

FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : CDMA/LTE Multi-Mode Digital Mobile Phone
BRAND NAME : ZTE
MODEL NAME : ZTE N9810
FCC ID : Q78-ZTEN9810
STANDARD : FCC 47 CFR Part 2, 24(E)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Dec. 18, 2012 and completely tested on Jan. 19, 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	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	NA	Conducted Output Power	NA	PASS	-
3.1	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	EIRP < 2 Watt	PASS	-
3.2	§24.232(d)	RSS-133(6.4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§2.1049 §24.238(a)	N/A	Occupied Bandwidth	NA	PASS	-
3.4	§2.1051 §24.238(a)	RSS-133 (6.5.1)	Emission Mask Measurement	< 43+10log ₁₀ (P[Watts])	PASS	-
3.4	§2.1051 §24.238(a)	RSS-133 (6.5.1)	Conducted Spurious Emission	< 43+10log ₁₀ (P[Watts])	PASS	-
3.5	§2.1053 §24.238(a)	RSS-133 (6.5.1)	Undesirable Out of Band Emissions	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 28.40 dB at 5732.000 MHz
3.6	§2.1055 §24.235	RSS-133 (6.3)	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 N9810
FCC ID	Q78-ZTEN9810
EUT supports Radios application	CDMA/EV-DO/LTE/WLAN 11abgn/ Bluetooth/Bluetooth4.0 – LE/NFC
HW Version	c9zB
SW Version	N9810V1.0.0B01
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	1850.7 MHz ~ 1914.3 MHz
Rx Frequency	1930.7 MHz ~ 1994.3 MHz
Bandwidth	1.4MHz / 3MHz / 5MHz/ 10MHz
Maximum Output Power to Antenna	23.89 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	0.2254 W	0.016	1M10G7D
Part 24E	LTE Band 25	16QAM	1.4MHz	0.1849 W	0.015	1M10D7W
Part 24E	LTE Band 25	QPSK	3MHz	0.2399 W	0.017	2M74G7D
Part 24E	LTE Band 25	16QAM	3MHz	0.1959 W	0.019	2M74D7W
Part 24E	LTE Band 25	QPSK	5MHz	0.2193 W	0.017	4M50G7D
Part 24E	LTE Band 25	16QAM	5MHz	0.1932 W	0.016	4M50D7W
Part 24E	LTE Band 25	QPSK	10MHz	0.2178 W	0.017	9M12G7D
Part 24E	LTE Band 25	16QAM	10MHz	0.1750 W	0.016	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	149928/4086E-1

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st 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	
Test Site No.	Sporton Site No.	FCC/IC Registration No.
	03CH05-HY	722060/4086B-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.

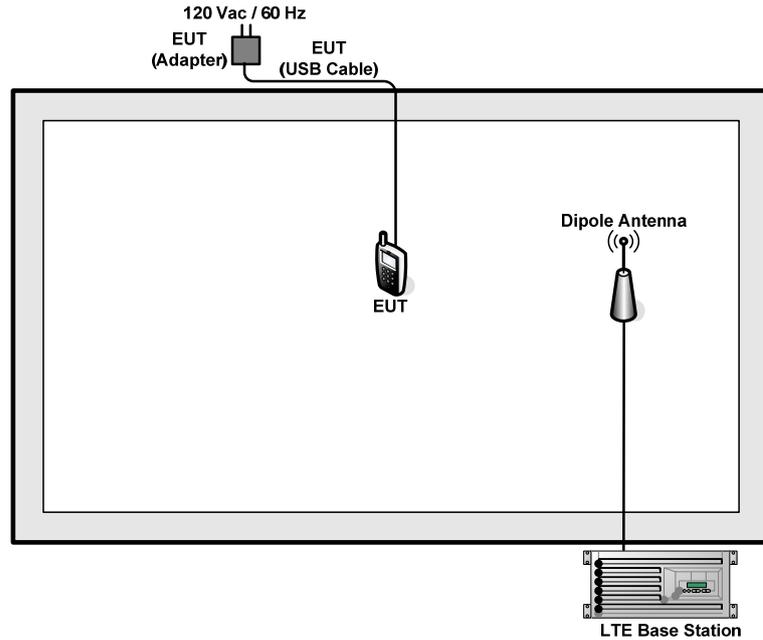
Test Modes			
Band		Radiated TCs	Conducted TCs
LTE Band 25	BW 1.4MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 0) QPSK Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1, RB Offset 0) Link ■ LTE (RB Size 1, RB Offset 2) Link ■ LTE (RB Size 1, RB Offset 5) Link ■ LTE (RB Size 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 0) 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 0) 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 0) 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.	LTE Base Station	R&S	CMW500	N/A	N/A	Unshielded, 1.8 m
3.	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:

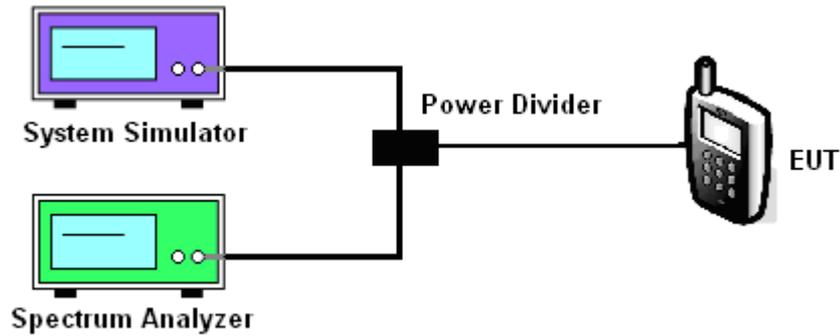
1. The RF output of the transmitter was connected to base station simulator.
2. Set EUT at maximum average power by base station simulator.
3. Measure lowest, middle, and highest channels for each bandwidth and different modulation.

For Effective Isotropic Radiated Power Measurement:

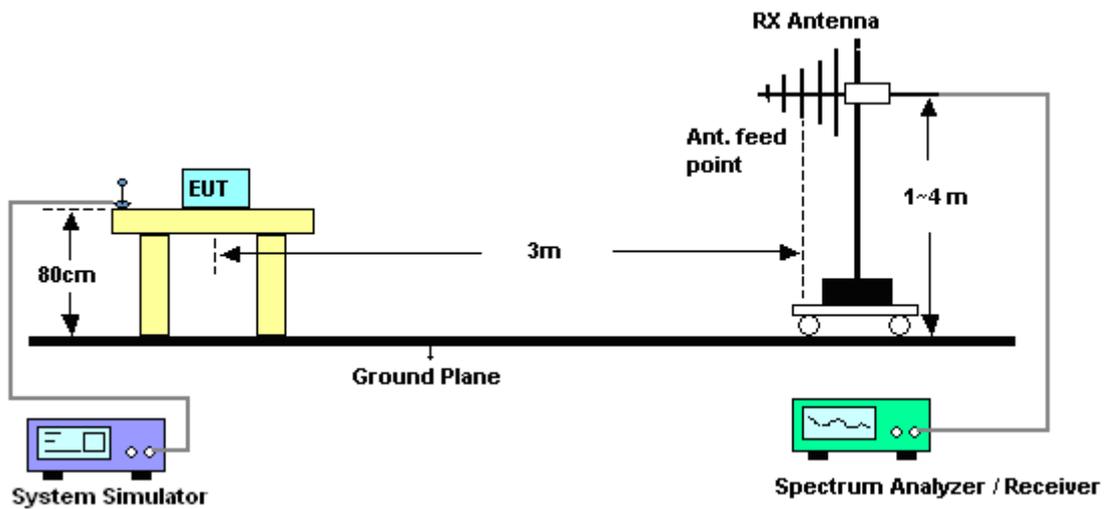
1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m.
2. During the measurement, the EUT was enforced in maximum power. The highest emission was recorded from analyzer power 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	23.89	0.2449	
					1	2	23.85	0.2427	
					1	5	23.83	0.2415	
					3	0	23.81	0.2404	
					3	1	23.86	0.2432	
					3	2	23.84	0.2421	
				6	0	22.96	0.1977		
				16-QAM	1	0	22.91	0.1954	
					1	2	22.86	0.1932	
					1	5	22.79	0.1901	
					3	0	22.84	0.1923	
					3	1	22.82	0.1914	
		3	2		22.85	0.1928			
		26365	1882.5	QPSK	1882.5	1	0	23.85	0.2427
						1	2	23.81	0.2404
						1	5	23.76	0.2377
						3	0	23.80	0.2399
						3	1	23.75	0.2371
						3	2	23.81	0.2404
				6	0	22.80	0.1905		
				16-QAM	1	0	22.85	0.1928	
					1	2	22.73	0.1875	
					1	5	22.68	0.1854	
					3	0	22.81	0.1910	
					3	1	22.83	0.1919	
		3	2		22.69	0.1858			
		26683	1914.3	QPSK	1914.3	1	0	23.87	0.2438
						1	2	23.86	0.2432
						1	5	23.79	0.2393
						3	0	23.86	0.2432
3	1					23.82	0.2410		
3	2					23.84	0.2421		
6	0			22.87	0.1936				
16-QAM	1			0	22.79	0.1901			
	1			2	22.72	0.1871			
	1			5	22.70	0.1862			
	3			0	22.65	0.1841			
	3			1	22.53	0.1791			
	3	2	22.50	0.1778					
6	0	21.86	0.1535						



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	23.85	0.2427
					1	7	23.83	0.2415
					1	14	23.76	0.2377
					8	0	22.87	0.1936
					8	4	22.83	0.1919
					8	7	22.80	0.1905
					15	0	22.85	0.1928
		16-QAM	1	0	22.83	0.1919		
			1	7	22.76	0.1888		
			1	14	22.71	0.1866		
			8	0	21.79	0.1510		
			8	4	21.73	0.1489		
			8	7	21.75	0.1496		
			15	0	21.78	0.1507		
	26365	1882.5	QPSK	1	0	23.78	0.2388	
				1	7	23.65	0.2317	
				1	14	23.71	0.2350	
				8	0	22.82	0.1914	
				8	4	22.87	0.1936	
				8	7	22.76	0.1888	
				15	0	22.83	0.1919	
	16-QAM	1	0	22.57	0.1807			
		1	7	22.42	0.1746			
		1	14	22.38	0.1730			
		8	0	21.70	0.1479			
		8	4	21.76	0.1500			
		8	7	21.64	0.1459			
15		0	21.72	0.1486				
26675	1913.5	QPSK	1	0	23.86	0.2432		
			1	7	23.81	0.2404		
			1	14	23.75	0.2371		
			8	0	22.89	0.1945		
			8	4	22.87	0.1936		
			8	7	22.83	0.1919		
			15	0	22.79	0.1901		
16-QAM	1	0	22.79	0.1901				
	1	7	22.72	0.1871				
	1	14	22.65	0.1841				
	8	0	21.86	0.1535				
	8	4	21.82	0.1521				
	8	7	21.75	0.1496				
	15	0	21.68	0.1472				



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	23.86	0.2432
					1	12	23.81	0.2404
					1	24	23.78	0.2388
					12	0	22.87	0.1936
					12	6	22.85	0.1928
					12	11	22.88	0.1941
				25	0	22.73	0.1875	
				16-QAM	1	0	22.71	0.1866
					1	12	22.69	0.1858
					1	24	22.58	0.1811
					12	0	21.86	0.1535
					12	6	21.83	0.1524
		12	11		21.78	0.1507		
		26365	1882.5	QPSK	1	0	23.69	0.2339
					1	12	23.63	0.2307
					1	24	23.65	0.2317
					12	0	22.80	0.1905
					12	6	22.81	0.1910
					12	11	22.76	0.1888
				25	0	22.72	0.1871	
				16-QAM	1	0	22.55	0.1799
					1	12	22.53	0.1791
					1	24	22.46	0.1762
					12	0	21.74	0.1493
					12	6	21.68	0.1472
		12	11		21.63	0.1455		
		26665	1912.5	QPSK	1	0	23.87	0.2438
					1	12	23.76	0.2377
					1	24	23.73	0.2360
					12	0	22.84	0.1923
12	6				22.81	0.1910		
12	11				22.79	0.1901		
25	0			22.83	0.1919			
16-QAM	1			0	22.78	0.1897		
	1			12	22.73	0.1875		
	1			24	22.69	0.1858		
	12			0	21.88	0.1542		
	12			6	21.82	0.1521		
	12	11	21.76	0.1500				
25	0	21.78	0.1507					



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	23.85	0.2427
					1	24	23.84	0.2421
					1	49	23.78	0.2388
					25	0	22.81	0.1910
					25	12	22.78	0.1897
					25	24	22.76	0.1888
				50	0	22.63	0.1832	
				16-QAM	1	0	22.81	0.1910
					1	24	22.85	0.1928
					1	49	22.79	0.1901
					25	0	21.68	0.1472
					25	12	21.61	0.1449
		25	24		21.78	0.1507		
		26365	1882.5	QPSK	1	0	23.87	0.2438
					1	24	23.83	0.2415
					1	49	23.78	0.2388
					25	0	22.84	0.1923
					25	12	22.77	0.1892
					25	24	22.74	0.1879
				50	0	22.65	0.1841	
				16-QAM	1	0	22.87	0.1936
					1	24	22.86	0.1932
					1	49	22.76	0.1888
					25	0	21.60	0.1445
					25	12	21.66	0.1466
		25	24		21.58	0.1439		
		26640	1910	QPSK	1	0	23.74	0.2366
					1	24	23.65	0.2317
					1	49	23.69	0.2339
					25	0	22.69	0.1858
25	12				22.75	0.1884		
25	24				22.76	0.1888		
50	0			22.60	0.1820			
16-QAM	1			0	22.86	0.1932		
	1			24	22.84	0.1923		
	1			49	22.82	0.1914		
	25			0	21.72	0.1486		
	25			12	21.66	0.1466		
	25	24	21.78	0.1507				
50	0	21.57	0.1435					



3.1.6 Test Result of EIRP

LTE Band 25 Radiated Power EIRP										
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset						
25	1.4	QPSK	1	0	1850.7	-20.00	41.51	21.51	0.1416	H
25	1.4	QPSK	1	0	1882.5	-18.38	41.91	23.53	0.2254	H
25	1.4	QPSK	1	0	1914.3	-19.73	41.73	22.00	0.1585	H
25	1.4	QPSK	1	0	1850.7	-21.39	42.78	21.39	0.1377	V
25	1.4	QPSK	1	0	1882.5	-23.20	43.75	20.55	0.1135	V
25	1.4	QPSK	1	0	1914.3	-24.52	43.06	18.54	0.0714	V
25	1.4	16QAM	1	0	1850.7	-20.63	41.51	20.88	0.1225	H
25	1.4	16QAM	1	0	1882.5	-19.24	41.91	22.67	0.1849	H
25	1.4	16QAM	1	0	1914.3	-20.55	41.73	21.18	0.1312	H
25	1.4	16QAM	1	0	1850.7	-22.14	42.78	20.64	0.1159	V
25	1.4	16QAM	1	0	1882.5	-24.16	43.75	19.59	0.0910	V
25	1.4	16QAM	1	0	1914.3	-25.42	43.06	17.64	0.0581	V
25	3	QPSK	1	0	1851.5	-20.05	41.48	21.43	0.1390	H
25	3	QPSK	1	0	1882.5	-18.11	41.91	23.80	0.2399	H
25	3	QPSK	1	0	1913.5	-19.56	41.59	22.03	0.1596	H
25	3	QPSK	1	0	1851.5	-21.33	42.69	21.36	0.1368	V
25	3	QPSK	1	0	1882.5	-23.05	43.75	20.70	0.1175	V
25	3	QPSK	1	0	1913.5	-24.10	43.02	18.92	0.0780	V
25	3	16QAM	1	0	1851.5	-21.04	41.48	20.44	0.1107	H
25	3	16QAM	1	0	1882.5	-18.99	41.91	22.92	0.1959	H
25	3	16QAM	1	0	1913.5	-20.66	41.59	20.93	0.1239	H
25	3	16QAM	1	0	1851.5	-22.28	42.69	20.41	0.1099	V
25	3	16QAM	1	0	1882.5	-23.84	43.75	19.91	0.0979	V
25	3	16QAM	1	0	1913.5	-24.99	43.02	18.03	0.0635	V



LTE Band 25 Radiated Power EIRP										
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset						
25	5	QPSK	1	0	1852.5	-20.55	41.44	20.89	0.1227	H
25	5	QPSK	1	0	1882.5	-18.50	41.91	23.41	0.2193	H
25	5	QPSK	1	0	1912.5	-19.94	41.59	21.65	0.1462	H
25	5	QPSK	1	0	1852.5	-21.90	42.69	20.79	0.1199	V
25	5	QPSK	1	0	1882.5	-23.67	43.75	20.08	0.1019	V
25	5	QPSK	1	0	1912.5	-24.90	43.02	18.12	0.0649	V
25	5	16QAM	1	0	1852.5	-21.12	41.44	20.32	0.1076	H
25	5	16QAM	1	0	1882.5	-19.05	41.91	22.86	0.1932	H
25	5	16QAM	1	0	1912.5	-20.48	41.59	21.11	0.1291	H
25	5	16QAM	1	0	1852.5	-22.55	42.69	20.14	0.1033	V
25	5	16QAM	1	0	1882.5	-24.19	43.75	19.56	0.0904	V
25	5	16QAM	1	0	1912.5	-25.60	43.02	17.42	0.0552	V
25	10	QPSK	1	0	1855.0	-20.95	41.56	20.61	0.1151	H
25	10	QPSK	1	0	1882.5	-18.53	41.91	23.38	0.2178	H
25	10	QPSK	1	0	1910.0	-19.75	41.73	21.98	0.1578	H
25	10	QPSK	1	0	1855.0	-22.44	42.78	20.34	0.1081	V
25	10	QPSK	1	0	1882.5	-24.08	43.75	19.67	0.0927	V
25	10	QPSK	1	0	1910.0	-24.37	43.06	18.69	0.0740	V
25	10	16QAM	1	24	1855.0	-21.05	41.56	20.51	0.1125	H
25	10	16QAM	1	0	1882.5	-19.48	41.91	22.43	0.1750	H
25	10	16QAM	1	0	1910.0	-20.54	41.73	21.19	0.1315	H
25	10	16QAM	1	24	1855.0	-23.05	42.78	19.73	0.0940	V
25	10	16QAM	1	0	1882.5	-24.99	43.75	18.76	0.0752	V
25	10	16QAM	1	0	1910.0	-25.13	43.06	17.93	0.0621	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.

