



# FCC RF Test Report

APPLICANT : Hewlett-Packard Company  
EQUIPMENT : Tablet PC  
BRAND NAME : hp  
MODEL NAME : HSTNN-C78C  
FCC ID : B94HNC78CSWTH  
STANDARD : 47 CFR Part 2, 22(H), 24(E), 27  
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product was received on Sep. 27, 2013 and testing was completed on Oct. 22, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown 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



## SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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### SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-130(4.4) RSS-132 (5.4) RSS-133 (6.4) RSS-139(6.4)	Conducted Output Power	Reporting Only	PASS	-
3.1	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power (Band 5)	ERP < 7 Watts	PASS	-
	§27.50(c)(10)	N/A	Effective Radiated Power (Band 13) (Band 17)	ERP < 3 Watts		
	N/A	RSS-130(4.4)	Equivalent Isotropic Radiated Power (Band 13) (Band 17)	EIRP < 5 Watts		
	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power (Band 2)(Band 25)	EIRP < 2Watt		
	§27.50(d)(4)	RSS-139 (6.4) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt		
3.2	§2.1053 §22.917(a) §24.238(a) §27.53(c)(g)h	RSS-130(4.6) RSS-132 (5.5) RSS-133 (6.5.1) RSS-139 (6.5)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 13) (Band 17) (Band 25)	< 43+10log <sub>10</sub> (P[Watts])	PASS	Under limit 10.26 dB at 5580.000 MHz



# 1 General Description

## 1.1 Applicant

Hewlett-Packard Company  
3000 Hanover Street, Palo Alto, California 94304, USA

## 1.2 Manufacturer

COMPAL ELECTRONICS, INC.  
No. 581, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan (R.O.C.)

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Brand Name	hp
Model Name	HSTNN-C78C
FCC ID	B94HNC78CSWTH
Integrated WWAN Module	Brand Name: SIERRA WIRELESS Model Name: EM7355
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/LTE
EUT Stage	Identical Prototype

**Remark:**

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There have two batteries for EUT, The Battery 1 (model name: HSTNN-IB5O) and Battery 2 (model name: HSTNN-LB5O) are identical on power rating. The only differences are vendor and model name. All the tests were performed with Battery 1.

### 1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
<b>Tx Frequency</b>	LTE Band 5 : 826.5 MHz ~ 846.5 MHz LTE Band 2 : 1852.5 MHz ~ 1907.5 MHz LTE Band 25 : 1852.5 MHz ~ 1912.5 MHz LTE Band 4 : 1712.5 MHz ~ 1752.5 MHz LTE Band 13 : 779.5 MHz ~ 784.5 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz
<b>Rx Frequency</b>	LTE Band 5 : 871.5 MHz ~ 891.5 MHz LTE Band 2 : 1932.5 MHz ~ 1987.5 MHz LTE Band 25 : 1932.5 MHz ~ 1992.5 MHz LTE Band 4 : 2112.5 MHz ~ 2152.5 MHz LTE Band 13 : 748.5 MHz ~ 753.5 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz
<b>Bandwidth</b>	5MHz / 10MHz (Band 5) 5MHz / 10MHz / 15MHz / 20MHz (Band 2) 5MHz / 10MHz / 15MHz / 20MHz (Band 25) 5MHz / 10MHz / 15MHz / 20MHz (Band 4) 5MHz / 10MHz (Band 13) 5MHz / 10MHz (Band 17)
<b>Maximum Output Power to Antenna</b>	LTE Band 5 : 22.67 dBm / 0.18 W LTE Band 2 : 22.88 dBm / 0.19 W LTE Band 25 : 22.94 dBm / 0.20 W LTE Band 4 : 23.87 dBm / 0.24 W LTE Band 13 : 23.74 dBm / 0.24 W LTE Band 17 : 23.87 dBm / 0.24 W
<b>Antenna Type</b>	Main Antenna : PIFA Antenna Aux. Antenna : Coupling Type Antenna
<b>Antenna Gain</b>	LTE Band 5 : -1.16 dBi LTE Band 2 : 0.25 dBi LTE Band 25 : 0.25 dBi LTE Band 4 : 0.97 dBi LTE Band 13 : 1.03 dBi LTE Band 17 : 0.20 dBi
<b>Type of Modulation</b>	QPSK / 16QAM / 64QAM

### 1.5 Modification of EUT

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



### 1.6 Emission Designator

FCC Rule	System	Type of Modulation	BW	Maximum ERP/EIRP
Part 22	LTE Band 5	QPSK	5 MHz	0.09 W
Part 22	LTE Band 5	16QAM	5 MHz	0.07 W
Part 22	LTE Band 5	QPSK	10 MHz	0.09 W
Part 22	LTE Band 5	16QAM	10 MHz	0.07 W
Part 24	LTE Band 2	QPSK	5 MHz	0.20 W
Part 24	LTE Band 2	16QAM	5 MHz	0.17 W
Part 24	LTE Band 2	QPSK	10 MHz	0.20 W
Part 24	LTE Band 2	16QAM	10 MHz	0.17 W
Part 24	LTE Band 2	QPSK	15 MHz	0.20 W
Part 24	LTE Band 2	16QAM	15 MHz	0.17 W
Part 24	LTE Band 2	QPSK	20 MHz	0.21 W
Part 24	LTE Band 2	16QAM	20 MHz	0.17 W



FCC Rule	System	Type of Modulation	BW	Maximum ERP/EIRP
Part 24	LTE Band 25	QPSK	5 MHz	0.21 W
Part 24	LTE Band 25	16QAM	5 MHz	0.17 W
Part 24	LTE Band 25	QPSK	10 MHz	0.21 W
Part 24	LTE Band 25	16QAM	10 MHz	0.17 W
Part 24	LTE Band 25	QPSK	15 MHz	0.21 W
Part 24	LTE Band 25	16QAM	15 MHz	0.17 W
Part 24	LTE Band 25	QPSK	20 MHz	0.21 W
Part 24	LTE Band 25	16QAM	20 MHz	0.17 W
Part 27	LTE Band 4	QPSK	5MHz	0.30 W
Part 27	LTE Band 4	16QAM	5MHz	0.24 W
Part 27	LTE Band 4	QPSK	10MHz	0.30 W
Part 27	LTE Band 4	16QAM	10MHz	0.25 W
Part 27	LTE Band 4	QPSK	15MHz	0.30 W
Part 27	LTE Band 4	16QAM	15MHz	0.24 W
Part 27	LTE Band 4	QPSK	20MHz	0.30 W
Part 27	LTE Band 4	16QAM	20MHz	0.24 W
Part 27	LTE Band 13	QPSK	5MHz	0.18 W
Part 27	LTE Band 13	16QAM	5MHz	0.15 W
Part 27	LTE Band 13	QPSK	10MHz	0.18 W
Part 27	LTE Band 13	16QAM	10MHz	0.15 W
Part 27	LTE Band 17	QPSK	5MHz	0.15 W
Part 27	LTE Band 17	16QAM	5MHz	0.12 W
Part 27	LTE Band 17	QPSK	10MHz	0.16 W
Part 27	LTE Band 17	16QAM	10MHz	0.13 W

## 1.7 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL INC.		
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		<b>FCC/IC Registration No.</b>
	TH02-HY	03CH07-HY	722060/4086B-1

## 1.8 Applied Standards

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

- ♦ 47 CFR Part 2, 22(H), 24(E), 27
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01
- ♦ FCC KDB 412172 D01 Determining ERP and ERIP v01

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

## 2 Test Configuration of Equipment Under Test

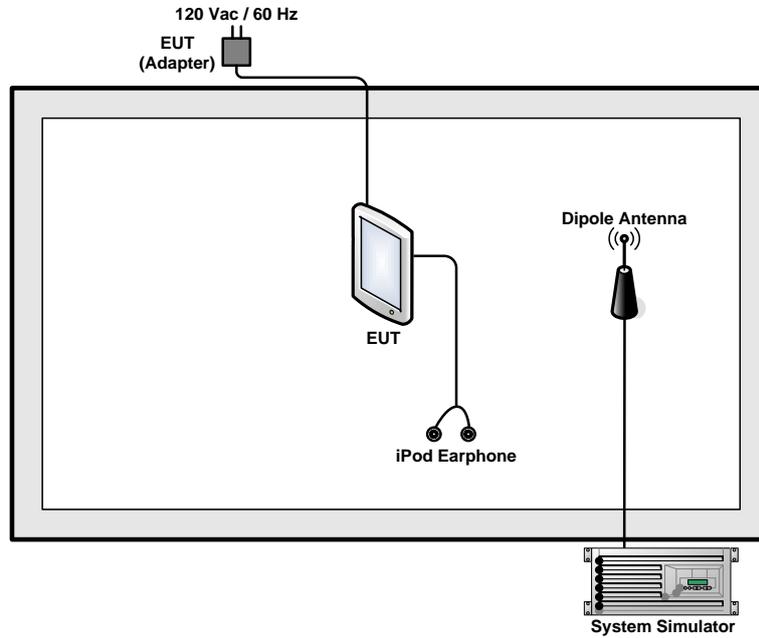
### 2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission: 30MHz to 10<sup>th</sup> harmonic.

Test Modes		
Band		Radiated TCs
LTE Band 5	BW 5MHz	-
	BW 10MHz	LTE (RB Size 1) Link
LTE Band 2	BW 5MHz	-
	BW 10MHz	-
	BW 15MHz	-
	BW 20MHz	LTE (RB Size 1) Link
LTE Band 25	BW 5MHz	-
	BW 10MHz	-
	BW 15MHz	-
	BW 20MHz	LTE (RB Size 1) Link
LTE Band 4	BW 5MHz	-
	BW 10MHz	-
	BW 15MHz	-
	BW 20MHz	LTE (RB Size 1) Link
LTE Band 13	BW 5MHz	-
	BW 10MHz	LTE (RB Size 1) Link
LTE Band 17	BW 5MHz	-
	BW 10MHz	LTE (RB Size 1) Link

## 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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	N/A	Unshielded, 1.0 m	N/A

### 3 Test Result

#### 3.1 Conducted Output Power Measurement and ERP/EIRP Measurement

##### 3.1.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 13 and Band 17.

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2 and Band 25.

