FCC RF Test Report

APPLICANT	: Acer Incorporated
EQUIPMENT	: Smart HandHeld
BRAND NAME	: Acer
MODEL NAME	: T02
MARKETING NAME	: Liquid Z530
FCC ID	: HLZDMZ530
STANDARD	: 47 CFR Part 2, 24(E), 27
CLASSIFICATION	: PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Jul. 14, 2015 and completely tested on Jan. 04, 2016. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-D-2010 and the testing has shown the tested sample to be in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG571428-01B	Rev. 01	Initial issue of report	Jan. 07, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.5	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §24.238(a) §27.53(g) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 12)	< 43+10log10(P[Watts])	PASS	-
	§27.53(m)(4)	Conducted Band Edge Measurement (Band 7)	§27.53(m)(4)		

Report Section	FCC Rule	Description	Limit	Result	Remark
3.8	§2.1051 §24.238(a) §27.53(g) §27.53(h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 12)	< 43+10log10(P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (Band 7)	< $55+10\log_{10}$(P[Watts])		
3.9	§2.1055 §24.235 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§27.50(c)(10)	Effective Radiated Power (Band 12)	ERP < 3 Watt	PASS	-
	N/A	Equivalent Isotropic Radiated Power (Band 12)	EIRP < 5 Watt		
	§24.232(c) §27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2) (Band 7)	EIRP < 2Watt		
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt		
4.5	§2.1053 §24.238(a) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 12)	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 11.47 dB at 12630.000 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (Band 7)	< $55+10\log_{10}$(P[Watts])		

1 General Description

1.1 Applicant

Acer Incorporated
8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22181, Taiwan (R.O.C)

1.2 Manufacturer

Compal Electronics, INC.
No. 385, Yangguang St. Neihu District, Taipei City 11491, Taiwan (R.O.C)

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart HandHeld
Brand Name	Acer
Model Name	T02
Marketing Name	Liquid Z530
FCC ID	HLZDMZ530
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE WLAN 11b/g/n HT20/HT40 Bluetooth v4.0 EDR/LE
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 12 : 699 MHz ~ 716 MHz
Rx Frequency	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 7 : 2622.5MHz ~ 2687.5 MHz LTE Band 12 : 729 MHz ~ 746 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz LTE Band 12 : 1.4MHz / 3MHz / 5MHz / 10MHz
Maximum Output Power to Antenna	LTE Band 2 : 21.50 dBm LTE Band 4 : 20.85 dBm LTE Band 7 : 16.99 dBm LTE Band 12 : 21.47 dBm
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Emission Designator

LTE Band 2	QPSK			16QAM		
BW(MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1M09G7D		0.1341	1M10W7D		0.0989
3	2M73G7D		0.1287	2M73W7D		0.1044
5	4M53G7D		0.1321	4M50W7D		0.1102
10	9M07G7D	0.0012	0.1352	9M03W7D		0.1130
15	13M5G7D		0.1312	13M5W7D		0.1038
20	18M5G7D		0.1284	18M5W7D		0.1045
LTE Band 4	QPSK			16QAM		
BW(MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1M10G7D		0.1213	1M09W7D		0.0940
3	2M72G7D		0.1105	2M72W7D		0.0931
5	4M53G7D		0.1215	4M51W7D		0.0923
10	9M07G7D	0.0083	0.1279	9M03W7D		0.1011
15	13M5G7D		0.1299	13M5W7D		0.1013
20	18M5G7D		0.1211	18M5W7D		0.0927
LTE Band 7	QPSK			16QAM		
BW(MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
			AVG.			AVG.
5	4M52G7D		0.0180	4M52W7D		0.0151
10	9M09G7D	0.0009	0.0179	9M03W7D		0.0142
15	13M5G7D		0.0131	13M5W7D		0.0159
20	18M5G7D		0.0194	18M4W7D		0.0098
LTE Band 12	QPSK			16QAM		
BW(MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
1.4	1M09G7D		0.0578	1M10W7D		0.0603
3	2M73G7D		0.0652	2M72W7D		0.0542
5	4M52G7D		0.0656	4M52W7D		0.0538
10	9M05G7D	0.0072	0.0633	9M11W7D		0.0513

1.7 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH05-HY

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	03CH11-HY

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 24(E), 27
- ANSI / TIA / EIA-603-D-2010
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02

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.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

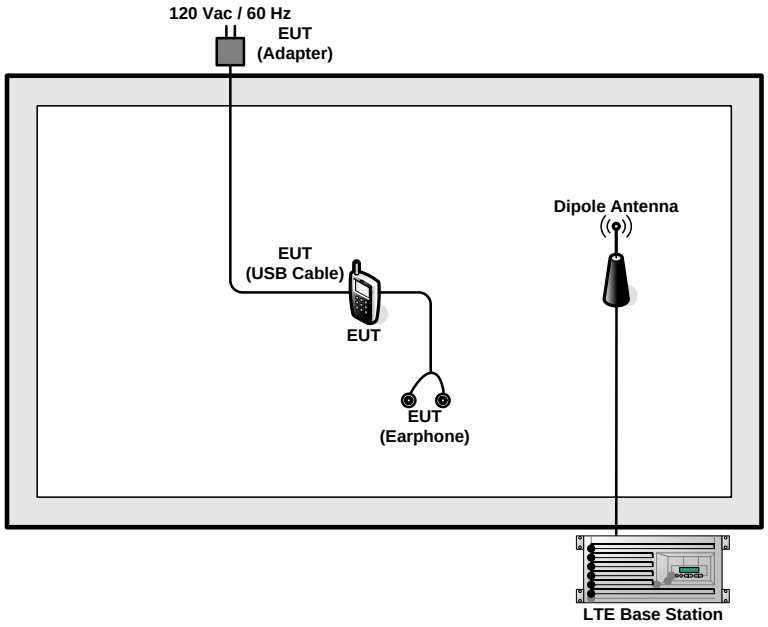
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

