



FCC RF Test Report

APPLICANT : Research In Motion Limited
EQUIPMENT : LTE band 4 & 17 / HSPA+ FDD 1, 2 & 5 Tablet PC
BRAND NAME : RIM
MODEL NAME : REG51LW
MARKETING NAME : P150-32***The stars "*" in model name can be 0 to 9, A to Z or blank, for marking purpose.
FCC ID : L6AREG50LW
STANDARD : 47 CFR Part 2, 27
CLASSIFICATION : PCS Licensed Transmitter (PCB)
TX FREQUENCY RANGE : 1710 MHz ~ 1755 MHz (LTE – Band 4)
704 MHz ~ 716 MHz (LTE – Band 17)
RX FREQUENCY RANGE : 2110 MHz ~ 2155 MHz (LTE – Band 4)
734 MHz ~ 746 MHz (LTE – Band 17)
MAX. ERP/EIRP POWER : 0.13W (LTE Band 4 QPSK, BW 1.4MHz)
0.13W (LTE Band 4 16-QAM, BW 1.4MHz)
0.13W (LTE Band 4 QPSK, BW 3MHz)
0.12W (LTE Band 4 16-QAM, BW 3MHz)
0.12 W (LTE Band 4 QPSK, BW 5MHz)
0.12 W (LTE Band 4 16-QAM, BW 5MHz)
0.13 W (LTE Band 4 QPSK, BW 10MHz)
0.12 W (LTE Band 4 16-QAM, BW 10MHz)
0.12W (LTE Band 4 QPSK, BW 15MHz)
0.13W (LTE Band 4 16-QAM, BW 15MHz)
0.13W (LTE Band 4 QPSK, BW 20MHz)
0.14W (LTE Band 4 16-QAM, BW 20MHz)
0.18 W (LTE Band 17 QPSK, BW 5MHz)
0.17 W (LTE Band 17 16-QAM, BW 5MHz)
0.17 W (LTE Band 17 QPSK, BW 10MHz)
0.17 W (LTE Band 17 16-QAM, BW 10MHz)



The product was received on Dec. 07, 2011 and completely tested on Mar. 12, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards. The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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



TABLE OF CONTENTS

REVISION HISTORY..... 4

SUMMARY OF TEST RESULT 5

1 GENERAL DESCRIPTION 6

 1.1 Applicant 6

 1.2 Manufacturer 6

 1.3 Feature of Equipment Under Test 6

 1.4 Emission Designator 7

 1.5 Testing Site 7

 1.6 Applied Standards 8

 1.7 Ancillary Equipment List 8

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 9

 2.1 Test Mode 9

 2.2 Connection Diagram of Test System 10

3 TEST RESULT 11

 3.1 Conducted Output Average Power Measurement 11

 3.2 Effective Radiated Power and Equivalent Isotropic Radiated Power Measurement 14

 3.3 Occupied Bandwidth 24

 3.4 Band Edge Measurement 33

 3.5 Conducted Emission Measurement 50

 3.6 Field Strength of Spurious Radiation Measurement 99

 3.7 Frequency Stability Measurement 117

4 LIST OF MEASURING EQUIPMENTS 121

5 UNCERTAINTY OF EVALUATION 122

APPENDIX A. PHOTOGRAPHS OF EUT

APPENDIX B. SETUP PHOTOGRAPHS



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG1D0774B	Rev. 01	Initial issue of report	Feb. 08, 2012
FG1D0774B	Rev. 02	Update report for Modifying description of “Output Power” to “Output Average Power”.	Feb. 14, 2012
FG1D0774B	Rev. 03	Update report for revising Effective Radiated Power and Equivalent Isotropic Radiated Power Measurement	Mar. 13, 2012



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Average Power	NA	PASS	-
3.2	§27.50(c)(10) §27.50(d)(4)	Effective Radiated Power and Equivalent Isotropic Radiated Power	ERP < 3 Watts (Band 17) EIRP < 1 Watt (Band 4)	PASS	-
3.3	§2.1049	Occupied Bandwidth	NA	PASS	-
3.4	§2.1049 §27.53(g)(h)	Emission Mask Measurement	< 43+10log ₁₀ (P[Watts])	PASS	-
3.5	§2.1051 §27.53(g)(h)	Conducted Emission	< 43+10log ₁₀ (P[Watts])	PASS	-
3.6	§2.1053 §27.53(h)(g)	Undesirable Out of Band Emissions	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 15.38 dB at 5197.000 MHz
3.7	§2.1055 §27.54	Frequency Stability Temperature & Voltage	< 2.5 ppm	PASS	-



1 General Description

1.1 Applicant

Research In Motion Limited
295 Phillip Street, Waterloo, Ontario, Canada

1.2 Manufacturer

Quanta Computer Inc.
No. 188, Wen Hwa 2nd Road, Kuei Shan Hsiang, Tao Yuan Shien, 333 Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	LTE band 4 & 17 / HSPA+ FDD 1, 2 & 5 Tablet PC
Brand Name	RIM
Model Name	REG51LW
FCC ID	L6AREG50LW
Tx Frequency	LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 17 : 704 MHz ~ 716 MHz
Rx Frequency	LTE Band 4 : 2110 MHz ~ 2155 MHz LTE Band 17 : 734 MHz ~ 746 MHz
Bandwidth	1.4MHz/ 3MHz/ 5MHz/ 10MHz/ 15MHz/ 20MHz for band 4 5MHz/ 10MHz for band 17
Maximum Output Average Power to Antenna	LTE Band 4 : 24.14 dBm LTE Band 17 : 23.31 dBm
Antenna Type	Coupling type (LDS)
HW Version	DARU3MB1AD0 REVD
SW Version	1.0.0.0
EUT Stage	Identical Prototype

1.4 Emission Designator

FCC Rule	System	Type of Modulation	BW	Emission Designator	Maximum ERP/EIRP
Part 27	LTE Band 4	QPSK	1.4MHz	1M09G7D	0.13 W
Part 27	LTE Band 4	16-QAM	1.4MHz	1M10D7W	0.13 W
Part 27	LTE Band 4	QPSK	3MHz	2M74G7D	0.13 W
Part 27	LTE Band 4	16-QAM	3MHz	2M74D7W	0.12 W
Part 27	LTE Band 4	QPSK	5MHz	4M52G7D	0.12 W
Part 27	LTE Band 4	16-QAM	5MHz	4M52D7W	0.12 W
Part 27	LTE Band 4	QPSK	10MHz	9M12G7D	0.13 W
Part 27	LTE Band 4	16-QAM	10MHz	9M12D7W	0.12 W
Part 27	LTE Band 4	QPSK	15MHz	13M6G7D	0.12 W
Part 27	LTE Band 4	16-QAM	15MHz	13M6D7W	0.13 W
Part 27	LTE Band 4	QPSK	20MHz	18M7G7D	0.13 W
Part 27	LTE Band 4	16-QAM	20MHz	18M7D7W	0.14 W
Part 27	LTE Band 17	QPSK	5MHz	4M48G7D	0.18 W
Part 27	LTE Band 17	16-QAM	5MHz	4M48D7W	0.17 W
Part 27	LTE Band 17	QPSK	10MHz	9M08G7D	0.17 W
Part 27	LTE Band 17	16-QAM	10MHz	9M08D7W	0.17 W

1.5 Testing Site

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.
	TH02-HY	03CH05-HY / 03CH07-HY	TW1022/4086B-1



1.6 Applied Standards

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

- ♦ 47 CFR Part 2, 27
- ♦ 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.

1.7 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	FCC DoC	Unshielded, 1.2 m	N/A

2 Test Configuration of Equipment Under Test

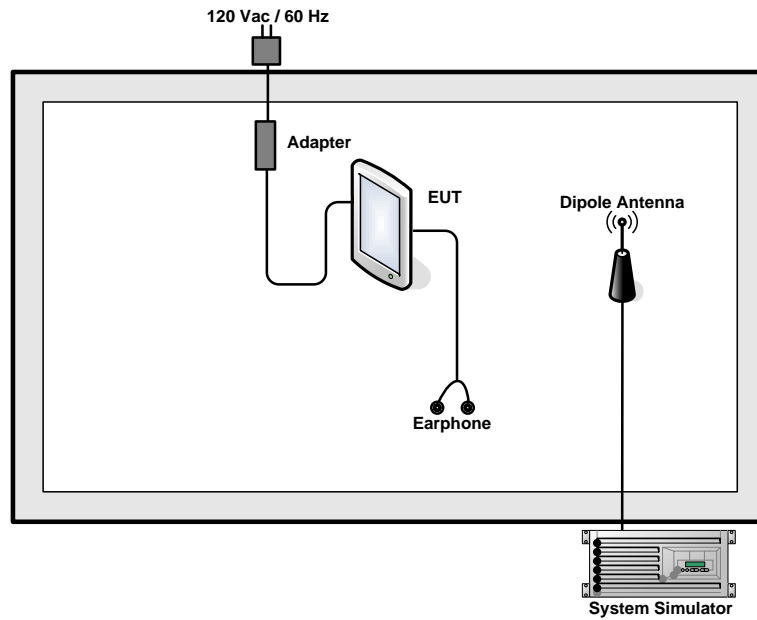
2.1 Test Mode

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.

Frequency range investigated for radiated emission: 30MHz to 10th harmonic.

Test Modes			
Band			
		Radiated TCs	
		Conducted TCs	
LTE Band 4	BW 1.4MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link
	BW 3MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link
	BW 5MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link
	BW 10MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link
	BW 15MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link
	BW 20MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link
LTE Band 17	BW 5MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link
	BW 10MHz	■ LTE QPSK Link	■ LTE QPSK Link ■ LTE 16-QAM Link

2.2 Connection Diagram of Test System



3 Test Result

3.1 Conducted Output Average Power Measurement

3.1.1 Description of the Conducted Output Average Power Measurement

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

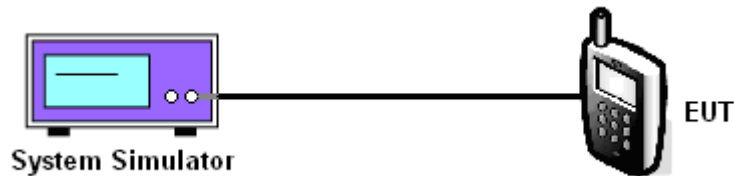
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Average Power

Operation Band	Band Width	Modulation	Channel	Frequency (MHz)	Average Power (dBm)	Average Power (Watts)	PAPR (dB)
LTE Band 4	1.4MHz	QPSK	19957	1710.7	23.73	0.2360	5.32
			20175	1732.5	23.34	0.2158	5.20
			20393	1754.3	23.54	0.2259	5.32
		16-QAM	19957	1710.7	23.00	0.1995	6.12
			20175	1732.5	22.62	0.1828	5.88
			20393	1754.3	22.85	0.1928	6.00
	3MHz	QPSK	19965	1711.5	23.75	0.2371	5.24
			20175	1732.5	23.29	0.2133	5.04
			20385	1753.5	23.67	0.2328	5.16
		16-QAM	19965	1711.5	23.01	0.2000	6.04
			20175	1732.5	22.60	0.1820	5.88
			20385	1753.5	22.95	0.1972	6.08
	5MHz	QPSK	19975	1712.5	23.98	0.2500	5.24
			20175	1732.5	23.54	0.2259	5.12
			20375	1752.5	23.65	0.2317	5.24
		16-QAM	19975	1712.5	23.11	0.2046	5.88
			20175	1732.5	22.93	0.1963	5.80
			20375	1752.5	23.05	0.2018	5.80
	10MHz	QPSK	20000	1715.0	24.14	0.2594	5.40
			20175	1732.5	23.81	0.2404	5.40
			20350	1750.0	23.68	0.2333	5.40
		16-QAM	20000	1715.0	23.44	0.2208	6.16
			20175	1732.5	23.13	0.2056	6.12
			20350	1750.0	23.04	0.2014	6.28
	15MHz	QPSK	20025	1717.5	24.00	0.2512	5.88
			20175	1732.5	23.86	0.2432	5.72
			20325	1747.5	23.83	0.2415	5.84
16-QAM		20025	1717.5	23.05	0.2018	6.72	
		20175	1732.5	23.05	0.2018	6.64	
		20325	1747.5	23.20	0.2089	6.72	



LTE Band 4	20MHz	QPSK	20050	1720.0	23.89	0.2449	6.48
			20175	1732.5	24.02	0.2523	6.44
			20300	1745.0	23.84	0.2421	6.52
		16-QAM	20050	1720.0	23.10	0.2042	7.08
			20175	1732.5	23.21	0.2094	7.12
			20300	1745.0	23.04	0.2014	7.08

Operation Band	Band Width	Modulation	Channel	Frequency (MHz)	Average Power (dBm)	Average Power (Watts)	PAPR (dB)
LTE Band 17	5MHz	QPSK	23755	706.5	23.17	0.2075	5.64
			23790	710.0	23.03	0.2009	5.76
			23825	713.5	22.98	0.1986	5.76
		16-QAM	23755	706.5	22.14	0.1637	6.40
			23790	710.0	22.25	0.1679	6.48
			23825	713.5	22.10	0.1622	6.52
	10MHz	QPSK	23780	709.0	23.31	0.2143	5.48
			23790	710.0	23.01	0.2000	5.40
			23800	711.0	22.87	0.1936	5.44
		16-QAM	23780	709.0	22.69	0.1858	6.40
			23790	710.0	22.40	0.1738	6.32
			23800	711.0	22.08	0.1614	6.36



3.2 Effective Radiated Power and Equivalent Isotropic Radiated Power Measurement

3.2.1 Description of the ERP/EIRP Measurement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v01. Mobile and portable (hand-held) stations operating in the 777 MHz ~787 MHz band and 1710 MHz ~ 1755 MHz band are limited to a peak ERP of 3 watts with band 17 and EIRP of 1 watt with band 4.

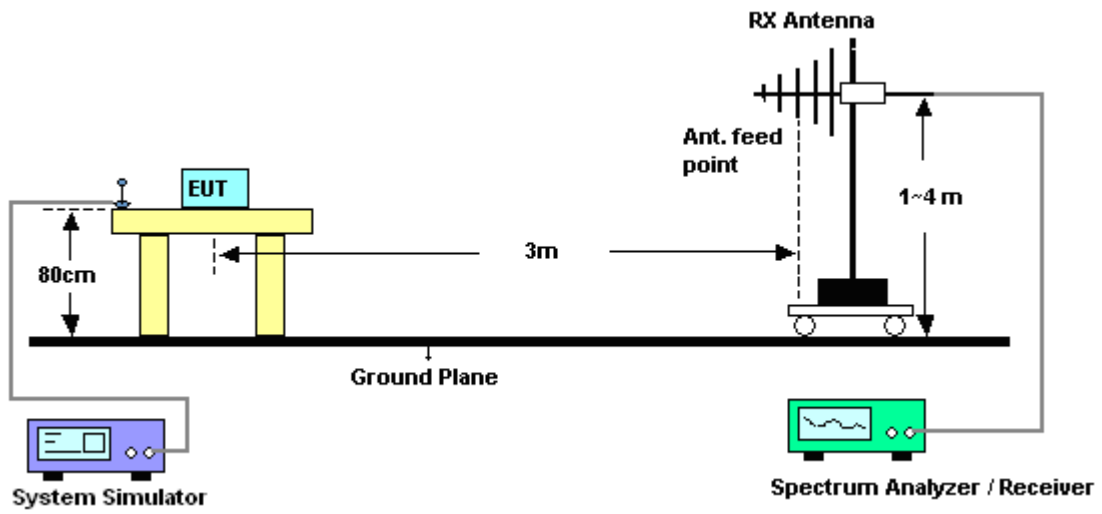
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was placed on a 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 with a test antenna and a spectrum analyzer with RBW= 100KHz, VBW= 300KHz for BW 1.4MHz and BW 3MHz, RBW= 300KHz, VBW= 1MHz for BW 5MHz and BW 10MHz, RBW= 1MHz, VBW= 3MHz for BW 15MHz and BW 20MHz, RMS detector, and used Channel Power function with measurement bandwidth = 5MHz/10MHz per section 4.0 of KDB 971168 D01.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. 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 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, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$.

3.2.4 Test Setup



3.2.5 Test Result of ERP/EIRP

LTE Band 4 Radiated Power EIRP for BW 1.4MHz (QPSK, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-16.31	39.33	20.87	0.12
1732.50	-16.58	39.86	21.13	0.13
1754.30	-17.25	39.91	20.51	0.11
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-26.39	42.9	14.36	0.03
1732.50	-26.06	42.23	14.02	0.03
1754.30	-26.61	41.7	12.94	0.02

LTE Band 4 Radiated Power EIRP for BW 1.4MHz (16-QAM, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-16.91	39.33	20.27	0.11
1732.50	-16.64	39.86	21.07	0.13
1754.30	-17.39	39.91	20.37	0.11
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-26.48	42.9	14.27	0.03
1732.50	-26.29	42.23	13.79	0.02
1754.30	-26.64	41.7	12.91	0.02



LTE Band 4 Radiated Power EIRP for BW 3MHz (QPSK, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-16.89	39.36	20.32	0.11
1732.50	-16.72	39.86	20.99	0.13
1753.50	-16.94	39.88	20.79	0.12
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-26.07	42.85	14.63	0.03
1732.50	-25.94	42.23	14.14	0.03
1753.50	-26.23	41.66	13.28	0.02

LTE Band 4 Radiated Power EIRP for BW 3MHz (16-QAM, 1RB Size, RB Offset 14)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-16.93	39.36	20.28	0.11
1732.50	-16.76	39.86	20.95	0.12
1753.50	-17.11	39.88	20.62	0.12
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-26.21	42.85	14.49	0.03
1732.50	-26.19	42.23	13.89	0.02
1753.50	-26.38	41.66	13.13	0.02



LTE Band 4 Radiated Power EIRP for BW 5MHz (QPSK, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.50	-16.55	39.39	20.69	0.12
1732.50	-17.35	39.86	20.36	0.11
1752.50	-17.06	39.84	20.63	0.12
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.50	-26.90	42.83	13.78	0.02
1732.50	-26.16	42.23	13.92	0.02
1752.50	-25.63	41.64	13.86	0.02

LTE Band 4 Radiated Power EIRP for BW 5MHz (16-QAM, 1RB Size, RB Offset 24)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.50	-16.33	39.39	20.91	0.12
1732.50	-17.28	39.86	20.43	0.11
1752.50	-16.74	39.84	20.95	0.12
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.50	-27.05	42.83	13.63	0.02
1732.50	-26.62	42.23	13.46	0.02
1752.50	-26.07	41.64	13.42	0.02



LTE Band 4 Radiated Power EIRP for BW 10MHz (QPSK, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.00	-16.21	39.43	21.07	0.13
1732.50	-17.11	39.86	20.60	0.11
1750.00	-17.06	39.77	20.56	0.11
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.00	-26.41	42.36	13.80	0.02
1732.50	-26.60	42.23	13.48	0.02
1750.00	-25.89	41.69	13.65	0.02

LTE Band 4 Radiated Power EIRP for BW 10MHz (16-QAM, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.00	-16.63	39.43	20.65	0.12
1732.50	-17.25	39.86	20.46	0.11
1750.00	-17.12	39.77	20.50	0.11
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.00	-26.61	42.36	13.60	0.02
1732.50	-26.73	42.23	13.35	0.02
1750.00	-26.10	41.69	13.44	0.02



LTE Band 4 Radiated Power EIRP for BW 15MHz (QPSK, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-16.41	39.52	20.96	0.12
1732.50	-17.51	39.86	20.20	0.10
1747.50	-16.77	39.45	20.53	0.11
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-26.27	42	13.58	0.02
1732.50	-26.46	42.23	13.62	0.02
1747.50	-26.61	41.9	13.14	0.02

LTE Band 4 Radiated Power EIRP for BW 15MHz (16-QAM, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-16.37	39.52	21.00	0.13
1732.50	-17.00	39.86	20.71	0.12
1747.50	-16.32	39.45	20.98	0.13
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-25.98	42	13.87	0.02
1732.50	-26.43	42.23	13.65	0.02
1747.50	-26.74	41.9	13.01	0.02



LTE Band 4 Radiated Power EIRP for BW 20MHz (QPSK, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-16.57	39.55	20.83	0.12
1732.50	-16.89	39.86	20.82	0.12
1745.00	-16.30	39.43	20.98	0.13
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-26.44	42.03	13.44	0.02
1732.50	-26.43	42.23	13.65	0.02
1745.00	-26.34	41.88	13.39	0.02

LTE Band 4 Radiated Power EIRP for BW 20MHz (16-QAM, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-16.35	39.55	21.05	0.13
1732.50	-16.26	39.86	21.45	0.14
1745.00	-16.17	39.43	21.11	0.13
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-26.37	42.03	13.51	0.02
1732.50	-26.59	42.23	13.49	0.02
1745.00	-26.40	41.88	13.33	0.02



LTE Band 17 Radiated Power ERP for BW 5MHz (QPSK, 1RB Size, RB Offset 24)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.50	-7.52	30.76	21.09	0.13
710.00	-6.78	31.07	22.14	0.16
713.50	-6.36	31.09	22.58	0.18
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.50	-16.58	34.86	16.13	0.04
710.00	-16.55	34.63	15.93	0.04
713.50	-16.45	34.39	15.79	0.04

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15

LTE Band 17 Radiated Power ERP for BW 5MHz (16-QAM, 1RB Size, RB Offset 24)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.50	-7.95	30.76	20.66	0.12
710.00	-6.95	31.07	21.97	0.16
713.50	-6.63	31.09	22.31	0.17
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.50	-17.07	34.86	15.64	0.04
710.00	-17.01	34.63	15.47	0.04
713.50	-16.99	34.39	15.25	0.03

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15



LTE Band 17 Radiated Power ERP for BW 10MHz (QPSK, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709.00	-6.40	30.97	22.42	0.17
710.00	-6.63	31.07	22.29	0.17
711.00	-6.65	30.88	22.08	0.16
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709.00	-15.42	34.69	17.12	0.05
710.00	-15.63	34.63	16.85	0.05
711.00	-15.96	34.5	16.39	0.04

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15

LTE Band 17 Radiated Power ERP for BW 10MHz (16-QAM, 1RB Size, RB Offset 0)				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709.00	-6.71	30.97	22.11	0.16
710.00	-6.72	31.07	22.20	0.17
711.00	-6.83	30.88	21.90	0.15
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709.00	-15.68	34.69	16.86	0.05
710.00	-15.80	34.63	16.68	0.05
711.00	-16.08	34.5	16.27	0.04

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15

3.3 Occupied Bandwidth

3.3.1 Description of Occupied Bandwidth Measurement

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

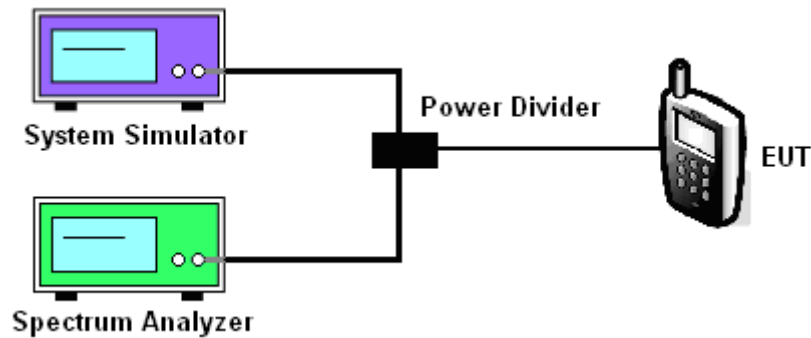
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

4. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
5. The 99% occupied bandwidth (BW) of the middle channel for the highest RF powers with full RB sizes were measured.

