FCC RF Test Report

FCC ID	:	**UZ7ET45BB**
Equipment	:	**Tablet**
Brand Name	:	**Zebra**
Model Name	:	**ET45BB**
Applicant	:	**Zebra Technologies Corporation** **1 Zebra Plaza, Holtsville, NY 11742**
Manufacturer	:	**Zebra Technologies Corporation** **1 Zebra Plaza, Holtsville, NY 11742**
Standard	:	**47 CFR Part 2, 27**
Classification	:	**PCS Licensed Transmitter (PCB)**
Test Date(s)	:	**May 25, 2022 ~ Jun. 24, 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.

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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

ACCREDITED Cert #5145.02

Sporton International Inc. (Kunshan)
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People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG230405H	Rev. 01	Initial issue of report	Aug. 03, 2022

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(h)(2)	Equivalent Isotropic Radiated Power (5G NR n7, n38, n41)	EIRP < 2Watt		
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (5G NR n66)	EIRP < 1Watt		
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 §27.53(h)	Conducted Band Edge Measurement (5G NR n66)	< 43+10log10(P[Watts])	PASS	-
	§27.53(m)(4)	Conducted Band Edge Measurement (5G NR n7, n38, n41)	§27.53(m)(4)		
3.8	§2.1051 §27.53(h)	Conducted Spurious Emission (5G NR n66)	< 43+10log10(P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (5G NR n7, n38, n41)	< 55+10log$_{10}$(P[Watts])		
3.9	§27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(h)	Radiated Spurious Emission (5G NR n66)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 14.05 dB at 7570.000 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (5G NR n7, n38, n41)	< 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 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet
Brand Name	Zebra
Model Name	ET45BB
FCC ID	UZ7ET45BB
HW Version	EV2-2
SW Version	ET45USERDEBUG 11 11-10-12.00-RG-U00-PRD-GSE MXJ release-keys
MFD	07MAY22
EUT Stage	Identical Prototype

Specification of Accessory				
Battery	**Brand Name**	Zebra	**Model Number**	BT-000456

Supported Unit Used in Test Configuration and System				
AC Adapter	**Brand Name**	Zebra	**Part Number**	PWR-WUA5V12W0US
Earphone 1	**Brand Name**	Zebra	**Part Number**	HDST-35MM-PTVP-01
Earphone 2	**Brand Name**	Zebra	**Part Number**	HDST-USBC-PTT1-01
USB Cable (Type C to Type A)	**Brand Name**	Zebra	**Part Number**	CBL-TC5X-USBC2A-01
Type C-Audio Cable (Type C to 3.5mm)	**Brand Name**	Zebra	**Part Number**	ADP-USBC-35MM1-01

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	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 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
Bandwidth	**SA:** n7: 5MHz / 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 40MHz / 50MHz n38 : 20MHz / 30MHz / 40MHz n41 : 20MHz / 30MHz / 40MHz / 50MHz / 60MHz / 70MHz / 80MHz / 90MHz / 100MHz n66: 5MHz / 10MHz / 15MHz / 20MHz **NSA:** n7: 5MHz / 10MHz / 15MHz / 20MHz n38 : 20MHz / 30MHz / 40MHz n41 : 20MHz / 30MHz / 40MHz / 50MHz / 60MHz / 70MHz / 80MHz / 90MHz / 100MHz n66: 5MHz / 10MHz / 15MHz / 20MHz / 30MHz
SCS	n7, n66: 15kHz n38, n41: 30kHz
Maximum Output Power to Antenna	**<Ant. 0>:** 5G NR n7 : 24.17 dBm 5G NR n38 : 22.75 dBm 5G NR 12A-n66 : 24.27 dBm **<Ant. 2>:** 5G NR n41 : 25.46 dBm
Antenna Gain	**<Ant. 0>:** 5G NR n7: 2.30 dBi 5G NR n38: 1.10 dBi 5G NR n66: 0.60 dBi **<Ant. 1>:** 5G NR n41: 2.00 dBi **<Ant. 2>:** 5G NR n7: 0.60 dBi 5G NR n66: -0.30 dBi 5G NR n41: 0.60 dBi **<Ant. 4>:** 5G NR n41: 0.90 dBi **<Ant. 5>:** 5G NR n41: -2.50 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum EIRP/ERP is calculated from max output power and max antenna gain, only the maximum EIRP/ERP of Antenna 0 for n7/n38/n66, and EIRP of Antenna 2 for n41 is shown in the report.
2. 5G NR n7/n66/n38/n41 support SA mode and NSA mode. According to the maximum power

between SA and NSA mode, SA covers NSA mode for n7/n66/n38/n41.

3. The EN-DC mode combination could be referred to the product spec.
4. The device supports HPUE mode for 5G NR n41.
5. The device supports n41(1T4R) SRS resources on ant.1/2/4/5, only the test data of worst ant.2 is showed in the report according to the maximum power.
6. The device supports two PAs for 5G NR n7/n38/n66 (main PA for SA mode and other PA for NSA mode), the maximum power of main PA is higher than the other PA for n7/n38 and other PA is higher than the main PA for 12A-n66A, therefore, we chose higher power PA to calculate the EIRP and show in the report.

1.3 Modification of EUT

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

1.4 Maximum ERP/EIRP and Emission Designator

5G NR n7 SA		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)
5	2502.5 ~ 2567.5	0.4102	4M50G7D	0.3311	4M51W7D
10	2505.0 ~ 2565.0	0.4093	9M39G7D	0.3266	9M43W7D
15	2507.5 ~ 2562.5	04055	14M2G7D	0.3296	14M2W7D
20	2510.0 ~ 2560.0	0.3926	19M5G7D	0.3192	19M5W7D
25	2512.5 ~ 2557.5	0.4140	23M7G7D	0.3342	23M7W7D
30	2515.0 ~ 2555.0	0.4121	28M5G7D	0.3365	28M5W7D
40	2520.0 ~ 2550.0	0.4406	38M6G7D	0.3532	38M8W7D
50	2525.0 ~ 2545.0	0.4436	48M2G7D	0.2965	48M4W7D

5G NR n38 SA		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)
20	2580.0 ~ 2610.0	0.2312	18M7G7D	0.1923	18M8W7D
30	2585.0 ~ 2605.0	0.2410	27M8G7D	0.1954	27M8W7D
40	2590.0 ~ 2600.0	0.2427	38M0G7D	0.1995	38M4W7D

5G NR n41 SA		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)
20	2506.02 ~ 2679.99	0.3656	18M6G7D	0.3184	18M8W7D
30	2511.00 ~ 2674.98	0.3999	27M8G7D	0.3443	27M9W7D
40	2516.01 ~ 2670.00	0.3999	37M9G7D	0.3334	38M0W7D
50	2521.02 ~ 2664.99	0.3981	47M7G7D	0.3350	47M8W7D
60	2526.00 ~ 2659.98	0.3828	57M7G7D	0.3342	58M0W7D
70	2531.01 ~ 2655.00	0.3890	67M5G7D	0.3289	67M7W7D
80	2536.02 ~ 2649.99	0.3855	77M0G7D	0.3177	77M5W7D
90	2541.00 ~ 2644.98	0.3945	87M0G7D	0.3221	87M8W7D
100	2546.01 ~ 2640.00	0.4036	97M5G7D	0.3281	98M5W7D

5G NR n66 SA		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)
5	1712.5 ~ 1777.5	0.3006	4M49G7D	0.2477	4M48W7D
10	1715.0 ~ 1775.0	0.2985	9M37G7D	0.2455	9M45W7D
15	1717.5 ~ 1772.5	0.2871	14M2G7D	0.2344	14M2W7D
20	1720.0 ~ 1770.0	0.3027	19M4G7D	0.2415	19M6W7D

5G NR n66 NSA (EN DC_12A-n66A)		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)
5	1712.5 ~ 1777.5	0.2786	4M49G7D	0.2371	4M51W7D
10	1715.0 ~ 1775.0	0.2655	9M39G7D	0.2427	9M39W7D
15	1717.5 ~ 1772.5	0.2754	14M1G7D	0.2382	14M2W7D
20	1720.0 ~ 1770.0	0.2742	19M3G7D	0.2377	19M5W7D
30	1725.0 ~ 1765.0	0.3069	28M6G7D	0.2588	28M6W7D

Note:

1. All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.

2. For 5G NR n66, according to the maximum power between SA and NSA mode, SA covers NSA mode. And 5G NR n66 NSA supports BW 30MHz, it is tested in the report.

1.5 Testing Location

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

1.6 Test Software

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

1.7 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 and accessory configurations. The worst-cases 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.

Test Items	5G NR	Bandwidth (MHz)											Modulation					RB #		Test Channel		
		5	10	15	20	25	30	40	50	60	70-90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Max. Output Power	n7	v	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
	n41	-	-	-	v	-	v	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
Peak-to-Average Ratio	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	n7	v	v	v	v	v	v	v	v	-	-	-		v	v	v	v		v		v	
	n38	-	-	-	v	-	v	v	-	-	-	-		v	v	v	v		v		v	
	n41	-	-	-	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	

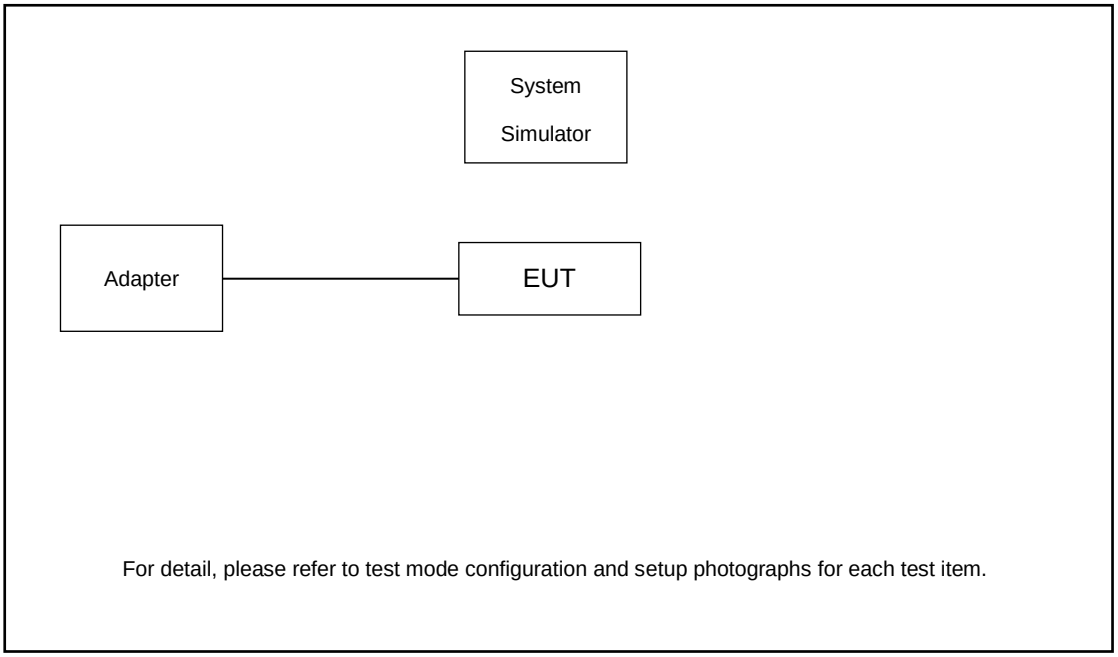
Test Items	5G NR	Bandwidth (MHz)											Modulation					RB #		Test Channel		
		5	10	15	20	25	30	40	50	60	70-90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Conducted Band Edge	n7	v	v		v				v	-	-	-	v	v				v	v	v		v
	n38	-	-	-	v	-	v	v	-				v	v				v	v	v		v
	n41	-	-	-	v	-				v		v	v	v				v	v	v		v
	n66	v	v		v	-	v	-	-	-	-	-	v	v				v	v	v		v
Conducted Spurious Emission	n7	v	v		v				v	-	-	-	v	v				v		v	v	v
	n38	-	-	-	v	-	v	v	-				v	v				v		v	v	v
	n41	-	-	-	v	-				v		v	v	v				v		v	v	v
	n66	v	v		v	-	v	-	-	-	-	-	v	v				v		v	v	v
Frequency Stability	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	n7	v	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
	n41	-	-	-	v	-	v	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
Radiated Spurious Emission	n7	Worst Case																		v	v	v
	n38	Worst Case																		v	v	v
	n41	Worst Case																		v	v	v
	n66	Worst Case																		v	v	v

Note

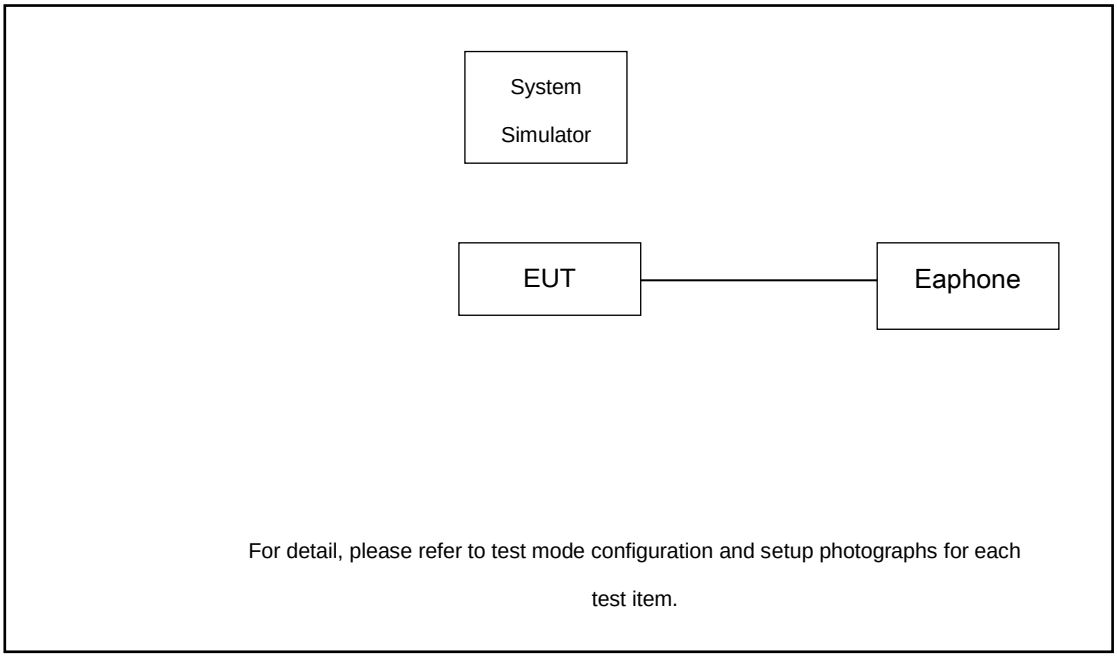
1. The mark "**v** " means that this configuration is chosen for testing
2. The mark "-" means that this bandwidth is not supported.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.
4. Based on engineering evaluation, only the worst modulation test results are shown in the report.
5. Frequency Stability : Normal Voltage = 3.87V ; Low Voltage =3.55V. ; High Voltage =4.45V

2.2 Connection Diagram of Test System

Adapter Mode:



Eaphone 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	MT8820/8821	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 6.0 dB.

Example :

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

= 6.0 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n7 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
50	Channel	529000	531000	533000
	Frequency	2525	2535	2545
40	Channel	528000	531000	534000
	Frequency	2520	2535	2550
30	Channel	527000	531000	535000
	Frequency	2515	2535	2555
25	Channel	526500	531000	535500
	Frequency	2512.5	2535	2557.5
20	Channel	526000	531000	536000
	Frequency	2510	2535	2560
15	Channel	525500	531000	536500
	Frequency	2507.5	2535	2562.5
10	Channel	525000	531000	537000
	Frequency	2505	2535	2565
5	Channel	524500	531000	537500
	Frequency	2502.5	2535	2567.5

5G NR n38 Channel and Frequency List				
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
20	Channel	516000	519000	522000
	Frequency	2580	2595	2610

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
30	Channel	425000	429000	433000
	Frequency	1725	1745	1765
20	Channel	424000	429000	434000
	Frequency	1720	1745	1770
15	Channel	423500	429000	434500
	Frequency	1717.5	1745	1772.5
10	Channel	423000	429000	435000
	Frequency	1715	1745	1775
5	Channel	422500	429000	435500
	Frequency	1712.5	1745	1777.5

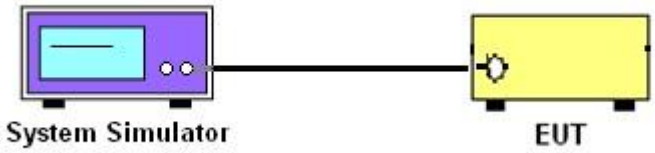
3 Conducted Test Items

3.1 Measuring Instruments

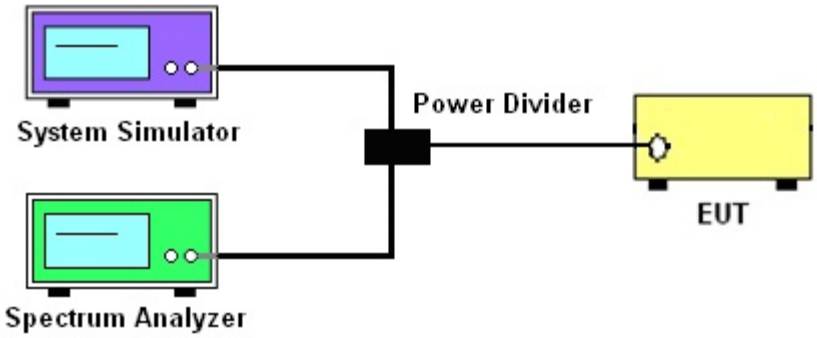
See list of measuring instruments of this test report.

