



# FCC RF Test Report

**APPLICANT** : Xiaomi Communications Co., Ltd.  
**EQUIPMENT** : Mobile Phone  
**BRAND NAME** : Redmi  
**MODEL NAME** : 2201116SR  
**FCC ID** : 2AFZZ16SR  
**STANDARD** : 47 CFR Part 2, 27(M)  
**CLASSIFICATION** : PCS Licensed Transmitter Held to Ear (PCE)  
**TEST DATE(S)** : Dec. 27, 2021 ~ Jan. 06, 2022

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 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: Jason Jia / Supervisor

Approved by: Alex Wang / Manager



**Sporton International (Kunshan) Inc.**

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China**



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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG1N1013-03C	Rev. 01	Initial issue of report	Jan. 07, 2022



## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	-	Report Only	-
	§27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 7) (Band 38) (Band 41)	EIRP < 2Watt	PASS	-
3.5	N/A	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	-	Report Only	-
3.7	§27.53(m)(4)	Conducted Band Edge Measurement (Band 7) (Band 38) (Band 41)	§27.53(m)(4)	PASS	-
3.8	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (Band 7) (Band 38) (Band 41)	< 55+10log <sub>10</sub> (P[Watts])	PASS	-
3.9	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (Band 7) (Band 38) (Band 41)	< 55+10log <sub>10</sub> (P[Watts])	PASS	Under limit 9.76 dB at 17680.000 MHz

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



# 1 General Description

## 1.1 Applicant

Xiaomi Communications Co., Ltd.

#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

## 1.2 Manufacturer

Xiaomi Communications Co., Ltd.

#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

## 1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Redmi
Model Name	2201116SR
FCC ID	2AFZZ16SR
IMEI Code	Conducted: 861288050015360/861288050015378 Radiation: 861288050015741/861288050015758
HW Version	P1.1
SW Version	MIUI 13
EUT Stage	Identical Prototype



### 1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx Frequency</b>	LTE Band 7 : 2500 MHz ~ 2570 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2545 MHz ~ 2650 MHz
<b>Rx Frequency</b>	LTE Band 7 : 2620 MHz ~ 2690 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2545 MHz ~ 2650 MHz
<b>Bandwidth</b>	LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz LTE Band 38 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 41 : 5MHz / 10MHz / 15MHz / 20MHz
<b>Maximum Output Power to Antenna</b>	<b>&lt;Ant 0&gt;</b> LTE Band 7 : 24.39 dBm LTE Band 38 : 24.13 dBm LTE Band 41 : 24.17 dBm LTE Band 7_CA : 24.29 dBm LTE Band 38_CA : 24.53 dBm LTE Band 41_CA : 24.67 dBm <b>&lt;Ant 4&gt;</b> LTE Band 7 : 22.67 dBm LTE Band 38 : 22.85 dBm LTE Band 41 : 22.89 dBm LTE Band 7_CA : 22.58 dBm LTE Band 38_CA : 22.82 dBm LTE Band 41_CA : 22.90 dBm
<b>Antenna Gain</b>	<b>&lt;Ant 0&gt;</b> LTE Band 7 : -3.6 dBi LTE Band 38 : -3.6 dBi LTE Band 41 : -3.6 dBi <b>&lt;Ant 4&gt;</b> LTE Band 7 : -0.6 dBi LTE Band 38 : -0.6 dBi LTE Band 41 : -0.6 dBi
<b>Type of Modulation</b>	QPSK / 16QAM / 64QAM / 256QAM(Downlink Only)

Remark: The EIRP is calculated from Output power and antenna gain, so the maximum EIRP is shown in the report for Antenna 4.

### 1.5 Modification of EUT

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



## 1.6 Re-use of Measured Data

### 1.6.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: 2201116SR, FCC ID: 2AFZZ16SR) is electrically identical to the reference device (Model: 2201116SG, FCC ID: 2AFZZ16SG) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 484596 D01.

### 1.6.2 Difference Section

The main difference between FCC ID: 2AFZZ16SG and FCC ID: 2AFZZ16SR is as below:

- Remove LTE Band 32/66 and 5G NR n66.
- Add LTE Band 42

Other differences and all the details of similarity and difference can be found in the confidential documents (2AFZZ16SR\_Operational Description of Product Equality Declaration).

### 1.6.3 Reference detail Section:

Equipment Class	Reference FCC ID	Folder Test	Report Title/Section
PCE	2AFZZ16SG	Part27M (Report No. FG1N1013C)	All conducted test sections applicable for LTE band 7

### 1.6.4 Spot Check Verification Data Section

Conducted power test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model

Summary for power spot check for each rule entry and technology is listed as below:

Test Item	Mode	2AFZZ16SG Worst Result	2AFZZ16SR Worst Result	Difference (dB)
Average Conducted Power (dBm)	LTE Band 7_Ant0	24.39	24.39	0
	LTE Band 7_Ant4	22.67	22.67	0

Conclusion:

We confirm that the test data reuse policy of FCC KDB 484596 D01 Referencing Test Data v01 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.



### 1.7 Maximum EIRP Power and Emission Designator

LTE Band 7		QPSK		16QAM/64QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20	2510.0 ~ 2560.0	0.1611	-	0.1374	-
LTE Band 38		QPSK		16QAM/64QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20	2580.0 ~ 2610.0	0.1679	18M4G7D	0.1384	18M4W7D
LTE Band 41		QPSK		16QAM/64QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20	2555.0 ~ 2640.0	0.1694	18M4G7D	0.1400	18M4W7D

LTE Band 7 CA		QPSK		16QAM/64QAM	
BW (MHz)		Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20MHz+20MHz		0.1578	37M8G7D	0.1346	38M0W7D
LTE Band 38 CA		QPSK		16QAM/64QAM	
BW (MHz)		Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20MHz+20MHz		0.1667	37M7G7D	0.1340	38M0W7D
LTE Band 41 CA		QPSK		16QAM/64QAM	
BW (MHz)		Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20MHz+20MHz		0.1698	37M7G7D	0.1282	38M0W7D

**Note:**

1. LTE Band 41 overlaps the entire frequency range of LTE Band 38. Therefore, the test results provided in this report covers Band 41 as well as Band 38.
2. All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report .
3. Based on engineering evaluation, only the maximum bandwidth and the worst modulation test results are shown in the report.





### 1.8 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

<b>Test Firm</b>	Sporton International (Kunshan) Inc.		
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	03CH05-KS TH01-KS	CN1257	314309

### 1.9 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH05-KS	AUDIX	E3	6.2009-8-24al

### 1.10 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 C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

**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 v03r01 with maximum output power.

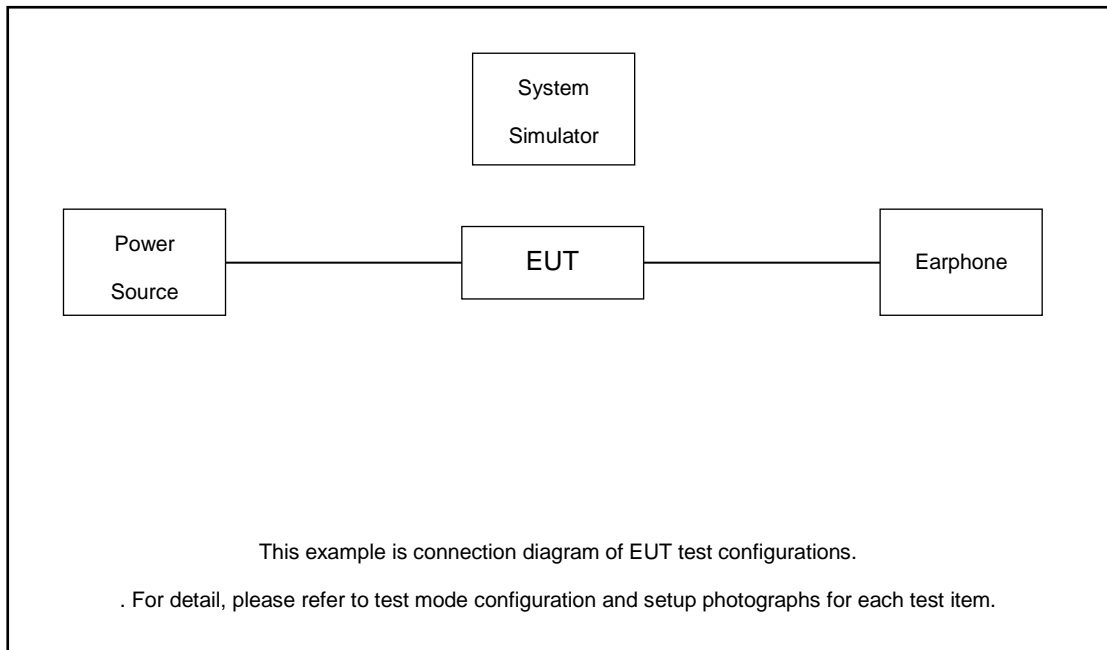
Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	7	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v
	38	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v
	41	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	41	-	-				v	v	v	v	v		v	v	v	v
26dB and 99% Bandwidth	41	-	-				v	v	v				v		v	
Conducted Band Edge	41	-	-	v	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	41	-	-	v	v	v	v	v				v		v	v	v
Frequency Stability	41	-	-				v	v					v		v	
E.R.P / E.I.R.P	7	-	-	v	v	v	v	v	v	v	v			v	v	v
	38	-	-	v	v	v	v	v	v	v	v			v	v	v
	41	-	-	v	v	v	v	v	v	v	v			v	v	v
Radiated Spurious Emission	7	Worst Case											v	v	v	
	41	Worst Case											v	v	v	
Note	<ol style="list-style-type: none"> <li>The mark "v" 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> <li>All test items are based on engineering evaluation.</li> <li>LTE Band 41 overlaps the entire frequency range of LTE Band 38. Therefore, the test results provided in this report covers Band 41 as well as Band 38.</li> </ol>															



Test Items	Band	Bandwidth (MHz)										Modulation				RB #			Test Channel		
		20+20	20+15	15+20	20+10	10+20	20+5	5+20	15+15	15+10	10+15	QPSK	16QAM	64QAM	-	1	Half	Full	L	M	H
Max. Output Power	7C_CA	v	v	v	v	v	-	-	v	v	-	v	v	v	-	v	v	v	v	v	v
	38C_CA	v							v			v	v	v	-	v	v	v	v	v	v
	41C_CA	v	v	v	v	v	v	v	v	v	v	v	v	v	-	v	v	v	v	v	v
26dB and 99% Bandwidth	7C_CA	v					-	-			-	v	v		-			v		v	
	41C_CA	v	-	-	-	-	-	-		-	-	v	v		-			v		v	
Conducted Band Edge	7C_CA	v	v	v	v	v	-	-	v	v	-	v	v	v	-	v		v	v		v
	41C_CA	v	v	v	v	v	v	v	v	v	v	v	v	v	-	v		v	v		v
Conducted Spurious Emission	7C_CA	v	v	v	v	v	-	-	v	v	-	v			-	v			v	v	v
	41C_CA	v	v	v	v	v	v	v	v	v	v	v			-	v			v	v	v
E.I.R.P.	7C_CA	v	v	v	v	v	-	-	v	v	-	v	v	v	-	v	v	v	v	v	v
	38C_CA	v							v			v	v	v	-	v	v	v	v	v	v
	41C_CA	v	v	v	v	v	v	v	v	v	v	v	v	v	-	v	v	v	v	v	v
Radiated Spurious Emission	7C_CA	Worst Case																		v	
	41C_CA	Worst Case																		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.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
3.	Earphone	MI	N/A	N/A	Unshielded, 1.2m	N/A

## 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.

$$\text{Offset} = \text{RF cable loss}$$

Following shows an offset computation example with cable loss 5.70 dB.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} \\ &= 5.70 \text{ (dB)} \end{aligned}$$



### 2.5 Frequency List of Low/Middle/High Channels

LTE Band 7 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20850	21100	21350
	Frequency	2510	2535	2560
15	Channel	20825	21100	21375
	Frequency	2507.5	2535	2562.5
10	Channel	20800	21100	21400
	Frequency	2505	2535	2565
5	Channel	20775	21100	21425
	Frequency	2502.5	2535	2567.5

LTE Band 38 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	37850	38000	38150
	Frequency	2580	2595	2610
15	Channel	37825	38000	38175
	Frequency	2577.5	2595	2612.5
10	Channel	37800	38000	38200
	Frequency	2575	2595	2615
5	Channel	37775	38000	38225
	Frequency	2572.5	2595	2617.5

LTE Band 41 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	40240	40665	41090
	Frequency	2555	2597.5	2640
15	Channel	40215	40665	41115
	Frequency	2552.5	2597.5	2642.5
10	Channel	40190	40665	41140
	Frequency	2550	2597.5	2645
5	Channel	40165	40665	41165
	Frequency	2547.5	2597.5	2647.5



LTE Band 7C_CA Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	20850	21001	21152
		Frequency	2510.0	2525.1	2540.2
	SCC	Channel	21048	21199	21350
		Frequency	2529.8	2544.9	2560.0
20 + 15	PCC	Channel	20850	21026	21201
		Frequency	2510.0	2527.6	2545.1
	SCC	Channel	21021	21197	21372
		Frequency	2527.1	2544.7	2562.2
15 + 20	PCC	Channel	20828	21003	21179
		Frequency	2507.8	2525.3	2542.9
	SCC	Channel	20999	21174	21350
		Frequency	2524.9	2542.4	2560.0
20 + 10	PCC	Channel	20850	21051	21251
		Frequency	2510.0	2530.1	2550.1
	SCC	Channel	20994	21195	21395
		Frequency	2524.4	2544.5	2564.5
10 + 20	PCC	Channel	20805	21006	21206
		Frequency	2505.5	2525.6	2545.6
	SCC	Channel	20949	21150	21350
		Frequency	2519.9	2540.0	2560.0
15 + 15	PCC	Channel	20825	21025	21225
		Frequency	2507.5	2527.5	2547.5
	SCC	Channel	20975	21175	21375
		Frequency	2522.5	2542.5	2562.5
15 + 10	PCC	Channel	20825	21051	21277
		Frequency	2507.5	2530.1	2552.7
	SCC	Channel	20945	21171	21397
		Frequency	2519.5	2542.1	2564.7



LTE Band 38C_CA Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	37850	37901	37952
		Frequency	2580.0	2585.1	2590.2
	SCC	Channel	38048	38099	38150
		Frequency	2599.8	2604.9	2610.0
15+ 15	PCC	Channel	37825	37925	38025
		Frequency	2577.5	2587.5	2597.5
	SCC	Channel	37975	38075	38175
		Frequency	2592.5	2602.5	2612.5

LTE Band 41C_CA Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	40240	40566	40892
		Frequency	2555.0	2587.6	2620.2
	SCC	Channel	40438	40764	41090
		Frequency	2574.8	2607.4	2640.0
20 + 15	PCC	Channel	40240	40591	40941
		Frequency	2555.0	2590.1	2625.1
	SCC	Channel	40411	40762	41112
		Frequency	2572.1	2607.2	2642.2
15 + 20	PCC	Channel	40218	40569	40919
		Frequency	2552.8	2587.9	2622.9
	SCC	Channel	40389	40740	41090
		Frequency	2569.9	2605.0	2640.0
20 + 10	PCC	Channel	40240	40616	40991
		Frequency	2555.0	2592.6	2630.1
	SCC	Channel	40384	40760	41135
		Frequency	2569.4	2607.0	2644.5
10 + 20	PCC	Channel	40195	40571	40946
		Frequency	2550.5	2588.1	2625.6
	SCC	Channel	40339	40715	41090
		Frequency	2564.9	2602.5	2640.0



LTE Band 41C_CA Channel and Frequency List					
20 + 5	PCC	Channel	40240	40640	41040
		Frequency	2555.0	2595	2635
	SCC	Channel	40357	40757	41157
		Frequency	2566.7	2606.7	2646.7
5 + 20	PCC	Channel	40173	40573	40973
		Frequency	2548.3	2588.3	2628.3
	SCC	Channel	40290	40690	41090
		Frequency	2560	2600	2640.0
15 + 15	PCC	Channel	40215	40590	40965
		Frequency	2552.5	2590	2627.5
	SCC	Channel	40365	40740	41115
		Frequency	2567.5	2605	2642.5
10 + 15	PCC	Channel	40193	40594	40995
		Frequency	2550.3	2590.4	2630.5
	SCC	Channel	40313	40714	41115
		Frequency	2562.3	2602.4	2642.5
15 + 10	PCC	Channel	40215	40616	41017
		Frequency	2552.5	2592.6	2632.7
	SCC	Channel	40335	40736	41137
		Frequency	2564.5	2604.6	2644.7



### 3 Conducted Test Items

#### 3.1 Measuring Instruments

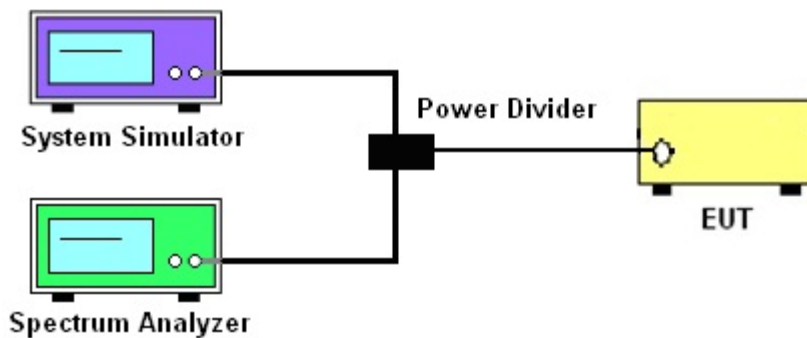
See list of measuring instruments of this test report.

#### 3.2 Test Setup

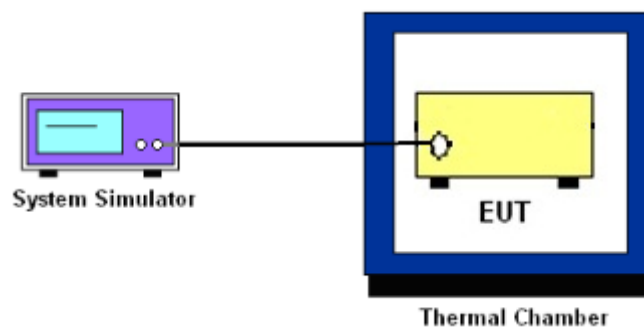
##### 3.2.1 Conducted Output Power



##### 3.2.2 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



##### 3.2.3 Frequency Stability



### 3.3 Test Result of Conducted Test

Please refer to Appendix A.