3.3.4 Test Setup

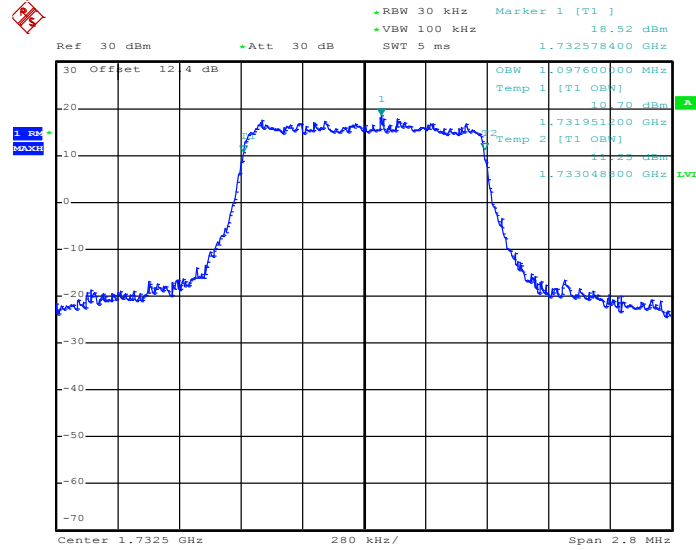




3.3.5 Test Result (Plots) of Occupied Bandwidth

Band :	LTE Band 4	BW / Mod. :	1.4MHz / QPSK
---------------	------------	--------------------	---------------

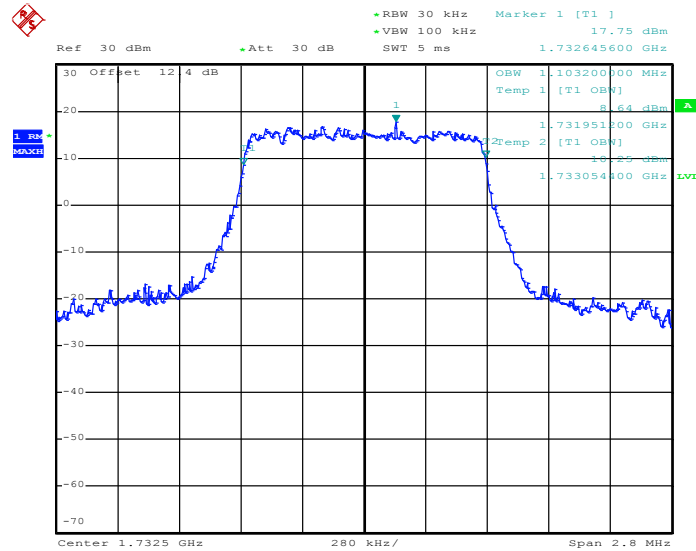
99% Occupied Bandwidth Plot on Channel 20175



Date: 21.DEC.2011 03:39:37

Band :	LTE Band 4	BW / Mod. :	1.4MHz / 16-QAM
---------------	------------	--------------------	-----------------

99% Occupied Bandwidth Plot on Channel 20175

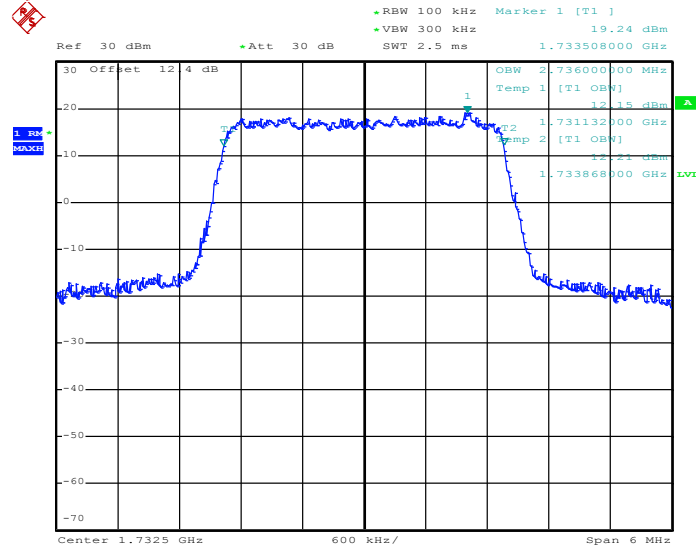


Date: 21.DEC.2011 03:40:03



Band :	LTE Band 4	BW / Mod. :	3MHz / QPSK
--------	------------	-------------	-------------

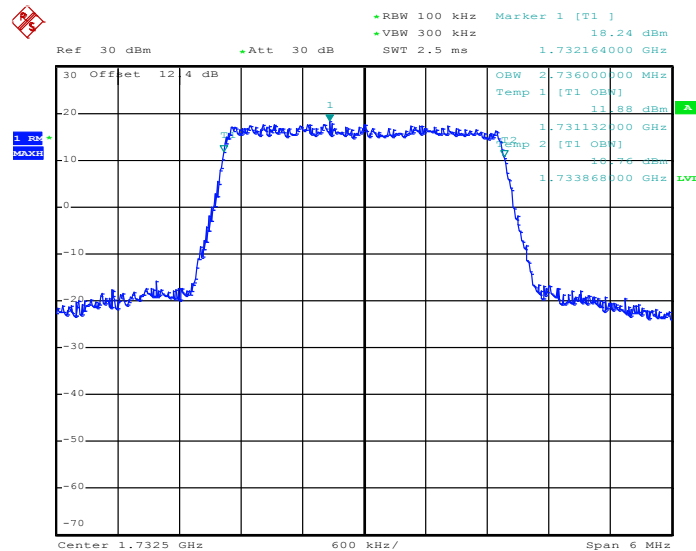
99% Occupied Bandwidth Plot on Channel 20175



Date: 21.DEC.2011 03:07:30

Band :	LTE Band 4	BW / Mod. :	3MHz / 16-QAM
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 20175

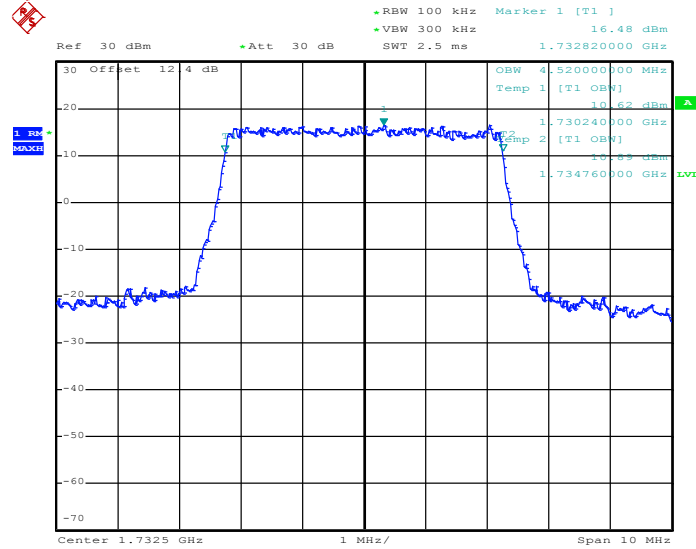


Date: 21.DEC.2011 03:08:17



Band :	LTE Band 4	BW / Mod. :	5MHz / QPSK
---------------	------------	--------------------	-------------

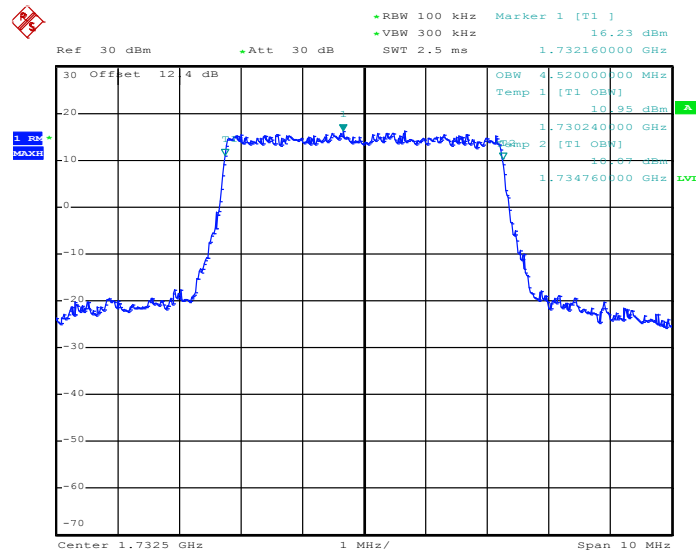
99% Occupied Bandwidth Plot on Channel 20175



Date: 21.DEC.2011 01:26:14

Band :	LTE Band 4	BW / Mod. :	5MHz / 16-QAM
---------------	------------	--------------------	---------------

99% Occupied Bandwidth Plot on Channel 20175

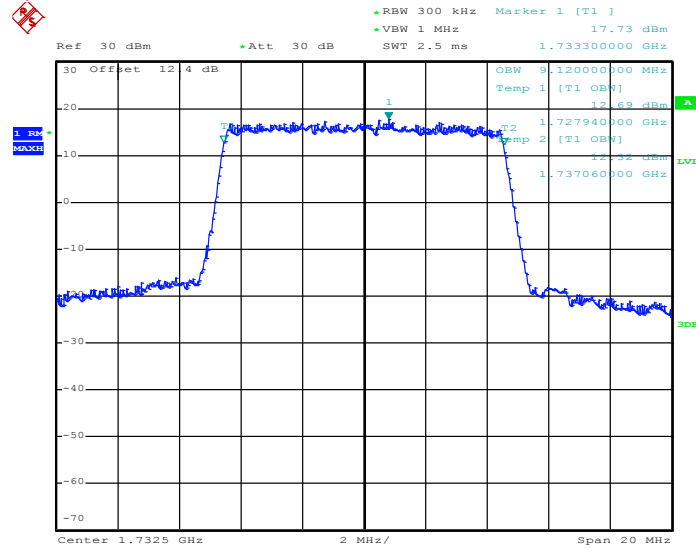


Date: 21.DEC.2011 01:27:34



Band :	LTE Band 4	BW / Mod. :	10MHz / QPSK
---------------	------------	--------------------	--------------

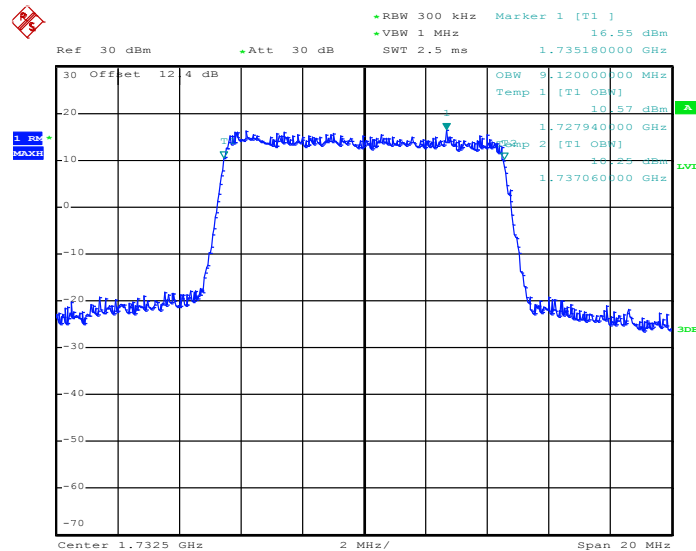
99% Occupied Bandwidth Plot on Channel 20175



Date: 20.DEC.2011 14:17:49

Band :	LTE Band 4	BW / Mod. :	10MHz / 16-QAM
---------------	------------	--------------------	----------------

99% Occupied Bandwidth Plot on Channel 20175

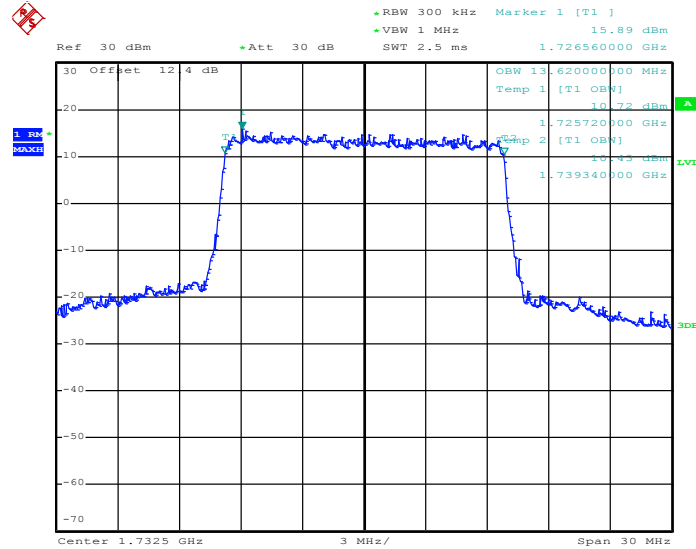


Date: 20.DEC.2011 14:18:19



Band :	LTE Band 4	BW / Mod. :	15MHz / QPSK
--------	------------	-------------	--------------

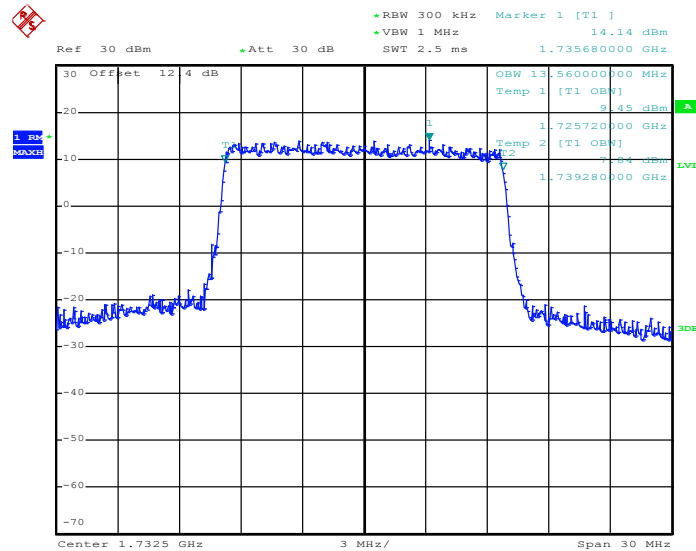
99% Occupied Bandwidth Plot on Channel 20175



Date: 10.JAN.2012 11:55:59

Band :	LTE Band 4	BW / Mod. :	15MHz / 16-QAM
--------	------------	-------------	----------------

99% Occupied Bandwidth Plot on Channel 20175

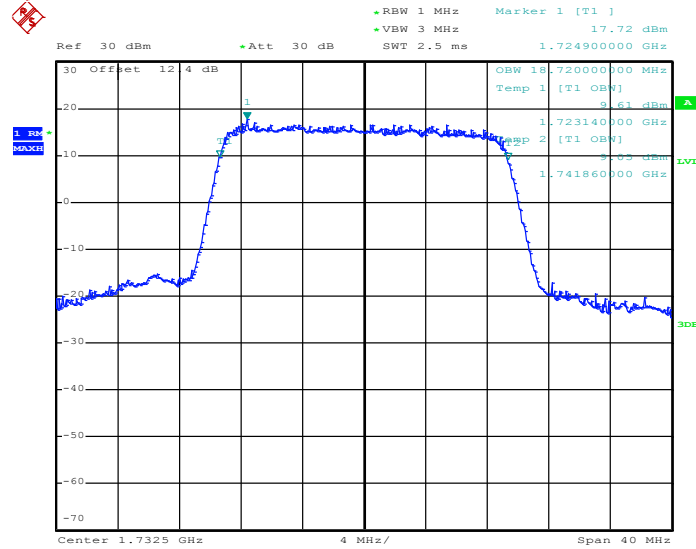


Date: 10.JAN.2012 11:56:16



Band :	LTE Band 4	BW / Mod. :	20MHz / QPSK
---------------	------------	--------------------	--------------

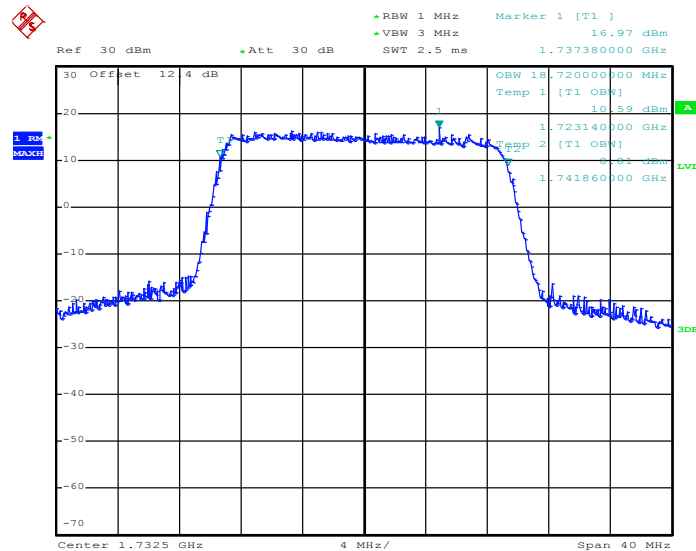
99% Occupied Bandwidth Plot on Channel 20175



Date: 6.JAN.2012 14:40:02

Band :	LTE Band 4	BW / Mod. :	20MHz / 16-QAM
---------------	------------	--------------------	----------------

99% Occupied Bandwidth Plot on Channel 20175

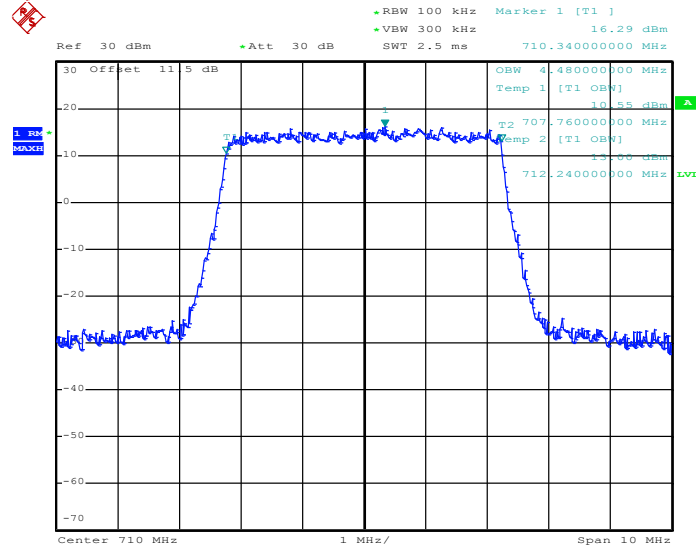


Date: 6.JAN.2012 14:40:24



Band :	LTE Band 17	BW / Mod. :	5MHz / QPSK
--------	-------------	-------------	-------------

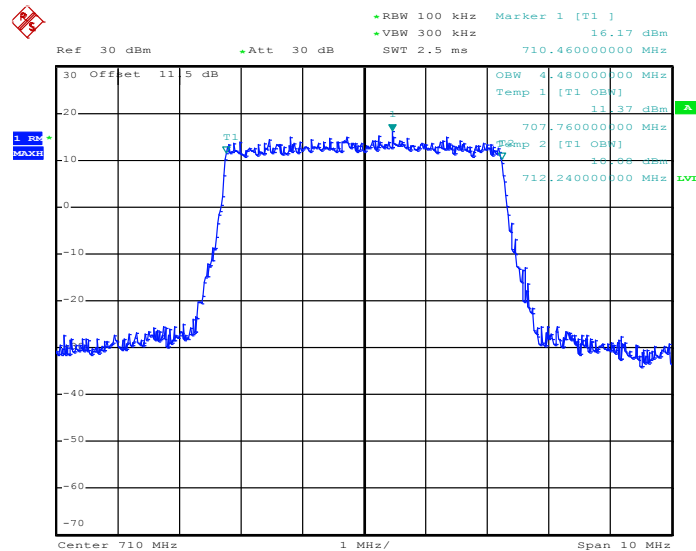
99% Occupied Bandwidth Plot on Channel 23790



Date: 21.DEC.2011 08:32:46

Band :	LTE Band 17	BW / Mod. :	5MHz / 16-QAM
--------	-------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 23790

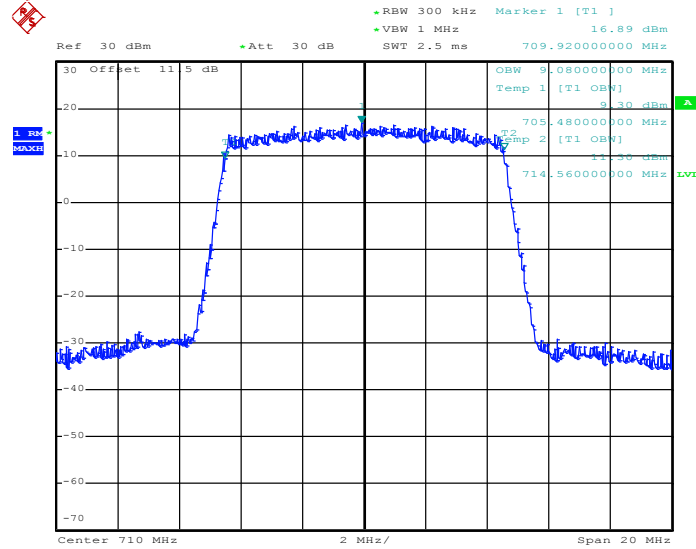


Date: 21.DEC.2011 08:33:00



Band :	LTE Band 17	BW / Mod. :	10MHz / QPSK
--------	-------------	-------------	--------------

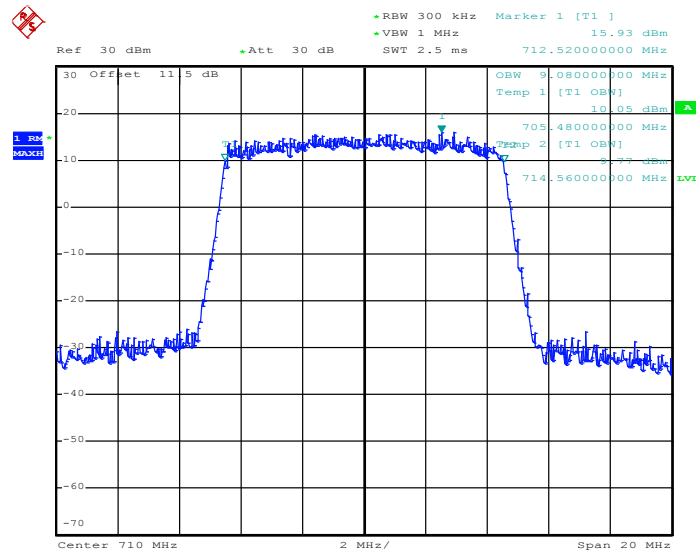
99% Occupied Bandwidth Plot on Channel 23790



Date: 21.DEC.2011 08:12:56

Band :	LTE Band 17	BW / Mod. :	10MHz / 16-QAM
--------	-------------	-------------	----------------

99% Occupied Bandwidth Plot on Channel 23790



Date: 21.DEC.2011 08:13:14

3.4 Band Edge Measurement

3.4.1 Limit

The emissions be operated in the 698 -746 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB = -13 dBm in a 100 KHz bandwidth.

For operations in the 1710 – 1755 MHz bands , the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB = -13 dBm in a 1 MHz bandwidth.

3.4.2 Measuring Instruments

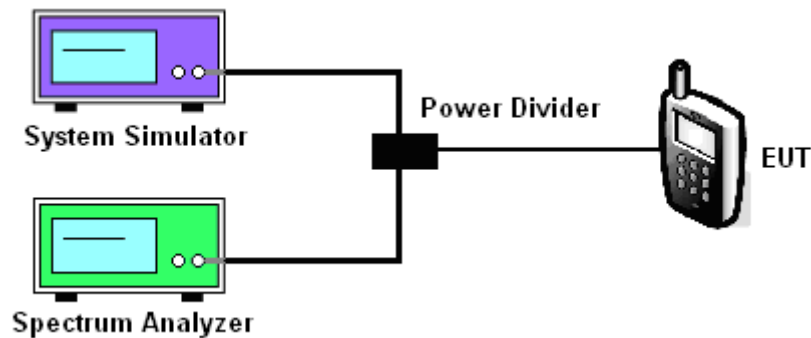
See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW = 100KHz(Band 17) / 1MHz(Band 4).

3.4.4 Test Setup

<Conducted Band Edge >

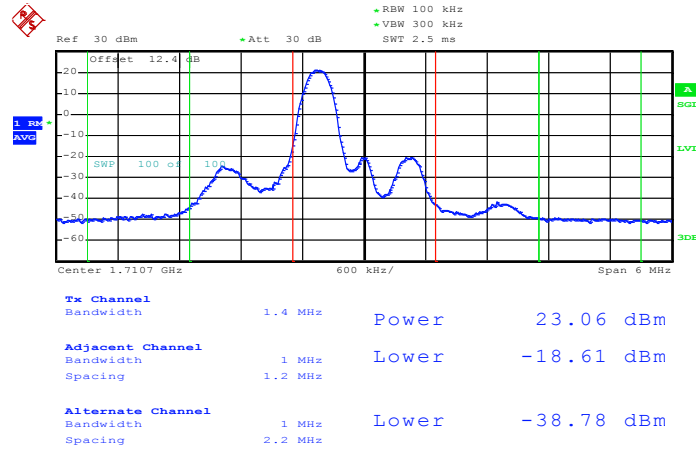




3.4.5 Test Result (Plots) of Conducted Band Edge

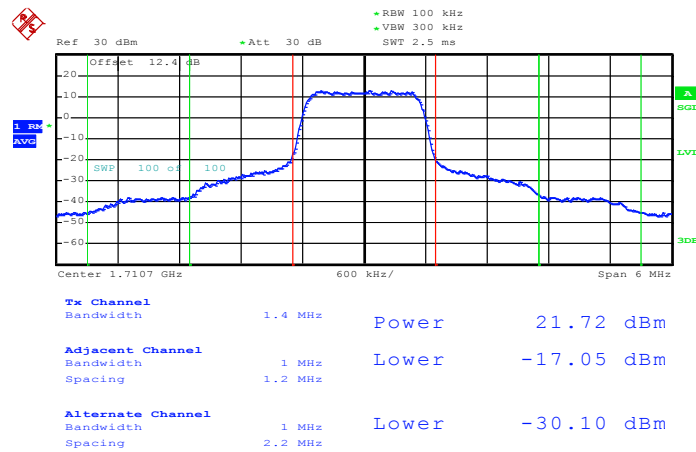
Band :	LTE Band 4	Band Width	1.4MHz
---------------	------------	-------------------	--------

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 23.DEC.2011 09:25:37

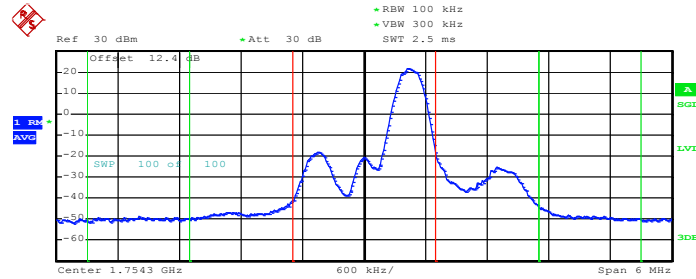
Lower Band Edge Plot for QPSK-RB Size 6, RB Offset 0



Date: 23.DEC.2011 09:25:19



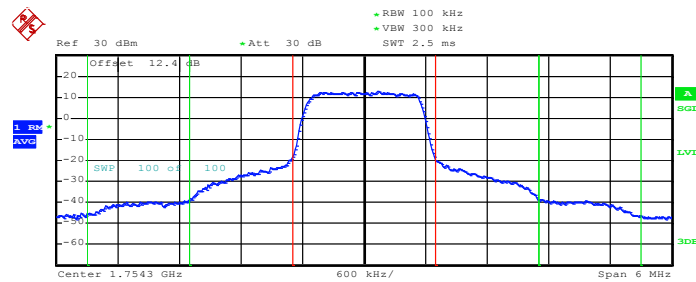
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 5



Tx Channel	Bandwidth	1.4 MHz	Power	23.29 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-19.20 dBm
	Spacing	1.2 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-38.87 dBm
	Spacing	2.2 MHz		

Date: 23.DEC.2011 09:30:50

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



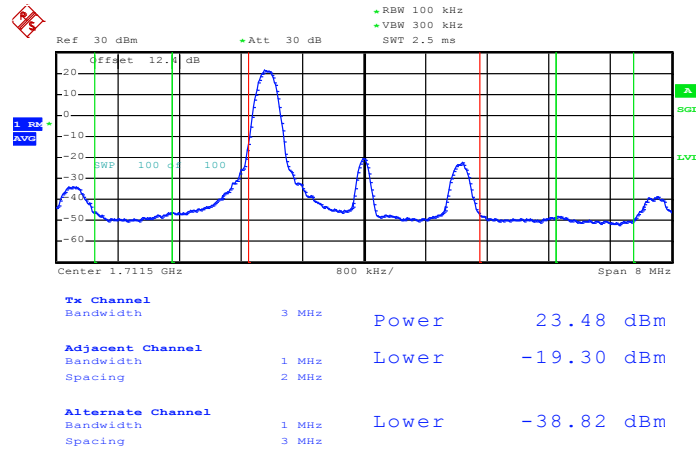
Tx Channel	Bandwidth	1.4 MHz	Power	21.67 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-16.77 dBm
	Spacing	1.2 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-31.15 dBm
	Spacing	2.2 MHz		

