FCC RF TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

LTE-FDD/HSPA MODULE

ISSUED TO
Shanghai Simcom Ltd.

SIM Technology Building., No.633, Jinzhong Rd, Changning District, Shanghai, P. R. China

Tested by: Tu Lang
Tu Lang
(Engineer)
Date Oct. 20, 2016

Approved by:
Wei Yanquan
(Chief Engineer)
Date Oct. 20. 2016

Report No.:	BL-SZ1690342-501
EUT Type:	LTE-FDD/HSPA MODULE
Model Name:	SIM7500A
Brand Name:	SIMCom
Test Standard:	47 CFR Part 2 (10-1-15 Edition)
	47 CFR Part 27 (10-1-15 Edition)
FCC ID:	UDV-201606
Test Conclusion:	Pass
Test Date:	Sep. 27, 2016 ~ Oct. 18, 2016
Date of Issue:	Oct. 20, 2016

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Oct. 09, 2016	Initial Issue
Rev. 02	Oct. 20, 2016	Revised test procedure and limit for LTE B12 in section 5; Added conducted output power in section annex A.1; Revised radiated unwanted emission data in section A.7.

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China.
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location 1	Shenzhen BALUN Technology Co., Ltd.
Address 1	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China.
Accreditation Certificate1	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055
Test Location 2	ECIT Shanghai, East China Institute of Telecommunications
Address 2	7F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

1.3 Test Environment Condition

Ambient Temperature	20 to 35 °C
Ambient Relative Humidity	30 to 60 %
Ambient Pressure	98 to 102KPa

1.4 Announce

(1) The test report reference to the report template version v1.3.
(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
(3) The test report is invalid if there is any evidence and/or falsification.
(4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
(5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
(6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Shanghai Simcom Ltd.
Address	SIM Technology Building., No.633, Jinzhong Rd, Changning District, Shanghai, P. R. China

2.2 Manufacturer Information

Manufacturer	Shenyang Simcom Technology Ltd.
Address	No. 37, Shenbei Rd, Shenbei New Aear, Shenyang, P. R. China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Type	LTE-FDD/HSPA MODULE
Model Name	SIM7500A
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V1.02
Software Version	SIM7500A_V1.1
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Network and Wireless connectivity	WCDMA Band 2/ 5; LTE FDD Band 2/ 4/ 12
About the Product	The equipment is LTE-FDD/HSPA MODULE, intended for used with information technology equipment.

2.5 Technical Information

The requirement for the following technical information of the EUT was tested in this report:

Frequency Bands	LTE FDD Band 12	
Modulation Type	LTE	QPSK
		16QAM
TX Frequency Range	LTE FDD Band 12: 699- 716 MHz	
Rx Frequency Range	LTE FDD Band 12: 729- 746 MHz	
Power Class	LTE FDD Band 12: 3	
Antenna Type	Dipole Antenna	

Note 1: The EUT information are declared by manufacturer. For more detailed features description, please refer to the manufacturer's specifications or user's manual.

Note 2: SIM 7500A, FCC ID: UDV-201606, don’t support full RB of the bandwidth more 10MHz @16QAM mode.

2.6 Ancillary Equipment

Ancillary Equipment 1	Charger	
	Brand Name	SWITCHING POWER SUPPLY
	Model No.	P-050B
	Rated Input	100-240 V~, 0.3 A, 50/60 Hz
	Rated Output	5 V⎓, 2A

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2 (10 - 1 - 15 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
3	47 CFR Part 27 (10 - 1 - 15 Edition)	Miscellaneous Wireless Communications Services
4	TIA/EIA 603.D-2010	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
5	KDB 971168 D01 v02r02	Measurement Guidance for Certification of Licensed Digital Transmitters

3.2 Test Verdict

No.	Description	FCC Part No.	Test Result	Verdict
1	Conducted RF Output Power	2.1046	Reporting only (ANNEX A.1)	N/A
2	Effective (Isotropic) Radiated Power	2.1046 27.50(c) 27.50(d) 27.50(h)	ANNEX A.1	Pass
3	Peak to average radio	2.1046 27.50(c) 27.50(d) 27.50(h)	ANNEX A.2	Pass
4	Occupied Bandwidth	2.1049 27.53(g) 27.53(h) 27.53(m)	ANNEX A.3	Pass
5	Frequency Stability	2.1055 27.54	ANNEX A.4	Pass
6	Spurious Emission at Antenna Terminals	2.1051 27.53(g) 27.53(h) 27.53(m)	ANNEX A.5	Pass
7	Band Edge	2.1051 27.53(g) 27.53(h) 27.53(m)	ANNEX A.6	Pass

8	Field Strength of Spurious Radiation	2.1053 27.53(g) 27.53(h) 27.53(m)	ANNEX A.7	Pass

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Working Voltage of The EUT	NV (Normal Voltage)	4.0 V
	LV (Low Voltage)	3.4 V
	HV (High Voltage)	4.2 V
Working Temperature of The EUT	LT (Low Temperature)	-30 °C
	HT (High Temperature)	50 °C

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2016.07.13	2017.07.12
Spectrum Analyzer	AGILENT	E4440A	MY45304434	2015.10.15	2016.10.14
Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU 200	123666	2015.10.15	2016.10.14
Wireless Communications Test Set	ROHDE&SCHWARZ	CMW 500	102318	2016.07.13	2017.07.12
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2016.07.05	2017.07.04
Power Splitter	KMW	DCPD-LDC	1305003215	--	--
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2016.07.13	2017.07.12
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	IT6863A	600014010687210020	2016.07.13	2017.07.12
Temperature Chamber	ANGELANTIONI SCIENCE	SP20	1412	2016.07.13	2017.07.12
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2015.07.22	2017.07.21
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2015.07.22	2017.07.21
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2015.07.22	2017.07.21
Test Antenna-Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2015.07.22	2017.07.21
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2015.02.28	2017.02.27
Shielded Enclosure	ChangNing	CN-130701	130703	--	--

4.3 Test Configurations

LTE Band	Bandwidth (MHz)						Modulation		RB#			Test Channel		
	1.4	3	5	10	15	20	QPSK	16-QAM	1	Half	Full	LCH	MCH	HCH
E.R.P/E.I.R.P														
12	v	v	v	v	n	n	v	v	v	v	v	v	v	v
Peak to Average Ratio														
12	--	--	--	v	n	n	v	v	v	--	v	v	v	v
Occupied Bandwidth														
12	v	v	v	v	n	n	v	v	--	--	v	v	v	v
Frequency Stability														
12	--	--	--	v	n	n	v	v	--	--	v	--	v	--
Spurious Emission at Antenna Terminals														
12	v	v	v	v	n	n	v	v	v	--	--	v	v	v
Band Edge														
12	v	v	v	v	n	n	v	v	v	--	v	v	--	v
Field Strength of Spurious Radiation														
12	v	v	v	v	n	n	v	--	v	--	--	--	v	--

Note 1: The mark “v” means that this configuration is chosen for testing.

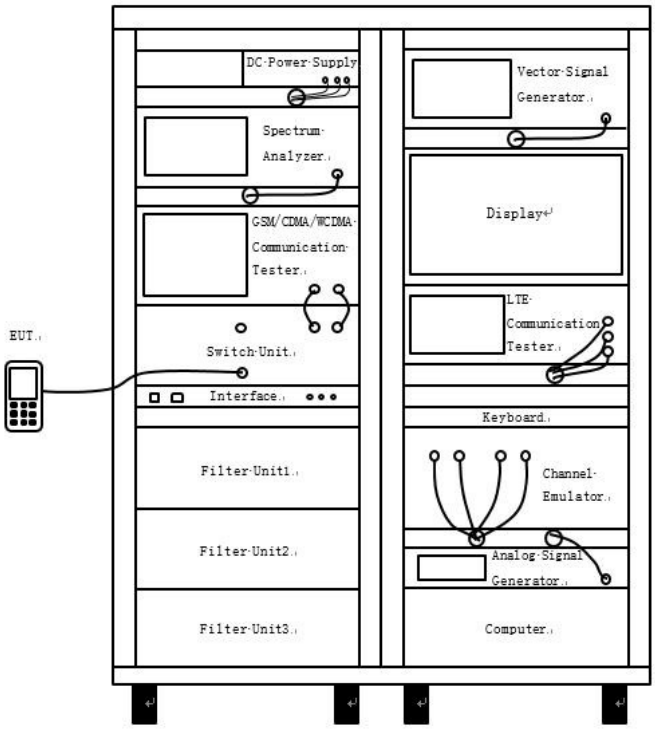
Note 2: The mark “n” means that this bandwidth is not supported.

Note 3: SIM 7500A, FCC ID: UDV-201606, don’t support full RB of the bandwidth more 10MHz @16QAM mode.

