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FCC Sub6 REPORT
Class II Permissive Change

Applicant Name:
SAMSUNG Electronics Co., Ltd.

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

Date of Issue:
June 23, 2021

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

Report No.: HCT-RF-2106-FC031

FCC ID:	**A3LSMG990U**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s): SM-G990U
Additional Model(s): SM-G990U1/DS, SM-G990U1
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 (20)	3460.02 – 3540.00	17M9G7D	PI/2 BPSK	0.272	24.35
		17M9G7D	QPSK	0.270	24.31
		18M0W7D	16QAM	0.217	23.36
		17M9W7D	64QAM	0.140	21.46
		18M0W7D	256QAM	0.108	20.35
Sub6 n77 (30)	3465.00 – 3534.99	26M9G7D	PI/2 BPSK	0.254	24.05
		27M0G7D	QPSK	0.219	23.41
		26M9W7D	16QAM	0.183	22.62
		26M9W7D	64QAM	0.116	20.64
		26M9W7D	256QAM	0.094	19.75
Sub6 n77 (40)	3470.01 – 3529.98	35M9G7D	PI/2 BPSK	0.262	24.19
		36M0G7D	QPSK	0.225	23.53
		35M7W7D	16QAM	0.187	22.73
		36M0W7D	64QAM	0.119	20.74
		35M9W7D	256QAM	0.097	19.85
Sub6 n77 (50)	3475.02 – 3525.00	45M8G7D	PI/2 BPSK	0.252	24.01
		45M9G7D	QPSK	0.231	23.63
		45M9W7D	16QAM	0.189	22.76
		45M9W7D	64QAM	0.121	20.82
		45M8W7D	256QAM	0.096	19.83
Sub6 n77 (60)	3480.00 – 3519.99	58M1G7D	PI/2 BPSK	0.225	23.53
		58M0G7D	QPSK	0.210	23.22
		58M1W7D	16QAM	0.170	22.32
		57M8W7D	64QAM	0.110	20.41
		58M0W7D	256QAM	0.088	19.44
Sub6 n77 (70)	3485.01 – 3514.98	64M5G7D	PI/2 BPSK	0.221	23.45
		64M5G7D	QPSK	0.186	22.70
		64M5W7D	16QAM	0.151	21.80
		64M5W7D	64QAM	0.096	19.84
		64M5W7D	256QAM	0.080	19.01

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n77 (80)	3490.02 – 3510.00	77M1G7D	PI/2 BPSK	0.222	23.46
		76M9G7D	QPSK	0.187	22.71
		77M2W7D	16QAM	0.152	21.81
		77M2W7D	64QAM	0.097	19.89
		77M1W7D	256QAM	0.080	19.06
Sub6 n77 (90)	3495.00 – 3504.99	86M9G7D	PI/2 BPSK	0.207	23.16
		86M8G7D	QPSK	0.164	22.15
		86M6W7D	16QAM	0.132	21.22
		87M0W7D	64QAM	0.086	19.35
		86M8W7D	256QAM	0.068	18.33
Sub6 n77 (100)	3500.01	96M9G7D	PI/2 BPSK	0.189	22.76
		96M3G7D	QPSK	0.152	21.82
		96M3W7D	16QAM	0.123	20.88
		96M5W7D	64QAM	0.078	18.94
		96M7W7D	256QAM	0.064	18.09

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 : Jung Ki Lim
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)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2106-FC031	June 23, 2021	- First Approval Report

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

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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:	A3LSMG990U
Application Type:	Class II Permissive Change
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2
EUT Type:	Mobile Phone
Model(s):	SM-G990U
Additional Model(s):	SM-G990U1/DS, SM-G990U1
SCS(kHz):	30
Bandwidth(MHz):	20, 30, 40, 50, 60, 70, 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:	3460.02 MHz – 3540.00 MHz (Sub6 n77(20 MHz)) 3465.00 MHz – 3534.99 MHz (Sub6 n77(30 MHz)) 3470.01 MHz – 3529.98 MHz (Sub6 n77(40 MHz)) 3475.02 MHz – 3525.00 MHz (Sub6 n77(50 MHz)) 3480.00 MHz – 3519.99 MHz (Sub6 n77(60 MHz)) 3485.01 MHz – 3514.98 MHz (Sub6 n77(70 MHz)) 3490.02 MHz – 3510.00 MHz (Sub6 n77(80 MHz)) 3495.00 MHz – 3504.99 MHz (Sub6 n77(90 MHz)) 3500.01 MHz (Sub6 n77(100 MHz))
Date(s) of Tests:	May 03, 2021 ~ June 07, 2021
Serial number:	Radiated: R3CR315YMXB Conducted: R3CR3117FEE

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/ax (HT20/40/80), Bluetooth, BT LE, NFC, WPT, mmWave(n260/261).

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;

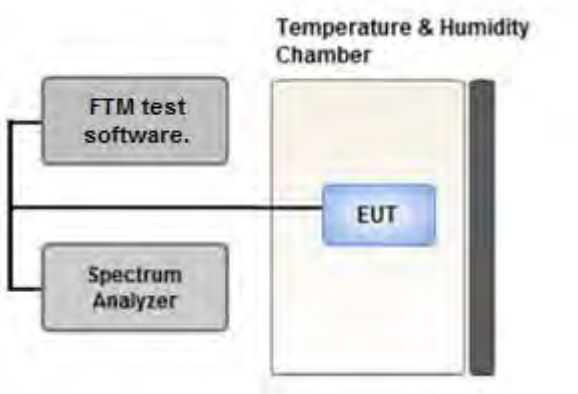
$$Result_{(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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:

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

Test Settings(Peak Power)

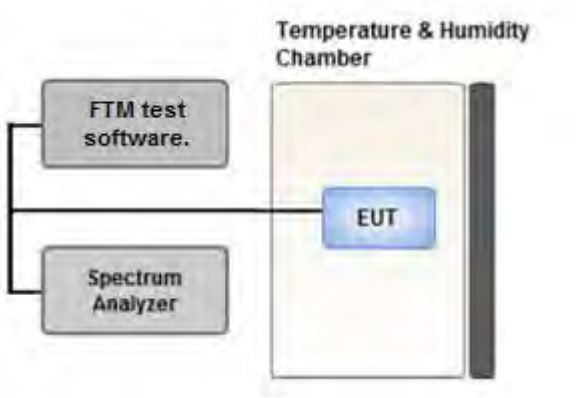
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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.

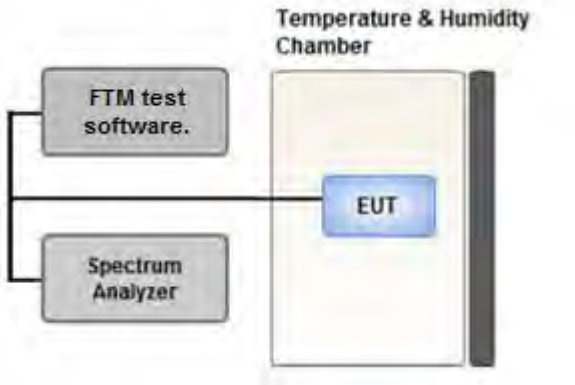
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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.

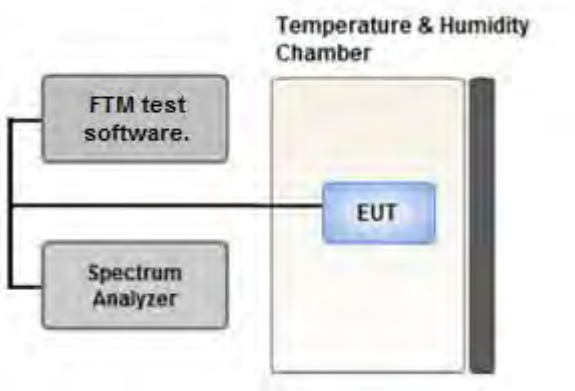
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

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 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

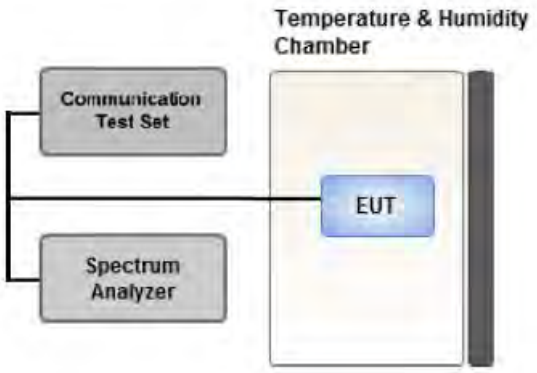
Compliance with this paragraph is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

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.

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.
  Mode: Power Class 2(SA/ NSA), Power Class 3(SA/ NSA), SRS
  Worst case: Power Class 2(SA)
- All radiated spurious emissions were investigated and the worst case bandwidth results are 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 RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- SM-G990U & additional models were tested and the worst case results are reported.
  (Worst case : SM-G990U)

[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	X

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 modes of operation were investigated and the worst case configuration results are reported.
  Mode: Power Class 2(SA/ NSA), Power Class 3(SA/ NSA), SRS
  Worst case: Power Class 2(SA)
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- SM-G990U & additional models were tested and the worst case results are reported.
  (Worst case : SM-G990U)

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth,	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	20, 30, 40, 50, 60, 70, 80, 90, 100	Mid	Full RB	0
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
			High	1	50
		30	Low	1	0
			High	1	77
		40	Low	1	0
			High	1	105
		50	Low	1	0
			High	1	132
		60	Low	1	0
			High	1	161
		70	Low	1	0
			High	1	188
		80	Low	1	0
			High	1	216
		90	Low	1	0
			High	1	244
		100	Low	1	0
			High	1	272
		20, 30, 40, 50, 60, 70, 80, 90, 100	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	20, 30, 40, 50, 60, 70, 80, 90, 100	Low, Mid, High	1	1

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
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
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	02289	05/08/2020	Biennial	05/08/2022
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1299	05/04/2020	Biennial	05/04/2022
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	10/13/2020	Biennial	10/13/2022
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	02/11/2020	Biennial	02/11/2022
Rohde & Schwarz	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	05/18/2020	Biennial	05/18/2022
Schwarzbeck	VULB9160/ Bilog Antenna	3150	03/03/2021	Biennial	03/03/2023
Schwarzbeck	VULB9160/ Hybrid Antenna	760	02/22/2021	Biennial	02/22/2023
ESPEC	SU-642 / Chamber	93008124	03/15/2021	Annual	03/15/2022
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY50200093	11/17/2020	Annual	11/17/2021
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/01/2021	Annual	06/01/2022
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	101436	03/02/2021	Annual	03/02/2022
Agilent	8960 (E5515C)/ Base Station	MY48360800	08/26/2020	Annual	08/26/2021
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
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	04/07/2021	Annual	04/07/2022
CERNEX	LOW NOISE AMP (100MHz ~ 18GHz)	26822	05/26/2021	Annual	05/26/2022
CERNEX	CBL18265035 / Power Amplifier	22966	12/04/2020	Annual	12/04/2021
CERNEX	CBL26405040 / Power Amplifier	25956	03/23/2021	Annual	03/23/2022
Hewlett Packard	E3632A/DC Power Supply	MY40004427	09/16/2020	Annual	09/16/2021
Anritsu Corp.	MT8821C/Wideband Radio Communication Tester	6262116770	07/22/2020	Annual	07/22/2021
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	01/07/2021	Annual	01/07/2022
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/13/2020	Annual	07/13/2021
KEYSIGHT	N9030B / Signal Analyzer(5Hz~40.0GHz)	MY55480167	06/02/2021	Annual	06/02/2022
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(n)(2)	< -13 dBm	PASS
Conducted Output Power	§2.1046	N/A	**See Note1**
Peak- to- Average Ratio	§27.50(k)(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(k)(3)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1051, §27.53(n)(2)	< -13 dBm	PASS

Note:

1. Radiateded tests were tested using 5G Wireless Tester.

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
3460.02	Sub6 n77/ 20 MHz [30 kHz]	PI/2 BPSK	-22.02	14.02	11.34	2.72	H	< 1.00	0.184	22.64
		QPSK	-22.99	13.05	11.34	2.72	H		0.147	21.67
		16-QAM	-23.76	12.28	11.34	2.72	H		0.123	20.90
		64-QAM	-25.81	10.23	11.34	2.72	H		0.077	18.85
		256-QAM	-26.63	9.41	11.34	2.72	H		0.064	18.03
3500.01		PI/2 BPSK	-21.31	15.01	11.50	2.75	H		0.238	23.76
		QPSK	-22.00	14.32	11.50	2.75	H		0.203	23.07
		16-QAM	-22.85	13.47	11.50	2.75	H		0.167	22.22
		64-QAM	-24.74	11.58	11.50	2.75	H		0.108	20.33
		256-QAM	-25.57	10.75	11.50	2.75	H		0.089	19.50
3540.00		PI/2 BPSK	-20.92	15.45	11.66	2.76	H		0.272	24.35
		QPSK	-20.96	15.41	11.66	2.76	H		0.270	24.31
		16-QAM	-21.91	14.46	11.66	2.76	H		0.217	23.36
		64-QAM	-23.81	12.56	11.66	2.76	H		0.140	21.46
		256-QAM	-24.92	11.45	11.66	2.76	H		0.108	20.35

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3465.00	Sub6 n77/ 30 MHz [30 kHz]	PI/2 BPSK	-22.24	13.81	11.36	2.72	H	< 1.00	0.176	22.45
		QPSK	-23.27	12.78	11.36	2.72	H		0.139	21.42
		16-QAM	-24.11	11.94	11.36	2.72	H		0.114	20.58
		64-QAM	-26.11	9.94	11.36	2.72	H		0.072	18.58
		256-QAM	-27.06	8.99	11.36	2.72	H		0.058	17.63
3500.01		PI/2 BPSK	-21.52	14.80	11.50	2.75	H		0.227	23.55
		QPSK	-22.41	13.91	11.50	2.75	H		0.185	22.66
		16-QAM	-23.34	12.98	11.50	2.75	H		0.149	21.73
		64-QAM	-25.17	11.15	11.50	2.75	H		0.098	19.90
		256-QAM	-26.23	10.09	11.50	2.75	H		0.077	18.84
3534.99		PI/2 BPSK	-21.24	15.17	11.64	2.76	H		0.254	24.05
		QPSK	-21.88	14.53	11.64	2.76	H		0.219	23.41
		16-QAM	-22.67	13.74	11.64	2.76	H		0.183	22.62
		64-QAM	-24.65	11.76	11.64	2.76	H		0.116	20.64
		256-QAM	-25.54	10.87	11.64	2.76	H		0.094	19.75

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3470.01	Sub6 n77/ 40 MHz [30 kHz]	PI/2 BPSK	-22.28	13.78	11.38	2.72	H	< 1.00	0.175	22.44
		QPSK	-23.28	12.78	11.38	2.72	H		0.139	21.44
		16-QAM	-24.14	11.92	11.38	2.72	H		0.114	20.58
		64-QAM	-26.09	9.97	11.38	2.72	H		0.073	18.63
		256-QAM	-27.02	9.04	11.38	2.72	H		0.059	17.70
3500.01		PI/2 BPSK	-21.48	14.84	11.50	2.75	H		0.229	23.59
		QPSK	-22.35	13.97	11.50	2.75	H		0.187	22.72
		16-QAM	-23.30	13.02	11.50	2.75	H		0.150	21.77
		64-QAM	-25.14	11.18	11.50	2.75	H		0.098	19.93
		256-QAM	-26.13	10.19	11.50	2.75	H		0.078	18.94
3529.98		PI/2 BPSK	-21.12	15.33	11.62	2.76	H		0.262	24.19
		QPSK	-21.78	14.67	11.62	2.76	H		0.225	23.53
		16-QAM	-22.58	13.87	11.62	2.76	H		0.187	22.73
		64-QAM	-24.57	11.88	11.62	2.76	H		0.119	20.74
		256-QAM	-25.46	10.99	11.62	2.76	H		0.097	19.85

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3475.02	Sub6 n77/ 50 MHz [30 kHz]	PI/2 BPSK	-22.06	14.02	11.40	2.72	H	< 1.00	0.186	22.70
		QPSK	-23.02	13.06	11.40	2.72	H		0.149	21.74
		16-QAM	-23.96	12.12	11.40	2.72	H		0.120	20.80
		64-QAM	-25.82	10.26	11.40	2.72	H		0.078	18.94
		256-QAM	-26.72	9.36	11.40	2.72	H		0.064	18.04
3500.01		PI/2 BPSK	-21.62	14.70	11.50	2.75	H		0.221	23.45
		QPSK	-22.17	14.15	11.50	2.75	H		0.195	22.90
		16-QAM	-23.12	13.20	11.50	2.75	H		0.157	21.95
		64-QAM	-25.02	11.30	11.50	2.75	H		0.101	20.05
		256-QAM	-25.93	10.39	11.50	2.75	H		0.082	19.14
3525.00		PI/2 BPSK	-21.27	15.16	11.60	2.75	H		0.252	24.01
		QPSK	-21.65	14.78	11.60	2.75	H		0.231	23.63
		16-QAM	-22.52	13.91	11.60	2.75	H		0.189	22.76
		64-QAM	-24.46	11.97	11.60	2.75	H		0.121	20.82
		256-QAM	-25.45	10.98	11.60	2.75	H		0.096	19.83

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3480.00	Sub6 n77/ 60 MHz [30 kHz]	PI/2 BPSK	-22.08	14.05	11.42	2.74	H	< 1.00	0.187	22.73
		QPSK	-23.09	13.04	11.42	2.74	H		0.149	21.72
		16-QAM	-23.94	12.19	11.42	2.74	H		0.122	20.87
		64-QAM	-25.97	10.16	11.42	2.74	H		0.077	18.84
		256-QAM	-26.90	9.23	11.42	2.74	H		0.062	17.91
3500.01		PI/2 BPSK	-21.87	14.45	11.50	2.75	H		0.209	23.20
		QPSK	-22.53	13.79	11.50	2.75	H		0.180	22.54
		16-QAM	-23.32	13.00	11.50	2.75	H		0.150	21.75
		64-QAM	-25.34	10.98	11.50	2.75	H		0.094	19.73
		256-QAM	-26.14	10.18	11.50	2.75	H		0.078	18.93
3519.99		PI/2 BPSK	-21.73	14.71	11.58	2.76	H		0.225	23.53
		QPSK	-22.04	14.40	11.58	2.76	H		0.210	23.22
		16-QAM	-22.94	13.50	11.58	2.76	H		0.170	22.32
		64-QAM	-24.85	11.59	11.58	2.76	H		0.110	20.41
		256-QAM	-25.82	10.62	11.58	2.76	H		0.088	19.44

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3485.01	Sub6 n77/ 70 MHz [30 kHz]	PI/2 BPSK	-22.05	14.10	11.44	2.74	H	< 1.00	0.190	22.80
		QPSK	-23.00	13.15	11.44	2.74	H		0.153	21.85
		16-QAM	-23.93	12.22	11.44	2.74	H		0.123	20.92
		64-QAM	-25.84	10.31	11.44	2.74	H		0.080	19.01
		256-QAM	-26.72	9.43	11.44	2.74	H		0.065	18.13
3500.01		PI/2 BPSK	-21.84	14.48	11.50	2.75	H		0.210	23.23
		QPSK	-22.71	13.61	11.50	2.75	H		0.172	22.36
		16-QAM	-23.53	12.79	11.50	2.75	H		0.143	21.54
		64-QAM	-25.50	10.82	11.50	2.75	H		0.091	19.57
		256-QAM	-26.39	9.93	11.50	2.75	H		0.074	18.68
3514.98		PI/2 BPSK	-21.78	14.69	11.52	2.76	H		0.221	23.45
		QPSK	-22.53	13.94	11.52	2.76	H		0.186	22.70
		16-QAM	-23.43	13.04	11.52	2.76	H		0.151	21.80
		64-QAM	-25.39	11.08	11.52	2.76	H		0.096	19.84
		256-QAM	-26.22	10.25	11.52	2.76	H		0.080	19.01

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3490.02	Sub6 n77/ 80 MHz [30 kHz]	PI/2 BPSK	-22.02	14.14	11.46	2.74	H	< 1.00	0.193	22.86
		QPSK	-22.98	13.18	11.46	2.74	H		0.155	21.90
		16-QAM	-23.90	12.26	11.46	2.74	H		0.125	20.98
		64-QAM	-25.80	10.36	11.46	2.74	H		0.081	19.08
		256-QAM	-26.69	9.47	11.46	2.74	H		0.066	18.19
3500.01		PI/2 BPSK	-21.80	14.52	11.50	2.75	H		0.212	23.27
		QPSK	-22.63	13.69	11.50	2.75	H		0.175	22.44
		16-QAM	-23.51	12.81	11.50	2.75	H		0.143	21.56
		64-QAM	-25.43	10.89	11.50	2.75	H		0.092	19.64
		256-QAM	-26.37	9.95	11.50	2.75	H		0.074	18.70
3510.00		PI/2 BPSK	-21.75	14.67	11.54	2.75	H		0.222	23.46
		QPSK	-22.50	13.92	11.54	2.75	H		0.187	22.71
		16-QAM	-23.40	13.02	11.54	2.75	H		0.152	21.81
		64-QAM	-25.32	11.10	11.54	2.75	H		0.097	19.89
		256-QAM	-26.15	10.27	11.54	2.75	H		0.080	19.06

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3495.00	Sub6 n77/ 90 MHz [30 kHz]	PI/2 BPSK	-22.12	14.13	11.48	2.75	H	< 1.00	0.193	22.86
		QPSK	-23.18	13.07	11.48	2.75	H		0.151	21.80
		16-QAM	-24.09	12.16	11.48	2.75	H		0.123	20.89
		64-QAM	-26.03	10.22	11.48	2.75	H		0.078	18.95
		256-QAM	-27.02	9.23	11.48	2.75	H		0.062	17.96
3500.01		PI/2 BPSK	-22.20	14.12	11.50	2.75	H		0.194	22.87
		QPSK	-23.18	13.14	11.50	2.75	H		0.155	21.89
		16-QAM	-24.03	12.29	11.50	2.75	H		0.127	21.04
		64-QAM	-25.98	10.34	11.50	2.75	H		0.081	19.09
		256-QAM	-26.81	9.51	11.50	2.75	H		0.067	18.26
3504.99		PI/2 BPSK	-21.98	14.39	11.52	2.75	H		0.207	23.16
		QPSK	-22.99	13.38	11.52	2.75	H		0.164	22.15
		16-QAM	-23.92	12.45	11.52	2.75	H		0.132	21.22
		64-QAM	-25.79	10.58	11.52	2.75	H		0.086	19.35
		256-QAM	-26.81	9.56	11.52	2.75	H		0.068	18.33

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3500.01	Sub6 n77/ 100 MHz [30 kHz]	PI/2 BPSK	-22.31	14.01	11.50	2.75	H	< 1.00	0.189	22.76
		QPSK	-23.25	13.07	11.50	2.75	H		0.152	21.82
		16-QAM	-24.19	12.13	11.50	2.75	H		0.123	20.88
		64-QAM	-26.13	10.19	11.50	2.75	H		0.078	18.94
		256-QAM	-26.98	9.34	11.50	2.75	H		0.064	18.09

8.2 RADIATED SPURIOUS EMISSIONS

▣ NR Band: N77

▣ Bandwidth: 20 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)
630668 (3460.02)	6 920.04	-61.52	11.10	-56.52	3.96	H	-49.38	-13.00
	10 380.06	-63.24	11.80	-53.88	4.93	H	-47.01	-13.00
	13 840.08	-56.25	13.02	-47.56	5.70	V	-40.24	-13.00
	17 300.10	-63.74	16.60	-48.44	6.54	H	-38.38	-13.00
633334 (3500.01)	7 000.02	-61.17	11.20	-55.46	3.97	H	-48.23	-13.00
	10 500.03	-63.00	11.80	-53.18	4.89	H	-46.27	-13.00
	14 000.04	-53.19	12.90	-45.17	5.80	V	-38.07	-13.00
	17 500.05	-66.38	16.10	-48.36	6.58	H	-38.84	-13.00
636000 (3540.00)	7 080.00	-62.46	11.08	-55.75	4.00	H	-48.67	-13.00
	10 620.00	-60.61	11.70	-50.23	4.86	H	-43.39	-13.00
	14 160.00	-51.85	12.92	-44.16	5.69	H	-36.93	-13.00
	17 700.00	-63.67	15.40	-42.92	6.64	H	-34.16	-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	-59.58	11.64	-62.57	2.85	V	-53.78	-13.00
	5,640.00	-60.92	12.00	-57.70	3.54	V	-49.24	-13.00
	7,520.00	-63.29	11.54	-50.94	4.12	V	-43.52	-13.00

Note : All EN-DC mode of operation were investigated and the worst case configuration results are reported.

