



# Variant FCC RF Test Report

APPLICANT : ZTE CORPORATION  
EQUIPMENT : WCDMA/LTE Hotspot  
BRAND NAME : ZTE  
MODEL NAME : Z289L  
FCC ID : SRQ-Z289L  
STANDARD : 47 CFR Part 2, 22H, 24E, 27H, 27L  
CLASSIFICATION : PCS Licensed Transmitter (PCB)

This is a variant report which is only valid together with the original report. The product was received on Jun. 19, 2015 and testing was completed on Jul. 29, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



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



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**SUMMARY OF TEST RESULT**

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 17)	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a) §27.53(g)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 17)	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	-
4.4	§22.913(a)(2)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	-
	§27.50(c)(10)	Effective Radiated Power (Band 17)	ERP < 3 Watt		
	§24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	EIRP < 2Watt		
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt		
4.5	§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 17)	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 30.74 dB at 7512.000 MHz



# 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 Hotspot
Brand Name	ZTE
Model Name	Z289L
FCC ID	SRQ-Z289L
EUT supports Radios application	WCDMA/HSPA/HSPA+(Downlink Only)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20
IMEI Code	Conducted: 359528031394270 Radiated: 359528031394312 ERP/EIRP: 359528031394270
HW Version	Z289LHWV1.1
SW Version	TF_US_Z289LV2.0.0B01
EUT Stage	Identical Prototype



### 1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
<b>Tx Frequency</b>	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz
<b>Rx Frequency</b>	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz
<b>Bandwidth</b>	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 17 : 5MHz / 10MHz
<b>Maximum Output Power to Antenna</b>	LTE Band 2 : 22.49 dBm LTE Band 4 : 22.45 dBm LTE Band 5 : 22.90 dBm LTE Band 17 : 23.29 dBm
<b>Antenna Type</b>	LDS Antenna
<b>Type of Modulation</b>	QPSK / 16QAM



### 1.5 Modification of EUT

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

### 1.6 Maximum ERP/EIRP Power

LTE Band 2	QPSK	16QAM
BW(MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	0.2009 0.1851	
3	0.2043 0.1584	
5	0.2020 0.1559	
10	0.1972 0.1608	
15	0.2244 0.1966	
20	0.2146 0.1919	
LTE Band 4	QPSK	16QAM
BW(MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	0.1876 0.1461	
3	0.1803 0.1468	
5	0.1845 0.1399	
10	0.1742 0.1449	
15	0.1619 0.1506	
20	0.1792 0.1297	
LTE Band 5	QPSK	16QAM
BW(MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	0.0836	0.0635
3	0.0806	0.0671
5	0.0804	0.0676
10	0.0832	0.0669
LTE Band 17	QPSK	16QAM
BW(MHz)	Maximum ERP(W)	Maximum ERP(W)
5	0.0573 0.0438	
10	0.0569 0.0440	



### 1.7 Testing Location

<b>Test Site</b>	SPORTON INTERNATIONAL (SHENZHEN) INC.	
<b>Test Site Location</b>	1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	TH01-SZ	

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

**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, 22(H), 24(E), 27(L), 27(H)
- ♦ 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

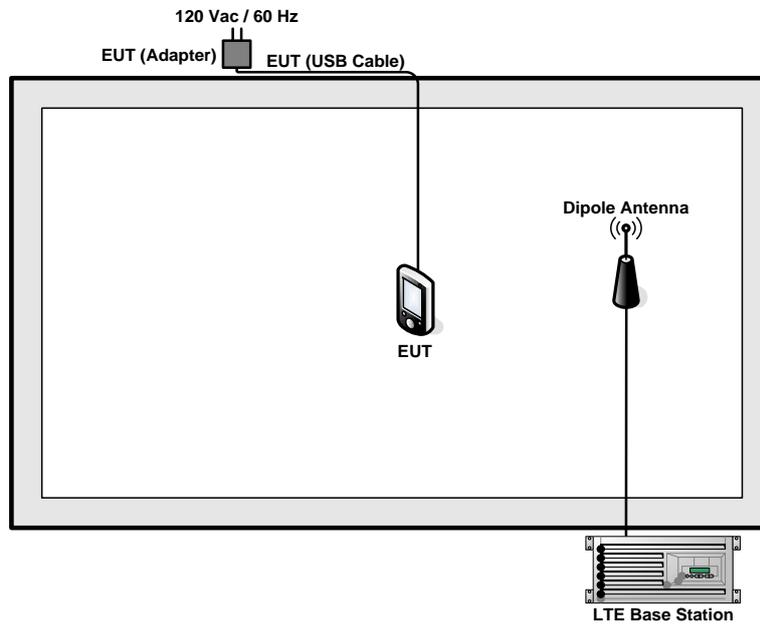
### 2.1 Test Mode

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	2	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	4	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	5	√	√	√	√	-	-	√	√	√	√	√	√	√	√
	17	-	-	√	√	-	-	√	√	√	√	√	√	√	√
Conducted Band Edge	2	√	√	√	√	√	√	√	√	√		√	√		√
	4	√	√	√	√	√	√	√	√	√		√	√		√
	5	√	√	√	√	-	-	√	√	√		√	√		√
	17	-	-	√	√	-	-	√	√	√		√	√		√
Conducted Spurious Emission	2	√	√	√	√	√	√	√	√	√	√		√	√	√
	4	√	√	√	√	√	√	√	√	√			√	√	√
	5	√	√	√	√	-	-	√	√	√	√		√	√	√
	17	-	-	√	√	-	-	√	√	√			√	√	√
E.R.P./E.I.R.P.	2	√	√	√	√	√	√	√	√	√	√		√	√	√
	4	√	√	√	√	√	√	√	√	√			√	√	√
	5	√	√	√	√	-	-	√	√	√	√		√	√	√
	17	-	-	√	√	-	-	√	√	√			√	√	√
Radiated Spurious Emission	2			√				√		√				√	
	4	√						√		√				√	
	5	√				-	-	√		√				√	
	17	-	-		√	-	-	√		√				√	
Note	<ol style="list-style-type: none"> <li>The mark "√" means that this configuration is chosen for testing</li> <li>The mark "-" means that this bandwidth is not supported.</li> <li>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.</li> </ol>														

## 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

### 2.4 Measurement Results Explanation Example

For all conducted test items:

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

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

$$\text{Offset} = \text{RF cable loss} + \text{attenuator factor}.$$

Following shows an offset computation example with cable loss 4.5 dB and 10dB attenuator.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.5 + 10 = 14.5 \text{ (dB)} \end{aligned}$$

### 3 Conducted Test Items

#### 3.1 Measuring Instruments

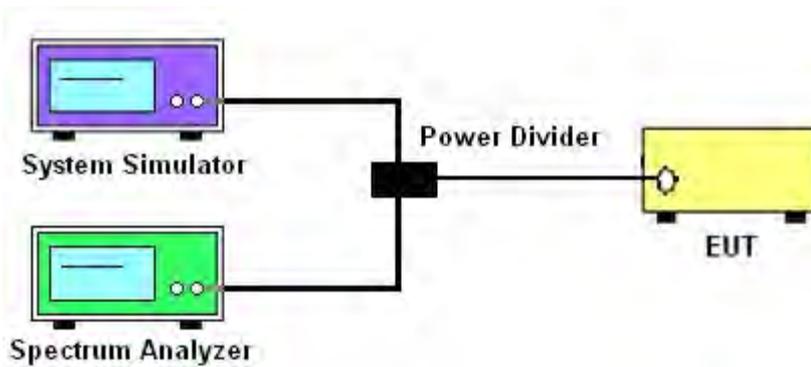
See list of measuring instruments of this test report.

#### 3.2 Test Setup

##### 3.2.1 Conducted Output Power



##### 3.2.2 Conducted Band-Edge and Conducted Spurious Emission



#### 3.3 Test Result of Conducted Test

Please refer to Appendix A.



## **3.4 Conducted Output Power**

### **3.4.1 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.

### **3.4.2 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.



### **3.5 Conducted Band Edge**

#### **3.5.1 Description of Conducted Band Edge Measurement**

22.917(a) for Band 5

For operations in the 824 – 849 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power P(Watts) in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

24.238 (a) for Band 2

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power P(Watts) in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (g) for Band 17

For operations in the 698 -746 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

27.53 (h) for Band 4

For operations in the 1710 – 1755 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.



### 3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set RBW  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)]$  (dB)  
 $= [30 + 10\log(P)]$  (dBm) -  $[43 + 10\log(P)]$  (dB)  
 $= -13$ dBm.



### 3.6 Conducted Spurious Emission

#### 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.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10<sup>th</sup> harmonic.

#### 3.6.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. 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.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)  
=  $P(W) - [43 + 10\log(P)]$  (dB)  
=  $[30 + 10\log(P)]$  (dBm) -  $[43 + 10\log(P)]$  (dB)  
= -13dBm.

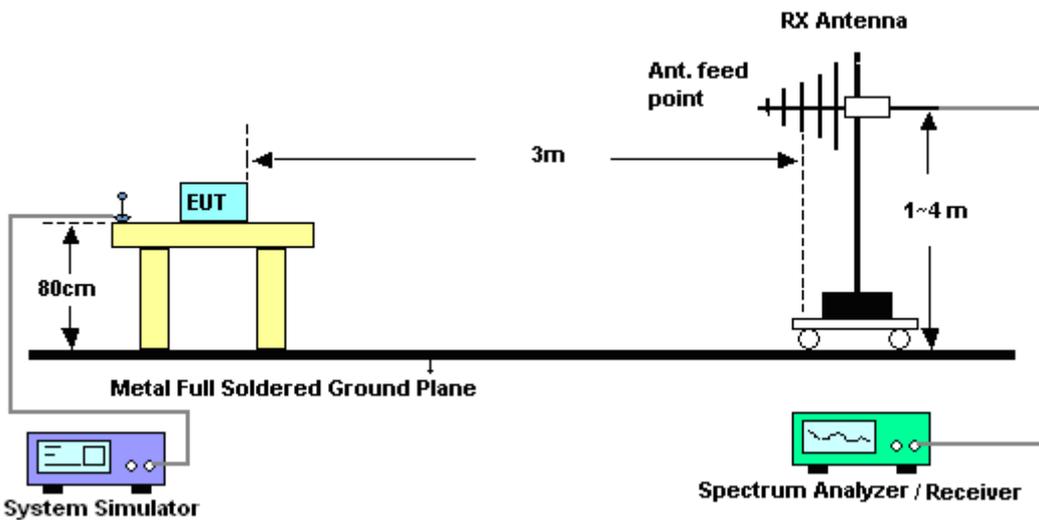
## 4 Radiated Test Items

### 4.1 Measuring Instruments

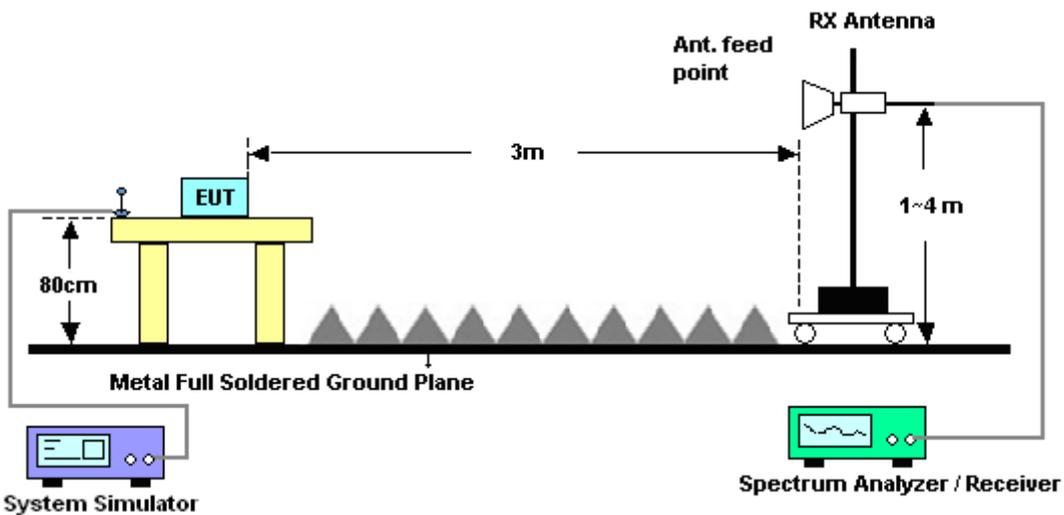
See list of measuring instruments of this test report.

### 4.2 Test Setup

#### 4.2.1 For radiated test from 30MHz to 1GHz



#### 4.2.2 For radiated test above 1GHz



### 4.3 Test Result of Radiated Test

Please refer to Appendix B.



## 4.4 Effective Radiated Power and Effective Isotropic Radiated Power

### 4.4.1 Description of the ERP/EIRP Measurement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. Mobile and portable (hand-held) stations operating are limited to average ERP of 7 watts with LTE band 5 and 3 watts with LTE band 17.

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 2 and 1 watt with LTE band 4.

### 4.4.2 Test Procedures

1. 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.
2. 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.
3. 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,  $EIRP = LVL + \text{Correction factor}$  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



## 4.5 Radiated Spurious Emission

### 4.5.1 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 LTE Band 17

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to  $-70$  dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and  $-80$  dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

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

### 4.5.2 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  $43 + 10\log(P)$ dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)]$  (dB)  
 $= [30 + 10\log(P)]$  (dBm) -  $[43 + 10\log(P)]$  (dB)  
 $= -13$ dBm.

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



## 5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	May 05, 2015	Jul. 20, 2015~ Jul. 21, 2015	May 04, 2016	Conducted (TH01-SZ)
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jan. 28, 2015	Jul. 20, 2015~ Jul. 21, 2015	Jan. 27, 2016	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Sep. 29, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 28, 2015	Radiation (03CH02-KS)
Spectrum Analyzer	R&S	FSV40	101040	10kHz~40GHz; Max 30dBm	Sep. 25, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 24, 2015	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz-2GHz	Sep. 13, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 12, 2015	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Jul. 27, 2015~ Jul. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Jul. 27, 2015~ Jul. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Sep. 04, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 03, 2015	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz ~1000MHz / 32 dB	May 04, 2015	Jul. 27, 2015~ Jul. 29, 2015	May 03, 2016	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1-26.5GHz Gain 30dB	Oct. 28, 2014	Jul. 27, 2015~ Jul. 29, 2015	Oct. 27, 2015	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Jul. 27, 2015~ Jul. 29, 2015	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jul. 27, 2015~ Jul. 29, 2015	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jul. 27, 2015~ Jul. 29, 2015	NCR	Radiation (03CH02-KS)



## **6 Uncertainty of Evaluation**

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

<b>Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))</b>	<b>5.1 dB</b>
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## Appendix A. Test Results of Conducted Test

### LTE Band 2

#### Conducted Output Power(Average power)

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	22.01	22.23	22.12
1.4	1	2		22.24	22.31	22.15
1.4	1	5		22.21	22.30	21.98
1.4	3	0		22.07	22.24	22.27
1.4	3	1		22.17	22.34	22.09
1.4	3	2		22.11	22.24	22.18
1.4	6	0		21.20	21.19	21.07
1.4	1	0	16-QAM	21.12	21.38	21.15
1.4	1	2		21.17	21.16	21.12
1.4	1	5		21.28	21.25	21.27
1.4	3	0		21.17	21.18	21.18
1.4	3	1		21.02	21.16	21.31
1.4	3	2		21.21	21.15	21.33
1.4	6	0		20.10	20.16	20.44
3	1	0	QPSK	22.18	22.26	22.18
3	1	7		22.13	22.33	22.20
3	1	14		22.17	22.30	22.32
3	8	0		21.17	21.18	21.19
3	8	4		21.21	21.14	21.13
3	8	7		21.14	21.16	21.18
3	15	0		21.12	21.06	21.23
3	1	0	16-QAM	21.09	21.18	21.36
3	1	7		21.37	21.51	21.17
3	1	14		21.11	21.02	20.92
3	8	0		20.04	20.14	20.12
3	8	4		20.03	20.13	20.13
3	8	7		20.09	20.11	19.98
3	15	0		20.13	20.19	20.18



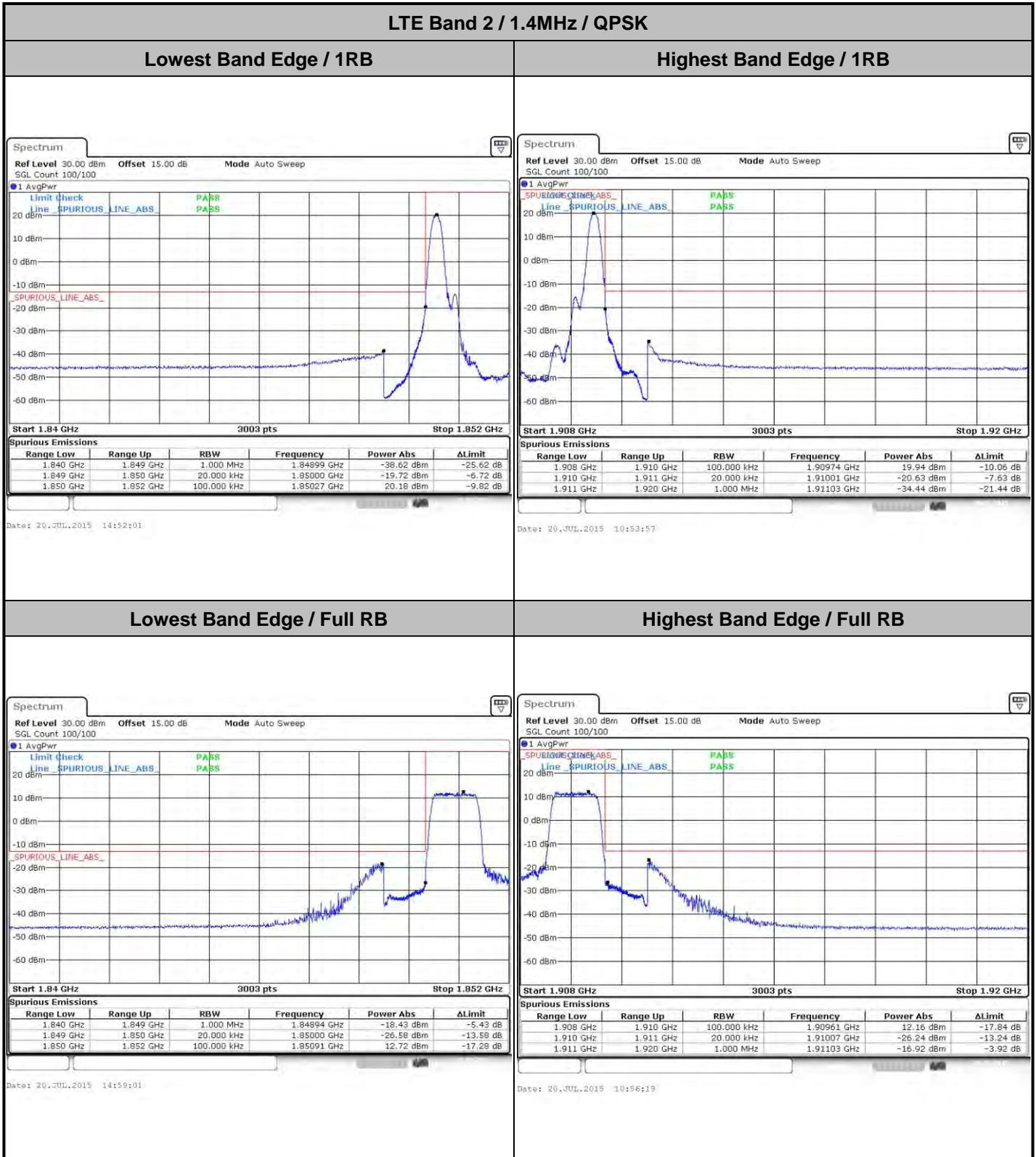
LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.10	22.19	22.34
5	1	12		22.13	22.44	22.49
5	1	24		22.20	22.30	22.14
5	12	0		21.13	21.21	21.47
5	12	6		21.14	21.15	21.34
5	12	11		21.20	21.15	21.22
5	25	0		21.11	21.11	21.33
5	1	0	16-QAM	21.12	21.11	21.30
5	1	12		21.25	21.23	21.17
5	1	24		21.00	21.16	21.35
5	12	0		20.15	20.26	20.17
5	12	6		20.14	20.26	20.30
5	12	11		20.20	20.25	20.22
5	25	0		19.98	20.13	20.18
10	1	0	QPSK	22.14	22.25	22.29
10	1	24		22.21	22.15	22.09
10	1	49		22.16	22.09	21.98
10	25	0		21.08	21.10	21.18
10	25	12		21.21	21.07	21.21
10	25	24		21.26	21.04	21.08
10	50	0		21.12	21.00	20.96
10	1	0	16-QAM	21.11	21.01	21.18
10	1	24		21.14	21.29	21.19
10	1	49		21.15	21.02	20.92
10	25	0		20.02	20.18	20.00
10	25	12		20.09	20.16	20.01
10	25	24		20.15	20.13	19.96
10	50	0		20.02	20.10	19.94