3.2 Test Setup

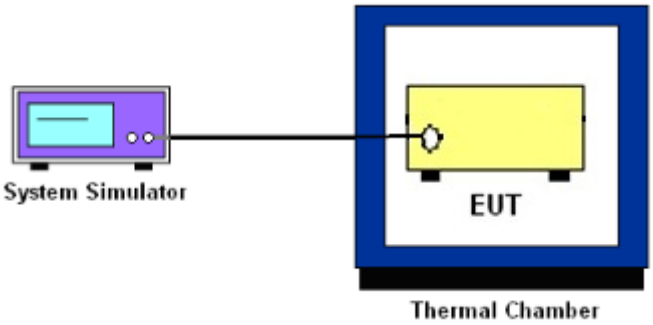
3.2.1 Conducted Output Power



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 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 5.2.6 (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 ≥ 2 × OBW in spectrum analyzer.
5. Set the RBW = 1MHz, VBW = 3MHz, Detector = power averaging, Trace mode = max hold, Set span ≥ 2 × OBW in spectrum analyzer.
6. Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission.
7. PAPR (dB) = P_{Pk} (dBm) − P_{Avg} (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

27.53 (h)

For operations in the 1710 – 1755 MHz band, the FCC limit is 43 + 10log$_{10}$(P[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 >= 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 + 10log(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^{th} 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 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.
11. For 5G NR n7/n38/n41
    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [55+ 10log(P)] (dB)
    = [30+ 10log(P)] (dBm) - [55+ 10log(P)] (dB)
    = -25dBm.

3.9 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 ±0.00025% (±2.5ppm) 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±5°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.

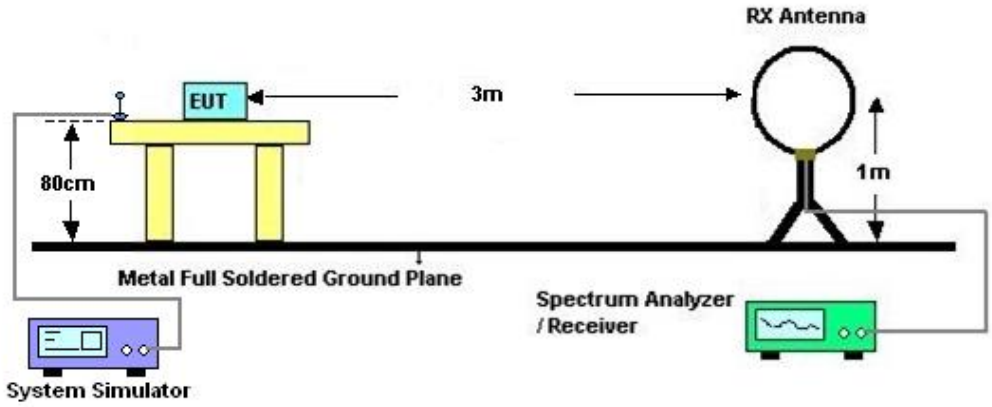
4 Radiated Test Items

4.1 Measuring Instruments

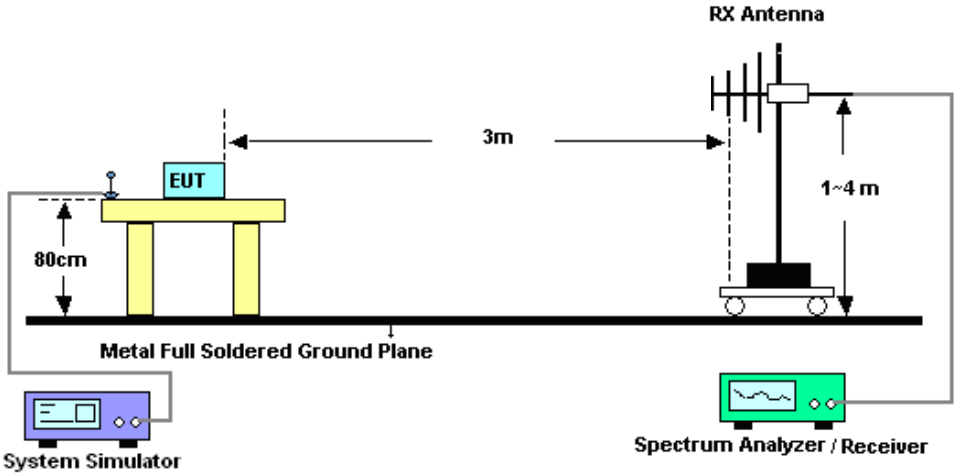
See list of measuring instruments of this test report.

4.2 Test Setup

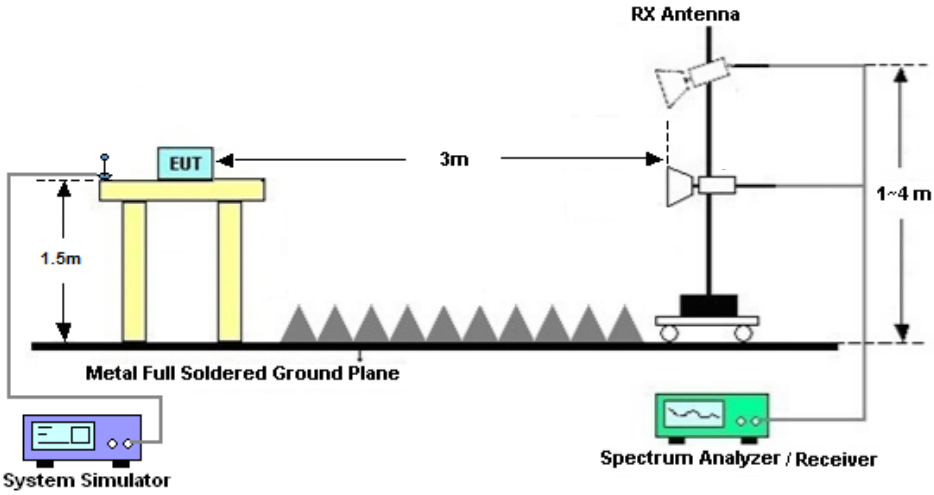
4.2.1 For radiated test below 30MHz



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 (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.
13. For 5G NR n7/n38/n41:
    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)The limit line is derived from 55 + 10log(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	May 25, 2022~ Jun. 22, 2022	Oct. 13, 2022	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	Aug. 26, 2021	May 25, 2022~ Jun. 22, 2022	Aug. 25, 2022	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 12, 2021	May 25, 2022~ Jun. 22, 2022	Jul. 11, 2022	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57541079	10Hz-44G,MAX 30dB	Oct. 14, 2021	Jun. 24, 2022	Oct. 13, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Jun. 24, 2022	Oct. 29, 2022	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 30, 2022	Jun. 24, 2022	May 29, 2023	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1284	1GHz~18GHz	Oct. 18, 2021	Jun. 24, 2022	Oct. 18, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Jun. 24, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 05, 2022	Jun. 24, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2022	Jun. 24, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2025788	1Ghz-18Ghz	Jul. 30, 2021	Jun. 24, 2022	Jul. 29, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 13, 2021	Jun. 24, 2022	Oct. 12, 2022	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jun. 24, 2022	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jun. 24, 2022	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jun. 24, 2022	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 :	Simle Wang	Temperature :	22~23℃
		Relative Humidity :	40~42%

Conducted Output Power(Average power) and ERP/EIRP

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				505000	507000	509000		L	M	H
Frequency (MHz)				2525	2535	2545				
50	PI/2 BPSK	1	1	23.03	23.22	23.65	2.30	0.3412	0.3565	0.3936
50	QPSK	1	1	23.20	23.36	23.77	2.30	0.3548	0.3681	0.4046
50	QPSK	1	108	23.66	24.17	23.90	2.30	0.3945	0.4436	0.4169
50	QPSK	1	214	23.74	23.66	23.81	2.30	0.4018	0.3945	0.4083
50	QPSK	108	0	22.25	22.61	22.75	2.30	0.2851	0.3097	0.3199
50	QPSK	108	54	23.54	23.72	23.80	2.30	0.3837	0.3999	0.4074
50	QPSK	108	108	23.72	23.77	23.67	2.30	0.3999	0.4046	0.3954
50	QPSK	216	0	22.55	22.70	22.67	2.30	0.3055	0.3162	0.3141
50	16QAM	1	1	22.42	21.50	21.93	2.30	0.2965	0.2399	0.2649
50	64QAM	1	1	20.28	20.62	21.01	2.30	0.1811	0.1959	0.2143
50	256QAM	1	1	18.56	18.62	18.95	2.30	0.1219	0.1236	0.1334
Channel				504000	507000	510000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2520	2535	2550				
40	QPSK	1	1	23.47	23.64	24.14	2.30	0.3776	0.3926	0.4406
40	16QAM	1	1	22.58	22.60	23.18	2.30	0.3076	0.3090	0.3532
Channel				503000	507000	511000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2515	2535	2555				
30	QPSK	1	1	23.25	23.72	23.85	2.30	0.3589	0.3999	0.4121
30	16QAM	1	1	22.46	22.84	22.97	2.30	0.2992	0.3266	0.3365
Channel				502500	507000	511500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2512.5	2535	2557.5				
25	QPSK	1	1	23.54	23.79	23.87	2.30	0.3837	0.4064	0.4140

25	16QAM	1	1	22.64	22.88	22.94	2.30	0.3119	0.3296	0.3342
Channel				502000	507000	512000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2510	2535	2560				
20	QPSK	1	1	23.25	23.64	23.60	2.30	0.3589	0.3926	0.3890
20	16QAM	1	1	22.28	22.74	22.66	2.30	0.2871	0.3192	0.3133
Channel				501500	507000	512500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2507.5	2535	2562.5				
15	QPSK	1	1	23.16	23.78	23.75	2.30	0.3516	0.4055	0.4027
15	16QAM	1	1	22.28	22.70	22.88	2.30	0.2871	0.3162	0.3296
Channel				501000	507000	513000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2505	2535	2565				
10	QPSK	1	1	23.13	23.82	23.56	2.30	0.3491	0.4093	0.3855
10	16QAM	1	1	22.35	22.84	22.58	2.30	0.2917	0.3266	0.3076
Channel				500500	507000	513500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2502.5	2535	2567.5				
5	QPSK	1	1	23.35	23.83	23.40	2.30	0.3673	0.4102	0.3715
5	16QAM	1	1	22.42	22.90	22.54	2.30	0.2965	0.3311	0.3048

5G NR n38										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				518004	519000	519996		L	M	H
Frequency (MHz)				2590.02	2595	2599.98				
40	PI/2 BPSK	1	1	22.75	22.52	22.70	1.1	0.2427	0.2301	0.2399
40	QPSK	1	1	22.72	22.51	22.61	1.1	0.2410	0.2296	0.2350
40	QPSK	1	53	22.53	22.32	22.47	1.1	0.2307	0.2198	0.2275
40	QPSK	1	104	22.46	22.29	22.34	1.1	0.2270	0.2183	0.2208
40	QPSK	50	0	21.66	21.45	21.63	1.1	0.1888	0.1799	0.1875
40	QPSK	50	28	22.65	22.41	22.54	1.1	0.2371	0.2244	0.2312
40	QPSK	50	56	21.59	21.38	21.43	1.1	0.1858	0.1770	0.1791
40	QPSK	100	0	21.62	21.37	21.59	1.1	0.1871	0.1766	0.1858
40	16QAM	1	1	21.90	21.70	21.81	1.1	0.1995	0.1905	0.1954
40	64QAM	1	1	19.63	19.55	19.56	1.1	0.1183	0.1161	0.1164
40	256QAM	1	1	17.89	18.05	18.03	1.1	0.0793	0.0822	0.0818
Channel				517002	519000	520998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2585.01	2595	2604.99				
30	QPSK	1	1	22.59	22.49	22.72	1.1	0.2339	0.2286	0.2410
30	16QAM	1	1	21.74	21.72	21.81	1.1	0.1923	0.1914	0.1954
Channel				516000	519000	522000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2580	2595	2610				
20	QPSK	1	1	22.54	22.25	22.30	1.1	0.2312	0.2163	0.2188
20	16QAM	1	1	21.74	21.39	21.54	1.1	0.1923	0.1774	0.1837

5G NR n41										
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		L	M	H
Frequency (MHz)				2546.01	2592.99	2640				
100	PI/2 BPSK	1	1	25.16	25.46	24.55	0.60	0.3767	0.4036	0.3273
100	QPSK	1	1	25.05	25.26	24.46	0.60	0.3673	0.3855	0.3206
100	QPSK	1	137	25.11	24.50	25.11	0.60	0.3724	0.3236	0.3724
100	QPSK	1	271	24.50	25.10	24.72	0.60	0.3236	0.3715	0.3404
100	QPSK	135	0	23.97	24.21	23.77	0.60	0.2864	0.3027	0.2735
100	QPSK	135	69	25.12	24.79	25.11	0.60	0.3733	0.3459	0.3724
100	QPSK	135	138	24.07	23.84	24.06	0.60	0.2931	0.2780	0.2924
100	QPSK	270	0	24.04	24.03	23.90	0.60	0.2911	0.2904	0.2818
100	16QAM	1	1	24.17	24.56	23.64	0.60	0.2999	0.3281	0.2655
100	64QAM	1	1	22.21	22.45	21.70	0.60	0.1910	0.2018	0.1698
100	256QAM	1	1	20.59	20.67	19.87	0.60	0.1315	0.1340	0.1114
Channel				508200	518598	528996	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2541	2592.99	2644.98				
90	QPSK	1	1	24.95	25.36	24.41	0.60	0.3589	0.3945	0.3170
90	16QAM	1	1	24.36	24.48	23.75	0.60	0.3133	0.3221	0.2723
Channel				507204	518598	529998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2536.02	2592.99	2649.99				
80	QPSK	1	1	24.91	25.26	24.67	0.60	0.3556	0.3855	0.3365
80	16QAM	1	1	24.12	24.42	23.89	0.60	0.2965	0.3177	0.2812
Channel				506202	518598	531000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2531.01	2592.99	2565				
70	QPSK	1	1	25.04	25.30	24.83	0.60	0.3664	0.3890	0.3491
70	16QAM	1	1	24.34	24.57	23.85	0.60	0.3119	0.3289	0.2786
Channel				505200	518598	531996	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2526	2592.99	2659.98				
60	QPSK	1	1	24.95	25.23	24.92	0.60	0.3589	0.3828	0.3565
60	16QAM	1	1	24.18	24.64	24.13	0.60	0.3006	0.3342	0.2972
Channel				504204	518598	532998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2521.02	2592.99	2664.99				

50	QPSK	1	1	25.08	25.31	25.40	0.60	0.3698	0.3899	0.3981
50	16QAM	1	1	24.33	24.37	24.65	0.60	0.3112	0.3141	0.3350
Channel				503202	518598	534000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2516.01	2592.99	2670				
40	QPSK	1	1	25.28	25.30	25.42	0.60	0.3873	0.3890	0.3999
40	16QAM	1	1	24.17	24.56	24.63	0.60	0.2999	0.3281	0.3334
Channel				502200	518598	534996	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2511	2592.99	2674.98				
30	QPSK	1	1	25.33	25.17	25.42	0.60	0.3917	0.3776	0.3999
30	16QAM	1	1	24.44	24.38	24.77	0.60	0.3192	0.3148	0.3443
Channel				501204	518598	535998	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				2506.02	2592.99	2679.99				
20	QPSK	1	1	25.03	24.89	24.98	0.60	0.3656	0.3540	0.3614
20	16QAM	1	1	24.43	24.08	24.31	0.60	0.3184	0.2938	0.3097

