RF TEST REPORT

Report No.:	SET2018-09072
Product:	Handheld Data Terminal
FCC ID:	HLEEA602BTNFL
Model No.:	EA600, EA602
Applicant:	Unitech Electronics Co., Ltd.
Address:	5F, No. 136, Lane 235, Pao-Chiao Rd., Hsin-Tien Dist., New Taipei City, Taiwan.
Dates of Testing:	07/10/2018 — 07/26/2018
Issued by:	CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.
Lab Location:	Building 28/29, East of Shigu Xili Industrial Zone, Nanshan District Shenzhen, Guangdong 518055, China **Tel**：86 755 26627338 **Fax**：86 755 26627238

Test Report

Product..... :	Handheld Data Terminal
Brand Name ..... :	unitech
Trade Name..... :	N.A
Applicant..... :	Unitech Electronics Co., Ltd.
Applicant Address..... :	5F, No. 136, Lane 235, Pao-Chiao Rd., Hsin-Tien Dist., New Taipei City, Taiwan.
Manufacturer..... :	Unitech Electronics Co., Ltd.
Manufacturer Address ..... :	5F, No. 136, Lane 235, Pao-Chiao Rd., Hsin-Tien Dist., New Taipei City, Taiwan.
Test Standards..... :	47 CFR Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations 47 CFR FCC Part 22(H): Cellular Radiotelephone Service 47 CFR Part 24(E): Personal Communications Services 47 CFR Part 27(L) 27(H) 27(M): Miscellaneous wireless communications services
Test Result .....:	PASS
Tested by ..... :	Shallwe Yang 2018.07.26 Shallwe Yang，Test Engineer
Reviewed by ..... :	Zhu Qi 2018.07.26 Zhu Qi, Senior Egineer
Approved by……:	Smartli 2018.07.26 Smart Li, Manager

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Change History		
Issue	Date	Reason for change
1.0	2018.07.26	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type	Handheld Data Terminal
Hardware Version	SQ51CW_V1.1
Software Version	SQ51CW_P1_XX_D_0_180706_02
Frequency Range	LTE Band 2 Tx: 1850.7MHz~1909.3MHz Rx: 1930.7MHz~1989.3MHz LTE Band 4 Tx: 1710.7MHz~1754.3MHz Rx: 2110.7MHz~2154.3MHz LTE Band 5 Tx: 824.7MHz~848.3MHz Rx: 869.7MHz~893.3MHz LTE Band 7 Tx: 2502.5MHz~2567.5MHz Rx: 2622.5MHz~2687.5MHz
Maximum Output Power to Antenna	LTE Band 2：23.78dBm LTE Band 4：23.01dBm LTE Band 5：23.45dBm LTE Band 7：22.04dBm
Bandwidth	LTE Band 2：1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 4：1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 5：1.4MHz/3MHz/5MHz/10MHz LTE Band 7：5MHz/10MHz/15MHz/20MHz
Modulation Type	QPSK/16QAM
Antenna Type	PIFA
Antenna Gain	LTE Band 2：-2.2dBi LTE Band 4：-2.2dBi LTE Band 5：-2.2dBi LTE Band 7：-2.2dBi

1.2 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	BW (MHz)	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP(W)
Part 24	LTE Band 2	QPSK	1.4	1M09G7D	—	0.171
Part 24	LTE Band 2	16QAM	1.4	1M09W7D	—	0.142
Part 24	LTE Band 2	QPSK	3	2M68G7D	—	0.172
Part 24	LTE Band 2	16QAM	3	2M68W7D	—	0.142
Part 24	LTE Band 2	QPSK	5	4M49G7D	—	0.173
Part 24	LTE Band 2	16QAM	5	4M49W7D	—	0.143
Part 24	LTE Band 2	QPSK	10	8M92G7D	0.005	0.171
Part 24	LTE Band 2	16QAM	10	8M91W7D	—	0.142
Part 24	LTE Band 2	QPSK	15	13M4G7D	—	0.173
Part 24	LTE Band 2	16QAM	15	13M4W7D	—	0.144
Part 24	LTE Band 2	QPSK	20	17M8G7D	—	0.174
Part 24	LTE Band 2	16QAM	20	17M8W7D	—	0.146
Part 27	LTE Band 4	QPSK	1.4	1M09G7D	__	0.168
Part 27	LTE Band 4	16QAM	1.4	1M09W7D	__	0.132
Part 27	LTE Band 4	QPSK	3	2M68G7D	__	0.165
Part 27	LTE Band 4	16QAM	3	2M68W7D	__	0.133
Part 27	LTE Band 4	QPSK	5	4M49G7D	__	0.167
Part 27	LTE Band 4	16QAM	5	4M49W7D	__	0.132
Part 27	LTE Band 4	QPSK	10	8M92G7D	0.002	0.166
Part 27	LTE Band 4	16QAM	10	8M91W7D	__	0.134
Part 27	LTE Band 4	QPSK	15	13M4G7D	__	0.169
Part 27	LTE Band 4	16QAM	15	13M4W7D	__	0.133
Part 27	LTE Band 4	QPSK	20	17M9G7D	__	0.171
Part 27	LTE Band 4	16QAM	20	17M9W7D	—	0.135

Part 22	LTE Band 5	QPSK	1.4	1M09G7D	__	0.155
Part 22	LTE Band 5	16QAM	1.4	1M09W7D	__	0.123
Part 22	LTE Band 5	QPSK	3	2M68G7D	__	0.154
Part 22	LTE Band 5	16QAM	3	2M68W7D	—	0.122
Part 22	LTE Band 5	QPSK	5	4M50G7D	__	0.156
Part 22	LTE Band 5	16QAM	5	4M50W7D	—	0.123
Part 22	LTE Band 5	QPSK	10	8M92G7D	0.005	0.157
Part 22	LTE Band 5	16QAM	10	8M91W7D	—	0.124
Part 27	LTE Band 7	QPSK	5	4M49G7D	—	0.150
Part 27	LTE Band 7	16QAM	5	4M49W7D	—	0.112
Part 27	LTE Band 7	QPSK	10	8M92G7D	0.004	0.151
Part 27	LTE Band 7	16QAM	10	8M91W7D	—	0.113
Part 27	LTE Band 7	QPSK	15	13M4G7D	—	0.149
Part 27	LTE Band 7	16QAM	15	13M4W7D	—	0.112
Part 27	LTE Band 7	QPSK	20	17M8G7D	—	0.152
Part 27	LTE Band 7	16QAM	20	17M8W7D	—	0.114

1.3 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 24, and Part27 for the EUT FCC ID Certification:

