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FCC Sub6 REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
February 19, 2021

Location:
HCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-2102-FC030-R1

FCC ID:	**A3LSMA326U**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-A326U
Additional Model(s):	SM-A326U1/DS, SM-S326DL
EUT Type:	Mobile Phone
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n77 (10)	3705.00 – 3975.00	8M59G7D	PI/2 BPSK	0.135	21.31
		8M57G7D	QPSK	0.131	21.18
		8M61W7D	16QAM	0.099	19.96
		8M63W7D	64QAM	0.069	18.37
		8M50W7D	256QAM	0.055	17.38
Sub6 n77 (15)	3707.51 – 3972.48	12M9G7D	PI/2 BPSK	0.133	21.23
		12M9G7D	QPSK	0.130	21.15
		12M9W7D	16QAM	0.097	19.85
		12M9W7D	64QAM	0.069	18.41
		12M8W7D	256QAM	0.055	17.37
Sub6 n77 (20)	3710.01 – 3969.99	17M8G7D	PI/2 BPSK	0.147	21.67
		18M0G7D	QPSK	0.146	21.65
		17M9W7D	16QAM	0.111	20.45
		17M9W7D	64QAM	0.078	18.90
		18M0W7D	256QAM	0.060	17.81
Sub6 n77 (25)	3712.50 – 3967.50	22M9G7D	PI/2 BPSK	0.143	21.55
		23M0G7D	QPSK	0.144	21.59
		22M9W7D	16QAM	0.109	20.38
		23M1W7D	64QAM	0.075	18.75
		23M0W7D	256QAM	0.060	17.76
Sub6 n77 (30)	3715.02 – 3964.98	26M9G7D	PI/2 BPSK	0.143	21.56
		26M9G7D	QPSK	0.142	21.52
		26M9W7D	16QAM	0.105	20.23
		27M1W7D	64QAM	0.077	18.86
		27M0W7D	256QAM	0.061	17.83
Sub6 n77 (40)	3720.00 – 3960.00	35M9G7D	PI/2 BPSK	0.143	21.55
		35M9G7D	QPSK	0.141	21.50
		36M0W7D	16QAM	0.106	20.25
		35M8W7D	64QAM	0.076	18.83
		36M1W7D	256QAM	0.060	17.79
Sub6 n77 (50)	3725.01 – 3954.99	45M7G7D	PI/2 BPSK	0.150	21.77
		45M9G7D	QPSK	0.146	21.64

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
		45M8W7D	16QAM	0.112	20.48
		45M9W7D	64QAM	0.078	18.92
		45M8W7D	256QAM	0.064	18.06
Sub6 n77 (60)	3730.01 – 3950.00	57M9G7D	PI/2 BPSK	0.142	21.51
		57M9G7D	QPSK	0.141	21.48
		57M9W7D	16QAM	0.108	20.34
		58M1W7D	64QAM	0.084	19.22
		58M1W7D	256QAM	0.060	17.81
Sub6 n77 (80)	3740.01 – 3939.99	77M5G7D	PI/2 BPSK	0.163	22.11
		77M4G7D	QPSK	0.162	22.10
		77M1W7D	16QAM	0.124	20.92
		77M1W7D	64QAM	0.087	19.42
		77M1W7D	256QAM	0.061	17.85
Sub6 n77 (90)	3745.01 – 3934.98	87M0G7D	PI/2 BPSK	0.153	21.86
		86M8G7D	QPSK	0.152	21.81
		86M9W7D	16QAM	0.113	20.55
		86M8W7D	64QAM	0.079	19.00
		87M0W7D	256QAM	0.062	17.95
Sub6 n77 (100)	3750.00 – 3930.00	96M2G7D	PI/2 BPSK	0.146	21.66
		96M2G7D	QPSK	0.142	21.54
		96M2W7D	16QAM	0.109	20.38
		96M2W7D	64QAM	0.077	18.85
		96M3W7D	256QAM	0.061	17.88

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.
HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

REVIEWED BY

Report prepared by : Jae Ryang Do **Engineer of Telecommunication Testing Center**	**Report approved by : Jong Seok Lee** **Manager of Telecommunication Testing Center**

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2102-FC030	February 10, 2021	- First Approval Report
HCT-RF-2102-FC030-R1	February 19, 2021	- Revised the EIRP

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMA326U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2
EUT Type:	Mobile Phone
Model(s):	SM-A326U
Additional Model(s):	SM-A326U1/DS, SM-S326DL
SCS(kHz):	30
Bandwidth(MHz):	10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100
Waveform:	CP-OFDM, DFT-S-OFDM
Modulation:	DFT-S-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
Tx Frequency:	3705.00 MHz – 3975.00 MHz (Sub6 n77(10 MHz)) 3707.51 MHz – 3972.48 MHz (Sub6 n77(15 MHz)) 3710.01 MHz – 3969.99 MHz (Sub6 n77(20 MHz)) 3712.50 MHz – 3967.50 MHz (Sub6 n77(25 MHz)) 3715.02 MHz – 3964.98 MHz (Sub6 n77(30 MHz)) 3720.00 MHz – 3960.00 MHz (Sub6 n77(40 MHz)) 3725.01 MHz – 3954.99 MHz (Sub6 n77(50 MHz)) 3730.01 MHz – 3950.00 MHz (Sub6 n77(60 MHz)) 3740.01 MHz – 3939.99 MHz (Sub6 n77(80 MHz)) 3745.01 MHz – 3934.98 MHz (Sub6 n77(90 MHz)) 3750.00 MHz – 3930.00 MHz (Sub6 n77(100 MHz))
Date(s) of Tests:	January 04, 2021 ~ February 05, 2021
Serial number:	Radiated: R3CNC01KD7D Conducted: 4C1B22D9E41C7ECE

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS, CDMA(BC0, 1, 10) and LTE, Sub6.

It also supports IEEE 802.11 a/b/g/n/ac (HT20/40/80), Bluetooth, BT LE, NFC.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.**

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- N/A (See SAR Report)
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4 - ANSI C63.26-2015 – Section 5.2.6(only GSM)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

   The power is calculated by the following formula;

   $$P_{d(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dB)}$$

   Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.
3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration
4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10^{th} harmonics from 9 kHz.

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data
3. For spurious emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.
   The spurious emissions is calculated by the following formula;

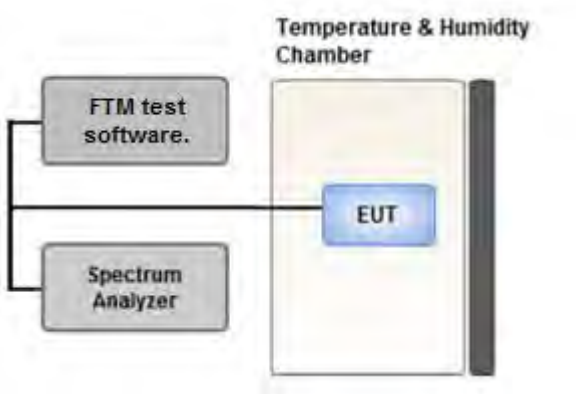
$$Result_{(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   Where: $P_g$is the generator output power into the substitution antenna.

   If the fundamental frequency is below 1GHz, RF output power has been converted to EIRP.

$$EIRP_{(dBm)} = ERP_{(dBm)} + 2.15$$

3.4 PEAK- TO- AVERAGE RATIO



Test setup

① **CCDF Procedure for PAPR**

Test Settings

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Set the measurement interval as follows:
   .- for continuous transmissions, set to 1 ms,
   .- 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.
4. Record the maximum PAPR level associated with a probability of 0.1%.

② **Alternate Procedure for PAPR**

Use one of the procedures presented in 5.2(ANSI C63.26-2015) to measure the total peak power and record as P_{Pk}.

Use one of the applicable procedures presented 5.2(ANSI C63.26-2015) to measure the total average power and record as P_{Avg}. Determine the P.A.R. from:

$$P.A.R_{(dB)} = P_{Pk\ (dBm)} - P_{Avg\ (dBm)}\ (P_{Avg} = \text{Average Power} + \text{Duty cycle Factor})$$

Test Settings(Peak Power)

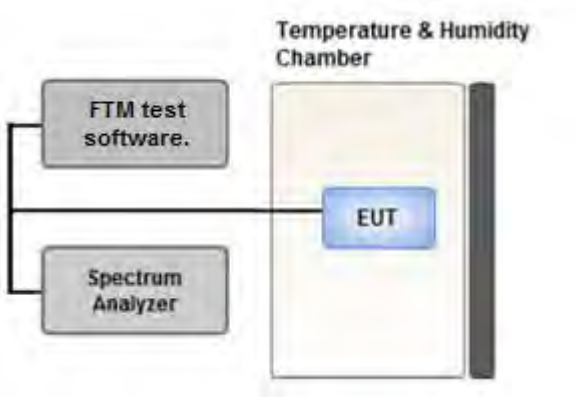
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

1. Set the RBW ≥ OBW.
2. Set VBW ≥ 3 × RBW.
3. Set span ≥ 2 × OBW.
4. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period).
5. Detector = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the peak amplitude level.

Test Settings(Average Power)

1. Set span to 2 × to 3 × the OBW.
2. Set RBW ≥ OBW.
3. Set VBW ≥ 3 × RBW.
4. Set number of measurement points in sweep ≥ 2 × span / RBW.
5. Sweep time:
   Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
6. Detector = power averaging (rms).
7. Set sweep trigger to “free run.”
8. 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 the on and off period of the transmitter, 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.)
9. Use the peak marker function to determine the maximum amplitude level.
10. Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25%.

3.5 OCCUPIED BANDWIDTH.



Test setup

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

The EUT makes a call to the communication simulator.

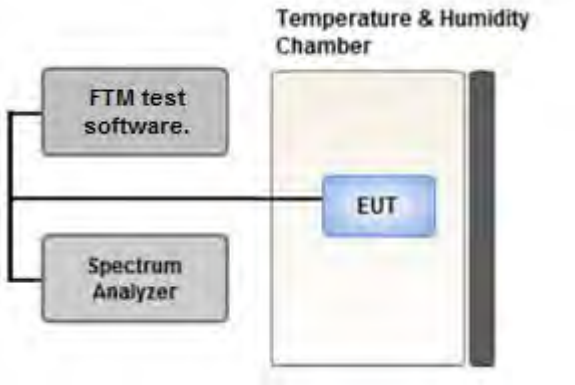
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

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

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic.

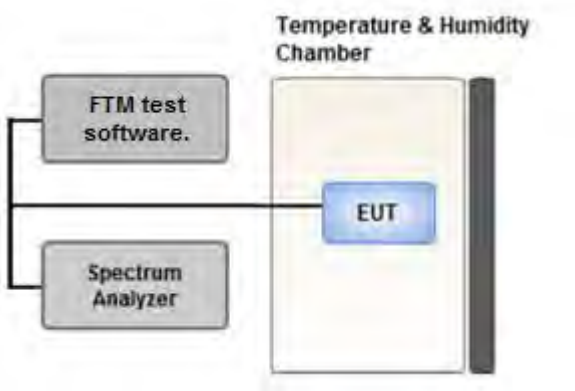
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. RBW = 1 MHz
2. VBW ≥ 3 MHz
3. Detector = RMS
4. Trace Mode = trace average
5. Sweep time = auto
6. Number of points in sweep ≥ 2 x Span / RBW

3.7 BAND EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum power and at the appropriate frequencies.

All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW : Please check the test notes below
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Notes

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.

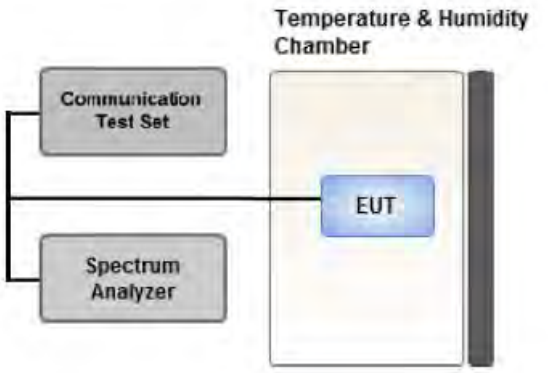
Measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

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.

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.

The frequency stability of the transmitter is measured by:

1. Temperature:

   The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

2. Primary Supply Voltage:

   .- Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment.

   .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes 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.
3. 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.

3.9 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.

(In the case of radiated spurious emissions, only the B.W result that confirmed the maximum radiated power was reported.)

- 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: 2A-n77A(BW 80MHz))
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- SM-A326U & additional models were tested and the worst case results are reported.
  (Worst case : SM-A326U)

[Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	1	1	Z
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	1	1	Z

3.10 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 RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- SM-A326U & additional models were tested and the worst case results are reported.
  (Worst case : SM-A326U)

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth,	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100	Mid	Full RB	0
Peak-To-Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100	Mid	1	Mid
Band Edge	PI/2 BPSK	10	Low	1	0
			High	1	23
		15	Low	1	0
			High	1	37
		20	Low	1	0
			High	1	50
		25	Low	1	0
			High	1	64
		30	Low	1	0
			High	1	77
		40	Low	1	0
			High	1	105
		50	Low	1	0
			High	1	132

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
		60	Low	1	0
			High	1	161
		80	Low	1	0
			High	1	216
		90	Low	1	0
			High	1	244
		100	Low	1	0
			High	1	272
		10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100	Low, Mid, High	1	1

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
Wainwright Instruments	WHKX10-900-1000-15000-40SS/ High Pass Filter	5	07/13/2020	Annual	07/13/2021
Wainwright Instruments	WHKX10-2700-3000-18000-40SS/ High Pass Filter	145	09/03/2020	Annual	09/03/2021
Wainwright Instruments	WHNX6-4740-6000-26500-40CC/ High Pass Filter	11	09/03/2020	Annual	09/03/2021
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	04/27/2020	Annual	04/27/2021
CERNEX	LOW NOISE AMP (100MHz ~ 18GHz)	26822	06/04/2020	Annual	06/04/2021
CERNEX	CBL18265035 / Power Amplifier	22966	12/04/2020	Annual	12/04/2021
CERNEX	CBL26405040 / Power Amplifier	25956	03/23/2020	Annual	03/23/2021
Hewlett Packard	E3632A/DC Power Supply	MY40004427	09/16/2020	Annual	09/16/2021
Schwarzbeck	UHAP / Precision Dipole Antenna	01273	05/30/2020	Biennial	05/30/2022
Schwarzbeck	UHAP / Precision Dipole Antenna	01274	05/30/2020	Biennial	05/30/2022
ESPEC	SU-642 / Chamber	93008124	03/18/2020	Annual	03/18/2021
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	02289	05/08/2020	Biennial	05/08/2022
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1299	05/10/2019	Biennial	05/10/2021
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	04/29/2019	Biennial	04/29/2021
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	02/11/2020	Biennial	02/11/2022
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY51110063	04/27/2020	Annual	04/27/2021
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/04/2020	Annual	06/04/2021
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	101436	03/16/2020	Annual	03/16/2021
Rohde & Schwarz	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	05/18/2020	Biennial	05/18/2022
Schwarzbeck	VULB9160/ Bilog Antenna	3150	03/12/2019	Biennial	03/12/2021
Schwarzbeck	VULB9160/ Hybrid Antenna	760	03/22/2019	Biennial	03/22/2021
Anritsu Corp.	MT8821C/Wideband Radio Communication Tester	6262116770	07/22/2020	Annual	07/22/2021
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/13/2020	Annual	07/13/2021
KEYSIGHT	N9030B / Signal Analyzer(5Hz~40.0GHz)	MY55480167	06/04/2020	Annual	06/04/2021
KEYSIGHT	E7515B / 5G Wireless Tester	MY60101126	05/28/2020	Annual	05/28/2021
Mini-Circuits	ZC4PD-K1844+ / 4-Way Divider	942907	09/14/2020	Annual	09/14/2021
HCT CO., LTD.,	FCC LTE Mobile Conducted RF Automation Test Software	-	-	-	-

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
2. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §27.53(i)(2)	< -13 dBm	PASS
Conducted Output Power	§2.1046	N/A	**See Note1**
Peak- to- Average Ratio	§27.50(j)(4)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§2.1055, § 27.54	Emission must remain in band	PASS

Note:

1. See SAR Report

2. All conducted tests were tested using 5G Wireless Tester.

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§27.50(j)(3)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(i)(2)	< -13 dBm	PASS

Note:

1. Radiateded tests were tested using FTM test software.

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
channel	Freq.(MHz)						W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	H	0.483	26.84

ERP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test , the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
channel	Freq.(MHz)						W	dBm
349000	1,732.50	-15.75	18.45	9.90	1.76	H	0.456	26.59

EIRP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test , the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

PSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3705.00	Sub6 n77/ 10 MHz [30 kHz]	PI/2 BPSK	-24.35	12.42	11.70	2.82	V	< 2.00	0.135	21.31
		QPSK	-24.48	12.29	11.70	2.82	V		0.131	21.18
		16-QAM	-25.70	11.07	11.70	2.82	V		0.099	19.96
		64-QAM	-27.29	9.48	11.70	2.82	V		0.069	18.37
		256-QAM	-28.28	8.49	11.70	2.82	V		0.055	17.38
3840.00		PI/2 BPSK	-24.70	12.53	11.24	2.86	V		0.123	20.91
		QPSK	-24.94	12.29	11.24	2.86	V		0.117	20.67
		16-QAM	-26.16	11.07	11.24	2.86	V		0.088	19.45
		64-QAM	-27.67	9.56	11.24	2.86	V		0.062	17.94
		256-QAM	-28.62	8.61	11.24	2.86	V		0.050	16.99
3975.00		PI/2 BPSK	-25.16	12.75	11.20	2.92	V		0.127	21.03
		QPSK	-25.24	12.67	11.20	2.92	V		0.124	20.95
		16-QAM	-26.43	11.48	11.20	2.92	V		0.095	19.76
		64-QAM	-27.94	9.97	11.20	2.92	V		0.067	18.25
		256-QAM	-28.89	9.02	11.20	2.92	V		0.054	17.30

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3707.51	Sub6 n77/ 15 MHz [30 kHz]	PI/2 BPSK	-24.52	12.35	11.70	2.82	V	< 2.00	0.133	21.23
		QPSK	-24.60	12.27	11.70	2.82	V		0.130	21.15
		16-QAM	-25.90	10.97	11.70	2.82	V		0.097	19.85
		64-QAM	-27.40	9.47	11.70	2.82	V		0.068	18.35
		256-QAM	-28.43	8.44	11.70	2.82	V		0.054	17.32
3840.00		PI/2 BPSK	-24.80	12.43	11.24	2.86	V		0.121	20.81
		QPSK	-24.91	12.32	11.24	2.86	V		0.117	20.70
		16-QAM	-26.13	11.10	11.24	2.86	V		0.089	19.48
		64-QAM	-27.62	9.61	11.24	2.86	V		0.063	17.99
		256-QAM	-28.57	8.66	11.24	2.86	V		0.051	17.04
3972.48		PI/2 BPSK	-25.44	12.49	11.18	2.92	V		0.119	20.75
		QPSK	-26.16	11.77	11.18	2.92	V		0.101	20.03
		16-QAM	-27.40	10.53	11.18	2.92	V		0.076	18.79
		64-QAM	-27.78	10.15	11.18	2.92	V		0.069	18.41
		256-QAM	-28.82	9.11	11.18	2.92	V		0.055	17.37

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3710.01	Sub6 n77/ 20 MHz [30 kHz]	PI/2 BPSK	-24.08	12.78	11.70	2.81	V	< 2.00	0.147	21.67
		QPSK	-24.10	12.76	11.70	2.81	V		0.146	21.65
		16-QAM	-25.30	11.56	11.70	2.81	V		0.111	20.45
		64-QAM	-26.85	10.01	11.70	2.81	V		0.078	18.90
		256-QAM	-27.94	8.92	11.70	2.81	V		0.060	17.81
3840.00		PI/2 BPSK	-24.86	12.37	11.24	2.86	V		0.119	20.75
		QPSK	-24.89	12.34	11.24	2.86	V		0.118	20.72
		16-QAM	-26.04	11.19	11.24	2.86	V		0.091	19.57
		64-QAM	-27.57	9.66	11.24	2.86	V		0.064	18.04
		256-QAM	-28.60	8.63	11.24	2.86	V		0.050	17.01
3969.99		PI/2 BPSK	-24.86	13.07	11.18	2.92	V		0.136	21.33
		QPSK	-24.90	13.03	11.18	2.92	V		0.134	21.29
		16-QAM	-26.00	11.93	11.18	2.92	V		0.104	20.19
		64-QAM	-27.50	10.43	11.18	2.92	V		0.074	18.69
		256-QAM	-28.57	9.36	11.18	2.92	V		0.058	17.62

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3712.50	Sub6 n77/ 25 MHz [30 kHz]	PI/2 BPSK	-24.20	12.66	11.70	2.81	V	< 2.00	0.143	21.55
		QPSK	-24.16	12.70	11.70	2.81	V		0.144	21.59
		16-QAM	-25.37	11.49	11.70	2.81	V		0.109	20.38
		64-QAM	-27.00	9.86	11.70	2.81	V		0.075	18.75
		256-QAM	-28.00	8.86	11.70	2.81	V		0.060	17.75
3840.00		PI/2 BPSK	-25.00	12.23	11.24	2.86	V		0.115	20.61
		QPSK	-25.01	12.22	11.24	2.86	V		0.115	20.60
		16-QAM	-26.15	11.08	11.24	2.86	V		0.088	19.46
		64-QAM	-27.70	9.53	11.24	2.86	V		0.062	17.91
		256-QAM	-28.70	8.53	11.24	2.86	V		0.049	16.91
3967.50		PI/2 BPSK	-24.68	13.25	11.18	2.92	V		0.141	21.51
		QPSK	-24.72	13.21	11.18	2.92	V		0.140	21.47
		16-QAM	-25.90	12.03	11.18	2.92	V		0.107	20.29
		64-QAM	-27.45	10.48	11.18	2.92	V		0.075	18.74
		256-QAM	-28.43	9.50	11.18	2.92	V		0.060	17.76

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3715.02	Sub6 n77/ 30 MHz [30 kHz]	PI/2 BPSK	-24.16	12.68	11.70	2.82	V	< 2.00	0.143	21.56
		QPSK	-24.20	12.64	11.70	2.82	V		0.142	21.52
		16-QAM	-25.53	11.31	11.70	2.82	V		0.105	20.19
		64-QAM	-26.99	9.85	11.70	2.82	V		0.075	18.73
		256-QAM	-28.00	8.84	11.70	2.82	V		0.059	17.72
3840.00		PI/2 BPSK	-25.10	12.13	11.24	2.86	V		0.112	20.51
		QPSK	-25.12	12.11	11.24	2.86	V		0.112	20.49
		16-QAM	-26.38	10.85	11.24	2.86	V		0.084	19.23
		64-QAM	-27.77	9.46	11.24	2.86	V		0.061	17.84
		256-QAM	-28.84	8.39	11.24	2.86	V		0.048	16.77
3964.98		PI/2 BPSK	-24.63	13.32	11.16	2.92	V		0.143	21.56
		QPSK	-24.72	13.23	11.16	2.92	V		0.140	21.47
		16-QAM	-25.96	11.99	11.16	2.92	V		0.105	20.23
		64-QAM	-27.33	10.62	11.16	2.92	V		0.077	18.86
		256-QAM	-28.36	9.59	11.16	2.92	V		0.061	17.83

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3720.00	Sub6 n77/ 40 MHz [30 kHz]	PI/2 BPSK	-24.44	12.38	11.70	2.82	V	< 2.00	0.134	21.26
		QPSK	-24.46	12.36	11.70	2.82	V		0.133	21.24
		16-QAM	-25.71	11.11	11.70	2.82	V		0.100	19.99
		64-QAM	-27.18	9.64	11.70	2.82	V		0.071	18.52
		256-QAM	-28.23	8.59	11.70	2.82	V		0.056	17.47
3840.00		PI/2 BPSK	-25.29	11.94	11.24	2.86	V		0.108	20.32
		QPSK	-25.30	11.93	11.24	2.86	V		0.107	20.31
		16-QAM	-26.52	10.71	11.24	2.86	V		0.081	19.09
		64-QAM	-27.97	9.26	11.24	2.86	V		0.058	17.64
		256-QAM	-28.99	8.24	11.24	2.86	V		0.046	16.62
3960.00		PI/2 BPSK	-24.64	13.33	11.14	2.92	V		0.143	21.55
		QPSK	-24.69	13.28	11.14	2.92	V		0.141	21.50
		16-QAM	-25.94	12.03	11.14	2.92	V		0.106	20.25
		64-QAM	-27.36	10.61	11.14	2.92	V		0.076	18.83
		256-QAM	-28.40	9.57	11.14	2.92	V		0.060	17.79

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3725.01	Sub6 n77/ 50 MHz [30 kHz]	PI/2 BPSK	-24.15	12.67	11.70	2.83	V	< 2.00	0.143	21.54
		QPSK	-24.27	12.55	11.70	2.83	V		0.139	21.42
		16-QAM	-25.48	11.34	11.70	2.83	V		0.105	20.21
		64-QAM	-27.04	9.78	11.70	2.83	V		0.073	18.65
		256-QAM	-28.00	8.82	11.70	2.83	V		0.059	17.69
3840.00		PI/2 BPSK	-25.02	12.21	11.24	2.86	V		0.115	20.59
		QPSK	-25.11	12.12	11.24	2.86	V		0.112	20.50
		16-QAM	-26.30	10.93	11.24	2.86	V		0.085	19.31
		64-QAM	-27.84	9.39	11.24	2.86	V		0.060	17.77
		256-QAM	-28.78	8.45	11.24	2.86	V		0.048	16.83
3954.99		PI/2 BPSK	-24.41	13.57	11.12	2.92	V		0.150	21.77
		QPSK	-24.54	13.44	11.12	2.92	V		0.146	21.64
		16-QAM	-25.70	12.28	11.12	2.92	V		0.112	20.48
		64-QAM	-27.26	10.72	11.12	2.92	V		0.078	18.92
		256-QAM	-28.12	9.86	11.12	2.92	V		0.064	18.06

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3730.01	Sub6 n77/ 60 MHz [30 kHz]	PI/2 BPSK	-24.22	12.59	11.70	2.83	V	< 2.00	0.140	21.46
		QPSK	-24.83	11.98	11.70	2.83	V		0.122	20.85
		16-QAM	-26.08	10.73	11.70	2.83	V		0.091	19.60
		64-QAM	-26.61	10.20	11.70	2.83	V		0.081	19.07
		256-QAM	-28.10	8.71	11.70	2.83	V		0.057	17.58
3840.00		PI/2 BPSK	-24.53	12.70	11.24	2.86	V		0.128	21.08
		QPSK	-24.56	12.67	11.24	2.86	V		0.127	21.05
		16-QAM	-25.67	11.56	11.24	2.86	V		0.099	19.94
		64-QAM	-27.30	9.93	11.24	2.86	V		0.068	18.31
		256-QAM	-28.76	8.47	11.24	2.86	V		0.048	16.85
3950.00		PI/2 BPSK	-24.65	13.33	11.10	2.92	V		0.142	21.51
		QPSK	-24.68	13.30	11.10	2.92	V		0.141	21.48
		16-QAM	-25.82	12.16	11.10	2.92	V		0.108	20.34
		64-QAM	-26.94	11.04	11.10	2.92	V		0.084	19.22
		256-QAM	-28.35	9.63	11.10	2.92	V		0.060	17.81

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3740.01	Sub6 n77/ 80 MHz [30 kHz]	PI/2 BPSK	-24.44	12.52	11.70	2.84	V	< 2.00	0.137	21.38
		QPSK	-24.50	12.46	11.70	2.84	V		0.135	21.32
		16-QAM	-25.55	11.41	11.70	2.84	V		0.106	20.27
		64-QAM	-26.67	10.29	11.70	2.84	V		0.082	19.15
		256-QAM	-28.20	8.76	11.70	2.84	V		0.058	17.62
3840.00		PI/2 BPSK	-25.03	12.20	11.24	2.86	V		0.114	20.58
		QPSK	-25.05	12.18	11.24	2.86	V		0.114	20.56
		16-QAM	-25.74	11.49	11.24	2.86	V		0.097	19.87
		64-QAM	-27.23	10.00	11.24	2.86	V		0.069	18.38
		256-QAM	-28.78	8.45	11.24	2.86	V		0.048	16.83
3939.99		PI/2 BPSK	-24.01	13.95	11.08	2.92	V		0.163	22.11
		QPSK	-24.02	13.94	11.08	2.92	V		0.162	22.10
		16-QAM	-25.20	12.76	11.08	2.92	V		0.124	20.92
		64-QAM	-26.70	11.26	11.08	2.92	V		0.087	19.42
		256-QAM	-28.27	9.69	11.08	2.92	V		0.061	17.85

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3745.01	Sub6 n77/ 90 MHz [30 kHz]	PI/2 BPSK	-24.00	13.00	11.70	2.84	V	< 2.00	0.153	21.86
		QPSK	-24.05	12.95	11.70	2.84	V		0.152	21.81
		16-QAM	-25.32	11.68	11.70	2.84	V		0.113	20.54
		64-QAM	-26.86	10.14	11.70	2.84	V		0.079	19.00
		256-QAM	-28.40	8.60	11.70	2.84	V		0.056	17.46
3840.00		PI/2 BPSK	-25.18	12.05	11.24	2.86	V		0.110	20.43
		QPSK	-25.22	12.01	11.24	2.86	V		0.109	20.39
		16-QAM	-26.40	10.83	11.24	2.86	V		0.083	19.21
		64-QAM	-27.89	9.34	11.24	2.86	V		0.059	17.72
		256-QAM	-28.90	8.33	11.24	2.86	V		0.047	16.71
3934.98		PI/2 BPSK	-24.35	13.63	11.07	2.92	V		0.151	21.78
		QPSK	-24.42	13.56	11.07	2.92	V		0.148	21.71
		16-QAM	-25.58	12.40	11.07	2.92	V		0.113	20.55
		64-QAM	-27.18	10.80	11.07	2.92	V		0.078	18.95
		256-QAM	-28.18	9.80	11.07	2.92	V		0.062	17.95

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3750.00	Sub6 n77/ 100 MHz [30 kHz]	PI/2 BPSK	-24.55	12.48	11.70	2.84	V	< 2.00	0.136	21.34
		QPSK	-24.64	12.39	11.70	2.84	V		0.133	21.25
		16-QAM	-25.80	11.23	11.70	2.84	V		0.102	20.09
		64-QAM	-27.46	9.57	11.70	2.84	V		0.070	18.43
		256-QAM	-28.38	8.65	11.70	2.84	V		0.056	17.51
3840.00		PI/2 BPSK	-25.18	12.05	11.24	2.86	V		0.110	20.43
		QPSK	-25.24	11.99	11.24	2.86	V		0.109	20.37
		16-QAM	-26.45	10.78	11.24	2.86	V		0.082	19.16
		64-QAM	-28.02	9.21	11.24	2.86	V		0.057	17.59
		256-QAM	-28.95	8.28	11.24	2.86	V		0.046	16.66
3930.00		PI/2 BPSK	-24.42	13.28	11.24	2.86	V		0.146	21.66
		QPSK	-24.54	13.16	11.24	2.86	V		0.142	21.54
		16-QAM	-25.70	12.00	11.24	2.86	V		0.109	20.38
		64-QAM	-27.23	10.47	11.24	2.86	V		0.077	18.85
		256-QAM	-28.20	9.50	11.24	2.86	V		0.061	17.88

8.2 RADIATED SPURIOUS EMISSIONS

▣ NR Band: N77

▣ LTE Band(Anchor): B2

▣ Bandwidth: 80 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
649334 (3740.01)	7 480.02	-43.58	11.46	-36.29	4.08	V	-28.91	-13.00
	11 220.03	-52.52	12.26	-40.67	5.04	H	-33.45	-13.00
	14 960.04	-54.91	14.24	-48.58	5.98	H	-40.32	-13.00
656000 (3840.00)	7 680.00	-46.21	11.54	-39.32	4.18	V	-31.96	-13.00
	11 520.00	-58.87	12.44	-48.00	5.16	H	-40.72	-13.00
	15 360.00	-56.10	15.54	-51.02	6.07	H	-41.55	-13.00
662666 (3939.99)	7 879.98	-45.53	11.00	-38.74	4.22	V	-31.96	-13.00
	11 819.97	-58.55	12.86	-48.21	5.08	V	-40.43	-13.00
	15 759.96	-55.61	16.40	-48.12	6.15	H	-37.87	-13.00

ENDC-Mode: 2A-n77A

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
18900 (1880.0)	3,760.00	-52.87	11.64	-58.71	2.85	H	-49.92	-13.00
	5,640.00	-54.26	12.00	-54.58	3.54	H	-46.12	-13.00
	7,520.00	-58.39	11.54	-50.16	4.12	H	-42.74	-13.00

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n77	10 MHz	3840.00	BPSK	24	0	4.37
			QPSK			5.65
			16-QAM			6.13
			64-QAM			6.43
			256-QAM			6.37
	15 MHz		BPSK	38		4.23
			QPSK			5.72
			16-QAM			6.15
			64-QAM			6.29
			256-QAM			6.61
	20 MHz		BPSK	51		4.25
			QPSK			5.61
			16-QAM			6.25
			64-QAM			6.60
			256-QAM			6.23
	25 MHz		BPSK	65		4.35
			QPSK			5.48
			16-QAM			6.22
			64-QAM			6.35
			256-QAM			6.59
	30 MHz		BPSK	78		4.35
			QPSK			5.63
			16-QAM			6.21
			64-QAM			6.31
			256-QAM			6.38
	40 MHz		BPSK	106		4.29
			QPSK			5.43
			16-QAM			6.14
			64-QAM			6.40
			256-QAM			6.22

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n77	50 MHz	3840.00	BPSK	133	0	4.62
			QPSK			5.56
			16-QAM			6.16
			64-QAM			6.33
			256-QAM			6.35
	60 MHz		BPSK	162		4.33
			QPSK			5.65
			16-QAM			6.17
			64-QAM			6.34
			256-QAM			6.56
	80 MHz		BPSK	217		5.02
			QPSK			5.63
			16-QAM			6.35
			64-QAM			6.47
			256-QAM			6.44
	90 MHz		BPSK	245		4.47
			QPSK			5.64
			16-QAM			6.28
			64-QAM			6.39
			256-QAM			6.51
	100 MHz		BPSK	273		5.02
			QPSK			5.64
			16-QAM			6.27
			64-QAM			6.34
			256-QAM			6.36

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 112 ~ 166.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n77	10 MHz	3840.00	BPSK	24	0	8.5872
			QPSK			8.5741
			16-QAM			8.6128
			64-QAM			8.6311
			256-QAM			8.4996
	15 MHz		BPSK	38		12.855
			QPSK			12.895
			16-QAM			12.904
			64-QAM			12.876
			256-QAM			12.797
	20 MHz		BPSK	51		17.843
			QPSK			17.972
			16-QAM			17.864
			64-QAM			17.889
			256-QAM			17.960
	25 MHz		BPSK	65		22.873
			QPSK			22.973
			16-QAM			22.859
			64-QAM			23.064
			256-QAM			23.020
	30 MHz		BPSK	78		26.924
			QPSK			26.845
			16-QAM			26.937
			64-QAM			27.049
			256-QAM			27.017
	40 MHz		BPSK	106		35.908
			QPSK			35.922
			16-QAM			35.979
			64-QAM			35.808
			256-QAM			36.104

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n77	50 MHz	3840.00	BPSK	133	0	45.702
			QPSK			45.852
			16-QAM			45.777
			64-QAM			45.883
			256-QAM			45.769
	60 MHz		BPSK	162		57.905
			QPSK			57.886
			16-QAM			57.854
			64-QAM			58.078
			256-QAM			58.055
	80 MHz		BPSK	217		77.452
			QPSK			77.382
			16-QAM			77.112
			64-QAM			77.126
			256-QAM			77.131
	90 MHz		BPSK	245		86.980
			QPSK			86.801
			16-QAM			86.922
			64-QAM			86.786
			256-QAM			86.965
	100 MHz		BPSK	273		96.160
			QPSK			96.194
			16-QAM			96.205
			64-QAM			96.179
			256-QAM			96.319

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 57~ 111.

