

FCC Sub6 REPORT

Certification

Applicant Name:

SAMSUNG Electronics Co., Ltd.

Date of Issue:

December 07, 2021

Location:

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

Report No.: HCT-RF-2111-FC053-R1

FCC ID:

A3LSMX808U

APPLICANT:

SAMSUNG Electronics Co., Ltd.

Model(s): SM-X808U
EUT Type: Tablet
FCC Classification: PCS Licensed Transmitter (PCB)
FCC Rule Part(s): §27, §2

1. 3450 MHz - 3550 MHz

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n77 (10)	3455.01 – 3544.99	8M61G7D	PI/2 BPSK	0.377	25.77
		8M65G7D	QPSK	0.374	25.73
		8M68W7D	16QAM	0.290	24.63
		8M64W7D	64QAM	0.196	22.92
		8M64W7D	256QAM	0.133	21.25
Sub6 n77 (15)	3457.50 – 3542.50	13M0G7D	PI/2 BPSK	0.379	25.79
		12M9G7D	QPSK	0.378	25.77
		13M0W7D	16QAM	0.306	24.86
		13M0W7D	64QAM	0.203	23.07
		12M9W7D	256QAM	0.137	21.38
Sub6 n77 (20)	3460.02 – 3540.00	18M0G7D	PI/2 BPSK	0.373	25.72
		17M9G7D	QPSK	0.366	25.64
		18M0W7D	16QAM	0.284	24.53
		17M9W7D	64QAM	0.191	22.81
		17M9W7D	256QAM	0.131	21.16
Sub6 n77 (30)	3465.00 – 3534.99	27M0G7D	PI/2 BPSK	0.380	25.80
		27M0G7D	QPSK	0.379	25.79
		27M0W7D	16QAM	0.286	24.57
		27M0W7D	64QAM	0.193	22.86
		27M0W7D	256QAM	0.131	21.17
Sub6 n77 (40)	3470.01 – 3529.98	35M9G7D	PI/2 BPSK	0.377	25.76
		35M9G7D	QPSK	0.375	25.74
		35M9W7D	16QAM	0.279	24.45
		35M8W7D	64QAM	0.191	22.80
		35M9W7D	256QAM	0.130	21.15
Sub6 n77 (50)	3475.02 – 3525.00	45M9G7D	PI/2 BPSK	0.353	25.48
		45M9G7D	QPSK	0.350	25.44
		45M8W7D	16QAM	0.268	24.29
		45M9W7D	64QAM	0.177	22.48
		45M8W7D	256QAM	0.123	20.91
Sub6 n77 (60)	3480.00 – 3519.99	58M0G7D	PI/2 BPSK	0.358	25.54
		58M0G7D	QPSK	0.356	25.51
		58M0W7D	16QAM	0.279	24.45
		58M1W7D	64QAM	0.182	22.60
		58M0W7D	256QAM	0.124	20.95
Sub6 n77 (70)	3485.01 – 3514.98	64M3G7D	PI/2 BPSK	0.361	25.58
		64M5G7D	QPSK	0.360	25.57
		64M6W7D	16QAM	0.278	24.44
		64M5W7D	64QAM	0.189	22.76
		64M5W7D	256QAM	0.126	21.02
Sub6 n77 (80)	3490.02 – 3510.00	77M4G7D	PI/2 BPSK	0.368	25.66
		77M5G7D	QPSK	0.366	25.64
		77M1W7D	16QAM	0.283	24.52
		77M2W7D	64QAM	0.186	22.69
		77M3W7D	256QAM	0.127	21.05
Sub6 n77 (90)	3495.00 – 3504.99	87M1G7D	PI/2 BPSK	0.379	25.79
		87M1G7D	QPSK	0.378	25.78
		86M9W7D	16QAM	0.295	24.70
		86M8W7D	64QAM	0.191	22.82
		86M9W7D	256QAM	0.132	21.22
Sub6 n77 (100)	3500.01	96M8G7D	PI/2 BPSK	0.371	25.69
		96M1G7D	QPSK	0.360	25.57
		96M7W7D	16QAM	0.279	24.46
		96M4W7D	64QAM	0.186	22.69
		96M7W7D	256QAM	0.129	21.10

2. 3700 MHz - 3980 MHz

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	0.242	23.84
		8M58G7D	QPSK	0.240	23.80
		8M64W7D	16QAM	0.181	22.57
		8M63W7D	64QAM	0.120	20.78
		8M56W7D	256QAM	0.083	19.20
Sub6 n77 (15)	3707.51 – 3972.48	13M0G7D	PI/2 BPSK	0.250	23.97
		13M0G7D	QPSK	0.249	23.96
		12M9W7D	16QAM	0.186	22.69
		12M9W7D	64QAM	0.123	20.91
		12M9W7D	256QAM	0.086	19.32
Sub6 n77 (20)	3710.01 – 3969.99	17M9G7D	PI/2 BPSK	0.227	23.55
		17M9G7D	QPSK	0.224	23.50
		17M9W7D	16QAM	0.170	22.30
		18M0W7D	64QAM	0.113	20.53
		18M0W7D	256QAM	0.079	18.95
Sub6 n77 (30)	3715.02 – 3964.98	27M1G7D	PI/2 BPSK	0.224	23.50
		27M0G7D	QPSK	0.223	23.47
		26M9W7D	16QAM	0.167	22.22
		27M0W7D	64QAM	0.113	20.52
		27M0W7D	256QAM	0.078	18.94
Sub6 n77 (40)	3720.00 – 3960.00	35M8G7D	PI/2 BPSK	0.247	23.92
		35M7G7D	QPSK	0.245	23.89
		35M9W7D	16QAM	0.185	22.66
		35M8W7D	64QAM	0.121	20.84
		35M9W7D	256QAM	0.083	19.17
Sub6 n77 (50)	3725.10 – 3954.99	46M0G7D	PI/2 BPSK	0.229	23.59
		46M0G7D	QPSK	0.224	23.50
		45M9W7D	16QAM	0.175	22.42
		45M8W7D	64QAM	0.113	20.54
		46M0W7D	256QAM	0.075	18.73
Sub6 n77 (60)	3730.02 – 3949.98	57M9G7D	PI/2 BPSK	0.234	23.69
		58M1G7D	QPSK	0.231	23.64
		57M8W7D	16QAM	0.180	22.56
		57M8W7D	64QAM	0.118	20.71
		57M9W7D	256QAM	0.081	19.07
Sub6 n77 (70)	3735.00 – 3945.00	64M5G7D	PI/2 BPSK	0.240	23.80
		64M5G7D	QPSK	0.239	23.78
		64M3W7D	16QAM	0.182	22.59
		64M5W7D	64QAM	0.121	20.84
		64M3W7D	256QAM	0.084	19.24
Sub6 n77 (80)	3740.01 – 3939.99	77M3G7D	PI/2 BPSK	0.249	23.96
		77M5G7D	QPSK	0.248	23.95
		77M2W7D	16QAM	0.190	22.79
		77M1W7D	64QAM	0.123	20.88
		77M3W7D	256QAM	0.085	19.31
Sub6 n77 (90)	3745.02 – 3934.98	86M8G7D	PI/2 BPSK	0.252	24.02
		87M1G7D	QPSK	0.252	24.01
		86M7W7D	16QAM	0.197	22.94
		86M7W7D	64QAM	0.126	20.99
		87M0W7D	256QAM	0.087	19.41
Sub6 n77 (100)	3750.00 – 3930.00	96M6G7D	PI/2 BPSK	0.257	24.10
		96M8G7D	QPSK	0.254	24.04
		96M1W7D	16QAM	0.199	22.98
		96M5W7D	64QAM	0.129	21.10
		96M3W7D	256QAM	0.089	19.50

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)

Report No.: HCT-RF-2111-FC053-R1

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)

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2111-FC053	November 24, 2021	- First Approval Report
HCT-RF-2111-FC053-R1	December 07, 2021	- Revised the data of Equivalent Isotropic Radiated Power on page 36 - Revised the plot on page 313

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:	A3LSMX808U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§27, §2
EUT Type:	Tablet
Model(s):	SM-X808U
SCS(kHz):	30
Bandwidth(MHz):	10, 15, 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: (3450 MHz - 3550 MHz)	3455.01 MHz – 3544.99 MHz (Sub6 n77(10 MHz)) 3457.50 MHz – 3542.50 MHz (Sub6 n77(15 MHz)) 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))
Tx Frequency: (3700 MHz - 3980 MHz)	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)) 3715.02 MHz – 3964.98 MHz (Sub6 n77(30 MHz)) 3720.00 MHz – 3960.00 MHz (Sub6 n77(40 MHz)) 3725.10 MHz – 3954.99 MHz (Sub6 n77(50 MHz)) 3730.02 MHz – 3949.98 MHz (Sub6 n77(60 MHz)) 3735.00 MHz – 3945.00 MHz (Sub6 n77(70 MHz)) 3740.01 MHz – 3939.99 MHz (Sub6 n77(80 MHz)) 3745.02 MHz – 3934.98 MHz (Sub6 n77(90 MHz)) 3750.00 MHz – 3930.00 MHz (Sub6 n77(100 MHz))
Date(s) of Tests:	September 13, 2021 ~ December 07, 2021
Serial number:	Radiated: R32R9001FVV Conducted: R32R9001JTN

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Tablet with UMTS and LTE, Sub6.

It also supports IEEE 802.11 a/b/g/n/ac/ax (20/40/80/160), WIFI 6E, Bluetooth, BT LE, 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 1 MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $> 2 \times$ 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 1 GHz, 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;

$$P_d \text{ (dBm)} = P_g \text{ (dBm)} - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

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 1 GHz and 1 MHz for emissions above 1 GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $> 2 \times$ 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 10th 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 1 GHz, 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;

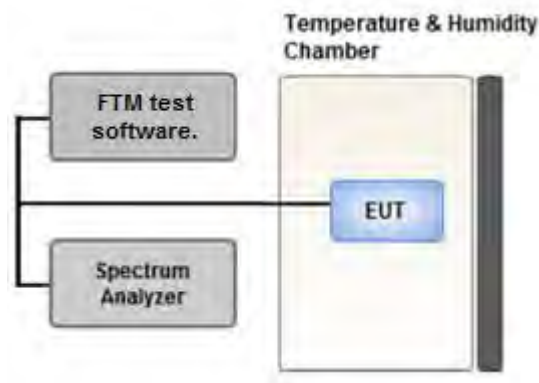
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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

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

$$\text{EIRP}_{(\text{dBm})} = \text{ERP}_{(\text{dBm})} + 2.15$$

3.4 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

1. Set resolution/measurement bandwidth $\geq$ 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:

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

Test Settings(Peak Power)

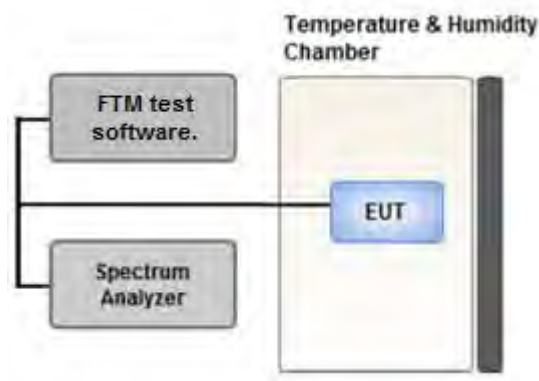
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW $\geq 3 \times$ RBW.

1. Set the RBW $\geq$ OBW.
2. Set VBW $\geq 3 \times$ RBW.
3. Set span $\geq 2 \times$ OBW.
4. Sweep time $\geq 10 \times$ (number of points in sweep) $\times$ (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 $2 \times$ to $3 \times$ the OBW.
2. Set RBW $\geq$ OBW.
3. Set VBW $\geq 3 \times$ RBW.
4. Set number of measurement points in sweep $\geq 2 \times$ span / RBW.
5. Sweep time:
Set $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission period})]$ 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 $[10 \log (1/\text{duty cycle})]$ to the measured maximum power level to compute the average power during continuous transmission. For example, add $[10 \log (1/0.25)] = 6 \text{ dB}$ 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.

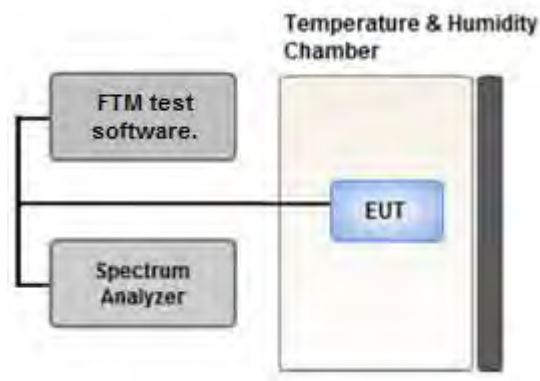
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5 % of the expected OBW
3. VBW $\geq 3 \times$ 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.

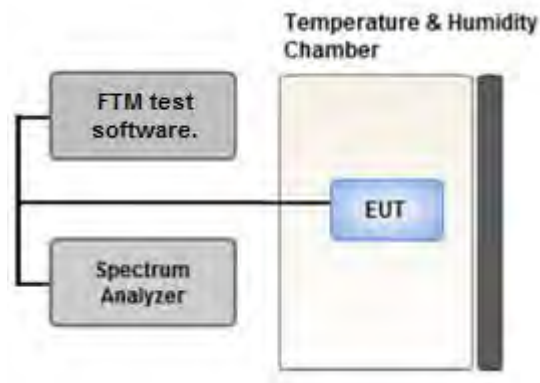
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

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 $\geq$ 3 MHz
3. Detector = RMS
4. Trace Mode = trace average
5. Sweep time = auto
6. Number of points in sweep $\geq 2 \times \text{Span} / \text{RBW}$

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 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. 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 > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
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.

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.

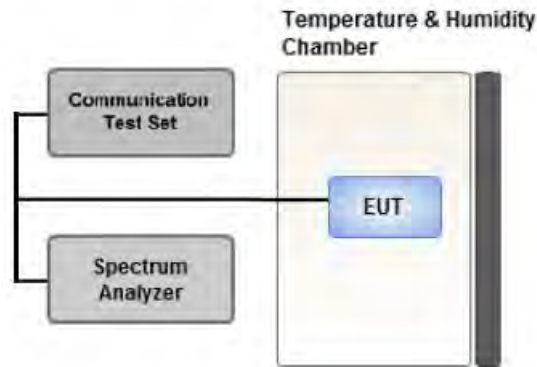
Measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

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.

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.

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

Mode : Stand alone, Stand alone + External accessories (Earphone, keyboard, AC adapter, etc)

Worst case : Stand alone

-In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported.

(Worst case : 30 MHz(3450 MHz – 3550 MHz), 100 MHz(3700 MHz – 3980 MHz))

[3450 MHz - 3550 MHz Worst case]

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

[3700 MHz - 3980 MHz Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	1	1	X
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.

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth,	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100	Mid	Full RB	0
Peak-To-Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100	Mid	Full RB	0
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
		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
		10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100	Low, Mid, High	1	1

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacture	Serial No.	Due to Calibration	Calibration Interval
Precision Dipole Antenna	UHAP	Schwarzbeck	01273	05/30/2022	Biennial
Precision Dipole Antenna	UHAP	Schwarzbeck	01274	05/30/2022	Biennial
Horn Antenna(1~18GHz)	BBHA 9120D	Schwarzbeck	02289	05/08/2022	Biennial
Horn Antenna(1~18GHz)	BBHA 9120D	Schwarzbeck	9120D-1299	05/04/2022	Biennial
Horn Antenna(15~40GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	10/13/2022	Biennial
Horn Antenna(15~40GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	02/11/2022	Biennial
Loop Antenna(9kHz~30 MHz)	FMZB1513	Rohde & Schwarz	1513-175	05/18/2022	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/03/2023	Biennial
Hybrid Antenna	VULB9160	Schwarzbeck	760	02/22/2023	Biennial
High Pass Filter	WHKX10-900-1000-15000-40SS	Wainwright Instruments	15	06/15/2022	Annual
High Pass Filter	WHKX10-2700-3000-18000-40SS	Wainwright Instruments	145	06/15/2022	Annual
High Pass Filter	WHNX6-4740-6000-26500-40CC	Wainwright Instruments	11	06/15/2022	Annual
LOW NOISE AMP (100 MHz ~ 18GHz)	CBLU1183540B-01	CERNEX	26822	06/15/2022	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/04/2021	Annual
Power Amplifier	CBL26405040	CERNEX	25956	03/23/2022	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	09/15/2022	Annual
Power Splitter(DC~26.5 GHz)	11667B	Hewlett Packard	11275	04/07/2022	Annual
Chamber	SU-642	ESPEC	93008124	03/15/2022	Annual
Signal Analyzer(10Hz~26.5GHz)	N9020A	Agilent	MY51110063	04/22/2022	Annual
ATTENUATOR(20dB)	8493C	Hewlett Packard	17280	06/01/2022	Annual
Spectrum Analyzer(10Hz~40GHz)	FSV40	REOHDE & SCHWARZ	101436	03/02/2022	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/18/2022	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262287700	05/25/2022	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/26/2022	Annual
SIGNAL GENERATOR (100kHz~40GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/05/2022	Annual
Signal Analyzer(5Hz~40.0GHz)	N9030B	KEYSIGHT	MY55480167	06/02/2022	Annual
4-Way Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/27/2022	Annua
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

- Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
- 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 ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05 (Confidence level about 95 %, $k=2$)

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), §27.53(l)(2)	< -13 dBm	PASS
Conducted Output Power	§2.1046	N/A	<u>See Note1</u>
Peak- to- Average Ratio	§27.50(k)(4), §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(k)(3), §27.50(j)(3)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1051, §27.53(n)(2), §27.53(l)(2)	< -13 dBm	PASS

Note:

1. Radiated 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

$$\text{ERP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 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

$$\text{EIRP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 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 (3450 MHz - 3550 MHz)

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
3455.01	Sub6 n77/ 10 MHz [30 kHz]	PI/2 BPSK	-20.51	17.49	11.32	3.05	H	< 1.00	0.377	25.77
		QPSK	-20.55	17.45	11.32	3.05	H		0.374	25.73
		16-QAM	-21.65	16.35	11.32	3.05	H		0.290	24.63
		64-QAM	-23.36	14.64	11.32	3.05	H		0.196	22.92
		256-QAM	-25.03	12.97	11.32	3.05	H		0.133	21.25
3500.01		PI/2 BPSK	-21.22	16.95	11.50	3.06	H		0.346	25.39
		QPSK	-21.33	16.84	11.50	3.06	H		0.337	25.28
		16-QAM	-22.56	15.61	11.50	3.06	H		0.254	24.05
		64-QAM	-24.21	13.96	11.50	3.06	H		0.174	22.40
		256-QAM	-25.86	12.31	11.50	3.06	H		0.119	20.75
3544.99		PI/2 BPSK	-21.88	16.29	11.68	3.08	H		0.308	24.89
		QPSK	-21.91	16.26	11.68	3.08	H		0.306	24.86
		16-QAM	-23.06	15.11	11.68	3.08	H		0.235	23.71
		64-QAM	-24.82	13.35	11.68	3.08	H		0.157	21.95
		256-QAM	-26.44	11.73	11.68	3.08	H		0.108	20.33

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3457.50	Sub6 n77/ 15 MHz [30 kHz]	PI/2 BPSK	-20.48	17.48	11.34	3.03	H	< 1.00	0.379	25.79
		QPSK	-20.50	17.46	11.34	3.03	H		0.378	25.77
		16-QAM	-21.41	16.55	11.34	3.03	H		0.306	24.86
		64-QAM	-23.20	14.76	11.34	3.03	H		0.203	23.07
		256-QAM	-24.89	13.07	11.34	3.03	H		0.137	21.38
3500.01		PI/2 BPSK	-21.12	17.05	11.50	3.06	H		0.354	25.49
		QPSK	-21.22	16.95	11.50	3.06	H		0.346	25.39
		16-QAM	-22.43	15.74	11.50	3.06	H		0.262	24.18
		64-QAM	-24.16	14.01	11.50	3.06	H		0.176	22.45
		256-QAM	-25.73	12.44	11.50	3.06	H		0.122	20.88
3542.50		PI/2 BPSK	-21.71	16.35	11.66	3.07	H		0.312	24.94
		QPSK	-21.74	16.32	11.66	3.07	H		0.310	24.91
		16-QAM	-22.94	15.12	11.66	3.07	H		0.235	23.71
		64-QAM	-24.58	13.48	11.66	3.07	H		0.161	22.07
		256-QAM	-26.21	11.85	11.66	3.07	H		0.111	20.44

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3460.02	Sub6 n77/ 20 MHz [30 kHz]	PI/2 BPSK	-20.55	17.41	11.34	3.03	H	< 1.00	0.373	25.72
		QPSK	-20.63	17.33	11.34	3.03	H		0.366	25.64
		16-QAM	-21.74	16.22	11.34	3.03	H		0.284	24.53
		64-QAM	-23.54	14.42	11.34	3.03	H		0.187	22.73
		256-QAM	-25.19	12.77	11.34	3.03	H		0.128	21.08
3500.01		PI/2 BPSK	-20.92	17.25	11.50	3.06	H		0.371	25.69
		QPSK	-20.99	17.18	11.50	3.06	H		0.365	25.62
		16-QAM	-22.08	16.09	11.50	3.06	H		0.284	24.53
		64-QAM	-23.80	14.37	11.50	3.06	H		0.191	22.81
		256-QAM	-25.45	12.72	11.50	3.06	H		0.131	21.16
3540.00		PI/2 BPSK	-21.35	16.71	11.66	3.07	H		0.339	25.30
		QPSK	-21.36	16.70	11.66	3.07	H		0.338	25.29
		16-QAM	-22.53	15.53	11.66	3.07	H		0.258	24.12
		64-QAM	-24.34	13.72	11.66	3.07	H		0.170	22.31
		256-QAM	-26.04	12.02	11.66	3.07	H		0.115	20.61

