



# FCC RF Test Report

**APPLICANT** : Xiaomi Communications Co., Ltd.  
**EQUIPMENT** : Mobile Phone  
**BRAND NAME** : Xiaomi  
**MODEL NAME** : 2201122G  
**FCC ID** : 2AFZZ122G  
**STANDARD** : 47 CFR Part 2, 22, 27  
**CLASSIFICATION** : PCS Licensed Transmitter Held to Ear (PCE)  
**TEST DATE(S)** : Nov. 24, 2021 ~ Dec. 20, 2021

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



TABLE OF CONTENTS

REVISION HISTORY...3
SUMMARY OF TEST RESULT...4
1 GENERAL DESCRIPTION...5
1.1 Applicant...5
1.2 Manufacturer...5
1.3 Product Feature of Equipment Under Test...5
1.4 Product Specification of Equipment Under Test...5
1.5 Modification of EUT...6
1.6 Maximum ERP/EIRP Power and Emission Designator...7
1.7 Testing Location...8
1.8 Test Software...8
1.9 Applicable Standards...8
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST...9
2.1 Test Mode...9
2.2 Connection Diagram of Test System...11
2.3 Support Unit used in test configuration and system...12
2.4 Measurement Results Explanation Example...12
2.5 Frequency List of Low/Middle/High Channels...13
3 CONDUCTED TEST ITEMS...16
3.1 Measuring Instruments...16
3.2 Test Setup...16
3.3 Test Result of Conducted Test...16
3.4 Conducted Output Power and ERP/EIRP...17
3.5 Peak-to-Average Ratio...18
3.6 Occupied Bandwidth...19
3.7 Conducted Band Edge...20
3.8 Conducted Spurious Emission...22
3.9 Frequency Stability...23
4 RADIATED TEST ITEMS...24
4.1 Measuring Instruments...24
4.2 Test Setup...24
4.3 Test Result of Radiated Test...25
4.4 Radiated Spurious Emission...26
5 LIST OF MEASURING EQUIPMENT...27
6 UNCERTAINTY OF EVALUATION...28
APPENDIX A. TEST RESULTS OF CONDUCTED TEST
APPENDIX B. TEST RESULTS OF RADIATED TEST
APPENDIX C. TEST SETUP PHOTOGRAPHS





## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power (5G NR n5)	ERP < 7 Watt		
	§24.232(c) §27.50(h)(2)	Equivalent Isotropic Radiated Power (5G NR n7, n41, n38)	EIRP < 2Watt		
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (5G NR n66)	EIRP < 1Watt		
3.5	N/A	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §27.53(h)	Conducted Band Edge Measurement (5G NR n5) (5G NR n66)	< 43+10log <sub>10</sub> (P[Watts])	PASS	-
	§27.53(m)(4)	Conducted Band Edge Measurement (5G NR n7, n41, n38)	§27.53(m)(4)		
3.8	§2.1051 §22.917(a) §27.53(h)	Conducted Spurious Emission (5G NR n5) (5G NR n66)	< 43+10log <sub>10</sub> (P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (5G NR n7, n41, n38)	< 55+10log <sub>10</sub> (P[Watts])		
3.9	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	-
	§24.235 §27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a) §27.53(h)	Radiated Spurious Emission (5G NR n5) (5G NR n66)	< 43+10log <sub>10</sub> (P[Watts])	PASS	Under limit 36.00 dB at 5052.000 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (5G NR n7, n41, n38)	< 55+10log <sub>10</sub> (P[Watts])		

**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	Xiaomi
Model Name	2201122G
FCC ID	2AFZZ122G
IMEI Code	Conducted: 863690050059314/863690050059322 Radiation: 863690050059678/863690050059686
HW Version	P2.1
SW Version	MIUI 13
EUT Stage	Identical Prototype

Remark: Only 5G NR bands are tested in this report, all the other RF bands are tested in the other reports separately.

## 1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz
Rx Frequency	5G NR n5 : 869 MHz ~ 894 MHz 5G NR n7 : 2620 MHz ~ 2690 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 2110 MHz~ 2200 MHz
SCS	n5, n7, n66: 15kHz n38, n41: 30kHz
Bandwidth	n5: 5MHz / 10MHz / 15MHz / 20MHz n7: 5MHz / 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 40MHz n38 : 10MHz / 15MHz / 20MHz / 30MHz / 40MHz n41: 20MHz / 30MHz / 40MHz / 50MHz / 60MHz / 70MHz / 80MHz / 90MHz / 100MHz



	n66: 5MHz / 10MHz / 15MHz / 20MHz / 30MHz / 40MHz
Antenna Gain	<p>&lt;Ant. 0&gt;  5G NR n5 : -5.2 dBi  5G NR n7 : -3.0 dBi  5G NR n38 : -3.0 dBi  5G NR n41 : -3.0 dBi  5G NR n66 : -7.5 dBi</p> <p>&lt;Ant. 1&gt;  5G NR n5 : -5.2 dBi</p> <p>&lt;Ant. 3&gt;  5G NR n7 : -1.5 dBi  5G NR n38 : -1.5 dBi  5G NR n41 : -1.5 dBi  5G NR n66 : -1.0 dBi</p> <p>&lt;Ant. 4&gt;  5G NR n7 : -2.4 dBi  5G NR n38 : -2.4 dBi  5G NR n41 : -2.4 dBi  5G NR n66 : -3.3 dBi</p> <p>&lt;Ant. 5&gt;  5G NR n7 : -2.6 dBi  5G NR n38 : -2.6 dBi  5G NR n41 : -2.6 dBi  5G NR n66 : -3.1 dBi</p>
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Note:

1. The maximum ERP/EIRP is calculated from max output power and antenna gain, only the maximum ERP/EIRP is shown in the report: 5G NR n5/n38/n41 for Ant. 0 and n7/n66 for Ant.4.
2. 5G NR Bands support SA and NSA mode. The whole testing has assessed SA mode by referring to the higher conducted power for conducted test items.
3. For NSA mode of all EN-DC combination, we only show the combination of the maximum power among all NSA combinations in the report.
4. The EN-DC mode combination could be referred to the product spec.

### 1.5 Modification of EUT

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

### 1.6 Maximum ERP/EIRP Power and Emission Designator

5G NR n5		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
20	834.0 ~ 839.0	0.1109	19M5G7D	0.0914	19M4W7D

5G NR n7		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
40	2520.0 ~ 2550.0	0.2070	38M7G7D	0.1629	38M8W7D

5G NR n38		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
40	2590.02 ~ 2599.98	0.1722	36M2G7D	0.1390	36M2W7D

5G NR n41		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
100	2546.01 ~ 2640.00	0.1754	96M3G7D	0.1380	96M3W7D

5G NR n66		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
40	1730.0 ~ 1760.0	0.1742	38M8G7D	0.1352	38M7W7D

**Note:**

- 5G NR Band n41 overlaps the entire frequency range of Band n38. Therefore, the conducted test results provided in this report covers Band n41(20M/30M/40M) as well as Band n38(20M/30M/40M).
- All modulations have been tested, only the worst test results of PSK & QAM are shown in the report.



### 1.7 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>
	03CH04-KS TH01-KS	CN1257	314309

### 1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24a

### 1.9 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, 24, 27
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

Antenna port conducted and radiated test items are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

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.

Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			

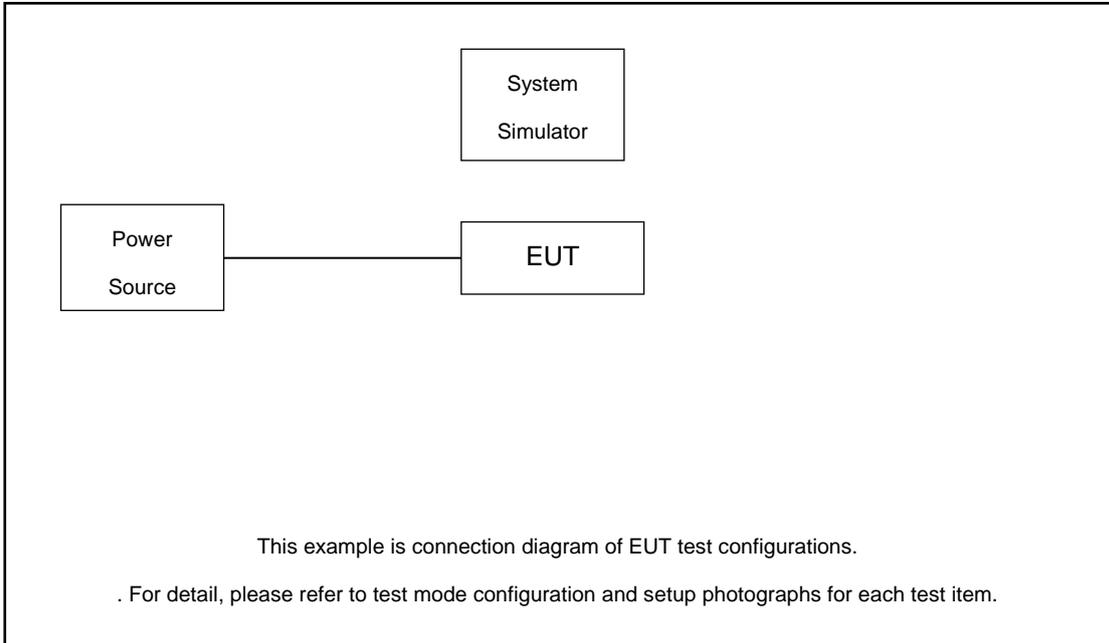
Test Items	5G NR	Bandwidth (MHz)									Modulation					RB #		Test Channel			
		5	10	15	20	25	30	40	50-90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H	
Max. Output Power	n5	v	v	v	v	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v	
	n7	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	
	n38	-	v	v	v	-	v	v	-	-	v	v	v	v	v	v	v	v	v	v	
	n41	-	-	-	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	
	n66	v	v	v	v	-	v	v	-	-	v	v	v	v	v	v	v	v	v	v	
Peak-to-Average Ratio	n5				v		-	-	-	-	v	v	v	v	v		v			v	
	n7							v	-	-	v	v	v	v	v		v			v	
	n38	-		v							v	v	v	v	v		v			v	
	n41	-	-	-						v	v	v	v	v	v		v			v	
	n66							v	-	-	v	v	v	v	v		v			v	
26dB and 99% Bandwidth	n5				v		-	-	-	-		v	v				v			v	
	n7							v	-	-		v	v				v			v	
	n38	-		v				v				v	v				v			v	
	n41	-	-	-						v		v	v				v			v	
	n66							v	-	-		v	v				v			v	
Conducted Band Edge	n5	v	v	v	v		-	-	-	-	v	v	v	v	v	v	v	v		v	
	n7	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v	v	v		v	
	n38	-	v	v							v	v	v	v	v	v	v	v		v	
	n41	-	-	-	v			v	v	v	v	v	v	v	v	v	v	v	v		v
	n66	v	v	v	v			v	v	-	-	v	v	v	v	v	v	v	v		v



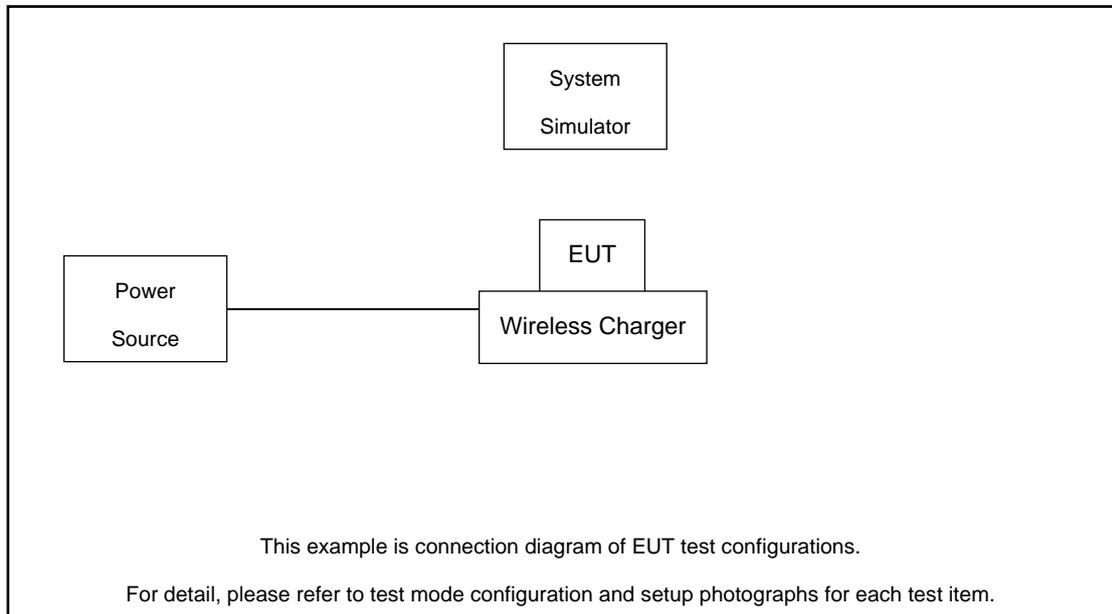
Test Items	5G NR	Bandwidth (MHz)									Modulation					RB #		Test Channel		
		5	10	15	20	25	30	40	50-90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Conducted Spurious Emission	n5	v	v	v	v	-	-	-	-	-		v				v		v	v	v
	n7	v	v	v	v	v	v	v	-	-		v				v		v	v	v
	n38	-	v	v	v		v	v				v				v		v	v	v
	n41	-	-	-	v		v	v	v	v		v				v		v	v	v
	n66	v	v	v	v		v	v	-	-		v				v		v	v	v
Frequency Stability	n5				v	-	-	-	-	-		v					v		v	
	n7				v		-	-	-	-		v					v		v	
	n38	-			v							v					v		v	
	n41	-	-	-	v							v					v		v	
	n66				v				-	-		v					v		v	
E.R.P / E.I.R.P	n5	v	v	v	v	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n7	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	n38	-	v	v	v	-	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	n41	-	-	-	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n66	v	v	v	v	-	v	v	-	-	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n5	Worst Case																	v	
	n7	Worst Case																	v	
	n38	Worst Case																	v	
	n41	Worst Case																	v	
	n66	Worst Case																	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>Based on engineering evaluation, only the worst modulations test results are shown in the report.</li> </ol>																			

## 2.2 Connection Diagram of Test System

### Adapter Mode:



### Wireless Charging Mode:



## 2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m
4.	Wireless Charging	Xiaomi	N/A	N/A	N/A	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 and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 2.99 dB and 10dB attenuator.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 2.99 + 10 = 12.99 \text{ (dB)} \end{aligned}$$



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

5G NR n5 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	166800	167300	167800
	Frequency	834	836.5	839
15	Channel	166300	167300	168300
	Frequency	831.5	836.5	841.5
10	Channel	165800	167300	168800
	Frequency	829	836.5	844
5	Channel	165300	167300	169300
	Frequency	826.5	836.5	846.5

5G NR n7 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	504000	507000	510000
	Frequency	2520	2535	2550
30	Channel	503000	507000	511000
	Frequency	2515	2535	2555
25	Channel	502500	507000	511500
	Frequency	2512.5	2535	2557.5
20	Channel	502000	507000	512000
	Frequency	2510	2535	2560
15	Channel	501500	507000	512500
	Frequency	2507.5	2535	2562.5
10	Channel	501000	507000	513000
	Frequency	2505	2535	2565
5	Channel	500500	507000	513500
	Frequency	2502.5	2535	2567.5



5G NR n38 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	518004	519000	519996
	Frequency	2590.02	2595	2599.98
30	Channel	517002	519000	520998
	Frequency	2585.01	2595	2604.99
20	Channel	516000	519000	522000
	Frequency	2580	2595	2610
15	Channel	515502	519000	522498
	Frequency	2577.51	2595	2612.49
10	Channel	515004	519000	522996
	Frequency	2575.02	2595	2614.98

5G NR n41 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	509202	518598	528000
	Frequency	2546.01	2592.99	2640
90	Channel	508200	518598	528996
	Frequency	2541	2592.99	2644.98
80	Channel	507204	518598	529998
	Frequency	2536.02	2592.99	2649.99
70	Channel	506202	518598	531000
	Frequency	2531.01	2592.99	2655
60	Channel	505200	518598	531996
	Frequency	2526	2592.99	2659.98
50	Channel	504204	518598	532998
	Frequency	2521.02	2592.99	2664.99
40	Channel	503202	518598	534000
	Frequency	2516.01	2592.99	2670
30	Channel	502200	518598	534996
	Frequency	2511	2592.99	2674.98
20	Channel	501204	518598	535998
	Frequency	2506.02	2592.99	2679.99



5G NR n66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	346000	349000	352000
	Frequency	1730	1745	1760
30	Channel	345000	349000	353000
	Frequency	1725	1745	1765
20	Channel	344000	349000	354000
	Frequency	1720	1745	1770
15	Channel	343500	349000	354500
	Frequency	1717.5	1745	1772.5
10	Channel	343000	349000	355000
	Frequency	1715	1745	1775
5	Channel	342500	349000	355500
	Frequency	1712.5	1745	1777.5

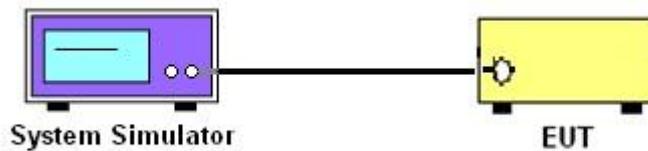
### 3 Conducted Test Items

#### 3.1 Measuring Instruments

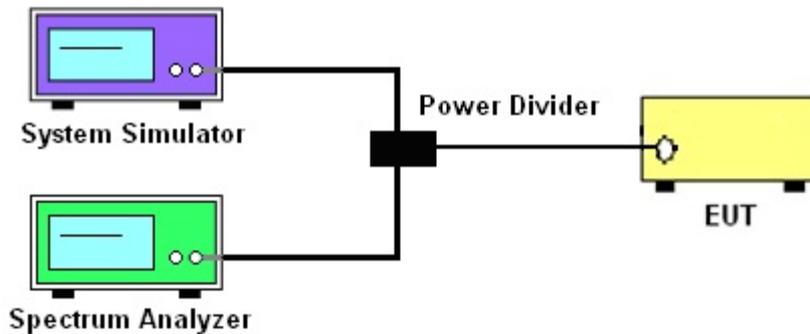
See list of measuring instruments of this test report.