Test Mode	UL Channel	Channel Bandwidth (MHz)	UL Channel No.	UL Frequency (MHz)
LTE Band 12	Low Range	1.4	23017	699.7
		3	23025	700.5
		5	23035	701.5
		10	23060	704
	Mid Range	1.4/3/5/10	23095	707.5
	High Range	1.4	23173	715.3
		3	23165	714.5
		5	23155	713.5
		10	23130	711

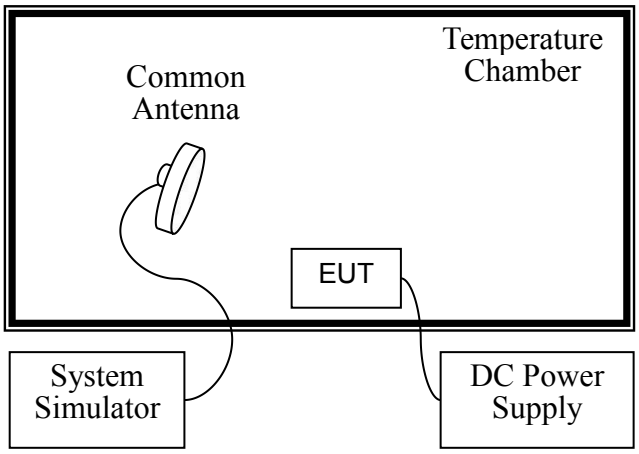
4.4 Test Setup

4.4.1 For Antenna Port Test



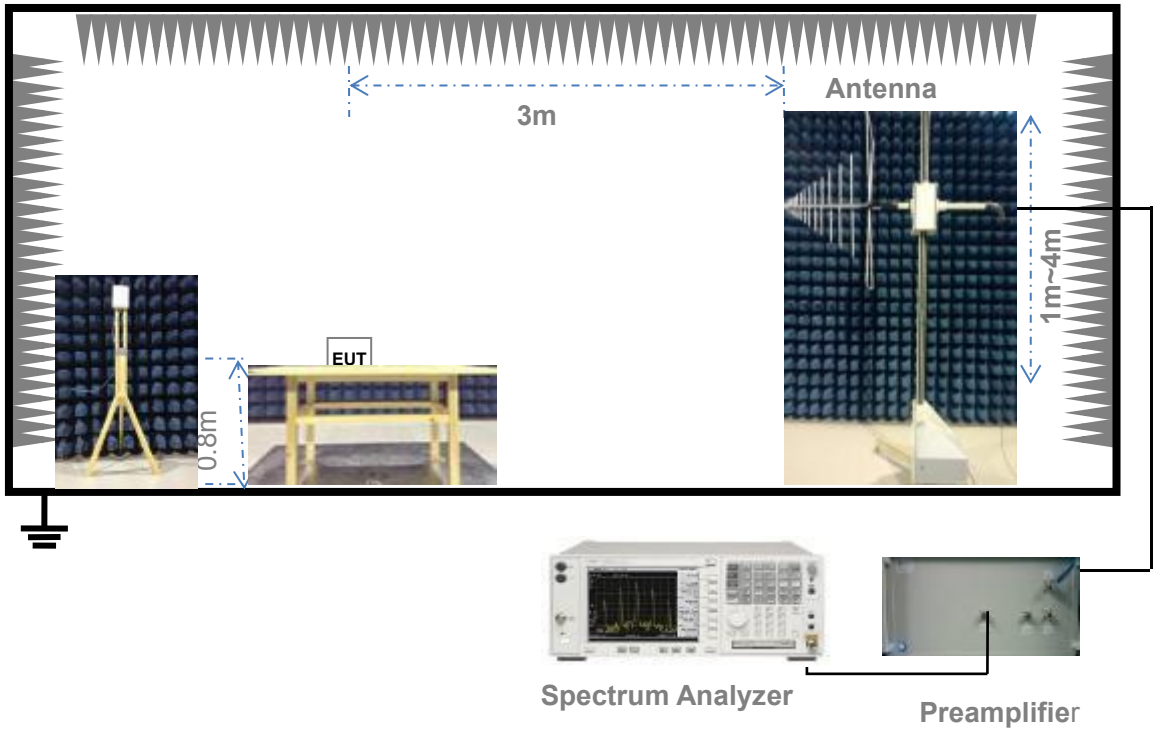
(Diagram 1)

4.4.2 For Frequency Stability Test



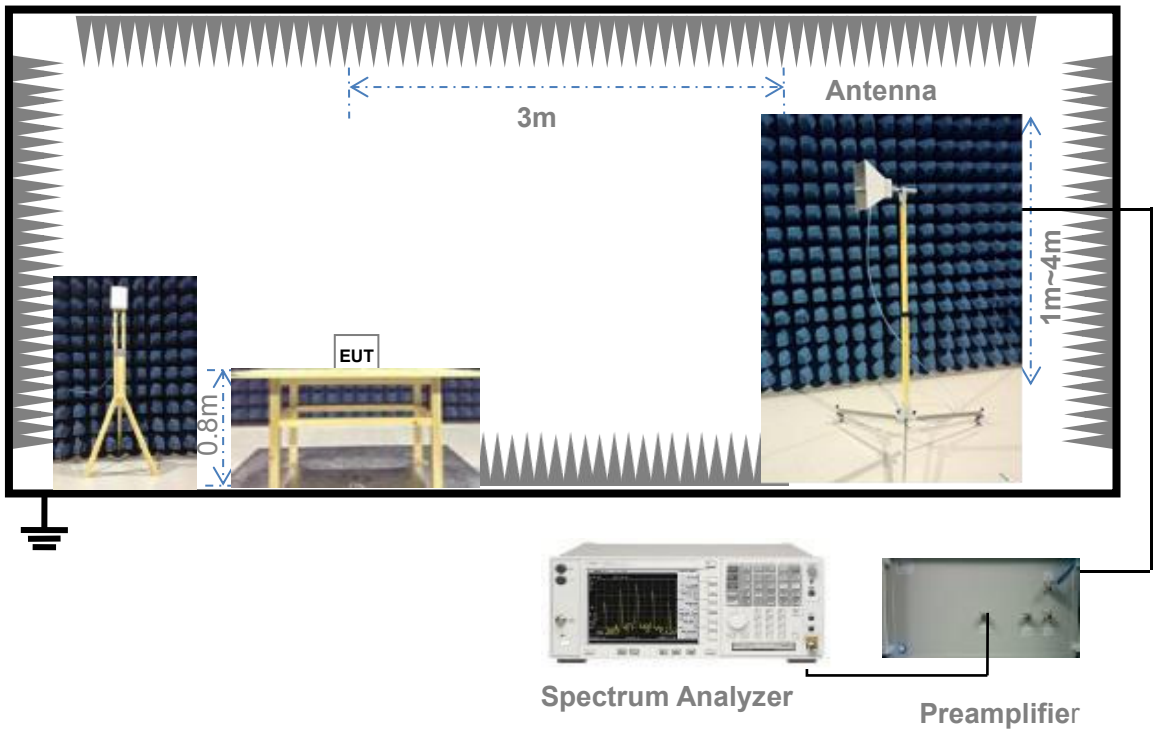
(Diagram 2)

4.4.3 For Radiated Test (30 MHz-1 GHz)



(Diagram 3)

4.4.4 For Radiated Test (Above 1 GHz)



(Diagram 4)

5 TEST ITEMS

5.1 Transmitter Radiated Power (EIRP/ERP)

5.1.1 Limit

FCC §2.1046(a) & 22.913 & 24.232 & 27.50(d) & 27.50(h) & 27.50(c)

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts, FCC section 24.232, Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.
FCC section 27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications, and FCC section 27.50(h) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

FCC section 27.50(c), fixed and portable stations (hand-held devices) operating in 698-746 MHz band, are limited to 3.0 watts ERP.

5.1.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for conducted output power test. The section 4.4.3 (Diagram 3) test setup description was used for radiatted output power test. The photo of test setup please refer to ANNEX B.

5.1.3 Test Procedure

Description of the Conducted Output Power Measurement

The EUT is coupled to the SS with attenuator through power splitter; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. A system simulator was used to establish communication with the EUT, Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

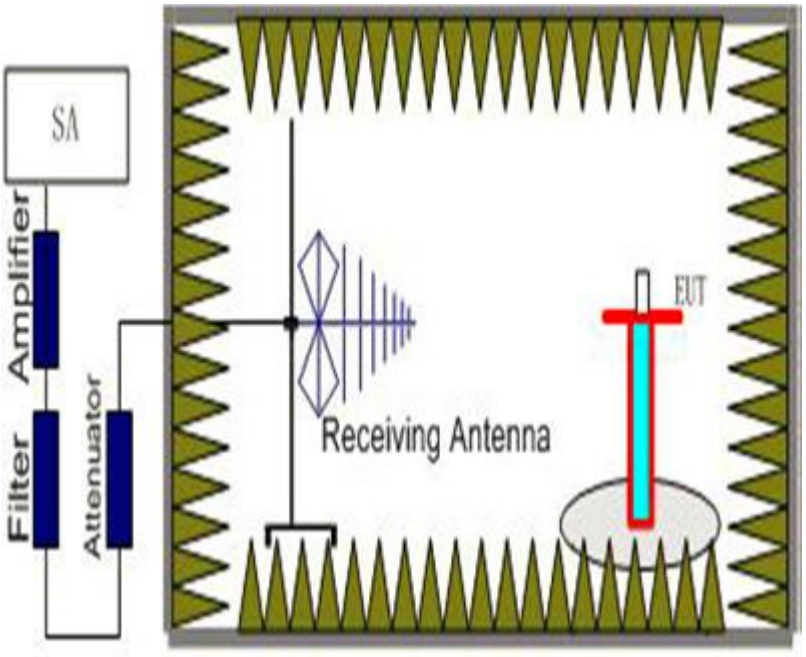
Note: Reference test setup 4.4.1 (Diagram 1)

Description of the Transmitter Radiated Power Measurement

In many cases, the RF output power limits for licensed digital transmission devices is specified in terms of effective radiated power (ERP) or equivalent isotropic radiated power (EIRP). Typically, ERP is specified when the operating frequency is less than or equal to 1 GHz and EIRP is specified when the operating frequency is greater than 1 GHz.