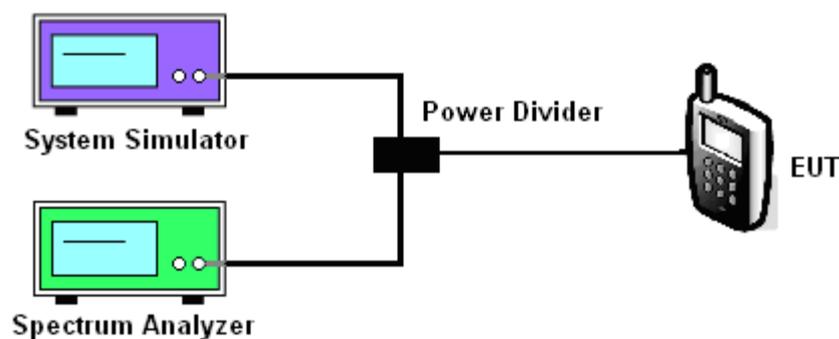
3.2.2 Measuring Instruments

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





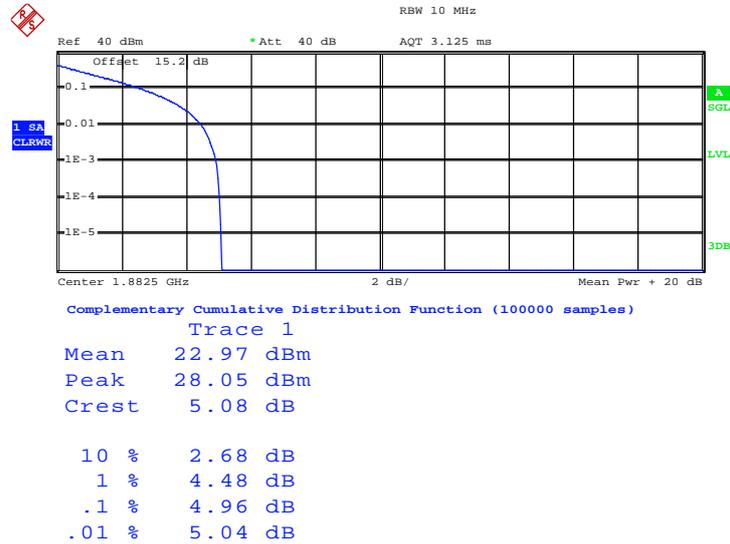
3.2.5 Test Result of Peak-to-Average Ratio

Band	Band Width	Channel	Frequency (MHz)	Modulation	PAR (dB)
LTE Band 25	1.4MHz	26365	1882.5	QPSK	4.96
				16-QAM	5.84
	3MHz	26365	1882.5	QPSK	5.04
				16-QAM	5.88
	5MHz	26365	1882.5	QPSK	5.28
				16-QAM	6.04
	10MHz	26365	1882.5	QPSK	5.40
				16-QAM	6.36



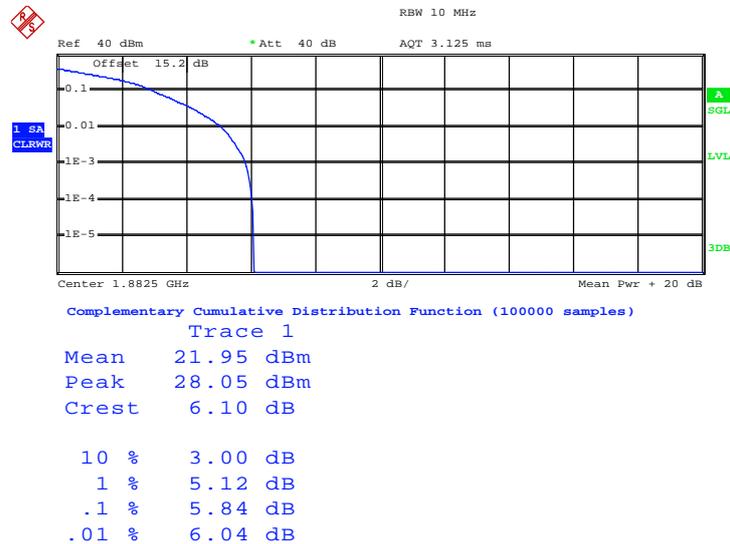
Band:	LTE Band 25	Bandwidth:	1.4MHz
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Peak-to-Average Ratio for QPSK-RB Size 6, RB Offset 0



Date: 14.JAN.2013 12:39:24

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

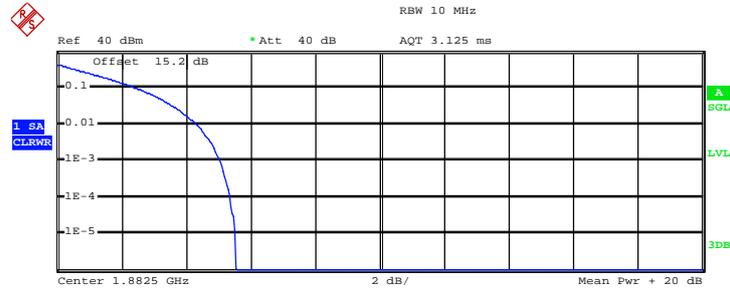


Date: 14.JAN.2013 12:39:36



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 22.86 dBm
 Peak 28.40 dBm
 Crest 5.54 dB

10 % 2.52 dB
 1 % 4.36 dB
 .1 % 5.04 dB
 .01 % 5.36 dB

Date: 14.JAN.2013 12:39:05

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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1
 Mean 21.94 dBm
 Peak 28.33 dBm
 Crest 6.40 dB

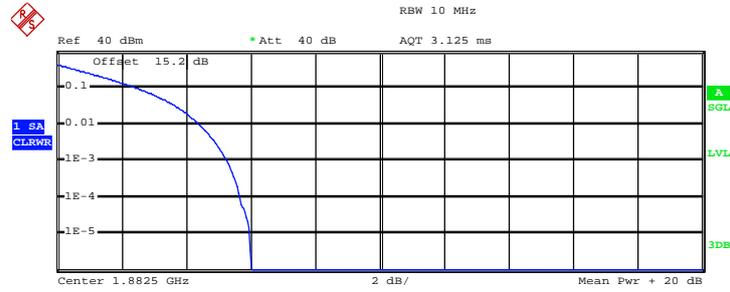
10 % 3.04 dB
 1 % 5.12 dB
 .1 % 5.88 dB
 .01 % 6.20 dB

Date: 14.JAN.2013 12:38:50



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



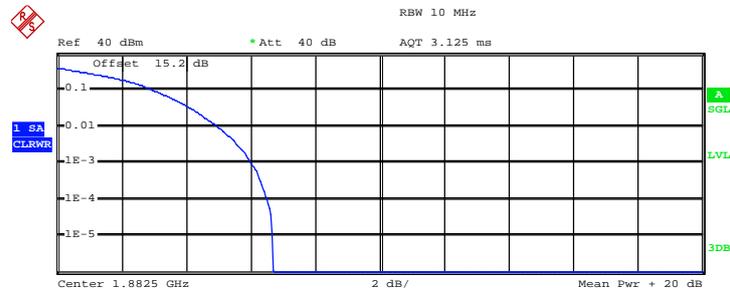
Complementary Cumulative Distribution Function (100000 samples)

Trace 1
Mean 22.76 dBm
Peak 28.76 dBm
Crest 6.00 dB

10 % 2.56 dB
1 % 4.44 dB
.1 % 5.28 dB
.01 % 5.68 dB

Date: 14.JAN.2013 12:38:17

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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1
Mean 21.65 dBm
Peak 28.33 dBm
Crest 6.68 dB

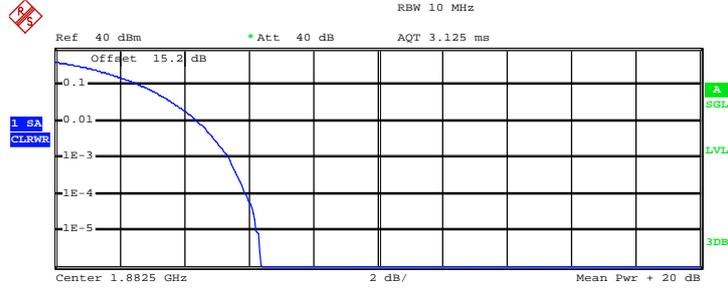
10 % 3.04 dB
1 % 5.00 dB
.1 % 6.04 dB
.01 % 6.52 dB

Date: 14.JAN.2013 12:38:29



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



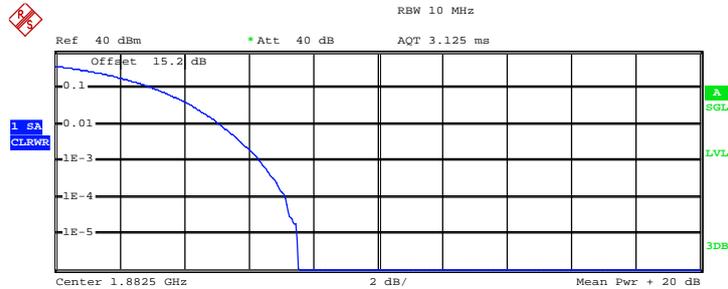
Complementary Cumulative Distribution Function (100000 samples)

Trace 1
Mean 22.39 dBm
Peak 28.76 dBm
Crest 6.37 dB

10 % 2.68 dB
1 % 4.44 dB
.1 % 5.40 dB
.01 % 5.92 dB

Date: 14.JAN.2013 12:37:43

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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1
Mean 21.30 dBm
Peak 28.83 dBm
Crest 7.53 dB

10 % 3.12 dB
1 % 5.12 dB
.1 % 6.36 dB
.01 % 7.16 dB

Date: 14.JAN.2013 12:37:28

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.

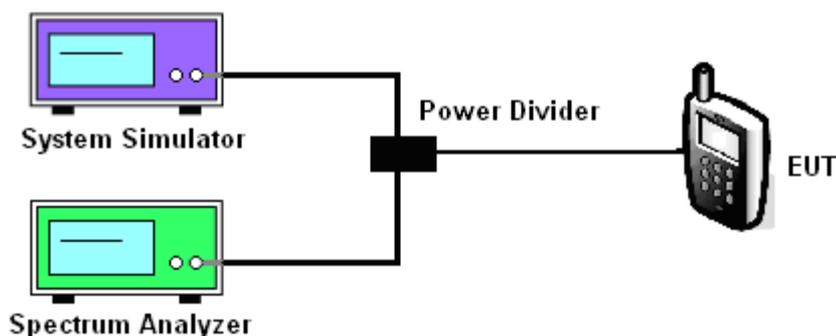
3.3.2 Measuring Instruments

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



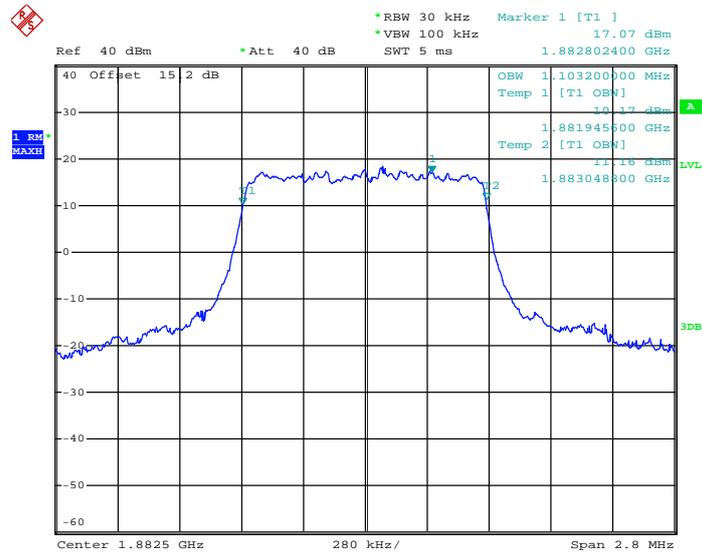
3.3.6 Test Result of 99% Occupied Bandwidth and 26dB Bandwidth

Band	Band Width	Channel	Frequency (MHz)	Modulation	99%Bandwidth (MHz)	26dB Bandwidth (MHz)
LTE Band 25	1.4MHz	26365	1882.5	QPSK	1.1032	1.3216
				16-QAM	1.1032	1.3104
	3MHz	26365	1882.5	QPSK	2.7360	3.1320
				16-QAM	2.7360	3.1440
	5MHz	26365	1882.5	QPSK	4.5000	5.1600
				16-QAM	4.5000	5.0800
	10MHz	26365	1882.5	QPSK	9.1200	10.2400
				16-QAM	9.0800	10.2400

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

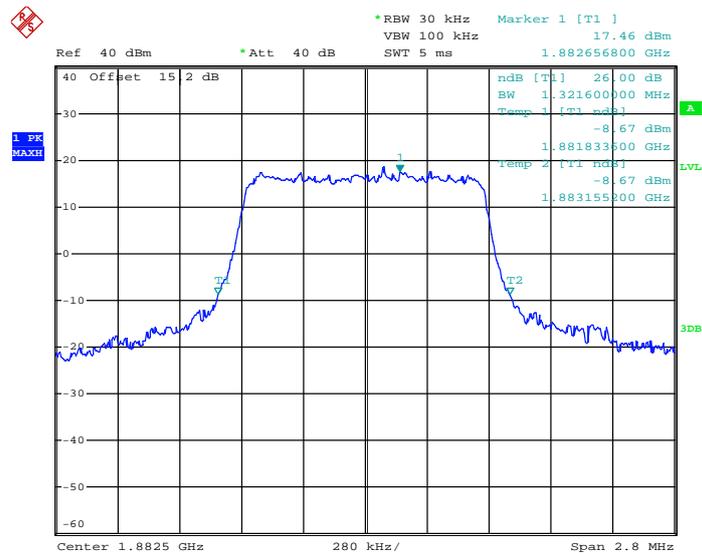
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 6, RB Offset 0**



Date: 14.JAN.2013 14:05:21

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

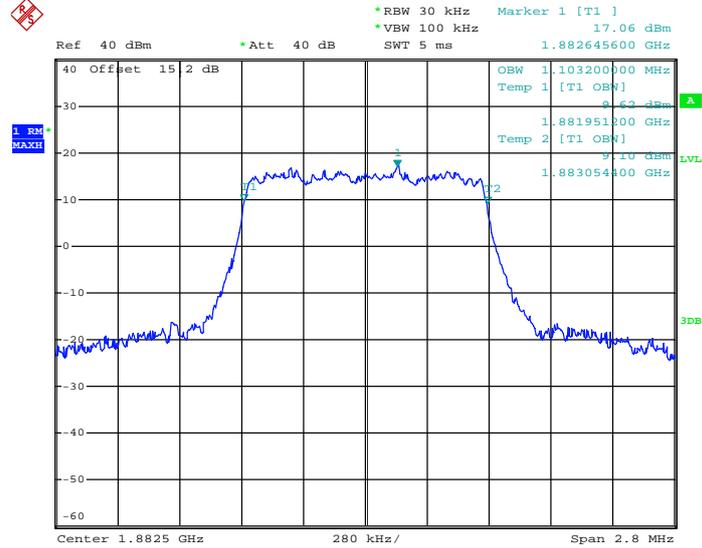


Date: 14.JAN.2013 12:30:16



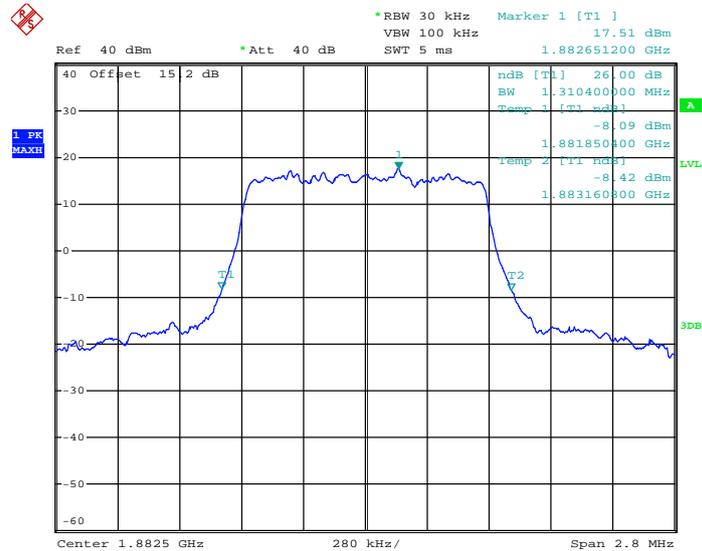
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 6, RB Offset 0**



Date: 14.JAN.2013 14:05:48

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

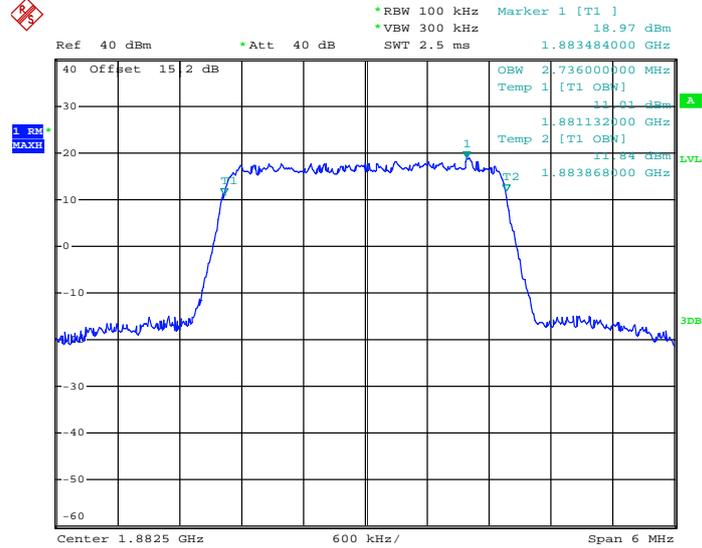


Date: 14.JAN.2013 12:29:53



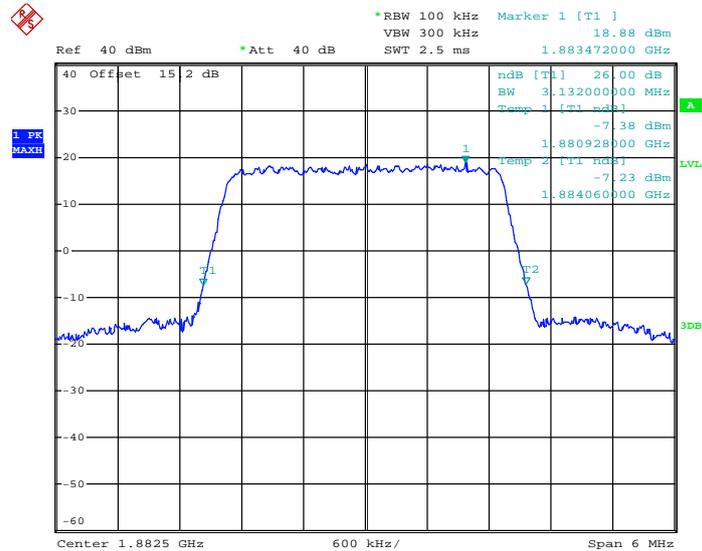
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 15, RB Offset 0**



Date: 14.JAN.2013 12:50:46

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

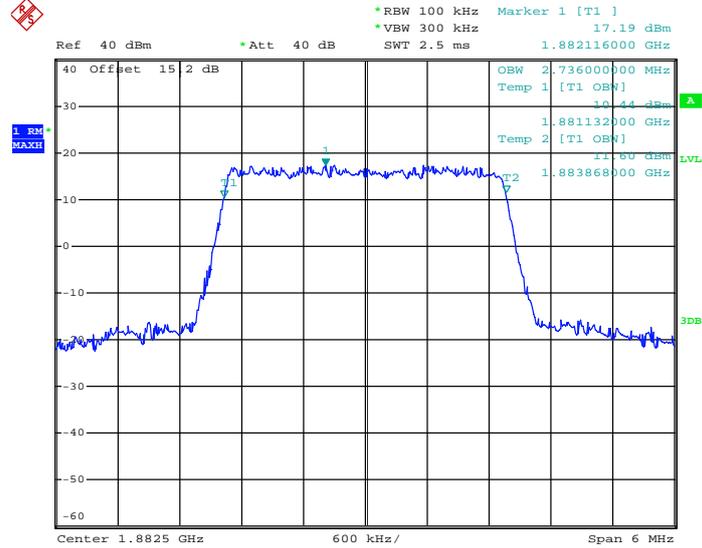


Date: 14.JAN.2013 12:30:58



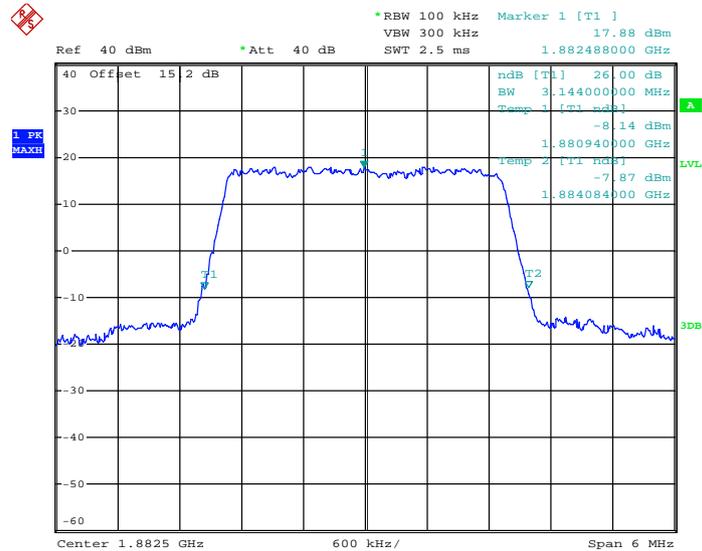
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 15, RB Offset 0**