(Worst case: 2A-n77A(BW 20MHz))

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n77	20 MHz	3500.01	BPSK	50	0	4.01
			QPSK			5.06
			16-QAM			5.81
			64-QAM			6.22
			256-QAM			6.65
	30 MHz		BPSK	75		4.03
			QPSK			5.10
			16-QAM			5.94
			64-QAM			6.28
			256-QAM			6.52
	40 MHz		BPSK	100		3.68
			QPSK			5.01
			16-QAM			5.93
			64-QAM			6.24
			256-QAM			6.45
	50 MHz		BPSK	128		3.95
			QPSK			5.02
			16-QAM			5.85
			64-QAM			6.15
			256-QAM			6.43
	60 MHz		BPSK	162		3.99
			QPSK			5.22
			16-QAM			6.00
			64-QAM			6.26
			256-QAM			6.45

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n77	70 MHz	3500.01	BPSK	180	0	4.21
			QPSK			5.25
			16-QAM			5.98
			64-QAM			6.30
			256-QAM			6.50
	80 MHz		BPSK	216		3.87
			QPSK			5.09
			16-QAM			5.88
			64-QAM			6.23
			256-QAM			6.41
	90 MHz		BPSK	243		4.08
			QPSK			5.11
			16-QAM			5.97
			64-QAM			6.24
			256-QAM			6.56
	100 MHz		BPSK	270		4.33
			QPSK			5.19
			16-QAM			6.00
			64-QAM			6.27
			256-QAM			6.53

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 98 ~ 142.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n77	20 MHz	3500.01	BPSK	50	0	17.919
			QPSK			17.903
			16-QAM			18.014
			64-QAM			17.907
			256-QAM			17.980
	30 MHz		BPSK	75		26.918
			QPSK			26.946
			16-QAM			26.911
			64-QAM			26.937
			256-QAM			26.917
	40 MHz		BPSK	100		35.906
			QPSK			35.954
			16-QAM			35.663
			64-QAM			36.004
			256-QAM			35.893
	50 MHz		BPSK	128		45.801
			QPSK			45.845
			16-QAM			45.929
			64-QAM			45.896
			256-QAM			45.786
	60 MHz		BPSK	162		58.089
			QPSK			58.034
			16-QAM			58.137
			64-QAM			57.820
			256-QAM			57.997

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n77	70 MHz	3500.01	BPSK	180	0	64.505
			QPSK			64.502
			16-QAM			64.462
			64-QAM			64.487
			256-QAM			64.526
	80 MHz		BPSK	216		77.101
			QPSK			76.872
			16-QAM			77.167
			64-QAM			77.237
			256-QAM			77.068
	90 MHz		BPSK	243		86.923
			QPSK			86.825
			16-QAM			86.636
			64-QAM			86.989
			256-QAM			86.747
	100 MHz		BPSK	270		96.905
			QPSK			96.314
			16-QAM			96.295
			64-QAM			96.509
			256-QAM			96.709

Note:

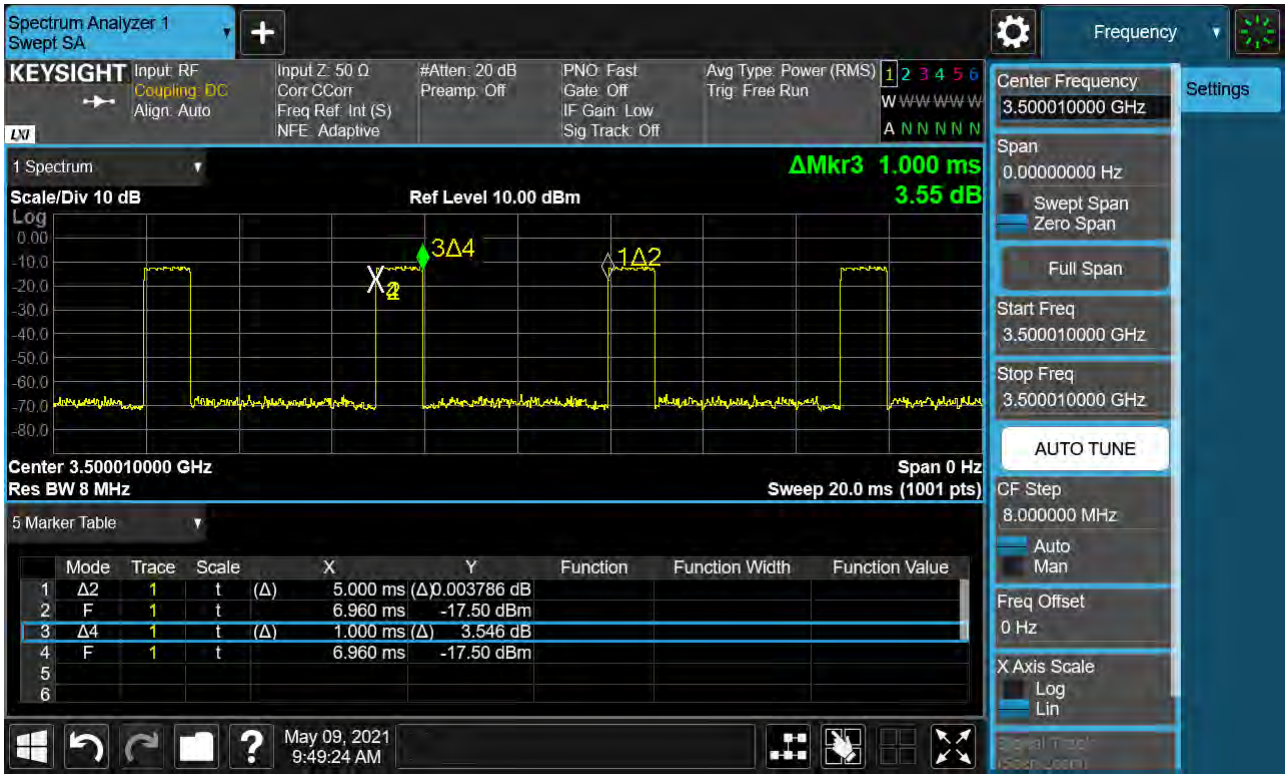
1. Plots of the EUT's Occupied Bandwidth are shown Page 53~ 97.

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	20	3460.02	3.1252	38.093	-72.598	-34.505	-13.00
		3500.01	7.9871	38.705	-71.793	-33.088	
		3540.00	2.5948	38.093	-72.203	-34.110	
	30	3465.00	9.9257	38.705	-72.051	-33.346	
		3500.01	8.0060	38.705	-72.351	-33.646	
		3534.99	7.9691	38.705	-72.538	-33.833	
	40	3470.01	8.0125	38.705	-71.396	-32.691	
		3500.01	5.7338	38.705	-71.573	-32.868	
		3529.98	7.9990	38.705	-71.935	-33.230	
	50	3475.02	8.2159	38.705	-71.452	-32.747	
		3500.01	9.4073	38.705	-70.800	-32.095	
		3525.00	8.6276	38.705	-71.300	-32.595	
	60	3480.00	3.1980	38.093	-72.783	-34.690	
		3500.01	9.1555	38.705	-72.678	-33.973	
		3519.99	7.9940	38.705	-71.833	-33.128	
	70	3485.01	4.5514	38.705	-72.600	-33.895	
		3500.01	8.0050	38.705	-71.888	-33.183	
		3514.98	7.9821	38.705	-72.307	-33.602	
	80	3490.02	8.0314	38.705	-71.385	-32.680	
		3500.01	7.9920	38.705	-71.458	-32.753	
		3510.00	8.0563	38.705	-72.154	-33.449	
	90	3495.00	8.0155	38.705	-72.228	-33.523	
		3500.01	8.8554	38.705	-72.424	-33.719	
		3504.99	3.1701	38.093	-71.471	-33.378	
	100	3500.01	7.9701	38.705	-72.725	-34.020	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 251 ~ 300.
2. Duty Cycle factor already applied on the factor.
   - Duty Cycle Factor(dB) = 6.990



   - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Divider
   - Result(dBm) = Reading + Factor

3. Factor(dB)

Frequency Range (GHz)	Factor [dB]
0.03 – 1	34.501
1 – 5	38.093
5 – 10	38.705
10 – 15	39.230
15 – 20	39.603
Above 20	40.245

8.6 BAND EDGE

1. Plots of the EUT's Band Edge are shown Page 143 ~ 250.
2. Duty Cycle factor already applied on the factor.
   - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Divider
   - Result(dBm) = Reading + Factor
   - Duty Cycle Factor(dB) = 6.990

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ BandWidth: 20 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3460.020	100%	+20(Ref)	3460 020 011	0.0	0.000 000	0.000
	100%	-30	3460 020 014	3.2	0.000 000	0.001
	100%	-20	3460 020 022	10.5	0.000 000	0.003
	100%	-10	3460 020 021	9.8	0.000 000	0.003
	100%	0	3460 020 028	16.7	0.000 000	0.005
	100%	+10	3460 020 018	6.6	0.000 000	0.002
	100%	+30	3460 020 019	7.8	0.000 000	0.002
	100%	+40	3460 020 018	6.3	0.000 000	0.002
	100%	+50	3460 020 025	13.3	0.000 000	0.004
	Batt. Endpoint	+20	3460 020 020	8.6	0.000 000	0.002
3540.000	100%	+20(Ref)	3540 000 008	0.0	0.000 000	0.000
	100%	-30	3540 000 023	15.2	0.000 000	0.004
	100%	-20	3540 000 013	5.0	0.000 000	0.001
	100%	-10	3540 000 018	10.6	0.000 000	0.003
	100%	0	3540 000 025	16.9	0.000 000	0.005
	100%	+10	3540 000 014	6.6	0.000 000	0.002
	100%	+30	3540 000 018	9.6	0.000 000	0.003
	100%	+40	3540 000 021	12.9	0.000 000	0.004
	100%	+50	3540 000 013	5.5	0.000 000	0.002
	Batt. Endpoint	+20	3540 000 015	6.9	0.000 000	0.002

▣ BandWidth: 30 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3465.000	100%	+20(Ref)	3465 000 004	0.0	0.000 000	0.000
	100%	-30	3465 000 021	17.0	0.000 000	0.005
	100%	-20	3465 000 011	7.5	0.000 000	0.002
	100%	-10	3465 000 012	7.9	0.000 000	0.002
	100%	0	3465 000 013	9.1	0.000 000	0.003
	100%	+10	3465 000 015	11.4	0.000 000	0.003
	100%	+30	3465 000 014	10.5	0.000 000	0.003
	100%	+40	3465 000 019	15.4	0.000 000	0.004
	100%	+50	3465 000 013	9.2	0.000 000	0.003
	Batt. Endpoint	+20	3465 000 010	6.5	0.000 000	0.002
3534.990	100%	+20(Ref)	3534 990 003	0.0	0.000 000	0.000
	100%	-30	3534 990 018	14.6	0.000 000	0.004
	100%	-20	3534 990 016	12.4	0.000 000	0.004
	100%	-10	3534 990 006	3.1	0.000 000	0.001
	100%	0	3534 990 014	11.2	0.000 000	0.003
	100%	+10	3534 990 007	3.5	0.000 000	0.001
	100%	+30	3534 990 018	14.9	0.000 000	0.004
	100%	+40	3534 990 010	6.5	0.000 000	0.002
	100%	+50	3534 990 019	16.2	0.000 000	0.005
	Batt. Endpoint	+20	3534 990 014	10.5	0.000 000	0.003

▣ BandWidth: 40 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3470.010	100%	+20(Ref)	3470 010 009	0.0	0.000 000	0.000
	100%	-30	3470 010 022	13.2	0.000 000	0.004
	100%	-20	3470 010 020	10.9	0.000 000	0.003
	100%	-10	3470 010 021	12.2	0.000 000	0.004
	100%	0	3470 010 016	6.8	0.000 000	0.002
	100%	+10	3470 010 015	6.5	0.000 000	0.002
	100%	+30	3470 010 024	15.5	0.000 000	0.004
	100%	+40	3470 010 019	10.5	0.000 000	0.003
	100%	+50	3470 010 018	9.5	0.000 000	0.003
	Batt. Endpoint	+20	3470 010 022	13.5	0.000 000	0.004
3529.980	100%	+20(Ref)	3529 980 007	0.0	0.000 000	0.000
	100%	-30	3529 980 015	8.1	0.000 000	0.002
	100%	-20	3529 980 014	7.5	0.000 000	0.002
	100%	-10	3529 980 019	12.1	0.000 000	0.003
	100%	0	3529 980 021	14.0	0.000 000	0.004
	100%	+10	3529 980 015	8.6	0.000 000	0.002
	100%	+30	3529 980 022	14.8	0.000 000	0.004
	100%	+40	3529 980 010	3.1	0.000 000	0.001
	100%	+50	3529 980 017	10.0	0.000 000	0.003
	Batt. Endpoint	+20	3529 980 012	5.4	0.000 000	0.002

▣ BandWidth: 50 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3475.020	100%	+20(Ref)	3475 020 016	0.0	0.000 000	0.000
	100%	-30	3475 020 023	7.4	0.000 000	0.002
	100%	-20	3475 020 020	4.0	0.000 000	0.001
	100%	-10	3475 020 031	15.3	0.000 000	0.004
	100%	0	3475 020 032	15.7	0.000 000	0.005
	100%	+10	3475 020 033	16.9	0.000 000	0.005
	100%	+30	3475 020 019	3.6	0.000 000	0.001
	100%	+40	3475 020 031	15.5	0.000 000	0.004
	100%	+50	3475 020 020	4.0	0.000 000	0.001
	Batt. Endpoint	+20	3475 020 028	12.7	0.000 000	0.004
3525.000	100%	+20(Ref)	3525 000 016	0.0	0.000 000	0.000
	100%	-30	3525 000 020	4.3	0.000 000	0.001
	100%	-20	3525 000 025	9.4	0.000 000	0.003
	100%	-10	3525 000 029	13.9	0.000 000	0.004
	100%	0	3525 000 024	8.2	0.000 000	0.002
	100%	+10	3525 000 021	5.2	0.000 000	0.001
	100%	+30	3525 000 030	14.6	0.000 000	0.004
	100%	+40	3525 000 019	3.8	0.000 000	0.001
	100%	+50	3525 000 022	6.4	0.000 000	0.002
	Batt. Endpoint	+20	3525 000 027	11.8	0.000 000	0.003

▣ BandWidth: 60 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3480.000	100%	+20(Ref)	3480 000 008	0.0	0.000 000	0.000
	100%	-30	3480 000 013	5.1	0.000 000	0.001
	100%	-20	3480 000 012	4.5	0.000 000	0.001
	100%	-10	3480 000 024	17.0	0.000 000	0.005
	100%	0	3480 000 014	6.6	0.000 000	0.002
	100%	+10	3480 000 017	9.1	0.000 000	0.003
	100%	+30	3480 000 014	6.9	0.000 000	0.002
	100%	+40	3480 000 015	7.7	0.000 000	0.002
	100%	+50	3480 000 023	15.3	0.000 000	0.004
	Batt. Endpoint	+20	3480 000 014	6.0	0.000 000	0.002
3519.990	100%	+20(Ref)	3519 990 008	0.0	0.000 000	0.000
	100%	-30	3519 990 024	16.3	0.000 000	0.005
	100%	-20	3519 990 017	9.0	0.000 000	0.003
	100%	-10	3519 990 022	14.5	0.000 000	0.004
	100%	0	3519 990 019	11.6	0.000 000	0.003
	100%	+10	3519 990 019	11.0	0.000 000	0.003
	100%	+30	3519 990 016	8.2	0.000 000	0.002
	100%	+40	3519 990 015	7.5	0.000 000	0.002
	100%	+50	3519 990 023	14.7	0.000 000	0.004
	Batt. Endpoint	+20	3519 990 017	8.8	0.000 000	0.002

▣ BandWidth: 70 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3485.010	100%	+20(Ref)	3485 010 006	0.0	0.000 000	0.000
	100%	-30	3485 010 022	16.4	0.000 000	0.005
	100%	-20	3485 010 017	11.2	0.000 000	0.003
	100%	-10	3485 010 022	16.5	0.000 000	0.005
	100%	0	3485 010 021	15.3	0.000 000	0.004
	100%	+10	3485 010 022	15.7	0.000 000	0.005
	100%	+30	3485 010 011	5.3	0.000 000	0.002
	100%	+40	3485 010 022	15.9	0.000 000	0.005
	100%	+50	3485 010 022	16.2	0.000 000	0.005
	Batt. Endpoint	+20	3485 010 022	15.8	0.000 000	0.005
3514.980	100%	+20(Ref)	3514 980 012	0.0	0.000 000	0.000
	100%	-30	3514 980 028	16.2	0.000 000	0.005
	100%	-20	3514 980 017	5.6	0.000 000	0.002
	100%	-10	3514 980 027	15.4	0.000 000	0.004
	100%	0	3514 980 027	15.5	0.000 000	0.004
	100%	+10	3514 980 025	13.8	0.000 000	0.004
	100%	+30	3514 980 018	6.0	0.000 000	0.002
	100%	+40	3514 980 027	15.6	0.000 000	0.004
	100%	+50	3514 980 022	10.4	0.000 000	0.003
	Batt. Endpoint	+20	3514 980 026	14.7	0.000 000	0.004

▣ BandWidth: 80 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3490.020	100%	+20(Ref)	3490 020 005	0.0	0.000 000	0.000
	100%	-30	3490 020 019	13.9	0.000 000	0.004
	100%	-20	3490 020 015	9.8	0.000 000	0.003
	100%	-10	3490 020 019	13.9	0.000 000	0.004
	100%	0	3490 020 010	5.1	0.000 000	0.001
	100%	+10	3490 020 013	8.0	0.000 000	0.002
	100%	+30	3490 020 009	4.2	0.000 000	0.001
	100%	+40	3490 020 014	8.9	0.000 000	0.003
	100%	+50	3490 020 016	11.6	0.000 000	0.003
	Batt. Endpoint	+20	3490 020 015	9.8	0.000 000	0.003
3510.000	100%	+20(Ref)	3510 000 013	0.0	0.000 000	0.000
	100%	-30	3510 000 022	9.2	0.000 000	0.003
	100%	-20	3510 000 027	14.0	0.000 000	0.004
	100%	-10	3510 000 022	8.8	0.000 000	0.003
	100%	0	3510 000 020	6.8	0.000 000	0.002
	100%	+10	3510 000 028	14.6	0.000 000	0.004
	100%	+30	3510 000 017	4.3	0.000 000	0.001
	100%	+40	3510 000 017	4.1	0.000 000	0.001
	100%	+50	3510 000 025	11.7	0.000 000	0.003
	Batt. Endpoint	+20	3510 000 023	9.6	0.000 000	0.003

▣ BandWidth: 90 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3495.000	100%	+20(Ref)	3495 000 004	0.0	0.000 000	0.000
	100%	-30	3495 000 019	15.8	0.000 000	0.005
	100%	-20	3495 000 008	4.7	0.000 000	0.001
	100%	-10	3495 000 018	14.3	0.000 000	0.004
	100%	0	3495 000 009	5.1	0.000 000	0.001
	100%	+10	3495 000 012	8.5	0.000 000	0.002
	100%	+30	3495 000 018	14.0	0.000 000	0.004
	100%	+40	3495 000 018	14.8	0.000 000	0.004
	100%	+50	3495 000 017	13.5	0.000 000	0.004
	Batt. Endpoint	+20	3495 000 020	16.4	0.000 000	0.005
3504.990	100%	+20(Ref)	3504 990 011	0.0	0.000 000	0.000
	100%	-30	3504 990 024	13.5	0.000 000	0.004
	100%	-20	3504 990 015	4.2	0.000 000	0.001
	100%	-10	3504 990 015	4.3	0.000 000	0.001
	100%	0	3504 990 023	12.5	0.000 000	0.004
	100%	+10	3504 990 024	13.7	0.000 000	0.004
	100%	+30	3504 990 021	10.0	0.000 000	0.003
	100%	+40	3504 990 016	5.8	0.000 000	0.002
	100%	+50	3504 990 017	6.3	0.000 000	0.002
	Batt. Endpoint	+20	3504 990 022	11.2	0.000 000	0.003

▣ BandWidth: 100 MHz

▣ Voltage(100%): 3.880 VDC

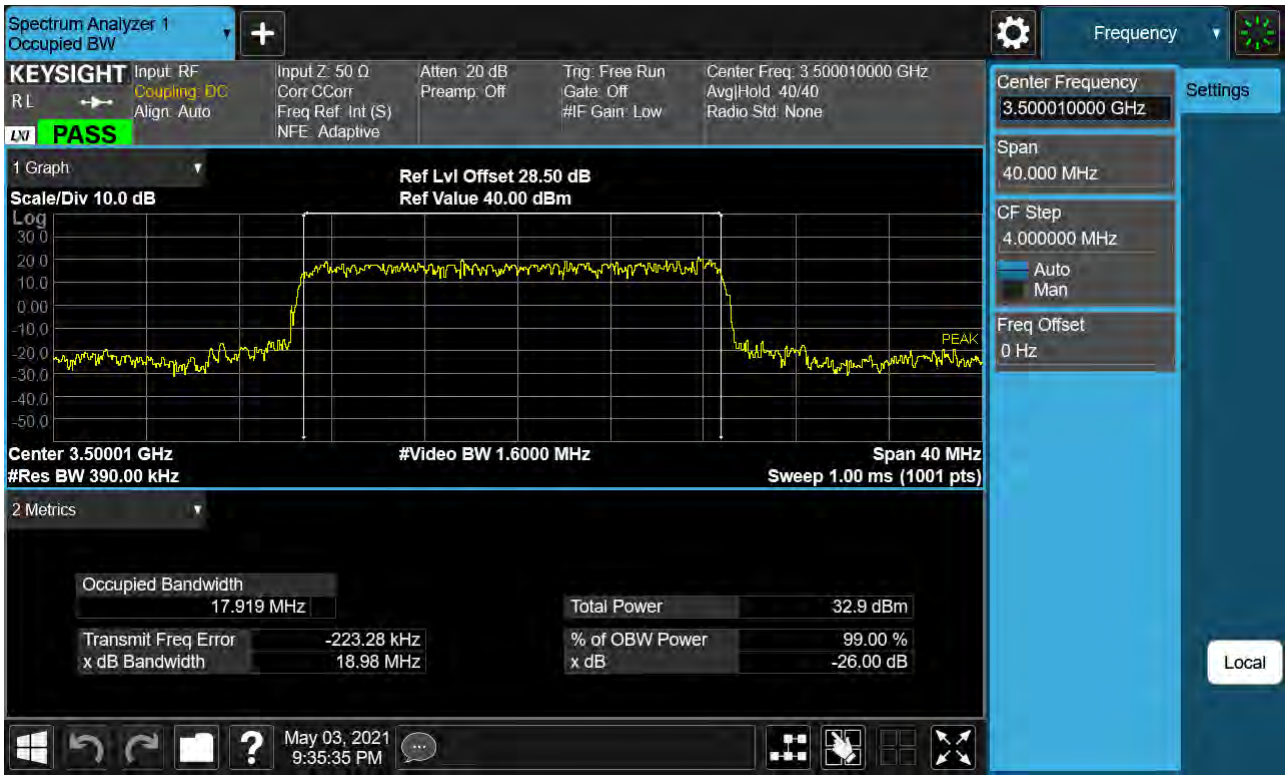
▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

