



FCC RF Test Report

APPLICANT : Xiaomi Communications Co., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : POCO
MODEL NAME : 22041216UG
FCC ID : 2AFZZ1216U
STANDARD : 47 CFR Part 2, 22, 27
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S) : Mar. 16, 2022 ~ Apr. 25, 2022

We, Sporton International Inc. (Kunshan), 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.

This report contains data that were produced under subcontract by Laboratory Sporton International Inc. (Shenzhen).

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (Kunshan)

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG231203F	Rev. 01	Initial issue of report	May 06, 2022

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		
	§27.50(h)(2)	Equivalent Isotropic Radiated Power (5G NR n7, n41, n38)	EIRP < 2Watt		
3.5	§27.50(j)(4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a)	Conducted Band Edge Measurement (5G NR n5)	< 43+10log ₁₀ (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)	Conducted Spurious Emission (5G NR n5)	< 43+10log ₁₀ (P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (5G NR n7, n41, n38)	< 55+10log ₁₀ (P[Watts])		
3.9	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	-
	§27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a)	Radiated Spurious Emission (5G NR n5)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 31.31 dB at 7575.00 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (5G NR n7, n41, n38)	< 55+10log ₁₀ (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	POCO
Model Name	22041216UG
FCC ID	2AFZZ1216U
IMEI Code	Conducted : 867032060031692/867032060031678 Radiation : 867032060031676/867032060031684
HW Version	P2
SW Version	MIUI13
EUT Stage	Identical Prototype

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
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
Bandwidth	For SCS 15kHz: n5: 5MHz / 10MHz / 15MHz / 20MHz / 25MHz n7: 5MHz / 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 40MHz / 50MHz n38: 5MHz / 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 40MHz n41: 10MHz / 15MHz / 20MHz / 30MHz / 40MHz / 50MHz For SCS 30kHz: n5: 10MHz / 15MHz / 20MHz / 25MHz n7: 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 40MHz / 50MHz n38: 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 40MHz n41 : 10MHz / 15MHz / 20MHz / 30MHz / 40MHz / 50MHz / 60MHz /

	70MHz / 80MHz / 90MHz / 100MHz
Antenna Gain	<Ant. 0> n5: -4.90 dBi n7: -3.20 dBi n38: -3.20 dBi n41: -3.20 dBi <Ant. 1> n5: -3.90 dBi n7: 0.90 dBi n38: 0 dBi n41: 0.90 dBi <Ant. 2> n7: 0.80 dBi n38: 0.30 dBi n41: 0.80 dBi <Ant. 5> n7: -2.30 dBi n38: -2.50 dBi n41: -2.30 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum ERP/EIRP is calculated from max output power and max antenna gain, only the maximum ERP/EIRP are shown in the report, 5G NR n5 for Antenna 0 and 5G NR n7/n38/n41 for Antenna 1.
2. 5G NR n5/n7 support SA mode and NSA mode, n38/n41 support SA mode only. According to the maximum power between SA and NSA mode, SA covers NSA mode for n5/n7.
3. The device supports two PAs for 5G NR n7: main PA and other PA(for NR CA n7A-n78A). The maximum power of main PA is higher than the other PA, therefore, we chose higher power of main PA to calculate the EIRP and show in the report.
4. 5G NR bands support SCS 15kHz and SCS 30kHz. According to the maximum power, n5 SCS 15kHz covers SCS 30kHz for BW 10/15/20/25MHz, n7 SCS 15kHz covers SCS 30kHz for BW 10/15/20/25/30/40/50MHz, n38 SCS 15kHz covers SCS 30kHz for BW 10/15/20/25/30/40MHz, n41 SCS 15kHz covers SCS 30kHz for BW 10/15/20/30/40/50MHz .
5. The EN-DC mode combination: DC_7A_n5A, DC_5A_n7A, DC_7A_n7A.
6. The device supports uplink CA band: n7A-n78A

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

For SCS 15kHz:

5G NR n5 SA		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)
25	836.5	0.0635	22M8G7D	0.0453	22M9W7D

5G NR n7 SA/ NR CA_n7A-n78A		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	EIRP (W)	Emission Designator (99%OBW)	EIRP (W)	Emission Designator (99%OBW)
50	2525.0 ~ 2545.0	0.2938	48M2G7D	0.2065	48M2W7D

5G NR n38 SA		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	EIRP (W)	Emission Designator (99%OBW)	EIRP (W)	Emission Designator (99%OBW)
40	2590.0 ~ 2600.0	0.2710	38M7G7D	0.2143	38M6W7D

5G NR n41 SA		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	EIRP (W)	Emission Designator (99%OBW)	EIRP (W)	Emission Designator (99%OBW)
50	2521.005 ~ 2664.99	0.3396	48M1G7D	0.2576	47M7W7D

For SCS 30kHz:

5G NR n41 SA		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	EIRP (W)	Emission Designator (99%OBW)	EIRP (W)	Emission Designator (99%OBW)
100	2546.01 ~ 2640.00	0.3350	97M3G7D	0.2244	97M7W7D

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 as well as Band n38, and 5G NR n38 supports BW 5/25MHz for SCS 15kHz, it is tested in the report.
- All modulations have been tested, only maximum bandwidth and the worst test results of PSK & QAM are shown in the report.

1.7 Testing Location

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

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	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		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH04-KS TH01-KS	CN1257	314309

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	TH01-SZ	CN1256	421272

Note: Test data subcontracted: conducted test results for 5G NR CA_n7A-n78A in section 3 of this report

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, 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, Z 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.

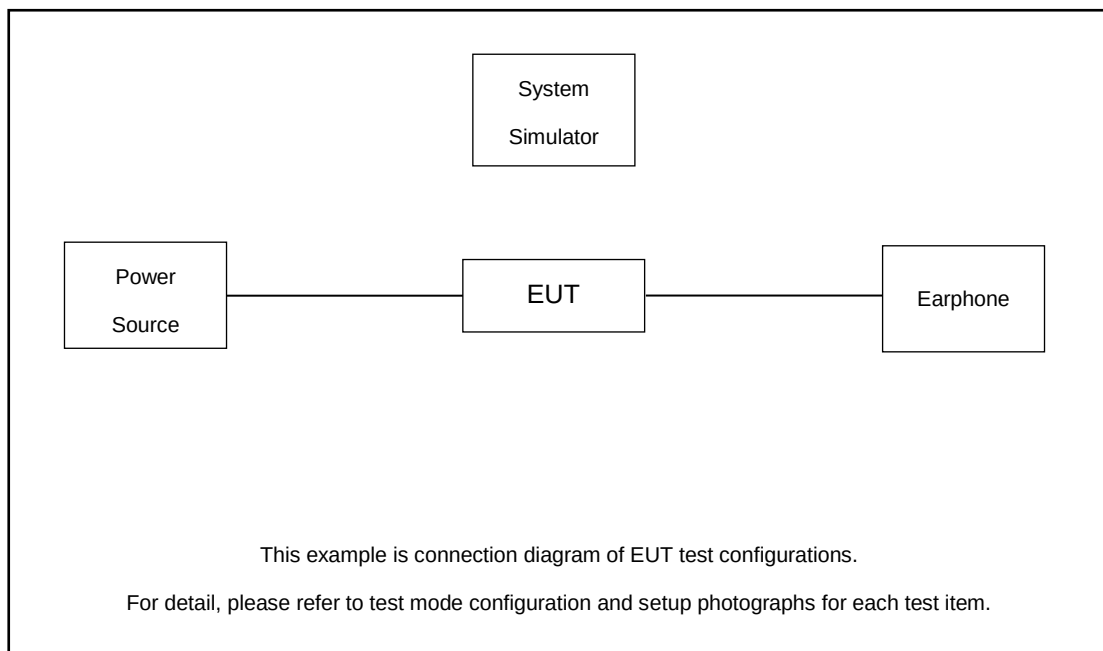
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			

Test Items	5G NR	Bandwidth (MHz)									Modulation					RB #		Test Channel		
		5	10/ 15	20	25	30	40	50	60- 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	v
	n41	-	v	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	v		v	
	n38						v	-	-	-	v	v	v	v	v		v		v	
	n41	-			-			v		v	v	v	v	v	v		v		v	
26dB and 99% Bandwidth	n5				v	-	-	-	-	-	v	v					v		v	
	n7	v	v	v	v	v	v	v	-	-	v	v	v	v	v		v		v	
	n38						v	-	-	-	v	v					v		v	
	n41	-			-			v		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	v	v	v		v
	n41	-	v	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	60-90	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	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
Frequency Stability	n5			v		-	-	-	-	-		v					v		v	
	n7			v					-	-		v					v		v	
	n38			v				-	-	-		v					v		v	
	n41	-			-			v		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	v
	n41	-	v	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	
	n41	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. 4. All modulations (BPSK/QPSK/16QAM/64QAM/256QAM) have been tested, and only the worst test results are shown in the report . 5. Frequency Stability : Normal Voltage = 3.87V ; Low Voltage =3.6V. ; High Voltage =4.45V																			

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

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 4.8 dB.

Example :

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

= 4.8 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n5 Channel and Frequency List for SCS 15kHz				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
25	Channel	-	167300	-
	Frequency	-	836.5	-
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 n5 Channel and Frequency List for SCS 30kHz				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
25	Channel	-	167300	-
	Frequency	-	836.5	-
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



5G NR n7 Channel and Frequency List for SCS 15kHz				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
50	Channel	505000	507000	509000
	Frequency	2525	2535	2545
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 n7 Channel and Frequency List for SCS 30kHz				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
50	Channel	505000	507000	509000
	Frequency	2525	2535	2545
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



5G NR n38 Channel and Frequency List for SCS 15kHz				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	518000	519000	520000
	Frequency	2590	2595	2600
30	Channel	517000	519000	521000
	Frequency	2585	2595	2605
25	Channel	516500	519000	521500
	Frequency	2582.5	2595	2607.5
20	Channel	516000	519000	522000
	Frequency	2580	2595	2610
15	Channel	515500	519000	522500
	Frequency	2577.5	2595	2612.5
10	Channel	515000	519000	523000
	Frequency	2575	2595	2615
5	Channel	514500	519000	523500
	Frequency	2572.5	2595	2617.5

5G NR n38 Channel and Frequency List for SCS 30kHz				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	518000	519000	520000
	Frequency	2590	2595	2600
30	Channel	517000	519000	521000
	Frequency	2585	2595	2605
25	Channel	516500	519000	521500
	Frequency	2582.5	2595	2607.5
20	Channel	516000	519000	522000
	Frequency	2580	2595	2610
15	Channel	515500	519000	522500
	Frequency	2577.5	2595	2612.5
10	Channel	515000	519000	523000
	Frequency	2575	2595	2615



5G NR n41 Channel and Frequency List for SCS 15kHz				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
50	Channel	504201	518601	532998
	Frequency	2521.005	2593.005	2664.99
40	Channel	503202	518601	534000
	Frequency	2516.01	2593.005	2670
30	Channel	502200	518601	534999
	Frequency	2511	2593.005	2674.995
20	Channel	501201	518601	535998
	Frequency	2506.005	2593.005	2679.99
15	Channel	500700	518601	536499
	Frequency	2503.5	2593.005	2682.495
10	Channel	500202	518601	537000
	Frequency	2501.01	2593.005	2685



5G NR n41 Channel and Frequency List for SCS 30kHz				
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	2535	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
15	Channel	500700	518598	536496
	Frequency	2503.5	2592.99	2682.48
10	Channel	500202	518601	537000
	Frequency	2501.01	2593.005	2685

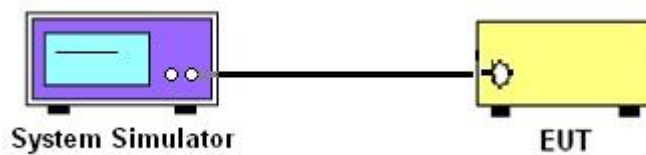
3 Conducted Test Items

3.1 Measuring Instruments

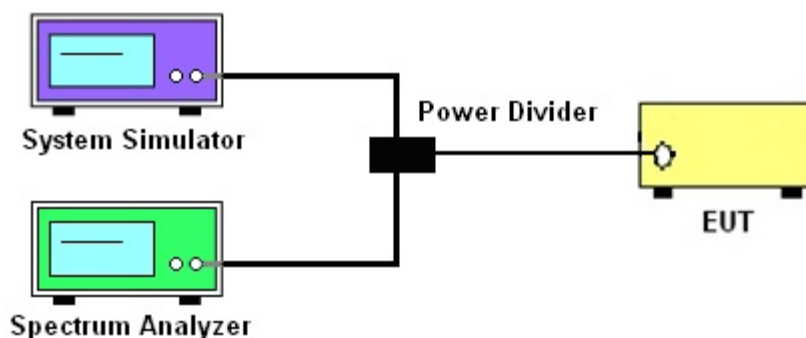
See list of measuring instruments of this test report.

3.2 Test Setup

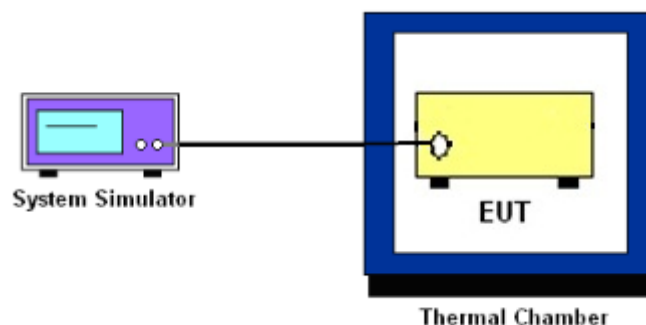
3.2.1 Conducted Output Power



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.

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

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} = -13\text{dBm}.$$

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 10th 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°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°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.9.3 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.

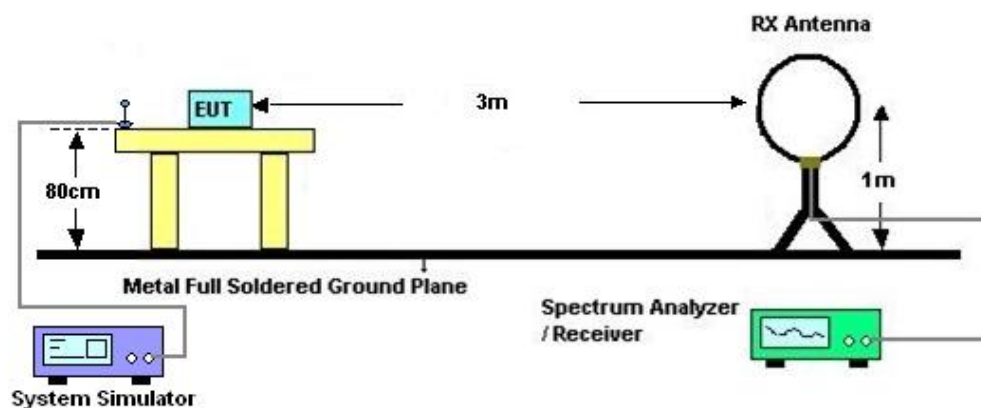
4 Radiated Test Items

4.1 Measuring Instruments

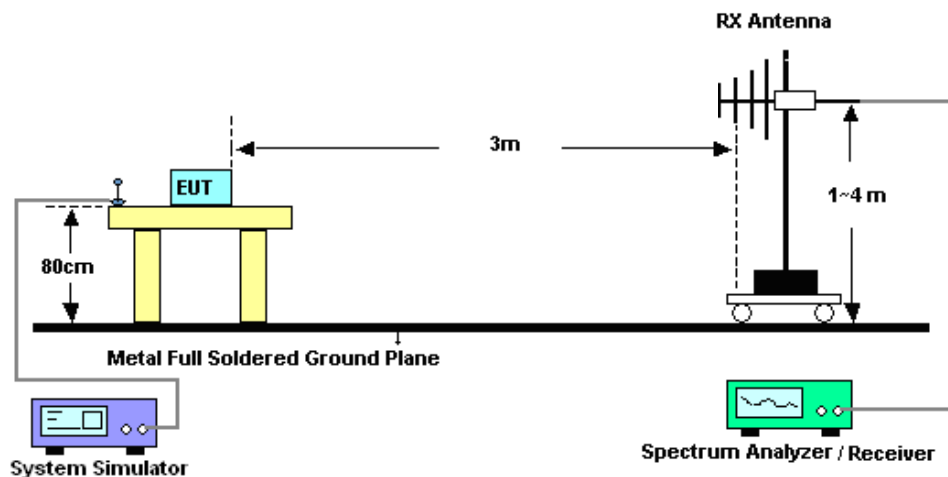
See list of measuring instruments of this test report.

