



PART 27 MEASUREMENT REPORT

Applicant Name:

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

Date of Testing:

11/29/2021 - 2/7/2022

Test Site/Location:

PCTEST Morgan Hill, CA, USA

Test Report Serial No.:

1C2111150079-05.BCG

FCC ID:

BCGA2589

Applicant Name:

Apple Inc.

Application Type:

Certification

Model:

A2589(A2591)

EUT Type:

Tablet Device

FCC Classification:

PCS Licensed Transmitter (PCB)

FCC Rule Part:

27

Test Procedure(s):

ANSI C63.26-2015, TIA-603-E-2016, 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.

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

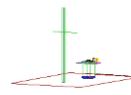
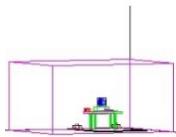


FCC ID: BCGA2589	PCTEST [®] Proud to be part of element		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device	Page 1 of 174	

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Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	PAR at 0.1% [dB]	EIRP		Emission Designator
						Max. Power [W]	Max. Power [dBm]	
NR Band n77 (PC2) (3450 - 3550MHz)	20 MHz	1/2 BPSK	3460.0 - 3540.0	17.980	3.96	0.794	29.00	18M0G7W
		QPSK	3465.0 - 3535.0	28.001	5.00	0.793	28.99	18M4G7W
		OPSK	3460.0 - 3540.0	18.427	5.14	0.625	27.96	18M4D7W
		16QAM	3460.0 - 3540.0	18.365	5.72	0.625	27.96	18M3D7W
		64QAM	3460.0 - 3540.0	18.343	6.14	0.498	26.97	18M3D7W
	30MHz	256QAM	3460.0 - 3540.0	18.310	6.58	0.250	23.98	18M3D7W
		1/2 BPSK	3465.0 - 3535.0	27.013	4.08	0.794	29.00	27M0G7W
		QPSK	3465.0 - 3535.0	28.001	5.00	0.782	28.93	28M0G7W
		OPSK	3465.0 - 3535.0	28.084	5.80	0.631	28.00	28M1D7W
		16QAM	3465.0 - 3535.0	28.061	6.38	0.495	26.95	28M1D7W
NR Band n77 (PC2) (3450 - 3550MHz)	40 MHz	256QAM	3465.0 - 3535.0	27.937	6.60	0.255	24.07	27M9D7W
		1/2 BPSK	3470.0 - 3530.0	35.865	3.82	0.782	28.93	35M9G7W
		QPSK	3470.0 - 3530.0	37.974	5.20	0.794	29.00	38M0G7W
		OPSK	3470.0 - 3530.0	38.038	5.92	0.634	28.02	38M0D7W
		16QAM	3470.0 - 3530.0	37.903	6.44	0.502	27.01	37M9D7W
	50 MHz	256QAM	3470.0 - 3530.0	37.972	6.76	0.254	24.04	38M0D7W
		1/2 BPSK	3475.0 - 3525.0	46.040	3.70	0.794	29.00	46M0G7W
		QPSK	3475.0 - 3525.0	47.725	4.70	0.783	28.94	47M7G7W
		OPSK	3475.0 - 3525.0	47.744	5.72	0.632	28.01	47M7D7W
		16QAM	3475.0 - 3525.0	47.733	6.20	0.504	27.02	47M7D7W
NR Band n77 (PC2) (3450 - 3550MHz)	60 MHz	256QAM	3475.0 - 3525.0	47.593	6.66	0.255	24.07	47M6D7W
		1/2 BPSK	3480.0 - 3520.0	58.385	4.16	0.794	29.00	58M4G7W
		QPSK	3480.0 - 3520.0	58.259	4.96	0.789	28.97	58M3G7W
		OPSK	3480.0 - 3520.0	58.238	5.78	0.631	28.00	58M2D7W
		16QAM	3480.0 - 3520.0	58.386	6.26	0.493	26.93	58M4D7W
	70 MHz	256QAM	3480.0 - 3520.0	58.170	6.72	0.258	24.12	58M2D7W
		1/2 BPSK	3485.0 - 3515.0	64.706	3.94	0.794	29.00	64M7G7W
		QPSK	3485.0 - 3515.0	67.834	5.04	0.787	28.96	67M9G7W
		OPSK	3485.0 - 3515.0	67.915	5.94	0.619	27.92	67M9D7W
		16QAM	3485.0 - 3515.0	67.983	6.26	0.500	26.99	68M0D7W
NR Band n77 (PC2) (3450 - 3550MHz)	80 MHz	256QAM	3485.0 - 3515.0	67.665	6.90	0.256	24.08	67M7D7W
		1/2 BPSK	3490.0 - 3510.0	77.576	4.26	0.787	28.96	77M6G7W
		QPSK	3490.0 - 3510.0	77.872	5.08	0.794	29.00	77M9G7W
		OPSK	3490.0 - 3510.0	77.814	5.86	0.619	27.92	77M8D7W
		16QAM	3490.0 - 3510.0	77.965	6.40	0.500	26.99	78M0D7W
	90 MHz	256QAM	3490.0 - 3510.0	77.636	6.86	0.256	24.09	77M6D7W
		1/2 BPSK	3495.0 - 3505.0	86.145	3.96	0.787	28.96	86M1G7W
		QPSK	3495.0 - 3505.0	87.745	4.76	0.794	29.00	87M2G7W
		OPSK	3495.0 - 3505.0	87.991	5.68	0.627	27.97	88M0D7W
		16QAM	3495.0 - 3505.0	87.991	6.24	0.504	27.02	87M8D7W
NR Band n77 (PC3) (3450 - 3550MHz)	100 MHz	256QAM	3495.0 - 3505.0	87.709	6.58	0.255	24.07	87M7D7W
		1/2 BPSK	3500	96.846	4.24	0.782	28.93	96M8G7W
		QPSK	3500	97.815	4.86	0.794	29.00	97M8G7W
		OPSK	3500	97.810	5.98	0.635	28.03	97M8D7W
		16QAM	3500	98.039	6.38	0.505	27.03	98M0D7W
	20 MHz	256QAM	3500	97.780	6.66	0.256	24.08	97M8D7W
		1/2 BPSK	3460.0 - 3540.0	17.980	3.96	0.757	28.79	18M0G7W
		QPSK	3460.0 - 3540.0	18.427	5.14	0.759	28.80	18M4G7W
		OPSK	3460.0 - 3540.0	18.365	5.72	0.603	27.80	18M4D7W
		16QAM	3460.0 - 3540.0	18.343	6.14	0.478	26.79	18M3D7W
NR Band n77 (PC3) (3450 - 3550MHz)	30MHz	256QAM	3460.0 - 3540.0	18.310	6.58	0.243	23.85	18M3D7W
		1/2 BPSK	3465.0 - 3535.0	27.013	4.08	0.745	28.72	27M0G7W
		QPSK	3465.0 - 3535.0	28.001	5.00	0.759	28.80	28M0G7W
		OPSK	3465.0 - 3535.0	28.088	5.80	0.601	27.79	28M1D7W
		16QAM	3465.0 - 3535.0	28.061	6.38	0.480	26.81	28M1D7W
	40 MHz	256QAM	3465.0 - 3535.0	27.937	6.60	0.246	23.91	27M9D7W
		1/2 BPSK	3470.0 - 3530.0	35.865	3.82	0.755	28.78	35M9G7W
		QPSK	3470.0 - 3530.0	37.974	5.20	0.759	28.80	38M0G7W
		OPSK	3470.0 - 3530.0	38.038	5.92	0.600	27.78	38M0D7W
		16QAM	3470.0 - 3530.0	37.903	6.44	0.474	26.76	37M9D7W
NR Band n77 (PC3) (3450 - 3550MHz)	50 MHz	256QAM	3475.0 - 3525.0	47.593	6.66	0.247	23.92	47M6D7W
		1/2 BPSK	3480.0 - 3520.0	58.385	4.16	0.750	28.75	58M4G7W
		QPSK	3480.0 - 3520.0	58.259	4.96	0.759	28.80	58M3G7W
		OPSK	3480.0 - 3520.0	58.238	5.78	0.600	27.78	58M2D7W
		16QAM	3480.0 - 3520.0	58.386	6.26	0.483	26.84	58M4D7W
	60 MHz	256QAM	3480.0 - 3520.0	58.170	6.72	0.247	23.93	58M2D7W
		1/2 BPSK	3485.0 - 3515.0	64.706	3.94	0.759	28.80	64M7G7W
		QPSK	3485.0 - 3515.0	67.834	5.04	0.757	28.79	67M8G7W
		OPSK	3485.0 - 3515.0	67.915	5.94	0.594	27.74	67M9D7W
		16QAM	3485.0 - 3515.0	67.983	6.26	0.473	26.75	68M0D7W
NR Band n77 (PC3) (3450 - 3550MHz)	70 MHz	256QAM	3485.0 - 3515.0	67.665	6.90	0.239	23.79	67M7D7W
		1/2 BPSK	3490.0 - 3510.0	77.576	4.26	0.757	28.79	77M6G7W
		QPSK	3490.0 - 3510.0	77.872	5.08	0.759	28.80	77M9G7W
		OPSK	3490.0 - 3510.0	77.814	5.86	0.603	27.80	77M8D7W
		16QAM	3490.0 - 3510.0	77.965	6.40	0.478	26.79	78M0D7W
	80 MHz	256QAM	3490.0 - 3510.0	77.636	6.86	0.245	23.90	77M6D7W
		1/2 BPSK	3495.0 - 3505.0	86.145	3.96	0.757	28.79	86M1G7W
		QPSK	3495.0 - 3505.0	87.745	4.76	0.759	28.80	87M7G7W
		OPSK	3495.0 - 3505.0	87.991	5.68	0.604	27.81	88M0D7W
		16QAM	3495.0 - 3505.0	87.991	5.98	0.604	27.81	87M8D7W
NR Band n77 (PC3) (3450 - 3550MHz)	90 MHz	256QAM	3495.0 - 3505.0	87.709	6.58	0.244	23.88	87M7D7W
		1/2 BPSK	3500	96.846	4.24	0.757	28.79	96M8G7W
		QPSK	3500	97.815	4.86	0.759	28.80	97M9G7W
		OPSK	3500	97.810	5.98	0.604	27.81	97M8D7W
		16QAM	3500	98.039	6.38	0.481	26.82	98M0D7W
	100 MHz	256QAM	3500	97.780	6.66	0.247	23.93	97M8D7W

EUT Overview

FCC ID: BCGA2589	 PCTEST Proud to be part of  element	PART 27 MEASUREMENT REPORT				Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device				

V 2.1 12/15/2021

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Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	PAR at 0.1% [dB]	EIRP		Emission Designator
						Max. Power [W]	Max. Power [dBm]	
NR Band n77 (PC2) (3700 - 3980MHz)	20 MHz	π/2 BPSK	3710.0 - 3970.0	19.134	3.88	0.773	28.88	19M1G7W
		QPSK	3710.0 - 3970.0	19.474	5.02	0.794	29.00	19M5G7W
		16QAM	3710.0 - 3970.0	19.492	5.88	0.628	27.98	19M5D7W
		64QAM	3710.0 - 3970.0	19.471	6.14	0.589	27.70	19M5D7W
	30 MHz	256QAM	3710.0 - 3970.0	18.849	6.60	0.589	27.70	18M8D7W
		π/2 BPSK	3715.0 - 3965.0	27.695	4.08	0.794	29.00	27M7G7W
		QPSK	3715.0 - 3965.0	28.585	4.98	0.787	28.96	28M6G7W
		16QAM	3715.0 - 3965.0	28.632	5.78	0.640	28.06	28M6D7W
	40 MHz	64QAM	3715.0 - 3965.0	28.673	6.28	0.589	27.70	28M7D7W
		256QAM	3715.0 - 3965.0	28.634	6.68	0.589	27.70	28M6D7W
		π/2 BPSK	3720.0 - 3960.0	36.329	3.98	0.785	28.95	36M3G7W
		QPSK	3720.0 - 3960.0	38.630	4.98	0.794	29.00	38M6G7W
	50 MHz	16QAM	3720.0 - 3960.0	38.641	5.94	0.622	27.94	38M6D7W
		64QAM	3720.0 - 3960.0	38.527	6.14	0.589	27.70	38M5D7W
		256QAM	3720.0 - 3960.0	38.472	6.72	0.589	27.70	38M5D7W
		π/2 BPSK	3725.0 - 3955.0	46.008	3.88	0.794	29.00	46M0G7W
	60 MHz	QPSK	3725.0 - 3955.0	47.724	4.90	0.793	28.99	47M7G7W
		16QAM	3725.0 - 3955.0	47.744	5.72	0.630	27.99	47M7D7W
		64QAM	3725.0 - 3955.0	47.700	6.12	0.589	27.70	47M7D7W
		256QAM	3725.0 - 3955.0	47.795	6.74	0.589	27.70	47M8D7W
	70 MHz	π/2 BPSK	3730.0 - 3950.0	58.019	4.06	0.793	28.99	58M0G7W
		QPSK	3730.0 - 3950.0	58.264	4.94	0.794	29.00	58M3G7W
		16QAM	3730.0 - 3950.0	58.338	5.86	0.630	27.99	58M3D7W
		64QAM	3730.0 - 3950.0	58.283	6.38	0.589	27.70	58M3D7W
	80 MHz	256QAM	3730.0 - 3950.0	58.456	6.66	0.589	27.70	58M5D7W
		π/2 BPSK	3735.0 - 3945.0	64.628	4.00	0.794	29.00	64M6G7W
		QPSK	3735.0 - 3945.0	67.637	5.02	0.794	29.00	67M6G7W
		16QAM	3735.0 - 3945.0	67.918	5.86	0.619	27.92	67M9D7W
	90 MHz	64QAM	3735.0 - 3945.0	67.876	6.26	0.589	27.70	67M9D7W
		256QAM	3735.0 - 3945.0	67.739	6.72	0.589	27.70	67M7D7W
		π/2 BPSK	3740.0 - 3940.0	77.416	3.82	0.791	28.98	77M4G7W
		QPSK	3740.0 - 3940.0	77.729	5.06	0.794	29.00	77M7G7W
	100 MHz	16QAM	3740.0 - 3940.0	77.941	6.00	0.625	27.96	77M9D7W
		64QAM	3740.0 - 3940.0	77.813	6.20	0.589	27.70	77M8D7W
		256QAM	3740.0 - 3940.0	77.591	6.66	0.589	27.70	77M6D7W
		π/2 BPSK	3745.0 - 3935.0	86.086	3.76	0.794	29.00	86M1G7W
NR Band n77 (PC3) (3700 - 3980MHz)	20 MHz	QPSK	3745.0 - 3935.0	87.984	4.90	0.767	28.85	88M0G7W
		16QAM	3745.0 - 3935.0	88.229	5.80	0.634	28.02	88M2D7W
		64QAM	3745.0 - 3935.0	87.841	6.14	0.589	27.70	87M8D7W
		256QAM	3745.0 - 3935.0	87.591	6.66	0.589	27.70	87M6D7W
	30 MHz	π/2 BPSK	3750.0 - 3930.0	96.924	3.88	0.783	28.94	96M9G7W
		QPSK	3750.0 - 3930.0	98.127	4.92	0.794	29.00	98M1G7W
		16QAM	3750.0 - 3930.0	98.100	5.82	0.621	27.93	98M1D7W
		64QAM	3750.0 - 3930.0	98.031	6.14	0.589	27.70	98M0D7W
	40 MHz	256QAM	3750.0 - 3930.0	97.795	6.74	0.589	27.70	97M8D7W
		π/2 BPSK	3750.0 - 3930.0	19.134	3.98	0.755	28.78	19M1G7W
		QPSK	3750.0 - 3930.0	19.474	4.98	0.759	28.80	19M5G7W
		16QAM	3750.0 - 3930.0	19.492	5.94	0.618	27.91	19M5D7W
	50 MHz	64QAM	3750.0 - 3930.0	19.471	6.14	0.490	26.90	19M5D7W
		256QAM	3750.0 - 3930.0	18.849	6.72	0.247	23.92	18M8D7W
		π/2 BPSK	3751.0 - 3965.0	27.695	3.88	0.753	28.77	27M7G7W
		QPSK	3751.0 - 3965.0	28.585	4.90	0.759	28.80	28M6G7W
	60 MHz	16QAM	3751.0 - 3965.0	28.632	5.72	0.600	27.78	28M6D7W
		64QAM	3751.0 - 3965.0	28.673	6.12	0.473	26.75	28M7D7W
		256QAM	3751.0 - 3965.0	28.634	6.74	0.240	23.81	28M6D7W
		π/2 BPSK	3752.0 - 3960.0	36.329	4.06	0.750	28.75	36M3G7W
	70 MHz	QPSK	3752.0 - 3960.0	38.630	4.94	0.759	28.80	38M6G7W
		16QAM	3752.0 - 3960.0	38.641	5.86	0.583	27.66	38M6D7W
		64QAM	3752.0 - 3960.0	38.527	6.38	0.475	26.77	38M5D7W
		256QAM	3752.0 - 3960.0	38.472	6.66	0.245	23.90	38M5D7W
	80 MHz	π/2 BPSK	3752.0 - 3955.0	46.008	4.00	0.757	28.79	46M0G7W
		QPSK	3752.0 - 3955.0	47.724	5.02	0.759	28.80	47M7G7W
		16QAM	3752.0 - 3955.0	47.744	5.86	0.601	27.79	47M7D7W
		64QAM	3752.0 - 3955.0	47.700	6.26	0.484	26.85	47M7D7W
	90 MHz	256QAM	3752.0 - 3955.0	47.795	6.72	0.249	23.96	47M8D7W
		π/2 BPSK	3753.0 - 3950.0	58.019	3.82	0.759	28.80	58M0G7W
		QPSK	3753.0 - 3950.0	58.264	5.06	0.741	28.70	58M3G7W
		16QAM	3753.0 - 3950.0	58.338	6.00	0.598	27.77	58M3D7W
	100 MHz	64QAM	3753.0 - 3950.0	58.283	6.20	0.480	26.81	58M3D7W
		256QAM	3753.0 - 3950.0	58.456	6.66	0.244	23.87	58M5D7W
		π/2 BPSK	3753.0 - 3945.0	64.628	3.76	0.757	28.79	64M6G7W
		QPSK	3753.0 - 3945.0	67.637	4.90	0.759	28.80	67M6G7W
	70 MHz	16QAM	3753.0 - 3945.0	67.918	5.80	0.604	27.81	67M9D7W
		64QAM	3753.0 - 3945.0	67.876	6.14	0.466	26.68	67M9D7W
		256QAM	3753.0 - 3945.0	67.739	6.66	0.247	23.93	67M7D7W
		π/2 BPSK	3754.0 - 3940.0	77.416	3.88	0.757	28.79	77M4G7W
	80 MHz	QPSK	3754.0 - 3940.0	77.729	4.92	0.759	28.80	77M7G7W
		16QAM	3754.0 - 3940.0	77.941	5.82	0.605	27.82	77M9D7W
		64QAM	3754.0 - 3940.0	77.813	6.14	0.486	26.87	77M8D7W
		256QAM	3754.0 - 3940.0	77.591	6.74	0.249	23.97	77M6D7W
	90 MHz	π/2 BPSK	3754.0 - 3935.0	86.086	3.88	0.757	28.79	86M1G7W
		QPSK	3754.0 - 3935.0	87.984	5.02	0.759	28.80	88M0G7W
		16QAM	3754.0 - 3935.0	88.229	5.88	0.604	27.81	88M2D7W
		64QAM	3754.0 - 3935.0	87.841	6.14	0.481	26.82	87M8D7W
	100 MHz	256QAM	3754.0 - 3935.0	87.591	6.60	0.246	23.91	87M6D7W
		π/2 BPSK	3755.0 - 3930.0	96.924	4.08	0.752	28.76	96M9G7W
		QPSK	3755.0 - 3930.0	98.127	4.98	0.759	28.80	98M1G7W
		16QAM	3755.0 - 3930.0	98.100	5.78	0.600	27.78	98M1D7W
	100 MHz	64QAM	3755.0 - 3930.0	98.031	6.28	0.475	26.77	98M0D7W
		256QAM	3755.0 - 3930.0	97.795	6.68	0.247	23.92	97M8D7W

EUT Overview

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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.

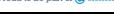
1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST 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 PCTEST located in Morgan Hill, CA 95037, U.S.A.

