Full

TEST REPORT

No. I17D00009-RFA

For

Client : Hisense International Co., Ltd.

Production : Smartphone

Model Name : Hisense F102

FCC ID: 2ADOBF102

Hardware Version: V1.00

Software Version: L1307.6.01.05.MX06

Issued date: 2017-02-20

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

Add: 7-8F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

Tel: (+86)-021-63843300, E-Mail: welcome@ecit.org.cn

Revision Version

Report Number	Revision	Date	Memo
I17D00009-RFA	00	2017-02-20	Initial creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301
FCC Registration NO.:	489729

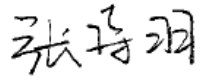
1.2. Testing Environment

Normal Temperature:	15-35℃
Extreme Temperature:	-10/+55℃
Relative Humidity:	25-75%

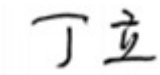
1.3. Project data

Project Leader:	Yu Anlu
Testing Start Date:	2017-01-10
Testing End Date:	2017-02-10

1.4. Signature



Zhang Shiyu
(Prepared this test report)



Ding Li
(Reviewed this test report)

Zheng Zhongbin
Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Hisense International Co., Ltd.
Address:	Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
Email:	zhangkelin@hisense.com
Postcode:	266010

2.2. Manufacturer Information

Company Name:	Hisense Communications Co., Ltd.
Address:	218 Qianwangang Road, Economic & Technological Development Zone, Qingdao, Shandong Province, P.R. China
Email:	Xuxin2@hisense.com
Postcode:	266510

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	Smartphone
Model name	Hisense F102
FCC ID	2ADOBF102
Frequency	GSM850/900/1800/1900; WCDMA BandII/IV/V LTE FDD2/4/5/7
Extreme Temperature	-10/+55℃
Nominal Voltage	3.8V
Extreme High Voltage	4.35V
Extreme Low Voltage	3.5V

Note: Photographs of EUT are shown in ANNEX A of this test report.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N10	008601601621565	V1.00	L1307.6.01.05.MX06	2017-01-10

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	RF cable	---
AE2	Dummy Battery	---

*AE ID: is used to identify the test sample in the lab internally.

3.4. Statements

The product name Hisense F102, supporting GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/HSPA+/LTE/WLAN/BT/BLE, manufactured by Hisense International Co., Ltd. is a variant product for testing. According to the variant description, there is no case to be retested except RSE. The other test results please refer to I16D00249-RFA which is the test report for the initial product of Hisense F102.

ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	2014
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	2014
FCC Part 22	PUBLIC MOBILE SERVICES	2014
ANSI-TIA-603-D	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2010
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

5. SUMMARY OF TEST RESULTS

Item	Test items	FCC rules	result
7	Conducted Spurious mission	2.1053/22.917(a)/24.238(a)/27.53(h)/2.1057	Pass
8	Emission Limit	2.1051/22.917/24.238/22.913/24.232	Pass

6. Test Equipment Utilized

Climate chamber

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Climate chamber	SH-641	92012011	ESPEC	2016-01-06	2 Year

Radiated emission test system

The test equipment and ancillaries used are as follows.

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Universal Radio Communication Tester	CMU200	123101	R&S	2016-05-12	1 Year
3	Test Receiver	ESU40	100307	R&S	2016-05-12	1 Year
4	Trilog Antenna	VULB9163	VULB9163-515	Schwarzbeck	2014-11-05	3 Year
5	Double Ridged Guide Antenna	ETS-3117	135885	ETS	2014-05-06	3 Year
8	2-Line V-Network	ENV216	101380	R&S	2016-05-12	1 Year

Conducted test system

No.	Name	Type	SN	Manufacture	Cal. Due Date	Cal.interval
1	Spectrum Analyzer	FSQ26	101096	R&S	2016-05-12	1 Year
2	Universal Radio Communicat	CMU200	123102	R&S	2016-05-12	1 Year
3	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2016-05-12	1 Year
4	Weinschel power spliter	1870A	10264	Weinschel	2016-05-12	1 Year

7. Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25%, Max. = 75 %
Shielding effectiveness	> 110 dB
Ground system resistance	< 0.5 Ω

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =25 %, Max. =75 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

ANNEX A. MEASUREMENT RESULTS

ANNEX A.1. RADIATED

A.1.1. ERP

A.1.1.1. GSM ERP

A.1.1.1.1. Description

This is the test for the maximum radiated power from the EUT.

