Test Report for FCC

Report Number		ESTRGC2311-004		
Applicant	Company name	LG Electronics USA, Inc.		
	Address	111 Sylvan Avenue North Building Englewood New Jersey United States 07632		
	Telephone	201-470-2696		
Product	Product name	NAD Module		
	Model No.	TM15FNNAHD0	Manufacturer	LG Electronics Inc.
	Serial No.	NONE	Country of origin	KOREA
Test date	18-Sep-23 ~ 22-Nov-23		Date of issue	23-Nov-23
Testing location	140-16, Eongmalli-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Rep. of Korea			
FCC ID	BEJTM15FNNAHD0			
FCC Rule Part(s)	Part 27			
Test result				Complied
Measurement facility registration number	659627			
Tested by	Engineer J.G. Lee			(Signature)
Reviewed by	Engineering Manager I.K. Hong			(Signature)
Abbreviation	OK, Pass = Complied, Fail = Failed, N/A = not applicable			

* Note
- This test report is not permitted to copy partly without our permission
- This test result is dependent on only equipment to be used
- This test report is not related to KOLAS accreditation
- This product is tested in a single channel at the request of the company.
- This is the reissue report due to the change of the applicant

Contents

1. LABORATORY INFORMATION 5

2. EUT DESCRIPTION 6

2.1 GENERAL INFORMATION.....6

2.2 Description Of EUT.....6

2.3 Antenna information 6

2.4 Emission Designator and Max power 7

3. INTRODUCTION.....12

3.1. EUT DESCRIPTION 12

3.2 Measurement Uncertainty 12

3.3 Summary of Test Results.....12

3.4 Worst Case (RADIATED TEST).....13

3.5 SAMPLE CALCULATION.....15

4. TEST EQUIPMENT.....17

4.1 Measurement equipment.....17

5. OUTPUT POWER 19

5.1 Test Procedure 19

5.2 Test settings 19

5.3 Test Setup 20

6. ERP & EIRP (Effective Radiated Power & Equivalent Isotropic Radiated Power) 21

6.1Test Set-up.....21

6.2 Test Procedure 21

6.3 Test setting 21
7. Peak to Average Ratio 24
7.1 Test Procedure 24
7.2 Test settings 24
7.3 Test Setup 25
8. Occupied Bandwidth 26
8.1 Test Procedure 26
8.1 Test settings 26
8.3 Test Setup 27
9. BAND EDGE EMISSIONS AT ANTENNA TERMINAL 28
9.1 Test Procedure 28
9.2 Test settings 28
9.3 Test Setup 29
10. FREQUENCY STABILITY 30
10.1 Test Procedure 30
10.2 Test settings 30
10.3 Test Setup 31
11. SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL 32
11.1 Test Procedure 32
11.2 Test setting 32
11.3 Test Setup 32
12. RADIATED SPURIOUS EMISSIONS 33

12.1Test Set-up....33
12.2 Test Procedure....33
12.3 Test setting....33
13. TEST DATA....35
13.1 CONDUCTED OUTPUT POWER....35
13.2 EIRP....43
13.3 RADIATED SPURIOUS EMISSIONS....49
13.4 FREQUENCY STABILITY....51
13.5 OCCUPIED BANDWIDTH....53
13.6 PEAK TO AVERAGE RATIO....143
13.7 BAND EDGE EMISSIONS....233
13.8 CONDUCTED SPURIOUS AND HARMONIC EMISSION....449

1. LABORATORY INFORMATION

Corporation Name : ESTECH Co., Ltd.

Head Office : Suite 1015 World Meridian II, 123 Gasan Digital 2-ro, Geumcheon-gu, Seoul 153-759, R. O. Korea

EMC/Telecom/Safety Test Lab : 140-16, Eongmalli-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Rep. of Korea

Official Qualification(s)

MSIP : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC

FCC : Filed Laboratory at Federal Communications Commission
VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE
ISED : Accredited Lab By Canada Laboratory Accreditation

2. EUT DESCRIPTION

2.1 GENERAL INFORMATION

Product : NAD Module
FCC ID : BEJTM15FNNAHD0
IC : 2703H-TM15FNNAHD0
Model Number : TM15FNNAHD0
Add Model Name : -
Serial Number : NONE
Hardware Version Id Number (HVIN): TM15FNNAHD0
Firmware Version Id Number (FVIN): N/A
Product Marketing Name (PMN): TM15FNNAHD0
Manufacturer : LG Electronics Inc. :
Country of origin : KOREA
Modulation Type : π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
Channel Bandwidth(MHz) : 100, 90, 80, 70, 60, 50, 40, 30, 20

Supply Voltage to product: 3.9 V

2.2 Description Of EUT

This device supports the following capabilities:
Multi-Band LTE and 5G NR(FR1)
5G NR supports SCS 15 kHz for FDD Band and SCS 30 kHz for TDD Band.

2.3 Antenna information

Antenna type	PIFA Antenna	
Antenna gain	Ant1 NR Band n77 : 2.75 dBi	Ant2 NR Band n77 : 2.60 dBi

2.4 Emission Designator and Max power

Low Band

band	Frequecny (MHz)	modulation	Emission Designator	Conducted Output Power		ERP/EIRP	
				Max power (dBm)	Max power (W)	Max power (dBm)	Max power (W)
Band 77	3 500.01	π/2 BPSK	96M23G7D	23.67	0.23	19.89	0.097
Band 77	3 500.01	QPSK	96M18G7D	23.68	0.23	18.93	0.078
Band 77	3 500.01	16QAM	96M26W7D	22.70	0.19	17.54	0.057
Band 77	3 500.01	64QAM	96M24W7D	21.97	0.16	16.97	0.05
Band 77	3 500.01	256QAM	96M27W7D	19.75	0.09	14.57	0.029
Band 77	3 495.00 ~ 3 504.99	π/2 BPSK	86M67G7D	24.08	0.26	19.83	18.74
Band 77	3 495.00 ~ 3 504.99	QPSK	86M59G7D	23.85	0.24	18.74	0.075
Band 77	3 495.00 ~ 3 504.99	16QAM	86M59W7D	22.86	0.19	18.05	0.064
Band 77	3 495.00 ~ 3 504.99	64QAM	86M62W7D	22.01	0.16	17.63	0.058
Band 77	3 495.00 ~ 3 504.99	256QAM	86M66W7D	19.86	0.10	15.23	0.033
Band 77	3 490.02 ~ 3 510.00	π/2 BPSK	76M97G7D	23.86	0.24	20.08	0.102
Band 77	3 490.02 ~ 3 510.00	QPSK	76M97G7D	23.83	0.24	18.1	0.065
Band 77	3 490.02 ~ 3 510.00	16QAM	77M06W7D	22.85	0.19	17.95	0.062
Band 77	3 490.02 ~ 3 510.00	64QAM	77M15W7D	21.90	0.15	17.06	0.051
Band 77	3 490.02 ~ 3 510.00	256QAM	77M01W7D	19.78	0.10	15.18	0.033
Band 77	3 485.01 ~ 3 5149.98	π/2 BPSK	64M13G7D	23.81	0.24	20.07	0.102
Band 77	3 485.01 ~ 3 5149.98	QPSK	64M22G7D	23.80	0.24	19.31	0.085
Band 77	3 485.01 ~ 3 5149.98	16QAM	64M16W7D	23.41	0.22	17.75	0.06
Band 77	3 485.01 ~ 3 5149.98	64QAM	64M12W7D	22.45	0.18	17.23	0.053
Band 77	3 485.01 ~	256QAM	64M12W7D	19.32	0.09	15.2	0.033

	3 5149.98						
Band 77	3 480.00 ~ 3 519.99	π/2 BPSK	57M71G7D	23.85	0.24	20.21	0.105
Band 77	3 480.00 ~ 3 519.99	QPSK	57M80G7D	23.76	0.24	18.7	0.074
Band 77	3 480.00 ~ 3 519.99	16QAM	57M75W7D	22.75	0.19	18.87	0.077
Band 77	3 480.00 ~ 3 519.99	64QAM	57M79W7D	21.39	0.14	17.22	0.053
Band 77	3 480.00 ~ 3 519.99	256QAM	57M78W7D	19.84	0.10	15.4	0.035
Band 77	3 475.02 ~ 3 525.00	π/2 BPSK	45M64G7D	23.65	0.23	20.08	0.102
Band 77	3 475.02 ~ 3 525.00	QPSK	45M71G7D	23.45	0.22	19.48	0.089
Band 77	3 475.02 ~ 3 525.00	16QAM	45M65W7D	22.44	0.18	17.89	0.062
Band 77	3 475.02 ~ 3 525.00	64QAM	45M65W7D	21.14	0.13	17.42	0.055
Band 77	3 475.02 ~ 3 525.00	256QAM	45M64W7D	19.17	0.08	15.84	0.038
Band 77	3 470.01 ~ 3 529.98	π/2 BPSK	35M68G7D	23.85	0.24	21.19	0.132
Band 77	3 470.01 ~ 3 529.98	QPSK	35M66G7D	23.75	0.24	19.59	0.091
Band 77	3 470.01 ~ 3 529.98	16QAM	35M66W7D	22.78	0.19	19.33	0.086
Band 77	3 470.01 ~ 3 529.98	64QAM	35M69W7D	21.37	0.14	17.59	0.057
Band 77	3 470.01 ~ 3 529.98	256QAM	35M67W7D	19.36	0.09	16.21	0.042
Band 77	3 465.00 ~ 3 534.99	π/2 BPSK	26M76G7D	23.67	0.23	20.23	0.105
Band 77	3 465.00 ~ 3 534.99	QPSK	26M74G7D	23.62	0.23	19.22	0.084
Band 77	3 465.00 ~ 3 534.99	16QAM	26M77W7D	22.66	0.18	18.52	0.071
Band 77	3 465.00 ~ 3 534.99	64QAM	26M75W7D	21.61	0.14	17.38	0.055
Band 77	3 465.00 ~ 3 534.99	256QAM	26M75W7D	19.39	0.09	15.78	0.038
Band 77	3 460.01 ~ 3 540.00	π/2 BPSK	17M82G7D	23.83	0.24	20.17	0.104

Band 77	3 460.01 ~ 3 540.00	QPSK	17M85G7D	23.85	0.24	19.75	0.094
Band 77	3 460.01 ~ 3 540.00	16QAM	17M82W7D	22.81	0.19	18.42	0.07
Band 77	3 460.01 ~ 3 540.00	64QAM	17M82W7D	21.43	0.14	16.83	0.048
Band 77	3 460.01 ~ 3 540.00	256QAM	17M83W7D	19.49	0.09	16.15	0.041

Upper Band

band	Frequecny (MHz)	modulation	Emission Designator	Conducted Output Power		ERP/EIRP	
				Max power (dBm)	Max power (W)	Max power (dBm)	Max power (W)
Band 77	3 750.00 ~ 3 930.00	π/2 BPSK	96M22G7D	23.78	0.24	17.7	0.059
Band 77	3 750.00 ~ 3 930.00	QPSK	96M28G7D	23.71	0.23	17.27	0.053
Band 77	3 750.00 ~ 3 930.00	16QAM	96M42W7D	22.66	0.18	15.54	0.036
Band 77	3 750.00 ~ 3 930.00	64QAM	96M33W7D	21.27	0.13	15.08	0.032
Band 77	3 750.00 ~ 3 930.00	256QAM	96M23W7D	19.31	0.09	14.53	0.028
Band 77	3 745.02 ~ 3 934.98	π/2 BPSK	86M57G7D	23.75	0.24	18.07	0.064
Band 77	3 745.02 ~ 3 934.98	QPSK	86M60G7D	23.76	0.24	17.49	0.056
Band 77	3 745.02 ~ 3 934.98	16QAM	86M57W7D	22.72	0.19	16.99	0.05
Band 77	3 745.02 ~ 3 934.98	64QAM	86M56W7D	21.29	0.13	15.81	0.038
Band 77	3 745.02 ~ 3 934.98	256QAM	86M66W7D	19.39	0.09	14.69	0.029
Band 77	3 740.01 ~ 3 939.99	π/2 BPSK	76M89G7D	23.76	0.24	18.89	0.077
Band 77	3 740.01 ~ 3 939.99	QPSK	77M18G7D	23.75	0.24	17.54	0.057
Band 77	3 740.01 ~ 3 939.99	16QAM	77M03W7D	22.73	0.19	16.51	0.045
Band 77	3 740.01 ~ 3 939.99	64QAM	76M99W7D	21.27	0.13	15.73	0.037

Band 77	3 740.01 ~ 3 939.99	256QAM	76M92W7D	19.34	0.09	14.27	0.027
Band 77	3 735.00 ~ 3 945.00	π/2 BPSK	64M30G7D	23.77	0.24	18.97	0.079
Band 77	3 735.00 ~ 3 945.00	QPSK	64M19G7D	23.80	0.24	17.95	0.062
Band 77	3 735.00 ~ 3 945.00	16QAM	64M17W7D	22.73	0.19	16.9	0.049
Band 77	3 735.00 ~ 3 945.00	64QAM	64M22W7D	21.32	0.14	15.95	0.039
Band 77	3 735.00 ~ 3 945.00	256QAM	64M20W7D	19.38	0.09	14.35	0.027
Band 77	3 730.02 ~ 3 949.98	π/2 BPSK	57M72G7D	23.77	0.24	17.84	0.061
Band 77	3 730.02 ~ 3 949.98	QPSK	57M80G7D	23.75	0.24	17.14	0.052
Band 77	3 730.02 ~ 3 949.98	16QAM	57M73W7D	22.72	0.19	15.73	0.037
Band 77	3 730.02 ~ 3 949.98	64QAM	57M76W7D	21.28	0.13	15.03	0.032
Band 77	3 730.02 ~ 3 949.98	256QAM	57M69W7D	19.82	0.10	13.56	0.023
Band 77	3 725.01 ~ 3 954.99	π/2 BPSK	45M59G7D	23.69	0.23	18.73	0.075
Band 77	3 725.01 ~ 3 954.99	QPSK	45M65G7D	22.74	0.19	17.98	0.063
Band 77	3 725.01 ~ 3 954.99	16QAM	45M70W7D	21.94	0.16	15.89	0.039
Band 77	3 725.01 ~ 3 954.99	64QAM	45M65W7D	19.66	0.09	15.3	0.034
Band 77	3 725.01 ~ 3 954.99	256QAM	45M64W7D	23.89	0.24	13.81	0.024
Band 77	3 720.00 ~ 3 960.00	π/2 BPSK	35M68G7D	23.74	0.24	20.13	0.103
Band 77	3 720.00 ~ 3 960.00	QPSK	35M73G7D	23.72	0.24	18.79	0.076
Band 77	3 720.00 ~ 3 960.00	16QAM	35M73W7D	22.75	0.19	17.25	0.053
Band 77	3 720.00 ~ 3 960.00	64QAM	35M70W7D	21.33	0.14	15.92	0.039
Band 77	3 720.00 ~ 3 960.00	256QAM	35M68W7D	19.57	0.09	14.44	0.028
Band 77	3 715.02 ~ 3	π/2 BPSK	26M71G7D	24.03	0.25	18.89	0.077

	964.98						
Band 77	3 715.02 ~ 3 964.98	QPSK	26M74G7D	23.79	0.24	18.38	0.069
Band 77	3 715.02 ~ 3 964.98	16QAM	26M76W7D	22.81	0.19	15.97	0.04
Band 77	3 715.02 ~ 3 964.98	64QAM	26M75W7D	22.07	0.16	15.53	0.036
Band 77	3 715.02 ~ 3 964.98	256QAM	26M78W7D	19.57	0.09	13.61	0.023
Band 77	3 710.01 ~ 3 969.99	π/2 BPSK	17M83G7D	23.82	0.24	18.64	0.073
Band 77	3 710.01 ~ 3 969.99	QPSK	17M84G7D	23.81	0.24	18.09	0.064
Band 77	3 710.01 ~ 3 969.99	16QAM	17M85W7D	23.72	0.24	16.73	0.047
Band 77	3 710.01 ~ 3 969.99	64QAM	17M82W7D	21.41	0.14	14.97	0.031
Band 77	3 710.01 ~ 3 969.99	256QAM	17M83W7D	19.61	0.09	13.22	0.021

3. INTRODUCTION

3.1. EUT DESCRIPTION

Temperature : +21 ℃ ~ +24 ℃

Humidity : 42 % ~ 46 %

Extreme Test Temperature : -10 ℃ ~ +55 ℃

3.2 Measurement Uncertainty

Item	Measurement Uncertainty
Conducted Output Power	±3.2 %
Occupied Channel Bandwidth	±0.87dB
Unwanted Emission, Conducted	±0.86dB
Emissions, Radiated (Below 1GHz)	±3.54dB
Emissions, Radiated (1GHz-18GHz)	±4.22dB
Emissions, Radiated (18GHz-25GHz)	±4.81dB

3.3 Summary of Test Results

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
Conducted Output Power	2.1046	N/A	Conducted	C
Occupied Bandwidth	2.1049	N/A	Conducted	C
Peak to Average Ratio	27.50(k.4) 27.50(j.4)	< 13 dB	Conducted	C
Band Edge / Conducted Spurious Emissions	2.1051 27.53(n) 27.53(l)	< -13 dBm/MHz	Conducted	C
Frequency Stability	2.1055 27.54	Fundamental emissions must stay within Authorized frequency block	Conducted	C
Radiated Output Power	27.50(k.3) 27.50(j.3)	< 1 Watts max. EIRP	Radiated	C
Undesirable Emissions	2.1053 27.53(n) 27.53(l)	< -13 dBm/MHz	Radiated	C

Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable

3.4 Worst Case (RADIATED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
(Worst case: DFT-S-OFDM)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.

- All modes of operation were investigated and the worst case configuration results are reported.
Mode: NSA. SA
Worst case: SA

- We were performed the RSE test in condition of co-location.
Mode : Stand alone, Simultaneous transmission scenarios
Worst case : Stand alone

- Radiated Spurious emissions are measured while operating in EN-DC mode with Sub 6 NR carrier as well as an LTE carrier (anchor).
All EN-DC mode of operation were investigated and the worst case configuration results are reported.
(Worst case: Band 2-n77 (40 MHz))

- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
Please refer to the table below.

- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth
results are reported.
(Worst case : 40 MHz , 50 MHz)

[Worst case]

Test Description	Modulation	RB size	RB offset
Effective Radiated Power	PI/2 BPSK, QPSK, 16QAM,	See Section 13.2	

	64QAM, 256QAM	
Radiated Spurious Emissions	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	See Section 13.3

WORST CASE(CONDUCTED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
(Worst case: DFT-S-OFDM)

- Modulation : All Modulation of operation were investigated and the worst case configuration results are reported.
(Worst case: PI/2 BPSK)

All modes of operation were investigated and the worst case configuration results are reported.
Mode: NSA, SA
Worst case: SA

- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported. Please refer to the table below.

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth Peak- to- Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	20, 30, 40, 50, 60, 70, 80, 90, 100	Mid	Full RB	0
Band Edge	PI/2 BPSK	20	Low	1	0
	PI/2 BPSK	20	High	1	50
	PI/2 BPSK	30	Low	1	0
	PI/2 BPSK	30	High	1	77

	PI/2 BPSK	40	Low	1	0
	PI/2 BPSK	40	High	1	105
	PI/2 BPSK	50	Low	1	0
	PI/2 BPSK	50	High	1	132
	PI/2 BPSK	60	Low	1	0
	PI/2 BPSK	60	High	1	161
	PI/2 BPSK	70	Low	1	0
	PI/2 BPSK	70	High	1	188
	PI/2 BPSK	80	Low	1	0
	PI/2 BPSK	80	High	1	216
	PI/2 BPSK	90	Low	1	0
	PI/2 BPSK	90	High	1	244
	PI/2 BPSK	100	Low	1	0
	PI/2 BPSK	100	High	1	272
	PI/2 BPSK	20, 30, 40, 50, 60, 70, 80, 90, 100	Low	Full RB	0
	PI/2 BPSK	20, 30, 40, 50, 60, 70, 80, 90, 100	High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	I/2 BPSK	20, 30, 40, 50, 60, 70, 80, 90, 100	Low	1	1
	I/2 BPSK	20, 30, 40, 50, 60, 70, 80, 90, 100	Mid	1	1
	I/2 BPSK	20, 30, 40, 50, 60, 70, 80, 90, 100	High	1	1

3.5 SAMPLE CALCULATION

NR Band n77(π/2 BPSK)
Emission Designator = 96M23G7D
OBW = 96.232 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(QPSK)
Emission Designator = 96W18G7D
OBW = 96.179 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(16QAM)
Emission Designator = 96M26W7D

OBW = 96.264 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(64QAM)
Emission Designator = 96M24W7D
OBW = 96.237 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(256QAM)
Emission Designator = 96M27W7D
OBW = 96.273 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

For substitution method

1) The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1 GHz respectively above ground.
2) The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3) During the test, the turn table is rotated until the maximum signal is found.
4) Record the field strength meter's level.
5) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
6) Increase the signal generator output till the field strength meter's level is equal to the item (4).
7) Record the level at substituted antenna terminal.
8) The result is calculated as below;

EIRP(dBm) = LEVLE@ANTENNA TERMINAL + TX Antenna Gain (dBi)
ERP(dBm) = LEVLE@ANTENNA TERMINAL + TX Antenna Gain (dBd)
Where, TX Antenna Gain (dBd) = TX Antenna Gain (dBi) - 2.15 dB

4. TEST EQUIPMENT

4.1 Measurement equipment

Equipment Name	Type	Manufacturer	Serial No.	Cal. Date	Cal. Due Date
Radio Communication Test Station	MT8000A	Anritsu	6261867318	2022-11-30	2023-11-30
Radio Communication Analyzer	MT8821C	Anritsu	6262116716	2022-11-29	2023-11-29
UXA Signal Analyzer	N9040B	Keysight	US57212216	2022-11-29	2023-11-29
Power divider	K240C	Anritsu	2143005	2023-03-13	2024-03-13
SPECTRUM ANALYZER	MS2840A	Anritsu	MS2840A	2023-04-19	2024-04-19
Attenuator	A-4010.2902.2	ACE RF COMM	A-1	2023-04-17	2024-04-17
Power Meter	N1912A	Agilent	MY45100570	2022-11-28	2023-11-28
Power Sensor	A1921A	Agilent	MY45240427	2022-11-28	2023-11-28
TEST Receiver	ESCI7	ROHDE & SCHWARZ	100916	2023-06-12	2024-06-12
LOOP Antenna	HFH2-Z2	ROHDE & SCHWARZ	100188	2023-08-24	2024-08-24
Logbicon Antenna	VULB 9168	SCHWARZBECK	193	2022-12-09	2023-12-09
Turn Table	DT3000-2t	Innco System GmbH	N/A	-	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-	-
PREAMPLIFIER	8449B	HP	3008A00581	2023-06-12	2024-06-12
Horn Antenna	LB-42-15-C-SF	A-INFOMF	J2020079000055	2022-11-11	2023-11-11
Horn Antenna	BBHA9120D	SCHWARZBECK	469	2022-11-08	2023-11-08
TEST Receiver	ESU	ROHDE & SCHWARZ	100529	2023-06-12	2024-06-12
Turn Table	DT1500-S	Innco System GmbH	N/A	-	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-	-
Antenna Mast	SW-AM-EMF	SIWON	-	-	-
Antenna Master & Turn table controller	CO2000-P	Innco System GmbH	CO2000/642 /28051111/L	-	-
TEST Receiver	ESHS 30	Rohde & Schwarz	828765/002	2023-06-28	2024-06-28

Log-Periodic Antenna	UHALP9107	SCHWARZBECK	1562	2023-05-19	2024-05-19
Signal Generator	SMB 100A	ROHDE & SCHWARZ	177653	2022-11-29	2023-11-29
Horn Antenna	BBHA 9170	SCHWARZBECK	732	2023-06-15	2024-06-15
AMPLIFER	TK-PA1840H	TESTEK	N/A	2023-06-15	2024-06-15
DC Power supply	AK3010	VUPOWER	01020516	2022-11-28	2023-11-28
DC Power supply	HMP2020	ROHDE & SCHWARZ	120957	2023-08-18	2024-08-18
Temp./Humidity Chamber	SH-642	ESPEC	93016326	2022-11-28	2023-11-28
Radio Communication Test Station	MT8000A	Anritsu	6272354124	2023-10-17	2024-10-17
Radio Communication Analyzer	MT8821C	Anritsu	6272348668	2022-11-29	2023-11-29

5. OUTPUT POWER

5.1 Test Procedure

- KDB971168 D01v03 - Section 5.2.4

- ANSI C63.26-2015 – Section 5.2.4.2

5.2 Test settings

When an average power meter is used to perform RF output power measurements, the fundamental condition that measurements be performed only over durations of active transmissions at maximum output power level applies. Thus, an average power meter can always be used to perform the measurement when the EUT can be configured to transmit continuously.

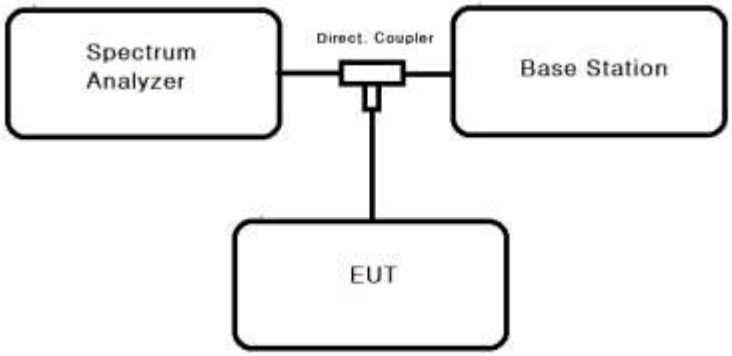
If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter:

a) A gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only during active transmission bursts at maximum output power levels.

.

b) A conventional average power meter with no signal gating capability can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than or equal to ±2%) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to [10 log (1/duty cycle)]. See 5.2.4.3.4 for guidance with respect to measuring the transmitter duty cycle.

5.3 Test Setup

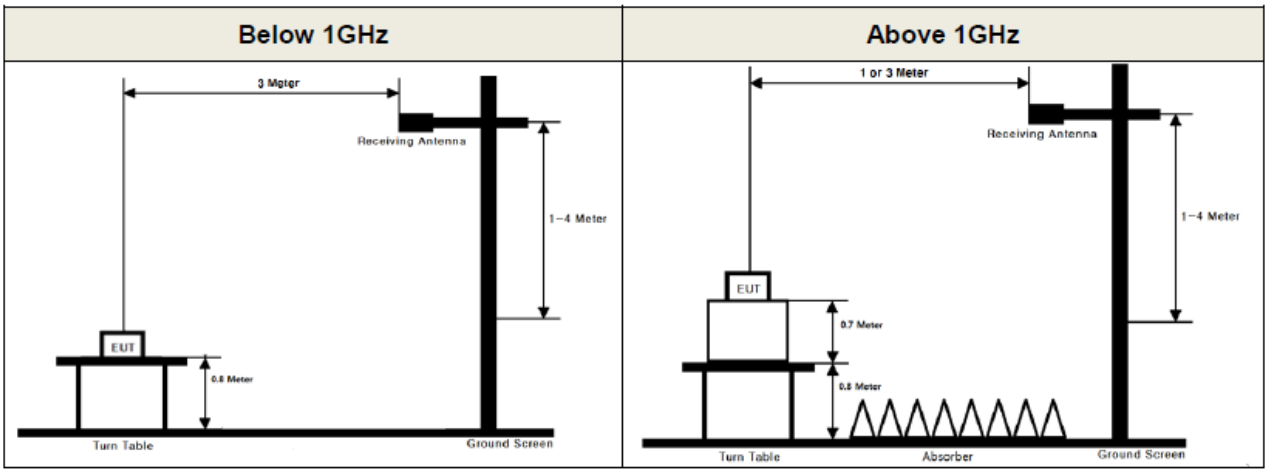


Test Limit

N/A.

6. ERP & EIRP (Effective Radiated Power & Equivalent Isotropic Radiated Power)

6.1Test Set-up



These measurements were performed at 3 m test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1GHz absorbers are placed 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 below 1 GHz, the absorbers are removed.

6.2 Test Procedure

- ANSI/TIA-603-E-2016 - Section 2.2.17
- KDB971168 D01v03 - Section 5.4
- ANSI C63.26-2015 – Section 5.2.4.4.1

6.3 Test setting

1. Set span to 2 x to 3 x the OBW.

2. Set RBW = 1 % to 5 % of the OBW.

3. Set VBW ≥ 3 x RBW.
4. Set number of points in sweep ≥ 2 × span / RBW.

5. Sweep time:
1) Set = auto-couple, or
2) Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible)
measurement. Transmission period is the on and off time of the transmitter.

6. Detector = power averaging (rms).

7. If the EUT can be configured to transmit continuously, then set the trigger to free run.

8. If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active fullpower transmissions).

9. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over multiple symbols, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.

10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

The receiver antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum

analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

The ERP/EIRP is calculated using the following formula:

ERP/EIRP = The conducted power at the substitute antenna`s terminal [dBm] + Substitute Antenna gain [dBd for ERP , dBi for EIRP]

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference Between the gain of the horn antenna and an isotropic antenna are taken into consideration.

7. Peak to Average Ratio

7.1 Test Procedure

- KDB971168 D01v03 – section 5.7.2

- ANSI C63.26-2015 – Section 5.2.3.4

7.2 Test settings

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 present of time the signal spends at or above the level defines the probability for that particular power level.

• Set resolution/measurement bandwidth ≥ signal's occupied bandwidth

• Set the number of counts to a value that stabilizes the measured CCDF curve

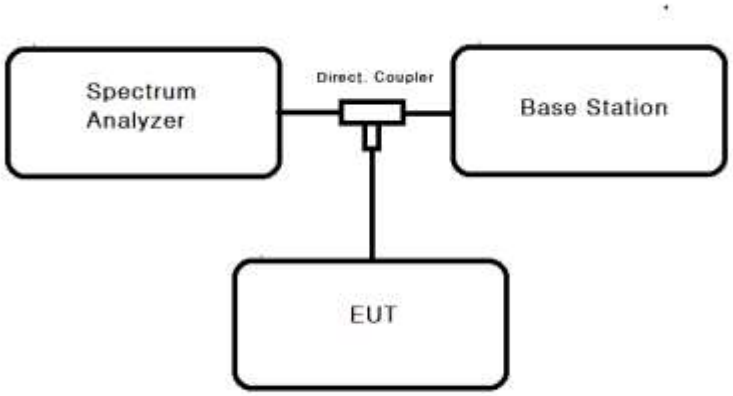
• Set the measurement interval as follows:

1) for continuous transmissions, set to 1 ms

2) or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.

• Record the maximum PAPR level associated with a probability of 0.1 %.

7.3 Test Setup



Limit

3450 ~ 3550 MHz band, 3700 ~ 3980 MHz band: The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

8. Occupied Bandwidth

8.1 Test Procedure

- KDB971168 D01v03 – section 4.3

- ANSI C63.26-2015 – Section 5.4.4

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.

8.1 Test settings

• 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.

• RBW = 1 ~ 5% of the expected OBW. and the VBW shall be set ≥ 3 × RBW

• Set the detection mode to peak, and the trace mode to max-hold.

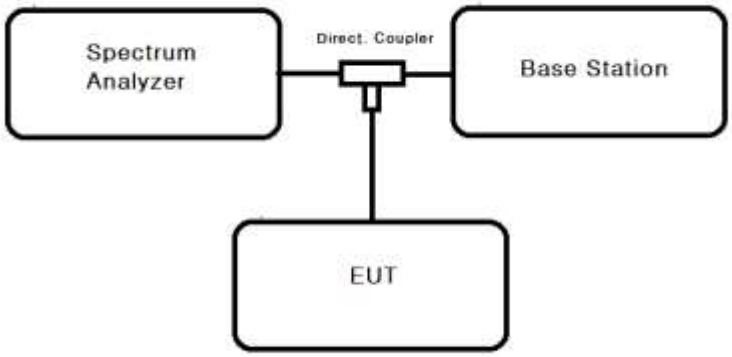
• Sweep point to Auto couple

• The trace was allowed to stabilize.

• The trace was allowed to stabilize

• If necessary, steps were repeated after changing the RBW such that it would be within 1 ~ 5% of the 99% occupied bandwidth observed in Step 6

8.3 Test Setup



9. BAND EDGE EMISSIONS AT ANTENNA TERMINAL

9.1 Test Procedure

- KDB971168 D01v03 – section 6

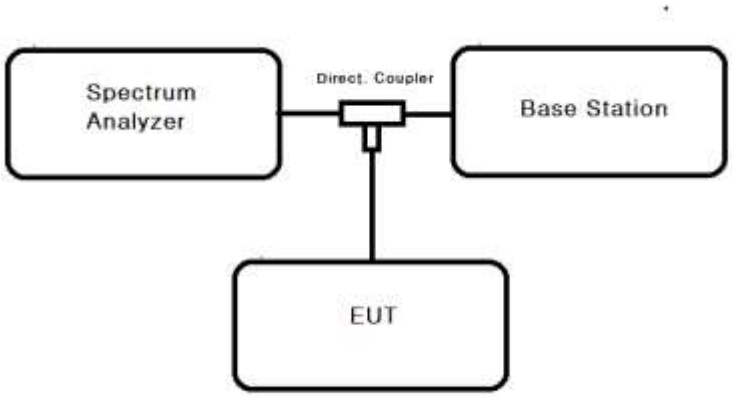
- ANSI C63.26-2015 – Section 5.7

9.2 Test settings

All out of band emissions are measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its lowest and highest channel with all bandwidths, modulations and RB configurations.

- Start and stop frequency were set such that the band edge would be placed in the center of the plot
- Span was set large enough so as to capture all out of band emissions near the band edge
- RBW ≥ 1 % of the emission bandwidth or Specified bandwidth
- VBW ≥ 3 X RBW
- Detector = RMS & Trace mode = Max hold
- Sweep time = Auto couple or 1 s for band edge
- Number of sweep point ≥ 2 X span / RBW
- The trace was allowed to stabilize

9.3 Test Setup



Limit

- Part 27.53(n)(2), for mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.

- Part 27.53(l)(2), for mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.

10. FREQUENCY STABILITY

10.1 Test Procedure

- KDB971168 D01v03 – section 9

- ANSI/TIA-603-E-2016 - Section 5.7

10.2 Test settings

he frequency stability of the transmitter is measured by:

a.) Temperature:

The temperature is varied from -30 °C to +50 °C using an environmental chamber.

b.) Primary Supply Voltage:

The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature.
(20 °C to provide a reference)

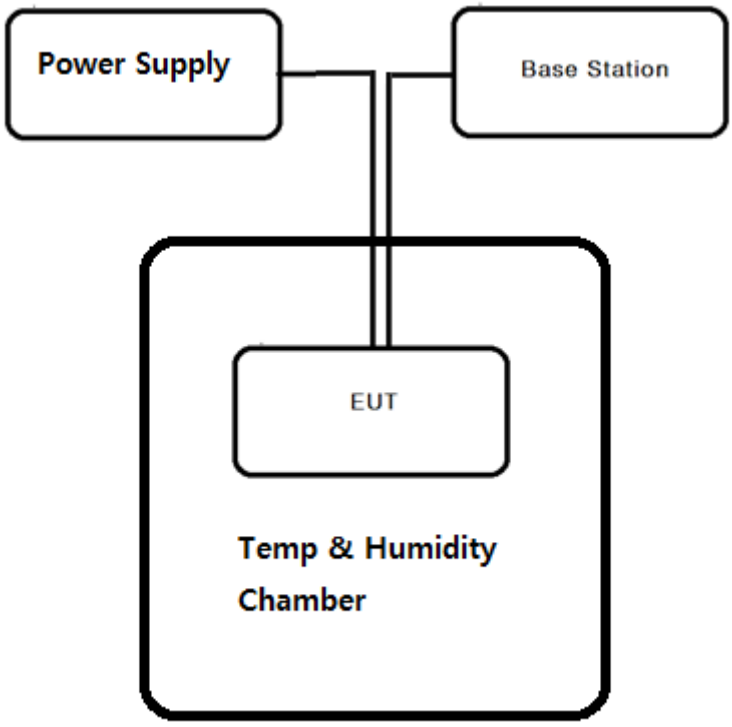
The equipment is turned on in a "standby" condition for one minute before applying power to

the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C.

A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

10.3 Test Setup



Limit

Fundamental emissions must stay within Authorized frequency block.

11. SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

11.1 Test Procedure

- KDB971168 D01v03 - Section 6

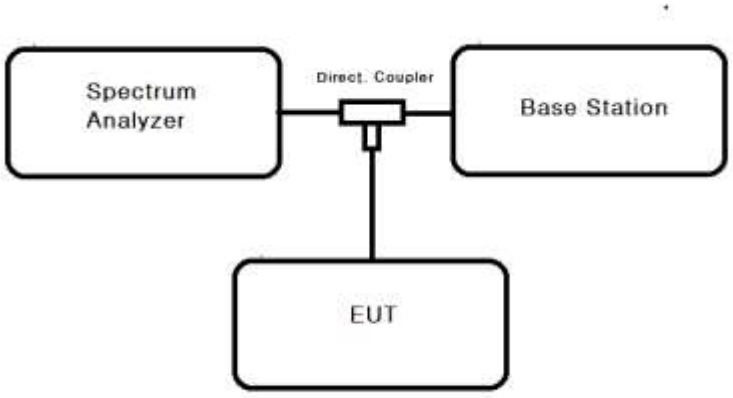
- ANSI C63.26-2015 – Section 5.7

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its low, middle, high channel with all bandwidths, modulations and RB configurations. The spectrum is scanned from 9 kHz up to a frequency including its 10th harmonic.

11.2 Test setting

- RBW = 1 MHz & VBW ≥ 3 X RBW
- Detector = RMS & Trace mode = Max hold
- Sweep time = Auto couple
- Number of sweep point ≥ 2 X span / RBW
- The trace was allowed to stabilize

11.3 Test Setup

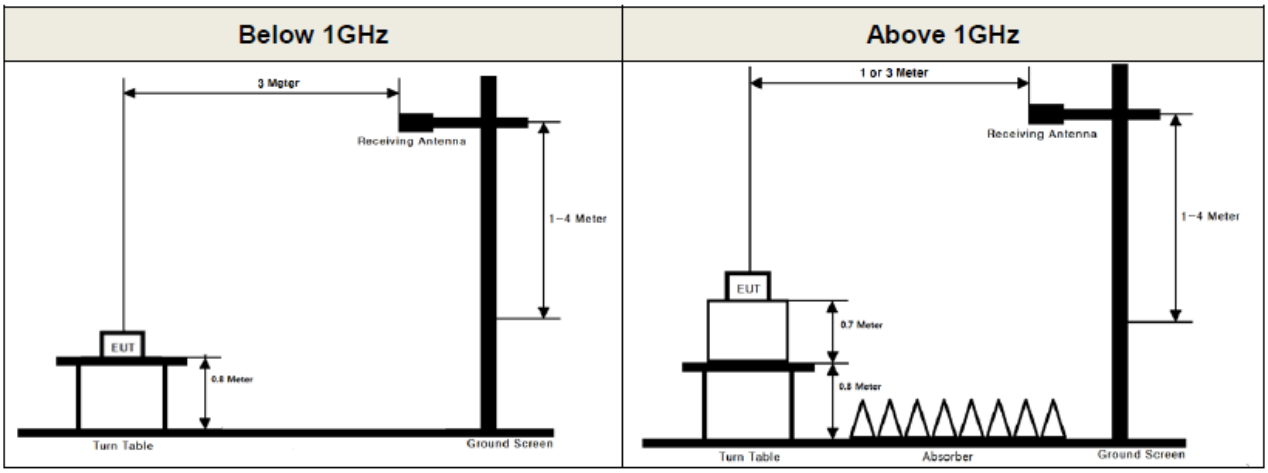


Limit

For mobile operations in the 3450-3550 MHz band and 3700-3980 MHz, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

12. RADIATED SPURIOUS EMISSIONS

12.1Test Set-up



These measurements were performed at 3 m test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1GHz absorbers are placed 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 below 1 GHz, the absorbers are removed.

12.2 Test Procedure

- ANSI/TIA-603-E-2016 - Section 2.2.12
- KDB971168 D01v03 - Section 6
- ANSI C63.26-2015 – Section 5.5

12.3 Test setting

1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW ≥ 3 X RBW
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.
For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.
For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain

the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration.
This measurement was performed with the EUT oriented in 3 orthogonal axis.

Limit
For mobile operations in the 3450-3550 MHz band and 3700-3980 MHz, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

13. TEST DATA

13.1 CONDUCTED OUTPUT POWER

- All modes of operation were investigated, and the worst-case configuration results are reported in this section

Low Band 77

channel obw	Frequency	Modulation	1RB					MID RB			
			edge left	inner left	Mid	inner right	edge right	Low	MID	HI	Full RB
20	3460.02	BPSK	23.13	23.63	23.62	23.82	23.35	23.21	23.69	23.21	23.23
		QPSK	22.60	23.67	23.59	23.80	22.74	22.71	23.70	22.79	22.75
		16QAM	21.70	22.68	22.62	22.80	21.81	21.70	22.67	21.76	21.75
		64QAM	21.18	21.22	21.20	21.34	21.40	21.18	21.22	21.23	21.23
		256QAM	19.21	19.18	19.16	19.36	19.36	19.20	19.22	19.23	19.22
	3500.01	BPSK	23.32	23.83	23.71	23.63	23.12	23.31	23.75	23.21	23.27
		QPSK	22.85	23.85	23.69	23.67	22.66	22.81	23.76	22.73	22.78
		16QAM	21.87	22.81	22.70	22.53	21.57	21.88	22.77	21.69	21.79
		64QAM	21.43	21.40	21.20	21.10	21.05	21.38	21.28	21.19	21.29
		256QAM	19.49	19.45	19.25	19.09	19.11	19.39	19.29	19.21	19.26
	3540.00	BPSK	22.97	23.41	23.36	23.51	23.00	22.91	23.45	23.05	23.00
		QPSK	22.47	23.40	23.38	23.49	22.53	22.43	23.46	22.54	22.55
		16QAM	21.44	22.44	22.38	22.53	21.54	21.49	22.45	21.53	21.59
		64QAM	20.97	20.97	20.92	21.06	21.02	20.95	20.98	21.03	21.08
		256QAM	18.98	19.04	18.93	19.11	19.08	19.01	18.98	19.03	19.05
30	3465.00	BPSK	23.15	23.54	23.59	23.50	23.05	23.01	23.59	23.27	23.22
		QPSK	22.74	23.52	23.56	23.49	22.51	22.48	23.57	22.77	22.71
		16QAM	21.74	22.49	22.66	22.35	21.61	21.45	22.48	21.75	21.74
		64QAM	21.36	21.11	21.61	21.54	21.25	20.87	21.44	21.25	21.24
		256QAM	19.19	19.15	19.13	19.11	19.12	19.08	19.15	19.16	19.20
	3500.01	BPSK	22.84	23.35	23.52	23.67	23.16	23.01	23.54	23.14	23.08
		QPSK	22.35	23.38	23.48	23.62	22.69	22.71	23.56	22.65	22.58

		16QAM	21.34	22.35	22.57	22.33	21.52	21.78	22.49	21.59	21.54
		64QAM	21.01	21.09	21.02	20.98	21.01	21.25	21.18	21.07	21.06
		256QAM	19.39	19.36	19.33	19.24	19.26	19.31	19.27	19.22	19.01
	3534.99	BPSK	23.08	23.55	23.49	23.57	23.01	23.09	23.51	23.02	23.16
		QPSK	22.58	23.51	23.47	23.51	22.49	22.58	23.49	22.51	22.66
		16QAM	21.49	22.48	22.39	22.48	21.45	21.54	22.42	21.59	21.67
		64QAM	20.95	20.89	20.81	20.95	21.01	21.07	21.02	21.06	21.20
		256QAM	19.05	19.04	19.03	19.07	19.08	19.02	19.05	19.08	19.16
40	3470.01	BPSK	23.20	23.68	23.38	23.70	23.22	23.05	23.49	23.02	23.04
		QPSK	22.70	23.67	23.39	23.72	22.74	22.53	23.45	22.53	22.83
		16QAM	21.69	22.62	22.34	22.71	21.69	21.58	22.46	21.52	21.85
		64QAM	21.25	21.22	20.92	21.19	21.20	21.05	20.98	21.02	21.33
		256QAM	19.33	19.32	19.31	19.36	19.32	19.33	19.30	19.29	19.35
	3500.01	BPSK	23.14	23.69	23.32	23.85	23.40	23.41	23.78	23.27	23.21
		QPSK	22.42	23.48	23.52	23.72	22.71	22.75	23.75	22.85	22.74
		16QAM	21.45	22.44	22.47	22.75	21.71	21.71	22.78	21.85	21.71
		64QAM	20.97	20.97	21.07	21.30	21.36	21.25	21.32	21.37	21.24
		256QAM	19.21	19.20	19.19	19.25	19.26	19.22	19.23	19.24	19.24
	3529.98	BPSK	22.86	23.32	23.14	23.23	22.72	22.80	23.27	22.71	22.81
		QPSK	22.36	23.34	23.15	23.25	22.25	22.29	23.24	22.22	22.30
		16QAM	21.31	22.33	22.11	22.25	21.20	21.27	22.25	21.24	21.30
		64QAM	20.88	20.89	20.69	20.74	20.78	20.76	20.75	20.74	20.81
		256QAM	18.89	18.86	18.88	18.87	18.89	18.91	18.90	18.91	18.94
50	3475.02	BPSK	22.96	23.49	23.40	23.31	22.75	22.96	23.44	22.88	23.15
		QPSK	22.40	23.45	23.35	23.22	22.24	22.42	23.41	22.39	22.61
		16QAM	21.38	22.42	22.31	22.21	21.19	21.45	22.40	21.37	21.63
		64QAM	21.01	21.01	20.91	20.89	20.72	20.92	20.92	20.87	21.14
		256QAM	19.05	19.15	19.16	19.10	19.17	19.13	19.08	19.07	19.08
	3525.00	BPSK	22.84	23.35	23.02	23.65	23.15	23.31	23.46	22.97	22.62
		QPSK	22.11	23.15	23.21	23.42	22.55	22.42	23.42	22.53	22.18
		16QAM	21.14	22.12	22.15	22.43	21.48	21.45	22.44	21.51	21.19
		64QAM	20.65	20.65	20.72	21.05	21.11	20.92	21.09	20.89	20.66
		256QAM	18.93	18.92	18.89	18.91	18.94	18.99	18.97	18.97	18.78
60	3495.00	BPSK	23.05	23.58	23.79	23.85	23.38	23.26	23.82	23.42	23.16
		QPSK	22.41	23.43	23.63	23.75	22.72	22.65	23.76	22.78	22.68
		16QAM	21.40	22.46	22.63	22.69	21.70	21.70	22.75	21.76	21.70

		64QAM	20.94	20.95	21.23	21.22	21.15	21.15	21.29	21.30	21.19
		256QAM	19.65	19.69	19.75	19.81	19.82	19.84	19.79	19.69	19.71
	3504.99	BPSK	23.15	23.64	23.71	23.76	23.22	23.27	23.66	23.11	23.37
		QPSK	22.71	23.63	23.71	23.75	22.69	22.79	23.65	22.61	22.88
		16QAM	21.66	22.66	22.68	22.69	21.69	21.79	22.68	21.66	21.90
		64QAM	21.20	21.19	21.26	21.24	21.27	21.29	21.18	21.17	21.39
		256QAM	19.63	19.67	19.70	19.78	19.78	19.77	19.75	19.64	19.69
70	3485.01	BPSK	22.94	23.65	23.65	23.65	23.11	23.12	23.21	23.20	23.18
		QPSK	22.46	23.62	23.65	23.65	22.61	22.62	22.70	22.70	22.66
		16QAM	21.47	23.41	22.59	22.62	21.62	21.63	21.71	21.68	21.69
		64QAM	20.99	22.45	21.25	21.17	21.17	21.16	21.26	21.22	21.15
		256QAM	18.99	19.03	19.30	19.19	19.19	19.18	19.26	19.23	19.27
	3514.98	BPSK	23.27	23.77	23.81	23.73	23.20	23.32	23.33	23.27	23.38
		QPSK	22.80	23.76	23.80	23.72	22.67	22.84	22.83	22.73	22.88
		16QAM	21.77	22.75	22.74	22.68	21.70	21.86	21.87	21.75	21.90
		64QAM	21.30	21.35	21.35	21.24	21.22	21.39	21.38	21.30	21.38
		256QAM	19.05	19.05	19.32	19.25	19.24	19.21	19.29	19.27	19.28
80	3490.02	BPSK	23.08	23.60	23.84	23.65	23.11	23.28	23.83	23.36	23.32
		QPSK	22.60	23.60	23.83	23.60	22.60	22.81	23.82	22.84	22.80
		16QAM	21.57	22.60	22.78	22.58	21.58	21.79	22.85	21.88	21.80
		64QAM	21.12	21.11	21.36	21.05	21.17	21.30	21.31	21.36	21.33
		256QAM	19.78	19.77	19.78	19.76	19.72	19.74	19.78	19.72	19.25
	3500.01	BPSK	23.26	23.78	23.81	23.73	23.22	23.30	23.83	23.24	23.86
		QPSK	22.75	23.76	23.79	23.71	22.71	22.77	23.81	22.71	23.38
		16QAM	21.80	22.77	22.81	22.67	21.69	21.84	22.85	21.74	22.38
		64QAM	21.28	21.31	21.30	21.26	21.24	21.28	21.37	21.23	21.90
		256QAM	19.75	19.71	19.70	19.68	19.66	19.70	19.73	19.67	19.70
90	3495.00	BPSK	23.06	23.62	23.67	23.68	23.17	23.22	23.76	23.25	23.88
		QPSK	22.54	23.60	23.70	23.71	22.67	22.71	23.75	22.78	23.29
		16QAM	21.60	22.52	22.61	22.65	21.66	21.71	22.78	21.75	22.29
		64QAM	21.11	21.05	21.14	21.19	21.26	21.27	21.27	21.26	21.78
		256QAM	19.75	19.78	19.71	19.73	19.75	19.77	19.78	19.68	19.86
	3504.99	BPSK	23.20	23.69	23.81	23.59	23.12	23.30	23.87	23.16	24.08
		QPSK	22.71	23.67	23.79	23.65	22.64	22.82	23.85	22.71	23.52
		16QAM	21.67	22.67	22.75	22.60	21.62	21.84	22.86	21.66	22.50
		64QAM	21.18	21.23	21.31	21.06	21.16	21.36	21.37	21.24	22.01

		256QAM	19.70	19.72	19.68	19.70	19.70	19.71	19.70	19.63	19.71
100	3500.01	BPSK	23.04	23.50	23.63	23.67	23.17	23.22	23.67	23.18	22.96
		QPSK	22.50	23.57	23.61	23.68	22.75	22.69	23.66	22.66	23.45
		16QAM	21.52	22.51	22.65	22.70	21.73	21.74	22.68	21.67	22.45
		64QAM	21.04	21.03	21.12	21.22	21.23	21.21	21.23	21.16	21.97
		256QAM	19.58	19.60	19.65	19.75	19.74	19.72	19.67	19.63	19.62

Upper Band 77

channel obw	Frequency	Modulation	1RB					MID RB			
			edge left	inner left	Mid	inner right	edge right	Low	MID	HI	Full RB
20	3710.01	BPSK	23.17	23.66	23.52	23.72	23.00	23.16	23.54	23.08	22.92
		QPSK	22.57	23.62	23.53	23.71	22.72	22.62	23.52	22.67	22.43
		16QAM	21.53	22.61	22.51	22.71	21.77	21.63	22.24	21.69	21.42
		64QAM	21.10	21.13	21.07	21.25	21.27	21.10	21.02	21.18	20.91
		256QAM	19.49	19.45	19.47	19.58	19.56	19.51	19.49	19.52	19.53
	3840.00	BPSK	23.33	23.82	23.73	23.72	23.23	23.31	23.75	23.29	23.08
		QPSK	22.82	23.81	23.71	23.73	22.72	22.81	23.77	22.74	22.58
		16QAM	21.87	22.88	22.70	23.72	21.72	21.86	22.78	21.77	21.58
		64QAM	21.40	21.41	21.25	21.22	21.22	21.36	21.29	21.28	21.11
		256QAM	19.46	19.43	19.45	19.56	19.55	19.48	19.48	19.50	19.51
	3969.99	BPSK	23.15	23.66	23.60	23.68	23.16	23.17	23.60	23.14	22.91
		QPSK	22.67	23.65	23.59	23.67	22.63	22.62	23.58	22.62	22.41
		16QAM	21.70	22.67	22.58	22.63	21.66	21.65	22.64	21.64	21.42
		64QAM	21.22	21.20	21.09	21.20	21.20	21.18	21.10	21.14	20.90
		256QAM	19.48	19.46	19.49	19.61	19.58	19.51	19.52	19.54	19.55
30	3715.02	BPSK	23.08	23.56	23.55	23.63	23.14	23.14	23.60	23.10	23.86
		QPSK	22.51	23.55	23.54	23.62	22.77	22.60	23.62	22.68	23.45
		16QAM	21.57	22.54	22.51	22.75	21.75	21.58	22.63	21.67	22.48
		64QAM	21.06	21.06	21.04	21.29	21.30	21.09	21.09	21.20	21.99
		256QAM	19.47	19.43	19.41	19.52	19.55	19.47	19.51	19.57	19.47