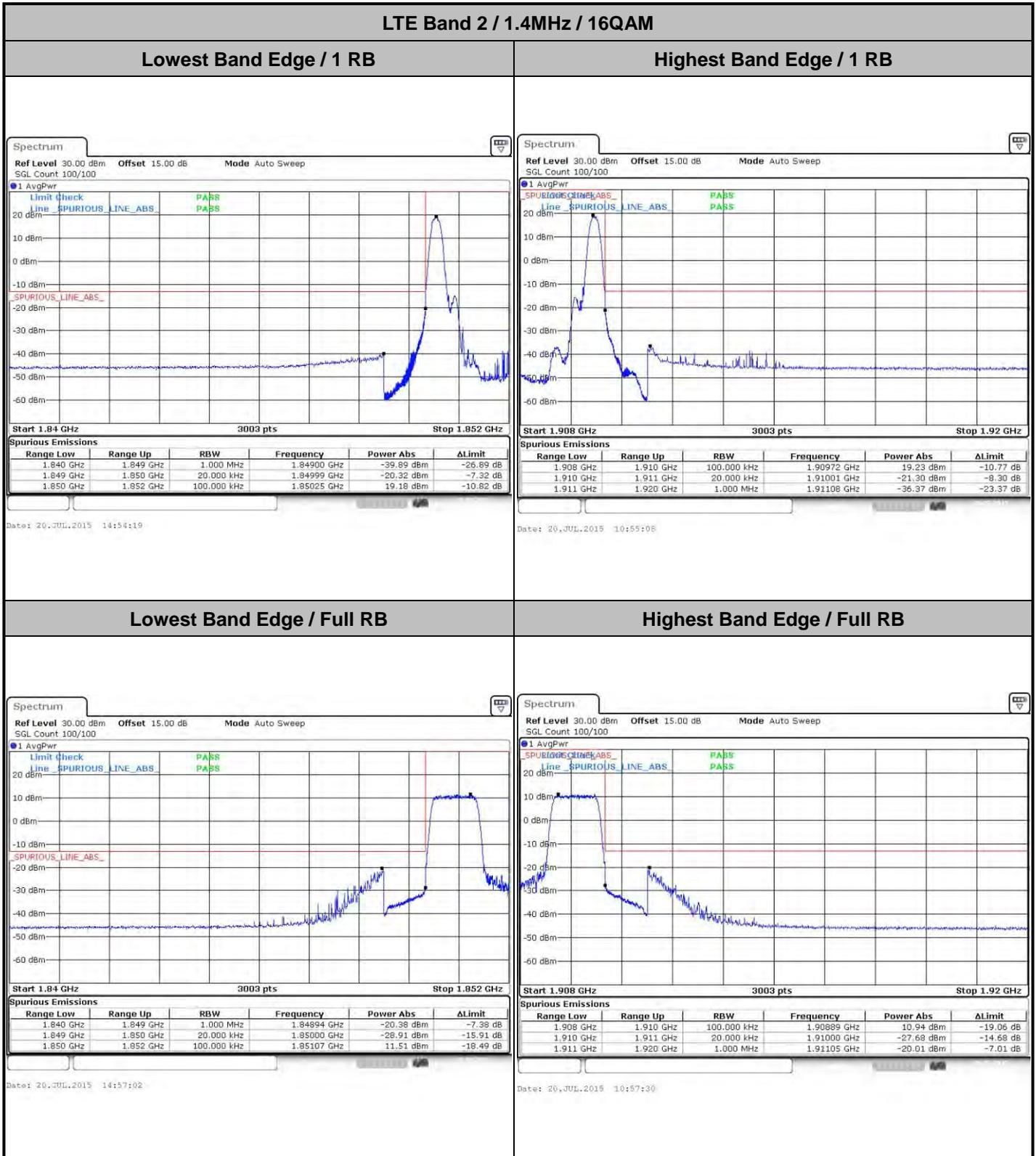


LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.15	22.20	22.31
15	1	37		22.10	22.33	22.17
15	1	74		22.11	22.36	21.98
15	36	0		21.19	21.13	21.15
15	36	18		21.04	21.21	21.02
15	36	37		20.99	21.03	21.02
15	75	0		21.00	20.96	21.11
15	1	0	16-QAM	21.38	21.20	21.27
15	1	37		21.30	21.31	21.18
15	1	74		21.15	21.05	21.31
15	36	0		19.96	20.10	20.04
15	36	18		19.98	20.08	20.02
15	36	37		19.98	20.11	20.11
15	75	0		19.99	20.04	20.12
20	1	0	QPSK	22.09	22.38	22.17
20	1	49		22.14	22.48	22.27
20	1	99		22.04	22.12	22.00
20	50	0		21.00	21.07	21.07
20	50	24		21.02	21.21	21.17
20	50	49		20.83	20.96	20.84
20	100	0		21.00	21.11	21.01
20	1	0	16-QAM	21.35	21.13	21.25
20	1	49		21.30	20.99	21.33
20	1	99		21.51	21.22	20.80
20	50	0		19.99	20.02	19.95
20	50	24		19.90	19.93	19.89
20	50	49		19.91	19.94	19.84
20	100	0		19.97	19.94	19.99



# Conducted Band Edge

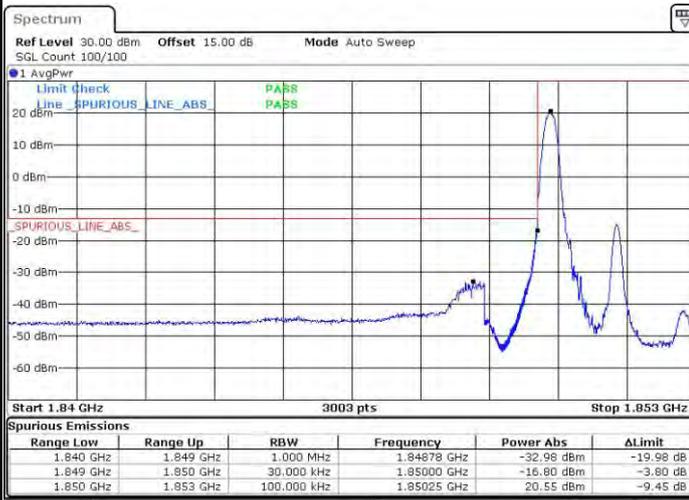






LTE Band 2 / 3MHz / QPSK

Lowest Band Edge / 1RB



Date: 20 JUL 2015 11:01:05

Highest Band Edge / 1 RB



Date: 20 JUL 2015 11:10:38

Lowest Band Edge / Full RB



Date: 20 JUL 2015 11:03:27

Highest Band Edge / Full RB

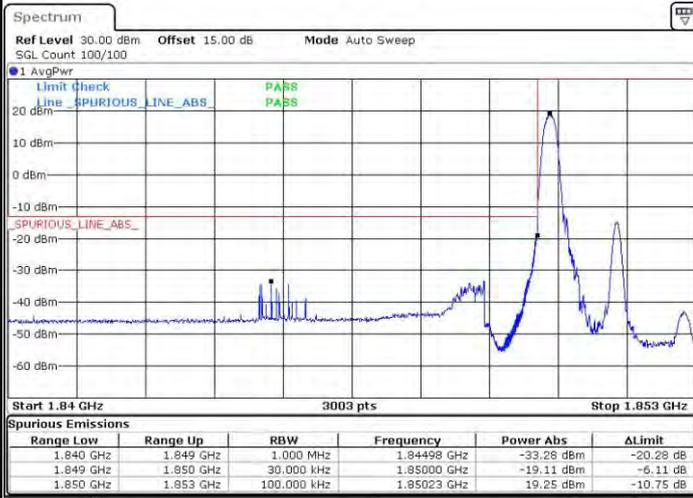


Date: 20 JUL 2015 11:13:00



LTE Band 2 / 3MHz / 16QAM

Lowest Band Edge / 1 RB



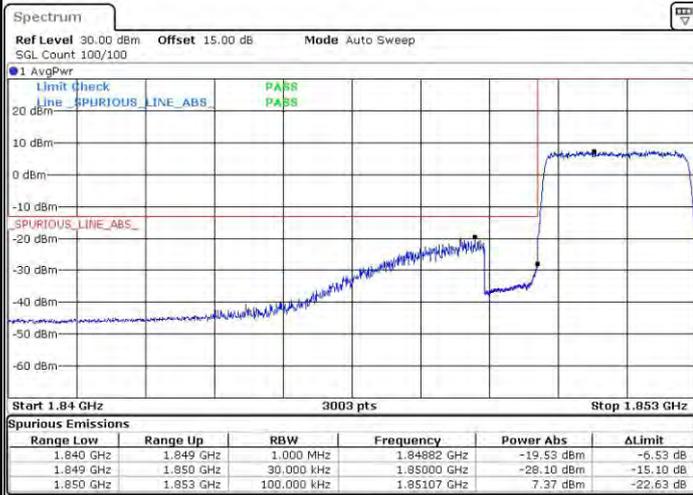
Date: 20.JUL.2015 11:02:16

Highest Band Edge / 1 RB



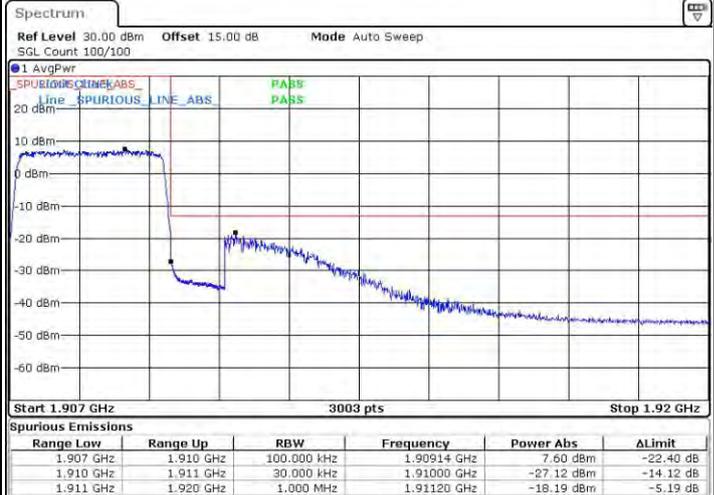
Date: 20.JUL.2015 11:11:49

Lowest Band Edge / Full RB



Date: 20.JUL.2015 11:04:38

Highest Band Edge / Full RB

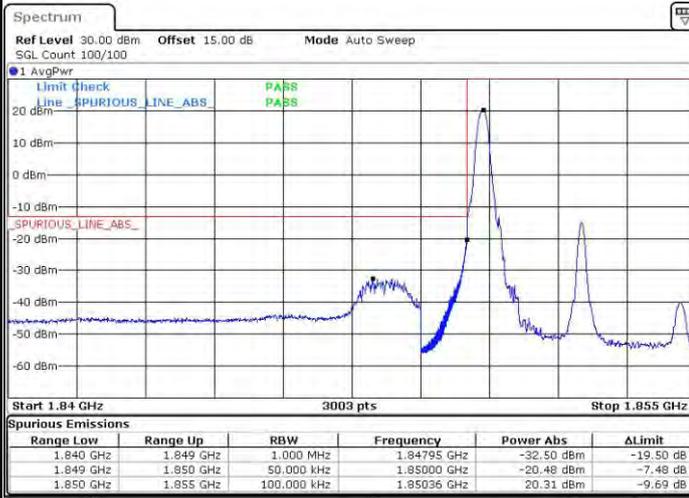


Date: 20.JUL.2015 11:14:11



LTE Band 2 / 5MHz / QPSK

Lowest Band Edge / 1 RB



Date: 20.JUL.2015 11:17:47

Highest Band Edge / 1 RB



Date: 20.JUL.2015 11:27:19

Lowest Band Edge / Full RB



Date: 20.JUL.2015 11:20:08

Highest Band Edge / Full RB

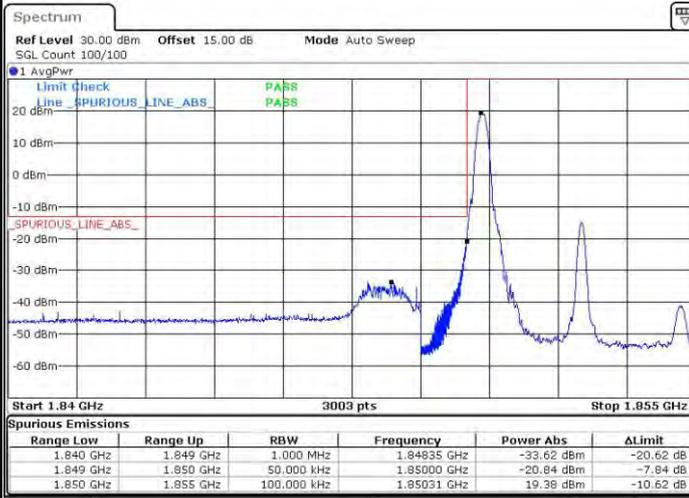


Date: 20.JUL.2015 11:29:41



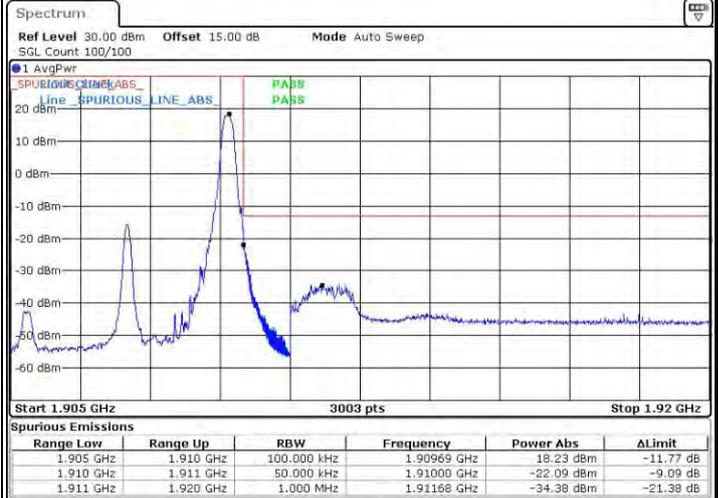
LTE Band 2 / 5MHz / 16QAM

Lowest Band Edge / 1RB



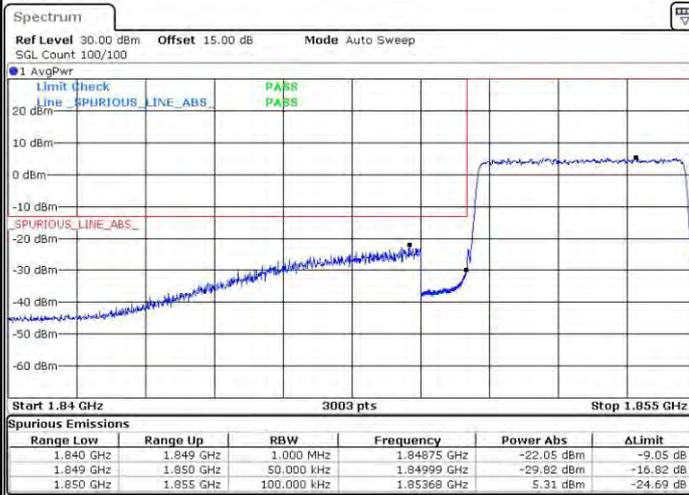
Date: 20.JUL.2015 11:18:57

Highest Band Edge / 1 RB



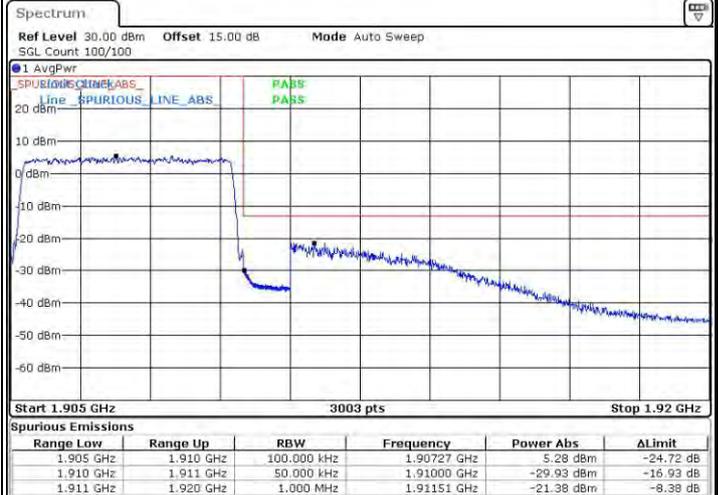
Date: 20.JUL.2015 11:28:30

Lowest Band Edge / Full RB



Date: 20.JUL.2015 11:21:19

Highest Band Edge / Full RB

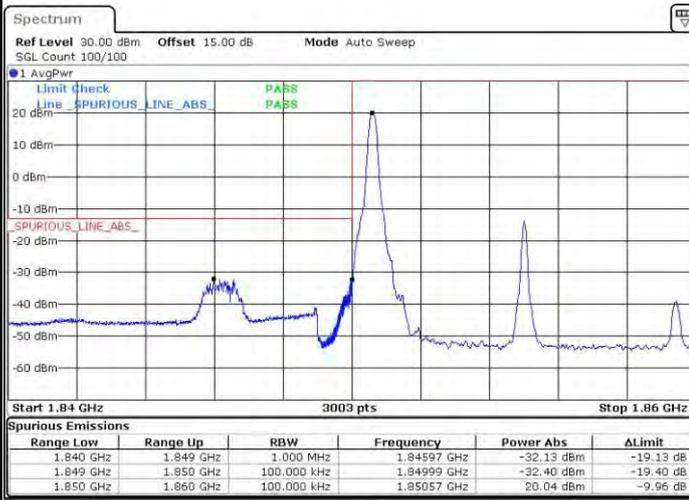


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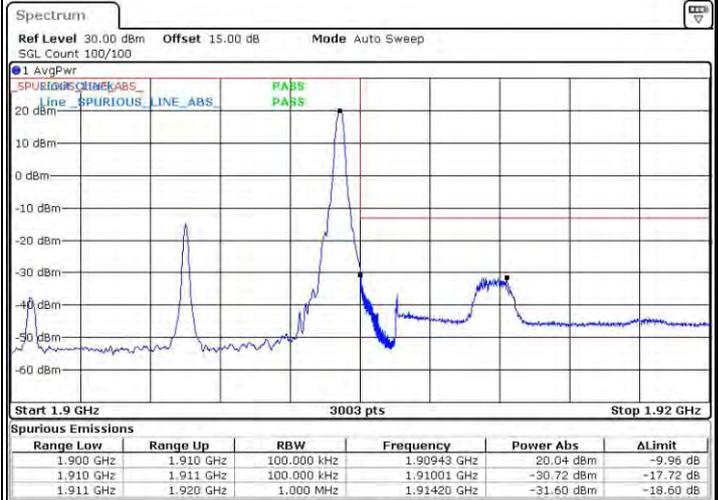
LTE Band 2 / 10MHz / QPSK