4.2 Test Setup

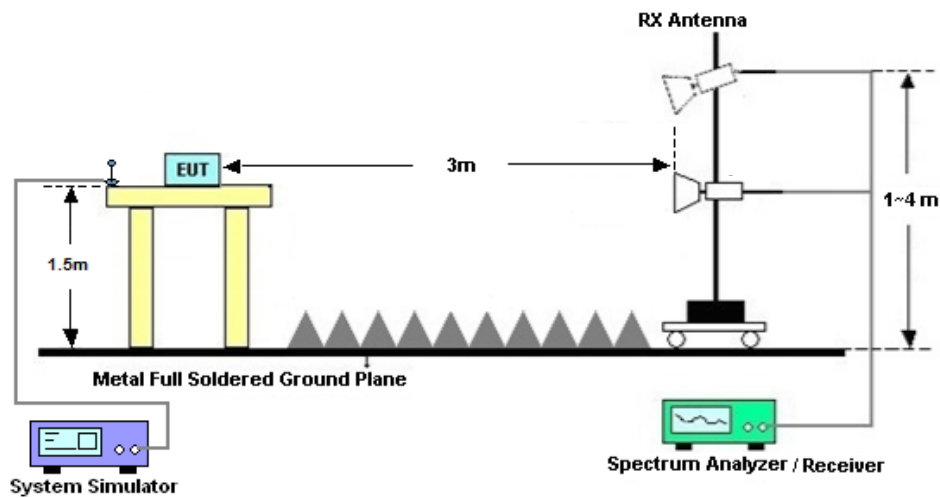
4.2.1 For radiated test below 30MHz



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 $43 + 10\log(P)\text{dB}$ 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 $55 + 10\log(P)\text{dB}$ below the transmitter power P(Watts)The limit line is derived from $55 + 10\log(P)\text{dB}$ 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	Mar. 16, 2022~ Apr. 23, 2022	Oct. 13, 2022	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	Aug. 26, 2021	Mar. 16, 2022~ Apr. 23, 2022	Aug. 25, 2022	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 12, 2021	Mar. 16, 2022~ Apr. 23, 2022	Jul. 11, 2022	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 07, 2022	Apr. 24, 2022~ Apr. 25, 2022	Apr. 06, 2023	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2021	Apr. 24, 2022~ Apr. 25, 2022	Dec. 24, 2022	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 14, 2021	Apr. 24, 2022~ Apr. 25, 2022	Jul. 13, 2022	Conducted (TH01-SZ)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44G,MAX 30dB	Apr. 13, 2021	Apr. 11, 2022	Apr. 12, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Apr. 11, 2022	Oct. 29, 2022	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz~1GHz	May 30, 2021	Apr. 11, 2022	May 29, 2022	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 18, 2021	Apr. 11, 2022	Apr. 17, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Apr. 11, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 05, 2022	Apr. 11, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 05, 2022	Apr. 11, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Jul. 30, 2021	Apr. 11, 2022	Jul. 29, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 13, 2021	Apr. 11, 2022	Oct. 12, 2022	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Apr. 11, 2022	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Apr. 11, 2022	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Apr. 11, 2022	NCR	Radiation (03CH04-KS)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 06, 2022	Apr. 10, 2022	Apr. 05, 2023	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 06, 2022	Apr. 10, 2022	Apr. 05, 2023	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 22, 2020	Apr. 10, 2022	Jun. 21, 2022	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	Jun. 22, 2020	Apr. 10, 2022	Jun. 21, 2022	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 25, 2021	Apr. 10, 2022	Apr. 24, 2022	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 22,2021	Apr. 10, 2022	Oct. 21,2022	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Oct. 22, 2021	Apr. 10, 2022	Oct. 21, 2022	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 11, 2021	Apr. 10, 2022	Apr. 10, 2022	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 29, 2021	Apr. 10, 2022	Dec. 28, 2022	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Apr. 10, 2022	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 10, 2022	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 10, 2022	NCR	Radiation (03CH03-SZ)

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
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

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



Appendix A. Test Results of Conducted Test

Test Engineer :	Smile Wang	Temperature :	22~23°C
		Relative Humidity :	40~42%

Conducted Output Power(Average power and ERP/EIRP)

5G NR n5(SCS 15kHz):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	ERP	ERP	ERP
Channel					167300			L	M	H
Frequency (MHz)					836.5					
25	PI/2 BPSK	1	1		24.54		-4.90		0.0561	
25	QPSK	1	1		24.46		-4.90		0.0551	
25	QPSK	1	66		24.69		-4.90		0.0581	
25	QPSK	1	132		23.78		-4.90		0.0471	
25	QPSK	64	0		23.79		-4.90		0.0472	
25	QPSK	64	35		25.08		-4.90		0.0635	
25	QPSK	64	69		23.96		-4.90		0.0491	
25	QPSK	128	0		23.80		-4.90		0.0473	
25	16QAM	1	1		23.61		-4.90		0.0453	
25	64QAM	1	1		22.07		-4.90		0.0318	
25	256QAM	1	1		20.35		-4.90		0.0214	
Channel				166800	167300	167800	Gain	ERP	ERP	ERP
Frequency (MHz)				834	836.5	839				
20	PI/2 BPSK	1	1	24.32	24.28	24.25	-4.90	0.0533	0.0528	0.0525
20	QPSK	1	1	24.26	24.27	24.23	-4.90	0.0526	0.0527	0.0522
20	QPSK	1	53	24.35	24.51	24.54	-4.90	0.0537	0.0557	0.0561
20	QPSK	1	104	24.44	24.56	24.67	-4.90	0.0548	0.0564	0.0578
20	QPSK	50	0	23.85	23.90	23.92	-4.90	0.0479	0.0484	0.0486
20	QPSK	50	28	24.97	25.01	25.07	-4.90	0.0619	0.0625	0.0634
20	QPSK	50	56	24.07	24.11	24.02	-4.90	0.0504	0.0508	0.0498
20	QPSK	100	0	23.89	24.02	23.92	-4.90	0.0483	0.0498	0.0486
20	16QAM	1	1	23.17	23.25	23.21	-4.90	0.0409	0.0417	0.0413
20	64QAM	1	1	21.89	21.64	21.62	-4.90	0.0305	0.0288	0.0286
20	256QAM	1	1	20.24	20.31	20.25	-4.90	0.0208	0.0212	0.0209
Channel				166300	167300	168300	Gain	ERP	ERP	ERP
Frequency (MHz)				831.5	836.5	841.5				
15	QPSK	1	1	24.27	24.37	24.38	-4.90	0.0527	0.0540	0.0541
15	16QAM	1	1	23.21	23.23	23.28	-4.90	0.0413	0.0415	0.0420
Channel				165800	167300	168800	Gain	ERP	ERP	ERP
Frequency (MHz)				829	836.5	844				
10	QPSK	1	1	24.38	24.36	24.48	-4.90	0.0541	0.0538	0.0553
10	16QAM	1	1	23.33	23.26	23.36	-4.90	0.0425	0.0418	0.0428
Channel				165300	167300	169300	Gain	ERP	ERP	ERP
Frequency (MHz)				826.5	836.5	846.5				
5	QPSK	1	1	24.43	24.41	24.58	-4.90	0.0547	0.0545	0.0566
5	16QAM	1	1	23.35	23.28	23.49	-4.90	0.0427	0.0420	0.0441



5G NR n7(SCS 15kHz):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP		
Channel				505000	507000	509000	Gain	L	M	H
Frequency (MHz)				2525	2535	2545				
50	PI/2 BPSK	1	1	23.18	23.13	23.11	0.90	0.2559	0.2529	0.2518
50	QPSK	1	1	23.14	23.08	23.07	0.90	0.2535	0.2500	0.2495
50	QPSK	1	268	23.27	23.21	23.02	0.90	0.2612	0.2576	0.2466
50	QPSK	1	269	22.99	22.97	23.08	0.90	0.2449	0.2438	0.2500
50	QPSK	135	0	22.69	22.63	22.55	0.90	0.2286	0.2254	0.2213
50	QPSK	135	135	23.78	23.67	23.65	0.90	0.2938	0.2864	0.2851
50	QPSK	270	0	22.68	22.66	22.63	0.90	0.2280	0.2270	0.2254
50	16QAM	1	1	22.25	22.19	22.23	0.90	0.2065	0.2037	0.2056
50	64QAM	1	1	20.55	20.58	20.44	0.90	0.1396	0.1406	0.1361
50	256QAM	1	1	19.23	19.25	19.21	0.90	0.1030	0.1035	0.1026
Channel				504000	507000	510000	Gain	L	M	H
Frequency (MHz)				2520	2535	2550				
40	QPSK	1	1	22.77	22.78	22.69	0.90	0.2328	0.2333	0.2286
40	16QAM	1	1	21.73	21.88	21.78	0.90	0.1832	0.1897	0.1854
Channel				503000	507000	511000	Gain	L	M	H
Frequency (MHz)				2515	2535	2555				
30	QPSK	1	1	23.03	23.02	22.74	0.90	0.2472	0.2466	0.2312
30	16QAM	1	1	22.02	21.96	21.89	0.90	0.1959	0.1932	0.1901
Channel				502500	507000	511500	Gain	L	M	H
Frequency (MHz)				2512.5	2535	2557.5				
25	QPSK	1	1	23.03	23.01	22.83	0.90	0.2472	0.2460	0.2360
25	16QAM	1	1	22.03	22.05	21.87	0.90	0.1963	0.1972	0.1892
Channel				502000	507000	512000	Gain	L	M	H
Frequency (MHz)				2510	2535	2560				
20	QPSK	1	1	23.18	23.13	22.98	0.90	0.2559	0.2529	0.2443
20	16QAM	1	1	22.18	22.11	21.93	0.90	0.2032	0.2000	0.1919
Channel				501500	507000	512500	Gain	L	M	H
Frequency (MHz)				2507.5	2535	2562.5				
15	QPSK	1	1	23.27	23.23	23.08	0.90	0.2612	0.2588	0.2500
15	16QAM	1	1	22.23	22.13	22.02	0.90	0.2056	0.2009	0.1959
Channel				501000	507000	513000	Gain	L	M	H
Frequency (MHz)				2505	2535	2565				
10	QPSK	1	1	23.32	23.11	23.13	0.90	0.2642	0.2518	0.2529
10	16QAM	1	1	22.22	22.14	22.08	0.90	0.2051	0.2014	0.1986
Channel				500500	507000	513500	Gain	L	M	H
Frequency (MHz)				2502.5	2535	2567.5				
5	QPSK	1	1	23.24	23.08	23.17	0.90	0.2594	0.2500	0.2553
5	16QAM	1	1	22.17	22.06	22.03	0.90	0.2028	0.1977	0.1963



5G NR n38(SCS 15kHz):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP		
Channel				518000	519000	520000	Gain	L	M	H
Frequency (MHz)				2590	2595	2600				
40	PI/2 BPSK	1	1	24.33	24.28	24.15	0.00	0.2710	0.2679	0.2600
40	QPSK	1	1	24.15	24.26	24.11	0.00	0.2600	0.2667	0.2576
40	QPSK	1	53	23.95	23.87	23.85	0.00	0.2483	0.2438	0.2427
40	QPSK	1	104	24.11	24.25	24.05	0.00	0.2576	0.2661	0.2541
40	QPSK	50	0	22.75	22.86	22.78	0.00	0.1884	0.1932	0.1897
40	QPSK	50	28	23.90	24.00	23.90	0.00	0.2455	0.2512	0.2455
40	QPSK	50	56	24.01	24.08	24.10	0.00	0.2518	0.2559	0.2570
40	QPSK	100	0	22.95	22.92	22.84	0.00	0.1972	0.1959	0.1923
40	16QAM	1	1	23.28	23.29	23.31	0.00	0.2128	0.2133	0.2143
40	64QAM	1	1	21.12	21.08	20.98	0.00	0.1294	0.1282	0.1253
40	256QAM	1	1	19.18	19.20	19.23	0.00	0.0828	0.0832	0.0838
Channel				517000	519000	521000	Gain	L	M	H
Frequency (MHz)				2585	2595	2605				
30	QPSK	1	1	23.91	23.84	23.82	0.00	0.2460	0.2421	0.2410
30	16QAM	1	1	22.92	22.92	22.84	0.00	0.1959	0.1959	0.1923
Channel				516500	519000	521500	Gain	L	M	H
Frequency (MHz)				2582.5	2595	2607.5				
25	QPSK	1	1	24.10	23.96	23.76	0.00	0.2570	0.2489	0.2377
25	16QAM	1	1	22.96	23.01	22.95	0.00	0.1977	0.2000	0.1972
Channel				516000	519000	522000	Gain	L	M	H
Frequency (MHz)				2580	2595	2610				
20	QPSK	1	1	24.04	24.05	24.03	0.00	0.2535	0.2541	0.2529
20	16QAM	1	1	23.14	22.84	22.88	0.00	0.2061	0.1923	0.1941
Channel				515500	519000	522500	Gain	L	M	H
Frequency (MHz)				2577.5	2595	2612.5				
15	QPSK	1	1	24.22	24.06	24.02	0.00	0.2642	0.2547	0.2523
15	16QAM	1	1	23.02	23.16	23.15	0.00	0.2004	0.2070	0.2065
Channel				515000	519000	523000	Gain	L	M	H
Frequency (MHz)				2575	2595	2615				
10	QPSK	1	1	24.21	24.21	24.16	0.00	0.2636	0.2636	0.2606
10	16QAM	1	1	23.06	23.27	23.18	0.00	0.2023	0.2123	0.2080
Channel				514500	519000	523500	Gain	L	M	H
Frequency (MHz)				2572.5	2595	2617.5				
5	QPSK	1	1	24.15	24.17	24.15	0.00	0.2600	0.2612	0.2600
5	16QAM	1	1	23.24	22.96	23.24	0.00	0.2109	0.1977	0.2109



5G NR n41(SCS 15kHz):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				504201	518601	532998	Gain	L	M	H
Frequency (MHz)				2521.005	2593.005	2664.99				
50	PI/2 BPSK	1	1	24.15	23.83	23.98	0.90	0.3199	0.2972	0.3076
50	QPSK	1	1	24.06	23.76	23.90	0.90	0.3133	0.2924	0.3020
50	QPSK	1	268	23.84	23.97	24.26	0.90	0.2979	0.3069	0.3281
50	QPSK	135	67	24.41	24.10	24.34	0.90	0.3396	0.3162	0.3342
50	QPSK	270	0	23.27	23.06	23.30	0.90	0.2612	0.2489	0.2630
50	16QAM	1	1	23.21	22.90	22.93	0.90	0.2576	0.2399	0.2415
50	64QAM	1	1	21.67	21.30	21.44	0.90	0.1807	0.1660	0.1714
50	256QAM	1	1	19.69	19.38	19.48	0.90	0.1146	0.1067	0.1091
Channel				503202	518601	534000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2516.01	2593.005	2670				
40	QPSK	1	1	23.90	23.55	23.71	0.90	0.3020	0.2786	0.2891
40	16QAM	1	1	22.93	22.60	22.59	0.90	0.2415	0.2239	0.2234
Channel				502200	518601	534999	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2511	2593.005	2674.995				
30	QPSK	1	1	24.10	23.78	24.01	0.90	0.3162	0.2938	0.3097
30	16QAM	1	1	23.12	22.82	22.75	0.90	0.2523	0.2355	0.2317
Channel				501201	518601	535998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2506.005	2593.005	2679.99				
20	QPSK	1	1	24.16	23.92	24.14	0.90	0.3206	0.3034	0.3192
20	16QAM	1	1	23.41	22.84	23.16	0.90	0.2698	0.2366	0.2547
Channel				500700	518601	536499	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2503.5	2593.005	2682.495				
15	QPSK	1	1	24.08	24.02	23.98	0.90	0.3148	0.3105	0.3076
15	16QAM	1	1	23.44	22.88	22.93	0.90	0.2716	0.2388	0.2415
Channel				500202	518601	537000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2501.01	2593.005	2685				
10	QPSK	1	1	24.08	24.06	24.06	0.90	0.3148	0.3133	0.3133
10	16QAM	1	1	23.39	23.01	22.96	0.90	0.2685	0.2460	0.2432



5G NR n41(SCS 30kHz):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				509202	518598	528000				
Frequency (MHz)				2546.01	2592.99	2640		L	M	H
100	PI/2 BPSK	1	1	23.54	23.16	23.01	0.90	0.2780	0.2547	0.2460
100	QPSK	1	1	23.52	23.12	23.09	0.90	0.2767	0.2523	0.2506
100	QPSK	1	137	24.17	24.16	24.35	0.90	0.3214	0.3206	0.3350
100	QPSK	1	271	23.35	23.72	23.74	0.90	0.2661	0.2897	0.2911
100	QPSK	135	0	23.11	22.86	22.82	0.90	0.2518	0.2377	0.2355
100	QPSK	135	69	24.18	24.10	24.28	0.90	0.3221	0.3162	0.3296
100	QPSK	135	138	22.94	23.12	23.27	0.90	0.2421	0.2523	0.2612
100	QPSK	270	0	23.06	23.06	23.11	0.90	0.2489	0.2489	0.2518
100	16QAM	1	1	22.61	22.32	22.23	0.90	0.2244	0.2099	0.2056
100	64QAM	1	1	20.98	20.63	20.48	0.90	0.1542	0.1422	0.1374
100	256QAM	1	1	19.54	19.05	19.02	0.90	0.1107	0.0989	0.0982
Channel				508200	518598	528996	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2541	2592.99	2644.98				
90	QPSK	1	1	23.69	23.31	23.20	0.90	0.2877	0.2636	0.2570
90	16QAM	1	1	22.89	22.52	22.31	0.90	0.2393	0.2198	0.2094
Channel				507204	518598	529998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2536.02	2592.99	2649.99				
80	QPSK	1	1	23.86	23.61	23.59	0.90	0.2992	0.2825	0.2812
80	16QAM	1	1	22.98	22.74	22.72	0.90	0.2443	0.2312	0.2301
Channel				506202	518598	531000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2535	2592.99	2655				
70	QPSK	1	1	24.08	23.84	23.79	0.90	0.3148	0.2979	0.2944
70	16QAM	1	1	23.25	22.91	22.81	0.90	0.2600	0.2404	0.2350
Channel				505200	518598	531996	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2526	2592.99	2659.98				
60	QPSK	1	1	24.12	23.91	23.89	0.90	0.3177	0.3027	0.3013
60	16QAM	1	1	23.22	23.04	23.01	0.90	0.2582	0.2477	0.2460
Channel				504204	518598	532998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2521.02	2592.99	2664.99				
50	QPSK	1	1	24.20	24.08	24.06	0.90	0.3236	0.3148	0.3133
50	16QAM	1	1	23.41	23.20	23.21	0.90	0.2698	0.2570	0.2576
Channel				503202	518598	534000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2516.01	2592.99	2670				
40	QPSK	1	1	24.02	23.81	23.98	0.90	0.3105	0.2958	0.3076
40	16QAM	1	1	23.21	22.98	23.10	0.90	0.2576	0.2443	0.2512
Channel				502200	518598	534996	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2511	2592.99	2674.98				
30	QPSK	1	1	24.22	24.00	24.11	0.90	0.3251	0.3090	0.3170
30	16QAM	1	1	23.43	23.14	23.27	0.90	0.2710	0.2535	0.2612
Channel				501204	518598	535998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2506.02	2592.99	2679.99				
20	QPSK	1	1	24.30	24.05	24.25	0.90	0.3311	0.3126	0.3273
20	16QAM	1	1	23.43	23.21	23.22	0.90	0.2710	0.2576	0.2582
Channel				500700	518598	536496	Gain	EIRP	EIRP	EIRP



