FCC RF Test Report

APPLICANT	:	**ZTE CORPORATION**
EQUIPMENT	:	**WCDMA/LTE Dual-Mode Digital Mobile Phone**
BRAND NAME	:	**ZTE**
MODEL NAME	:	**Vodafone Smart ultra 6, VF-995N, Vodafone Smart ultra**
FCC ID	:	**SRQ-995N**
STANDARD	:	**47 CFR Part 2, 27(M)**
CLASSIFICATION	:	**PCS Licensed Transmitter Held to Ear (PCE)**

The testing was completed on Apr. 29, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory 2627

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

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APPENDIX A. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG531601-01B	Rev. 01	Initial issue of report	May 05, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.2	N/A	Peak-to-Average Ratio	Reporting Only	PASS	-
3.3	§27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 7)	EIRP < 2Watt	PASS	-
3.4	§2.1049 §27.53(m)(6)	Occupied Bandwidth & 26dB Bandwidth	Reporting Only	PASS	-
3.5	§2.1051 §27.53(m)(4)	Conducted Band Edge Measurement (Band 7)	< 5MHz: -10 dBm 5 MHz~6MHz or 26dB(BW): -13 dBm ≥6MHz or 26dB(BW): -25 dBm	PASS	-
3.6	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (Band 7)	< 55+10log10(P[Watts])	PASS	
3.7	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (Band 7)	< $55+10\log_{10}$(P[Watts])	PASS	Under limit 3.34 dB at 7580.000 MHz
3.8	§2.1055 §27.54	Frequency Stability Temperature & Voltage	within authorized band	PASS	

1 General Description

1.1 Applicant

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

1.2 Manufacturer

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	WCDMA/LTE Dual-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	Vodafone Smart ultra 6, VF-995N, Vodafone Smart ultra
FCC ID	SRQ-995N
EUT supports Radios application	GSM/GPRS/EGPRS/NFC/LTE WLAN 2.4GHz 802.11b/g/n HT20 Bluetooth v3.0 + EDR/ Bluetooth v4.1 LE
HW Version	wreA
SW Version	P839V55V1.0.0B01
EUT Stage	Identical Prototype

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

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 : 2622.5MHz ~ 2687.5 MHz
Bandwidth	LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	LTE Band 7 : 23.41 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	Emission Designator	Frequency Tolerance	Maximum EIRP
Part 27M	LTE Band 7	QPSK	5MHz	4M52G7D	-	0.1426 W
Part 27M	LTE Band 7	16QAM	5MHz	4M51W7D	-	0.1180 W
Part 27M	LTE Band 7	QPSK	10MHz	9M11G7D	0.0052 ppm	0.1327 W
Part 27M	LTE Band 7	16QAM	10MHz	9M05W7D	-	0.1153 W
Part 27M	LTE Band 7	QPSK	15MHz	13M5G7D	-	0.1346 W
Part 27M	LTE Band 7	16QAM	15MHz	13M5W7D	-	0.1180 W
Part 27M	LTE Band 7	QPSK	20MHz	18M4G7D	-	0.1419 W
Part 27M	LTE Band 7	16QAM	20MHz	18M5W7D	-	0.1276 W

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	**Sporton Site No.**		**FCC Registration No.**
	TH01-KS	03CH02-KS	418269

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st 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 Registration No.**
	03CH10-HY	TW1022

Note: The test site complies with ANSI C63.4 2009 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 v02r02

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

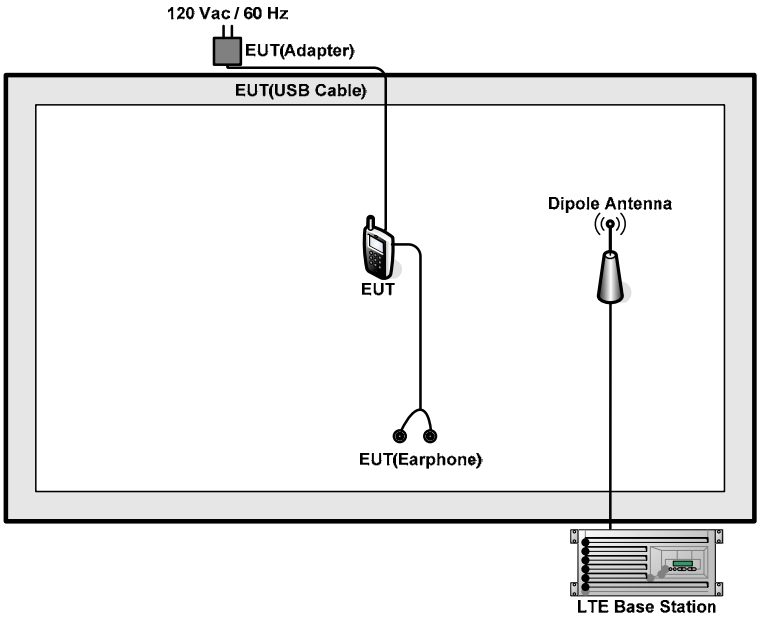
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

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

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	7	-	-	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	7	-	-				v	v	v	v		v	v	v	v
26dB and 99% Bandwidth	7	-	-	v	v	v	v	v	v			v	v	v	v
Conducted Band Edge	7	-	-	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	7	-	-	v	v	v	v	v	v	v			v	v	v
Frequency Stability	7	-	-		v			v				v		v	
E.I.R.P.	7	-	-	v	v	v	v	v	v	v			v	v	v
Radiated Spurious Emission	7	-	-	v	v	v	v	v		v				v	
Note	1. The mark "v " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.														

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 between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 5.5 dB.

Example :

Offset(dB) = RF cable loss(dB) = 5.5 (dB)

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A system simulator 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.

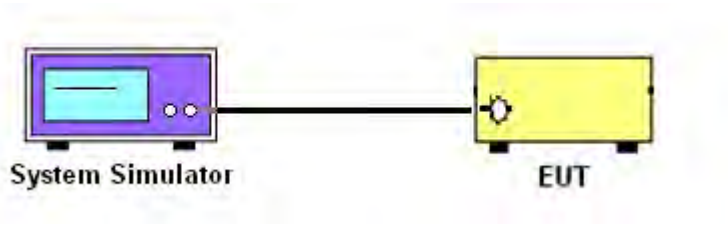
3.1.2 Measuring Instruments

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 system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

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	22.90	23.31	23.06
20	QPSK	1	49	22.87	23.32	23.09
20	QPSK	1	99	23.37	23.41	23.40
20	QPSK	50	0	21.68	22.09	22.10
20	QPSK	50	24	21.95	22.06	22.09
20	QPSK	50	49	21.96	22.13	22.11
20	QPSK	100	0	21.84	22.13	22.05
20	16QAM	1	0	22.39	22.36	22.48
20	16QAM	1	49	22.38	22.14	22.47
20	16QAM	1	99	22.07	22.48	22.15
20	16QAM	50	0	21.13	21.20	21.13
20	16QAM	50	24	21.00	21.04	21.15
20	16QAM	50	49	20.78	21.05	21.04
20	16QAM	100	0	21.32	21.07	21.00
Channel				**20825**	**21100**	**21375**
Frequency (MHz)				**2507.5**	**2535**	**2562.5**
15	QPSK	1	0	23.22	23.25	23.21
15	QPSK	1	37	22.80	22.83	22.98
15	QPSK	1	74	22.54	23.26	23.05
15	QPSK	36	0	21.93	22.16	22.01
15	QPSK	36	18	21.75	21.94	21.90
15	QPSK	36	37	22.04	22.15	22.07
15	QPSK	75	0	21.80	22.01	21.98
15	16QAM	1	0	22.39	22.21	22.46
15	16QAM	1	37	22.28	22.26	22.26
15	16QAM	1	74	22.33	21.86	22.36
15	16QAM	36	0	20.86	21.04	21.03
15	16QAM	36	18	20.83	20.94	20.87
15	16QAM	36	37	21.06	21.08	21.11
15	16QAM	75	0	20.79	21.08	20.92

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	22.91	23.13	23.27
10	QPSK	1	24	22.95	22.82	23.08
10	QPSK	1	49	22.81	23.18	23.37
10	QPSK	25	0	21.85	22.03	22.09
10	QPSK	25	12	21.83	21.97	21.96
10	QPSK	25	24	21.98	22.07	22.12
10	QPSK	50	0	22.18	22.03	22.05
10	16QAM	1	0	22.23	22.19	22.48
10	16QAM	1	24	22.14	22.17	22.18
10	16QAM	1	49	22.12	22.46	22.33
10	16QAM	25	0	20.96	20.90	21.17
10	16QAM	25	12	20.91	20.87	20.89
10	16QAM	25	24	20.87	21.01	21.15
10	16QAM	50	0	20.78	21.08	21.06
Channel				**20775**	**21100**	**21425**
Frequency (MHz)				**2502.5**	**2535**	**2567.5**
5	QPSK	1	0	23.13	22.90	23.10
5	QPSK	1	12	22.78	23.02	23.14
5	QPSK	1	24	22.72	23.04	23.08
5	QPSK	12	0	21.96	22.02	21.97
5	QPSK	12	6	21.93	21.96	22.02
5	QPSK	12	11	21.80	21.95	22.01
5	QPSK	25	0	21.82	22.03	22.02
5	16QAM	1	0	22.34	22.35	22.37
5	16QAM	1	12	22.07	22.40	22.30
5	16QAM	1	24	22.07	22.44	22.45
5	16QAM	12	0	20.85	20.95	21.09
5	16QAM	12	6	20.99	20.95	21.01
5	16QAM	12	11	20.81	20.87	21.08
5	16QAM	25	0	20.77	20.93	21.09

Note: maximum average power for LTE.

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

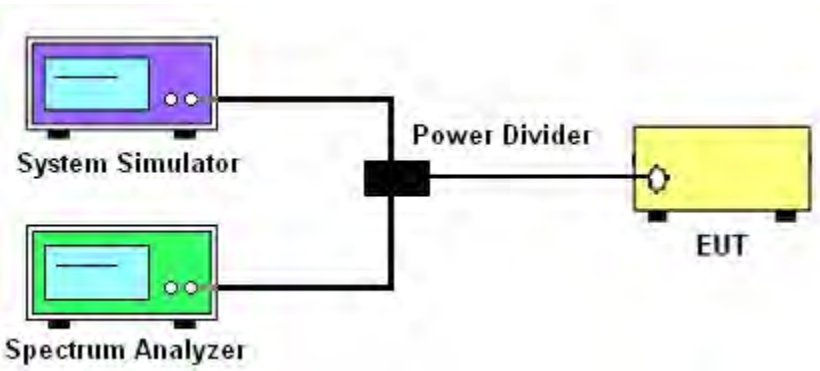
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



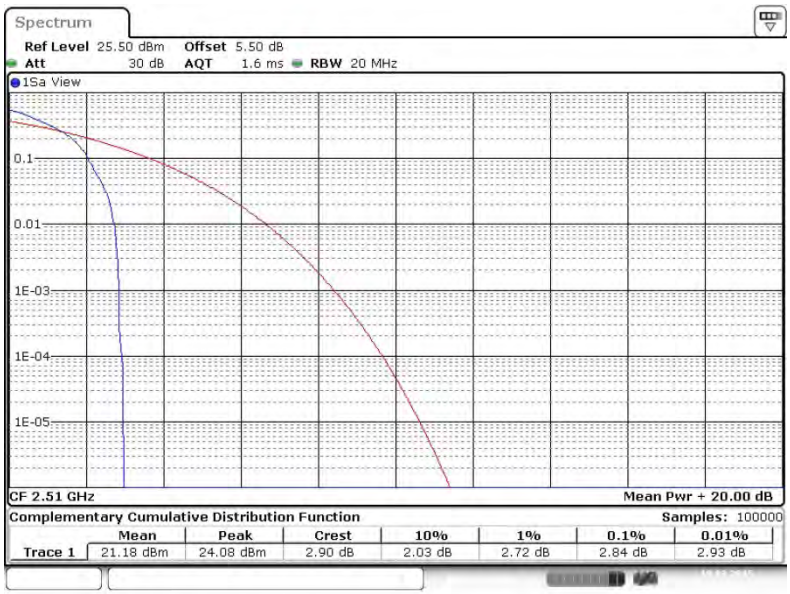
3.2.5 Test Result of Peak-to-Average Ratio

LTE Band 7						
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	2.84	3.68	3.22
20	QPSK	100	0	4.58	4.70	4.23
20	16QAM	1	0	3.22	4.72	3.74
20	16QAM	100	0	5.59	5.65	5.28

3.2.6 Peak to Average Power Ratio

Peak-to-Average Ratio on LTE Band 7

20MHz / QPSK in Ch. 20850 (1RB Size)



Date: 19.MAR.2015 00:10:36

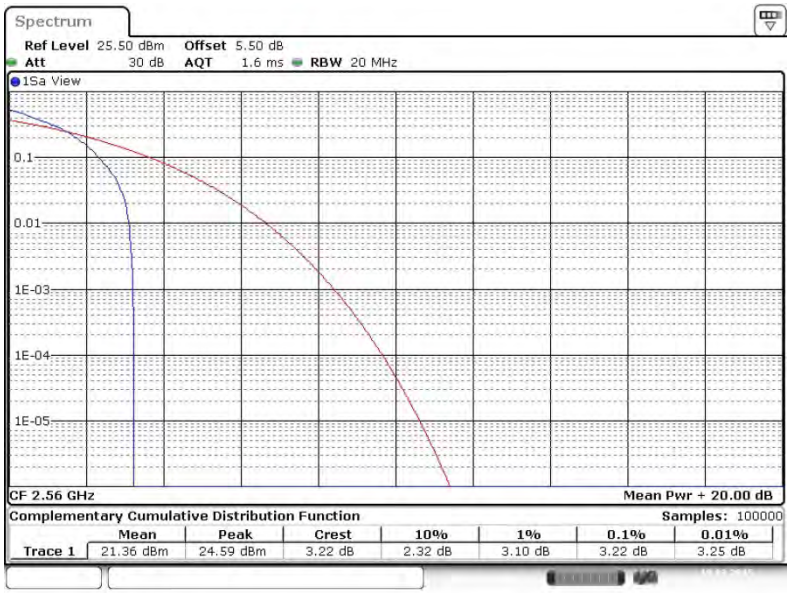
Peak-to-Average Ratio on LTE Band 7

20MHz / QPSK in Ch. 21100 (1RB Size)

Date: 19.MAR.2015 00:12:24

Peak-to-Average Ratio on LTE Band 7

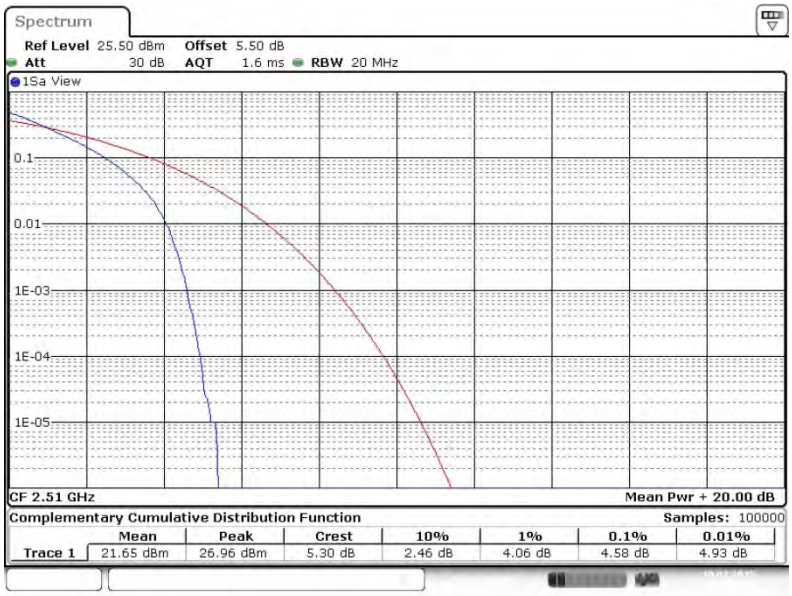
20MHz / QPSK in Ch. 21350 (1RB Size)



Date: 19.MAR.2015 00:13:21

Peak-to-Average Ratio on LTE Band 7

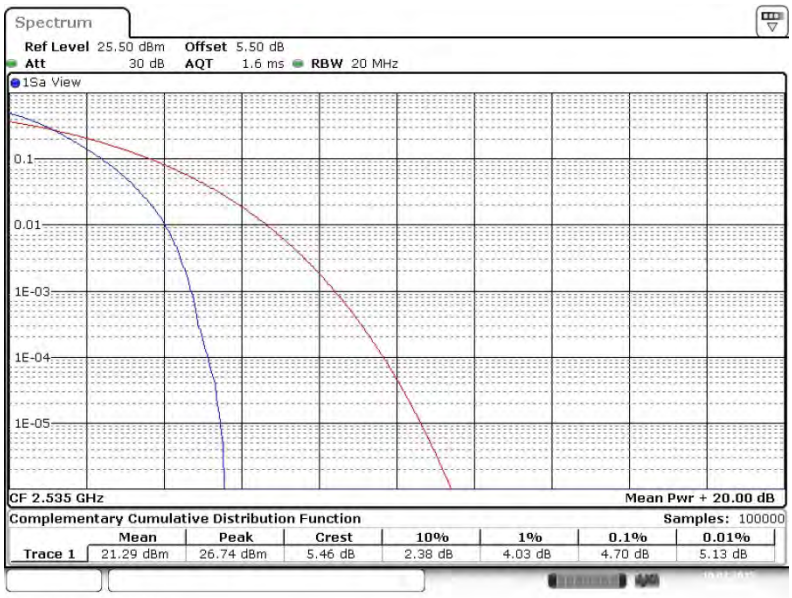
20MHz / QPSK in Ch. 20850 (100RB Size)



Date: 19.MAR.2015 00:10:55

Peak-to-Average Ratio on LTE Band 7

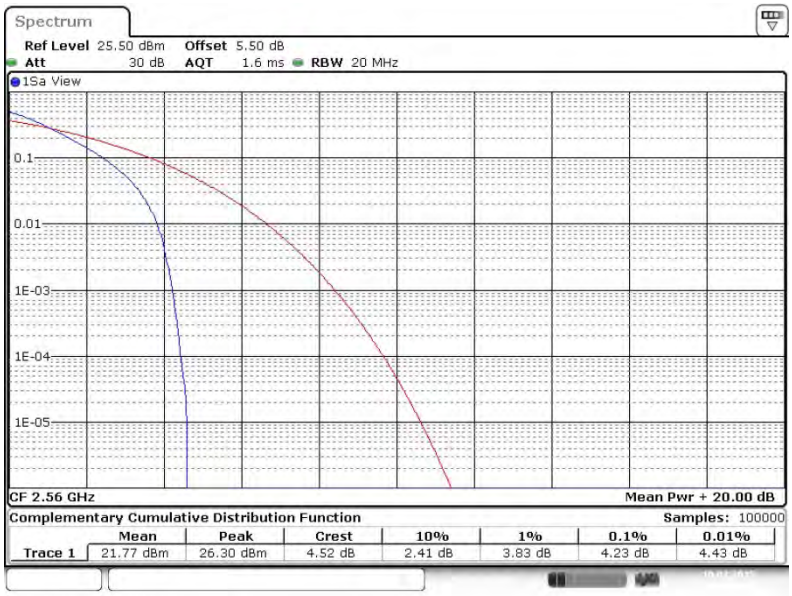
20MHz / QPSK in Ch. 21100 (100RB Size)



Date: 19.MAR.2015 00:11:53

Peak-to-Average Ratio on LTE Band 7

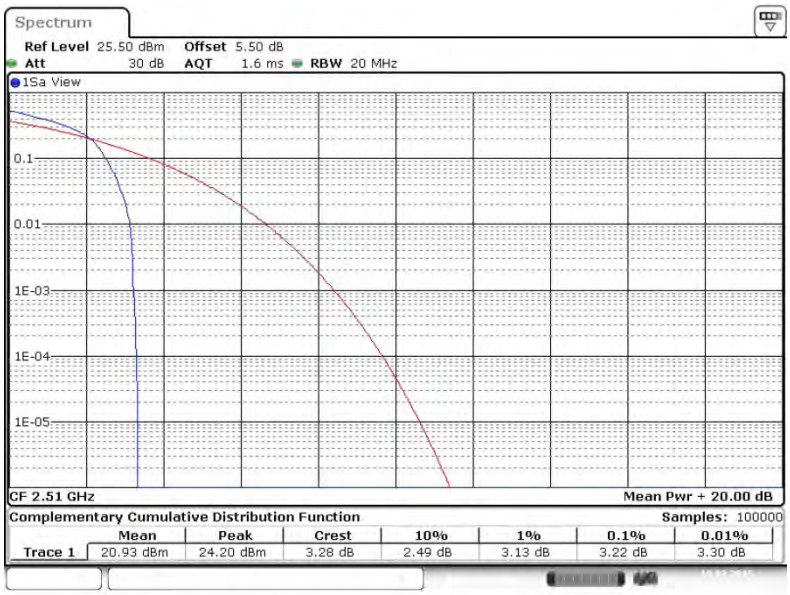
20MHz / QPSK in Ch. 21350 (100RB Size)



Date: 19.MAR.2015 00:14:15

Peak-to-Average Ratio on LTE Band 7

20MHz / 16QAM in Ch. 20850 (1RB Size)



Date: 19.MAR.2015 00:10:21

Peak-to-Average Ratio on LTE Band 7

20MHz / 16QAM in Ch. 21100 (1RB Size)

Date: 19.MAR.2015 00:12:41

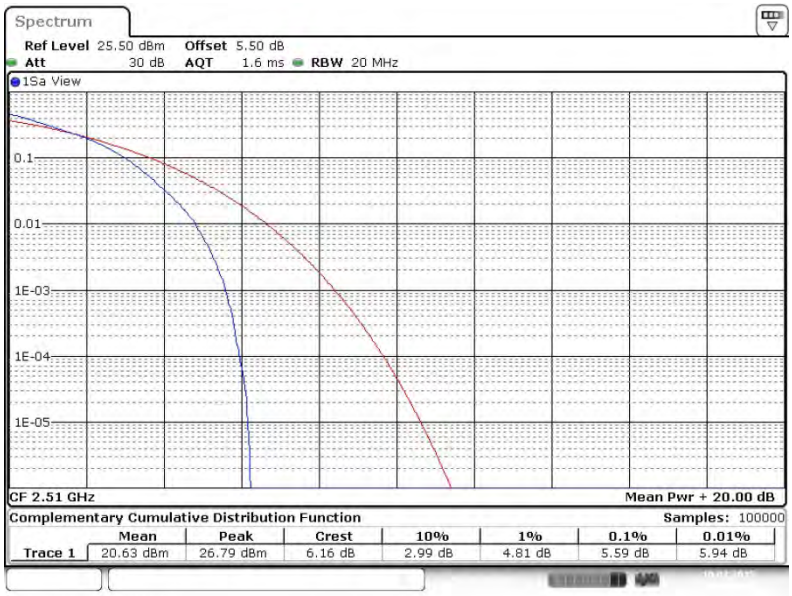
Peak-to-Average Ratio on LTE Band 7

20MHz / 16QAM in Ch. 21350 (1RB Size)

Date: 19.MAR.2015 00:13:01

Peak-to-Average Ratio on LTE Band 7

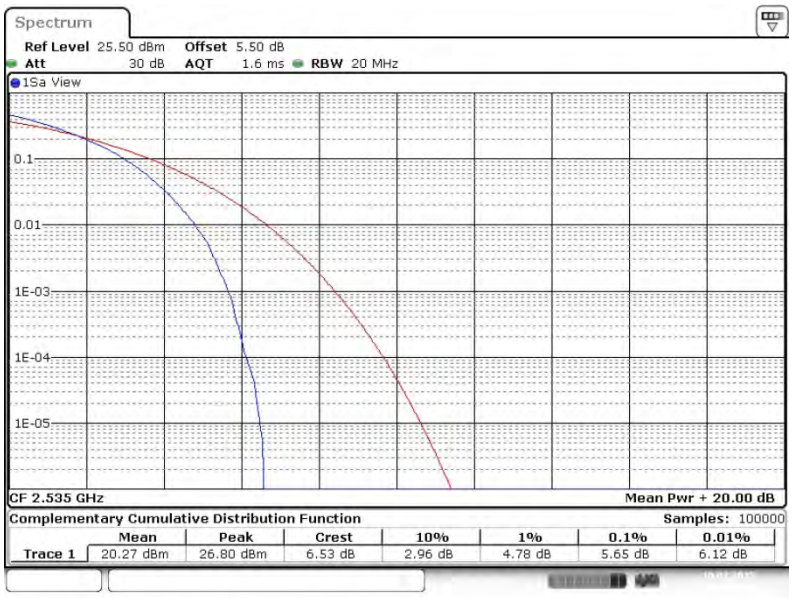
20MHz / 16QAM in Ch. 20850 (100RB Size)



Date: 19.MAR.2015 00:11:15

Peak-to-Average Ratio on LTE Band 7

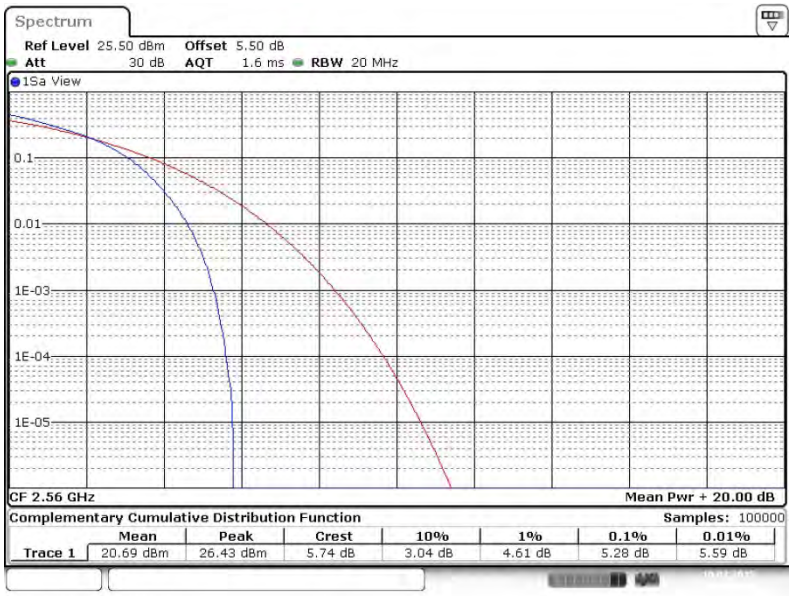
20MHz / 16QAM in Ch. 21100 (100RB Size)



Date: 19.MAR.2015 00:11:36

Peak-to-Average Ratio on LTE Band 7

20MHz / 16QAM in Ch. 21350 (100RB Size)



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3.3 Equivalent Isotropic Radiated Power Measurement

3.3.1 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 v02r02. Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 7.

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 testing follows FCC KDB 971168 v02r02 Section 5.2.1. and ANSI / TIA-603-C-2004 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high 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 RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum 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.

   Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by the 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 + Correction factor and ERP = EIRP - 2.15. Take the record of the output power at substitution antenna.

	LTE					
LTE BW	1.4M	3M	5M	10M	15M	20M
Span	3MHz	6MHz	10MHz	20MHz	30MHz	40MHz
RBW	30kHz	100kHz	100kHz	300kHz	300kHz	300kHz
VBW	100kHz	300kHz	300kHz	1MHz	1MHz	1MHz
Detector	RMS	RMS	RMS	RMS	RMS	RMS
Trace	Average	Average	Average	Average	Average	Average
Average Type	Power	Power	Power	Power	Power	Power
Sweep Count	100	100	100	100	100	100

3.3.4 Test Result of EIRP

LTE Band 7 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	19.50	0.0891	21.54	0.1426
Middle		1	24	19.82	0.0959	20.59	0.1146
Highest		1	12	19.32	0.0855	20.58	0.1143
Lowest	16QAM	1	0	18.65	0.0733	20.72	0.1180
Middle		1	24	18.95	0.0785	20.07	0.1016
Highest		1	24	18.68	0.0738	19.79	0.0953
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 10MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	24	19.46	0.0883	21.23	0.1327
Middle		1	49	19.64	0.0920	21.08	0.1282
Highest		1	49	19.59	0.0910	20.80	0.1202
Lowest	16QAM	1	0	19.00	0.0794	20.62	0.1153
Middle		1	49	18.66	0.0735	20.13	0.1030
Highest		1	0	19.26	0.0843	19.93	0.0984
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 15MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	19.58	0.0908	21.29	0.1346
Middle		1	74	19.80	0.0955	20.88	0.1225
Highest		1	0	19.91	0.0979	20.98	0.1253
Lowest	16QAM	1	0	18.93	0.0782	20.65	0.1161
Middle		1	37	18.94	0.0783	20.72	0.1180
Highest		1	0	19.00	0.0794	19.97	0.0993
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 20MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	99	19.67	0.0927	21.52	0.1419
Middle		1	99	19.88	0.0973	21.39	0.1377
Highest		1	99	19.69	0.0931	20.87	0.1222
Lowest	16QAM	1	0	18.95	0.0785	21.06	0.1276
Middle		1	99	19.06	0.0805	20.27	0.1064
Highest		1	0	19.14	0.0820	20.40	0.1096
Limit	EIRP < 2W			Result		PASS	

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 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 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.