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	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	7	-	-	v	v	v	v	v	v	v	v	v	v	v	v
	12	v	v	v	v	-	-	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	2						v	v	v	v		v	v	v	v
	4						v	v	v	v		v	v	v	v
	7	-	-				v	v	v	v		v	v	v	v
	12				v	-	-	v	v	v		v	v	v	v
26dB and 99% Bandwidth	2	v	v	v	v	v	v	v	v			v	v	v	v
	4	v	v	v	v	v	v	v	v			v	v	v	v
	7	-	-	v	v	v	v	v	v			v	v	v	v
	12	v	v	v	v	-	-	v	v			v	v	v	v
Conducted Band Edge	2	v	v	v	v	v	v	v	v	v		v	v		v
	4	v	v	v	v	v	v	v	v	v		v	v		v
	7	-	-	v	v	v	v	v	v	v		v	v		v
	12	v	v	v	v	-	-	v	v	v		v	v		v

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Conducted Spurious Emission	2	v	v	v	v	v	v	v	v	v			v	v	v
	4	v	v	v	v	v	v	v	v	v			v	v	v
	7	-	-	v	v	v	v	v	v	v			v	v	v
	12	v	v	v	v	-	-	v	v	v			v	v	v
Frequency Stability	2	v			v			v				v		v	
	4	v			v			v				v		v	
	7	-	-	v	v			v				v		v	
	12	v			v	-	-	v				v		v	
E.R.P./ E.I.R.P.	2	v	v	v	v	v	v	v	v	v			v	v	v
	4	v	v	v	v	v	v	v	v	v			v	v	v
	7	-	-	v	v	v	v	v	v	v			v	v	v
	12	v	v	v	v	v	v	v	v	v			v	v	v
Radiated Spurious Emission	2	v	v	v	v	v	v	v		v			v	v	v
	4	v	v	v	v	v	v	v		v			v	v	v
	7	-	-	v	v	v	v	v		v			v	v	v
	12	v	v	v	v	-	-	v		v			v	v	v
Note	1. The mark "v " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. 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.														

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 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 4.2 dB and 10dB attenuator.

Example :

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

= 4.2 + 10 = 14.2 (dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Band 2 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3

LTE Band 7 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	20850	21100	21350
	Frequency	2510	2535	2560
15	Channel	20825	21100	21375
	Frequency	2507.5	2535	2562.5
10	Channel	20800	21100	21400
	Frequency	2505	2535	2565
5	Channel	20775	21100	21425
	Frequency	2502.5	2535	2567.5

LTE Band 12 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

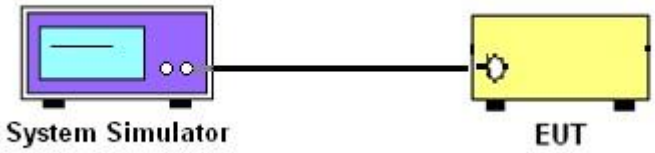
3 Conducted Test Items

3.1 Measuring Instruments

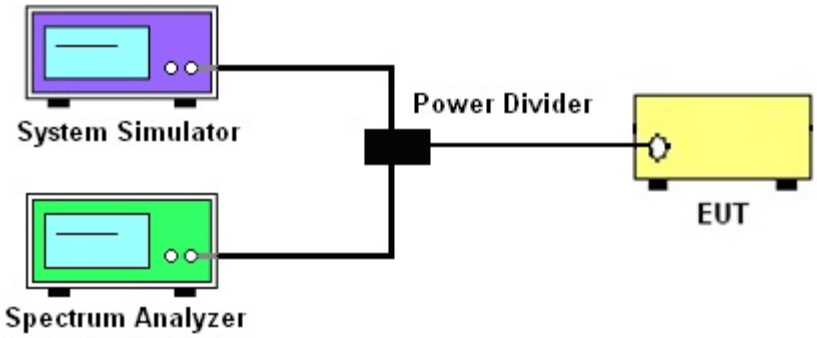
See list of measuring instruments of this test report.

3.2 Test Setup

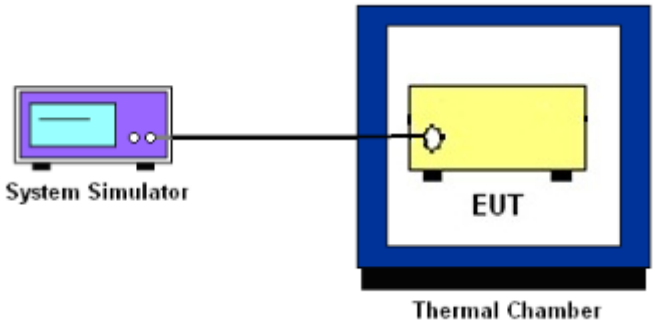
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power

3.4.1 Description of the Conducted Output Power Measurement

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.