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

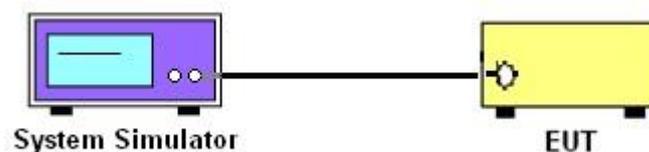
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

##### 3.1.4 Test Setup





3.1.5 Test Result of Conducted Output Power

<LTE Band 5 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
<b>Channel</b>				<b>20450</b>	<b>20525</b>	<b>20600</b>
<b>Frequency (MHz)</b>				<b>829</b>	<b>836.5</b>	<b>844</b>
10	QPSK	1	0	22.67	22.54	22.64
10	QPSK	1	24	22.50	22.50	22.53
10	QPSK	1	49	22.46	22.46	22.54
10	QPSK	25	0	21.71	21.55	21.54
10	QPSK	25	12	21.62	21.57	21.56
10	QPSK	25	24	21.57	21.39	21.58
10	QPSK	50	0	21.58	21.53	21.48
10	16QAM	1	0	21.48	21.57	21.65
10	16QAM	1	24	21.51	21.53	21.70
10	16QAM	1	49	21.46	21.46	21.58
10	16QAM	25	0	20.63	20.51	20.48
10	16QAM	25	12	20.55	20.51	20.49
10	16QAM	25	24	20.32	20.37	20.50
10	16QAM	50	0	20.43	20.47	20.42
<b>Channel</b>				<b>20425</b>	<b>20525</b>	<b>20625</b>
<b>Frequency (MHz)</b>				<b>826.5</b>	<b>836.5</b>	<b>846.5</b>
5	QPSK	1	0	22.56	22.44	22.41
5	QPSK	1	12	22.61	22.39	22.64
5	QPSK	1	24	22.49	22.39	22.54
5	QPSK	12	0	21.67	21.53	21.59
5	QPSK	12	6	21.68	21.59	21.64
5	QPSK	12	11	21.64	21.43	21.65
5	QPSK	25	0	21.50	21.53	21.57
5	16QAM	1	0	21.61	21.49	21.47
5	16QAM	1	12	21.59	21.45	21.64
5	16QAM	1	24	21.54	21.37	21.51
5	16QAM	12	0	20.60	20.55	20.65
5	16QAM	12	6	20.64	20.55	20.68
5	16QAM	12	11	20.63	20.41	20.61
5	16QAM	25	0	20.49	20.51	20.53



<LTE Band 2 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
<b>Channel</b>				<b>18700</b>	<b>18900</b>	<b>19100</b>
<b>Frequency (MHz)</b>				<b>1860</b>	<b>1880</b>	<b>1900</b>
20	QPSK	1	0	22.80	22.80	22.88
20	QPSK	1	49	22.81	22.76	22.71
20	QPSK	1	99	22.71	22.61	22.70
20	QPSK	50	0	21.77	21.54	21.52
20	QPSK	50	24	21.51	21.54	21.50
20	QPSK	50	49	21.41	21.54	21.54
20	QPSK	100	0	21.61	21.63	21.57
20	16QAM	1	0	21.78	21.94	21.84
20	16QAM	1	49	21.80	21.86	21.80
20	16QAM	1	99	21.77	21.76	21.90
20	16QAM	50	0	20.73	20.58	20.53
20	16QAM	50	24	20.45	20.56	20.39
20	16QAM	50	49	20.48	20.51	20.54
20	16QAM	100	0	20.50	20.58	20.51
<b>Channel</b>				<b>18675</b>	<b>18900</b>	<b>19125</b>
<b>Frequency (MHz)</b>				<b>1857.5</b>	<b>1880</b>	<b>1902.5</b>
15	QPSK	1	0	22.78	22.69	22.74
15	QPSK	1	37	22.83	22.76	22.84
15	QPSK	1	74	22.64	22.73	22.86
15	QPSK	36	0	21.73	21.67	21.61
15	QPSK	36	18	21.54	21.68	21.64
15	QPSK	36	37	21.55	21.53	21.64
15	QPSK	75	0	21.47	21.59	21.59
15	16QAM	1	0	21.76	21.79	21.76
15	16QAM	1	37	21.80	21.78	21.83
15	16QAM	1	74	21.75	21.88	21.93
15	16QAM	36	0	20.72	20.63	20.62
15	16QAM	36	18	20.57	20.55	20.63
15	16QAM	36	37	20.47	20.63	20.65
15	16QAM	75	0	20.44	20.52	20.61



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
<b>Channel</b>				<b>18650</b>	<b>18900</b>	<b>19150</b>
<b>Frequency (MHz)</b>				<b>1855</b>	<b>1880</b>	<b>1905</b>
10	QPSK	1	0	22.80	22.78	22.73
10	QPSK	1	24	22.68	22.79	22.82
10	QPSK	1	49	22.67	22.76	22.84
10	QPSK	25	0	21.71	21.81	21.74
10	QPSK	25	12	21.75	21.70	21.70
10	QPSK	25	24	21.62	21.72	21.76
10	QPSK	50	0	21.42	21.45	21.60
10	16QAM	1	0	21.77	21.84	21.77
10	16QAM	1	24	21.66	21.91	21.87
10	16QAM	1	49	21.64	21.89	21.96
10	16QAM	25	0	20.73	20.74	20.72
10	16QAM	25	12	20.90	20.66	20.76
10	16QAM	25	24	20.66	20.58	20.76
10	16QAM	50	0	20.54	20.60	20.55
<b>Channel</b>				<b>18625</b>	<b>18900</b>	<b>19175</b>
<b>Frequency (MHz)</b>				<b>1852.5</b>	<b>1880</b>	<b>1907.5</b>
5	QPSK	1	0	22.72	22.80	22.82
5	QPSK	1	12	22.60	22.78	22.86
5	QPSK	1	24	22.68	22.80	22.86
5	QPSK	12	0	21.69	21.89	21.91
5	QPSK	12	6	21.57	21.82	21.84
5	QPSK	12	11	21.70	21.78	21.97
5	QPSK	25	0	21.46	21.67	21.77
5	16QAM	1	0	21.71	21.77	21.84
5	16QAM	1	12	21.57	21.86	21.94
5	16QAM	1	24	21.64	21.82	21.99
5	16QAM	12	0	20.78	20.96	20.92
5	16QAM	12	6	20.59	20.81	20.85
5	16QAM	12	11	20.73	20.93	20.97
5	16QAM	25	0	20.50	20.66	20.77



<LTE Band 25 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
<b>Channel</b>				<b>26140</b>	<b>26365</b>	<b>26590</b>
<b>Frequency (MHz)</b>				<b>1860</b>	<b>1882.5</b>	<b>1905</b>
20	QPSK	1	0	22.80	22.79	22.72
20	QPSK	1	49	22.84	22.69	22.83
20	QPSK	1	99	22.70	22.75	22.94
20	QPSK	50	0	21.51	21.68	21.70
20	QPSK	50	24	21.52	21.52	21.59
20	QPSK	50	49	21.46	21.62	21.62
20	QPSK	100	0	21.75	21.66	21.72
20	16QAM	1	0	21.83	21.88	21.84
20	16QAM	1	49	21.90	21.64	21.88
20	16QAM	1	99	21.79	21.76	21.98
20	16QAM	50	0	20.44	20.50	20.67
20	16QAM	50	24	20.60	20.46	20.64
20	16QAM	50	49	20.58	20.65	20.61
20	16QAM	100	0	20.82	20.65	20.71
<b>Channel</b>				<b>26115</b>	<b>26365</b>	<b>26615</b>
<b>Frequency (MHz)</b>				<b>1857.5</b>	<b>1882.5</b>	<b>1907.5</b>
15	QPSK	1	0	22.76	22.74	22.90
15	QPSK	1	37	22.91	22.60	22.84
15	QPSK	1	74	22.72	22.71	22.88
15	QPSK	36	0	21.55	21.56	21.79
15	QPSK	36	18	21.64	21.52	21.77
15	QPSK	36	37	21.52	21.78	21.86
15	QPSK	75	0	21.72	21.55	21.69
15	16QAM	1	0	21.79	21.85	22.02
15	16QAM	1	37	21.89	21.77	21.96
15	16QAM	1	74	21.74	21.75	21.98
15	16QAM	36	0	20.65	20.77	20.82
15	16QAM	36	18	20.65	20.56	20.78
15	16QAM	36	37	20.43	20.72	20.81
15	16QAM	75	0	20.67	20.64	20.76



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
<b>Channel</b>				<b>26090</b>	<b>26365</b>	<b>26640</b>
<b>Frequency (MHz)</b>				<b>1855</b>	<b>1882.5</b>	<b>1910</b>
10	QPSK	1	0	22.70	22.81	22.90
10	QPSK	1	24	22.81	22.67	22.87
10	QPSK	1	49	22.63	22.81	22.91
10	QPSK	25	0	21.55	21.78	21.95
10	QPSK	25	12	21.62	21.54	21.86
10	QPSK	25	24	21.49	21.85	21.83
10	QPSK	50	0	21.69	21.57	21.81
10	16QAM	1	0	21.70	21.85	21.97
10	16QAM	1	24	21.90	21.64	21.92
10	16QAM	1	49	21.68	21.78	21.98
10	16QAM	25	0	20.62	20.76	20.93
10	16QAM	25	12	20.83	20.54	20.85
10	16QAM	25	24	20.59	20.80	20.91
10	16QAM	50	0	20.82	20.62	20.77
<b>Channel</b>				<b>26065</b>	<b>26365</b>	<b>26665</b>
<b>Frequency (MHz)</b>				<b>1852.5</b>	<b>1882.5</b>	<b>1912.5</b>
5	QPSK	1	0	22.70	22.77	22.93
5	QPSK	1	12	22.81	22.68	22.91
5	QPSK	1	24	22.69	22.88	22.92
5	QPSK	12	0	21.77	21.82	22.09
5	QPSK	12	6	21.67	21.79	22.05
5	QPSK	12	11	21.65	21.96	21.98
5	QPSK	25	0	21.78	21.89	22.03
5	16QAM	1	0	21.64	21.77	21.93
5	16QAM	1	12	21.73	21.78	21.98
5	16QAM	1	24	21.61	21.92	22.00
5	16QAM	12	0	20.80	20.89	21.15
5	16QAM	12	6	20.91	20.68	21.06
5	16QAM	12	11	20.81	21.01	21.05
5	16QAM	25	0	20.76	20.87	21.03