### 3.4 Conducted Output Power and EIRP

#### 3.4.1 Description of the Conducted Output Power Measurement and EIRP 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.

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 7 and Band 38 and Band 41.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

#### 3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.



## **3.5 Peak-to-Average Ratio**

### **3.5.1 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.

### **3.5.2 Test Procedures**

1. The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.



### 3.6 Occupied Bandwidth

#### 3.6.1 Description of Occupied Bandwidth Measurement

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

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.

#### 3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.  
(this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



## 3.7 Conducted Band Edge

### 3.7.1 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 than  $43 + 10 \log (P)$  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.

### 3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
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.
4. Set RBW  $\geq$  1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used
6. Set spectrum analyzer with RMS detector.
7. Offset has included the duty factor for LTE Band 38/41. Duty factor =  $10 \log (1/x)$ , where x is the measured duty cycle.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. Checked that all the results comply with the emission limit line.

Example:

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.

10. For LTE Band 7, 38, 41, the other 40 dB, and 55 dB have additionally applied same calculation above.
11. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.



### 3.8 Conducted Spurious Emission

#### 3.8.1 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 7,38,41:

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 30 MHz up to a frequency including its 10<sup>th</sup> harmonic.

#### 3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
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.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. Offset has included the duty factor for LTE Band 38/41. Duty factor =  $10 \log (1/x)$ , where x is the measured duty cycle.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
11. 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.
12. For Band 7, 38, 41  
The limit line is derived from  $55 + 10 \log (P)$  dB below the transmitter power P(Watts)  
=  $P(W) - [55 + 10 \log (P)]$  (dB)  
=  $[30 + 10 \log (P)]$  (dBm) -  $[55 + 10 \log (P)]$  (dB)  
= -25dBm.



## 3.9 Frequency Stability

### 3.9.1 Description of Frequency Stability Measurement

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

### 3.9.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to  $-30^{\circ}\text{C}$  and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in  $10^{\circ}\text{C}$  step up to  $50^{\circ}\text{C}$ . 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.

### 3.9.3 Test Procedures for Voltage Variation

1. The testing follows ANSI C63.26 section 5.6.5
2. The EUT was placed in a temperature chamber at  $20\pm 5^{\circ}\text{C}$  and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

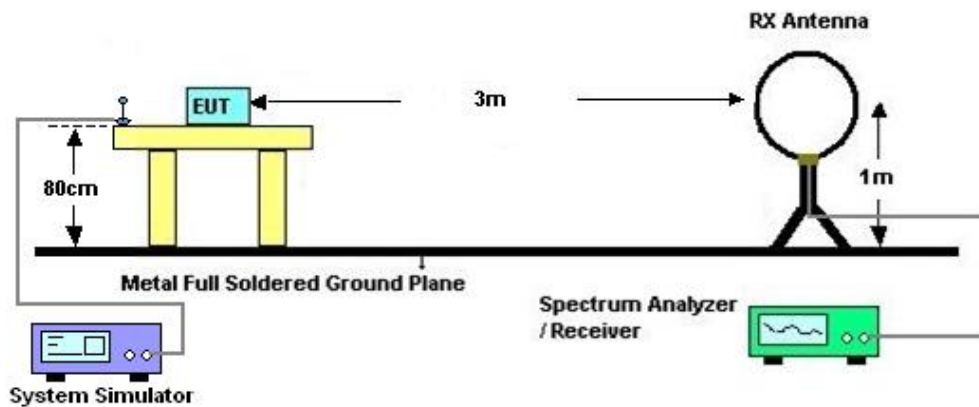
## 4 Radiated Test Items

### 4.1 Measuring Instruments

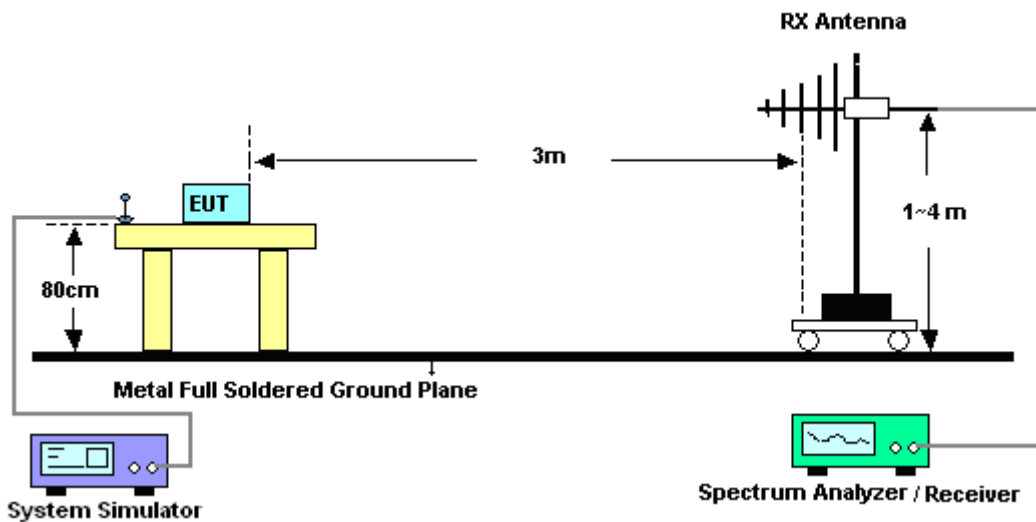
See list of measuring instruments of this test report.

### 4.2 Test Setup

#### 4.2.1 For radiated test below 30MHz

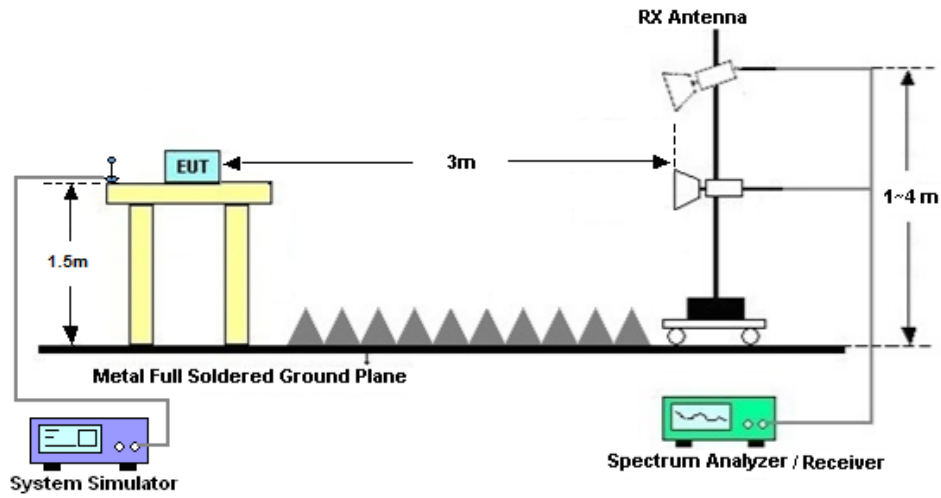


#### 4.2.2 For radiated test from 30MHz to 1GHz





### 4.2.3 For radiated test above 1GHz



### 4.3 Test Result of Radiated Test

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Please refer to Appendix B.



## 4.4 Radiated Spurious Emission

### 4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. 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, 38, 41

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.

### 4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna 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 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10.  $EIRP (dBm) = S.G. Power - Tx Cable Loss + Tx Antenna Gain$
11.  $ERP (dBm) = EIRP - 2.15$
12. 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)  
 $= P(W) - [43 + 10\log(P)] (dB)$   
 $= [30 + 10\log(P)] (dBm) - [43 + 10\log(P)] (dB)$   
 $= -13dBm.$

13. For Band 7, 38, 41:

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



## 5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 14, 2021	Dec. 27, 2021~ Jan. 06, 2022	Oct. 13, 2022	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 12, 2021	Dec. 27, 2021~ Jan. 06, 2022	Jul. 11, 2022	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	Aug. 26, 2021	Dec. 27, 2021~ Jan. 06, 2022	Aug. 25, 2022	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 13, 2021	Jan. 01, 2022	Apr. 12, 2022	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Jan. 01, 2022	Oct. 29, 2022	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jun. 04, 2021	Jan. 01, 2022	Jun. 03, 2022	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 24, 2021	Jan. 01, 2022	Apr. 23, 2022	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 09, 2021	Jan. 01, 2022	Nov. 08, 2022	Radiation (03CH05-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Apr. 12, 2021	Jan. 01, 2022	Apr. 11, 2022	Radiation (03CH05-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 07, 2021	Jan. 01, 2022	Jan. 06, 2022	Radiation (03CH05-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2012228	1Ghz-18Ghz	Oct. 16, 2021	Jan. 01, 2022	Oct. 15, 2022	Radiation (03CH05-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5GHz	Oct. 16, 2021	Jan. 01, 2022	Oct. 15, 2022	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jan. 01, 2022	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jan. 01, 2022	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jan. 01, 2022	NCR	Radiation (03CH05-KS)

NCR: No Calibration Required



## 6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5dB
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.1dB
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# Appendix A. Test Results of Conducted Test

## Conducted Output Power(Average power) and EIRP

### LTE Band 7:

BW [MHz]	Modulation	RB Size	RB Offset	Power	Power	Power	EIRP(W)		
				Low Ch. / Freq.	Middle Ch. / Freq.	High Ch. / Freq.			
Channel				20850	20850	21350			
Frequency (MHz)				2510	2535	2560	L	M	H
20	QPSK	1	0	22.56	22.67	22.35	0.1570	0.1611	0.1496
20	QPSK	1	99	22.38	22.46	22.42	0.1507	0.1535	0.1521
20	QPSK	100	0	21.45	21.52	21.40	0.1216	0.1236	0.1202
20	16QAM	1	0	21.98	21.75	21.63	0.1374	0.1303	0.1268
20	64QAM	1	0	20.48	20.77	20.78	0.0973	0.1040	0.1042
Channel				20825	21100	21375	EIRP(W)		
Frequency (MHz)				2507.5	2535	2562.5	L	M	H
15	QPSK	1	0	22.34	22.62	22.28	0.1493	0.1592	0.1472
15	16QAM	1	0	21.49	21.79	21.72	0.1227	0.1315	0.1294
Channel				20800	21100	21400	EIRP(W)		
Frequency (MHz)				2505	2535	2565	L	M	H
10	QPSK	1	0	22.46	22.51	22.66	0.1535	0.1552	0.1607
10	16QAM	1	0	21.76	21.65	21.53	0.1306	0.1274	0.1239
Channel				20775	21100	21425	EIRP(W)		
Frequency (MHz)				2502.5	2535	2567.5	L	M	H
5	QPSK	1	0	22.55	22.62	22.58	0.1567	0.1592	0.1578
5	16QAM	1	0	21.42	21.74	21.69	0.1208	0.1300	0.1285



LTE Band 38:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				37850	38000	38150			
Frequency (MHz)				2580	2595	2610	L	M	H
20	QPSK	1	0	22.63	22.85	22.64	0.1596	0.1679	0.1600
20	QPSK	1	99	22.67	22.55	22.54	0.1611	0.1567	0.1563
20	QPSK	100	0	21.63	21.76	21.68	0.1268	0.1306	0.1282
20	16QAM	1	0	21.70	21.73	22.01	0.1288	0.1297	0.1384
20	64QAM	1	0	20.96	20.92	20.88	0.1086	0.1076	0.1067
Channel				37825	38000	38175	EIRP(W)		
Frequency (MHz)				2577.5	2595	2612.5	L	M	H
15	QPSK	1	0	22.70	22.69	22.68	0.1622	0.1618	0.1614
15	16QAM	1	0	21.69	21.81	21.75	0.1285	0.1321	0.1303
Channel				37800	38000	38200	EIRP(W)		
Frequency (MHz)				2575	2595	2615	L	M	H
10	QPSK	1	0	22.84	22.52	22.75	0.1675	0.1556	0.1641
10	16QAM	1	0	21.62	21.92	21.67	0.1265	0.1355	0.1279
Channel				37775	38000	38225	EIRP(W)		
Frequency (MHz)				2572.5	2595	2617.5	L	M	H
5	QPSK	1	0	22.71	22.69	22.82	0.1626	0.1618	0.1667
5	16QAM	1	0	21.63	21.79	21.76	0.1268	0.1315	0.1306



LTE Band 41:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Low Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				40240	40665	41090	EIRP(W)		
Frequency (MHz)				2555	2597.5	2640	L	M	H
20	QPSK	1	0	22.53	22.89	22.68	0.1560	0.1694	0.1614
20	QPSK	1	99	22.56	22.73	22.64	0.1570	0.1633	0.1600
20	QPSK	100	0	21.71	21.85	21.79	0.1291	0.1334	0.1315
20	16QAM	1	0	21.71	22.06	21.86	0.1291	0.1400	0.1337
20	64QAM	1	0	20.58	20.85	20.71	0.0995	0.1059	0.1026
Channel				40215	40665	41115	EIRP(W)		
Frequency (MHz)				2552.5	2597.5	2642.5	L	M	H
15	QPSK	1	0	22.54	22.78	22.77	0.1563	0.1652	0.1648
15	16QAM	1	0	21.78	21.93	21.91	0.1312	0.1358	0.1352
Channel				40190	40665	41140	EIRP(W)		
Frequency (MHz)				2550	2597.5	2645	L	M	H
10	QPSK	1	0	22.85	22.87	22.63	0.1679	0.1687	0.1596
10	16QAM	1	0	21.88	21.95	21.94	0.1343	0.1365	0.1361
Channel				40165	40665	41165	EIRP(W)		
Frequency (MHz)				2547.5	2597.5	2647.5	L	M	H
5	QPSK	1	0	22.63	22.84	22.61	0.1596	0.1675	0.1589
5	16QAM	1	0	21.86	21.81	21.83	0.1337	0.1321	0.1327



LTE Band 7\_CA:

Combination 20MHz+20MHz (100RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.50	0.1549
M	QPSK	1	Max	1	0	22.58	0.1578
H	QPSK	1	Max	1	0	22.50	0.1549
L	16QAM	1	Max	1	0	21.69	0.1285
M	16QAM	1	Max	1	0	21.89	0.1346
H	16QAM	1	Max	1	0	21.68	0.1282
L	64QAM	1	Max	1	0	19.64	0.0802
M	64QAM	1	Max	1	0	19.89	0.0849
H	64QAM	1	Max	1	0	19.64	0.0802
Combination 20MHz+15MHz (100RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
M	QPSK	1	Max	1	0	22.35	0.1496
M	16QAM	1	Max	1	0	21.68	0.1282
Combination 15MHz+20MHz (75RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
M	QPSK	1	Max	1	0	22.36	0.1500
M	16QAM	1	Max	1	0	21.69	0.1285
Combination 15MHz+15MHz (75RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
M	QPSK	1	Max	1	0	22.19	0.1442
M	16QAM	1	Max	1	0	21.36	0.1191
Combination 20MHz+10MHz (100RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
M	QPSK	1	Max	1	0	22.35	0.1496
M	16QAM	1	Max	1	0	21.16	0.1138
Combination 10MHz+20MHz (50RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
M	QPSK	1	Max	1	0	22.06	0.1400
M	16QAM	1	Max	1	0	21.34	0.1186
Combination 15MHz+10MHz (75RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
M	QPSK	1	Max	1	0	21.86	0.1337
M	16QAM	1	Max	1	0	21.03	0.1104





LTE Band 38\_CA:

Combination 20MHz+20MHz (100RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.80	0.1660
M	QPSK	1	Max	1	0	22.82	0.1667
H	QPSK	1	Max	1	0	22.71	0.1626
L	16QAM	1	Max	1	0	21.69	0.1285
M	16QAM	1	Max	1	0	21.87	0.1340
H	16QAM	1	Max	1	0	21.53	0.1239
L	64QAM	1	Max	1	0	19.53	0.0782
M	64QAM	1	Max	1	0	19.45	0.0767
H	64QAM	1	Max	1	0	19.38	0.0755
Combination 15MHz+15MHz (75RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
M	QPSK	1	Max	1	0	22.00	0.1380
M	16QAM	1	Max	1	0	21.65	0.1274



LTE Band 41\_CA:

Combination 20MHz+20MHz (100RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.90	0.1698
M	QPSK	1	Max	1	0	22.88	0.1690
H	QPSK	1	Max	1	0	22.88	0.1690
L	16QAM	1	Max	1	0	21.68	0.1282
M	16QAM	1	Max	1	0	21.36	0.1191
H	16QAM	1	Max	1	0	21.36	0.1191
L	64QAM	1	Max	1	0	19.68	0.0809
M	64QAM	1	Max	1	0	19.35	0.0750
H	64QAM	1	Max	1	0	19.35	0.0750
Combination 20MHz+15MHz (100RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.56	0.1570
L	16QAM	1	Max	1	0	21.36	0.1191
Combination 15MHz+20MHz (75RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.71	0.1626
L	16QAM	1	Max	1	0	21.46	0.1219
Combination 15MHz+15MHz (75RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.34	0.1493
L	16QAM	1	Max	1	0	21.48	0.1225
Combination 20MHz+10MHz (100RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.35	0.1496
L	16QAM	1	Max	1	0	21.43	0.1211
Combination 10MHz+20MHz (50RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.00	0.1381
L	16QAM	1	Max	1	0	21.34	0.1186
Combination 15MHz+10MHz (75RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.13	0.1422
L	16QAM	1	Max	1	0	21.43	0.1211
Combination 10MHz+15MHz (50RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	22.39	0.1510
L	16QAM	1	Max	1	0	21.42	0.1208
Combination 20MHz+5MHz (100RB+25RB)							
Channel	Modulation	PCC		SCC		Measured	EIRP(W)