8.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
Sub6 n77	10	3705.00	7.9836	32.721	-71.293	-38.572	-13.00
		3840.00	5.2304	32.721	-72.203	-39.482	
		3975.00	7.1576	32.721	-72.727	-40.006	
	15	3707.51	8.0249	32.721	-72.089	-39.368	
		3840.00	9.4232	32.721	-72.600	-39.879	
		3972.48	4.9268	32.111	-72.242	-40.131	
	20	3710.01	7.9970	32.721	-72.248	-39.527	
		3840.00	9.7338	32.721	-72.522	-39.801	
		3969.99	8.0239	32.721	-71.801	-39.080	
	25	3712.50	8.3619	32.721	-72.188	-39.467	
		3840.00	5.4522	32.721	-72.295	-39.574	
		3967.50	8.0115	32.721	-71.497	-38.776	
	30	3715.02	3.1970	32.111	-71.723	-39.612	
		3840.00	8.0254	32.721	-71.087	-38.366	
		3964.98	7.9876	32.721	-72.338	-39.617	
	40	3720.00	7.1989	32.721	-72.657	-39.936	
		3840.00	8.0195	32.721	-71.945	-39.224	
		3960.00	5.4676	32.721	-72.473	-39.752	
	50	3725.01	8.5877	32.721	-72.568	-39.847	
		3840.00	8.0264	32.721	-71.260	-38.539	
		3954.99	9.4377	32.721	-71.603	-38.882	
	60	3730.01	8.0135	32.721	-71.472	-38.751	
		3840.00	8.0055	32.721	-72.546	-39.825	
		3950.00	8.0195	32.721	-71.749	-39.028	
	80	3740.01	6.0285	32.721	-71.356	-38.635	
		3840.00	8.0035	32.721	-71.836	-39.115	
		3939.99	7.9537	32.721	-72.323	-39.602	
	90	3745.01	6.9068	32.721	-71.906	-39.185	
		3840.00	9.6989	32.721	-71.655	-38.934	
		3934.98	8.0279	32.721	-71.950	-39.229	
	100	3750.00	7.9721	32.721	-72.610	-39.889	
		3840.00	3.2887	32.721	-72.679	-39.958	
		3930.00	7.1755	32.721	-71.496	-38.775	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 299 ~ 364.

2. Duty Cycle factor already applied on the factor.

- Duty Cycle Factor(dB) = 3.01

- Factor(dB) = Duty Cycle factor + Cable Loss + Power Splitter + Ext. Attenuator

- Result(dBm) = Reading + Factor

3. Factor(dB)

Frequency Range (GHz)	Factor [dB]
0.03 – 1	29.623
1 – 5	32.111
5 – 10	32.721
10 – 15	33.246
15 – 20	33.619
Above 20	34.261

8.6 BAND EDGE

1. Plots of the EUT's Band Edge are shown Page 167 ~ 298.
2. Duty Cycle factor already applied on the offset.
   - Duty Cycle Factor(dB) = 3.01
   - Offset(dB) = Duty Cycle factor + Cable Loss + Power Splitter + Ext. Attenuator

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ BandWidth: 10 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3705.000	100%	+20(Ref)	3705 000 013	0.0	0.000 000	0.000
	100%	-30	3705 000 022	9.0	0.000 000	0.002
	100%	-20	3705 000 024	11.1	0.000 000	0.003
	100%	-10	3705 000 024	11.2	0.000 000	0.003
	100%	0	3705 000 020	6.4	0.000 000	0.002
	100%	+10	3705 000 024	10.8	0.000 000	0.003
	100%	+30	3705 000 021	8.1	0.000 000	0.002
	100%	+40	3705 000 020	7.1	0.000 000	0.002
	100%	+50	3705 000 019	5.3	0.000 000	0.001
	Batt. Endpoint	+20	3705 000 029	15.3	0.000 000	0.004
3975.000	100%	+20(Ref)	3975 000 008	0.0	0.000 000	0.000
	100%	-30	3975 000 020	12.1	0.000 000	0.003
	100%	-20	3975 000 012	4.3	0.000 000	0.001
	100%	-10	3975 000 023	14.6	0.000 000	0.004
	100%	0	3975 000 013	5.2	0.000 000	0.001
	100%	+10	3975 000 024	15.8	0.000 000	0.004
	100%	+30	3975 000 023	14.8	0.000 000	0.004
	100%	+40	3975 000 020	11.9	0.000 000	0.003
	100%	+50	3975 000 018	9.7	0.000 000	0.002
	Batt. Endpoint	+20	3975 000 025	16.4	0.000 000	0.004

▣ BandWidth: 15 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3707.500	100%	+20(Ref)	3707 520 017	0.0	0.000 000	0.000
	100%	-30	3707 520 029	11.9	0.000 000	0.003
	100%	-20	3707 520 031	14.0	0.000 000	0.004
	100%	-10	3707 520 027	10.7	0.000 000	0.003
	100%	0	3707 520 023	6.4	0.000 000	0.002
	100%	+10	3707 520 031	14.3	0.000 000	0.004
	100%	+30	3707 520 033	16.6	0.000 000	0.004
	100%	+40	3707 520 021	4.2	0.000 000	0.001
	100%	+50	3707 520 032	15.6	0.000 000	0.004
	Batt. Endpoint	+20	3707 520 029	12.6	0.000 000	0.003
3972.500	100%	+20(Ref)	3972 480 017	0.0	0.000 000	0.000
	100%	-30	3972 480 026	9.0	0.000 000	0.002
	100%	-20	3972 480 026	8.5	0.000 000	0.002
	100%	-10	3972 480 023	5.8	0.000 000	0.001
	100%	0	3972 480 030	13.5	0.000 000	0.003
	100%	+10	3972 480 026	8.8	0.000 000	0.002
	100%	+30	3972 480 025	7.9	0.000 000	0.002
	100%	+40	3972 480 028	11.3	0.000 000	0.003
	100%	+50	3972 480 029	12.3	0.000 000	0.003
	Batt. Endpoint	+20	3972 480 030	13.0	0.000 000	0.003

▣ BandWidth: 20 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3710.010	100%	+20(Ref)	3710 010 008	0.0	0.000 000	0.000
	100%	-30	3710 010 024	16.5	0.000 000	0.004
	100%	-20	3710 010 018	9.9	0.000 000	0.003
	100%	-10	3710 010 017	8.9	0.000 000	0.002
	100%	0	3710 010 017	9.0	0.000 000	0.002
	100%	+10	3710 010 018	10.4	0.000 000	0.003
	100%	+30	3710 010 023	15.4	0.000 000	0.004
	100%	+40	3710 010 015	7.0	0.000 000	0.002
	100%	+50	3710 010 024	16.0	0.000 000	0.004
	Batt. Endpoint	+20	3710 010 014	6.1	0.000 000	0.002
3969.990	100%	+20(Ref)	3969 990 016	0.0	0.000 000	0.000
	100%	-30	3969 990 031	14.6	0.000 000	0.004
	100%	-20	3969 990 024	7.8	0.000 000	0.002
	100%	-10	3969 990 029	13.0	0.000 000	0.003
	100%	0	3969 990 025	9.6	0.000 000	0.002
	100%	+10	3969 990 023	7.2	0.000 000	0.002
	100%	+30	3969 990 019	3.0	0.000 000	0.001
	100%	+40	3969 990 025	9.5	0.000 000	0.002
	100%	+50	3969 990 025	9.1	0.000 000	0.002
	Batt. Endpoint	+20	3969 990 028	12.4	0.000 000	0.003

▣ BandWidth: 25 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3712.500	100%	+20(Ref)	3712 500 007	0.0	0.000 000	0.000
	100%	-30	3712 500 021	14.6	0.000 000	0.004
	100%	-20	3712 500 020	13.4	0.000 000	0.004
	100%	-10	3712 500 020	12.7	0.000 000	0.003
	100%	0	3712 500 023	16.2	0.000 000	0.004
	100%	+10	3712 500 023	16.0	0.000 000	0.004
	100%	+30	3712 500 012	5.3	0.000 000	0.001
	100%	+40	3712 500 012	5.6	0.000 000	0.002
	100%	+50	3712 500 018	11.6	0.000 000	0.003
	Batt. Endpoint	+20	3712 500 013	6.6	0.000 000	0.002
3967.500	100%	+20(Ref)	3967 500 014	0.0	0.000 000	0.000
	100%	-30	3967 500 024	10.4	0.000 000	0.003
	100%	-20	3967 500 026	12.0	0.000 000	0.003
	100%	-10	3967 500 027	13.4	0.000 000	0.003
	100%	0	3967 500 022	7.9	0.000 000	0.002
	100%	+10	3967 500 026	11.8	0.000 000	0.003
	100%	+30	3967 500 026	11.7	0.000 000	0.003
	100%	+40	3967 500 020	6.1	0.000 000	0.002
	100%	+50	3967 500 018	3.5	0.000 000	0.001
	Batt. Endpoint	+20	3967 500 020	6.3	0.000 000	0.002

▣ BandWidth: 30 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3715.020	100%	+20(Ref)	3715 020 014	0.0	0.000 000	0.000
	100%	-30	3715 020 017	3.6	0.000 000	0.001
	100%	-20	3715 020 019	5.0	0.000 000	0.001
	100%	-10	3715 020 030	16.1	0.000 000	0.004
	100%	0	3715 020 022	8.2	0.000 000	0.002
	100%	+10	3715 020 028	14.3	0.000 000	0.004
	100%	+30	3715 020 019	5.6	0.000 000	0.002
	100%	+40	3715 020 027	12.8	0.000 000	0.003
	100%	+50	3715 020 024	9.7	0.000 000	0.003
	Batt. Endpoint	+20	3715 020 029	15.6	0.000 000	0.004
3964.980	100%	+20(Ref)	3964 980 013	0.0	0.000 000	0.000
	100%	-30	3964 980 020	6.7	0.000 000	0.002
	100%	-20	3964 980 019	5.2	0.000 000	0.001
	100%	-10	3964 980 028	14.9	0.000 000	0.004
	100%	0	3964 980 025	11.8	0.000 000	0.003
	100%	+10	3964 980 020	6.7	0.000 000	0.002
	100%	+30	3964 980 023	9.4	0.000 000	0.002
	100%	+40	3964 980 019	5.3	0.000 000	0.001
	100%	+50	3964 980 029	15.7	0.000 000	0.004
	Batt. Endpoint	+20	3964 980 022	8.7	0.000 000	0.002

▣ BandWidth: 40 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3720.000	100%	+20(Ref)	3720 000 006	0.0	0.000 000	0.000
	100%	-30	3720 000 019	12.6	0.000 000	0.003
	100%	-20	3720 000 010	3.9	0.000 000	0.001
	100%	-10	3720 000 017	10.9	0.000 000	0.003
	100%	0	3720 000 014	7.9	0.000 000	0.002
	100%	+10	3720 000 011	4.8	0.000 000	0.001
	100%	+30	3720 000 022	15.7	0.000 000	0.004
	100%	+40	3720 000 011	4.3	0.000 000	0.001
	100%	+50	3720 000 023	16.2	0.000 000	0.004
	Batt. Endpoint	+20	3720 000 020	14.1	0.000 000	0.004
3960.000	100%	+20(Ref)	3960 000 013	0.0	0.000 000	0.000
	100%	-30	3960 000 019	6.7	0.000 000	0.002
	100%	-20	3960 000 024	11.5	0.000 000	0.003
	100%	-10	3960 000 017	5.0	0.000 000	0.001
	100%	0	3960 000 026	13.6	0.000 000	0.003
	100%	+10	3960 000 018	5.0	0.000 000	0.001
	100%	+30	3960 000 018	5.4	0.000 000	0.001
	100%	+40	3960 000 020	7.1	0.000 000	0.002
	100%	+50	3960 000 023	10.7	0.000 000	0.003
	Batt. Endpoint	+20	3960 000 025	12.6	0.000 000	0.003

▣ BandWidth: 50 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3725.010	100%	+20(Ref)	3725 010 012	0.0	0.000 000	0.000
	100%	-30	3725 010 015	3.4	0.000 000	0.001
	100%	-20	3725 010 027	15.3	0.000 000	0.004
	100%	-10	3725 010 022	10.6	0.000 000	0.003
	100%	0	3725 010 019	6.7	0.000 000	0.002
	100%	+10	3725 010 020	8.2	0.000 000	0.002
	100%	+30	3725 010 022	10.3	0.000 000	0.003
	100%	+40	3725 010 018	6.5	0.000 000	0.002
	100%	+50	3725 010 019	7.6	0.000 000	0.002
	Batt. Endpoint	+20	3725 010 021	9.1	0.000 000	0.002
3954.990	100%	+20(Ref)	3954 990 005	0.0	0.000 000	0.000
	100%	-30	3954 990 012	7.4	0.000 000	0.002
	100%	-20	3954 990 012	6.8	0.000 000	0.002
	100%	-10	3954 990 015	10.0	0.000 000	0.003
	100%	0	3954 990 013	8.3	0.000 000	0.002
	100%	+10	3954 990 020	15.0	0.000 000	0.004
	100%	+30	3954 990 009	4.1	0.000 000	0.001
	100%	+40	3954 990 008	3.3	0.000 000	0.001
	100%	+50	3954 990 011	6.3	0.000 000	0.002
	Batt. Endpoint	+20	3954 990 013	7.9	0.000 000	0.002

▣ BandWidth: 60 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3730.020	100%	+20(Ref)	3730 020 010	0.0	0.000 000	0.000
	100%	-30	3730 020 022	11.4	0.000 000	0.003
	100%	-20	3730 020 021	10.0	0.000 000	0.003
	100%	-10	3730 020 015	4.5	0.000 000	0.001
	100%	0	3730 020 014	3.3	0.000 000	0.001
	100%	+10	3730 020 021	10.4	0.000 000	0.003
	100%	+30	3730 020 020	9.9	0.000 000	0.003
	100%	+40	3730 020 014	3.8	0.000 000	0.001
	100%	+50	3730 020 023	13.0	0.000 000	0.003
	Batt. Endpoint	+20	3730 020 014	3.4	0.000 000	0.001
3949.990	100%	+20(Ref)	3949 995 014	0.0	0.000 000	0.000
	100%	-30	3949 995 023	8.9	0.000 000	0.002
	100%	-20	3949 995 027	13.3	0.000 000	0.003
	100%	-10	3949 995 027	13.1	0.000 000	0.003
	100%	0	3949 995 031	17.0	0.000 000	0.004
	100%	+10	3949 995 029	15.7	0.000 000	0.004
	100%	+30	3949 995 019	5.0	0.000 000	0.001
	100%	+40	3949 995 023	9.8	0.000 000	0.002
	100%	+50	3949 995 029	15.6	0.000 000	0.004
	Batt. Endpoint	+20	3949 995 031	16.9	0.000 000	0.004

▣ BandWidth: 80 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3740.000	100%	+20(Ref)	3740 010 014	0.0	0.000 000	0.000
	100%	-30	3740 010 022	7.5	0.000 000	0.002
	100%	-20	3740 010 026	11.4	0.000 000	0.003
	100%	-10	3740 010 021	6.7	0.000 000	0.002
	100%	0	3740 010 023	9.1	0.000 000	0.002
	100%	+10	3740 010 029	14.6	0.000 000	0.004
	100%	+30	3740 010 021	7.1	0.000 000	0.002
	100%	+40	3740 010 024	9.6	0.000 000	0.003
	100%	+50	3740 010 020	5.7	0.000 000	0.002
	Batt. Endpoint	+20	3740 010 028	13.6	0.000 000	0.004
3939.990	100%	+20(Ref)	3939 990 015	0.0	0.000 000	0.000
	100%	-30	3939 990 018	3.6	0.000 000	0.001
	100%	-20	3939 990 025	10.2	0.000 000	0.003
	100%	-10	3939 990 018	3.6	0.000 000	0.001
	100%	0	3939 990 021	6.6	0.000 000	0.002
	100%	+10	3939 990 028	13.2	0.000 000	0.003
	100%	+30	3939 990 031	16.2	0.000 000	0.004
	100%	+40	3939 990 019	4.4	0.000 000	0.001
	100%	+50	3939 990 028	13.2	0.000 000	0.003
	Batt. Endpoint	+20	3939 990 025	10.1	0.000 000	0.003

▣ BandWidth: 90 MHz

▣ Voltage(100%): 3.860 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3745.020	100%	+20(Ref)	3745 020 014	0.0	0.000 000	0.000
	100%	-30	3745 020 028	13.5	0.000 000	0.004
	100%	-20	3745 020 031	16.5	0.000 000	0.004
	100%	-10	3745 020 017	3.1	0.000 000	0.001
	100%	0	3745 020 021	6.6	0.000 000	0.002
	100%	+10	3745 020 027	12.9	0.000 000	0.003
	100%	+30	3745 020 022	7.8	0.000 000	0.002
	100%	+40	3745 020 020	5.9	0.000 000	0.002
	100%	+50	3745 020 025	11.3	0.000 000	0.003
	Batt. Endpoint	+20	3745 020 018	3.7	0.000 000	0.001
3934.980	100%	+20(Ref)	3934 980 012	0.0	0.000 000	0.000
	100%	-30	3934 980 028	16.2	0.000 000	0.004
	100%	-20	3934 980 017	4.6	0.000 000	0.001
	100%	-10	3934 980 029	16.5	0.000 000	0.004
	100%	0	3934 980 022	9.5	0.000 000	0.002
	100%	+10	3934 980 027	14.5	0.000 000	0.004
	100%	+30	3934 980 025	12.9	0.000 000	0.003
	100%	+40	3934 980 018	5.3	0.000 000	0.001
	100%	+50	3934 980 016	4.0	0.000 000	0.001
	Batt. Endpoint	+20	3934 980 016	4.1	0.000 000	0.001

▣ BandWidth: 100 MHz

▣ Voltage(100%): 3.860 VDC

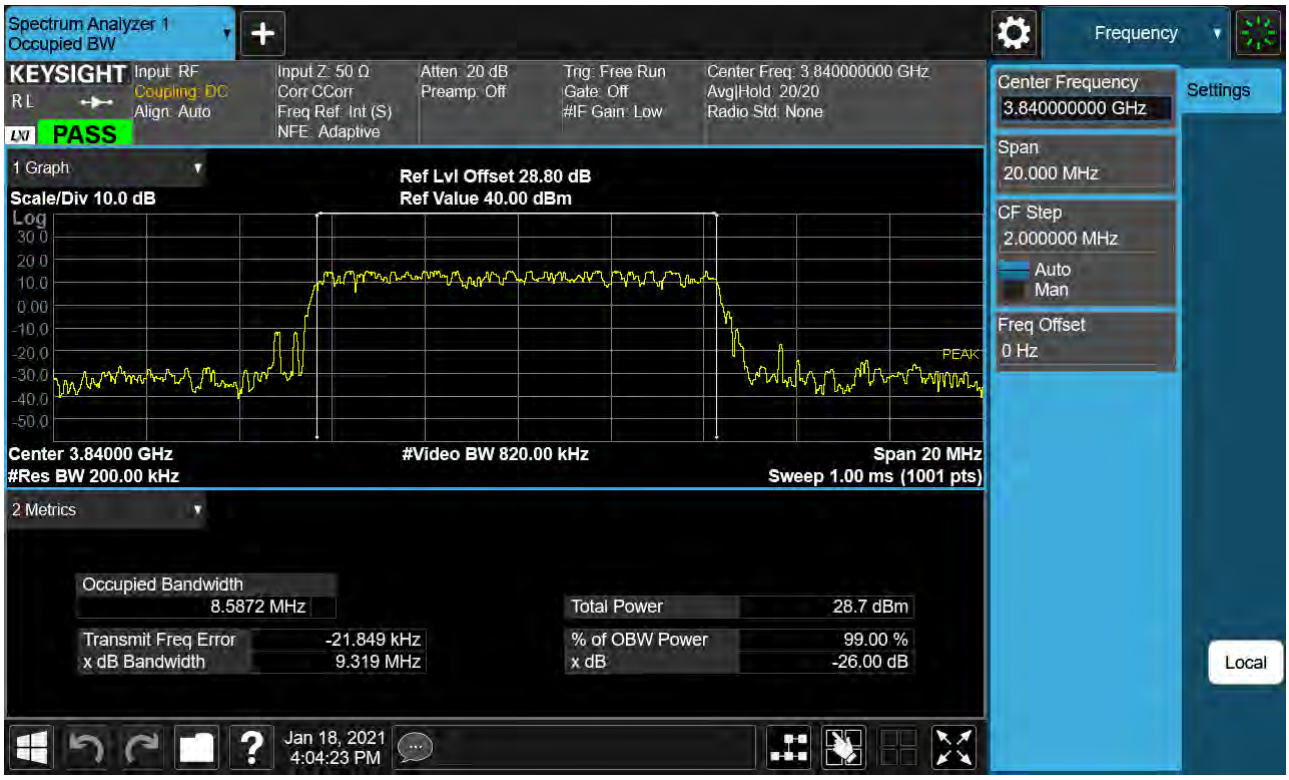
▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

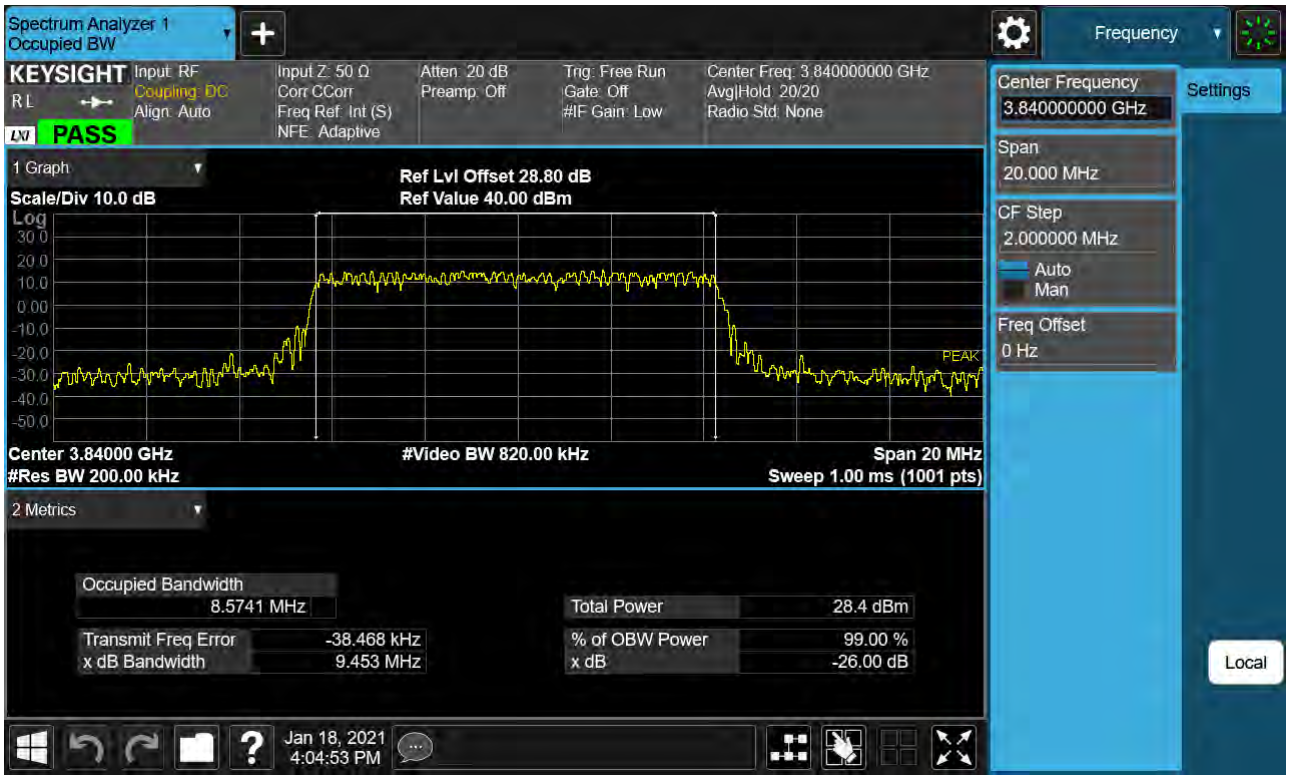
Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3750.000	100%	+20(Ref)	3750 000 012	0.0	0.000 000	0.000
	100%	-30	3750 000 018	5.9	0.000 000	0.002
	100%	-20	3750 000 029	16.6	0.000 000	0.004
	100%	-10	3750 000 017	5.3	0.000 000	0.001
	100%	0	3750 000 020	8.1	0.000 000	0.002
	100%	+10	3750 000 019	6.8	0.000 000	0.002
	100%	+30	3750 000 029	16.3	0.000 000	0.004
	100%	+40	3750 000 019	7.1	0.000 000	0.002
	100%	+50	3750 000 028	15.5	0.000 000	0.004
	Batt. Endpoint	+20	3750 000 022	9.4	0.000 000	0.003
3930.000	100%	+20(Ref)	3930 000 010	0.0	0.000 000	0.000
	100%	-30	3930 000 014	3.7	0.000 000	0.001
	100%	-20	3930 000 023	13.1	0.000 000	0.003
	100%	-10	3930 000 016	6.0	0.000 000	0.002
	100%	0	3930 000 027	16.6	0.000 000	0.004
	100%	+10	3930 000 014	4.1	0.000 000	0.001
	100%	+30	3930 000 025	15.1	0.000 000	0.004
	100%	+40	3930 000 014	3.9	0.000 000	0.001
	100%	+50	3930 000 023	12.5	0.000 000	0.003
	Batt. Endpoint	+20	3930 000 013	3.0	0.000 000	0.001

9. TEST PLOTS

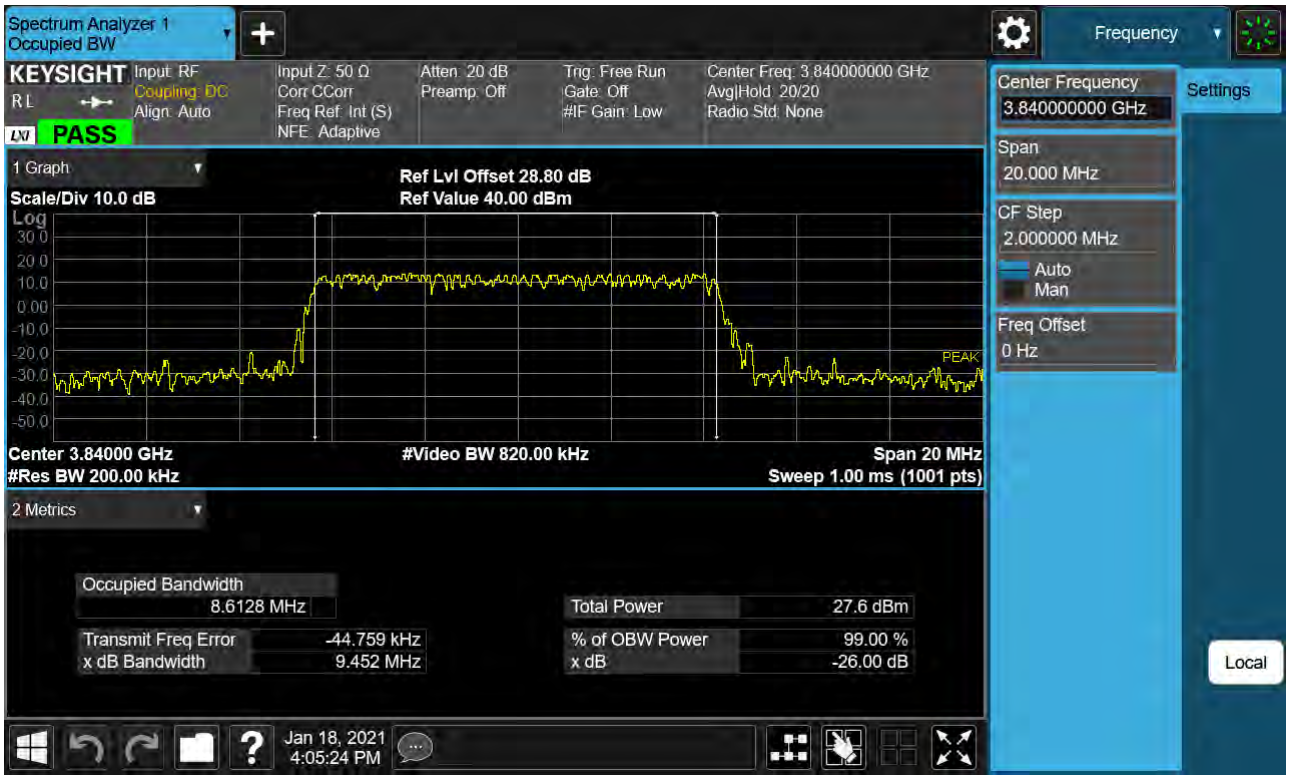
Sub6 n77. Occupied Bandwidth Plot (10M BW Ch.656000 BPSK)



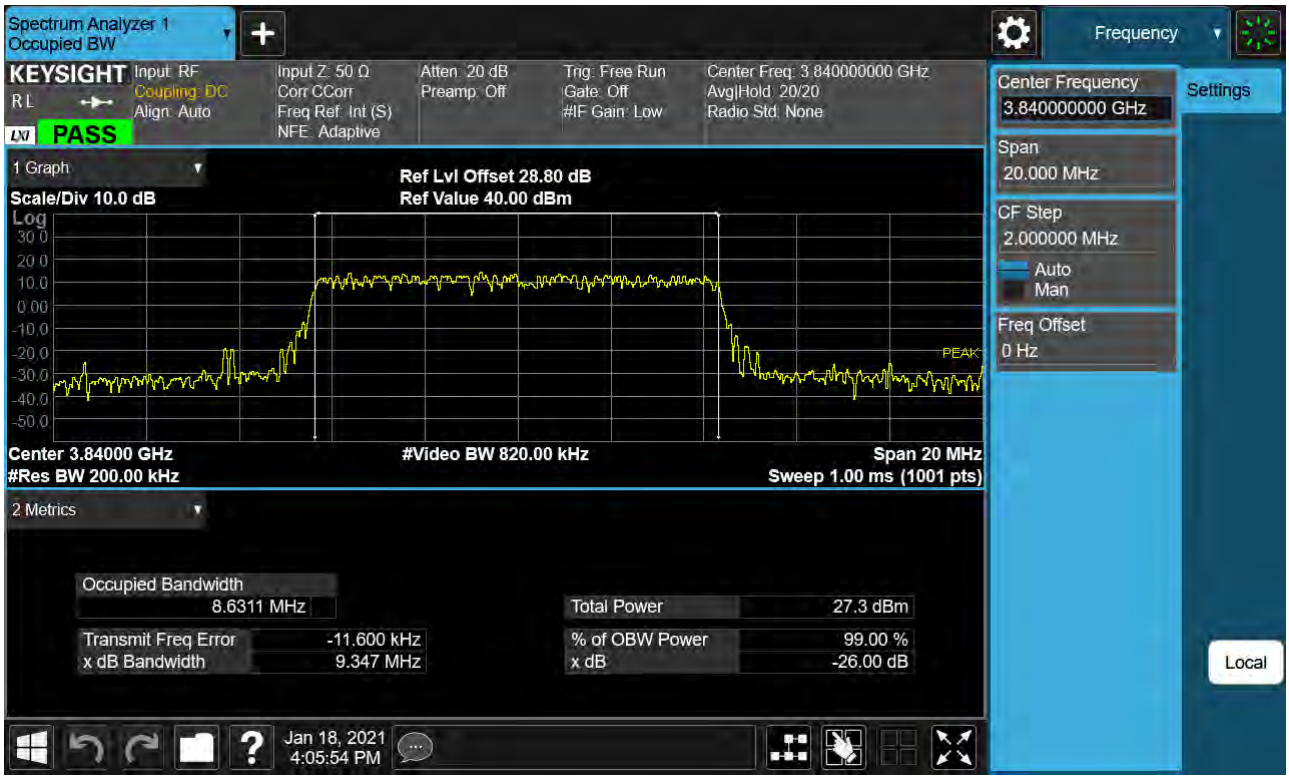
Sub6 n77. Occupied Bandwidth Plot (10M BW Ch.656000 QPSK)