3.4.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the 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.

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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.

3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.7.1.
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

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.

3.6.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 4.2.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (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.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1MHz bandwidth. 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.

27.53 (g)

For operations in the 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

27.53 (h)

For operations in the 1710 – 1755 MHz band, the FCC limit is 43 + $10\log_{10}$(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 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.

3.7.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used or a narrower RBW was used and the measured power was integrated over the full required measurement bandwidth of 1 MHz.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.
   Example:
   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.
9. For LTE Band 7, the other 40 dB, and 55 dB have additionally applied same calculation above.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

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

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

3.8.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. 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.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. 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.
11. 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.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

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.

3.9.2 Test Procedures for Temperature Variation

1. The testing follows FCC KDB 971168 v02r02 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. 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.
4. 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.

3.9.3 Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 v02r02 Section 9.0.
2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

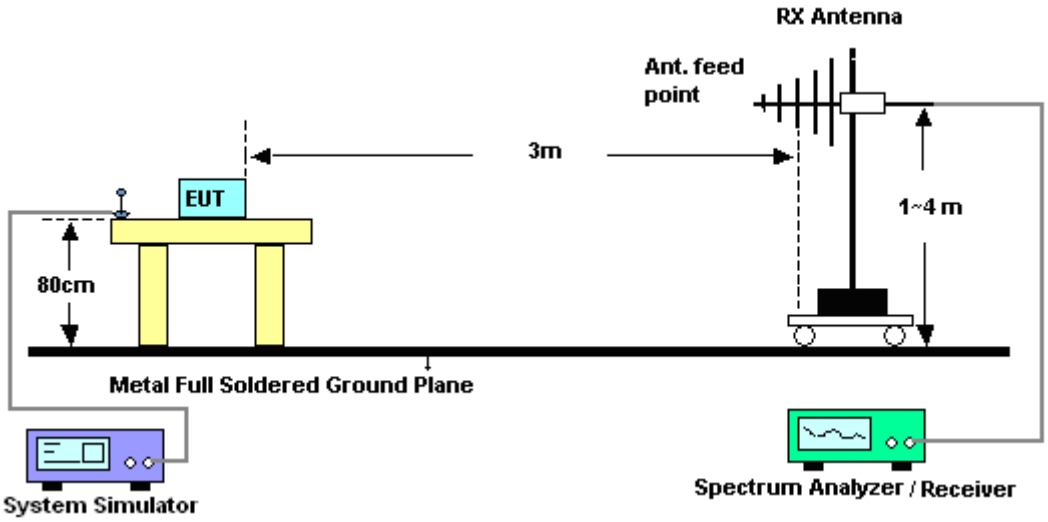
4 Radiated Test Items

4.1 Measuring Instruments

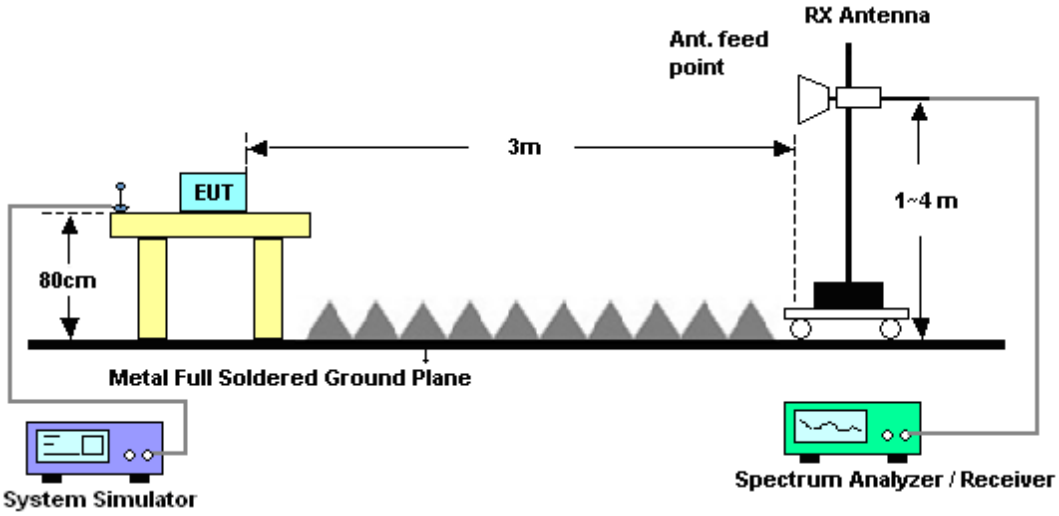
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Effective Radiated Power and Effective Isotropic Radiated Power

4.4.1 Description of the ERP/EIRP Measurement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-D-2010, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. Mobile and portable (hand-held) stations operating are limited to average 3 watts with LTE band 12.

Equivalent isotropic radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-D-2010, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. 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.

4.4.2 Test Procedures

1. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
2. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP = LVL + Correction factor and ERP = EIRP - 2.15. Take the record of the output power at substitution antenna.