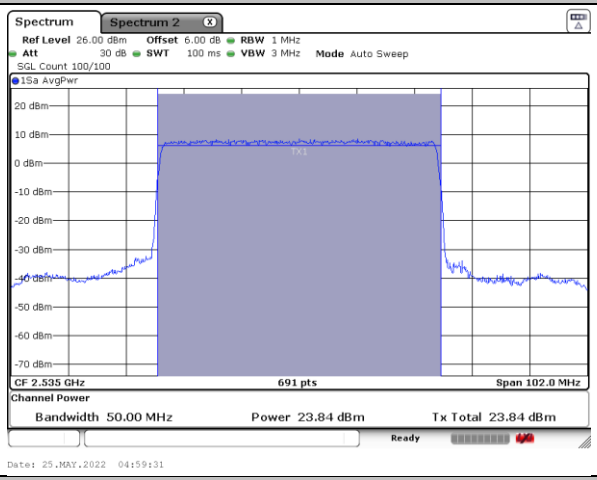
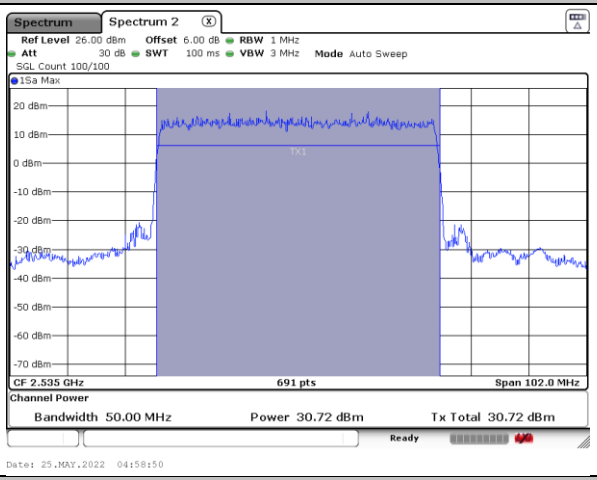
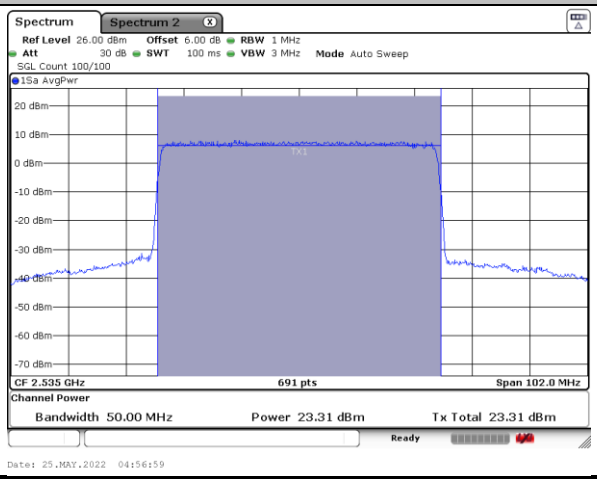
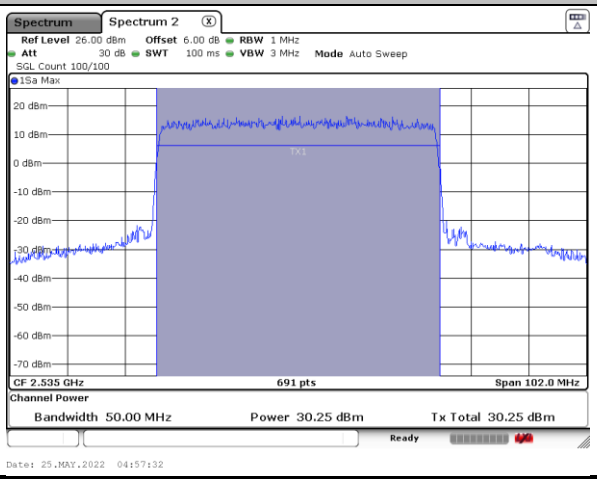
5G NR n66										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				344000	349000	354000		L	M	H
Frequency (MHz)				1720	1745	1770				
20	PI/2 BPSK	1	1	24.07	23.76	23.98	0.60	0.2931	0.2729	0.2871
20	QPSK	1	1	24.19	24.03	24.20	0.60	0.3013	0.2904	0.3020
20	QPSK	1	53	24.05	24.05	24.12	0.60	0.2917	0.2917	0.2965
20	QPSK	1	104	24.13	24.21	24.18	0.60	0.2972	0.3027	0.3006
20	QPSK	50	0	23.05	22.99	23.16	0.60	0.2317	0.2286	0.2377
20	QPSK	50	28	24.02	24.08	24.18	0.60	0.2897	0.2938	0.3006
20	QPSK	50	56	23.02	23.07	23.16	0.60	0.2301	0.2328	0.2377
20	QPSK	100	0	23.06	23.02	23.10	0.60	0.2323	0.2301	0.2344
20	16QAM	1	1	23.17	23.08	23.23	0.60	0.2382	0.2333	0.2415
20	64QAM	1	1	21.43	21.33	21.53	0.60	0.1596	0.1560	0.1633
20	256QAM	1	1	19.43	19.38	19.34	0.60	0.1007	0.0995	0.0986
Channel				343500	349000	354500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1717.5	1745	1772.5				
15	QPSK	1	1	23.83	23.90	23.98	0.60	0.2773	0.2818	0.2871
15	16QAM	1	1	22.97	22.93	23.10	0.60	0.2275	0.2254	0.2344
Channel				343000	349000	355000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1715	1745	1775				
10	QPSK	1	1	23.98	24.15	23.60	0.60	0.2871	0.2985	0.2630
10	16QAM	1	1	23.19	23.30	22.63	0.60	0.2393	0.2455	0.2104
Channel				342500	349000	355500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1712.5	1745	1777.5				
5	QPSK	1	1	24.05	24.18	23.81	0.60	0.2917	0.3006	0.2761
5	16QAM	1	1	23.25	23.34	22.98	0.60	0.2427	0.2477	0.2280

ENDC_12A-n66A										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	ERP	ERP	ERP
Channel				345000	349000	353000		L	M	H
Frequency (MHz)				1725	1745	1765				
30	BPSK	1	1	24.25	24.18	24.27	0.6	0.3055	0.3006	0.3069
30	BPSK	160	0	23.85	23.88	23.90	0.6	0.2786	0.2805	0.2818
30	BPSK	1	0	23.76	23.69	23.80	0.6	0.2729	0.2685	0.2754
30	BPSK	1	159	23.64	23.72	23.63	0.6	0.2655	0.2704	0.2649
30	QPSK	1	1	23.55	24.03	24.01	0.6	0.2600	0.2904	0.2891
30	16QAM	1	1	22.92	23.53	23.45	0.6	0.2249	0.2588	0.2541
30	64QAM	1	1	21.06	21.58	21.67	0.6	0.1466	0.1652	0.1687
30	256QAM	1	1	19.62	19.44	19.56	0.6	0.1052	0.1009	0.1038
Channel				344000	349000	354000	Gain	ERP	ERP	ERP
Frequency (MHz)				1720	1745	1770				
20	QPSK	1	1	23.69	23.78	22.69	0.6	0.2685	0.2742	0.2133
20	16QAM	1	1	23.16	23.02	22.23	0.6	0.2377	0.2301	0.1919
Channel				343500	349000	354500	Gain	ERP	ERP	ERP
Frequency (MHz)				1717.5	1745	1772.5				
15	QPSK	1	1	23.80	23.72	23.41	0.6	0.2754	0.2704	0.2518
15	16QAM	1	1	23.17	23.06	22.81	0.6	0.2382	0.2323	0.2193
Channel				343000	349000	355000	Gain	ERP	ERP	ERP
Frequency (MHz)				1715	1745	1775				
10	QPSK	1	1	23.62	23.59	23.64	0.6	0.2642	0.2624	0.2655
10	16QAM	1	1	23.25	23.18	23.05	0.6	0.2427	0.2388	0.2317
Channel				342500	349000	355500	Gain	ERP	ERP	ERP
Frequency (MHz)				1712.5	1745	1777.5				
5	QPSK	1	1	23.85	23.63	23.36	0.6	0.2786	0.2649	0.2489
5	16QAM	1	1	23.12	23.15	23.06	0.6	0.2355	0.2371	0.2323

FR1 n7

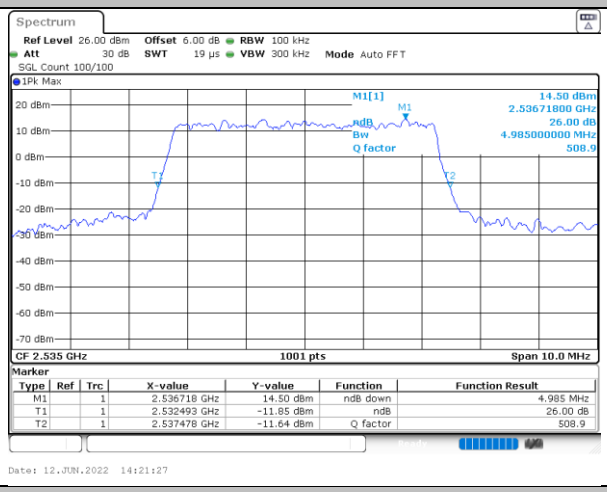
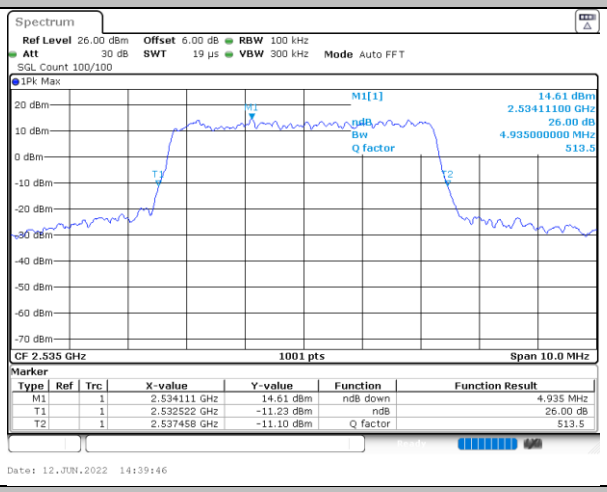
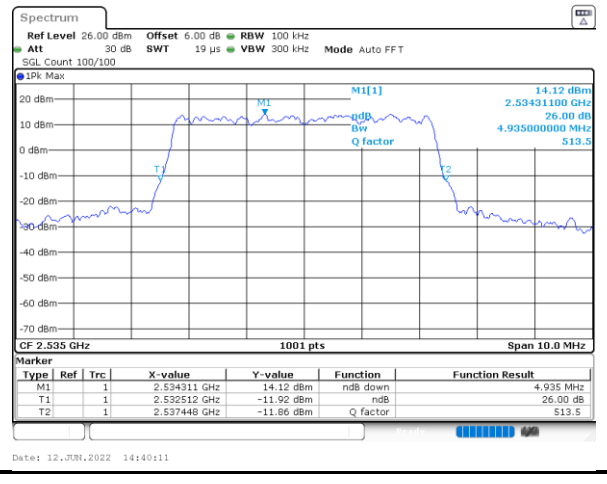
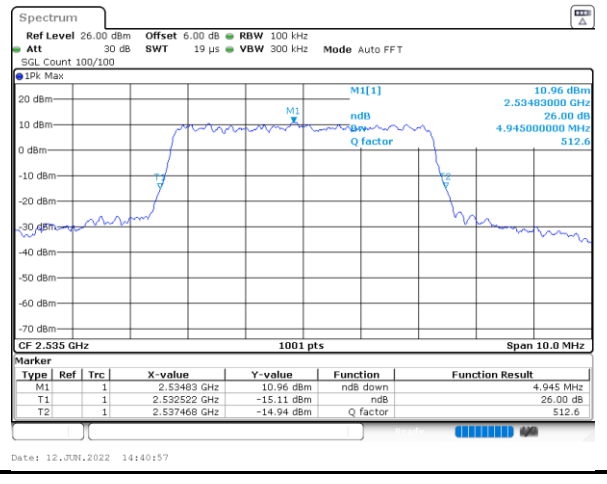
Peak-to-Average Ratio

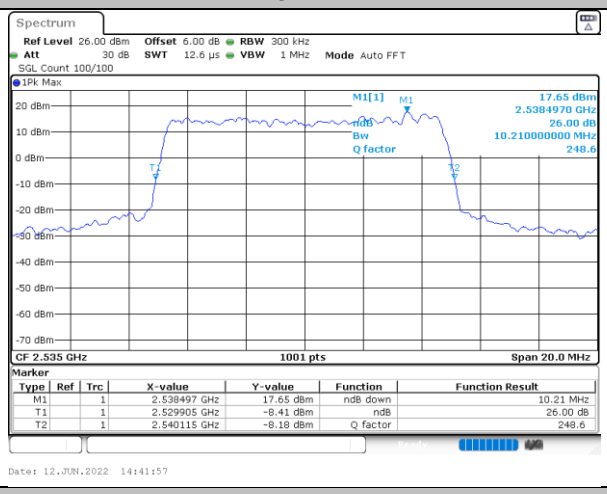
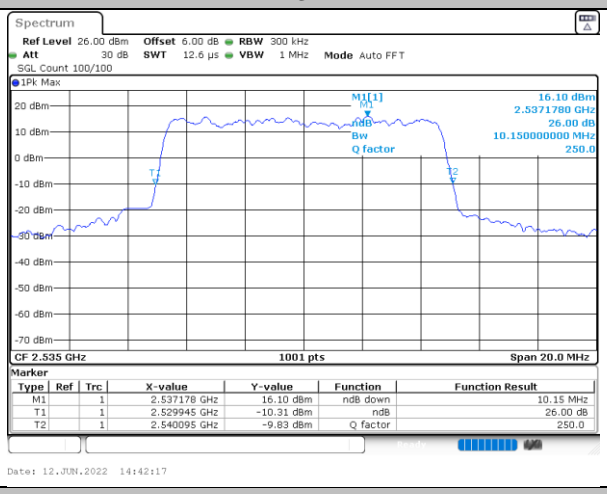
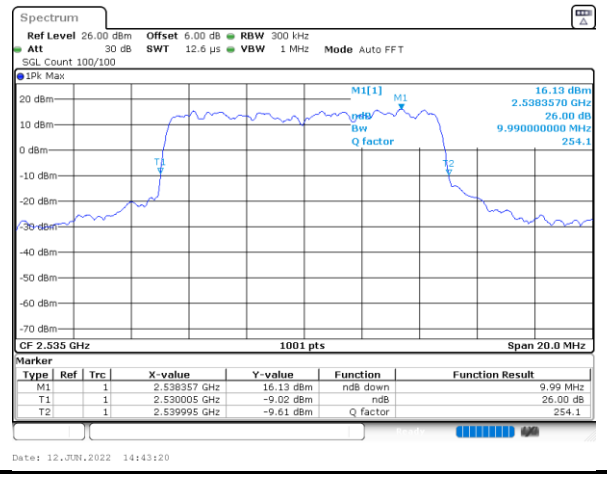
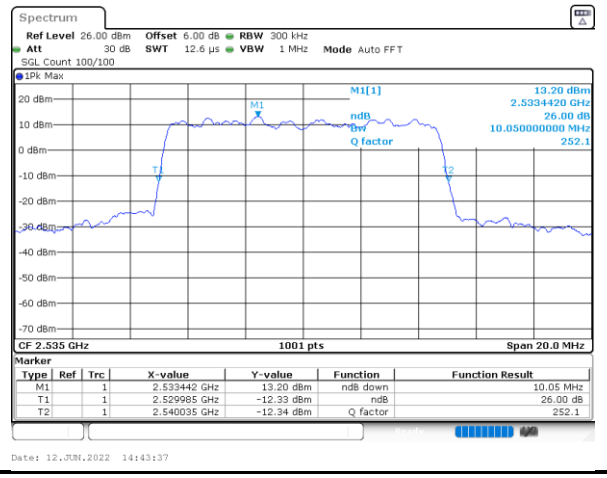
Mode	FR1 n7 / 50MHz / DFT-S OFDM				
Mod.	PI/2 BPSK	QPSK			Limit: 13dB
RB Size	Full RB	Full RB			Result
Middle CH	6.88	6.94			PASS

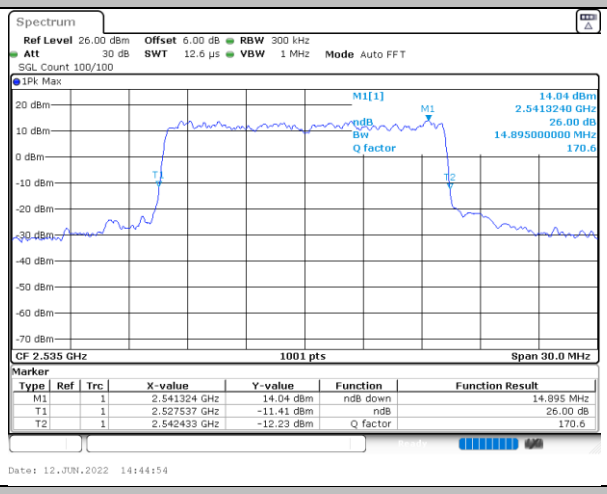
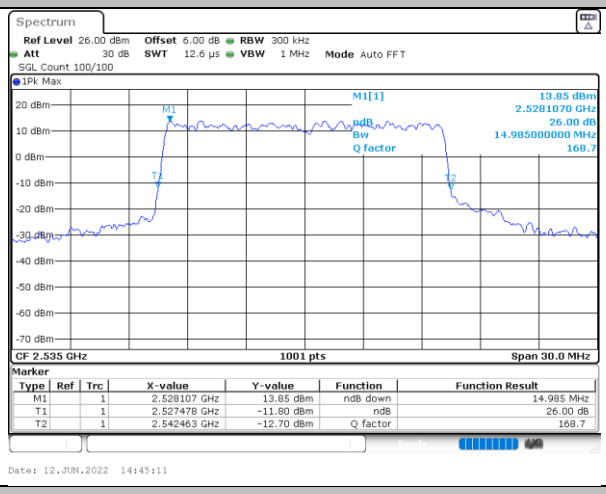
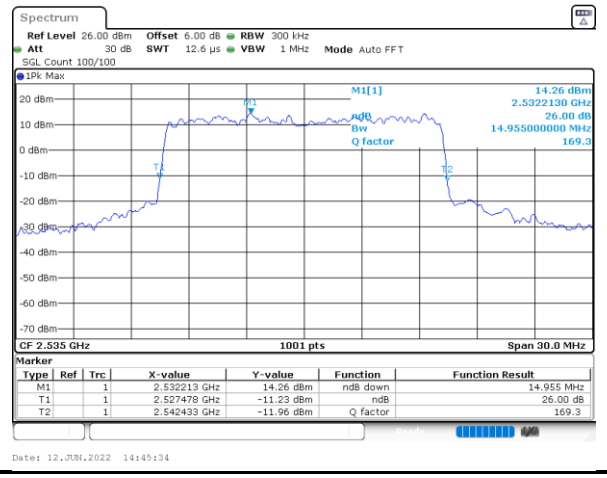
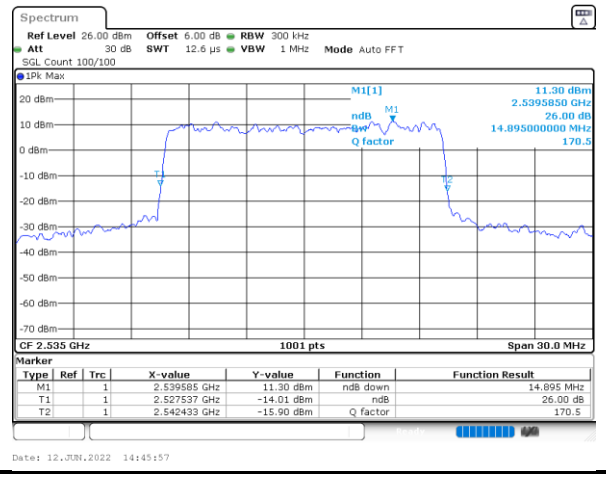
Middle Channel / Full RB	Middle Channel / Full RB
BPSK-A	BPSK-P
	