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

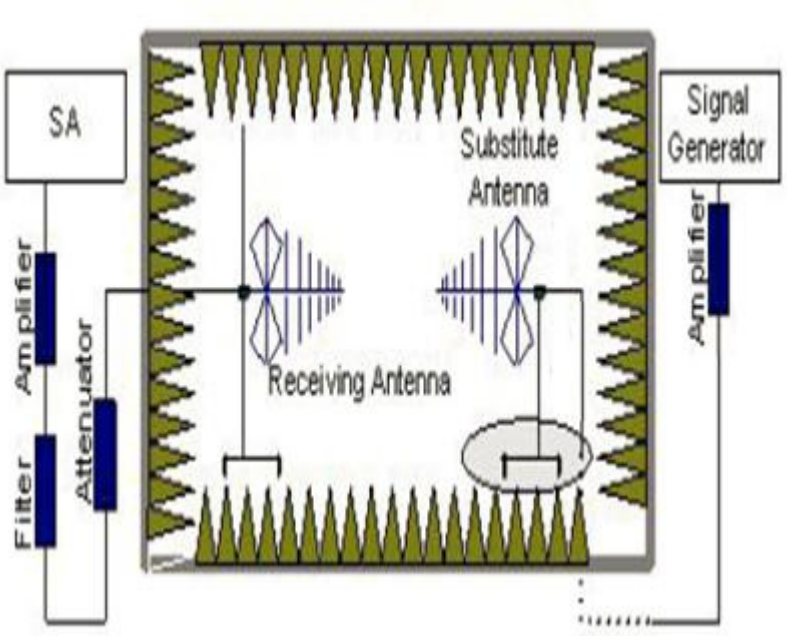
1. EUT was placed on a non-conductive stand at a 3 meter test distance from thereceive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUTfor emission measurements. The height of receiving antenna is 1.5m. The test setup refers tofigure below. Detected emissions were maximized 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 (PMea) 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 (Pr). The power of signal source (PMea) 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 (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.

The measurement results are obtained as described below:

Power(EIRP)=PMea+ PAg- Pcl+ Ga

5. ANALYZER SETTINGS: RBW = VBW = 5MHz

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

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

5.1.4 Test Result

Please refer to ANNEX A.1.

5.2 Peak to average ratio

5.2.1 Limit

FCC § 2.1046 & 24.232 & 27.50(d)

For operations int the 698-746 MHz band, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with 24.232 (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

5.2.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

Test procedures:

a) Refer to instrument’s analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth ≥ signal’s occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval as follows:

1) for continuous transmissions, set to 1 ms,

2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.

e) Record the maximum PAPR level associated with a probability of 0.1%.

Use one of the procedures presented in 4.1 to measure the total peak power and record as PPk. Use one of the applicable procedures presented 4.2 to measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

PAPR (dB) = PPk (dBm) - PAvg (dBm).

Note: Reference test setup 4.4.1 (Diagram 1).

5.2.4 Test Result

Please refer to ANNEX A.2.

5.3 Occupied Bandwidth

5.3.1 Limit

FCC § 2.1049

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth.

5.3.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The following procedure shall be used for measuring (99 %) power bandwidth

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.

d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.

e) Set the detection mode to peak, and the trace mode to max hold..

f) Use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.

g) If the instrument does not have a 99 % power bandwidth function, the trace data points are to be recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99 % power bandwidth is the difference between these two frequencies.

h) The OBW shall be reported by providing plot(s) of the measuring instrument display. The frequency and amplitude axes and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Note: Reference test setup 4.4.1 (Diagram 1).

5.3.4 Test Result

Please refer to ANNEX A.3.

5.4 Frequency Stability

5.4.1 Limit

FCC § 2.1055 & 22.355 & 24.235 &27.54

§ 22.355
Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1—Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

& 24.235
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.
&27.54
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

The test conditions are:

(a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.

(b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

5.4.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

1. The test is performed in a Temperature Chamber.
2. The EUT is configured as MS + DC Power Supply.

Note: Reference test setup 4.4.2 (Diagram 2).

5.4.4 Test Result

Please refer to ANNEX A.4.

5.5 Spurious Emission at Antenna Terminals

5.5.1 Limit

FCC §2.1051 & 22.917(a) & 24.238(a) & 27.53(h) & 27.53(m) & 27.53(g)

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. This calculated to be -13 dBm.

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) dB.

FCC § 27.53(m)

For mobile digital stations, the attenuation factor shall be not less than:

• 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.

• 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

• 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

FCC § 27.53(g)

According to FCC section 27.53(g), for operations int the 698-746 MHz band, the power of any emission outside a license's frequency band of operation shall be attenuated below the transmitter power(P) within the licensed band of operation, measured in watts, by at least 43 + 10 log (P) dB.

A relaxation of the reference bandwidth is ofen provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is ofen implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

5.5.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P)

dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

1. The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

2. CMW500 was used to establish communication with the EUT, Its parameters were set to force the EUT transmitting at maximum output power.

3. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient Attenuation.

4. Spurious emissions were tested with 0.001MHz RBW for frequency less than 150kHz, 0.01MHz RBW for frequency less than 30MHz, 0.1MHz RBW for frequency less than 1GHz, and 1MHz RBW for frequency above 1GHz. And sweep point number were at least 401, refering to following formula.

Sweep point number = Span/RBW

VBW=3RBW

Note: Reference test setup 4.4.1 (Diagram 1).

5.5.4 Test Result

Please refer to ANNEX A.5.

5.6 Band Edge

5.6.1 Limit

FCC § 2.1051 & 22.917(b) & 24.238(b) & 27.53(h) & 27.53(m) & 27.53(g)

The power of any emission outside of the authorized operating frequency must be attenuated below the transmitting (P) by a factor of at least 43+10log(P) dB.
In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26 dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

According to FCC section 27.53(g), for operations int the 698-746 MHz band, the power of any emission outside a license's frequency band of operation shall be attenuated below the transmitter power(P) within the licensed band of operation, measured in watts, by at least 43 + 10 log (P) dB.

A relaxation of the reference bandwidth is ofen provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is ofen implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

5.6.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.

1.The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

2. CMW500 was used to establish communication with the EUT, Its parameters were set to force the EUT

transmitting at maximum output power.

3. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient Attenuation.
4. The center of the spectrum analyzer was set to block edge frequency.

5. Band edge were tested with 0.01*cBW RBW, and sweep point number refered to following formula.

Sweep point number = 2*Span/RBW

VBW=3RBW

Note: Reference test setup 4.4.1 (Diagram 1).

5.6.4 Test Result

Please refer to ANNEX A.6.

5.7 Field Strength of Spurious Radiation

5.7.1 Limit

FCC § 2.1053 & 22.917 & 24.238 & 27.53(h) & 27.53(m) & 27.53(g)

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. This calculated to be -13 dBm.

FCC § 27.53(g)

For operation in the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured the watts, by at least 43+10*log(P) dB.

FCC § 27.53(h)

(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10(P) dB.

(2) Additional protection levels. Notwithstanding the foregoing paragraph (h)(1) of this section:

(i) Operations in the 2180-2200 MHz band are subject to the out-of-band emission requirements set forth in § 27.1134 for the protection of federal government operations operating in the 2200-2290 MHz band.

(ii) For operations in the 2000-2020 MHz band, the power of any emissions below 2000 MHz shall be attenuated below the transmitter power (P) in watts by at least 70 + 10 log10(P) dB.

(iii) For operations in the 1915-1920 MHz band, the power of any emission between 1930-1995 MHz shall be attenuated below the transmitter power (P) in watts by at least 70 + 10 log10(P) dB.

(iv) For operations in the 1995-2000 MHz band, the power of any emission between 2005-2020 MHz shall be attenuated below the transmitter power (P) in watts by at least 70 + 10 log10(P) dB.

FCC § 27.53(m)

For mobile digital stations, the attenuation factor shall be not less than:

• 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.

• 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

• 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

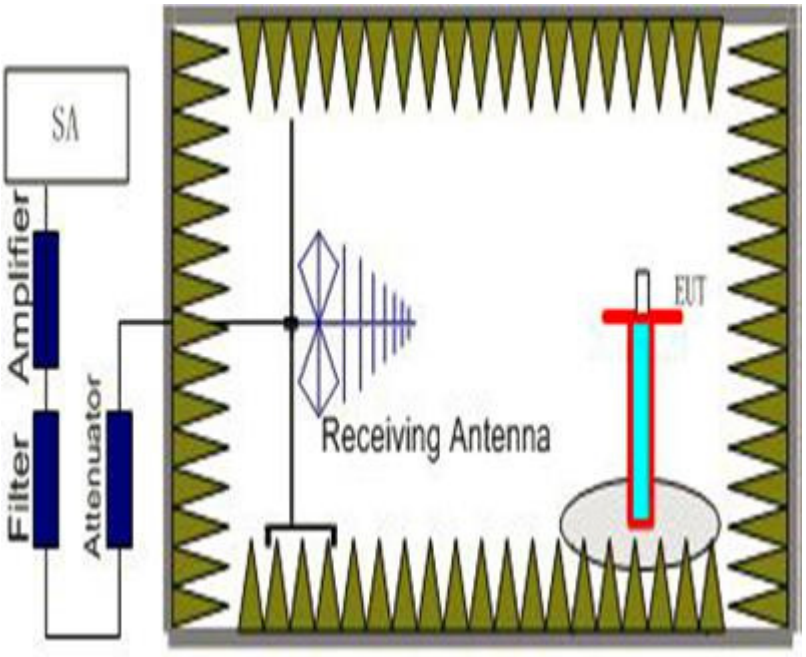
5.7.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