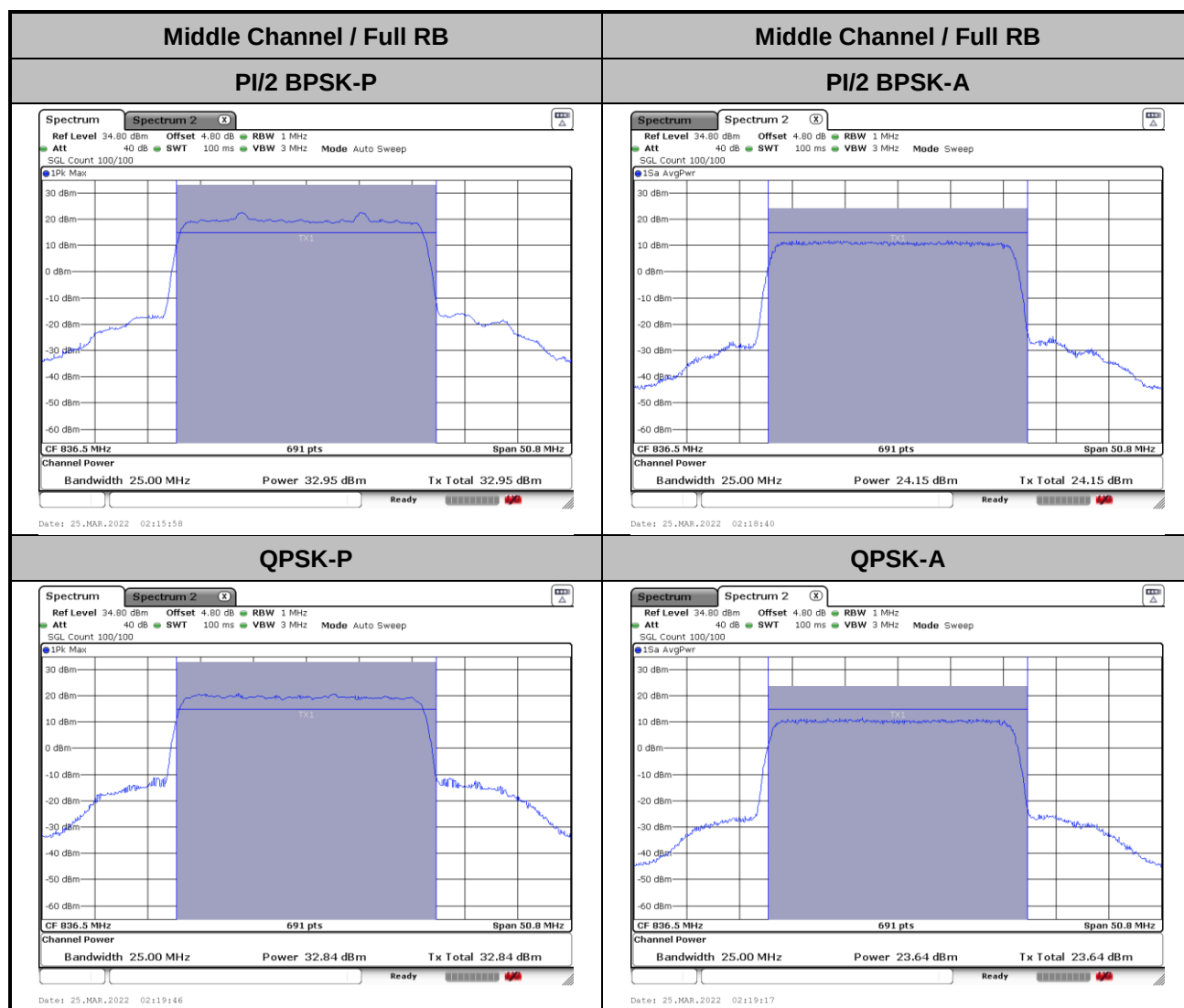
Frequency (MHz)				2503.5	2592.99	2682.48				
15	QPSK	1	1	24.28	24.22	24.23	0.90	0.3296	0.3251	0.3258
15	16QAM	1	1	23.52	23.21	23.42	0.90	0.2767	0.2576	0.2704
Channel				500202	518598	537000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2501.01	2592.99	2685				
10	QPSK	1	1	24.26	24.18	24.27	0.90	0.3281	0.3221	0.3289
10	16QAM	1	1	23.35	23.30	23.26	0.90	0.2661	0.2630	0.2606



FR1 n5(SCS 15kHz)

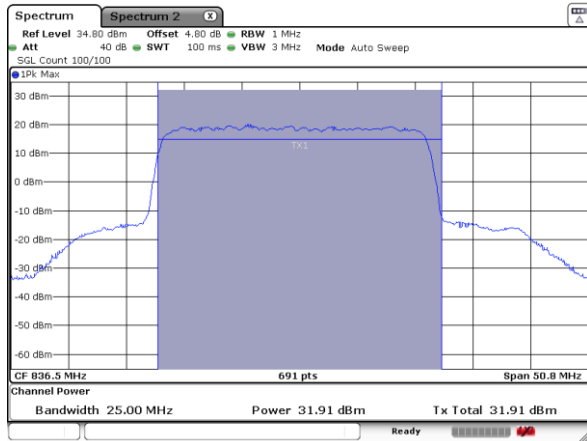
Peak-to-Average Ratio

Mode	FR1 n5 / 25MHz / 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	8.8	9.2	9.26	9.48	PASS
Mode	FR1 n5 / 25MHz / DFT-S OFDM				
Mod.	256QAM				Limit: 13dB
RB Size	Full RB				Result
Middle CH	9.36				PASS

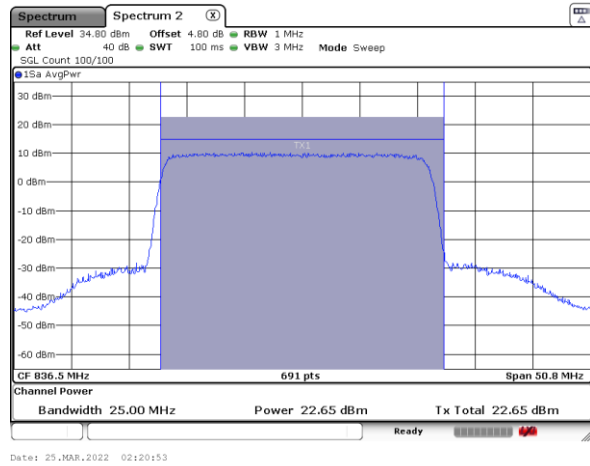




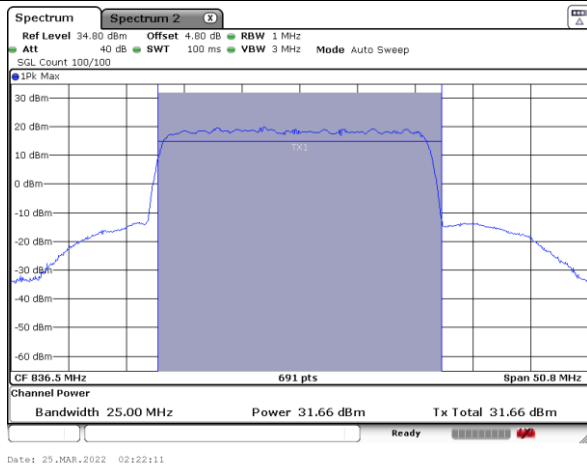
16QAM-P



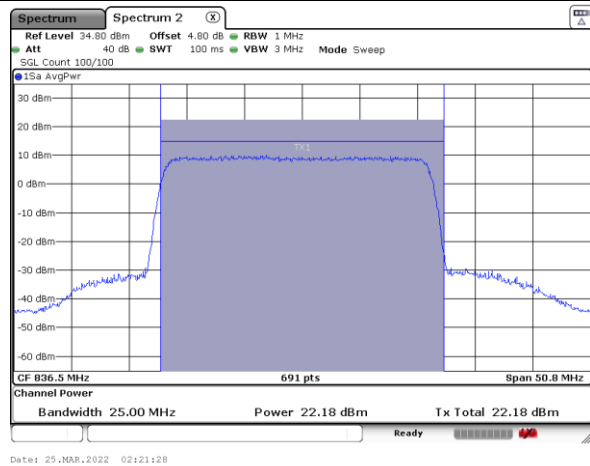
16QAM-A



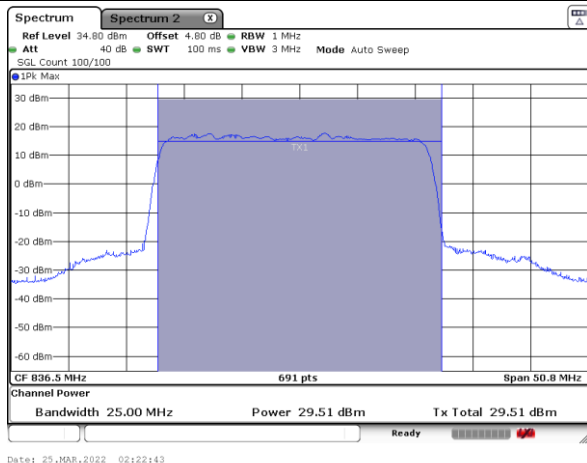
64QAM-P



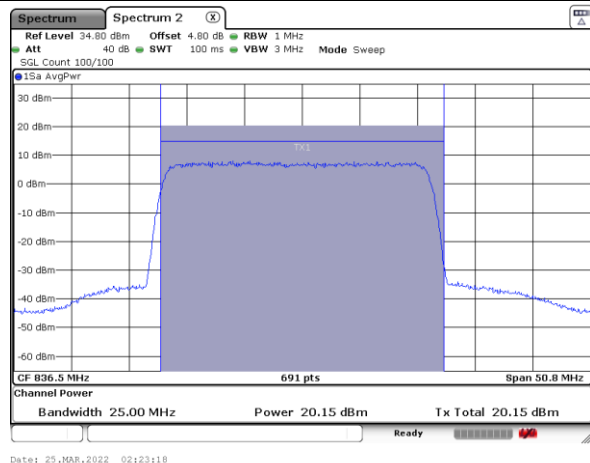
64QAM-A



256QAM-P

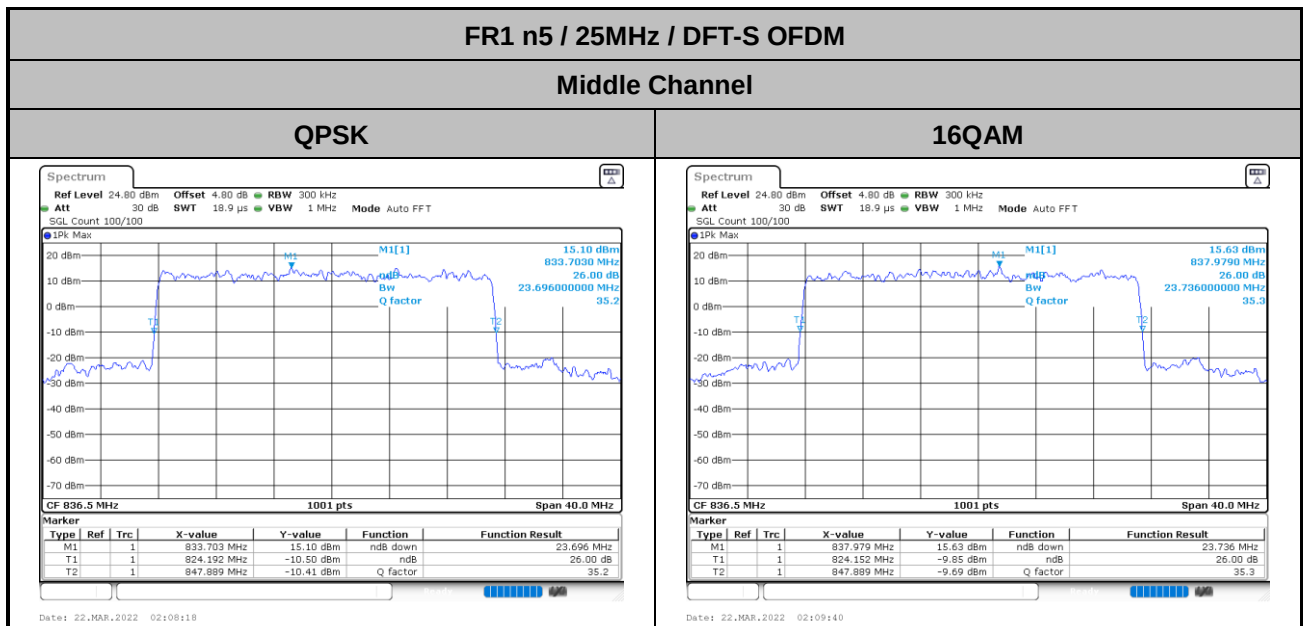


256QAM-A



**26dB Bandwidth**

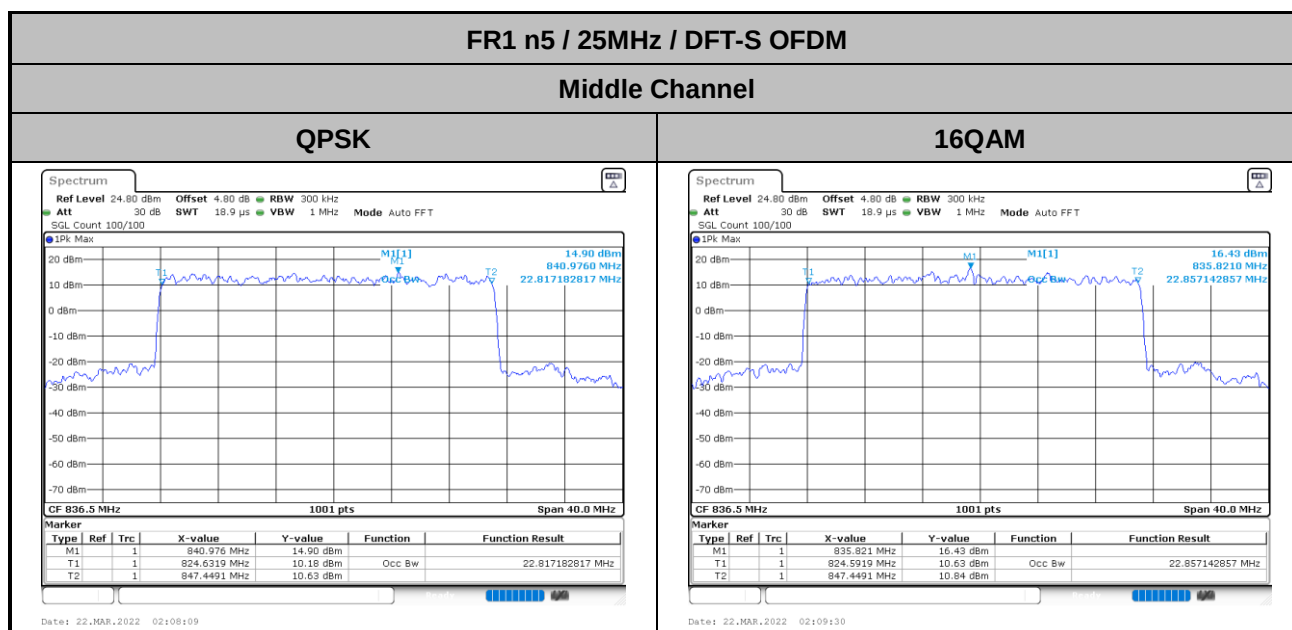
Mode	FR1 n5: 26dB BW(MHz) / DFT-S OFDM	
BW	25MHz	
Mod.	QPSK	16QAM
Middle CH	23.70	23.74





Occupied Bandwidth

Mode	FR1 n5 : 99%OBW(MHz) / DFT-S OFDM	
BW	25MHz	
Mod.	QPSK	16QAM
Middle CH	22.82	22.86