QPSK-A	QPSK-P
	

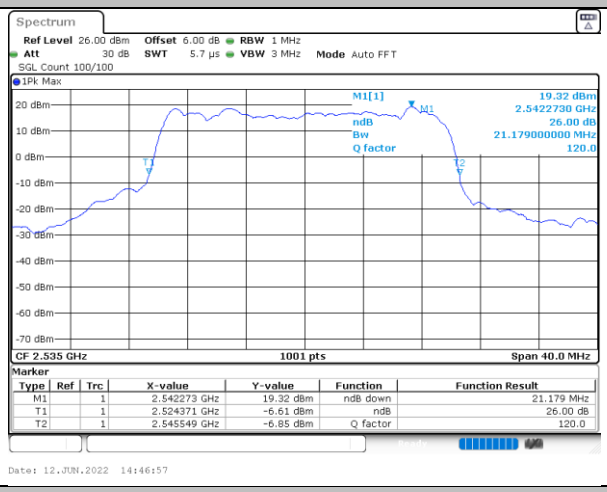
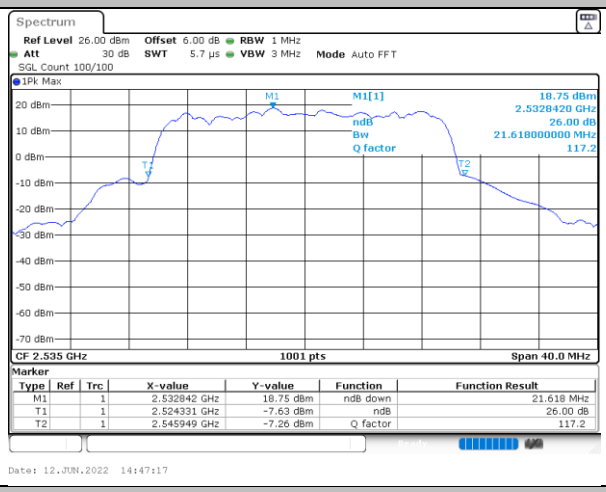
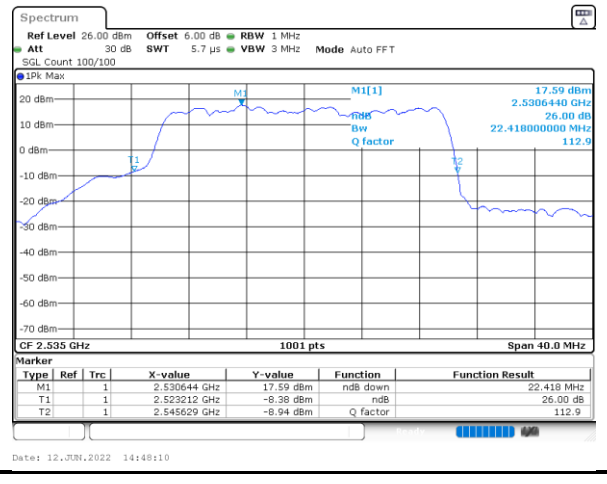
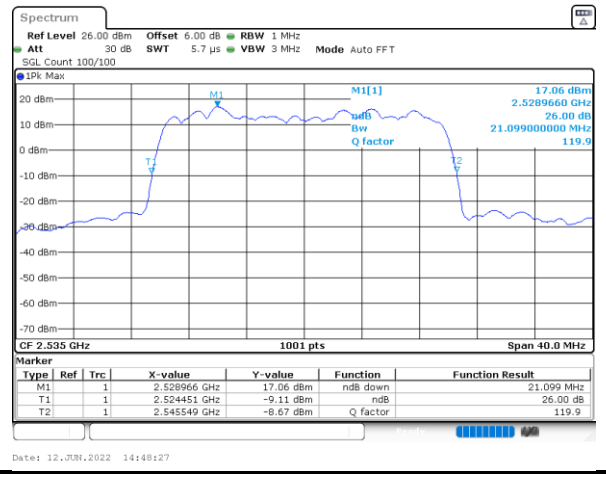
26dB Bandwidth

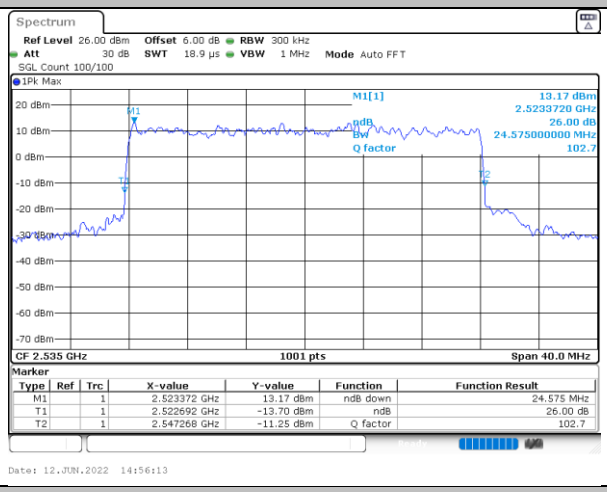
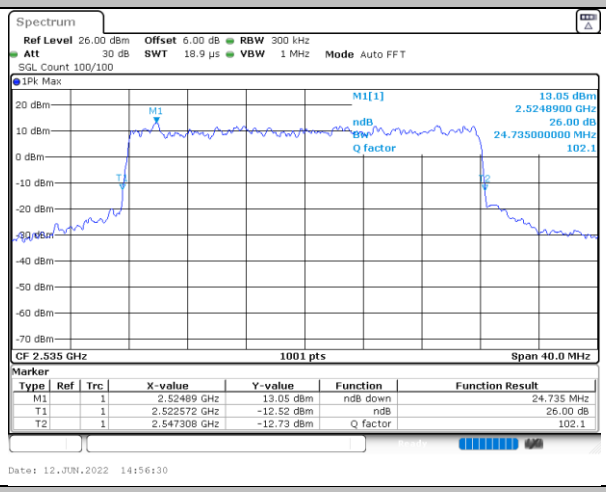
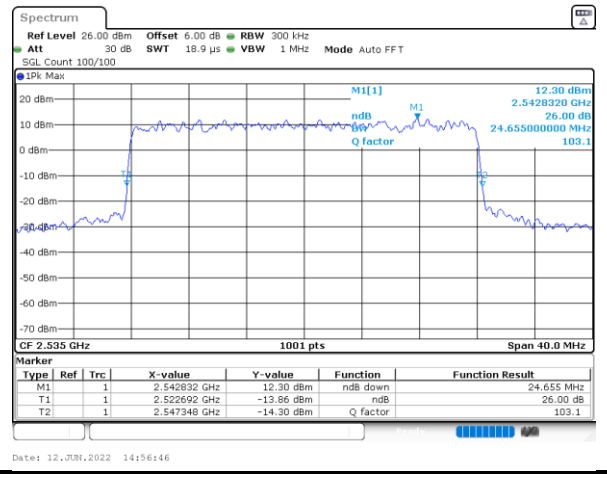
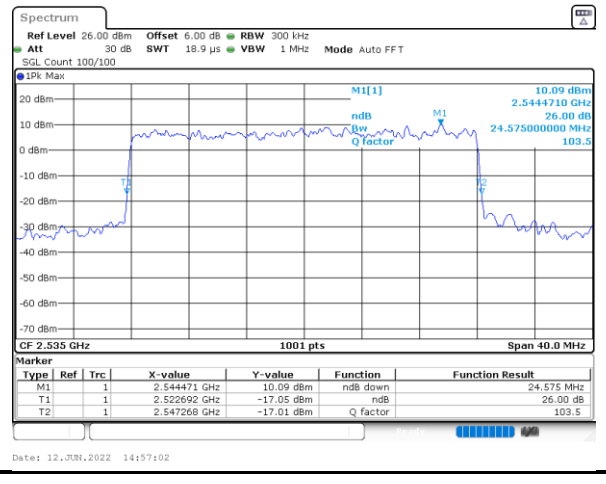
Mode	FR1 n7 : 26dB BW(MHz) / DFT-S OFDM			
BW	5M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	4.99	4.94	4.94	4.95
BW	10M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	10.21	10.15	9.99	10.05
BW	15M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	14.90	14.99	14.96	14.90
BW	20M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	21.18	21.62	22.42	21.10
BW	25M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	24.58	24.74	24.66	24.58
BW	30M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	29.57	29.61	29.45	29.65
BW	40M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	41.00	40.92	41.08	40.92
BW	50M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	50.65	50.75	50.65	50.75

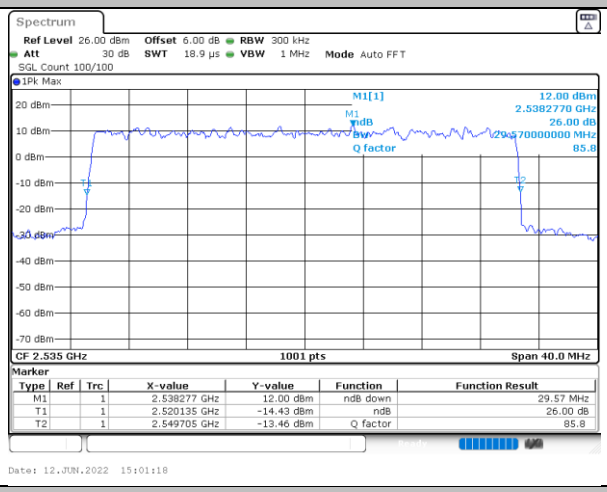
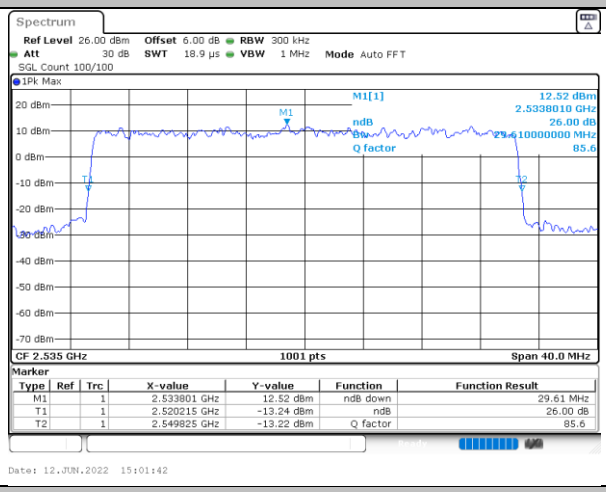
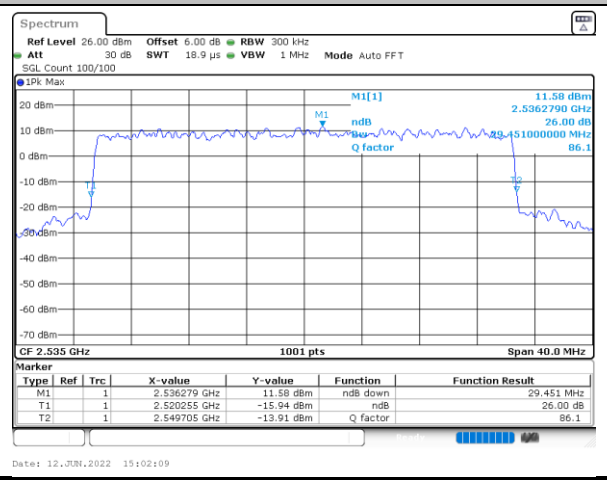
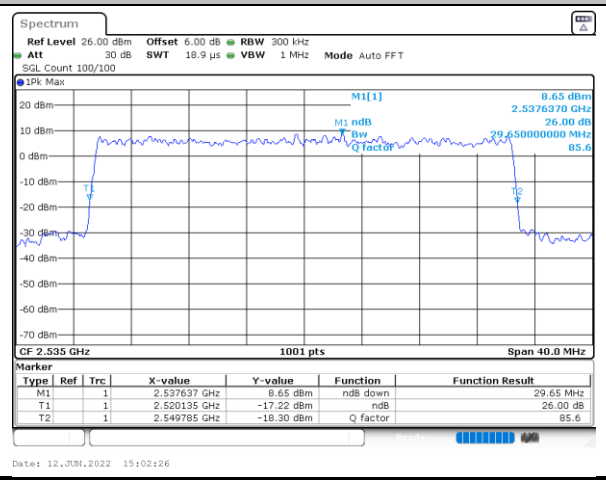
5M	
QPSK	16QAM
	
64QAM	256QAM
	

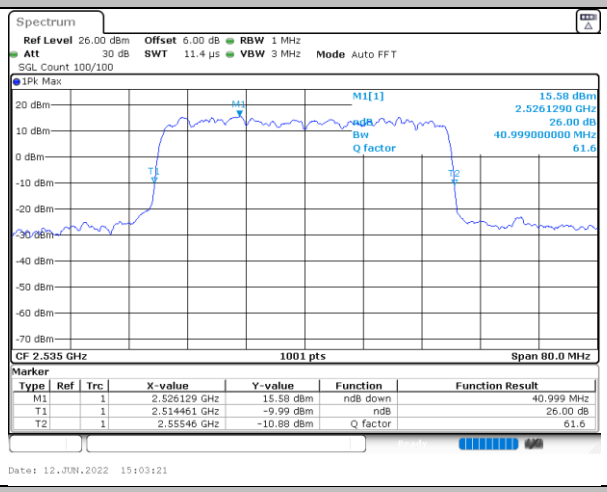
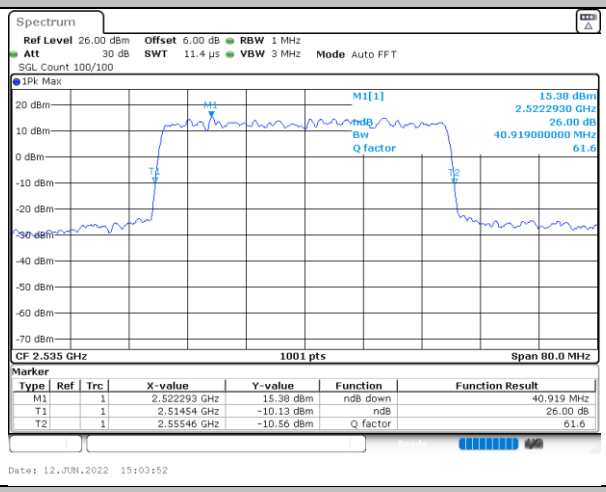
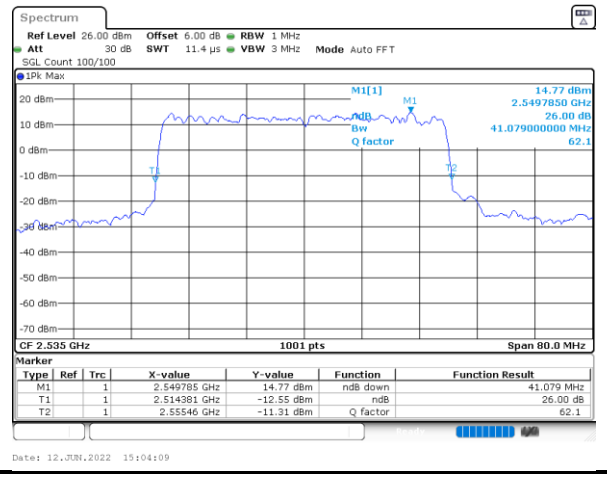
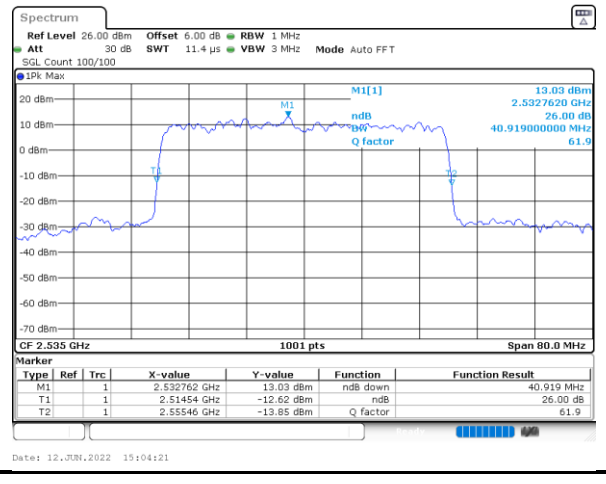
10M	
QPSK	16QAM
	