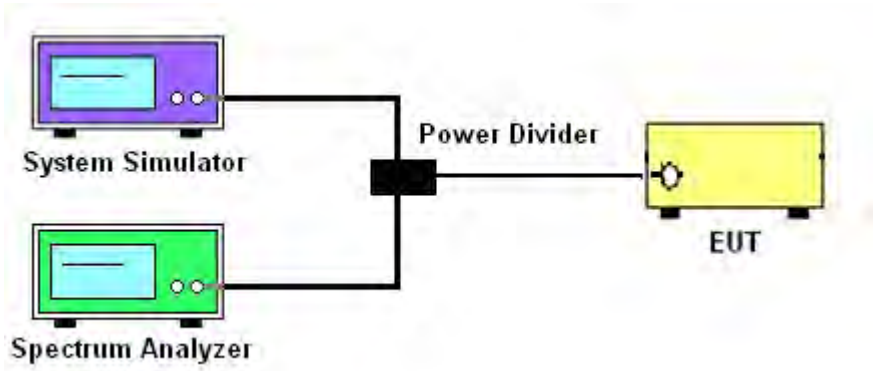
3.4.2 Measuring Instruments

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 system simulator 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.

3.4.4 Test Setup



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

Modes	LTE Band 7											
BW / Mod.	5MHz / QPSK			5MHz / 16QAM			10MHz / QPSK			10MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	4.505	4.496	4.515	4.505	4.496	4.505	9.111	9.071	9.111	9.051	9.051	9.031
26dB BW (MHz)	5.115	5.055	5.095	5.105	5.045	5.045	10.110	10.010	10.090	10.130	10.030	10.070
BW / Mod.	15MHz / QPSK			15MHz / 16QAM			20MHz / QPSK			20MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	13.546	13.487	13.516	13.546	13.487	13.457	18.382	18.422	18.422	18.462	18.501	18.422
26dB BW (MHz)	14.805	14.625	14.805	14.925	14.865	14.715	20.380	20.539	20.380	20.500	20.380	20.260

Note:

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

BW5.0MHz RB setting：RB Size 25, RB offset 0

BW10MHz RB setting：RB Size 50, RB offset 0

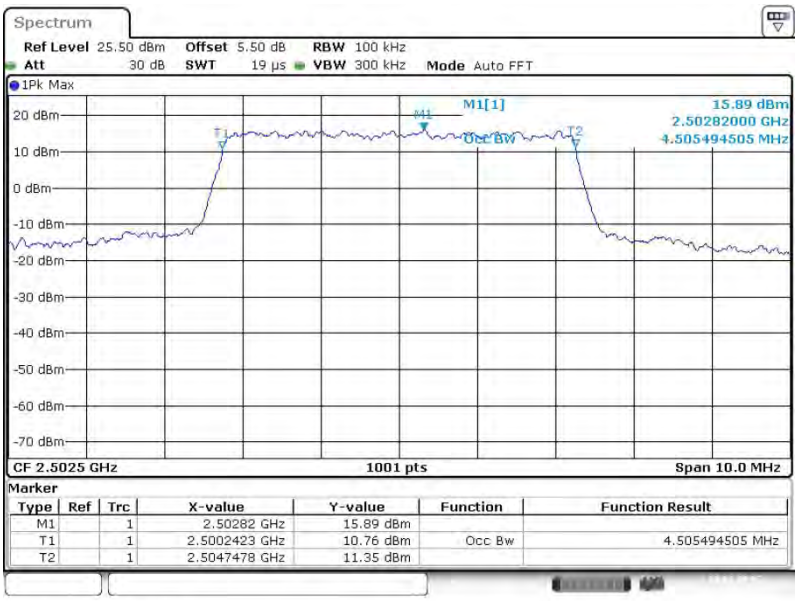
BW15MHz RB setting：RB Size 75, RB offset 0

BW20MHz RB setting：RB Size 100, RB offset 0

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

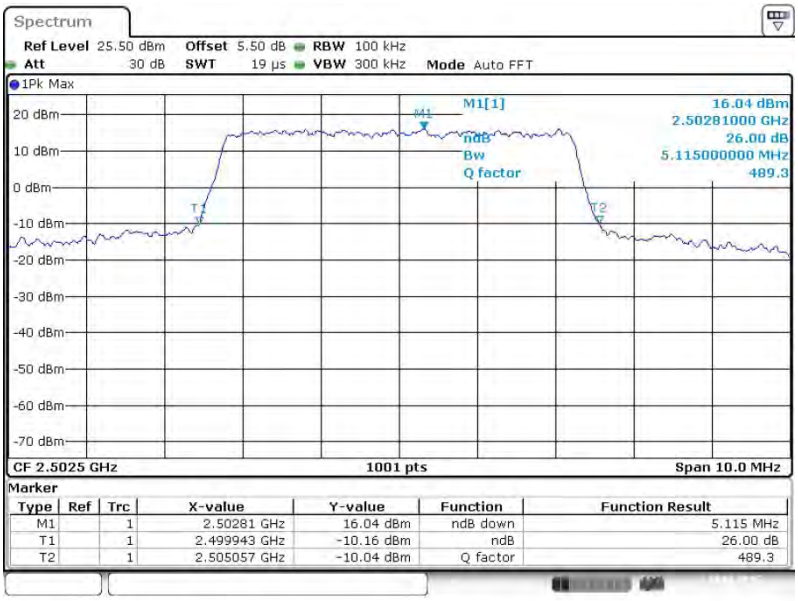
Band :	LTE Band 7	BW / Mod. :	5MHz / QPSK

99% Occupied Bandwidth Plot on Channel 20775



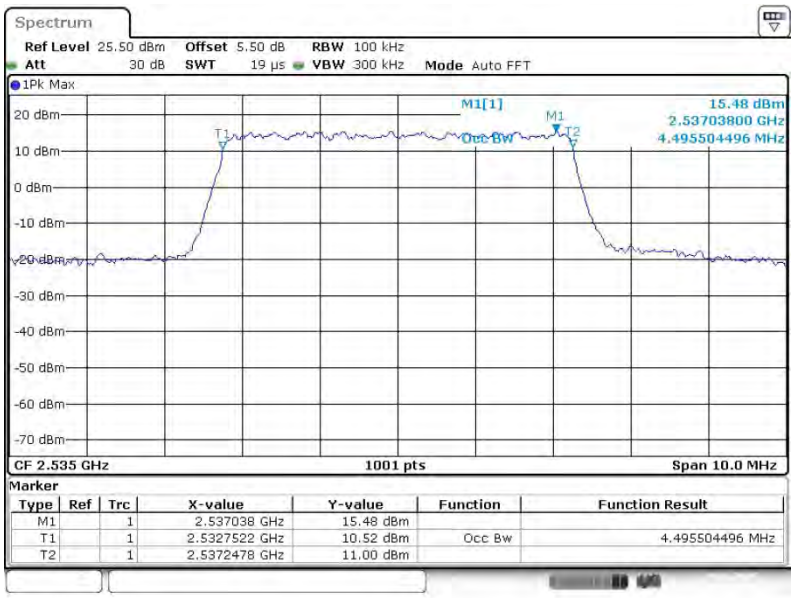
Date: 18.MAR.2015 21:40:28

26dB Bandwidth Plot on Channel 20775



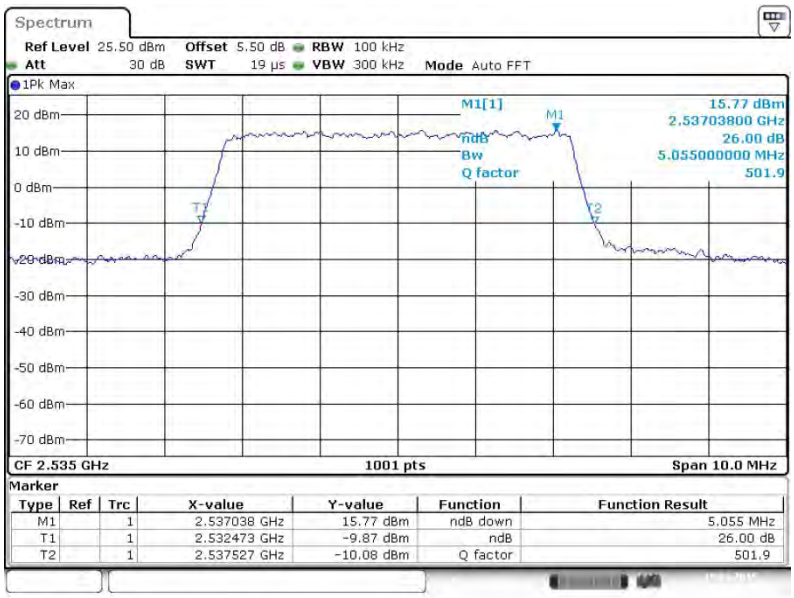
Date: 18.MAR.2015 21:40:50

99% Occupied Bandwidth Plot on Channel 21100



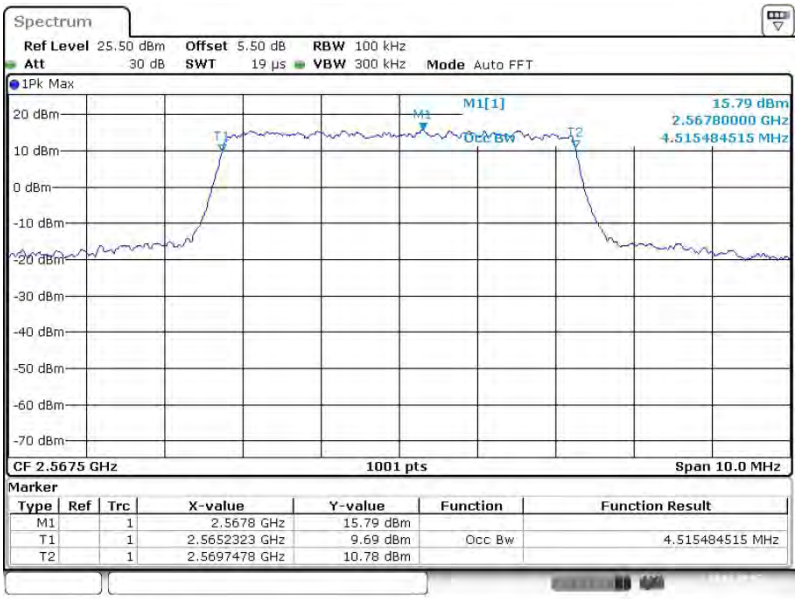
Date: 18.MAR.2015 21:43:55

26dB Bandwidth Plot on Channel 21100



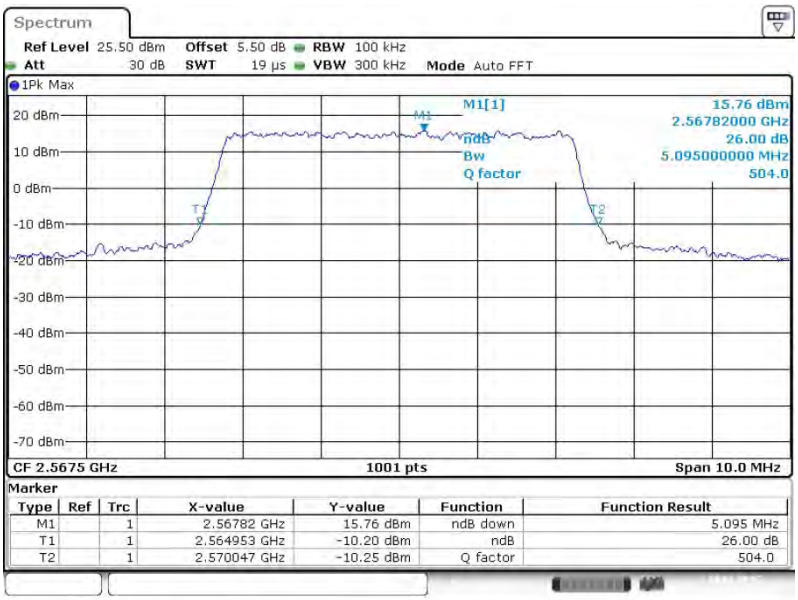
Date: 18.MAR.2015 21:44:17

99% Occupied Bandwidth Plot on Channel 21425



Date: 18.MAR.2015 21:47:21

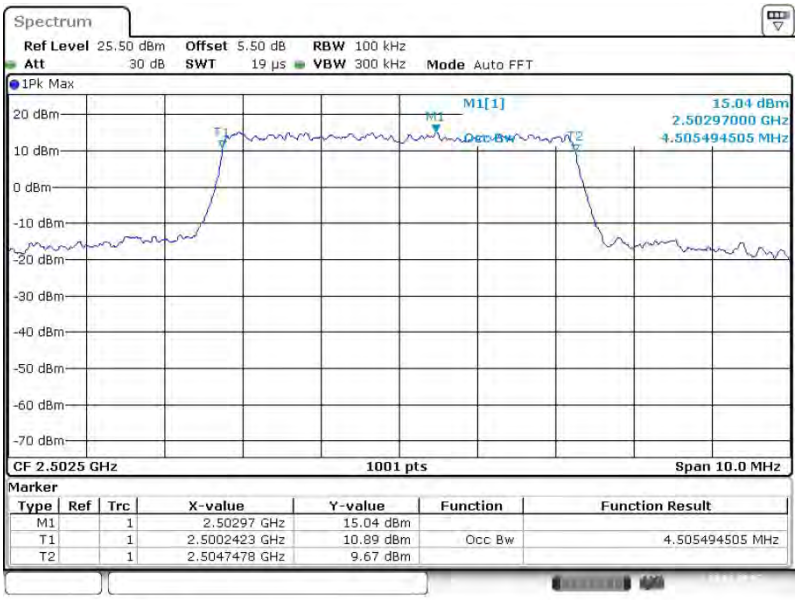
26dB Bandwidth Plot on Channel 21425



Date: 18.MAR.2015 21:47:43

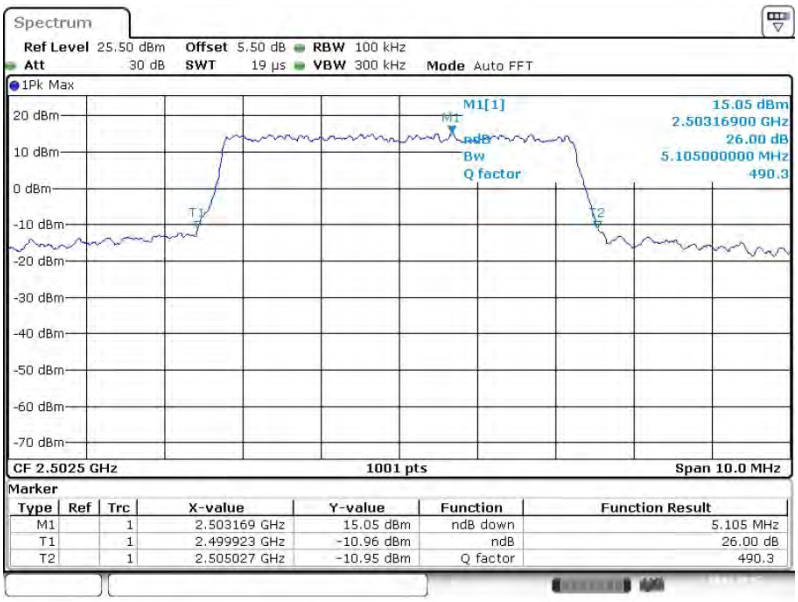
Band :	LTE Band 7	BW / Mod. :	5MHz / 16QAM

99% Occupied Bandwidth Plot on Channel 20775



Date: 18.MAR.2015 21:40:38

26dB Bandwidth Plot on Channel 20775



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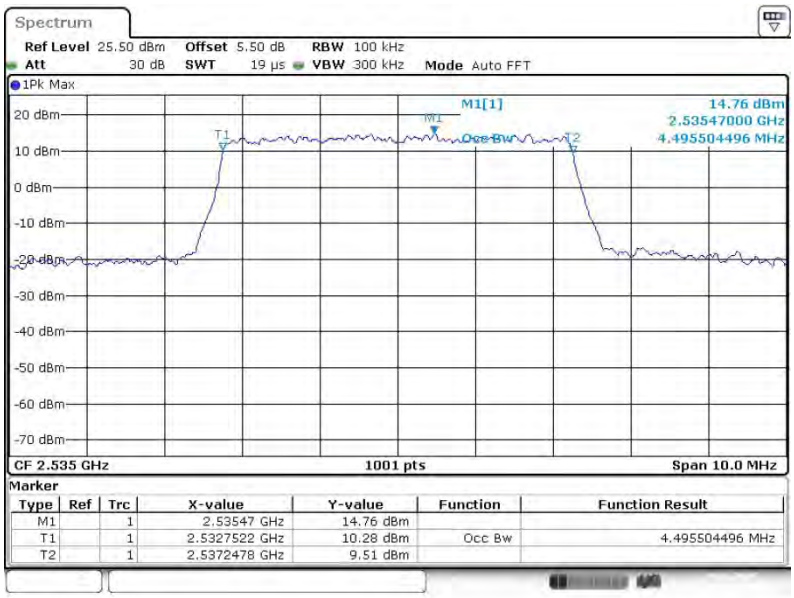
99% Occupied Bandwidth Plot on Channel 21100



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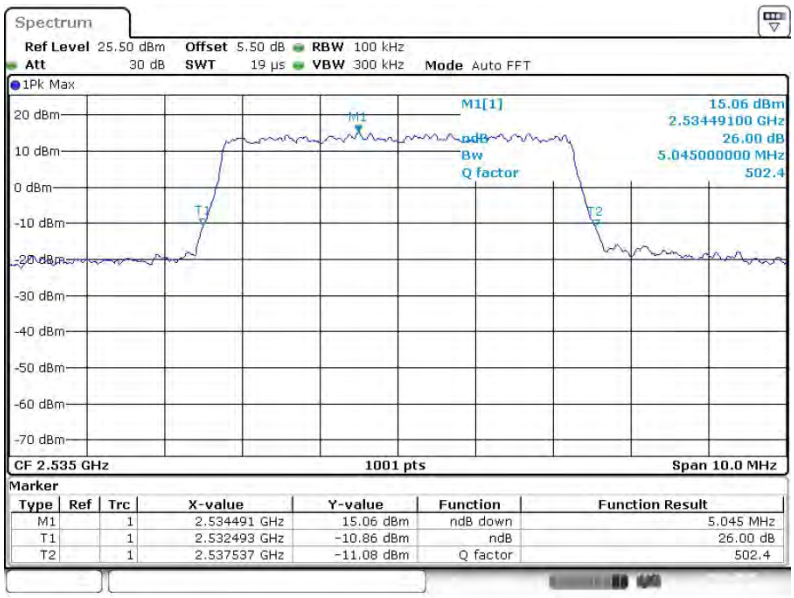
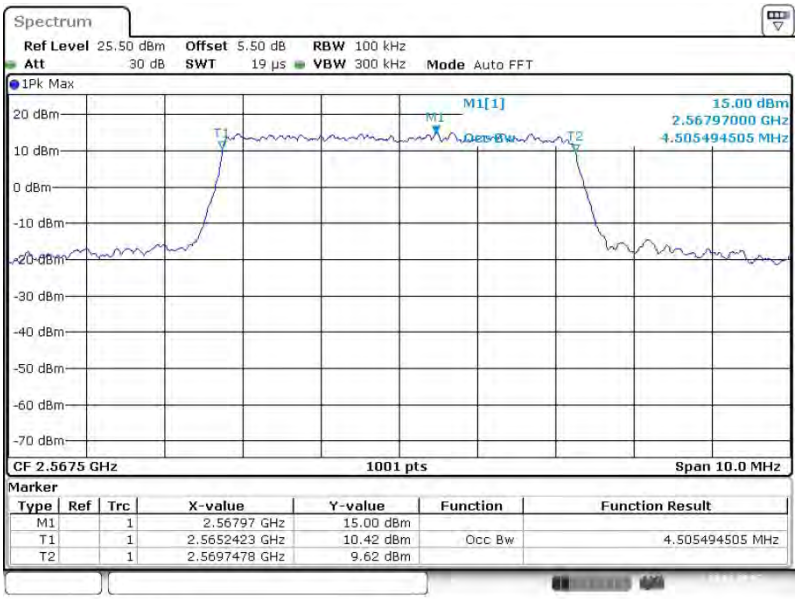
26dB Bandwidth Plot on Channel 21100



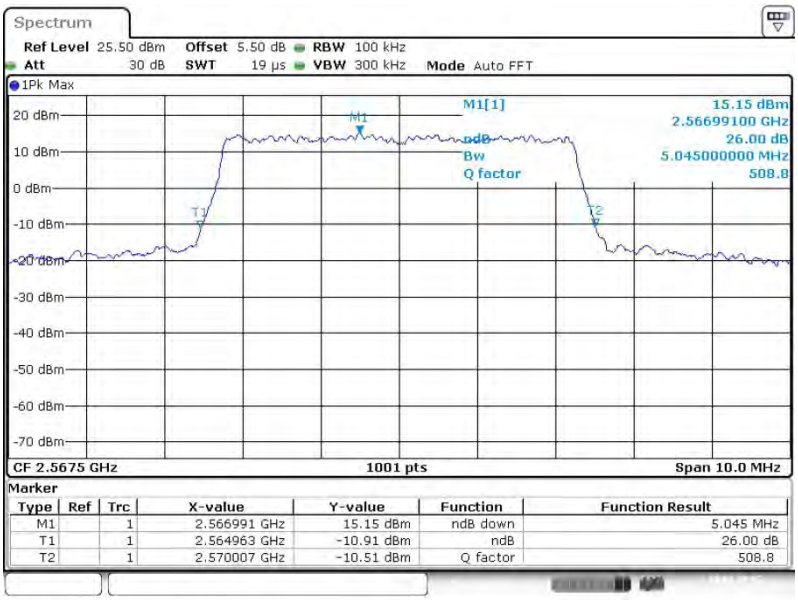
Date: 18.MAR.2015 21:44:28

99% Occupied Bandwidth Plot on Channel 21425



Date: 18.MAR.2015 21:47:31

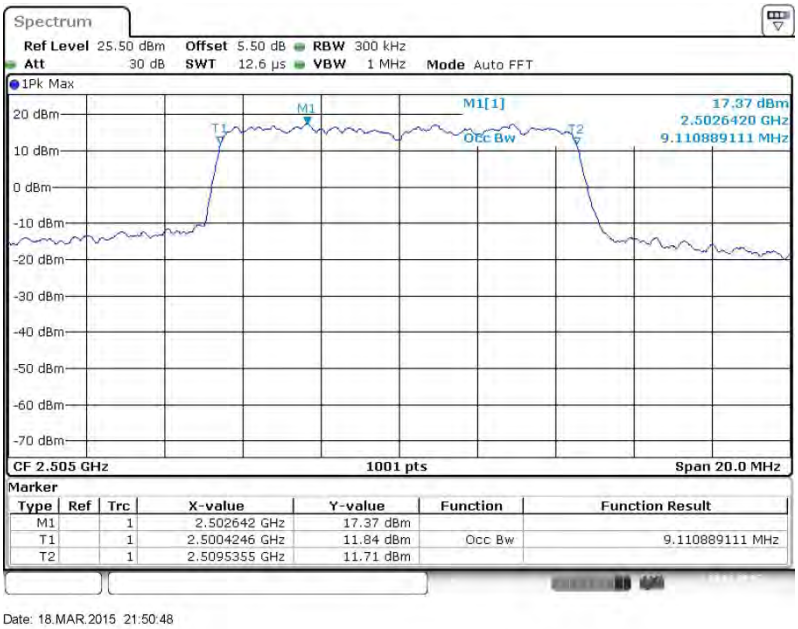
26dB Bandwidth Plot on Channel 21425



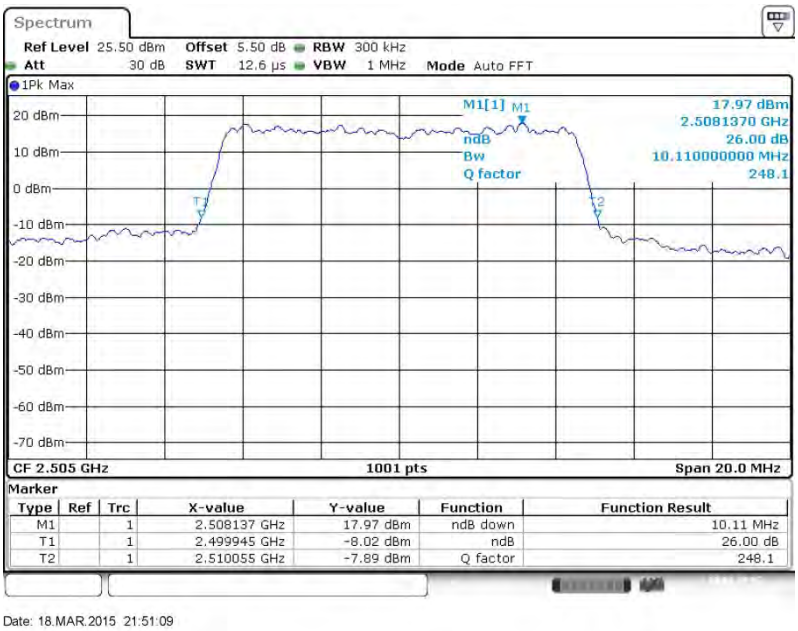
Date: 18.MAR.2015 21:47:55

Band :	LTE Band 7	BW / Mod. :	10MHz / QPSK

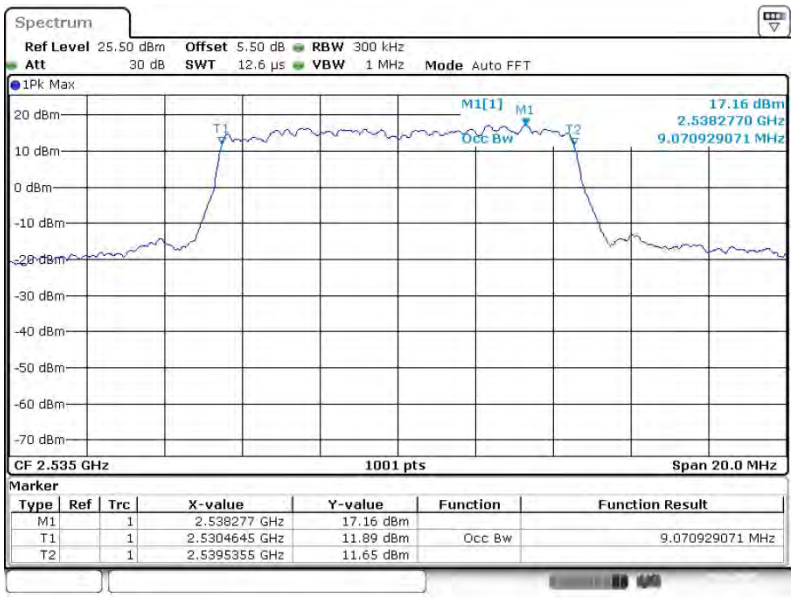
99% Occupied Bandwidth Plot on Channel 20800