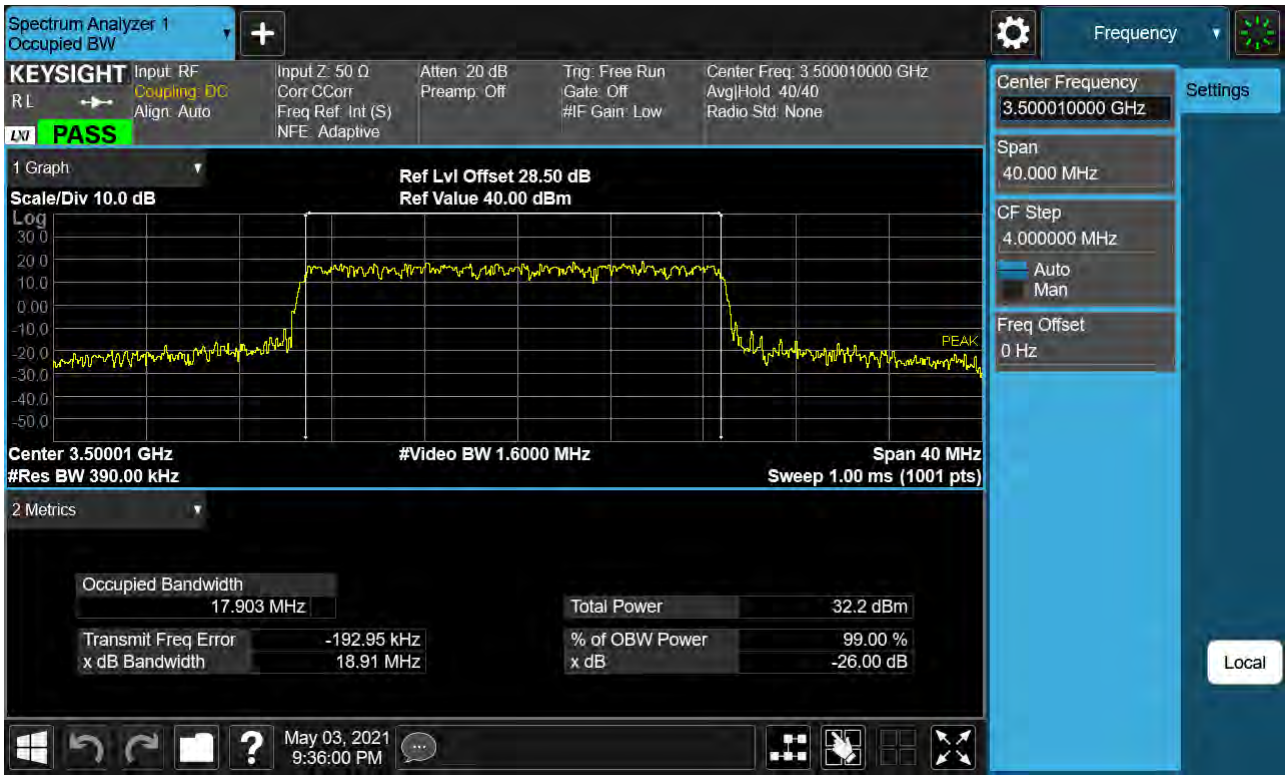
Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3500.010	100%	+20(Ref)	3500 010 003	0.0	0.000 000	0.000
	100%	-30	3500 010 009	5.2	0.000 000	0.001
	100%	-20	3500 010 009	5.5	0.000 000	0.002
	100%	-10	3500 010 008	4.2	0.000 000	0.001
	100%	0	3500 010 010	7.0	0.000 000	0.002
	100%	+10	3500 010 006	3.1	0.000 000	0.001
	100%	+30	3500 010 009	5.4	0.000 000	0.002
	100%	+40	3500 010 012	8.4	0.000 000	0.002
	100%	+50	3500 010 020	16.9	0.000 000	0.005
	Batt. Endpoint	+20	3500 010 017	14.0	0.000 000	0.004

9. TEST PLOTS

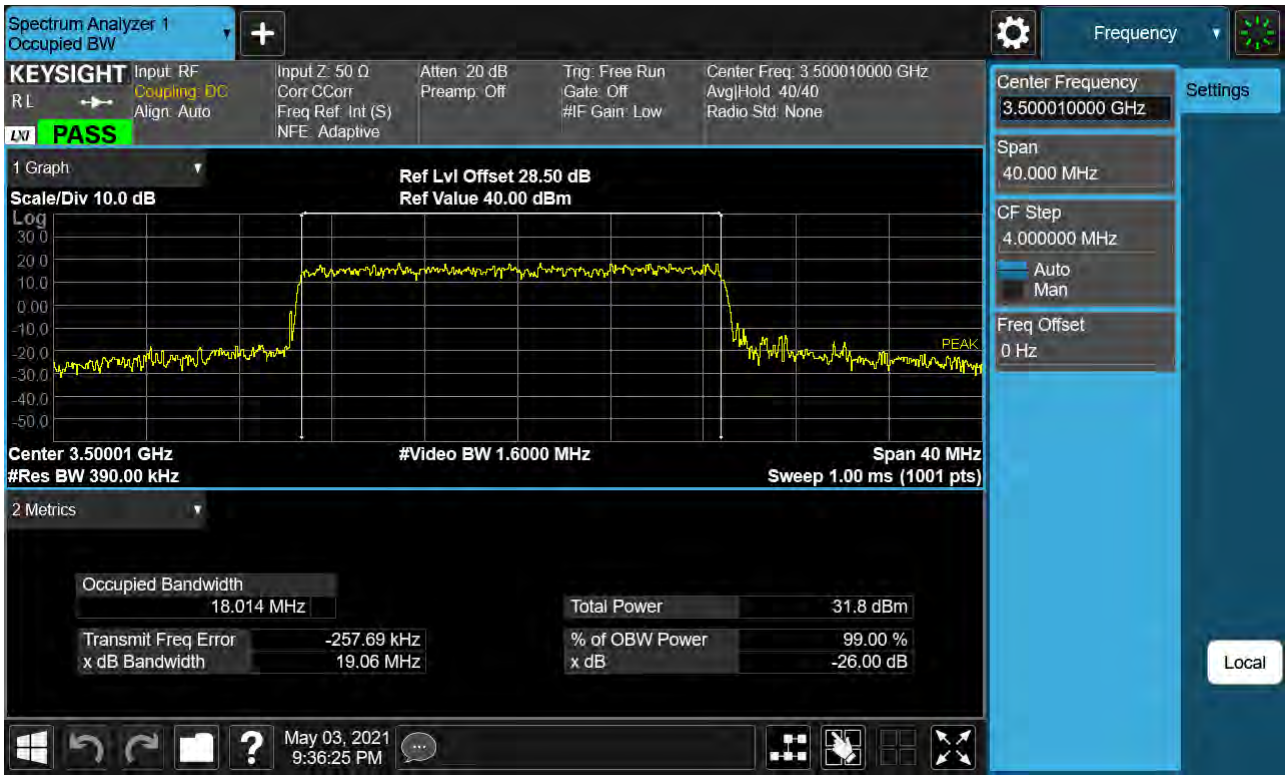
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.633334 BPSK)



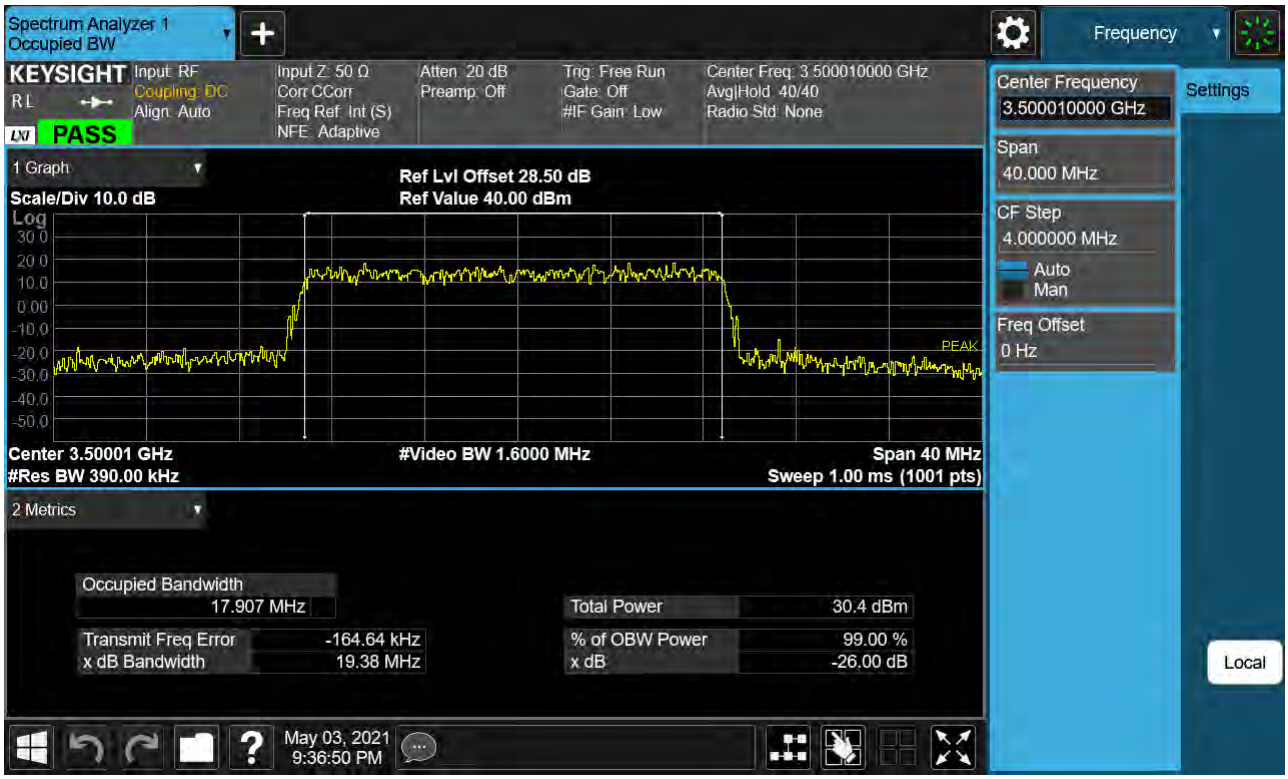
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.633334 QPSK)



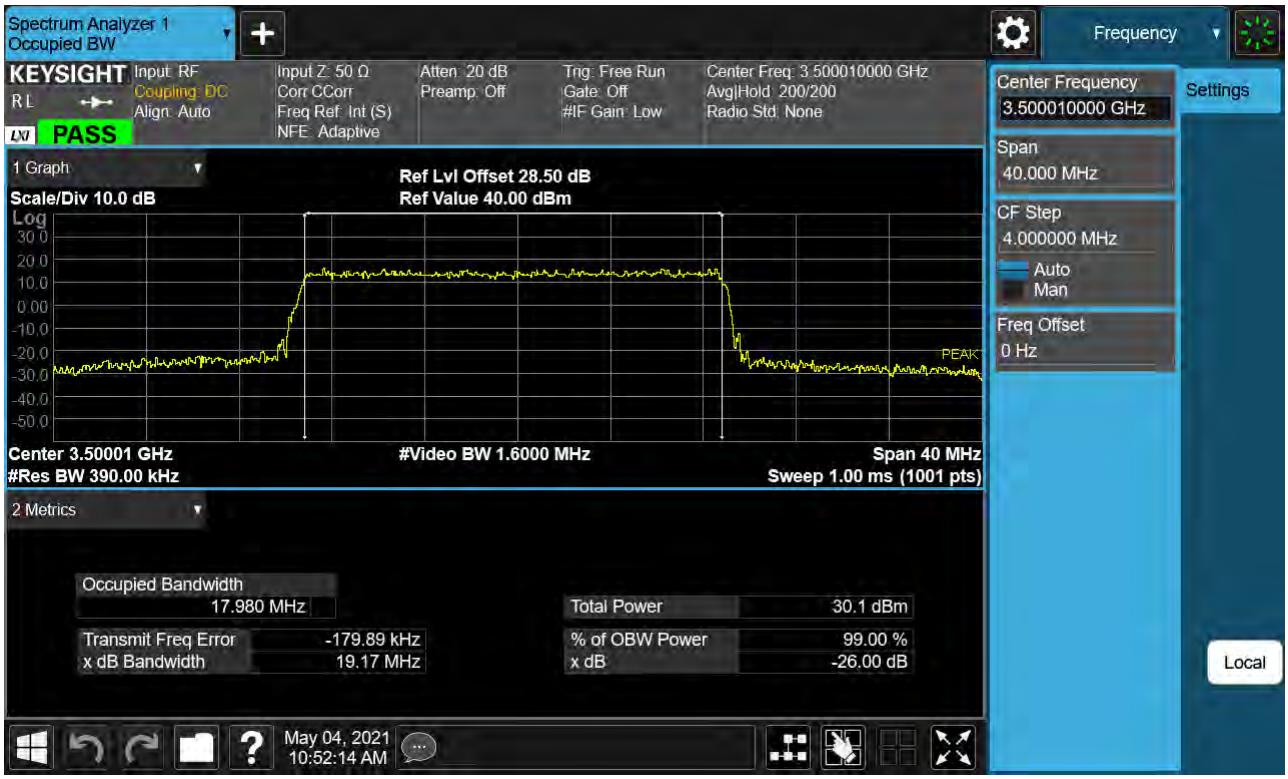
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.633334 16QAM)



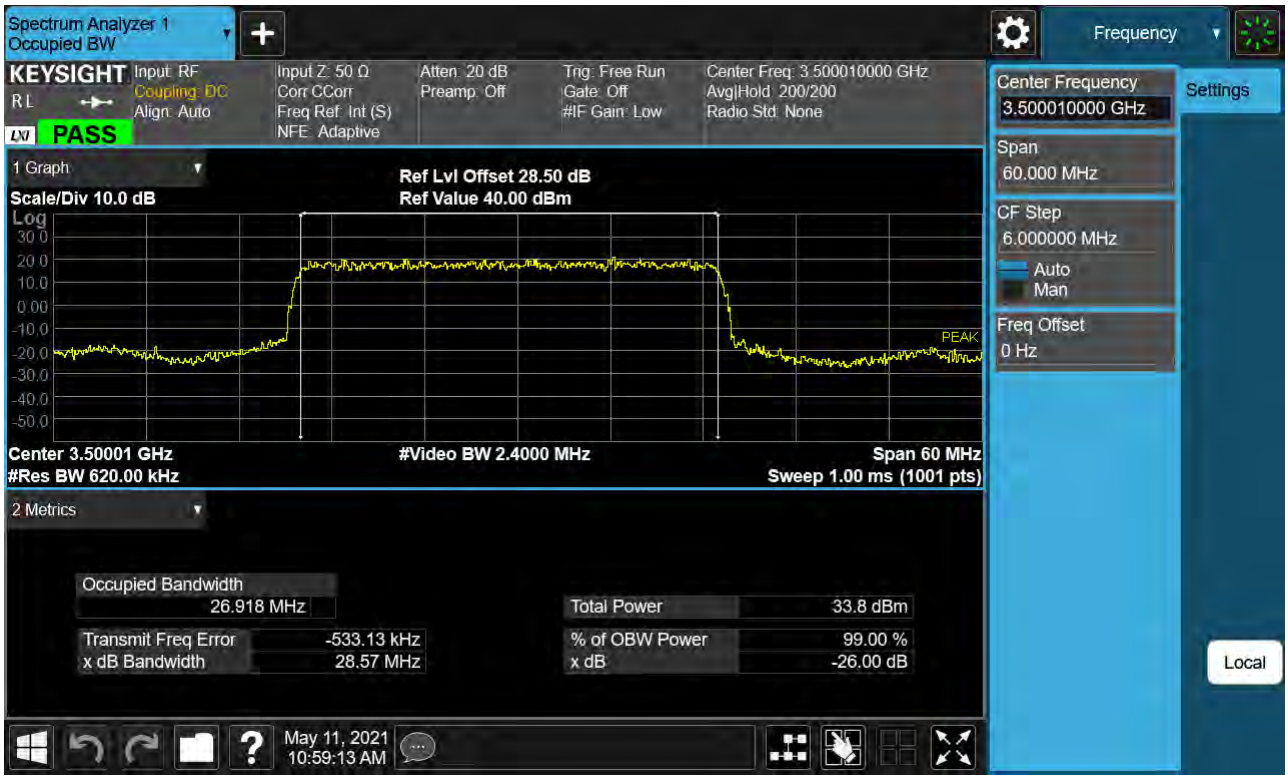
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.633334 64QAM)



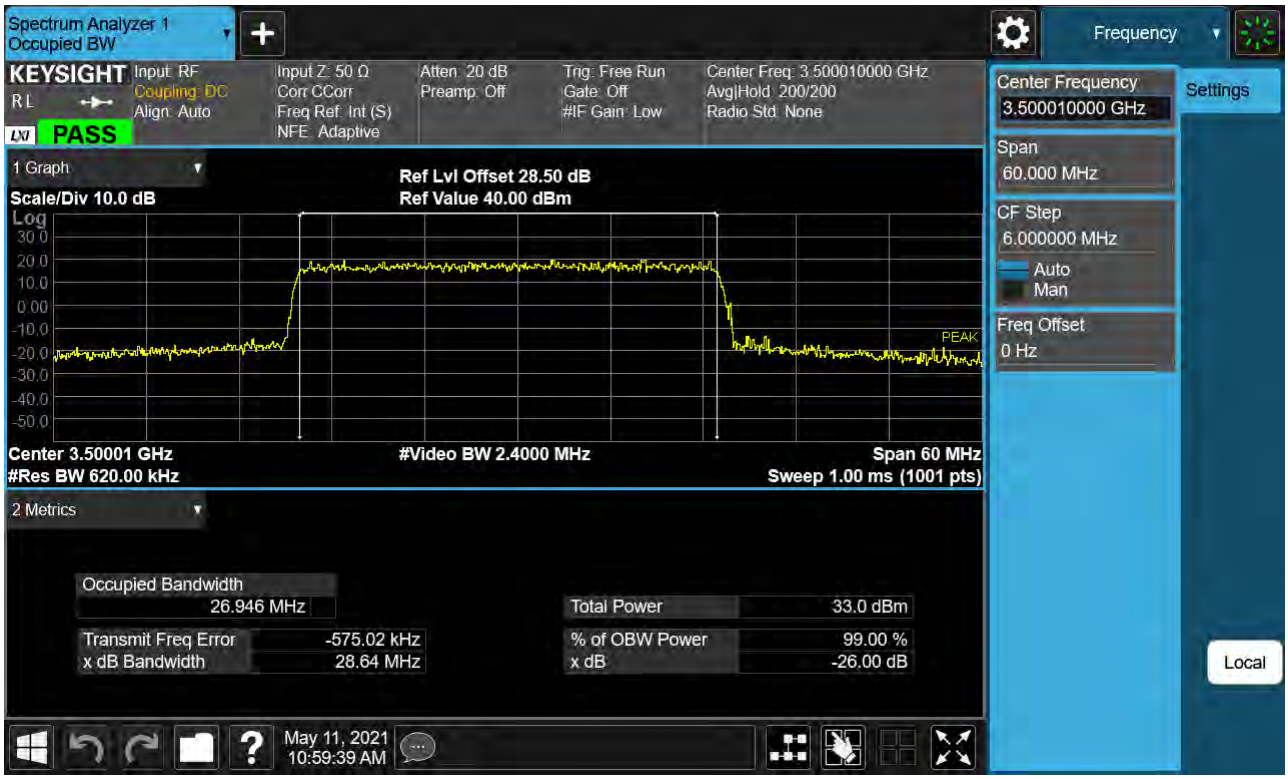
Sub6 n77. Occupied Bandwidth Plot (20M BW Ch.633334 256QAM)



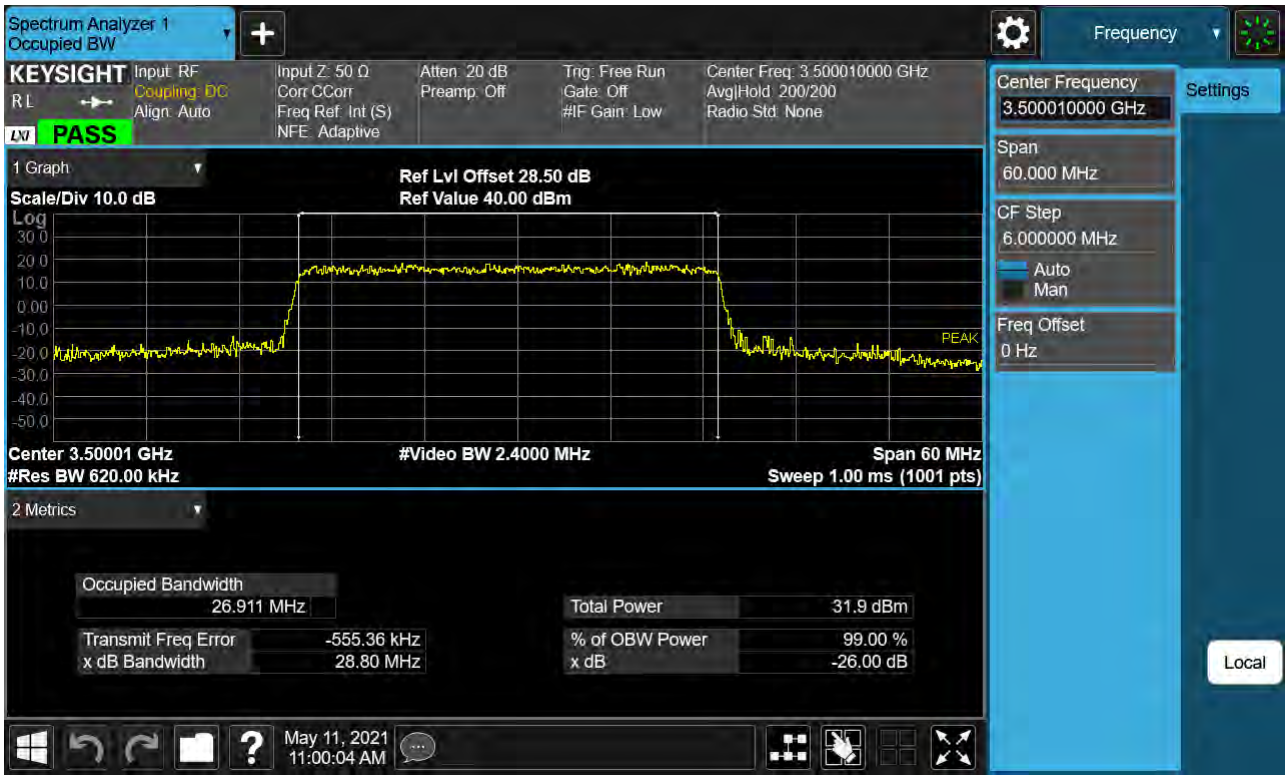
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.633334 BPSK)