64QAM	256QAM
	

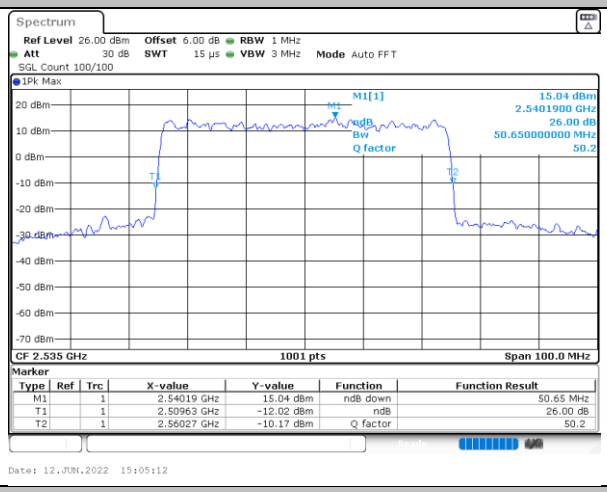
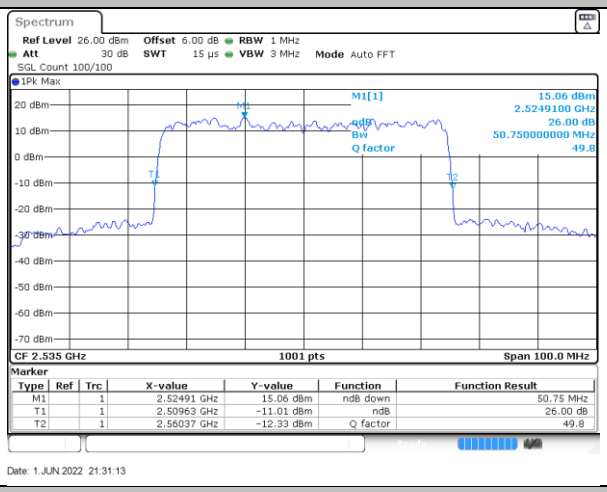
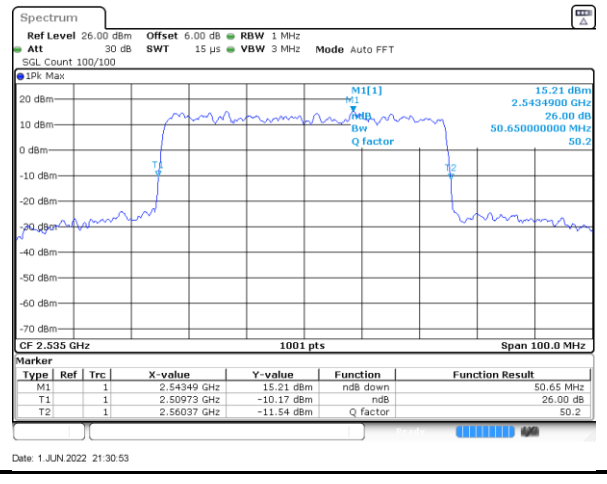
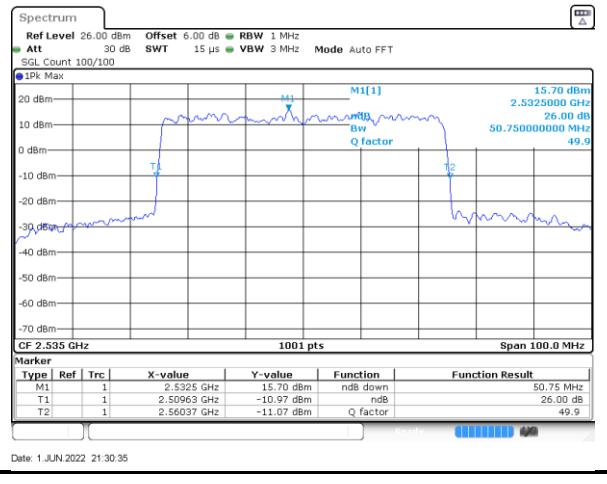
15M	
QPSK	16QAM
	
64QAM	256QAM
	

20M	
QPSK	16QAM
	
64QAM	256QAM
	

25M	
QPSK	16QAM
	
64QAM	256QAM
	

30M	
QPSK	16QAM
	
64QAM	256QAM
	

40M	
QPSK	16QAM
	
64QAM	256QAM
	

50M	
QPSK	16QAM
	
64QAM	256QAM
	

Occupied Bandwidth

Mode	FR1 n7 : 26dB BW(MHz) / DFT-S OFDM			
BW	5M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	4.50	4.51	4.49	4.50
BW	10M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	9.39	9.35	9.39	9.39
BW	15M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	14.12	14.15	14.18	14.15
BW	20M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	19.50	19.38	19.46	19.54
BW	25M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	23.74	23.70	23.66	23.74
BW	30M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	28.53	28.53	28.53	28.53
BW	40M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	38.60	38.76	38.68	38.68
BW	50M			
Mod.	QPSK	16QAM	64QAM	256QAM
Middle CH	48.15	48.25	48.35	48.05

5M	
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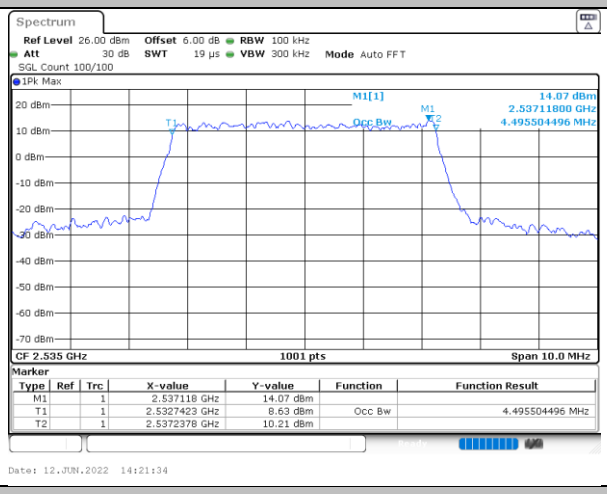	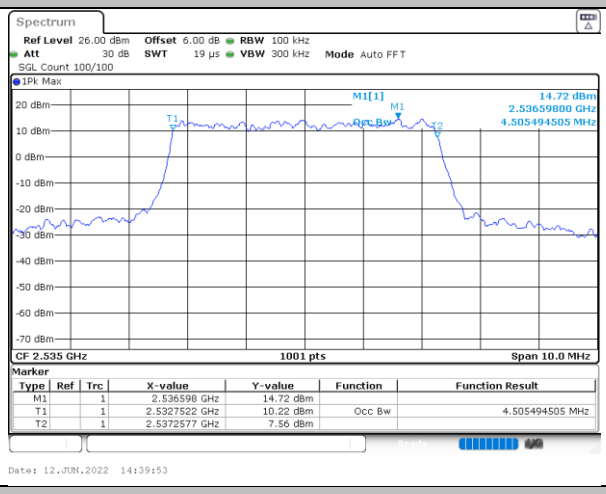
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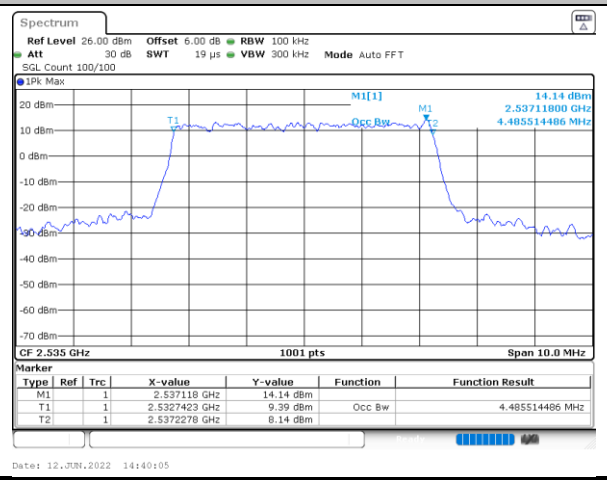
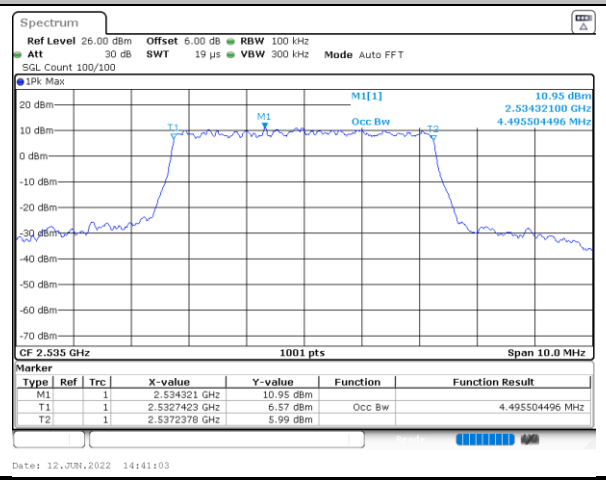
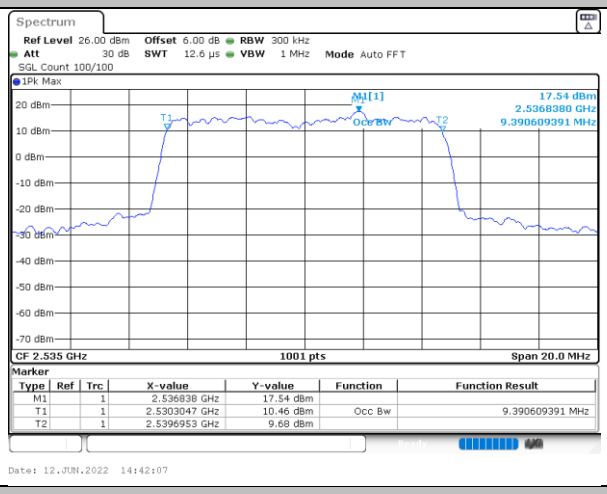
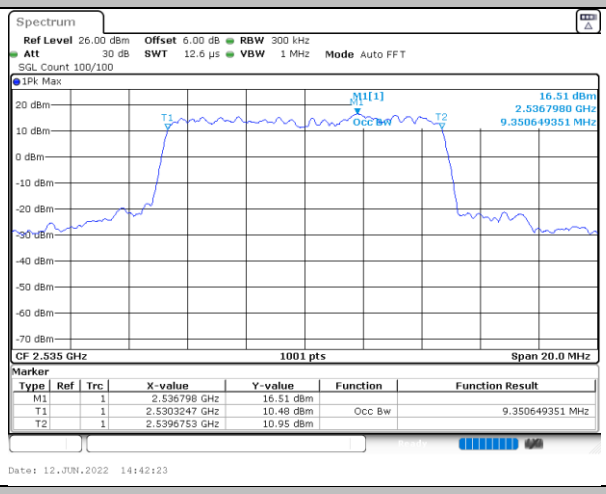
	

10M	
QPSK	16QAM
	
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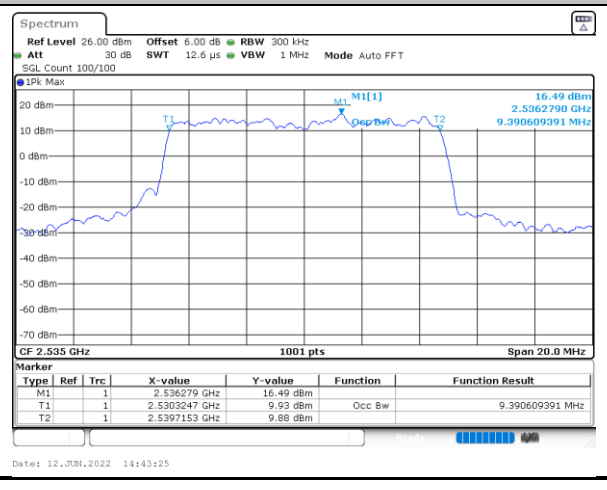	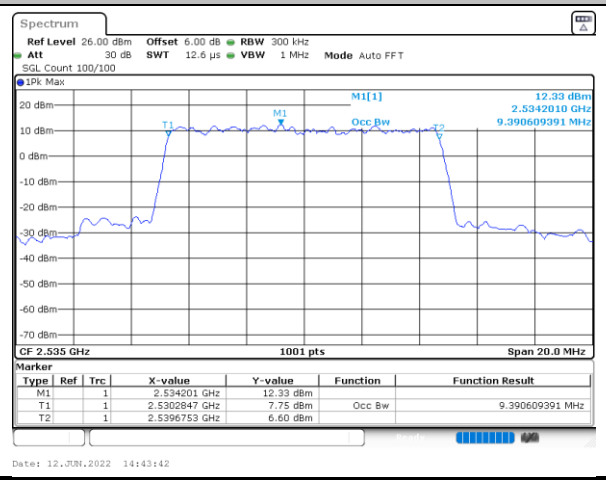

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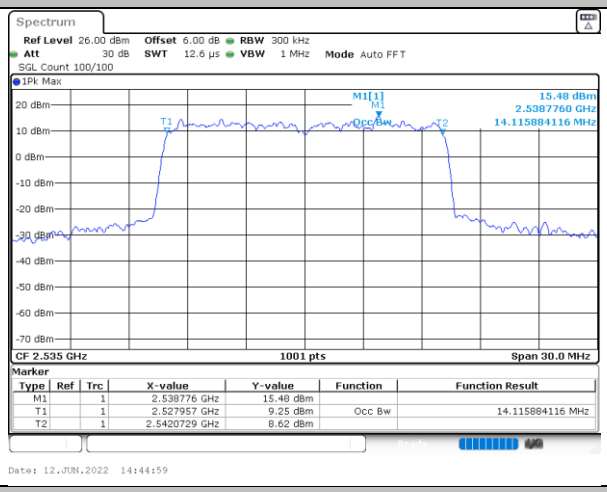	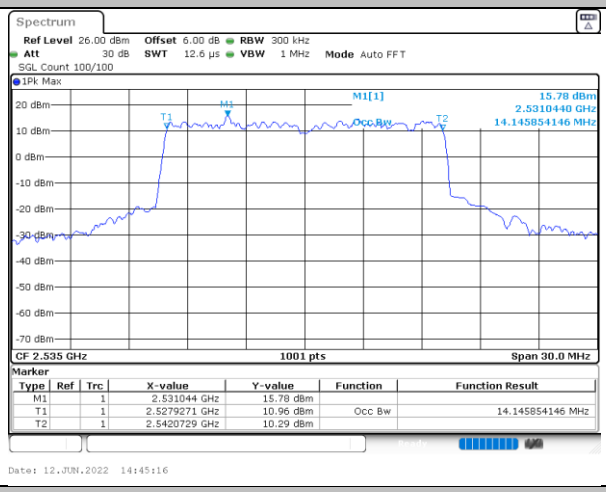
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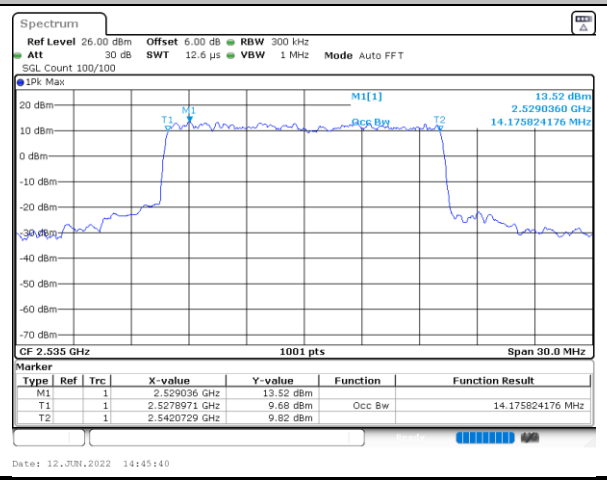	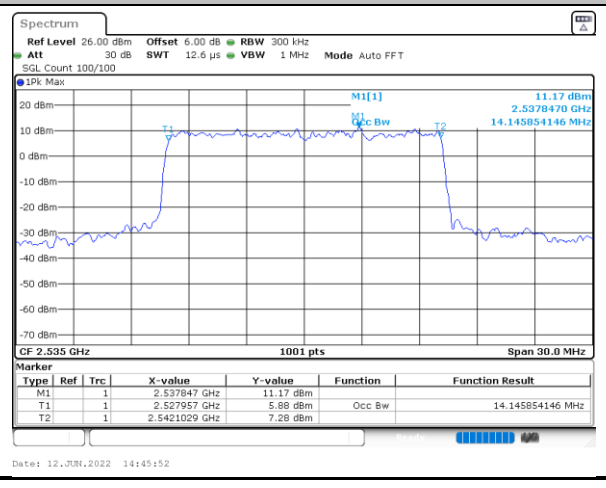

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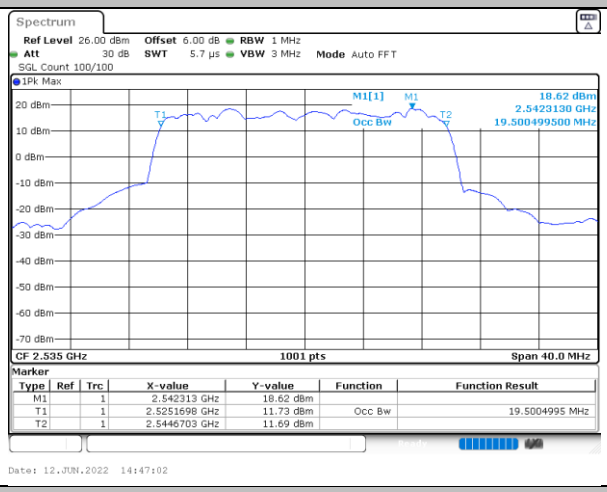	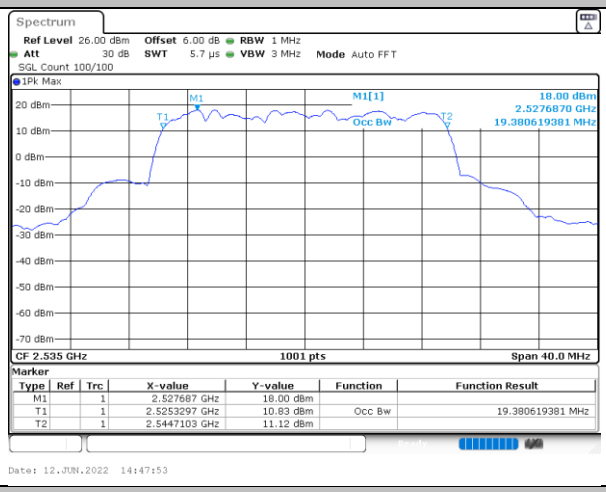
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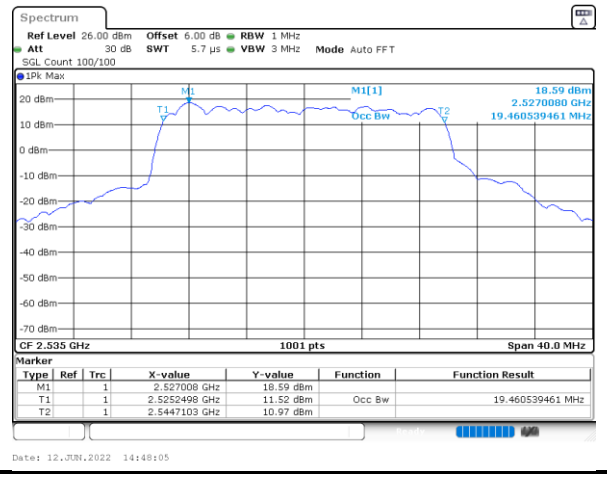	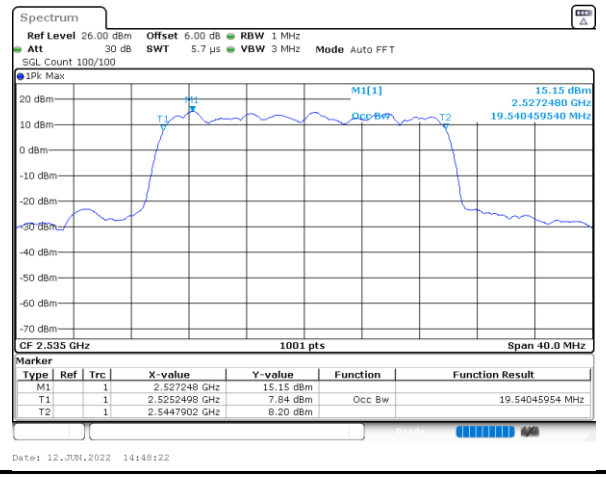

