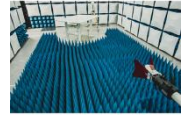




# Element Materials Technology

(formerly PCTEST)  
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## MEASUREMENT REPORT PART 27

**Applicant Name:**

Apple Inc.  
One Apple Park Way  
Cupertino, CA 95014  
United States

**Date of Testing:**

10/1/2023 - 03/04/2024

**Test Report Issue Date:**

4/8/2024

**Test Site/Location:**

Element Materials Technology, Morgan Hill, CA, USA

**Test Report Serial No.:**

1C2311270064-10-R1.BCG

**FCC ID:**

**BCGA2903**

**Applicant Name:**

**Apple Inc.**

**Application Type:**

Certification

**Model:**

A2903, A2904

**EUT Type:**

Tablet Device

**FCC Classification:**

PCS Licensed Transmitter (PCB)

**FCC Rule Part:**

27

**Test Procedure(s):**

ANSI C63.26-2015, KDB 971168 D01 v03r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 1C2311270064-10-R1.BCG) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RJ Ortanez  
Executive Vice President

**Prepared by:** WKR0000006184

**Reviewed by:** WKR0000005805




<b>FCC ID:</b> BCGA2903	<b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 1 of 572

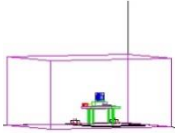
V2.2 09/07/2023

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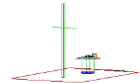
# TABLE OF CONTENTS

1.0	INTRODUCTION .....	6
1.1	Scope .....	6
1.2	Element Materials Technology Test Location.....	6
1.3	Test Facility / Accreditations.....	6
2.0	PRODUCT INFORMATION.....	7
2.1	Equipment Description .....	7
2.2	Device Capabilities.....	7
2.3	Antenna Description .....	8
2.4	Test Support Equipment.....	8
2.5	Test Configuration .....	9
2.6	Software and Firmware .....	9
2.7	EMI Suppression Device(s)/Modifications .....	9
3.0	DESCRIPTION OF TESTS .....	10
3.1	Evaluation Procedure .....	10
3.2	Radiated Spurious Emissions .....	10
4.0	MEASUREMENT UNCERTAINTY .....	11
5.0	TEST EQUIPMENT CALIBRATION DATA .....	12
6.0	SAMPLE CALCULATIONS .....	13
7.0	TEST RESULTS.....	14
7.1	Summary.....	14
7.2	Occupied Bandwidth .....	16
7.3	Spurious and Harmonic Emissions at Antenna Terminal .....	94
7.4	Band Edge Emissions at Antenna Terminal .....	138
7.5	Additional Maximum Power Reduction (A-MPR).....	480
7.6	Radiated Power (EIRP) .....	482
7.7	Radiated Spurious Emissions .....	520
7.8	Frequency Stability / Temperature Variation .....	565
8.0	CONCLUSION.....	572

<b>FCC ID:</b> BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>	<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device
		Page 2 of 572



# PART 27 MEASUREMENT REPORT




Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	EIRP		Emission Designator	
					Max. Power [W]	Max. Power [dBm]		
LTE Band 30	5 MHz	QPSK	2307.5 - 2312.5	4.5426	0.224	23.50	4M54G7W	
		16QAM	2307.5 - 2312.5	4.5691	0.179	22.53	4M57D7W	
		64QAM	2307.5 - 2312.5	4.5428	0.142	21.51	4M54D7W	
		256QAM	2307.5 - 2312.5	4.5365	0.073	18.62	4M54D7W	
	10MHz	QPSK	2310	9.0249	0.223	23.48	9M02G7W	
		16QAM	2310	9.0536	0.175	22.42	9M05D7W	
		64QAM	2310	9.0262	0.139	21.44	9M03D7W	
		256QAM	2310	9.0392	0.072	18.56	9M04D7W	
		QPSK	2502.5 - 2567.5	4.5474	0.550	27.40	4M55G7W	
		16QAM	2502.5 - 2567.5	4.5364	0.445	26.48	4M54D7W	
LTE Band 7	5 MHz	64QAM	2502.5 - 2567.5	4.5312	0.350	25.44	4M53D7W	
		256QAM	2502.5 - 2567.5	4.5166	0.181	22.57	4M52D7W	
		QPSK	2505 - 2565	9.0471	0.550	27.40	9M05G7W	
		16QAM	2505 - 2565	9.0239	0.431	26.34	9M02D7W	
	10 MHz	64QAM	2505 - 2565	9.0301	0.345	25.38	9M03D7W	
		256QAM	2505 - 2565	9.0038	0.174	22.40	9M00D7W	
		QPSK	2507.5 - 2562.5	13.5471	0.538	27.31	13M5G7W	
		16QAM	2507.5 - 2562.5	13.5406	0.416	26.19	13M5D7W	
		64QAM	2507.5 - 2562.5	13.5161	0.340	25.32	13M5D7W	
		256QAM	2507.5 - 2562.5	13.4900	0.176	22.46	13M5D7W	
	20 MHz	QPSK	2510 - 2560	18.0412	0.537	27.30	18M0G7W	
		16QAM	2510 - 2560	18.0319	0.436	26.39	18M0D7W	
		64QAM	2510 - 2560	18.0600	0.348	25.41	18M1D7W	
		256QAM	2510 - 2560	18.0105	0.179	22.52	18M0D7W	
		QPSK	2498.5 - 2687.5	4.5378	0.741	28.70	4M54G7W	
		16QAM	2498.5 - 2687.5	4.5439	0.589	27.70	4M54D7W	
	LTE Band 41 (PC2)	5 MHz	64QAM	2498.5 - 2687.5	4.5252	0.525	27.20	4M53D7W
			256QAM	2498.5 - 2687.5	4.5348	0.468	26.70	4M53D7W
QPSK			2501 - 2685	9.0304	0.741	28.70	9M03G7W	
16QAM			2501 - 2685	9.0405	0.589	27.70	9M04D7W	
10 MHz		64QAM	2501 - 2685	9.0415	0.525	27.20	9M04D7W	
		256QAM	2501 - 2685	9.0247	0.468	26.70	9M02D7W	
		QPSK	2503.5 - 2682.5	13.5266	0.741	28.70	13M5G7W	
		16QAM	2503.5 - 2682.5	13.5182	0.589	27.70	13M5D7W	
		64QAM	2503.5 - 2682.5	13.5353	0.525	27.20	13M5D7W	
		256QAM	2503.5 - 2682.5	13.5022	0.468	26.70	13M5D7W	
20 MHz		QPSK	2506 - 2680	18.0583	0.741	28.70	18M1G7W	
		16QAM	2506 - 2680	18.0607	0.589	27.70	18M1D7W	
		64QAM	2506 - 2680	18.0166	0.525	27.20	18M0D7W	
		256QAM	2506 - 2680	17.9935	0.468	26.70	18M0D7W	
		QPSK	2498.5 - 2687.5	4.5378	0.575	27.60	4M54G7W	
		16QAM	2498.5 - 2687.5	4.5439	0.454	26.57	4M54D7W	
LTE Band 41 (PC3)		5 MHz	64QAM	2498.5 - 2687.5	4.5252	0.410	26.13	4M53D7W
			256QAM	2498.5 - 2687.5	4.5348	0.281	24.49	4M53D7W
	QPSK		2501 - 2685	9.0304	0.575	27.60	9M03G7W	
	16QAM		2501 - 2685	9.0405	0.451	26.54	9M04D7W	
	10 MHz	64QAM	2501 - 2685	9.0415	0.411	26.14	9M04D7W	
		256QAM	2501 - 2685	9.0247	0.280	24.47	9M02D7W	
		QPSK	2503.5 - 2682.5	13.5266	0.575	27.60	13M5G7W	
		16QAM	2503.5 - 2682.5	13.5182	0.453	26.56	13M5D7W	
		64QAM	2503.5 - 2682.5	13.5353	0.409	26.12	13M5D7W	
		256QAM	2503.5 - 2682.5	13.5022	0.279	24.46	13M5D7W	
	20 MHz	QPSK	2506 - 2680	18.0583	0.575	27.60	18M1G7W	
		16QAM	2506 - 2680	18.0607	0.450	26.53	18M1D7W	
		64QAM	2506 - 2680	18.0166	0.414	26.17	18M0D7W	
		256QAM	2506 - 2680	17.9935	0.278	24.44	18M0D7W	
		QPSK	2520 - 2550	37.5580	0.530	27.24	37M6G7W	
		16QAM	2520 - 2550	37.5890	0.493	26.93	37M6D7W	
	ULCA LTE Band 7	20 + 20 MHz	64QAM	2520 - 2550	37.5660	0.330	25.19	37M6D7W
			256QAM	2520 - 2550	37.5680	0.285	24.55	37M6D7W
QPSK			2516 - 2670	37.6033	0.728	28.62	37M6G7W	
16QAM			2516 - 2670	37.5769	0.398	26.00	37M6D7W	
64QAM			2516 - 2670	37.5855	0.318	25.02	37M6D7W	
ULCA LTE Band 41(PC2)	20 + 20 MHz	256QAM	2516 - 2670	37.5225	0.237	23.75	37M5D7W	
		QPSK	2516 - 2670	37.6033	0.524	27.19	37M6G7W	
		16QAM	2516 - 2670	37.5769	0.262	24.18	37M6D7W	
		64QAM	2516 - 2670	37.5855	0.239	23.79	37M6D7W	
		256QAM	2516 - 2670	37.5225	0.158	21.98	37M5D7W	

## EUT Overview

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Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 3 of 572

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	EIRP		Emission Designator
					Max. Power [W]	Max. Power [dBm]	
NR Band n30	5 MHz	π/2 BPSK	2307.5 - 2312.5	4.4772	0.224	23.50	4M48G7W
		QPSK	2307.5 - 2312.5	4.4904	0.224	23.50	4M49G7W
		16QAM	2307.5 - 2312.5	4.4940	0.178	22.50	4M49D7W
		64QAM	2307.5 - 2312.5	4.4820	0.141	21.50	4M48D7W
		256QAM	2307.5 - 2312.5	4.4825	0.072	18.60	4M48D7W
	10MHz	π/2 BPSK	2310	8.9637	0.220	23.43	8M96G7W
		QPSK	2310	9.3224	0.217	23.37	9M32G7W
		16QAM	2310	9.3031	0.177	22.47	9M30D7W
		64QAM	2310	9.3342	0.143	21.56	9M33D7W
		256QAM	2310	9.3121	0.073	18.62	9M31D7W
NR Band n7	5 MHz	π/2 BPSK	2502.5 - 2567.5	4.4805	0.542	27.34	4M48G7W
		QPSK	2502.5 - 2567.5	4.4794	0.548	27.39	4M48G7W
		16QAM	2502.5 - 2567.5	4.4870	0.442	26.45	4M49D7W
		64QAM	2502.5 - 2567.5	4.5036	0.315	24.99	4M50D7W
		256QAM	2502.5 - 2567.5	4.4850	0.193	22.85	4M49D7W
	10MHz	π/2 BPSK	2505 - 2565	8.9575	0.535	27.28	8M96G7W
		QPSK	2505 - 2565	9.3138	0.549	27.39	9M31G7W
		16QAM	2505 - 2565	9.2633	0.446	26.50	9M26D7W
		64QAM	2505 - 2565	9.3238	0.310	24.92	9M32D7W
		256QAM	2505 - 2565	9.3311	0.192	22.82	9M33D7W
	15 MHz	π/2 BPSK	2507.5 - 2562.5	13.4430	0.545	27.37	13M4G7W
		QPSK	2507.5 - 2562.5	14.1170	0.547	27.38	14M1G7W
		16QAM	2507.5 - 2562.5	14.1890	0.441	26.45	14M2D7W
		64QAM	2507.5 - 2562.5	14.1150	0.308	24.89	14M1D7W
		256QAM	2507.5 - 2562.5	14.0300	0.196	22.92	14M0D7W
	20MHz	π/2 BPSK	2510 - 2560	17.9180	0.548	27.39	17M9G7W
		QPSK	2510 - 2560	19.0310	0.549	27.39	19M0G7W
		16QAM	2510 - 2560	18.9520	0.454	26.57	19M0D7W
		64QAM	2510 - 2560	19.0380	0.323	25.09	19M0D7W
		256QAM	2510 - 2560	18.8670	0.194	22.87	18M9D7W
	25MHz	π/2 BPSK	2512.5 - 2557.5	22.9110	0.549	27.40	22M9G7W
		QPSK	2512.5 - 2557.5	23.7640	0.548	27.39	23M8G7W
		16QAM	2512.5 - 2557.5	23.7710	0.444	26.48	23M8D7W
		64QAM	2512.5 - 2557.5	23.7290	0.309	24.89	23M7D7W
		256QAM	2512.5 - 2557.5	23.8710	0.192	22.83	23M9D7W
	30MHz	π/2 BPSK	2515 - 2555	28.6850	0.536	27.29	28M7G7W
		QPSK	2515 - 2555	28.7370	0.535	27.28	28M7G7W
		16QAM	2515 - 2555	28.6840	0.439	26.43	28M7D7W
		64QAM	2515 - 2555	28.6890	0.308	24.88	28M7D7W
		256QAM	2515 - 2555	28.7260	0.190	22.78	28M7D7W
	35MHz	π/2 BPSK	2517.5 - 2552.5	32.2140	0.524	27.19	32M2G7W
		QPSK	2517.5 - 2552.6	33.6590	0.533	27.27	33M7G7W
		16QAM	2517.5 - 2552.7	33.7260	0.431	26.35	33M7D7W
		64QAM	2517.5 - 2552.8	33.6890	0.308	24.88	33M7D7W
		256QAM	2517.5 - 2552.9	33.7170	0.188	22.75	33M7D7W
	40MHz	π/2 BPSK	2520 - 2550	38.5140	0.547	27.38	38M5G7W
		QPSK	2520 - 2550	38.6800	0.549	27.40	38M7G7W
		16QAM	2520 - 2550	38.6350	0.450	26.53	38M6D7W
		64QAM	2520 - 2550	38.7610	0.312	24.94	38M8D7W
		256QAM	2520 - 2550	38.5420	0.196	22.93	38M5D7W

### EUT Overview

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Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 4 of 572

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	EIRP		Emission Designator	
					Max. Power [W]	Max. Power [dBm]		
NR Band n41 (PC2)	10 Mhz	112 BPSK	2501 - 2685	8.6030	0.741	28.70	8M5G7W	
		QPSK	2501 - 2685	8.6127	0.738	28.68	8M1G7W	
		16QAM	2501 - 2685	8.6521	0.551	27.41	8M5D7W	
		64QAM	2501 - 2685	8.6107	0.336	25.27	8M1D7W	
		256QAM	2501 - 2685	8.6068	0.290	24.62	8M1D7W	
	15 Mhz	112 BPSK	2503.5 - 2682.5	12.8950	0.741	28.70	12M9G7W	
		QPSK	2503.5 - 2682.5	13.6670	0.705	28.48	13M7G7W	
		16QAM	2503.5 - 2682.5	13.6170	0.582	27.65	13M6D7W	
		64QAM	2503.5 - 2682.5	13.6140	0.404	26.07	13M6D7W	
		256QAM	2503.5 - 2682.5	13.5640	0.280	24.15	13M6D7W	
	20 Mhz	112 BPSK	2506 - 2690	17.8830	0.719	28.57	17M9G7W	
		QPSK	2506 - 2690	18.2990	0.729	28.63	18M9G7W	
		16QAM	2506 - 2690	18.3090	0.600	27.78	18M3D7W	
		64QAM	2506 - 2690	18.2970	0.435	26.39	18M3D7W	
		256QAM	2506 - 2690	18.2940	0.253	24.04	18M3D7W	
	30Mhz	112 BPSK	2511 - 2675	26.8450	0.741	28.70	26M9G7W	
		QPSK	2511 - 2675	27.9820	0.740	28.69	28M9G7W	
		16QAM	2511 - 2675	28.0030	0.577	27.61	28M0D7W	
		64QAM	2511 - 2675	28.0160	0.422	26.26	28M0D7W	
		256QAM	2511 - 2675	27.9650	0.264	24.22	28M0D7W	
	40 Mhz	112 BPSK	2516 - 2670	35.7800	0.740	28.69	35M9G7W	
		QPSK	2516 - 2670	38.0050	0.730	28.63	38M9G7W	
		16QAM	2516 - 2670	38.0580	0.550	27.40	38M1D7W	
		64QAM	2516 - 2670	37.9930	0.406	26.09	38M0D7W	
		256QAM	2516 - 2670	38.0110	0.259	24.13	38M0D7W	
	50 Mhz	112 BPSK	2521 - 2665	45.8530	0.728	28.64	45M9G7W	
		QPSK	2521 - 2665	47.6000	0.714	28.54	47M9G7W	
		16QAM	2521 - 2665	47.7200	0.586	27.68	47M0D7W	
		64QAM	2521 - 2665	47.6360	0.408	26.11	47M0D7W	
		256QAM	2521 - 2665	47.5950	0.254	24.05	47M0D7W	
	60 Mhz	112 BPSK	2526 - 2660	57.9910	0.724	28.60	58M9G7W	
		QPSK	2526 - 2660	58.1150	0.738	28.68	58M1G7W	
		16QAM	2526 - 2660	58.0480	0.595	27.75	58M0D7W	
		64QAM	2526 - 2660	58.0180	0.417	26.20	58M0D7W	
		256QAM	2526 - 2660	57.9430	0.251	23.99	57M0D7W	
	70 Mhz	112 BPSK	2531 - 2655	64.5380	0.731	28.64	64M9G7W	
		QPSK	2531 - 2655	67.6630	0.696	28.42	67M9G7W	
		16QAM	2531 - 2655	67.5700	0.590	27.71	67M6D7W	
		64QAM	2531 - 2655	67.5680	0.413	26.16	67M6D7W	
		256QAM	2531 - 2655	67.6290	0.258	24.11	67M6D7W	
	80 Mhz	112 BPSK	2536 - 2650	77.1820	0.724	28.60	77M9G7W	
		QPSK	2536 - 2650	77.3990	0.729	28.63	77M9G7W	
		16QAM	2536 - 2650	77.8450	0.607	27.84	77M6D7W	
		64QAM	2536 - 2650	77.8350	0.419	26.23	77M6D7W	
		256QAM	2536 - 2650	77.6800	0.251	24.00	77M6D7W	
	90 Mhz	112 BPSK	2541 - 2645	87.3260	0.741	28.70	87M9G7W	
		QPSK	2541 - 2645	87.6830	0.741	28.70	87M9G7W	
		16QAM	2541 - 2645	87.8290	0.575	27.59	87M6D7W	
		64QAM	2541 - 2645	87.6740	0.428	26.31	87M6D7W	
		256QAM	2541 - 2645	87.9050	0.255	24.06	87M6D7W	
	100 Mhz	112 BPSK	2546 - 2640	96.6420	0.740	28.69	96M9G7W	
		QPSK	2546 - 2640	97.8490	0.733	28.65	97M9G7W	
		16QAM	2546 - 2640	97.7830	0.570	27.56	97M6D7W	
		64QAM	2546 - 2640	97.7900	0.404	26.06	97M6D7W	
		256QAM	2546 - 2640	97.4490	0.255	24.07	97M6D7W	
	NR Band n41 (PC3)	10 Mhz	112 BPSK	2505 - 2685	8.6030	0.550	27.40	8M5G7W
			QPSK	2505 - 2685	8.6127	0.549	27.39	8M1G7W
			16QAM	2505 - 2685	8.6521	0.475	26.76	8M5D7W
			64QAM	2505 - 2685	8.6107	0.334	25.24	8M1D7W
			256QAM	2505 - 2685	8.6068	0.290	23.91	8M1D7W
		15 Mhz	112 BPSK	2507.5 - 2682.5	12.8950	0.568	27.54	12M9G7W
			QPSK	2507.5 - 2682.5	13.6670	0.569	27.55	13M7G7W
			16QAM	2507.5 - 2682.5	13.6170	0.491	26.91	13M6D7W
			64QAM	2507.5 - 2682.5	13.6140	0.343	25.35	13M6D7W
			256QAM	2507.5 - 2682.5	13.5640	0.204	23.09	13M6D7W
		20 Mhz	112 BPSK	2506 - 2690	17.8830	0.524	27.19	17M9G7W
			QPSK	2506 - 2690	18.2990	0.523	27.19	18M9G7W
			16QAM	2506 - 2690	18.3090	0.438	26.42	18M3D7W
			64QAM	2506 - 2690	18.2970	0.330	25.19	18M3D7W
			256QAM	2506 - 2690	18.2940	0.186	22.69	18M3D7W
		30Mhz	112 BPSK	2511 - 2675	26.8450	0.556	27.45	26M9G7W
			QPSK	2511 - 2675	27.9820	0.538	27.31	28M9G7W
			16QAM	2511 - 2675	28.0030	0.454	26.57	28M0D7W
			64QAM	2511 - 2675	28.0160	0.323	25.09	28M0D7W
			256QAM	2511 - 2675	27.9650	0.193	22.85	28M0D7W
		40 Mhz	112 BPSK	2516 - 2670	35.7800	0.551	27.41	35M9G7W
			QPSK	2516 - 2670	38.0050	0.545	27.36	38M9G7W
			16QAM	2516 - 2670	38.0580	0.458	26.61	38M1D7W
			64QAM	2516 - 2670	37.9930	0.323	25.09	38M0D7W
			256QAM	2516 - 2670	38.0110	0.193	22.85	38M0D7W
		50 Mhz	112 BPSK	2521 - 2665	45.8530	0.552	27.42	45M9G7W
			QPSK	2521 - 2665	47.6000	0.575	27.60	47M9G7W
			16QAM	2521 - 2665	47.7200	0.445	26.48	47M0D7W
			64QAM	2521 - 2665	47.6360	0.307	24.87	47M0D7W
			256QAM	2521 - 2665	47.5950	0.187	22.71	47M0D7W
		60 Mhz	112 BPSK	2526 - 2660	57.9910	0.544	27.36	58M9G7W
			QPSK	2526 - 2660	58.1150	0.535	27.29	58M1G7W
			16QAM	2526 - 2660	58.0480	0.457	26.60	58M0D7W
			64QAM	2526 - 2660	58.0180	0.336	25.27	58M0D7W
			256QAM	2526 - 2660	57.9430	0.186	22.69	57M0D7W
		70 Mhz	112 BPSK	2531 - 2655	64.5380	0.543	27.35	64M9G7W
			QPSK	2531 - 2655	67.6630	0.527	27.22	67M9G7W
			16QAM	2531 - 2655	67.5700	0.458	26.61	67M6D7W
			64QAM	2531 - 2655	67.5680	0.316	25.00	67M6D7W
			256QAM	2531 - 2655	67.6290	0.194	22.88	67M6D7W
		80 Mhz	112 BPSK	2536 - 2650	77.1820	0.548	27.39	77M9G7W
			QPSK	2536 - 2650	77.3990	0.552	27.42	77M9G7W
			16QAM	2536 - 2650	77.8450	0.449	26.53	77M6D7W
			64QAM	2536 - 2650	77.8350	0.364	25.61	77M6D7W
			256QAM	2536 - 2650	77.6800	0.190	22.78	77M6D7W
90 Mhz		112 BPSK	2541 - 2645	87.3260	0.561	27.49	87M9G7W	
		QPSK	2541 - 2645	87.6830	0.542	27.34	87M9G7W	
		16QAM	2541 - 2645	87.8290	0.443	26.47	87M6D7W	
		64QAM	2541 - 2645	87.6740	0.339	25.30	87M6D7W	
		256QAM	2541 - 2645	87.9050	0.186	22.70	87M6D7W	
100 Mhz		112 BPSK	2546 - 2640	96.6420	0.565	27.52	96M9G7W	
		QPSK	2546 - 2640	97.8490	0.538	27.31	97M9G7W	
		16QAM	2546 - 2640	97.7830	0.455	26.58	97M6D7W	
		64QAM	2546 - 2640	97.7900	0.305	24.84	97M6D7W	
		256QAM	2546 - 2640	97.4490	0.191	22.80	97M6D7W	

### EUT Overview

FCC ID: BCGA2903		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 5 of 572	

# 1.0 INTRODUCTION

## 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.


## 1.2 Element Materials Technology Test Location

These measurement tests were conducted at the Element Materials Technology facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

## 1.3 Test Facility / Accreditations

### Measurements were performed at Element Materials Technology

- Element Materials Technology is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element Materials Technology facility is a registered (22831) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Agreements (MRAs).

<b>FCC ID:</b> BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 6 of 572

V2.2 09/07/2023

## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID:BCGA2903**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27.

**Test Device Serial No.:** RH779H9653, NLX2R24160, D23WW2YJ9K, DLXH09000290000EVP

### 2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, 802.11a/ax WIFI 6E, 802.15.4, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), NB UNII (1x, HDR4, HDR8), WPT, 802.15.4

This device supports BT Beamforming

Measurements for LTE Band 41, FR1 Band n41, and LTE ULCA B41 were performed with NS04 for all antennas. Measurements for LTE Band 30 were performed with NS21 for all antennas.

This device supports simultaneous transmission operations, which allows for multiple transmitters to transmit simultaneously on the same antenna. The table below shows all configurations possible.

Antenna	Simultaneous Tx Config	Wifi 2GHz	Bluetooth	Thread	Wifi 5GHz	Wifi 6GHz	NB UNII	LTE/FR1 NR	
		802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE1/2M	802.15.4	802.11 a/n/ac/ax	802.11 a/ax	BDR, HDR4/8	MB/HB	UHB
3a	Config 1	X	✓	X	✓	X	X	✓	X
3a	Config 2	X	✓	X	X	✓	X	✓	X
3a	Config 3	✓	X	X	X	X	✓	✓	X
3a	Config 4	X	X	✓	✓	X	X	✓	X
3a	Config 5	X	X	✓	X	✓	X	✓	X
3a	Config 6	✓	X	X	X	X	✓	X	X
3a	Config 7	✓	X	X	X	X	X	✓	X
3a	Config 8	X	✓	X	✓	X	X	X	X
3a	Config 9	X	✓	X	X	✓	X	X	X
3a	Config 10	X	✓	X	X	X	X	✓	X
3a	Config 11	X	X	✓	✓	X	X	X	X
3a	Config 13	X	X	✓	X	✓	X	X	X
3a	Config 14	X	X	✓	X	X	X	✓	X
3a	Config 15	X	X	X	✓	X	X	✓	X
3a	Config 16	X	X	X	X	✓	X	✓	X
3a	Config 17	X	X	X	X	X	✓	✓	X
1a	Config 18	✓	X	X	X	X	X	X	✓
1a	Config 15	X	✓	X	X	X	X	X	✓
1a	Config 16	X	X	✓	X	X	X	X	✓
1b	Config 17	X	X	X	✓	X	X	✓	X
1b	Config 18	X	X	X	X	✓	X	✓	X
1b	Config 19	X	X	X	X	X	✓	✓	X

**Table 2-1. Simultaneous Transmission Configurations**

✓ = Support; ✗ = Not Support

**Note:**

- All the above simultaneous transmission configurations have been tested and the worst case configuration was found to be Config 1.
- Specific 2.4GHz Wi-Fi antenna that can only transmit simultaneously with 2.4GHz Bluetooth antenna is listed in the SAR test report. For BT (2.4GHz) in connected mode and Wi-Fi (2.4GHz) - Wi-Fi max power will not exceed minimum of (13.5dBm, SAR max cap, Reg max cap) power. For BT (2.4GHz) in disconnected mode and Wi-Fi (2.4GHz) - BT will be using iPA only and Wi-Fi max power will not exceed minimum of (SAR max cap, Reg max cap) power. Bluetooth can simultaneously transmit with IEEE 802.11a/n/ac/ax 5/6 GHz on separate antenna.

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 7 of 572

### 2.3 Antenna Description

Following antenna gains provided by manufacturer were used for testing.


Band	Antenna Gain [dBi]			
	Antenna 4	Antenna 2b	Antenna 3a	Antenna 1b
LTE Band 30	1.9	-1.3	1.6	-2.8
NR Band n30				
LTE Band 7	1.7	-0.2	2.6	-2.5
NR Band n7				
LTE Band 41	1.0	-0.9	1.9	-3.6
NR Band n41				

Table 2-2. Highest Antenna Gain

### 2.4 Test Support Equipment

1	Apple MacBook Pro w/AC/DC Adapter	Model: A2141 Model: A2166	S/N: S/N:	C02H604EQ05D C4H042705ZNP0WA6
2	Apple USB-C Cable	Model: Spartan	S/N:	GXK1336018XKTR024
3	USB-C Cable w/ AC Adapter	Model: A246C Model: A2305	S/N: S/N:	DWH80115BK826GV19 C4H95160004PF4F4V
4	Apple Pencil	Model: A2538	S/N:	KJ26TCFXJW
5	DC Power Supply	Model: KPS3010D	S/N:	N/A

Table 2-3. Test Support Equipment

FCC ID: BCGA2903	 PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 8 of 572

V2.2 09/07/2023



## 2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.26 2015, TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power and the worst case channel.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

All possible simultaneous transmission configurations have been investigated and the worst case config has been reported.

Description	FR1 n41	802.11a/n/ac/ax 5GHz	Bluetooth
Antenna	Antenna 3a	Antenna 3a	Antenna 3a
Channel	41490	36	78
Operating Frequency (MHz)	2506	5180	2480
Mode/Modulation	QPSK/1RB/20MHz	802.11n, MCS10	GFSK ePa


**Table 2-4. Worst Case Simultaneous Transmission Configuration**

## 2.6 Software and Firmware

The test was conducted with firmware version 21E8197 installed on the EUT.

## 2.7 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

FCC ID: BCGA2903		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device		Page 9 of 572

V2.2 09/07/2023

## 3.0 DESCRIPTION OF TESTS

### 3.1 Evaluation Procedure

The measurement procedures described in the documents titled “American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services” (ANSI C63.26-2015 and TIA-603-E-2016) and “Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems” (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

**Deviation from Measurement Procedure.....None**

### 3.2 Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. Field Strength (EIRP) is calculated using the following formulas:

$$E_{[dB\mu V/m]} = \text{Measured amplitude level}_{[dBm]} + 107 + \text{Cable Loss}_{[dB]} + \text{Antenna Factor}_{[dB/m]}$$


And

$$\text{EIRP}_{[dBm]} = E_{[dB\mu V/m]} + 20\log D - 104.8; \text{ where } D \text{ is the measurement distance in meters.}$$

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014.

Per KDB 414788 D01 v01r01, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was used while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.


Radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26-2015 and TIA-603-E-2016.

<b>FCC ID:</b> BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 10 of 572

## 4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the  $U_{CISPR}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty ( $\pm$ dB)
Conducted Bench Top Measurements	2.07
Radiated Disturbance (<30MHz)	4.12
Radiated Disturbance (30MHz-1GHz)	4.85
Radiated Disturbance (1-18GHz)	5.08
Radiated Disturbance (>18GHz)	4.59

FCC ID: BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 11 of 572

V2.2 09/07/2023

## 5.0 TEST EQUIPMENT CALIBRATION DATA


Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	6/21/2023	Annual	6/21/2024	MY49430244
ESPEC	SU-241	Tabletop Temperature Chamber	11/17/2023	Annual	11/17/2024	92009574
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	3/30/2023	Annual	3/30/2024	00218555
Keysight Technology	N9040B	UXA Signal Analyzer	3/10/2023	Annual	3/10/2024	MY57212015
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	8/31/2023	Annual	8/31/2024	100052
Rohde & Schwarz	FSV40	Signal Analyzer (10Hz-40GHz)	5/11/2023	Annual	5/11/2024	101619
Rohde & Schwarz	ESW44	EMI Test Receiver	6/6/2023	Annual	6/6/2024	101668
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	6/22/2023	Annual	6/22/2024	102356
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	11/30/2023	Annual	11/30/2024	161616
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	12/27/2023	Annual	12/27/2024	164715
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	6/2/2023	Annual	6/2/2024	100050
Rohde & Schwarz	HFH2-Z2	Loop Antenna	5/1/2023	Annual	5/1/2024	100519
Rohde & Schwarz	FSW43	Signal Analyzer (2Hz-43.5GHz)	7/13/2023	Annual	7/13/2024	101261
Schwarzbeck	VULB 9162	Bilog Antenna (30MHz - 6GHz)	4/17/2023	Annual	4/17/2024	00304

**Table 5-1. Test Equipment**

**Notes:**

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

FCC ID: BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 12 of 572

## 6.0 SAMPLE CALCULATIONS

### Emission Designator

#### $\pi/2$ BPSK / QPSK Modulation

**Emission Designator = 8M62G7W**

BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination of Any

#### QAM Modulation

**Emission Designator = 8M45D7W**

BW = 8.45 MHz

D = Amplitude/Angle Modulated


7 = Quantized/Digital Info

W = Combination of Any

### Spurious Radiated Emission

#### **Example: Spurious emission at 3700.40 MHz**

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was  $-81.0$  dBm. The gain of the substituted antenna is  $8.1$  dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of  $-81.0$  dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is  $2.0$  dB at  $3700.40$  MHz. So  $6.1$  dB is added to the signal generator reading of  $-30.9$  dBm yielding  $-24.80$  dBm. The fundamental EIRP was  $25.50$  dBm so this harmonic was  $25.50$  dBm  $- (-24.80) = 50.3$  dBc.