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	-20.69	17.18	11.36	3.02	H	< 1.00	0.357	25.52
		QPSK	-20.70	17.17	11.36	3.02	H		0.356	25.51
		16-QAM	-21.86	16.01	11.36	3.02	H		0.272	24.35
		64-QAM	-23.62	14.25	11.36	3.02	H		0.182	22.59
		256-QAM	-25.21	12.66	11.36	3.02	H		0.126	21.00
3500.01		PI/2 BPSK	-20.81	17.36	11.50	3.06	H		0.380	25.80
		QPSK	-20.82	17.35	11.50	3.06	H		0.379	25.79
		16-QAM	-22.04	16.13	11.50	3.06	H		0.286	24.57
		64-QAM	-23.75	14.42	11.50	3.06	H		0.193	22.86
		256-QAM	-25.44	12.73	11.50	3.06	H		0.131	21.17
3534.99		PI/2 BPSK	-21.17	16.88	11.64	3.06	H		0.352	25.47
		QPSK	-21.27	16.78	11.64	3.06	H		0.344	25.37
		16-QAM	-22.49	15.56	11.64	3.06	H		0.260	24.15
		64-QAM	-24.06	13.99	11.64	3.06	H		0.181	22.58
		256-QAM	-25.68	12.37	11.64	3.06	H		0.125	20.96

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	-20.77	17.00	11.38	3.00	H	< 1.00	0.346	25.38
		QPSK	-20.81	16.96	11.38	3.00	H		0.342	25.34
		16-QAM	-21.96	15.81	11.38	3.00	H		0.263	24.19
		64-QAM	-23.70	14.07	11.38	3.00	H		0.176	22.45
		256-QAM	-25.33	12.44	11.38	3.00	H		0.121	20.82
3500.01		PI/2 BPSK	-20.85	17.32	11.50	3.06	H		0.377	25.76
		QPSK	-20.87	17.30	11.50	3.06	H		0.375	25.74
		16-QAM	-22.16	16.01	11.50	3.06	H		0.279	24.45
		64-QAM	-23.81	14.36	11.50	3.06	H		0.191	22.80
		256-QAM	-25.46	12.71	11.50	3.06	H		0.130	21.15
3529.98	PI/2 BPSK	-21.34	16.71	11.62	3.04	H	0.338	25.29		
	QPSK	-21.37	16.68	11.62	3.04	H	0.335	25.26		
	16-QAM	-22.47	15.58	11.62	3.04	H	0.260	24.16		
	64-QAM	-24.30	13.75	11.62	3.04	H	0.171	22.33		
	256-QAM	-25.91	12.14	11.62	3.04	H	0.118	20.72		

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	-20.93	16.82	11.40	3.01	H	< 1.00	0.332	25.21
		QPSK	-20.94	16.81	11.40	3.01	H		0.331	25.20
		16-QAM	-22.11	15.64	11.40	3.01	H		0.253	24.03
		64-QAM	-23.91	13.84	11.40	3.01	H		0.167	22.23
		256-QAM	-25.59	12.16	11.40	3.01	H		0.113	20.55
3500.01		PI/2 BPSK	-21.13	17.04	11.50	3.06	H		0.353	25.48
		QPSK	-21.17	17.00	11.50	3.06	H		0.350	25.44
		16-QAM	-22.32	15.85	11.50	3.06	H		0.268	24.29
		64-QAM	-24.13	14.04	11.50	3.06	H		0.177	22.48
		256-QAM	-25.70	12.47	11.50	3.06	H		0.123	20.91
3525.00		PI/2 BPSK	-21.51	16.60	11.60	3.05	H		0.328	25.16
		QPSK	-21.53	16.58	11.60	3.05	H		0.326	25.14
		16-QAM	-22.63	15.48	11.60	3.05	H		0.253	24.04
		64-QAM	-24.48	13.63	11.60	3.05	H		0.165	22.19
		256-QAM	-26.10	12.01	11.60	3.05	H		0.114	20.57

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	-21.01	16.71	11.42	3.02	H	< 1.00	0.324	25.11
		QPSK	-21.03	16.69	11.42	3.02	H		0.323	25.09
		16-QAM	-22.16	15.56	11.42	3.02	H		0.249	23.96
		64-QAM	-24.00	13.72	11.42	3.02	H		0.163	22.12
		256-QAM	-25.59	12.13	11.42	3.02	H		0.113	20.53
3500.01		PI/2 BPSK	-21.07	17.10	11.50	3.06	H		0.358	25.54
		QPSK	-21.11	17.06	11.50	3.06	H		0.355	25.50
		16-QAM	-22.16	16.01	11.50	3.06	H		0.279	24.45
		64-QAM	-24.01	14.16	11.50	3.06	H		0.182	22.60
		256-QAM	-25.66	12.51	11.50	3.06	H		0.124	20.95
3519.99		PI/2 BPSK	-21.16	17.01	11.58	3.05	H		0.358	25.54
		QPSK	-21.19	16.98	11.58	3.05	H		0.356	25.51
		16-QAM	-22.26	15.91	11.58	3.05	H		0.278	24.44
		64-QAM	-24.13	14.04	11.58	3.05	H		0.181	22.57
		256-QAM	-25.80	12.37	11.58	3.05	H		0.123	20.90

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	-21.10	16.72	11.44	3.04	H	< 1.00	0.326	25.13
		QPSK	-21.11	16.71	11.44	3.04	H		0.325	25.12
		16-QAM	-22.33	15.49	11.44	3.04	H		0.245	23.90
		64-QAM	-24.08	13.74	11.44	3.04	H		0.164	22.15
		256-QAM	-25.71	12.11	11.44	3.04	H		0.113	20.52
3500.01		PI/2 BPSK	-21.11	17.06	11.50	3.06	H		0.355	25.50
		QPSK	-21.12	17.05	11.50	3.06	H		0.354	25.49
		16-QAM	-22.23	15.94	11.50	3.06	H		0.274	24.38
		64-QAM	-24.09	14.08	11.50	3.06	H		0.179	22.52
		256-QAM	-25.69	12.48	11.50	3.06	H		0.124	20.92
3514.98		PI/2 BPSK	-21.21	17.11	11.52	3.06	H		0.361	25.58
		QPSK	-21.22	17.10	11.52	3.06	H		0.360	25.57
		16-QAM	-22.35	15.97	11.52	3.06	H		0.278	24.44
		64-QAM	-24.03	14.29	11.52	3.06	H		0.189	22.76
		256-QAM	-25.77	12.55	11.52	3.06	H		0.126	21.02

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	-20.96	16.96	11.46	3.05	H	< 1.00	0.345	25.37
		QPSK	-20.97	16.95	11.46	3.05	H		0.344	25.36
		16-QAM	-22.17	15.75	11.46	3.05	H		0.261	24.16
		64-QAM	-23.91	14.01	11.46	3.05	H		0.175	22.42
		256-QAM	-25.58	12.34	11.46	3.05	H		0.119	20.75
3500.01		PI/2 BPSK	-20.95	17.22	11.50	3.06	H		0.368	25.66
		QPSK	-21.00	17.17	11.50	3.06	H		0.364	25.61
		16-QAM	-22.09	16.08	11.50	3.06	H		0.283	24.52
		64-QAM	-23.92	14.25	11.50	3.06	H		0.186	22.69
		256-QAM	-25.56	12.61	11.50	3.06	H		0.127	21.05
3510.00		PI/2 BPSK	-21.21	17.18	11.54	3.06	H		0.368	25.66
		QPSK	-21.23	17.16	11.54	3.06	H		0.366	25.64
		16-QAM	-22.41	15.98	11.54	3.06	H		0.279	24.46
		64-QAM	-24.18	14.21	11.54	3.06	H		0.186	22.69
		256-QAM	-25.82	12.57	11.54	3.06	H		0.127	21.05

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	-20.98	17.07	11.48	3.06	H	< 1.00	0.354	25.49
		QPSK	-20.99	17.06	11.48	3.06	H		0.353	25.48
		16-QAM	-22.29	15.76	11.48	3.06	H		0.262	24.18
		64-QAM	-23.92	14.13	11.48	3.06	H		0.180	22.55
		256-QAM	-25.54	12.51	11.48	3.06	H		0.124	20.93
3500.01		PI/2 BPSK	-20.91	17.26	11.50	3.06	H		0.371	25.70
		QPSK	-20.92	17.25	11.50	3.06	H		0.371	25.69
		16-QAM	-22.03	16.14	11.50	3.06	H		0.287	24.58
		64-QAM	-23.79	14.38	11.50	3.06	H		0.191	22.82
		256-QAM	-25.48	12.69	11.50	3.06	H		0.130	21.13
3504.99		PI/2 BPSK	-20.95	17.33	11.52	3.06	H		0.379	25.79
		QPSK	-20.96	17.32	11.52	3.06	H		0.378	25.78
		16-QAM	-22.04	16.24	11.52	3.06	H		0.295	24.70
		64-QAM	-23.93	14.35	11.52	3.06	H		0.191	22.81
		256-QAM	-25.52	12.76	11.52	3.06	H		0.132	21.22

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	-20.92	17.25	11.50	3.06	H	< 1.00	0.371	25.69
		QPSK	-21.04	17.13	11.50	3.06	H		0.360	25.57
		16-QAM	-22.15	16.02	11.50	3.06	H		0.279	24.46
		64-QAM	-23.92	14.25	11.50	3.06	H		0.186	22.69
		256-QAM	-25.51	12.66	11.50	3.06	H		0.129	21.10

8.2 RADIATED SPURIOUS EMISSIONS

- ☐ NR Band: N77
☐ Bandwidth: 30 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)
631000 (3465.00)	6,930.00	-53.70	11.10	-46.06	4.32	H	-39.28	-13.00
	10,395.00	-62.79	11.80	-50.26	5.44	H	-43.90	-13.00
	13,860.00	-60.64	13.00	-46.88	6.42	V	-40.30	-13.00
	17,325.00	-66.53	16.50	-46.31	7.32	V	-37.12	-13.00
633334 (3500.01)	7,000.02	-52.43	11.20	-43.81	4.38	V	-36.99	-13.00
	10,500.03	-61.83	11.80	-48.41	5.49	V	-42.10	-13.00
	14,000.04	-58.40	12.90	-45.96	6.48	H	-39.54	-13.00
	17,500.05	-65.49	16.10	-44.45	7.30	H	-35.65	-13.00
635666 (3534.99)	7,069.98	-56.06	11.12	-47.21	4.46	V	-40.55	-13.00
	10,604.97	-62.11	11.70	-48.36	5.52	H	-42.18	-13.00
	14,139.96	-59.92	12.88	-48.37	6.47	V	-41.96	-13.00
	17,674.95	-63.66	15.52	-37.68	7.39	V	-29.55	-13.00

☐ ENDC-Mode : 5A(10 MHz)-n77A(30 MHz) , PC2

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
20525 (836.5)	1673.00	-57.64	9.52	-67.29	2.03	V	-59.80	-13.00
	2509.50	-61.46	10.28	-66.44	2.51	H	-58.67	-13.00
	3346.00	-59.80	11.28	-62.58	2.99	V	-54.29	-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	3500.01	BPSK	24	0	4.41
			QPSK			5.71
			16-QAM			6.36
			64-QAM			6.67
			256-QAM			6.41
	15 MHz		BPSK	36		4.43
			QPSK			5.72
			16-QAM			6.52
			64-QAM			6.60
			256-QAM			6.55
	20 MHz		BPSK	50		4.28
			QPSK			5.65
			16-QAM			6.36
			64-QAM			6.60
			256-QAM			6.61
	30 MHz		BPSK	75		4.10
			QPSK			5.54
			16-QAM			6.31
			64-QAM			6.56
			256-QAM			6.48
	40 MHz		BPSK	100		4.31
			QPSK			5.69
			16-QAM			6.51
			64-QAM			6.68
			256-QAM			6.47
	50 MHz		BPSK	128		4.63
			QPSK			5.75
			16-QAM			6.49
			64-QAM			6.65
			256-QAM			6.53
	60 MHz		BPSK	162		4.39

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
			QPSK			5.74
			16-QAM			6.48
			64-QAM			6.70
			256-QAM			6.47
	70 MHz		BPSK	180		4.45
			QPSK			5.67
			16-QAM			6.38
			64-QAM			6.58
			256-QAM			6.48
	80 MHz		BPSK	216		4.28
			QPSK			5.42
			16-QAM			6.23
			64-QAM			6.51
			256-QAM			6.49
	90 MHz		BPSK	243		4.49
			QPSK			5.74
			16-QAM			6.47
			64-QAM			6.70
			256-QAM			6.57
	100 MHz		BPSK	270		4.58
			QPSK			5.70
			16-QAM			6.44
			64-QAM			6.63
			256-QAM			6.61

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 143 ~ 197.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n77	10 MHz	3500.01	BPSK	24	0	8.6051
			QPSK			8.6508
			16-QAM			8.6753
			64-QAM			8.6387
			256-QAM			8.6407
	15 MHz		BPSK	36		12.945
			QPSK			12.906
			16-QAM			12.963
			64-QAM			12.978
			256-QAM			12.942
	20 MHz		BPSK	50		17.950
			QPSK			17.941
			16-QAM			17.961
			64-QAM			17.935
			256-QAM			17.941
	30 MHz		BPSK	75		26.955
			QPSK			27.037
			16-QAM			26.957
			64-QAM			27.001
			256-QAM			26.982
	40 MHz		BPSK	100		35.862
			QPSK			35.850
			16-QAM			35.865
			64-QAM			35.843
			256-QAM			35.891
	50 MHz		BPSK	128		45.934
			QPSK			45.925
			16-QAM			45.752
			64-QAM			45.876
			256-QAM			45.840
	60 MHz		BPSK	162		58.012

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
			QPSK			57.971
			16-QAM			58.015
			64-QAM			58.067
			256-QAM			57.973
	70 MHz		BPSK	180		64.335
			QPSK			64.517
			16-QAM			64.607
			64-QAM			64.529
			256-QAM			64.463
	80 MHz		BPSK	216		77.395
			QPSK			77.526
			16-QAM			77.105
			64-QAM			77.145
			256-QAM			77.330
	90 MHz		BPSK	243		87.051
			QPSK			87.115
			16-QAM			86.918
			64-QAM			86.755
			256-QAM			86.943
	100 MHz		BPSK	270		96.802
			QPSK			96.123
			16-QAM			96.741
			64-QAM			96.380
			256-QAM			96.646

Note:

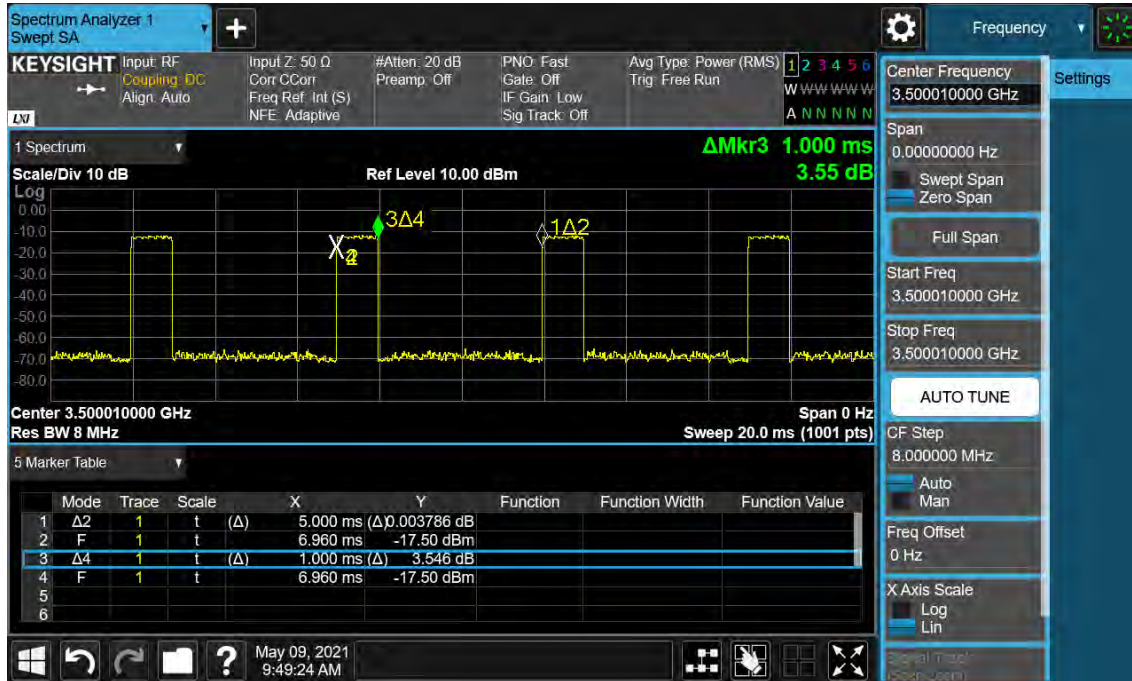
1. Plots of the EUT's Occupied Bandwidth are shown Page 88 ~ 142.

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	3455.01	4.9686	37.190	-70.858	-33.668	-13.00
		3500.01	5.9896	37.805	-70.718	-32.913	
		3544.99	9.1406	37.805	-70.772	-32.967	
	15	3457.50	7.5000	37.805	-70.616	-32.811	
		3500.01	5.1910	37.805	-69.696	-31.891	
		3542.50	9.9581	37.805	-71.268	-33.463	
	20	3460.02	5.2184	37.805	-70.943	-33.138	
		3500.01	8.2577	37.805	-70.589	-32.784	
		3540.00	8.2503	37.805	-70.245	-32.440	
	30	3465.00	8.2901	37.805	-70.623	-32.818	
		3500.01	8.8709	37.805	-70.503	-32.698	
		3534.99	8.8679	37.805	-70.670	-32.865	
	40	3470.01	8.2697	37.805	-69.659	-31.854	
		3500.01	9.9656	37.805	-70.751	-32.946	
		3529.98	9.9691	37.805	-70.344	-32.539	
	50	3475.02	6.0195	37.805	-69.588	-31.783	
		3500.01	9.9751	37.805	-70.236	-32.431	
		3525.00	7.4601	37.805	-70.843	-33.038	
	60	3480.00	6.9028	37.805	-70.841	-33.036	
		3500.01	9.1501	37.805	-70.760	-32.955	
		3519.99	6.0090	37.805	-70.708	-32.903	
	70	3485.01	4.9327	37.190	-70.576	-33.386	
		3500.01	5.2309	37.805	-70.111	-32.306	
		3514.98	9.1800	37.805	-70.562	-32.757	
	80	3490.02	9.9661	37.805	-70.133	-32.328	
		3500.01	6.0190	37.805	-70.317	-32.512	
		3510.00	9.6889	37.805	-70.820	-33.015	
	90	3495.00	9.1441	37.805	-70.571	-32.766	
		3500.01	4.9622	37.190	-70.452	-33.262	
		3504.99	8.0010	37.805	-69.772	-31.967	
	100	3500.01	6.9028	37.805	-70.170	-32.365	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 330 ~ 391.
2. Duty Cycle factor already applied on the factor.
- Duty Cycle Factor(dB) = 6.990



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

- Result(dBm) = Reading + Factor

3. Factor(dB)

Frequency Range (GHz)	Factor [dB]
0.03 – 1	34.484
1 – 5	37.190
5 – 10	37.805
10 – 15	38.330
15 – 20	38.703
Above 20	39.345

8.6 BAND EDGE

1. Plots of the EUT's Band Edge are shown Page 198 ~ 329.
2. Duty Cycle factor already applied on the factor.
 - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Splitter
 - Result(dBm) = Reading + Factor
 - Duty Cycle Factor(dB) = 6.990

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. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3455.010	100 %	+20(Ref)	3455 010 006	0.0	0.000 000	0.000
	100 %	-30	3455 010 017	10.8	0.000 000	0.003
	100 %	-20	3455 010 018	11.5	0.000 000	0.003
	100 %	-10	3455 010 021	14.5	0.000 000	0.004
	100 %	0	3455 010 014	8.0	0.000 000	0.002
	100 %	+10	3455 010 021	14.5	0.000 000	0.004
	100 %	+30	3455 010 022	16.1	0.000 000	0.005
	100 %	+40	3455 010 014	8.2	0.000 000	0.002
	100 %	+50	3455 010 014	7.5	0.000 000	0.002
	Batt. Endpoint	+20	3455 010 017	10.9	0.000 000	0.003
3544.980	100 %	+20(Ref)	3544 980 011	0.0	0.000 000	0.000
	100 %	-30	3544 980 023	12.1	0.000 000	0.003
	100 %	-20	3544 980 022	10.9	0.000 000	0.003
	100 %	-10	3544 980 021	10.3	0.000 000	0.003
	100 %	0	3544 980 022	10.9	0.000 000	0.003
	100 %	+10	3544 980 017	6.2	0.000 000	0.002
	100 %	+30	3544 980 025	14.3	0.000 000	0.004
	100 %	+40	3544 980 014	3.3	0.000 000	0.001
	100 %	+50	3544 980 015	4.1	0.000 000	0.001
	Batt. Endpoint	+20	3544 980 023	12.0	0.000 000	0.003

- ▣ BandWidth: 15 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3457.500	100 %	+20(Ref)	3457 500 014	0.0	0.000 000	0.000
	100 %	-30	3457 500 026	11.5	0.000 000	0.003
	100 %	-20	3457 500 023	8.8	0.000 000	0.003
	100 %	-10	3457 500 026	11.2	0.000 000	0.003
	100 %	0	3457 500 023	8.1	0.000 000	0.002
	100 %	+10	3457 500 022	7.8	0.000 000	0.002
	100 %	+30	3457 500 023	8.2	0.000 000	0.002
	100 %	+40	3457 500 020	5.6	0.000 000	0.002
	100 %	+50	3457 500 019	4.8	0.000 000	0.001
	Batt. Endpoint	+20	3457 500 022	7.6	0.000 000	0.002
3542.490	100 %	+20(Ref)	3542 490 012	0.0	0.000 000	0.000
	100 %	-30	3542 490 024	12.6	0.000 000	0.004
	100 %	-20	3542 490 021	9.0	0.000 000	0.003
	100 %	-10	3542 490 024	12.1	0.000 000	0.003
	100 %	0	3542 490 019	7.3	0.000 000	0.002
	100 %	+10	3542 490 027	15.6	0.000 000	0.004
	100 %	+30	3542 490 020	8.6	0.000 000	0.002
	100 %	+40	3542 490 022	10.2	0.000 000	0.003
	100 %	+50	3542 490 019	7.5	0.000 000	0.002
	Batt. Endpoint	+20	3542 490 015	3.2	0.000 000	0.001