#### 3.2 Test Setup

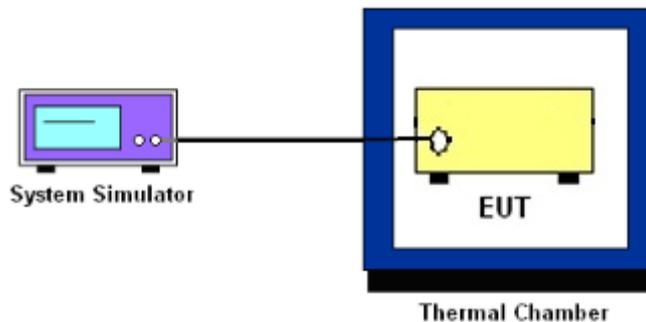
##### 3.2.1 Conducted Output Power



##### 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 ERP/EIRP

#### 3.4.1 Description of the Conducted Output Power Measurement and ERP/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 ERP of mobile transmitters must not exceed 7 Watts for 5G NR n5.

The EIRP of mobile transmitters must not exceed 2 Watts for 5G NR n7, n38 and n41.

The EIRP of mobile transmitters must not exceed 1 Watts for 5G NR n66.

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.

1. The testing follows ANSI C63.26 Section 5.2.6 (PAPR).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set EUT in maximum power output.
4. Set the RBW = 1MHz, VBW = 3MHz, Detector = Peak, Trace mode = max hold, Set span  $\geq 2 \times$  OBW in spectrum analyzer.
5. Set the RBW = 1MHz, VBW = 3MHz, Detector = power averaging, Trace mode = max hold, Set span  $\geq 2 \times$  OBW in spectrum analyzer.
6. Add  $[10 \log (1/\text{duty cycle})]$  to the measured maximum power level to compute the average power during continuous transmission.

$$7. \text{ PAPR (dB)} = P_{Pk} \text{ (dBm)} - P_{Avg} \text{ (dBm)}$$

where

PAPR peak-to-average power ratio, in dB

$P_{Pk}$  measured peak power level, in dBm

$P_{Avg}$  measured average power level, in dBm

8. 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

22.917(a)

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.

27.53 (h)

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.

27.53(m)(4)

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



### 3.7.2 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. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. 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 + 10log(P)] (dB)  
= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

9. For 5G NR n7/n38/n41, the other 40 dB, and 55 dB have additionally applied same calculation above.
10. 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 5G NR n7/n38/n41:

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. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. 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.
11. For 5G NR n7/n38/n41  
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)  
 $= -25$ dBm.



## 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.

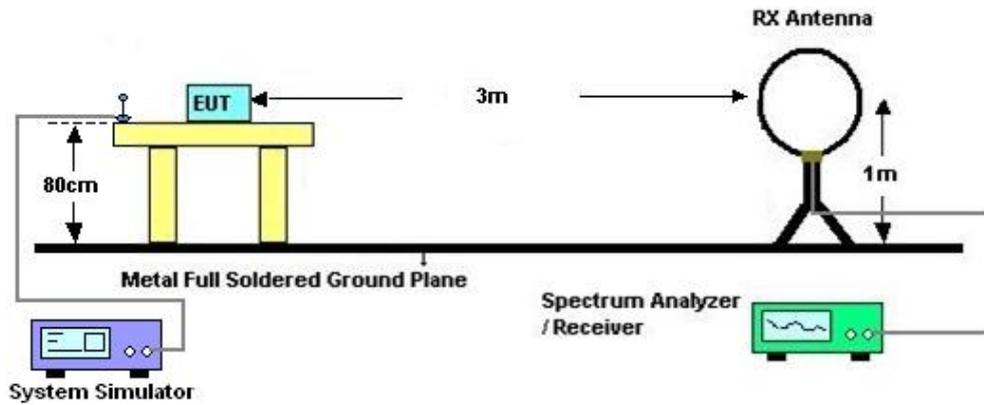
## 4 Radiated Test Items

### 4.1 Measuring Instruments

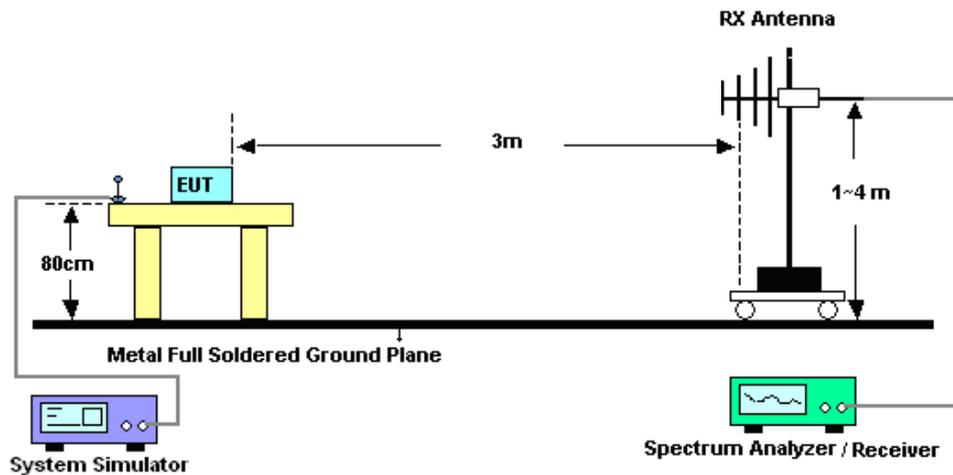
See list of measuring instruments of this test report.

### 4.2 Test Setup

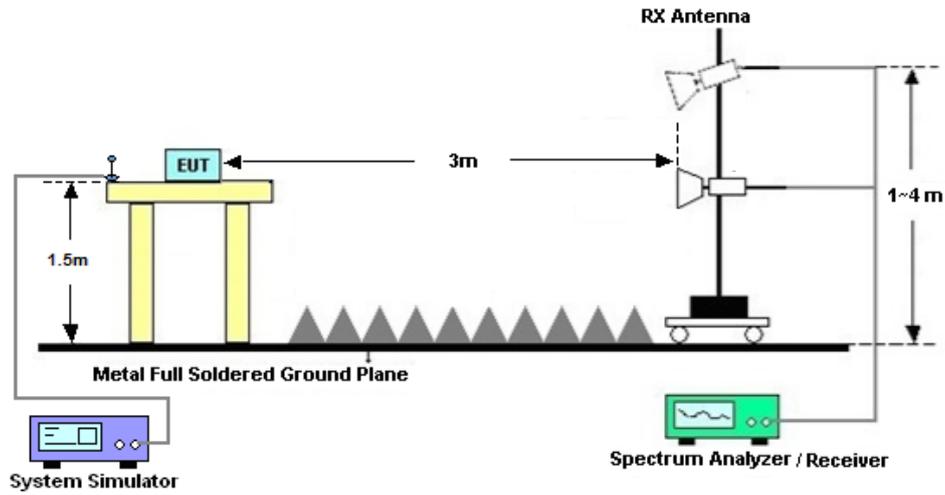
#### 4.2.1 For radiated test below 30MHz



#### 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 5G NR n7/n38/n41

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.  $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11.  $ERP \text{ (dBm)} = EIRP - 2.15$
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)  
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$   
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$   
 $= -13\text{dBm}.$

13. For 5G NR n7/n38/n41:

The limit line is derived from  $55 + 10\log(P)$ dB below the transmitter power P(Watts)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	Nov. 24, 2021~ Dec. 20, 2021	Oct. 13, 2022	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	Aug. 26, 2021	Nov. 24, 2021~ Dec. 20, 2021	Aug. 25, 2022	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 12, 2021	Nov. 24, 2021~ Dec. 20, 2021	Jul. 11, 2022	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44G,MAX 30dB	Apr. 13, 2021	Dec. 11, 2021	Apr. 12, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Dec. 11, 2021	Oct. 29, 2022	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 30, 2021	Dec. 11, 2021	May 29, 2022	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 18, 2021	Dec. 11, 2021	Apr. 17, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 06, 2021	Dec. 11, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 06, 2021	Dec. 11, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 07, 2021	Dec. 11, 2021	Jan. 06, 2022	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Jan. 06, 2021	Dec. 11, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 13, 2021	Dec. 11, 2021	Oct. 12, 2022	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Dec. 11, 2021	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Dec. 11, 2021	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Dec. 11, 2021	NCR	Radiation (03CH04-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))	3.3dB
---------------------------------------------------------------------	-------

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB
---------------------------------------------------------------------	-------

### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB
---------------------------------------------------------------------	-------

----- THE END -----



## Appendix A. Test Results of Conducted Test

Test Engineer :	Yong He	Temperature :	21~24°C
		Relative Humidity :	45~51%

### Conducted Output Power(Average power and EIRP)

5G NR n5:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	ERP	ERP	ERP
								L	M	H
Channel				166800	167300	167800				
Frequency (MHz)				834	836.5	839		L	M	H
20	PI/2 BPSK	1	1	25.55	25.65	25.58	-5.2	0.1084	0.1109	0.1091
20	QPSK	1	1	25.34	25.34	25.33	-5.2	0.1033	0.1033	0.1030
20	QPSK	1	53	25.34	25.36	25.37	-5.2	0.1033	0.1038	0.1040
20	QPSK	1	104	25.27	25.24	25.26	-5.2	0.1016	0.1009	0.1014
20	QPSK	50	0	24.55	24.71	24.63	-5.2	0.0861	0.0893	0.0877
20	QPSK	50	28	25.52	25.47	25.55	-5.2	0.1076	0.1064	0.1084
20	QPSK	50	56	24.63	24.58	24.60	-5.2	0.0877	0.0867	0.0871
20	QPSK	100	0	24.59	24.60	24.65	-5.2	0.0869	0.0871	0.0881
20	16QAM	1	1	24.76	24.81	24.77	-5.2	0.0904	0.0914	0.0906
20	64QAM	1	1	22.90	22.94	22.83	-5.2	0.0589	0.0594	0.0579
20	256QAM	1	1	20.77	20.82	20.88	-5.2	0.0361	0.0365	0.0370
Channel				166300	167300	168300	Gain	ERP	ERP	ERP
Frequency (MHz)				831.5	836.5	841.5				
15	QPSK	1	1	25.21	25.33	25.20	-5.2	0.1002	0.1030	0.1000
15	16QAM	1	1	24.72	24.69	24.69	-5.2	0.0895	0.0889	0.0889
Channel				165800	167300	168800	Gain	ERP	ERP	ERP
Frequency (MHz)				829	836.5	844				
10	QPSK	1	1	25.25	25.17	25.19	-5.2	0.1012	0.0993	0.0998
10	16QAM	1	1	24.55	24.60	24.48	-5.2	0.0861	0.0871	0.0847
Channel				165300	167300	169300	Gain	ERP	ERP	ERP
Frequency (MHz)				826.5	836.5	846.5				
5	QPSK	1	1	25.22	25.23	25.30	-5.2	0.1005	0.1007	0.1023
5	16QAM	1	1	24.56	24.63	24.57	-5.2	0.0863	0.0877	0.0865



5G NR n7:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				504000	507000	510000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2520	2535	2550				
40	PI/2 BPSK	1	1	25.48	25.58	25.52	-2.40	0.2032	0.2080	0.2051
40	QPSK	1	1	25.47	25.56	25.49	-2.40	0.2028	0.2070	0.2037
40	QPSK	1	108	25.28	25.46	25.45	-2.40	0.1941	0.2023	0.2018
40	QPSK	1	214	25.46	25.43	25.44	-2.40	0.2023	0.2009	0.2014
40	QPSK	108	0	24.36	24.45	24.53	-2.40	0.1570	0.1603	0.1633
40	QPSK	108	54	25.34	25.38	25.37	-2.40	0.1968	0.1986	0.1982
40	QPSK	108	108	24.68	24.49	24.66	-2.40	0.1690	0.1618	0.1683
40	QPSK	216	0	24.23	24.55	24.50	-2.40	0.1524	0.1641	0.1622
40	16QAM	1	1	24.48	24.52	24.51	-2.40	0.1614	0.1629	0.1626
40	64QAM	1	1	22.60	22.64	22.79	-2.40	0.1047	0.1057	0.1094
40	256QAM	1	1	20.83	20.97	20.81	-2.40	0.0697	0.0719	0.0693
Channel				503000	507000	511000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2515	2535	2555				
30	QPSK	1	1	25.04	25.30	25.36	-2.40	0.1837	0.1950	0.1977
30	16QAM	1	1	24.26	24.42	24.33	-2.40	0.1535	0.1592	0.1560
Channel				502500	507000	511500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2512.5	2535	2557.5				
25	QPSK	1	1	25.38	25.53	25.48	-2.40	0.1986	0.2056	0.2032
25	16QAM	1	1	24.44	24.51	24.48	-2.40	0.1600	0.1626	0.1614
Channel				502000	507000	512000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2510	2535	2560				
20	QPSK	1	1	25.38	25.48	25.44	-2.40	0.1986	0.2032	0.2014
20	16QAM	1	1	24.43	24.51	24.39	-2.40	0.1596	0.1626	0.1581
Channel				501500	507000	512500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2507.5	2535	2562.5				
15	QPSK	1	1	25.44	25.34	25.46	-2.40	0.2014	0.1968	0.2023
15	16QAM	1	1	24.42	24.42	24.48	-2.40	0.1592	0.1592	0.1614
Channel				501000	507000	513000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2505	2535	2565				
10	QPSK	1	1	25.13	25.26	25.32	-2.40	0.1875	0.1932	0.1959
10	16QAM	1	1	24.39	24.32	24.47	-2.40	0.1581	0.1556	0.1611
Channel				500500	507000	513500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2502.5	2535	2567.5				
5	QPSK	1	1	25.38	25.51	25.42	-2.40	0.1986	0.2046	0.2004
5	16QAM	1	1	24.22	24.38	24.26	-2.40	0.1521	0.1578	0.1535



5G NR n38:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	ERP	ERP	ERP
Channel				518004	519000	519996		L	M	H
Frequency (MHz)				2590.02	2595	2599.98				
40	PI/2 BPSK	1	1	25.11	25.12	25.09	-3.0	0.1626	0.1629	0.1618
40	QPSK	1	1	25.08	25.09	25.03	-3.0	0.1614	0.1618	0.1596
40	QPSK	1	53	25.04	25.05	25.04	-3.0	0.1600	0.1603	0.1600
40	QPSK	1	104	25.07	25.03	25.01	-3.0	0.1611	0.1596	0.1589
40	QPSK	50	0	24.27	24.30	24.48	-3.0	0.1340	0.1349	0.1406
40	QPSK	50	28	25.08	24.32	25.05	-3.0	0.1614	0.1355	0.1603
40	QPSK	50	56	24.50	24.46	24.44	-3.0	0.1413	0.1400	0.1393
40	QPSK	100	0	24.36	24.39	24.57	-3.0	0.1368	0.1377	0.1435
40	16QAM	1	1	24.28	24.41	24.48	-3.0	0.1343	0.1384	0.1406
40	64QAM	1	1	21.96	22.02	22.35	-3.0	0.0787	0.0798	0.0861
40	256QAM	1	1	20.32	20.47	20.55	-3.0	0.0540	0.0558	0.0569
Channel				517002	519000	520998	Gain	ERP	ERP	ERP
Frequency (MHz)				2585.01	2595	2604.99				
30	QPSK	1	1	24.89	24.96	24.98	-3.0	0.1545	0.1570	0.1578
30	16QAM	1	1	24.16	24.31	24.45	-3.0	0.1306	0.1352	0.1396
Channel				516000	519000	522000	Gain	ERP	ERP	ERP
Frequency (MHz)				2580	2595	2610				
20	QPSK	1	1	24.98	24.96	24.97	-3.0	0.1578	0.1570	0.1574
20	16QAM	1	1	24.16	24.38	24.38	-3.0	0.1306	0.1374	0.1374
Channel				515502	519000	522498	Gain	ERP	ERP	ERP
Frequency (MHz)				2577.51	2595	2612.49				
15	QPSK	1	1	24.90	24.86	24.91	-3.0	0.1549	0.1535	0.1552
15	16QAM	1	1	23.75	23.83	23.87	-3.0	0.1189	0.1211	0.1222
Channel				515004	519000	522996	Gain	ERP	ERP	ERP
Frequency (MHz)				2575.02	2595	2614.98				
10	QPSK	1	1	24.96	24.79	24.88	-3.0	0.1570	0.1510	0.1542
10	16QAM	1	1	23.87	23.85	23.93	-3.0	0.1222	0.1216	0.1239