26dB Bandwidth Plot on Channel 20800

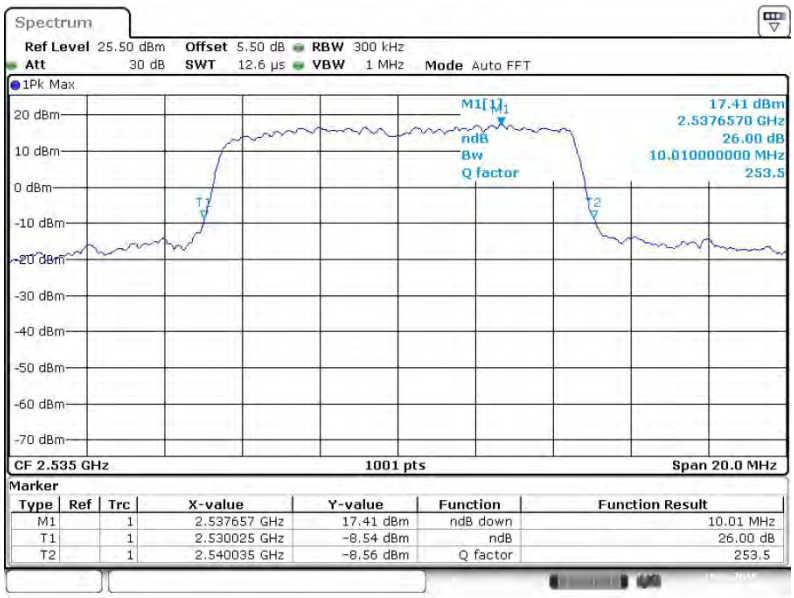


99% Occupied Bandwidth Plot on Channel 21100



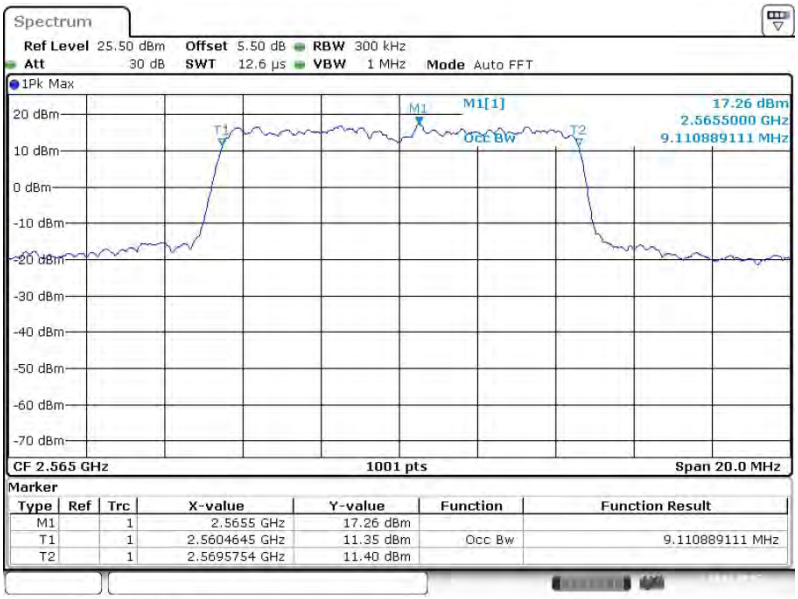
Date: 18.MAR.2015 21:54:12

26dB Bandwidth Plot on Channel 21100



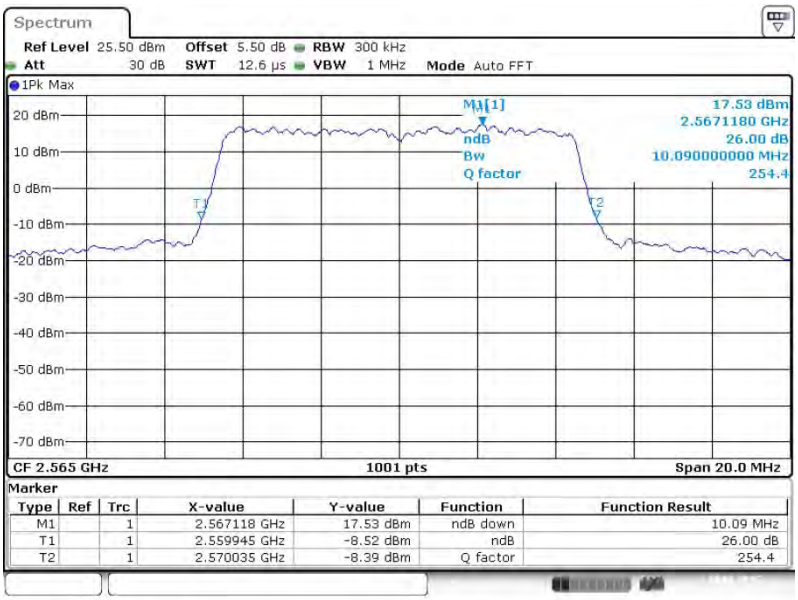
Date: 18.MAR.2015 21:54:34

99% Occupied Bandwidth Plot on Channel 21400



Date: 18.MAR.2015 21:57:40

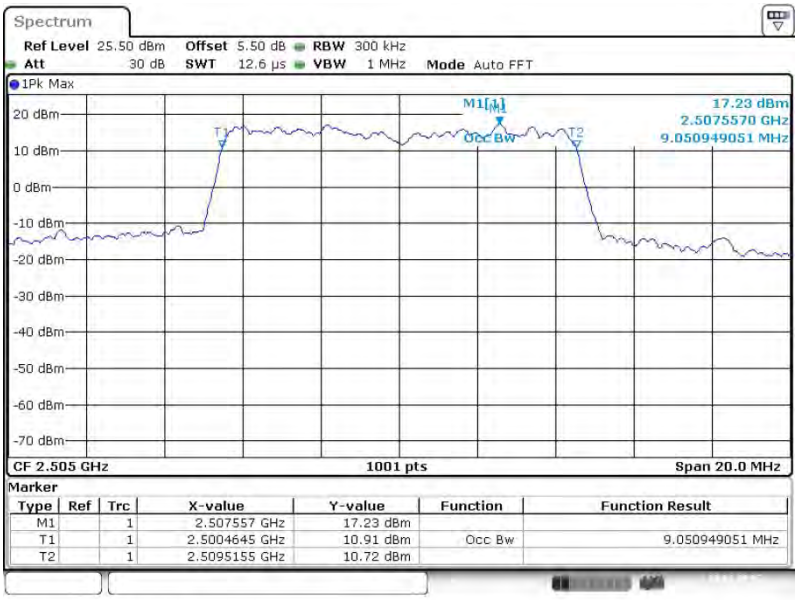
26dB Bandwidth Plot on Channel 21400



Date: 18.MAR.2015 21:58:02

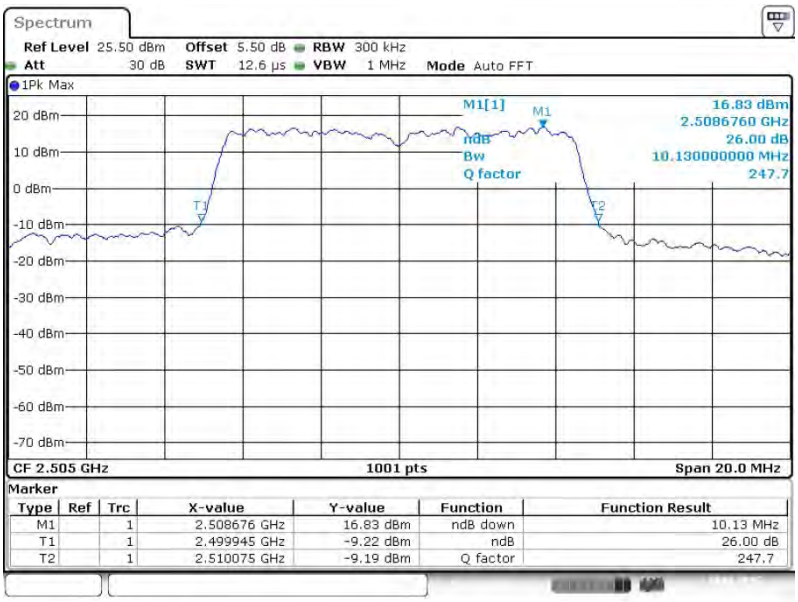
Band :	LTE Band 7	BW / Mod. :	10MHz / 16QAM

99% Occupied Bandwidth Plot on Channel 20800



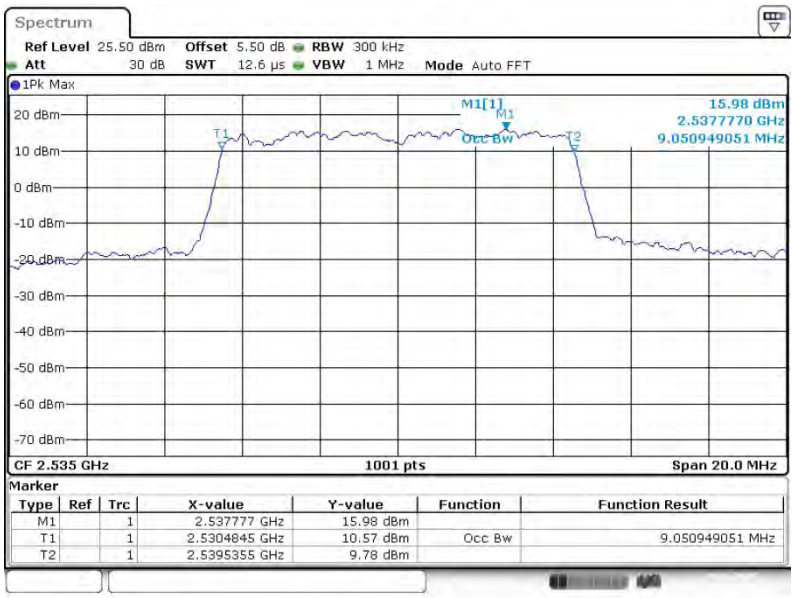
Date: 18.MAR.2015 21:50:58

26dB Bandwidth Plot on Channel 20800



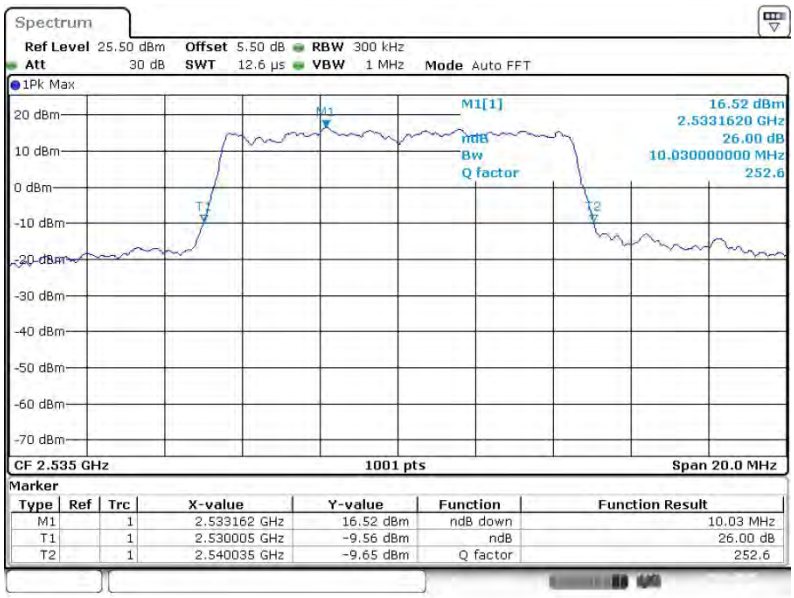
Date: 18.MAR.2015 21:51:21

99% Occupied Bandwidth Plot on Channel 21100



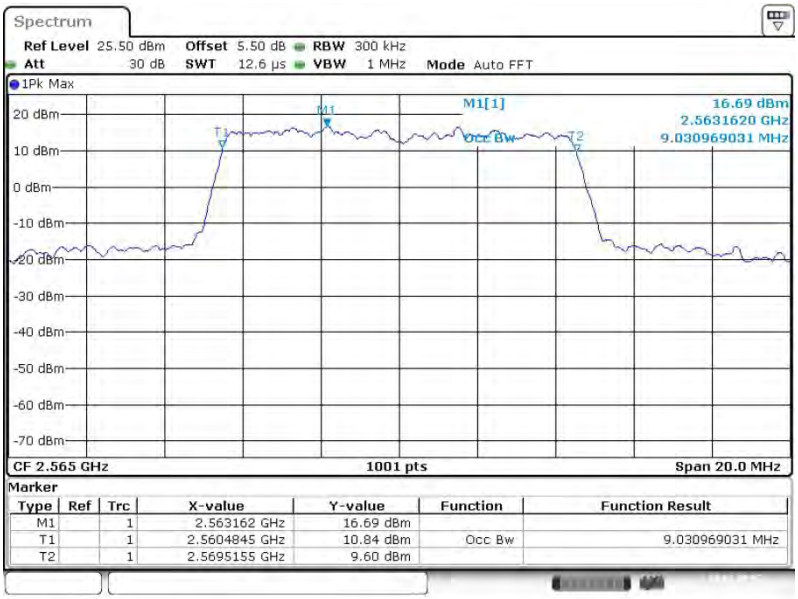
Date: 18.MAR.2015 21:54:22

26dB Bandwidth Plot on Channel 21100



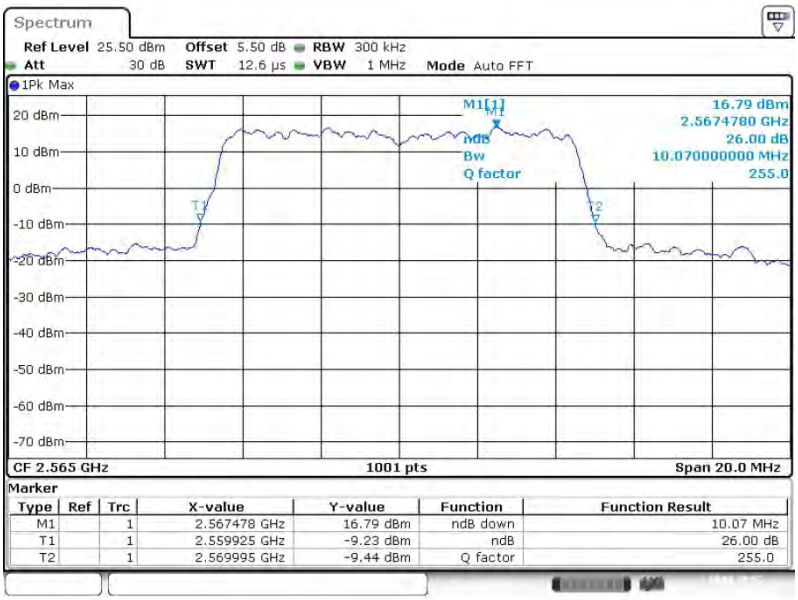
Date: 18.MAR.2015 21:54:46

99% Occupied Bandwidth Plot on Channel 21400



Date: 18.MAR.2015 21:57:50

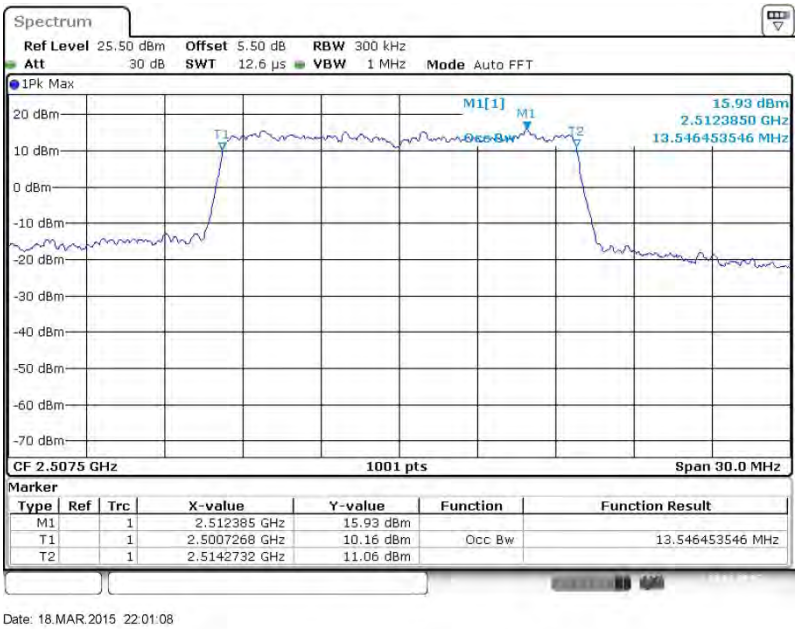
26dB Bandwidth Plot on Channel 21400



Date: 18.MAR.2015 21:58:14

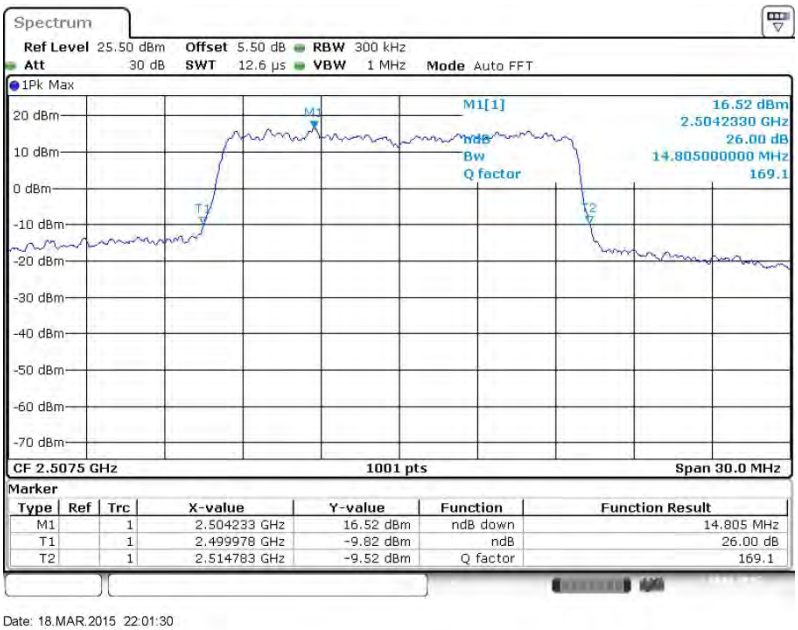
Band :	LTE Band 7	BW / Mod. :	15MHz / QPSK

99% Occupied Bandwidth Plot on Channel 20825



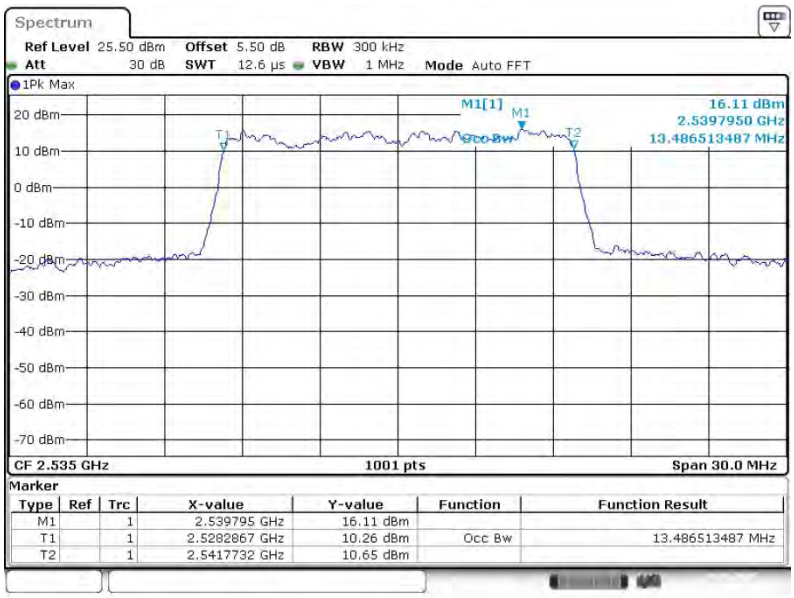
Date: 18.MAR.2015 22:01:08

26dB Bandwidth Plot on Channel 20825



Date: 18.MAR.2015 22:01:30

99% Occupied Bandwidth Plot on Channel 21100



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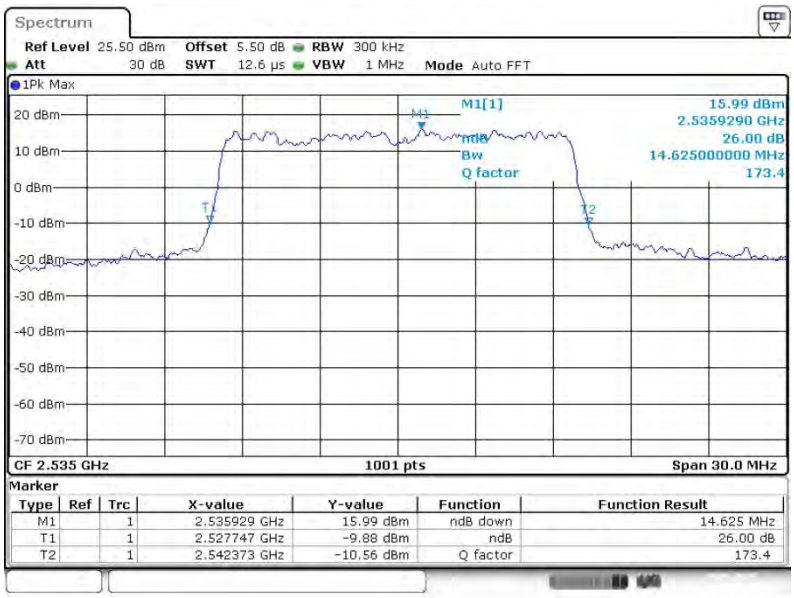
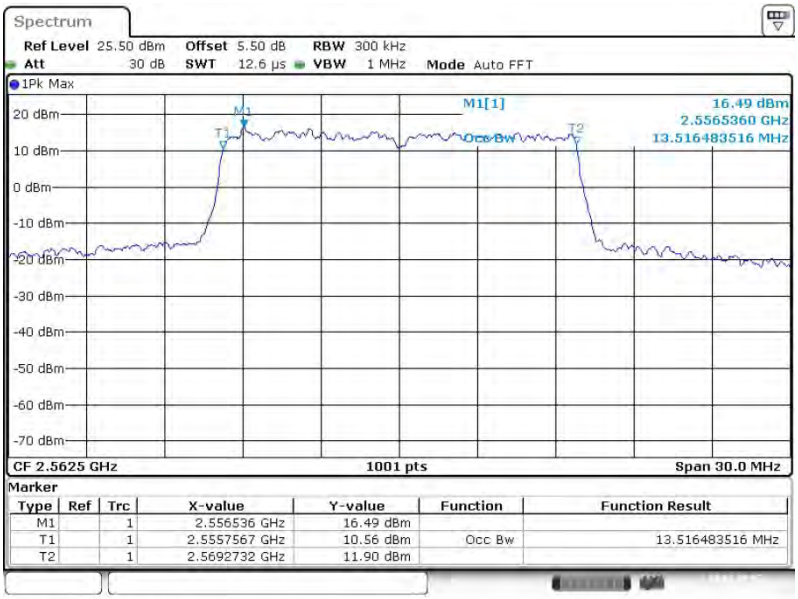
26dB Bandwidth Plot on Channel 21100



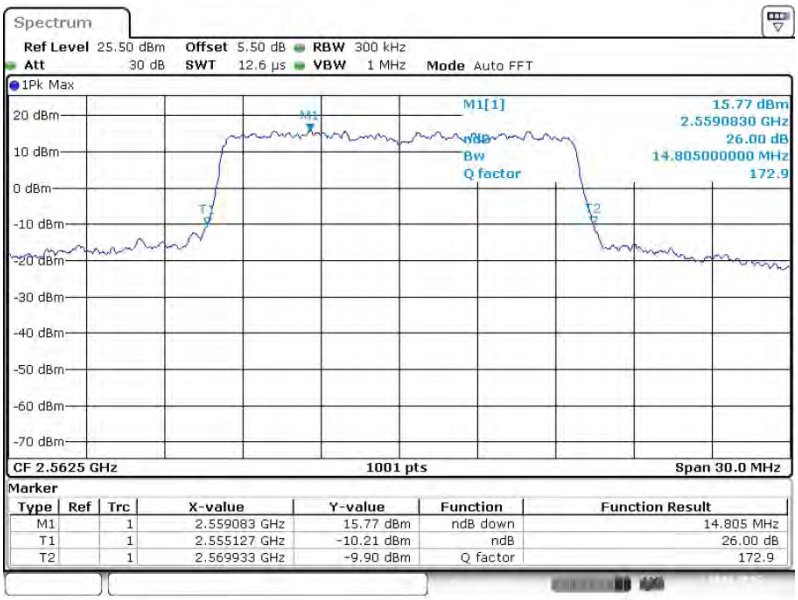
Date: 18.MAR.2015 22:04:56

99% Occupied Bandwidth Plot on Channel 21375



Date: 18.MAR.2015 22:08:01

26dB Bandwidth Plot on Channel 21375



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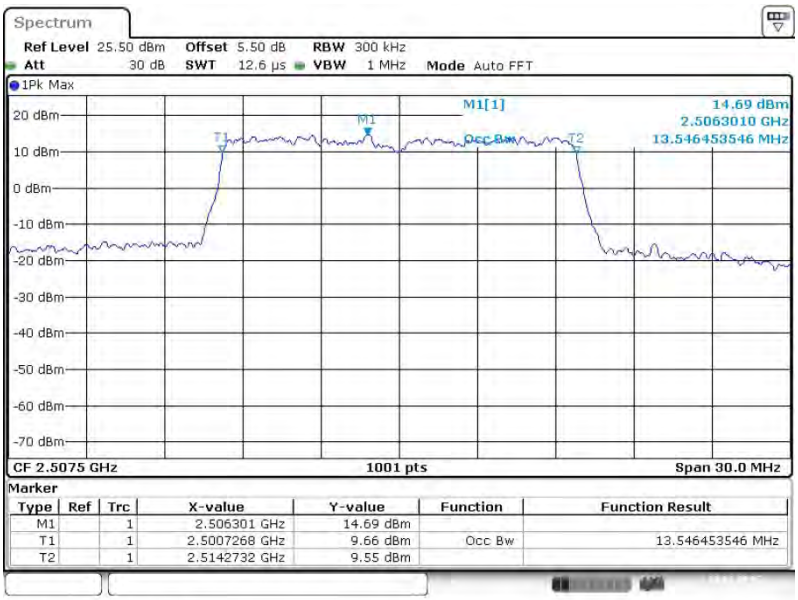
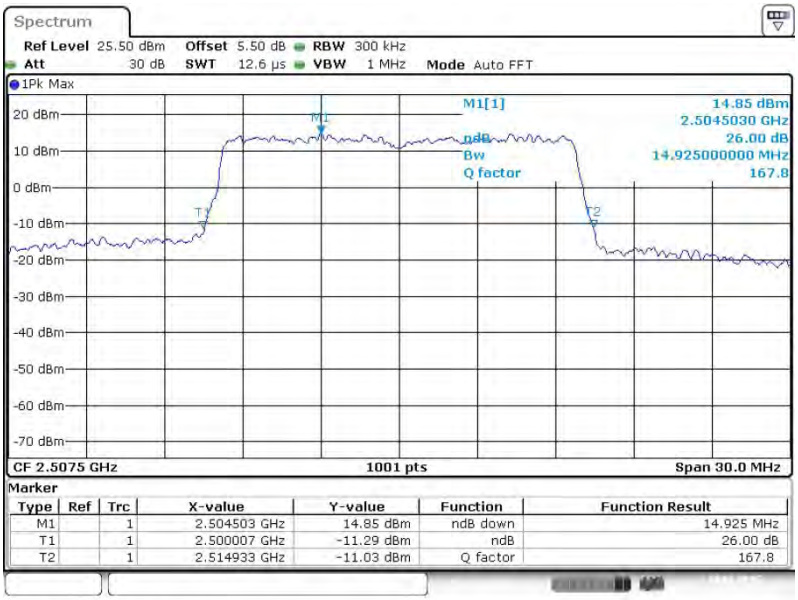
Band :	LTE Band 7	BW / Mod. :	15MHz / 16QAM