Date: 23.DEC.2011 09:30:26



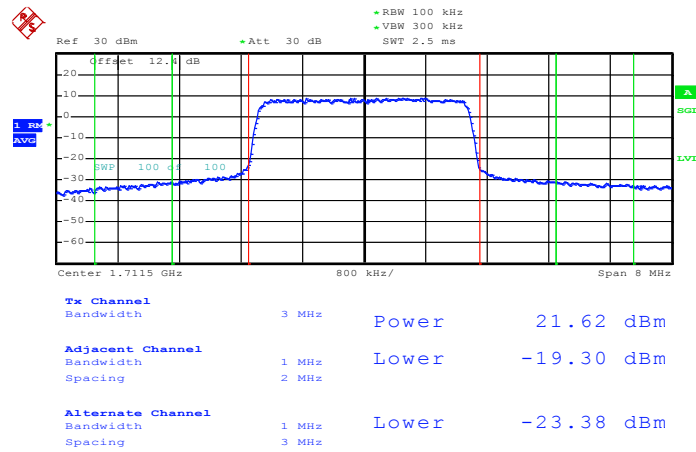
Band :	LTE Band 4	Band Width	3MHz
---------------	------------	-------------------	------

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 21.DEC.2011 02:40:05

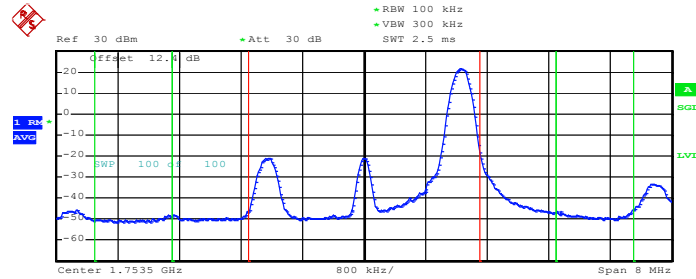
Lower Band Edge Plot for QPSK-RB Size 15, RB Offset 0



Date: 21.DEC.2011 02:36:48



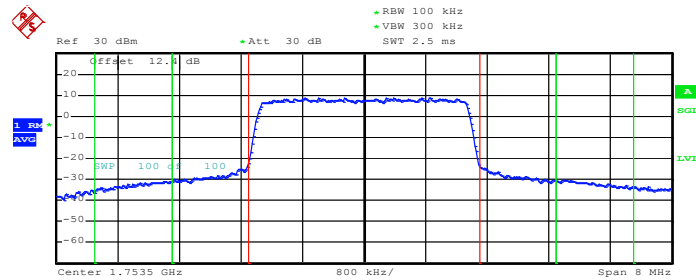
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 14



Tx Channel	Bandwidth	3 MHz	Power	23.33 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-21.13 dBm
	Spacing	2 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-38.91 dBm
	Spacing	3 MHz		

Date: 21.DEC.2011 02:42:23

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



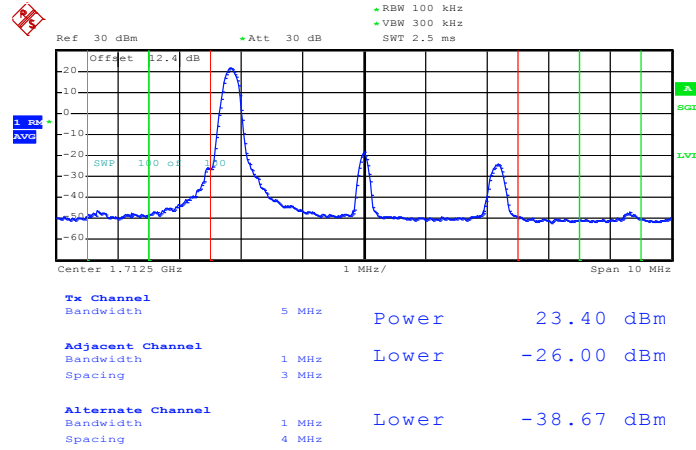
Tx Channel	Bandwidth	3 MHz	Power	21.55 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-18.56 dBm
	Spacing	2 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-22.44 dBm
	Spacing	3 MHz		

Date: 21.DEC.2011 02:43:40



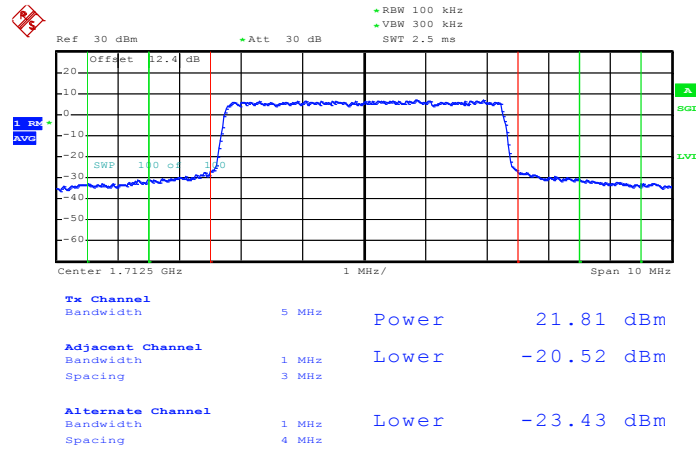
Band :	LTE Band 4	Band Width	5MHz
---------------	------------	-------------------	------

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 21.DEC.2011 02:02:40

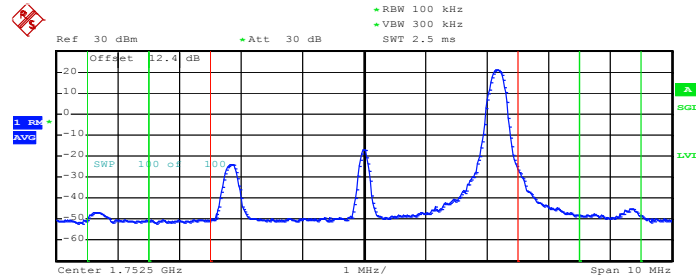
Lower Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 21.DEC.2011 02:03:42



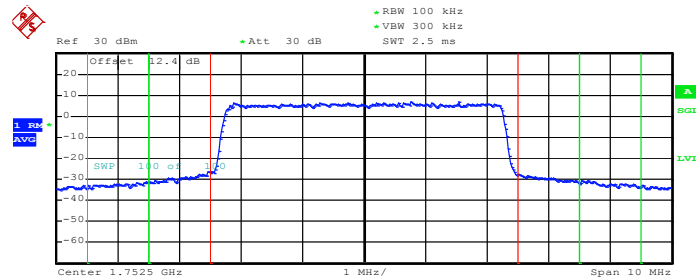
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 24



Tx Channel	Bandwidth	5 MHz	Power	23.09 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-27.14 dBm
	Spacing	3 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-37.99 dBm
	Spacing	4 MHz		

Date: 21.DEC.2011 01:57:47

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



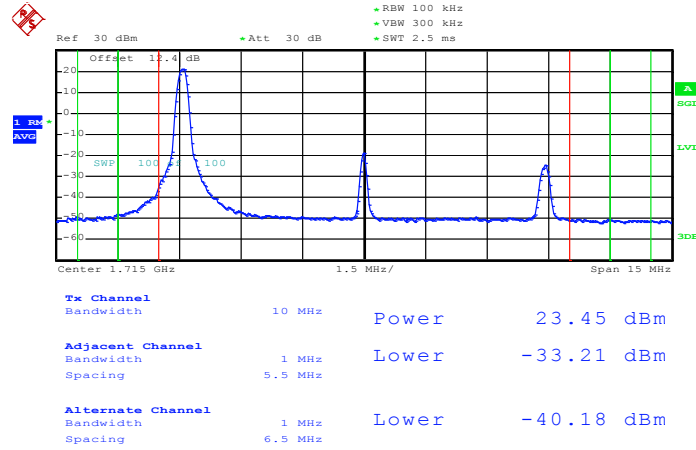
Tx Channel	Bandwidth	5 MHz	Power	21.59 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-19.84 dBm
	Spacing	3 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-22.54 dBm
	Spacing	4 MHz		

Date: 21.DEC.2011 01:59:50



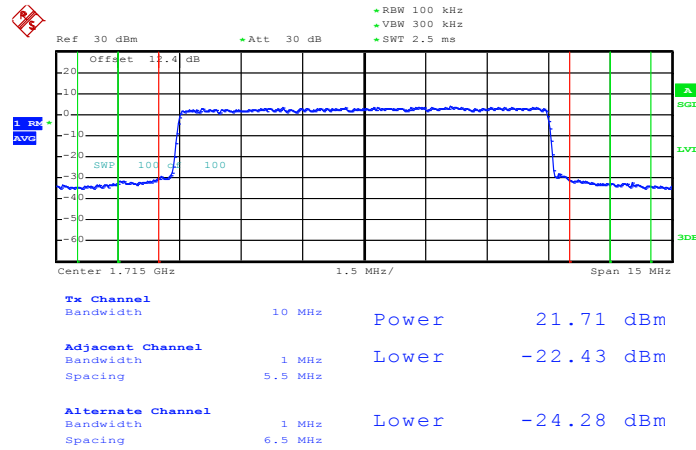
Band :	LTE Band 4	Band Width	10MHz
---------------	------------	-------------------	-------

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 20.DEC.2011 15:56:47

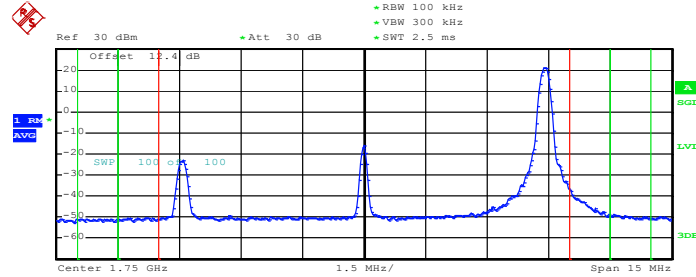
Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0



Date: 20.DEC.2011 16:01:38



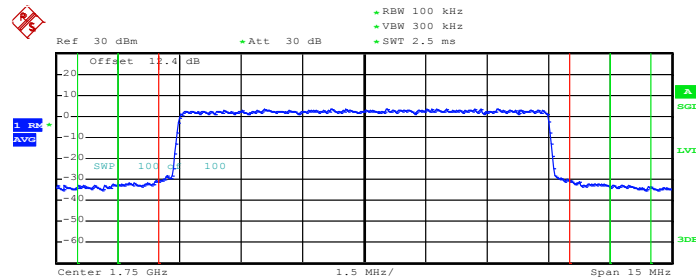
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 49



Tx Channel	Bandwidth	10 MHz	Power	23.33 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-33.57 dBm
	Spacing	5.5 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-40.25 dBm
	Spacing	6.5 MHz		

Date: 20.DEC.2011 16:10:05

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



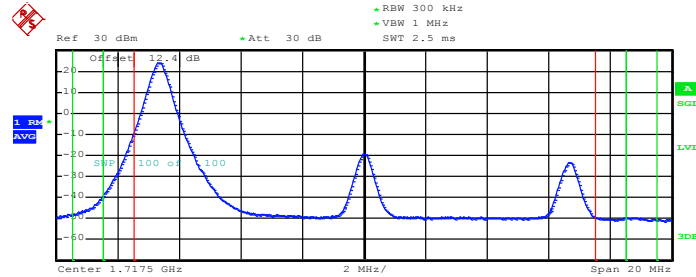
Tx Channel	Bandwidth	10 MHz	Power	21.57 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-22.57 dBm
	Spacing	5.5 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-23.96 dBm
	Spacing	6.5 MHz		

Date: 20.DEC.2011 16:10:33



Band :	LTE Band 4	Band Width	15MHz
---------------	------------	-------------------	-------

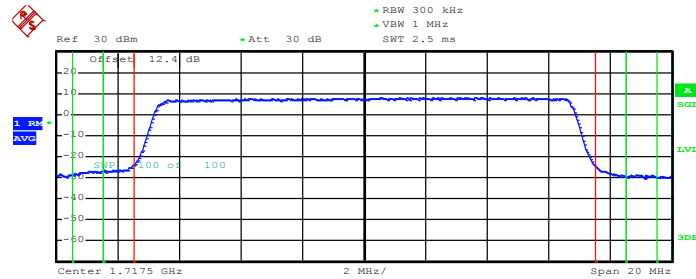
Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Tx Channel	Bandwidth	15 MHz	Power	24.18 dBm
Adjacent Channel	Bandwidth	1 MHz	Lower	-15.56 dBm
	Spacing	8 MHz		
Alternate Channel	Bandwidth	1 MHz	Lower	-40.14 dBm
	Spacing	9 MHz		

Date: 6.JAN.2012 16:34:50

Lower Band Edge Plot for QPSK-RB Size 75, RB Offset 0

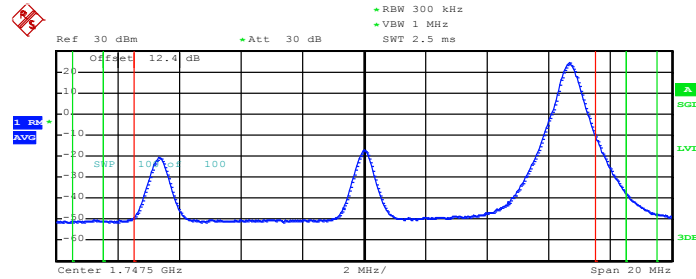


Tx Channel	Bandwidth	15 MHz	Power	23.11 dBm
Adjacent Channel	Bandwidth	1 MHz	Lower	-21.90 dBm
	Spacing	8 MHz		
Alternate Channel	Bandwidth	1 MHz	Lower	-23.03 dBm
	Spacing	9 MHz		

Date: 6.JAN.2012 16:35:59



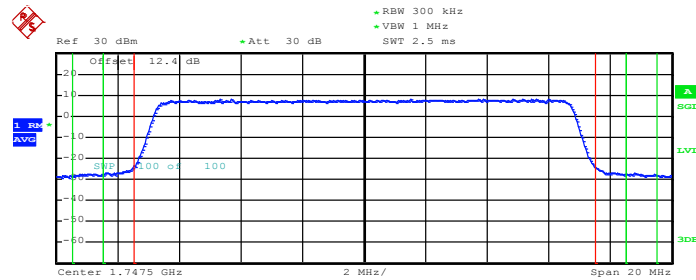
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 74



Tx Channel	Bandwidth	15 MHz	Power	24.17 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-14.11 dBm
	Spacing	8 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-38.34 dBm
	Spacing	9 MHz		

Date: 6.JAN.2012 16:38:05

Higher Band Edge Plot for QPSK-RB Size 75, RB Offset 0



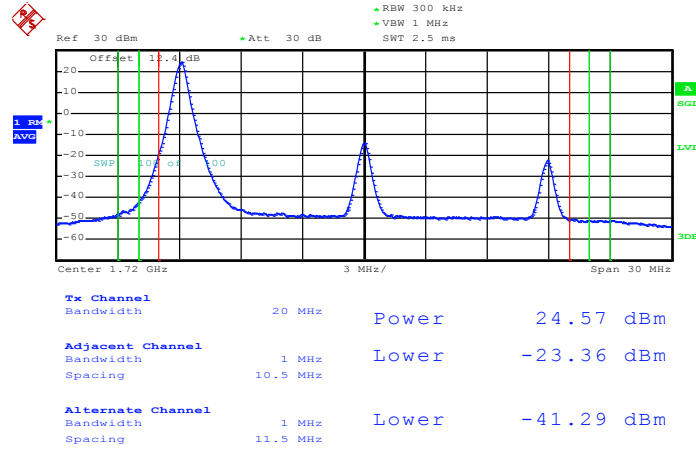
Tx Channel	Bandwidth	15 MHz	Power	23.00 dBm
Adjacent Channel	Bandwidth	1 MHz	Upper	-22.14 dBm
	Spacing	8 MHz		
Alternate Channel	Bandwidth	1 MHz	Upper	-23.39 dBm
	Spacing	9 MHz		

Date: 6.JAN.2012 16:38:53



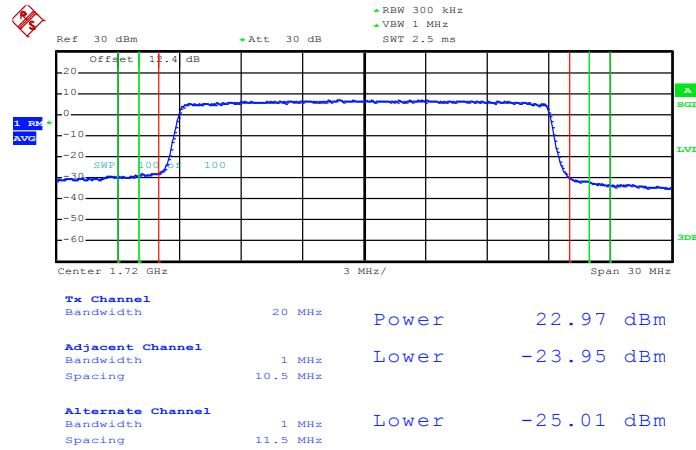
Band :	LTE Band 4	Band Width	20MHz
---------------	------------	-------------------	-------

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 6.JAN.2012 15:08:24

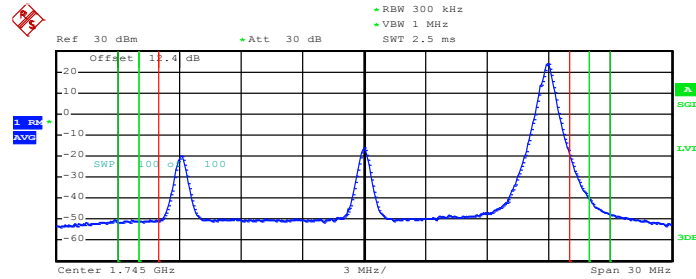
Lower Band Edge Plot for QPSK-RB Size 100, RB Offset 0



Date: 6.JAN.2012 15:10:12



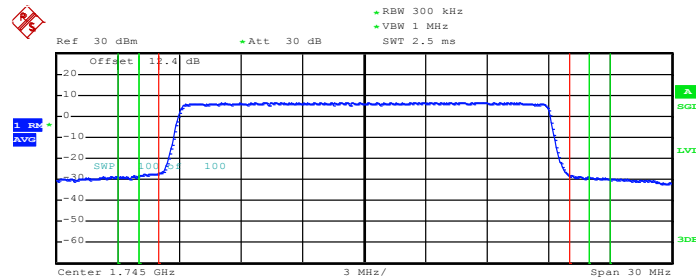
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 99



Tx Channel			
Bandwidth	20 MHz	Power	23.93 dBm
Adjacent Channel			
Bandwidth	1 MHz	Upper	-21.65 dBm
Spacing	10.5 MHz		
Alternate Channel			
Bandwidth	1 MHz	Upper	-40.29 dBm
Spacing	11.5 MHz		

Date: 6.JAN.2012 15:13:50

Higher Band Edge Plot for QPSK-RB Size 100, RB Offset 0



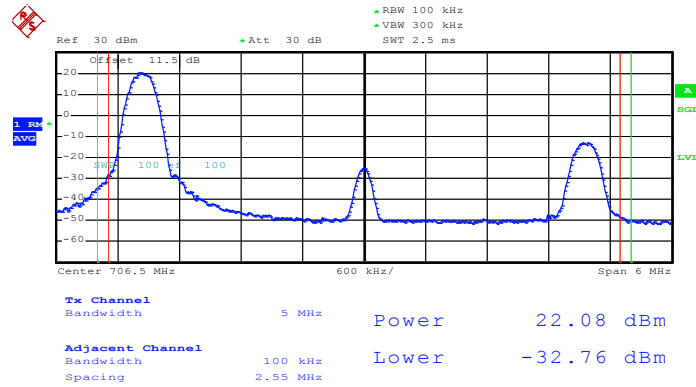
Tx Channel			
Bandwidth	20 MHz	Power	23.02 dBm
Adjacent Channel			
Bandwidth	1 MHz	Upper	-24.50 dBm
Spacing	10.5 MHz		
Alternate Channel			
Bandwidth	1 MHz	Upper	-25.09 dBm
Spacing	11.5 MHz		

Date: 6.JAN.2012 15:14:56



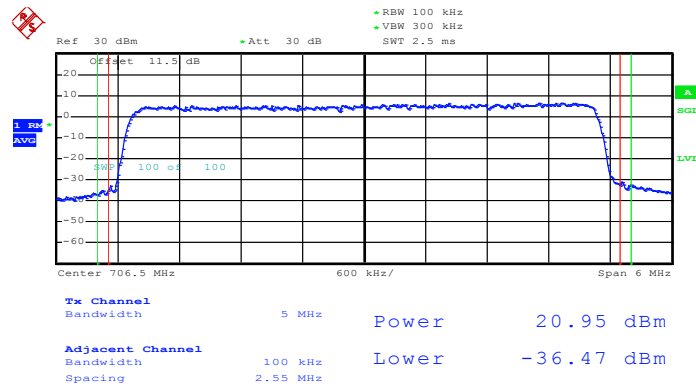
Band :	LTE Band 17	Band Width	5MHz
---------------	-------------	-------------------	------

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 21.DEC.2011 08:46:29

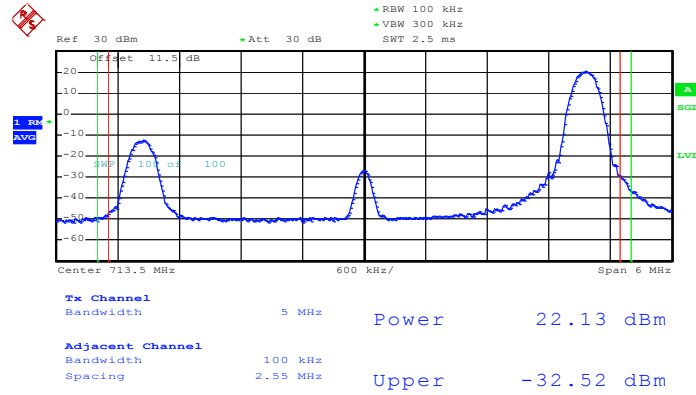
Lower Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 21.DEC.2011 08:45:34

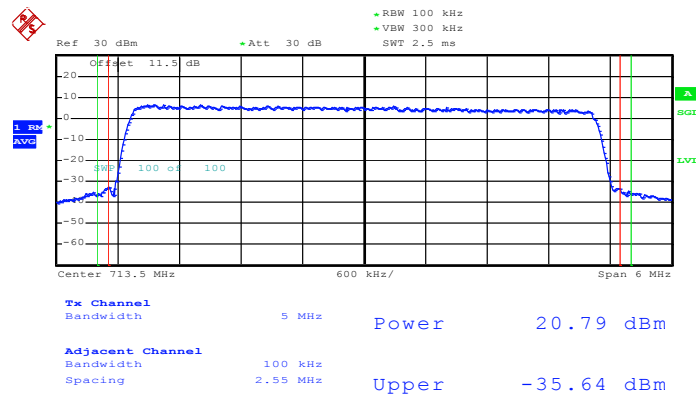


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 24



Date: 21.DEC.2011 08:41:52

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

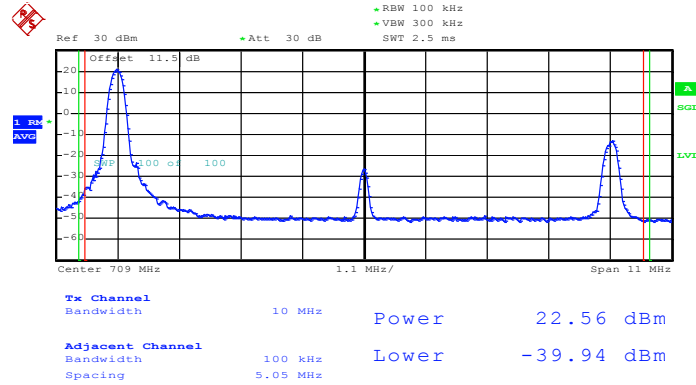


Date: 21.DEC.2011 08:43:08



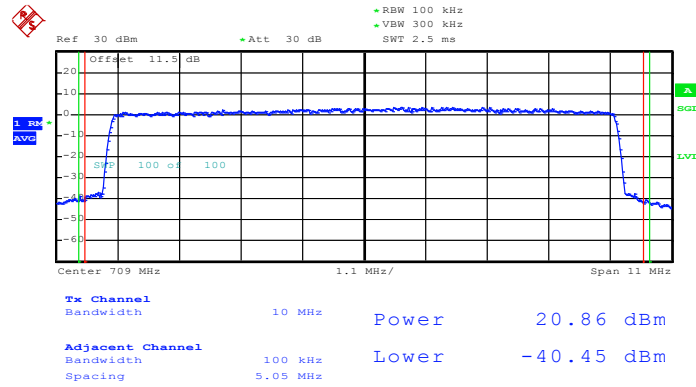
Band :	LTE Band 17	Band Width	10MHz
---------------	-------------	-------------------	-------

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 21.DEC.2011 08:59:35

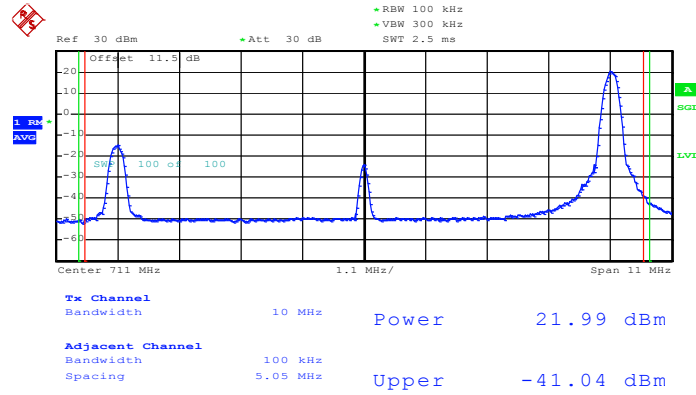
Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0



Date: 21.DEC.2011 09:00:40

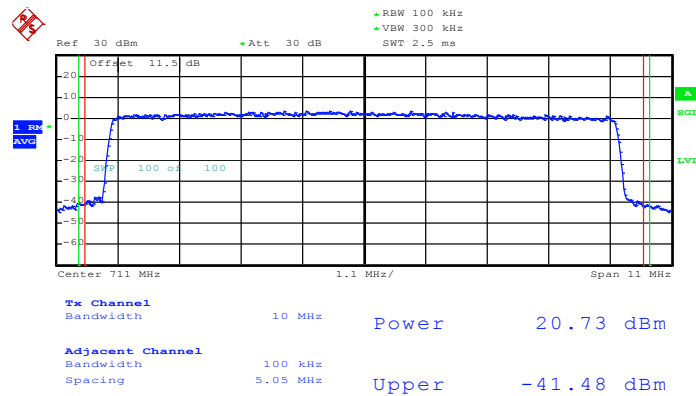


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 49



Date: 21.DEC.2011 08:02:38

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



Date: 21.DEC.2011 08:01:16

3.5 Conducted Emission Measurement

3.5.1 Description of Conducted Emission Measurement

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

It is measured by means of a calibrated spectrum analyzer and scanned from 9 KHz up to a frequency including its 10th harmonic.