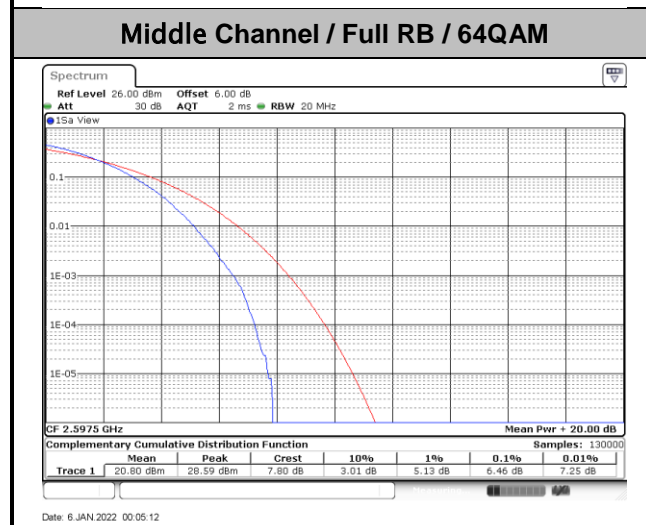
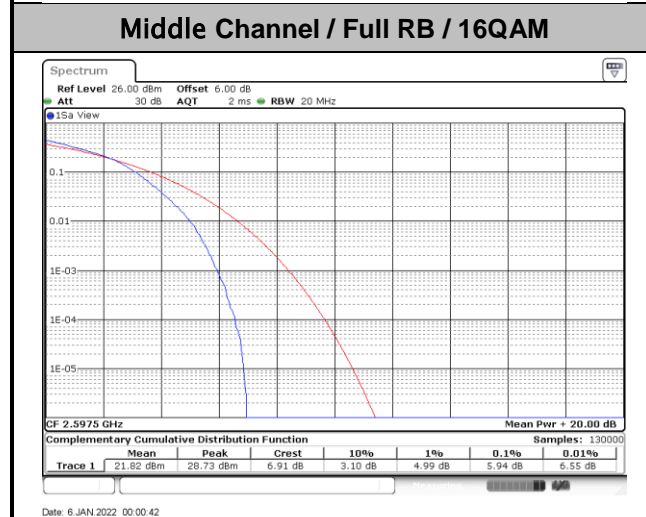
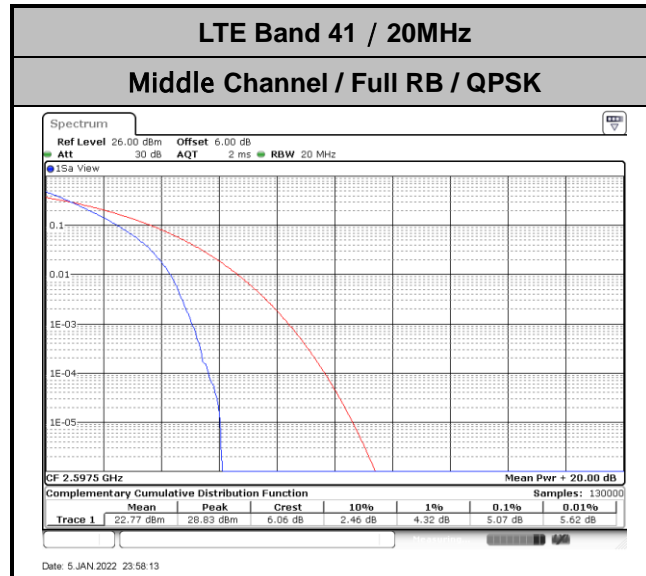
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	21.98	0.1374
L	16QAM	1	Max	1	0	21.31	0.1178
Combination 5MHz+20MHz (25RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	21.79	0.1315
L	16QAM	1	Max	1	0	21.03	0.1104



## LTE Band 41

### Peak-to-Average Ratio

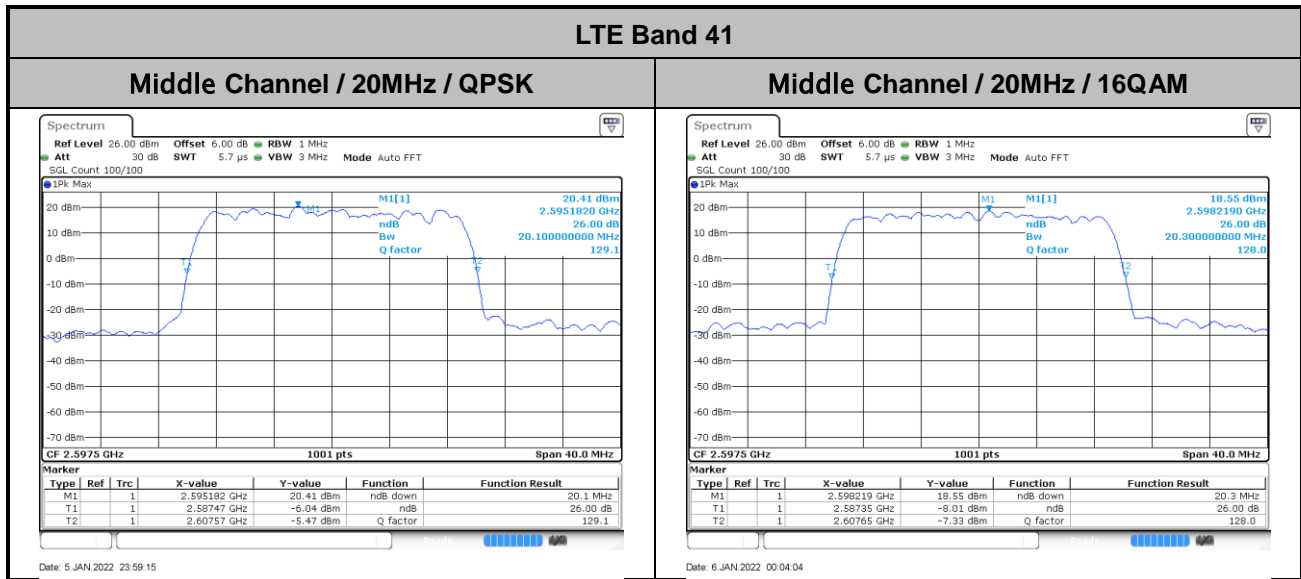
Mode	LTE Band 41 / 20MHz			
Mod.	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Result
Middle CH	5.07	5.94	6.46	<b>PASS</b>





## 26dB Bandwidth

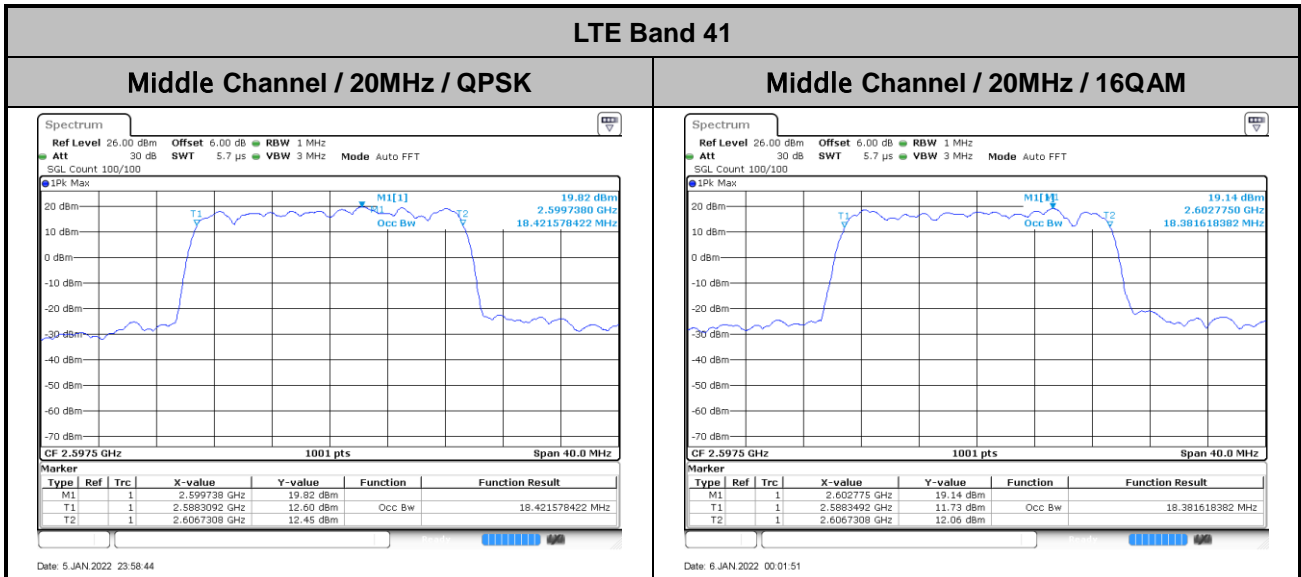
<b>Mode</b>	<b>LTE Band 41 : 26dB BW(MHz)</b>	
<b>BW</b>	<b>20MHz</b>	
<b>Mod.</b>	<b>QPSK</b>	<b>16QAM</b>
<b>Middle CH</b>	20.10	20.30





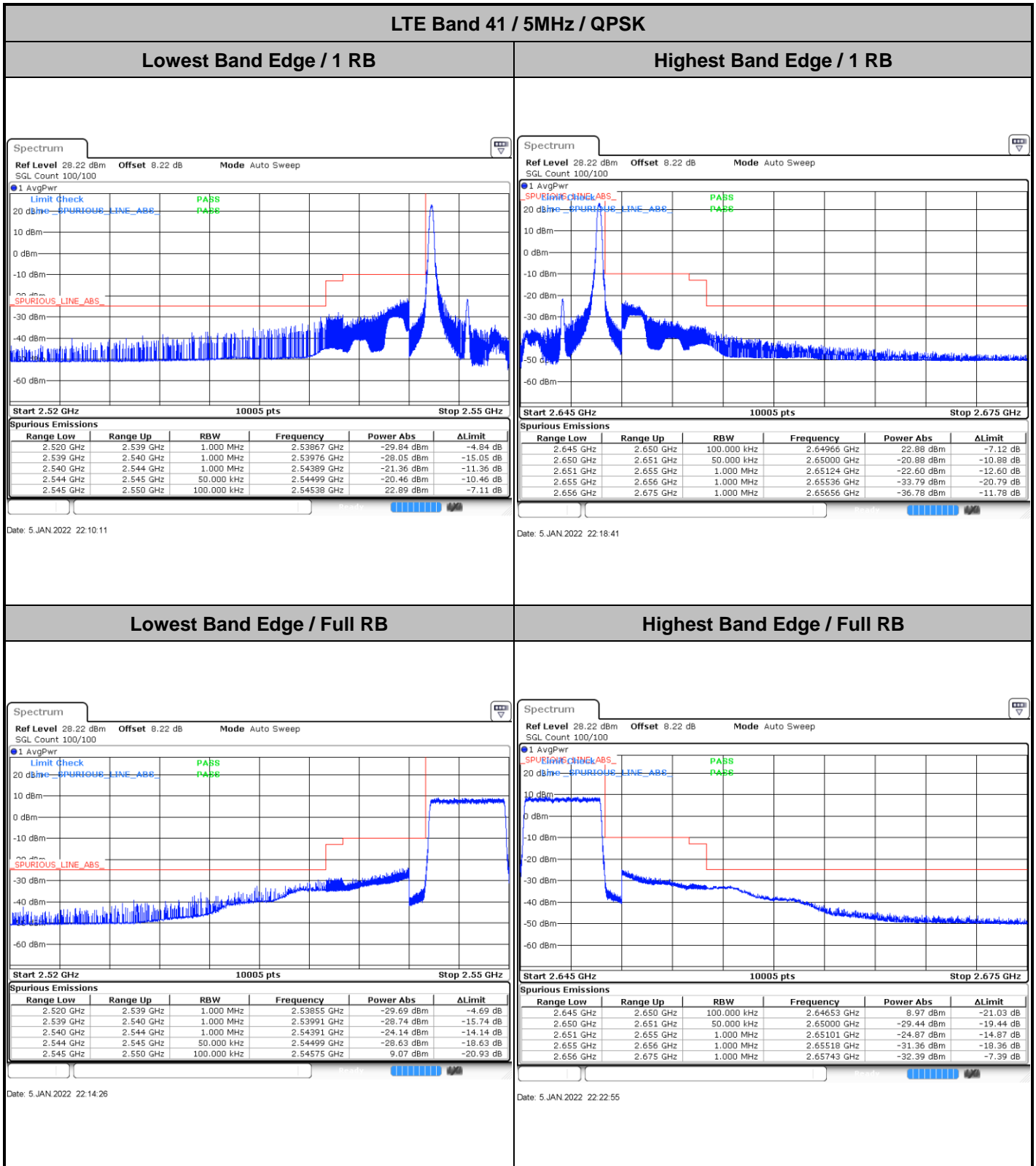
# Occupied Bandwidth

Mode	LTE Band 41 : 99%OBW(MHz)	
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	18.42	18.38