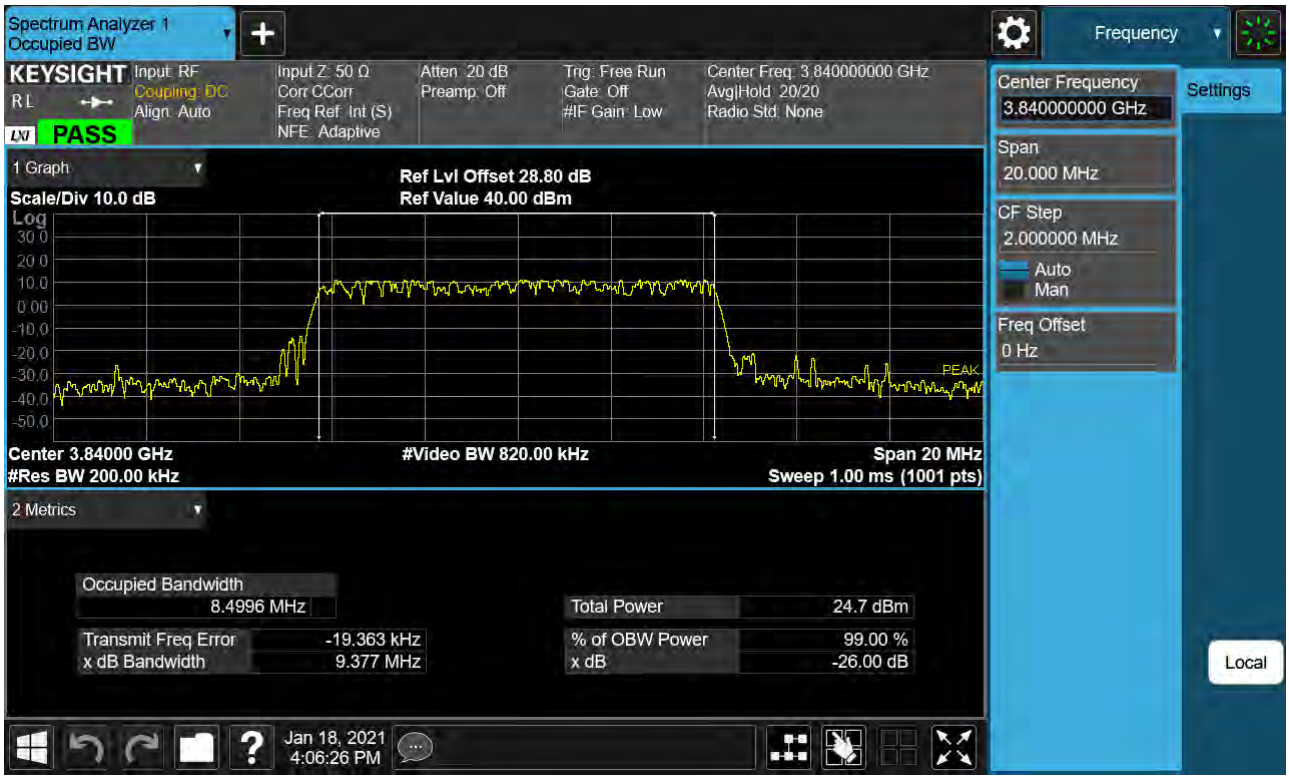
Sub6 n77. Occupied Bandwidth Plot (10M BW Ch.656000 16QAM)



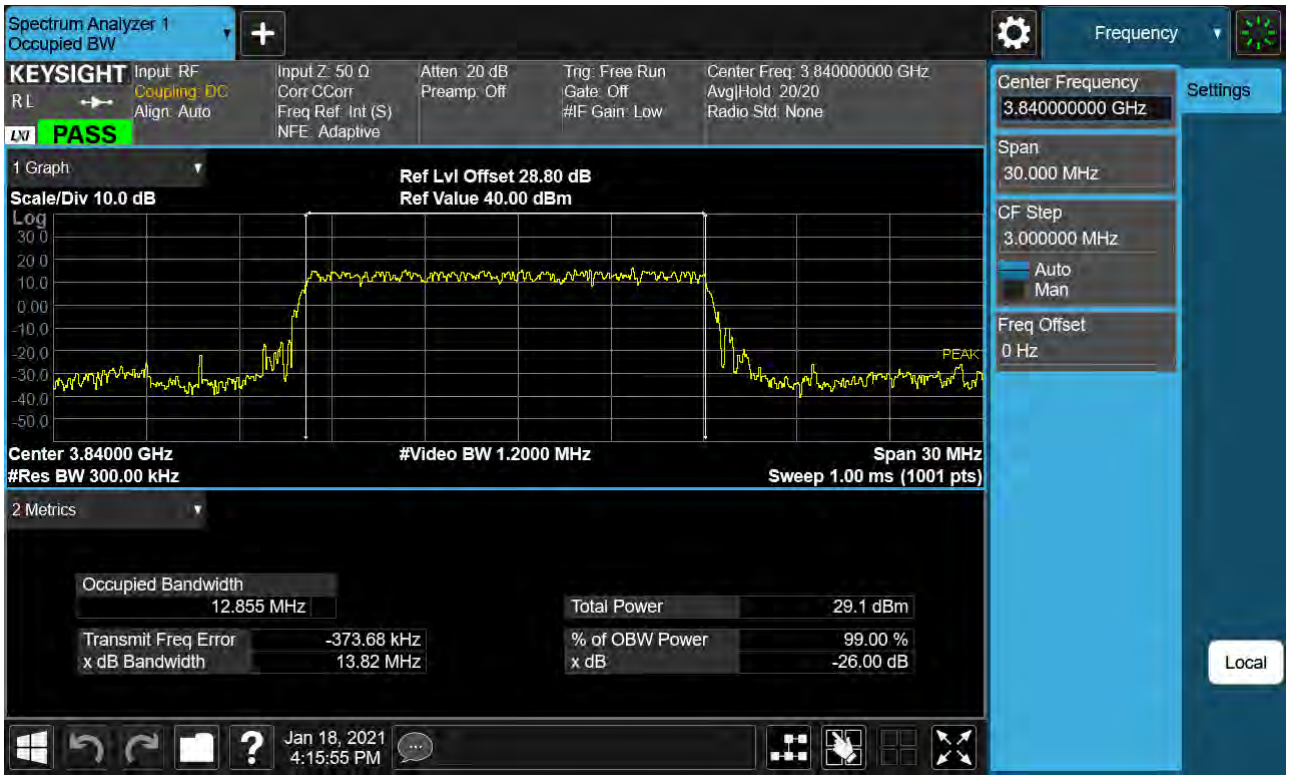
Sub6 n77. Occupied Bandwidth Plot (10M BW Ch.656000 64QAM)



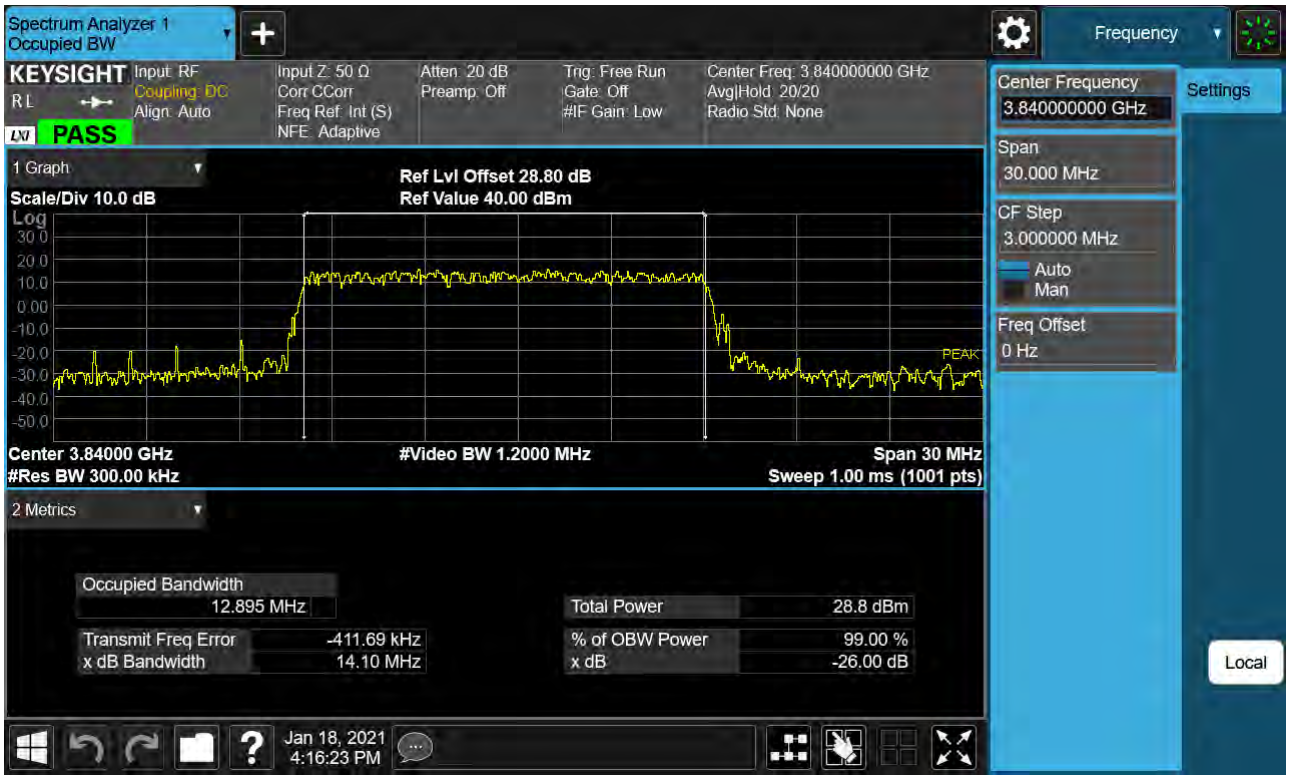
Sub6 n77. Occupied Bandwidth Plot (10M BW Ch.656000 256QAM)



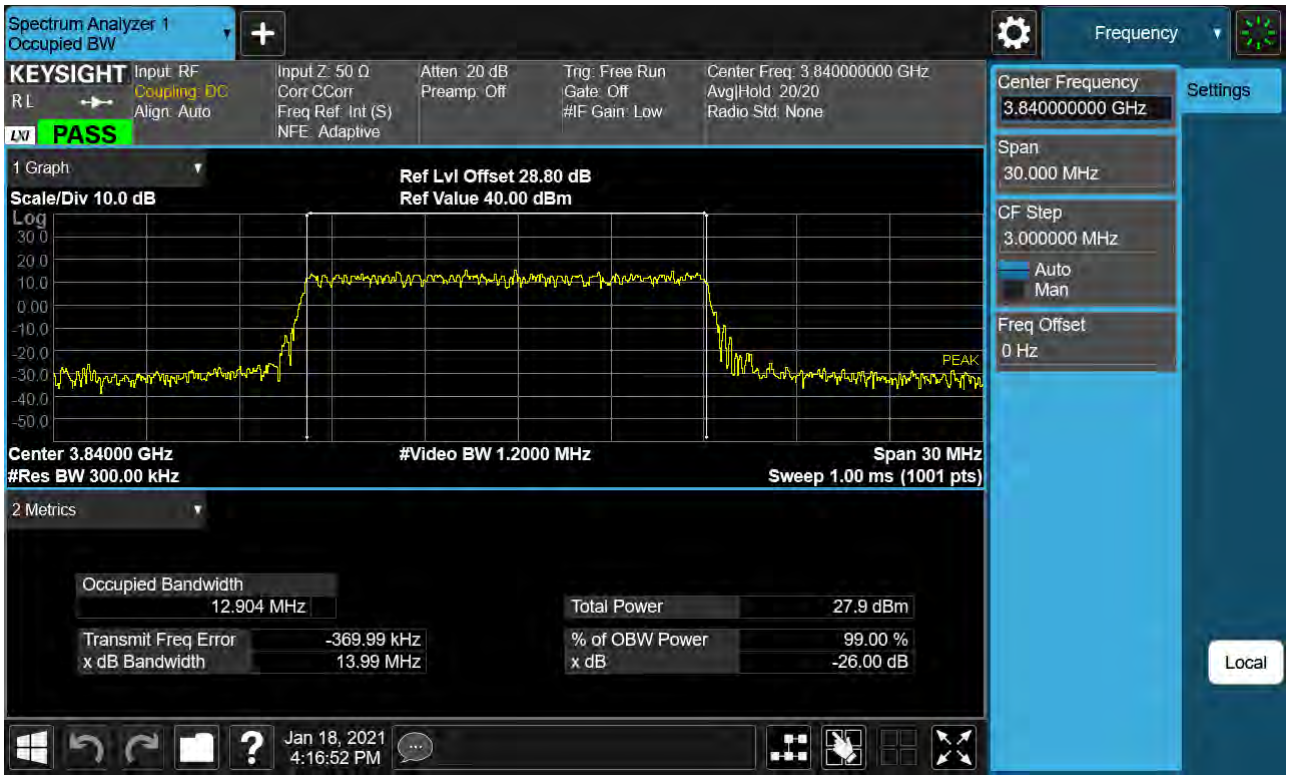
Sub6 n77. Occupied Bandwidth Plot (15M BW Ch.656000 BPSK)



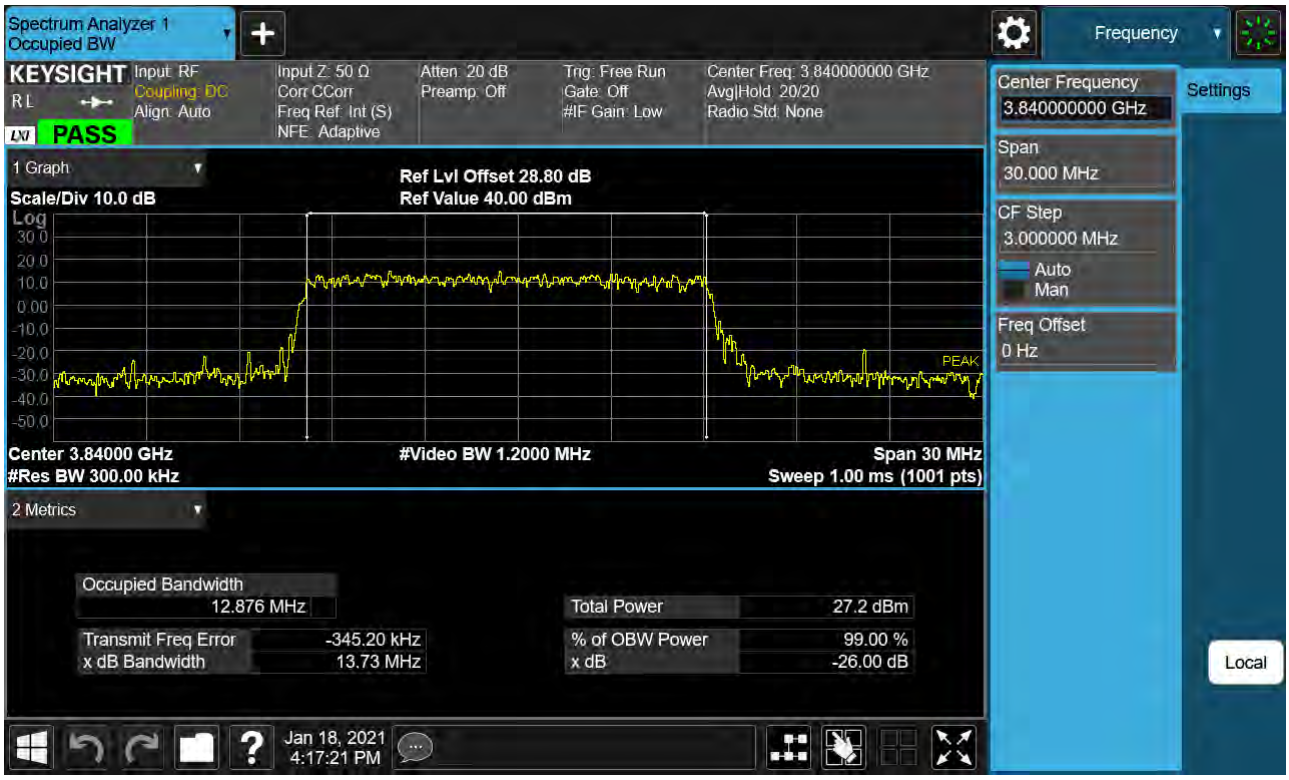
Sub6 n77. Occupied Bandwidth Plot (15M BW Ch.656000 QPSK)



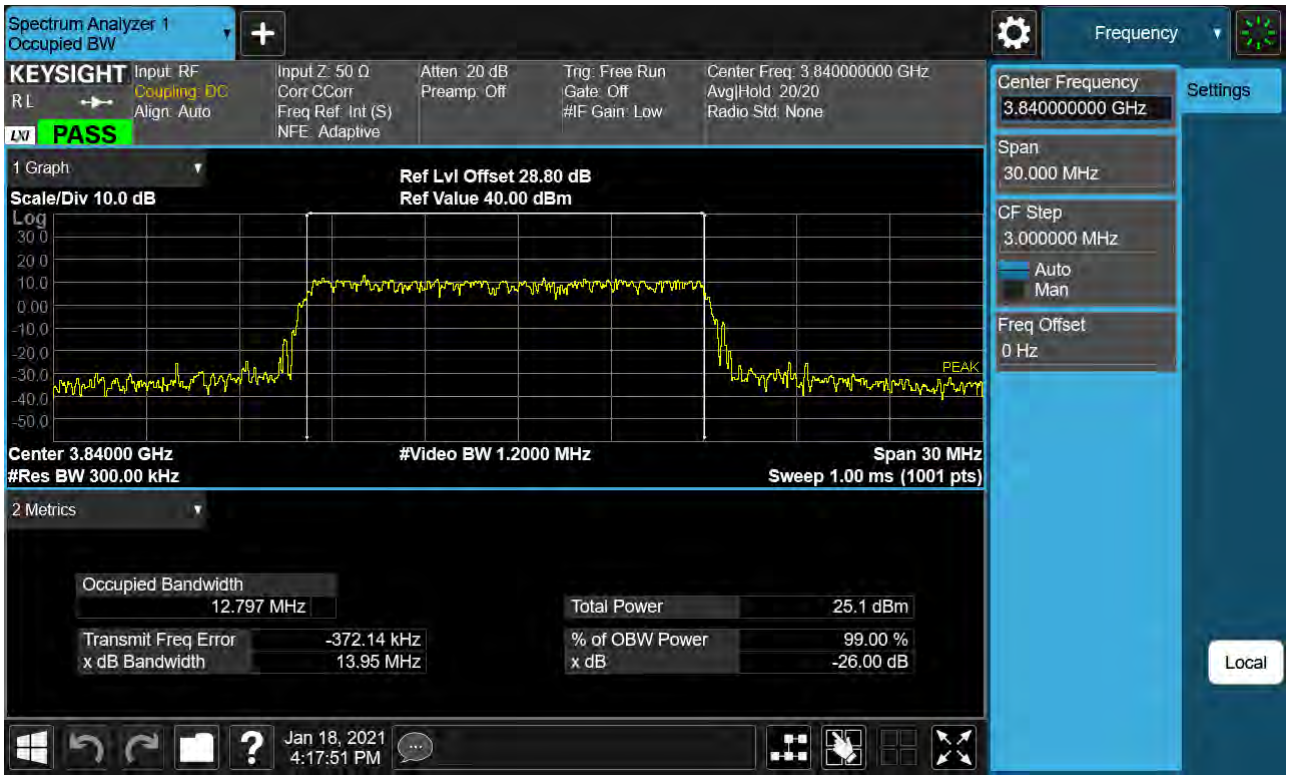
Sub6 n77. Occupied Bandwidth Plot (15M BW Ch.656000 16QAM)



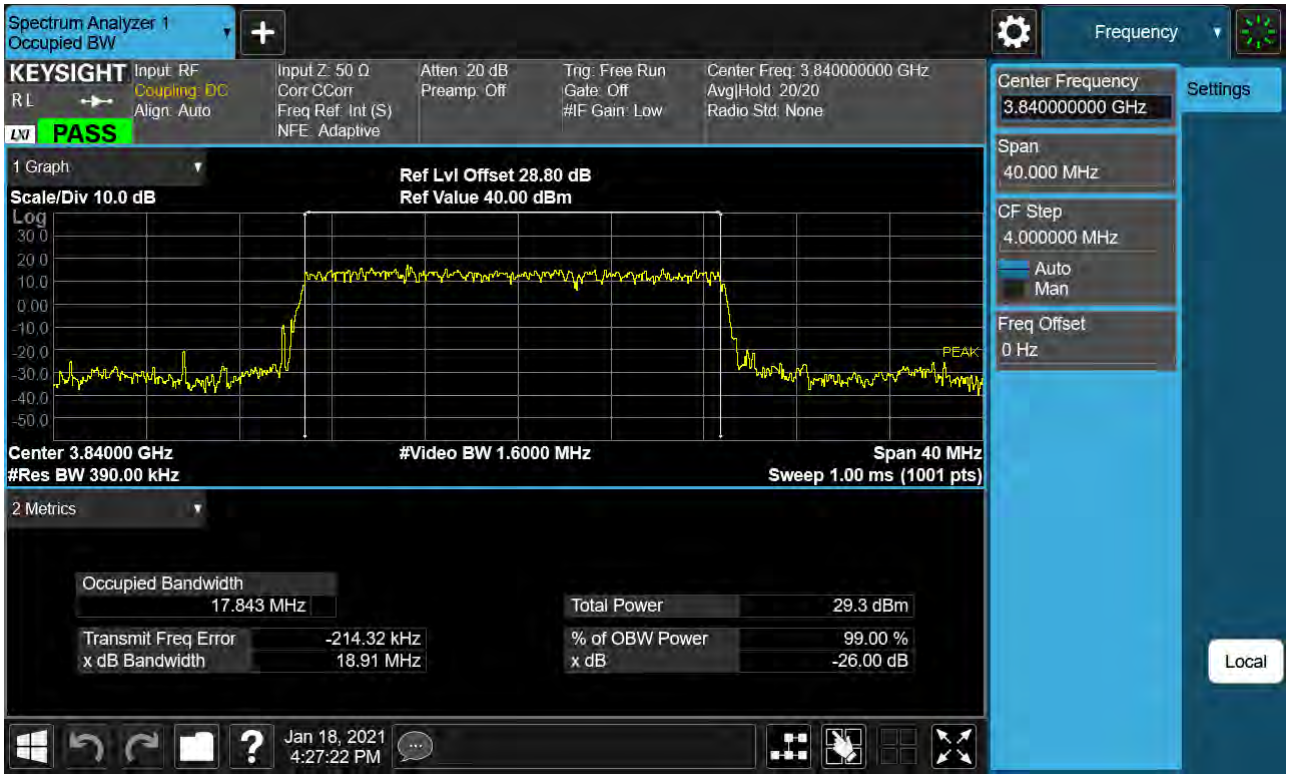
Sub6 n77. Occupied Bandwidth Plot (15M BW Ch.656000 64QAM)



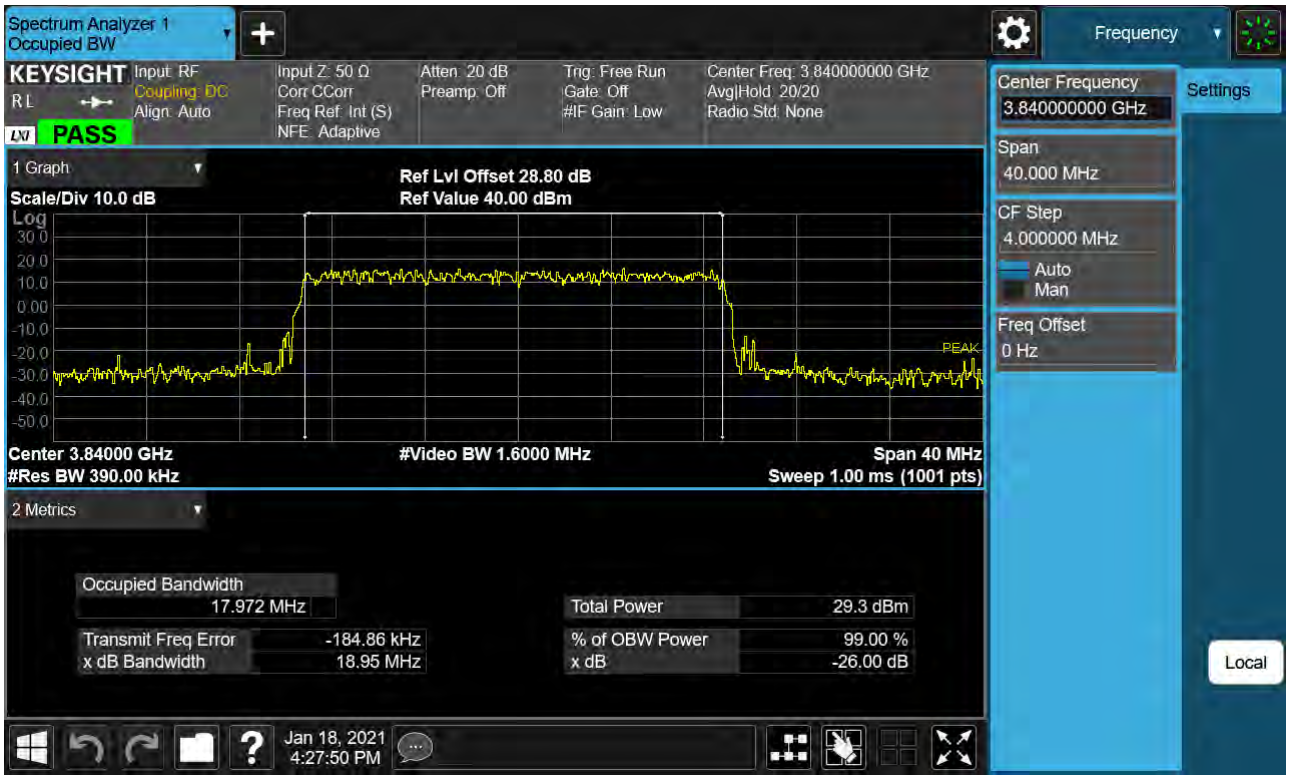
Sub6 n77. Occupied Bandwidth Plot (15M BW Ch.656000 256QAM)



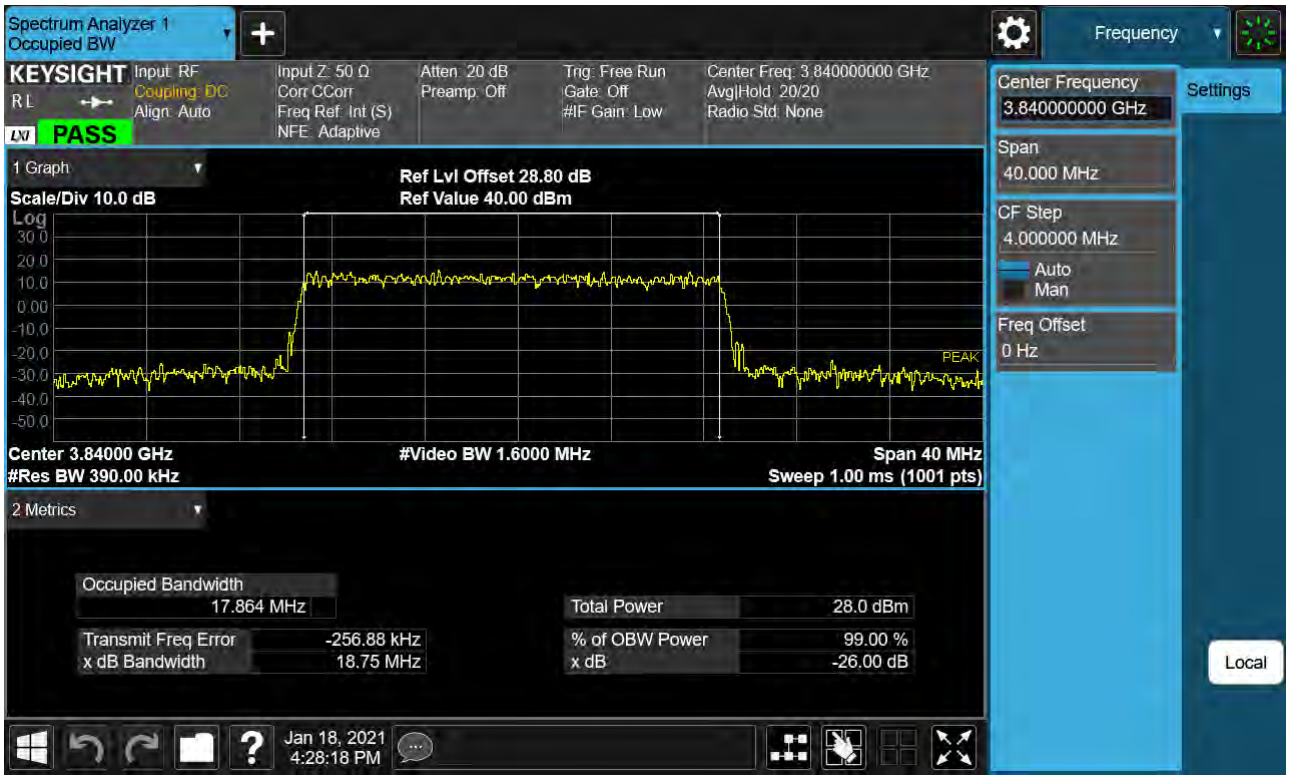
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.656000 BPSK)



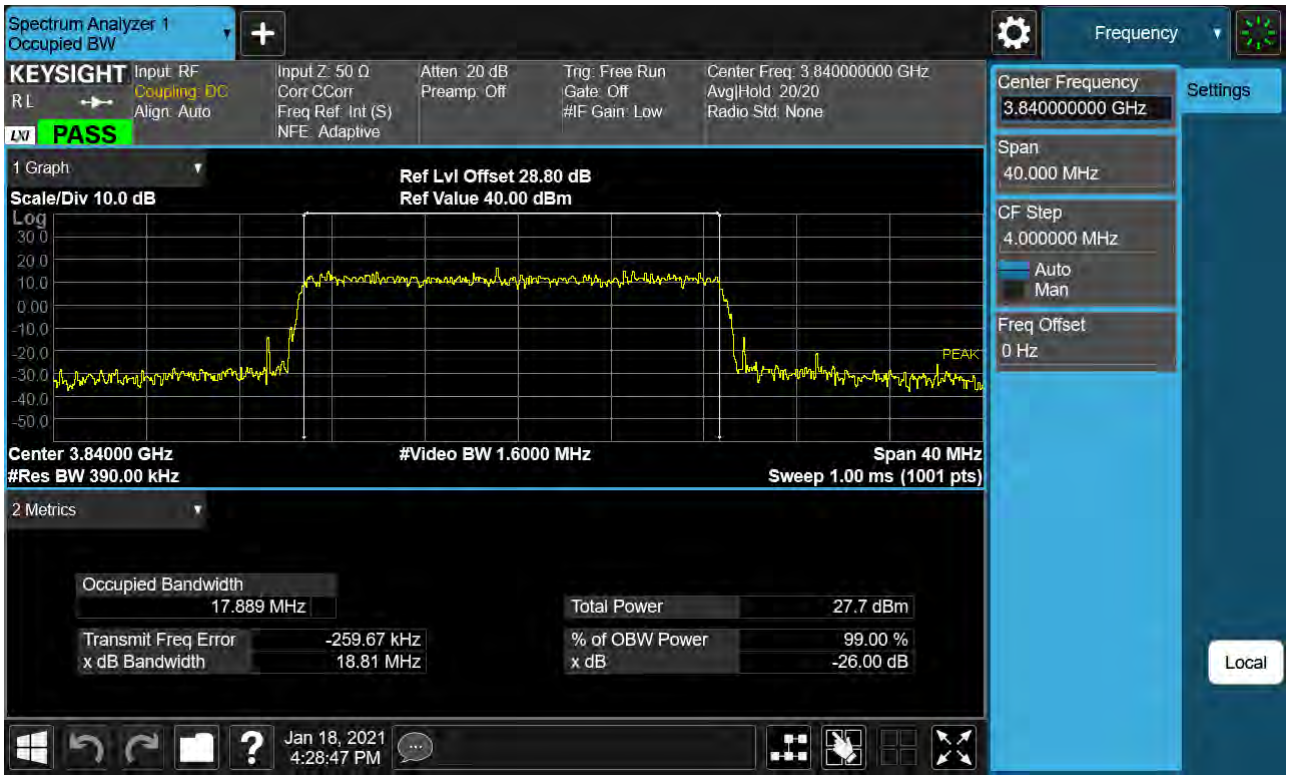
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.656000 QPSK)



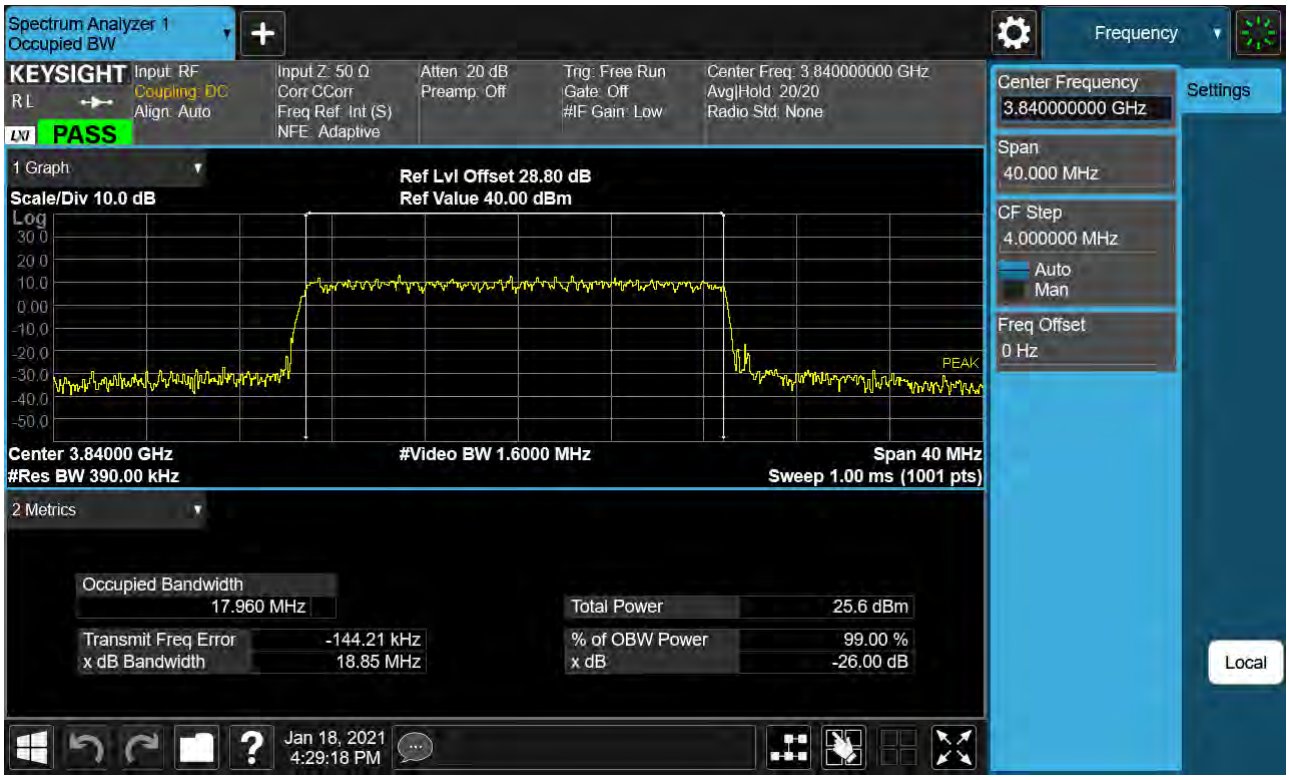
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.656000 16QAM)