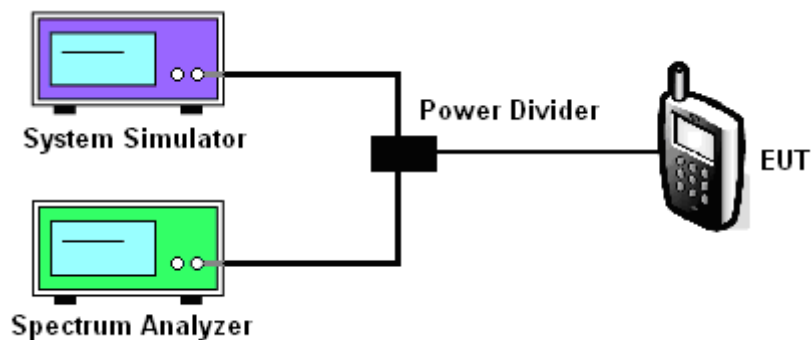
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

3.5.4 Test Setup

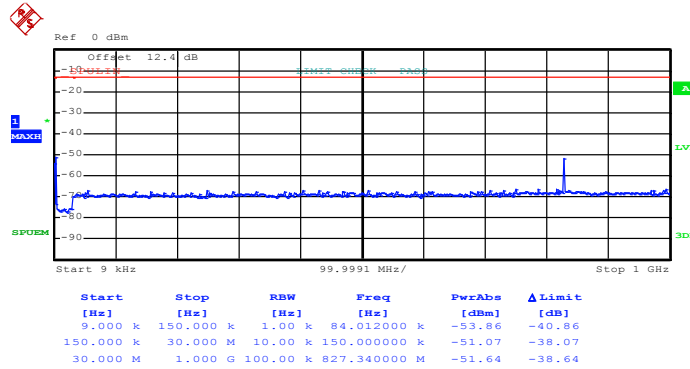




3.5.5 Test Result (Plots) of Conducted Emission

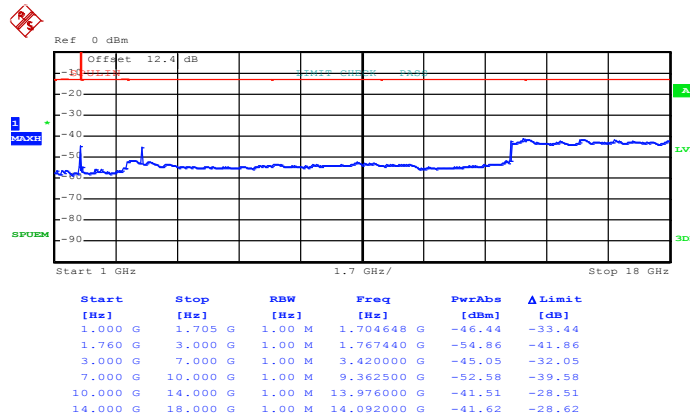
Band :	LTE Band 4	Channel :	CH19957 (Low)
Band Width	1.4MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 17:03:35

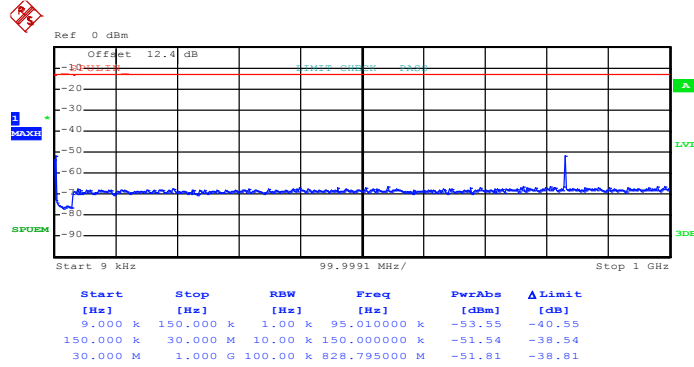
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:59:26

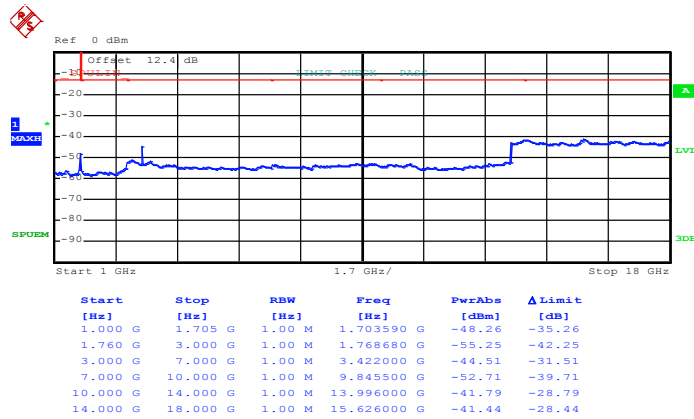


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 5)



Date: 22.DEC.2011 17:02:43

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 5)

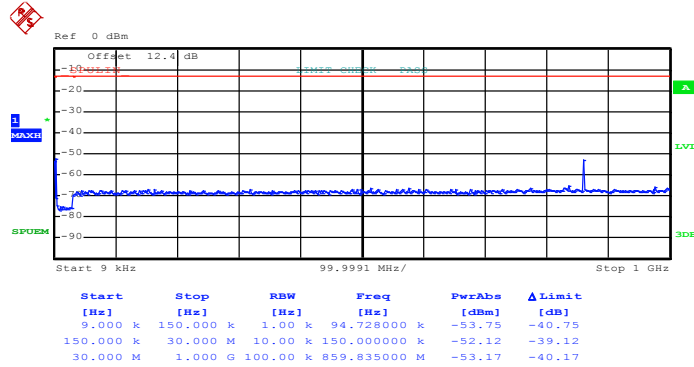


Date: 22.DEC.2011 17:02:11



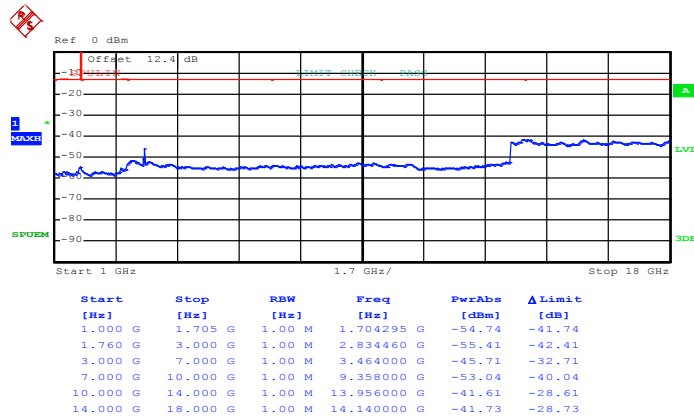
Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width	1.4MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 17:05:40

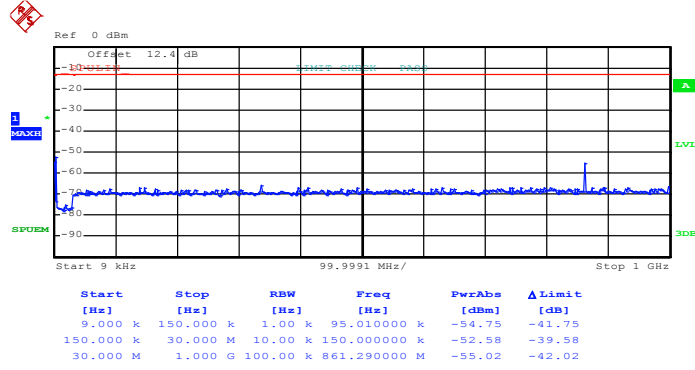
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 17:08:35

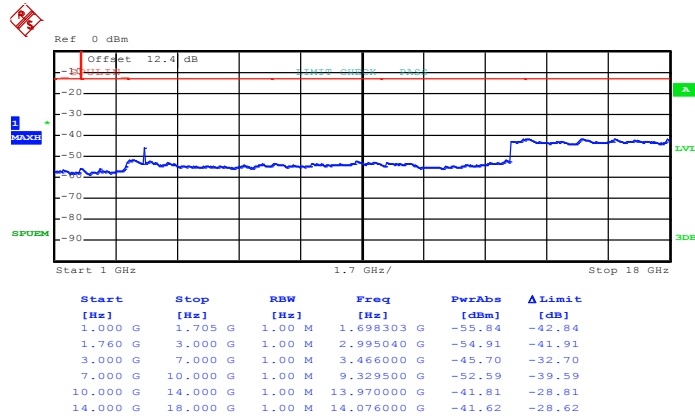


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 5)



Date: 22.DEC.2011 17:07:11

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 5)

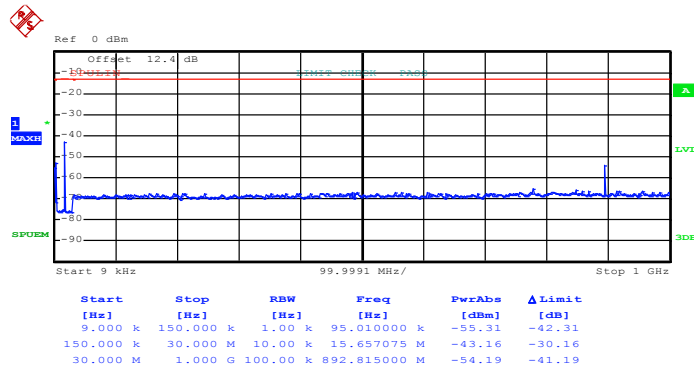


Date: 22.DEC.2011 17:07:48



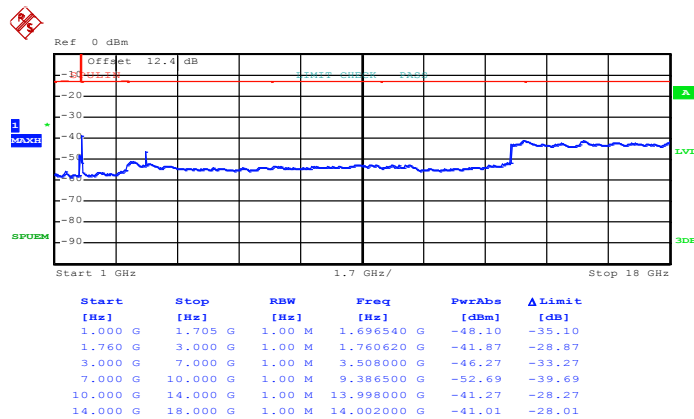
Band :	LTE Band 4	Channel :	CH20393 (High)
Band Width	1.4MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 17:16:49

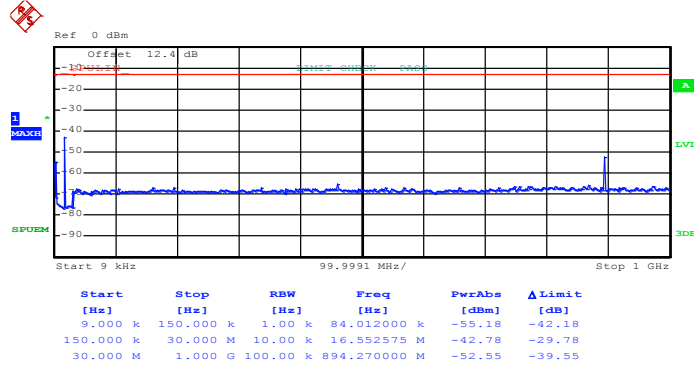
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 17:11:49

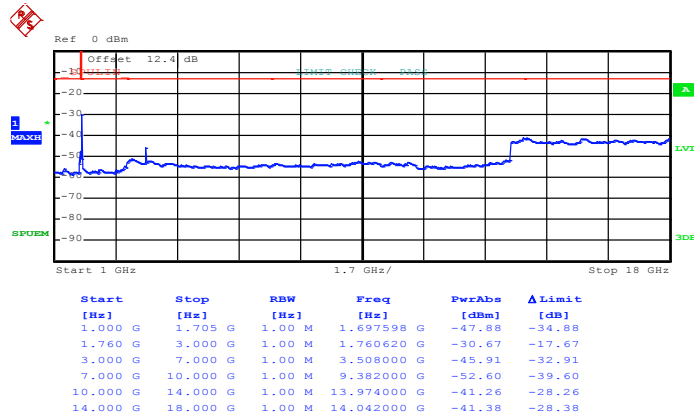


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 5)



Date: 22.DEC.2011 17:15:48

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 5)

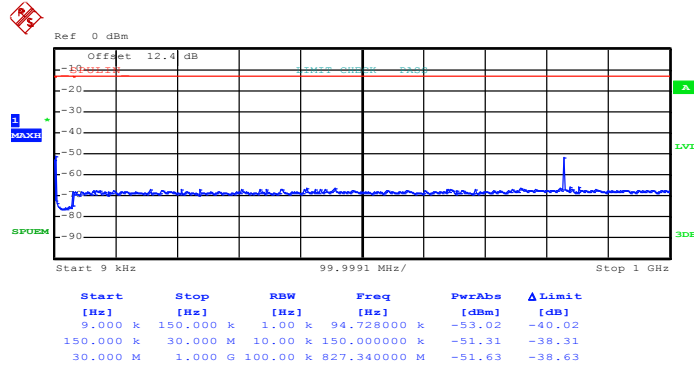


Date: 22.DEC.2011 17:14:57



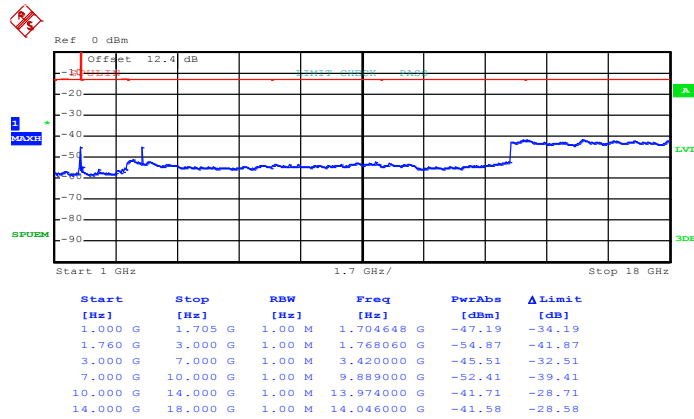
Band :	LTE Band 4	Channel :	CH19965 (Low)
Band Width	3MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:27:17

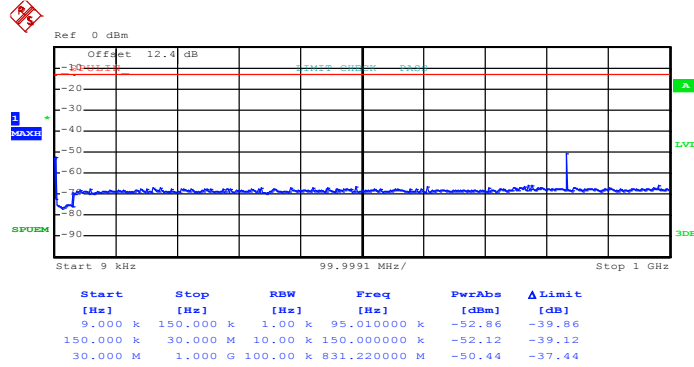
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:30:33

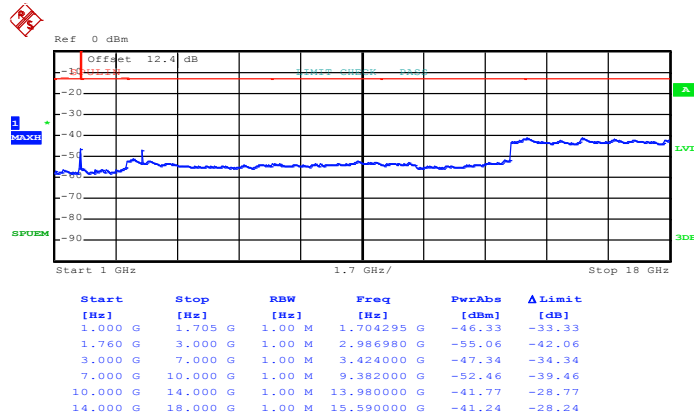


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 14)



Date: 22.DEC.2011 16:28:52

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 14)

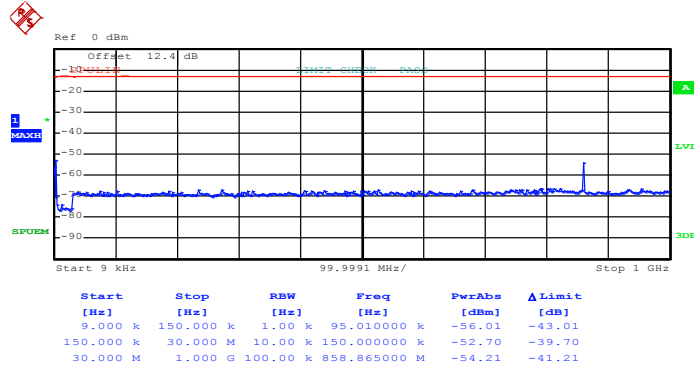


Date: 22.DEC.2011 16:29:43



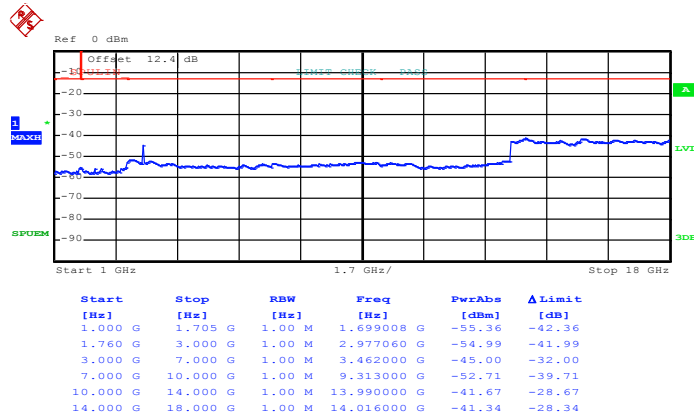
Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width	3MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:37:07

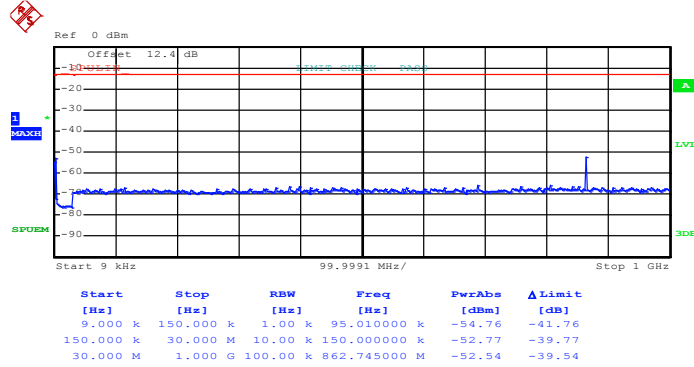
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:34:29

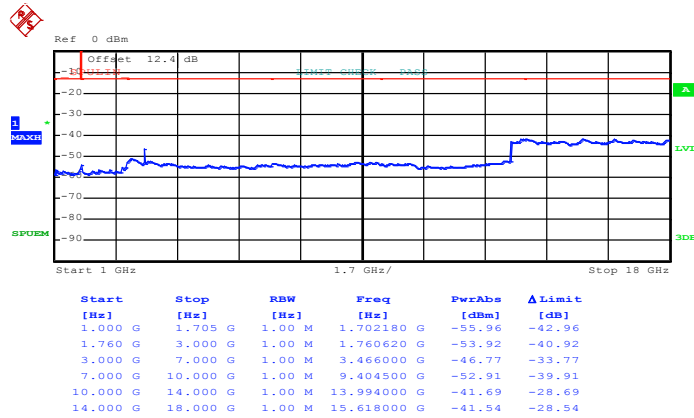


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 14)



Date: 22.DEC.2011 16:36:04

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 14)

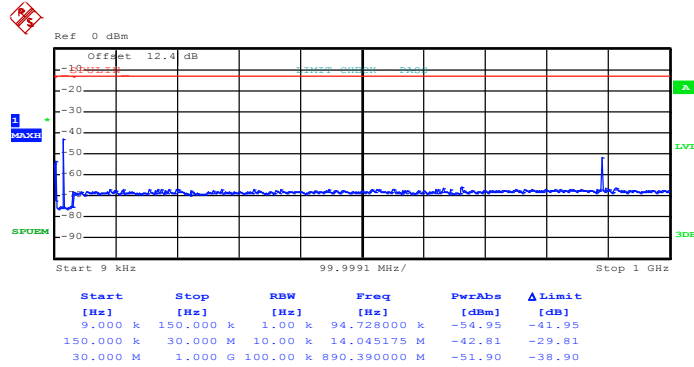


Date: 22.DEC.2011 16:35:33



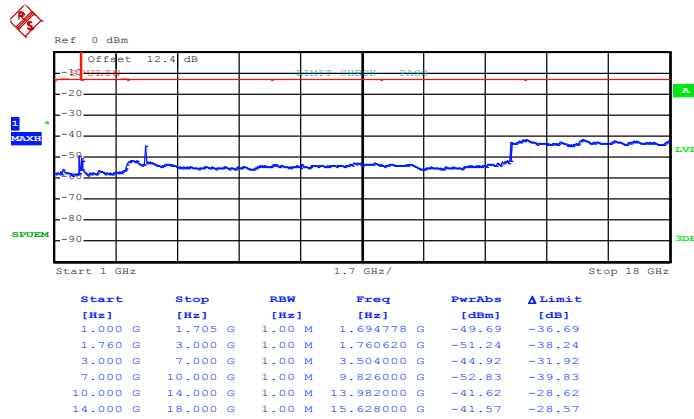
Band :	LTE Band 4	Channel :	CH20385 (High)
Band Width	3MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:38:41

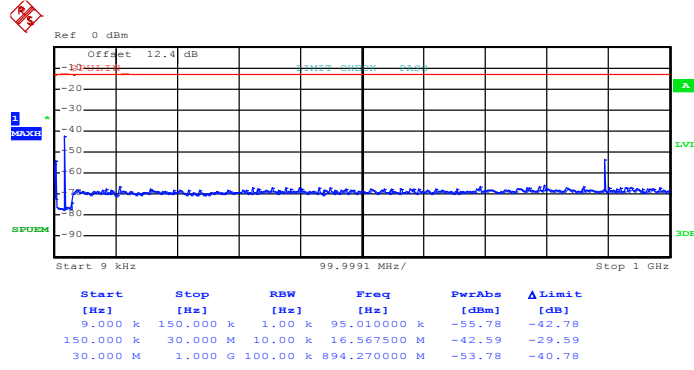
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:41:42

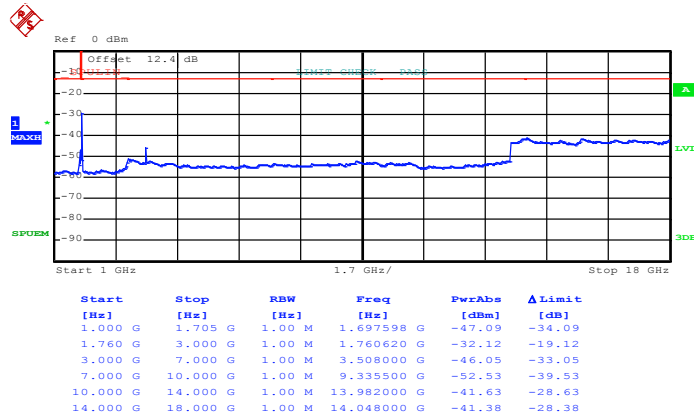


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 14)



Date: 22.DEC.2011 16:39:37

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 14)

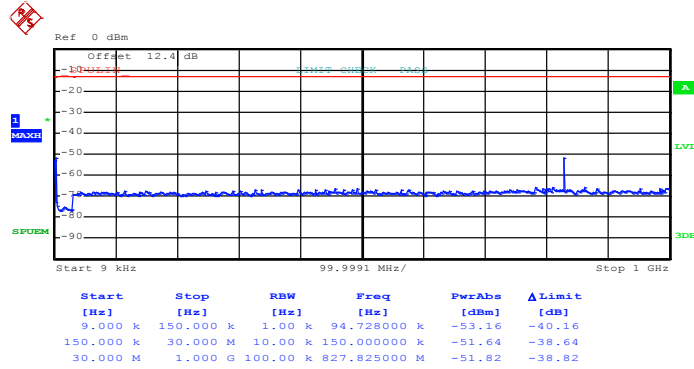


Date: 22.DEC.2011 16:40:53



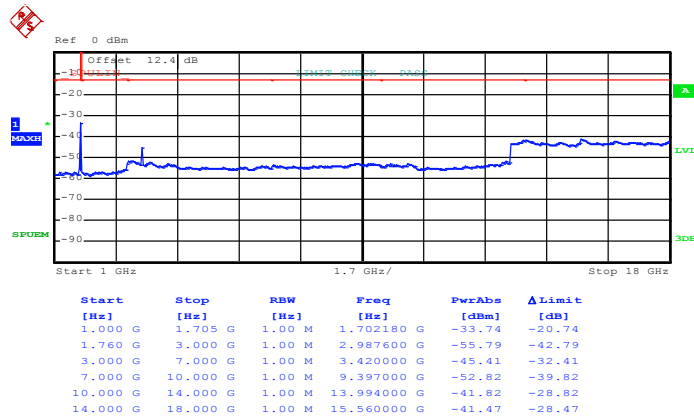
Band :	LTE Band 4	Channel :	CH19975 (Low)
Band Width	5MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:07:36