<LTE Band 4 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
<b>Channel</b>				<b>20050</b>	<b>20175</b>	<b>20300</b>
<b>Frequency (MHz)</b>				<b>1720</b>	<b>1732.5</b>	<b>1745</b>
20	QPSK	1	0	23.79	23.79	23.87
20	QPSK	1	49	23.84	23.75	23.77
20	QPSK	1	99	23.83	23.72	23.66
20	QPSK	50	0	22.47	22.59	22.52
20	QPSK	50	24	22.49	22.50	22.45
20	QPSK	50	49	22.51	22.38	22.51
20	QPSK	100	0	22.52	22.70	22.47
20	16QAM	1	0	22.83	22.90	22.84
20	16QAM	1	49	22.87	22.87	22.80
20	16QAM	1	99	22.84	22.82	22.71
20	16QAM	50	0	21.48	21.56	21.58
20	16QAM	50	24	21.45	21.41	21.56
20	16QAM	50	49	21.49	21.49	21.53
20	16QAM	100	0	21.51	21.57	21.48
<b>Channel</b>				<b>20025</b>	<b>20175</b>	<b>20325</b>
<b>Frequency (MHz)</b>				<b>1717.5</b>	<b>1732.5</b>	<b>1747.5</b>
15	QPSK	1	0	23.79	23.80	23.82
15	QPSK	1	37	23.86	23.77	23.86
15	QPSK	1	74	23.60	23.74	23.58
15	QPSK	36	0	22.53	22.67	22.51
15	QPSK	36	18	22.57	22.60	22.67
15	QPSK	36	37	22.49	22.53	22.50
15	QPSK	75	0	22.48	22.70	22.51
15	16QAM	1	0	22.76	22.85	22.80
15	16QAM	1	37	22.81	22.85	22.74
15	16QAM	1	74	22.62	22.82	22.64
15	16QAM	36	0	21.54	21.70	21.58
15	16QAM	36	18	21.50	21.61	21.65
15	16QAM	36	37	21.49	21.59	21.62
15	16QAM	75	0	21.44	21.57	21.52



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
<b>Channel</b>				<b>20000</b>	<b>20175</b>	<b>20350</b>
<b>Frequency (MHz)</b>				<b>1715</b>	<b>1732.5</b>	<b>1750</b>
10	QPSK	1	0	23.80	23.85	23.78
10	QPSK	1	24	23.75	23.81	23.80
10	QPSK	1	49	23.84	23.74	23.67
10	QPSK	25	0	22.68	22.90	22.66
10	QPSK	25	12	22.64	22.69	22.70
10	QPSK	25	24	22.58	22.69	22.73
10	QPSK	50	0	22.43	22.68	22.40
10	16QAM	1	0	22.84	23.00	22.77
10	16QAM	1	24	22.82	22.78	22.78
10	16QAM	1	49	22.76	22.81	22.67
10	16QAM	25	0	21.67	21.77	21.75
10	16QAM	25	12	21.67	21.68	21.69
10	16QAM	25	24	21.63	21.58	21.73
10	16QAM	50	0	21.46	21.66	21.52
<b>Channel</b>				<b>19975</b>	<b>20175</b>	<b>20375</b>
<b>Frequency (MHz)</b>				<b>1712.5</b>	<b>1732.5</b>	<b>1752.5</b>
5	QPSK	1	0	23.76	23.83	23.70
5	QPSK	1	12	23.72	23.81	23.80
5	QPSK	1	24	23.75	23.82	23.65
5	QPSK	12	0	22.82	22.94	22.79
5	QPSK	12	6	22.80	22.86	22.84
5	QPSK	12	11	22.68	22.85	22.69
5	QPSK	25	0	22.57	22.78	22.60
5	16QAM	1	0	22.82	22.83	22.80
5	16QAM	1	12	22.83	22.86	22.72
5	16QAM	1	24	22.75	22.88	22.68
5	16QAM	12	0	21.70	21.99	21.75
5	16QAM	12	6	21.69	21.83	21.90
5	16QAM	12	11	21.68	21.76	21.79
5	16QAM	25	0	21.54	21.77	21.72



<LTE Band 13 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel					23230	
Frequency (MHz)					782	
10	QPSK	1	0		23.40	
10	QPSK	1	24		23.74	
10	QPSK	1	49		23.62	
10	QPSK	25	0		22.47	
10	QPSK	25	12		22.64	
10	QPSK	25	24		22.51	
10	QPSK	50	0		22.43	
10	16QAM	1	0		22.40	
10	16QAM	1	24		22.75	
10	16QAM	1	49		22.54	
10	16QAM	25	0		21.36	
10	16QAM	25	12		21.60	
10	16QAM	25	24		21.51	
10	16QAM	50	0		21.39	
Channel				23205	23230	23255
Frequency (MHz)				779.5	782	784.5
5	QPSK	1	0	23.45	23.33	23.63
5	QPSK	1	12	23.40	23.69	23.51
5	QPSK	1	24	23.61	23.54	23.38
5	QPSK	12	0	22.43	22.59	22.54
5	QPSK	12	6	22.45	22.69	22.58
5	QPSK	12	11	22.47	22.63	22.46
5	QPSK	25	0	22.38	22.54	22.42
5	16QAM	1	0	22.37	22.34	22.65
5	16QAM	1	12	22.43	22.75	22.52
5	16QAM	1	24	22.64	22.53	22.40
5	16QAM	12	0	21.42	21.65	21.53
5	16QAM	12	6	21.47	21.67	21.55
5	16QAM	12	11	21.60	21.66	21.53
5	16QAM	25	0	21.36	21.57	21.47



<LTE Band 17 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				23780	23790	23800
Frequency (MHz)				709	710	711
10	QPSK	1	0	23.50	23.57	23.50
10	QPSK	1	24	23.76	23.87	23.66
10	QPSK	1	49	23.40	23.58	23.38
10	QPSK	25	0	22.60	22.84	22.76
10	QPSK	25	12	22.52	22.74	22.70
10	QPSK	25	24	22.52	22.64	22.49
10	QPSK	50	0	22.37	22.61	22.60
10	16QAM	1	0	22.46	22.60	22.70
10	16QAM	1	24	22.73	22.92	22.74
10	16QAM	1	49	22.38	22.56	22.45
10	16QAM	25	0	21.43	21.77	21.65
10	16QAM	25	12	21.51	21.69	21.57
10	16QAM	25	24	21.43	21.60	21.43
10	16QAM	50	0	21.34	21.58	21.55
Channel				23755	23790	23825
Frequency (MHz)				706.5	710	713.5
5	QPSK	1	0	23.45	23.72	23.68
5	QPSK	1	12	23.59	23.74	23.58
5	QPSK	1	24	23.71	23.69	23.55
5	QPSK	12	0	22.50	22.99	22.70
5	QPSK	12	6	22.64	22.90	22.62
5	QPSK	12	11	22.74	22.75	22.57
5	QPSK	25	0	22.46	22.77	22.54
5	16QAM	1	0	22.37	22.77	22.63
5	16QAM	1	12	22.55	22.78	22.54
5	16QAM	1	24	22.71	22.65	22.53
5	16QAM	12	0	21.50	21.91	21.54
5	16QAM	12	6	21.59	21.87	21.58
5	16QAM	12	11	21.69	21.73	21.50
5	16QAM	25	0	21.40	21.74	21.46

Note: maximum average power for LTE.



3.1.6 Test Result of Conducted Output Power and ERP/EIRP

Cellular Band ( $G_T - L_C = -1.16$ dB)						
Modes	LTE Band 5 (QPSK, BW=5M)			LTE Band 5 (16QAM, BW=5M)		
Channel	20425 (Low)	20525 (Mid)	20625 (High)	20425 (Low)	20525 (Mid)	20625 (High)
Frequency (MHz)	826.5	836.5	846.5	826.5	836.5	846.5
Conducted Power (dBm)	22.61	22.44	22.64	21.61	21.49	21.64
Conducted Power (Watts)	0.18	0.18	0.18	0.14	0.14	0.15
ERP(dBm)	19.30	19.13	19.33	18.30	18.18	18.33
ERP(Watts)	0.09	0.08	0.09	0.07	0.07	0.07

Cellular Band ( $G_T - L_C = -1.16$ dB)						
Modes	LTE Band 5 (QPSK, BW=10M)			LTE Band 5 (16QAM, BW=10M)		
Channel	20450 (Low)	20525 (Mid)	20600 (High)	20450 (Low)	20525 (Mid)	20600 (High)
Frequency (MHz)	829	836.5	844	829	836.5	844
Conducted Power (dBm)	22.67	22.54	22.64	21.51	21.57	21.7
Conducted Power (Watts)	0.18	0.18	0.18	0.14	0.14	0.15
ERP(dBm)	19.36	19.23	19.33	18.20	18.26	18.39
ERP(Watts)	0.09	0.08	0.09	0.07	0.07	0.07



PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 2 (QPSK, BW=5M)			LTE Band 2 (16QAM, BW=5M)		
Channel	18625(Low)	18900 (Mid)	19175 (High)	18625(Low)	18900 (Mid)	19175 (High)
Frequency (MHz)	1852.5	1880	1907.5	1852.5	1880	1907.5
Conducted Power (dBm)	22.72	22.80	22.86	21.71	21.86	21.99
Conducted Power (Watts)	0.19	0.19	0.19	0.15	0.15	0.16
EIRP(dBm)	22.97	23.05	23.11	21.96	22.11	22.24
EIRP(Watts)	0.20	0.20	0.20	0.16	0.16	0.17

PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 2 (QPSK, BW=10M)			LTE Band 2 (16QAM, BW=10M)		
Channel	18650(Low)	18900 (Mid)	19150 (High)	18650(Low)	18900 (Mid)	19150 (High)
Frequency (MHz)	1855	1880	1905	1855	1880	1905
Conducted Power (dBm)	22.80	22.79	22.84	21.77	21.91	21.96
Conducted Power (Watts)	0.19	0.19	0.19	0.15	0.16	0.16
EIRP(dBm)	23.05	23.04	23.09	22.02	22.16	22.21
EIRP(Watts)	0.20	0.20	0.20	0.16	0.16	0.17



PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 2 (QPSK, BW=15M)			LTE Band 2 (16QAM, BW=15M)		
Channel	18675(Low)	18900 (Mid)	19125 (High)	18675(Low)	18900 (Mid)	19125 (High)
Frequency (MHz)	1857.5	1880	1902.5	1857.5	1880	1902.5
Conducted Power (dBm)	22.83	22.76	22.86	21.80	21.88	21.93
Conducted Power (Watts)	0.19	0.19	0.19	0.15	0.15	0.16
EIRP(dBm)	23.08	23.01	23.11	22.05	22.13	22.18
EIRP(Watts)	0.20	0.20	0.20	0.16	0.16	0.17

PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 2 (QPSK, BW=20M)			LTE Band 2 (16QAM, BW=20M)		
Channel	18700(Low)	18900 (Mid)	19100 (High)	18700(Low)	18900 (Mid)	19100 (High)
Frequency (MHz)	1860	1880	1900	1860	1880	1900
Conducted Power (dBm)	22.81	22.80	22.88	21.80	21.94	21.90
Conducted Power (Watts)	0.19	0.19	0.19	0.15	0.16	0.15
EIRP(dBm)	23.06	23.05	23.13	22.05	22.19	22.15
EIRP(Watts)	0.20	0.20	0.21	0.16	0.17	0.16



PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 25 (QPSK, BW=5M)			LTE Band 25 (16QAM, BW=5M)		
Channel	26065 (Low)	26365 (Mid)	26665 (High)	26065 (Low)	26365 (Mid)	26665 (High)
Frequency (MHz)	1852.5	1882.5	1912.5	1852.5	1882.5	1912.5
Conducted Power (dBm)	22.81	22.88	22.93	21.73	21.92	22.00
Conducted Power (Watts)	0.19	0.19	0.20	0.15	0.16	0.16
EIRP(dBm)	23.06	23.13	23.18	21.98	22.17	22.25
EIRP(Watts)	0.20	0.21	0.21	0.16	0.16	0.17

PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 25 (QPSK, BW=10M)			LTE Band 25 (16QAM, BW=10M)		
Channel	26090 (Low)	26365 (Mid)	26640 (High)	26090 (Low)	26365 (Mid)	26640 (High)
Frequency (MHz)	1855	1882.5	1910	1855	1882.5	1910
Conducted Power (dBm)	22.81	22.81	22.91	21.90	21.85	21.98
Conducted Power (Watts)	0.19	0.19	0.20	0.15	0.15	0.16
EIRP(dBm)	23.06	23.06	23.16	22.15	22.10	22.23
EIRP(Watts)	0.20	0.20	0.21	0.16	0.16	0.17



PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 25 (QPSK, BW=15M)			LTE Band 25 (16QAM, BW=15M)		
Channel	26115 (Low)	26365 (Mid)	26615 (High)	26115 (Low)	26365 (Mid)	26615 (High)
Frequency (MHz)	1857.5	1882.5	1907.5	1857.5	1882.5	1907.5
Conducted Power (dBm)	22.91	22.74	22.90	21.89	21.85	22.02
Conducted Power (Watts)	0.20	0.19	0.19	0.15	0.15	0.16
EIRP(dBm)	23.16	22.99	23.15	22.14	22.10	22.27
EIRP(Watts)	0.21	0.20	0.21	0.16	0.16	0.17

PCS Band ( $G_T - L_C = 0.25$ dB)						
Modes	LTE Band 25 (QPSK, BW=20M)			LTE Band 25 (16QAM, BW=20M)		
Channel	26140 (Low)	26365 (Mid)	26590 (High)	26140 (Low)	26365 (Mid)	26590 (High)
Frequency (MHz)	1860	1882.5	1905	1860	1882.5	1905
Conducted Power (dBm)	22.84	22.79	22.94	21.90	21.88	21.98
Conducted Power (Watts)	0.19	0.19	0.20	0.15	0.15	0.16
EIRP(dBm)	23.09	23.04	23.19	22.15	22.13	22.23
EIRP(Watts)	0.20	0.20	0.21	0.16	0.16	0.17



PCS Band ( $G_T - L_C = 0.97$ dB)						
Modes	LTE Band 4 (QPSK, BW=5M)			LTE Band 4 (16QAM, BW=5M)		
Channel	19975(Low)	20175 (Mid)	20375 (High)	19975(Low)	20175 (Mid)	20375 (High)
Frequency (MHz)	1712.5	1732.5	1752.5	1712.5	1732.5	1752.5
Conducted Power (dBm)	23.76	23.83	23.80	22.83	22.88	22.80
Conducted Power (Watts)	0.24	0.24	0.24	0.19	0.19	0.19
EIRP(dBm)	24.73	24.80	24.77	23.80	23.85	23.77
EIRP(Watts)	0.30	0.30	0.30	0.24	0.24	0.24

PCS Band ( $G_T - L_C = 0.97$ dB)						
Modes	LTE Band 4 (QPSK, BW=10M)			LTE Band 4 (16QAM, BW=10M)		
Channel	20000 (Low)	20175 (Mid)	20350 (High)	20000 (Low)	20175 (Mid)	20350 (High)
Frequency (MHz)	1715	1732.5	1750	1715	1732.5	1750
Conducted Power (dBm)	23.84	23.85	23.80	22.84	23.00	22.78
Conducted Power (Watts)	0.24	0.24	0.24	0.19	0.20	0.19
EIRP(dBm)	24.81	24.82	24.77	23.81	23.97	23.75
EIRP(Watts)	0.30	0.30	0.30	0.24	0.25	0.24



PCS Band ( $G_T - L_C = 0.97$ dB)						
Modes	LTE Band 4 (QPSK, BW=15M)			LTE Band 4 (16QAM, BW=15M)		
Channel	20025 (Low)	20175 (Mid)	20325 (High)	20025 (Low)	20175 (Mid)	20325 (High)
Frequency (MHz)	1717.5	1732.5	1747.5	1717.5	1732.5	1747.5
Conducted Power (dBm)	23.86	23.80	23.86	22.81	22.85	22.80
Conducted Power (Watts)	0.24	0.24	0.24	0.19	0.19	0.19
EIRP(dBm)	24.83	24.77	24.83	23.78	23.82	23.77
EIRP(Watts)	0.30	0.30	0.30	0.24	0.24	0.24

PCS Band ( $G_T - L_C = 0.97$ dB)						
Modes	LTE Band 4 (QPSK, BW=20M)			LTE Band 4 (16QAM, BW=20M)		
Channel	20050 (Low)	20175 (Mid)	20300 (High)	20050 (Low)	20175 (Mid)	20300 (High)
Frequency (MHz)	1720	1732.5	1745	1720	1732.5	1745
Conducted Power (dBm)	23.84	23.79	23.87	22.87	22.90	22.84
Conducted Power (Watts)	0.24	0.24	0.24	0.19	0.19	0.19
EIRP(dBm)	24.81	24.76	24.84	23.84	23.87	23.81
EIRP(Watts)	0.30	0.30	0.30	0.24	0.24	0.24



Cellular Band ( $G_T - L_C = 1.03$ dB)						
Modes	LTE Band 13 (QPSK, BW=5M)			LTE Band 13 (16QAM, BW=5M)		
Channel	23205 (Low)	23230 (Mid)	23255 (High)	23205 (Low)	23230 (Mid)	23255 (High)
Frequency (MHz)	779.5	782	784.5	779.5	782	784.5
Conducted Power (dBm)	23.61	23.69	22.63	22.64	22.75	22.65
Conducted Power (Watts)	0.23	0.23	0.18	0.18	0.19	0.18
ERP(dBm)	22.49	22.57	21.51	21.52	21.63	21.53
ERP(Watts)	0.18	0.18	0.14	0.14	0.15	0.14

Cellular Band ( $G_T - L_C = 1.03$ dB)		
Modes	LTE Band 13 (QPSK, BW=10M)	LTE Band 13 (16QAM, BW=10M)
Channel	23230 (Mid)	23230 (Mid)
Frequency (MHz)	782	782
Conducted Power (dBm)	23.74	22.75
Conducted Power (Watts)	0.24	0.19
ERP(dBm)	22.62	21.63
ERP(Watts)	0.18	0.15



Cellular Band ( $G_T - L_C = 0.20$ dB)						
Modes	LTE Band 17 (QPSK,BW=5M)			LTE Band 17 (16QAM,BW=5M)		
Channel	23755(Low)	23790 (Mid)	23825 (High)	23755(Low)	23790 (Mid)	23825 (High)
Frequency (MHz)	706.5	710	713.5	706.5	710	713.5
Conducted Power (dBm)	23.71	23.74	23.68	22.71	22.78	22.63
Conducted Power (Watts)	0.23	0.24	0.23	0.19	0.19	0.18
ERP(dBm)	21.76	21.79	21.73	20.76	20.83	20.68
ERP(Watts)	0.15	0.15	0.15	0.12	0.12	0.12