	3840.00	BPSK	23.03	23.53	23.26	23.76	23.24	23.22	23.84	23.29	23.43
		QPSK	22.52	23.55	22.72	23.75	22.76	22.75	23.79	22.81	22.91
		16QAM	21.57	22.55	21.70	22.73	21.74	21.76	22.81	21.80	21.93
		64QAM	21.14	21.09	21.24	21.28	21.31	21.24	21.32	21.32	21.44
		256QAM	19.42	19.40	19.38	19.50	19.52	19.41	19.46	19.53	19.45
	3964.98	BPSK	23.20	23.67	23.60	23.81	23.30	23.18	23.66	23.19	24.03
		QPSK	22.66	23.66	23.57	23.79	22.81	22.69	23.64	22.68	23.53
		16QAM	21.69	22.70	22.59	22.81	21.82	21.70	22.66	21.67	22.55
		64QAM	21.20	21.26	21.14	21.33	21.33	21.23	21.17	21.20	22.07
		256QAM	19.45	19.41	19.39	19.48	19.53	19.44	19.47	19.55	19.49
40	3720.00	BPSK	23.20	23.68	23.38	23.70	23.22	23.05	23.49	23.02	23.04
		QPSK	22.70	23.67	23.39	23.72	22.74	22.53	23.45	22.53	22.83
		16QAM	21.69	22.62	22.34	22.71	21.69	21.58	22.46	21.52	21.85
		64QAM	21.25	21.22	20.92	21.19	21.20	21.05	20.98	21.02	21.33
		256QAM	19.49	19.48	19.43	19.52	19.53	19.46	19.47	19.51	19.52
	3840.00	BPSK	22.94	23.46	23.51	23.74	23.22	23.05	23.60	23.17	23.03
		QPSK	22.42	23.48	23.52	23.72	22.71	22.57	23.58	22.69	22.56
		16QAM	21.45	22.44	22.47	22.75	21.71	21.53	22.62	21.67	21.55
		64QAM	20.97	20.97	21.07	21.30	21.26	21.05	21.12	21.19	21.05
		256QAM	19.45	19.42	19.44	19.51	19.51	19.42	19.43	19.47	19.44
	3954.99	BPSK	22.86	23.32	23.14	23.23	22.72	22.80	23.27	22.71	22.81
		QPSK	22.36	23.34	23.15	23.25	22.25	22.29	23.24	22.22	22.30
		16QAM	21.31	22.33	22.11	22.25	21.20	21.27	22.25	21.24	21.30
		64QAM	20.88	20.89	20.69	20.74	20.78	20.76	20.75	20.74	20.81
		256QAM	19.48	19.44	19.46	19.55	19.57	19.45	19.46	19.49	19.56
50	3725.01	BPSK	22.96	23.49	23.22	23.49	22.99	22.82	23.37	22.93	23.60
		QPSK	22.38	23.34	23.21	23.52	22.50	22.34	23.36	22.41	23.10
		16QAM	21.36	22.32	22.20	22.45	21.50	21.34	22.38	21.45	22.12
		64QAM	20.90	20.88	20.74	21.02	20.99	20.85	20.86	20.91	21.64
		256QAM	19.38	19.35	19.31	19.52	19.51	19.42	19.45	19.44	19.35
	3840.00	BPSK	22.74	23.36	23.62	23.66	23.17	22.99	23.75	23.14	23.37
		QPSK	22.25	23.31	23.69	23.65	22.66	22.50	23.69	22.62	22.79
		16QAM	21.29	22.32	22.56	22.61	21.60	21.50	22.74	21.65	21.80
		64QAM	20.78	20.91	21.14	21.17	21.17	21.01	21.20	21.16	21.33
		256QAM	19.48	19.46	19.43	19.61	19.63	19.50	19.58	19.52	19.48
	3954.99	BPSK	23.03	23.52	23.47	23.40	22.89	23.06	23.57	23.01	23.89

		QPSK	22.53	23.58	23.49	23.40	22.37	22.54	23.56	22.46	23.39
		16QAM	21.53	22.49	22.44	22.31	21.35	21.60	22.59	21.49	22.42
		64QAM	21.07	21.05	21.03	20.88	20.91	21.12	21.05	20.99	21.94
		256QAM	19.51	19.52	19.48	19.63	19.66	19.54	19.62	19.58	19.52
60	3730.02	BPSK	23.08	23.57	23.57	23.77	23.28	23.09	23.70	23.28	23.18
		QPSK	22.52	23.48	23.55	23.73	22.72	22.49	23.62	22.71	22.70
		16QAM	21.55	22.48	22.52	22.68	21.69	21.53	22.62	21.68	21.72
		64QAM	21.05	21.04	21.05	21.22	21.23	21.01	21.12	21.17	21.19
		256QAM	19.61	19.69	19.61	19.77	19.82	19.71	19.68	19.70	19.69
	3840.00	BPSK	22.98	23.40	23.56	23.75	23.23	23.11	23.69	23.24	23.19
		QPSK	22.39	23.41	23.64	23.75	22.74	22.62	23.71	22.76	22.69
		16QAM	21.45	22.40	22.57	22.72	21.75	21.63	22.71	21.78	21.71
		64QAM	21.02	20.96	21.14	21.25	21.27	21.14	21.22	21.28	21.22
		256QAM	19.57	19.62	19.57	19.71	19.78	19.63	19.62	19.65	19.63
	3949.98	BPSK	22.94	23.50	23.61	23.45	22.96	23.05	23.66	23.11	23.06
		QPSK	22.45	23.52	23.60	23.43	22.48	22.56	23.68	22.64	22.56
		16QAM	21.50	22.49	22.52	22.42	21.45	21.52	22.70	21.65	21.58
		64QAM	21.04	21.01	21.06	20.99	20.96	21.05	21.21	21.16	21.07
		256QAM	19.61	19.66	19.68	19.77	19.82	19.70	19.68	19.72	19.61
70	3735.00	BPSK	22.92	23.43	23.76	23.77	23.27	23.01	23.09	23.23	23.16
		QPSK	22.46	23.52	23.67	23.80	22.75	22.57	22.65	22.71	22.63
		16QAM	21.41	22.42	22.61	22.73	21.76	21.51	21.65	21.72	21.62
		64QAM	21.02	21.01	21.14	21.25	21.25	21.07	21.08	21.25	21.11
		256QAM	19.25	19.23	19.38	19.15	19.19	19.26	19.38	19.33	19.15
	3840.00	BPSK	22.99	23.46	23.74	23.71	23.19	23.10	23.14	23.20	23.13
		QPSK	22.51	23.44	23.72	23.79	22.70	22.60	22.65	22.69	22.64
		16QAM	21.43	22.45	22.65	22.65	21.73	21.61	21.71	21.70	21.68
		64QAM	21.04	21.02	21.22	21.26	21.32	21.11	21.13	21.22	21.16
		256QAM	19.26	19.25	19.37	19.16	19.15	19.28	19.37	19.35	19.18
	3945.00	BPSK	22.87	23.37	23.59	23.43	22.96	22.94	23.07	23.07	23.02
		QPSK	22.35	23.37	23.62	23.46	22.46	22.44	22.52	22.54	22.53
		16QAM	21.37	22.40	22.58	22.45	21.44	21.37	21.57	21.62	21.53
		64QAM	20.92	20.91	21.11	20.92	21.01	20.87	21.03	21.05	21.02
		256QAM	19.22	19.21	19.33	19.12	19.11	19.25	19.34	19.31	19.16
80	3740.01	BPSK	23.02	23.52	23.68	23.71	23.08	23.07	23.65	23.34	23.16
		QPSK	22.51	23.51	23.57	23.61	22.59	22.57	23.67	22.75	22.69

		16QAM	21.56	22.51	22.56	22.56	21.60	21.58	22.67	21.72	21.70
		64QAM	21.05	21.03	21.12	21.05	21.13	21.08	21.17	21.27	21.23
		256QAM	19.15	19.22	19.31	19.02	19.03	19.21	19.28	19.22	19.11
	3840.00	BPSK	23.04	23.59	23.68	23.69	23.19	23.72	23.76	23.27	23.16
		QPSK	22.61	23.62	23.68	23.73	22.67	23.70	23.75	22.72	22.67
		16QAM	21.62	22.56	22.68	22.72	21.70	22.70	22.73	21.74	21.73
		64QAM	21.12	21.12	21.19	21.20	21.25	21.21	21.20	21.25	21.20
		256QAM	19.19	19.21	19.34	19.05	19.06	19.24	19.31	19.26	19.09
	3939.99	BPSK	22.99	23.54	23.71	23.42	22.92	23.09	23.71	23.16	23.03
		QPSK	22.49	23.53	23.69	23.46	22.47	22.57	23.66	22.66	22.57
		16QAM	21.52	22.47	22.68	22.43	21.42	21.59	22.72	21.70	21.59
		64QAM	21.03	21.06	21.20	20.94	20.97	21.09	21.23	21.16	21.09
		256QAM	19.17	19.18	19.31	19.01	18.98	19.18	19.26	19.21	19.06
90	3745.02	BPSK	23.03	23.59	23.47	23.75	23.27	23.14	23.72	23.38	23.15
		QPSK	22.49	23.53	23.46	23.71	22.68	22.51	23.67	22.80	22.65
		16QAM	21.45	22.51	22.39	22.70	21.65	21.58	22.63	21.80	21.66
		64QAM	21.02	21.06	21.01	21.21	21.20	21.08	21.14	21.29	21.19
		256QAM	19.34	19.37	19.25	19.01	19.04	19.34	19.25	19.21	19.17
	3840.00	BPSK	23.13	23.67	23.46	23.73	23.22	23.02	23.70	23.27	23.15
		QPSK	22.65	23.66	23.51	23.76	22.73	22.50	23.68	22.76	22.69
		16QAM	21.61	22.59	22.51	22.72	21.67	21.58	22.72	21.78	21.70
		64QAM	21.14	21.17	20.97	21.26	21.21	21.03	21.23	21.28	21.17
		256QAM	19.35	19.39	19.29	19.05	19.07	19.38	19.29	19.25	19.19
	3934.98	BPSK	23.18	23.70	23.64	23.26	22.79	23.09	23.51	23.00	23.06
		QPSK	22.67	23.75	23.62	23.28	22.31	22.58	23.50	22.55	22.57
		16QAM	21.72	22.70	22.57	22.30	21.31	21.60	22.49	21.57	21.60
		64QAM	21.22	21.22	21.15	20.83	20.81	21.11	21.04	21.07	21.11
		256QAM	19.32	19.35	19.27	19.02	19.00	19.31	19.26	19.20	19.18
100	3750.00	BPSK	23.18	23.60	23.61	23.54	23.13	23.14	23.78	23.34	23.17
		QPSK	22.48	23.64	23.43	23.59	22.44	22.58	23.66	22.62	22.74
		16QAM	21.45	22.60	22.45	22.57	21.44	21.67	22.66	21.69	21.73
		64QAM	20.99	21.12	20.99	21.03	20.91	21.05	21.16	21.13	21.22
		256QAM	19.28	19.29	19.18	19.16	19.11	19.31	19.30	19.29	19.20
	3840.00	BPSK	23.20	23.68	23.47	23.77	23.01	23.10	23.71	23.29	23.19
		QPSK	22.66	23.70	23.40	23.58	22.60	22.48	23.59	22.71	22.68
		16QAM	21.56	22.63	22.35	22.59	21.58	21.49	22.58	21.67	21.73

		64QAM	21.13	21.19	21.02	21.11	21.15	21.05	21.20	21.27	21.19
		256QAM	19.31	19.28	19.19	19.15	19.15	19.28	19.29	19.28	19.19
	3930.00	BPSK	23.13	23.71	23.35	23.37	22.90	23.14	23.49	23.05	23.06
		QPSK	22.68	23.71	23.39	23.36	22.42	22.64	23.48	22.51	22.53
		16QAM	21.66	22.62	22.41	22.41	21.44	21.66	22.50	21.61	21.58
		64QAM	21.24	21.18	20.88	20.95	20.97	21.17	21.01	21.03	21.09
		256QAM	19.27	19.24	19.15	19.10	19.09	19.26	19.26	19.26	19.17

13.2 EIRP

All modes of operation were investigated, and the worst-case configuration results are reported in this section.

3 450 ~ 3 550 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
100	3 500.01	π/2 BPSK	1/1	H	7.30	12.59	19.89	0.097
		QPSK		H	6.34	12.59	18.93	0.078
		16QAM		H	4.95	12.59	17.54	0.057
		64QAM		H	4.38	12.59	16.97	0.050
		256QAM		H	1.98	12.59	14.57	0.029
90	3 495.00	π/2 BPSK	1/1	H	7.22	12.61	19.83	0.096
		QPSK		H	6.10	12.61	18.71	0.074
		16QAM		H	5.00	12.61	17.61	0.058
		64QAM		H	4.34	12.61	16.95	0.050
		256QAM		H	2.47	12.61	15.08	0.032
	3 504.99	π/2 BPSK	1/1	H	6.94	12.59	19.53	0.090
		QPSK		H	6.15	12.59	18.74	0.075
		16QAM		H	5.46	12.59	18.05	0.064
		64QAM		H	5.04	12.59	17.63	0.058
		256QAM		H	2.64	12.59	15.23	0.033
80	3 490.02	π/2 BPSK	1/1	H	6.68	12.62	19.30	0.085
		QPSK		H	5.39	12.62	18.01	0.063
		16QAM		H	4.48	12.62	17.10	0.051
		64QAM		H	4.33	12.62	16.95	0.050
		256QAM		H	1.82	12.62	14.44	0.028
	3 510.00	π/2 BPSK	1/1	H	7.49	12.59	20.08	0.102
		QPSK		H	5.51	12.59	18.10	0.065
		16QAM		H	5.36	12.59	17.95	0.062
		64QAM		H	4.47	12.59	17.06	0.051
		256QAM		H	2.59	12.59	15.18	0.033
70	3485.01	π/2 BPSK	1/1	H	6.68	12.64	19.32	0.086
		QPSK		H	6.14	12.64	18.78	0.076
		16QAM		H	5.11	12.64	17.75	0.060
		64QAM		H	4.59	12.64	17.23	0.053
		256QAM		H	2.56	12.64	15.20	0.033
	3514.98	π/2 BPSK	1/1	H	7.49	12.58	20.07	0.102
		QPSK		H	6.73	12.58	19.31	0.085
		16QAM		H	4.87	12.58	17.45	0.056

		64QAM		H	4.51	12.58	17.09	0.051
		256QAM		H	2.44	12.58	15.02	0.032
60	3 480.00	π/2 BPSK	1/1	H	6.66	12.66	19.32	0.086
		QPSK		H	6.04	12.66	18.70	0.074
		16QAM		H	5.61	12.66	18.27	0.067
		64QAM		H	3.73	12.66	16.39	0.044
		256QAM		H	2.12	12.66	14.78	0.030
	3 519.99	π/2 BPSK	1/1	H	7.63	12.58	20.21	0.105
		QPSK		H	5.49	12.58	18.07	0.064
		16QAM		H	6.29	12.58	18.87	0.077
		64QAM		H	4.64	12.58	17.22	0.053
		256QAM		H	2.82	12.58	15.40	0.035
50	3 475.02	π/2 BPSK	1/1	H	6.75	12.67	19.42	0.087
		QPSK		H	6.25	12.67	18.92	0.078
		16QAM		H	4.46	12.67	17.13	0.052
		64QAM		H	4.45	12.67	17.12	0.052
		256QAM		H	1.94	12.67	14.61	0.029
	3 525.00	π/2 BPSK	1/1	H	7.51	12.57	20.08	0.102
		QPSK		H	6.91	12.57	19.48	0.089
		16QAM		H	5.32	12.57	17.89	0.062
		64QAM		H	4.85	12.57	17.42	0.055
		256QAM		H	3.27	12.57	15.84	0.038
40	3 470.01	π/2 BPSK	1/1	H	7.79	12.68	20.47	0.111
		QPSK		H	6.22	12.68	18.90	0.078
		16QAM		H	6.65	12.68	19.33	0.086
		64QAM		H	3.60	12.68	16.28	0.042
		256QAM		H	2.16	12.68	14.84	0.030
	3 500.01	π/2 BPSK	1/1	H	7.41	12.59	20.00	0.100
		QPSK		H	6.02	12.59	18.61	0.073
		16QAM		H	5.08	12.59	17.67	0.058
		64QAM		H	3.99	12.59	16.58	0.045
		256QAM		H	2.77	12.59	15.36	0.034
	3 529.98	π/2 BPSK	1/1	H	8.62	12.57	21.19	0.132
		QPSK		H	7.02	12.57	19.59	0.091
		16QAM		H	5.22	12.57	17.79	0.060
		64QAM		H	5.02	12.57	17.59	0.057
		256QAM		H	3.64	12.57	16.21	0.042
30	3 465.00	π/2 BPSK	1/1	H	7.53	12.70	20.23	0.105
		QPSK		H	5.96	12.70	18.66	0.073
		16QAM		H	5.82	12.70	18.52	0.071
		64QAM		H	4.16	12.70	16.86	0.049
		256QAM		H	1.43	12.70	14.13	0.026
	3 500.01	π/2 BPSK	1/1	H	7.56	12.59	20.15	0.104

		QPSK		H	5.77	12.59	18.36	0.069
		16QAM		H	4.72	12.59	17.31	0.054
		64QAM		H	4.75	12.59	17.34	0.054
		256QAM		H	2.29	12.59	14.88	0.031
	3 534.99	π/2 BPSK	1/1	H	7.56	12.56	20.12	0.103
		QPSK		H	6.66	12.56	19.22	0.084
		16QAM		H	5.58	12.56	18.14	0.065
		64QAM		H	4.82	12.56	17.38	0.055
		256QAM		H	3.22	12.56	15.78	0.038
20	3 460.01	π/2 BPSK	1/1	H	6.89	12.71	19.60	0.091
		QPSK		H	6.14	12.71	18.85	0.077
		16QAM		H	5.71	12.71	18.42	0.070
		64QAM		H	3.76	12.71	16.47	0.044
		256QAM		H	2.29	12.71	15.00	0.032
	3 500.01	π/2 BPSK	1/1	H	6.70	12.59	19.29	0.085
		QPSK		H	5.85	12.59	18.44	0.070
		16QAM		H	4.47	12.59	17.06	0.051
		64QAM		H	4.24	12.59	16.83	0.048
		256QAM		H	2.31	12.59	14.90	0.031
	3 540.00	π/2 BPSK	1/1	H	7.61	12.56	20.17	0.104
		QPSK		H	7.19	12.56	19.75	0.094
		16QAM		H	5.43	12.56	17.99	0.063
		64QAM		H	3.84	12.56	16.40	0.044
		256QAM		H	3.59	12.56	16.15	0.041

3 700 ~ 3 980 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
100	3 750.00	π/2 BPSK	1/1	H	4.95	12.75	17.70	0.059
		QPSK		H	4.16	12.75	16.91	0.049
		16QAM		H	2.79	12.75	15.54	0.036
		64QAM		H	2.33	12.75	15.08	0.032
		256QAM		H	1.78	12.75	14.53	0.028
	3 840.00	π/2 BPSK	1/1	H	4.70	12.70	17.40	0.055
		QPSK		H	4.57	12.70	17.27	0.053
		16QAM		H	2.46	12.70	15.16	0.033
		64QAM		H	1.09	12.70	13.79	0.024
		256QAM		H	0.46	12.70	13.16	0.021

	3 930.00	π/2 BPSK	1/1	H	3.56	12.73	16.29	0.043
		QPSK		H	2.23	12.73	14.96	0.031
		16QAM		H	1.35	12.73	14.08	0.026
		64QAM		H	0.45	12.73	13.18	0.021
		256QAM		H	-0.67	12.73	12.06	0.016
90	3 745.02	π/2 BPSK	1/1	H	5.32	12.75	18.07	0.064
		QPSK		H	4.74	12.75	17.49	0.056
		16QAM		H	4.24	12.75	16.99	0.050
		64QAM		H	3.06	12.75	15.81	0.038
		256QAM		H	1.94	12.75	14.69	0.029
	3 840.00	π/2 BPSK	1/1	H	4.76	12.70	17.46	0.056
		QPSK		H	4.67	12.70	17.37	0.055
		16QAM		H	3.46	12.70	16.16	0.041
		64QAM		H	2.01	12.70	14.71	0.030
		256QAM		H	1.07	12.70	13.77	0.024
	3 934.98	π/2 BPSK	1/1	H	3.40	12.73	16.13	0.041
		QPSK		H	2.19	12.73	14.92	0.031
		16QAM		H	1.42	12.73	14.15	0.026
		64QAM		H	0.48	12.73	13.21	0.021
		256QAM		H	-1.57	12.73	11.16	0.013
80	3 740.01	π/2 BPSK	1/1	H	6.21	12.68	18.89	0.077
		QPSK		H	4.86	12.68	17.54	0.057
		16QAM		H	3.79	12.68	16.47	0.044
		64QAM		H	2.95	12.68	15.63	0.037
		256QAM		H	1.22	12.68	13.90	0.025
	3 840	π/2 BPSK	1/1	H	4.92	12.70	17.62	0.058
		QPSK		H	4.19	12.70	16.89	0.049
		16QAM		H	3.81	12.70	16.51	0.045
		64QAM		H	3.03	12.70	15.73	0.037
		256QAM		H	1.57	12.70	14.27	0.027
	3 939.99	π/2 BPSK	1/1	H	4.98	12.73	17.71	0.059
		QPSK		H	4.05	12.73	16.78	0.048
		16QAM		H	3.31	12.73	16.04	0.040
		64QAM		H	2.21	12.73	14.94	0.031
		256QAM		H	0.38	12.73	13.11	0.020
70	3 735	π/2 BPSK	1/1	H	6.21	12.76	18.97	0.079
		QPSK		H	5.19	12.76	17.95	0.062
		16QAM		H	4.14	12.76	16.90	0.049
		64QAM		H	3.19	12.76	15.95	0.039
		256QAM		H	1.59	12.76	14.35	0.027
	3 840	π/2 BPSK	1/1	H	4.92	12.70	17.62	0.058
		QPSK		H	4.05	12.70	16.75	0.047
		16QAM		H	3.26	12.70	15.96	0.039

		64QAM		H	2.36	12.70	15.06	0.032
		256QAM		H	1.01	12.70	13.71	0.023
		π/2 BPSK		H	4.98	12.74	17.72	0.059
		QPSK		H	4.43	12.74	17.17	0.052
	3 945	16QAM	1/1	H	3.52	12.74	16.26	0.042
		64QAM		H	2.14	12.74	14.88	0.031
		256QAM		H	0.59	12.74	13.33	0.022
		π/2 BPSK		H	5.08	12.76	17.84	0.061
		QPSK		H	4.38	12.76	17.14	0.052
	3 730.02	16QAM	1/1	H	2.97	12.76	15.73	0.037
		64QAM		H	2.27	12.76	15.03	0.032
		256QAM		H	0.44	12.76	13.20	0.021
		π/2 BPSK		H	4.95	12.70	17.65	0.058
		QPSK		H	3.99	12.70	16.69	0.047
60	3 840.00	16QAM	1/1	H	2.77	12.70	15.47	0.035
		64QAM		H	2.24	12.70	14.94	0.031
		256QAM		H	0.86	12.70	13.56	0.023
		π/2 BPSK		H	4.47	12.74	17.21	0.053
		QPSK		H	3.48	12.74	16.22	0.042
	3 949.98	16QAM	1/1	H	2.10	12.74	14.84	0.030
		64QAM		H	1.48	12.74	14.22	0.026
		256QAM		H	0.03	12.74	12.77	0.019
		π/2 BPSK		H	5.96	12.77	18.73	0.075
		QPSK		H	5.21	12.77	17.98	0.063
	3 725.01	16QAM	1/1	H	3.12	12.77	15.89	0.039
		64QAM		H	2.31	12.77	15.08	0.032
		256QAM		H	1.04	12.77	13.81	0.024
		π/2 BPSK		H	4.91	12.70	17.61	0.058
		QPSK		H	3.58	12.70	16.28	0.042
50	3 840.00	16QAM	1/1	H	3.09	12.70	15.79	0.038
		64QAM		H	2.60	12.70	15.30	0.034
		256QAM		H	0.96	12.70	13.66	0.023
		π/2 BPSK		H	4.20	12.75	16.95	0.050
		QPSK		H	3.13	12.75	15.88	0.039
	3 954.99	16QAM	1/1	H	2.13	12.75	14.88	0.031
		64QAM		H	1.41	12.75	14.16	0.026
		256QAM		H	0.11	12.75	12.86	0.019
		π/2 BPSK		H	7.27	12.78	20.05	0.101
		QPSK		H	6.01	12.78	18.79	0.076
40	3 720.00	16QAM	1/1	H	4.24	12.78	17.02	0.050
		64QAM		H	2.89	12.78	15.67	0.037
		256QAM		H	1.66	12.78	14.44	0.028
	3 840.00	π/2 BPSK	1/1	H	7.43	12.70	20.13	0.103

		QPSK		H	6.01	12.70	18.71	0.074
		16QAM		H	4.55	12.70	17.25	0.053
		64QAM		H	3.22	12.70	15.92	0.039
		256QAM		H	1.37	12.70	14.07	0.026
	3 960.00	π/2 BPSK	1/1	H	5.86	12.76	18.62	0.073
		QPSK		H	5.29	12.76	18.05	0.064
		16QAM		H	4.20	12.76	16.96	0.050
		64QAM		H	2.74	12.76	15.50	0.035
		256QAM		H	1.03	12.76	13.79	0.024
30	3 715.02	π/2 BPSK	1/1	H	6.11	12.78	18.89	0.077
		QPSK		H	5.60	12.78	18.38	0.069
		16QAM		H	3.19	12.78	15.97	0.040
		64QAM		H	2.75	12.78	15.53	0.036
		256QAM		H	0.26	12.78	13.04	0.020
	3 840.00	π/2 BPSK	1/1	H	4.84	12.70	17.54	0.057
		QPSK		H	3.38	12.70	16.08	0.041
		16QAM		H	2.85	12.70	15.55	0.036
		64QAM		H	1.93	12.70	14.63	0.029
		256QAM		H	-0.48	12.70	12.22	0.017
	3 964.98	π/2 BPSK	1/1	H	4.56	12.76	17.32	0.054
		QPSK		H	3.23	12.76	15.99	0.040
		16QAM		H	2.97	12.76	15.73	0.037
		64QAM		H	1.73	12.76	14.49	0.028
		256QAM		H	0.85	12.76	13.61	0.023
20	3 710.01	π/2 BPSK	1/1	H	5.86	12.78	18.64	0.073
		QPSK		H	5.31	12.78	18.09	0.064
		16QAM		H	3.95	12.78	16.73	0.047
		64QAM		H	2.19	12.78	14.97	0.031
		256QAM		H	0.44	12.78	13.22	0.021
	3 840.00	π/2 BPSK	1/1	H	4.78	12.70	17.48	0.056
		QPSK		H	3.70	12.70	16.40	0.044
		16QAM		H	2.13	12.70	14.83	0.030
		64QAM		H	1.65	12.70	14.35	0.027
		256QAM		H	0.23	12.70	12.93	0.020
	3 969.99	π/2 BPSK	1/1	H	4.10	12.76	16.86	0.049
		QPSK		H	3.02	12.76	15.78	0.038
		16QAM		H	2.17	12.76	14.93	0.031
		64QAM		H	1.07	12.76	13.83	0.024
		256QAM		H	-0.58	12.76	12.18	0.017

13.3 RADIATED SPURIOUS EMISSIONS

Low Band 77

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Measured Frequency (MHz)	Pol (H/V)	Measured Level (dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
40	3 470.01	π/2 BPSK	1/1	6 903.13	V	-60.33	12.33	-48.00	-13.00	35.00
		QPSK		6 902.80	V	-60.71	12.34	-48.37	-13.00	35.37
		16QAM		6 903.00	V	-60.62	12.33	-48.29	-13.00	35.29
		64QAM		6 903.00	V	-60.41	12.33	-48.08	-13.00	35.08
		256QAM		6 902.67	V	-60.11	12.34	-47.77	-13.00	34.77
	3 500.01	π/2 BPSK	1/1	6 963.07	V	-60.08	12.12	-47.96	-13.00	34.96
		QPSK		6 963.20	V	-60.19	12.12	-48.07	-13.00	35.07
		16QAM		6 963.20	V	-59.86	12.12	-47.74	-13.00	34.74
		64QAM		6 962.93	V	-60.01	12.12	-47.89	-13.00	34.89
		256QAM		6 963.40	V	-60.07	12.12	-47.95	-13.00	34.95
	3 529.98	π/2 BPSK	1/1	7 022.67	V	-60.53	11.95	-48.58	-13.00	35.58
		QPSK		7 022.87	V	-60.71	11.95	-48.76	-13.00	35.76
		16QAM		7 022.73	V	-60.51	11.95	-48.56	-13.00	35.56
		64QAM		7 023.00	V	-60.52	11.95	-48.57	-13.00	35.57
		256QAM		7 022.87	V	-60.31	11.95	-48.36	-13.00	35.36

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Measured Frequency (MHz)	Pol (H/V)	Measured Level (dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
40	3 500.01	π/2 BPSK	1/1	6 903.13	V	-60.33	12.33	-48.00	-13.00	35.00
		QPSK		6 902.80	V	-60.71	12.34	-48.37	-13.00	35.37
		16QAM		6 903.00	V	-60.62	12.33	-48.29	-13.00	35.29
		64QAM		6 903.00	V	-60.41	12.33	-48.08	-13.00	35.08
		256QAM		6 902.67	V	-60.11	12.34	-47.77	-13.00	34.77

Upper Band 77

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Measured Frequency (MHz)	Pol (H/V)	Measured Level (dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
70	3 735.00	π/2 BPSK	1/1	7 402.80	V	-58.87	11.50	-47.37	-13.00	34.37
		QPSK		7 402.87	V	-59.13	11.50	-47.63	-13.00	34.63
		16QAM		7 402.60	V	-59.06	11.50	-47.56	-13.00	34.56
		64QAM		7 403.27	V	-59.00	11.50	-47.50	-13.00	34.50
		256QAM		7 403.20	V	-58.98	11.50	-47.48	-13.00	34.48
	3 840.00	π/2 BPSK	1/1	7 613.07	V	-59.33	11.91	-47.42	-13.00	34.42
		QPSK		7 613.07	V	-58.48	11.91	-46.57	-13.00	33.57
		16QAM		7 612.80	V	-58.94	11.91	-47.03	-13.00	34.03
		64QAM		7 612.93	V	-58.87	11.91	-46.96	-13.00	33.96
		256QAM		7 613.00	V	-58.51	11.91	-46.60	-13.00	33.60
	3 945.00	π/2 BPSK	1/1	7 812.80	V	-59.00	12.06	-46.94	-13.00	33.94
		QPSK		7 813.07	V	-58.75	12.06	-46.69	-13.00	33.69
		16QAM		7 812.73	V	-58.97	12.06	-46.91	-13.00	33.91
		64QAM		7 812.88	V	-59.07	12.06	-47.01	-13.00	34.01
		256QAM		7 813.27	V	-59.25	12.06	-47.19	-13.00	34.19

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Measured Frequency (MHz)	Pol (H/V)	Measured Level (dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
70	3 840.00	π/2 BPSK	1/1	7 405.44	V	-61.06	11.91	-49.15	-13.00	36.15
		QPSK		7 410.00	V	-60.84	11.91	-48.93	-13.00	35.93
		16QAM		7 404.76	V	-61.12	11.91	-49.21	-13.00	36.21
		64QAM		7 406.44	V	-60.37	11.91	-48.46	-13.00	35.46
		256QAM		7 413.20	V	-60.99	11.91	-49.08	-13.00	36.08

13.4 FREQUENCY STABILITY

Operting Frequency :	3 500.01 MHz
Reference Voltage :	3.90 Vd.c.
Deviatin Limit :	Emission must remain in Band

Voltage (%)	Power (Vdc)	Temperature (℃)	Frequency (Hz)	Deviation (%)
100	3.90	+20 ℃(Ref)	3500.009.992	-0.000000229
100		-20	3500.009.980	-0.000000571
100		-10	3500.009.998	-0.000000057
100		0	3500.009.997	-0.000000086
100		10	3500.009.989	-0.000000314
100		20	3500.009.989	-0.000000314
100		30	3500.010.001	0.000000029
100		40	3500.009.998	-0.000000057
100		50	3500.009.990	-0.000000286
85	3.315	20	3500.009.988	-0.000000343
115	4.485	20	3500.009.983	-0.000000486

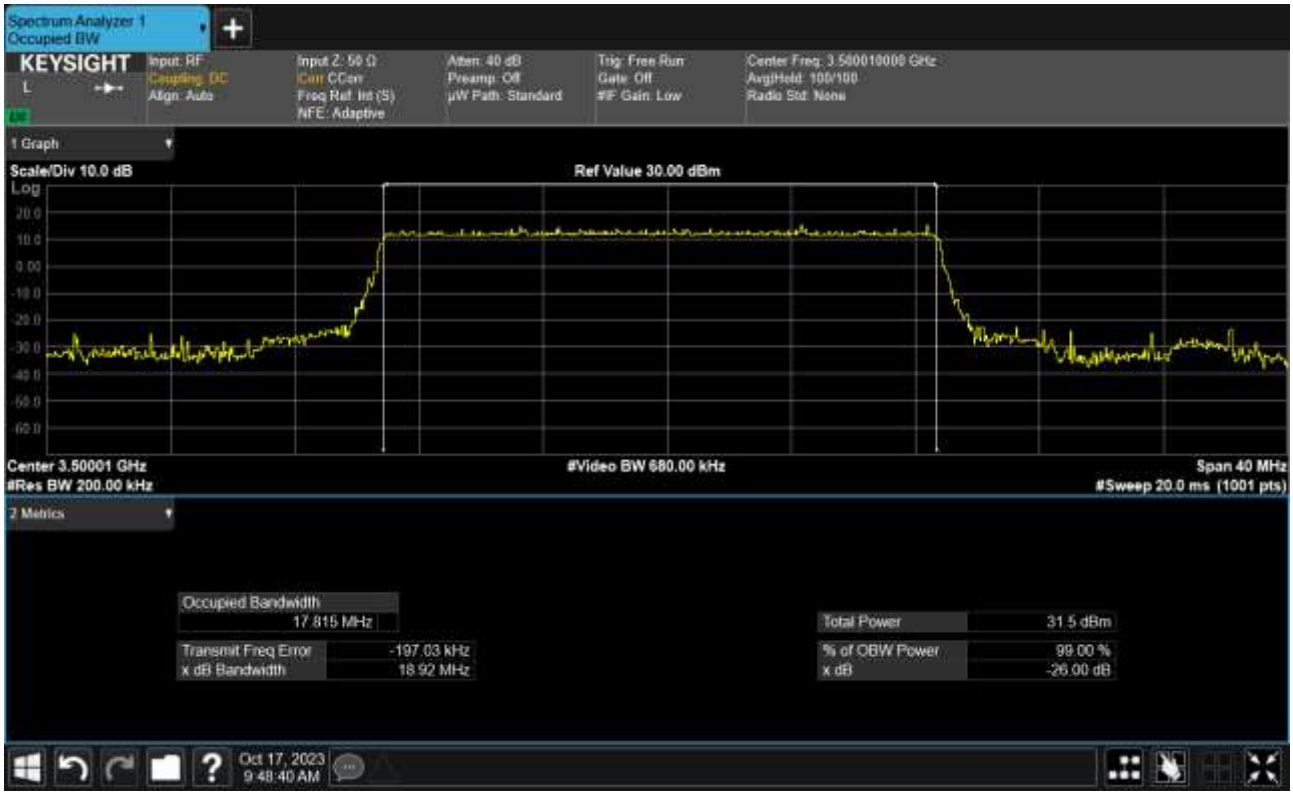
Operting Frequency :	3 840.00 MHz
Reference Voltage :	3.90 Vd.c.
Deviatin Limit :	Emission must remain in Band

Voltage (%)	Power (Vdc)	Temperature (℃)	Frequency (Hz)	Deviation (%)
100	3.90	+20 ℃(Ref)	3 839.999.992	-0.000000208
100		-20	3 839.999.997	-0.000000078
100		-10	3 839.999.975	-0.000000651
100		**0**	3 840.000.005	0.000000130
100		10	3 839.999.996	-0.000000104
100		20	3 839.999.987	-0.000000339
100		30	3 840.000.002	0.000000052
100		40	3 839.999.986	-0.000000365
100		50	3 839.999.984	-0.000000417
85	3.315	20	3 839.999.982	-0.000000469
115	4.485	20	3 840.000.011	0.000000286

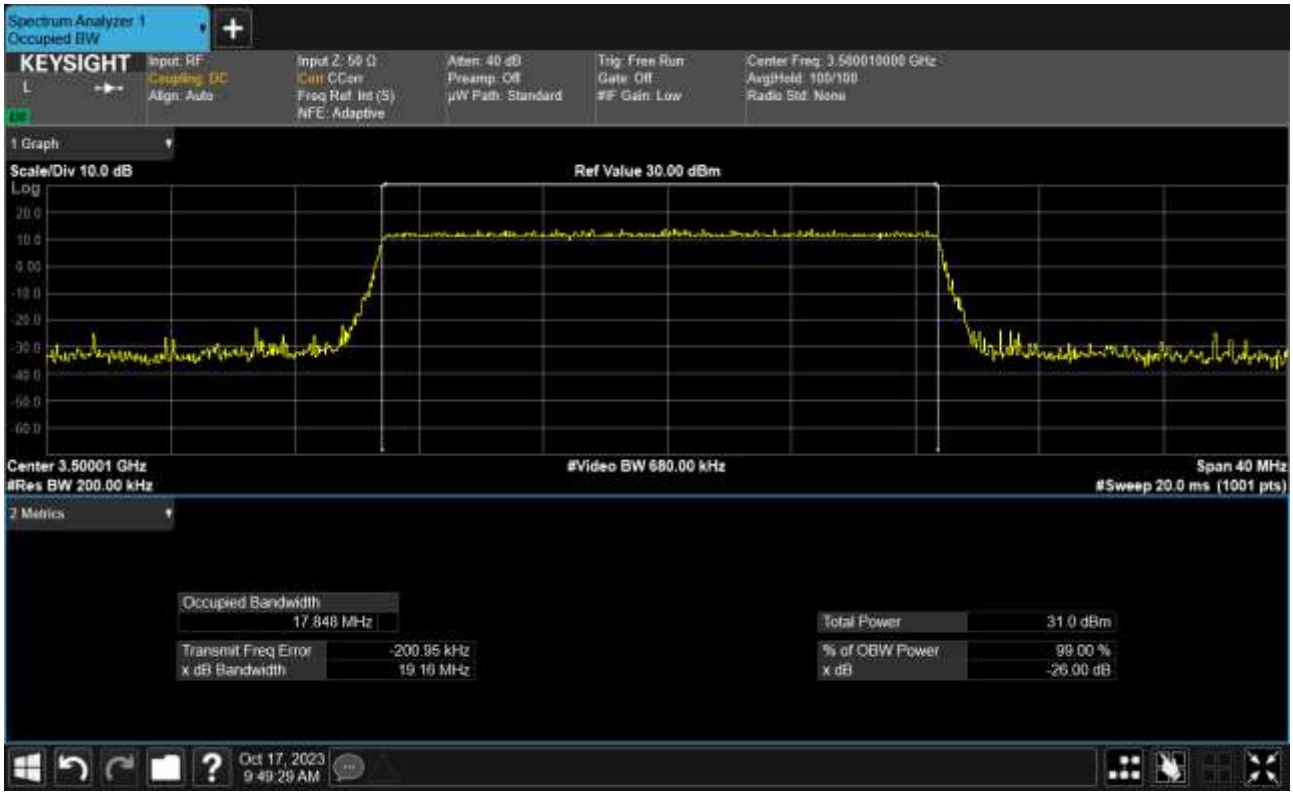
13.5 OCCUPIED BANDWIDTH

All modes of operation were investigated, and the worst-case configuration results are reported in this section.

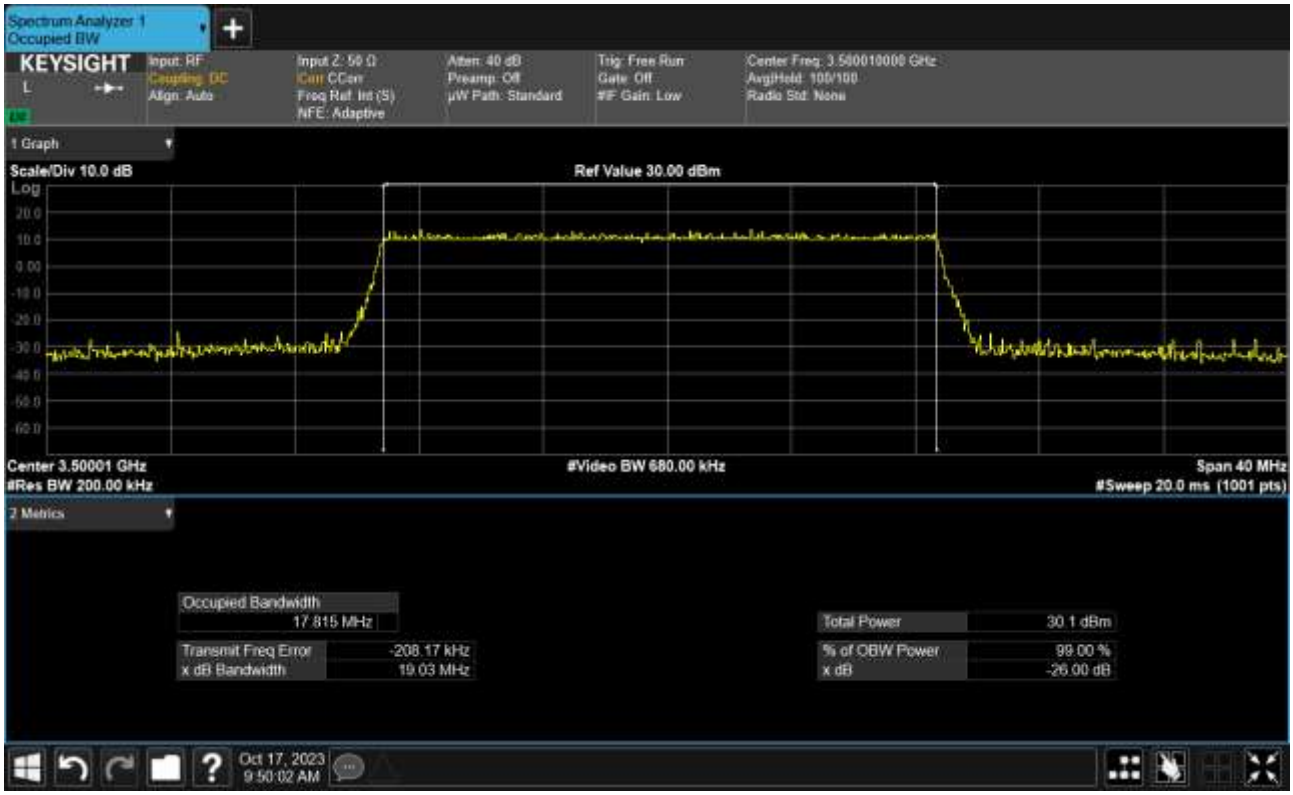
Low BAND 77 Occupied Bandwidth Plot (20 MHz, 3 500.01 MHz, BPSK, Full RB)



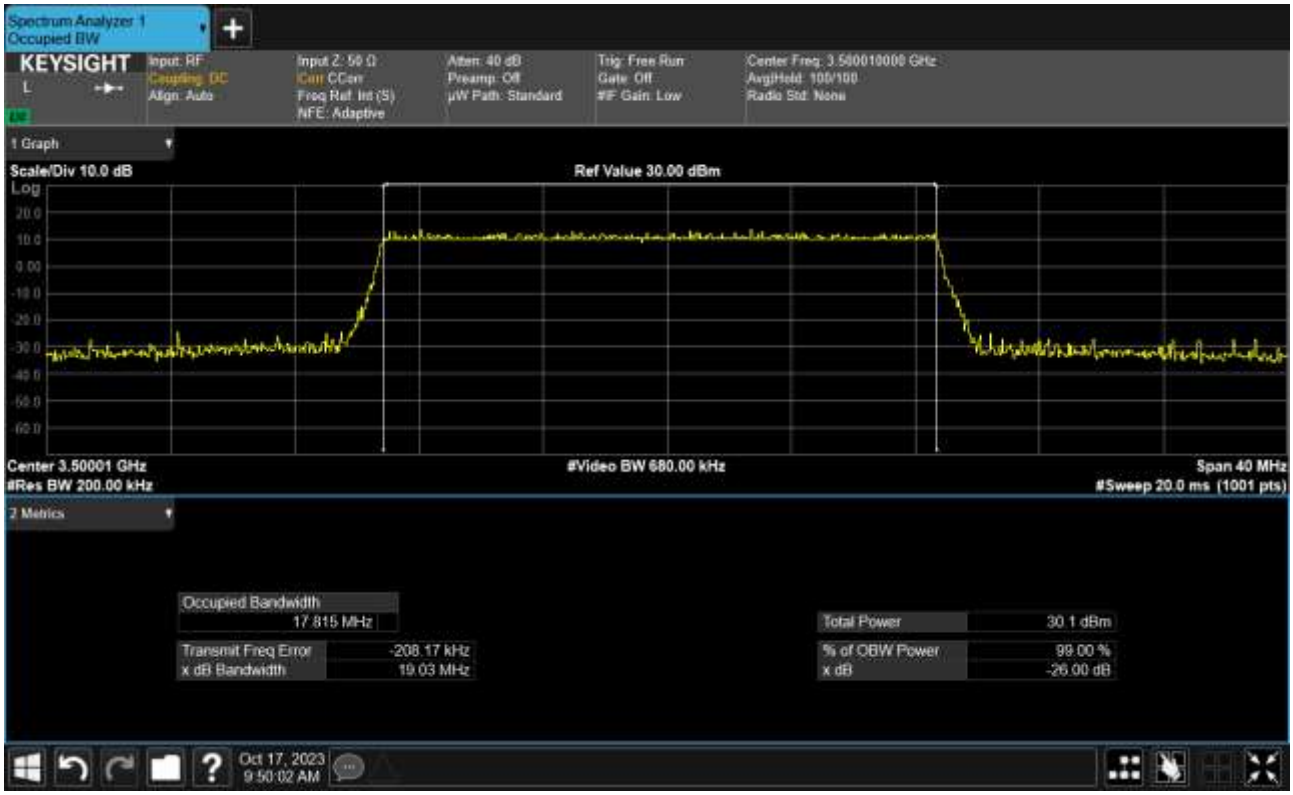
Low BAND 77 Occupied Bandwidth Plot (20 MHz, 3 500.01 MHz, QPSK, Full RB)



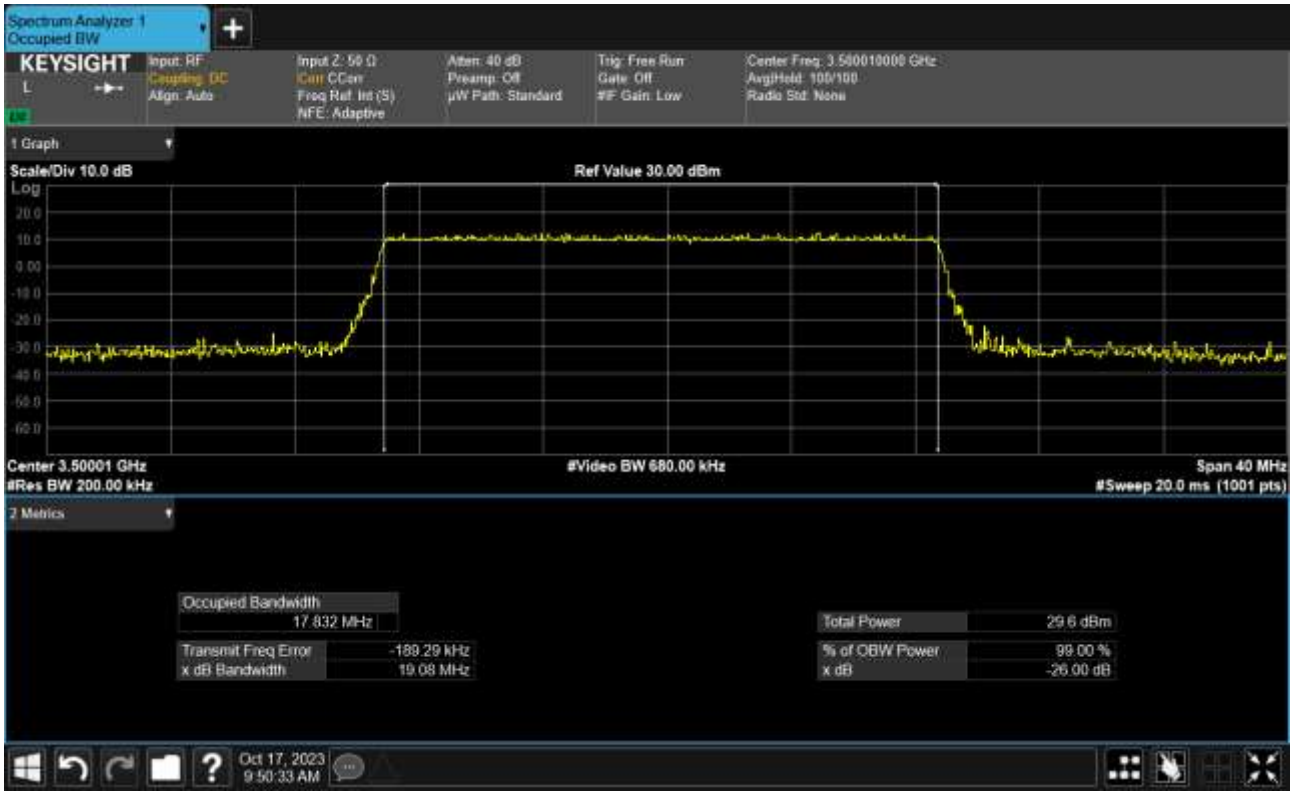
Low BAND 77 Occupied Bandwidth Plot (20 MHz, 3 500.01 MHz, 16QAM, Full RB)



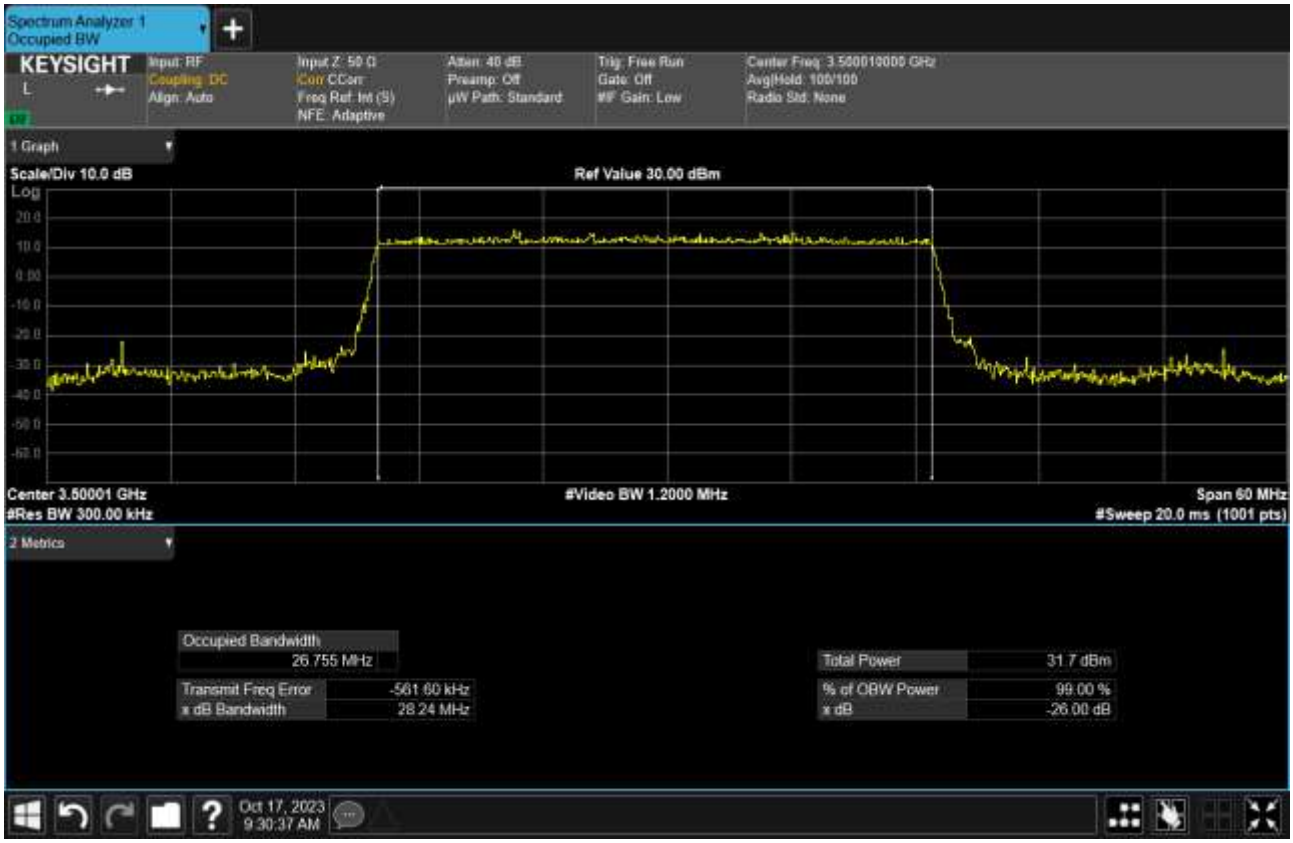
Low BAND 77 Occupied Bandwidth Plot (20 MHz, 3 500.01 MHz, 64QAM, Full RB)