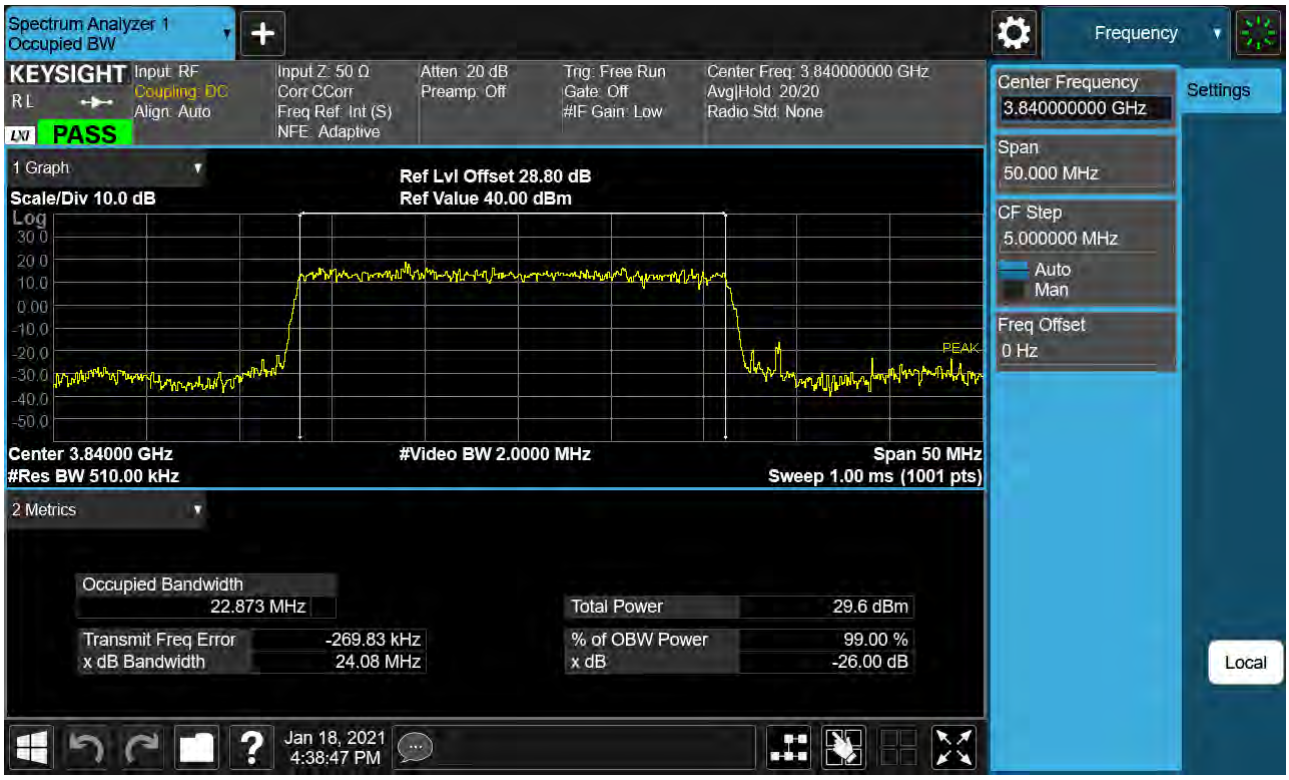
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.656000 64QAM)



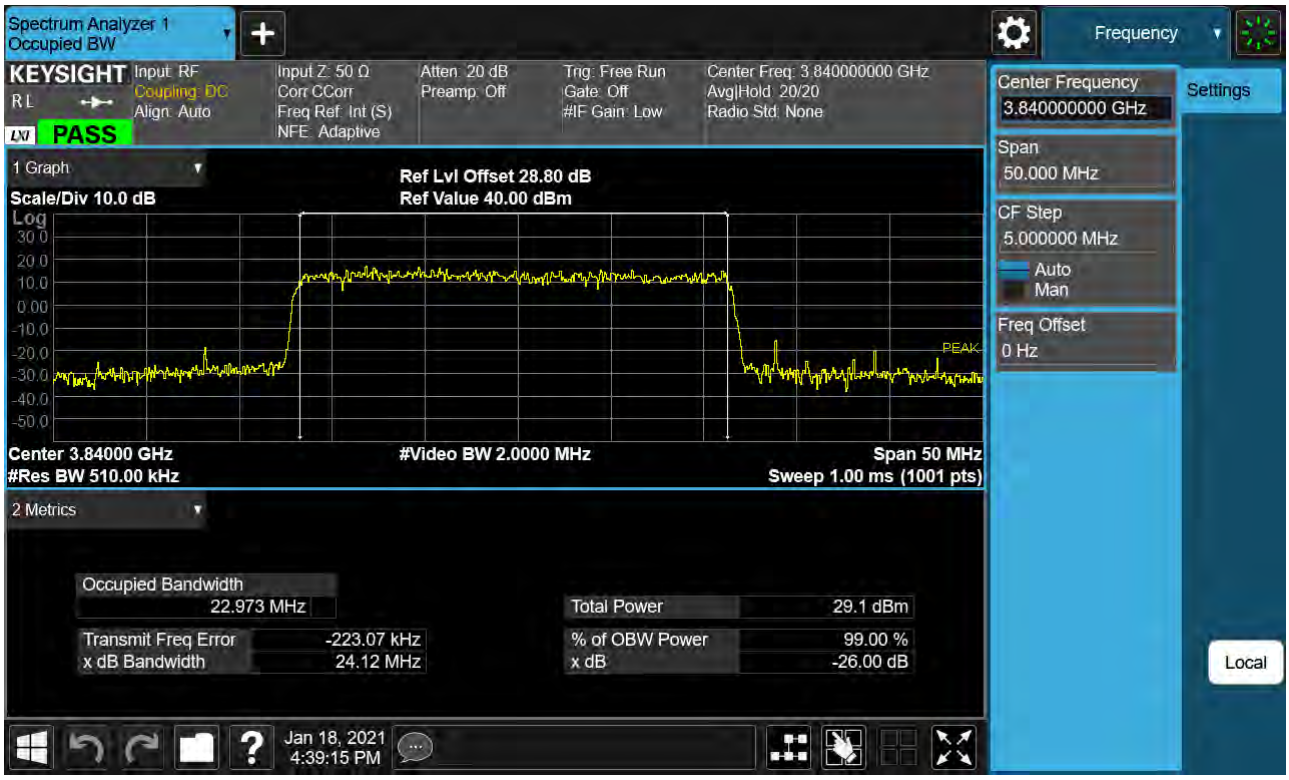
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.656000 256QAM)



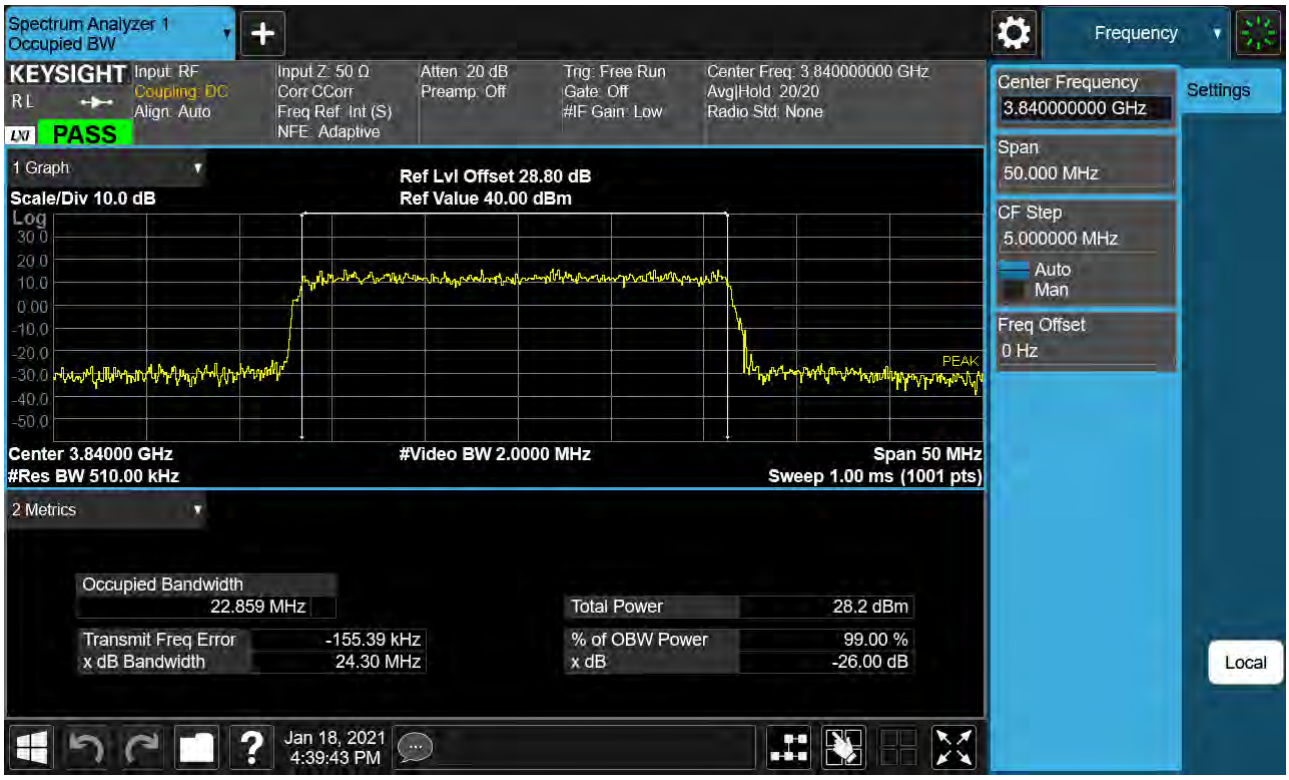
Sub6 n77. Occupied Bandwidth Plot (25M BW Ch.656000 BPSK)



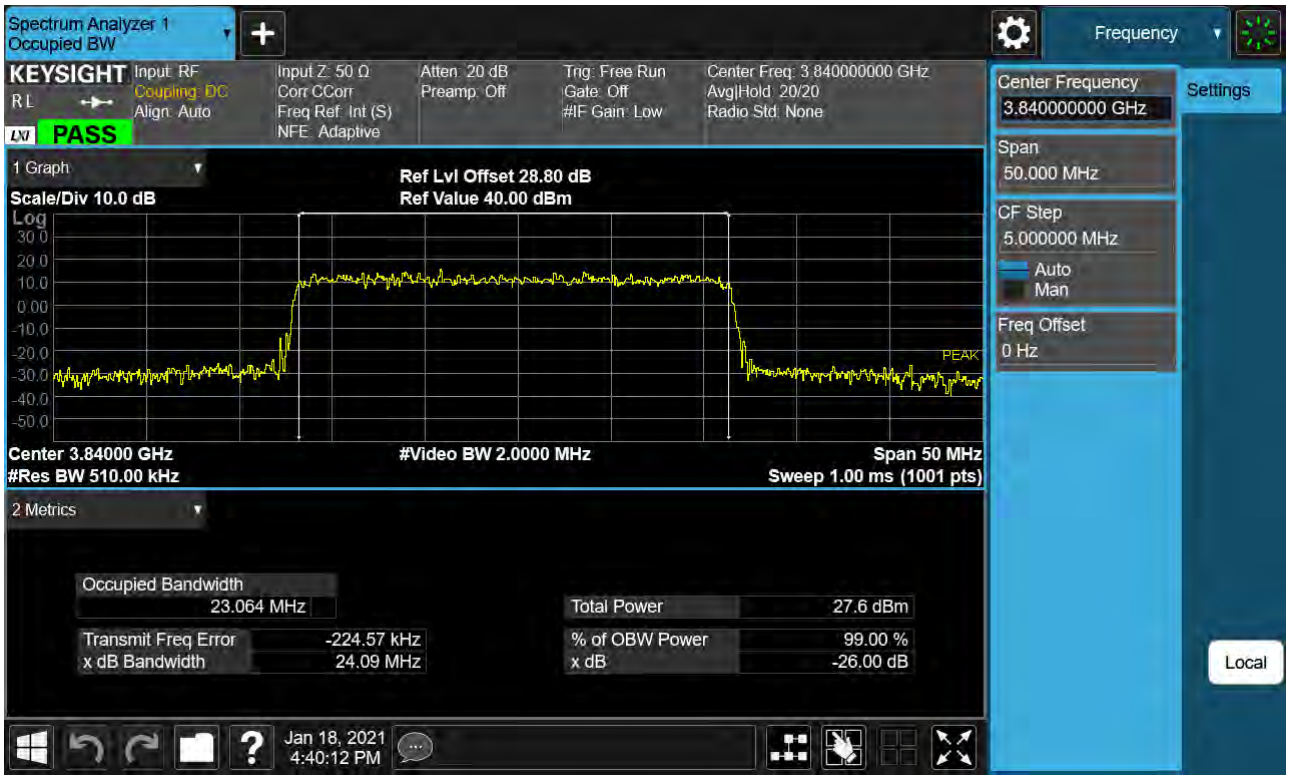
Sub6 n77. Occupied Bandwidth Plot (25M BW Ch.656000 QPSK)



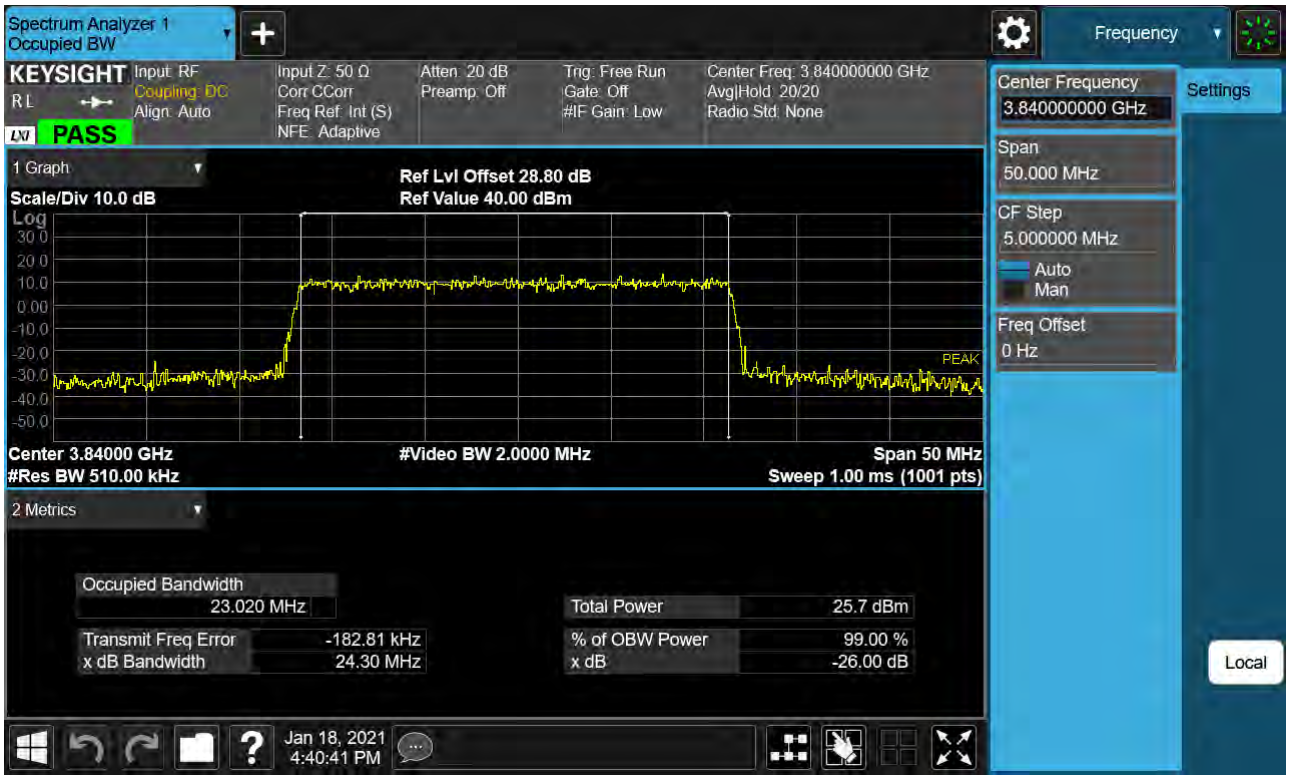
Sub6 n77. Occupied Bandwidth Plot (25M BW Ch.656000 16QAM)



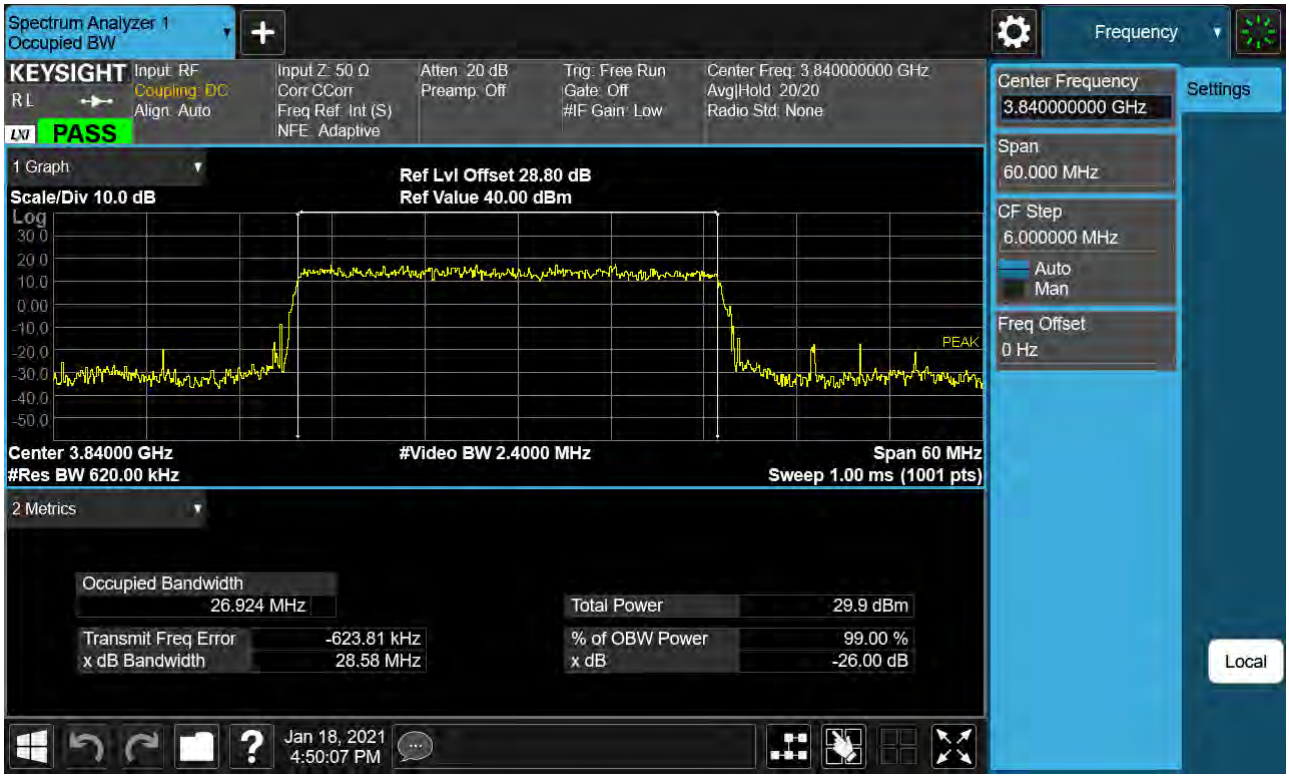
Sub6 n77. Occupied Bandwidth Plot (25M BW Ch.656000 64QAM)



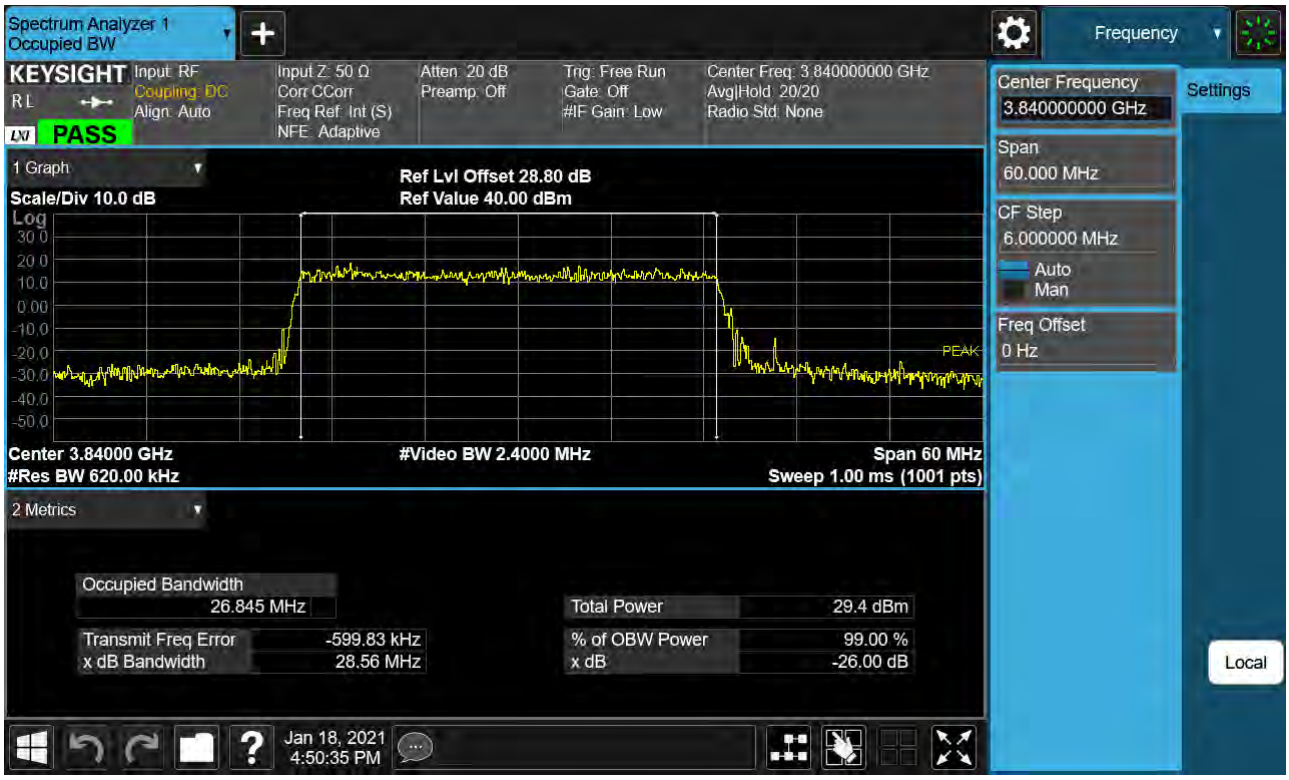
Sub6 n77. Occupied Bandwidth Plot (25M BW Ch.656000 256QAM)



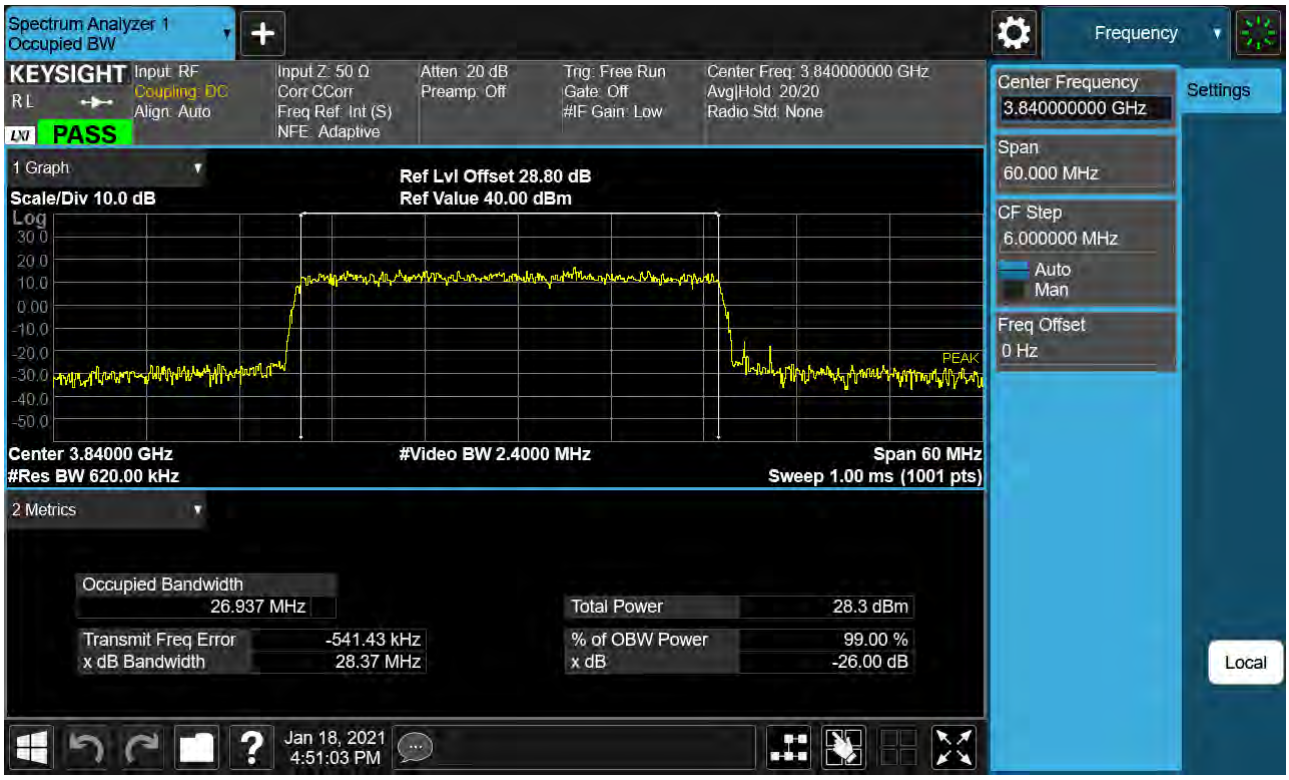
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.656000 BPSK)



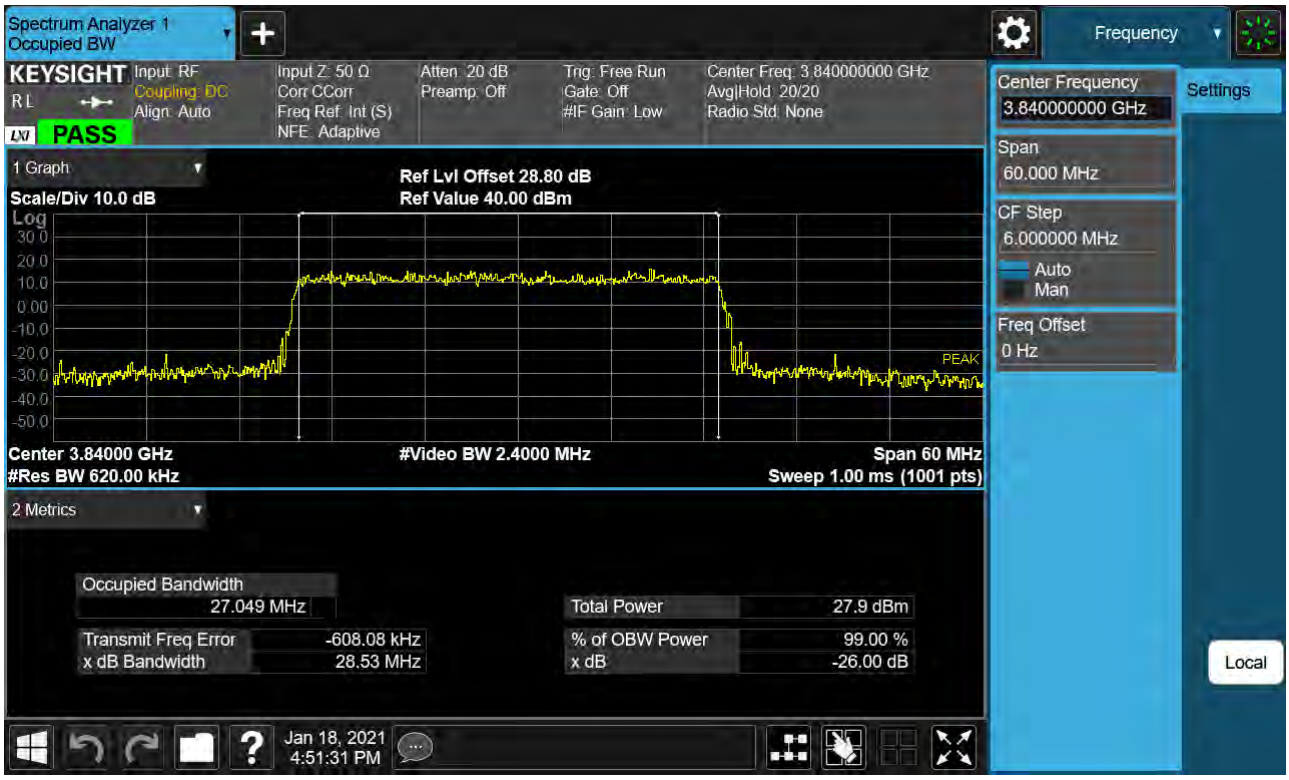
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.656000 QPSK)



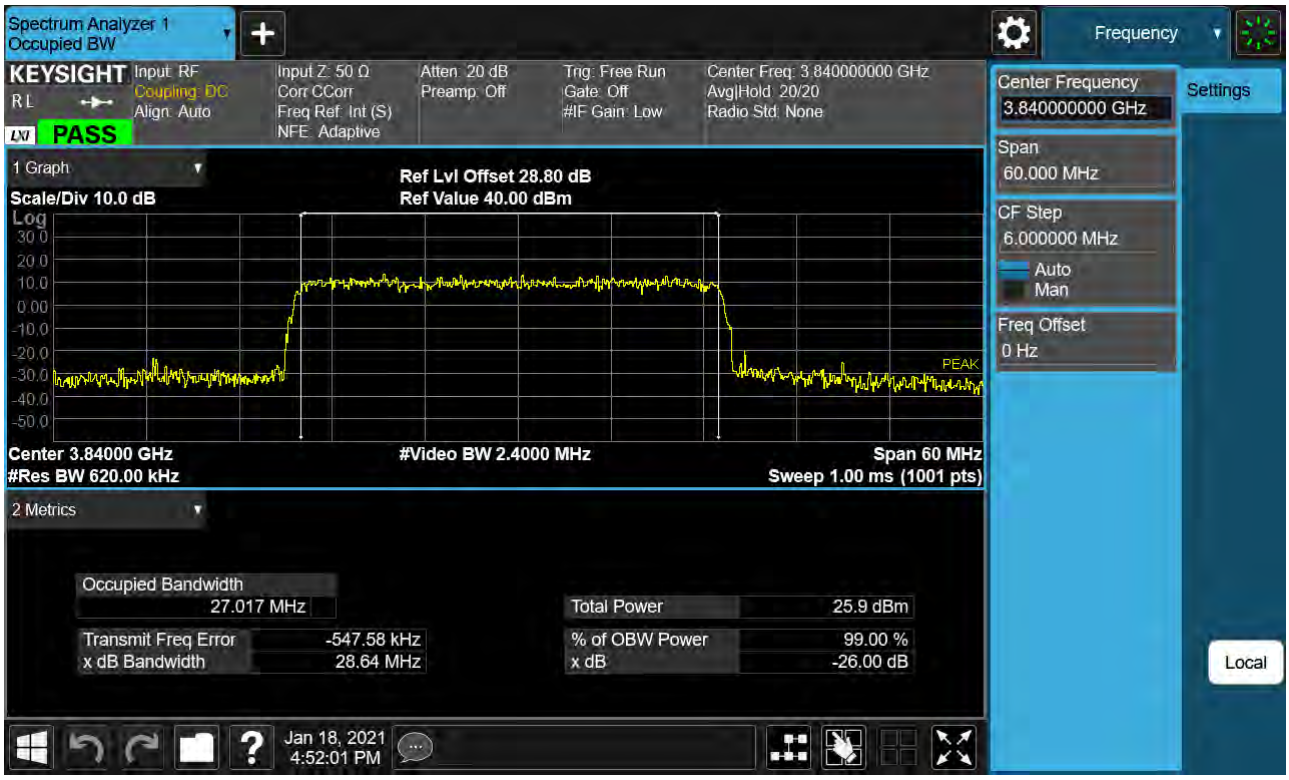
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.656000 16QAM)



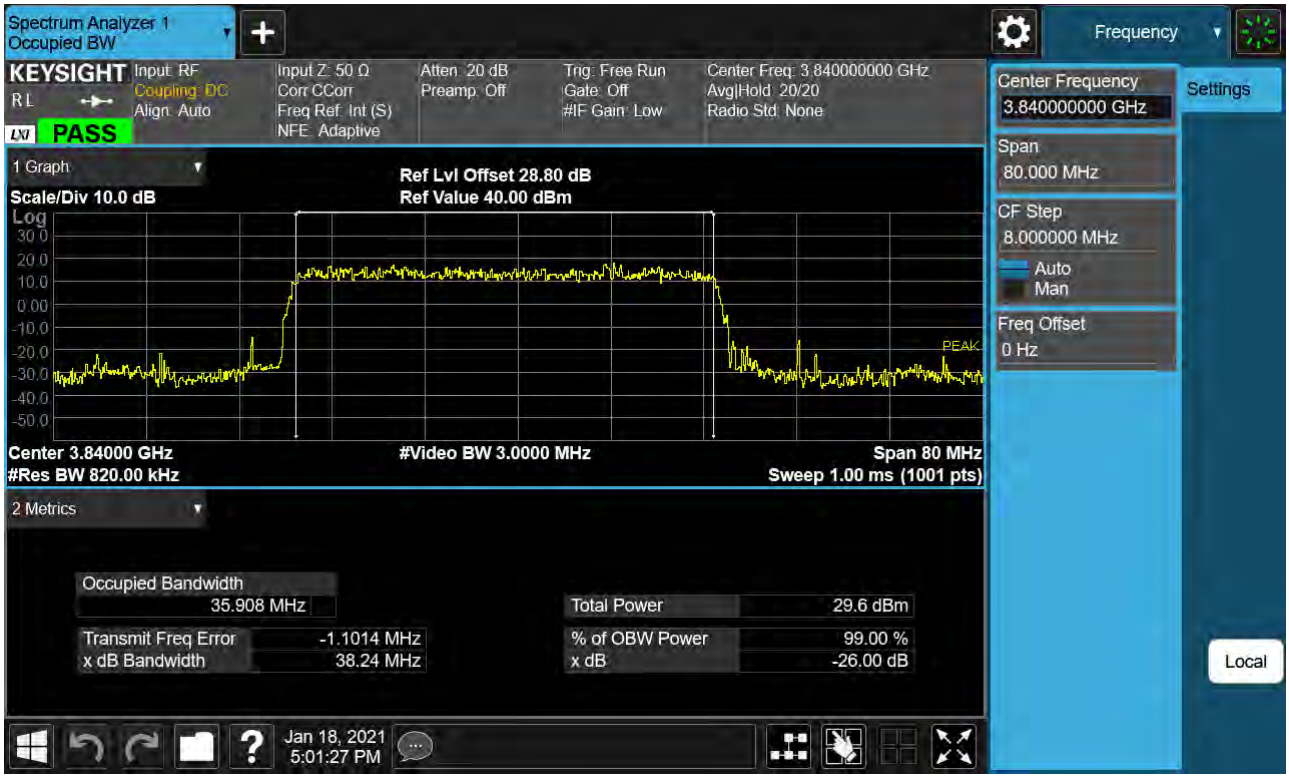
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.656000 64QAM)