Cellular Band ( $G_T - L_C = 0.20$ dB)						
Modes	LTE Band 17 (QPSK,BW=10M)			LTE Band 17 (16QAM,BW=10M)		
Channel	23780(Low)	23790 (Mid)	23800 (High)	23780(Low)	23790 (Mid)	23800 (High)
Frequency (MHz)	709	710	711	709	710	711
Conducted Power (dBm)	23.76	23.87	23.66	22.73	22.92	22.74
Conducted Power (Watts)	0.24	0.24	0.23	0.19	0.20	0.19
ERP(dBm)	21.81	21.92	21.71	20.78	20.97	20.79
ERP(Watts)	0.15	0.16	0.15	0.12	0.13	0.12

## 3.2 Radiated Spurious Emission Measurement

### 3.2.1 Description of Radiated Spurious Emission

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

### 3.2.2 Measuring Instruments

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

### 3.2.3 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  $43 + 10\log(P)$ dB below the transmitter power P(Watts)

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

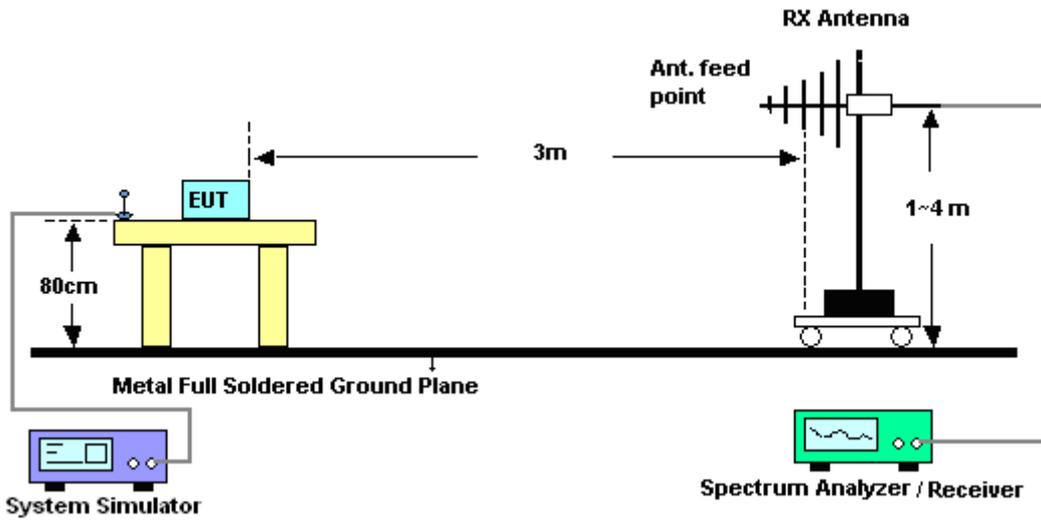
$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$$

$$= -13\text{dBm.}$$

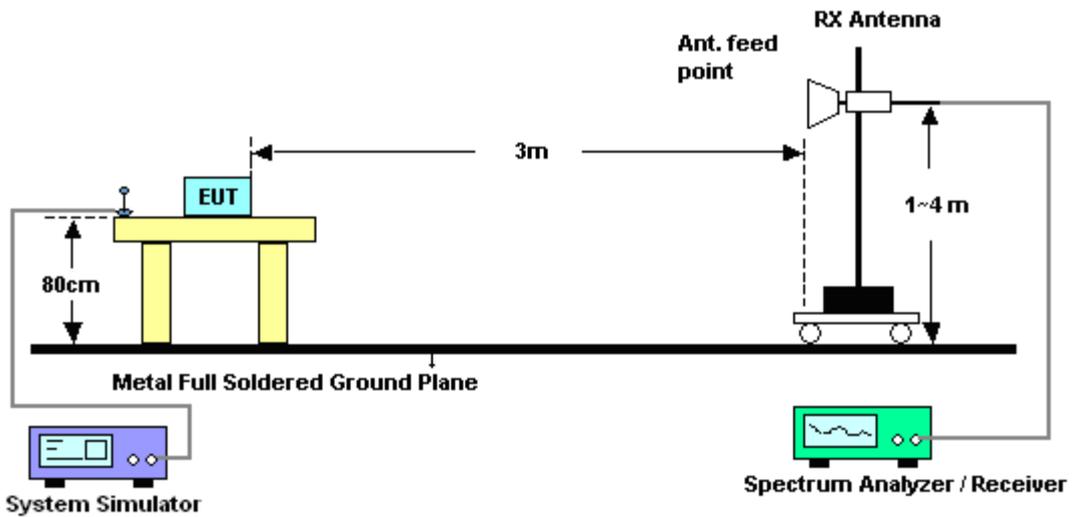
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
12. ERP (dBm) = EIRP - 2.15

### 3.2.4 Test Setup

For radiated emissions from 30MHz to 1GHz



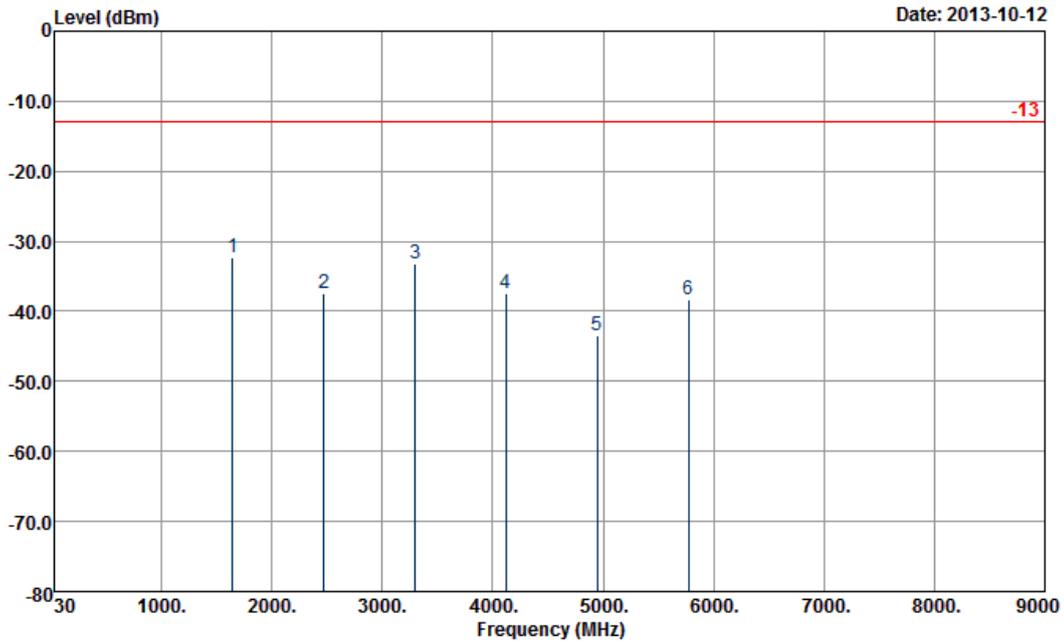
For radiated emissions above 1GHz





3.2.5 Test Result of Field Strength of Spurious Radiated

<b>Band :</b>	LTE Band 5	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	10MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

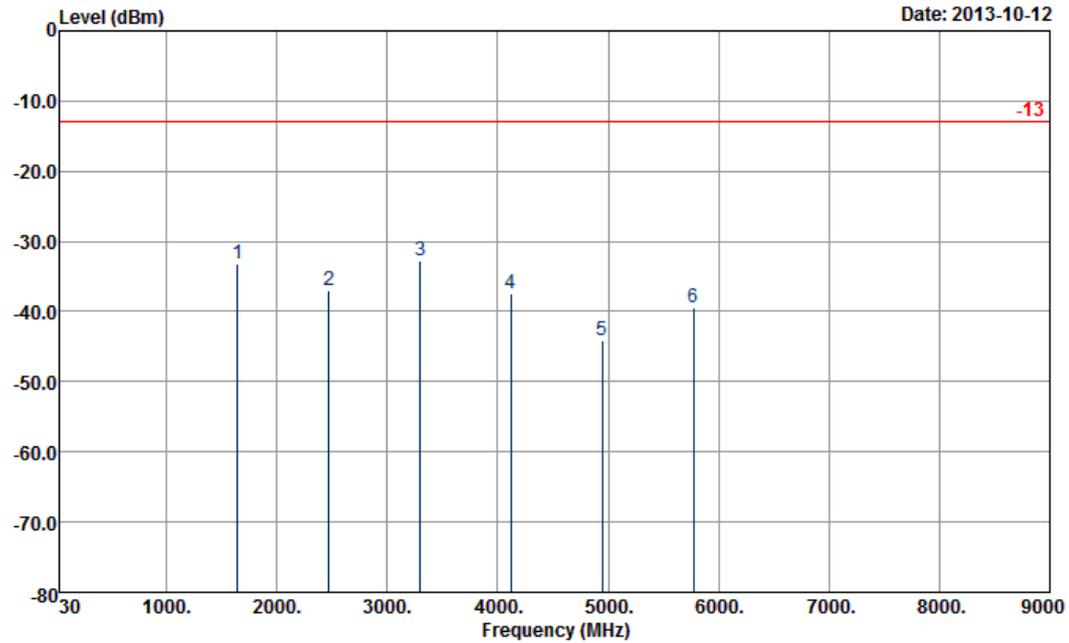


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) HORIZONTAL

Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1648	-32.22	-13	-19.22	-41.5	-36.17	1.63	5.58	H	Pass
2473	-37.45	-13	-24.45	-50.63	-41.55	2.21	6.31	H	Pass
3298	-33.18	-13	-20.18	-47.37	-38.21	3.1	8.13	H	Pass
4120	-37.35	-13	-24.35	-53.85	-44.05	2.65	9.35	H	Pass
4945	-43.42	-13	-30.42	-60.97	-51.14	3.17	10.89	H	Pass
5770	-38.29	-13	-25.29	-59.62	-45.71	3.03	10.45	H	Pass