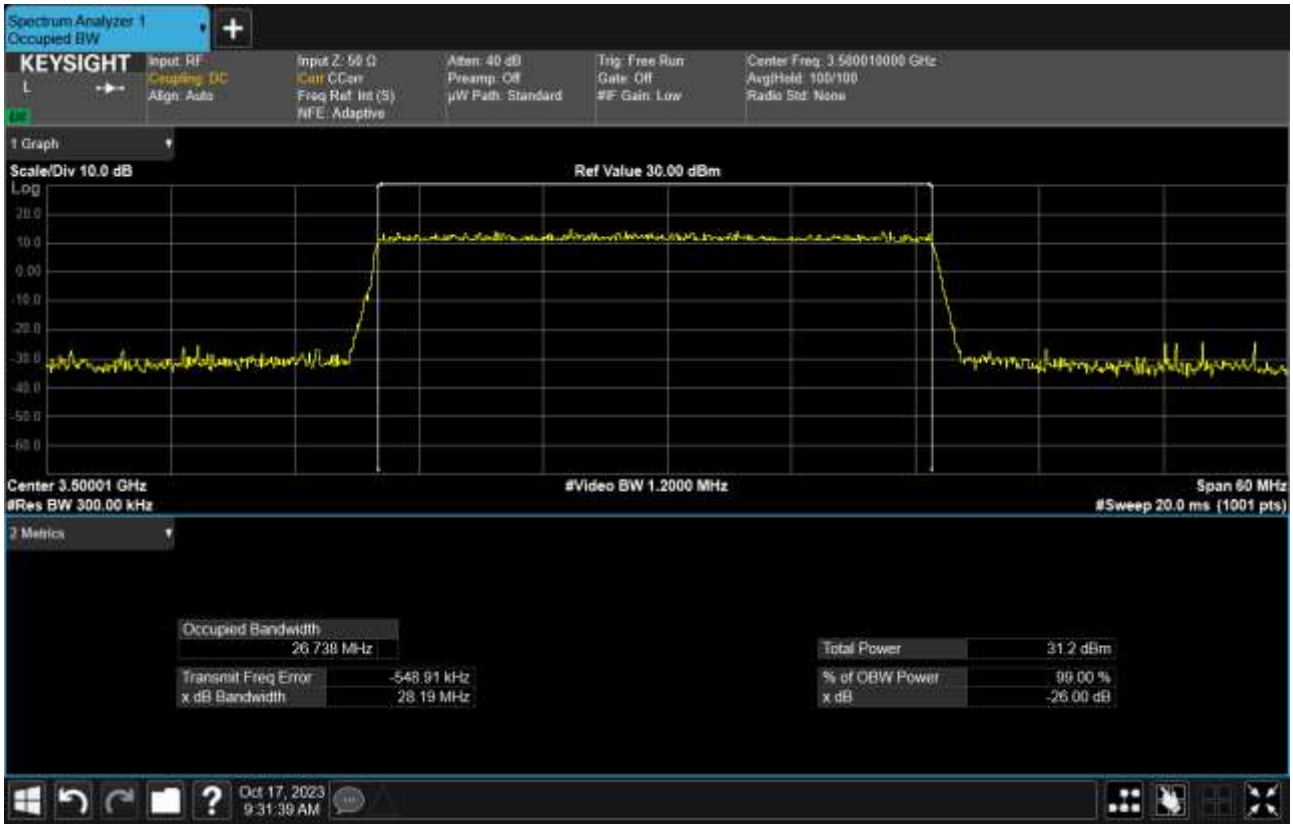
Low BAND 77 Occupied Bandwidth Plot (20 MHz, 3 500.01 MHz, 256QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (30 MHz, 3 500.01 MHz, BPSK, Full RB)

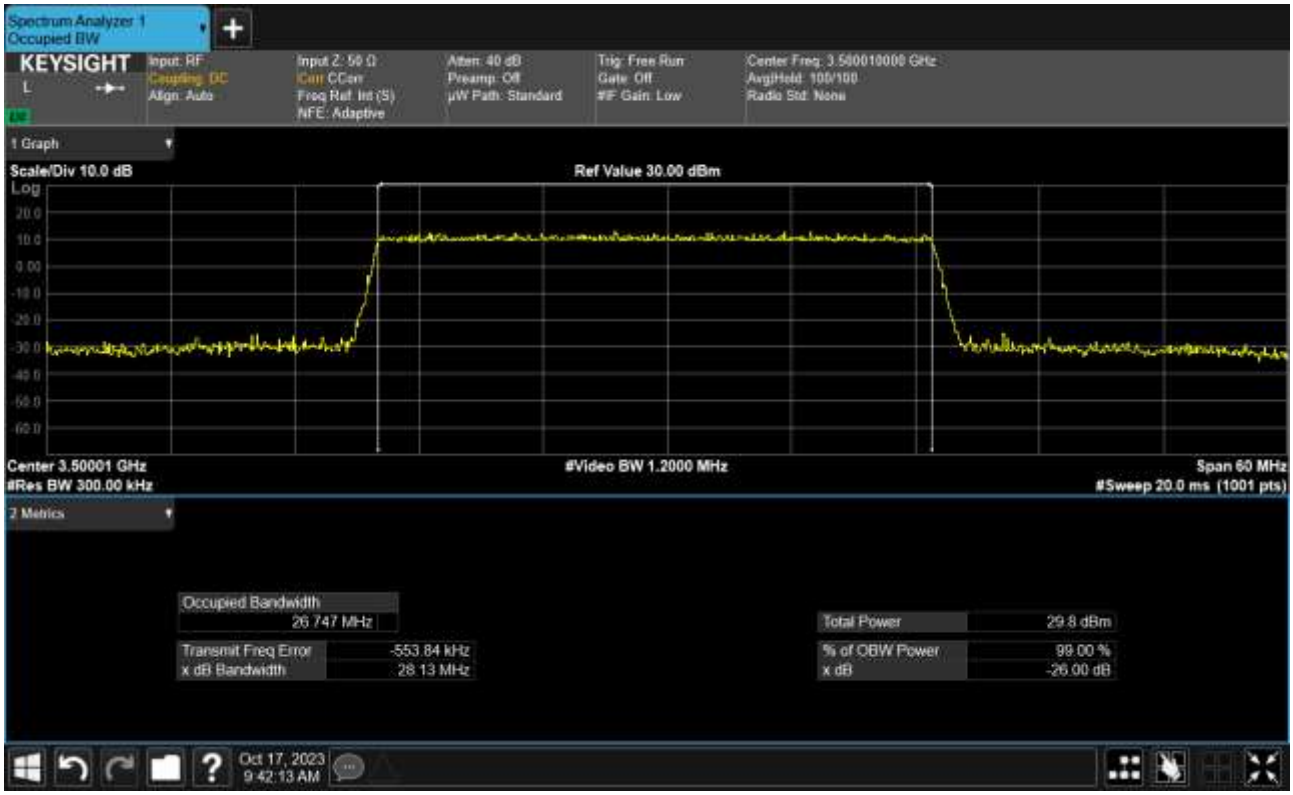


Low BAND 77 Occupied Bandwidth Plot (30 MHz, 3 500.01 MHz, QPSK, Full RB)

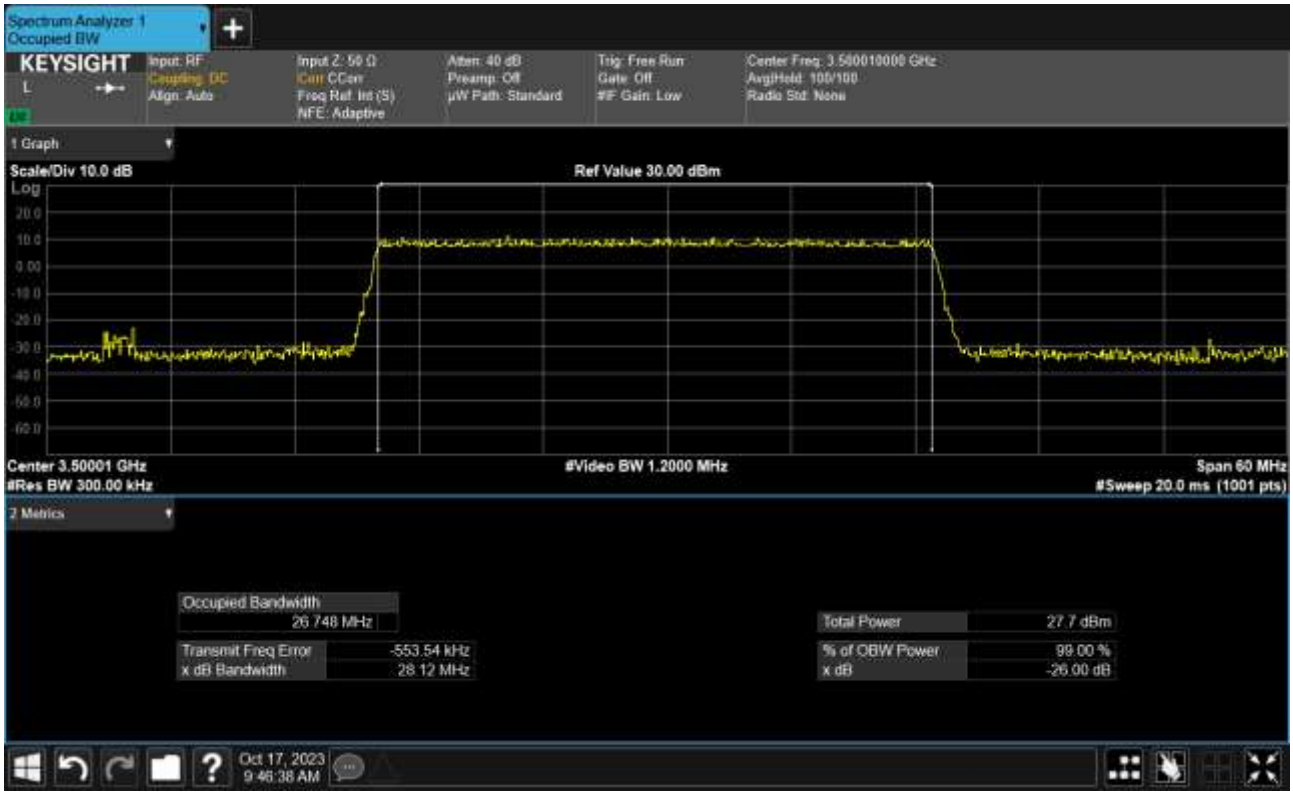


Low BAND 77 Occupied Bandwidth Plot (30 MHz, 3 500.01 MHz, 16QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (30 MHz, 3 500.01 MHz, 64QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (30 MHz, 3 500.01 MHz, 256QAM, Full RB)



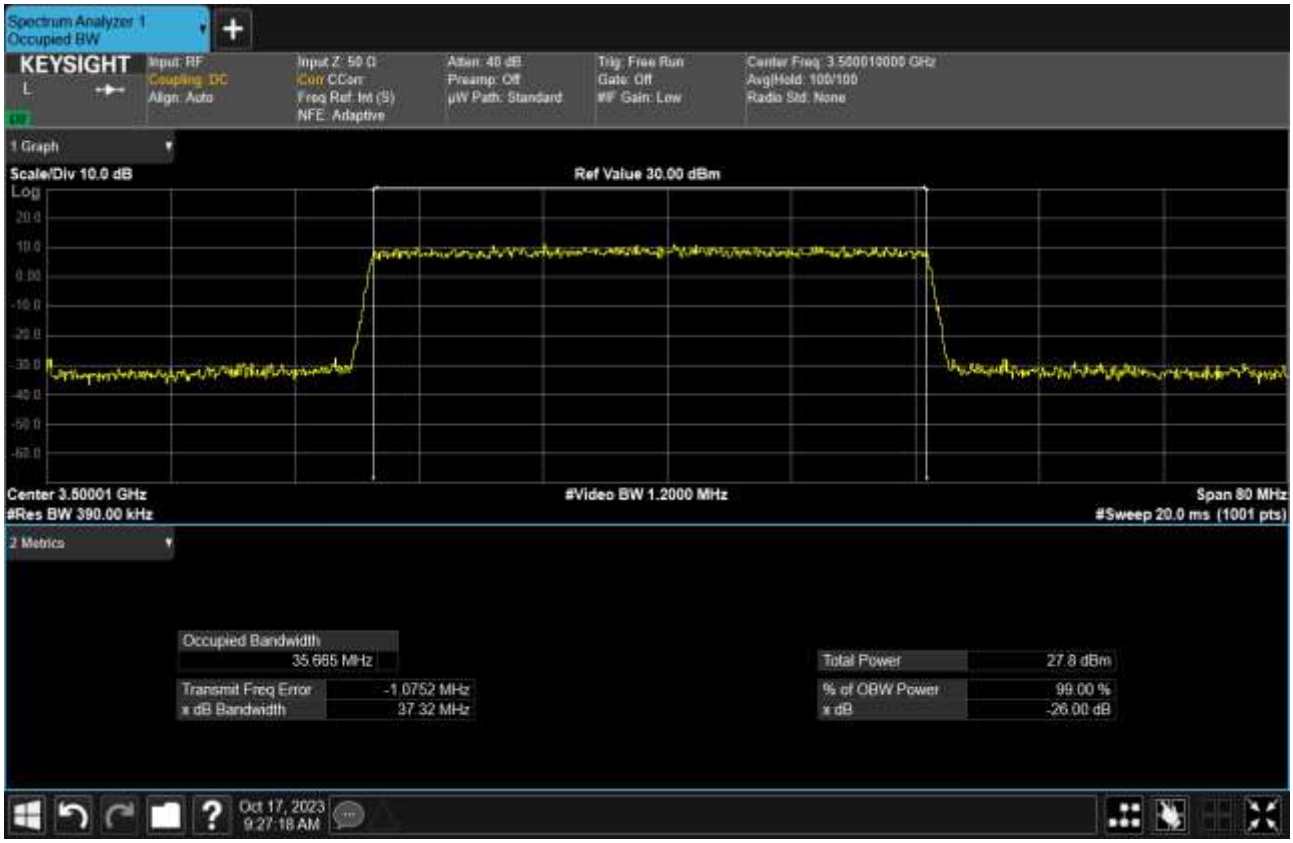
Low BAND 77 Occupied Bandwidth Plot (40 MHz, 3 500.01 MHz, BPSK, Full RB)

Low BAND 77 Occupied Bandwidth Plot (40 MHz, 3 500.01 MHz, QPSK, Full RB)

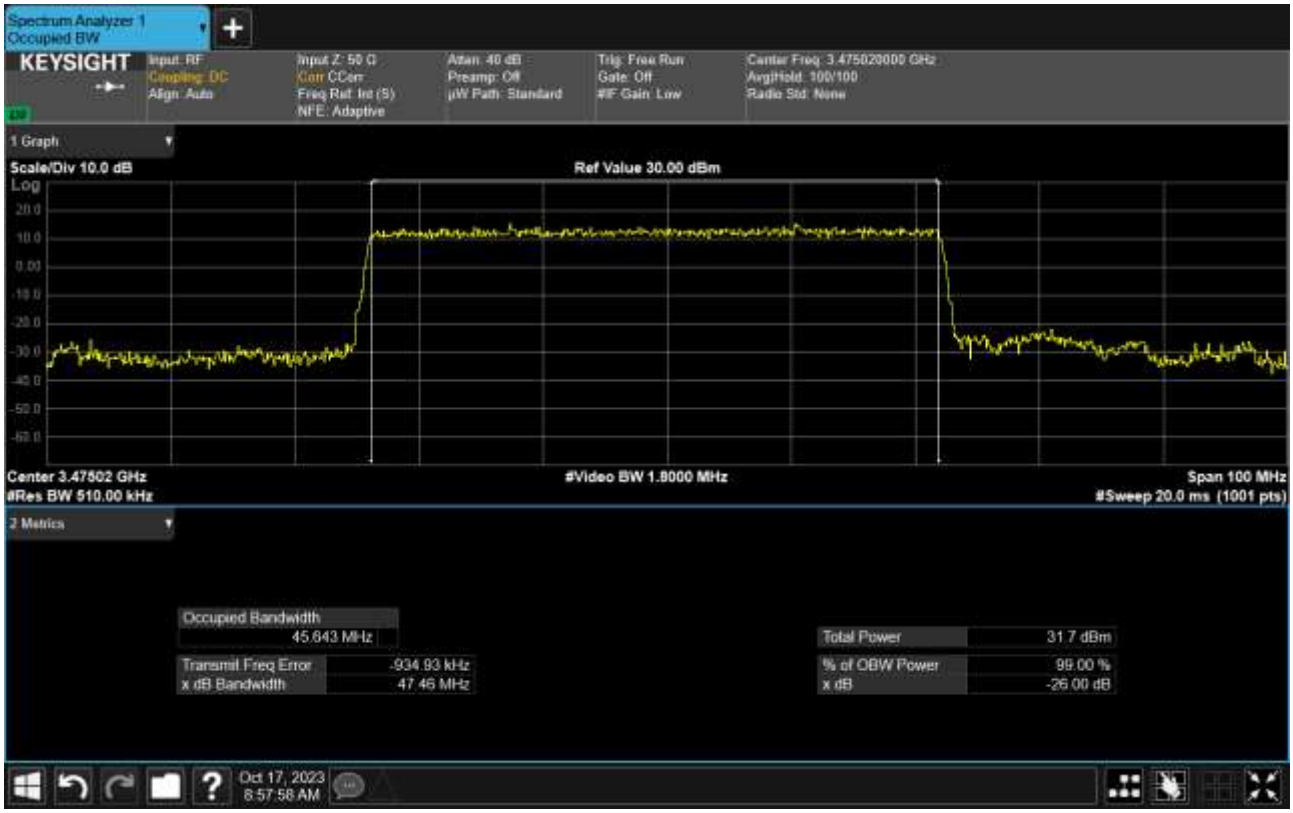
Low BAND 77 Occupied Bandwidth Plot (40 MHz, 3 500.01 MHz, 16QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (40 MHz, 3 500.01 MHz, 64QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (40 MHz, 3 500.01 MHz, 256QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (50 MHz, 3 475.02 MHz, BPSK, Full RB)



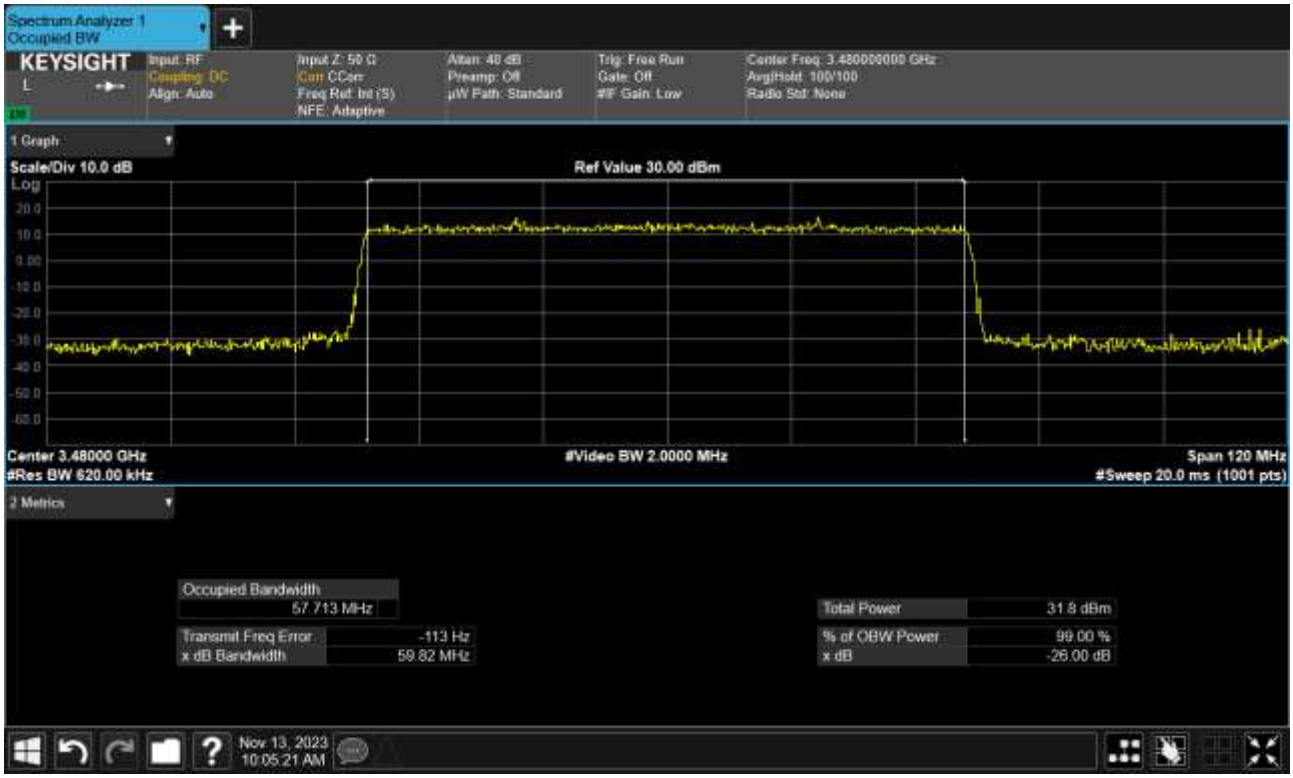
Low BAND 77 Occupied Bandwidth Plot (50 MHz, 3 475.02 MHz, QPSK, Full RB)

Low BAND 77 Occupied Bandwidth Plot (50 MHz, 3 475.02 MHz, 16QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (50 MHz, 3 475.02 MHz, 64QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (50 MHz, 3 475.02 MHz, 256QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (60 MHz, 3 480.00 MHz, BPSK, Full RB)



Low BAND 77 Occupied Bandwidth Plot (60 MHz, 3 480.00 MHz, QPSK, Full RB)

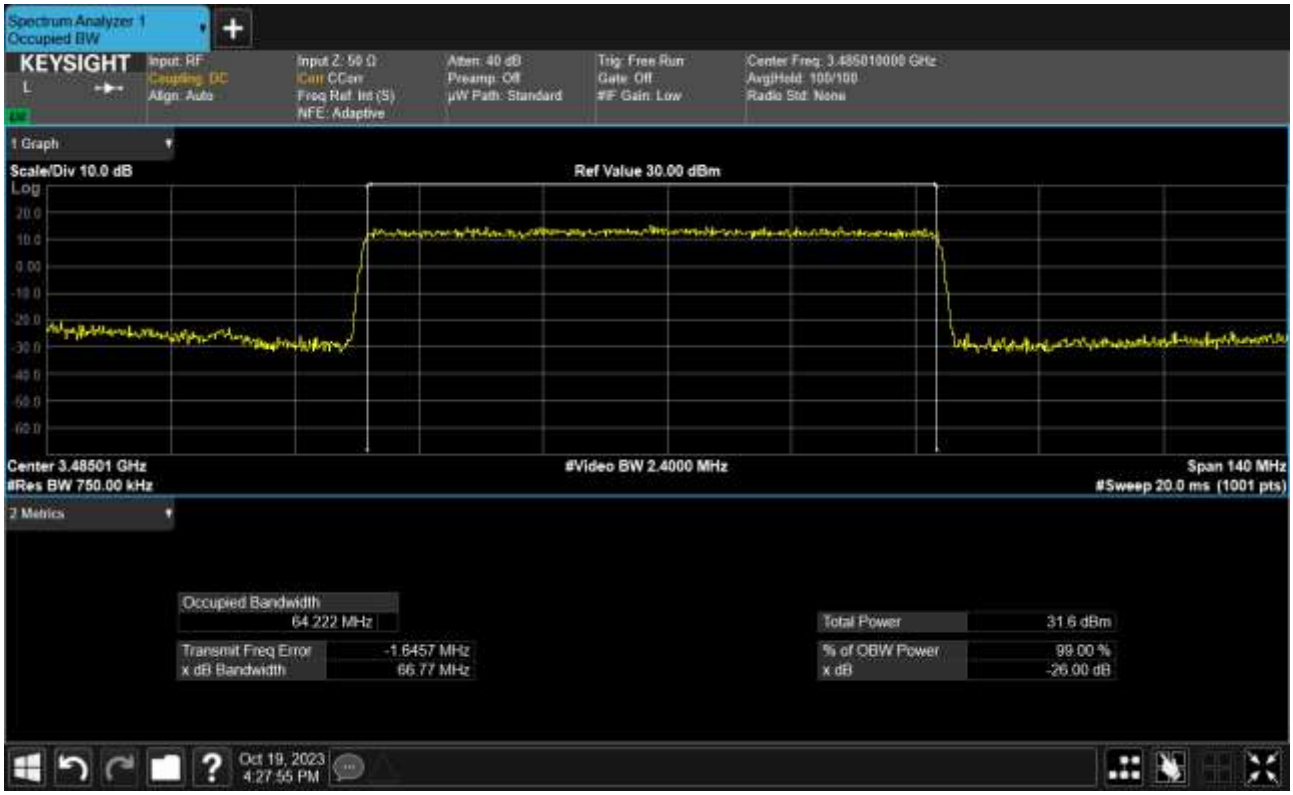
Low BAND 77 Occupied Bandwidth Plot (60 MHz, 3 480.00 MHz, 16QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (60 MHz, 3 480.00 MHz, 64QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (60 MHz, 3 480.00 MHz, 256QAM, Full RB)

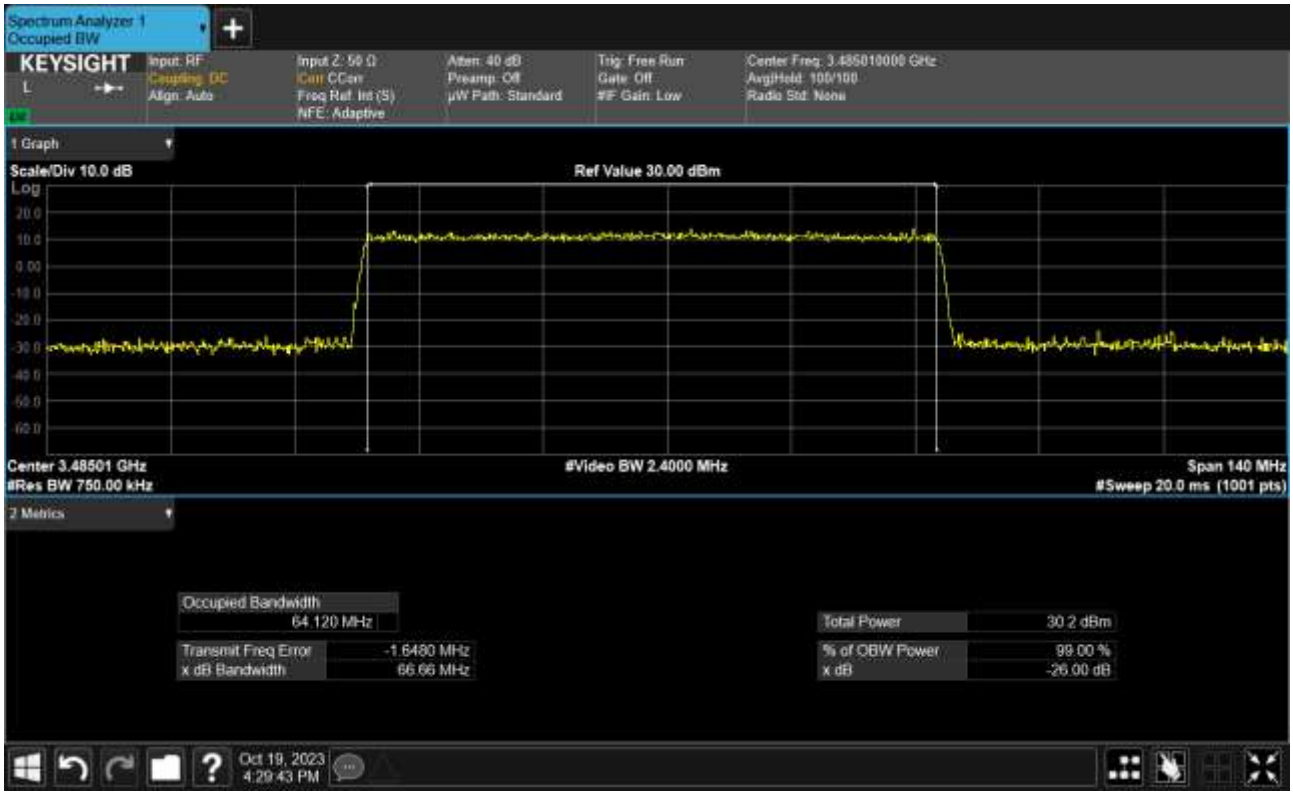
Low BAND 77 Occupied Bandwidth Plot (70 MHz, 3 485.01 MHz, BPSK, Full RB)

Low BAND 77 Occupied Bandwidth Plot (70 MHz, 3 485.01 MHz, QPSK, Full RB)

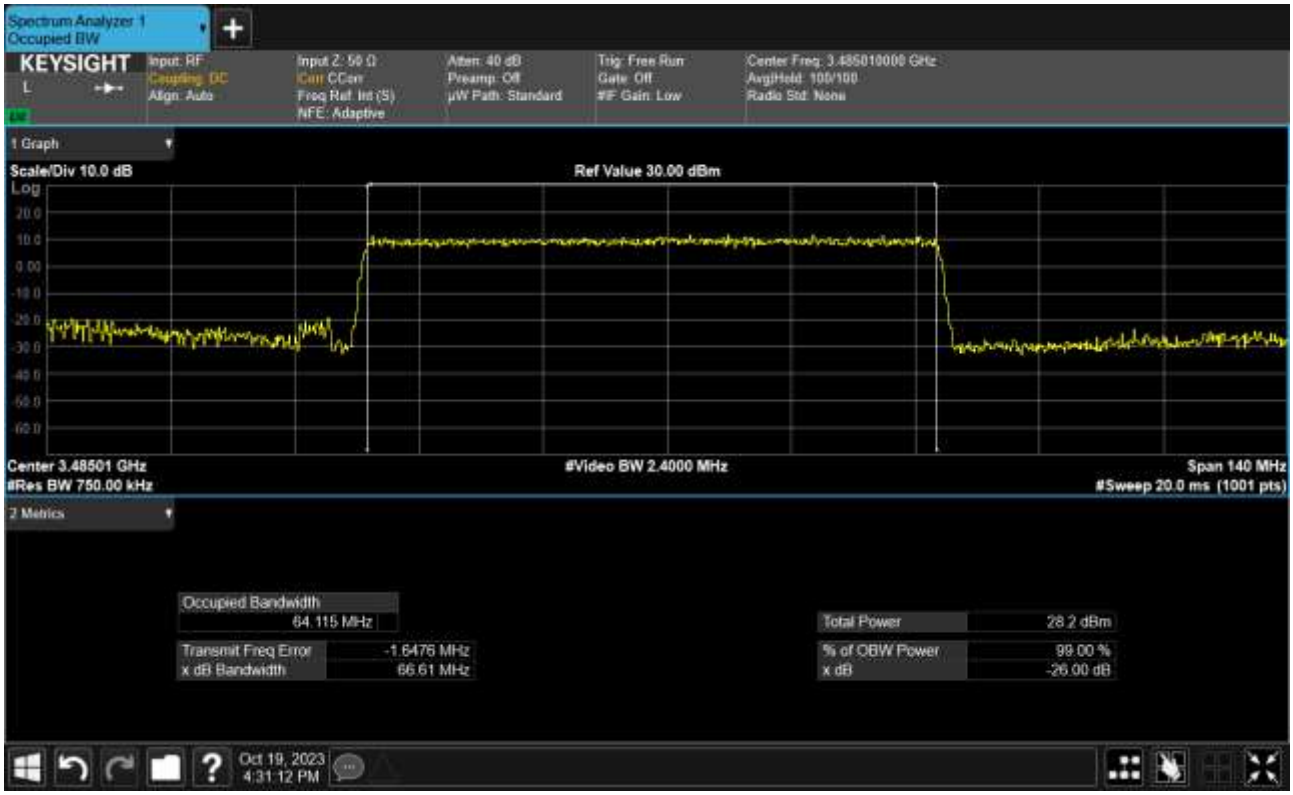


Low BAND 77 Occupied Bandwidth Plot (70 MHz, 3 485.01 MHz, 16QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (70 MHz, 3 485.01 MHz, 64QAM, Full RB)



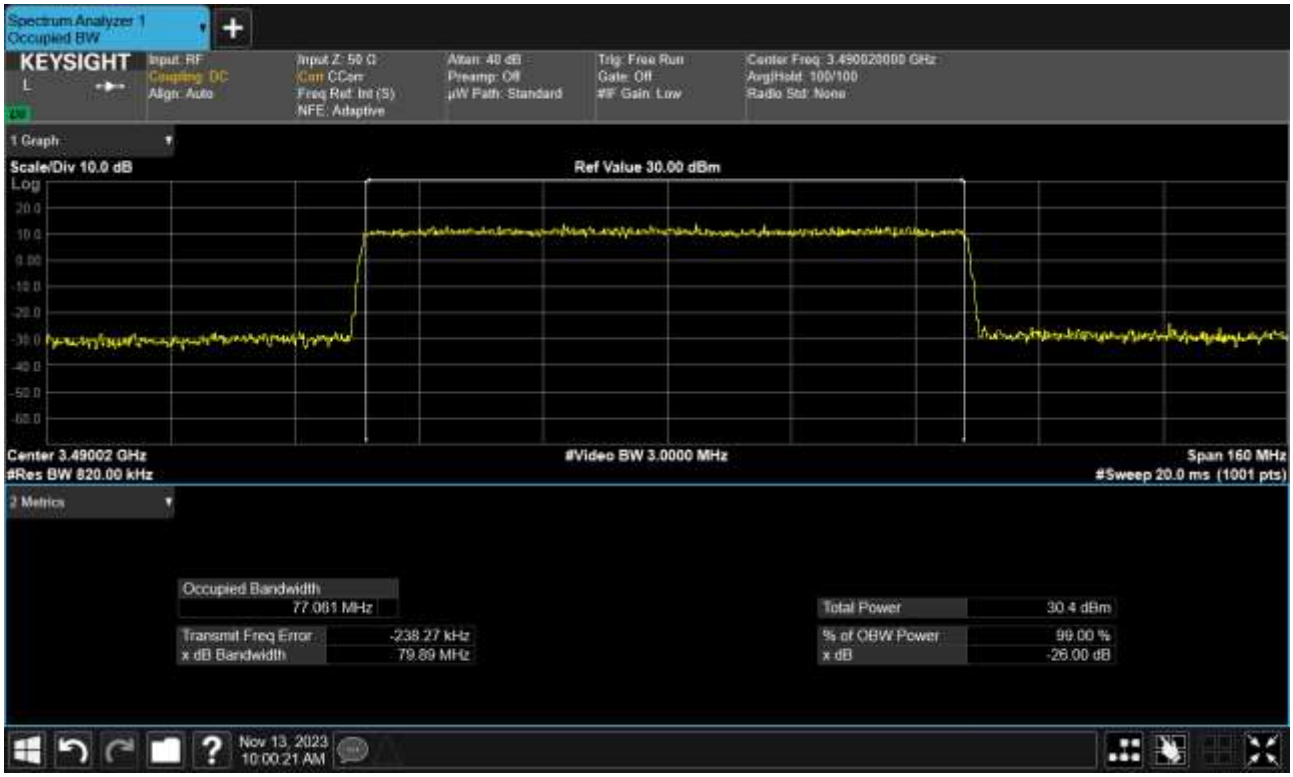
Low BAND 77 Occupied Bandwidth Plot (70 MHz, 3 485.01 MHz, 256QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (80 MHz, 3 490.02 MHz, BPSK, Full RB)

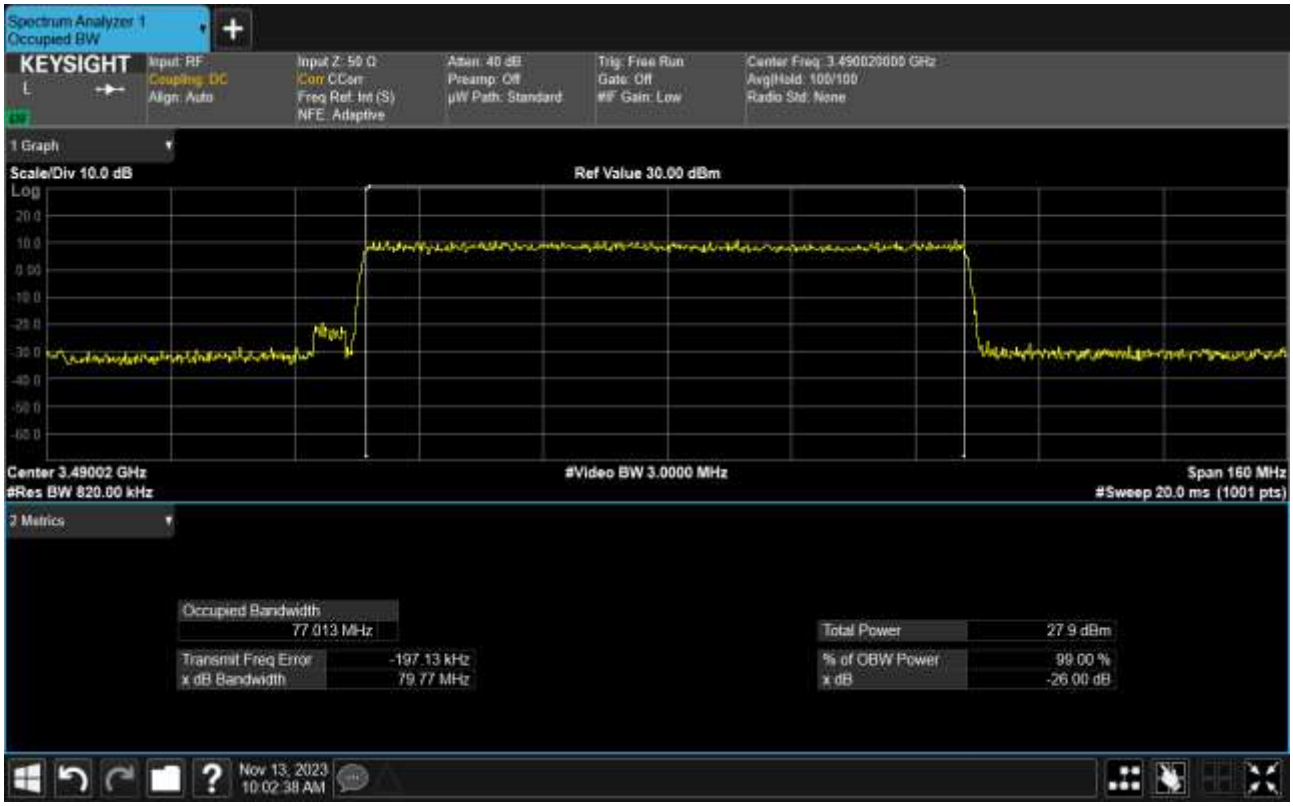
Low BAND 77 Occupied Bandwidth Plot (80 MHz, 3 490.02 MHz, QPSK, Full RB)

Low BAND 77 Occupied Bandwidth Plot (80 MHz, 3 490.02 MHz, 16QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (80 MHz, 3 490.02 MHz, 64QAM, Full RB)

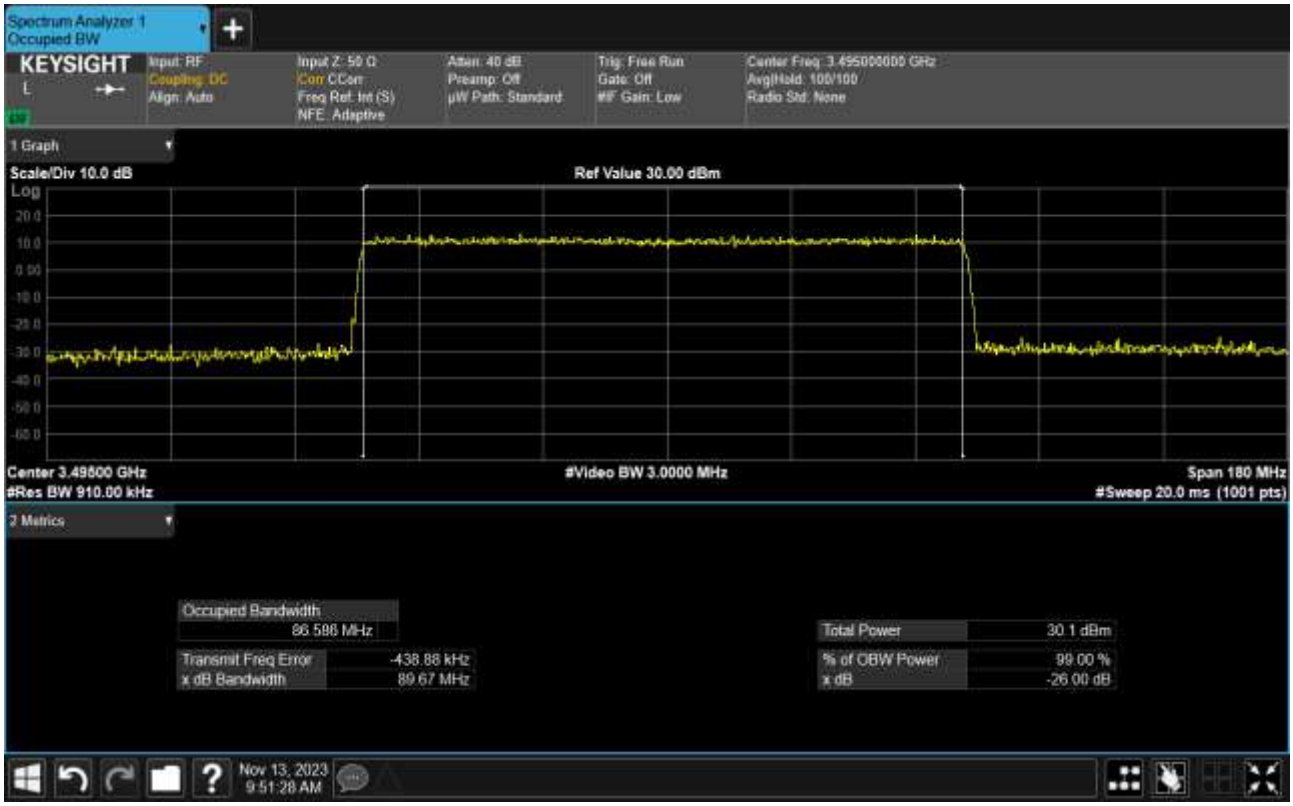
Low BAND 77 Occupied Bandwidth Plot (80 MHz, 3 490.02 MHz, 256QAM, Full RB)



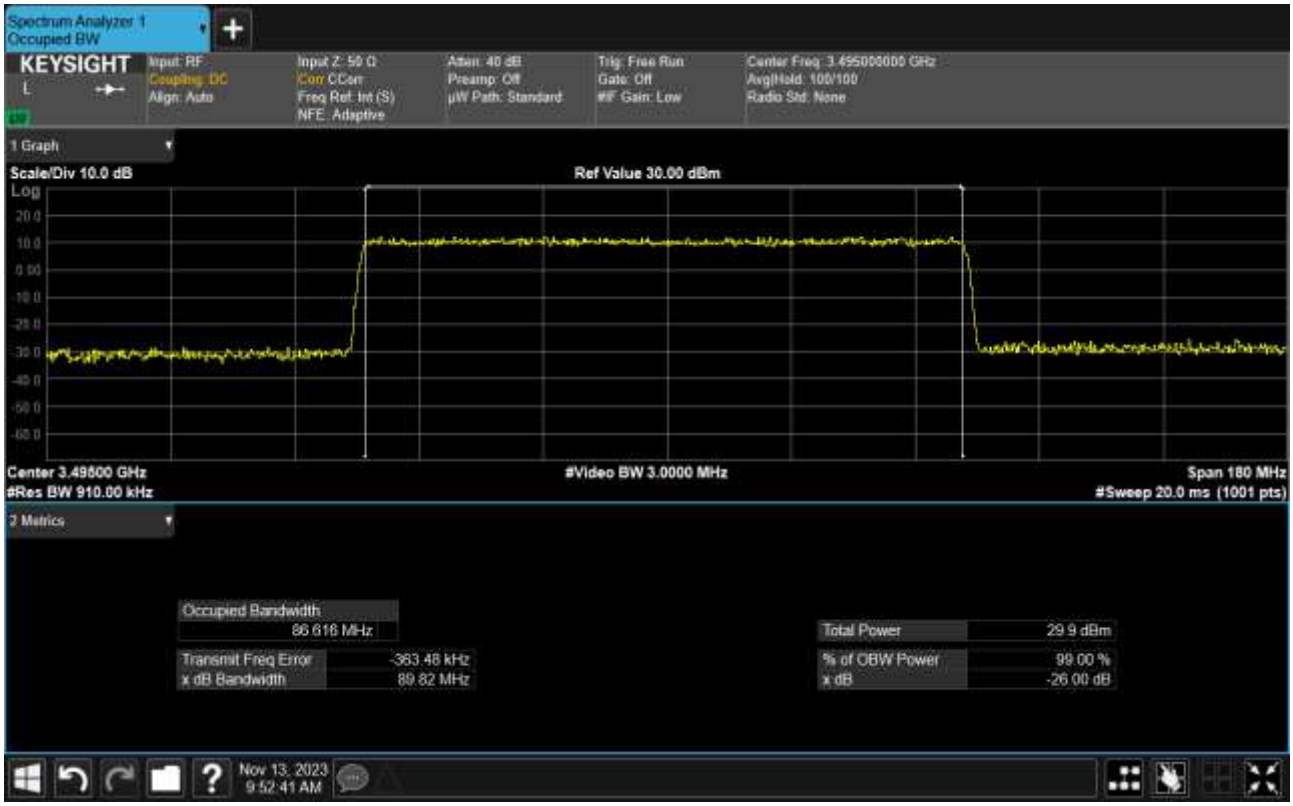
Low BAND 77 Occupied Bandwidth Plot (90 MHz, 3 495.00 MHz, BPSK, Full RB)

Low BAND 77 Occupied Bandwidth Plot (90 MHz, 3 495.00 MHz, QPSK, Full RB)

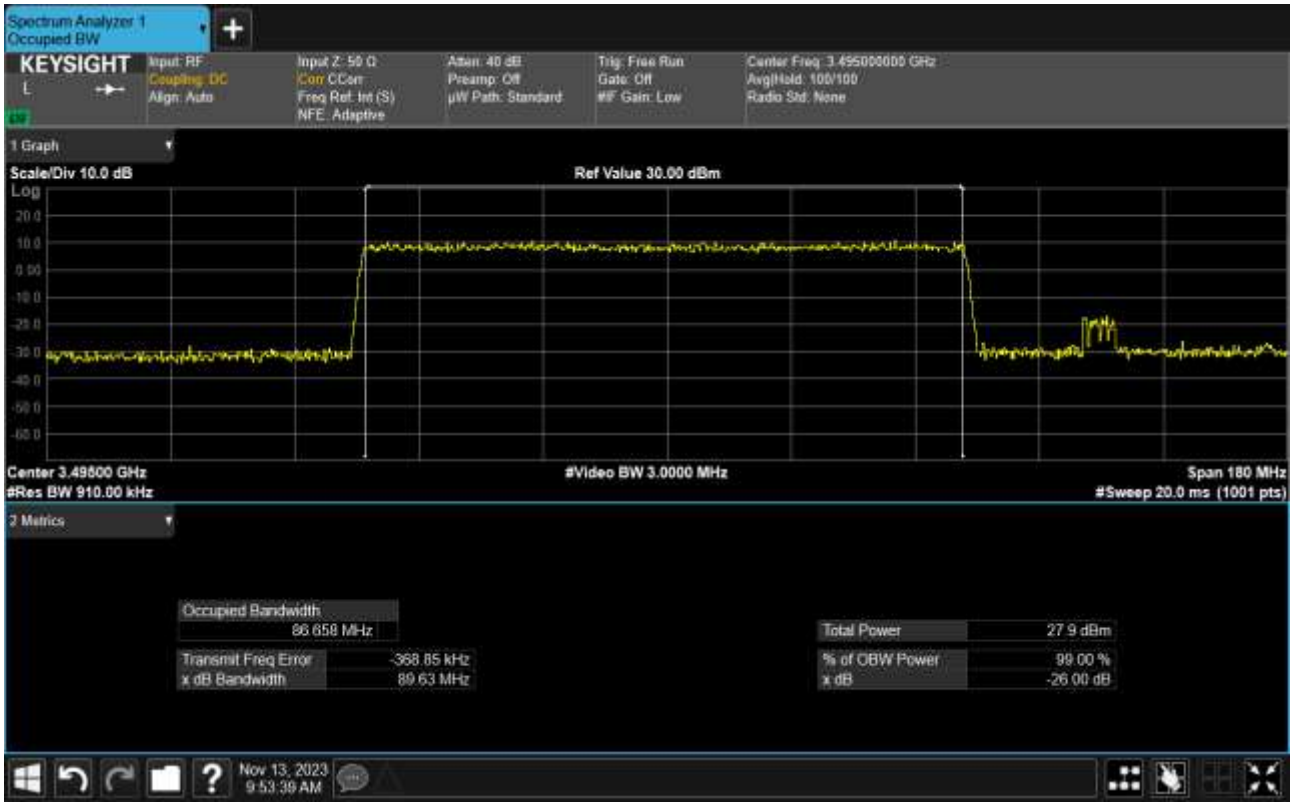
Low BAND 77 Occupied Bandwidth Plot (90 MHz, 3 495.00 MHz, 16QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (90 MHz, 3 495.00 MHz, 64QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (90 MHz, 3 495.00 MHz, 256QAM, Full RB)



Low BAND 77 Occupied Bandwidth Plot (100 MHz, 3 500.01 MHz, BPSK, Full RB)

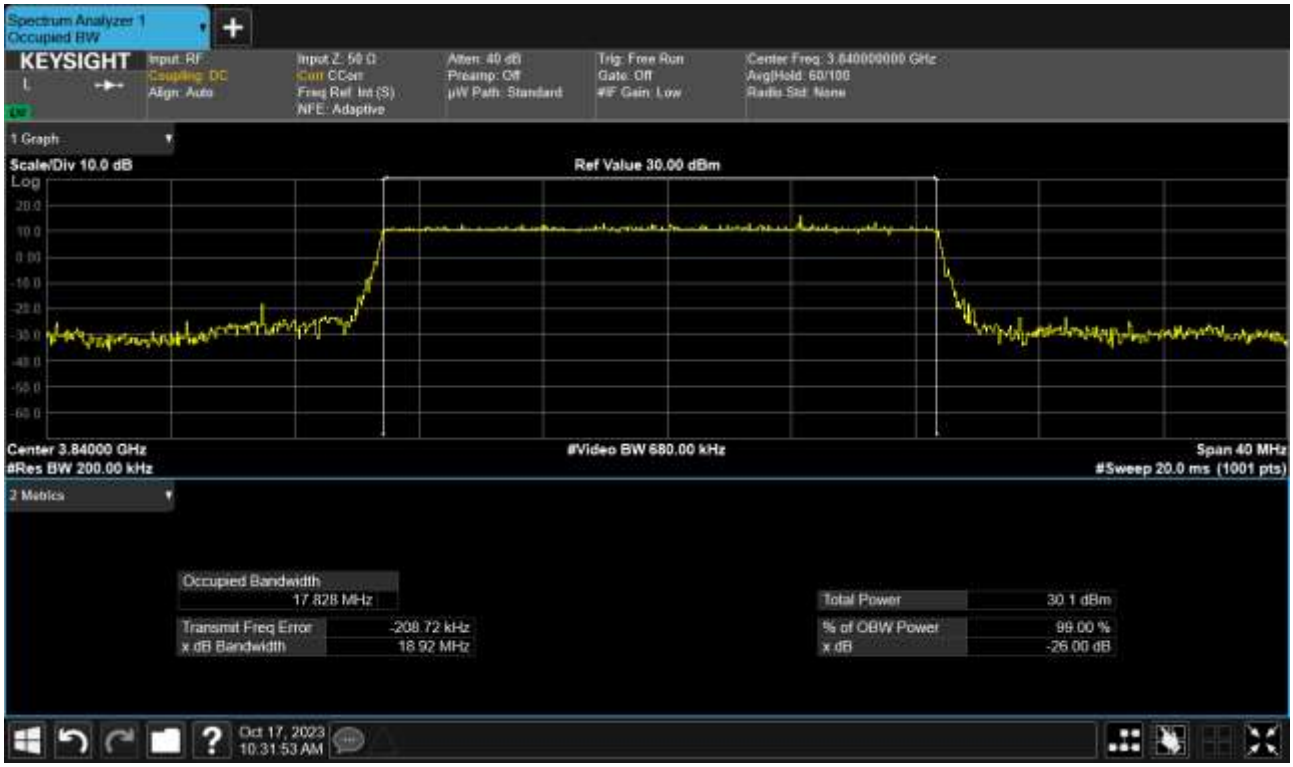
Low BAND 77 Occupied Bandwidth Plot (100 MHz, 3 500.01 MHz, QPSK, Full RB)

Low BAND 77 Occupied Bandwidth Plot (100 MHz, 3 500.01 MHz, 16QAM, Full RB)

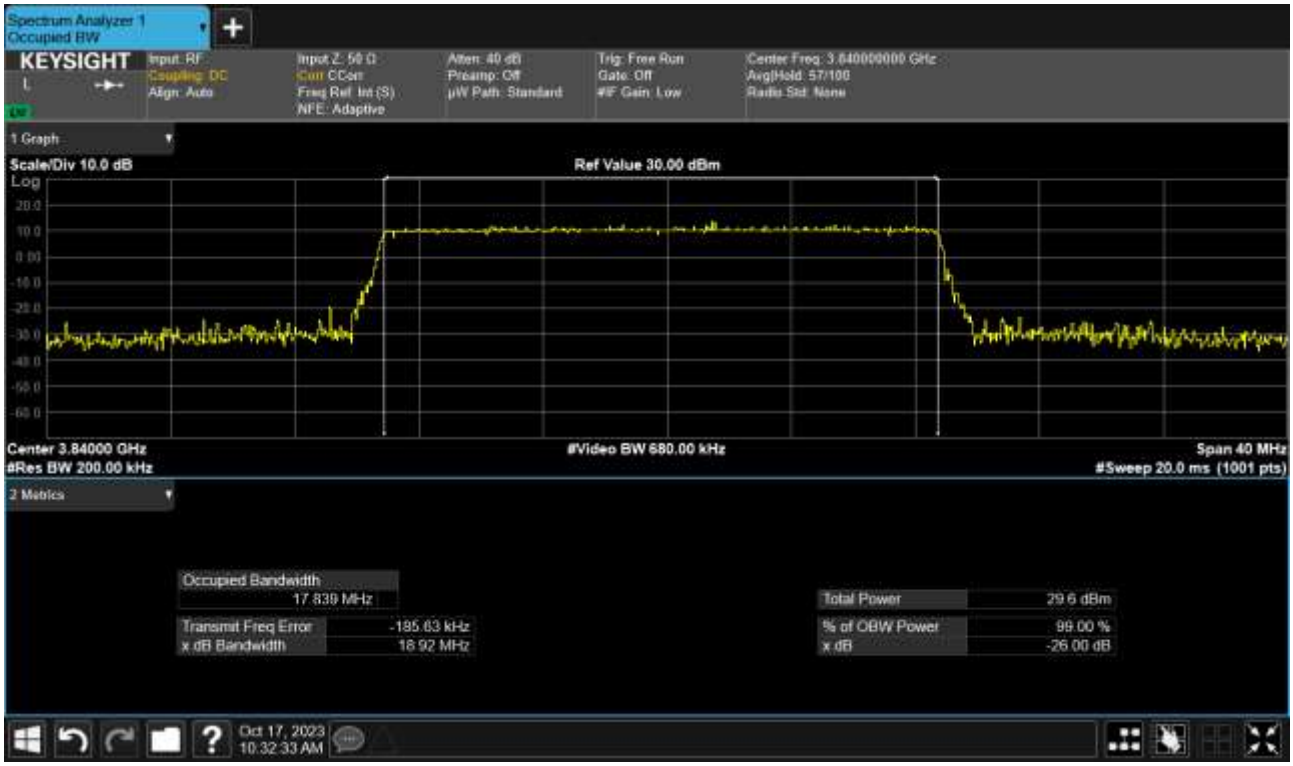
Low BAND 77 Occupied Bandwidth Plot (100 MHz, 3 500.01 MHz, 64QAM, Full RB)