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

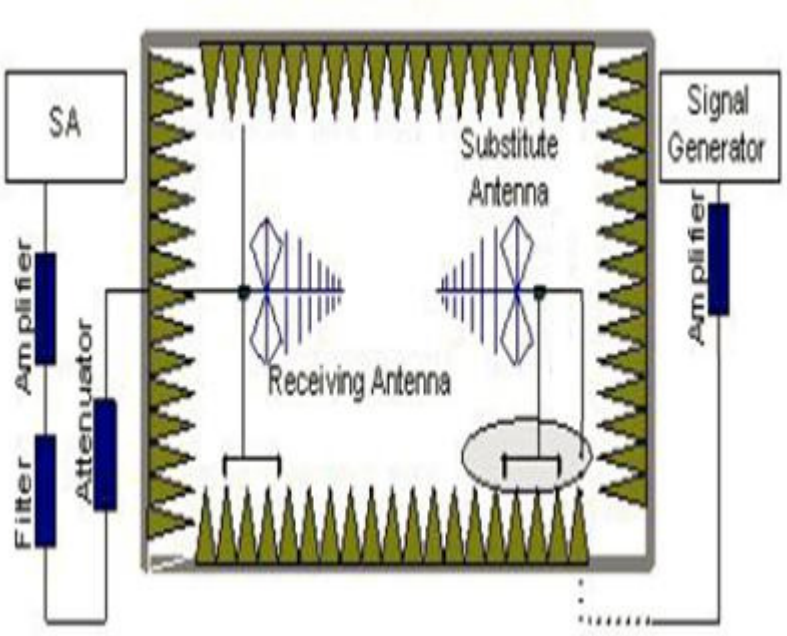
1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from thereceive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUTfor emission measurements. The height of receiving antenna is 1.5m. The test setup refers tofigure below. Detected emissions 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 (PMea) 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 (Pr). The power of signal source (PMea) 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 (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.

The measurement results are obtained as described below:

Power(EIRP)=PMea+ PAg -Pcl+ Ga

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.

5.7.4 Test Result

Please refer to ANNEX A.7.

ANNEX A TEST RESULTS

A.1 Transmitter Radiated Power (ERP)

Note1: The ERP test data were provided by ECIT Shanghai, East China Institute of Telecommunications.
Note2: Peak EIRP(dBm) = P_{Mea} + G_a +P_{Ag} - P_{cl}

Conducted Test Data:

Test BW	Test Channel	Test Model	Test RB (Size#Offset)	Conducted AV Power (dBm)	Conducted AV Power (W)
LTE BAND12					
1.4 MHz	LCH	QPSK	RB1#0	20	0.10
			RB1#3	20.13	0.10
			RB1#5	20.21	0.10
			RB3#0	20	0.10
			RB3#2	20.09	0.10
			RB3#3	20.08	0.10
			RB6#0	20.03	0.10
		16-QAM	RB1#0	19.24	0.08
			RB1#3	19.41	0.09
			RB1#5	19.54	0.09
			RB3#0	19.28	0.08
			RB3#2	19.4	0.09
			RB3#3	19.44	0.09
			RB6#0	19.44	0.09
	MCH	QPSK	RB1#0	21.2	0.13
			RB1#3	21.67	0.15
			RB1#5	21.27	0.13
			RB3#0	21.35	0.14
			RB3#2	21.81	0.15
			RB3#3	21.33	0.14
			RB6#0	20.19	0.10
		16-QAM	RB1#0	20.35	0.11
			RB1#3	20.11	0.10
			RB1#5	20.34	0.11
			RB3#0	20.21	0.10
			RB3#2	20.38	0.11
			RB3#3	20.44	0.11
			RB6#0	18.92	0.08
	HCH	QPSK	RB1#0	21.54	0.14
			RB1#3	21.73	0.15
			RB1#5	21.65	0.15
			RB3#0	21.69	0.15
			RB3#2	21.75	0.15

Test BW	Test Channel	Test Model	Test RB (Size#Offset)	Conducted AV Power (dBm)	Conducted AV Power (W)
LTE BAND12					
			RB3#3	21.74	0.15
			RB6#0	20.83	0.12
		16-QAM	RB1#0	20.56	0.11
			RB1#3	20.48	0.11
			RB1#5	20.78	0.12
			RB3#0	20.79	0.12
			RB3#2	20.98	0.13
			RB3#3	20.82	0.12
			RB6#0	19.71	0.09
3 MHz	LCH	QPSK	RB1#0	19.34	0.09
			RB1#7	20.02	0.10
			RB1#14	20.89	0.12
			RB8#0	19.52	0.09
			RB8#4	19.95	0.10
			RB8#7	20.34	0.11
			RB15#0	19.97	0.10
		16-QAM	RB1#0	18.36	0.07
			RB1#7	19.24	0.08
			RB1#14	20.17	0.10
			RB8#0	18.93	0.08
			RB8#4	19.44	0.09
			RB8#7	19.85	0.10
			RB15#0	19.29	0.08
	MCH	QPSK	RB1#0	21.38	0.14
			RB1#7	21.56	0.14
			RB1#14	21.45	0.14
			RB8#0	20.45	0.11
			RB8#4	20.5	0.11
			RB8#7	20.46	0.11
			RB15#0	20.3	0.11
		16-QAM	RB1#0	20.17	0.10
			RB1#7	20.25	0.11
			RB1#14	20.33	0.11
			RB8#0	19.36	0.09
			RB8#4	19.58	0.09
			RB8#7	19.49	0.09
			RB15#0	19.31	0.09
	HCH	QPSK	RB1#0	21.6	0.14
			RB1#7	21.41	0.14
			RB1#14	21.61	0.14
			RB8#0	20.74	0.12

Test BW	Test Channel	Test Model	Test RB (Size#Offset)	Conducted AV Power (dBm)	Conducted AV Power (W)
LTE BAND12					
			RB8#4	20.56	0.11
			RB8#7	20.54	0.11
			RB15#0	20.65	0.12
		16-QAM	RB1#0	20.6	0.11
			RB1#7	20.44	0.11
			RB1#14	20.63	0.12
			RB8#0	19.63	0.09
			RB8#4	19.46	0.09
			RB8#7	19.38	0.09
			RB15#0	19.26	0.08
5 MHz	LCH	QPSK	RB1#0	19.04	0.08
			RB1#13	20.86	0.12
			RB1#24	21.91	0.16
			RB12#0	19.77	0.09
			RB12#6	20.82	0.12
			RB12#13	20.42	0.11
			RB25#0	20.38	0.11
		16-QAM	RB1#0	18.35	0.07
			RB1#13	20.33	0.11
			RB1#24	20.3	0.11
			RB12#0	19.18	0.08
			RB12#6	19.47	0.09
			RB12#13	19.29	0.08
			RB25#0	19.48	0.09
	MCH	QPSK	RB1#0	21.1	0.13
			RB1#13	21.43	0.14
			RB1#24	21.21	0.13
			RB12#0	20.48	0.11
			RB12#6	20.52	0.11
			RB12#13	20.43	0.11
			RB25#0	20.36	0.11
		16-QAM	RB1#0	20.41	0.11
			RB1#13	20.64	0.12
			RB1#24	20.51	0.11
			RB12#0	19.25	0.08
			RB12#6	19.41	0.09
			RB12#13	19.39	0.09
			RB25#0	19.21	0.08
	HCH	QPSK	RB1#0	21.39	0.14
			RB1#13	21.35	0.14
			RB1#24	21.59	0.14

Test BW	Test Channel	Test Model	Test RB (Size#Offset)	Conducted AV Power (dBm)	Conducted AV Power (W)
LTE BAND12					
			RB12#0	20.5	0.11
			RB12#6	20.48	0.11
			RB12#13	20.53	0.11
			RB25#0	20.6	0.11
		16-QAM	RB1#0	20.32	0.11
			RB1#13	19.84	0.10
			RB1#24	19.84	0.10
			RB12#0	19.46	0.09
			RB12#6	19.19	0.08
			RB12#13	19.34	0.09
			RB25#0	19.51	0.09
10 MHz	LCH	QPSK	RB1#0	18.61	0.07
			RB1#25	21.8	0.15
			RB1#49	21.67	0.15
			RB25#0	20.38	0.11
			RB25#13	20.51	0.11
			RB25#25	20.68	0.12
			RB50#0	20.35	0.11
		16-QAM	RB1#0	17.79	0.06
			RB1#25	21.1	0.13
			RB1#49	20.93	0.12
			RB25#0	19.32	0.09
			RB25#13	19.41	0.09
			RB25#25	19.49	0.09
	MCH	QPSK	RB1#0	21.29	0.13
			RB1#25	21.86	0.15
			RB1#49	21.44	0.14
			RB25#0	20.52	0.11
			RB25#13	20.54	0.11
			RB25#25	20.46	0.11
			RB50#0	20.39	0.11
		16-QAM	RB1#0	20.17	0.10
			RB1#25	20.34	0.11
			RB1#49	19.77	0.09
			RB25#0	19.49	0.09
			RB25#13	19.66	0.09
			RB25#25	19.5	0.09
	HCH	QPSK	RB1#0	21.36	0.14
			RB1#25	21.87	0.15
			RB1#49	21.57	0.14
			RB25#0	20.55	0.11

Test BW	Test Channel	Test Model	Test RB (Size#Offset)	Conducted AV Power (dBm)	Conducted AV Power (W)
LTE BAND12					
			RB25#13	20.49	0.11
			RB25#25	20.45	0.11
			RB50#0	20.42	0.11
		16-QAM	RB1#0	20.42	0.11
			RB1#25	20.31	0.11
			RB1#49	20.12	0.10
			RB25#0	19.45	0.09
			RB25#13	19.47	0.09
			RB25#25	19.42	0.09

