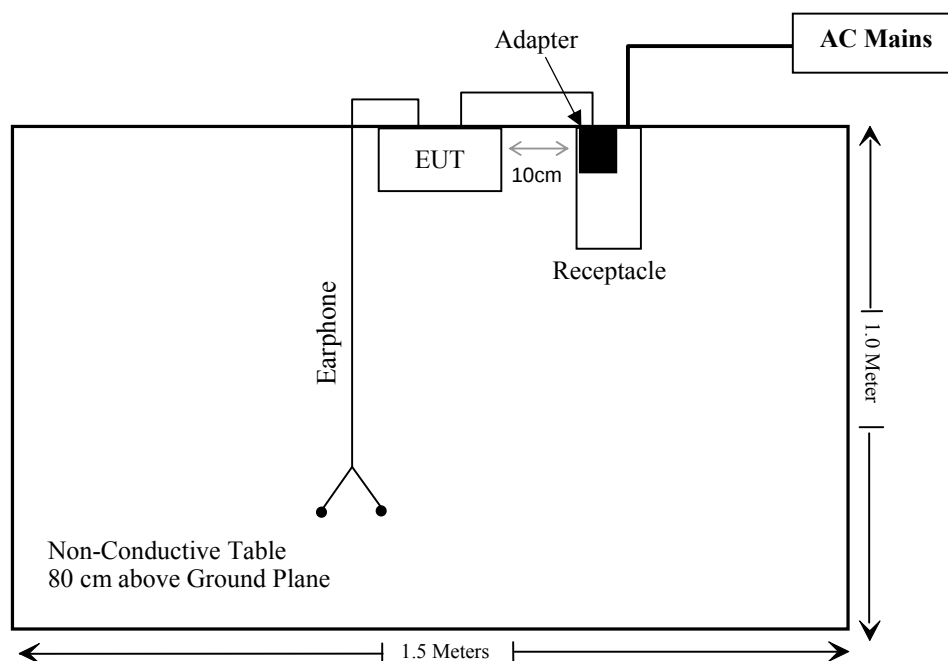
Equipment Modifications

No modification was made to the EUT tested.

External I/O Cable

Cable Description	Length (m)	From Port	To
Shielding Detachable USB Cable	1.0	EUT	Adapter

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance*
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliance
§15.247(a)(1)	20 dB Emission Bandwidth	Compliance*
§15.247(a)(1)	Channel Separation Test	Compliance*
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance*
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance*
§15.247(b)(1)	Peak Output Power Measurement	Compliance*
§15.247(d)	Band edges	Compliance*

Compliance*: Please referred to FCC ID: W9HPADP0003 granted on 2014-02-24, report No.: RSZ140126003-00A, which was tested by Bay Area Compliance Laboratories Corp.

FCC §15.247 (i) & §2.1093 – RF EXPOSURE

Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.

2. Power and distance are rounded to the nearest mW and mm before calculation.

3. The result is rounded to one decimal place for comparison.

4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

The Max Conducted Power: $-2.32\text{dBm}=0.59\text{mW}$
 $(0.59/5) \cdot \sqrt{2.45}=0.18 < 3.0$

Result: No SAR need test.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has a FPC antenna arrangement for bluetooth, which was permanently attached and the antenna gain is -1dBi, fulfill the requirement of this section. Please refer to the internal photos.

Result: Compliance.

FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

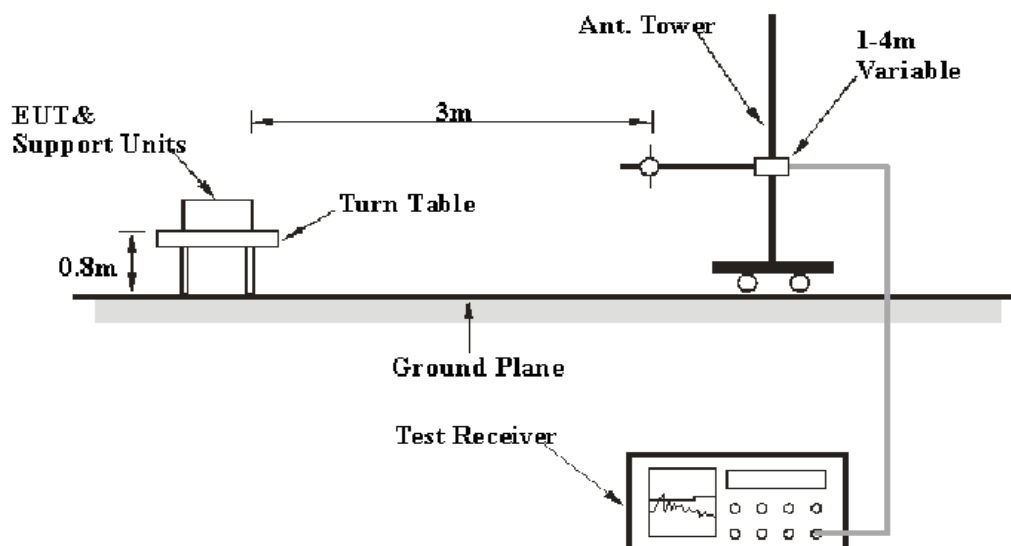
FCC §15.205; §15.209; §15.247(d)

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.91 dB for 30MHz-1GHz, and 4.92 dB for above 1GHz. And this uncertainty will not be taken into consideration for the test data recorded in the report.

EUT Setup



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209 and FCC 15.247 limits.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz and peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2013-09-30	2014-09-30
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-09-17	2014-09-17
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Mini	Amplifier	ZVA-183-S+	5969001149	2014-04-03	2015-04-03
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2015-02-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2013-11-12	2014-11-12
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
R&S	Auto test Software	EMC32	V9.10	--	--
Quinstar	Amplifier	QLW-18405536-50	15964001001	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247, the worst margin reading as below:

4.01 dB at 2496.8 MHz in the Horizontal polarization

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(L_m)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(L_m)}$ is less than $+U_{cispr}$, if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Sewen Guo on 2014-05-09.

EUT operation mode: Transmitting

30 MHz -25 GHz:

Worst case: BDR Mode (GFSK):

LCD Driving Plate: M81FP2-01

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2402 MHz)									
177.2	45.58	QP	98	1.4	H	-16.0	29.58	43.5	13.92
2402.0	90.93	PK	267	1.6	H	6.13	97.06	/	/
2402.0	78.27	Ave.	267	1.6	H	6.13	84.40	/	/
2402.0	89.27	PK	235	1.0	V	6.13	95.40	/	/
2402.0	73.10	Ave.	235	1.0	V	6.13	79.23	/	/
2336.8	61.25	PK	273	1.8	V	5.48	66.73	74	7.27
2336.8	38.35	Ave.	273	1.8	V	5.48	43.83	54	10.17
2386.0	58.38	PK	237	1.1	H	7.21	65.59	74	8.41
2386.0	40.43	Ave.	237	1.1	H	7.21	47.64	54	6.36
2496.8	62.78	PK	124	2.0	H	7.21	69.99	74	4.01
2496.8	37.89	Ave.	124	2.0	H	7.21	45.10	54	8.90
4804.0	51.10	PK	102	1.6	H	12.46	63.56	74	10.44
4804.0	32.27	Ave.	102	1.6	H	12.46	44.73	54	9.27
7206.0	50.15	PK	146	1.8	H	15.91	66.06	74	7.94
7206.0	29.70	Ave.	146	1.8	H	15.91	45.61	54	8.39
9608.0	45.85	PK	345	2.5	H	19.29	65.14	74	8.86
9608.0	26.74	Ave.	345	2.5	H	19.29	46.03	54	7.97