5G NR n41:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	ERP	ERP	ERP
Channel				509202	518598	528000		L	M	H
Frequency (MHz)				2546.01	2592.99	2640				
100	PI/2 BPSK	1	1	25.45	25.42	25.44	-3.0	0.1758	0.1746	0.1754
100	QPSK	1	1	25.43	25.40	25.42	-3.0	0.1750	0.1738	0.1746
100	QPSK	1	137	25.32	25.12	25.10	-3.0	0.1706	0.1629	0.1622
100	QPSK	1	271	25.40	25.25	25.40	-3.0	0.1738	0.1679	0.1738
100	QPSK	135	0	24.39	24.21	24.20	-3.0	0.1377	0.1321	0.1318
100	QPSK	135	69	25.41	25.22	25.12	-3.0	0.1742	0.1667	0.1629
100	QPSK	135	138	25.40	24.39	24.35	-3.0	0.1738	0.1377	0.1365
100	QPSK	270	0	24.42	24.35	24.26	-3.0	0.1387	0.1365	0.1337
100	16QAM	1	1	24.33	24.40	24.39	-3.0	0.1358	0.1380	0.1377
100	64QAM	1	1	21.43	22.34	22.09	-3.0	0.0697	0.0859	0.0811
100	256QAM	1	1	20.15	20.53	20.35	-3.0	0.0519	0.0566	0.0543
Channel				508200	518598	528996	Gain	ERP	ERP	ERP
Frequency (MHz)				2541	2592.99	2644.98				
90	QPSK	1	1	25.01	25.05	25.07	-3.0	0.1589	0.1603	0.1611
90	16QAM	1	1	23.65	24.23	24.00	-3.0	0.1161	0.1327	0.1259
Channel				507204	518598	529998	Gain	ERP	ERP	ERP
Frequency (MHz)				2536.02	2592.99	2649.99				
80	QPSK	1	1	25.03	25.07	25.06	-3.0	0.1596	0.1611	0.1607
80	16QAM	1	1	23.88	24.28	24.01	-3.0	0.1225	0.1343	0.1262
Channel				506202	518598	531000	Gain	ERP	ERP	ERP
Frequency (MHz)				2535	2592.99	2655				
70	QPSK	1	1	25.01	25.02	25.06	-3.0	0.1589	0.1592	0.1607
70	16QAM	1	1	23.86	24.31	24.22	-3.0	0.1219	0.1352	0.1324
Channel				505200	518598	531996	Gain	ERP	ERP	ERP
Frequency (MHz)				2526	2592.99	2659.98				
60	QPSK	1	1	24.95	25.05	25.16	-3.0	0.1567	0.1603	0.1644
60	16QAM	1	1	23.73	24.22	24.24	-3.0	0.1183	0.1324	0.1330
Channel				504204	518598	532998	Gain	ERP	ERP	ERP
Frequency (MHz)				2521.02	2592.99	2664.99				
50	QPSK	1	1	24.96	25.02	25.05	-3.0	0.1570	0.1592	0.1603
50	16QAM	1	1	23.91	24.23	24.26	-3.0	0.1233	0.1327	0.1337
Channel				503202	518598	534000	Gain	ERP	ERP	ERP
Frequency (MHz)				2516.01	2592.99	2670				
40	QPSK	1	1	24.97	25.33	25.09	-3.0	0.1574	0.1710	0.1618
40	16QAM	1	1	23.67	24.35	24.18	-3.0	0.1167	0.1365	0.1312
Channel				502200	518598	534996	Gain	ERP	ERP	ERP
Frequency (MHz)				2511	2592.99	2674.98				
30	QPSK	1	1	24.98	25.31	25.11	-3.0	0.1578	0.1702	0.1626
30	16QAM	1	1	23.67	24.35	24.32	-3.0	0.1167	0.1365	0.1355
Channel				501204	518598	535998	Gain	ERP	ERP	ERP
Frequency (MHz)				2506.02	2592.99	2679.99				
20	QPSK	1	1	25.02	25.30	25.22	-3.0	0.1592	0.1698	0.1667
20	16QAM	1	1	23.99	24.38	24.36	-3.0	0.1256	0.1374	0.1368



5G NR n66:

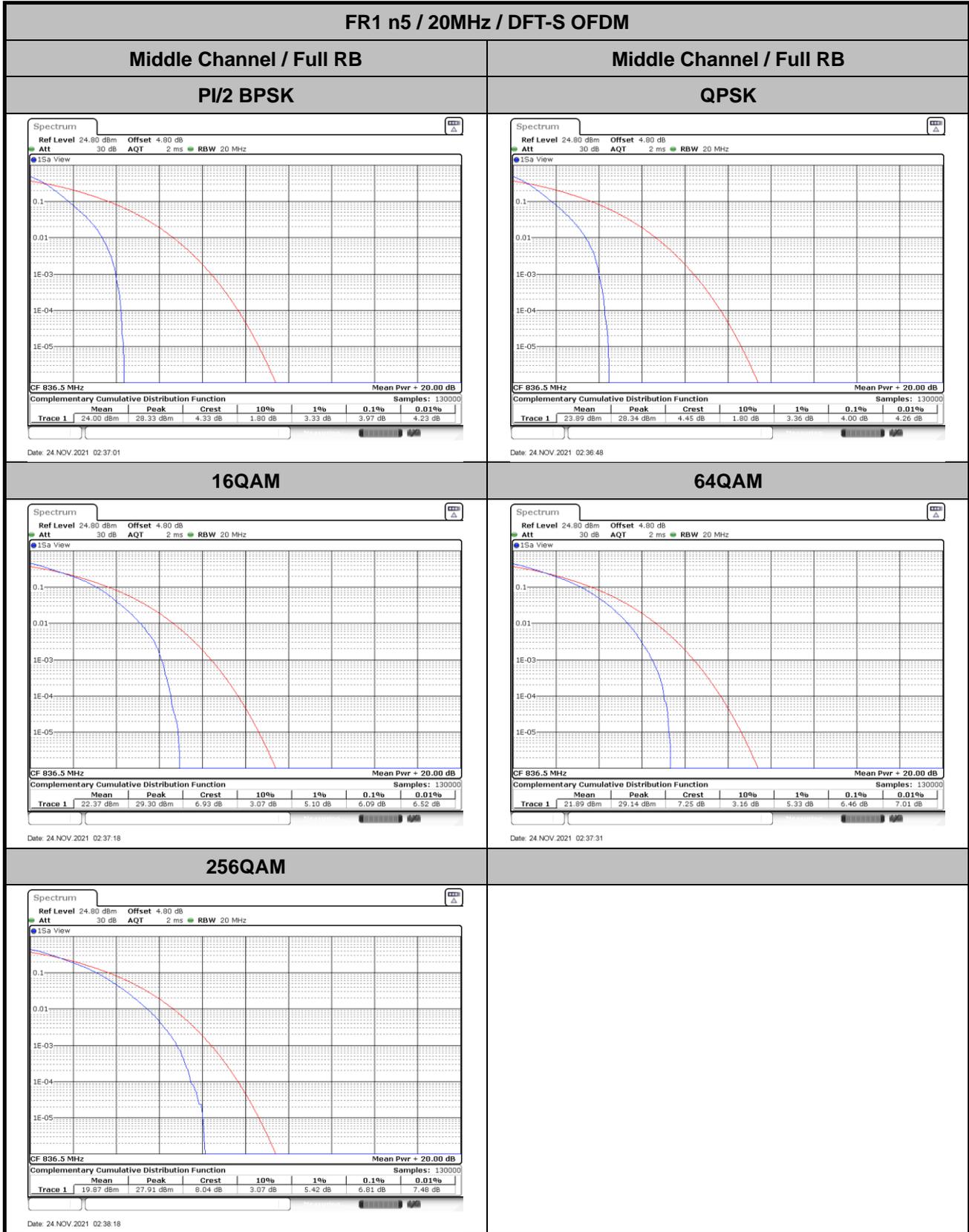
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				346000	349000	352000		L	M	H
Frequency (MHz)				1730	1745	1760				
40	PI/2 BPSK	1	1	25.78	25.74	25.77	-3.30	0.1770	0.1754	0.1766
40	QPSK	1	1	25.74	25.68	25.72	-3.30	0.1754	0.1730	0.1746
40	QPSK	1	108	25.53	25.63	25.65	-3.30	0.1671	0.1710	0.1718
40	QPSK	1	214	25.48	25.64	25.67	-3.30	0.1652	0.1714	0.1726
40	QPSK	108	0	24.63	24.56	24.53	-3.30	0.1358	0.1337	0.1327
40	QPSK	108	54	25.56	25.64	25.58	-3.30	0.1683	0.1714	0.1690
40	QPSK	108	108	24.73	24.66	24.69	-3.30	0.1390	0.1368	0.1377
40	QPSK	216	0	24.68	24.58	24.50	-3.30	0.1374	0.1343	0.1318
40	16QAM	1	1	24.78	24.85	24.81	-3.30	0.1406	0.1429	0.1416
40	64QAM	1	1	22.66	22.73	22.70	-3.30	0.0863	0.0877	0.0871
40	256QAM	1	1	20.79	20.85	20.91	-3.30	0.0561	0.0569	0.0577
Channel				345000	349000	353000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1725	1745	1765				
30	QPSK	1	1	25.70	25.65	25.68	-3.30	0.1738	0.1718	0.1730
30	16QAM	1	1	24.72	24.81	24.73	-3.30	0.1387	0.1416	0.1390
Channel				344000	349000	354000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1720	1745	1770				
20	QPSK	1	1	25.71	25.63	25.70	-3.30	0.1742	0.1710	0.1738
20	16QAM	1	1	24.66	24.75	24.63	-3.30	0.1368	0.1396	0.1358
Channel				343500	349000	354500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1717.5	1745	1772.5				
15	QPSK	1	1	25.68	25.66	25.62	-3.30	0.1730	0.1722	0.1706
15	16QAM	1	1	24.71	24.79	24.60	-3.30	0.1384	0.1409	0.1349
Channel				343000	349000	355000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1715	1745	1775				
10	QPSK	1	1	25.58	25.56	25.55	-3.30	0.1690	0.1683	0.1679
10	16QAM	1	1	24.54	24.62	24.68	-3.30	0.1330	0.1355	0.1374
Channel				342500	349000	355500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1712.5	1745	1777.5				
5	QPSK	1	1	25.63	25.46	25.55	-3.30	0.1710	0.1644	0.1679
5	16QAM	1	1	24.71	24.48	24.60	-3.30	0.1384	0.1312	0.1349



# FR1 n5

## Peak-to-Average Ratio

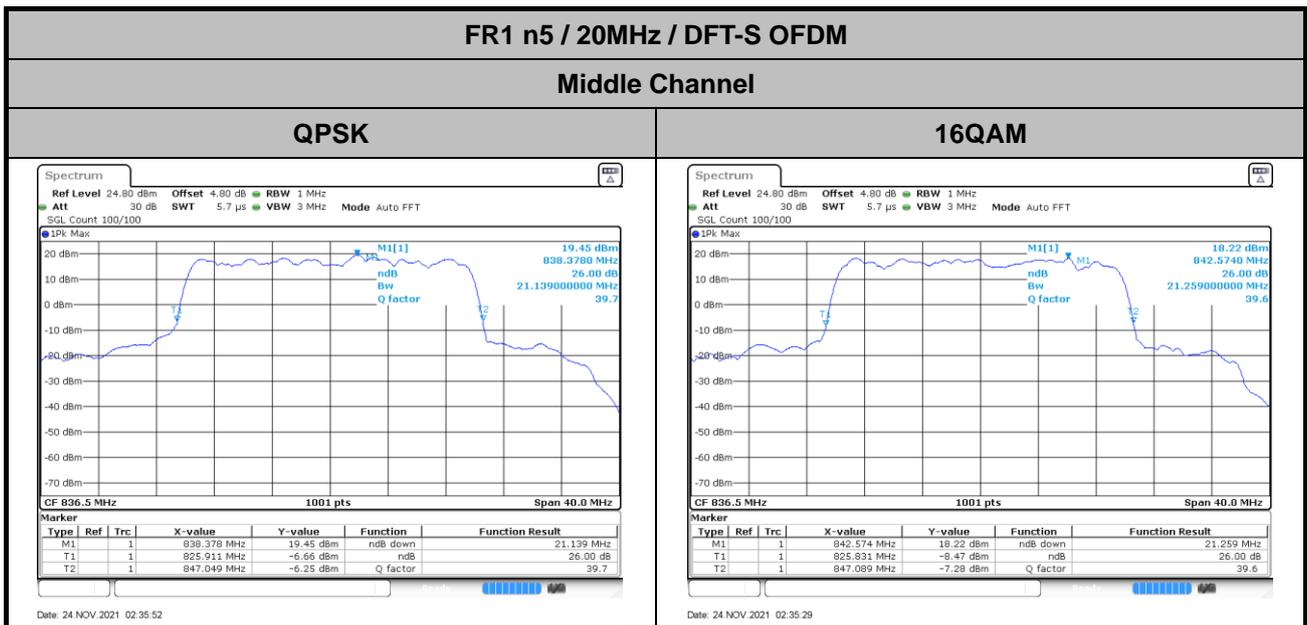
Mode	FR1 n5 / 20MHz / DFT-S OFDM				
Mod.	PI/2 BPSK	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	3.97	4	6.09	6.46	PASS
Mode	FR1 n5 / 20MHz / DFT-S OFDM				
Mod.	256QAM				Limit: 13dB
RB Size	Full RB				Result
Middle CH	6.81				PASS





**26dB Bandwidth**

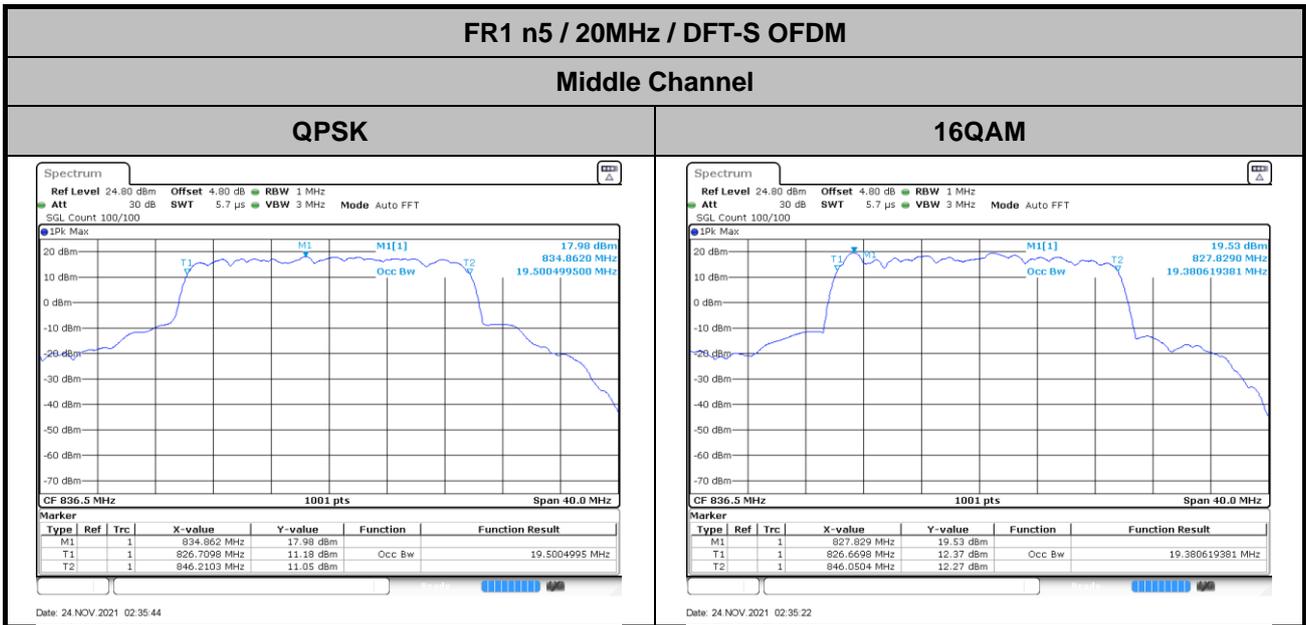
Mode	FR1 n5: 26dB BW(MHz) / DFT-S OFDM	
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	21.14	21.25





# Occupied Bandwidth

Mode	FR1 n5 : 99%OBW(MHz) / DFT-S OFDM	
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	19.50	19.38