FCC ID: BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 13 of 572

V2.2 09/07/2023


## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: Apple Inc.  
 FCC ID: BCGA2903  
 FCC Classification: PCS Licensed Transmitter (PCB)  
 Mode(s): LTE/NR/ULCA

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Occupied Bandwidth	2.1049	N/A	N/A	Section 7.2
	Conducted Band Edge / Spurious Emissions (LTE Band 30)	2.1051, 27.53(a)	Undesirable emissions must meet the limits detailed in 27.53(a)	PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (LTE Band 7)	2.1051, 27.53(m)	Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (LTE Band 41)			PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (NR Band n41)			PASS	Sections 7.3, 7.4
	Transmitter Conducted Output Power	2.1046	N/A	N/A	See RF Exposure Report
	Additional Maximum Power Reduction (A-MPR)	2.1046	N/A	N/A	Section 7.5
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 30)	27.50(a)(3)	< 0.25 Watts max. EIRP	PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 7)	27.50(h)(2)	< 2 Watts max. EIRP	PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 41)			PASS	Section 7.6
Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band n41)	PASS			Section 7.6	
Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block over the temperature and voltage range as tested	PASS	Section 7.8	
RADIATED	Radiated Spurious Emissions (LTE Band 30)	2.1053, 27.53(a)	> 70 + 10log <sub>10</sub> (P[Watts])	PASS	Section 7.7
	Radiated Spurious Emissions (LTE Band 7)	2.1053, 27.53(m)	Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Section 7.7
	Radiated Spurious Emissions (LTE Band 41)			PASS	Section 7.7
	Radiated Spurious Emissions (NR Band n41)			PASS	Section 7.7


**Table 7-1. Summary of Test Results**

FCC ID: BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 14 of 572

V2.2 09/07/2023

**Notes:**

1. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
2. The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
3. All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
4. All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized was Element EMC Software Tool v1.1.

<b>FCC ID:</b> BCGA2903	 <b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 15 of 572

V2.2 09/07/2023

## 7.2 Occupied Bandwidth

§2.1049

### Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section. All ports were tested and only the worst case data were reported.

### Test Procedure Used

KDB 971168 D01 v03r01 – Section 4.2

### Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq$  3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

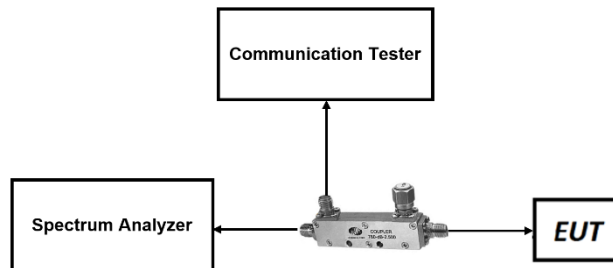



Figure 7-1. Test Instrument & Measurement Setup

### Test Notes

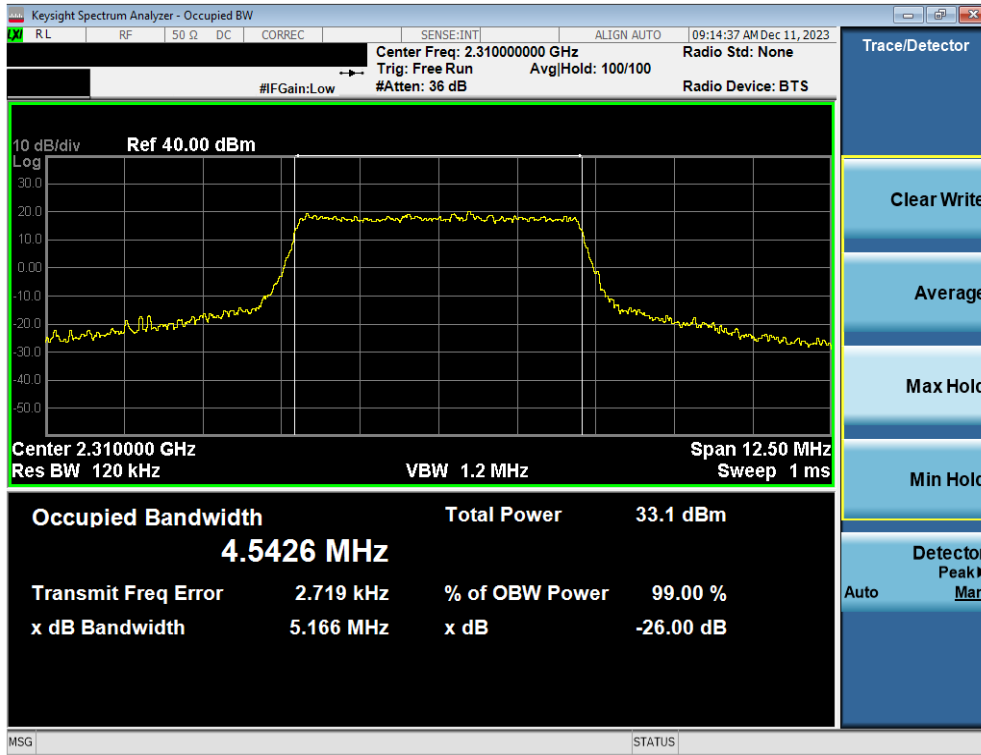
None.

FCC ID: BCGA2903	 PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 16 of 572

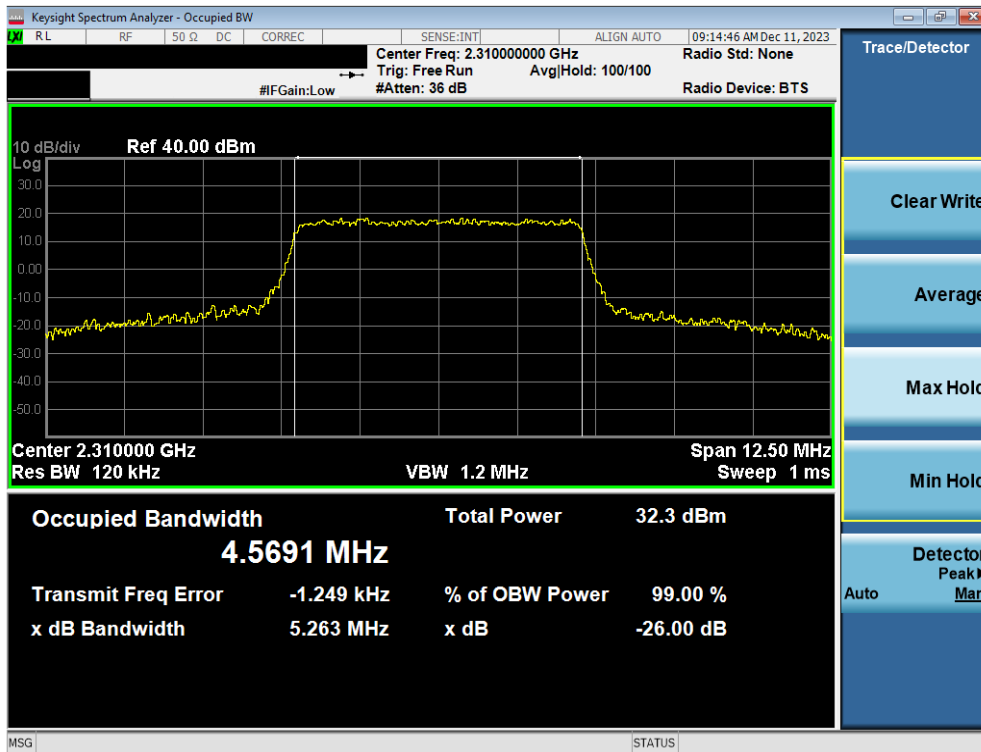
V2.2 09/07/2023



## LTE Band 30

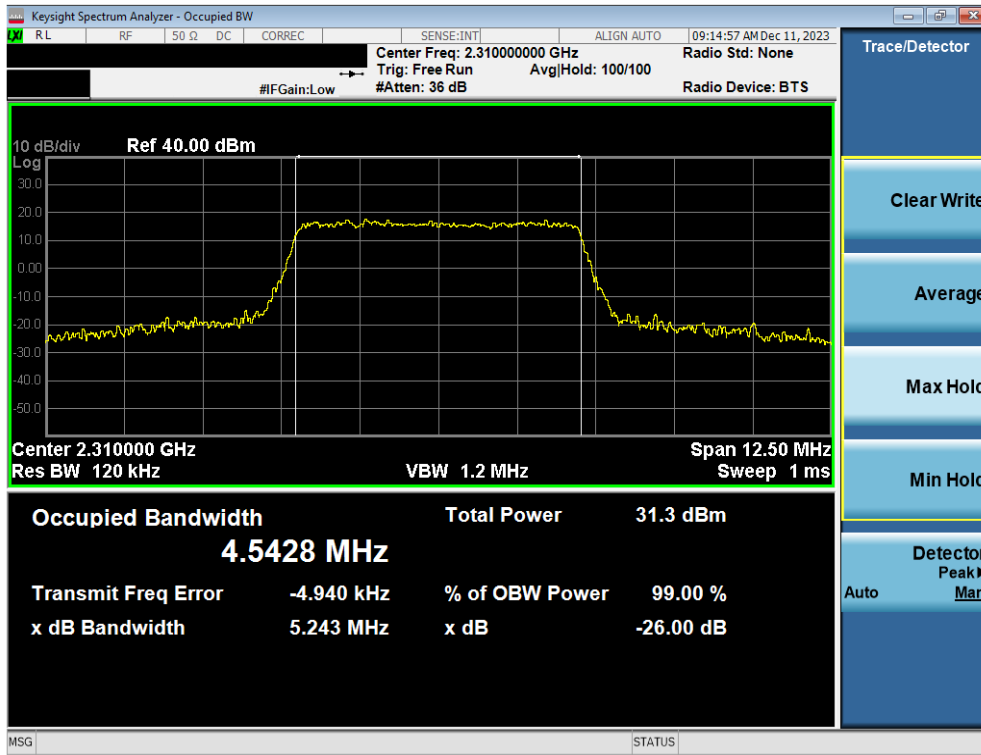


Plot 7-1. Occupied Bandwidth Plot (LTE Band 30 - 5MHz QPSK - Full RB)

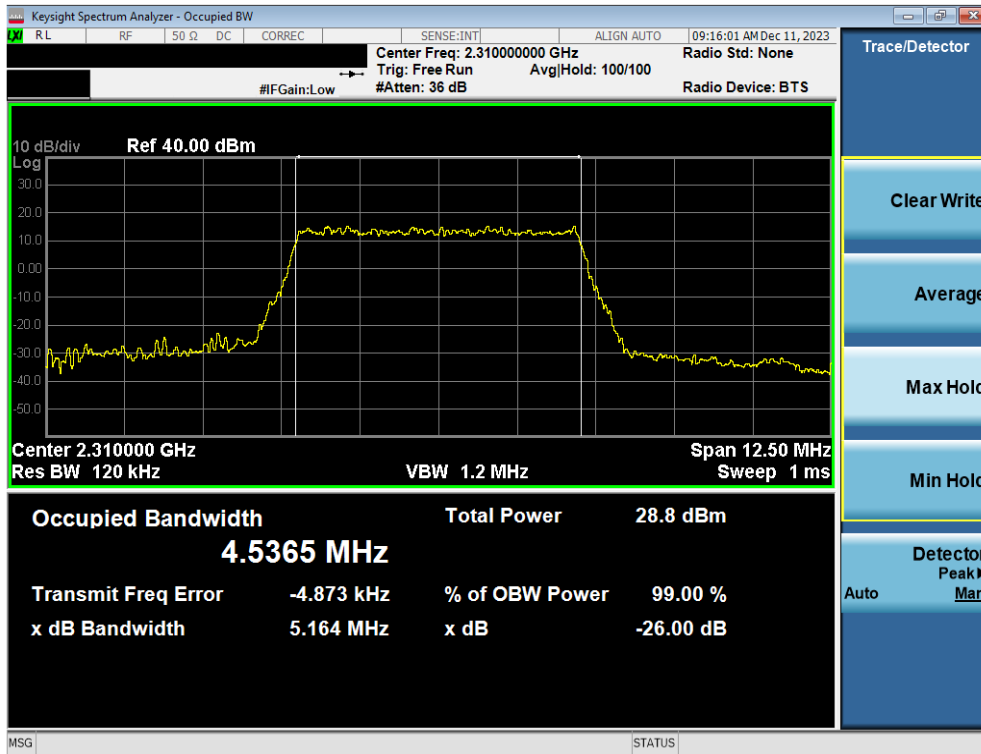


Plot 7-2. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 17 of 572

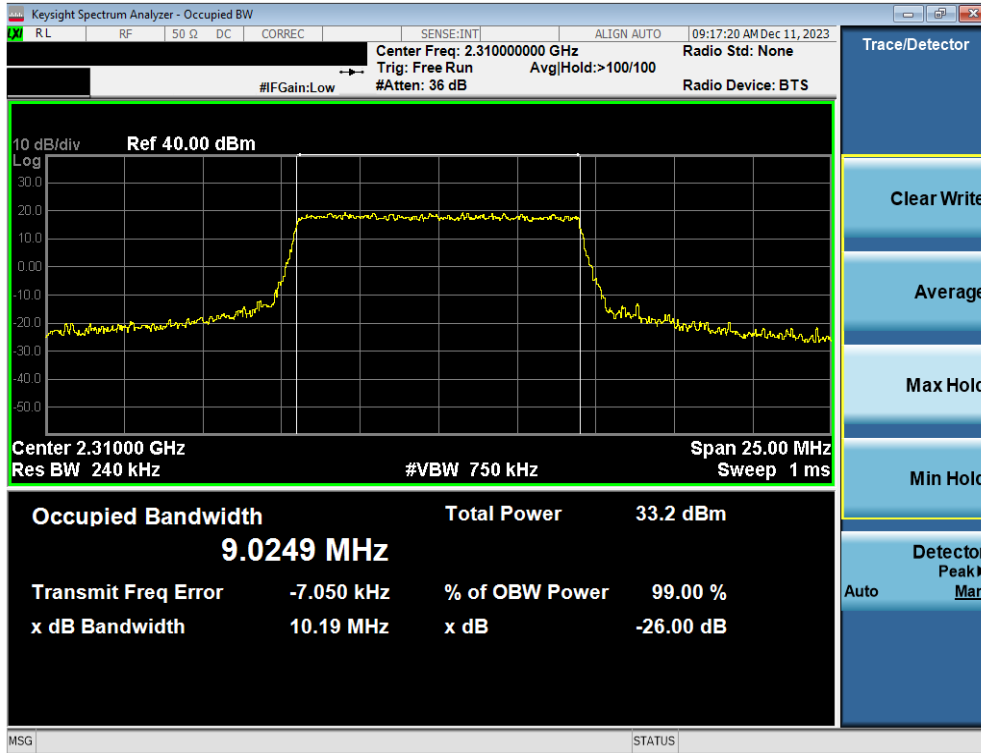


Plot 7-3. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 64-QAM - Full RB)

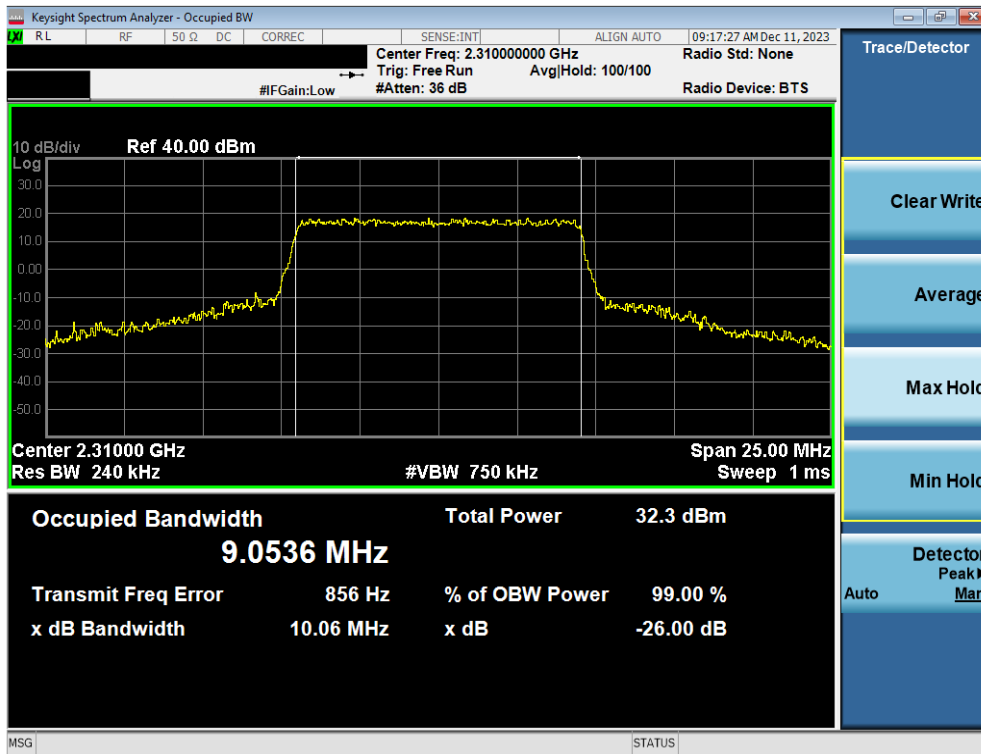


Plot 7-4. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 18 of 572

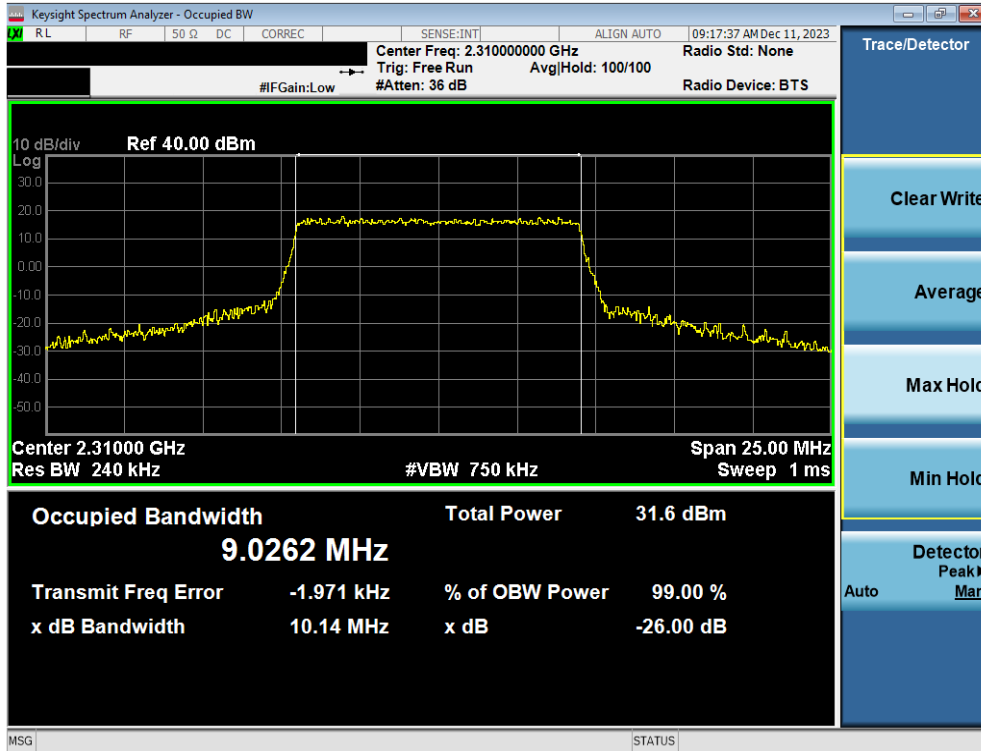


Plot 7-5. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB)

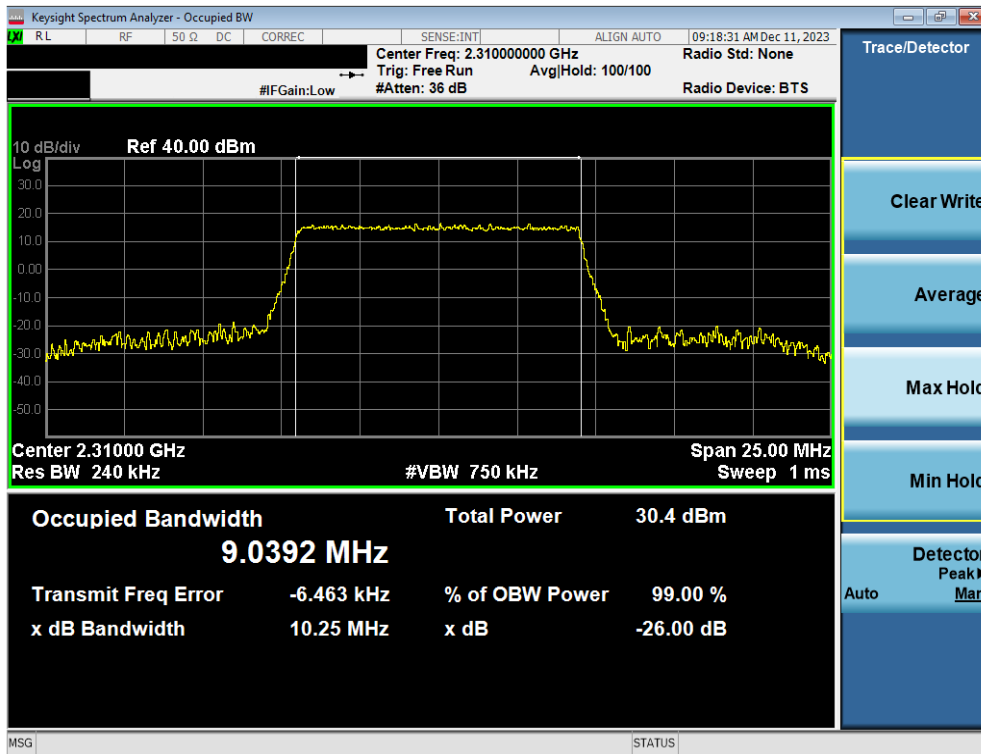


Plot 7-6. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 19 of 572



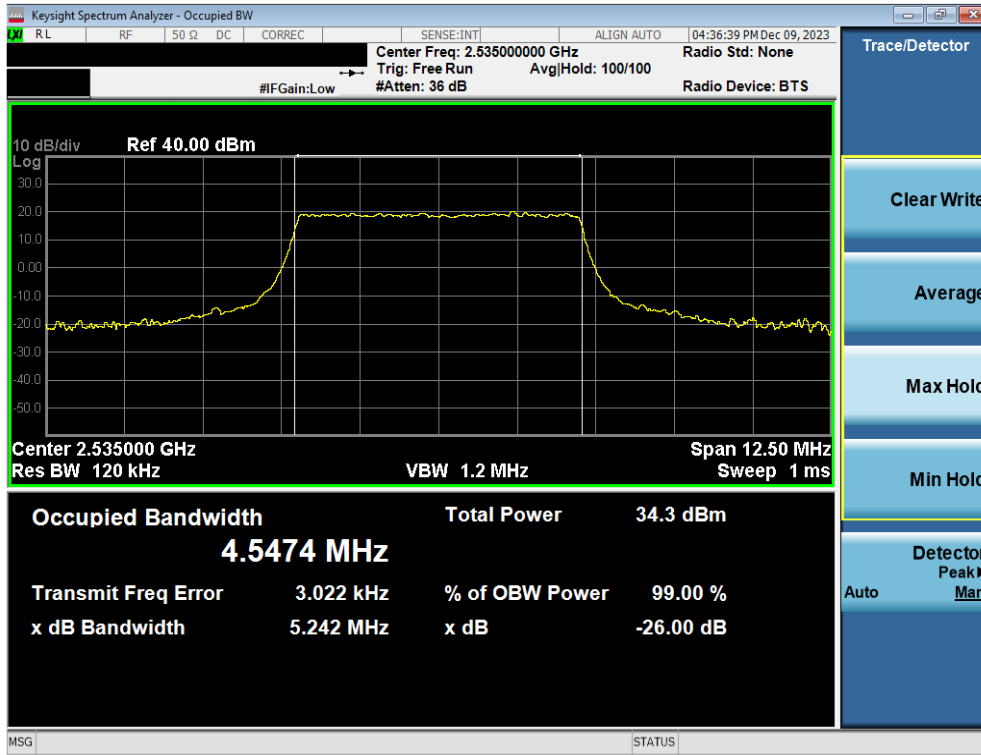
Plot 7-7. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 64-QAM - Full RB)



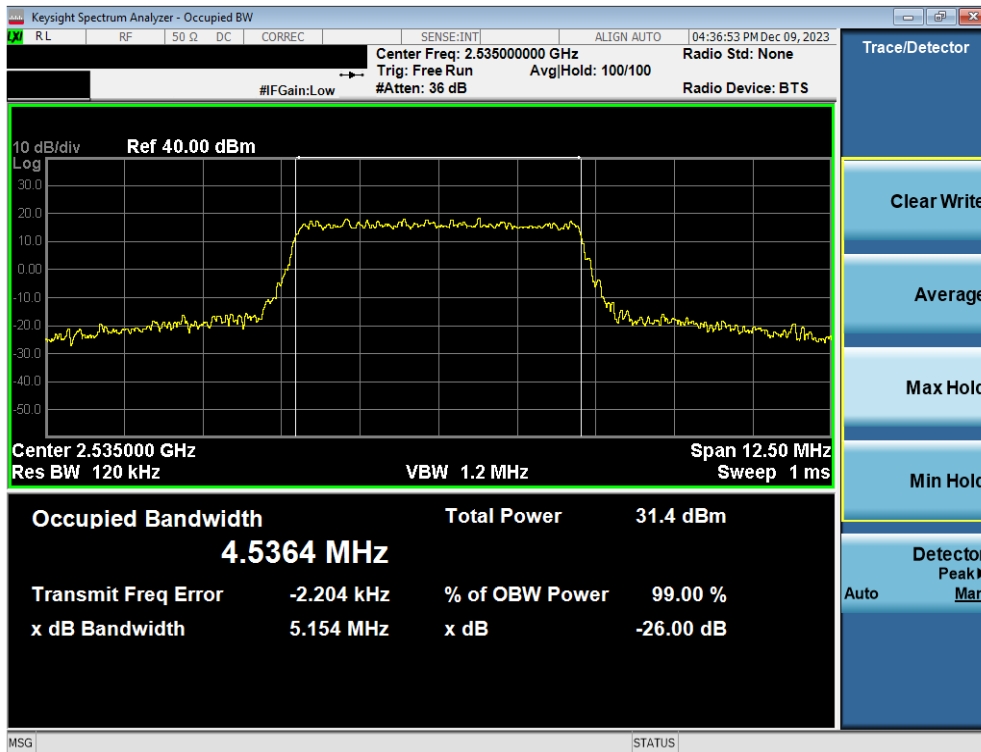
Plot 7-8. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 20 of 572

## LTE Band 7

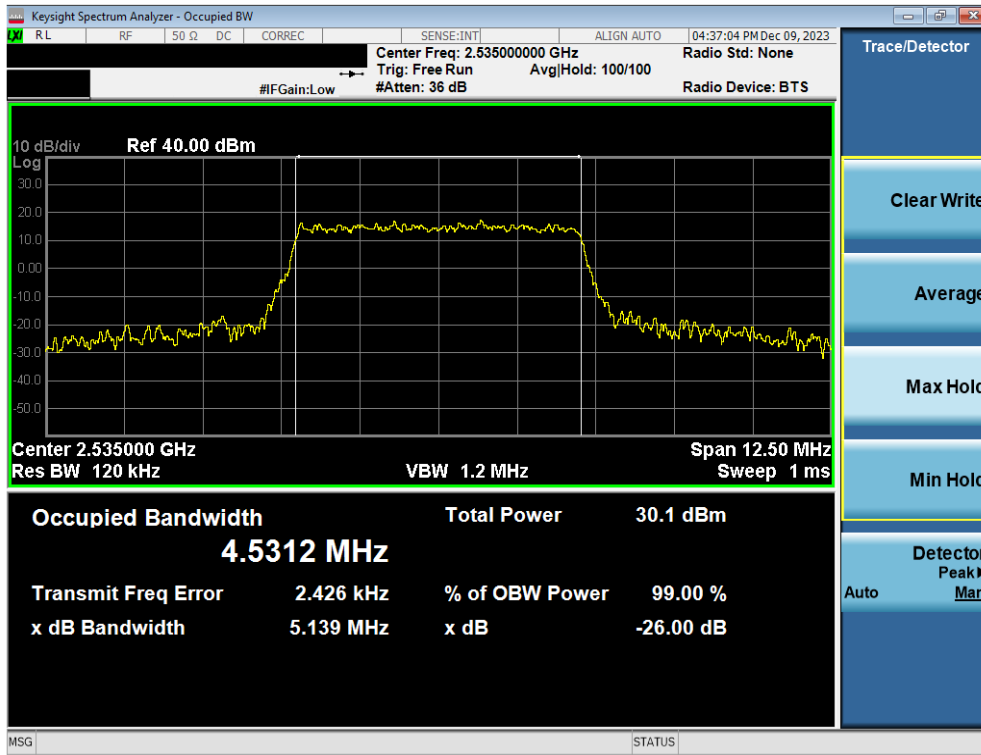


Plot 7-9. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB)

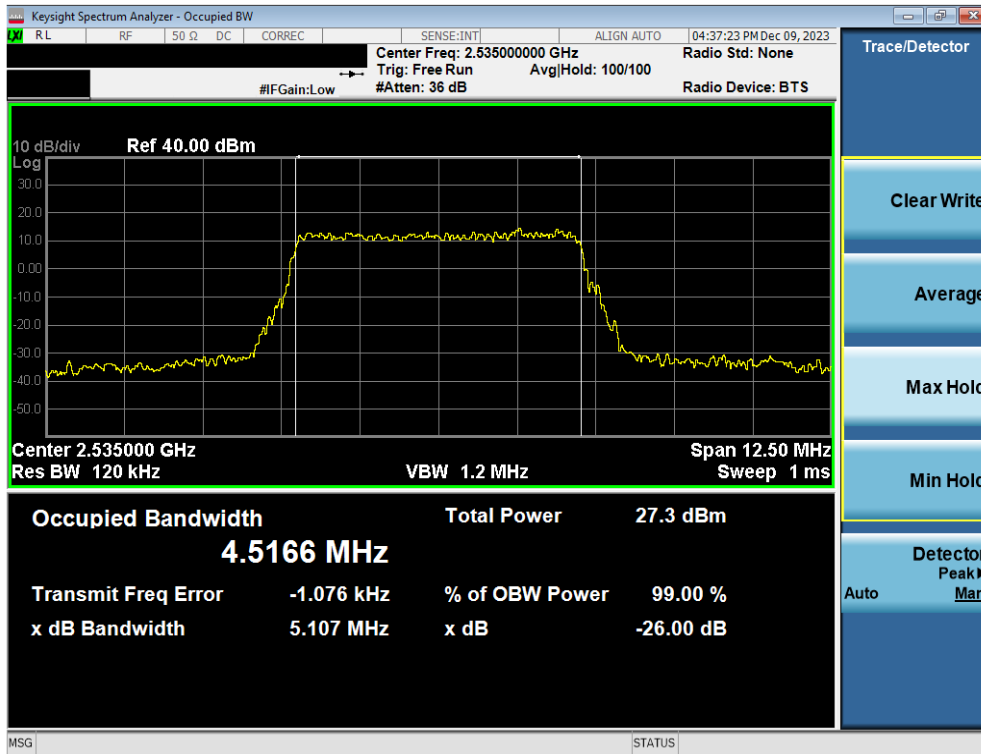


Plot 7-10. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 21 of 572

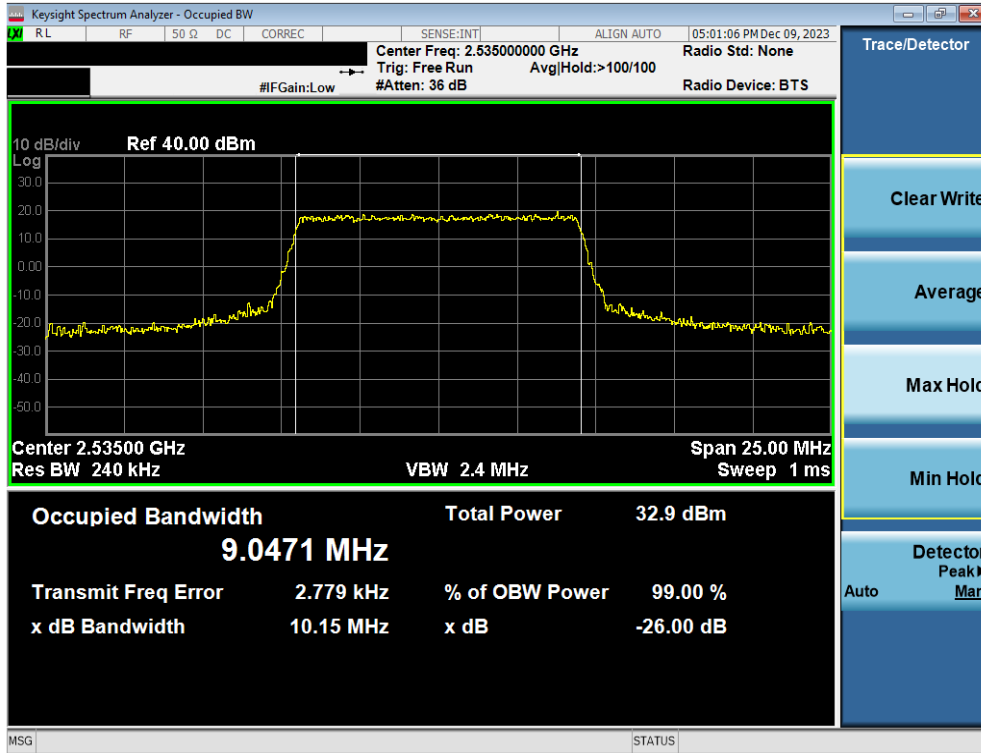


**Plot 7-11. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 64-QAM - Full RB)**

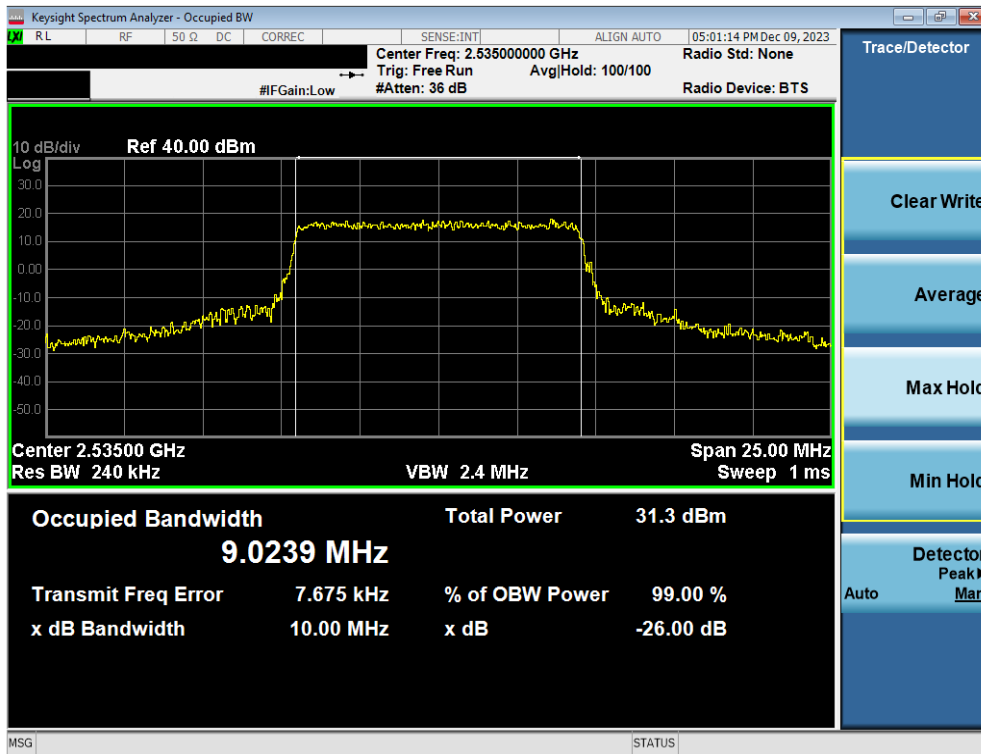


**Plot 7-12. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 256-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 22 of 572