Low BAND 77 Occupied Bandwidth Plot (100 MHz, 3 500.01 MHz, 256QAM, Full RB)

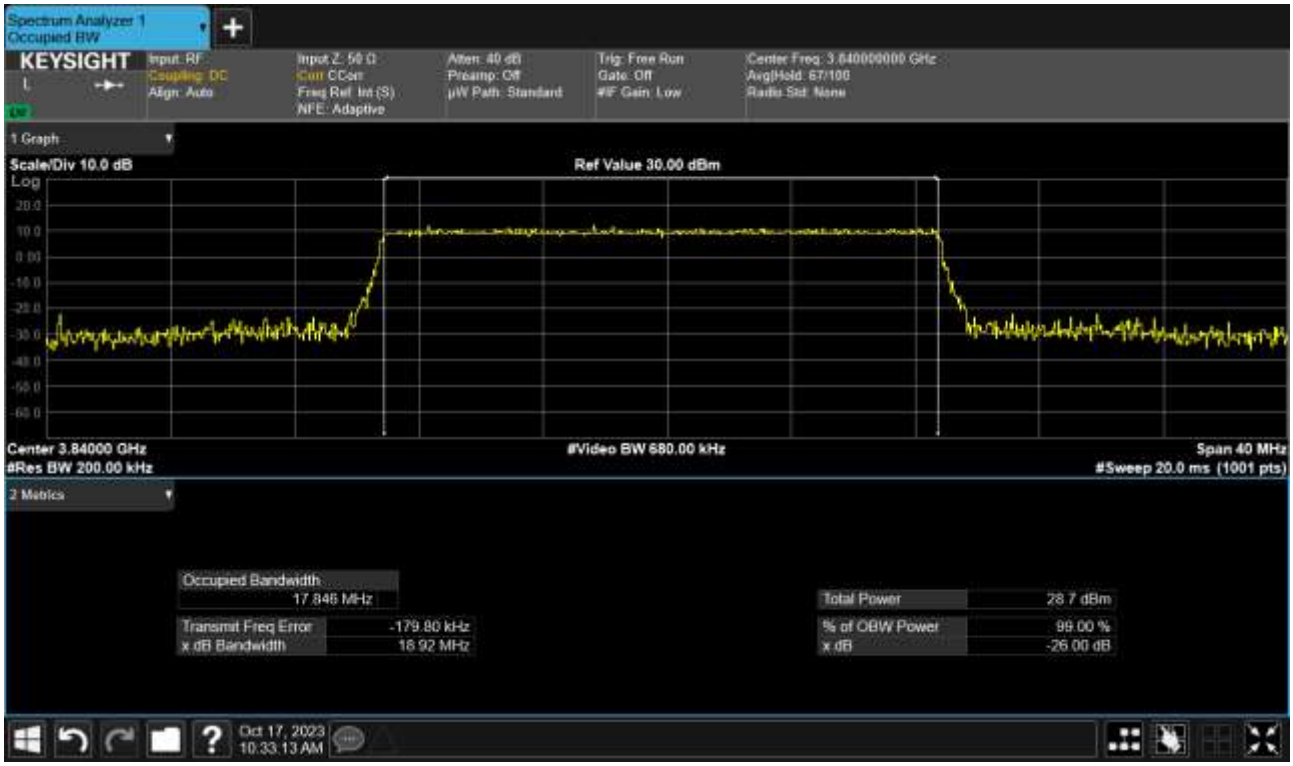
Upper BAND 77 Occupied Bandwidth Plot (20 MHz, 3 840.00 MHz, BPSK, Full RB)



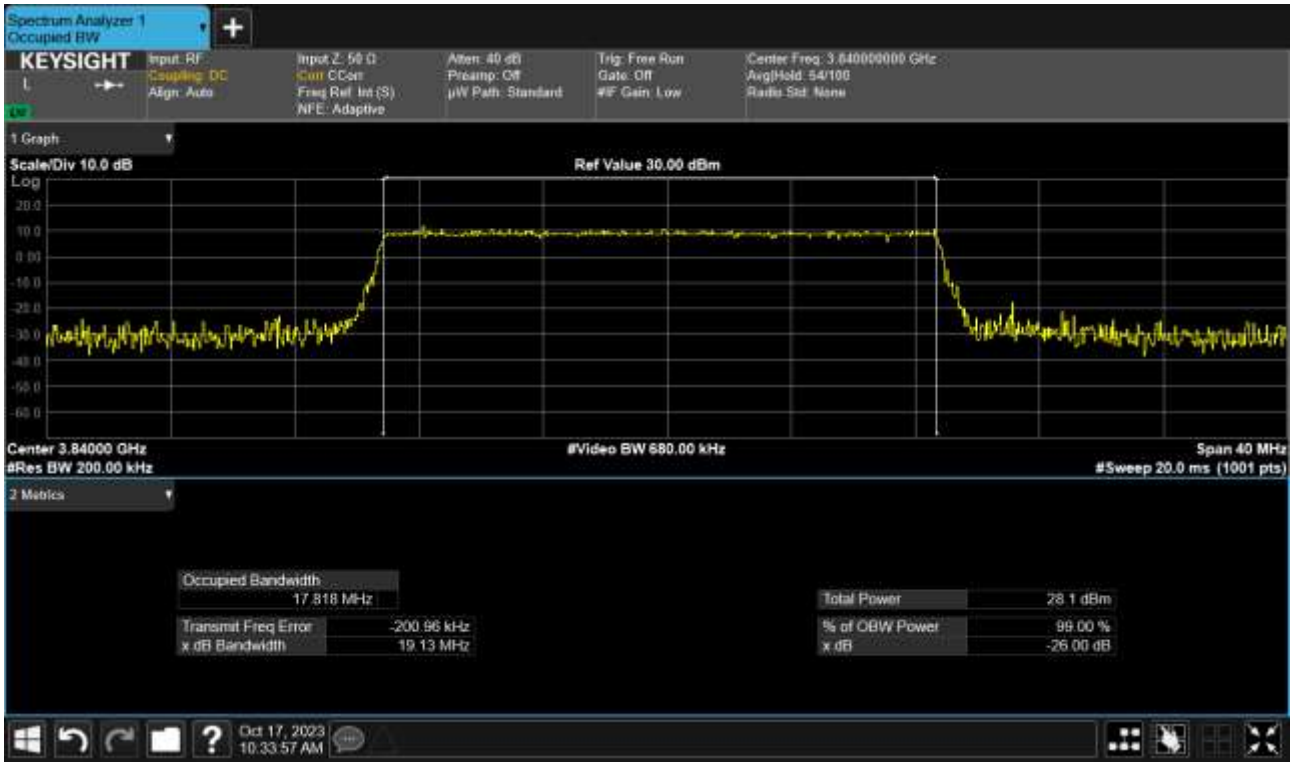
Upper BAND 77 Occupied Bandwidth Plot (20 MHz, 3 840.00 MHz, QPSK, Full RB)



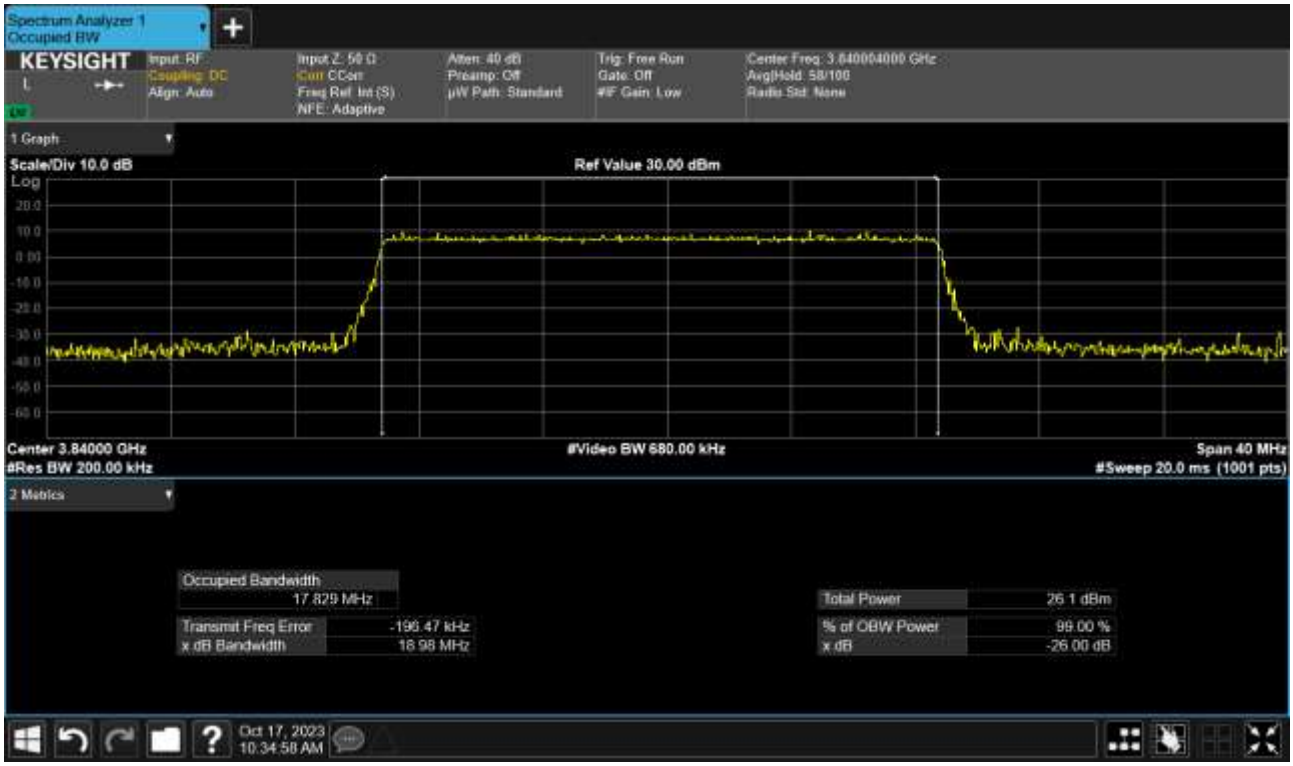
Upper BAND 77 Occupied Bandwidth Plot (20 MHz, 3 840.00 MHz, 16QAM, Full RB)



Upper BAND 77 Occupied Bandwidth Plot (20 MHz, 3 840.00 MHz, 64QAM, Full RB)

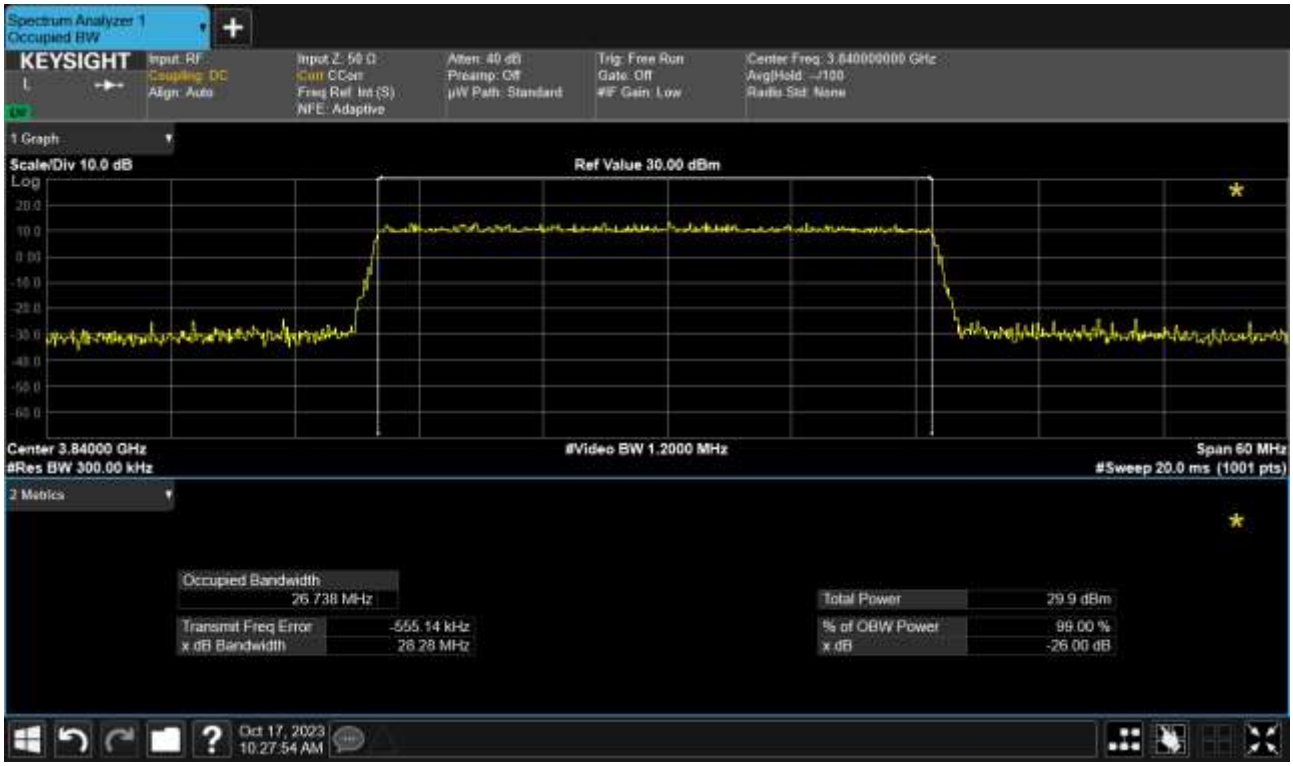


Upper BAND 77 Occupied Bandwidth Plot (20 MHz, 3 840.00 MHz, 256QAM, Full RB)

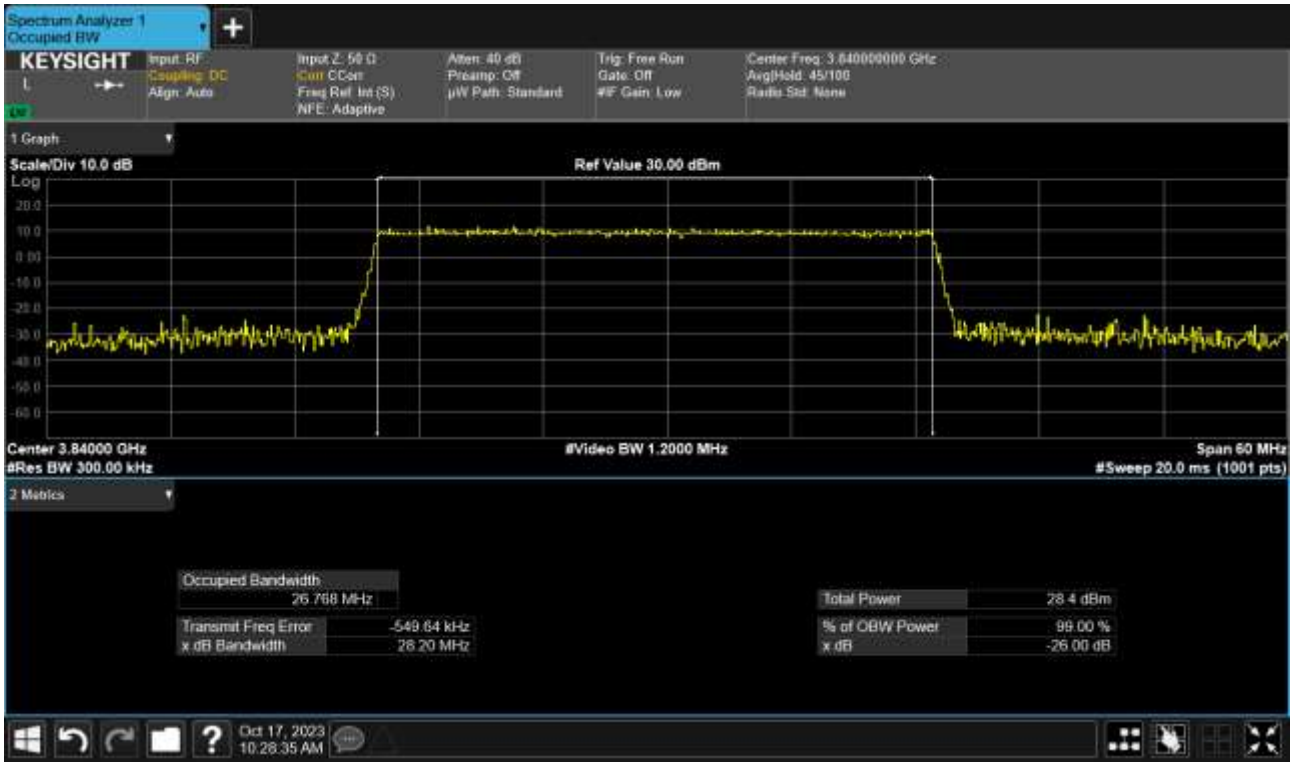


Upper BAND 77 Occupied Bandwidth Plot (30 MHz, 3 840.00 MHz, BPSK, Full RB)

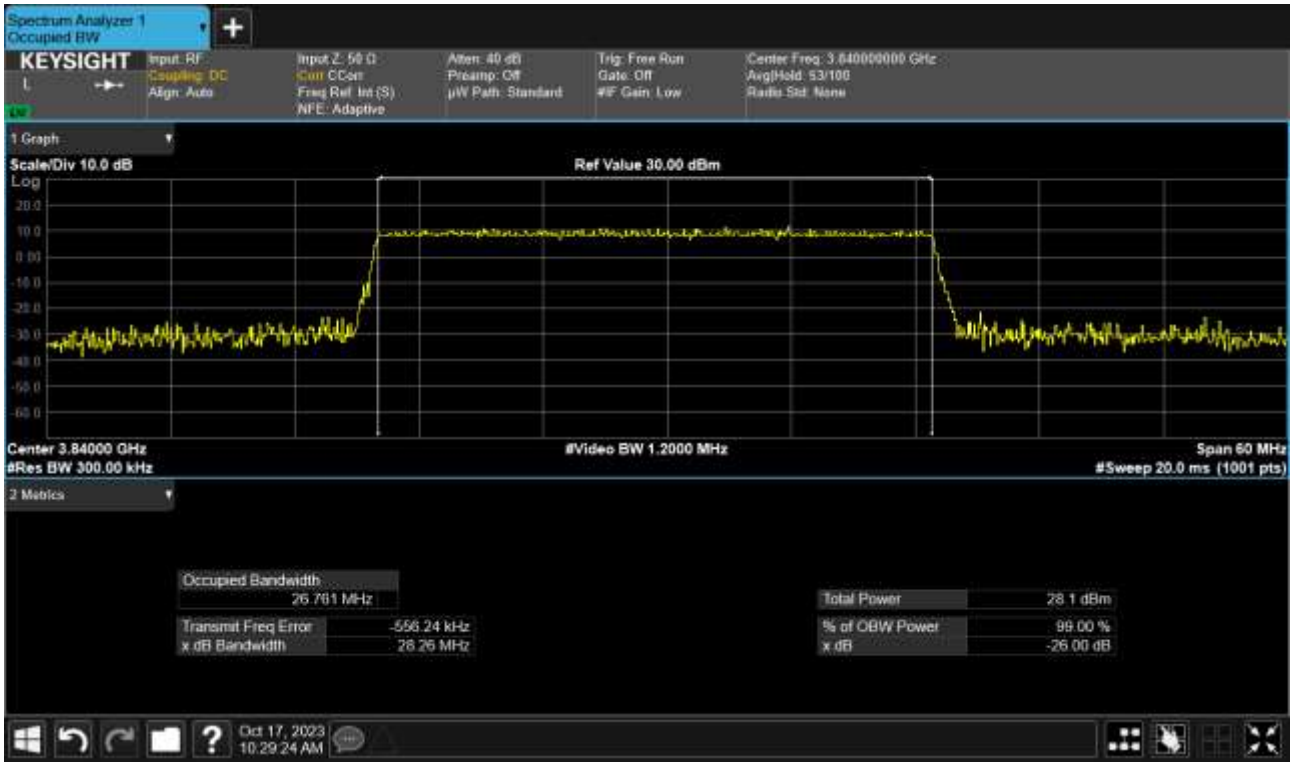
Upper BAND 77 Occupied Bandwidth Plot (30 MHz, 3 840.00 MHz, QPSK, Full RB)



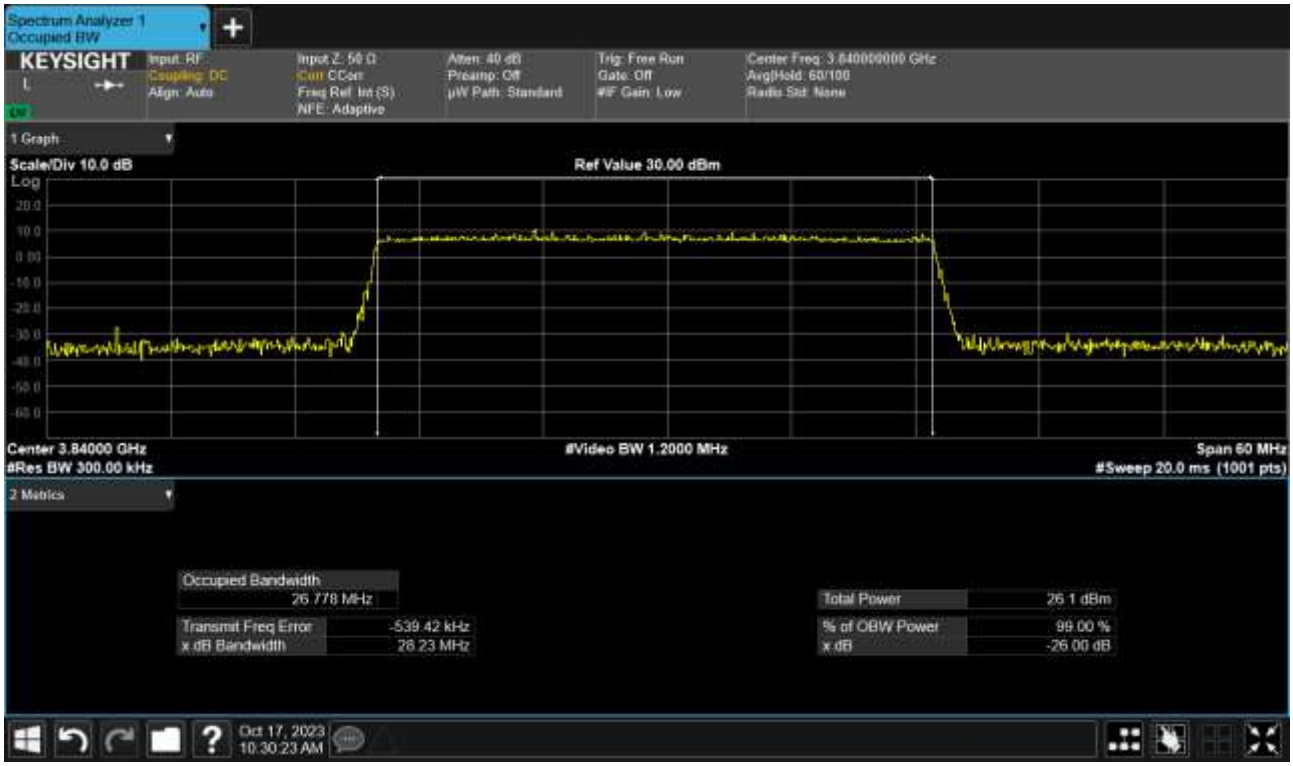
Upper BAND 77 Occupied Bandwidth Plot (30 MHz, 3 840.00 MHz, 16QAM, Full RB)



Upper BAND 77 Occupied Bandwidth Plot (30 MHz, 3 840.00 MHz, 64QAM, Full RB)



Upper BAND 77 Occupied Bandwidth Plot (30 MHz, 3 840.00 MHz, 256QAM, Full RB)

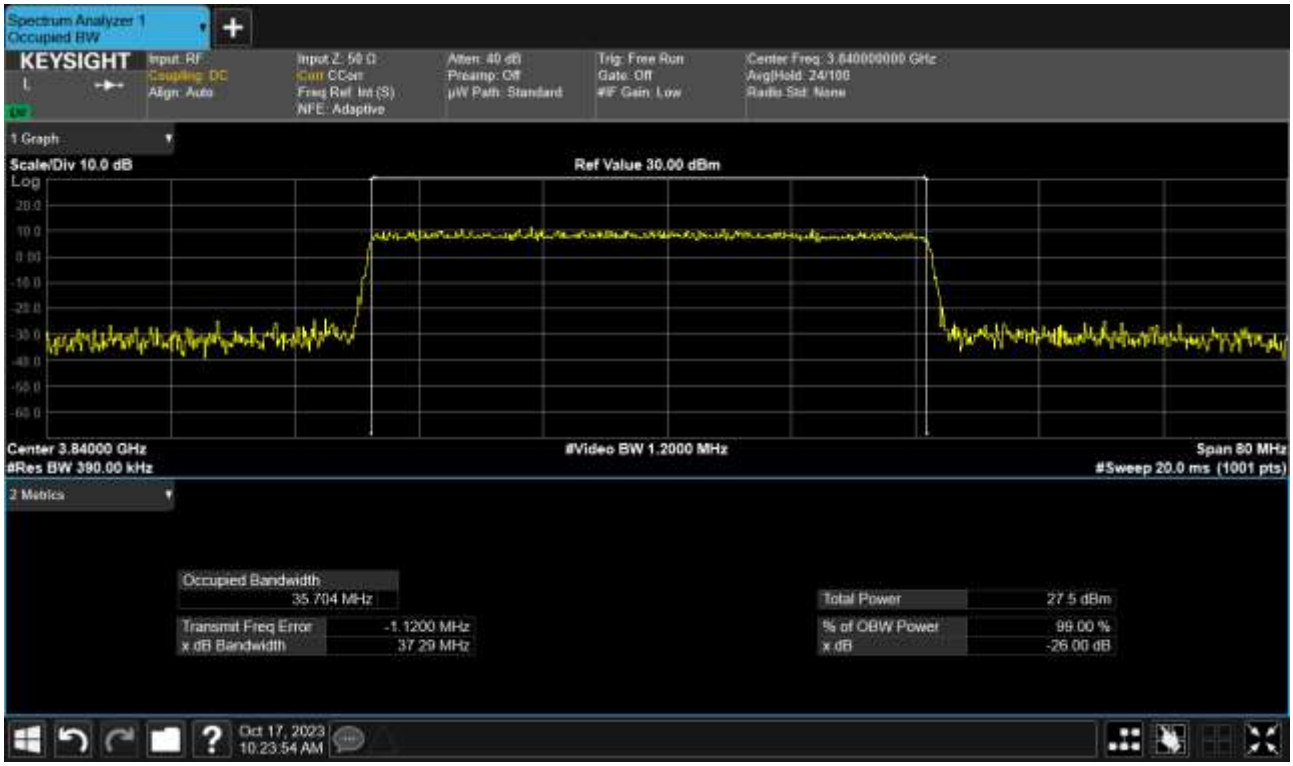


Upper BAND 77 Occupied Bandwidth Plot (40 MHz, 3 840.00 MHz, BPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (40 MHz, 3 840.00 MHz, QPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (40 MHz, 3 840.00 MHz, 16QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (40 MHz, 3 840.00 MHz, 64QAM, Full RB)

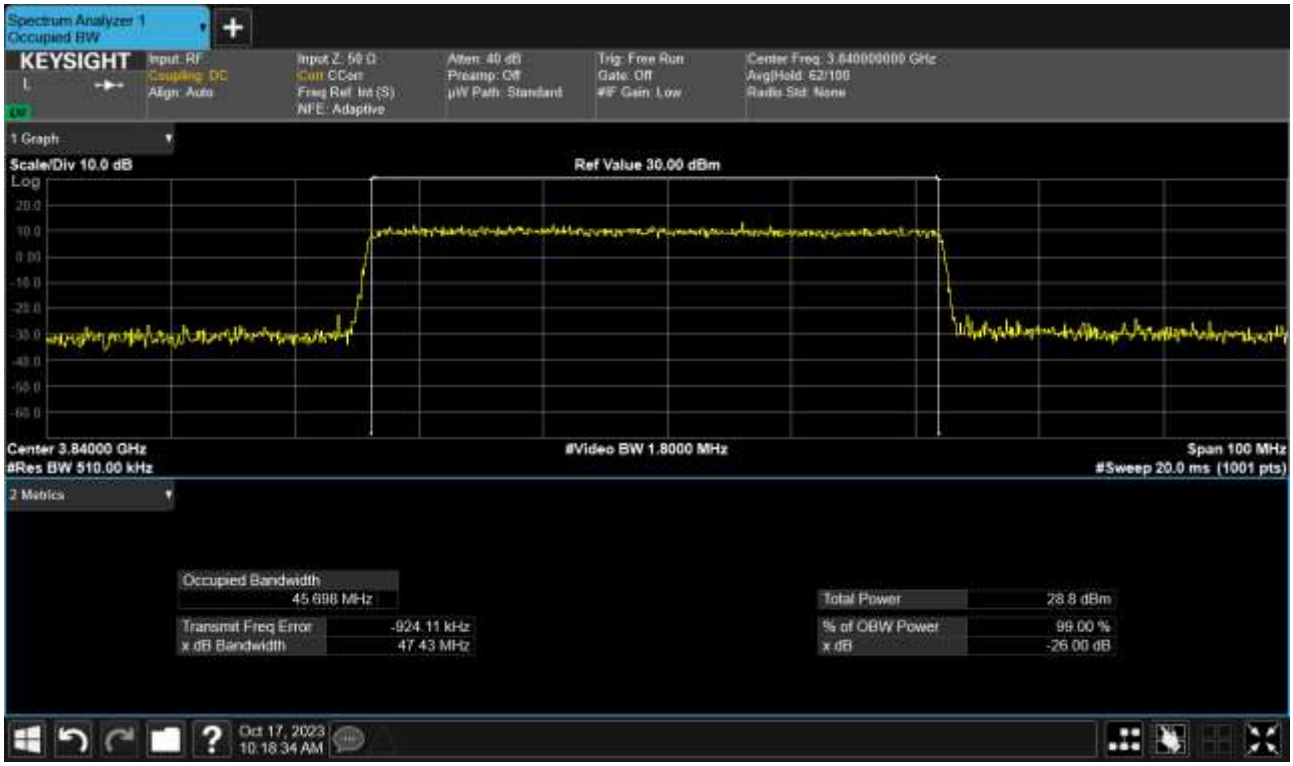


Upper BAND 77 Occupied Bandwidth Plot (40 MHz, 3 840.00 MHz, 256QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (50 MHz, 3 840.00 MHz, BPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (50 MHz, 3 840.00 MHz, QPSK, Full RB)

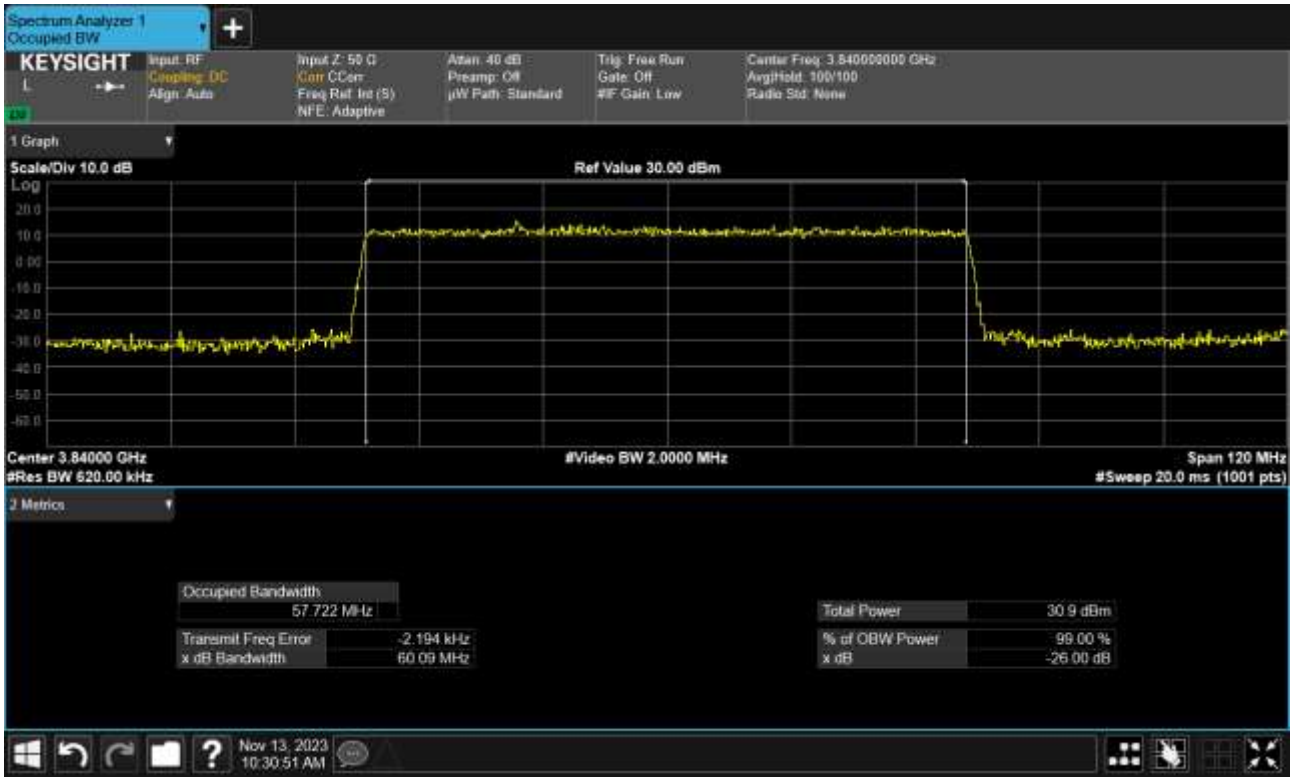
Upper BAND 77 Occupied Bandwidth Plot (50 MHz, 3 840.00 MHz, 16QAM, Full RB)



Upper BAND 77 Occupied Bandwidth Plot (50 MHz, 3 840.00 MHz, 64QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (50 MHz, 3 840.00 MHz, 256QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (60 MHz, 3 840.00 MHz, BPSK, Full RB)

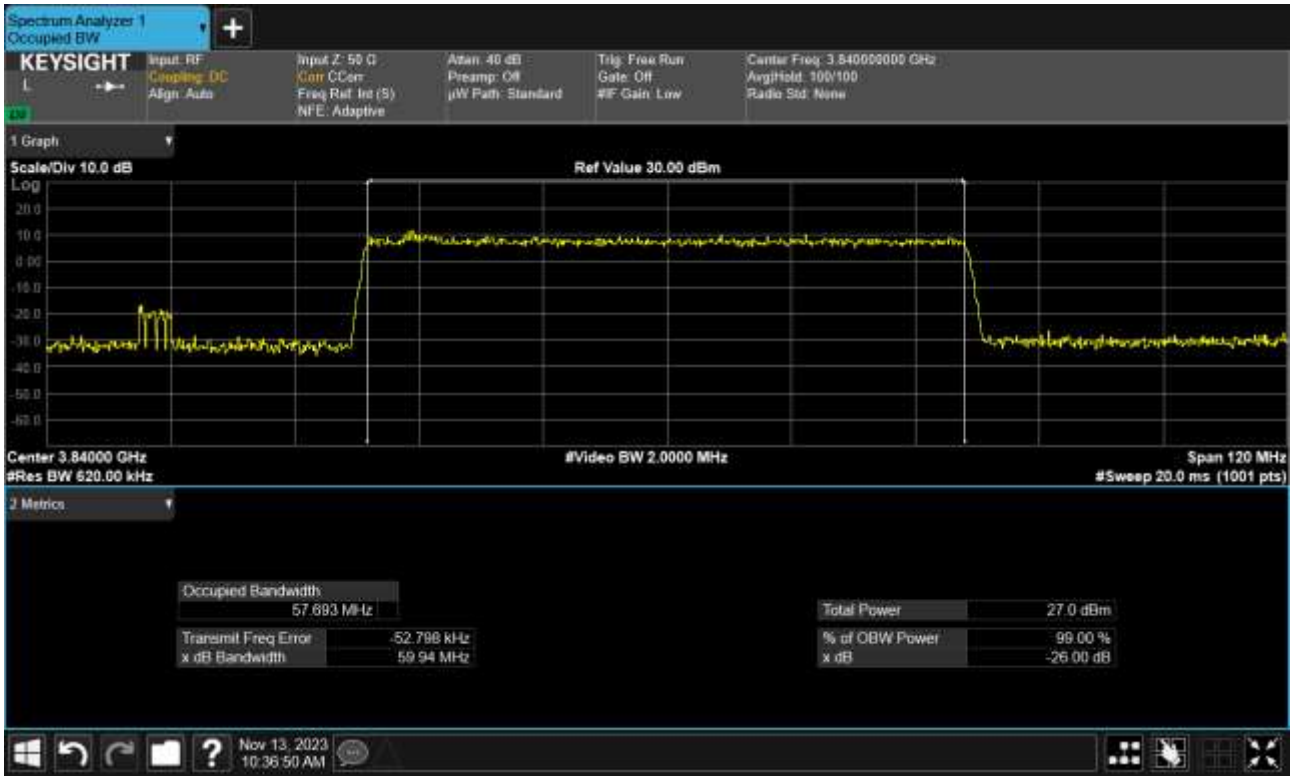


Upper BAND 77 Occupied Bandwidth Plot (60 MHz, 3 840.00 MHz, QPSK, Full RB)

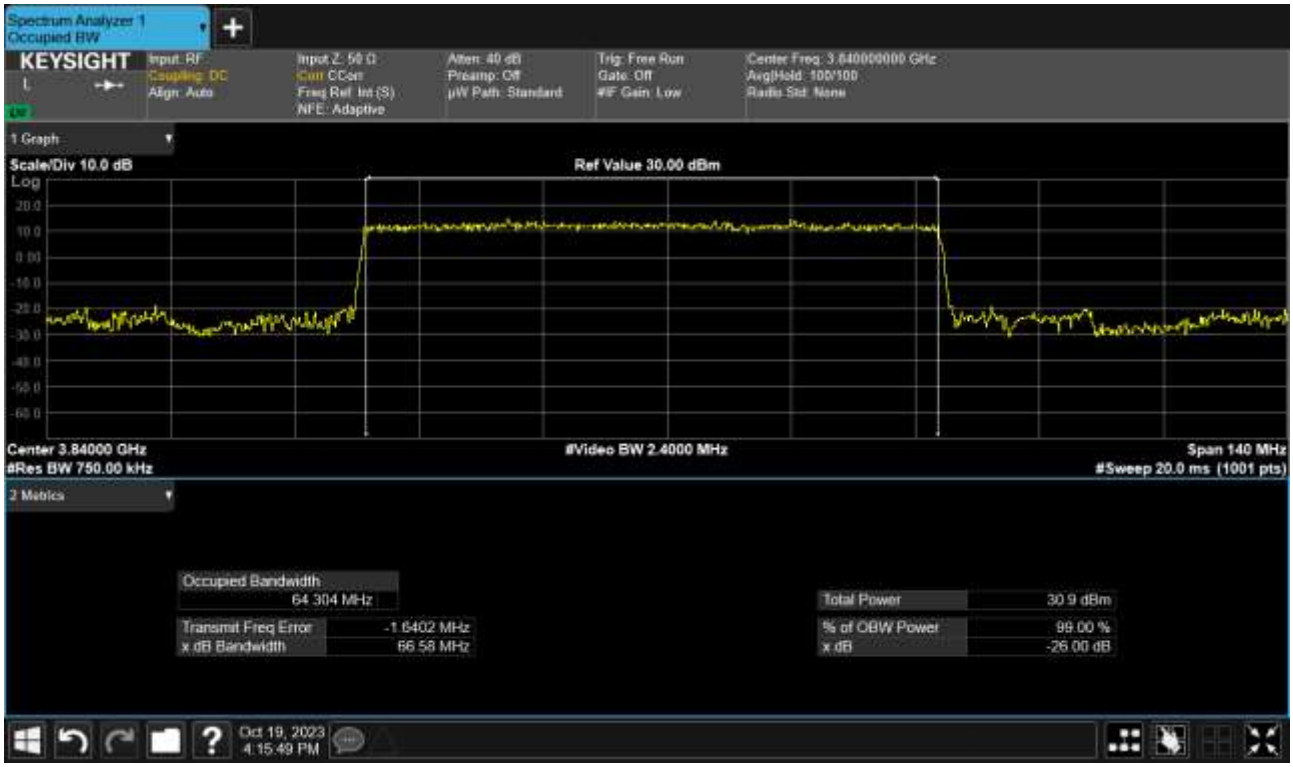
Upper BAND 77 Occupied Bandwidth Plot (60 MHz, 3 840.00 MHz, 16QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (60 MHz, 3 840.00 MHz, 64QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (60 MHz, 3 840.00 MHz, 256QAM, Full RB)



Upper BAND 77 Occupied Bandwidth Plot (70 MHz, 3 840.00 MHz, BPSK, Full RB)

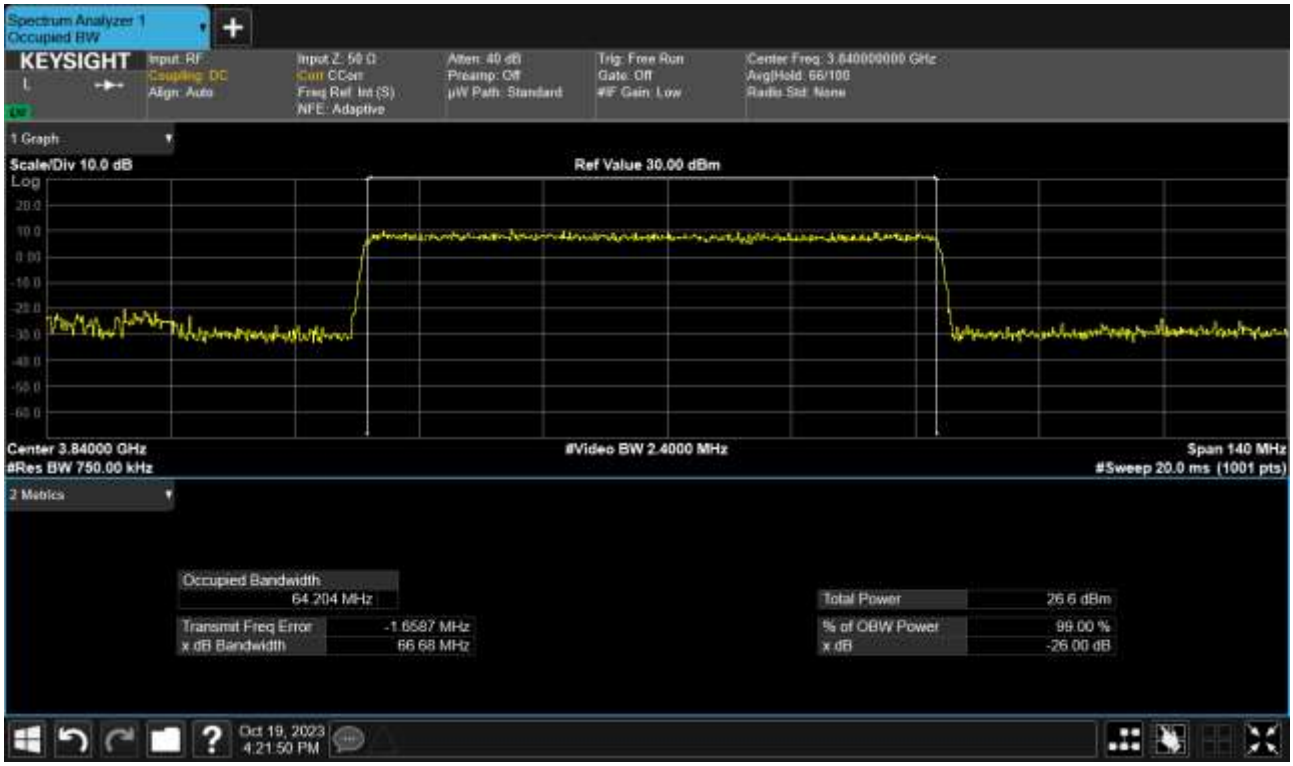


Upper BAND 77 Occupied Bandwidth Plot (70 MHz, 3 840.00 MHz, QPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (70 MHz, 3 840.00 MHz, 16QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (70 MHz, 3 840.00 MHz, 64QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (70 MHz, 3 840.00 MHz, 256QAM, Full RB)



Upper BAND 77 Occupied Bandwidth Plot (80 MHz, 3 840.00 MHz, BPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (80 MHz, 3 840.00 MHz, QPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (80 MHz, 3 840.00 MHz, 16QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (80 MHz, 3 840.00 MHz, 64QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (80 MHz, 3 840.00 MHz, 256QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (90 MHz, 3 840.00 MHz, BPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (90 MHz, 3 840.00 MHz, QPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (90 MHz, 3 840.00 MHz, 16QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (90 MHz, 3 840.00 MHz, 64QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (90 MHz, 3 840.00 MHz, 256QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (100 MHz, 3 840.00 MHz, BPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (100 MHz, 3 840.00 MHz, QPSK, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (100 MHz, 3 840.00 MHz, 16QAM, Full RB)

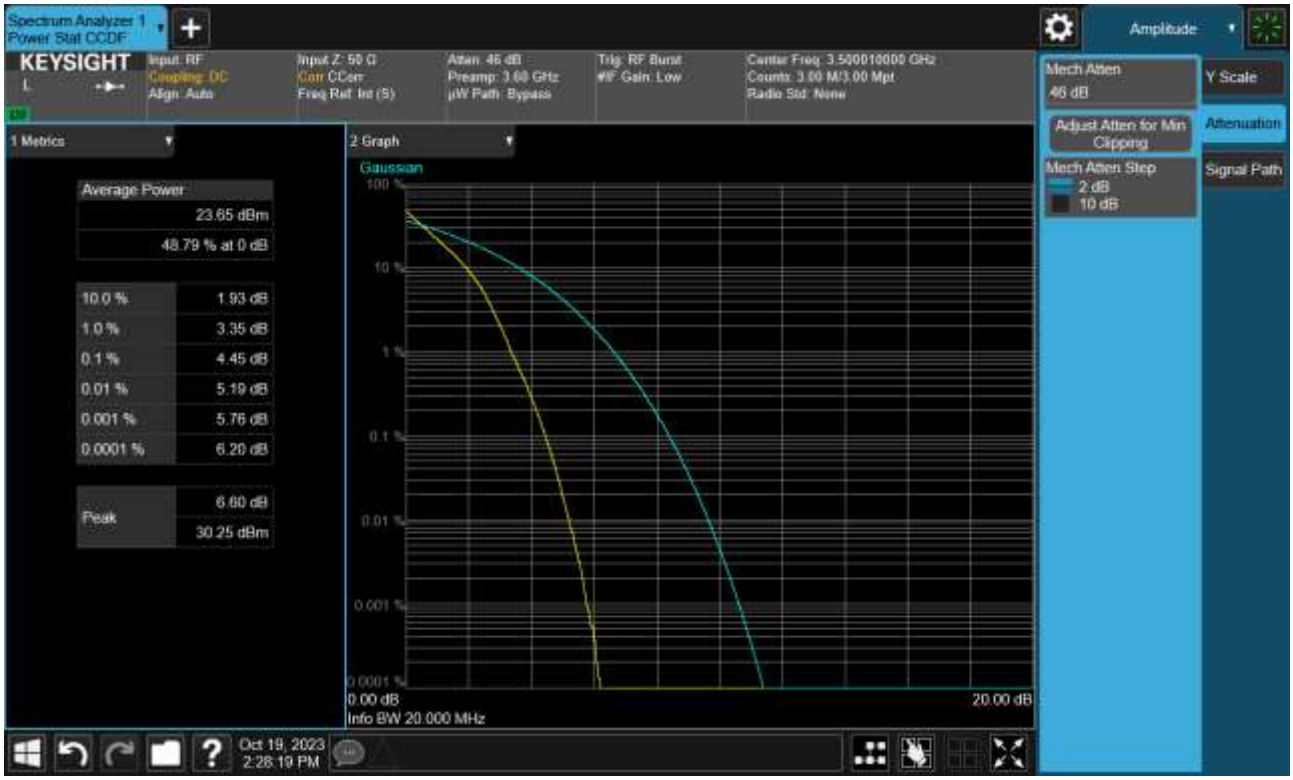
Upper BAND 77 Occupied Bandwidth Plot (100 MHz, 3 840.00 MHz, 64QAM, Full RB)

Upper BAND 77 Occupied Bandwidth Plot (100 MHz, 3 840.00 MHz, 256QAM, Full RB)

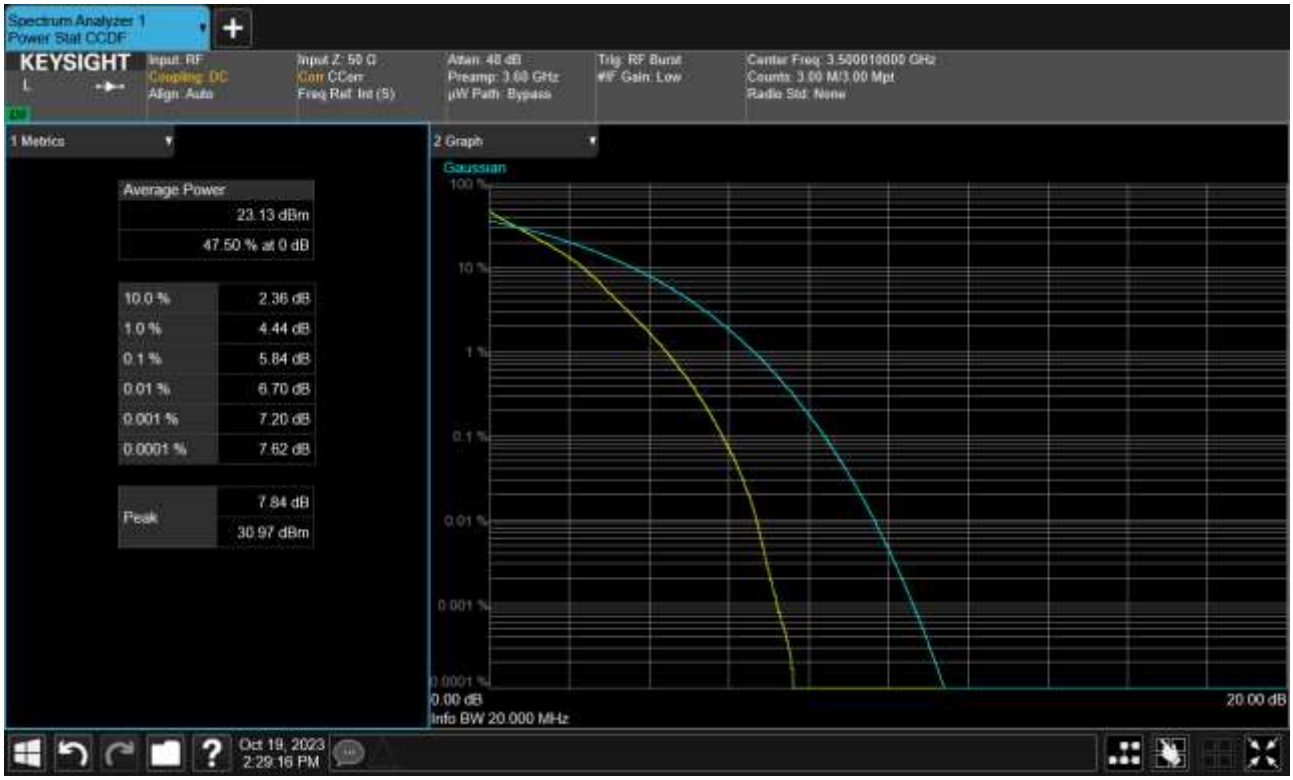
13.6 PEAK TO AVERAGE RATIO

All modes of operation were investigated, and the worst-case configuration results are reported in this section.