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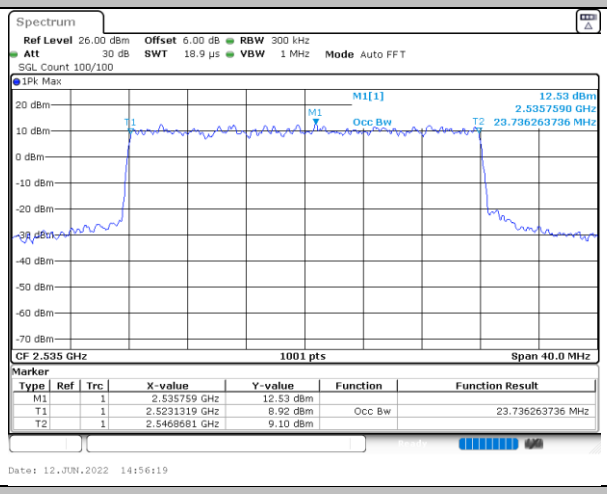	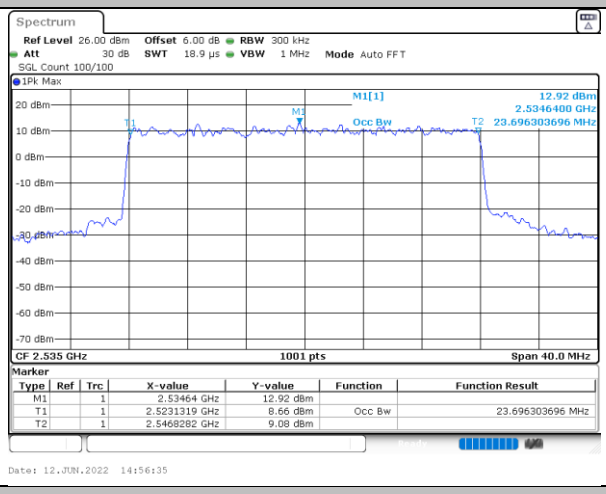
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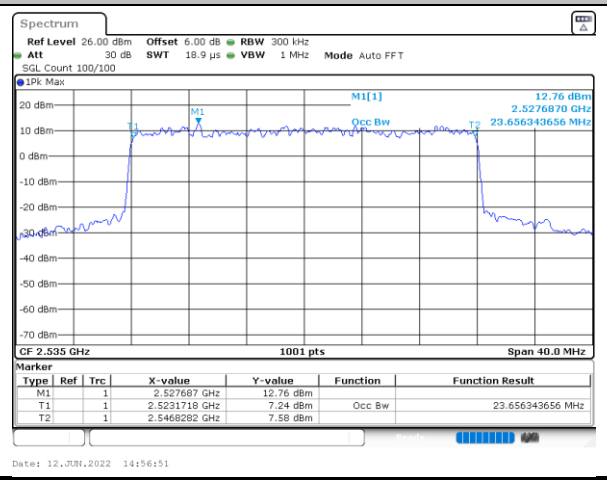	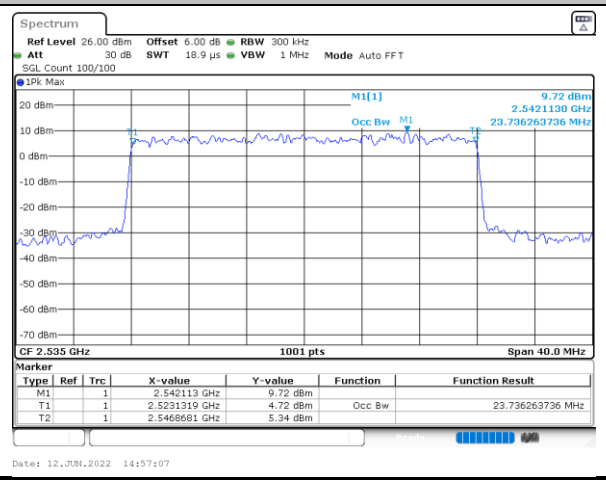

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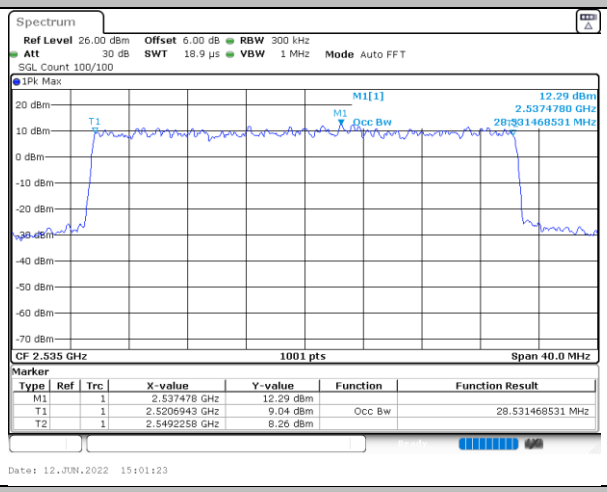	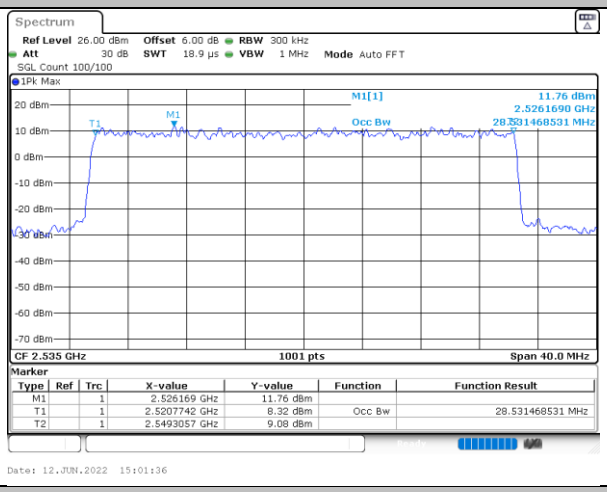
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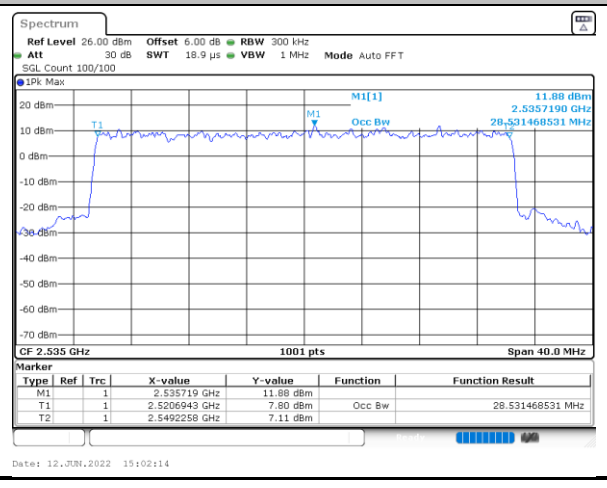	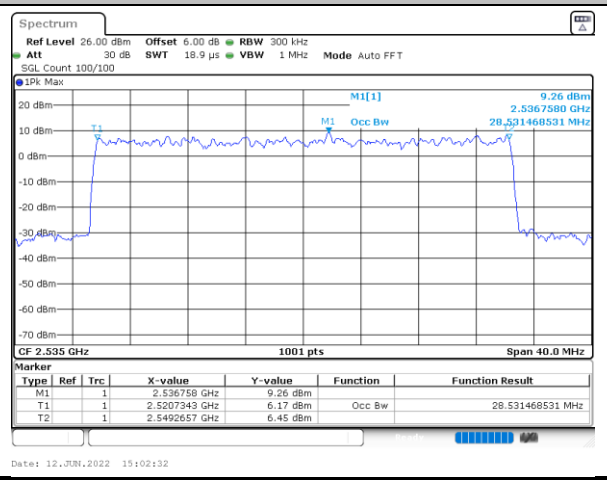

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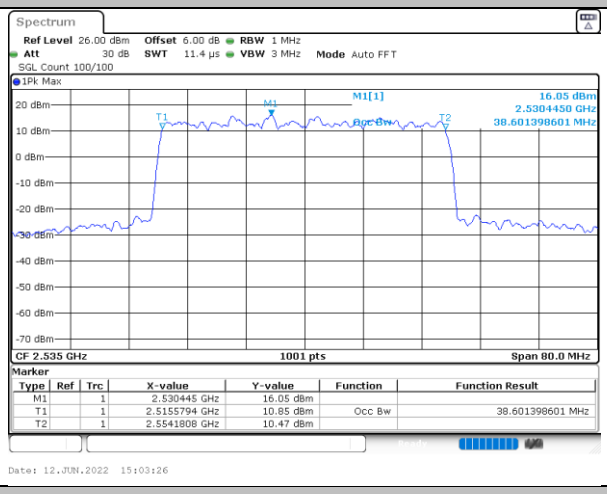	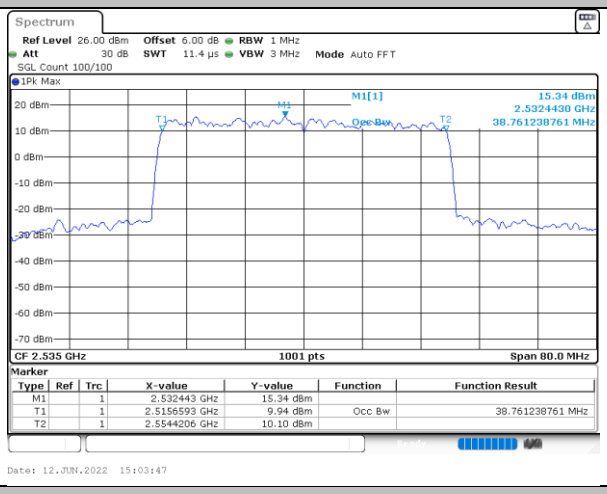
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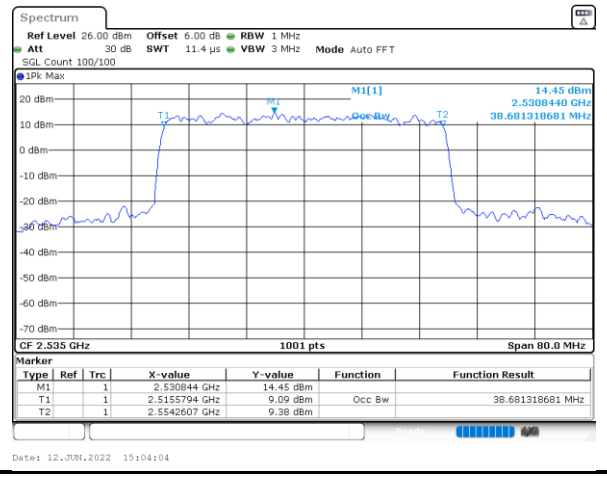	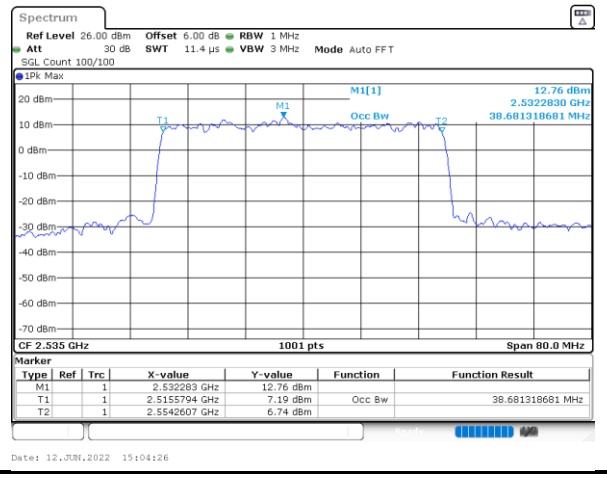

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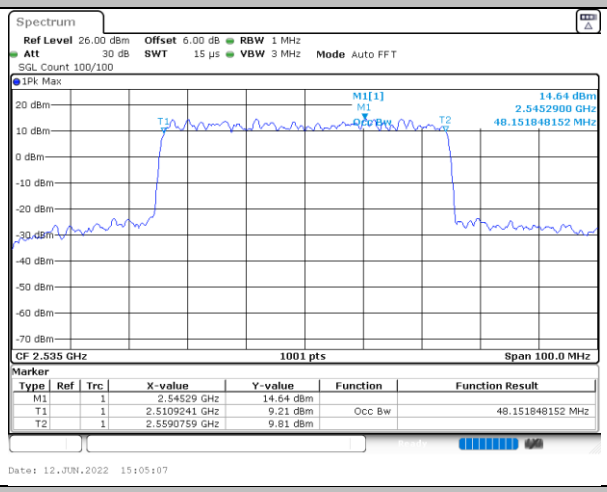	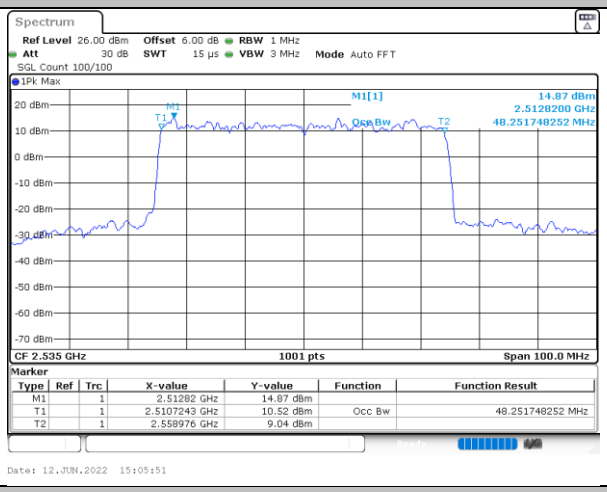
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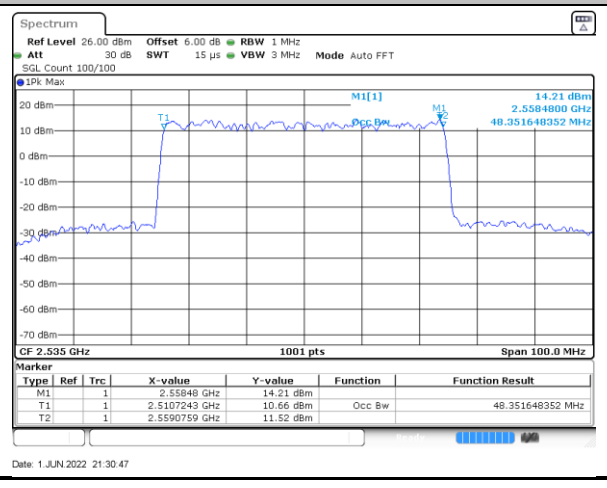
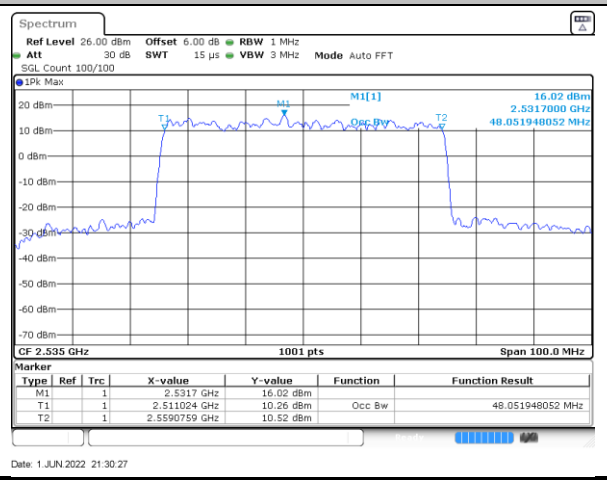
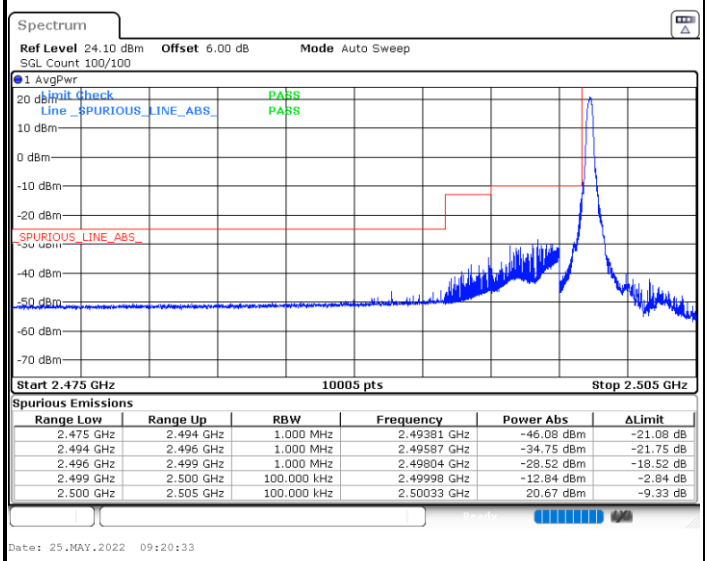
	