- PCTEST 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.
- PCTEST 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).
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID:BCGA2589**. 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.: Y257GJ4FH2, MK616422XY, CM9FQFPG4G, DLX1462005314921G

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, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), WPT

This device supports BT Beamforming

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	WLAN	Bluetooth	WCDMA / LTE / FR1 NR	LTE / FR1 NR		UNII
		802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE1/2M	Mid Band	High Band	Ultra High Band	802.11 a/n/ac/ax
3A	Config 1	✗	✓	✗	✗	✗	✓
3A	Config 2	✓	✗	✗	✓	✗	✗
3A	Config 3	✗	✓	✗	✓	✗	✗
3A	Config 4	✗	✓	✗	✓	✗	✓
3A	Config 5	✗	✗	✗	✓	✗	✓
3A	Config 6	✓	✗	✓	✗	✗	✗
3A	Config 7	✗	✓	✓	✗	✗	✗
3A	Config 8	✗	✓	✓	✗	✗	✓
3A	Config 9	✗	✗	✓	✗	✗	✓
1A	Config 10	✓	✗	✗	✓	✗	✗
1A	Config 11	✗	✓	✗	✓	✗	✗
1A	Config 12	✓	✗	✓	✗	✗	✗
1A	Config 13	✗	✓	✓	✗	✗	✗
1B	Config 14	✗	✗	✗	✗	✓	✓
2B	Config 15	✗	✗	✗	✗	✓	✓

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 4 and reported in Bluetooth, UNII, and Part 27b RF test reports.

Wi-Fi 2.4GHz and Bluetooth 2.4 GHz can transmit simultaneously on separate antennas. 2.4 GHz WLAN Antenna 3a can only transmit simultaneously with 2.4GHz Bluetooth Antenna 1a. In this scenario Wi-Fi max power will not exceed minimum of (13.5dBm, SAR max cap, Regulatory max cap) power.

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2.3 Antenna Description

Following antenna gains provided by manufacturer were used for testing.

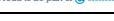
Band	Antenna Gain (dBi)			
	Antenna 3b	Antenna 1b	Antenna 4	Antenna 2b
NR Band n77	3.1	-1.5	1.5	-3.9

Table 2-2. Highest Antenna Gain

2.4 Test Support Equipment

Test Support Equipment				
1	Apple MacBook Pro w/AC/DC Adapter	Model: A2141 Model: A2166	S/N: C02DV7VKMD6T S/N: N/A	
2	Apple USB-C Cable	Model: Chimp	S/N: 420A57	
3	Apple USB-C Cable	Model: Spartan	S/N: 000MKTR02U	
4	USB-C Cable w/ AC Adapter	Model: A146 Model: A2305	S/N: N/A S/N: N/A	
5	Apple Pencil	Model: N/A	S/N: GQXGSXBJKM9	
6	DC Power Supply	Model: KPS3010D	S/N: N/A	

Table 2-3. Test Support Equipment

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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.

2.6 Software and Firmware

The test was conducted with firmware version 19E11500Q 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.

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI C63.26 2015, TIA-603-E-2016) and “Measurement Guidance for Certification of Licensed Digital Transmitters” (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:

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

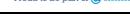
And

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

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.

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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	1.65
Radiated Disturbance (<30MHz)	4.06
Radiated Disturbance (30MHz-1GHz)	4.30
Radiated Disturbance (1-18GHz)	4.78
Radiated Disturbance (>18GHz)	4.79

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5.0 TEST EQUIPMENT CALIBRATION DATA

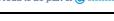
Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/31/2021	Annual	3/31/2022	MY49430244
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	8/13/2021	Annual	8/13/2022	T058701-01
ESPEC	SU-241	Tabletop Temperature Chamber	10/26/2021	Annual	10/26/2022	92009574
ETS-Lindgren	3142E	BiConiLog Antenna (30MHz - 6GHz)	10/21/2021	Annual	10/21/2022	208204
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	10/25/2021	Annual	10/25/2022	227597
Keysight Technology	N9040B	UXA Signal Analyzer	2/8/2022	Annual	2/8/2023	MY57212015
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	1/6/2022	Annual	1/6/2023	102327
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	1/6/2022	Annual	1/6/2023	101639
Rohde & Schwarz	FSV40	Signal Analyzer (10Hz-40GHz)	3/16/2021	Annual	3/16/2022	101619
Rohde & Schwarz	ESW26	EMI Test Receiver	6/11/2021	Annual	6/11/2022	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	12/2/2021	Annual	12/2/2022	101570
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	10/11/2021	Annual	10/11/2022	161616
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	3/15/2021	Annual	3/15/2022	161617
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	4/29/2021	Annual	4/29/2022	100051
Rohde & Schwarz	HFH2-Z2	Loop Antenna	4/5/2021	Annual	4/5/2022	100519
Rohde & Schwarz	FSVA3030	Signal Analyzer (up to 30 GHz)	4/19/2021	Annual	4/19/2022	100823
Rohde & Schwarz	FSVA3044	Signal Analyzer (up to 44 GHz)	4/26/2021	Annual	4/26/2022	101098

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.

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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

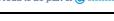
7 = Quantized/Digital Info

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.

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7.0 TEST RESULTS

7.1 Summary

Company Name: Apple Inc.
 FCC ID: BCGA2589
 FCC Classification: PCS Licensed Transmitter (PCB)
 Mode(s): NR

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 (NR Band n77 - 3450-3550MHz)	2.1051, 27.53(n)(2)	-13 dBm at Band Edge and for all out-of-band emissions	PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (NR Band n77 - 3700-3980MHz)	2.1051, 27.53(l)(2)		PASS	Sections 7.3, 7.4
	Peak-Average Ratio (NR Band n77 - 3450-3550MHz)	27.50(k)(4)	< 13 dB	PASS	Sections 7.5
	Peak-Average Ratio (NR Band n77 - 3700-3980MHz)	27.50(j)(4)		PASS	Sections 7.5
	Transmitter Conducted Output Power	2.1046	N/A	N/A	See RF Exposure Report
	Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band n77 - 3450-3550MHz)	27.50(k)(3)	< 1 Watts max. EIRP	PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band n77 - 3700-3980MHz)	27.50(j)(3)		PASS	Section 7.6
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8
RADIATED	Radiated Spurious Emissions (NR Band n77 - 3450-3550MHz)	2.1051, 27.53(n)(2)	-13 for all out-of-band emissions	PASS	Section 7.7
	Radiated Spurious Emissions (NR Band n77 - 3700-3980MHz)	2.1051, 27.53(l)(2)		PASS	Section 7.7

Table 7-1. Summary of Test Results

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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 PCTEST EMC Software Tool 1.1.

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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.

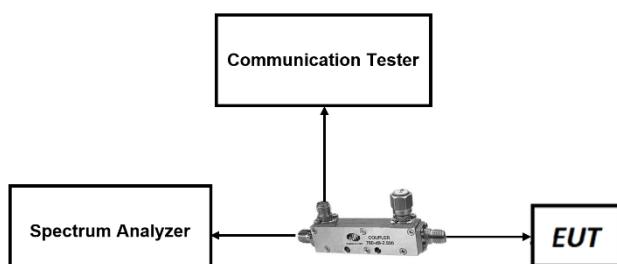


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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NR Band n77 DoD-Band



Plot 7-1. Occupied Bandwidth Plot (NR Band n77 DoD Band - 20MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)



Plot 7-2. Occupied Bandwidth Plot (NR Band n77 DoD Band - 20MHz CP-OFDM QPSK - Full RB)

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Plot 7-3. Occupied Bandwidth Plot (NR Band n77 DoD Band - 20MHz CP-OFDM 16-QAM - Full RB)

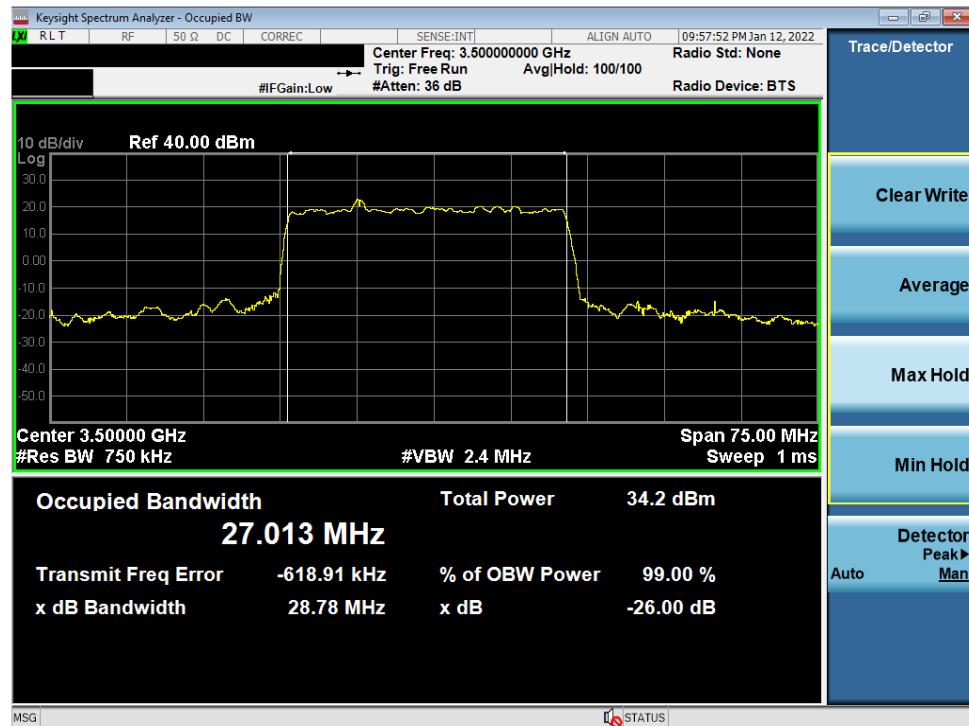


Plot 7-4. Occupied Bandwidth Plot (NR Band n77 DoD Band - 20MHz CP-OFDM 64-QAM - Full RB)

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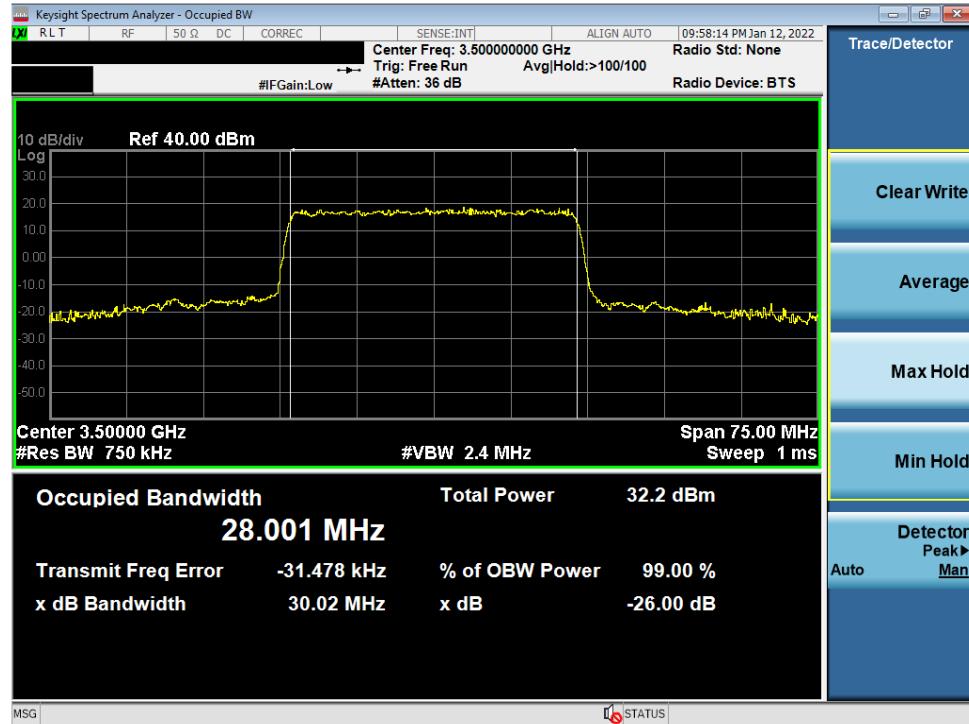


Plot 7-5. Occupied Bandwidth Plot (NR Band n77 DoD Band - 20MHz CP-OFDM 256-QAM - Full RB)



Plot 7-6. Occupied Bandwidth Plot (NR Band n77 DoD Band - 30MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)

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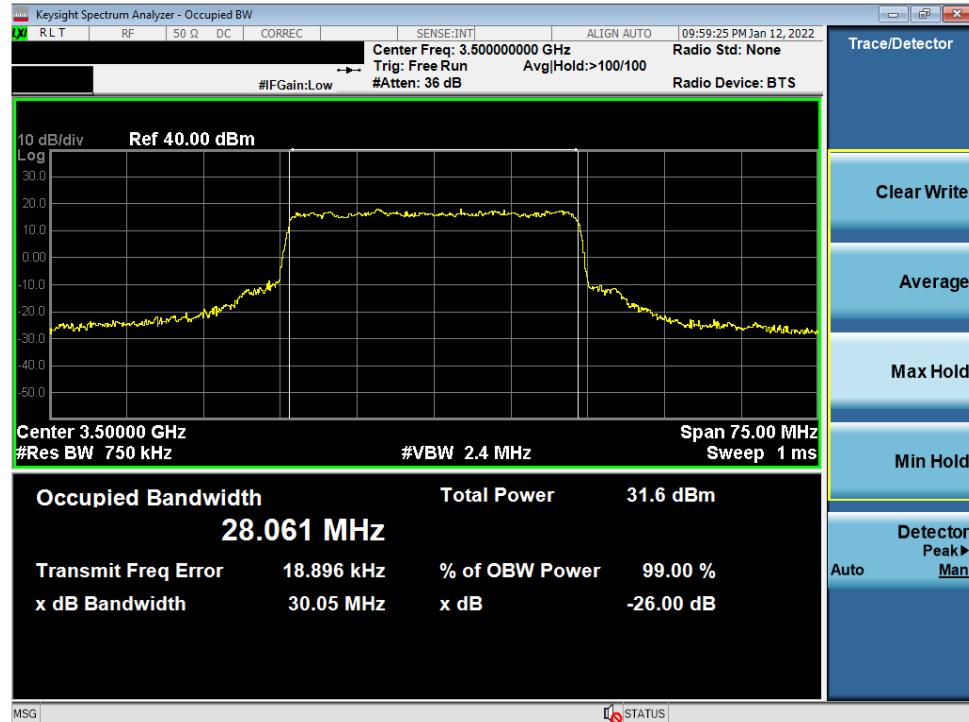


Plot 7-7. Occupied Bandwidth Plot (NR Band n77 DoD Band - 30MHz CP-OFDM QPSK - Full RB)

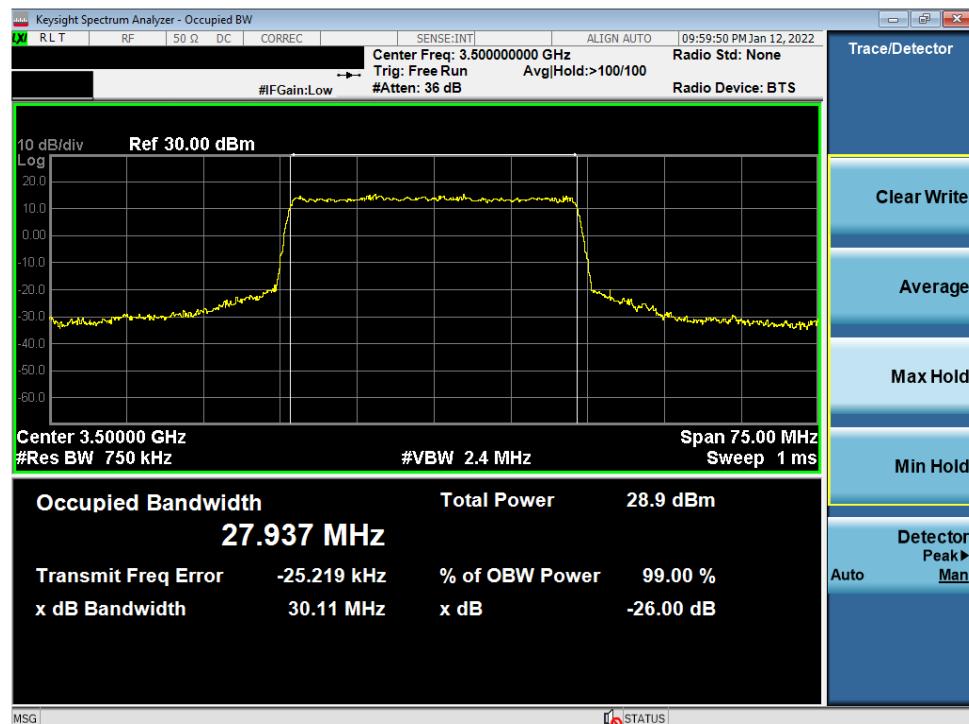


Plot 7-8. Occupied Bandwidth Plot (NR Band n77 DoD Band - 30MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 19 of 174

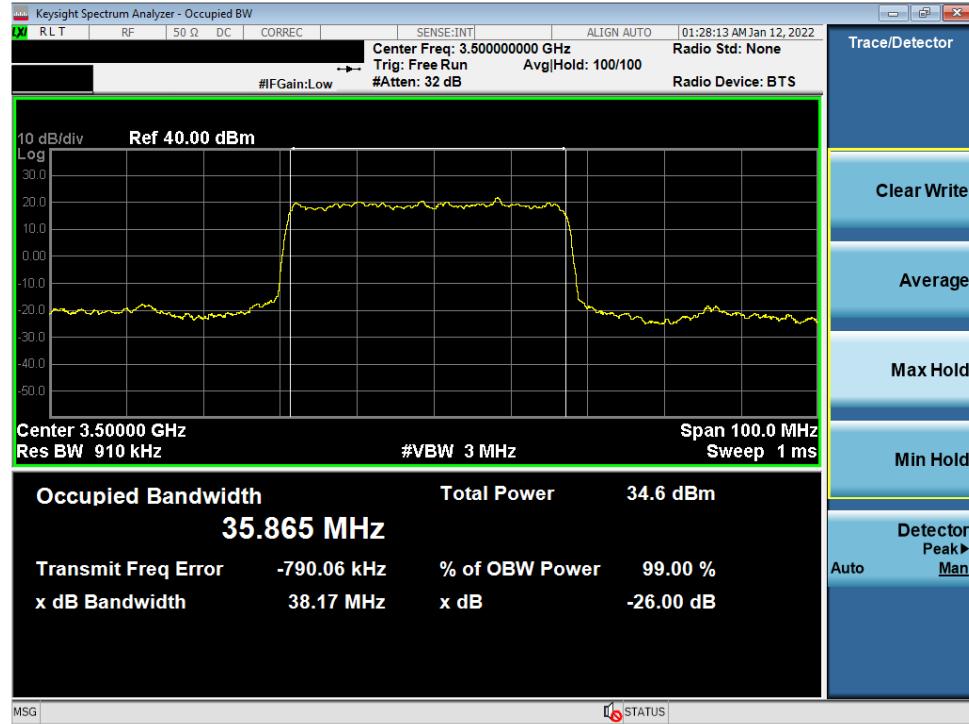


Plot 7-9. Occupied Bandwidth Plot (NR Band n77 DoD Band - 30MHz CP-OFDM 64-QAM - Full RB)

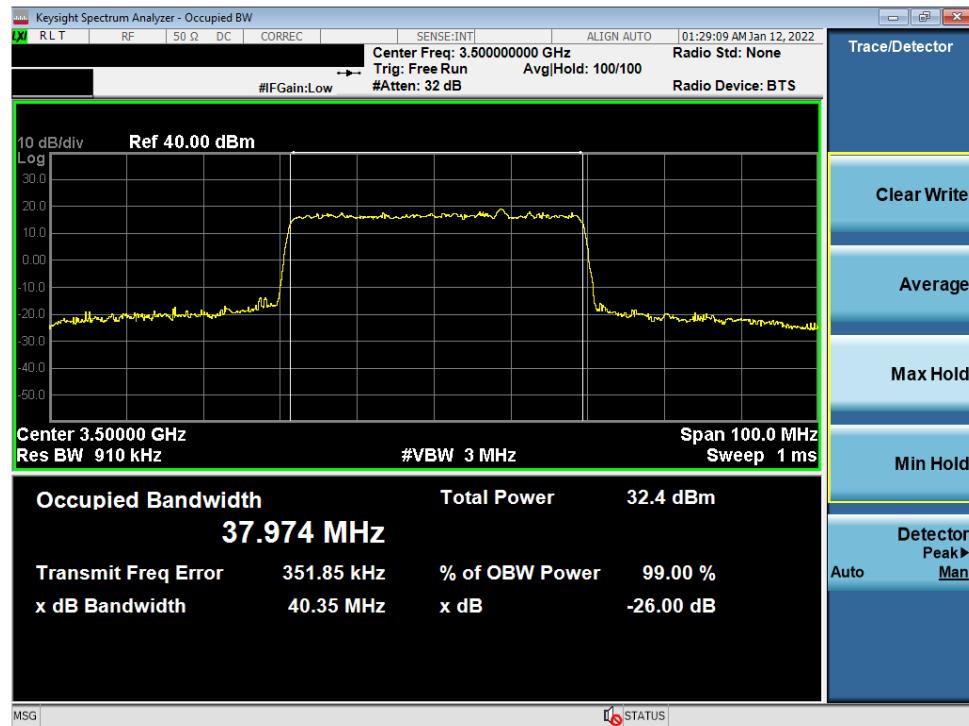


Plot 7-10. Occupied Bandwidth Plot (NR Band n77 DoD Band - 30MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 20 of 174