Lowest Band Edge / 1 RB



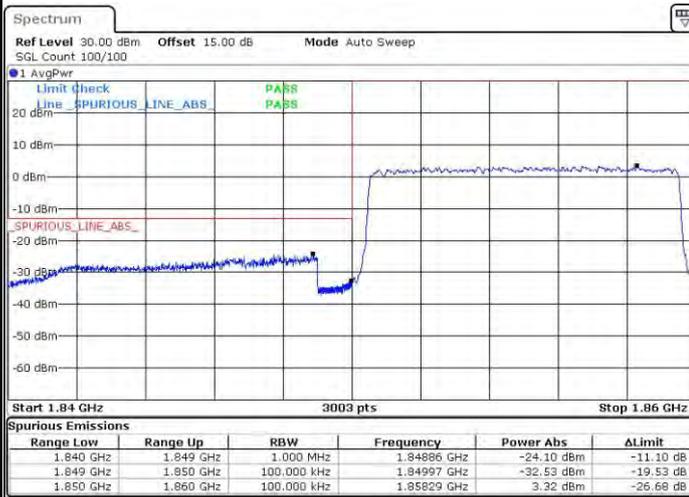
Date: 20.JUL.2015 11:34:27

Highest Band Edge / 1 RB



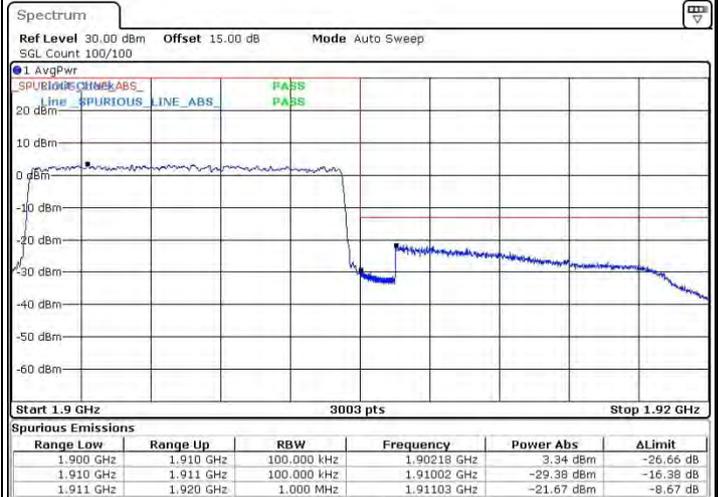
Date: 20.JUL.2015 11:43:59

Lowest Band Edge / Full RB



Date: 20.JUL.2015 11:36:48

Highest Band Edge / Full RB

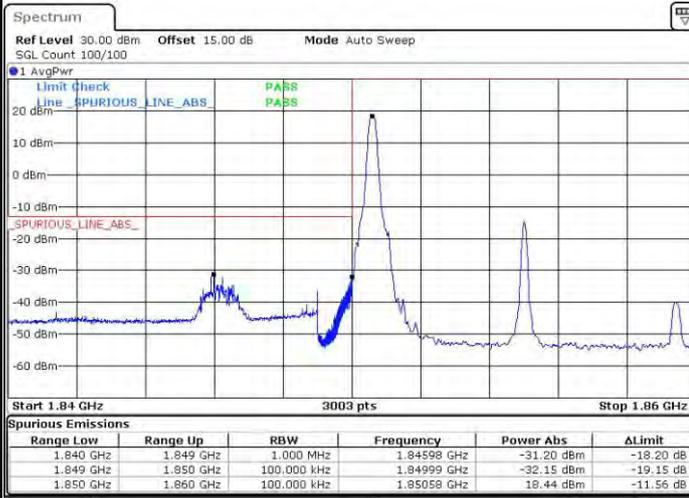


Date: 20.JUL.2015 15:11:24



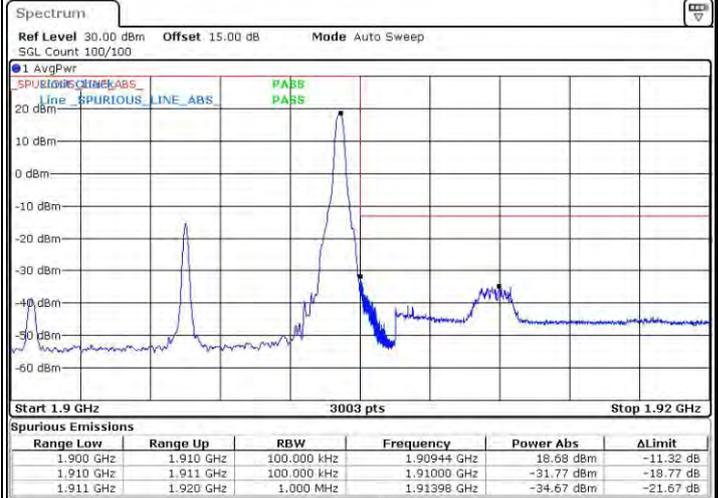
LTE Band 2 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



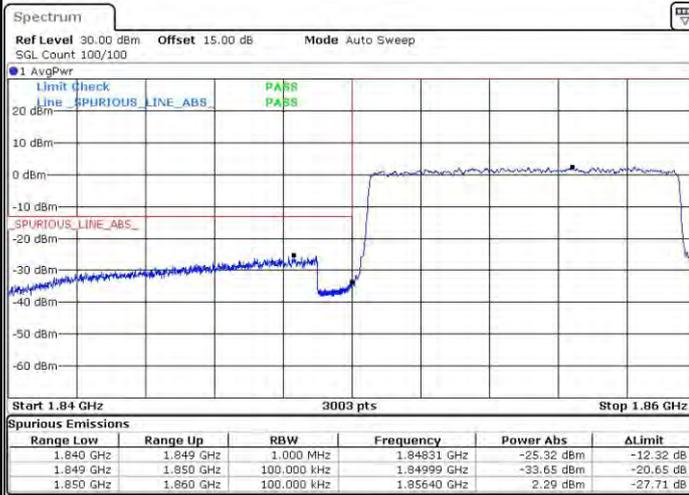
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Highest Band Edge / 1 RB



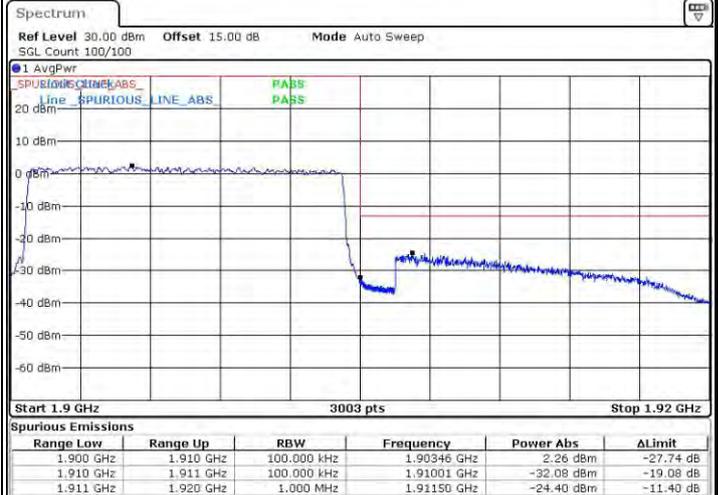
Date: 20.JUL.2015 11:45:10

Lowest Band Edge / Full RB



Date: 20.JUL.2015 11:37:58

Highest Band Edge / Full RB

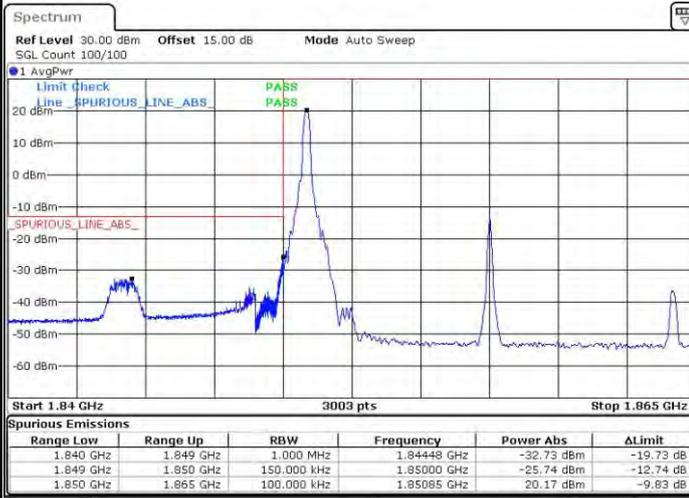


Date: 20.JUL.2015 11:47:32



LTE Band 2 / 15MHz / QPSK

Lowest Band Edge / 1 RB



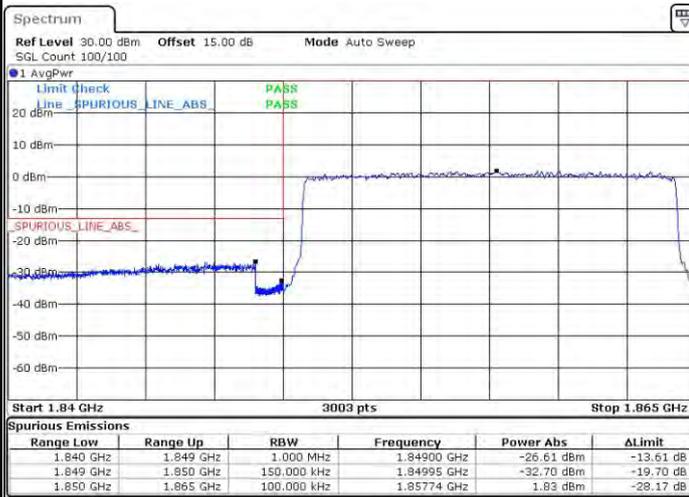
Date: 20.JUL.2015 11:51:08

Highest Band Edge / 1 RB



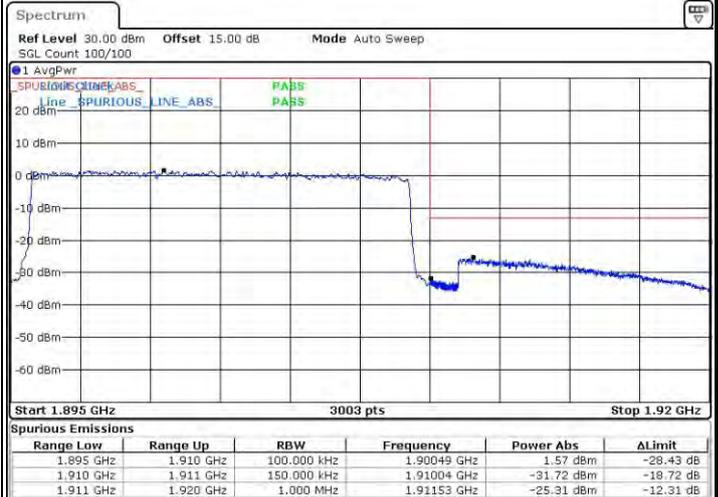
Date: 20.JUL.2015 13:47:37

Lowest Band Edge / Full RB

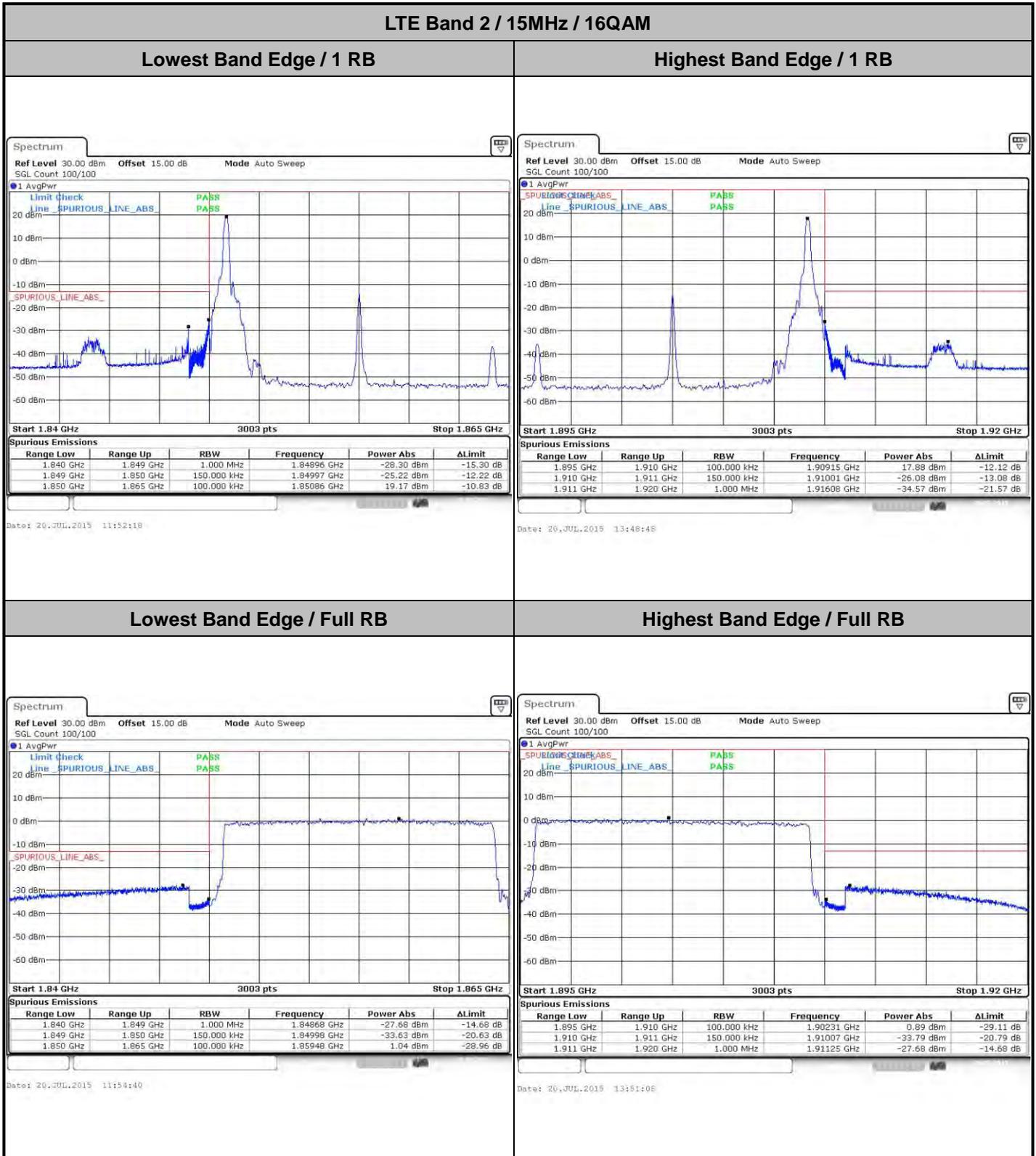


Date: 20.JUL.2015 11:53:29

Highest Band Edge / Full RB



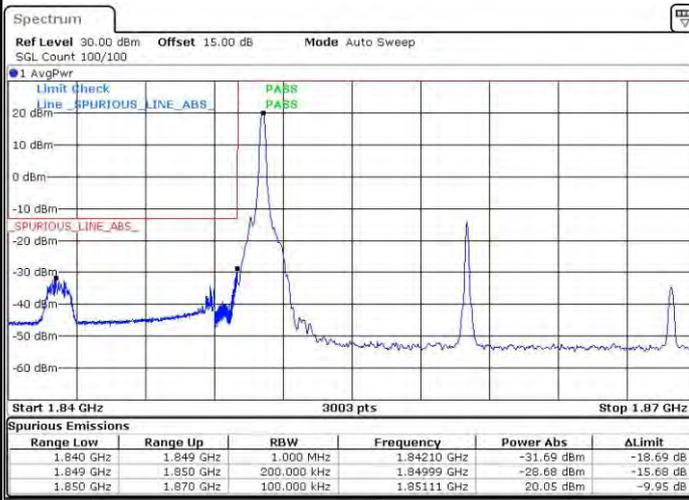
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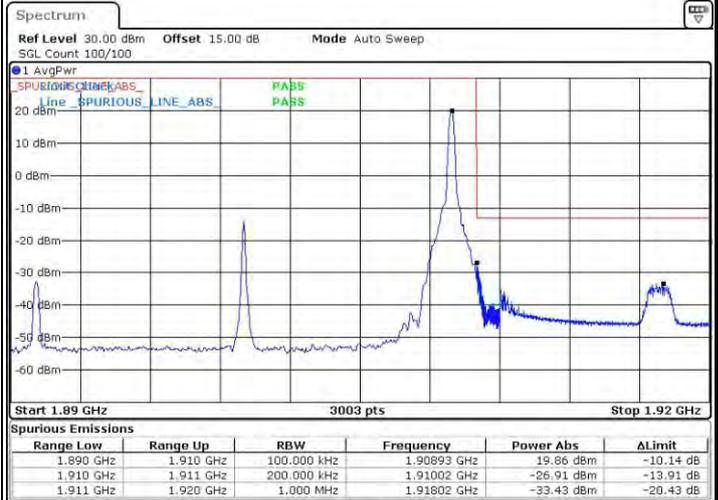
LTE Band 2 / 20MHz / QPSK