1.47 CFR Part 2, 22(H), 24(E), 27(L) 27(M)

2. ANSI/TIA/EIA-603-D-2010

3. FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Limit	Result
1	2.1046	Conducted RF Output Power	Reporting Only	PASS
2	24.232(d) 27.50(d)(5)	Peak to Average Radio	＜13dB	PASS
3	27.50(h)(2) 24.232(c)	Effective Radiated Power(Band 2/7)	EIRP＜2Watt	PASS PASS
	27.50(d)(4)	Effective Radiated Power(Band 4)	EIRP＜1Watt	PASS
	22.913(a)(2)	Effective Radiated Power(Band 5)	ERP＜7Watt	PASS
4	2.1049 22.917(b) 24.238(b) 27.53(h)(3) 27.53(g)(3) 27.53(i)(6)	Occupied Bandwidth	Reporting Only	PASS
5	2.1051 22.917(a) 24.238(b) 27.53(g) 27.53(h)	Conducted Band Edge(Band 2/4/5)	＜43+10log10(P[watt])	PASS
	2.1051 27.53(i)(4)	Conducted Band Edge(Band 7)	＜5.5MHz: -13dBm ≥5.5MHz: -25dBm	PASS
6	2.1051 22.917(a) 24.238(a) 27.53(g)	Conducted Spurious Emission (Band 2/4/5)	＜43+10log10(P[watt])	PASS

	27.53(h)			
	2.1051 27.53(i)(4)	Conducted Spurious Emission (Band 7)	＜55+10log10(P[watt])	PASS
7	2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h)	Radiated Spurious Emission (Band 2/4/5)	＜43+10log10(P[watt])	PASS
	2.1053 27.53(i)(4)	Radiated Spurious Emission (Band 7)	＜55+10log10(P[watt])	PASS
8	2.1055, 22.355 24.235 27.54	Frequency Stability	＜2.5ppm	PASS

Remark：

1. All test items were verified and recorded according to the standards and without any deviation during the test.

2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.4 Test Configuration of Equipment Under Test

1.4.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth(MHz)						Modulation		RB#			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	4	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	5	√	√	√	√			√	√	√	√	√	√	√	√
	7			√	√	√	√	√	√	√	√	√	√	√	√
Peak-to-Average Ratio	2						√		√	√		√	√	√	√
	4						√		√	√		√	√	√	√
	5				√				√	√		√	√	√	√
	7						√		√	√		√	√	√	√
26dB and 99% Bandwidth	2	√	√	√	√	√	√	√	√			√		√	
	4	√	√	√	√	√	√	√	√			√		√	
	5	√	√	√	√			√	√			√		√	
	7			√	√	√	√	√	√			√		√	
Conducted Band Edge	2	√	√	√	√	√	√	√	√	√		√	√		√
	4	√	√	√	√	√	√	√	√	√		√	√		√
	5	√	√	√	√			√	√	√		√	√		√
	7			√	√	√	√	√	√	√		√	√		√
Conducted Spurious Emission	2	√	√	√	√	√	√	√	√	√			√	√	√
	4	√	√	√	√	√	√	√	√	√			√	√	√
	5	√	√	√	√			√	√	√			√	√	√
	7			√	√	√	√	√	√	√			√	√	√
Frequency Stability	2				√			√				√		√	
	4				√			√				√		√	
	5				√			√				√		√	
	7				√			√				√		√	
ERP/EIRP	2	√	√	√	√	√	√	√	√	√			√	√	√
	4	√	√	√	√	√	√	√	√	√			√	√	√
	5	√	√	√	√			√	√	√			√	√	√

	7			√	√	√	√	√	√	√			√	√	√
Radiated Spurious Emission	2	√	√	√	√	√	√	√		√			√	√	√
	4	√	√	√	√	√	√	√		√			√	√	√
	5	√	√	√	√			√		√			√	√	√
	7			√	√	√	√	√		√			√	√	√
Note	**1. The mark “√” means that this configuration is chosen for testing.** **2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.** **3. For E.R.P/E.I.R.P. measurement, the widest bandwidth and the bandwidth with the highest conducted power of each band is chosen for testing. Besides, the lowest bandwidth of each band is also measured for reporting only.**														

1.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 7dB and 10dB attenuator.

Example:

Offset (dB) = RF cable loss(dB) + attenuator factor(dB).

= 7 + 10 = 17(dB)

1.6 Facilities and Accreditations

1.6.1 Test Facilities

CNAS-Lab Code: L1659

CCIC-SET is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

FCC-Registration No.: CN5031

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN5031, valid time is until December 31, 2018.

ISED Registration: 11185A-1

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Aug. 03, 2019.

NVLAP Lab Code: 201008-0

CCIC-SET is a third party testing organization accredited by NVLAP according to ISO/IEC 17025. The accreditation certificate number is 201008-0.

1.6.2 Test Environment Conditions

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

Temperature (°C):	15℃- 35℃
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

2. 47 CFR PART 2, PART 27H REQUIREMENTS

2.1 Conducted RF Output Power

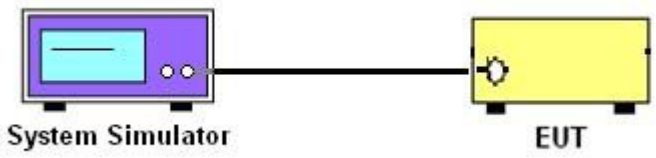
2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

2.1.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.1.3 Test Setup



2.1.4 Test Procedures

1. The transmitter output port was connected to the system simulator.

2. Set EUT at maximum power through system simulator.

3. Select lowest, middle, and highest channels for each band and different modulation.

4. Measure and record the power level from the system simulator.

2.1.5 Test Results

Please refer to Appendix A for detail

2.2 Peak to Average Radio

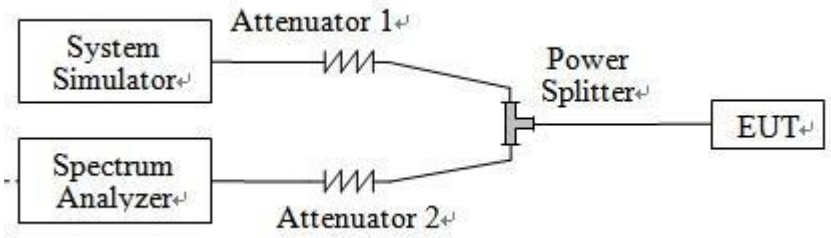
2.2.1 Definition

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

2.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.2.3 Test Description



2.2.4 Test Procedures

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

2.2.5 Test Results of Peak-to-Average Ratio

Please refer to Appendix A for detail

2.3 99% Occupied Bandwidth and 26dB Bandwidth

2.3.1 Definition

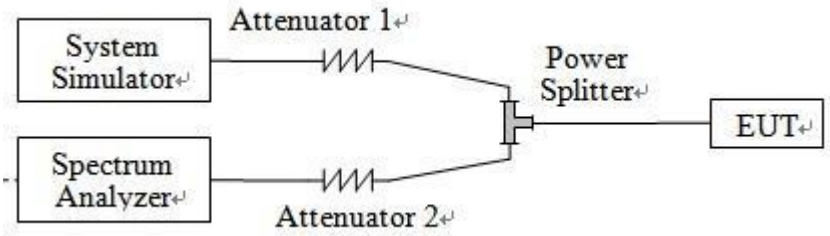
According to FCC section 2.1049, the occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

2.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.3.3 Test Setup



2.3.4 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF power with full RB sizes were measured.