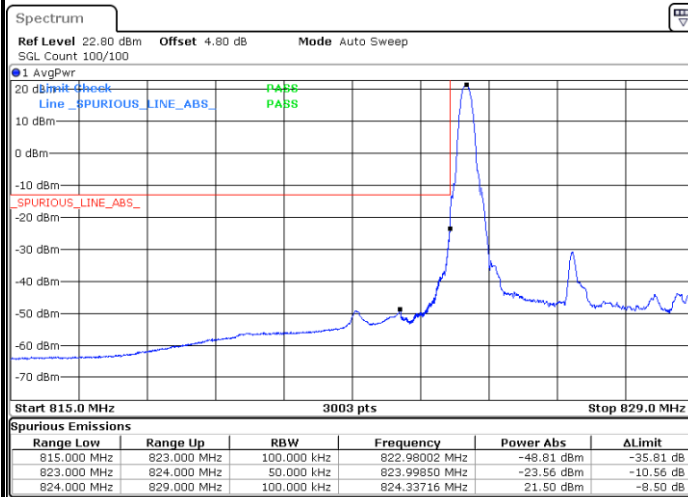




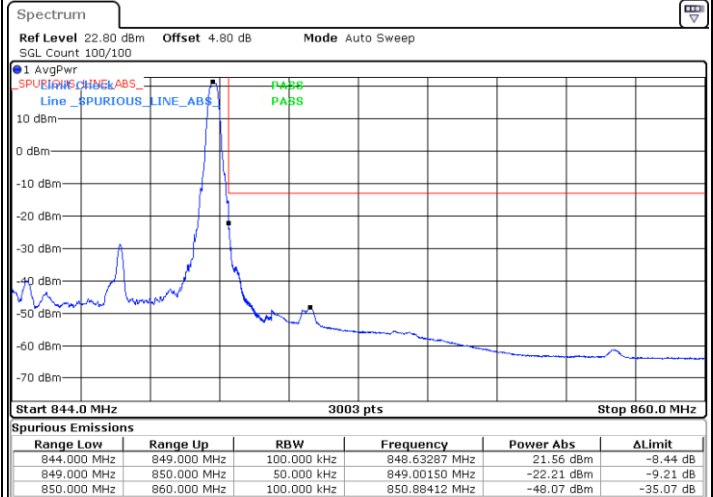
Conducted Band Edge

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

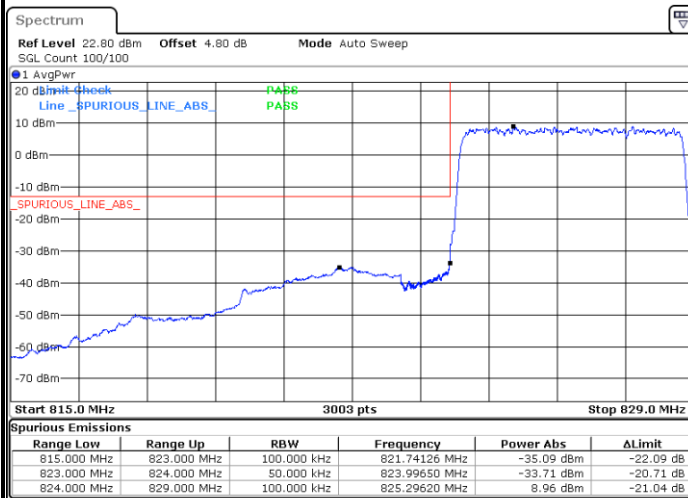
Lowest Band Edge / 1RB0



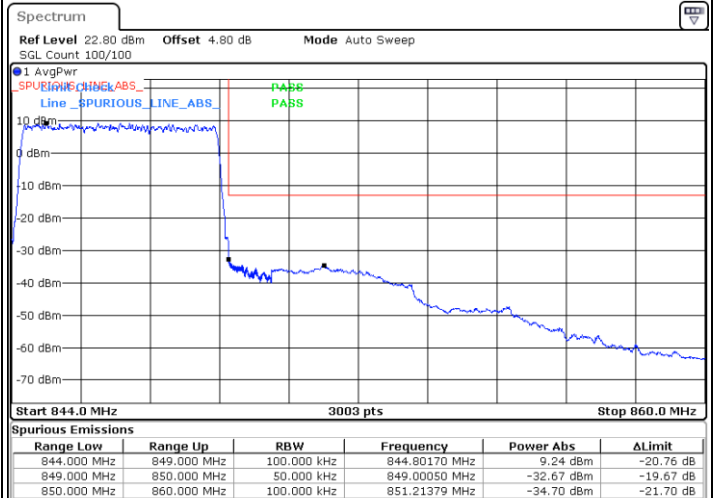
Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB



Highest Band Edge / Full RB

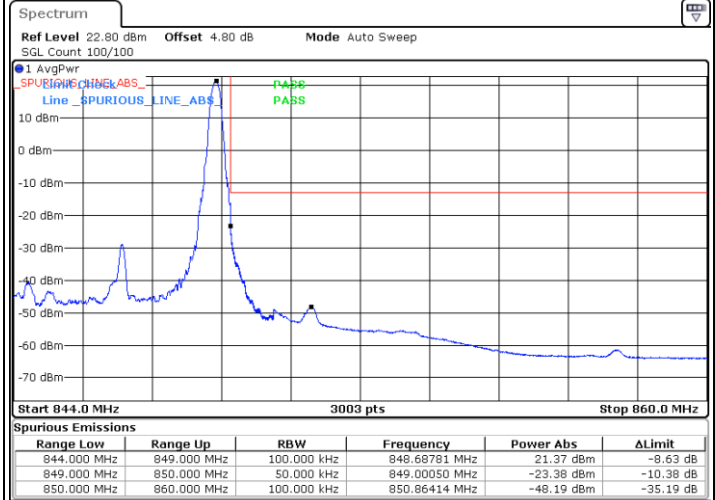
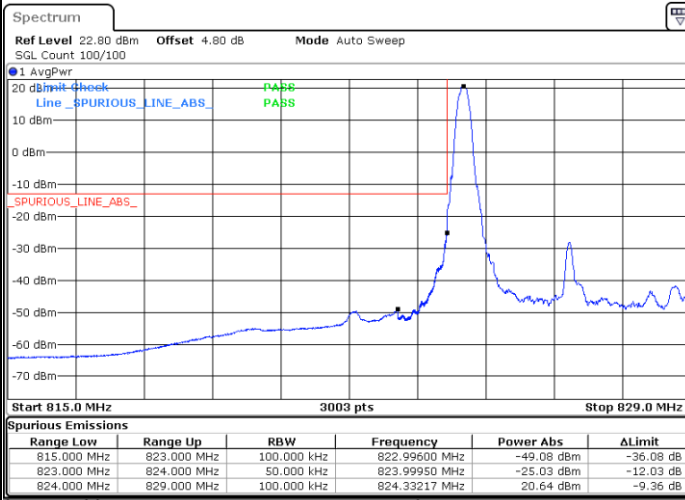




FR1 n5 / 5MHz / DFT-S OFDM / QPSK

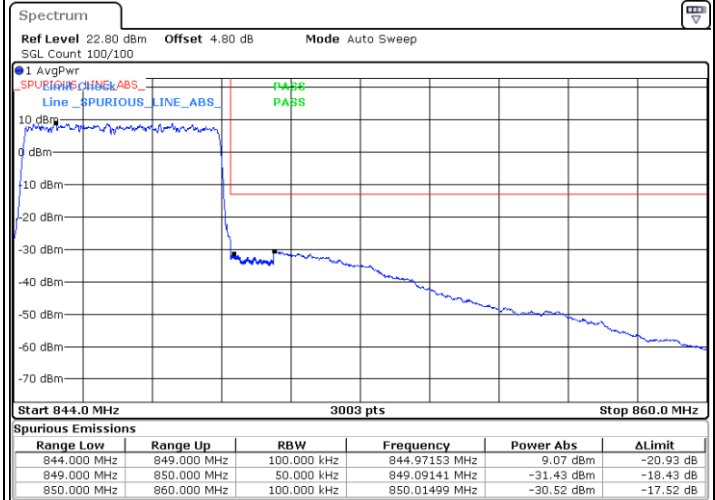
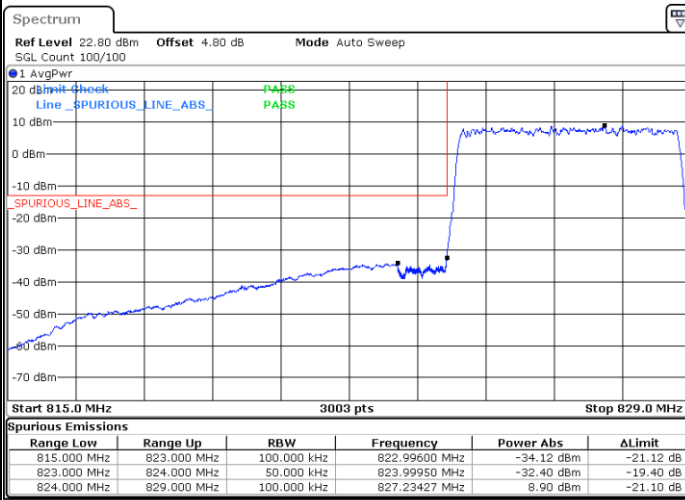
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

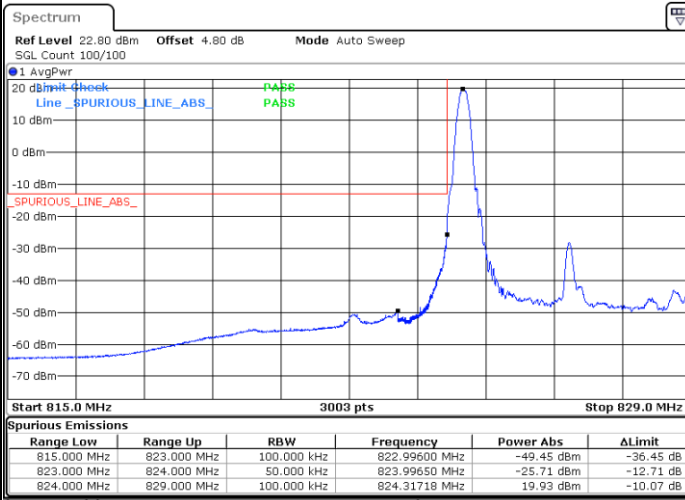




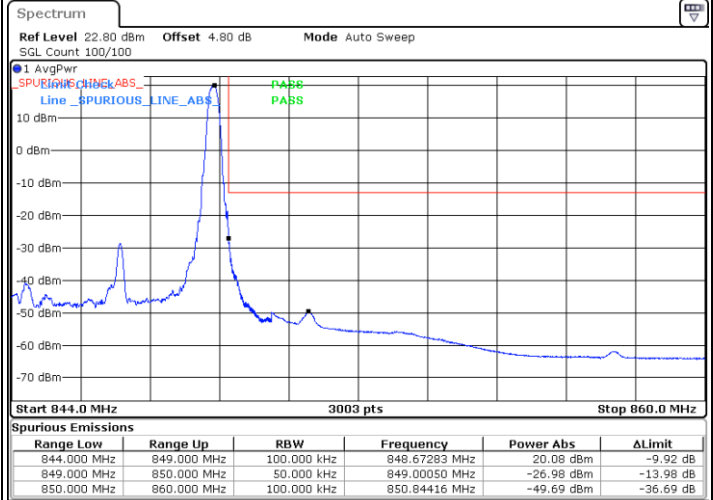
FR1 n5 / 5MHz / DFT-S OFDM / 16Q

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



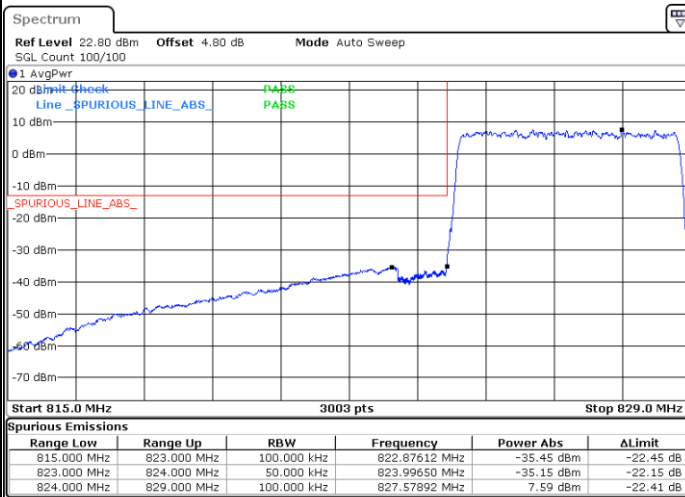
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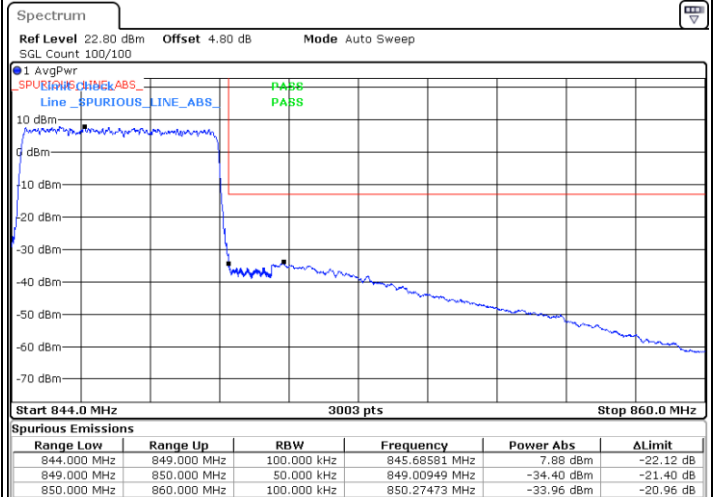
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Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 17:47:14



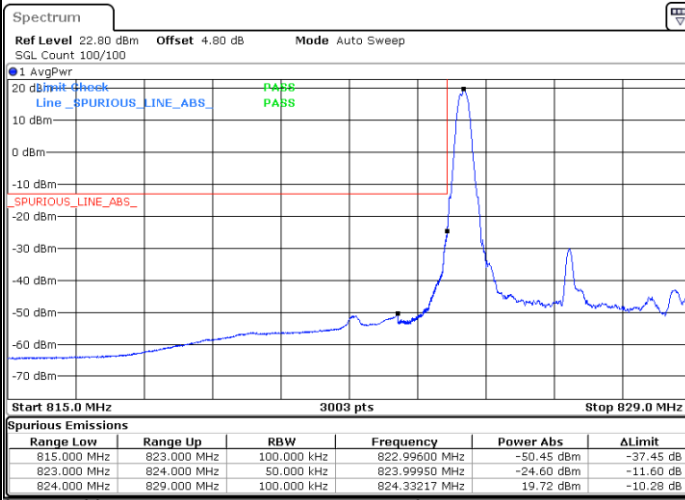
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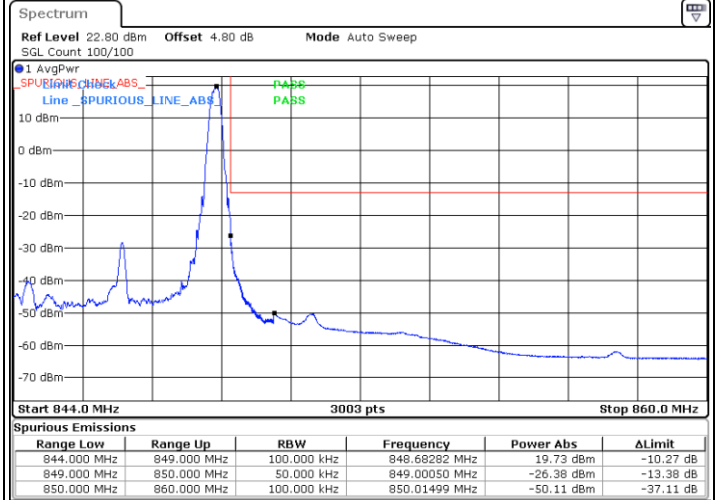
FR1 n5/ 5MHz / DFT-S OFDM / 64Q

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



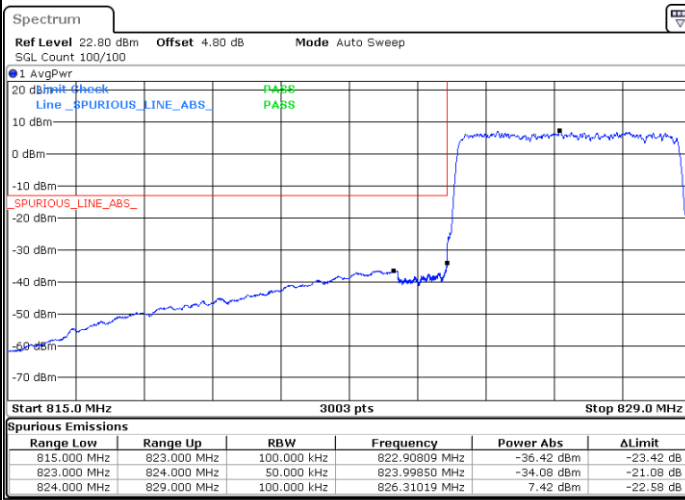
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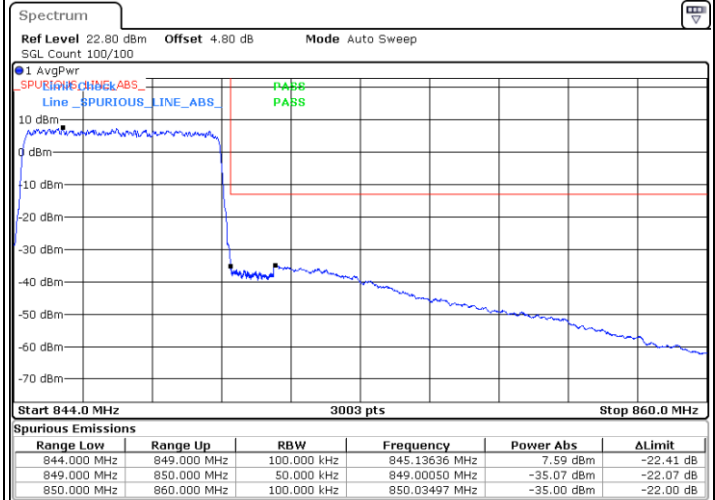
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Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 17:48:01