Lowest Band Edge / 1 RB



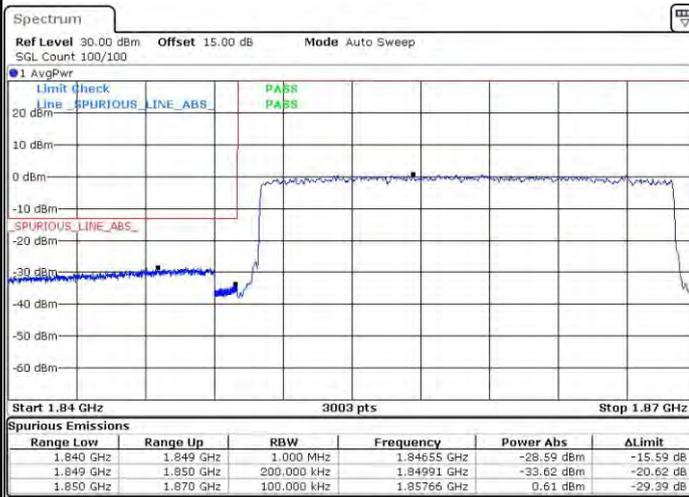
Date: 20.JUL.2015 13:54:44

Highest Band Edge / 1 RB



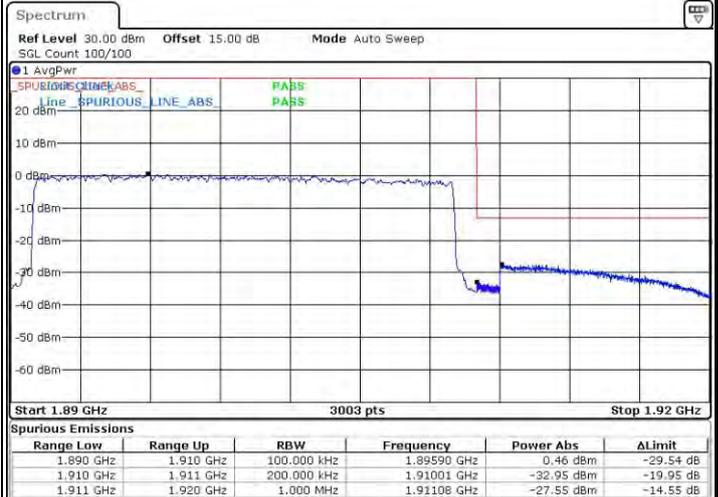
Date: 20.JUL.2015 14:04:16

Lowest Band Edge / Full RB



Date: 20.JUL.2015 13:57:05

Highest Band Edge / Full RB

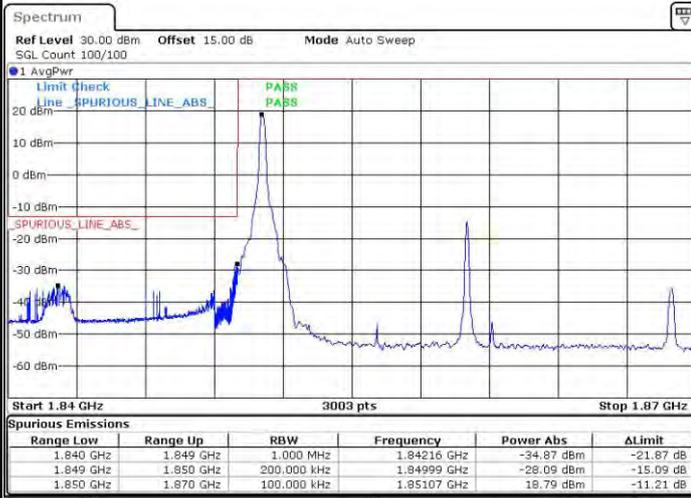


Date: 20.JUL.2015 14:06:36



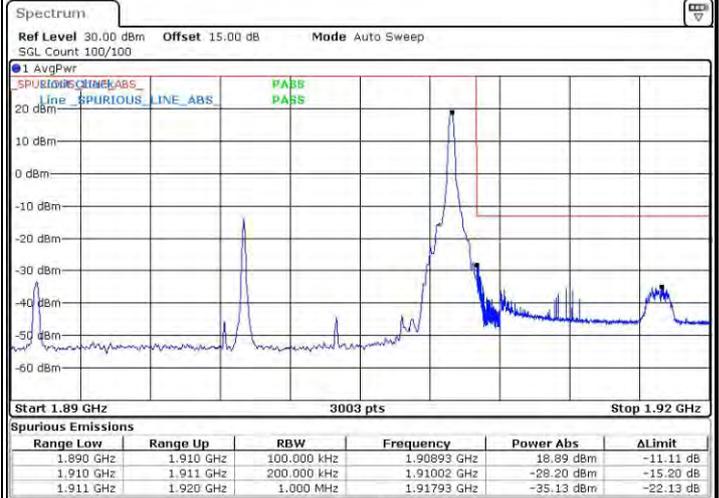
LTE Band 2 / 20MHz / 16QAM

Lowest Band Edge / 1 RB



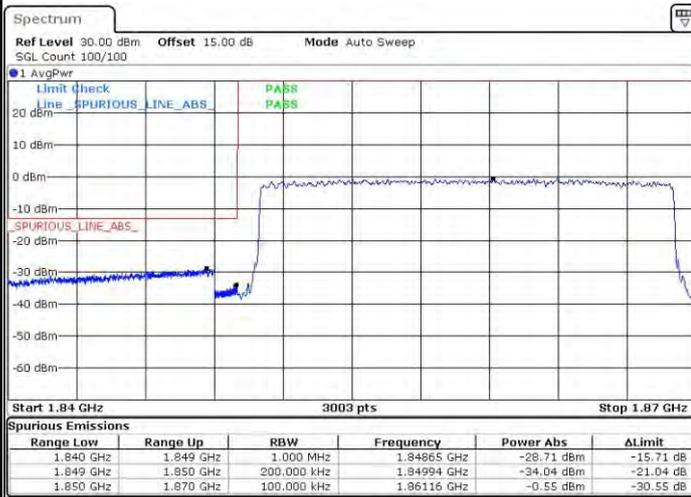
Date: 20.JUL.2015 13:55:54

Highest Band Edge / 1 RB



Date: 20.JUL.2015 14:05:26

Lowest Band Edge / Full RB



Date: 20.JUL.2015 13:58:15

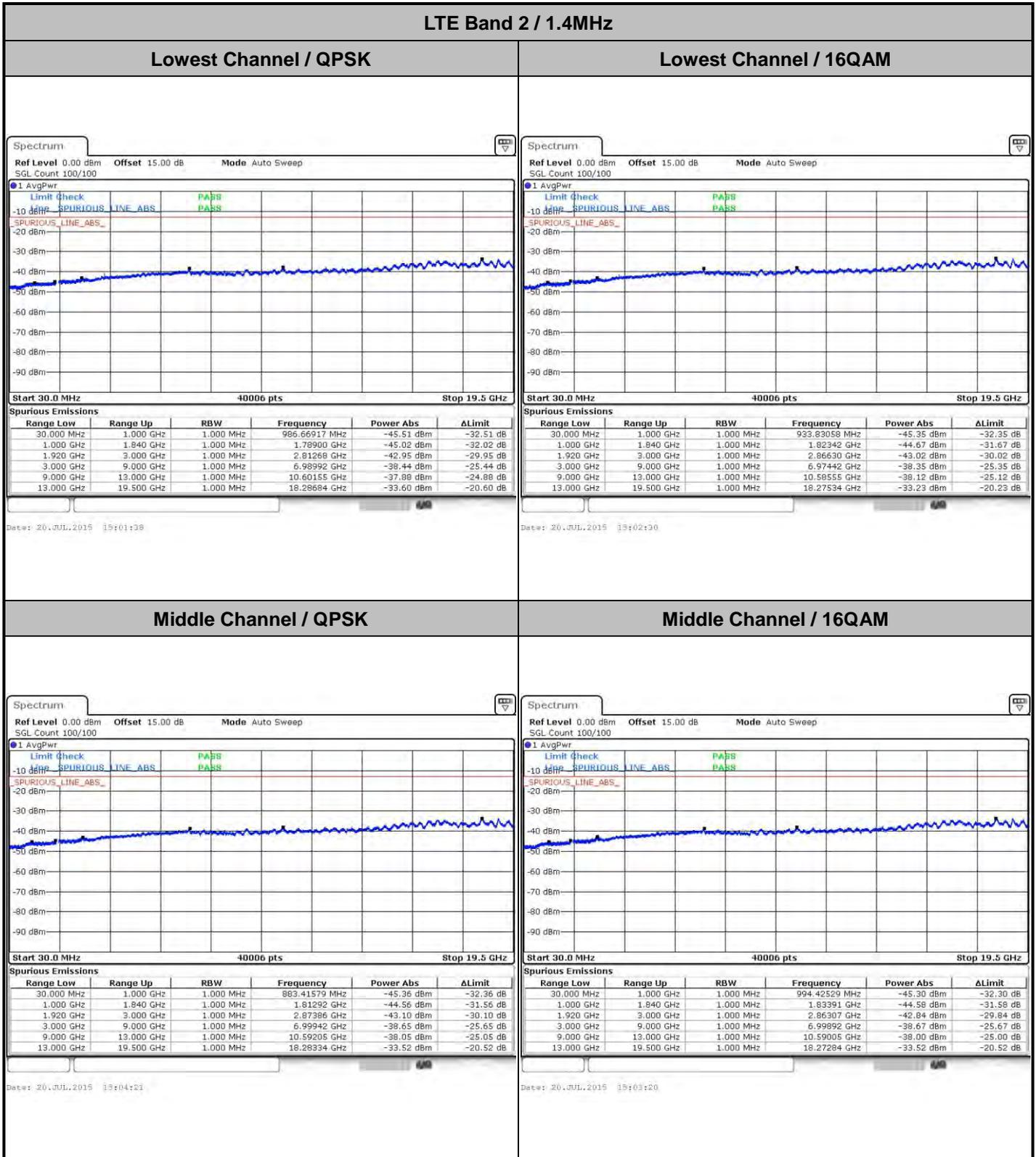
Highest Band Edge / Full RB



Date: 20.JUL.2015 14:07:47



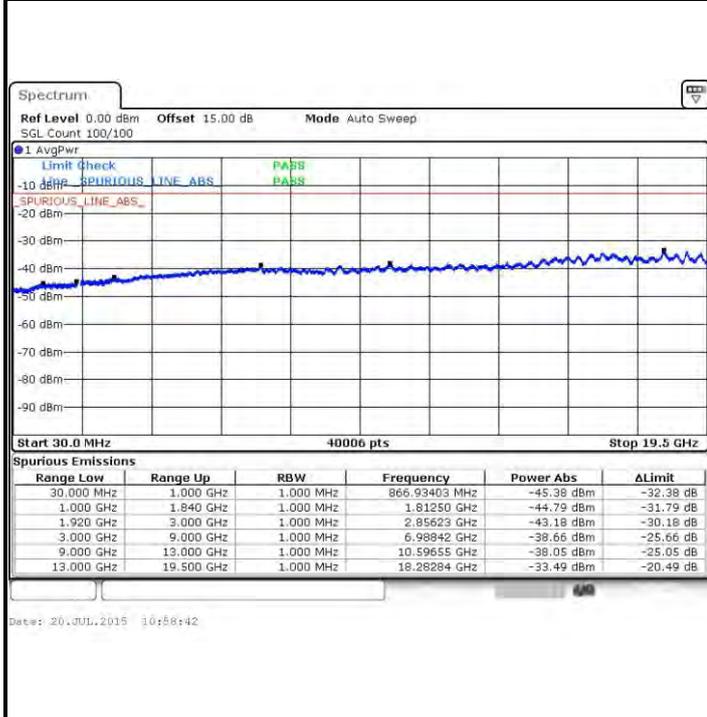
# Conducted Spurious Emission





**LTE Band 2 / 1.4MHz**

**Highest Channel / QPSK**

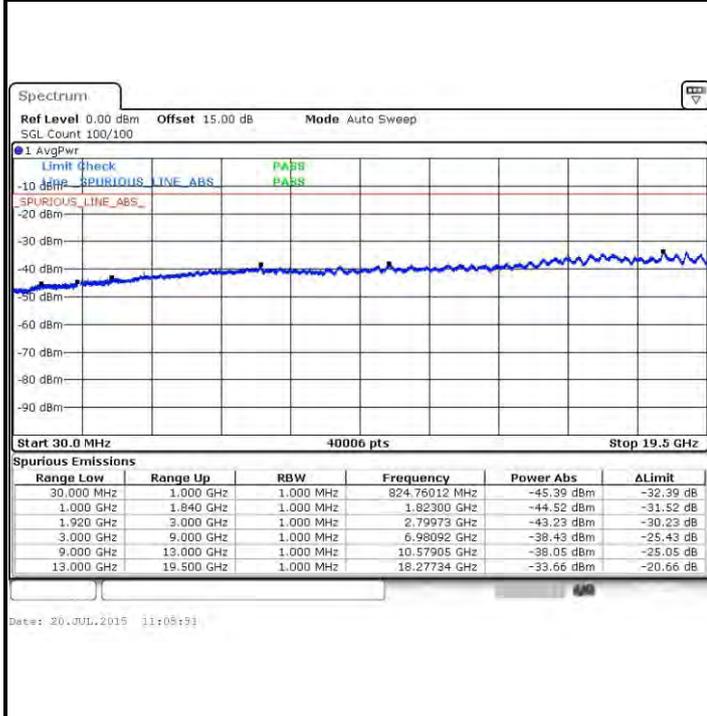


**Highest Channel / 16QAM**

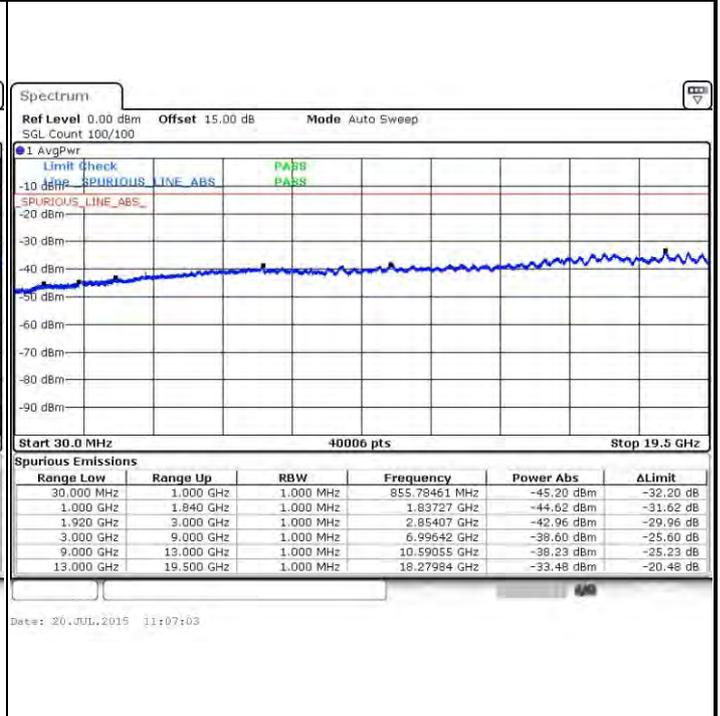


**LTE Band 2 / 3MHz**

**Lowest Channel / QPSK**



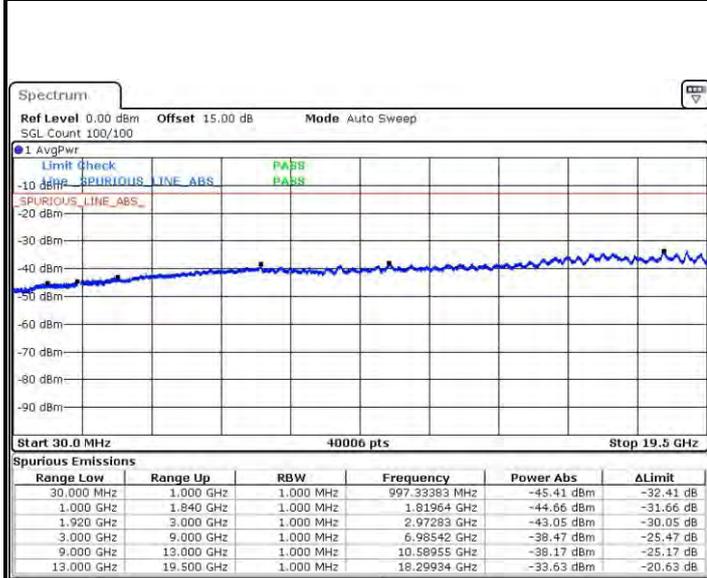
**Lowest Channel / 16QAM**





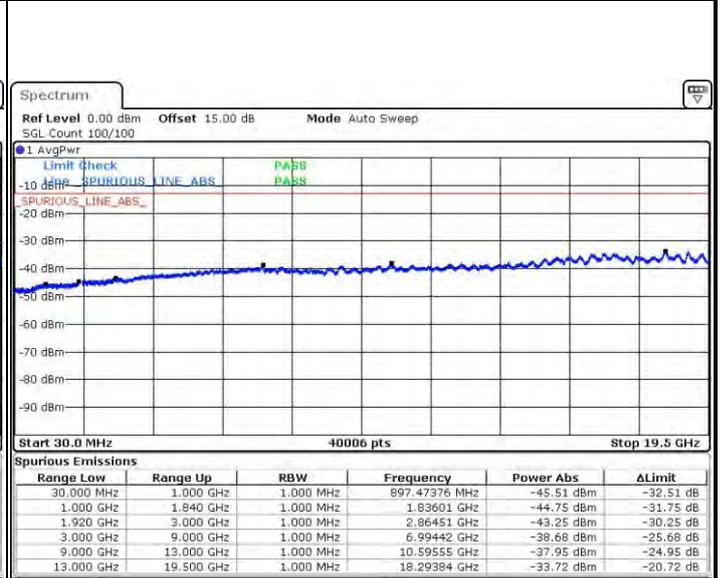
LTE Band 2 / 3MHz

Middle Channel / QPSK



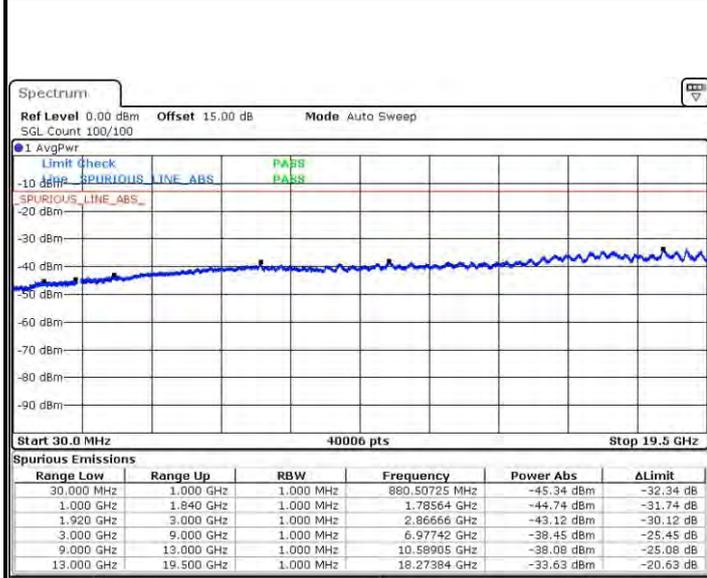
Date: 20.JUL.2015 11:08:16

Middle Channel / 16QAM



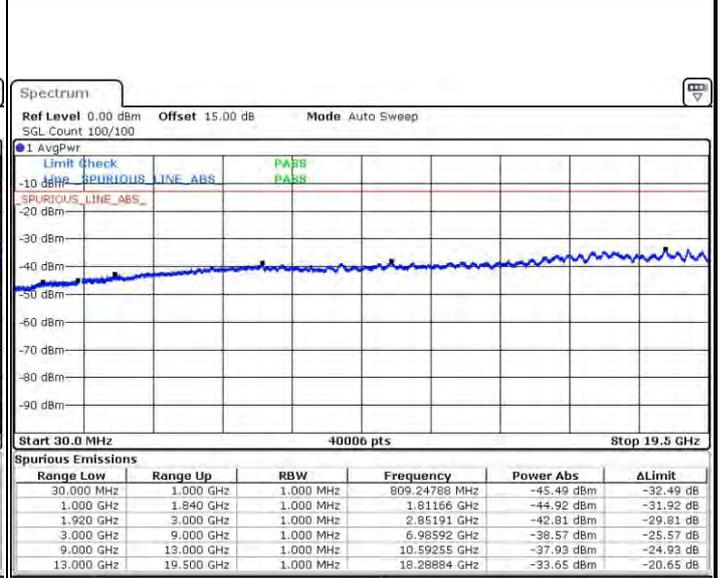
Date: 20.JUL.2015 11:09:28

Highest Channel / QPSK