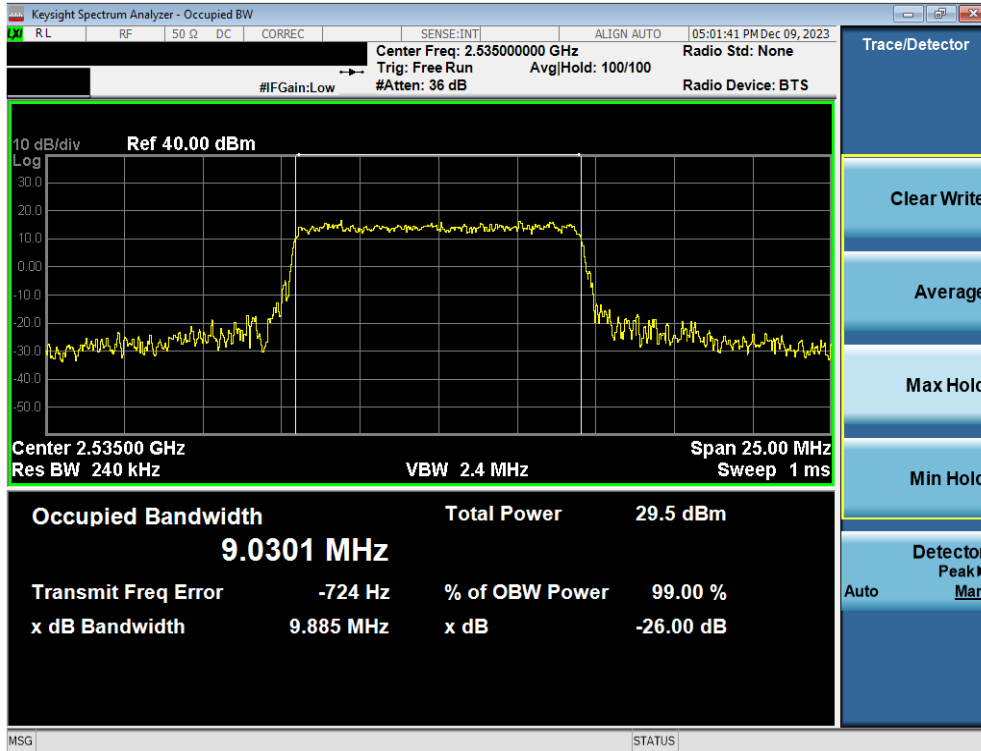


Plot 7-13. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB)

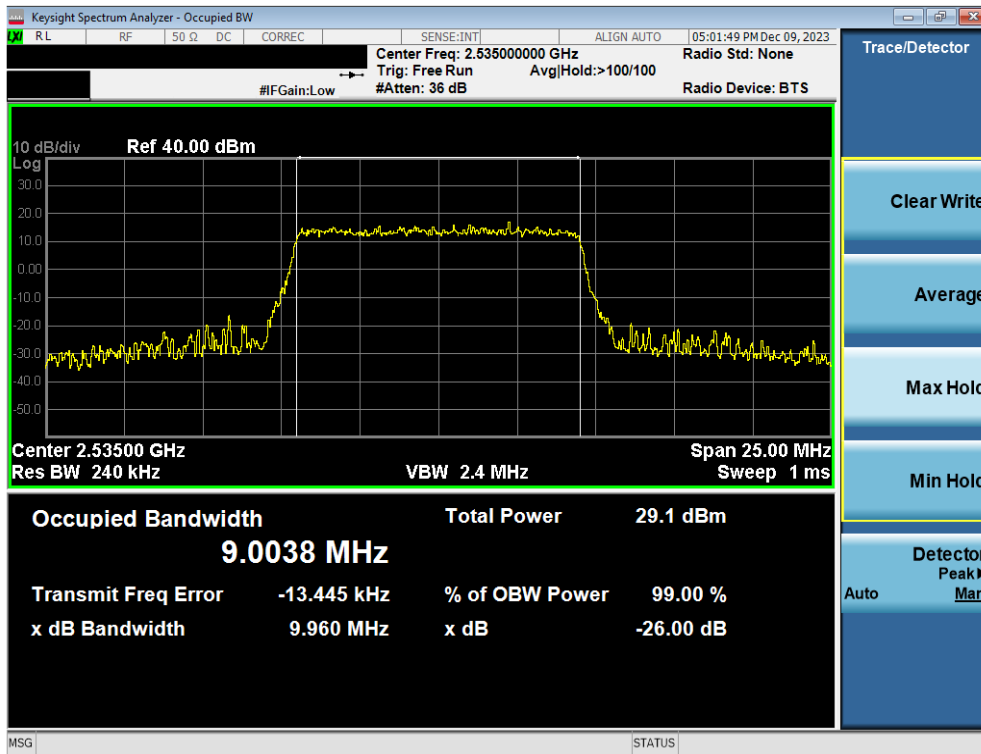


Plot 7-14. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 23 of 572



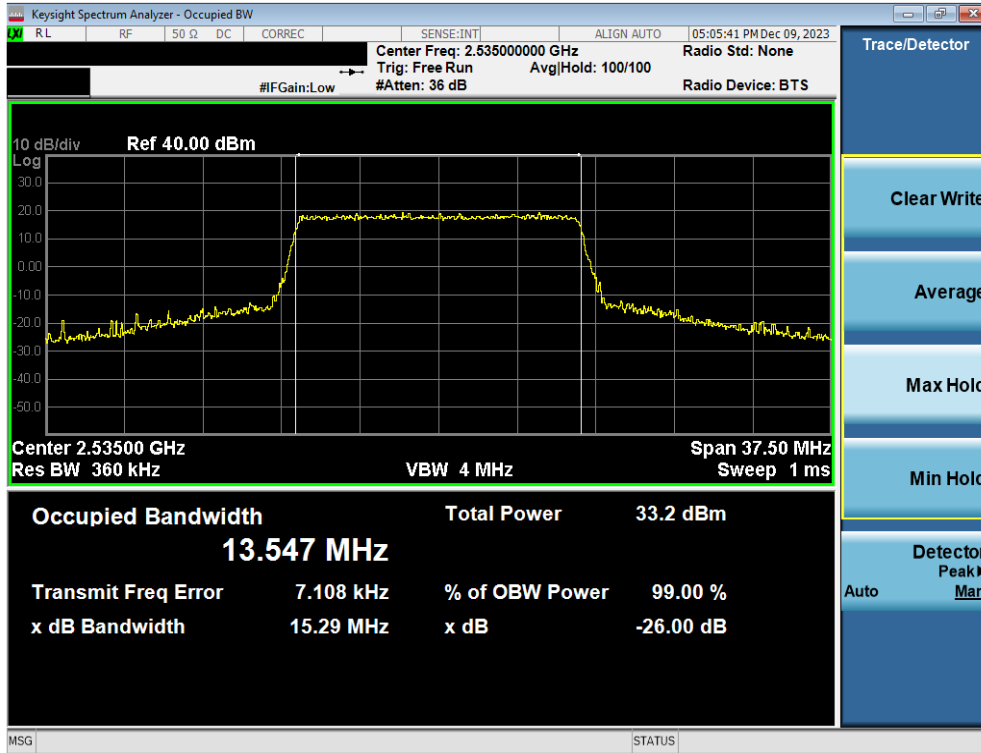
Plot 7-15. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 64-QAM - Full RB)



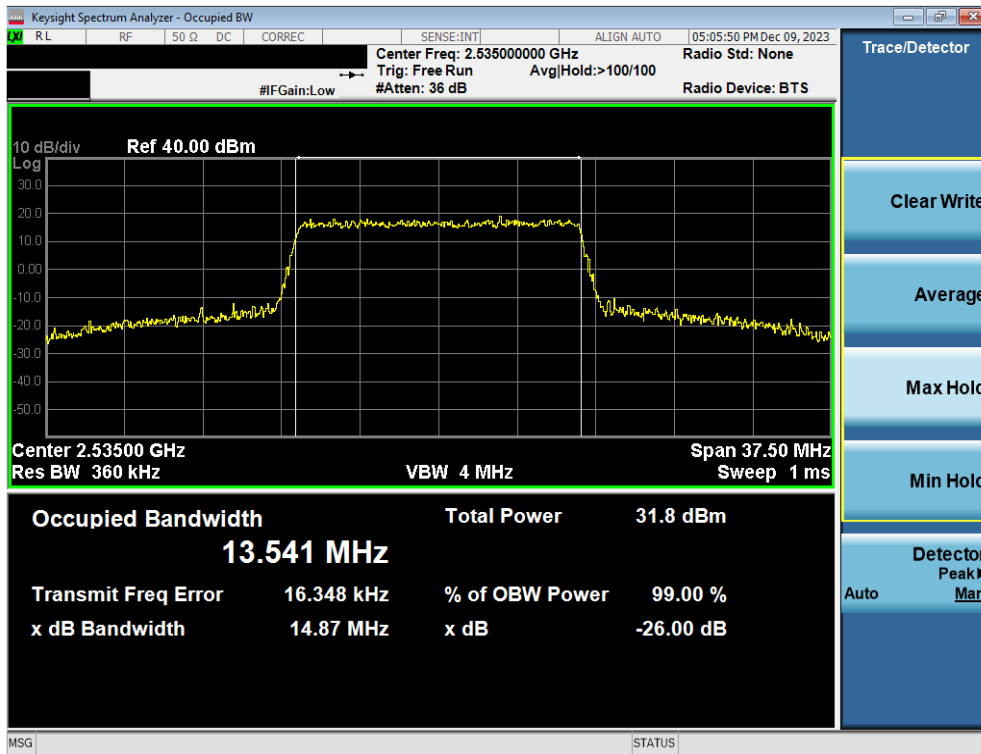
Plot 7-16. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 24 of 572



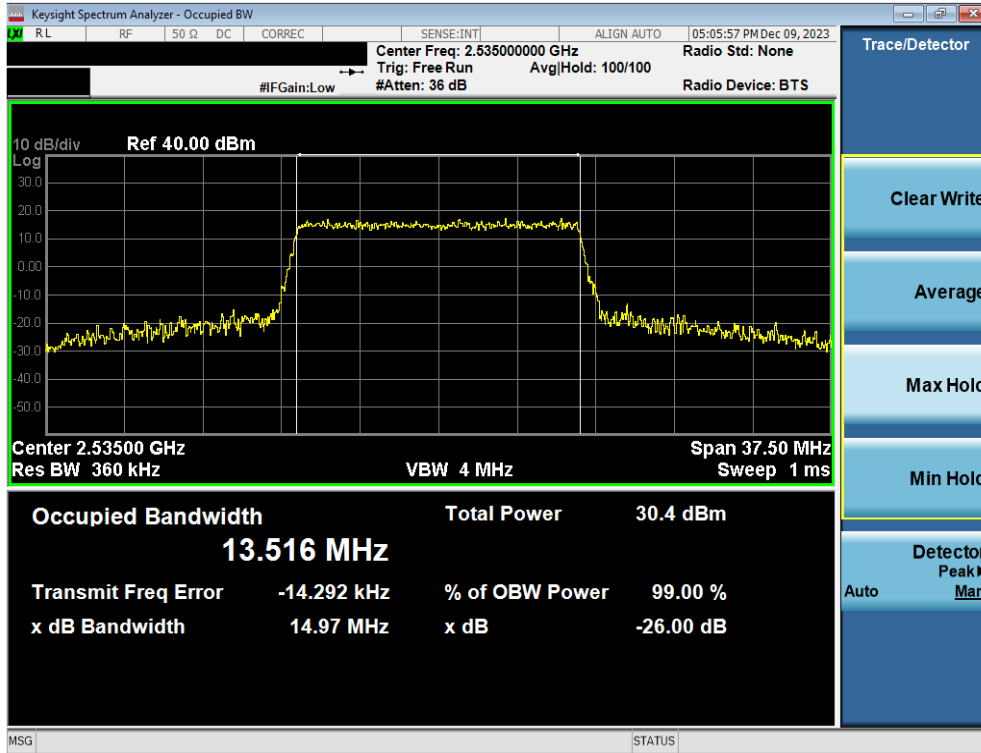


Plot 7-17. Occupied Bandwidth Plot (LTE Band 7 - 15MHz QPSK - Full RB)

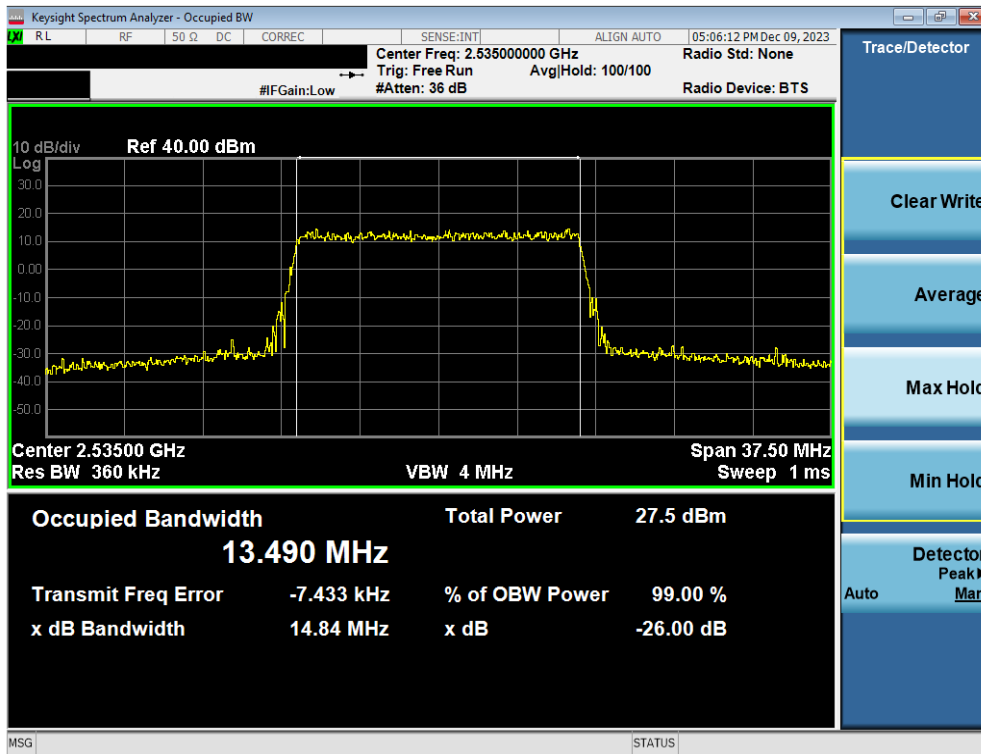


Plot 7-18. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 25 of 572

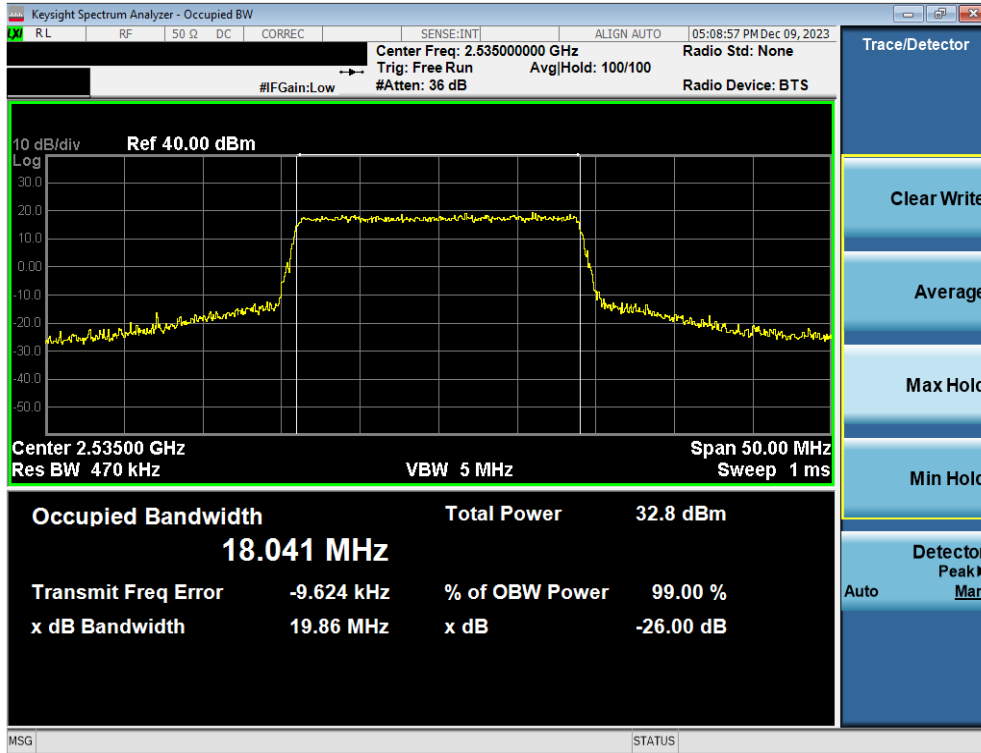


Plot 7-19. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 64-QAM - Full RB)

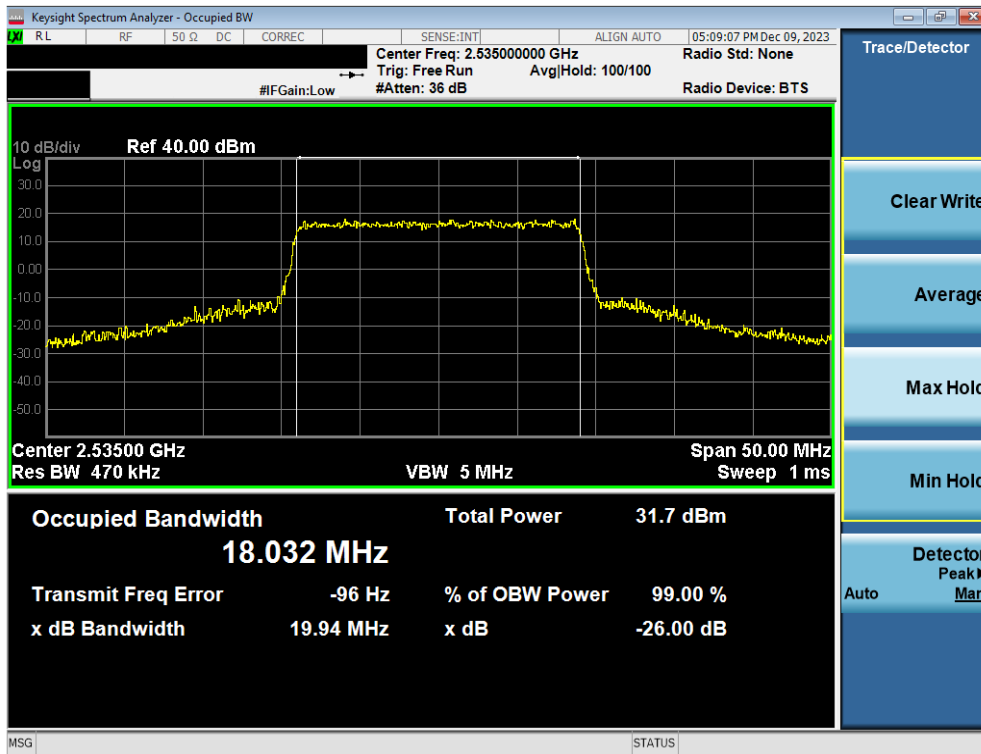


Plot 7-20. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 26 of 572

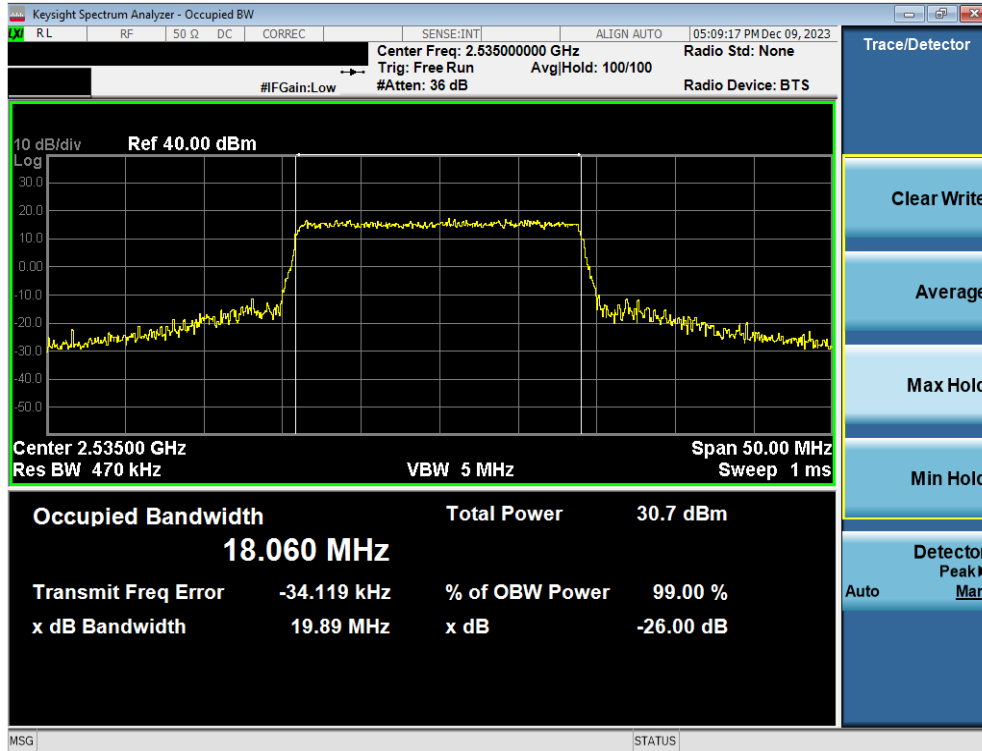


Plot 7-21. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB)

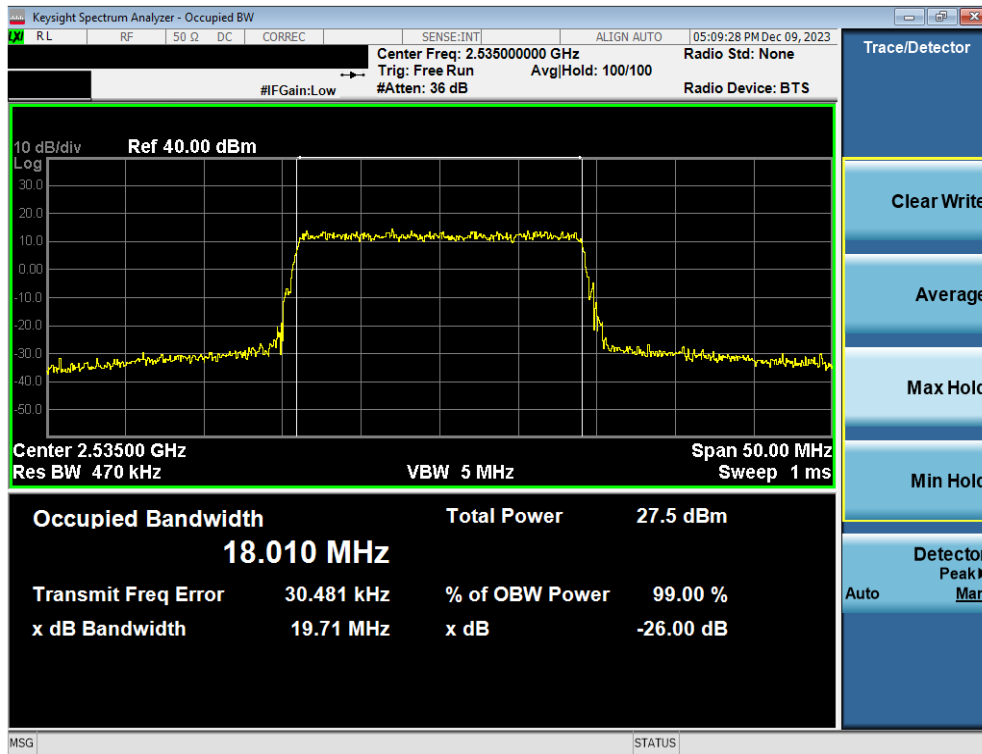


Plot 7-22. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 27 of 572



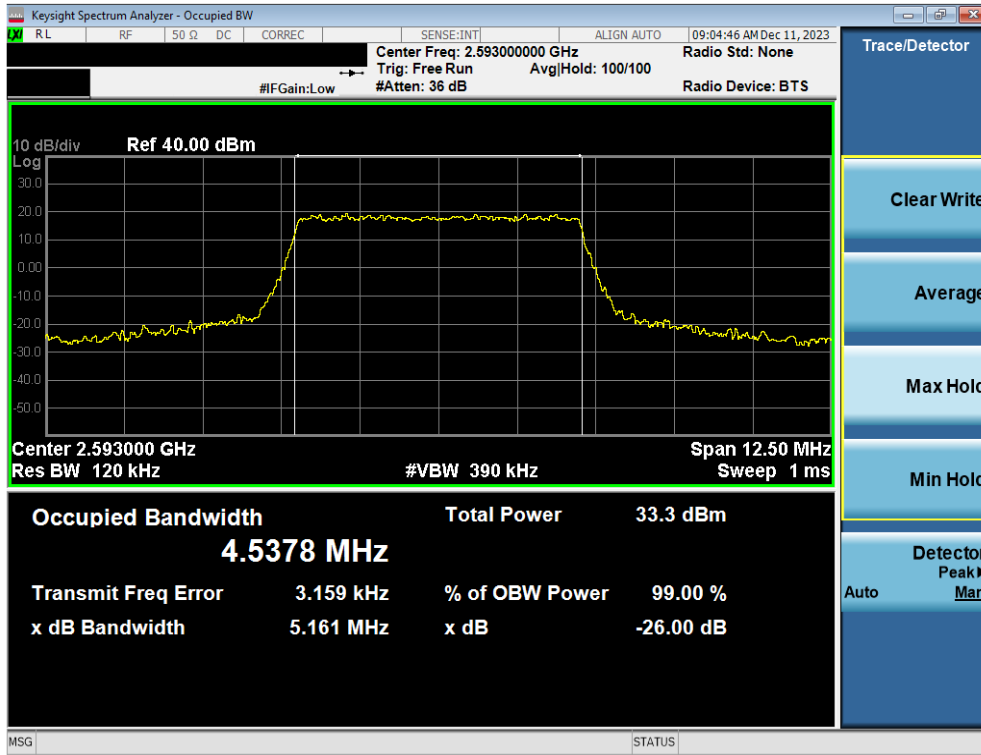
Plot 7-23. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 64-QAM - Full RB)



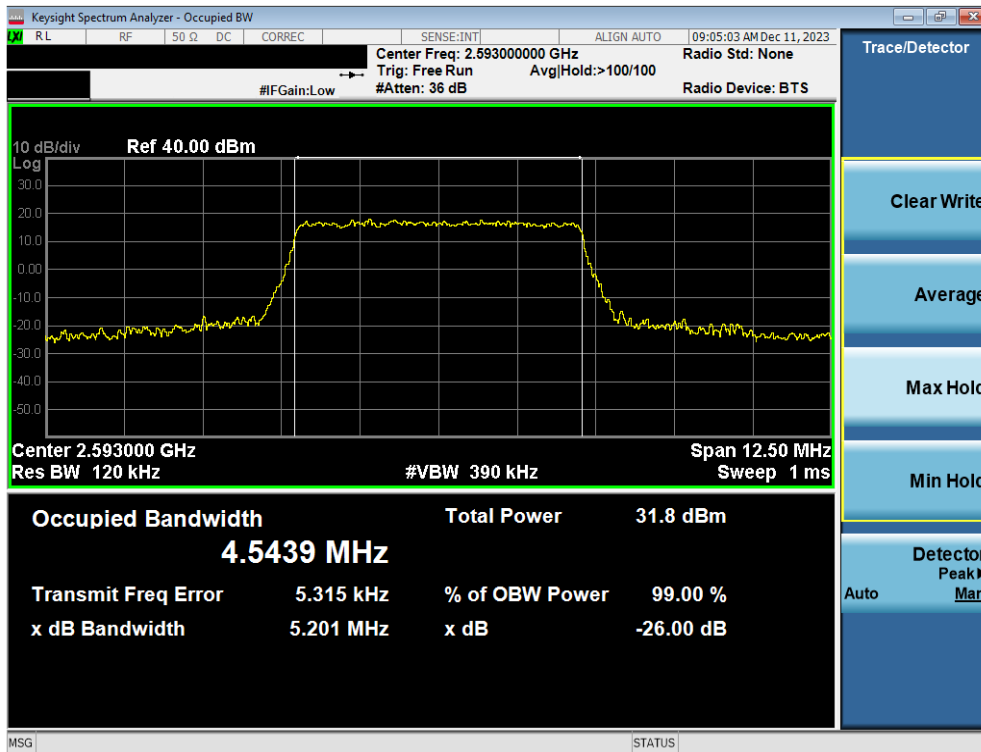
Plot 7-24. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 28 of 572