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2441 MHz)									
177.2	46.21	QP	123	1.2	H	-16	30.21	43.5	13.29
2441.0	89.27	PK	118	1.2	H	6.13	95.40	/	/
2441.0	72.10	Ave.	118	1.2	H	6.13	78.23	/	/
2441.0	90.12	PK	32	1.7	V	6.13	96.25	/	/
2441.0	73.56	Ave.	32	1.7	V	6.13	79.69	/	/
2362.4	60.93	PK	70	1.1	H	5.48	66.41	74	7.59
2362.4	36.36	Ave.	70	1.1	H	5.48	41.84	54	12.16
2484.8	58.17	PK	262	1.5	H	7.21	65.38	74	8.62
2484.8	40.48	Ave.	262	1.5	H	7.21	47.69	54	6.31
2489.5	59.73	PK	30	1.8	V	7.21	66.94	74	7.06
2489.5	36.52	Ave.	30	1.8	V	7.21	43.73	54	10.27
4882.0	51.59	PK	43	1.4	V	12.46	64.05	74	9.95
4882.0	32.32	Ave.	43	1.4	V	12.46	44.78	54	9.22
7323.0	50.61	PK	115	2.5	V	15.91	66.52	74	7.48
7323.0	29.90	Ave.	115	2.5	V	15.91	45.81	54	8.19
9764.0	46.27	PK	251	2.2	H	19.29	65.56	74	8.44
9764.0	25.89	Ave.	251	2.2	H	19.29	45.18	54	8.82
High Channel (2480 MHz)									
177.2	47.18	QP	144	1.2	H	-16	31.18	43.5	12.32
2480.0	90.27	PK	358	2.0	H	6.13	96.40	/	/
2480.0	78.21	Ave.	358	2.0	H	6.13	84.34	/	/
2480.0	89.76	PK	268	2.2	V	6.13	95.89	/	/
2480.0	72.10	Ave.	268	2.2	V	6.13	78.23	/	/
2342.8	59.90	PK	307	1.1	V	5.48	65.38	74	8.62
2342.8	37.26	Ave.	307	1.1	V	5.48	42.74	54	11.26
2485.2	59.66	PK	106	1.3	H	7.21	66.87	74	7.13
2485.2	40.28	Ave.	106	1.3	H	7.21	47.49	54	6.51
2492.0	60.05	PK	298	1.4	H	7.21	67.26	74	6.74
2492.0	37.14	Ave.	298	1.4	H	7.21	44.35	54	9.65
4960.0	51.32	PK	113	2.1	H	12.46	63.78	74	10.22
4960.0	30.88	Ave.	113	2.1	H	12.46	43.34	54	10.66
7440.0	49.90	PK	226	1.4	H	15.91	65.81	74	8.19
7440.0	29.20	Ave.	226	1.4	H	15.91	45.11	54	8.89
9920.0	46.28	PK	182	2.0	H	19.29	65.57	74	8.43
9920.0	26.95	Ave.	182	2.0	H	19.29	46.24	54	7.76