Radiated Test Data:

LTE Band 12_1.4MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
699.7	-13.16	2.8	37.08	-3.26	17.86	H
707.5	-10.82	2.8	37.05	-3.26	20.17	H
715.3	-13.19	2.8	37.33	-3.26	18.08	H

LTE Band 12_3MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
700.5	-13.01	2.8	37.08	-3.26	18.01	H
707.5	-8.75	2.8	37.05	-3.26	22.24	H
714.5	-12.93	2.8	37.06	-3.26	18.07	H

LTE Band 12_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
701.5	-13.45	2.8	37.08	-3.26	17.57	H
707.5	-.7.79	2.8	37.05	-3.26	23.20	H
713.5	-13.14	2.8	37.06	-3.26	17.86	H

LTE Band1 2_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
704	-13.38	2.8	37.08	-3.26	17.64	H
707.5	-8.55	2.8	37.05	-3.26	22.44	H
711	-12.07	2.8	37.06	-3.26	18.93	H

LTE Band 12_1.4MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
699.7	-13.2	2.8	37.08	-3.26	17.82	H
707.5	-13.16	2.8	37.05	-3.26	17.83	H
715.3	-13.67	2.8	37.33	-3.26	17.60	H

LTE Band 12_3MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
700.5	-13.51	2.8	37.08	-3.26	17.51	H
707.5	-13.83	2.8	37.05	-3.26	17.16	H
714.5	-13.41	2.8	37.06	-3.26	17.59	H

LTE Band 12_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
701.5	-13.68	2.8	37.08	-3.26	17.34	H
707.5	-14.16	2.8	37.05	-3.26	16.83	H
713.5	-12.90	2.8	37.06	-3.26	18.10	H

LTE Band 12_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dBi)	EIRP(dBm)	Polarization
704	-13.72	2.8	37.08	-3.26	17.30	H
707.5	-9.52	2.8	37.05	-3.26	21.47	H
711	-12.07	2.8	37.06	-3.26	18.93	H

A.2 Peak to Average Ratio

Note 1: Test plots please refer to the document “Annex No.: BL-SZ1690342-501 Data Part 1.pdf”.

LTE Test Data

Test Band	Test Bandwidth	Test Channel	Test Model	Test RB (Size#Offset)	Peak to Average ratio (dBm)	Limit (dBm)	Refer to Plot Note1	Verdict
LTE Band 12	10 MHz	LCH	QPSK	RB1#0	3.39	13	1.1	Pass
				RB100#0	4.32	13	1.2	Pass
			16-QAM	RB1#0	4.14	13	1.3	Pass
		MCH	QPSK	RB1#0	3.86	13	1.4	Pass
				RB100#0	4.49	13	1.5	Pass
			16-QAM	RB1#0	4.64	13	1.6	Pass
		HCH	QPSK	RB1#0	4.14	13	1.7	Pass
				RB100#0	4.38	13	1.8	Pass
			16-QAM	RB1#0	4.99	13	1.9	Pass

A.3 Occupied Bandwidth

Note 1: All mode were tested, but only the typical data were reported in this report.

Note 2: Test plots please refer to the document “Annex No.: BL-SZ1690342-501 Data Part 2.pdf”.

LTE Mode Test Data

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Measured 99% Occupied Bandwidth (MHz)	Measured -26 dB Occupied Bandwidth (MHz)	Refer to Plot[Note2]
Band 12	1.4 MHz	LCH	QPSK	RB6#0	1.08	1.33	1.1
			16-QAM	RB6#0	1.08	1.32	1.2
		MCH	QPSK	RB6#0	1.08	1.25	1.3
			16-QAM	RB6#0	1.08	1.22	1.4
		HCH	QPSK	RB6#0	1.08	1.24	1.5
			16-QAM	RB6#0	1.08	1.25	1.6
	3 MHz	LCH	QPSK	RB15#0	2.68	2.93	1.7
			16-QAM	RB15#0	2.69	2.98	1.8
		MCH	QPSK	RB15#0	2.68	2.92	1.9
			16-QAM	RB15#0	2.68	2.90	1.10
		HCH	QPSK	RB15#0	2.68	2.95	1.11
			16-QAM	RB15#0	2.68	2.94	1.12
	5 MHz	LCH	QPSK	RB25#0	4.47	4.88	1.13
			16-QAM	RB25#0	4.46	4.92	1.14
		MCH	QPSK	RB25#0	4.46	4.90	1.15
			16-QAM	RB25#0	4.48	4.92	1.16
		HCH	QPSK	RB25#0	4.47	4.90	1.17
			16-QAM	RB25#0	4.48	4.95	1.18
	10 MHz	LCH	QPSK	RB50#0	8.91	9.80	1.19
		MCH	QPSK	RB50#0	8.89	9.55	1.20
		HCH	QPSK	RB50#0	8.90	9.61	1.21

A.4 Frequency Stability

LTE Band 12 QPSK 10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 707.5 MHz		
		Value (Hz)	Limits (Hz)	
4.0	-30	0.82	±1768.75	Pass
	-20	-12.24		
	-10	-0.75		
	+5	1.31		
	+10	12.93		
	+20	-21.47		
	+30	20.15		
	+40	5.26		
	+50	21.18		
4.2	+25	-9.14		
3.4	+25	-9.68		

LTE Band 12 16QAM10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 707.5 MHz		
		Value (Hz)	Limits (Hz)	
4.0	-30	0.59	±1768.75	Pass
	-20	-10.77		
	-10	9.95		
	+5	4.36		
	+10	-26.56		
	+20	1.35		
	+30	-8.19		
	+40	15.94		
	+50	-18.77		
4.2	+25	3.73		
3.4	+25	44.47		

A.5 Spurious Emission at Antenna Terminals

Note 1: Only the worst data with different bandwidth for LTE are shown here.

Note 2: The frequency of verdict which mark by "N/A" should be ignored because they are MS carrier frequency.

Note 3: Test plots please refer to the document “Annex No.: BL-SZ1690432-501 Data Part 3.pdf”.

LTE Mode Test Verdict

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB(Size#Offset)	Refer to Plot[Note3]	Verdict
Band 12	1.4 MHz	LCH	QPSK	RB1#0	1.1	Pass
			16-QAM	RB1#0	1.2	Pass
		MCH	QPSK	RB1#0	1.3	Pass
			16-QAM	RB1#0	1.4	Pass
		HCH	QPSK	RB1#0	1.5	Pass
			16-QAM	RB1#0	1.6	Pass
	3 MHz	LCH	QPSK	RB1#0	1.7	Pass
			16-QAM	RB1#0	1.8	Pass
		MCH	QPSK	RB1#0	1.9	Pass
			16-QAM	RB1#0	1.10	Pass
		HCH	QPSK	RB1#0	1.11	Pass
			16-QAM	RB1#0	1.12	Pass
	5 MHz	LCH	QPSK	RB1#0	1.13	Pass
			16-QAM	RB1#0	1.14	Pass
		MCH	QPSK	RB1#0	1.15	Pass
			16-QAM	RB1#0	1.16	Pass
		HCH	QPSK	RB1#0	1.17	Pass
			16-QAM	RB1#0	1.18	Pass
	10 MHz	LCH	QPSK	RB1#0	1.19	Pass
			16-QAM	RB1#0	1.20	Pass
		MCH	QPSK	RB1#0	1.21	Pass
			16-QAM	RB1#0	1.22	Pass
		HCH	QPSK	RB1#0	1.23	Pass
			16-QAM	RB1#0	1.24	Pass

A.6 Band Edge

Note 1: Test plots please refer to the document “Annex No.: BL-SZ1690432-501 Data Part 4.pdf”.

LTE Mode Test Verdict

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB(Size#Offset)	Refer to Plot[Note1]	Verdict
Band 12	1.4 MHz	LCH	QPSK	RB1#0	9.1	Pass
				RB6#0	9.2	Pass
			16-QAM	RB1#0	9.3	Pass
				RB6#0	9.4	Pass
		HCH	QPSK	RB1#5	9.5	Pass
				RB6#0	9.6	Pass
			16-QAM	RB1#5	9.7	Pass
				RB6#0	9.8	Pass
	3 MHz	LCH	QPSK	RB1#0	9.9	Pass
				RB15#0	9.10	Pass
			16-QAM	RB1#0	9.11	Pass
				RB15#0	9.12	Pass
		HCH	QPSK	RB1#14	9.13	Pass
				RB15#0	9.14	Pass
			16-QAM	RB1#14	9.15	Pass
				RB15#0	9.16	Pass
	5 MHz	LCH	QPSK	RB1#0	9.17	Pass
				RB25#0	9.18	Pass
			16-QAM	RB1#0	9.19	Pass
				RB25#0	9.20	Pass
		HCH	QPSK	RB1#24	9.21	Pass
				RB25#0	9.22	Pass
			16-QAM	RB1#24	9.23	Pass
				RB25#0	9.24	Pass
	10 MHz	LCH	QPSK	RB1#0	9.25	Pass
				RB50#0	9.26	Pass
			16-QAM	RB1#0	9.27	Pass
		HCH	QPSK	RB1#49	9.28	Pass
				RB50#0	9.29	Pass
			16-QAM	RB1#49	9.30	Pass

A. 7 Field Strength of Spurious Radiation

Note 1: The radiated spurious emissions test data were provided by ECIT Shanghai, East China Institute of Telecommunications.

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the LTE Bands 12. 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 LTE Bands 12 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.

