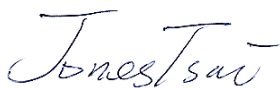


FCC RF Test Report

APPLICANT : Yulong Computer Telecommunication
Scientific (Shenzhen) Co., Ltd.
EQUIPMENT : mobile phone
BRAND NAME : Vodafone
MODEL NAME : 889N
FCC ID : R38YL889N
STANDARD : 47 CFR Part 2, 27(M)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was testing completed on May 28, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 and the testing has shown the tested sample to be in compliance with the applicable technical standards. The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG412407B	Rev. 01	Initial issue of report	May 30, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(c) §27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 7)	EIRP < 2Watt	PASS	-
3.3	§2.1049 §27.53(l)(6)	99% Occupied Bandwidth and 26dB Bandwidth	Reporting Only	PASS	-
3.4	§2.1051 §27.53(l)(4)	Conducted Band Edge Measurement (Band 7)	< 5.5MHz: -13 dBm ≥5.5MHz: -25 dBm	PASS	-
3.5	§2.1051 §27.53(l)(4)	Conducted Spurious Emission (Band 7)	< 55+10log ₁₀ (P[Watts])	PASS	-
3.6	§2.1053 §27.53(l)(4)	Radiated Spurious Emission (Band 7)	< 55+10log ₁₀ (P[Watts])	PASS	Under limit 5.20 dB at 10260.000 MHz
3.7	§2.1055 §27.54	Frequency Stability Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd.

Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.2 Manufacturer

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd.

Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	mobile phone
Brand Name	Vodafone
Model Name	889N
FCC ID	R38YL889N
EUT supports Radios application	GSM/GPRS/EGPRS/LTE/NFC/ WLAN 2.4GHz 11b/g/n HT20/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	T3
SW Version	4.4.257.00.T3.140506.KVT49L.VF.DE
EUT Stage	Production Unit

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

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz
Rx Frequency	LTE Band 7 : 2622.5 MHz ~ 2687.5 MHz
Bandwidth	5MHz / 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	22.83 dBm
Antenna Type	PIFA Antenna
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

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

1.6 Maximum EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	BW	Maximum EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 27M	LTE Band 7	QPSK	5MHz	0.20	0.007	4M52G7D
Part 27M	LTE Band 7	16QAM	5MHz	0.17	0.010	4M52D7W
Part 27M	LTE Band 7	QPSK	10MHz	0.21	0.008	9M12G7D
Part 27M	LTE Band 7	16QAM	10MHz	0.16	0.010	9M12D7W
Part 27M	LTE Band 7	QPSK	15MHz	0.20	0.009	13M6G7D
Part 27M	LTE Band 7	16QAM	15MHz	0.16	0.009	13M5D7W
Part 27M	LTE Band 7	QPSK	20MHz	0.20	0.009	18M7G7D
Part 27M	LTE Band 7	16QAM	20MHz	0.16	0.008	18M7D7W

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.	
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755- 3320-2398	
Test Site No.	Sporton Site No.	FCC Registration No.
	TH01-SZ	831040

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.	
Test Site Location	No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
Test Site No.	Sporton Site No.	
	OTA01-SZ	

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

Note: The test site complies with ANSI C63.4 2003 requirement.

1.8 Applicable Standards

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

- ♦ 47 CFR Part 2, 27(M)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r01 with maximum output power.

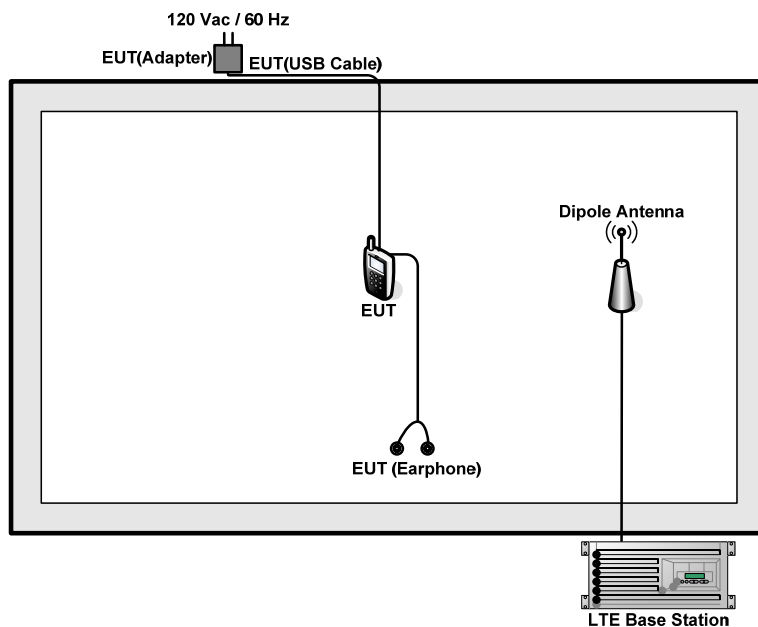
Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission. (Z plane)

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

Test Modes			
Band		Radiated TCs	Conducted TCs
LTE Band 7	BW 5MHz	■ LTE (RB Size 1, RB Offset 12) QPSK Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 12) Link ■ LTE (RB Size 25) Link
	BW 10MHz	■ LTE (RB Size 1, RB Offset 24) QPSK Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
	BW 15MHz	■ LTE (RB Size 1, RB Offset 37) QPSK Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 36) Link ■ LTE (RB Size 75) Link
	BW 20MHz	■ LTE (RB Size 1, RB Offset 49) QPSK Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 50) Link ■ LTE (RB Size 100) Link

Note: The spurious emission was performed by conducted and radiated methods. From conducted spurious emission measurement (QPSK and 16QAM), the modulation related spurious emission out of the band was not identified and the radiated spurious emissions results on 16QAM were not worse than QSPK mode during exploratory test.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 7.5 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset (dB)} &= \text{RF cable loss (dB)} + \text{attenuator factor (dB)} \\ &= 7.5 + 10 = 17.5 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

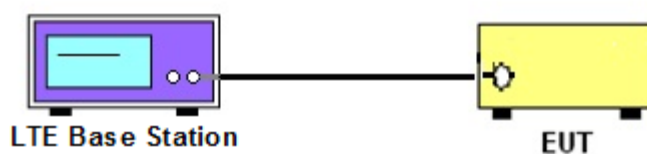
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

<LTE Band 7 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20850	21100	21350
Frequency (MHz)				2510	2535	2560
20	QPSK	1	0	22.75	22.75	22.60
20	QPSK	1	49	22.77	22.80	22.83
20	QPSK	1	99	22.71	22.79	22.73
20	QPSK	50	0	21.84	21.70	21.74
20	QPSK	50	24	21.77	21.68	21.69
20	QPSK	50	49	21.73	21.65	21.72
20	QPSK	100	0	21.68	21.68	21.69
20	16QAM	1	0	21.76	21.15	21.60
20	16QAM	1	49	21.95	21.86	21.84
20	16QAM	1	99	21.46	21.69	21.36
20	16QAM	50	0	20.57	20.52	20.53
20	16QAM	50	24	20.71	20.59	20.65
20	16QAM	50	49	20.60	20.57	20.63
20	16QAM	100	0	20.45	20.54	20.64
Channel				20825	21100	21375
Frequency (MHz)				2507.5	2535	2562.5
15	QPSK	1	0	22.65	22.69	22.51
15	QPSK	1	37	22.68	22.71	22.80
15	QPSK	1	74	22.56	22.59	22.69
15	QPSK	36	0	21.72	21.65	21.72
15	QPSK	36	18	21.68	21.63	21.72
15	QPSK	36	37	21.71	21.66	21.66
15	QPSK	75	0	21.66	21.68	21.68
15	16QAM	1	0	21.73	21.52	21.63
15	16QAM	1	37	21.81	21.57	21.71
15	16QAM	1	74	21.47	21.52	21.67
15	16QAM	36	0	20.44	20.47	20.56
15	16QAM	36	18	20.48	20.52	20.51
15	16QAM	36	37	20.60	20.58	20.54
15	16QAM	75	0	20.48	20.54	20.57

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20800	21100	21400
Frequency (MHz)				2505	2535	2565
10	QPSK	1	0	22.66	22.60	22.63
10	QPSK	1	24	22.69	22.69	22.70
10	QPSK	1	49	22.68	22.67	22.59
10	QPSK	25	0	21.65	21.62	21.63
10	QPSK	25	12	21.55	21.56	21.66
10	QPSK	25	24	21.75	21.57	21.61
10	QPSK	50	0	21.73	21.58	21.60
10	16QAM	1	0	21.57	21.46	21.53
10	16QAM	1	24	21.74	21.66	21.59
10	16QAM	1	49	21.63	21.58	21.26
10	16QAM	25	0	20.44	20.55	20.49
10	16QAM	25	12	20.35	20.47	20.55
10	16QAM	25	24	20.60	20.57	20.48
10	16QAM	50	0	20.62	20.49	20.52
Channel				20775	21100	21425
Frequency (MHz)				2502.5	2535	2567.5
5	QPSK	1	0	22.47	22.40	22.35
5	QPSK	1	12	22.57	22.58	22.54
5	QPSK	1	24	22.43	22.48	22.26
5	QPSK	12	0	21.53	21.35	21.30
5	QPSK	12	6	21.45	21.32	21.27
5	QPSK	12	11	21.49	21.40	21.25
5	QPSK	25	0	21.42	21.39	21.25
5	16QAM	1	0	21.30	21.04	21.14
5	16QAM	1	12	21.49	21.41	21.43
5	16QAM	1	24	21.30	21.38	21.37
5	16QAM	12	0	20.31	20.20	20.22
5	16QAM	12	6	20.28	20.26	20.21
5	16QAM	12	11	20.20	20.25	20.20
5	16QAM	25	0	20.27	20.28	20.24

Note: Maximum average power for LTE.

3.2 Equivalent Isotropic Radiated Power Measurement

3.2.1 Description of the EIRP Measurement

Equivalent isotropic 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 v02r01. Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 7.

3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer which used a channel power option across EUT's signal bandwidth per section 4.0 of KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

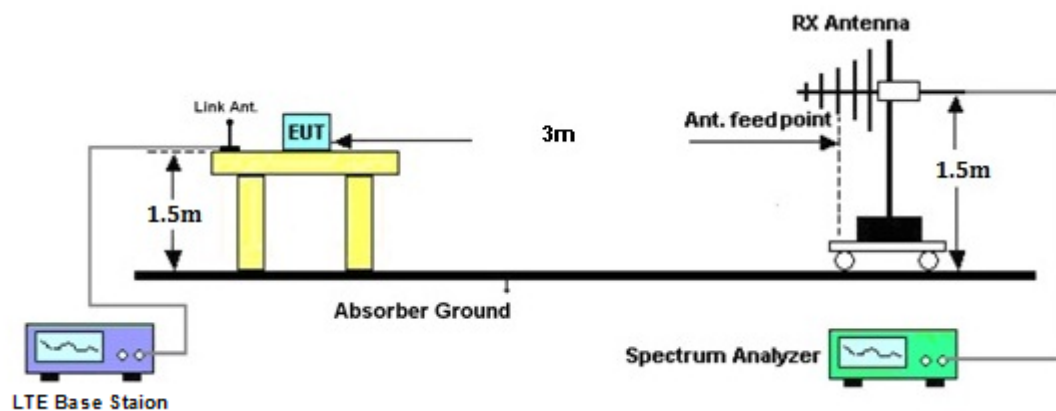
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

R_t : The highest received signal in spectrum analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.

3.2.4 Test Setup



3.2.5 Test Result of EIRP

LTE Band 7 Radiated Power EIRP								
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset				
7	5	QPSK	1	12	2502.5	23.10	0.20	H
7	5	QPSK	1	12	2535	22.92	0.20	H
7	5	QPSK	1	12	2567.5	22.16	0.16	H
7	5	QPSK	1	12	2502.5	22.87	0.19	V
7	5	QPSK	1	12	2535	22.70	0.19	V
7	5	QPSK	1	12	2567.5	21.76	0.15	V
7	5	16QAM	1	24	2502.5	22.38	0.17	H
7	5	16QAM	1	24	2535	22.22	0.17	H
7	5	16QAM	1	24	2567.5	21.28	0.13	H
7	5	16QAM	1	24	2502.5	22.16	0.16	V
7	5	16QAM	1	24	2535	21.86	0.15	V
7	5	16QAM	1	24	2567.5	20.95	0.12	V
7	10	QPSK	1	24	2505	23.27	0.21	H
7	10	QPSK	1	24	2535	22.94	0.20	H
7	10	QPSK	1	24	2565	22.62	0.18	H
7	10	QPSK	1	24	2505	22.95	0.20	V
7	10	QPSK	1	24	2535	22.73	0.19	V
7	10	QPSK	1	24	2565	22.31	0.17	V
7	10	16QAM	1	49	2505	22.13	0.16	H
7	10	16QAM	1	49	2535	22.10	0.16	H
7	10	16QAM	1	49	2565	21.20	0.13	H
7	10	16QAM	1	49	2505	21.91	0.16	V
7	10	16QAM	1	49	2535	21.83	0.15	V
7	10	16QAM	1	49	2565	20.81	0.12	V

LTE Band 7 Radiated Power EIRP								
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset				
7	15	QPSK	1	37	2507.5	22.97	0.20	H
7	15	QPSK	1	37	2535	22.77	0.19	H
7	15	QPSK	1	37	2562.5	22.52	0.18	H
7	15	QPSK	1	37	2507.5	22.71	0.19	V
7	15	QPSK	1	37	2535	22.49	0.18	V
7	15	QPSK	1	37	2562.5	22.20	0.17	V
7	15	16QAM	1	74	2507.5	22.07	0.16	H
7	15	16QAM	1	74	2535	22.16	0.16	H
7	15	16QAM	1	74	2562.5	21.23	0.13	H
7	15	16QAM	1	74	2507.5	21.86	0.15	V
7	15	16QAM	1	74	2535	21.88	0.15	V
7	15	16QAM	1	74	2562.5	20.89	0.12	V
7	20	QPSK	1	49	2510	23.07	0.20	H
7	20	QPSK	1	49	2535	22.92	0.20	H
7	20	QPSK	1	49	2560	22.81	0.19	H
7	20	QPSK	1	49	2510	22.82	0.19	V
7	20	QPSK	1	49	2535	22.71	0.19	V
7	20	QPSK	1	49	2560	22.29	0.17	V
7	20	16QAM	1	99	2510	21.75	0.15	H
7	20	16QAM	1	99	2535	22.02	0.16	H
7	20	16QAM	1	99	2560	21.07	0.13	H
7	20	16QAM	1	99	2510	21.57	0.14	V
7	20	16QAM	1	99	2535	21.83	0.15	V
7	20	16QAM	1	99	2560	20.82	0.12	V

3.3 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.3.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

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

The 26dB 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 26 dB.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

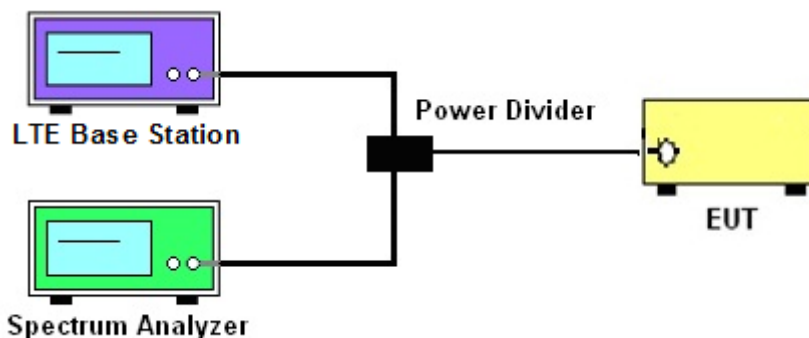
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The EUT was connected to spectrum analyzer and LTE base station via a power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF power with full RB sizes were measured.