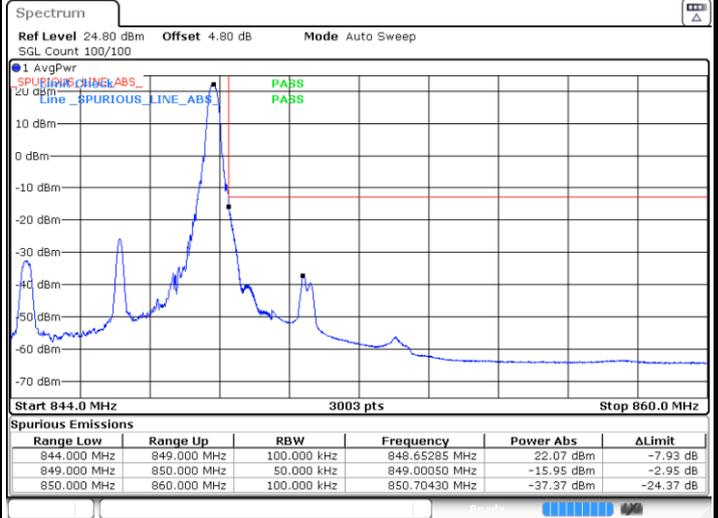
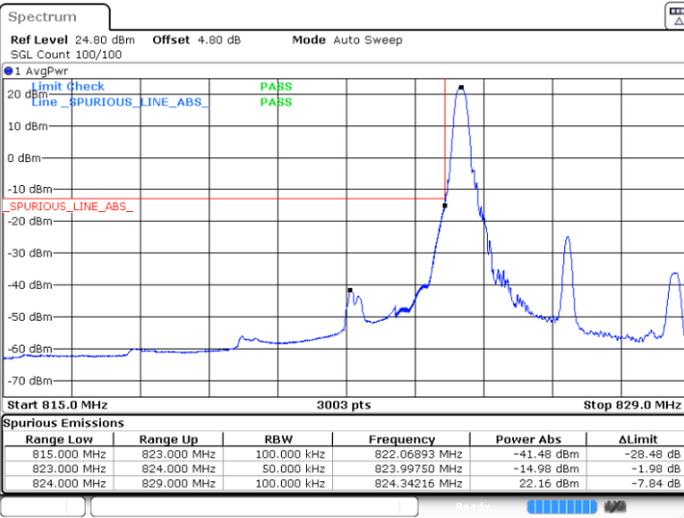


# Conducted Band Edge

FR1 n5 / 5MHz / DFT-S OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

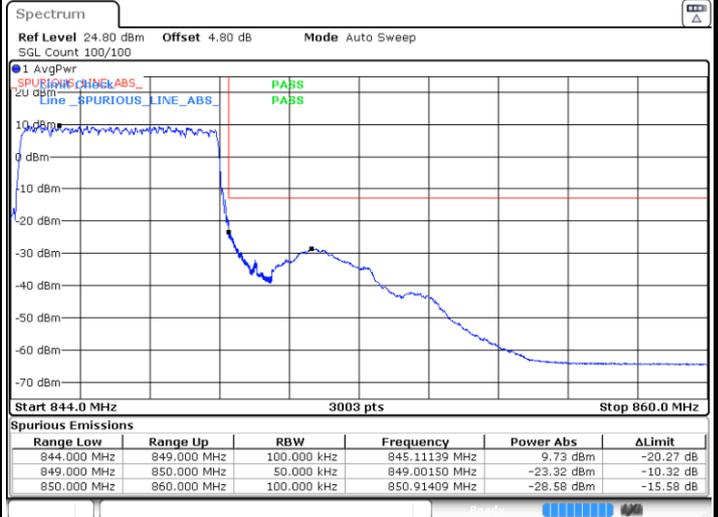
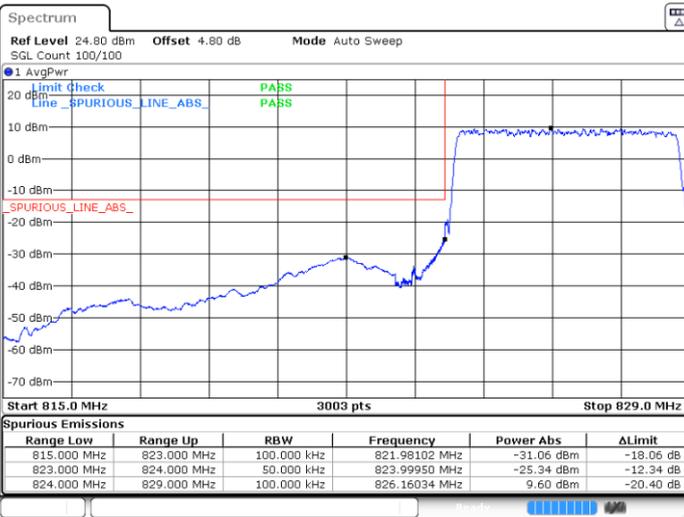


Date: 24.NOV.2021 03:57:06

Date: 24.NOV.2021 04:10:10

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24.NOV.2021 04:18:57

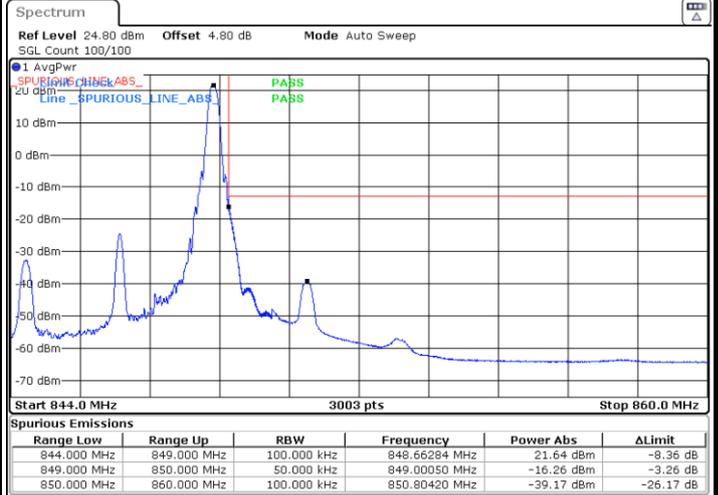
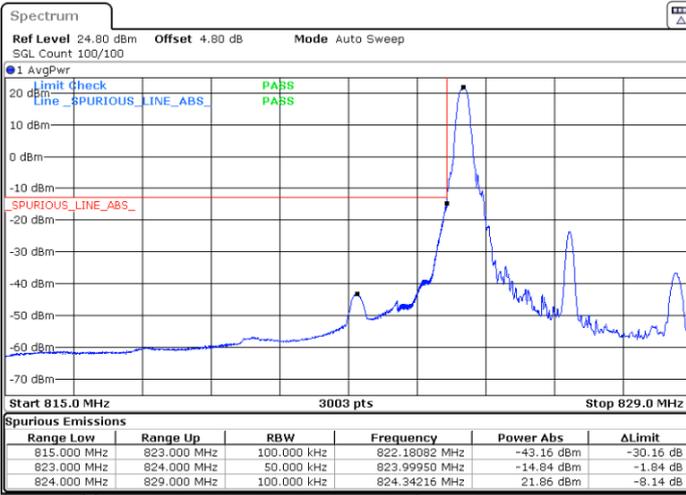
Date: 24.NOV.2021 04:17:35



FR1 n5 / 5MHz / DFT-S OFDM / QPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

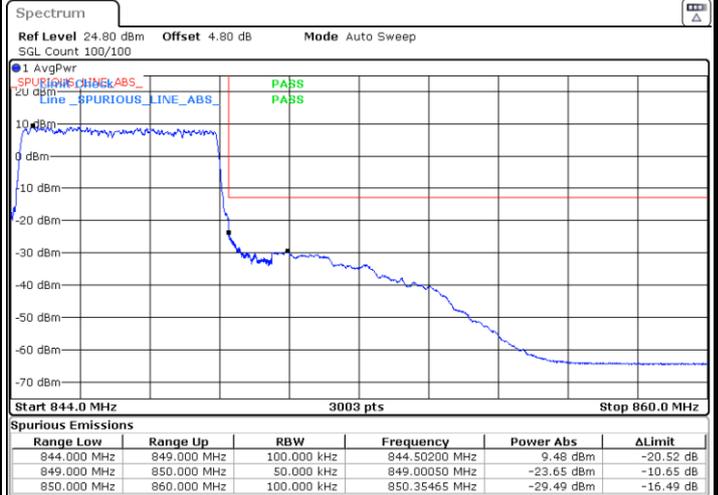
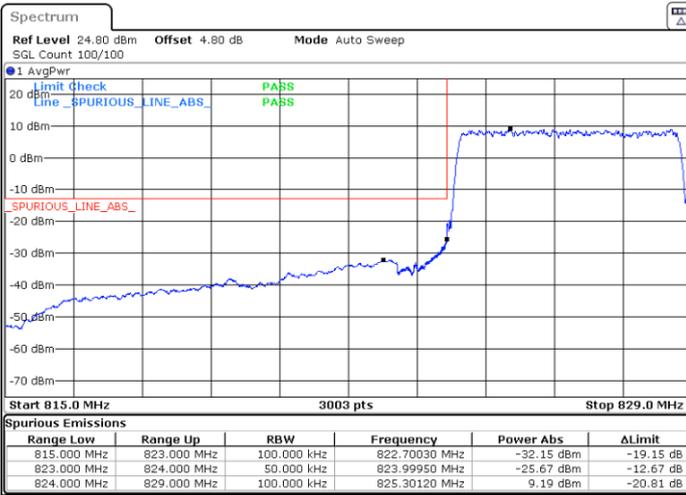


Date: 24 NOV 2021 03:58:56

Date: 24 NOV 2021 04:08:58

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 04:20:02

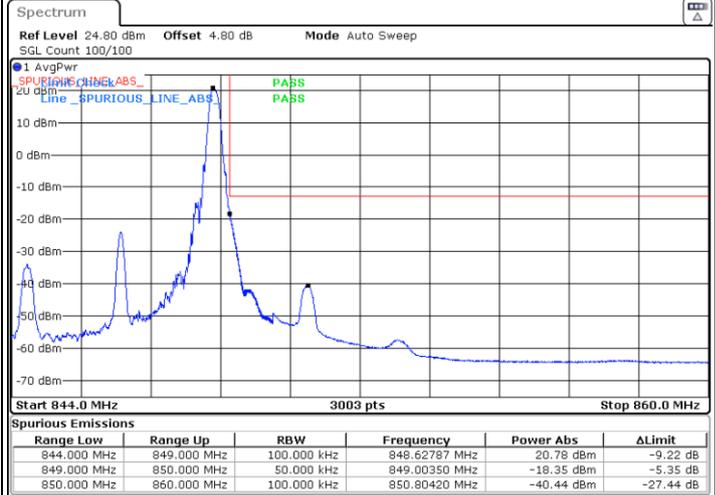
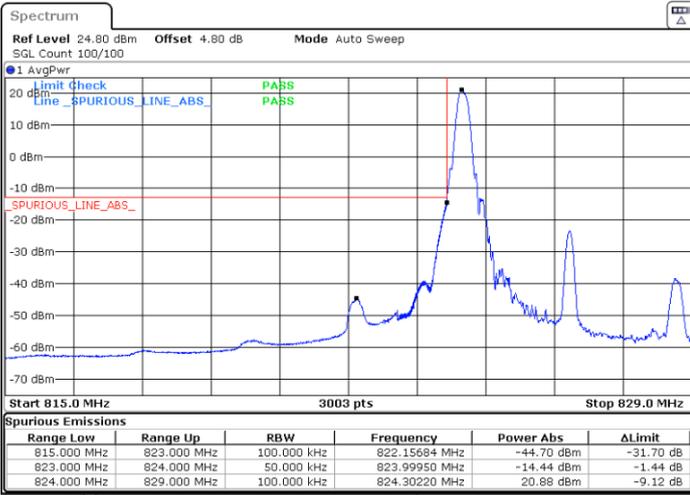
Date: 24 NOV 2021 04:16:29



FR1 n5 / 5MHz / DFT-S OFDM / 16QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

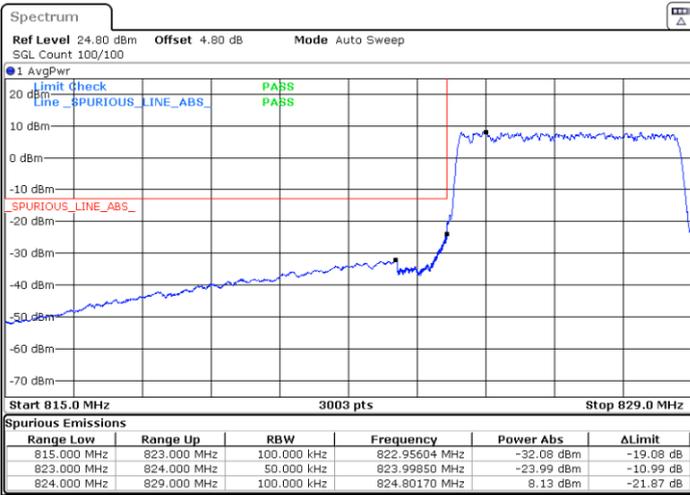


Date: 24.NOV.2021 04:01:05

Date: 24.NOV.2021 04:11:04

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24.NOV.2021 04:21:13

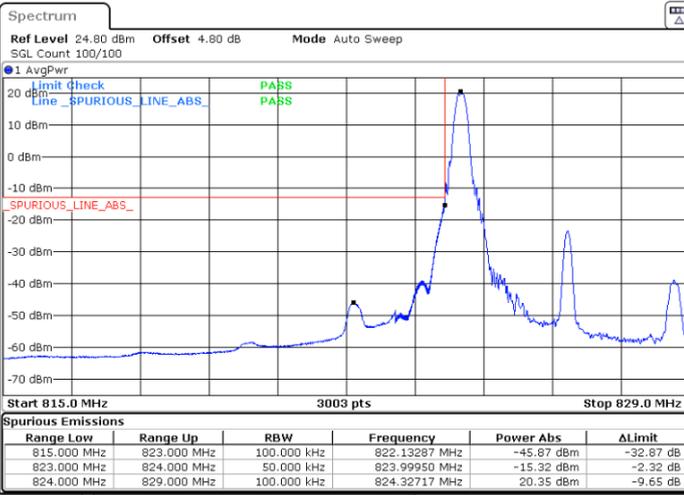
Date: 24.NOV.2021 04:15:35



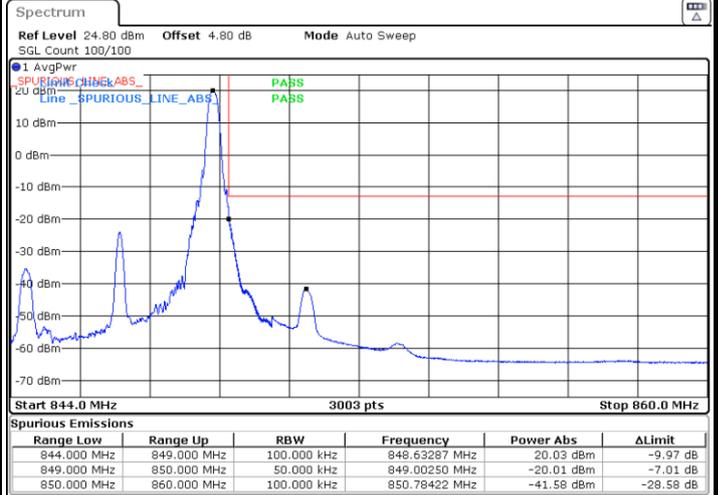
FR1 n5/ 5MHz / DFT-S OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