LTE Mode Test Results

LTE Band 12, 1.4MHz, QPSK, Channel 23017

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1398.384615	-38.13	4.0	5.3	-36.83	-13.00	23.83	V
2097.692308	-37.05	4.9	4.5	-37.45	-13.00	24.45	H
2796.923077	-33.92	5.7	6.1	-33.52	-13.00	20.52	V
3496.000000	-27.32	6.4	7.8	-25.92	-13.00	12.92	H
4195.600000	-49.63	7.0	8.9	-47.73	-13.00	34.73	H
4894.800000	-45.89	7.7	9.6	-43.99	-13.00	30.99	H

LTE Band 12, 1.4MHz, QPSK, Channel 23095

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1413.961539	-35.46	4.0	5.3	-34.16	-13.00	21.16	H
2120.769231	-37.07	4.9	5.1	-36.87	-13.00	23.87	H
2828.461538	-29.65	5.7	6.1	-29.25	-13.00	16.25	H
3535.200000	-22.22	6.4	6.9	-21.72	-13.00	8.72	H
4242.400000	-41.15	7.1	8.9	-39.35	-13.00	26.35	V
4949.200000	-37.04	7.7	9.6	-35.14	-13.00	22.14	H

LTE Band 12, 1.4MHz, QPSK, Channel 23173

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1429.538462	-41.53	4.1	3.4	-36.04	-13.00	23.04	H
2144.230769	-40.23	5.0	3.3	-41.93	-13.00	28.93	H
2859.615385	-29.43	5.8	4.1	-31.13	-13.00	18.13	H
3574.400000	-20.2	6.4	6.0	-20.60	-13.00	7.60	H
4288.800000	-42.85	7.1	7.7	-42.25	-13.00	29.25	V
5004.000000	-38.48	7.9	9.0	-37.38	-13.00	24.38	H

LTE Band 12, 1.4MHz, 16QAM, Channel 23017

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1398.384615	-38.03	4.0	5.3	-36.73	-13.00	23.73	V
2097.307692	-37.78	4.9	4.5	-38.18	-13.00	25.18	H
2796.923077	-33.6	5.7	6.1	-33.20	-13.00	20.20	V
3496.000000	-26.89	6.4	7.8	-25.49	-13.00	12.49	H
4195.600000	-49.82	7.0	8.9	-47.92	-13.00	34.92	H
4894.800000	-45.03	7.7	9.6	-43.13	-13.00	30.13	H

LTE Band12, 1.4MHz, 16QAM, Channel 23095

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1414.307692	-35.85	4.0	5.3	-34.55	-13.00	21.55	H
2121.153846	-36.97	4.9	5.1	-36.77	-13.00	23.77	H
2828.461538	-29.39	5.7	6.1	-28.99	-13.00	15.99	H
3535.200000	-22.49	6.4	6.9	-21.99	-13.00	8.99	H
4242.000000	-41.58	7.1	8.9	-39.78	-13.00	26.78	V
4949.200000	-36.73	7.7	9.6	-34.83	-13.00	21.83	H

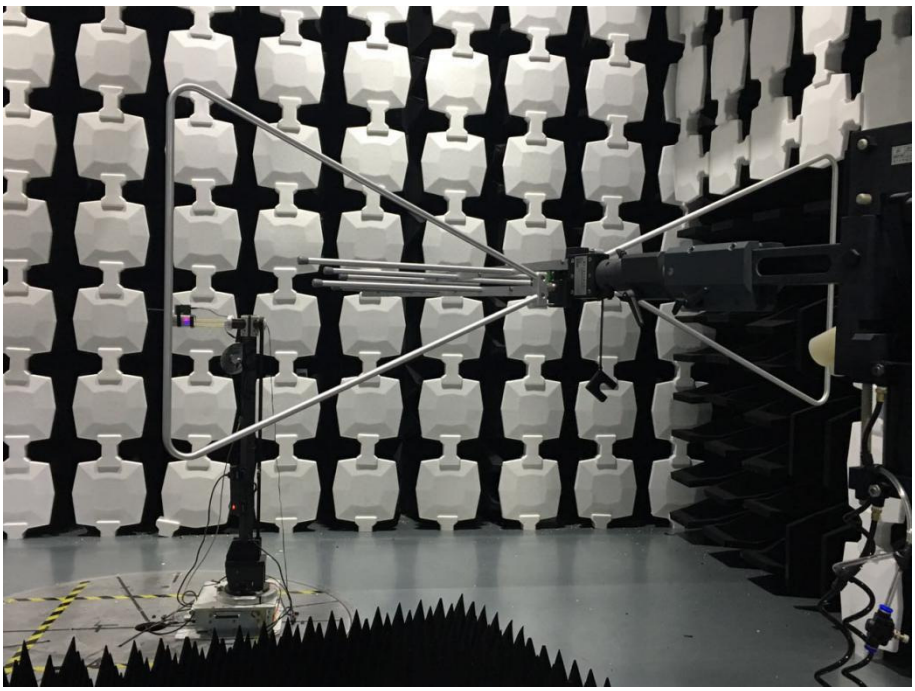
LTE Band 12, 1.4MHz, 16QAM, Channel 23173

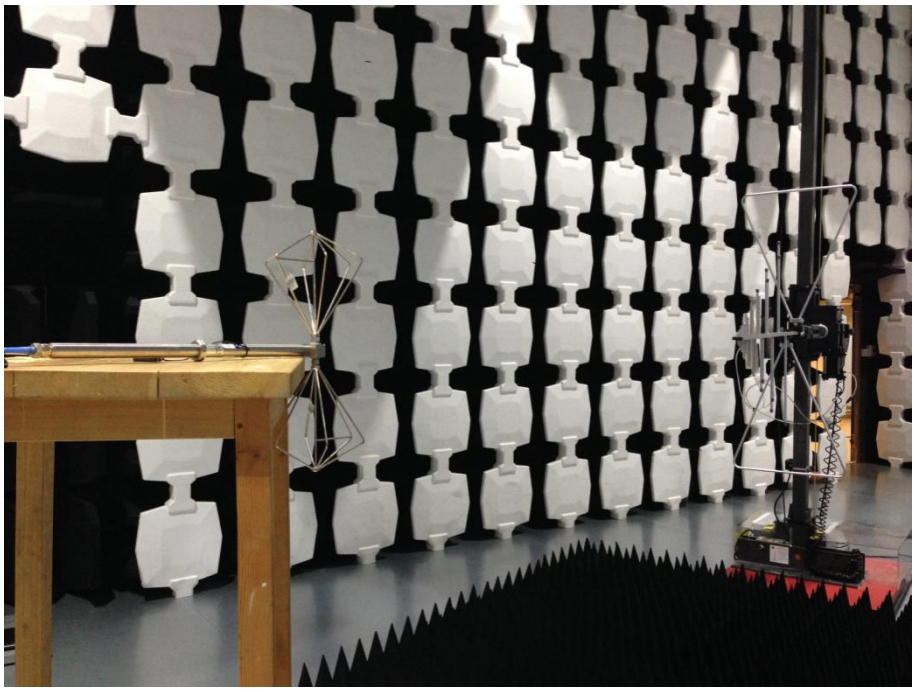
Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1429.538462	-37.22	4.1	3.4	-37.92	-13.00	24.92	V
2144.230769	-39.56	5.0	3.3	-41.26	-13.00	28.26	H
2859.230769	-29.51	5.8	4.1	-31.21	-13.00	18.21	H
3574.000000	-20.02	6.4	6.0	-20.42	-13.00	7.42	H
4289.200000	-43.02	7.1	7.7	-42.42	-13.00	29.42	V
5004.000000	-38.05	7.9	9.0	-36.95	-13.00	23.95	H