☐ BandWidth: 20 MHz
☐ Voltage(100 %): 3.860 VDC
☐ Batt. Endpoint: 3.400 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3460.020	100 %	+20(Ref)	3460 020 004	0.0	0.000 000	0.000
	100 %	-30	3460 020 010	6.1	0.000 000	0.002
	100 %	-20	3460 020 010	5.6	0.000 000	0.002
	100 %	-10	3460 020 017	13.1	0.000 000	0.004
	100 %	0	3460 020 017	13.2	0.000 000	0.004
	100 %	+10	3460 020 016	12.1	0.000 000	0.004
	100 %	+30	3460 020 011	7.0	0.000 000	0.002
	100 %	+40	3460 020 020	15.8	0.000 000	0.005
	100 %	+50	3460 020 017	12.5	0.000 000	0.004
	Batt. Endpoint	+20	3460 020 010	6.0	0.000 000	0.002
3540.000	100 %	+20(Ref)	3540 000 007	0.0	0.000 000	0.000
	100 %	-30	3540 000 013	6.3	0.000 000	0.002
	100 %	-20	3540 000 012	5.4	0.000 000	0.002
	100 %	-10	3540 000 020	13.3	0.000 000	0.004
	100 %	0	3540 000 018	10.9	0.000 000	0.003
	100 %	+10	3540 000 011	4.5	0.000 000	0.001
	100 %	+30	3540 000 012	5.2	0.000 000	0.001
	100 %	+40	3540 000 013	5.9	0.000 000	0.002
	100 %	+50	3540 000 012	5.8	0.000 000	0.002
	Batt. Endpoint	+20	3540 000 010	3.1	0.000 000	0.001

- ▣ BandWidth: 30 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3465.000	100 %	+20(Ref)	3465 000 006	0.0	0.000 000	0.000
	100 %	-30	3465 000 019	13.2	0.000 000	0.004
	100 %	-20	3465 000 016	9.8	0.000 000	0.003
	100 %	-10	3465 000 017	11.1	0.000 000	0.003
	100 %	0	3465 000 017	10.9	0.000 000	0.003
	100 %	+10	3465 000 014	7.9	0.000 000	0.002
	100 %	+30	3465 000 019	13.2	0.000 000	0.004
	100 %	+40	3465 000 021	15.5	0.000 000	0.004
	100 %	+50	3465 000 015	9.3	0.000 000	0.003
	Batt. Endpoint	+20	3465 000 014	8.1	0.000 000	0.002
3534.990	100 %	+20(Ref)	3534 990 007	0.0	0.000 000	0.000
	100 %	-30	3534 990 023	16.7	0.000 000	0.005
	100 %	-20	3534 990 014	7.2	0.000 000	0.002
	100 %	-10	3534 990 014	7.8	0.000 000	0.002
	100 %	0	3534 990 012	5.1	0.000 000	0.001
	100 %	+10	3534 990 017	10.9	0.000 000	0.003
	100 %	+30	3534 990 014	7.1	0.000 000	0.002
	100 %	+40	3534 990 012	5.1	0.000 000	0.001
	100 %	+50	3534 990 010	4.0	0.000 000	0.001
	Batt. Endpoint	+20	3534 990 017	10.2	0.000 000	0.003

- ▣ BandWidth: 40 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3470.010	100 %	+20(Ref)	3470 010 004	0.0	0.000 000	0.000
	100 %	-30	3470 010 016	11.8	0.000 000	0.003
	100 %	-20	3470 010 015	10.8	0.000 000	0.003
	100 %	-10	3470 010 014	9.9	0.000 000	0.003
	100 %	0	3470 010 009	4.9	0.000 000	0.001
	100 %	+10	3470 010 015	11.0	0.000 000	0.003
	100 %	+30	3470 010 014	9.5	0.000 000	0.003
	100 %	+40	3470 010 018	14.0	0.000 000	0.004
	100 %	+50	3470 010 017	12.6	0.000 000	0.004
	Batt. Endpoint	+20	3470 010 013	9.0	0.000 000	0.003
3529.980	100 %	+20(Ref)	3529 980 006	0.0	0.000 000	0.000
	100 %	-30	3529 980 012	5.8	0.000 000	0.002
	100 %	-20	3529 980 014	8.3	0.000 000	0.002
	100 %	-10	3529 980 016	10.1	0.000 000	0.003
	100 %	0	3529 980 018	11.5	0.000 000	0.003
	100 %	+10	3529 980 020	13.9	0.000 000	0.004
	100 %	+30	3529 980 016	10.2	0.000 000	0.003
	100 %	+40	3529 980 010	4.3	0.000 000	0.001
	100 %	+50	3529 980 020	14.3	0.000 000	0.004
	Batt. Endpoint	+20	3529 980 015	8.5	0.000 000	0.002

- ▣ BandWidth: 50 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3475.020	100 %	+20(Ref)	3475 020 013	0.0	0.000 000	0.000
	100 %	-30	3475 020 019	6.2	0.000 000	0.002
	100 %	-20	3475 020 022	8.7	0.000 000	0.003
	100 %	-10	3475 020 026	12.7	0.000 000	0.004
	100 %	0	3475 020 021	7.5	0.000 000	0.002
	100 %	+10	3475 020 024	11.1	0.000 000	0.003
	100 %	+30	3475 020 018	4.9	0.000 000	0.001
	100 %	+40	3475 020 026	13.2	0.000 000	0.004
	100 %	+50	3475 020 030	16.5	0.000 000	0.005
	Batt. Endpoint	+20	3475 020 019	6.1	0.000 000	0.002
3525.000	100 %	+20(Ref)	3525 000 016	0.0	0.000 000	0.000
	100 %	-30	3525 000 028	11.5	0.000 000	0.003
	100 %	-20	3525 000 033	17.0	0.000 000	0.005
	100 %	-10	3525 000 029	12.5	0.000 000	0.004
	100 %	0	3525 000 023	6.8	0.000 000	0.002
	100 %	+10	3525 000 025	9.2	0.000 000	0.003
	100 %	+30	3525 000 033	16.9	0.000 000	0.005
	100 %	+40	3525 000 033	16.7	0.000 000	0.005
	100 %	+50	3525 000 022	5.9	0.000 000	0.002
	Batt. Endpoint	+20	3525 000 020	4.3	0.000 000	0.001

- ▣ BandWidth: 60 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3480.000	100 %	+20(Ref)	3480 000 015	0.0	0.000 000	0.000
	100 %	-30	3480 000 022	6.6	0.000 000	0.002
	100 %	-20	3480 000 019	3.9	0.000 000	0.001
	100 %	-10	3480 000 030	15.0	0.000 000	0.004
	100 %	0	3480 000 023	7.3	0.000 000	0.002
	100 %	+10	3480 000 026	10.6	0.000 000	0.003
	100 %	+30	3480 000 024	8.6	0.000 000	0.002
	100 %	+40	3480 000 027	12.0	0.000 000	0.003
	100 %	+50	3480 000 024	8.8	0.000 000	0.003
	Batt. Endpoint	+20	3480 000 022	6.3	0.000 000	0.002
3519.990	100 %	+20(Ref)	3519 990 017	0.0	0.000 000	0.000
	100 %	-30	3519 990 031	13.9	0.000 000	0.004
	100 %	-20	3519 990 032	15.0	0.000 000	0.004
	100 %	-10	3519 990 020	3.2	0.000 000	0.001
	100 %	0	3519 990 025	8.8	0.000 000	0.002
	100 %	+10	3519 990 020	3.0	0.000 000	0.001
	100 %	+30	3519 990 022	5.2	0.000 000	0.001
	100 %	+40	3519 990 027	10.7	0.000 000	0.003
	100 %	+50	3519 990 025	8.1	0.000 000	0.002
	Batt. Endpoint	+20	3519 990 030	13.6	0.000 000	0.004

- ▣ BandWidth: 70 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	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	15.8	0.000 000	0.005
	100 %	-20	3485 010 020	13.7	0.000 000	0.004
	100 %	-10	3485 010 014	8.1	0.000 000	0.002
	100 %	0	3485 010 012	5.9	0.000 000	0.002
	100 %	+10	3485 010 022	15.9	0.000 000	0.005
	100 %	+30	3485 010 010	3.9	0.000 000	0.001
	100 %	+40	3485 010 012	5.8	0.000 000	0.002
	100 %	+50	3485 010 013	7.0	0.000 000	0.002
	Batt. Endpoint	+20	3485 010 015	8.5	0.000 000	0.002
3514.980	100 %	+20(Ref)	3514 980 016	0.0	0.000 000	0.000
	100 %	-30	3514 980 025	9.1	0.000 000	0.003
	100 %	-20	3514 980 032	16.4	0.000 000	0.005
	100 %	-10	3514 980 026	10.3	0.000 000	0.003
	100 %	0	3514 980 025	9.0	0.000 000	0.003
	100 %	+10	3514 980 025	9.0	0.000 000	0.003
	100 %	+30	3514 980 020	4.0	0.000 000	0.001
	100 %	+40	3514 980 024	8.0	0.000 000	0.002
	100 %	+50	3514 980 020	3.6	0.000 000	0.001
	Batt. Endpoint	+20	3514 980 025	8.8	0.000 000	0.003

- ▣ BandWidth: 80 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3490.020	100 %	+20(Ref)	3490 020 007	0.0	0.000 000	0.000
	100 %	-30	3490 020 017	10.7	0.000 000	0.003
	100 %	-20	3490 020 019	12.3	0.000 000	0.004
	100 %	-10	3490 020 017	10.4	0.000 000	0.003
	100 %	0	3490 020 012	5.4	0.000 000	0.002
	100 %	+10	3490 020 016	9.1	0.000 000	0.003
	100 %	+30	3490 020 022	15.4	0.000 000	0.004
	100 %	+40	3490 020 021	14.0	0.000 000	0.004
	100 %	+50	3490 020 023	16.3	0.000 000	0.005
	Batt. Endpoint	+20	3490 020 018	11.4	0.000 000	0.003
3510.000	100 %	+20(Ref)	3510 000 011	0.0	0.000 000	0.000
	100 %	-30	3510 000 017	6.0	0.000 000	0.002
	100 %	-20	3510 000 026	14.7	0.000 000	0.004
	100 %	-10	3510 000 025	14.4	0.000 000	0.004
	100 %	0	3510 000 022	11.1	0.000 000	0.003
	100 %	+10	3510 000 028	17.0	0.000 000	0.005
	100 %	+30	3510 000 023	12.3	0.000 000	0.003
	100 %	+40	3510 000 016	4.8	0.000 000	0.001
	100 %	+50	3510 000 017	6.1	0.000 000	0.002
	Batt. Endpoint	+20	3510 000 020	8.4	0.000 000	0.002

- ▣ BandWidth: 90 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3495.000	100 %	+20(Ref)	3495 000 008	0.0	0.000 000	0.000
	100 %	-30	3495 000 014	5.5	0.000 000	0.002
	100 %	-20	3495 000 014	6.2	0.000 000	0.002
	100 %	-10	3495 000 023	14.8	0.000 000	0.004
	100 %	0	3495 000 022	14.0	0.000 000	0.004
	100 %	+10	3495 000 023	14.4	0.000 000	0.004
	100 %	+30	3495 000 024	15.9	0.000 000	0.005
	100 %	+40	3495 000 014	5.5	0.000 000	0.002
	100 %	+50	3495 000 023	14.6	0.000 000	0.004
	Batt. Endpoint	+20	3495 000 020	11.5	0.000 000	0.003
3504.990	100 %	+20(Ref)	3504 990 010	0.0	0.000 000	0.000
	100 %	-30	3504 990 017	7.1	0.000 000	0.002
	100 %	-20	3504 990 017	6.9	0.000 000	0.002
	100 %	-10	3504 990 018	7.4	0.000 000	0.002
	100 %	0	3504 990 026	15.5	0.000 000	0.004
	100 %	+10	3504 990 021	10.3	0.000 000	0.003
	100 %	+30	3504 990 023	13.2	0.000 000	0.004
	100 %	+40	3504 990 025	14.7	0.000 000	0.004
	100 %	+50	3504 990 026	15.9	0.000 000	0.005
	Batt. Endpoint	+20	3504 990 016	6.0	0.000 000	0.002

☐ BandWidth: 100 MHz
☐ Voltage(100 %): 3.860 VDC
☐ Batt. Endpoint: 3.400 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3500.010	100 %	+20(Ref)	3500 010 014	0.0	0.000 000	0.000
	100 %	-30	3500 010 030	16.5	0.000 000	0.005
	100 %	-20	3500 010 029	15.4	0.000 000	0.004
	100 %	-10	3500 010 028	14.7	0.000 000	0.004
	100 %	0	3500 010 024	10.7	0.000 000	0.003
	100 %	+10	3500 010 019	5.2	0.000 000	0.001
	100 %	+30	3500 010 021	6.9	0.000 000	0.002
	100 %	+40	3500 010 031	16.8	0.000 000	0.005
	100 %	+50	3500 010 025	10.9	0.000 000	0.003
	Batt. Endpoint	+20	3500 010 024	10.4	0.000 000	0.003

9. TEST DATA (3700 MHz - 3980 MHz)

9.1 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	-23.68	14.66	11.70	3.14	H	< 1.00	0.210	23.23
		QPSK	-23.68	14.66	11.70	3.14	H		0.210	23.23
		16-QAM	-24.77	13.57	11.70	3.14	H		0.164	22.14
		64-QAM	-26.65	11.69	11.70	3.14	H		0.106	20.26
		256-QAM	-28.27	10.07	11.70	3.14	H		0.073	18.64
3840.00		PI/2 BPSK	-24.11	15.81	11.24	3.21	H		0.242	23.84
		QPSK	-24.15	15.77	11.24	3.21	H		0.240	23.80
		16-QAM	-25.38	14.54	11.24	3.21	H		0.181	22.57
		64-QAM	-27.17	12.75	11.24	3.21	H		0.120	20.78
		256-QAM	-28.75	11.17	11.24	3.21	H		0.083	19.20
3975.00		PI/2 BPSK	-27.09	12.54	11.20	3.23	H		0.113	20.51
		QPSK	-27.13	12.50	11.20	3.23	H		0.112	20.47
		16-QAM	-28.29	11.34	11.20	3.23	H		0.085	19.31
		64-QAM	-30.09	9.54	11.20	3.23	H		0.056	17.51
		256-QAM	-31.72	7.91	11.20	3.23	H		0.039	15.88

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	-23.31	14.98	11.70	3.15	H	< 1.00	0.226	23.53
		QPSK	-23.32	14.97	11.70	3.15	H		0.225	23.52
		16-QAM	-24.41	13.88	11.70	3.15	H		0.175	22.43
		64-QAM	-26.25	12.04	11.70	3.15	H		0.115	20.59
		256-QAM	-27.91	10.38	11.70	3.15	H		0.078	18.93
3840.00		PI/2 BPSK	-23.98	15.94	11.24	3.21	H		0.250	23.97
		QPSK	-23.99	15.93	11.24	3.21	H		0.249	23.96
		16-QAM	-25.26	14.66	11.24	3.21	H		0.186	22.69
		64-QAM	-27.04	12.88	11.24	3.21	H		0.123	20.91
		256-QAM	-28.63	11.29	11.24	3.21	H		0.086	19.32
3972.48		PI/2 BPSK	-27.10	12.55	11.18	3.23	H		0.112	20.50
		QPSK	-27.11	12.54	11.18	3.23	H		0.112	20.49
		16-QAM	-28.22	11.43	11.18	3.23	H		0.087	19.38
		64-QAM	-30.06	9.59	11.18	3.23	H		0.057	17.54
		256-QAM	-31.71	7.94	11.18	3.23	H		0.039	15.89

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	-23.29	15.00	11.70	3.15	H	< 1.00	0.227	23.55
		QPSK	-23.34	14.95	11.70	3.15	H		0.224	23.50
		16-QAM	-24.54	13.75	11.70	3.15	H		0.170	22.30
		64-QAM	-26.31	11.98	11.70	3.15	H		0.113	20.53
		256-QAM	-27.89	10.40	11.70	3.15	H		0.079	18.95
3840.00		PI/2 BPSK	-24.66	15.26	11.24	3.21	H		0.213	23.29
		QPSK	-24.71	15.21	11.24	3.21	H		0.211	23.24
		16-QAM	-25.90	14.02	11.24	3.21	H		0.160	22.05
		64-QAM	-27.78	12.14	11.24	3.21	H		0.104	20.17
		256-QAM	-29.39	10.53	11.24	3.21	H		0.072	18.56
3969.99		PI/2 BPSK	-26.71	12.94	11.18	3.23	H		0.123	20.89
		QPSK	-26.85	12.80	11.18	3.23	H		0.119	20.75
		16-QAM	-27.99	11.66	11.18	3.23	H		0.092	19.61
		64-QAM	-29.93	9.72	11.18	3.23	H		0.059	17.67
		256-QAM	-31.47	8.18	11.18	3.23	H		0.041	16.13

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	-23.46	14.96	11.70	3.18	H	< 1.00	0.223	23.48
		QPSK	-23.47	14.95	11.70	3.18	H		0.223	23.47
		16-QAM	-24.73	13.69	11.70	3.18	H		0.167	22.21
		64-QAM	-26.45	11.97	11.70	3.18	H		0.112	20.49
		256-QAM	-28.01	10.41	11.70	3.18	H		0.078	18.93
3840.00		PI/2 BPSK	-24.45	15.47	11.24	3.21	H		0.224	23.50
		QPSK	-24.56	15.36	11.24	3.21	H		0.218	23.39
		16-QAM	-25.73	14.19	11.24	3.21	H		0.167	22.22
		64-QAM	-27.43	12.49	11.24	3.21	H		0.113	20.52
		256-QAM	-29.01	10.91	11.24	3.21	H		0.078	18.94
3964.98		PI/2 BPSK	-26.41	13.26	11.16	3.23	H		0.132	21.19
		QPSK	-26.42	13.25	11.16	3.23	H		0.131	21.18
		16-QAM	-27.56	12.11	11.16	3.23	H		0.101	20.04
		64-QAM	-29.51	10.16	11.16	3.23	H		0.065	18.09
		256-QAM	-31.10	8.57	11.16	3.23	H		0.045	16.50

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	-23.31	15.23	11.70	3.20	H	< 1.00	0.236	23.73
		QPSK	-23.34	15.20	11.70	3.20	H		0.235	23.70
		16-QAM	-24.45	14.09	11.70	3.20	H		0.182	22.59
		64-QAM	-26.27	12.27	11.70	3.20	H		0.120	20.77
		256-QAM	-27.90	10.64	11.70	3.20	H		0.082	19.14
3840.00		PI/2 BPSK	-24.03	15.89	11.24	3.21	H		0.247	23.92
		QPSK	-24.06	15.86	11.24	3.21	H		0.245	23.89
		16-QAM	-25.29	14.63	11.24	3.21	H		0.185	22.66
		64-QAM	-27.11	12.81	11.24	3.21	H		0.121	20.84
		256-QAM	-28.78	11.14	11.24	3.21	H		0.083	19.17
3960.00		PI/2 BPSK	-26.28	13.41	11.14	3.23	H		0.136	21.32
		QPSK	-26.31	13.38	11.14	3.23	H		0.135	21.29
		16-QAM	-27.41	12.28	11.14	3.23	H		0.105	20.19
		64-QAM	-29.36	10.33	11.14	3.23	H		0.067	18.24
		256-QAM	-30.97	8.72	11.14	3.23	H		0.046	16.63

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3725.10	Sub6 n77/ 50 MHz [30 kHz]	PI/2 BPSK	-23.69	14.93	11.70	3.22	H	< 1.00	0.219	23.41
		QPSK	-23.70	14.92	11.70	3.22	H		0.219	23.40
		16-QAM	-24.99	13.63	11.70	3.22	H		0.163	22.11
		64-QAM	-26.73	11.89	11.70	3.22	H		0.109	20.37
		256-QAM	-28.37	10.25	11.70	3.22	H		0.075	18.73
3840.00		PI/2 BPSK	-24.36	15.56	11.24	3.21	H		0.229	23.59
		QPSK	-24.45	15.47	11.24	3.21	H		0.224	23.50
		16-QAM	-25.53	14.39	11.24	3.21	H		0.175	22.42
		64-QAM	-27.41	12.51	11.24	3.21	H		0.113	20.54
		256-QAM	-29.22	10.70	11.24	3.21	H		0.075	18.73
3954.99		PI/2 BPSK	-26.58	13.13	11.12	3.23	H		0.127	21.02
		QPSK	-26.57	13.14	11.12	3.23	H		0.127	21.03
		16-QAM	-27.75	11.96	11.12	3.23	H		0.097	19.85
		64-QAM	-29.51	10.20	11.12	3.23	H		0.065	18.09
		256-QAM	-31.19	8.52	11.12	3.23	H		0.044	16.41

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3730.02	Sub6 n77/ 60 MHz [30 kHz]	PI/2 BPSK	-23.75	14.95	11.70	3.24	H	< 1.00	0.219	23.41
		QPSK	-23.79	14.91	11.70	3.24	H		0.217	23.37
		16-QAM	-24.97	13.73	11.70	3.24	H		0.166	22.19
		64-QAM	-26.75	11.95	11.70	3.24	H		0.110	20.41
		256-QAM	-28.35	10.35	11.70	3.24	H		0.076	18.81
3840.00		PI/2 BPSK	-24.26	15.66	11.24	3.21	H		0.234	23.69
		QPSK	-24.31	15.61	11.24	3.21	H		0.231	23.64
		16-QAM	-25.39	14.53	11.24	3.21	H		0.180	22.56
		64-QAM	-27.24	12.68	11.24	3.21	H		0.118	20.71
		256-QAM	-28.88	11.04	11.24	3.21	H		0.081	19.07
3949.98		PI/2 BPSK	-26.51	13.22	11.10	3.23	H		0.129	21.09
		QPSK	-26.53	13.20	11.10	3.23	H		0.128	21.07
		16-QAM	-27.67	12.06	11.10	3.23	H		0.099	19.93
		64-QAM	-29.69	10.04	11.10	3.23	H		0.062	17.91
		256-QAM	-31.38	8.35	11.10	3.23	H		0.042	16.22

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3735.00	Sub6 n77/ 70 MHz [30 kHz]	PI/2 BPSK	-23.78	14.98	11.70	3.24	H	< 1.00	0.221	23.44
		QPSK	-23.83	14.93	11.70	3.24	H		0.219	23.39
		16-QAM	-24.96	13.80	11.70	3.24	H		0.168	22.26
		64-QAM	-26.78	11.98	11.70	3.24	H		0.111	20.44
		256-QAM	-28.39	10.37	11.70	3.24	H		0.077	18.83
3840.00		PI/2 BPSK	-24.15	15.77	11.24	3.21	H		0.240	23.80
		QPSK	-24.17	15.75	11.24	3.21	H		0.239	23.78
		16-QAM	-25.36	14.56	11.24	3.21	H		0.182	22.59
		64-QAM	-27.11	12.81	11.24	3.21	H		0.121	20.84
		256-QAM	-28.71	11.21	11.24	3.21	H		0.084	19.24
3945.00		PI/2 BPSK	-26.41	13.33	11.09	3.23	H		0.132	21.19
		QPSK	-26.44	13.30	11.09	3.23	H		0.131	21.16
		16-QAM	-27.63	12.11	11.09	3.23	H		0.099	19.97
		64-QAM	-29.43	10.31	11.09	3.23	H		0.066	18.17
		256-QAM	-31.05	8.69	11.09	3.23	H		0.045	16.55