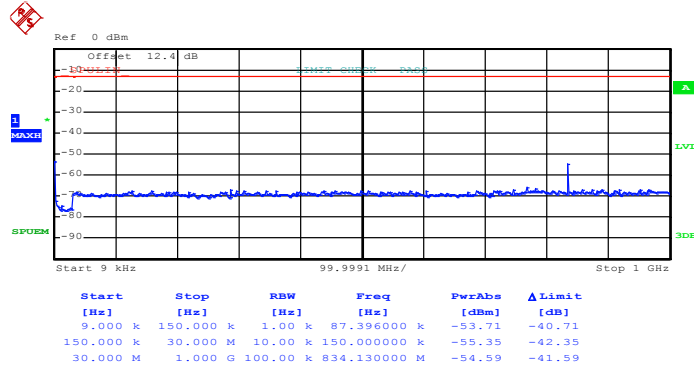
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:11:33

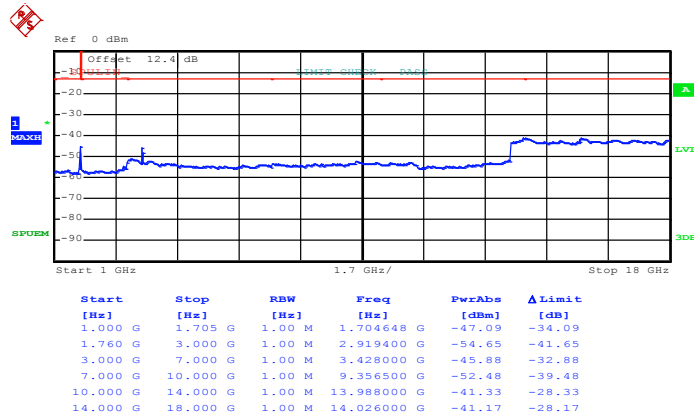


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 24)



Date: 22.DEC.2011 16:08:46

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 24)

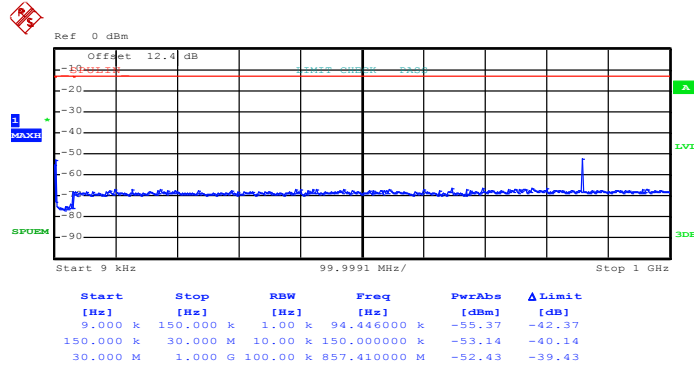


Date: 22.DEC.2011 16:10:27



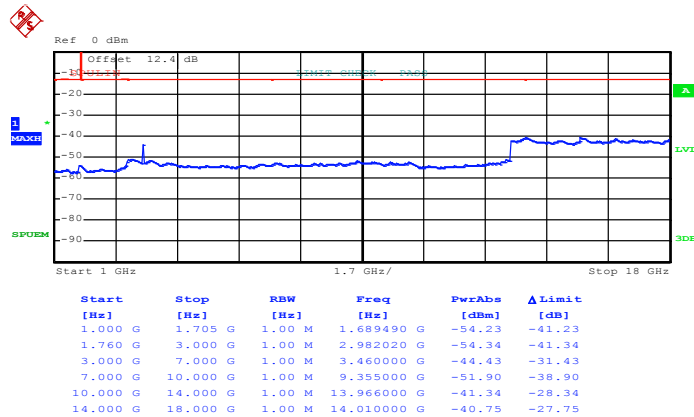
Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width	5MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:06:30

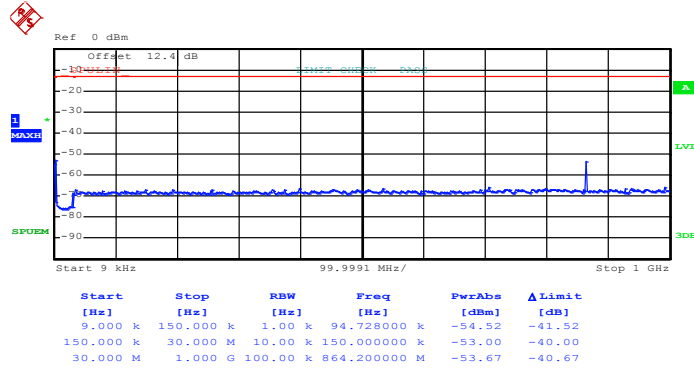
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:03:16

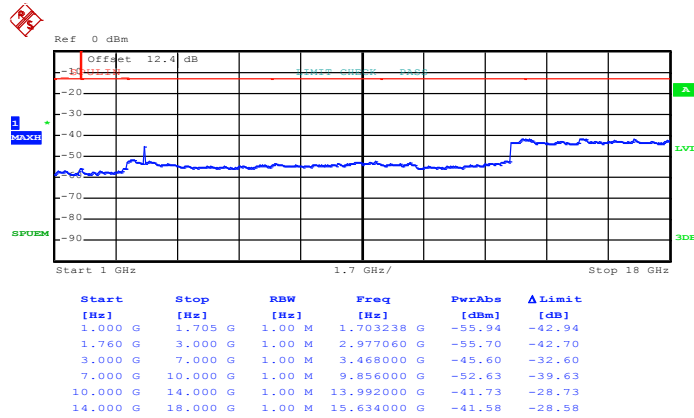


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 24)



Date: 22.DEC.2011 16:05:22

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 24)

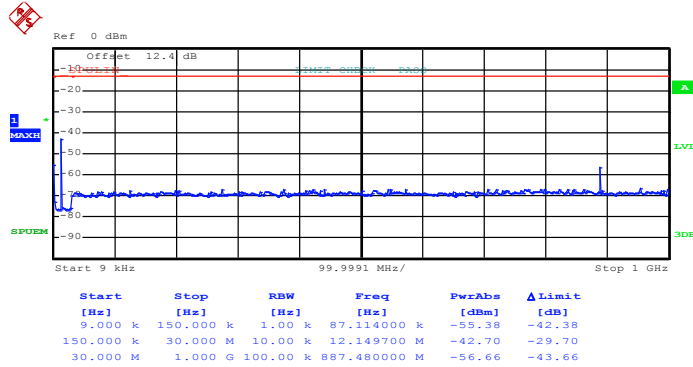


Date: 22.DEC.2011 16:04:26



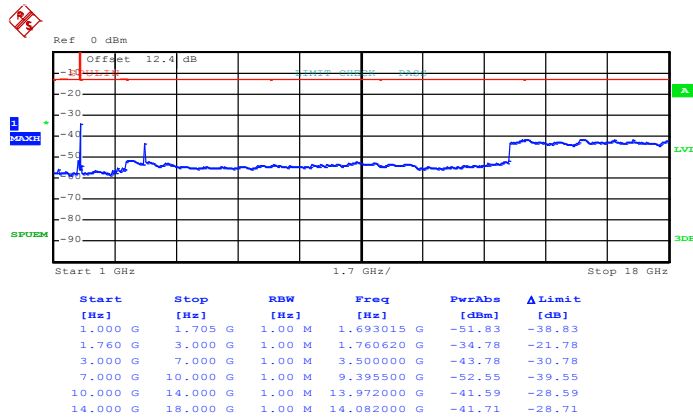
Band :	LTE Band 4	Channel :	CH20375 (High)
Band Width	5MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:17:26

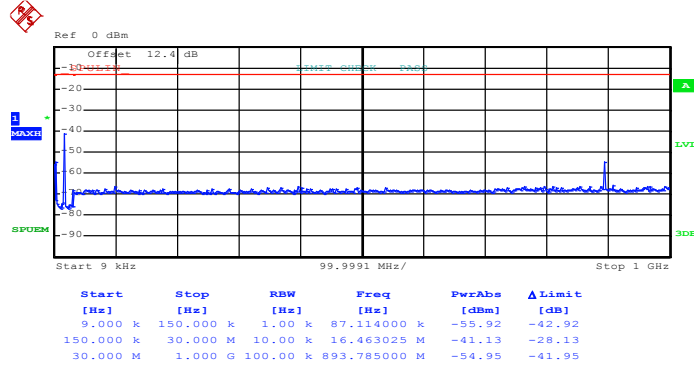
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 16:12:41

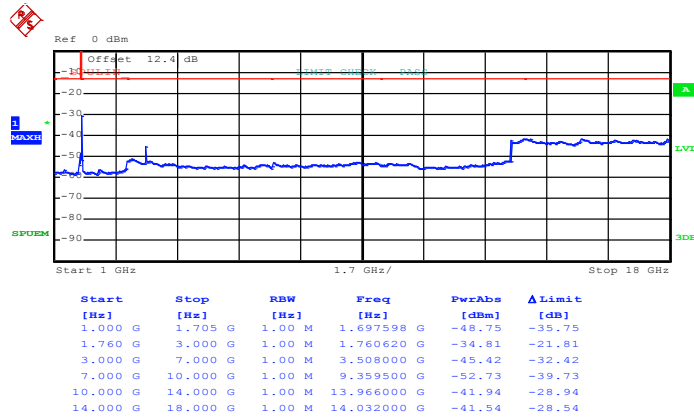


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 24)



Date: 22.DEC.2011 16:16:14

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 24)

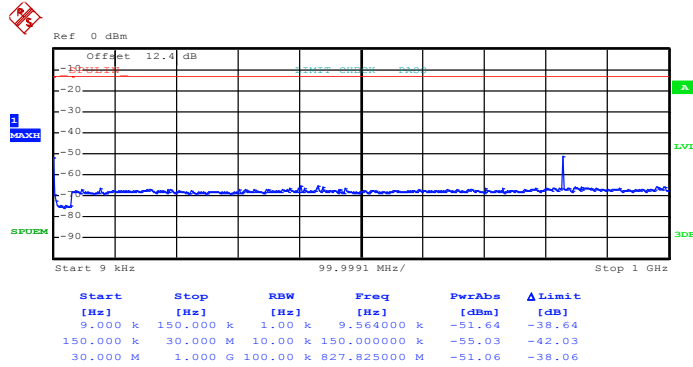


Date: 22.DEC.2011 16:13:49



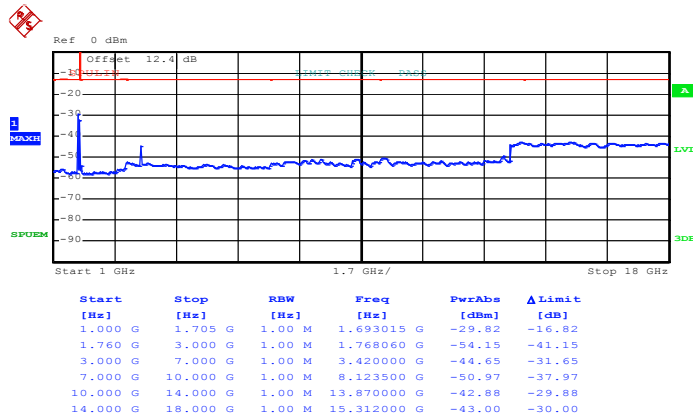
Band :	LTE Band 4	Channel :	CH20000 (Low)
Band Width	10MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 20.DEC.2011 17:39:44

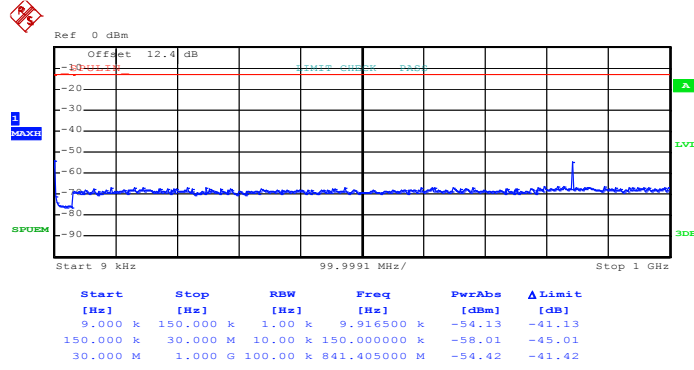
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 20.DEC.2011 17:36:47

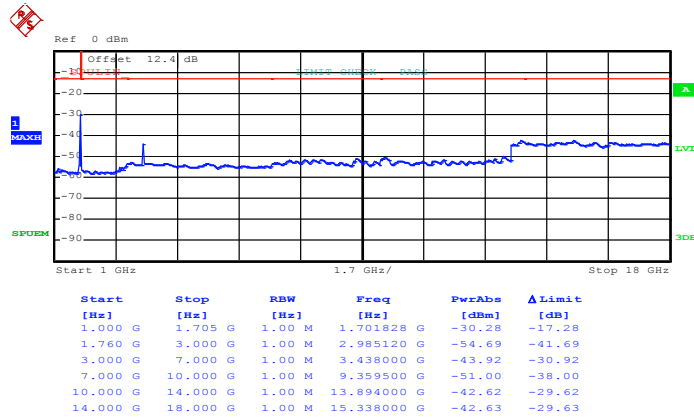


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 20.DEC.2011 17:41:00

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 49)

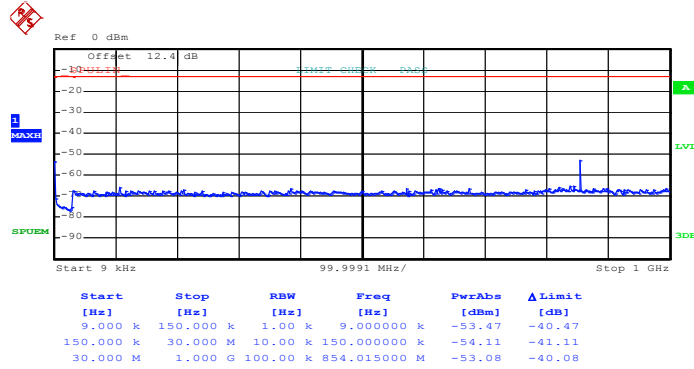


Date: 20.DEC.2011 17:38:20



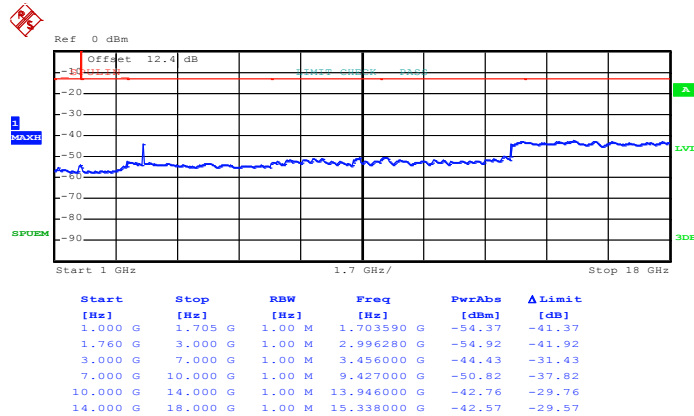
Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width	10MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 20.DEC.2011 17:29:47

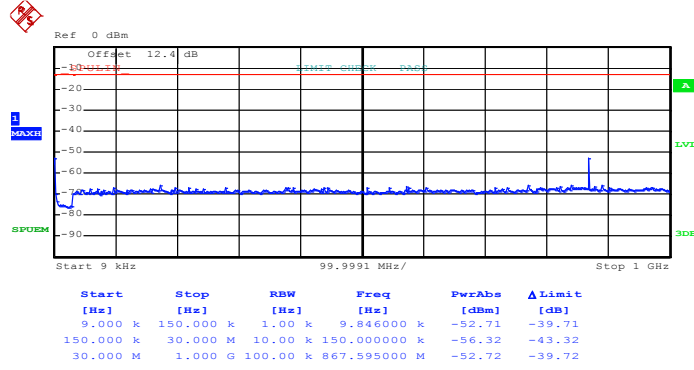
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 20.DEC.2011 17:32:32

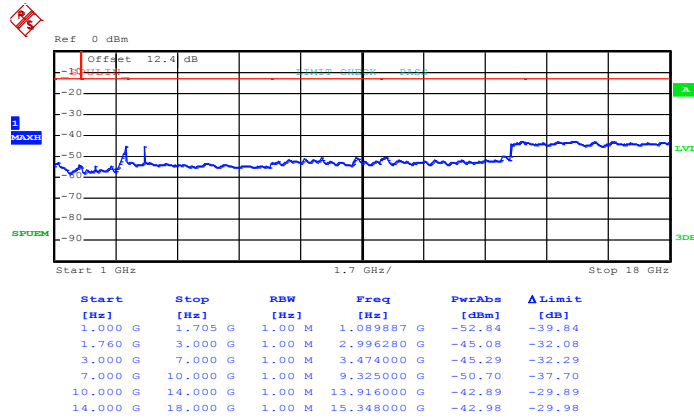


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 20.DEC.2011 17:28:40

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 49)

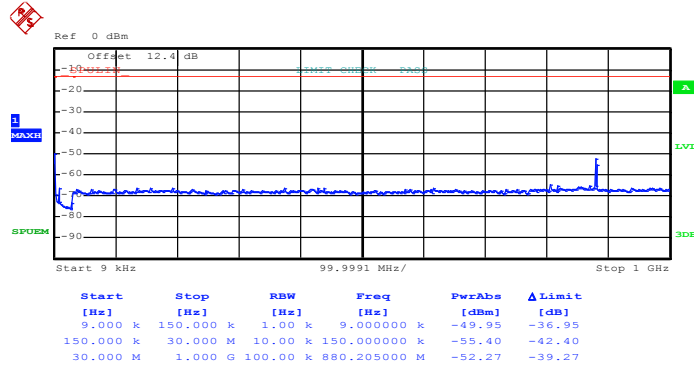


Date: 20.DEC.2011 17:33:47



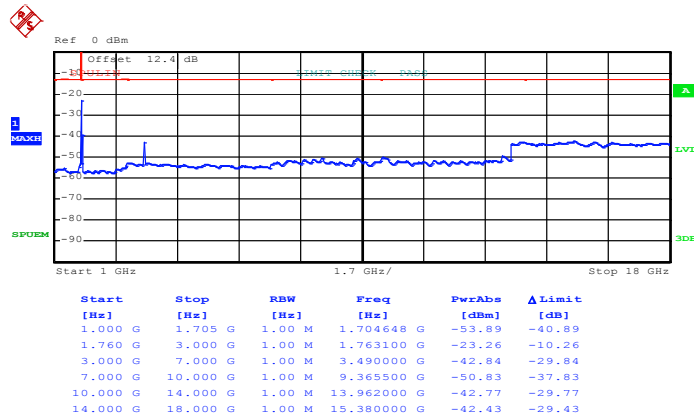
Band :	LTE Band 4	Channel :	CH20350 (High)
Band Width	10MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 20.DEC.2011 17:18:03

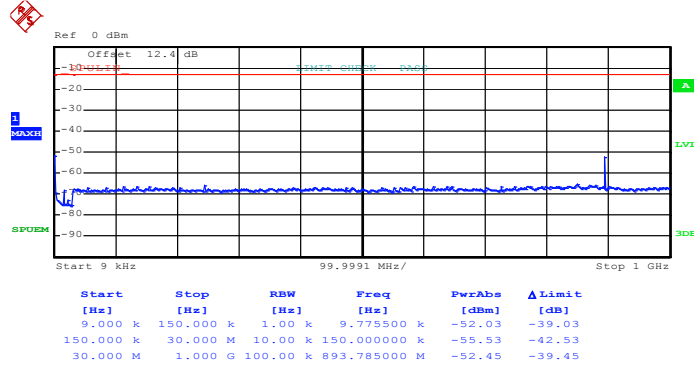
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 20.DEC.2011 17:22:07

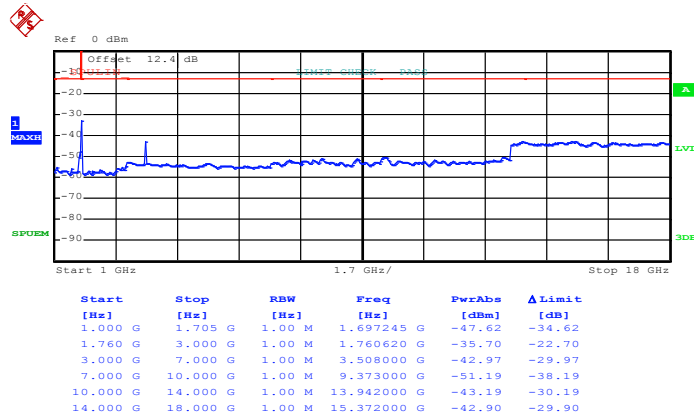


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 20.DEC.2011 17:25:30

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 49)

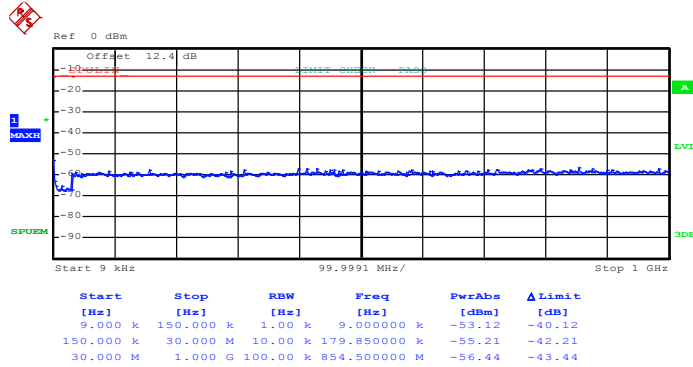


Date: 20.DEC.2011 17:24:22



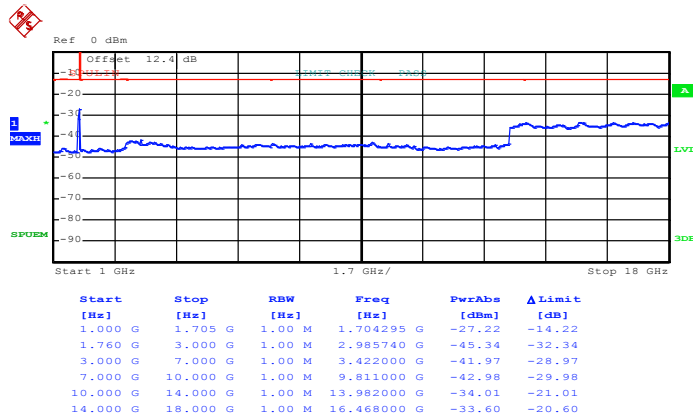
Band :	LTE Band 4	Channel :	CH20025 (Low)
Band Width	15MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 14:46:40

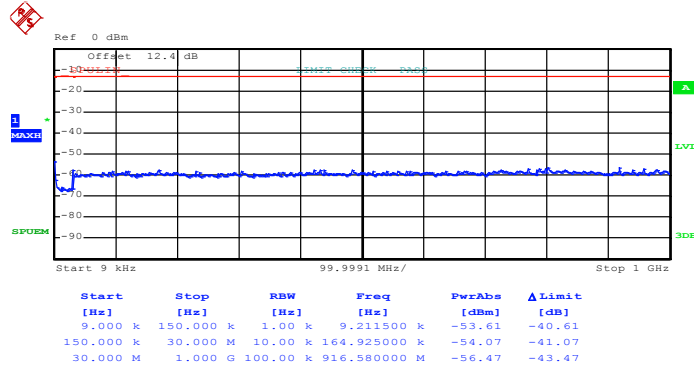
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 14:33:57

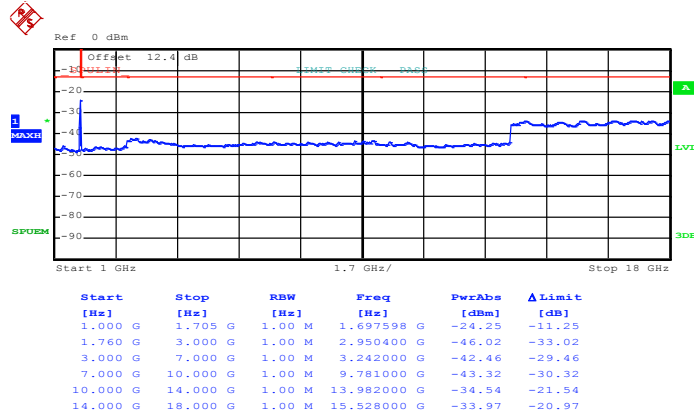


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 74)



Date: 10.JAN.2012 14:47:27

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 74)

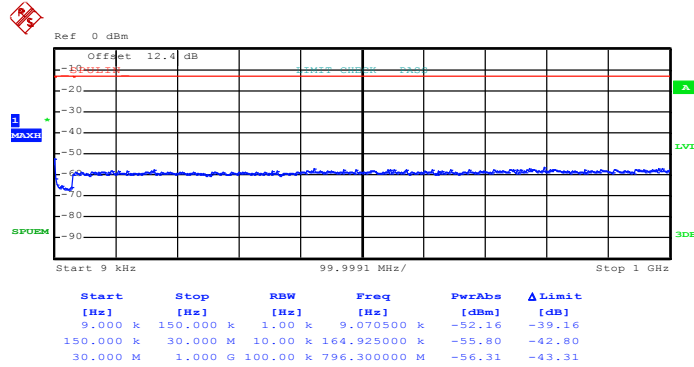


Date: 10.JAN.2012 14:34:56



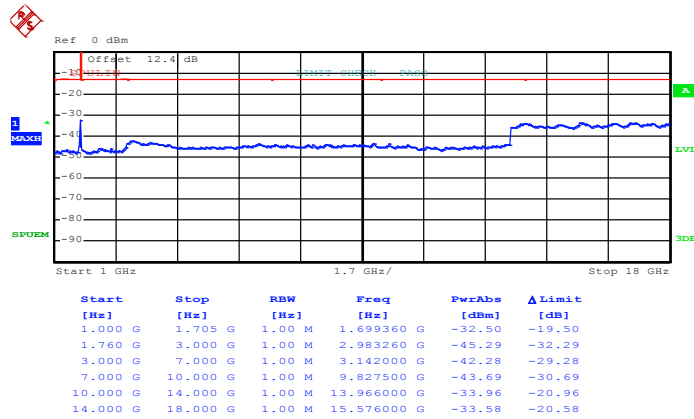
Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width	15MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 14:44:15

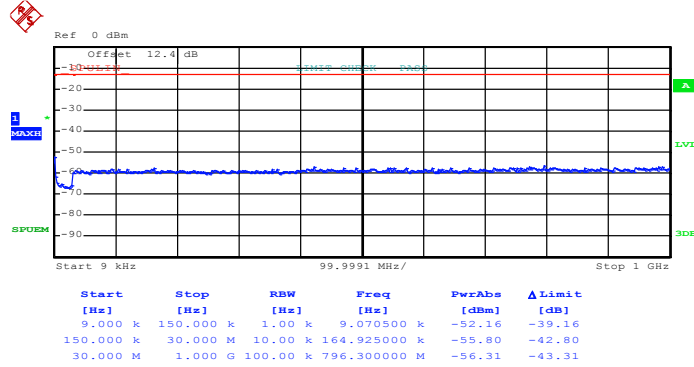
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 14:36:57