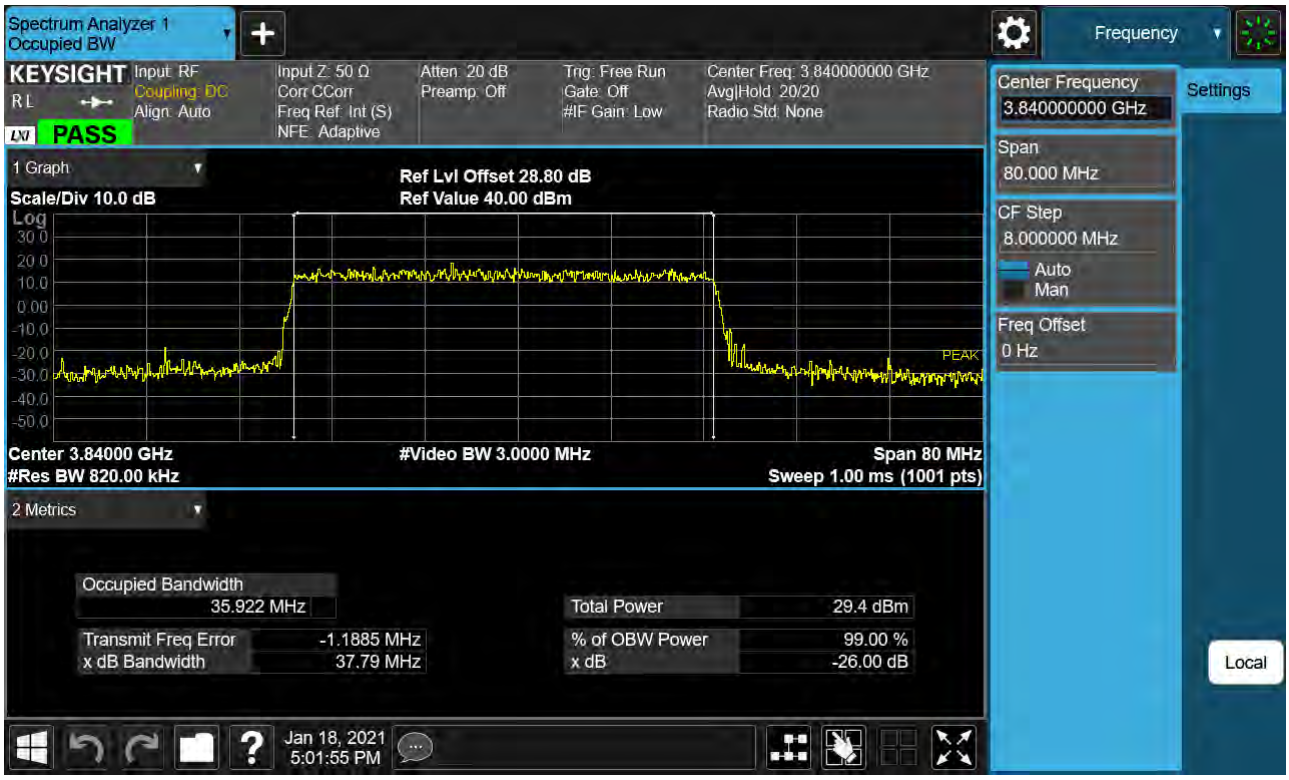
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.656000 256QAM)



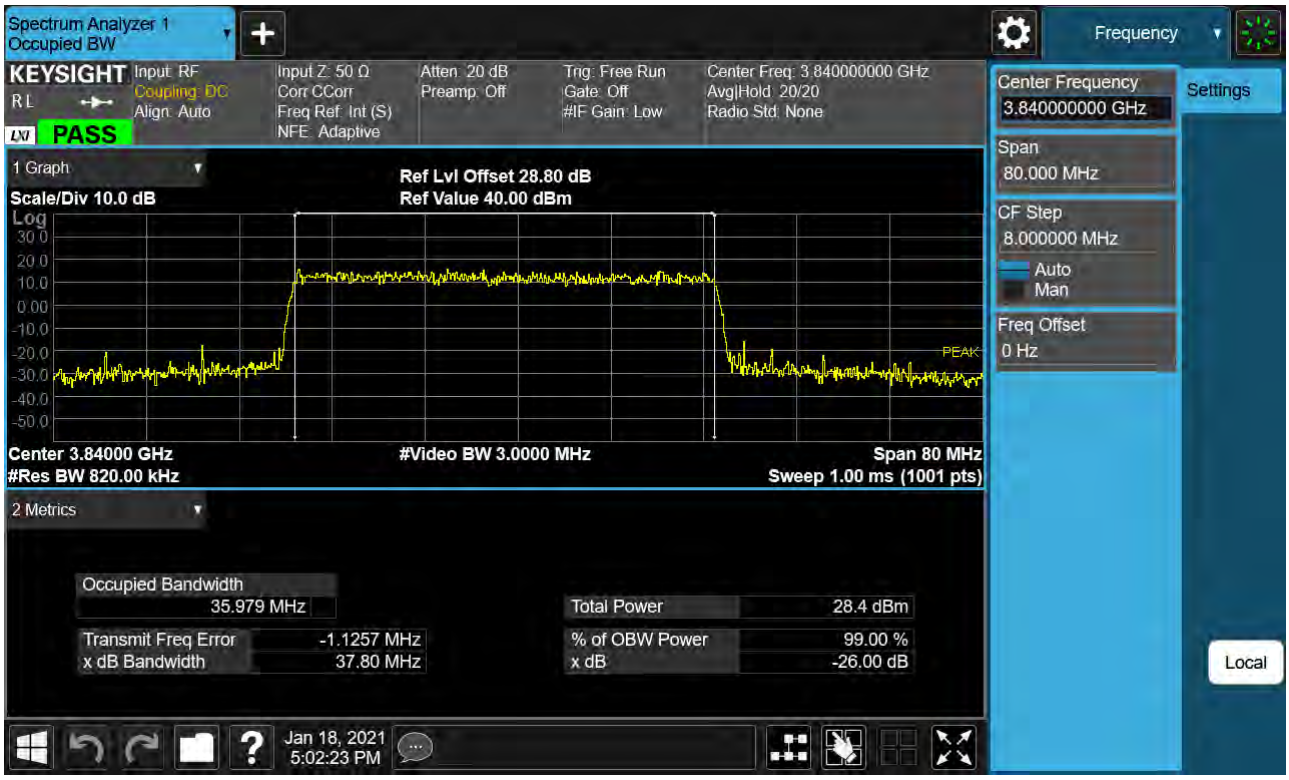
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.656000 BPSK)



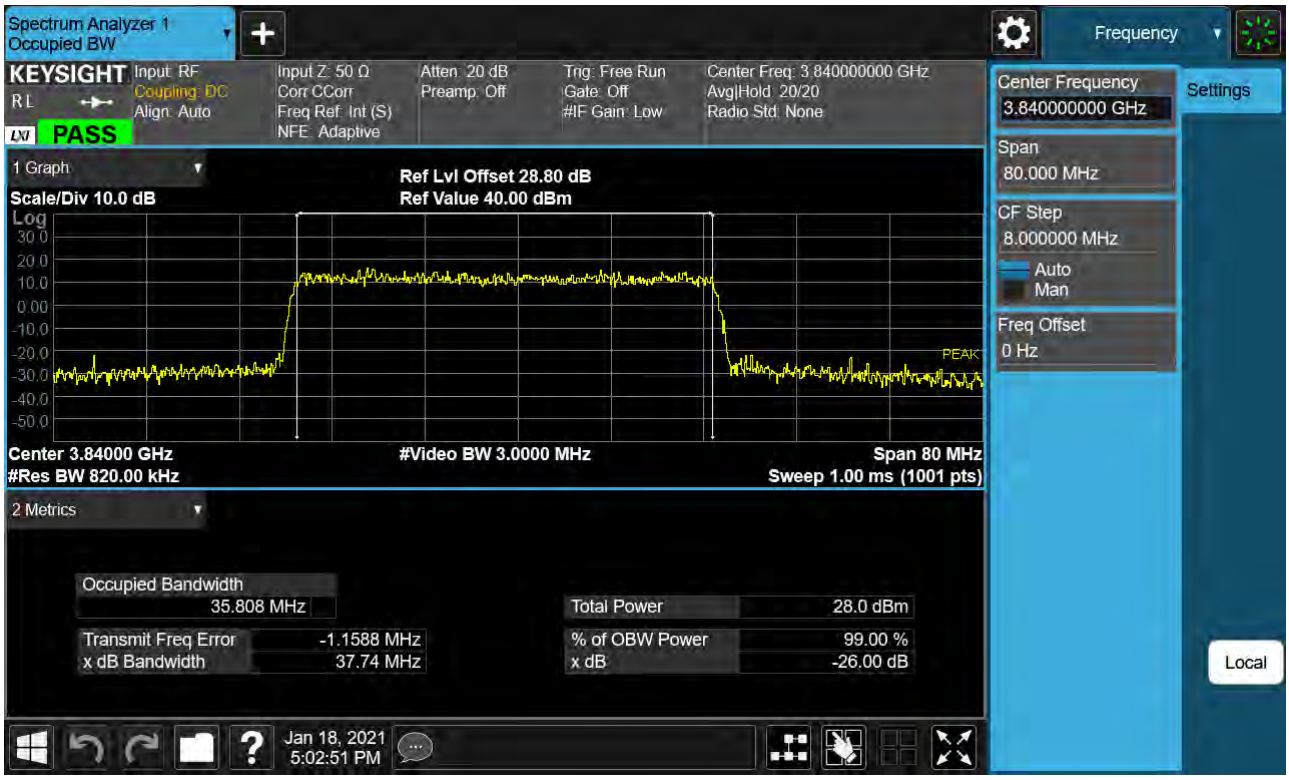
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.656000 QPSK)



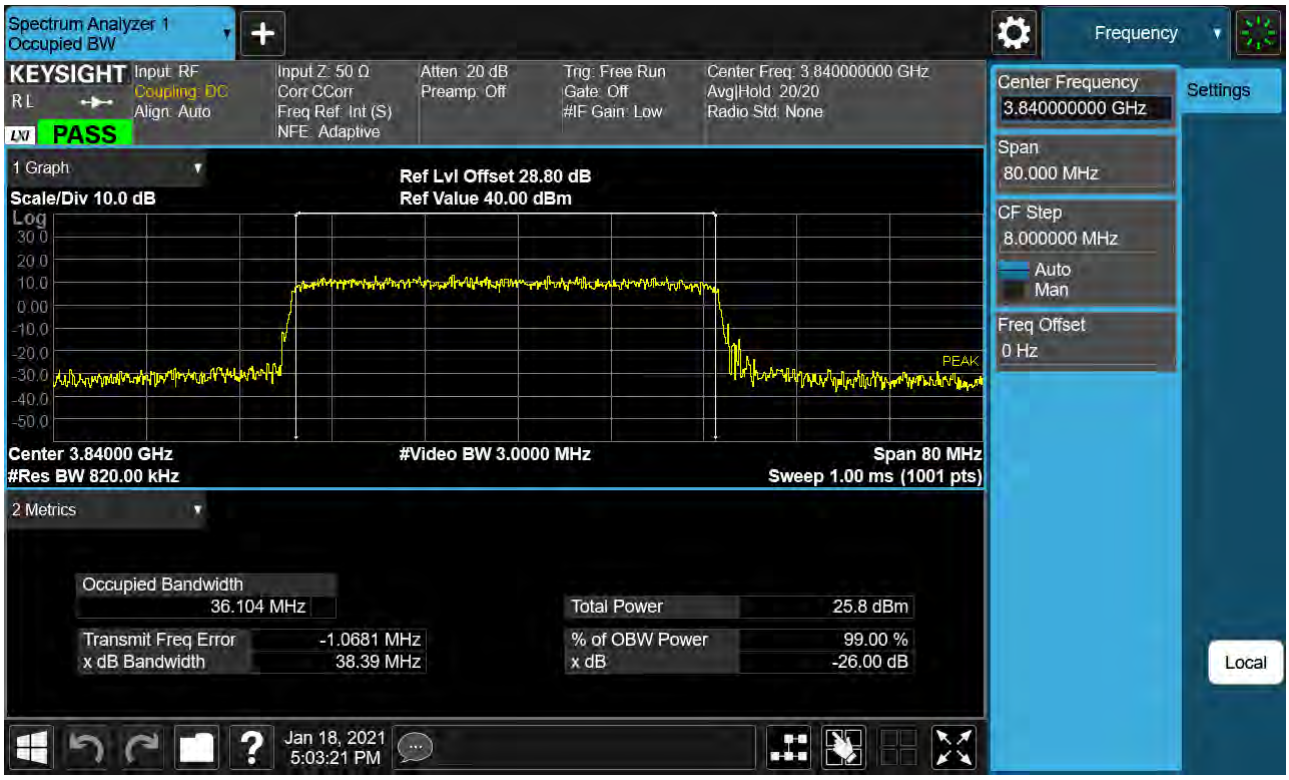
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.656000 16QAM)



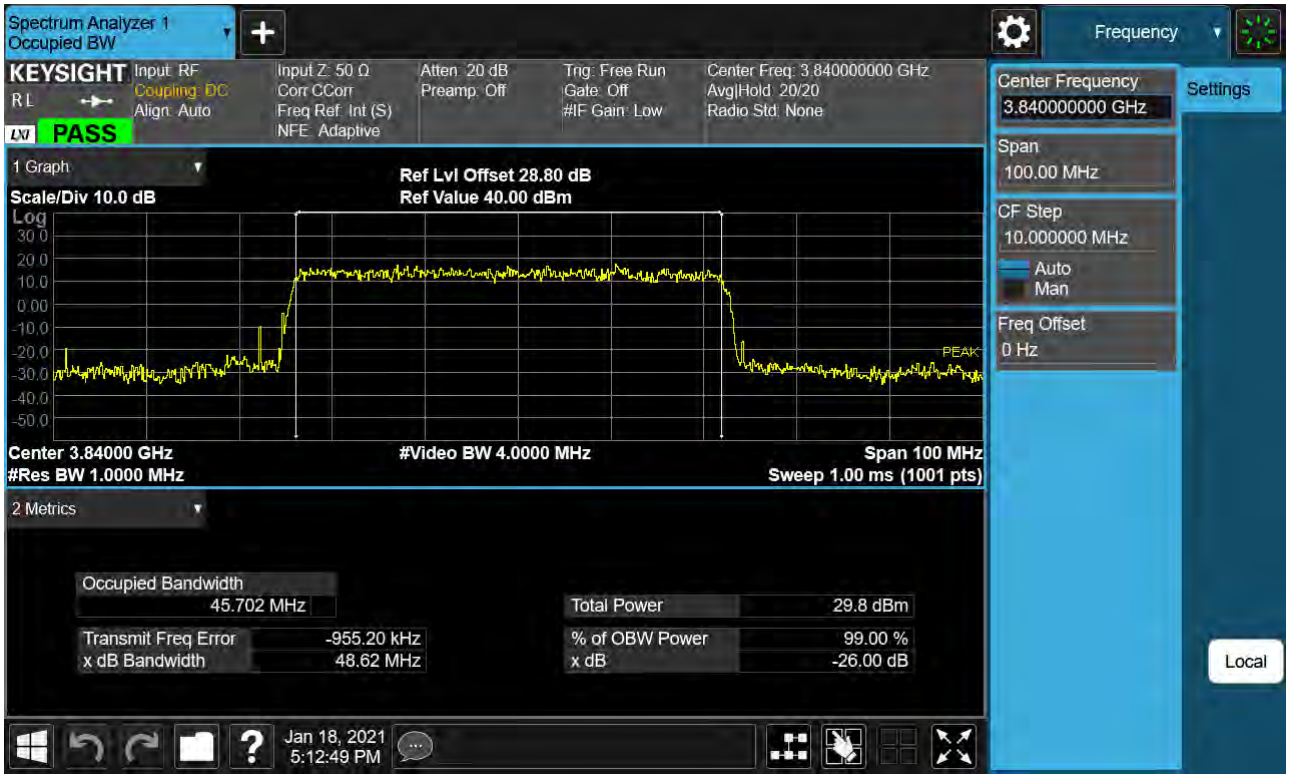
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.656000 64QAM)



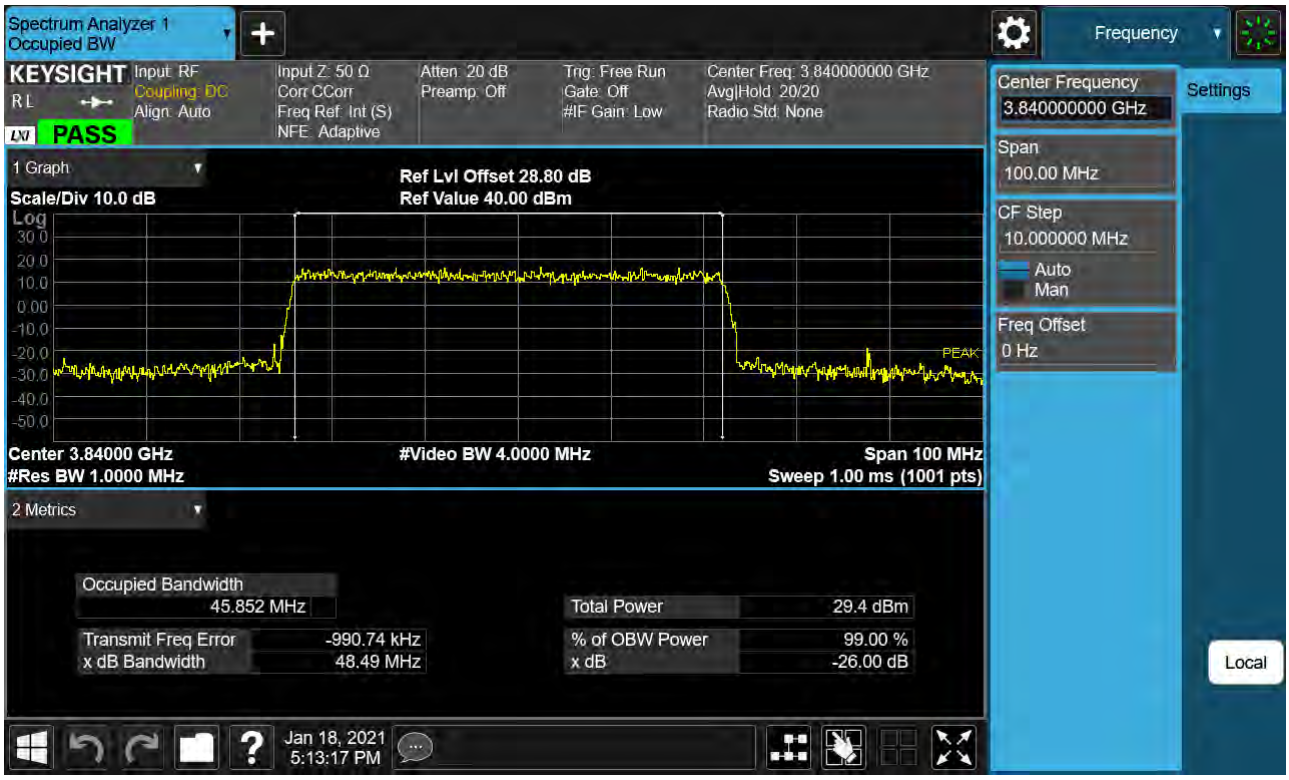
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.656000 256QAM)



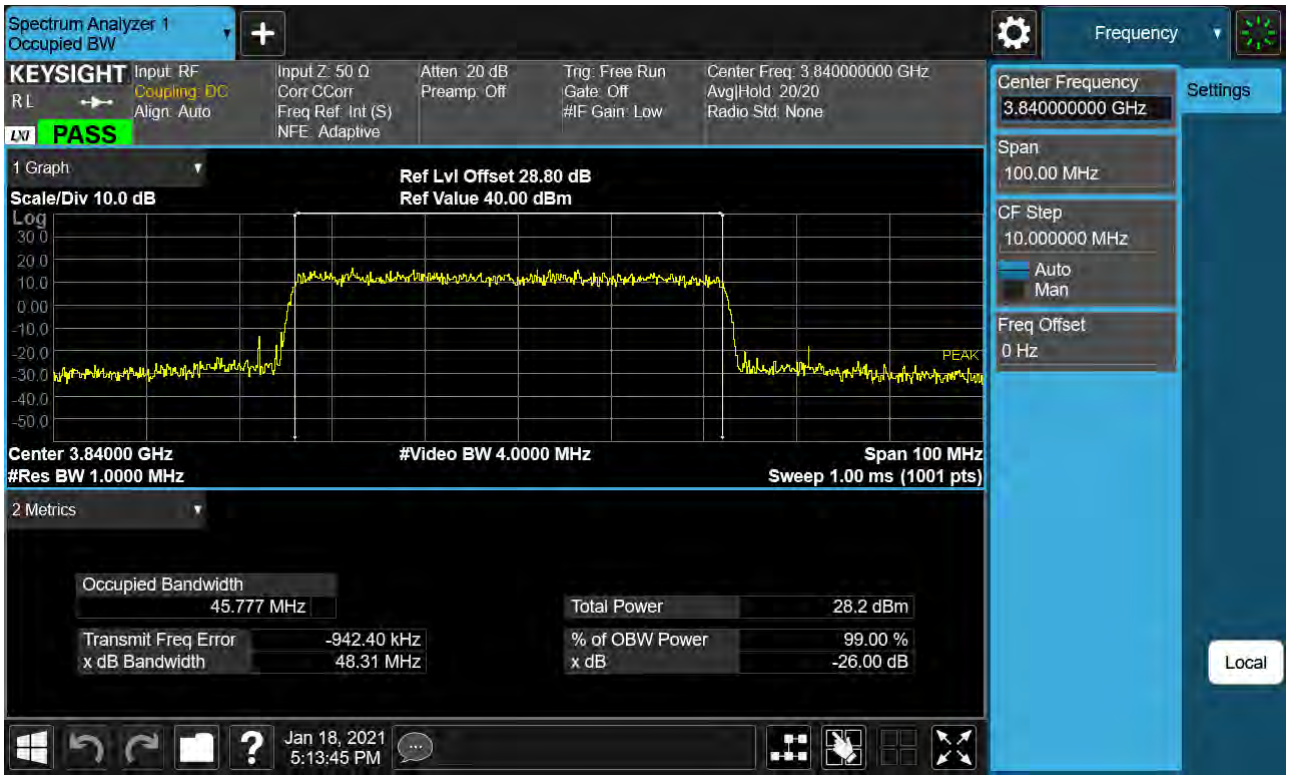
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.656000 BPSK)



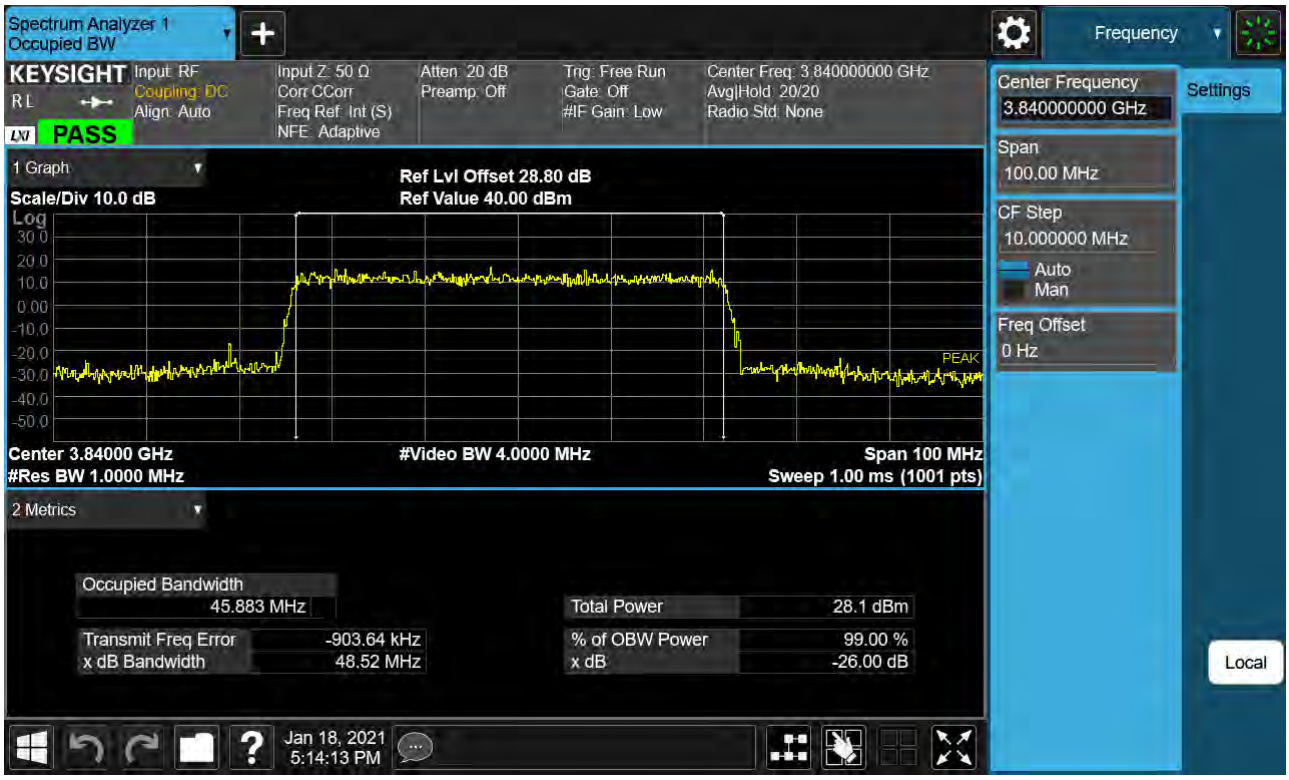
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.656000 QPSK)



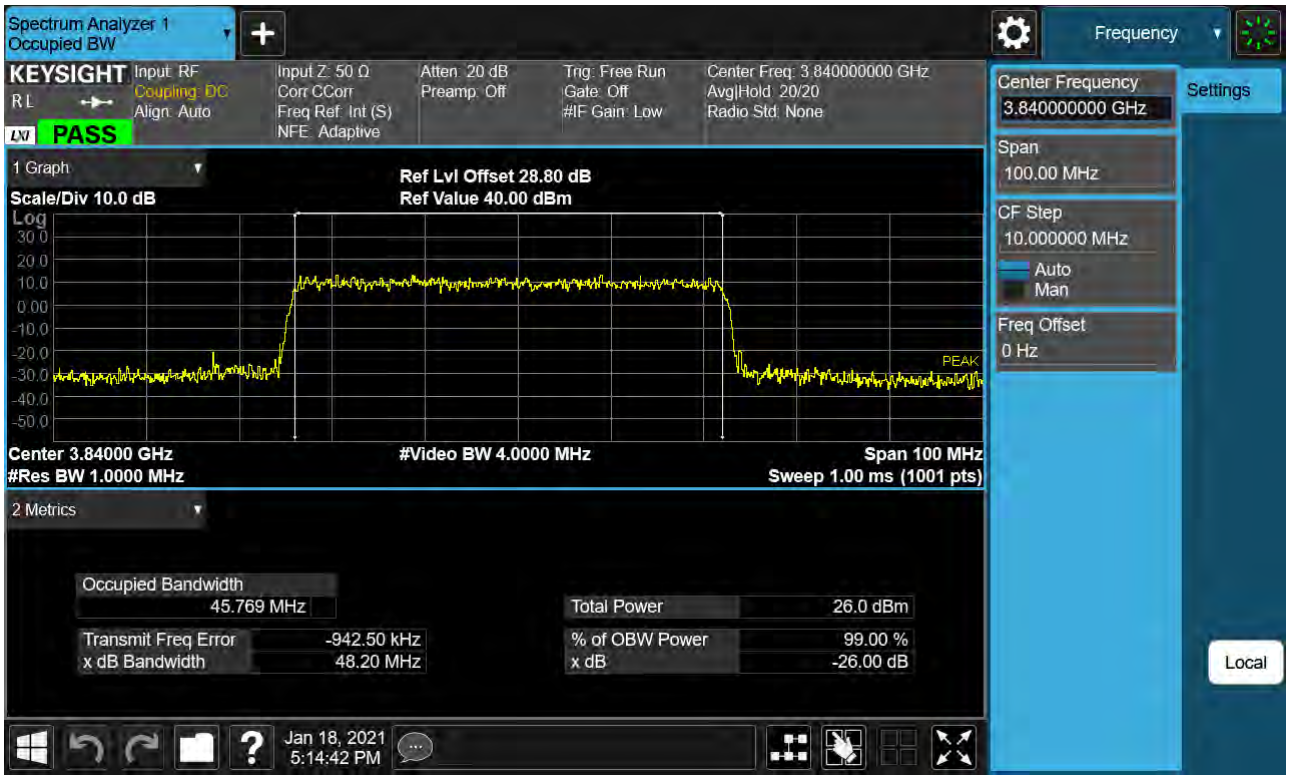
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.656000 16QAM)



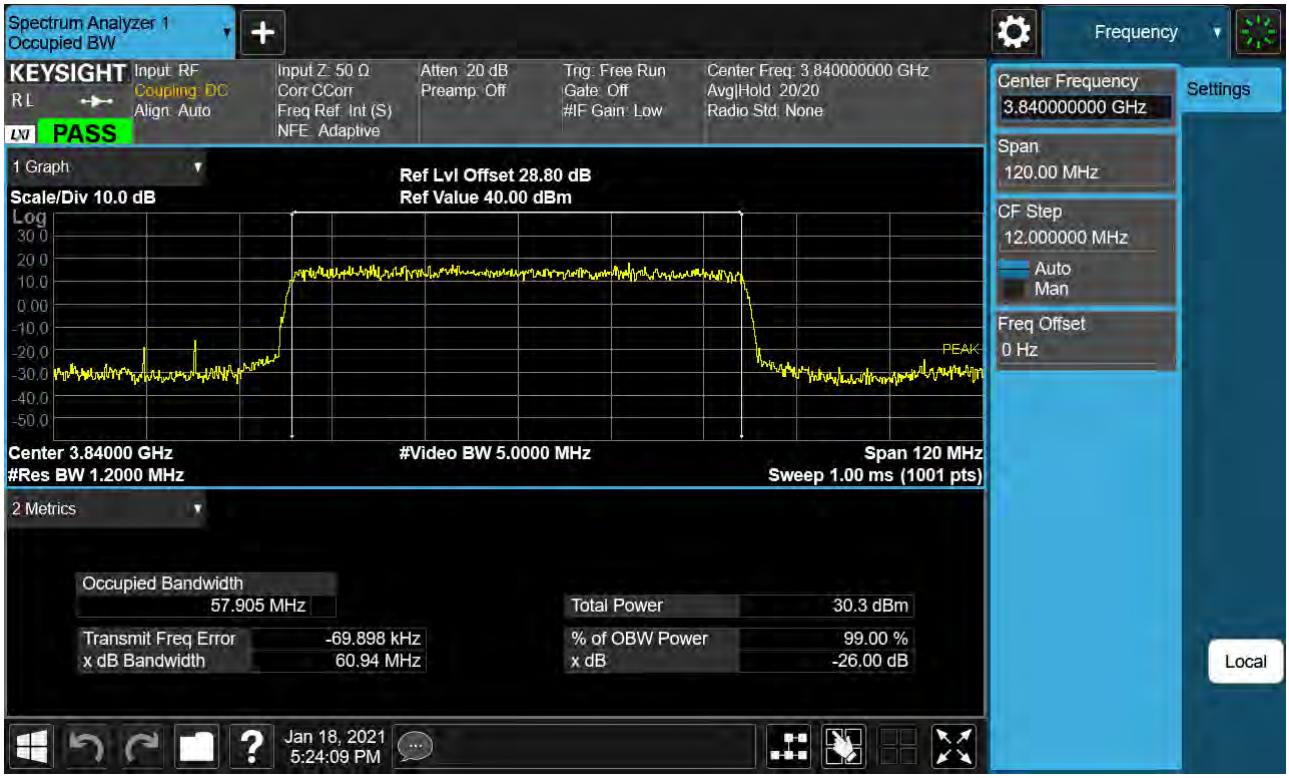
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.656000 64QAM)



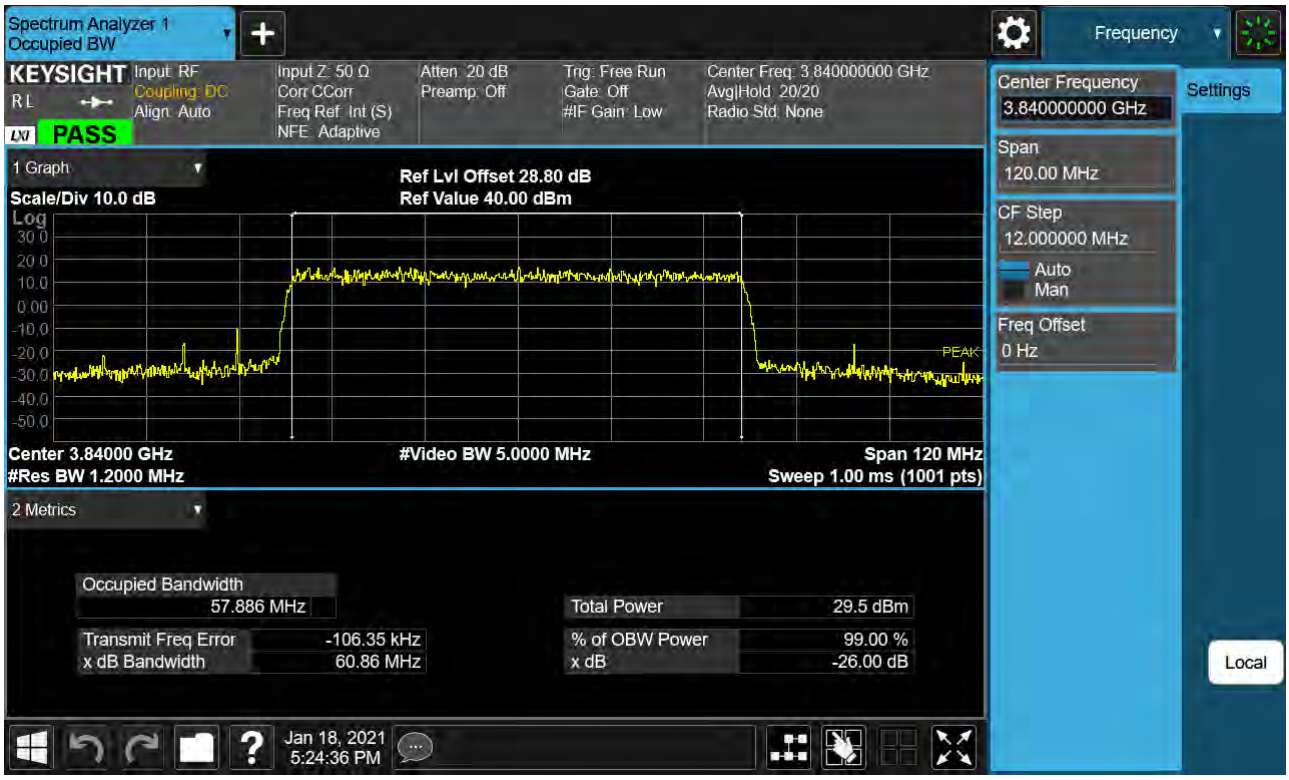
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.656000 256QAM)