2.3.5 Test Result of 99% Occupied Bandwidth and 26dB Bandwidth

Please refer to Appendix A for detail

2.4 Frequency Stability

2.4.1 Requirement

According to FCC section 27.54, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency. According to FCC section 2.1055, the test conditions are:

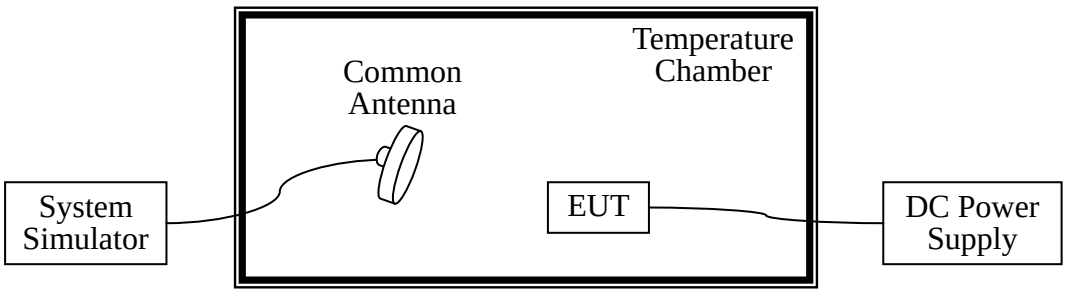
(a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.

(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.

2.4.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3 Test Setup



2.4.4 Test Procedures

1. The EUT was set up in the thermal chamber and connected with the system simulator.

2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized

before testing. Power was applied and the maximum change in frequency was recorded within one minute.

3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.6VDC, which are specified by the applicant; the normal temperature here used is 25°C.
5. The variation in frequency was measured for the worst case.

2.4.5 Test Result of Frequency Stability

Please refer to Appendix A for detail

2.5 Conducted Out of Band Emissions

2.5.1 Requirement

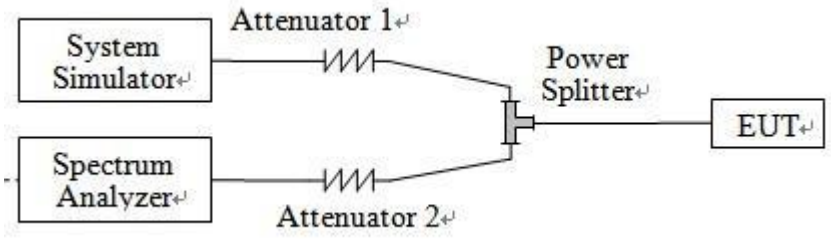
According to FCC section 27.53(h), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

It is measured by means of a calibrated spectrum analyzer and scanned from 30MHz up to a frequency including its 10th harmonic.

2.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.5.3 Test Setup



2.5.4 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.

6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

   = -13dBm.

2.5.5 Test Result of Conducted Spurious Emission

Please refer to Appendix A for detail

2.6 Conducted Band Edge

2.6.1 Description of Conducted Band Edge Measurement

24.238(a) for Band 2

For operations in the 1850 -1910 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 1MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53(h) for Band 4

For operations in the 1710 – 1755 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

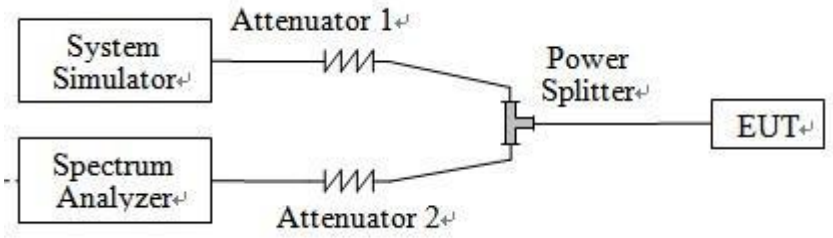
27.53 (m)(4) for Band 7

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.

2.6.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.6.3 Test Setup



2.6.4 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW>= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with RMS detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
5. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.
   <For Band 7>
   The limit line is derived from 55+ 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [55 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [55 + 10log(P)] (dB)
   = -25dBm.

2.6.5 Test Result of Conducted Band Edge

Please refer to Appendix A for detail

2.7 Transmitter Radiated Power (EIRP/ERP)

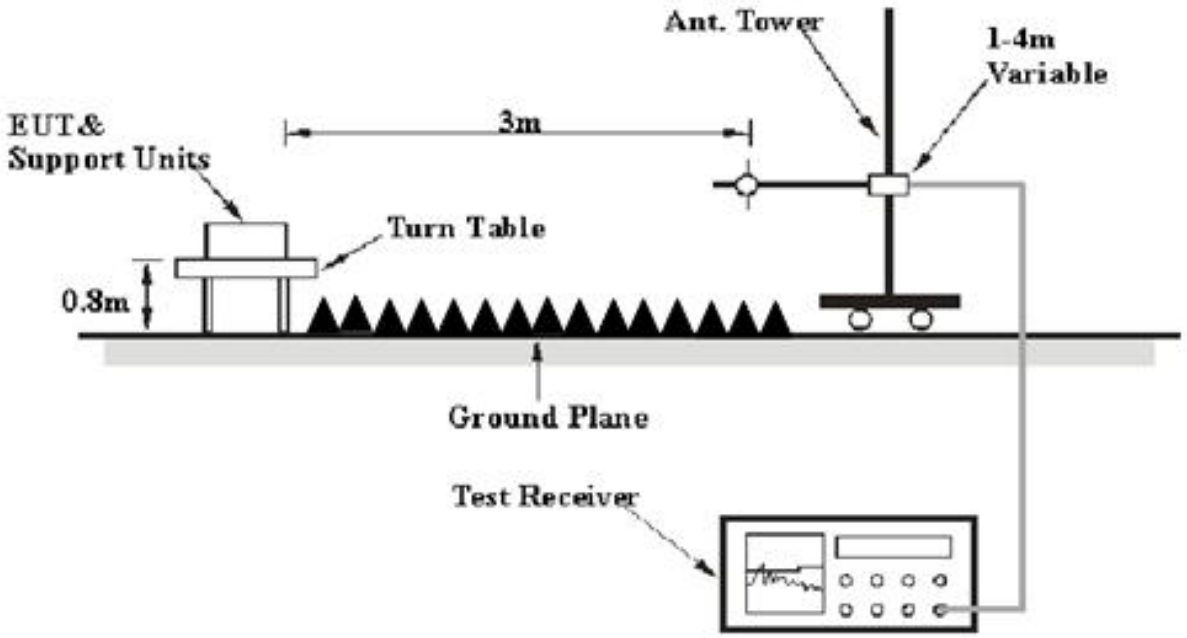
2.7.1 Requirement

Equivalent isotropic radiated power output measurements by substitution method according to ANSI /TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v03r01. Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 2 / 7 and 1 watt with LTE band 4.