Plot 7-11. Occupied Bandwidth Plot (NR Band n77 DoD Band - 40MHz DFT-s-OFDM π/2 BPSK - Full RB)



Plot 7-12. Occupied Bandwidth Plot (NR Band n77 DoD Band - 40MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 21 of 174

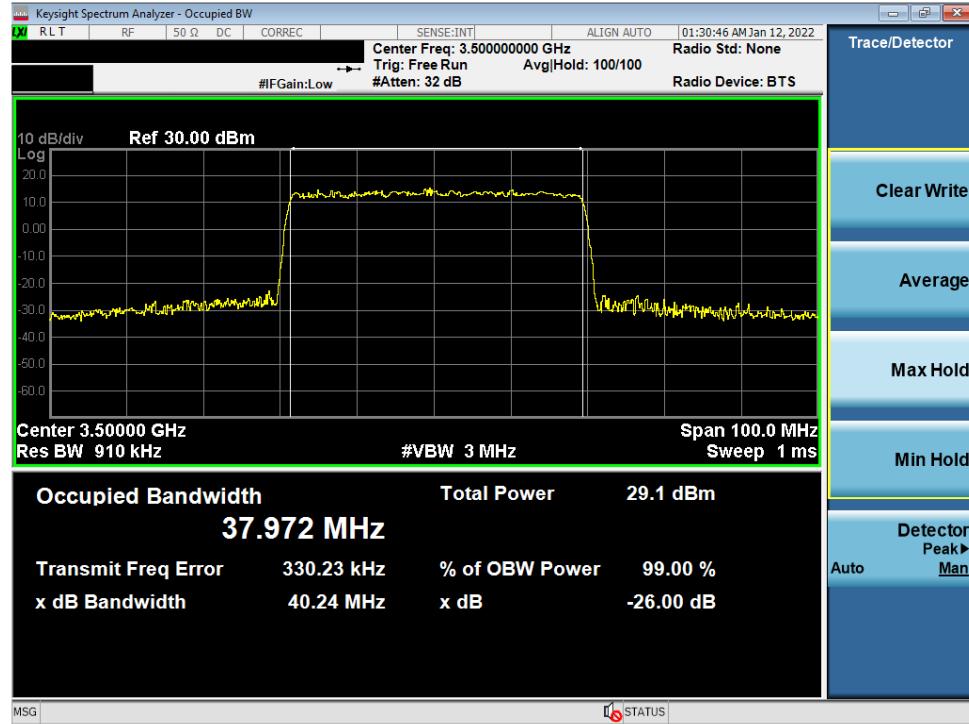


Plot 7-13. Occupied Bandwidth Plot (NR Band n77 DoD Band - 40MHz CP-OFDM 16-QAM - Full RB)

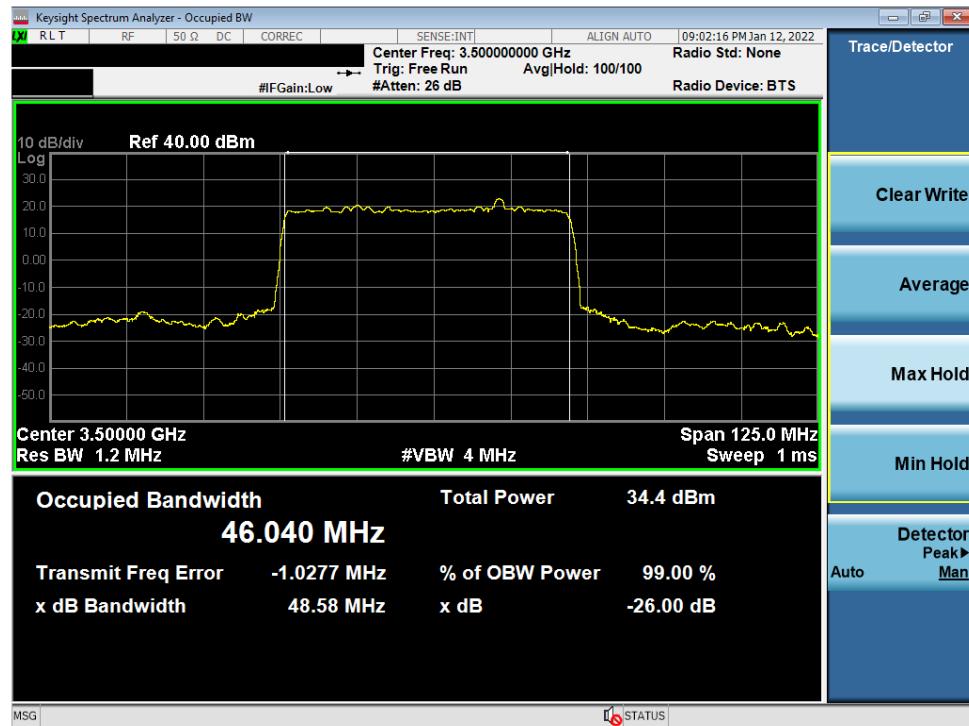


Plot 7-14. Occupied Bandwidth Plot (NR Band n77 DoD Band - 40MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 22 of 174

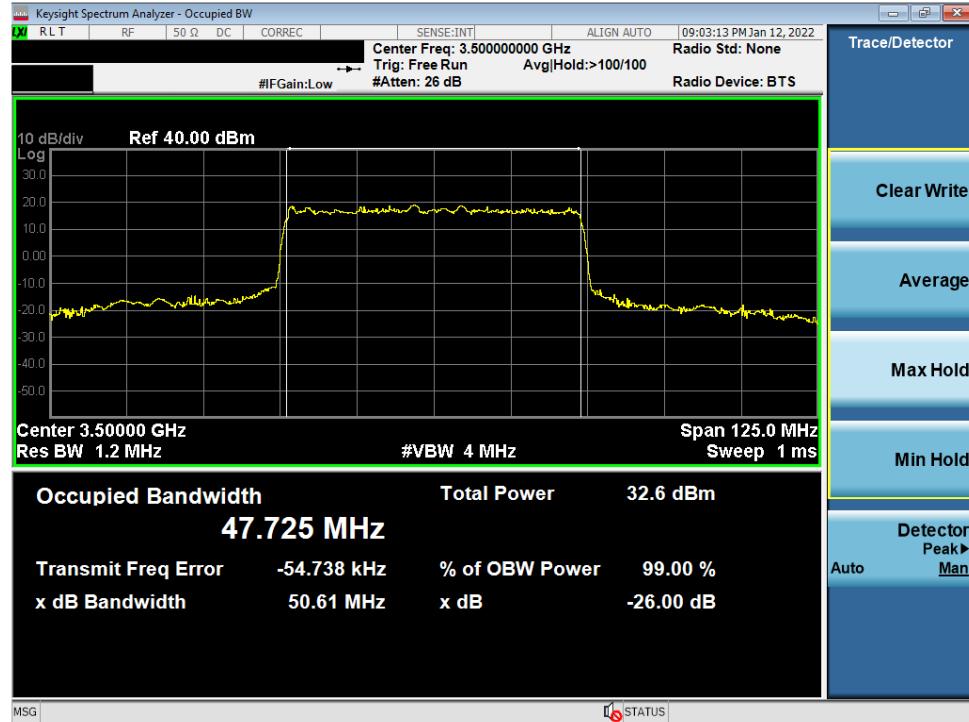


Plot 7-15. Occupied Bandwidth Plot (NR Band n77 DoD Band - 40MHz CP-OFDM 256-QAM - Full RB)



Plot 7-16. Occupied Bandwidth Plot (NR Band n77 DoD Band - 50MHz DFT-s-OFDM π/2 BPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 23 of 174



Plot 7-17. Occupied Bandwidth Plot (NR Band n77 DoD Band - 50MHz CP-OFDM QPSK - Full RB)

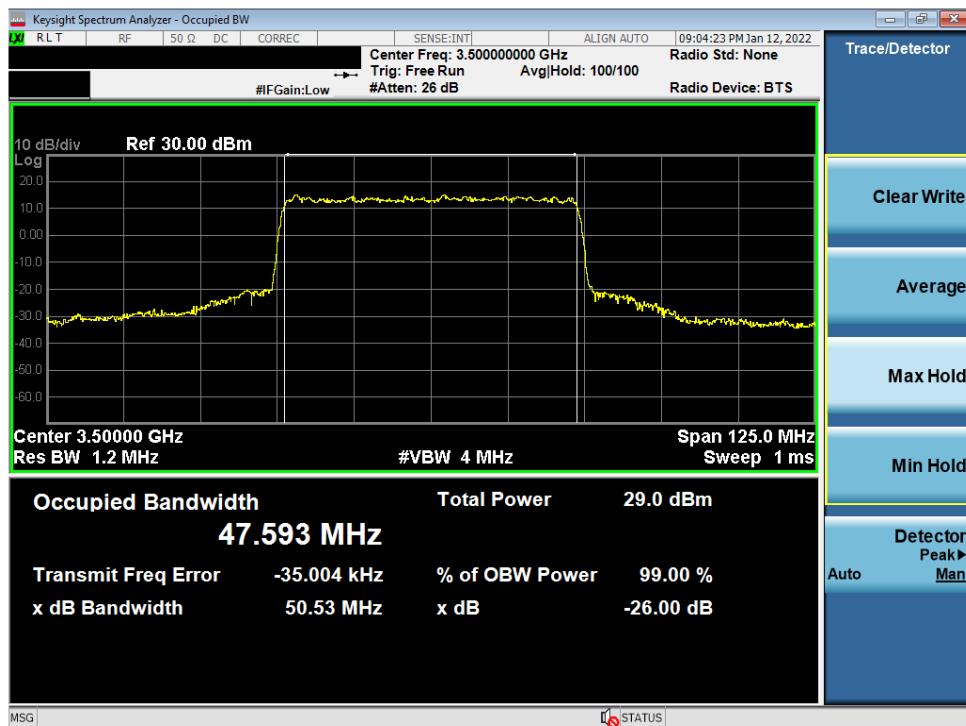


Plot 7-18. Occupied Bandwidth Plot (NR Band n77 DoD Band - 50MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 24 of 174

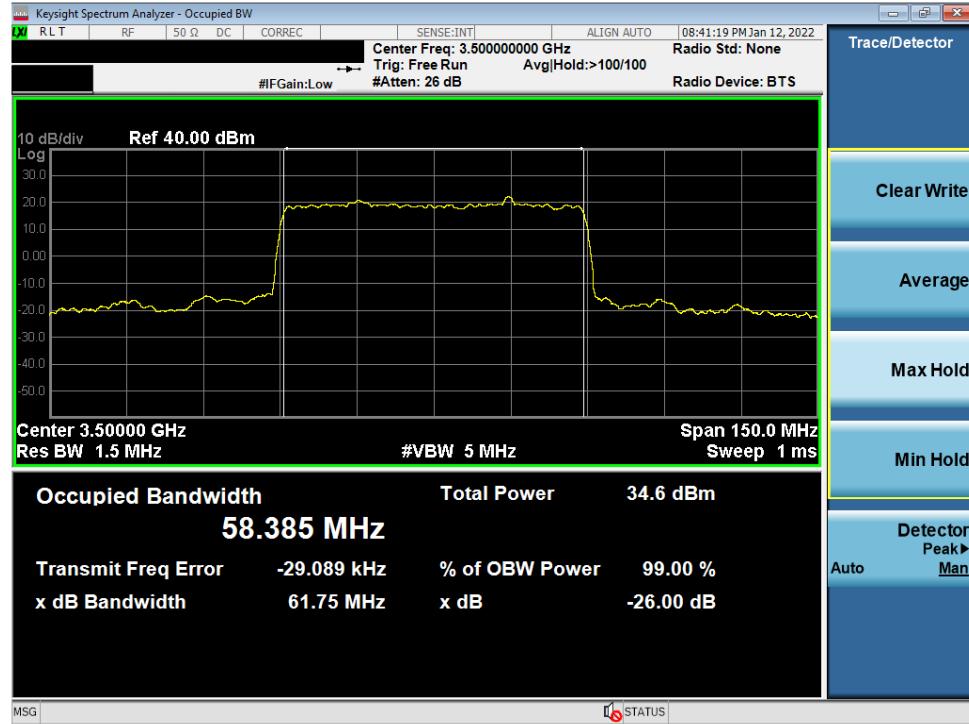


Plot 7-19. Occupied Bandwidth Plot (NR Band n77 DoD Band - 50MHz CP-OFDM 64-QAM - Full RB)



Plot 7-20. Occupied Bandwidth Plot (NR Band n77 DoD Band - 50MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	 Proud to be part of	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device		Page 25 of 174



Plot 7-21. Occupied Bandwidth Plot (NR Band n77 DoD Band - 60MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)



Plot 7-22. Occupied Bandwidth Plot (NR Band n77 DoD Band - 60MHz DFT-s-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			



Plot 7-23. Occupied Bandwidth Plot (NR Band n77 DoD Band - 60MHz DFT-s-OFDM 16-QAM - Full RB)



Plot 7-24. Occupied Bandwidth Plot (NR Band n77 DoD Band - 60MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 27 of 174

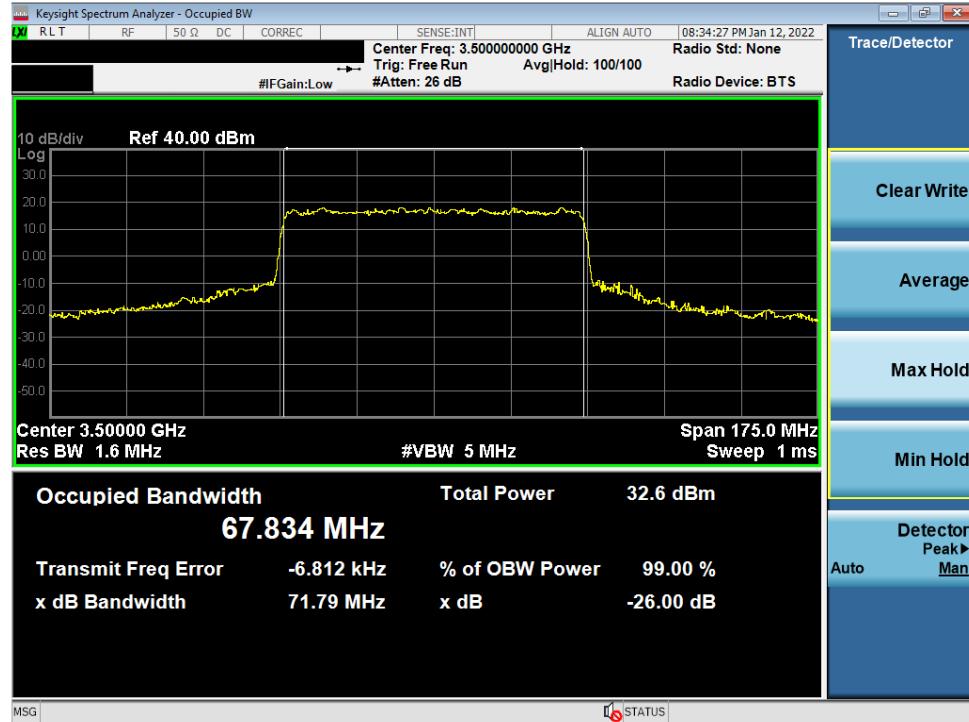


Plot 7-25. Occupied Bandwidth Plot (NR Band n77 DoD Band - 60MHz CP-OFDM 256-QAM - Full RB)



Plot 7-26. Occupied Bandwidth Plot (NR Band n77 DoD Band - 70MHz DFT-s-OFDM π/2 BPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 28 of 174



Plot 7-27. Occupied Bandwidth Plot (NR Band n77 DoD Band - 70MHz CP-OFDM QPSK - Full RB)

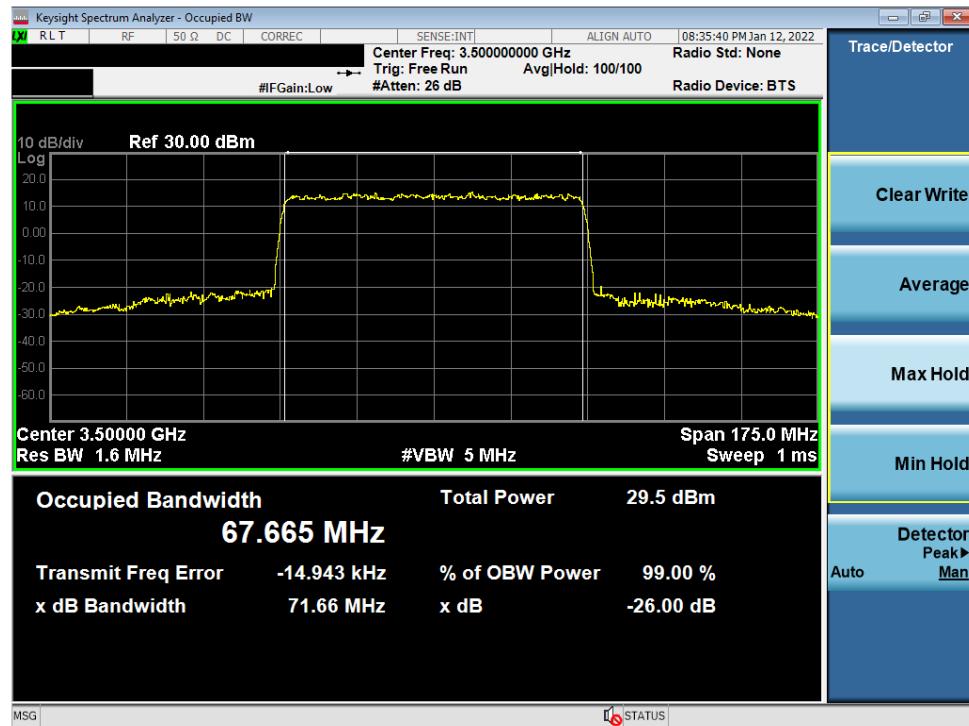


Plot 7-28. Occupied Bandwidth Plot (NR Band n77 DoD Band - 70MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 29 of 174



Plot 7-29. Occupied Bandwidth Plot (NR Band n77 DoD Band - 70MHz CP-OFDM 64-QAM - Full RB)

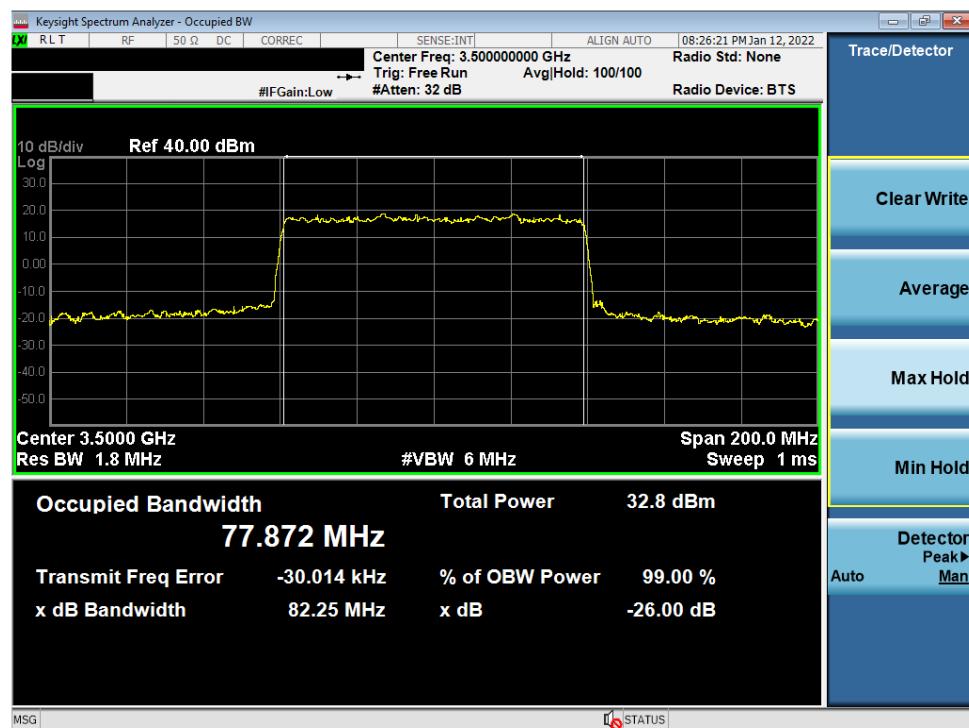


Plot 7-30. Occupied Bandwidth Plot (NR Band n77 DoD Band - 70MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 30 of 174



Plot 7-31. Occupied Bandwidth Plot (NR Band n77 DoD Band - 80MHz DFT-s-OFDM π/2 BPSK - Full RB)



Plot 7-32. Occupied Bandwidth Plot (NR Band n77 DoD Band - 80MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 31 of 174