	LTE Average					
LTE BW	1.4M	3M	5M	10M	15M	20M
Span	3MHz	6MHz	10MHz	20MHz	30MHz	40MHz
RBW	30kHz	100kHz	100kHz	300kHz	300kHz	300kHz
VBW	100kHz	300kHz	300kHz	1MHz	1MHz	1MHz
Detector	RMS	RMS	RMS	RMS	RMS	RMS
Trace	Average	Average	Average	Average	Average	Average
Average Type	Power	Power	Power	Power	Power	Power
Sweep Count	100	100	100	100	100	100

	LTE Peak					
LTE BW	1.4M	3M	5M	10M	15M	20M
Span	3MHz	6MHz	10MHz	20MHz	30MHz	40MHz
RBW	30kHz	100kHz	100kHz	300kHz	300kHz	300kHz
VBW	100kHz	300kHz	300kHz	1MHz	1MHz	1MHz
Detector	Peak	Peak	Peak	Peak	Peak	Peak
Trace	Max Hold	Max Hold	Max Hold	Max Hold	Max Hold	Max Hold
Power	Channel	Channel	Channel	Channel	Channel	Channel

4.5 Radiated Spurious Emission

4.5.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-D-2010. 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.

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.

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. 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.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. 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)
12. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
13. ERP (dBm) = EIRP - 2.15

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Sep. 11, 2015	Nov. 03, 2015~ Jan. 04, 2016	Sep. 10 2016	Conducted (TH05-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 18, 2015	Nov. 03, 2015~ Jan. 04, 2016	Mar. 17, 2016	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SU-241	92003713	-30°~95°	Jun. 15, 2015	Nov. 03, 2015~ Jan. 04, 2016	Jun. 14, 2016	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890089	1V~20V 0.5A~5A	Jan. 14, 2015	Nov. 03, 2015~ Jan. 04, 2016	Jan. 13, 2016	Conducted (TH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Oct. 12, 2015	Nov. 22, 2015~ Dec. 06, 2015	Oct. 11, 2016	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz- 40GHz	Apr. 20, 2015	Nov. 22, 2015~ Dec. 06, 2015	Apr 19, 2016	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Nov. 17, 2015	Nov. 22, 2015~ Dec. 06, 2015	Nov. 16, 2016	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A	MY54130085	20Hz ~ 8.4GHz	Nov. 04, 2015	Nov. 22, 2015~ Dec. 06, 2015	Nov. 03, 2016	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1325	1GHz ~ 18GHz	Sep. 30, 2015	Nov. 22, 2015~ Dec. 06, 2015	Sep. 29, 2016	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Nov. 22, 2015~ Dec. 06, 2015	Nov. 19, 2016	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35413	30MHz~1GHz	Oct. 31, 2015	Nov. 22, 2015~ Dec. 06, 2015	Oct. 30, 2016	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 08, 2015	Nov. 22, 2015~ Dec. 06, 2015	Oct. 07, 2016	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 19, 2015	Nov. 22, 2015~ Dec. 06, 2015	Nov. 18, 2016	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHZ	Sep. 24, 2015	Nov. 22, 2015~ Dec. 06, 2015	Sep. 23, 2016	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Nov. 22, 2015~ Dec. 06, 2015	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Nov. 22, 2015~ Dec. 06, 2015	N/A	Radiation (03CH11-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May. 22, 2015	Nov. 22, 2015~ Dec. 06, 2015	May. 21, 2016	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degree	N/A	Nov. 22, 2015~ Dec. 06, 2015	N/A	Radiation (03CH11-HY)

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.90**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.50**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	21.50	21.45	21.42
20	1	49		21.45	21.41	21.40
20	1	99		21.45	21.36	21.33
20	50	0		20.46	20.43	20.40
20	50	24		20.42	20.41	20.37
20	50	50		20.41	20.39	20.35
20	100	0		20.42	20.37	20.37
20	1	0	16-QAM	20.43	20.47	20.42
20	1	49		20.44	20.42	20.43
20	1	99		20.43	20.36	20.22
20	50	0		19.39	19.37	19.35
20	50	24		19.36	19.36	19.34
20	50	50		19.33	19.33	19.30
20	100	0		19.34	19.31	19.32
15	1	0	QPSK	21.50	21.45	21.43
15	1	37		21.47	21.45	21.43
15	1	74		21.41	21.38	21.31
15	36	0		20.44	20.45	20.50
15	36	20		20.47	20.48	20.50
15	36	39		20.44	20.50	20.48
15	75	0		20.49	20.50	20.47
15	1	0	16-QAM	20.49	20.48	20.43
15	1	37		20.47	20.48	20.45
15	1	74		20.43	20.38	20.21
15	36	0		19.27	19.26	19.27
15	36	20		19.27	19.26	19.26
15	36	39		19.26	19.22	19.22
15	75	0		19.27	19.23	19.22