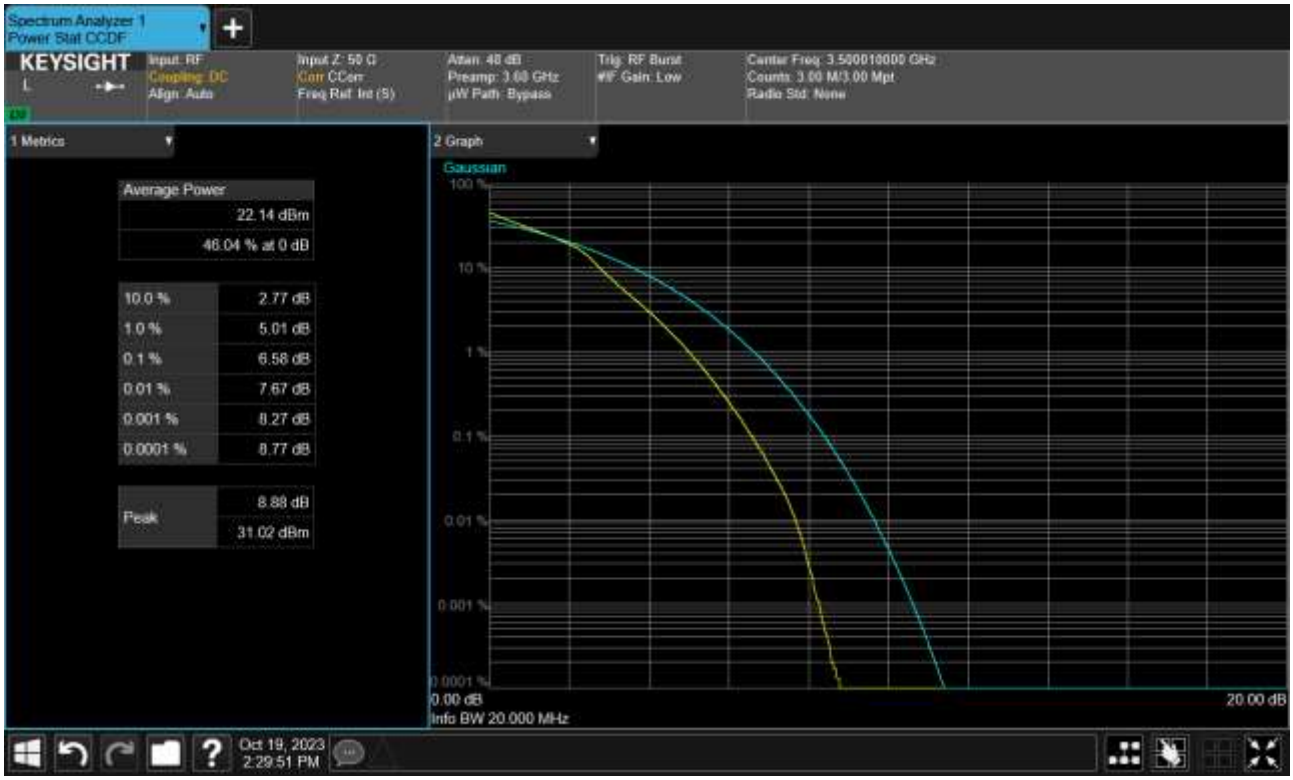
Low BAND 77 Peak To Average Ratio Plot (20 MHz, 3 500.01 MHz, BPSK, Full RB)



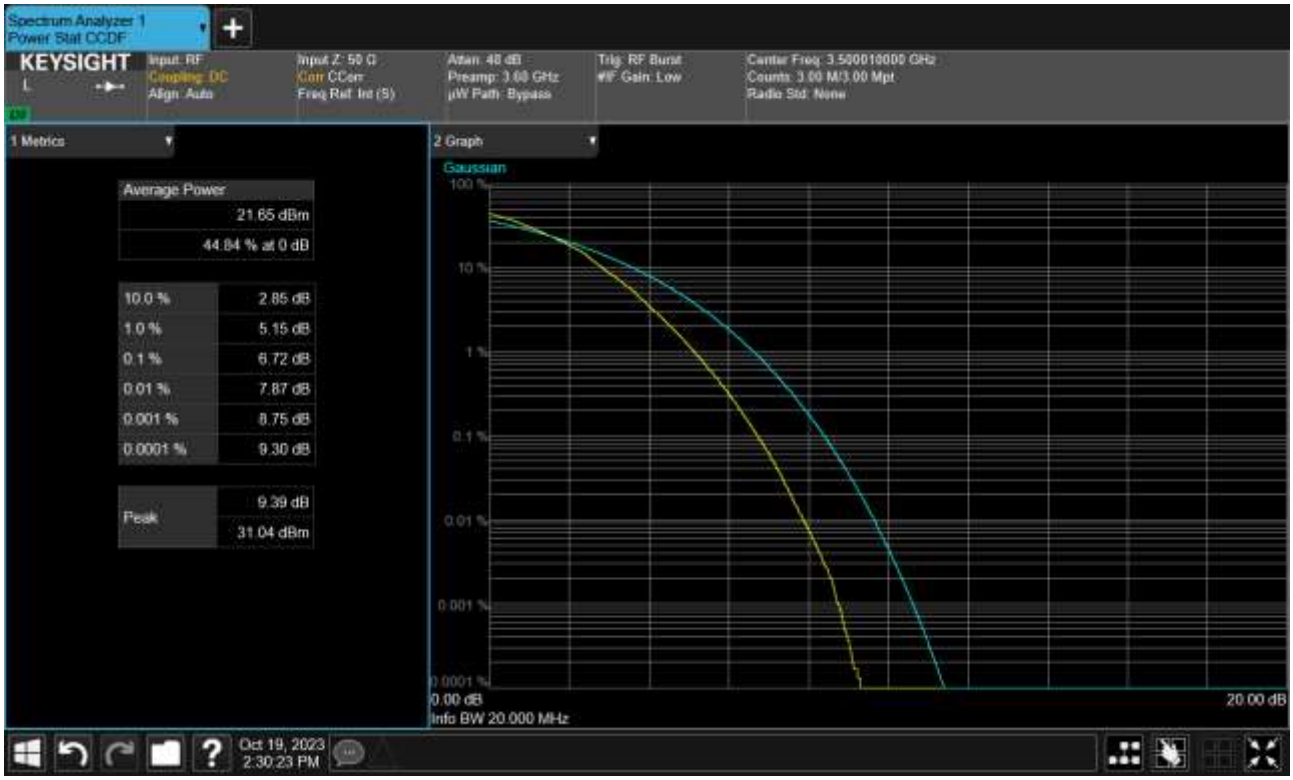
Low BAND 77 Peak To Average Ratio Plot (20 MHz, 3 500.01 MHz, QPSK, Full RB)



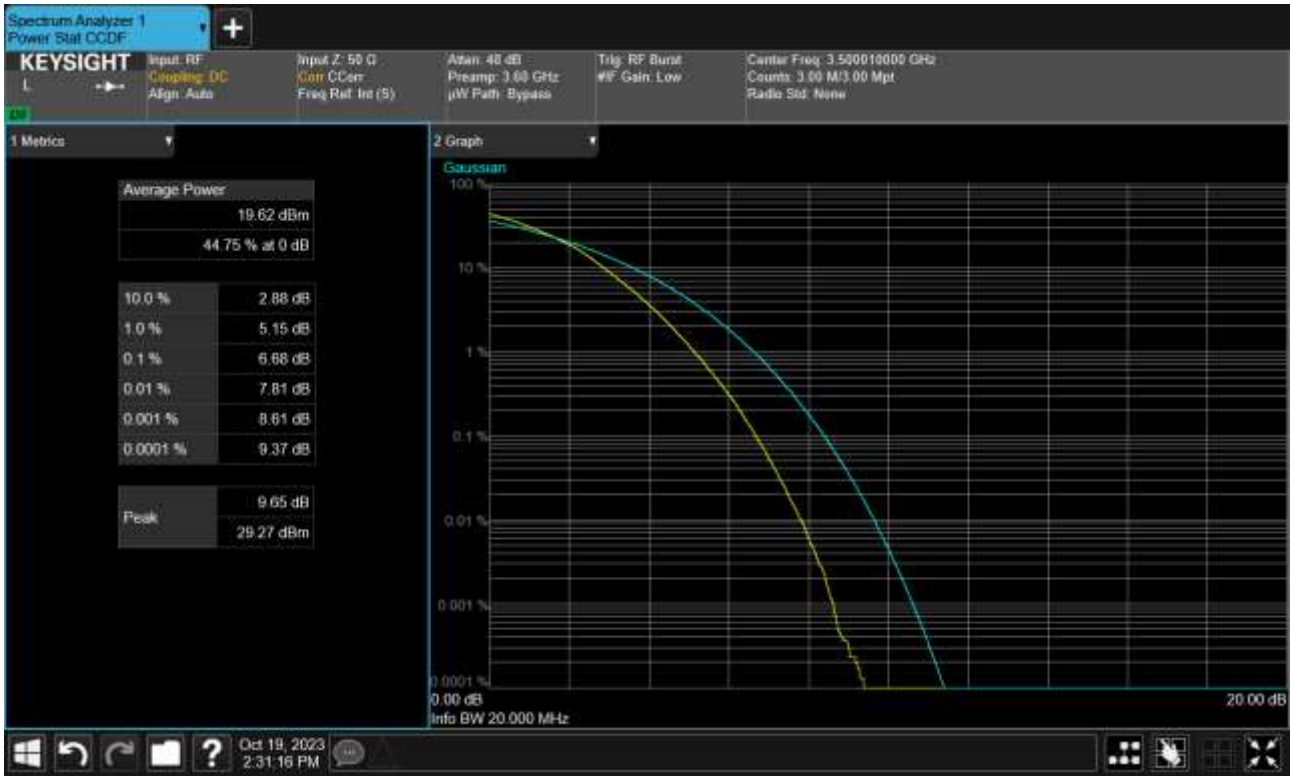
Low BAND 77 Peak To Average Ratio Plot (20 MHz, 3 500.01 MHz, 16QAM, Full RB)



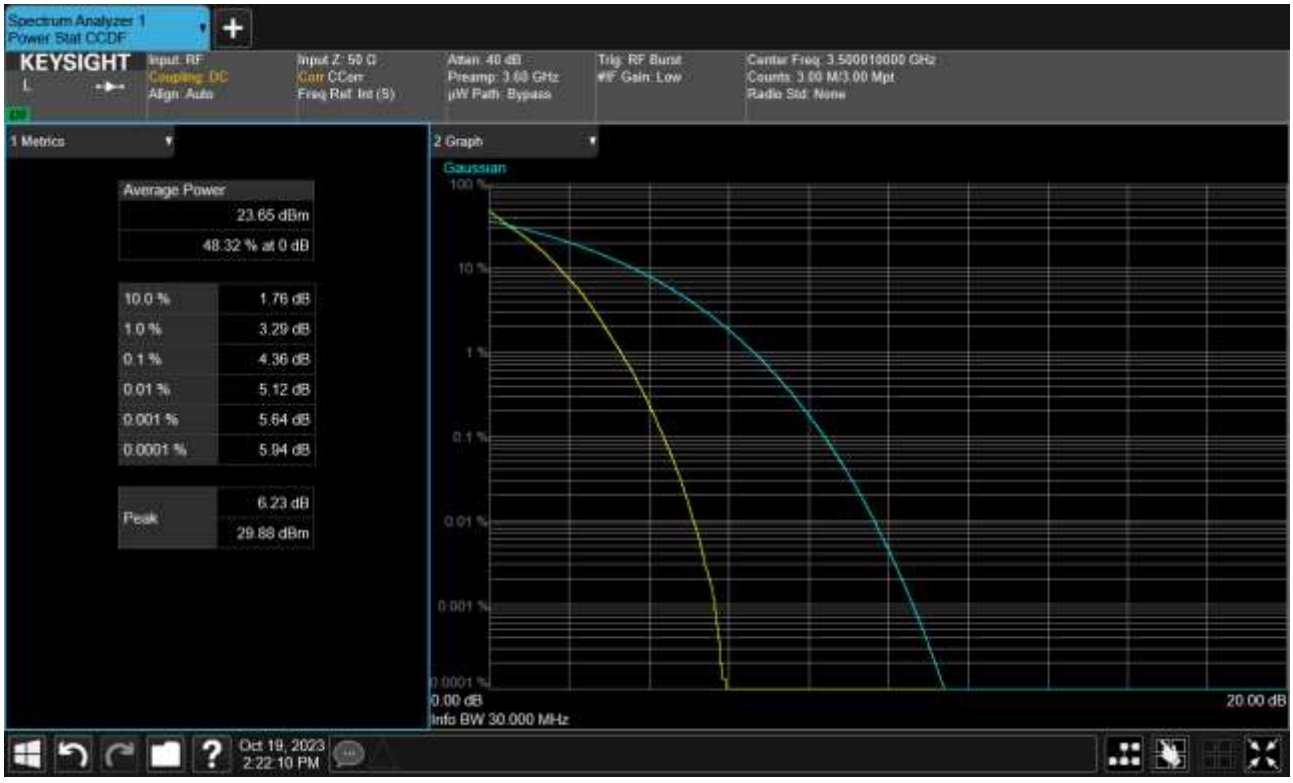
Low BAND 77 Peak To Average Ratio Plot (20 MHz, 3 500.01 MHz, 64QAM, Full RB)



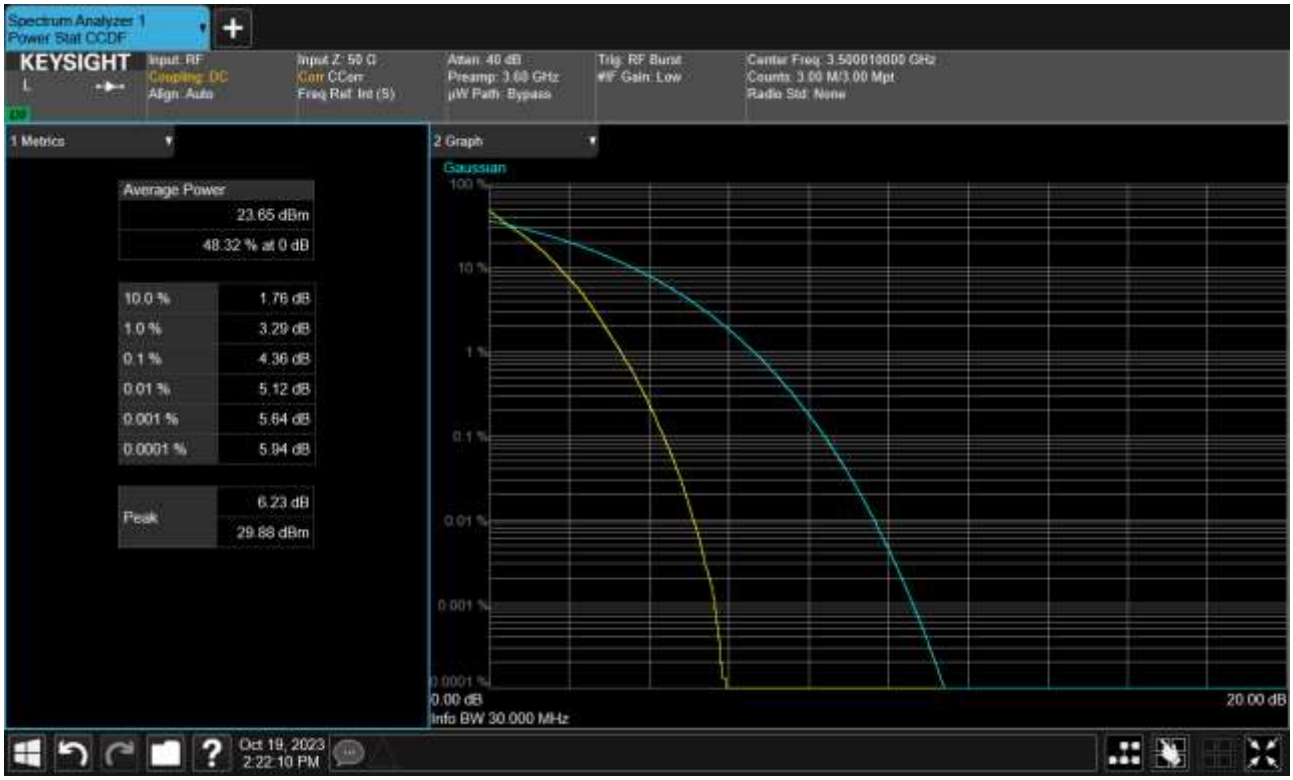
Low BAND 77 Peak To Average Ratio Plot (20 MHz, 3 500.01 MHz, 256QAM, Full RB)



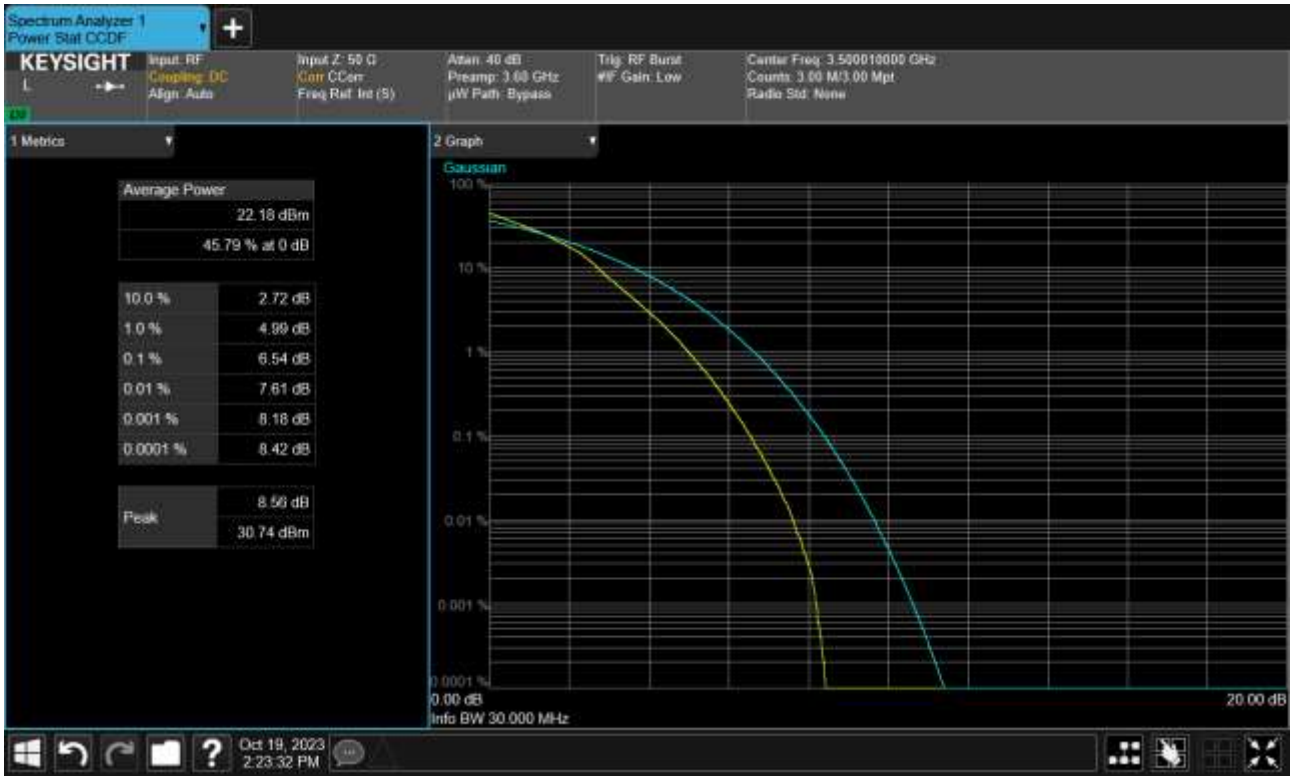
Low BAND 77 Peak To Average Ratio Plot (30 MHz, 3 500.01 MHz, BPSK, Full RB)



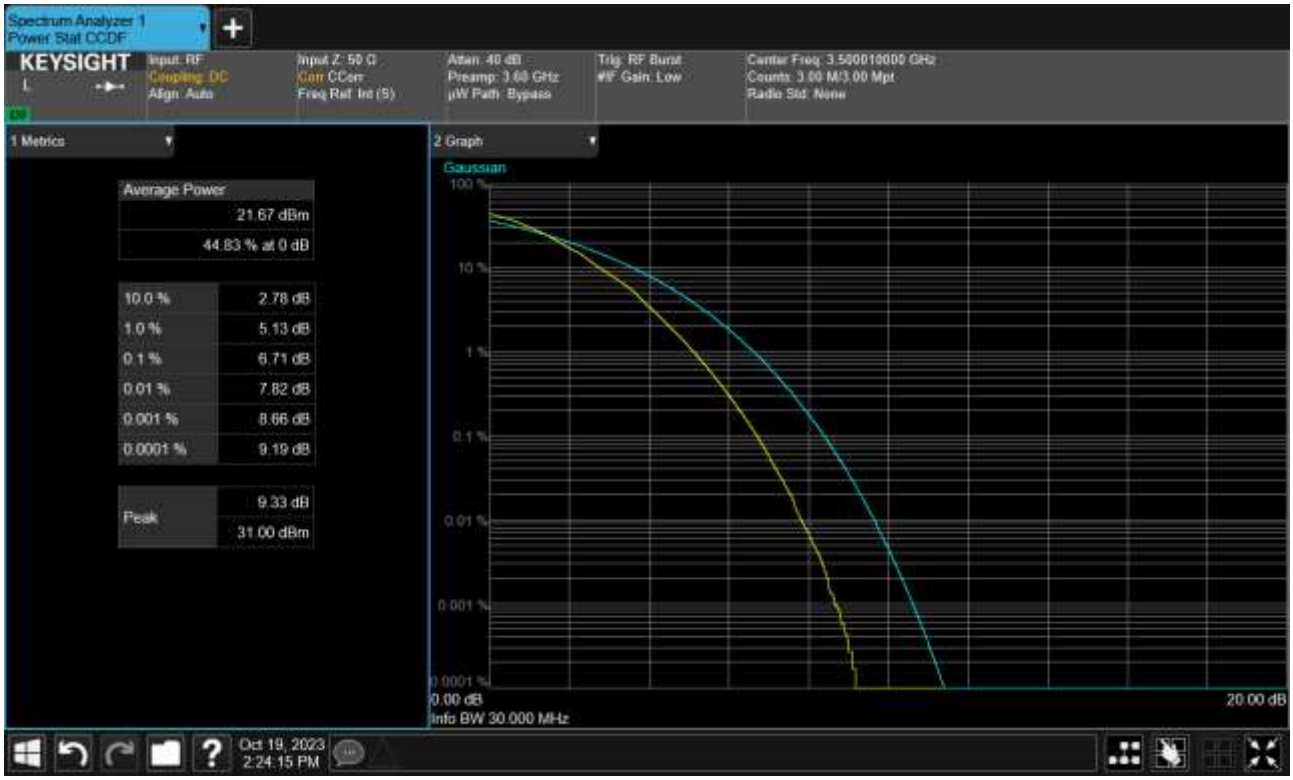
Low BAND 77 Peak To Average Ratio Plot (30 MHz, 3 500.01 MHz, QPSK, Full RB)



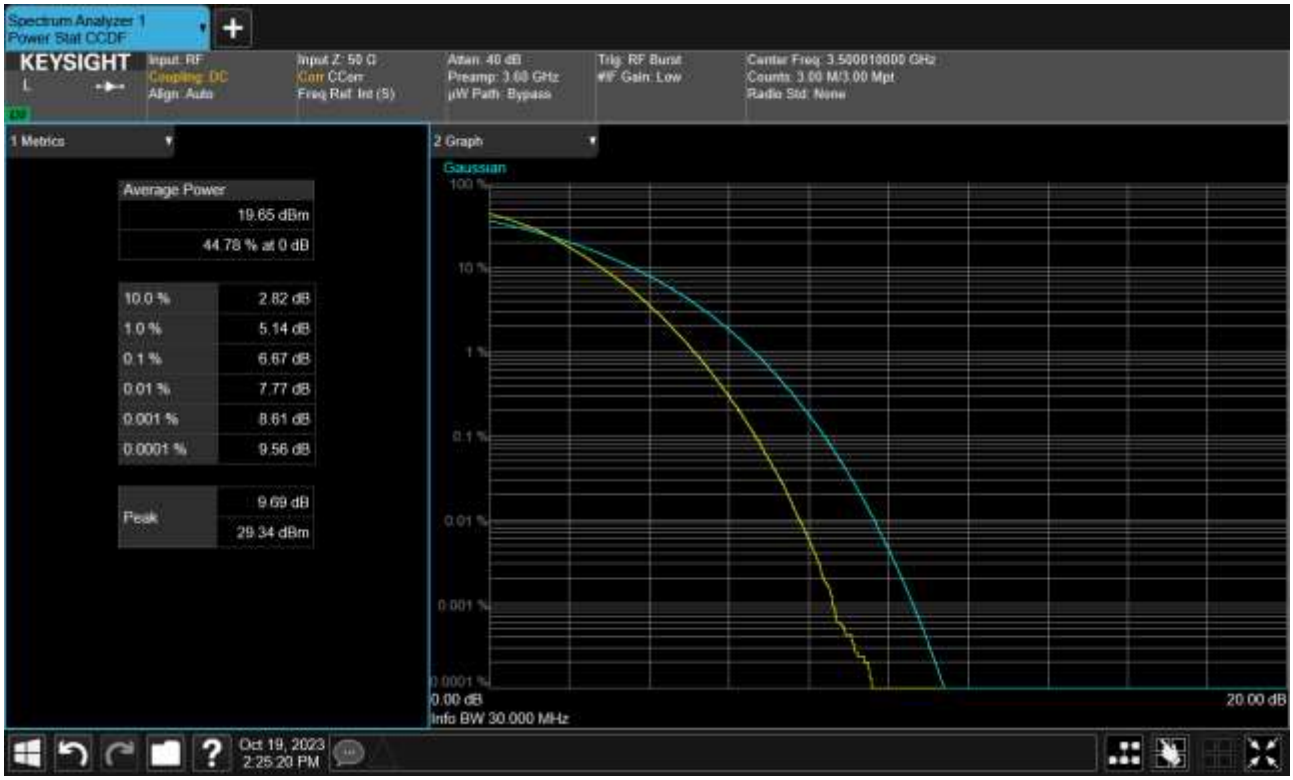
Low BAND 77 Peak To Average Ratio Plot (30 MHz, 3 500.01 MHz, 16QAM, Full RB)



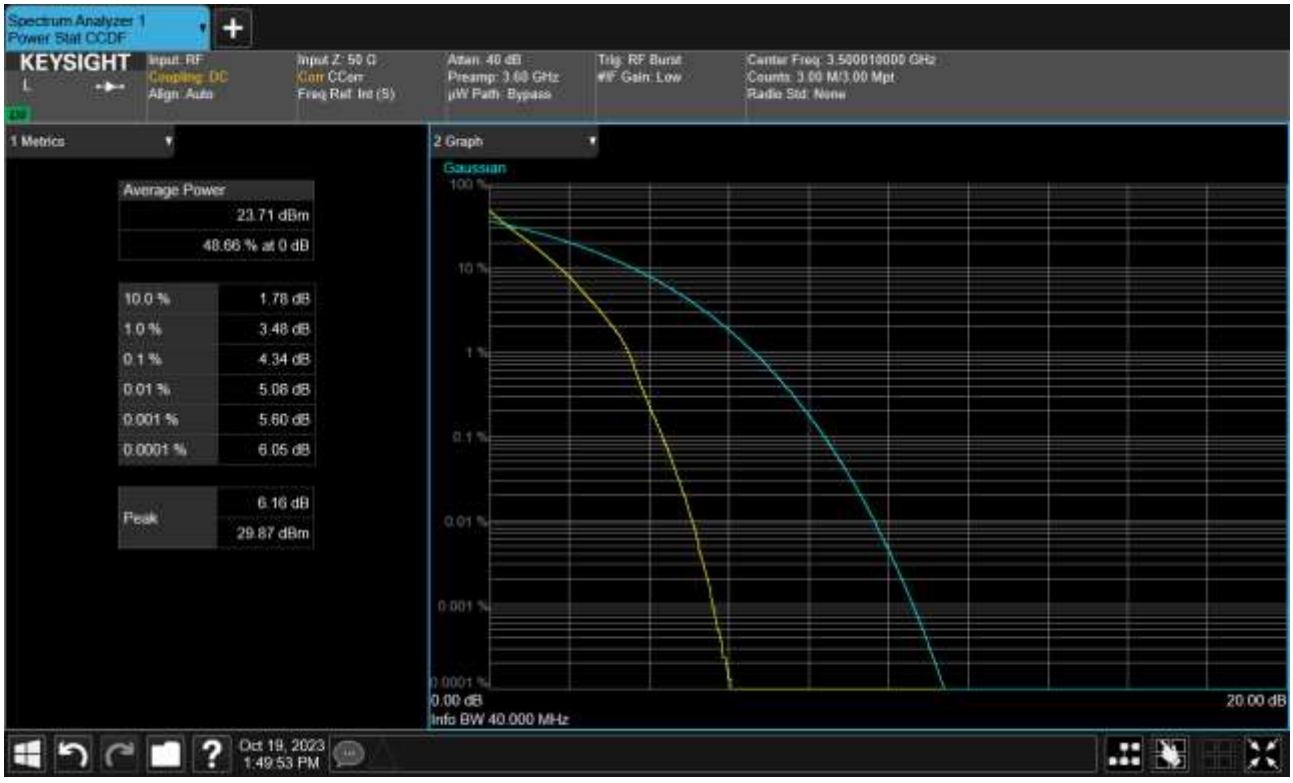
Low BAND 77 Peak To Average Ratio Plot (30 MHz, 3 500.01 MHz, 64QAM, Full RB)



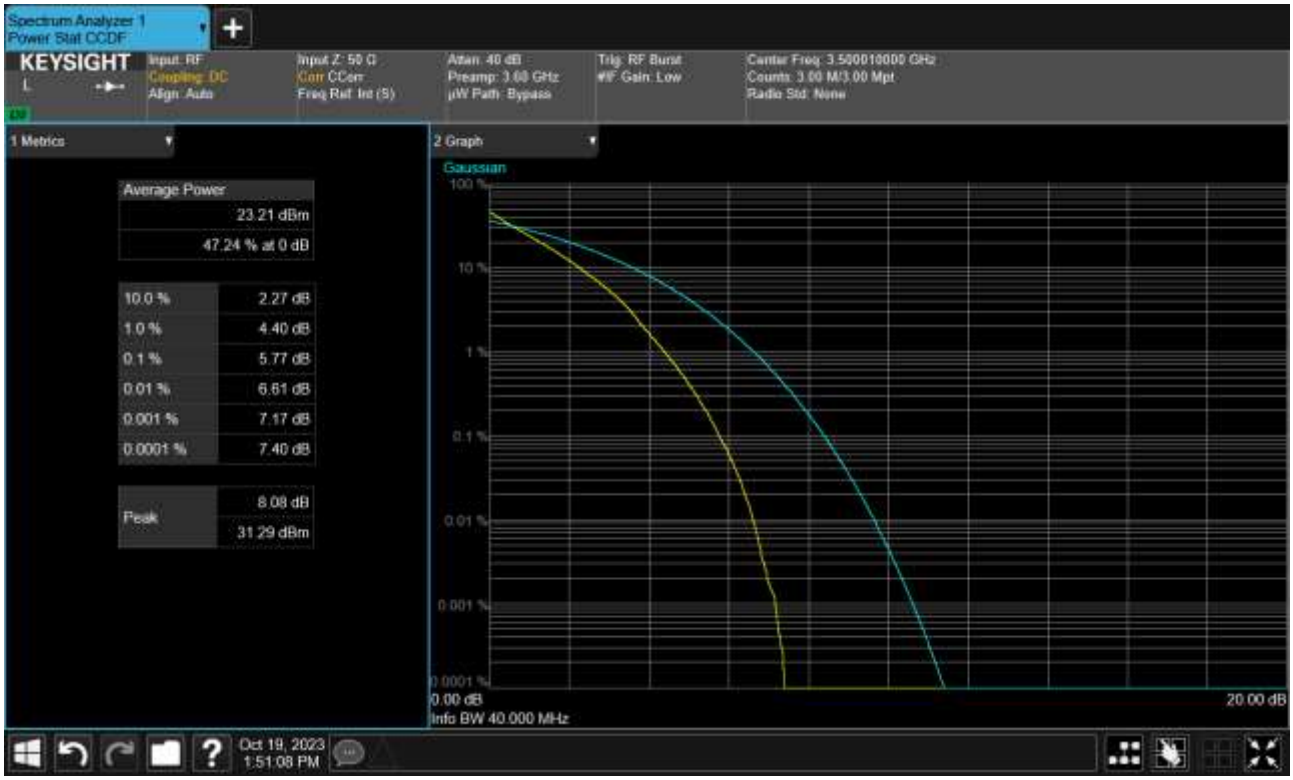
Low BAND 77 Peak To Average Ratio Plot (30 MHz, 3 500.01 MHz, 256QAM, Full RB)



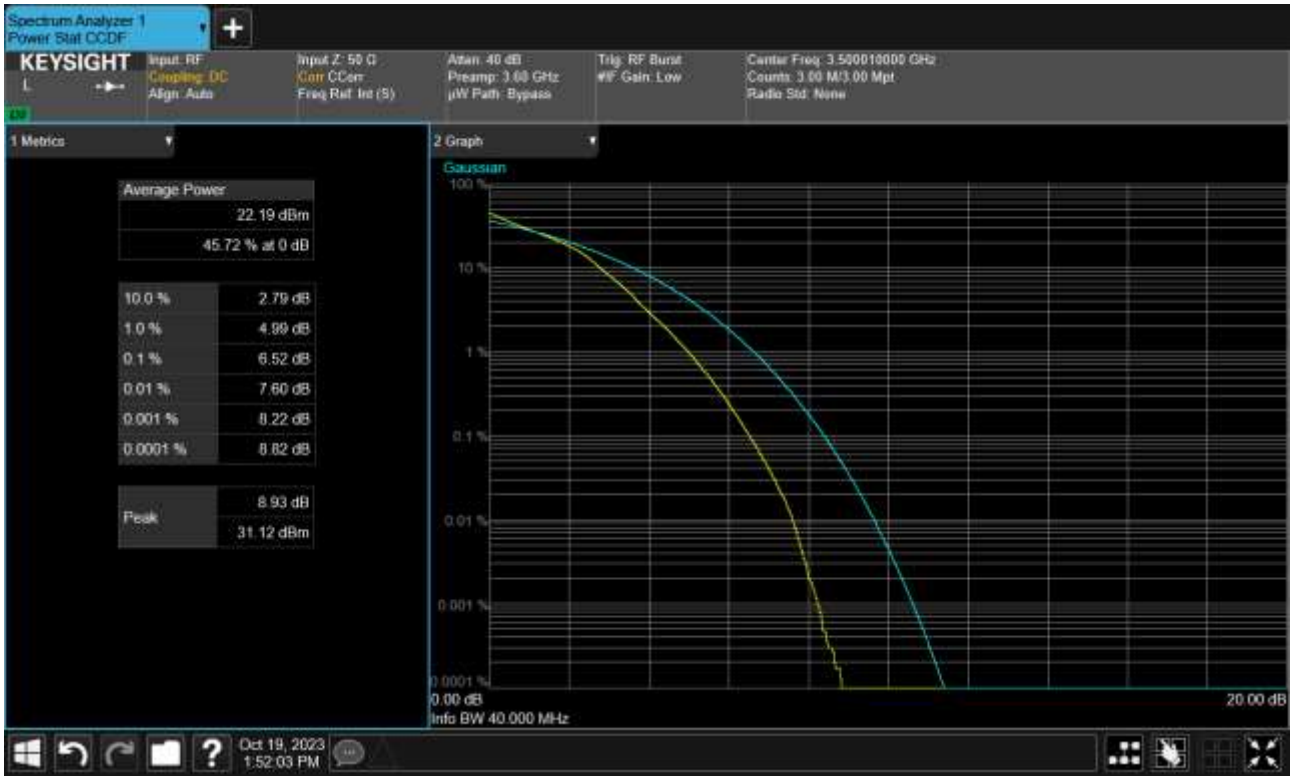
Low BAND 77 Peak To Average Ratio Plot (40 MHz, 3 500.01 MHz, BPSK, Full RB)



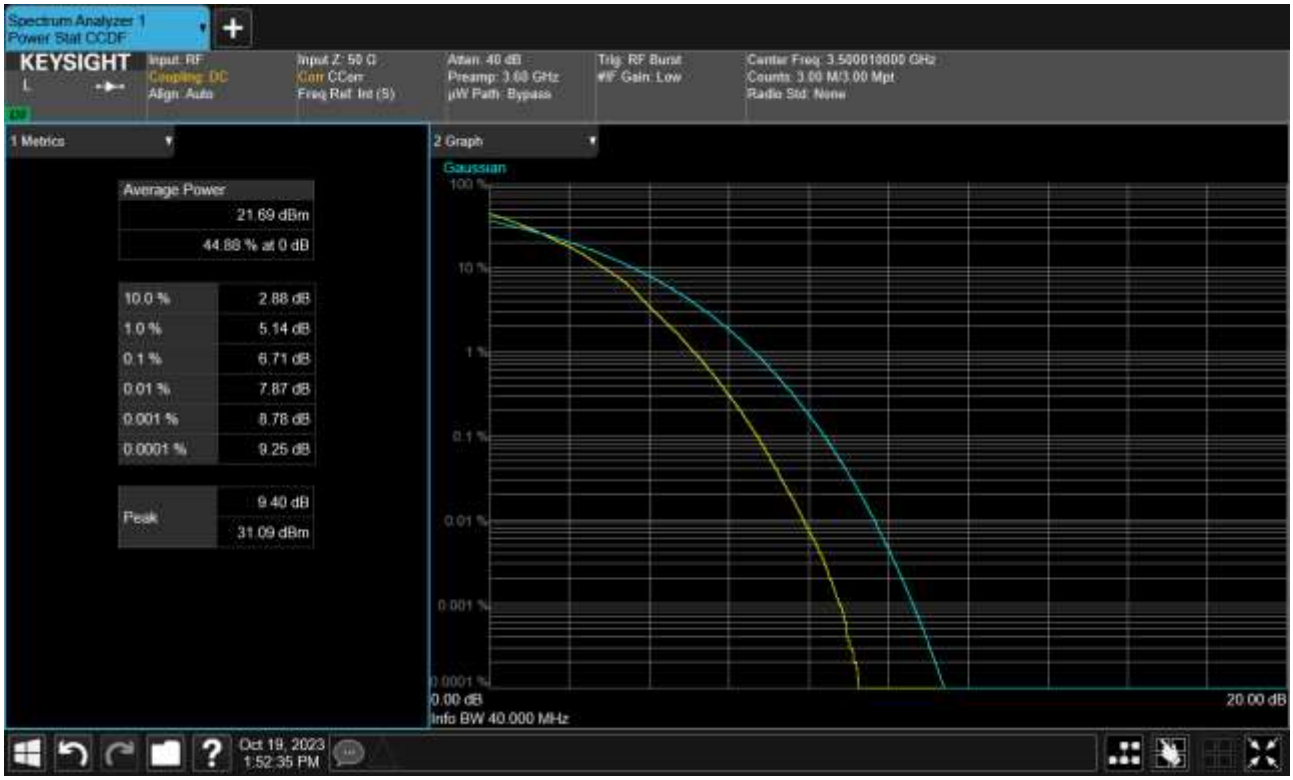
Low BAND 77 Peak To Average Ratio Plot (40 MHz, 3 500.01 MHz, QPSK, Full RB)



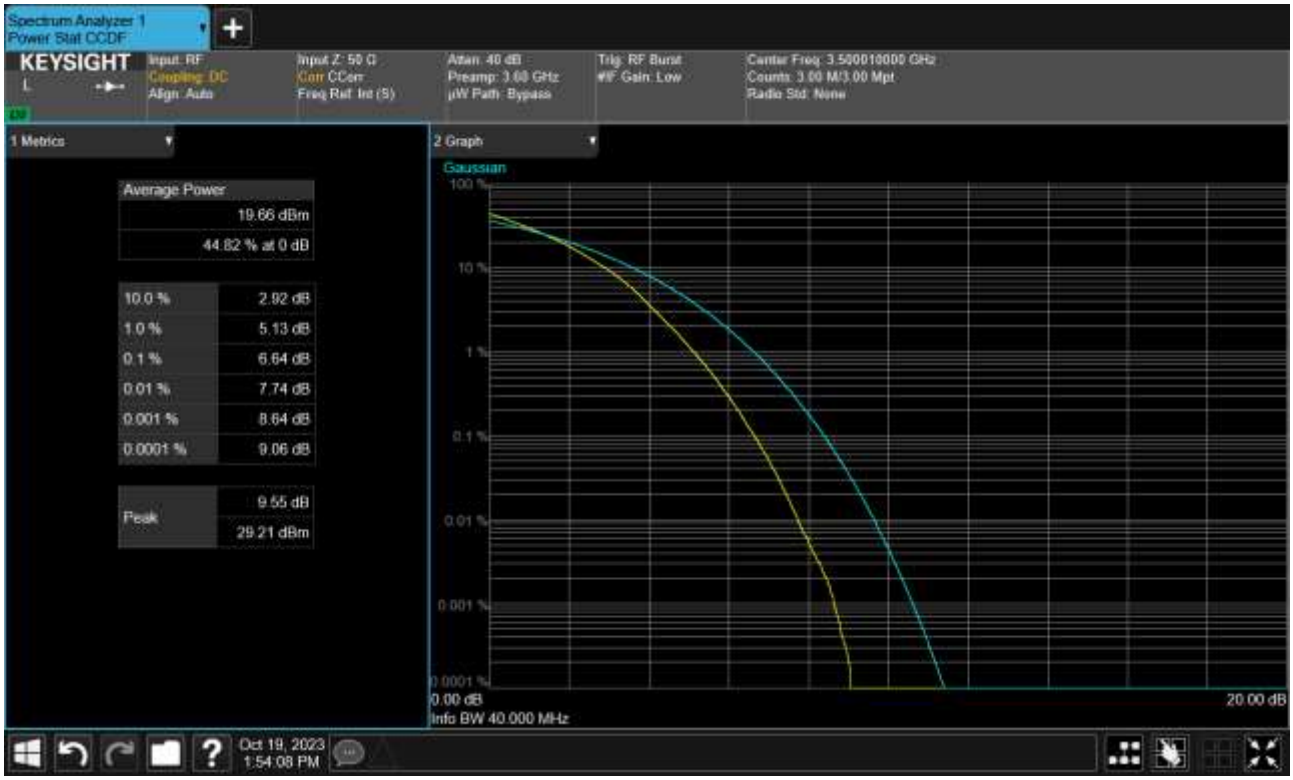
Low BAND 77 Peak To Average Ratio Plot (40 MHz, 3 500.01 MHz, 16QAM, Full RB)



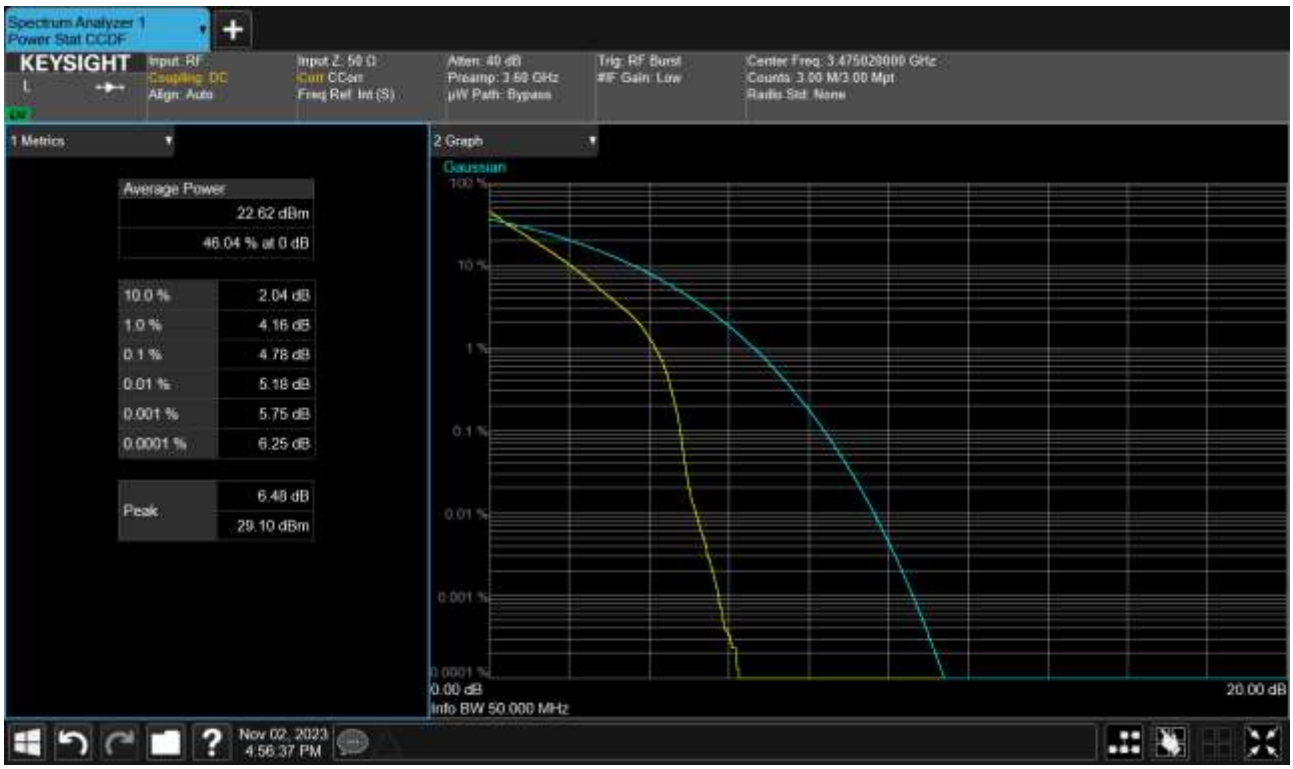
Low BAND 77 Peak To Average Ratio Plot (40 MHz, 3 500.01 MHz, 64QAM, Full RB)



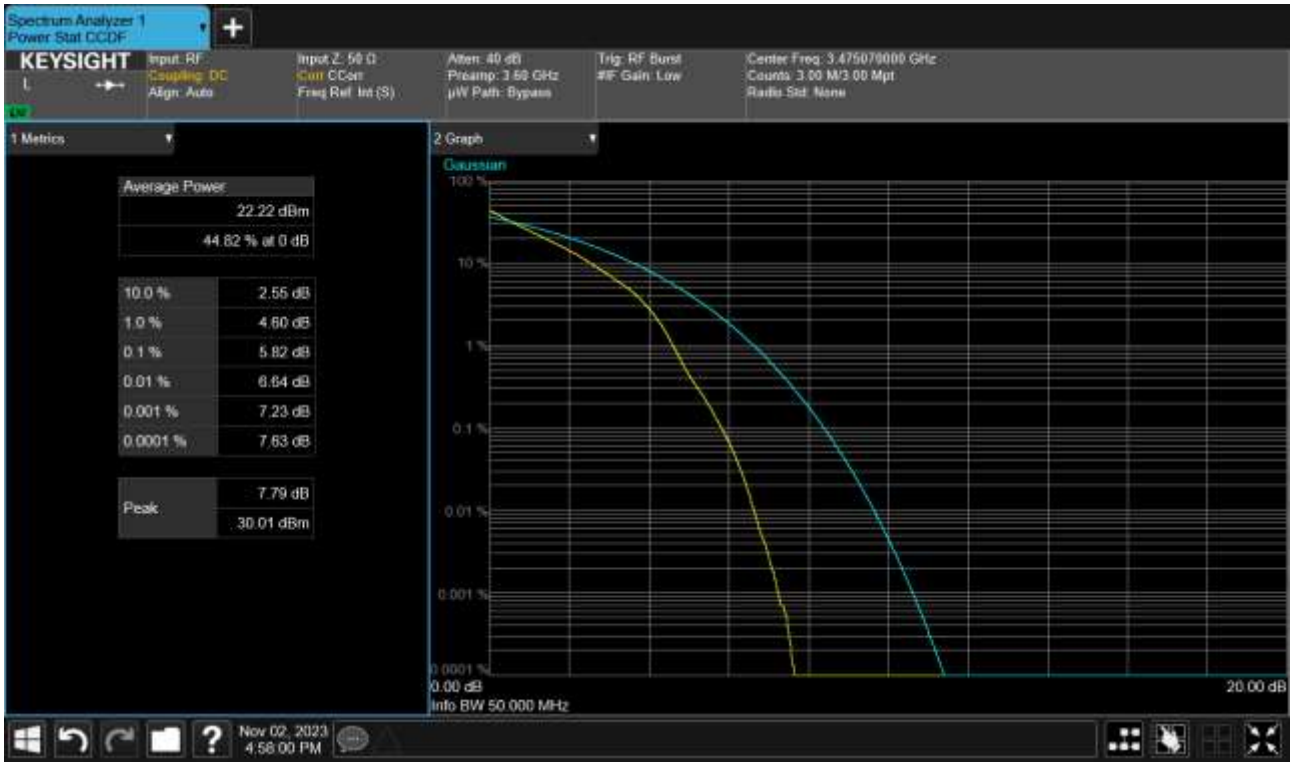
Low BAND 77 Peak To Average Ratio Plot (40 MHz, 3 500.01 MHz, 256QAM, Full RB)



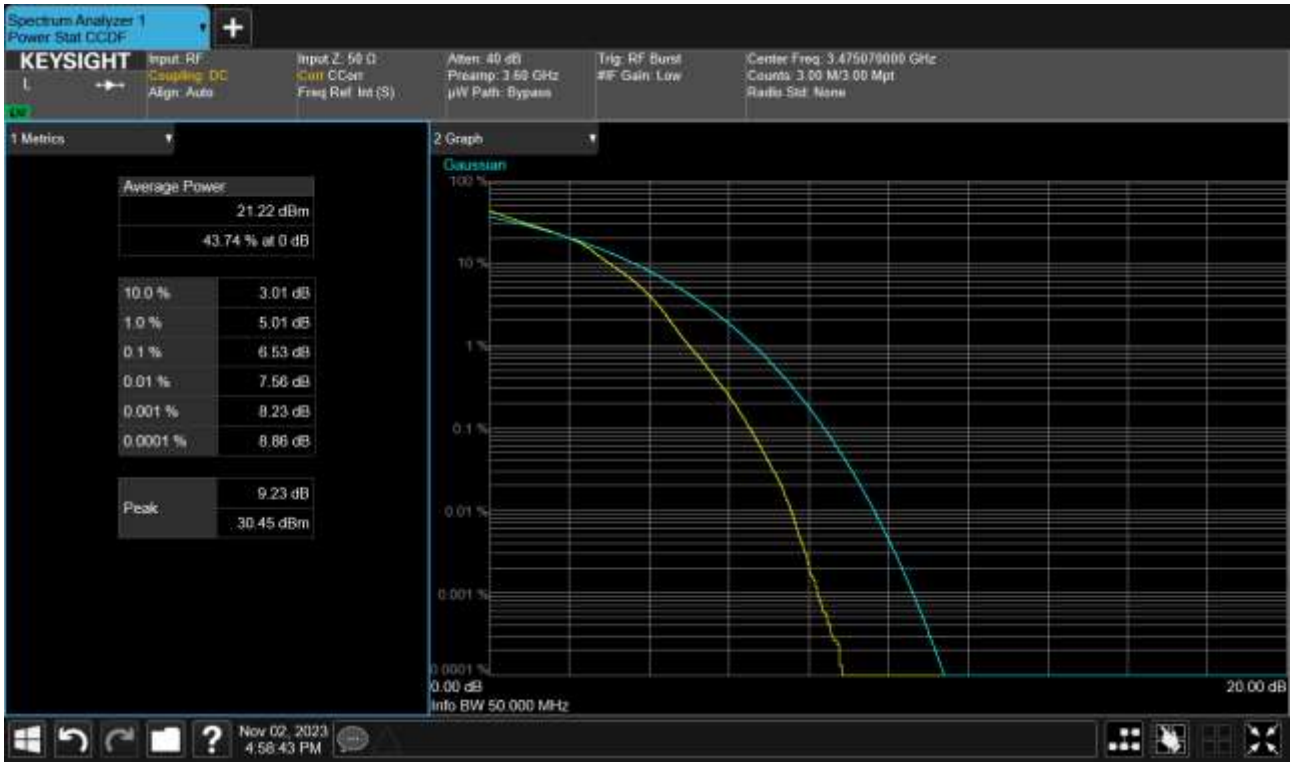
Low BAND 77 Peak To Average Ratio Plot (50 MHz, 3 475.02 MHz, BPSK, Full RB)



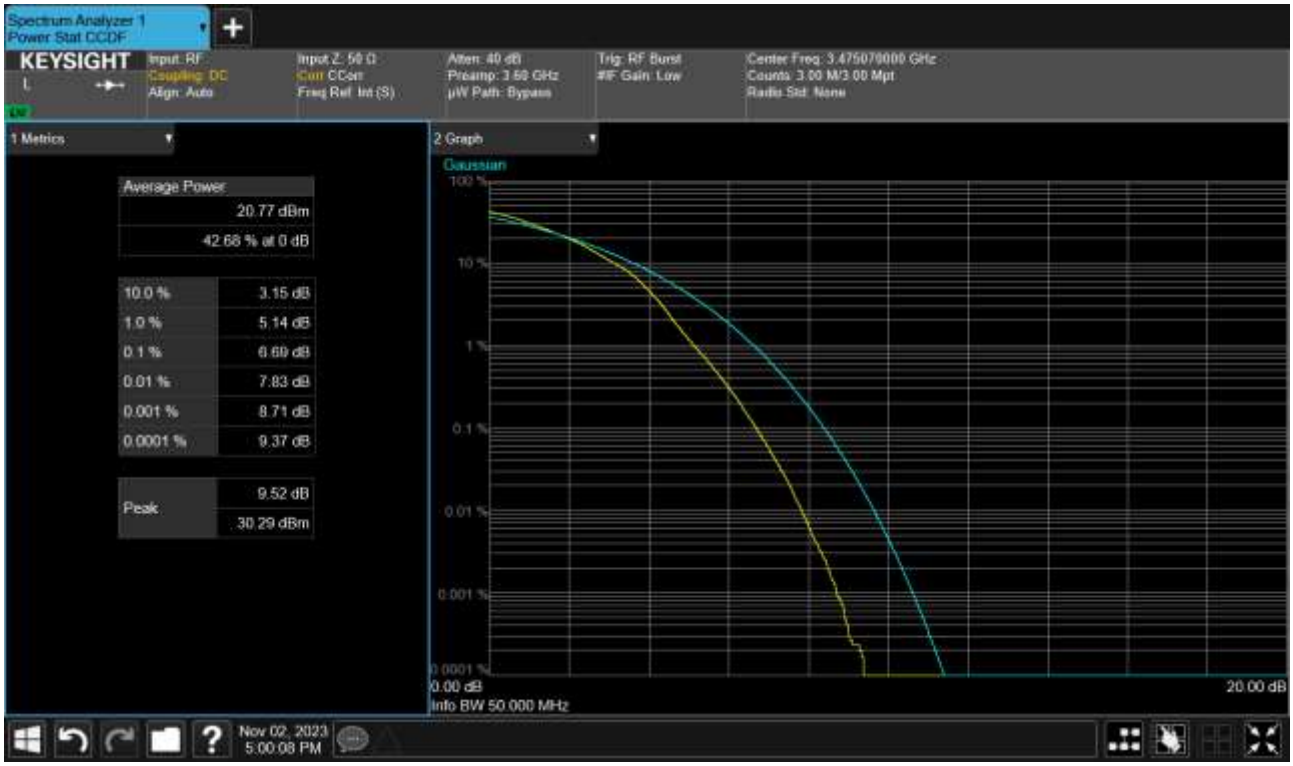
Low BAND 77 Peak To Average Ratio Plot (50 MHz, 3 475.02 MHz, QPSK, Full RB)