Date: 20.JUL.2015 11:15:24

Highest Channel / 16QAM



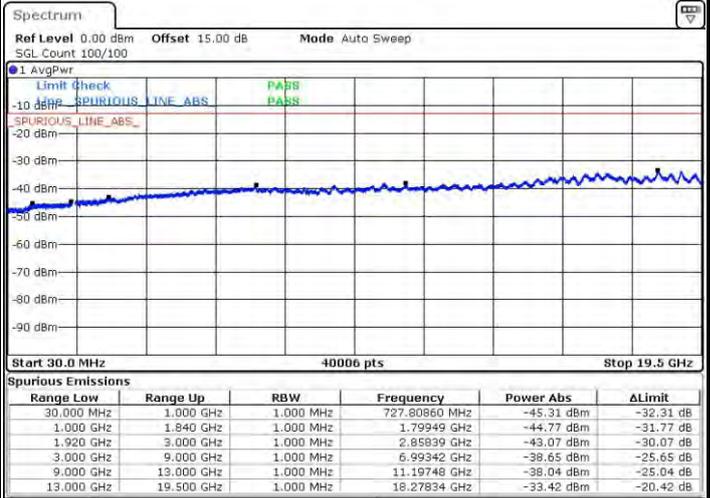
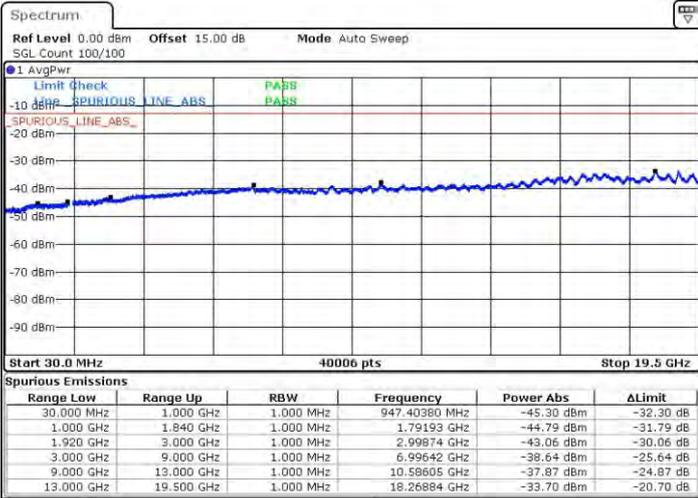
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LTE Band 2 / 5MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM

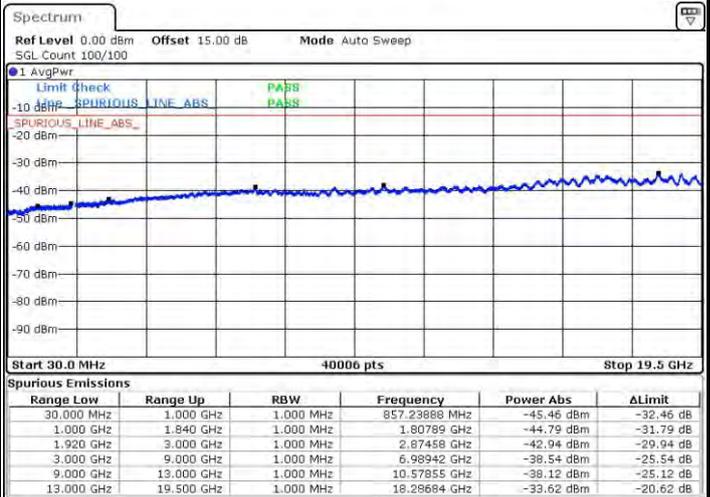
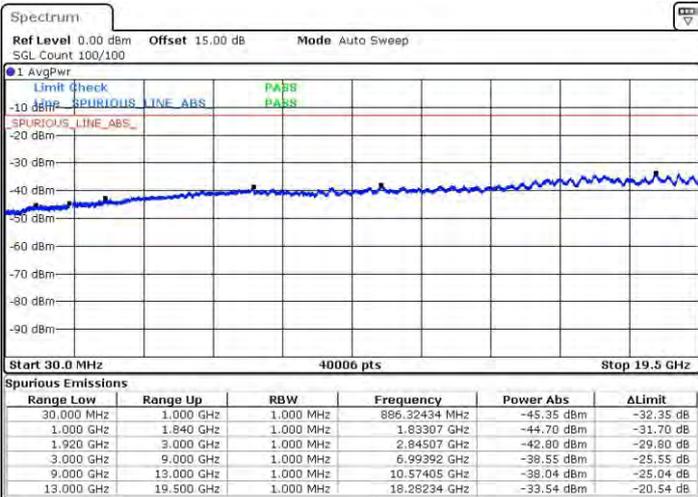


Date: 20.JUL.2015 11:22:31

Date: 20.JUL.2015 11:23:44

Middle Channel / QPSK

Middle Channel / 16QAM



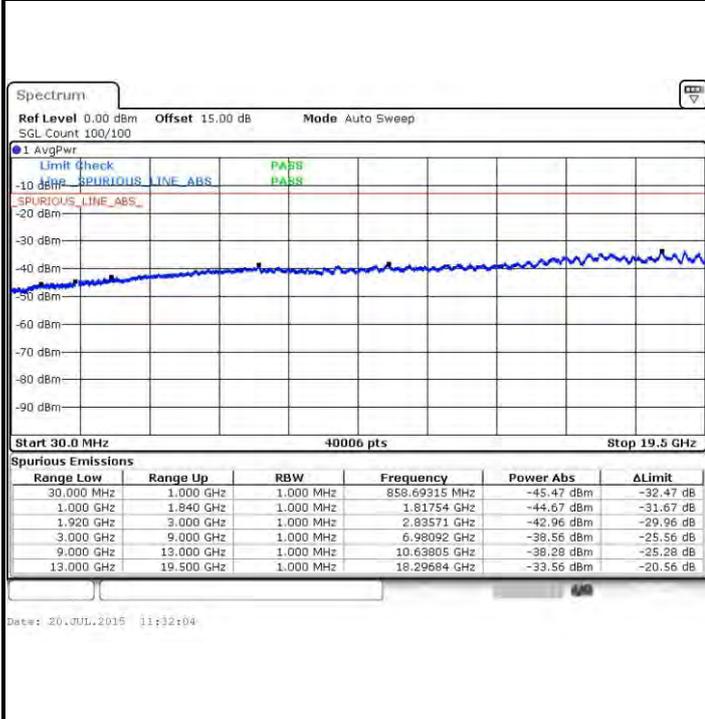
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Date: 20.JUL.2015 11:26:09



LTE Band 2 / 5MHz

Highest Channel / QPSK

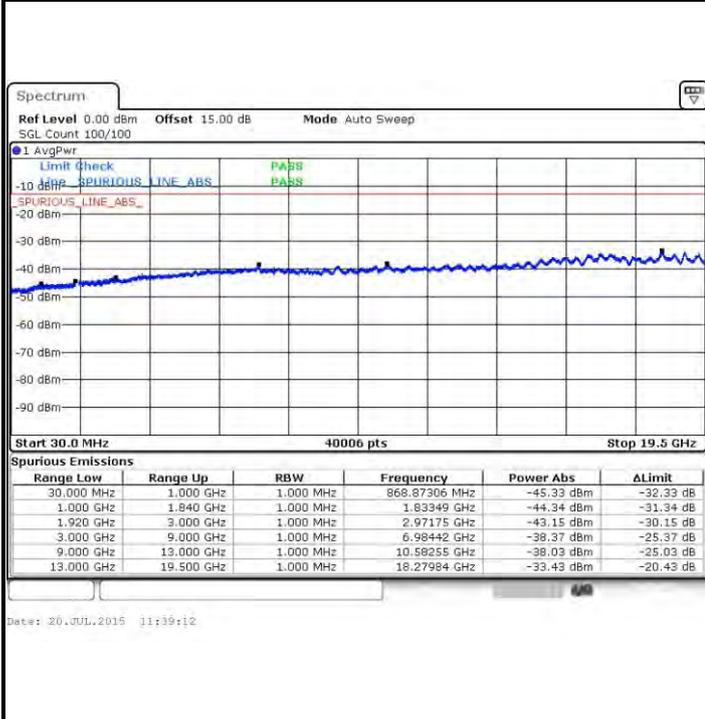


Highest Channel / 16QAM



LTE Band 2 / 10MHz

Lowest Channel / QPSK



Lowest Channel / 16QAM

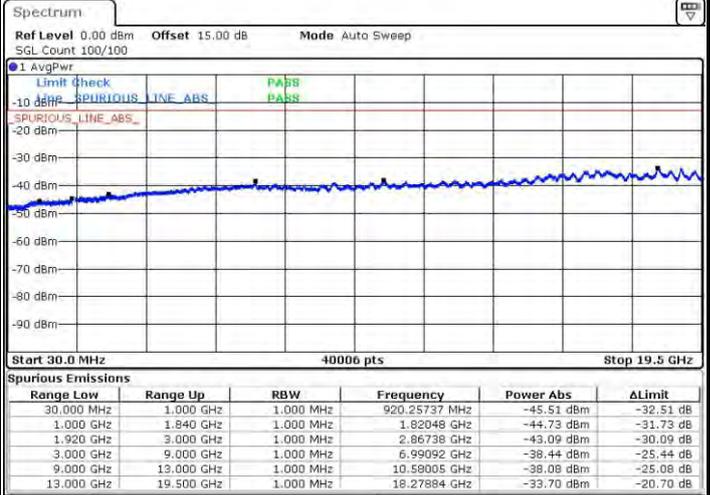




LTE Band 2 / 10MHz

Middle Channel / QPSK

Middle Channel / 16QAM

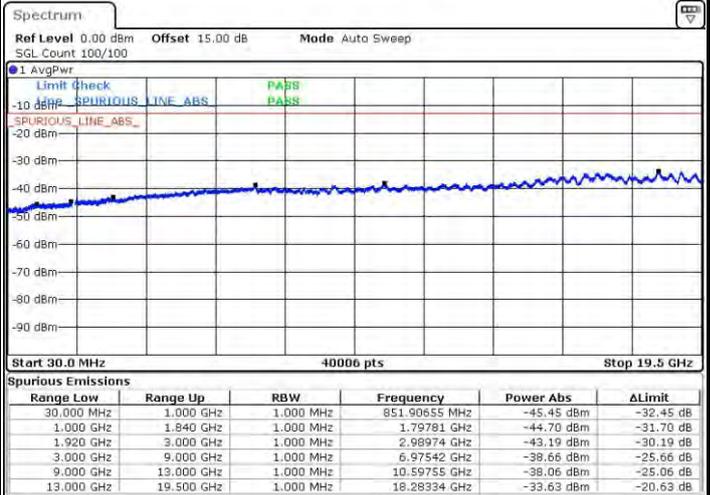
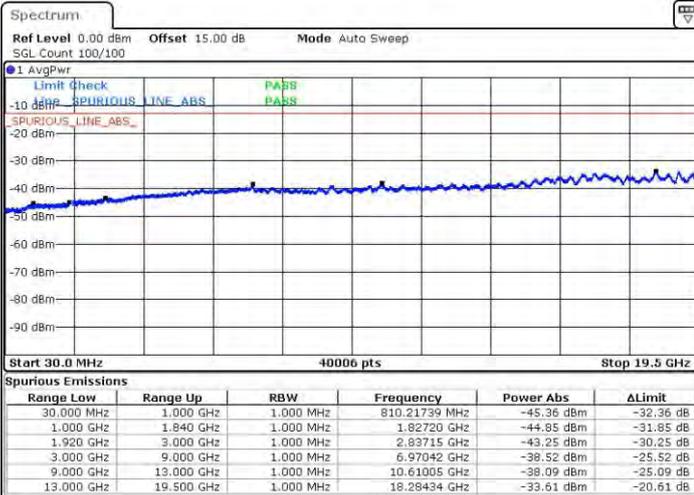


Date: 20.JUL.2015 11:41:37

Date: 20.JUL.2015 11:42:50

Highest Channel / QPSK

Highest Channel / 16QAM



Date: 20.JUL.2015 11:48:45

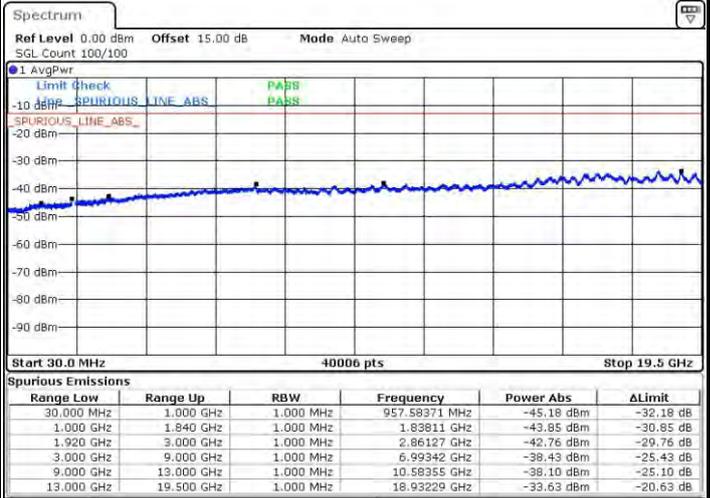
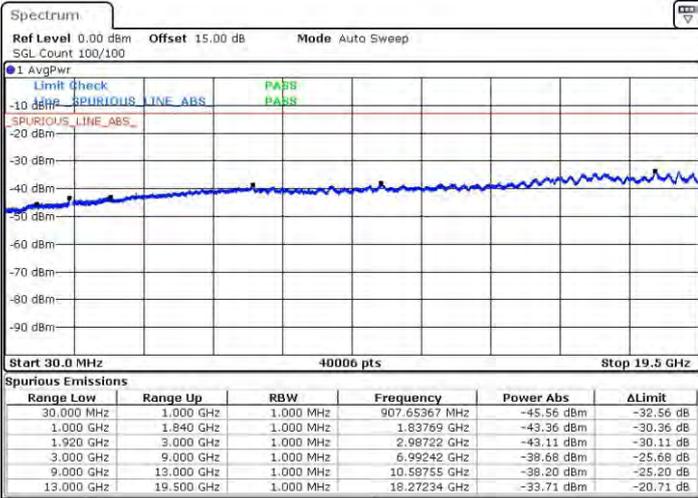
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LTE Band 2 / 15MHz

Lowest Channel / QPSK

Lowest Channel / 16QAM

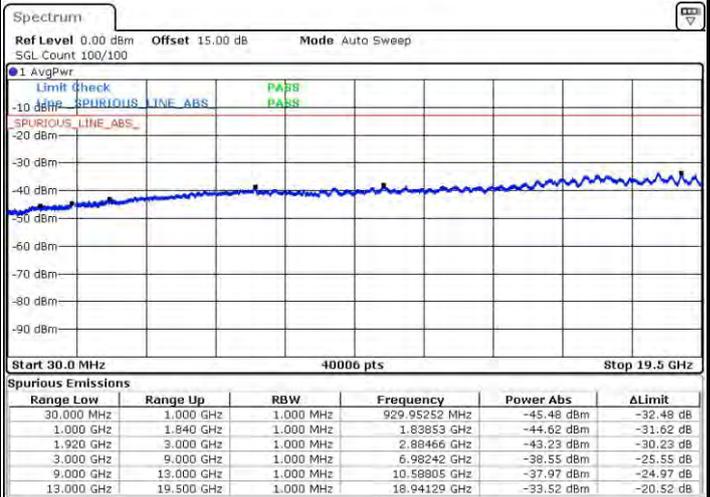
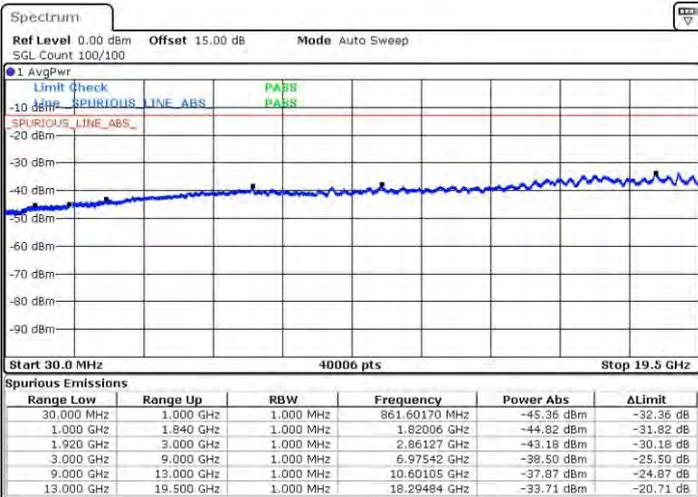