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	-23.85	14.97	11.70	3.23	H	< 1.00	0.221	23.44
		QPSK	-23.86	14.96	11.70	3.23	H		0.220	23.43
		16-QAM	-25.03	13.79	11.70	3.23	H		0.168	22.26
		64-QAM	-26.78	12.04	11.70	3.23	H		0.112	20.51
		256-QAM	-28.43	10.39	11.70	3.23	H		0.077	18.86
3840.00		PI/2 BPSK	-23.99	15.93	11.24	3.21	H		0.249	23.96
		QPSK	-24.00	15.92	11.24	3.21	H		0.248	23.95
		16-QAM	-25.16	14.76	11.24	3.21	H		0.190	22.79
		64-QAM	-27.07	12.85	11.24	3.21	H		0.123	20.88
		256-QAM	-28.64	11.28	11.24	3.21	H		0.085	19.31
3939.99		PI/2 BPSK	-26.14	13.61	11.08	3.23	H		0.140	21.46
		QPSK	-26.21	13.54	11.08	3.23	H		0.138	21.39
		16-QAM	-27.34	12.41	11.08	3.23	H		0.106	20.26
		64-QAM	-29.33	10.42	11.08	3.23	H		0.067	18.27
		256-QAM	-31.01	8.74	11.08	3.23	H		0.046	16.59

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
3745.02	Sub6 n77/ 90 MHz [30 kHz]	PI/2 BPSK	-23.86	14.98	11.70	3.22	H	< 1.00	0.222	23.46
		QPSK	-23.90	14.94	11.70	3.22	H		0.220	23.42
		16-QAM	-25.13	13.71	11.70	3.22	H		0.166	22.19
		64-QAM	-26.82	12.02	11.70	3.22	H		0.112	20.50
		256-QAM	-28.44	10.40	11.70	3.22	H		0.077	18.88
3840.00		PI/2 BPSK	-23.93	15.99	11.24	3.21	H		0.252	24.02
		QPSK	-23.94	15.98	11.24	3.21	H		0.252	24.01
		16-QAM	-25.01	14.91	11.24	3.21	H		0.197	22.94
		64-QAM	-26.96	12.96	11.24	3.21	H		0.126	20.99
		256-QAM	-28.54	11.38	11.24	3.21	H		0.087	19.41
3934.98		PI/2 BPSK	-26.09	13.67	11.07	3.23	H		0.142	21.51
		QPSK	-26.16	13.60	11.07	3.23	H		0.139	21.44
		16-QAM	-27.40	12.36	11.07	3.23	H		0.105	20.20
		64-QAM	-29.13	10.63	11.07	3.23	H		0.070	18.47
		256-QAM	-30.76	9.00	11.07	3.23	H		0.048	16.84

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	-23.88	14.98	11.70	3.20	H	< 1.00	0.223	23.48
		QPSK	-23.92	14.94	11.70	3.20	H		0.221	23.44
		16-QAM	-25.11	13.75	11.70	3.20	H		0.168	22.25
		64-QAM	-26.83	12.03	11.70	3.20	H		0.113	20.53
		256-QAM	-28.53	10.33	11.70	3.20	H		0.076	18.83
3840.00		PI/2 BPSK	-23.85	16.07	11.24	3.21	H		0.257	24.10
		QPSK	-23.91	16.01	11.24	3.21	H		0.254	24.04
		16-QAM	-24.97	14.95	11.24	3.21	H		0.199	22.98
		64-QAM	-26.85	13.07	11.24	3.21	H		0.129	21.10
		256-QAM	-28.45	11.47	11.24	3.21	H		0.089	19.50
3930.00		PI/2 BPSK	-25.99	13.60	11.24	3.23	H		0.145	21.61
		QPSK	-25.98	13.61	11.24	3.23	H		0.145	21.62
		16-QAM	-27.07	12.52	11.24	3.23	H		0.113	20.53
		64-QAM	-29.03	10.56	11.24	3.23	H		0.072	18.57
		256-QAM	-30.71	8.88	11.24	3.23	H		0.049	16.89

9.2 RADIATED SPURIOUS EMISSIONS

- NR Band: N77(PC2)
- Bandwidth: 100 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)
650000 (3750.00)	7 500.00	-60.96	11.50	-51.45	4.54	V	-44.49	-13.00
	11 250.00	-61.68	12.20	-48.80	5.74	H	-42.34	-13.00
	15 000.00	-56.08	14.40	-47.94	6.75	V	-40.29	-13.00
656000 (3840.00)	7 680.00	-57.71	11.54	-47.94	4.60	V	-41.00	-13.00
	11 520.00	-59.65	12.44	-45.71	5.72	V	-38.99	-13.00
	15 360.00	-56.41	15.54	-48.28	6.81	H	-39.55	-13.00
662000 (3930.00)	7 860.00	-58.94	11.00	-49.28	4.71	H	-42.99	-13.00
	11 790.00	-54.11	12.90	-41.73	5.87	V	-34.70	-13.00
	15 720.00	-60.24	16.40	-51.30	6.88	H	-41.78	-13.00

- ENDC-Mode : 5A(10 MHz)-n77A(100 MHz) , PC2

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
20525 (836.5)	1673.00	-57.31	9.52	-66.96	2.03	V	-59.47	-13.00
	2509.50	-61.34	10.28	-66.32	2.51	H	-58.55	-13.00
	3346.00	-59.56	11.28	-62.34	2.99	V	-54.05	-13.00

9.3 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	4.00
			QPSK			5.42
			16-QAM			6.12
			64-QAM			6.50
			256-QAM			6.49
	15 MHz		BPSK	36		4.34
			QPSK			5.56
			16-QAM			6.40
			64-QAM			6.41
			256-QAM			6.63
	20 MHz		BPSK	50		4.22
			QPSK			5.49
			16-QAM			6.27
			64-QAM			6.57
			256-QAM			6.66
	30 MHz		BPSK	75		4.26
			QPSK			5.48
			16-QAM			6.27
			64-QAM			6.51
			256-QAM			6.56
	40 MHz		BPSK	100		4.02
			QPSK			5.27
			16-QAM			6.18
			64-QAM			6.46
			256-QAM			6.55
	50 MHz		BPSK	128		3.92
			QPSK			5.33
			16-QAM			6.14
			64-QAM			6.48
			256-QAM			6.60

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
	60 MHz		BPSK	162		3.90
			QPSK			5.41
			16-QAM			6.26
			64-QAM			6.56
			256-QAM			6.54
	70 MHz		BPSK	180		4.45
			QPSK			5.68
			16-QAM			6.37
			64-QAM			6.50
			256-QAM			6.62
	80 MHz		BPSK	216		4.42
			QPSK			5.64
			16-QAM			6.40
			64-QAM			6.51
			256-QAM			6.59
	90 MHz		BPSK	243		4.22
			QPSK			5.58
			16-QAM			6.37
			64-QAM			6.60
			256-QAM			6.68
	100 MHz		BPSK	270		4.46
			QPSK			5.58
			16-QAM			6.34
			64-QAM			6.54
			256-QAM			6.64

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 448 ~ 502.

9.4 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	8.5848
			QPSK			8.5805
			16-QAM			8.6432
			64-QAM			8.6245
			256-QAM			8.5563
	15 MHz		BPSK	36		12.990
			QPSK			12.947
			16-QAM			12.902
			64-QAM			12.889
			256-QAM			12.889
	20 MHz		BPSK	50		17.940
			QPSK			17.935
			16-QAM			17.942
			64-QAM			17.969
			256-QAM			17.973
	30 MHz		BPSK	75		27.067
			QPSK			26.958
			16-QAM			26.883
			64-QAM			27.043
			256-QAM			26.949
	40 MHz		BPSK	100		35.821
			QPSK			35.750
			16-QAM			35.863
			64-QAM			35.805
			256-QAM			35.856
	50 MHz		BPSK	128		45.955
			QPSK			45.962
			16-QAM			45.872
			64-QAM			45.775
			256-QAM			45.990

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
	60 MHz		BPSK	162		57.939
			QPSK			58.072
			16-QAM			57.822
			64-QAM			57.805
			256-QAM			57.918
	70 MHz		BPSK	180		64.532
			QPSK			64.514
			16-QAM			64.330
			64-QAM			64.504
			256-QAM			64.251
	80 MHz		BPSK	216		77.247
			QPSK			77.496
			16-QAM			77.229
			64-QAM			77.105
			256-QAM			77.246
	90 MHz		BPSK	243		86.824
			QPSK			87.073
			16-QAM			86.706
			64-QAM			86.766
			256-QAM			87.007
	100 MHz		BPSK	270		96.642
			QPSK			96.791
			16-QAM			96.094
			64-QAM			96.496
			256-QAM			96.267

Note:

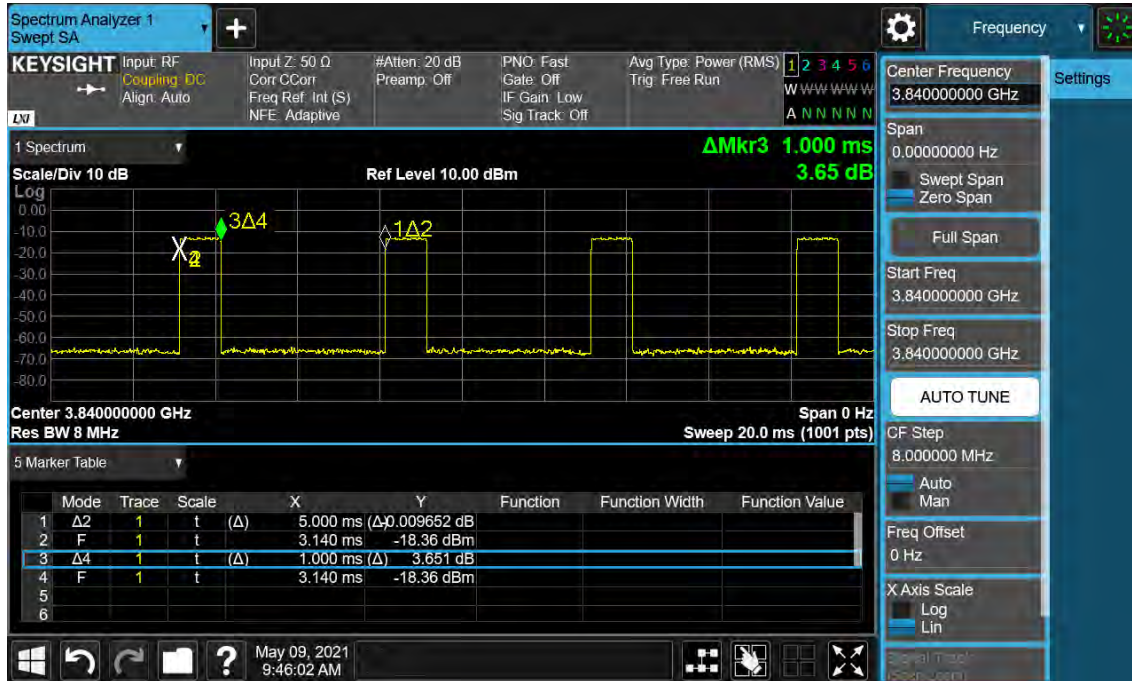
1. Plots of the EUT's Occupied Bandwidth are shown Page 393 ~ 447.

9.5 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	7.4572	37.805	-71.243	-33.438	-13.00
		3840.00	8.3360	37.805	-70.634	-32.829	
		3975.00	8.3046	37.805	-70.781	-32.976	
	15	3707.51	8.2438	37.805	-70.343	-32.538	
		3840.00	8.8854	37.805	-70.462	-32.657	
		3972.48	9.0972	37.805	-70.506	-32.701	
	20	3710.01	4.9018	37.190	-71.039	-33.849	
		3840.00	4.8879	37.190	-71.286	-34.096	
		3969.99	8.3071	37.805	-70.831	-33.026	
	30	3715.02	7.1586	37.805	-70.789	-32.984	
		3840.00	9.9502	37.805	-70.374	-32.569	
		3964.98	9.7169	37.805	-70.900	-33.095	
	40	3720.00	8.3151	37.805	-71.430	-33.625	
		3840.00	9.9905	37.805	-71.222	-33.417	
		3960.00	8.5917	37.805	-71.111	-33.306	
	50	3725.10	8.8789	37.805	-70.812	-33.007	
		3840.00	8.2403	37.805	-70.398	-32.593	
		3954.99	9.4123	37.805	-70.136	-32.331	
	60	3730.02	9.1969	37.805	-70.156	-32.351	
		3840.00	6.0010	37.805	-70.587	-32.782	
		3949.98	6.0110	37.805	-69.684	-31.879	
	70	3735.00	8.0040	37.805	-70.204	-32.399	
		3840.00	4.8839	37.190	-70.422	-33.232	
		3945.00	5.7548	37.805	-71.025	-33.220	
	80	3740.01	6.0294	37.805	-70.576	-32.771	
		3840.00	8.0539	37.805	-69.419	-31.614	
		3939.99	4.9472	37.190	-69.815	-32.625	
	90	3745.02	8.8599	37.805	-70.621	-32.816	
		3840.00	8.0045	37.805	-70.836	-33.031	
		3934.98	7.7094	37.805	-70.475	-32.670	
	100	3750.00	8.2194	37.805	-70.336	-32.531	
		3840.00	7.2034	37.805	-70.524	-32.719	
		3930.00	9.9736	37.805	-70.697	-32.892	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 635 ~ 700.
2. Duty Cycle factor already applied on the factor.
- Duty Cycle Factor(dB) = 6.990



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

3. Factor(dB)

Frequency Range (GHz)	Factor [dB]
0.03 – 1	34.484
1 – 5	37.190
5 – 10	37.805
10 – 15	38.330
15 – 20	38.703
Above 20	39.345

9.6 BAND EDGE

1. Plots of the EUT's Band Edge are shown Page 503 ~ 634.
2. Duty Cycle factor already applied on the factor.
 - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Splitter
 - Result(dBm) = Reading + Factor
 - Duty Cycle Factor(dB) = 6.990

9.7 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. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3705.000	100 %	+20(Ref)	3705 000 014	0.0	0.000 000	0.000
	100 %	-30	3705 000 031	16.1	0.000 000	0.004
	100 %	-20	3705 000 023	8.8	0.000 000	0.002
	100 %	-10	3705 000 027	12.3	0.000 000	0.003
	100 %	0	3705 000 027	12.6	0.000 000	0.003
	100 %	+10	3705 000 021	6.8	0.000 000	0.002
	100 %	+30	3705 000 020	5.4	0.000 000	0.001
	100 %	+40	3705 000 022	7.2	0.000 000	0.002
	100 %	+50	3705 000 027	12.4	0.000 000	0.003
	Batt. Endpoint	+20	3705 000 019	4.4	0.000 000	0.001
3975.000	100 %	+20(Ref)	3975 000 006	0.0	0.000 000	0.000
	100 %	-30	3975 000 010	4.0	0.000 000	0.001
	100 %	-20	3975 000 010	4.2	0.000 000	0.001
	100 %	-10	3975 000 010	4.4	0.000 000	0.001
	100 %	0	3975 000 009	3.1	0.000 000	0.001
	100 %	+10	3975 000 018	12.0	0.000 000	0.003
	100 %	+30	3975 000 016	10.4	0.000 000	0.003
	100 %	+40	3975 000 015	8.8	0.000 000	0.002
	100 %	+50	3975 000 022	15.9	0.000 000	0.004
	Batt. Endpoint	+20	3975 000 010	3.6	0.000 000	0.001

- ▣ BandWidth: 15 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3707.520	100 %	+20(Ref)	3707 520 015	0.0	0.000 000	0.000
	100 %	-30	3707 520 032	16.7	0.000 000	0.005
	100 %	-20	3707 520 019	3.7	0.000 000	0.001
	100 %	-10	3707 520 028	12.9	0.000 000	0.003
	100 %	0	3707 520 020	4.8	0.000 000	0.001
	100 %	+10	3707 520 020	5.0	0.000 000	0.001
	100 %	+30	3707 520 022	7.2	0.000 000	0.002
	100 %	+40	3707 520 026	11.1	0.000 000	0.003
	100 %	+50	3707 520 019	3.5	0.000 000	0.001
	Batt. Endpoint	+20	3707 520 028	13.2	0.000 000	0.004
3972.480	100 %	+20(Ref)	3972 480 004	0.0	0.000 000	0.000
	100 %	-30	3972 480 013	8.7	0.000 000	0.002
	100 %	-20	3972 480 020	16.2	0.000 000	0.004
	100 %	-10	3972 480 010	6.4	0.000 000	0.002
	100 %	0	3972 480 013	9.1	0.000 000	0.002
	100 %	+10	3972 480 016	11.8	0.000 000	0.003
	100 %	+30	3972 480 009	5.2	0.000 000	0.001
	100 %	+40	3972 480 015	10.7	0.000 000	0.003
	100 %	+50	3972 480 008	4.5	0.000 000	0.001
	Batt. Endpoint	+20	3972 480 018	14.1	0.000 000	0.004

- ▣ BandWidth: 20 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3710.010	100 %	+20(Ref)	3710 010 005	0.0	0.000 000	0.000
	100 %	-30	3710 010 017	12.0	0.000 000	0.003
	100 %	-20	3710 010 021	15.9	0.000 000	0.004
	100 %	-10	3710 010 011	5.5	0.000 000	0.001
	100 %	0	3710 010 019	13.8	0.000 000	0.004
	100 %	+10	3710 010 015	9.7	0.000 000	0.003
	100 %	+30	3710 010 017	11.9	0.000 000	0.003
	100 %	+40	3710 010 017	12.1	0.000 000	0.003
	100 %	+50	3710 010 019	14.0	0.000 000	0.004
	Batt. Endpoint	+20	3710 010 015	9.9	0.000 000	0.003
3969.990	100 %	+20(Ref)	3969 990 011	0.0	0.000 000	0.000
	100 %	-30	3969 990 023	12.6	0.000 000	0.003
	100 %	-20	3969 990 015	4.0	0.000 000	0.001
	100 %	-10	3969 990 028	17.0	0.000 000	0.004
	100 %	0	3969 990 019	8.2	0.000 000	0.002
	100 %	+10	3969 990 027	16.2	0.000 000	0.004
	100 %	+30	3969 990 015	4.3	0.000 000	0.001
	100 %	+40	3969 990 024	13.4	0.000 000	0.003
	100 %	+50	3969 990 014	3.1	0.000 000	0.001
	Batt. Endpoint	+20	3969 990 023	12.2	0.000 000	0.003

☐ BandWidth: 30 MHz
☐ Voltage(100 %): 3.860 VDC
☐ Batt. Endpoint: 3.400 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3715.020	100 %	+20(Ref)	3715 020 012	0.0	0.000 000	0.000
	100 %	-30	3715 020 021	9.3	0.000 000	0.002
	100 %	-20	3715 020 020	7.8	0.000 000	0.002
	100 %	-10	3715 020 020	8.3	0.000 000	0.002
	100 %	0	3715 020 027	15.2	0.000 000	0.004
	100 %	+10	3715 020 026	14.0	0.000 000	0.004
	100 %	+30	3715 020 026	14.2	0.000 000	0.004
	100 %	+40	3715 020 018	5.6	0.000 000	0.002
	100 %	+50	3715 020 017	4.5	0.000 000	0.001
	Batt. Endpoint	+20	3715 020 022	9.9	0.000 000	0.003
3964.980	100 %	+20(Ref)	3964 980 006	0.0	0.000 000	0.000
	100 %	-30	3964 980 020	13.6	0.000 000	0.003
	100 %	-20	3964 980 010	3.1	0.000 000	0.001
	100 %	-10	3964 980 011	4.2	0.000 000	0.001
	100 %	0	3964 980 013	6.2	0.000 000	0.002
	100 %	+10	3964 980 017	10.4	0.000 000	0.003
	100 %	+30	3964 980 015	8.9	0.000 000	0.002
	100 %	+40	3964 980 009	3.1	0.000 000	0.001
	100 %	+50	3964 980 010	3.4	0.000 000	0.001
	Batt. Endpoint	+20	3964 980 016	10.0	0.000 000	0.003

- ▣ BandWidth: 40 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3720.000	100 %	+20(Ref)	3720 000 009	0.0	0.000 000	0.000
	100 %	-30	3720 000 018	9.1	0.000 000	0.002
	100 %	-20	3720 000 018	8.9	0.000 000	0.002
	100 %	-10	3720 000 022	13.2	0.000 000	0.004
	100 %	0	3720 000 012	3.6	0.000 000	0.001
	100 %	+10	3720 000 023	14.2	0.000 000	0.004
	100 %	+30	3720 000 021	12.8	0.000 000	0.003
	100 %	+40	3720 000 015	6.1	0.000 000	0.002
	100 %	+50	3720 000 015	6.5	0.000 000	0.002
	Batt. Endpoint	+20	3720 000 013	4.8	0.000 000	0.001
3960.000	100 %	+20(Ref)	3960 000 015	0.0	0.000 000	0.000
	100 %	-30	3960 000 020	5.1	0.000 000	0.001
	100 %	-20	3960 000 023	8.2	0.000 000	0.002
	100 %	-10	3960 000 021	6.2	0.000 000	0.002
	100 %	0	3960 000 026	10.3	0.000 000	0.003
	100 %	+10	3960 000 021	5.6	0.000 000	0.001
	100 %	+30	3960 000 028	12.5	0.000 000	0.003
	100 %	+40	3960 000 018	3.1	0.000 000	0.001
	100 %	+50	3960 000 023	7.3	0.000 000	0.002
	Batt. Endpoint	+20	3960 000 030	14.8	0.000 000	0.004