Plot 7-33. Occupied Bandwidth Plot (NR Band n77 DoD Band - 80MHz CP-OFDM 16-QAM - Full RB)

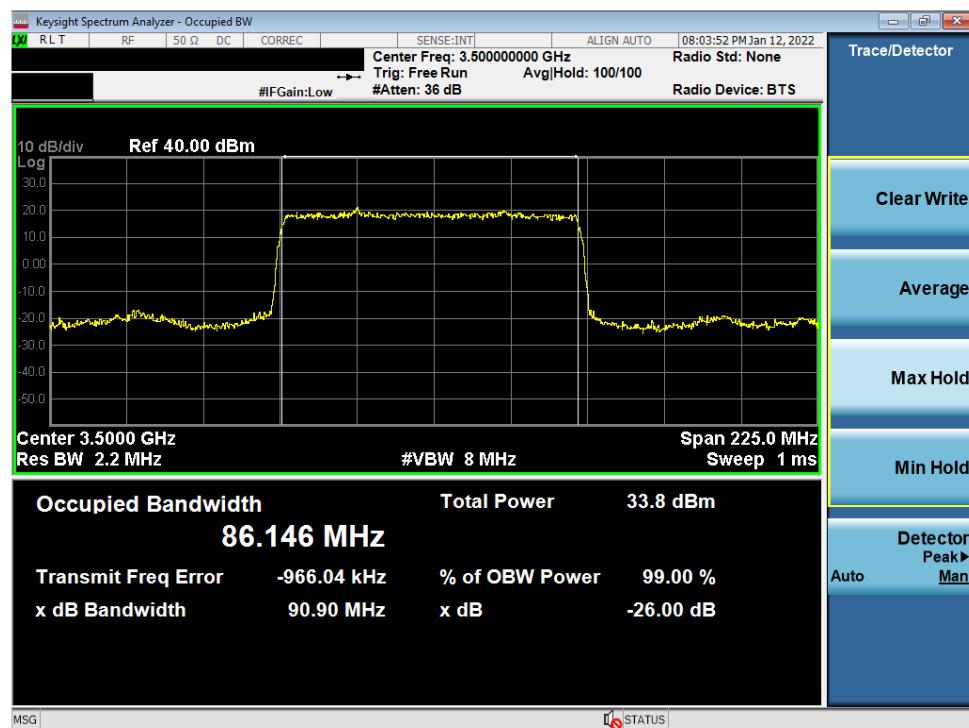


Plot 7-34. Occupied Bandwidth Plot (NR Band n77 DoD Band - 80MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 32 of 174



Plot 7-35. Occupied Bandwidth Plot (NR Band n77 DoD Band - 80MHz CP-OFDM 256-QAM - Full RB)



Plot 7-36. Occupied Bandwidth Plot (NR Band n77 DoD Band - 90MHz DFT-s-OFDM π/2 BPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 33 of 174

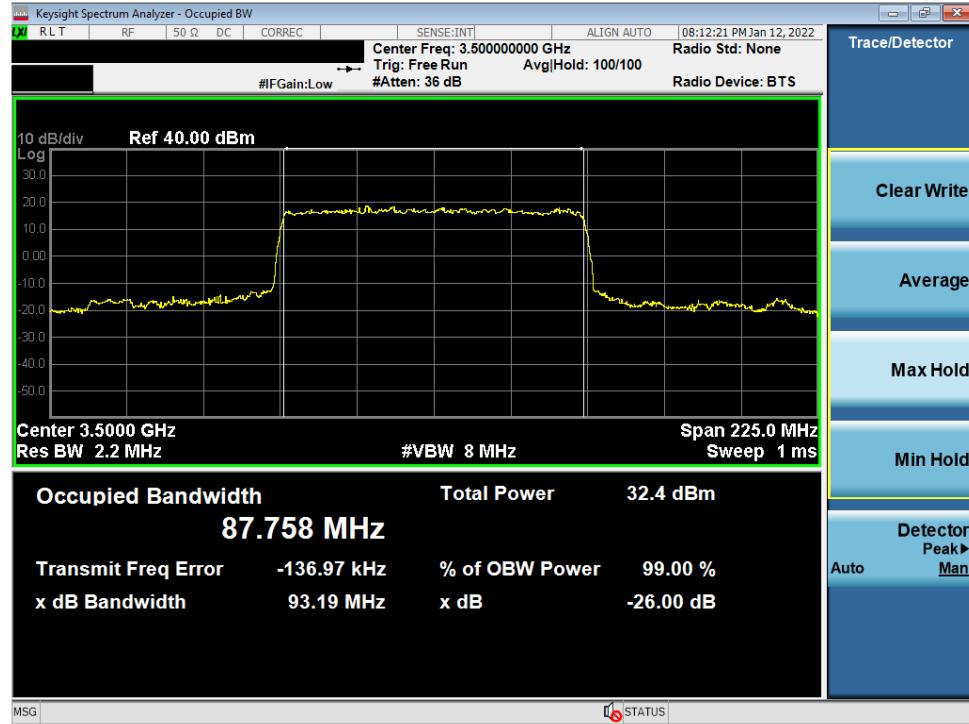


Plot 7-37. Occupied Bandwidth Plot (NR Band n77 DoD Band - 90MHz CP-OFDM QPSK - Full RB)

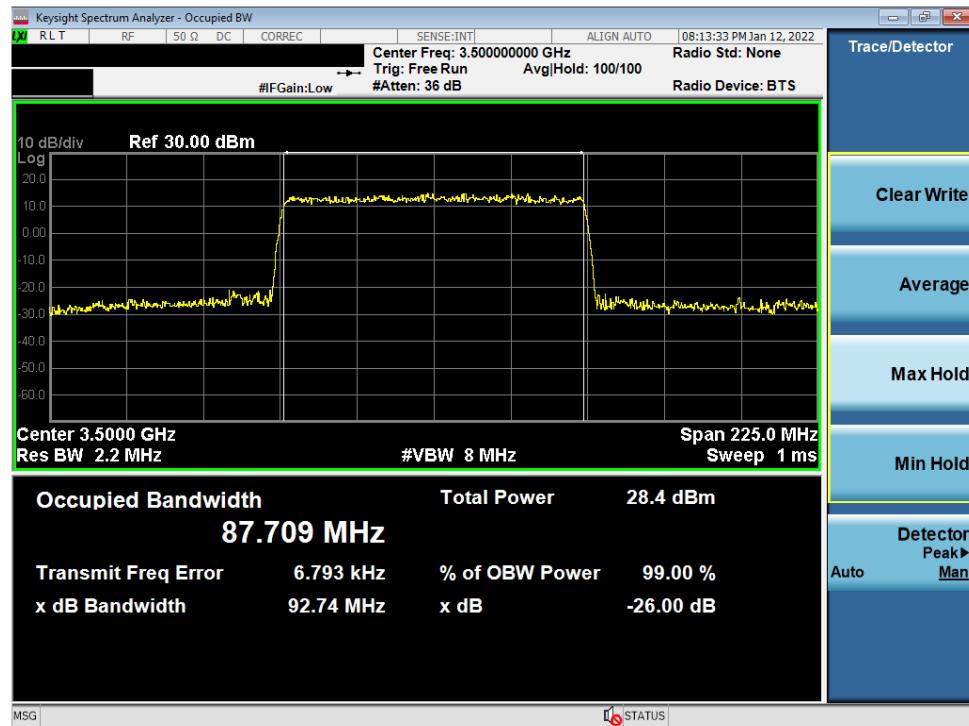


Plot 7-38. Occupied Bandwidth Plot (NR Band n77 DoD Band - 90MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			



Plot 7-39. Occupied Bandwidth Plot (NR Band n77 DoD Band - 90MHz CP-OFDM 64-QAM - Full RB)



Plot 7-40. Occupied Bandwidth Plot (NR Band n77 DoD Band - 90MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C211150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 35 of 174



Plot 7-41. Occupied Bandwidth Plot (NR Band n77 DoD Band - 100MHz DFT-s-OFDM π/2 BPSK - Full RB)



Plot 7-42. Occupied Bandwidth Plot (NR Band n77 DoD Band - 100MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			



Plot 7-43. Occupied Bandwidth Plot (NR Band n77 DoD Band - 100MHz CP-OFDM 16-QAM - Full RB)



Plot 7-44. Occupied Bandwidth Plot (NR Band n77 DoD Band - 100MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 37 of 174



Plot 7-45. Occupied Bandwidth Plot (NR Band n77 DoD Band - 100MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device	Page 38 of 174		

NR Band n77 C-Band

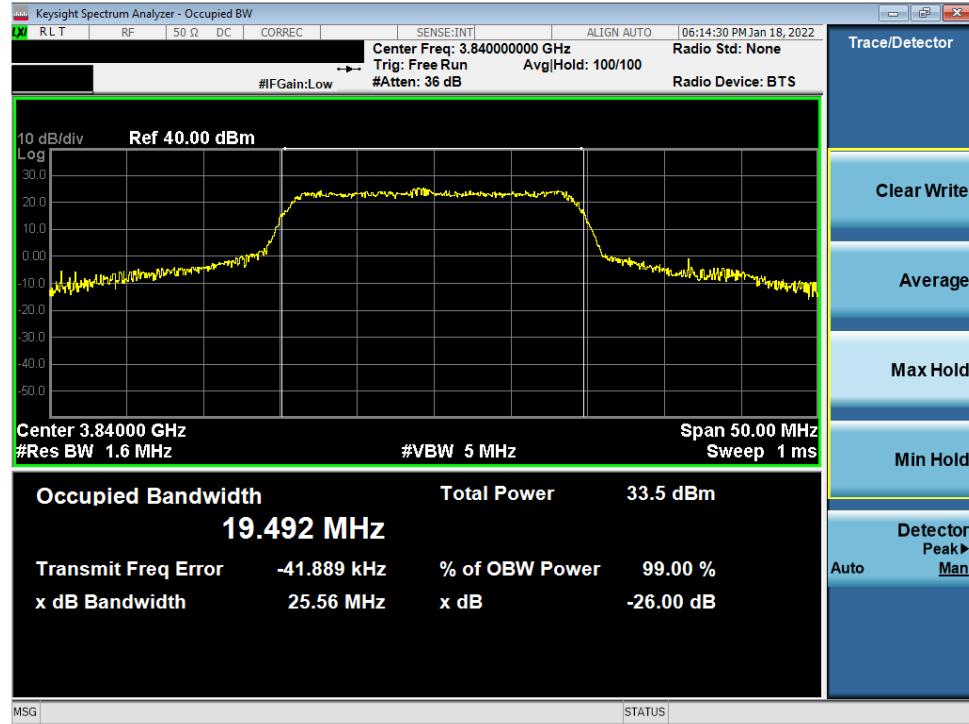


Plot 7-46. Occupied Bandwidth Plot (NR Band n77 C-Band - 20MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)



Plot 7-47. Occupied Bandwidth Plot (NR Band n77 C-Band - 20MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C211150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			

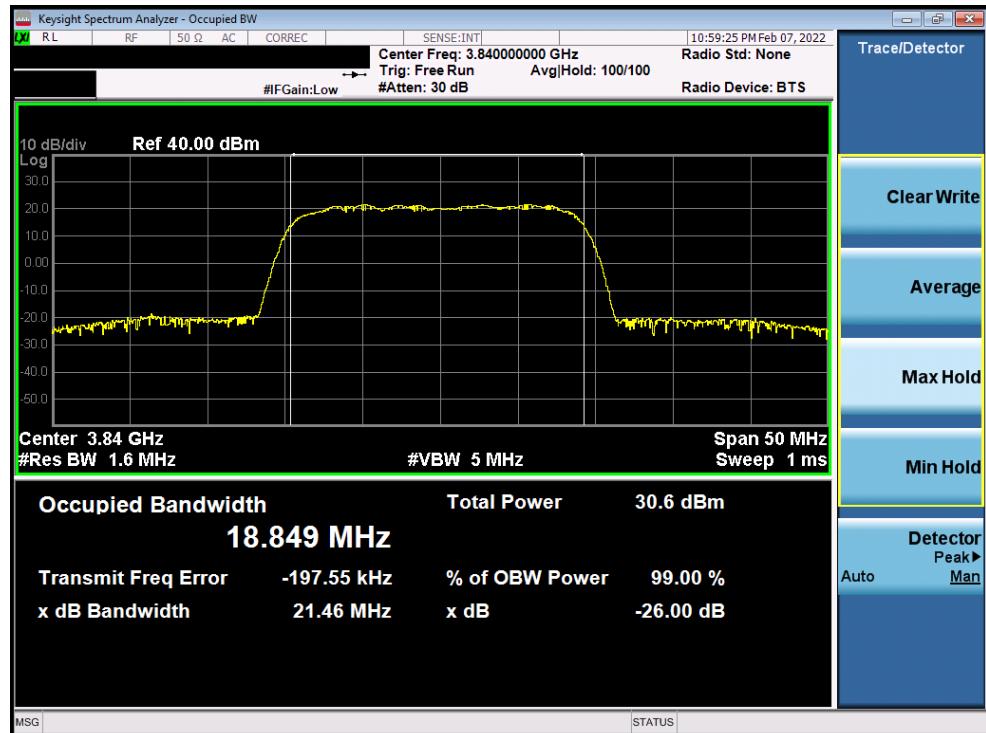


Plot 7-48. Occupied Bandwidth Plot (NR Band n77 C-Band - 20MHz CP-OFDM 16-QAM - Full RB)

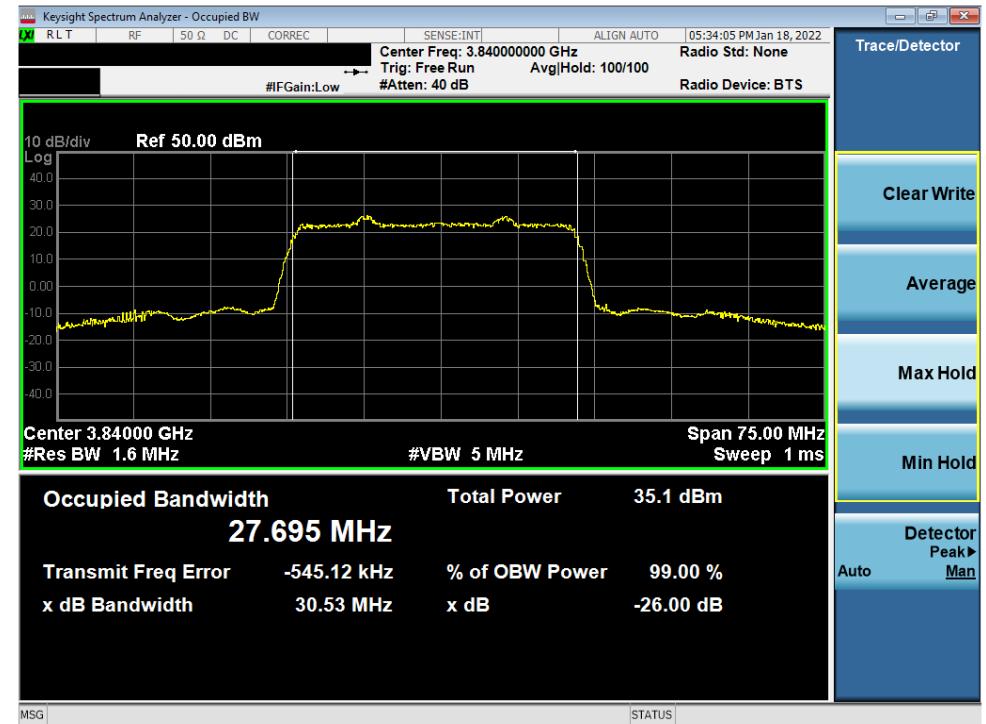


Plot 7-49. Occupied Bandwidth Plot (NR Band n77 C-Band - 20MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			

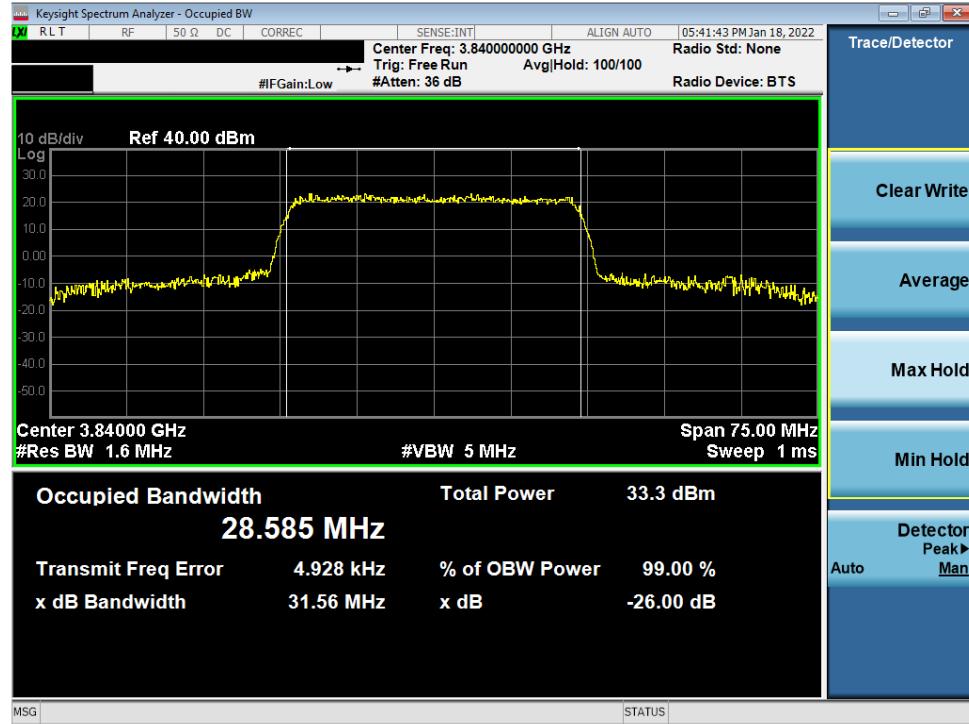


Plot 7-50. Occupied Bandwidth Plot (NR Band n77 C-Band - 20MHz CP-OFDM 256-QAM - Full RB)

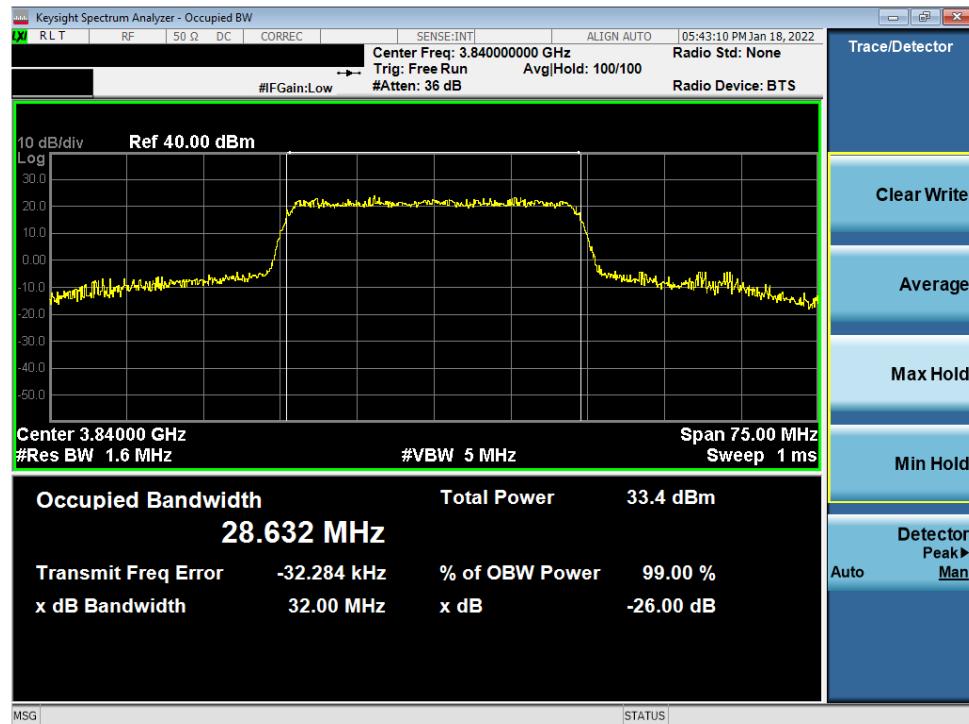


Plot 7-51. Occupied Bandwidth Plot (NR Band n77 C-Band - 30MHz DFT-s-OFDM π/2 BPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 41 of 174