2.7.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3 Test Setup



2.7.4 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer which used a channel power option across EUT's signal

bandwidth per section 4.0 of KDB 971168 D01 v03r01.

4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs

Ps (dBm)：Input power to substitution antenna.

Gs (dBi or dBd)：Substitution antenna Gain.

Et = Rt + AF

Es = Rs + AF

AF (dB/m)：Receive antenna factor

Rt：The highest received signal in spectrum analyzer for EUT.

Rs：The highest received signal in spectrum analyzer for substitution antenna.

2.7.5 Test Result of ERP/EIRP

1. LTE Band 2 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
2	1.4	QPSK	1	3	1850.7	**22.33**	H	PASS
2	1.4	QPSK	1	3	1880	22.30	H	PASS
2	1.4	QPSK	1	3	1909.3	22.32	H	PASS
2	1.4	QPSK	1	3	1850.7	21.88	V	PASS
2	1.4	QPSK	1	3	1880	21.85	V	PASS
2	1.4	QPSK	1	3	1909.3	21.87	V	PASS
2	1.4	16QAM	1	0	1850.7	21.48	H	PASS
2	1.4	16QAM	1	0	1880	21.42	H	PASS
2	1.4	16QAM	1	0	1909.3	**21.53**	H	PASS
2	1.4	16QAM	1	0	1850.7	20.82	V	PASS
2	1.4	16QAM	1	0	1880	20.87	V	PASS
2	1.4	16QAM	1	0	1909.3	20.88	V	PASS
2	3	QPSK	1	8	1851.5	22.29	H	PASS
2	3	QPSK	1	8	1880	**22.35**	H	PASS
2	3	QPSK	1	8	1908.5	22.28	H	PASS
2	3	QPSK	1	8	1851.5	21.82	V	PASS
2	3	QPSK	1	8	1880	21.84	V	PASS
2	3	QPSK	1	8	1908.5	21.85	V	PASS
2	3	16QAM	1	0	1851.5	**21.51**	H	PASS
2	3	16QAM	1	0	1880	21.48	H	PASS
2	3	16QAM	1	0	1908.5	21.47	H	PASS
2	3	16QAM	1	0	1851.5	20.91	V	PASS
2	3	16QAM	1	0	1880	20.85	V	PASS
2	3	16QAM	1	0	1908.5	20.83	V	PASS
2	5	QPSK	1	0	1852.5	22.30	H	PASS
2	5	QPSK	1	0	1880	22.31	H	PASS
2	5	QPSK	1	0	1907.5	**22.37**	H	PASS
2	5	QPSK	1	0	1852.5	21.82	V	PASS
2	5	QPSK	1	0	1880	21.89	V	PASS
2	5	QPSK	1	0	1907.5	21.85	V	PASS
2	5	16QAM	1	24	1852.5	21.52	H	PASS
2	5	16QAM	1	24	1880	21.50	H	PASS
2	5	16QAM	1	24	1907.5	**21.55**	H	PASS
2	5	16QAM	1	24	1852.5	20.85	V	PASS
2	5	16QAM	1	24	1880	20.84	V	PASS
2	5	16QAM	1	24	1907.5	20.89	V	PASS

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
2	10	QPSK	1	49	1855	22.31	H	PASS
2	10	QPSK	1	49	1880	22.27	H	PASS
2	10	QPSK	1	49	1905	**22.32**	H	PASS
2	10	QPSK	1	49	1855	21.85	V	PASS
2	10	QPSK	1	49	1880	21.84	V	PASS
2	10	QPSK	1	49	1905	21.88	V	PASS
2	10	16QAM	1	0	1855	21.48	H	PASS
2	10	16QAM	1	0	1880	21.50	H	PASS
2	10	16QAM	1	0	1905	**21.52**	H	PASS
2	10	16QAM	1	0	1855	20.84	V	PASS
2	10	16QAM	1	0	1880	20.90	V	PASS
2	10	16QAM	1	0	1905	20.85	V	PASS
2	15	QPSK	1	74	1857.5	22.38	H	PASS
2	15	QPSK	1	74	1880	**22.39**	H	PASS
2	15	QPSK	1	74	1902.5	22.33	H	PASS
2	15	QPSK	1	74	1857.5	21.82	V	PASS
2	15	QPSK	1	74	1880	21.91	V	PASS
2	15	QPSK	1	74	1902.5	21.87	V	PASS
2	15	16QAM	1	0	1857.5	21.49	H	PASS
2	15	16QAM	1	0	1880	**21.57**	H	PASS
2	15	16QAM	1	0	1902.5	21.53	H	PASS
2	15	16QAM	1	0	1857.5	20.89	V	PASS
2	15	16QAM	1	0	1880	20.92	V	PASS
2	15	16QAM	1	0	1902.5	20.87	V	PASS
2	20	QPSK	1	0	1860	**22.41**	H	PASS
2	20	QPSK	1	0	1880	22.35	H	PASS
2	20	QPSK	1	0	1900	22.39	H	PASS
2	20	QPSK	1	0	1860	21.85	V	PASS
2	20	QPSK	1	0	1880	21.89	V	PASS
2	20	QPSK	1	0	1900	21.92	V	PASS
2	20	16QAM	1	0	1860	21.59	H	PASS
2	20	16QAM	1	0	1880	21.62	H	PASS
2	20	16QAM	1	0	1900	**21.65**	H	PASS
2	20	16QAM	1	0	1860	20.91	V	PASS
2	20	16QAM	1	0	1880	20.96	V	PASS
2	20	16QAM	1	0	1900	20.94	V	PASS