☐ BandWidth: 50 MHz
☐ Voltage(100 %): 3.860 VDC
☐ Batt. Endpoint: 3.400 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3725.010	100 %	+20(Ref)	3725 010 011	0.0	0.000 000	0.000
	100 %	-30	3725 010 024	12.6	0.000 000	0.003
	100 %	-20	3725 010 022	10.7	0.000 000	0.003
	100 %	-10	3725 010 023	11.7	0.000 000	0.003
	100 %	0	3725 010 026	14.2	0.000 000	0.004
	100 %	+10	3725 010 020	8.5	0.000 000	0.002
	100 %	+30	3725 010 027	15.8	0.000 000	0.004
	100 %	+40	3725 010 026	14.7	0.000 000	0.004
	100 %	+50	3725 010 027	15.7	0.000 000	0.004
	Batt. Endpoint	+20	3725 010 027	15.8	0.000 000	0.004
3954.990	100 %	+20(Ref)	3954 990 011	0.0	0.000 000	0.000
	100 %	-30	3954 990 027	16.0	0.000 000	0.004
	100 %	-20	3954 990 015	4.0	0.000 000	0.001
	100 %	-10	3954 990 026	15.1	0.000 000	0.004
	100 %	0	3954 990 028	16.7	0.000 000	0.004
	100 %	+10	3954 990 017	6.1	0.000 000	0.002
	100 %	+30	3954 990 015	3.8	0.000 000	0.001
	100 %	+40	3954 990 018	7.1	0.000 000	0.002
	100 %	+50	3954 990 020	9.2	0.000 000	0.002
	Batt. Endpoint	+20	3954 990 025	13.5	0.000 000	0.003

- ▣ BandWidth: 60 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3730.020	100 %	+20(Ref)	3730 020 005	0.0	0.000 000	0.000
	100 %	-30	3730 020 021	15.8	0.000 000	0.004
	100 %	-20	3730 020 020	15.1	0.000 000	0.004
	100 %	-10	3730 020 011	6.3	0.000 000	0.002
	100 %	0	3730 020 013	8.4	0.000 000	0.002
	100 %	+10	3730 020 020	15.7	0.000 000	0.004
	100 %	+30	3730 020 018	12.9	0.000 000	0.003
	100 %	+40	3730 020 021	15.7	0.000 000	0.004
	100 %	+50	3730 020 020	15.4	0.000 000	0.004
	Batt. Endpoint	+20	3730 020 015	10.5	0.000 000	0.003
3949.995	100 %	+20(Ref)	3949 995 009	0.0	0.000 000	0.000
	100 %	-30	3949 995 013	4.2	0.000 000	0.001
	100 %	-20	3949 995 013	4.4	0.000 000	0.001
	100 %	-10	3949 995 019	10.6	0.000 000	0.003
	100 %	0	3949 995 022	13.2	0.000 000	0.003
	100 %	+10	3949 995 016	6.7	0.000 000	0.002
	100 %	+30	3949 995 013	4.4	0.000 000	0.001
	100 %	+40	3949 995 020	11.1	0.000 000	0.003
	100 %	+50	3949 995 021	12.6	0.000 000	0.003
	Batt. Endpoint	+20	3949 995 022	13.3	0.000 000	0.003

- ▣ BandWidth: 70 MHz
- ▣ Voltage(100 %): 3.860 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3735.000	100 %	+20(Ref)	3735 000 003	0.0	0.000 000	0.000
	100 %	-30	3735 000 014	10.4	0.000 000	0.003
	100 %	-20	3735 000 007	4.0	0.000 000	0.001
	100 %	-10	3735 000 012	8.1	0.000 000	0.002
	100 %	0	3735 000 010	6.6	0.000 000	0.002
	100 %	+10	3735 000 008	4.4	0.000 000	0.001
	100 %	+30	3735 000 007	3.2	0.000 000	0.001
	100 %	+40	3735 000 014	10.8	0.000 000	0.003
	100 %	+50	3735 000 016	12.9	0.000 000	0.003
	Batt. Endpoint	+20	3735 000 013	9.8	0.000 000	0.003
3945.000	100 %	+20(Ref)	3945 000 008	0.0	0.000 000	0.000
	100 %	-30	3945 000 012	4.0	0.000 000	0.001
	100 %	-20	3945 000 023	14.8	0.000 000	0.004
	100 %	-10	3945 000 018	9.9	0.000 000	0.002
	100 %	0	3945 000 019	11.5	0.000 000	0.003
	100 %	+10	3945 000 022	14.2	0.000 000	0.004
	100 %	+30	3945 000 022	14.2	0.000 000	0.004
	100 %	+40	3945 000 023	15.8	0.000 000	0.004
	100 %	+50	3945 000 016	7.9	0.000 000	0.002
	Batt. Endpoint	+20	3945 000 024	16.6	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. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3740.010	100 %	+20(Ref)	3740 010 003	0.0	0.000 000	0.000
	100 %	-30	3740 010 014	10.7	0.000 000	0.003
	100 %	-20	3740 010 011	8.0	0.000 000	0.002
	100 %	-10	3740 010 007	3.5	0.000 000	0.001
	100 %	0	3740 010 020	17.0	0.000 000	0.005
	100 %	+10	3740 010 016	12.6	0.000 000	0.003
	100 %	+30	3740 010 016	12.5	0.000 000	0.003
	100 %	+40	3740 010 016	13.0	0.000 000	0.003
	100 %	+50	3740 010 014	11.3	0.000 000	0.003
	Batt. Endpoint	+20	3740 010 011	8.2	0.000 000	0.002
3939.990	100 %	+20(Ref)	3939 990 004	0.0	0.000 000	0.000
	100 %	-30	3939 990 012	8.1	0.000 000	0.002
	100 %	-20	3939 990 010	6.0	0.000 000	0.002
	100 %	-10	3939 990 013	8.5	0.000 000	0.002
	100 %	0	3939 990 016	11.6	0.000 000	0.003
	100 %	+10	3939 990 010	5.9	0.000 000	0.002
	100 %	+30	3939 990 015	10.4	0.000 000	0.003
	100 %	+40	3939 990 010	5.5	0.000 000	0.001
	100 %	+50	3939 990 009	5.3	0.000 000	0.001
	Batt. Endpoint	+20	3939 990 015	11.1	0.000 000	0.003

☐ BandWidth: 90 MHz
☐ Voltage(100 %): 3.860 VDC
☐ Batt. Endpoint: 3.400 VDC
☐ LIMIT: Emission must remain in band

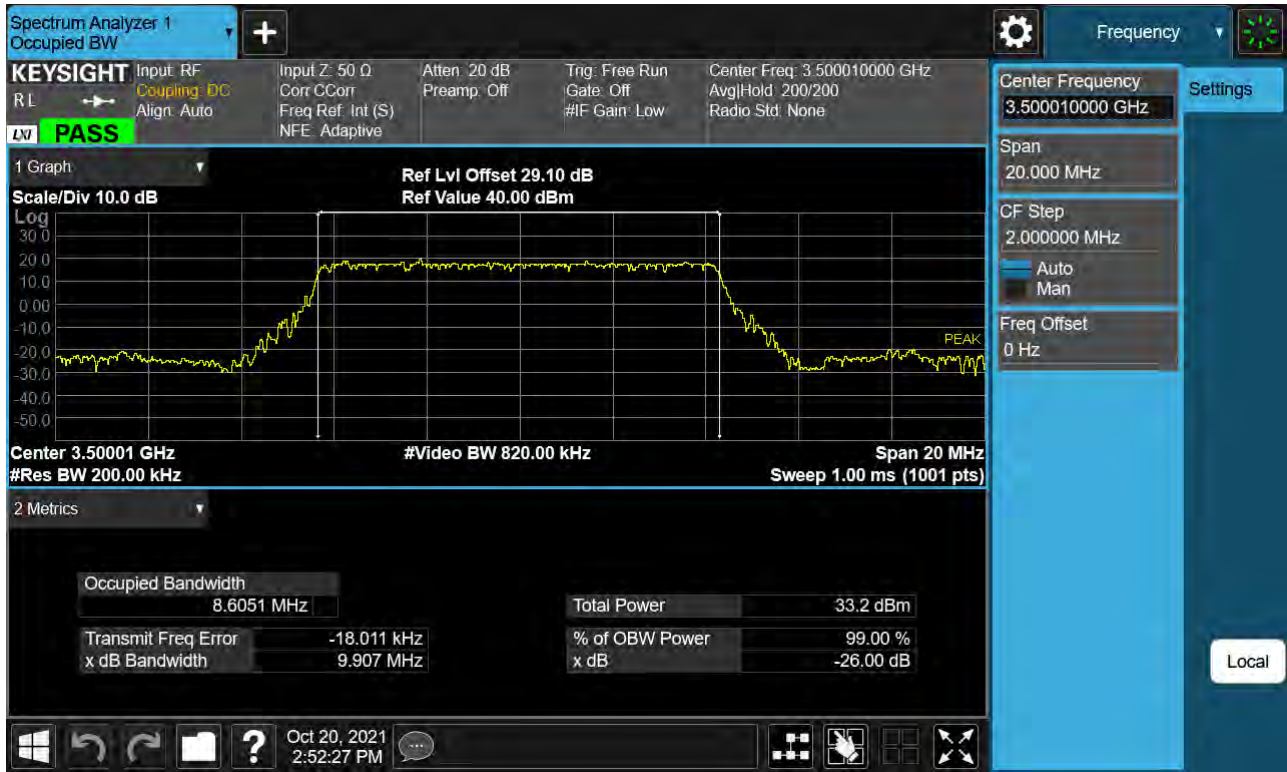
Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3745.020	100 %	+20(Ref)	3745 020 005	0.0	0.000 000	0.000
	100 %	-30	3745 020 017	11.3	0.000 000	0.003
	100 %	-20	3745 020 015	9.5	0.000 000	0.003
	100 %	-10	3745 020 018	12.9	0.000 000	0.003
	100 %	0	3745 020 017	11.6	0.000 000	0.003
	100 %	+10	3745 020 021	16.1	0.000 000	0.004
	100 %	+30	3745 020 016	11.0	0.000 000	0.003
	100 %	+40	3745 020 011	5.7	0.000 000	0.002
	100 %	+50	3745 020 012	7.3	0.000 000	0.002
	Batt. Endpoint	+20	3745 020 021	15.5	0.000 000	0.004
3934.980	100 %	+20(Ref)	3934 980 006	0.0	0.000 000	0.000
	100 %	-30	3934 980 020	13.4	0.000 000	0.003
	100 %	-20	3934 980 018	12.3	0.000 000	0.003
	100 %	-10	3934 980 022	16.3	0.000 000	0.004
	100 %	0	3934 980 011	5.2	0.000 000	0.001
	100 %	+10	3934 980 013	6.9	0.000 000	0.002
	100 %	+30	3934 980 013	6.6	0.000 000	0.002
	100 %	+40	3934 980 022	16.2	0.000 000	0.004
	100 %	+50	3934 980 018	12.1	0.000 000	0.003
	Batt. Endpoint	+20	3934 980 023	16.5	0.000 000	0.004

☐ BandWidth: 100 MHz
☐ Voltage(100 %): 3.860 VDC
☐ Batt. Endpoint: 3.400 VDC
☐ LIMIT: Emission must remain in band

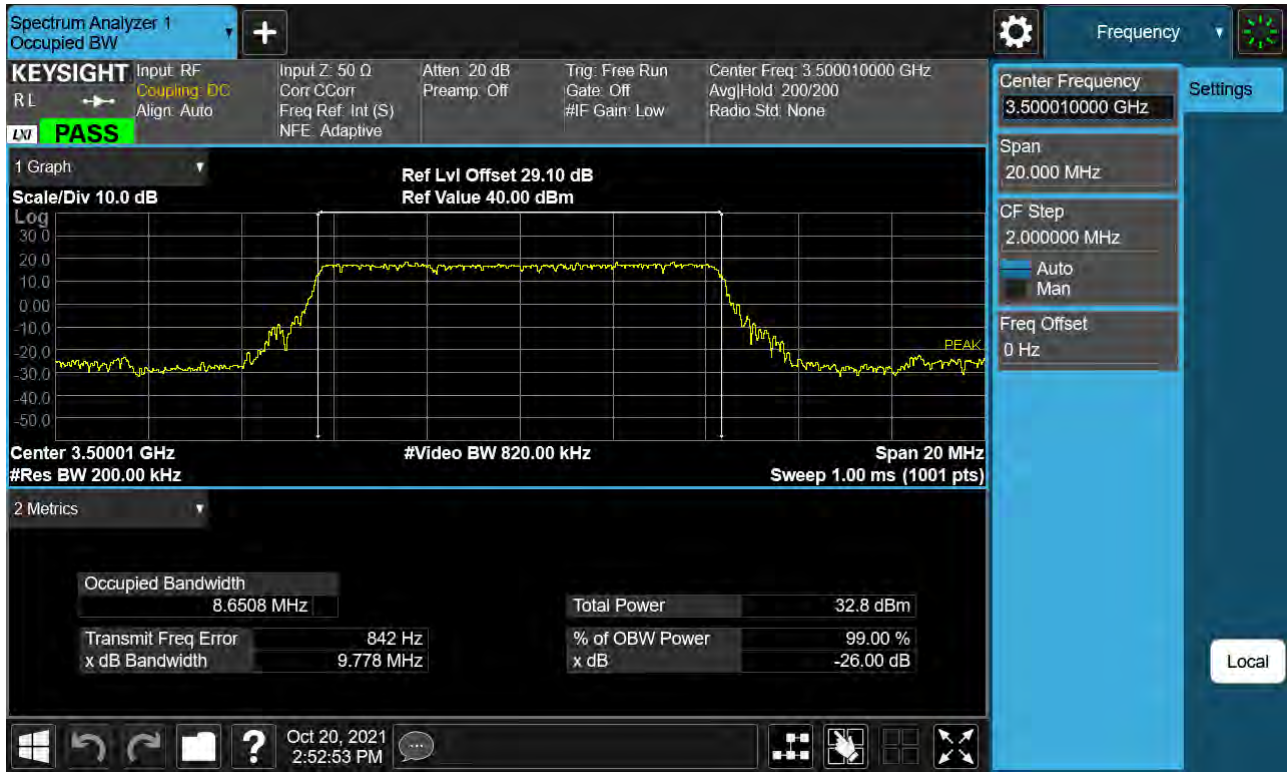
Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3750.000	100 %	+20(Ref)	3750 000 004	0.0	0.000 000	0.000
	100 %	-30	3750 000 010	6.3	0.000 000	0.002
	100 %	-20	3750 000 013	9.9	0.000 000	0.003
	100 %	-10	3750 000 011	7.0	0.000 000	0.002
	100 %	0	3750 000 013	9.1	0.000 000	0.002
	100 %	+10	3750 000 010	6.9	0.000 000	0.002
	100 %	+30	3750 000 016	12.5	0.000 000	0.003
	100 %	+40	3750 000 018	14.4	0.000 000	0.004
	100 %	+50	3750 000 014	10.8	0.000 000	0.003
	Batt. Endpoint	+20	3750 000 019	15.1	0.000 000	0.004
3930.000	100 %	+20(Ref)	3930 000 016	0.0	0.000 000	0.000
	100 %	-30	3930 000 028	11.8	0.000 000	0.003
	100 %	-20	3930 000 021	5.5	0.000 000	0.001
	100 %	-10	3930 000 020	4.0	0.000 000	0.001
	100 %	0	3930 000 022	6.5	0.000 000	0.002
	100 %	+10	3930 000 021	4.8	0.000 000	0.001
	100 %	+30	3930 000 029	13.6	0.000 000	0.003
	100 %	+40	3930 000 020	4.0	0.000 000	0.001
	100 %	+50	3930 000 020	3.8	0.000 000	0.001
	Batt. Endpoint	+20	3930 000 022	6.2	0.000 000	0.002

10. TEST PLOTS(3450 MHz - 3550 MHz)

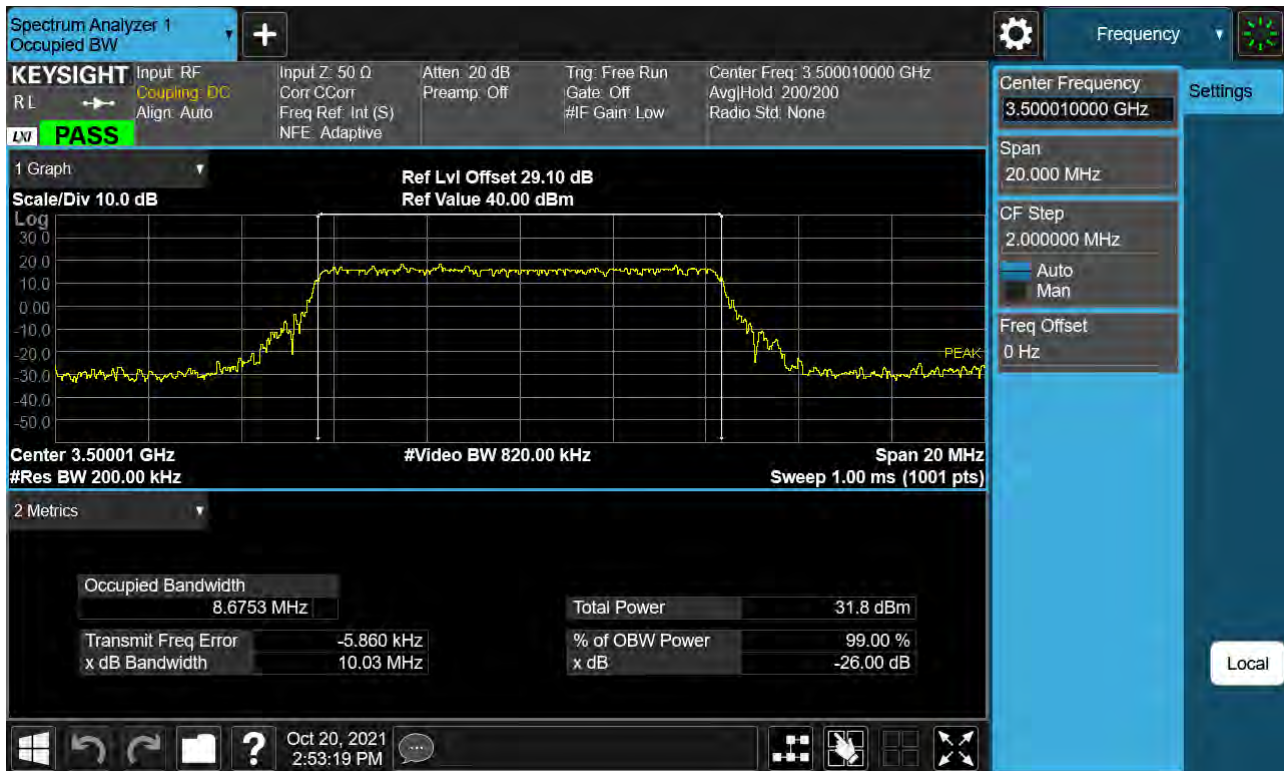
Sub6 n77. Occupied Bandwidth Plot (10 M BW Ch.633334 BPSK)



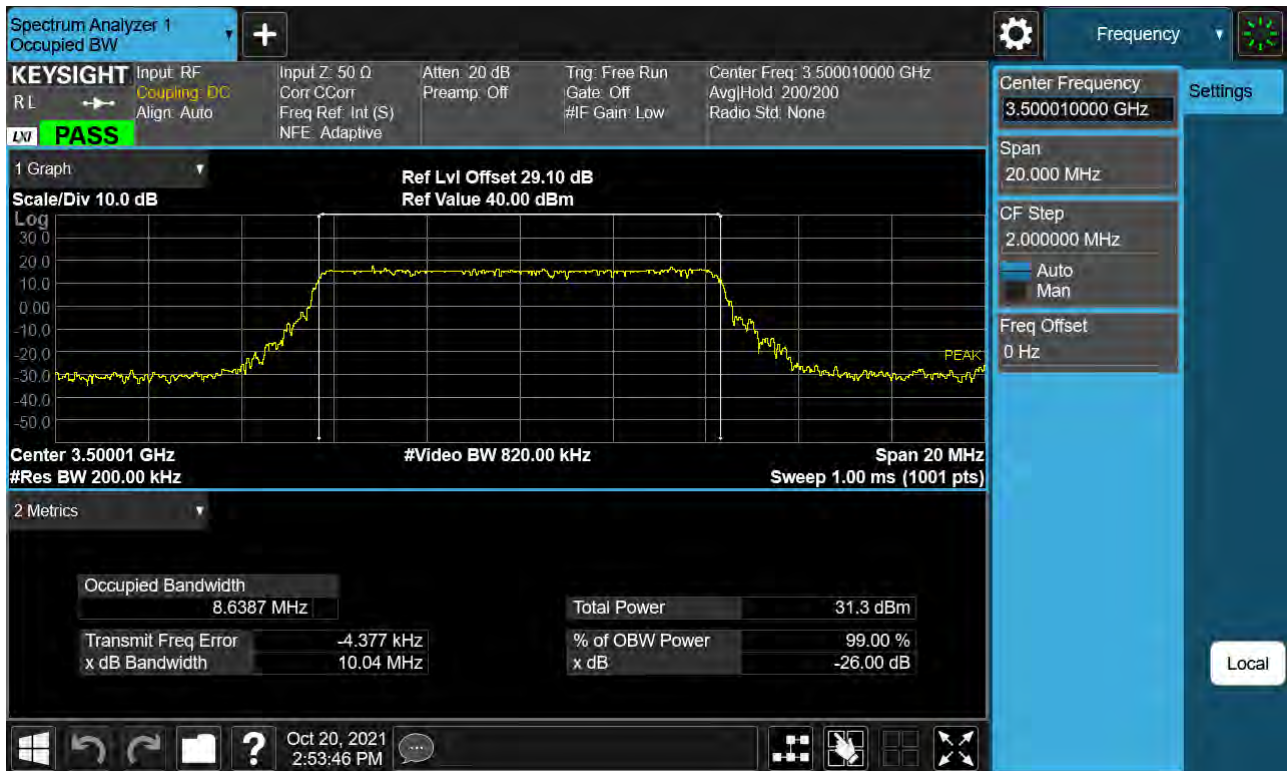
Sub6 n77. Occupied Bandwidth Plot (10 M BW Ch.633334 QPSK)