3.3.4 Test Setup



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

Modes	LTE Band 7			
BW / Mod.	5MHz / QPSK	5MHz / 16QAM	10MHz / QPSK	10MHz / 16QAM
99% OBW (MHz)	4.52	4.52	9.12	9.12
26dB BW (MHz)	5.00	5.02	10.12	10.12
BW / Mod.	15MHz / QPSK	15MHz / 16QAM	20MHz / QPSK	20MHz / 16QAM
99% OBW (MHz)	13.56	13.50	18.72	18.72
26dB BW (MHz)	14.70	14.70	21.28	21.20

Note:

The maximum RB configurations of the 99% Occupied Bandwidth and 26dB Bandwidth summary as below:

BW5MHz RB setting : RB Size 25, RB offset 0

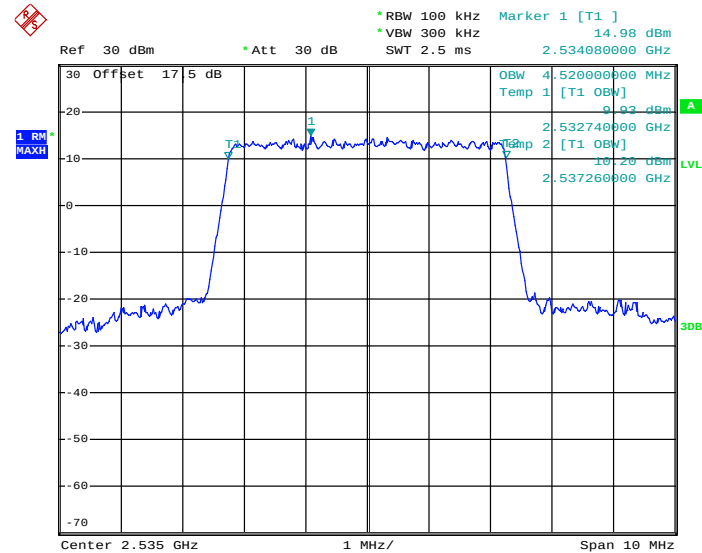
BW10MHz RB setting : RB Size 50, RB offset 0

BW15MHz RB setting : RB Size 75, RB offset 0

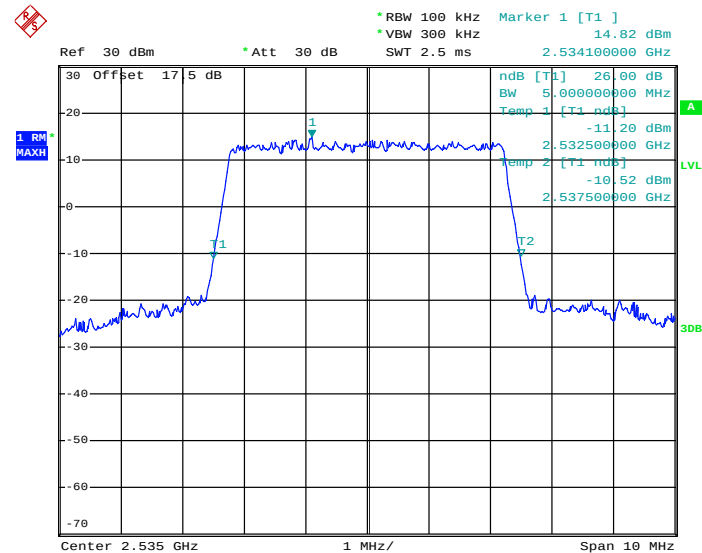
BW20MHz RB setting : RB Size 100, RB offset 0

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

Band :	LTE Band 7	BW / Mod. :	5MHz / QPSK
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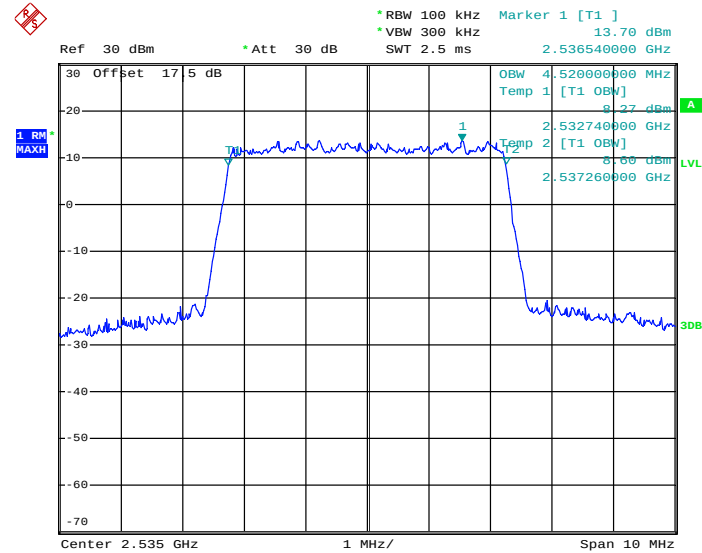
99% Occupied Bandwidth Plot on Channel 21100


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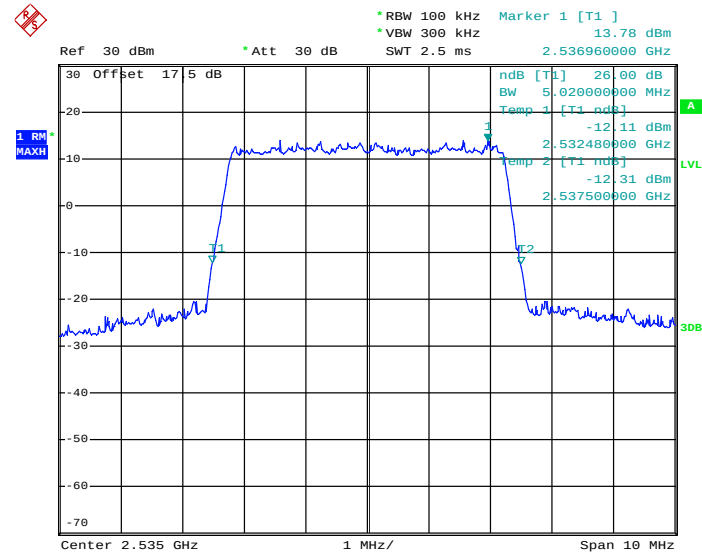
26dB Bandwidth Plot on Channel 21100


Date: 5.APR.2014 22:48:08

Band :	LTE Band 7	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 21100


Date: 5.APR.2014 23:39:59

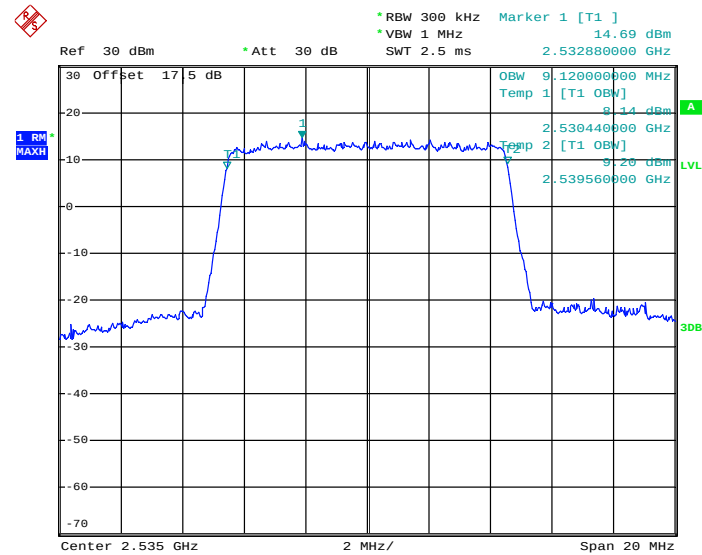
26dB Bandwidth Plot on Channel 21100


Date: 5.APR.2014 22:50:16



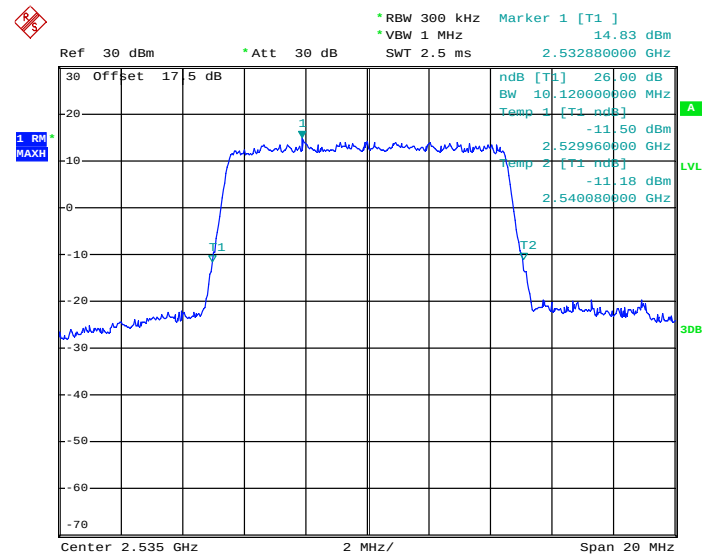
Band :	LTE Band 7	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 21100



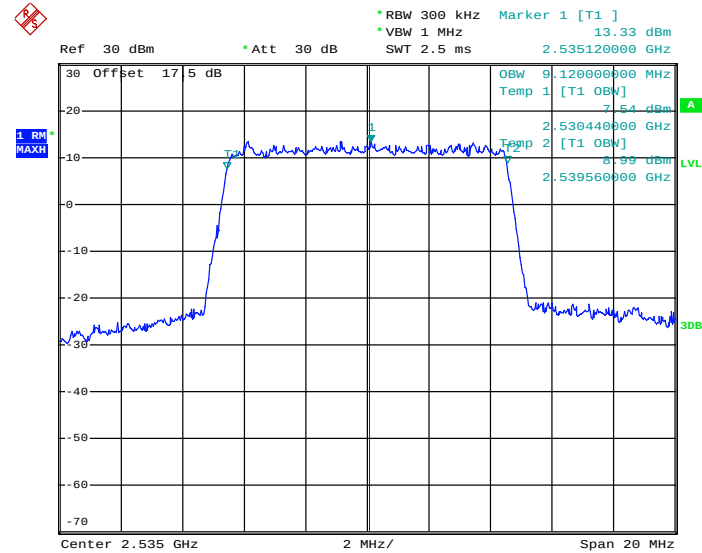
Date: 6.APR.2014 00:16:14

26dB Bandwidth Plot on Channel 21100

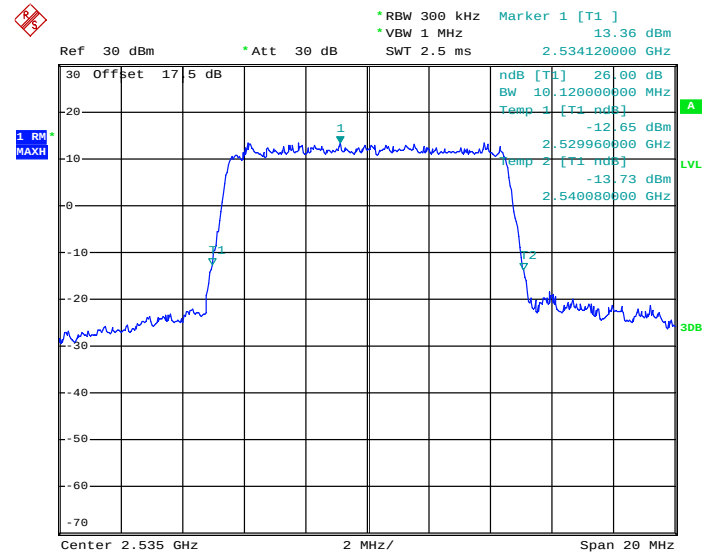


Date: 5.APR.2014 22:54:44

Band :	LTE Band 7	BW / Mod. :	10MHz / 16QAM
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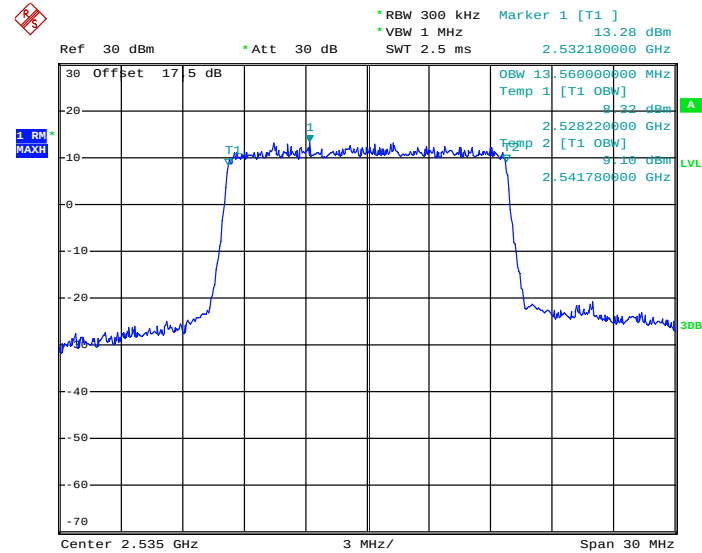
99% Occupied Bandwidth Plot on Channel 21100


Date: 6.APR.2014 00:18:15

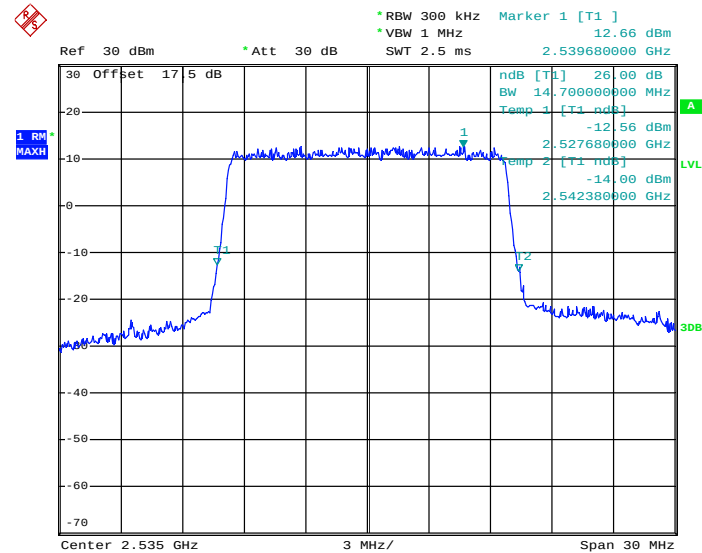
26dB Bandwidth Plot on Channel 21100


Date: 5.APR.2014 22:57:10

Band :	LTE Band 7	BW / Mod. :	15MHz / QPSK
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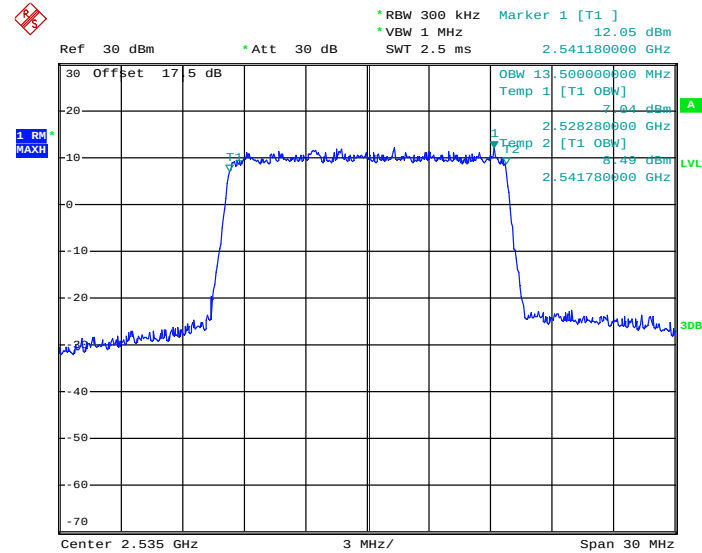
99% Occupied Bandwidth Plot on Channel 21100