# Conducted Band Edge

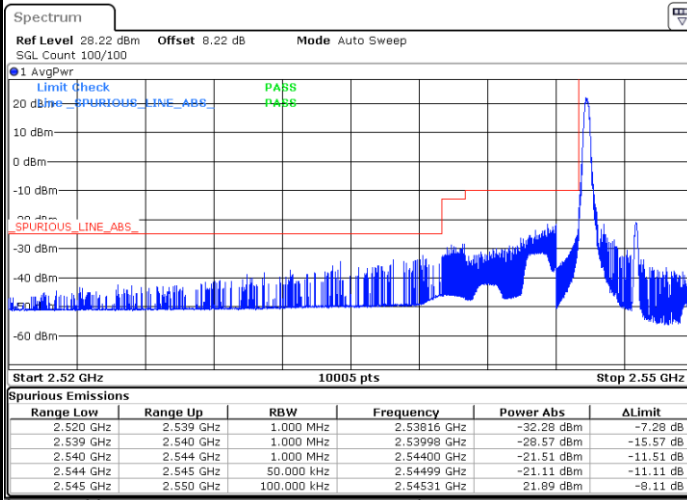






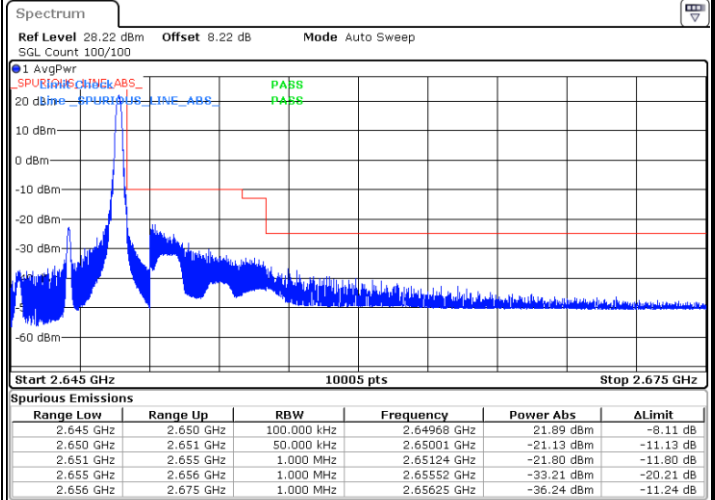
LTE Band 41 / 5MHz / 16QAM

Lowest Band Edge / 1RB



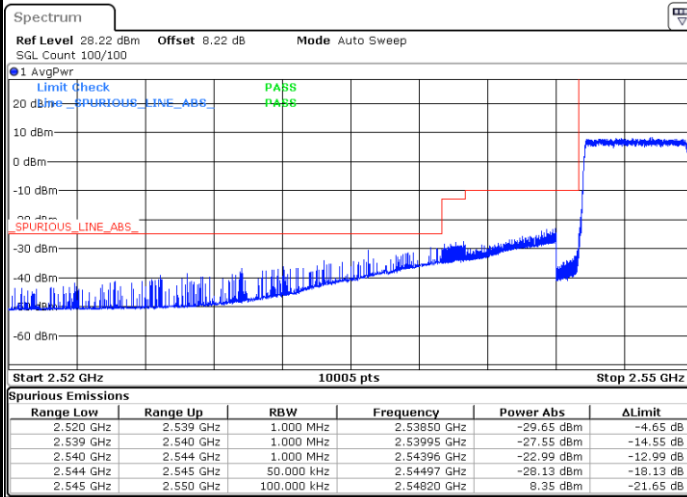
Date: 5 JAN 2022 22:11:36

Highest Band Edge / 1 RB



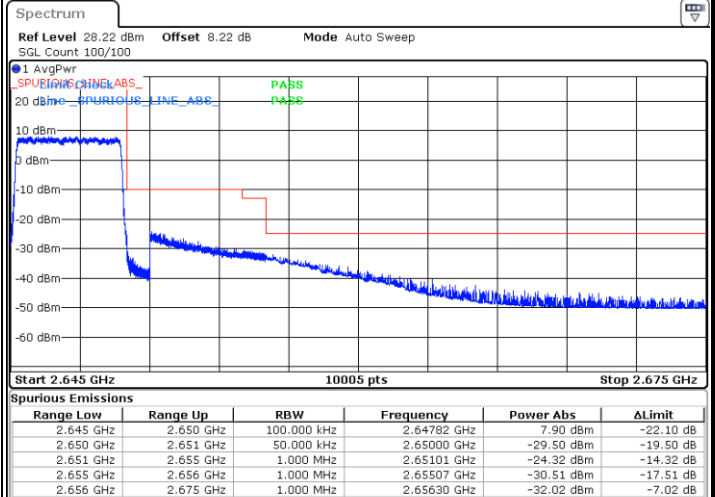
Date: 5 JAN 2022 22:20:05

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:15:51

Highest Band Edge / Full RB

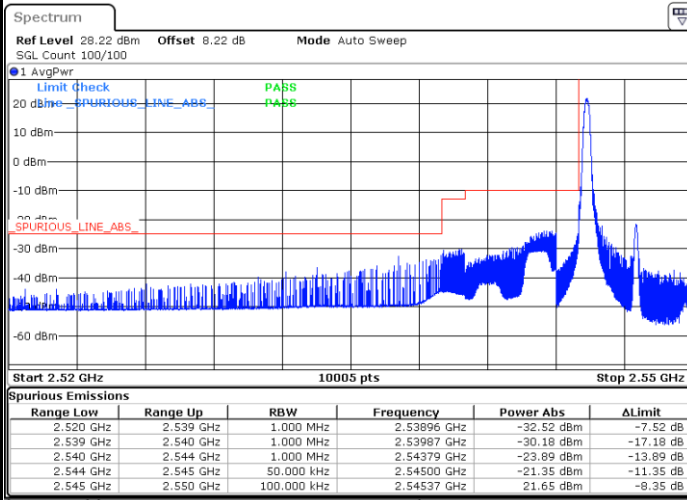


Date: 5 JAN 2022 22:24:19



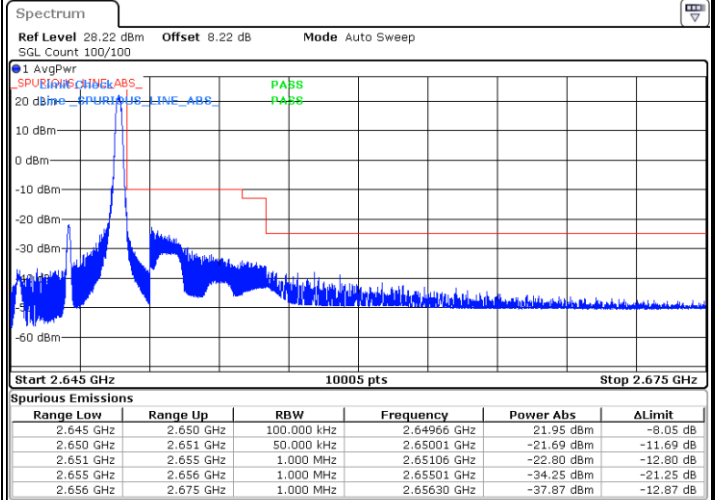
LTE Band 41 / 5MHz / 64QAM

Lowest Band Edge / 1RB



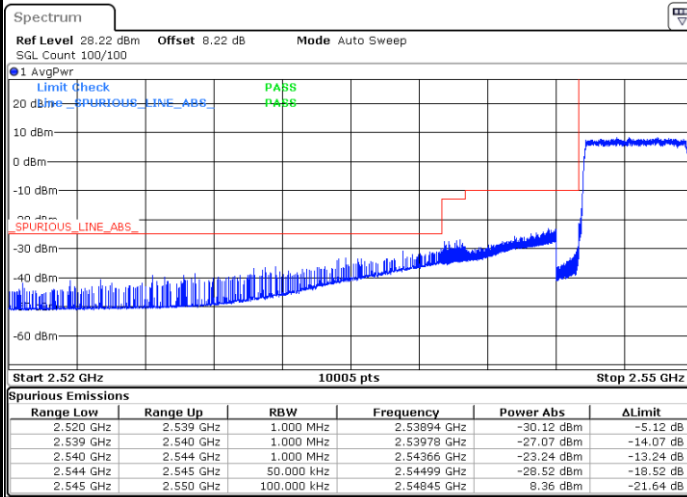
Date: 5 JAN 2022 22:13:01

Highest Band Edge / 1 RB



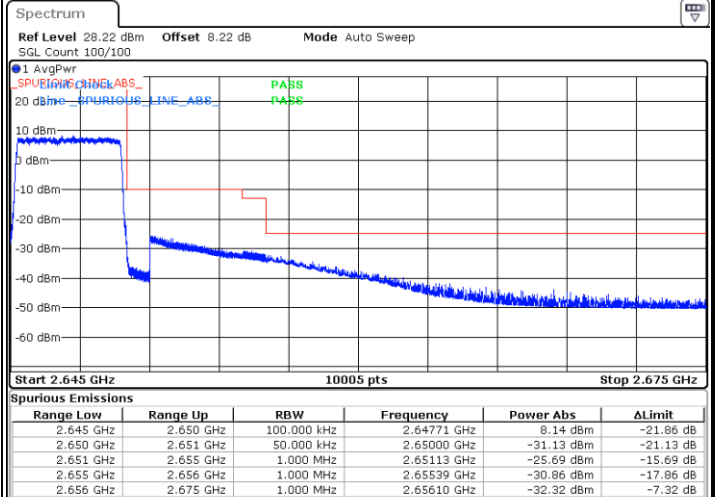
Date: 5 JAN 2022 22:21:30

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:17:16

Highest Band Edge / Full RB

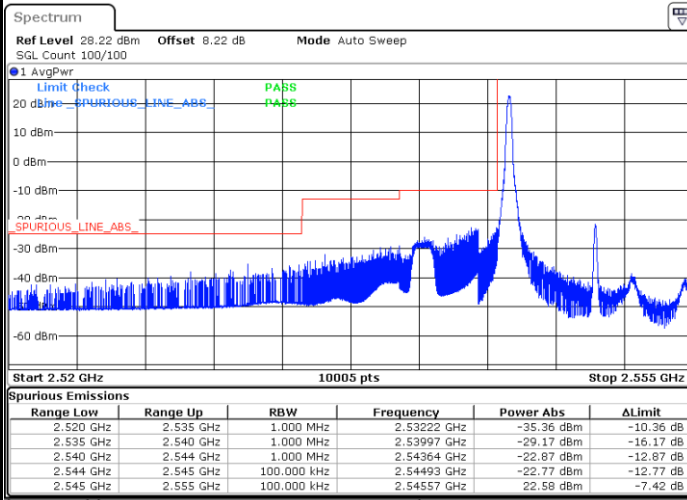


Date: 5 JAN 2022 22:25:44



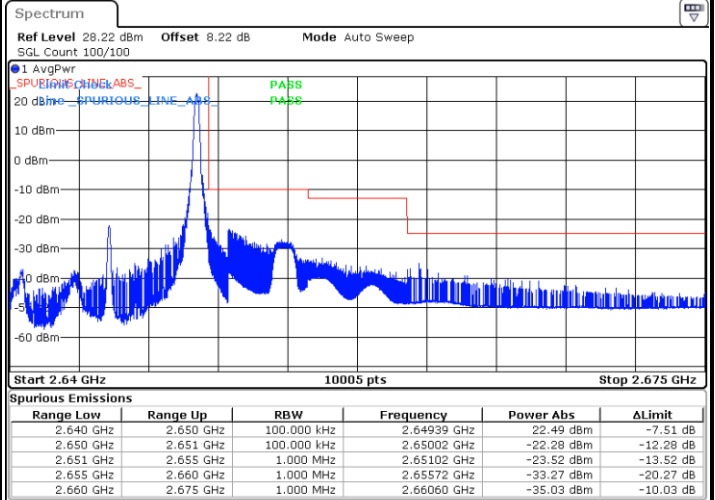
LTE Band 41 / 10MHz / QPSK

Lowest Band Edge / 1 RB



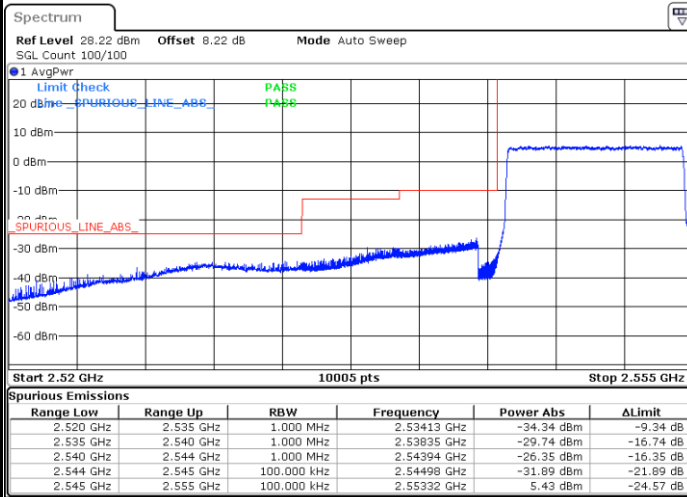
Date: 5 JAN 2022 22:27:09

Highest Band Edge / 1 RB



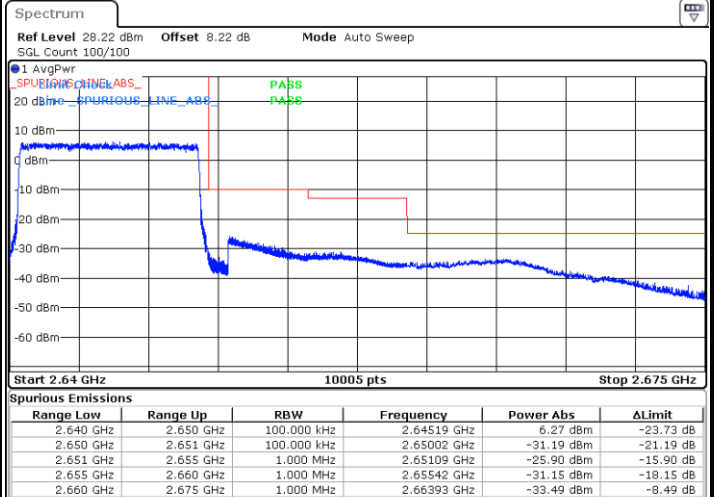
Date: 5 JAN 2022 22:35:39

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:31:24

Highest Band Edge / Full RB

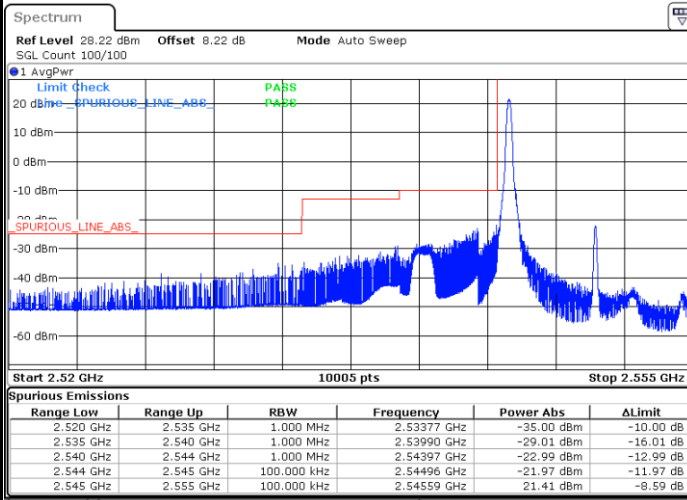


Date: 5 JAN 2022 22:39:53



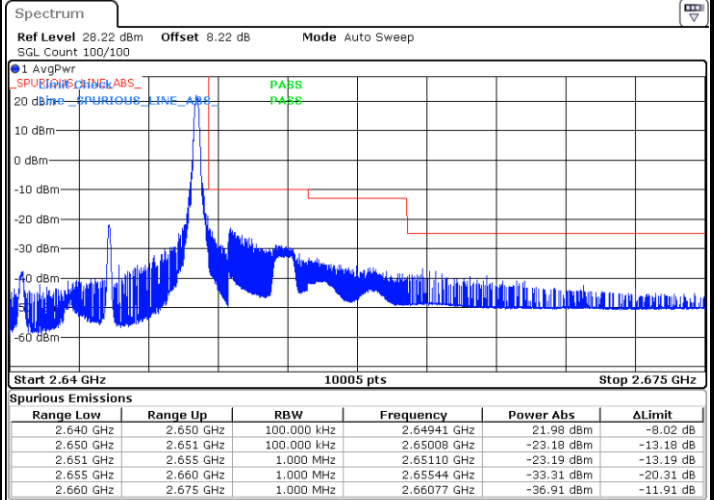
LTE Band 41 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