Date: 20.JUL.2015 11:55:33

Date: 20.JUL.2015 13:44:02

Middle Channel / QPSK

Middle Channel / 16QAM



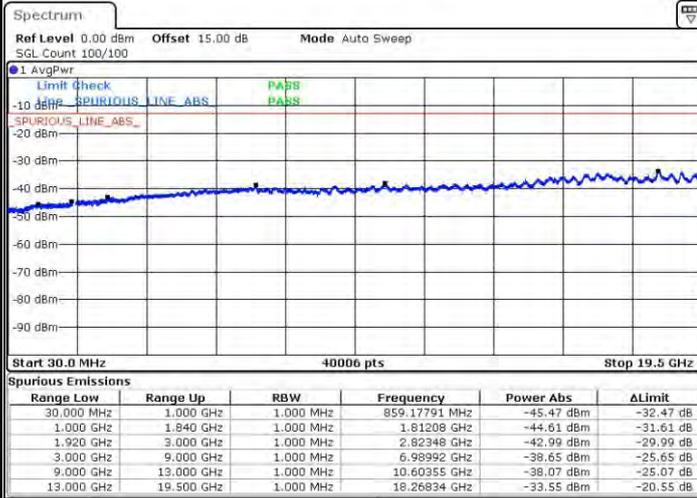
Date: 20.JUL.2015 13:45:19

Date: 20.JUL.2015 13:46:27



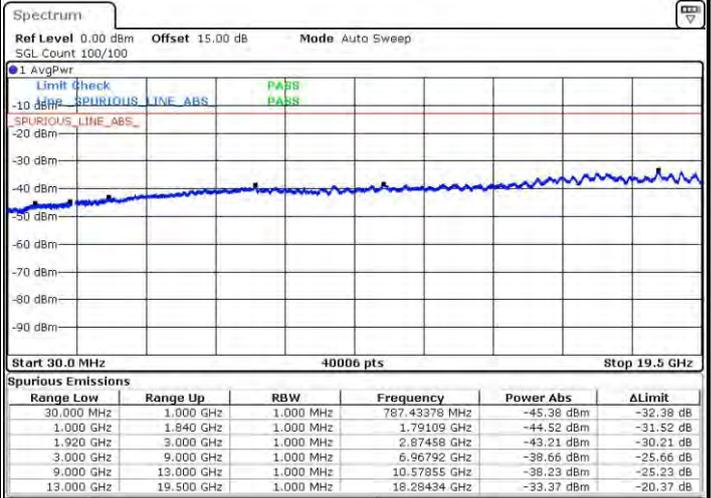
LTE Band 2 / 15MHz

Highest Channel / QPSK



Date: 20.JUL.2015 13:52:21

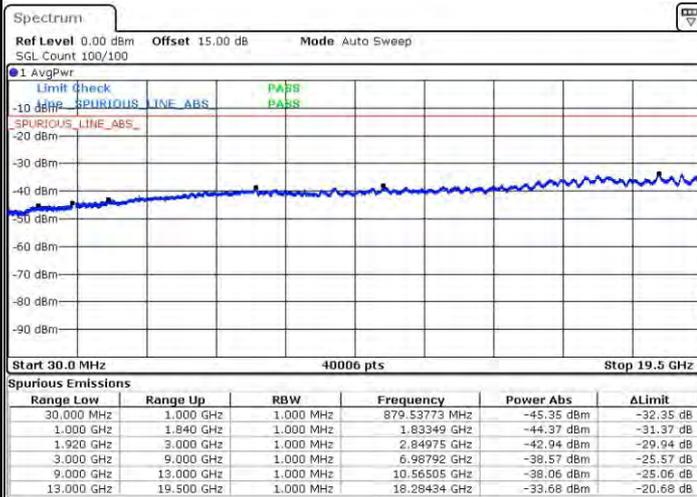
Highest Channel / 16QAM



Date: 20.JUL.2015 13:53:34

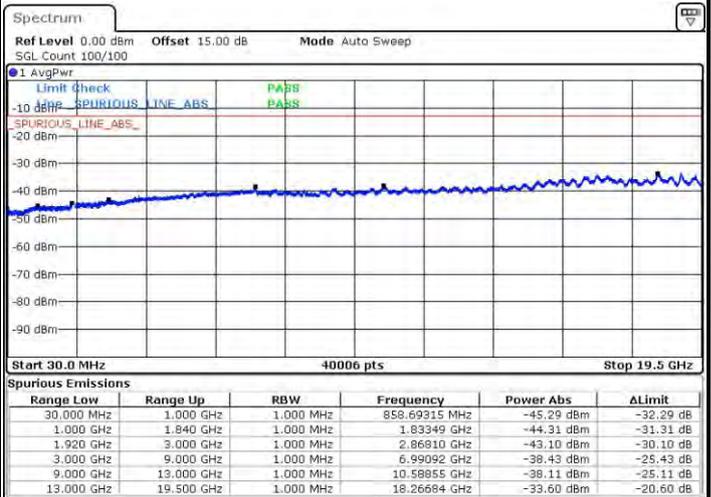
LTE Band 2 / 20MHz

Lowest Channel / QPSK



Date: 20.JUL.2015 13:59:29

Lowest Channel / 16QAM

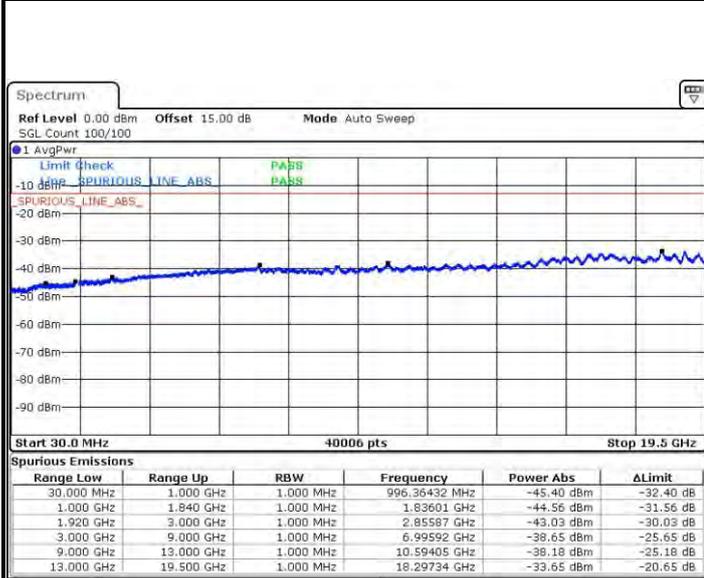


Date: 20.JUL.2015 14:00:41



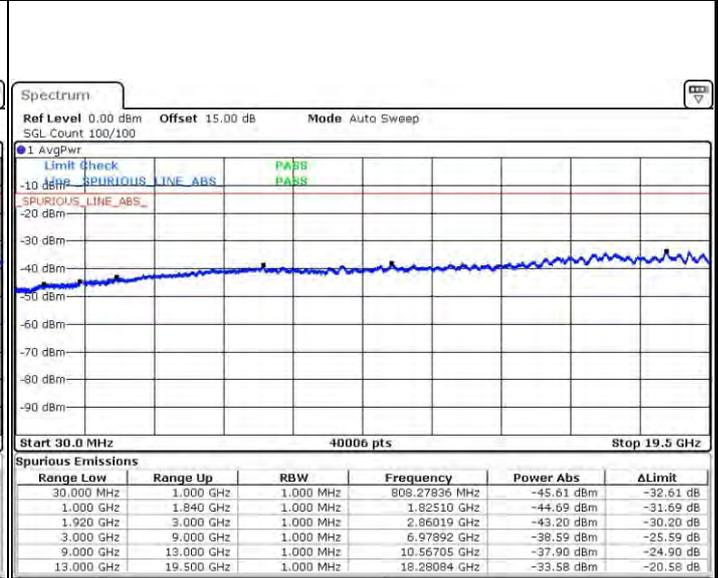
LTE Band 2 / 20MHz

Middle Channel / QPSK



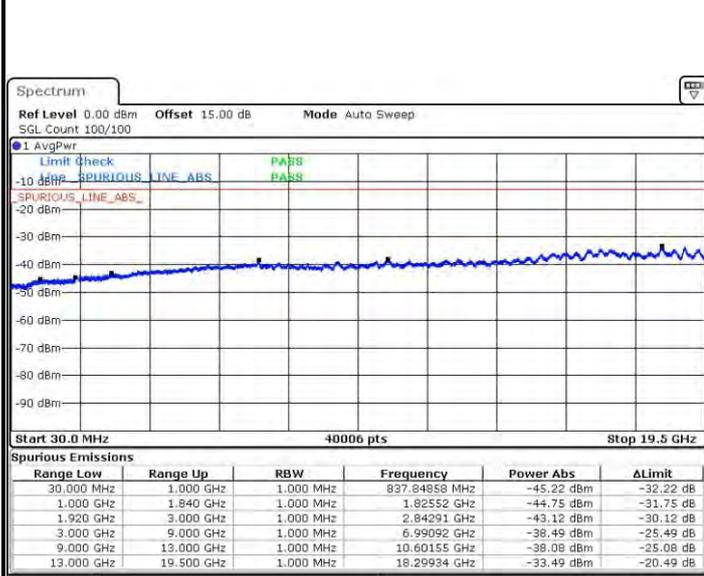
Date: 20.JUL.2015 14:01:53

Middle Channel / 16QAM



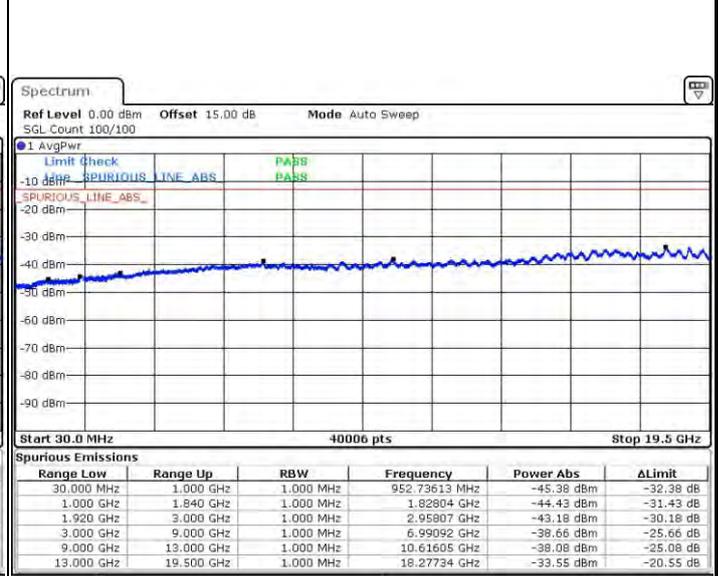
Date: 20.JUL.2015 14:03:06

Highest Channel / QPSK



Date: 20.JUL.2015 14:09:00

Highest Channel / 16QAM



Date: 20.JUL.2015 14:10:12



### LTE Band 4

### Conducted Output Power(Average power)

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	22.31	22.11	22.24
1.4	1	2		22.38	22.31	22.28
1.4	1	5		22.34	22.32	22.26
1.4	3	0		22.30	22.26	22.19
1.4	3	1		22.31	22.28	22.17
1.4	3	2		22.32	22.25	22.16
1.4	6	0		21.35	21.25	21.11
1.4	1	0	16-QAM	21.37	21.11	21.39
1.4	1	2		21.42	21.21	21.01
1.4	1	5		21.38	21.54	21.51
1.4	3	0		21.40	21.09	21.17
1.4	3	1		21.35	21.22	21.28
1.4	3	2		21.39	21.22	21.29
1.4	6	0		20.46	20.12	20.22
3	1	0	QPSK	22.41	22.28	22.23
3	1	7		22.32	22.25	22.35
3	1	14		22.35	22.23	22.22
3	8	0		21.33	21.22	21.17
3	8	4		21.42	21.17	21.15
3	8	7		21.37	21.22	21.27
3	15	0		21.46	21.16	21.08
3	1	0	16-QAM	21.26	21.33	20.86
3	1	7		21.68	20.86	21.54
3	1	14		21.25	21.31	21.28
3	8	0		20.40	20.27	20.14
3	8	4		20.38	20.25	20.09
3	8	7		20.44	20.18	20.02
3	15	0		20.46	20.11	20.11



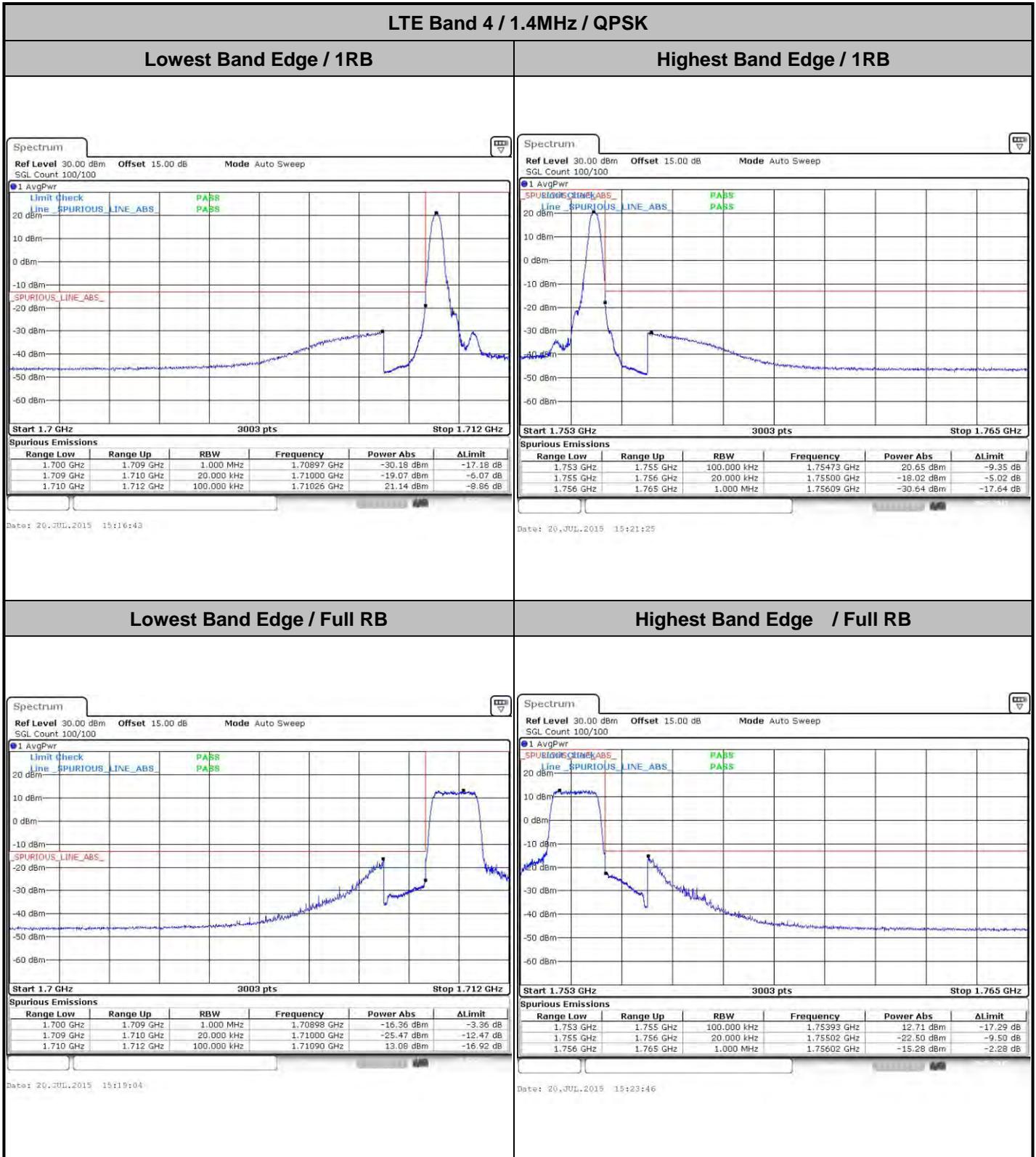
LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.45	22.13	22.35
5	1	12		22.27	22.29	22.09
5	1	24		22.26	22.16	22.12
5	12	0		21.41	21.22	21.17
5	12	6		21.37	21.21	21.08
5	12	11		21.39	21.22	21.17
5	25	0		21.34	21.11	21.04
5	1	0	16-QAM	21.62	21.46	21.00
5	1	12		21.38	21.01	21.36
5	1	24		21.33	21.54	21.31
5	12	0		20.43	20.25	20.20
5	12	6		20.49	20.13	20.18
5	12	11		20.48	20.23	20.17
5	25	0		20.34	20.16	20.02
10	1	0	QPSK	22.36	22.36	22.11
10	1	24		22.35	22.34	22.26
10	1	49		22.31	22.05	22.04
10	25	0		21.37	21.21	21.06
10	25	12		21.39	21.15	21.04
10	25	24		21.32	21.20	21.15
10	50	0		21.28	21.15	21.11
10	1	0	16-QAM	21.64	21.54	21.24
10	1	24		21.57	21.04	21.47
10	1	49		21.06	21.03	21.41
10	25	0		20.28	20.28	20.16
10	25	12		20.38	20.17	20.21
10	25	24		20.40	20.19	20.05
10	50	0		20.27	20.06	19.95