ANNEX B TEST SETUP PHOTOS

B.1 Conducted Test Photo

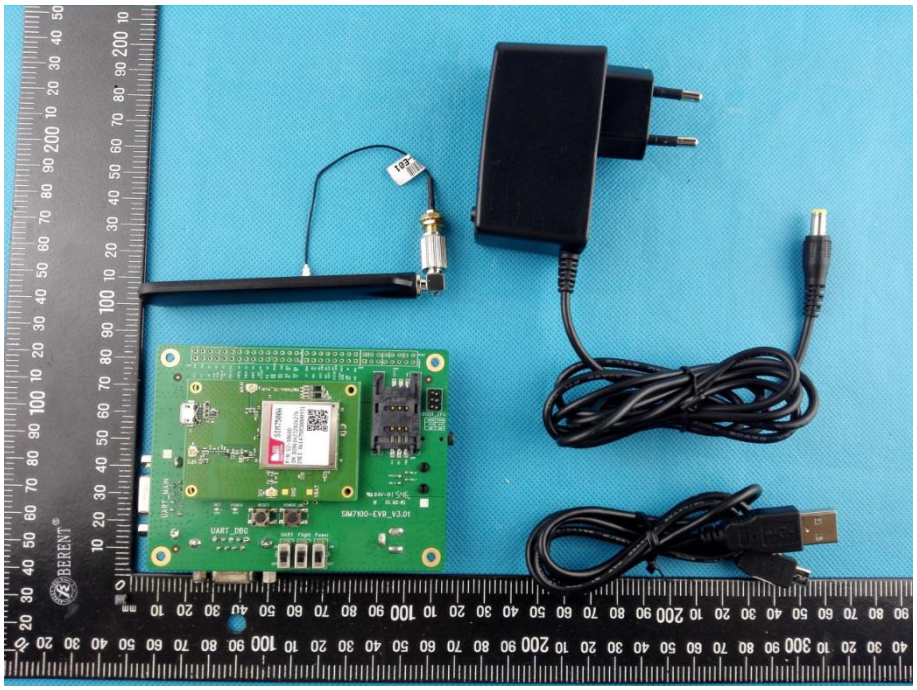
B.2 Radiation Test Photo

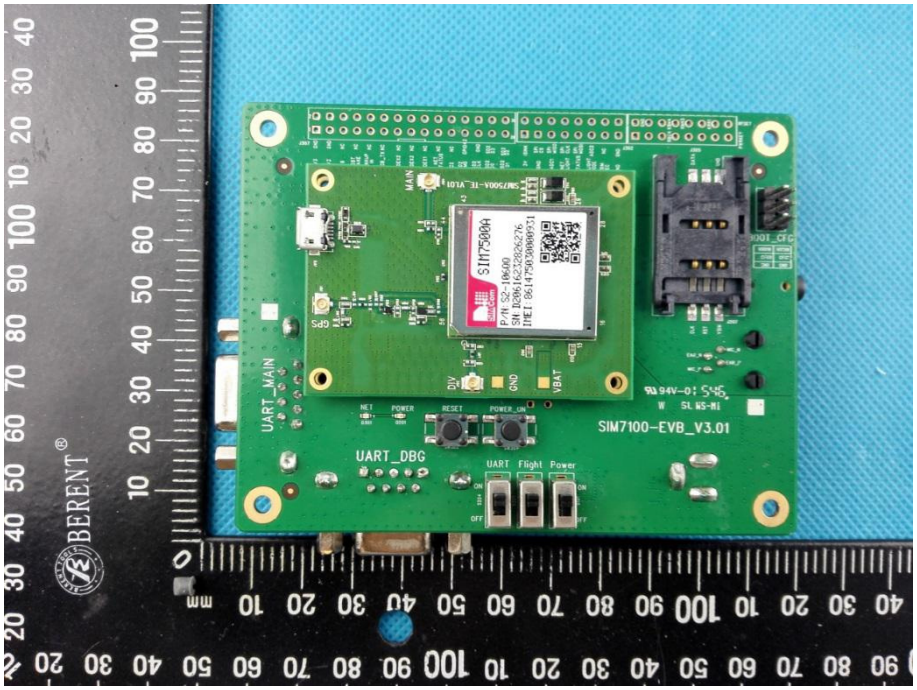


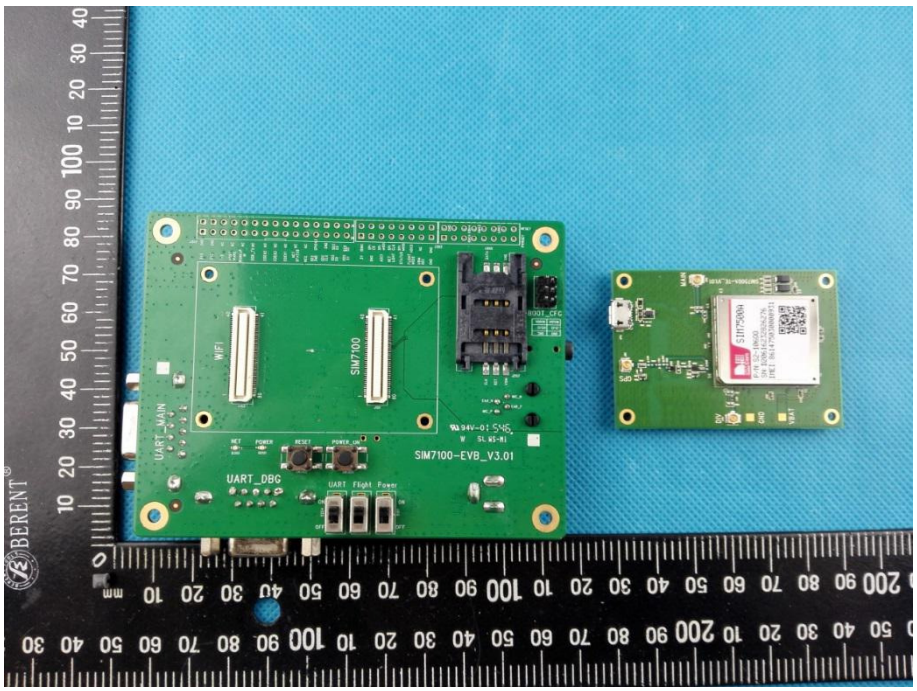


ANNEX C EUT EXTERNAL PHOTOS

C.1 Appearance of the EUT



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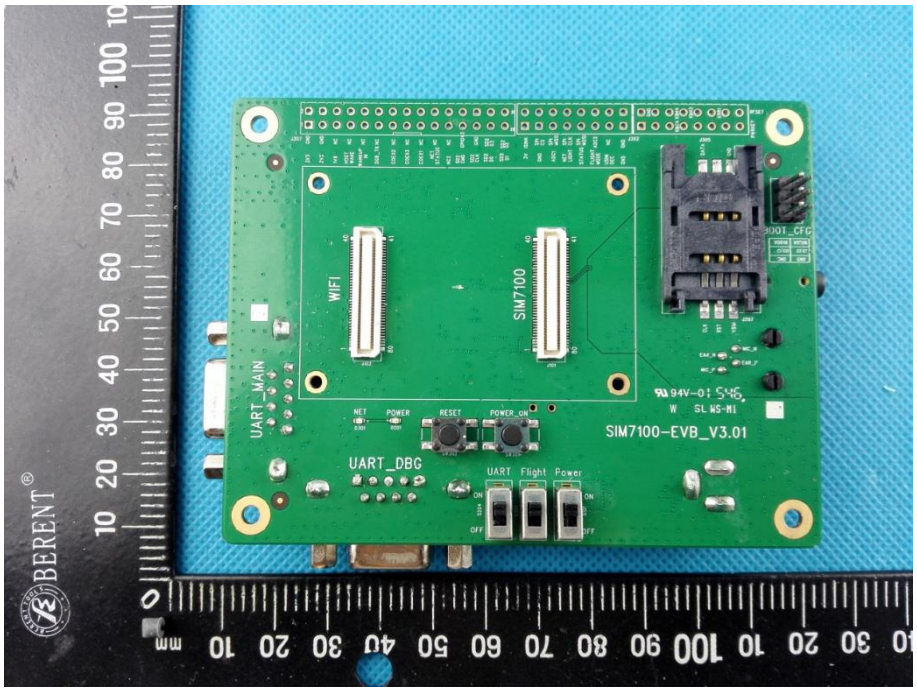
UART_DBG
SIM7100-EVB_V3.01
BERENT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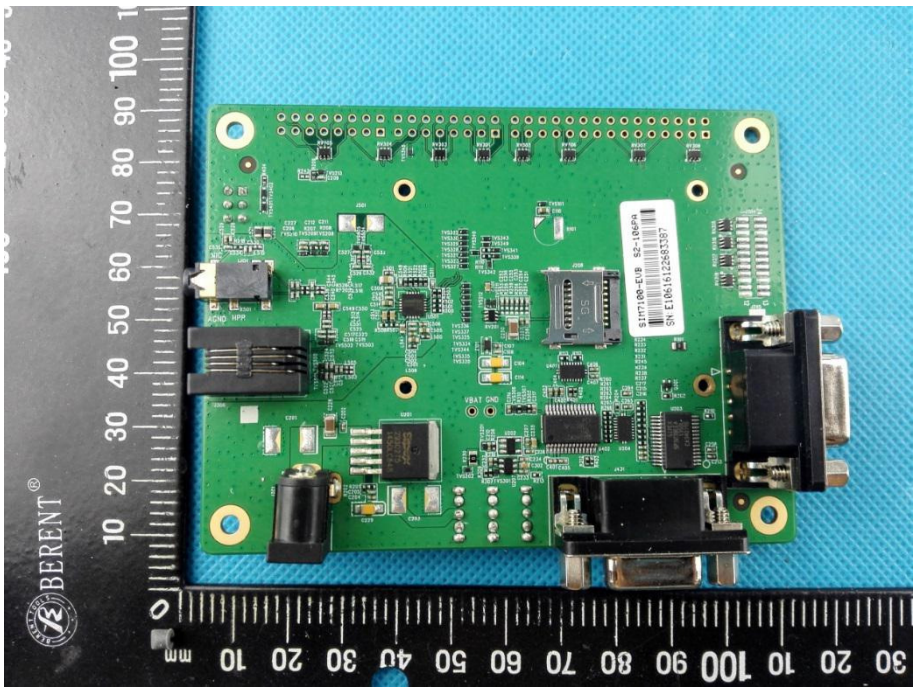