99% Occupied Bandwidth Plot on Channel 20825



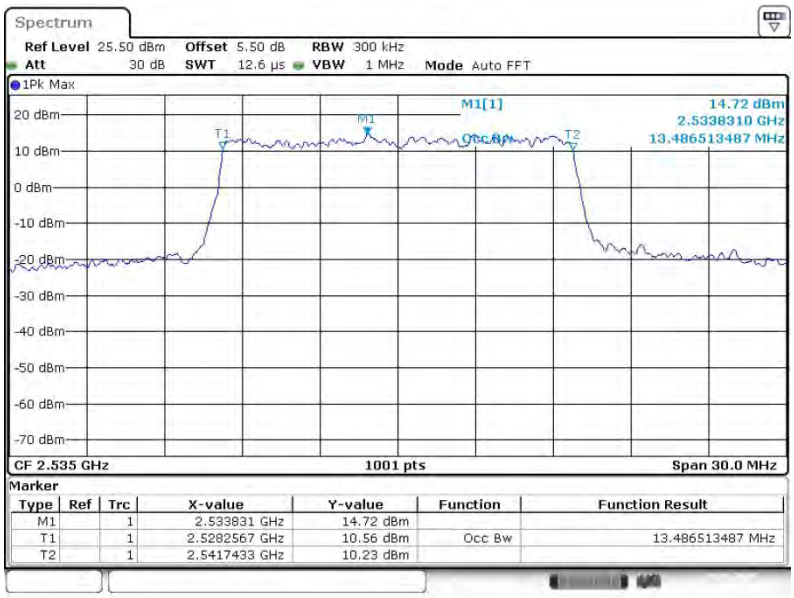
Date: 18.MAR.2015 22:01:18

26dB Bandwidth Plot on Channel 20825



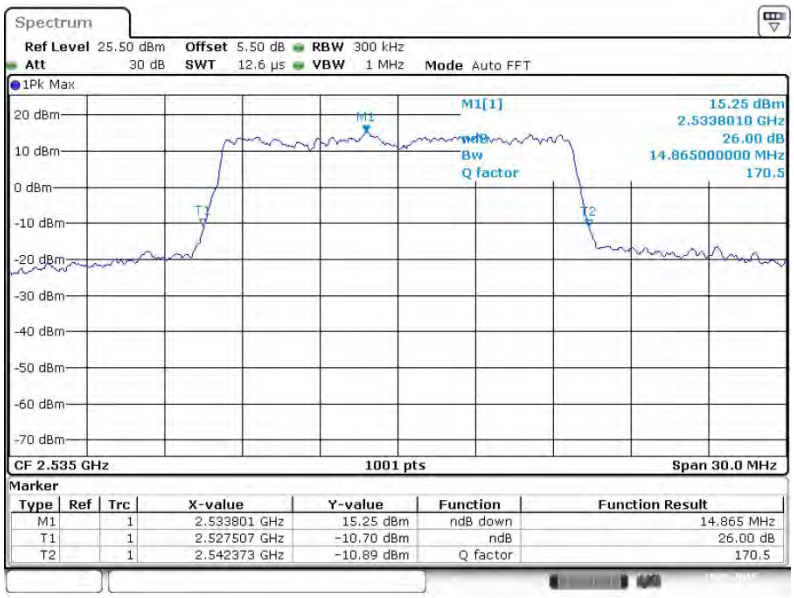
Date: 18.MAR.2015 22:01:42

99% Occupied Bandwidth Plot on Channel 21100



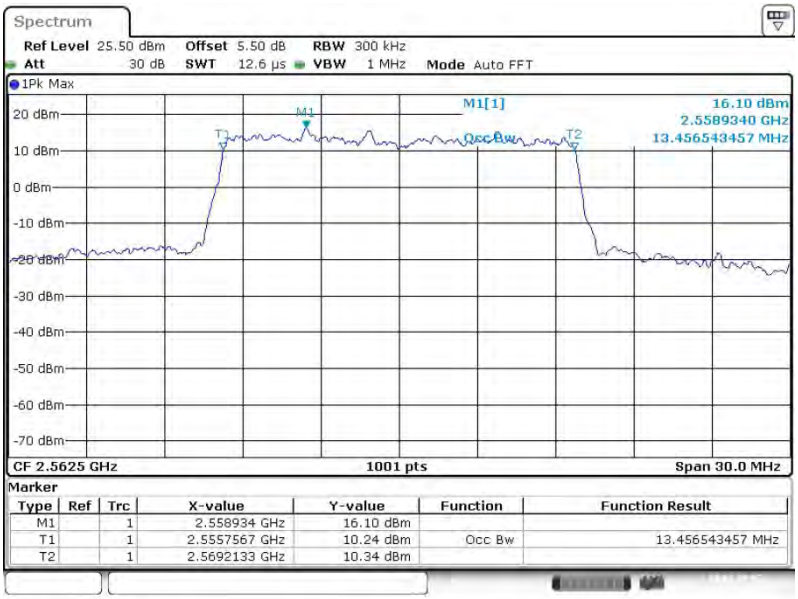
Date: 18.MAR.2015 22:04:45

26dB Bandwidth Plot on Channel 21100

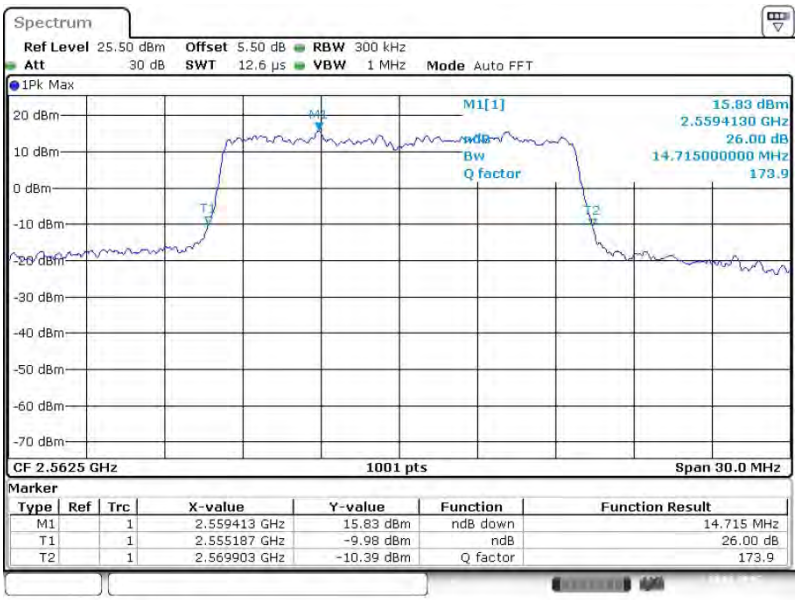


Date: 18.MAR.2015 22:05:08

99% Occupied Bandwidth Plot on Channel 21375

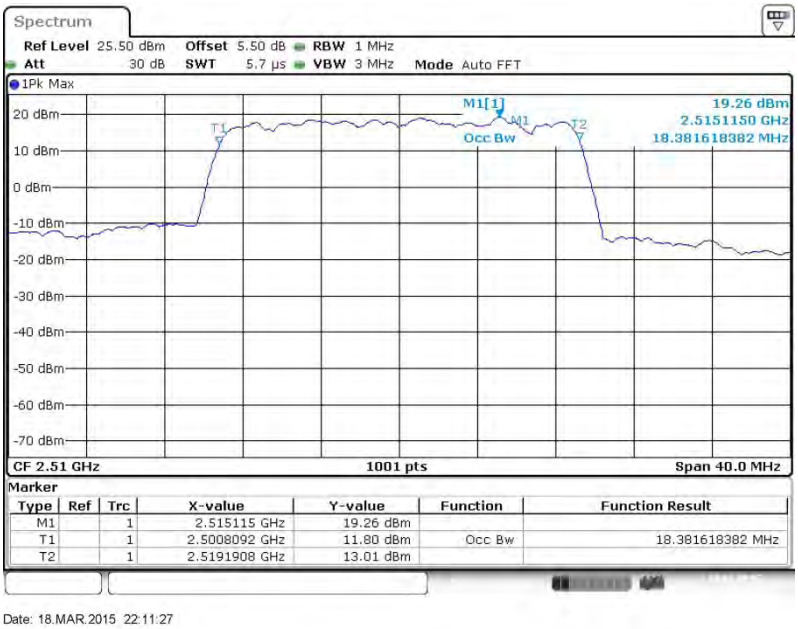


26dB Bandwidth Plot on Channel 21375

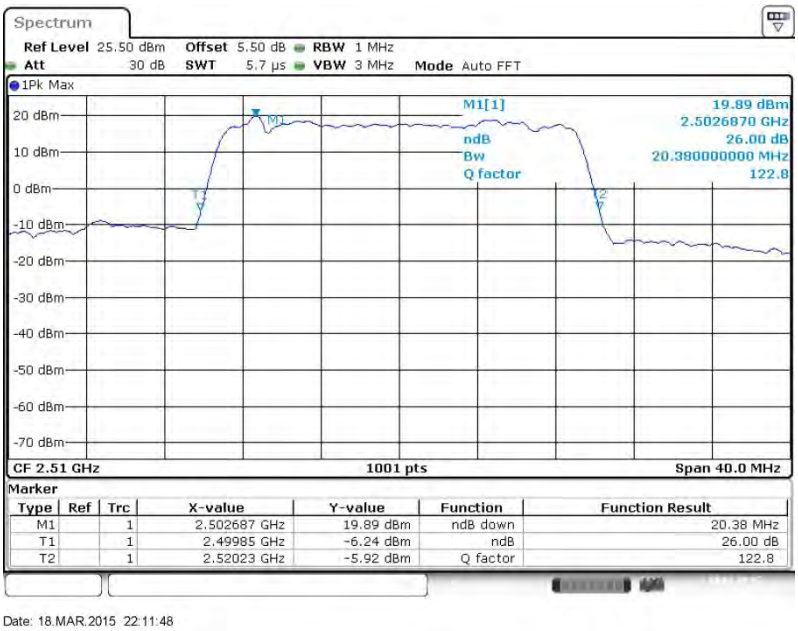


Band :	LTE Band 7	BW / Mod. :	20MHz / QPSK

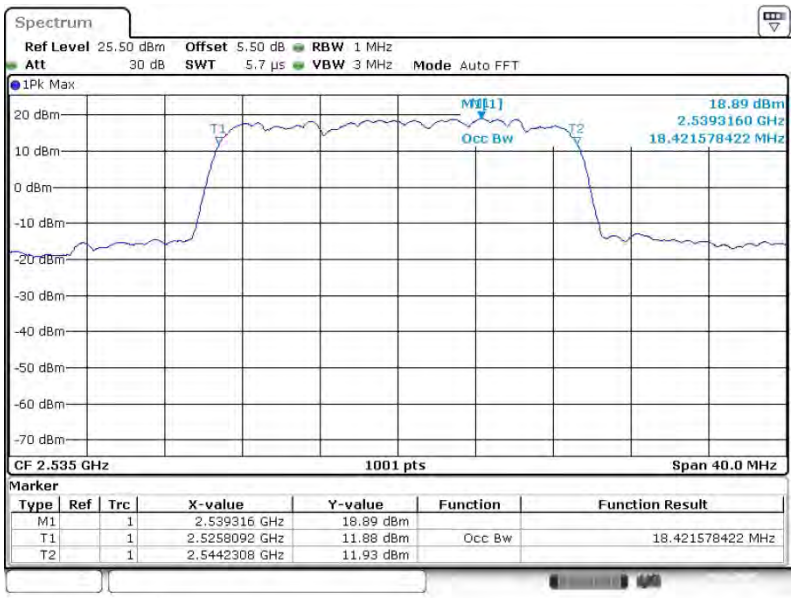
99% Occupied Bandwidth Plot on Channel 20850



26dB Bandwidth Plot on Channel 20850

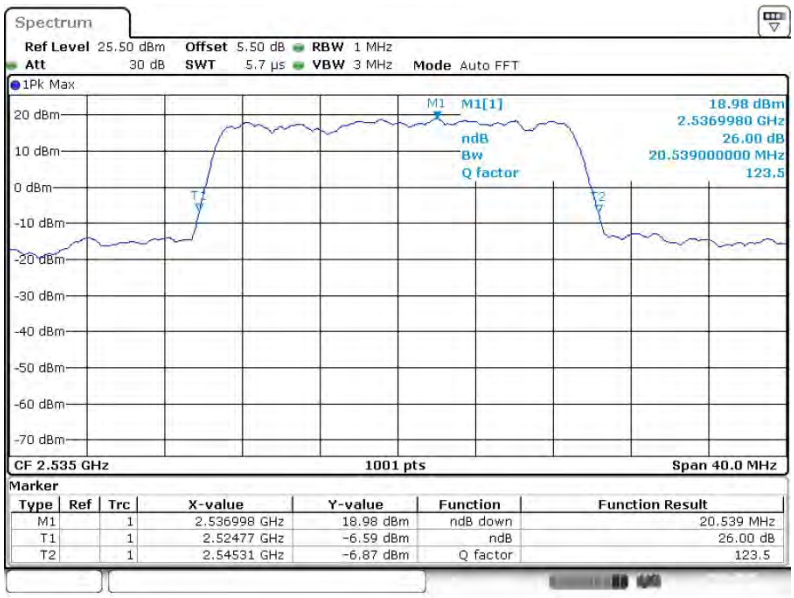


99% Occupied Bandwidth Plot on Channel 21100



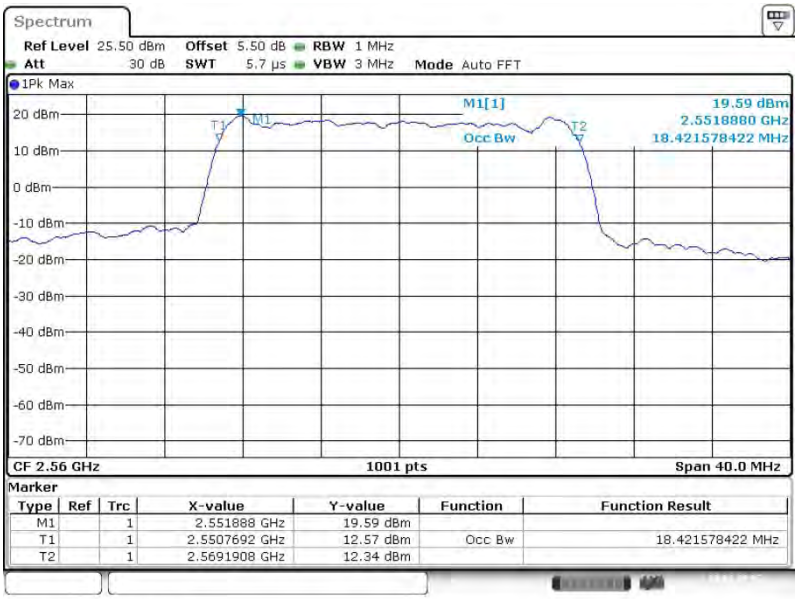
Date: 18.MAR.2015 22:14:51

26dB Bandwidth Plot on Channel 21100



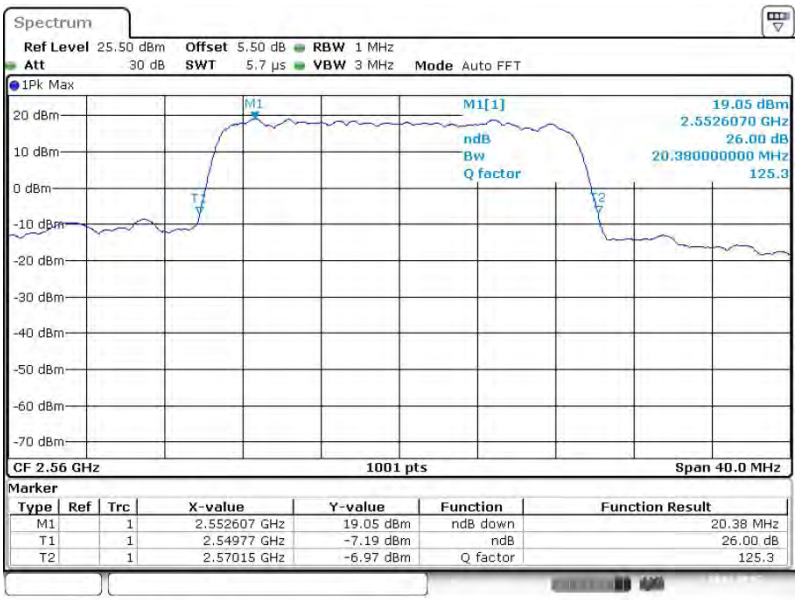
Date: 18.MAR.2015 22:15:13

99% Occupied Bandwidth Plot on Channel 21350



Date: 18.MAR.2015 22:18:16

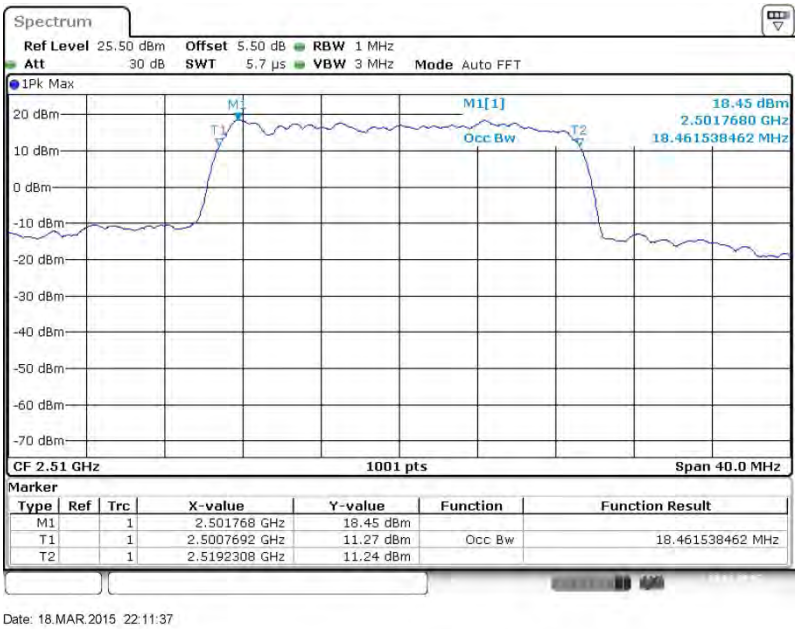
26dB Bandwidth Plot on Channel 21350



Date: 18.MAR.2015 22:18:38

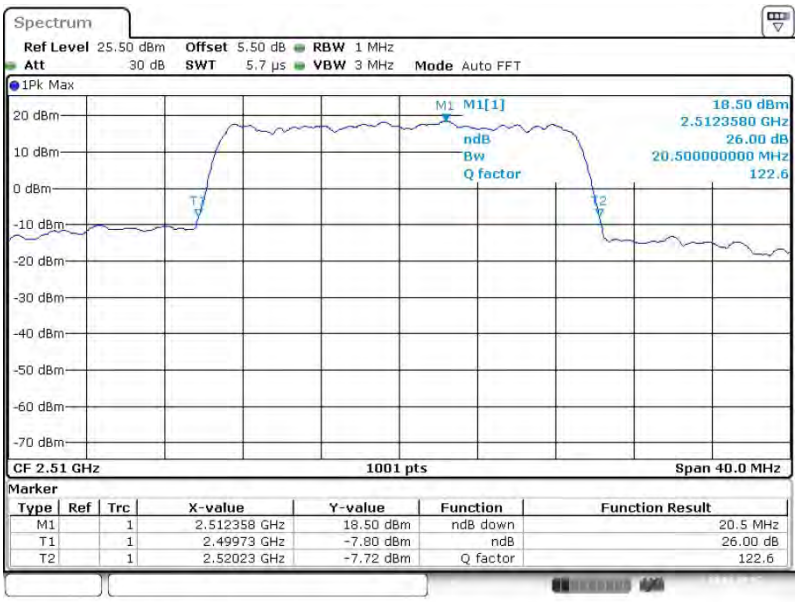
Band :	LTE Band 7	BW / Mod. :	20MHz / 16QAM

99% Occupied Bandwidth Plot on Channel 20850



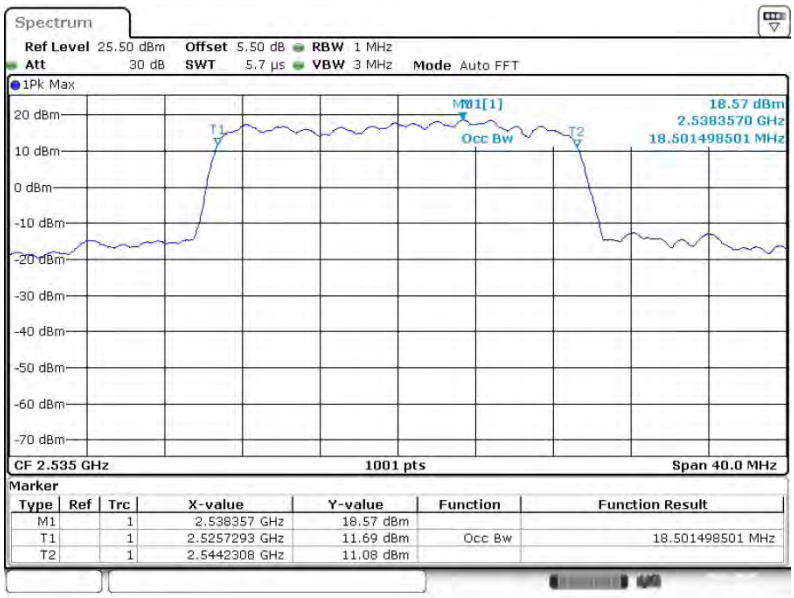
Date: 18.MAR.2015 22:11:37

26dB Bandwidth Plot on Channel 20850



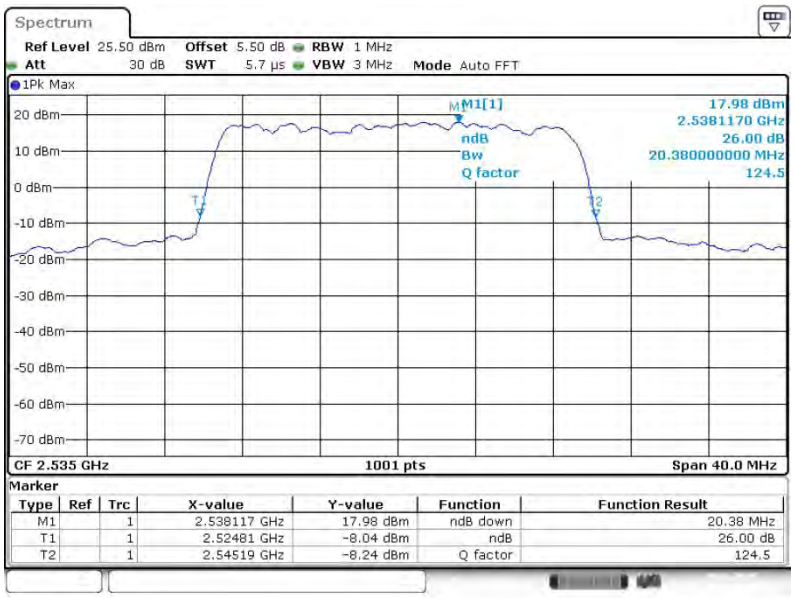
Date: 18.MAR.2015 22:12:00

99% Occupied Bandwidth Plot on Channel 21100



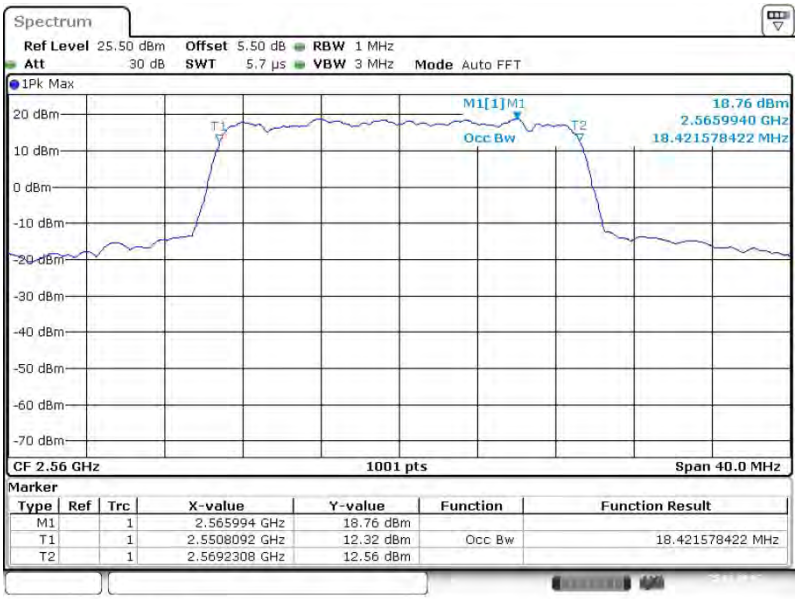
Date: 18.MAR.2015 22:15:01

26dB Bandwidth Plot on Channel 21100



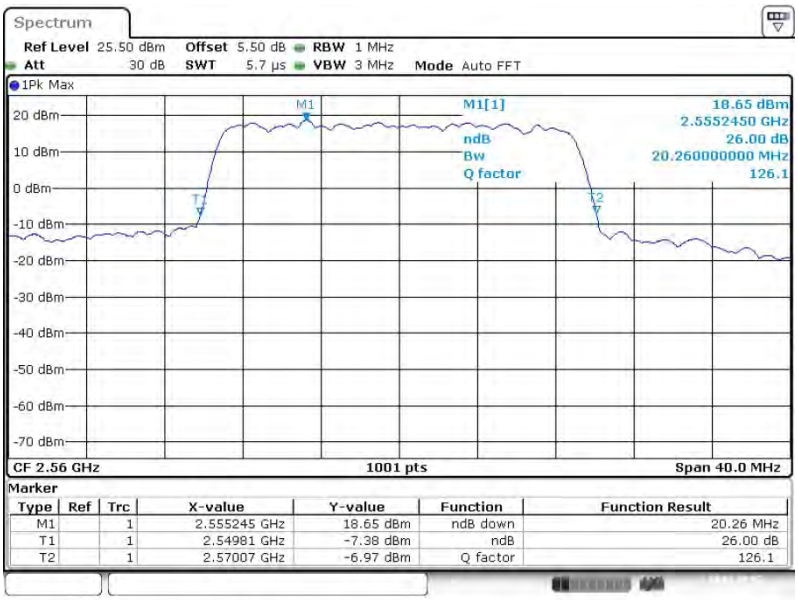
Date: 18.MAR.2015 22:15:25

99% Occupied Bandwidth Plot on Channel 21350



Date: 25.MAR.2015 22:39:29

26dB Bandwidth Plot on Channel 21350



Date: 18.MAR.2015 22:18:50

3.5 Conducted Band Edge Measurement

3.5.1 Description of Conducted Band Edge Measurement

27.53 (m)(4)

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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 system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW >= 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.
5. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

   = -13dBm.

   <For Band 7>

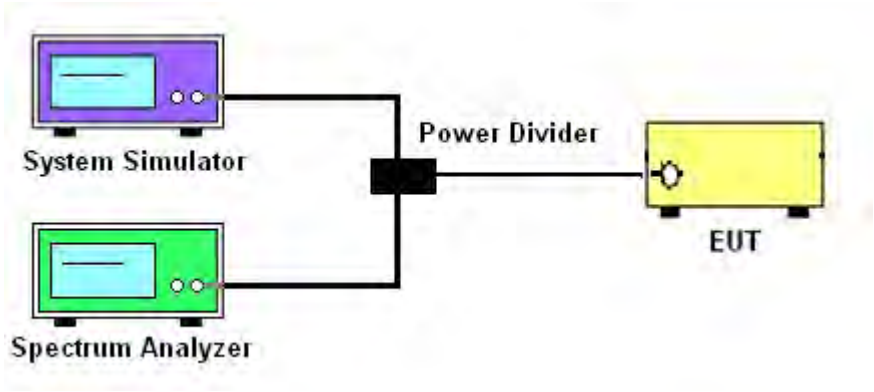
   The limit line is derived from 55+ 10log(P)dB below the transmitter power P(Watts)

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

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

   = -25dBm.