# LTE Band 41

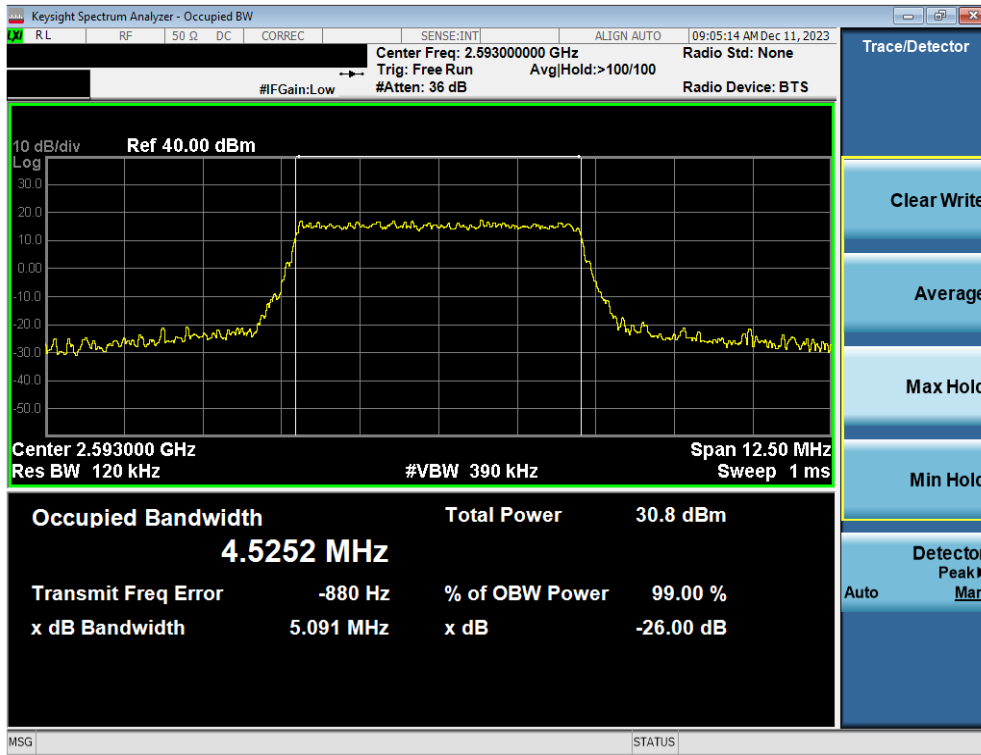


Plot 7-25. Occupied Bandwidth Plot (LTE Band 41 - 5MHz QPSK - Full RB)

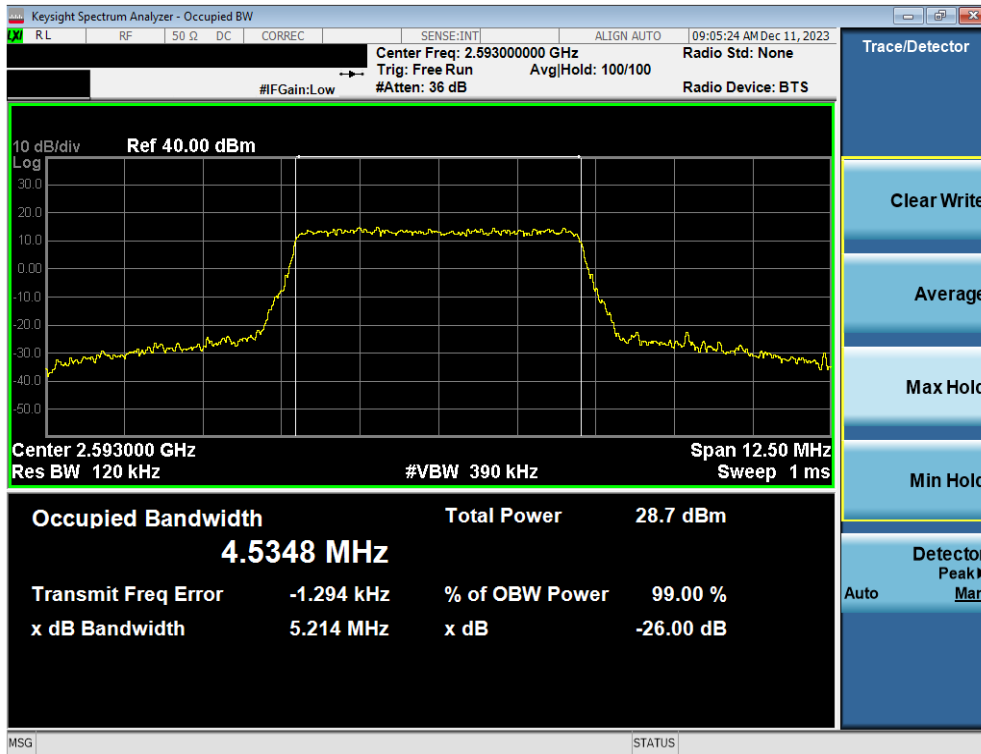


Plot 7-26. Occupied Bandwidth Plot (LTE Band 41 - 5MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 29 of 572

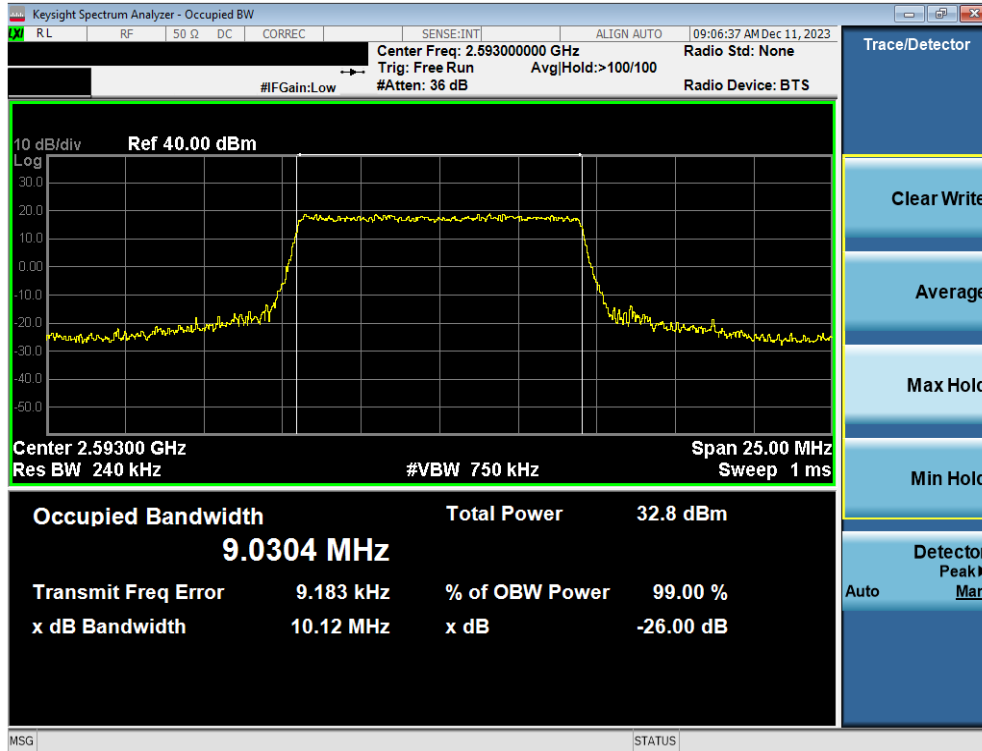


Plot 7-27. Occupied Bandwidth Plot (LTE Band 41 - 5MHz 64-QAM - Full RB)

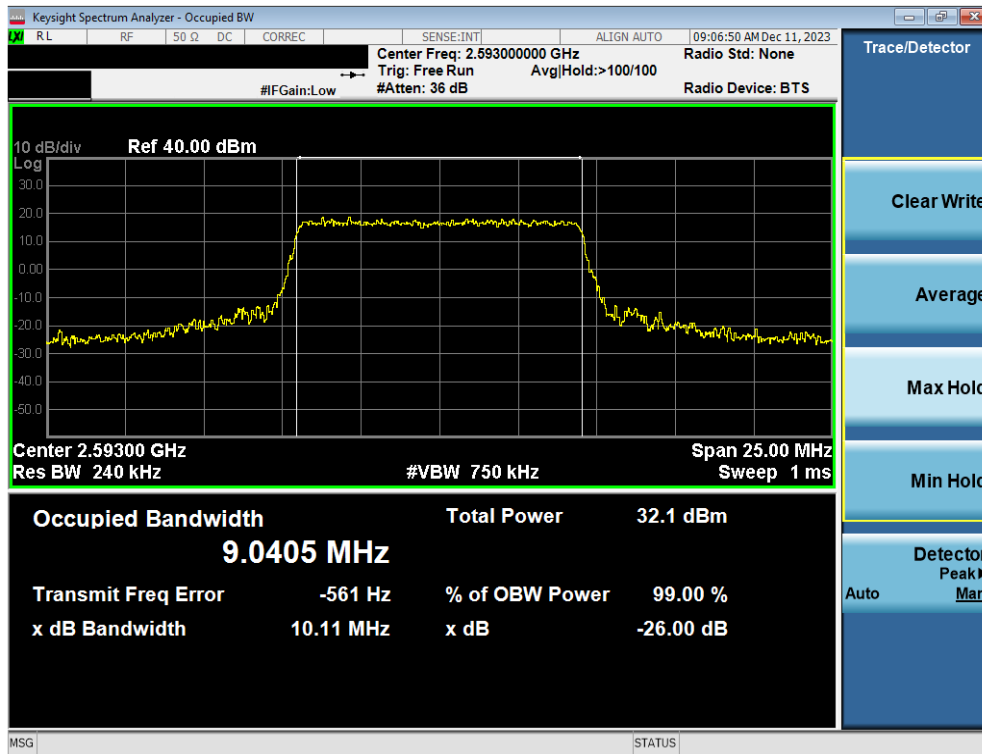


Plot 7-28. Occupied Bandwidth Plot (LTE Band 41 - 5MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 30 of 572

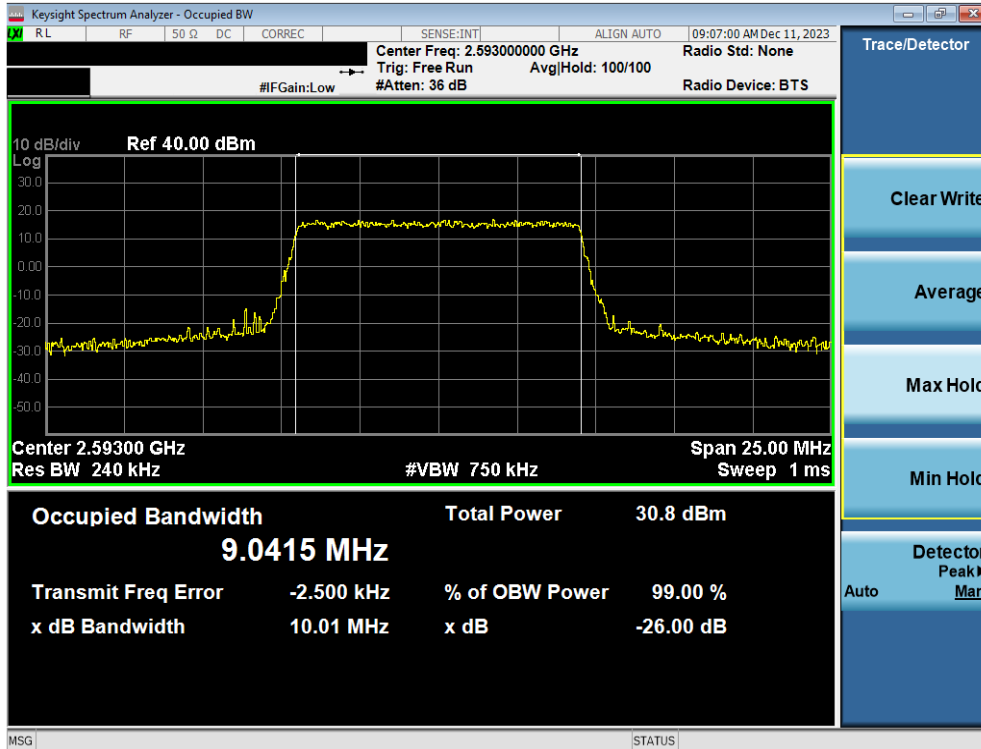


Plot 7-29. Occupied Bandwidth Plot (LTE Band 41 - 10MHz QPSK - Full RB)

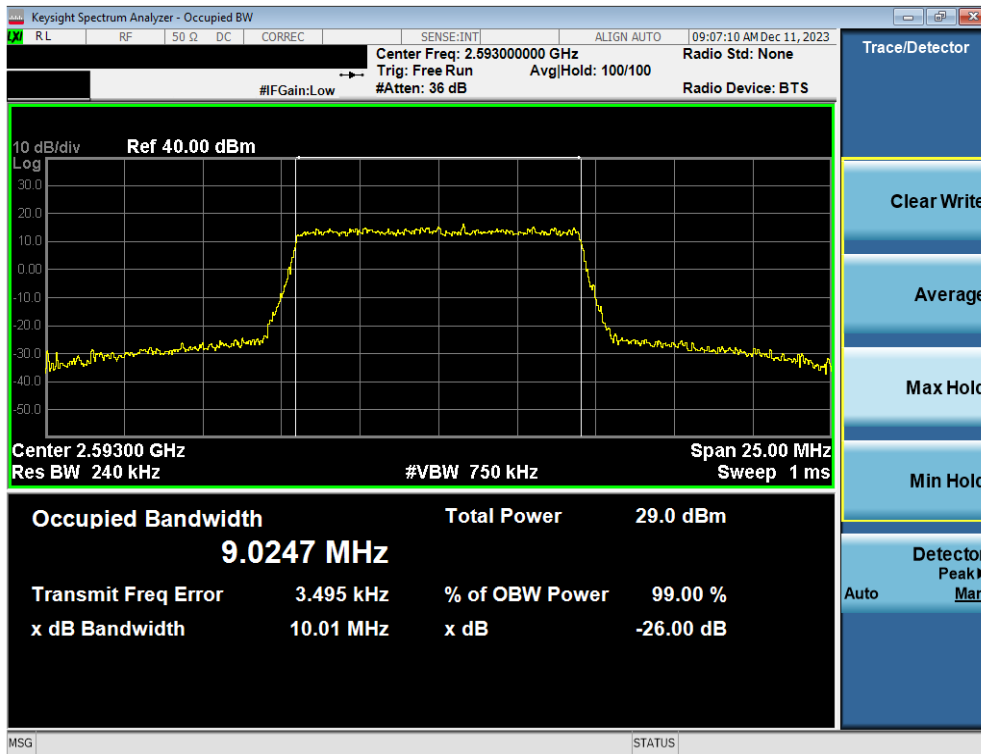


Plot 7-30. Occupied Bandwidth Plot (LTE Band 41 - 10MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 31 of 572



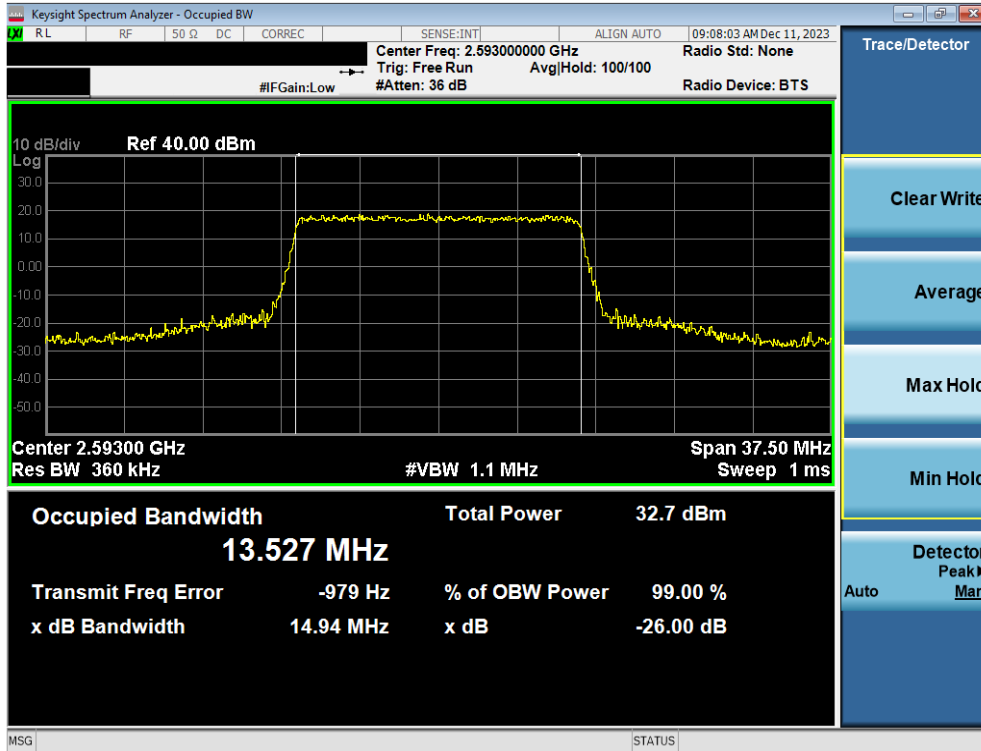
Plot 7-31. Occupied Bandwidth Plot (LTE Band 41 - 10MHz 64-QAM - Full RB)



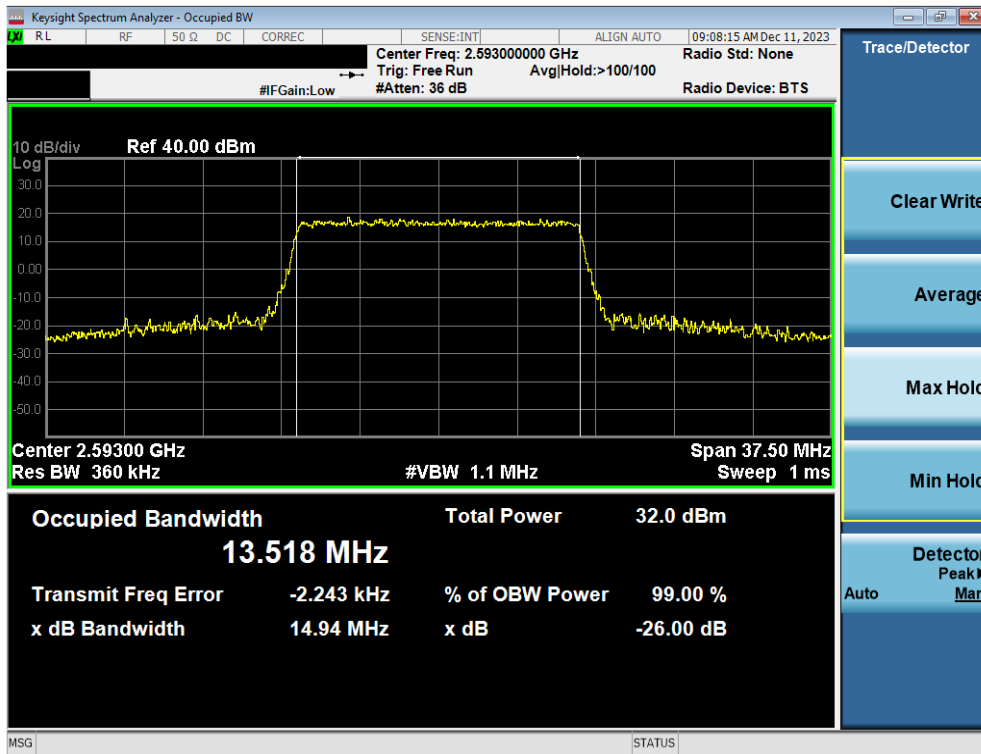
Plot 7-32. Occupied Bandwidth Plot (LTE Band 41 - 10MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 32 of 572



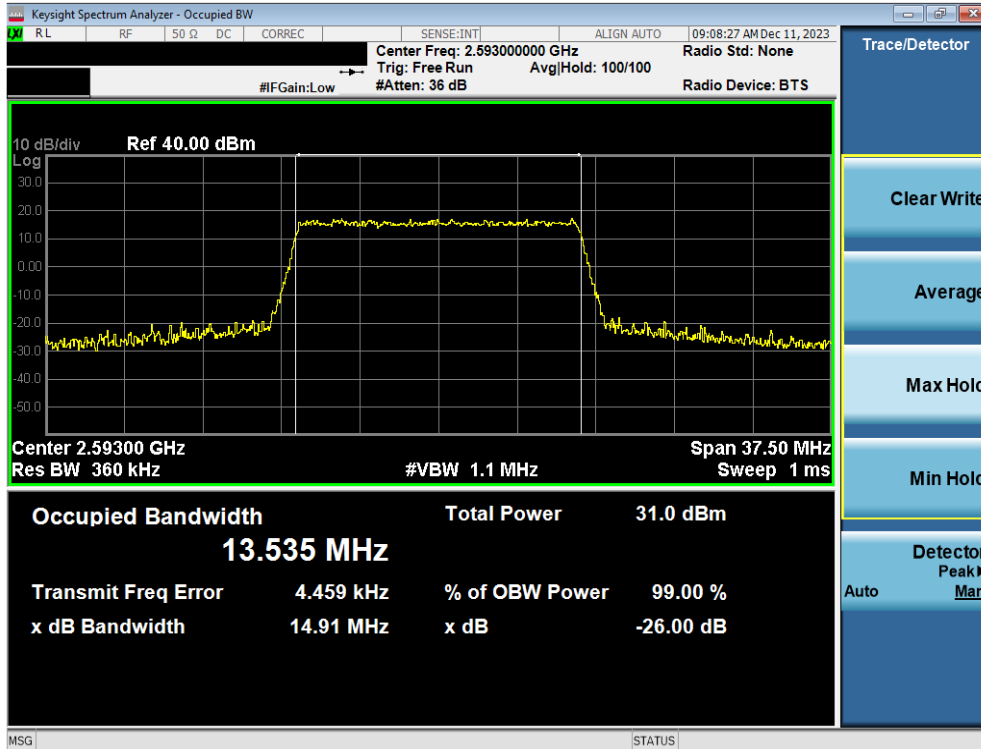


Plot 7-33. Occupied Bandwidth Plot (LTE Band 41 - 15MHz QPSK - Full RB)

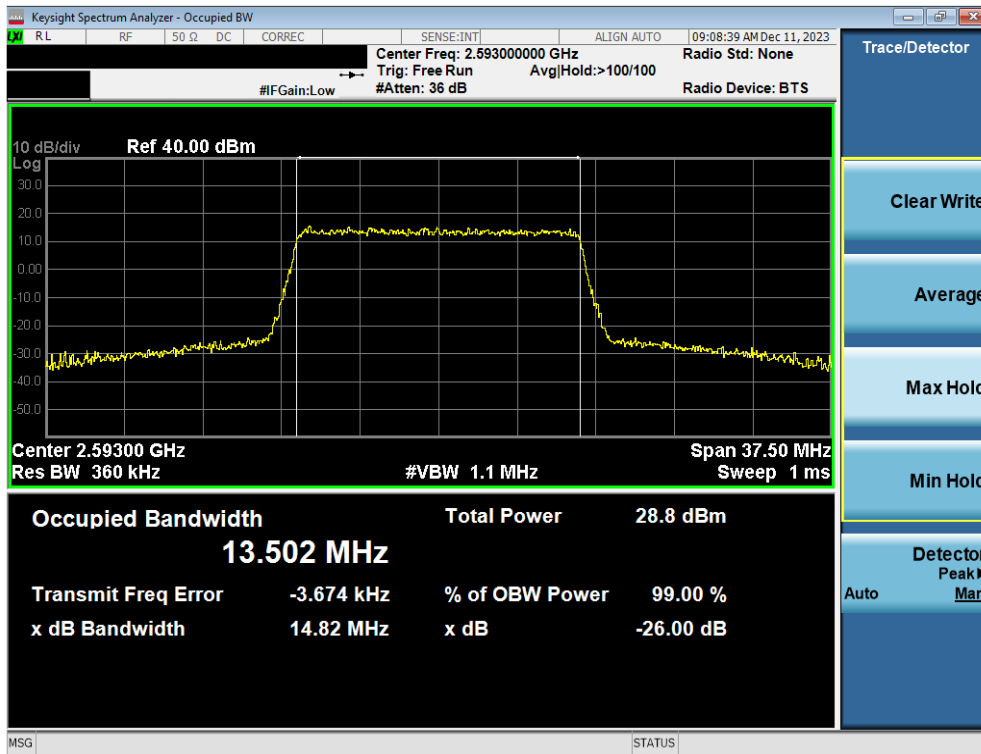


Plot 7-34. Occupied Bandwidth Plot (LTE Band 41 - 15MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 33 of 572

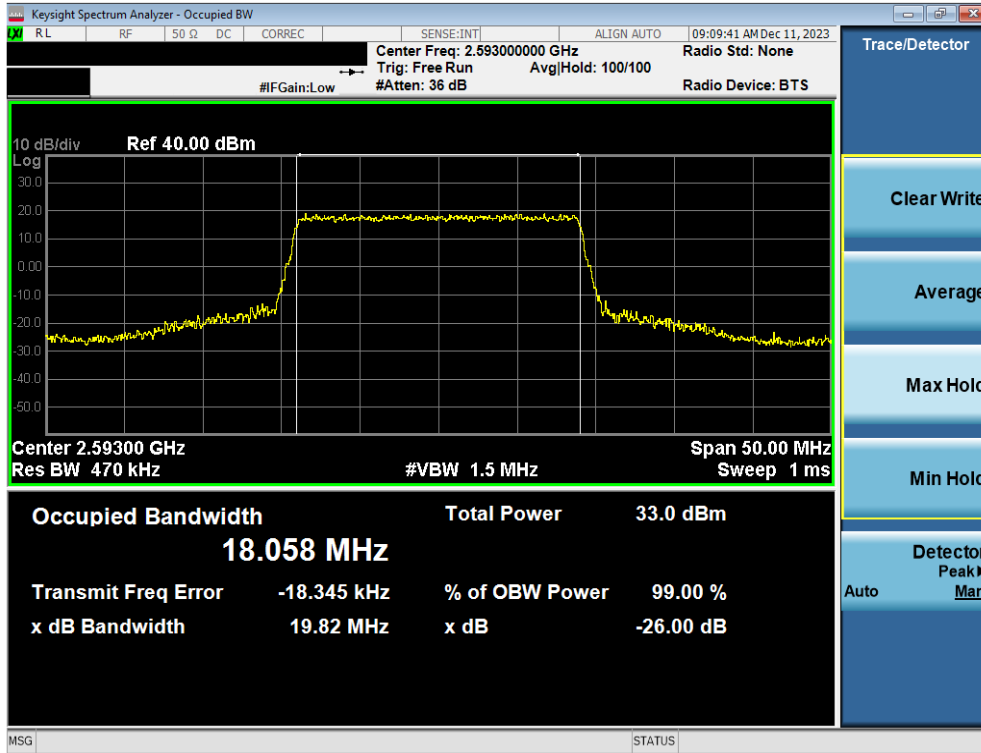


Plot 7-35. Occupied Bandwidth Plot (LTE Band 41 - 15MHz 64-QAM - Full RB)

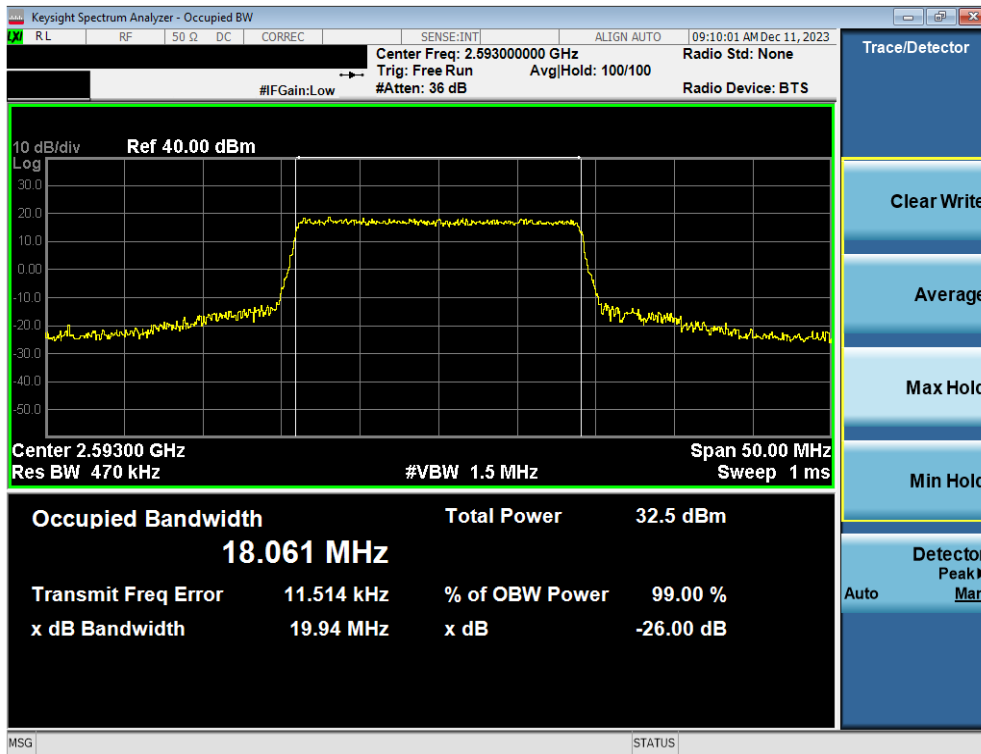


Plot 7-36. Occupied Bandwidth Plot (LTE Band 41 - 15MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 34 of 572

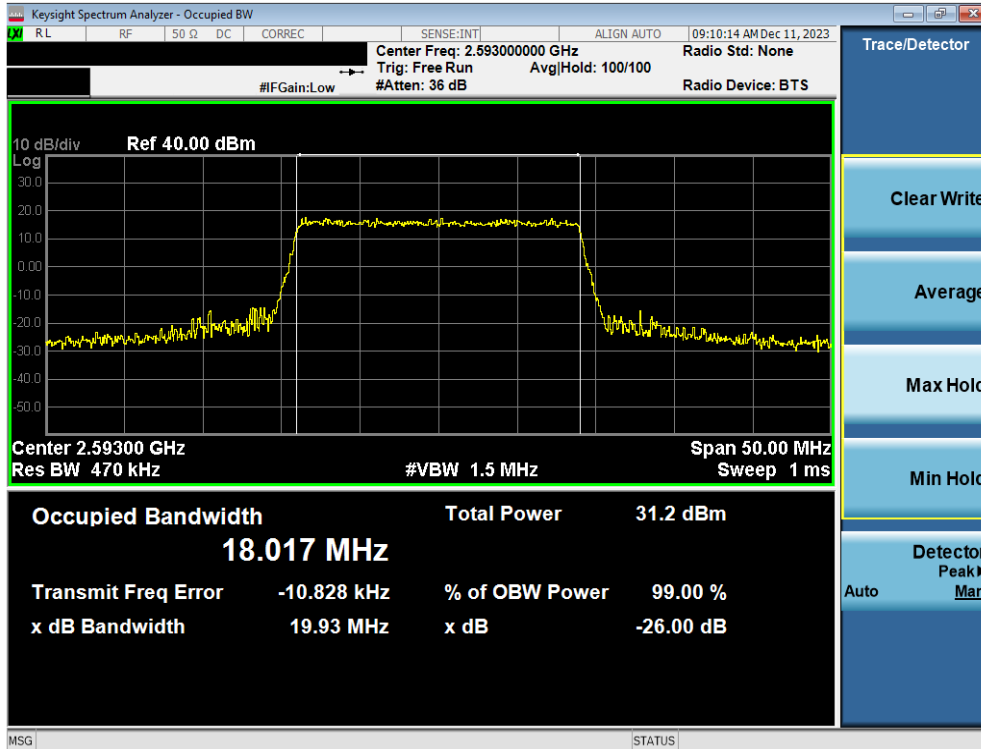


Plot 7-37. Occupied Bandwidth Plot (LTE Band 41 - 20MHz QPSK - Full RB)

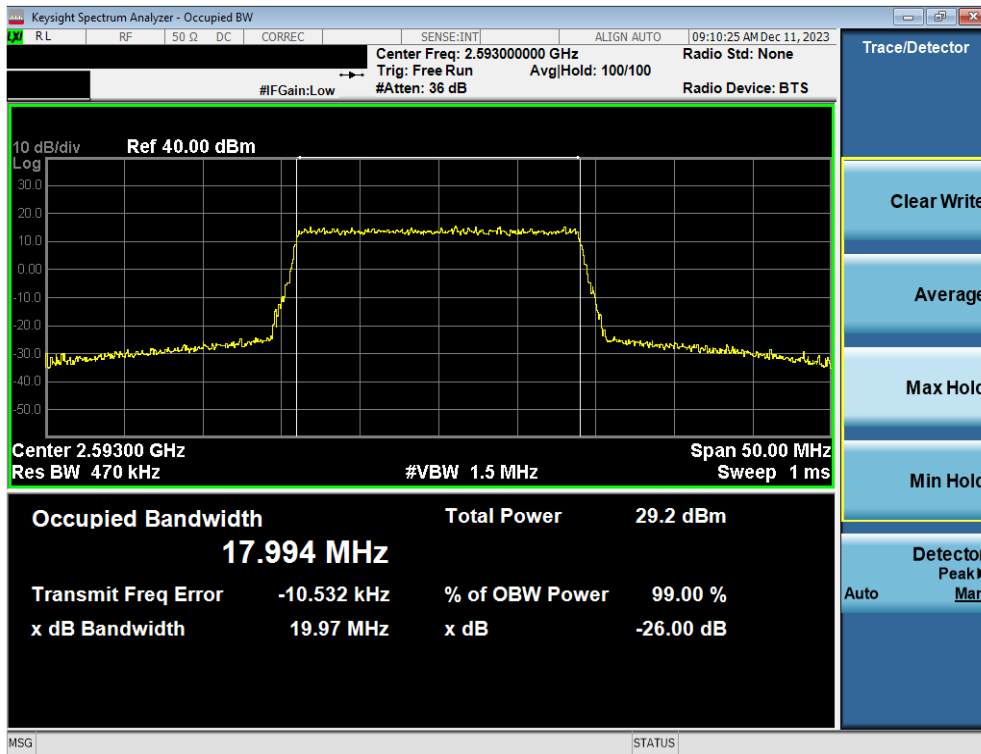


Plot 7-38. Occupied Bandwidth Plot (LTE Band 41 - 20MHz 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 35 of 572