Date: 14.JAN.2013 12:50:04

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

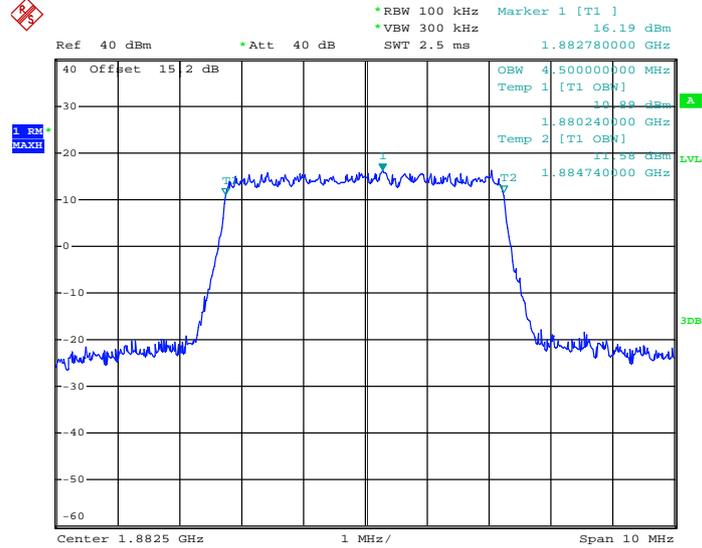


Date: 14.JAN.2013 12:31:41



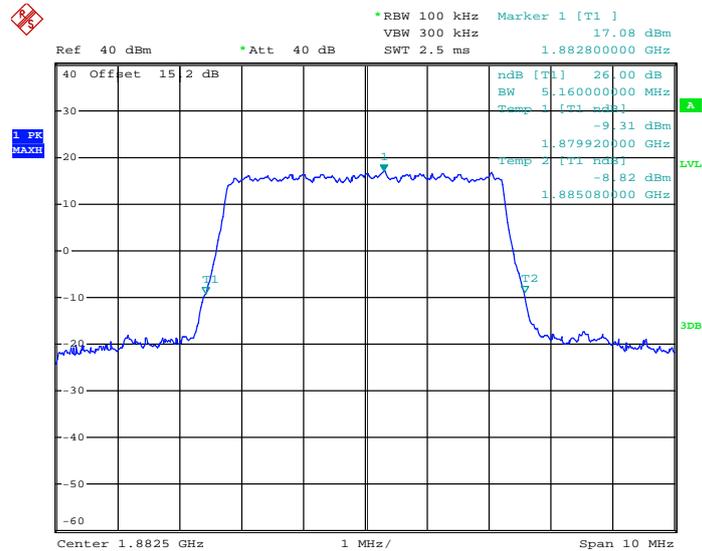
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 25, RB Offset 0**



Date: 14.JAN.2013 12:55:35

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

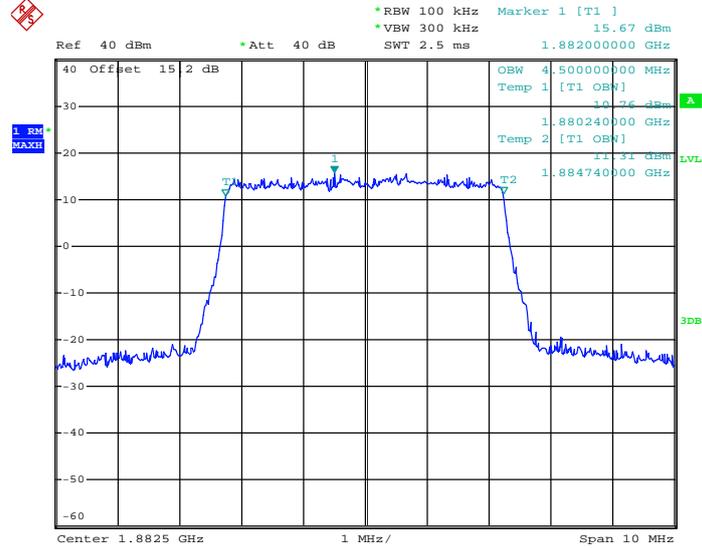


Date: 14.JAN.2013 12:34:50



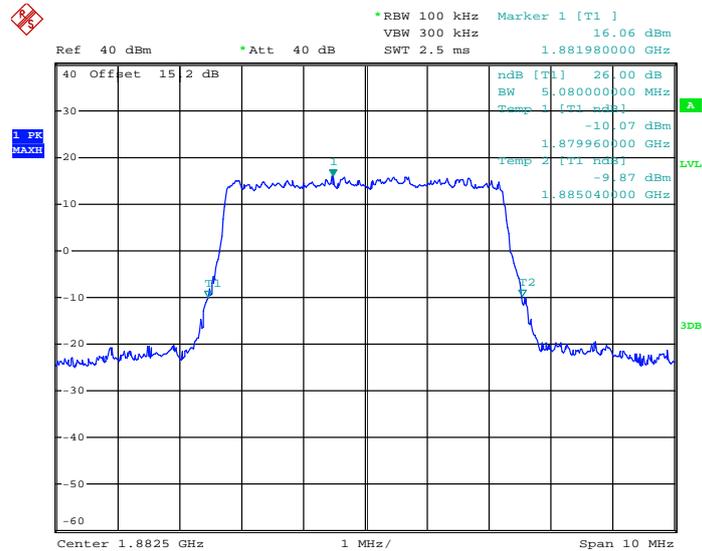
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 25, RB Offset 0**



Date: 14.JAN.2013 12:55:07

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

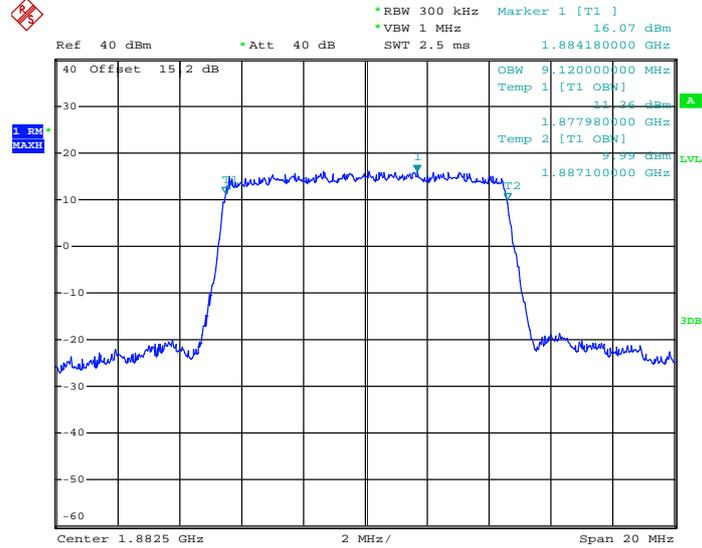


Date: 14.JAN.2013 12:32:36



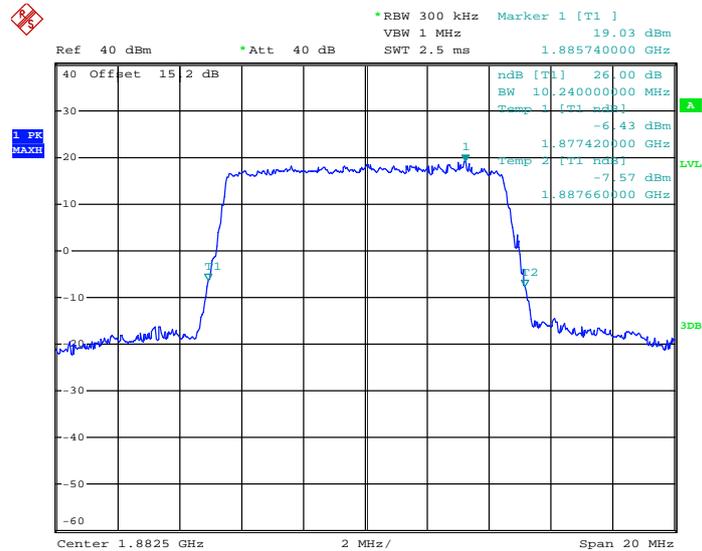
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 50, RB Offset 0**



Date: 14.JAN.2013 13:02:21

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

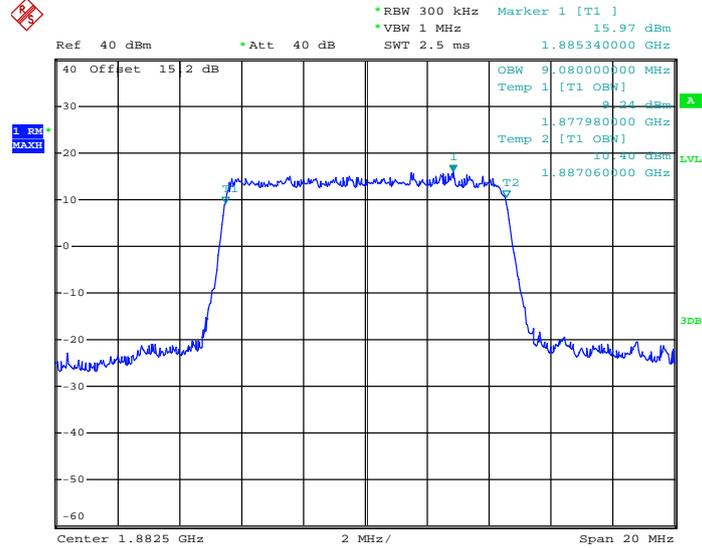


Date: 14.JAN.2013 12:35:45



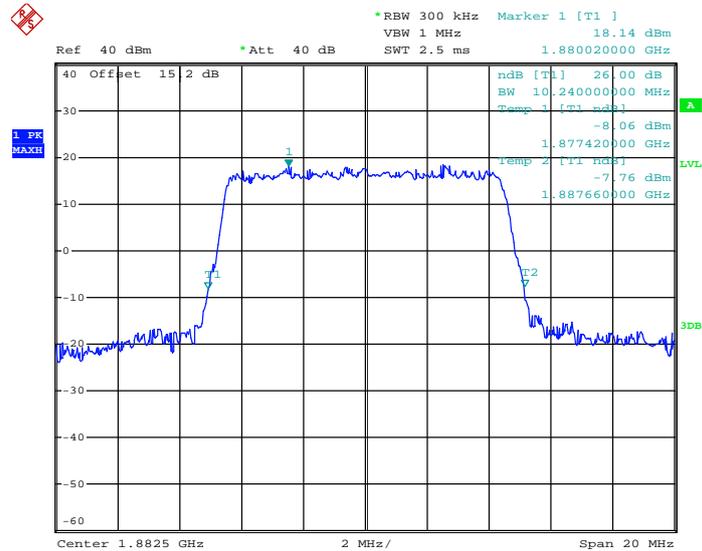
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
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**99% Occupied Bandwidth Plot on Channel 26365
for RB Size 50, RB Offset 0**



Date: 14.JAN.2013 13:01:22

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



Date: 14.JAN.2013 12:36:12

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.

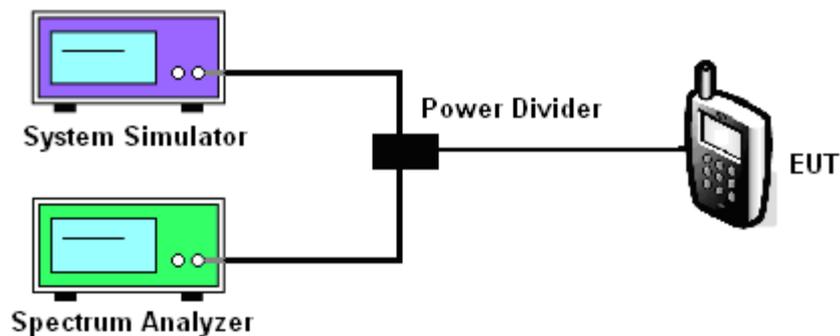
3.4.2 Measuring Instruments

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.

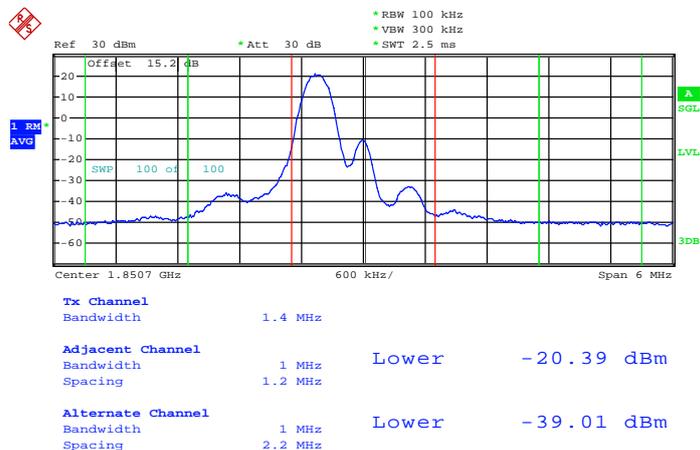
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band-Edge Emission

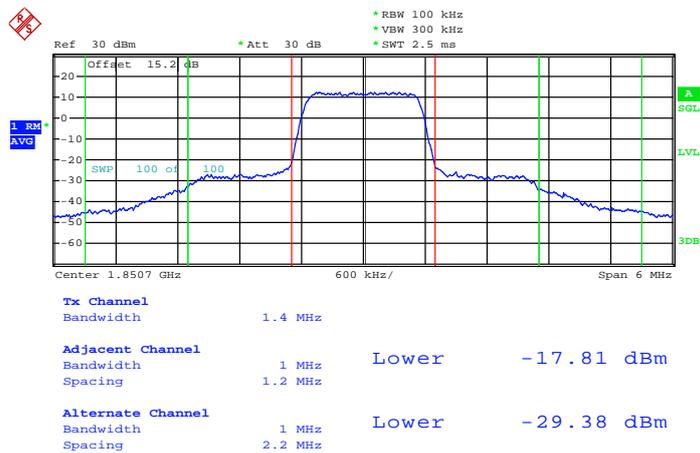
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:38:47

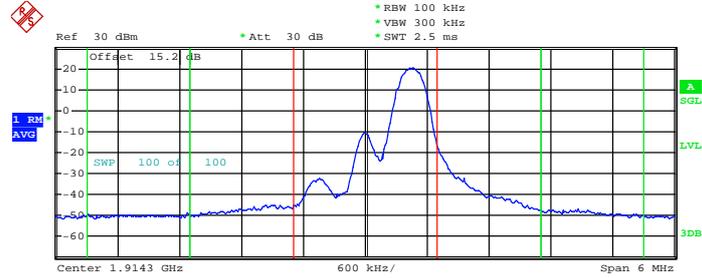
Lower Band Edge Plot for QPSK-RB Size 6, RB Offset 0



Date: 14.JAN.2013 13:38:59



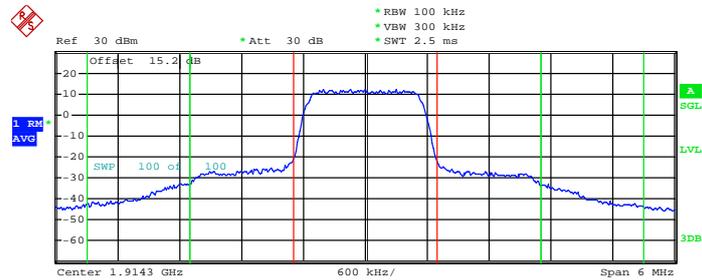
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 5



Tx Channel			
Bandwidth	1.4 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	1.2 MHz	Upper	-20.24 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	2.2 MHz	Upper	-38.97 dBm

Date: 14.JAN.2013 13:37:36

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



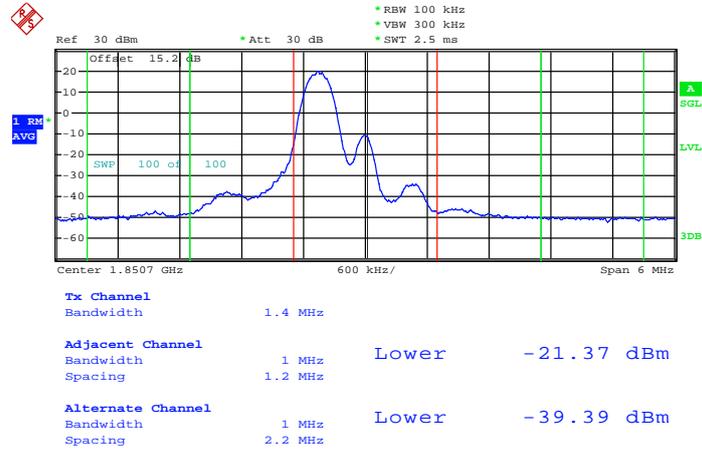
Tx Channel			
Bandwidth	1.4 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	1.2 MHz	Upper	-17.99 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	2.2 MHz	Upper	-28.40 dBm

Date: 14.JAN.2013 13:37:14



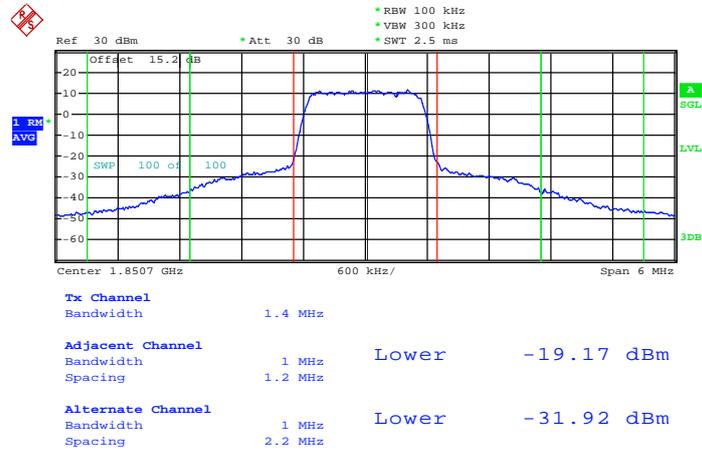
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:38:35

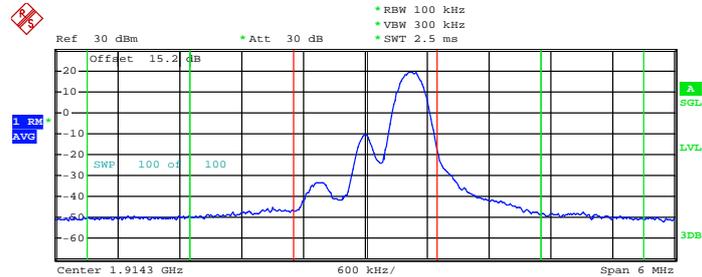
Lower Band Edge Plot for 16QAM -RB Size 6, RB Offset 0



Date: 14.JAN.2013 13:39:10



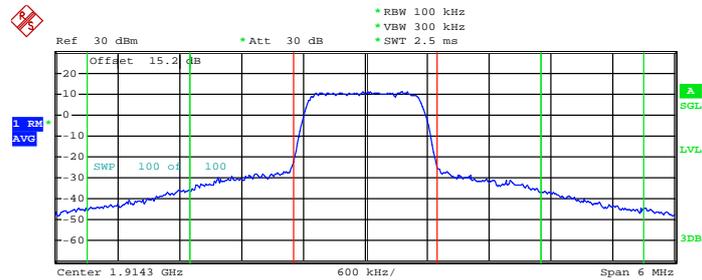
Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 5



Tx Channel			
Bandwidth	1.4 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	1.2 MHz	Upper	-22.30 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	2.2 MHz	Upper	-39.39 dBm

Date: 14.JAN.2013 13:37:49

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



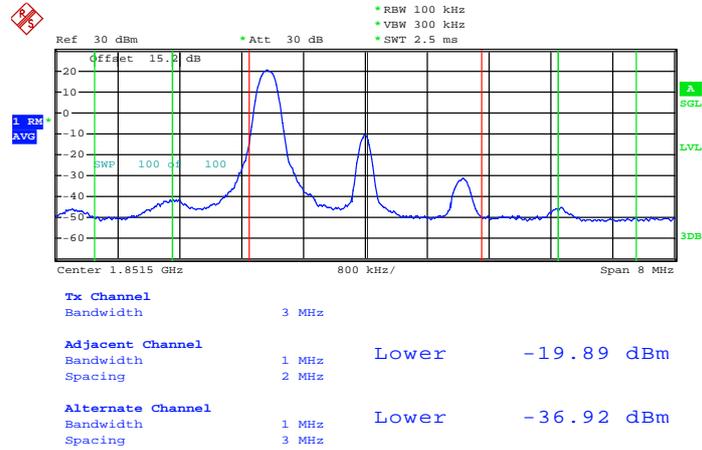
Tx Channel			
Bandwidth	1.4 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	1.2 MHz	Upper	-20.96 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	2.2 MHz	Upper	-30.93 dBm

Date: 14.JAN.2013 13:36:54



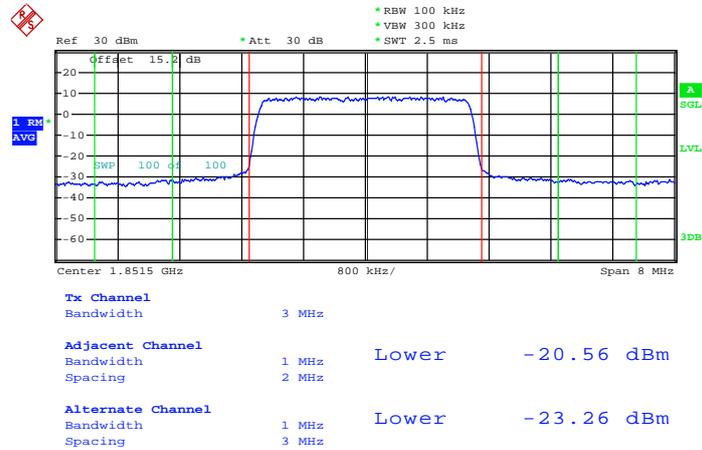
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:41:42