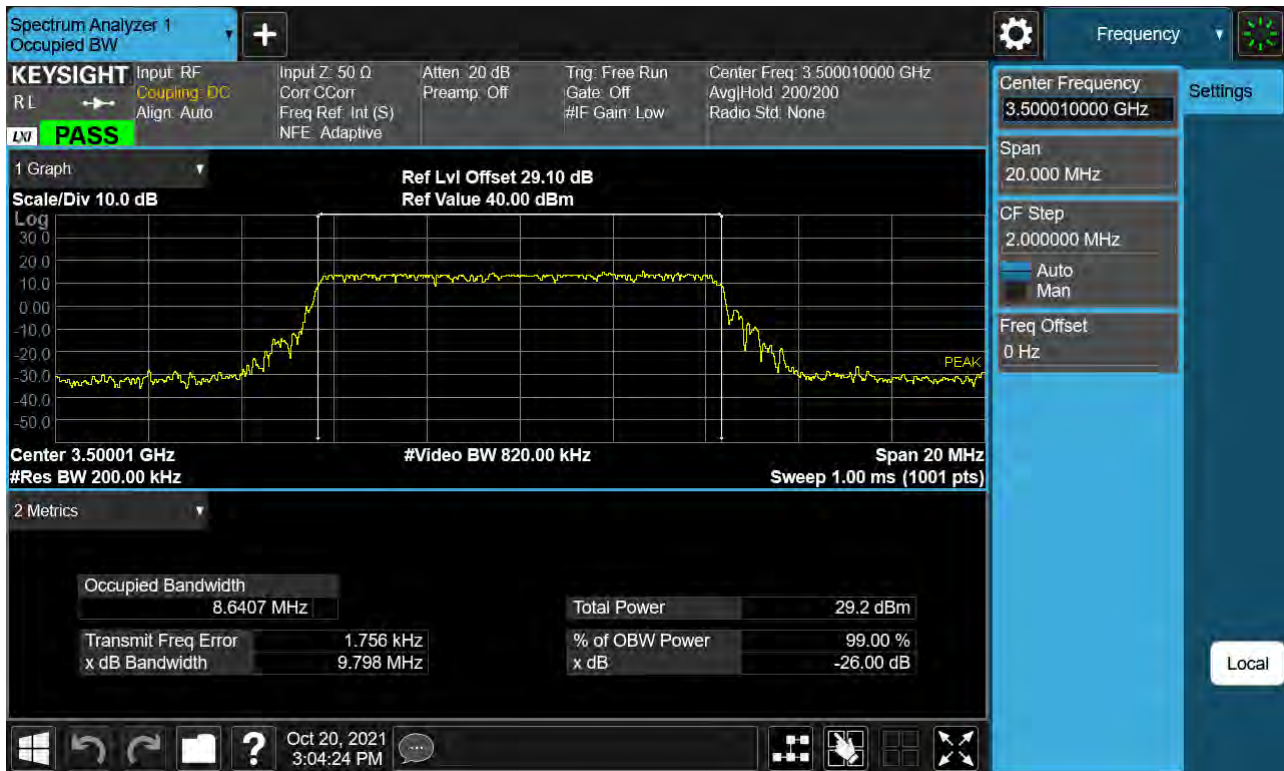
Sub6 n77. Occupied Bandwidth Plot (10 M BW Ch.633334 16QAM)



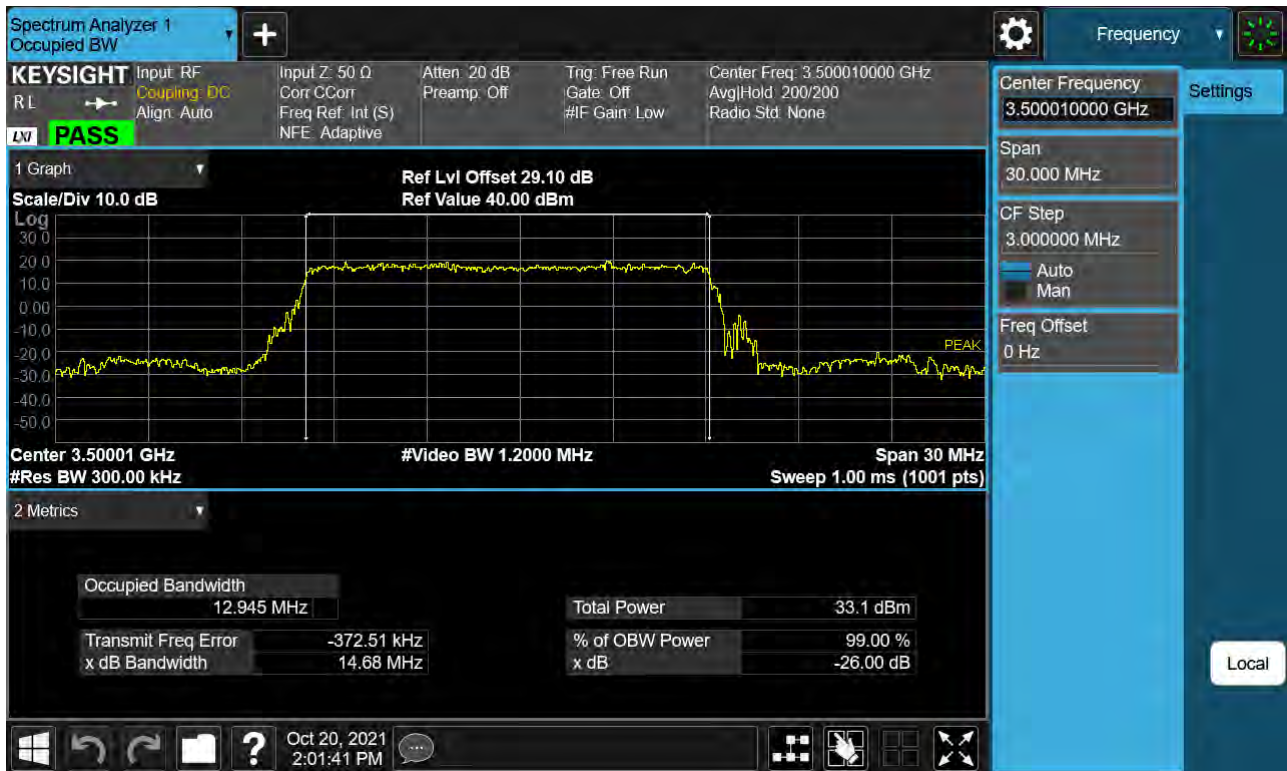
Sub6 n77. Occupied Bandwidth Plot (10 M BW Ch.633334 64QAM)



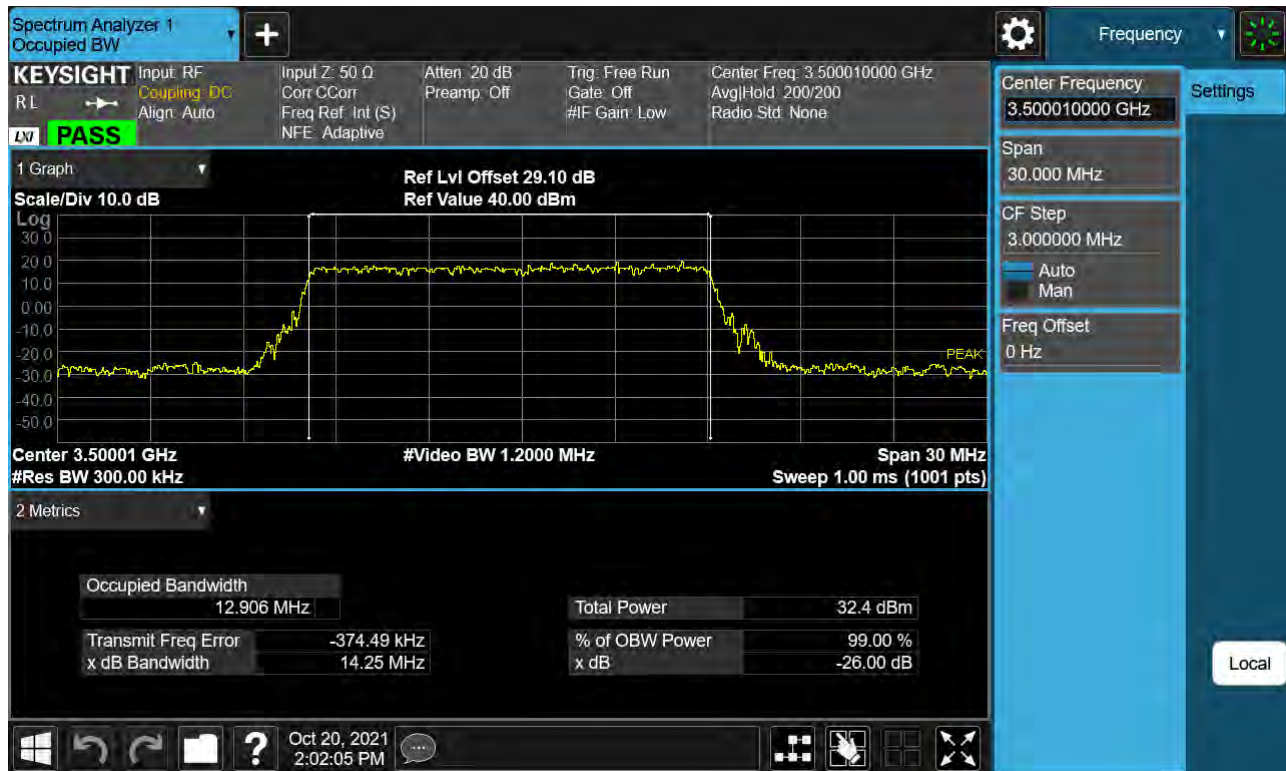
Sub6 n77. Occupied Bandwidth Plot (10 M BW Ch.633334 256QAM)



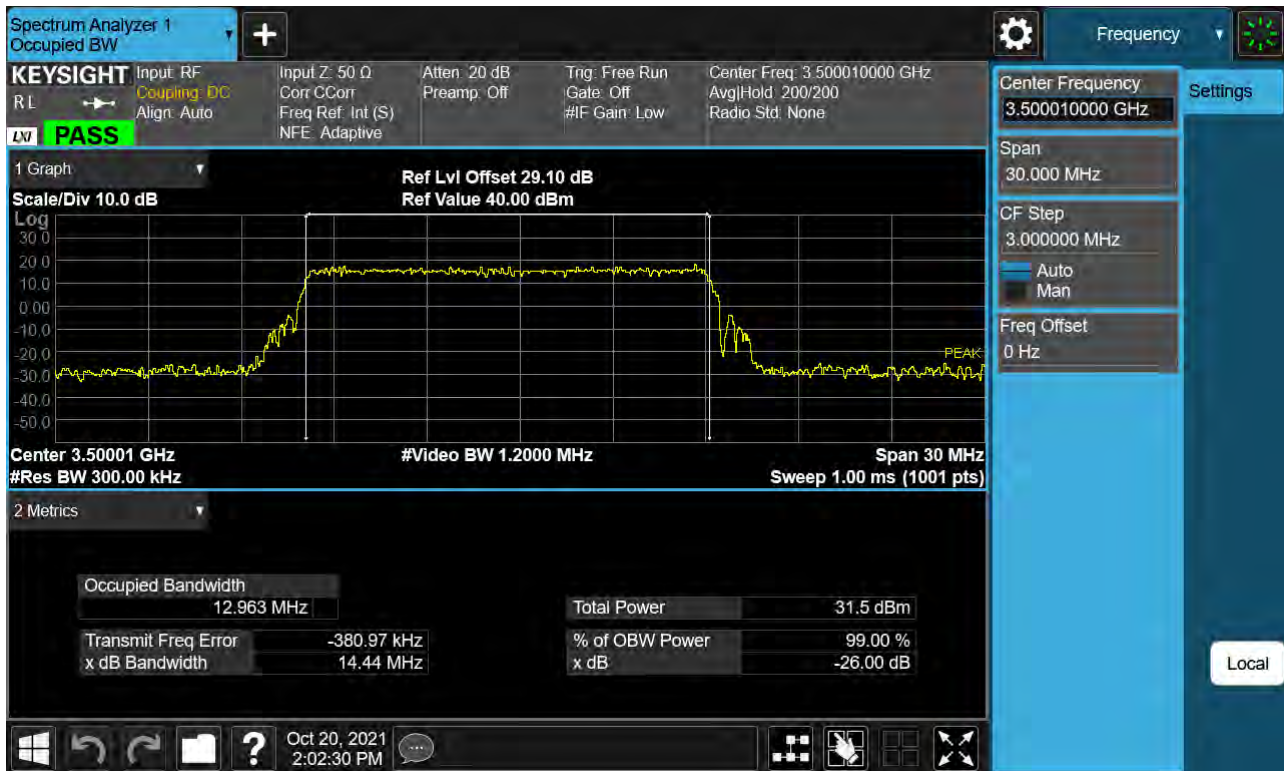
Sub6 n77. Occupied Bandwidth Plot (15 M BW Ch.633334 BPSK)



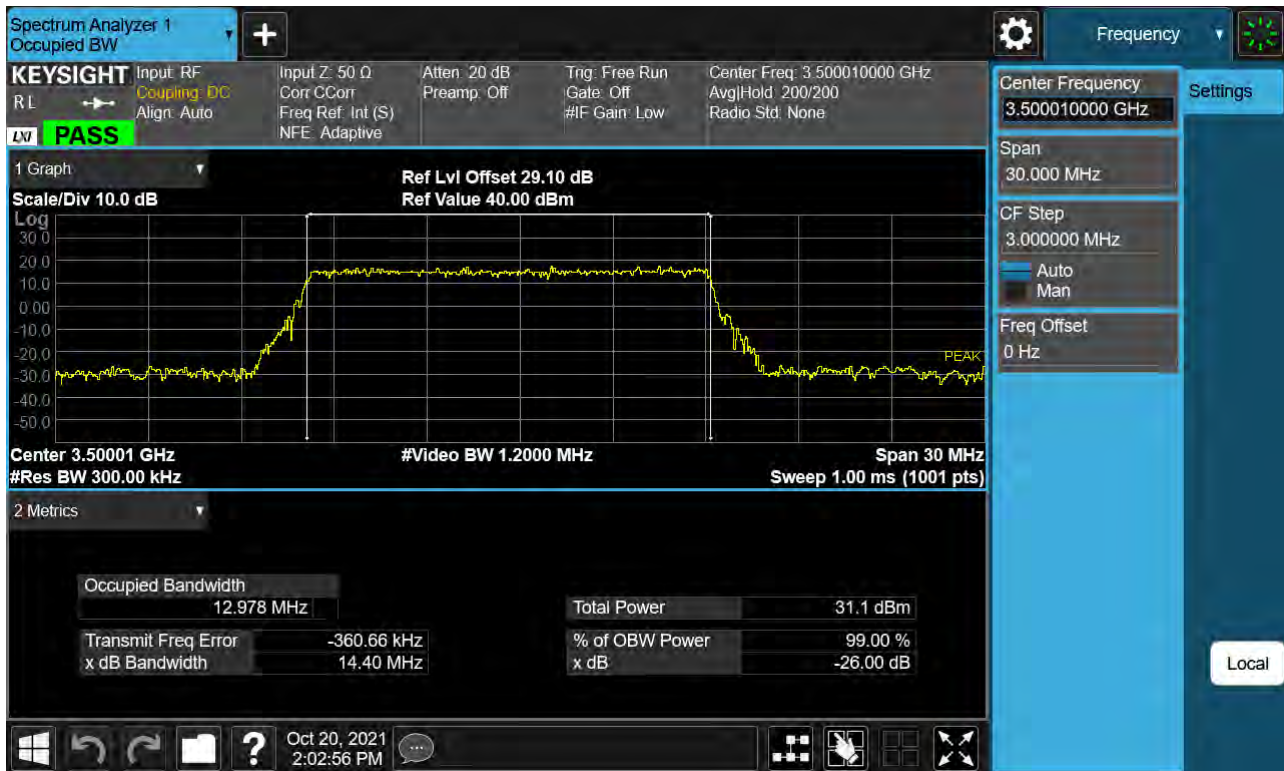
Sub6 n77. Occupied Bandwidth Plot (15 M BW Ch.633334 QPSK)



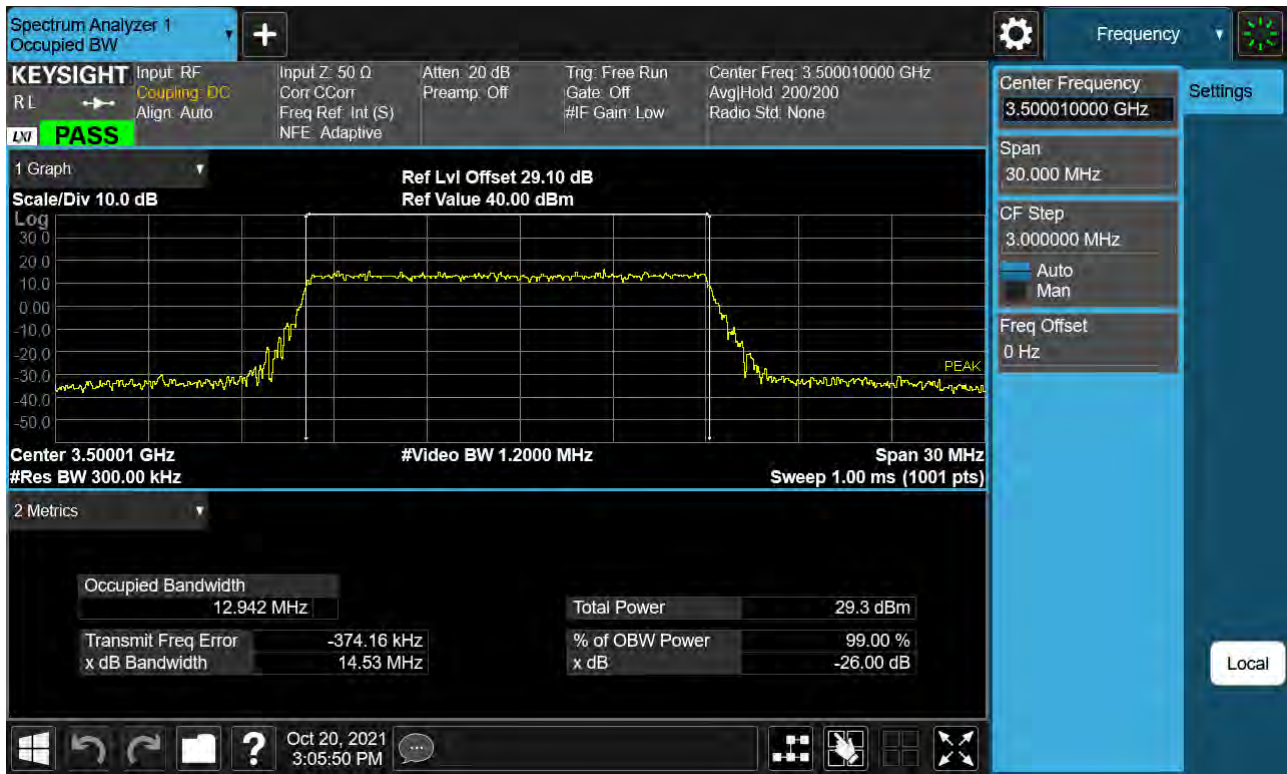
Sub6 n77. Occupied Bandwidth Plot (15 M BW Ch.633334 16QAM)



Sub6 n77. Occupied Bandwidth Plot (15 M BW Ch.633334 64QAM)



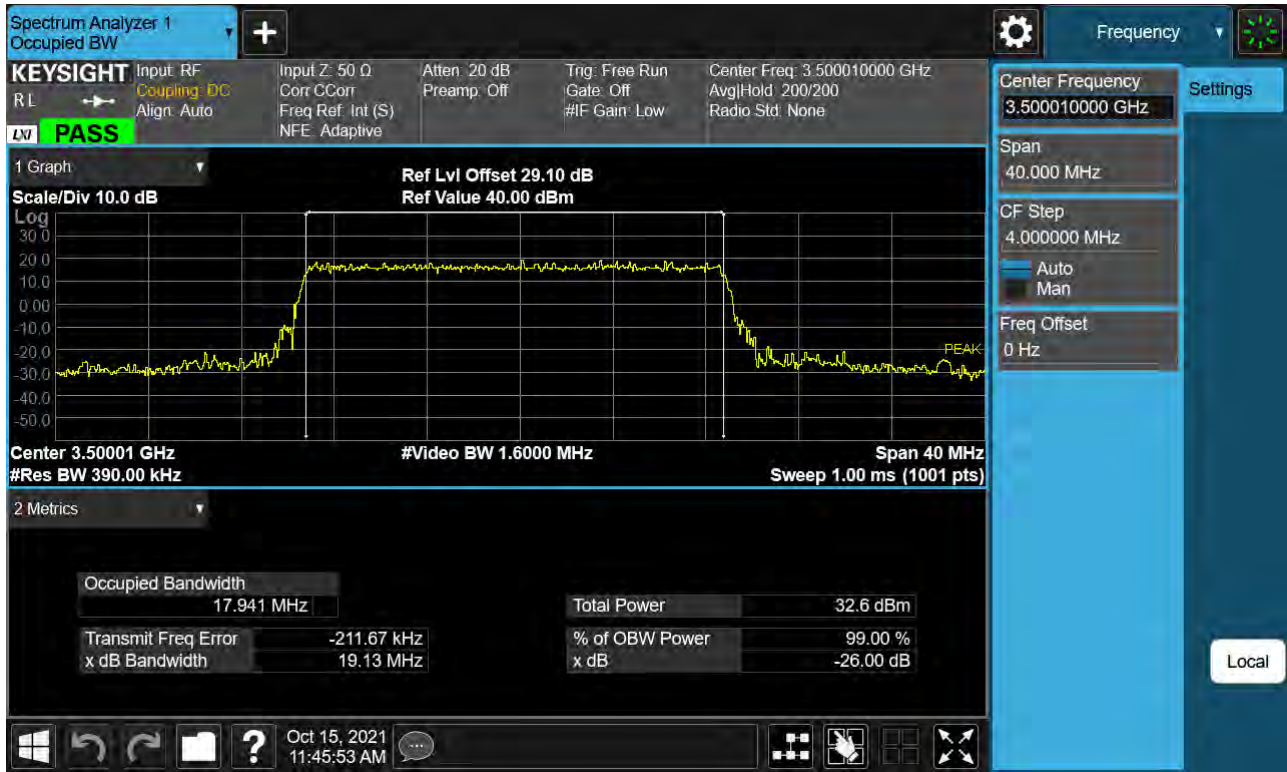
Sub6 n77. Occupied Bandwidth Plot (15 M BW Ch.633334 256QAM)