Conducted Band Edge

FR1 n7 / 5MHz / DFT-S OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0

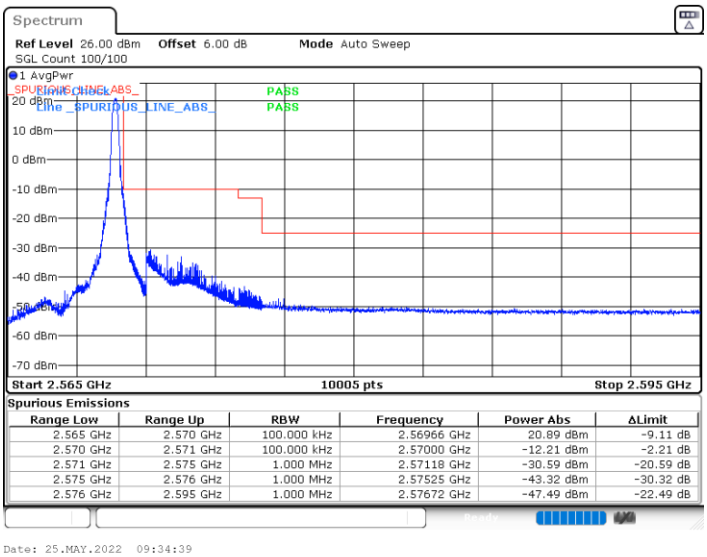


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.494 GHz	1.000 MHz	2.49381 GHz	-46.08 dBm	-21.08 dB
2.494 GHz	2.496 GHz	1.000 MHz	2.49587 GHz	-34.75 dBm	-21.75 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49804 GHz	-28.52 dBm	-18.52 dB
2.499 GHz	2.500 GHz	100.000 kHz	2.49998 GHz	-12.84 dBm	-2.84 dB
2.500 GHz	2.505 GHz	100.000 kHz	2.50033 GHz	20.67 dBm	-9.33 dB

Date: 25.MAY.2022 09:20:33

Highest Band Edge / 1RBMAX

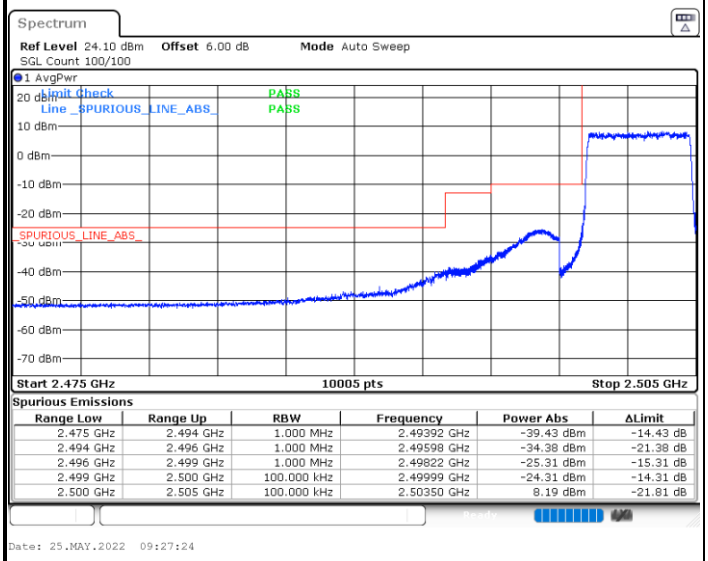


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56966 GHz	20.89 dBm	-9.11 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57000 GHz	-12.21 dBm	-2.21 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57118 GHz	-30.59 dBm	-20.59 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57525 GHz	-43.32 dBm	-30.32 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57672 GHz	-47.49 dBm	-22.49 dB

Date: 25.MAY.2022 09:34:39

Lowest Band Edge / Full RB

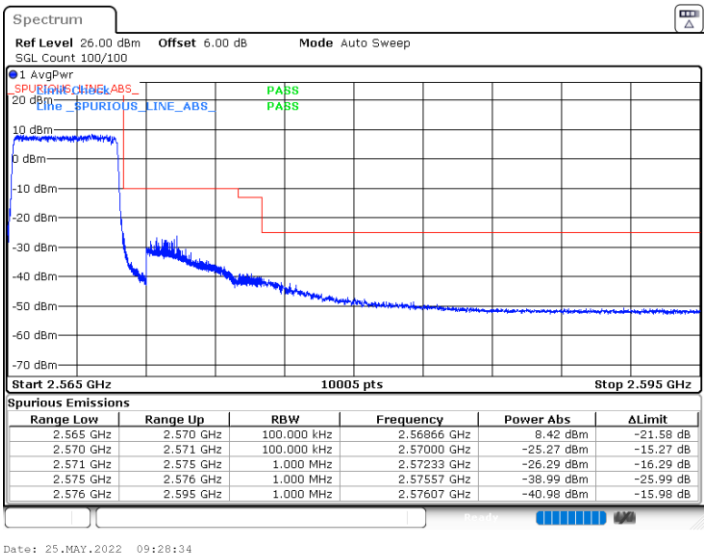


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.494 GHz	1.000 MHz	2.49392 GHz	-39.43 dBm	-14.43 dB
2.494 GHz	2.496 GHz	1.000 MHz	2.49598 GHz	-34.38 dBm	-21.38 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49822 GHz	-25.31 dBm	-15.31 dB
2.499 GHz	2.500 GHz	100.000 kHz	2.49999 GHz	-24.31 dBm	-14.31 dB
2.500 GHz	2.505 GHz	100.000 kHz	2.50350 GHz	8.19 dBm	-21.81 dB

Date: 25.MAY.2022 09:27:24

Highest Band Edge / Full RB



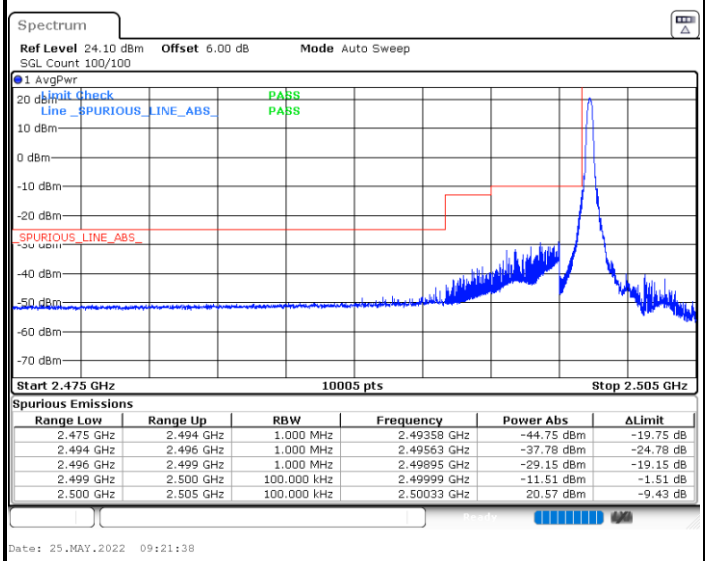
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56866 GHz	8.42 dBm	-21.58 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57000 GHz	-25.27 dBm	-15.27 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57233 GHz	-26.29 dBm	-16.29 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57557 GHz	-38.99 dBm	-25.99 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57607 GHz	-40.98 dBm	-15.98 dB

Date: 25.MAY.2022 09:28:34

FR1 n7 / 5MHz / DFT-S OFDM / QPSK

Lowest Band Edge / 1RB0

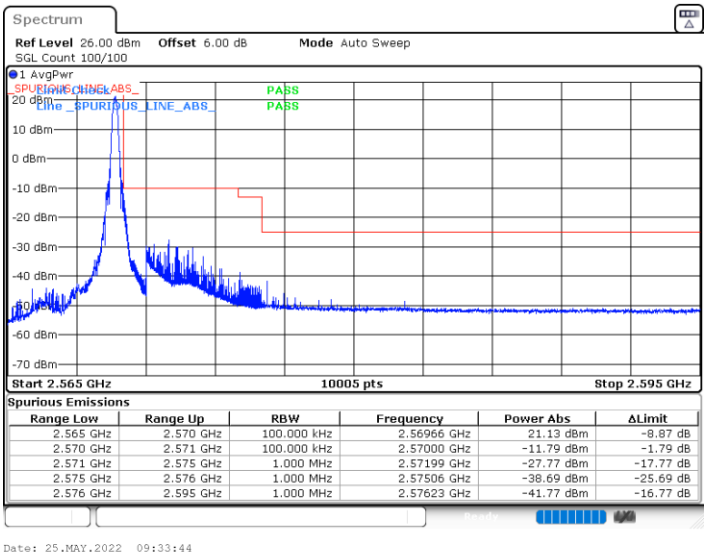


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.494 GHz	1.000 MHz	2.49358 GHz	-44.75 dBm	-19.75 dB
2.494 GHz	2.496 GHz	1.000 MHz	2.49563 GHz	-37.78 dBm	-24.78 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49895 GHz	-29.15 dBm	-19.15 dB
2.499 GHz	2.500 GHz	100.000 kHz	2.49999 GHz	-11.51 dBm	-1.51 dB
2.500 GHz	2.505 GHz	100.000 kHz	2.50033 GHz	20.57 dBm	-9.43 dB

Date: 25.MAY.2022 09:21:38

Highest Band Edge / 1RBMAX

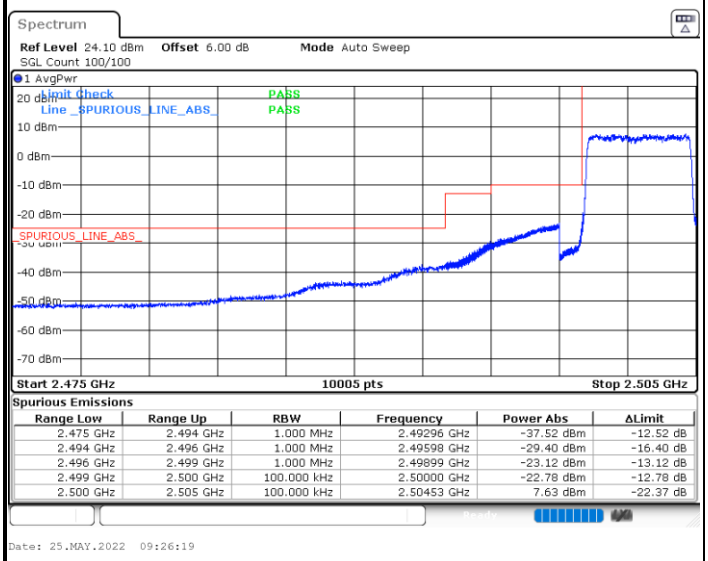


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56966 GHz	21.13 dBm	-8.87 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57000 GHz	-11.79 dBm	-1.79 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57199 GHz	-27.77 dBm	-17.77 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57506 GHz	-38.69 dBm	-25.69 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57623 GHz	-41.77 dBm	-16.77 dB

Date: 25.MAY.2022 09:33:44

Lowest Band Edge / Full RB

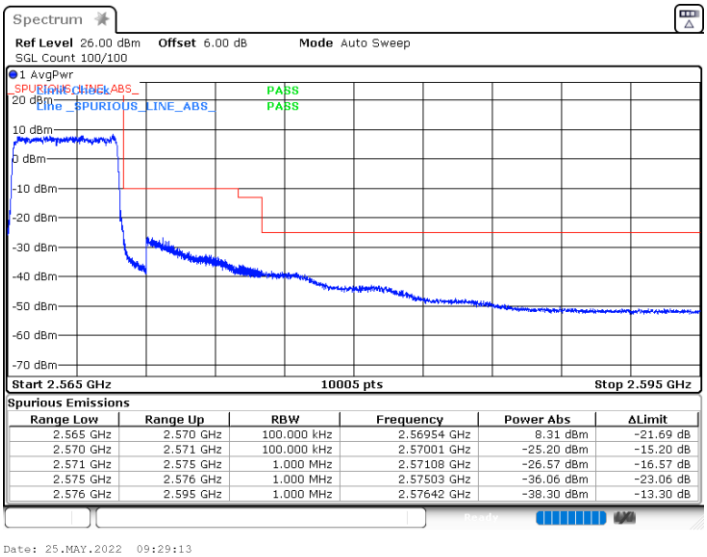


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.494 GHz	1.000 MHz	2.49296 GHz	-37.52 dBm	-12.52 dB
2.494 GHz	2.496 GHz	1.000 MHz	2.49598 GHz	-29.40 dBm	-16.40 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49899 GHz	-23.12 dBm	-13.12 dB
2.499 GHz	2.500 GHz	100.000 kHz	2.50000 GHz	-22.78 dBm	-12.78 dB
2.500 GHz	2.505 GHz	100.000 kHz	2.50453 GHz	7.63 dBm	-22.37 dB

Date: 25.MAY.2022 09:26:19

Highest Band Edge / Full RB



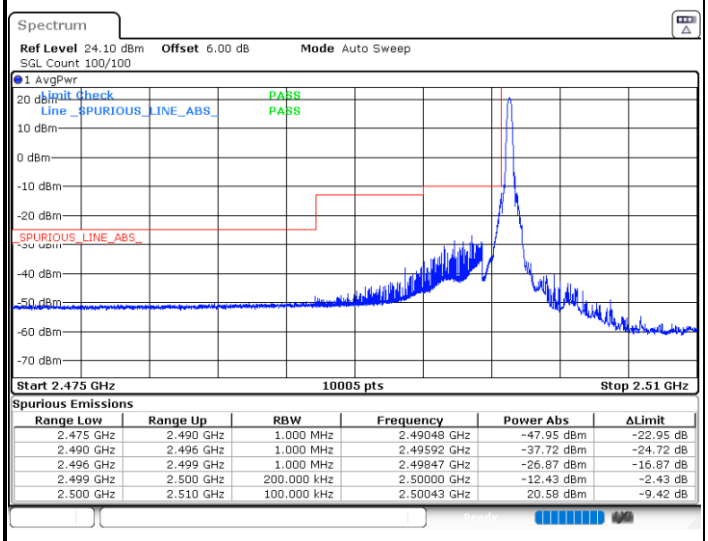
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56954 GHz	8.31 dBm	-21.69 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57001 GHz	-25.20 dBm	-15.20 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57108 GHz	-26.57 dBm	-16.57 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57503 GHz	-36.06 dBm	-23.06 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57642 GHz	-38.30 dBm	-13.30 dB

Date: 25.MAY.2022 09:29:13

FR1 n7 / 10MHz / DFT-s-OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0

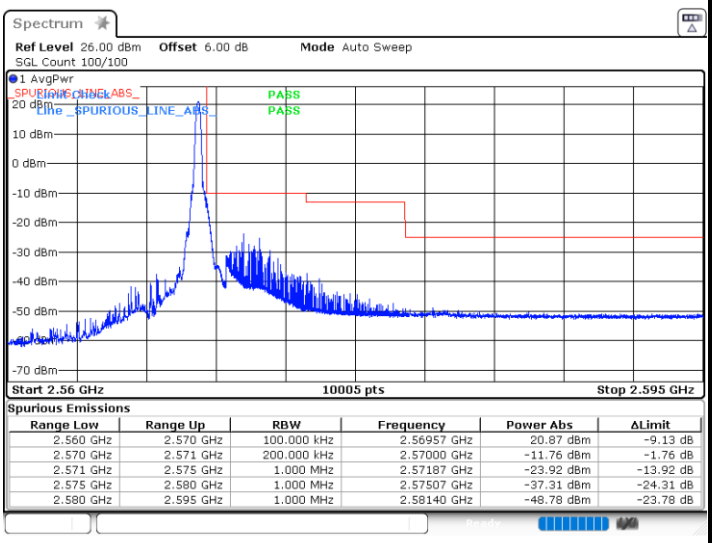


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49048 GHz	-47.95 dBm	-22.95 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49592 GHz	-37.72 dBm	-24.72 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49847 GHz	-26.87 dBm	-16.87 dB
2.499 GHz	2.500 GHz	200.000 kHz	2.50000 GHz	-12.43 dBm	-2.43 dB
2.500 GHz	2.510 GHz	100.000 kHz	2.50043 GHz	20.58 dBm	-9.42 dB

Date: 25.MAY.2022 08:56:35

Highest Band Edge / 1RBMAX

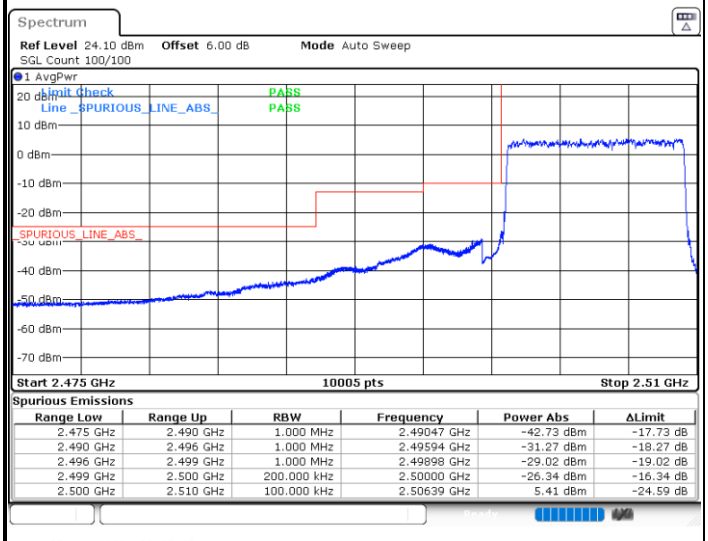


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56957 GHz	20.87 dBm	-9.13 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57000 GHz	-11.76 dBm	-1.76 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57187 GHz	-23.92 dBm	-13.92 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57507 GHz	-37.31 dBm	-24.31 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58140 GHz	-48.78 dBm	-23.78 dB

Date: 25.MAY.2022 09:14:09

Lowest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49047 GHz	-42.73 dBm	-17.73 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49594 GHz	-31.27 dBm	-18.27 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49898 GHz	-29.02 dBm	-19.02 dB
2.499 GHz	2.500 GHz	200.000 kHz	2.50000 GHz	-26.34 dBm	-16.34 dB
2.500 GHz	2.510 GHz	100.000 kHz	2.50639 GHz	5.41 dBm	-24.59 dB