Date: 6.APR.2014 00:45:22

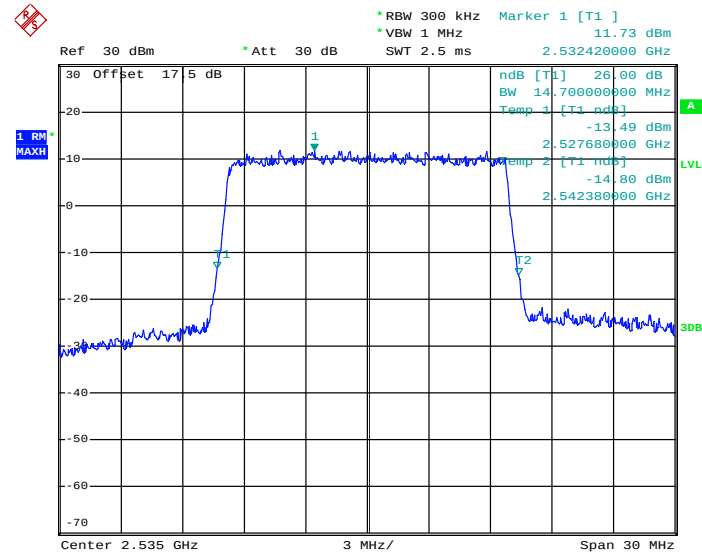
26dB Bandwidth Plot on Channel 21100


Date: 5.APR.2014 22:59:48

Band :	LTE Band 7	BW / Mod. :	15MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 21100


Date: 6.APR.2014 00:46:57

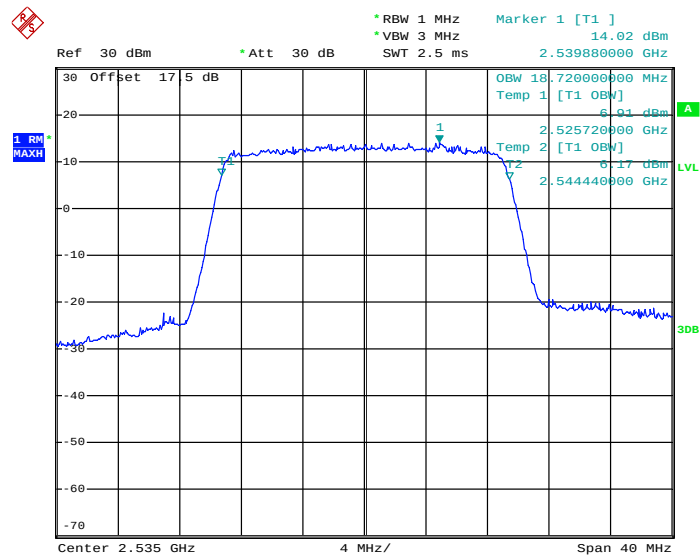
26dB Bandwidth Plot on Channel 21100


Date: 5.APR.2014 23:01:21



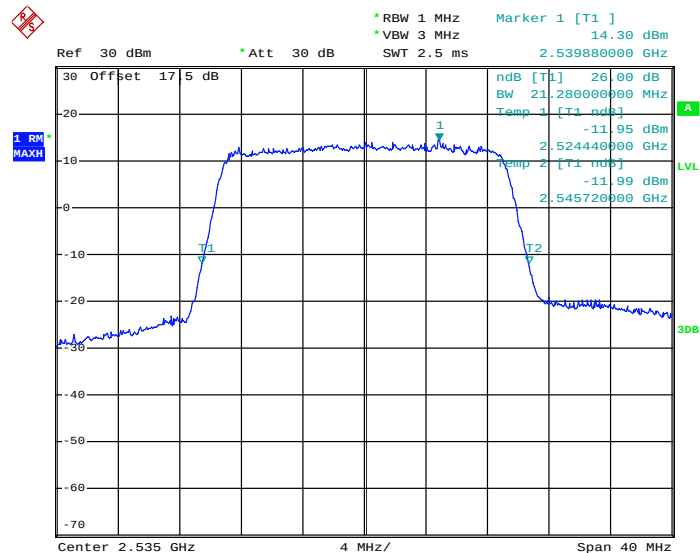
Band :	LTE Band 7	BW / Mod. :	20MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 21100



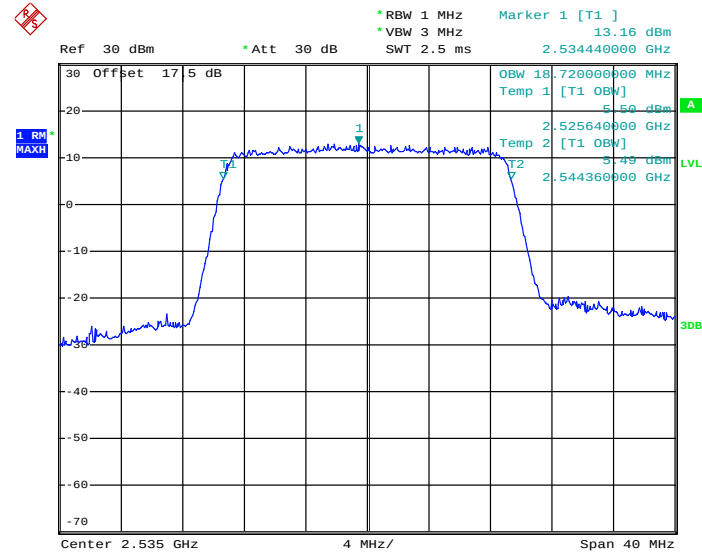
Date: 6.APR.2014 00:48:41

26dB Bandwidth Plot on Channel 21100

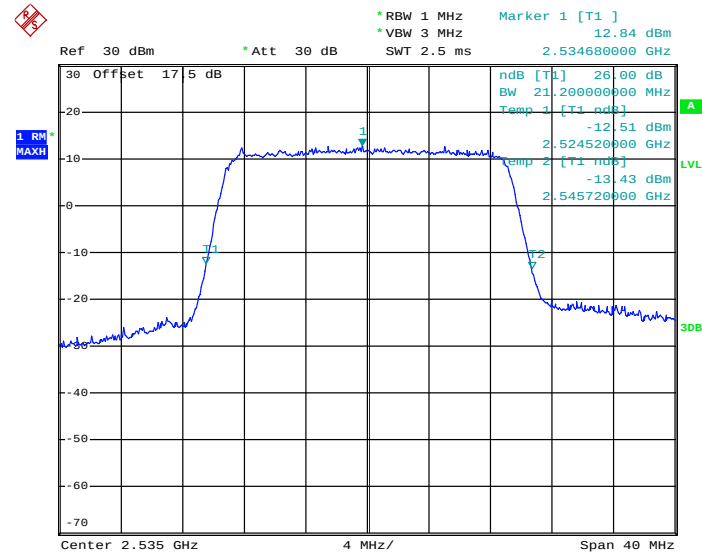


Date: 5.APR.2014 23:06:13

Band :	LTE Band 7	BW / Mod. :	20MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 21100


Date: 6.APR.2014 00:49:55

26dB Bandwidth Plot on Channel 21100


Date: 5.APR.2014 23:04:54

3.4 Conducted Band Edge Measurement

3.4.1 Description of Conducted Band Edge Measurement

27.53 (l) (4) for Band 7

The emissions be operated in the 2496-2690 MHz band, the attenuation factor of transmitter Power (P) shall be not less than $43 + 10 \log (P)$ dB at the channel edge and $55 + 10 \log (P)$ dB at 5.5 MHz from the channel edges.

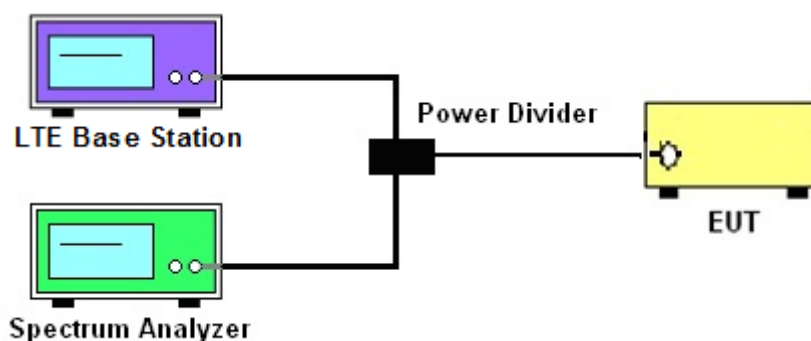
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The EUT was connected to spectrum analyzer and LTE base station via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with RMS detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

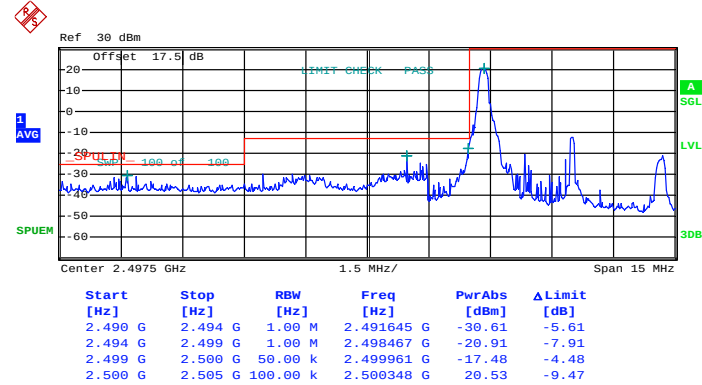
3.4.4 Test Setup



3.4.5 Test Result (Plots) of Conducted Band Edge

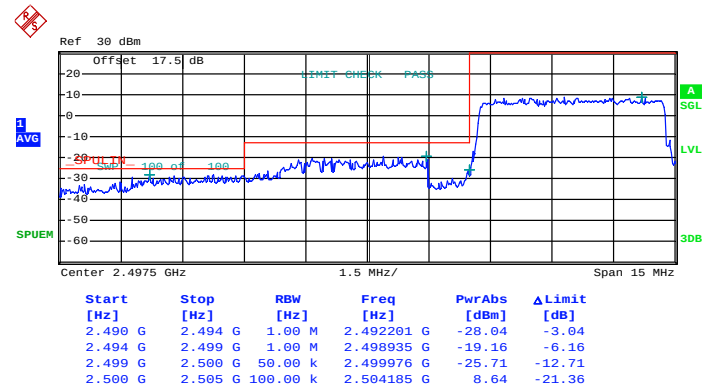
Band :	LTE Band 7	Band Width :	5MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



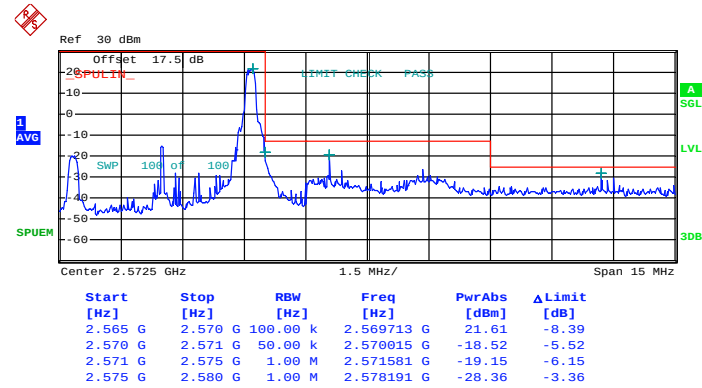
Date: 6.APR.2014 20:36:56

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



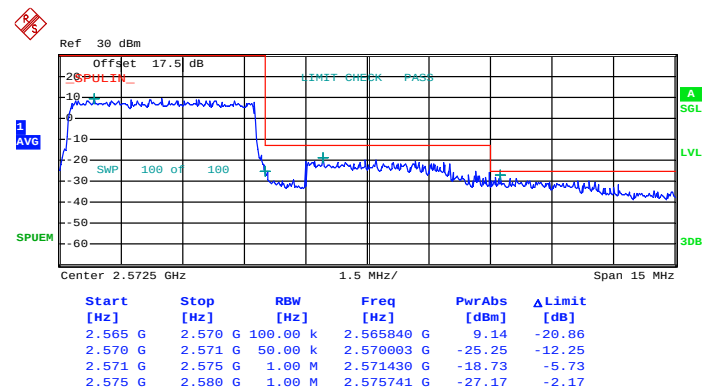
Date: 6.APR.2014 20:41:29

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



Date: 6.APR.2014 20:53:02

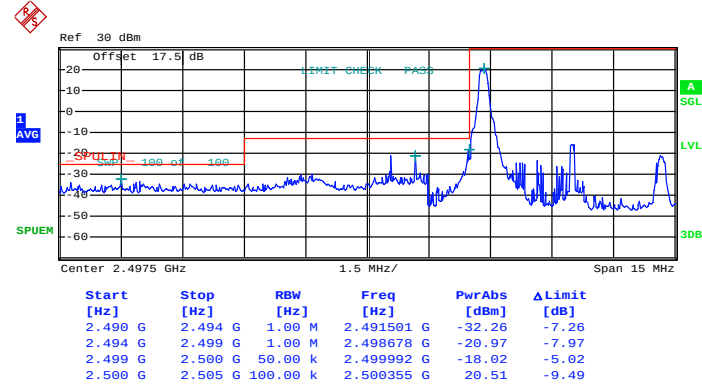
Higher Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 6.APR.2014 20:46:54

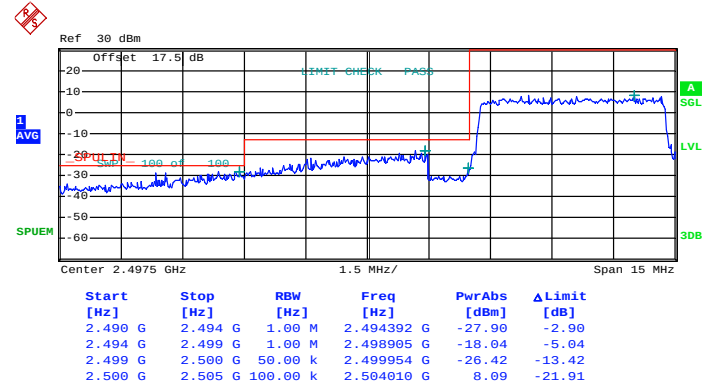
Band :	LTE Band 7	Band Width :	5MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



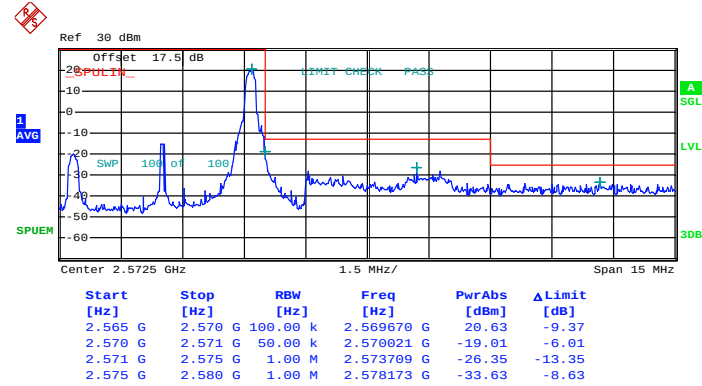
Date: 6.APR.2014 20:39:26

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



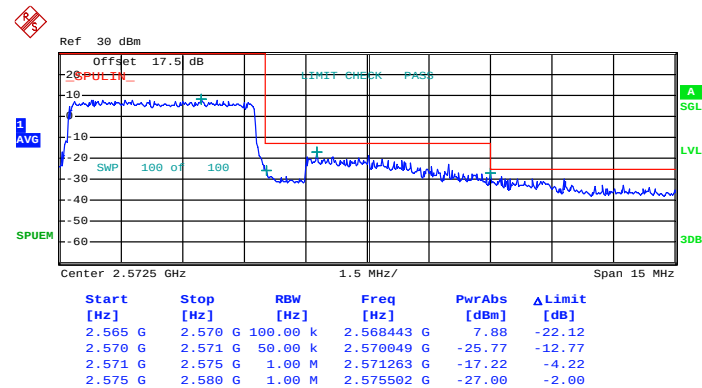
Date: 6.APR.2014 20:40:42

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



Date: 6.APR.2014 20:50:41

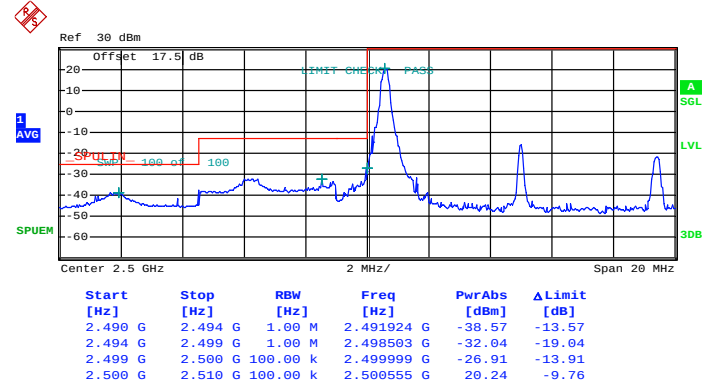
Higher Band Edge Plot for 16QAM-RB Size 25, RB Offset 0