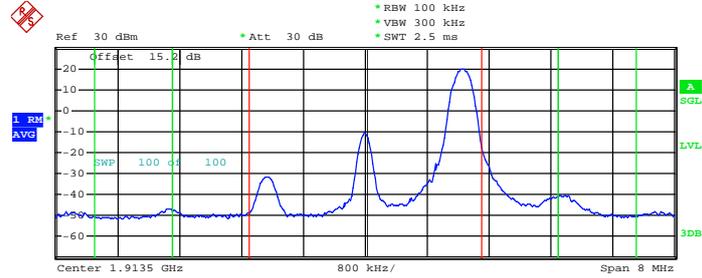
Lower Band Edge Plot for QPSK-RB Size 15, RB Offset 0



Date: 14.JAN.2013 13:41:28



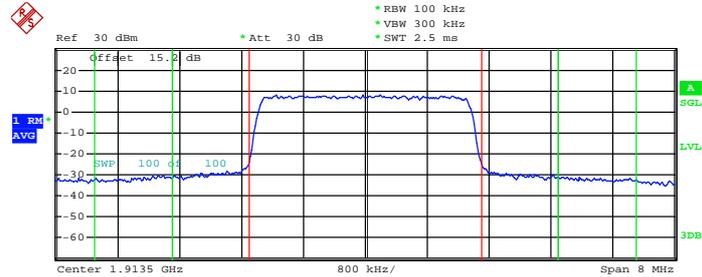
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 14



Tx Channel			
Bandwidth	3 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	2 MHz	Upper	-19.99 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	3 MHz	Upper	-35.85 dBm

Date: 14.JAN.2013 13:43:18

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



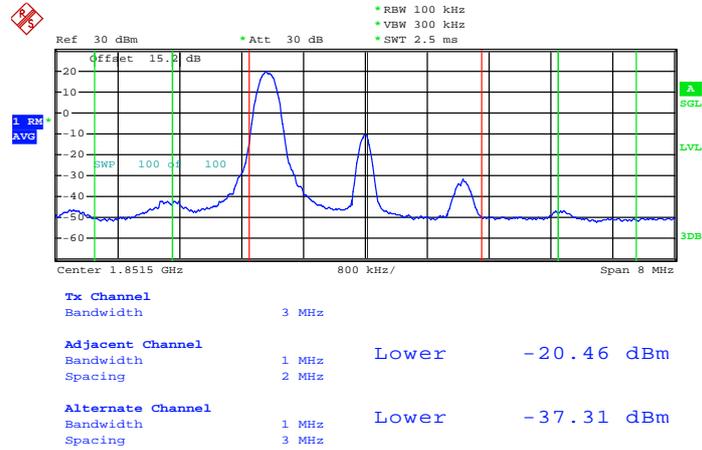
Tx Channel			
Bandwidth	3 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	2 MHz	Upper	-20.10 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	3 MHz	Upper	-22.51 dBm

Date: 14.JAN.2013 13:44:09



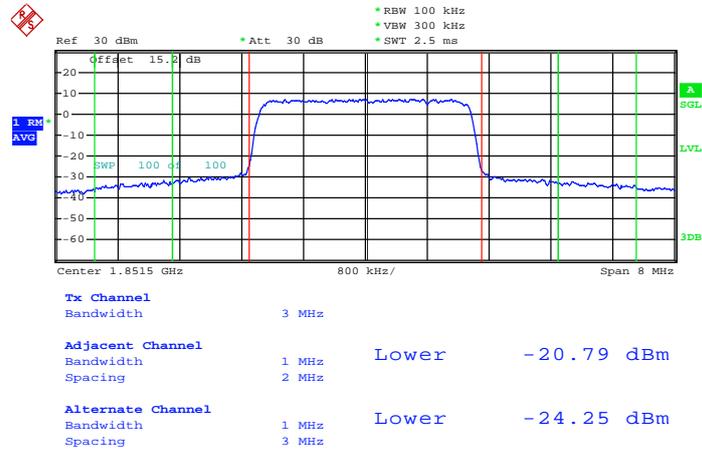
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:42:30

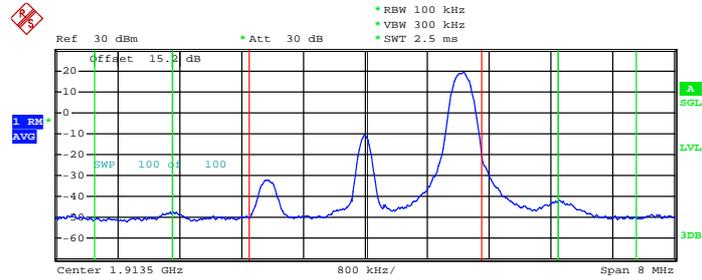
Lower Band Edge Plot for 16QAM -RB Size 15, RB Offset 0



Date: 14.JAN.2013 13:41:14



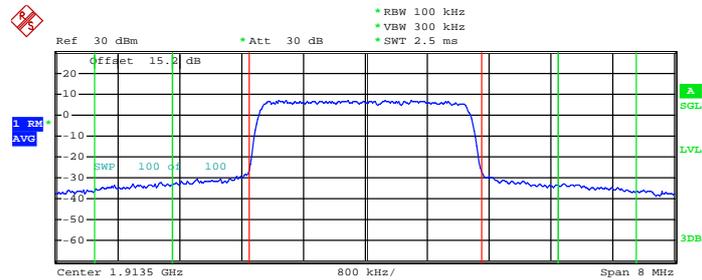
Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 14



Tx Channel			
Bandwidth	3 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	2 MHz	Upper	-22.05 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	3 MHz	Upper	-37.15 dBm

Date: 14.JAN.2013 13:43:07

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



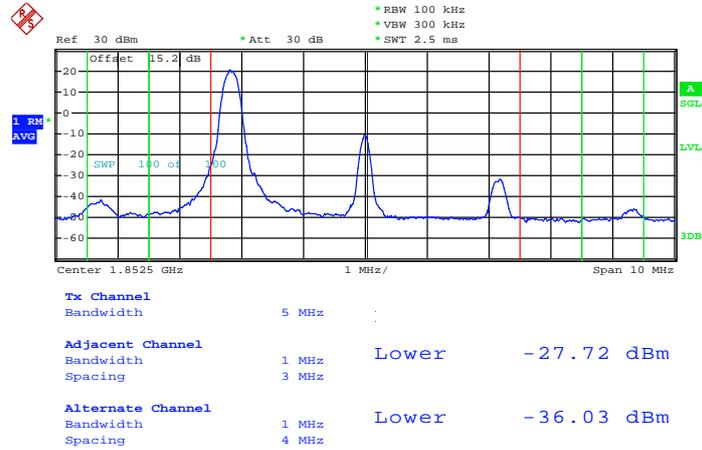
Tx Channel			
Bandwidth	3 MHz		
Adjacent Channel			
Bandwidth	1 MHz		
Spacing	2 MHz	Upper	-22.10 dBm
Alternate Channel			
Bandwidth	1 MHz		
Spacing	3 MHz	Upper	-24.94 dBm

Date: 14.JAN.2013 13:43:59



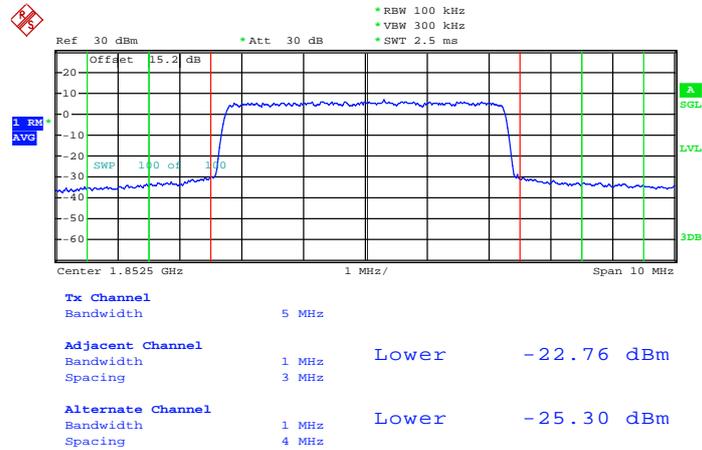
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:48:52

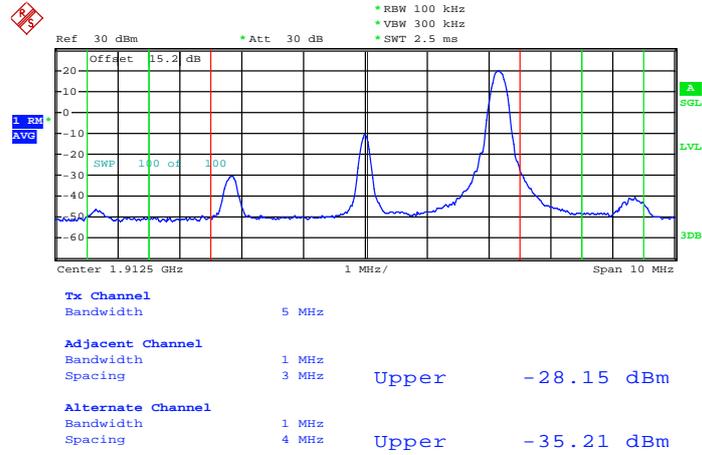
Lower Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 14.JAN.2013 13:50:13

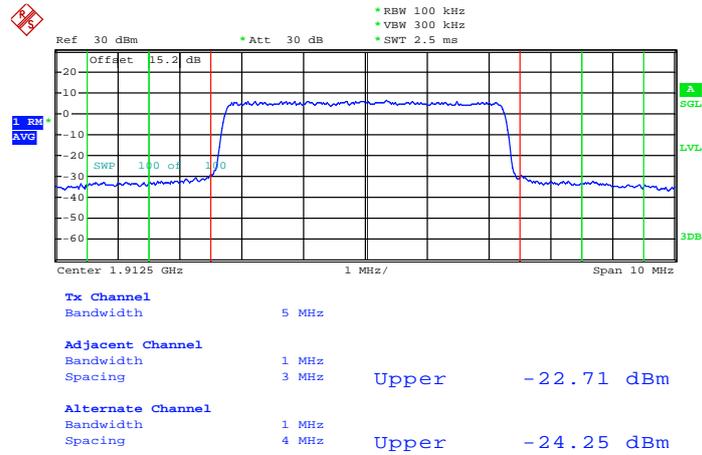


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 24



Date: 14.JAN.2013 13:46:25

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

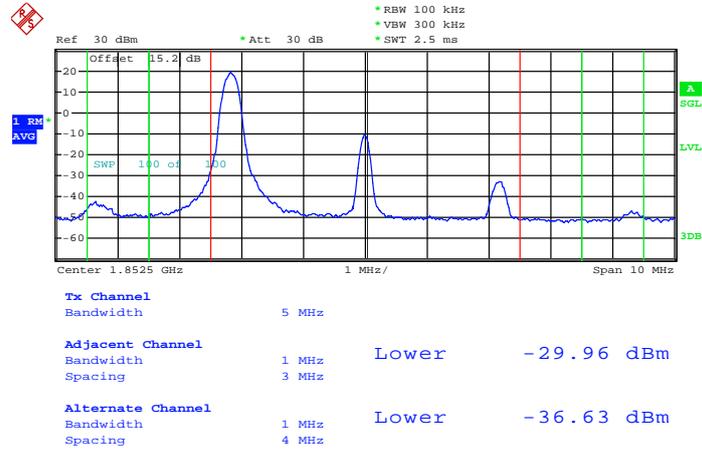


Date: 14.JAN.2013 13:45:34



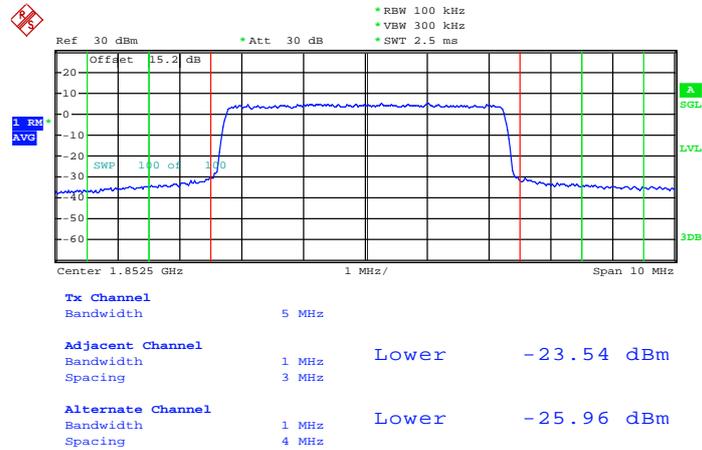
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:49:08

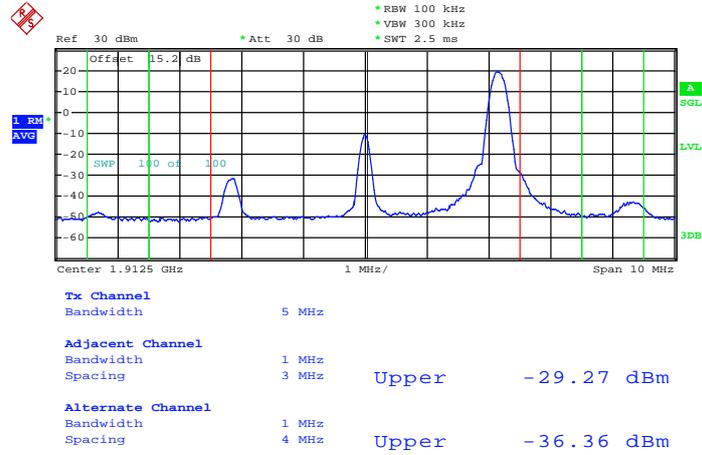
Lower Band Edge Plot for 16QAM -RB Size 25, RB Offset 0



Date: 14.JAN.2013 13:49:56

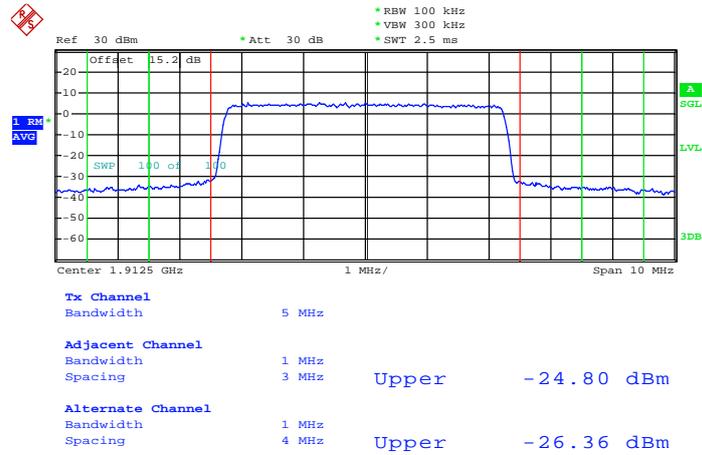


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 24



Date: 14.JAN.2013 13:46:12

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

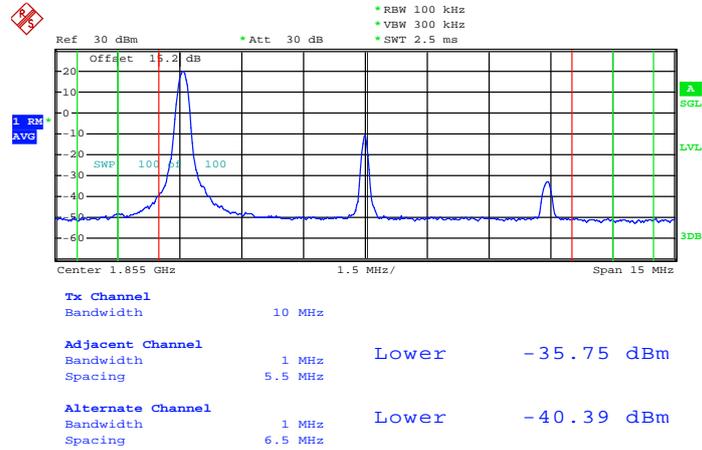


Date: 14.JAN.2013 13:45:49



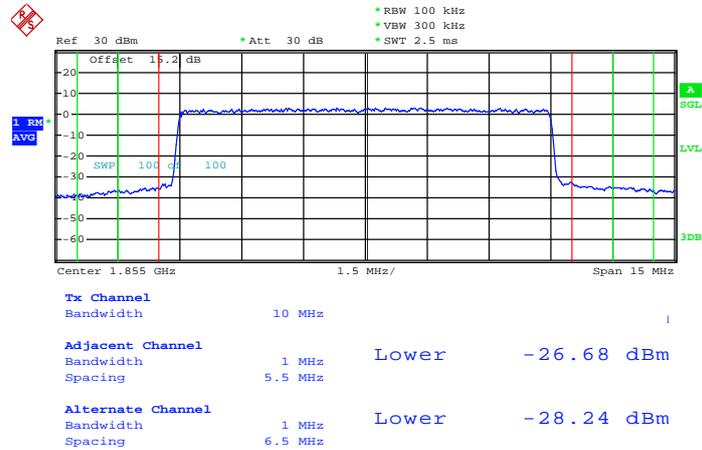
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:53:44

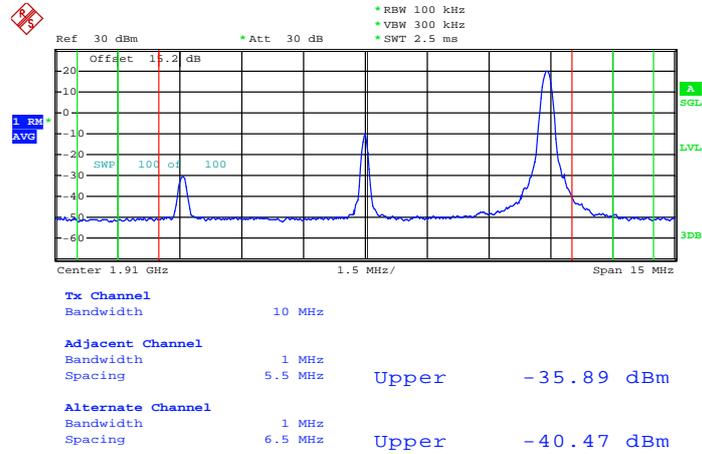
Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0



Date: 14.JAN.2013 13:51:25

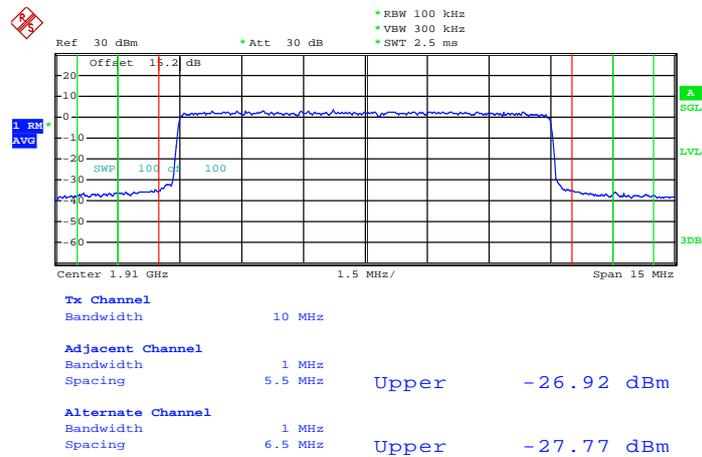


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 49



Date: 14.JAN.2013 13:55:41

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

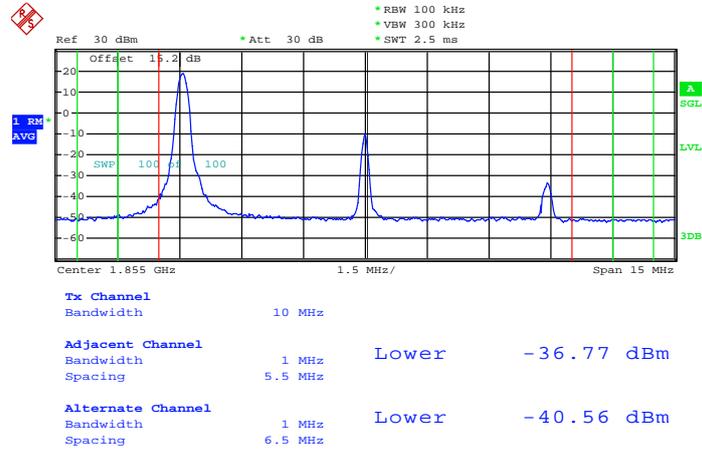


Date: 14.JAN.2013 13:56:41



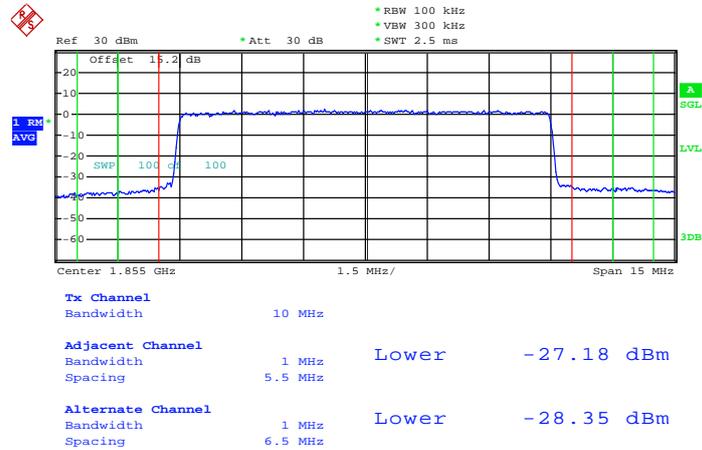
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 14.JAN.2013 13:52:42