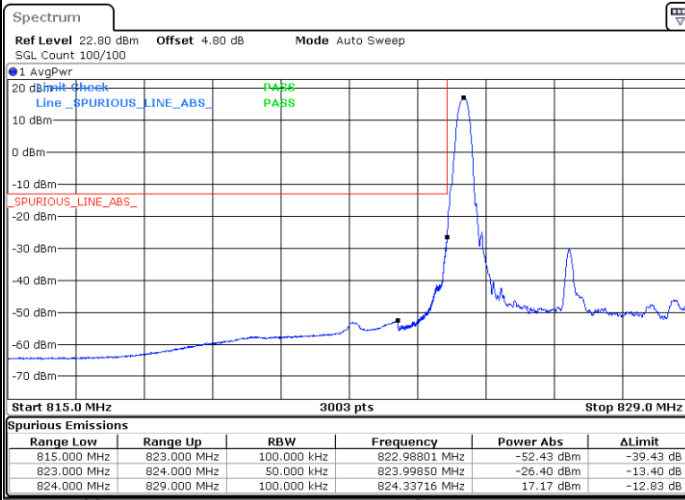
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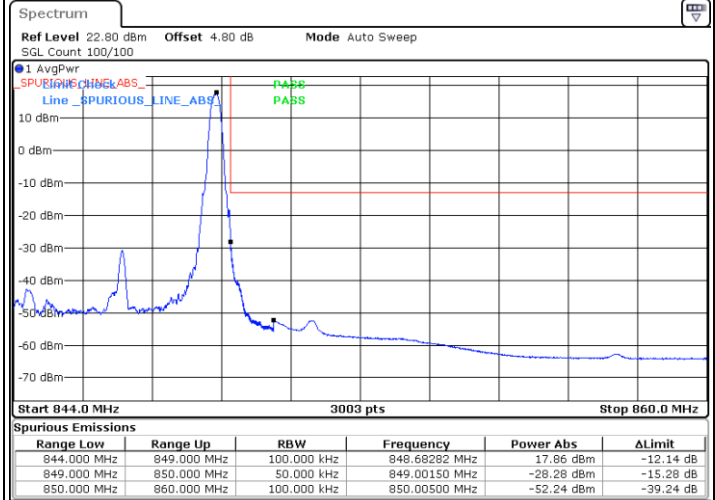
FR1 n5 / 5MHz / DFT-S OFDM / 256Q

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



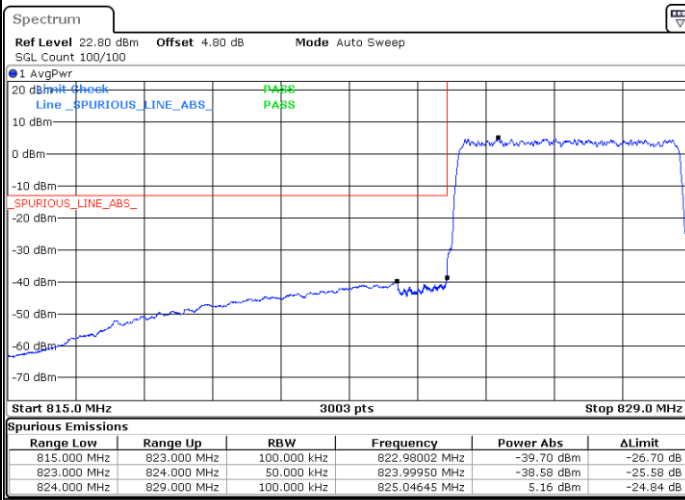
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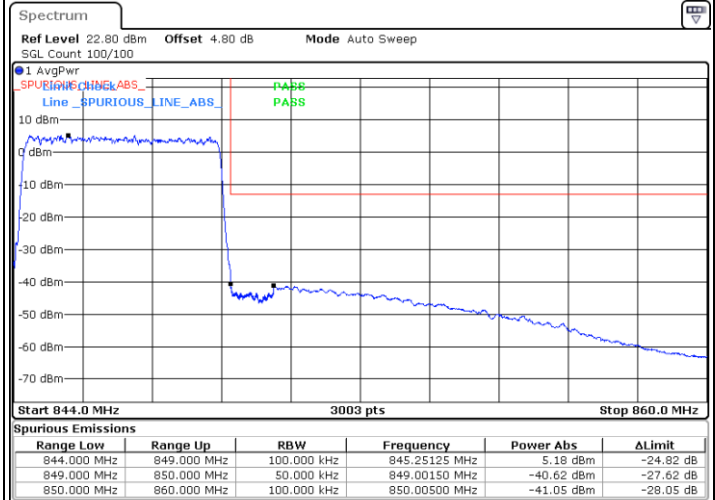
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Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 17:49:13



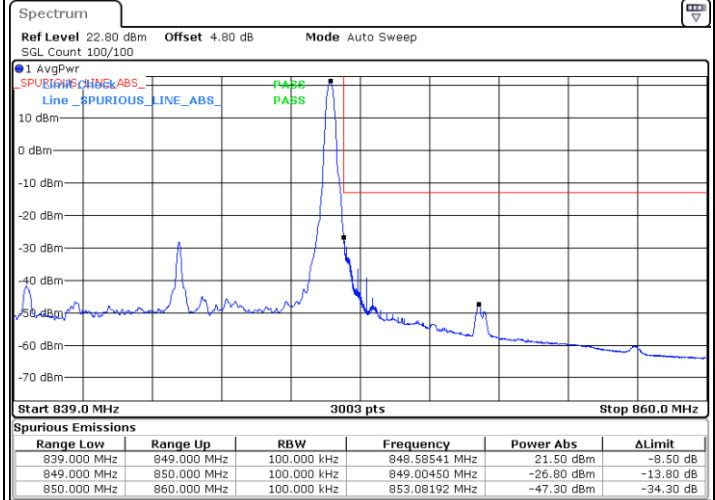
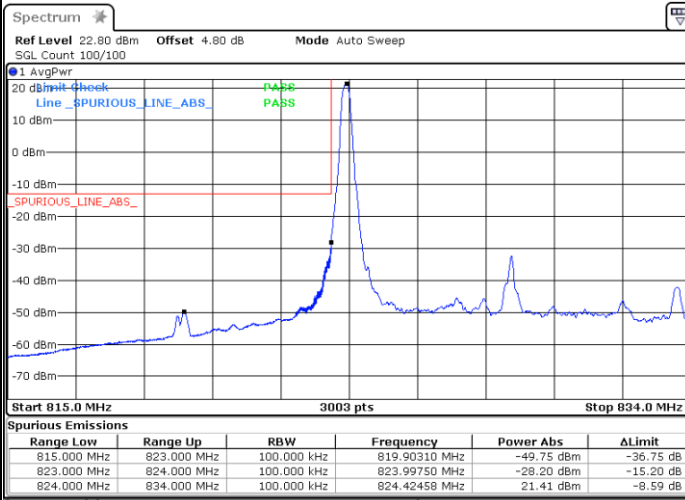
Date: 18.MAR.2022 18:02:59



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

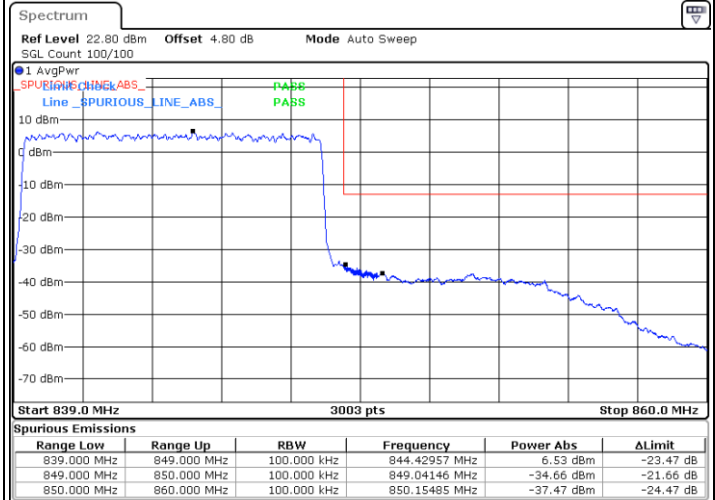
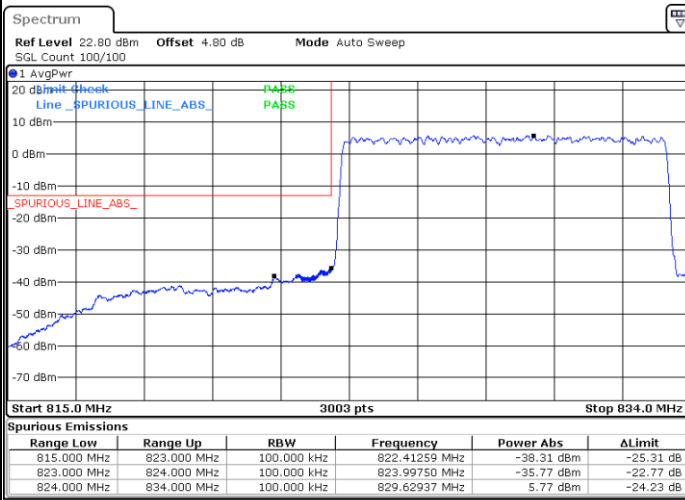
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

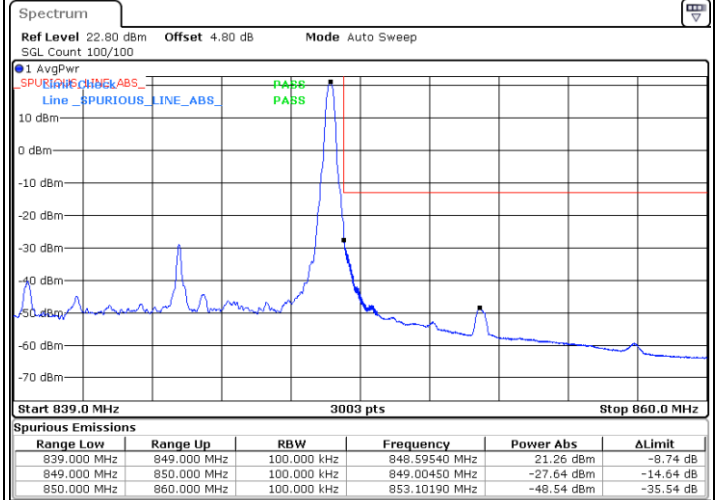
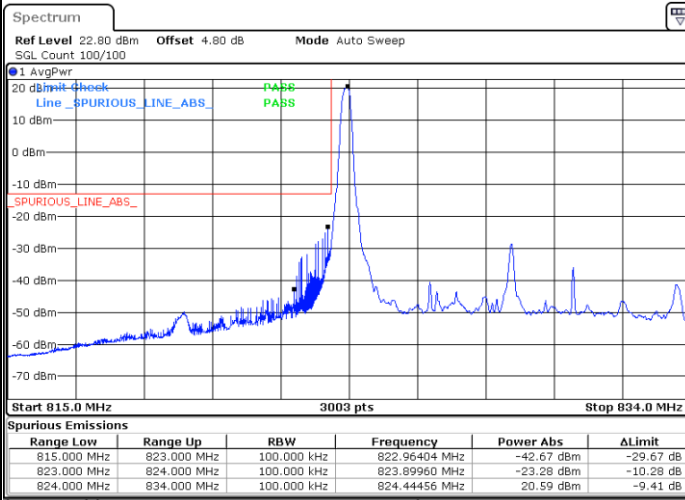




FR1 n5 / 10MHz / DFT-s-OFDM / QPSK

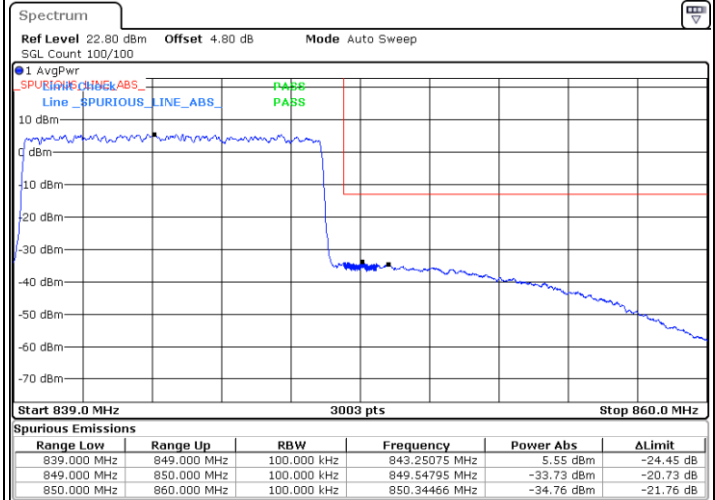
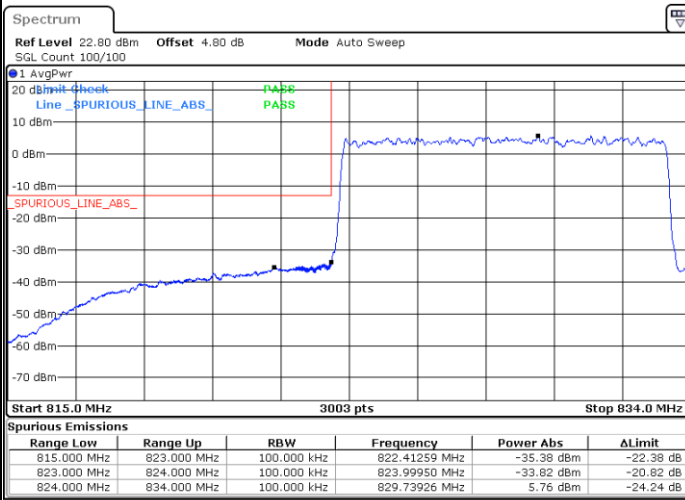
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

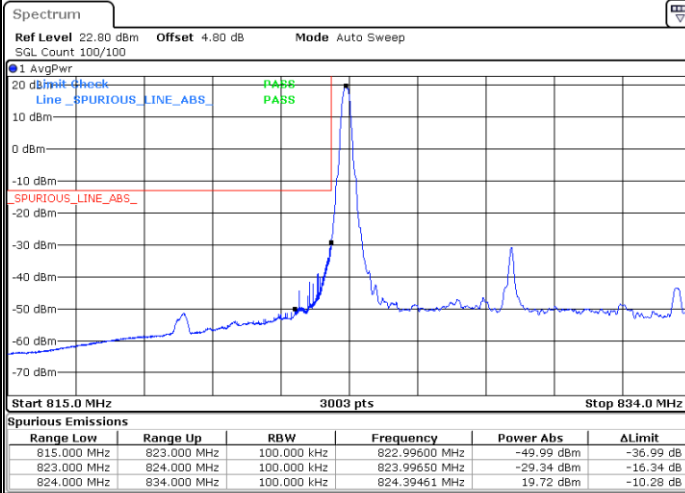




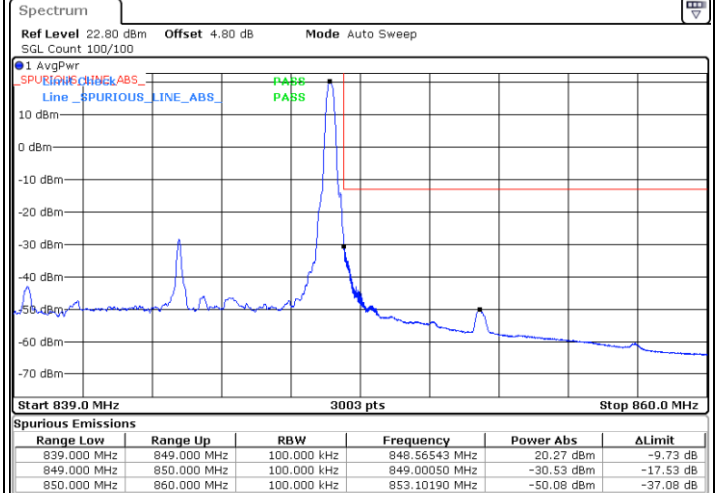
FR1 n5/ 10MHz / DFT-s-OFDM / 16QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