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	21.46	21.45	21.42
10	1	25		21.42	21.42	21.40
10	1	49		21.35	21.35	21.32
10	25	0		20.44	20.48	20.48
10	25	12		20.45	20.48	20.44
10	25	25		20.46	20.47	20.44
10	50	0		20.48	20.50	20.49
10	1	0	16-QAM	20.44	20.47	20.47
10	1	25		20.41	20.42	20.40
10	1	49		20.35	20.35	20.29
10	25	0		19.43	19.49	19.44
10	25	12		19.48	19.43	19.41
10	25	25		19.49	19.41	19.48
10	50	0		19.42	19.44	19.44
5	1	0	QPSK	21.43	21.41	21.39
5	1	12		21.44	21.44	21.40
5	1	24		21.34	21.35	21.30
5	12	0		20.49	20.50	20.47
5	12	7		20.44	20.45	20.44
5	12	13		20.50	20.49	20.45
5	25	0		20.48	20.46	20.42
5	1	0	16-QAM	20.39	20.46	20.36
5	1	12		20.40	20.44	20.33
5	1	24		20.20	20.45	20.26
5	12	0		19.47	19.45	19.44
5	12	7		19.46	19.48	19.41
5	12	13		19.46	19.45	19.39
5	25	0		19.41	19.39	19.36

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	21.32	21.28	21.24
3	1	8		**21.36**	21.35	21.29
3	1	14		21.27	21.25	21.23
3	8	0		20.44	20.44	20.36
3	8	4		20.43	20.44	20.35
3	8	7		20.41	20.42	20.34
3	15	0		20.44	20.44	20.37
3	1	0	16-QAM	20.38	20.31	20.47
3	1	8		20.43	20.37	20.46
3	1	14		20.44	20.41	20.37
3	8	0		19.48	19.45	19.46
3	8	4		19.44	19.47	19.44
3	8	7		19.46	19.46	19.41
3	15	0		19.50	19.48	19.41
1.4	1	0	QPSK	21.34	21.31	21.27
1.4	1	3		21.43	21.41	21.36
1.4	1	5		21.33	21.34	21.25
1.4	3	0		**21.45**	21.42	21.37
1.4	3	1		21.41	21.40	21.33
1.4	3	3		21.40	21.40	21.32
1.4	6	0		20.45	20.41	20.37
1.4	1	0	16-QAM	20.40	20.40	20.24
1.4	1	3		20.41	20.49	20.33
1.4	1	5		20.39	20.41	20.21
1.4	3	0		20.46	20.44	20.32
1.4	3	1		20.41	20.43	20.27
1.4	3	3		20.39	20.42	20.26
1.4	6	0		19.44	19.49	19.45

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	20.60	**20.61**	20.53
20	1	49		20.59	20.53	20.42
20	1	99		20.48	20.41	20.27
20	50	0		19.66	19.68	19.57
20	50	24		19.65	19.61	19.49
20	50	50		19.60	19.55	19.43
20	100	0		19.66	19.68	19.48
20	1	0	16-QAM	20.06	19.92	19.84
20	1	49		19.93	19.86	19.77
20	1	99		19.80	19.72	19.60
20	50	0		18.74	18.65	18.56
20	50	24		18.65	18.58	18.50
20	50	50		18.59	18.54	18.42
20	100	0		18.65	18.56	18.47
15	1	0	QPSK	**20.85**	20.66	20.60
15	1	37		20.75	20.61	20.52
15	1	74		20.59	20.51	20.36
15	36	0		19.88	19.72	19.63
15	36	20		19.81	19.70	19.60
15	36	39		19.76	19.64	19.52
15	75	0		19.81	19.67	19.58
15	1	0	16-QAM	20.14	19.96	19.89
15	1	37		20.09	19.91	19.84
15	1	74		19.93	19.79	19.66
15	36	0		18.85	18.71	18.63
15	36	20		18.80	18.66	18.57
15	36	39		18.75	18.61	18.50
15	75	0		18.81	18.65	18.58

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	20.83	20.65	20.59
10	1	25		20.77	20.59	20.52
10	1	49		20.59	20.50	20.39
10	25	0		19.86	19.68	19.58
10	25	12		19.81	19.66	19.55
10	25	25		19.75	19.63	19.52
10	50	0		19.83	19.66	19.56
10	1	0	16-QAM	20.14	19.99	19.90
10	1	25		20.11	19.94	19.86
10	1	49		19.94	19.84	19.69
10	25	0		18.84	18.66	18.56
10	25	12		18.79	18.64	18.54
10	25	25		18.73	18.62	18.52
10	50	0		18.82	18.65	18.56
5	1	0	QPSK	20.73	20.60	20.54
5	1	12		20.72	20.61	20.51
5	1	24		20.62	20.51	20.35
5	12	0		19.82	19.71	19.58
5	12	7		19.80	19.70	19.54
5	12	13		19.80	19.67	19.52
5	25	0		19.75	19.64	19.51
5	1	0	16-QAM	20.04	19.93	19.79
5	1	12		20.06	19.93	19.78
5	1	24		19.97	19.82	19.66
5	12	0		18.81	18.71	18.57
5	12	7		18.81	18.70	18.55
5	12	13		18.82	18.66	18.52
5	25	0		18.75	18.63	18.51