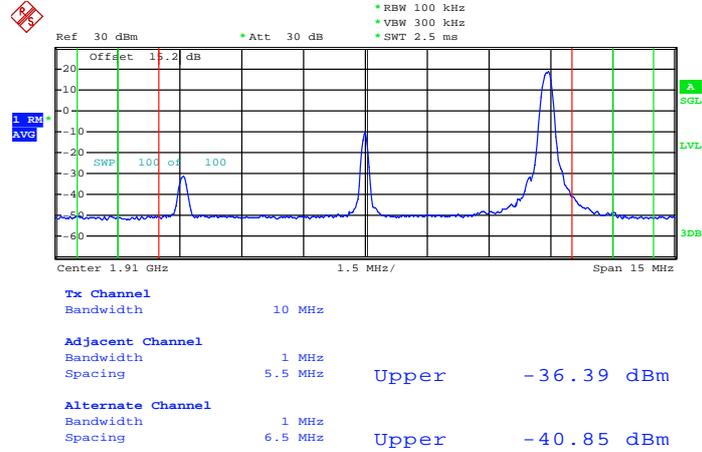
Lower Band Edge Plot for 16QAM -RB Size 50, RB Offset 0



Date: 14.JAN.2013 13:51:39

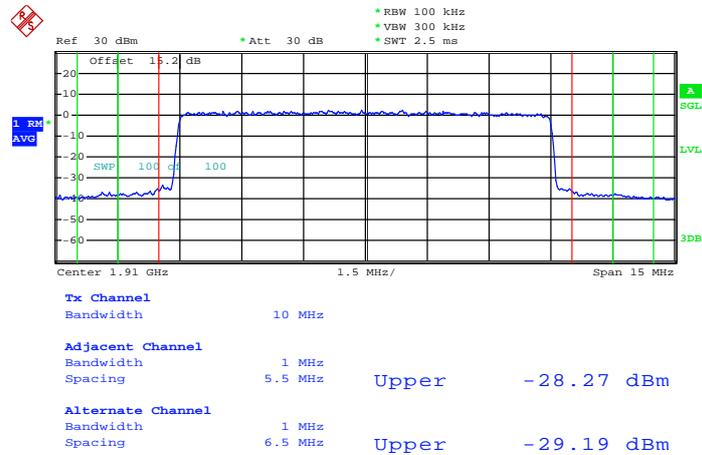


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 49



Date: 14.JAN.2013 13:55:59

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

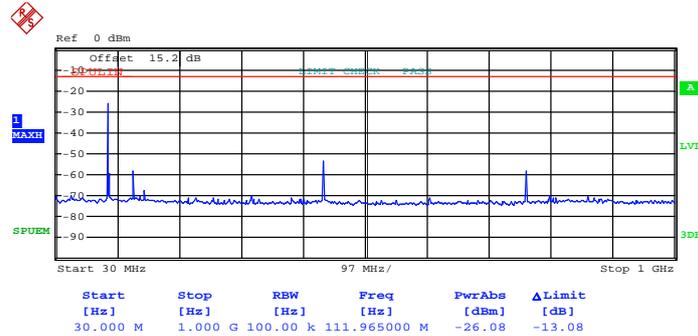


Date: 14.JAN.2013 13:56:29

3.4.6 Test Plots of Spurious Emission

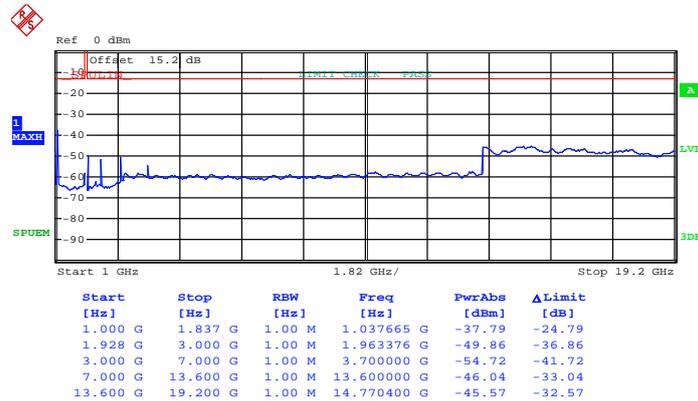
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
Frequency :	1850.7	Channel :	26047

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



Date: 14.JAN.2013 12:24:00

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

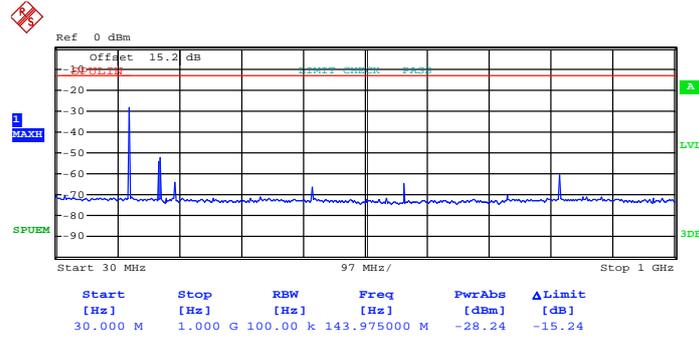


Date: 14.JAN.2013 12:22:44



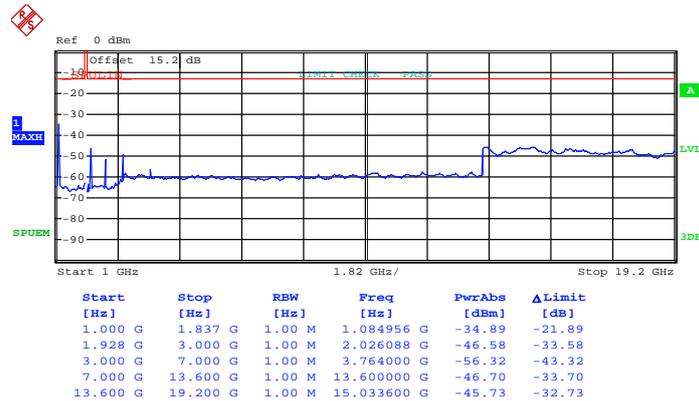
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:33:17

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

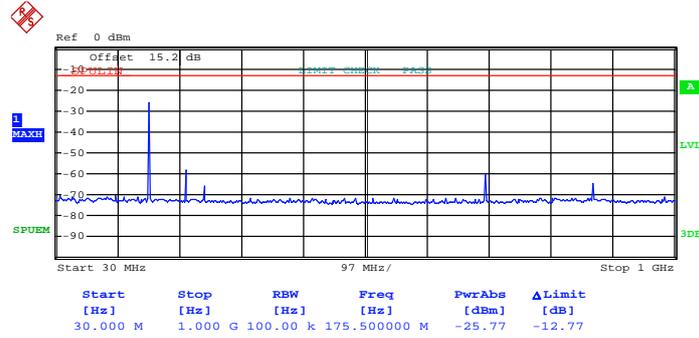


Date: 14.JAN.2013 11:33:49



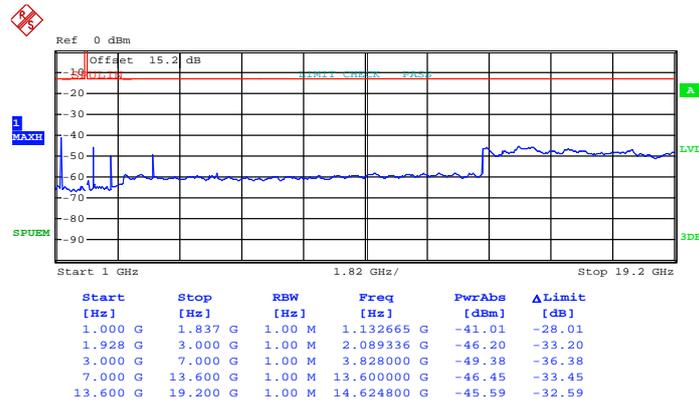
Band :	LTE Band 25	BW / Mod. :	1.4MHz / QPSK
Frequency :	1914.3	Channel :	26683

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



Date: 14.JAN.2013 11:35:41

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

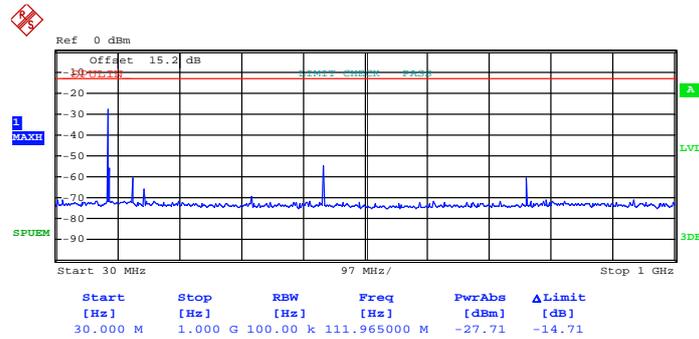


Date: 14.JAN.2013 11:35:18



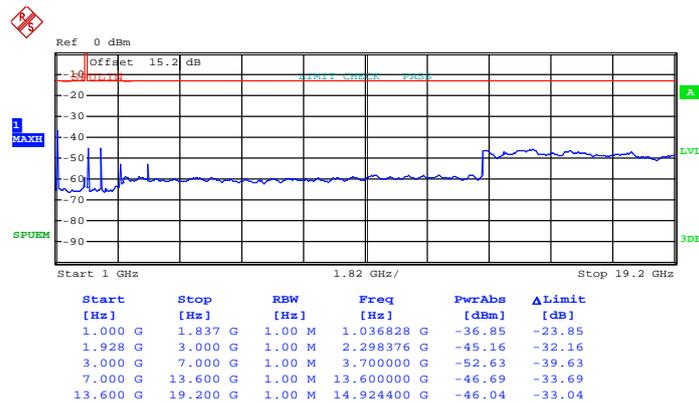
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
Frequency :	1850.7	Channel :	26047

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



Date: 14.JAN.2013 12:23:28

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16QAM (RB Size 1, RB Offset 0)

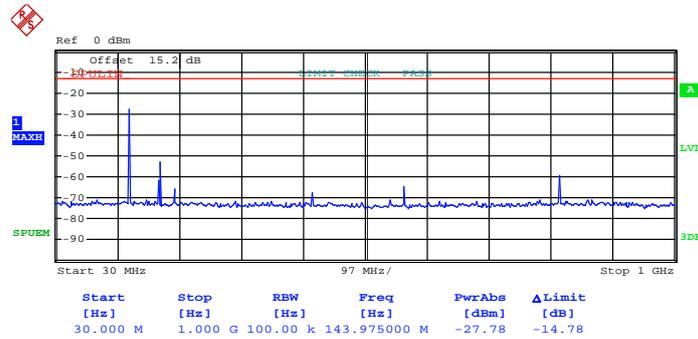


Date: 14.JAN.2013 12:23:10



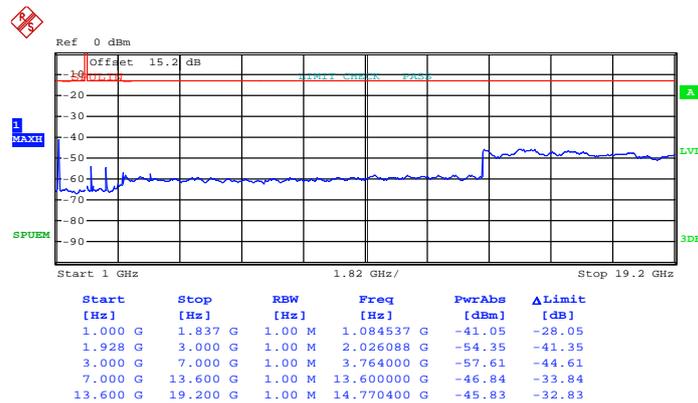
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:32:50

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16QAM (RB Size 1, RB Offset 0)

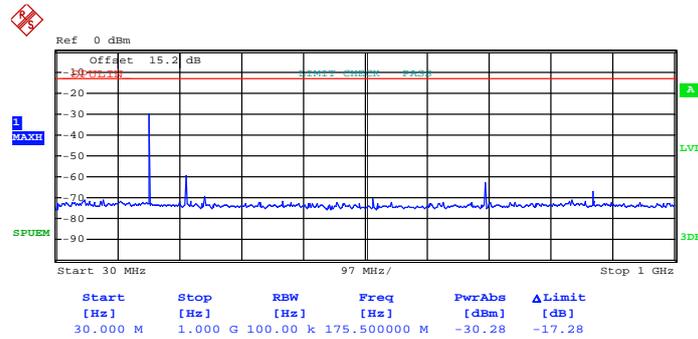


Date: 14.JAN.2013 11:34:06



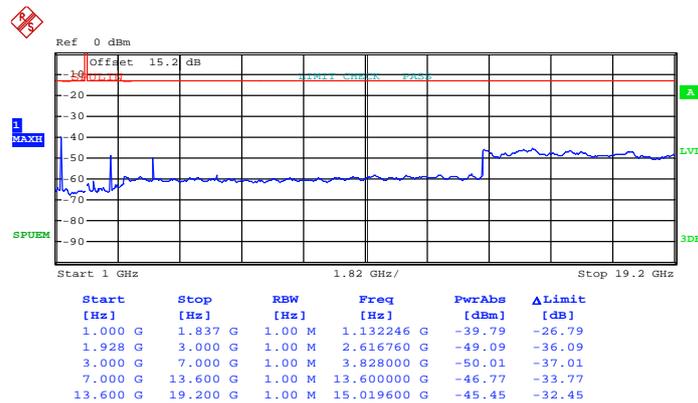
Band :	LTE Band 25	BW / Mod. :	1.4MHz / 16QAM
Frequency :	1914.3	Channel :	26683

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



Date: 14.JAN.2013 11:35:56

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16QAM (RB Size 1, RB Offset 0)

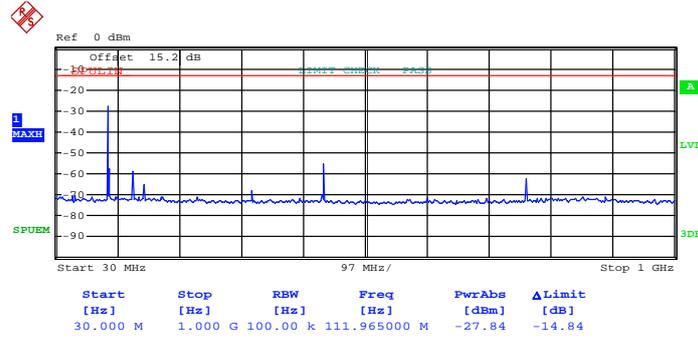


Date: 14.JAN.2013 11:34:58



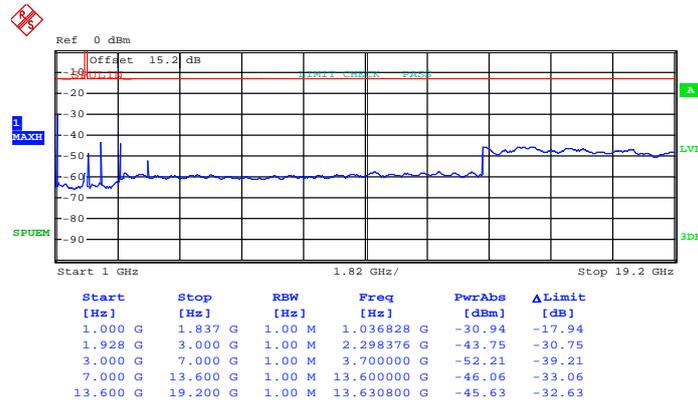
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
Frequency :	1851.5	Channel :	26055

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



Date: 14.JAN.2013 12:18:23

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

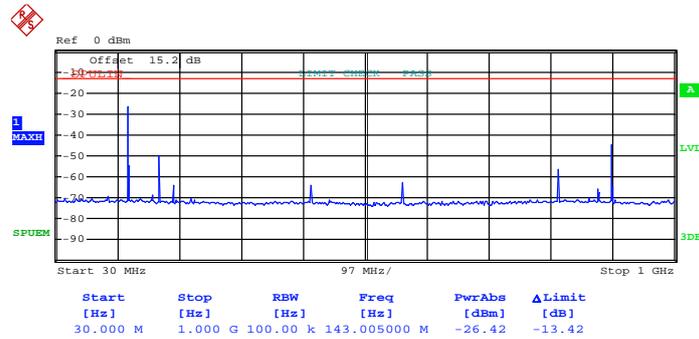


Date: 14.JAN.2013 12:20:41



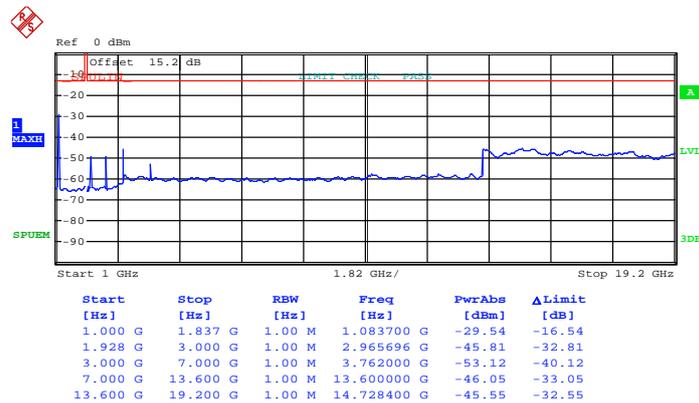
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:24:42

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

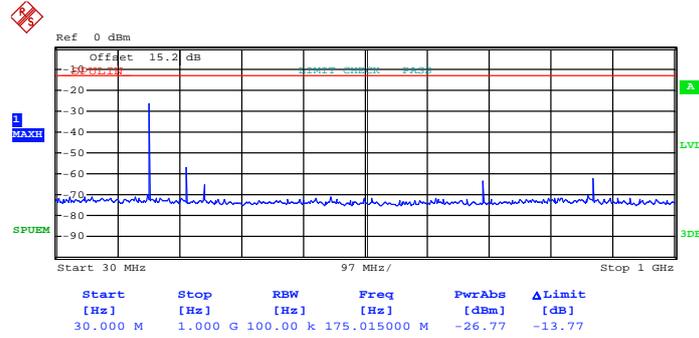


Date: 14.JAN.2013 11:23:50



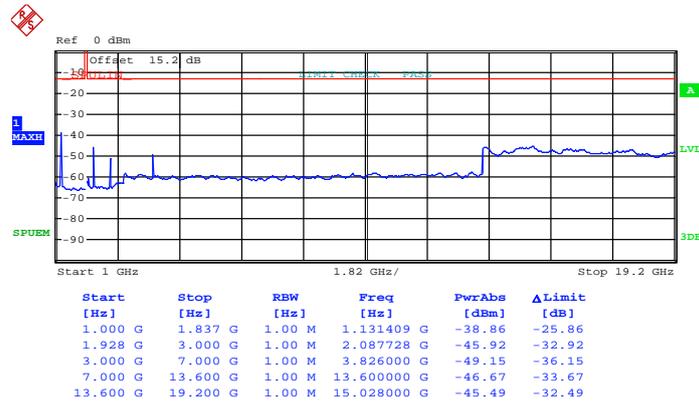
Band :	LTE Band 25	BW / Mod. :	3MHz / QPSK
Frequency :	1913.5	Channel :	26675