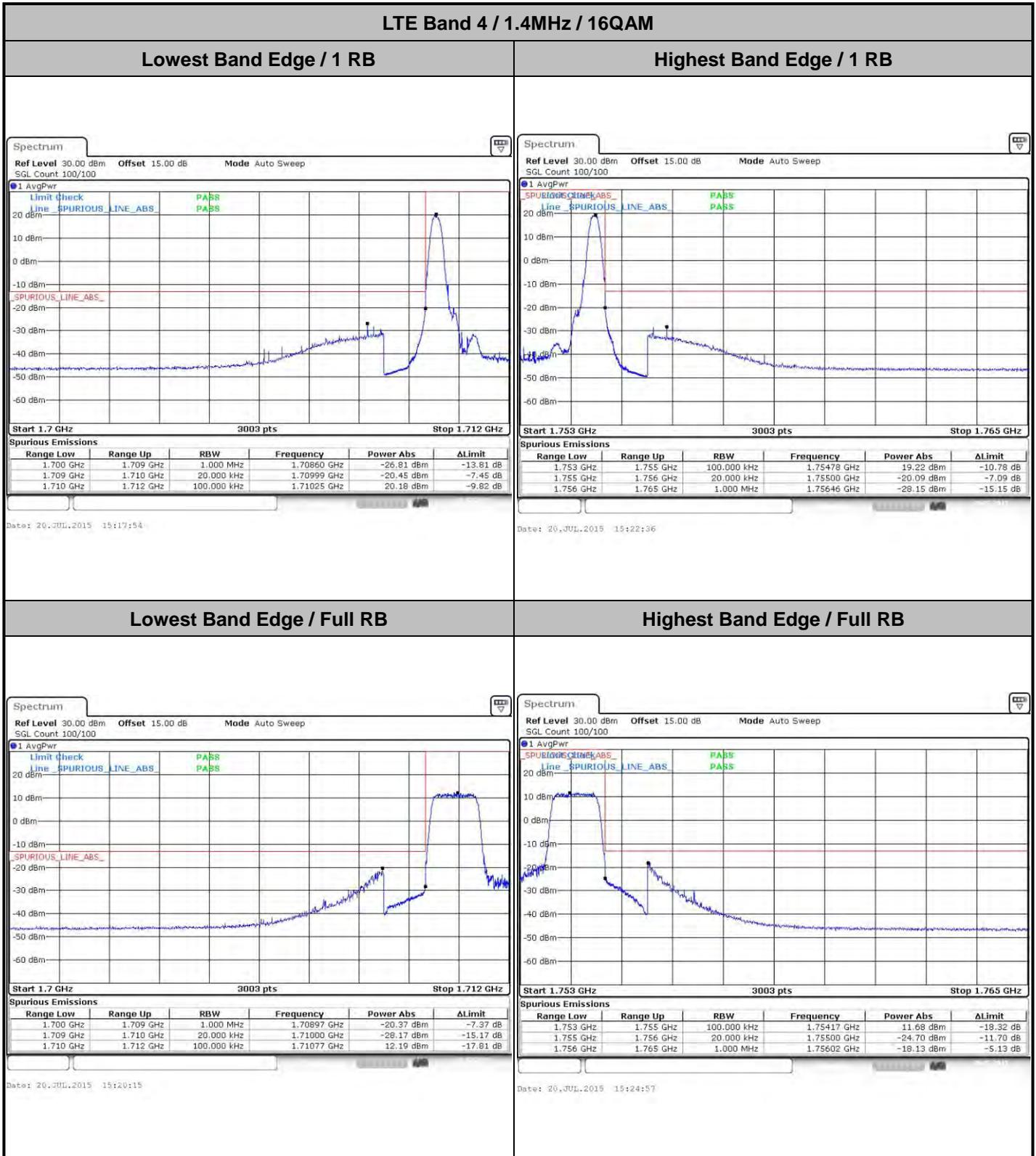


LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.39	22.30	22.23
15	1	37		22.35	22.38	22.21
15	1	74		22.25	22.05	22.12
15	36	0		21.33	21.14	21.16
15	36	18		21.40	21.09	21.24
15	36	37		21.24	21.02	21.02
15	75	0		21.24	21.11	21.07
15	1	0	16-QAM	21.22	21.04	20.88
15	1	37		21.46	20.79	21.09
15	1	74		20.84	20.74	21.01
15	36	0		20.30	20.23	20.08
15	36	18		20.36	20.12	20.12
15	36	37		20.35	20.13	20.08
15	75	0		20.25	20.20	20.04
20	1	0	QPSK	22.43	22.37	22.34
20	1	49		22.38	22.30	22.26
20	1	99		22.23	22.08	21.92
20	50	0		21.33	21.17	21.11
20	50	24		21.30	21.07	21.03
20	50	49		21.20	21.01	20.91
20	100	0		21.30	21.20	21.02
20	1	0	16-QAM	21.47	21.45	21.31
20	1	49		21.43	21.46	21.44
20	1	99		21.17	21.00	20.89
20	50	0		20.35	20.19	20.01
20	50	24		20.35	20.21	20.06
20	50	49		20.27	20.11	20.22
20	100	0		20.17	20.24	20.09



# Conducted Band Edge







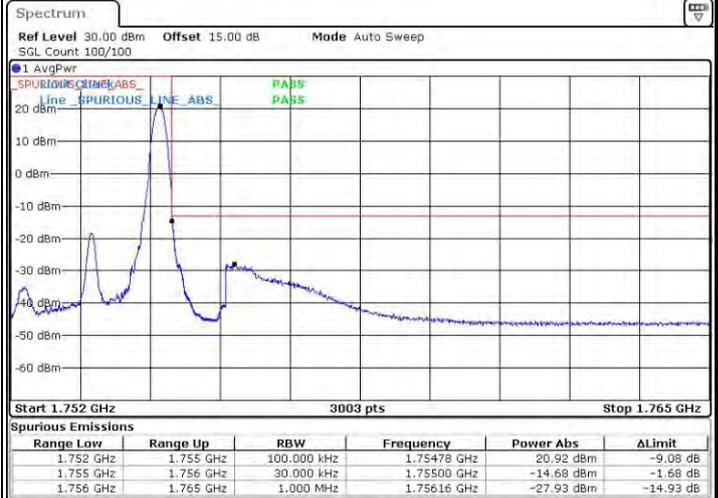
LTE Band 4 / 3MHz / QPSK

Lowest Band Edge / 1RB



Date: 20.JUL.2015 15:26:07

Highest Band Edge / 1 RB



Date: 20.JUL.2015 15:30:50

Lowest Band Edge / Full RB



Date: 20.JUL.2015 15:28:28

Highest Band Edge / Full RB

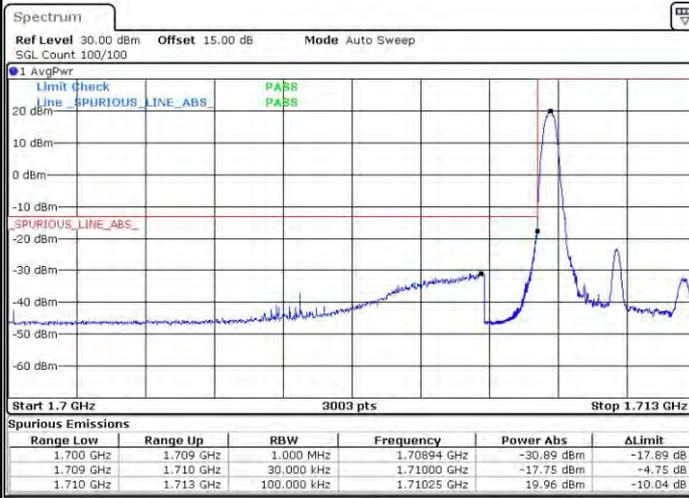


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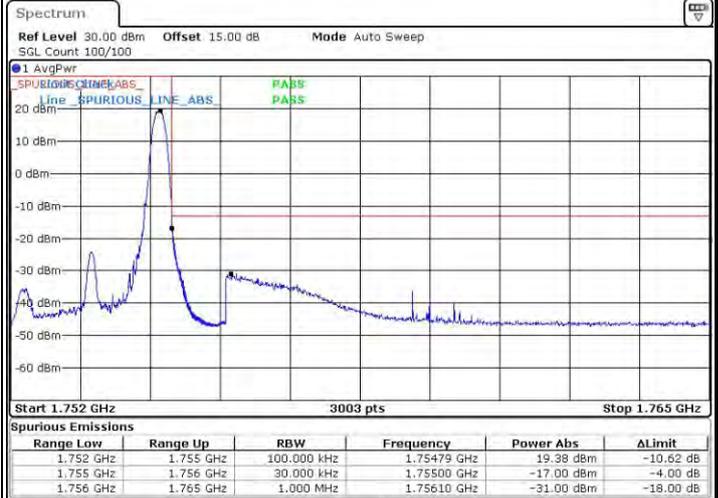
LTE Band 4 / 3MHz / 16QAM

Lowest Band Edge / 1 RB



Date: 20.JUL.2015 15:27:18

Highest Band Edge / 1 RB



Date: 20.JUL.2015 15:32:00

Lowest Band Edge / Full RB



Date: 20.JUL.2015 15:29:39

Highest Band Edge / Full RB

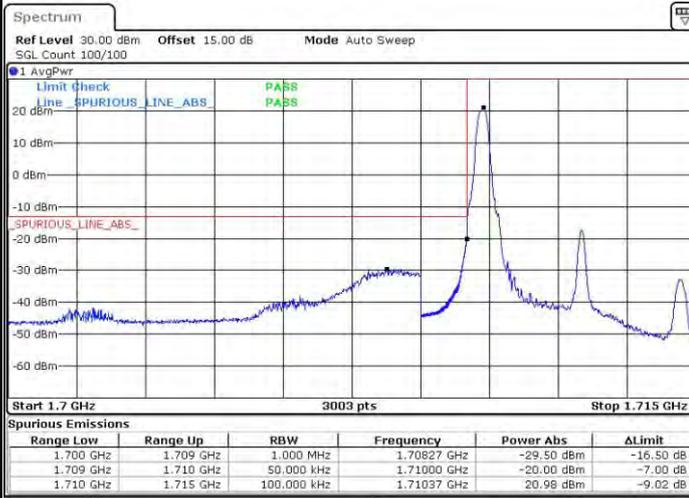


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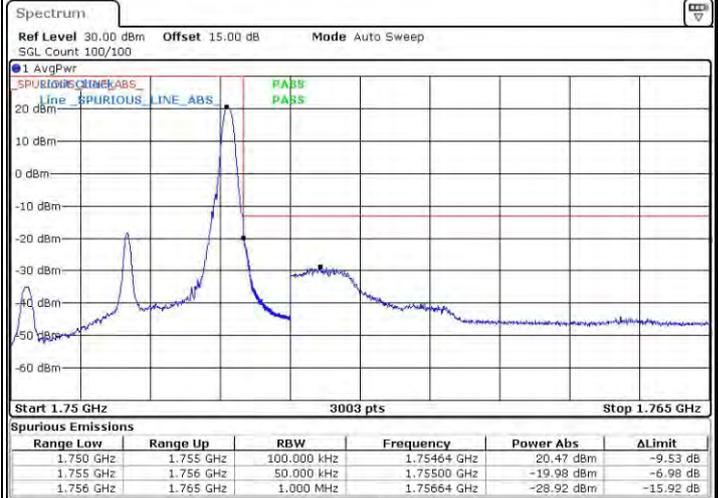
LTE Band 4 / 5MHz / QPSK

Lowest Band Edge / 1 RB



Date: 20 JUL 2015 15:35:32

Highest Band Edge / 1 RB



Date: 20 JUL 2015 15:40:13

Lowest Band Edge / Full RB



Date: 20 JUL 2015 15:37:53

Highest Band Edge / Full RB

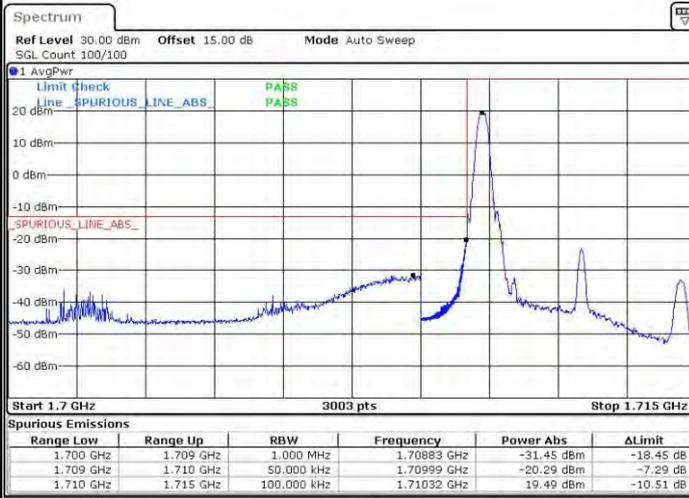


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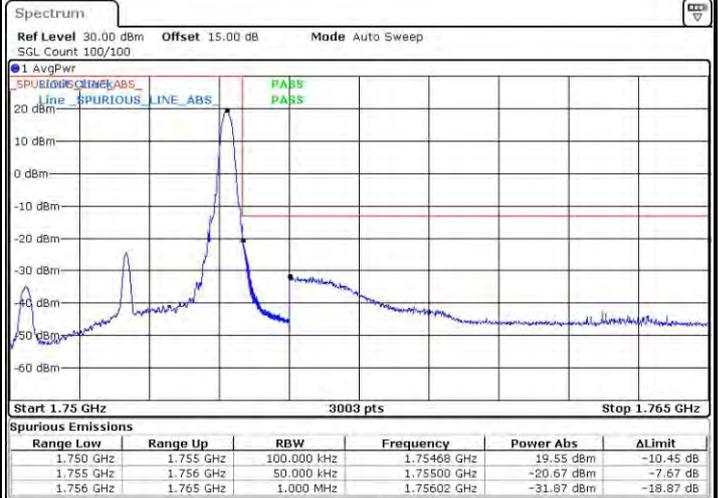
LTE Band 4 / 5MHz / 16QAM

Lowest Band Edge / 1RB



Date: 20 JUL 2015 15:36:42

Highest Band Edge / 1 RB



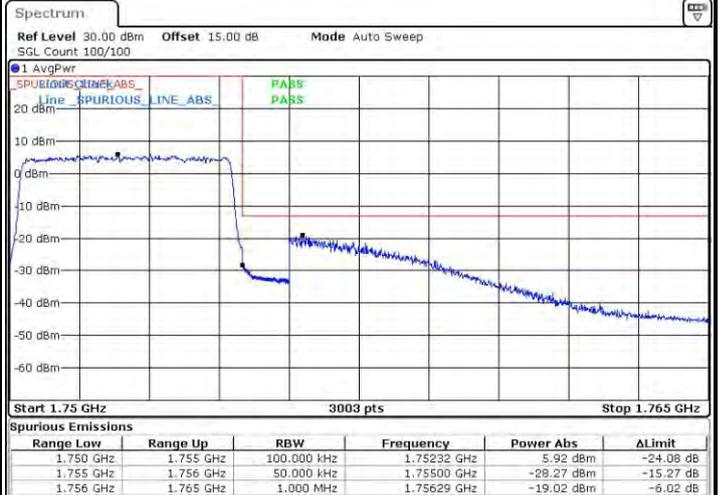
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Lowest Band Edge / Full RB

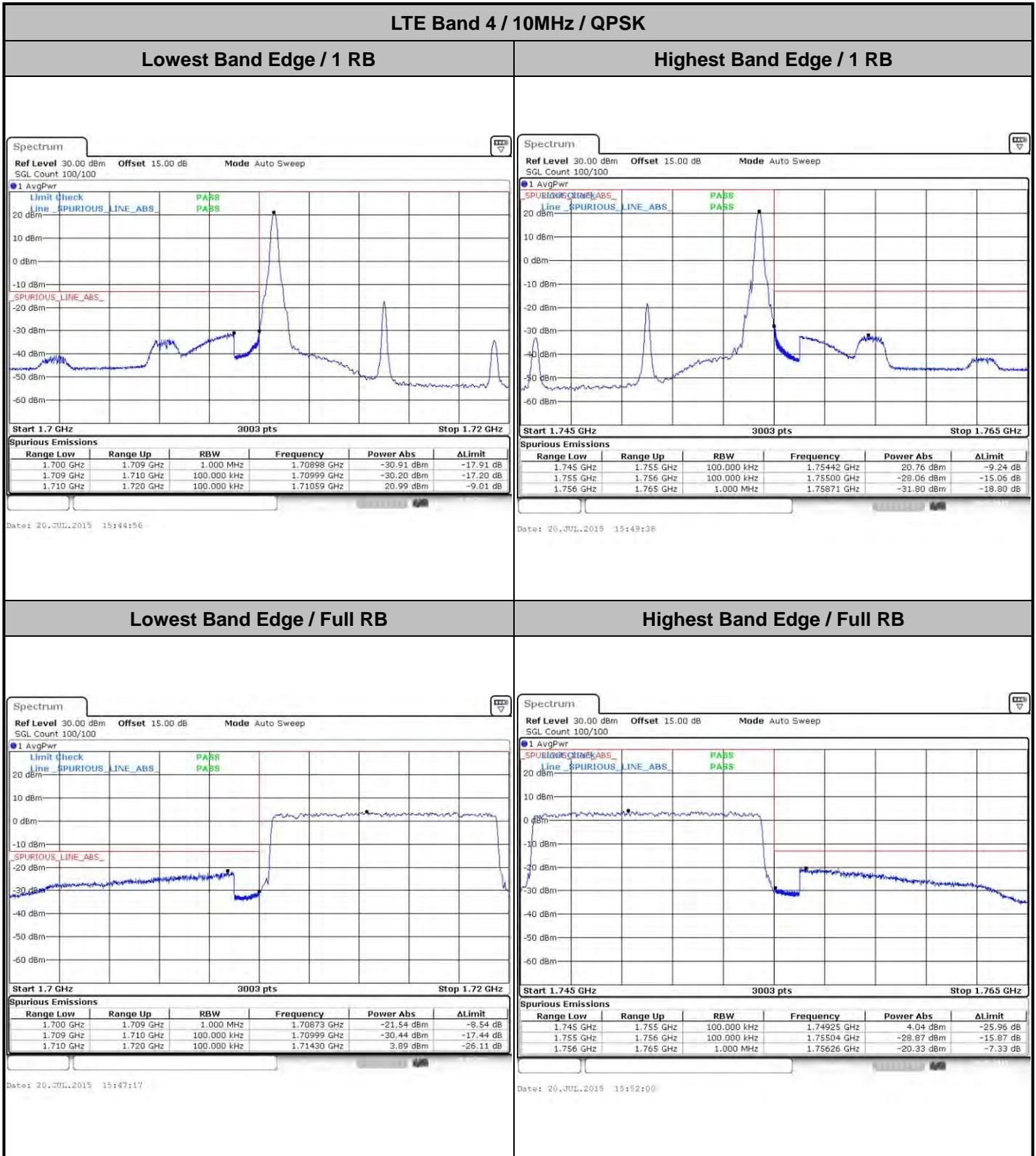


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Highest Band Edge / Full RB



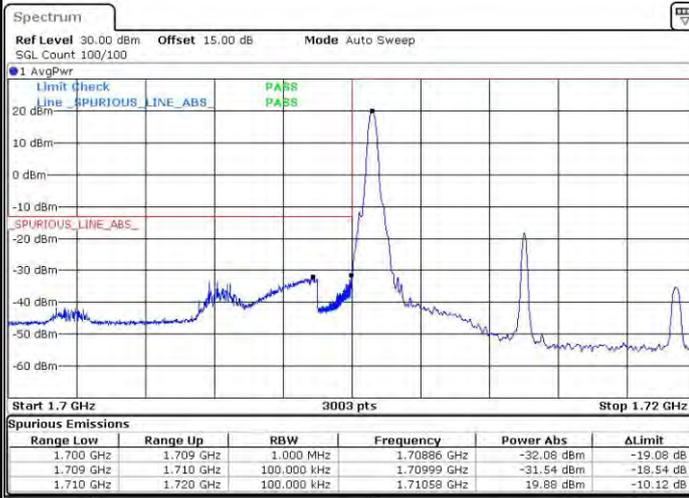
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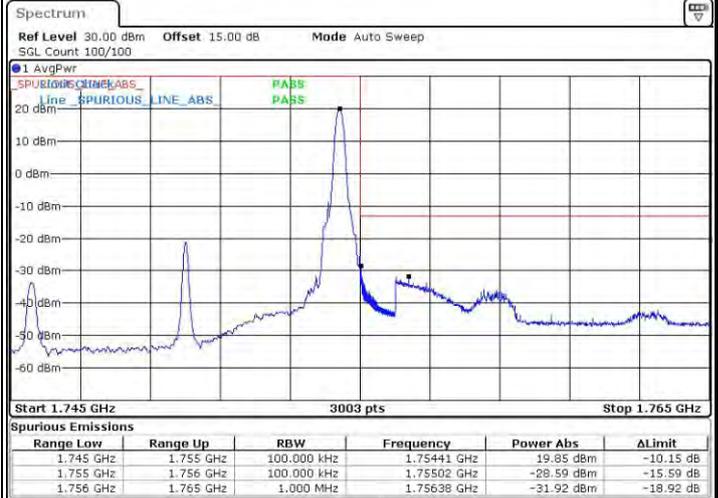
LTE Band 4 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