2. LTE Band 4 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
4	1.4	QPSK	3	0	1710.7	22.11	H	PASS
4	1.4	QPSK	3	2	1732.5	22.24	H	PASS
4	1.4	QPSK	1	2	1754.3	**22.25**	H	PASS
4	1.4	QPSK	3	0	1710.7	21.76	V	PASS
4	1.4	QPSK	3	2	1732.5	21.74	V	PASS
4	1.4	QPSK	1	2	1754.3	21.77	V	PASS
4	1.4	16QAM	3	2	1710.7	21.19	H	PASS
4	1.4	16QAM	3	2	1732.5	**21.20**	H	PASS
4	1.4	16QAM	3	2	1754.3	21.17	H	PASS
4	1.4	16QAM	3	2	1710.7	20.57	V	PASS
4	1.4	16QAM	3	2	1732.5	20.61	V	PASS
4	1.4	16QAM	3	2	1754.3	20.62	V	PASS
4	3	QPSK	1	0	1711.5	22.11	H	PASS
4	3	QPSK	1	0	1732.5	**22.17**	H	PASS
4	3	QPSK	1	7	1753.5	22.15	H	PASS
4	3	QPSK	1	0	1711.5	21.60	V	PASS
4	3	QPSK	1	0	1732.5	21.64	V	PASS
4	3	QPSK	1	7	1753.5	21.71	V	PASS
4	3	16QAM	1	14	1711.5	21.22	H	PASS
4	3	16QAM	1	14	1732.5	21.14	H	PASS
4	3	16QAM	1	14	1753.5	**21.24**	H	PASS
4	3	16QAM	1	14	1711.5	20.57	V	PASS
4	3	16QAM	1	14	1732.5	20.52	V	PASS
4	3	16QAM	1	14	1753.5	20.60	V	PASS
4	5	QPSK	1	12	1712.5	22.20	H	PASS
4	5	QPSK	1	24	1732.5	**22.22**	H	PASS
4	5	QPSK	1	24	1752.5	22.19	H	PASS
4	5	QPSK	1	12	1712.5	21.76	V	PASS
4	5	QPSK	1	24	1732.5	21.70	V	PASS
4	5	QPSK	1	24	1752.5	21.68	V	PASS
4	5	16QAM	1	24	1712.5	21.15	H	PASS
4	5	16QAM	1	0	1732.5	21.11	H	PASS
4	5	16QAM	1	0	1752.5	**21.19**	H	PASS
4	5	16QAM	1	24	1712.5	20.72	V	PASS
4	5	16QAM	1	0	1732.5	20.65	V	PASS
4	5	16QAM	1	0	1752.5	20.70	V	PASS

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
4	10	QPSK	1	24	1715	**22.19**	H	PASS
4	10	QPSK	1	0	1732.5	22.15	H	PASS
4	10	QPSK	1	24	1750	22.11	H	PASS
4	10	QPSK	1	24	1715	21.67	V	PASS
4	10	QPSK	1	0	1732.5	21.62	V	PASS
4	10	QPSK	1	24	1750	21.63	V	PASS
4	10	16QAM	1	24	1715	21.21	H	PASS
4	10	16QAM	1	0	1732.5	**21.28**	H	PASS
4	10	16QAM	1	24	1750	21.13	H	PASS
4	10	16QAM	1	24	1715	20.62	V	PASS
4	10	16QAM	1	0	1732.5	20.71	V	PASS
4	10	16QAM	1	24	1750	20.63	V	PASS
4	15	QPSK	1	74	1717.5	22.24	H	PASS
4	15	QPSK	1	74	1732.5	**22.28**	H	PASS
4	15	QPSK	1	0	1747.5	22.23	H	PASS
4	15	QPSK	1	74	1717.5	21.63	V	PASS
4	15	QPSK	1	74	1732.5	21.65	V	PASS
4	15	QPSK	1	0	1747.5	21.69	V	PASS
4	15	16QAM	1	74	1717.5	21.24	H	PASS
4	15	16QAM	1	0	1732.5	21.20	H	PASS
4	15	16QAM	1	0	1747.5	**21.25**	H	PASS
4	15	16QAM	1	74	1717.5	20.66	V	PASS
4	15	16QAM	1	0	1732.5	20.71	V	PASS
4	15	16QAM	1	0	1747.5	20.69	V	PASS
4	20	QPSK	1	0	1720	22.28	H	PASS
4	20	QPSK	1	0	1732.5	**22.32**	H	PASS
4	20	QPSK	1	0	1745	22.29	H	PASS
4	20	QPSK	1	0	1720	21.69	V	PASS
4	20	QPSK	1	0	1732.5	21.74	V	PASS
4	20	QPSK	1	0	1745	21.66	V	PASS
4	20	16QAM	1	0	1720	21.23	H	PASS
4	20	16QAM	1	0	1732.5	21.26	H	PASS
4	20	16QAM	1	0	1745	**21.29**	H	PASS
4	20	16QAM	1	0	1720	20.73	V	PASS
4	20	16QAM	1	0	1732.5	20.76	V	PASS
4	20	16QAM	1	0	1745	20.74	V	PASS

3. LTE Band 5 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
5	1.4	QPSK	3	0	824.7	21.88	H	PASS
5	1.4	QPSK	3	2	836.5	21.90	H	PASS
5	1.4	QPSK	1	2	848.3	**21.91**	H	PASS
5	1.4	QPSK	3	0	824.7	21.45	V	PASS
5	1.4	QPSK	3	2	836.5	21.34	V	PASS
5	1.4	QPSK	1	2	848.3	21.37	V	PASS
5	1.4	16QAM	3	2	824.7	20.89	H	PASS
5	1.4	16QAM	3	2	836.5	**20.91**	H	PASS
5	1.4	16QAM	3	2	848.3	20.87	H	PASS
5	1.4	16QAM	3	2	824.7	20.17	V	PASS
5	1.4	16QAM	3	2	836.5	20.21	V	PASS
5	1.4	16QAM	3	2	848.3	20.22	V	PASS
5	3	QPSK	1	0	825.5	21.87	H	PASS
5	3	QPSK	1	0	836.5	**21.88**	H	PASS
5	3	QPSK	1	7	847.5	21.85	H	PASS
5	3	QPSK	1	0	825.5	21.40	V	PASS
5	3	QPSK	1	0	836.5	21.44	V	PASS
5	3	QPSK	1	7	847.5	21.51	V	PASS
5	3	16QAM	1	14	825.5	20.82	H	PASS
5	3	16QAM	1	14	836.5	20.84	H	PASS
5	3	16QAM	1	14	847.5	**20.87**	H	PASS
5	3	16QAM	1	14	825.5	20.27	V	PASS
5	3	16QAM	1	14	836.5	20.22	V	PASS
5	3	16QAM	1	14	847.5	20.20	V	PASS
5	5	QPSK	1	12	826.5	21.90	H	PASS
5	5	QPSK	1	24	836.5	**21.92**	H	PASS
5	5	QPSK	1	24	846.5	21.89	H	PASS
5	5	QPSK	1	12	826.5	21.46	V	PASS
5	5	QPSK	1	24	836.5	21.50	V	PASS
5	5	QPSK	1	24	846.5	21.48	V	PASS
5	5	16QAM	1	24	826.5	20.85	H	PASS
5	5	16QAM	1	0	836.5	20.81	H	PASS
5	5	16QAM	1	0	846.5	**20.90**	H	PASS
5	5	16QAM	1	24	826.5	20.22	V	PASS
5	5	16QAM	1	0	836.5	20.25	V	PASS
5	5	16QAM	1	0	846.5	20.18	V	PASS

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
5	10	QPSK	1	24	829	21.87	H	PASS
5	10	QPSK	1	0	836.5	**21.96**	H	PASS
5	10	QPSK	1	24	844	21.92	H	PASS
5	10	QPSK	1	24	829	21.47	V	PASS
5	10	QPSK	1	0	836.5	21.52	V	PASS
5	10	QPSK	1	24	844	21.48	V	PASS
5	10	16QAM	1	24	829	20.88	H	PASS
5	10	16QAM	1	0	836.5	**20.92**	H	PASS
5	10	16QAM	1	24	844	20.83	H	PASS
5	10	16QAM	1	24	829	20.25	V	PASS
5	10	16QAM	1	0	836.5	20.27	V	PASS
5	10	16QAM	1	24	844	20.23	V	PASS

