

FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : CDMA/LTE Multi-mode Digital Mobile Phone
BRAND NAME : ZTE
MODEL NAME : ZTE N9510
FCC ID : Q78-ZTEN9510
STANDARD : FCC 47 CFR Part 2, 24(E)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Feb. 04, 2013 and completely tested on Apr. 24, 2013. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



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**SUMMARY OF TEST RESULT**

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	NA	PASS	-
3.1	§24.232(c)	Equivalent Isotropic Radiated Power	EIRP < 2 Watt	PASS	-
3.2	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§2.1049 §24.238(b)	Occupied Bandwidth	NA	PASS	-
3.4	§2.1051 §24.238(a)	Conducted Band edge Measurement	< 43+10log ₁₀ (P[Watts])	PASS	-
3.4	§2.1051 §24.238(a)	Conducted Spurious Emission	< 43+10log ₁₀ (P[Watts])	PASS	-
3.5	§2.1053 §24.238(a)	Radiated Emissions Measurement	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 34.73 dB at 7650.000 MHz
3.6	§2.1055 §24.235	Frequency Stability Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	CDMA/LTE Multi-mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE N9510
FCC ID	Q78-ZTEN9510
EUT supports Radios application	CDMA/EV-DO/LTE/WLAN 11abgn/Bluetooth EDR/Bluetooth v4.0-LE/ NFC
HW Version	czfA
SW Version	N9510V1.0.0B02
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Product Specification subjective to this standard	
Tx Frequency	LTE Band 25 : 1850.7 MHz ~ 1914.3 MHz
Rx Frequency	LTE Band 25 : 1930.7 MHz ~ 1994.3 MHz
Bandwidth	1.4MHz / 3MHz / 5MHz/ 10MHz
Maximum Output Power to Antenna	24.39 dBm
Antenna Type	PIFA Antenna
Type of Modulation	QPSK / 16QAM

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Maximum EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	BW	Maximum EIRP (W)	Frequency Tolerance (% , Hz, ppm)	Emission Designator
Part 24E	LTE Band 25	QPSK	1.4MHz	0.2138 W	0.010	1M10G7D
Part 24E	LTE Band 25	16QAM	1.4MHz	0.1679 W	0.014	1M11D7W
Part 24E	LTE Band 25	QPSK	3MHz	0.2104 W	0.009	2M74G7D
Part 24E	LTE Band 25	16QAM	3MHz	0.1746 W	0.012	2M74D7W
Part 24E	LTE Band 25	QPSK	5MHz	0.2286 W	0.008	4M50G7D
Part 24E	LTE Band 25	16QAM	5MHz	0.1722 W	0.012	4M50D7W
Part 24E	LTE Band 25	QPSK	10MHz	0.2061 W	0.008	9M16G7D
Part 24E	LTE Band 25	16QAM	10MHz	0.1489 W	0.015	9M08D7W

1.5 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	TH01-KS	03CH01-KS	149928/4086E-1

1.6 Applied Standards

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

- FCC 47 CFR Part 2, 24(E)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v01

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

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, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is: 30 MHz to 19000 MHz.

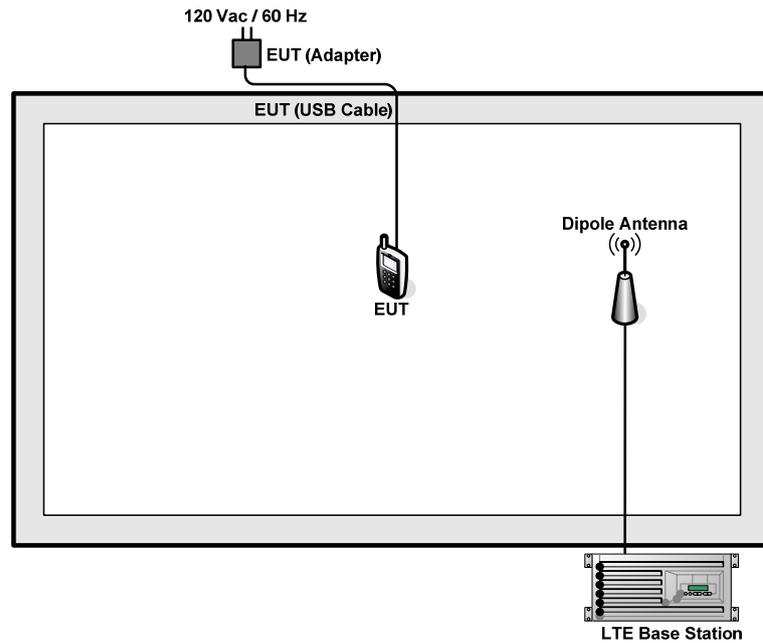
Test Modes			
Band		Radiated TCs	Conducted TCs
LTE Band 25	BW 1.4MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 2) QPSK Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 0) Link ■ LTE (RB Size 1, RB Offset 2) Link ■ LTE (RB Size 1, RB Offset 5) Link ■ LTE (RB Size 3, RB Offset 0) Link ■ LTE (RB Size 3, RB Offset 1) Link ■ LTE (RB Size 3, RB Offset 2) Link ■ LTE (RB Size 6, RB Offset 0) Link
	BW 3MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 7) QPSK Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 0) Link ■ LTE (RB Size 1, RB Offset 7) Link ■ LTE (RB Size 1, RB Offset 14) Link ■ LTE (RB Size 8, RB Offset 0) Link ■ LTE (RB Size 8, RB Offset 4) Link ■ LTE (RB Size 8, RB Offset 7) Link ■ LTE (RB Size 15, RB Offset 0) Link
	BW 5MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 12) QPSK Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 0) Link ■ LTE (RB Size 1, RB Offset 12) Link ■ LTE (RB Size 1, RB Offset 24) Link ■ LTE (RB Size 12, RB Offset 0) Link ■ LTE (RB Size 12, RB Offset 6) Link ■ LTE (RB Size 12, RB Offset 11) Link ■ LTE (RB Size 25, RB Offset 0) Link
	BW 10MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 49) QPSK Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 0) Link ■ LTE (RB Size 1, RB Offset 24) Link ■ LTE (RB Size 1, RB Offset 49) Link ■ LTE (RB Size 25, RB Offset 0) Link ■ LTE (RB Size 25, RB Offset 12) Link ■ LTE (RB Size 25, RB Offset 24) Link ■ LTE (RB Size 50, RB Offset 0) Link

Note:

1. For conducted test, both two Modulations (QPSK and 16QAM) are tested. For RSE, only the maximum RF output power level is chosen.

- From conducted spurious emission measurement, the modulation related spurious emission out of the band is not identified. Since MPR is implemented, 1RB-QPSK results in highest RF power, therefore it's chosen for RSE measurement.

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.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and 10dB attenuator 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 10dB attenuator factor.

Offset = RF cable loss + attenuator factor.

Following table shows an offset computation example with cable loss 5.2 dB.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 5.2 + 10 = 15.2 \text{ (dB)} \end{aligned}$$

3 Test Result

3.1 Maximum Output Power and Effective Isotropic Radiated Power Measurement

3.1.1 Limit

Equivalent isotropic radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004. Mobile and portable (hand-held) stations operating in each channel are limited to average EIRP of 2 watts.

3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

For Conducted Power Measurement:

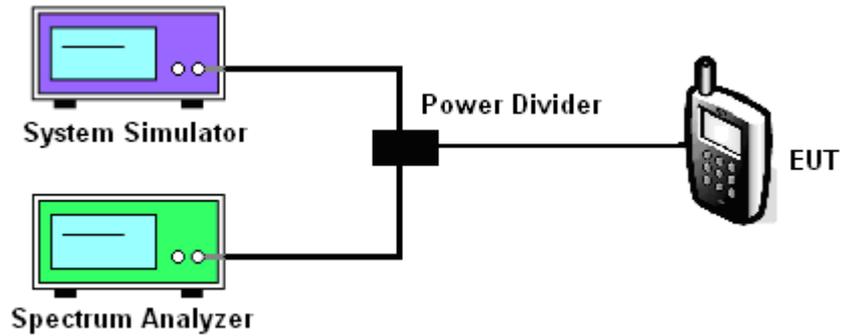
1. The RF output of the transmitter was connected to base station simulator.
2. Set EUT at maximum average power by base station simulator.
3. Measure lowest, middle, and highest channels for each bandwidth and different modulation.

For Effective Isotropic Radiated Power Measurement:

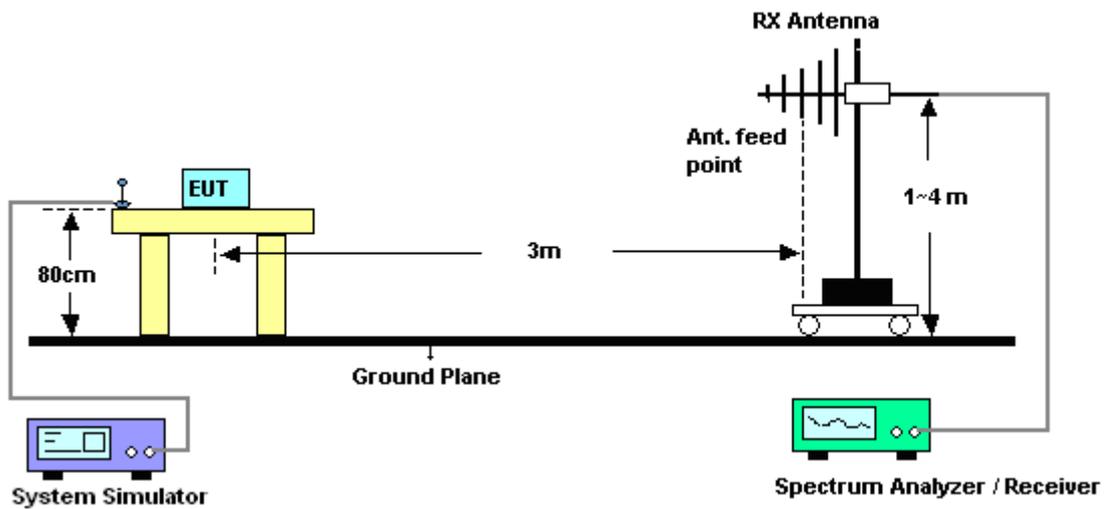
1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m.
2. During the measurement, the EUT was enforced in maximum power. The highest emission was recorded from analyzer power 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 Radiated Power (ERP) and Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (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, $EIRP = LVL + \text{Correction factor}$.

3.1.4 Test Setup

<Conducted Power and Band Edge Measurement>



<Effective Isotropic Radiated Power Measurement>





3.1.5 Test Result of Conducted Output Power

Mode	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power (dBm)	Average Power (Watts)	
					RB Size	RB Offset			
LTE Band 25	1.4MHz	26047	1850.7	QPSK	1	0	24.01	0.2518	
					1	2	24.35	0.2723	
					1	5	24.04	0.2535	
					3	0	24.25	0.2661	
					3	1	23.88	0.2443	
					3	2	23.90	0.2455	
				16-QAM	6	0	23.13	0.2056	
					1	0	23.30	0.2138	
					1	2	23.38	0.2178	
					1	5	23.23	0.2104	
					3	0	22.92	0.1959	
					3	1	23.33	0.2153	
		26365	1882.5	QPSK	1882.5	3	2	22.97	0.1982
						6	0	22.01	0.1589
						1	0	24.12	0.2582
						1	2	24.21	0.2636
						1	5	24.29	0.2685
						3	0	24.14	0.2594
				16-QAM	3	1	24.06	0.2547	
					3	2	24.01	0.2518	
					6	0	23.20	0.2089	
					1	0	22.99	0.1991	
					1	2	22.93	0.1963	
					1	5	23.17	0.2075	
		26683	1914.3	QPSK	1914.3	3	0	23.16	0.2070
						3	1	23.09	0.2037
						3	2	23.15	0.2065
						6	0	22.05	0.1603
						1	0	24.33	0.2710
						1	2	24.16	0.2606
16-QAM	1			5	23.97	0.2495			
	3			0	24.30	0.2692			
	3			1	24.14	0.2594			
	3			2	24.11	0.2576			
	6			0	23.19	0.2084			
	1			0	23.34	0.2158			
16-QAM	1	2	23.25	0.2113					
	1	5	22.82	0.1914					
	3	0	23.30	0.2138					
	3	1	23.29	0.2133					
	3	2	23.08	0.2032					
	6	0	22.21	0.1663					



Mode	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power (dBm)	Average Power (Watts)
					RB Size	RB Offset		
LTE Band 25	3MHz	26055	1851.5	QPSK	1	0	24.03	0.2529
					1	7	24.26	0.2667
					1	14	23.82	0.2410
					8	0	23.05	0.2018
					8	4	23.01	0.2000
					8	7	23.05	0.2018
					15	0	23.04	0.2014
		16-QAM	1	0	22.68	0.1854		
			1	7	23.07	0.2028		
			1	14	22.90	0.1950		
			8	0	22.00	0.1585		
			8	4	21.97	0.1574		
			8	7	21.97	0.1574		
			15	0	22.08	0.1614		
	26365	1882.5	QPSK	1	0	24.03	0.2529	
				1	7	24.00	0.2512	
				1	14	24.12	0.2582	
				8	0	23.08	0.2032	
				8	4	23.03	0.2009	
				8	7	23.04	0.2014	
				15	0	22.95	0.1972	
		16-QAM	1	0	23.15	0.2065		
			1	7	22.61	0.1824		
			1	14	23.20	0.2089		
			8	0	21.96	0.1570		
			8	4	22.15	0.1641		
			8	7	21.88	0.1542		
15			0	22.14	0.1637			
26675	1913.5	QPSK	1	0	24.30	0.2692		
			1	7	24.34	0.2716		
			1	14	24.19	0.2624		
			8	0	23.36	0.2168		
			8	4	23.34	0.2158		
			8	7	23.22	0.2099		
			15	0	23.23	0.2104		
	16-QAM	1	0	23.37	0.2173			
		1	7	23.49	0.2234			
		1	14	22.93	0.1963			
		8	0	22.47	0.1766			
		8	4	22.27	0.1687			
		8	7	22.15	0.1641			
		15	0	22.24	0.1675			



Mode	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power (dBm)	Average Power (Watts)		
					RB Size	RB Offset				
LTE Band 25	5MHz	26065	1852.5	QPSK	1	0	24.07	0.2553		
					1	12	23.93	0.2472		
					1	24	24.08	0.2559		
					12	0	23.02	0.2004		
					12	6	23.03	0.2009		
					12	11	23.12	0.2051		
		16-QAM	25	0	22.89	0.1945				
			1	0	22.79	0.1901				
			1	12	22.92	0.1959				
			1	24	23.18	0.2080				
			12	0	22.06	0.1607				
			12	6	22.15	0.1641				
		26365	1882.5	QPSK	1882.5	QPSK	12	11	22.03	0.1596
							25	0	21.85	0.1531
							1	0	24.05	0.2541
							1	12	24.08	0.2559
							1	24	24.05	0.2541
							12	0	23.00	0.1995
	16-QAM	1882.5	16-QAM	1882.5	16-QAM	12	6	23.15	0.2065	
						12	11	23.17	0.2075	
						25	0	22.75	0.1884	
						1	0	22.79	0.1901	
						1	12	23.19	0.2084	
						1	24	22.97	0.1982	
	26665	1912.5	QPSK	1912.5	QPSK	12	0	22.02	0.1592	
						12	6	22.25	0.1679	
						12	11	22.15	0.1641	
25						0	21.85	0.1531		
1						0	24.21	0.2636		
1						12	24.39	0.2748		
16-QAM	1912.5	16-QAM	1912.5	16-QAM	1	24	23.96	0.2489		
					12	0	23.29	0.2133		
					12	6	23.34	0.2158		
					12	11	23.23	0.2104		
					25	0	23.26	0.2118		
					1	0	23.46	0.2218		
26665	1912.5	QPSK	1912.5	QPSK	1	12	23.47	0.2223		
					1	24	22.71	0.1866		
					12	0	22.32	0.1706		
					12	6	22.35	0.1718		
					12	11	22.32	0.1706		
					25	0	22.21	0.1663		



Mode	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power (dBm)	Average Power (Watts)
					RB Size	RB Offset		
LTE Band 25	10MHz	26090	1855	QPSK	1	0	24.10	0.2570
					1	24	24.20	0.2630
					1	49	24.23	0.2649
					25	0	22.90	0.1950
					25	12	23.00	0.1995
					25	24	23.05	0.2018
					50	0	22.84	0.1923
		16-QAM	1	0	23.21	0.2094		
			1	24	23.10	0.2042		
			1	49	23.31	0.2143		
			25	0	21.87	0.1538		
			25	12	21.90	0.1549		
			25	24	21.84	0.1528		
			50	0	21.74	0.1493		
	26365	1882.5	QPSK	1	0	24.05	0.2541	
				1	24	23.96	0.2489	
				1	49	24.27	0.2673	
				25	0	22.92	0.1959	
				25	12	22.95	0.1972	
				25	24	23.15	0.2065	
				50	0	22.95	0.1972	
		16-QAM	1	0	22.77	0.1892		
			1	24	23.13	0.2056		
			1	49	23.28	0.2128		
			25	0	21.94	0.1563		
			25	12	21.91	0.1552		
			25	24	21.87	0.1538		
50			0	21.72	0.1486			
26640	1910	QPSK	1	0	23.90	0.2455		
			1	24	24.14	0.2594		
			1	49	24.15	0.2600		
			25	0	23.03	0.2009		
			25	12	23.11	0.2046		
			25	24	23.12	0.2051		
			50	0	22.92	0.1959		
	16-QAM	1	0	23.15	0.2065			
		1	24	23.03	0.2009			
		1	49	23.23	0.2104			
		25	0	21.95	0.1567			
		25	12	21.96	0.1570			
		25	24	22.15	0.1641			
		50	0	21.85	0.1531			



3.1.6 Test Result of EIRP

LTE Band 2 Radiated Power EIRP								
LTE BAND	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset				
25	1.4	QPSK	1	2	1850.7	22.91	0.1954	H
25	1.4	QPSK	1	2	1882.5	21.16	0.1306	H
25	1.4	QPSK	1	2	1914.3	20.26	0.1062	H
25	1.4	QPSK	1	2	1850.7	23.30	0.2138	V
25	1.4	QPSK	1	2	1882.5	21.54	0.1426	V
25	1.4	QPSK	1	2	1914.3	19.88	0.0973	V
25	1.4	16QAM	1	2	1850.7	21.85	0.1531	H
25	1.4	16QAM	1	2	1882.5	20.01	0.1002	H
25	1.4	16QAM	1	2	1914.3	19.08	0.0809	H
25	1.4	16QAM	1	2	1850.7	22.25	0.1679	V
25	1.4	16QAM	1	2	1882.5	20.35	0.1084	V
25	1.4	16QAM	1	2	1914.3	18.12	0.0649	V
25	3	QPSK	1	7	1851.5	23.08	0.2032	H
25	3	QPSK	1	7	1882.5	21.68	0.1472	H
25	3	QPSK	1	7	1913.5	19.62	0.0916	H
25	3	QPSK	1	7	1851.5	23.23	0.2104	V
25	3	QPSK	1	7	1882.5	21.89	0.1545	V
25	3	QPSK	1	7	1913.5	19.73	0.0940	V
25	3	16QAM	1	7	1851.5	22.02	0.1592	H
25	3	16QAM	1	7	1882.5	20.08	0.1019	H
25	3	16QAM	1	7	1913.5	19.40	0.0871	H
25	3	16QAM	1	7	1851.5	22.42	0.1746	V
25	3	16QAM	1	7	1882.5	20.39	0.1094	V
25	3	16QAM	1	7	1913.5	18.91	0.0778	V



LTE Band 2 Radiated Power EIRP								
LTE BAND	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset				
25	5	QPSK	1	12	1852.5	23.26	0.2118	H
25	5	QPSK	1	12	1882.5	21.68	0.1472	H
25	5	QPSK	1	12	1912.5	20.75	0.1189	H
25	5	QPSK	1	12	1852.5	23.59	0.2286	V
25	5	QPSK	1	12	1882.5	22.04	0.1600	V
25	5	QPSK	1	12	1912.5	20.37	0.1089	V
25	5	16QAM	1	12	1852.5	21.86	0.1535	H
25	5	16QAM	1	12	1882.5	19.94	0.0986	H
25	5	16QAM	1	12	1912.5	19.89	0.0975	H
25	5	16QAM	1	12	1852.5	22.36	0.1722	V
25	5	16QAM	1	12	1882.5	20.27	0.1064	V
25	5	16QAM	1	12	1912.5	19.23	0.0838	V
25	10	QPSK	1	49	1855.0	22.92	0.1959	H
25	10	QPSK	1	49	1882.5	21.71	0.1483	H
25	10	QPSK	1	49	1910.0	19.33	0.0857	H
25	10	QPSK	1	49	1855.0	23.14	0.2061	V
25	10	QPSK	1	49	1882.5	22.02	0.1592	V
25	10	QPSK	1	49	1910.0	19.50	0.0891	V
25	10	16QAM	1	49	1855.0	21.57	0.1435	H
25	10	16QAM	1	49	1882.5	20.44	0.1107	H
25	10	16QAM	1	49	1910.0	18.12	0.0649	H
25	10	16QAM	1	49	1855.0	21.73	0.1489	V
25	10	16QAM	1	49	1882.5	20.24	0.1057	V
25	10	16QAM	1	49	1910.0	18.45	0.0700	V

3.2 Peak-to-Average Ratio

3.2.1 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. The following guidelines are offered for performing a CCDF measurement.