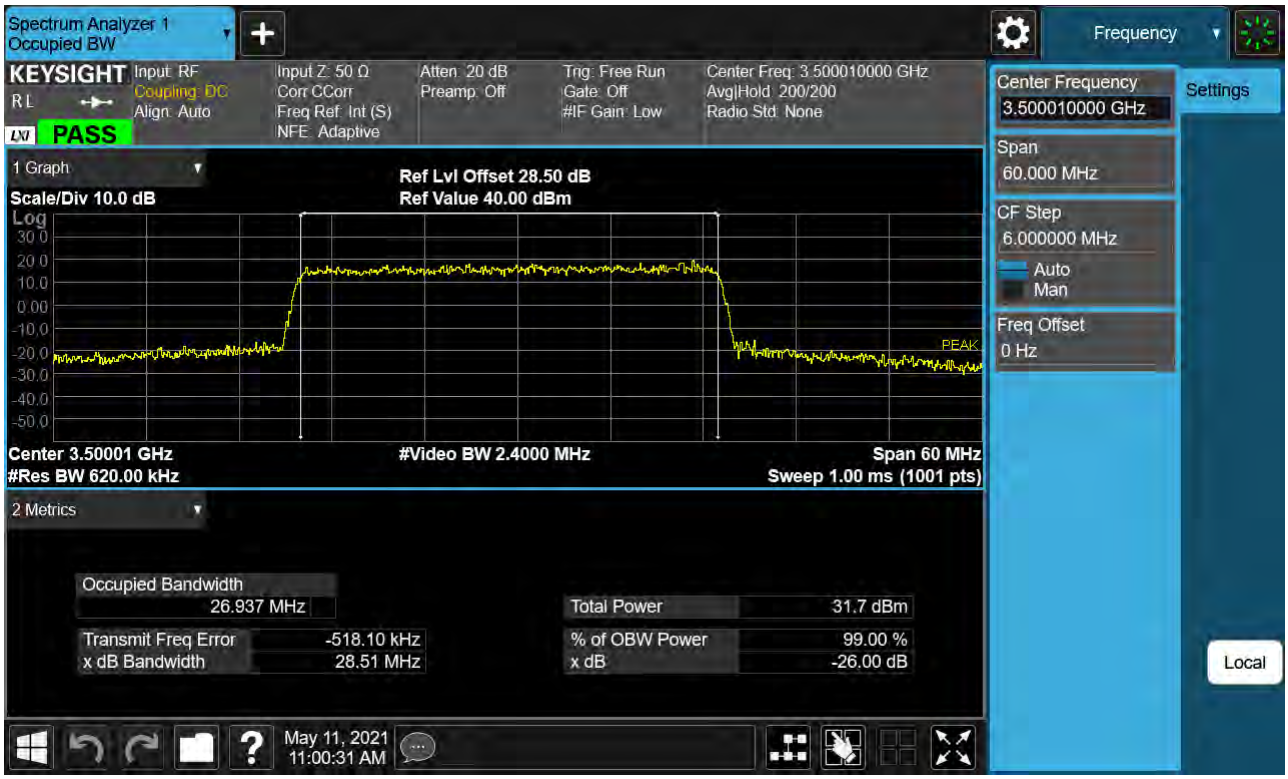
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.633334 QPSK)



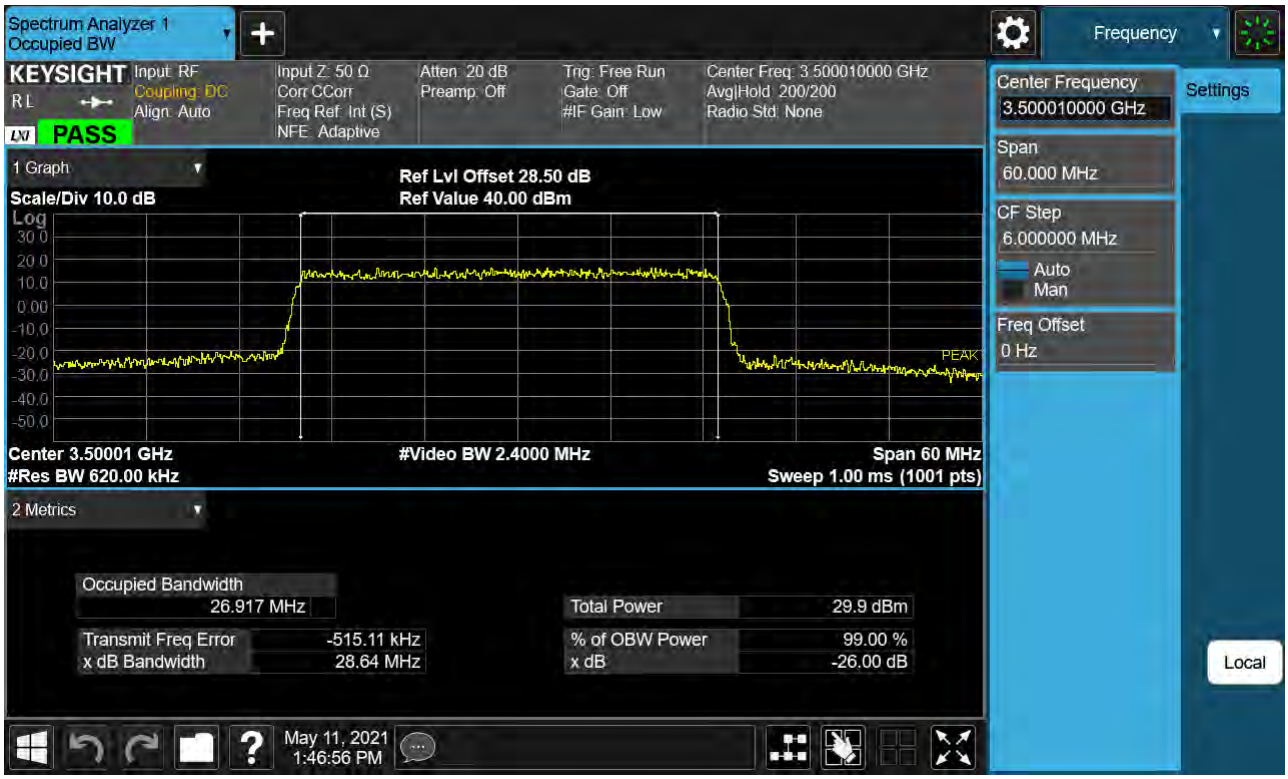
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.633334 16QAM)



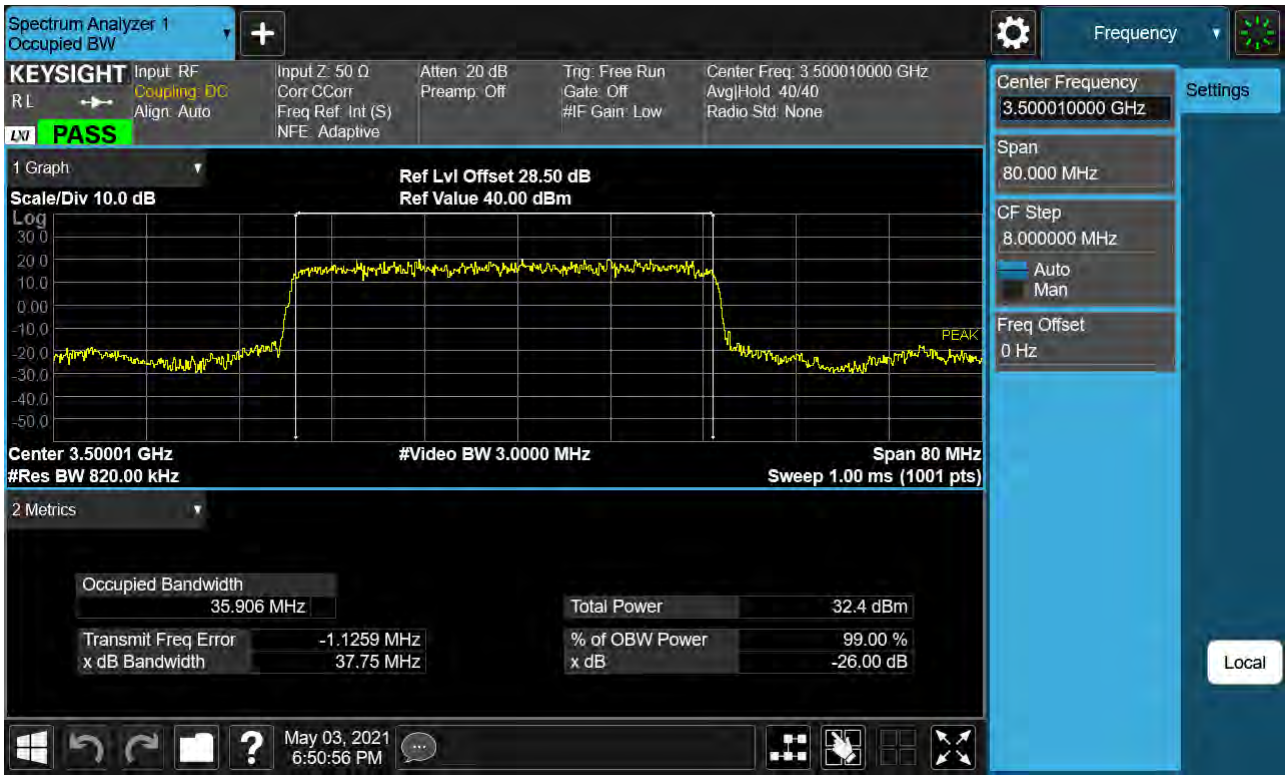
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.633334 64QAM)



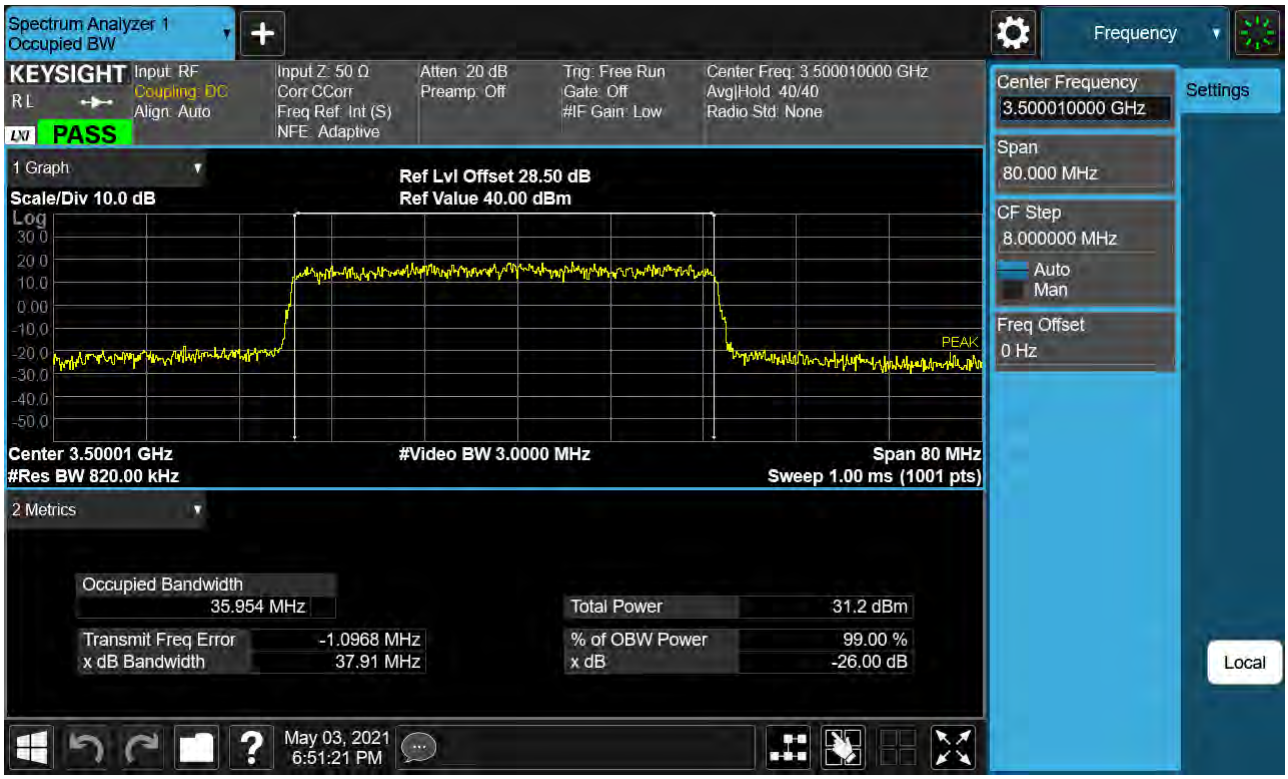
Sub6 n77. Occupied Bandwidth Plot (30M BW Ch.633334 256QAM)



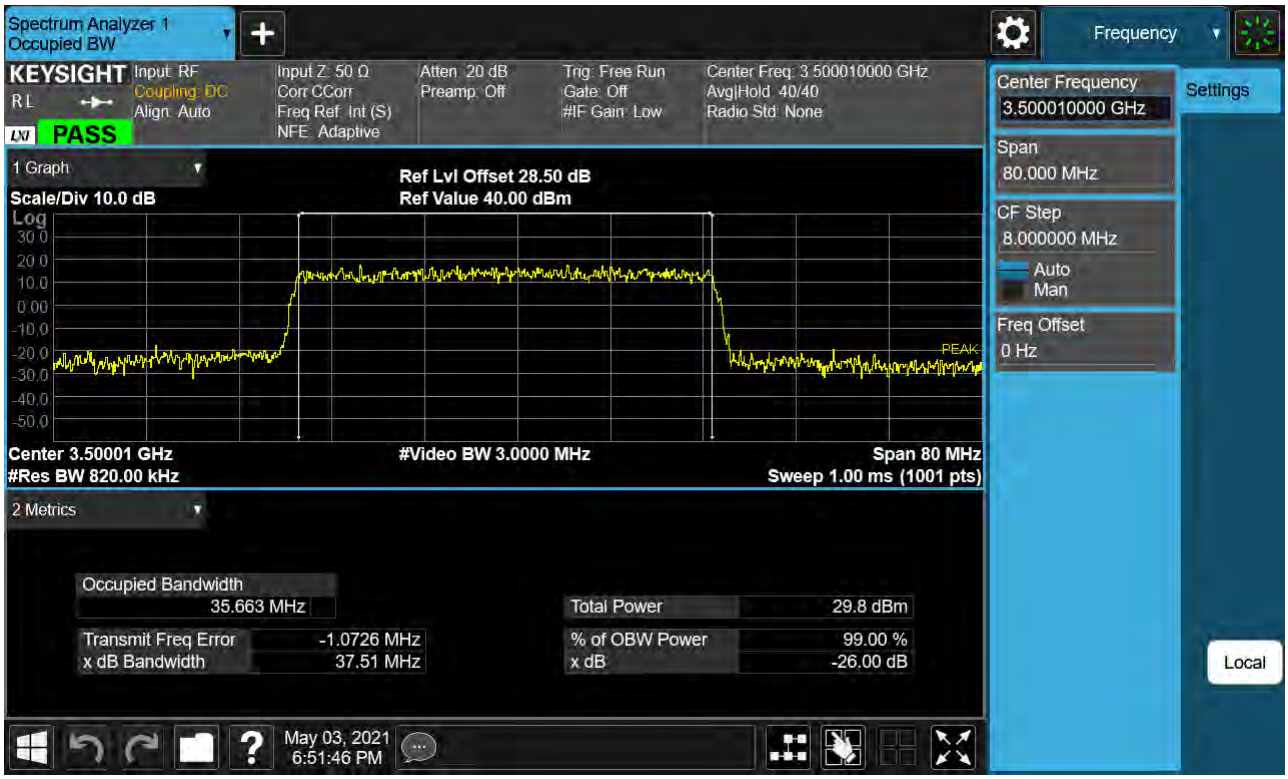
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.633334 BPSK)



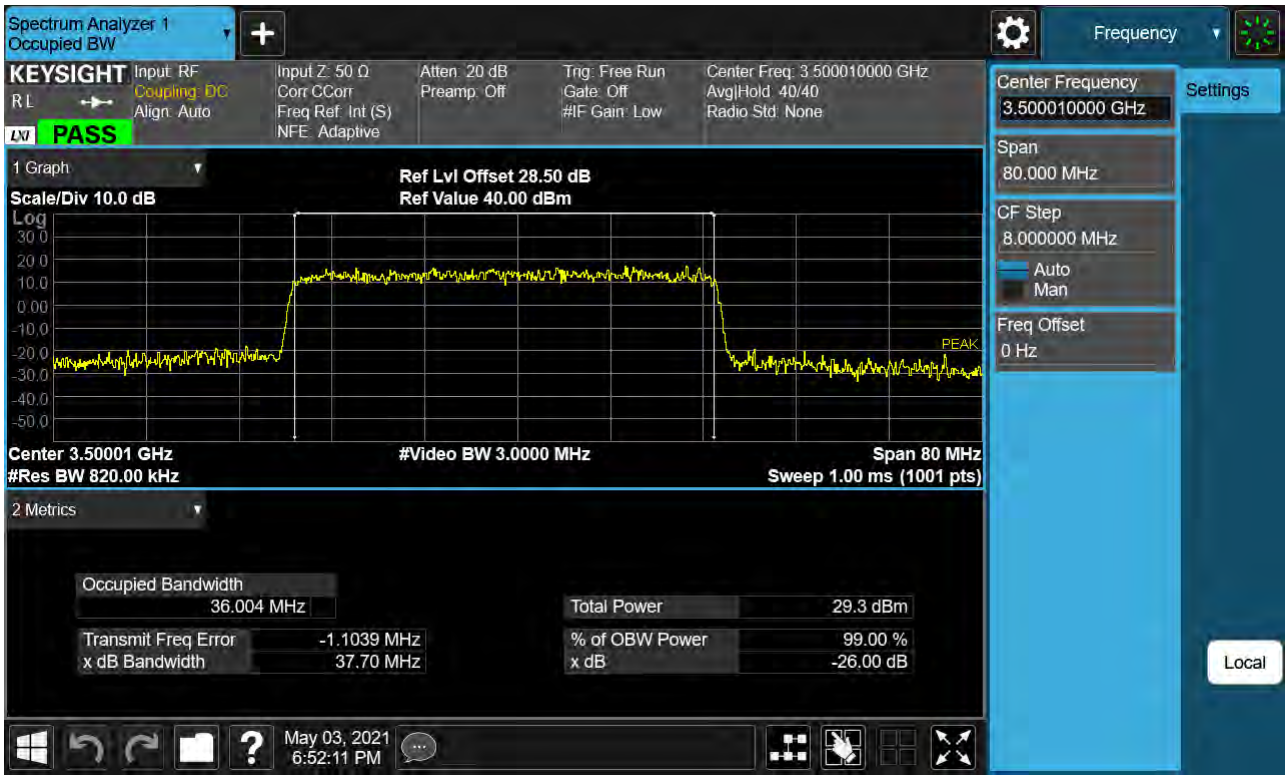
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.633334 QPSK)



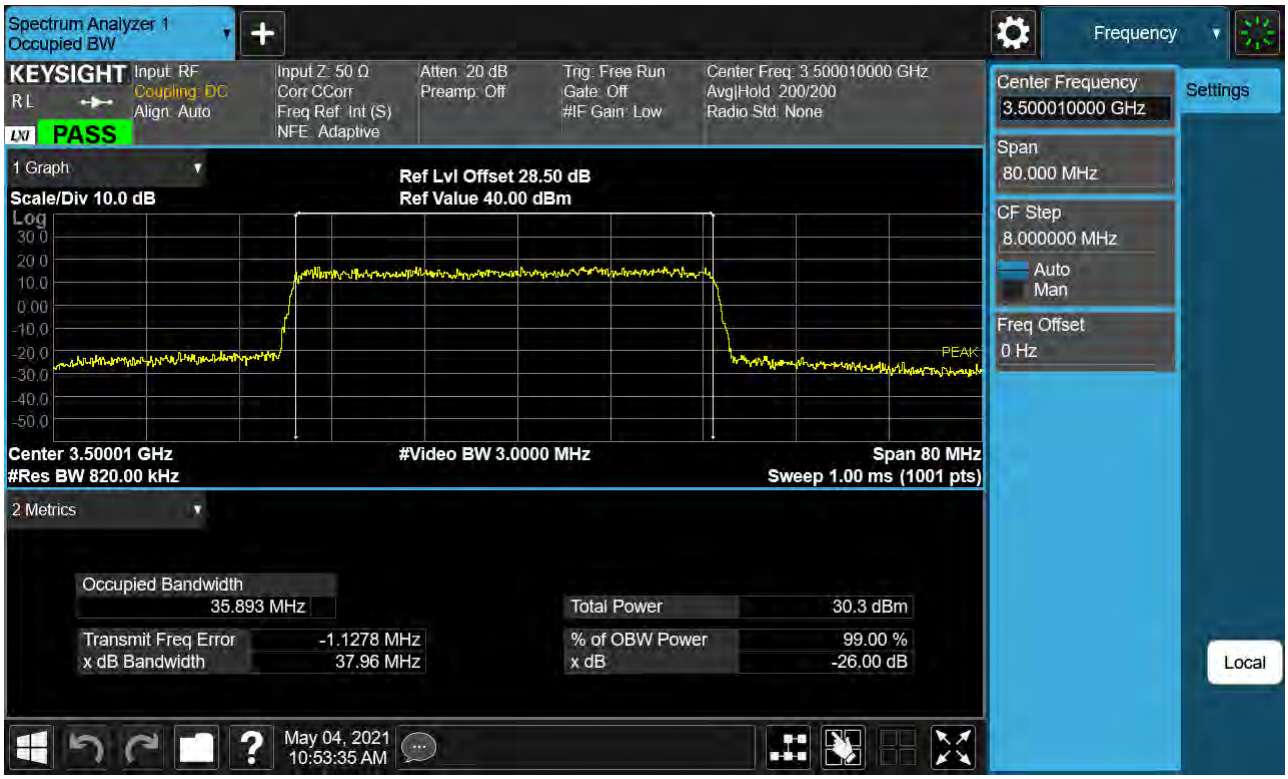
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.633334 16QAM)



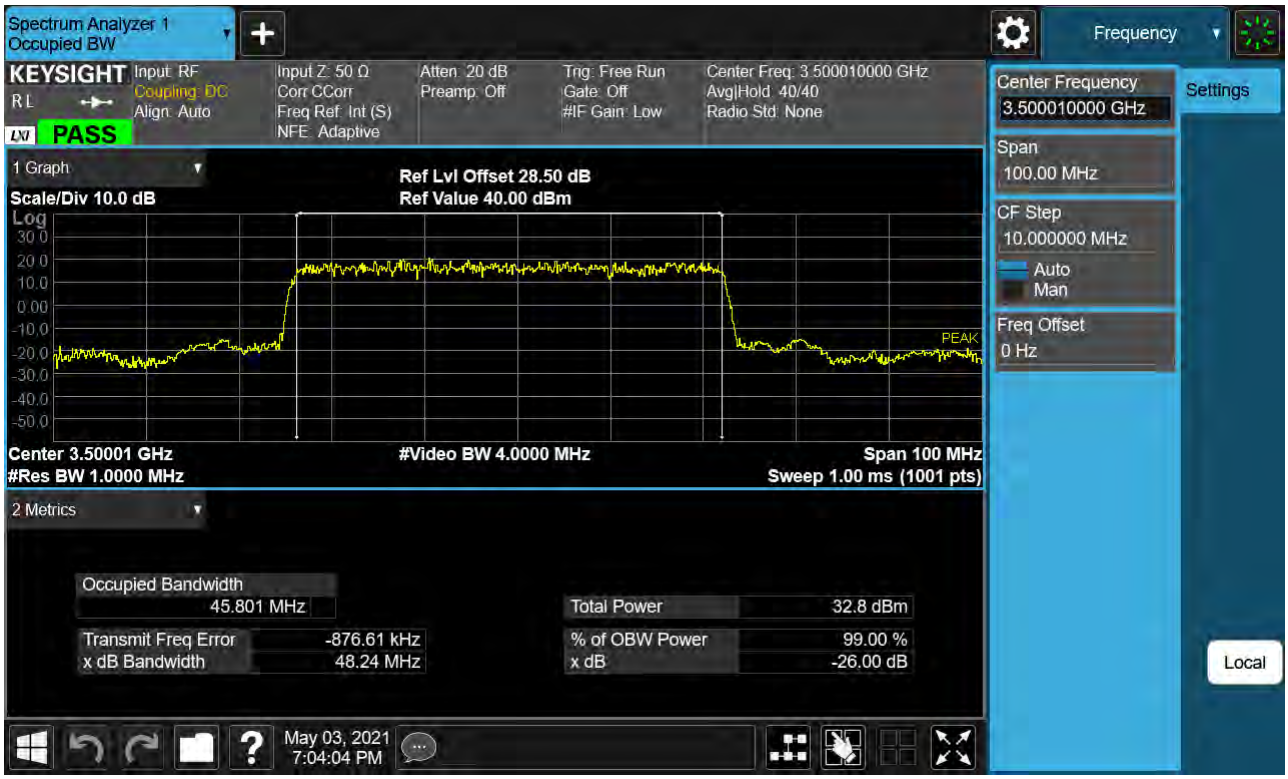
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.633334 64QAM)