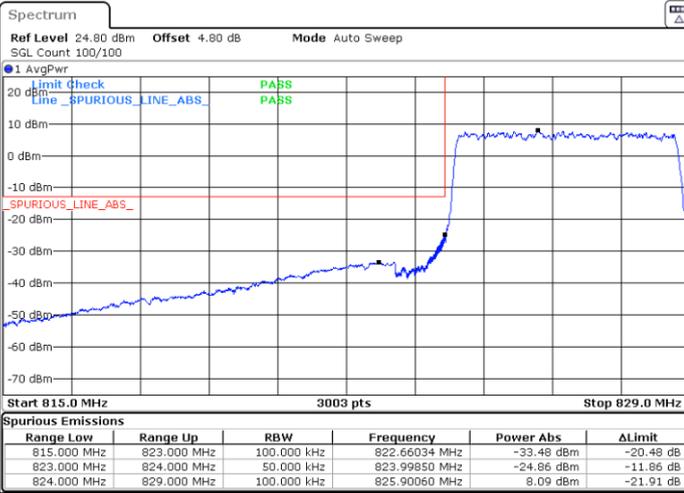
Date: 24 NOV 2021 04:01:59



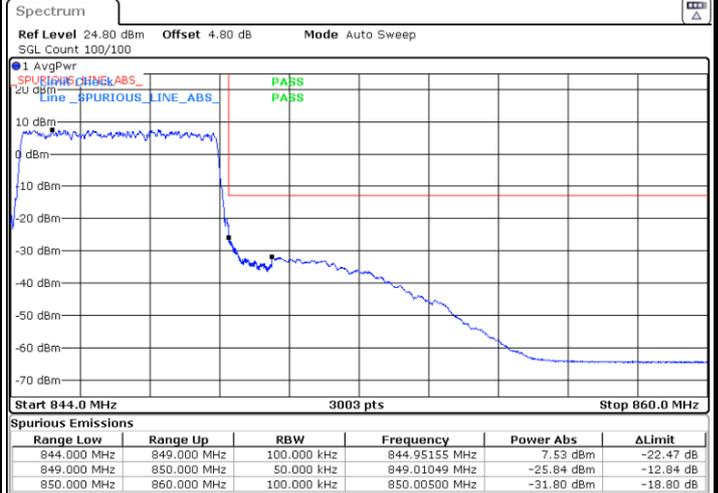
Date: 24 NOV 2021 04:11:52

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 04:22:04



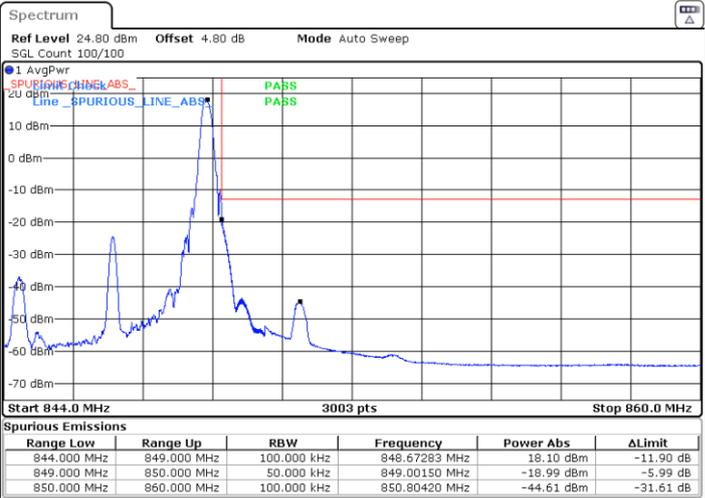
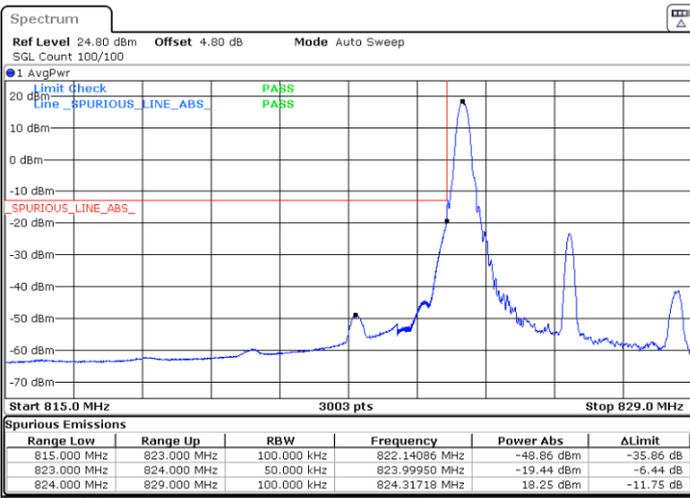
Date: 24 NOV 2021 04:14:42



FR1 n5 / 5MHz / DFT-S OFDM / 256QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

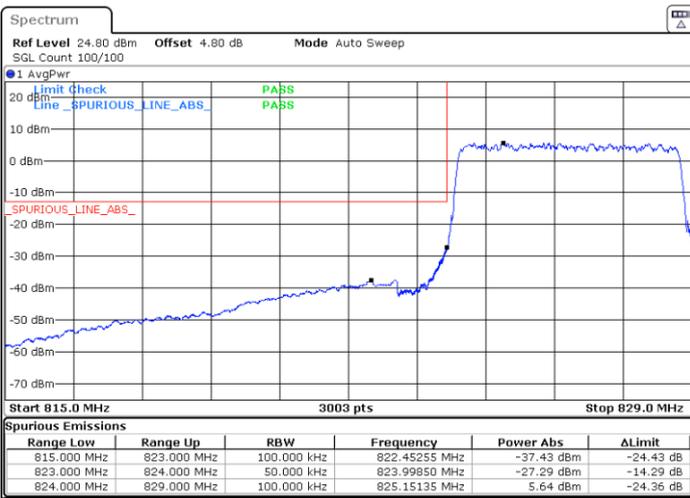


Date: 24 NOV 2021 04:02:47

Date: 24 NOV 2021 04:12:46

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 04:23:53

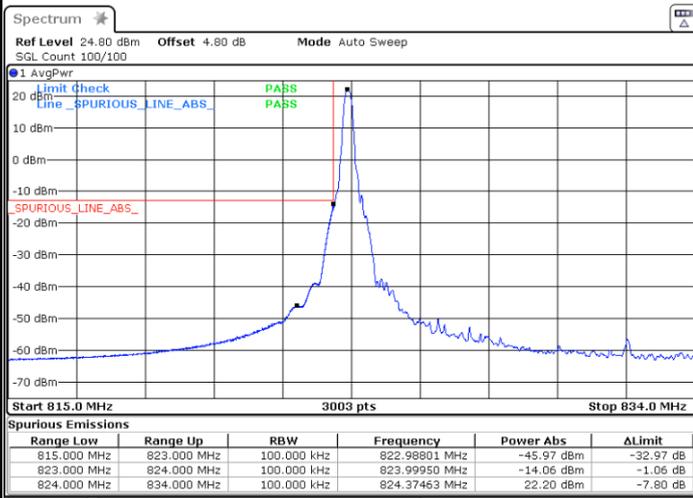
Date: 24 NOV 2021 04:13:54



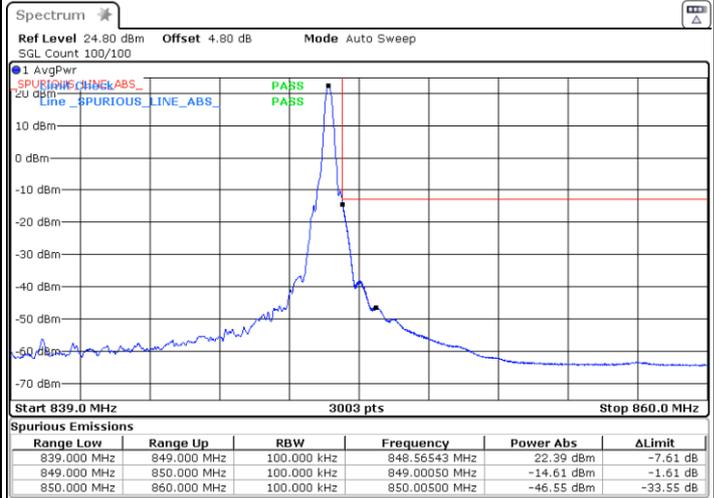
FR1 n5 / 10MHz / DFT-s-OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



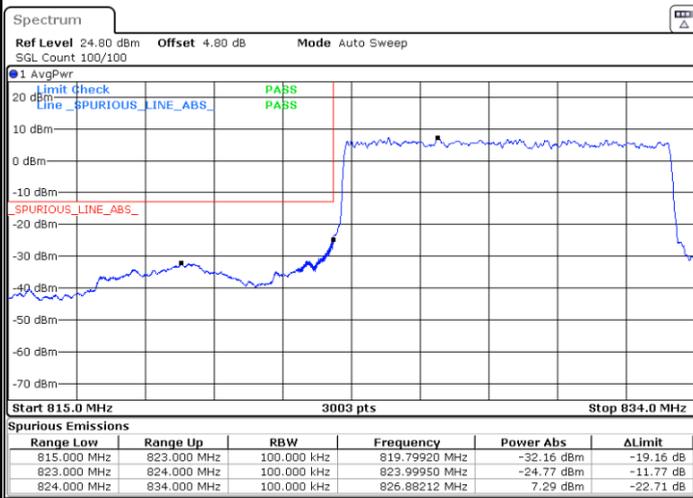
Date: 24 NOV 2021 03:22:24



Date: 24 NOV 2021 03:53:19

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 03:40:40



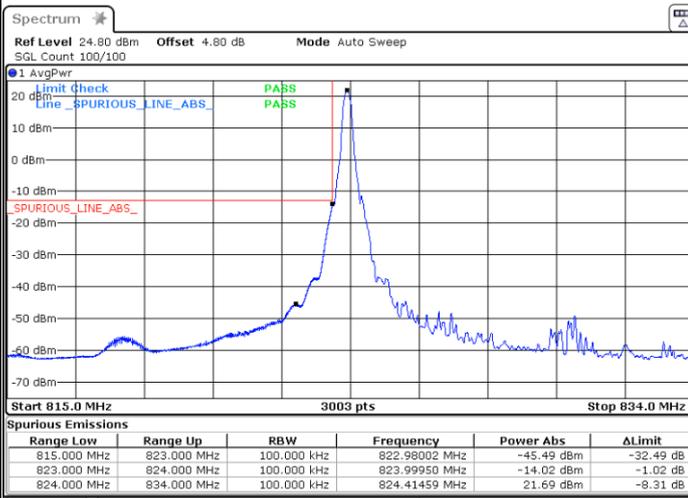
Date: 24 NOV 2021 03:41:42



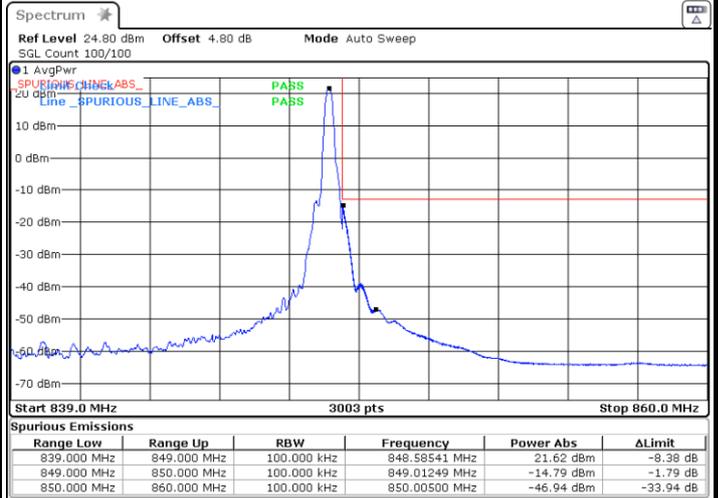
FR1 n5 / 10MHz / DFT-s-OFDM / QPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



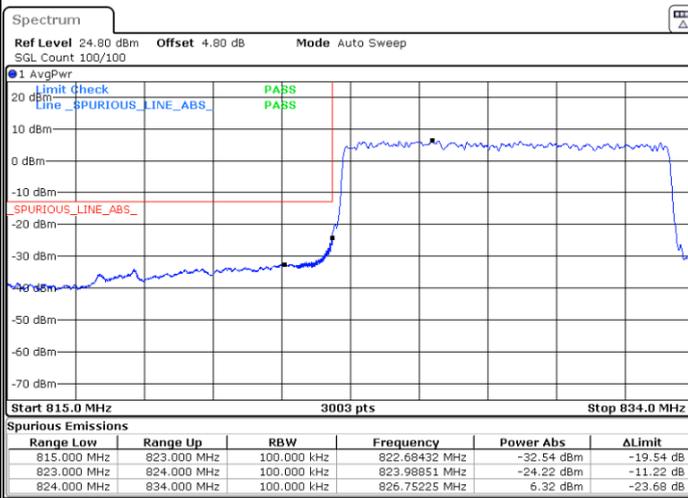
Date: 24 NOV 2021 03:24:52



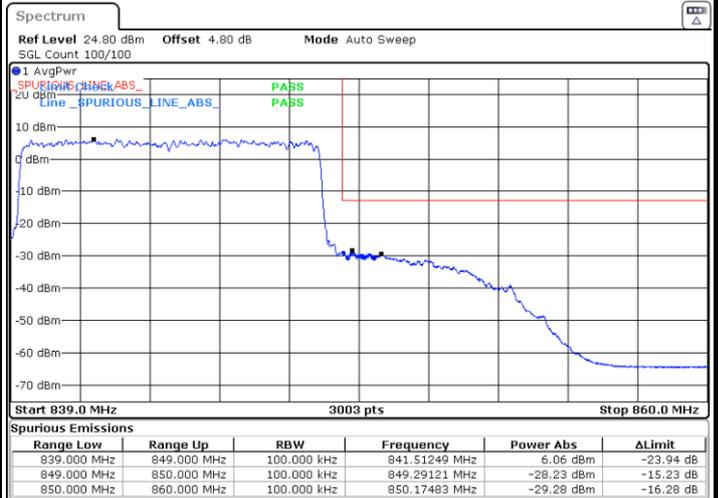
Date: 24 NOV 2021 03:51:46

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 03:39:49



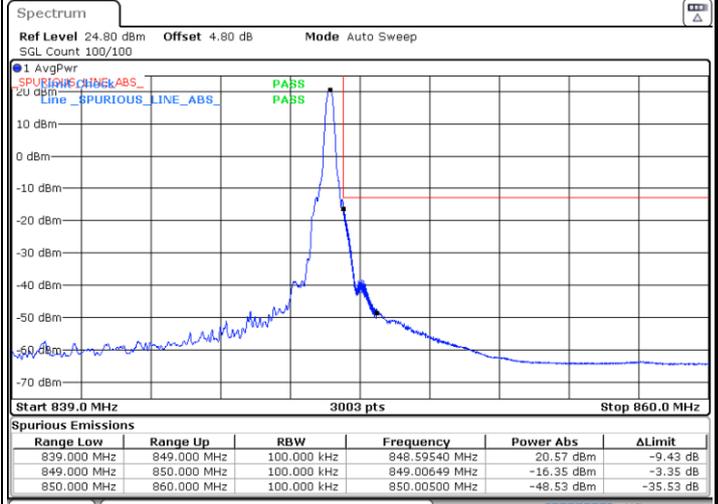
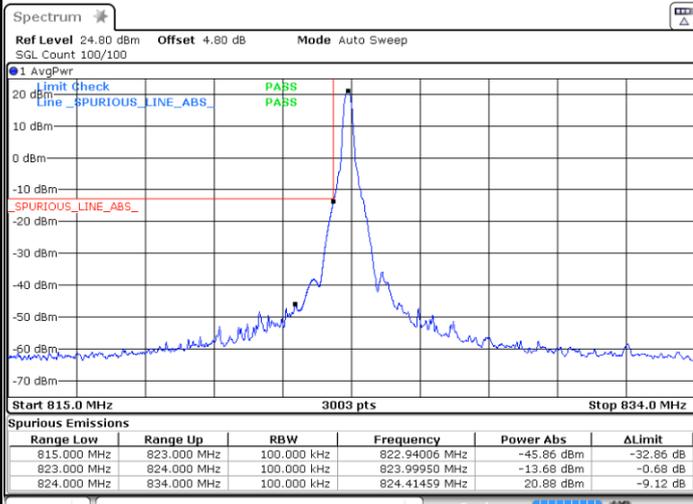
Date: 24 NOV 2021 03:42:28



FR1 n5/ 10MHz / DFT-s-OFDM / 16QAM

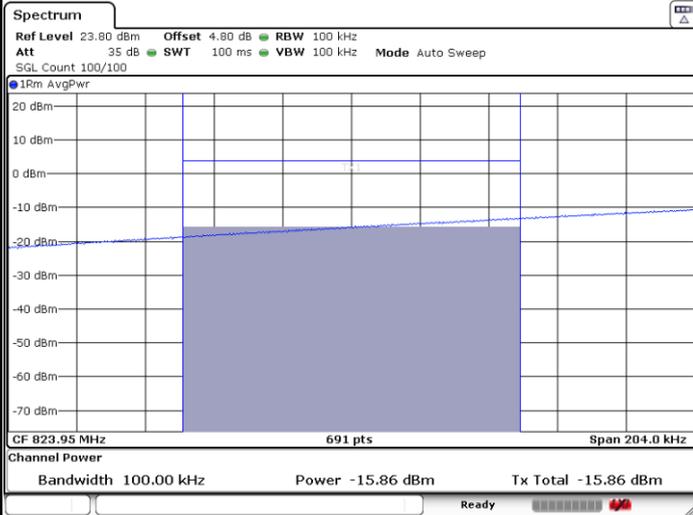
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