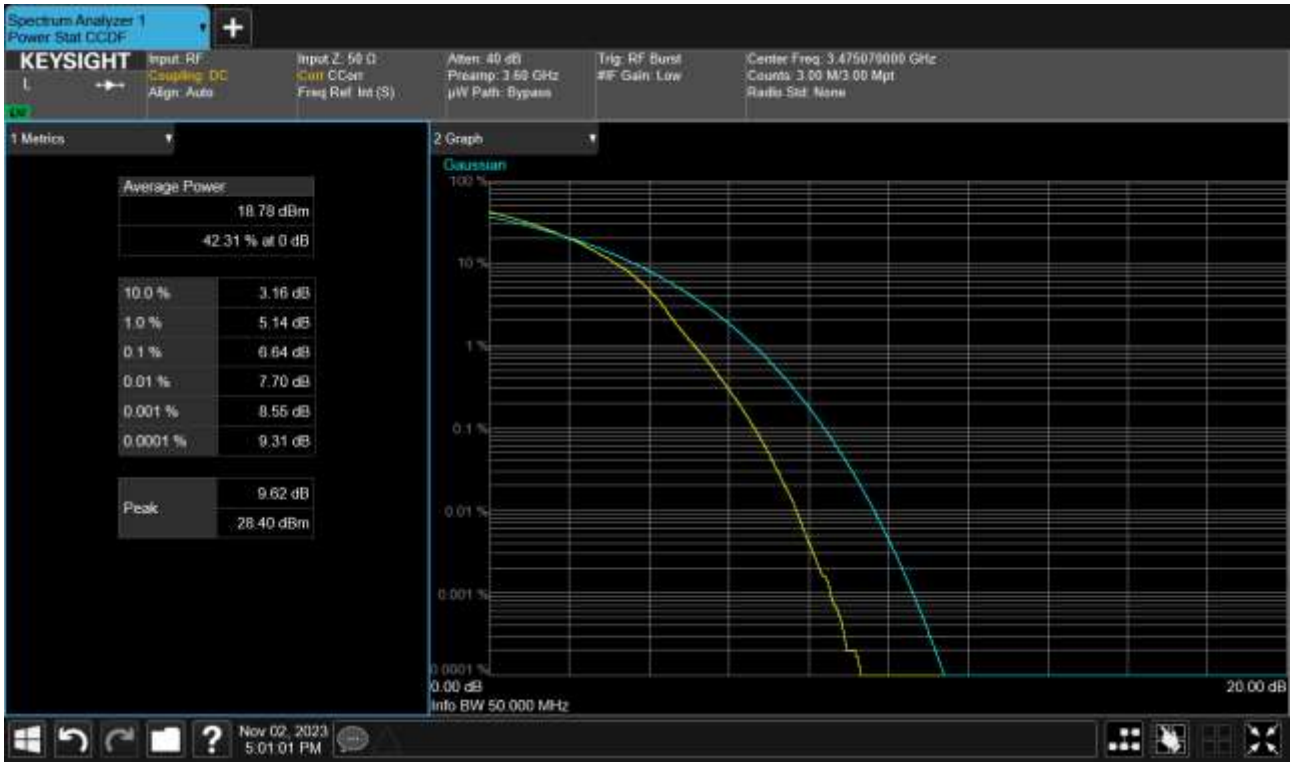
Low BAND 77 Peak To Average Ratio Plot (50 MHz, 3 475.02 MHz, 16QAM, Full RB)



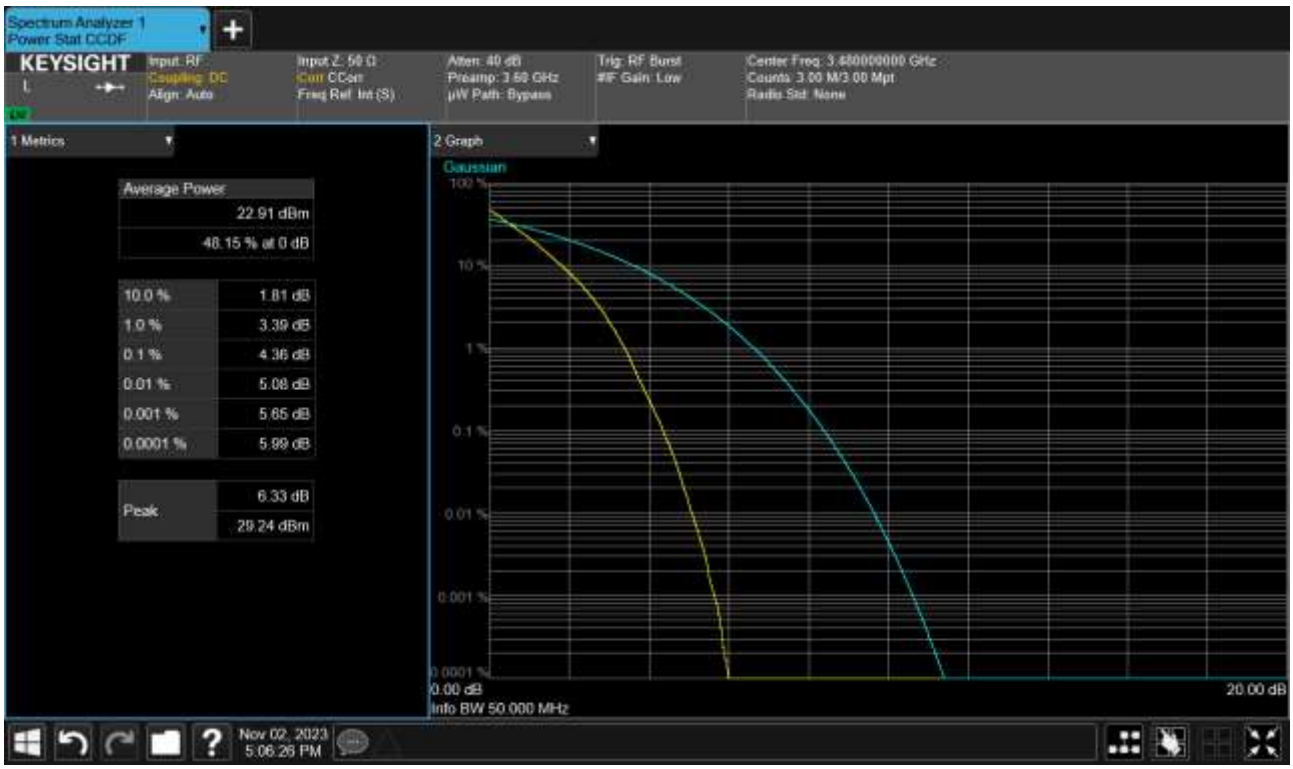
Low BAND 77 Peak To Average Ratio Plot (50 MHz, 3 475.02 MHz, 64QAM, Full RB)



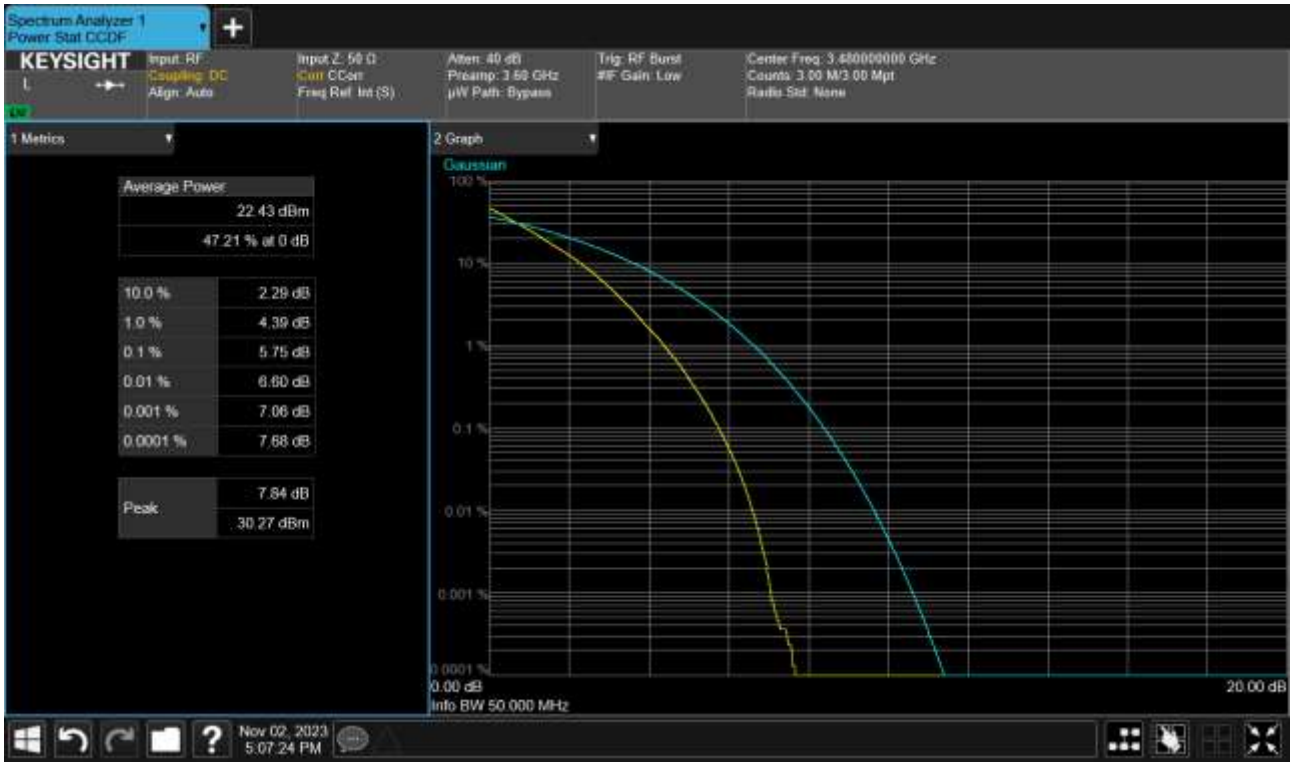
Low BAND 77 Peak To Average Ratio Plot (50 MHz, 3 475.02 MHz, 256QAM, Full RB)



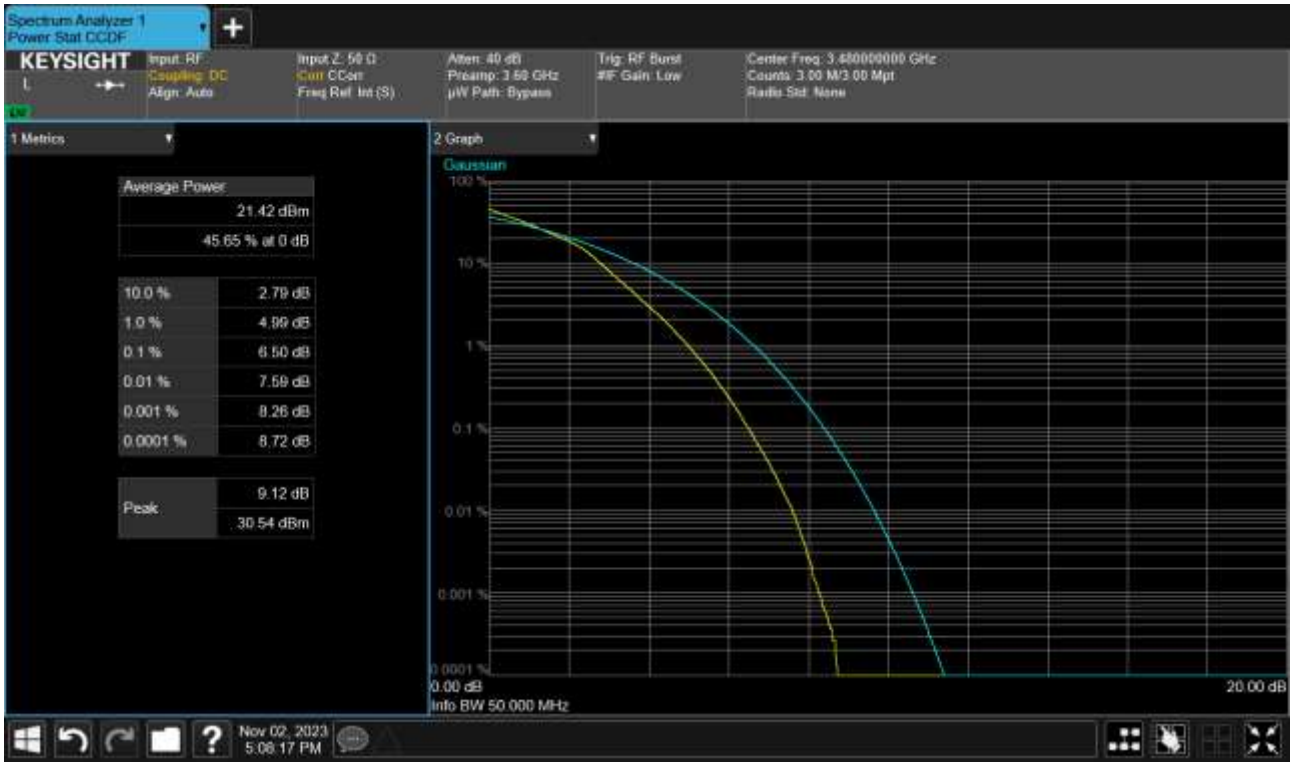
Low BAND 77 Peak To Average Ratio Plot (60 MHz, 3 480.00 MHz, BPSK, Full RB)



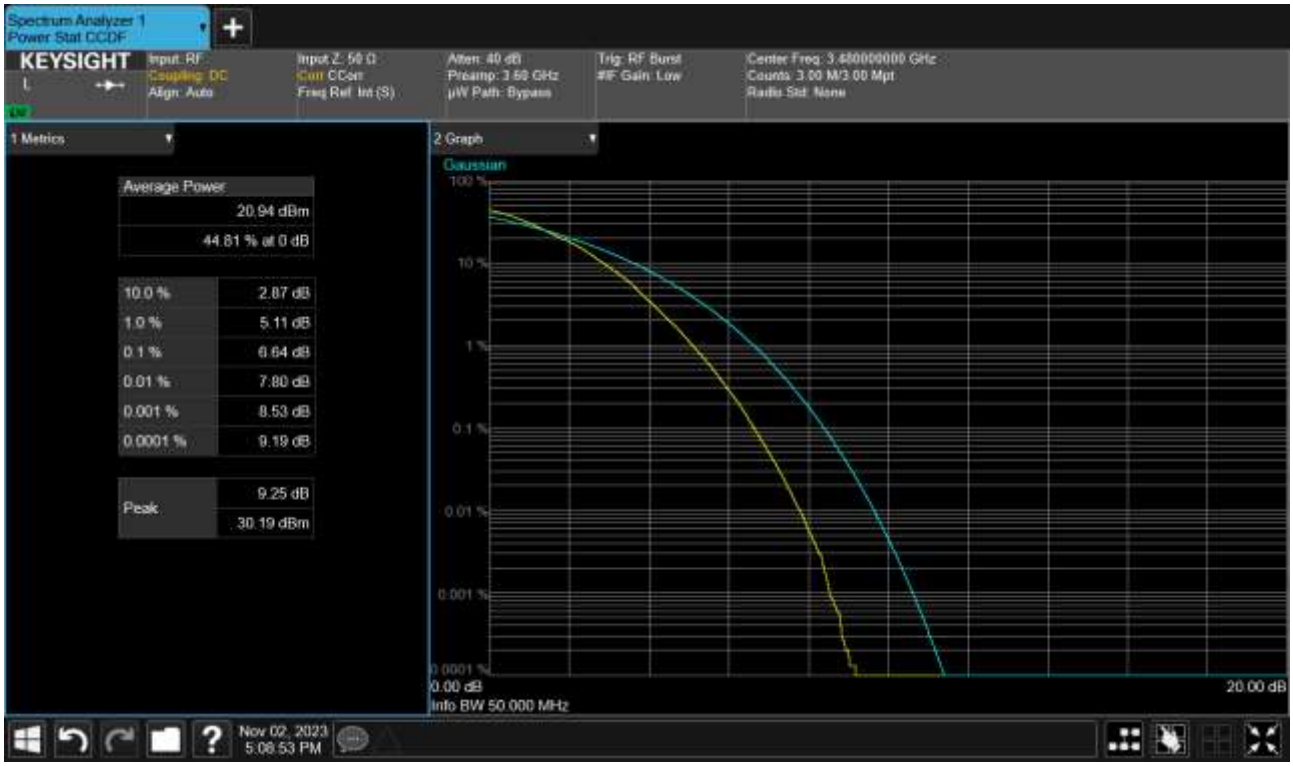
Low BAND 77 Peak To Average Ratio Plot (60 MHz, 3 480.00 MHz, QPSK, Full RB)



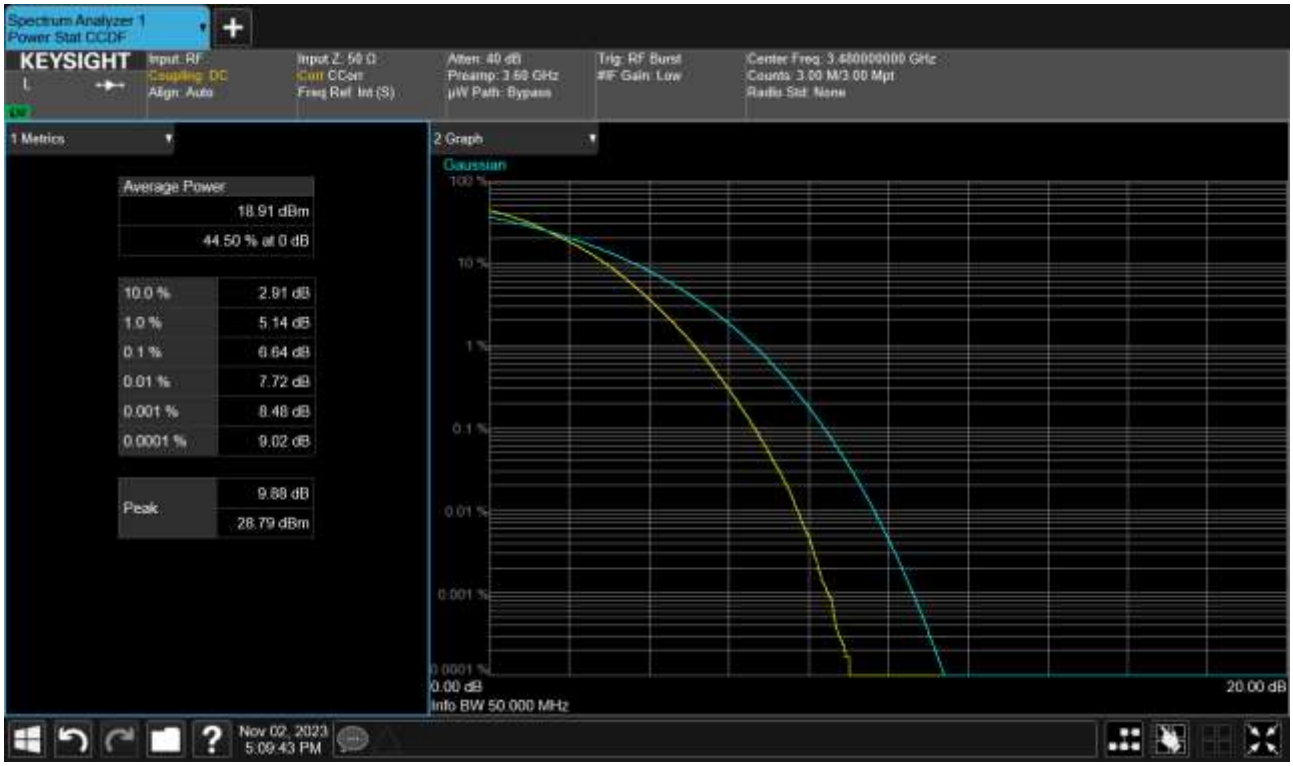
Low BAND 77 Peak To Average Ratio Plot (60 MHz, 3 480.00 MHz, 16QAM, Full RB)



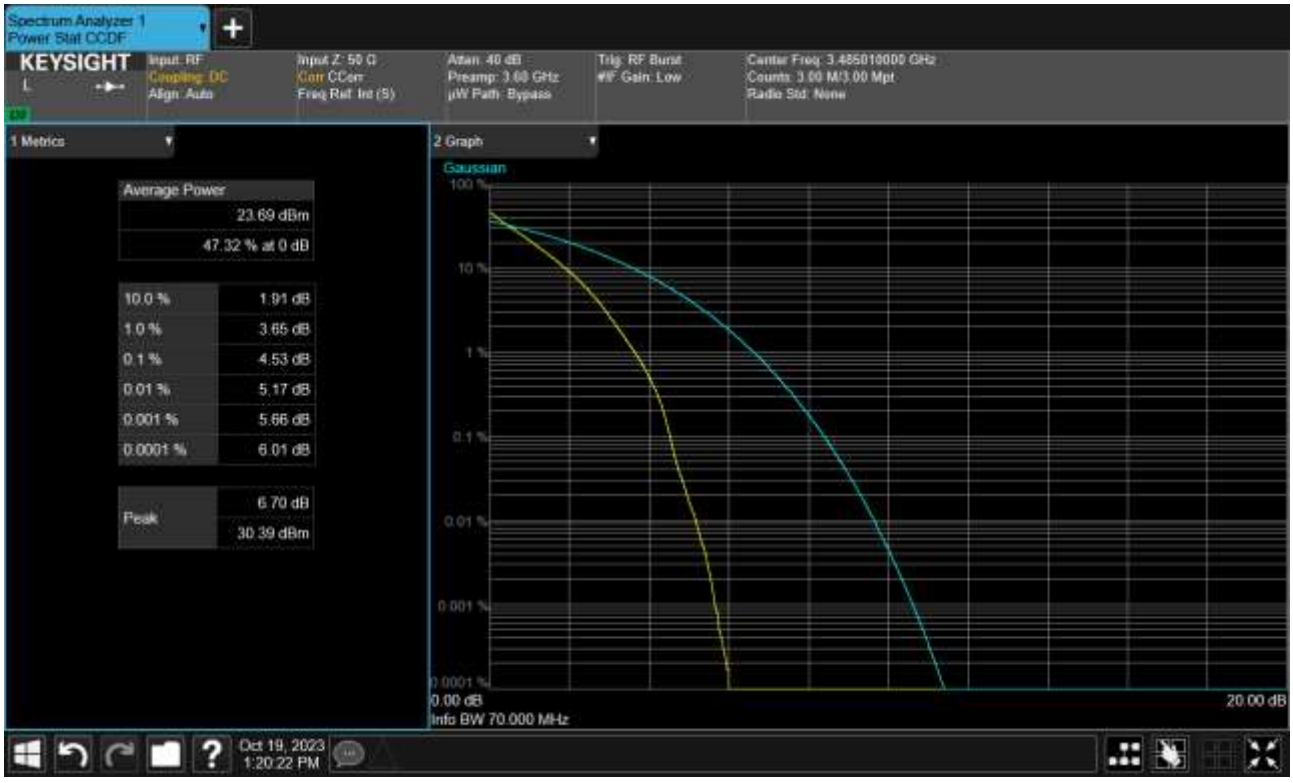
Low BAND 77 Peak To Average Ratio Plot (60 MHz, 3 480.00 MHz, 64QAM, Full RB)



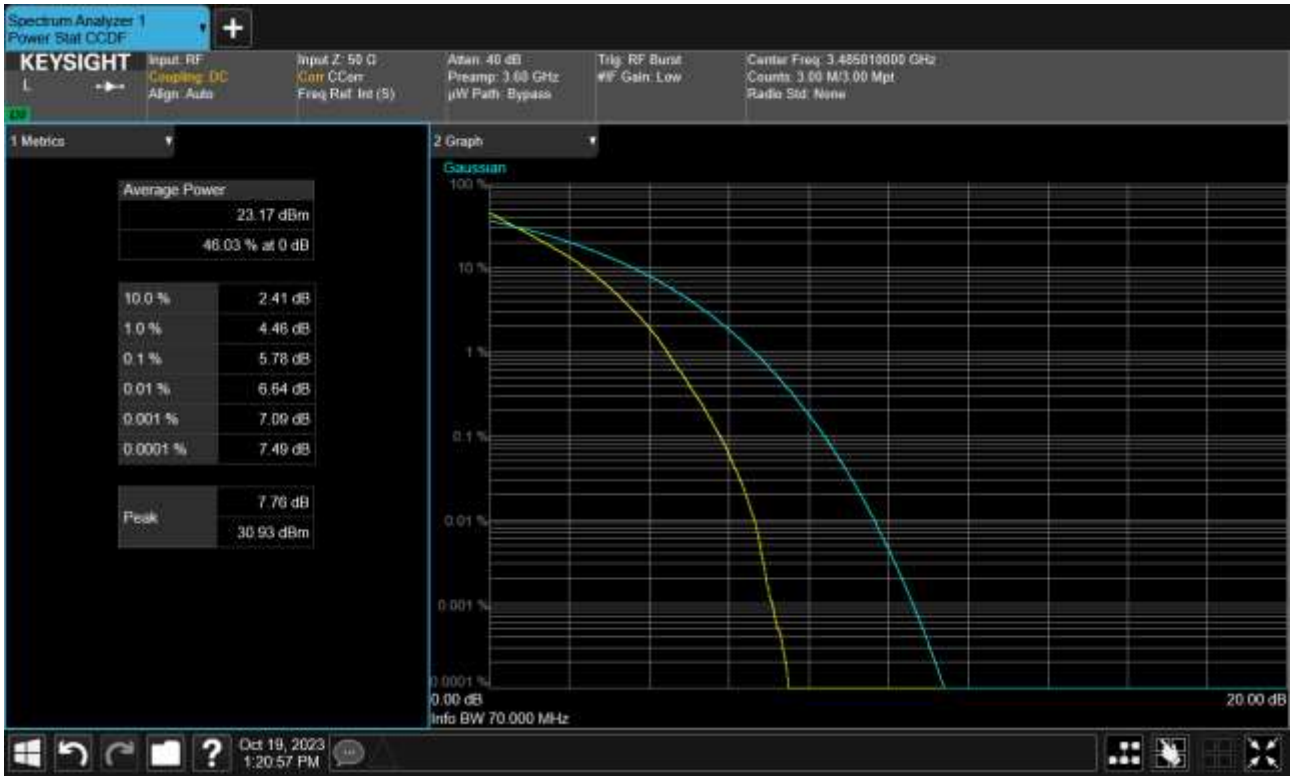
Low BAND 77 Peak To Average Ratio Plot (60 MHz, 3 480.00 MHz, 256QAM, Full RB)



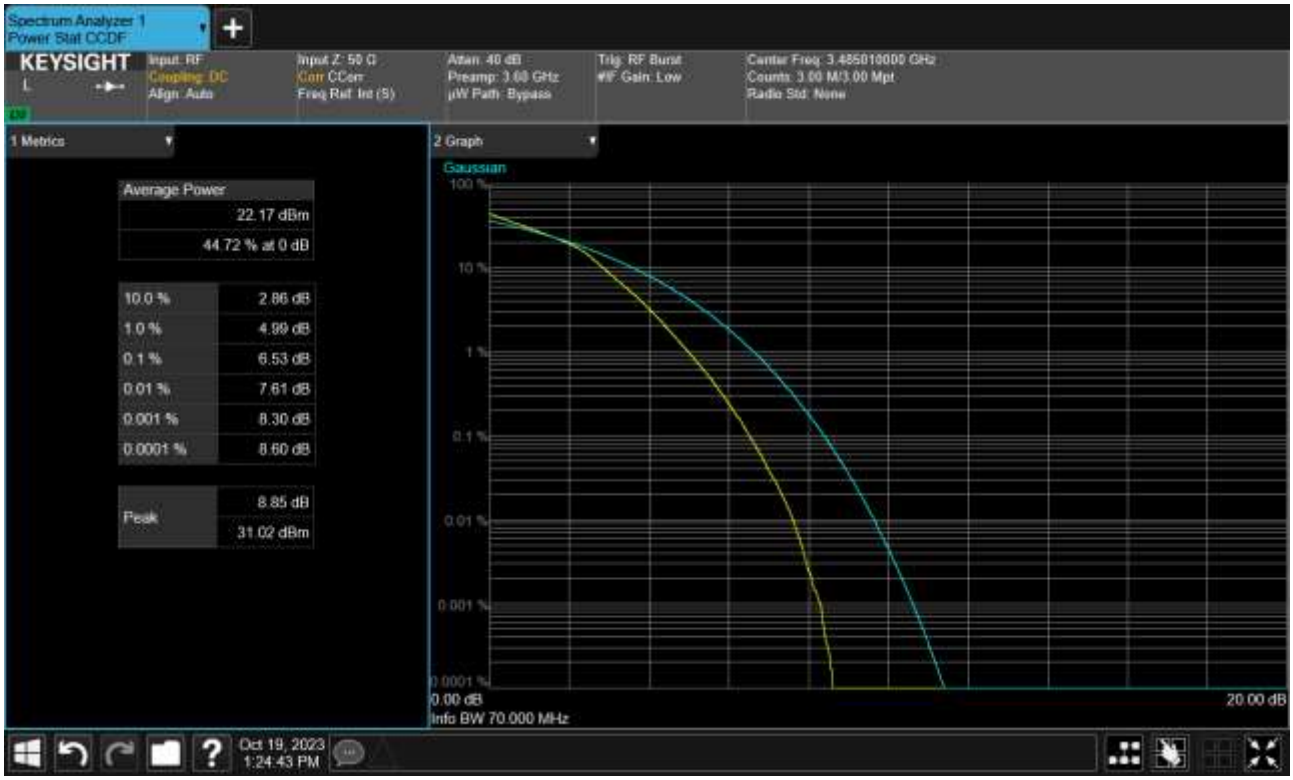
Low BAND 77 Peak To Average Ratio Plot (70 MHz, 3 485.01 MHz, BPSK, Full RB)



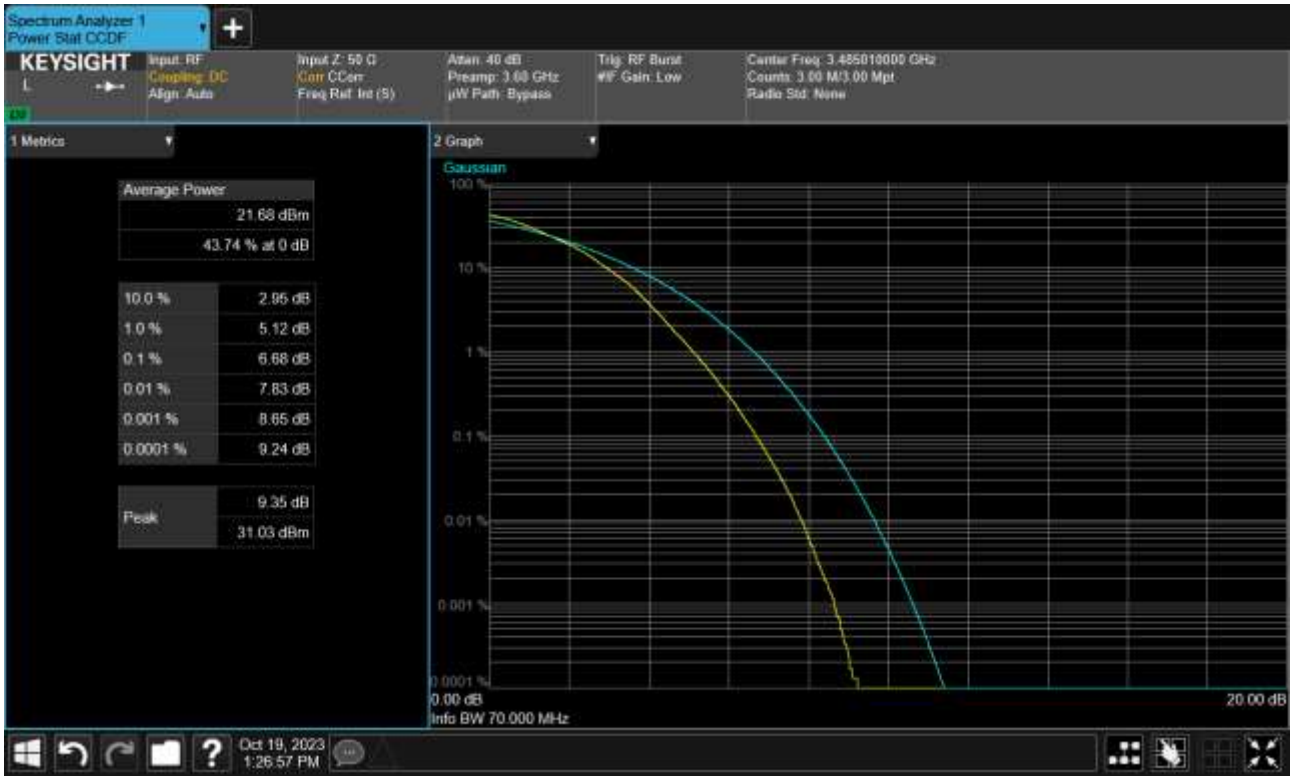
Low BAND 77 Peak To Average Ratio Plot (70 MHz, 3 485.01 MHz, QPSK, Full RB)



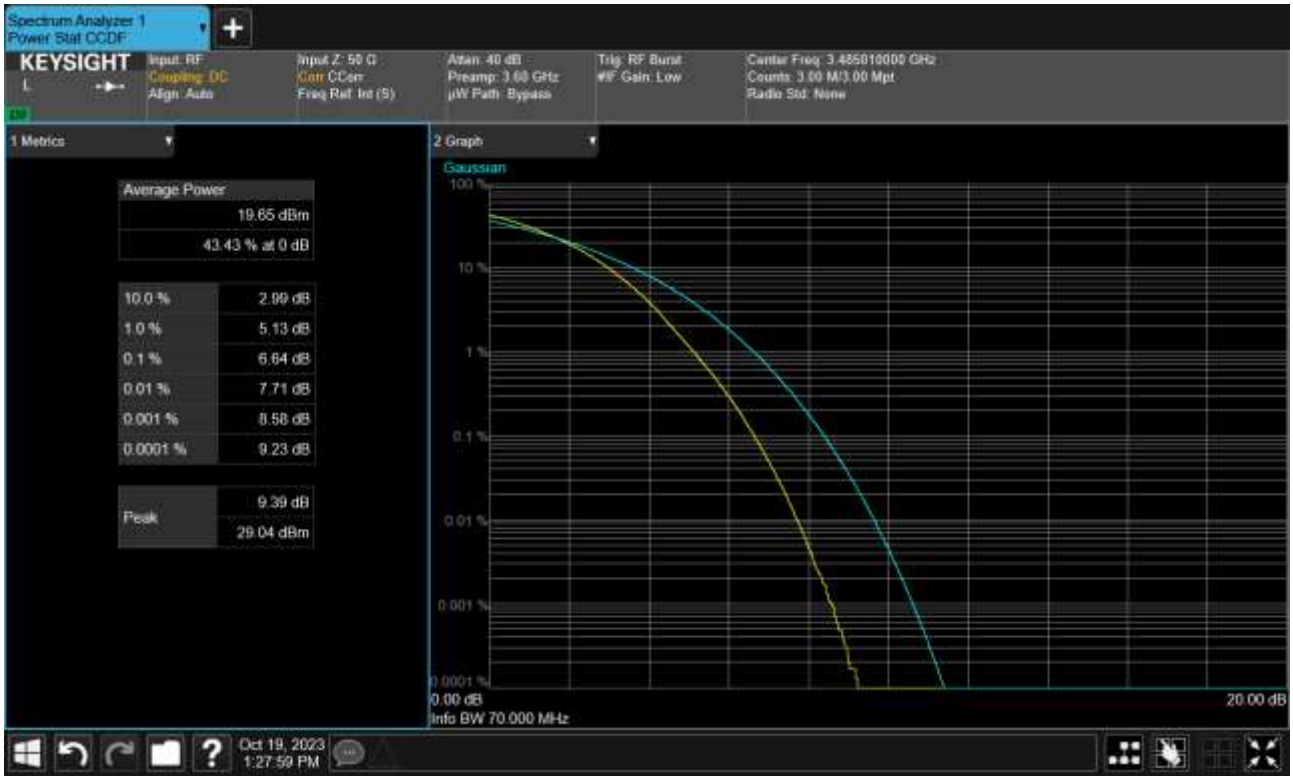
Low BAND 77 Peak To Average Ratio Plot (70 MHz, 3 485.01 MHz, 16QAM, Full RB)



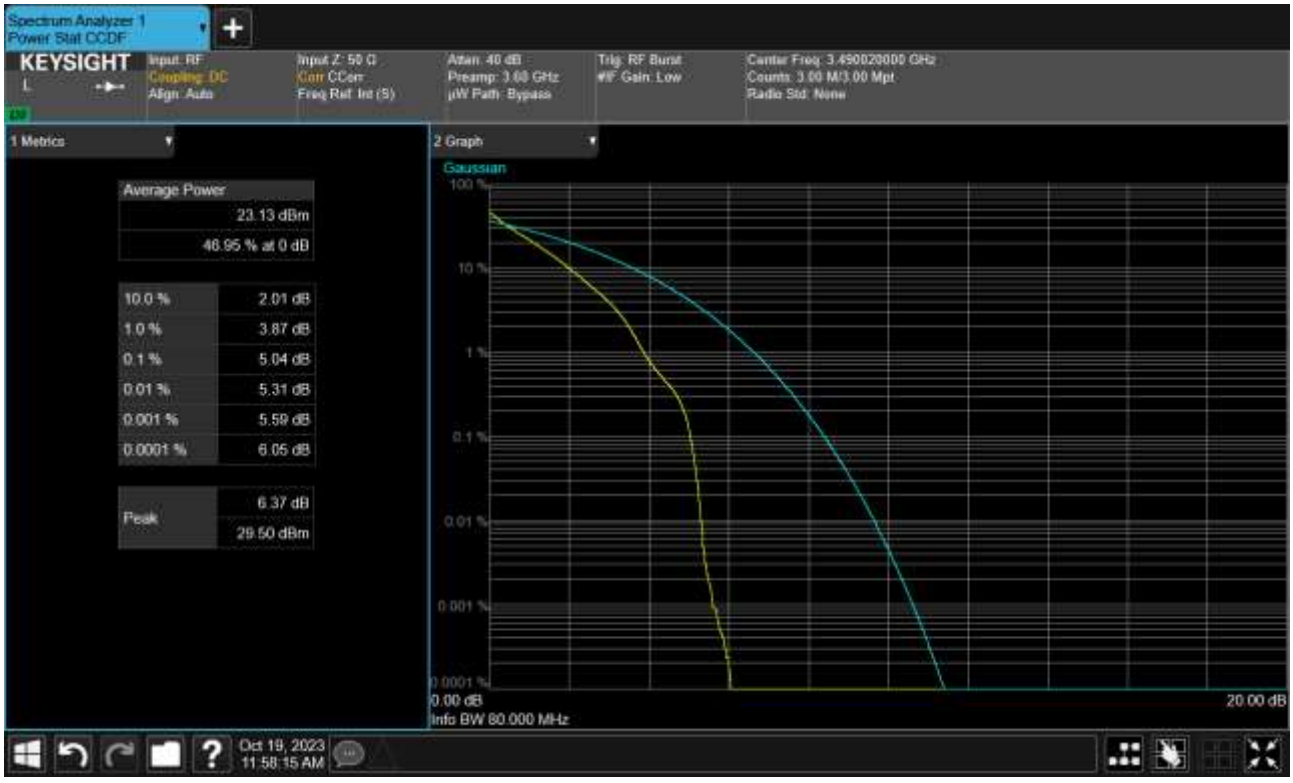
Low BAND 77 Peak To Average Ratio Plot (70 MHz, 3 485.01 MHz, 64QAM, Full RB)



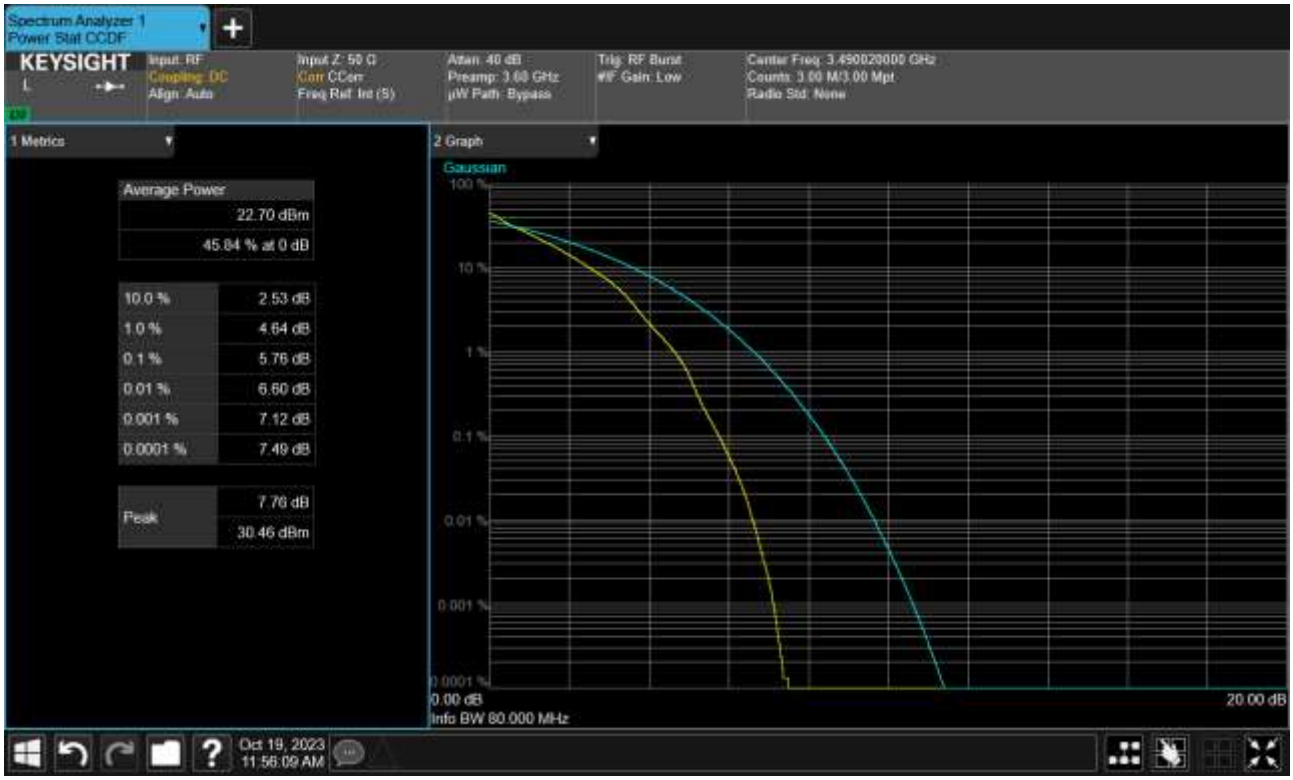
Low BAND 77 Peak To Average Ratio Plot (70 MHz, 3 485.01 MHz, 256QAM, Full RB)



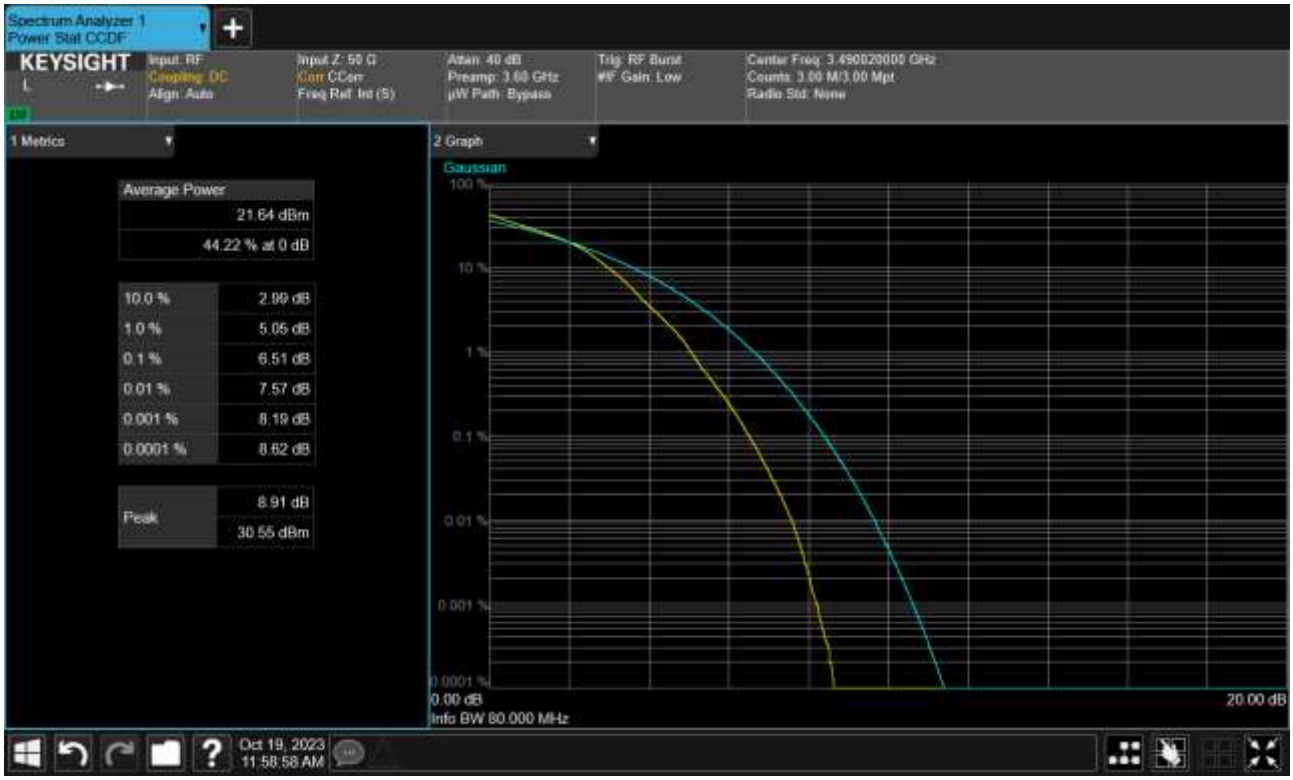
Low BAND 77 Peak To Average Ratio Plot (80 MHz, 3 490.02 MHz, BPSK, Full RB)



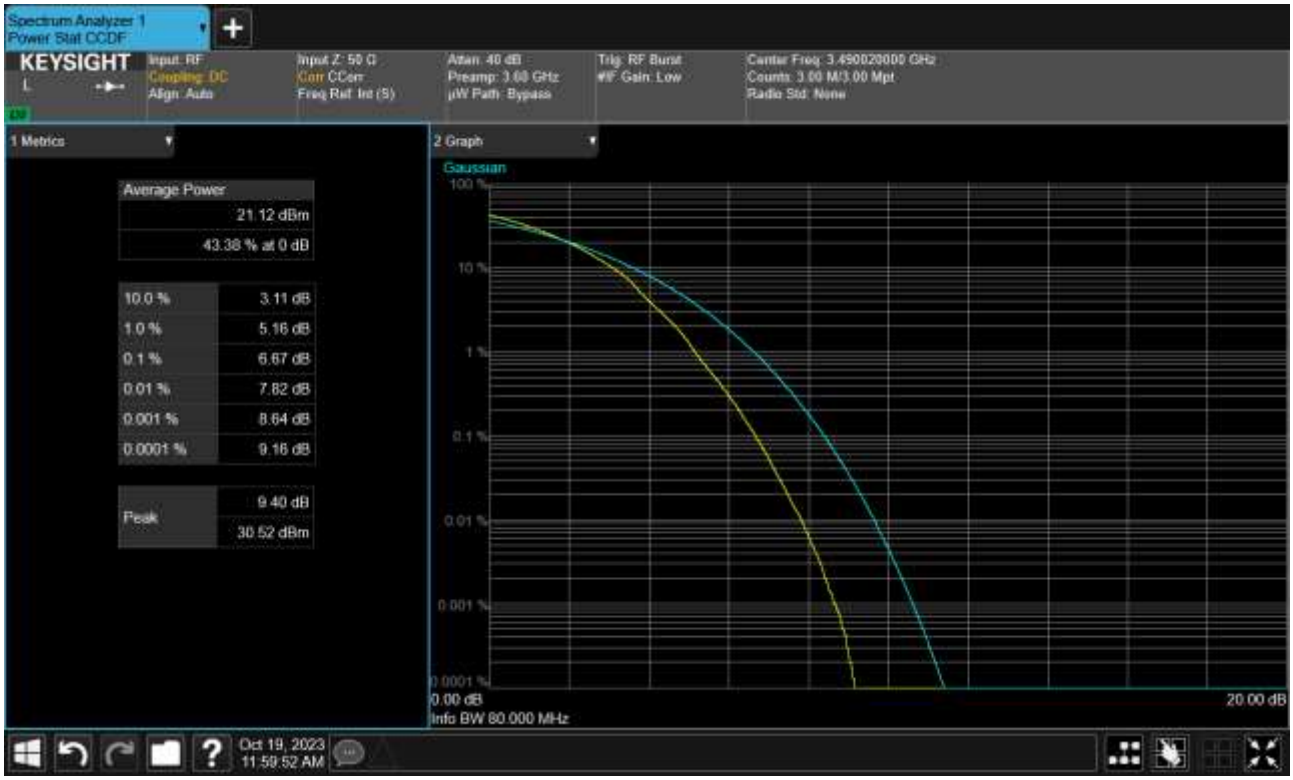
Low BAND 77 Peak To Average Ratio Plot (80 MHz, 3 490.02 MHz, QPSK, Full RB)



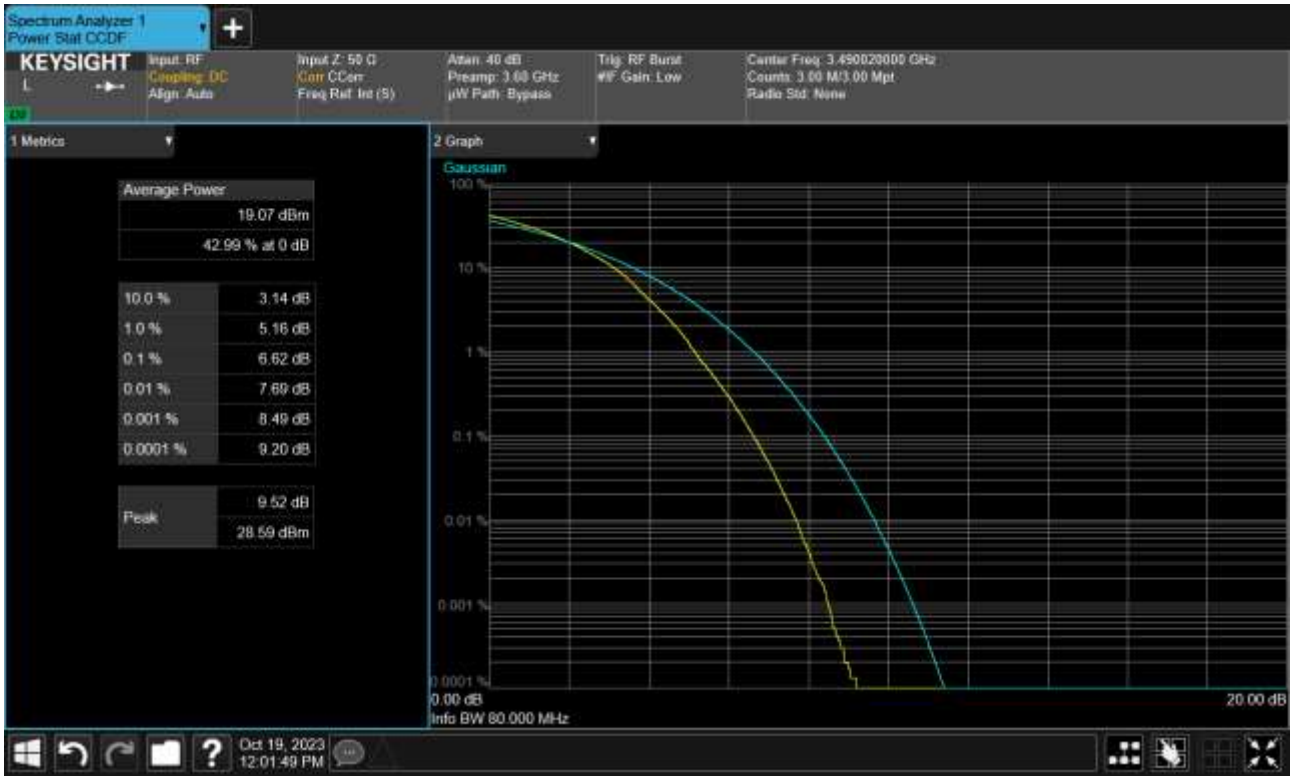
Low BAND 77 Peak To Average Ratio Plot (80 MHz, 3 490.02 MHz, 16QAM, Full RB)