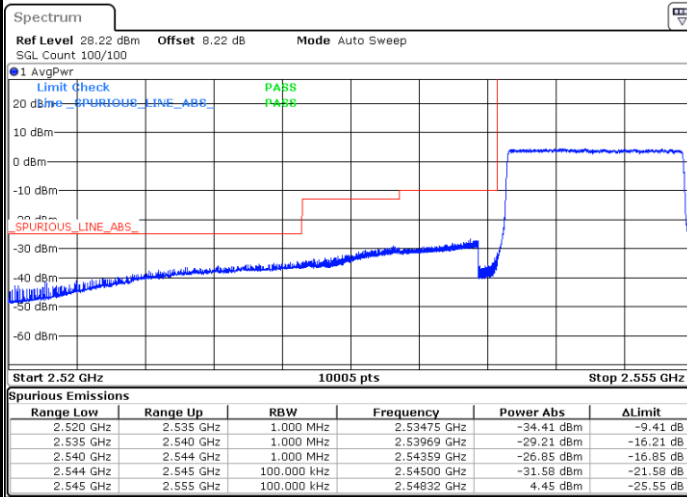
Date: 5 JAN 2022 22:28:34

Highest Band Edge / 1 RB



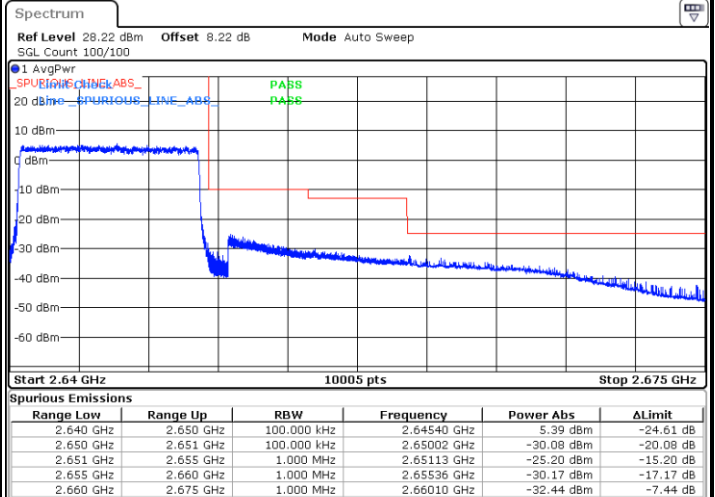
Date: 5 JAN 2022 22:37:04

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:32:49

Highest Band Edge / Full RB

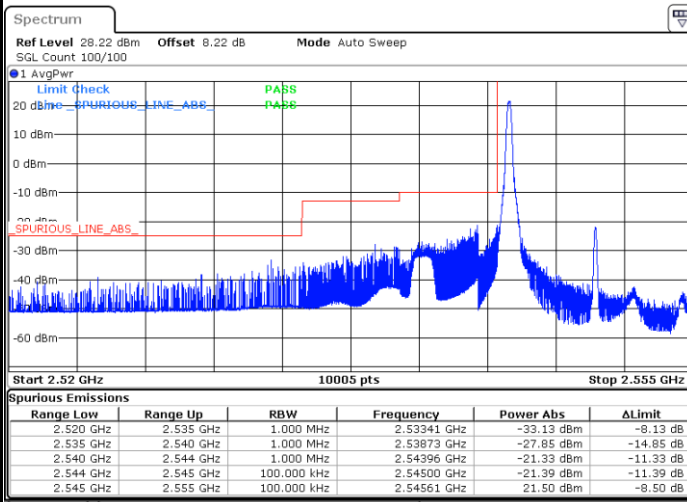


Date: 5 JAN 2022 22:41:18



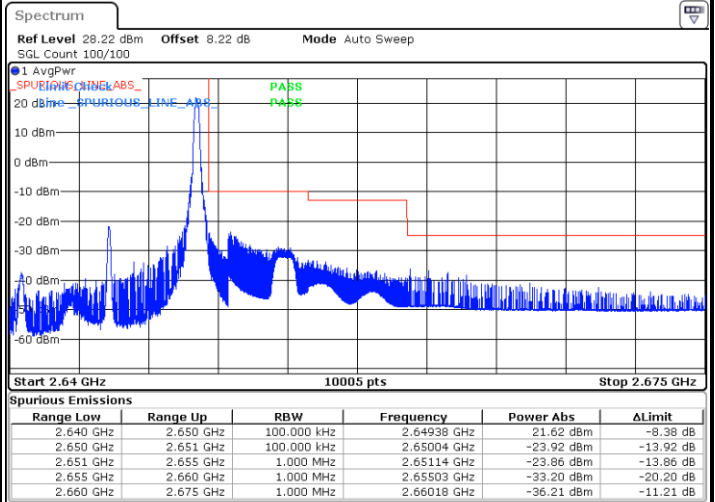
LTE Band 41 / 10MHz / 64QAM

Lowest Band Edge / 1 RB



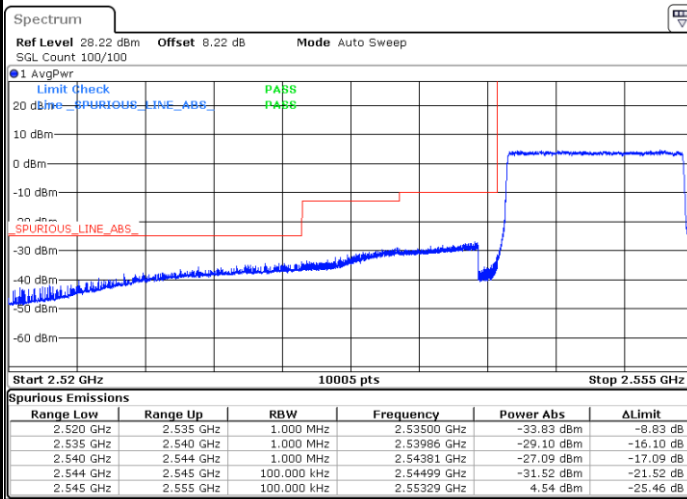
Date: 5 JAN 2022 22:29:59

Highest Band Edge / 1 RB



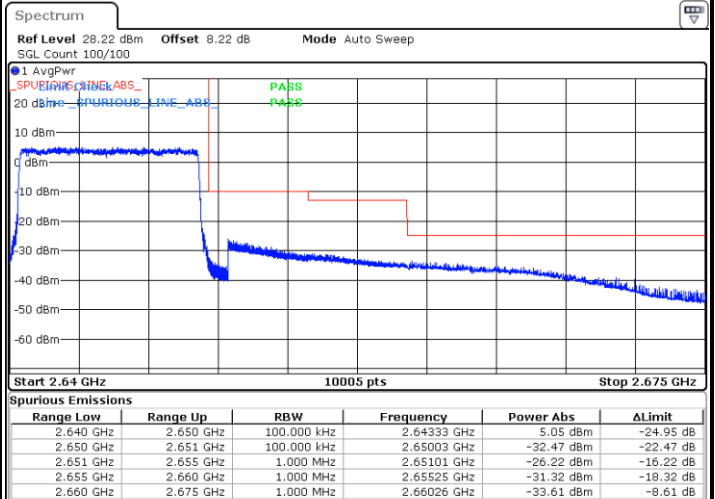
Date: 5 JAN 2022 22:38:28

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:34:14

Highest Band Edge / Full RB

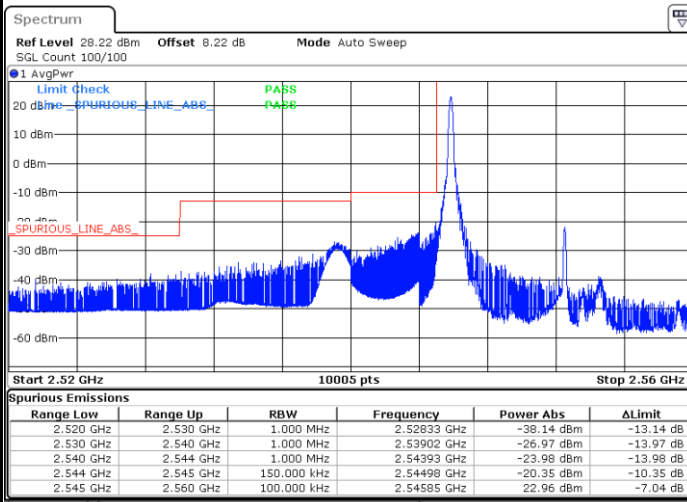


Date: 5 JAN 2022 22:42:42



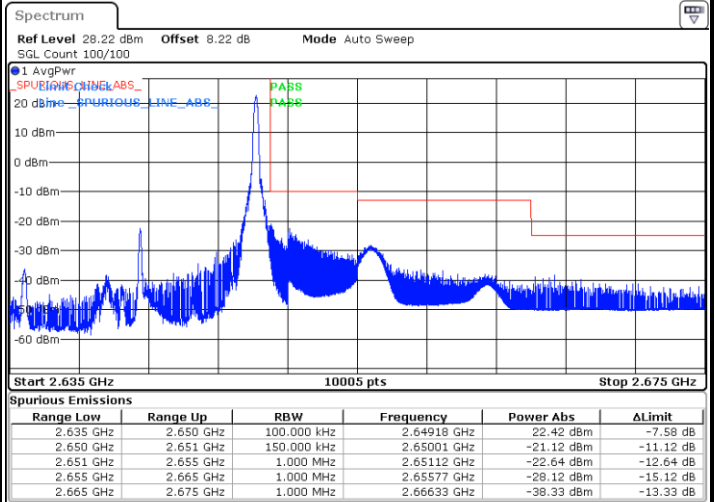
LTE Band 41 / 15MHz / QPSK

Lowest Band Edge / 1 RB



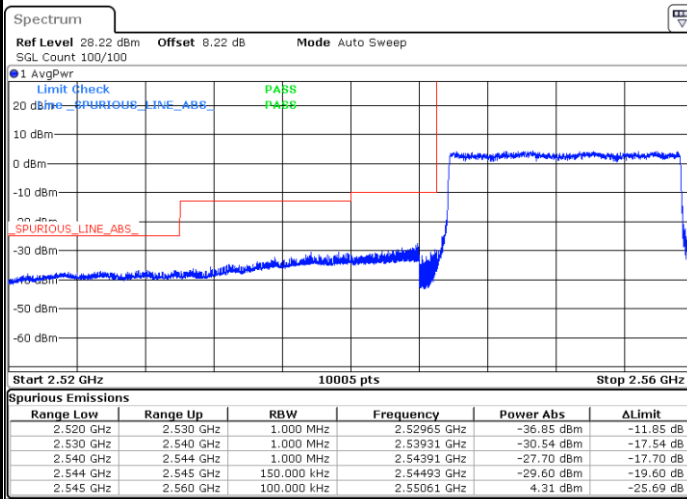
Date: 5 JAN 2022 22:44:08

Highest Band Edge / 1 RB



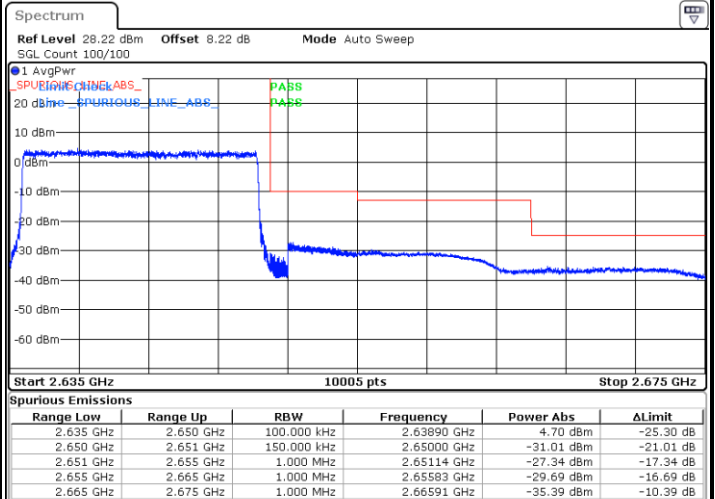
Date: 5 JAN 2022 22:52:37

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:48:23

Highest Band Edge / Full RB

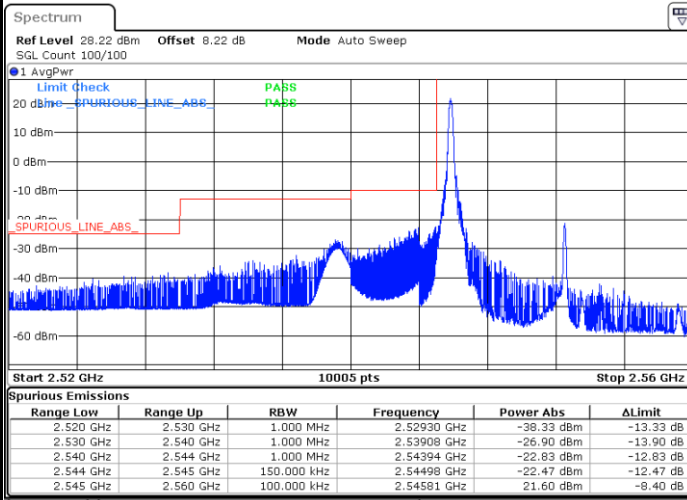


Date: 5 JAN 2022 22:56:51



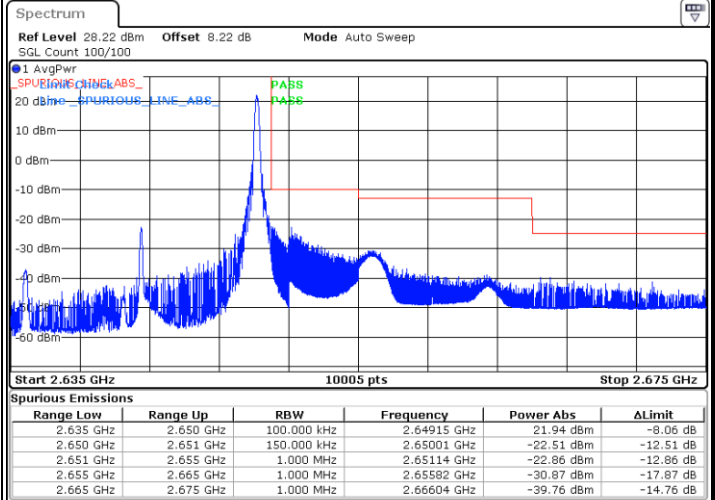
LTE Band 41 / 15MHz / 16QAM

Lowest Band Edge / 1 RB



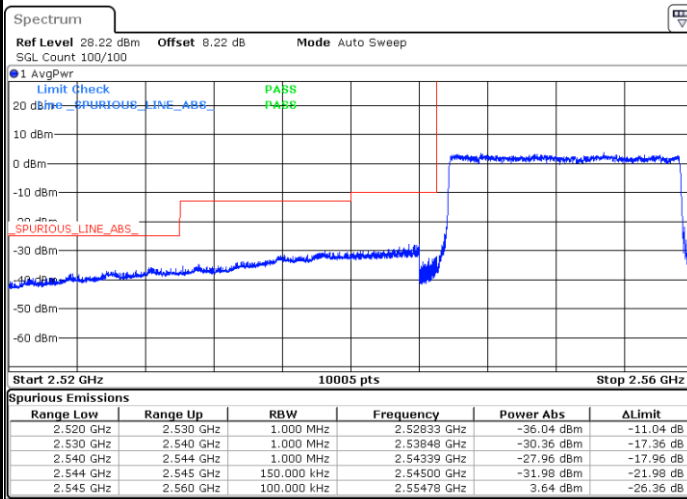
Date: 5 JAN 2022 22:45:33

Highest Band Edge / 1 RB



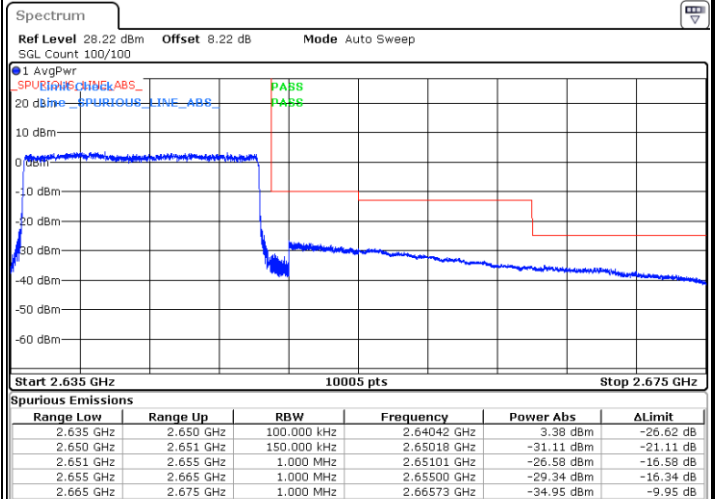
Date: 5 JAN 2022 22:54:02

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:49:48

Highest Band Edge / Full RB

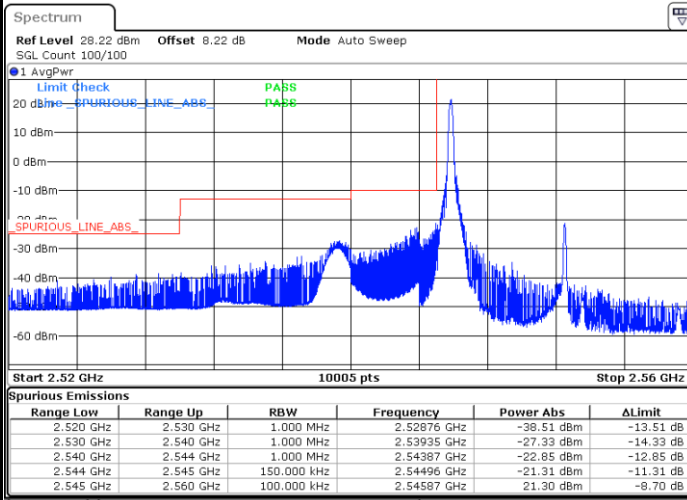


Date: 5 JAN 2022 22:58:16



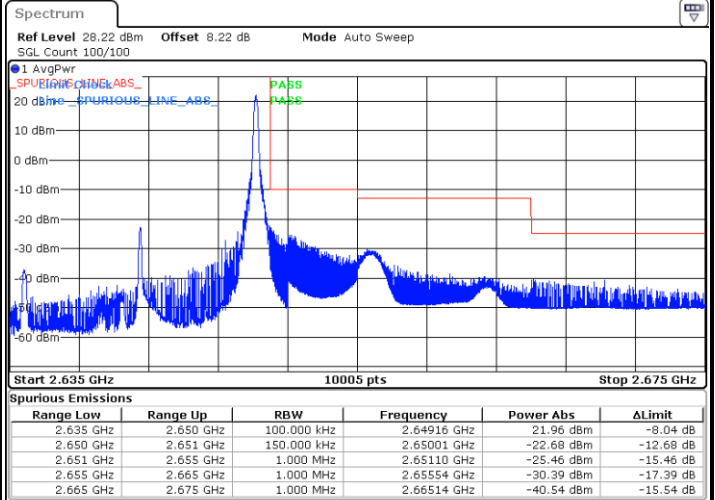