<b>Band :</b>	LTE Band 5	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	10MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

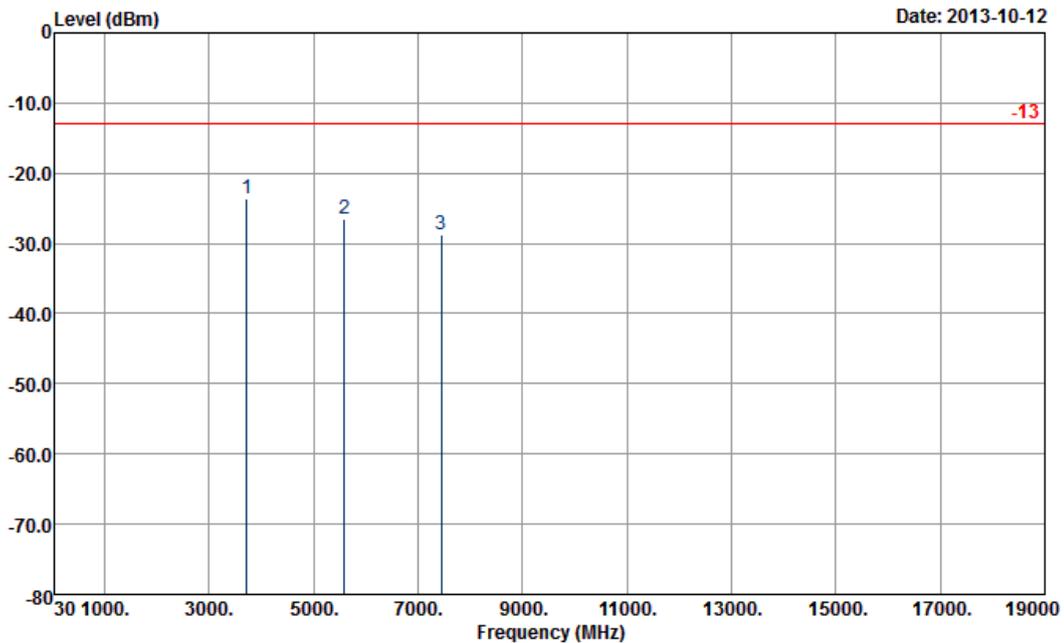


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) VERTICAL

Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1648	-33.23	-13	-20.23	-44.45	-37.18	1.63	5.58	V	Pass
2473	-37.07	-13	-24.07	-50.88	-41.17	2.21	6.31	V	Pass
3298	-32.73	-13	-19.73	-48.52	-37.76	3.1	8.13	V	Pass
4120	-37.35	-13	-24.35	-54.53	-44.05	2.65	9.35	V	Pass
4945	-44.07	-13	-31.07	-62.02	-51.79	3.17	10.89	V	Pass
5770	-39.46	-13	-26.46	-60.64	-46.88	3.03	10.45	V	Pass



<b>Band :</b>	LTE Band 2	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	20MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

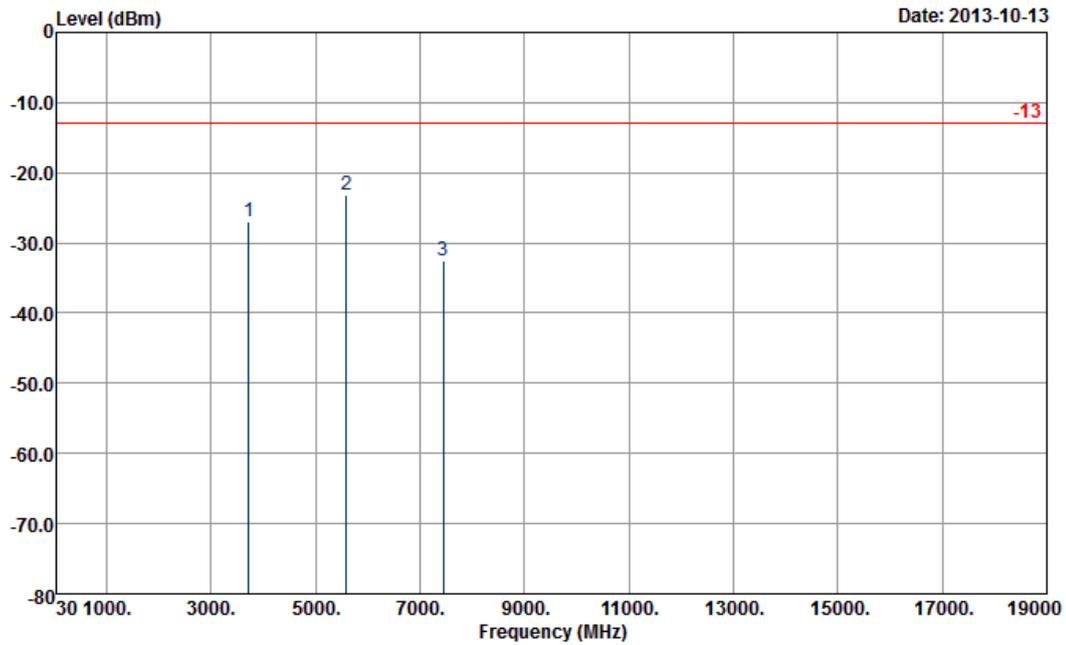


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) HORIZONTAL

Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3720	-23.51	-13	-10.51	-38.8	-29.89	2.51	8.89	H	Pass
5580	-26.52	-13	-13.52	-46.97	-34.38	3.03	10.89	H	Pass
7440	-28.71	-13	-15.71	-56.27	-37.85	3.24	12.38	H	Pass



<b>Band :</b>	LTE Band 2	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	20MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

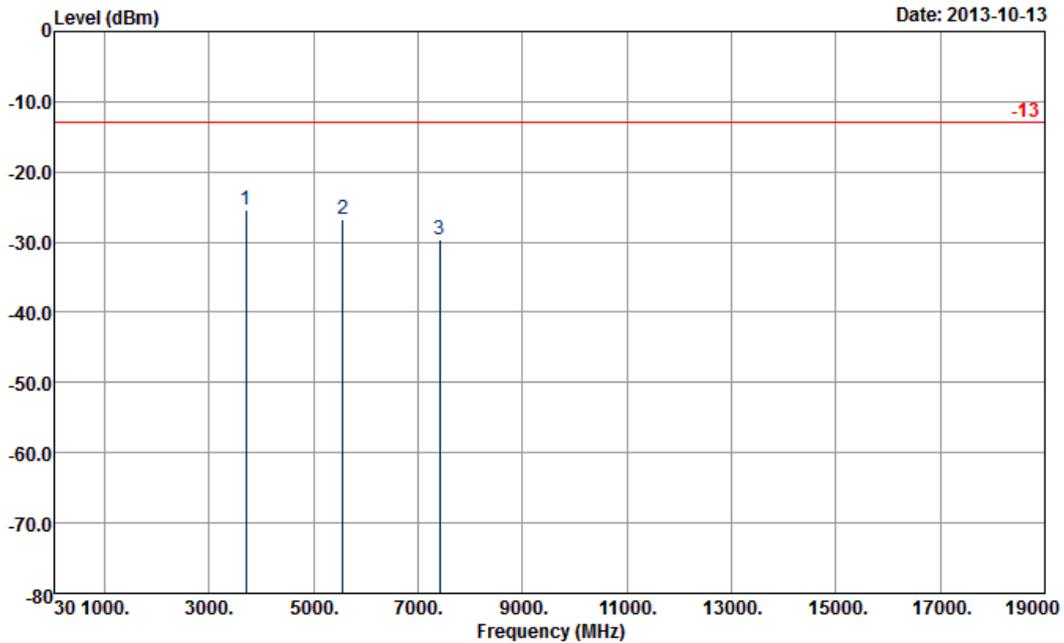


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) VERTICAL

Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3720	-26.91	-13	-13.91	-43.23	-33.29	2.51	8.89	V	Pass
5580	-23.26	-13	-10.26	-44.01	-31.12	3.03	10.89	V	Pass
7440	-32.57	-13	-19.57	-59.79	-41.71	3.24	12.38	V	Pass



<b>Band :</b>	LTE Band 25	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	20MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

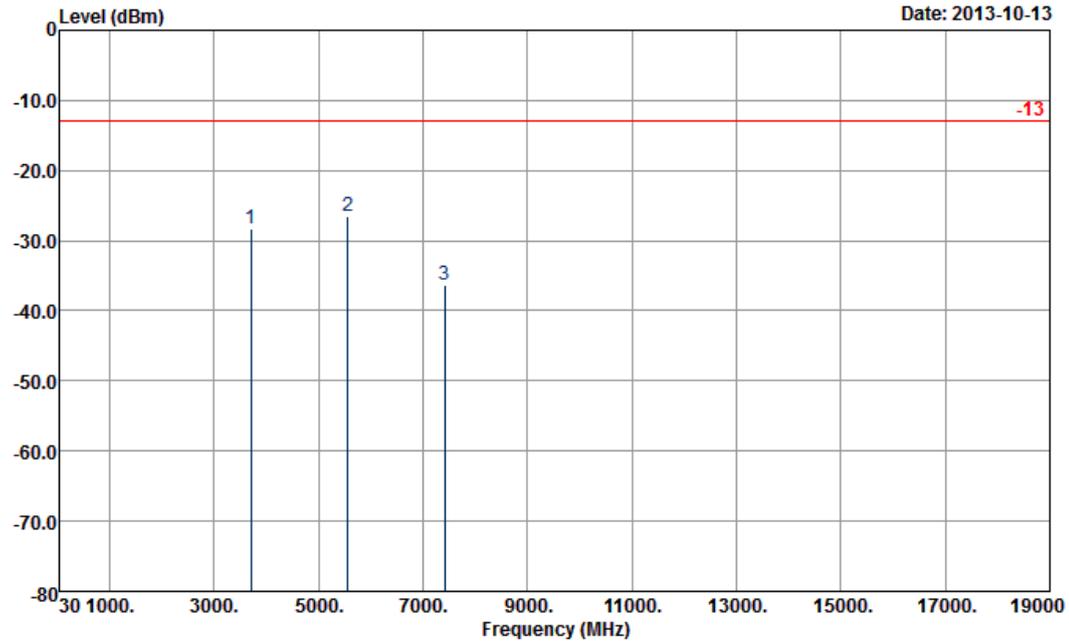


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) HORIZONTAL

Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-25.40	-13	-12.40	-40.72	-31.78	2.51	8.89	H	Pass
5556	-26.67	-13	-13.67	-47.35	-34.53	3.03	10.89	H	Pass
7404	-29.53	-13	-16.53	-56.88	-38.67	3.24	12.38	H	Pass