4. LTE Band 7 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	H/V	Verdict
			RB Size	RB Offset				
7	5	QPSK	1	12	2502.5	**21.76**	H	PASS
7	5	QPSK	1	0	2535	21.70	H	PASS
7	5	QPSK	1	24	2567.5	21.78	H	PASS
7	5	QPSK	1	12	2502.5	21.16	V	PASS
7	5	QPSK	1	0	2535	21.20	V	PASS
7	5	QPSK	1	24	2567.5	21.18	V	PASS
7	5	16QAM	1	24	2502.5	20.45	H	PASS
7	5	16QAM	1	24	2535	20.48	H	PASS
7	5	16QAM	1	0	2567.5	**20.49**	H	PASS
7	5	16QAM	1	24	2502.5	19.72	V	PASS
7	5	16QAM	1	24	2535	19.65	V	PASS
7	5	16QAM	1	0	2567.5	19.75	V	PASS
7	10	QPSK	1	24	2505	**21.78**	H	PASS
7	10	QPSK	1	49	2535	21.69	H	PASS
7	10	QPSK	1	24	2565	21.71	H	PASS
7	10	QPSK	1	24	2505	21.23	V	PASS
7	10	QPSK	1	49	2535	21.18	V	PASS
7	10	QPSK	1	24	2565	21.15	V	PASS
7	10	16QAM	1	24	2505	20.50	H	PASS
7	10	16QAM	1	49	2535	20.45	H	PASS
7	10	16QAM	1	24	2565	**20.53**	H	PASS
7	10	16QAM	1	24	2505	19.82	V	PASS
7	10	16QAM	1	49	2535	19.75	V	PASS
7	10	16QAM	1	24	2565	19.83	V	PASS
7	15	QPSK	1	37	2507.5	**21.74**	H	PASS
7	15	QPSK	1	74	2535	21.73	H	PASS
7	15	QPSK	1	0	2562.5	21.70	H	PASS
7	15	QPSK	1	37	2507.5	21.25	V	PASS
7	15	QPSK	1	74	2535	21.20	V	PASS
7	15	QPSK	1	0	2562.5	21.19	V	PASS
7	15	16QAM	1	37	2507.5	20.44	H	PASS
7	15	16QAM	1	18	2535	20.50	H	PASS
7	15	16QAM	1	0	2562.5	**20.51**	H	PASS
7	15	16QAM	1	37	2507.5	19.86	V	PASS
7	15	16QAM	1	18	2535	19.81	V	PASS
7	15	16QAM	1	0	2562.5	19.79	V	PASS

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	H/V	Verdict
7	20	QPSK	1	0	2510	21.78	H	PASS
7	20	QPSK	1	0	2535	21.75	H	PASS
7	20	QPSK	1	0	2560	**21.81**	H	PASS
7	20	QPSK	1	0	2510	21.29	V	PASS
7	20	QPSK	1	0	2535	21.24	V	PASS
7	20	QPSK	1	0	2560	21.25	V	PASS
7	20	16QAM	1	0	2510	20.53	H	PASS
7	20	16QAM	1	0	2535	**20.56**	H	PASS
7	20	16QAM	1	0	2560	20.49	H	PASS
7	20	16QAM	1	0	2510	19.83	V	PASS
7	20	16QAM	1	0	2535	19.86	V	PASS
7	20	16QAM	1	0	2560	19.91	V	PASS

2.8 Radiated Out of Band Emissions

2.8.1 Requirement

The radiated spurious emission was measured by substitution method according to ANSI / TIA /EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

For Band 7

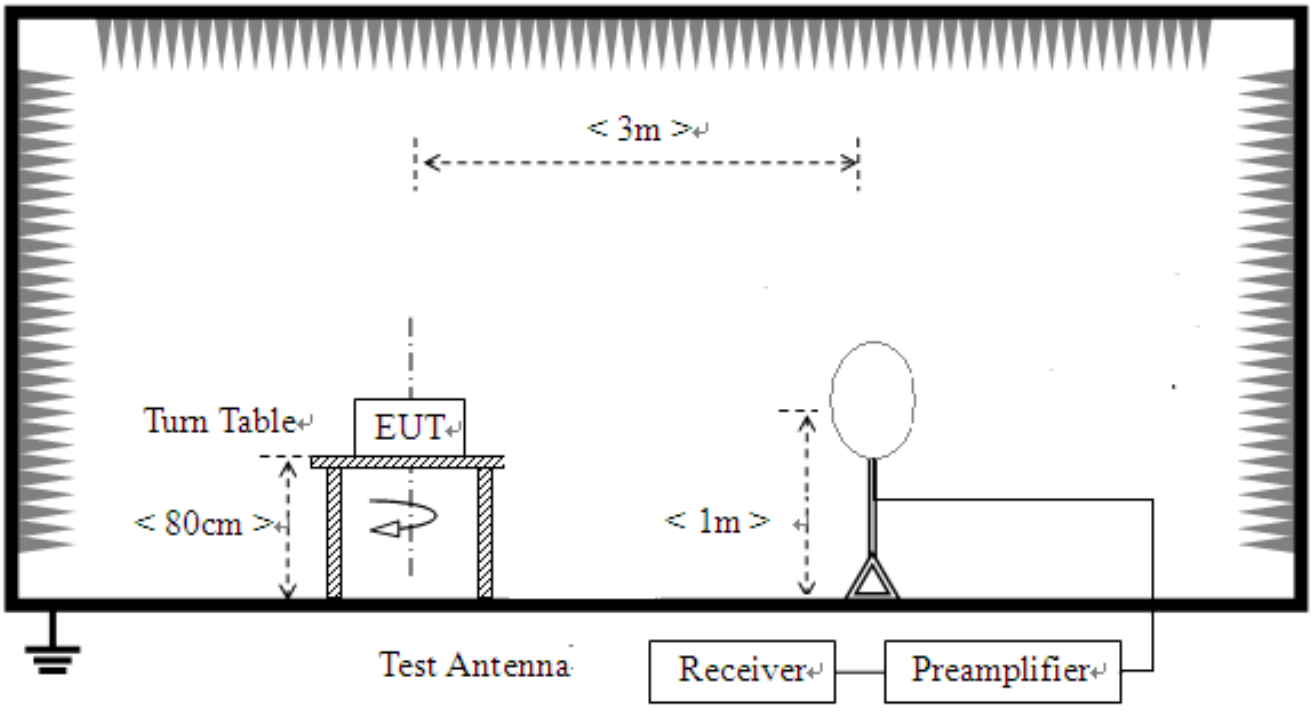
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