LTE Band 41 / 15MHz / 64QAM

Lowest Band Edge / 1 RB



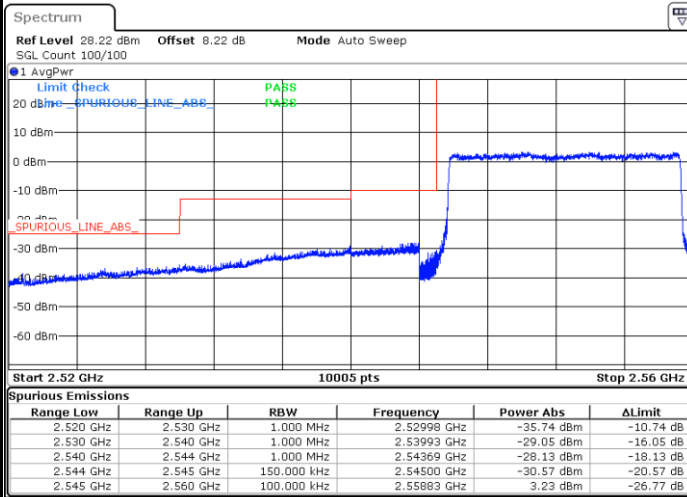
Date: 5 JAN 2022 22:46:58

Highest Band Edge / 1 RB



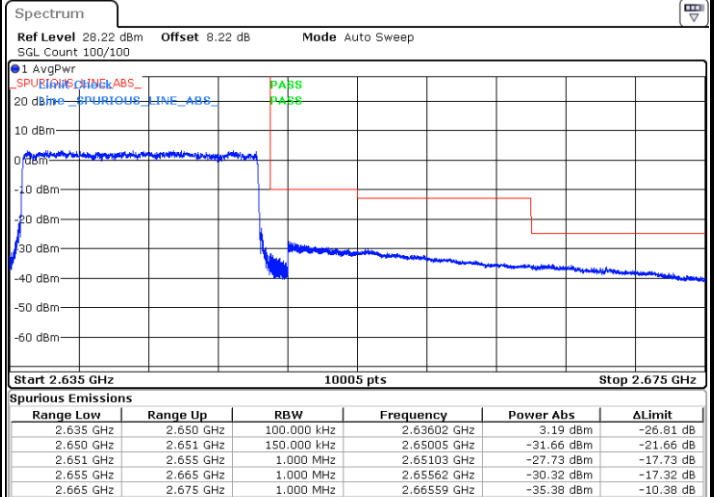
Date: 5 JAN 2022 22:55:27

Lowest Band Edge / Full RB



Date: 5 JAN 2022 22:51:13

Highest Band Edge / Full RB



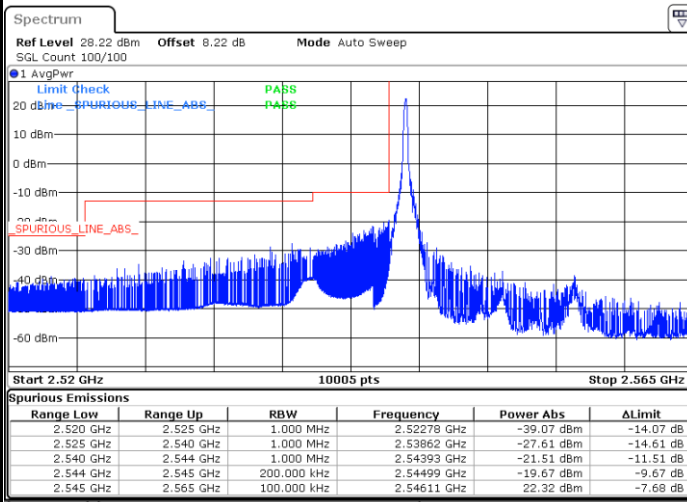
Date: 5 JAN 2022 22:59:41





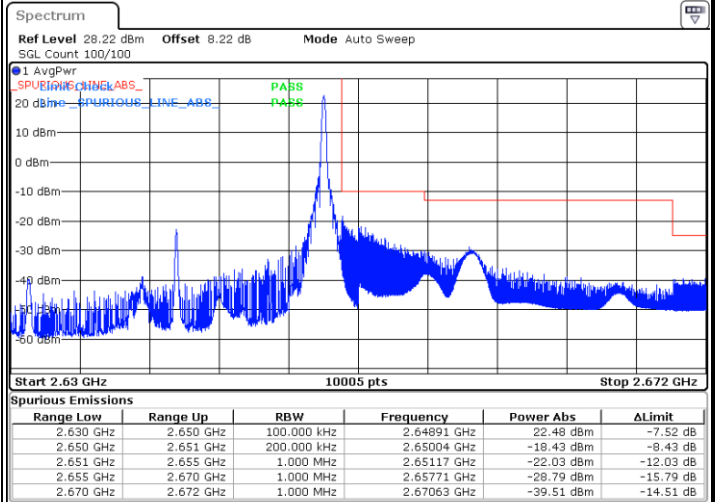
LTE Band 41 / 20MHz / QPSK

Lowest Band Edge / 1 RB



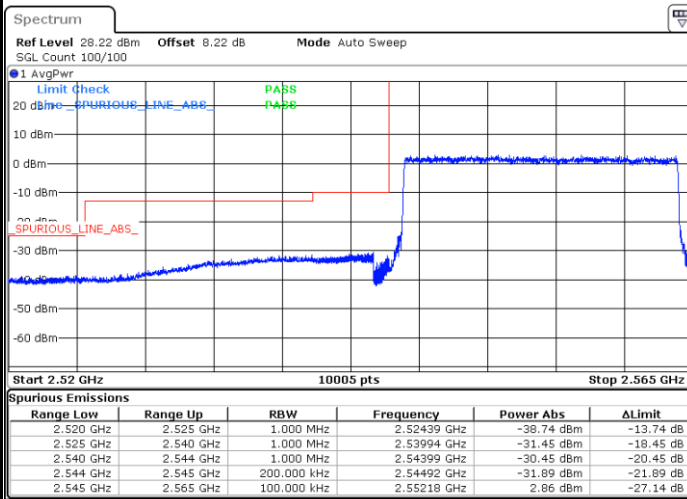
Date: 5 JAN 2022 23:01:06

Highest Band Edge / 1 RB



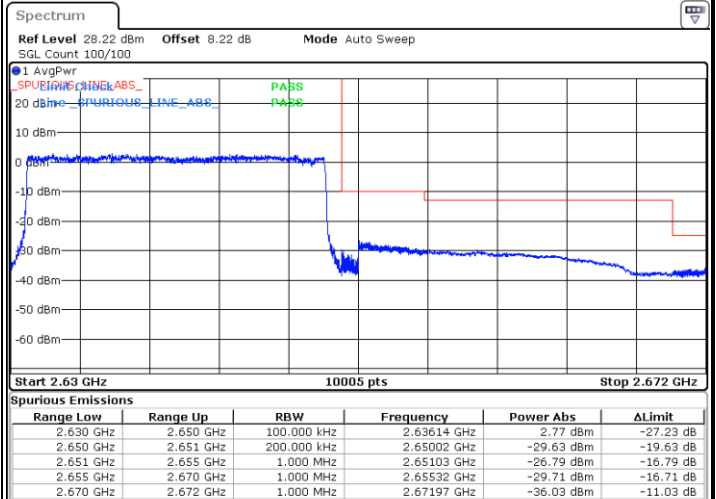
Date: 5 JAN 2022 23:09:36

Lowest Band Edge / Full RB



Date: 5 JAN 2022 23:05:21

Highest Band Edge / Full RB

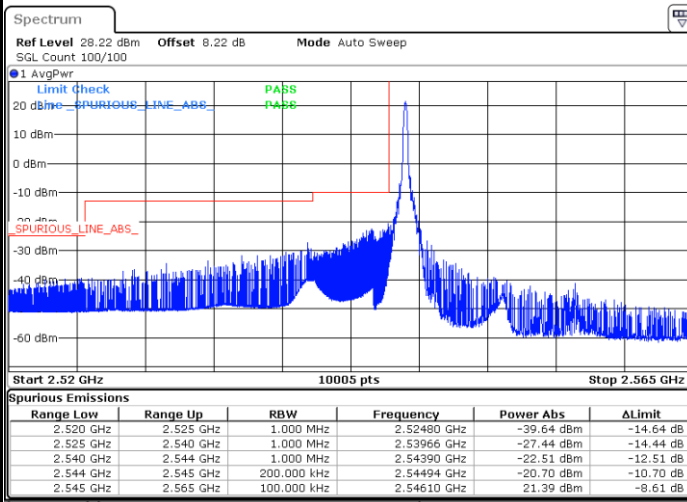


Date: 5 JAN 2022 23:15:14



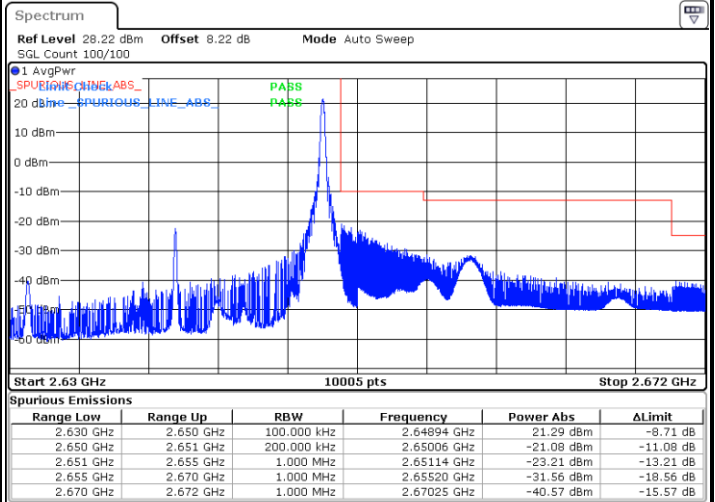
LTE Band 41 / 20MHz / 16QAM

Lowest Band Edge / 1 RB



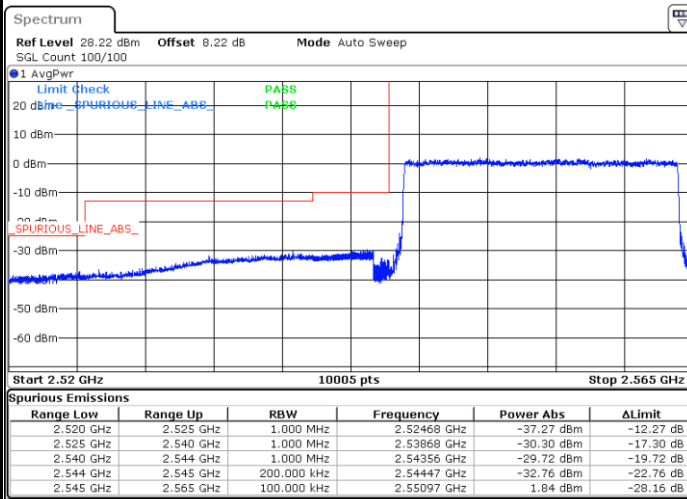
Date: 5 JAN 2022 23:02:31

Highest Band Edge / 1 RB



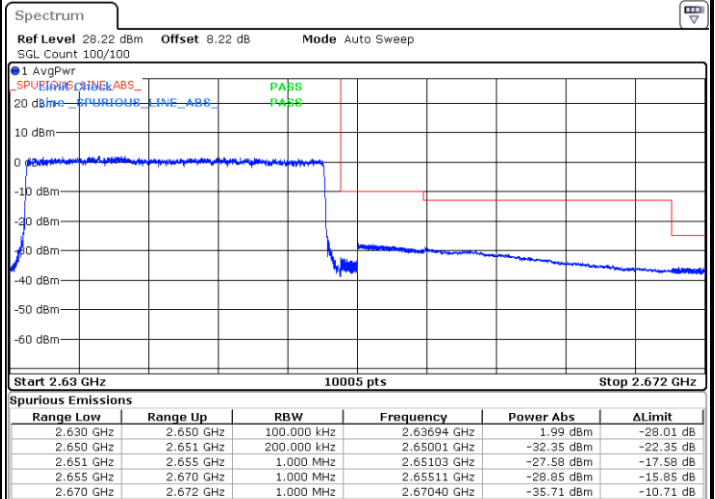
Date: 5 JAN 2022 23:11:00

Lowest Band Edge / Full RB



Date: 5 JAN 2022 23:06:46

Highest Band Edge / Full RB

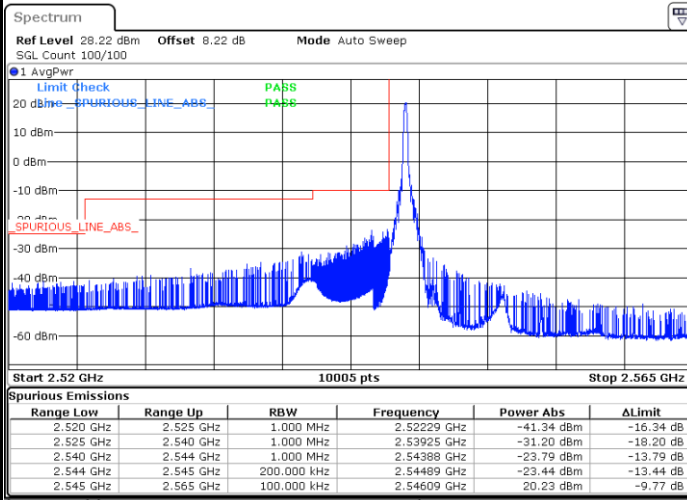


Date: 5 JAN 2022 23:13:50



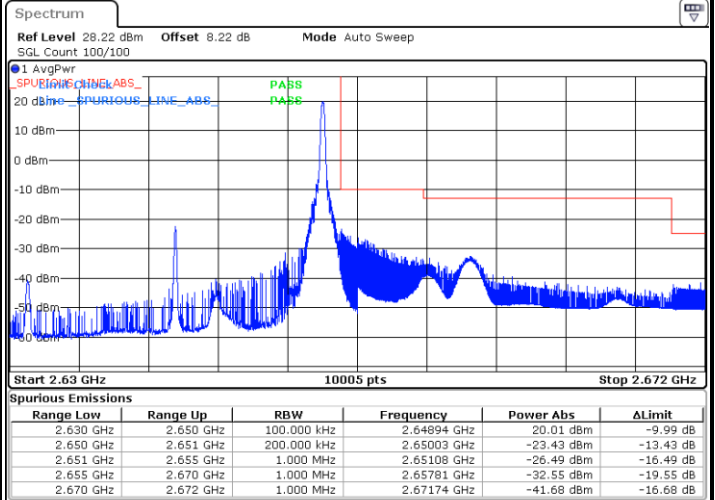
LTE Band 41 / 20MHz / 64QAM

Lowest Band Edge / 1 RB



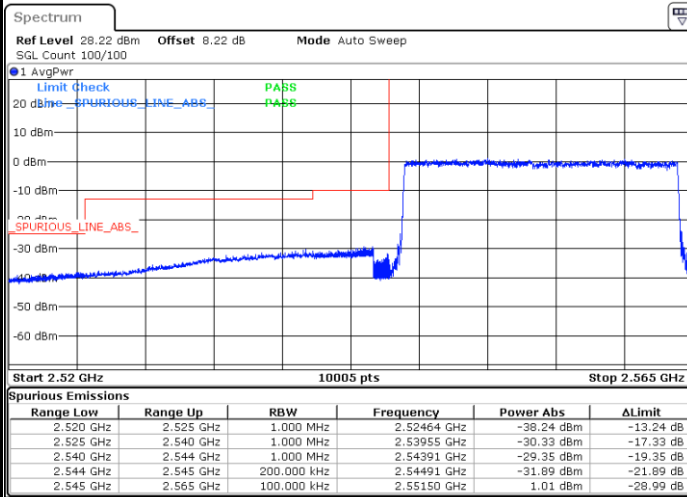
Date: 5 JAN 2022 23:03:56

Highest Band Edge / 1 RB



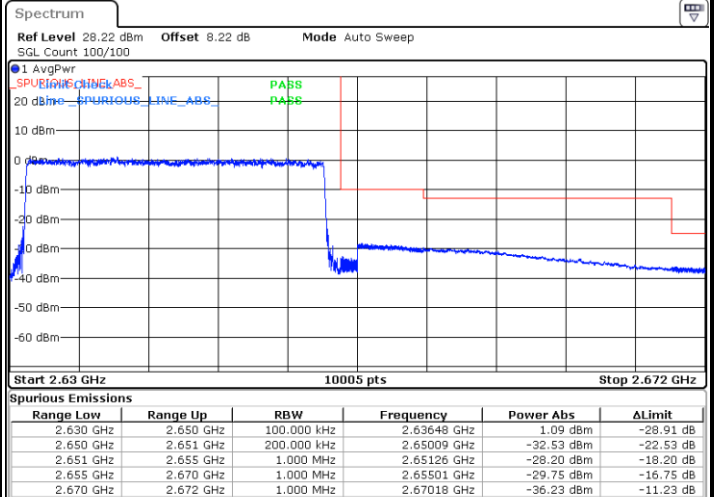
Date: 5 JAN 2022 23:12:25

Lowest Band Edge / Full RB



Date: 5 JAN 2022 23:08:11

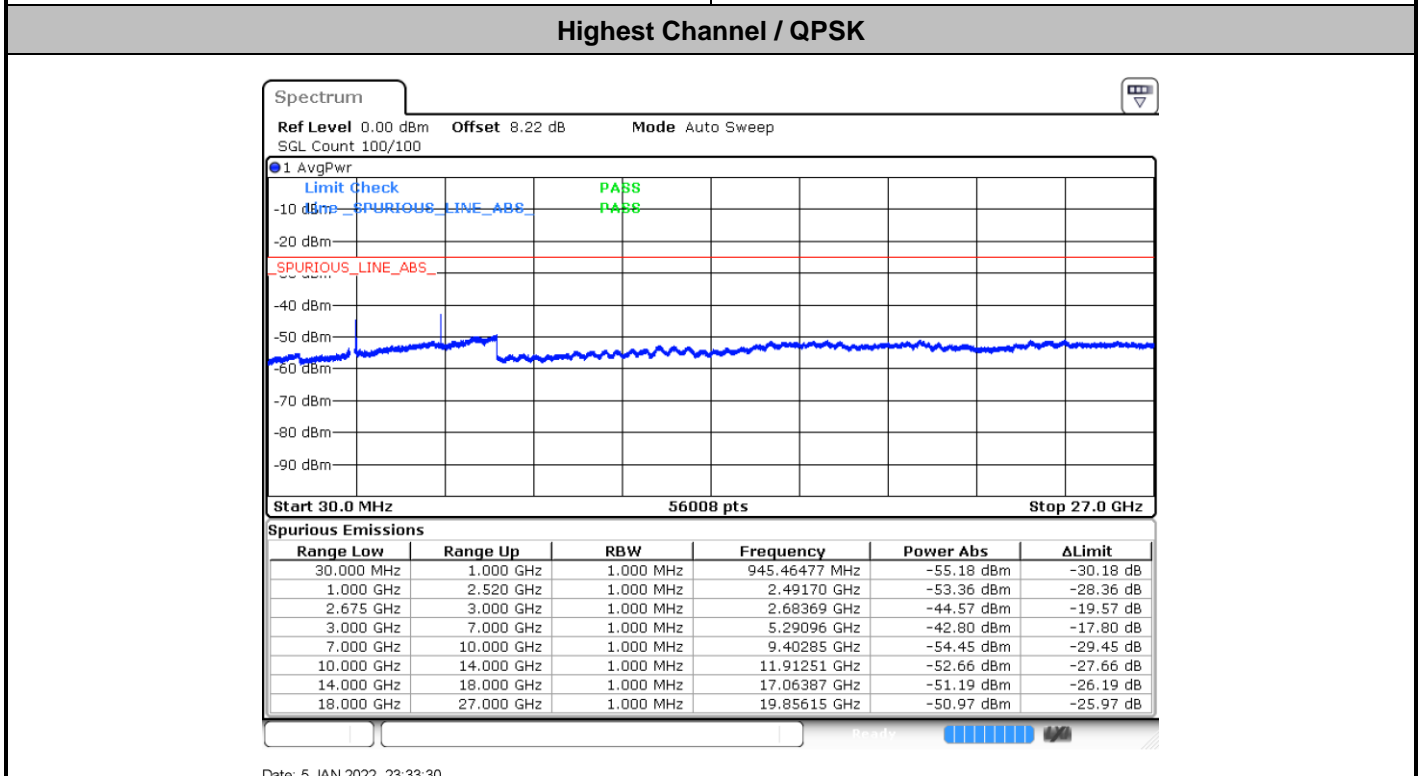
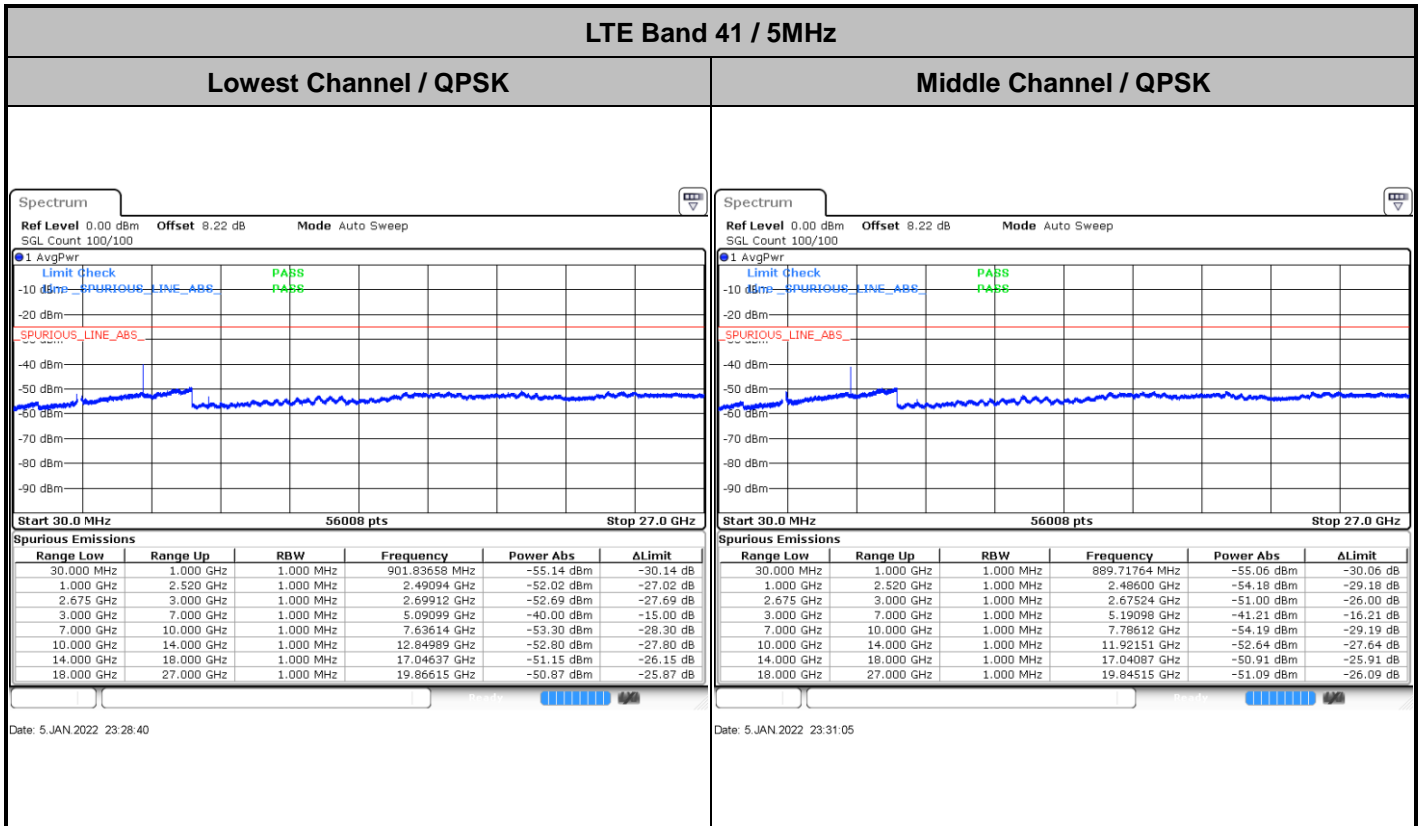
Highest Band Edge / Full RB