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



Date: 14.JAN.2013 12:02:24

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

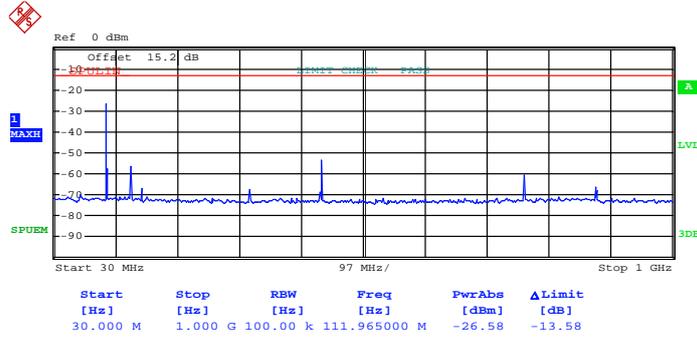


Date: 14.JAN.2013 12:02:58



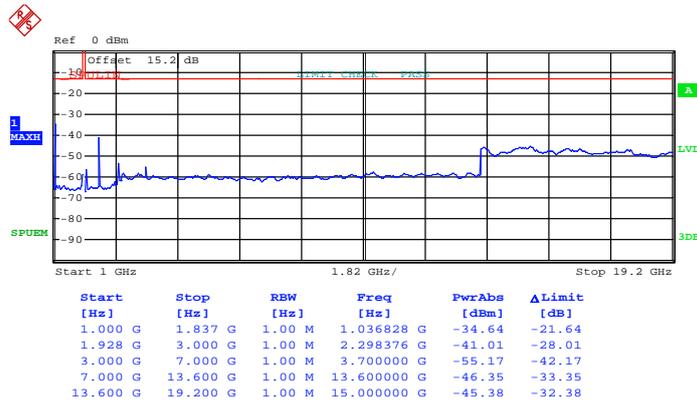
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
Frequency :	1851.5	Channel :	26055

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



Date: 14.JAN.2013 12:18:51

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 0)

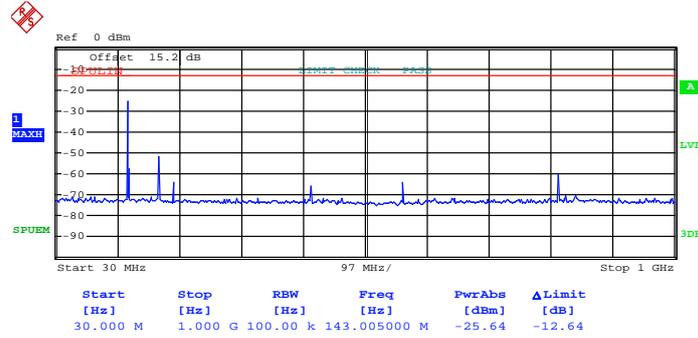


Date: 14.JAN.2013 12:19:23



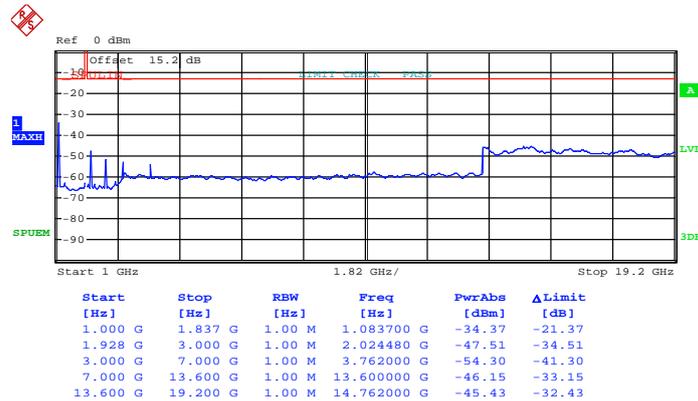
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:25:03

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 0)

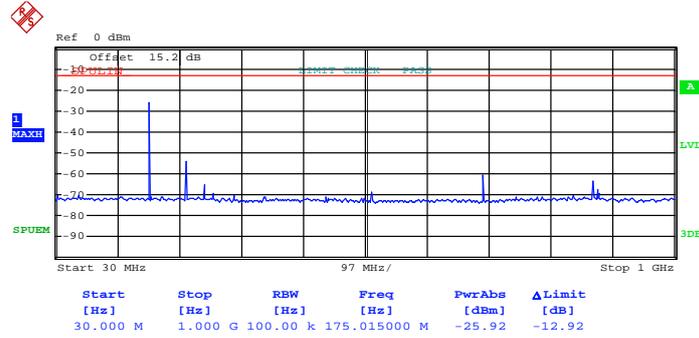


Date: 14.JAN.2013 11:23:00



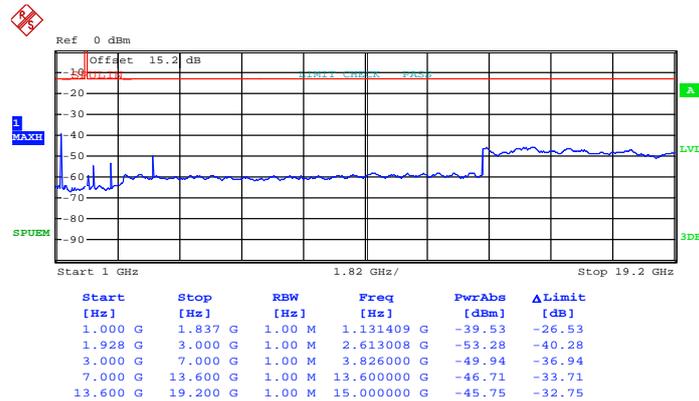
Band :	LTE Band 25	BW / Mod. :	3MHz / 16QAM
Frequency :	1913.5	Channel :	26675

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



Date: 14.JAN.2013 12:02:07

**Conducted Emission Plot (1GHz ~ 19.2GHz) for
16-QAM (RB Size 1, RB Offset 0)**

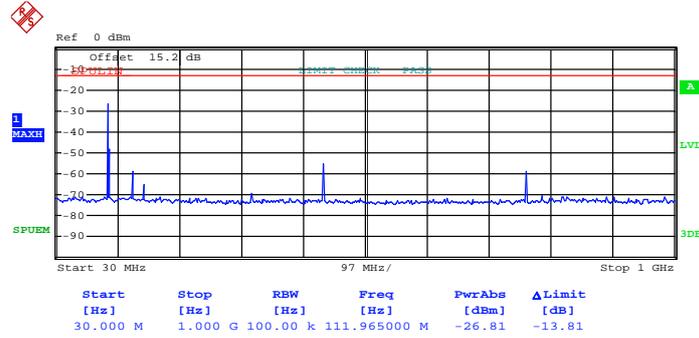


Date: 14.JAN.2013 12:03:21



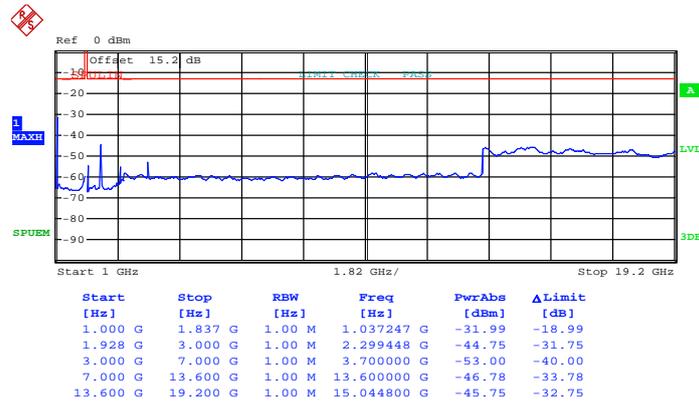
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
Frequency :	1852.5	Channel :	26065

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



Date: 14.JAN.2013 12:17:45

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

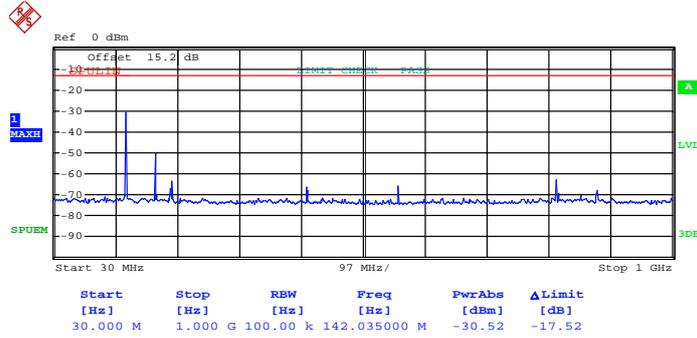


Date: 14.JAN.2013 12:16:41



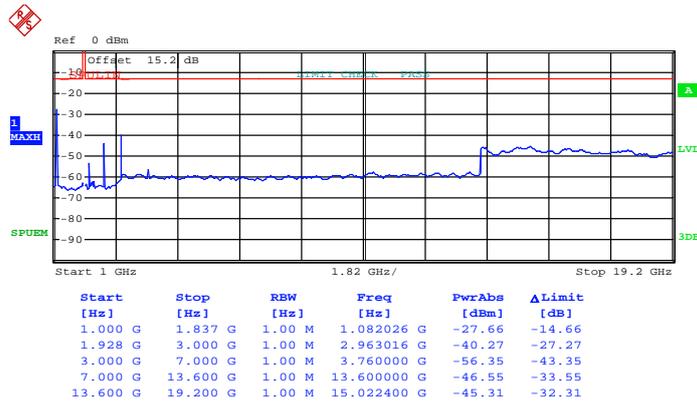
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:20:35

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

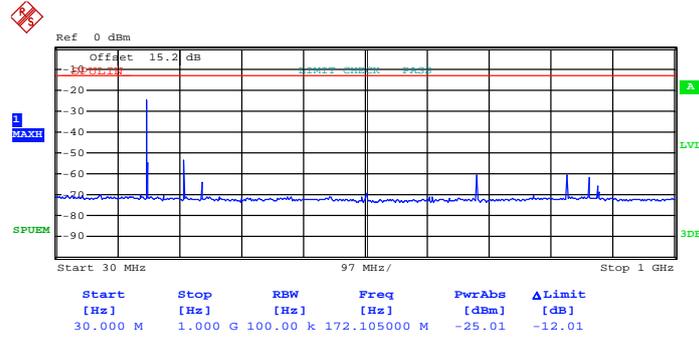


Date: 14.JAN.2013 11:21:22



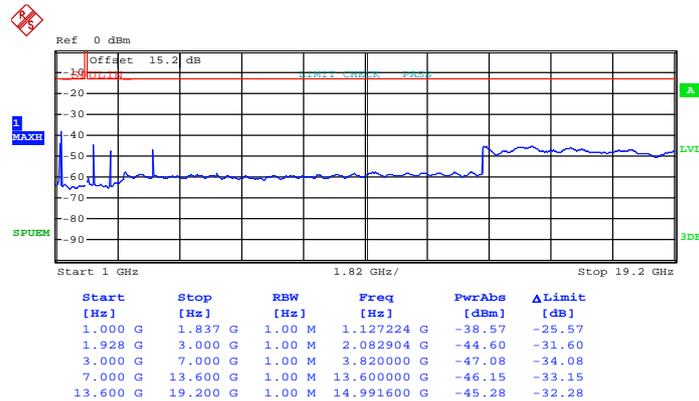
Band :	LTE Band 25	BW / Mod. :	5MHz / QPSK
Frequency :	1912.5	Channel :	26665

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



Date: 14.JAN.2013 12:10:07

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

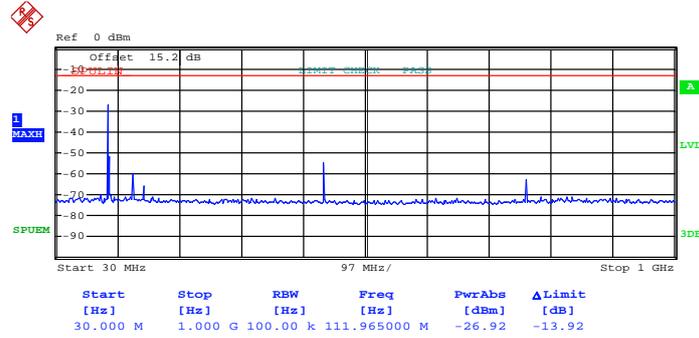


Date: 14.JAN.2013 12:09:14



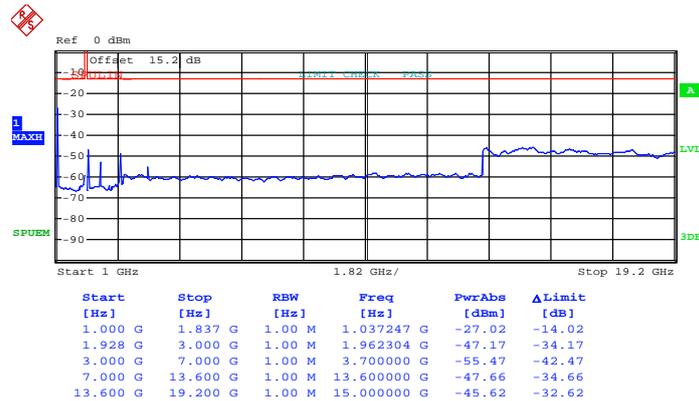
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
Frequency :	1852.5	Channel :	26065

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



Date: 14.JAN.2013 12:17:26

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 0)

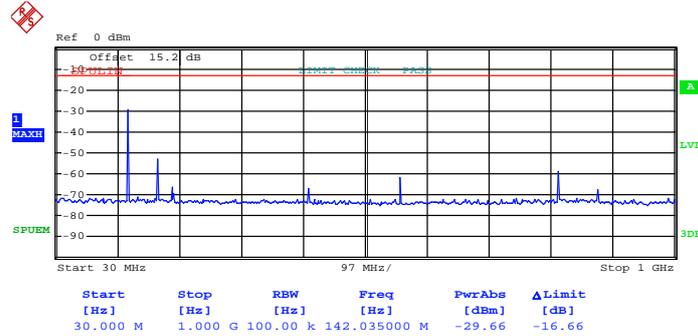


Date: 14.JAN.2013 12:17:01



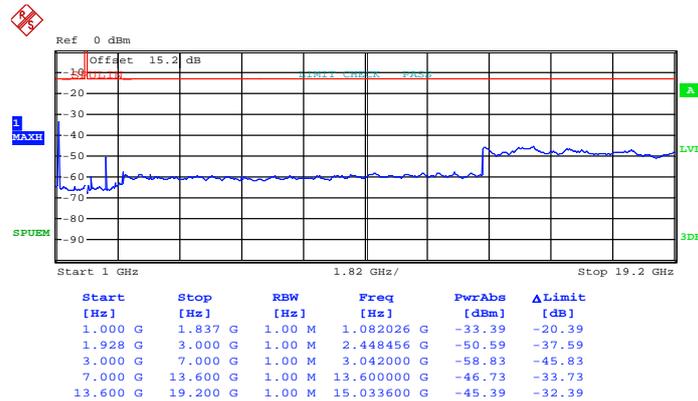
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:20:14

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 0)

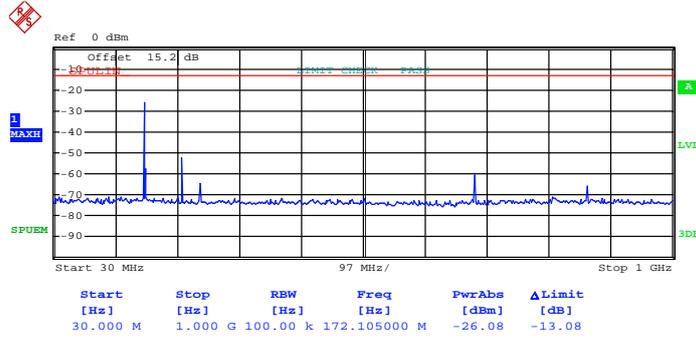


Date: 14.JAN.2013 11:21:38



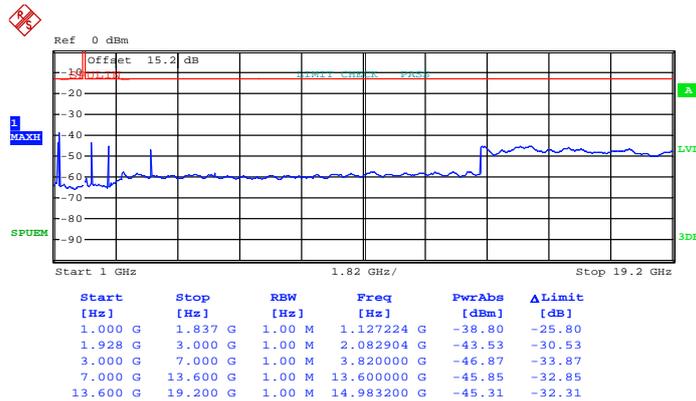
Band :	LTE Band 25	BW / Mod. :	5MHz / 16QAM
Frequency :	1912.5	Channel :	26665

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



Date: 14.JAN.2013 12:10:23

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 0)

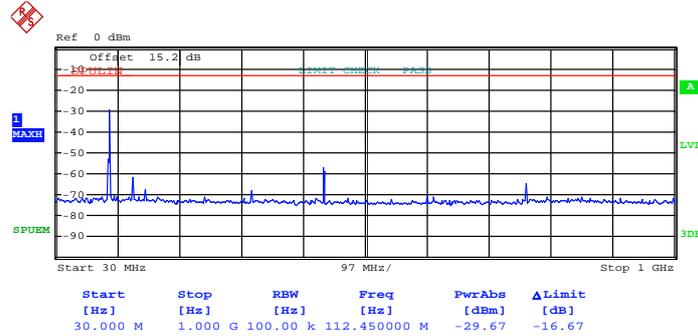


Date: 14.JAN.2013 12:06:55



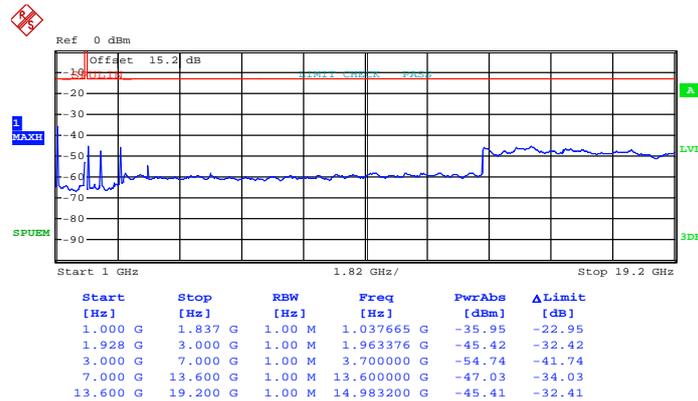
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
Frequency :	1855	Channel :	26090

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



Date: 14.JAN.2013 12:14:51

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

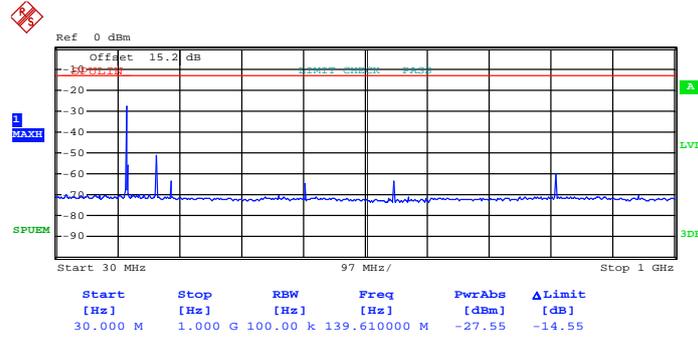


Date: 14.JAN.2013 12:15:28



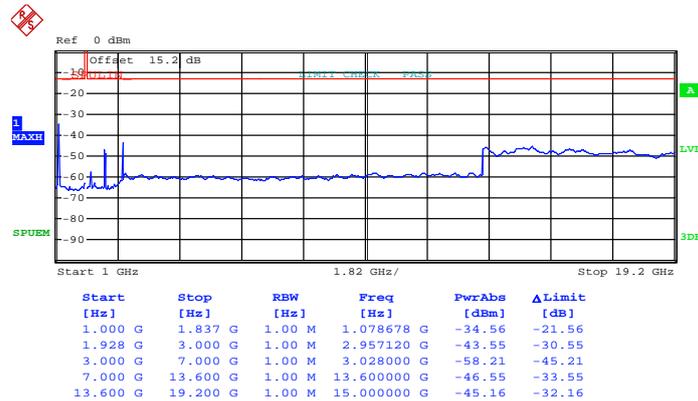
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:16:31