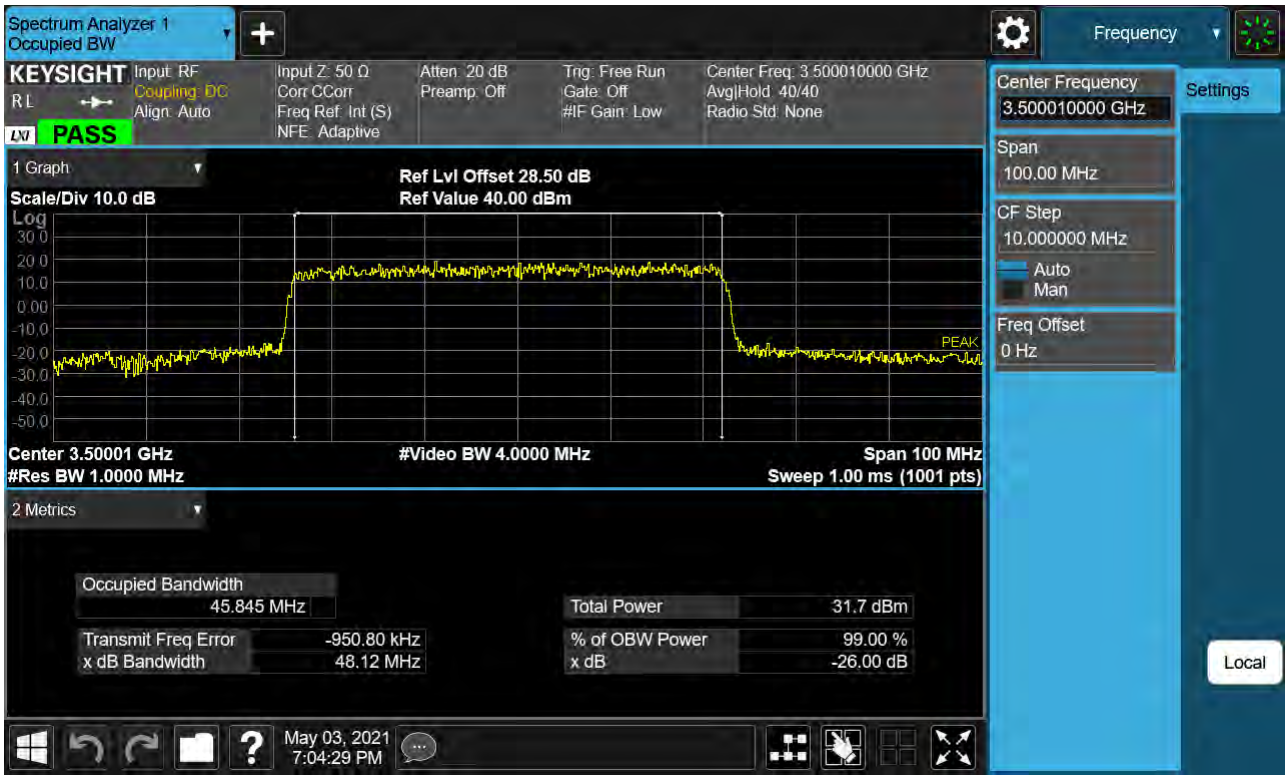
Sub6 n77. Occupied Bandwidth Plot (40M BW Ch.633334 256QAM)



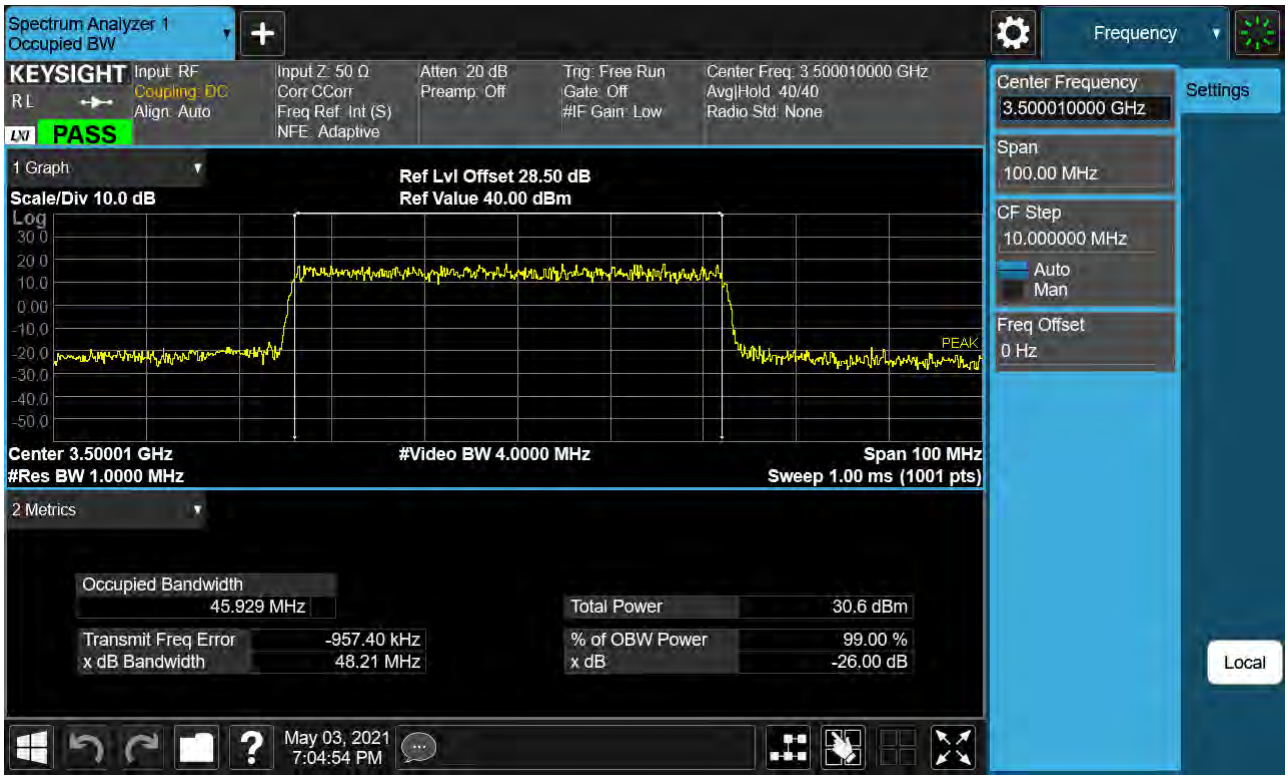
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.633334 BPSK)



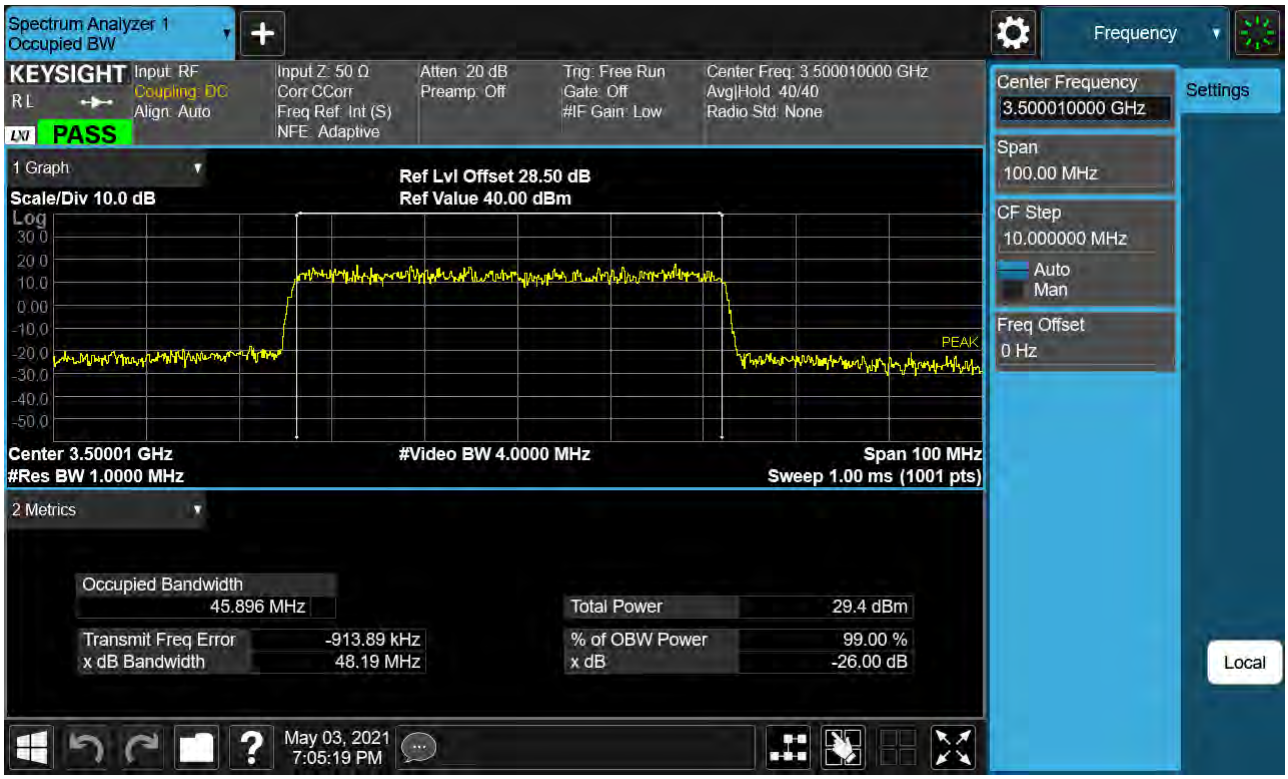
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.633334 QPSK)



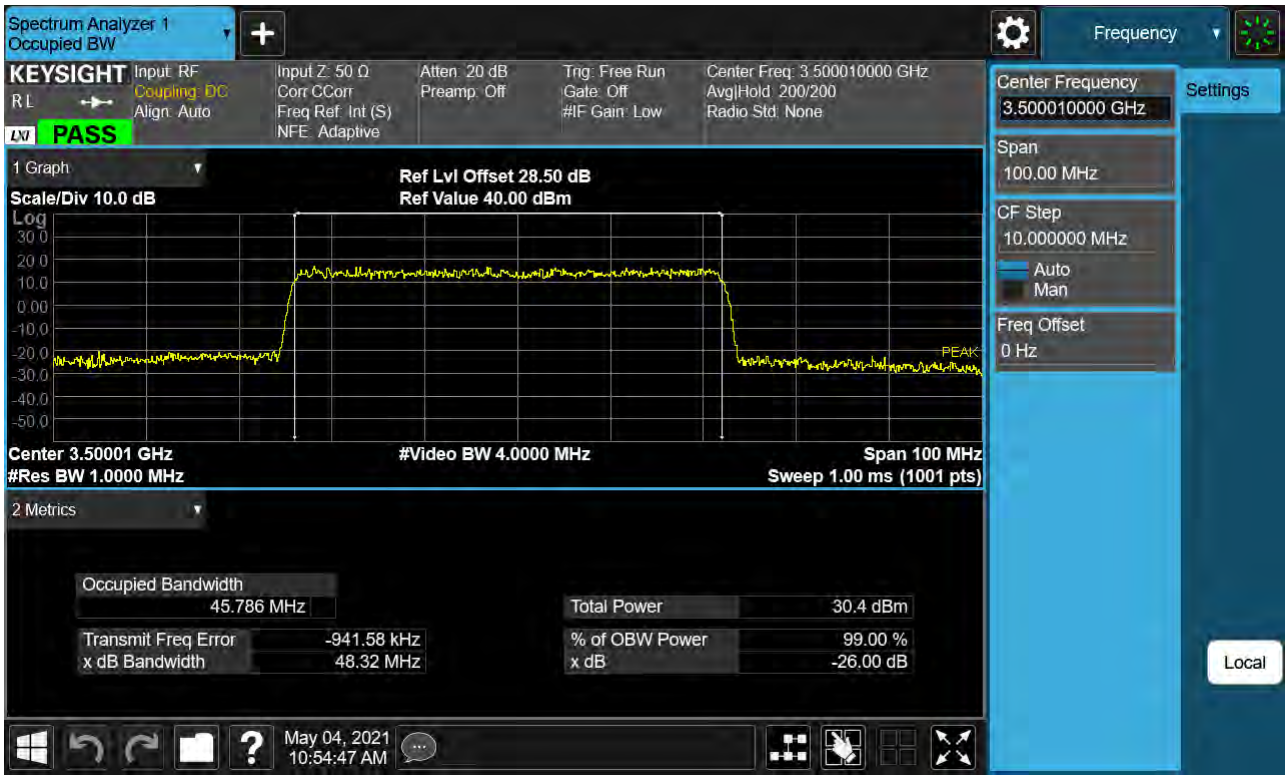
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.633334 16QAM)



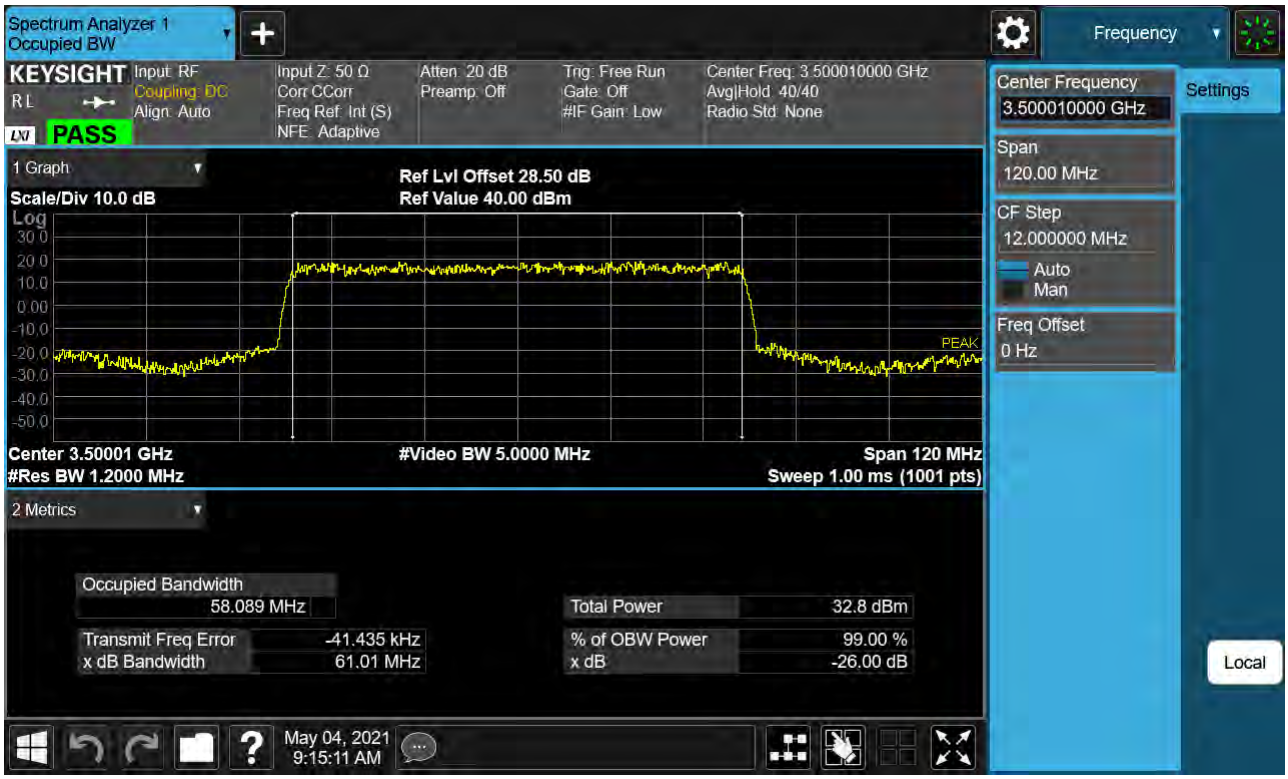
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.633334 64QAM)



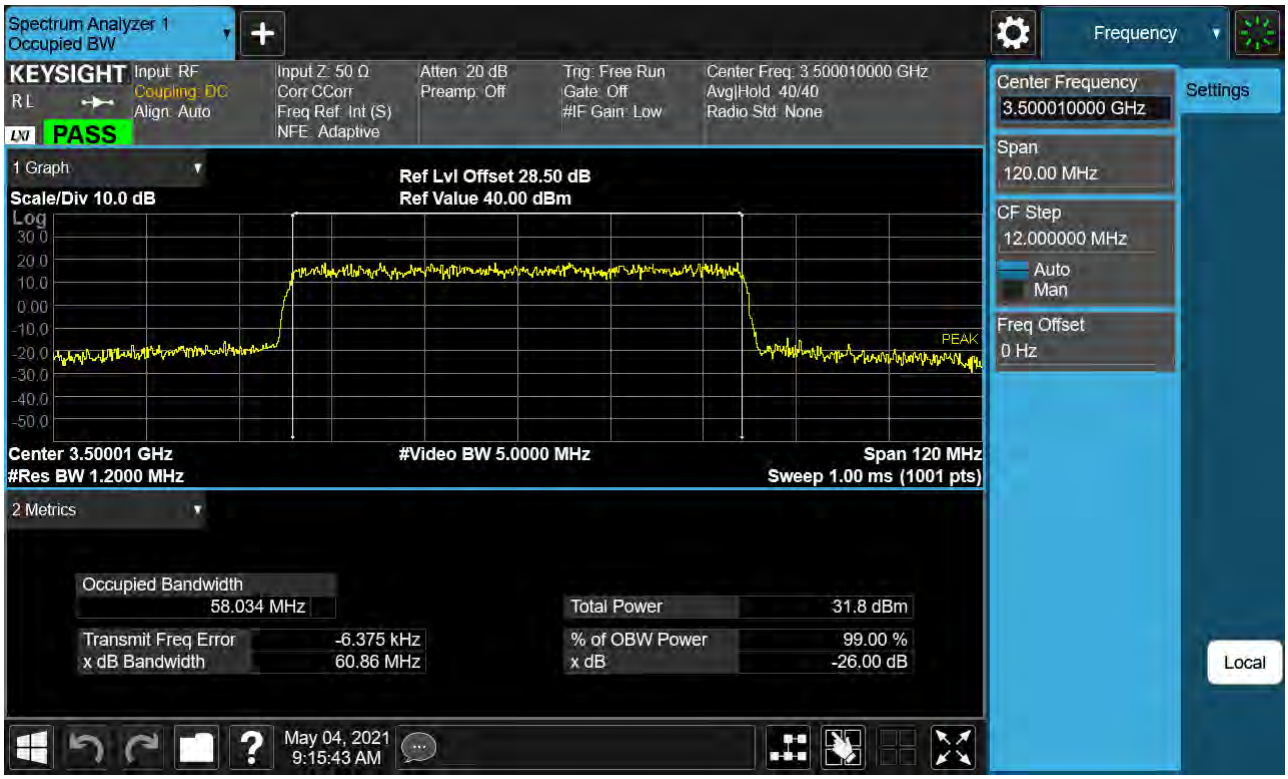
Sub6 n77. Occupied Bandwidth Plot (50M BW Ch.633334 256QAM)



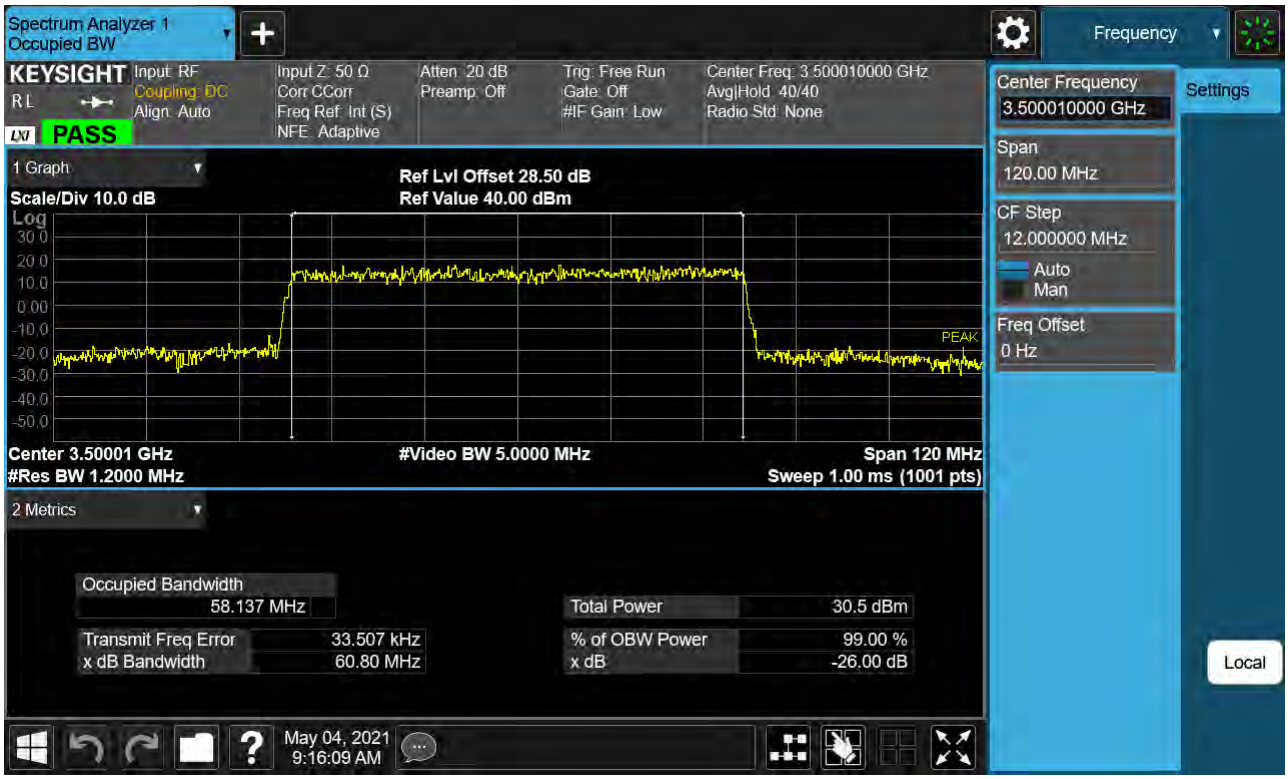
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.633334 BPSK)