Date: 5 JAN 2022 23:16:39



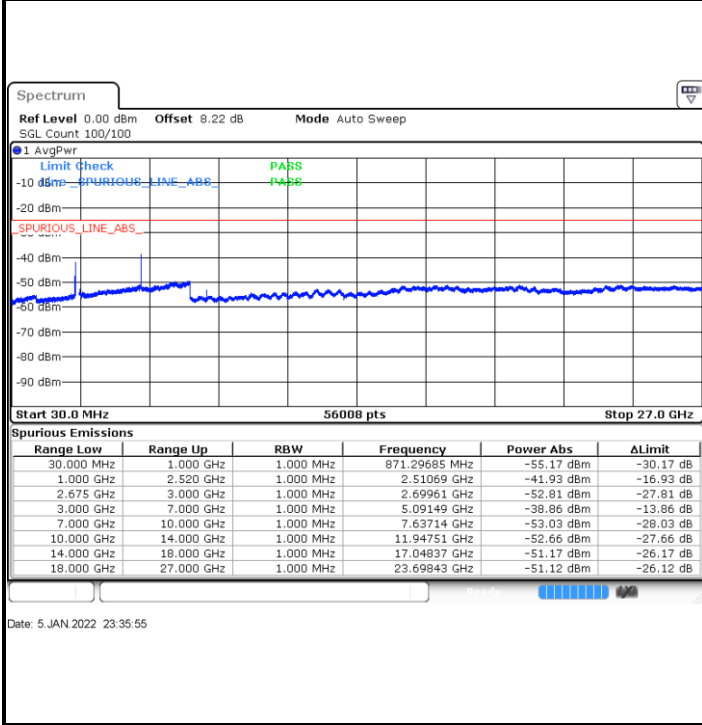
# Conducted Spurious Emission



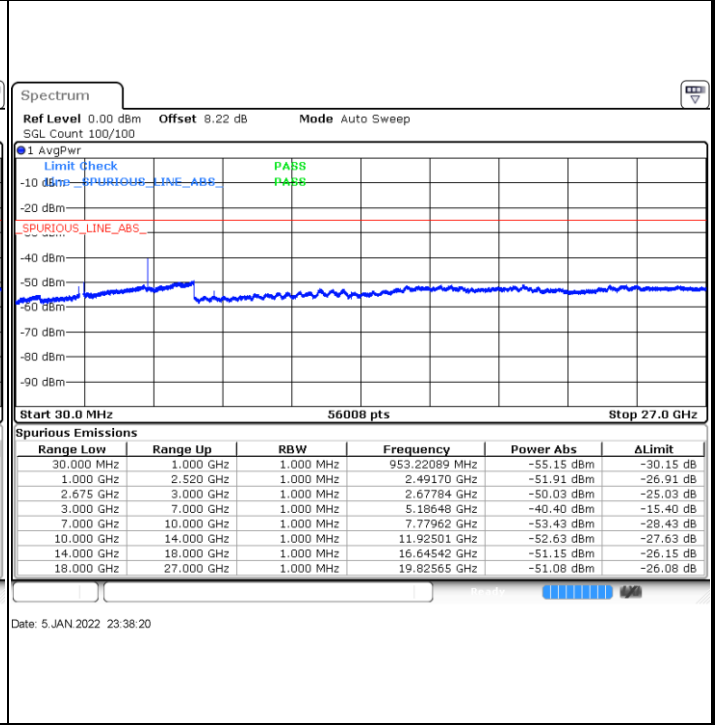


**LTE Band 41 / 10MHz**

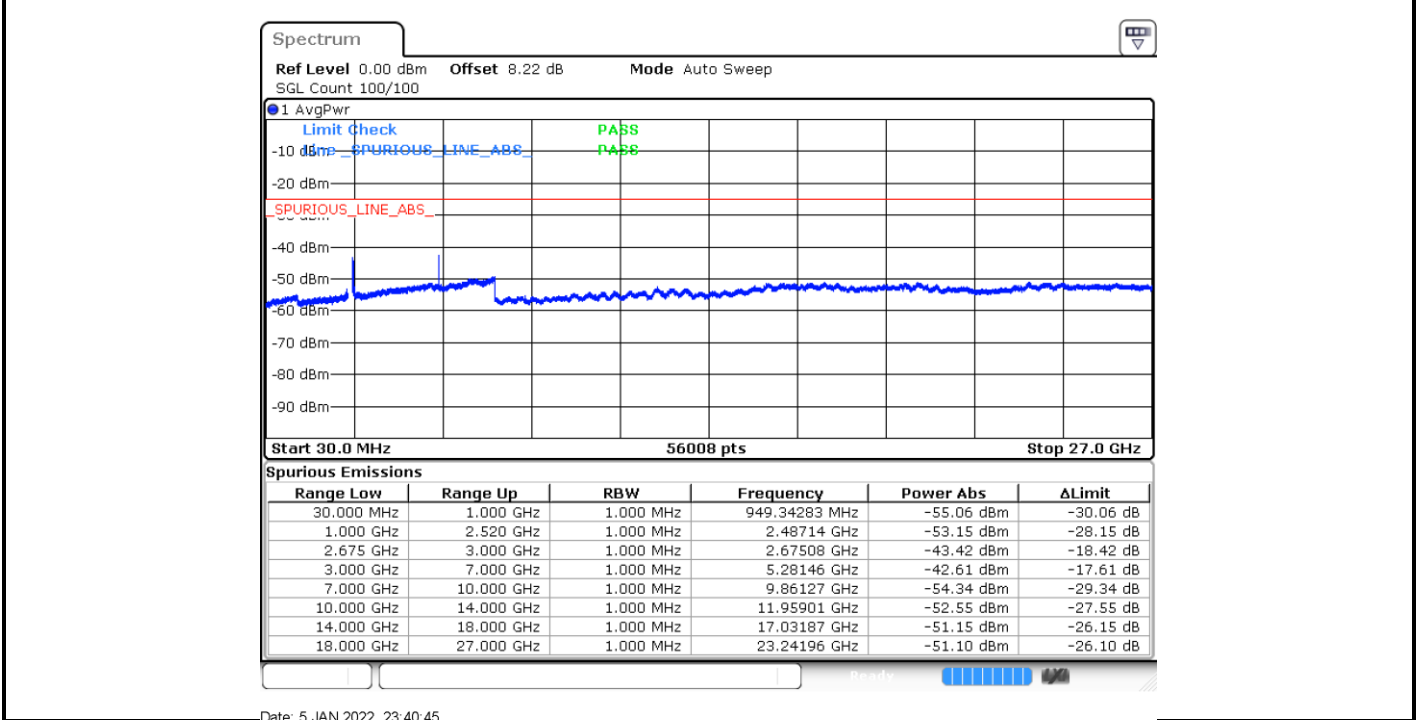
**Lowest Channel / QPSK**



**Middle Channel / QPSK**



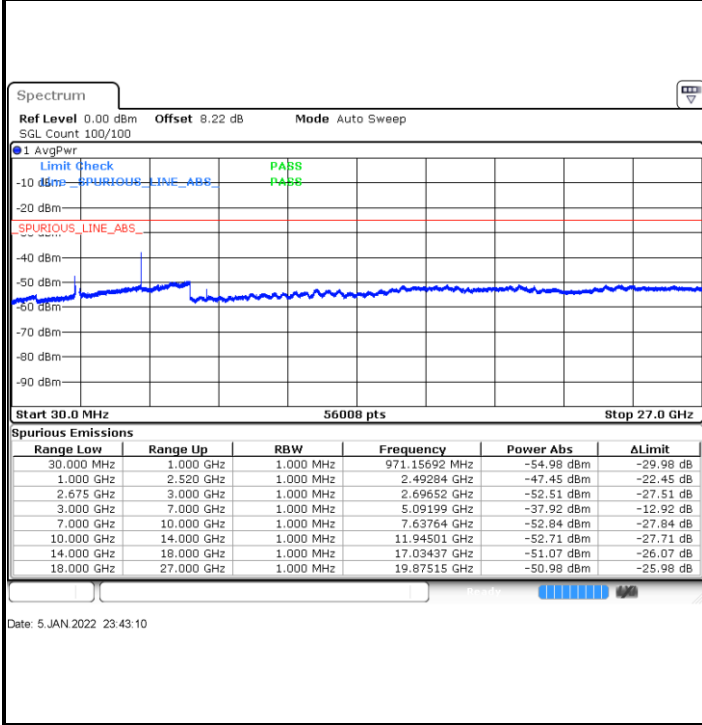
**Highest Channel / QPSK**



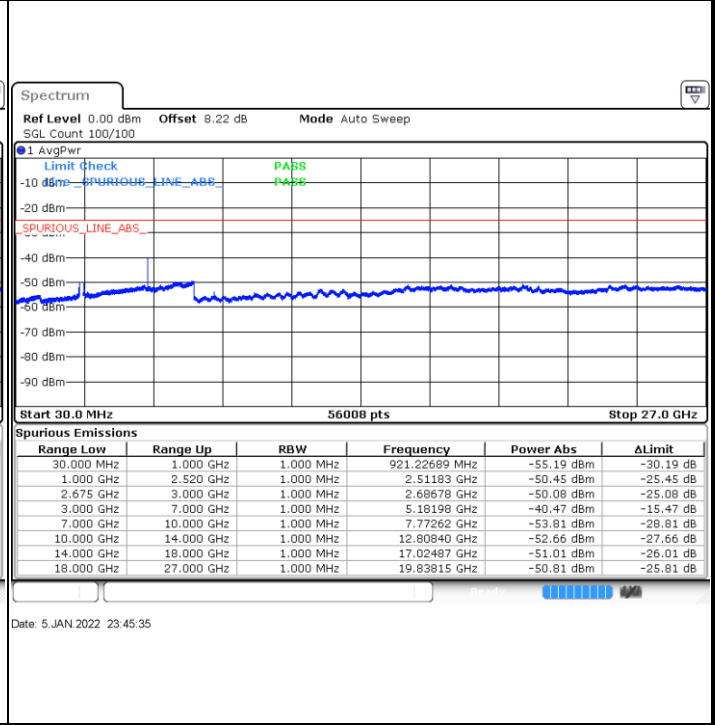


**LTE Band 41 / 15MHz**

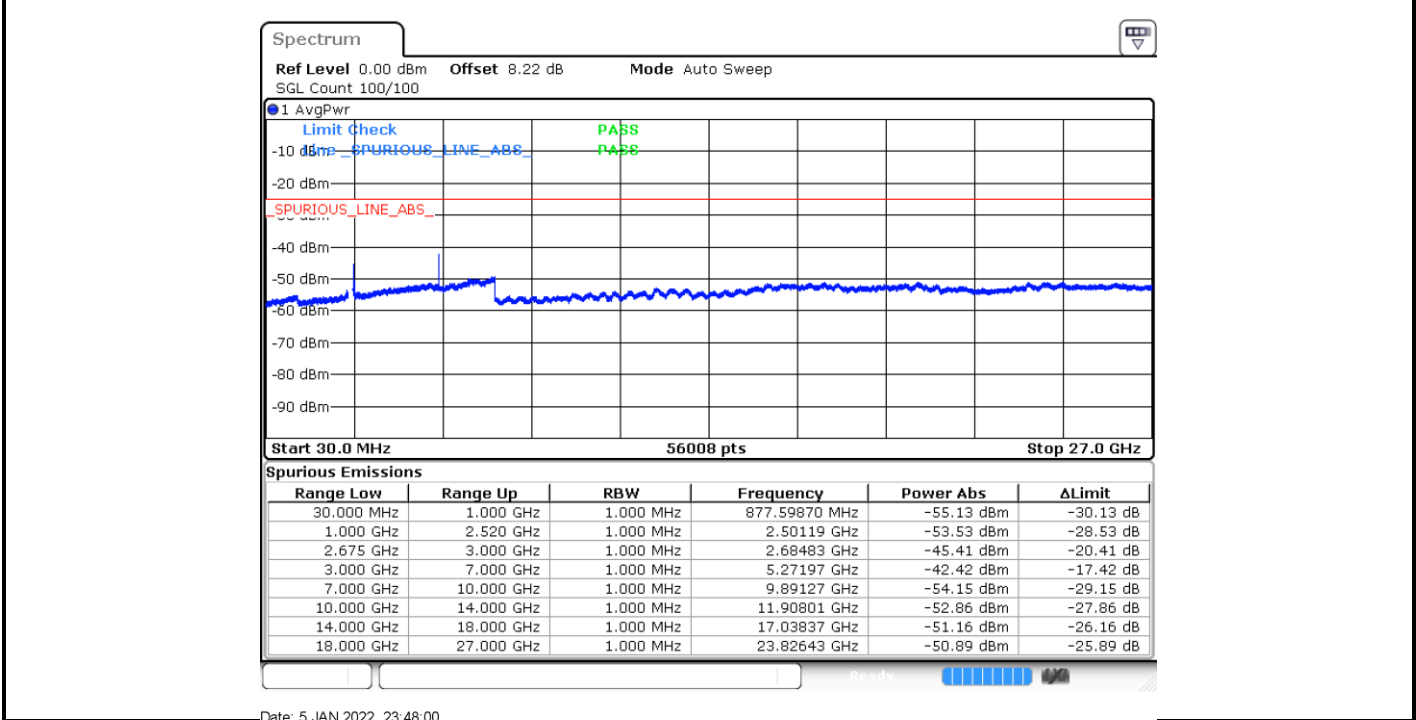
**Lowest Channel / QPSK**



**Middle Channel / QPSK**



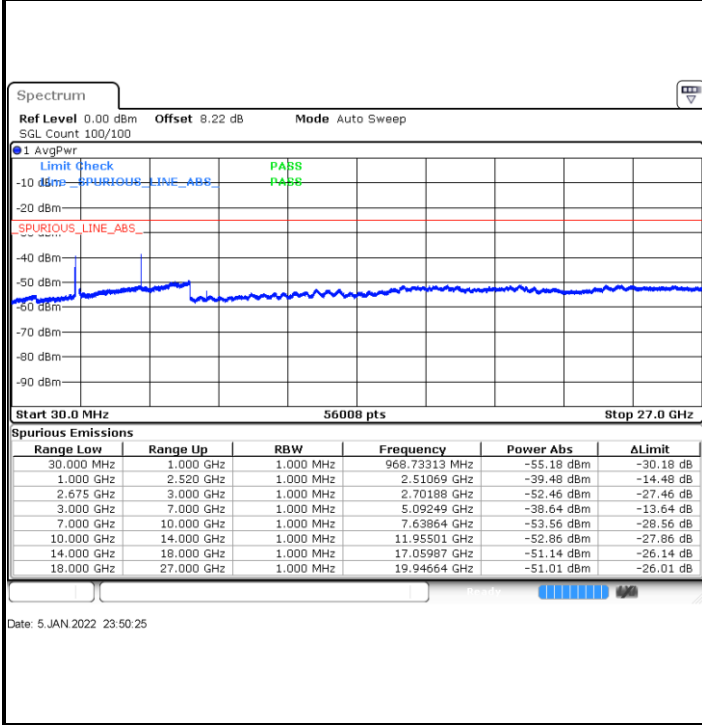
**Highest Channel / QPSK**



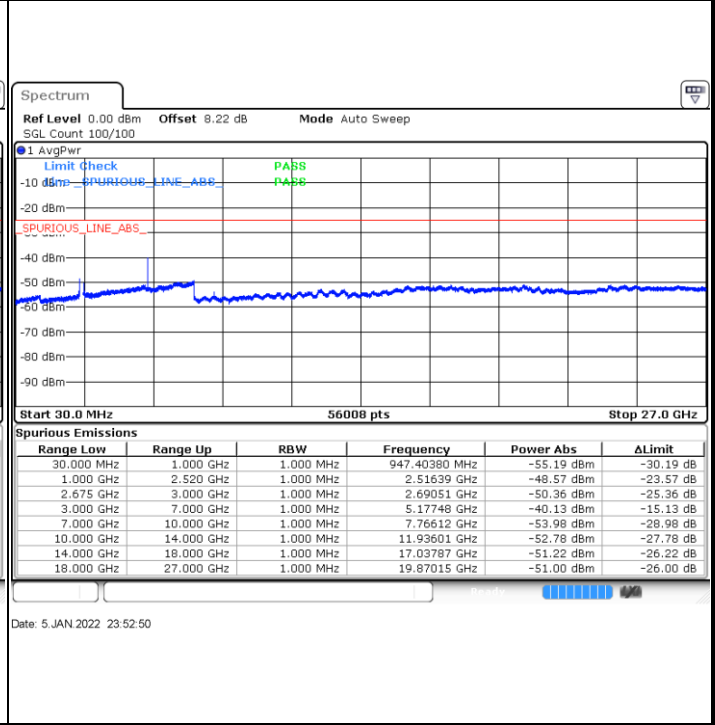


**LTE Band 41 / 20MHz**

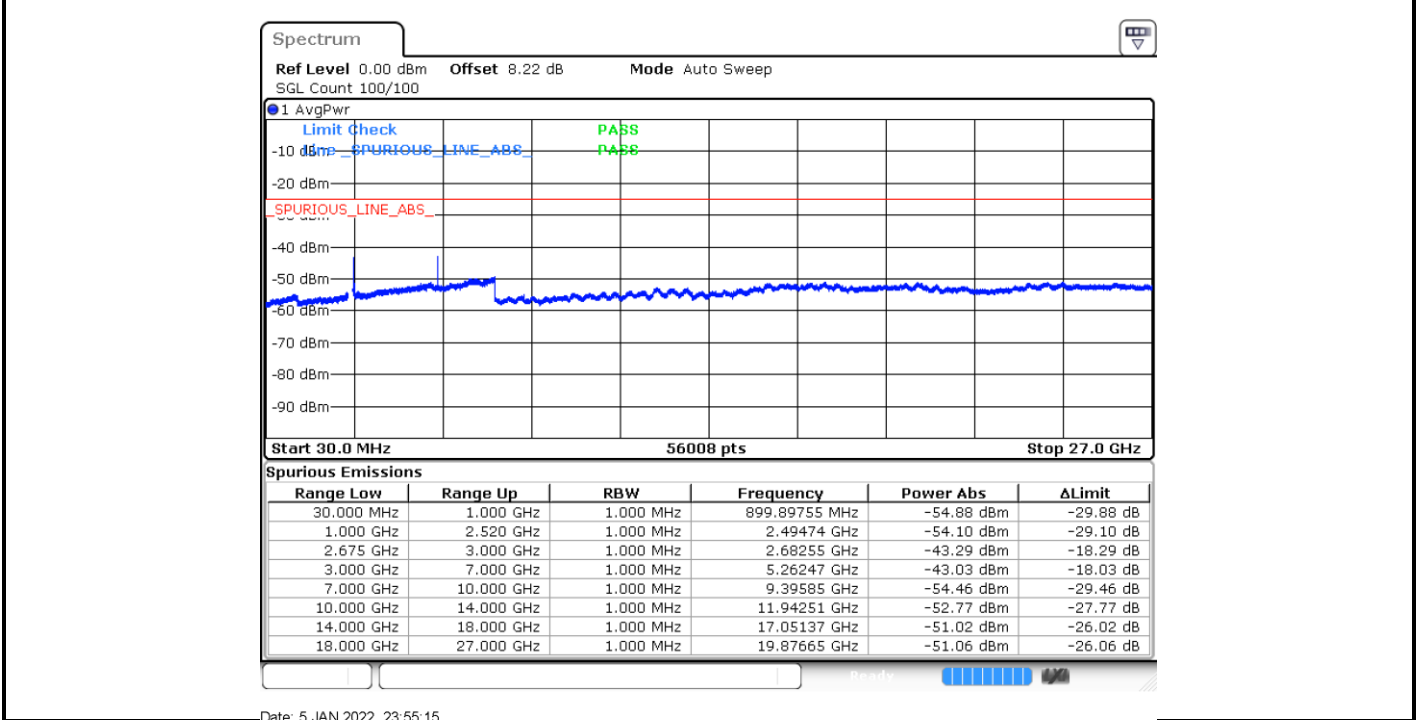
**Lowest Channel / QPSK**



**Middle Channel / QPSK**



**Highest Channel / QPSK**





### Frequency Stability

Test Conditions		LTE Band 41 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0011	PASS
40	Normal Voltage	0.0024	
30	Normal Voltage	0.0015	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0013	
0	Normal Voltage	0.0014	
-10	Normal Voltage	0.0025	
-20	Normal Voltage	0.0012	
-30	Normal Voltage	0.0005	
20	Maximum Voltage	0.0006	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0012	

**Note:**

1. Normal Voltage =3.87 V. ; Battery End Point (BEP) =3.6V. ; Maximum Voltage =4.4V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.