LCD Driving Plate: M81FP2-06

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2402 MHz)									
152.02	43.26	QP	124	1.9	H	-16	27.26	43.5	16.24
2402.0	89.76	PK	6	2.0	H	6.13	95.89	/	/
2402.0	74.08	Ave.	6	2.0	H	6.13	80.21	/	/
2402.0	87.57	PK	267	1.0	V	6.13	93.7	/	/
2402.0	73.12	Ave.	267	1.0	V	6.13	79.25	/	/
2336.8	61.28	PK	77	1.3	V	5.48	66.76	74	7.24
2336.8	41.36	Ave.	77	1.3	V	5.48	46.84	54	7.16
2386.0	62.22	PK	184	1.9	H	5.48	67.70	74	6.30
2386.0	44.06	Ave.	184	1.9	H	5.48	49.54	54	4.46
2496.8	60.40	PK	27	1.9	H	7.21	67.61	74	6.39
2496.8	40.92	Ave.	27	1.9	H	7.21	48.13	54	5.87
4804.0	55.55	PK	245	2.4	V	12.44	67.99	74	6.01
4804.0	36.75	Ave.	245	2.4	V	12.44	49.19	54	4.81
7206.0	50.62	PK	137	2.4	V	17.06	67.68	74	6.32
7206.0	31.39	Ave.	137	2.4	V	17.06	48.45	54	5.55
9608.0	49.50	PK	199	1.2	V	19.28	68.78	74	5.22
9608.0	30.42	Ave.	199	1.2	V	19.28	49.70	54	4.30
Middle Channel (2441 MHz)									
152.02	46.72	QP	135	1.5	H	-16	30.72	43.5	12.78
2441.0	89.12	PK	293	2.0	H	6.13	95.25	/	/
2441.0	73.21	Ave.	293	2.0	H	6.13	79.34	/	/
2441.0	89.21	PK	183	1.5	V	6.13	95.34	/	/
2441.0	73.36	Ave.	183	1.5	V	6.13	79.49	/	/
2362.4	62.68	PK	91	1.4	H	5.48	68.16	74	5.84
2362.4	40.79	Ave.	91	1.4	H	5.48	46.27	54	7.73
2484.8	59.44	PK	91	2.3	H	5.48	64.92	74	9.08
2484.8	41.80	Ave.	91	2.3	H	5.48	47.28	54	6.72
2489.5	62.60	PK	226	1.6	V	7.21	69.81	74	4.19
2489.5	40.33	Ave.	226	1.6	V	7.21	47.54	54	6.46
4882.0	53.21	PK	305	1.1	H	12.44	65.65	74	8.35
4882.0	37.25	Ave.	305	1.1	H	12.44	49.69	54	4.31
7323.0	51.66	PK	70	1.8	V	17.06	68.72	74	5.28
7323.0	30.00	Ave.	70	1.8	V	17.06	47.06	54	6.94
9764.0	50.01	PK	221	2.0	V	19.28	69.29	74	4.71
9764.0	29.11	Ave.	221	2.0	V	19.28	48.39	54	5.61

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2480 MHz)									
152.02	45.23	QP	135	1.5	H	-16	29.23	43.5	14.27
2480.0	88.92	PK	299	1.9	H	6.13	95.05	/	/
2480.0	73.21	Ave.	299	1.9	H	6.13	79.34	/	/
2480.0	89.10	PK	348	1.1	V	6.13	95.23	/	/
2480.0	74.10	Ave.	348	1.1	V	6.13	80.23	/	/
2342.8	64.02	PK	231	1.3	H	5.48	69.50	74	4.50
2342.8	40.60	Ave.	231	1.3	H	5.48	46.08	54	7.92
2485.2	62.25	PK	205	1.5	H	7.21	69.46	74	4.54
2485.2	40.62	Ave.	205	1.5	H	7.21	47.83	54	6.17
2492.0	60.92	PK	121	1.9	V	7.21	68.13	74	5.87
2492.0	40.99	Ave.	121	1.9	V	7.21	48.20	54	5.80
4960.0	53.22	PK	275	1.5	V	12.46	65.68	74	8.32
4960.0	37.04	Ave.	275	1.5	V	12.46	49.50	54	4.50
7440.0	50.33	PK	337	1.7	V	15.91	66.24	74	7.76
7440.0	31.70	Ave.	337	1.7	V	15.91	47.61	54	6.39
9920.0	50.52	PK	2	2.1	V	19.29	69.81	74	4.19
9920.0	29.82	Ave.	2	2.1	V	19.29	49.11	54	4.89

Note:

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Corrected Amplitude = Corrected Factor + Reading

Margin = Limit - Corrected. Amplitude

PRODUCT SIMILARITY DECLARATION LETTER

Hisense Electric Co., Ltd.

No. 218 Qianwangang Road, Economy & Technology Dev, Qingdao ,266071, China

Tel: 0532-80874377

Fax: 0532-80874665

2014-05-05

Product Similarity Declaration

To Whom It May Concern,

We, Hisense Electric Co., Ltd. hereby declare that our Sero8, the series models E2281xx (x shall consist of lowercase letters a-z or capital letters A-Z) are electrically identical with the E2281 that was certified by BACL. They are just different in model numbers.

Please contact me if you have any question.

Signature:

Lulu Tang

Director



***** END OF REPORT *****