Date: 6.APR.2014 20:48:55

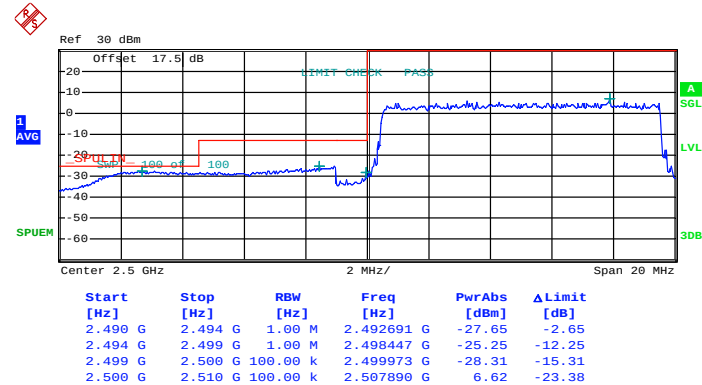
Band :	LTE Band 7	Band Width :	10MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



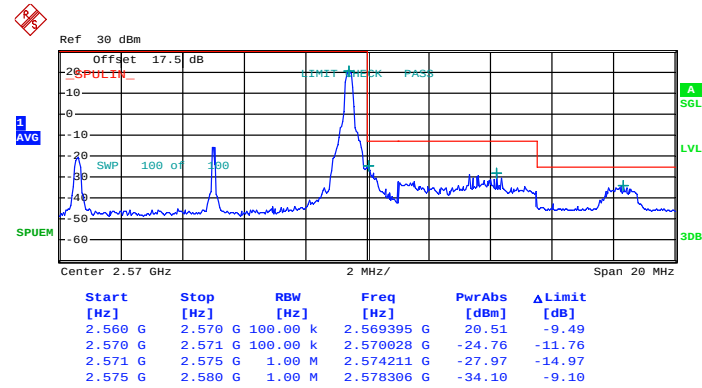
Date: 8.APR.2014 11:36:47

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



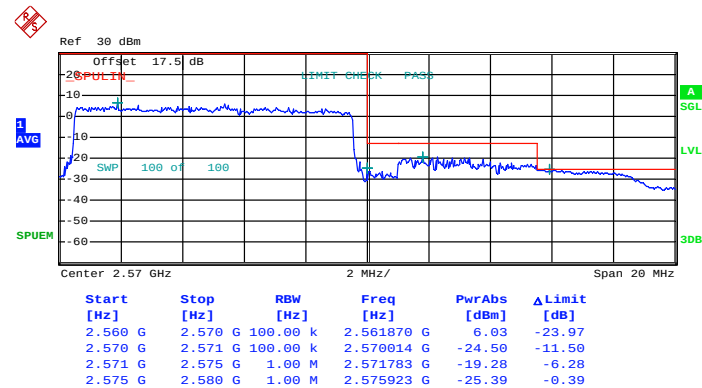
Date: 8.APR.2014 11:45:15

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



Date: 8.APR.2014 10:09:46

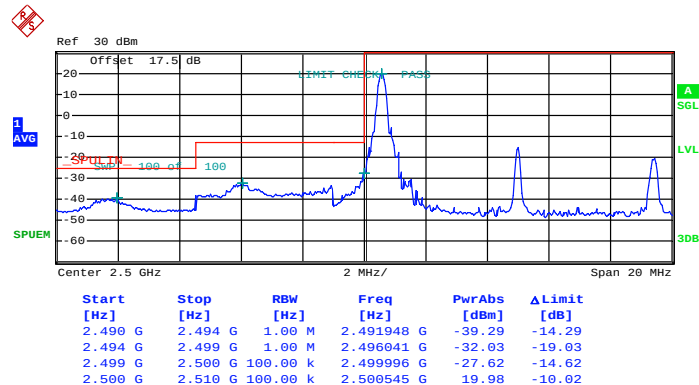
Higher Band Edge Plot for QPSK-RB Size 50, RB Offset 0



Date: 8.APR.2014 10:05:00

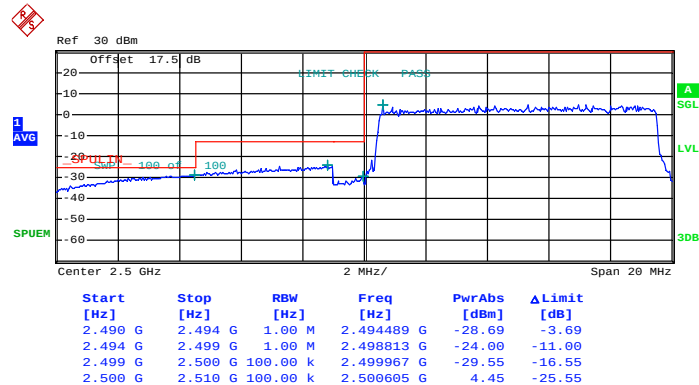
Band :	LTE Band 7	Band Width :	10MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



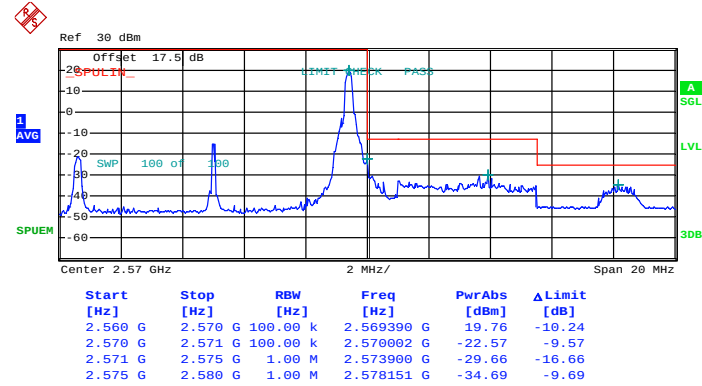
Date: 8.APR.2014 11:39:03

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



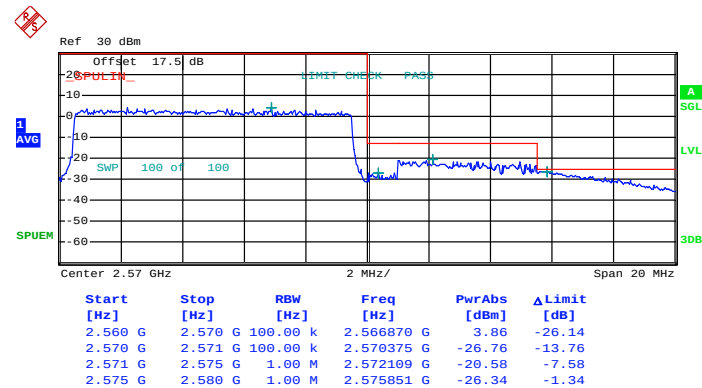
Date: 8.APR.2014 11:42:32

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



Date: 8.APR.2014 10:08:44

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

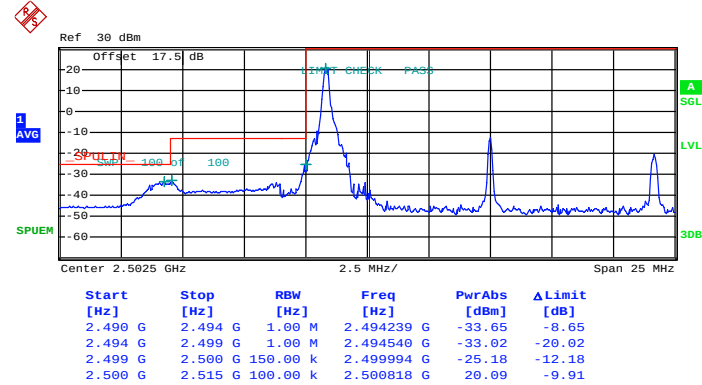


Date: 8.APR.2014 10:07:35



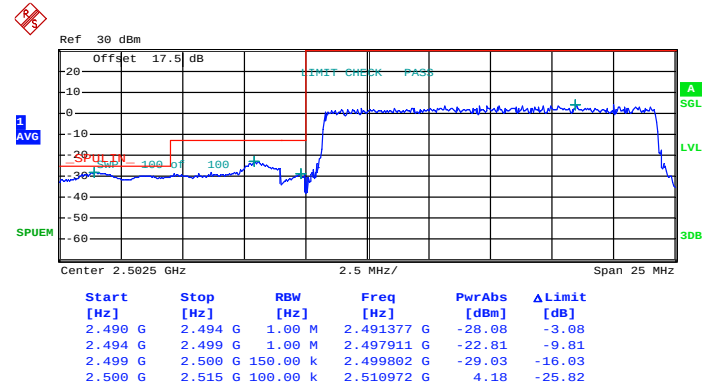
Band :	LTE Band 7	Band Width :	15MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



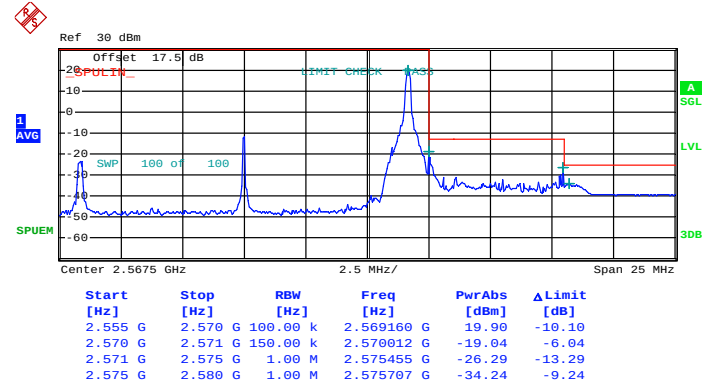
Date: 8.APR.2014 11:24:44

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



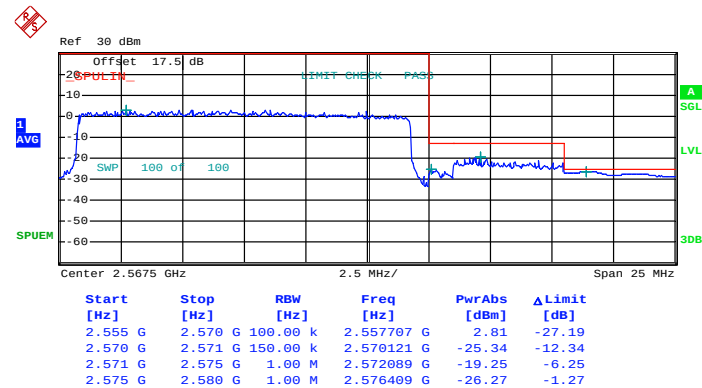
Date: 8.APR.2014 11:29:07

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



Date: 8.APR.2014 10:29:46

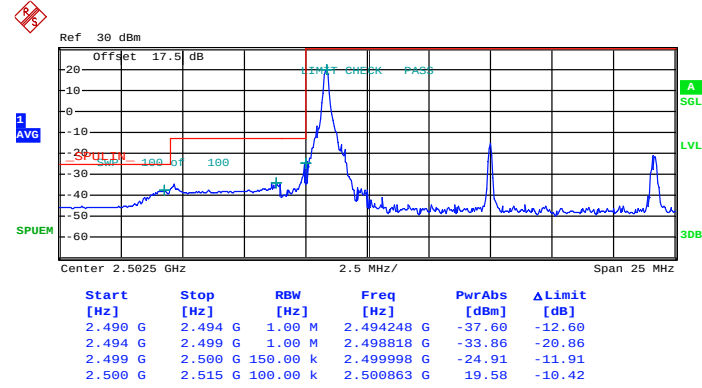
Higher Band Edge Plot for QPSK-RB Size 75, RB Offset 0



Date: 8.APR.2014 10:20:58

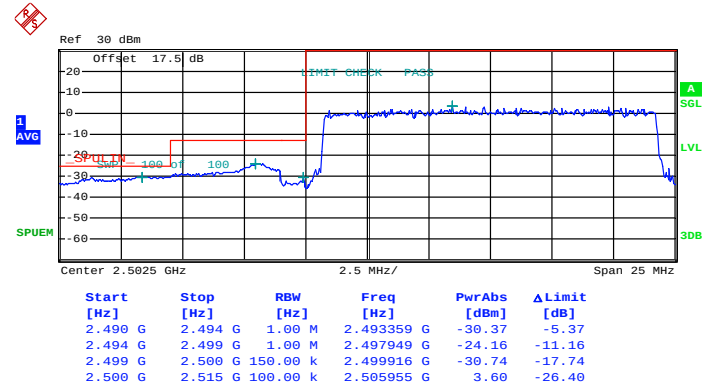
Band :	LTE Band 7	Band Width :	15MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



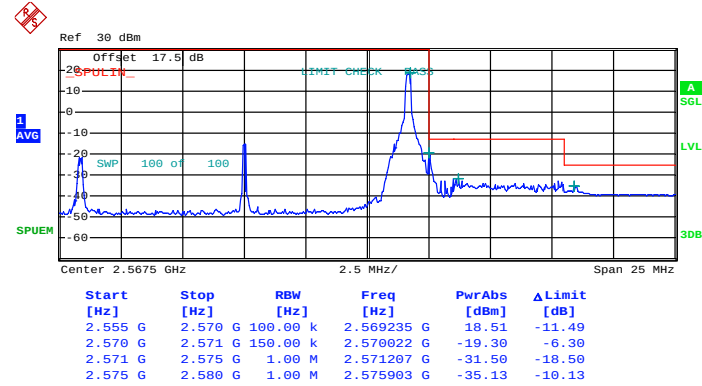
Date: 8.APR.2014 11:26:21

Lower Band Edge Plot for 16QAM-RB Size 75, RB Offset 0



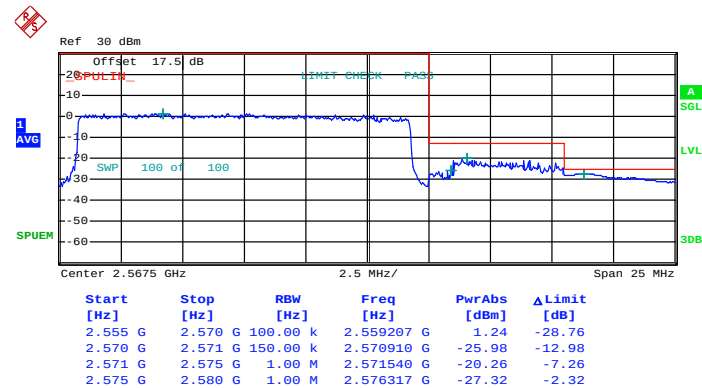
Date: 8.APR.2014 11:27:34

Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 74



Date: 8.APR.2014 10:27:06

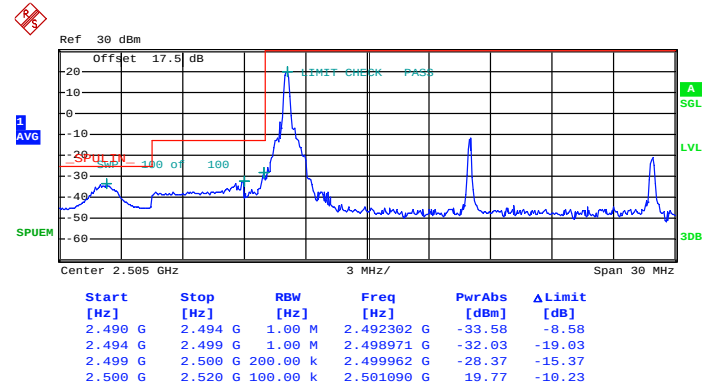
Higher Band Edge Plot for 16QAM-RB Size 75, RB Offset 0