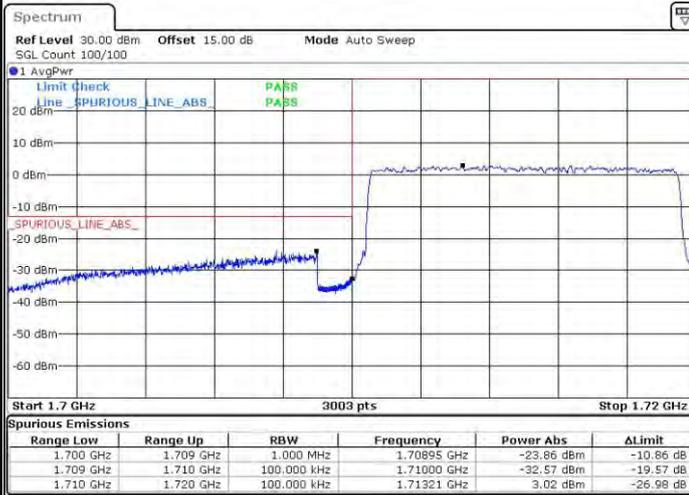
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Highest Band Edge / 1 RB



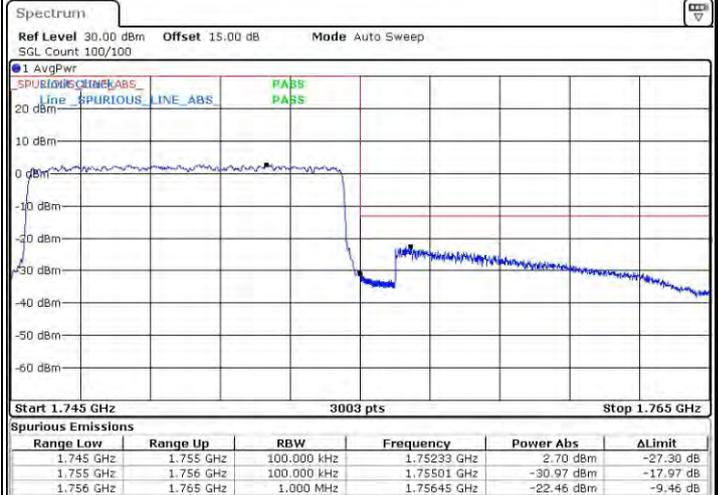
Date: 20.JUL.2015 15:50:49

Lowest Band Edge / Full RB



Date: 20.JUL.2015 15:49:28

Highest Band Edge / Full RB

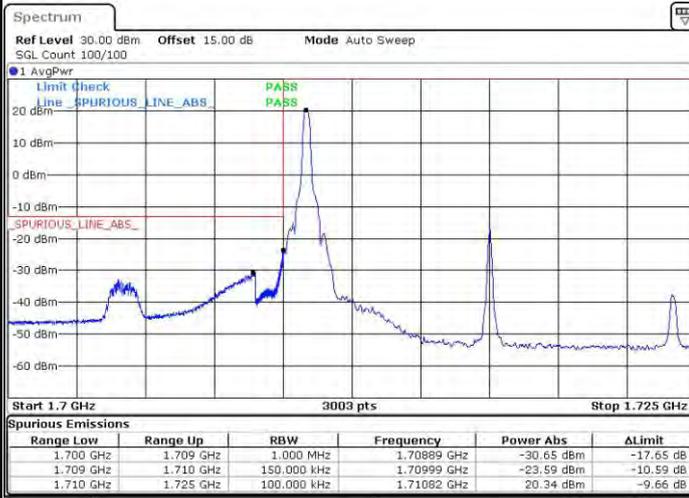


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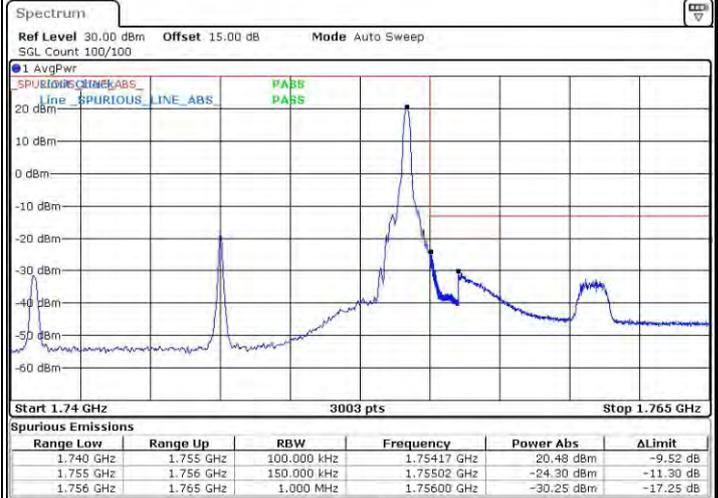
LTE Band 4 / 15MHz / QPSK

Lowest Band Edge / 1 RB



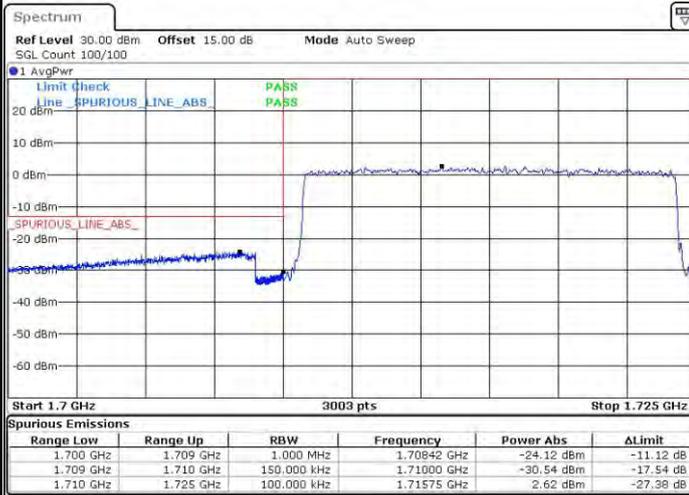
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Highest Band Edge / 1 RB



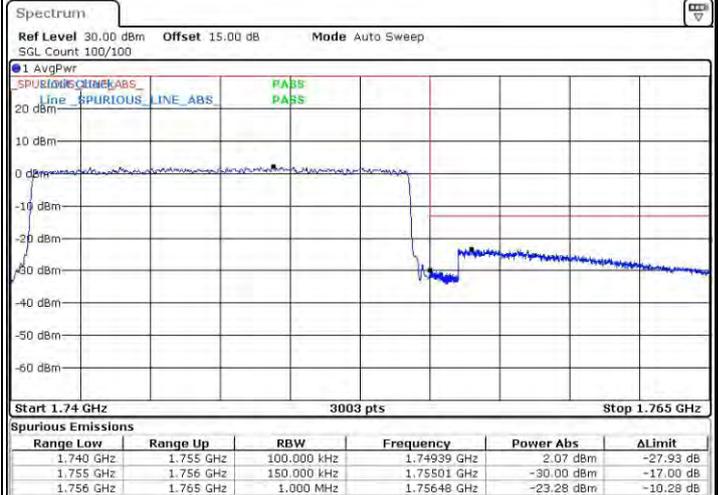
Date: 20.JUL.2015 15:59:03

Lowest Band Edge / Full RB



Date: 20.JUL.2015 15:56:42

Highest Band Edge / Full RB

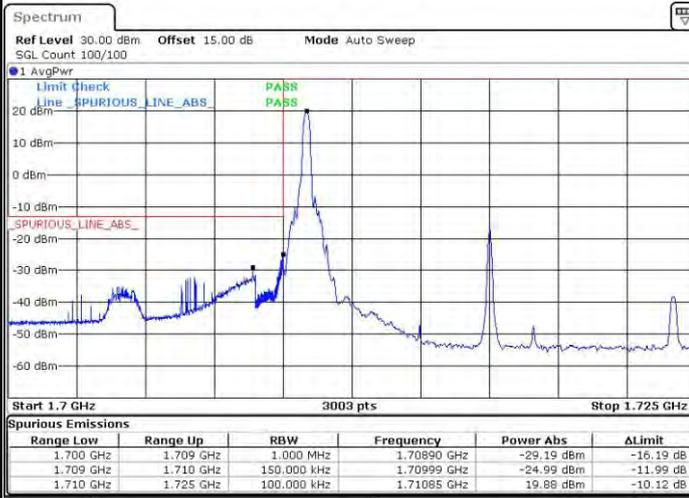


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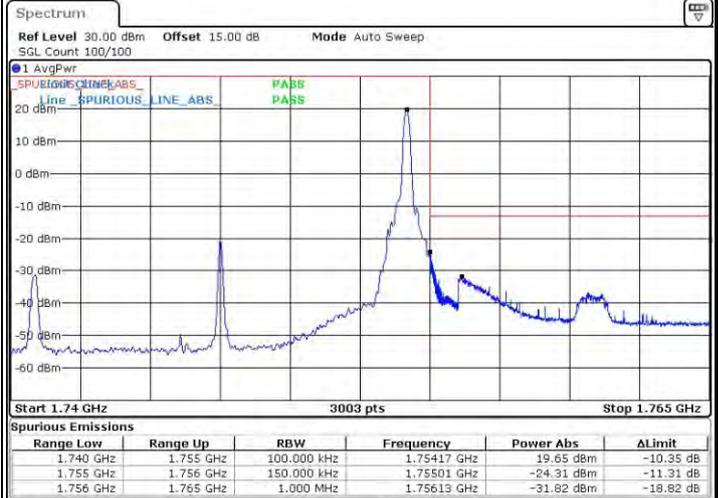
LTE Band 4 / 15MHz / 16QAM

Lowest Band Edge / 1 RB



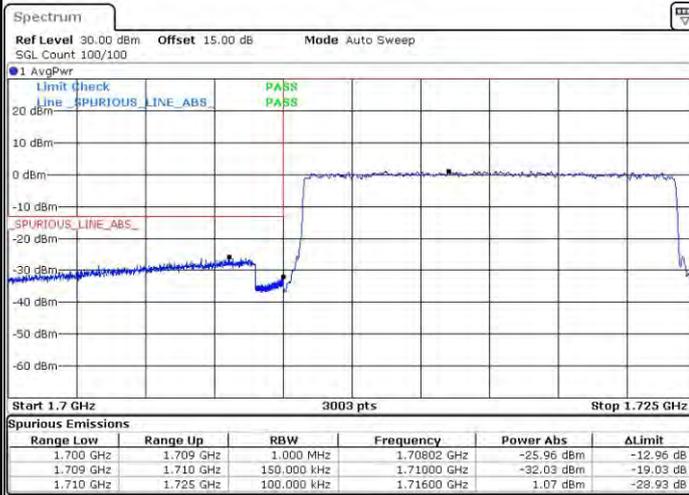
Date: 20 JUL 2015 15:55:31

Highest Band Edge / 1 RB



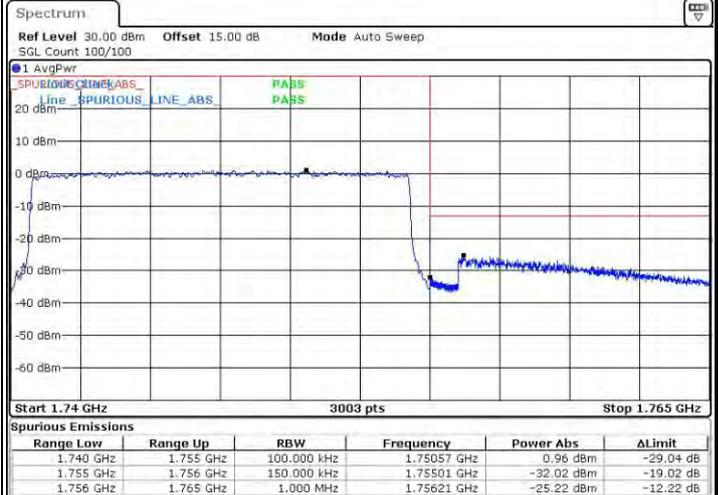
Date: 20 JUL 2015 16:00:13

Lowest Band Edge / Full RB



Date: 20 JUL 2015 15:57:52

Highest Band Edge / Full RB

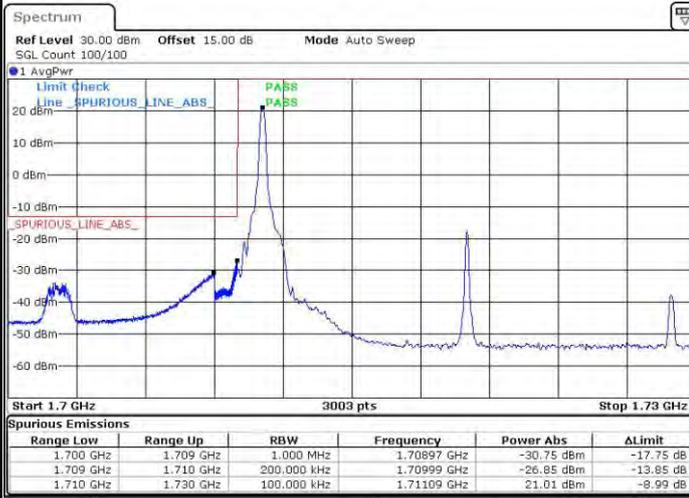


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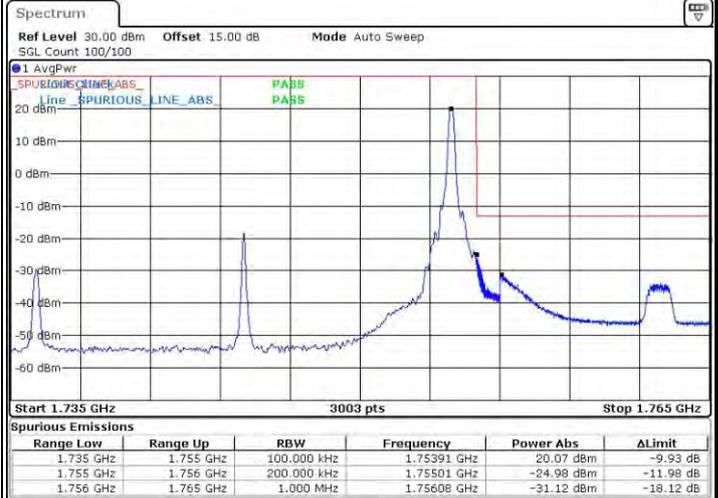
LTE Band 4 / 20MHz / QPSK

Lowest Band Edge / 1 RB



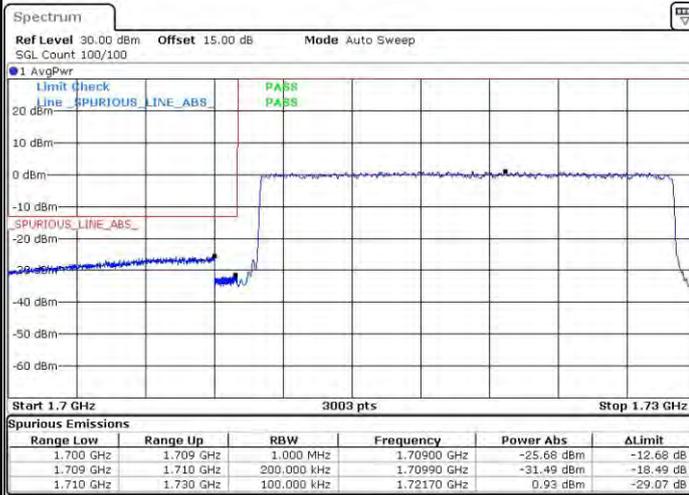
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Highest Band Edge / 1 RB



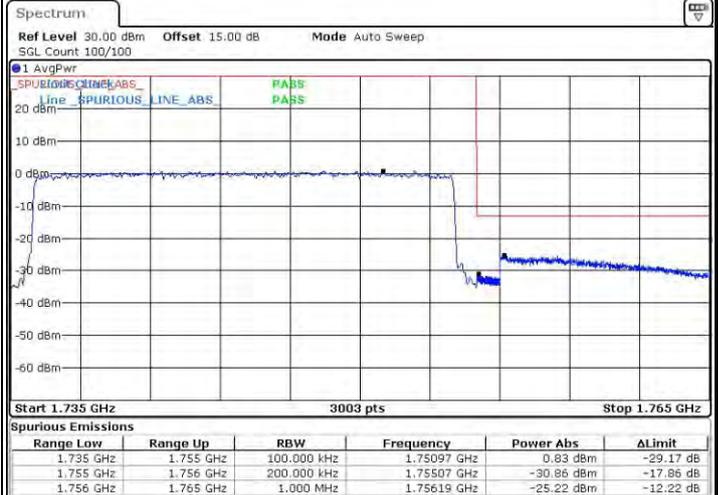
Date: 20.JUL.2015 16:08:27

Lowest Band Edge / Full RB



Date: 20.JUL.2015 16:06:06

Highest Band Edge / Full RB



Date: 20.JUL.2015 16:10:48