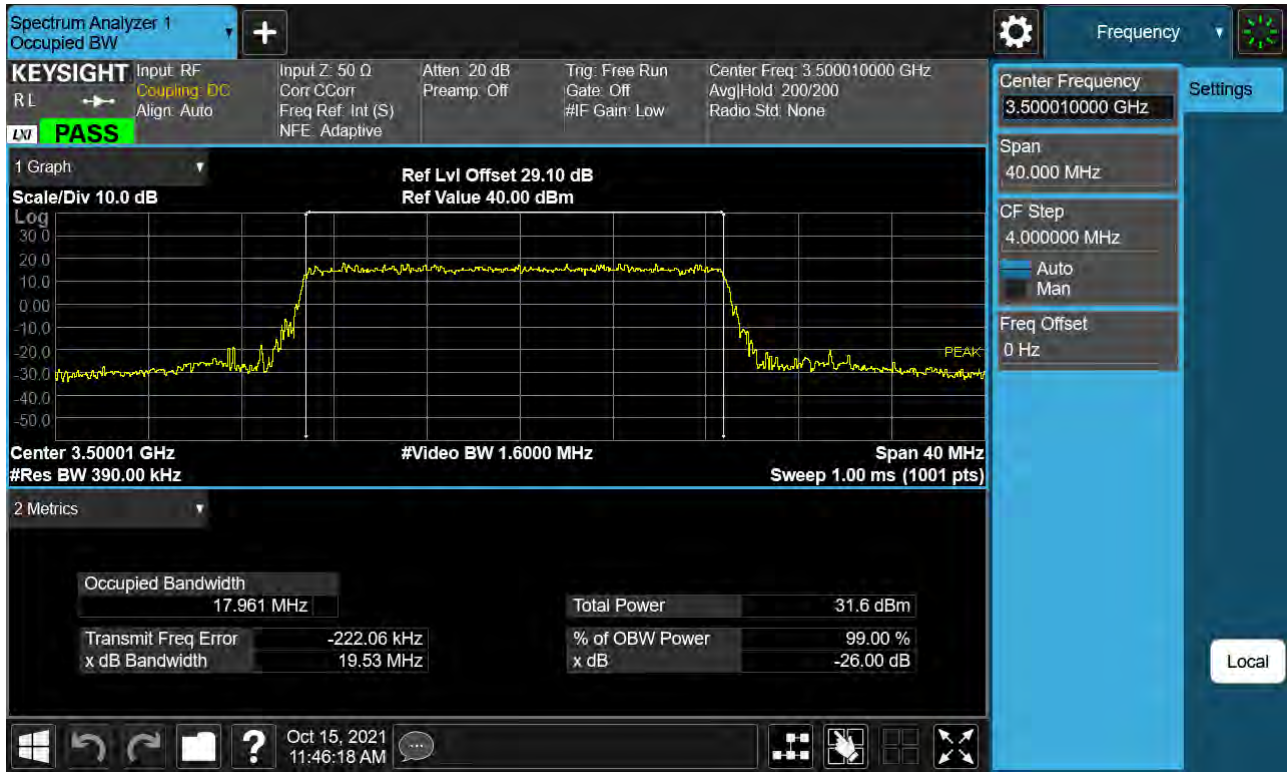
Sub6 n77. Occupied Bandwidth Plot (20 M BW Ch.633334 BPSK)



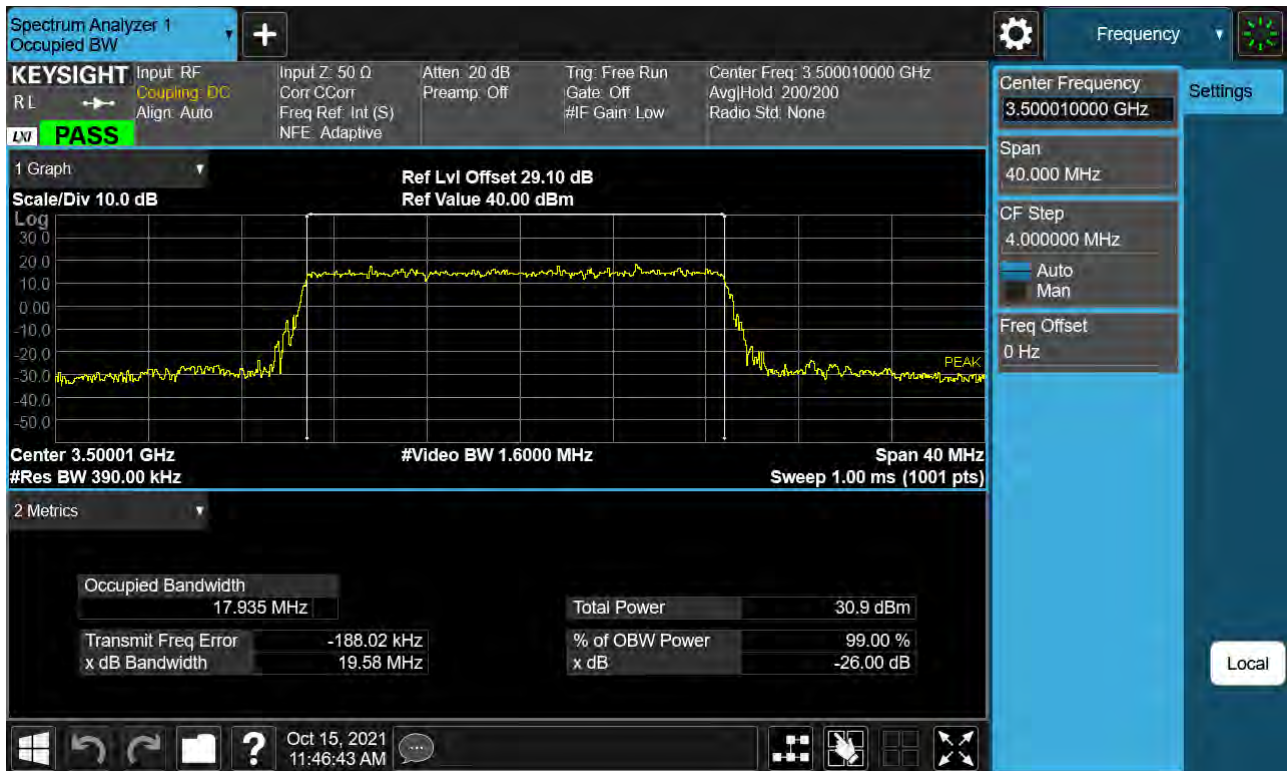
Sub6 n77. Occupied Bandwidth Plot (20 M BW Ch.633334 QPSK)



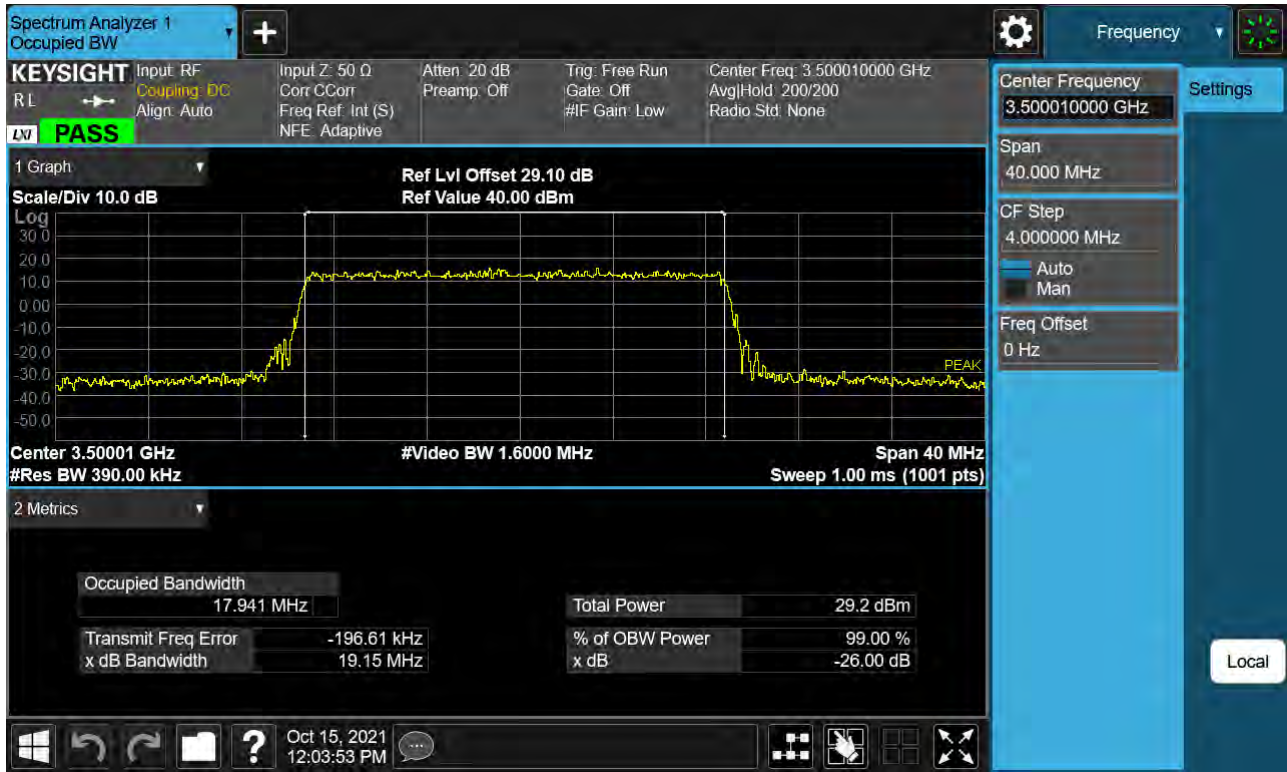
Sub6 n77. Occupied Bandwidth Plot (20 M BW Ch.633334 16QAM)



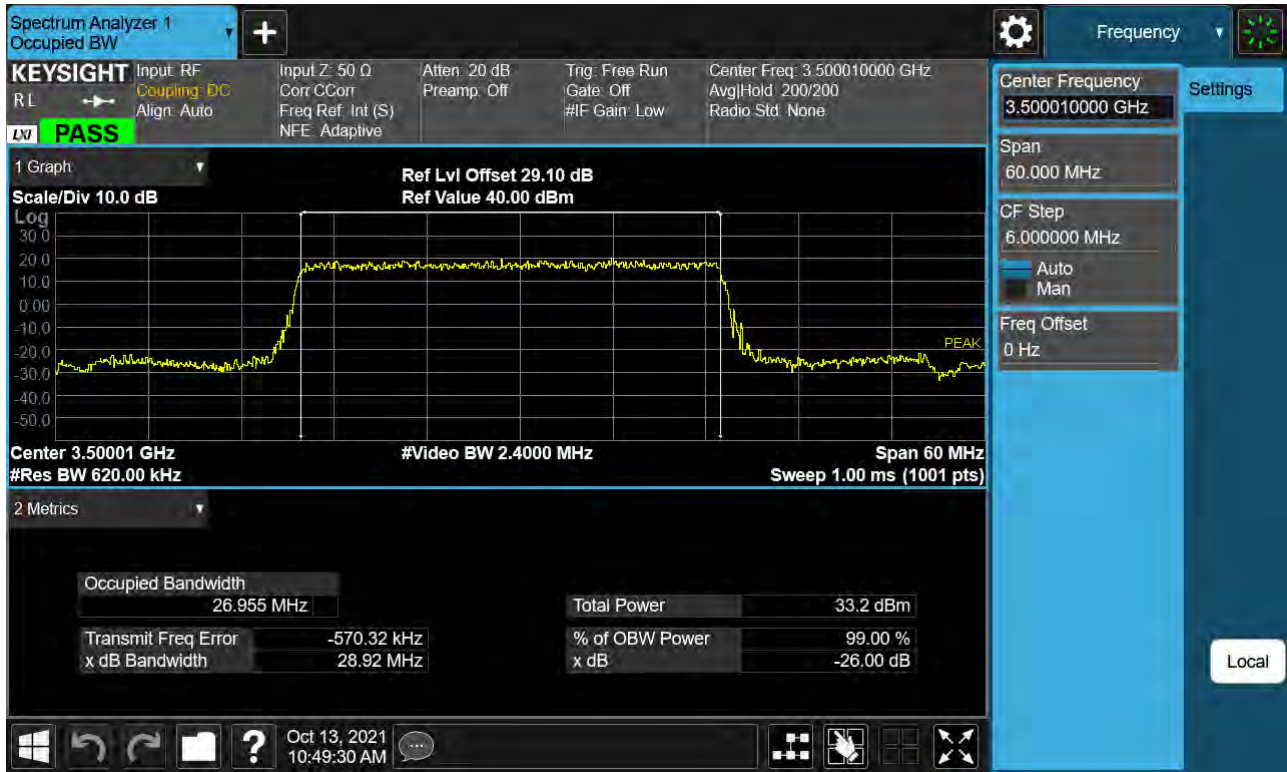
Sub6 n77. Occupied Bandwidth Plot (20 M BW Ch.633334 64QAM)



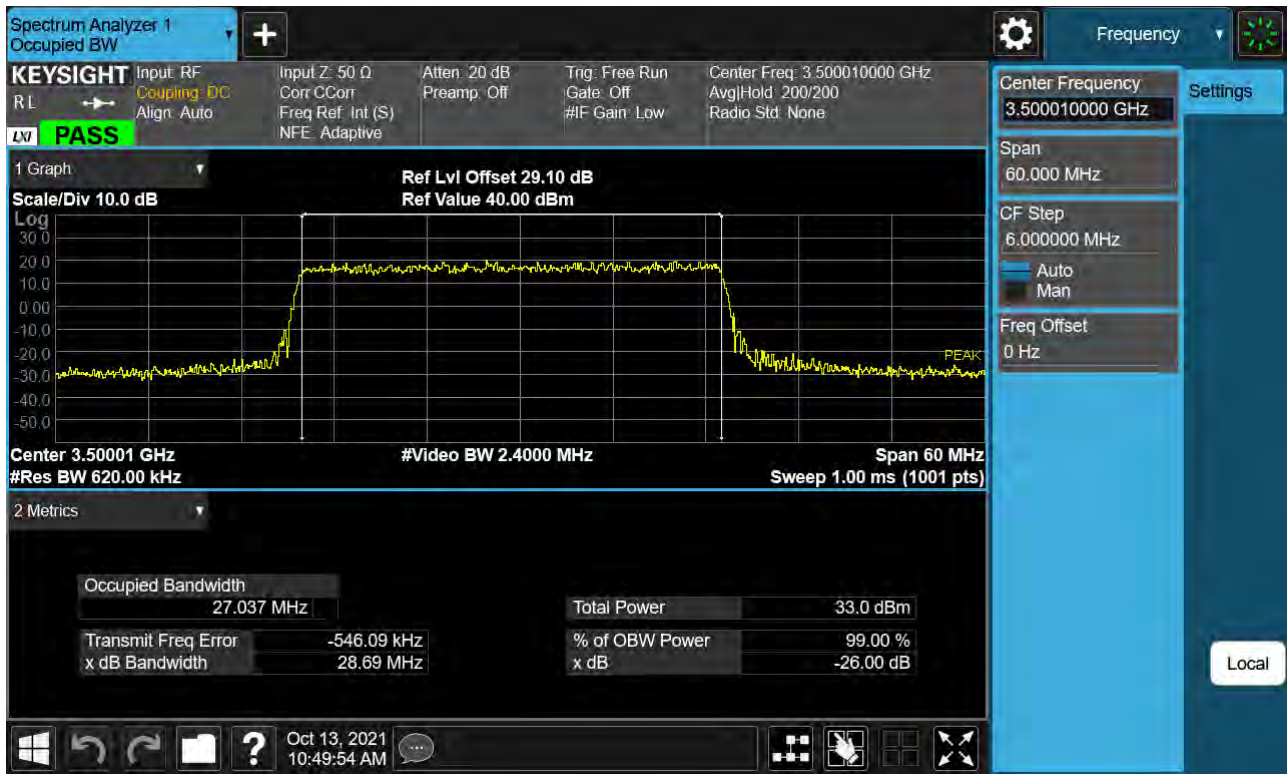
Sub6 n77. Occupied Bandwidth Plot (20 M BW Ch.633334 256QAM)



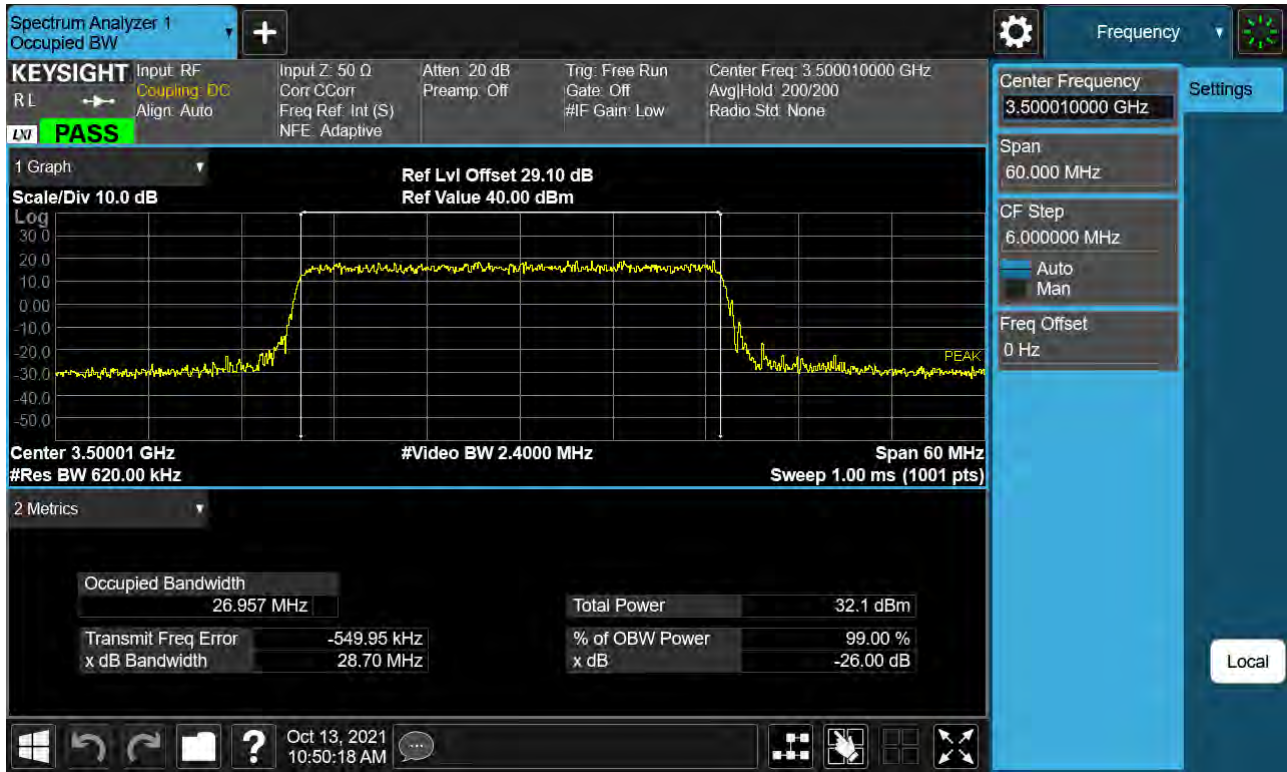
Sub6 n77. Occupied Bandwidth Plot (30 M BW Ch.633334 BPSK)



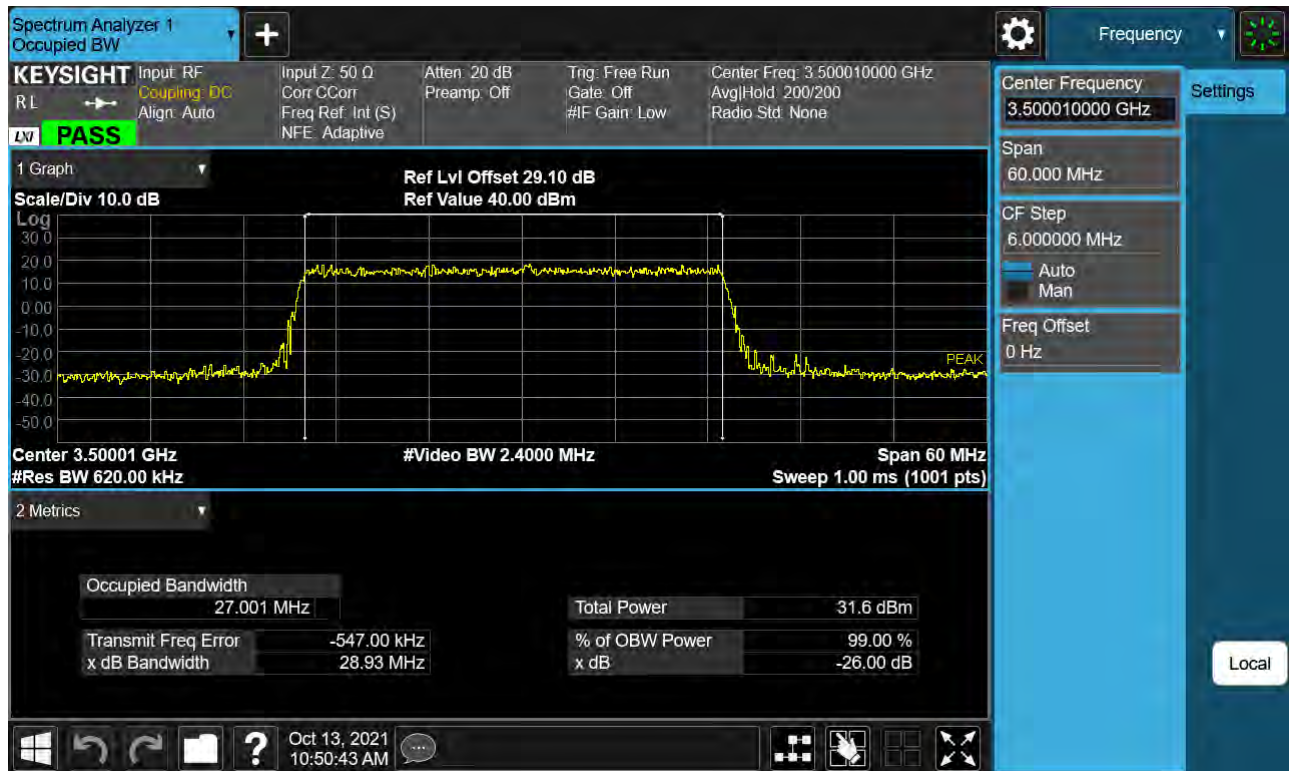
Sub6 n77. Occupied Bandwidth Plot (30 M BW Ch.633334 QPSK)