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	20.63	20.51	20.42
3	1	8		**20.67**	20.55	20.47
3	1	14		20.59	20.44	20.34
3	8	0		19.78	19.66	19.56
3	8	4		19.78	19.66	19.53
3	8	7		19.76	19.64	19.50
3	15	0		19.76	19.63	19.52
3	1	0	16-QAM	19.96	19.79	19.75
3	1	8		19.99	19.87	19.79
3	1	14		19.89	19.78	19.72
3	8	0		18.83	18.72	18.61
3	8	4		18.82	18.70	18.59
3	8	7		18.80	18.70	18.58
3	15	0		18.77	18.66	18.52
1.4	1	0	QPSK	20.67	20.55	20.43
1.4	1	3		20.74	20.61	20.52
1.4	1	5		20.64	20.52	20.38
1.4	3	0		**20.76**	20.64	20.49
1.4	3	1		20.71	20.59	20.44
1.4	3	3		20.70	20.59	20.42
1.4	6	0		19.76	19.61	19.49
1.4	1	0	16-QAM	19.97	19.85	19.70
1.4	1	3		20.05	19.92	19.81
1.4	1	5		19.97	19.84	19.69
1.4	3	0		19.83	19.71	19.55
1.4	3	1		19.78	19.65	19.50
1.4	3	3		19.75	19.64	19.49
1.4	6	0		18.84	18.70	18.56

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	16.92	**16.99**	16.70
20	1	49		16.84	16.95	16.53
20	1	99		16.74	16.69	16.41
20	50	0		15.97	15.98	15.72
20	50	24		15.96	15.96	15.70
20	50	50		15.95	15.89	15.67
20	100	0		15.90	15.96	15.63
20	1	0	16-QAM	15.98	15.99	15.83
20	1	49		15.97	15.86	15.93
20	1	99		15.98	15.96	15.72
20	50	0		15.00	14.91	14.66
20	50	24		14.94	14.95	14.68
20	50	50		14.93	14.86	14.65
20	100	0		14.96	14.87	14.61
15	1	0	QPSK	**16.92**	16.88	16.63
15	1	37		16.66	16.90	16.74
15	1	74		16.90	16.78	16.40
15	36	0		15.97	15.96	15.70
15	36	20		15.86	15.99	15.75
15	36	39		15.98	15.93	15.61
15	75	0		15.93	15.96	15.67
15	1	0	16-QAM	15.98	15.99	15.94
15	1	37		15.97	15.98	15.96
15	1	74		15.97	15.95	15.70
15	36	0		14.98	14.95	14.68
15	36	20		14.87	14.97	14.72
15	36	39		14.95	14.90	14.57
15	75	0		14.91	14.93	14.65

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	16.82	16.91	16.67
10	1	25		16.78	**16.96**	**16.96**
10	1	49		16.67	16.80	16.66
10	25	0		15.84	15.96	15.95
10	25	12		15.79	15.96	15.93
10	25	25		15.79	15.94	15.85
10	50	0		15.82	15.95	15.94
10	1	0	16-QAM	15.89	15.98	15.91
10	1	25		16.00	15.99	16.00
10	1	49		15.94	15.96	15.96
10	25	0		14.81	14.93	14.93
10	25	12		14.76	14.94	14.92
10	25	25		14.76	14.91	14.84
10	50	0		14.78	14.94	14.92
5	1	0	QPSK	16.82	16.91	16.88
5	1	12		16.85	**16.97**	16.79
5	1	24		16.75	16.85	16.60
5	12	0		15.89	16.00	15.89
5	12	7		15.89	15.98	15.85
5	12	13		15.88	15.98	15.79
5	25	0		15.84	15.96	15.80
5	1	0	16-QAM	15.64	15.59	15.90
5	1	12		15.61	15.61	15.60
5	1	24		15.65	15.76	15.54
5	12	0		14.87	14.99	14.89
5	12	7		14.88	14.96	14.84
5	12	13		14.86	14.96	14.78
5	25	0		14.82	14.95	14.78

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	21.36	**21.46**	21.45
10	1	25		21.33	21.42	21.38
10	1	49		21.32	21.39	21.43
10	25	0		20.36	20.47	20.45
10	25	12		20.33	20.41	20.38
10	25	25		20.35	20.40	20.44
10	50	0		20.35	20.43	20.42
10	1	0	16-QAM	20.31	20.41	20.49
10	1	25		20.38	20.47	20.43
10	1	49		20.38	20.42	20.50
10	25	0		19.34	19.45	19.40
10	25	12		19.35	19.45	19.41
10	25	25		19.38	19.44	19.47
10	50	0		19.38	19.46	19.44
5	1	0	QPSK	21.30	21.41	21.28
5	1	12		21.32	**21.42**	21.35
5	1	24		21.26	21.34	21.30
5	12	0		20.36	20.48	20.37
5	12	7		20.38	20.45	20.39
5	12	13		20.38	20.45	20.42
5	25	0		20.31	20.41	20.35
5	1	0	16-QAM	20.33	20.47	20.31
5	1	12		20.37	20.49	20.39
5	1	24		20.33	20.42	20.38
5	12	0		19.39	19.50	19.40
5	12	7		19.41	19.48	19.41
5	12	13		19.41	19.48	19.44
5	25	0		19.33	19.43	19.36