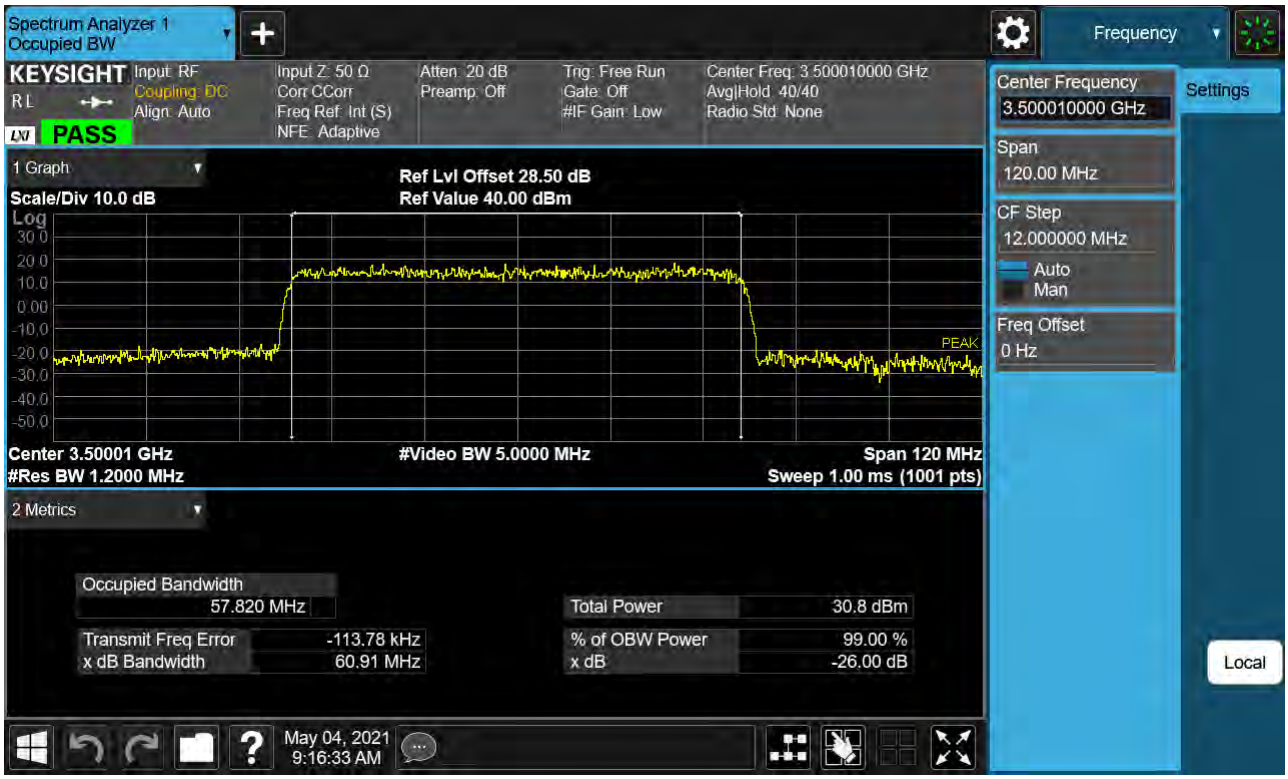
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.633334 QPSK)



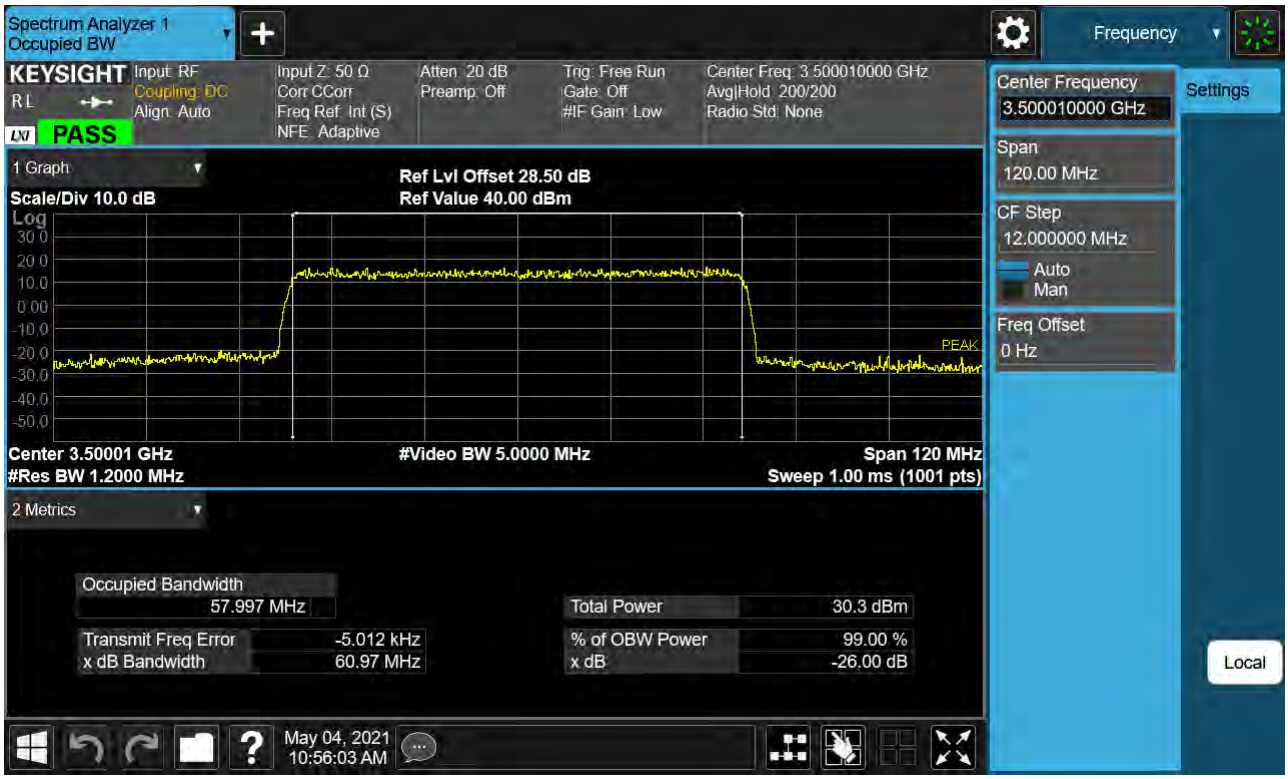
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.633334 16QAM)



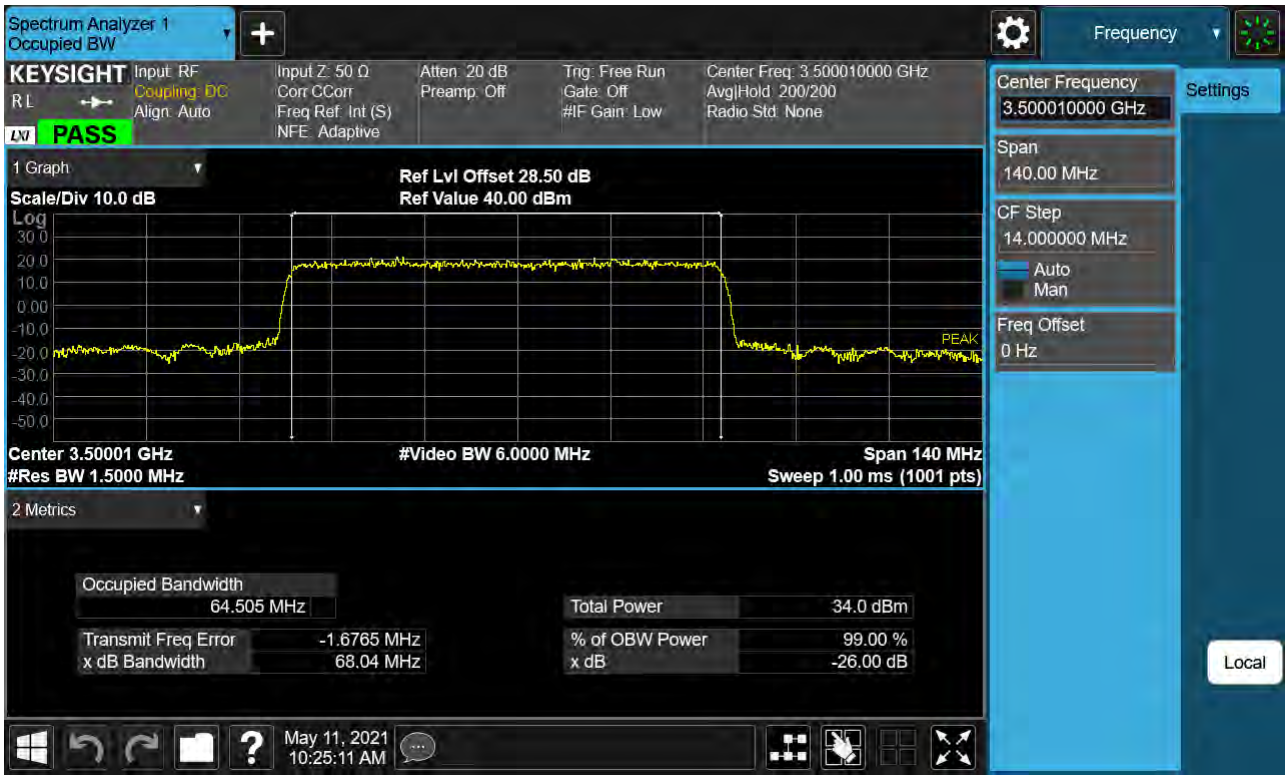
Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.633334 64QAM)



Sub6 n77. Occupied Bandwidth Plot (60M BW Ch.633334 256QAM)

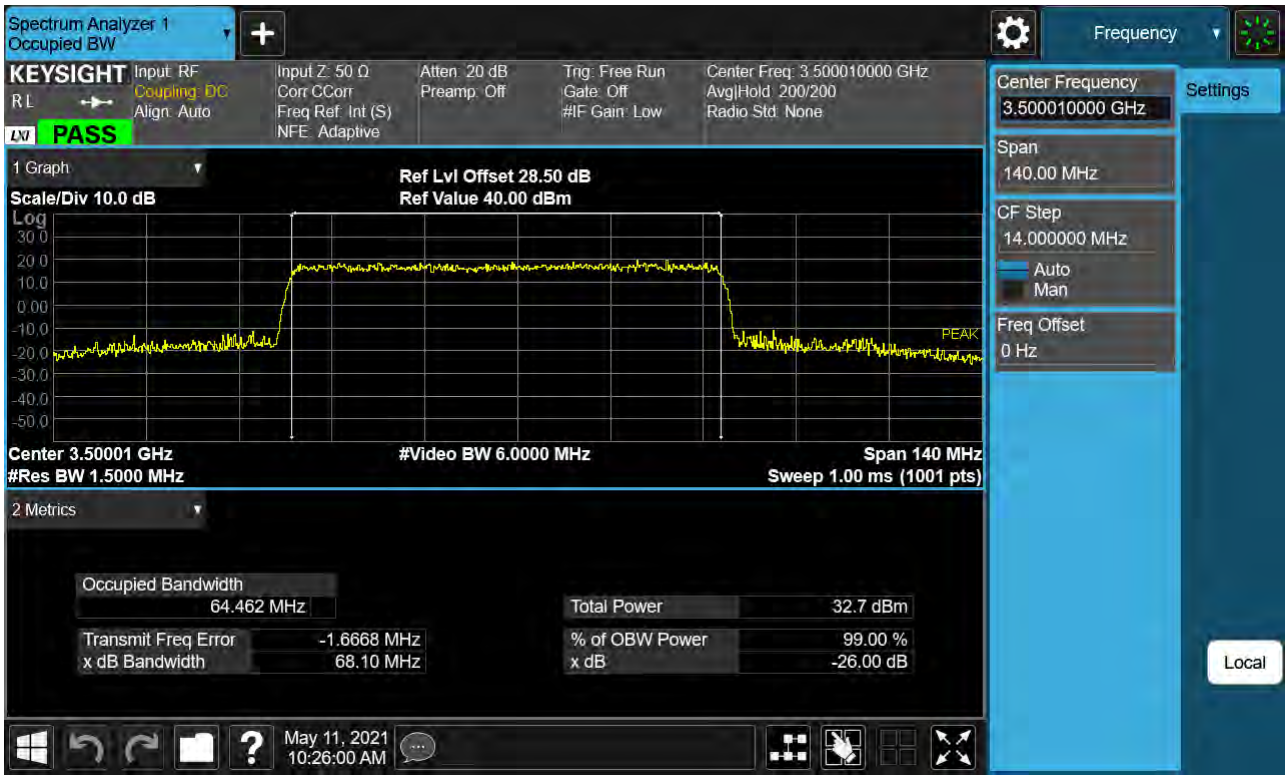


Sub6 n77. Occupied Bandwidth Plot (70M BW Ch.633334 BPSK)

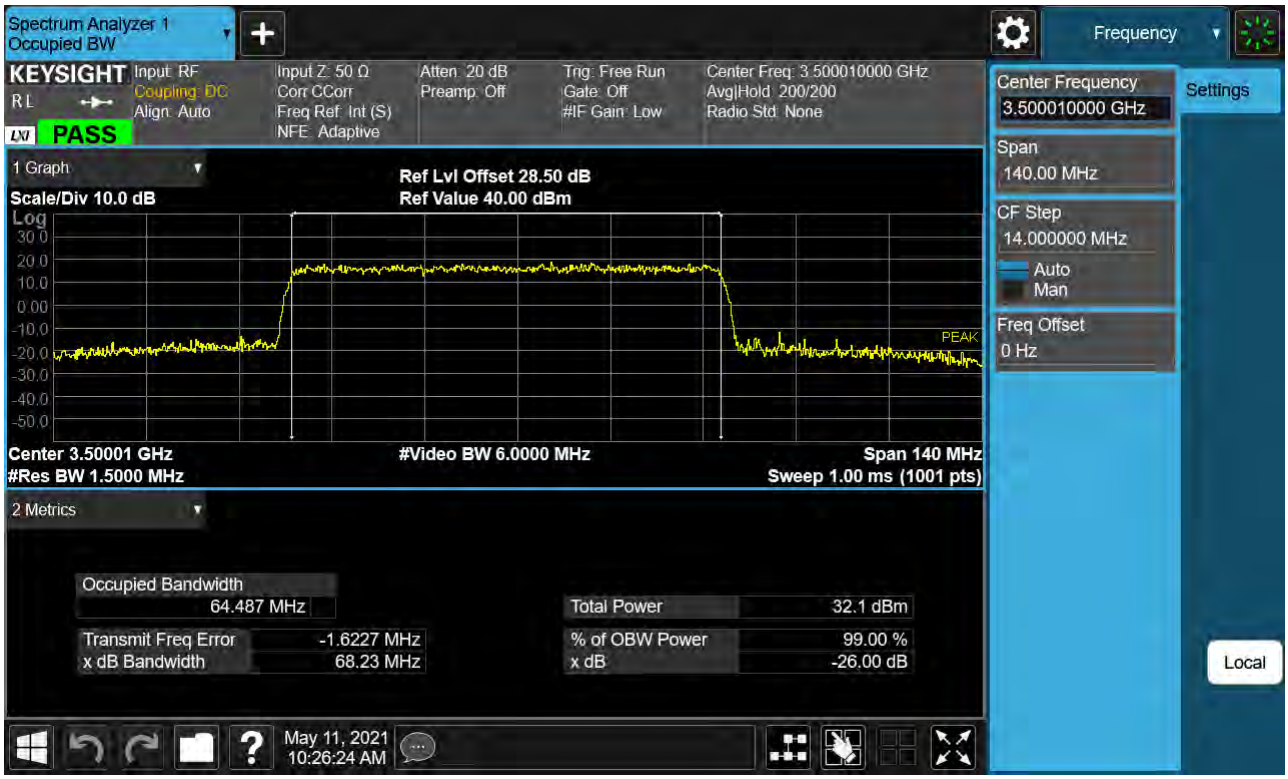


Sub6 n77. Occupied Bandwidth Plot (70M BW Ch.633334 QPSK)

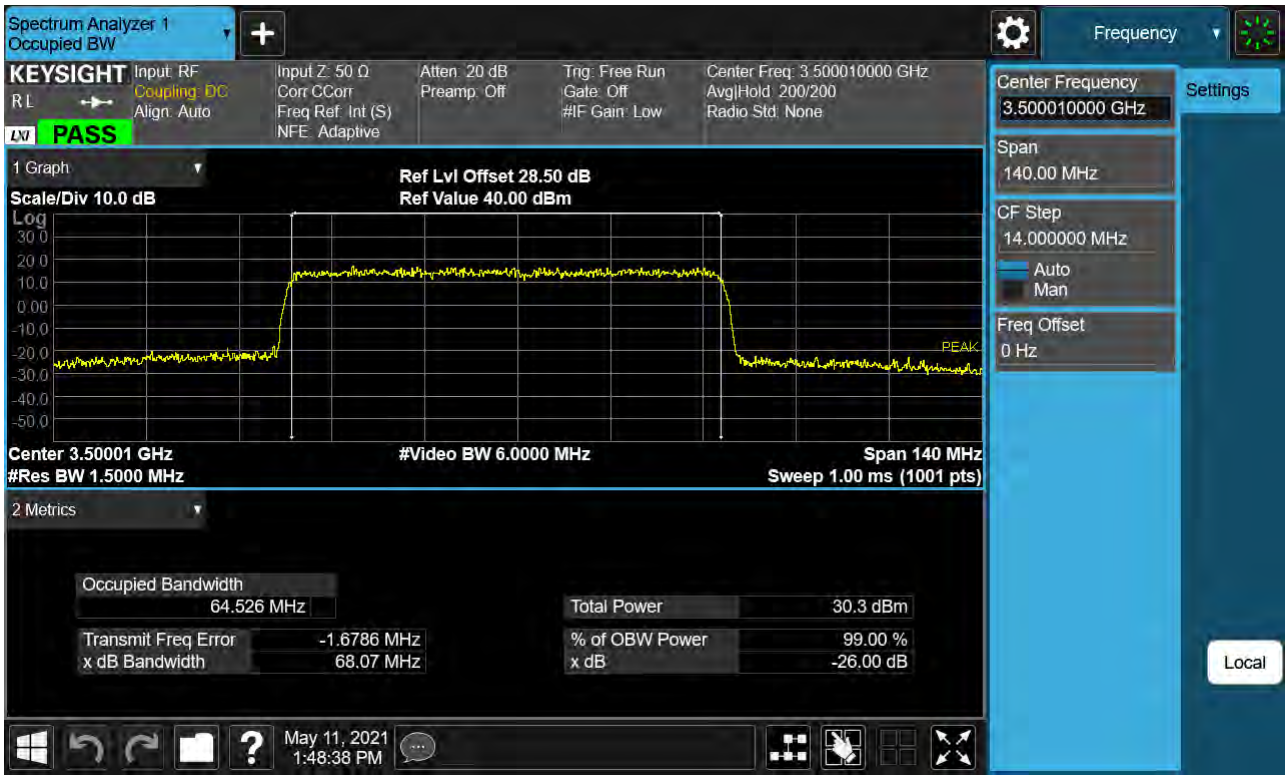
Sub6 n77. Occupied Bandwidth Plot (70M BW Ch.633334 16QAM)



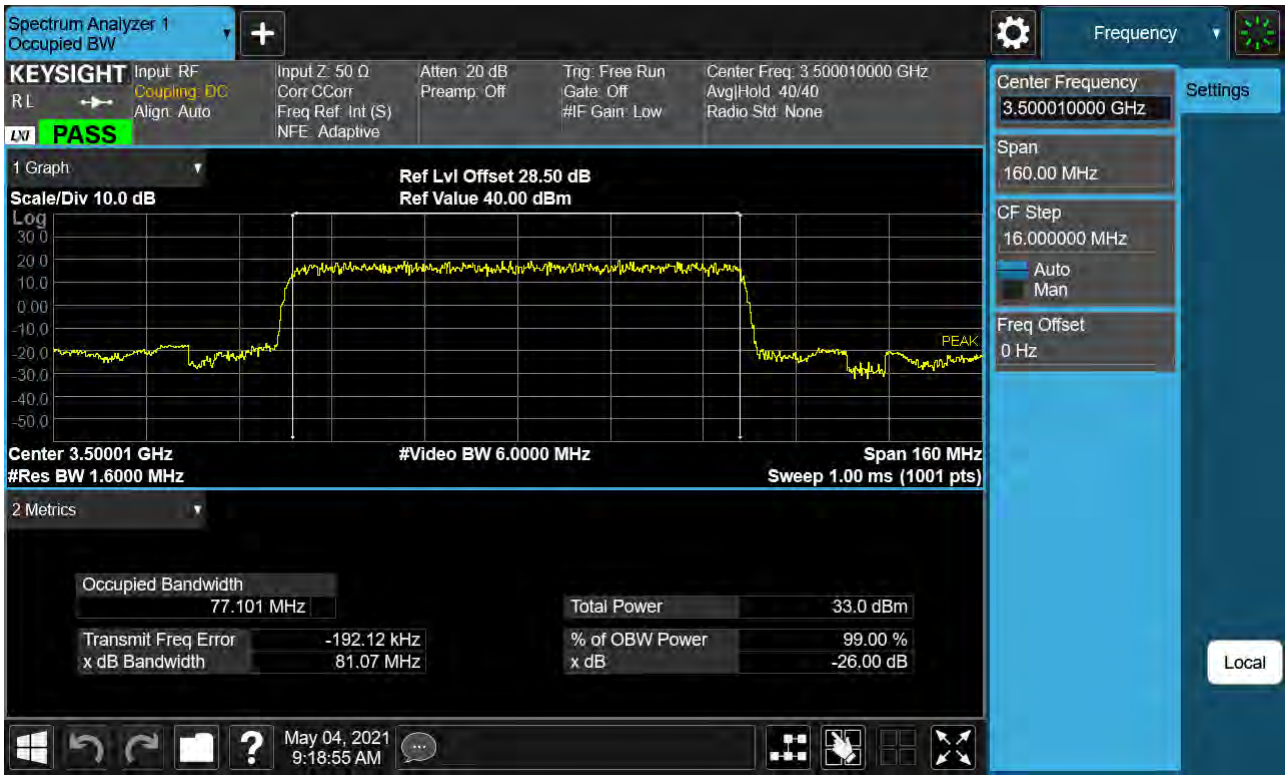
Sub6 n77. Occupied Bandwidth Plot (70M BW Ch.633334 64QAM)



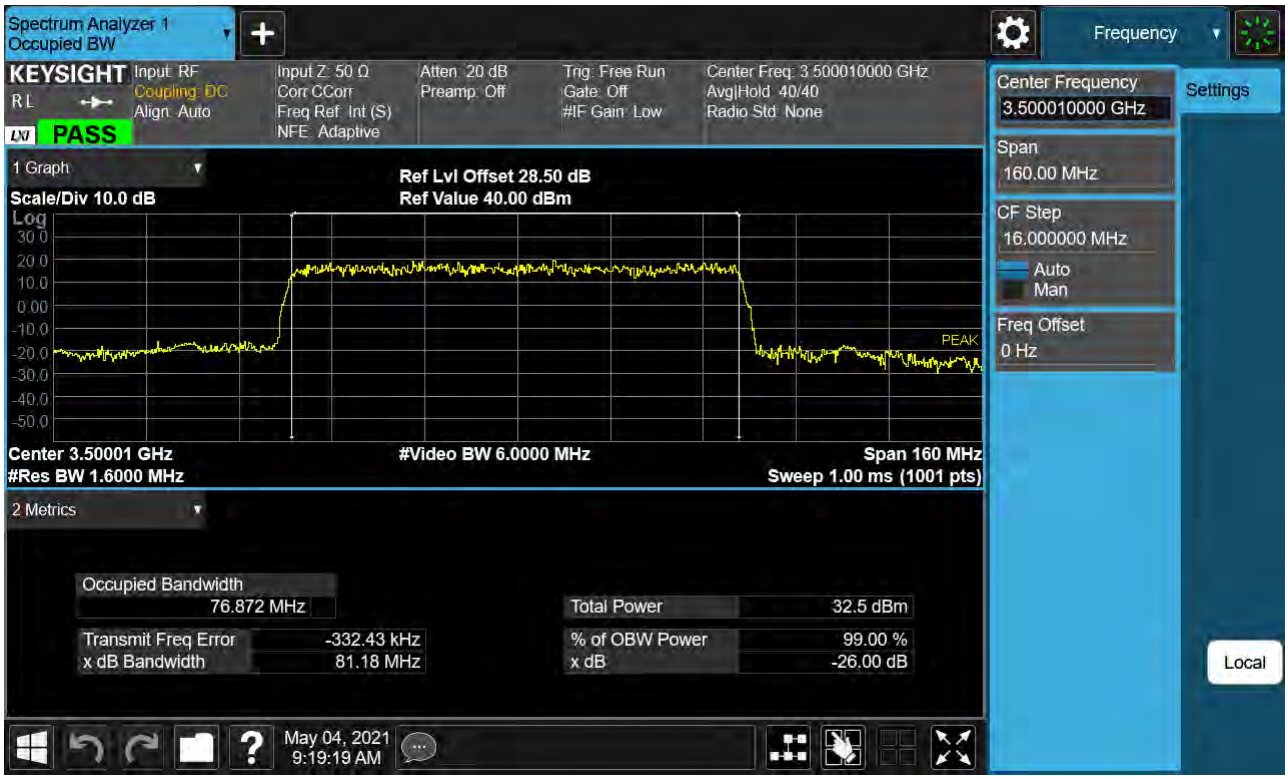
Sub6 n77. Occupied Bandwidth Plot (70M BW Ch.633334 256QAM)