Date: 8.APR.2014 10:23:40

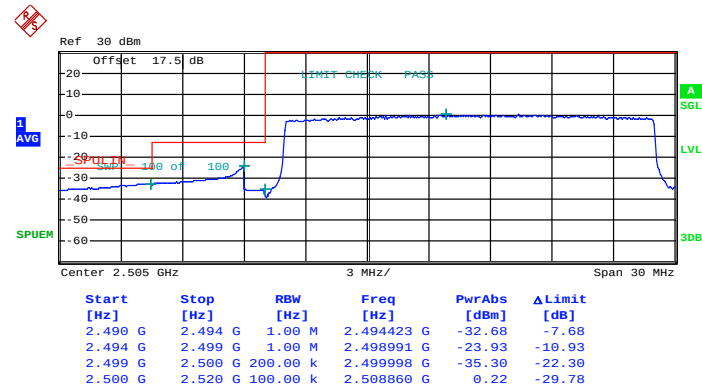
Band :	LTE Band 7	Band Width :	20MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



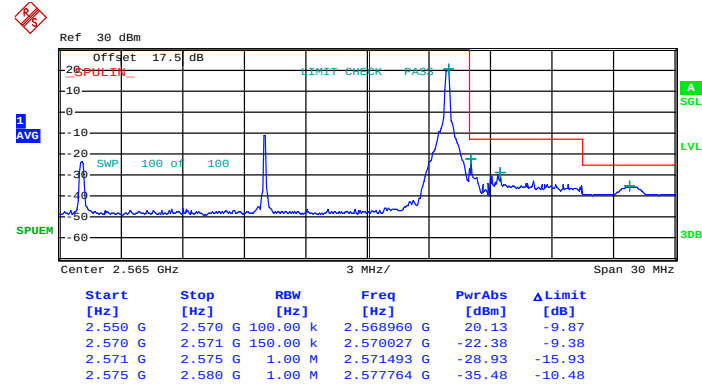
Date: 8.APR.2014 11:20:25

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



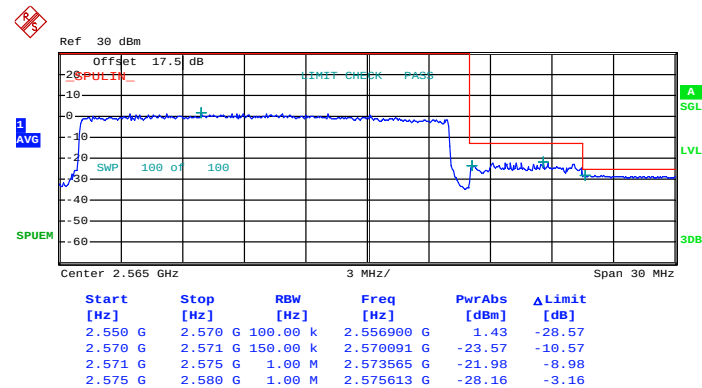
Date: 8.APR.2014 11:05:34

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



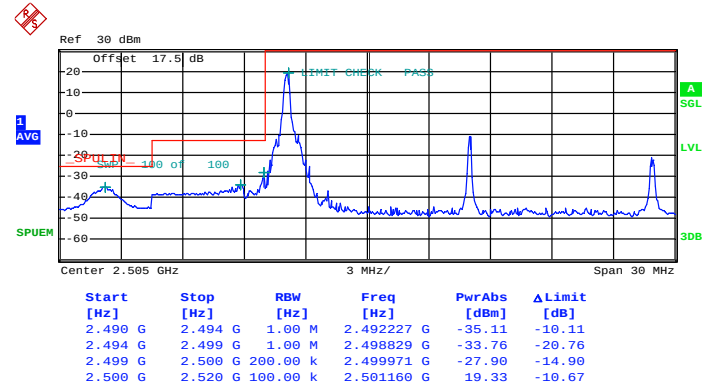
Date: 8.APR.2014 10:44:22

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

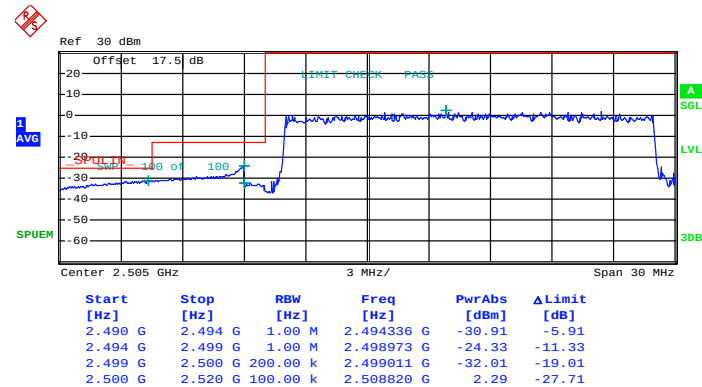


Date: 8.APR.2014 10:52:50

Band :	LTE Band 7	Band Width :	20MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0


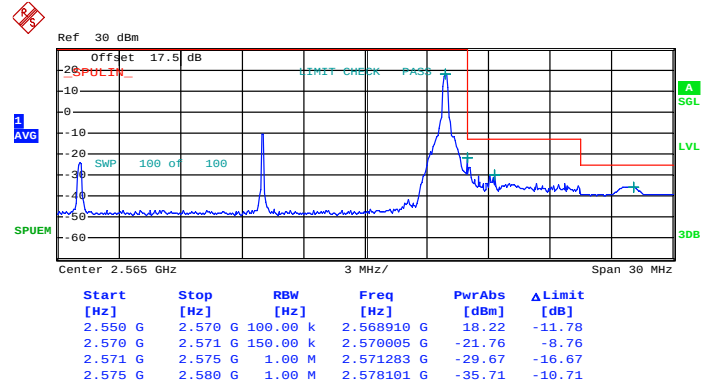
Date: 8.APR.2014 11:18:29

Lower Band Edge Plot for 16QAM-RB Size 100, RB Offset 0


Date: 8.APR.2014 11:15:49

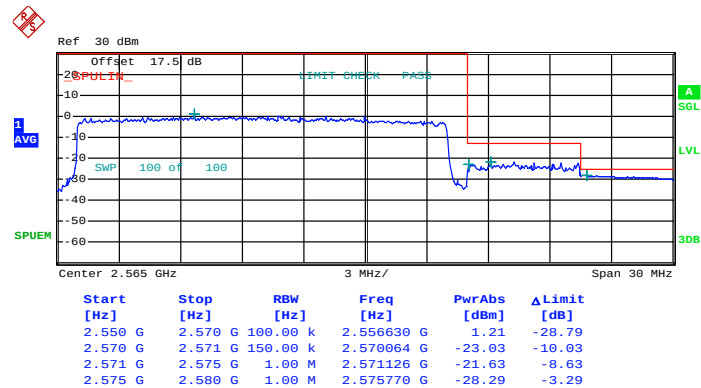


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 99



Date: 8.APR.2014 10:47:07

Higher Band Edge Plot for 16QAM-RB Size 100, RB Offset 0



Date: 8.APR.2014 10:50:00

3.5 Conducted Spurious Emission Measurement

3.5.1 Description of Conducted Spurious Emission Measurement

For Band 7

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

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

3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

1. The EUT was connected to spectrum analyzer and LTE base station via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. For Band 7

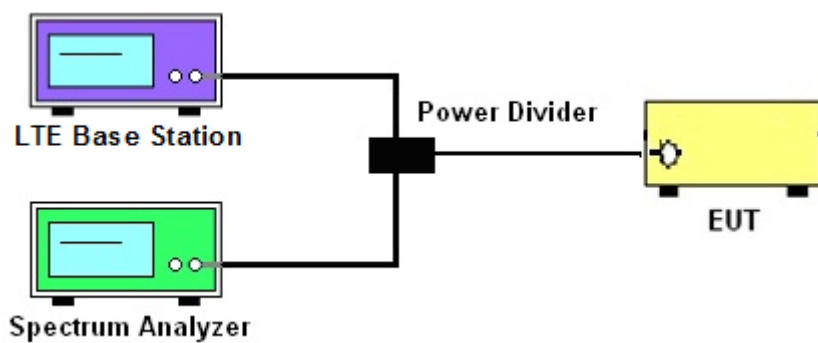
The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)

= $P(W) - [55 + 10\log(P)]$ (dB)

= $[30 + 10\log(P)]$ (dBm) - $[55 + 10\log(P)]$ (dB)

= -25dBm.

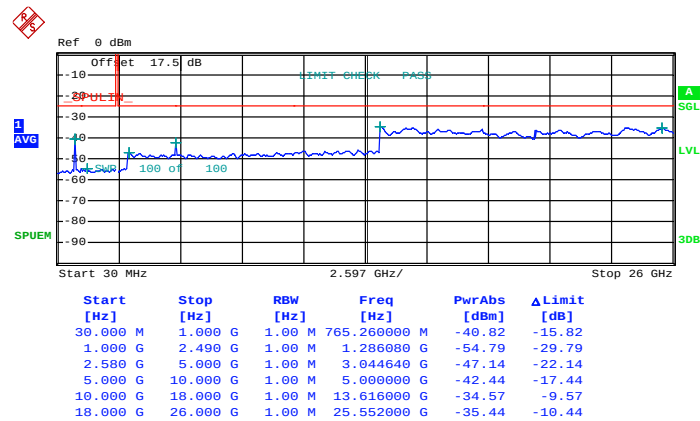
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Spurious Emission

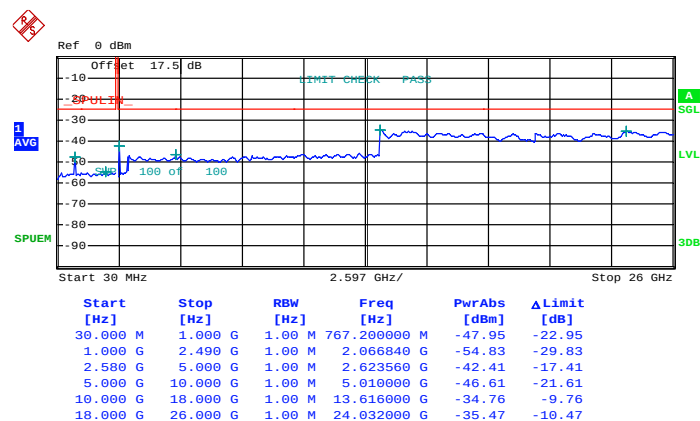
Band :	LTE Band 7	Channel :	CH20775 (Low)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 12)



Date: 6.APR.2014 12:47:43

16QAM (RB Size 1, RB Offset 12)

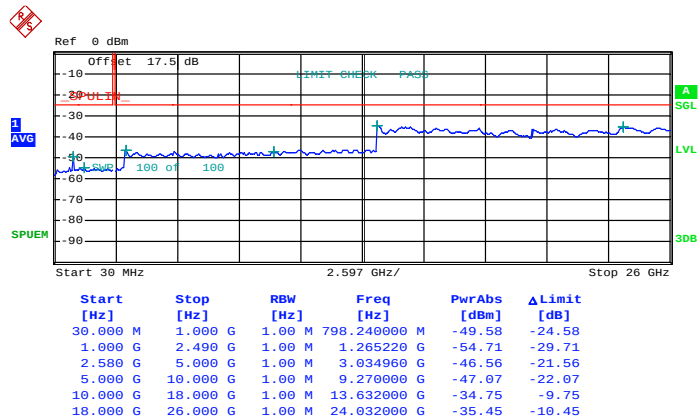


Date: 6.APR.2014 12:54:09



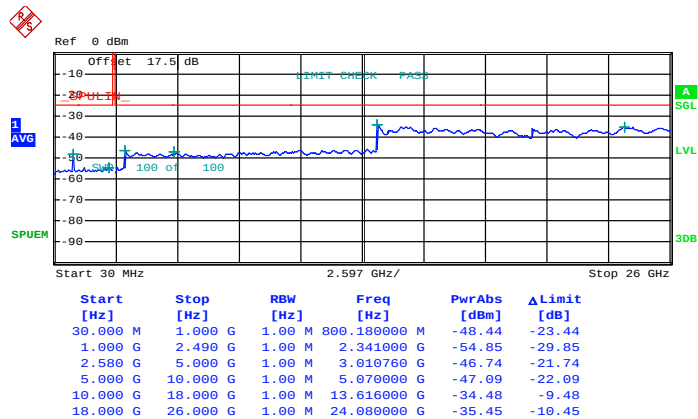
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 12)



Date: 6.APR.2014 11:57:00

16QAM (RB Size 1, RB Offset 12)

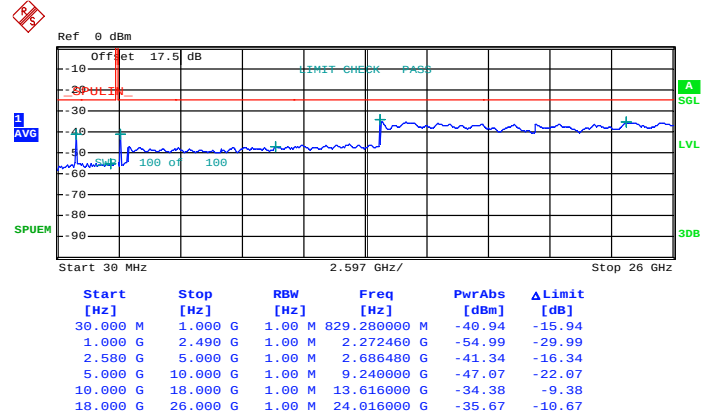


Date: 6.APR.2014 11:50:34



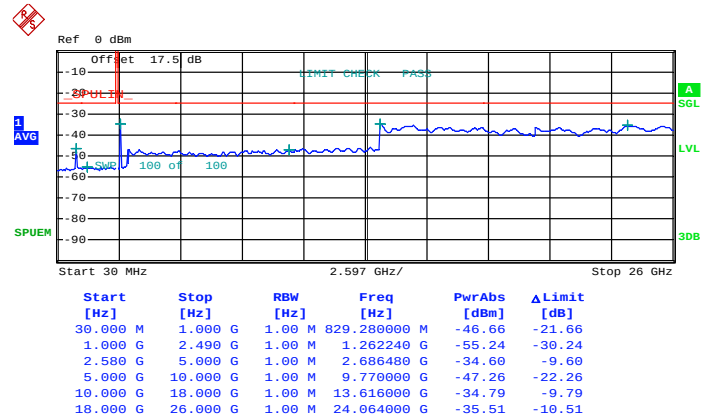
Band :	LTE Band 7	Channel :	CH21425 (High)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 12)



Date: 6.APR.2014 12:31:17

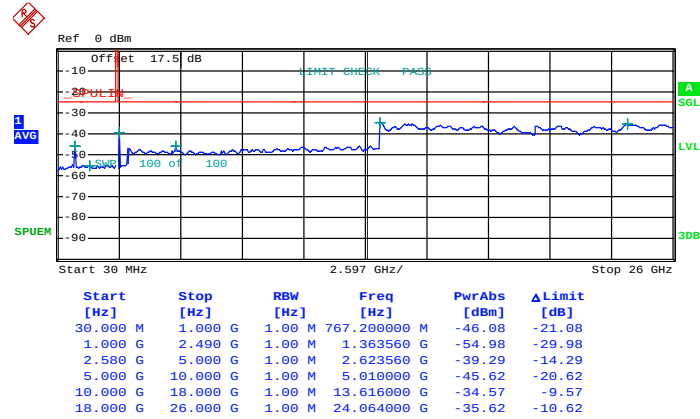
16QAM (RB Size 1, RB Offset 12)



Date: 6.APR.2014 12:25:07

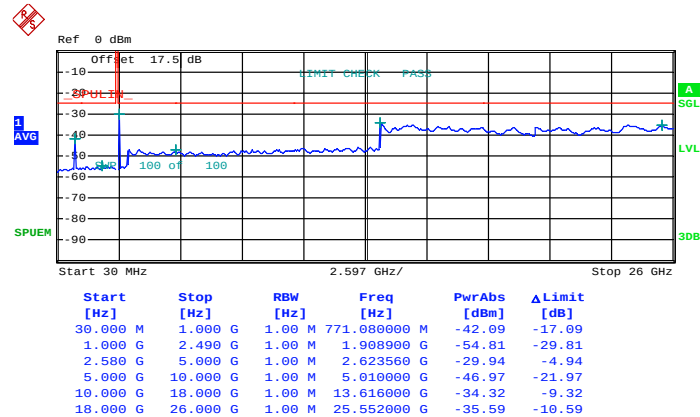
Band :	LTE Band 7	Channel :	CH20800 (Low)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 24)