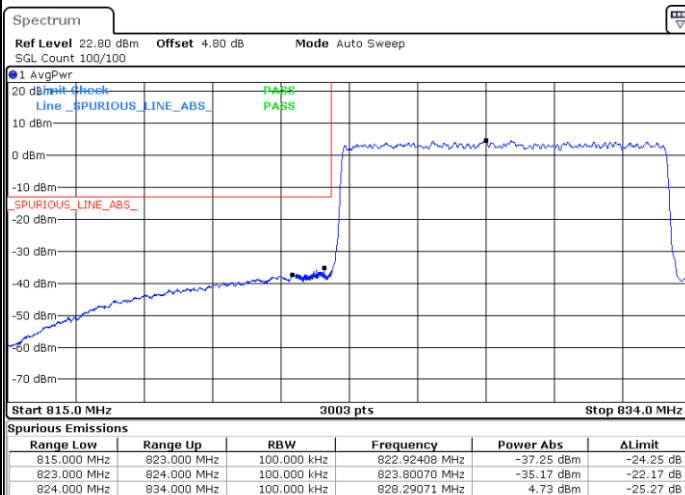
Date: 18.MAR.2022 17:25:16



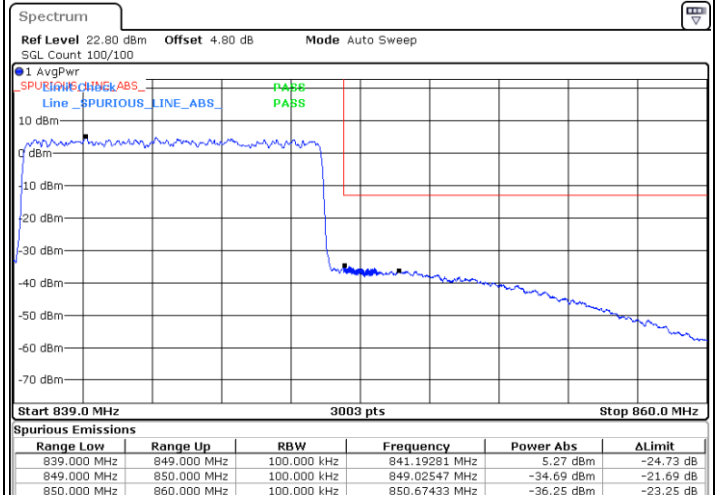
Date: 18.MAR.2022 17:32:28

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 17:19:04



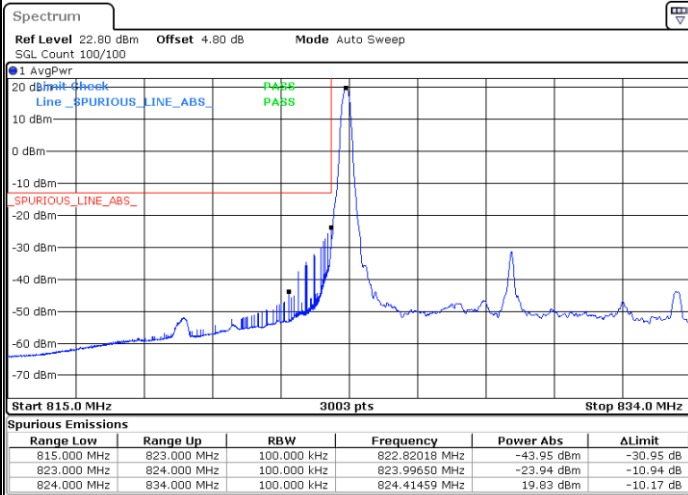
Date: 18.MAR.2022 17:37:13



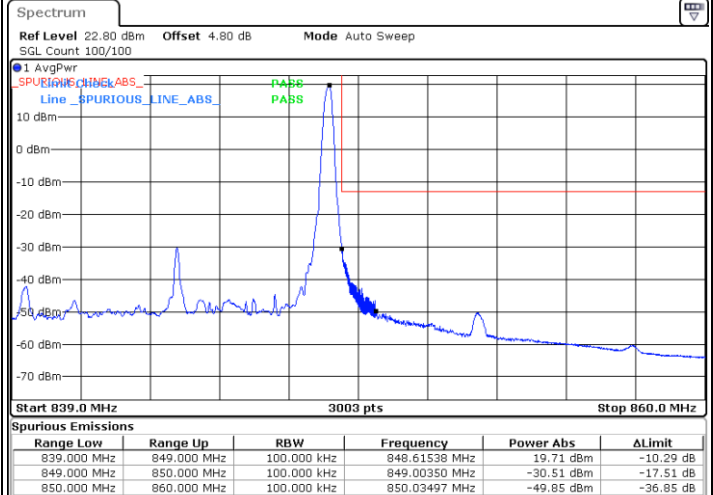
FR1 n5 / 10MHz / DFT-s-OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



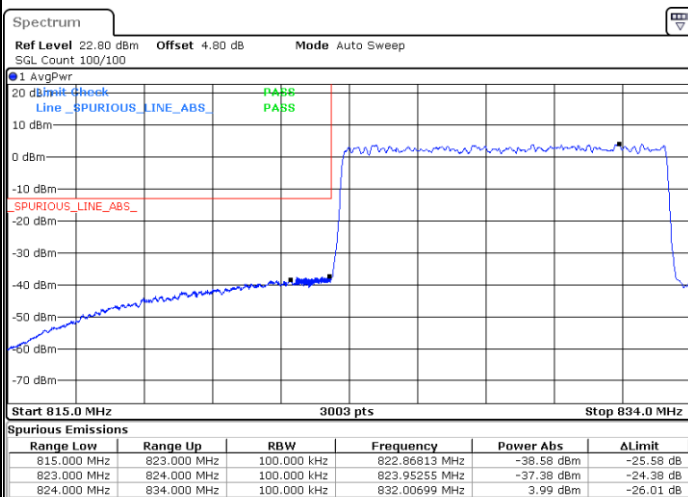
Date: 18.MAR.2022 17:24:37



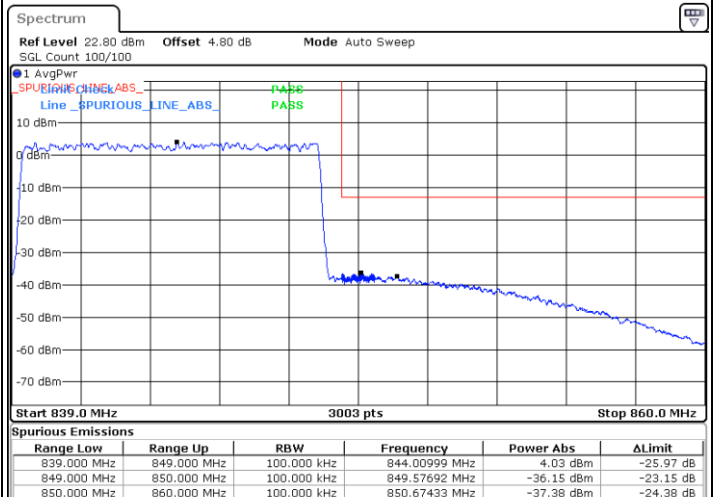
Date: 18.MAR.2022 17:33:21

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 17:19:59



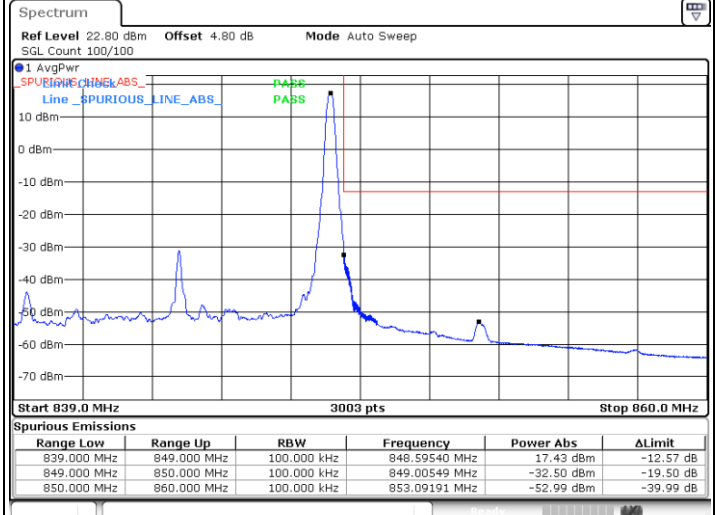
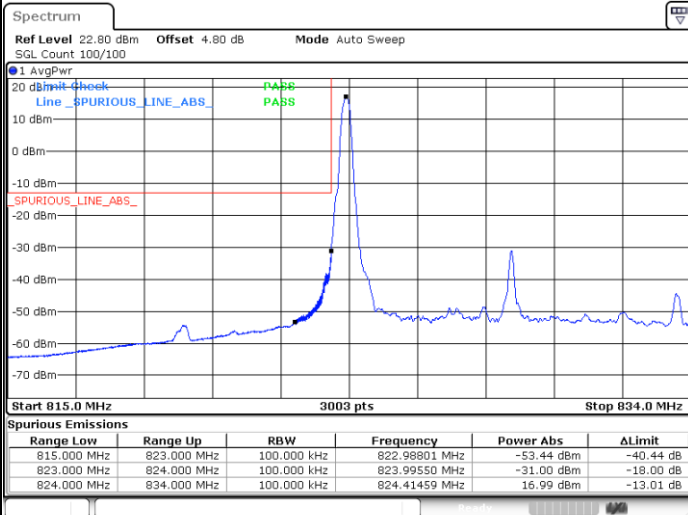
Date: 18.MAR.2022 17:36:06



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

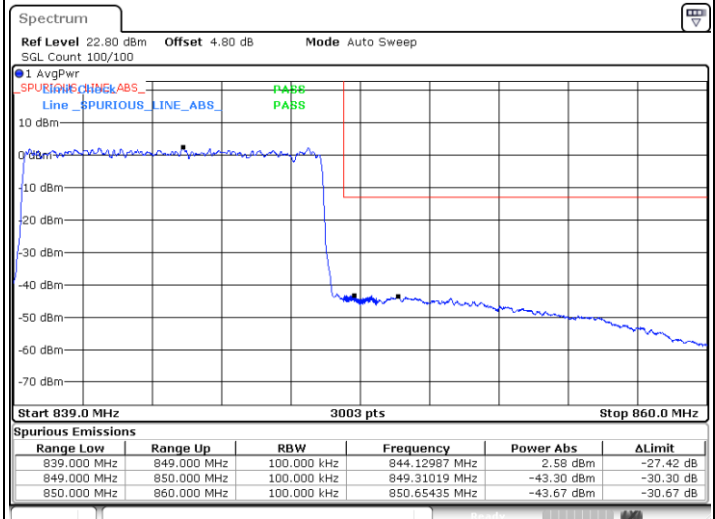
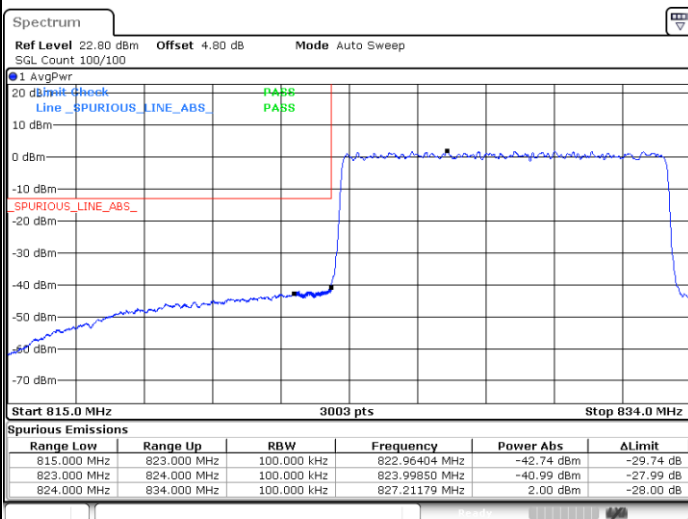
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

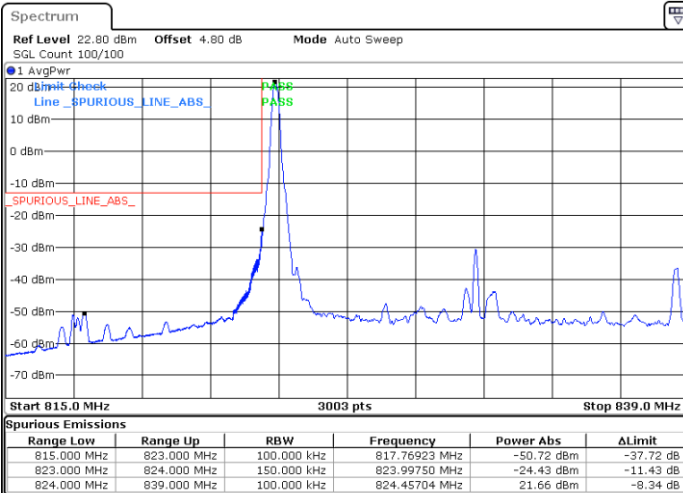




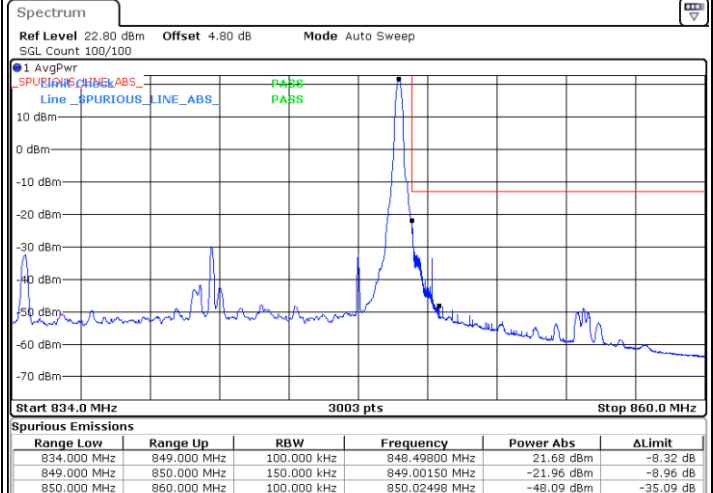
FR1 n5 / 15MHz / DFT-s-OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



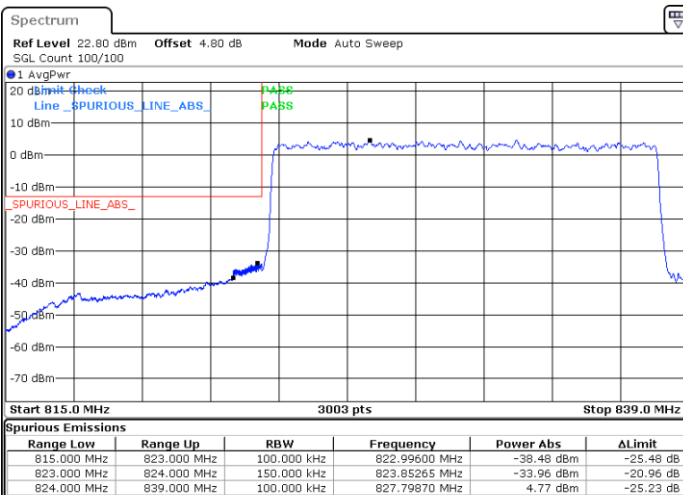
Date: 18.MAR.2022 16:23:49



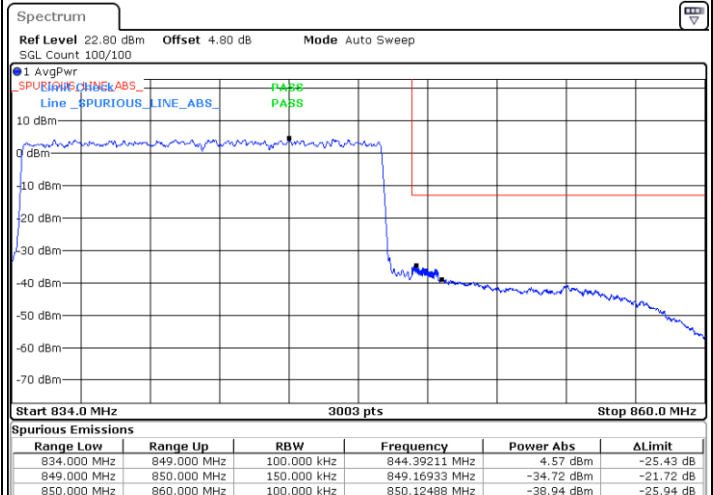
Date: 18.MAR.2022 16:41:12

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 16:24:57



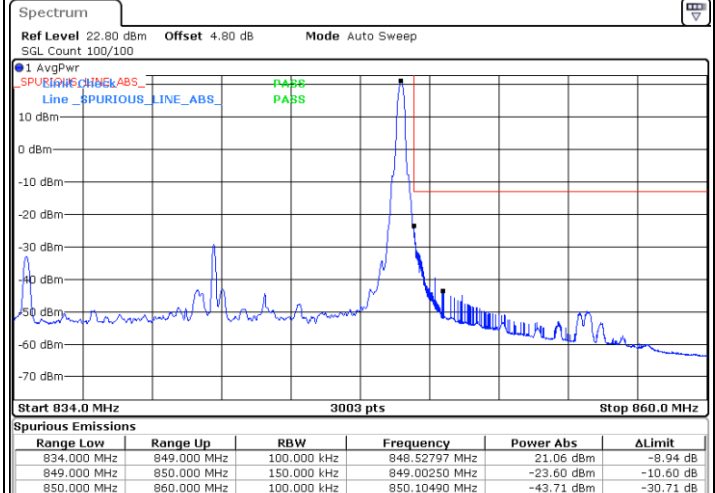
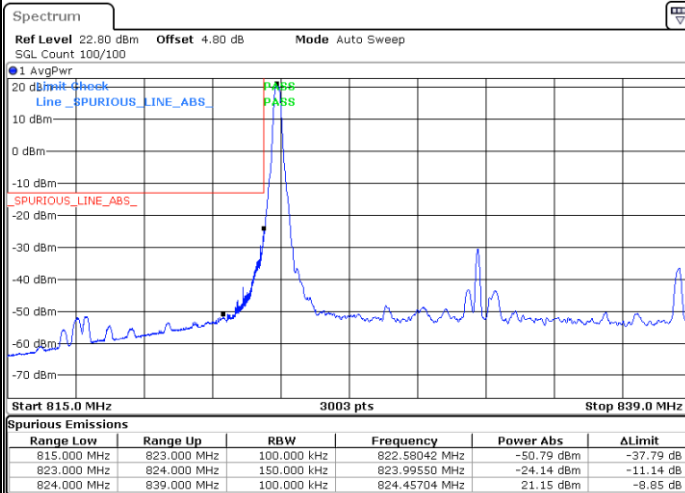
Date: 18.MAR.2022 16:39:58