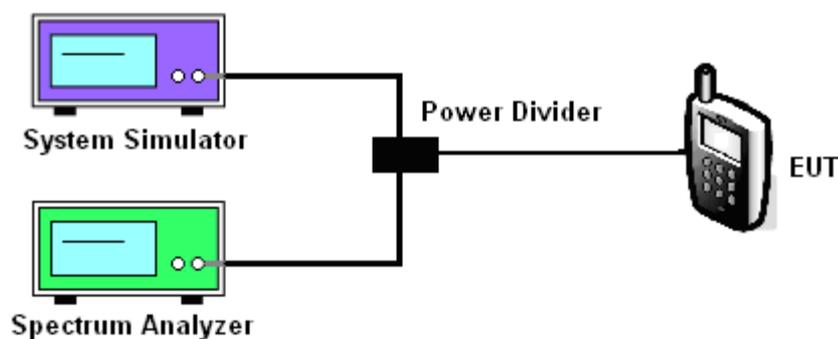
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The CCDF (Complementary Cumulative Distribution Function) of the middle channel for the highest RF powers were measured.

3.2.4 Test Setup





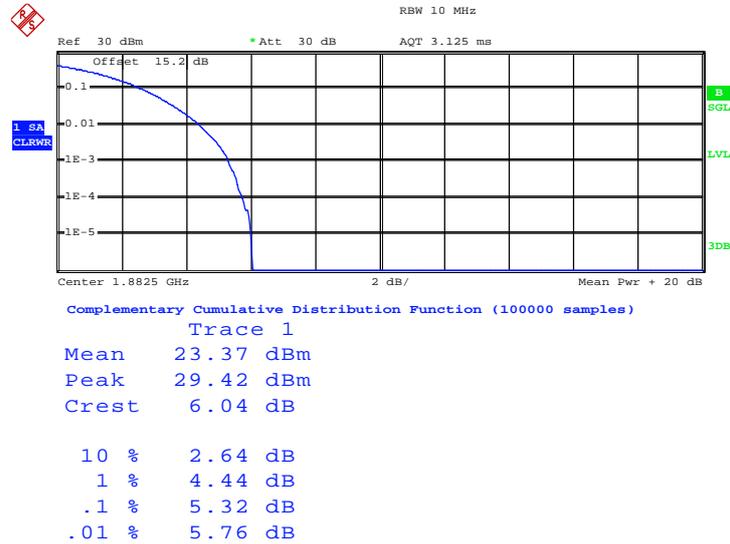
3.2.5 Test Result of Peak-to-Average Ratio

Band	Band Width	Channel	Frequency (MHz)	Modulation	PAR (dB)
LTE Band 25	1.4MHz	26365	1882.5	QPSK	5.32
				16-QAM	5.40
	3MHz	26365	1882.5	QPSK	4.40
				16-QAM	5.40
	5MHz	26365	1882.5	QPSK	4.60
				16-QAM	5.36
	10MHz	26365	1882.5	QPSK	5.16
				16-QAM	6.00



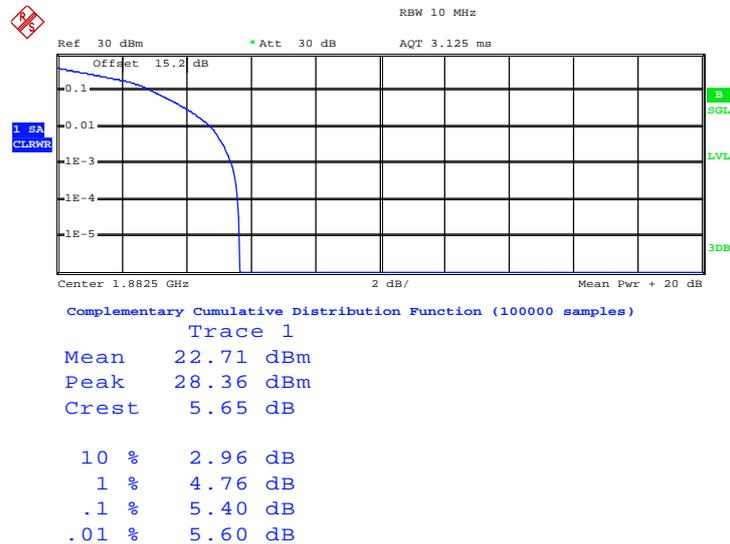
Band:	LTE Band 25	Bandwidth:	1.4MHz
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Peak-to-Average Ratio for QPSK-RB Size 6, RB Offset 0



Date: 20.APR.2013 20:44:57

Peak-to-Average Ratio for 16QAM-RB Size 6, RB Offset 0

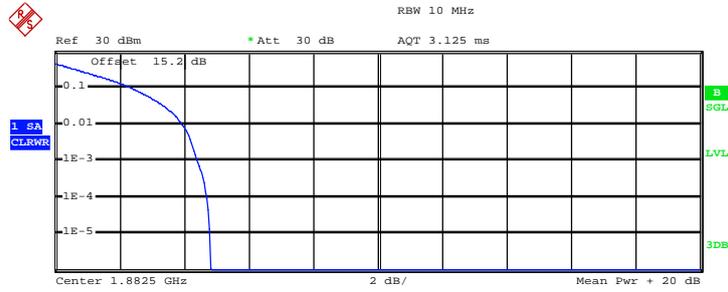


Date: 20.APR.2013 20:45:25



Band:	LTE Band 25	Bandwidth:	3MHz
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Peak-to-Average Ratio for QPSK-RB Size 15, RB Offset 0



Complementary Cumulative Distribution Function (100000 samples)

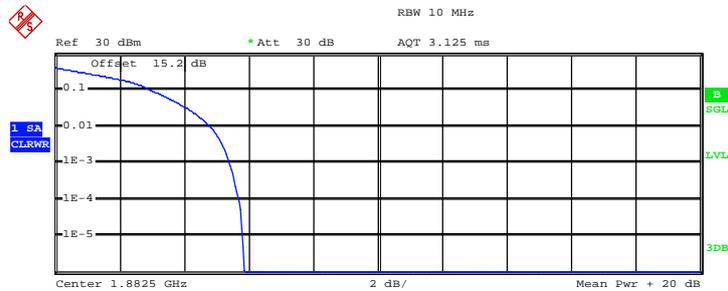
Trace 1

Mean 22.42 dBm
 Peak 27.23 dBm
 Crest 4.81 dB

10 % 2.44 dB
 1 % 3.96 dB
 .1 % 4.40 dB
 .01 % 4.72 dB

Date: 20.APR.2013 20:48:24

Peak-to-Average Ratio for 16QAM-RB Size 15, RB Offset 0



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.56 dBm
 Peak 28.43 dBm
 Crest 5.87 dB

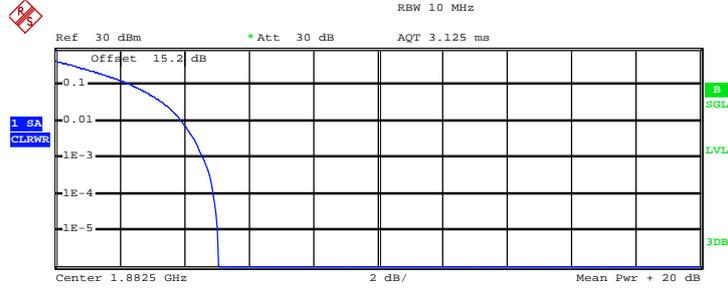
10 % 3.04 dB
 1 % 4.80 dB
 .1 % 5.40 dB
 .01 % 5.72 dB

Date: 20.APR.2013 20:47:14



Band:	LTE Band 25	Bandwidth:	5MHz
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Peak-to-Average Ratio for QPSK-RB Size 25, RB Offset 0



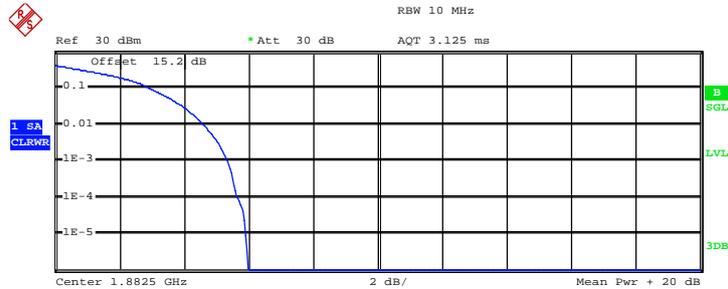
Complementary Cumulative Distribution Function (100000 samples)

Trace 1
 Mean 22.52 dBm
 Peak 27.58 dBm
 Crest 5.06 dB

10 % 2.40 dB
 1 % 3.92 dB
 .1 % 4.60 dB
 .01 % 4.92 dB

Date: 20.APR.2013 20:48:56

Peak-to-Average Ratio for 16QAM-RB Size 25, RB Offset 0



Complementary Cumulative Distribution Function (100000 samples)

Trace 1
 Mean 21.61 dBm
 Peak 27.58 dBm
 Crest 5.97 dB

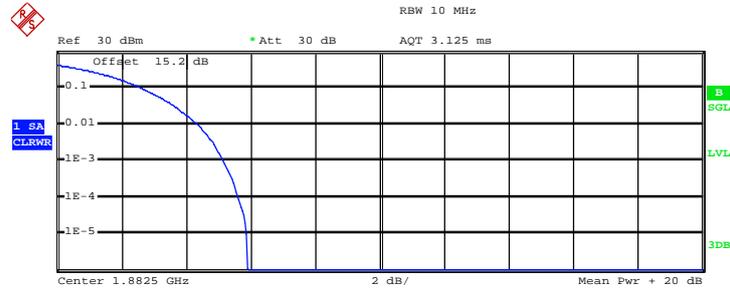
10 % 3.00 dB
 1 % 4.64 dB
 .1 % 5.36 dB
 .01 % 5.68 dB

Date: 20.APR.2013 20:49:08



Band:	LTE Band 25	Bandwidth:	10MHz
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Peak-to-Average Ratio for QPSK-RB Size 50, RB Offset 0



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 21.96 dBm
 Peak 27.86 dBm
 Crest 5.90 dB

10 % 2.68 dB
 1 % 4.36 dB
 .1 % 5.16 dB
 .01 % 5.64 dB

Date: 20.APR.2013 20:50:13

Peak-to-Average Ratio for 16QAM-RB Size 50, RB Offset 0



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 21.18 dBm
 Peak 28.15 dBm
 Crest 6.97 dB

10 % 3.08 dB
 1 % 4.96 dB
 .1 % 6.00 dB
 .01 % 6.68 dB

Date: 20.APR.2013 20:49:59

3.3 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.3.1 Description of Occupied Bandwidth and 26dB Bandwidth Measurement

The 99% 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 emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

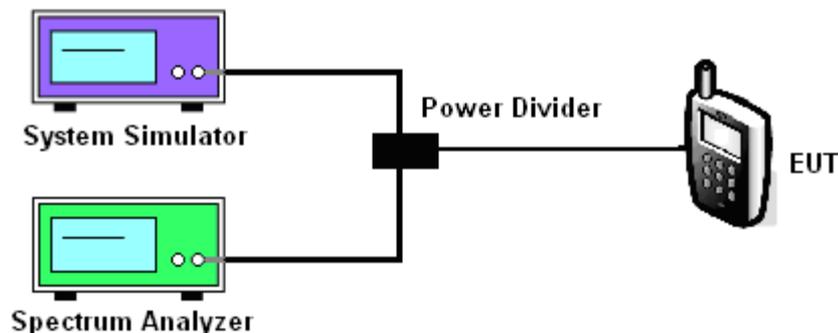
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and System Simulator via power divider.
2. The 99% occupied bandwidth and 26 dB bandwidth of the middle channel for the highest RF powers were measured.

3.3.4 Test Setup



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

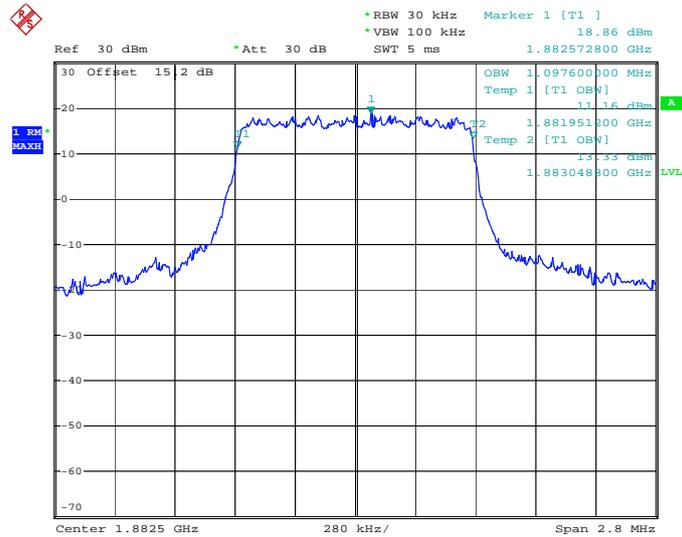
Band	Band Width	Channel	Frequency (MHz)	Modulation	99%Bandwidth (MHz)	26dB Bandwidth (MHz)
LTE Band 25	1.4MHz	26365	1882.5	QPSK	1.0976	1.2992
				16-QAM	1.1088	1.3048
	3MHz	26365	1882.5	QPSK	2.7360	3.0720
				16-QAM	2.7360	3.1080
	5MHz	26365	1882.5	QPSK	4.5000	5.0600
				16-QAM	4.5000	5.1200
	10MHz	26365	1882.5	QPSK	9.1600	10.1200
				16-QAM	9.0800	10.1200



3.3.6 Test Result (Plots) of 99% Occupied Bandwidth and 26dB Bandwidth

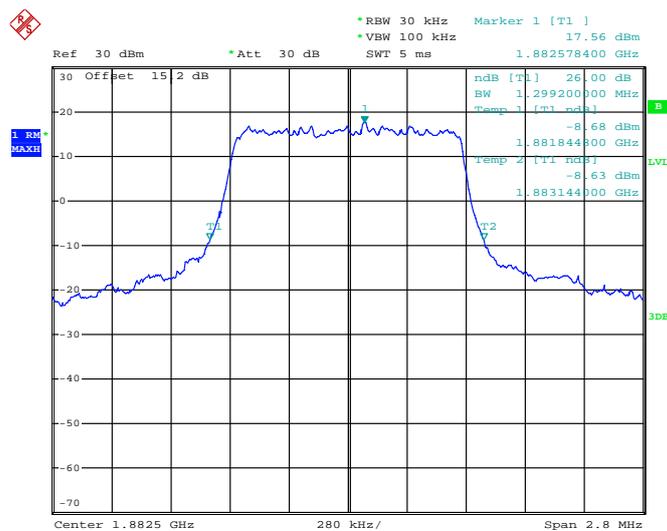
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 26365 for RB Size 6, RB Offset 0



Date: 19.APR.2013 05:13:46

26dB Bandwidth Plot on Channel 26365 for RB Size 6, RB Offset 0

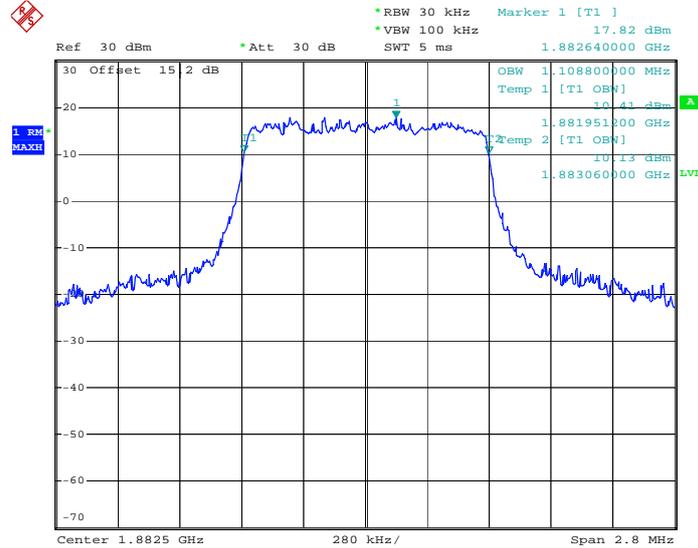


Date: 20.APR.2013 20:33:00



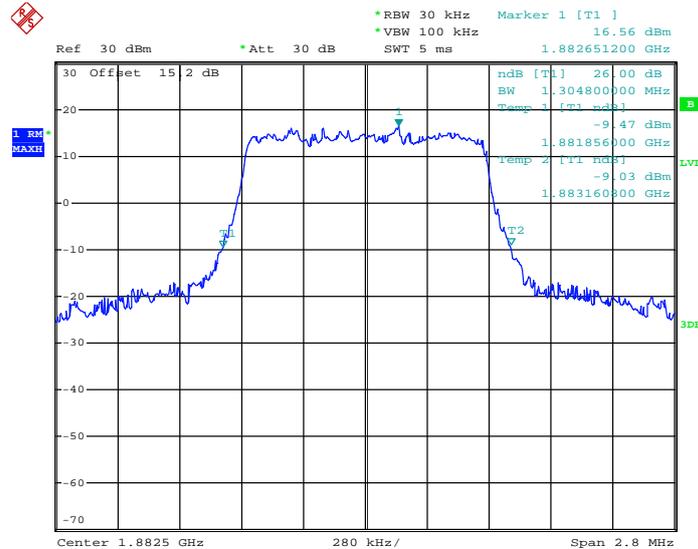
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 6, RB Offset 0**



Date: 19.APR.2013 05:13:17

**26dB Bandwidth Plot on Channel 26365
for RB Size 6, RB Offset 0**

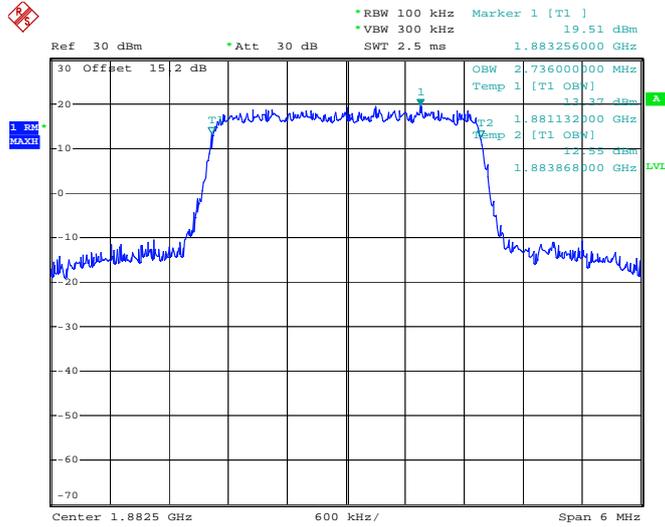


Date: 20.APR.2013 20:33:48



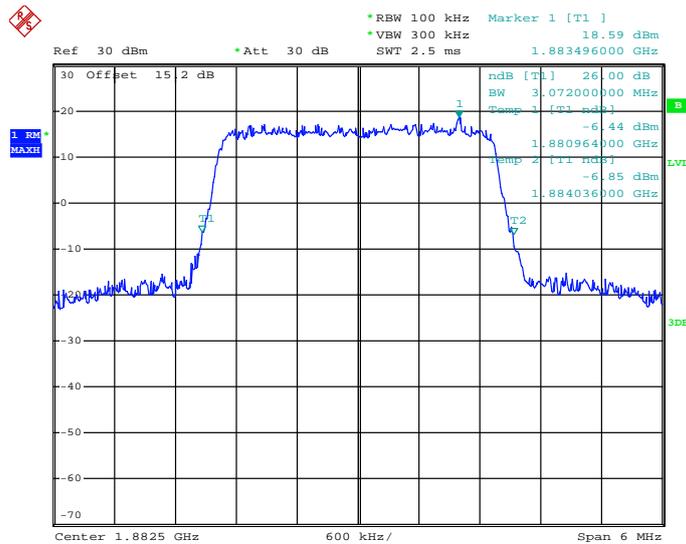
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 15, RB Offset 0**