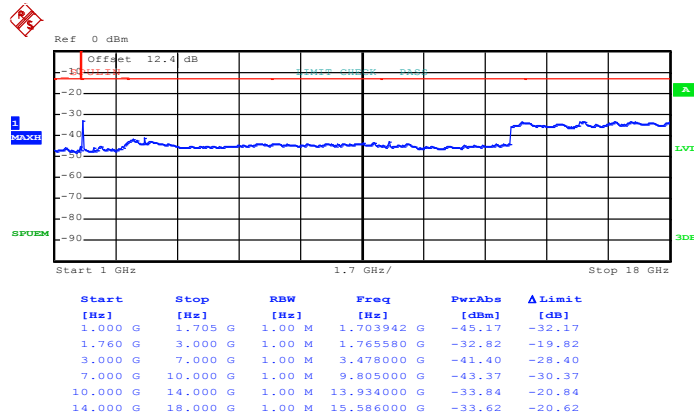


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 74)



Date: 10.JAN.2012 14:44:15

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 74)

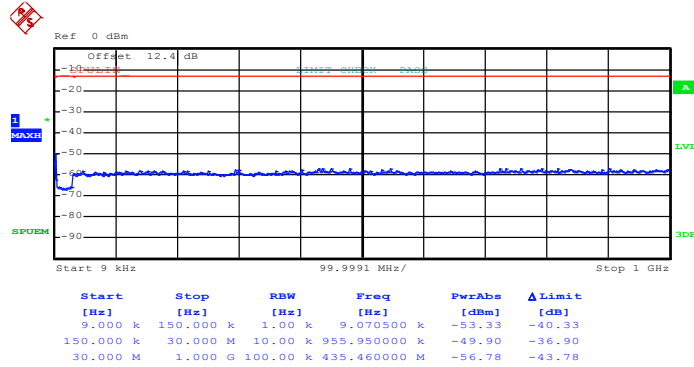


Date: 10.JAN.2012 17:49:50



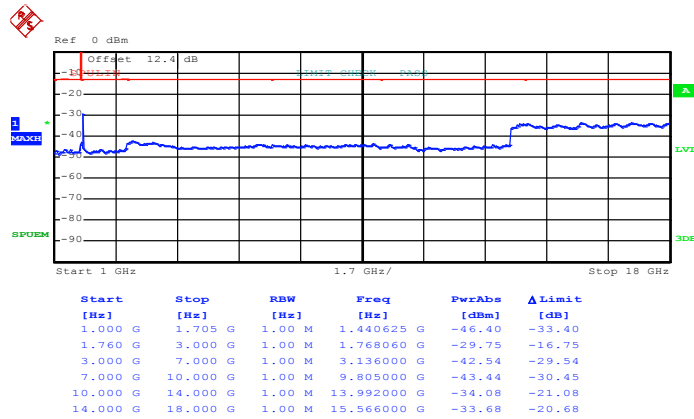
Band :	LTE Band 4	Channel :	CH20325 (High)
Band Width	15MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 14:45:43

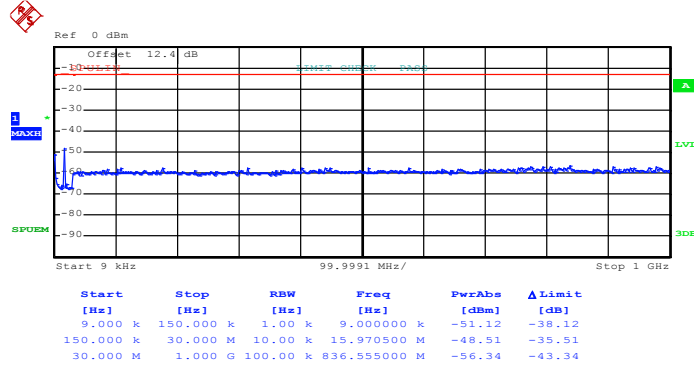
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 14:38:57

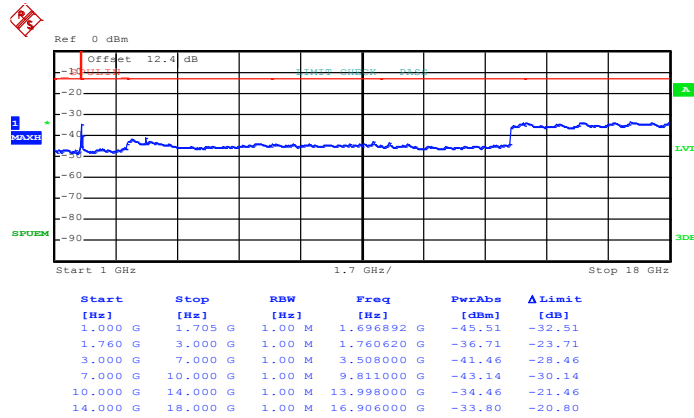


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 74)



Date: 10.JAN.2012 14:42:13

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 74)

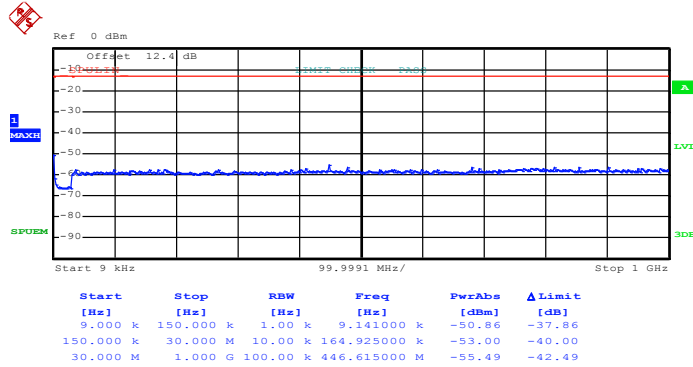


Date: 10.JAN.2012 14:39:43



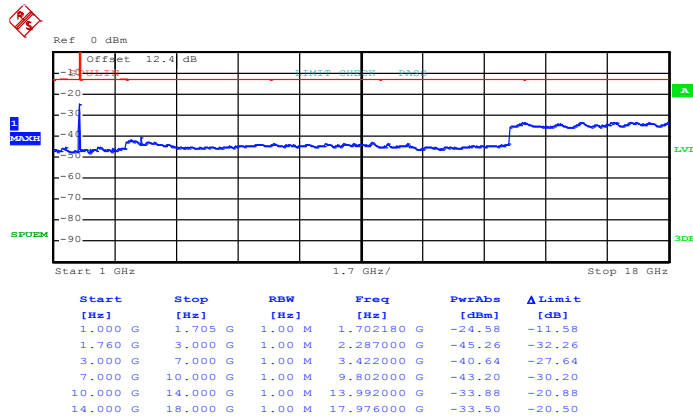
Band :	LTE Band 4	Channel :	CH20050 (Low)
Band Width	20MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 17:31:19

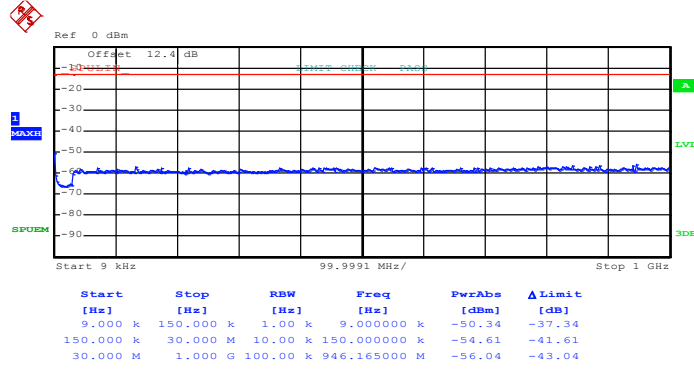
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 17:42:21

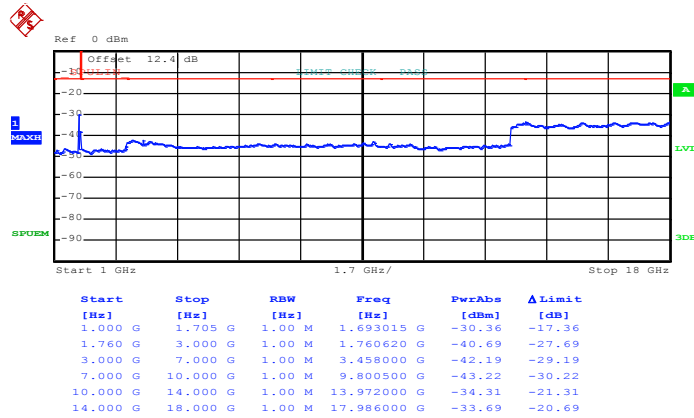


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 99)



Date: 10.JAN.2012 17:34:24

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 99)

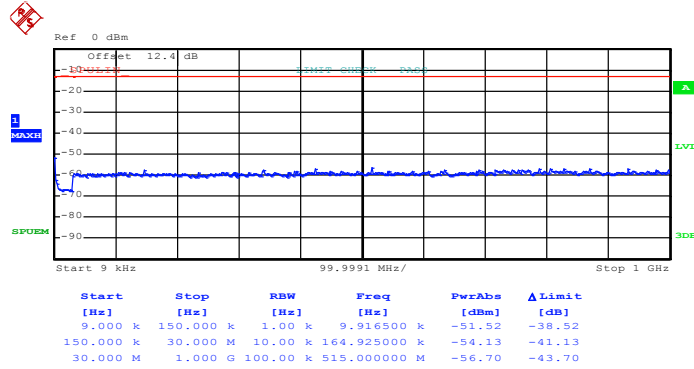


Date: 10.JAN.2012 17:43:29



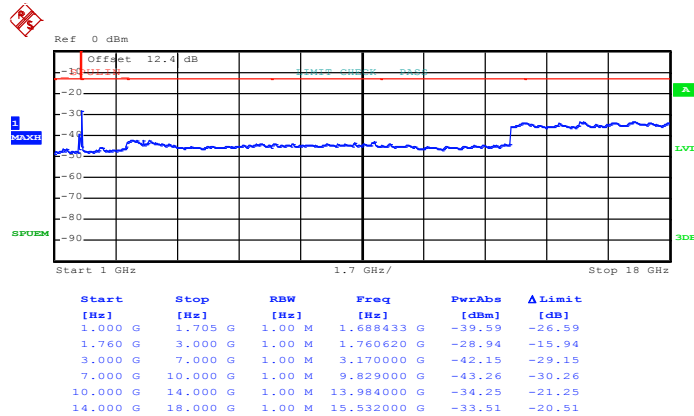
Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width	20MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 17:35:46

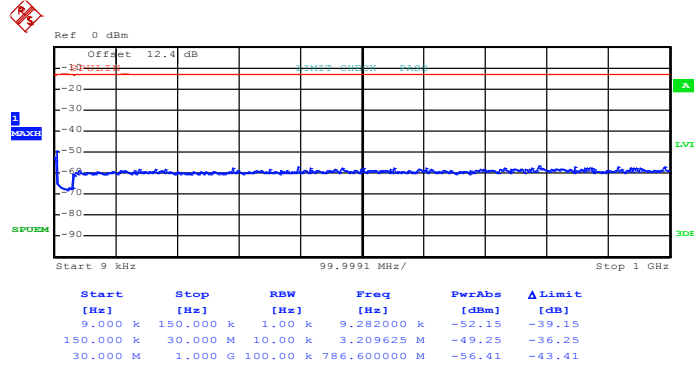
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 17:44:33

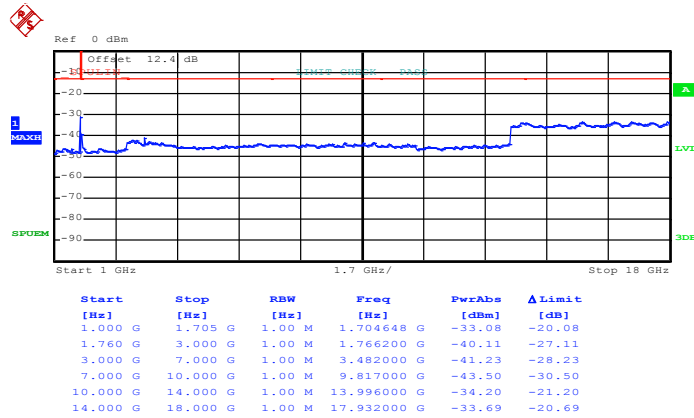


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 99)



Date: 10.JAN.2012 17:37:29

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 99)

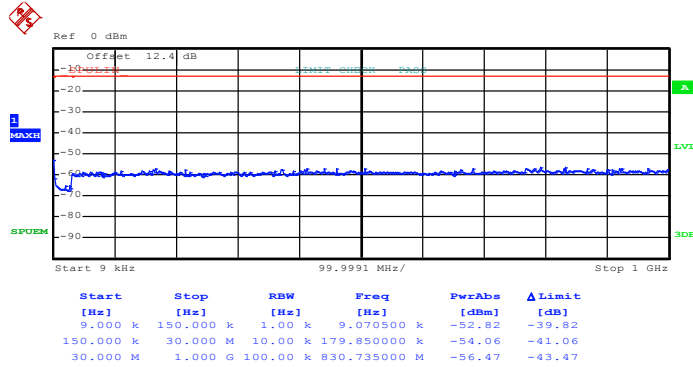


Date: 10.JAN.2012 17:45:19



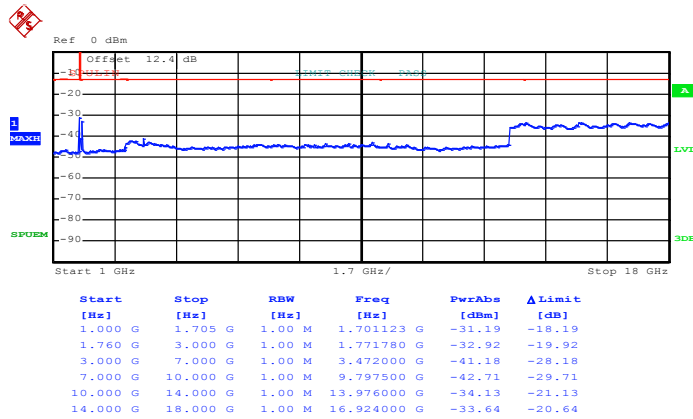
Band :	LTE Band 4	Channel :	CH20300 (High)
Band Width	20MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 17:38:47

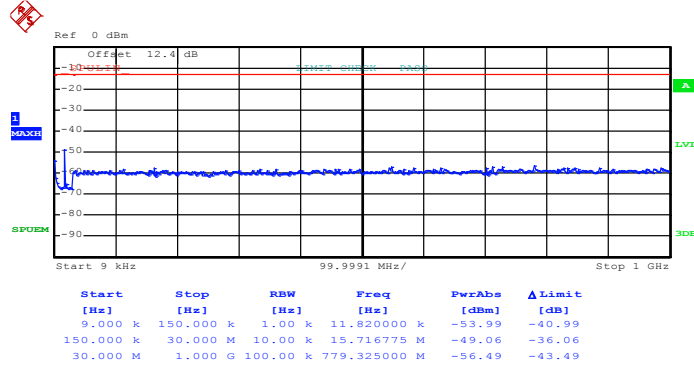
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 10.JAN.2012 17:46:26

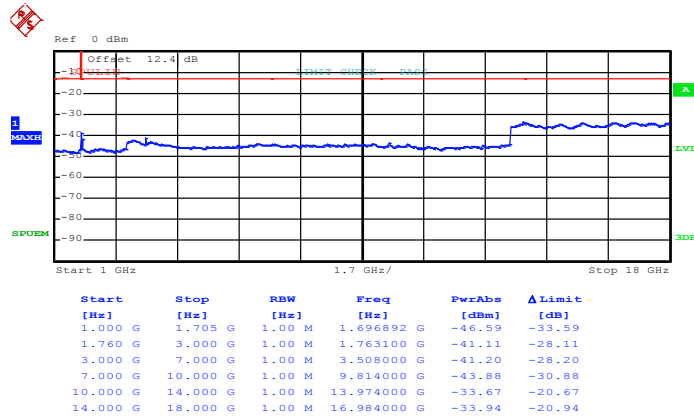


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 99)



Date: 10.JAN.2012 17:39:33

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 99)

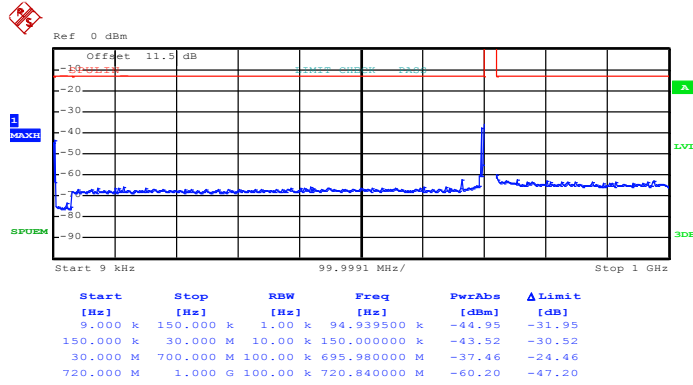


Date: 10.JAN.2012 17:47:10



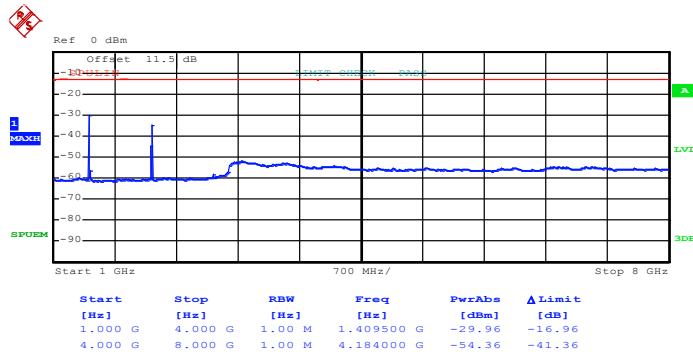
Band :	LTE Band 17	Channel :	CH23755 (Low)
Band Width	5MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 09:44:45

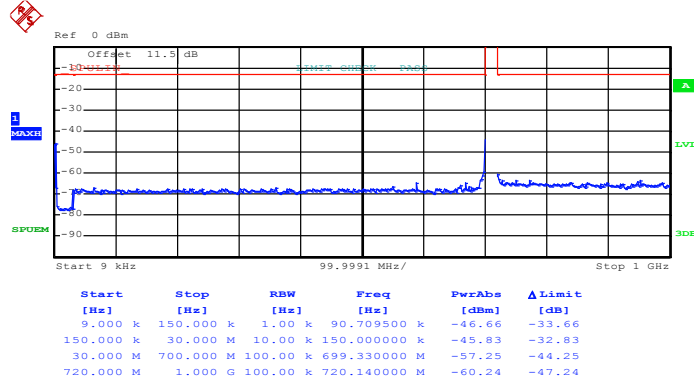
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 10:00:12

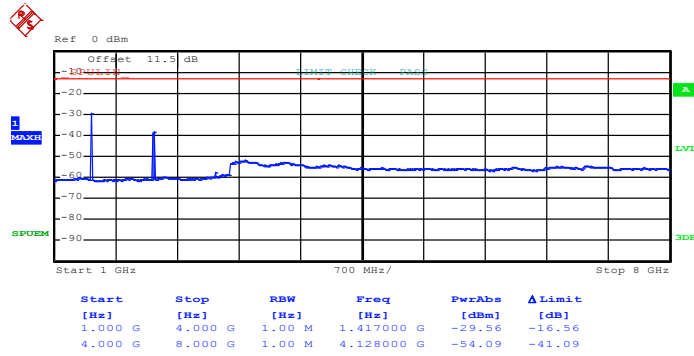


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 24)



Date: 22.DEC.2011 09:46:15

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 24)

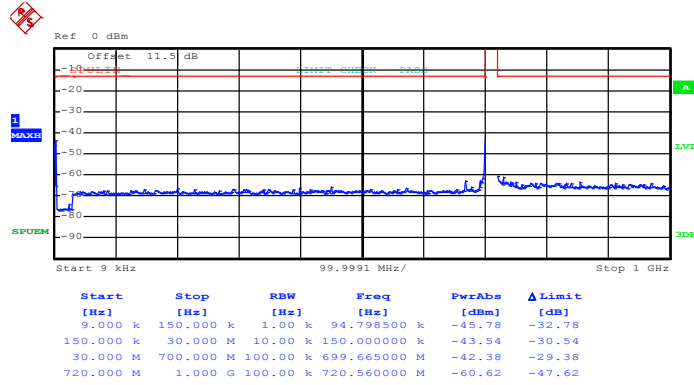


Date: 22.DEC.2011 10:01:00



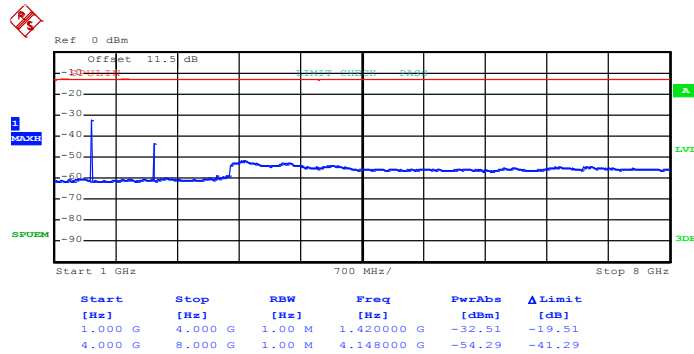
Band :	LTE Band 17	Channel :	CH23790 (Middle)
Band Width	5MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 09:48:07

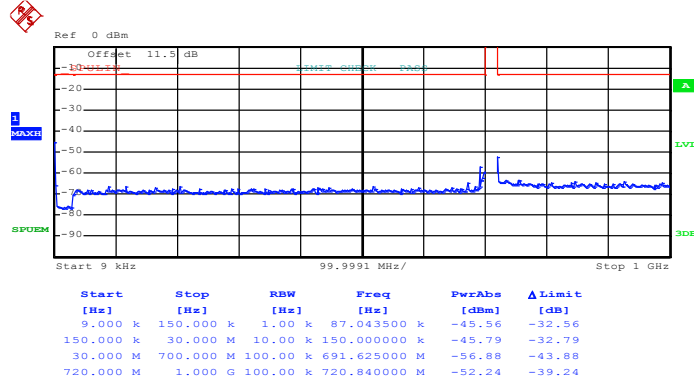
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 09:57:12

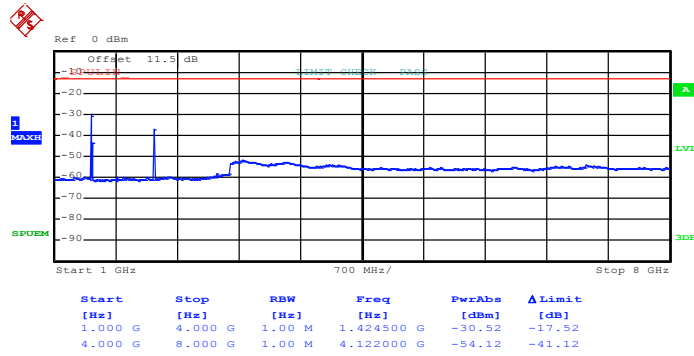


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 24)



Date: 22.DEC.2011 09:49:04

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 24)

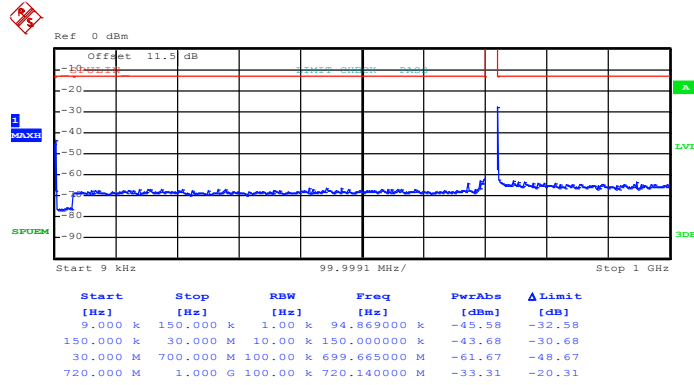


Date: 22.DEC.2011 09:58:41



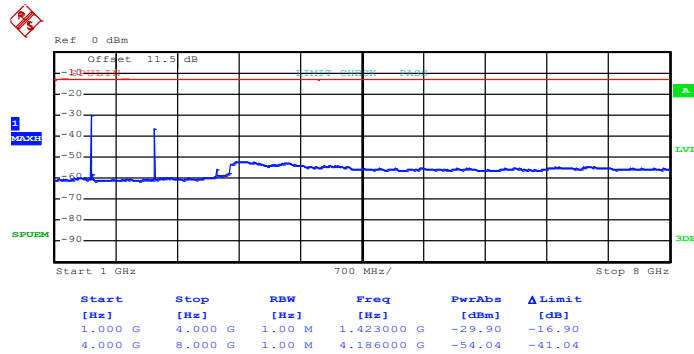
Band :	LTE Band 17	Channel :	CH23825 (High)
Band Width	5MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 09:51:12

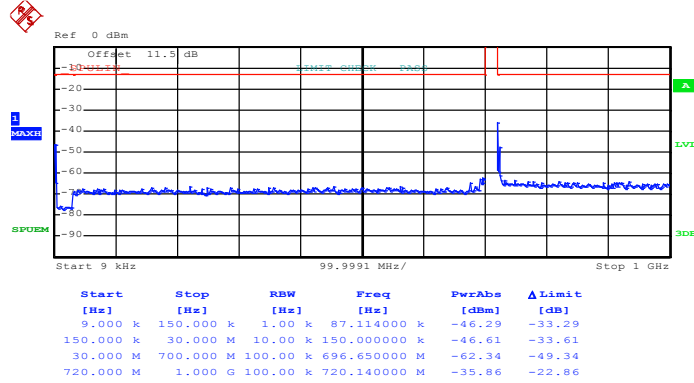
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 22.DEC.2011 09:54:22