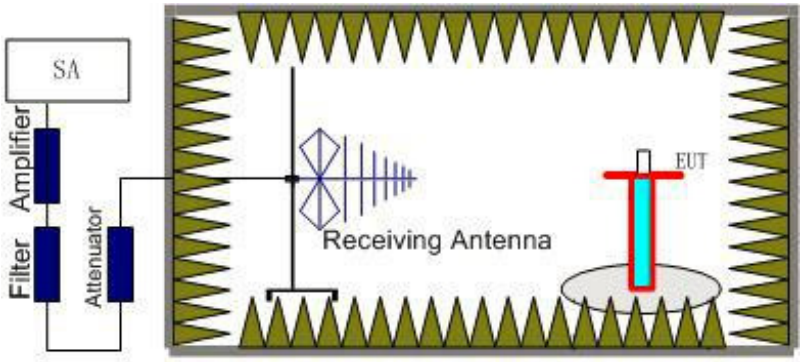
Rule Part 24.232(c) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power"and 24.232(c) specifies that "Peak transmit power must be measured over any interval ofcontinuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."Rule Part 22.913(a) specifies ” The ERP of mobile transmitters and auxiliary test transmitters must

not exceed 7 Watts.”

A.1.1.1.2. Method of Measurement

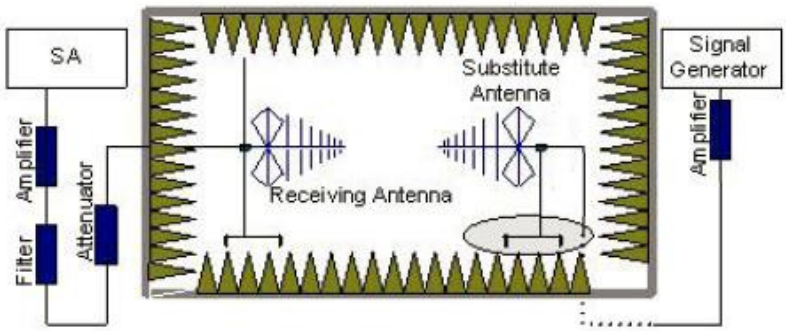
The measurements procedures in TIA-603D-2010 are used.

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from thereceive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUTfor emission measurements. The height of receiving antenna is 1.5m. The test setup refers tofigure below. Detected emissions were maximized at each frequency by rotating the EUTthrough 360° and adjusting the receiving antenna polarization. The radiated emissionmeasurements of all transmit frequencies in three channels (High, Middle, Low) weremeasured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level duringthe test. And the maximum value of the receiver should be recorded as (Pr).

3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna.

The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.

The measurement results are obtained as described below:

Power(EIRP)=P_{Mea}+ P_{Ag}- P_{cl}+ G_a

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15dBi) and known input power.

6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

A.1.1.1.3 GSM 850-ERP 22.913(a)

A.1.1.1.3.1 Limits

	Power Step	Burst Peak ERP (dBm)
GSM	5	≤38.45dBm (7W)
GPRS	3	≤38.45dBm (7W)
EDGE	6	≤38.45dBm (7W)

A.1.1.1.3.2 Measurement result

GSM(GMSK)

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_aAntenna Gain (dBd)	PeakERP (dBm)	Polarization
824.2	-7.66	3.1	37	3.11	29.35	H
836.6	-6.78	3.1	37	3.11	30.23	H

848.8	-7.12	3.1	37	3.11	29.89	H

GPRS(GMSK)

Frequency (MHz)	PMea(dBm)	Pcl(dB)	PAg(dB)	GaAntenna Gain(dBd)	PeakERP(dBm)	Polarization
824.2	-6.6	3.1	37	3.11	30.41	H
836.6	-9.24	3.1	37	3.11	27.77	H
848.8	-8.46	3.1	37	3.11	28.55	H