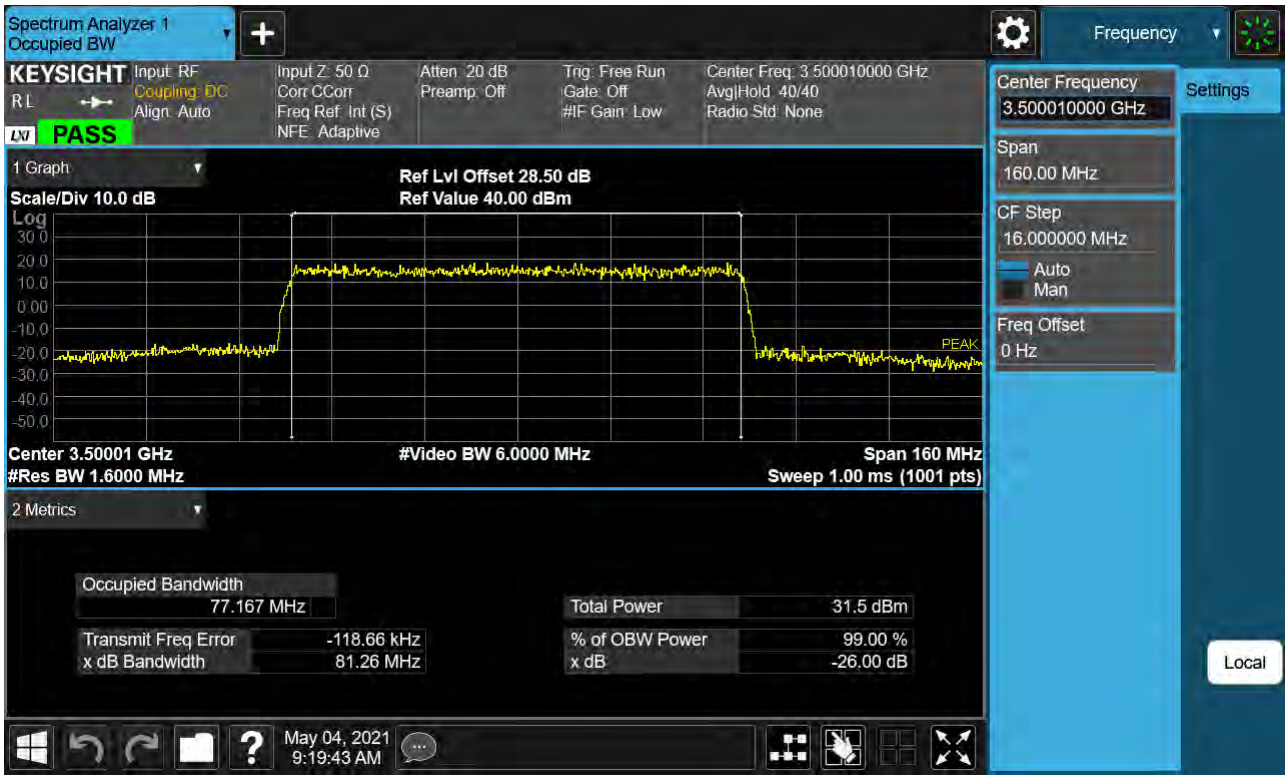
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.633334 BPSK)



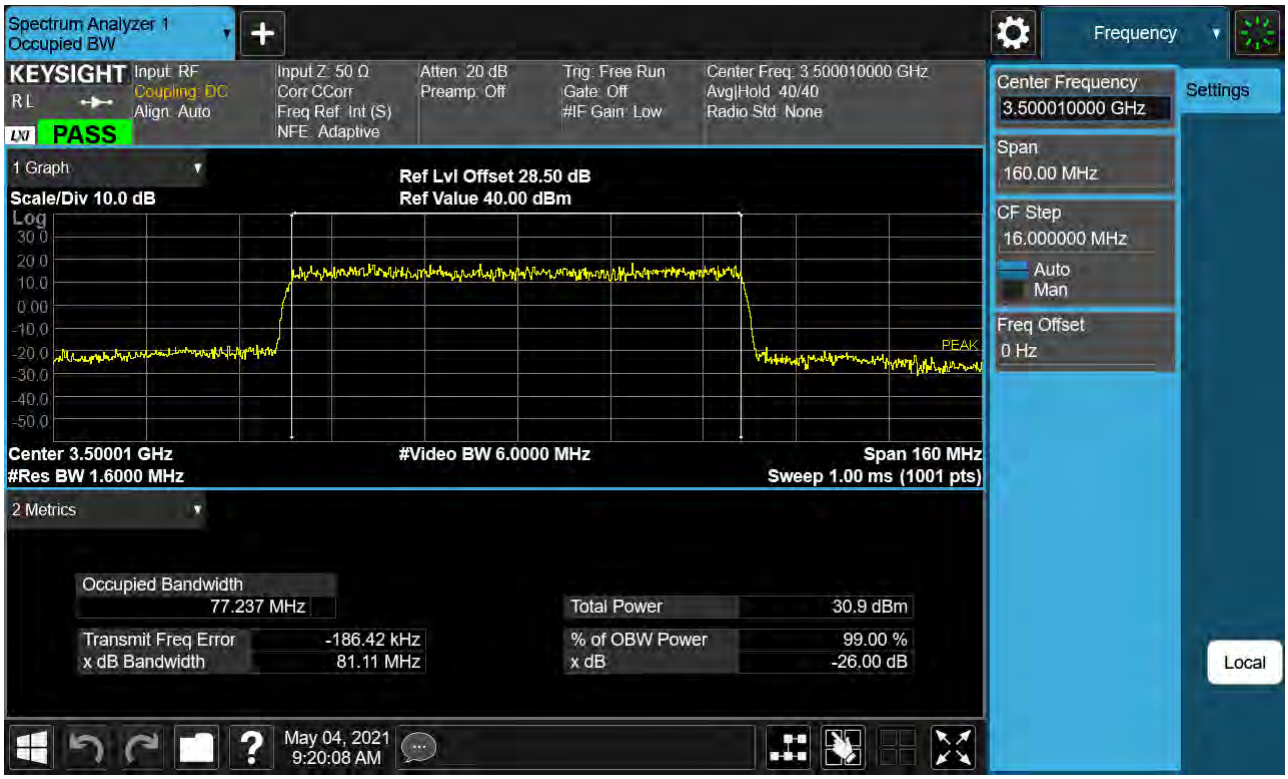
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.633334 QPSK)



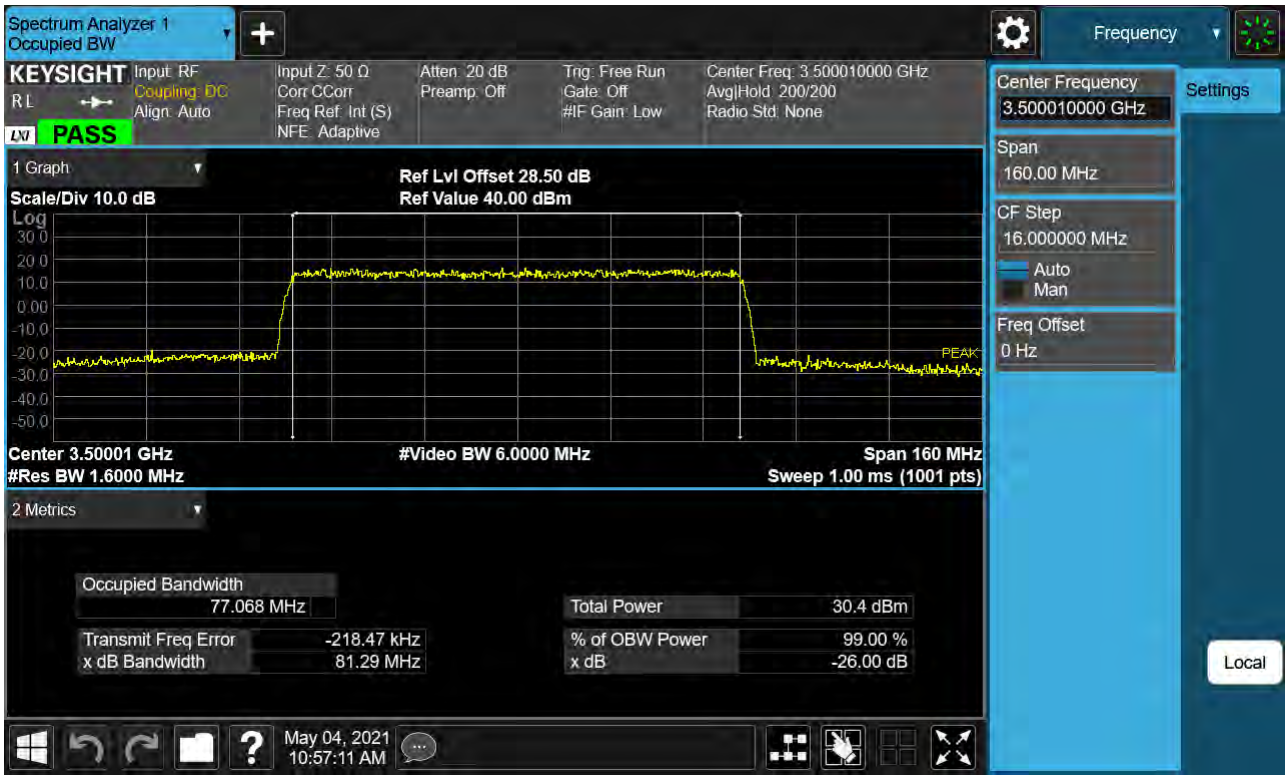
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.633334 16QAM)



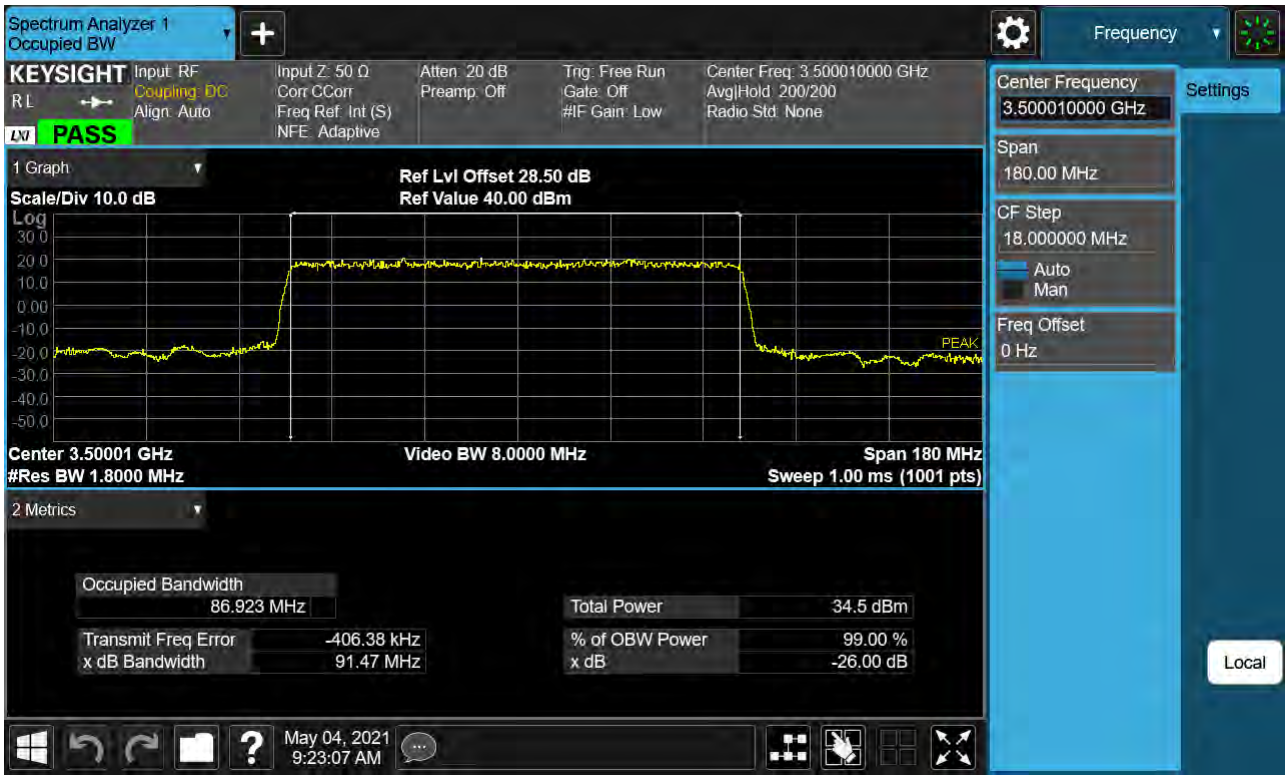
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.633334 64QAM)



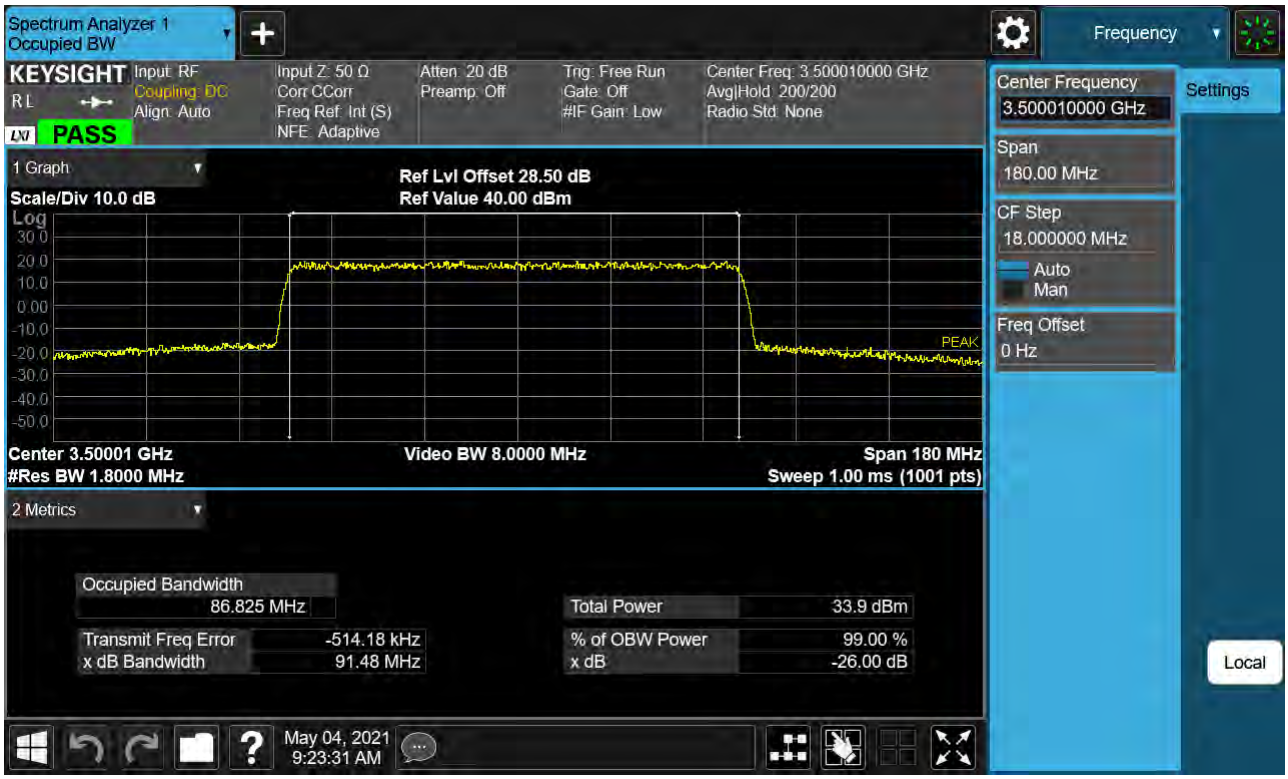
Sub6 n77. Occupied Bandwidth Plot (80M BW Ch.633334 256QAM)



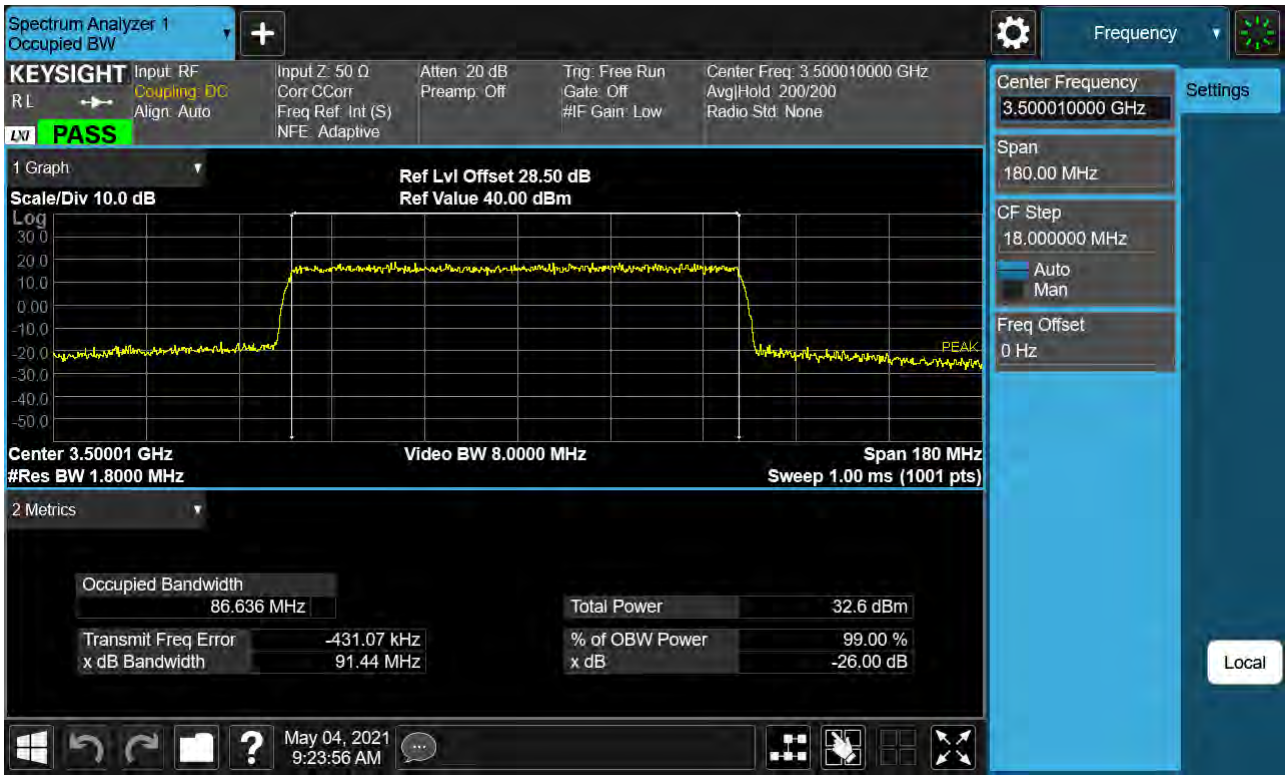
Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.633334 BPSK)



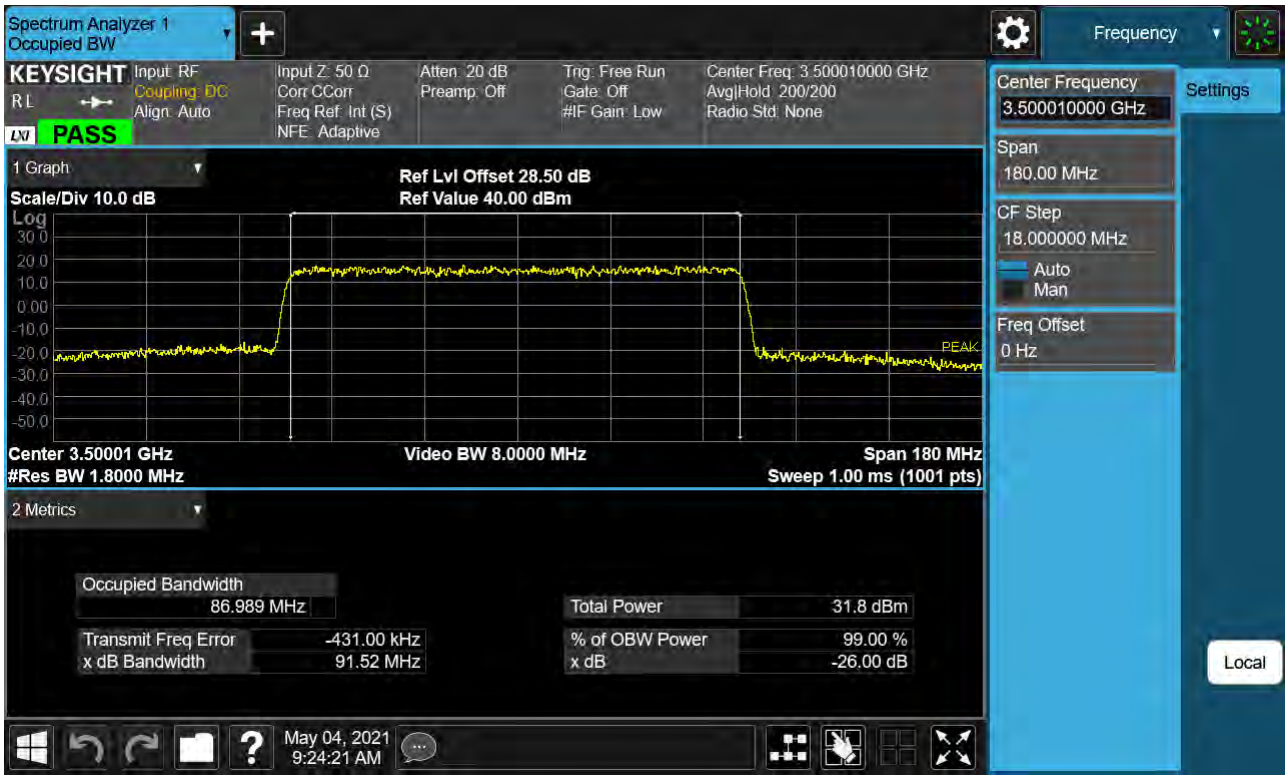
Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.633334 QPSK)