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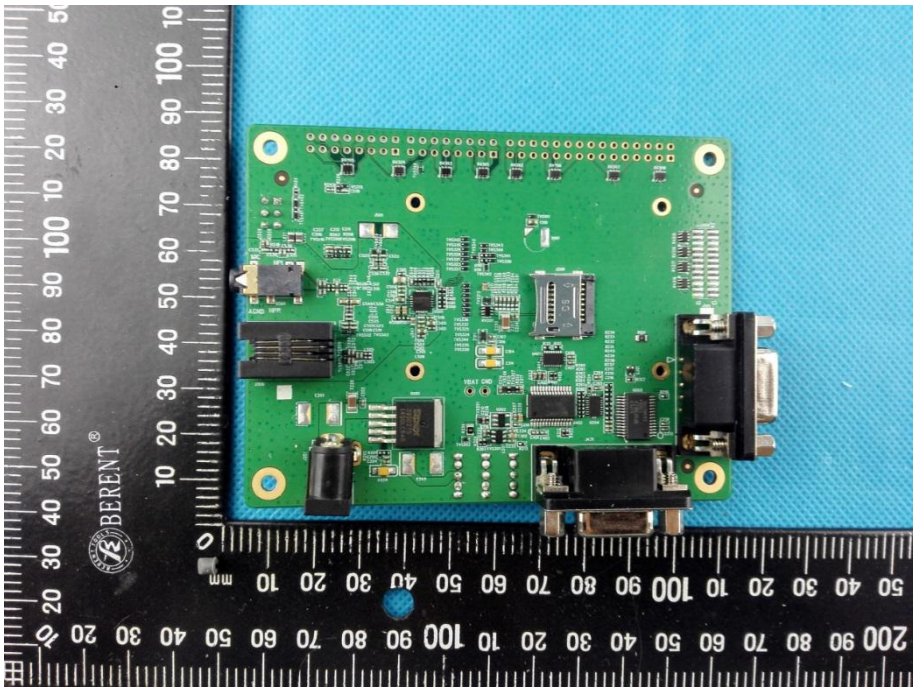
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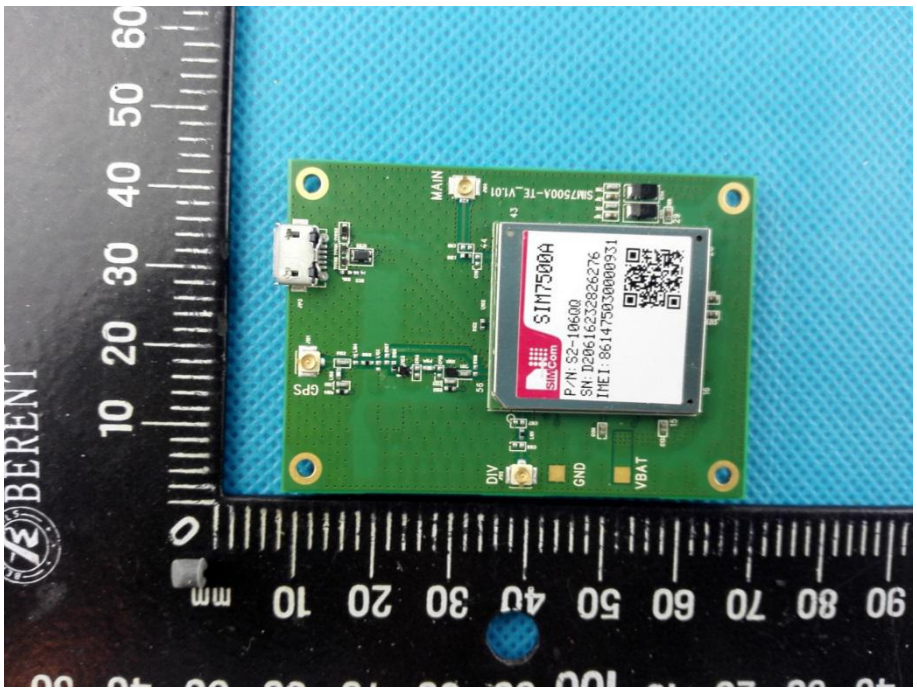
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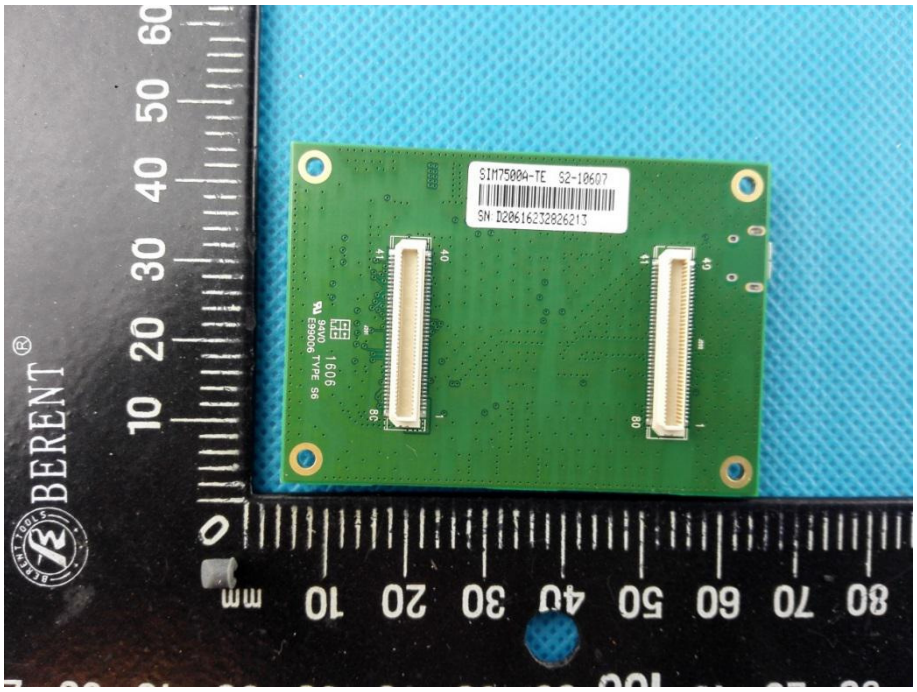
MAIN
GPS
DIV
GND
VBAT
BERENT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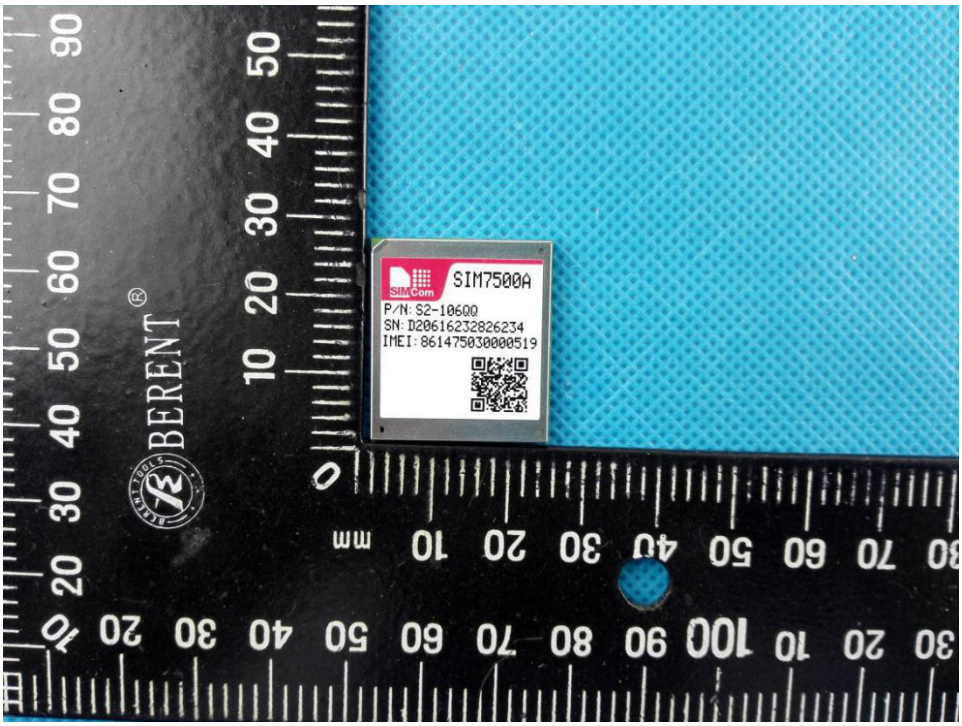

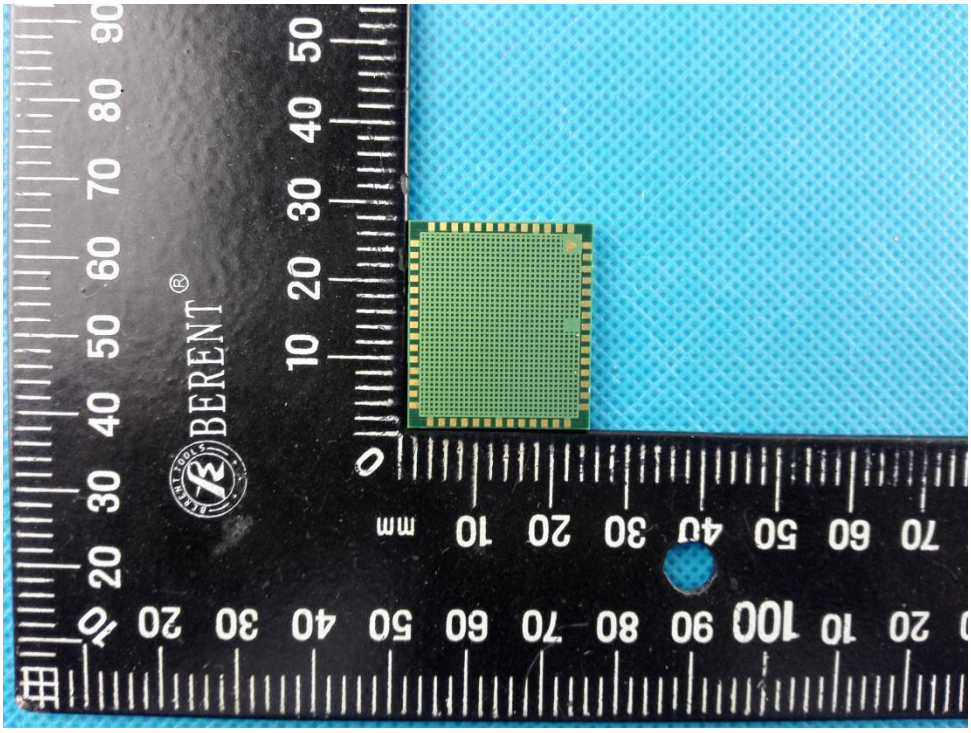

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