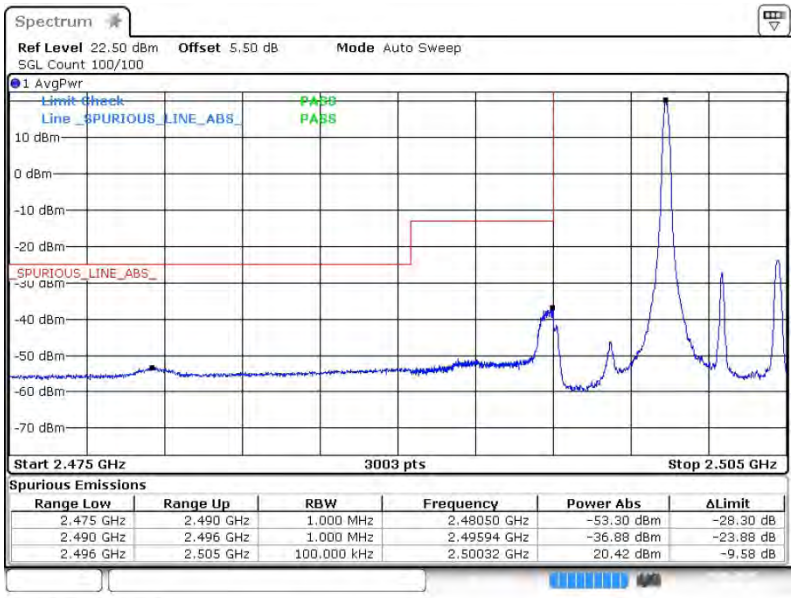
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	LTE Band 7	Band Width :	5MHz / QPSK

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

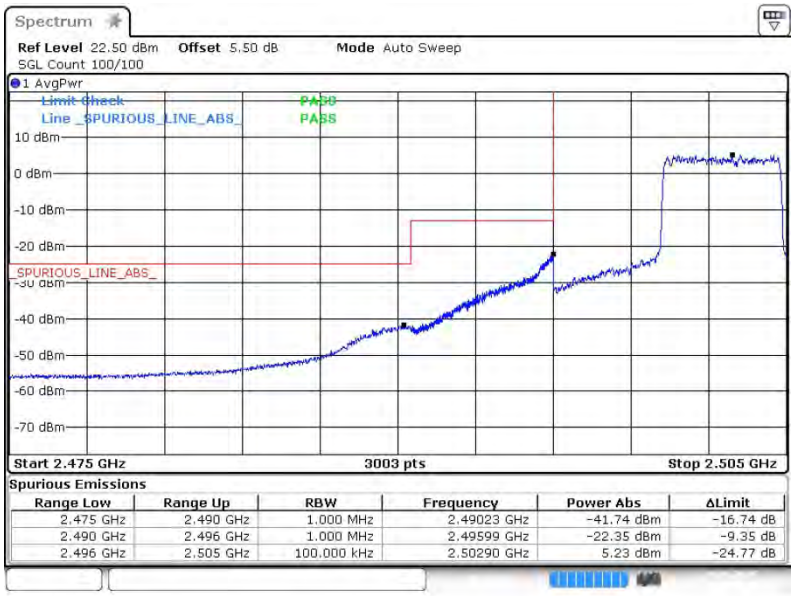


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48050 GHz	-53.30 dBm	-28.30 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49594 GHz	-36.88 dBm	-23.88 dB
2.496 GHz	2.505 GHz	100.000 kHz	2.50032 GHz	20.42 dBm	-9.58 dB

Date: 18.MAR.2015 23:49:37

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

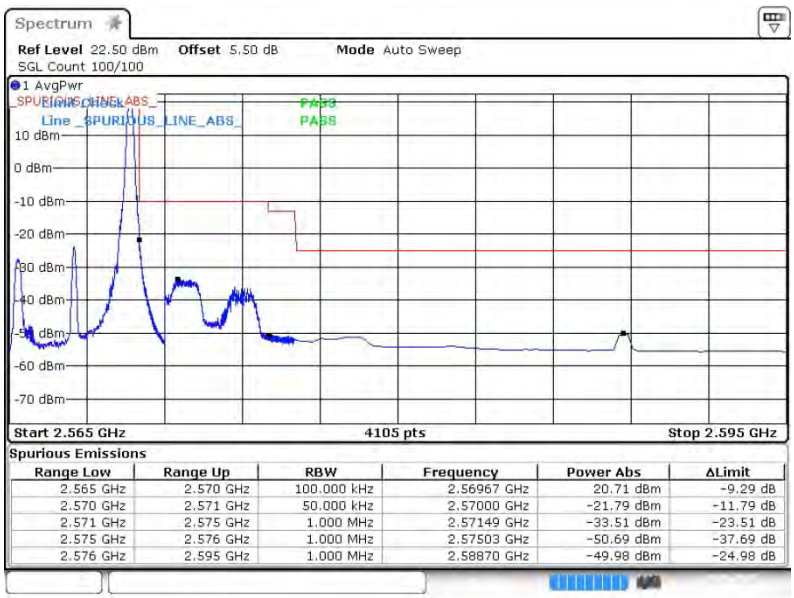


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49023 GHz	-41.74 dBm	-16.74 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49599 GHz	-22.35 dBm	-9.35 dB
2.496 GHz	2.505 GHz	100.000 kHz	2.50290 GHz	5.23 dBm	-24.77 dB

Date: 18.MAR.2015 23:50:10

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



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56967 GHz	20.71 dBm	-9.29 dB
2.570 GHz	2.571 GHz	50.000 kHz	2.57000 GHz	-21.79 dBm	-11.79 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57149 GHz	-33.51 dBm	-23.51 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57503 GHz	-50.69 dBm	-37.69 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.58870 GHz	-49.98 dBm	-24.98 dB

Date: 18.MAR.2015 23:52:18

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

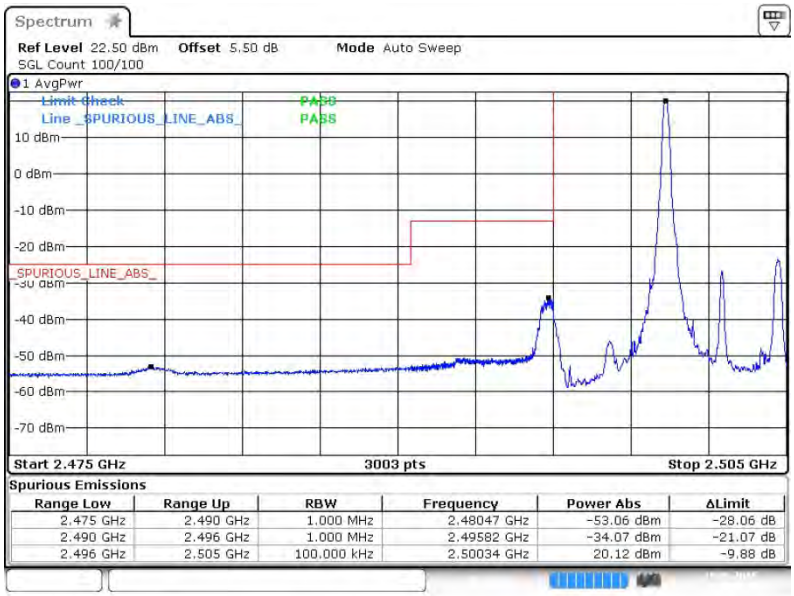
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56586 GHz	6.74 dBm	-23.26 dB
2.570 GHz	2.571 GHz	50.000 kHz	2.57000 GHz	-25.99 dBm	-15.99 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57101 GHz	-16.64 dBm	-6.64 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57505 GHz	-28.61 dBm	-15.61 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57609 GHz	-32.48 dBm	-7.48 dB

Date: 18.MAR.2015 23:51:45

Band :	LTE Band 7	Band Width :	5MHz / 16QAM

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0

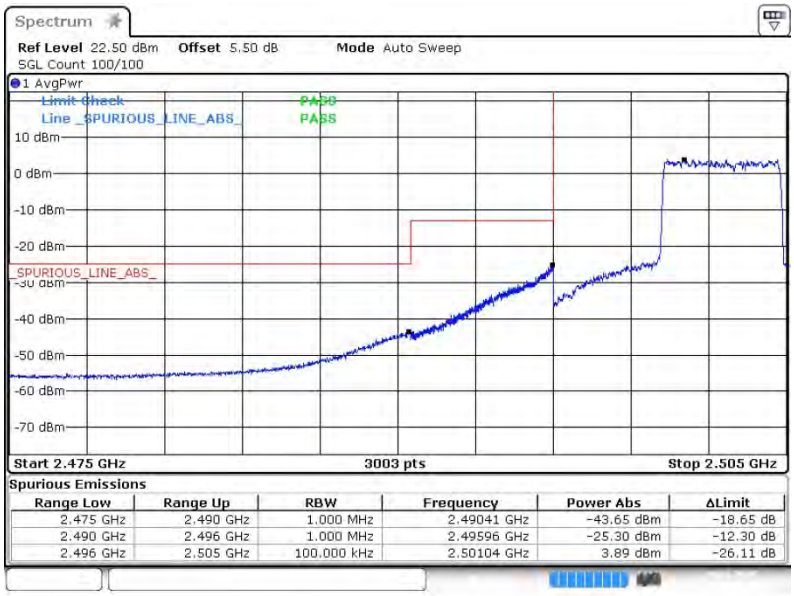


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48047 GHz	-53.06 dBm	-28.06 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49582 GHz	-34.07 dBm	-21.07 dB
2.496 GHz	2.505 GHz	100.000 kHz	2.50034 GHz	20.12 dBm	-9.88 dB

Date: 18.MAR.2015 23:49:15

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

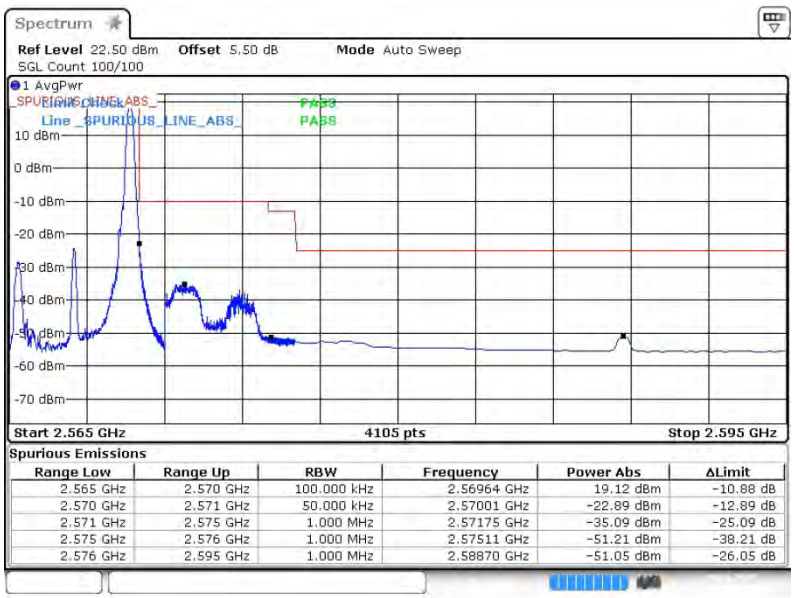


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49041 GHz	-43.65 dBm	-18.65 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49596 GHz	-25.30 dBm	-12.30 dB
2.496 GHz	2.505 GHz	100.000 kHz	2.50104 GHz	3.89 dBm	-26.11 dB

Date: 18.MAR.2015 23:50:30

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

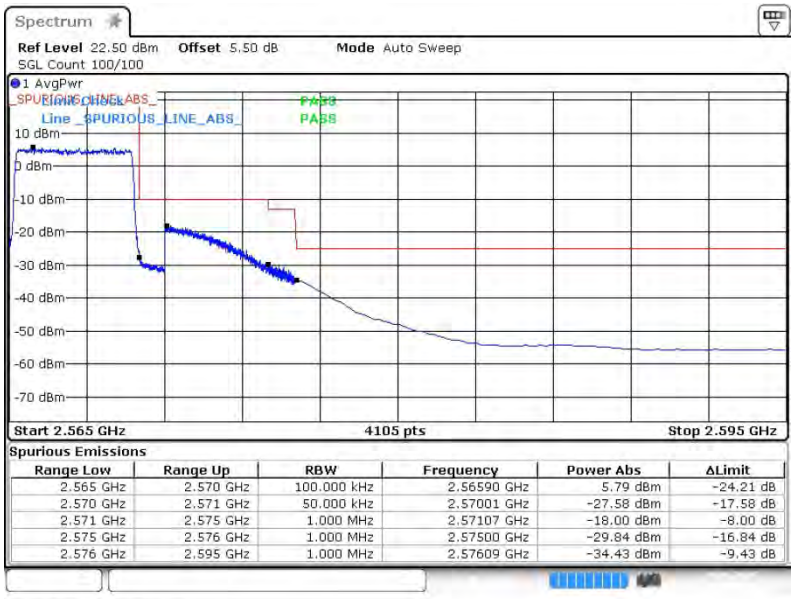


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56964 GHz	19.12 dBm	-10.88 dB
2.570 GHz	2.571 GHz	50.000 kHz	2.57001 GHz	-22.89 dBm	-12.89 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57175 GHz	-35.09 dBm	-25.09 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57511 GHz	-51.21 dBm	-38.21 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.58870 GHz	-51.05 dBm	-26.05 dB

Date: 18.MAR.2015 23:52:44

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



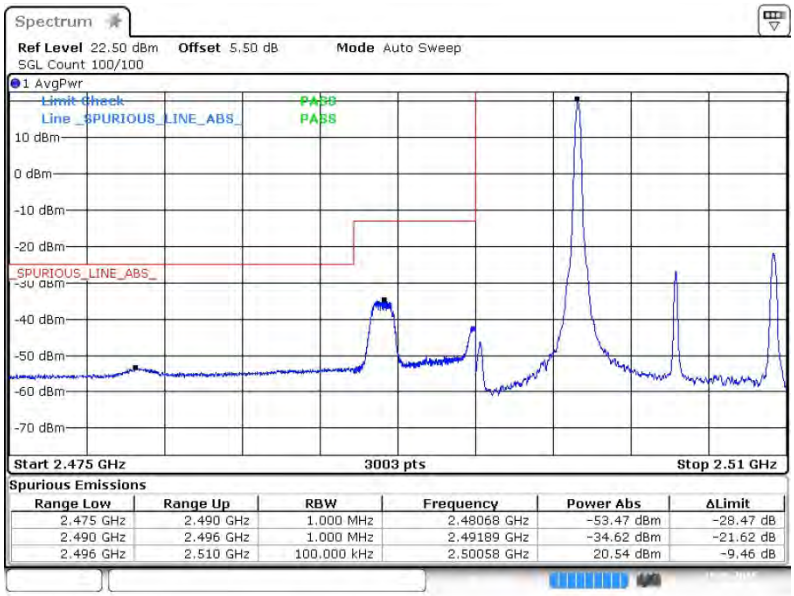
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56590 GHz	5.79 dBm	-24.21 dB
2.570 GHz	2.571 GHz	50.000 kHz	2.57001 GHz	-27.58 dBm	-17.58 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57107 GHz	-18.00 dBm	-8.00 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57500 GHz	-29.84 dBm	-16.84 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57609 GHz	-34.43 dBm	-9.43 dB

Date: 18.MAR.2015 23:51:12

Band :	LTE Band 7	Band Width :	10MHz / QPSK

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



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48068 GHz	-53.47 dBm	-28.47 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49189 GHz	-34.62 dBm	-21.62 dB
2.496 GHz	2.510 GHz	100.000 kHz	2.50058 GHz	20.54 dBm	-9.46 dB

Date: 18.MAR.2015 23:53:43

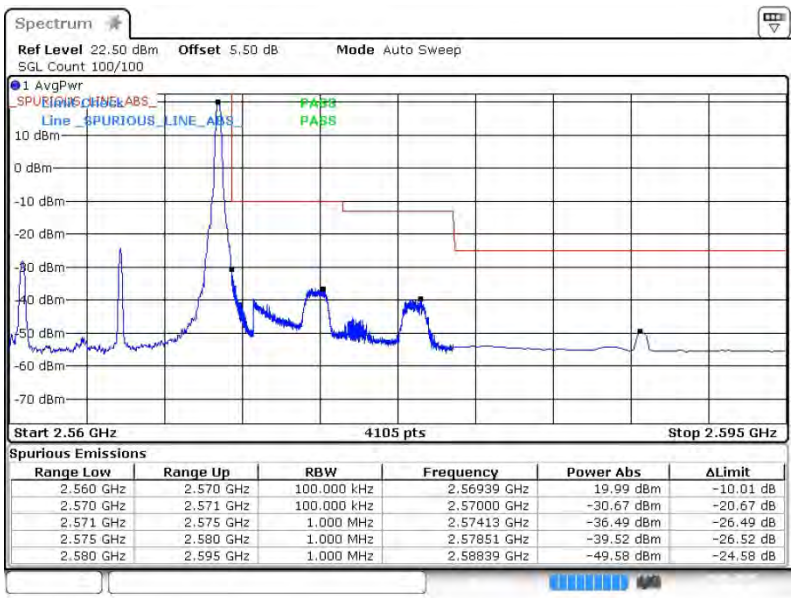
Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0

Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49020 GHz	-31.80 dBm	-6.80 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49588 GHz	-18.26 dBm	-5.26 dB
2.496 GHz	2.510 GHz	100.000 kHz	2.50300 GHz	2.29 dBm	-27.71 dB

Date: 18.MAR.2015 23:54:04

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



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56939 GHz	19.99 dBm	-10.01 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57000 GHz	-30.67 dBm	-20.67 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57413 GHz	-36.49 dBm	-26.49 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57851 GHz	-39.52 dBm	-26.52 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58839 GHz	-49.58 dBm	-24.58 dB

Date: 18.MAR.2015 23:55:33

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

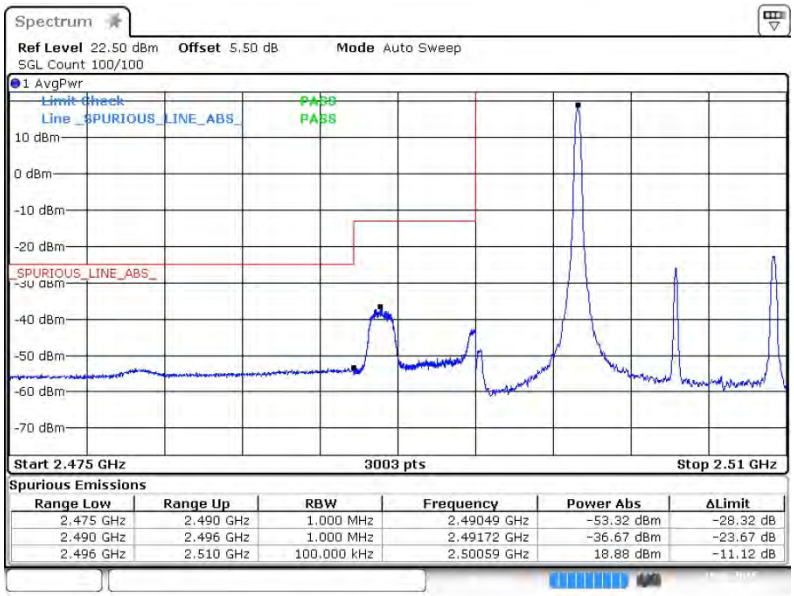
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56073 GHz	3.44 dBm	-26.56 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57000 GHz	-27.18 dBm	-17.18 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57103 GHz	-19.55 dBm	-9.55 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57509 GHz	-23.34 dBm	-10.34 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58007 GHz	-33.86 dBm	-8.86 dB

Date: 18.MAR.2015 23:55:11

Band :	LTE Band 7	Band Width :	10MHz / 16QAM

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49049 GHz	-53.32 dBm	-28.32 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49172 GHz	-36.67 dBm	-23.67 dB
2.496 GHz	2.510 GHz	100.000 kHz	2.50059 GHz	18.88 dBm	-11.12 dB

Date: 18.MAR.2015 23:53:21

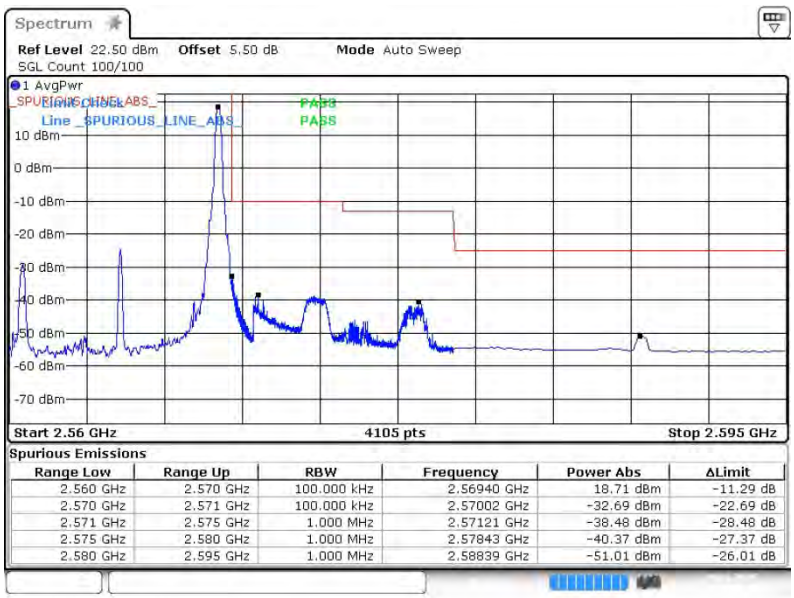
Lower Band Edge Plot for 16QAM-RB Size 50, RB Offset 0

Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49045 GHz	-32.84 dBm	-7.84 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49556 GHz	-19.60 dBm	-6.60 dB
2.496 GHz	2.510 GHz	100.000 kHz	2.50308 GHz	1.33 dBm	-28.67 dB

Date: 18.MAR.2015 23:54:26

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

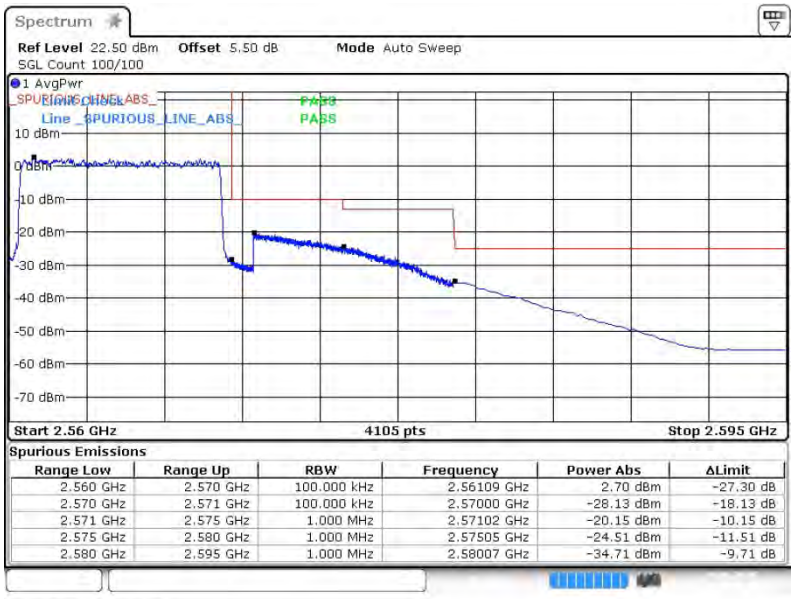


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56940 GHz	18.71 dBm	-11.29 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57002 GHz	-32.69 dBm	-22.69 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57121 GHz	-38.48 dBm	-28.48 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57843 GHz	-40.37 dBm	-27.37 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58839 GHz	-51.01 dBm	-26.01 dB

Date: 18.MAR.2015 23:55:53

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



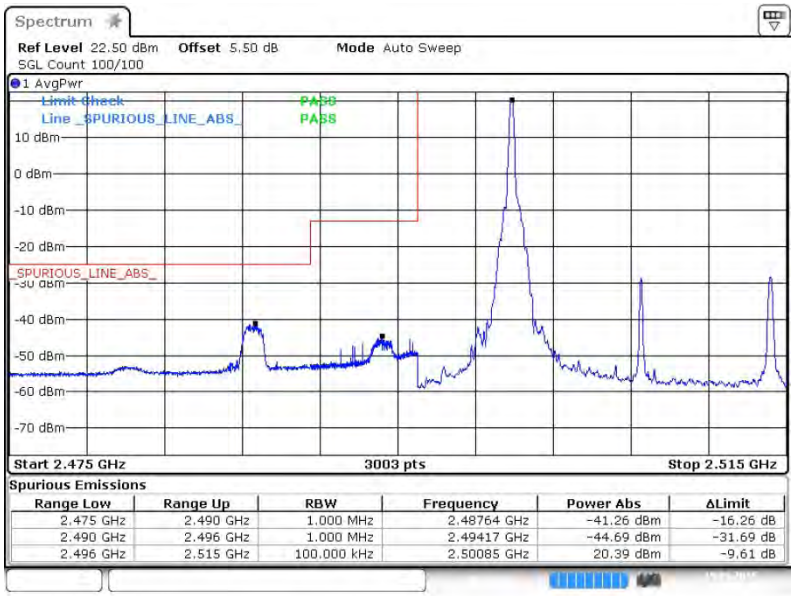
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56109 GHz	2.70 dBm	-27.30 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57000 GHz	-28.13 dBm	-18.13 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57102 GHz	-20.15 dBm	-10.15 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57505 GHz	-24.51 dBm	-11.51 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58007 GHz	-34.71 dBm	-9.71 dB

Date: 18.MAR.2015 23:54:47

Band :	LTE Band 7	Band Width :	15MHz / QPSK

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

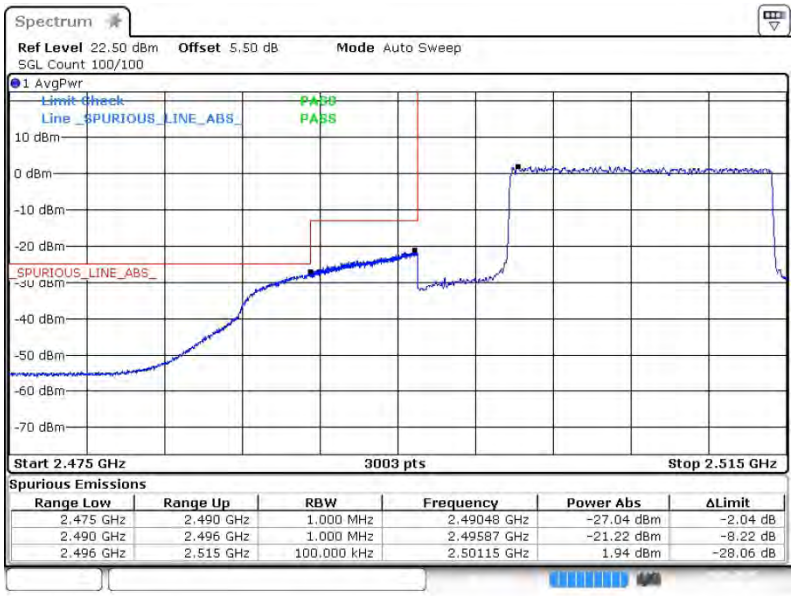


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48764 GHz	-41.26 dBm	-16.26 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49417 GHz	-44.69 dBm	-31.69 dB
2.496 GHz	2.515 GHz	100.000 kHz	2.50085 GHz	20.39 dBm	-9.61 dB

Date: 19.MAR.2015 10:09:50

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

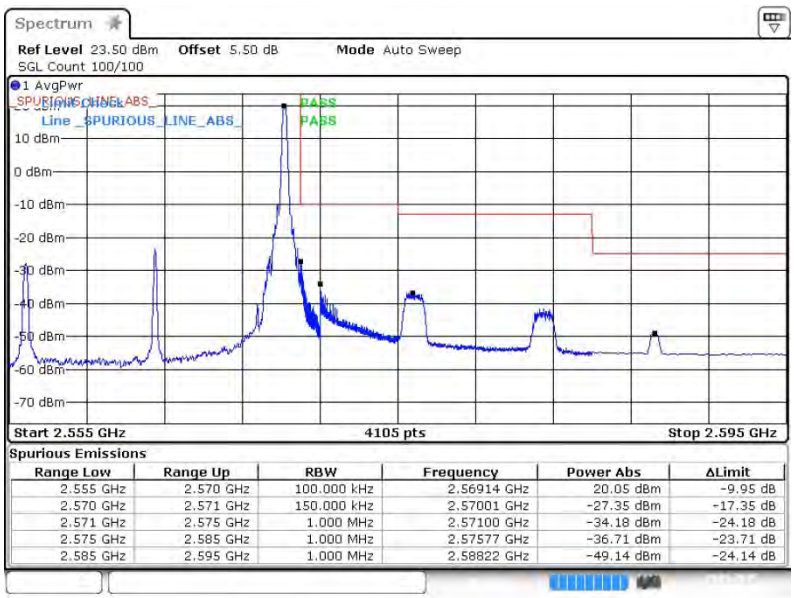


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49048 GHz	-27.04 dBm	-2.04 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49587 GHz	-21.22 dBm	-8.22 dB
2.496 GHz	2.515 GHz	100.000 kHz	2.50115 GHz	1.94 dBm	-28.06 dB