Plot 7-39. Occupied Bandwidth Plot (LTE Band 41 - 20MHz 64-QAM - Full RB)



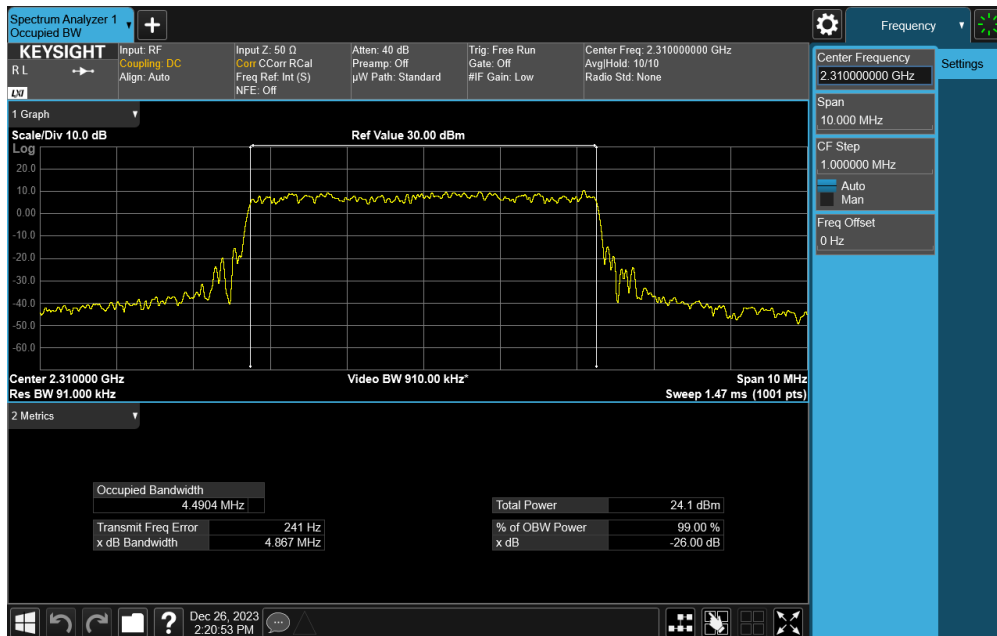
Plot 7-40. Occupied Bandwidth Plot (LTE Band 41 - 20MHz 256-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 36 of 572

### NR Band n30

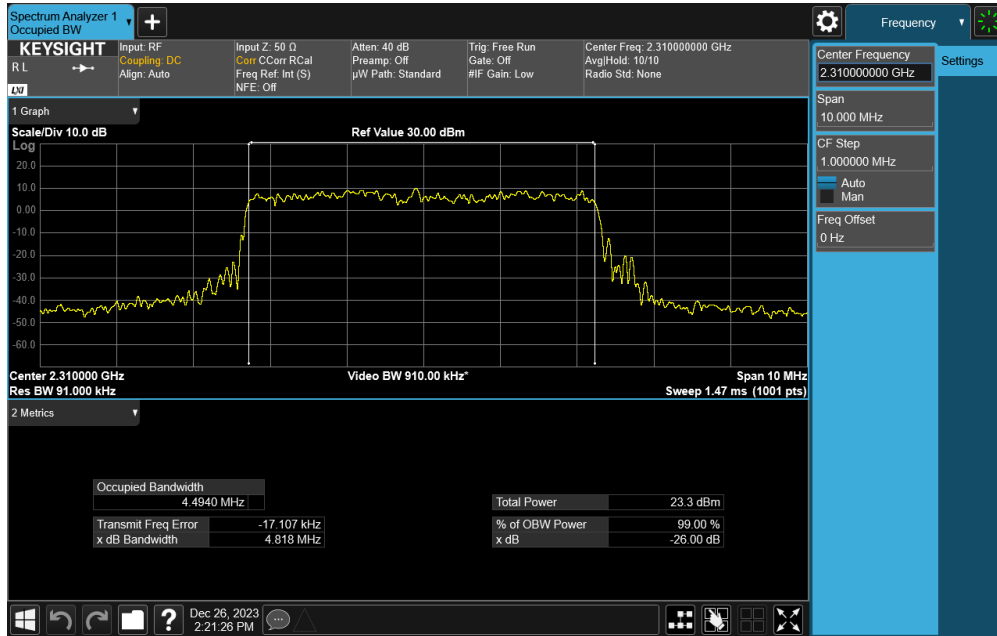


**Plot 7-41. Occupied Bandwidth Plot (NR Band n30 - 5MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)**

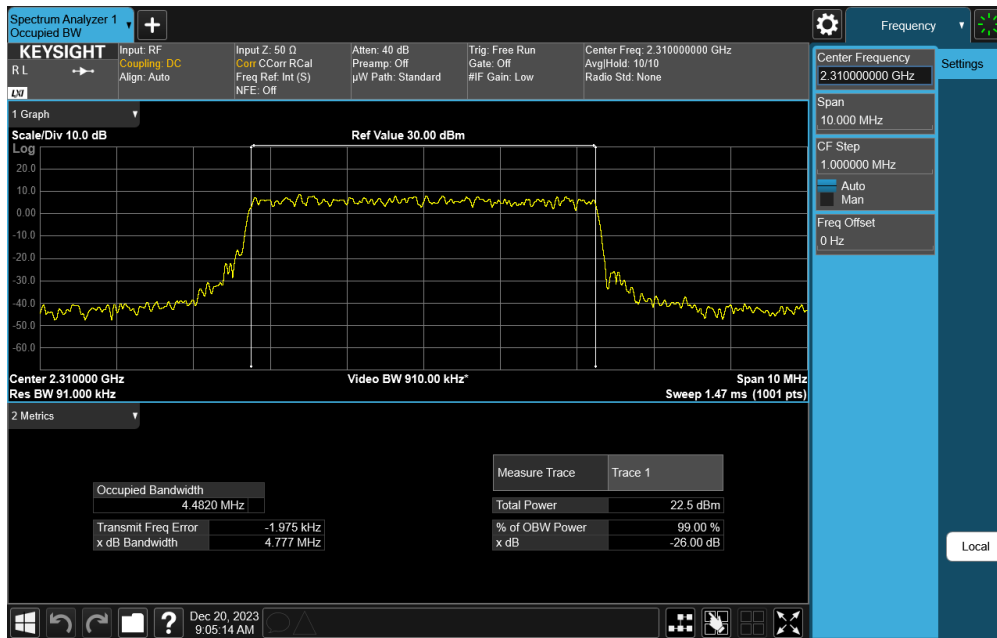


**Plot 7-42. Occupied Bandwidth Plot (NR Band n30 - 5MHz DFT-s-OFDM QPSK - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 37 of 572



Plot 7-43. Occupied Bandwidth Plot (NR Band n30 - 5MHz DFT-s-OFDM 16-QAM - Full RB)

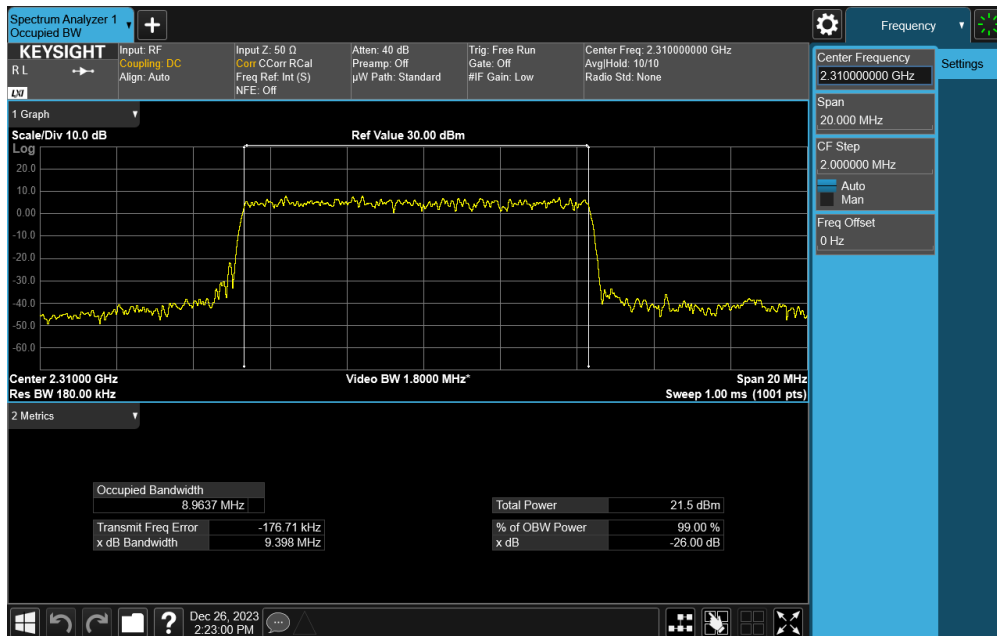


Plot 7-44. Occupied Bandwidth Plot (NR Band n30 - 5MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 38 of 572

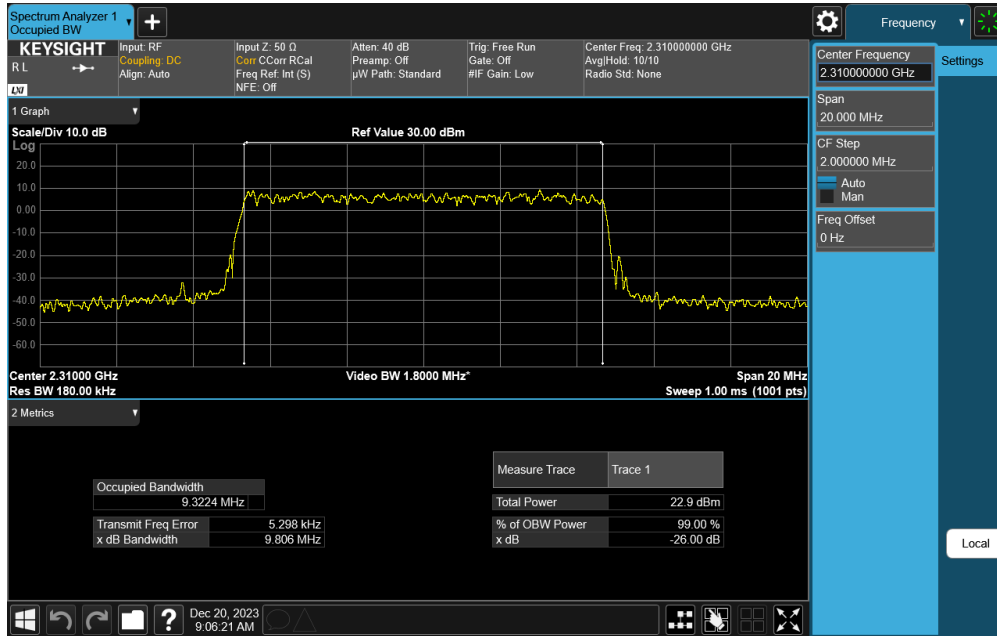


Plot 7-45. Occupied Bandwidth Plot (NR Band n30 - 5MHz CP-OFDM 256-QAM - Full RB)

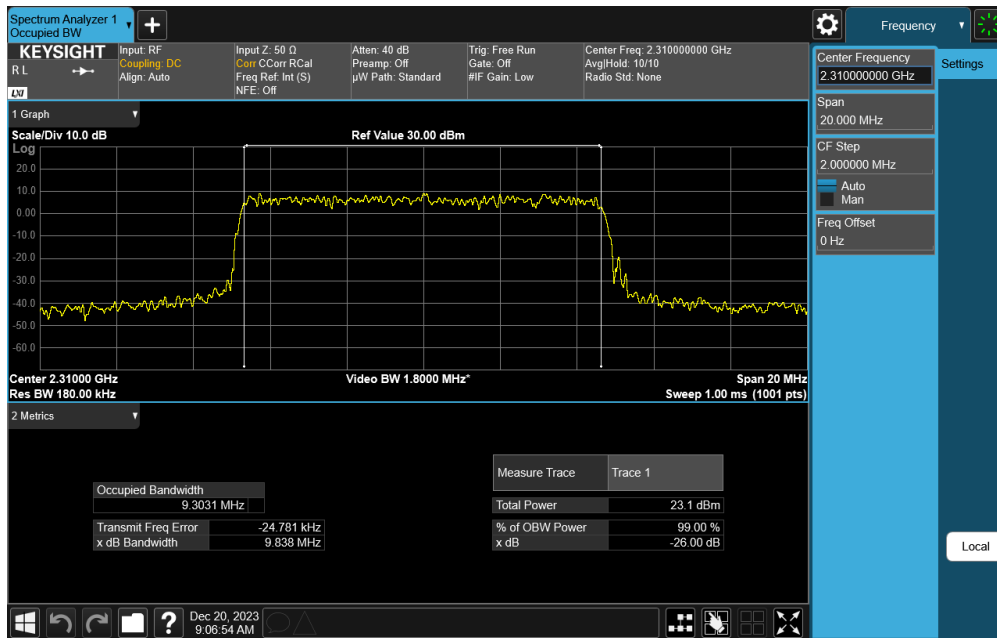


Plot 7-46. Occupied Bandwidth Plot (NR Band n30 - 10MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 39 of 572



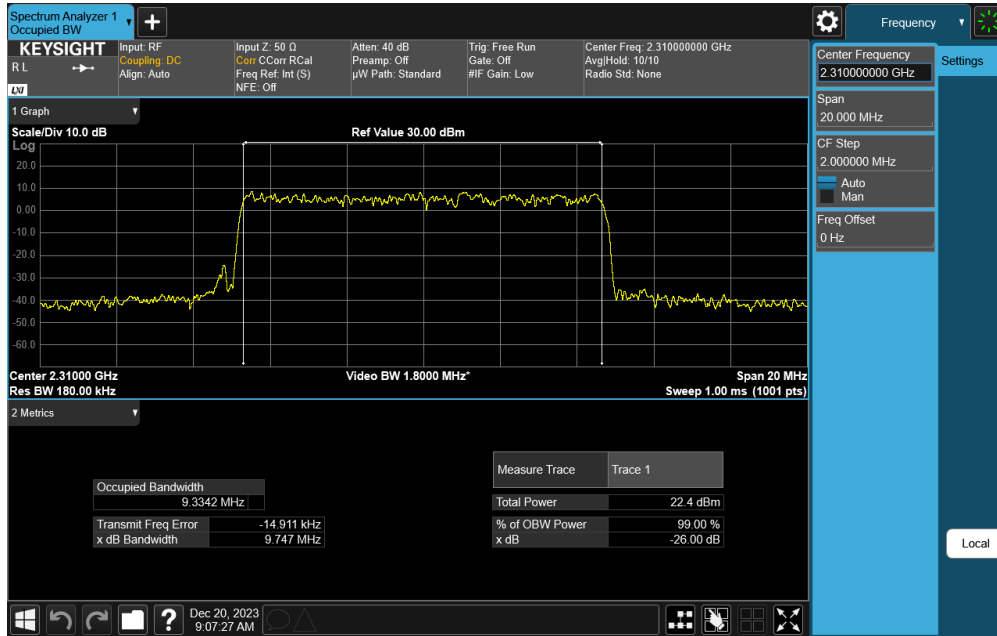
Plot 7-47. Occupied Bandwidth Plot (NR Band n30 - 10MHz CP-OFDM QPSK - Full RB)



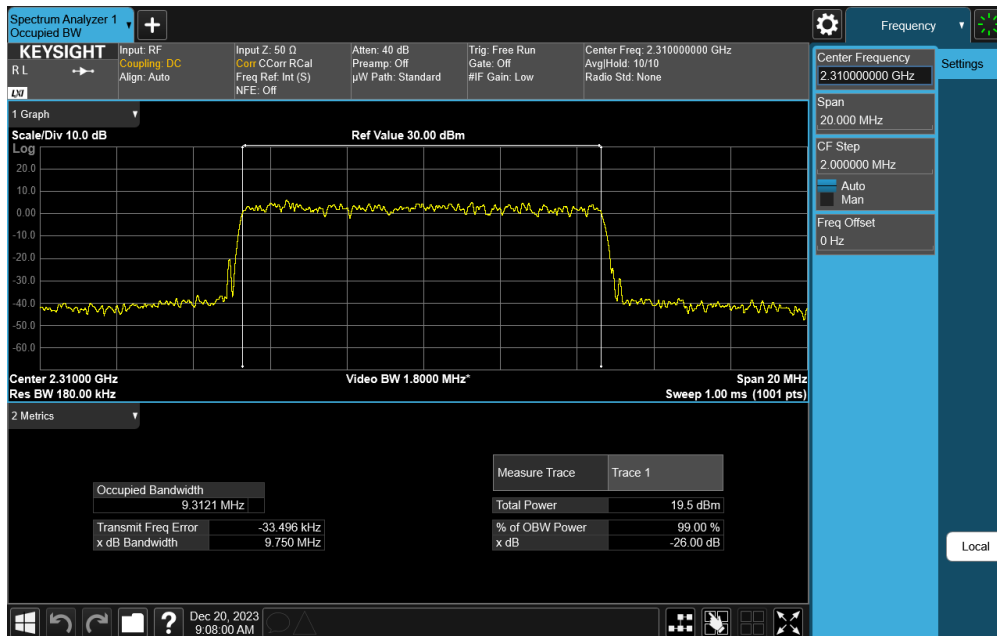
Plot 7-48. Occupied Bandwidth Plot (NR Band n30 - 10MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	Page 40 of 572
	EUT Type: Tablet Device	





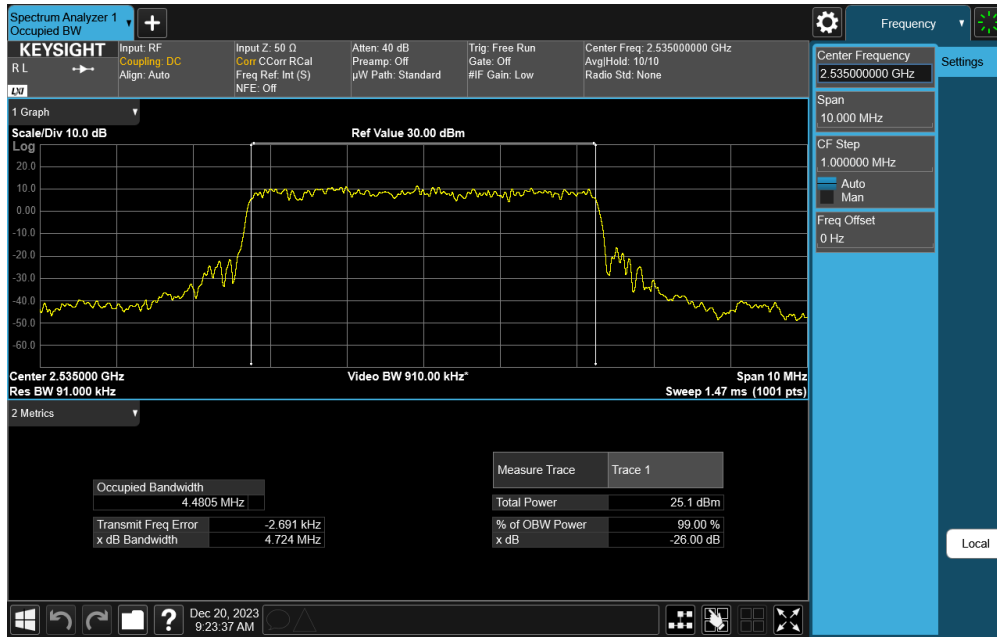
**Plot 7-49. Occupied Bandwidth Plot (NR Band n30 - 10MHz CP-OFDM 64-QAM - Full RB)**



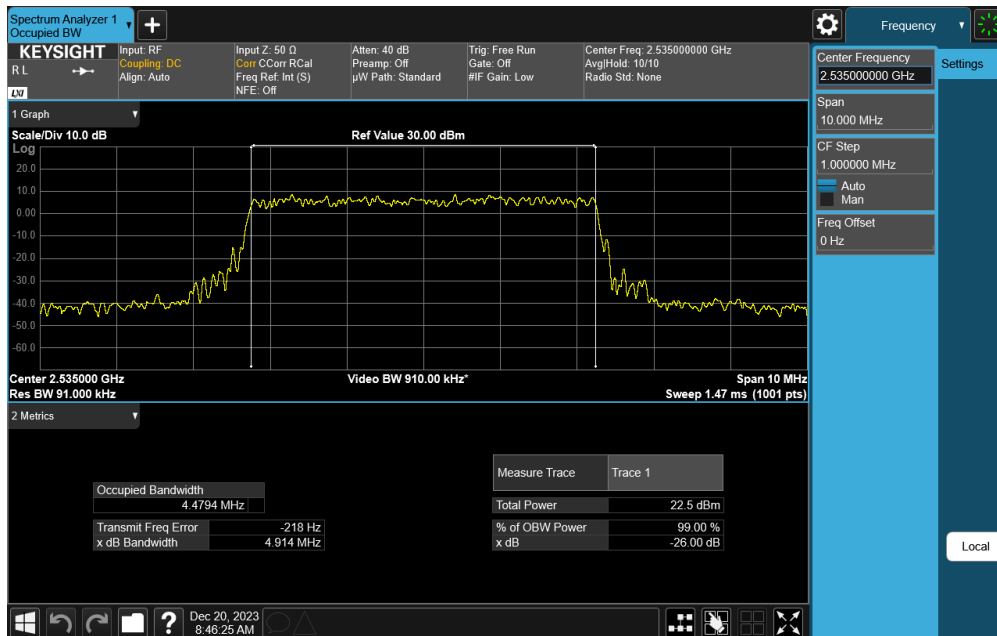
**Plot 7-50. Occupied Bandwidth Plot (NR Band n30 - 10MHz CP-OFDM 256-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 41 of 572

## NR Band n7



**Plot 7-51. Occupied Bandwidth Plot (NR Band n7 - 5MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)**



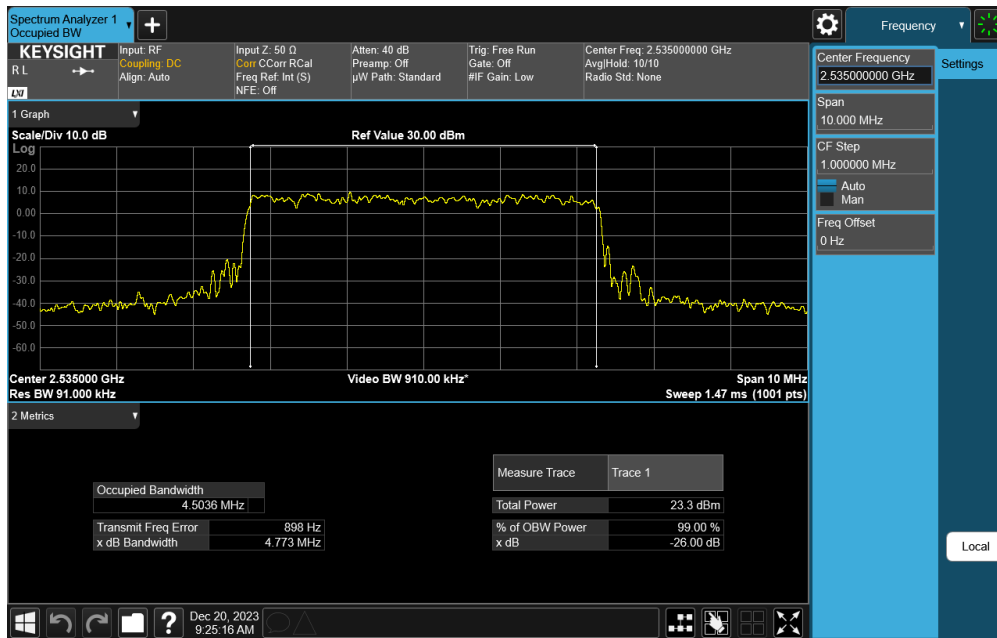
**Plot 7-52. Occupied Bandwidth Plot (NR Band n7 - 5MHz CP-OFDM QPSK - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 42 of 572

V2.2 09/07/2023

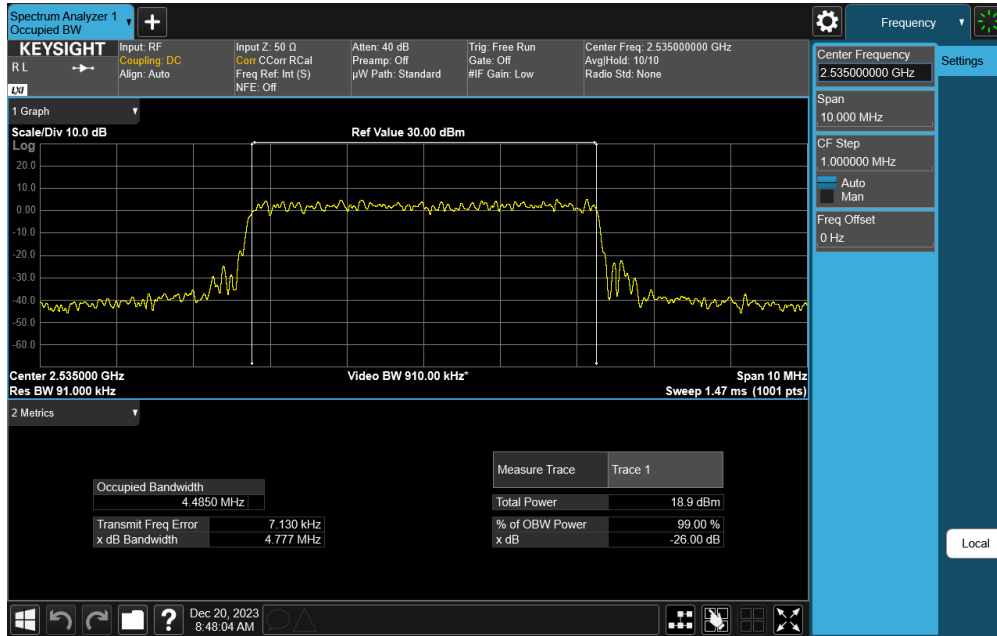


**Plot 7-53. Occupied Bandwidth Plot (NR Band n7 - 5MHz CP-OFDM 16-QAM - Full RB)**

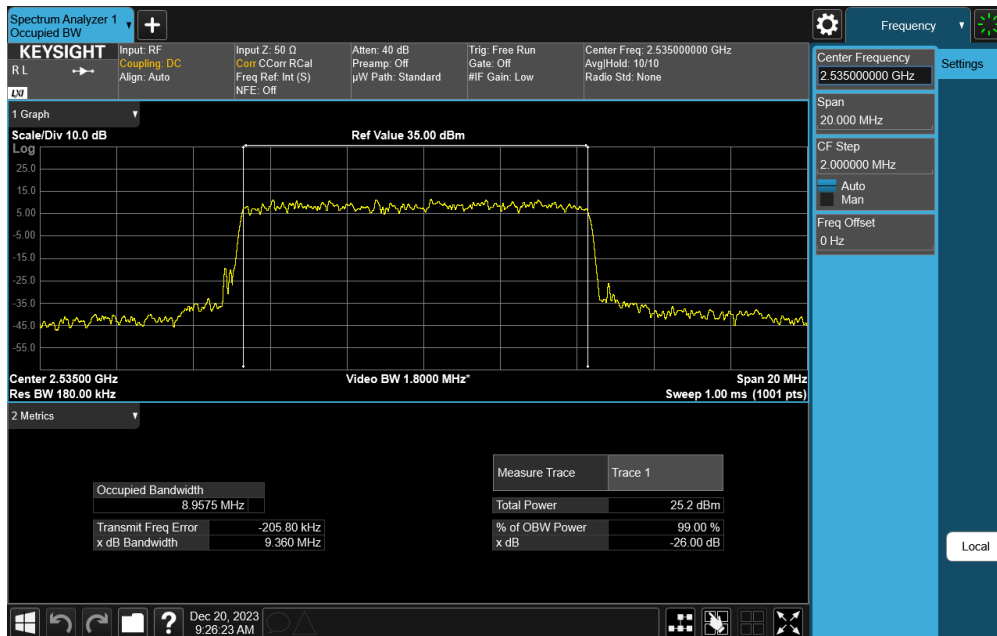


**Plot 7-54. Occupied Bandwidth Plot (NR Band n7 - 5MHz 64-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 43 of 572

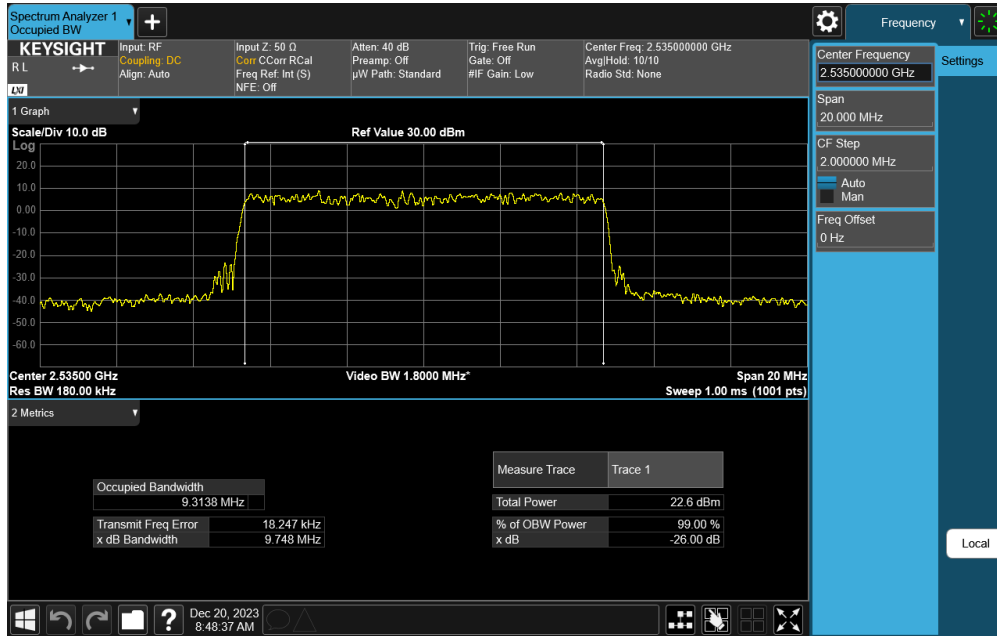


Plot 7-55. Occupied Bandwidth Plot (NR Band n7 - 5MHz CP-OFDM 256-QAM - Full RB)

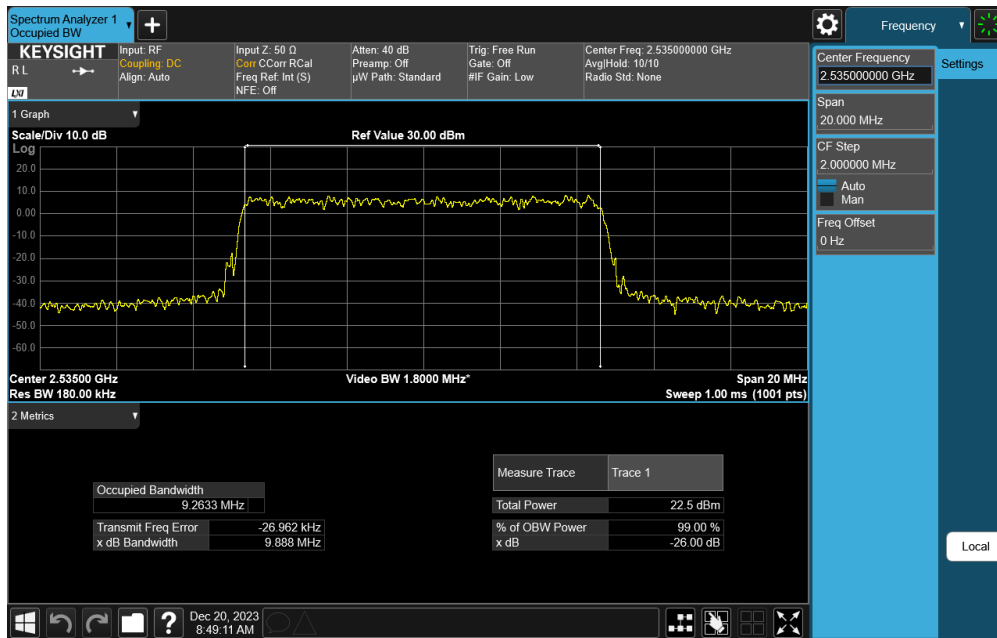


Plot 7-56. Occupied Bandwidth Plot (NR Band n7 - 10MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 44 of 572