Date: 6.APR.2014 13:49:06

16QAM (RB Size 1, RB Offset 24)

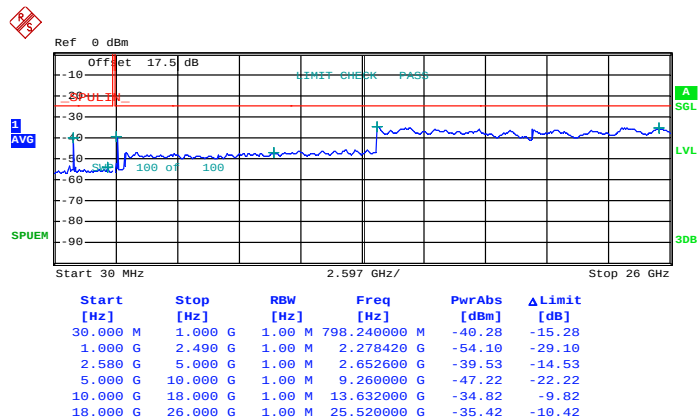


Date: 6.APR.2014 13:37:11



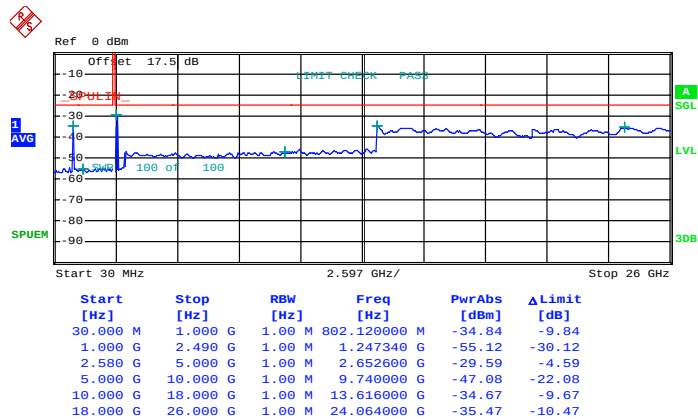
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 24)



Date: 6.APR.2014 13:10:10

16QAM (RB Size 1, RB Offset 24)

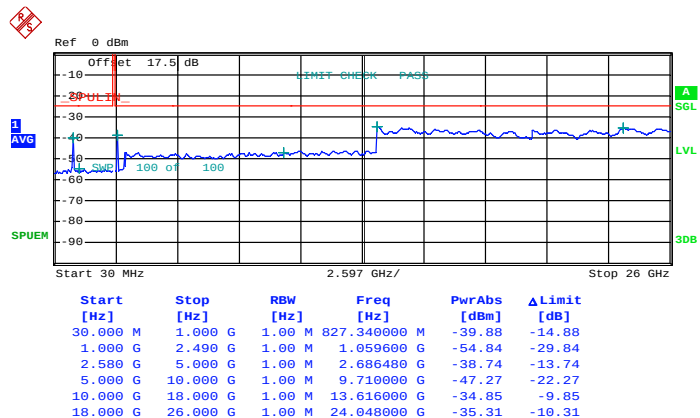


Date: 6.APR.2014 13:04:04



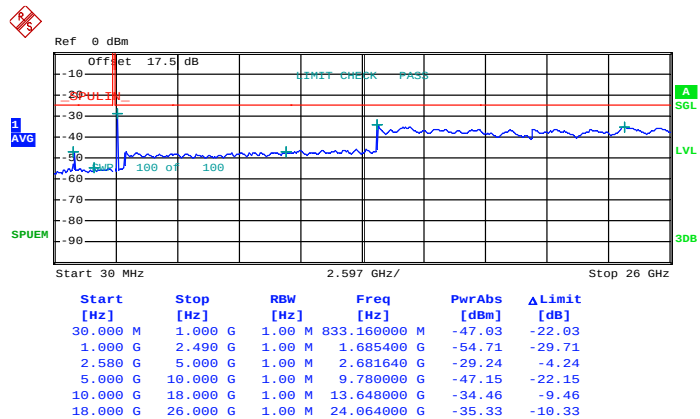
Band :	LTE Band 7	Channel :	CH21400 (High)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 24)



Date: 6.APR.2014 13:26:03

16QAM (RB Size 1, RB Offset 24)

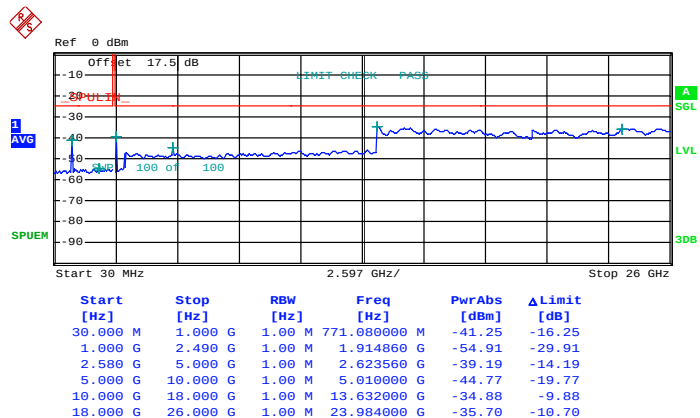


Date: 6.APR.2014 13:17:11



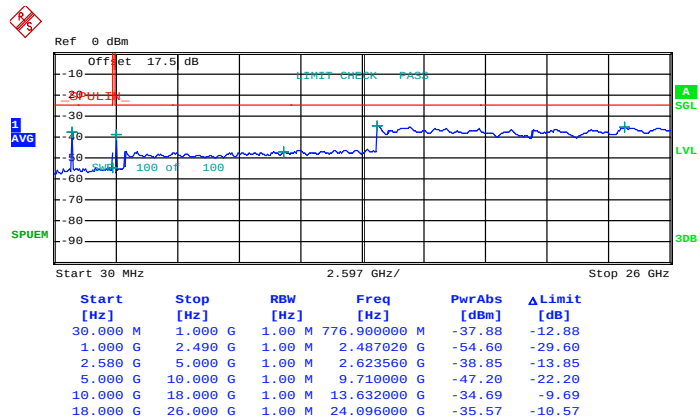
Band :	LTE Band 7	Channel :	CH20825 (Low)
Band Width :	15MHz		

QPSK (RB Size 1, RB Offset 37)



Date: 6.APR.2014 14:28:50

16QAM (RB Size 1, RB Offset 37)

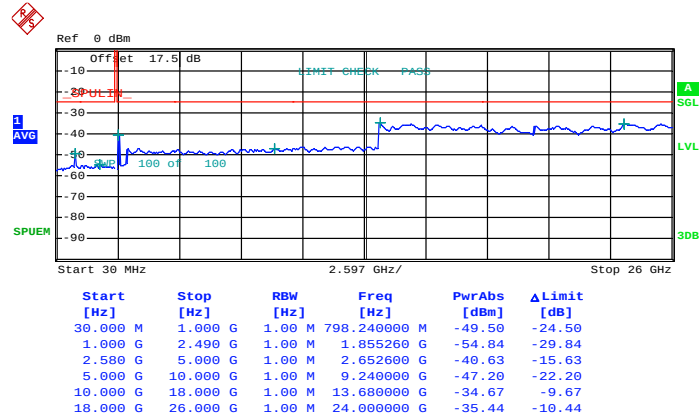


Date: 6.APR.2014 14:21:58



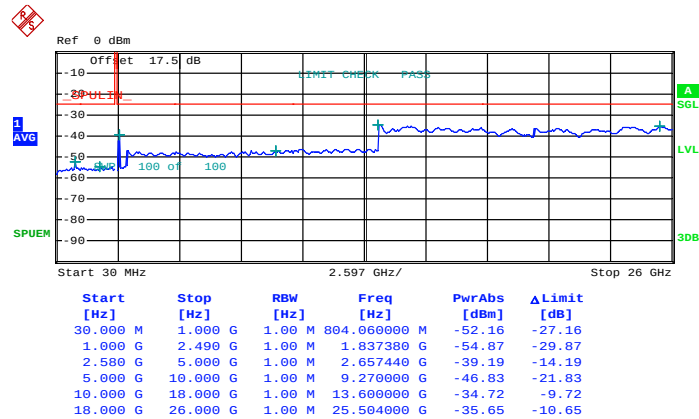
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	15MHz		

QPSK (RB Size 1, RB Offset 37)



Date: 6.APR.2014 14:02:46

16QAM (RB Size 1, RB Offset 37)

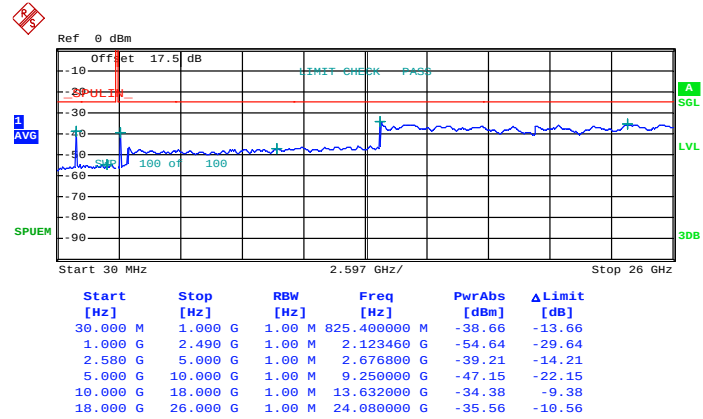


Date: 6.APR.2014 13:56:23



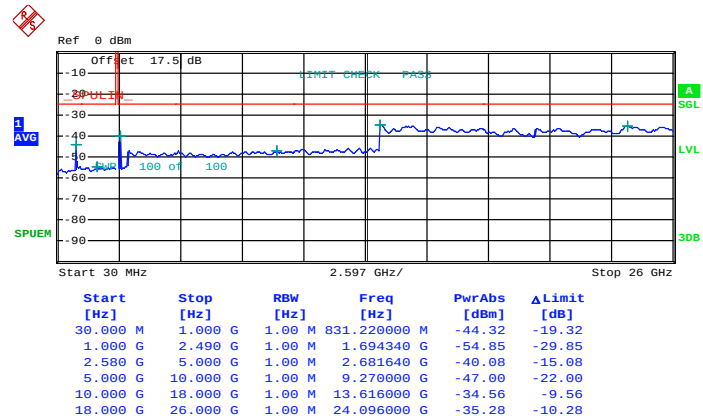
Band :	LTE Band 7	Channel :	CH21375 (High)
Band Width :	15MHz		

QPSK (RB Size 1, RB Offset 37)



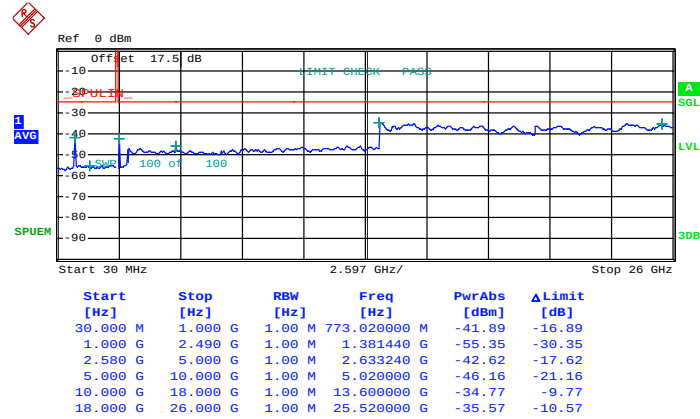
Date: 6.APR.2014 14:09:11

16QAM (RB Size 1, RB Offset 37)

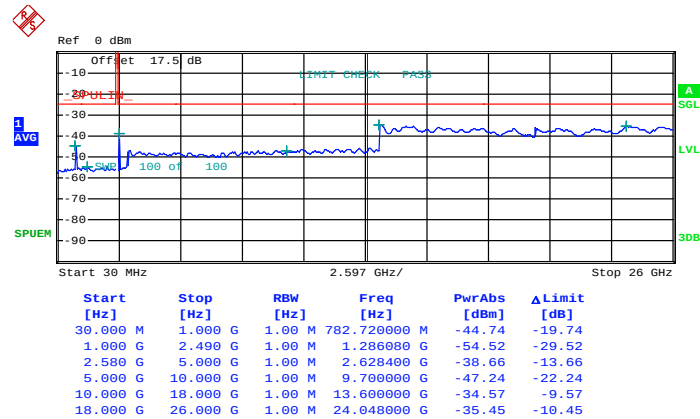


Date: 6.APR.2014 14:15:15

Band :	LTE Band 7	Channel :	CH20850 (Low)
Band Width :	20MHz		

QPSK (RB Size 1, RB Offset 49)


Date: 6.APR.2014 15:18:58

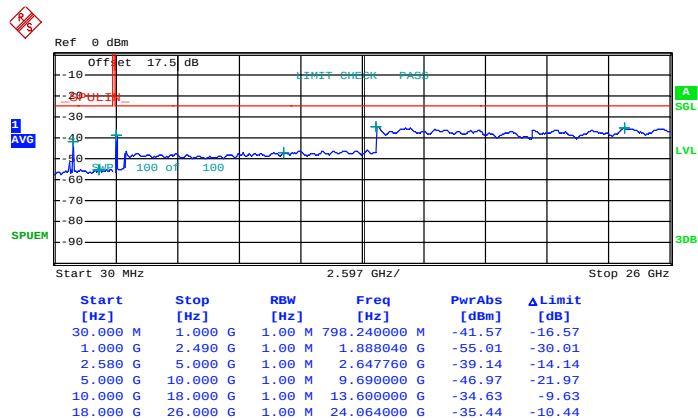
16QAM (RB Size 1, RB Offset 49)


Date: 6.APR.2014 15:13:04



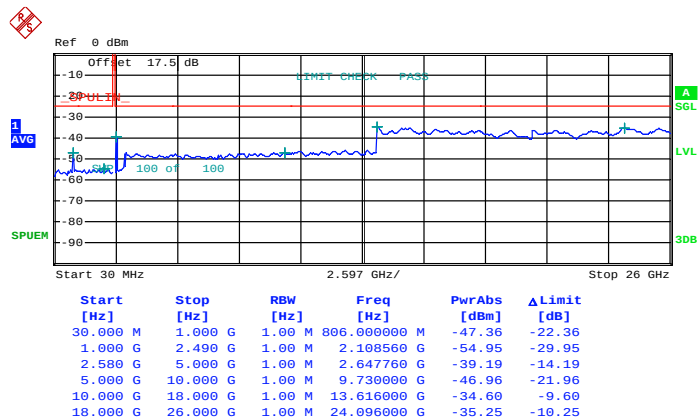
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	20MHz		

QPSK (RB Size 1, RB Offset 49)



Date: 6.APR.2014 14:43:40

16QAM (RB Size 1, RB Offset 49)

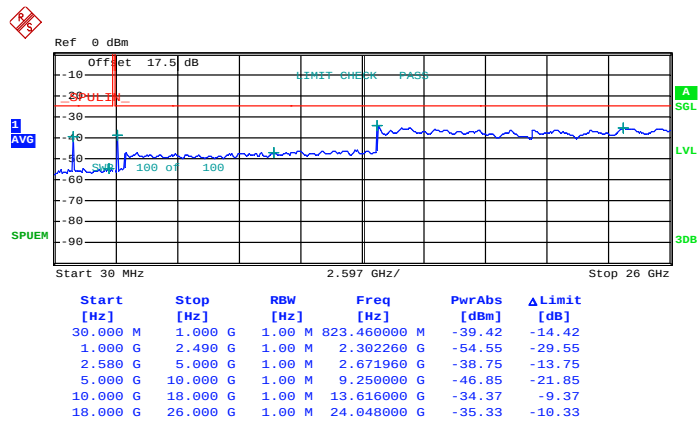


Date: 6.APR.2014 14:37:37



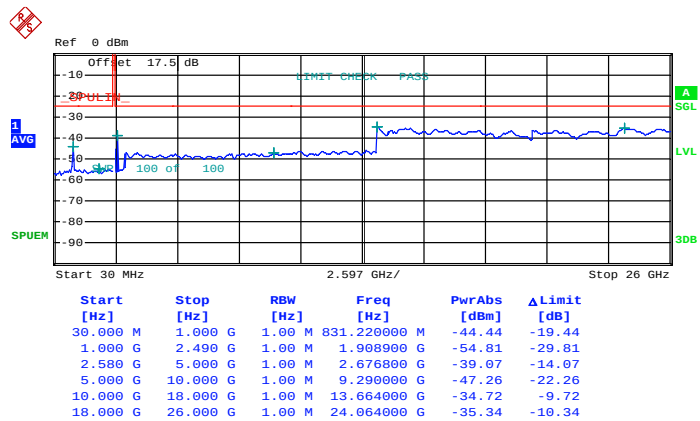
Band :	LTE Band 7	Channel :	CH21350 (High)
Band Width :	20MHz		

QPSK (RB Size 1, RB Offset 49)



Date: 6.APR.2014 14:50:51

16QAM (RB Size 1, RB Offset 49)



Date: 6.APR.2014 14:58:50

3.6 Radiated Spurious Emission Measurement

3.6.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004.