EDGE(8PSK)

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_aAntenna Gain(dBd)	PeakERP(dBm)	Polarization
824.2	-10.56	3.1	37	3.11	26.45	H
836.6	-10.16	3.1	37	3.11	26.85	H
848.8	-9.92	3.1	37	3.11	27.09	H

Frequency: 824.2MHz

Peak ERP(dBm)= P_{Mea}(-10.56dBm) - P_{cl}(3.1dB) +P_{Ag}(37dB) + G_a(3.11dBd)

= 26.45dBm

Note: ANALYZER SETTINGS: RBW = VBW = 3MHz

A.8.1.1.4 PCS 1900-EIRP 24.232(c)

A.8.1.1.4.1 Limits

	Power Step	Burst Peak EIRP (dBm)
GSM	0	≤33dBm (2W)
EDGE	5	≤33dBm (2W)
GPRS	3	≤33dBm (2W)

A.8.1.1.4.2 Measurement result

GSM(GMSK)

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_aAntenna Gain(dBi)	PeakEIRP(dBm)	Polarization
1850.2	-10.74	4.6	36	4.7	25.36	H
1880.0	-9.67	4.6	35.6	4.7	26.03	V

1909.8	-9.83	4.7	36	4.7	26.17	V

GPRS(GMSK)

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_aAntenna Gain(dBi)	PeakEIRP(dBm)	Polarization
1850.2	-9.61	4.6	36	4.7	26.49	H
1880.0	-9.22	4.6	35.6	4.7	26.48	H
1909.8	-8.87	4.7	36	4.7	27.13	V

EDGE(8PSK)

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_aAntenna Gain(dBi)	PeakEIRP(dBm)	Polarization
1850.2	-13.49	4.6	36	4.7	22.61	H
1880.0	-13.08	4.6	35.6	4.7	22.62	H
1909.8	-12.46	4.7	36	4.7	23.54	H

Frequency: 1850.2MHz
Peak EIRP(dBm)= P_{Mea}(-10.74dBm) - P_{cl}(4.6dB)+ P_{Ag}(36dB) +G_a(4.7dB)+2.15dBi=25.36dBm
ANALYZER SETTINGS: RBW = VBW = 3MHz

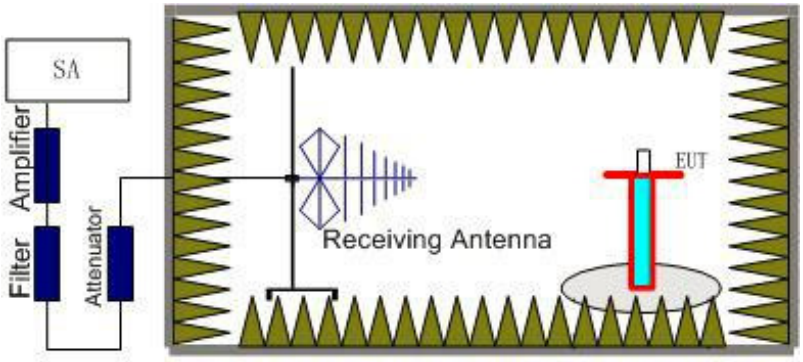
A.1.1.2. WCDMA ERP

A.1.1.2.1. Description

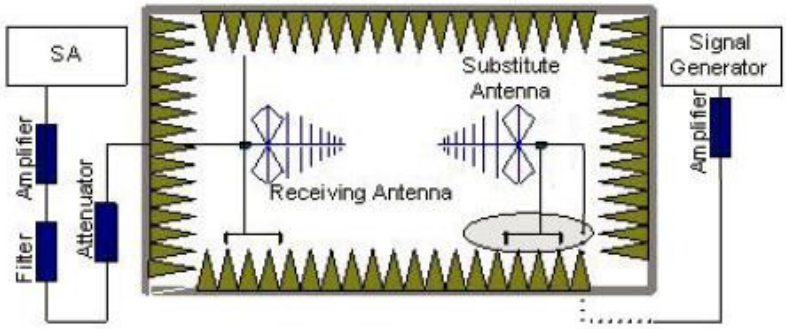
This is the test for the maximum radiated power from the EUT.
Rule Part 24.232(c) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power"and 24.232(c) specifies that "Peak transmit power must be measured over any interval ofcontinuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."Rule Part 22.913(a) specifies ” The ERP of mobile transmitters and auxiliary test transmitters mustnot exceed 7 Watts.”