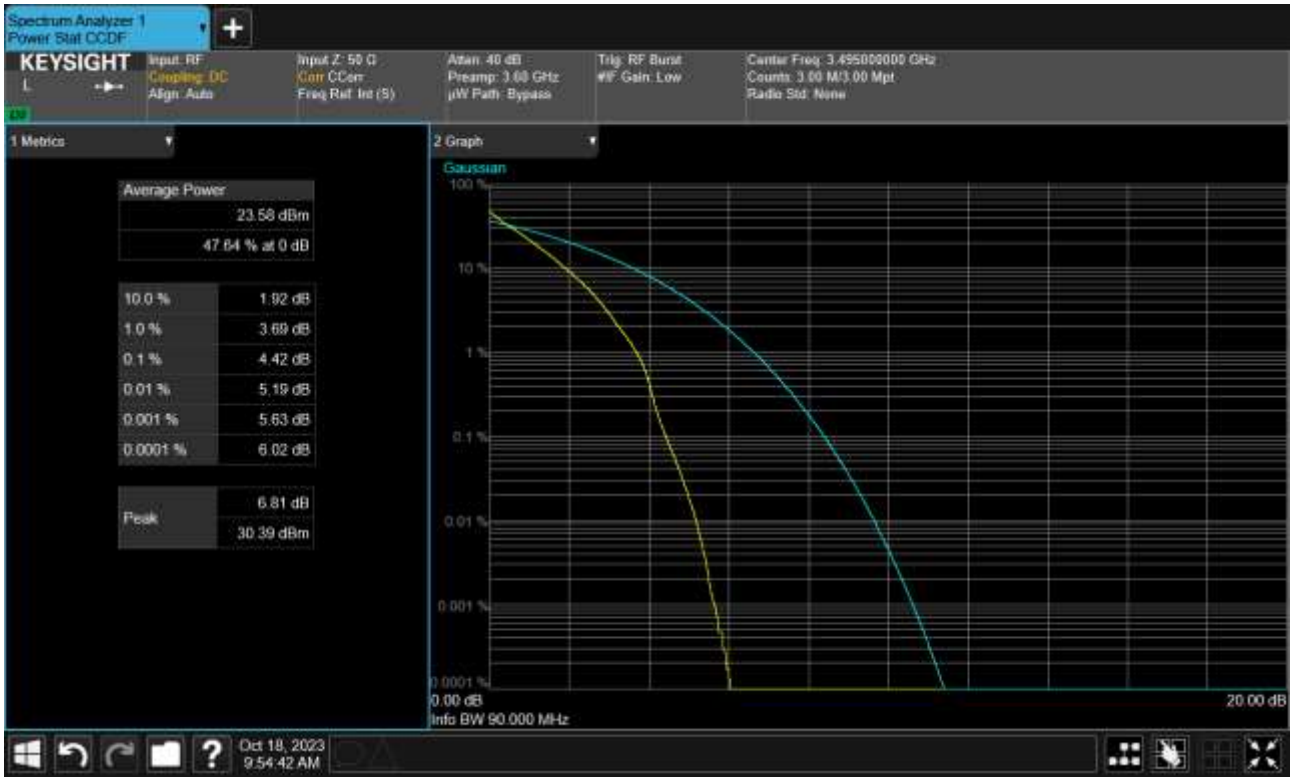
Low BAND 77 Peak To Average Ratio Plot (80 MHz, 3 490.02 MHz, 64QAM, Full RB)



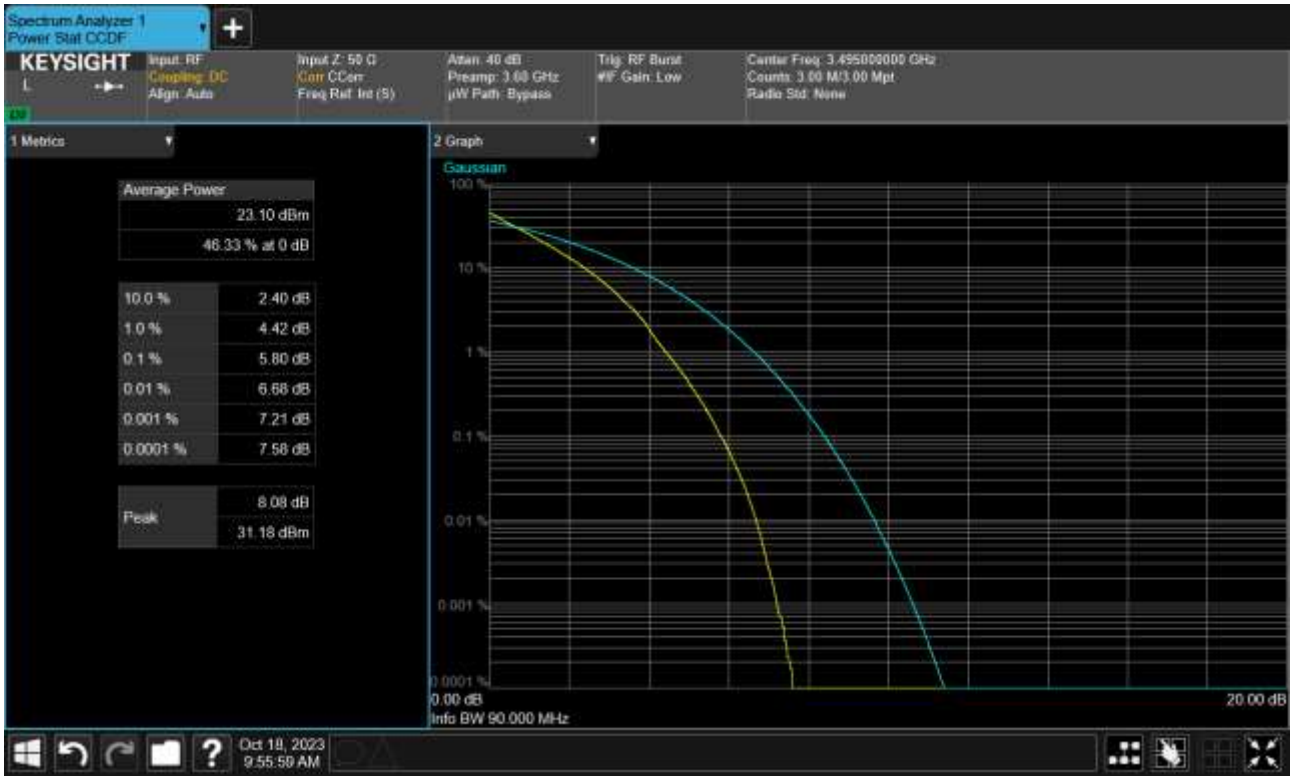
Low BAND 77 Peak To Average Ratio Plot (80 MHz, 3 490.02 MHz, 256QAM, Full RB)



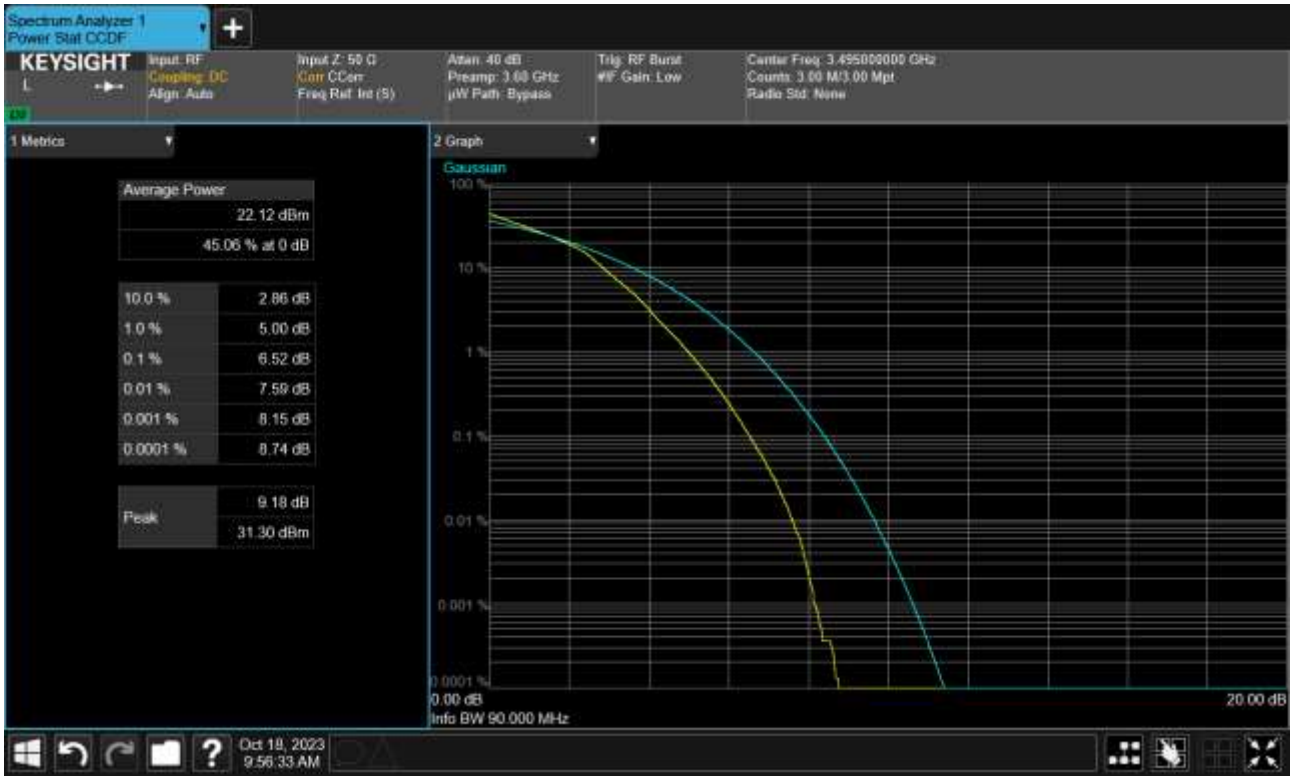
Low BAND 77 Peak To Average Ratio Plot (90 MHz, 3 495.00 MHz, BPSK, Full RB)



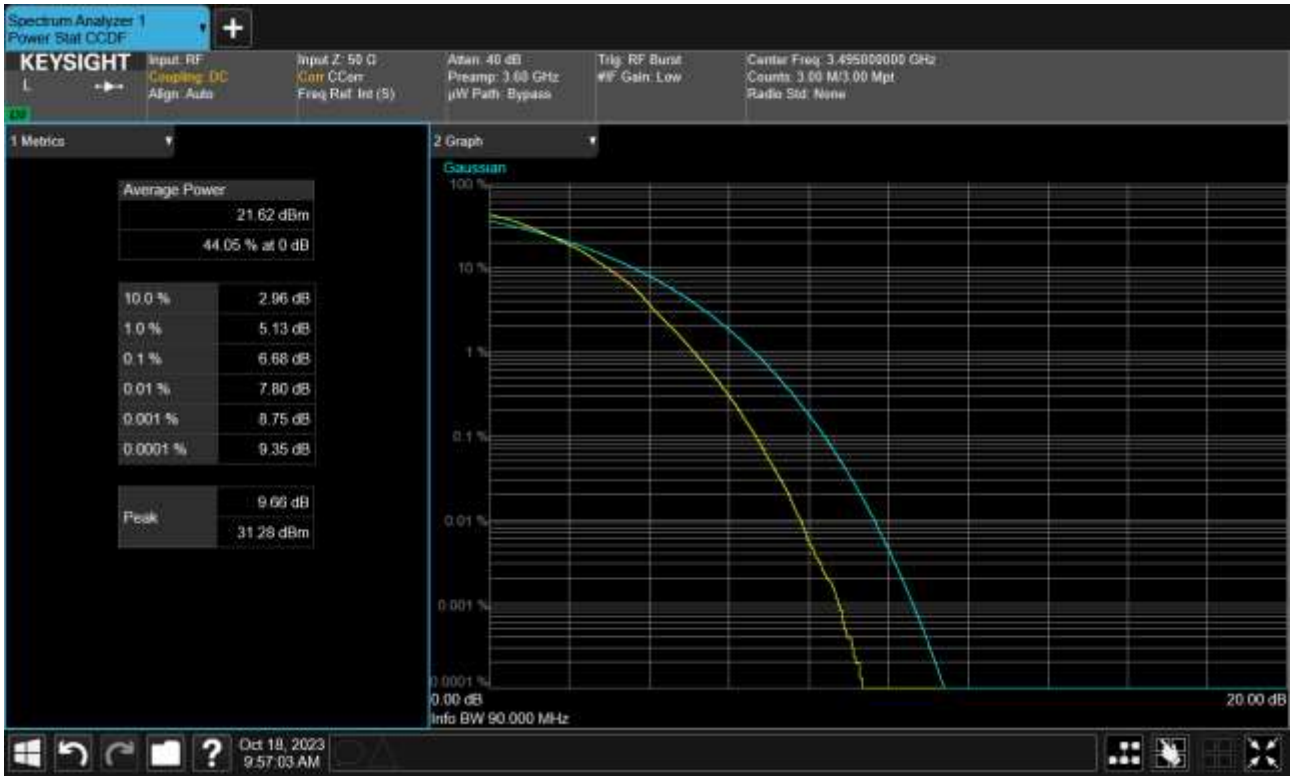
Low BAND 77 Peak To Average Ratio Plot (90 MHz, 3 495.00 MHz, QPSK, Full RB)



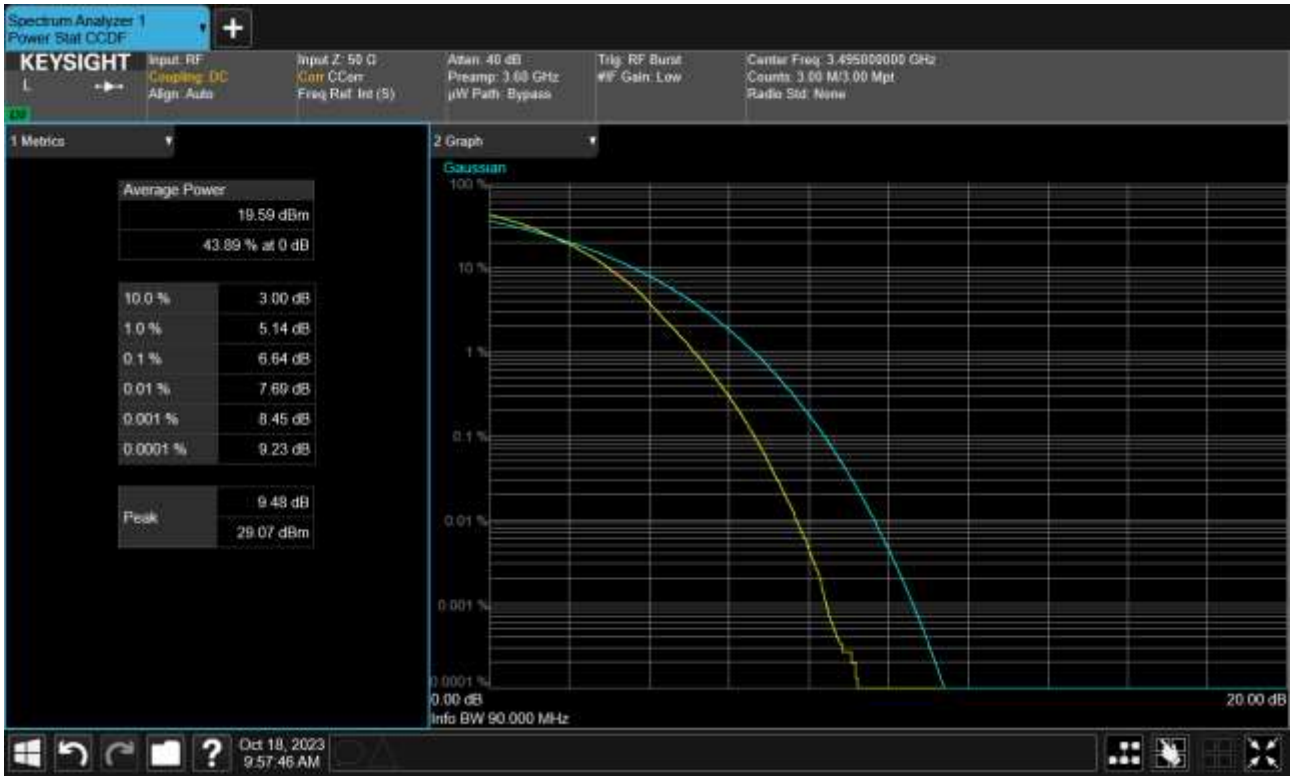
Low BAND 77 Peak To Average Ratio Plot (90 MHz, 3 495.00 MHz, 16QAM, Full RB)



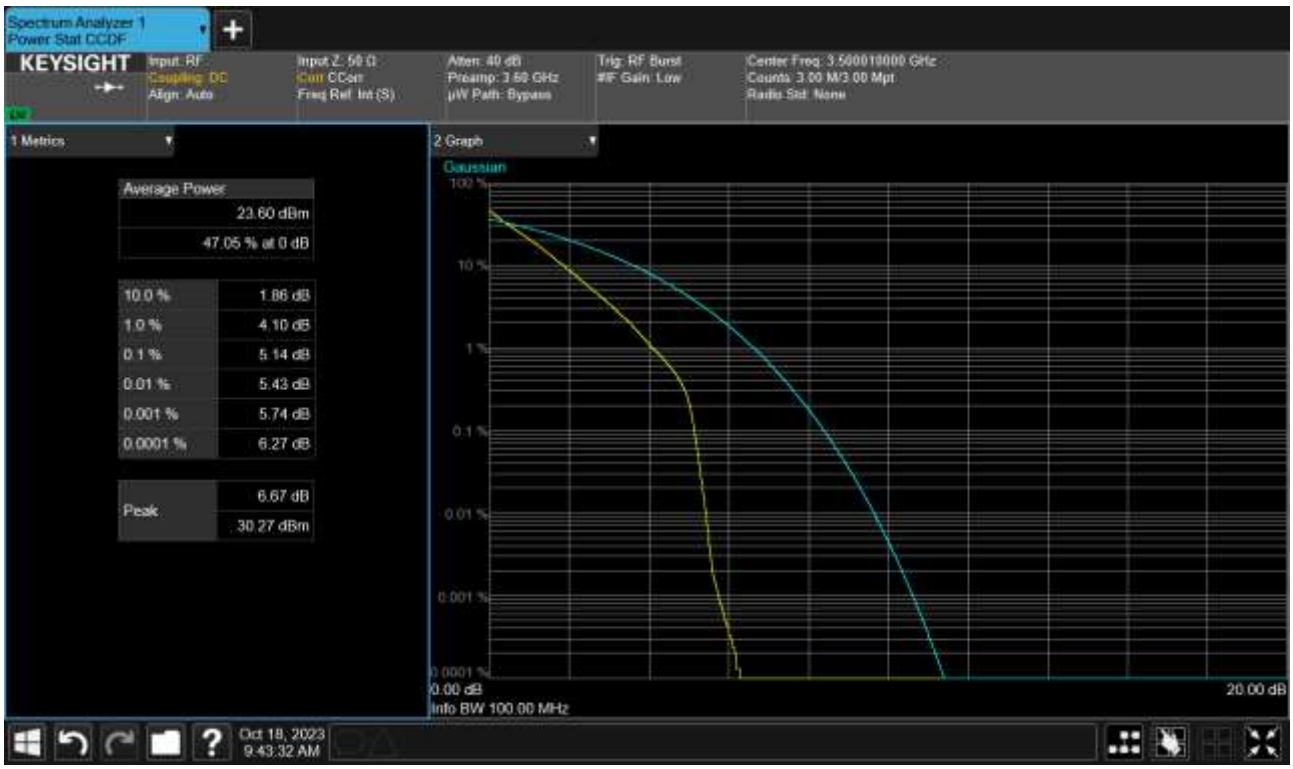
Low BAND 77 Peak To Average Ratio Plot (90 MHz, 3 495.00 MHz, 64QAM, Full RB)



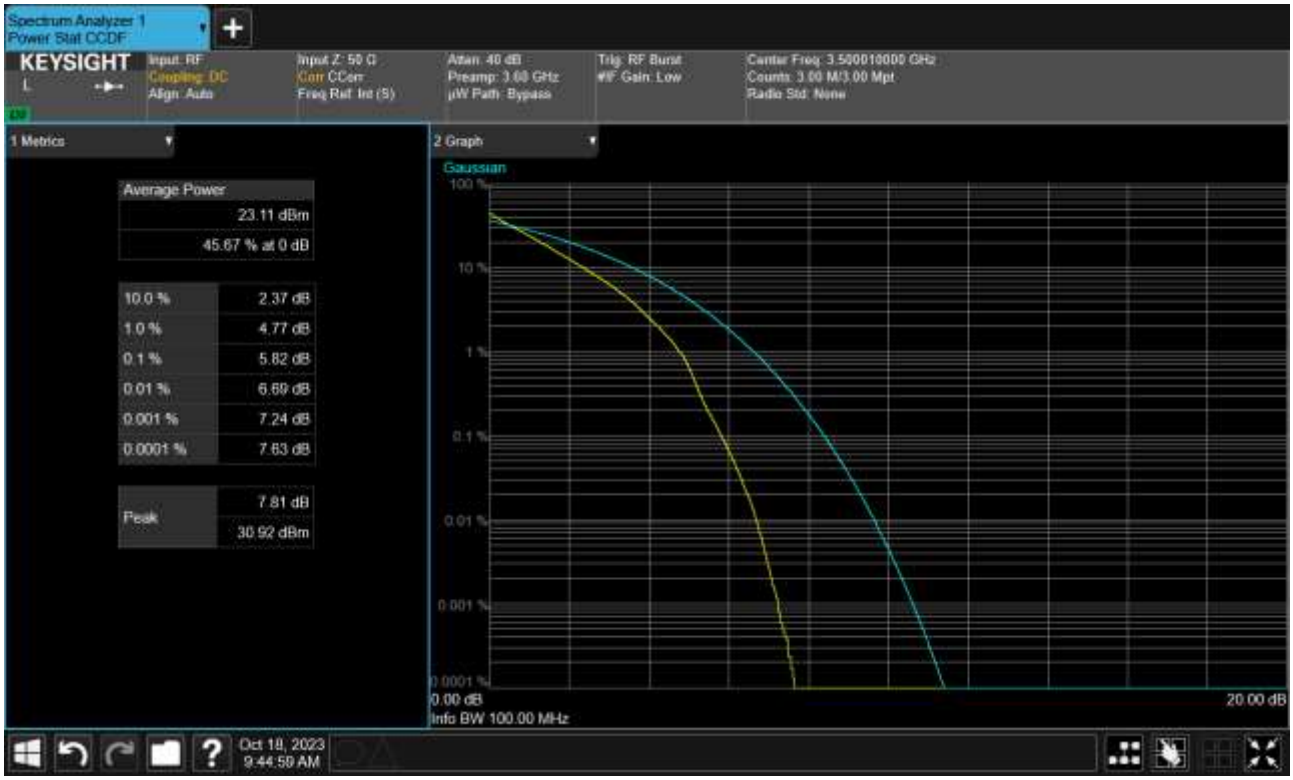
Low BAND 77 Peak To Average Ratio Plot (90 MHz, 3 495.00 MHz, 256QAM, Full RB)



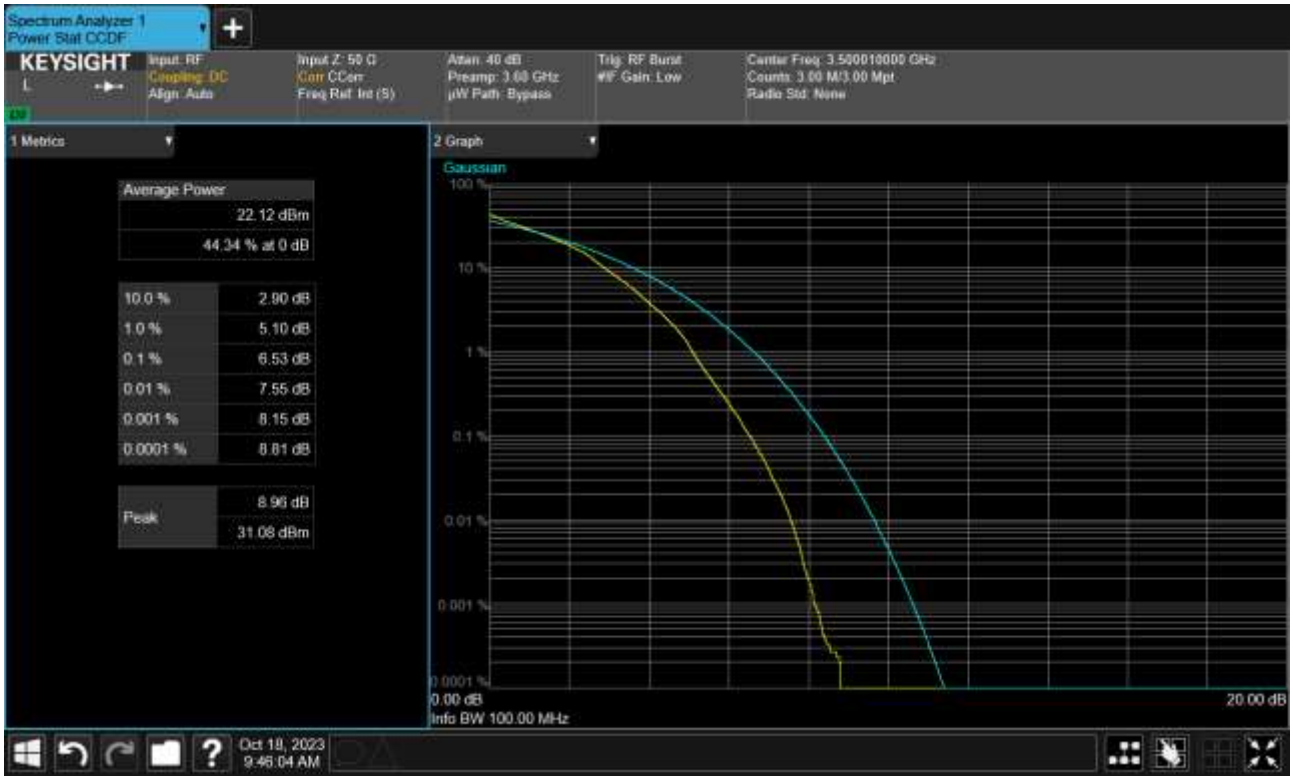
Low BAND 77 Peak To Average Ratio Plot (100 MHz, 3 500.01 MHz, BPSK, Full RB)



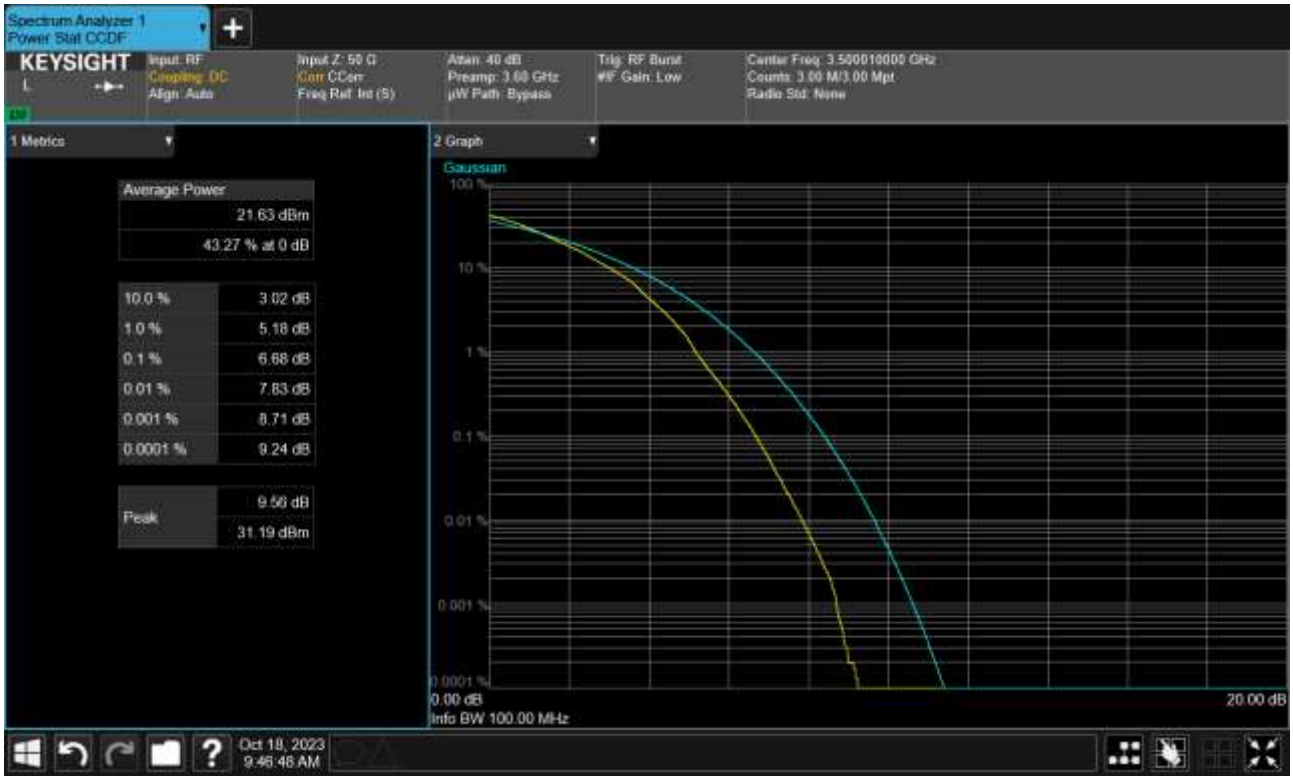
Low BAND 77 Peak To Average Ratio Plot (100 MHz, 3 500.01 MHz, QPSK, Full RB)



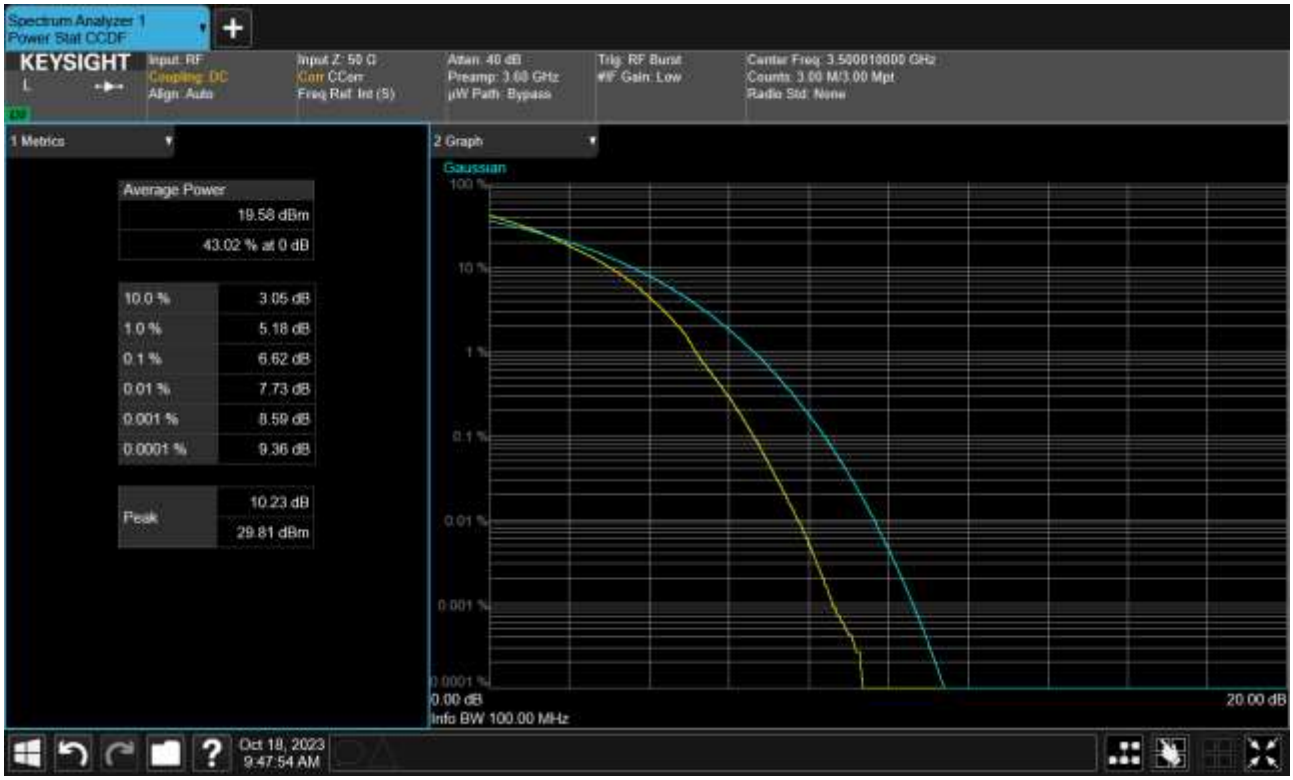
Low BAND 77 Peak To Average Ratio Plot (100 MHz, 3 500.01 MHz, 16QAM, Full RB)



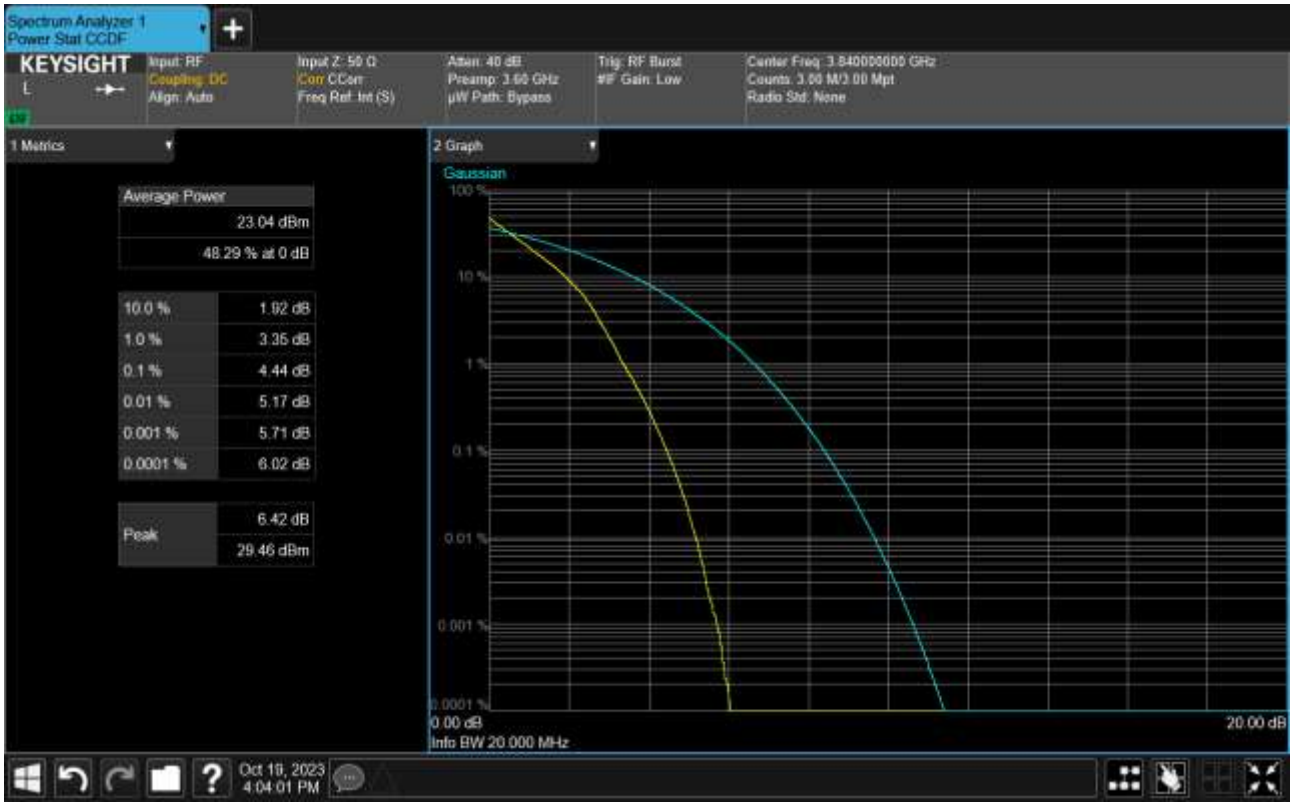
Low BAND 77 Peak To Average Ratio Plot (100 MHz, 3 500.01 MHz, 64QAM, Full RB)



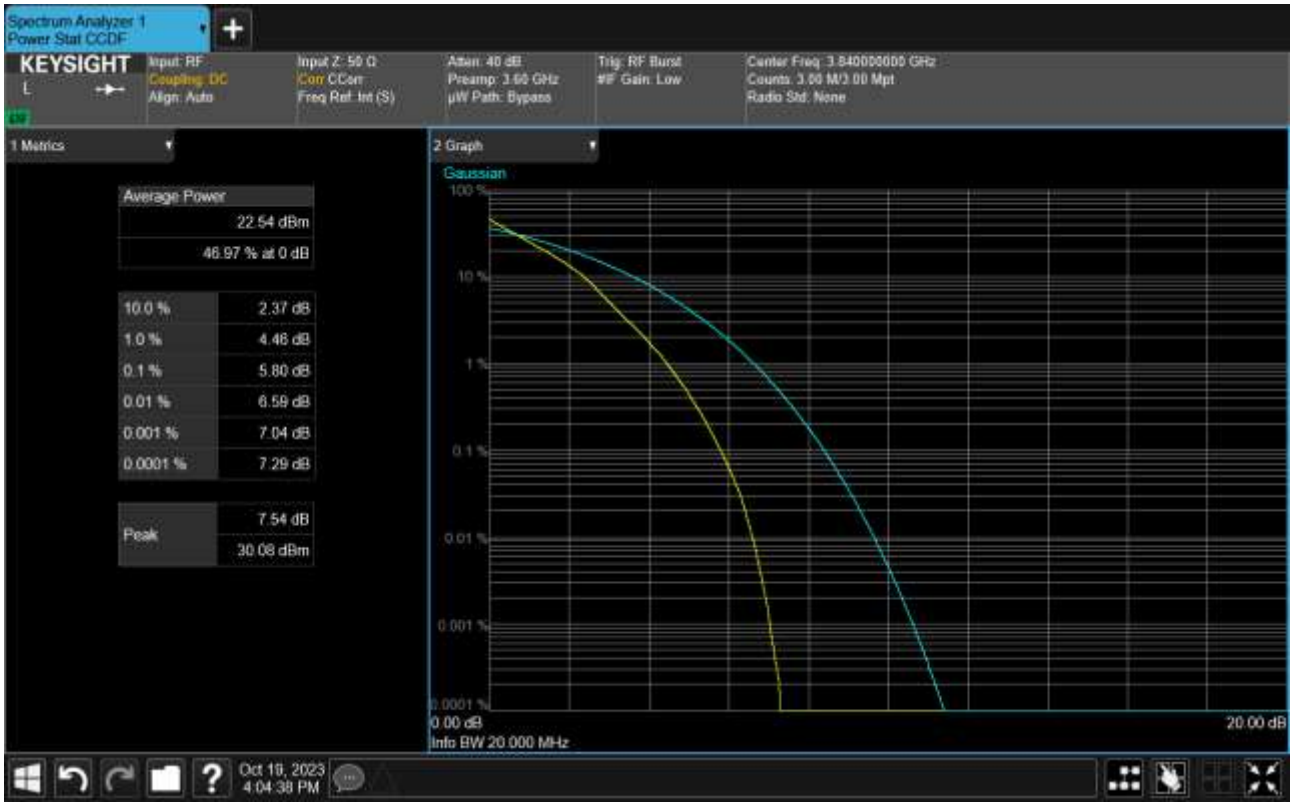
Low BAND 77 Peak To Average Ratio Plot (100 MHz, 3 500.01 MHz, 256QAM, Full RB)



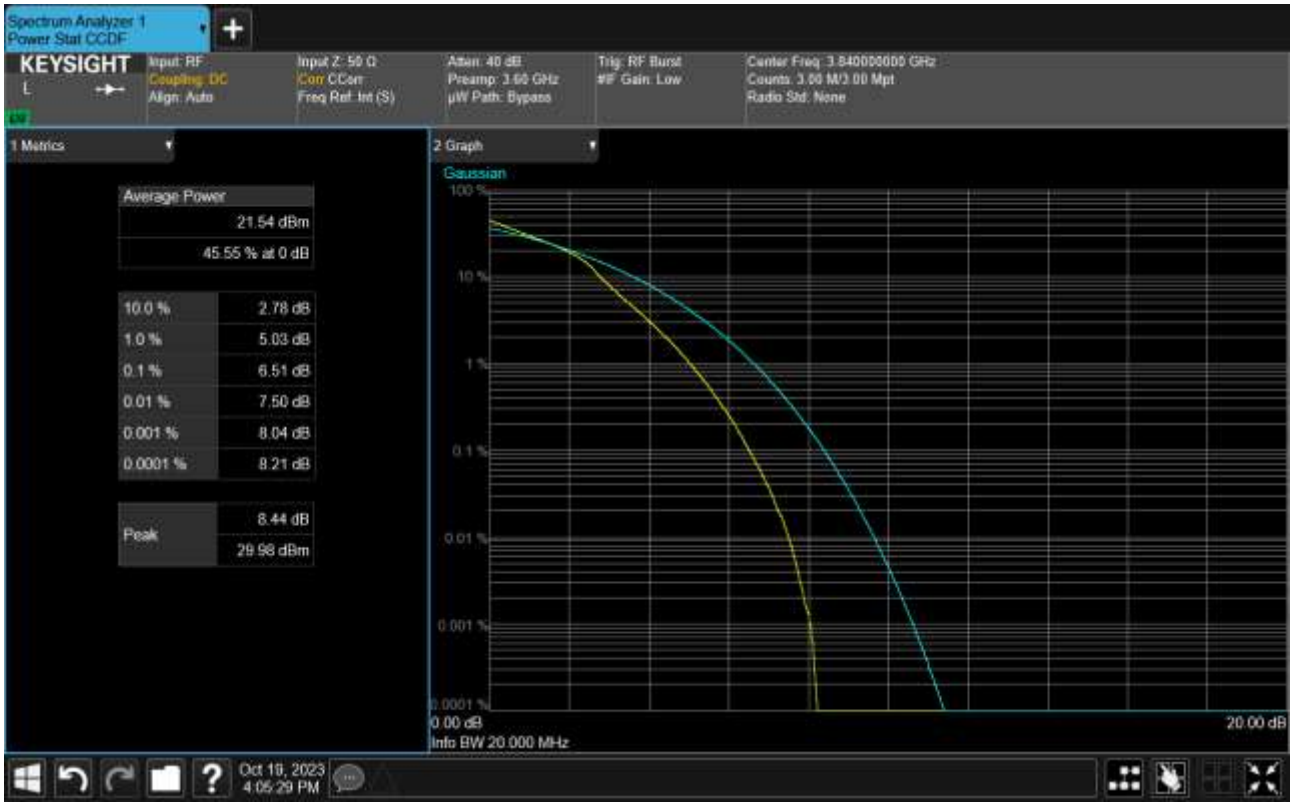
Upper BAND 77 Peak To Average Ratio Plot (20 MHz, 3 840.00 MHz, BPSK, Full RB)



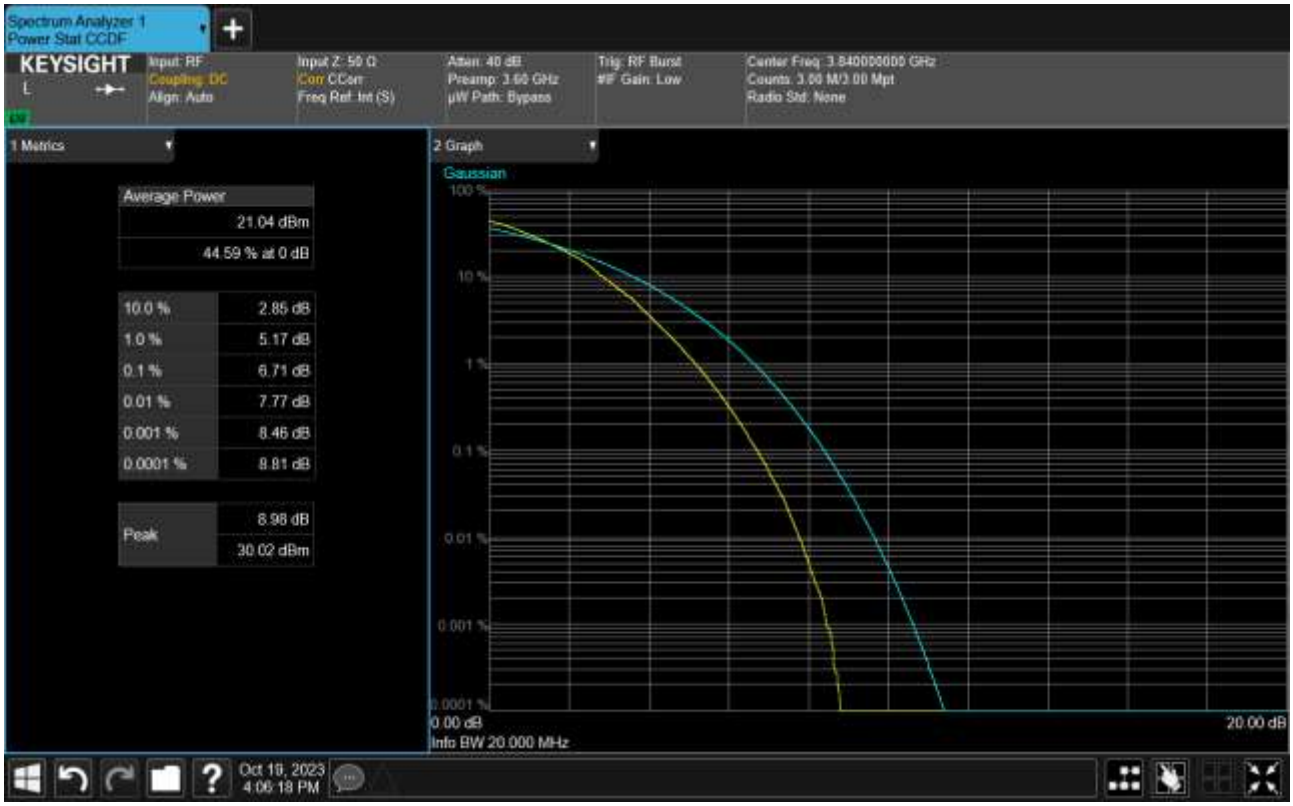
Upper BAND 77 Peak To Average Ratio Plot (20 MHz, 3 840.00 MHz, QPSK, Full RB)



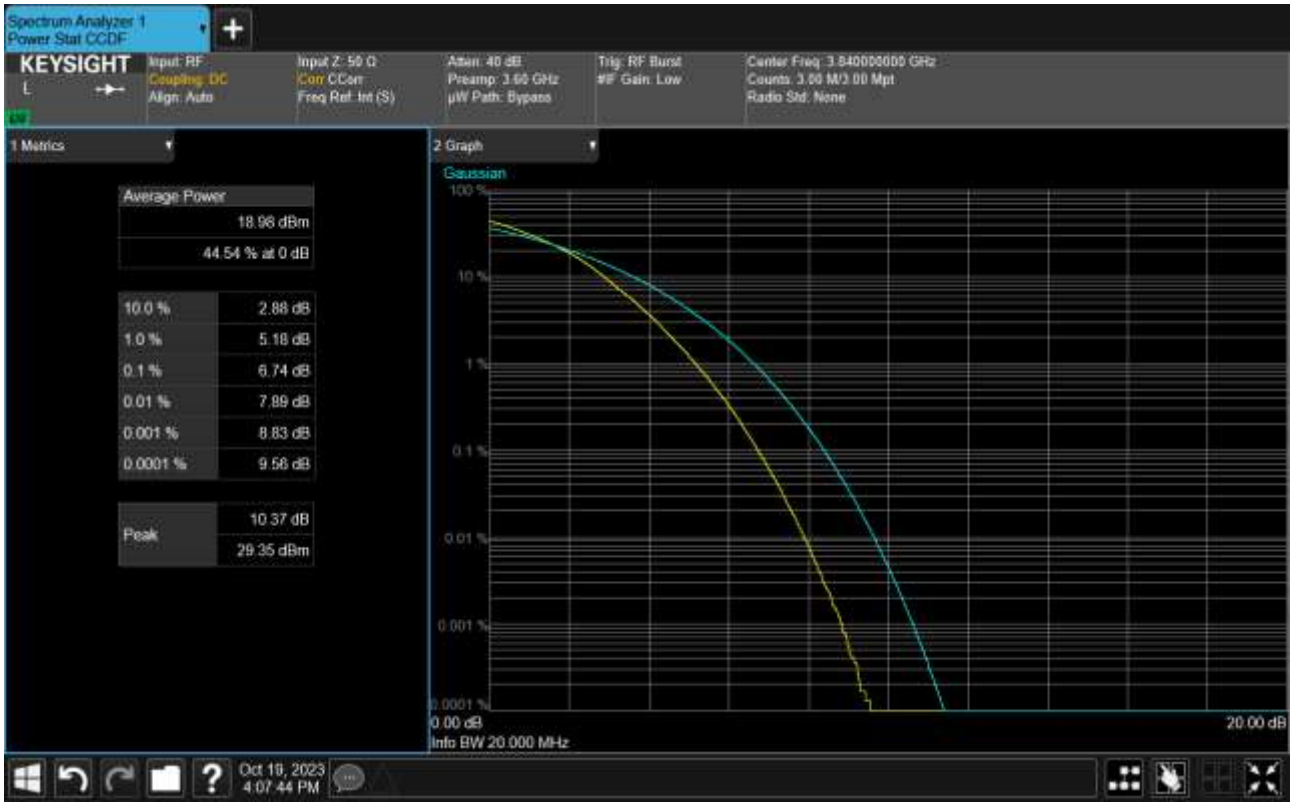
Upper BAND 77 Peak To Average Ratio Plot (20 MHz, 3 840.00 MHz, 16QAM, Full RB)



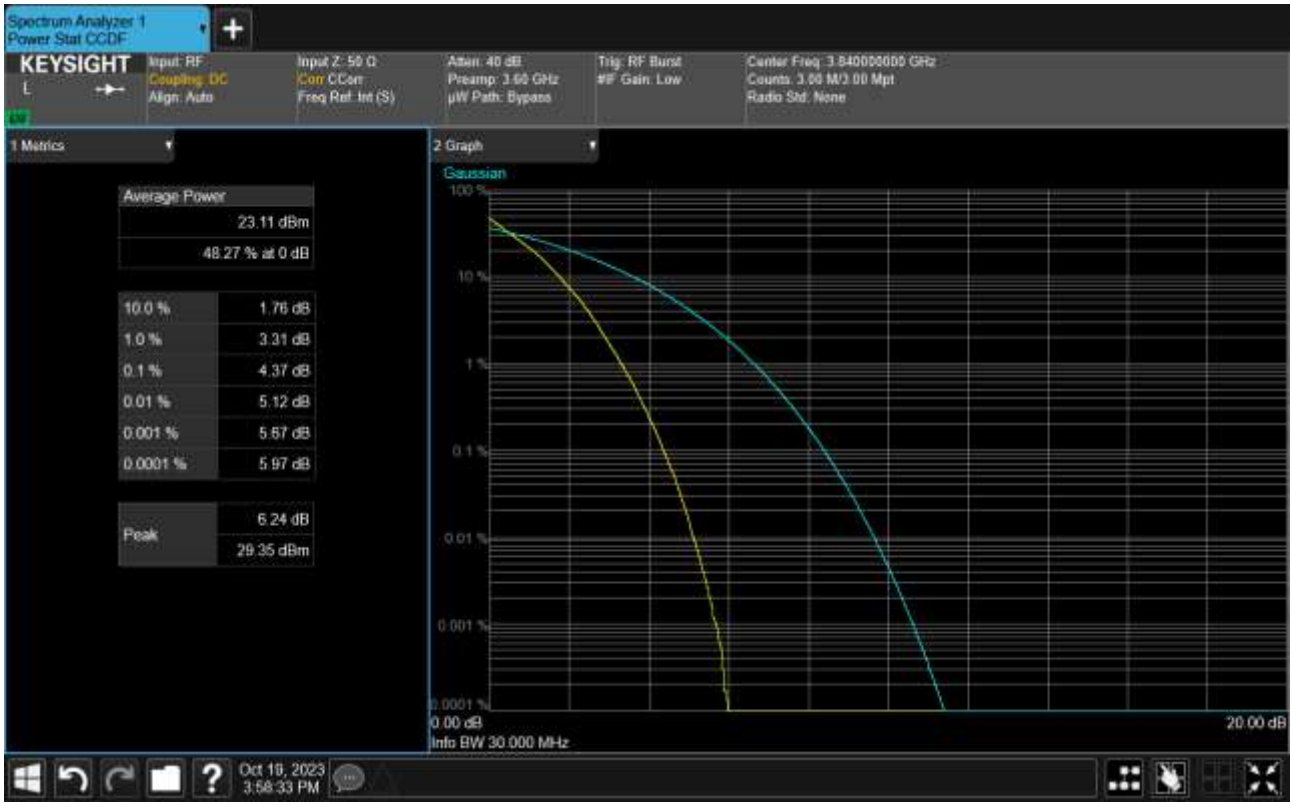
Upper BAND 77 Peak To Average Ratio Plot (20 MHz, 3 840.00 MHz, 64QAM, Full RB)