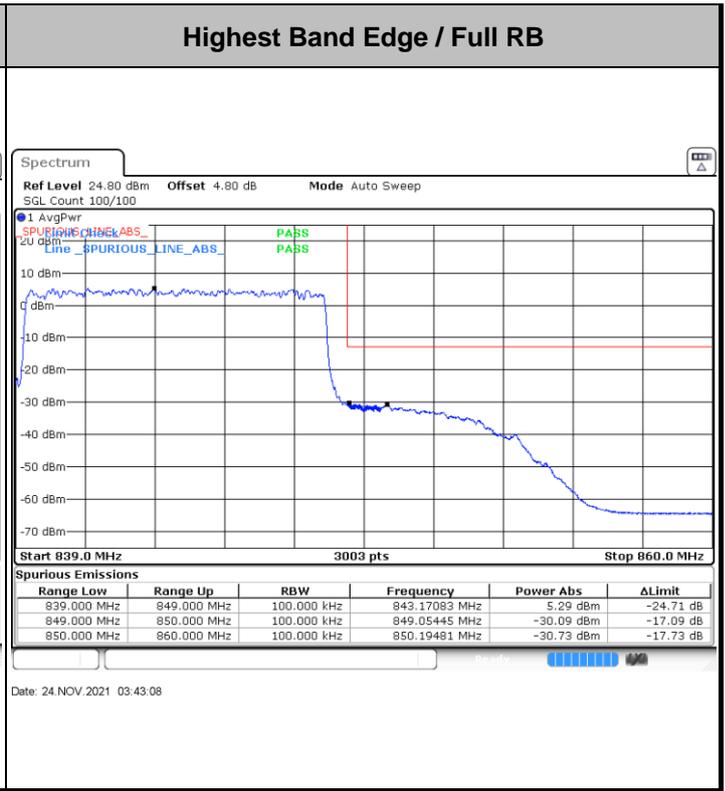
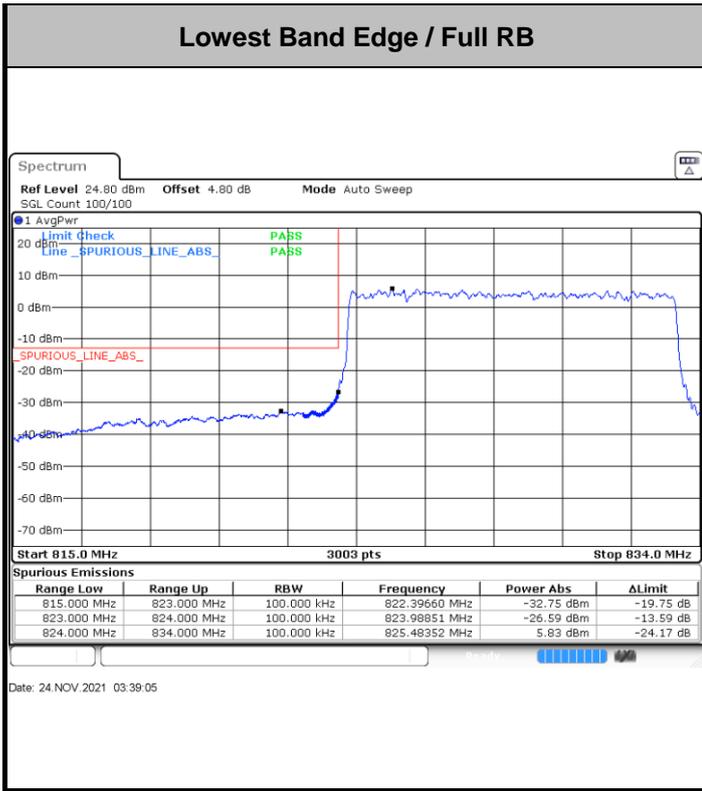


Date: 24 NOV 2021 03:31:06

Date: 24 NOV 2021 03:50:28



Date: 24 NOV 2021 04:33:13

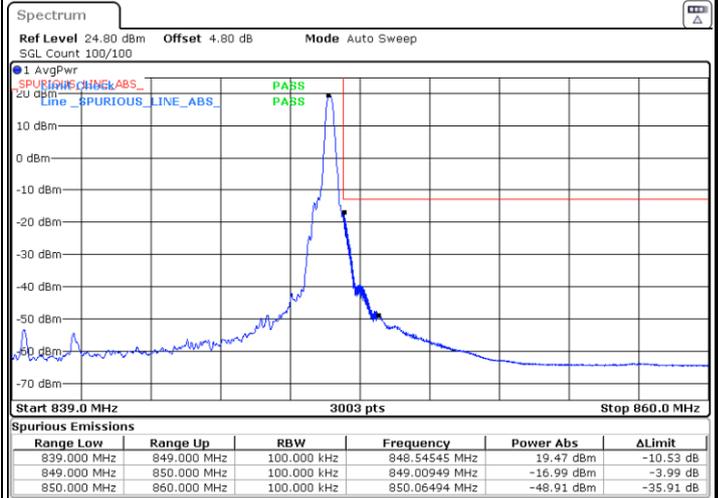
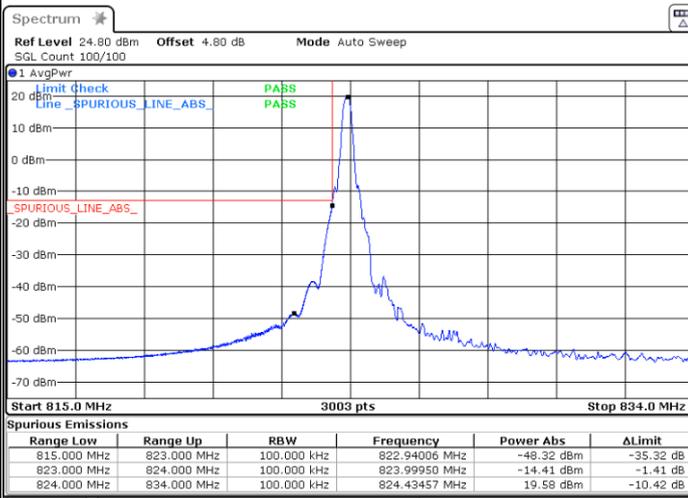




FR1 n5 / 10MHz / DFT-s-OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

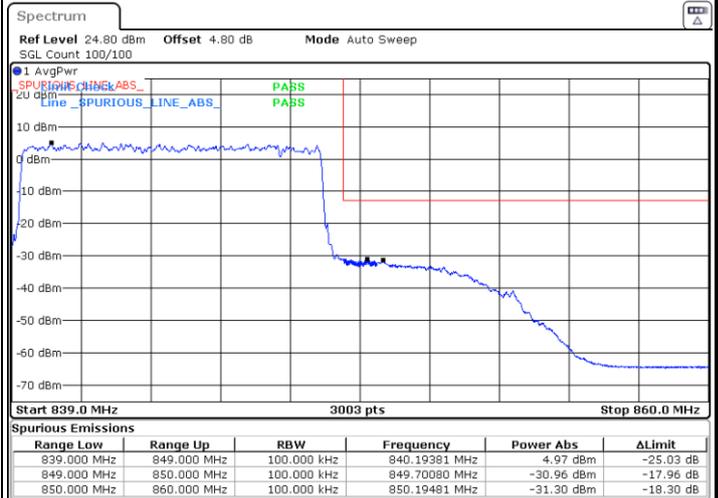
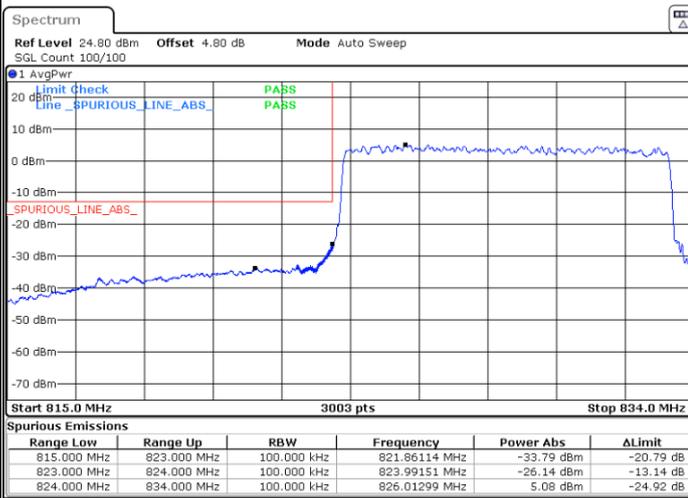


Date: 24 NOV 2021 03:33:40

Date: 24 NOV 2021 03:49:45

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 03:38:16

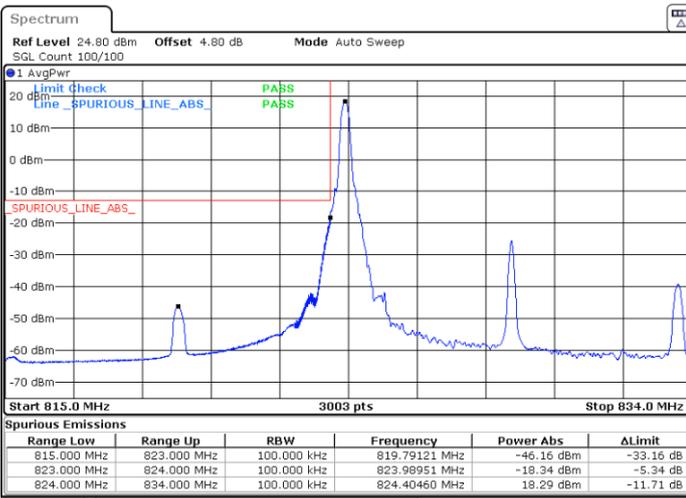
Date: 24 NOV 2021 03:43:49



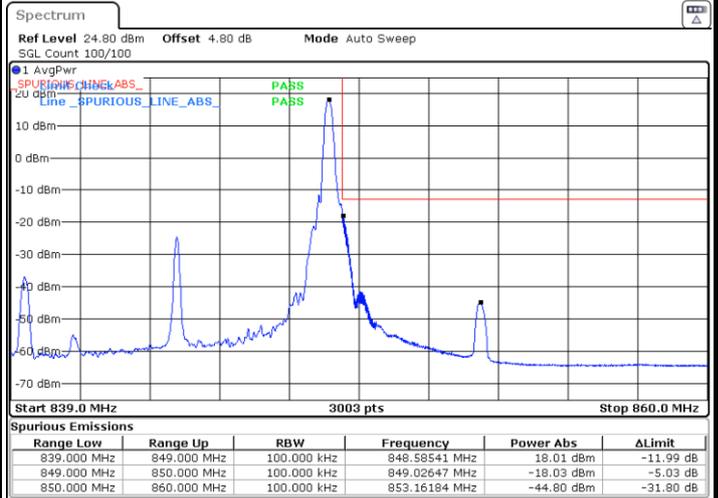
FR1 n5 / 10MHz / DFT-s-OFDM / 256QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



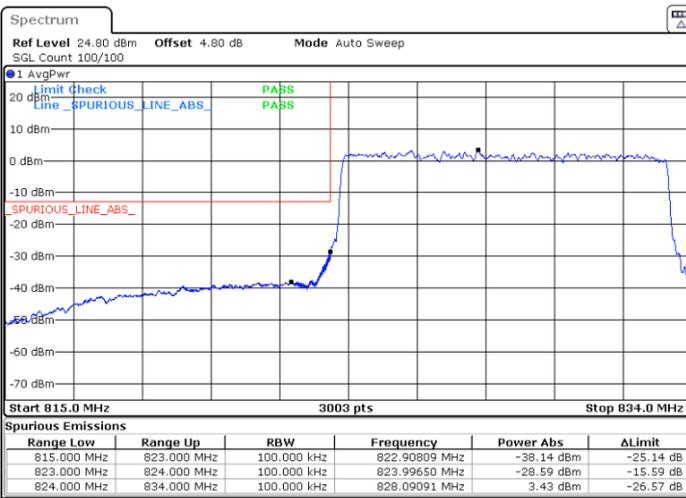
Date: 24 NOV 2021 03:34:44



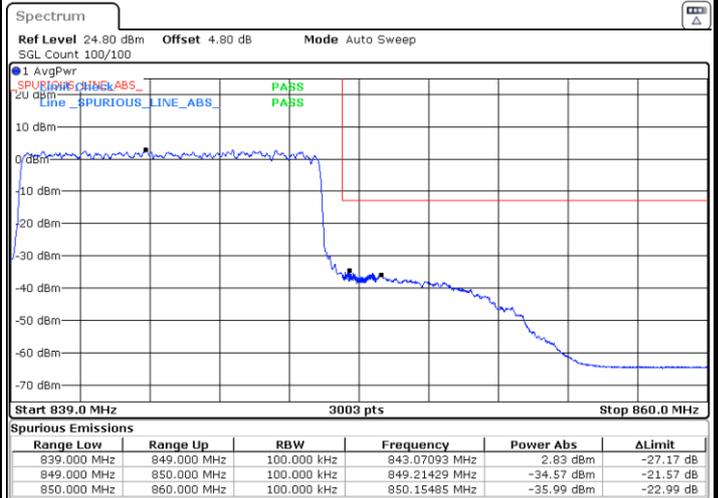
Date: 24 NOV 2021 03:48:59

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 03:37:42



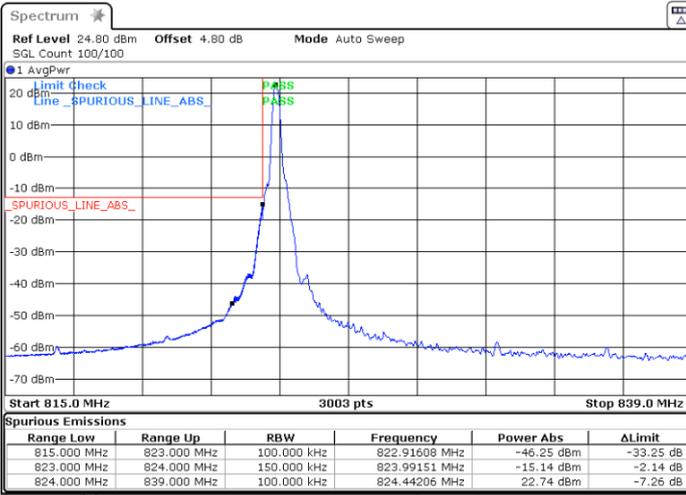
Date: 24 NOV 2021 03:44:44



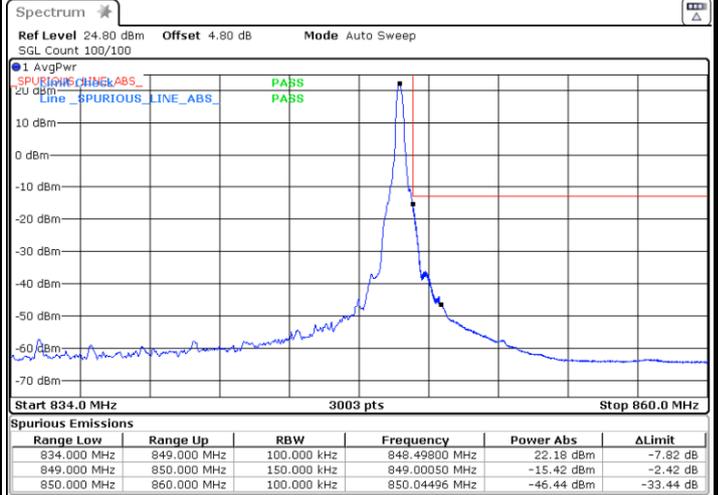
FR1 n5 / 15MHz / DFT-s-OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



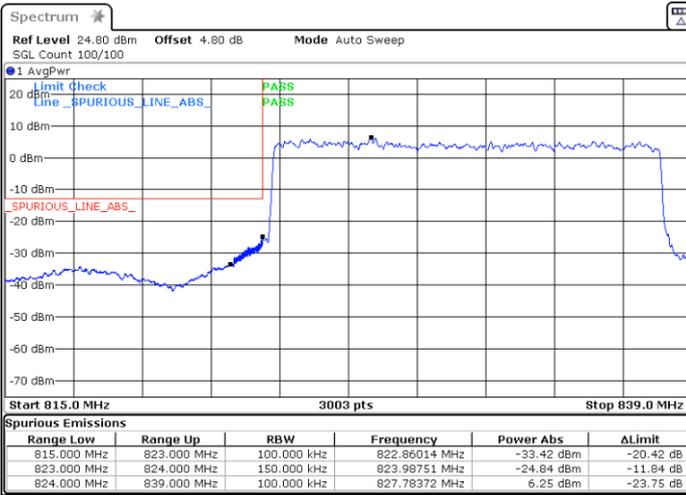
Date: 24 NOV 2021 02:48:25



Date: 24 NOV 2021 03:09:07

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:49:10



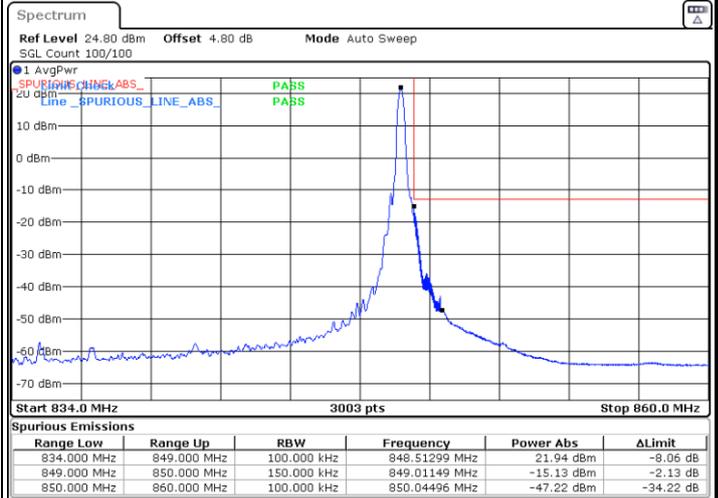
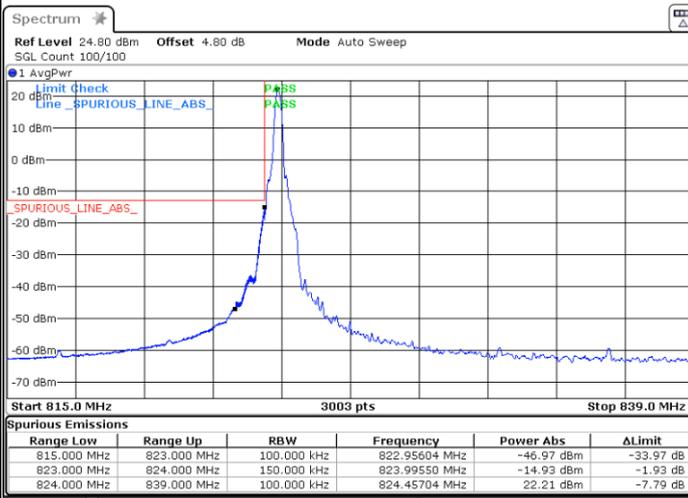
Date: 24 NOV 2021 03:08:00