For Band 7

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

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

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

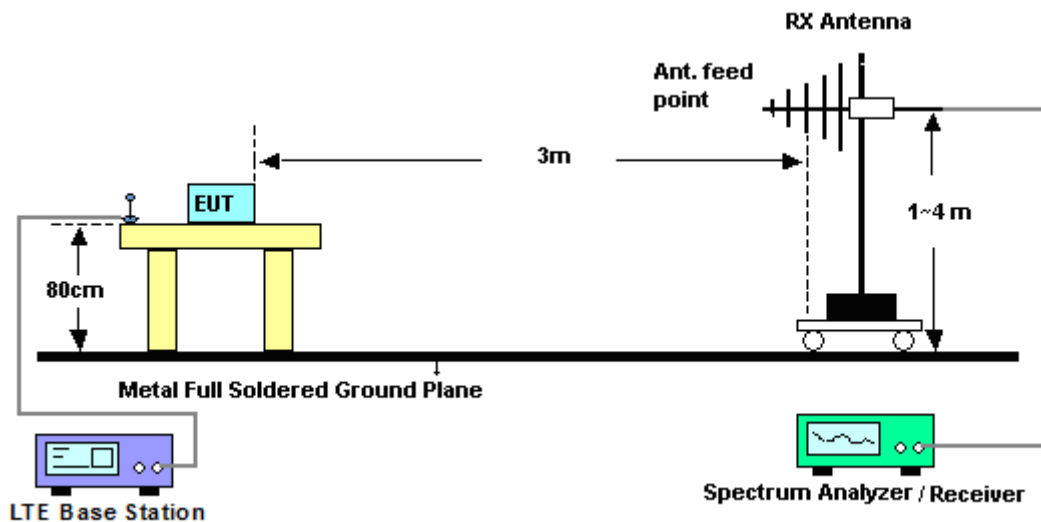
For Band 7

The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)
= $P(W) - [55 + 10\log(P)]$ (dB)
= $[30 + 10\log(P)]$ (dBm) - $[55 + 10\log(P)]$ (dB)
= -25dBm.

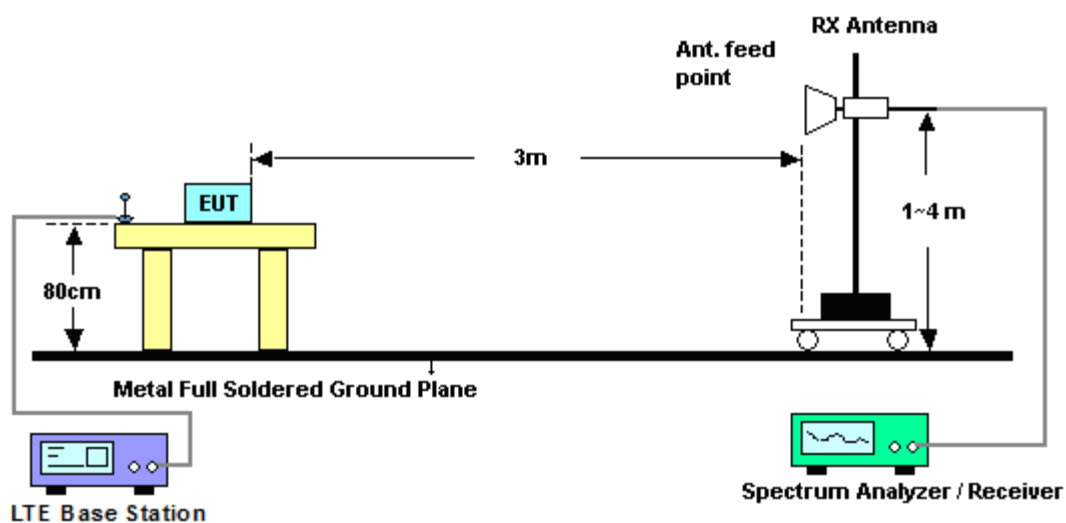
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
12. ERP (dBm) = EIRP - 2.15

3.6.4 Test Setup

For radiated emissions from 30MHz to 1GHz

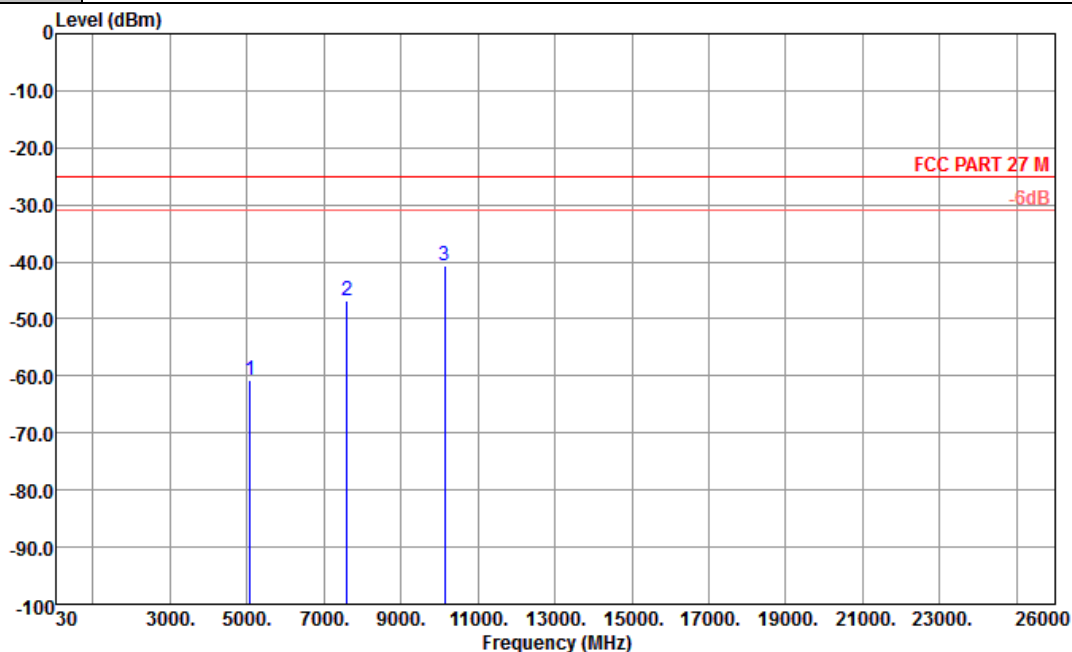


For radiated emissions above 1GHz



3.6.5 Test Result of Field Strength of Spurious Radiated

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 12	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



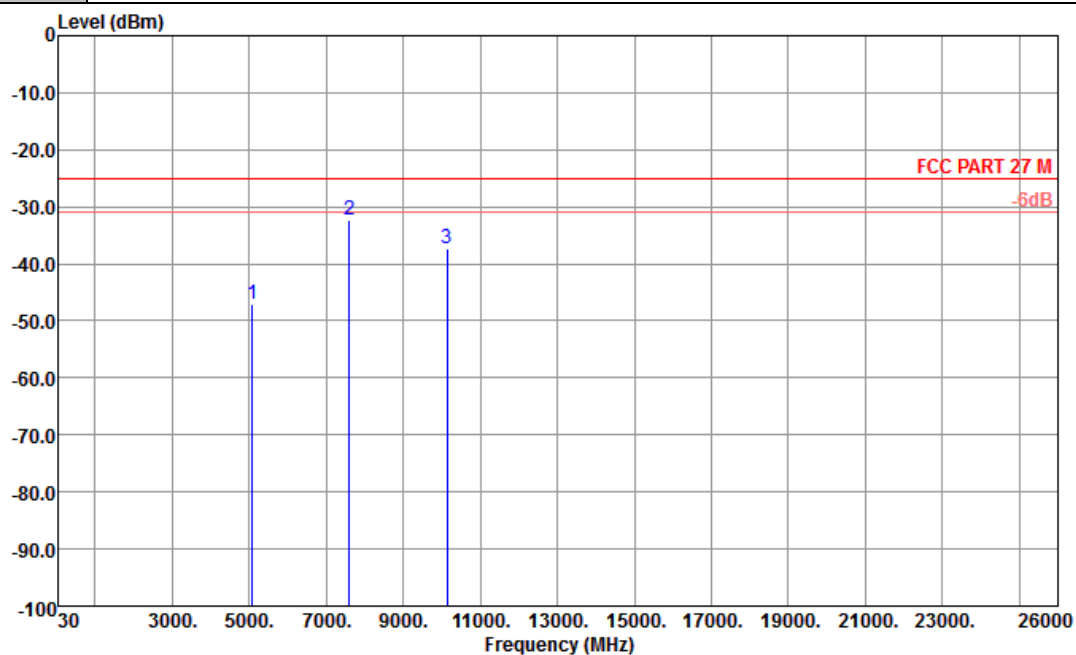
Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 HORIZONTAL

Plane : Z

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
5070	-60.77	-25	-35.77	-62.51	-66.17	2.2	7.60	H	Pass
7604	-46.67	-25	-21.67	-60.31	-53.45	3.12	9.90	H	Pass
10140	-40.80	-25	-15.80	-58.49	-48.69	2.98	10.87	H	Pass

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 12	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



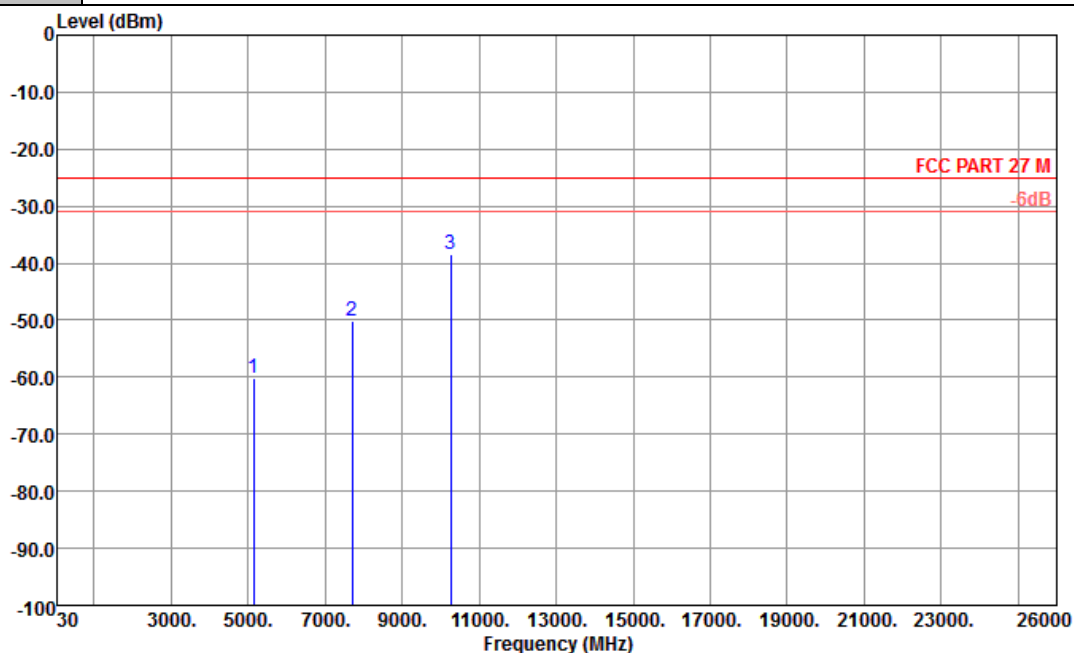
Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 VERTICAL

Plane : Z

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
5070	-47.13	-25	-22.13	-57.69	-52.53	2.2	7.6	V	Pass
7606	-32.29	-25	-7.29	-50.82	-39.07	3.12	9.9	V	Pass
10140	-37.31	-25	-12.31	-55.36	-45.20	2.98	10.87	V	Pass

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 24	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



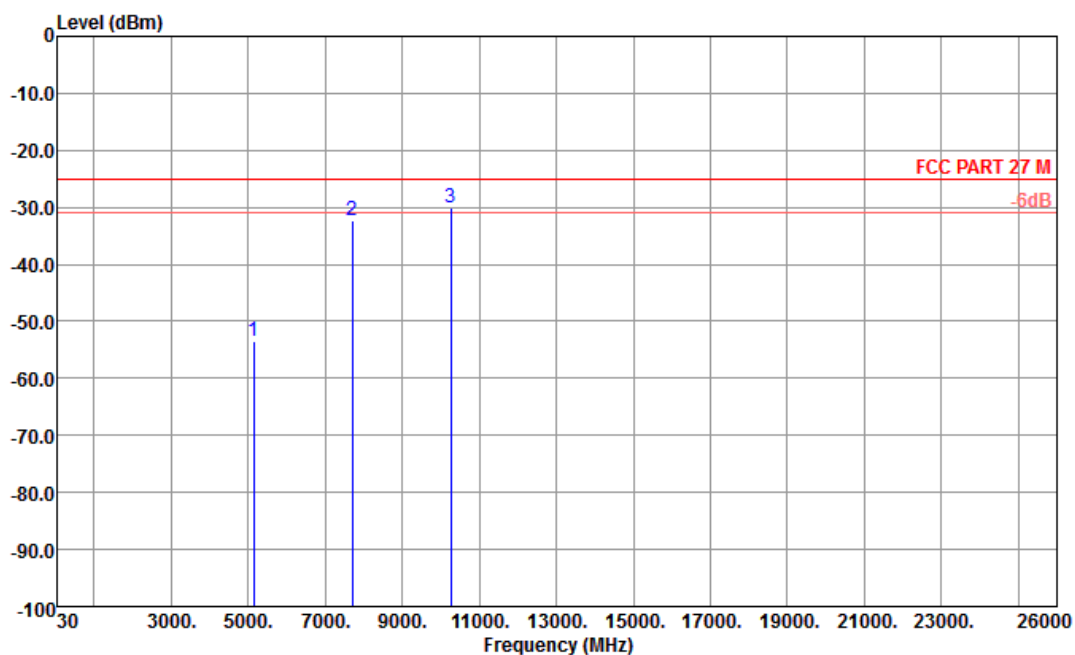
Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 HORIZONTAL

Plane : Z

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
5130	-60.05	-25	-35.05	-62.11	-65.45	2.2	7.60	H	Pass
7694	-50.15	-25	-25.15	-61.69	-56.93	3.12	9.90	H	Pass
10260	-38.31	-25	-13.31	-56.74	-46.20	2.98	10.87	H	Pass

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 24	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