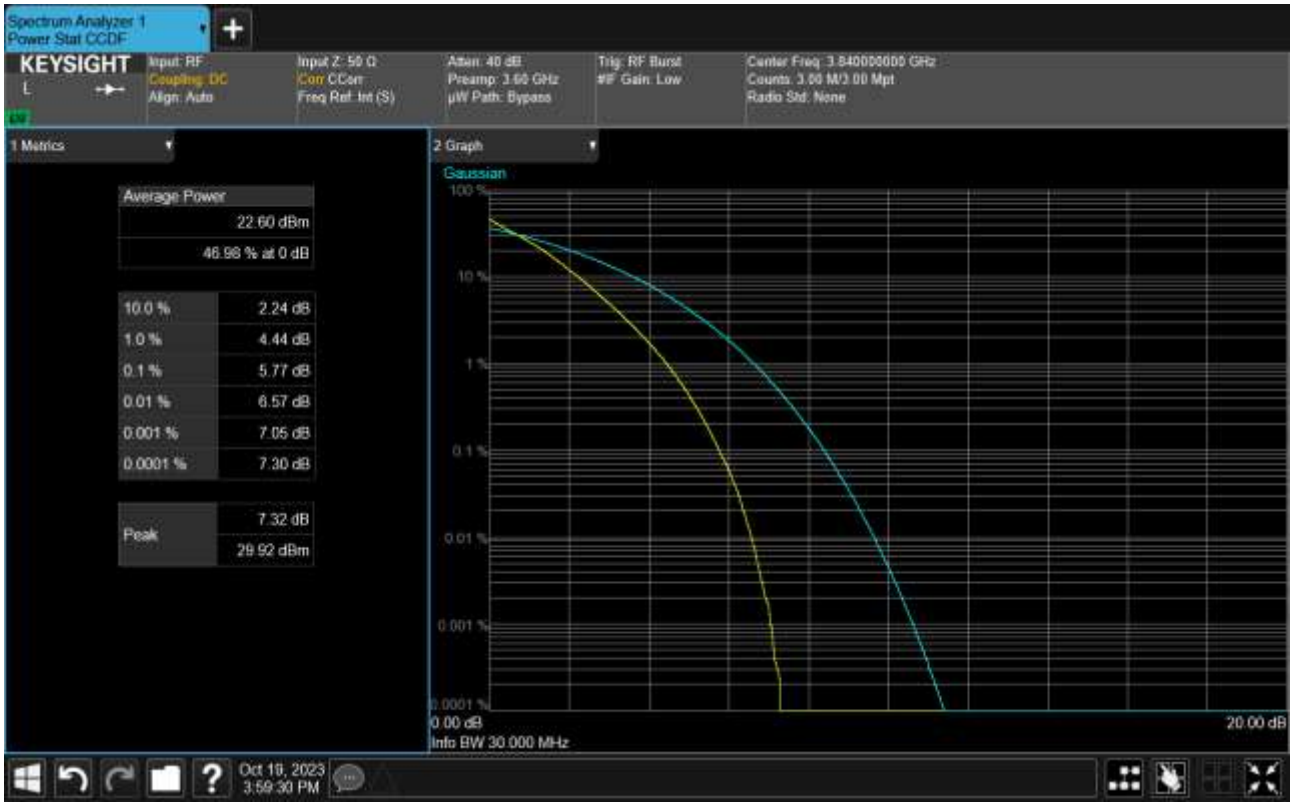
Upper BAND 77 Peak To Average Ratio Plot (20 MHz, 3 840.00 MHz, 256QAM, Full RB)



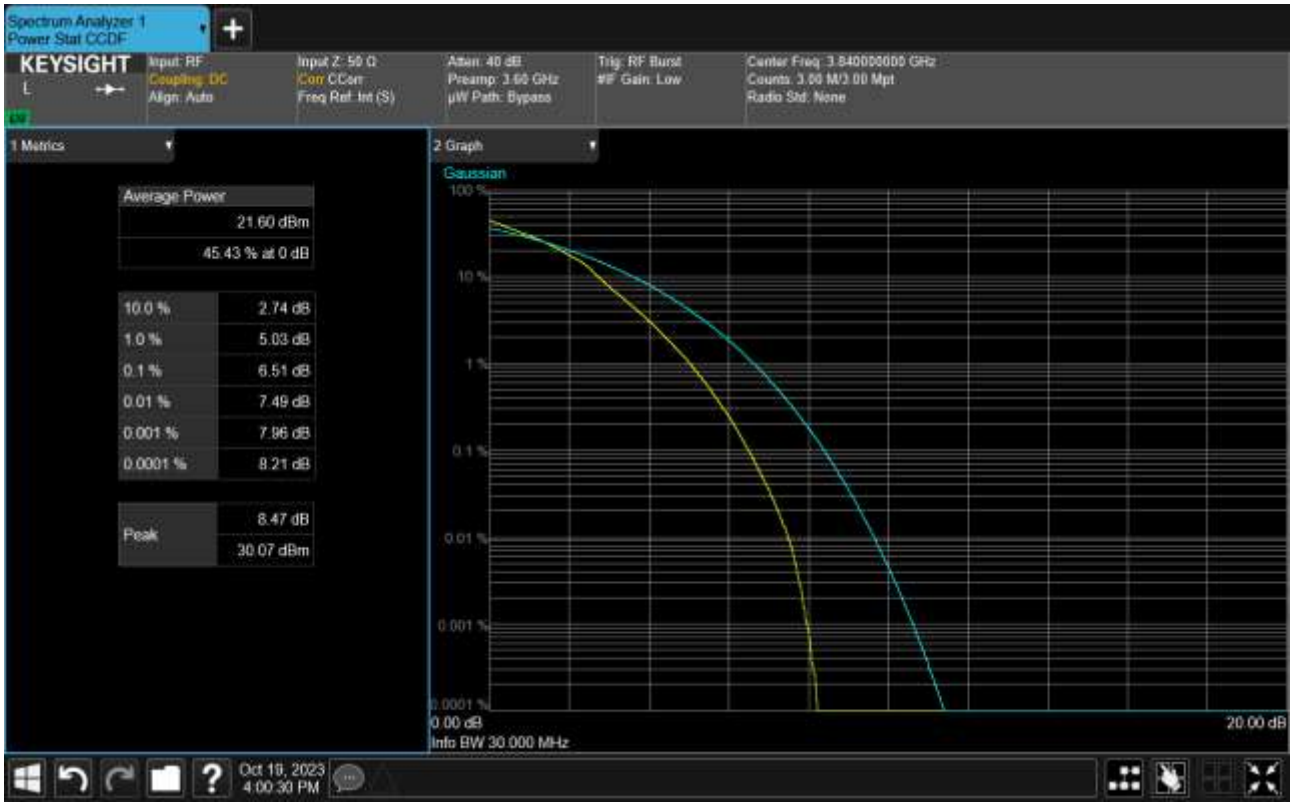
Upper BAND 77 Peak To Average Ratio Plot (30 MHz, 3 840.00 MHz, BPSK, Full RB)



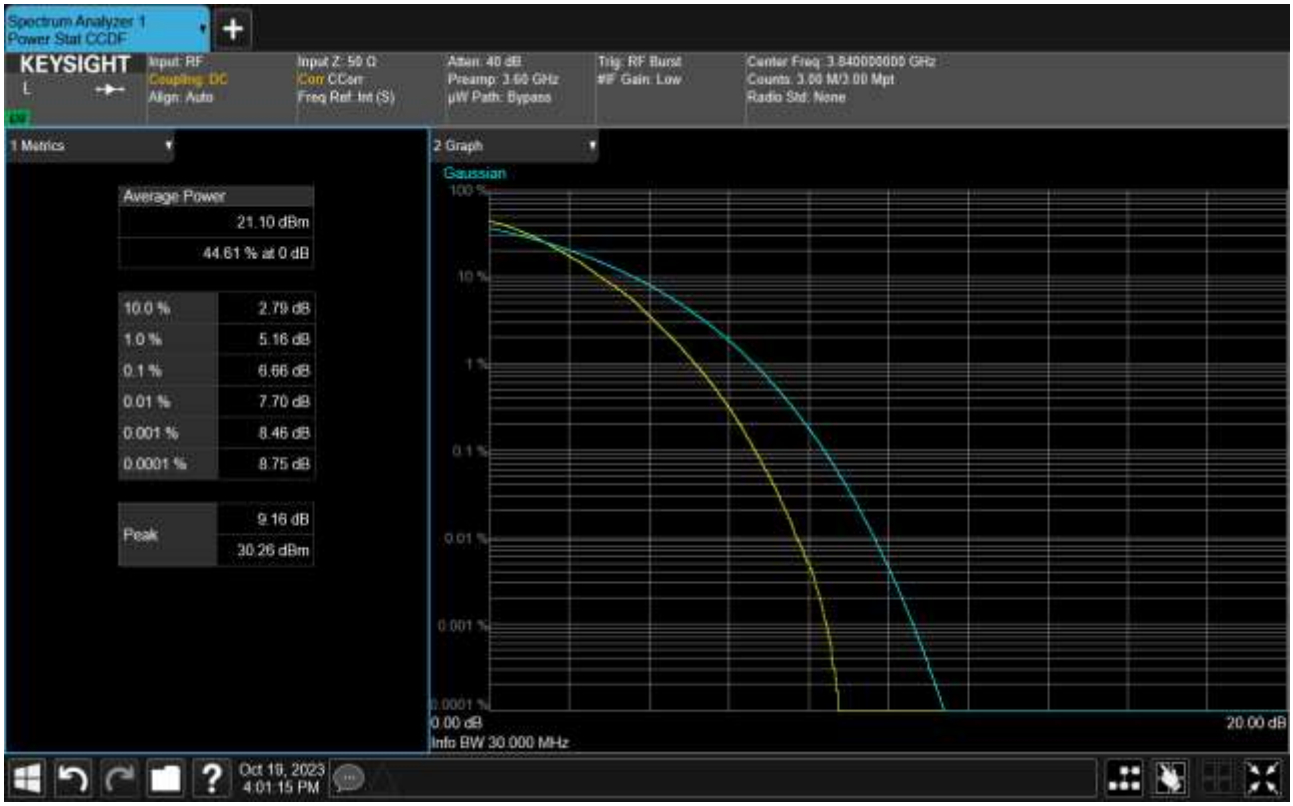
Upper BAND 77 Peak To Average Ratio Plot (30 MHz, 3 840.00 MHz, QPSK, Full RB)



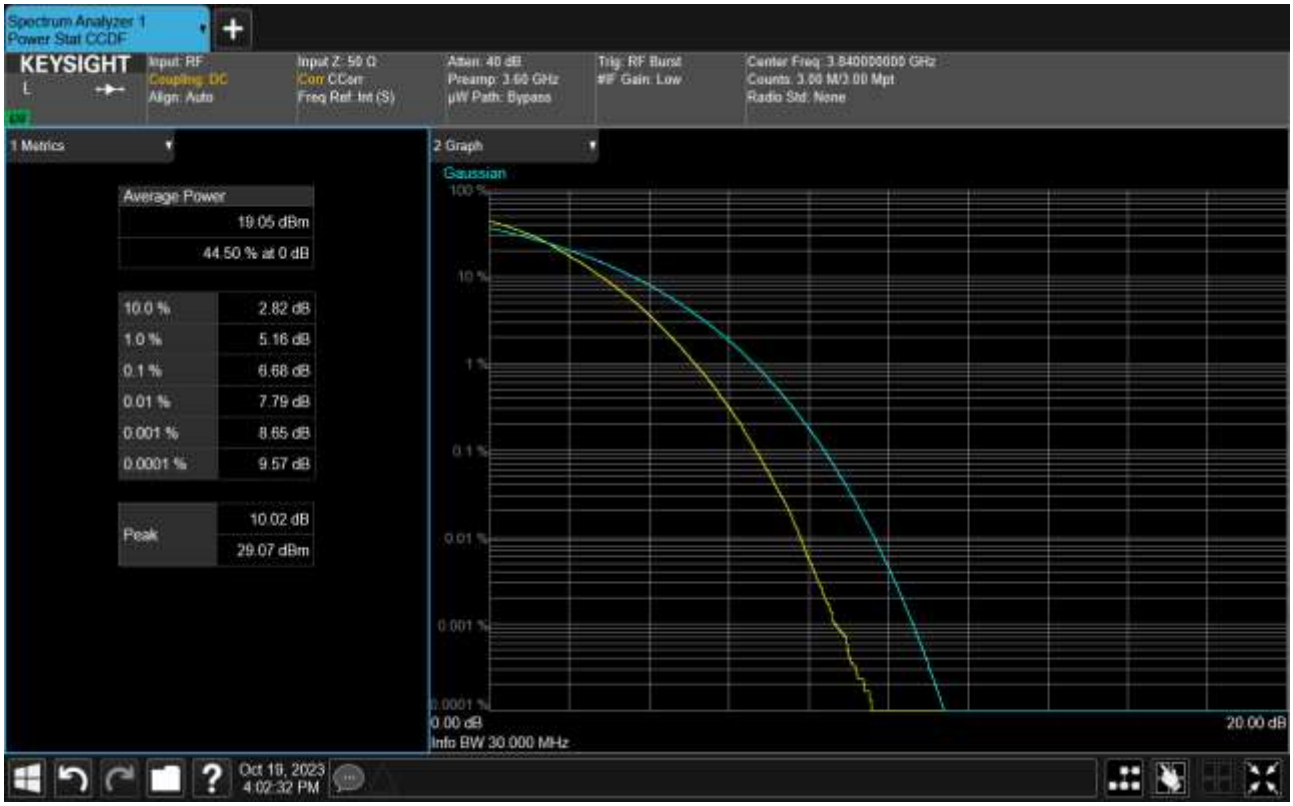
Upper BAND 77 Peak To Average Ratio Plot (30 MHz, 3 840.00 MHz, 16QAM, Full RB)



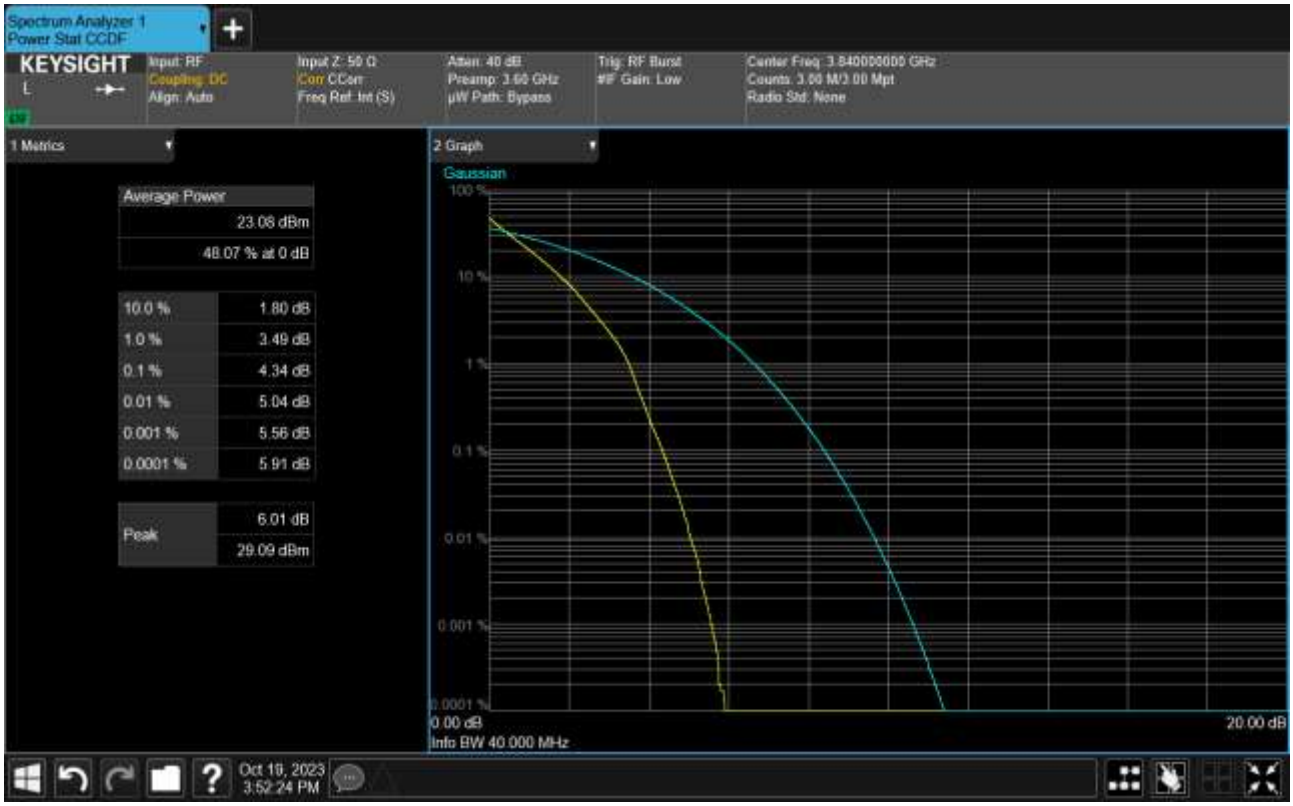
Upper BAND 77 Peak To Average Ratio Plot (30 MHz, 3 840.00 MHz, 64QAM, Full RB)



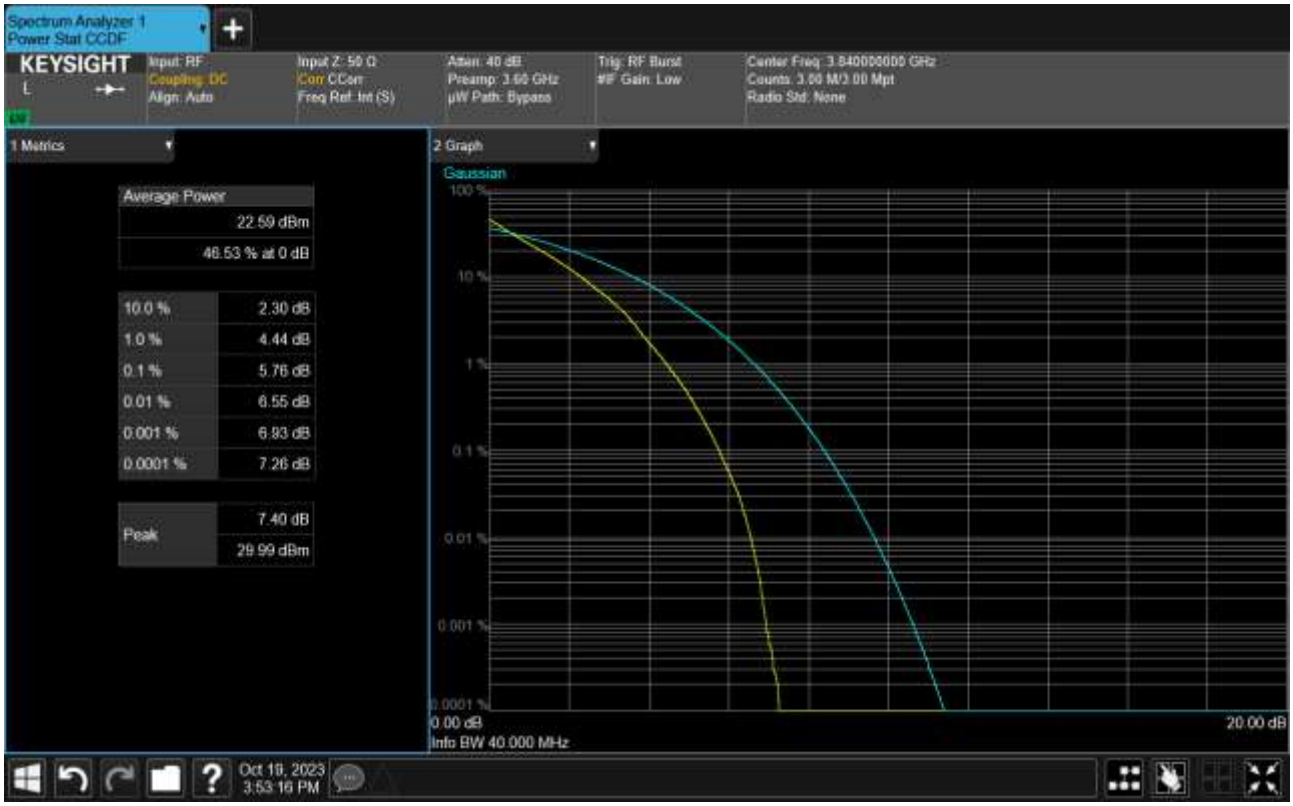
Upper BAND 77 Peak To Average Ratio Plot (30 MHz, 3 840.00 MHz, 256QAM, Full RB)



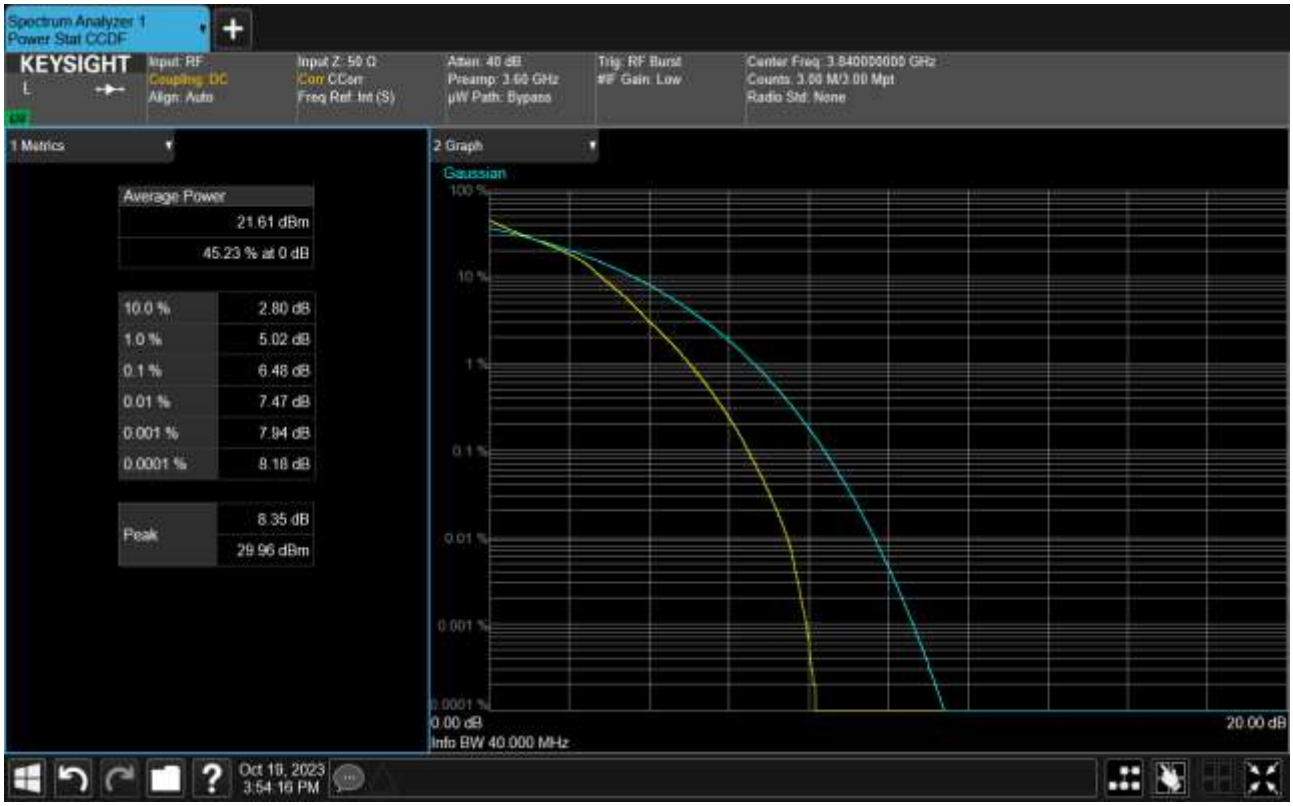
Upper BAND 77 Peak To Average Ratio Plot (40 MHz, 3 840.00 MHz, BPSK, Full RB)



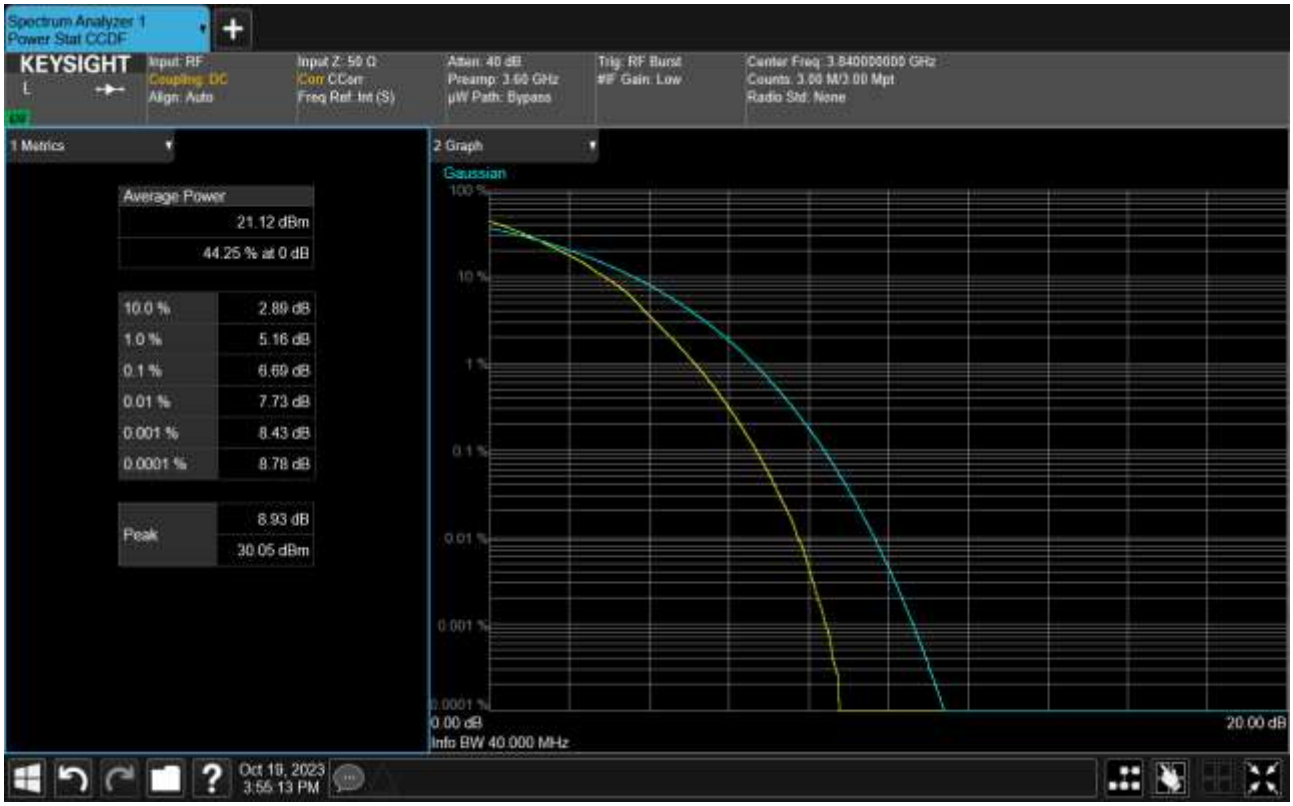
Upper BAND 77 Peak To Average Ratio Plot (40 MHz, 3 840.00 MHz, QPSK, Full RB)



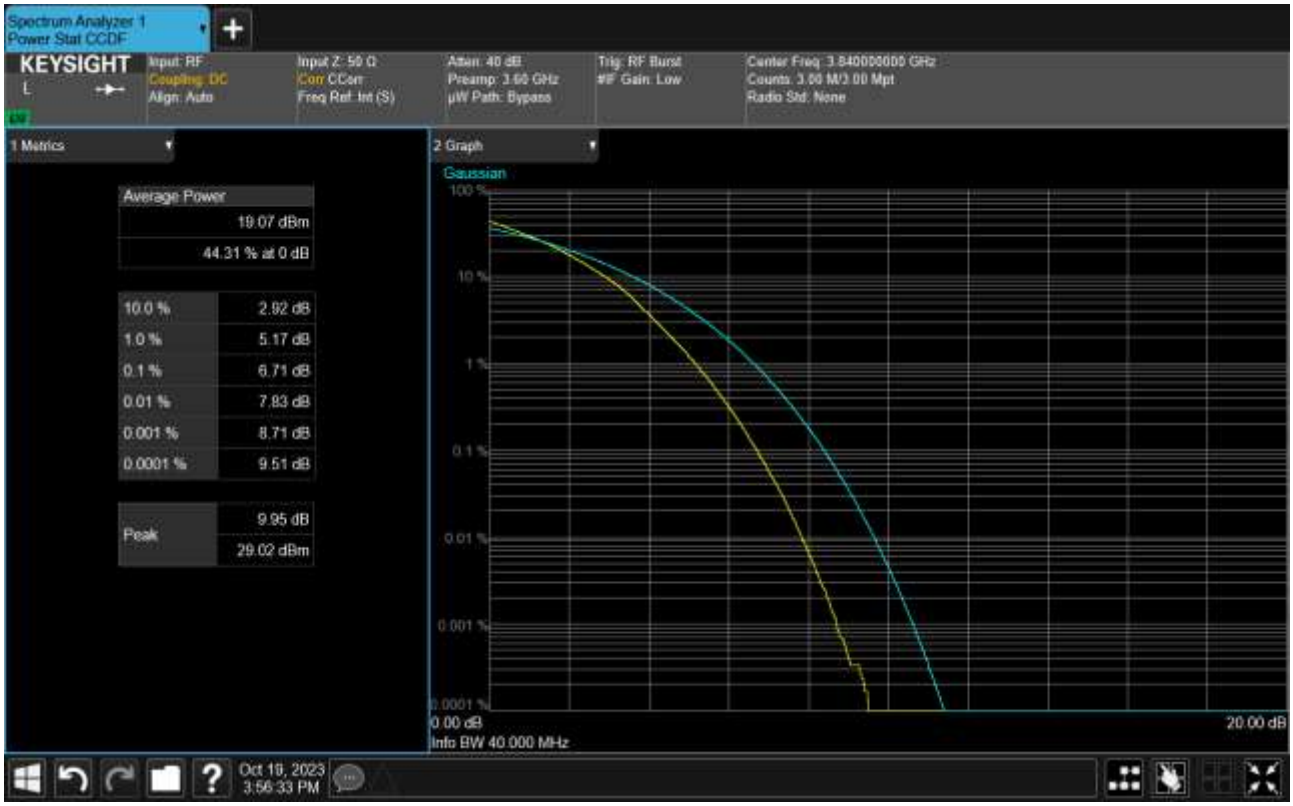
Upper BAND 77 Peak To Average Ratio Plot (40 MHz, 3 840.00 MHz, 16QAM, Full RB)



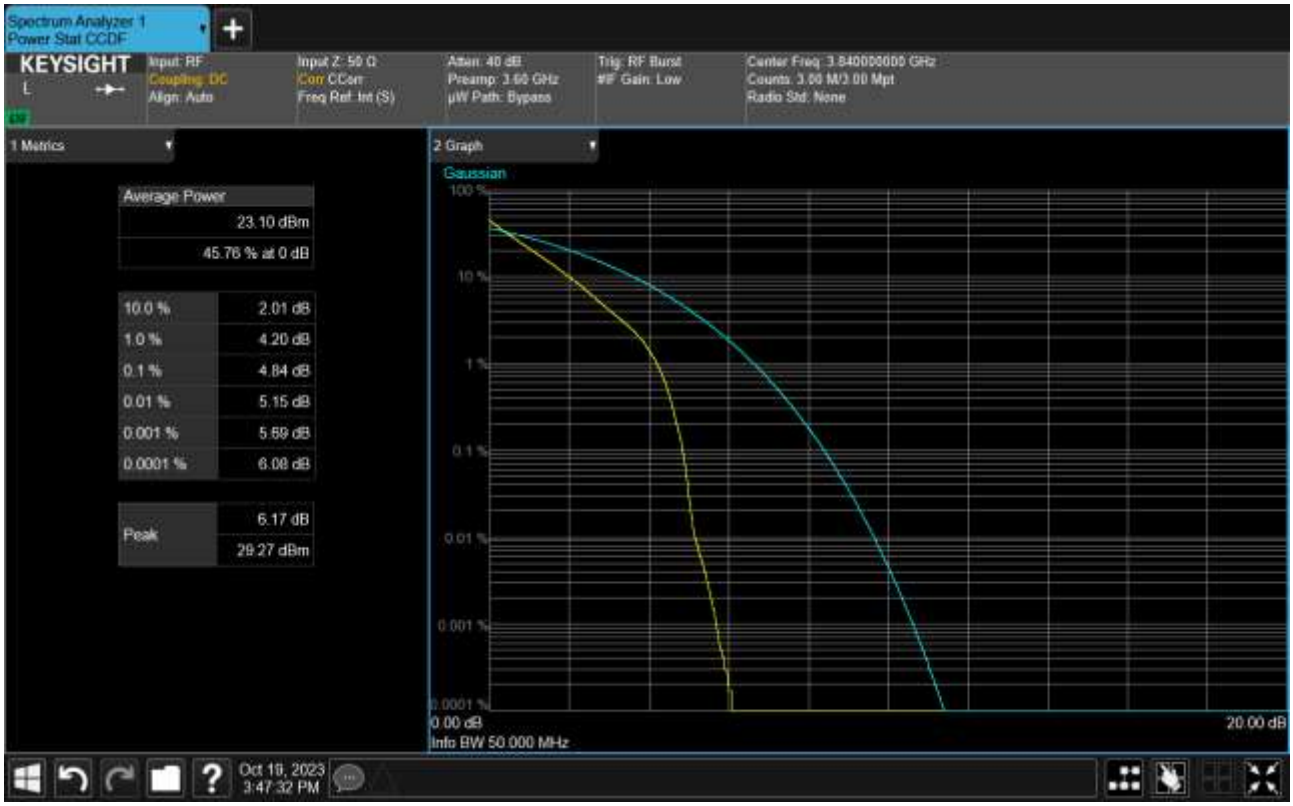
Upper BAND 77 Peak To Average Ratio Plot (40 MHz, 3 840.00 MHz, 64QAM, Full RB)



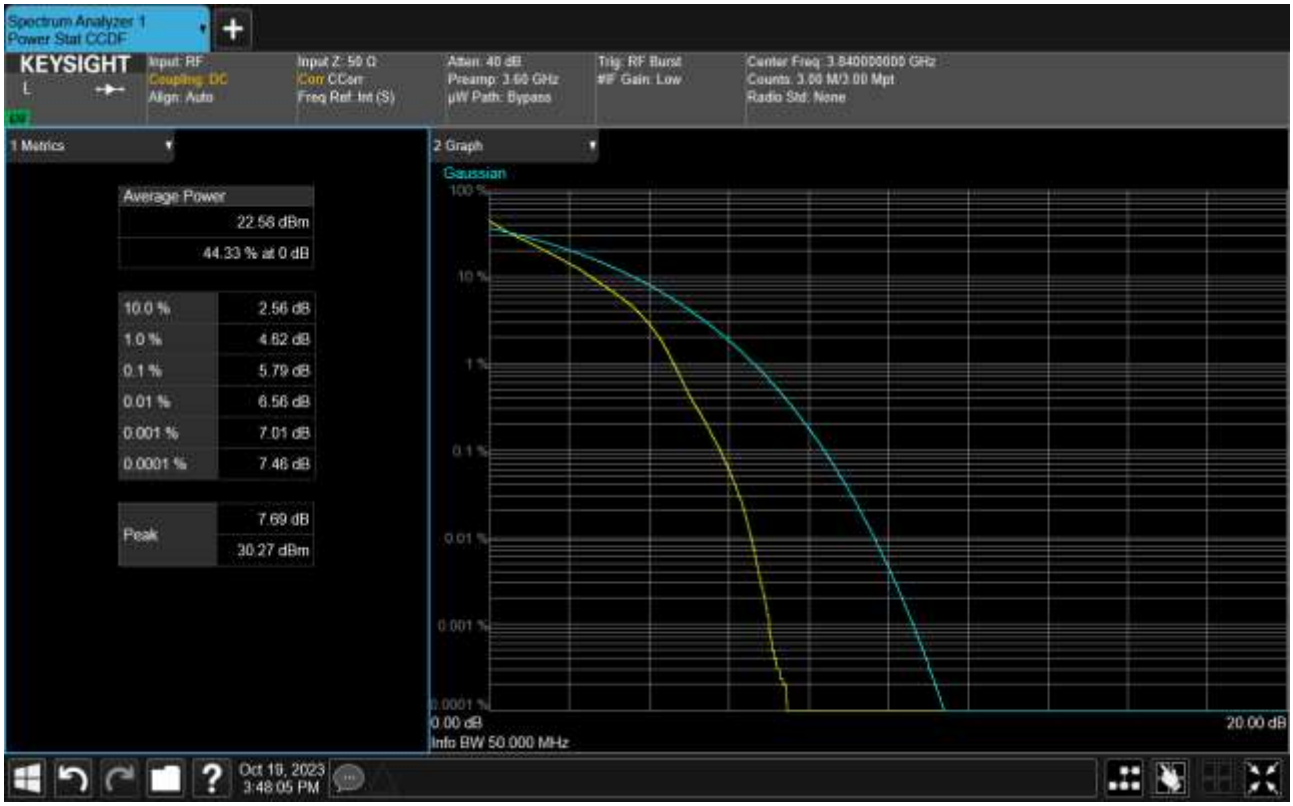
Upper BAND 77 Peak To Average Ratio Plot (40 MHz, 3 840.00 MHz, 256QAM, Full RB)



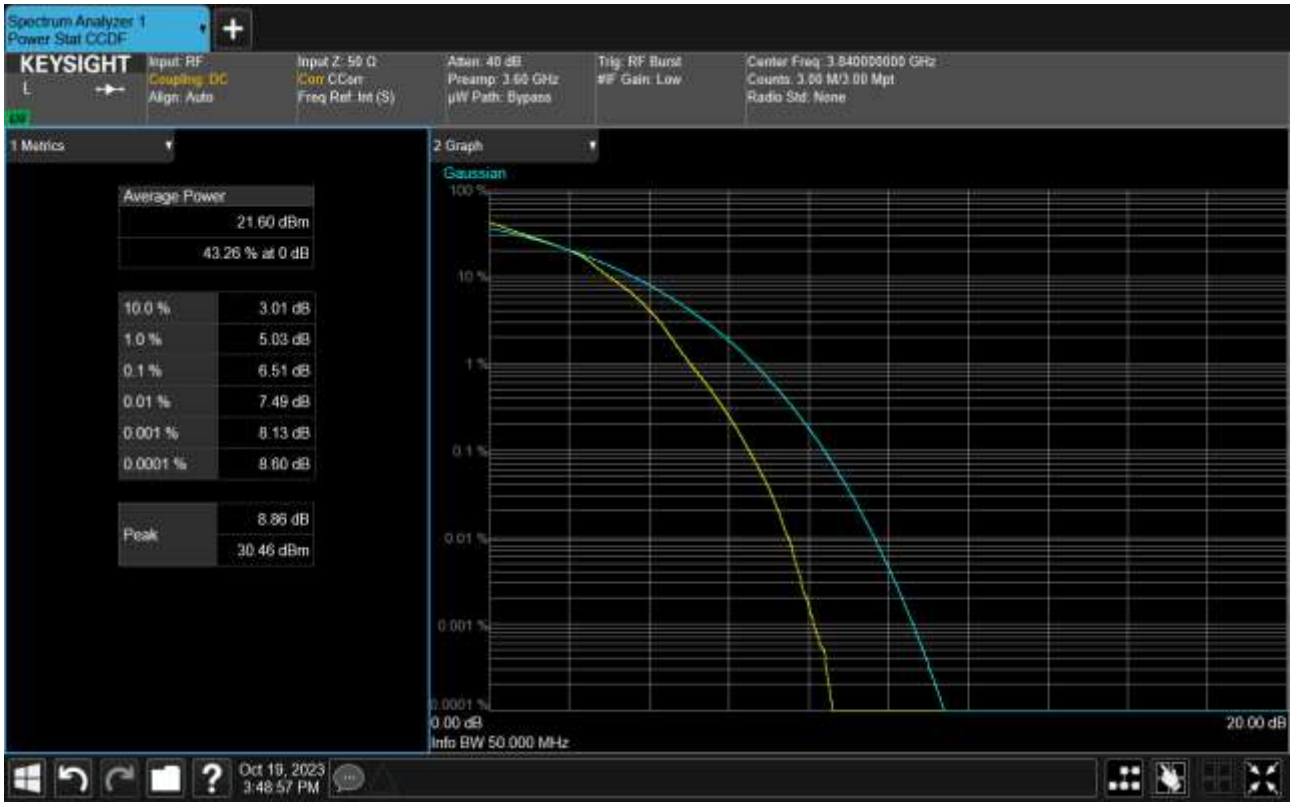
Upper BAND 77 Peak To Average Ratio Plot (50 MHz, 3 840.00 MHz, BPSK, Full RB)



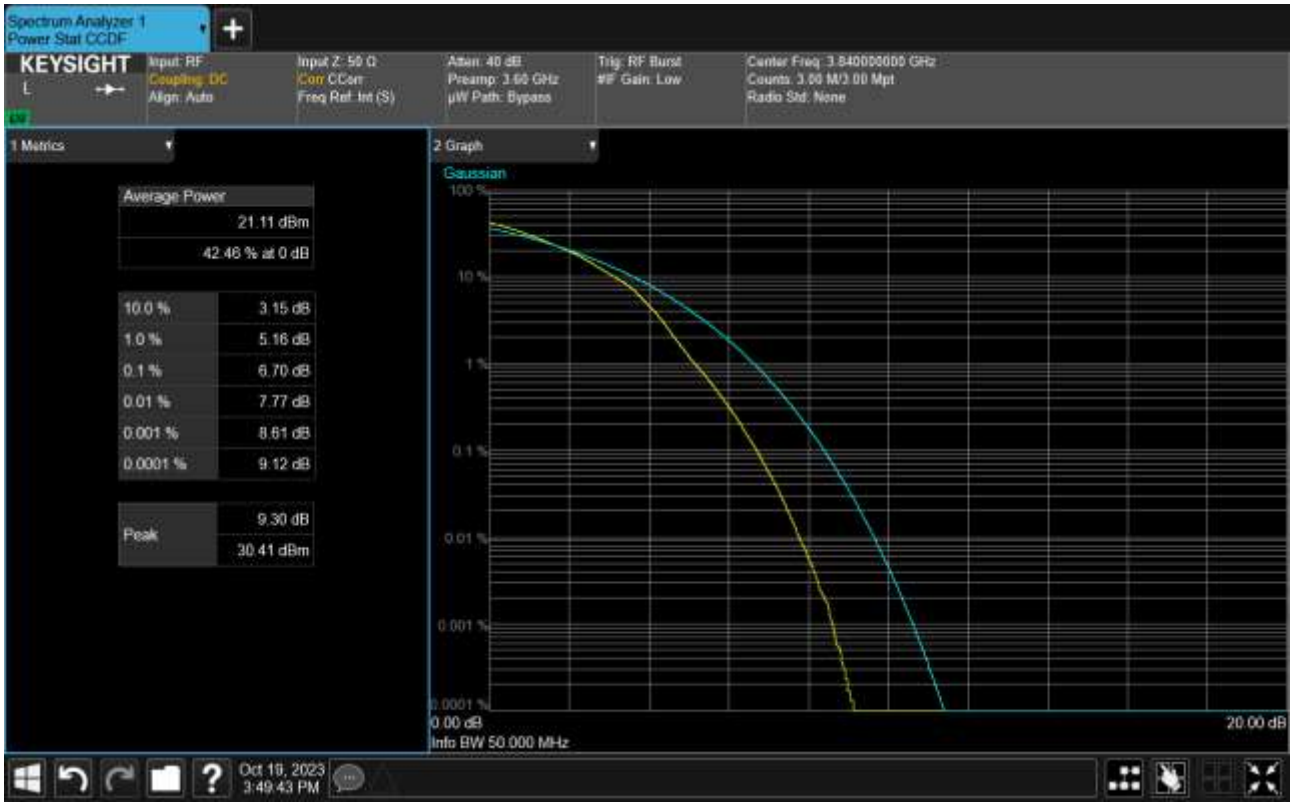
Upper BAND 77 Peak To Average Ratio Plot (50 MHz, 3 840.00 MHz, QPSK, Full RB)



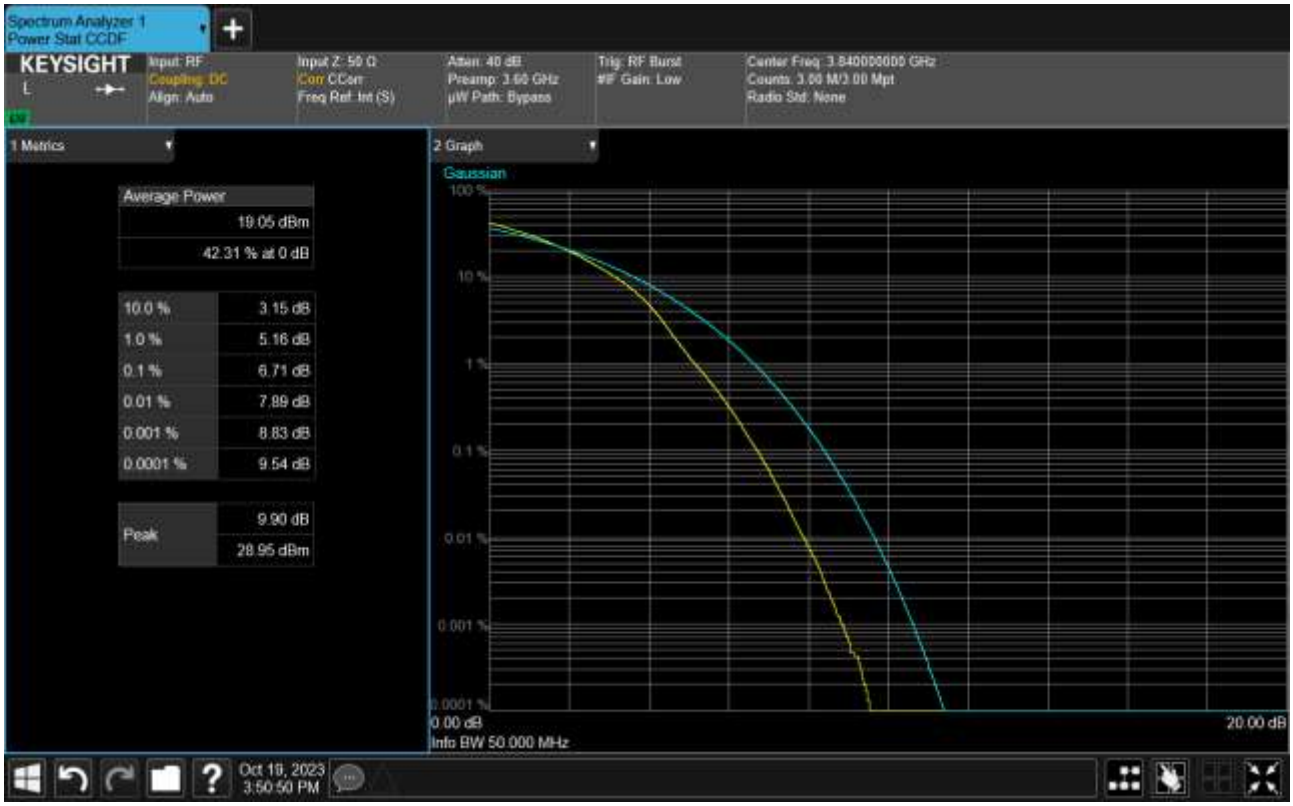
Upper BAND 77 Peak To Average Ratio Plot (50 MHz, 3 840.00 MHz, 16QAM, Full RB)



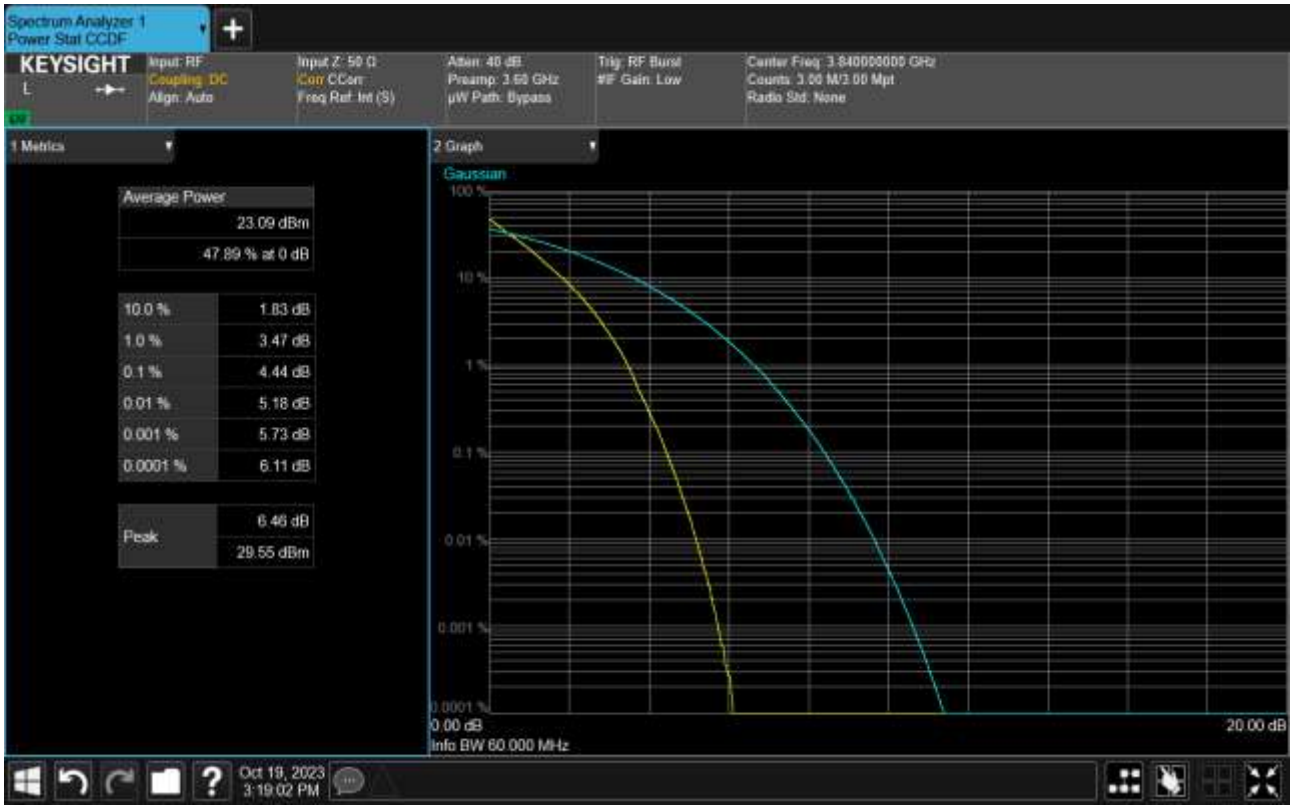
Upper BAND 77 Peak To Average Ratio Plot (50 MHz, 3 840.00 MHz, 64QAM, Full RB)



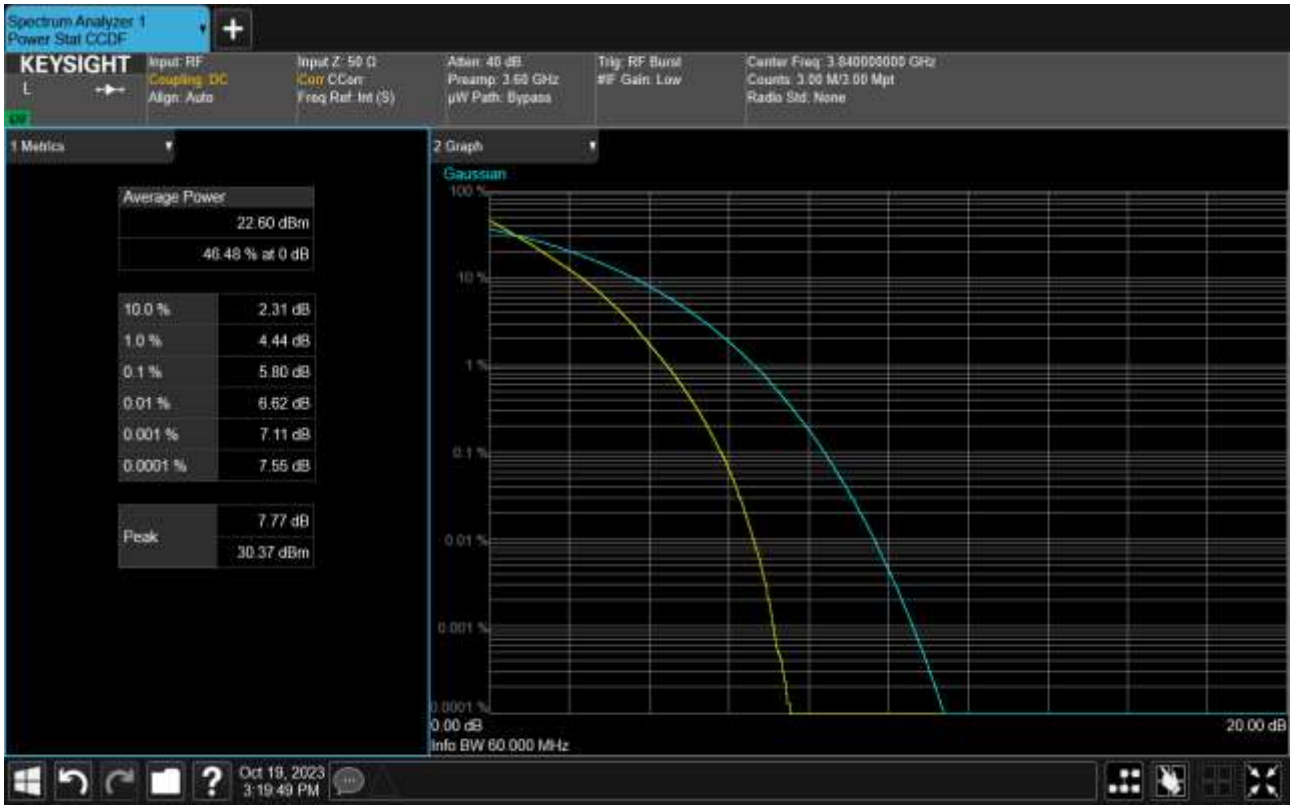
Upper BAND 77 Peak To Average Ratio Plot (50 MHz, 3 840.00 MHz, 256QAM, Full RB)



Upper BAND 77 Peak To Average Ratio Plot (60 MHz, 3 840.00 MHz, BPSK, Full RB)



Upper BAND 77 Peak To Average Ratio Plot (60 MHz, 3 840.00 MHz, QPSK, Full RB)



Upper BAND 77 Peak To Average Ratio Plot (60 MHz, 3 840.00 MHz, 16QAM, Full RB)