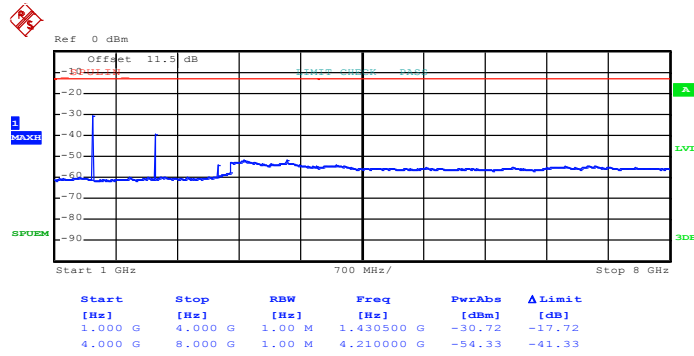


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 24)



Date: 22.DEC.2011 09:52:03

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 24)

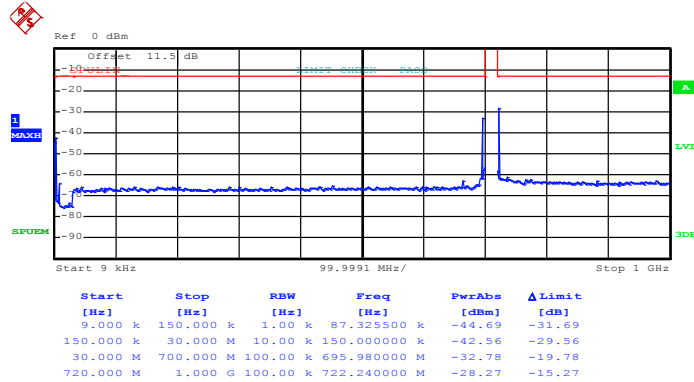


Date: 22.DEC.2011 09:55:23



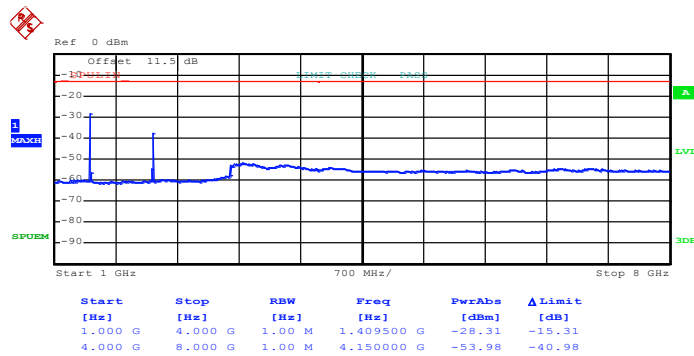
Band :	LTE Band 17	Channel :	CH23755 (Low)
Band Width	10MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2011 17:55:22

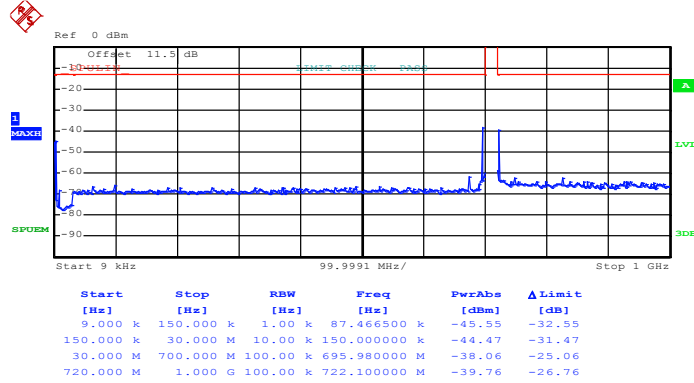
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2011 18:12:40

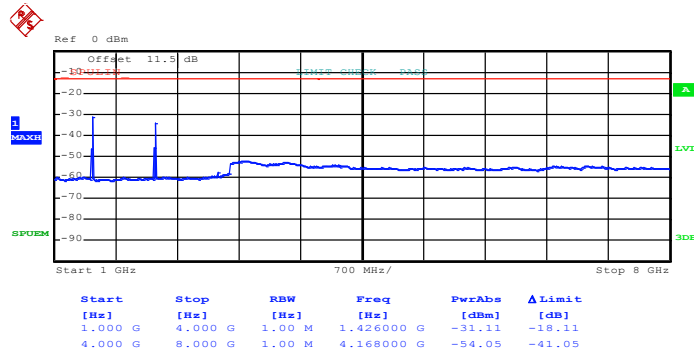


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 21.DEC.2011 17:56:55

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 49)

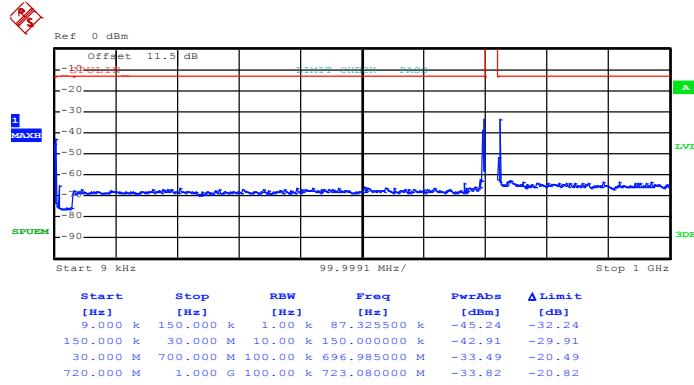


Date: 21.DEC.2011 18:13:36



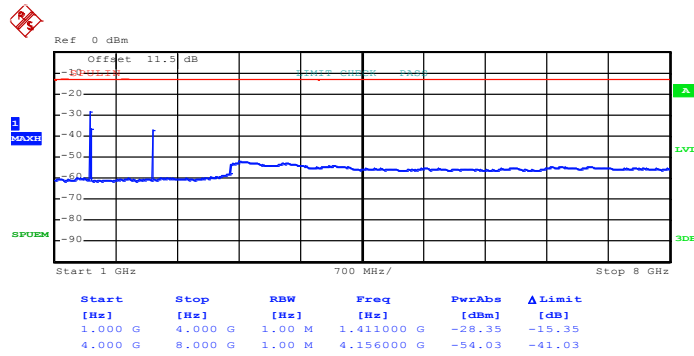
Band :	LTE Band 17	Channel :	CH23790 (Middle)
Band Width	10MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2011 17:59:50

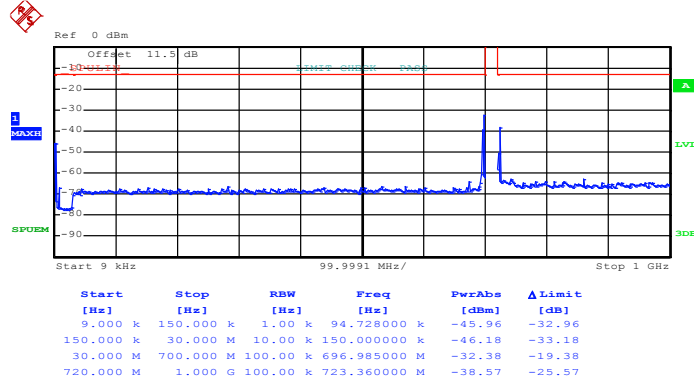
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2011 18:09:54

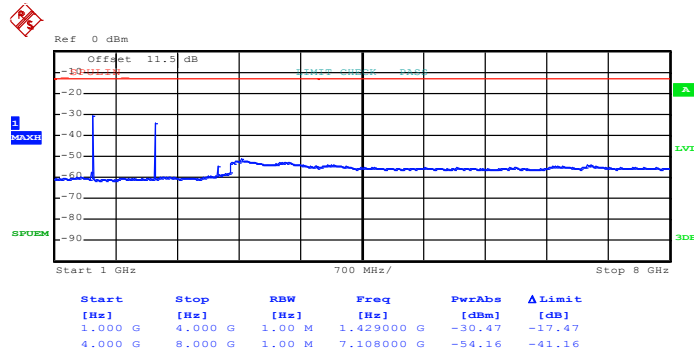


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 21.DEC.2011 18:01:01

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 49)

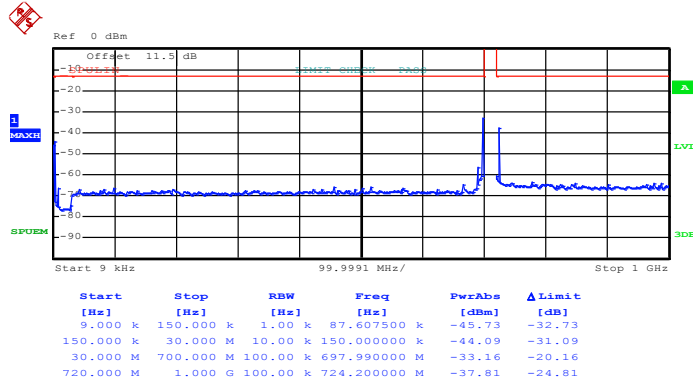


Date: 21.DEC.2011 18:10:50



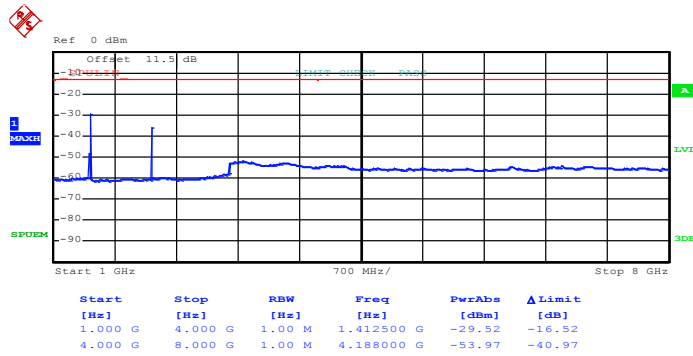
Band :	LTE Band 17	Channel :	CH23825 (High)
Band Width	10MHz		

Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2011 18:02:33

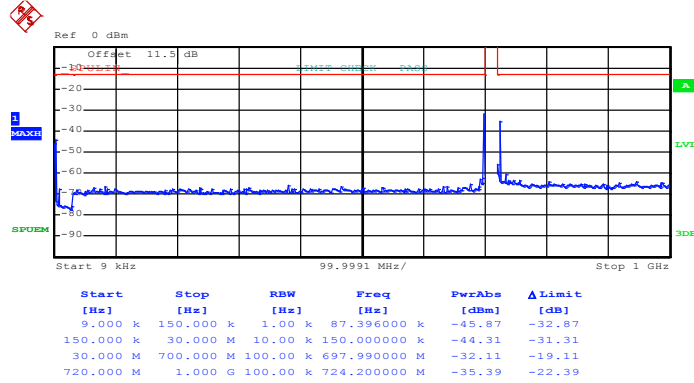
Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2011 18:05:45

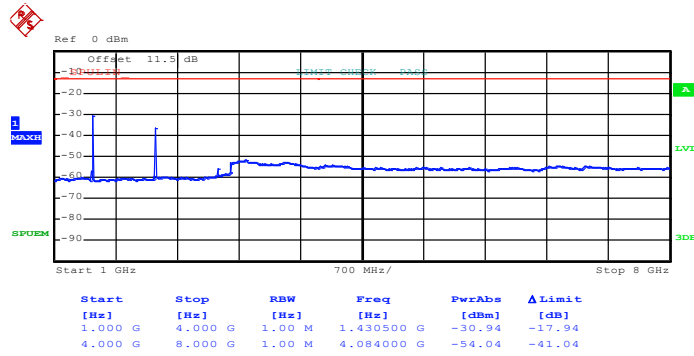


Conducted Emission Plot (9kHz ~ 1GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 21.DEC.2011 18:03:26

Conducted Emission Plot (1GHz ~ 18GHz) for QPSK (RB Size 1, RB Offset 49)



Date: 21.DEC.2011 18:07:01

3.6 Field Strength of Spurious Radiation Measurement

3.6.1 Description of Field Strength of Spurious Radiated 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.

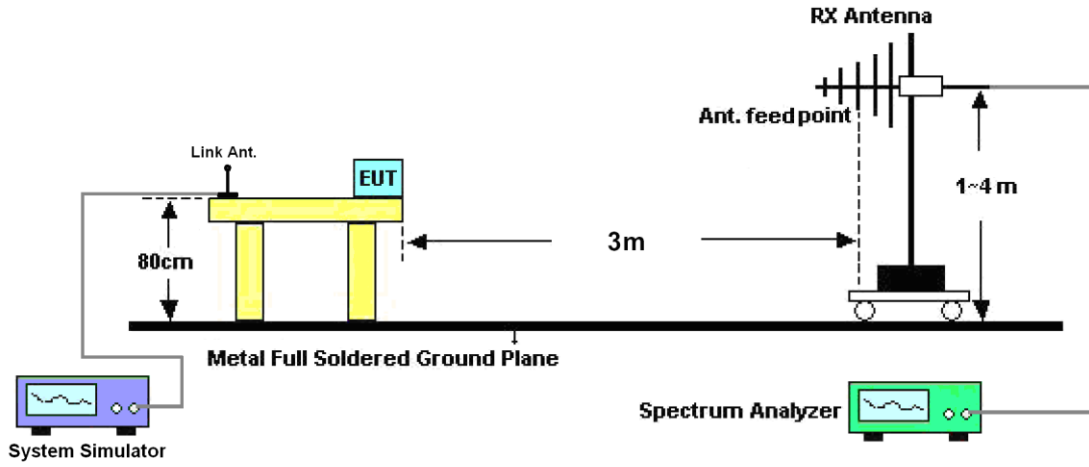
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter about 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, Sweep = 500ms, 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.

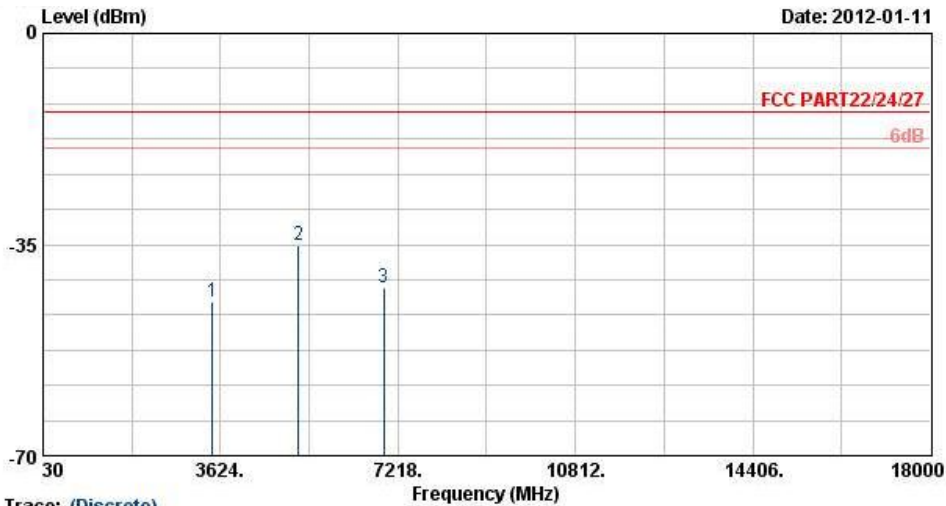
3.6.4 Test Setup





3.6.5 Test Result of Field Strength of Spurious Radiated

Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

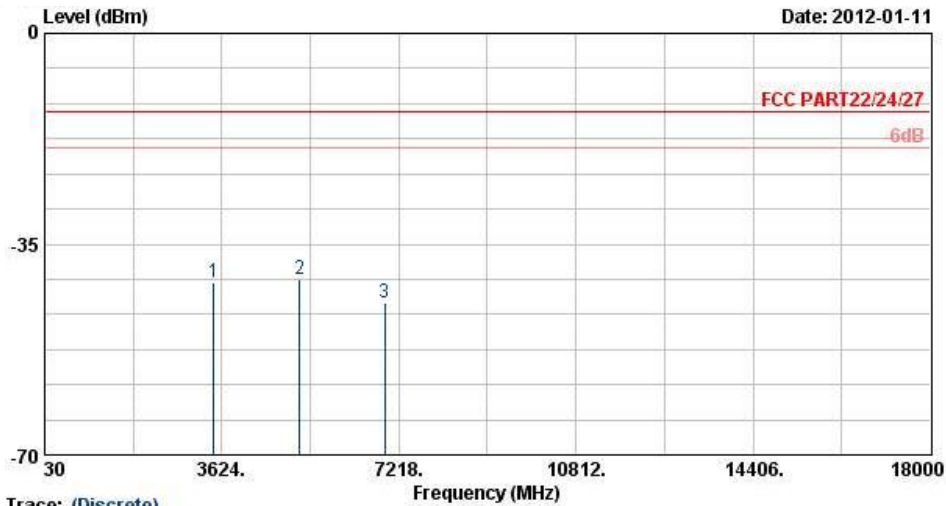


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(080306) HORIZONTAL
 Project : FG 1D0774

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
3465	-44.53	-13	-31.53	-59.46	-46.21	4.48	8.31	H	Pass
5197	-35.13	-13	-22.13	-55.59	-37.62	5.332	9.98	H	Pass
6930	-42.07	-13	-29.07	-68.44	-45.16	6.1	11.34	H	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

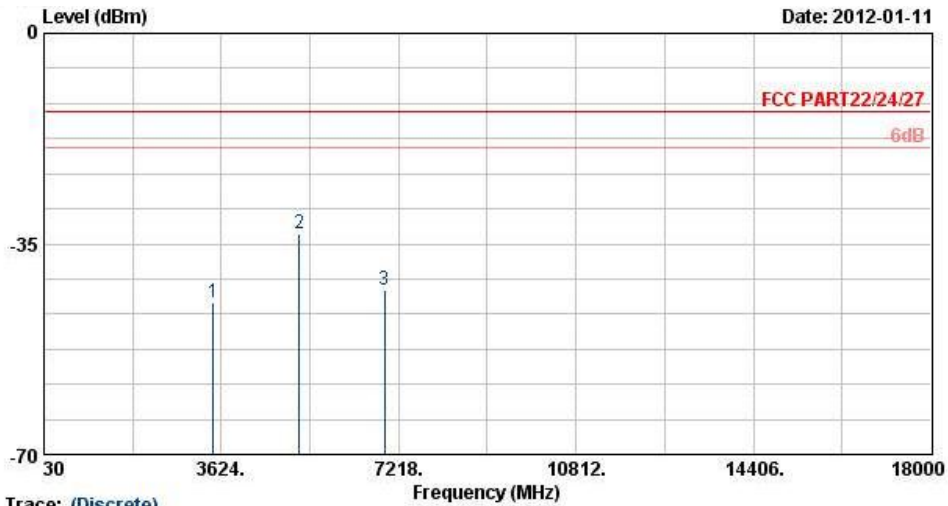


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(080306) VERTICAL
 Project : FG 1D0774

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
3465	-41.48	-13	-28.48	-57.45	-43.16	4.48	8.31	V	Pass
5197	-40.79	-13	-27.79	-60.77	-43.28	5.332	9.98	V	Pass
6930	-44.80	-13	-31.80	-70.09	-47.89	6.1	11.34	V	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

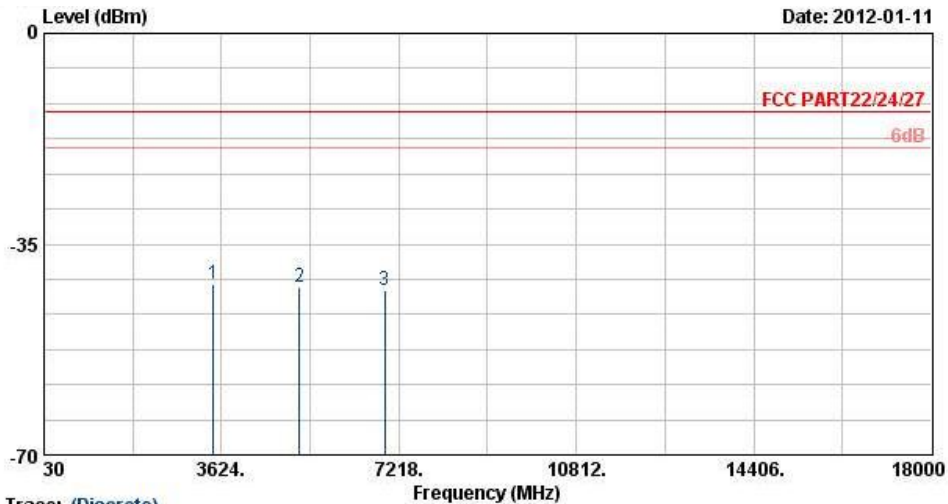


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(080306) HORIZONTAL
 Project : FG 1D0774

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
3465	-44.74	-13	-31.74	-59.42	-46.42	4.48	8.31	H	Pass
5197	-33.30	-13	-20.30	-52.3	-35.79	5.332	9.98	H	Pass
6930	-42.66	-13	-29.66	-70.25	-45.75	6.1	11.34	H	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

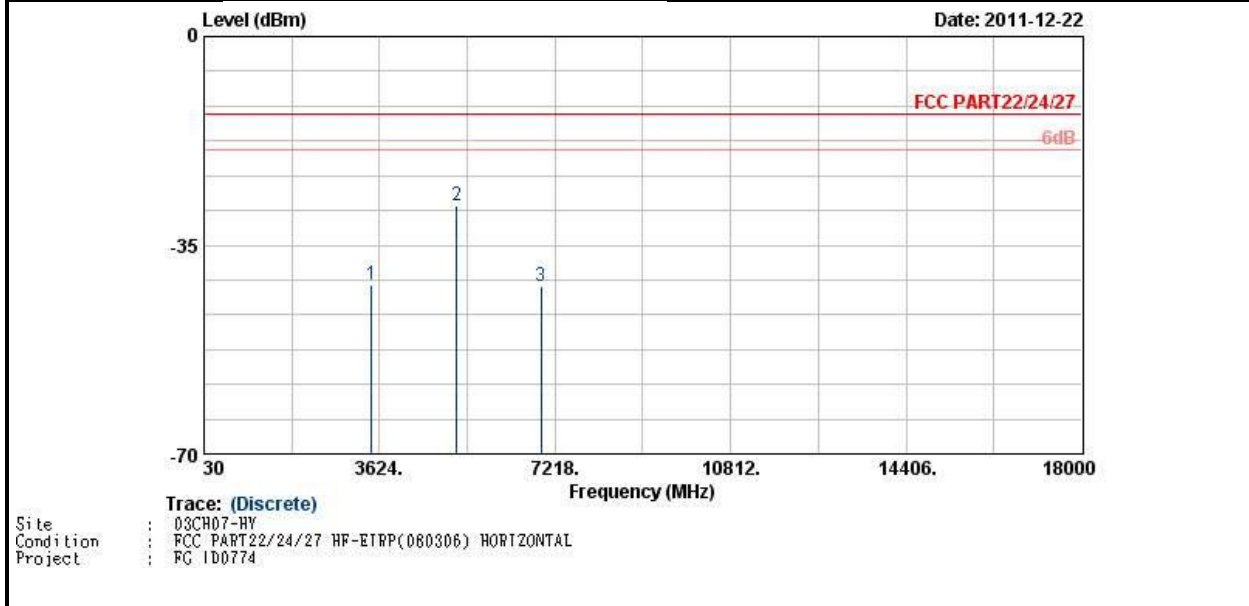


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(080306) VERTICAL
 Project : FG 1D0774

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
-41.53	-13	-28.53	-58.25	-43.21	4.48	8.31	-41.53	V	Pass
-42.16	-13	-29.16	-60.91	-44.65	5.332	9.98	-42.16	V	Pass
-42.80	-13	-29.80	-69.33	-45.89	6.1	11.34	-42.80	V	Pass



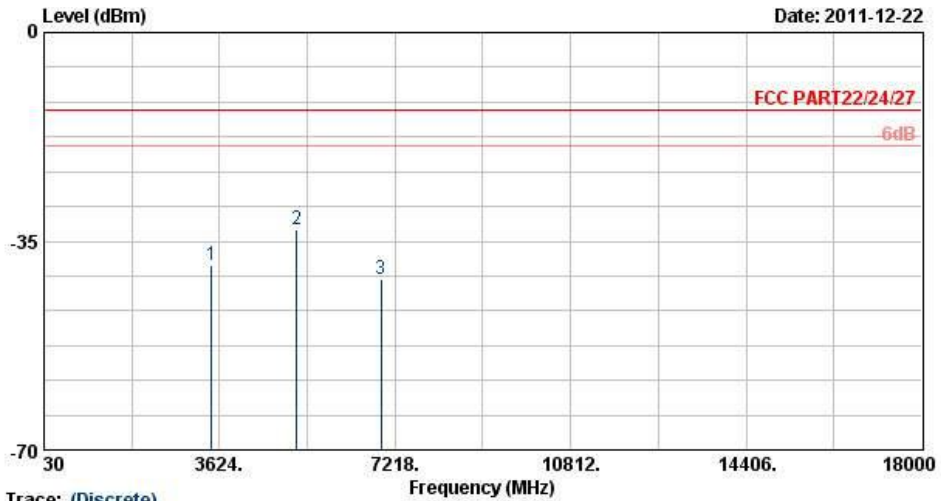
Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal



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
3465	-41.68	-13	-28.68	-56.43	-43.36	4.48	8.31	H	Pass
5197	-28.38	-13	-15.38	-47.15	-30.87	5.332	9.98	H	Pass
6930	-41.82	-13	-28.82	-67.96	-44.91	6.1	11.34	H	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical

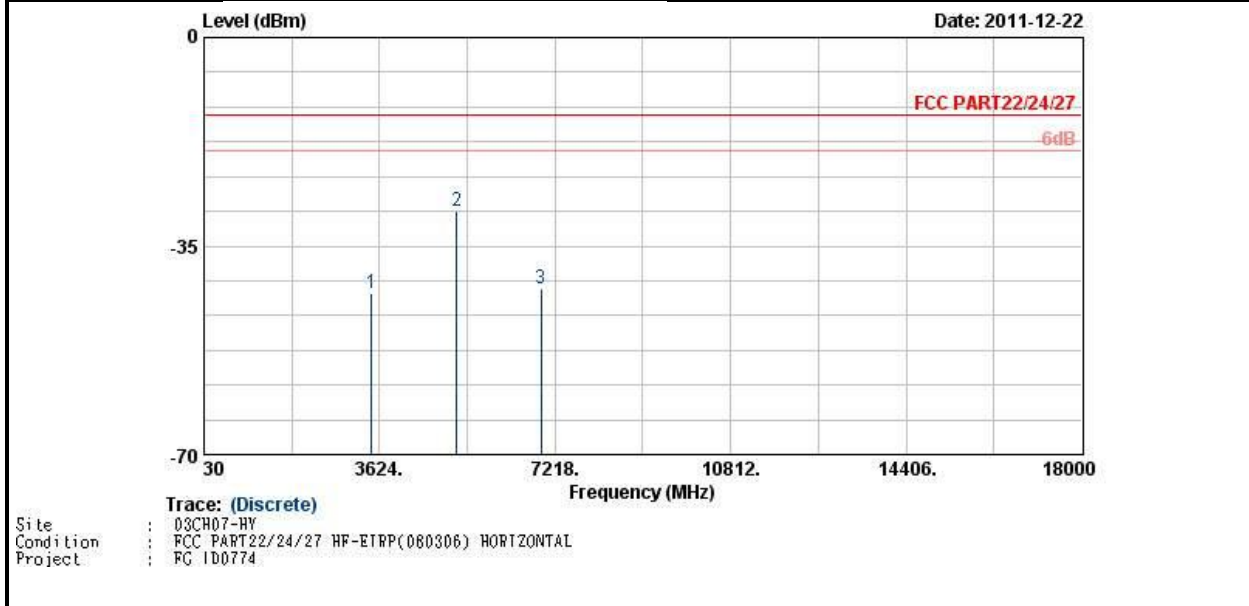


Trace: (Discrete)
 Site : D3CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(080306) VERTICAL
 Project : FG 1D0774