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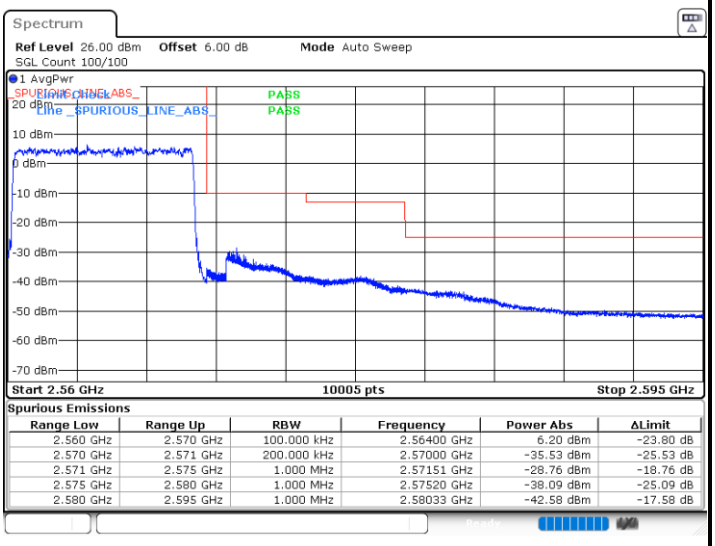
Highest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56400 GHz	6.20 dBm	-23.80 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57000 GHz	-35.53 dBm	-25.53 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57151 GHz	-28.76 dBm	-18.76 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57520 GHz	-38.09 dBm	-25.09 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58033 GHz	-42.58 dBm	-17.58 dB

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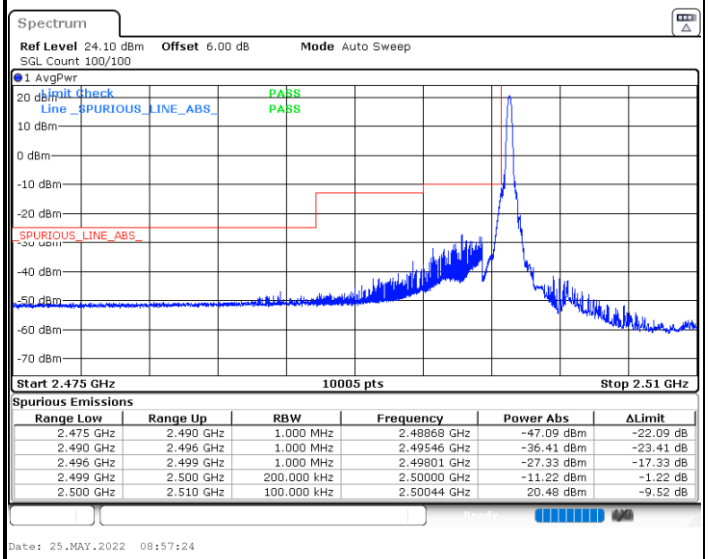
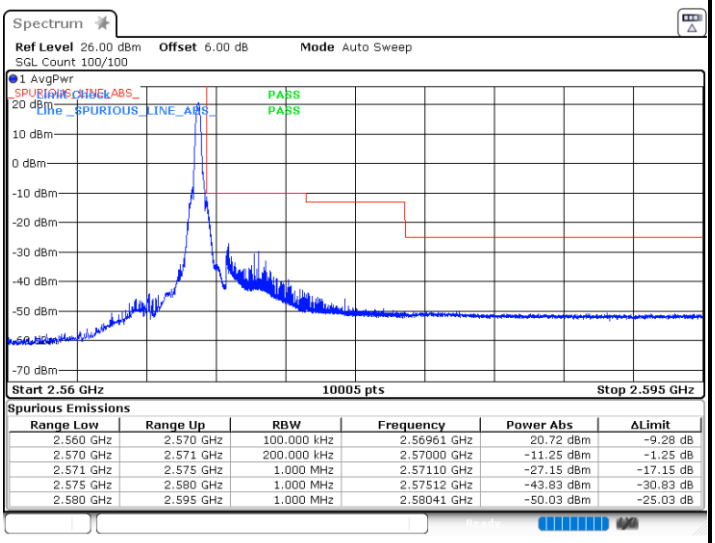
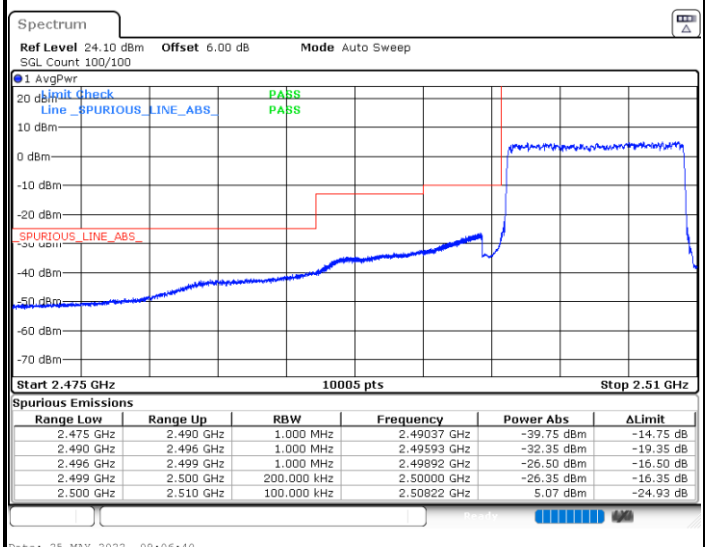
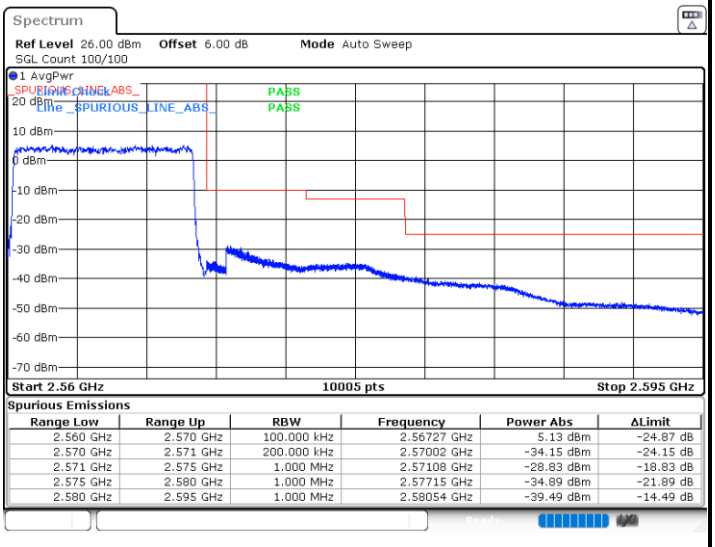
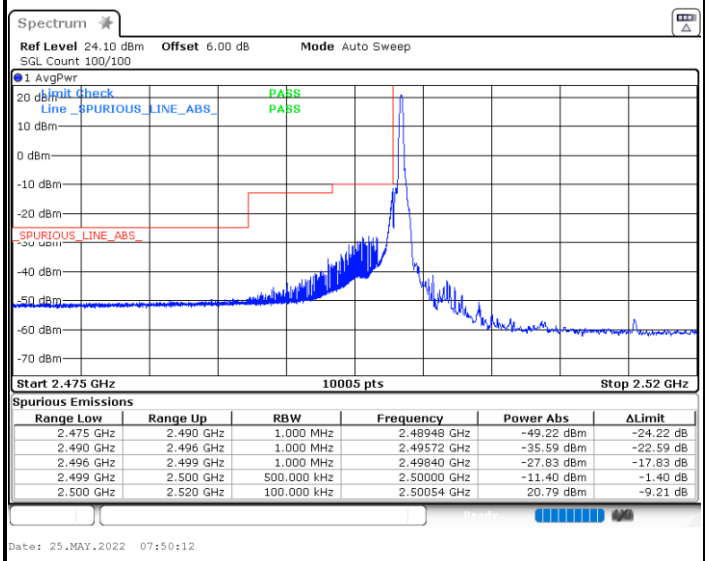
FR1 n7 / 10MHz / DFT-s-OFDM / QPSK	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBMAX**
	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n7 / 20MHz / DFT-s-OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48948 GHz	-49.22 dBm	-24.22 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49572 GHz	-35.59 dBm	-22.59 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49840 GHz	-27.83 dBm	-17.83 dB
2.499 GHz	2.500 GHz	500.000 kHz	2.50000 GHz	-11.40 dBm	-1.40 dB
2.500 GHz	2.520 GHz	100.000 kHz	2.50054 GHz	20.79 dBm	-9.21 dB

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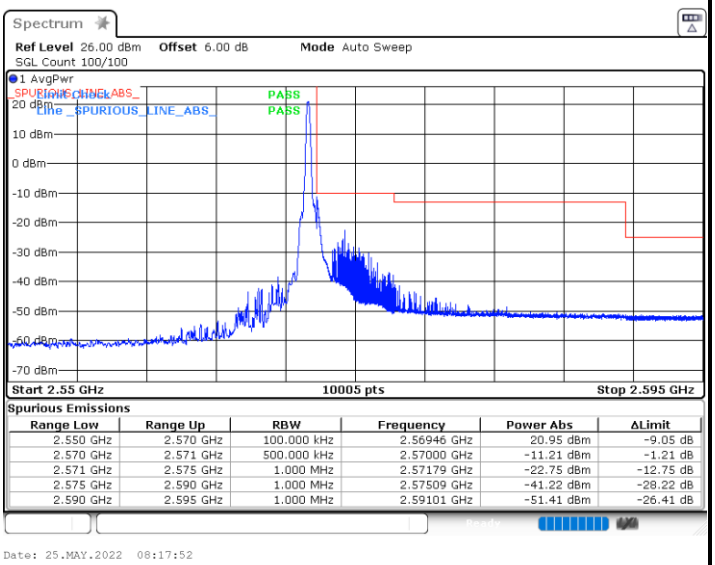
Highest Band Edge / 1RBMAX



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.56946 GHz	20.95 dBm	-9.05 dB
2.570 GHz	2.571 GHz	500.000 kHz	2.57000 GHz	-11.21 dBm	-1.21 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57179 GHz	-22.75 dBm	-12.75 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57509 GHz	-41.22 dBm	-28.22 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59101 GHz	-51.41 dBm	-26.41 dB

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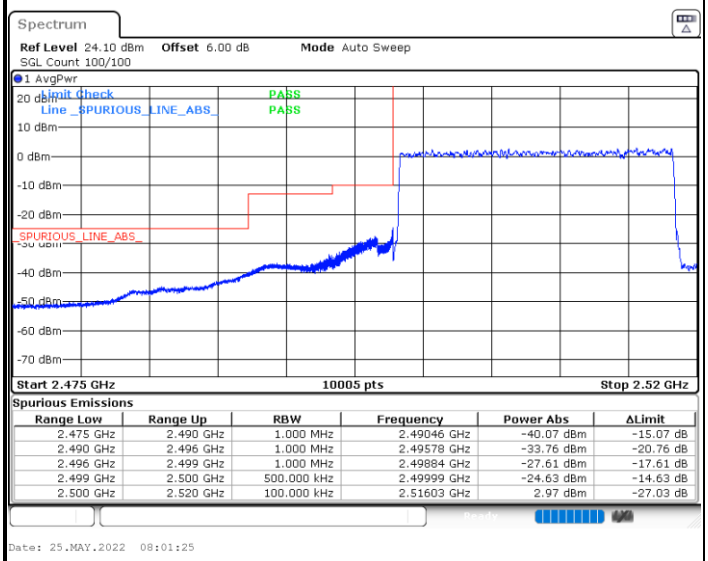
Lowest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49046 GHz	-40.07 dBm	-15.07 dB
2.490 GHz	2.496 GHz	1.000 MHz	2.49578 GHz	-33.76 dBm	-20.76 dB
2.496 GHz	2.499 GHz	1.000 MHz	2.49884 GHz	-27.61 dBm	-17.61 dB
2.499 GHz	2.500 GHz	500.000 kHz	2.49999 GHz	-24.63 dBm	-14.63 dB
2.500 GHz	2.520 GHz	100.000 kHz	2.51603 GHz	2.97 dBm	-27.03 dB

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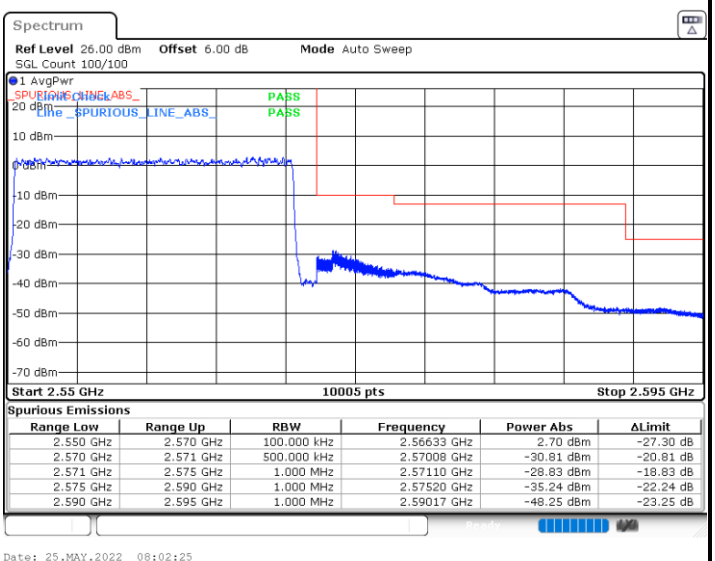
Highest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.56633 GHz	2.70 dBm	-27.30 dB
2.570 GHz	2.571 GHz	500.000 kHz	2.57008 GHz	-30.81 dBm	-20.81 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57110 GHz	-28.83 dBm	-18.83 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57520 GHz	-35.24 dBm	-22.24 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59017 GHz	-48.25 dBm	-23.25 dB

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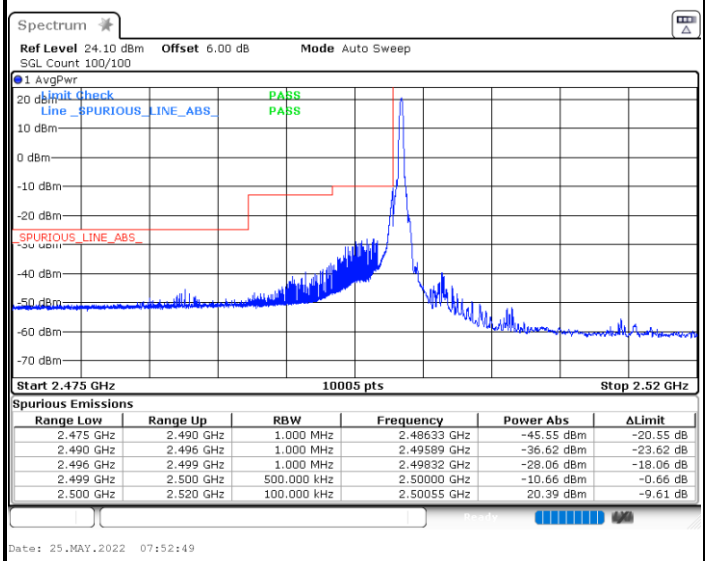
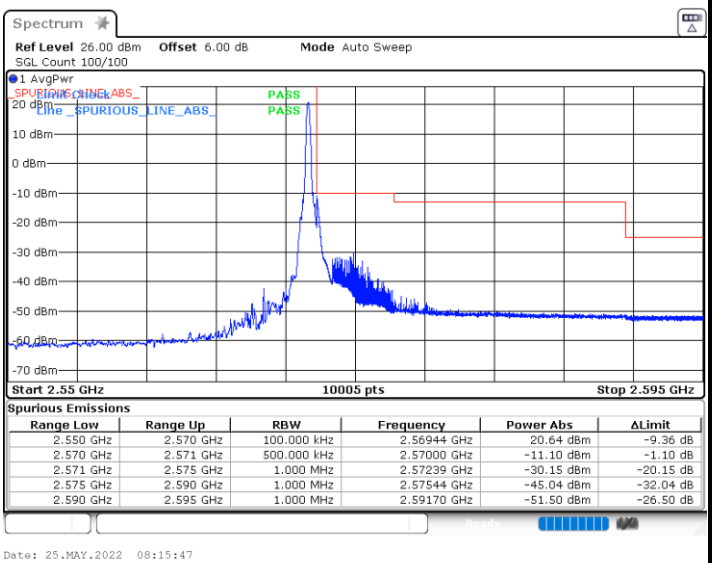
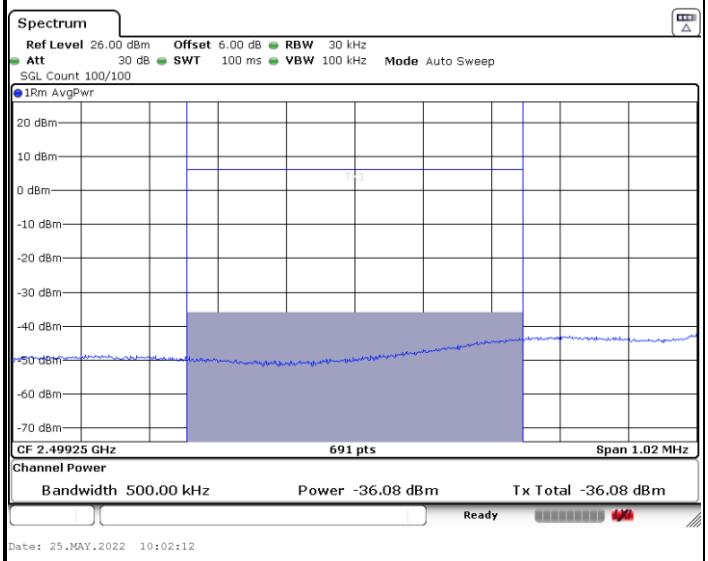
FR1 n7 / 20MHz / DFT-s-OFDM / QPSK	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBMAX**







Lowest Band Edge / Full RB	Highest Band Edge / Full RB