Date: 19.APR.2013 05:17:56

**26dB Bandwidth Plot on Channel 26365
for RB Size 15, RB Offset 0**

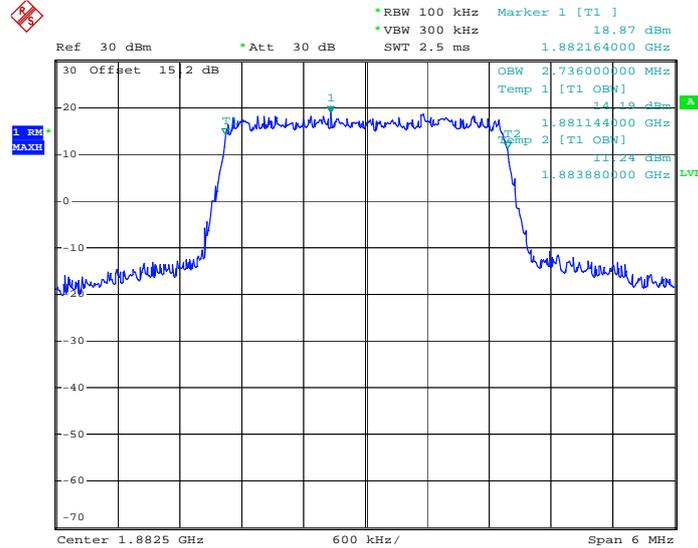


Date: 20.APR.2013 20:36:36



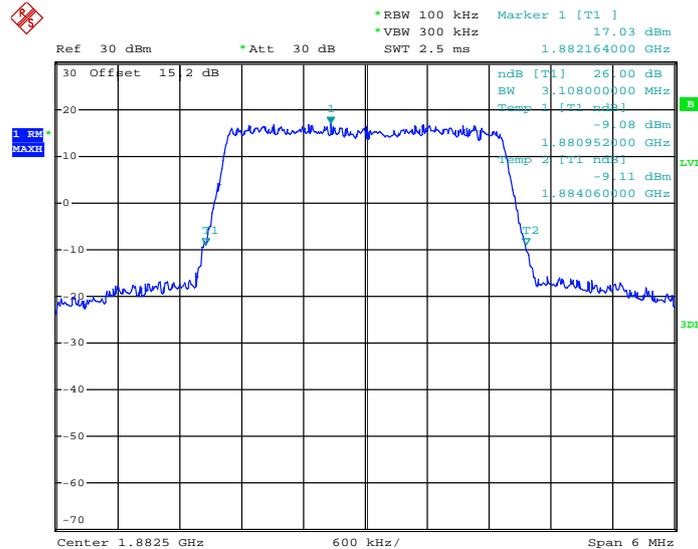
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 15, RB Offset 0**



Date: 19.APR.2013 05:17:44

**26dB Bandwidth Plot on Channel 26365
for RB Size 15, RB Offset 0**

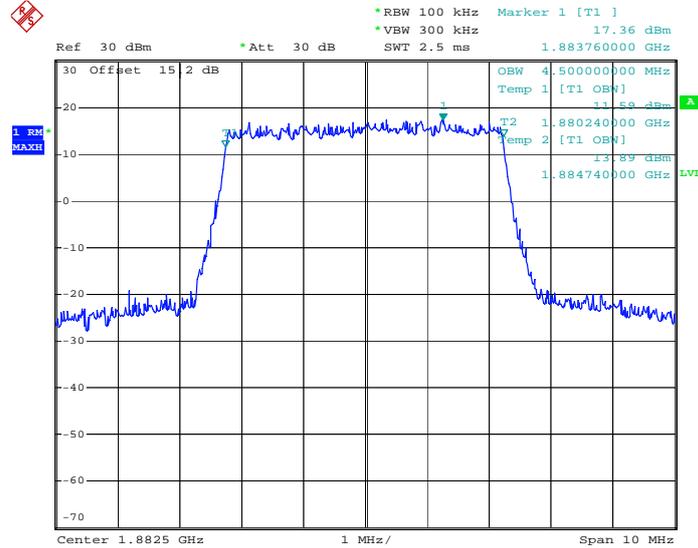


Date: 20.APR.2013 20:36:18



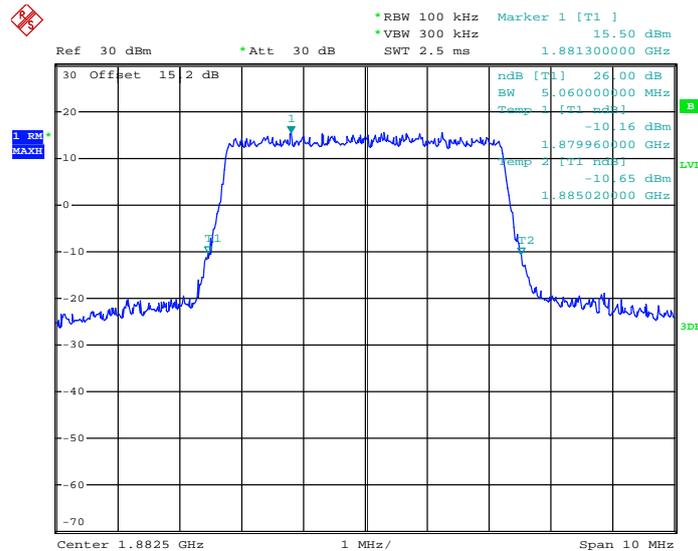
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 25, RB Offset 0**



Date: 19.APR.2013 05:33:31

**26dB Bandwidth Plot on Channel 26365
for RB Size 25, RB Offset 0**

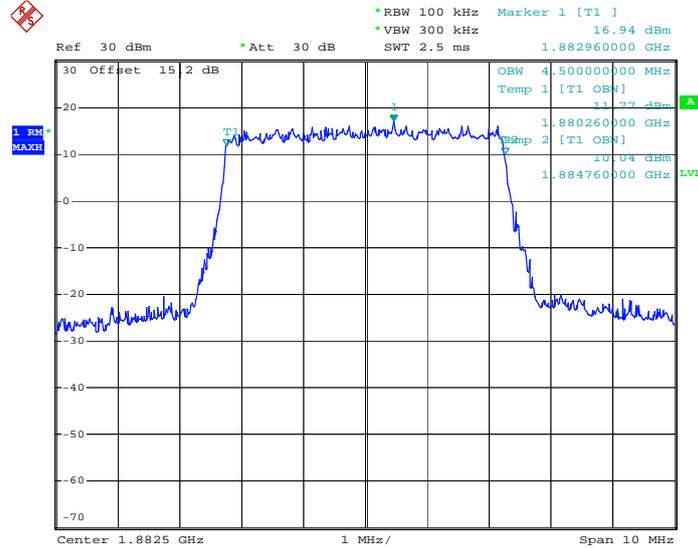


Date: 20.APR.2013 20:37:20



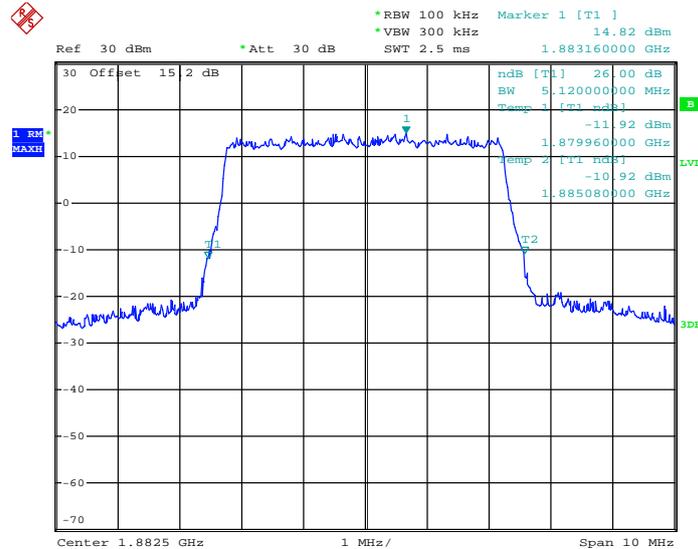
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 25, RB Offset 0**



Date: 19.APR.2013 05:33:11

**26dB Bandwidth Plot on Channel 26365
for RB Size 25, RB Offset 0**

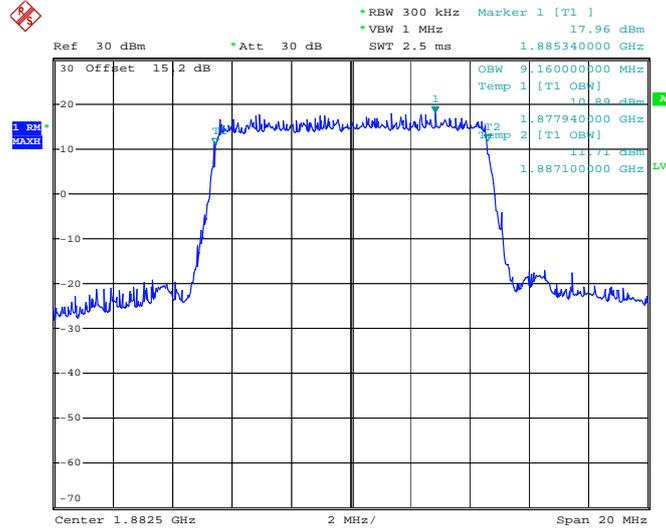


Date: 20.APR.2013 20:38:10



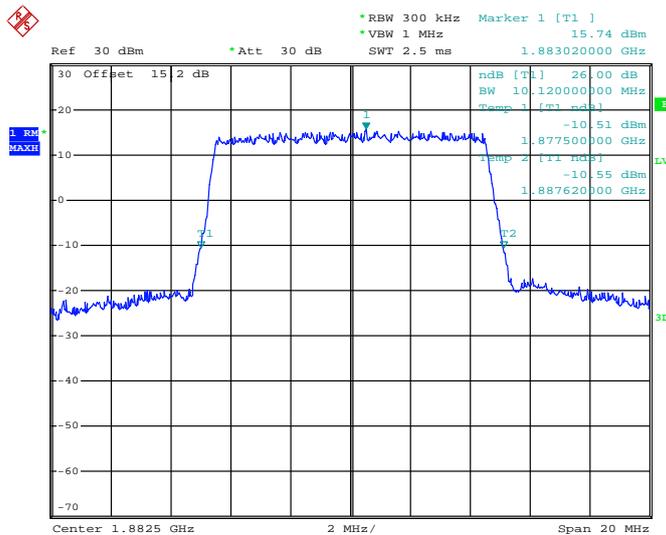
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 50, RB Offset 0**



Date: 19.APR.2013 05:36:49

**26dB Bandwidth Plot on Channel 26365
for RB Size 50, RB Offset 0**

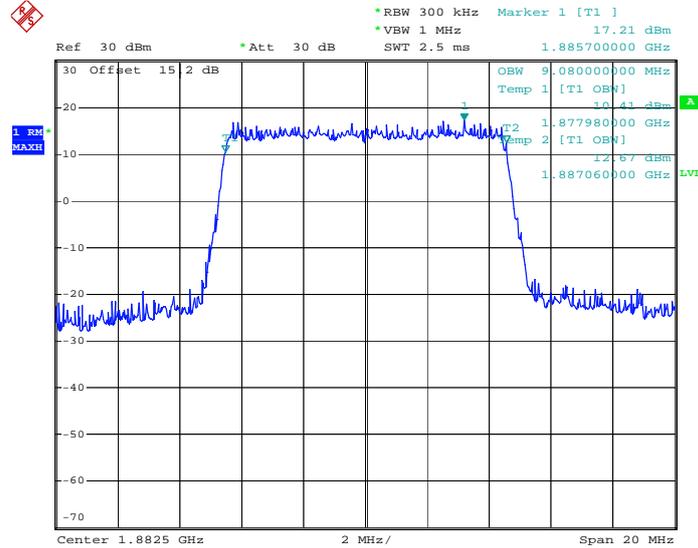


Date: 20.APR.2013 20:40:38



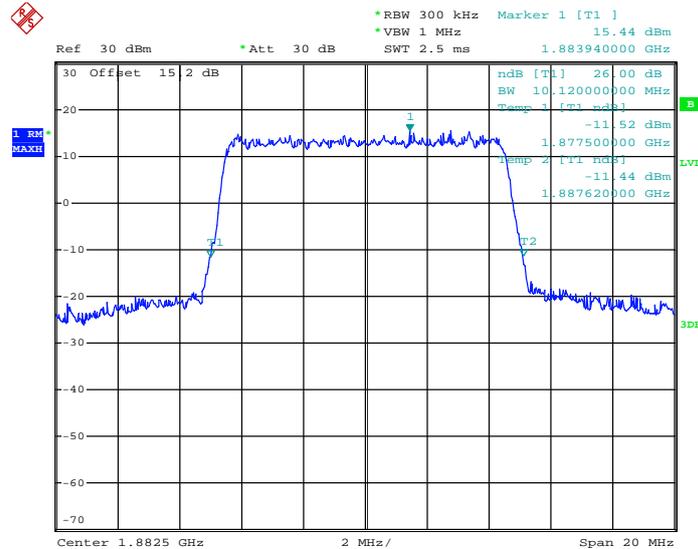
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 50, RB Offset 0**



Date: 19.APR.2013 05:36:35

**26dB Bandwidth Plot on Channel 26365
for RB Size 50, RB Offset 0**



Date: 20.APR.2013 20:39:53

3.4 Conducted Band Edge and Spurious Emission Measurement

3.4.1 Limit

For operations in band 25, the FCC limit is

$43 + 10\log_{10}(P[\text{Watts}]) \text{ dB} = -13 \text{ dBm}$ in a 1 MHz bandwidth.

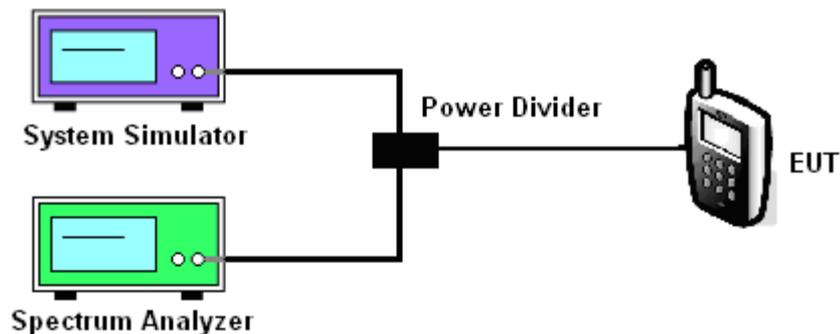
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via power divider.
2. The conducted spurious emission for the whole frequency range was taken.

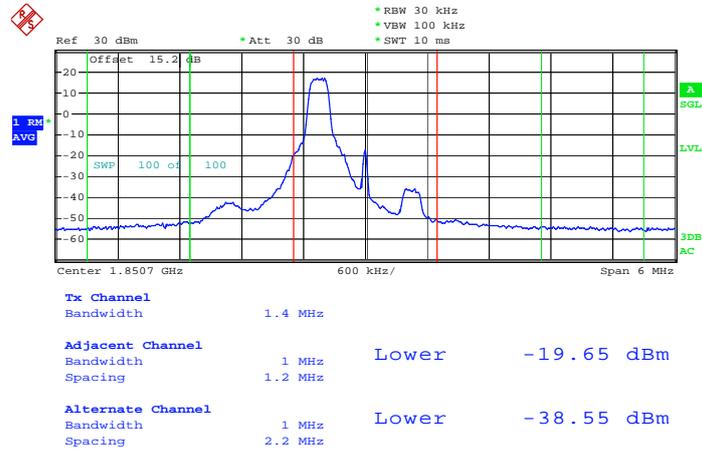
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band-Edge Emission

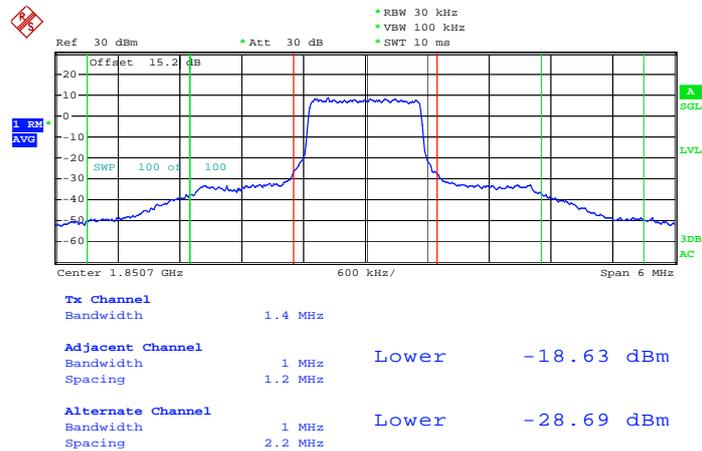
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 24.APR.2013 09:05:26

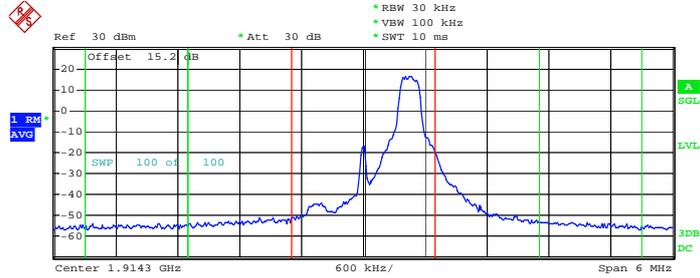
Lower Band Edge Plot for QPSK-RB Size 6, RB Offset 0



Date: 24.APR.2013 09:06:06



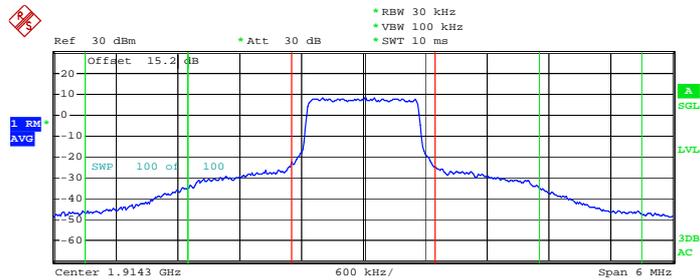
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 5



Tx Channel			
Bandwidth	1.4 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	1.2 MHz	Upper	-19.35 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	2.2 MHz	Upper	-39.43 dBm

Date: 24.APR.2013 09:17:43

Higher Band Edge Plot for QPSK-RB Size 6, RB Offset 0



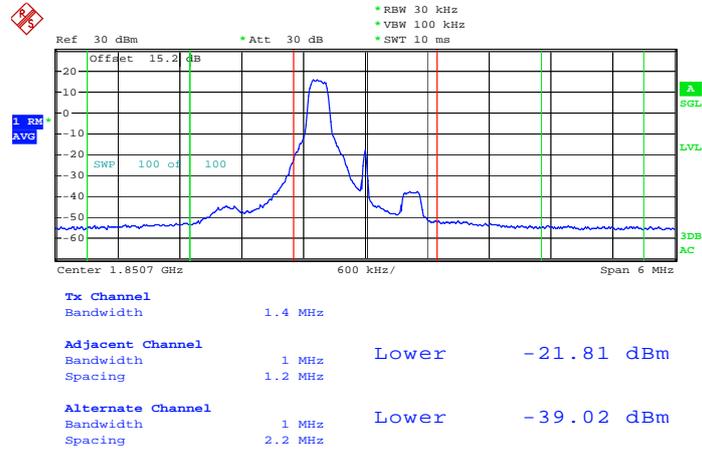
Tx Channel			
Bandwidth	1.4 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	1.2 MHz	Upper	-13.99 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	2.2 MHz	Upper	-26.04 dBm

Date: 24.APR.2013 09:09:59



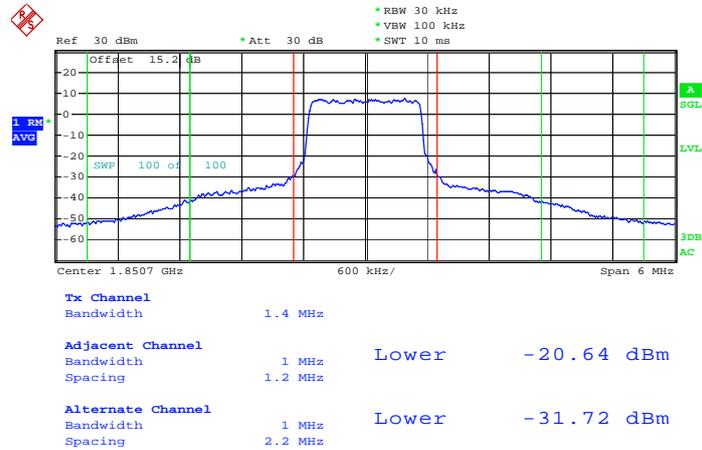
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 24.APR.2013 09:05:06

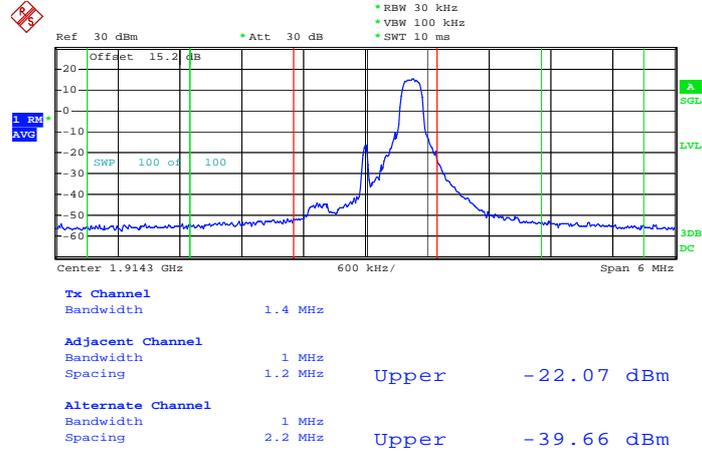
Lower Band Edge Plot for 16QAM -RB Size 6, RB Offset 0