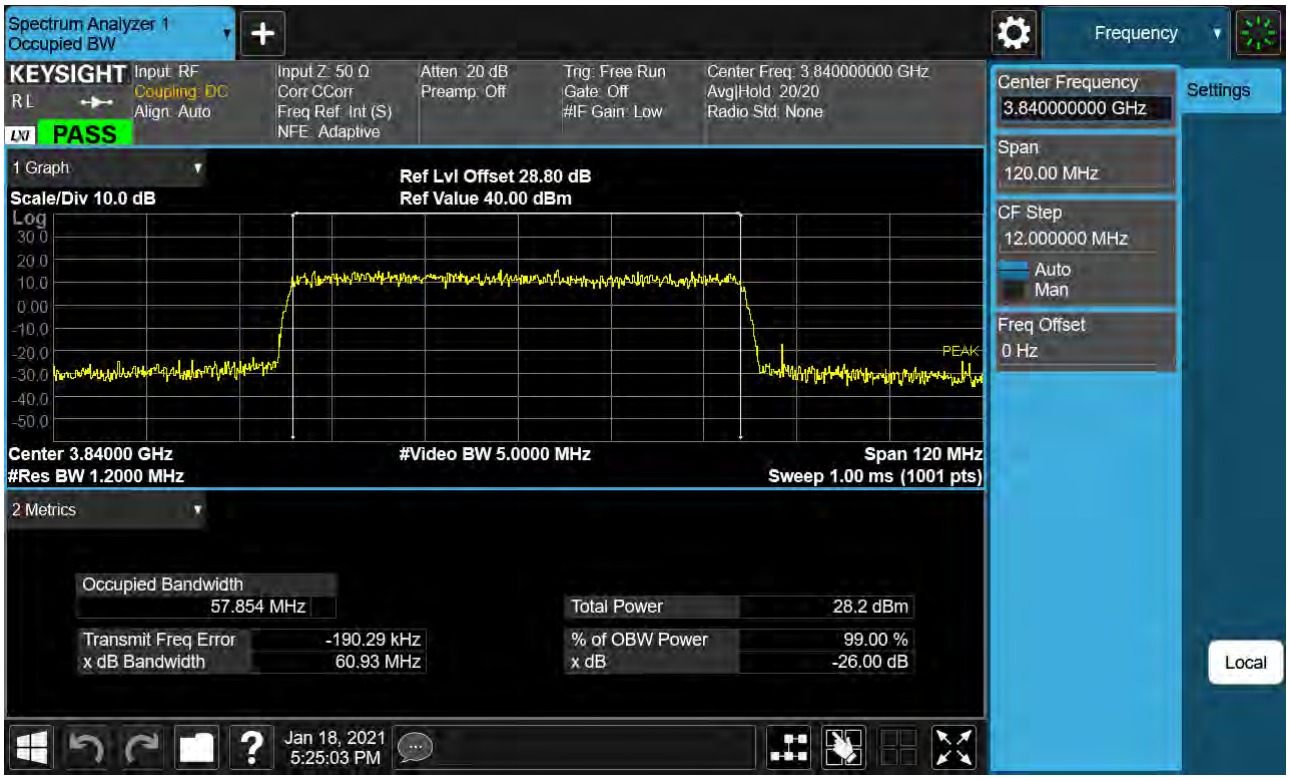
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.656000 BPSK)



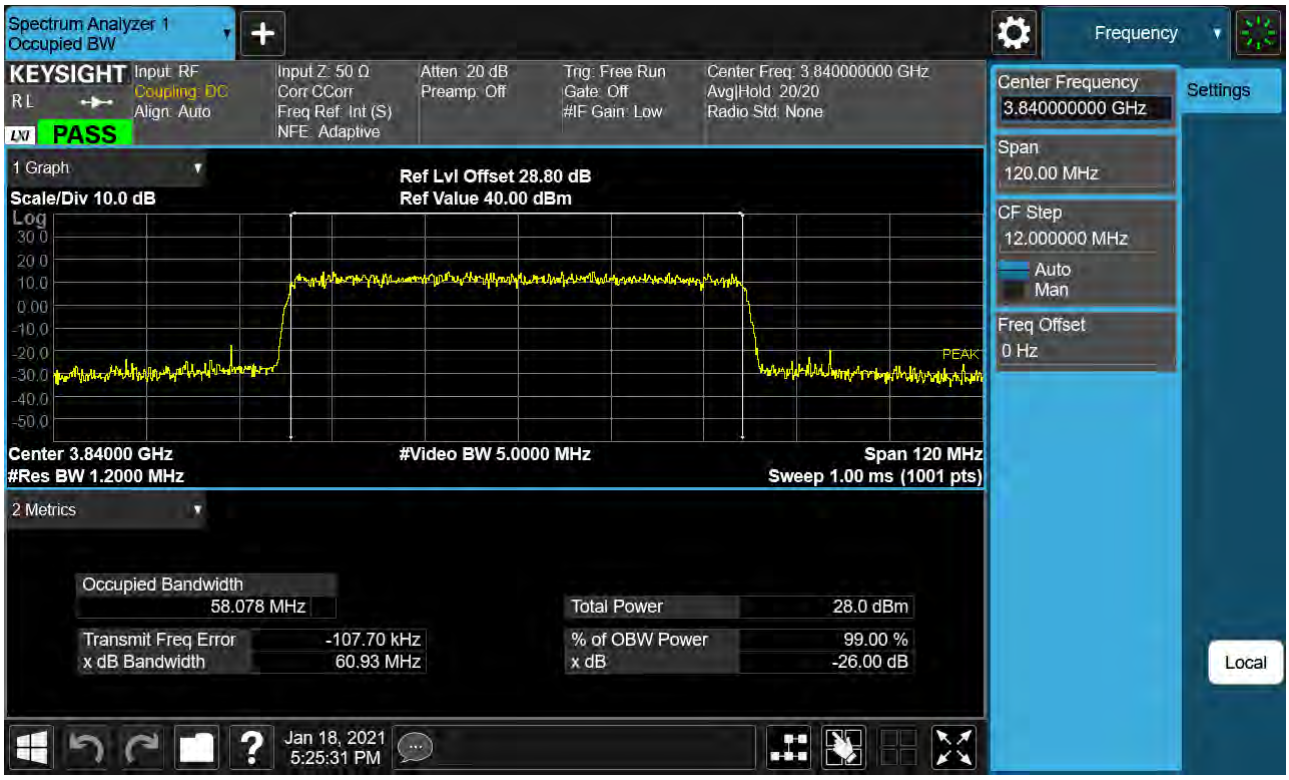
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.656000 QPSK)



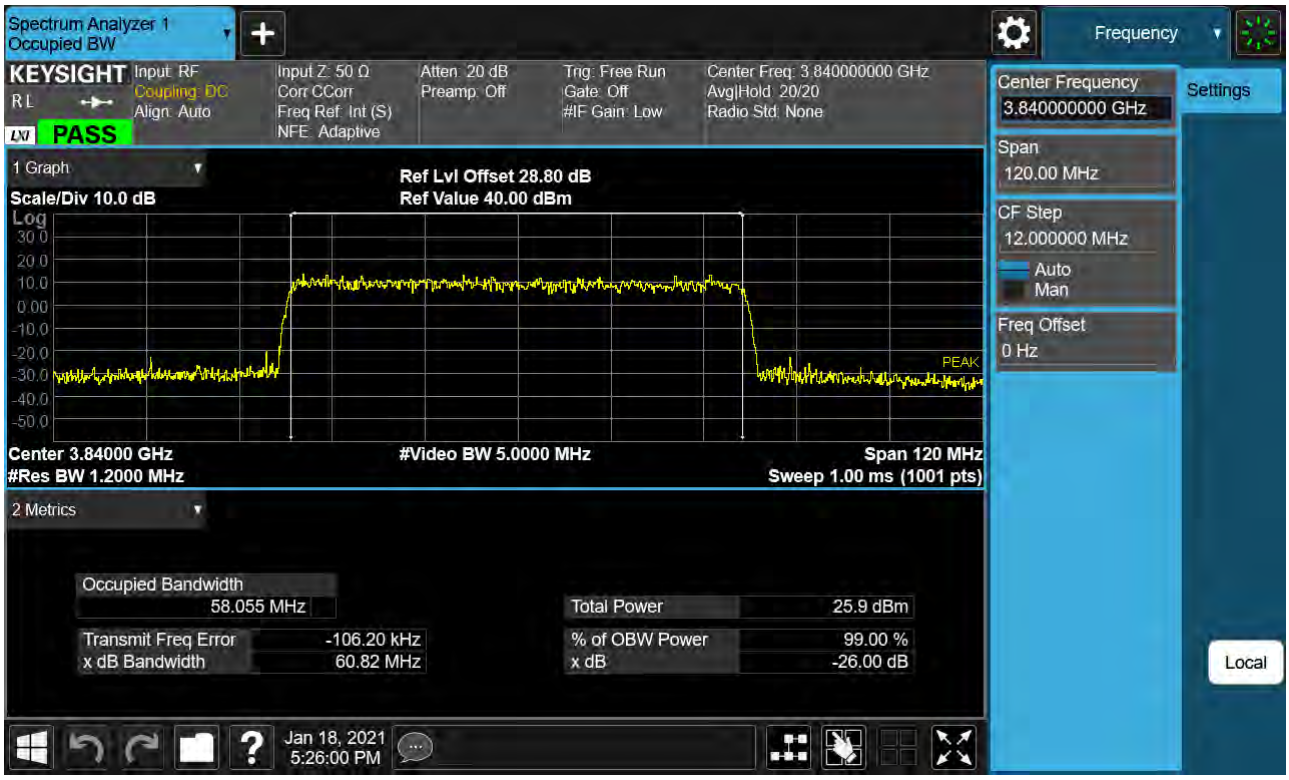
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.656000 16QAM)



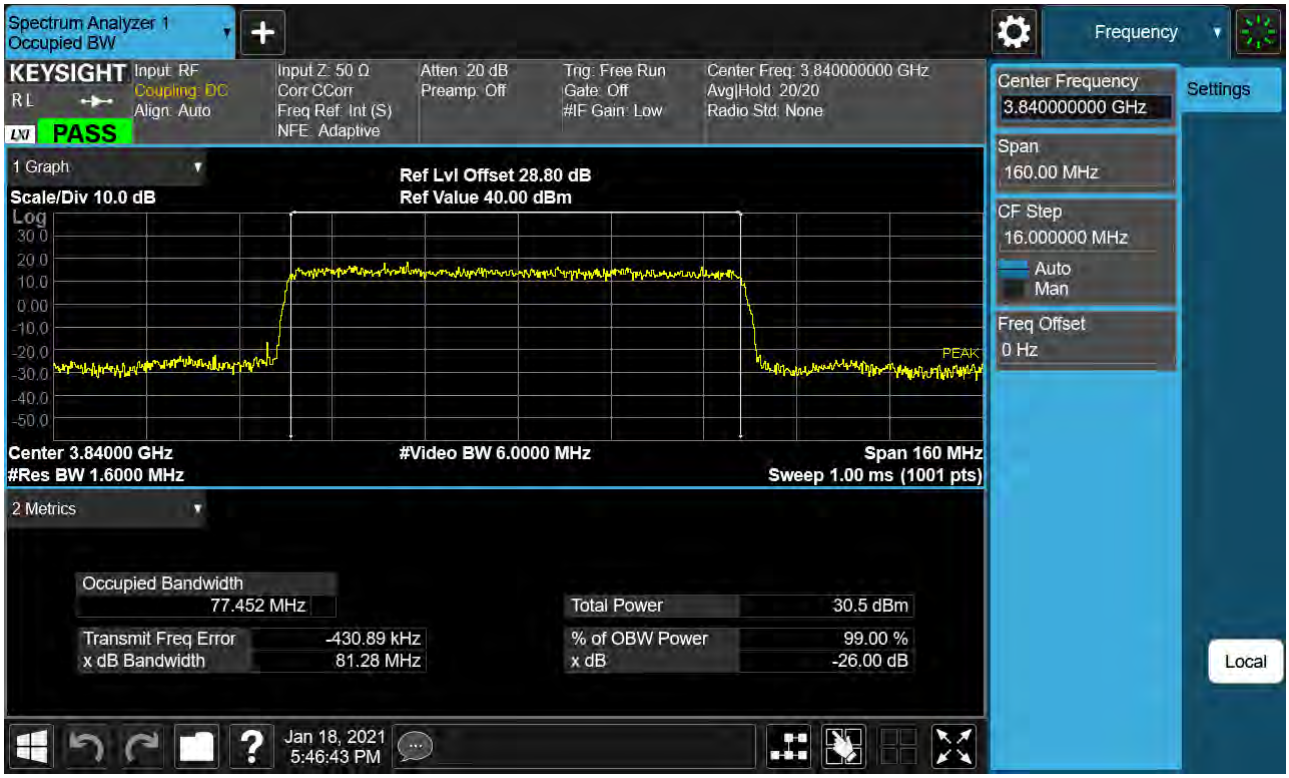
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.656000 64QAM)



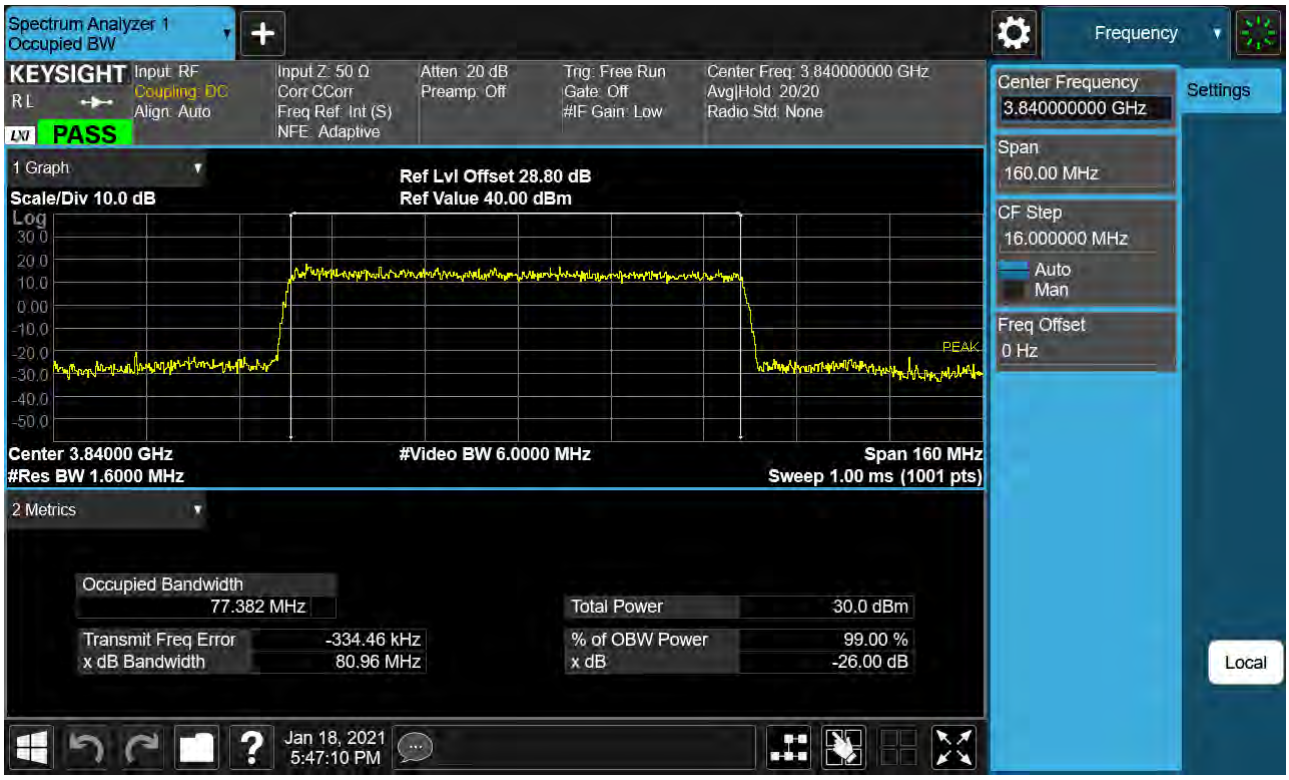
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.656000 256QAM)



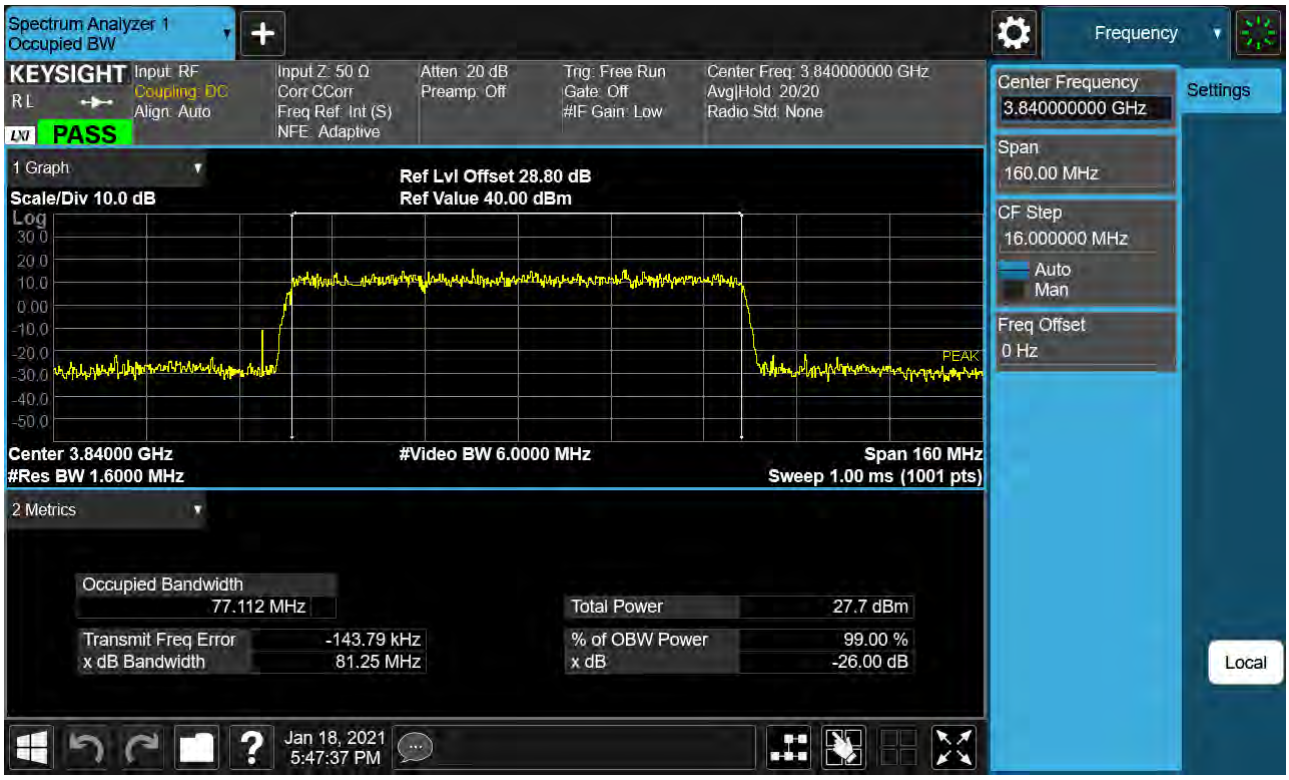
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.656000 BPSK)



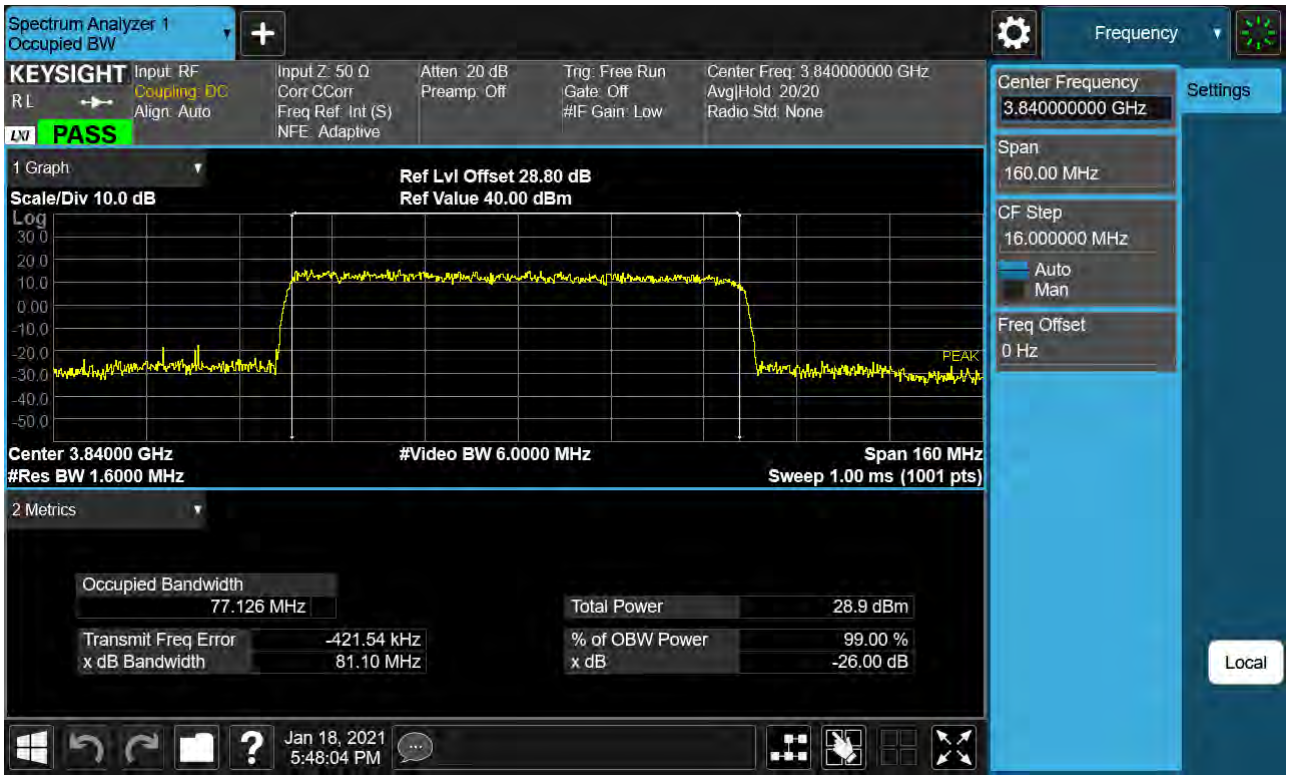
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.656000 QPSK)



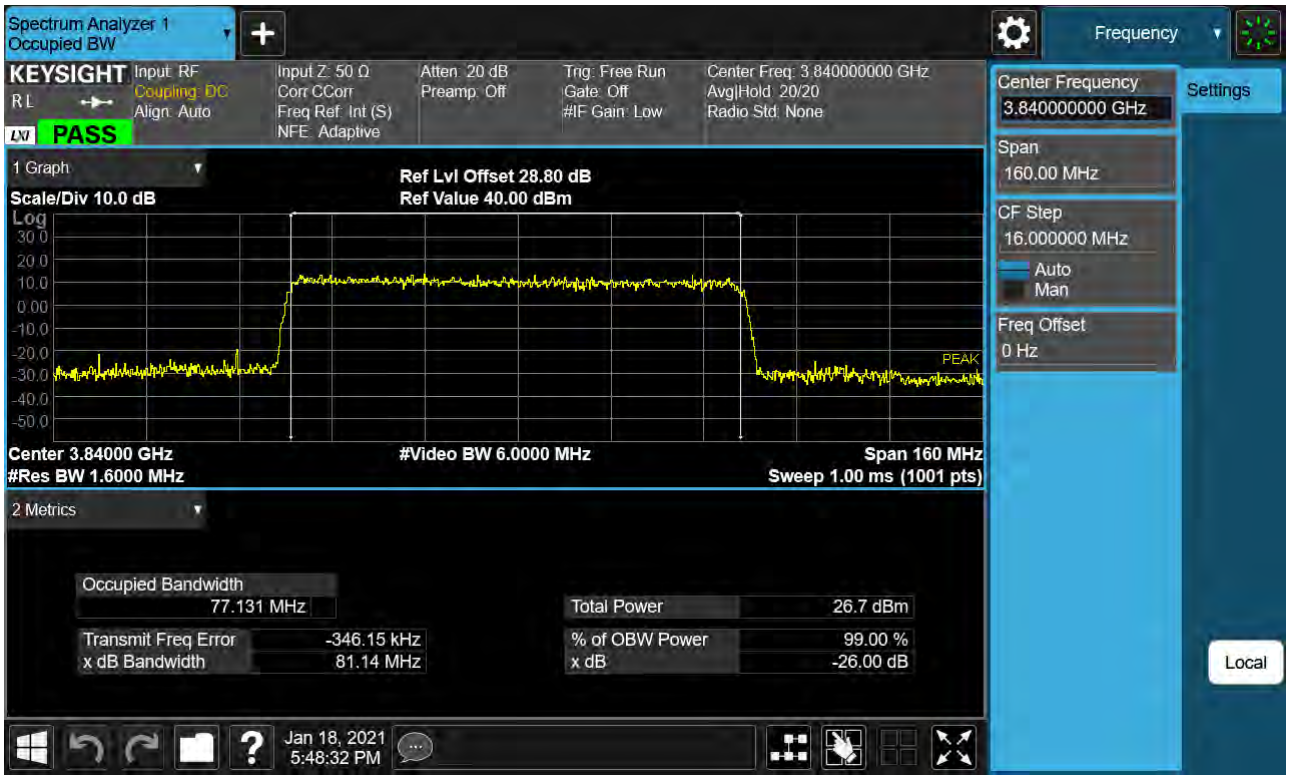
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.656000 16QAM)



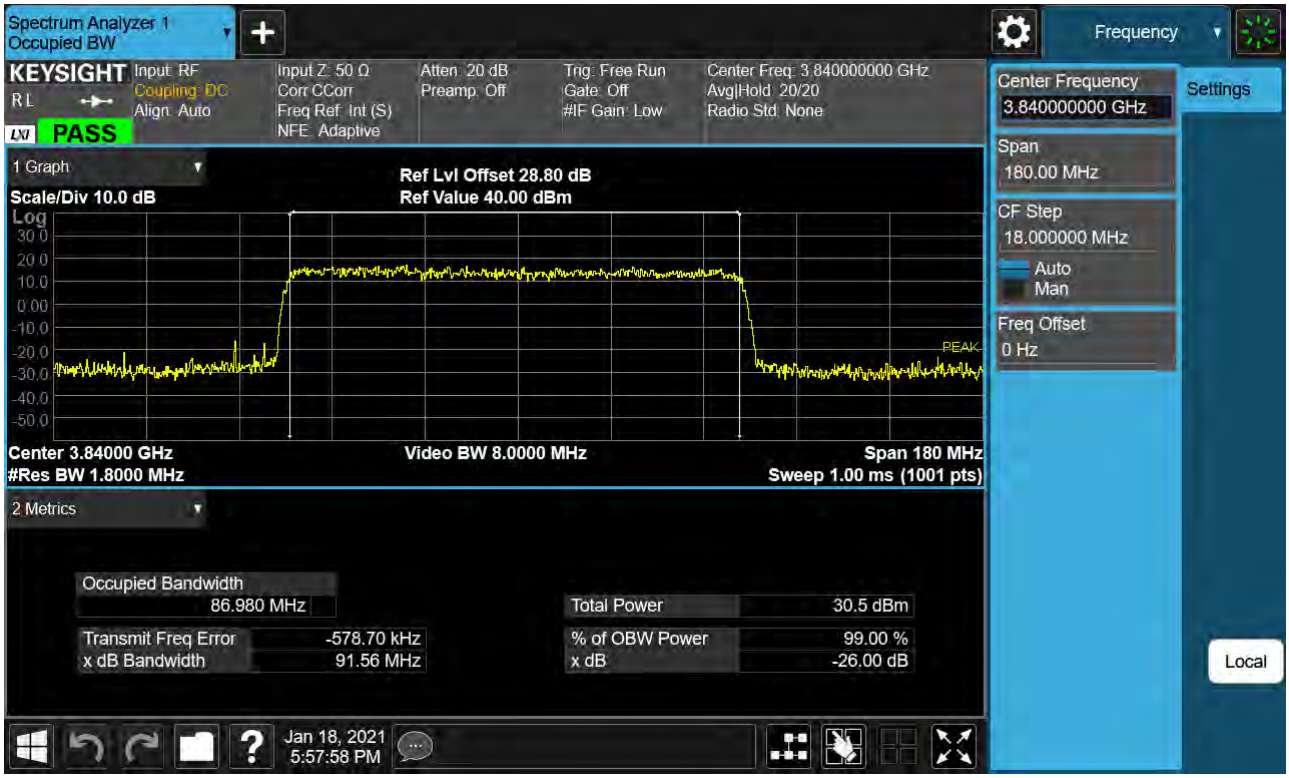
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.656000 64QAM)



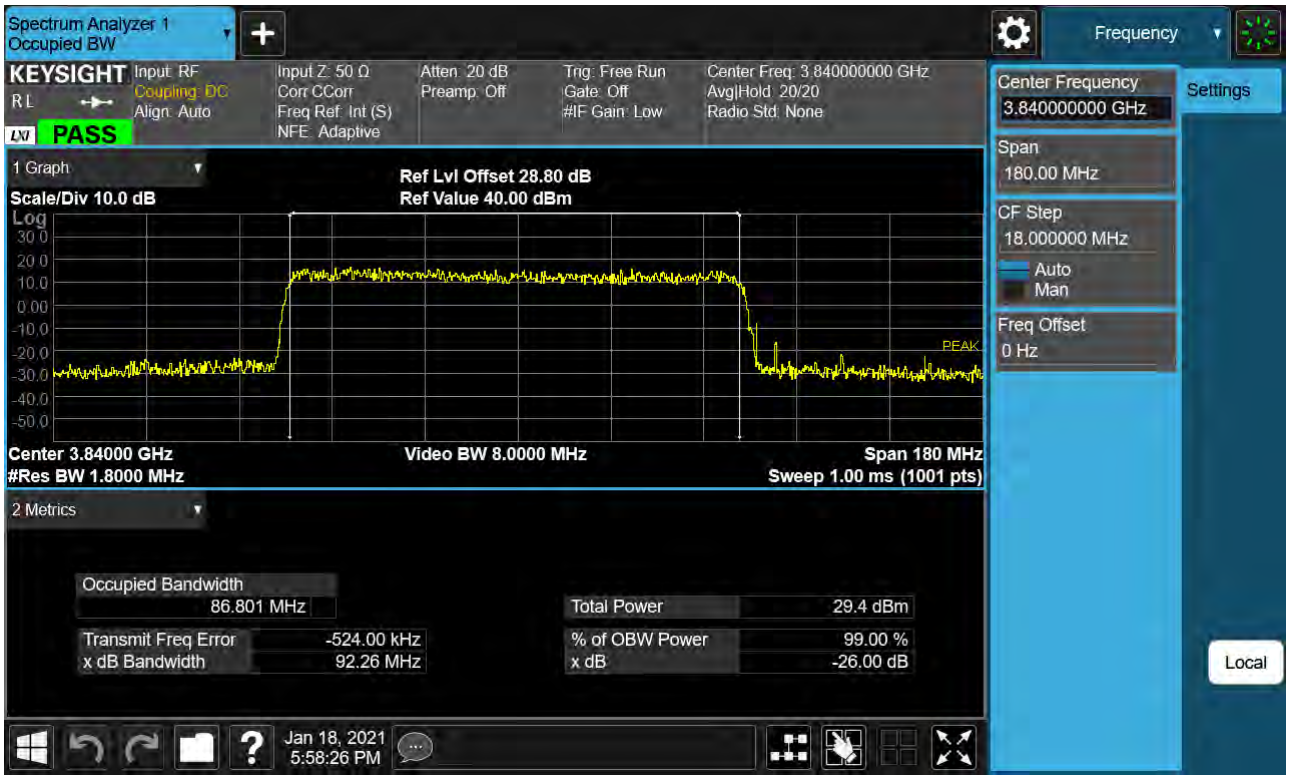
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.656000 256QAM)