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	21.22	21.34	21.27
3	1	8		21.28	**21.38**	**21.38**
3	1	14		21.21	21.30	21.29
3	8	0		20.35	20.46	20.42
3	8	4		20.35	20.42	20.46
3	8	7		20.36	20.41	20.43
3	15	0		20.31	20.41	20.39
3	1	0	16-QAM	20.25	20.38	20.31
3	1	8		20.31	20.43	20.47
3	1	14		20.25	20.38	20.40
3	8	0		19.43	19.49	19.47
3	8	4		19.42	19.50	19.49
3	8	7		19.44	19.50	19.48
3	15	0		19.37	19.45	19.41
1.4	1	0	QPSK	21.26	21.35	21.39
1.4	1	3		21.35	21.45	**21.47**
1.4	1	5		21.26	21.35	21.35
1.4	3	0		21.37	21.45	21.46
1.4	3	1		21.32	21.39	21.41
1.4	3	3		21.31	21.39	21.41
1.4	6	0		20.32	20.39	20.43
1.4	1	0	16-QAM	20.29	20.40	20.43
1.4	1	3		20.38	20.41	20.49
1.4	1	5		20.28	20.38	20.40
1.4	3	0		20.43	20.49	20.50
1.4	3	1		20.37	20.45	20.48
1.4	3	3		20.37	20.44	20.48
1.4	6	0		19.42	19.49	19.48

Appendix B. Test Results of Radiated Test

ERP/EIRP

LTE Band 2 / 1.4MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	19.00	0.0795	20.65	0.1162
Middle		1	0	18.62	0.0728	21.12	0.1293
Highest		1	0	18.75	0.0750	21.27	0.1341
Lowest	16QAM	1	0	18.02	0.0634	19.61	0.0913
Middle		1	0	17.33	0.0540	19.93	0.0983
Highest		1	0	17.44	0.0555	19.95	0.0989
Limit	EIRP < 2W			Result		PASS	

LTE Band 2 / 3MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	18.62	0.0727	20.37	0.1090
Middle		1	0	18.36	0.0686	20.88	0.1225
Highest		1	0	18.54	0.0714	21.09	0.1287
Lowest	16QAM	1	0	18.08	0.0642	19.62	0.0917
Middle		1	0	17.38	0.0546	19.95	0.0989
Highest		1	0	17.61	0.0577	20.19	0.1044
Limit	EIRP < 2W			Result		PASS	

LTE Band 2 / 5MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	18.68	0.0738	20.51	0.1123
Middle		1	0	18.37	0.0687	20.94	0.1243
Highest		1	0	18.58	0.0721	21.21	0.1321
Lowest	16QAM	1	0	17.55	0.0569	19.94	0.0985
Middle		1	0	17.55	0.0569	19.94	0.0985
Highest		1	0	17.81	0.0604	20.42	0.1102
Limit	EIRP < 2W			Result		PASS	

LTE Band 2 / 10MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	19.18	0.0827	20.50	0.1122
Middle		1	0	18.47	0.0704	20.84	0.1214
Highest		1	0	18.74	0.0748	21.31	0.1352
Lowest	16QAM	1	0	18.05	0.0638	19.76	0.0947
Middle		1	0	17.64	0.0581	19.99	0.0997
Highest		1	0	17.96	0.0624	20.53	0.1130
Limit	EIRP < 2W			Result		PASS	

LTE Band 2 / 15MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	19.53	0.0897	21.18	0.1312
Middle		1	0	18.64	0.0731	21.11	0.1292
Highest		1	0	18.23	0.0666	21.05	0.1275
Lowest	16QAM	1	0	18.37	0.0687	20.06	0.1015
Middle		1	0	17.68	0.0586	19.99	0.0997
Highest		1	0	17.53	0.0566	20.16	0.1038
Limit	EIRP < 2W			Result		PASS	

LTE Band 2 / 20MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	19.39	0.0868	21.02	0.1265
Middle		1	0	18.74	0.0749	20.91	0.1234
Highest		1	0	18.71	0.0742	21.09	0.1284
Lowest	16QAM	1	0	18.52	0.0711	20.18	0.1043
Middle		1	0	17.44	0.0554	19.95	0.0988
Highest		1	0	17.33	0.0541	20.19	0.1045
Limit	EIRP < 2W			Result		PASS	

LTE Band 4 / 1.4MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	18.06	0.0639	20.84	0.1213
Middle		1	0	17.61	0.0577	20.37	0.1088
Highest		1	0	17.90	0.0617	19.92	0.0981
Lowest	16QAM	1	0	17.01	0.0502	19.73	0.0940
Middle		1	0	16.84	0.0483	19.43	0.0878
Highest		1	0	16.85	0.0484	18.71	0.0743
Limit	EIRP < 1W			Result		PASS	

LTE Band 4 / 3MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	17.57	0.0571	20.44	0.1105
Middle		1	0	17.36	0.0544	20.08	0.1019
Highest		1	0	17.70	0.0588	19.67	0.0926
Lowest	16QAM	1	0	16.97	0.0498	19.69	0.0931
Middle		1	0	16.83	0.0482	19.41	0.0874
Highest		1	0	16.90	0.0489	18.79	0.0756
Limit	EIRP < 1W			Result		PASS	

LTE Band 4 / 5MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	18.00	0.0631	20.85	0.1215
Middle		1	0	17.49	0.0561	20.30	0.1072
Highest		1	0	18.10	0.0645	20.19	0.1044
Lowest	16QAM	1	0	16.89	0.0489	19.65	0.0923
Middle		1	0	16.87	0.0486	19.48	0.0887
Highest		1	0	17.04	0.0505	18.90	0.0777
Limit	EIRP < 1W			Result		PASS	