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

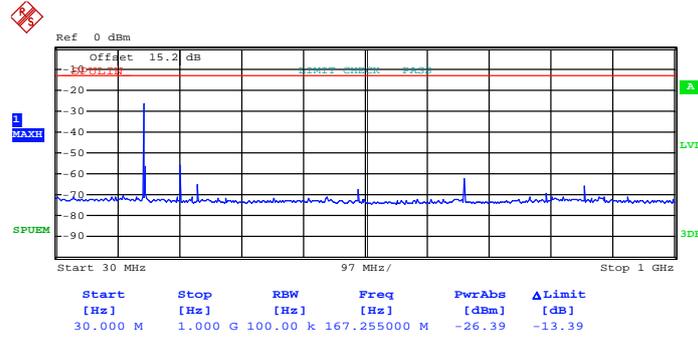


Date: 14.JAN.2013 11:17:22



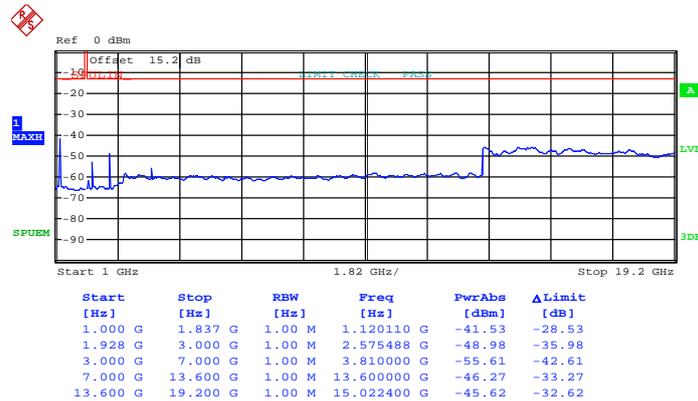
Band :	LTE Band 25	BW / Mod. :	10MHz / QPSK
Frequency :	1910	Channel :	26640

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



Date: 14.JAN.2013 12:11:42

Conducted Emission Plot (1GHz ~ 19.2GHz) for QPSK (RB Size 1, RB Offset 0)

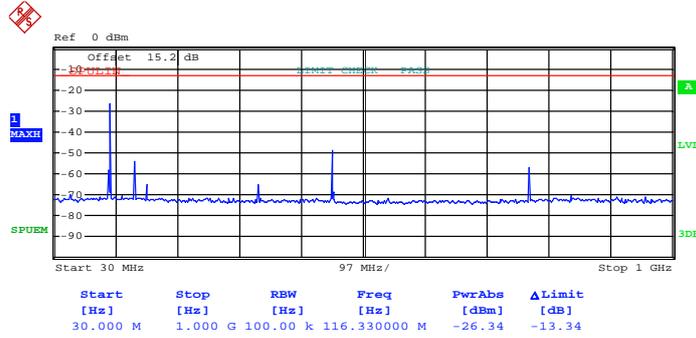


Date: 14.JAN.2013 12:12:07



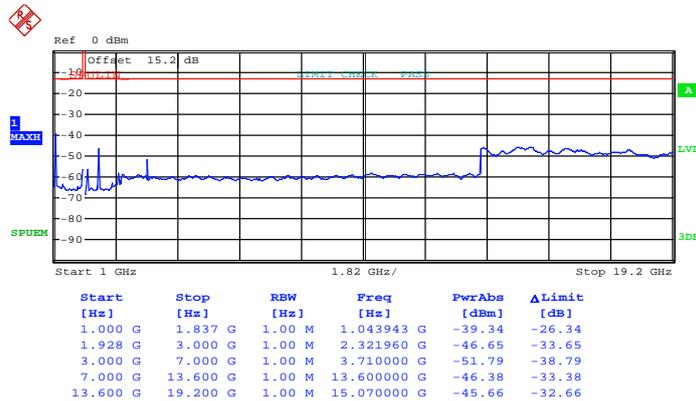
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
Frequency :	1855	Channel :	26090

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



Date: 14.JAN.2013 12:14:26

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 24)

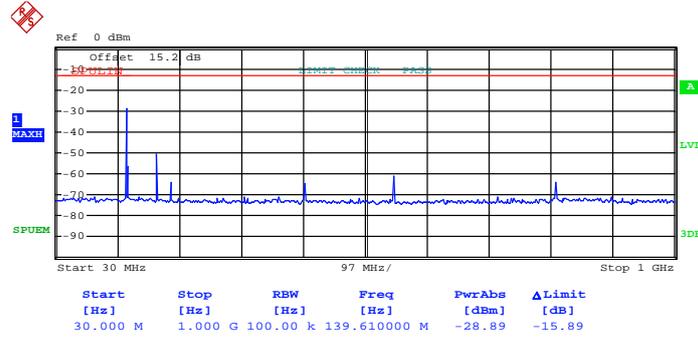


Date: 14.JAN.2013 12:13:58



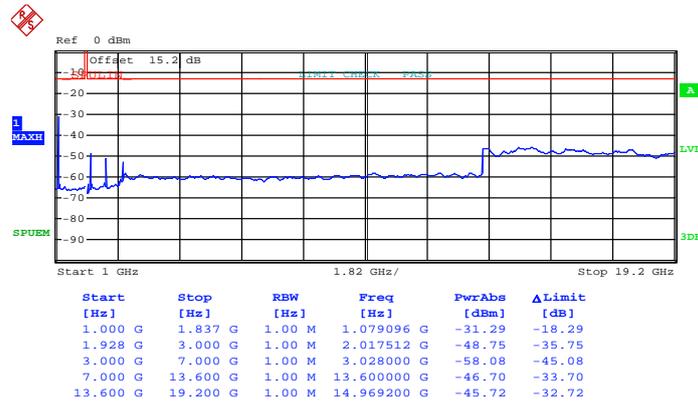
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
Frequency :	1882.5	Channel :	26365

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



Date: 14.JAN.2013 11:18:32

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 0)

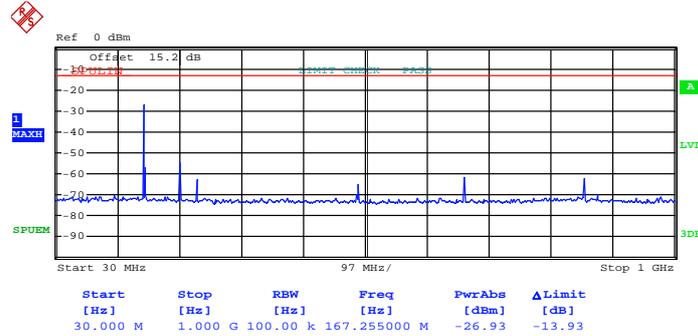


Date: 14.JAN.2013 11:17:56



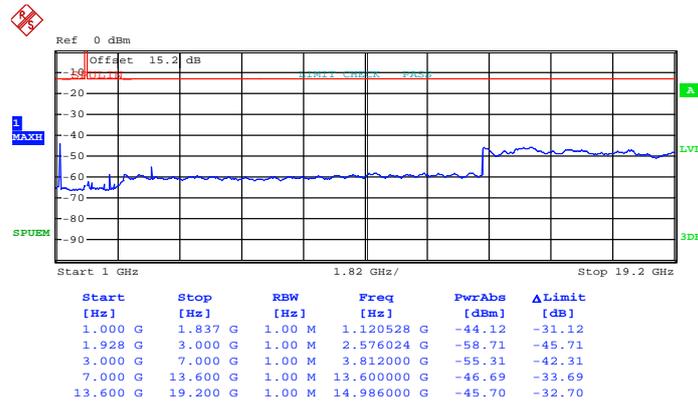
Band :	LTE Band 25	BW / Mod. :	10MHz / 16QAM
Frequency :	1910	Channel :	26640

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



Date: 14.JAN.2013 12:11:22

Conducted Emission Plot (1GHz ~ 19.2GHz) for 16-QAM (RB Size 1, RB Offset 0)



Date: 14.JAN.2013 12:12:25

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

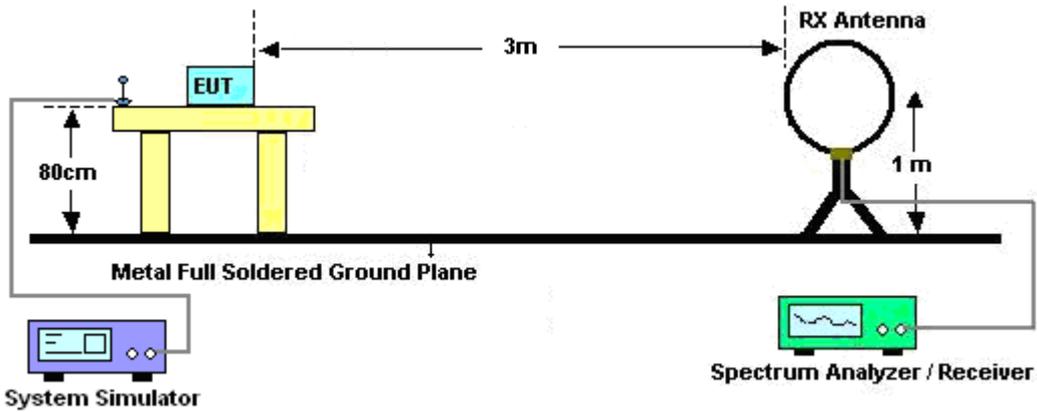
See list of measuring instruments of this test report.

3.5.3 Test Procedures

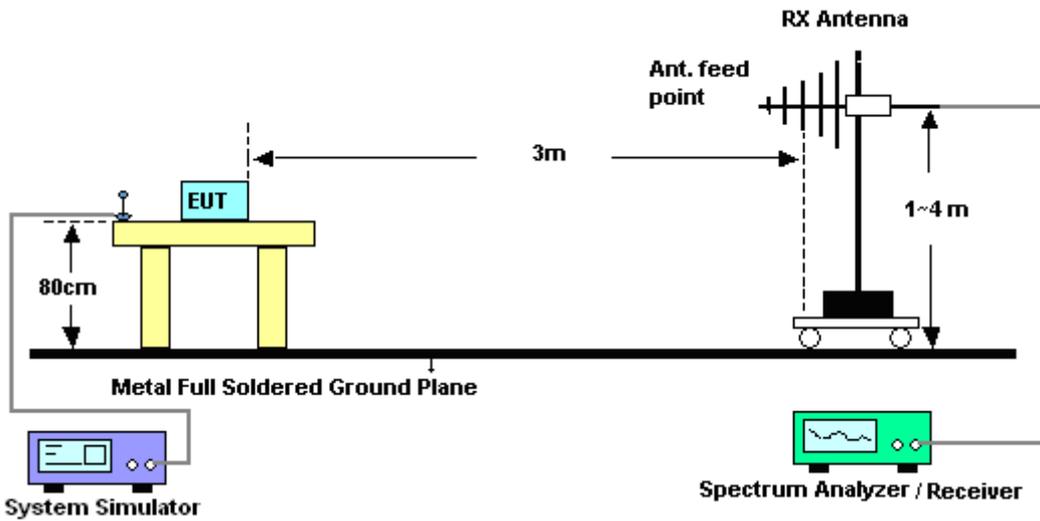
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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

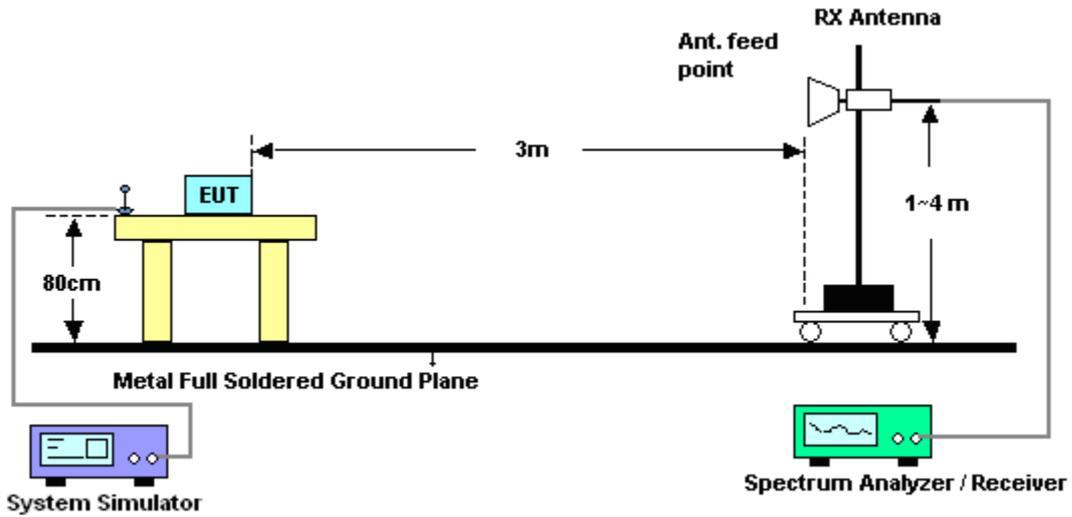
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



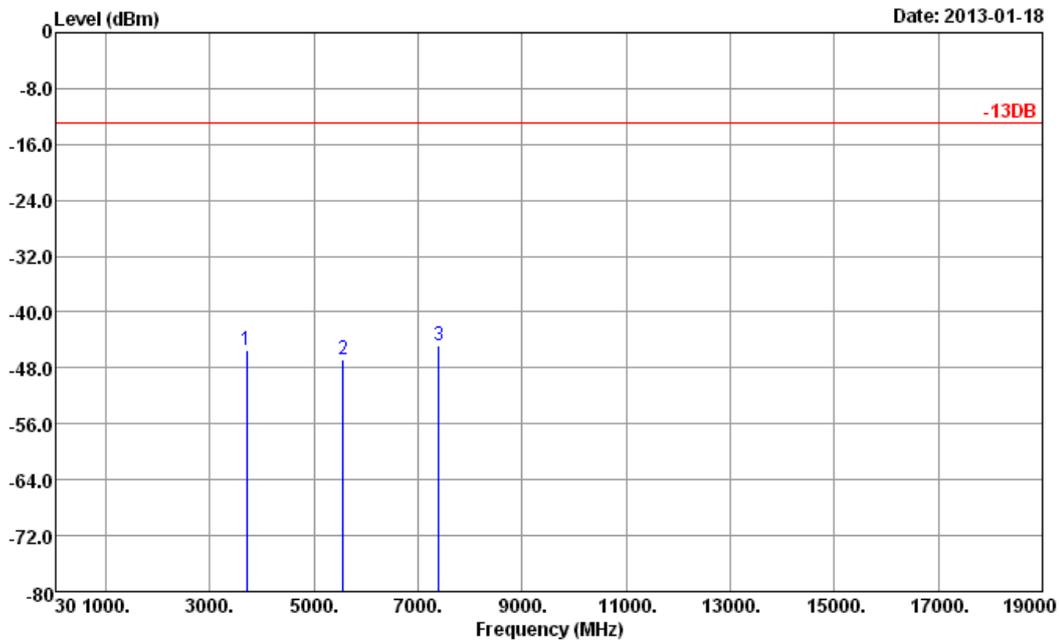
3.5.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

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 :	20~22°C
Test Mode :	1.4MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

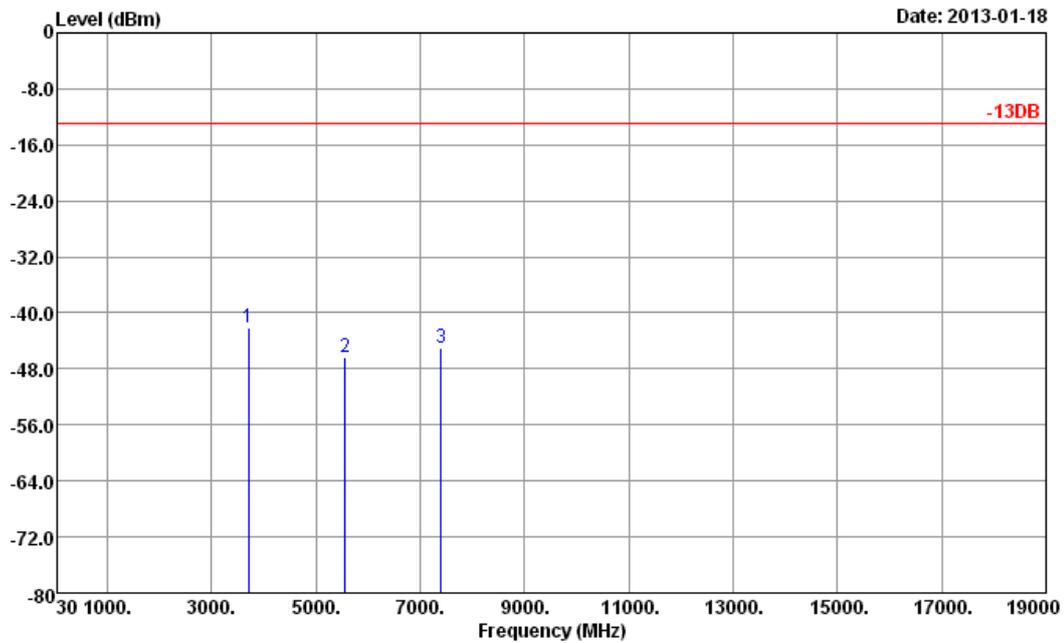


Site : 03CH05-HY
 Condition : -13DB HF_EIRP_101221 HORIZONTAL

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	-45.39	-13	-32.39	-58.51	-52.03	2.01	8.64	H	Pass
5552	-46.73	-13	-33.73	-65.44	-55.4	2.12	10.79	H	Pass
7400	-44.84	-13	-31.84	-66.64	-54.3	2.63	12.08	H	Pass



Band :	LTE Band 25	Temperature :	20~22°C
Test Mode :	1.4MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

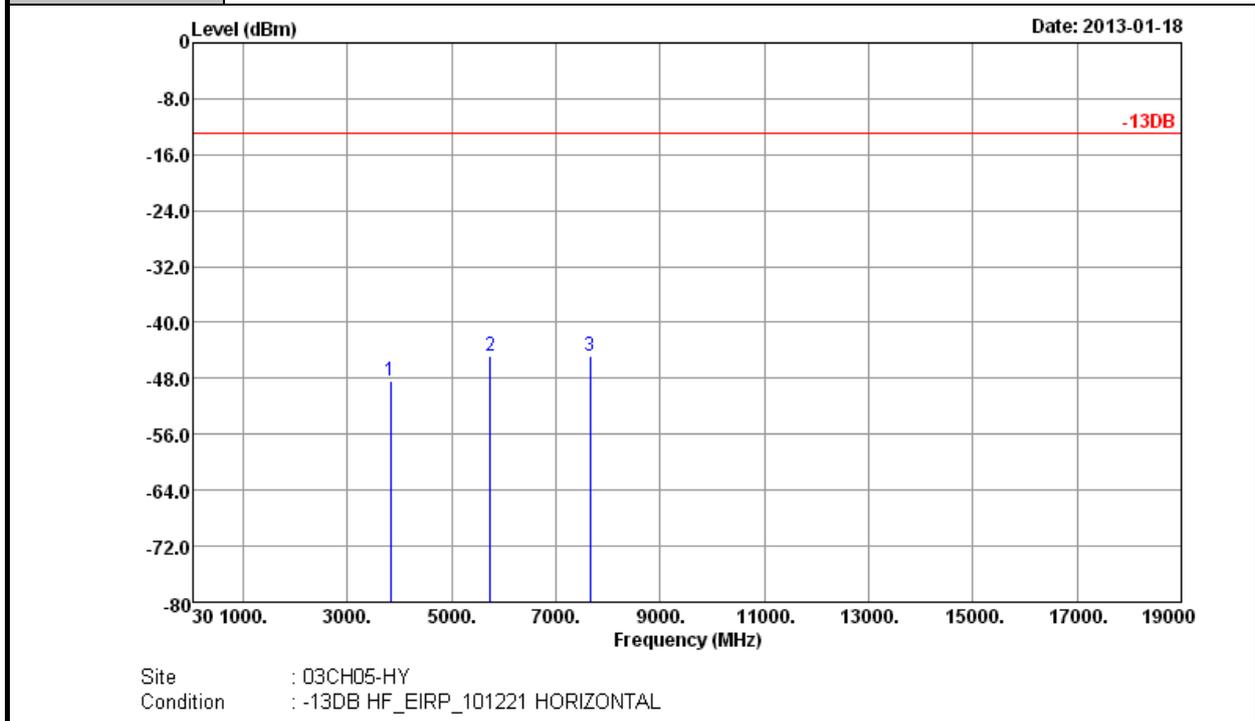


Site : 03CH05-HY
 Condition : -13DB HF_EIRP_101221 VERTICAL

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	-42.16	-13	-29.16	-55.3	-48.8	2.01	8.64	V	Pass
5552	-46.33	-13	-33.33	-65.03	-55	2.12	10.79	V	Pass
7400	-45.04	-13	-32.04	-66.83	-54.5	2.63	12.08	V	Pass