FR1 n5/ 15MHz / DFT-s-OFDM / QPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

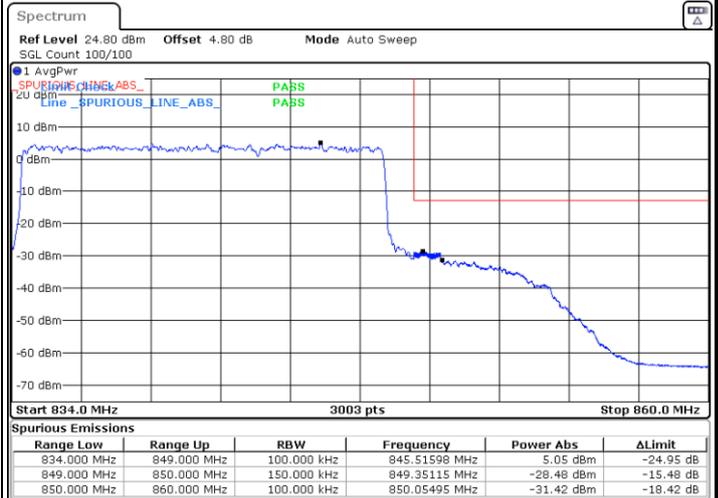
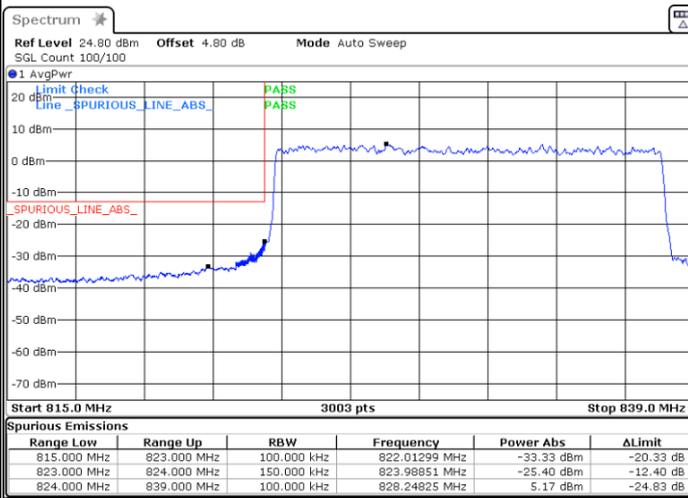


Date: 24 NOV 2021 02:47:11

Date: 24 NOV 2021 02:57:01

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:50:21

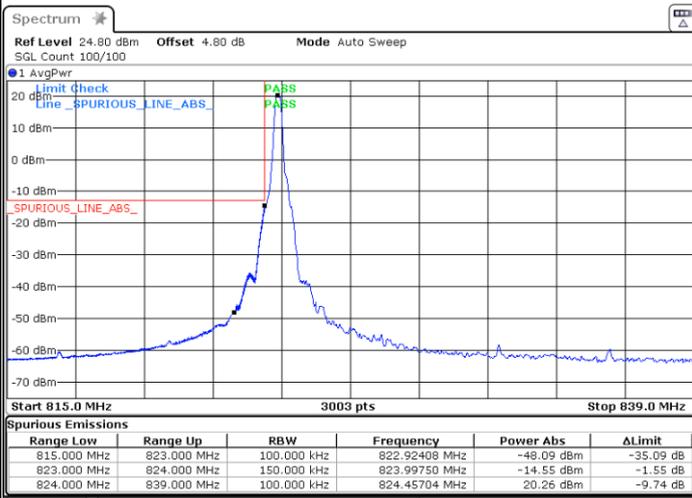
Date: 24 NOV 2021 03:07:10



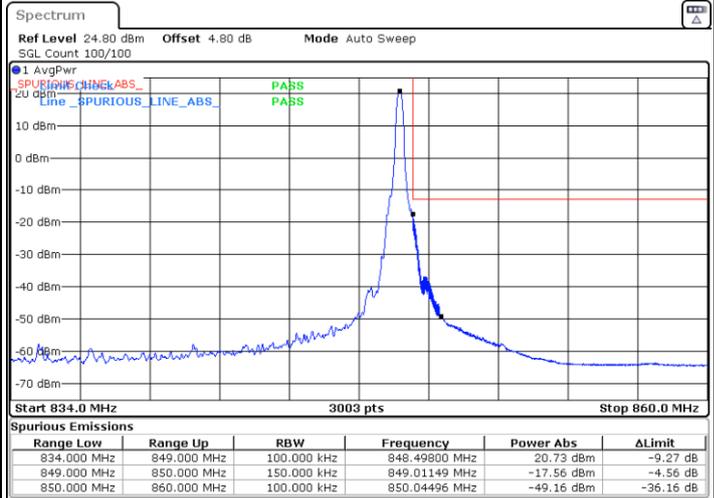
FR1 n5 / 15MHz / DFT-s-OFDM / 16QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



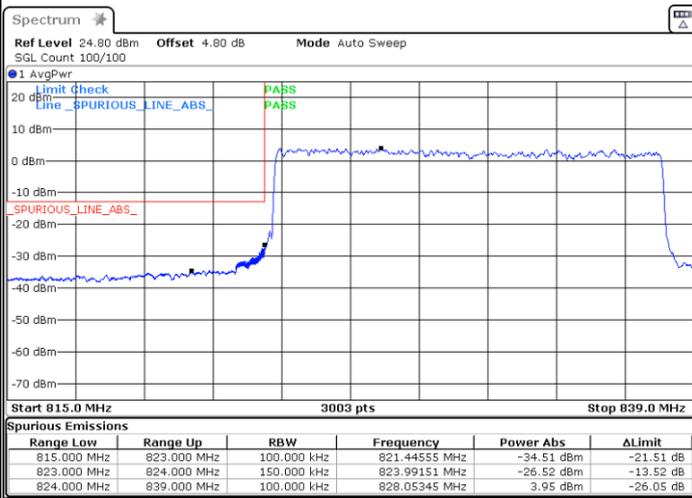
Date: 24 NOV 2021 02:46:18



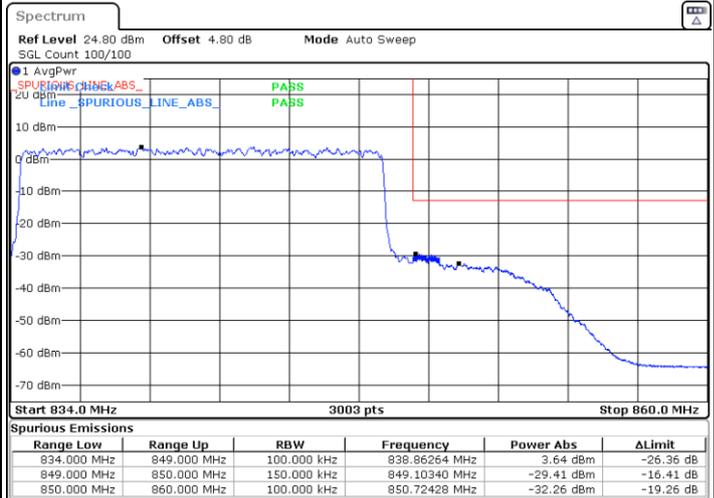
Date: 24 NOV 2021 02:57:50

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:51:08



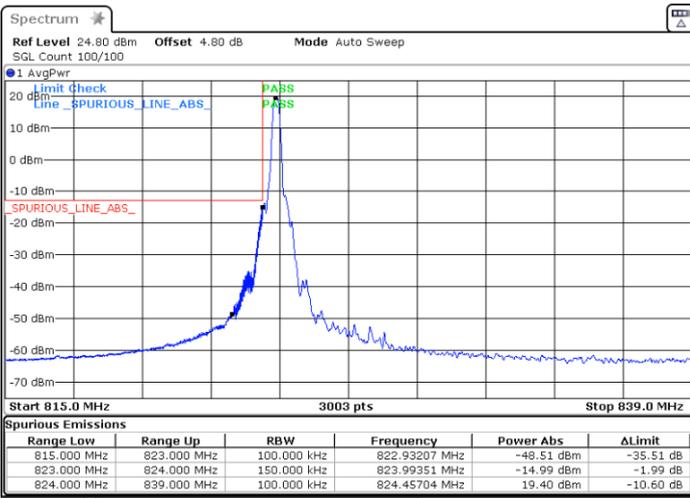
Date: 24 NOV 2021 03:06:26



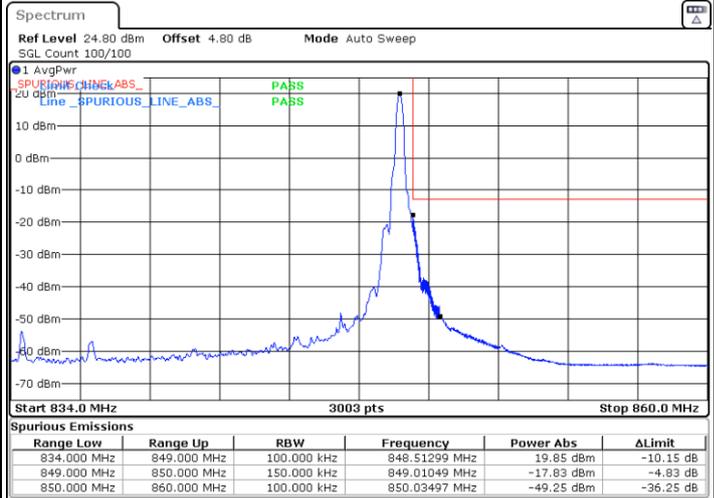
FR1 n5 / 15MHz / DFT-s-OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



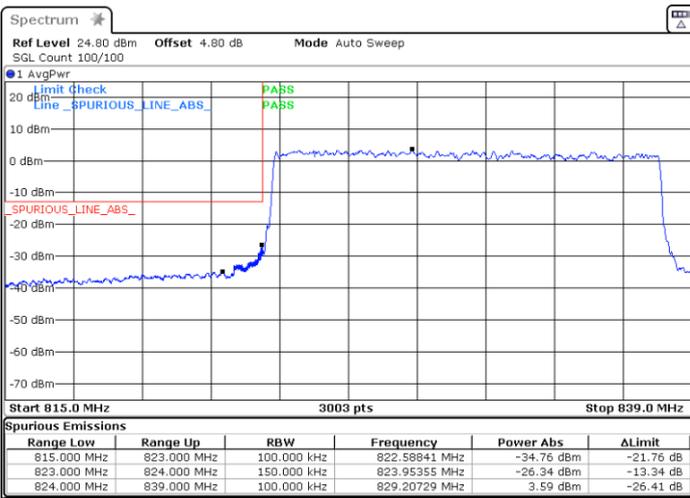
Date: 24 NOV 2021 02:45:07



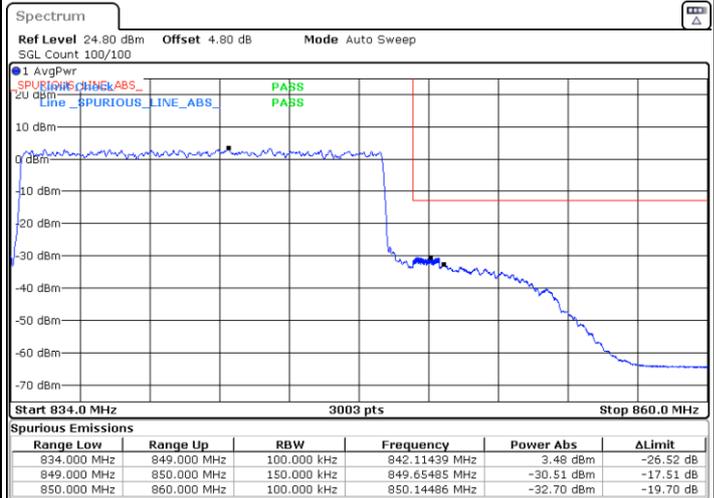
Date: 24 NOV 2021 02:58:38

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:52:07



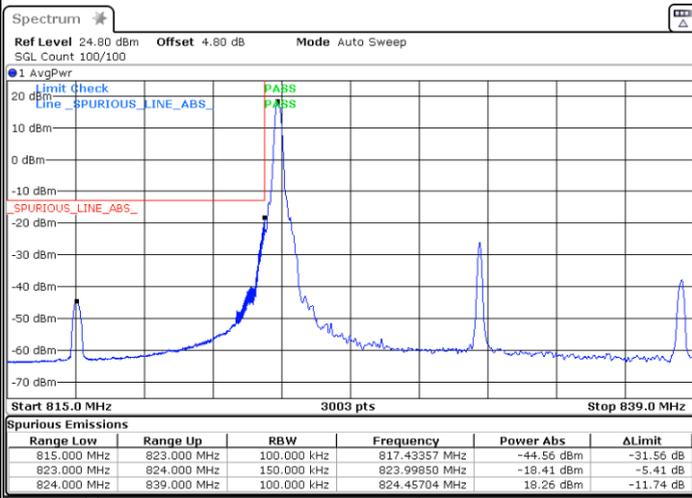
Date: 24 NOV 2021 03:00:40



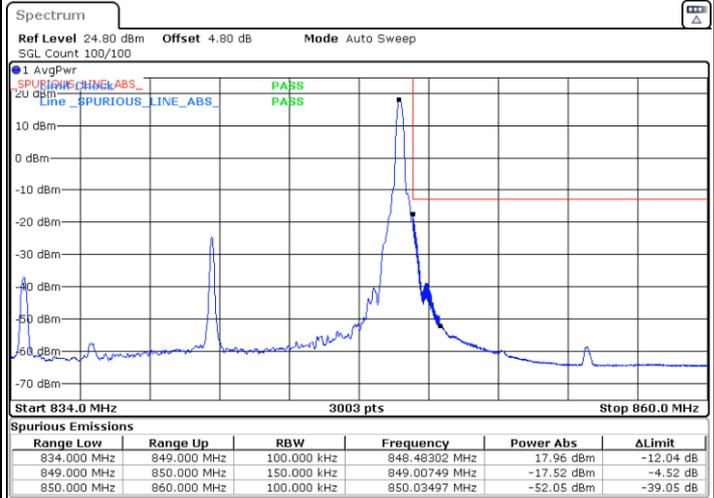
FR1 n5/ 15MHz / DFT-s-OFDM / 256QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



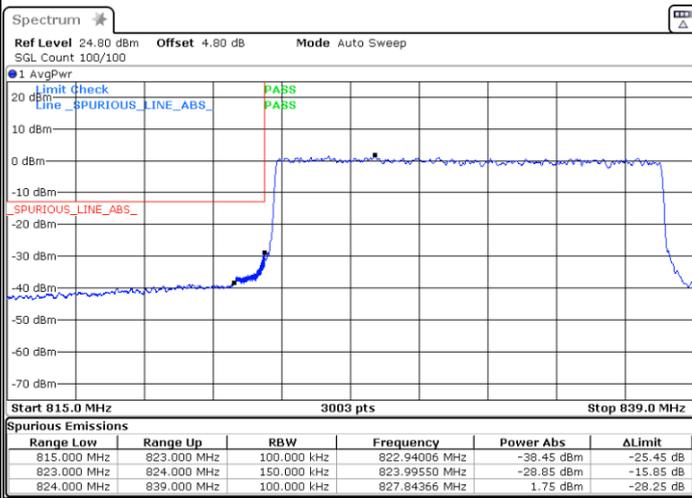
Date: 24 NOV 2021 02:41:36



Date: 24 NOV 2021 02:59:15

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:53:16



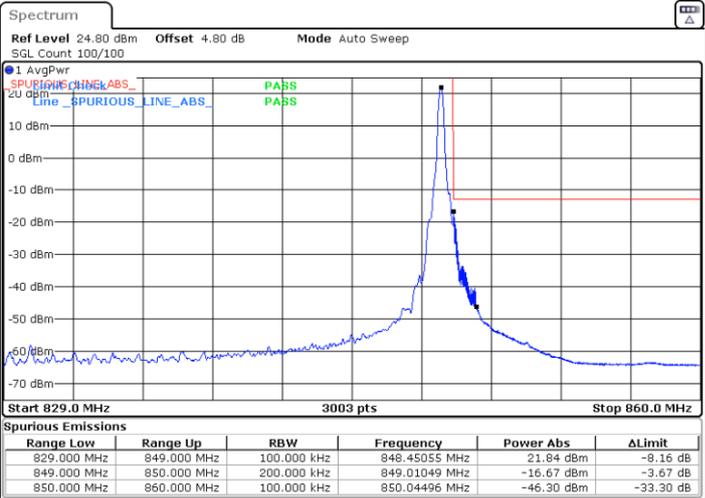
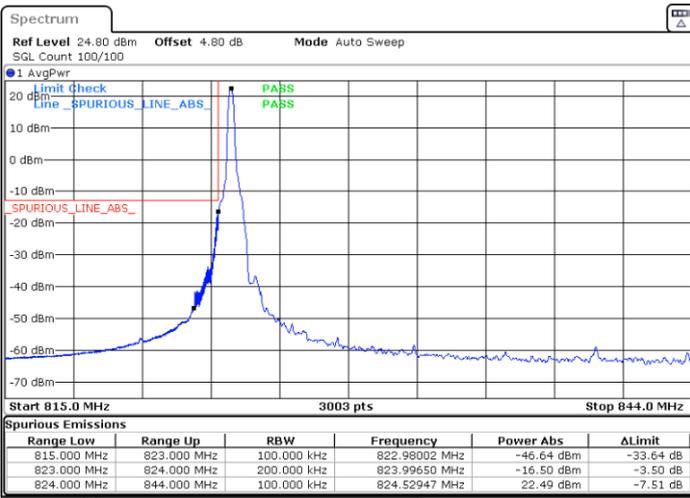
Date: 24 NOV 2021 02:59:59