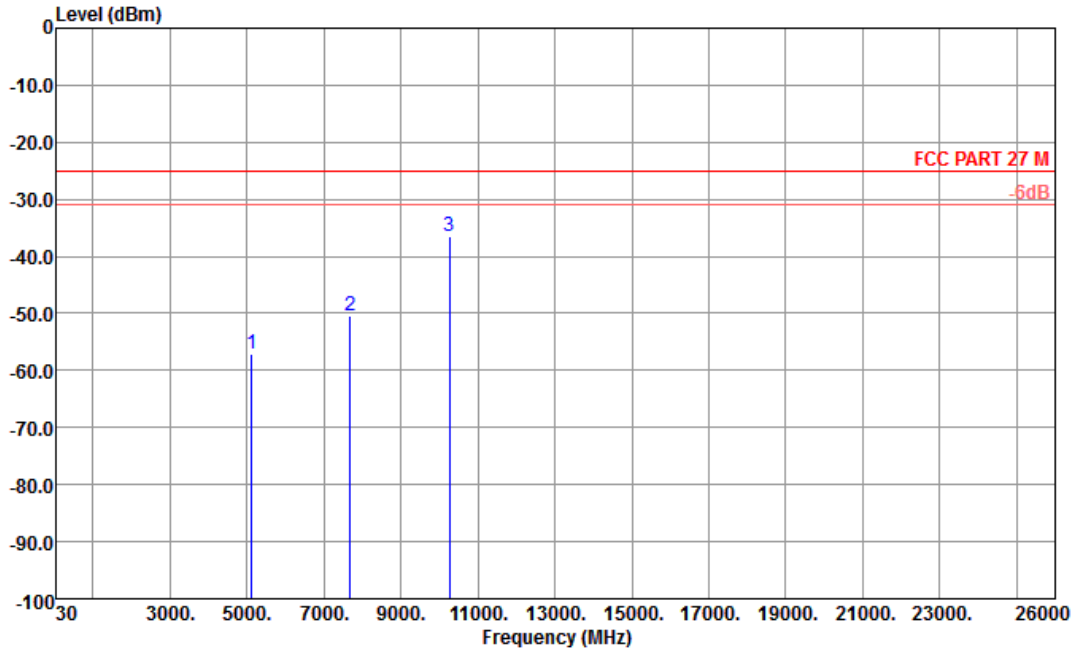
Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 VERTICAL

Plane : Z

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
5130	-53.39	-25	-28.39	-61.09	-58.79	2.2	7.6	V	Pass
7694	-32.19	-25	-7.19	-50.73	-38.97	3.12	9.9	V	Pass
10260	-30.20	-25	-5.20	-49.91	-38.09	2.98	10.87	V	Pass

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 37	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



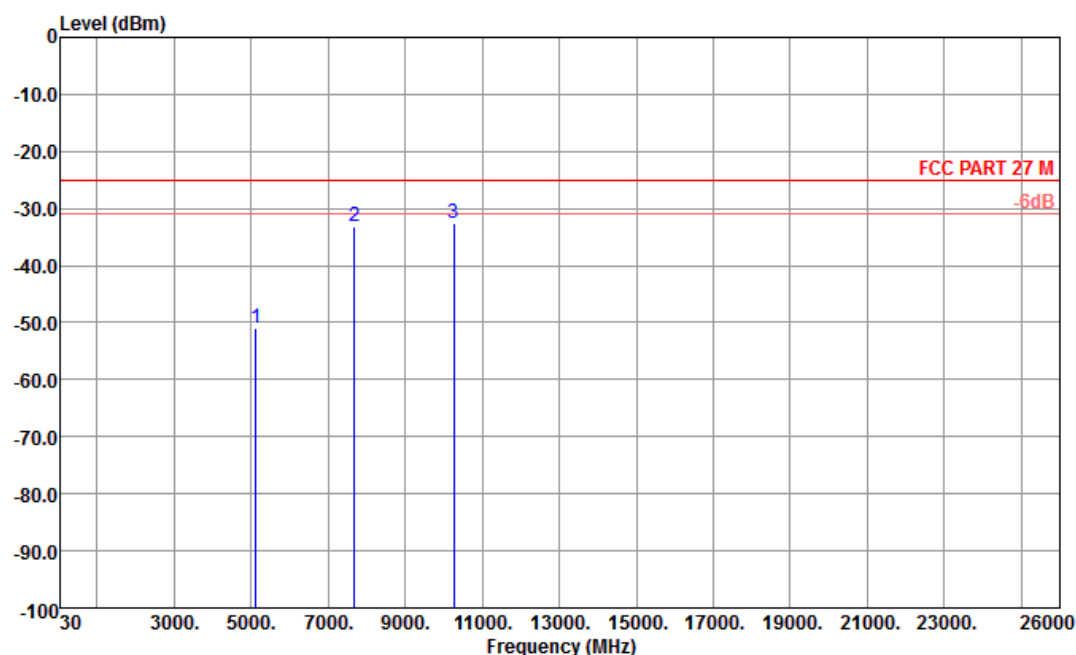
Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 HORIZONTAL

Plane : Z

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
5124	-57.15	-25	-32.15	-60.78	-62.55	2.2	7.60	H	Pass
7688	-50.37	-25	-25.37	-61.91	-57.15	3.12	9.90	H	Pass
10251	-36.39	-25	-11.39	-55.69	-44.28	2.98	10.87	H	Pass

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 37	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



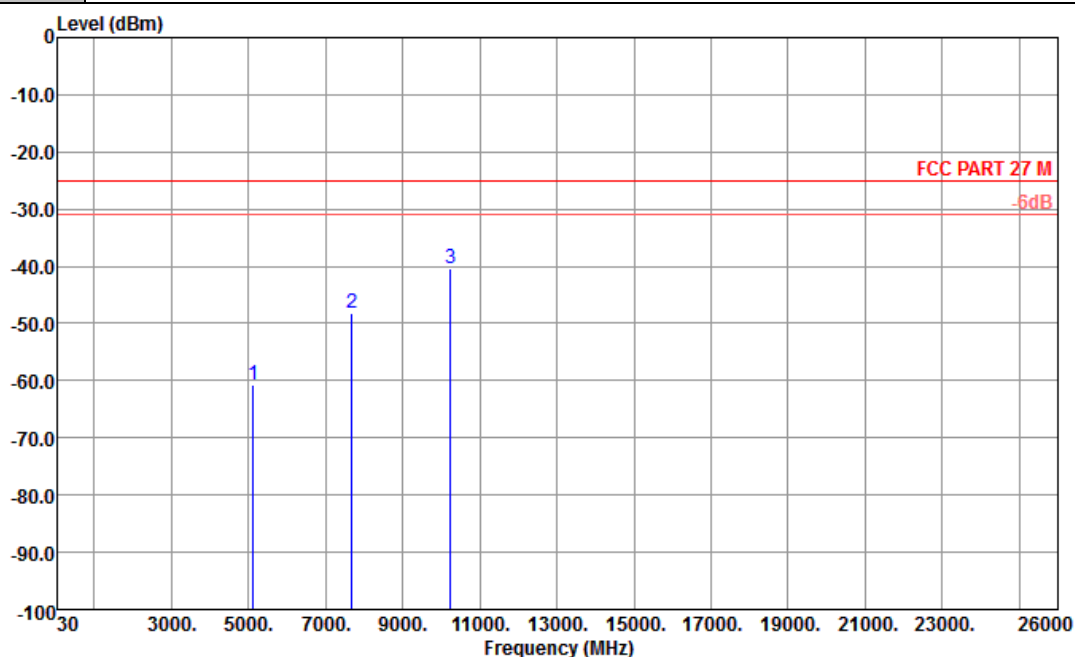
Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 VERTICAL

Plane : Z

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
5124	-51.10	-25	-26.10	-60.02	-56.50	2.2	7.6	V	Pass
7688	-33.06	-25	-8.06	-51.55	-39.84	3.12	9.9	V	Pass
10251	-32.68	-25	-7.68	-51.9	-40.57	2.98	10.87	V	Pass

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 49	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



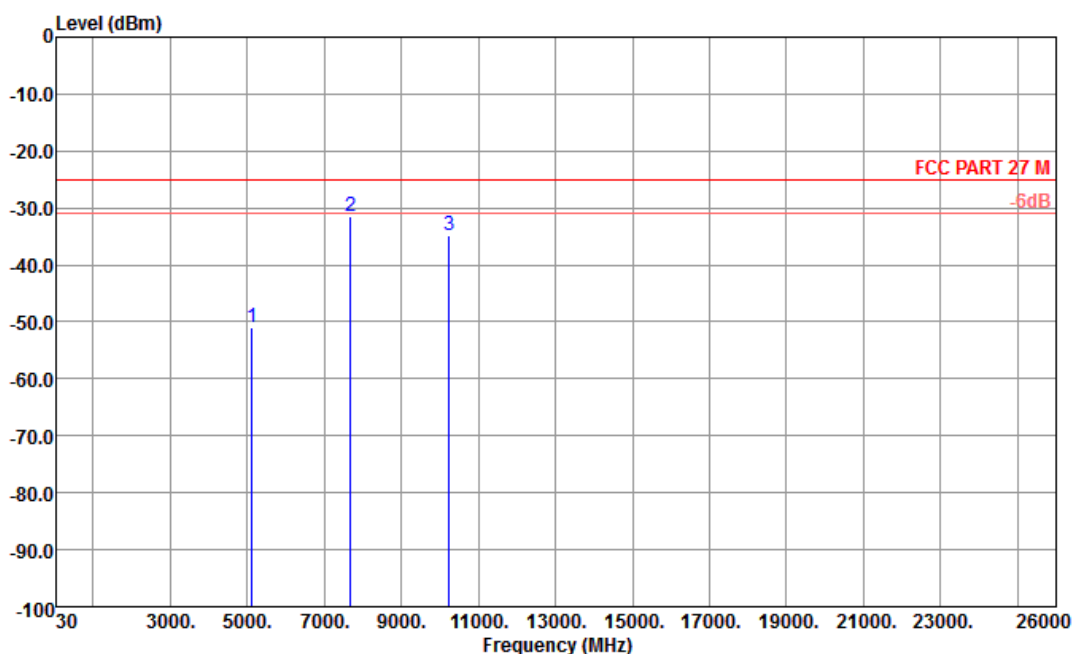
Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 HORIZONTAL

Plane : Z

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
5120	-60.86	-25	-35.86	-62.56	-66.26	2.2	7.60	H	Pass
7680	-48.14	-25	-23.14	-60.75	-54.92	3.12	9.90	H	Pass
10239	-40.50	-25	-15.50	-58.29	-48.39	2.98	10.87	H	Pass

Band :	LTE Band 7	Temperature :	22~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 49	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



Site : 03CH01-KS

Condition : FCC PART 27 M HF_EIRP_FACTOR130726 VERTICAL

Plane : Z

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
5120	-51.09	-25	-26.09	-60.01	-56.49	2.2	7.6	V	Pass
7680	-31.44	-25	-6.44	-50.19	-38.22	3.12	9.9	V	Pass
10239	-34.75	-25	-9.75	-53.42	-42.64	2.98	10.87	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

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

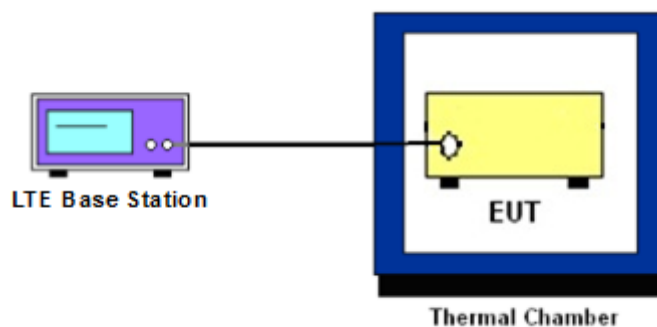
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the LTE base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

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 LTE 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 7 (QPSK)			Limit (ppm) :	2.5
Temperature (°C)	BW 5MHz		BW 10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	18.9	+0.007	21.1	+0.008	PASS
-20	17.7	+0.007	20.3	+0.008	
-10	15.4	+0.006	20.8	+0.008	
0	16.8	+0.007	19.5	+0.008	
10	-14.6	-0.006	19.7	+0.008	
20	13.6	+0.005	17.6	+0.007	
30	-13.6	-0.005	15.7	+0.006	
40	-12.3	-0.005	16.4	+0.006	
50	-12.8	-0.005	16.9	+0.007	

Band :	LTE Band 7 (QPSK)			Limit (ppm) :	2.5
Temperature (°C)	BW 15MHz		BW 20MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	20.5	+0.008	20.1	+0.008	PASS
-20	20.9	+0.008	19.3	+0.008	
-10	19.5	+0.008	19.9	+0.008	
0	19.9	+0.008	17.8	+0.007	
10	18.5	+0.007	19.2	+0.008	
20	19.7	+0.008	20.7	+0.008	
30	20.8	+0.008	21.6	+0.009	
40	21.3	+0.008	20.9	+0.008	
50	22.8	+0.009	22.1	+0.009	

Band :	LTE Band 7 (16QAM)			Limit (ppm) :	2.5
Temperature (°C)	BW 5MHz		BW 10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	24.6	+0.010	24.1	+0.010	PASS
-20	22.6	+0.009	22.5	+0.009	
-10	22.3	+0.009	22.9	+0.009	
0	20.9	+0.008	20.8	+0.008	
10	19.6	+0.008	21.6	+0.009	
20	19.3	+0.008	23.5	+0.009	
30	20.4	+0.008	20.4	+0.008	
40	19.9	+0.008	21.8	+0.009	
50	20.6	+0.008	18.2	+0.007	

Band :	LTE Band 7 (16QAM)			Limit (ppm) :	2.5
Temperature (°C)	BW 15MHz		BW 20MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	18.4	+0.007	19.0	+0.007	PASS
-20	19.6	+0.008	18.2	+0.007	
-10	20.5	+0.008	18.9	+0.007	
0	19.7	+0.008	17.8	+0.007	
10	20.5	+0.008	17.4	+0.007	
20	21.8	+0.009	16.9	+0.007	
30	22.1	+0.009	18.8	+0.007	
40	21.9	+0.009	19.5	+0.008	
50	24.1	+0.009	20.8	+0.008	

3.7.7 Test Result of Voltage Variation

Band	Bandwidth	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 7 (QPSK)	5M	4.2	15.3	+0.006	2.5	PASS
		3.7	13.6	+0.005		
		3.6	14.2	+0.006		
	10M	4.2	16.5	+0.007		
		3.7	17.6	+0.007		
		3.6	17.3	+0.007		
	15M	4.2	19.9	+0.008		
		3.7	19.7	+0.008		
		3.6	18.7	+0.007		
	20M	4.2	21.9	+0.009		
		3.7	20.7	+0.008		
		3.6	19.3	+0.008		
LTE Band 7 (16QAM)	5M	4.2	19.8	+0.008		
		3.7	19.3	+0.008		
		3.6	18.9	+0.007		
	10M	4.2	24.3	+0.010		
		3.7	23.5	+0.009		
		3.6	21.4	+0.008		
	15M	4.2	20.1	+0.008		
		3.7	21.8	+0.009		
		3.6	21.9	+0.009		
	20M	4.2	18.8	+0.007		
		3.7	16.9	+0.007		
		3.6	16.5	+0.007		

Note:

1. Normal Voltage = 3.7V.
2. Battery End Point (BEP) = 3.6 V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Mar. 03, 2014	Apr. 05, 2014~ Apr. 08, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Thermal Chamber	Hongzhan	LP-150U	HD20120425	-40℃~150℃	Feb. 21, 2014	Apr. 05, 2014~ Apr. 08, 2014	Feb. 20, 2015	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Apr. 24, 2014~ May 13, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101399	9kHz~30GHz	May 23, 2013	Apr. 24, 2014~ May 13, 2014	May 22, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 08, 2014	Apr. 24, 2014~ May 13, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 08, 2014	Apr. 24, 2014~ May 13, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Apr. 24, 2014~ May 13, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 10, 2014	Apr. 24, 2014~ May 13, 2014	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Apr. 24, 2014~ May 13, 2014	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Dec. 10, 2013	Apr. 24, 2014~ May 13, 2014	Dec. 09, 2014	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Apr. 24, 2014~ May 13, 2014	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Apr. 24, 2014~ May 13, 2014	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Apr. 24, 2014~ May 13, 2014	NCR	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP 7	100818	9kHz~7GHz	Sep. 03, 2013	May 28, 2014	Sep. 02, 2014	EIRP (OTA01-SZ)
Quad-Ridged Horn	ETS-Lindgren	3164-08	00102954	700MHz~10000M Hz	N/A	May 28, 2014	N/A	EIRP (OTA01-SZ)
Multi-Devices Controller	ETS-Lindgren	2090-OPT1	00108147	N/A	N/A	May 28, 2014	N/A	EIRP (OTA01-SZ)
Switch Control Mainframe	Agilent	3499A	MY42005451	N/A	N/A	May 28, 2014	N/A	EIRP (OTA01-SZ)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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