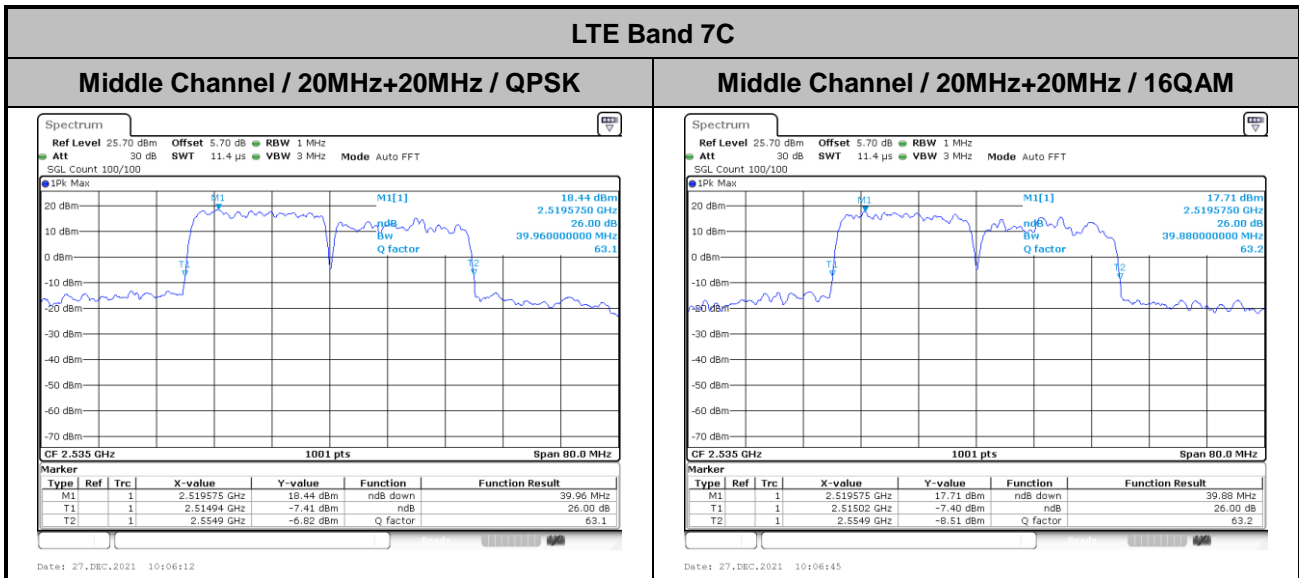




# LTE Band 7C

## 26dB Bandwidth

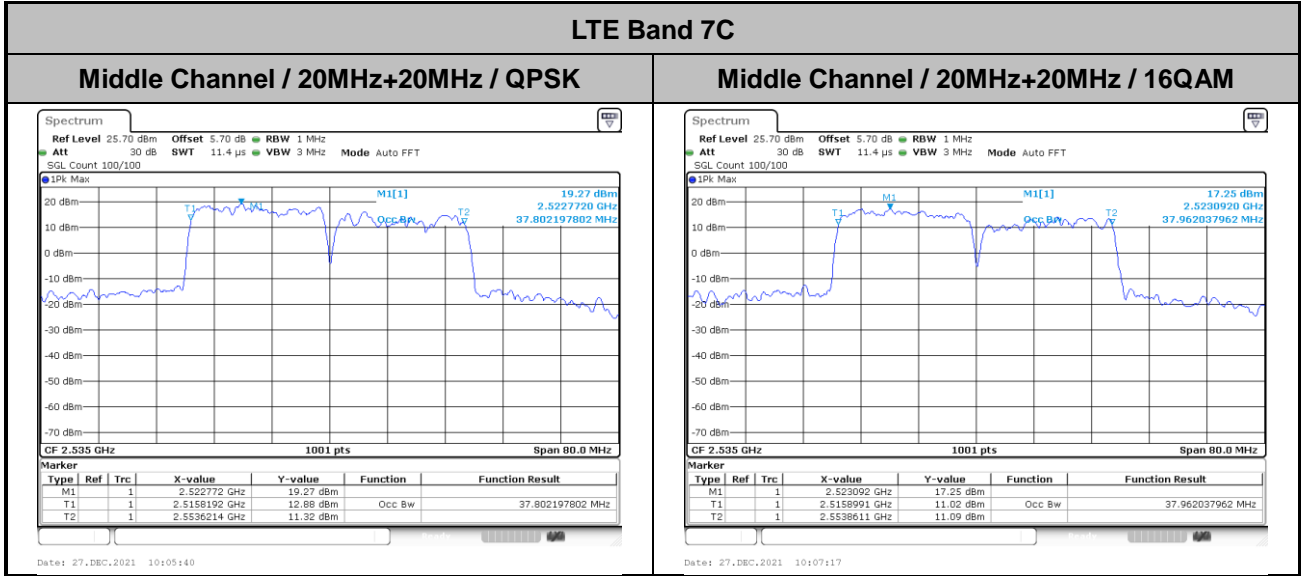
<b>Mode</b>	<b>LTE Band 7C : 26dB BW(MHz)</b>	
<b>BW</b>	<b>20MHz+20MHz</b>	
<b>Mod.</b>	<b>QPSK</b>	<b>16QAM</b>
<b>Middle CH</b>	39.96	39.88





# Occupied Bandwidth

Mode	LTE Band 7C : 99%OBW(MHz)	
BW	20MHz+20MHz	
Mod.	QPSK	16QAM
Middle CH	37.80	37.96



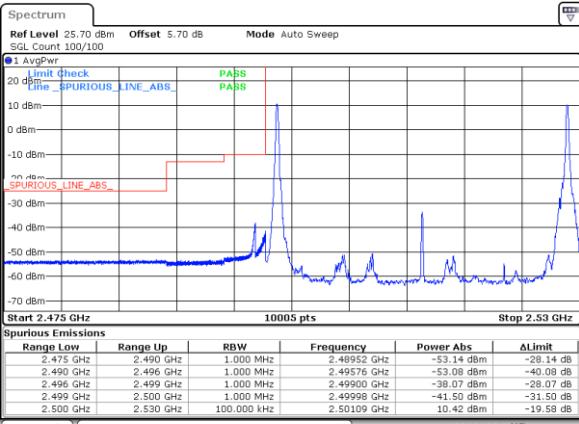


# Conducted Band Edge

## LTE Band 7C / 10MHz+20MHz

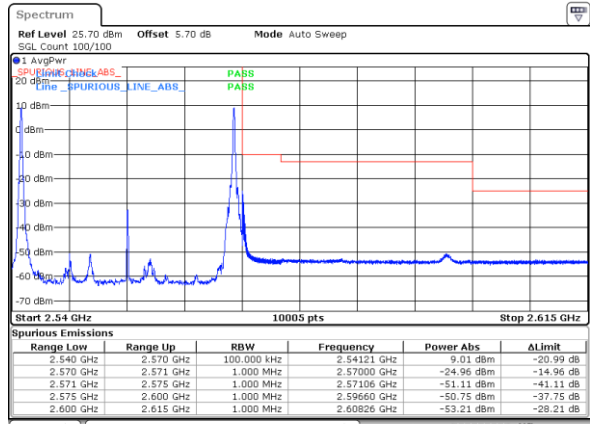
### QPSK

#### Lowest Band Edge / 1RB0 and 1RB99



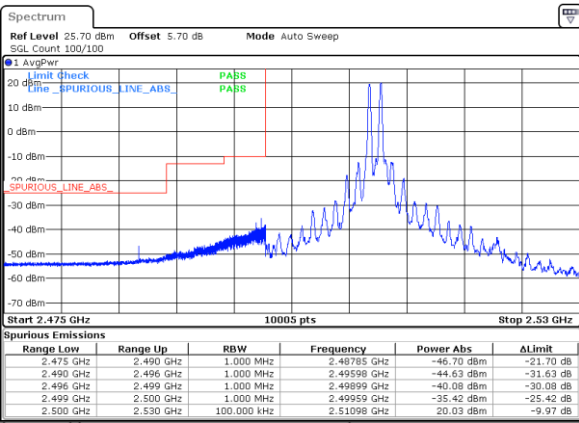
Date: 27\_DEC.2021 02:14:25

#### Highest Band Edge / 1RB0 and 1RB99



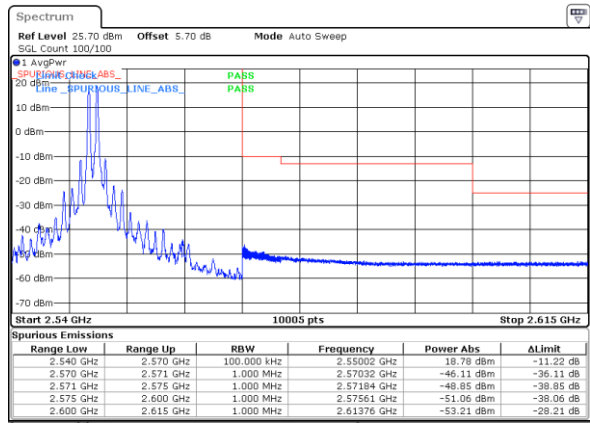
Date: 27\_DEC.2021 03:31:17

#### Lowest Band Edge / 1RB49 and 1RB0



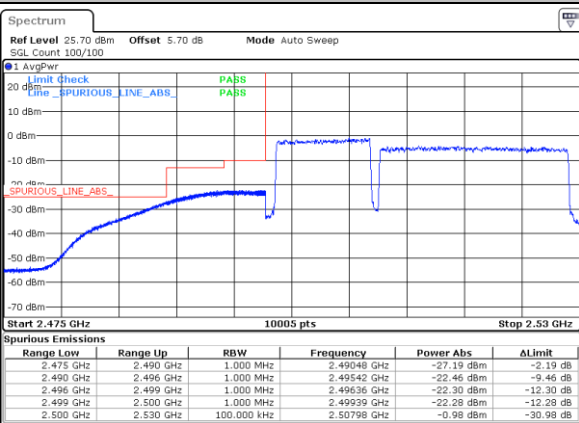
Date: 27\_DEC.2021 02:20:13

#### Highest Band Edge / 1RB49 and 1RB0



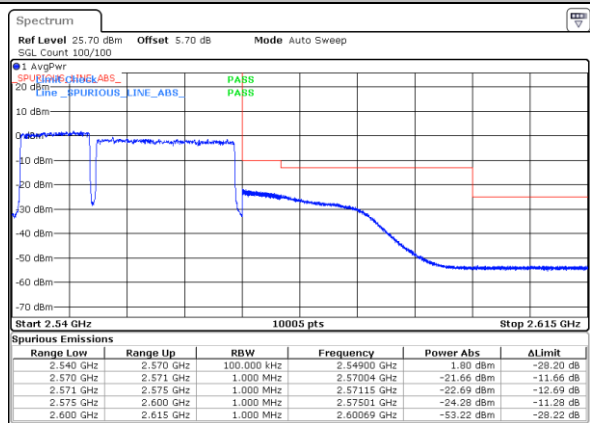
Date: 27\_DEC.2021 03:34:02

#### Lowest Band Edge / Full RB



Date: 30\_DEC.2021 00:12:11

#### Highest Band Edge / Full RB



Date: 27\_DEC.2021 03:27:05

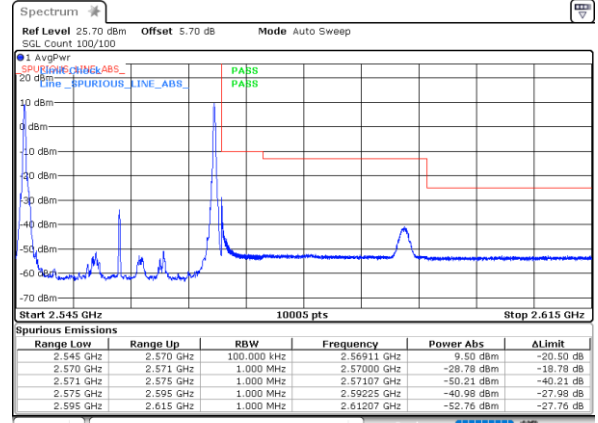
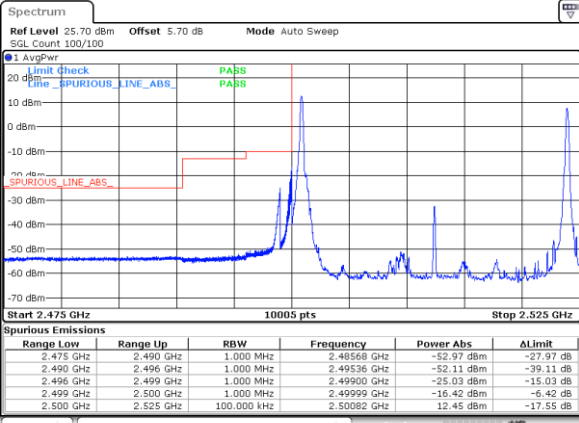


LTE Band 7C / 15MHz+10MHz

QPSK

Lowest Band Edge / 1RB0 and 1RB49

Highest Band Edge / 1RB0 and 1RB49

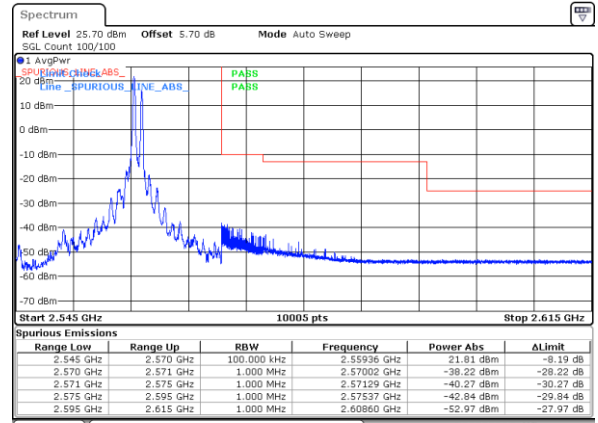
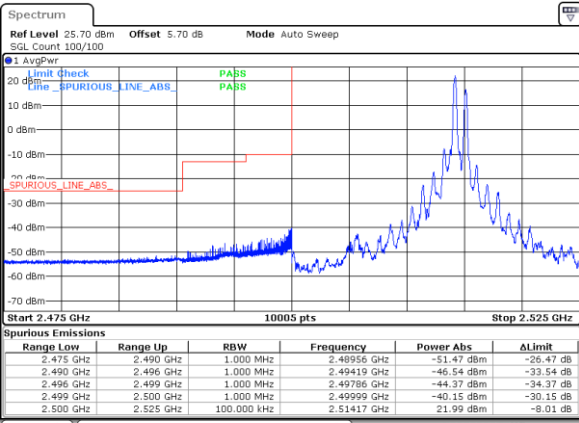


Date: 27. DEC. 2021 10:20:21

Date: 29. DEC. 2021 22:57:13

Lowest Band Edge / 1RB74 and 1RB0

Highest Band Edge / 1RB74 and 1RB0

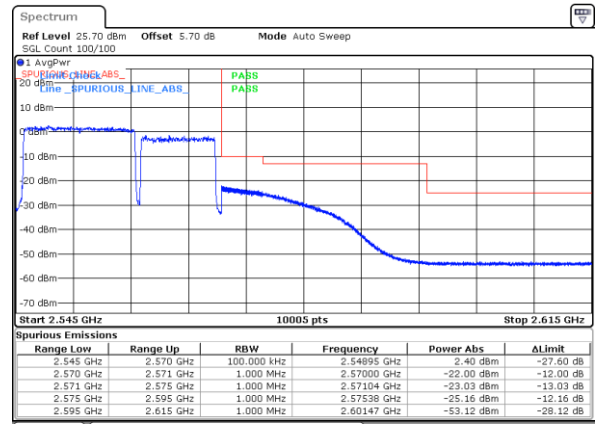
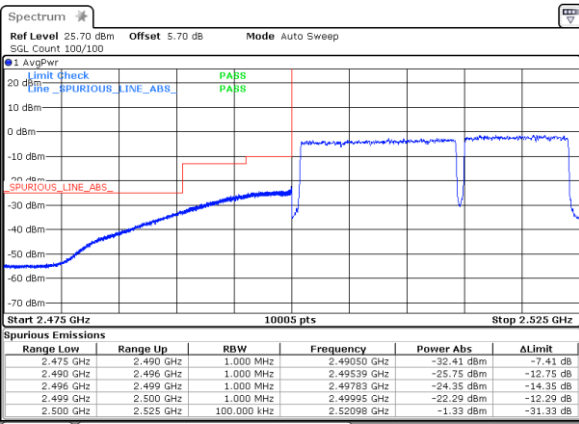


Date: 27. DEC. 2021 10:26:17

Date: 27. DEC. 2021 10:53:31

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 30. DEC. 2021 00:27:03

Date: 27. DEC. 2021 10:54:45