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

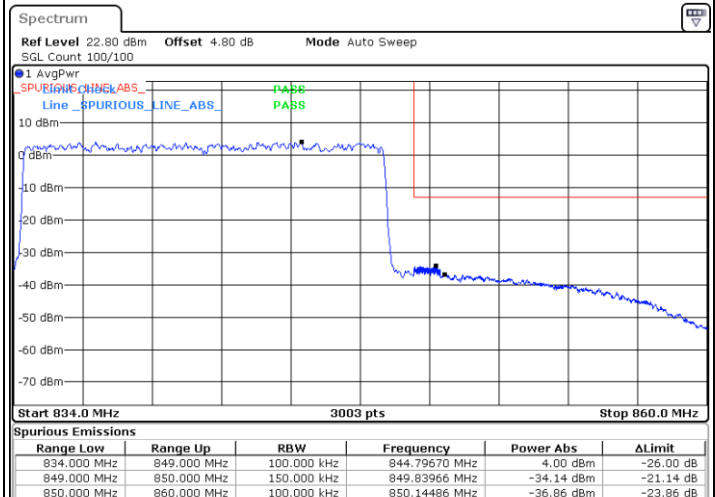
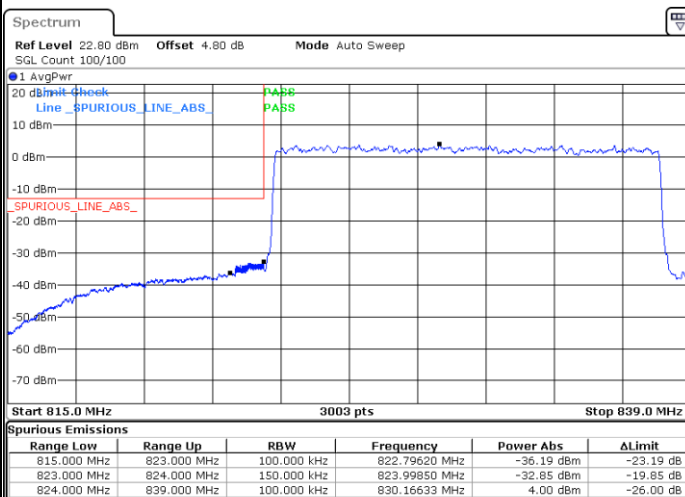
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

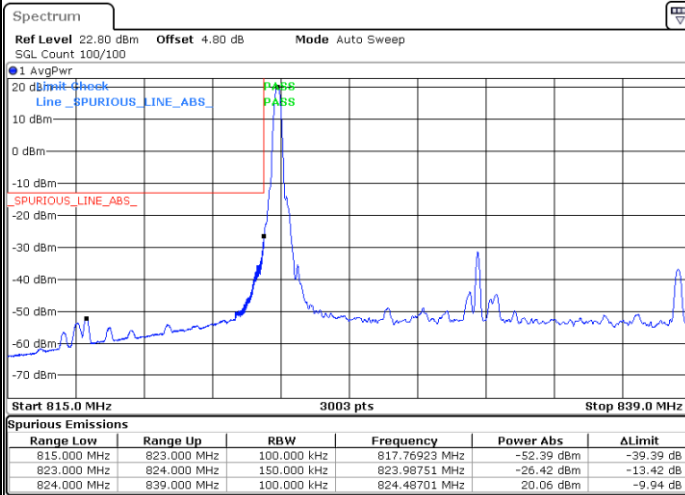




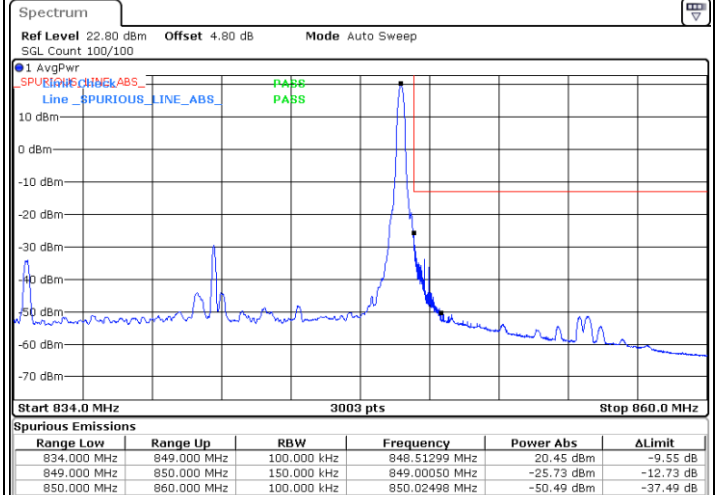
FR1 n5 / 15MHz / DFT-s-OFDM / 16QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



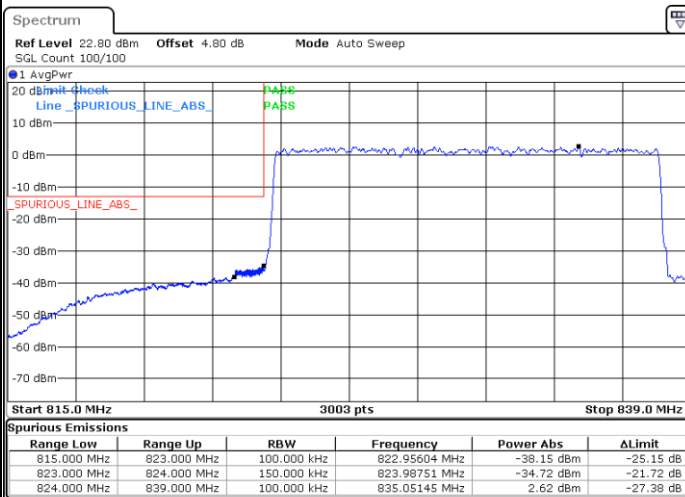
Date: 18.MAR.2022 16:19:15



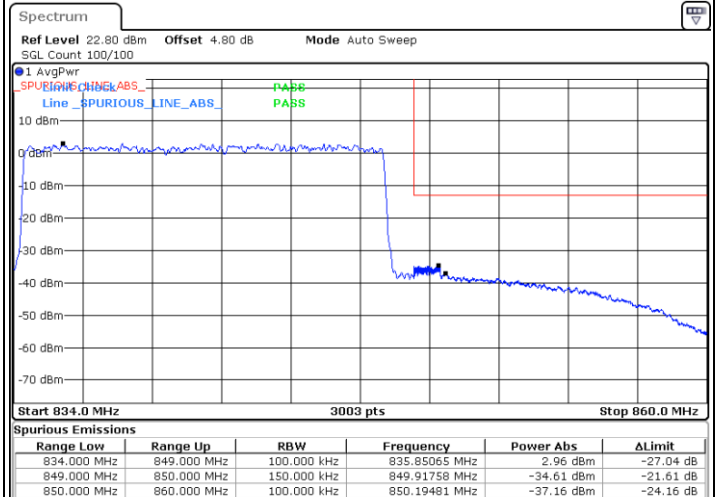
Date: 18.MAR.2022 16:33:42

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 16:13:33



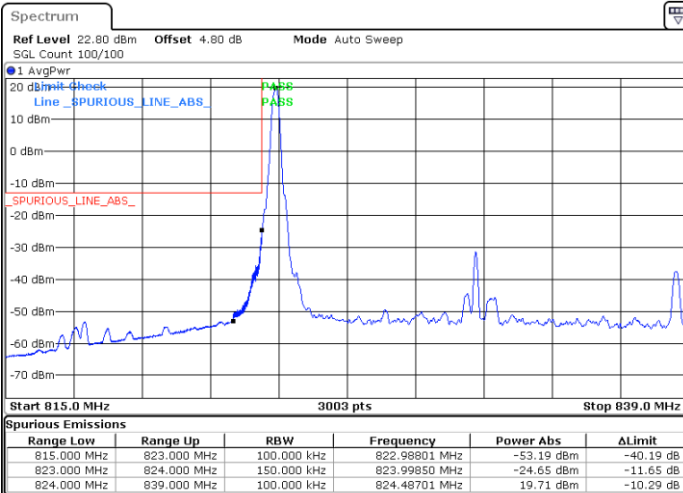
Date: 18.MAR.2022 16:38:15



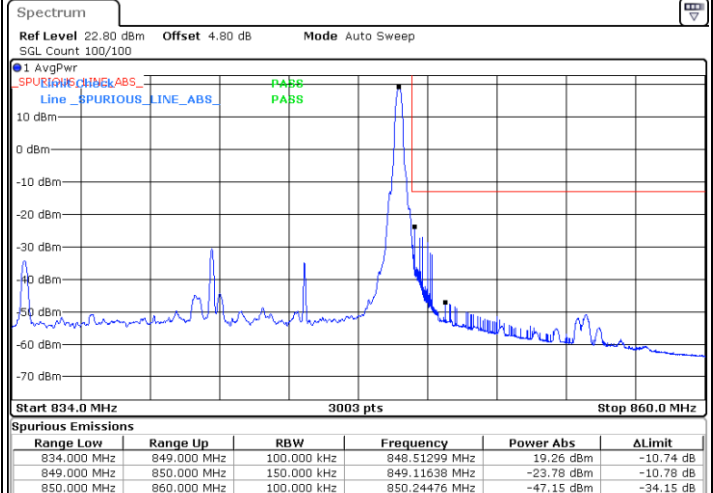
FR1 n5 / 15MHz / DFT-s-OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



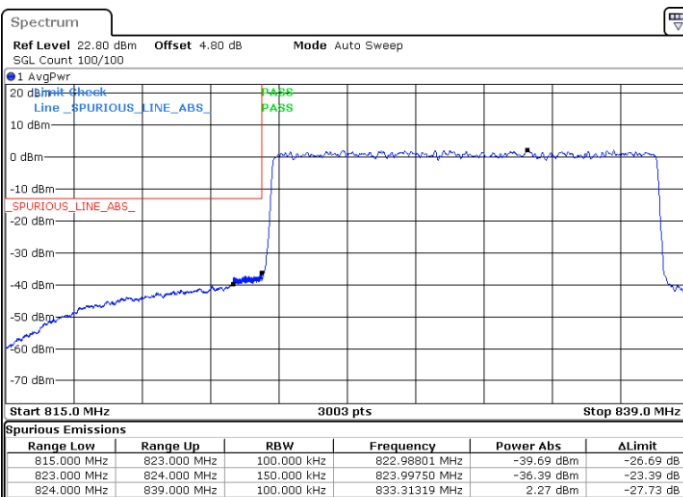
Date: 18.MAR.2022 16:18:13



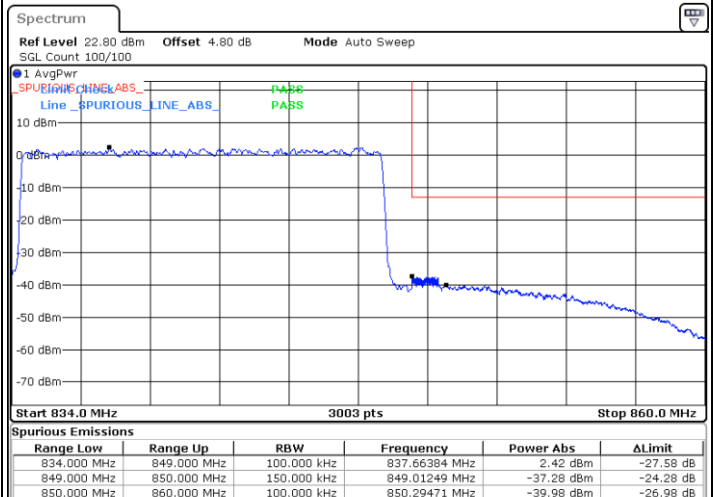
Date: 18.MAR.2022 16:34:44

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 16:14:45



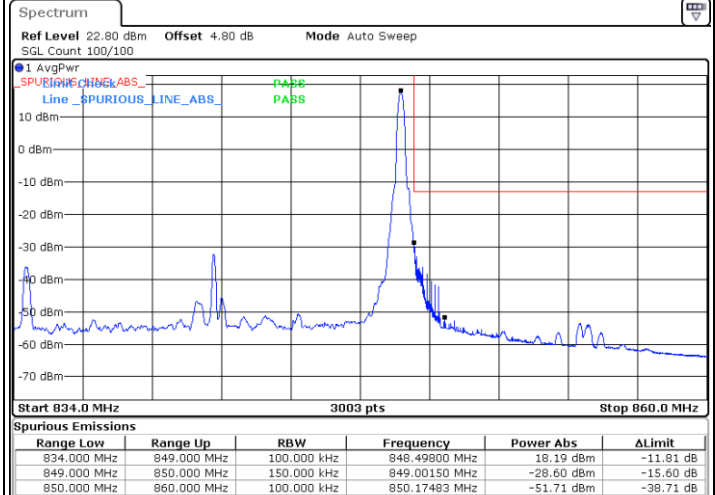
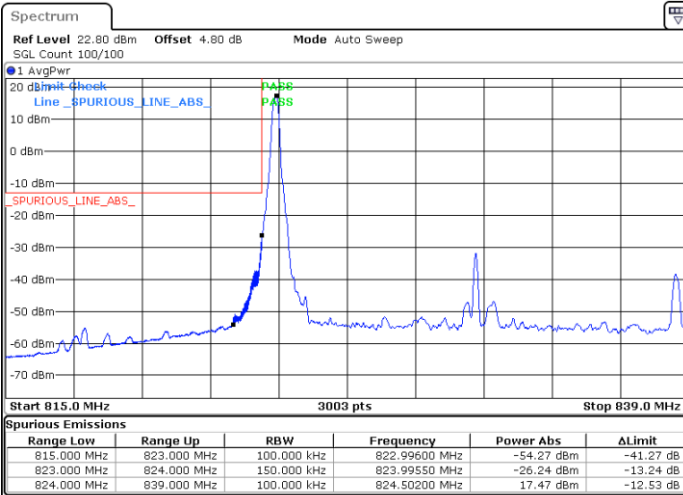
Date: 18.MAR.2022 16:37:19



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

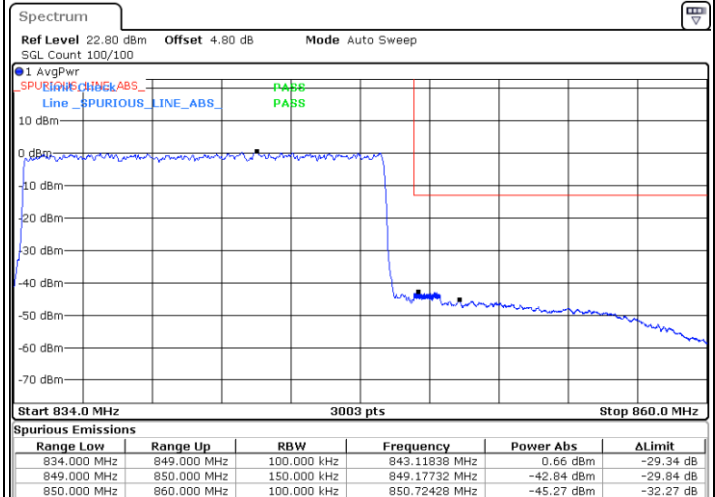
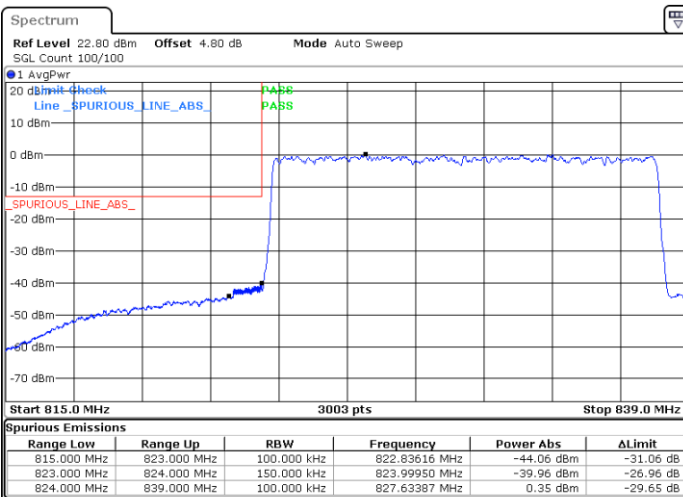
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