A.1.1.2.2. Method of Measurement

The measurements procedures in TIA-603D-2010 are used.
1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from thereceive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUTfor emission measurements. The height of receiving antenna is 1.5m. The test setup refers tofigure below. Detected emissions were maximized at each frequency by rotating the EUTthrough 360° and adjusting the receiving antenna polarization. The radiated emissionmeasurements of all transmit frequencies in three channels (High, Middle, Low) weremeasured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
4. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna.
The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
The measurement results are obtained as described below:
Power(EIRP)=P_{Mea}+ P_{Ag} -P_{cl}+ G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

A.1.1.2.3 WCDMA Band II-EIRP

A.1.1.2.3.1 Limit

	Burst Peak EIRP (dBm)

WCDMA Band II	≤33dBm (2W)

A.1.1.2.3.2 Measurement result

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_aAntenna Gain(dBi)	PeakEIRP(dBm)	Polarization
1852.4	-13.36	4.6	36	4.7	22.74	V
1880.0	-13.71	4.6	35.6	4.7	21.99	H
1907.6	-13.37	4.7	36	4.7	22.63	H

Frequency: 1852.40MHz

Peak EIRP(dBm)= P_{Mea}(-13.36dBm)- P_{cl}(4.6dB)+ P_{Ag}(36dB)+G_a(4.7dBi) =22.74dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

A.1.1.2.4 WCDMA Band IV-ERP

A.1.1.2.4.1 Limits

	Burst Peak EIRP (dBm)
WCDMA Band IV	≤38.45dBm (7W)

A.1.1.2.4.2 Measurement result

Frequency (MHz)	PMea(dBm)	Pcl(dB)	PAg(dB)	GaAntenna Gain(dBi)	PeakEIRP(dBm)	Polarization
1713.0	-17.49	4.4	36.25	4.7	19.06	V
1731.2	-16.95	4.5	35.88	4.7	19.13	V
1754.0	-18.17	4.5	36.44	4.7	18.47	V

Frequency: 1712.4 MHz

Peak ERP(dBm)= PMea(-17.49dBm)- Pcl(4.4dB)+PAg(36.25dB)+Ga(4.7dB)=19.06dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

A.1.1.2.5 WCDMA Band V-ERP

A.1.1.2.5.1 Limits

	Burst Peak EIRP (dBm)
WCDMA Band V	≤38.45dBm (7W)

A.1.1.2.5.2 Measurement result

Frequency	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_aAntenna	PeakERP(d	Polarizati
826.4	-14.59	3.1	37	2.9	22.21	H

836.6	-15.14	3.1	37	2.9	21.66	H
846.6	-15.11	3.1	37	2.9	21.69	H

Frequency: 826.4 MHz

Peak ERP(dBm)= P_{Mea}(-14.59dBm)- P_{cl}(3.1dB)+P_{Ag}(37dB)+G_a(2.9idB)=22.21dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: the EUT was displayed in several different direction, the worst cases were shown.

A.1.2 EMISSION LIMIT (§2.1051/§22.917§24.238)

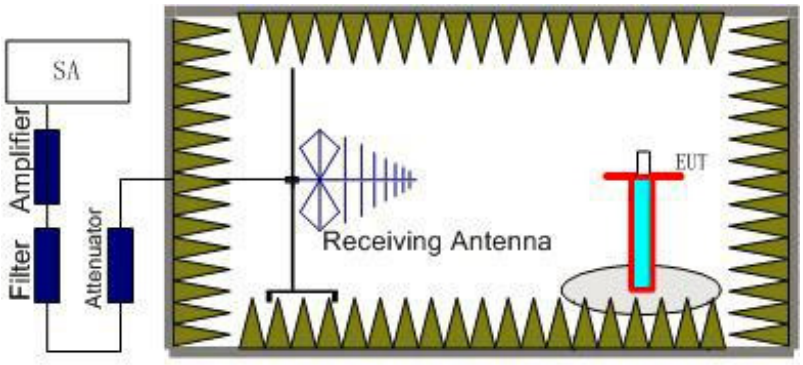
A.1.2.1 GSM Measurement Method

The measurement procedures in TIA-603D-2010are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set as outlined in Part 24.238 and Part 22.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of PCS1900 and GSM850.