Date: 19.MAR.2015 10:07:44

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



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.555 GHz	2.570 GHz	100.000 kHz	2.56914 GHz	20.05 dBm	-9.95 dB
2.570 GHz	2.571 GHz	150.000 kHz	2.57001 GHz	-27.35 dBm	-17.35 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57100 GHz	-34.18 dBm	-24.18 dB
2.575 GHz	2.585 GHz	1.000 MHz	2.57577 GHz	-36.71 dBm	-23.71 dB
2.585 GHz	2.595 GHz	1.000 MHz	2.58822 GHz	-49.14 dBm	-24.14 dB

Date: 19.MAR.2015 00:04:34

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

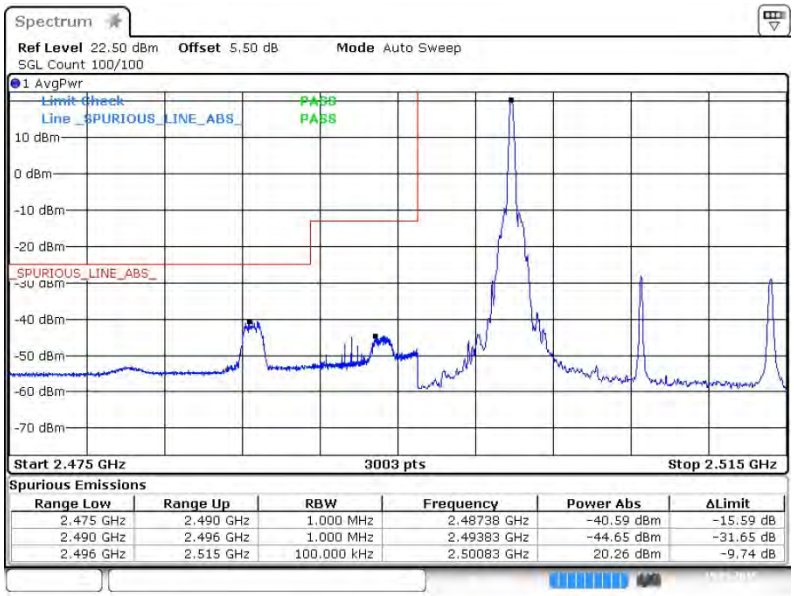
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.555 GHz	2.570 GHz	100.000 kHz	2.55613 GHz	1.84 dBm	-28.16 dB
2.570 GHz	2.571 GHz	150.000 kHz	2.57004 GHz	-27.06 dBm	-17.06 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57146 GHz	-21.48 dBm	-11.48 dB
2.575 GHz	2.585 GHz	1.000 MHz	2.57502 GHz	-24.51 dBm	-11.51 dB
2.585 GHz	2.595 GHz	1.000 MHz	2.58505 GHz	-36.85 dBm	-11.85 dB

Date: 19.MAR.2015 00:04:16

Band :	LTE Band 7	Band Width :	15MHz / 16QAM

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0

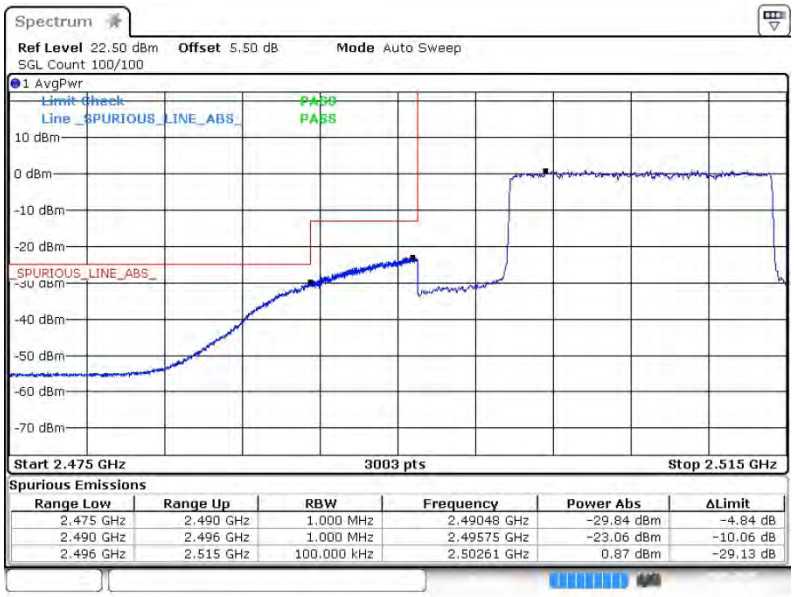


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48738 GHz	-40.59 dBm	-15.59 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49383 GHz	-44.65 dBm	-31.65 dB
2.496 GHz	2.515 GHz	100.000 kHz	2.50083 GHz	20.26 dBm	-9.74 dB

Date: 19.MAR.2015 10:09:19

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

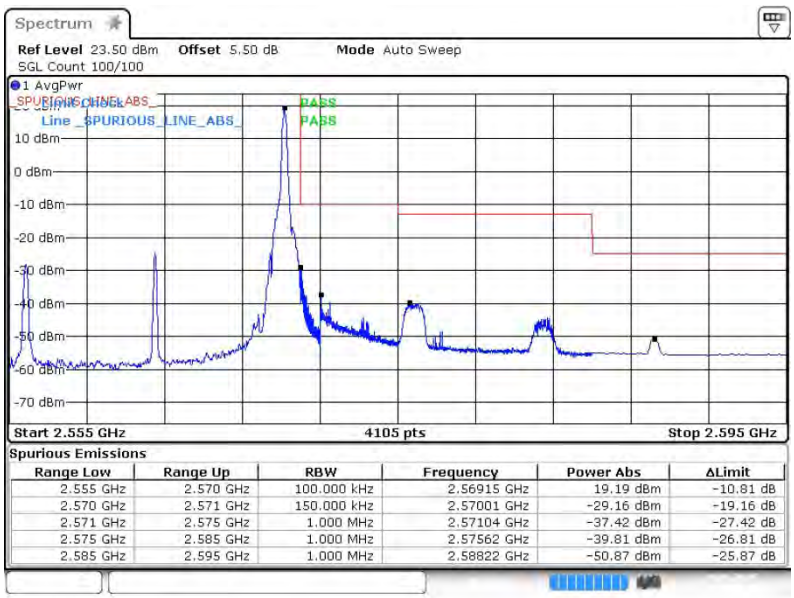


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49048 GHz	-29.84 dBm	-4.84 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49575 GHz	-23.06 dBm	-10.06 dB
2.496 GHz	2.515 GHz	100.000 kHz	2.50261 GHz	0.87 dBm	-29.13 dB

Date: 19.MAR.2015 10:08:46

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

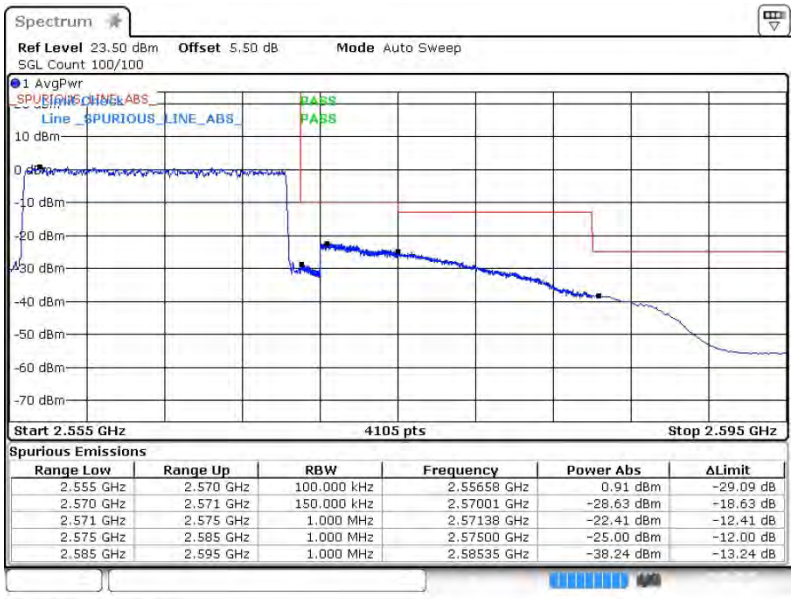


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.555 GHz	2.570 GHz	100.000 kHz	2.56915 GHz	19.19 dBm	-10.81 dB
2.570 GHz	2.571 GHz	150.000 kHz	2.57001 GHz	-29.16 dBm	-19.16 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57104 GHz	-37.42 dBm	-27.42 dB
2.575 GHz	2.585 GHz	1.000 MHz	2.57562 GHz	-39.81 dBm	-26.81 dB
2.585 GHz	2.595 GHz	1.000 MHz	2.58822 GHz	-50.87 dBm	-25.87 dB

Date: 19.MAR.2015 00:04:55

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



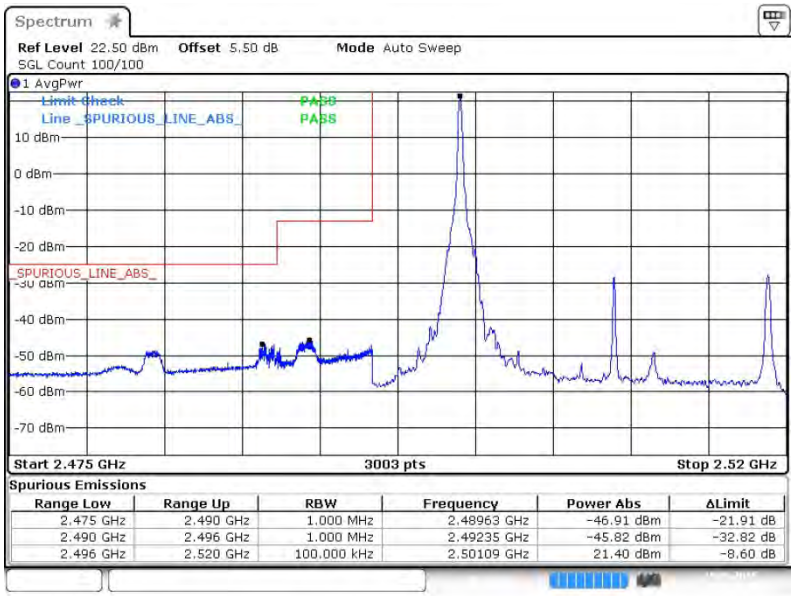
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.555 GHz	2.570 GHz	100.000 kHz	2.55658 GHz	0.91 dBm	-29.09 dB
2.570 GHz	2.571 GHz	150.000 kHz	2.57001 GHz	-28.63 dBm	-18.63 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57138 GHz	-22.41 dBm	-12.41 dB
2.575 GHz	2.585 GHz	1.000 MHz	2.57500 GHz	-25.00 dBm	-12.00 dB
2.585 GHz	2.595 GHz	1.000 MHz	2.58535 GHz	-38.24 dBm	-13.24 dB

Date: 19.MAR.2015 00:03:58

Band :	LTE Band 7	Band Width :	20MHz / QPSK

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

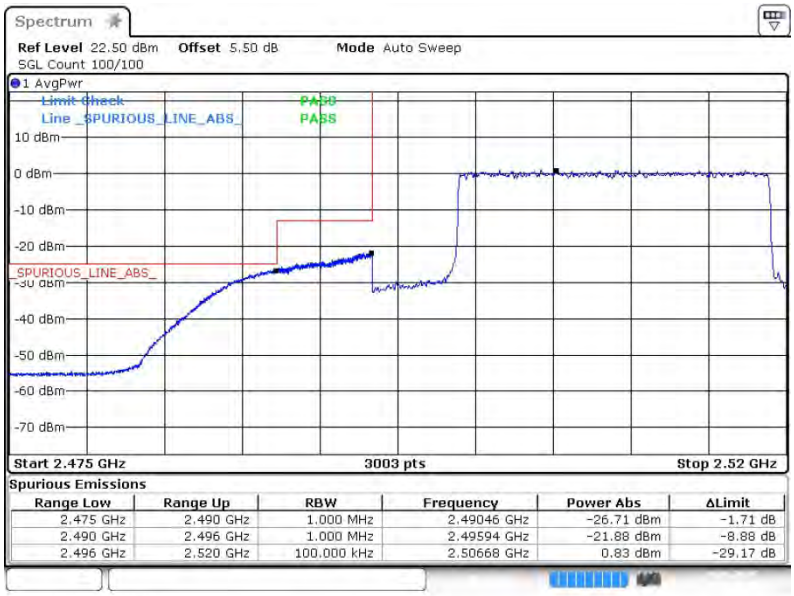


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48963 GHz	-46.91 dBm	-21.91 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49235 GHz	-45.82 dBm	-32.82 dB
2.496 GHz	2.520 GHz	100.000 kHz	2.50109 GHz	21.40 dBm	-8.60 dB

Date: 19.MAR.2015 10:11:47

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

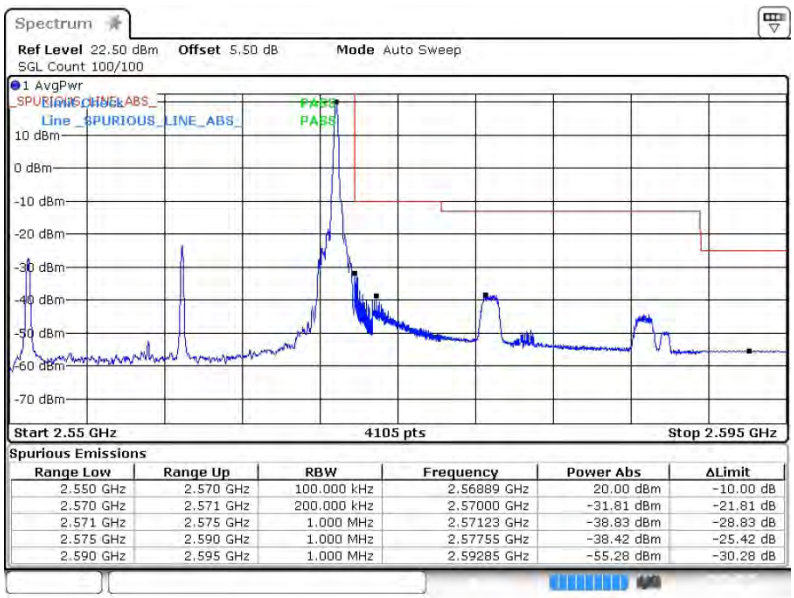


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49046 GHz	-26.71 dBm	-1.71 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49594 GHz	-21.88 dBm	-8.88 dB
2.496 GHz	2.520 GHz	100.000 kHz	2.50668 GHz	0.83 dBm	-29.17 dB

Date: 19.MAR.2015 10:13:17

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

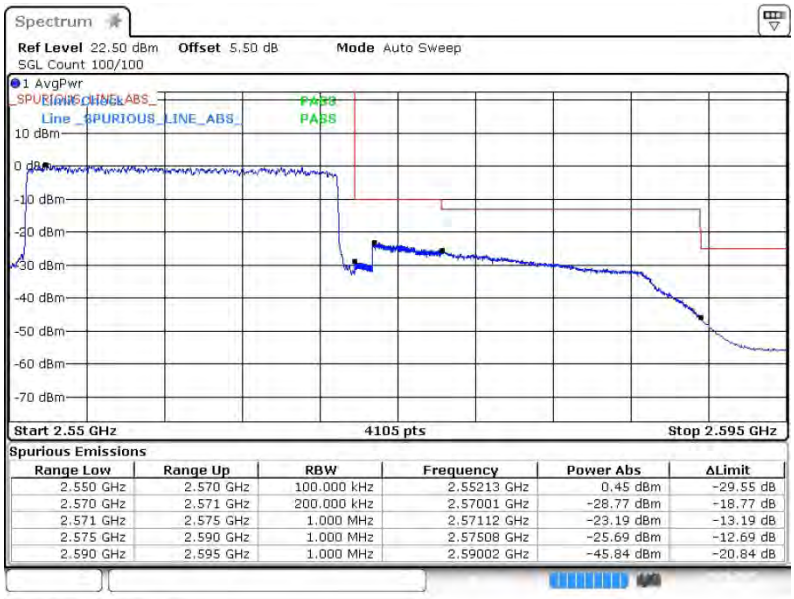


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.56889 GHz	20.00 dBm	-10.00 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57000 GHz	-31.81 dBm	-21.81 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57123 GHz	-38.83 dBm	-28.83 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57755 GHz	-38.42 dBm	-25.42 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59285 GHz	-55.28 dBm	-30.28 dB

Date: 19.MAR.2015 00:08:48

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



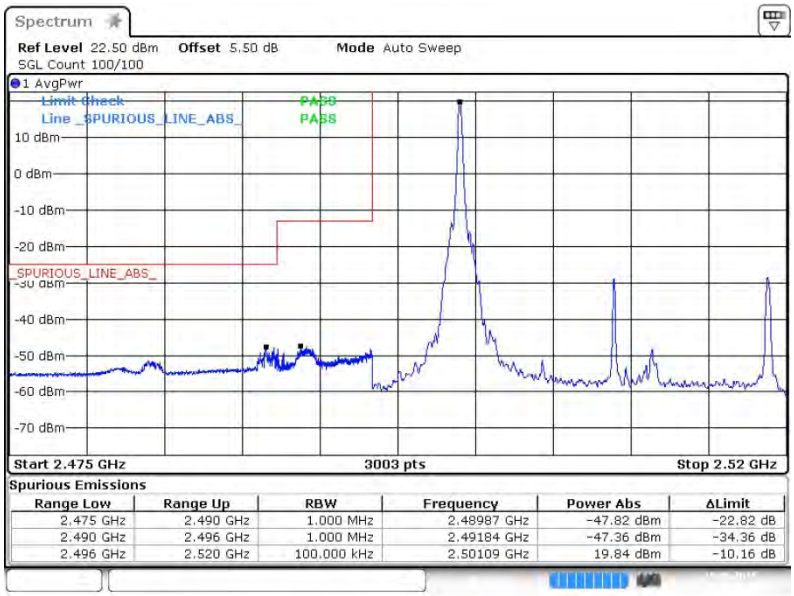
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.55213 GHz	0.45 dBm	-29.55 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57001 GHz	-28.77 dBm	-18.77 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57112 GHz	-23.19 dBm	-13.19 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57508 GHz	-25.69 dBm	-12.69 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59002 GHz	-45.84 dBm	-20.84 dB

Date: 19.MAR.2015 00:07:40

Band :	LTE Band 7	Band Width :	20MHz / 16QAM

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0

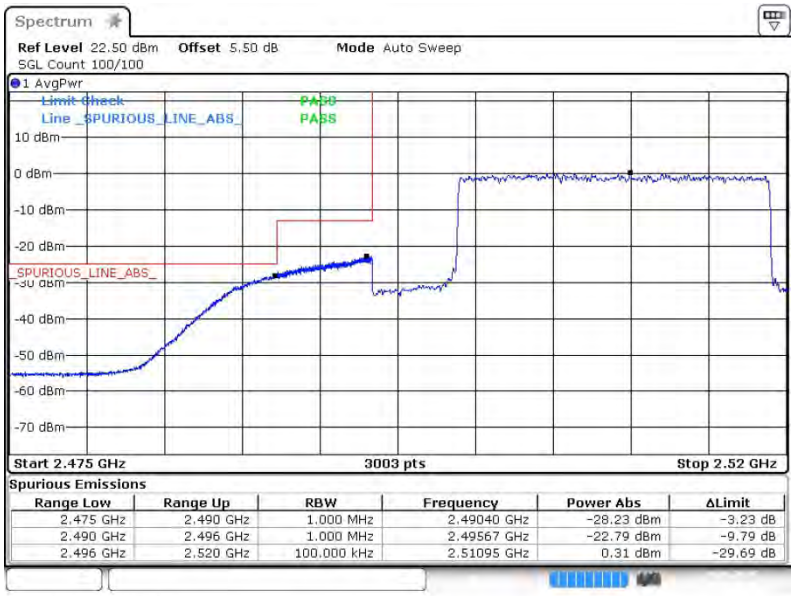


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48987 GHz	-47.82 dBm	-22.82 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49184 GHz	-47.36 dBm	-34.36 dB
2.496 GHz	2.520 GHz	100.000 kHz	2.50109 GHz	19.84 dBm	-10.16 dB

Date: 19.MAR.2015 10:12:13

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

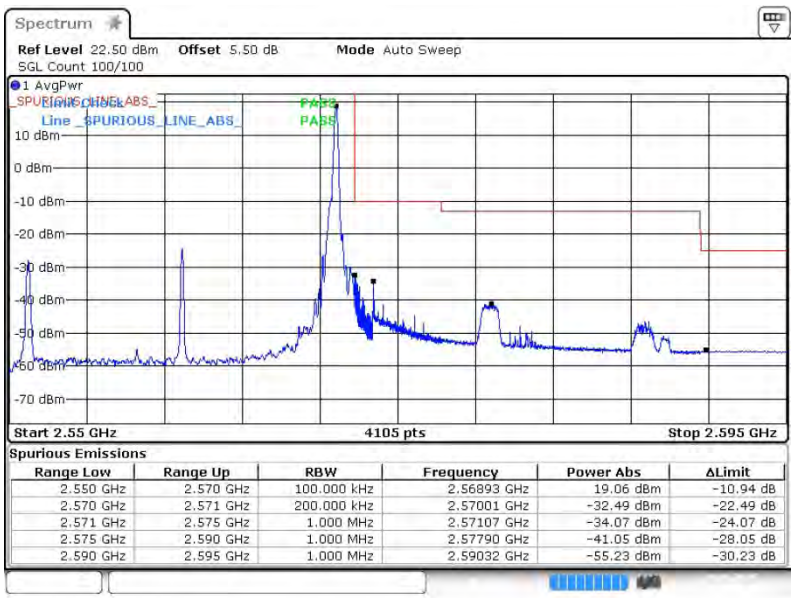


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49040 GHz	-28.23 dBm	-3.23 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49567 GHz	-22.79 dBm	-9.79 dB
2.496 GHz	2.520 GHz	100.000 kHz	2.51095 GHz	0.31 dBm	-29.69 dB

Date: 19.MAR.2015 10:12:52

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

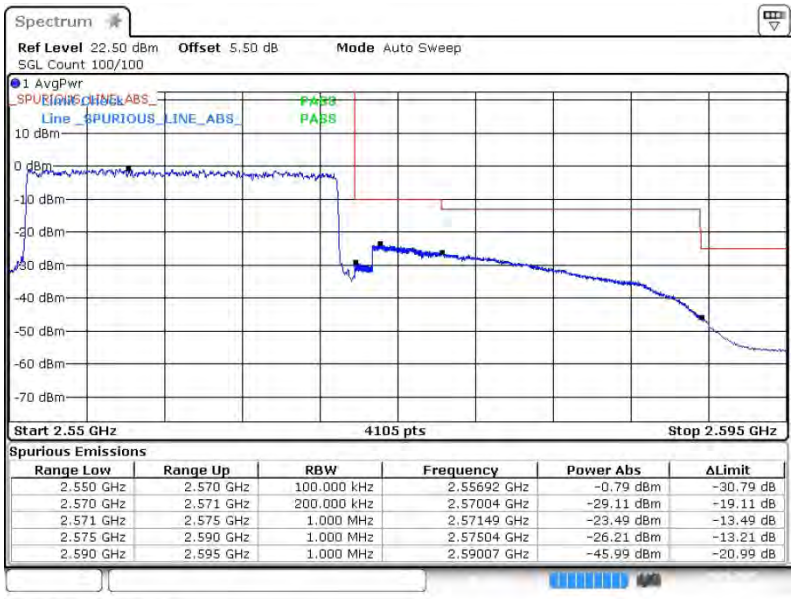


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.56893 GHz	19.06 dBm	-10.94 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57001 GHz	-32.49 dBm	-22.49 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57107 GHz	-34.07 dBm	-24.07 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57790 GHz	-41.05 dBm	-28.05 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59032 GHz	-55.23 dBm	-30.23 dB

Date: 19.MAR.2015 00:09:19

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



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.55692 GHz	-0.79 dBm	-30.79 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57004 GHz	-29.11 dBm	-19.11 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57149 GHz	-23.49 dBm	-13.49 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57504 GHz	-26.21 dBm	-13.21 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59007 GHz	-45.99 dBm	-20.99 dB

Date: 19.MAR.2015 00:07:18

3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious 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.

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 30MHz up to a frequency including its 10th harmonic.

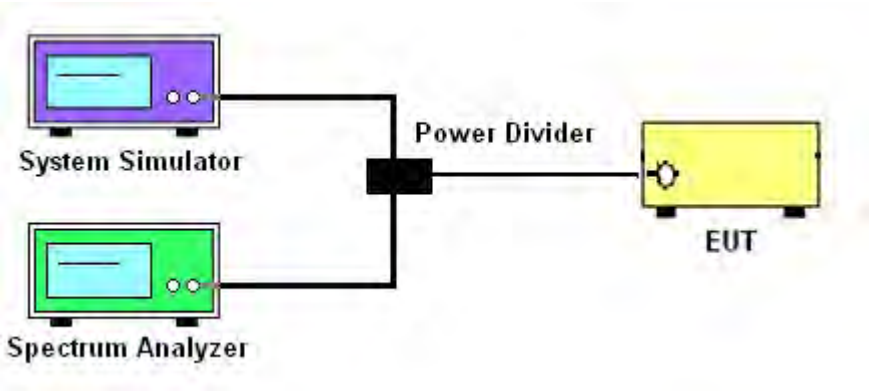
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator 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. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.
8. For Band 7
   The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)
   = P(W) - [55 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [55 + 10log(P)] (dB)
   = -25dBm.