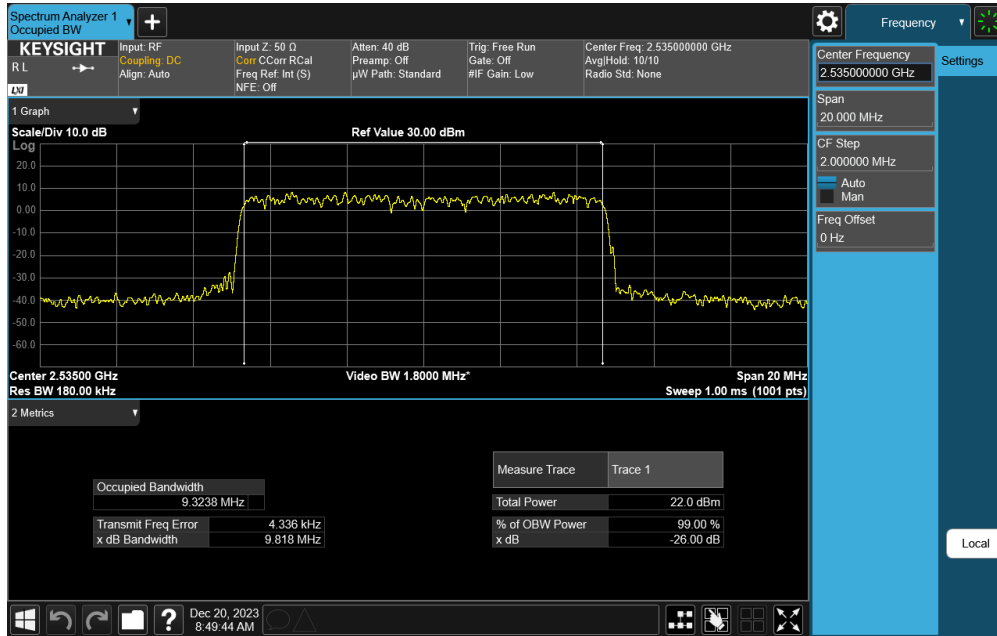


**Plot 7-57. Occupied Bandwidth Plot (NR Band n7 - 10MHz CP-OFDM QPSK - Full RB)**

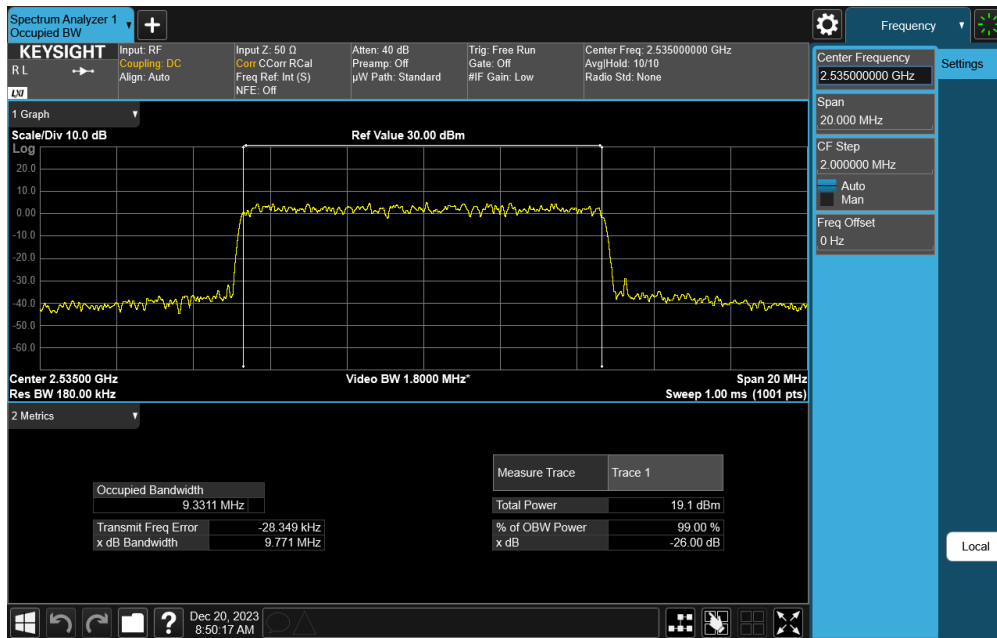


**Plot 7-58. Occupied Bandwidth Plot (NR Band n7 - 10MHz CP-OFDM 16-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 45 of 572

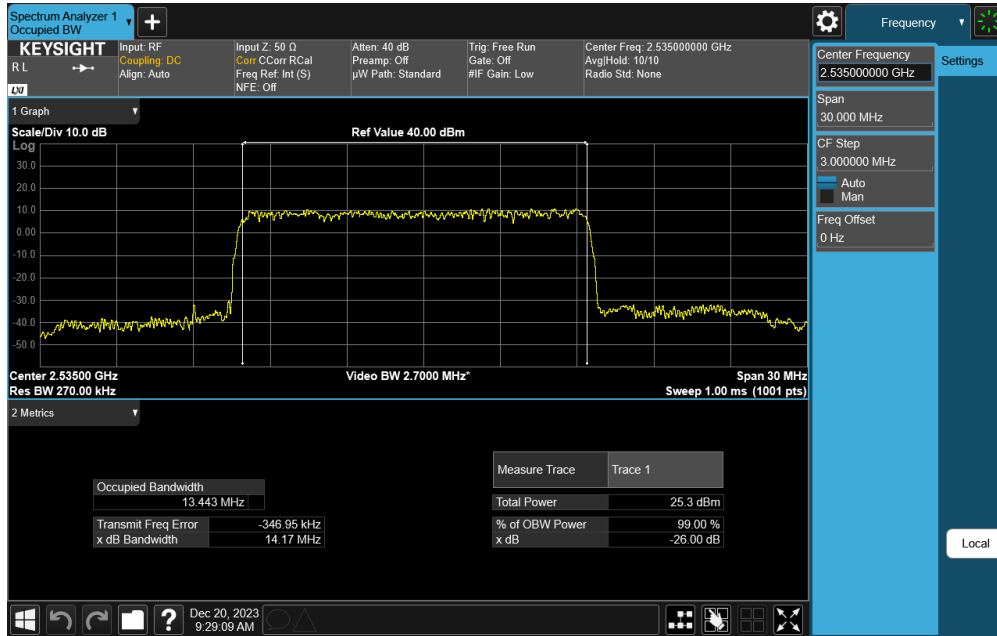


**Plot 7-59. Occupied Bandwidth Plot (NR Band n7 - 10MHz CP-OFDM 64-QAM - Full RB)**

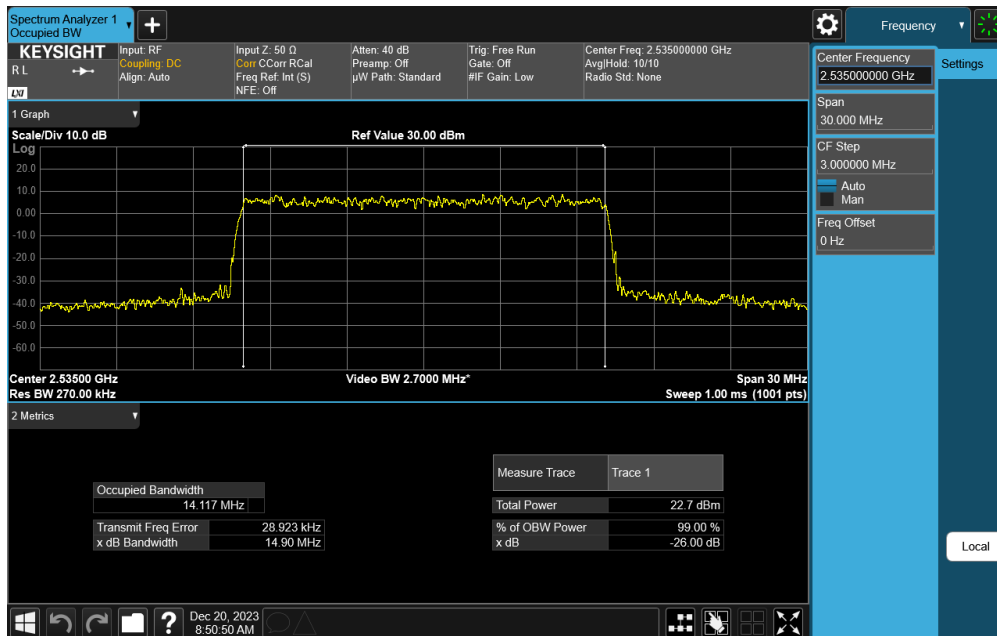


**Plot 7-60. Occupied Bandwidth Plot (NR Band n7 - 10MHz CP-OFDM 256-QAM - Full RB)**

FCC ID: BCGA2903	<b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 46 of 572

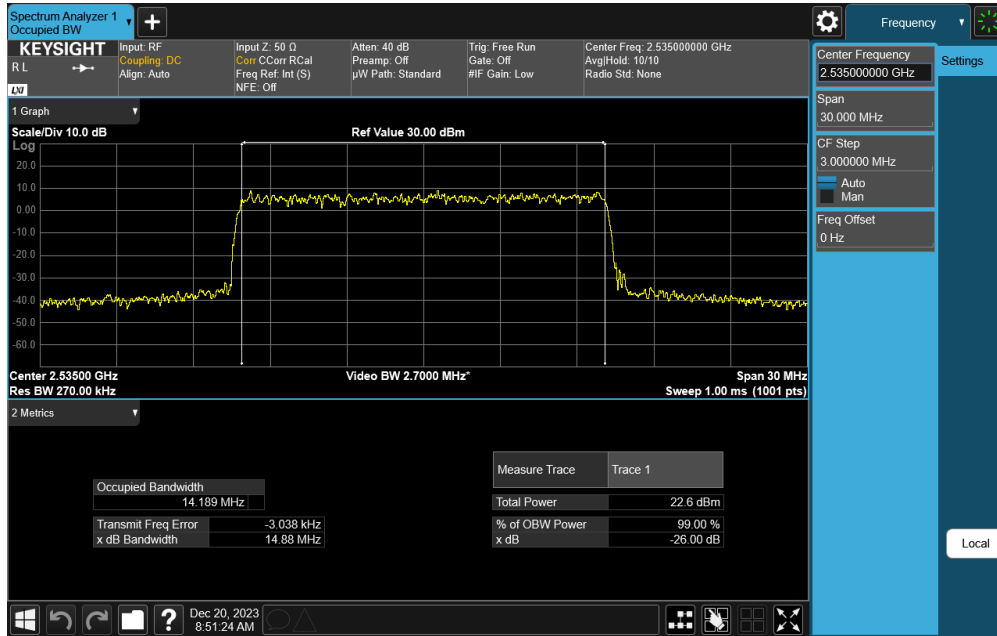


**Plot 7-61. Occupied Bandwidth Plot (NR Band n7 - 15MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)**

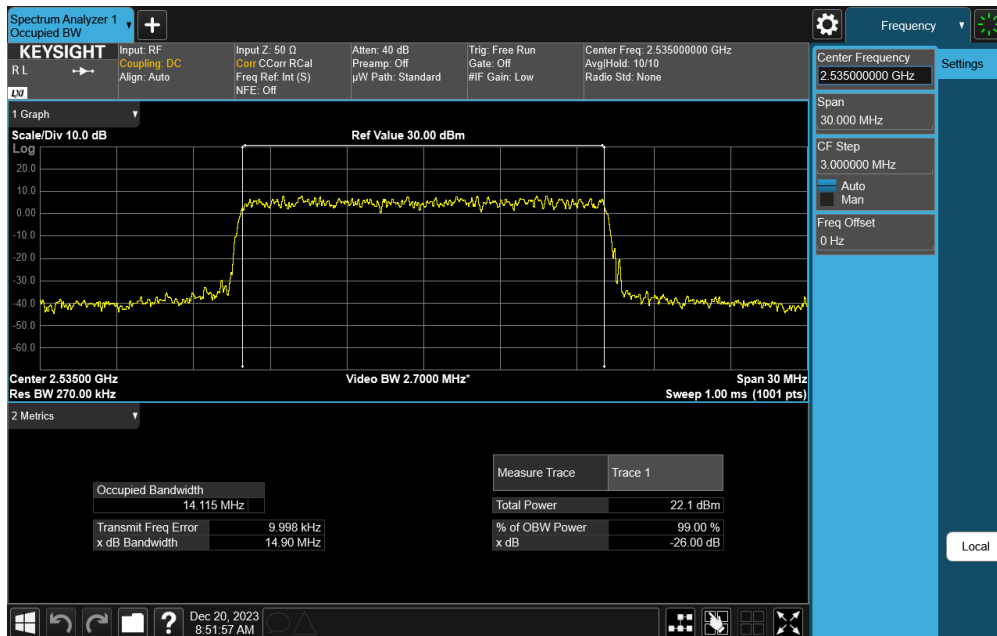


**Plot 7-62. Occupied Bandwidth Plot (NR Band n7 - 15MHz CP-OFDM QPSK - Full RB)**

FCC ID: BCGA2903	<b>PART 27 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 47 of 572



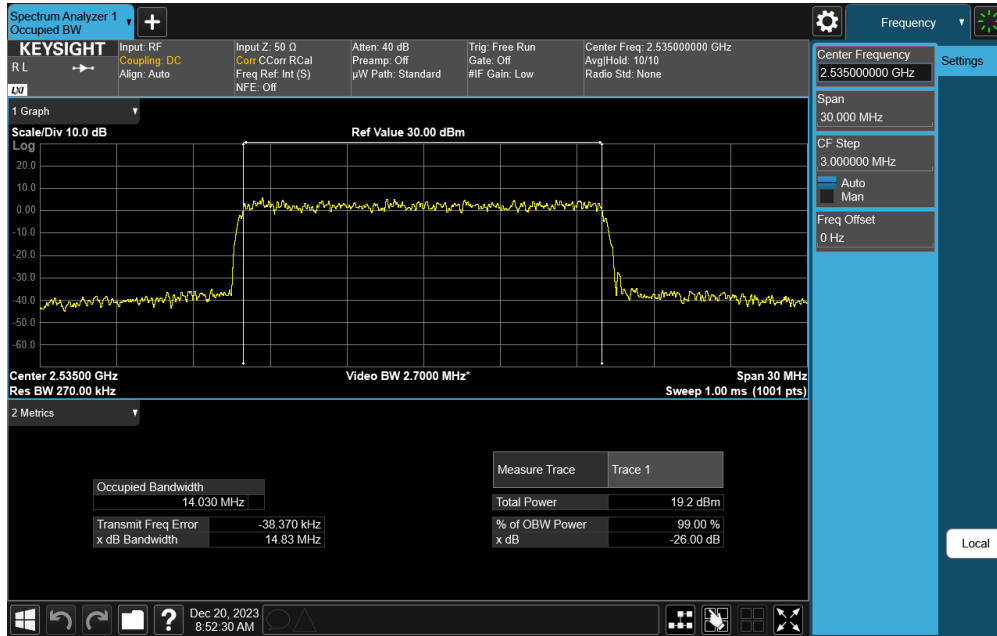
**Plot 7-63. Occupied Bandwidth Plot (NR Band n7 - 15MHz CP-OFDM 16-QAM - Full RB)**



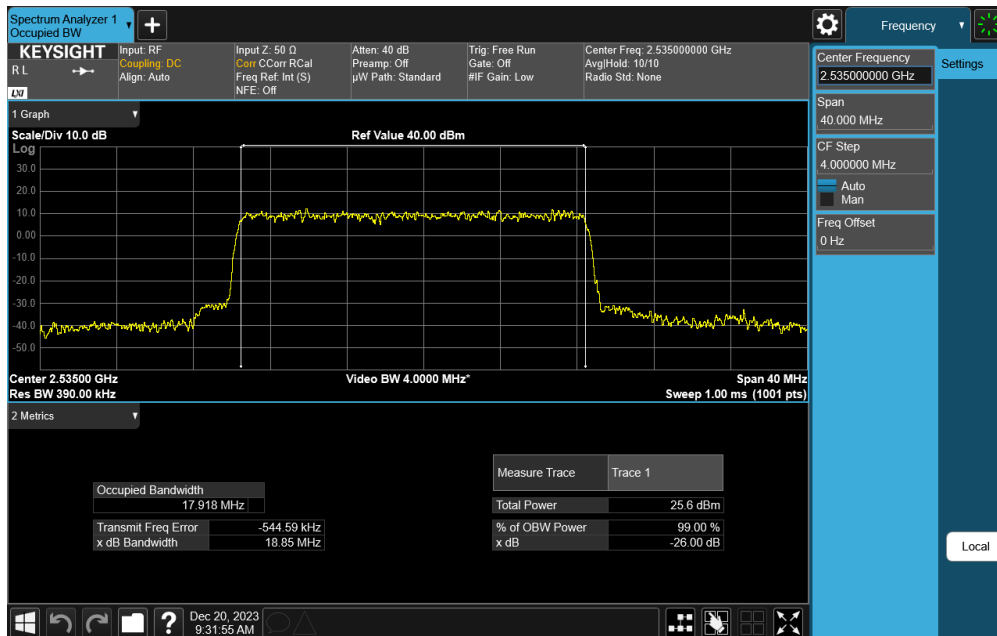
**Plot 7-64. Occupied Bandwidth Plot (NR Band n7 - 15MHz CP-OFDM 64-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 48 of 572



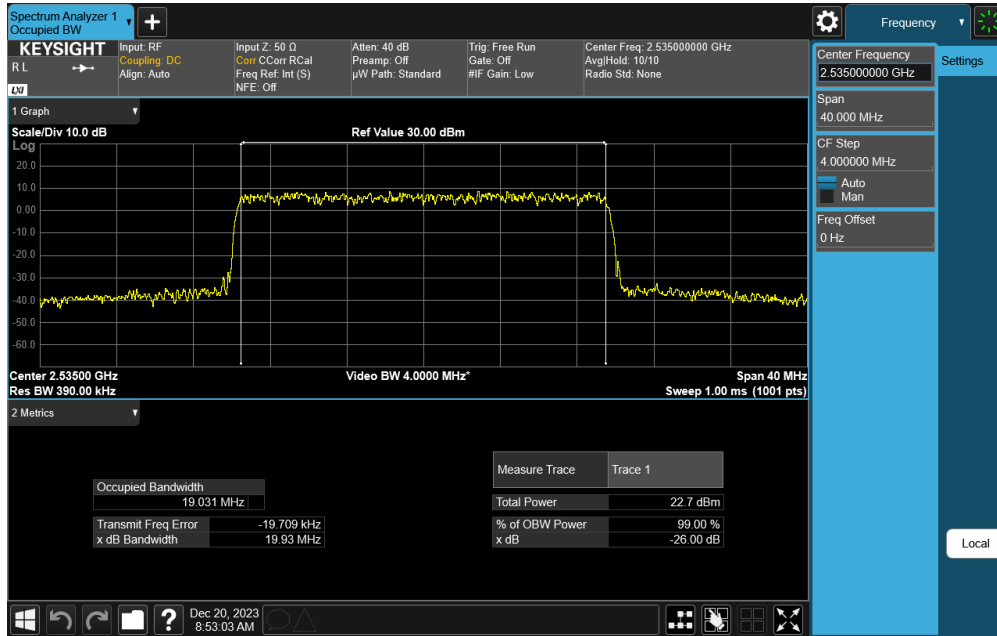


Plot 7-65. Occupied Bandwidth Plot (NR Band n7 - 15MHz CP-OFDM 256-QAM - Full RB)

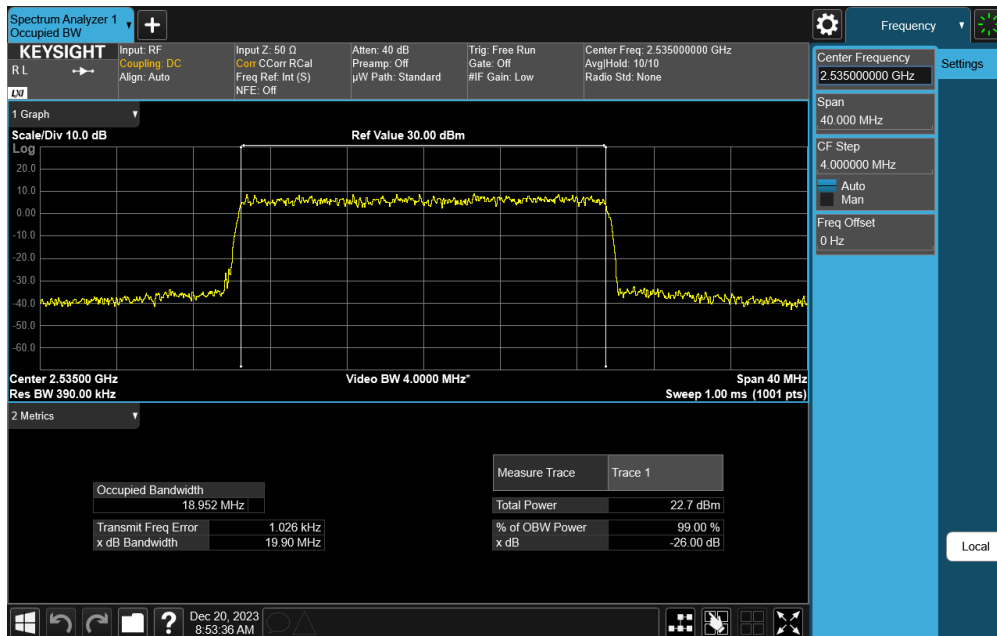


Plot 7-66. Occupied Bandwidth Plot (NR Band n7 - 20MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 49 of 572

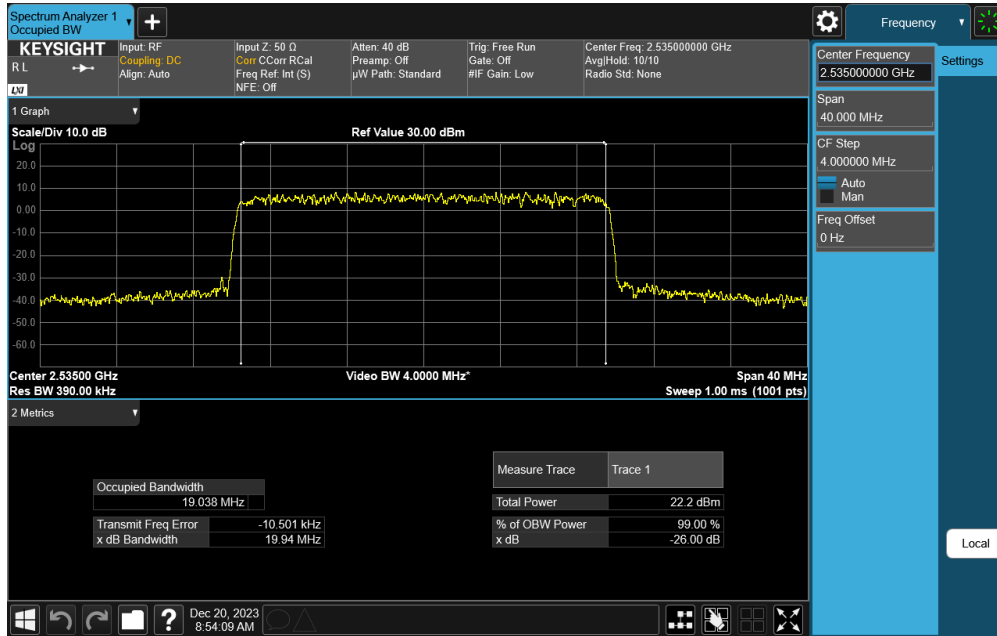


Plot 7-67. Occupied Bandwidth Plot (NR Band n7 - 20MHz CP-OFDM QPSK - Full RB)

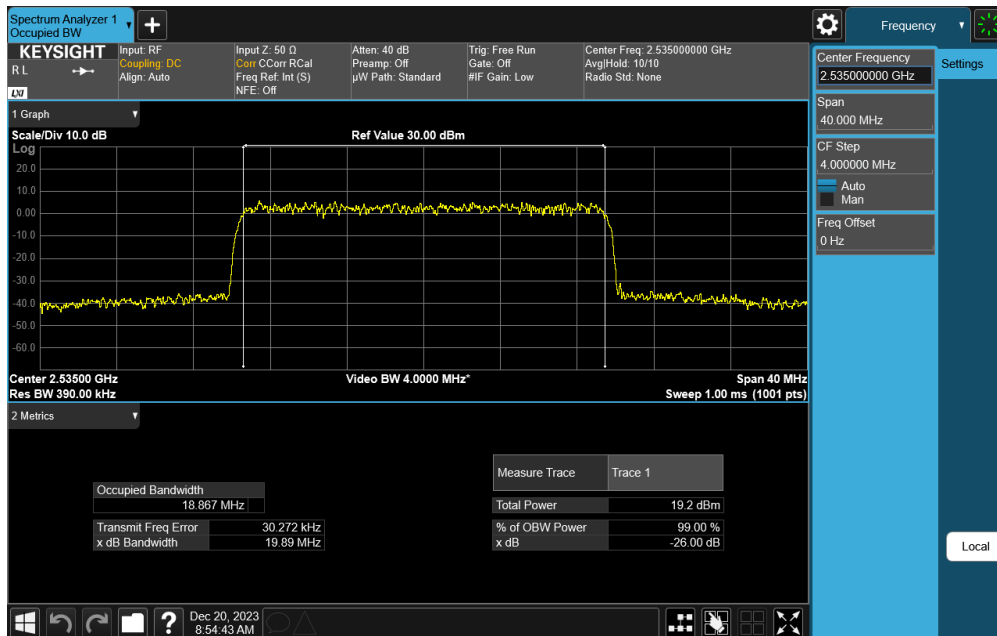


Plot 7-68. Occupied Bandwidth Plot (NR Band n7 - 20MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 50 of 572

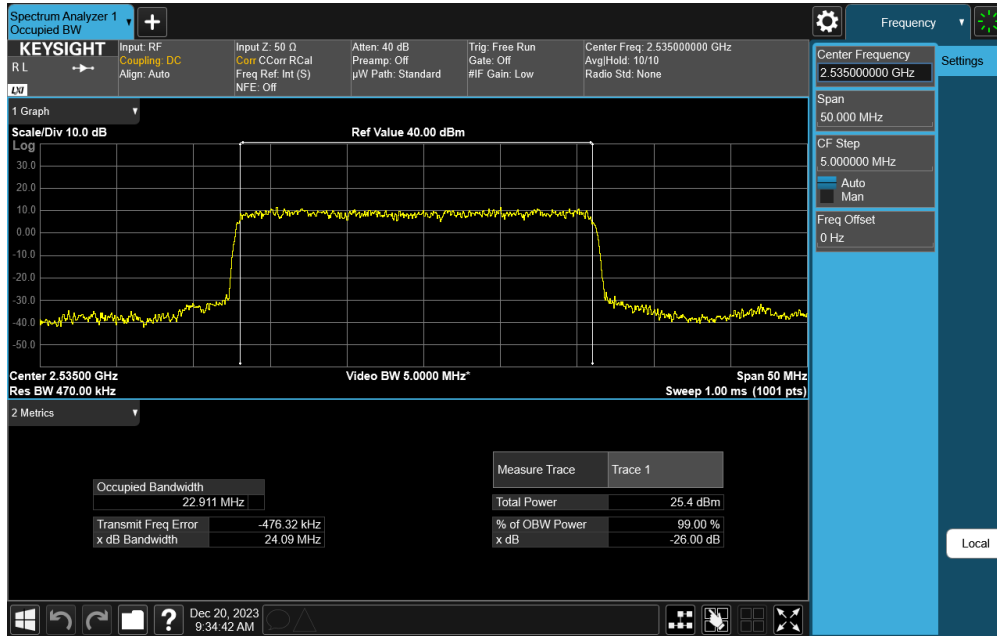


**Plot 7-69. Occupied Bandwidth Plot (NR Band n7 - 20MHz CP-OFDM 64-QAM - Full RB)**

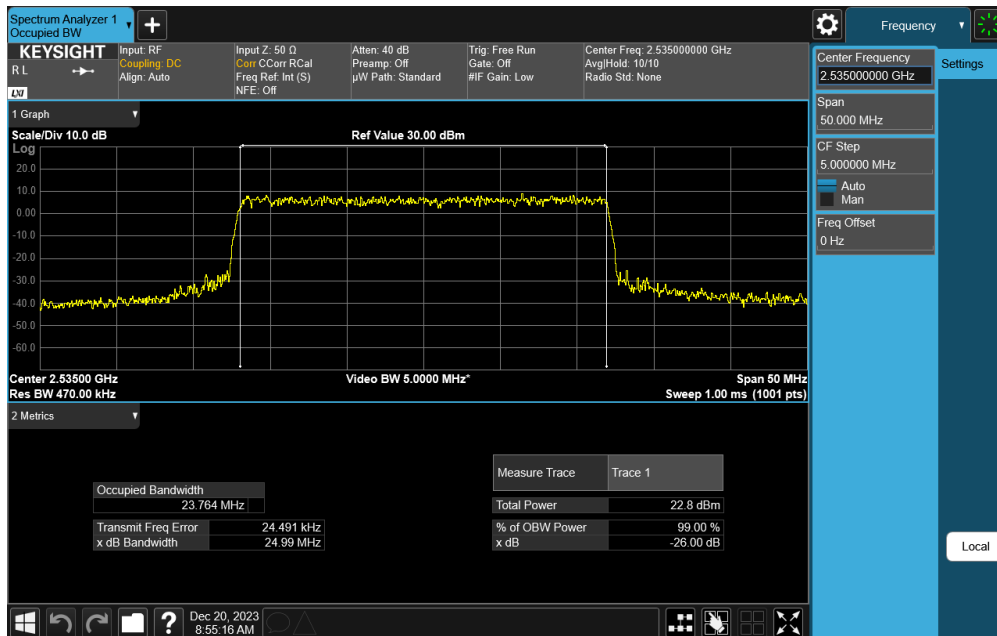


**Plot 7-70. Occupied Bandwidth Plot (NR Band n7 - 20MHz CP-OFDM 256-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 51 of 572

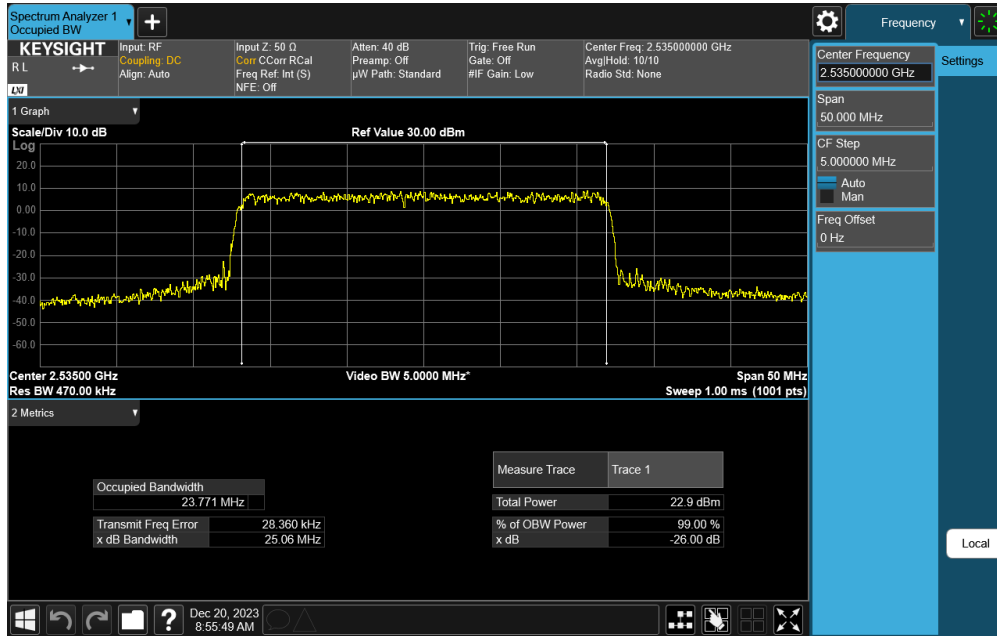


Plot 7-71. Occupied Bandwidth Plot (NR Band n7 - 25MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