<b>Band :</b>	LTE Band 25	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	20MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

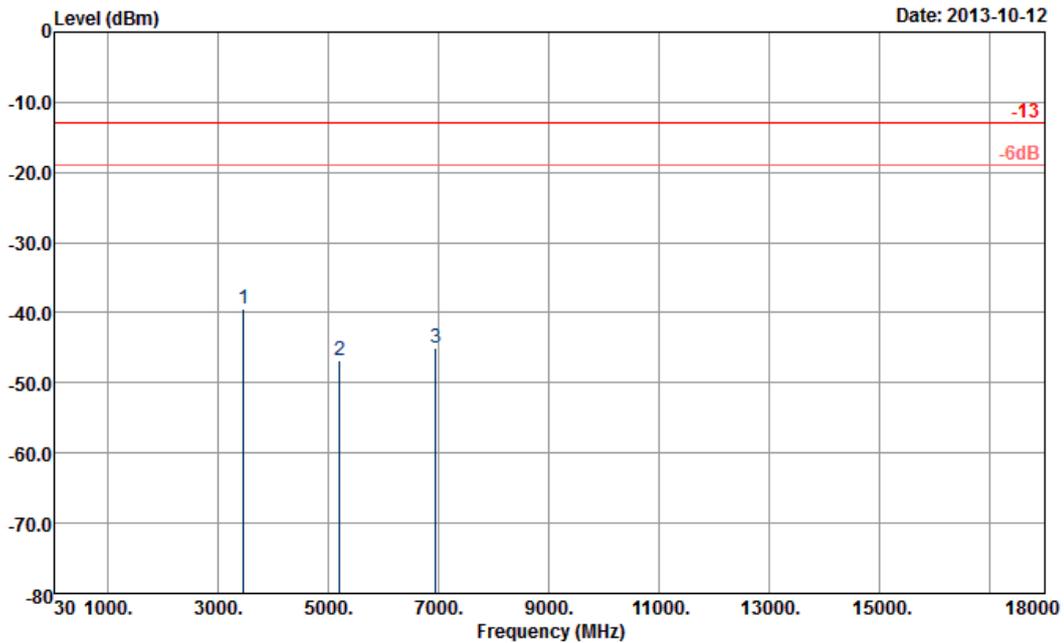


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) VERTICAL

Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-28.29	-13	-15.29	-44.66	-34.67	2.51	8.89	V	Pass
5556	-26.50	-13	-13.50	-47.02	-34.36	3.03	10.89	V	Pass
7404	-36.33	-13	-23.33	-63.58	-45.47	3.24	12.38	V	Pass



<b>Band :</b>	LTE Band 4	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	20MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

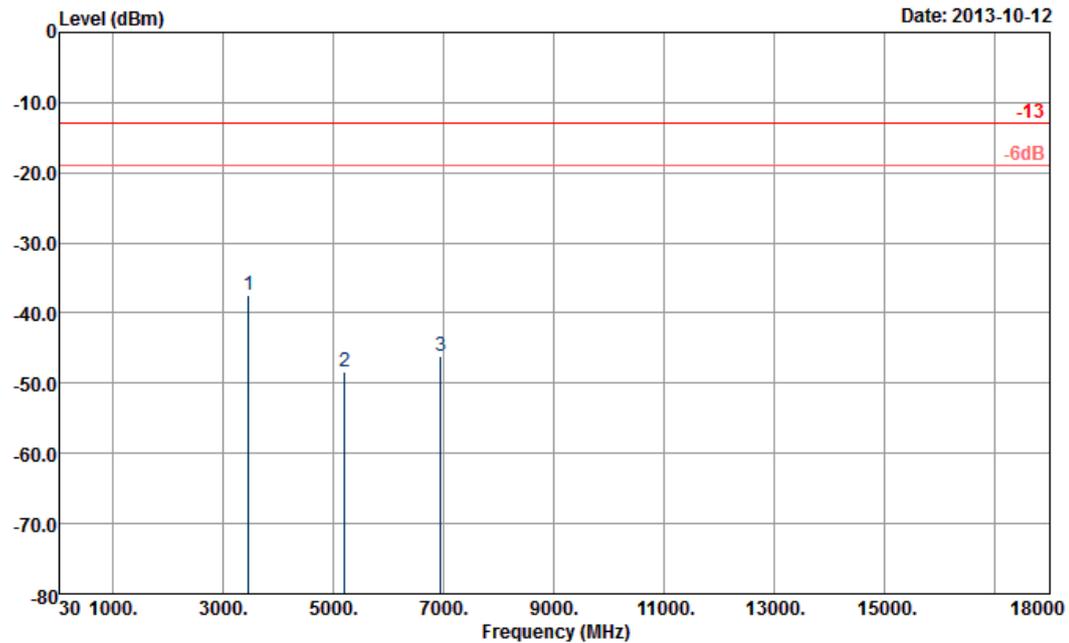


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) HORIZONTAL

Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3472	-39.44	-13	-26.44	-53.5	-43.53	4.28	8.37	H	Pass
5208	-46.83	-13	-33.83	-64.98	-51.64	5.22	10.03	H	Pass
6944	-45.10	-13	-32.10	-71.29	-50.23	6.23	11.36	H	Pass



<b>Band :</b>	LTE Band 4	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	20MHz QPSK RB Size 1 Offset 0	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

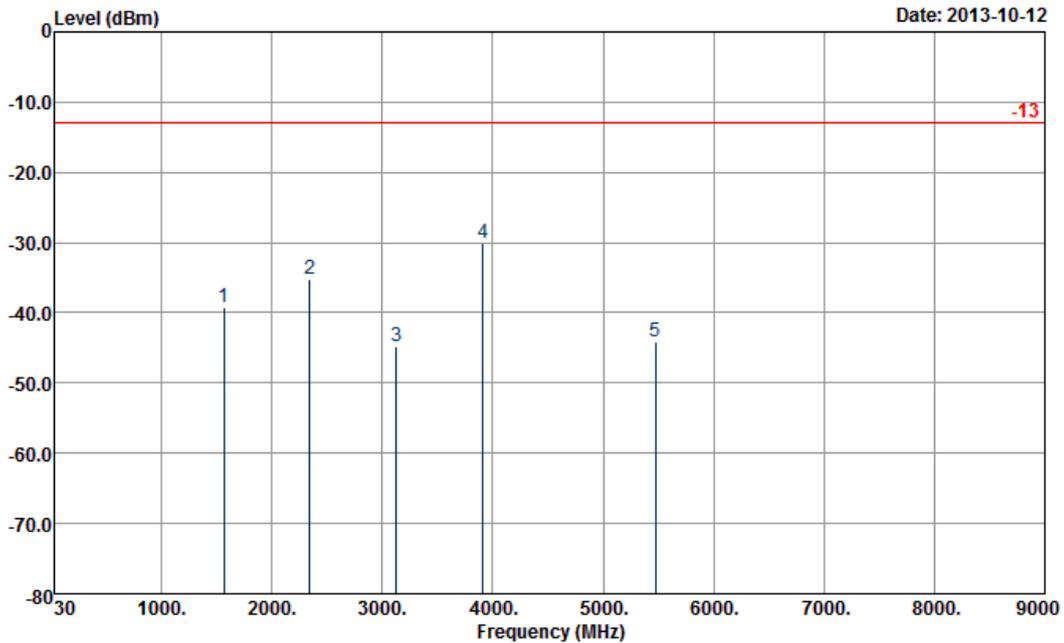


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) VERTICAL

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3472	-37.49	-13	-24.49	-53.41	-41.58	4.28	8.37	V	Pass
5208	-48.35	-13	-35.35	-66.91	-53.16	5.22	10.03	V	Pass
6944	-46.15	-13	-33.15	-71.03	-51.28	6.23	11.36	V	Pass



<b>Band :</b>	LTE Band 13	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	10MHz QPSK RB Size 1 Offset 24	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