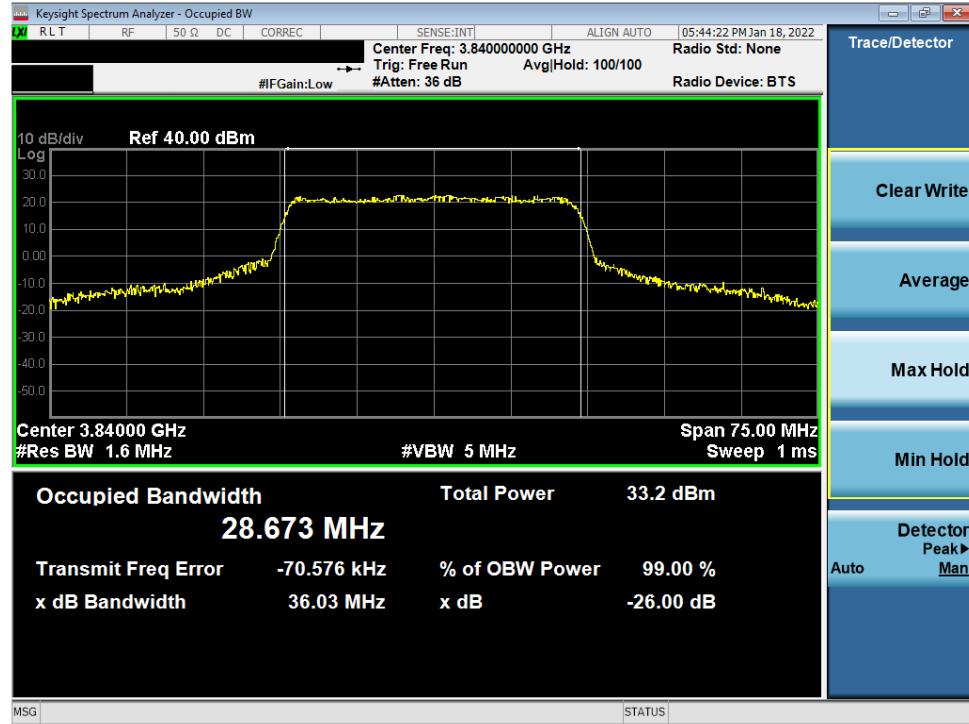


Plot 7-52. Occupied Bandwidth Plot (NR Band n77 C-Band - 30MHz CP-OFDM QPSK - Full RB)



Plot 7-53. Occupied Bandwidth Plot (NR Band n77 C-Band - 30MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			



Plot 7-54. Occupied Bandwidth Plot (NR Band n77 C-Band - 30MHz CP-OFDM 64-QAM - Full RB)

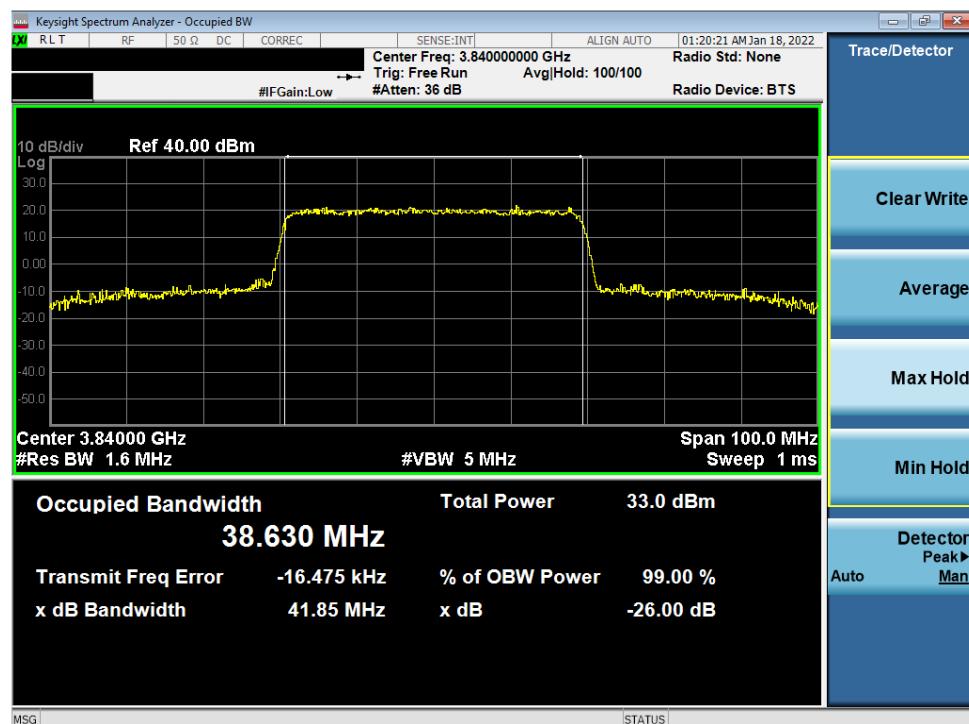


Plot 7-55. Occupied Bandwidth Plot (NR Band n77 C-Band - 30MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 43 of 174



Plot 7-56. Occupied Bandwidth Plot (NR Band n77 C-Band - 40MHz DFT-s-OFDM π/2 BPSK - Full RB)

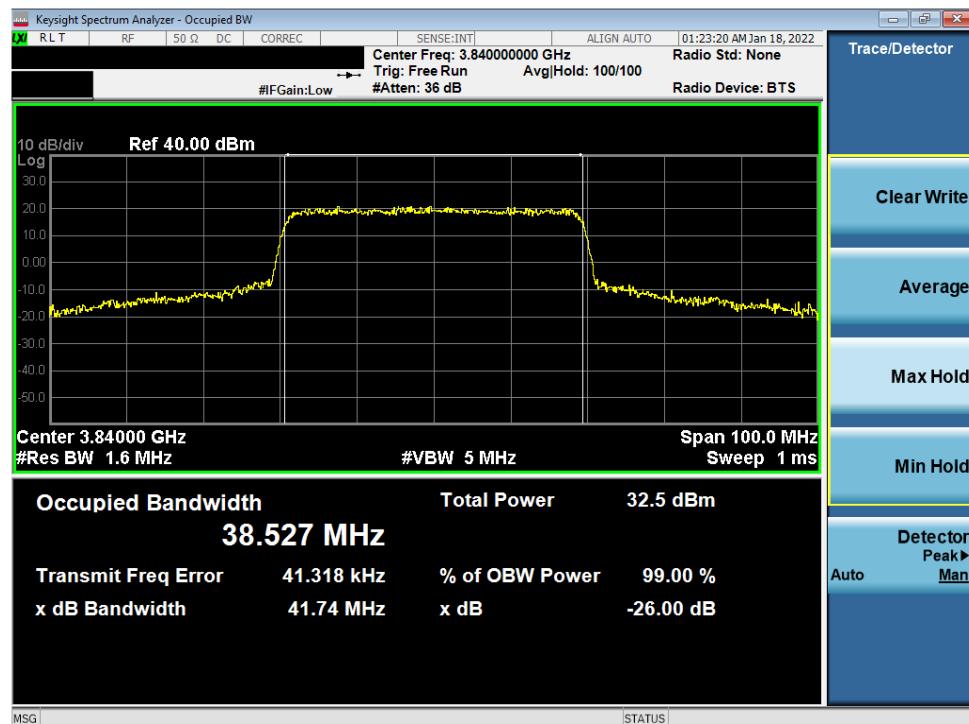


Plot 7-57. Occupied Bandwidth Plot (NR Band n77 C-Band - 40MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 44 of 174

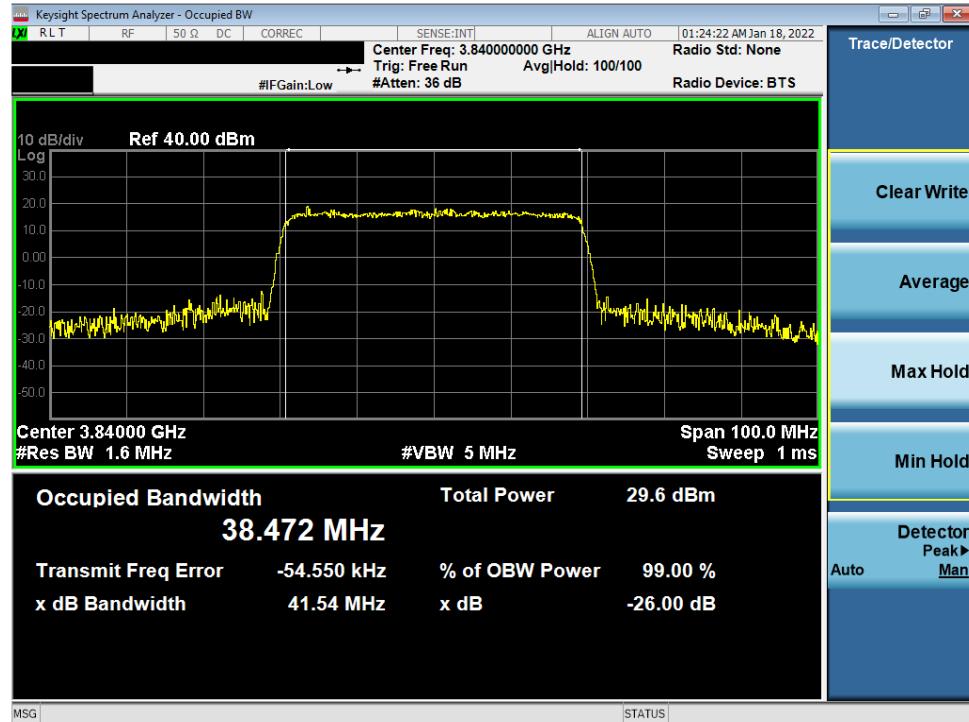


Plot 7-58. Occupied Bandwidth Plot (NR Band n77 C-Band - 40MHz CP-OFDM 16-QAM - Full RB)



Plot 7-59. Occupied Bandwidth Plot (NR Band n77 C-Band - 40MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 45 of 174

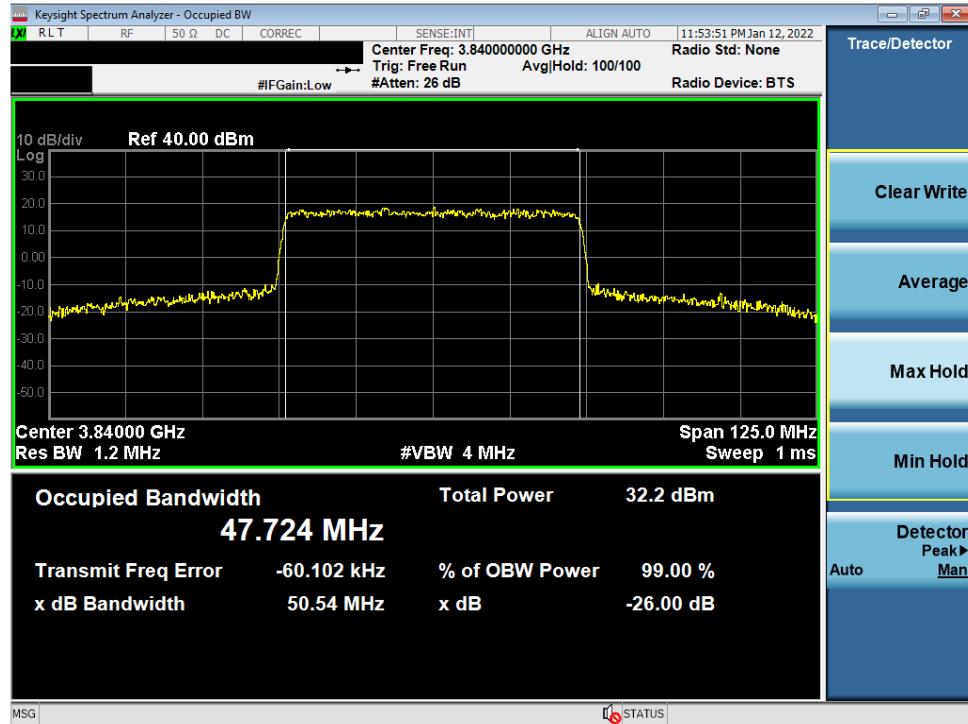


Plot 7-60. Occupied Bandwidth Plot (NR Band n77 C-Band - 40MHz CP-OFDM 256-QAM - Full RB)



Plot 7-61. Occupied Bandwidth Plot (NR Band n77 C-Band - 50MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			

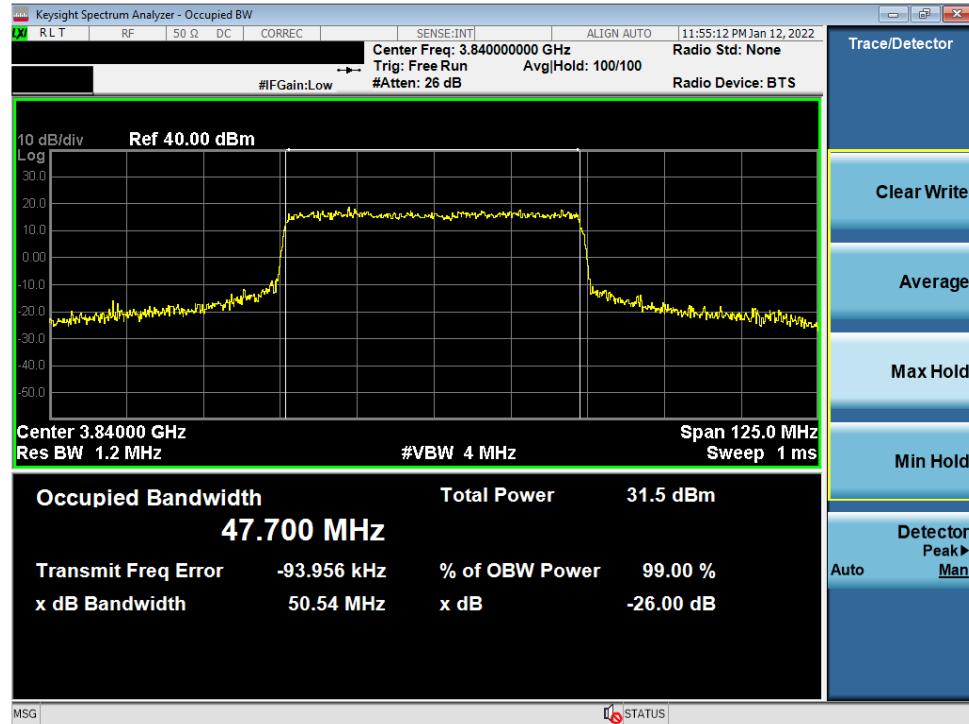


Plot 7-62. Occupied Bandwidth Plot (NR Band n77 C-Band - 50MHz CP-OFDM QPSK - Full RB)



Plot 7-63. Occupied Bandwidth Plot (NR Band n77 C-Band - 50MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 47 of 174

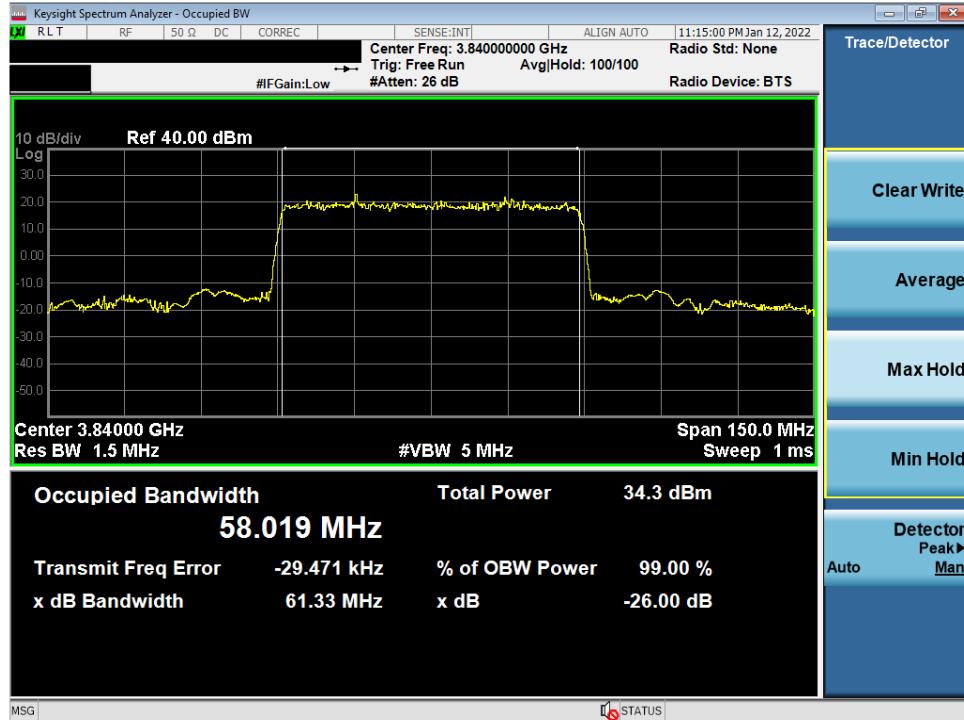


Plot 7-64. Occupied Bandwidth Plot (NR Band n77 C-Band - 50MHz CP-OFDM 64-QAM - Full RB)



Plot 7-65. Occupied Bandwidth Plot (NR Band n77 C-Band - 50MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			



Plot 7-66. Occupied Bandwidth Plot (NR Band n77 C-Band - 60MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)

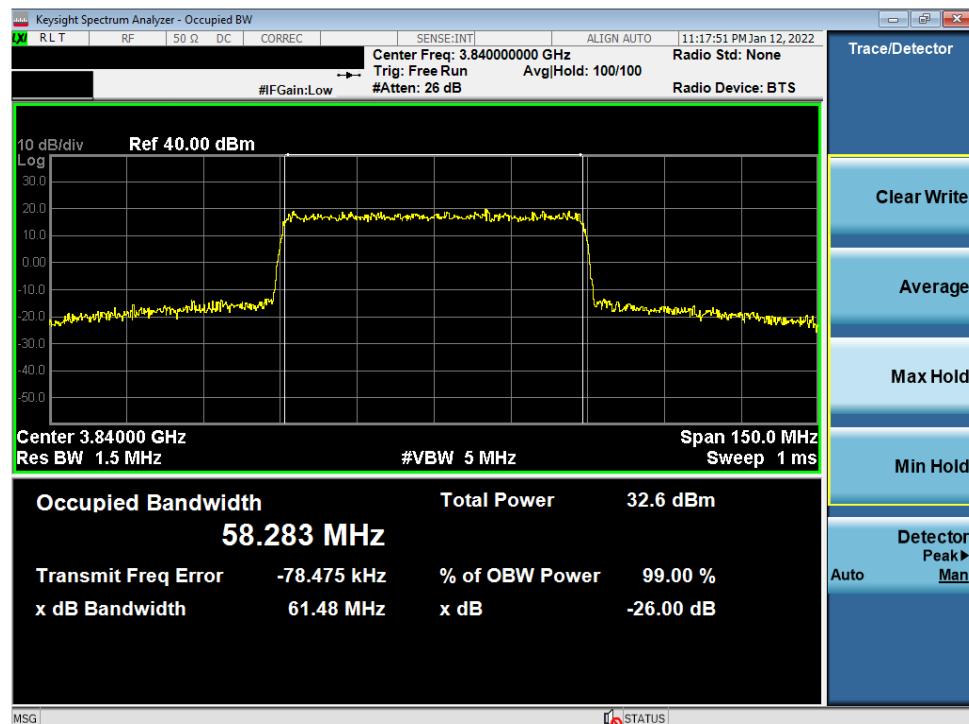


Plot 7-67. Occupied Bandwidth Plot (NR Band n77 C-Band - 60MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 49 of 174

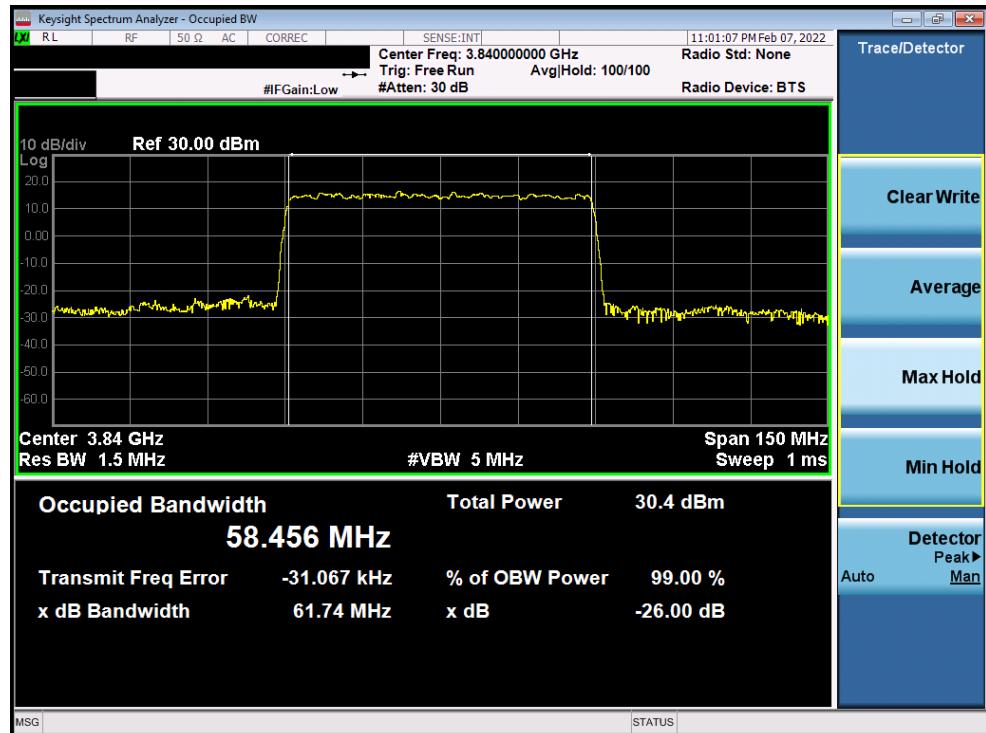


Plot 7-68. Occupied Bandwidth Plot (NR Band n77 C-Band - 60MHz CP-OFDM 16-QAM - Full RB)