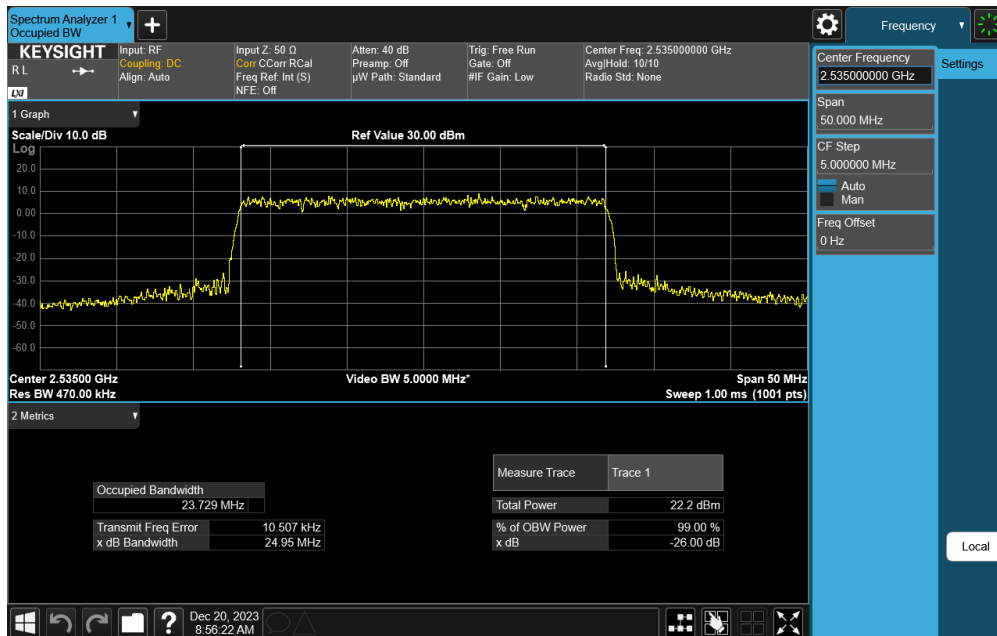


Plot 7-72. Occupied Bandwidth Plot (NR Band n7 - 25MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2903	<b>PART 27 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 52 of 572

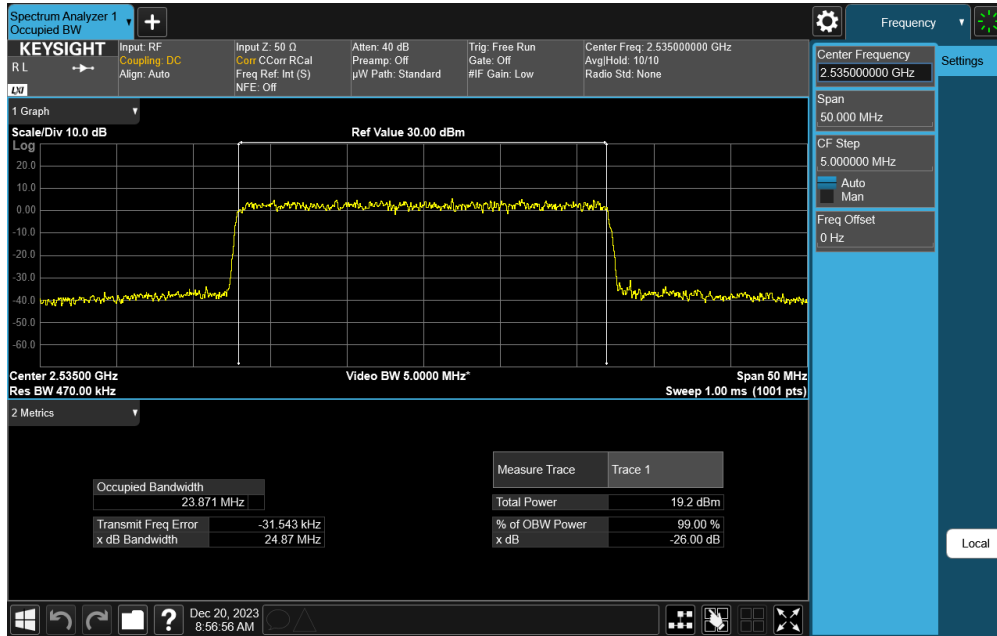


**Plot 7-73. Occupied Bandwidth Plot (NR Band n7 - 25MHz CP-OFDM 16-QAM - Full RB)**

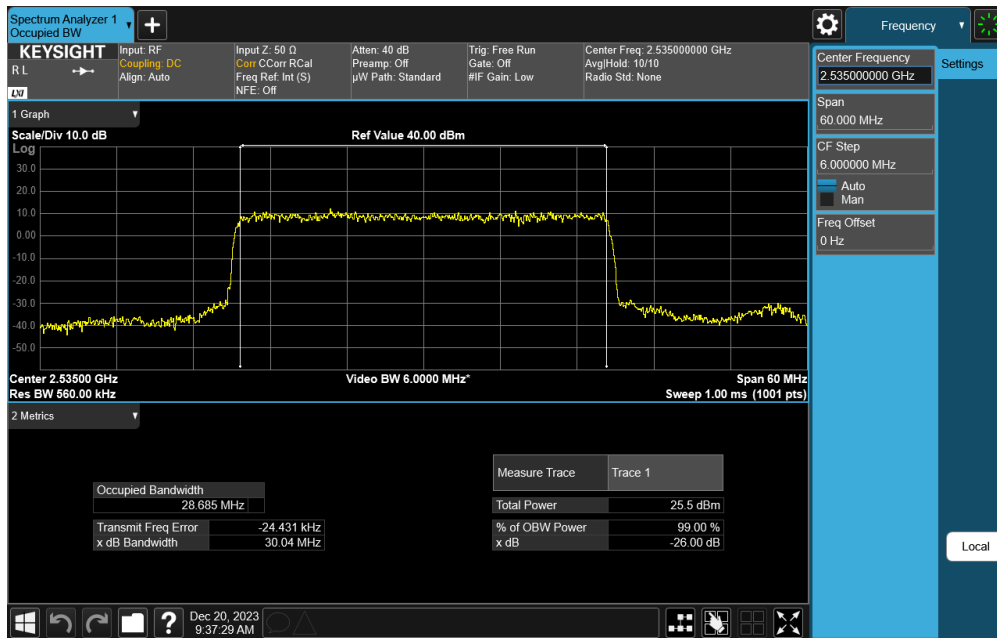


**Plot 7-74. Occupied Bandwidth Plot (NR Band n7 - 25MHz CP-OFDM 64-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 53 of 572

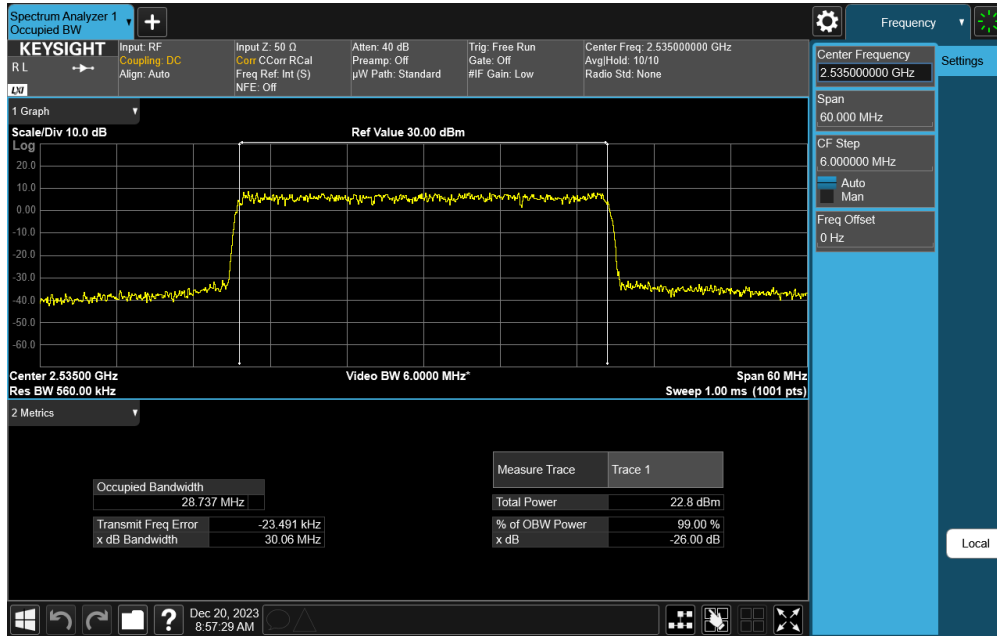


Plot 7-75. Occupied Bandwidth Plot (NR Band n7 - 25MHz CP-OFDM 256-QAM - Full RB)

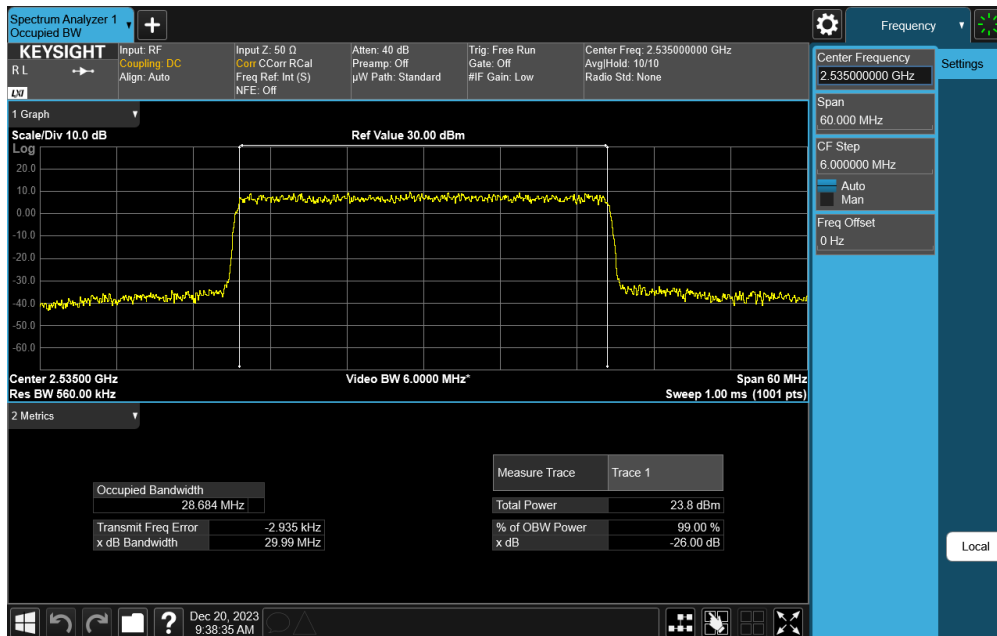


Plot 7-76. Occupied Bandwidth Plot (NR Band n7 - 30MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 54 of 572

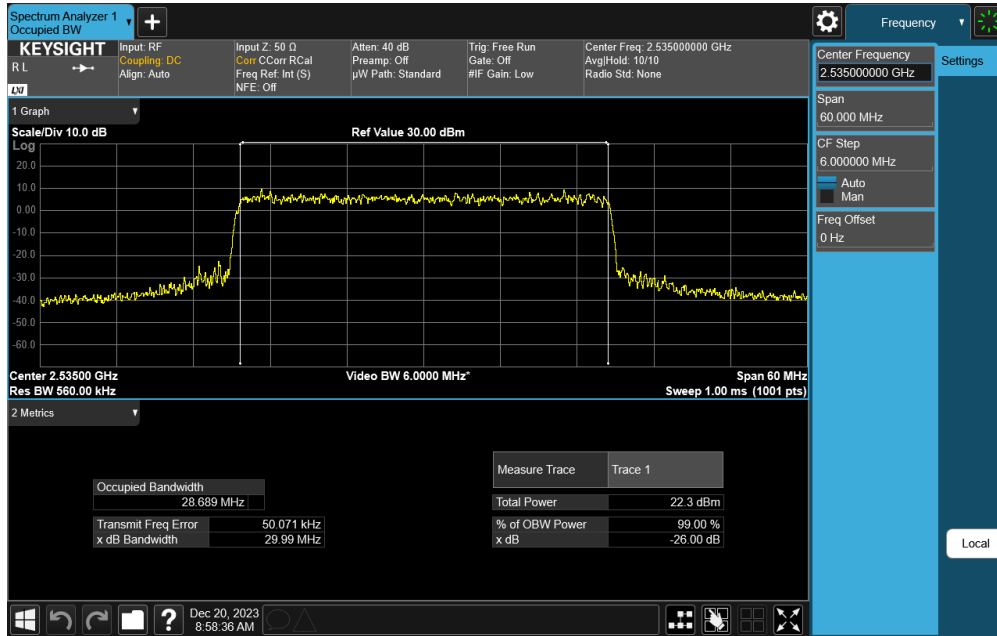


**Plot 7-77. Occupied Bandwidth Plot (NR Band n7 - 30MHz CP-OFDM QPSK - Full RB)**

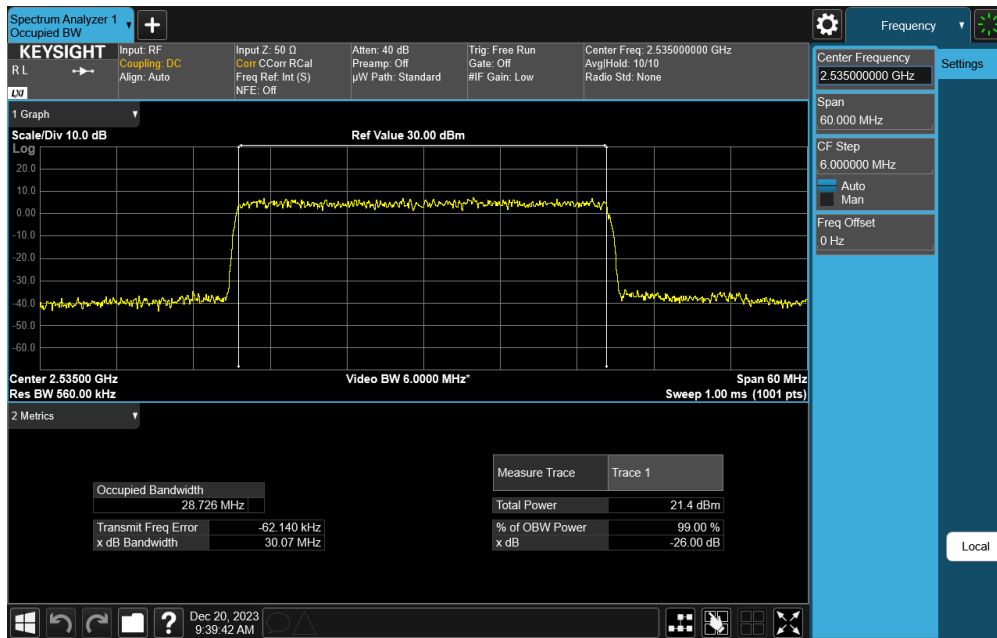


**Plot 7-78. Occupied Bandwidth Plot (NR Band n7 - 30MHz DFT-s-OFDM 16-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 55 of 572



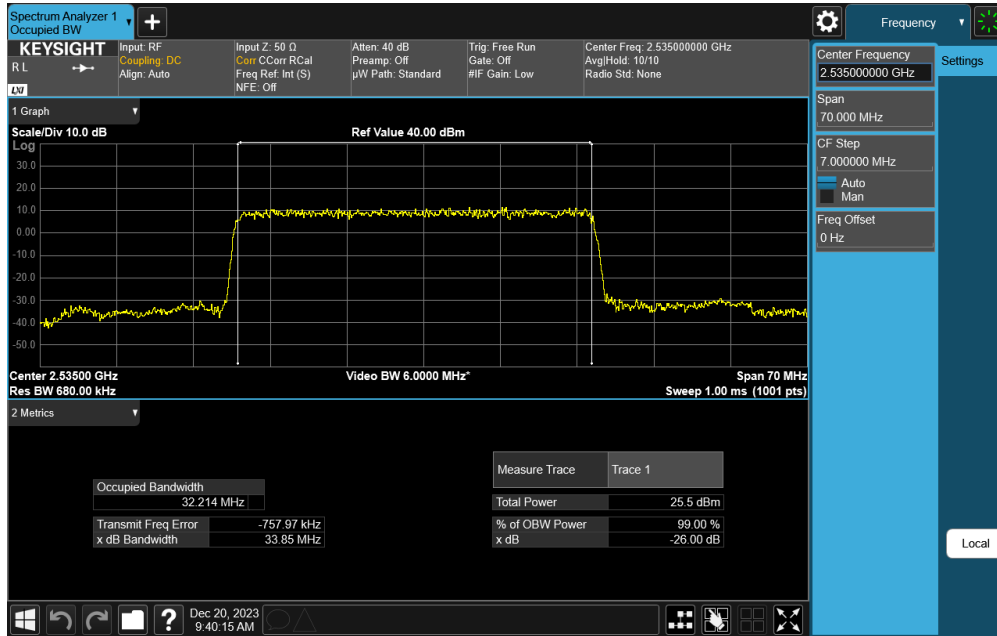
Plot 7-79. Occupied Bandwidth Plot (NR Band n7 - 30MHz CP-OFDM 64-QAM - Full RB)



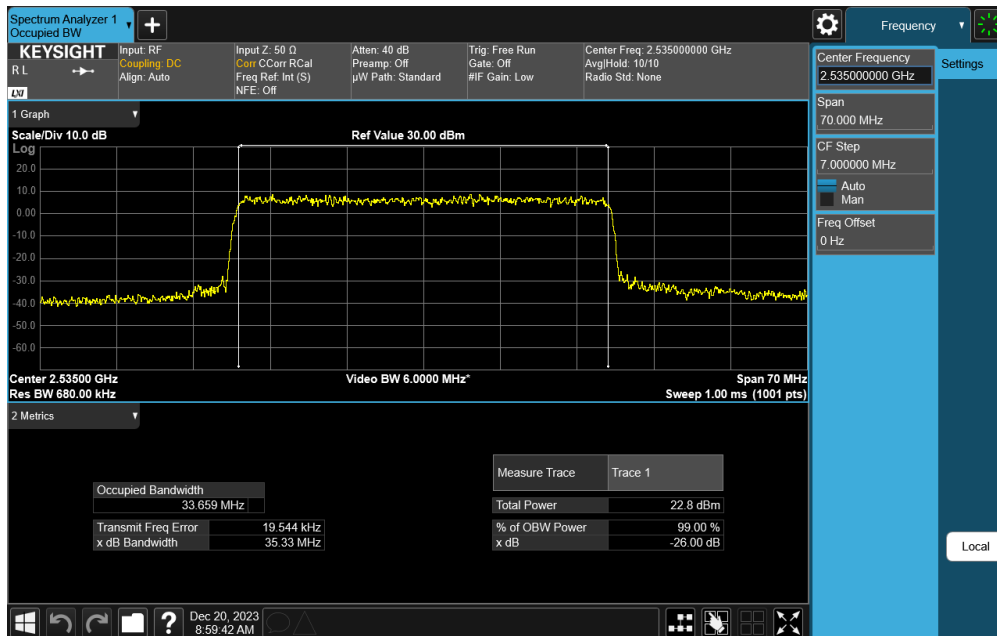
Plot 7-80. Occupied Bandwidth Plot (NR Band n7 - 30MHz DFT-s-OFDM 256-QAM - Full RB)

FCC ID: BCGA2903	<b>PART 27 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 56 of 572



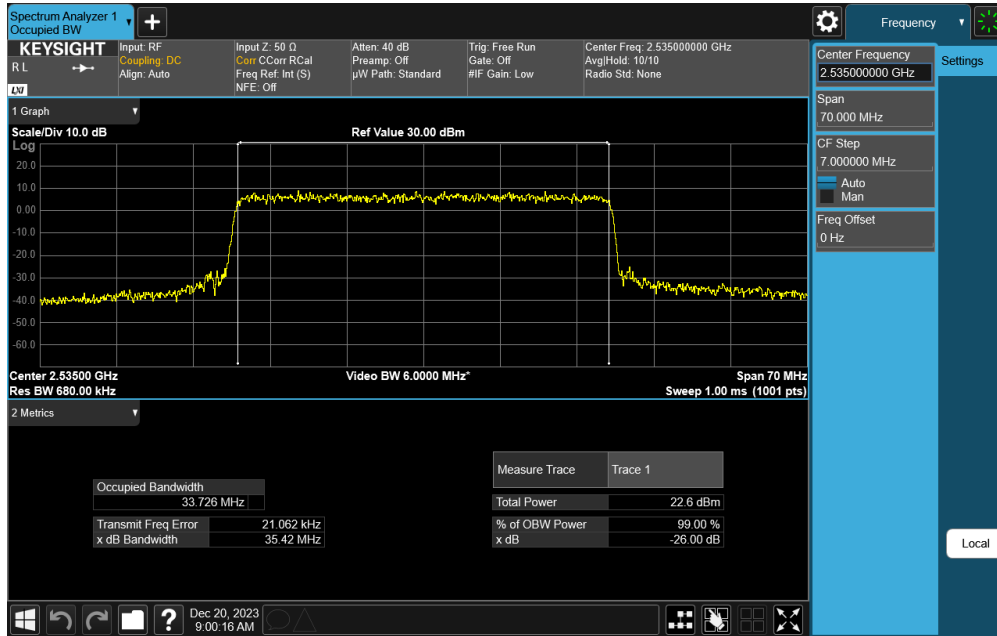


Plot 7-81. Occupied Bandwidth Plot (NR Band n7 - 35MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

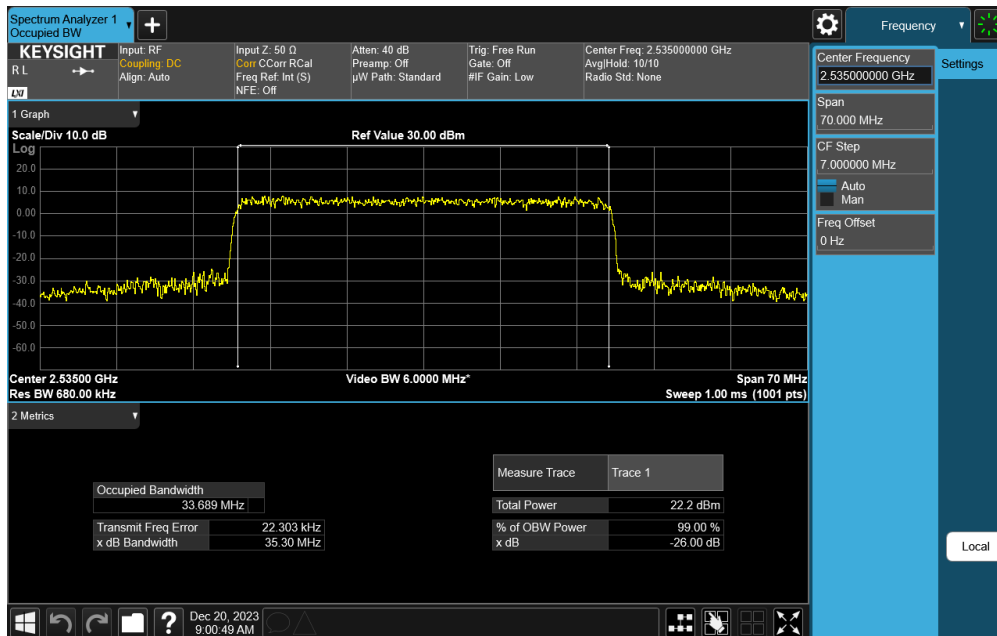


Plot 7-82. Occupied Bandwidth Plot (NR Band n7 - 35MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 57 of 572

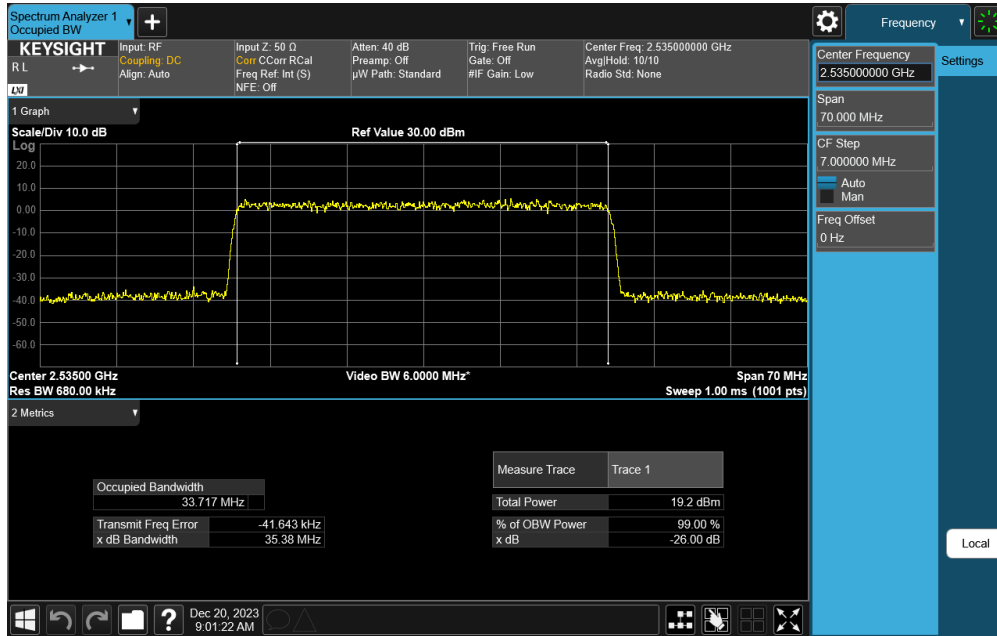


Plot 7-83. Occupied Bandwidth Plot (NR Band n7 - 35MHz CP-OFDM 16-QAM - Full RB)

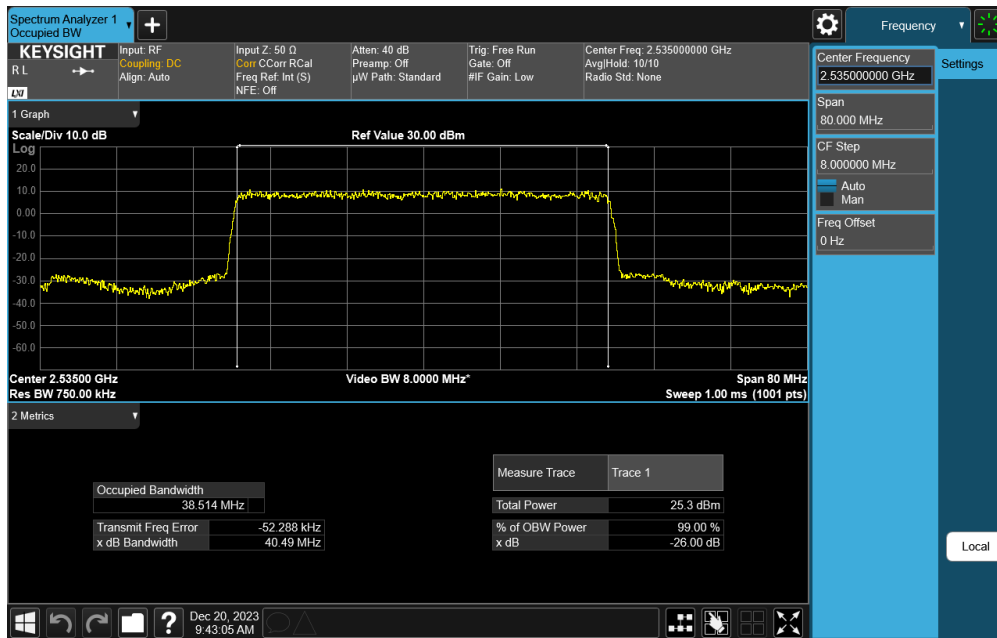


Plot 7-84. Occupied Bandwidth Plot (NR Band n7 - 35MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 58 of 572



**Plot 7-85. Occupied Bandwidth Plot (NR Band n7 - 35MHz CP-OFDM 256-QAM - Full RB)**

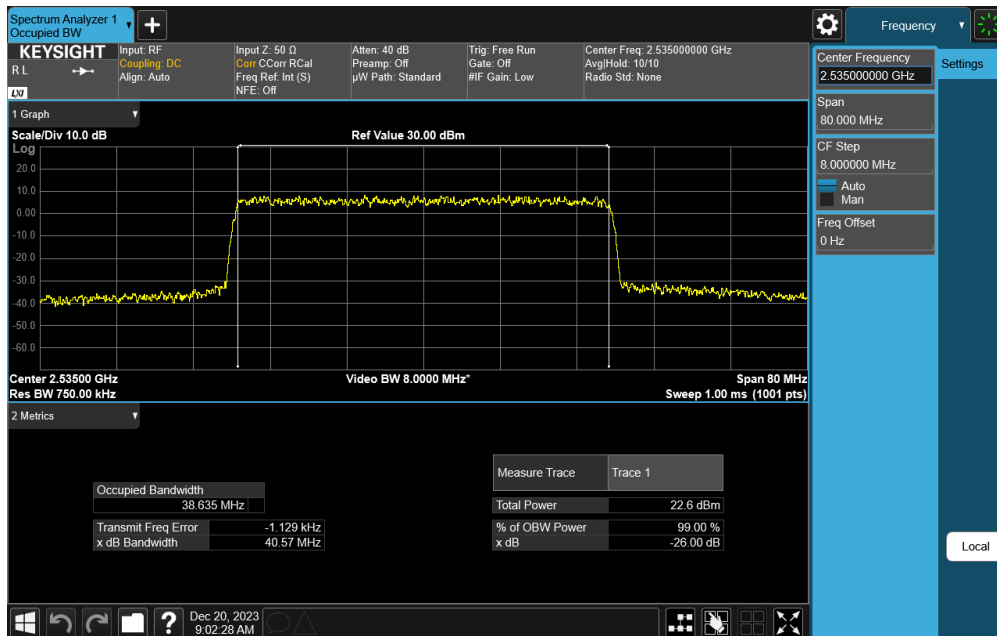


**Plot 7-86. Occupied Bandwidth Plot (NR Band n7 - 40MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 59 of 572

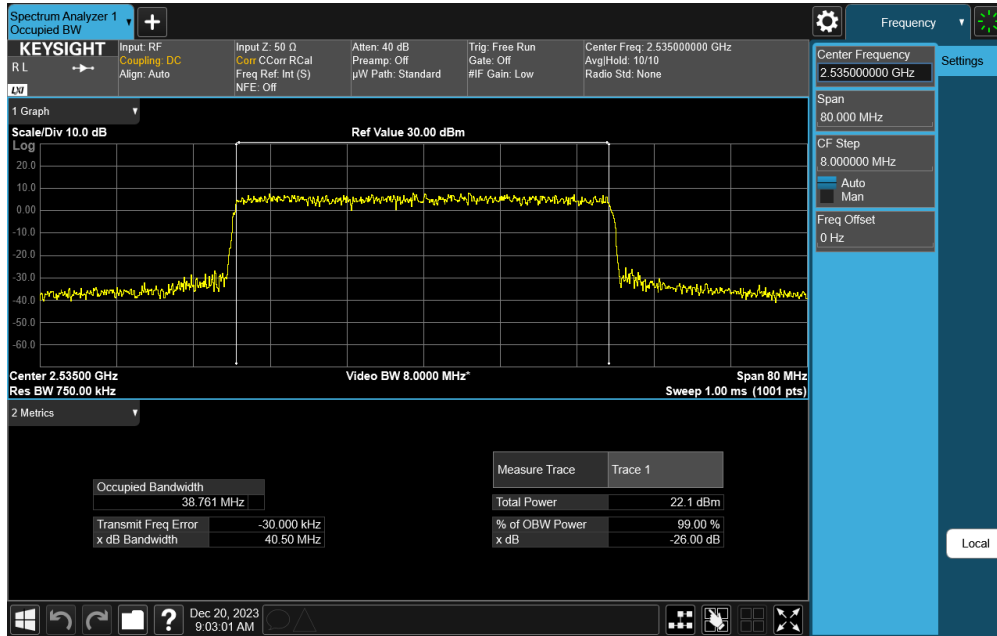


**Plot 7-87. Occupied Bandwidth Plot (NR Band n7 - 40MHz DFT-s-OFDM QPSK - Full RB)**

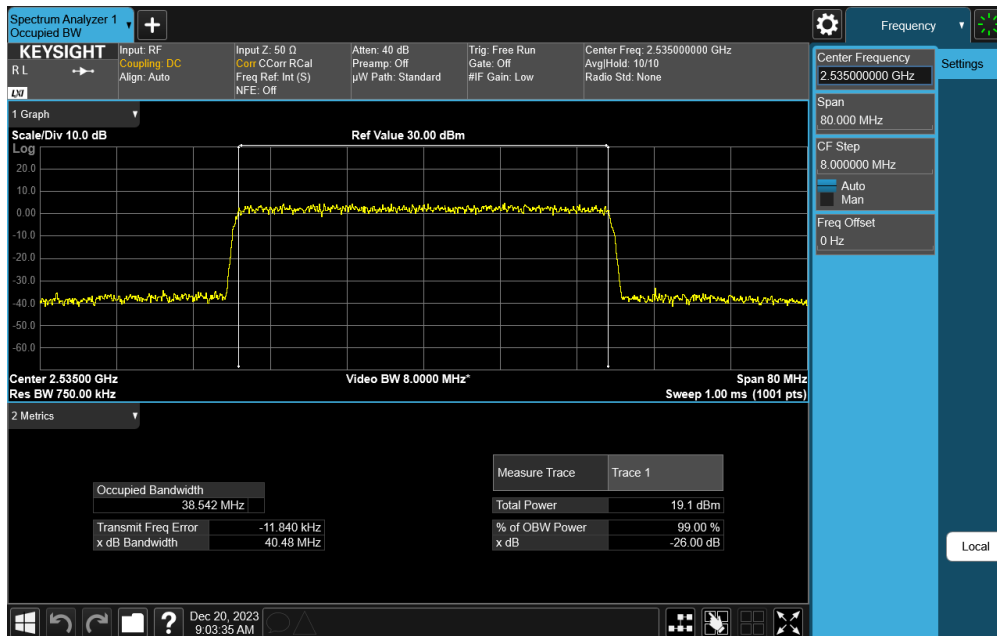


**Plot 7-88. Occupied Bandwidth Plot (NR Band n7 - 40MHz CP-OFDM 16-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 60 of 572