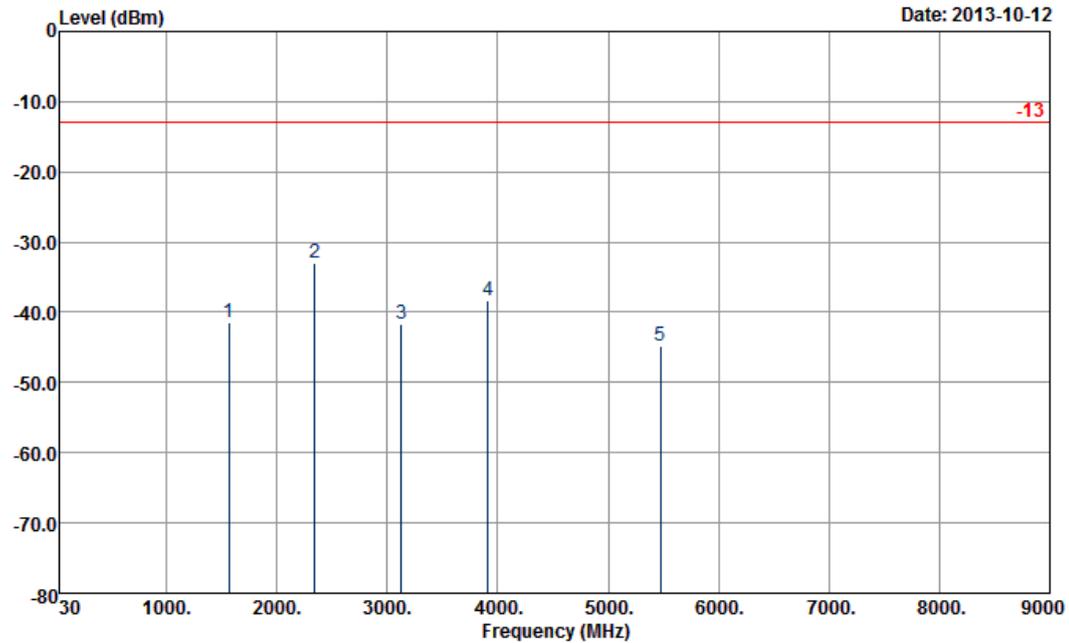


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) HORIZONTAL

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1564	-39.29	-13	-26.29	-44.84	-41.12	1.51	5.49	H	Pass
2347	-35.26	-13	-22.26	-47.87	-37.18	1.98	6.05	H	Pass
3127	-44.86	-13	-31.86	-58.66	-47.88	2.39	7.56	H	Pass
3910	-30.10	-13	-17.10	-46.47	-34.28	2.52	8.85	H	Pass
5475	-44.21	-13	-31.21	-64.48	-49.71	2.89	10.54	H	Pass



<b>Band :</b>	LTE Band 13	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	10MHz QPSK RB Size 1 Offset 24	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

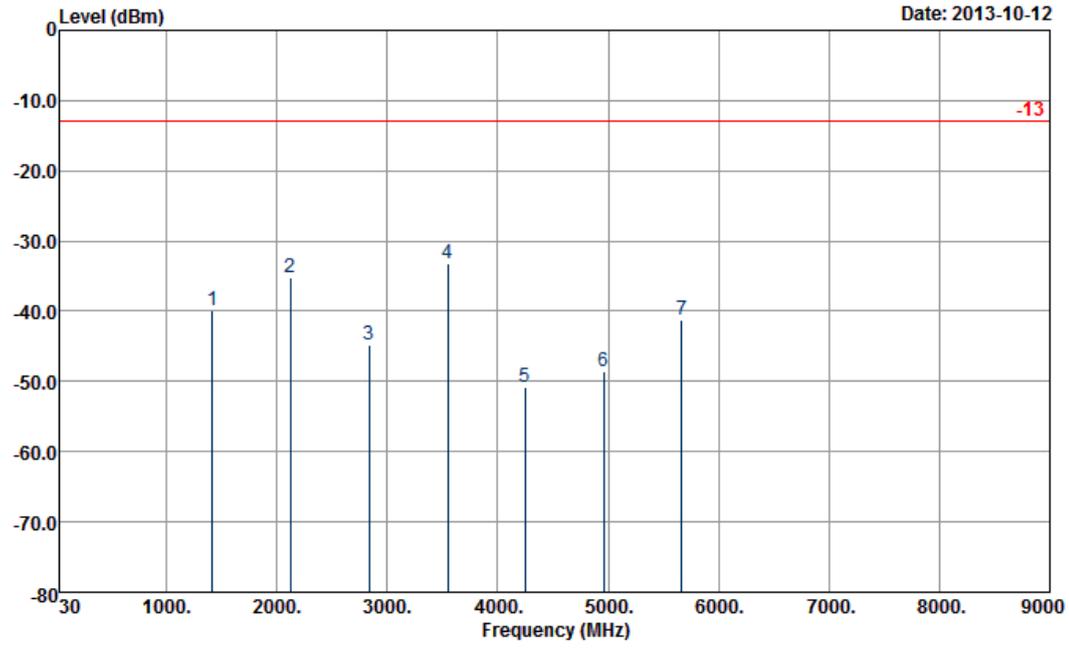


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) VERTICAL

Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1564	-41.45	-13	-28.45	-52.17	-43.28	1.51	5.49	V	Pass
2347	-33.09	-13	-20.09	-46.66	-35.01	1.98	6.05	V	Pass
3130	-41.63	-13	-28.63	-57.5	-44.65	2.39	7.56	V	Pass
3910	-38.37	-13	-25.37	-55.48	-42.55	2.52	8.85	V	Pass
5475	-44.70	-13	-31.70	-64.88	-50.2	2.89	10.54	V	Pass



<b>Band :</b>	LTE Band 17	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	10MHz QPSK RB Size 1 Offset 24	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

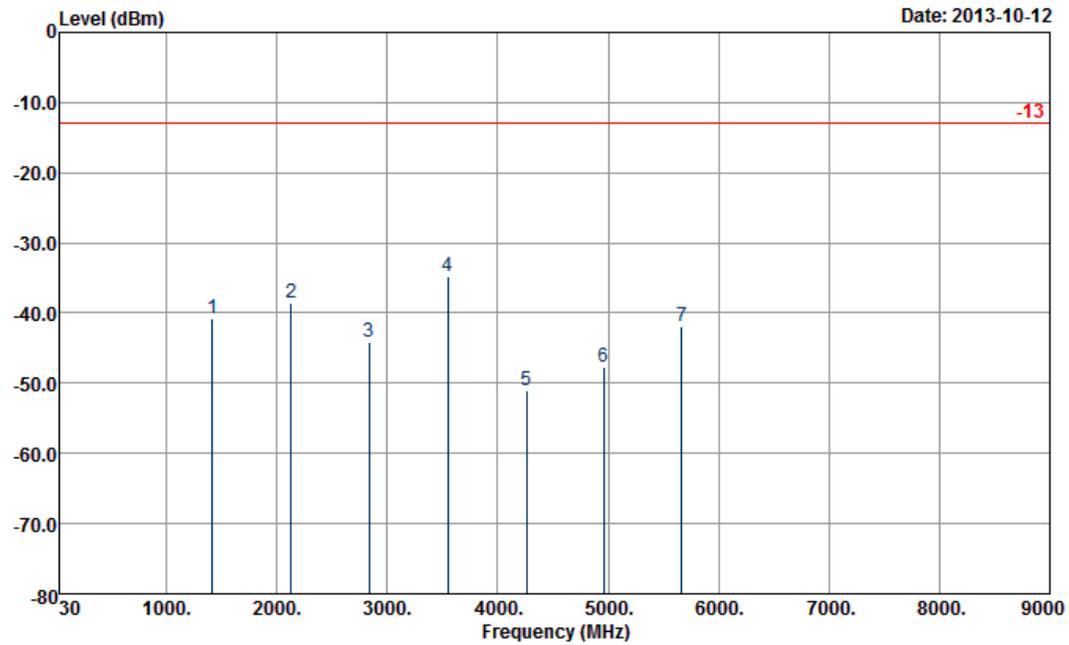


Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) HORIZONTAL

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1417	-39.79	-13	-26.79	-45.01	-43.88	1.52	5.61	H	Pass
2125	-35.24	-13	-22.24	-46.63	-39.43	1.83	6.02	H	Pass
2836	-44.76	-13	-31.76	-58.24	-49.53	2.24	7.01	H	Pass
3547	-33.17	-13	-20.17	-47.64	-38.88	2.5	8.21	H	Pass
4250	-50.81	-13	-37.81	-67.03	-57.61	2.53	9.33	H	Pass
4960	-48.55	-13	-35.55	-66.28	-56.03	2.64	10.12	H	Pass
5670	-41.16	-13	-28.16	-62.18	-48.79	2.96	10.59	H	Pass



<b>Band :</b>	LTE Band 17	<b>Temperature :</b>	21~24°C
<b>Test Mode :</b>	10MHz QPSK RB Size 1 Offset 24	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Kyle Jhuang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



Site : 03CH07-HY  
 Condition : -13 HF-EIRP(080306) VERTICAL

Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1417	-40.79	-13	-27.79	-51.25	-44.89	1.51	5.61	V	Pass
2128	-38.57	-13	-25.57	-52.25	-42.77	1.82	6.02	V	Pass
2836	-44.21	-13	-31.21	-59.26	-49.02	2.2	7.01	V	Pass
3547	-34.76	-13	-21.76	-50.77	-40.55	2.42	8.21	V	Pass
4260	-50.96	-13	-37.96	-52.04	-57.74	2.55	9.33	V	Pass
4960	-47.67	-13	-34.67	-48.75	-55.06	2.73	10.12	V	Pass
5670	-41.85	-13	-28.85	-42.86	-49.53	2.91	10.59	V	Pass



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201026480	30MHz~2.7GHz SISO	Jan. 04, 2013	Oct. 22, 2013	Jan. 03, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9kHz~30GHz	Nov. 30, 2012	Oct. 12, 2013~ Oct. 13, 2013	Nov. 29, 2013	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	Oct. 12, 2013~ Oct. 13, 2013	Oct. 09, 2014	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2013	Oct. 12, 2013~ Oct. 13, 2013	Aug. 21, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	30MHz~1GHz	Feb. 26, 2013	Oct. 12, 2013~ Oct. 13, 2013	Feb. 25, 2014	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Dec. 01, 2012	Oct. 12, 2013~ Oct. 13, 2013	Nov. 30, 2013	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Oct. 12, 2013~ Oct. 13, 2013	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	ChainTek 3000	N/A	N/A	N/A	Oct. 12, 2013~ Oct. 13, 2013	N/A	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 03, 2013	Oct. 12, 2013~ Oct. 13, 2013	Oct. 02, 2014	Radiation (03CH07-HY)



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.54
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.72
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