2.8.2 Measuring Instruments

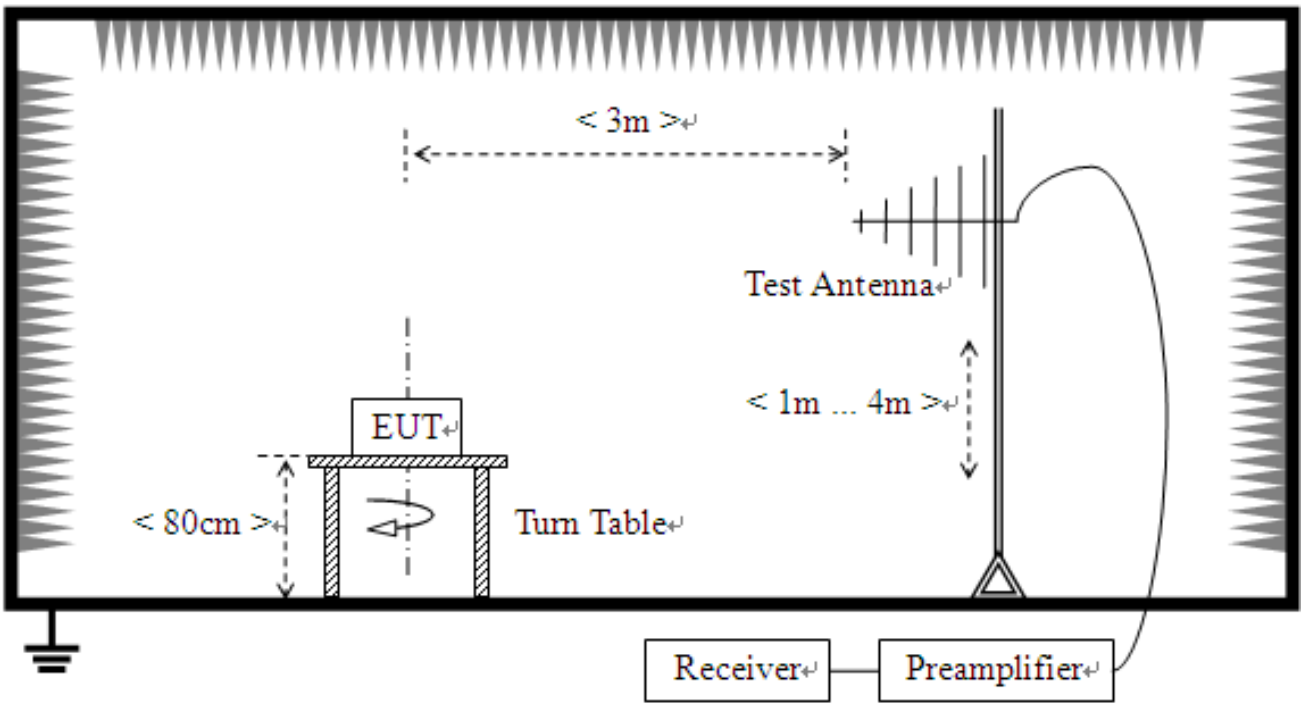
The measuring equipment is listed in the section 3 of this test report.

2.8.3 Test Setup

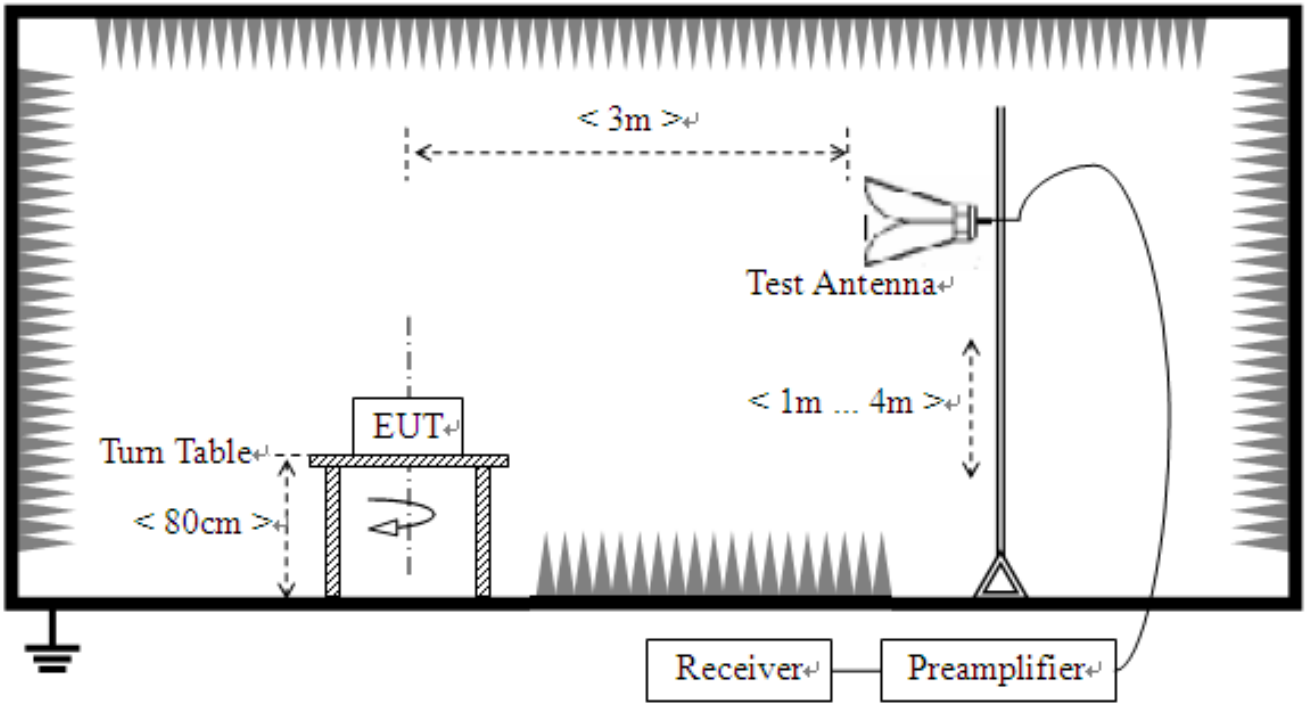
For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



For radiated emissions above 1GHz



2.8.4 Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

    = P(W)- [43 + 10log(P)] (dB)

    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

    = -13dBm.

    <For Band 7>

    The limit line is derived from 55+ 10log(P)dB below the transmitter power P(Watts)

    = P(W)- [55 + 10log(P)] (dB)

    = [30 + 10log(P)] (dBm) - [55 + 10log(P)] (dB)

    = -25dBm.
11. All Spurious Emission tests were performed in X, Y, Z axis direction and low, middle, high channel. And only the worst axis test condition was recorded in this test report.
12. The spectrum is measured from 9 KHz to the 10^{th} harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. The worst case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.