Date: 24.APR.2013 09:06:55

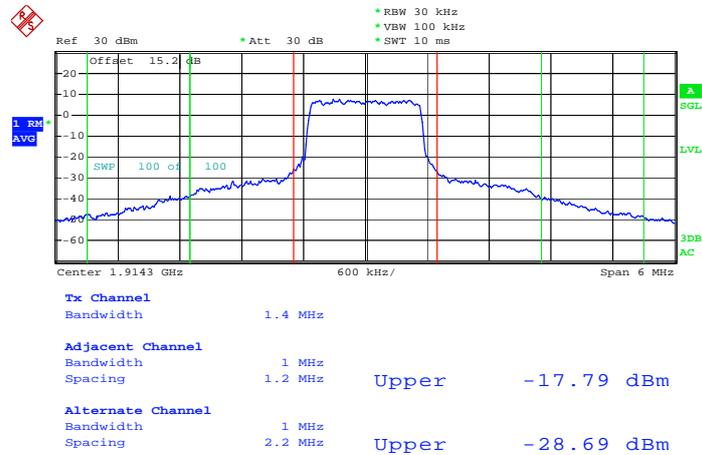


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 5



Date: 24.APR.2013 09:17:57

Higher Band Edge Plot for 16QAM -RB Size 6, RB Offset 0

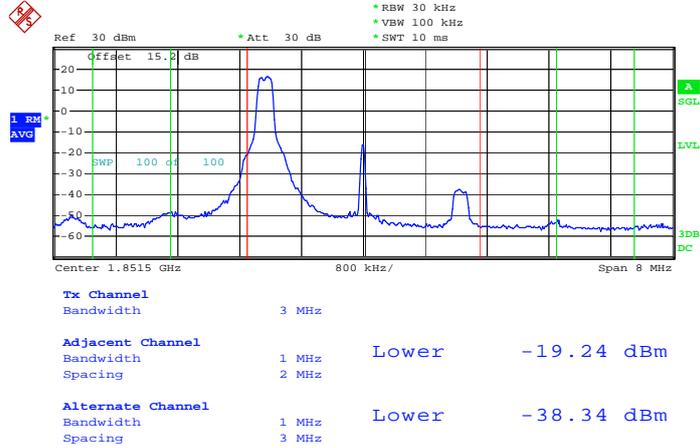


Date: 24.APR.2013 09:07:57



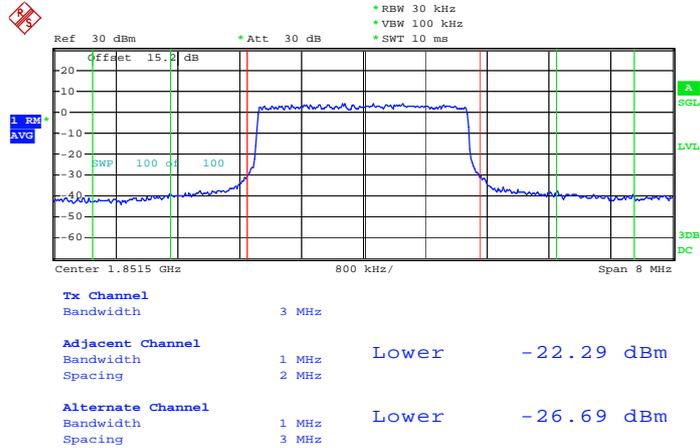
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 24.APR.2013 09:20:00

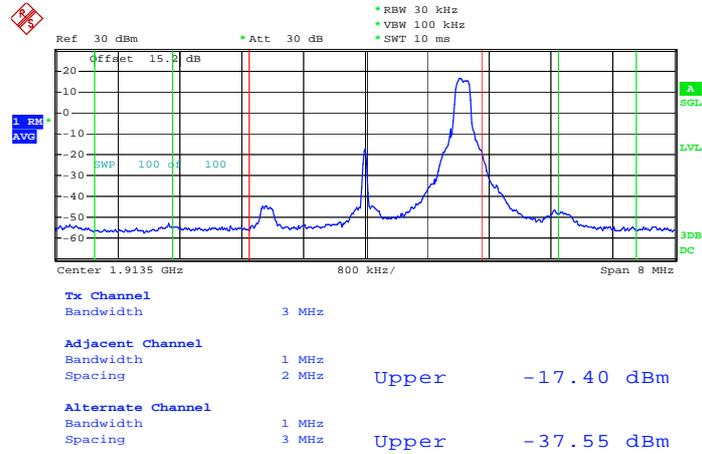
Lower Band Edge Plot for QPSK-RB Size 15, RB Offset 0



Date: 24.APR.2013 09:20:23

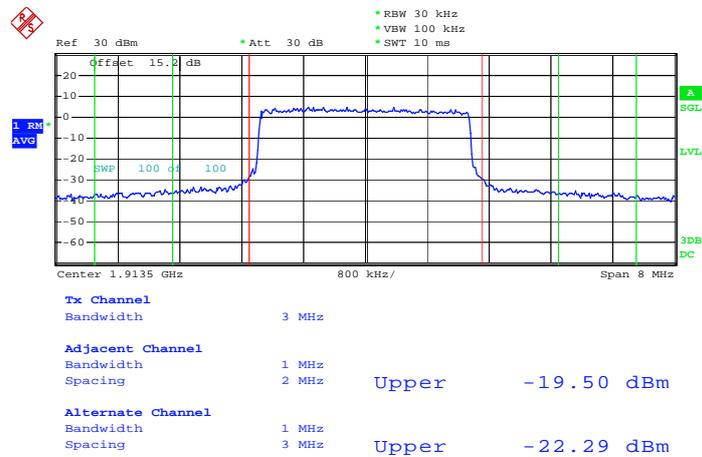


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 14



Date: 24.APR.2013 09:47:30

Higher Band Edge Plot for QPSK-RB Size 15, RB Offset 0

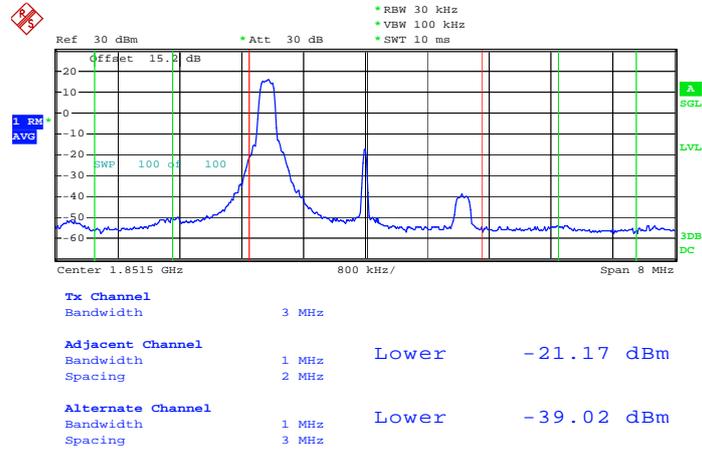


Date: 24.APR.2013 09:48:27



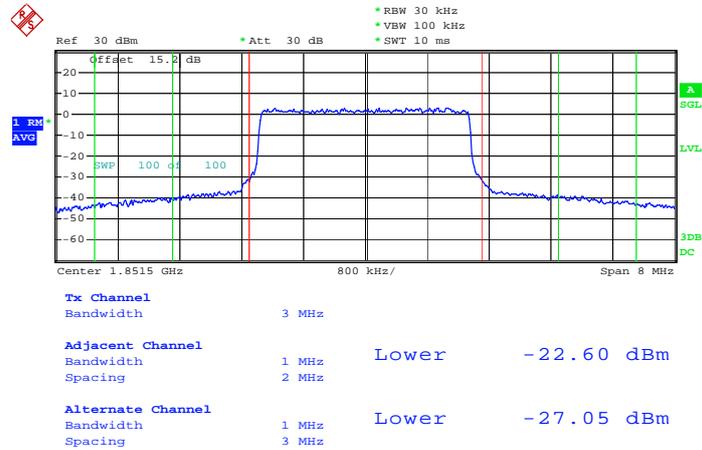
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 24.APR.2013 09:19:49

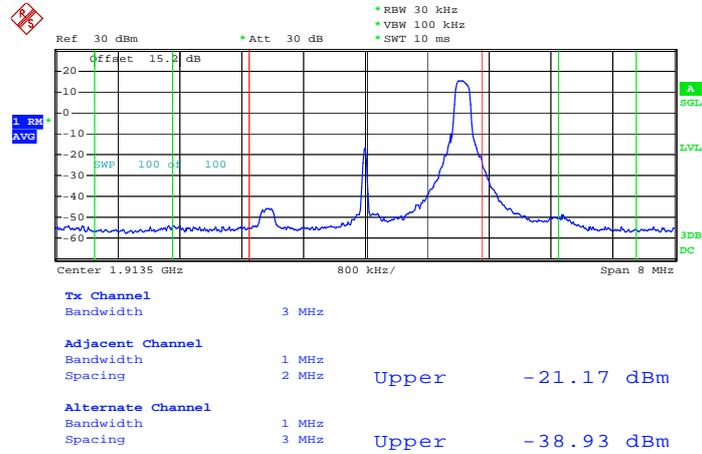
Lower Band Edge Plot for 16QAM -RB Size 15, RB Offset 0



Date: 24.APR.2013 09:20:38

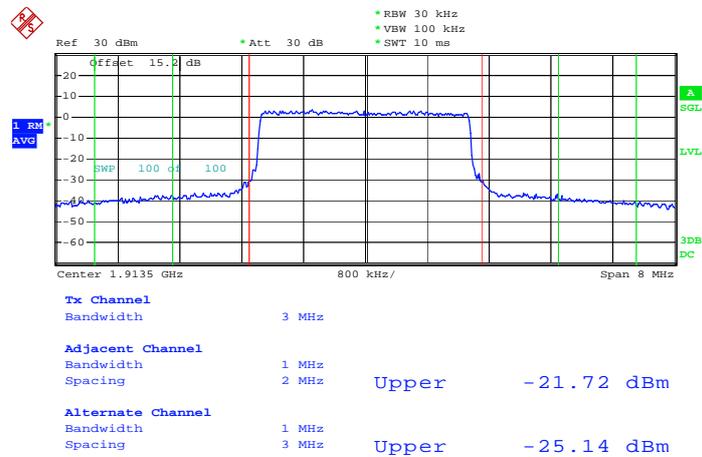


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 14



Date: 24.APR.2013 09:47:44

Higher Band Edge Plot for 16QAM -RB Size 15, RB Offset 0

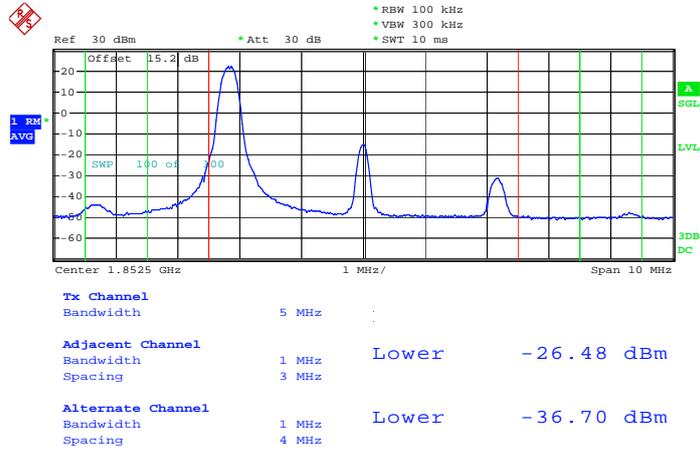


Date: 24.APR.2013 09:48:08



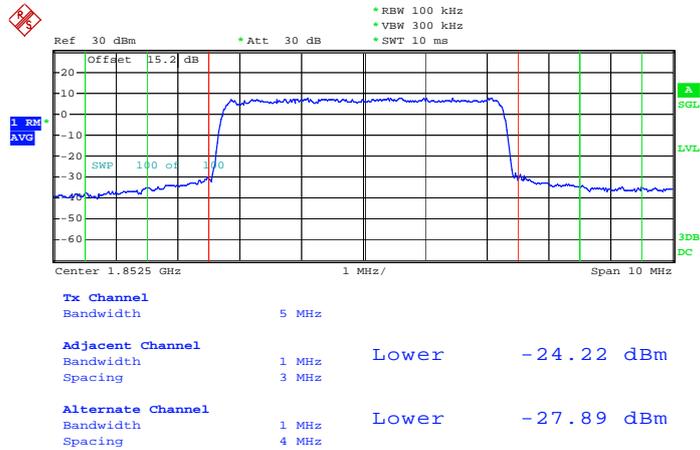
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 24.APR.2013 09:51:02

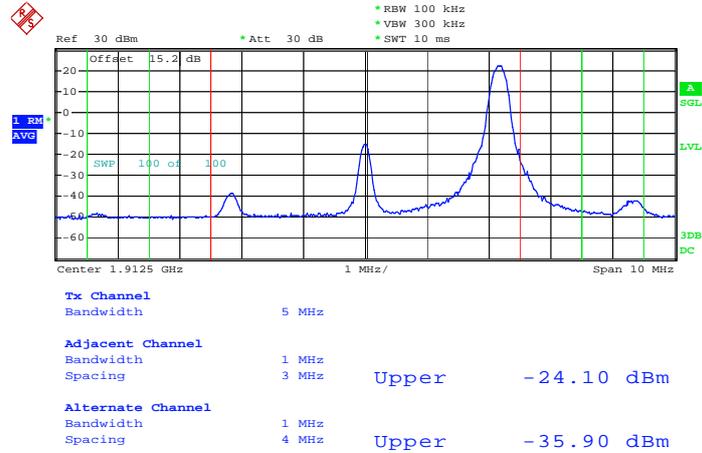
Lower Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 24.APR.2013 09:52:03

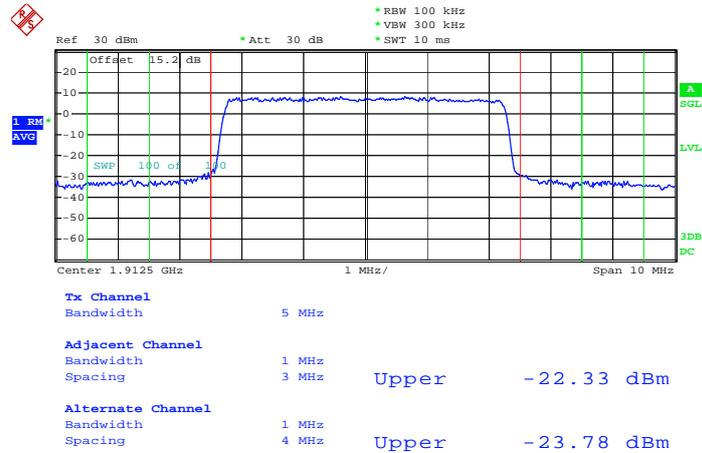


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 24



Date: 24.APR.2013 09:53:43

Higher Band Edge Plot for QPSK-RB Size 25, RB Offset 0

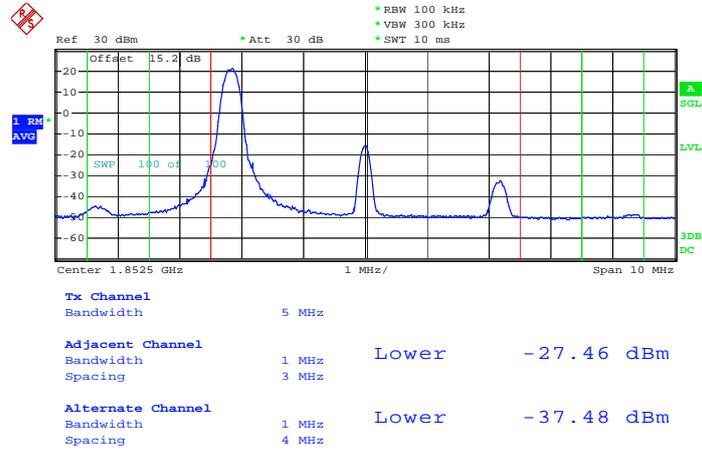


Date: 24.APR.2013 09:52:40



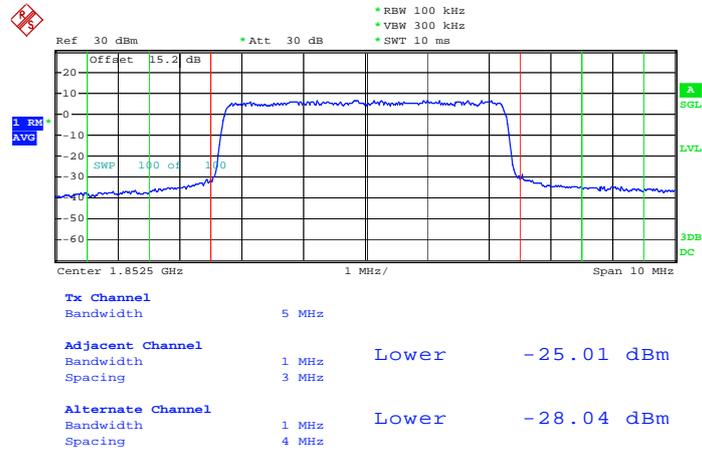
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 24.APR.2013 09:51:24

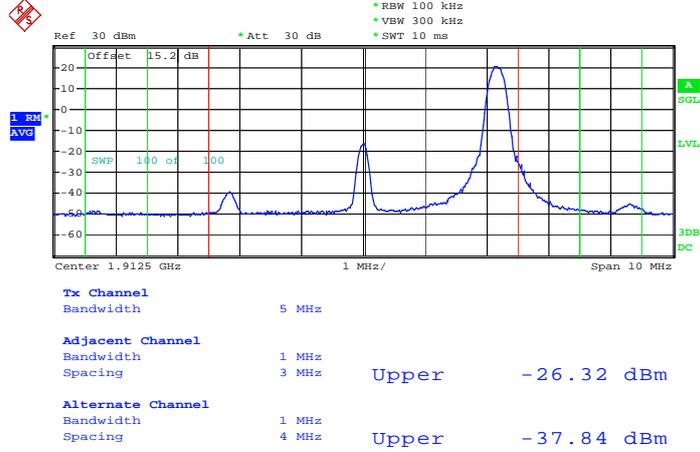
Lower Band Edge Plot for 16QAM -RB Size 25, RB Offset 0



Date: 24.APR.2013 09:51:46

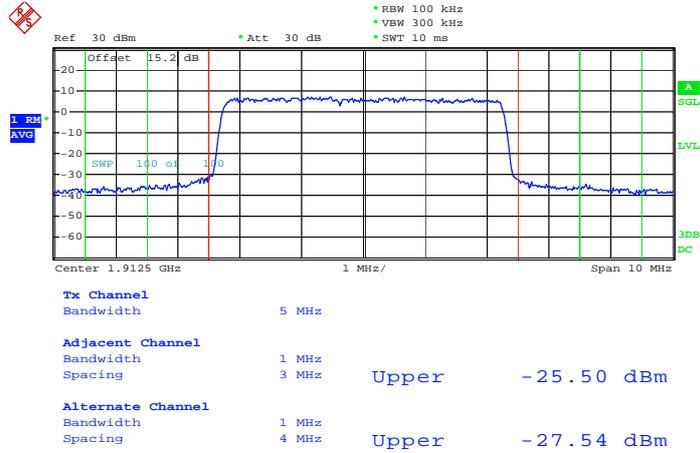


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 24



Date: 24.APR.2013 09:53:28

Higher Band Edge Plot for 16QAM -RB Size 25, RB Offset 0

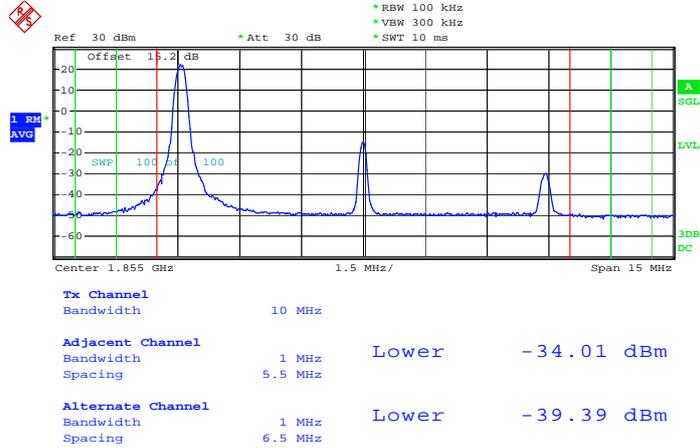


Date: 24.APR.2013 09:53:05



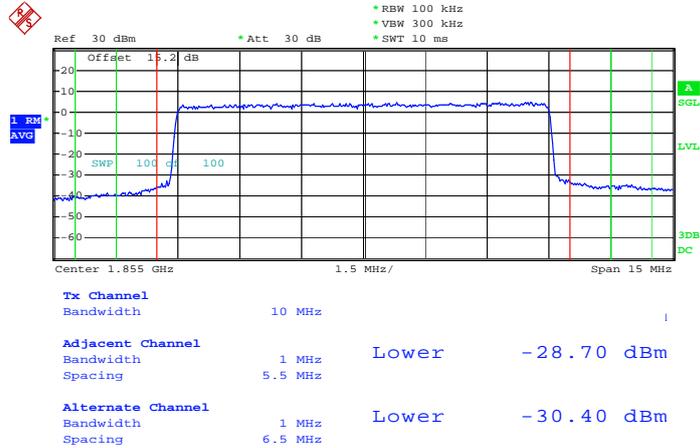
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 24.APR.2013 09:56:19