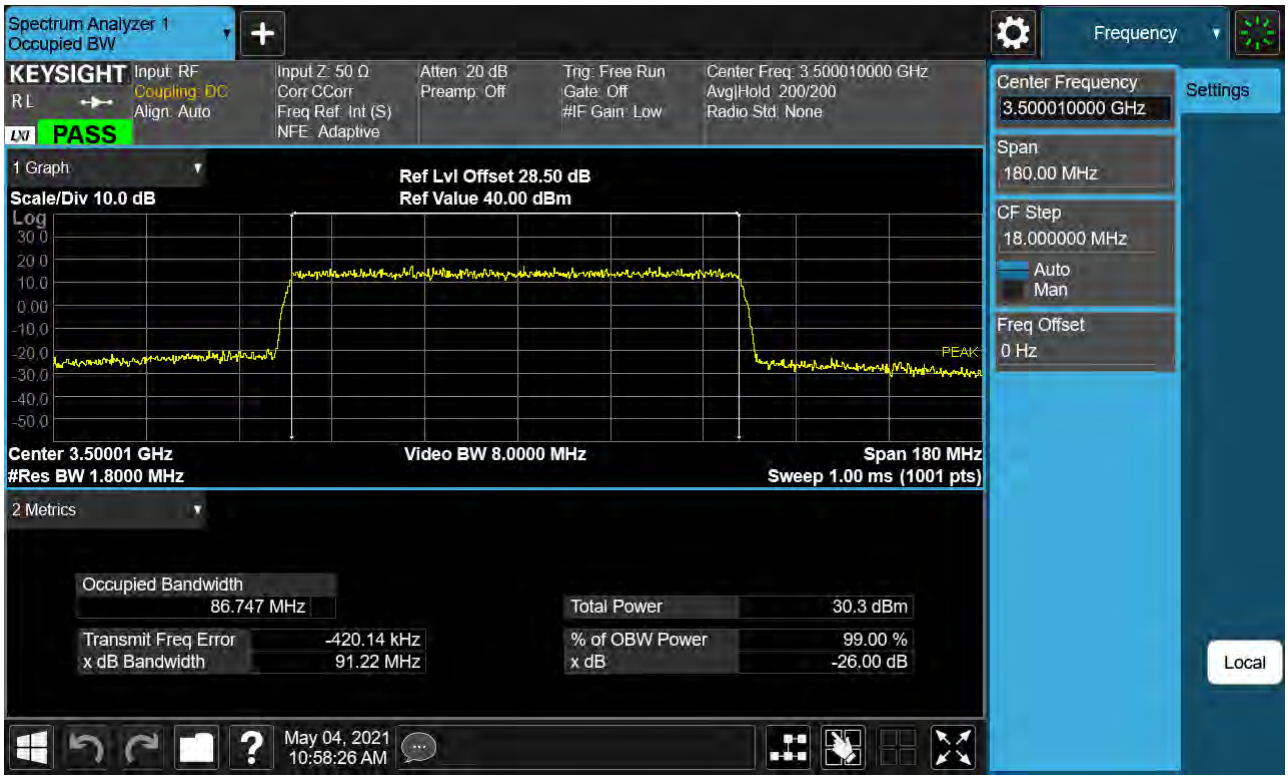
Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.633334 16QAM)



Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.633334 64QAM)



Sub6 n77. Occupied Bandwidth Plot (90M BW Ch.633334 256QAM)

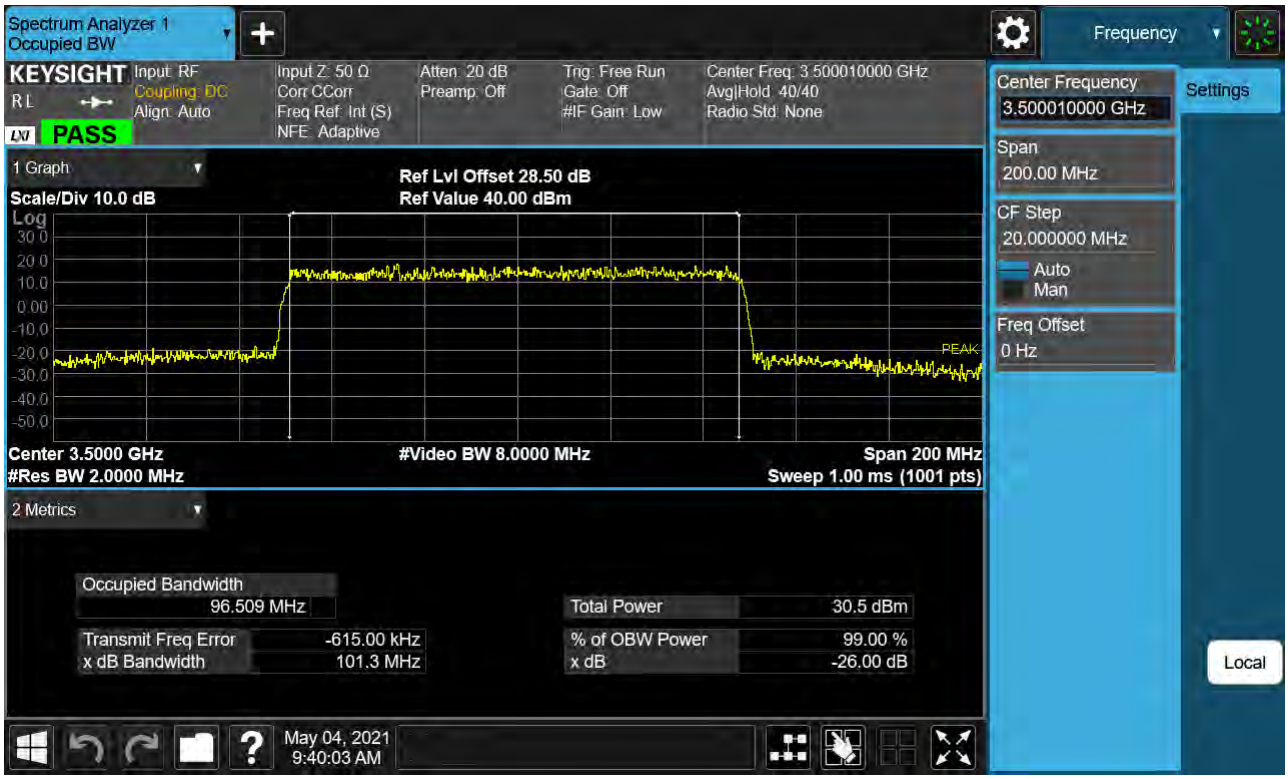


Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.633334 BPSK)

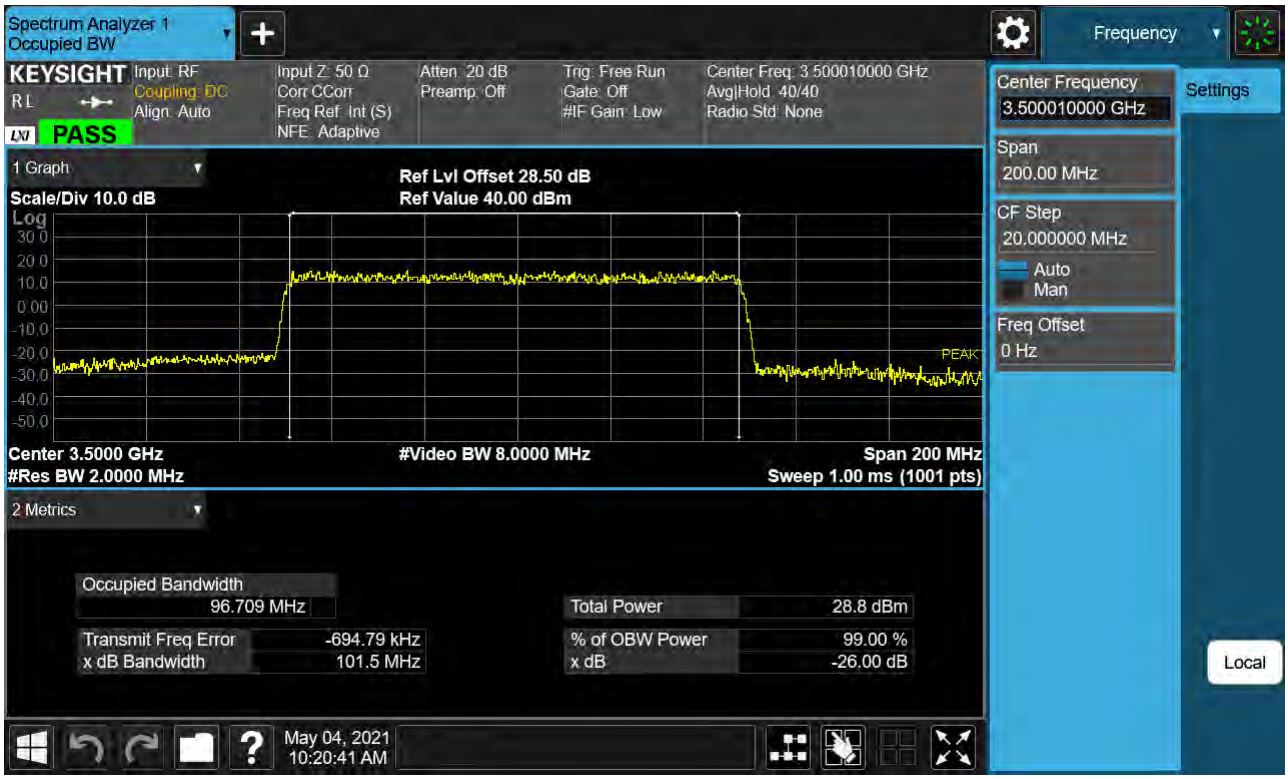
Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.633334 QPSK)

Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.633334 16QAM)

Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.633334 64QAM)



Sub6 n77. Occupied Bandwidth Plot (100M BW Ch.633334 256QAM)



Sub6 n77. PAR Plot (20M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (20M BW_Ch.633334_QPSK)

Sub6 n77. PAR Plot (20M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (20M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (20M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (30M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (30M BW_Ch.633334_QPSK)

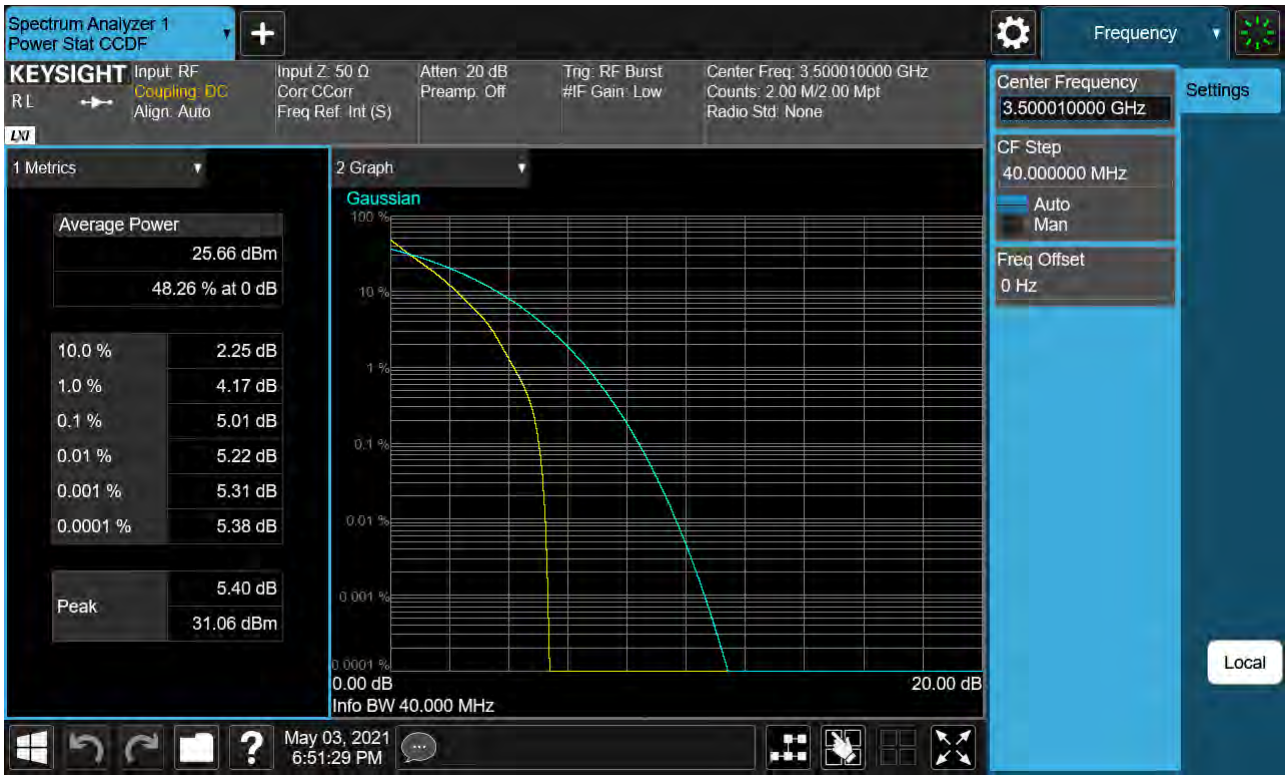
Sub6 n77. PAR Plot (30M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (30M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (30M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (40M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (40M BW_Ch.633334_QPSK)



Sub6 n77. PAR Plot (40M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (40M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (40M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (50M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (50M BW_Ch.633334_QPSK)

Sub6 n77. PAR Plot (50M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (50M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (50M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (60M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (60M BW_Ch.633334_QPSK)

Sub6 n77. PAR Plot (60M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (60M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (60M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (70M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (70M BW_Ch.633334_QPSK)

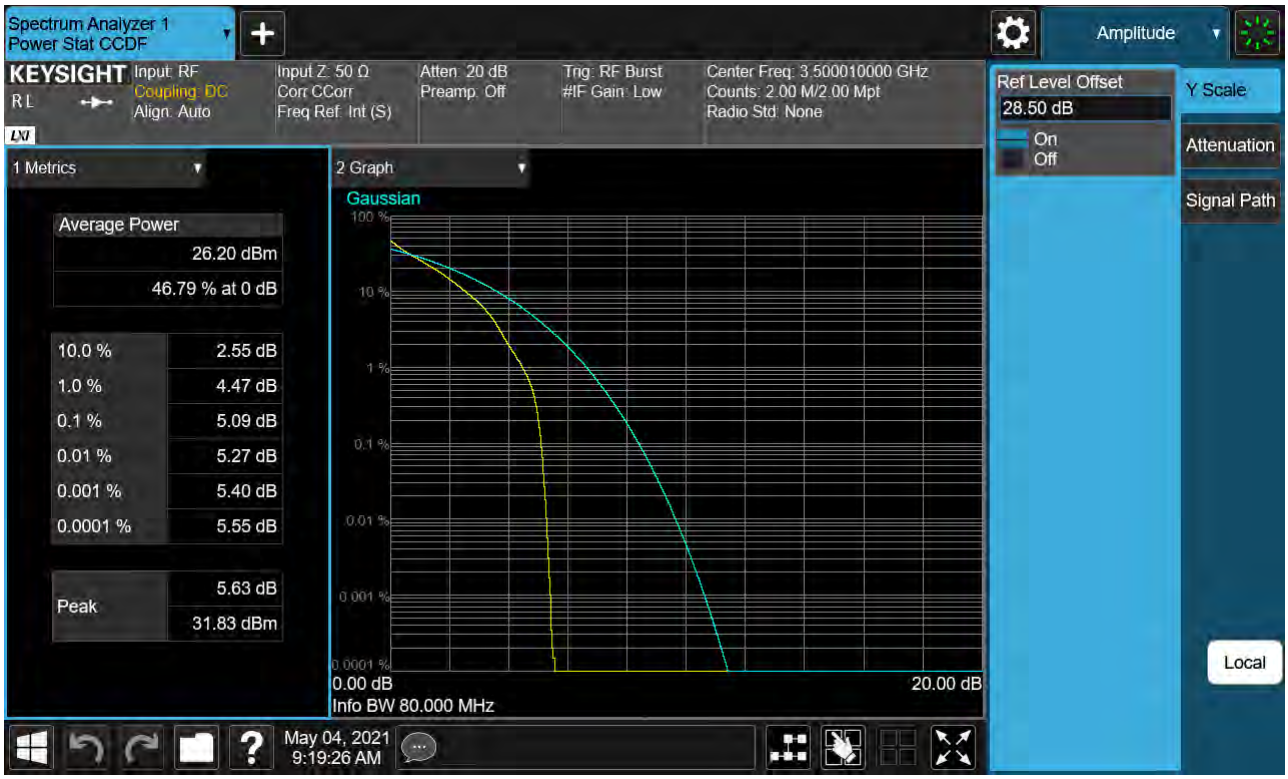
Sub6 n77. PAR Plot (70M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (70M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (70M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (80M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (80M BW_Ch.633334_QPSK)



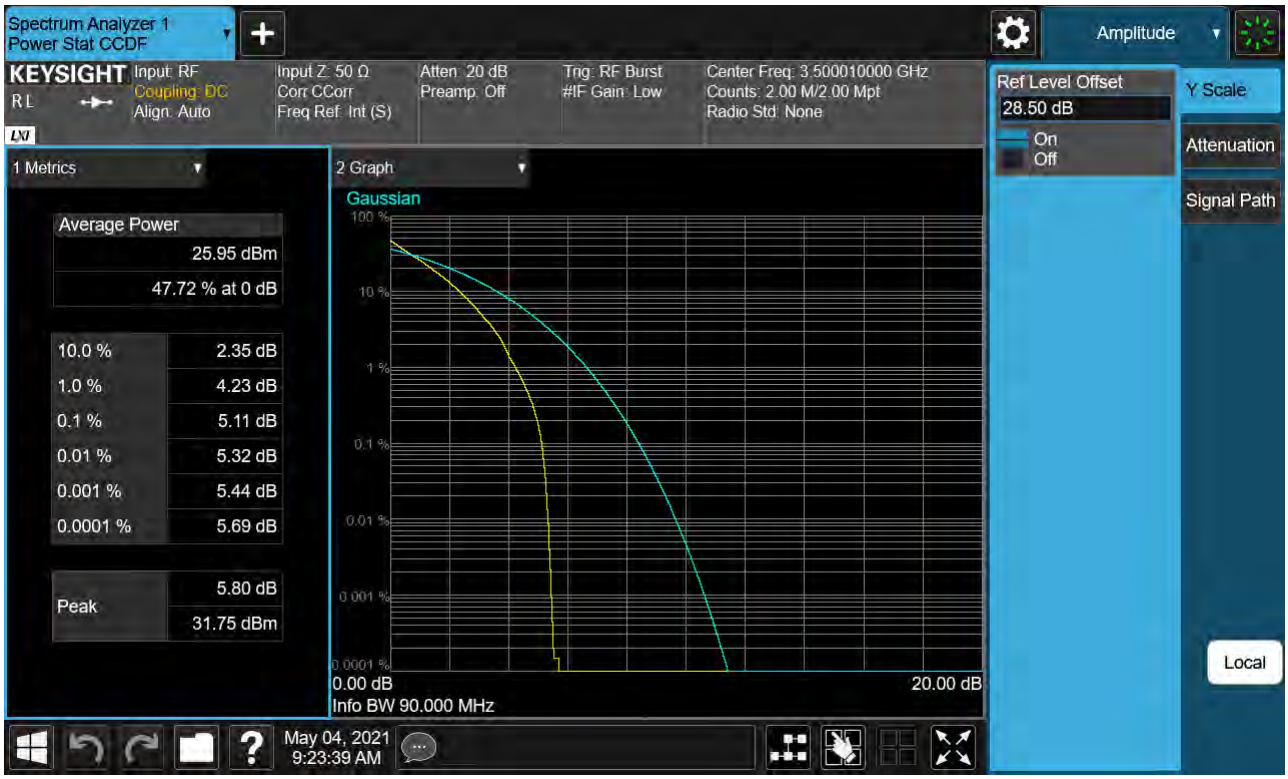
Sub6 n77. PAR Plot (80M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (80M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (80M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (90M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (90M BW_Ch.633334_QPSK)



Sub6 n77. PAR Plot (90M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (90M BW_Ch.633334_64QAM)

Sub6 n77. PAR Plot (90M BW_Ch.633334_256QAM)

Sub6 n77. PAR Plot (100M BW_Ch.633334_ BPSK)

Sub6 n77. PAR Plot (100M BW_Ch.633334_QPSK)

Sub6 n77. PAR Plot (100M BW_Ch.633334_16QAM)

Sub6 n77. PAR Plot (100M BW_Ch.633334_64QAM)

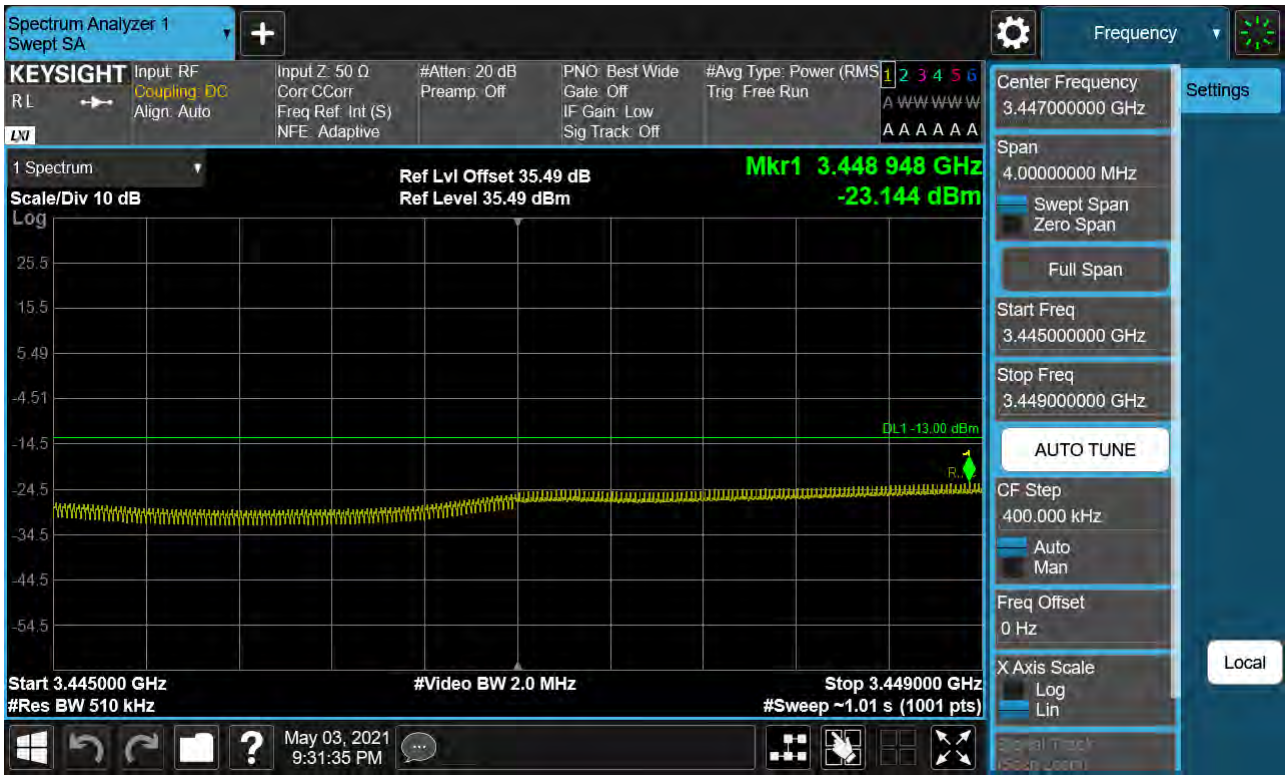
Sub6 n77. PAR Plot (100M BW_Ch.633334_256QAM)

Sub6 n77. Low Band Edge Plot (20M BW Ch.630668 BPSK 1RB)(1)

Sub6 n77. Low Band Edge Plot (20M BW Ch.630668 BPSK FullRB)(1)

Sub6 n77. Low Band Edge Plot (20M BW Ch.630668 BPSK 1RB)(2)

Sub6 n77. Low Band Edge Plot (20M BW Ch.630668 BPSK FullRB)(2)



Sub6 n77. Low Band Edge Plot (20M BW Ch.630668 BPSK 1RB)(3)

Sub6 n77. Low Band Edge Plot (20M BW Ch.630668 BPSK FullRB)(3)

Sub6 n77. High Band Edge Plot (20M BW Ch.636000 BPSK 1RB)(1)