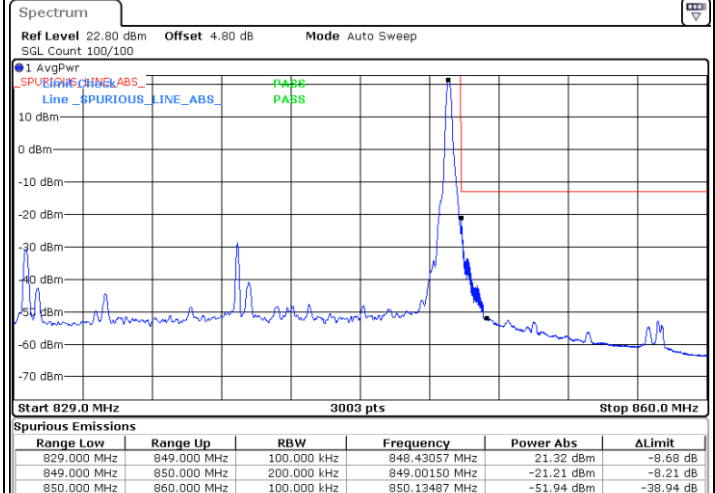
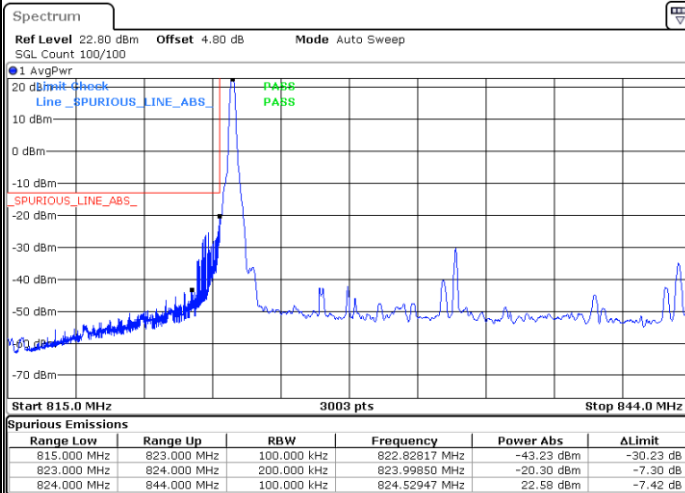




FR1 n5 / 20MHz / DFT-s-OFDM / PI/2 BPSK

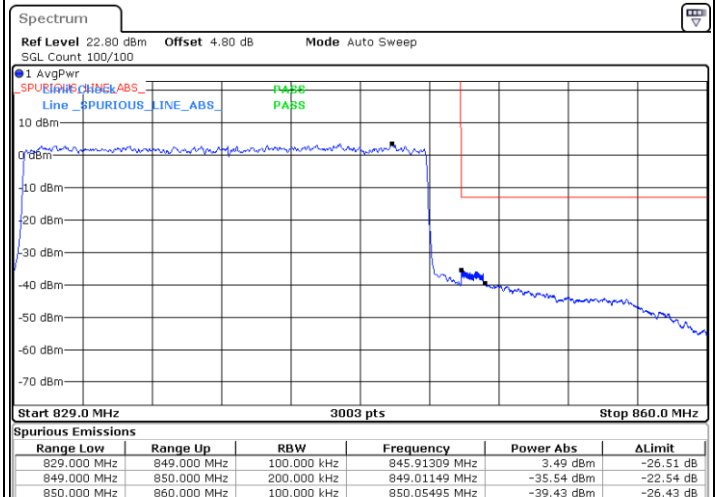
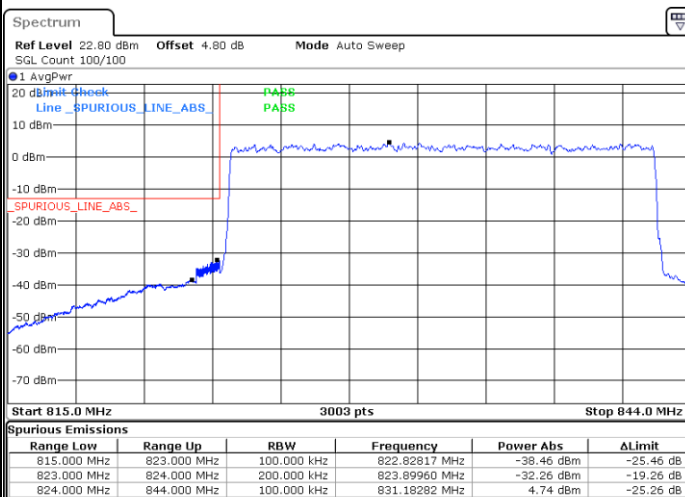
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

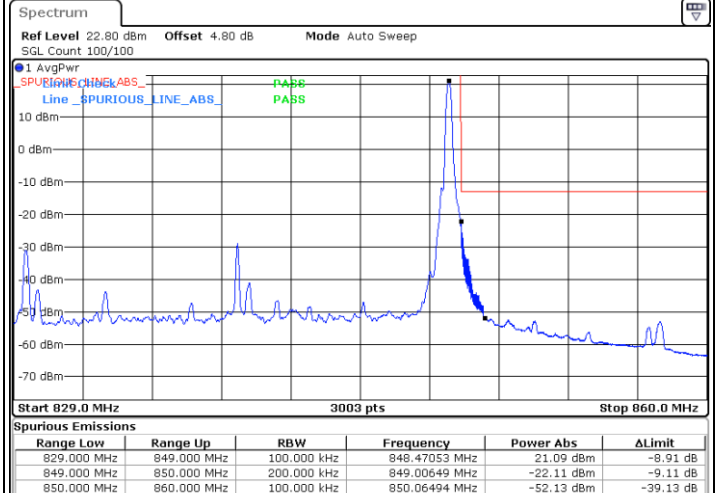
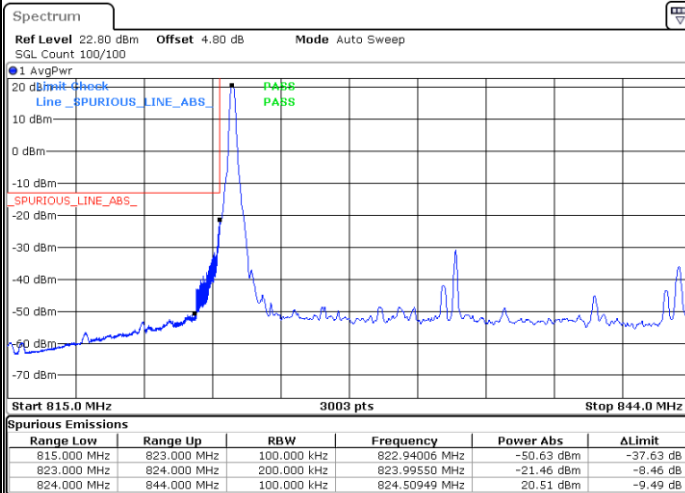




FR1 n5/ 20MHz / DFT-s-OFDM / QPSK

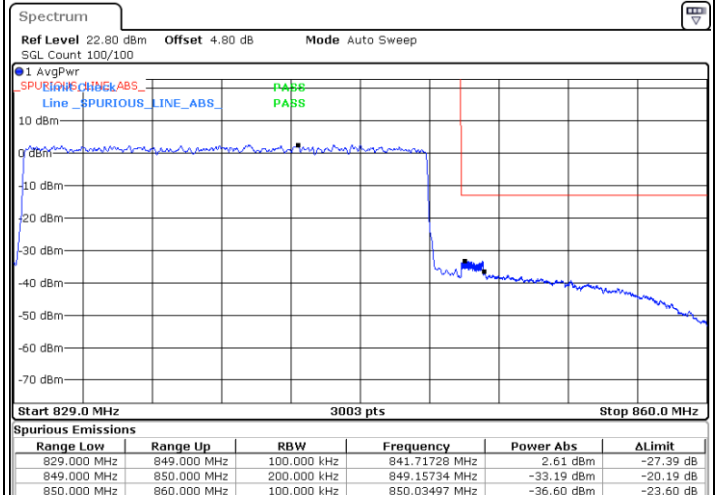
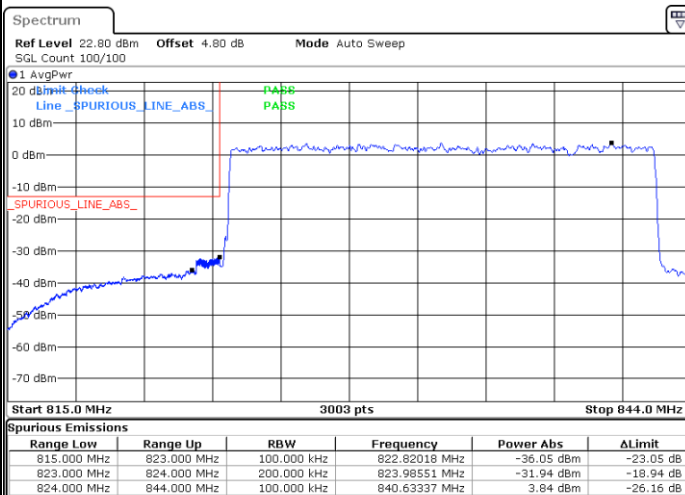
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

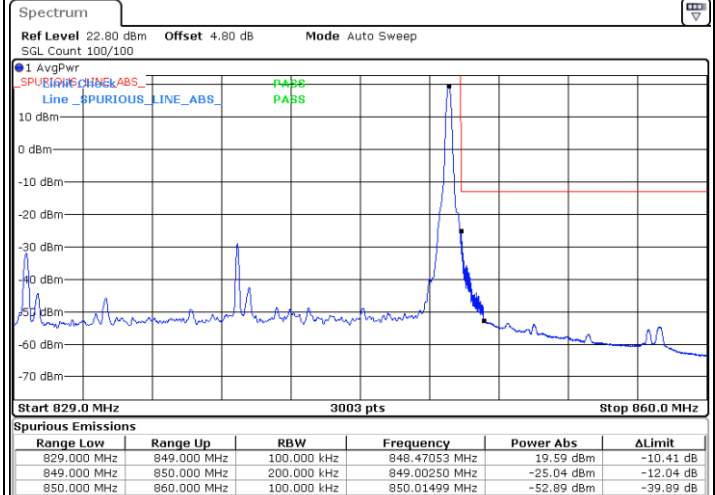
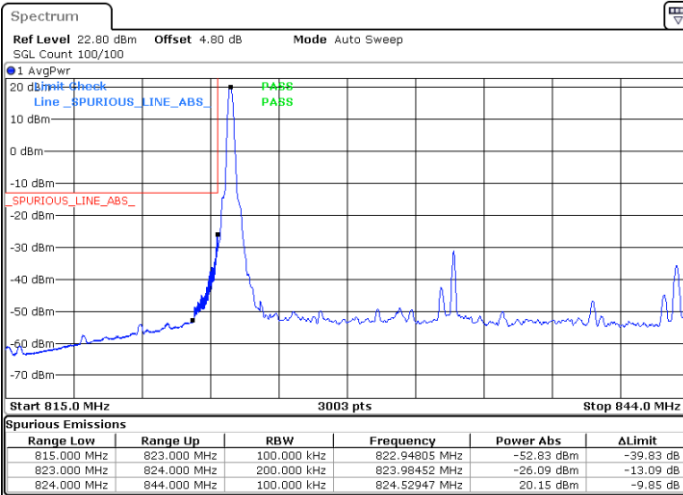




FR1 n5 / 20MHz / DFT-s-OFDM / 16QAM

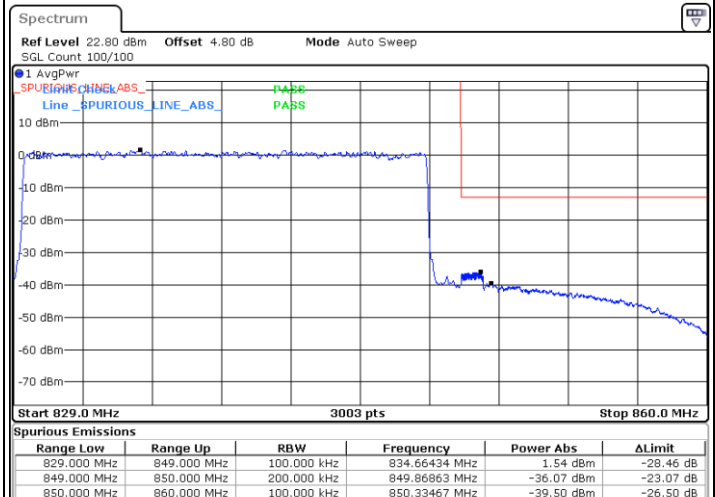
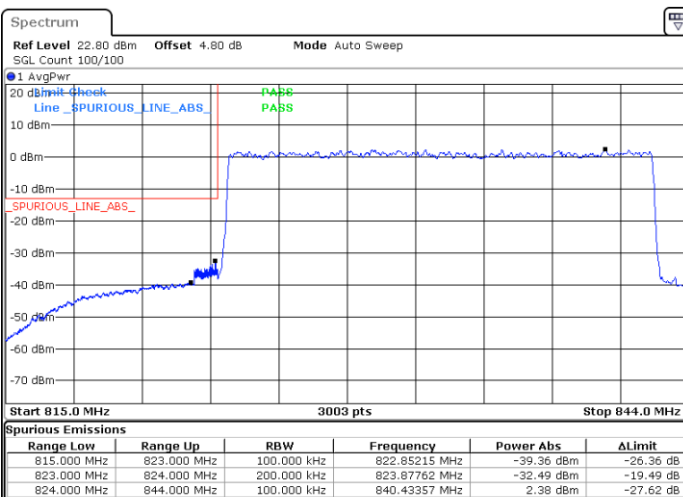
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

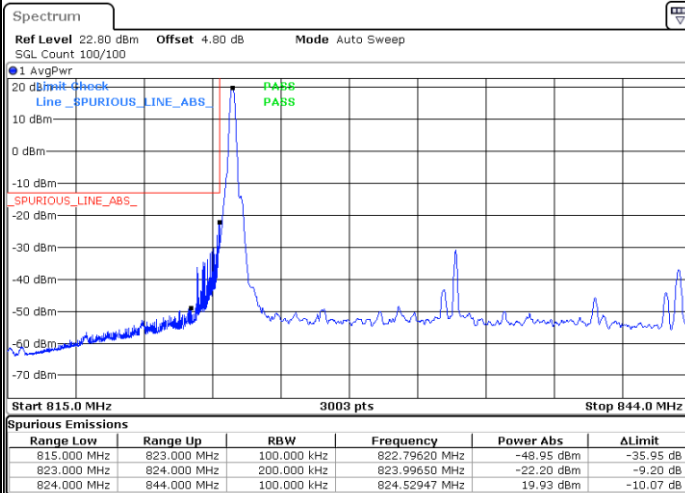




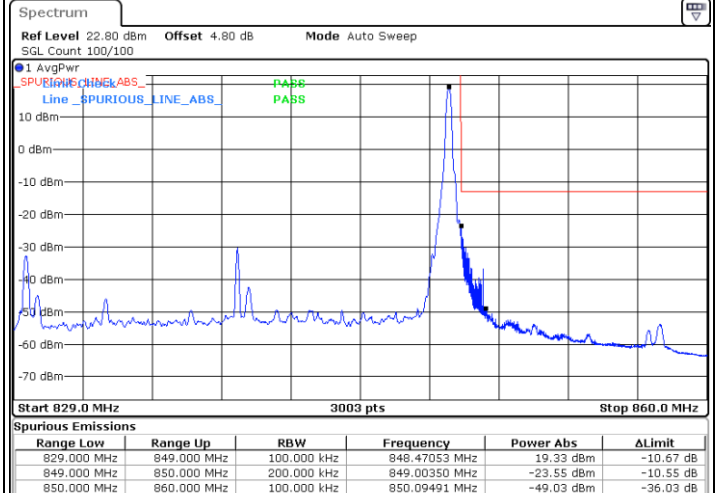
FR1 n5 / 20MHz / DFT-s-OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBMAX



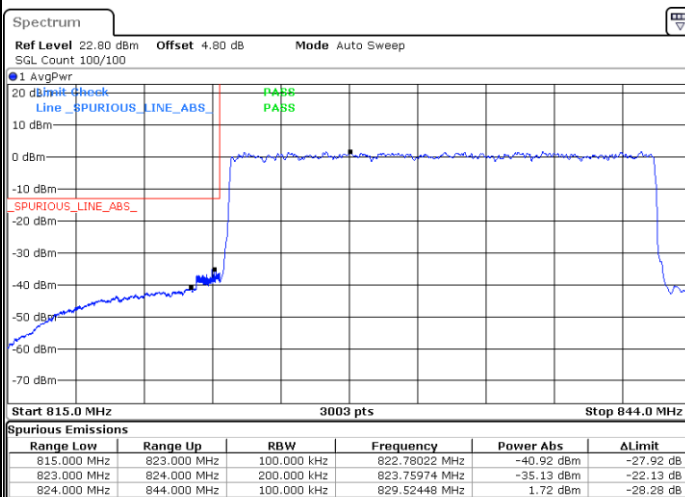
Date: 18.MAR.2022 15:38:57



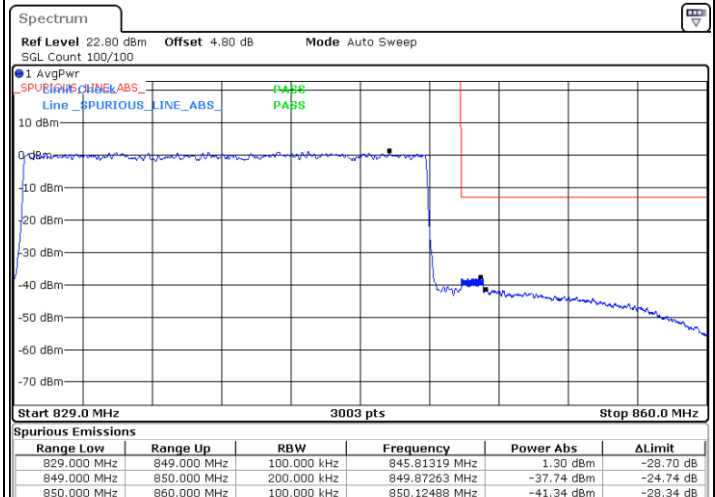
Date: 18.MAR.2022 16:01:54

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 18.MAR.2022 15:34:56



Date: 18.MAR.2022 16:02:40