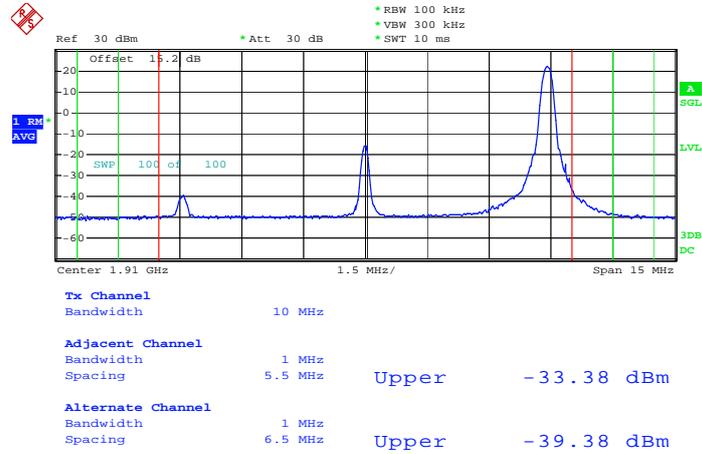
Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0



Date: 24.APR.2013 09:57:27

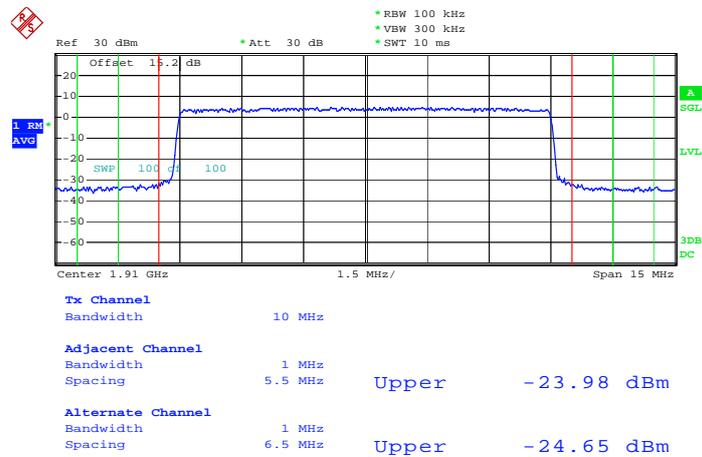


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 49



Date: 24.APR.2013 10:00:22

Higher Band Edge Plot for QPSK-RB Size 50, RB Offset 0

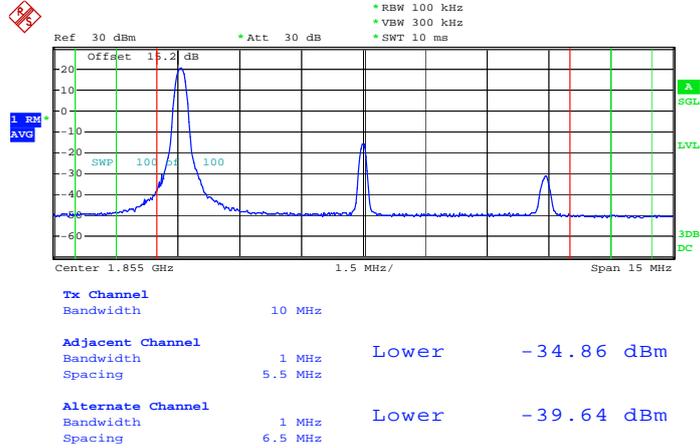


Date: 24.APR.2013 09:58:57



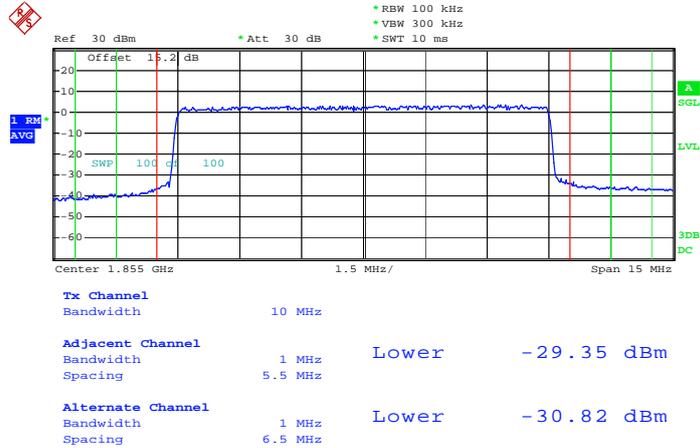
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 24.APR.2013 09:56:36

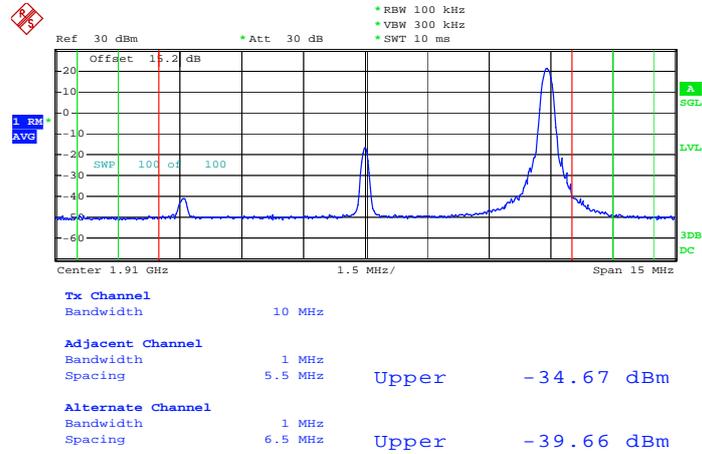
Lower Band Edge Plot for 16QAM -RB Size 50, RB Offset 0



Date: 24.APR.2013 09:57:01

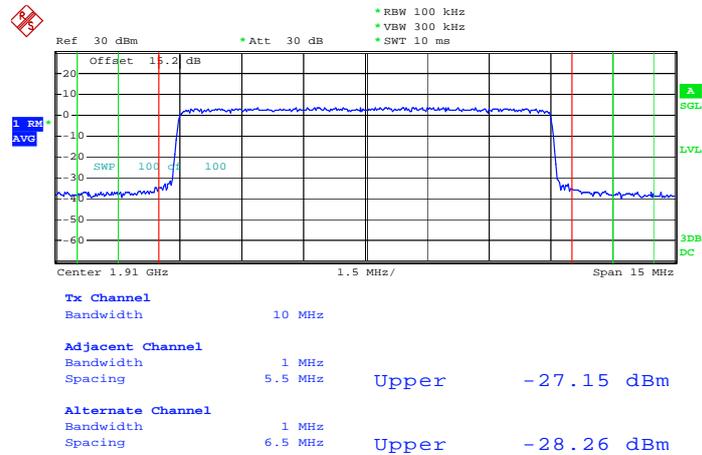


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 49



Date: 24.APR.2013 10:00:05

Higher Band Edge Plot for 16QAM -RB Size 50, RB Offset 0

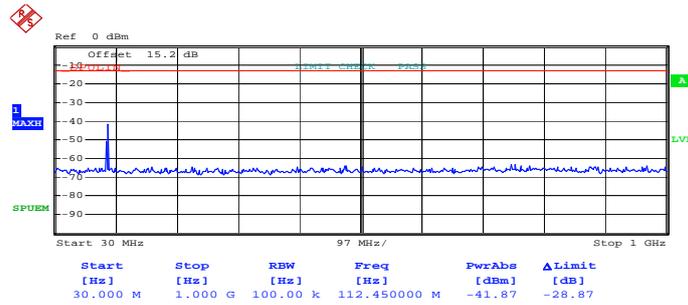


Date: 24.APR.2013 09:59:12

3.4.6 Test Plots of Spurious Emission

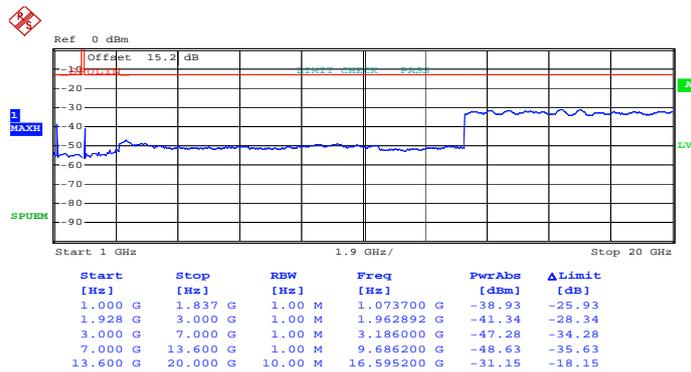
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
Frequency :	1850.7	Channel :	26047

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 2)



Date: 19.APR.2013 02:58:25

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 2)

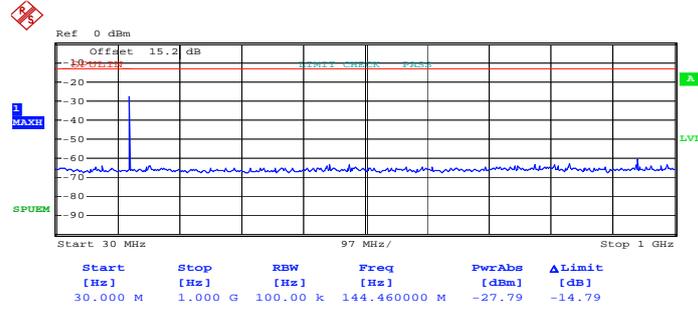


Date: 19.APR.2013 03:09:40



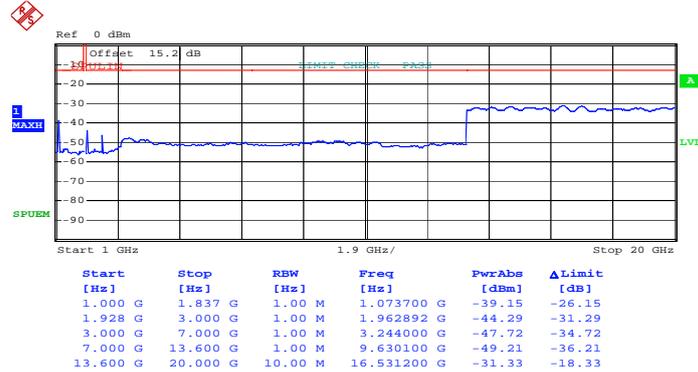
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
Frequency :	1882.5	Channel :	26365

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 5)



Date: 19.APR.2013 03:12:04

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 5)

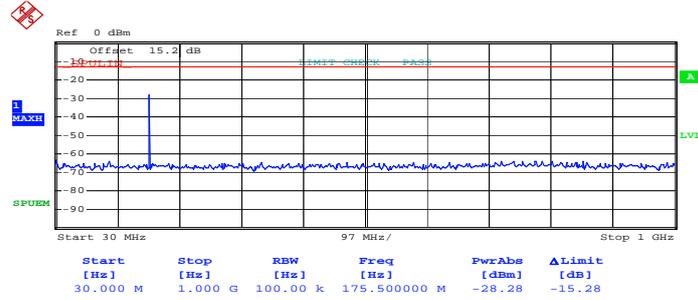


Date: 19.APR.2013 03:11:17



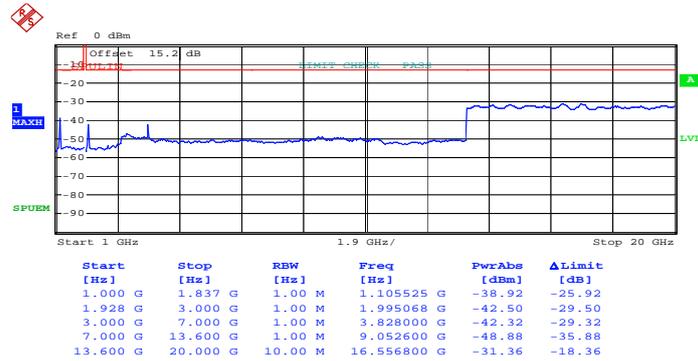
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
Frequency :	1914.3	Channel :	26683

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 19.APR.2013 03:13:31

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 0)

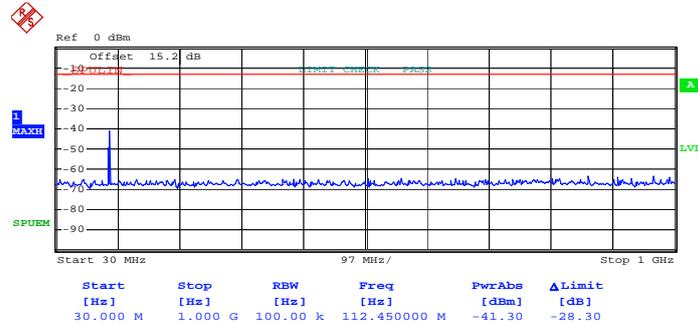


Date: 19.APR.2013 03:14:59



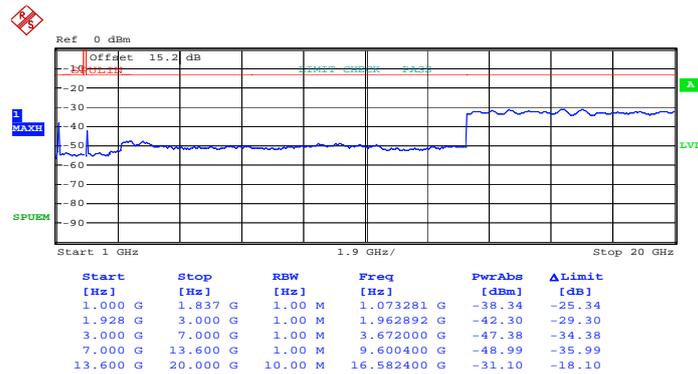
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
Frequency :	1850.7	Channel :	26047

Conducted Emission Plot (30MHz ~ 1GHz) for 16QAM (RB Size 1, RB Offset 2)



Date: 19.APR.2013 02:58:38

Conducted Emission Plot (1GHz ~ 20GHz) for 16QAM (RB Size 1, RB Offset 2)

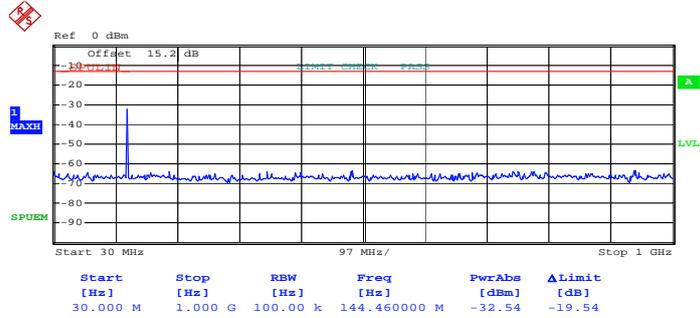


Date: 19.APR.2013 03:10:03



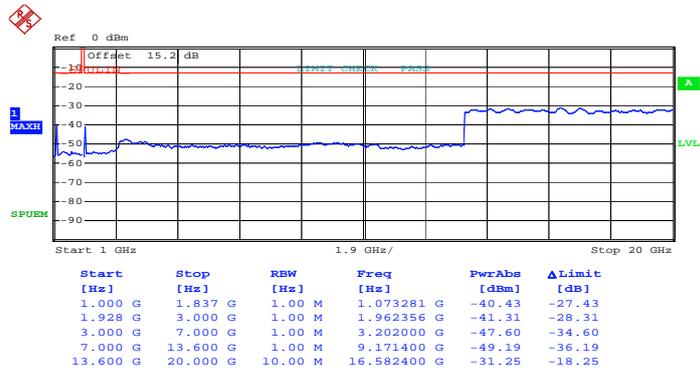
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
Frequency :	1882.5	Channel :	26365

Conducted Emission Plot (30MHz ~ 1GHz) for 16QAM (RB Size 1, RB Offset 5)



Date: 19.APR.2013 03:12:20

Conducted Emission Plot (1GHz ~ 20GHz) for 16QAM (RB Size 1, RB Offset 5)

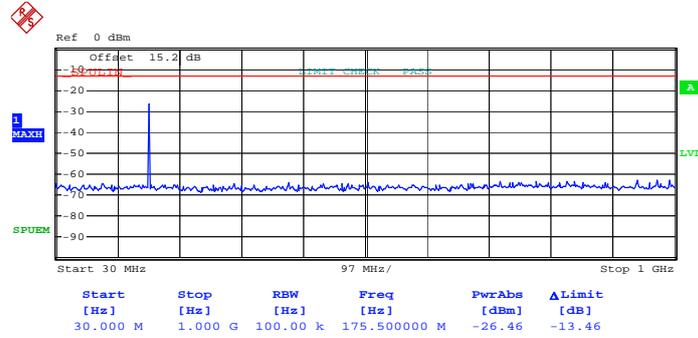


Date: 19.APR.2013 03:11:02



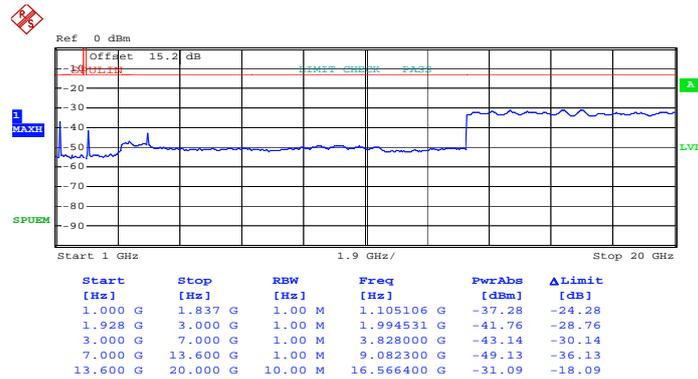
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
Frequency :	1914.3	Channel :	26683

Conducted Emission Plot (30MHz ~ 1GHz) for 16QAM (RB Size 1, RB Offset 0)



Date: 19.APR.2013 03:13:03

Conducted Emission Plot (1GHz ~ 20GHz) for 16QAM (RB Size 1, RB Offset 0)

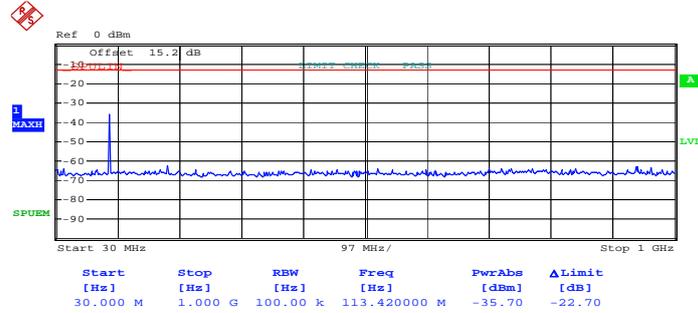


Date: 19.APR.2013 03:14:44



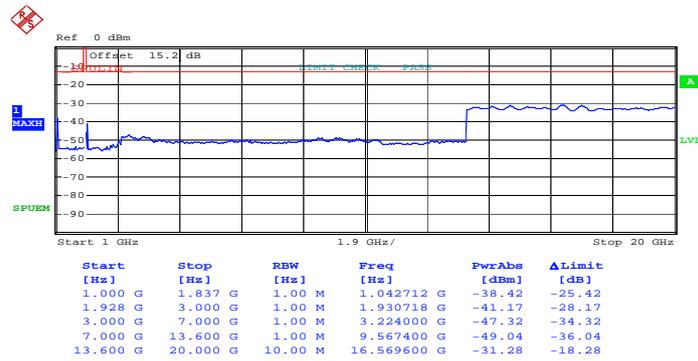
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
Frequency :	1851.5	Channel :	26055

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 7)



Date: 19.APR.2013 03:21:22

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 7)

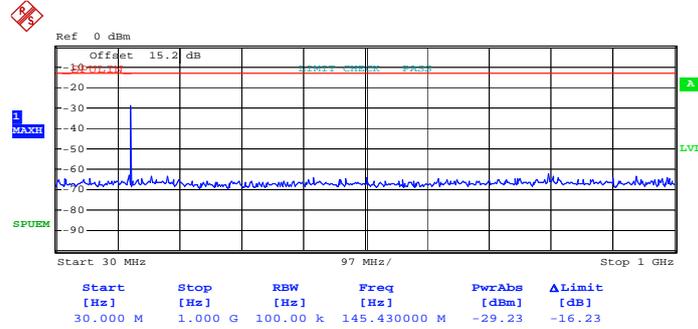


Date: 19.APR.2013 03:22:02



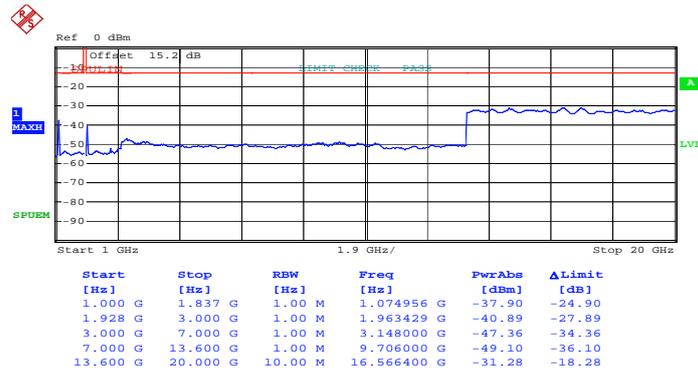
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
Frequency :	1882.5	Channel :	26365