Plot 7-69. Occupied Bandwidth Plot (NR Band n77 C-Band - 60MHz DFT-s-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 50 of 174



Plot 7-70. Occupied Bandwidth Plot (NR Band n77 C-Band - 60MHz CP-OFDM 256-QAM - Full RB)



Plot 7-71. Occupied Bandwidth Plot (NR Band n77 C-Band - 70MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 51 of 174



Plot 7-72. Occupied Bandwidth Plot (NR Band n77 C-Band - 70MHz CP-OFDM QPSK - Full RB)

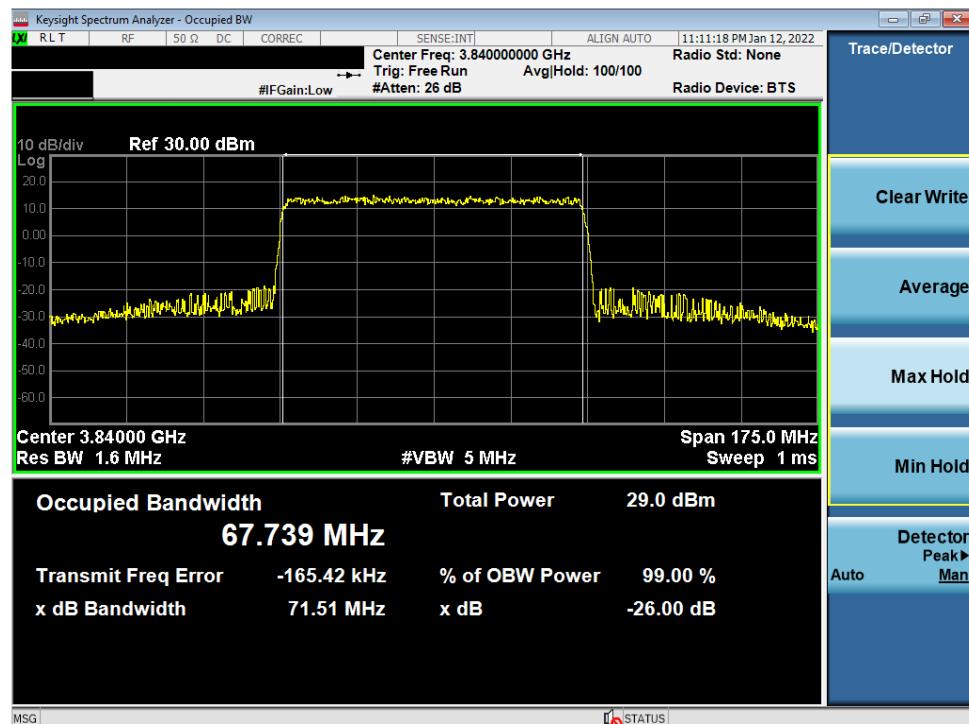


Plot 7-73. Occupied Bandwidth Plot (NR Band n77 C-Band - 70MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 52 of 174



Plot 7-74. Occupied Bandwidth Plot (NR Band n77 C-Band - 70MHz CP-OFDM 64-QAM - Full RB)

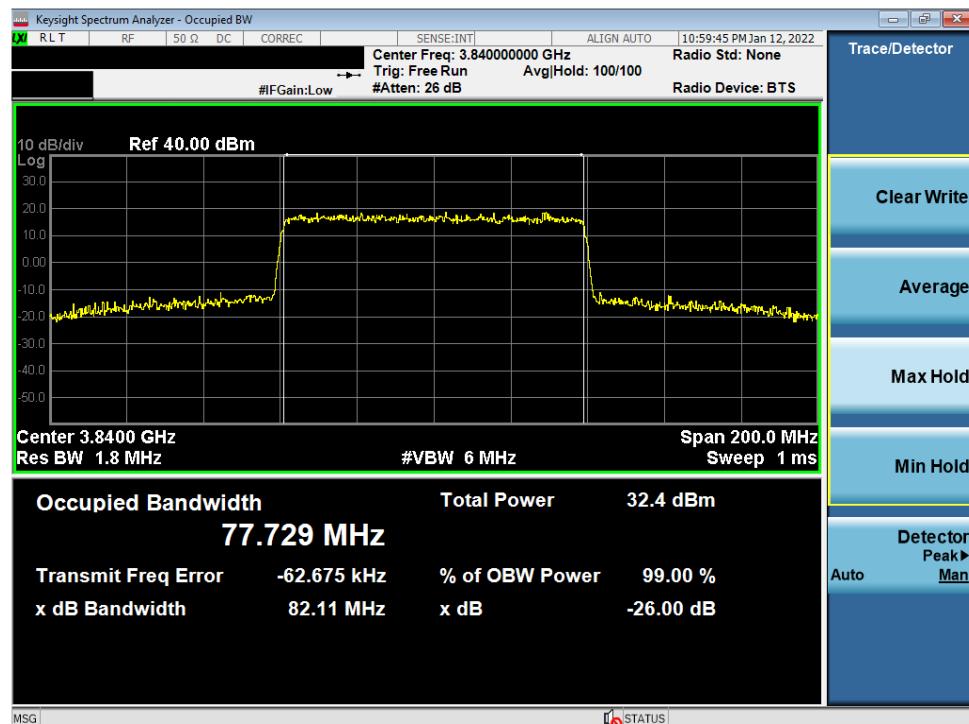


Plot 7-75. Occupied Bandwidth Plot (NR Band n77 C-Band - 70MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C211150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 53 of 174

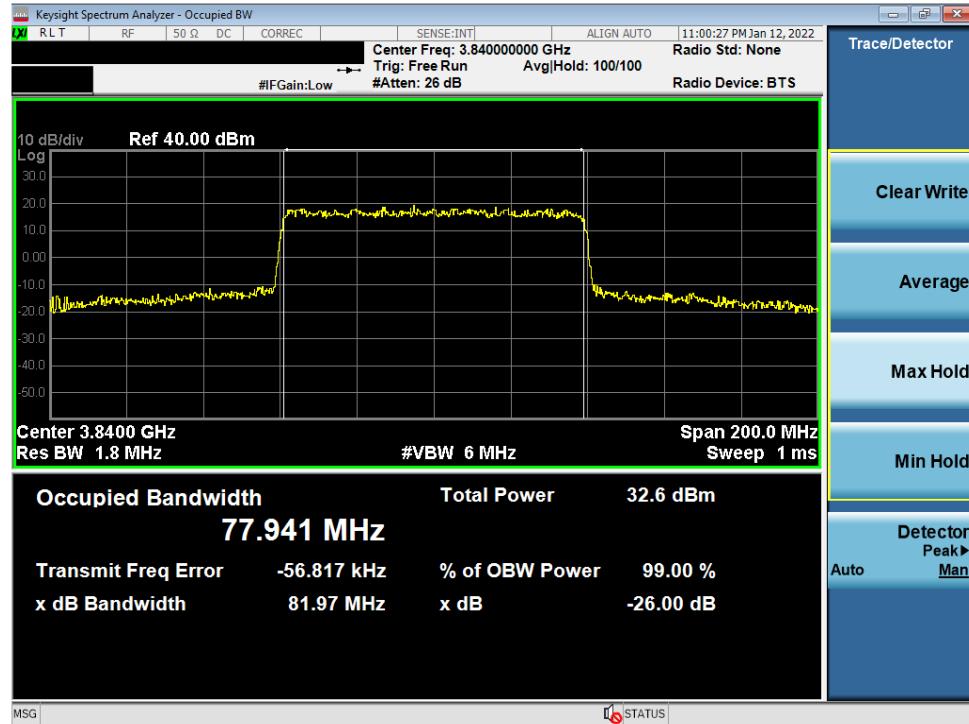


Plot 7-76. Occupied Bandwidth Plot (NR Band n77 C-Band - 80MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)



Plot 7-77. Occupied Bandwidth Plot (NR Band n77 C-Band - 80MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 54 of 174

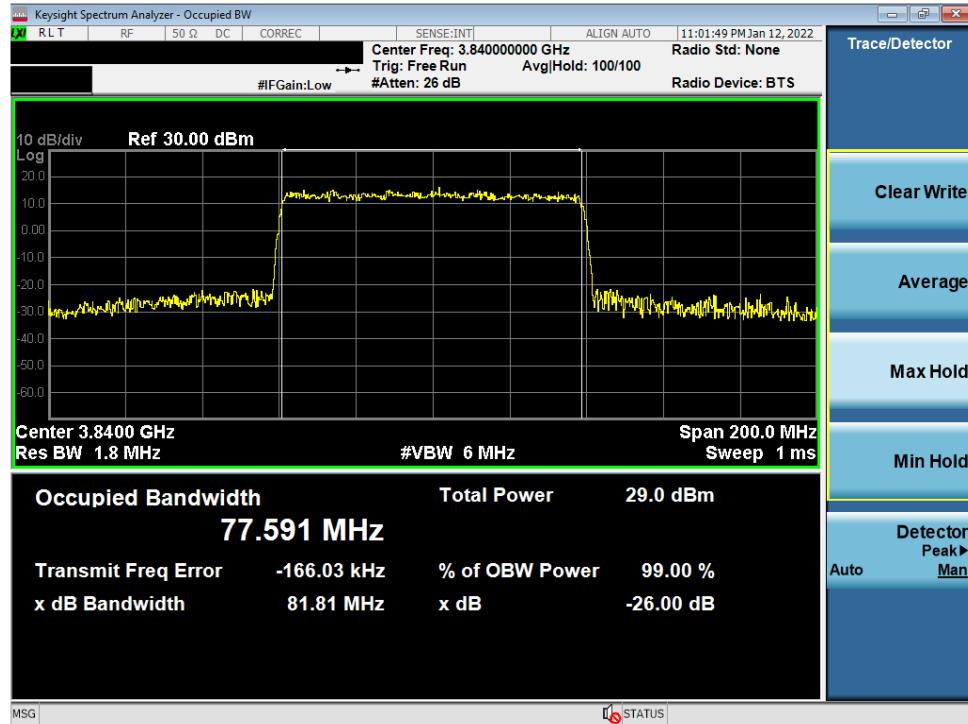


Plot 7-78. Occupied Bandwidth Plot (NR Band n77 C-Band - 80MHz CP-OFDM 16-QAM - Full RB)



Plot 7-79. Occupied Bandwidth Plot (NR Band n77 C-Band - 80MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 55 of 174

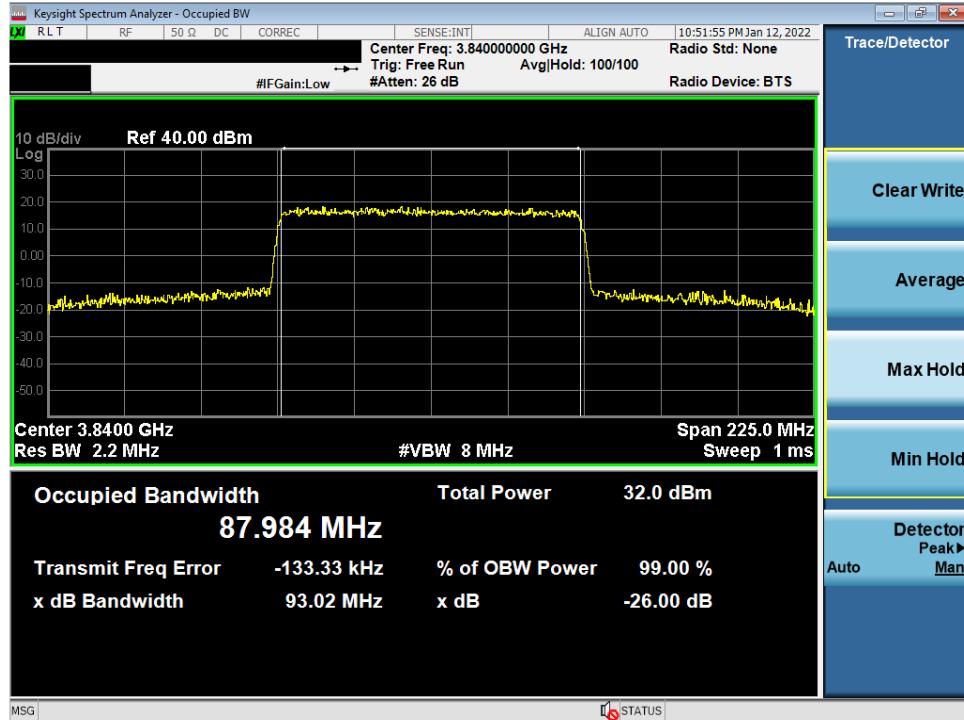


Plot 7-80. Occupied Bandwidth Plot (NR Band n77 C-Band - 80MHz CP-OFDM 256-QAM - Full RB)



Plot 7-81. Occupied Bandwidth Plot (NR Band n77 C-Band - 90MHz DFT-s-OFDM $\pi/2$ BPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 56 of 174



Plot 7-82. Occupied Bandwidth Plot (NR Band n77 C-Band - 90MHz CP-OFDM QPSK - Full RB)

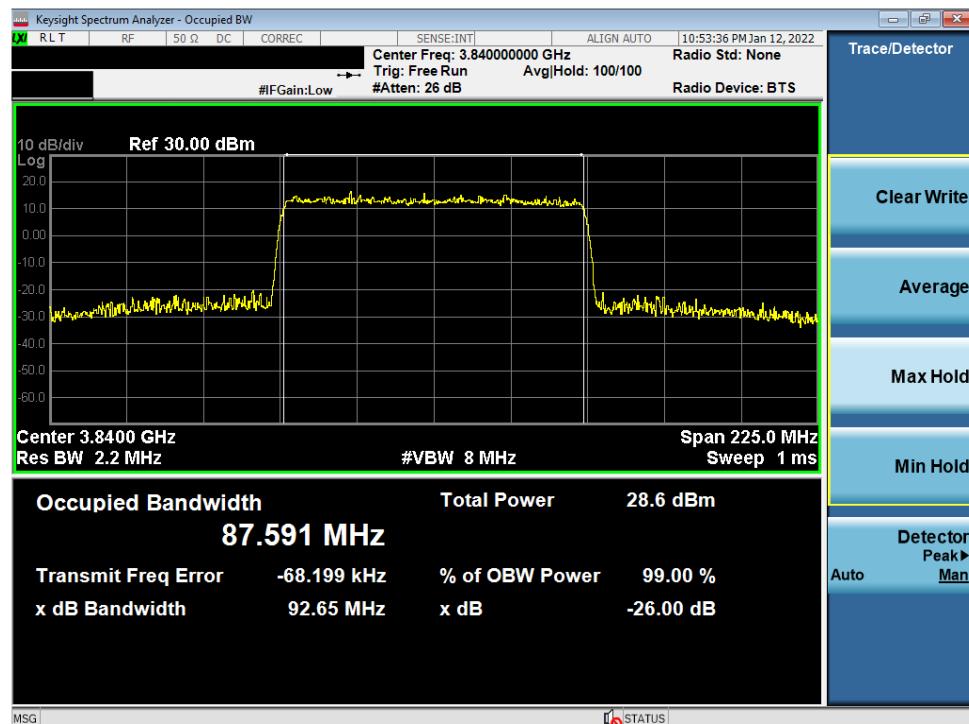


Plot 7-83. Occupied Bandwidth Plot (NR Band n77 C-Band - 90MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	PCTEST Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			

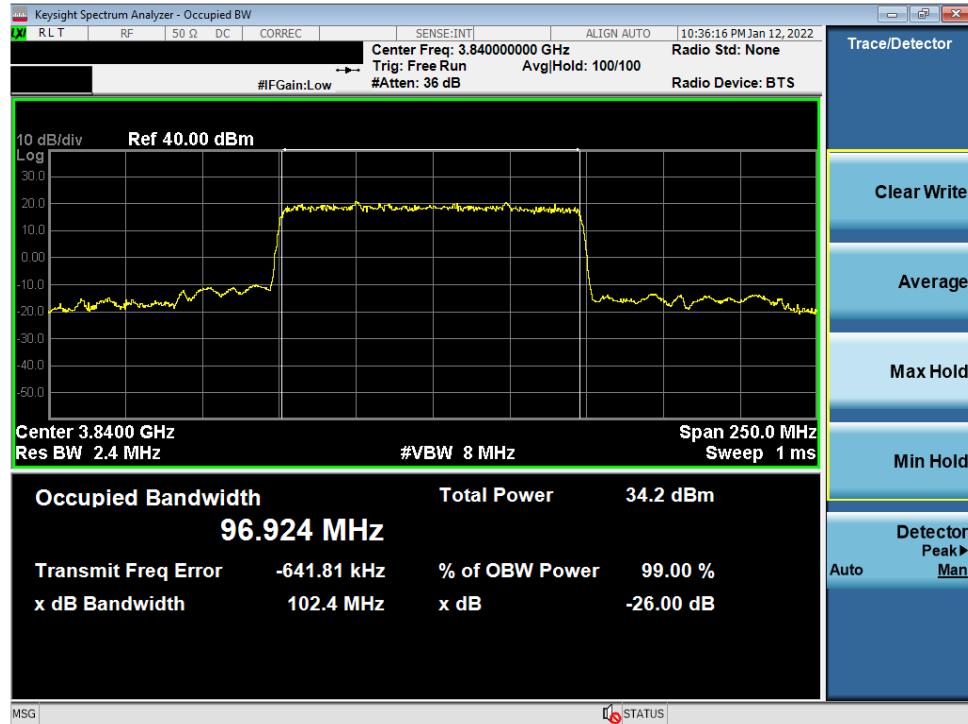


Plot 7-84. Occupied Bandwidth Plot (NR Band n77 C-Band - 90MHz CP-OFDM 64-QAM - Full RB)



Plot 7-85. Occupied Bandwidth Plot (NR Band n77 C-Band - 90MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 58 of 174

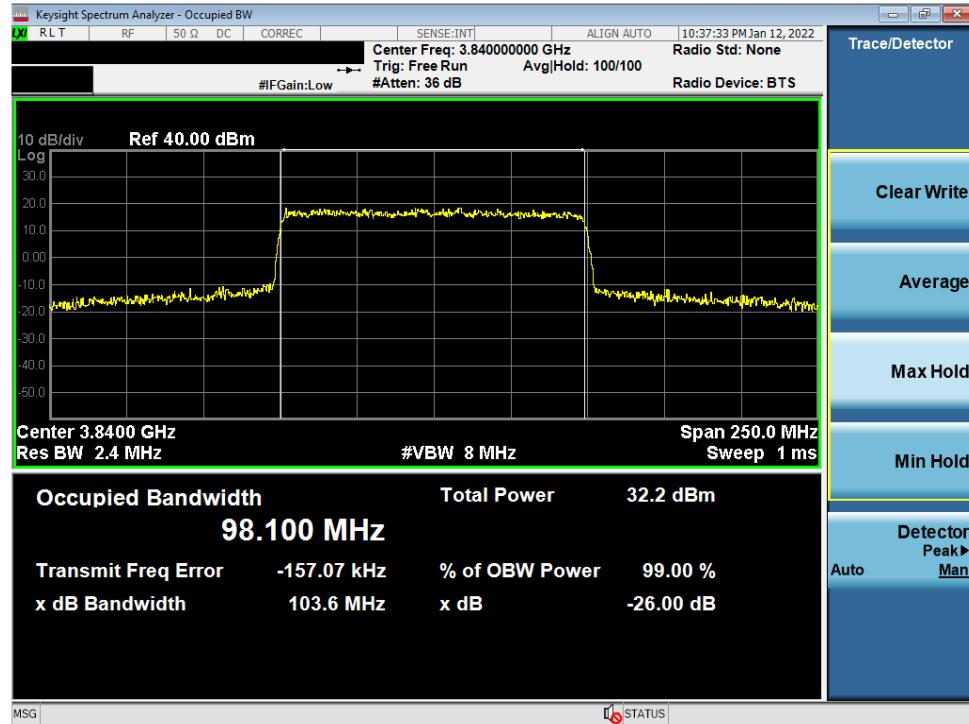


Plot 7-86. Occupied Bandwidth Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM π/2 BPSK - Full RB)



Plot 7-87. Occupied Bandwidth Plot (NR Band n77 C-Band - 100MHz CP-OFDM QPSK - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 59 of 174