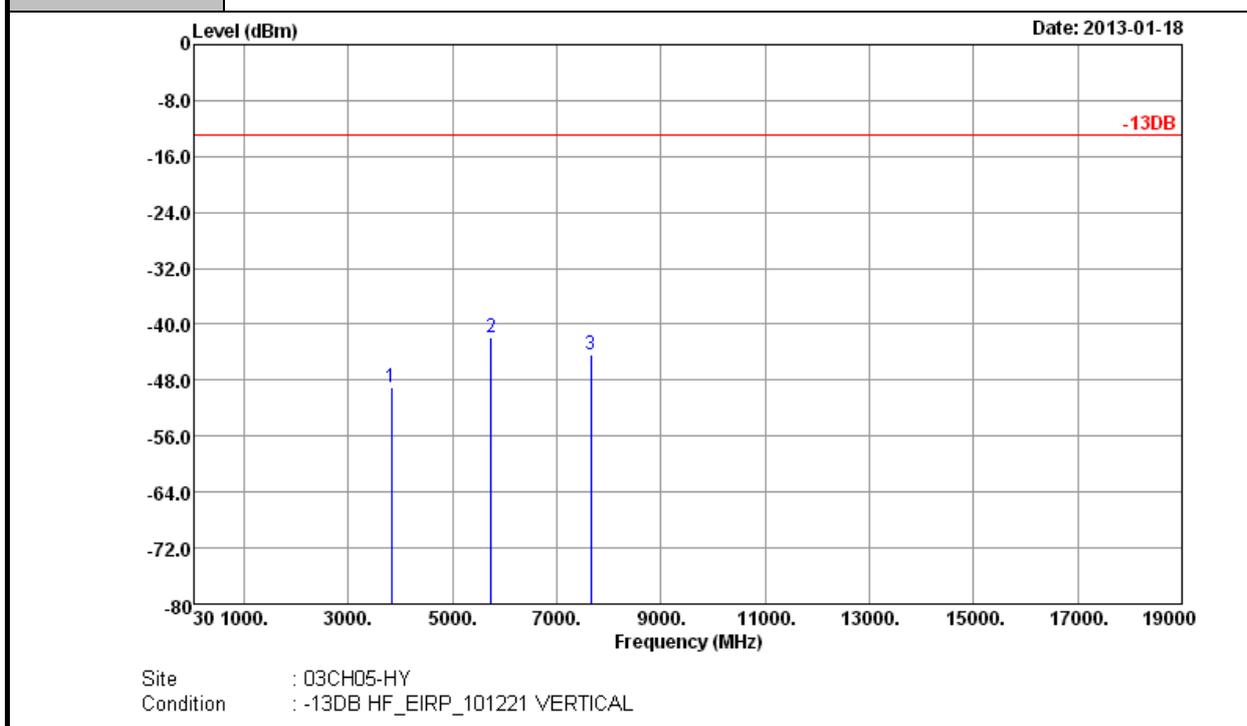
Band :	LTE Band 25	Temperature :	20~22°C
Test Mode :	3MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3824	-48.25	-13	-35.25	-62.1	-55.05	1.99	8.79	H	Pass
5740	-44.90	-13	-31.90	-63.94	-53.5	2.15	10.75	H	Pass
7656	-44.76	-13	-31.76	-66.97	-54.4	2.68	12.32	H	Pass



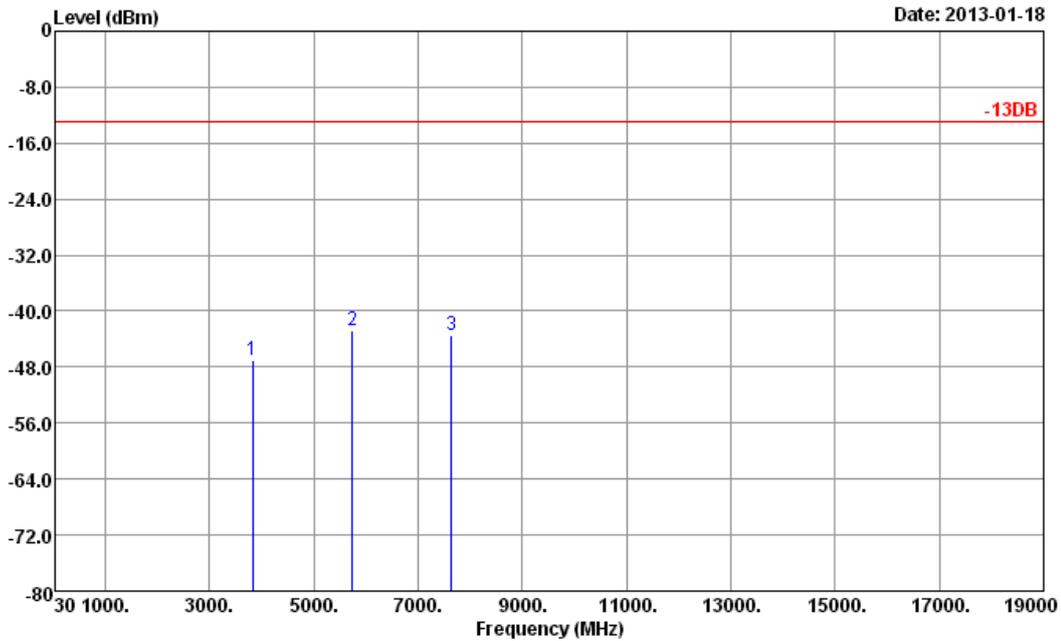
Band :	LTE Band 25	Temperature :	20~22°C
Test Mode :	3MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3824	-49.00	-13	-36.00	-62.83	-55.8	1.99	8.79	V	Pass
5736	-41.90	-13	-28.90	-60.96	-50.5	2.15	10.75	V	Pass
7656	-44.36	-13	-31.36	-66.53	-54	2.68	12.32	V	Pass



Band :	LTE Band 25	Temperature :	20~22°C
Test Mode :	5MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

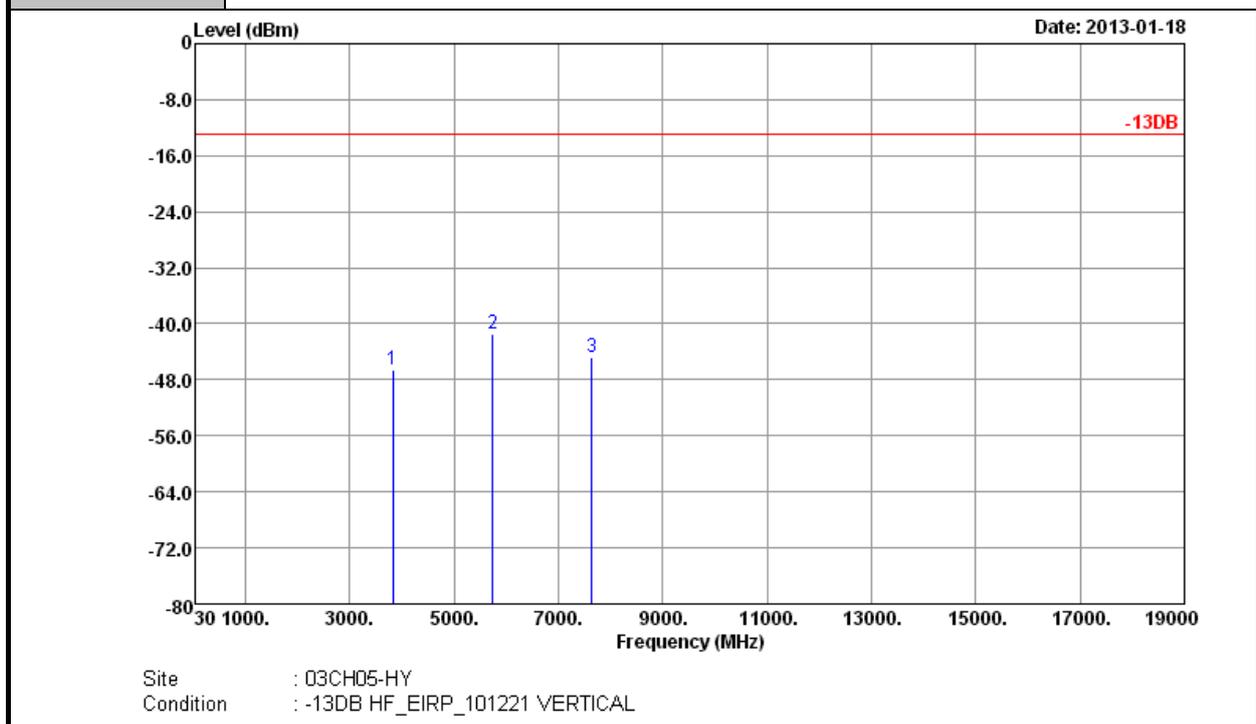


Site : 03CH05-HY
 Condition : -13DB HF_EIRP_101221 HORIZONTAL

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
3820	-47.00	-13	-34.00	-60.83	-53.8	1.99	8.79	H	Pass
5732	-42.70	-13	-29.70	-61.73	-51.3	2.15	10.75	H	Pass
7640	-43.56	-13	-30.56	-65.67	-53.2	2.68	12.32	H	Pass



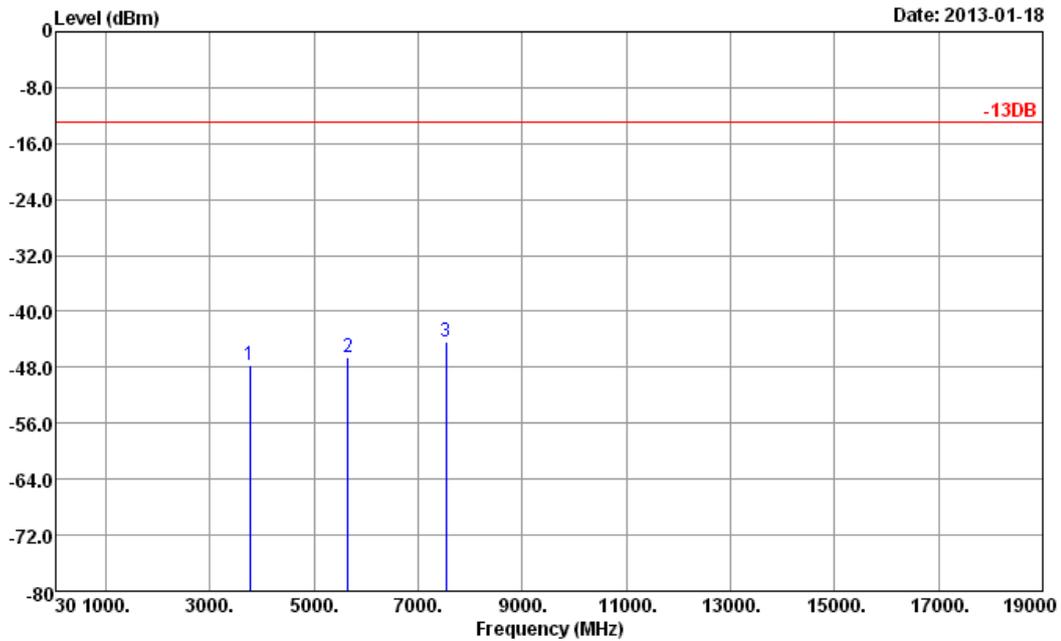
Band :	LTE Band 25	Temperature :	20~22°C
Test Mode :	5MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3820	-46.50	-13	-33.50	-60.36	-53.3	1.99	8.79	V	Pass
5732	-41.40	-13	-28.40	-60.39	-50	2.15	10.75	V	Pass
7640	-44.86	-13	-31.86	-67.02	-54.5	2.68	12.32	V	Pass



Band :	LTE Band 25	Temperature :	20~22°C
Test Mode :	10MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

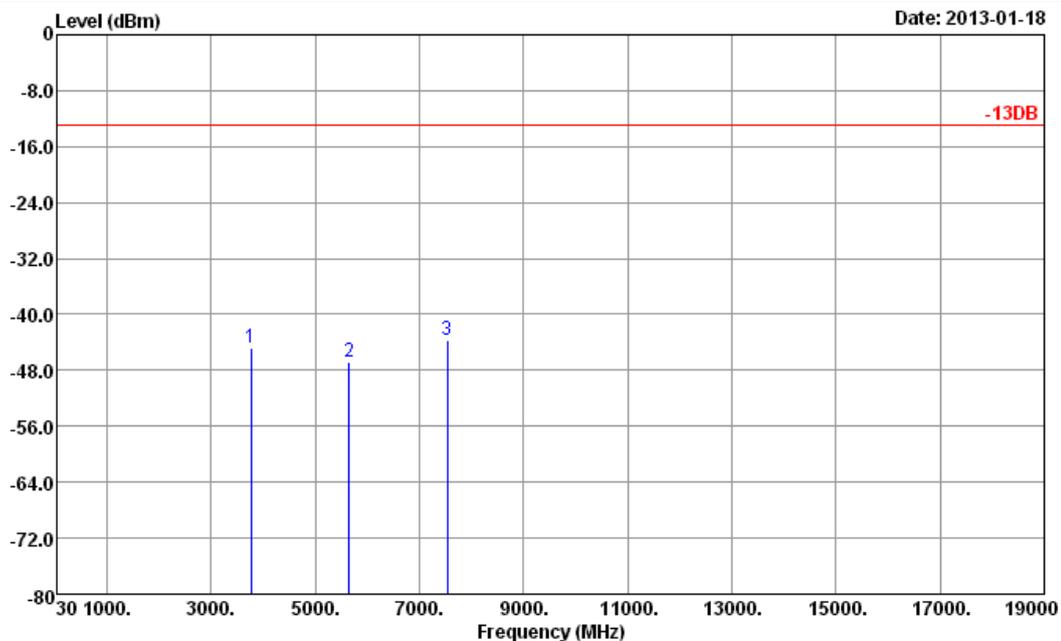


Site : 03CH05-HY
 Condition : -13DB HF_EIRP_101221 HORIZONTAL

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
3756	-47.63	-13	-34.63	-61.87	-54.35	2.00	8.72	H	Pass
5652	-46.65	-13	-33.65	-66.2	-55.29	2.13	10.77	H	Pass
7528	-44.32	-13	-31.32	-67.59	-53.86	2.68	12.22	H	Pass



Band :	LTE Band 25	Temperature :	20~22°C
Test Mode :	10MHz, QPSK, RB Size 1, RB Offset 0	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : -13DB HF_EIRP_101221 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
3756	-44.75	-13	-31.75	-58.66	-51.47	2.00	8.72	V	Pass
5648	-46.75	-13	-33.75	-66.23	-55.39	2.13	10.77	V	Pass
7528	-43.60	-13	-30.60	-66.63	-53.14	2.68	12.22	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.

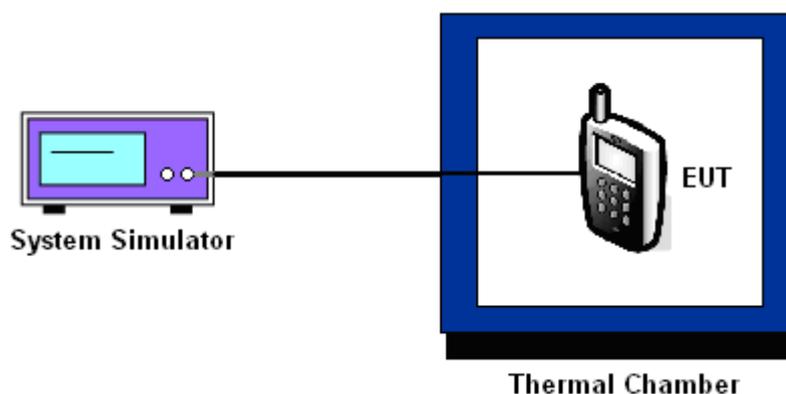
3.6.3 Test Procedures for Temperature Variation

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	10.3	0.015	-12.3	-0.017	7.8	0.011	-5.6	-0.008	PASS
-20	11.5	0.016	-10.2	-0.014	10.6	0.015	-8.9	-0.013	
-10	9.4	0.013	9.5	0.013	-9.5	-0.013	-12.1	-0.017	
0	9.8	0.014	-8.4	-0.012	-8.5	-0.012	-10.2	-0.014	
10	8.7	0.012	10.2	0.014	6.9	0.010	-10.9	-0.015	
20	-9.5	-0.013	-5.6	-0.008	9.5	0.013	-11.6	-0.016	
30	-11.5	-0.016	11.3	0.016	10.5	0.015	-9.8	-0.014	
40	10.9	0.015	-10.6	-0.015	-9.4	-0.013	-7.6	-0.011	
50	8.1	0.011	9.8	0.014	-12.3	-0.017	-9.2	-0.013	
55	7.9	0.011	8.7	0.012	-10.6	-0.015	-8.6	-0.012	

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

Temperature (°C)	1.4MHz		3MHz		5MHz		10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)							
-30	8.6	0.012	-13.6	-0.019	8.2	0.012	6.8	0.010	PASS
-20	10.4	0.015	-8.6	-0.012	11.0	0.016	5.6	0.008	
-10	7.6	0.011	9.1	0.013	9.1	0.013	-9.5	-0.013	
0	-8.4	-0.012	7.6	0.011	7.0	0.010	-11.3	-0.016	
10	-7.1	-0.010	9.7	0.014	-9.6	-0.014	-9.8	-0.014	
20	8.9	0.013	5.5	0.008	8.8	0.012	8.5	0.012	
30	10.1	0.014	-10.2	-0.014	-9.9	-0.014	9.2	0.013	
40	7.5	0.011	-8.6	-0.012	-7.8	-0.011	-8.5	-0.012	
50	-9.0	-0.013	7.5	0.011	-11.6	-0.016	-9.4	-0.013	
55	-6.6	-0.009	-7.5	-0.011	-9.1	-0.013	-9.7	-0.014	

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	-8.1	-0.011	2.5	PASS
			3.60	-10.2	-0.014		
			4.35	-5.4	-0.008		
		3MHz	3.80	12.3	0.017		
			3.60	10.5	0.015		
			4.35	11.6	0.016		
		5MHz	3.80	-7.1	-0.010		
			3.60	-8.4	-0.012		
			4.35	-9.6	-0.014		
		10MHz	3.80	-8.2	-0.012		
			3.60	-10.2	-0.014		
			4.35	-8.9	-0.013		
	16QAM	1.4MHz	3.80	-5.5	-0.008		
			3.60	8.3	0.012		
			4.35	-9.6	-0.014		
		3MHz	3.80	13.6	0.019		
			3.60	11.2	0.016		
			4.35	9.9	0.014		
		5MHz	3.80	-7.1	-0.010		
			3.60	-8.4	-0.012		
			4.35	-9.6	-0.014		
		10MHz	3.80	-10.6	-0.015		
			3.60	-9.5	-0.013		
			4.35	-7.2	-0.010		

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	Jan. 14, 2013	Dec. 28, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Jan. 14, 2013	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 29, 2012	Jan. 14, 2013	Dec. 28, 2013	Conducted (TH01-KS)
LTE Base Station	Anritsu	MT8820C	6201074235	LTE_FDD full band	Dec. 29, 2012	Jan. 14, 2013	Dec. 28, 2013	Conducted (TH01-KS)
Spectrum Analyzer	R&S	ESU26	100390	20Hz~26.5GHz	Dec. 14, 2012	Jan. 17, 2013~ Jan. 19, 2013	Dec. 13, 2013	Radiation (03CH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2725	30MHz~2GHz	Oct. 06, 2012	Jan. 17, 2013~ Jan. 19, 2013	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0~360 degree	N/A	Jan. 17, 2013~ Jan. 19, 2013	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Jan. 17, 2013~ Jan. 19, 2013	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Jan. 17, 2013~ Jan. 19, 2013	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Jan. 17, 2013~ Jan. 19, 2013	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz~40GHz	Sep. 28, 2012	Jan. 17, 2013~ Jan. 19, 2013	Sep. 27, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103	161075	10-1000MHz.32dB.GAIN	Feb. 27, 2012	Jan. 17, 2013~ Jan. 19, 2013	Feb. 26, 2013	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 03, 2012	Jan. 17, 2013~ Jan. 19, 2013	Jul. 02, 2013	Radiation (03CH05-HY)
LTE Base Station	R&S	CMW500	123471	70MHz~3.3GHz	May 29, 2012	Jan. 17, 2013~ Jan. 19, 2013	May 28, 2013	Radiation (03CH05-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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Appendix A. Photographs of EUT

Please refer to Sporton report number EP2D1804 as below.