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 14)



Date: 19.APR.2013 03:17:48

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 14)

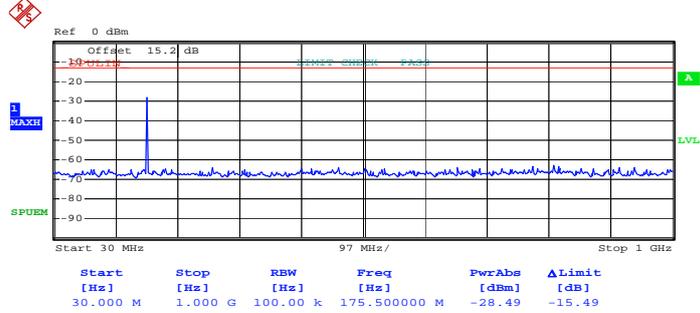


Date: 19.APR.2013 03:18:41



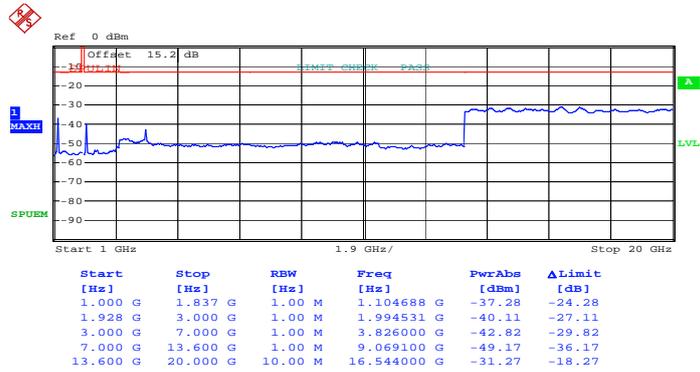
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
Frequency :	1913.5	Channel :	26675

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 7)



Date: 19.APR.2013 03:17:10

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 7)

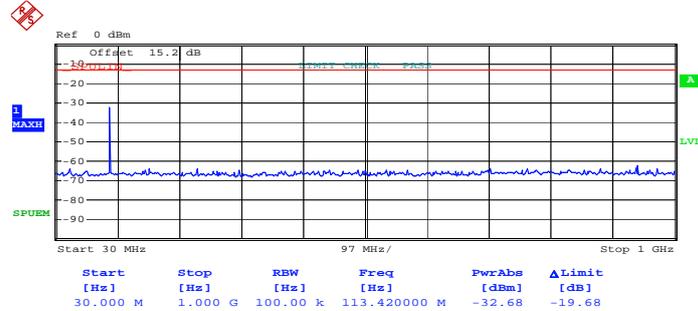


Date: 19.APR.2013 03:15:58



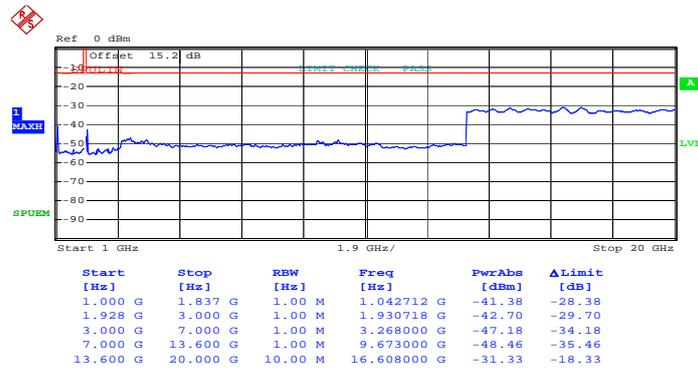
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
Frequency :	1851.5	Channel :	26055

Conducted Emission Plot (30MHz ~ 1GHz) for 16-QAM (RB Size 1, RB Offset 7)



Date: 19.APR.2013 03:21:04

Conducted Emission Plot (1GHz ~ 20GHz) for 16-QAM (RB Size 1, RB Offset 7)

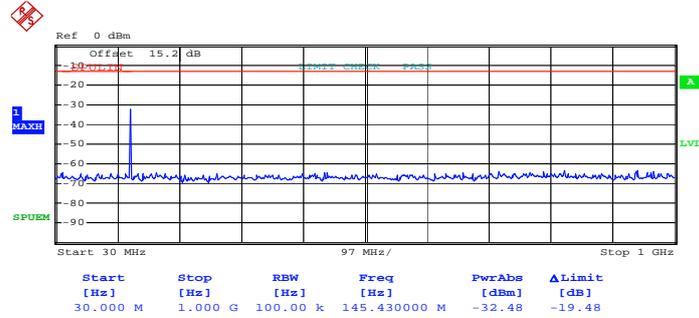


Date: 19.APR.2013 03:22:22



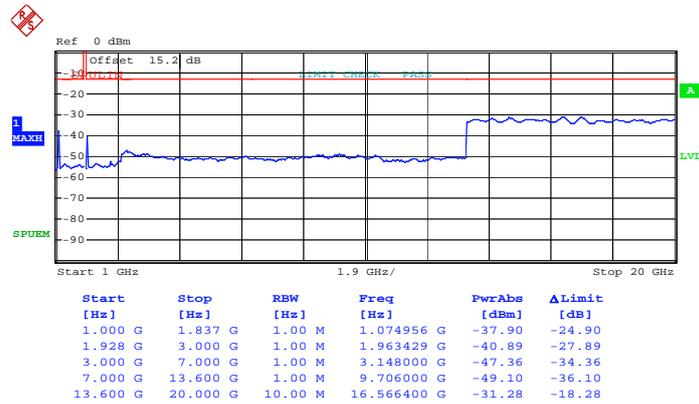
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
Frequency :	1882.5	Channel :	26365

**Conducted Emission Plot (30MHz ~ 1GHz) for
16-QAM (RB Size 1, RB Offset 14)**



Date: 19.APR.2013 03:18:03

**Conducted Emission Plot (1GHz ~ 20GHz) for
16-QAM (RB Size 1, RB Offset 14)**

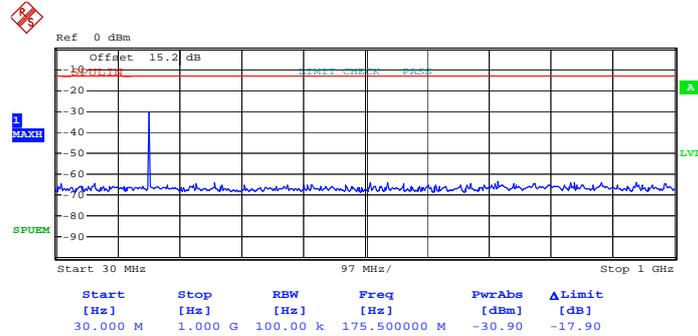


Date: 19.APR.2013 03:18:41



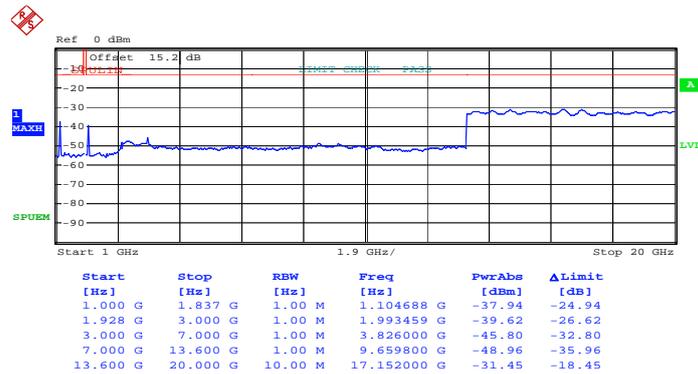
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
Frequency :	1913.5	Channel :	26675

Conducted Emission Plot (30MHz ~ 1GHz) for 16-QAM (RB Size 1, RB Offset 7)



Date: 19.APR.2013 03:16:55

Conducted Emission Plot (1GHz ~ 20GHz) for 16-QAM (RB Size 1, RB Offset 7)

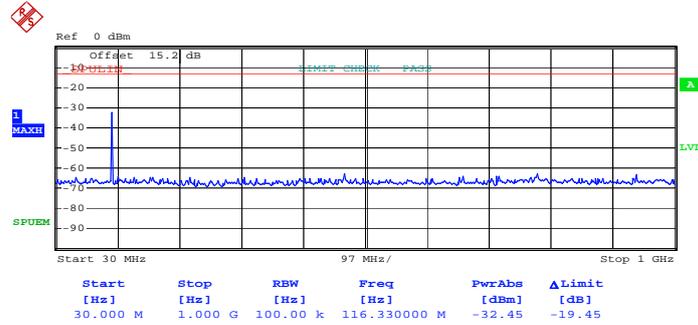


Date: 19.APR.2013 03:16:19



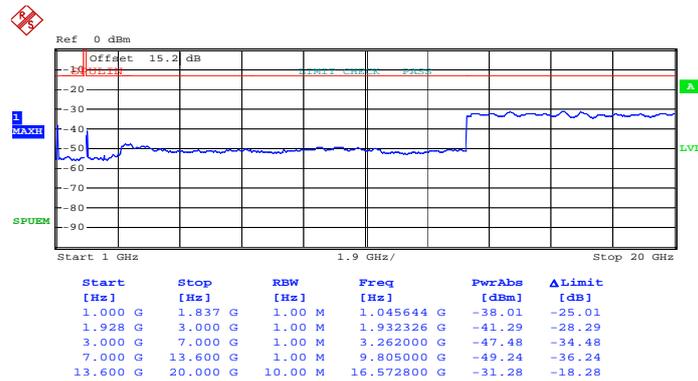
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
Frequency :	1852.5	Channel :	26065

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 24)



Date: 19.APR.2013 03:24:14

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 24)

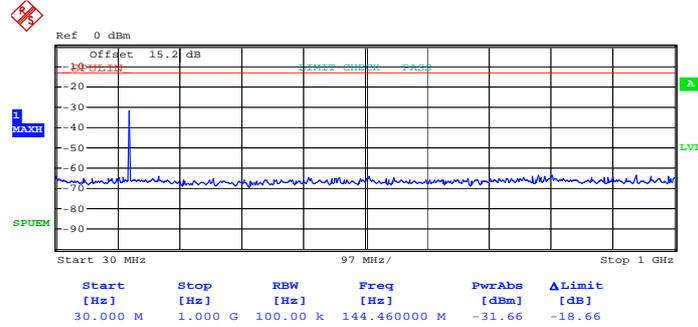


Date: 19.APR.2013 03:23:42



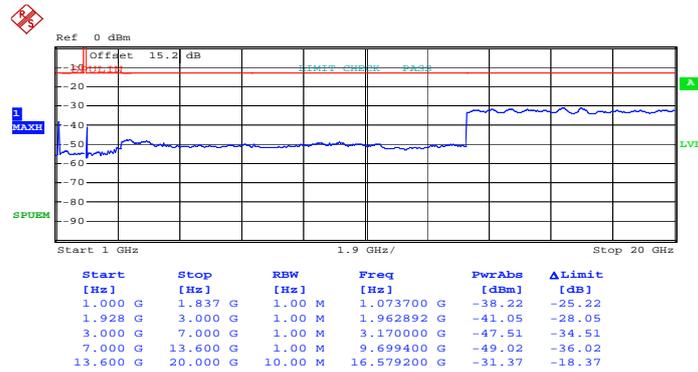
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
Frequency :	1882.5	Channel :	26365

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 12)



Date: 19.APR.2013 03:25:26

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 12)

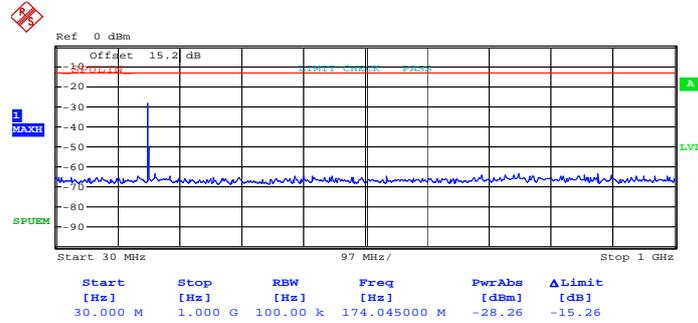


Date: 19.APR.2013 03:26:03



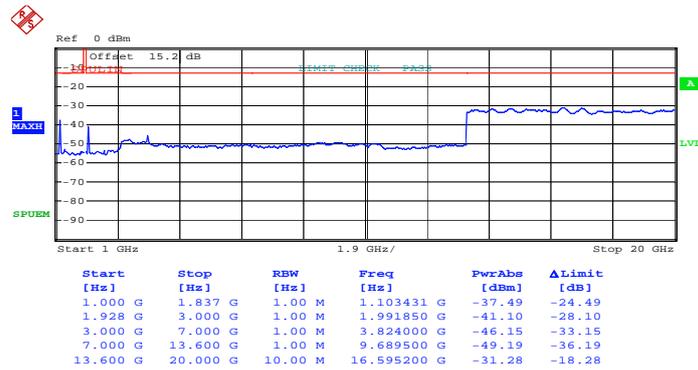
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
Frequency :	1912.5	Channel :	26665

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 12)



Date: 19.APR.2013 03:28:17

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 12)

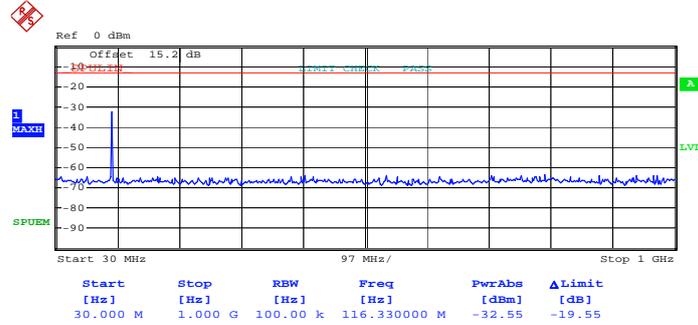


Date: 19.APR.2013 03:28:44



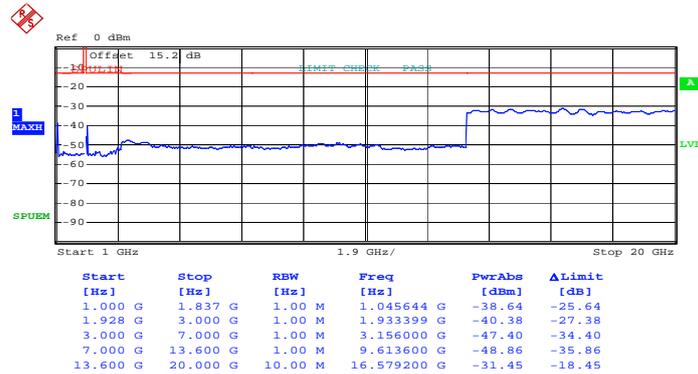
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
Frequency :	1852.5	Channel :	26065

Conducted Emission Plot (30MHz ~ 1GHz) for 16-QAM (RB Size 1, RB Offset 24)



Date: 19.APR.2013 03:24:26

Conducted Emission Plot (1GHz ~ 20GHz) for 16-QAM (RB Size 1, RB Offset 24)

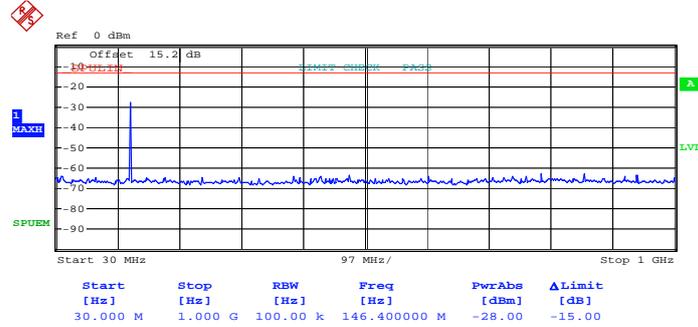


Date: 19.APR.2013 03:23:23



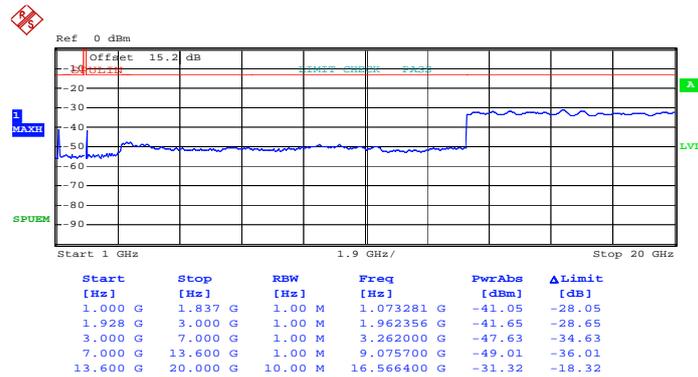
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
Frequency :	1882.5	Channel :	26365

Conducted Emission Plot (30MHz ~ 1GHz) for 16-QAM (RB Size 1, RB Offset 12)



Date: 19.APR.2013 03:25:13

Conducted Emission Plot (1GHz ~ 20GHz) for 16-QAM (RB Size 1, RB Offset 12)

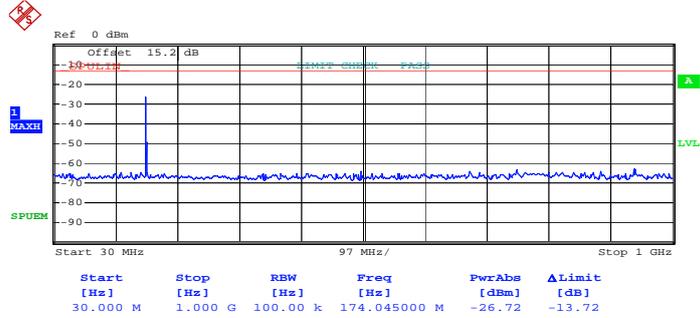


Date: 19.APR.2013 03:26:35



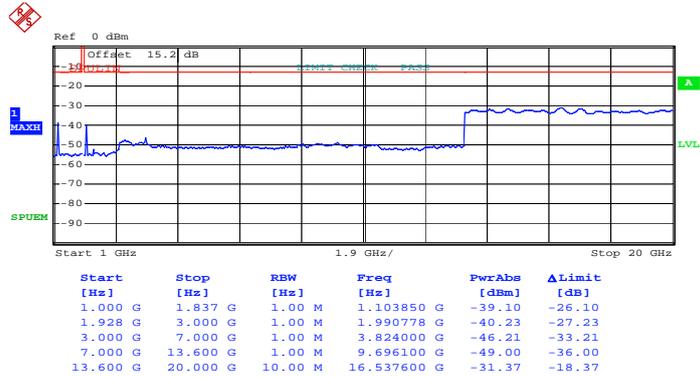
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
Frequency :	1912.5	Channel :	26665

Conducted Emission Plot (30MHz ~ 1GHz) for 16-QAM (RB Size 1, RB Offset 12)



Date: 19.APR.2013 03:28:03

Conducted Emission Plot (1GHz ~ 20GHz) for 16-QAM (RB Size 1, RB Offset 12)

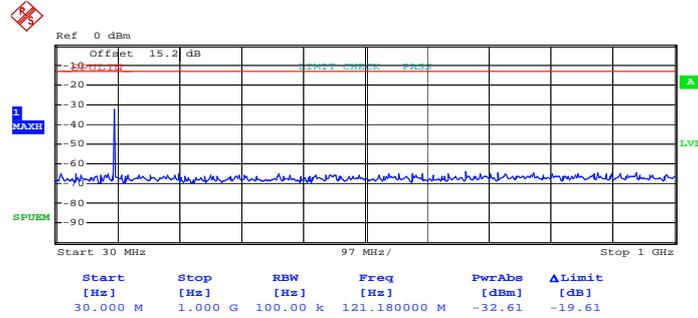


Date: 19.APR.2013 03:29:02



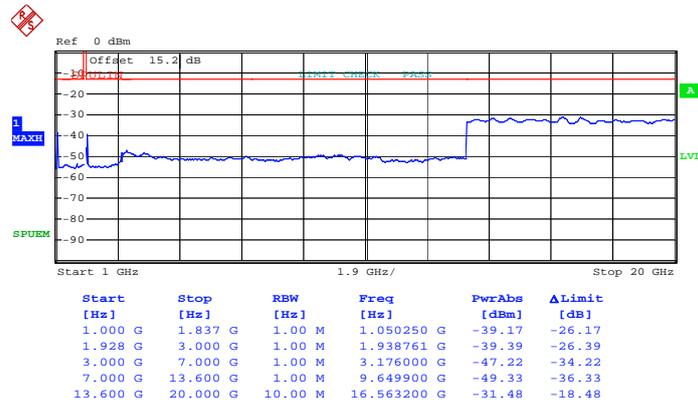
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
Frequency :	1855	Channel :	26090

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 19.APR.2013 03:30:37

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 49)