Plot 7-88. Occupied Bandwidth Plot (NR Band n77 C-Band - 100MHz CP-OFDM 16-QAM - Full RB)



Plot 7-89. Occupied Bandwidth Plot (NR Band n77 C-Band - 100MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 60 of 174



Plot 7-90. Occupied Bandwidth Plot (NR Band n77 C-Band - 100MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device	Page 61 of 174	

7.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, §27.53(l), §27.53(n)

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is $43 + 10 \log_{10}(P_{\text{Watts}})$, where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 10GHz (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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

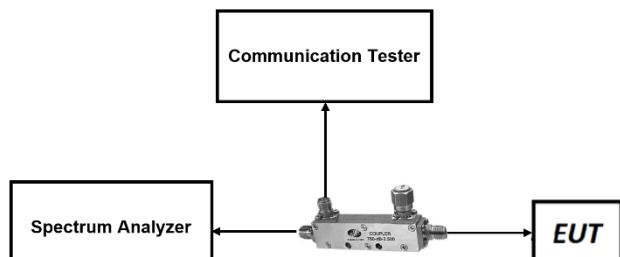


Figure 7-2. Test Instrument & Measurement Setup

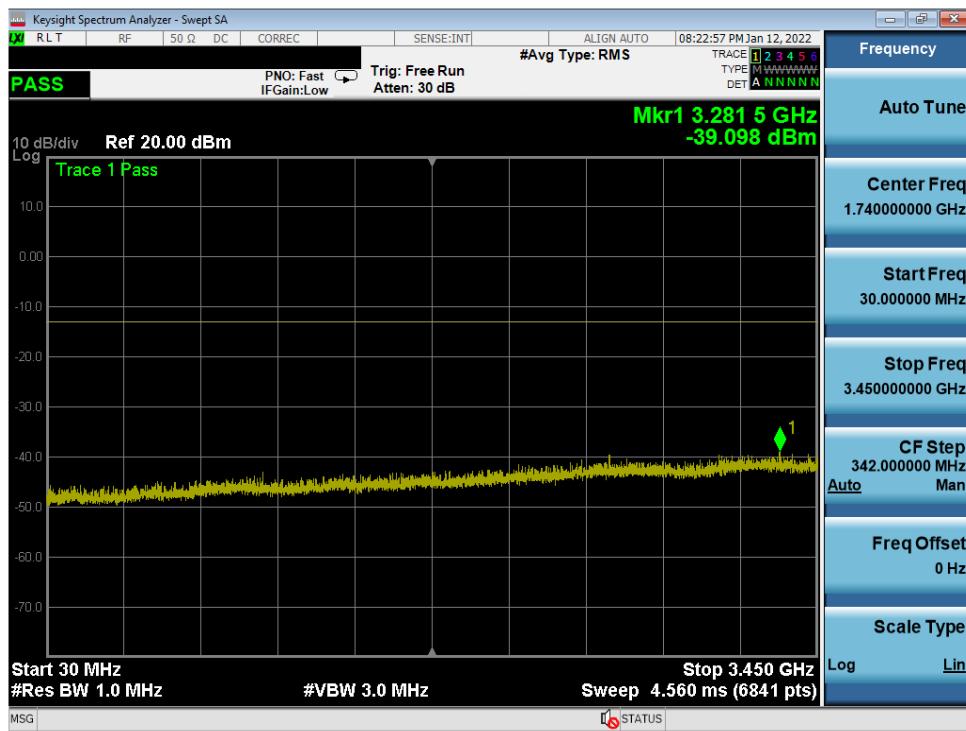
FCC ID: BCGA2589	 PCTEST® Proud to be part of 		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C211150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device		Page 62 of 174

Test Notes

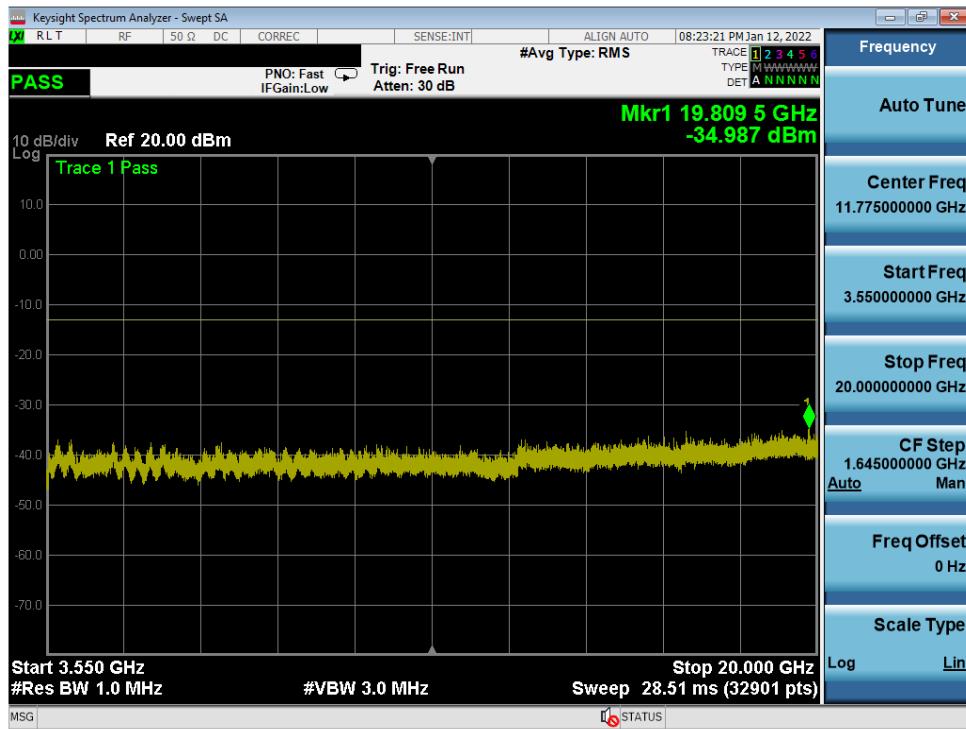
1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

FCC ID: BCGA2589	 PCTEST® Proud to be part of  element		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device		Page 63 of 174

NR Band n77 PC2 DoD-Band

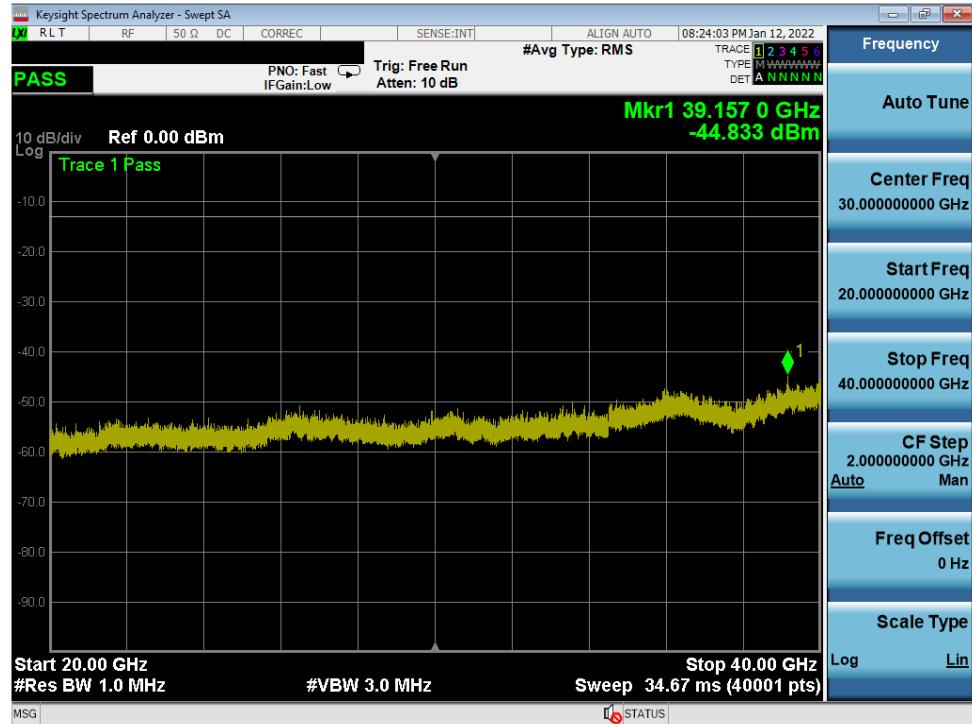


Plot 7-91. Conducted Spurious Plot (NR Band n77 DoD Band - 90MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Low Channel)

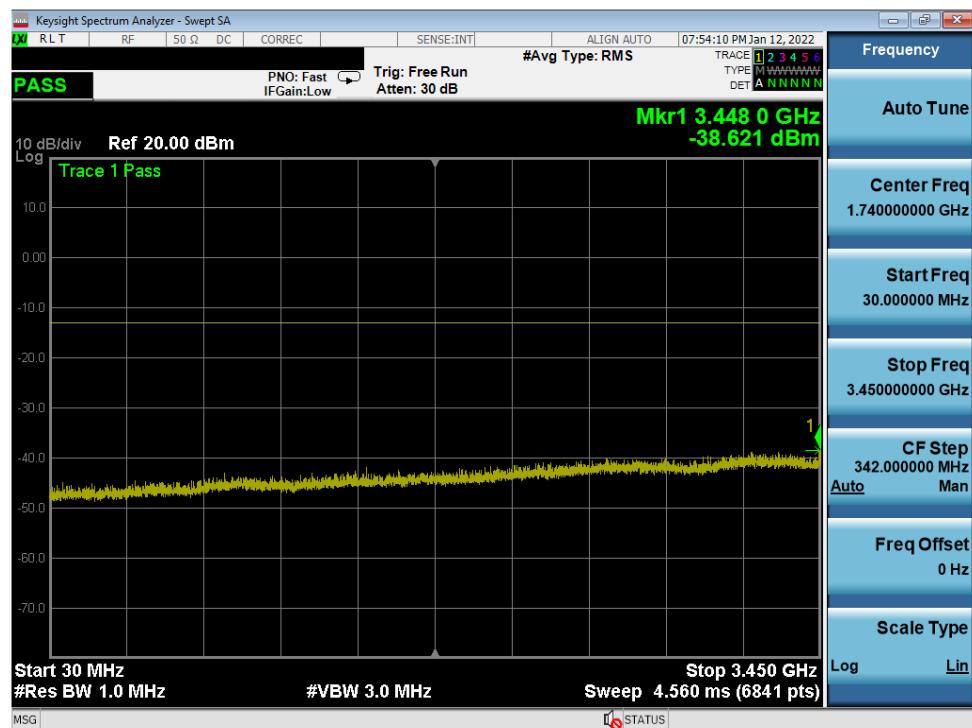


Plot 7-92. Conducted Spurious Plot (NR Band n77 DoD Band - 90MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C211150079-05.BCG	Test Dates: 11/29/2021 - 2/7/2022	EUT Type: Tablet Device			Page 64 of 174

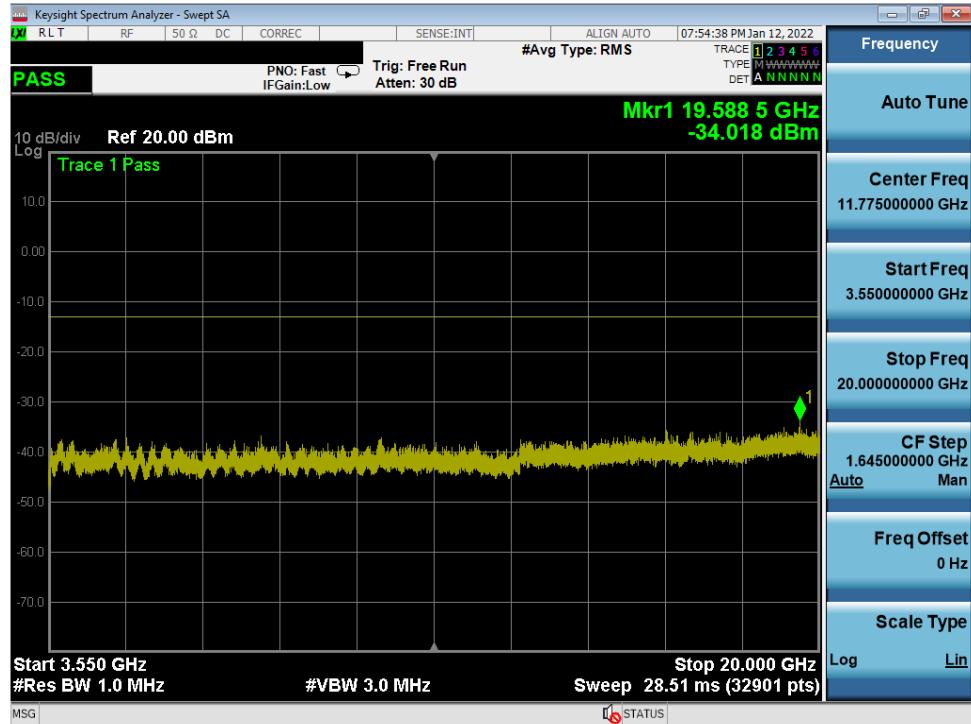


Plot 7-93. Conducted Spurious Plot (NR Band n77 DoD Band - 90MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Low Channel)

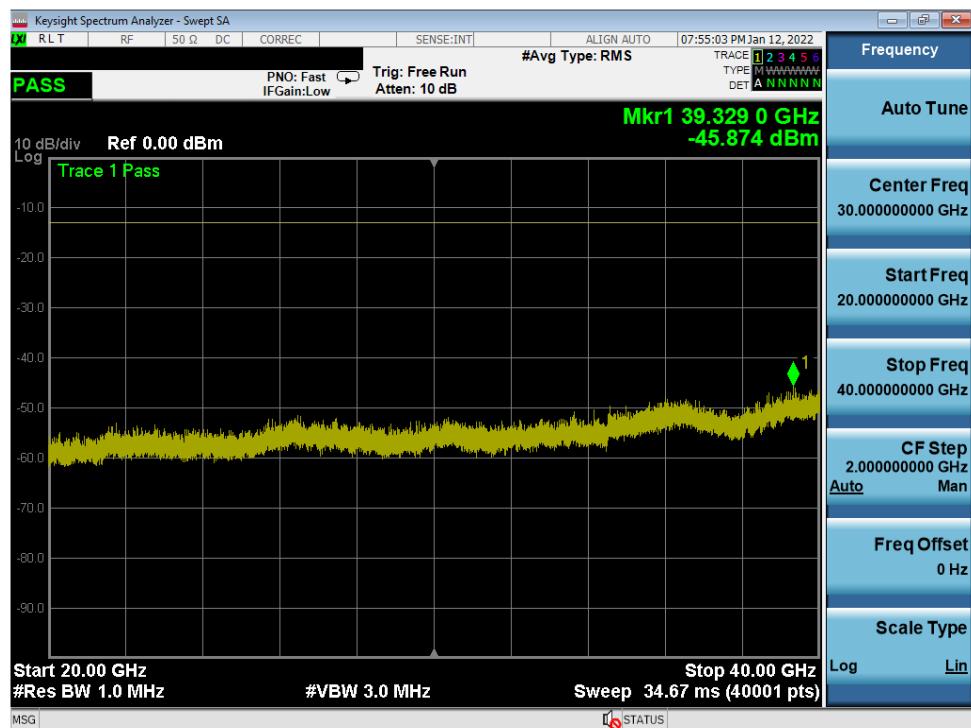


Plot 7-94. Conducted Spurious Plot (NR Band n77 DoD Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 65 of 174

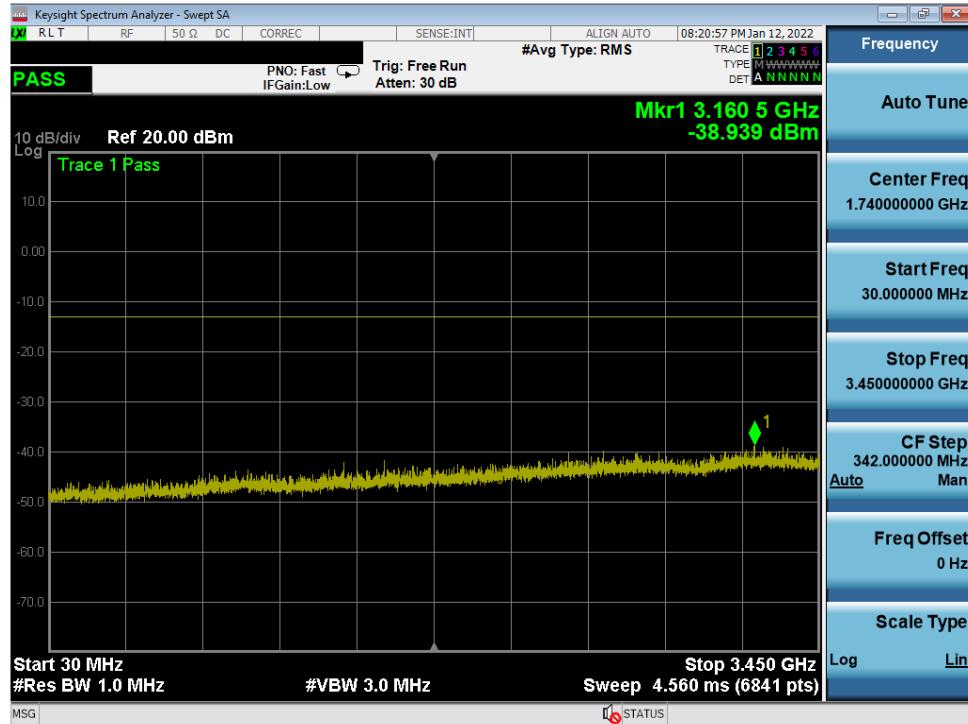


Plot 7-95. Conducted Spurious Plot (NR Band n77 DoD Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Mid Channel)

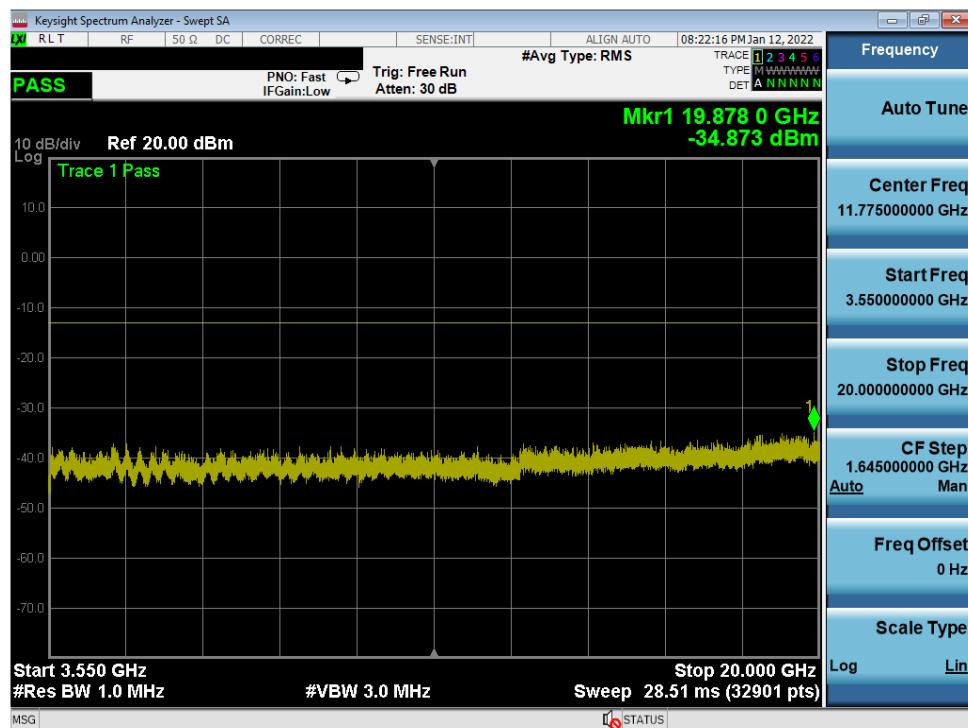


Plot 7-96. Conducted Spurious Plot (NR Band n77 DoD Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 66 of 174



Plot 7-97. Conducted Spurious Plot (NR Band n77 DoD Band - 90MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-98. Conducted Spurious Plot (NR Band n77 DoD Band - 90MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - High Channel)