13. For 9KHz to 30MHz: the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
14. The maximum RB configurations of the Radiated Spurious Emissions as RB Size 1, RB Offset 0

2.8.5 Test Result (Plots) of Radiated Spurious Emission

Worst-Case test data provide as below:

30MHz~26.5GHz:

Note: 1. within 30MHz-1GHz were found more than 20dB below limit line

Note: 2. Absolute Level=Reading Level + Factor

LTE Band 2 Middle Channel QPSK 20MHz BW

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2581.790	-78.09	-52.48	-13	39.48	25.61	Horizontal
2	3198.639	-77.66	-48.72	-13	35.72	28.94	Horizontal
3	5098.019	-79.20	-45.42	-13	32.42	33.78	Horizontal
4	6297.059	-72.57	-46.96	-13	33.96	25.61	Horizontal
5	7581.166	-72.15	-41.68	-13	28.68	30.47	Horizontal
6	8695.139	-72.14	-39.52	-13	26.52	32.62	Horizontal
7	12570.41	-71.98	-33.77	-13	20.77	38.21	Horizontal

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2393.696	-77.97	-53.17	-13	40.17	24.8	Vertical
2	3143.428	-78.28	-49.00	-13	36.00	29.28	Vertical
3	3760.352	-77.69	-47.02	-13	34.02	30.67	Vertical
4	5012.802	-78.83	-44.85	-13	31.85	33.98	Vertical
5	7594.668	-72.42	-41.60	-13	28.60	30.82	Vertical
6	8696.489	-72.14	-39.51	-13	26.51	32.63	Vertical
7	10933.88	-72.46	-38.80	-13	25.80	33.66	Vertical

LTE Band 4 Middle Channel QPSK 20MHz BW

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2638.819	-77.12	-51.27	-13	38.27	25.85	Horizontal
2	3140.428	-77.73	-48.57	-13	35.57	29.16	Horizontal
3	3862.372	-79.32	-48.02	-13	35.02	31.30	Horizontal
4	5062.012	-79.34	-45.86	-13	32.86	33.48	Horizontal
5	7604.120	-73.13	-42.33	-13	29.33	30.80	Horizontal
6	8724.845	-72.55	-40.09	-13	27.09	32.46	Horizontal
7	9977.895	-71.92	-40.51	-13	27.51	31.41	Horizontal

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2133.566	-69.95	-46.62	-13	33.62	23.33	Vertical
2	3465.093	-70.57	-41.40	-13	28.40	29.17	Vertical
3	5484.496	-78.76	-44.45	-13	31.45	34.31	Vertical
4	7587.917	-72.47	-41.83	-13	28.83	30.64	Vertical
5	8697.839	-72.44	-39.79	-13	26.79	32.65	Vertical
6	10937.93	-72.19	-38.57	-13	25.57	33.62	Vertical

LTE Band 5 Middle Channel QPSK 10MHz BW

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1695.339	-76.93	-50.27	-13	37.27	26.66	Horizontal
2	2003.000	-78.61	-50.18	-13	37.18	28.43	Horizontal
3	3091.218	-78.04	-48.87	-13	35.87	29.17	Horizontal
4	3861.772	-79.01	-47.71	-13	34.71	31.3	Horizontal
5	5094.418	-78.89	-45.14	-13	32.14	33.75	Horizontal
6	7635.177	-72.10	-42.52	-13	29.52	29.58	Horizontal
7	8681.636	-72.40	-39.96	-13	26.96	32.44	Horizontal

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1765.753	-76.19	-55.75	-13	42.75	20.44	Vertical
2	2412.282	-76.04	-51.31	-13	38.31	24.73	Vertical
3	4683.936	-78.47	-45.88	-13	32.88	32.59	Vertical
4	7537.957	-72.16	-42.83	-13	29.83	29.33	Vertical
5	8599.269	-71.79	-40.44	-13	27.44	31.35	Vertical
6	9977.895	-71.35	-39.94	-13	26.94	31.41	Vertical

LTE Band 7 Middle Channel QPSK 10MHz BW

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	3165.633	-77.64	-48.58	-25	23.58	29.06	Horizontal
2	3867.773	-78.85	-47.51	-25	22.51	31.34	Horizontal
3	5086.017	-78.27	-44.59	-25	19.59	33.68	Horizontal
4	7577.115	-71.99	-41.63	-25	16.63	30.36	Horizontal
5	8615.473	-71.53	-39.97	-25	14.97	31.56	Horizontal
6	9695.689	-72.91	-40.63	-25	15.63	32.28	Horizontal

NO.	Freq. [MHz]	Reading Level [dBm]	Absolute Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1765.753	-76.19	-55.75	-25	30.75	20.44	Vertical
2	2412.282	-76.04	-51.31	-25	26.31	24.73	Vertical
3	4683.936	-78.47	-45.88	-25	20.88	32.59	Vertical
4	7537.957	-72.16	-42.83	-25	17.83	29.33	Vertical
5	8599.269	-71.79	-40.44	-25	15.44	31.35	Vertical
6	9977.895	-71.35	-39.94	-25	14.94	31.41	Vertical

3. LIST OF MEASURING EQUIPMENT

Description	Manufacturer	Model	Serial No.	Cal. Date	Due Date	Remark
EMI Test Receiver	R&S	ESIB26	A0304218	2018.05.25	2019.05.24	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2018.05.25	2019.05.24	Radiation
Bilog Antenna	Schwarzbeck	VULB 9163	9163-274	2018.05.25	2019.05.24	Radiation
Broadband antenna (30MHz~1GHz)	R&S	HL562	101341	2018.05.25	2019.05.24	Radiation
Broadband antenna (30MHz~1GHz)	R&S	HL562	101339	2018.05.25	2019.05.24	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100150	2018.05.25	2019.05.24	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100148	2018.05.25	2019.05.24	Radiation
Horn antenna (18GHz~26.5GHz)	R&S	HM118	101286	2018.05.25	2019.05.24	Radiation
Horn antenna (18GHz~26.5GHz)	R&S	HM118	101284	2018.05.25	2019.05.24	Radiation
Amplifier 20M~3GHz	R&S	PAP-0203H	22018	2018.05.25	2019.05.24	Radiation
Ampilier 1G~18GHz	R&S	MITEQ AFS42-00101800	25-S-42	2018.05.25	2019.05.24	Radiation
Ampilier 18G~40GHz	R&S	JS42-18002600-28-5A	12111.0980.00	2018.05.25	2019.05.24	Radiation
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2017.11.12	2018.11.11	Conducted
LISN	ROHDE&SCHWARZ	ESH2-Z5	A0304221	2018.05.25	2019.05.24	Conducted
Test Receiver	R&S	ESCS30	A0304260	2018.05.25	2019.05.24	Conducted
Cable	SUNHNER	SUCOFLEX 100	/	2018.05.25	2019.05.24	Radiation
Cable	SUNHNER	SUCOFLEX 104	/	2018.05.25	2019.05.24	Radiation
Temperature chamber	espec	SU-642	93008519	2017.08.25	2018.08.24	Conducted
Wideband Radio Communication tester	R&S	CMW500	149332	2018.05.04	2019.05.03	Conducted
Power Supply	R&S	NGMO1	101037	2018.05.04	2019.05.03	Conducted