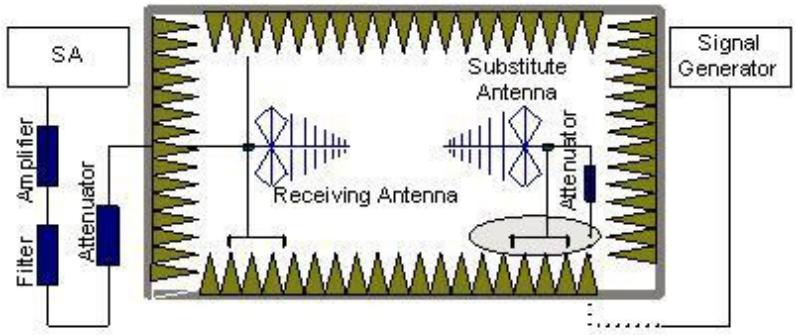
A.1.2.2 The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10thharmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).

3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.

A amplifier should be connected in for the test.

The Path loss (P_{pl}) is the summation of the cable loss .

The measurement results are obtained as described below:

Power(EIRP)=P_{Mea}- P_{pl}+ G_a

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.

6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi

A.1.2.3 Measurement Limit

Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.1.2.4 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the PCS1900 band (1850.2 MHz, 1880 MHz and 1909.8 MHz) and GSM850 band (824.2MHz, 836.6MHz, 848.8MHz) . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a

carrier in one block of the PCS1900 ,GSM850 into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

A.1.2.5 Measurement Results

Measurements results:

Frequency	Channel	Frequency Range	Result
GSM850	Low	30MHz~10GHz	P
	Middle	30MHz~10GHz	P
	High	30MHz~10GHz	P

GSM Mode Channel 128

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1519.285714	-48.95	4.1	5.3	-47.75	-13	V
2377.5	-40.94	5.2	5.4	-40.74	-13	V
4099.615385	-49.86	7	8.7	-48.16	-13	H
6603.076923	-47.52	9.1	10.7	-45.92	-13	V
7618.461539	-47.59	9.7	11.7	-45.59	-13	V
8323.076923	-45.09	10.1	10.5	-44.69	-13	V

Note:

GSM850, CH128

Power(ERP)= Pmea-Pcl+Ga=-45.09-10.1+10.5=-44.69dbm

This method Applicable to the following table.

GSM Mode Channel 190

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1832.142857	-45.16	4.6	4.6	-45.16	-13	H

2511.428571	-37.16	5.4	5.6	-36.96	-13	V
4105.384615	-49.71	7	8.7	-48.01	-13	H
4938.461538	-49.35	7.7	9.5	-47.55	-13	V
5779.615385	-48.98	8.5	10.2	-47.28	-13	H
8423.076923	-45.57	10.1	10.5	-45.17	-13	H

GSM Mode Channel 251

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1695	-46.77	4.4	5	-46.17	-13	H
2546.785714	-29.06	5.4	5.6	-28.86	-13	H
5337.692308	-48.93	8.1	9.5	-47.53	-13	V
6584.615385	-47.76	9.1	10.7	-46.16	-13	V
8564.615385	-47.3	10.3	12.6	-45	-13	H
9430.769231	-45.1	10.7	12.7	-43.1	-13	V

Conclusion: PASS

Note: the EUT was displayed in several different direction, the worst cases were shown.

A.1.2.2. WCDMA Measurement Method

The measurements procedures in TIA-603D-2010 are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in Part 24.238 and Part 24.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band II and WCDMA Band V.

The procedure of radiated spurious emissions is the same like GSM.