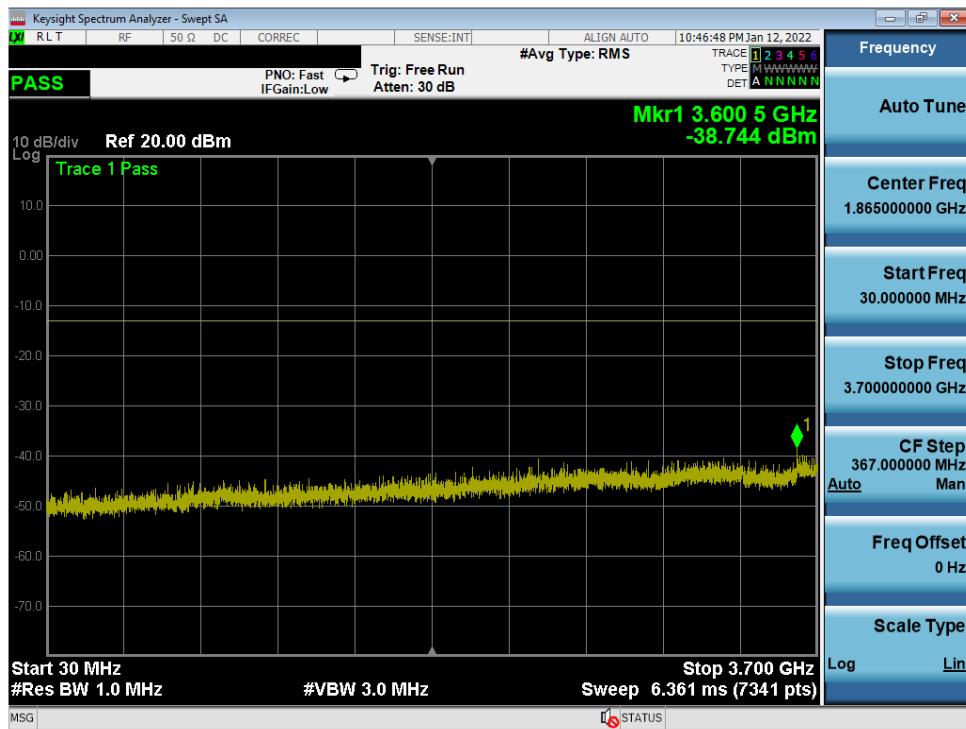
FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C211150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 67 of 174



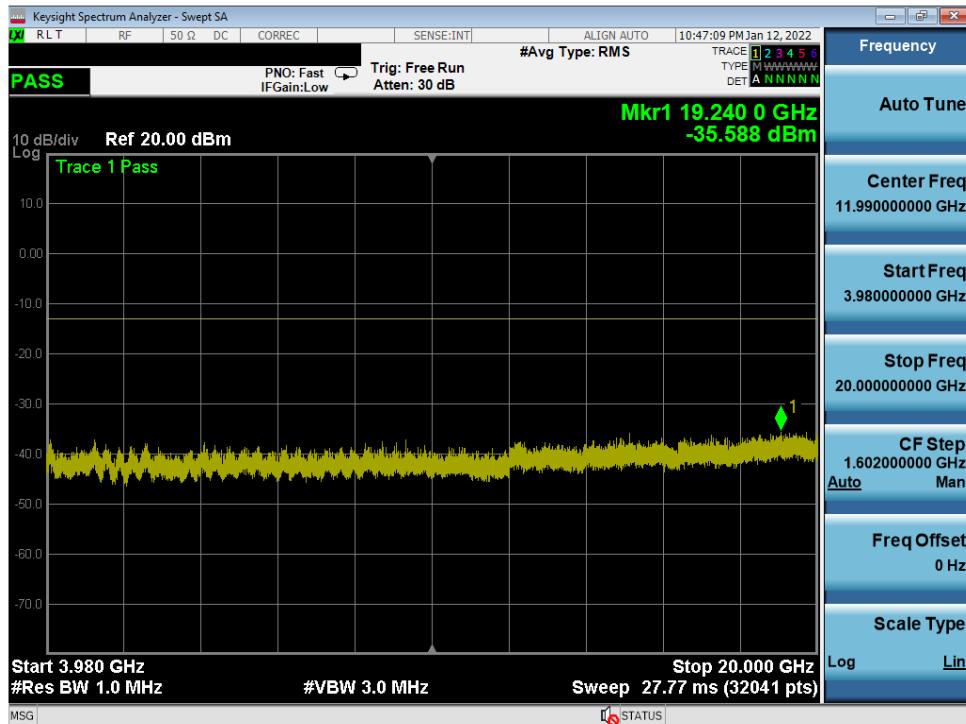
Plot 7-99. Conducted Spurious Plot (NR Band n77 DoD Band - 90MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device	Page 68 of 174	

NR Band n77 PC2 C-Band

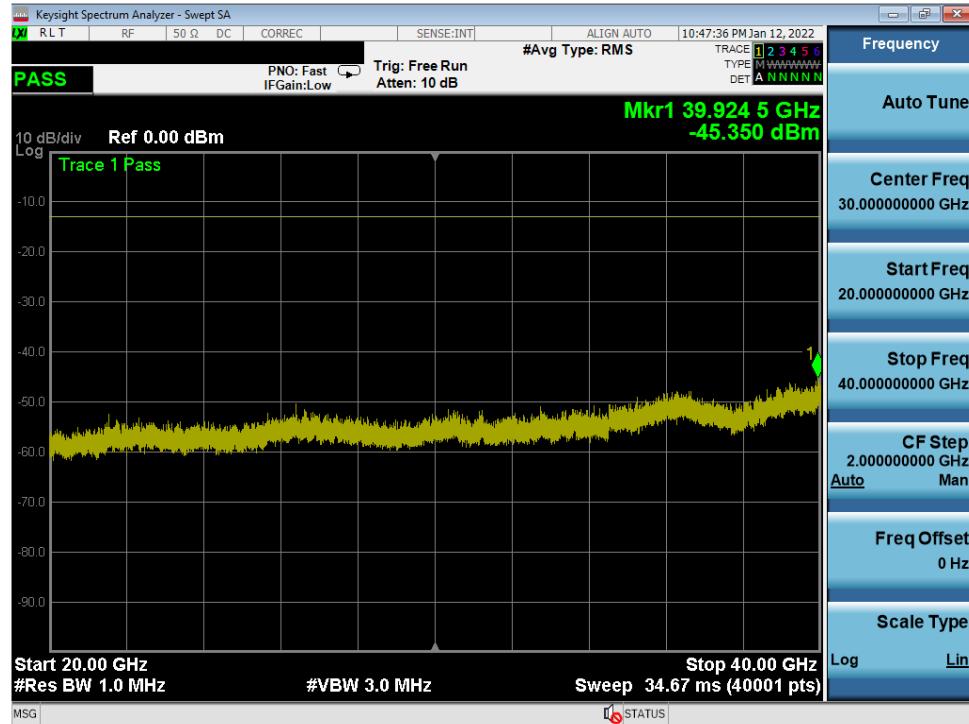


Plot 7-100. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Low Channel)

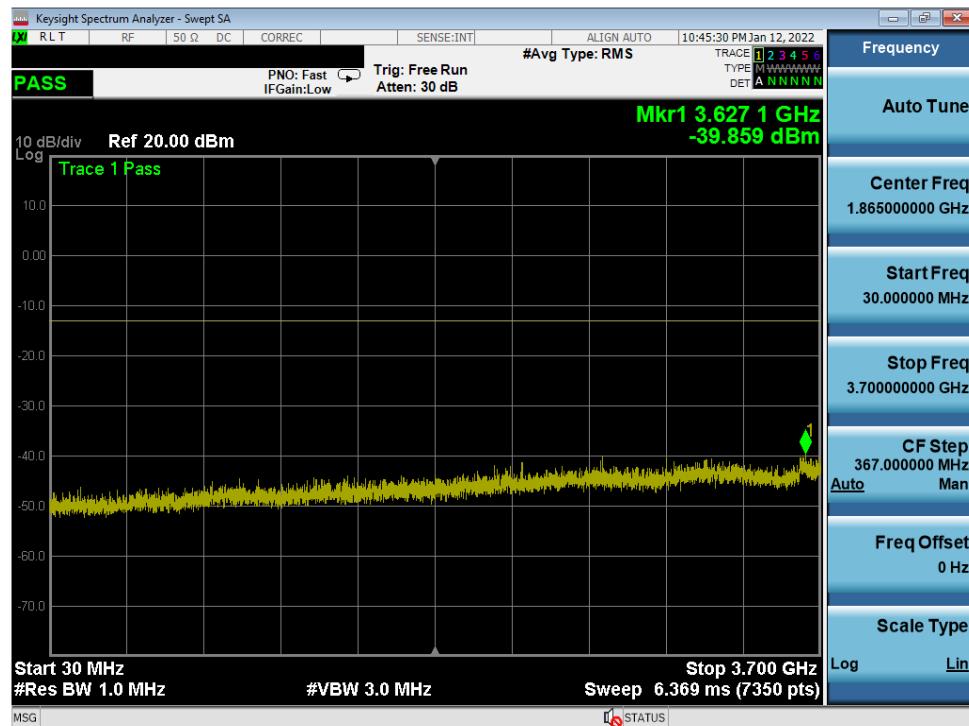


Plot 7-101. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2589	PCTEST Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C211150079-05.BCG	Test Dates: 11/29/2021 - 2/7/2022	EUT Type: Tablet Device			Page 69 of 174

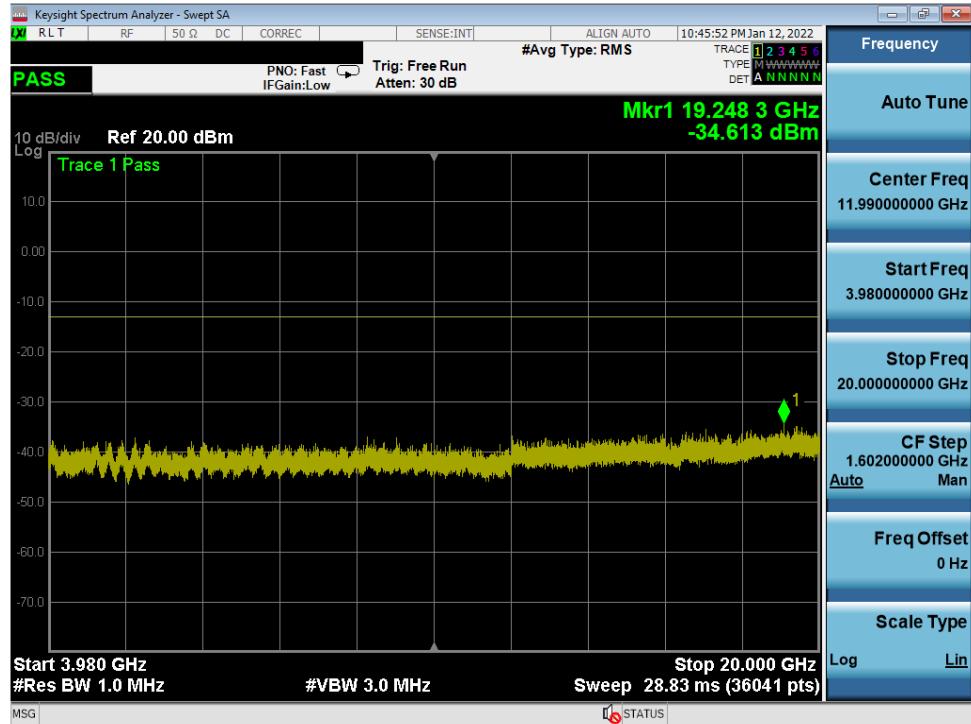


Plot 7-102. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Low Channel)

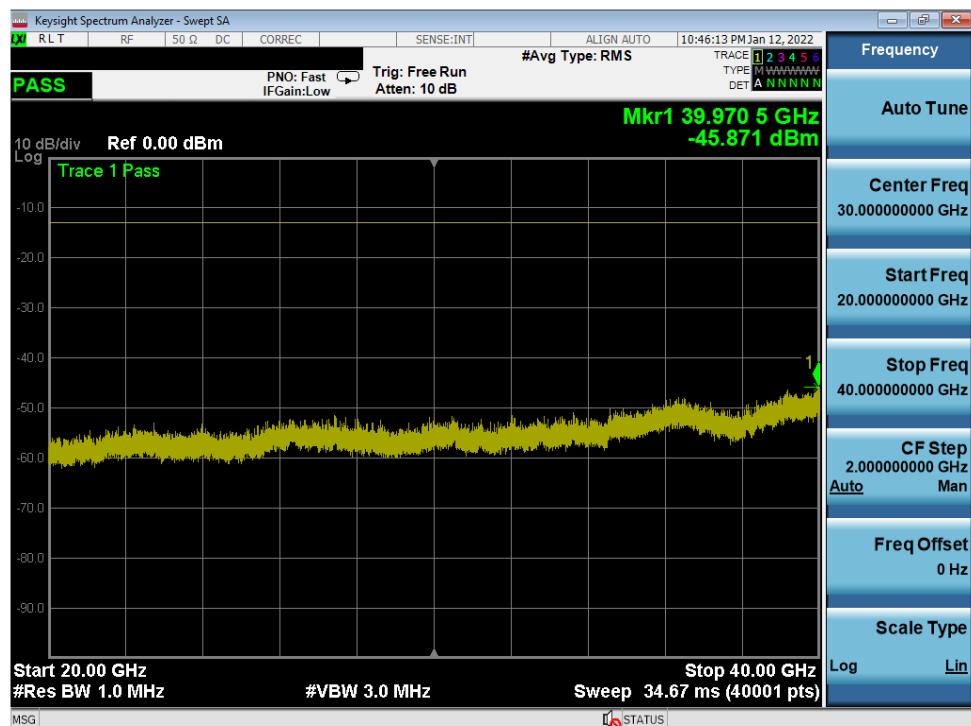


Plot 7-103. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 70 of 174

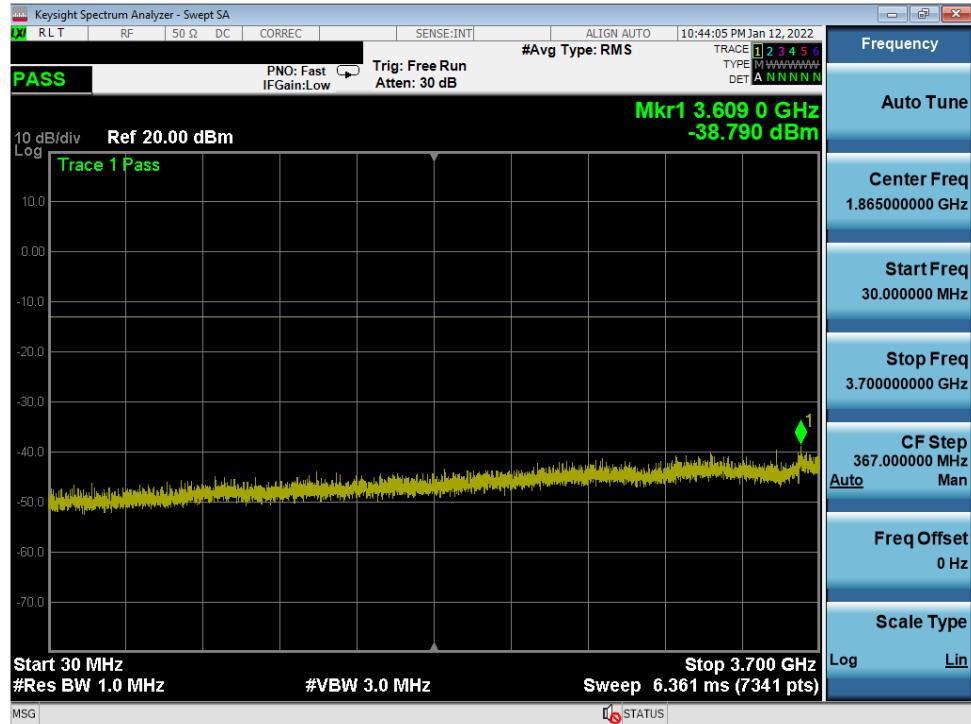


Plot 7-104. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Mid Channel)

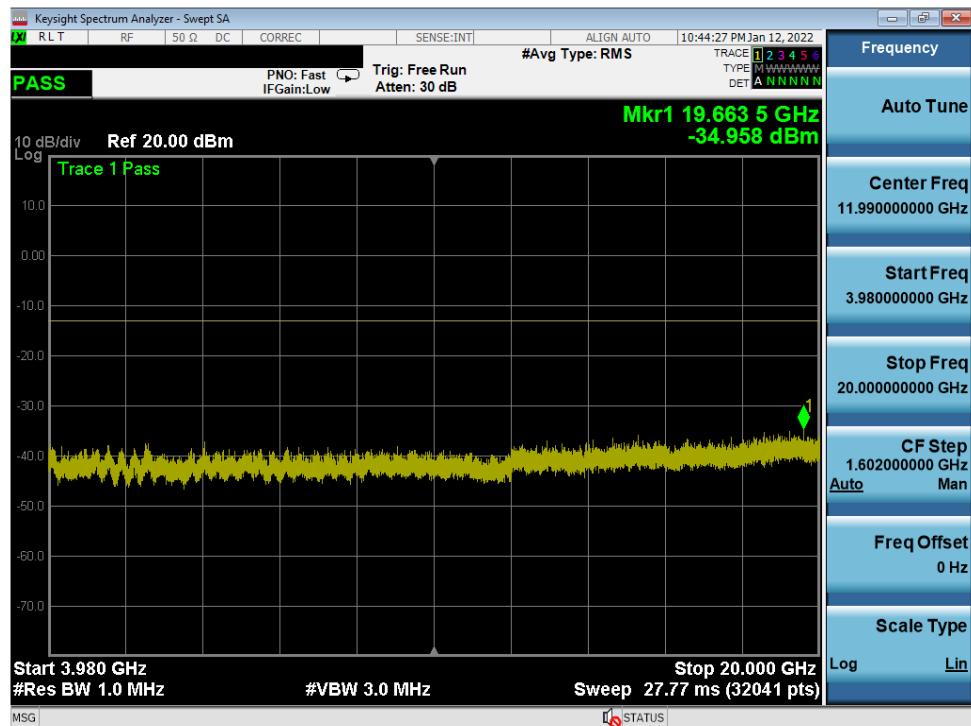


Plot 7-105. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			

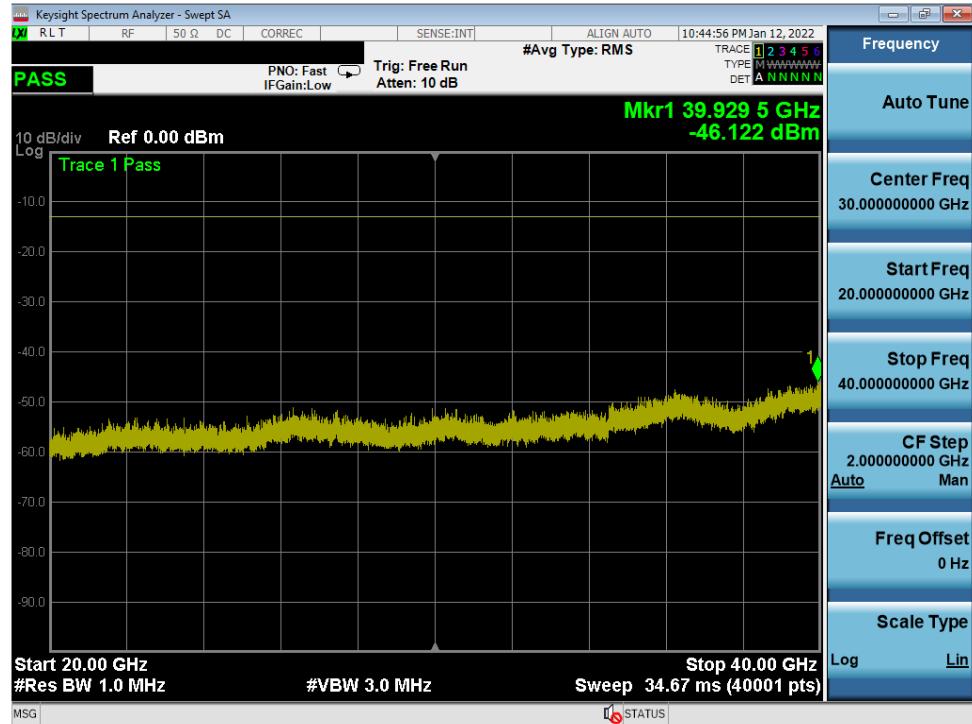


Plot 7-106. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-107. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element			PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device			Page 72 of 174



Plot 7-108. Conducted Spurious Plot (NR Band n77 C-Band - 100MHz DFT-s-OFDM QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	PCTEST® Proud to be part of  element		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1C2111150079-05.BCG	Test Dates: 11/29/2021 – 2/7/2022	EUT Type: Tablet Device		Page 73 of 174

7.4 Peak-Average Ratio

§27.50(k)(4), §27.50(j)(4);

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. All ports were tested and only the worst case data were reported.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW \geq OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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

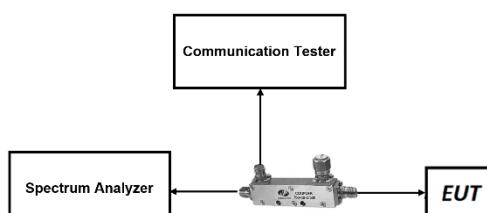
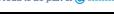


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: BCGA2589	 PCTEST® Proud to be part of 		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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