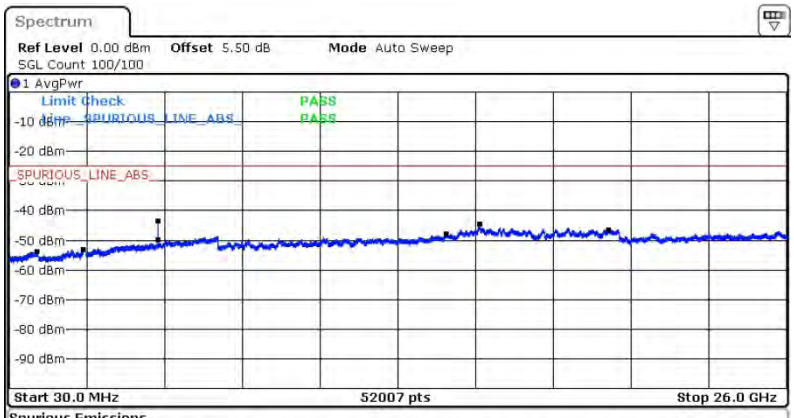
3.6.4 Test Setup



3.6.5 Test Result (Plots) of Conducted Spurious Emission

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

QPSK (RB Size 1, RB Offset 0)

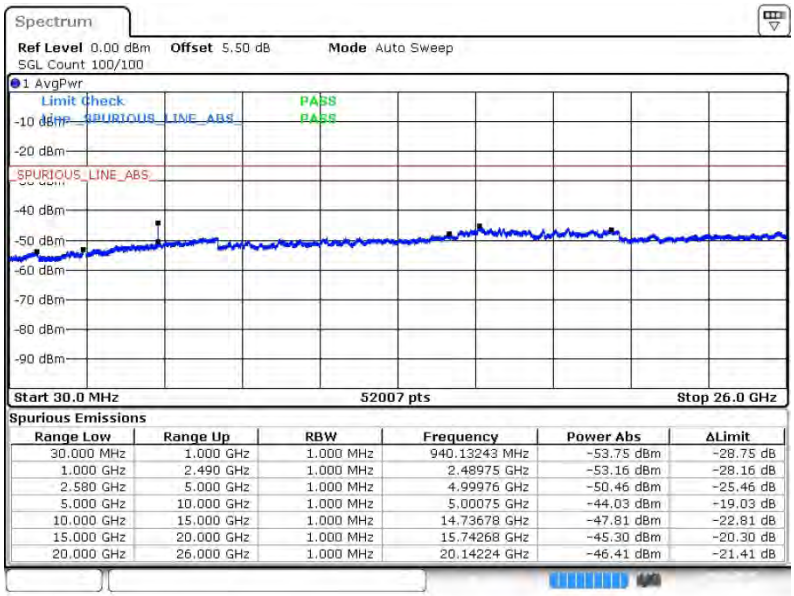


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	937.70865 MHz	-53.73 dBm	-28.73 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48975 GHz	-53.10 dBm	-28.10 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99976 GHz	-49.76 dBm	-24.76 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00075 GHz	-43.42 dBm	-18.42 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.63479 GHz	-47.96 dBm	-22.96 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.72768 GHz	-44.61 dBm	-19.61 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.05575 GHz	-46.35 dBm	-21.35 dB

Date: 18.MAR.2015 21:42:12

16QAM (RB Size 1, RB Offset 0)



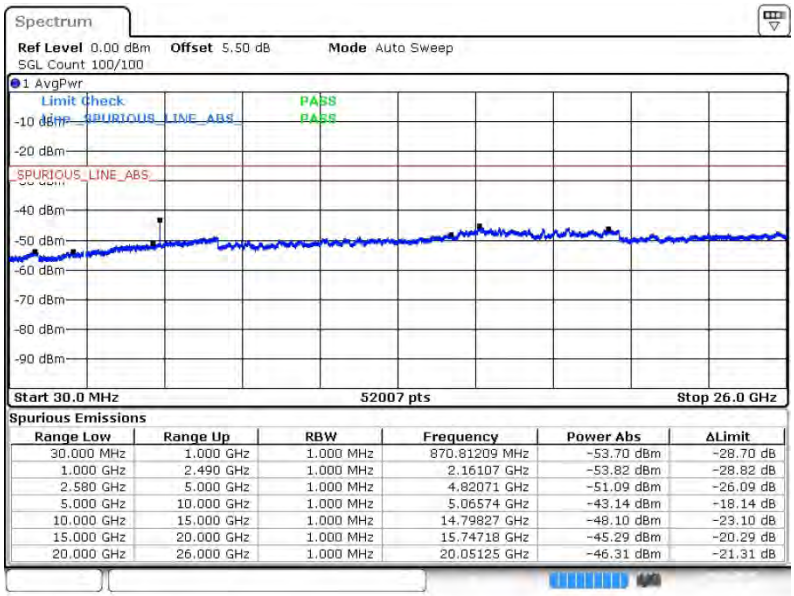
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.13243 MHz	-53.75 dBm	-28.75 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48975 GHz	-53.16 dBm	-28.16 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99976 GHz	-50.46 dBm	-25.46 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00075 GHz	-44.03 dBm	-19.03 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.73678 GHz	-47.81 dBm	-22.81 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.74268 GHz	-45.30 dBm	-20.30 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.14224 GHz	-46.41 dBm	-21.41 dB

Date: 18.MAR.2015 21:43:34

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

QPSK (RB Size 1, RB Offset 0)

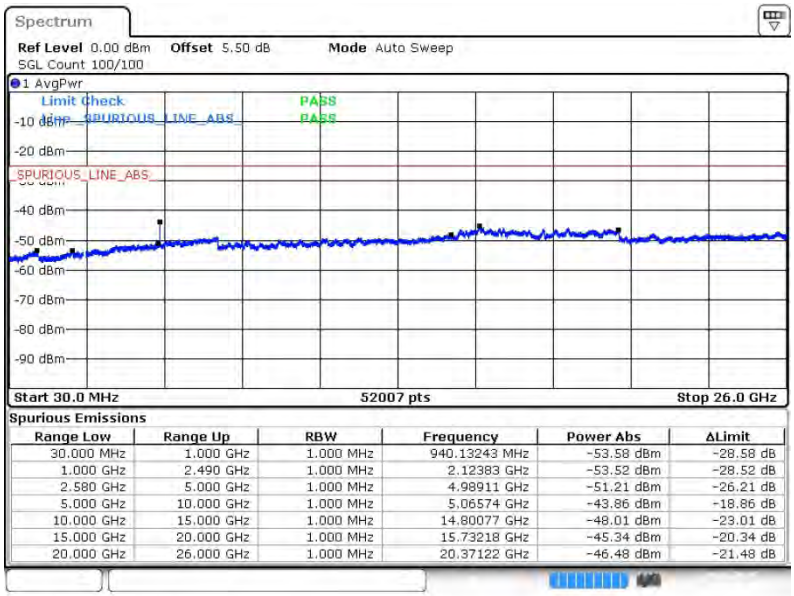


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	870.81209 MHz	-53.70 dBm	-28.70 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.16107 GHz	-53.82 dBm	-28.82 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.82071 GHz	-51.09 dBm	-26.09 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.06574 GHz	-43.14 dBm	-18.14 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.79827 GHz	-48.10 dBm	-23.10 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.74718 GHz	-45.29 dBm	-20.29 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.05125 GHz	-46.31 dBm	-21.31 dB

Date: 18.MAR.2015 21:45:39

16QAM (RB Size 1, RB Offset 0)



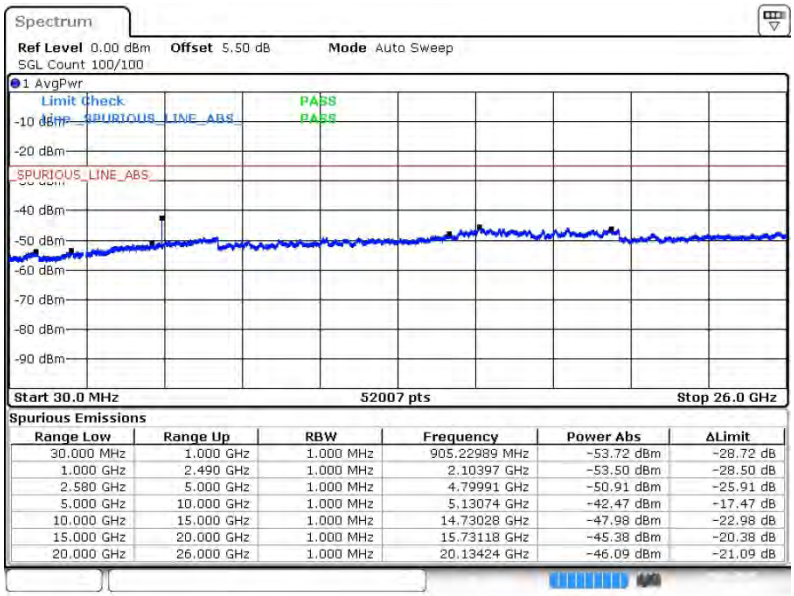
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.13243 MHz	-53.58 dBm	-28.58 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.12383 GHz	-53.52 dBm	-28.52 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.98911 GHz	-51.21 dBm	-26.21 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.06574 GHz	-43.86 dBm	-18.86 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.80077 GHz	-48.01 dBm	-23.01 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73218 GHz	-45.34 dBm	-20.34 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.37122 GHz	-46.48 dBm	-21.48 dB

Date: 18.MAR.2015 21:47:00

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

QPSK (RB Size 1, RB Offset 0)

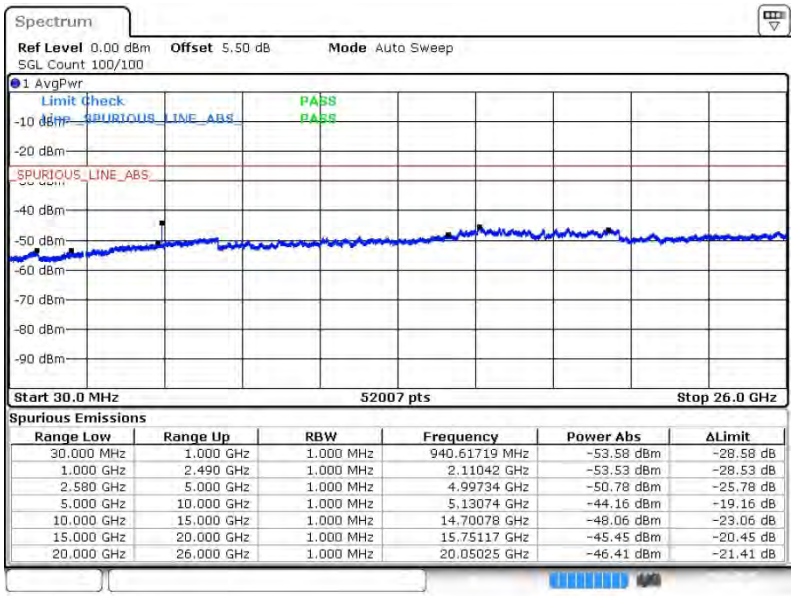


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	905.22989 MHz	-53.72 dBm	-28.72 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.10397 GHz	-53.50 dBm	-28.50 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.79991 GHz	-50.91 dBm	-25.91 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.13074 GHz	-42.47 dBm	-17.47 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.73028 GHz	-47.98 dBm	-22.98 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73118 GHz	-45.38 dBm	-20.38 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.13424 GHz	-46.09 dBm	-21.09 dB

Date: 18.MAR.2015 21:49:06

16QAM (RB Size 1, RB Offset 0)



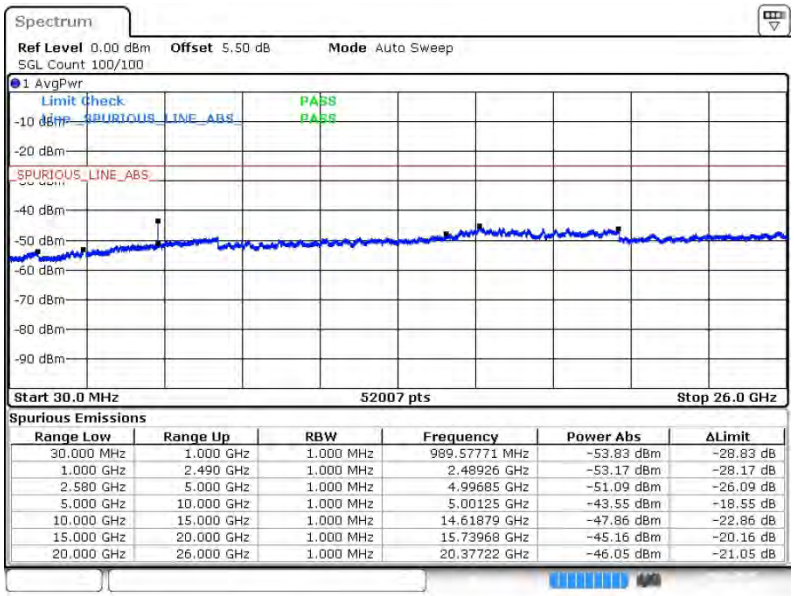
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.61719 MHz	-53.58 dBm	-28.58 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.11042 GHz	-53.53 dBm	-28.53 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99734 GHz	-50.78 dBm	-25.78 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.13074 GHz	-44.16 dBm	-19.16 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.70078 GHz	-48.06 dBm	-23.06 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.75117 GHz	-45.45 dBm	-20.45 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.05025 GHz	-46.41 dBm	-21.41 dB

Date: 18.MAR.2015 21:50:27

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

QPSK (RB Size 1, RB Offset 0)

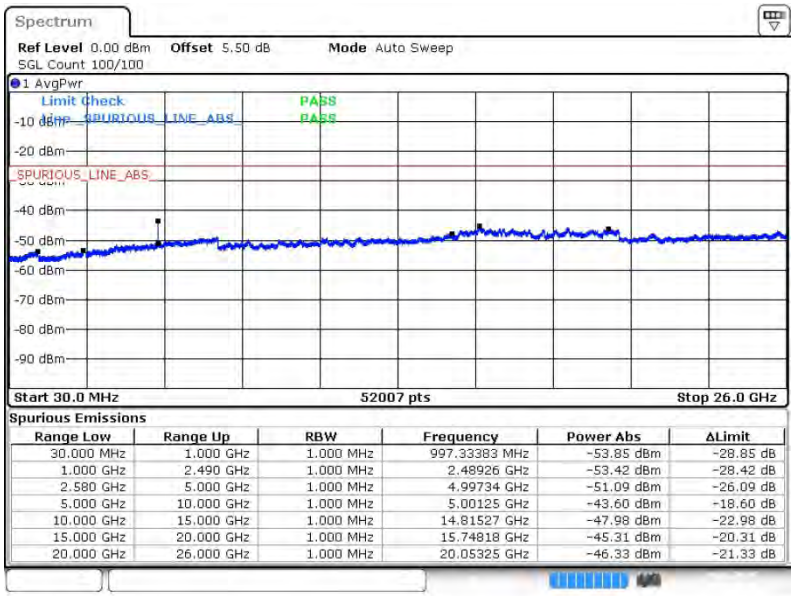


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	989.57771 MHz	-53.83 dBm	-28.83 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48926 GHz	-53.17 dBm	-28.17 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99685 GHz	-51.09 dBm	-26.09 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00125 GHz	-43.55 dBm	-18.55 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.61879 GHz	-47.86 dBm	-22.86 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73968 GHz	-45.16 dBm	-20.16 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.37722 GHz	-46.05 dBm	-21.05 dB

Date: 18.MAR.2015 21:52:31

16QAM (RB Size 1, RB Offset 0)



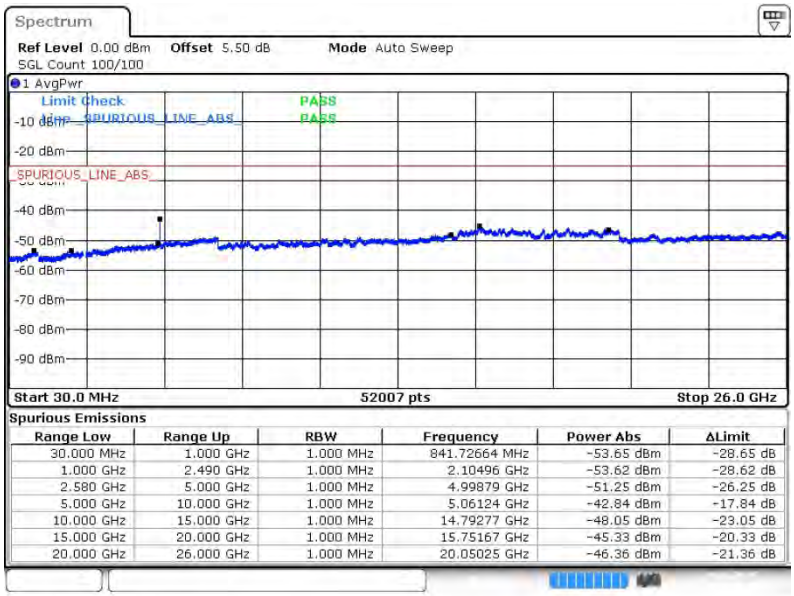
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	997.33383 MHz	-53.85 dBm	-28.85 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48926 GHz	-53.42 dBm	-28.42 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99734 GHz	-51.09 dBm	-26.09 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00125 GHz	-43.60 dBm	-18.60 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.81527 GHz	-47.98 dBm	-22.98 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.74818 GHz	-45.31 dBm	-20.31 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.05325 GHz	-46.33 dBm	-21.33 dB

Date: 18.MAR.2015 21:53:52

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

QPSK (RB Size 1, RB Offset 0)

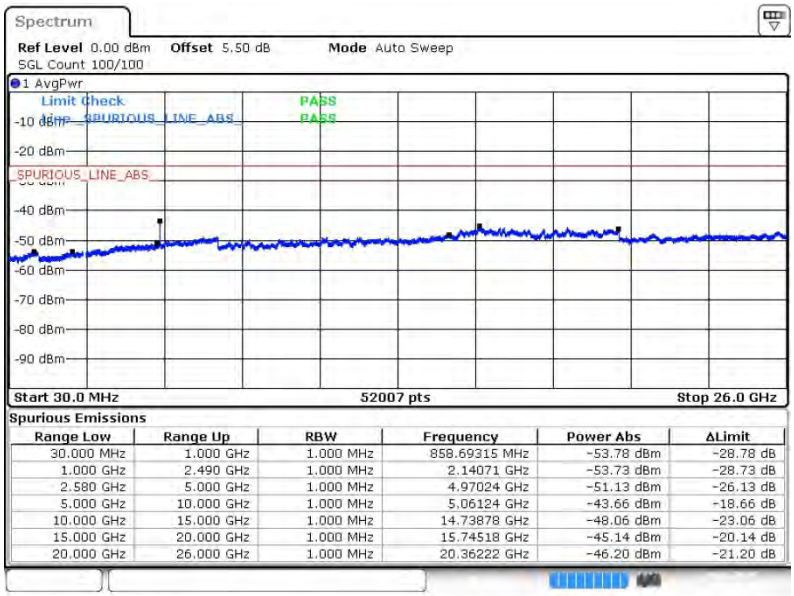


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	841.72664 MHz	-53.65 dBm	-28.65 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.10496 GHz	-53.62 dBm	-28.62 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99879 GHz	-51.25 dBm	-26.25 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.06124 GHz	-42.84 dBm	-17.84 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.79277 GHz	-48.05 dBm	-23.05 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.75167 GHz	-45.33 dBm	-20.33 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.05025 GHz	-46.36 dBm	-21.36 dB

Date: 18.MAR.2015 21:55:57

16QAM (RB Size 1, RB Offset 0)



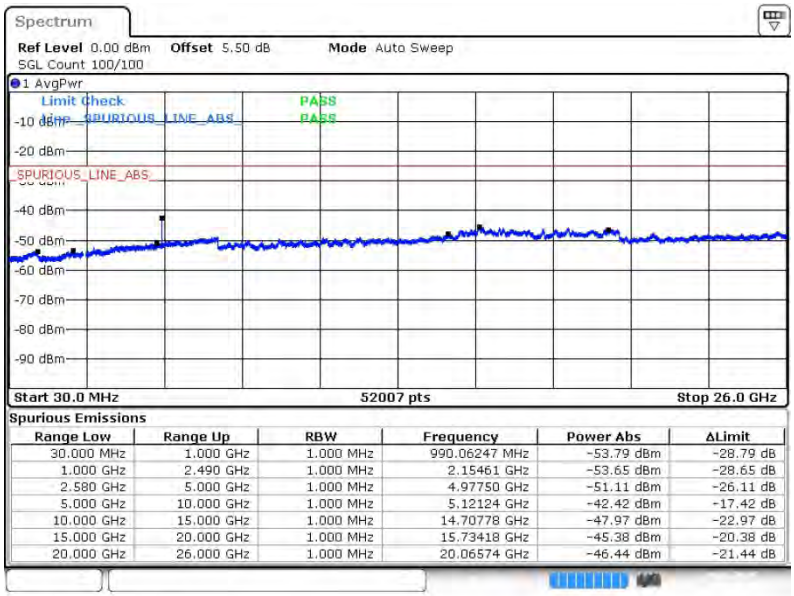
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	858.69315 MHz	-53.78 dBm	-28.78 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.14071 GHz	-53.73 dBm	-28.73 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.97024 GHz	-51.13 dBm	-26.13 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.06124 GHz	-43.66 dBm	-18.66 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.73878 GHz	-48.06 dBm	-23.06 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.74518 GHz	-45.14 dBm	-20.14 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.36222 GHz	-46.20 dBm	-21.20 dB

Date: 18.MAR.2015 21:57:20

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

QPSK (RB Size 1, RB Offset 0)

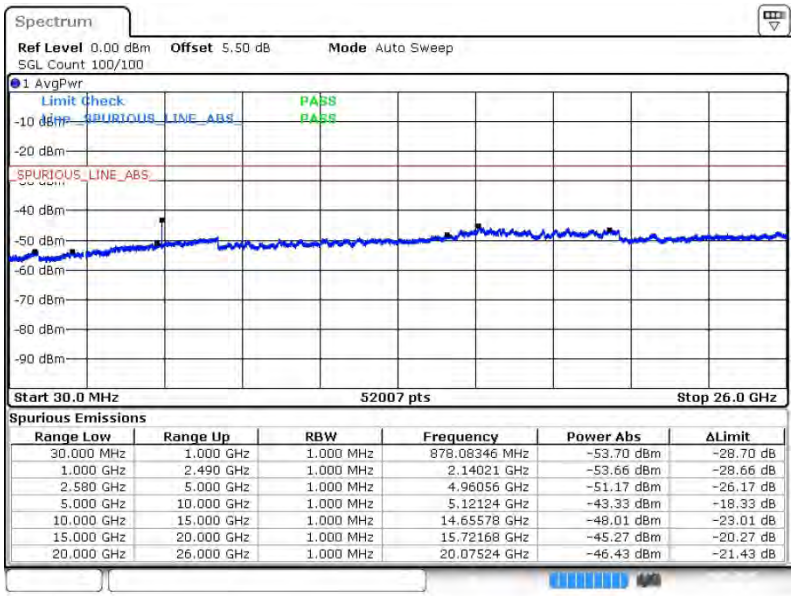


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	990.06247 MHz	-53.79 dBm	-28.79 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.15461 GHz	-53.65 dBm	-28.65 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.97750 GHz	-51.11 dBm	-26.11 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.12124 GHz	-42.42 dBm	-17.42 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.70778 GHz	-47.97 dBm	-22.97 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73418 GHz	-45.38 dBm	-20.38 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.06574 GHz	-46.44 dBm	-21.44 dB

Date: 18.MAR.2015 21:59:25

16QAM (RB Size 1, RB Offset 0)



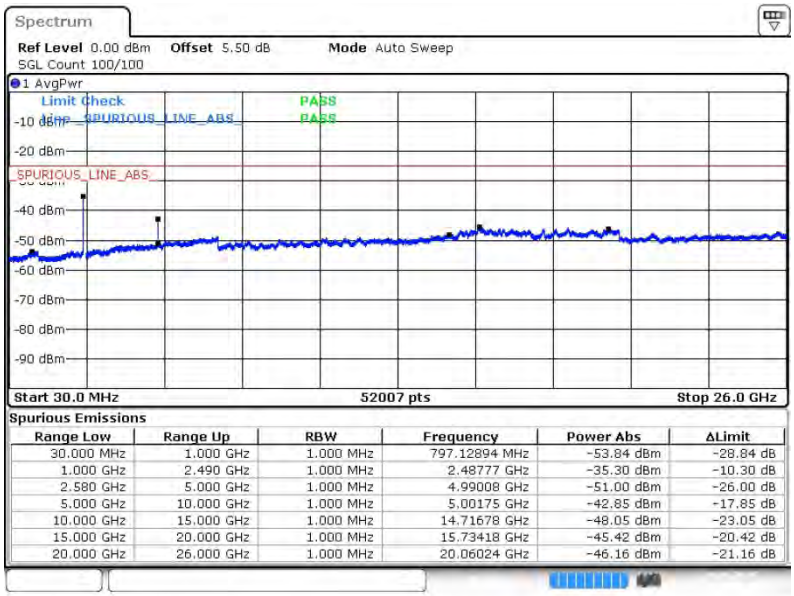
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	878.08346 MHz	-53.70 dBm	-28.70 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.14021 GHz	-53.66 dBm	-28.66 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.96056 GHz	-51.17 dBm	-26.17 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.12124 GHz	-43.33 dBm	-18.33 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.65578 GHz	-48.01 dBm	-23.01 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.72168 GHz	-45.27 dBm	-20.27 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.07524 GHz	-46.43 dBm	-21.43 dB

Date: 18.MAR.2015 22:00:48

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

QPSK (RB Size 1, RB Offset 0)

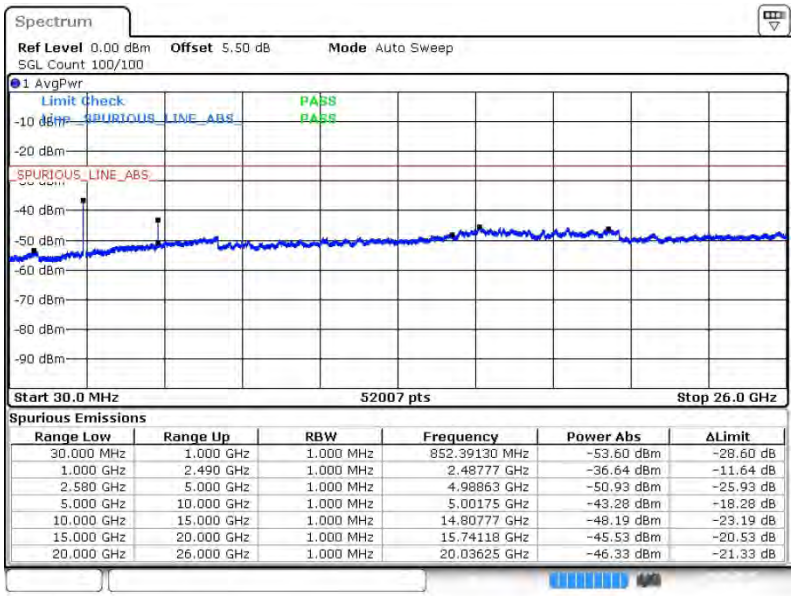


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	797.12894 MHz	-53.84 dBm	-28.84 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48777 GHz	-35.30 dBm	-10.30 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99008 GHz	-51.00 dBm	-26.00 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00175 GHz	-42.85 dBm	-17.85 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.71678 GHz	-48.05 dBm	-23.05 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73418 GHz	-45.42 dBm	-20.42 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.06024 GHz	-46.16 dBm	-21.16 dB

Date: 18.MAR.2015 22:02:53

16QAM (RB Size 1, RB Offset 0)



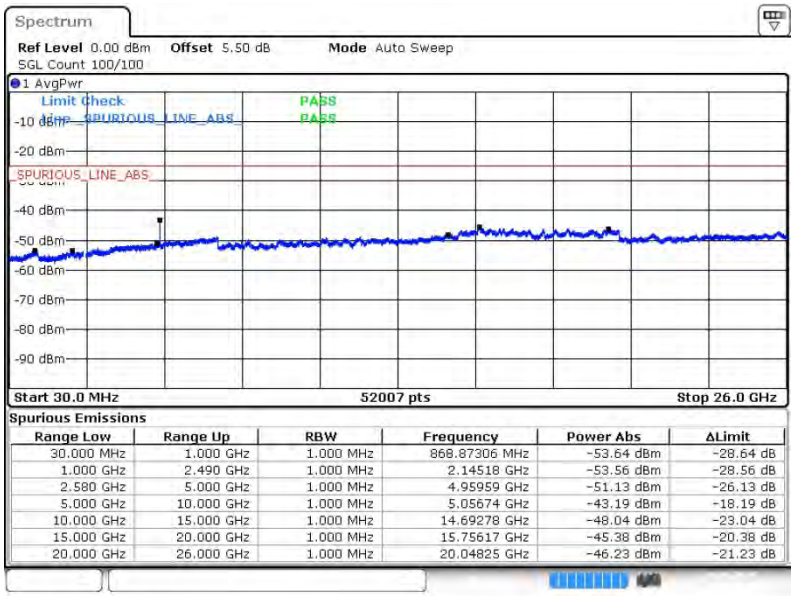
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	852.39130 MHz	-53.60 dBm	-28.60 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48777 GHz	-36.64 dBm	-11.64 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.98863 GHz	-50.93 dBm	-25.93 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00175 GHz	-43.28 dBm	-18.28 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.80777 GHz	-48.19 dBm	-23.19 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.74118 GHz	-45.53 dBm	-20.53 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.03625 GHz	-46.33 dBm	-21.33 dB

Date: 18.MAR.2015 22:04:14

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

QPSK (RB Size 1, RB Offset 0)

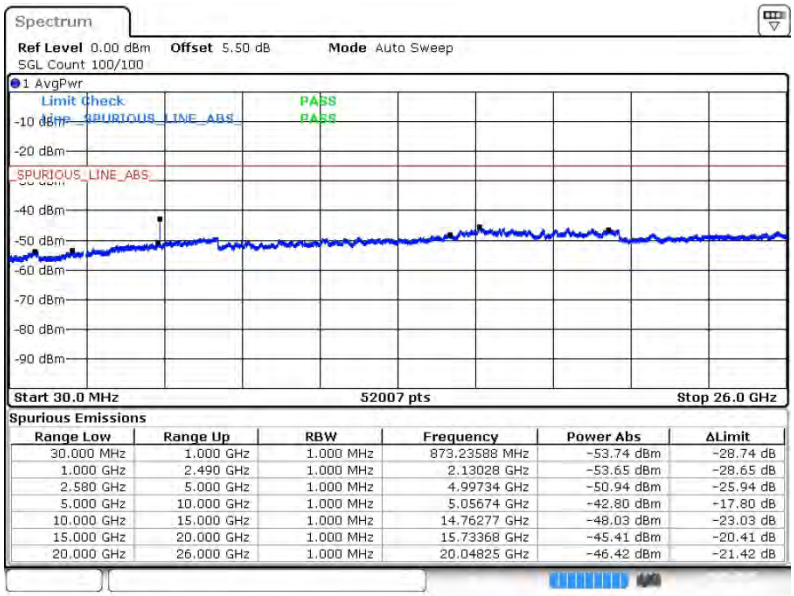


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	868.87306 MHz	-53.64 dBm	-28.64 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.14518 GHz	-53.56 dBm	-28.56 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.95959 GHz	-51.13 dBm	-26.13 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.05674 GHz	-43.19 dBm	-18.19 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.69278 GHz	-48.04 dBm	-23.04 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.75617 GHz	-45.38 dBm	-20.38 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.04825 GHz	-46.23 dBm	-21.23 dB