A.1.2.2.1. Measurement Limit

Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.1.2.2.2. Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the WCDMA Band II (1852.4 MHz, 1880.0MHz and 1907.6MHz) and WCDMA Band
V (826.4MHz, 836.6MHz and 846.6MHz) . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the WCDMA Band II and WCDMA Band V into any of the other blocks. The
equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

A.1.2.2.3. Measurement Results Table

Frequency	Channel	Frequency Range	Result
WCDMA Band V	Low	30MHz~10GHz	P
	Middle	30MHz~10GHz	P
	High	30MHz~10GHz	P

WCDMA BAND V Mode Channel 4132

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1861.071429	-58.85	4.6	4.6	-58.85	-13	H
4067.2	-60.07	6.9	8.6	-58.37	-13	V
4854.4	-60.33	7.6	9.3	-58.63	-13	V
5713.6	-59.47	8.5	10.2	-57.77	-13	V

7518.4	-57.63	9.7	11.6	-55.73	-13	V
8290.6	-57.83	10.1	12.4	-55.53	-13	V

WCDMA BAND V Mode Channel 4183

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
2368.076923	-54.34	5.2	5.1	-54.44	-13	V
4078.8	-61.51	7	8.6	-59.91	-13	V
4973.6	-59.52	7.7	9.6	-57.62	-13	H
6337.2	-58.03	8.8	10.4	-56.43	-13	V
8441.2	-58.21	10.2	12.6	-55.81	-13	V
9693.4	-53.81	10.9	12.7	-52.01	-13	V

WCDMA BAND V Mode Channel 4233

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1665.357143	-63.03	4.3	5	-62.33	-13	H
2541.923077	-53.58	5.4	5.6	-53.38	-13	V
4374.4	-60.73	7.2	8.8	-59.13	-13	H
5781.6	-59.93	8.5	10.2	-58.23	-13	H
6752.8	-57.94	9.2	10.9	-56.24	-13	V
8786.8	-57.52	10.4	12.7	-55.22	-13	H

Conclusion: PASS

Note: the EUT was displayed in several different direction, the worst cases were shown.

ANNEX B. Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

ANNEX C. Product Change Description

As the applicant of the below model, [Hisense International Co., Ltd.] declares that the product,

Product description: Smartphone
Brand name: Hisense
Model name: Hisense F102

is the variant of the initial certified product,

Product description: Smartphone
Brand name: Hisense
Model name: Hisense F102

SOFTWARE MODIFICATIONS:
Protocol Stack changes: NO
MMS/STK changes: NO
JAVA changes: NO
Other changes detailed: NO

HARDWARE MODIFICATION:
Band changes: NO
Power Amplifier changes: NO
Antenna changes: NO
PCB Layout changes: NO
Components on PCB changes: NO
LCD+CTP changes: Yes, only increased a new supplier.
Speaker changes: Yes, only increased a new supplier.
Camera changes: NO
Vibrator changes: Yes, only increased a new supplier.
Bluetooth changes: NO
FM changes: NO
Memory changes: Yes, only increased a new supplier.
Other changes: NO

MECHANICAL MODIFICATIONS:
Use new metal front/back cover or keypad: NO
Mechanical shell changes: NO.
Other changes detailed: NO

ACCESSORY MODIFICATIONS:
Battery changes: Yes, only increased a new supplier.
AC Adaptor changes: NO
USB Cable changed: NO

Earphone changes: NO

Original Client:

Name：Hisense International Co., Ltd.
Address：Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China

Original manufacturer：

Name: Hisense Communications Co., Ltd.
Address：No.218, Qianwangang Road, Economic & Technological Development Zone, Qingdao, China

New Client:

Name: Hisense International Co., Ltd. Address: Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China

New manufacturer：

Name: Hisense Communications Co., Ltd. Address：No.218, Qianwangang Road, Economic & Technological Development Zone, Qingdao, China

APPROVED BY: 

Date:2017/2/14

Company: Hisense International Co., Ltd.

Address: Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China

Tel: +86-532-80875571

ANNEX D. Accreditation Certificate

Accredited Laboratory

A2LA has accredited

EAST CHINA INSTITUTE OF TELECOMMUNICATIONS

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of any additional program requirements in the field of Electrical. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 10th day of December 2014.

President & CEO
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2017

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

************End The Report************