FR1 n5 / 20MHz / DFT-s-OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

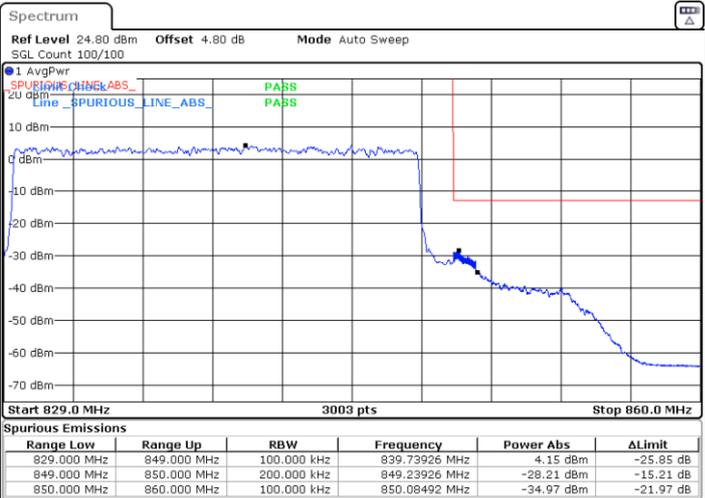
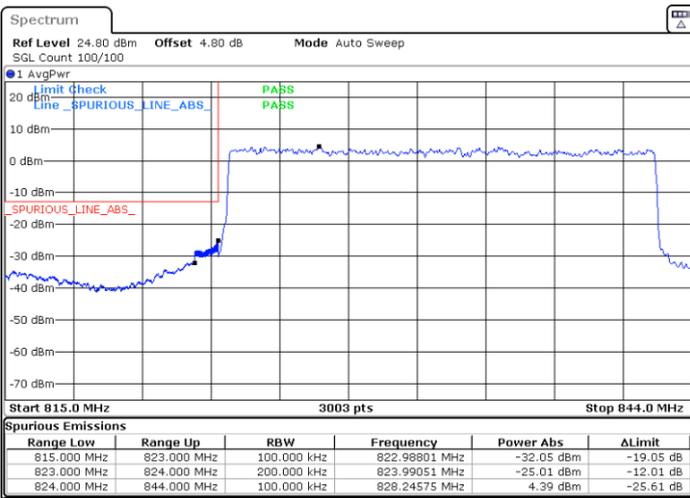


Date: 24 NOV 2021 02:09:16

Date: 24 NOV 2021 02:28:38

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:18:30

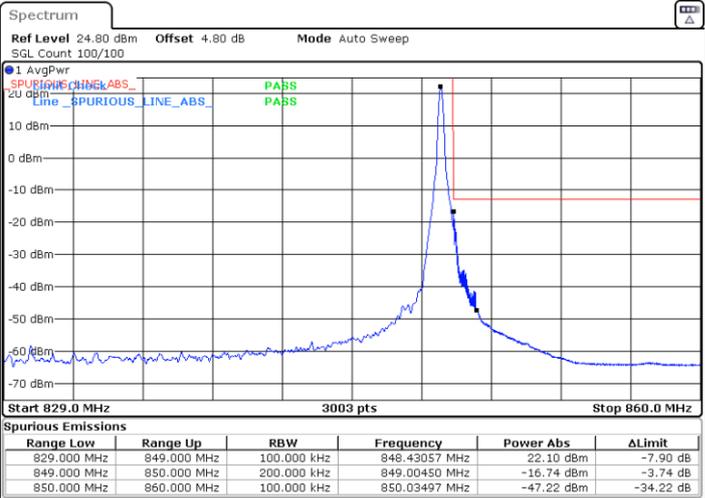
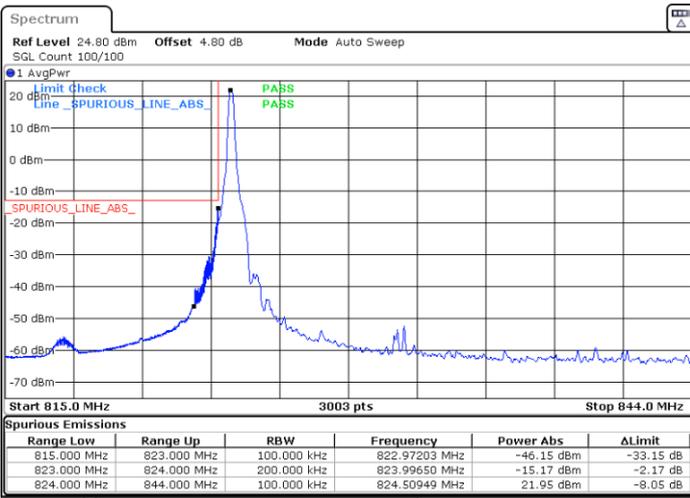
Date: 24 NOV 2021 02:19:52



FR1 n5/ 20MHz / DFT-s-OFDM / QPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

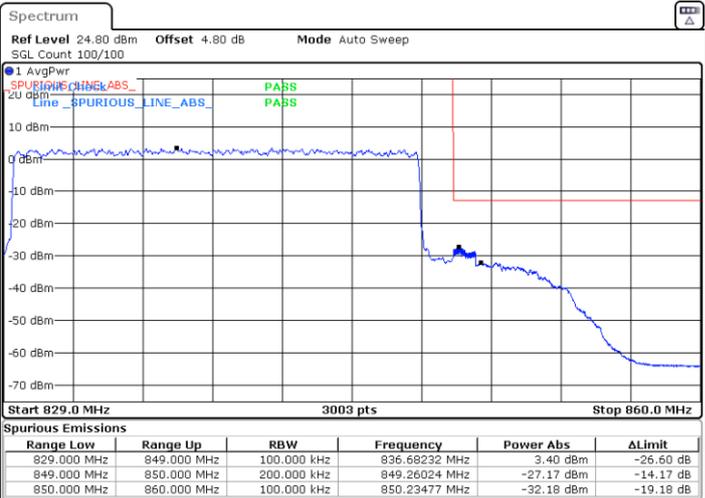
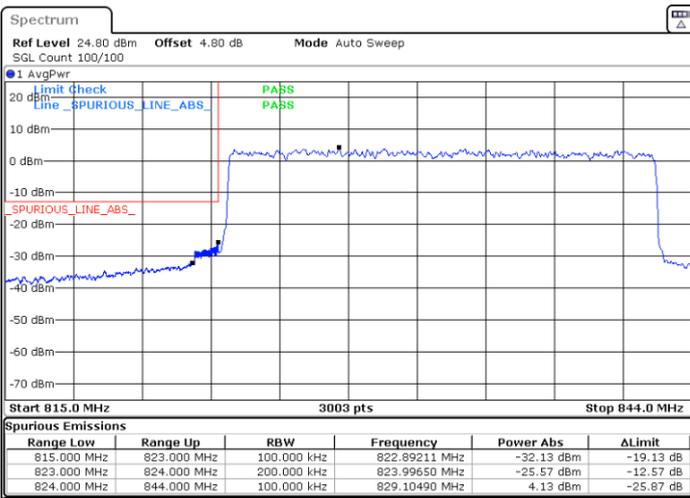


Date: 24 NOV 2021 02:04:26

Date: 24 NOV 2021 02:27:56

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:17:09

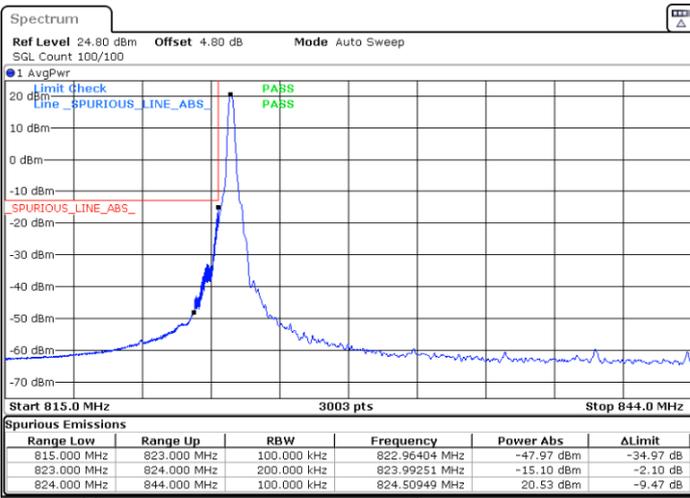
Date: 24 NOV 2021 02:20:30



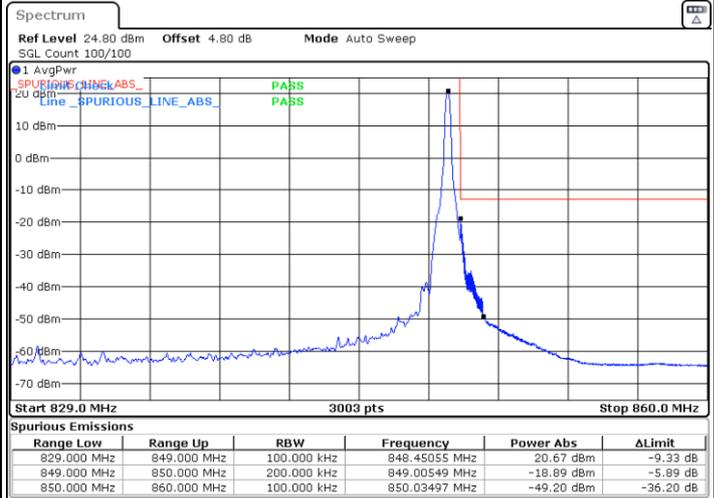
FR1 n5 / 20MHz / DFT-s-OFDM / 16QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



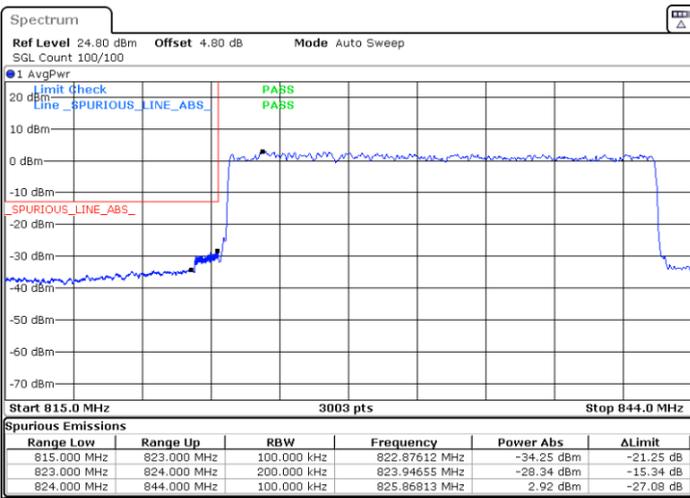
Date: 24 NOV 2021 02:10:28



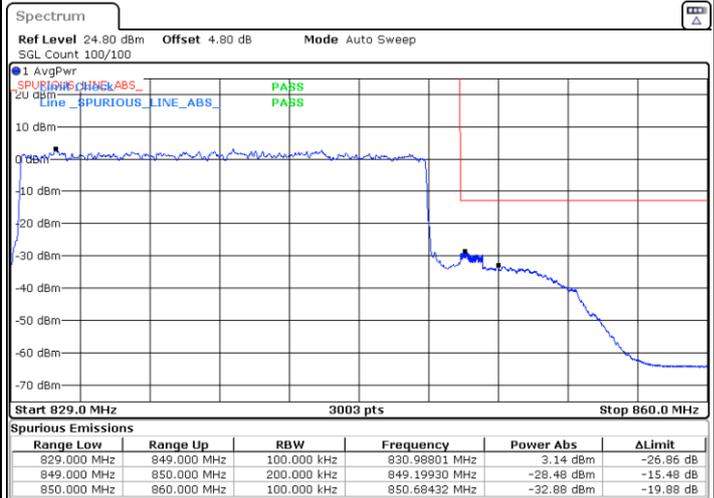
Date: 24 NOV 2021 02:25:17

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24 NOV 2021 02:16:31



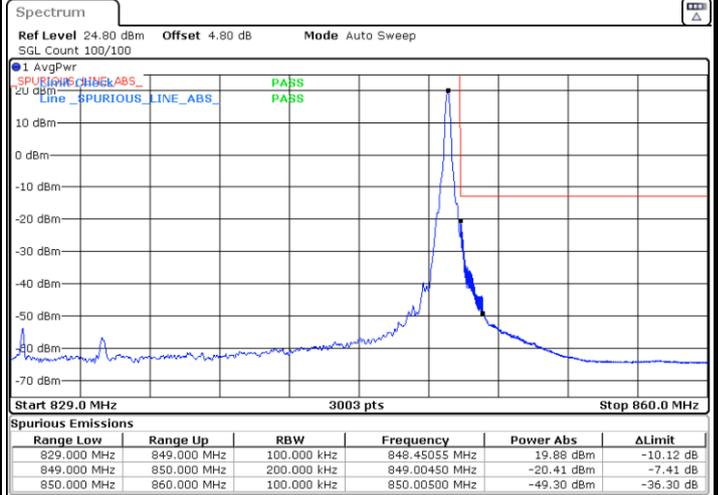
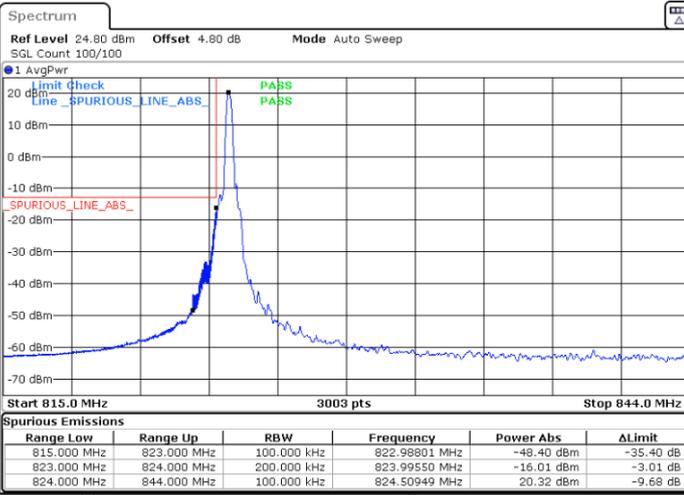
Date: 24 NOV 2021 02:21:11



FR1 n5 / 20MHz / DFT-s-OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX

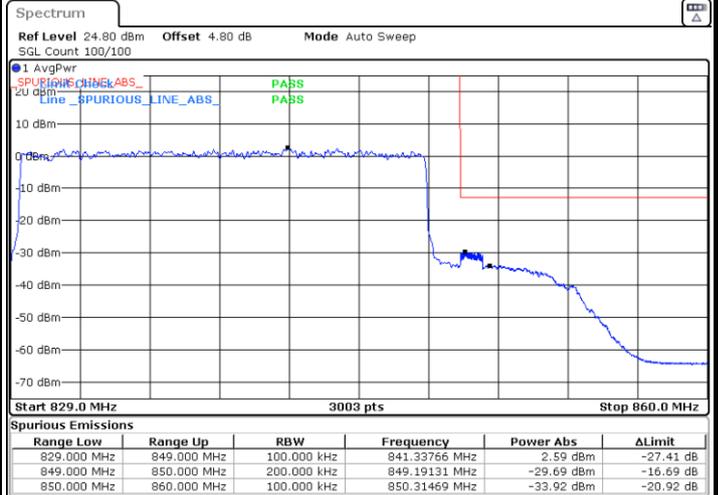
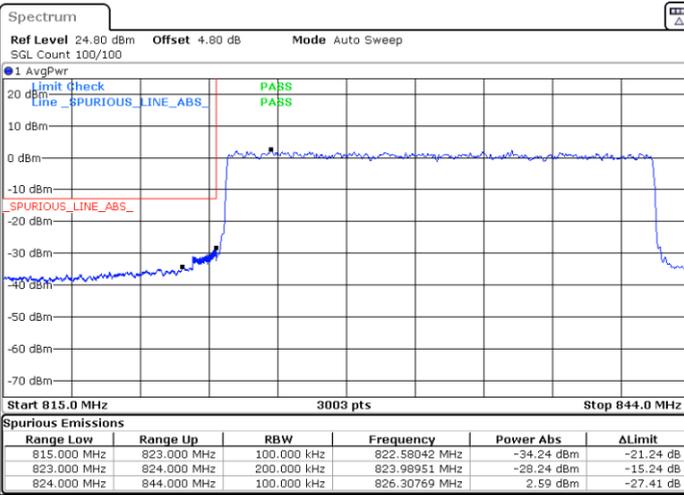


Date: 24.NOV.2021 02:11:21

Date: 24.NOV.2021 02:24:38

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 24.NOV.2021 02:15:54

Date: 24.NOV.2021 02:22:12