Date: 18.MAR.2015 22:06:19

16QAM (RB Size 1, RB Offset 0)



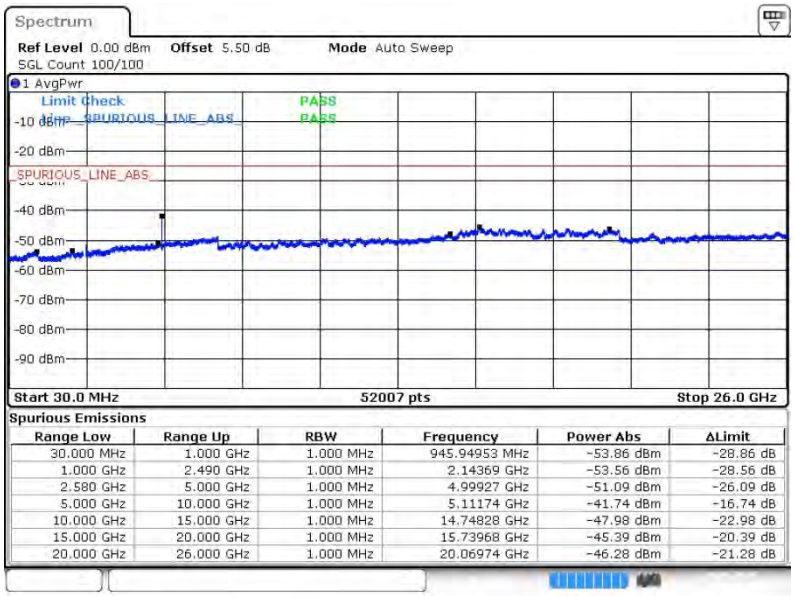
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	873.23588 MHz	-53.74 dBm	-28.74 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.13028 GHz	-53.65 dBm	-28.65 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99734 GHz	-50.94 dBm	-25.94 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.05674 GHz	-42.80 dBm	-17.80 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.76277 GHz	-48.03 dBm	-23.03 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73368 GHz	-45.41 dBm	-20.41 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.04825 GHz	-46.42 dBm	-21.42 dB

Date: 18.MAR.2015 22:07:40

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

QPSK (RB Size 1, RB Offset 0)

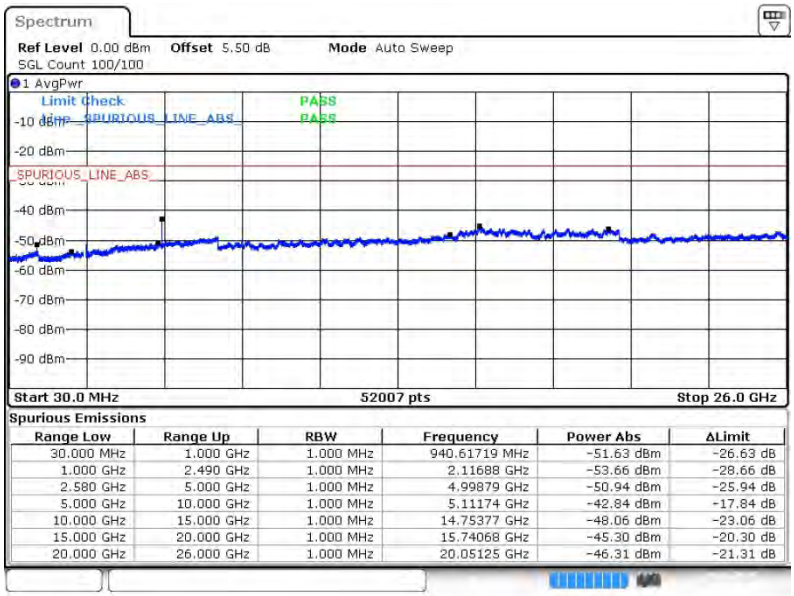


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	945.94953 MHz	-53.86 dBm	-28.86 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.14369 GHz	-53.56 dBm	-28.56 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99927 GHz	-51.09 dBm	-26.09 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.11174 GHz	-41.74 dBm	-16.74 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.74828 GHz	-47.98 dBm	-22.98 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73968 GHz	-45.39 dBm	-20.39 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.06974 GHz	-46.28 dBm	-21.28 dB

Date: 18.MAR.2015 22:09:45

16QAM (RB Size 1, RB Offset 0)



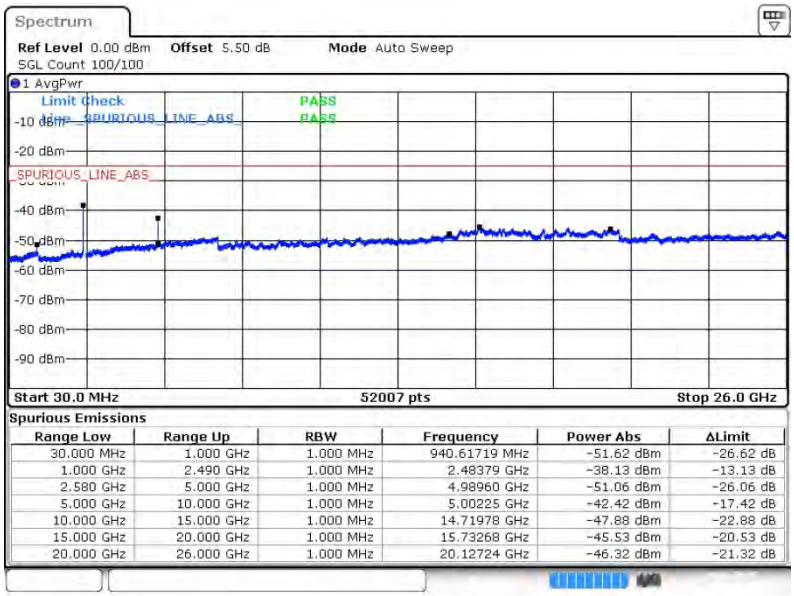
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.61719 MHz	-51.63 dBm	-26.63 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.11688 GHz	-53.66 dBm	-28.66 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99879 GHz	-50.94 dBm	-25.94 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.11174 GHz	-42.84 dBm	-17.84 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.75377 GHz	-48.06 dBm	-23.06 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.74068 GHz	-45.30 dBm	-20.30 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.05125 GHz	-46.31 dBm	-21.31 dB

Date: 18.MAR.2015 22:11:06

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

QPSK (RB Size 1, RB Offset 0)

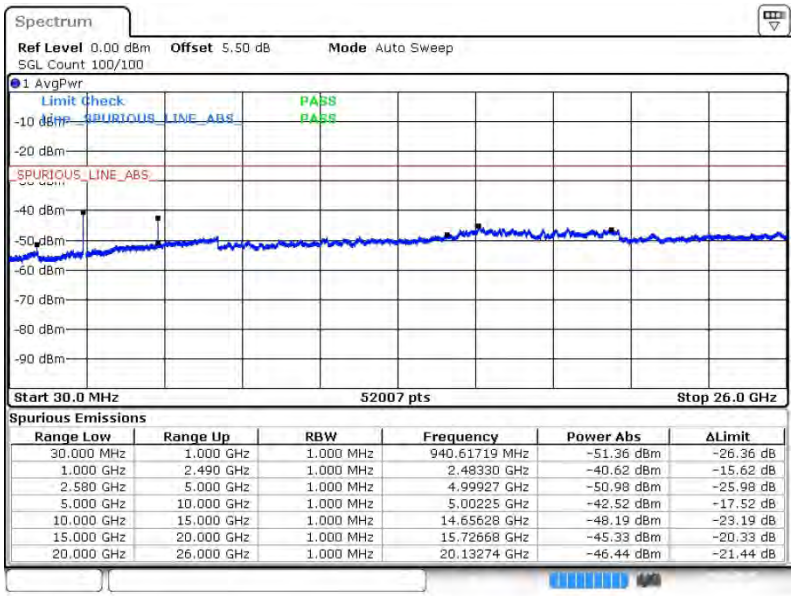


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.61719 MHz	-51.62 dBm	-26.62 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48379 GHz	-38.13 dBm	-13.13 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.98960 GHz	-51.06 dBm	-26.06 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00225 GHz	-42.42 dBm	-17.42 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.71978 GHz	-47.88 dBm	-22.88 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.73268 GHz	-45.53 dBm	-20.53 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.12724 GHz	-46.32 dBm	-21.32 dB

Date: 18.MAR.2015 22:13:11

16QAM (RB Size 1, RB Offset 0)



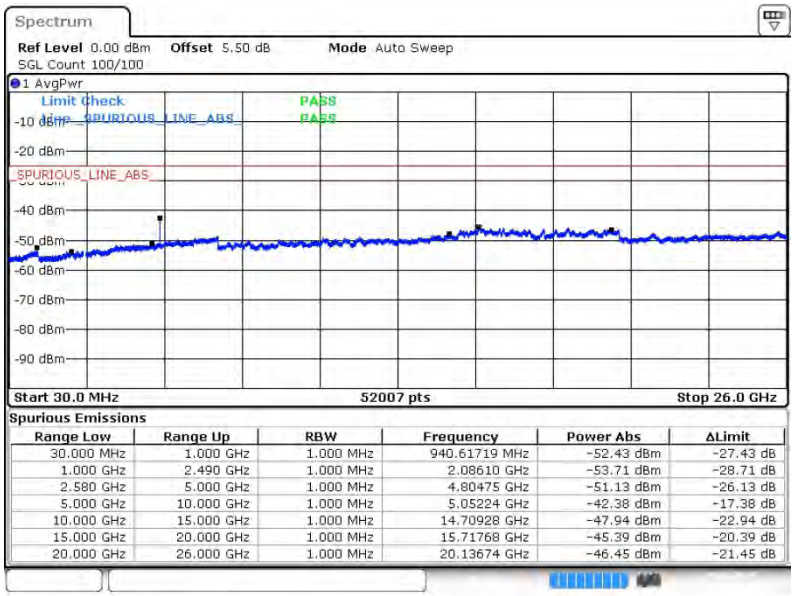
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.61719 MHz	-51.36 dBm	-26.36 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48330 GHz	-40.62 dBm	-15.62 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99927 GHz	-50.98 dBm	-25.98 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.00225 GHz	-42.52 dBm	-17.52 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.65628 GHz	-48.19 dBm	-23.19 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.72668 GHz	-45.33 dBm	-20.33 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.13274 GHz	-46.44 dBm	-21.44 dB

Date: 18.MAR.2015 22:14:31

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

QPSK (RB Size 1, RB Offset 0)

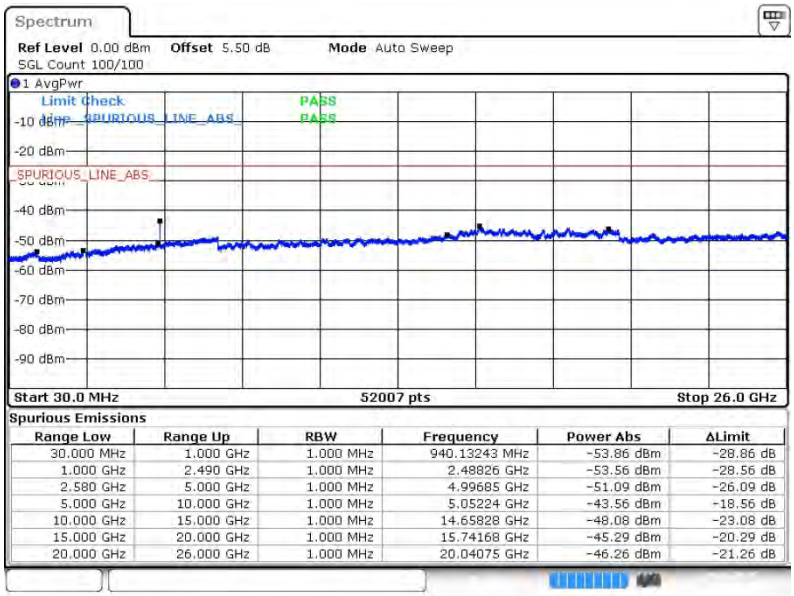


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.61719 MHz	-52.43 dBm	-27.43 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.08610 GHz	-53.71 dBm	-28.71 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.80475 GHz	-51.13 dBm	-26.13 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.05224 GHz	-42.38 dBm	-17.38 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.70928 GHz	-47.94 dBm	-22.94 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.71768 GHz	-45.39 dBm	-20.39 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.13674 GHz	-46.45 dBm	-21.45 dB

Date: 18.MAR.2015 22:16:35

16QAM (RB Size 1, RB Offset 0)



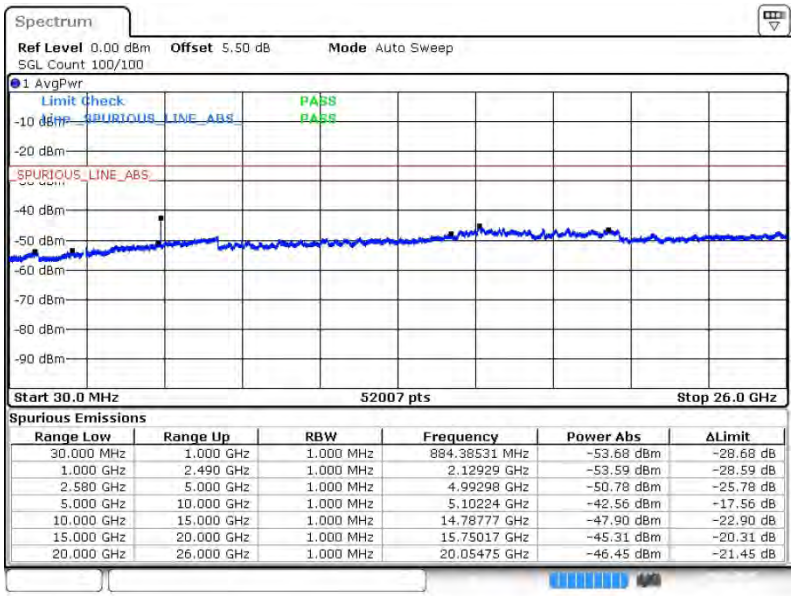
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	940.13243 MHz	-53.86 dBm	-28.86 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48826 GHz	-53.56 dBm	-28.56 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99685 GHz	-51.09 dBm	-26.09 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.05224 GHz	-43.56 dBm	-18.56 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.65828 GHz	-48.08 dBm	-23.08 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.74168 GHz	-45.29 dBm	-20.29 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.04075 GHz	-46.26 dBm	-21.26 dB

Date: 18.MAR.2015 22:17:56

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

QPSK (RB Size 1, RB Offset 0)

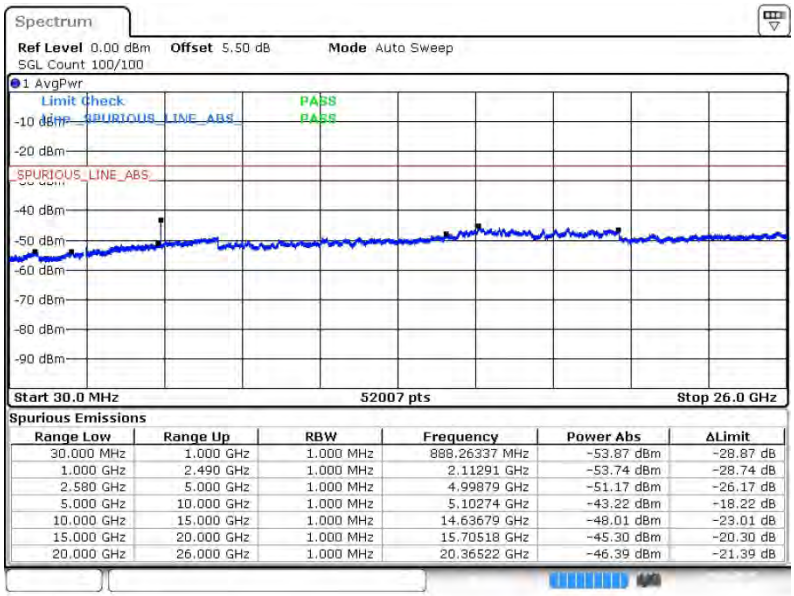


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	884.38531 MHz	-53.68 dBm	-28.68 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.12929 GHz	-53.59 dBm	-28.59 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99298 GHz	-50.78 dBm	-25.78 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.10224 GHz	-42.56 dBm	-17.56 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.78777 GHz	-47.90 dBm	-22.90 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.75017 GHz	-45.31 dBm	-20.31 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.05475 GHz	-46.45 dBm	-21.45 dB

Date: 18.MAR.2015 22:20:00

16QAM (RB Size 1, RB Offset 0)



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	888.26337 MHz	-53.87 dBm	-28.87 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.11291 GHz	-53.74 dBm	-28.74 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.99879 GHz	-51.17 dBm	-26.17 dB
5.000 GHz	10.000 GHz	1.000 MHz	5.10274 GHz	-43.22 dBm	-18.22 dB
10.000 GHz	15.000 GHz	1.000 MHz	14.63679 GHz	-48.01 dBm	-23.01 dB
15.000 GHz	20.000 GHz	1.000 MHz	15.70518 GHz	-45.30 dBm	-20.30 dB
20.000 GHz	26.000 GHz	1.000 MHz	20.36522 GHz	-46.39 dBm	-21.39 dB

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3.7 Radiated Spurious Emission Measurement

3.7.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

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.

3.7.2 Measuring Instruments

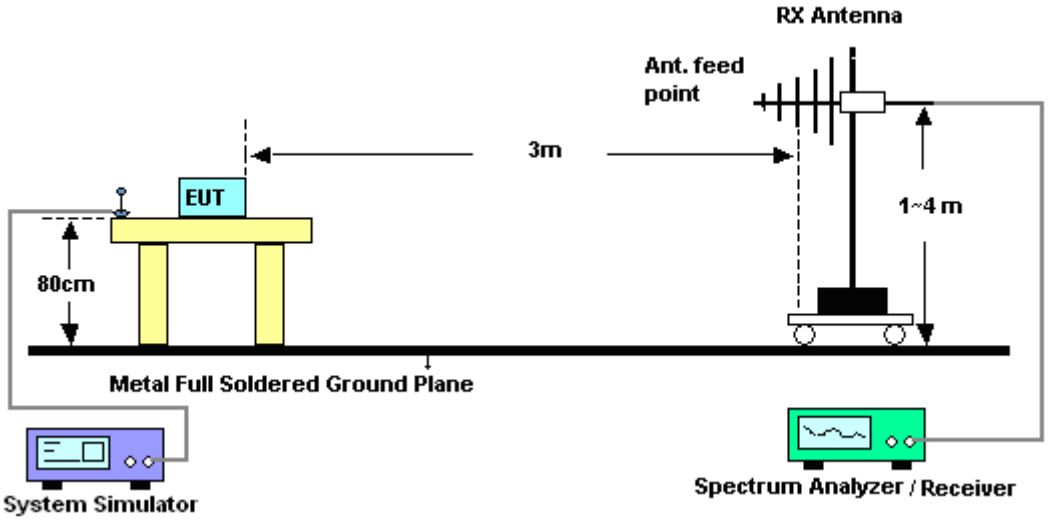
The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedures

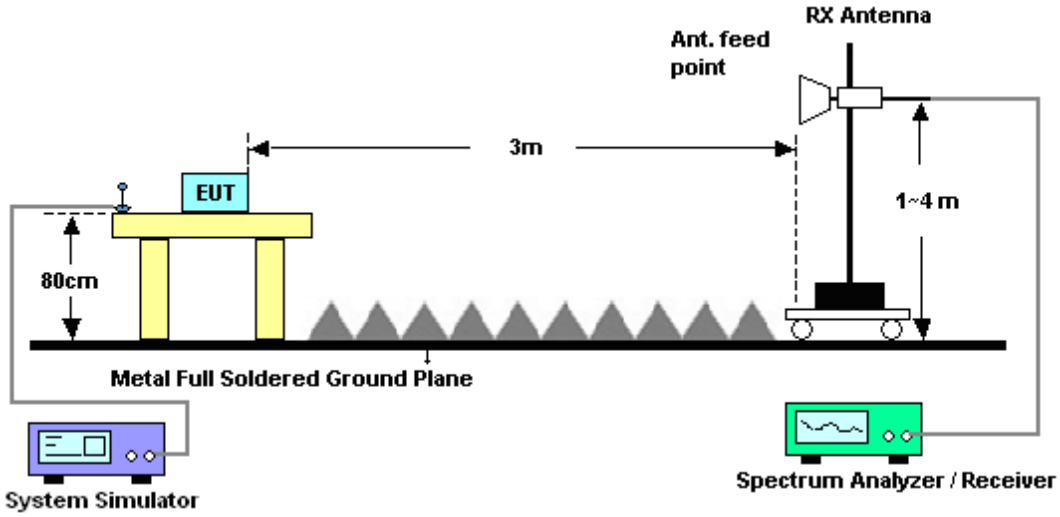
1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. 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.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.
    For Band 7
    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)
12. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
13. ERP (dBm) = EIRP - 2.15

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.7.5 Test Result of Field Strength of Spurious Radiated

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5064	-44.15	-25	-19.15	-66.91	-51.48	2.37	9.70	H	Pass
7600	-30.62	-25	-5.62	-58.98	-40.08	2.40	11.86	H	Pass
10132	-41.68	-25	-16.68	-72.99	-51.24	2.70	12.25	H	Pass

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5064	-40.84	-25	-15.84	-62.04	-48.17	2.37	9.70	V	Pass
7600	-28.99	-25	-3.99	-56.63	-38.45	2.40	11.86	V	Pass
10132	-41.70	-25	-16.70	-72.12	-51.26	2.70	12.25	V	Pass

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5060	-42.85	-25	-17.85	-64.89	-50.18	2.37	9.70	H	5060
7592	-29.54	-25	-4.54	-58.38	-39	2.40	11.86	H	7592
10124	-40.48	-25	-15.48	72.27	-50.03	2.70	12.25	H	10124

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5060	-39.25	-25	-14.25	-61.51	-46.58	2.37	9.70	V	5060
7592	-28.43	-25	-3.43	-55.79	-37.89	2.40	11.86	V	7592
10124	-41.23	-25	-16.23	-71.27	-50.78	2.70	12.25	V	10124

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	15MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5054	-44.99	-25	-19.99	-58.97	-50.77	3.49	9.27	H	Pass
7586	-40.86	-25	-15.86	-58.31	-48.65	4.28	12.07	H	Pass
10112	-42.84	-25	-17.84	-64.23	-50.14	5.1	12.40	H	Pass

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	15MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5054	-39.96	-25	-14.96	-56.24	-45.74	3.49	9.27	V	Pass
7583	-44.22	-25	-19.22	-61.24	-52.01	4.28	12.07	V	Pass
10112	-42.73	-25	-17.73	-63.83	-50.03	5.1	12.40	V	Pass

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5052	-40.81	-25	-15.81	-63.53	-48.14	2.37	9.70	H	Pass
7580	-31.68	-25	-6.68	-59.87	-41.12	2.40	11.85	H	Pass
10104	-41.78	-25	-16.78	-73.43	-51.33	2.70	12.24	H	Pass

Band :	LTE Band 7	**Temperature :**	18~19°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	**Relative Humidity :**	41~42%
Test Engineer :	Ken Huang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5052	-37.85	-25	-12.85	-59.2	-45.18	2.37	9.70	V	Pass
7580	-28.34	-25	-3.34	-55.83	-37.78	2.40	11.85	V	Pass
10104	-40.56	-25	-15.56	-70.97	-50.11	2.70	12.24	V	Pass

3.8 Frequency Stability Measurement

3.8.1 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 ±0.00025% (±2.5ppm) of the center frequency.

3.8.2 Measuring Instruments

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

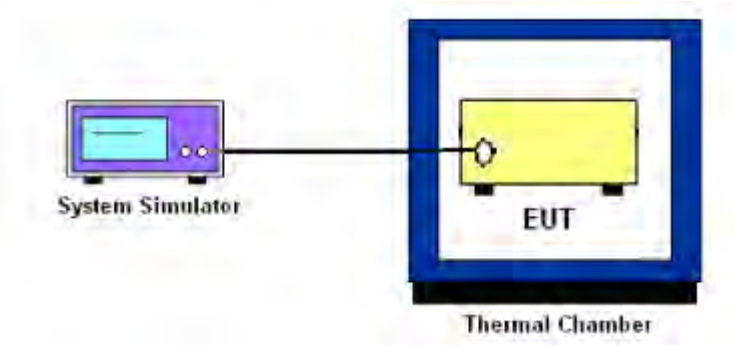
3.8.3 Test Procedures for Temperature Variation

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

3.8.4 Test Procedures for Voltage Variation

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

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation (FCC)

Band :	LTE Band 7 (QPSK)	Limit (ppm) :	within authorized band

Temperature (°C)	BW 10MHz	Result
	Deviation (ppm)	
50	0.0036	PASS
40	0.0002	
30	0.0002	
20(Ref.)	0.0000	
10	0.0052	
0	0.0013	
-10	0.0017	
-20	0.0011	
-30	0.0003	

3.8.7 Test Result of Voltage Variation (FCC)

Band	Bandwidth	Voltage (Volt)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 7	10M	4.2	0.0032	(Note 3.)	PASS
		Normal	0.0012		
		3.5	0.0013		

Remark:

1. Normal Voltage = 3.8V.
2. The manufacturer declared that the EUT could work properly between voltage 3.5V ~ 4.2V.
3. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV30	101338	9kHz~30GHz	May 04, 2014	Mar. 18, 2015~ Mar. 25, 2015	May 03, 2015	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 25, 2014	Mar. 18, 2015~ Mar. 25, 2015	Oct. 24, 2015	Conducted (TH01-KS)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9 kHz~7 GHz	Aug. 30, 2014	Apr. 07, 2015	Aug. 29, 2015	Radiation (03CH10-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 09, 2015	Apr. 07, 2015	Feb. 08, 2016	Radiation (03CH10-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	Apr. 07, 2015	Sep. 26, 2015	Radiation (03CH10-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 19, 2014	Apr. 07, 2015	Aug. 18, 2015	Radiation (03CH10-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Oct. 02, 2014	Apr. 07, 2015	Oct. 01, 2015	Radiation (03CH10-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz	Mar. 16, 2015	Apr. 07, 2015	Mar. 15, 2016	Radiation (03CH10-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Oct. 21, 2014	Apr. 07, 2015	Oct. 20, 2015	Radiation (03CH10-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Apr. 07, 2015	N/A	Radiation (03CH10-HY)
Antenna Mast	ChainTek	M-400-0	114/8000604/L	N/A	N/A	Apr. 07, 2015	N/A	Radiation (03CH10-HY)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Sep. 29, 2014	Apr. 29, 2015	Sep. 28, 2015	Radiation (03CH02-KS)
Spectrum Analyzer	R&S	FSV40	101040	10kHz~40GHz;Max 30dBm	Sep. 25, 2014	Apr. 29, 2015	Sep. 24, 2015	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz-2GHz	Sep. 13, 2014	Apr. 29, 2015	Sep. 12, 2015	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Apr. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Apr. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
SHF-EHF Horn	com-power	AH-840	101070	18Ghz-40GHz	Sep. 04, 2014	Apr. 29, 2015	Sep. 03, 2015	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz ~1000MHz / 32 dB	May 04, 2014	Apr. 29, 2015	May 03, 2015	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1-26.5GHz Gain 30dB	Oct. 28, 2014	Apr. 29, 2015	Oct. 27, 2015	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Apr. 29, 2015	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Apr. 29, 2015	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Apr. 29, 2015	NCR	Radiation (03CH02-KS)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz) for 03CH10-HY

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5 dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz) for 03CH02-KS

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.1 dB