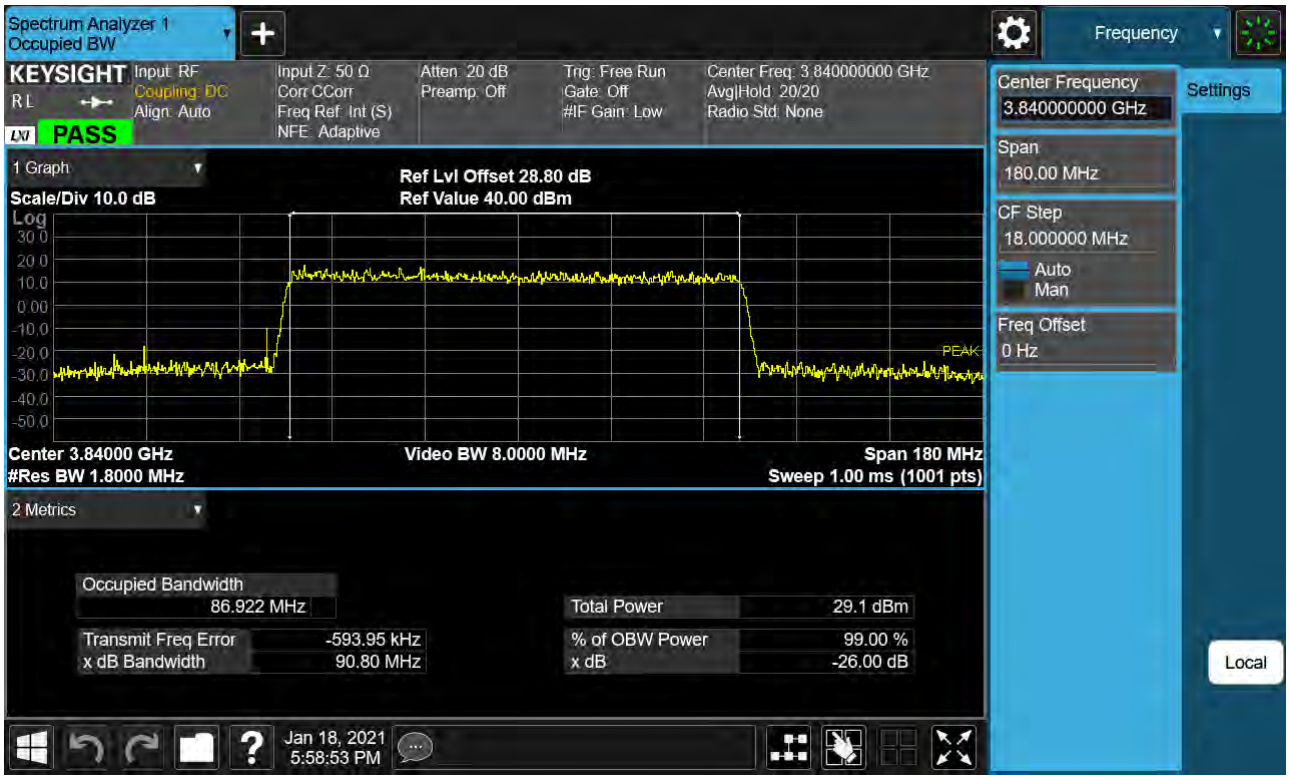
Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.656000 BPSK)



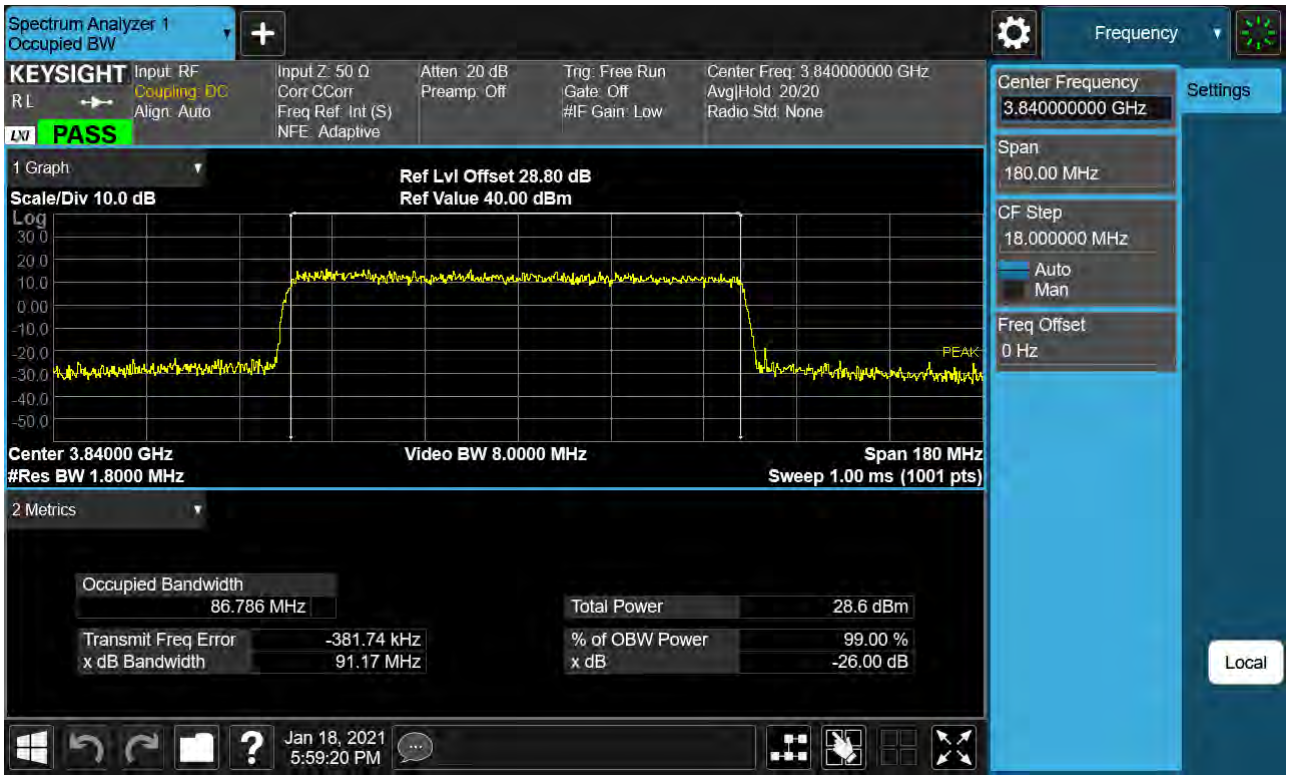
Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.656000 QPSK)



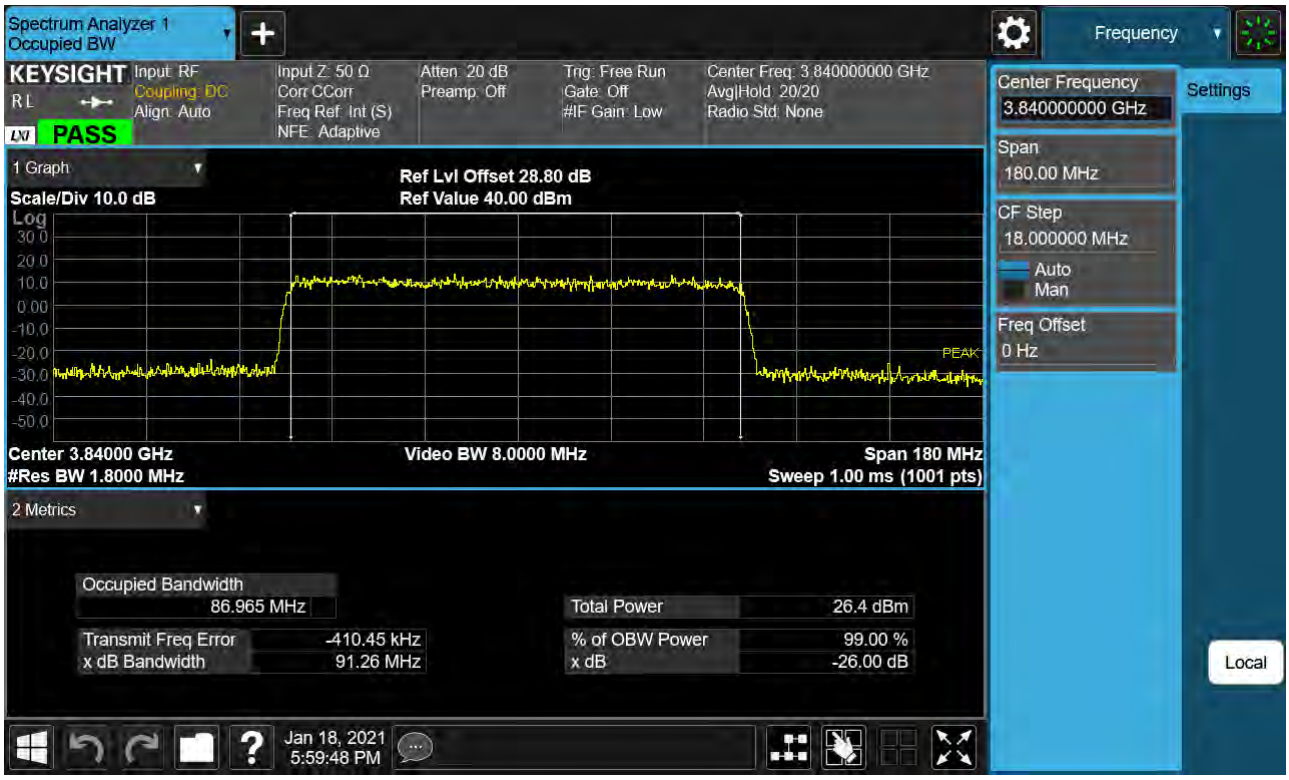
Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.656000 16QAM)



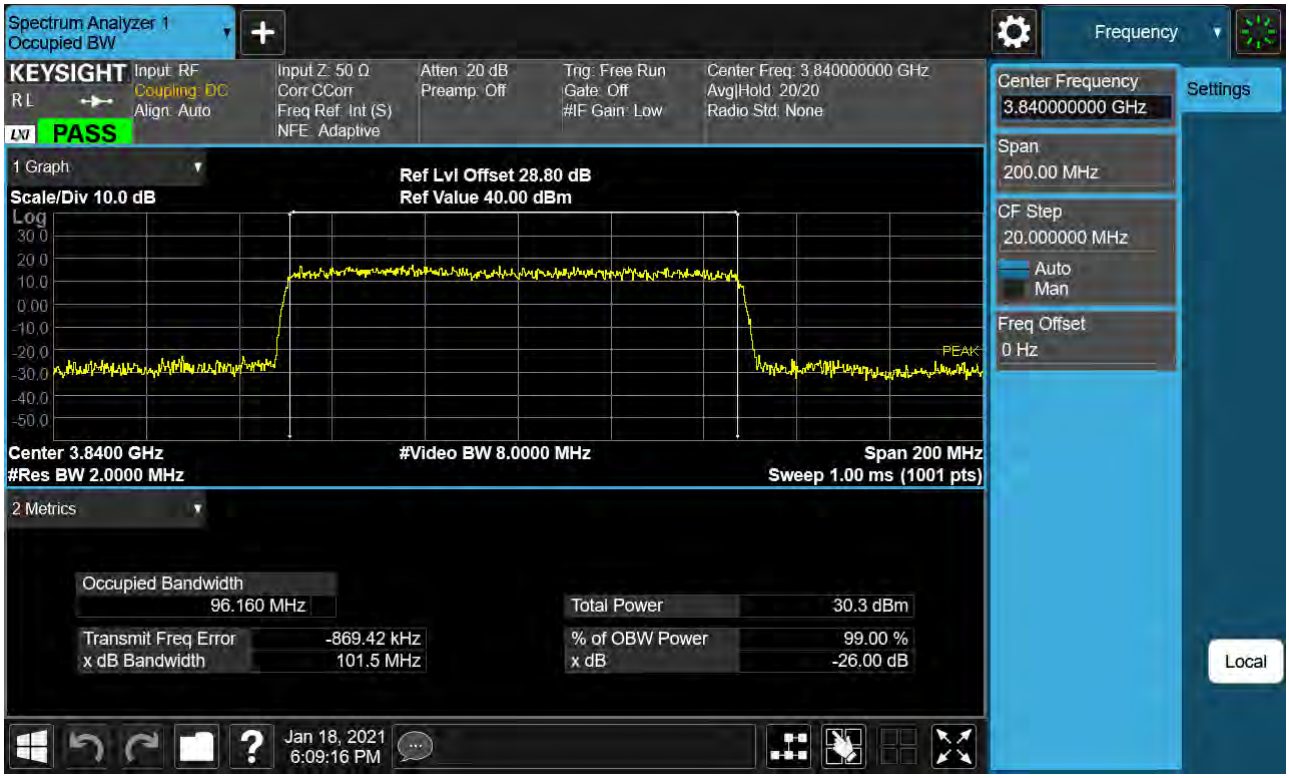
Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.656000 64QAM)



Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.656000 256QAM)



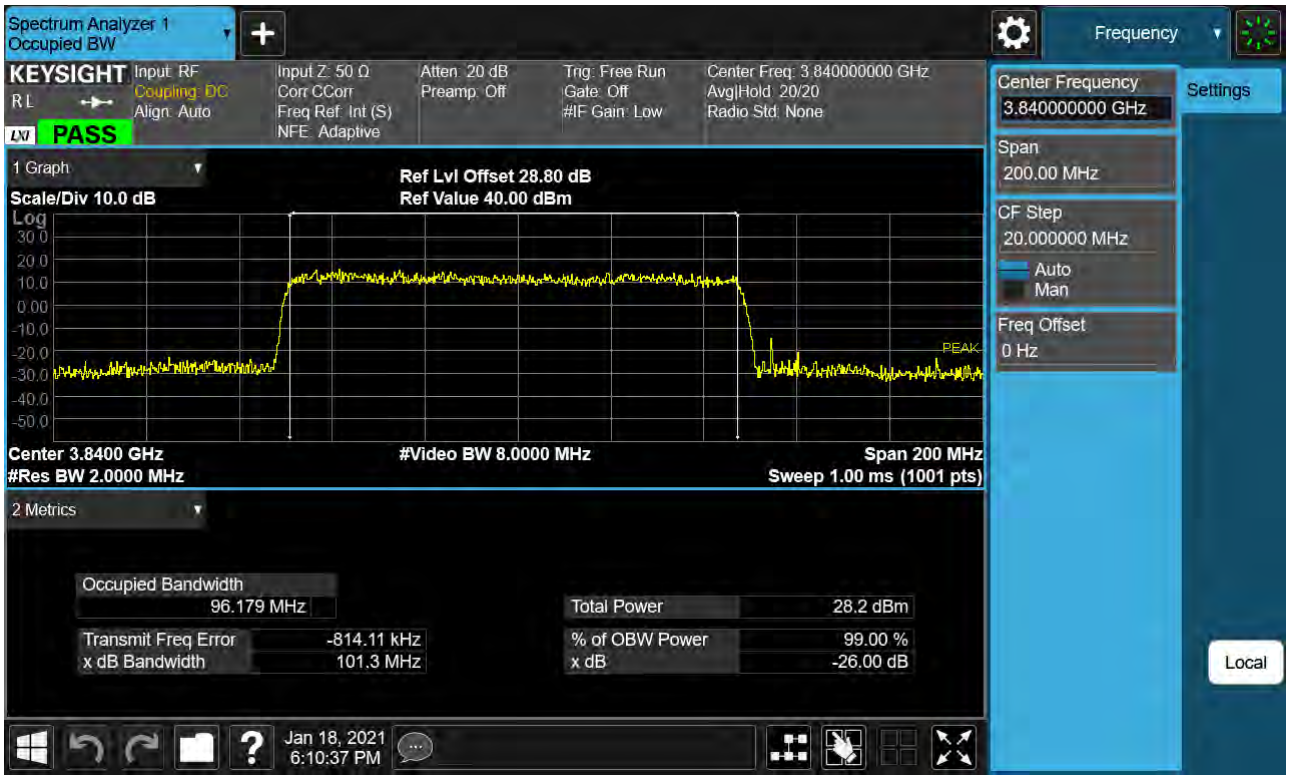
Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.656000 BPSK)



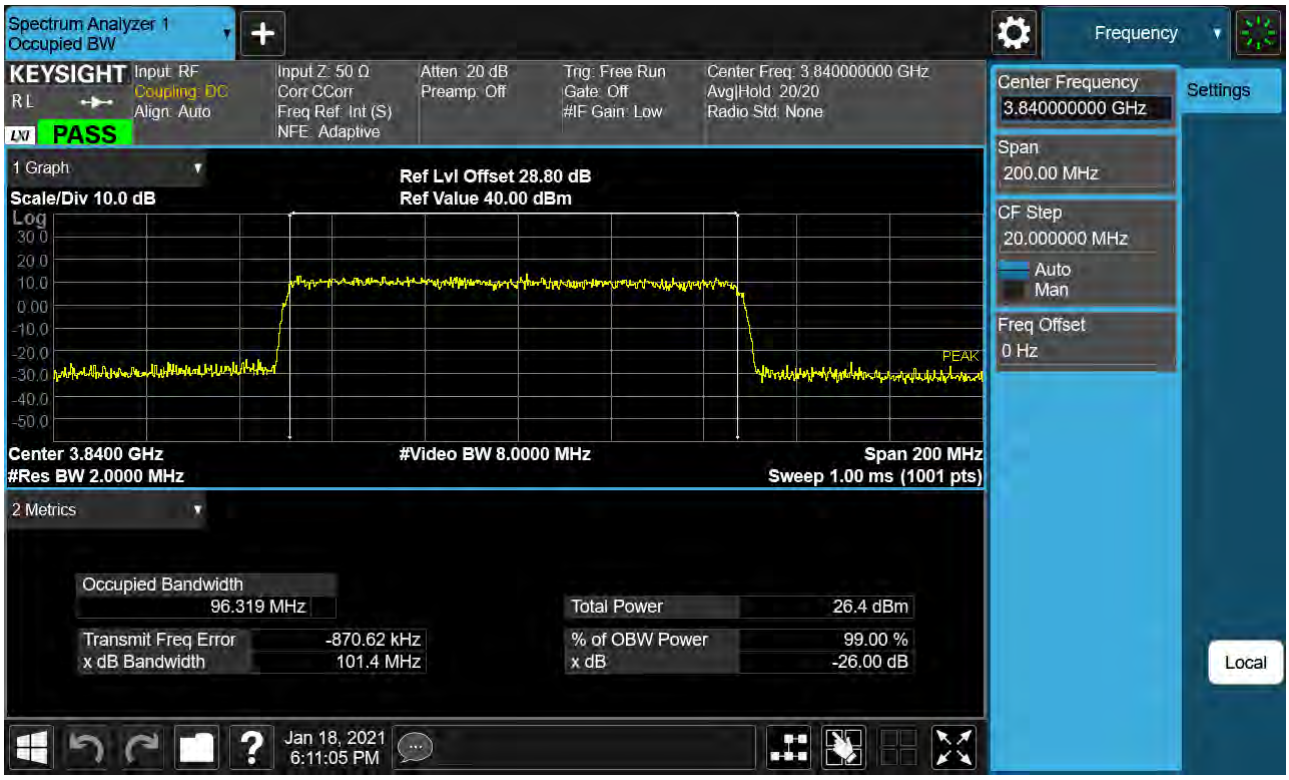
Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.656000 QPSK)

Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.656000 16QAM)

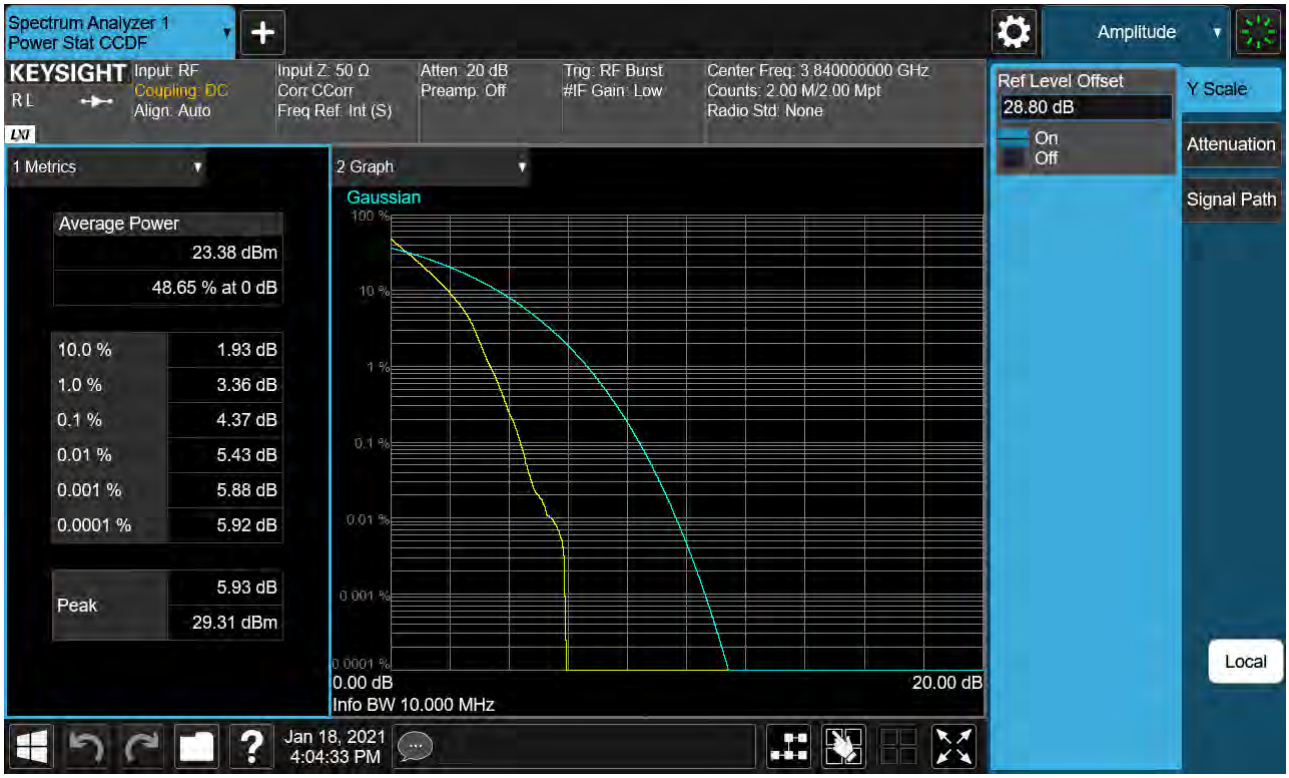
Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.656000 64QAM)



Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.656000 256QAM)



Sub6 n77. PAR Plot (10M BW_Ch.656000_ BPSK)



Sub6 n77. PAR Plot (10M BW_Ch.656000_QPSK)

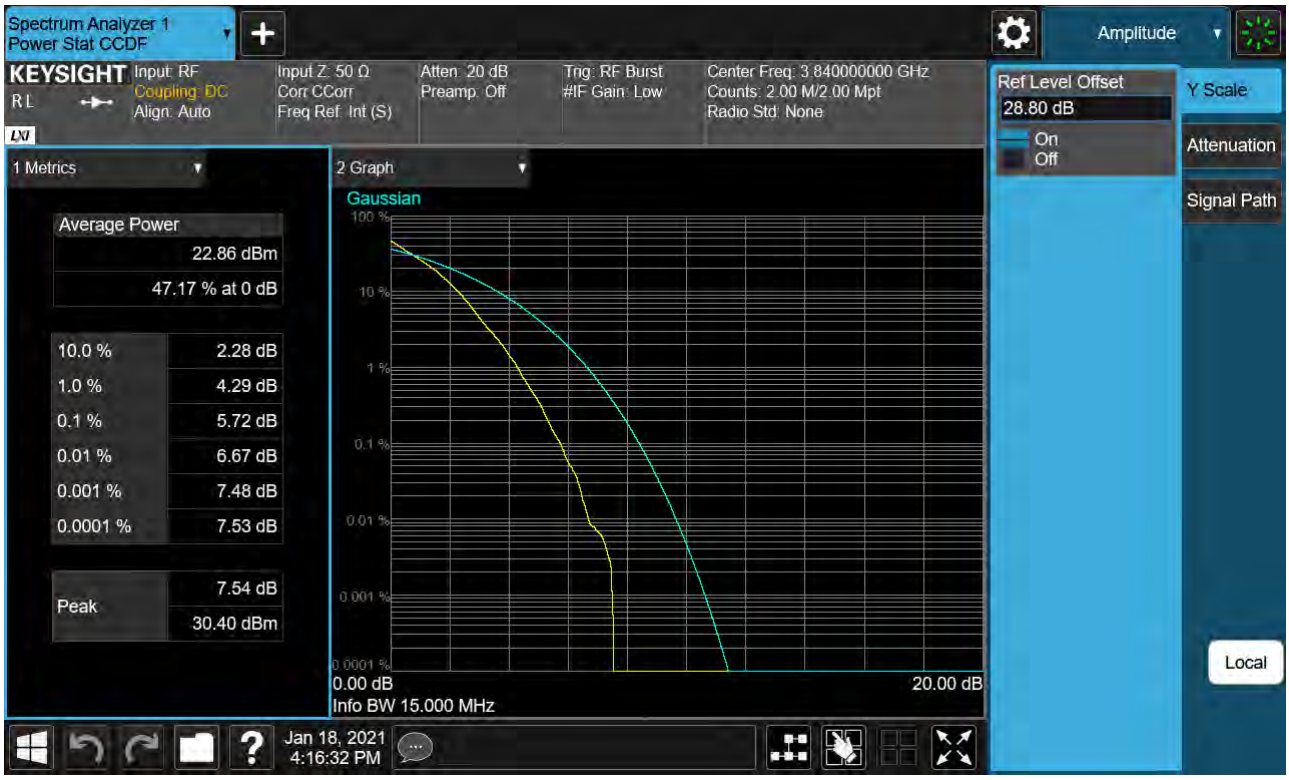
Sub6 n77. PAR Plot (10M BW_Ch.656000_16QAM)

Sub6 n77. PAR Plot (10M BW_Ch.656000_64QAM)

Sub6 n77. PAR Plot (10M BW_Ch.656000_256QAM)

Sub6 n77. PAR Plot (15M BW_Ch.656000_ BPSK)

Sub6 n77. PAR Plot (15M BW_Ch.656000_QPSK)

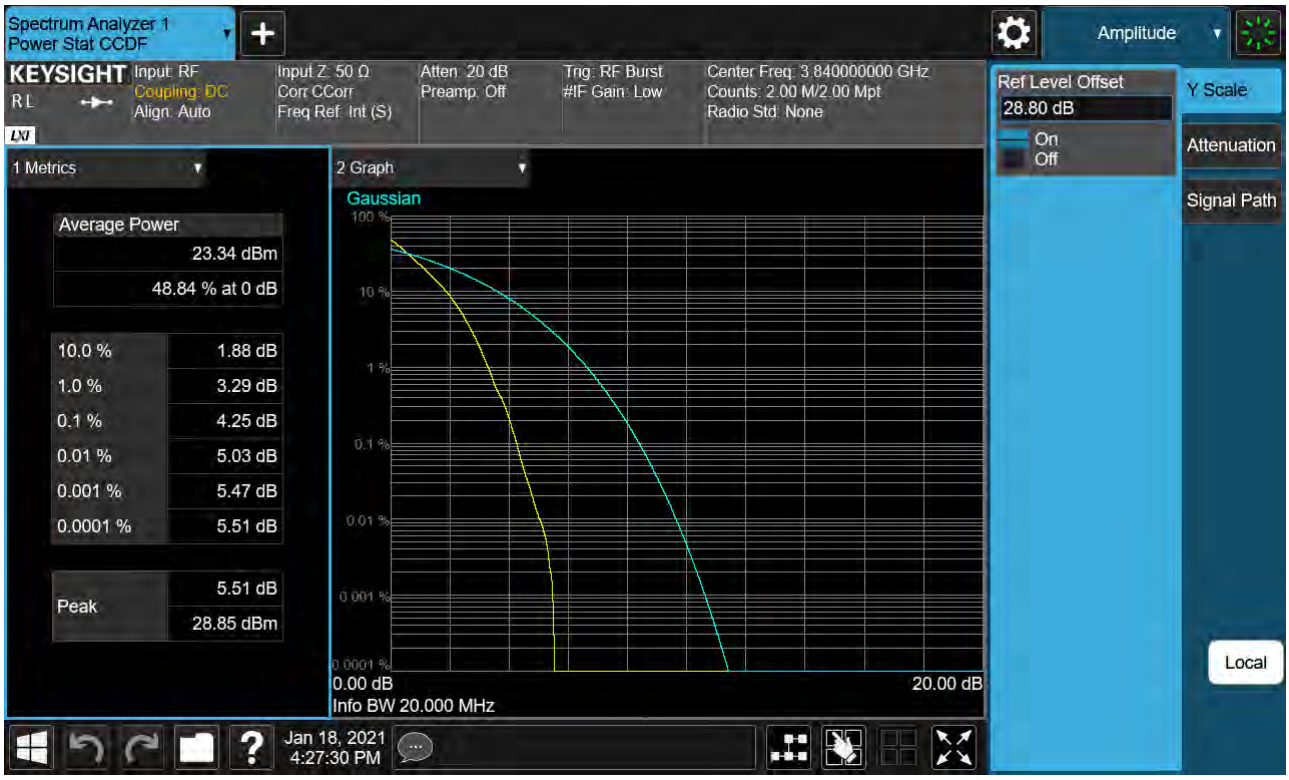


Sub6 n77. PAR Plot (15M BW_Ch.656000_16QAM)

Sub6 n77. PAR Plot (15M BW_Ch.656000_64QAM)

Sub6 n77. PAR Plot (15M BW_Ch.656000_256QAM)

Sub6 n77. PAR Plot (20M BW_Ch.656000_ BPSK)



Sub6 n77. PAR Plot (20M BW_Ch.656000_QPSK)

Sub6 n77. PAR Plot (20M BW_Ch.656000_16QAM)

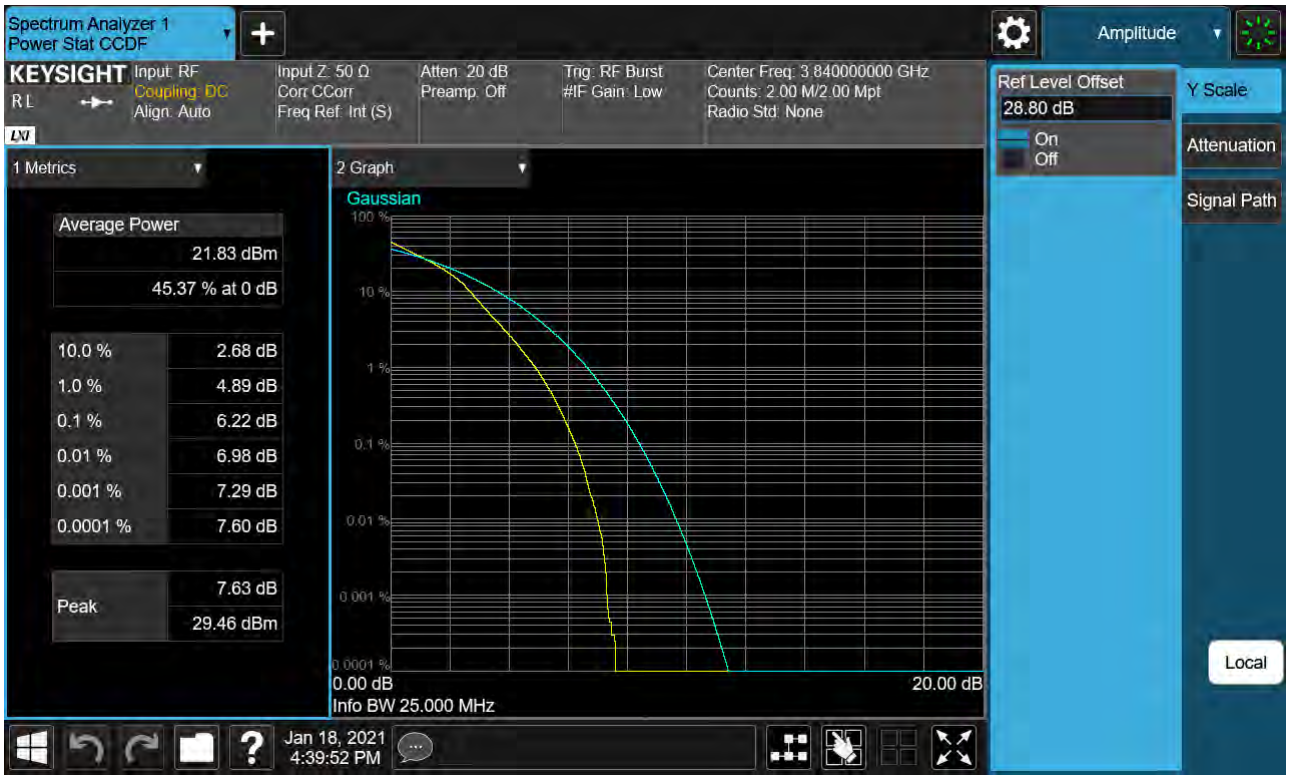
Sub6 n77. PAR Plot (20M BW_Ch.656000_64QAM)

Sub6 n77. PAR Plot (20M BW_Ch.656000_256QAM)

Sub6 n77. PAR Plot (25M BW_Ch.656000_ BPSK)

Sub6 n77. PAR Plot (25M BW_Ch.656000_QPSK)

Sub6 n77. PAR Plot (25M BW_Ch.656000_16QAM)

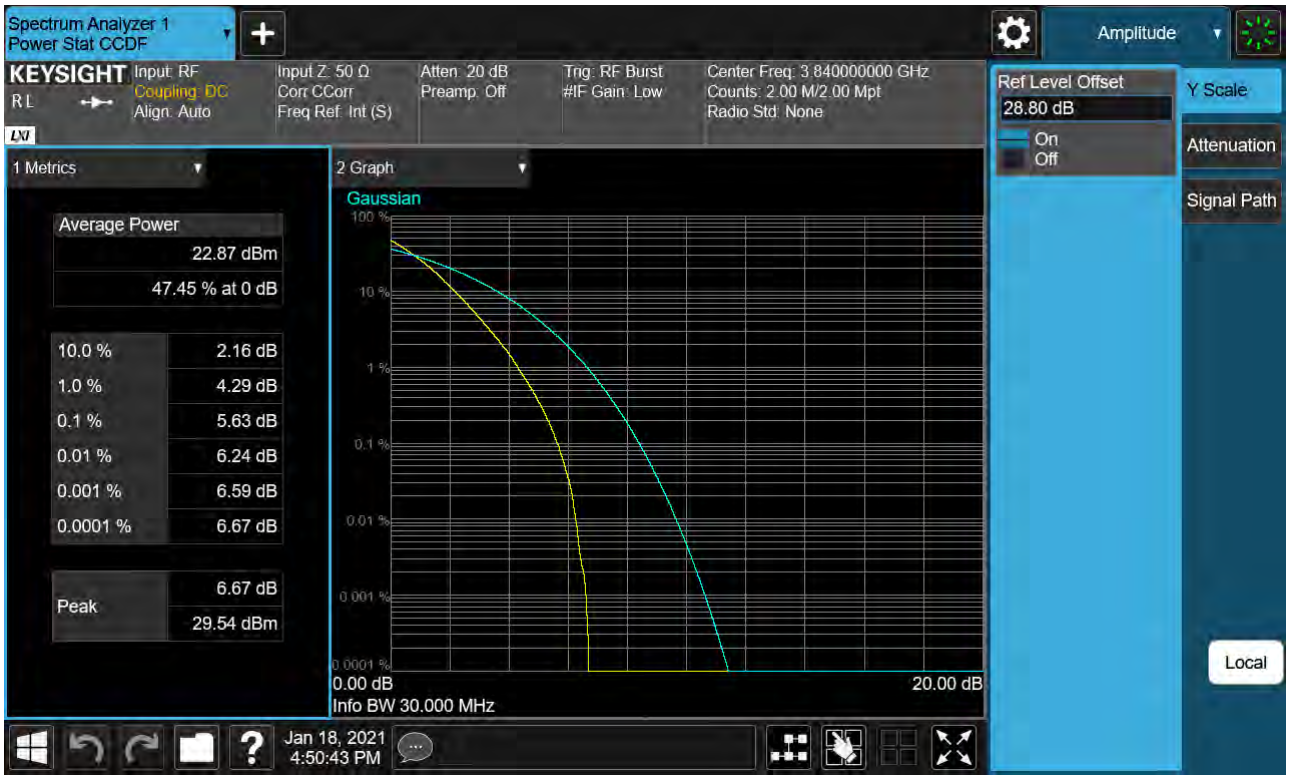


Sub6 n77. PAR Plot (25M BW_Ch.656000_64QAM)