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
3465	-38.97	-13	-25.97	-55.4	-40.65	4.48	8.31	V	Pass
5197	-32.94	-13	-19.94	-52.15	-35.43	5.332	9.98	V	Pass
6930	-41.28	-13	-28.28	-68.2	-44.37	6.1	11.34	V	Pass



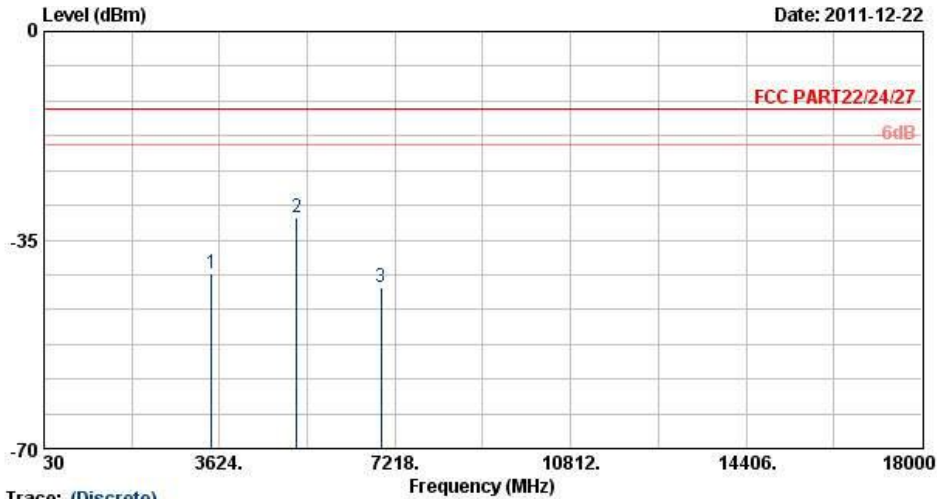
Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal



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
3465	-42.97	-13	-29.97	-57.27	-44.65	4.48	8.31	H	Pass
5197	-29.08	-13	-16.08	-47.98	-31.57	5.332	9.98	H	Pass
6930	-42.20	-13	-29.20	-68.46	-45.29	6.1	11.34	H	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical

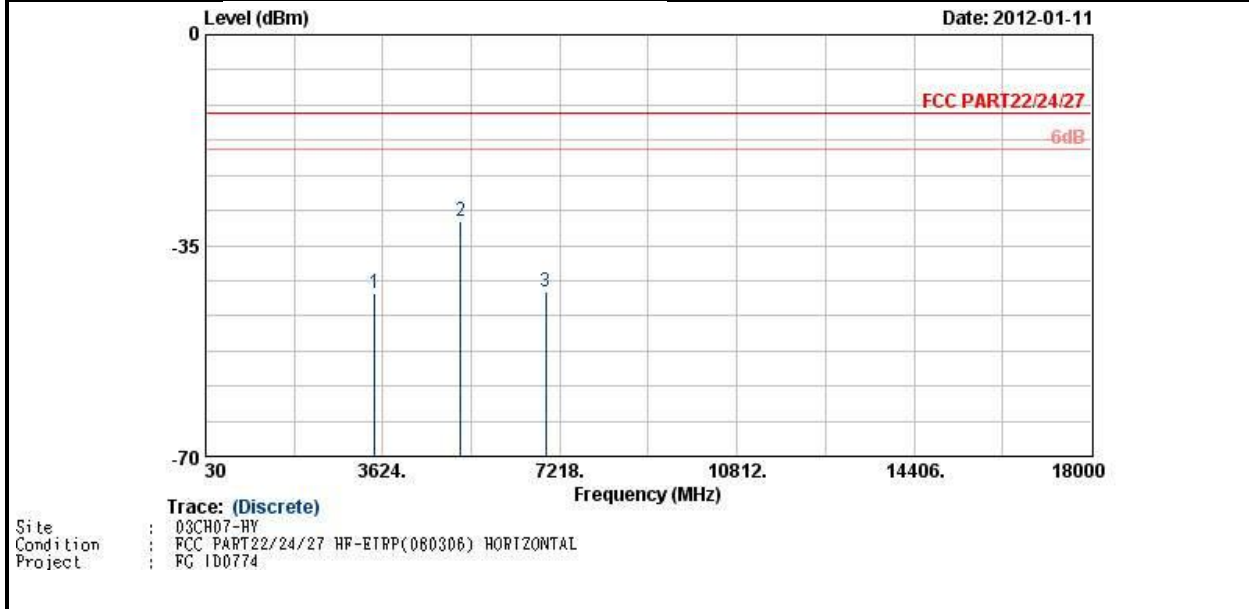


Trace: (Discrete)
 Site : D3CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(080306) VERTICAL
 Project : FG 1D0774

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
3465	-40.63	-13	-27.63	-56.26	-42.31	4.48	8.31	V	Pass
5197	-31.25	-13	-18.25	-51.5	-33.74	5.332	9.98	V	Pass
6930	-42.86	-13	-29.86	-68.05	-45.95	6.1	11.34	V	Pass



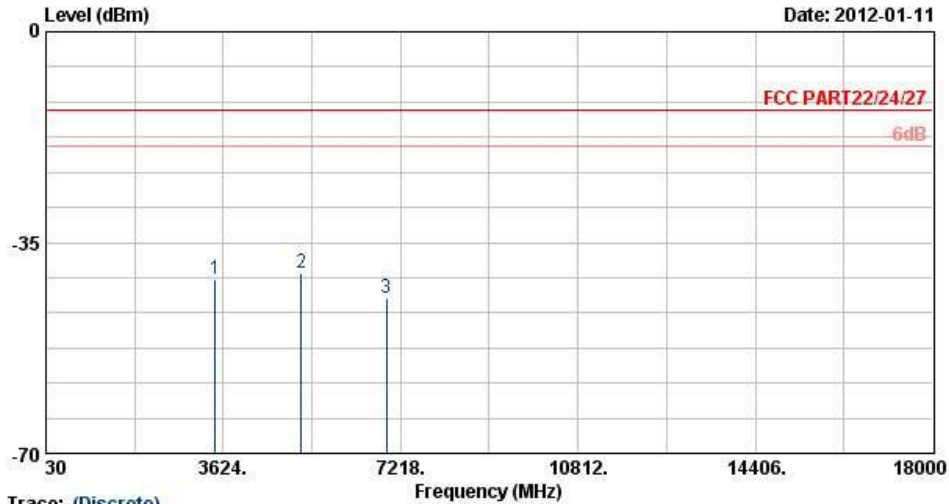
Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	15MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal



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
3465	-43.05	-13	-30.05	-58.85	-44.73	4.48	8.31	H	Pass
5197	-30.87	-13	-17.87	-50.42	-33.36	5.332	9.98	H	Pass
6930	-42.56	-13	-29.56	-69.77	-45.65	6.1	11.34	H	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	15MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

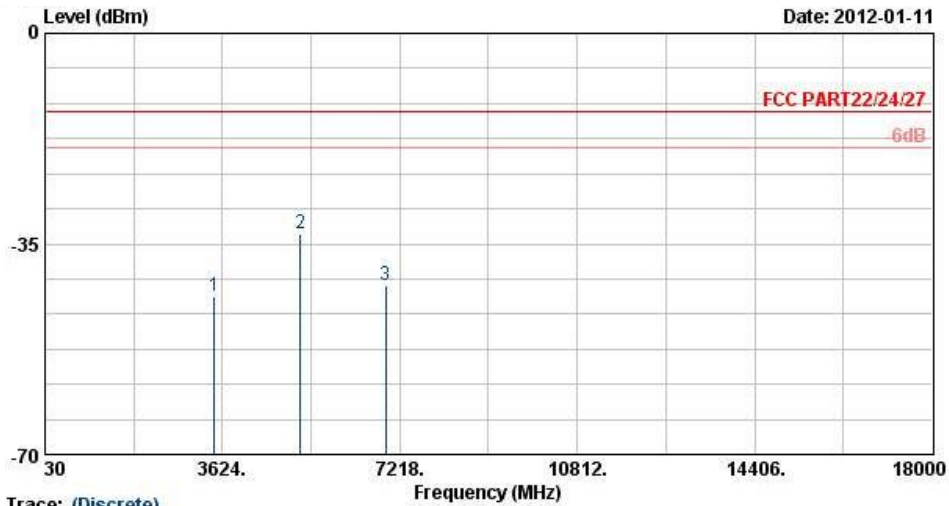


Trace: (Discrete)
 Site : D8CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(080306) VERTICAL
 Project : FG 1D0774

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
3465	-41.07	-13	-28.07	-57.62	-42.75	4.48	8.31	V	Pass
5197	-40.20	-13	-27.20	-59.01	-42.69	5.332	9.98	V	Pass
6930	-44.16	-13	-31.16	-70.19	-47.25	6.1	11.34	V	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	20MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

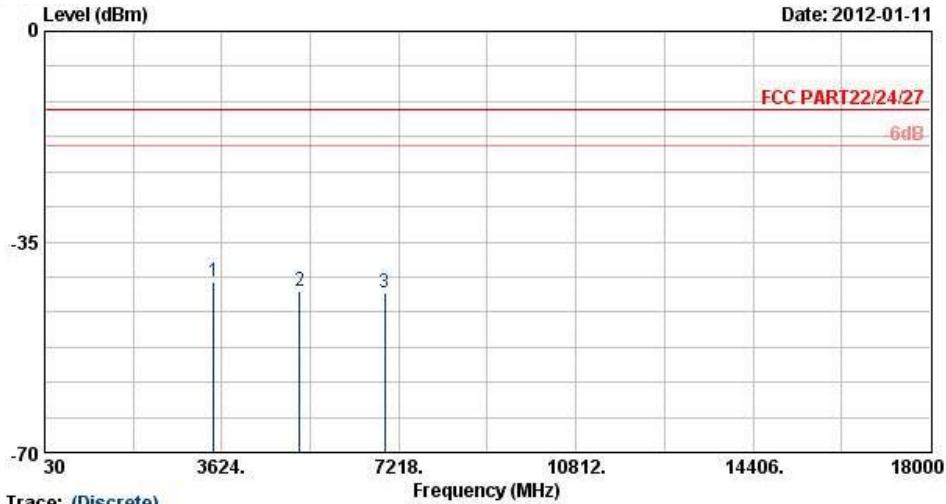


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(060306) HORIZONTAL
 Project : FG 1D0774

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
3465	-43.68	-13	-30.68	-58.95	-45.36	4.48	8.31	H	Pass
5197	-33.29	-13	-20.29	-52.75	-35.78	5.332	9.98	H	Pass
6930	-42.02	-13	-29.02	-68.52	-45.11	6.1	11.34	H	Pass



Band :	LTE Band 4	Temperature :	21~22°C
Test Mode :	20MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

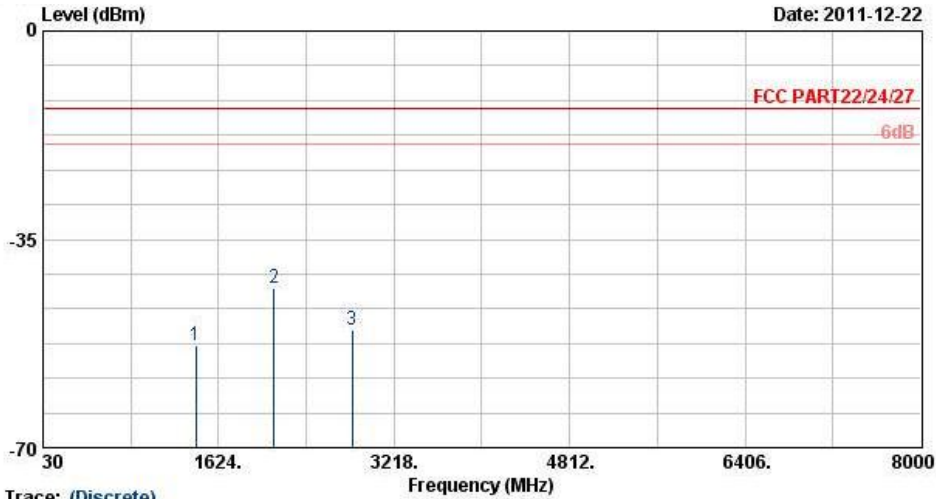


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC PART22/24/27 HF-ETRP(060306) VERTICAL
 Project : FG 1D0774

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
3465	-41.57	-13	-28.57	-57.26	-43.25	4.48	8.31	V	Pass
5197	-43.22	-13	-30.22	-62.61	-45.71	5.332	9.98	V	Pass
6930	-43.38	-13	-30.38	-68.64	-46.47	6.1	11.34	V	Pass



Band :	LTE Band 17	Temperature :	21~22°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

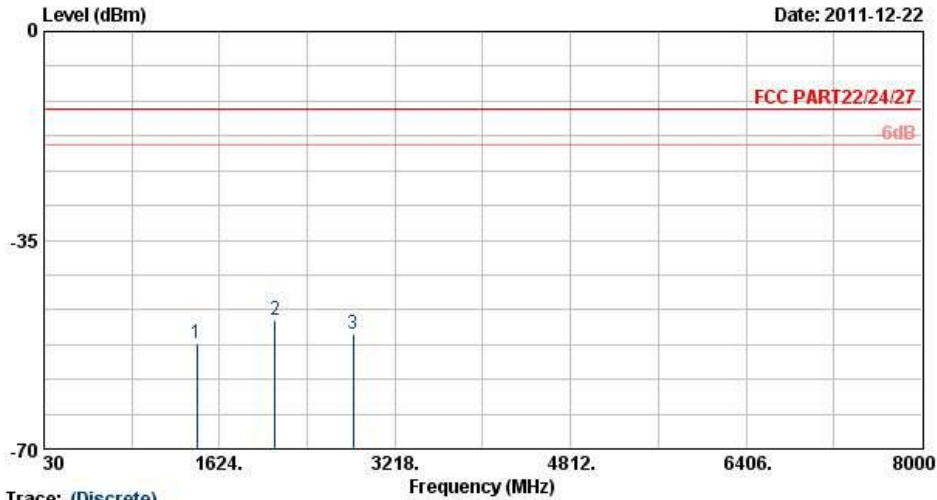


Trace: (Discrete)
 Site : 03CH07-RY
 Condition : FCC PART22/24/27 HF-ETRP(060306) HORIZONTAL
 Project : FG 1D0774

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
1420	-52.70	-13	-39.70	-61.56	-54.63	1.53	5.61	H	Pass
2130	-43.10	-13	-30.10	-56.07	-45.12	1.85	6.02	H	Pass
2840	-50.13	-13	-37.13	-65.3	-52.74	2.24	7.00	H	Pass



Band :	LTE Band 17	Temperature :	21~22°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

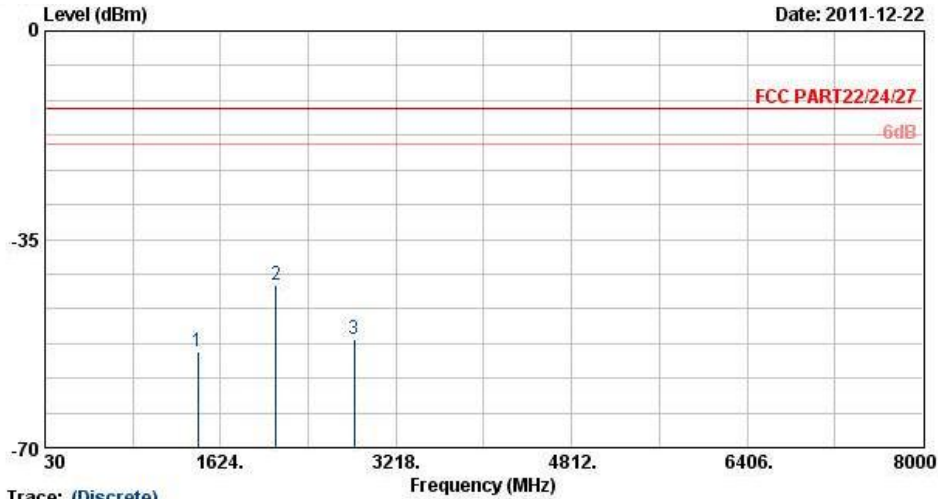


Trace: (Discrete)
 Site : D3CH07-HY
 Condition : FCC PART22/24/27 HF-EIRP(080306) VERTICAL
 Project : FG 1D0774

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
1420	-52.39	-13	-39.39	-63.71	-54.32	1.53	5.61	V	Pass
2130	-48.53	-13	-35.53	-62.81	-50.45	1.98	6.05	V	Pass
2840	-50.67	-13	-37.67	-65.22	-53.69	2.39	7.56	V	Pass



Band :	LTE Band 17	Temperature :	21~22°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

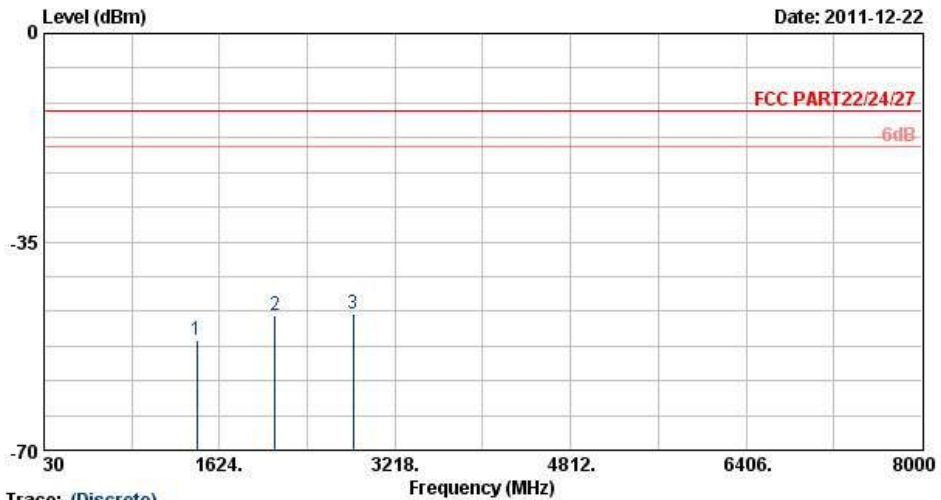


Trace: (Discrete)
 Site : 03CH07-RY
 Condition : FCC PART22/24/27 HF-ETRP(060306) HORIZONTAL
 Project : FG 1D0774

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
1420	-53.94	-13	-40.94	-63.98	-55.87	1.53	5.61	H	Pass
2130	-42.74	-13	-29.74	-54.38	-44.76	1.85	6.02	H	Pass
2840	-51.71	-13	-38.71	-66.24	-54.32	2.24	7.00	H	Pass



Band :	LTE Band 17	Temperature :	21~22°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC PART22/24/27 HF-EIRP(080306) VERTICAL
 Project : FG 1D0774

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
1420	-51.50	-13	-38.50	-64.1	-53.43	1.53	5.61	V	Pass
2130	-47.36	-13	-34.36	-61.98	-49.28	1.98	6.05	V	Pass
2840	-47.09	-13	-34.09	-62.81	-50.11	2.39	7.56	V	Pass

3.7 Frequency Stability Measurement

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

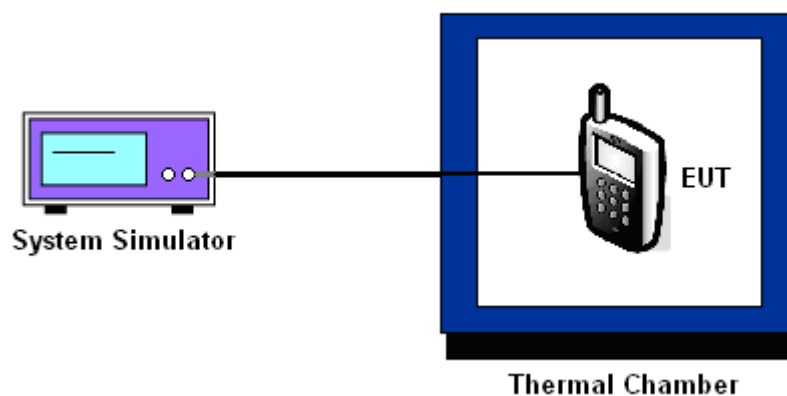
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized for three hours. 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 can not be turned on at -30°C , the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

3.7.4 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 base station.
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.

3.7.5 Test Setup



3.7.6 Test Result of Temperature Variation

Band :	LTE Band 4			Limit (ppm) :	2.5
Temperature (°C)	BW 1.4MHz		BW 3MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	N/A	N/A	N/A	N/A	
0	-11.3	-0.007	-11.0	-0.006	
10	9.7	0.006	-13.1	-0.008	
20	16.6	0.010	-19.0	-0.011	
30	-9.6	-0.006	-13.8	-0.008	
40	-14.7	-0.008	-17.6	-0.010	
50	N/A	N/A	N/A	N/A	
55	N/A	N/A	N/A	N/A	

Temperature (°C)	BW 5MHz		BW 10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	N/A	N/A	N/A	N/A	
0	12.8	0.007	-10.1	-0.006	
10	9.8	0.006	-11.4	-0.007	
20	8.6	0.005	-10.1	-0.006	
30	-10.1	-0.006	10.9	0.006	
40	-9.8	-0.006	7.2	0.004	
50	N/A	N/A	N/A	N/A	
55	N/A	N/A	N/A	N/A	



Temperature (°C)	BW 15MHz		BW 20MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	N/A	N/A	N/A	N/A	
0	10.4	0.006	7.1	0.004	
10	5.9	0.003	-9.7	-0.006	
20	7.3	0.004	-7.3	-0.004	
30	8.1	0.005	12.8	0.007	
40	8.5	0.005	9.1	0.005	
50	N/A	N/A	N/A	N/A	
55	N/A	N/A	N/A	N/A	

Note: The manufacturer declared that the EUT could work properly between temperatures 0°C~40°C.

Band :	LTE Band 17	Limit (ppm) :	2.5
---------------	-------------	----------------------	-----

Temperature (°C)	BW 5MHz		BW 10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	N/A	N/A	N/A	N/A	
0	3.3	0.005	5.3	0.007	
10	2.8	0.004	3.4	0.005	
20	2.9	0.004	-3.1	-0.004	
30	3.2	0.005	3.4	0.005	
40	-3.1	-0.004	-4.8	-0.007	
50	N/A	N/A	N/A	N/A	
55	N/A	N/A	N/A	N/A	

Note: The manufacturer declared that the EUT could work properly between temperatures 0°C~40°C.

3.7.7 Test Result of Voltage Variation

Band	Bandwidth	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 4	1.4M	Normal	-10.1	-0.006	2.5	PASS
		3.4	9.8	0.006		
		4.2	11.3	0.007		
	3M	Normal	12.4	0.007		
		3.4	11.8	0.007		
		4.2	-9.8	-0.006		
	5M	Normal	12.5	0.007		
		3.4	11.9	0.007		
		4.2	12.1	0.007		
	10M	Normal	8.3	0.005		
		3.4	-9.6	-0.006		
		4.2	11.4	0.007		
	15M	Normal	8.4	0.005		
		3.4	7.3	0.004		
		4.2	-7.0	-0.004		
20M	Normal	8.8	0.005			
	3.4	7.6	0.004			
	4.2	10.6	0.006			
LTE Band 17	5M	Normal	2.7	0.004	2.5	PASS
		3.4	3.4	0.005		
		4.2	3.1	0.004		
	10M	Normal	-3.1	-0.004		
		3.4	2.9	0.004		
		4.2	2.8	0.004		

Remark:

1. Normal Voltage = 3.8V.
2. The manufacturer declared that the EUT could work properly between voltage 3.4V ~ 4.2V.

4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	Dec. 21, 2011~ Jan. 10, 2012	Jul. 27, 2012	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	Dec. 21, 2011~ Jan. 10, 2012	Jun. 12, 2012	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 27, 2011	Dec. 21, 2011~ Jan. 10, 2012	Jul. 26, 2012	Conducted (TH02-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Dec. 22, 2011~ Jan. 11, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Dec. 22, 2011~ Jan. 11, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Dec. 22, 2011~ Jan. 11, 2012	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 05, 2011	Dec. 22, 2011~ Jan. 11, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB. GAIN	Mar. 29, 2011	Dec. 22, 2011~ Jan. 11, 2012	Mar. 28, 2012	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Dec. 22, 2011~ Jan. 11, 2012	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00 101800-30-1	159088	1GHz ~ 18GHz	Feb. 21, 2011	Dec. 22, 2011~ Jan. 11, 2012	Feb. 20, 2012	Radiation (03CH07-HY)
LTE Base Station	Anritsu	MT8820C	6200930978	N/A	Dec. 28, 2010	Dec. 22, 2011~ Jan. 11, 2012	Dec. 27, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Mar. 12, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
COM-POWER	Double Ridge Horn	AH-118	701030	1GHz ~ 18GHz	N/A	Mar. 12, 2012	N/A	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	Mar. 12, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Mar. 12, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Mar. 12, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz ~ 18GHz	Aug. 04, 2011	Mar. 12, 2012	Aug. 03, 2012	Radiation (03CH05-HY)
COM-POWER	COM-POWER	PA-103	161075	10Hz ~ 1000MHz Gain:32dB	Mar. 29, 2011	Mar. 12, 2012	Mar. 28, 2012	Radiation (03CH05-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz~18GHz	Jul. 18, 2011	Mar. 12, 2012	Jul. 17, 2012	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 30, 2011	Mar. 12, 2012	Aug. 29, 2012	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP1D0774 as below.