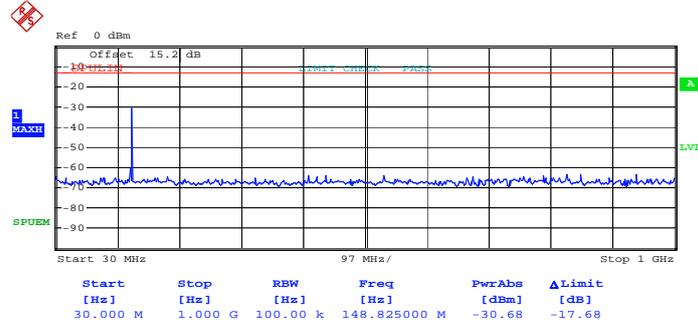


Date: 19.APR.2013 03:31:03



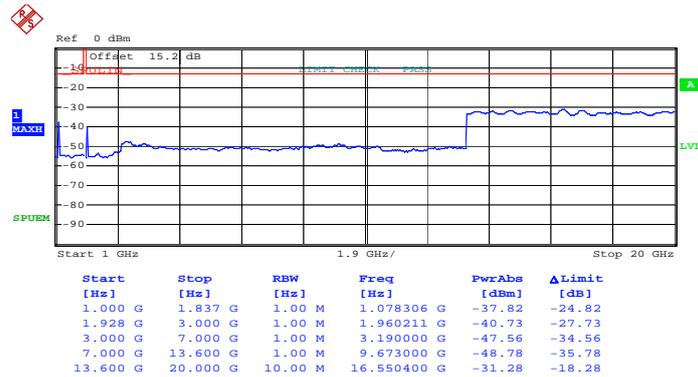
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
Frequency :	1882.5	Channel :	26365

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 19.APR.2013 03:33:20

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 49)

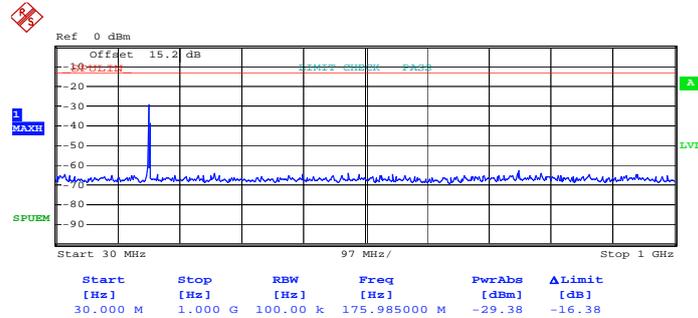


Date: 19.APR.2013 03:32:24



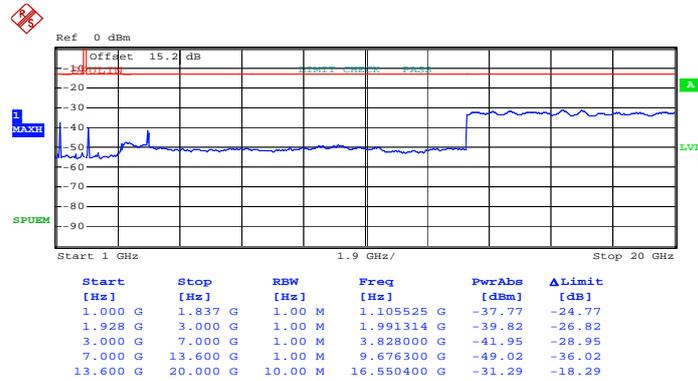
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
Frequency :	1910	Channel :	26640

Conducted Emission Plot (30MHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 19.APR.2013 03:35:03

Conducted Emission Plot (1GHz ~ 20GHz) for QPSK (RB Size 1, RB Offset 49)

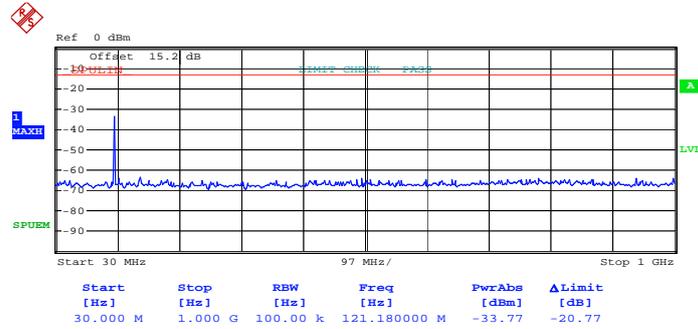


Date: 19.APR.2013 03:35:48



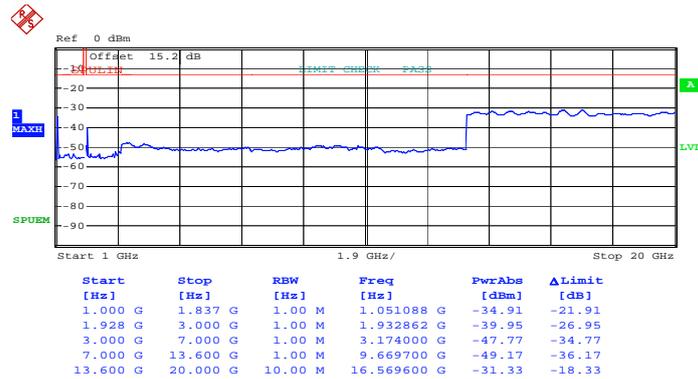
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
Frequency :	1855	Channel :	26090

Conducted Emission Plot (30MHz ~ 1GHz) for 16-QAM (RB Size 1, RB Offset 49)



Date: 19.APR.2013 03:30:27

Conducted Emission Plot (1GHz ~ 20GHz) for 16-QAM (RB Size 1, RB Offset 49)

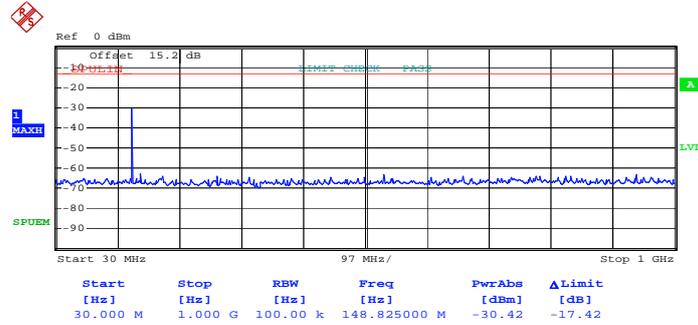


Date: 19.APR.2013 03:31:19



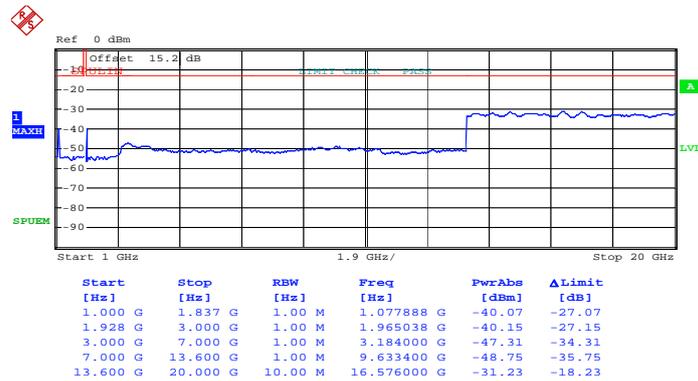
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
Frequency :	1882.5	Channel :	26365

Conducted Emission Plot (30MHz ~ 1GHz) for 16-QAM (RB Size 1, RB Offset 49)



Date: 19.APR.2013 03:33:38

Conducted Emission Plot (1GHz ~ 20GHz) for 16-QAM (RB Size 1, RB Offset 49)

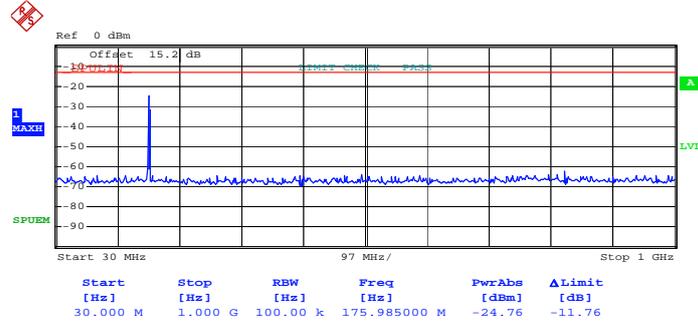


Date: 19.APR.2013 03:32:07



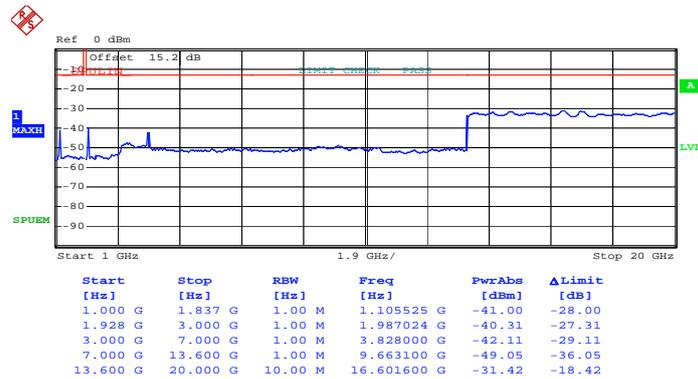
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
Frequency :	1910	Channel :	26640

Conducted Emission Plot (30MHz ~ 1GHz) for
16-QAM (RB Size 1, RB Offset 49)



Date: 19.APR.2013 03:34:50

Conducted Emission Plot (1GHz ~ 20GHz) for
16-QAM (RB Size 1, RB Offset 49)



Date: 19.APR.2013 03:36:10

3.5 Radiated Emissions Measurement

3.5.1 Description of Radiated Emissions Measurement

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.

3.5.2 Measuring Instruments

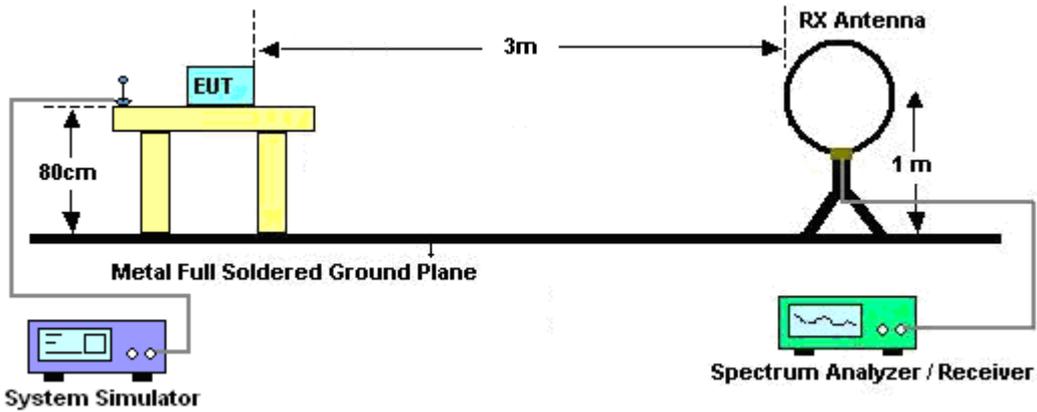
See list of measuring instruments of this test report.

3.5.3 Test Procedures

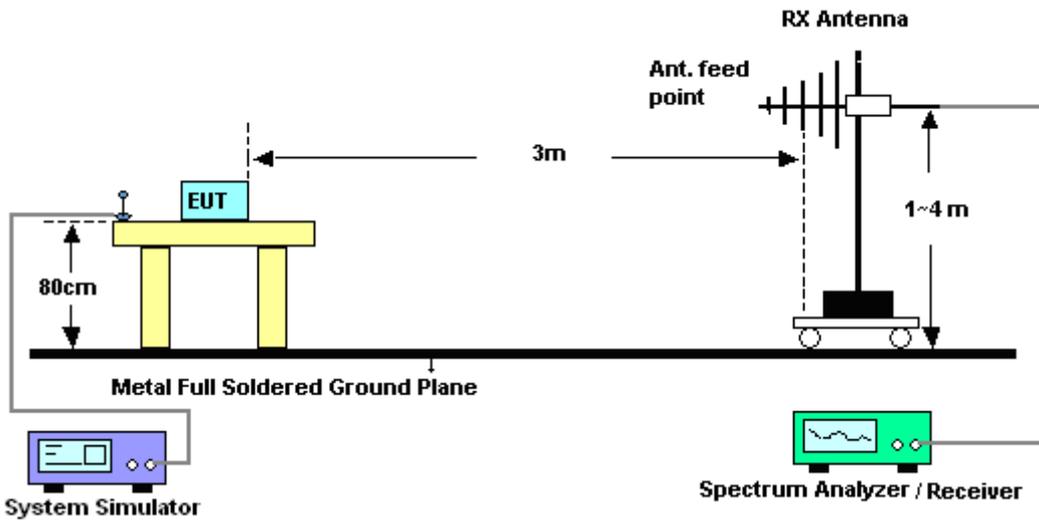
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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. Emission level (dBm) = output power + substitution Gain.

3.5.4 Test Setup

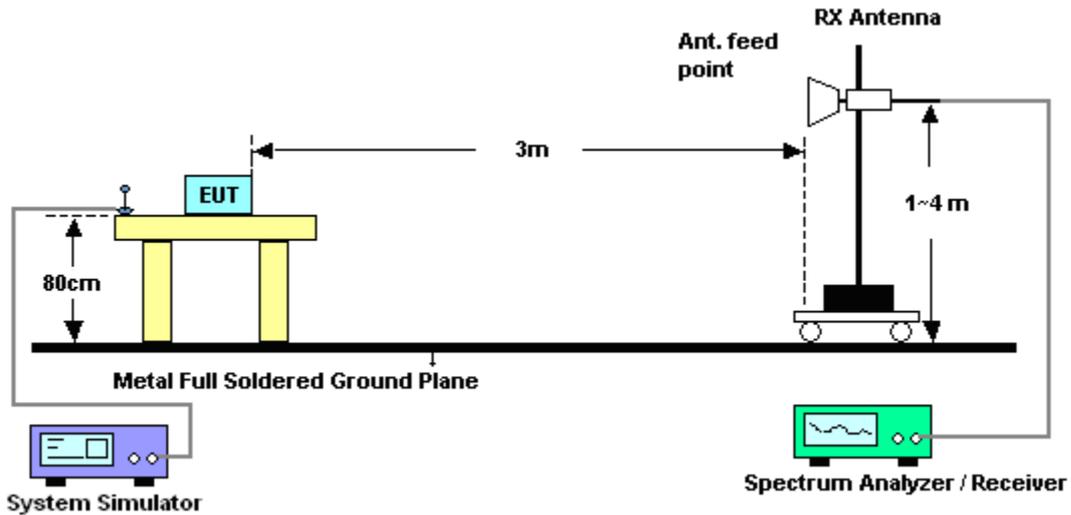
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



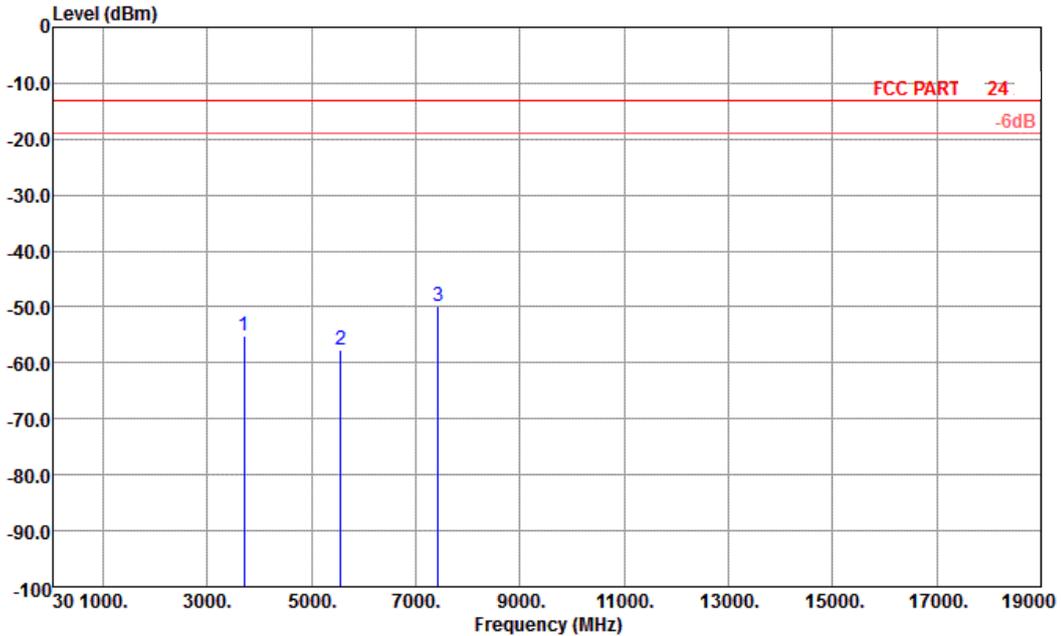
3.5.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



3.5.6 Test Result of Radiated Emissions

Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	1.4MHz, QPSK, RB Size 1, RB Offset 2	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

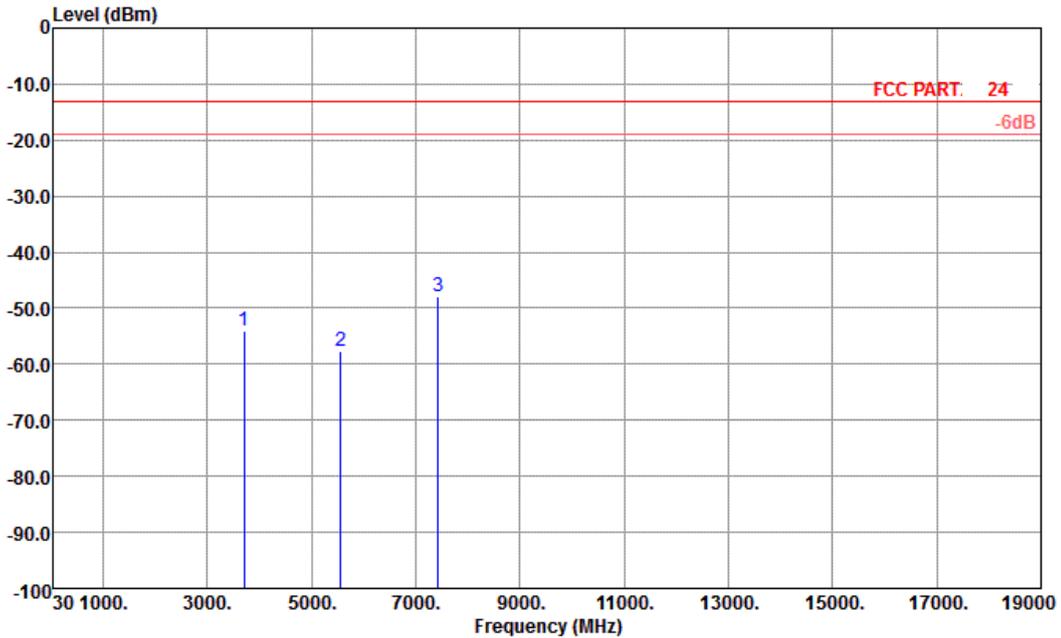


Site : 03CH01-KS
 Condition : FCC PART 24 HF EIRP FACTOR HORIZONTAL

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
3701	-55.28	-13	-42.28	-62.18	-55.93	0.57	3.37	H	Pass
5552	-57.66	-13	-44.66	-66.34	-59.89	0.78	5.16	H	Pass
7402	-49.89	-13	-36.89	-64.99	-53.53	0.87	6.66	H	Pass



Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	1.4MHz, QPSK, RB Size 1, RB Offset 2	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

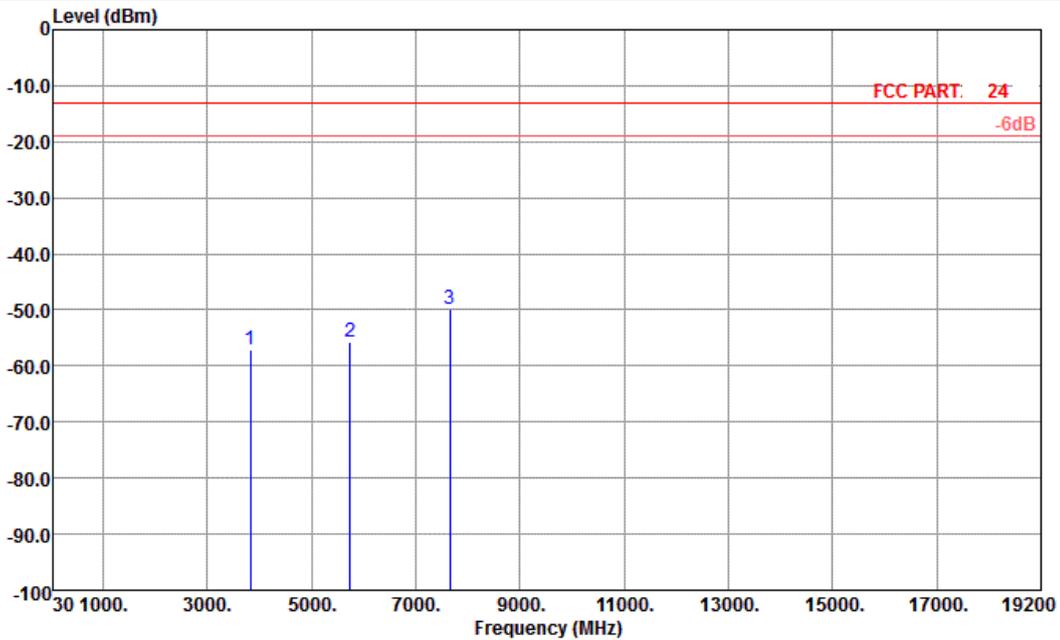


Site : 03CH01-KS
 Condition : FCC PART 24 HF EIRP FACTOR VERTICAL

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
3701	-53.93	-13	-40.93	-61.75	-54.58	0.57	3.37	V	Pass
5552	-57.62	-13	-44.62	-66.48	-59.85	0.78	5.16	V	Pass
7402	-47.94	-13	-34.94	-65.15	-51.58	0.87	6.66	V	Pass



Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	3MHz, QPSK, RB Size 1, RB Offset 7	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

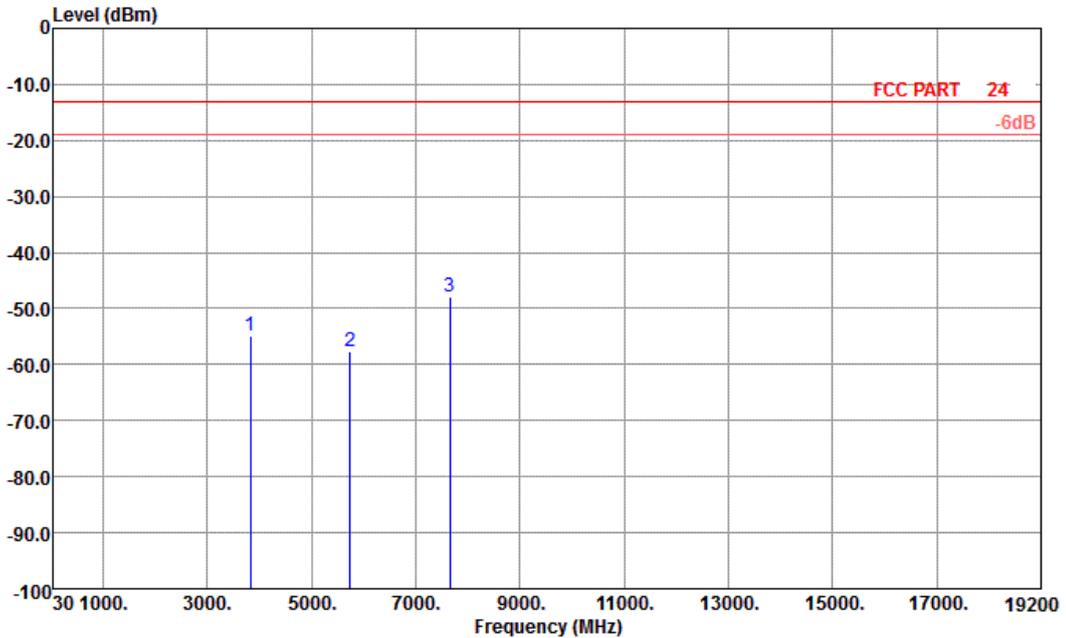


Site : 03CH01-KS
 Condition : FCC PART 24 HF EIRP FACTOR HORIZONTAL

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
3828	-57.17	-13	-44.17	-64.07	-57.82	0.57	3.37	H	Pass
5740	-55.75	-13	-42.75	-64.43	-57.98	0.78	5.16	H	Pass
7654	-49.77	-13	-36.77	-64.87	-53.41	0.87	6.66	H	Pass



Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	3MHz, QPSK, RB Size 1, RB Offset 7	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

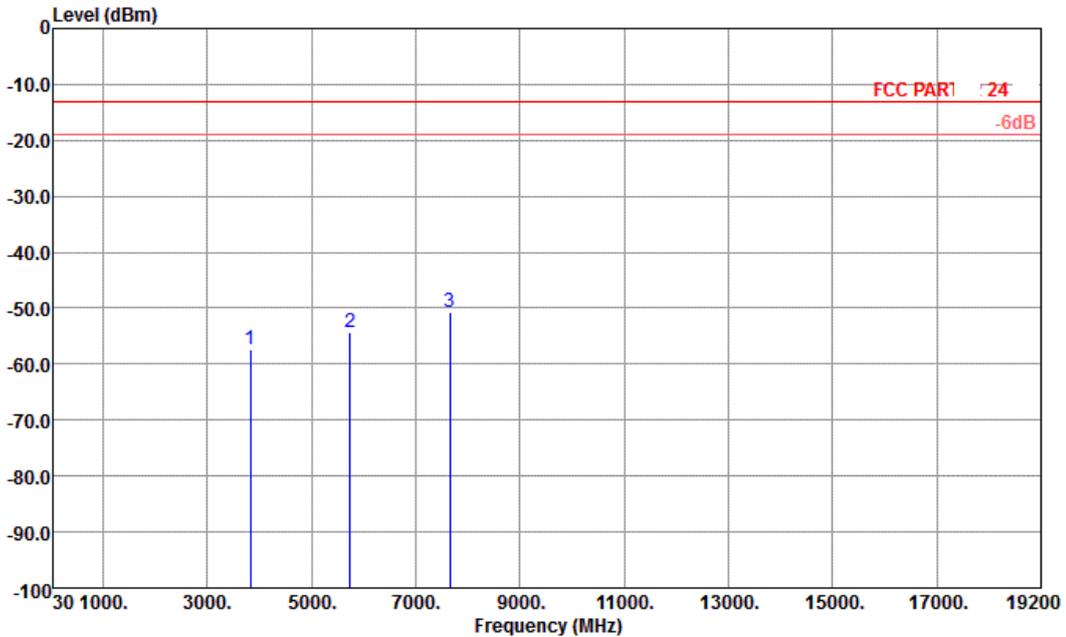


Site : 03CH01-KS
 Condition : FCC PART: 24 HF EIRP FACTOR VERTICAL

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
3828	-54.88	-13	-41.88	-62.70	-55.53	0.57	3.37	V	Pass
5740	-57.57	-13	-44.57	-66.43	-59.80	0.78	5.16	V	Pass
7654	-48.02	-13	-35.02	-65.23	-51.66	0.87	6.66	V	Pass



Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	5MHz, QPSK, RB Size 1, RB Offset 12	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

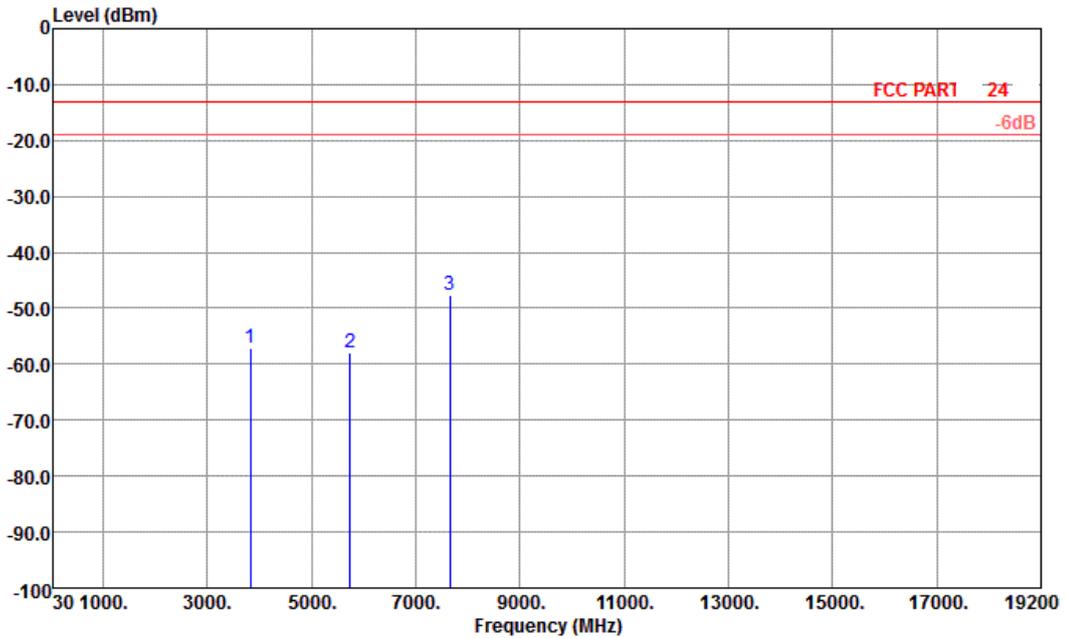


Site : 03CH01-KS
 Condition : FCC PART 24 HF EIRP FACTOR HORIZONTAL

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
3825	-57.34	-13	-44.34	-64.24	-57.99	0.57	3.37	H	Pass
5738	-54.36	-13	-41.36	-63.04	-56.59	0.78	5.16	H	Pass
7650	-50.59	-13	-37.59	-65.69	-54.23	0.87	6.66	H	Pass



Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	5MHz, QPSK, RB Size 1, RB Offset 12	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

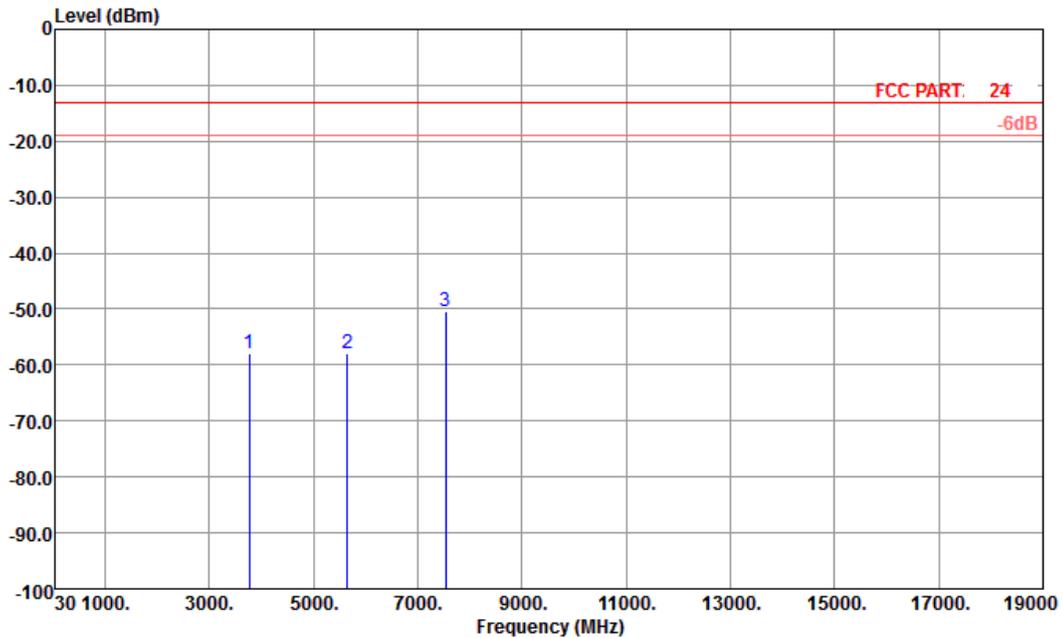


Site : 03CH01-KS
 Condition : FCC PART. 24 : HF EIRP FACTOR VERTICAL

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
3825	-57.06	-13	-44.06	-64.88	-57.71	0.57	3.37	V	Pass
5740	-57.92	-13	-44.92	-66.78	-60.15	0.78	5.16	V	Pass
7650	-47.73	-13	-34.73	-64.94	-51.37	0.87	6.66	V	Pass



Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	10MHz, QPSK, RB Size 1, RB Offset 49	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

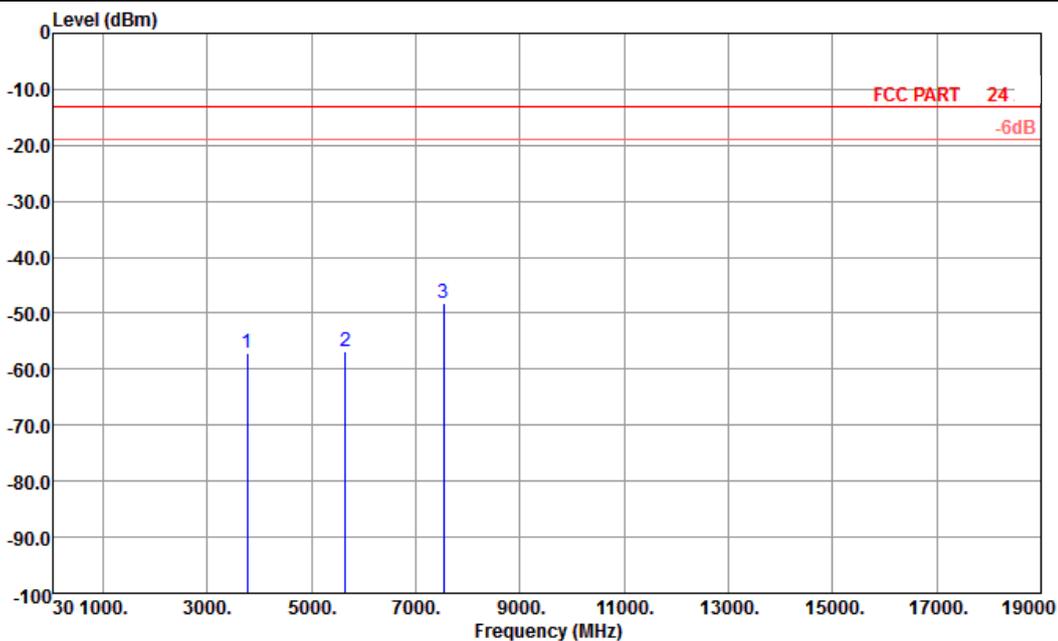


Site : 03CH01-KS
 Condition : FCC PART. 24 : HF EIRP FACTOR HORIZONTAL

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
3764	-58.07	-13	-45.07	-64.97	-58.72	0.57	3.37	H	Pass
5648	-57.87	-13	-44.87	-66.55	-60.10	0.78	5.16	H	Pass
7530	-50.48	-13	-37.48	-65.58	-54.12	0.87	6.66	H	Pass



Band :	LTE Band 25	Temperature :	22~23°C
Test Mode :	10MHz, QPSK, RB Size 1, RB Offset 49	Relative Humidity :	42~44%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH01-KS
 Condition : FCC PART 24 : HF EIRP FACTOR 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
3764	-57.00	-13	-44.00	-64.82	-57.65	0.57	3.37	V	Pass
5648	-56.73	-13	-43.73	-65.59	-58.96	0.78	5.16	V	Pass
7530	-48.24	-13	-35.24	-65.45	-51.88	0.87	6.66	V	Pass

3.6 Frequency Stability Measurement

3.6.1 Description of Frequency Stability Measurement

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency band. For equipment authorization purposes, this is a reporting requirement only.

3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

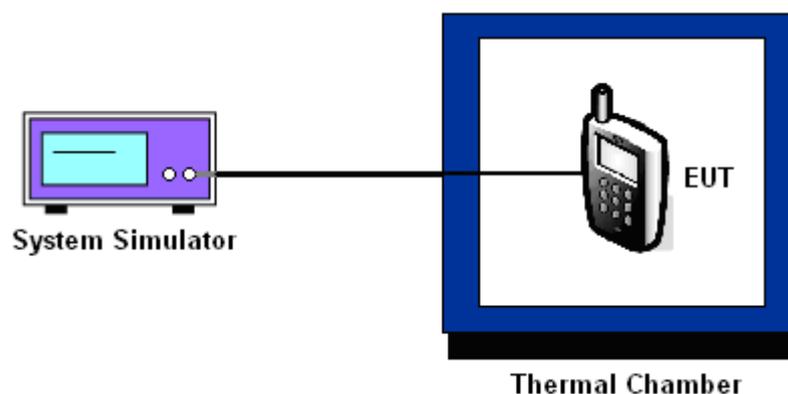
3.6.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. If the EUT cannot be turned on at -30°C , the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

3.6.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case

3.6.5 Test Setup





3.6.6 Test Result of Temperature Variation

Band :	LTE Band 25	Limit (ppm) :	2.5
Mode :	QPSK		

Temperature (°C)	1.4MHz		3MHz		5MHz		10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)							
-30	1.9	0.003	5.6	0.008	-3.5	-0.005	4.7	0.007	PASS
-20	4.9	0.007	2.2	0.003	1.9	0.003	4.9	0.007	
-10	-0.1	0.001	0.9	0.001	2.2	0.003	-0.1	0.001	
0	4.7	0.007	-6.3	-0.009	-2.8	-0.004	5.6	0.008	
10	5.6	0.008	-4.8	-0.007	-3.6	-0.005	-0.1	0.001	
20	-4.5	-0.006	1.6	0.002	4.1	0.006	4.7	0.007	
30	-6.8	-0.010	4.3	0.006	2.2	0.003	-2.9	-0.004	
40	-2.9	-0.004	2.6	0.004	2.9	0.004	4.7	0.007	
50	4.6	0.006	3.7	0.005	-1.0	-0.001	5.6	0.008	
55	5.2	0.007	4.3	0.006	2.3	0.003	-1.7	-0.002	

Band :	LTE Band 25	Limit (ppm) :	2.5
Mode :	16QAM		

Temperature (°C)	1.4MHz		3MHz		5MHz		10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)							
-30	-9.6	-0.014	-7.3	-0.010	8.6	0.012	7.1	0.010	PASS
-20	-7.9	-0.011	-8.4	-0.012	5.6	0.008	-10.3	-0.015	
-10	6.4	0.009	-6.4	-0.009	-2.9	-0.004	-7.4	-0.010	
0	3.0	0.004	-2.9	-0.004	6.8	0.010	-6.7	-0.009	
10	3.0	0.004	6.8	0.010	-4.8	-0.007	-8.1	-0.011	
20	-7.9	-0.011	-4.8	-0.007	0.9	0.001	-8.4	-0.012	
30	-0.1	0.001	-1.3	-0.002	-6.3	-0.009	-7.6	-0.011	
40	-0.1	0.001	-6.3	-0.009	5.6	0.008	-8.4	-0.012	
50	-4.9	-0.007	4.0	0.006	5.6	0.008	-6.7	-0.009	
55	6.4	0.009	-8.2	-0.012	3.1	0.004	7.8	0.011	



3.6.7 Test Result of Voltage Variation

Band	Mode	Band Width	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 25	QPSK	1.4MHz	3.80	-2.4	-0.003	2.5	PASS
			3.60	-4.5	-0.006		
			4.35	-6.8	-0.010		
		3MHz	3.80	-6.3	-0.009		
			3.60	4.7	0.007		
			4.35	-2.9	-0.004		
		5MHz	3.80	-6.0	-0.008		
			3.60	-3.0	-0.004		
			4.35	4.3	0.006		
		10MHz	3.80	-2.9	-0.004		
			3.60	2.2	0.003		
			4.35	3.7	0.005		
	16QAM	1.4MHz	3.80	3.8	0.005		
			3.60	4.2	0.006		
			4.35	5.5	0.008		
		3MHz	3.80	-6.0	-0.008		
			3.60	2.9	0.004		
			4.35	2.6	0.004		
		5MHz	3.80	-3.3	-0.005		
			3.60	-5.8	-0.008		
			4.35	-2.5	-0.004		
		10MHz	3.80	3.0	0.004		
			3.60	4.4	0.006		
			4.35	-5.2	-0.007		

Remark:

1. Normal Voltage = 3.80V.
2. Battery End Point (BEP) = 3.60 V.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 29, 2012	Apr. 19, 2013~ Apr. 24, 2013	Dec. 28, 2013	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV30	100845	9kHz~30GHz	Nov. 06, 2012	Apr. 19, 2013~ Apr. 24, 2013	Nov. 05, 2013	Conducted (TH01-KS)
LTE Base Station	Anritsu	MT8820C	6201074235	LTE_FDD full band	Dec. 29, 2012	Apr. 19, 2013~ Apr. 24, 2013	Dec. 28, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Apr. 19, 2013~ Apr. 24, 2013	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 29, 2012	Apr. 19, 2013~ Apr. 24, 2013	Dec. 28, 2013	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Apr. 17, 2013	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	Jun. 01, 2012	Apr. 17, 2013	May 31, 2013	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2012	Apr. 17, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2013	Apr. 17, 2013	Jan. 05, 2014	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	Apr. 17, 2013	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 29, 2012	Apr. 17, 2013	Dec. 28, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170249	15GHz~40GHz	Nov. 23, 2012	Apr. 17, 2013	Nov. 22, 2013	Radiation (03CH01-KS)
HFH2-Z2 Loop Antenna	R&S	HFH2-Z2	100321	9KHZ-30MHZ	Oct. 22, 2012	Apr. 17, 2013	Oct. 21, 2013	Radiation (03CH01-KS)
LTE Base Station	Anritsu	MT8820C	6201074235	LTE_FDD full band	Dec. 29, 2012	Apr. 17, 2013	Dec. 28, 2013	Radiation (03CH01-KS)



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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Appendix A. Photographs of EUT

Please refer to Sporton report number EP320404 as below.