**Plot 7-89. Occupied Bandwidth Plot (NR Band n7 - 40MHz CP-OFDM 64-QAM - Full RB)**



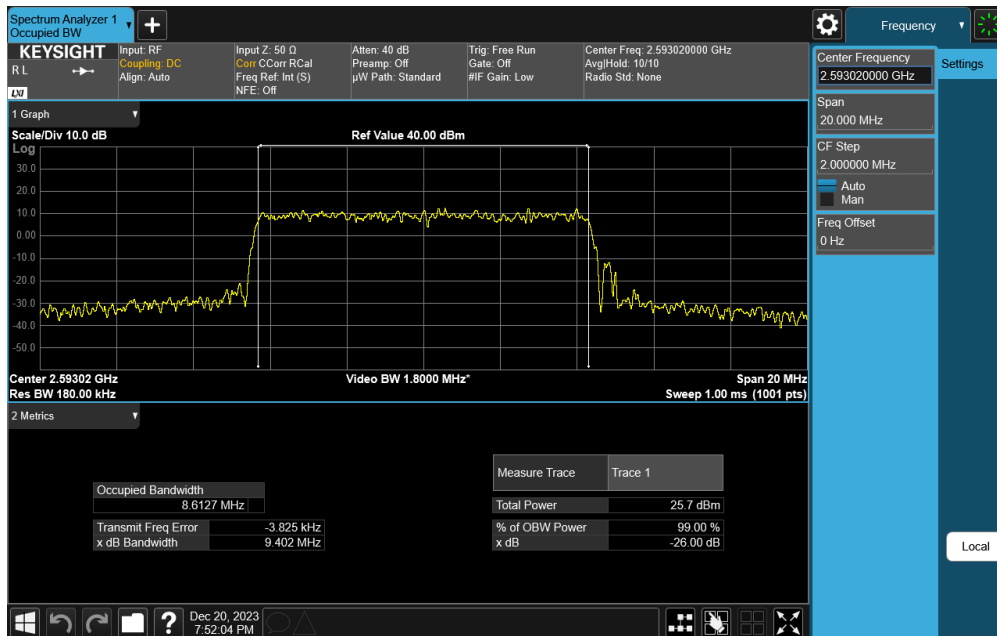
**Plot 7-90. Occupied Bandwidth Plot (NR Band n7 - 40MHz CP-OFDM 256-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 61 of 572

## NR Band n41



**Plot 7-91. Occupied Bandwidth Plot (NR Band n41 - 10MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)**

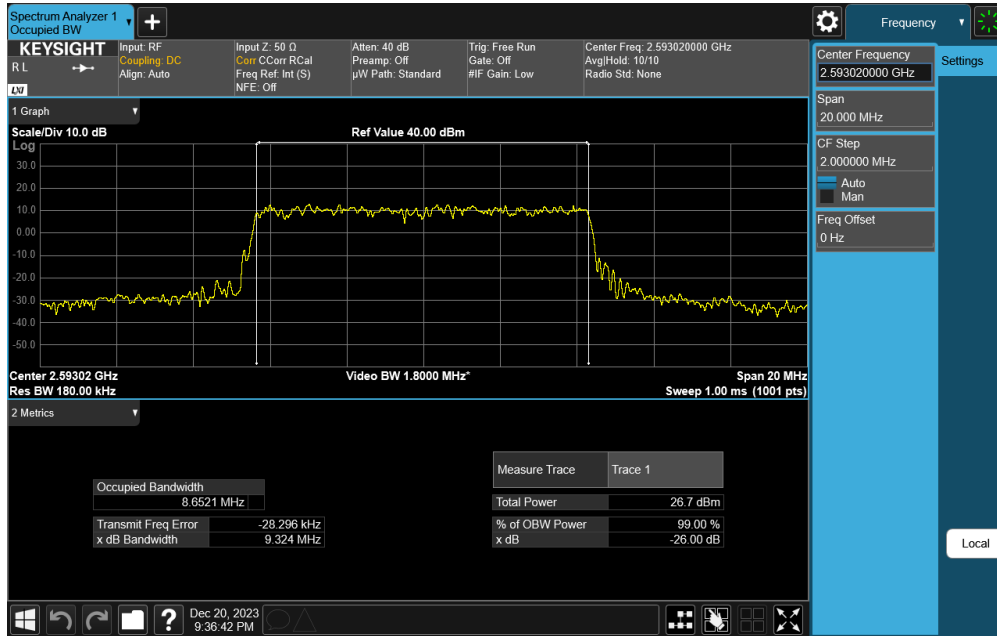


**Plot 7-92. Occupied Bandwidth Plot (NR Band n41 - 10MHz CP-OFDM QPSK - Full RB)**

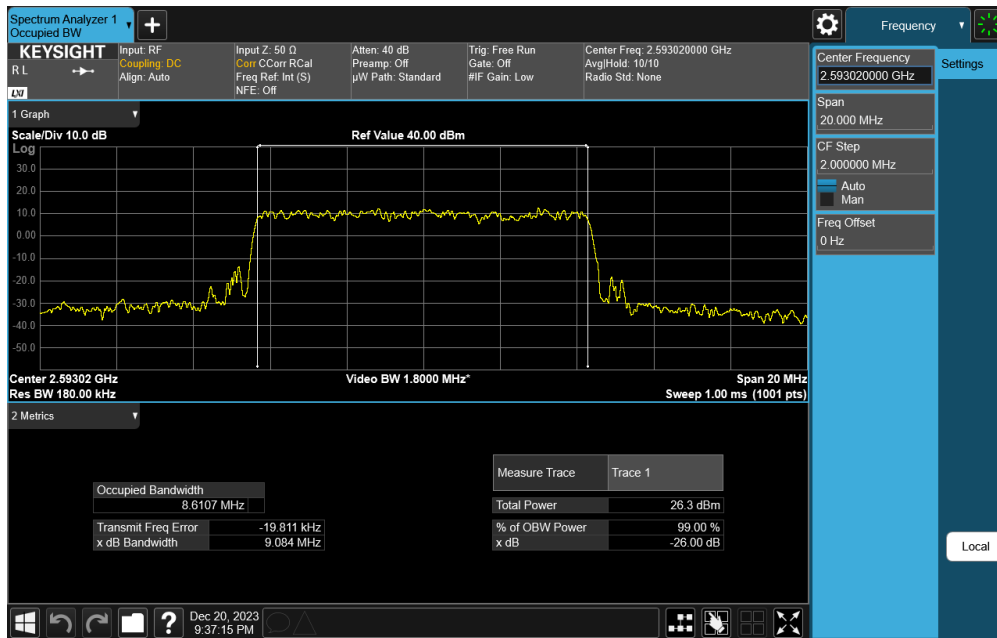
FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	Page 62 of 572
	EUT Type: Tablet Device	

V2.2 09/07/2023

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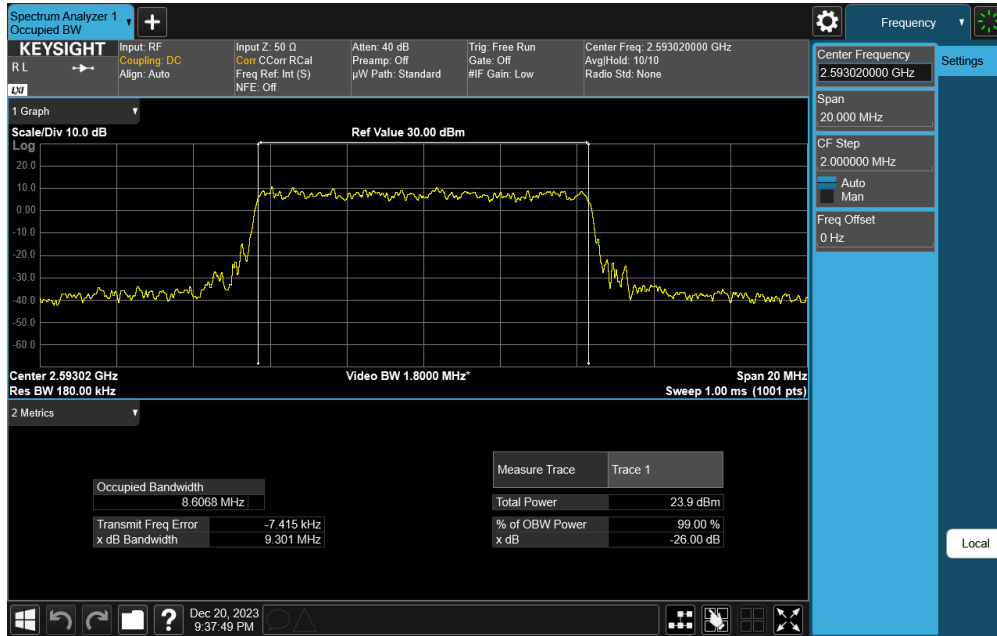


**Plot 7-93. Occupied Bandwidth Plot (NR Band n41 - 10MHz CP-OFDM 16-QAM - Full RB)**

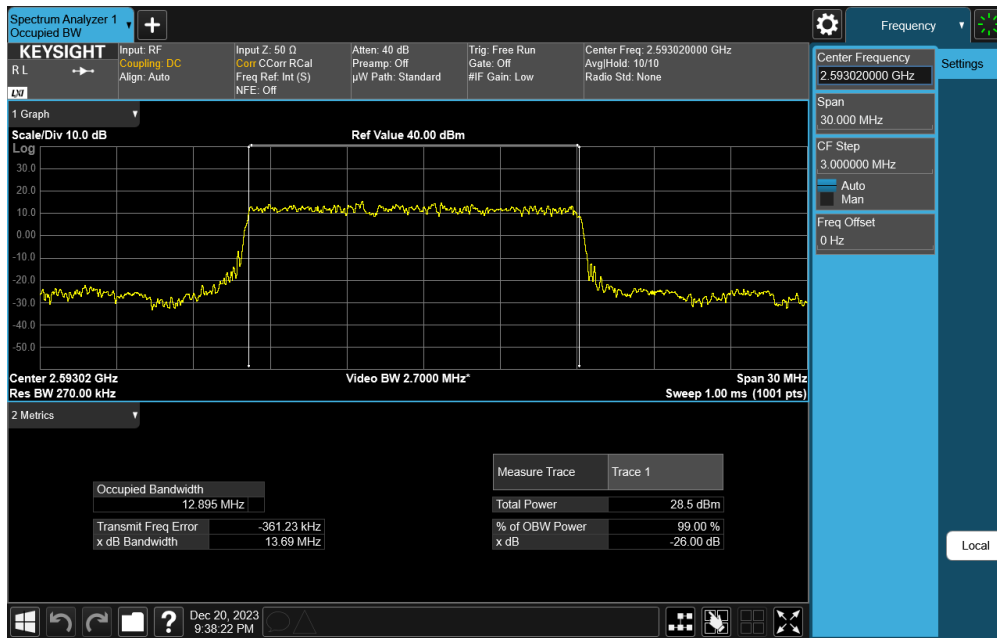


**Plot 7-94. Occupied Bandwidth Plot (NR Band n41 - 10MHz CP-OFDM 64-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 63 of 572



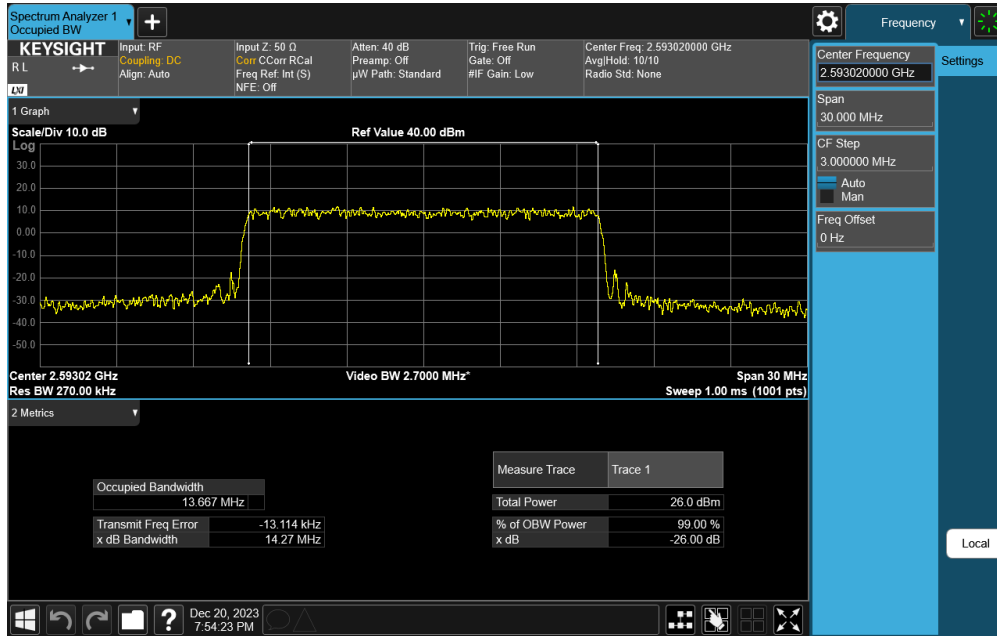
**Plot 7-95. Occupied Bandwidth Plot (NR Band n41 - 10MHz CP-OFDM 256-QAM - Full RB)**



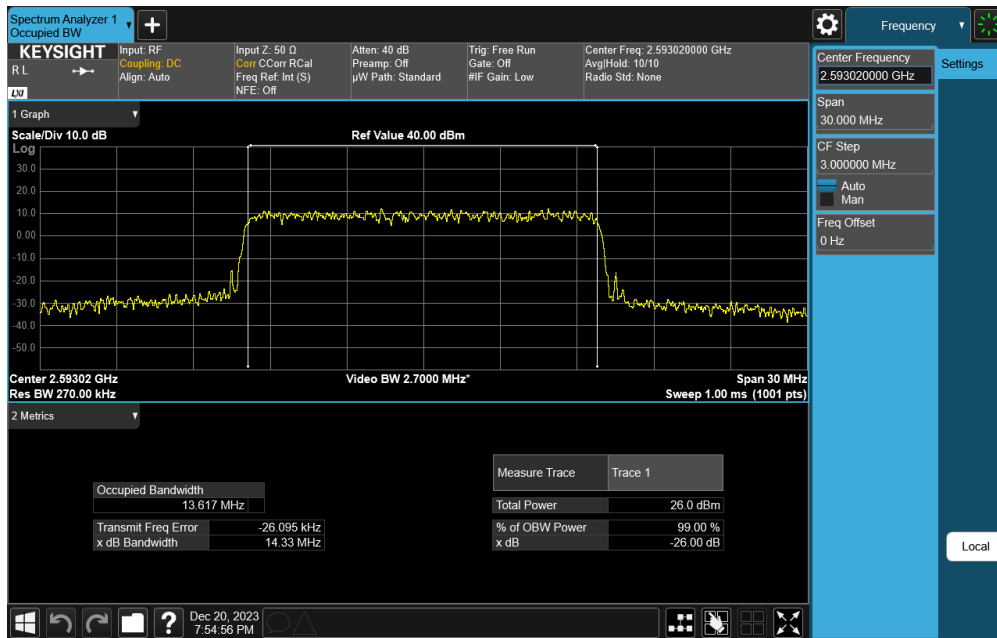
**Plot 7-96. Occupied Bandwidth Plot (NR Band n41 - 15MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 64 of 572



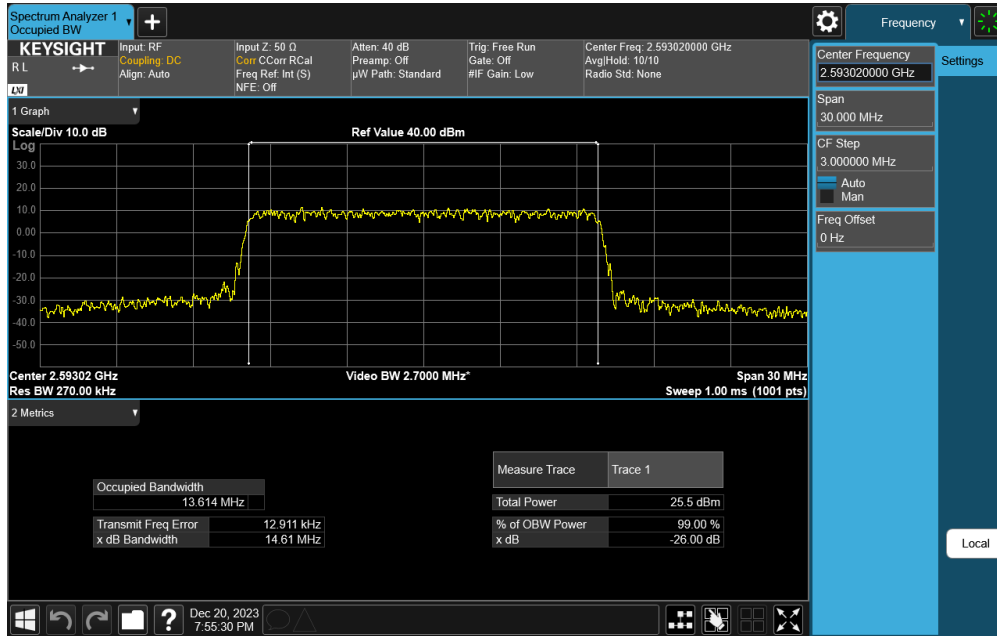


Plot 7-97. Occupied Bandwidth Plot (NR Band n41 - 15MHz CP-OFDM QPSK - Full RB)

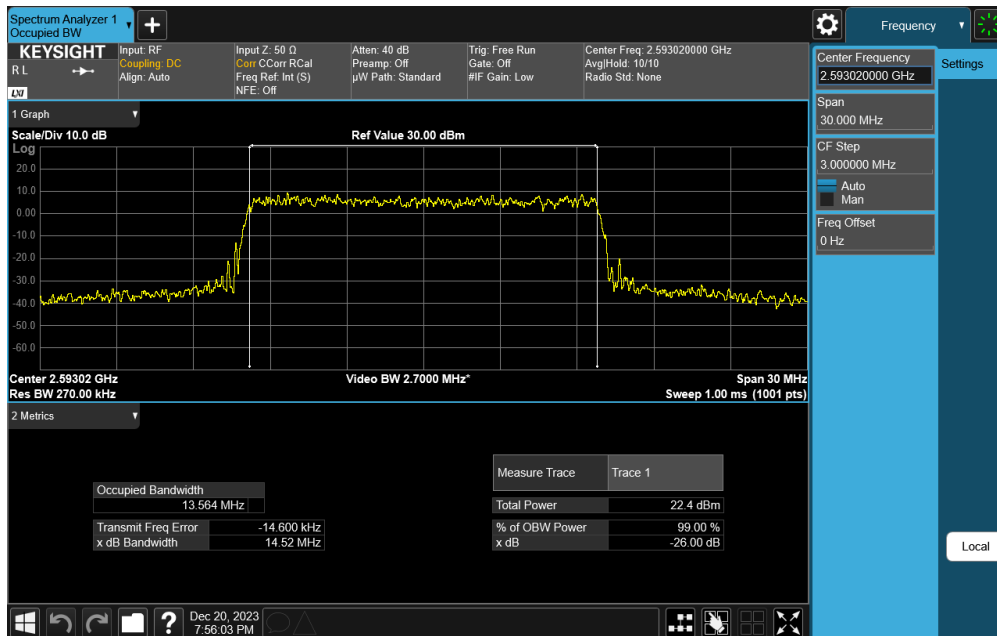


Plot 7-98. Occupied Bandwidth Plot (NR Band n41 - 15MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 65 of 572

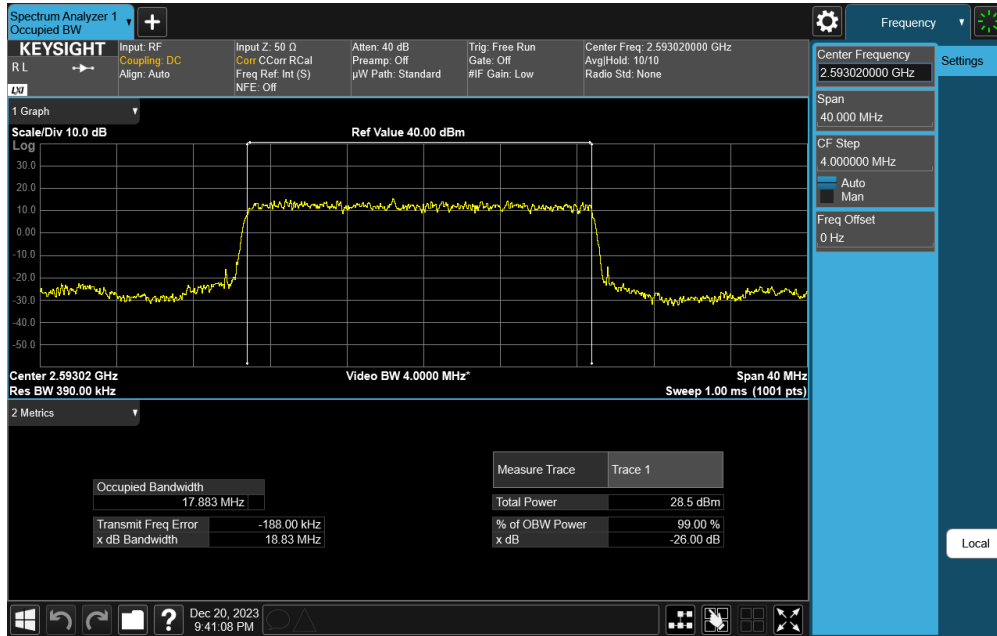


Plot 7-99. Occupied Bandwidth Plot (NR Band n41 - 15MHz CP-OFDM 64-QAM - Full RB)

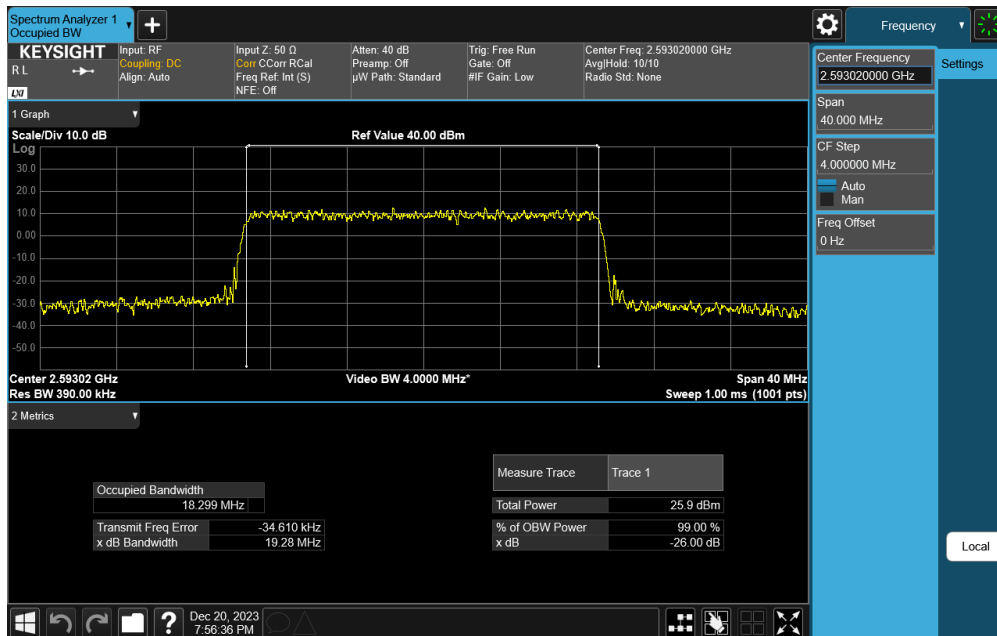


Plot 7-100. Occupied Bandwidth Plot (NR Band n41 - 15MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2903	<b>PART 27 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device	Page 66 of 572

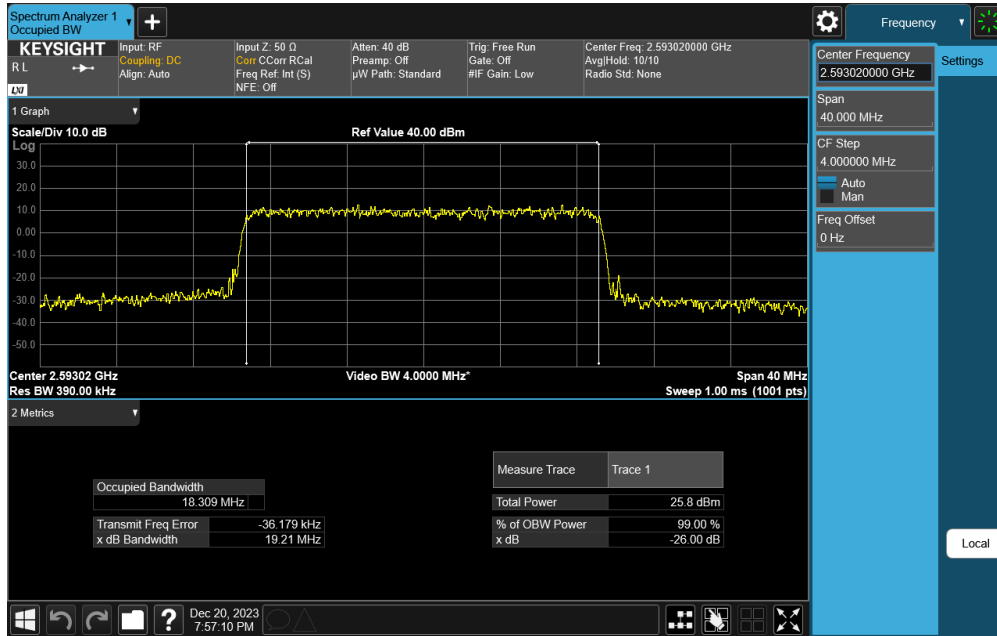


Plot 7-101. Occupied Bandwidth Plot (NR Band n41 - 20MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

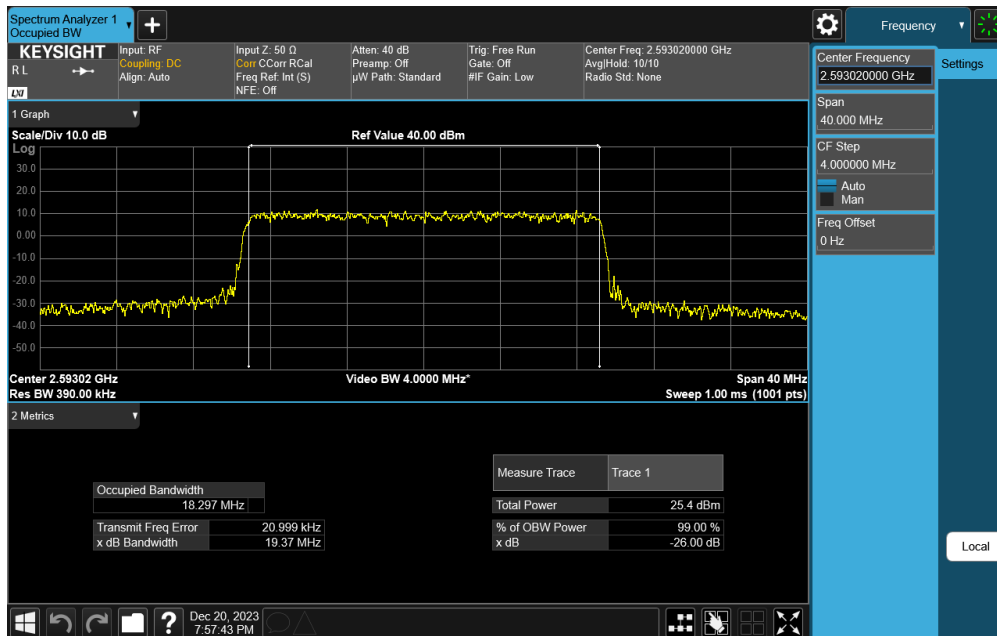


Plot 7-102. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 67 of 572

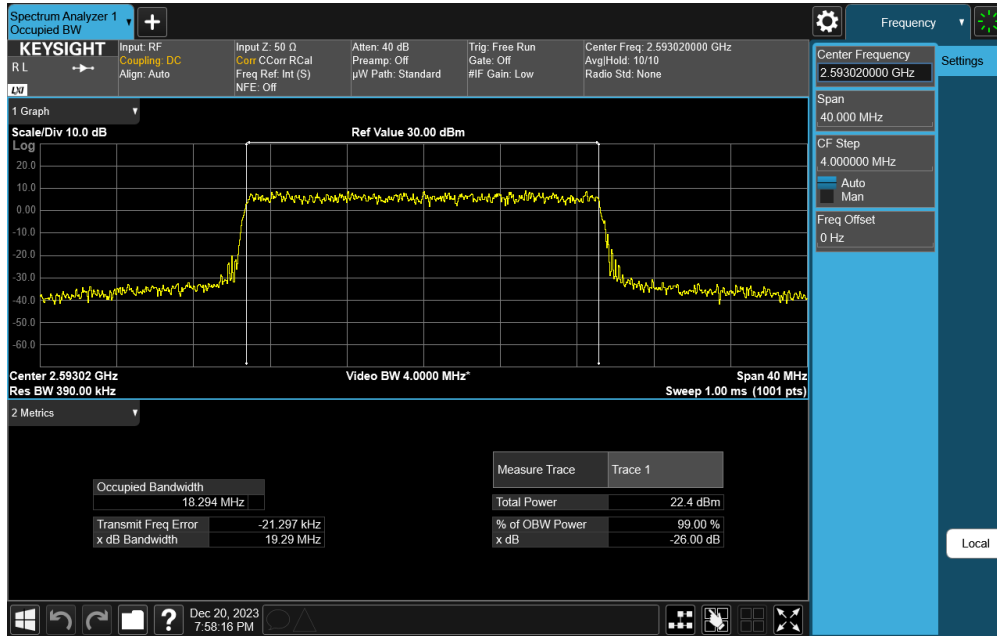


**Plot 7-103. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM 16-QAM - Full RB)**

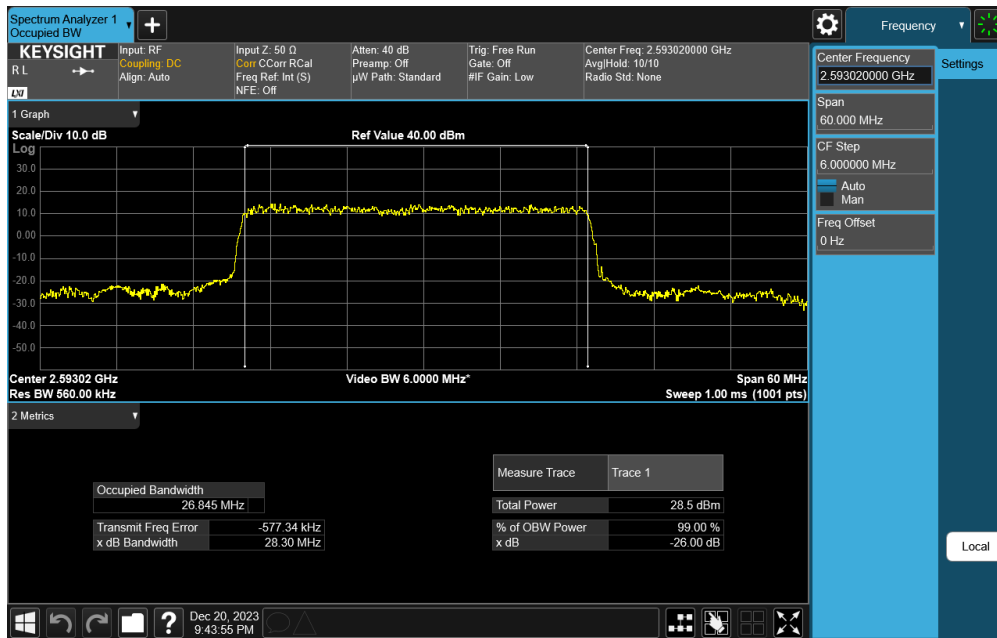


**Plot 7-104. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM 64-QAM - Full RB)**

FCC ID: BCGA2903	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2311270064-10-R1.BCG	Test Dates: 10/1/2023 - 03/04/2024	EUT Type: Tablet Device
		Page 68 of 572



Plot 7-105. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM 256-QAM - Full RB)



Plot 7-106. Occupied Bandwidth Plot (NR Band n41 - 30MHz DFT-s-OFDM  $\pi/2$  BPSK - Full RB)

FCC ID: BCGA2903	<b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1C2311270064-10-R1.BCG	<b>Test Dates:</b> 10/1/2023 - 03/04/2024	<b>EUT Type:</b> Tablet Device	Page 69 of 572