Sub6 n77. PAR Plot (25M BW_Ch.656000_256QAM)

Sub6 n77. PAR Plot (30M BW_Ch.656000_ BPSK)

Sub6 n77. PAR Plot (30M BW_Ch.656000_QPSK)

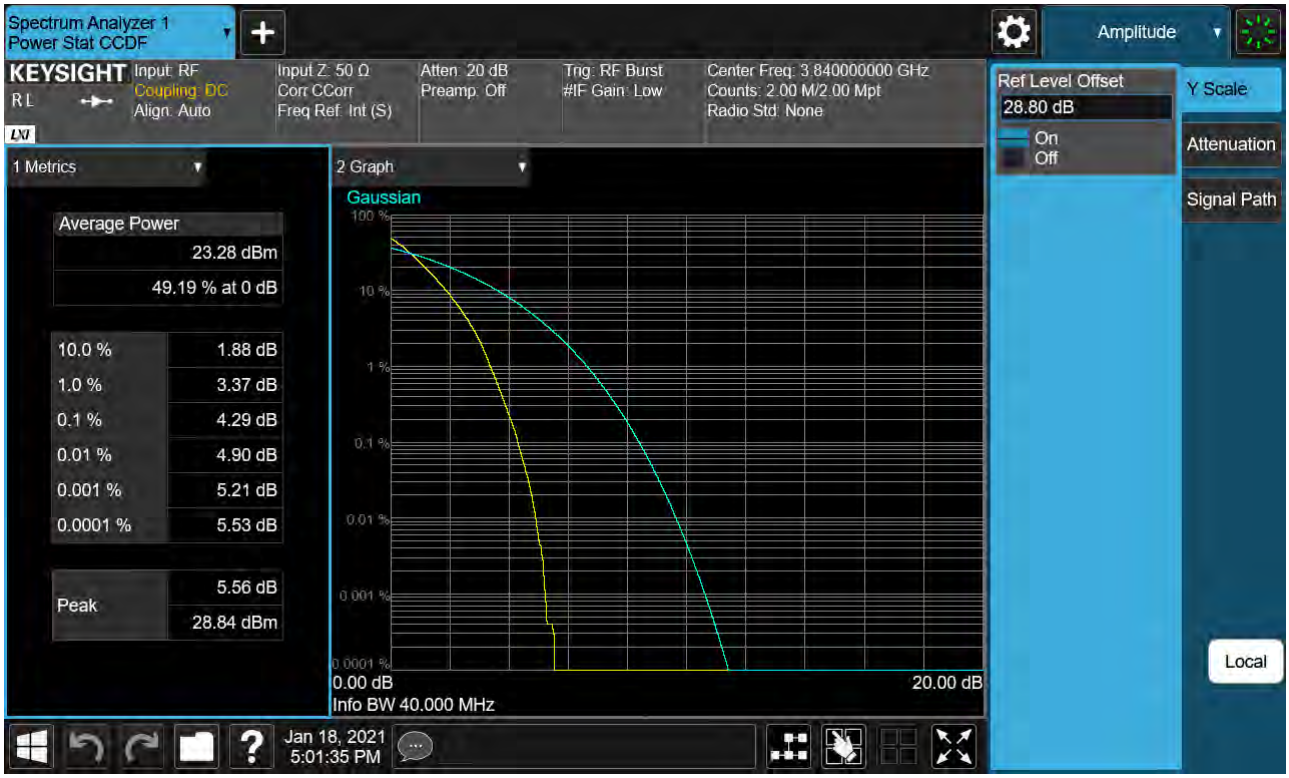


Sub6 n77. PAR Plot (30M BW_Ch.656000_16QAM)

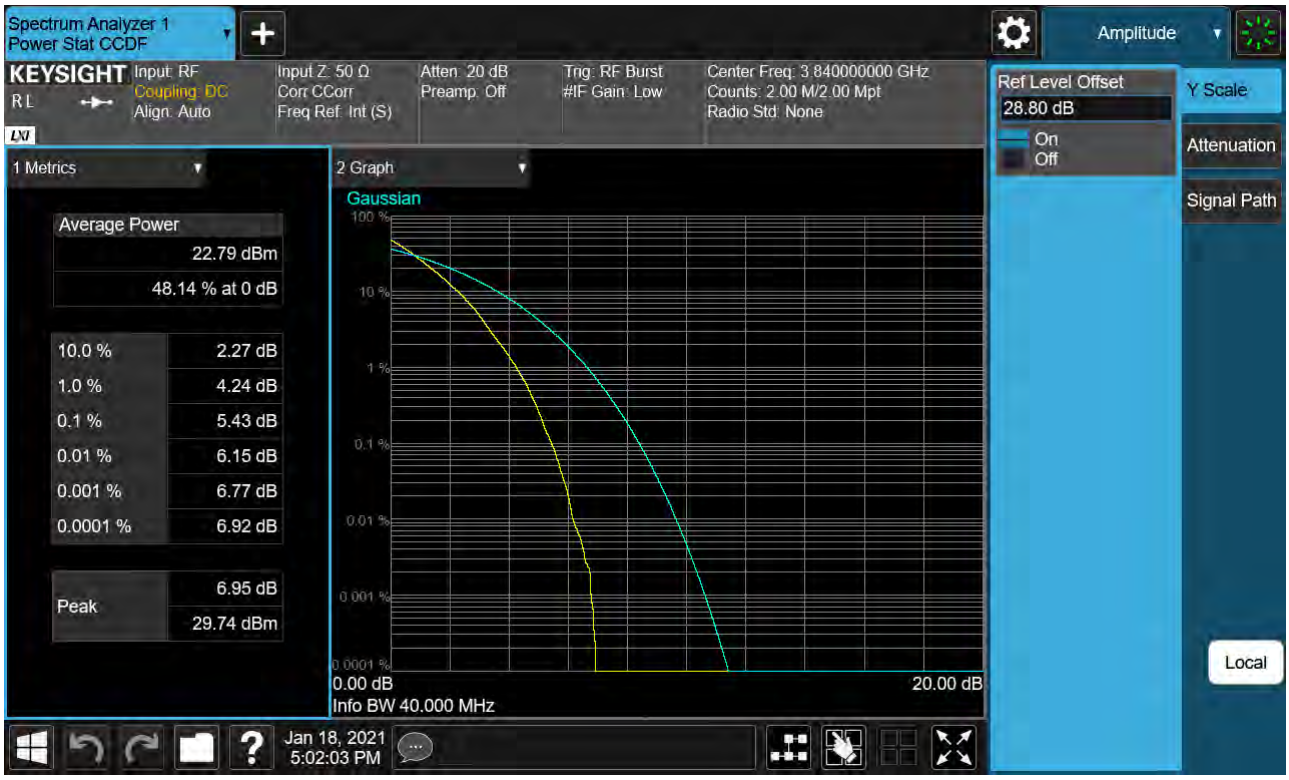
Sub6 n77. PAR Plot (30M BW_Ch.656000_64QAM)

Sub6 n77. PAR Plot (30M BW_Ch.656000_256QAM)

Sub6 n77. PAR Plot (40M BW_Ch.656000_ BPSK)



Sub6 n77. PAR Plot (40M BW_Ch.656000_QPSK)

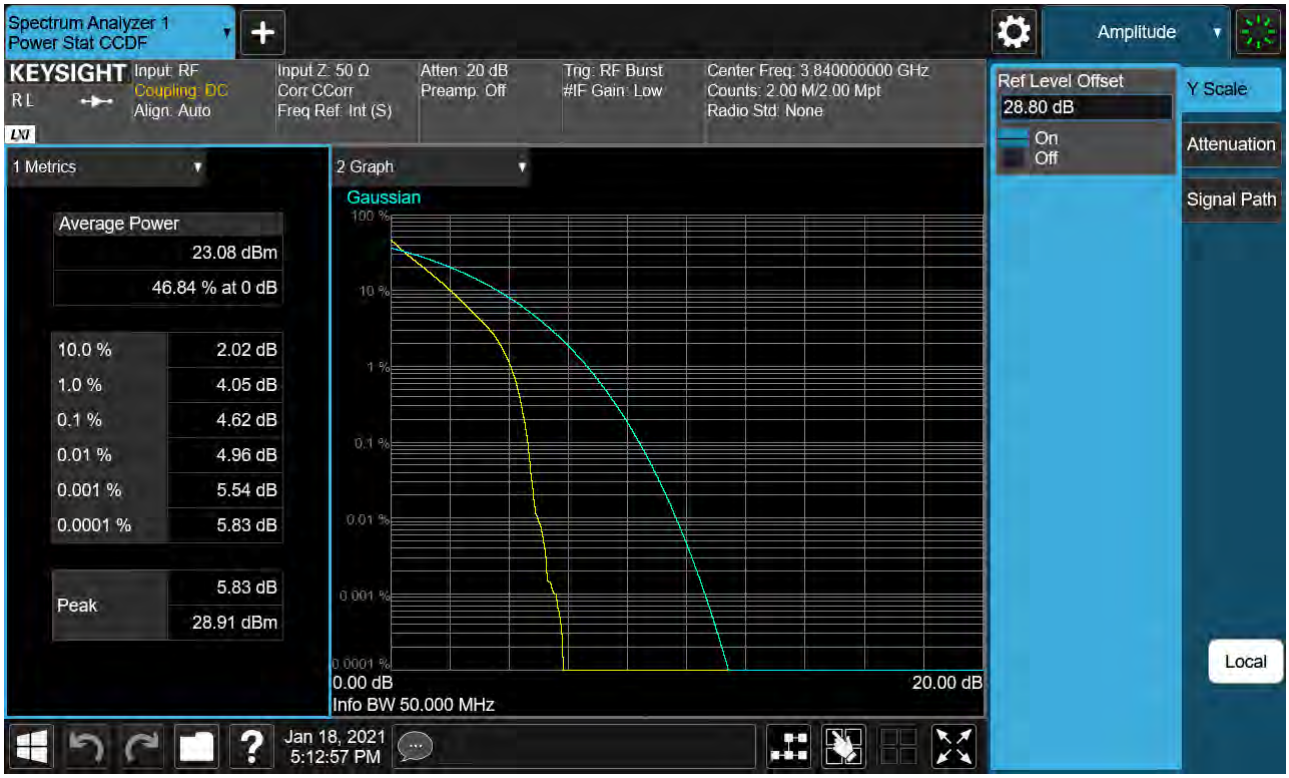


Sub6 n77. PAR Plot (40M BW_Ch.656000_16QAM)

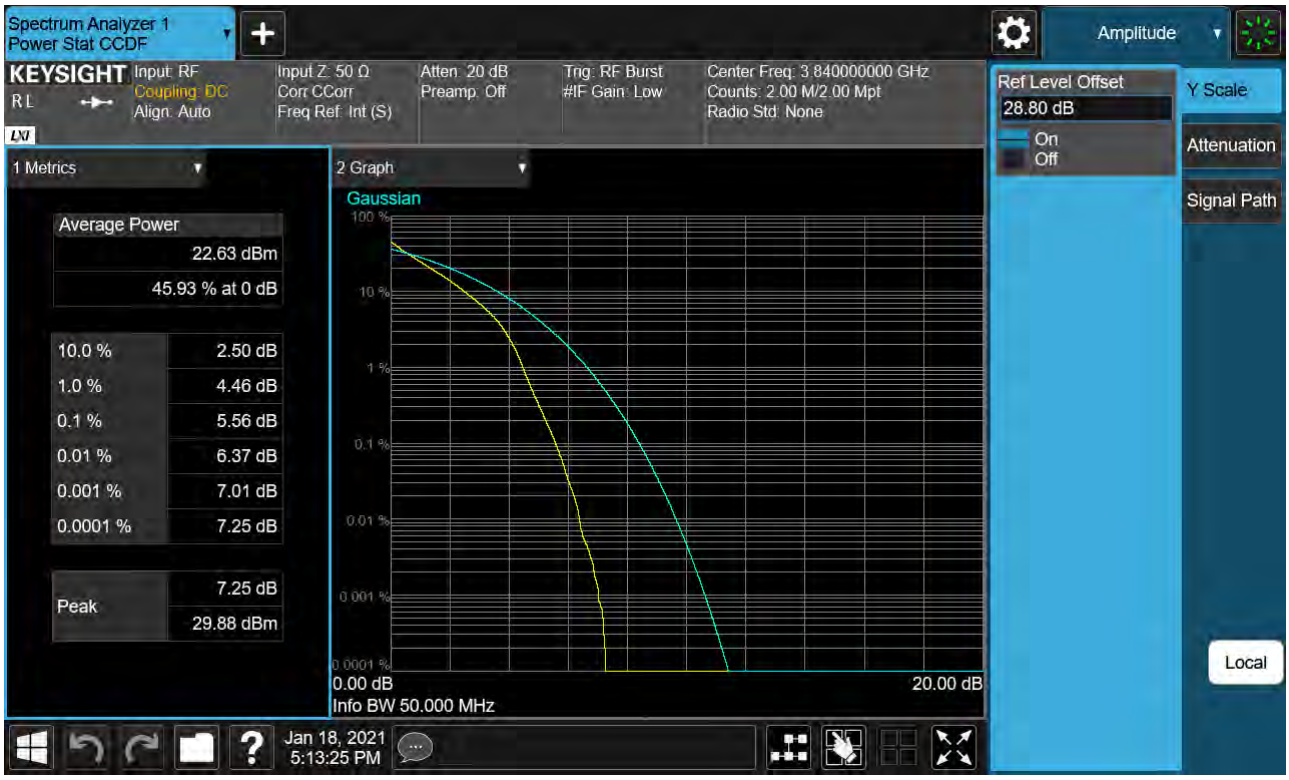
Sub6 n77. PAR Plot (40M BW_Ch.656000_64QAM)

Sub6 n77. PAR Plot (40M BW_Ch.656000_256QAM)

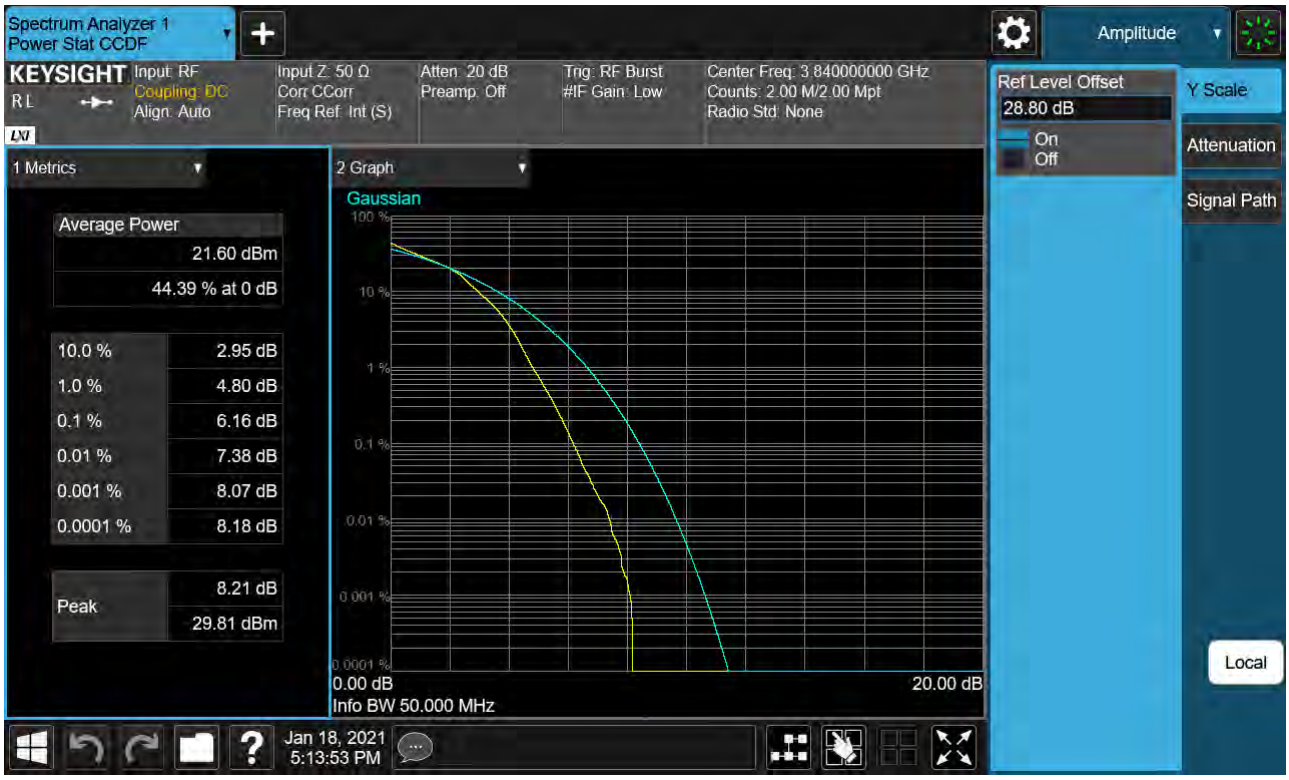
Sub6 n77. PAR Plot (50M BW_Ch.656000_ BPSK)



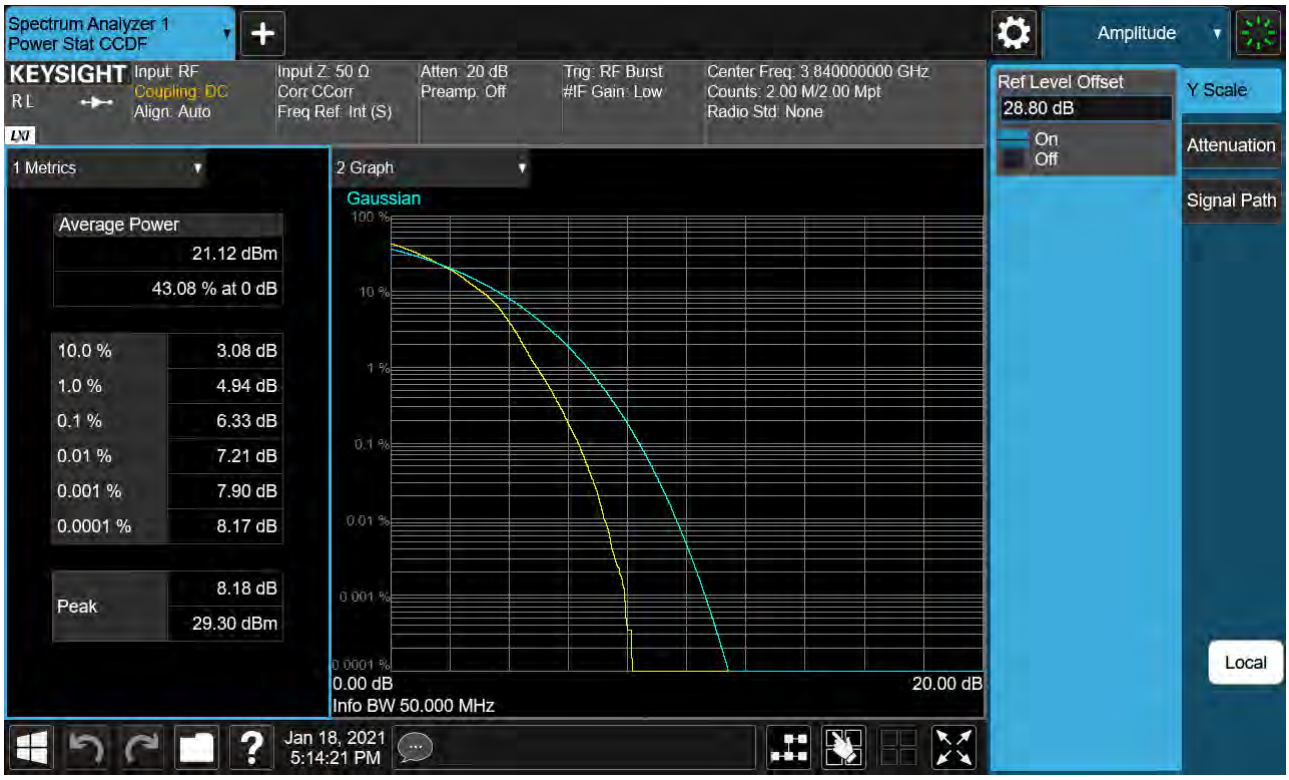
Sub6 n77. PAR Plot (50M BW_Ch.656000_QPSK)



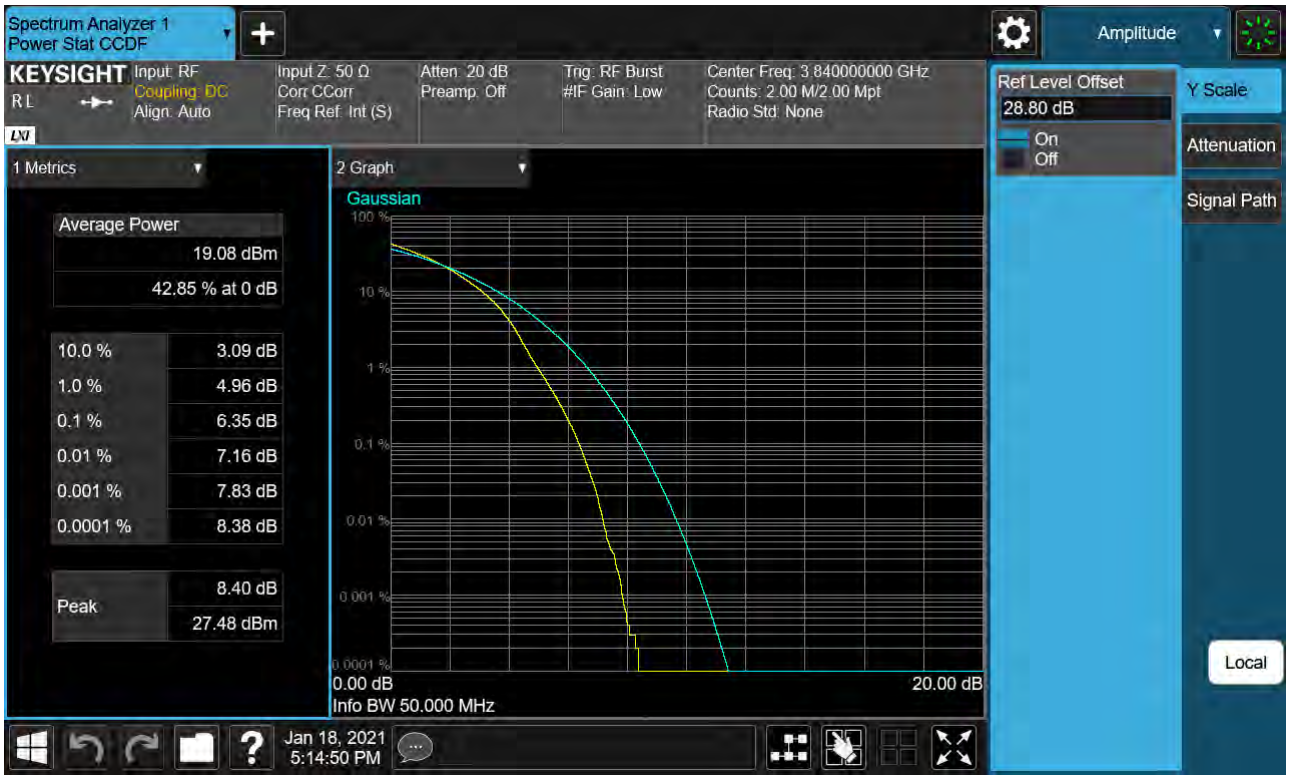
Sub6 n77. PAR Plot (50M BW_Ch.656000_16QAM)



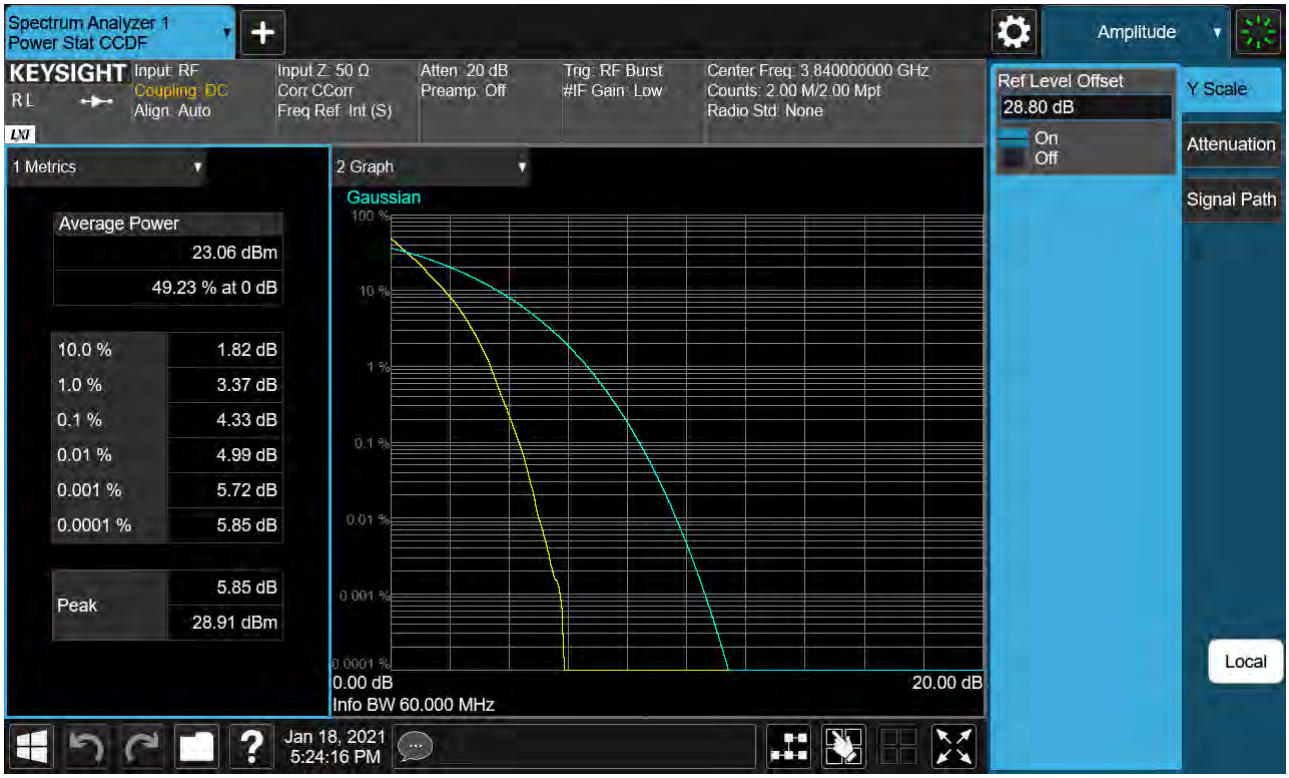
Sub6 n77. PAR Plot (50M BW_Ch.656000_64QAM)



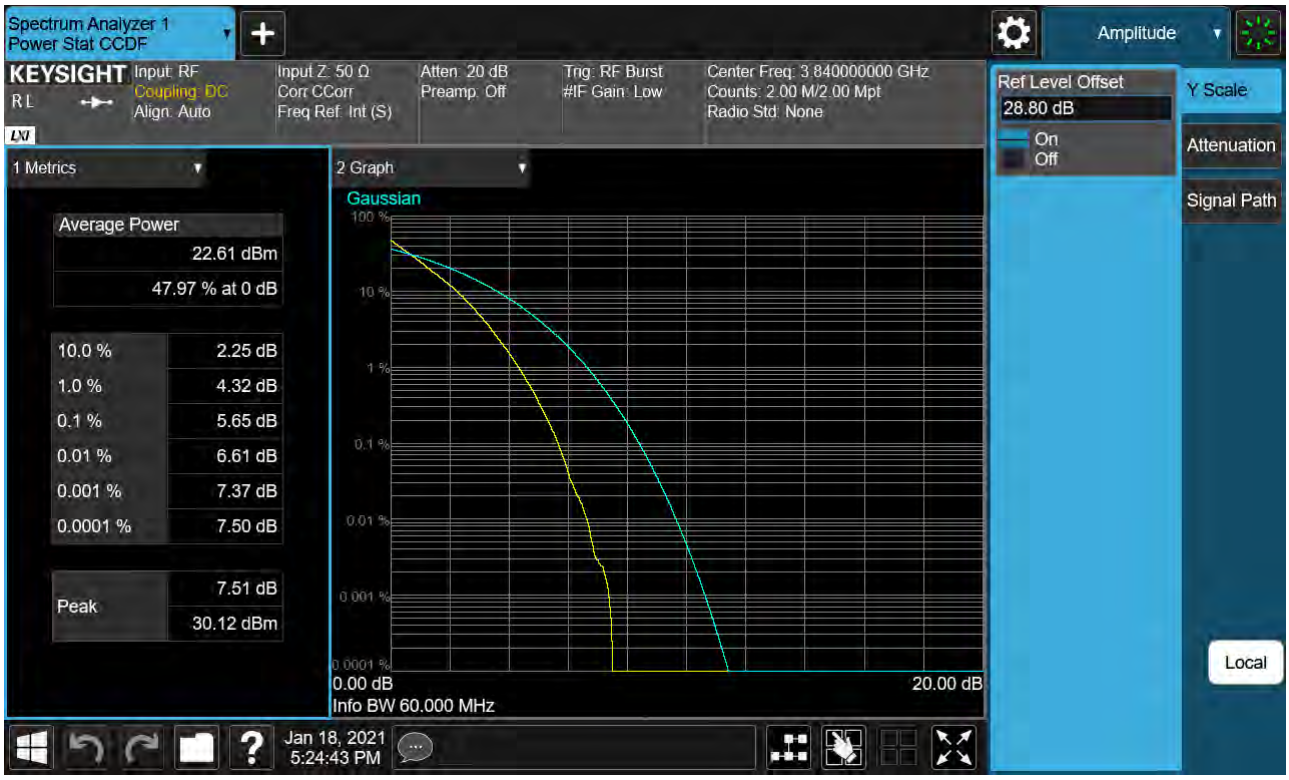
Sub6 n77. PAR Plot (50M BW_Ch.656000_256QAM)



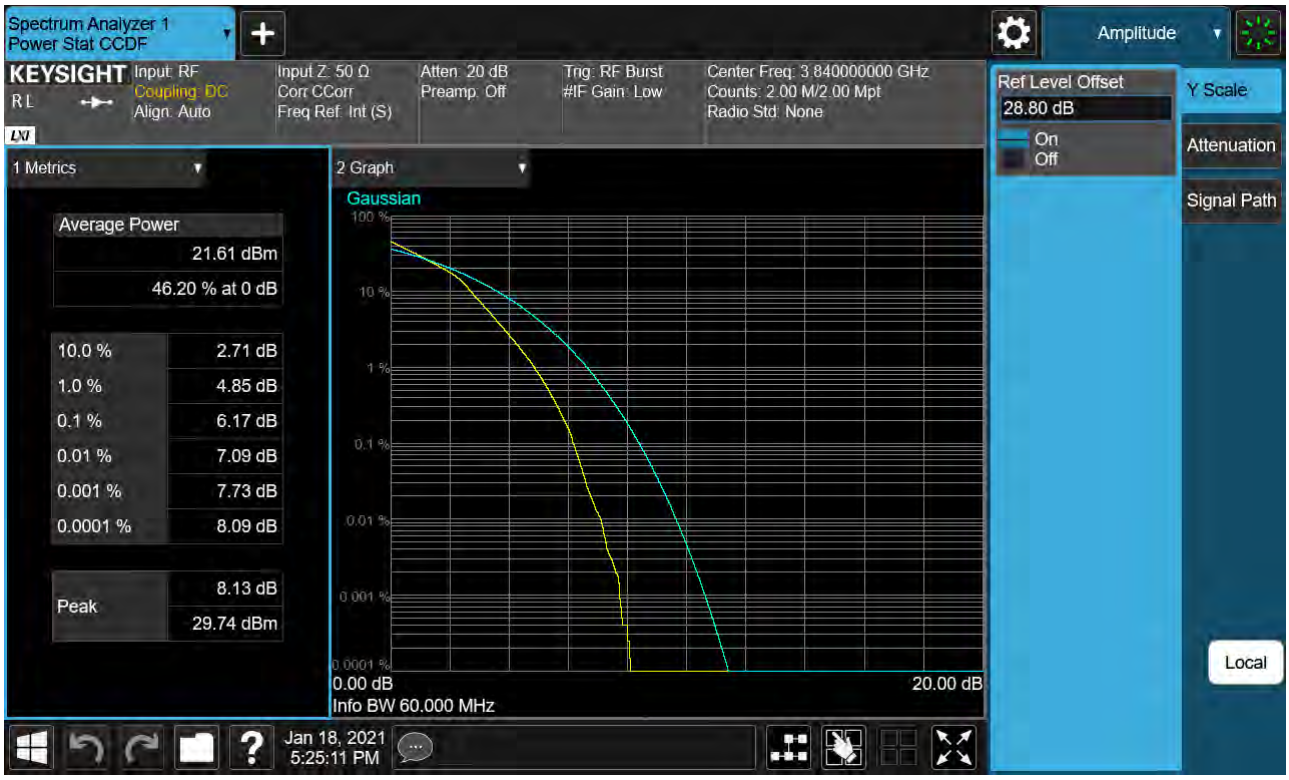
Sub6 n77. PAR Plot (60M BW_Ch.656000_ BPSK)



Sub6 n77. PAR Plot (60M BW_Ch.656000_QPSK)



Sub6 n77. PAR Plot (60M BW_Ch.656000_16QAM)



Sub6 n77. PAR Plot (60M BW_Ch.656000_64QAM)

Sub6 n77. PAR Plot (60M BW_Ch.656000_256QAM)