LTE Band 4/ 10MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	18.22	0.0664	21.07	0.1279
Middle		1	0	17.40	0.0550	20.20	0.1047
Highest		1	0	17.60	0.0576	19.91	0.0979
Lowest	16QAM	1	0	17.30	0.0537	20.05	0.1011
Middle		1	0	16.72	0.0470	19.34	0.0859
Highest		1	0	16.81	0.0480	18.95	0.0785
Limit	EIRP < 1W			Result		PASS	

LTE Band 4 / 15MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	18.28	0.0673	21.13	0.1299
Middle		1	0	17.43	0.0554	20.17	0.1040
Highest		1	0	17.40	0.0549	19.88	0.0974
Lowest	16QAM	1	0	17.30	0.0537	20.06	0.1013
Middle		1	0	16.68	0.0465	19.24	0.0839
Highest		1	0	16.64	0.0461	18.97	0.0788
Limit	EIRP < 1W			Result		PASS	

LTE Band 4 / 20MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	18.04	0.0637	20.83	0.1211
Middle		1	0	17.38	0.0547	20.14	0.1033
Highest		1	0	17.70	0.0589	20.25	0.1060
Lowest	16QAM	1	0	16.97	0.0498	19.67	0.0927
Middle		1	0	16.64	0.0461	19.28	0.0847
Highest		1	0	16.93	0.0493	19.49	0.0890
Limit	EIRP < 1W			Result		PASS	

LTE Band 7 / 5MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	9.76	0.0095	12.55	0.0180
Middle		1	0	8.21	0.0066	11.47	0.0140
Highest		1	0	6.54	0.0045	9.24	0.0084
Lowest	16QAM	1	0	8.99	0.0079	11.80	0.0151
Middle		1	0	7.16	0.0052	10.50	0.0112
Highest		1	0	5.48	0.0035	8.47	0.0070
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 10MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	9.87	0.0097	12.52	0.0179
Middle		1	0	7.44	0.0055	10.67	0.0117
Highest		1	0	5.42	0.0035	8.28	0.0067
Lowest	16QAM	1	0	8.82	0.0076	11.53	0.0142
Middle		1	0	7.22	0.0053	10.36	0.0109
Highest		1	0	5.45	0.0035	8.04	0.0064
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 15MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	8.40	0.0069	11.16	0.0131
Middle		1	0	8.08	0.0064	10.96	0.0125
Highest		1	0	7.07	0.0051	9.57	0.0091
Lowest	16QAM	1	0	9.31	0.0085	12.01	0.0159
Middle		1	0	7.37	0.0055	10.20	0.0105
Highest		1	0	6.31	0.0043	8.81	0.0076
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 20MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	10.02	0.0100	12.87	0.0194
Middle		1	0	7.54	0.0057	10.65	0.0116
Highest		1	0	7.02	0.0050	9.95	0.0099
Lowest	16QAM	1	0	6.86	0.0049	9.73	0.0094
Middle		1	0	6.99	0.0050	9.93	0.0098
Highest		1	0	6.31	0.0043	8.78	0.0076
Limit	EIRP < 2W			Result		PASS	

LTE Band 12 / 1.4MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	5.23	0.0033	17.25	0.0531
Middle		1	0	5.87	0.0039	17.35	0.0544
Highest		1	0	6.49	0.0045	17.62	0.0578
Lowest	16QAM	1	0	5.60	0.0036	16.97	0.0498
Middle		1	0	5.60	0.0036	17.25	0.0531
Highest		1	0	5.89	0.0039	17.80	0.0603
Limit	ERP < 3W			Result		PASS	

LTE Band 12 / 3MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	6.05	0.0040	17.55	0.0569
Middle		1	0	6.21	0.0042	17.96	0.0626
Highest		1	0	6.25	0.0042	18.14	0.0652
Lowest	16QAM	1	0	5.34	0.0034	16.75	0.0474
Middle		1	0	5.53	0.0036	17.18	0.0522
Highest		1	0	5.50	0.0035	17.34	0.0542
Limit	ERP < 3W			Result		PASS	

LTE Band 12 / 5MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	6.11	0.0041	17.88	0.0613
Middle		1	0	6.28	0.0043	18.01	0.0633
Highest		1	0	6.28	0.0042	18.17	0.0656
Lowest	16QAM	1	0	5.31	0.0034	16.78	0.0477
Middle		1	0	5.50	0.0036	17.18	0.0522
Highest		1	0	5.43	0.0035	17.31	0.0538
Limit	ERP < 3W			Result		PASS	

LTE Band 12 / 10MHz (Average)							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	QPSK	1	0	6.59	0.0046	17.98	0.0628
Middle		1	0	6.46	0.0044	17.98	0.0628
Highest		1	0	6.31	0.0043	18.01	0.0633
Lowest	16QAM	1	0	5.43	0.0035	17.10	0.0513
Middle		1	0	5.10	0.0032	16.91	0.0491
Highest		1	0	5.18	0.0033	16.92	0.0492
Limit	ERP < 3W			Result		PASS	