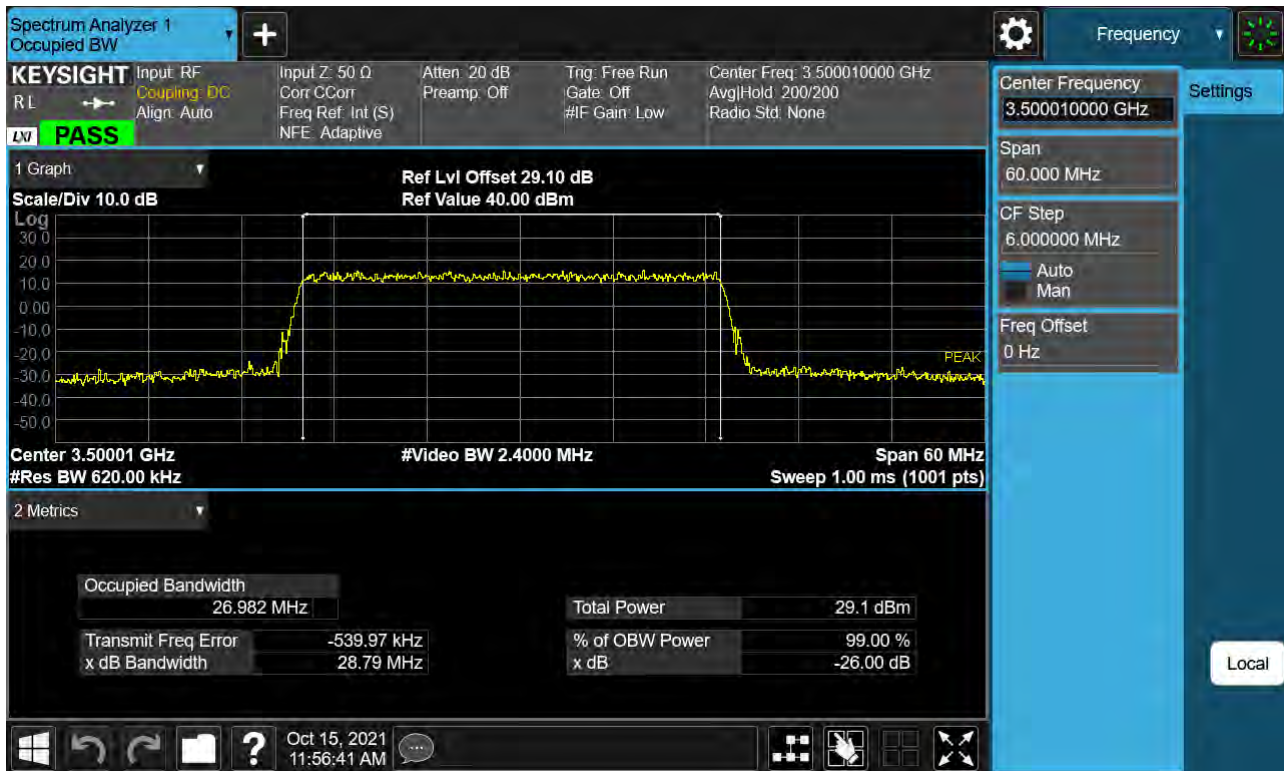
Sub6 n77. Occupied Bandwidth Plot (30 M BW Ch.633334 16QAM)



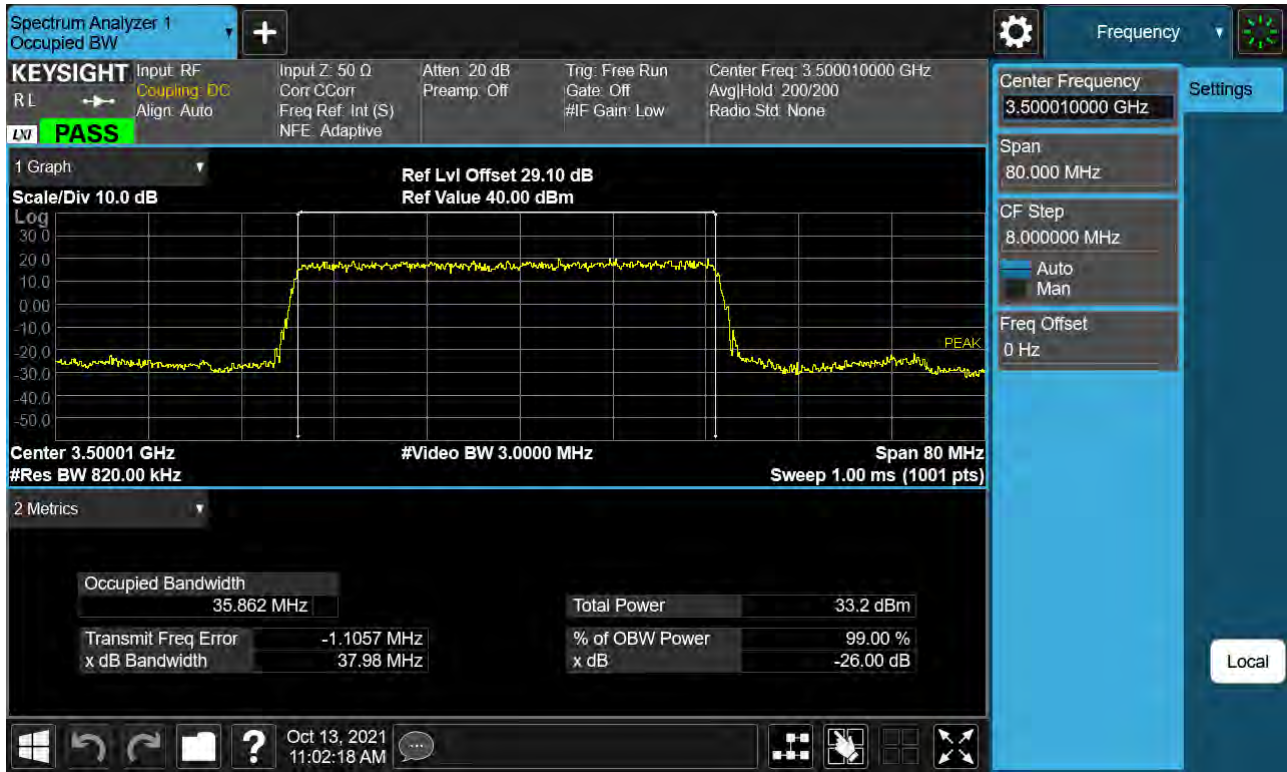
Sub6 n77. Occupied Bandwidth Plot (30 M BW Ch.633334 64QAM)



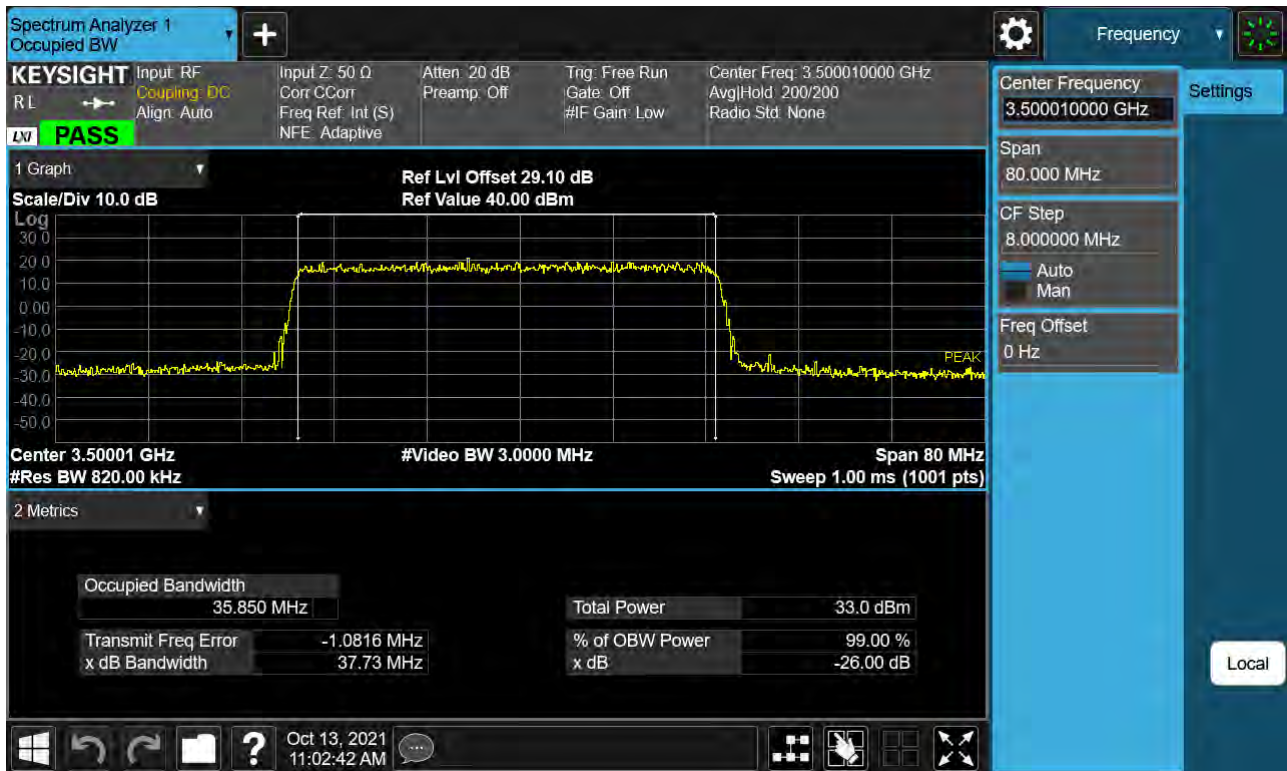
Sub6 n77. Occupied Bandwidth Plot (30 M BW Ch.633334 256QAM)



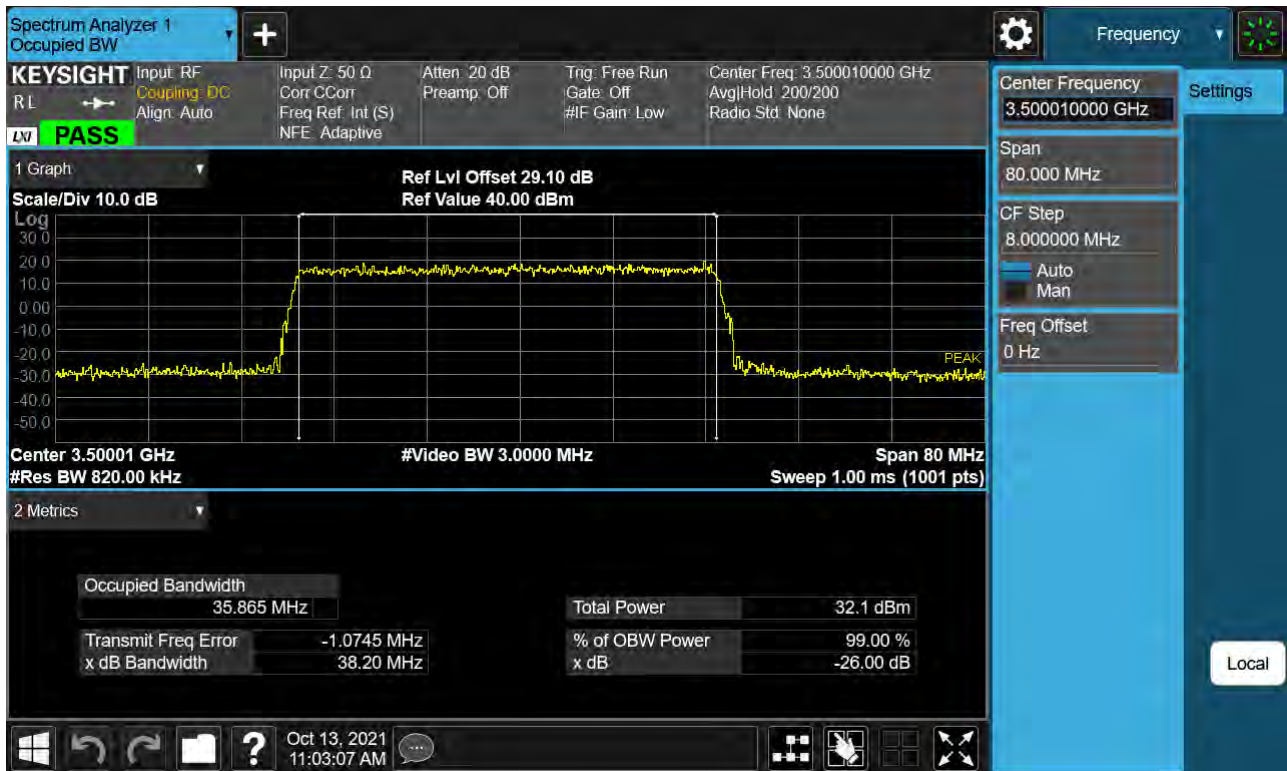
Sub6 n77. Occupied Bandwidth Plot (40 M BW Ch.633334 BPSK)



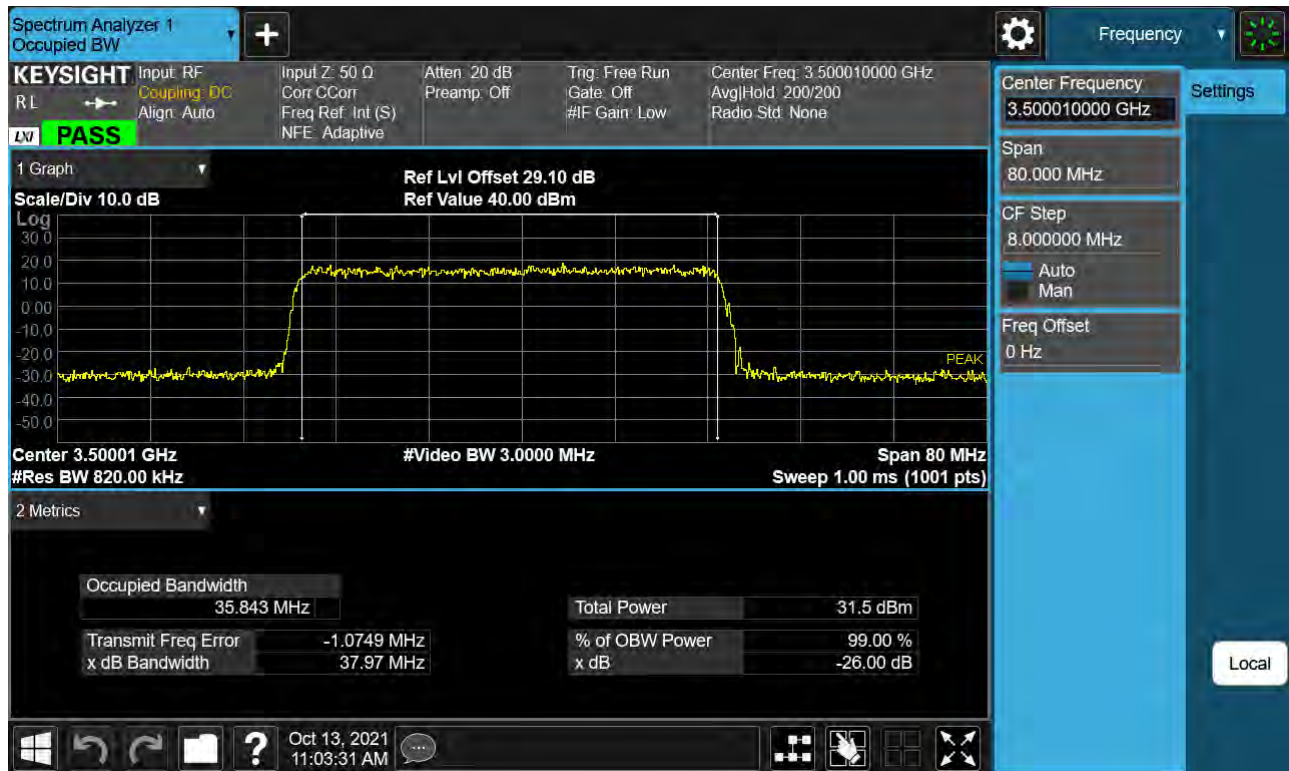
Sub6 n77. Occupied Bandwidth Plot (40 M BW Ch.633334 QPSK)



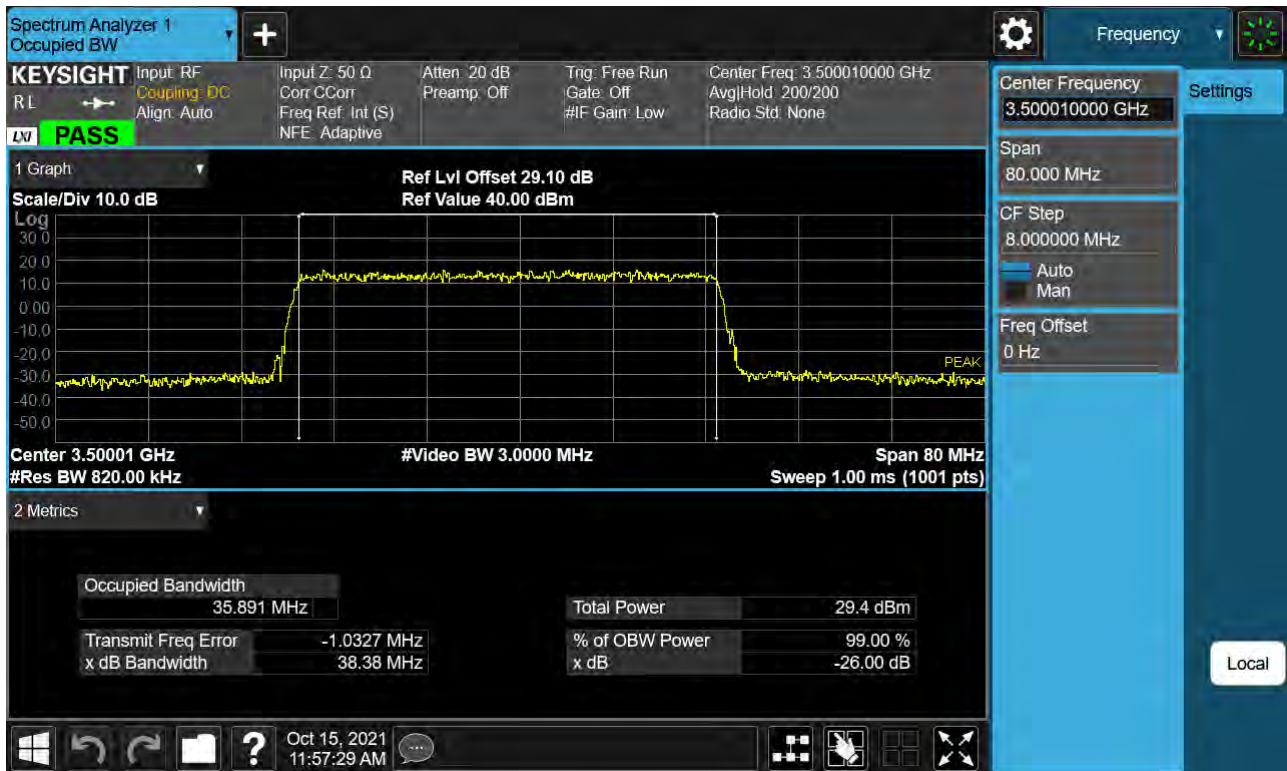
Sub6 n77. Occupied Bandwidth Plot (40 M BW Ch.633334 16QAM)



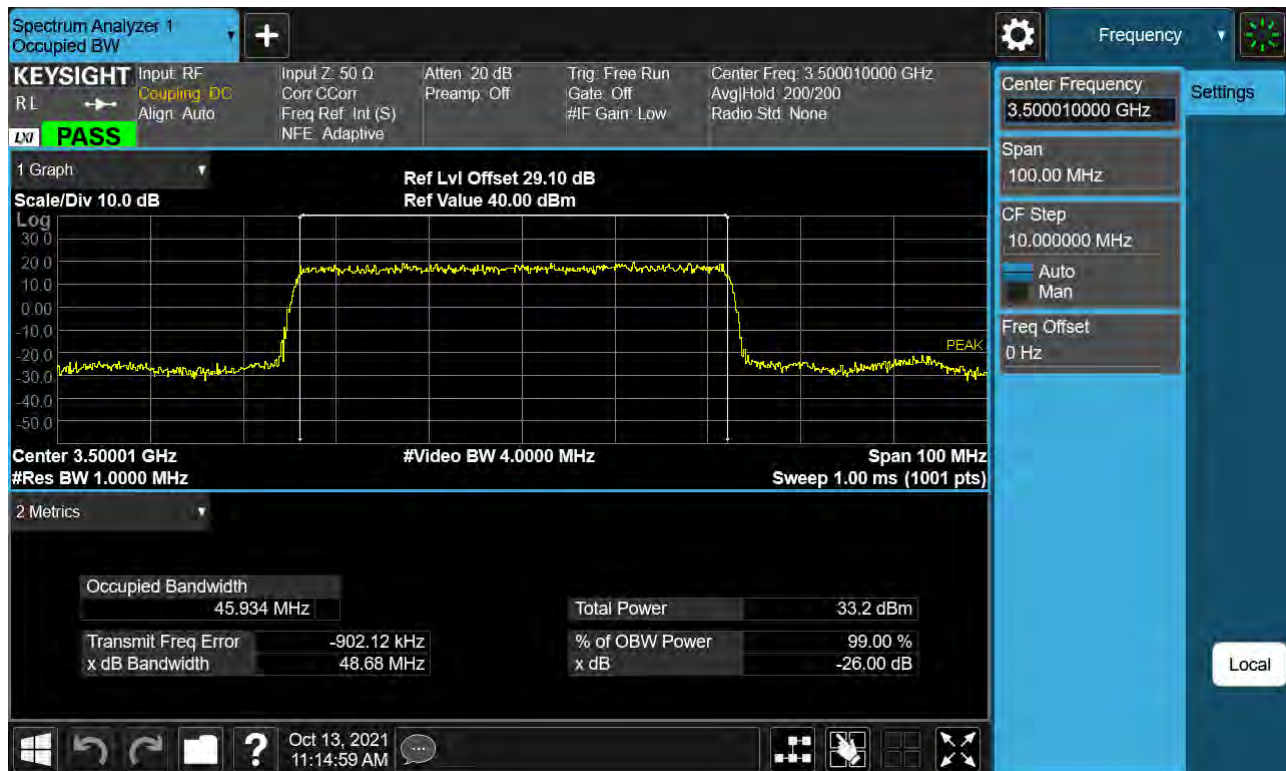
Sub6 n77. Occupied Bandwidth Plot (40 M BW Ch.633334 64QAM)



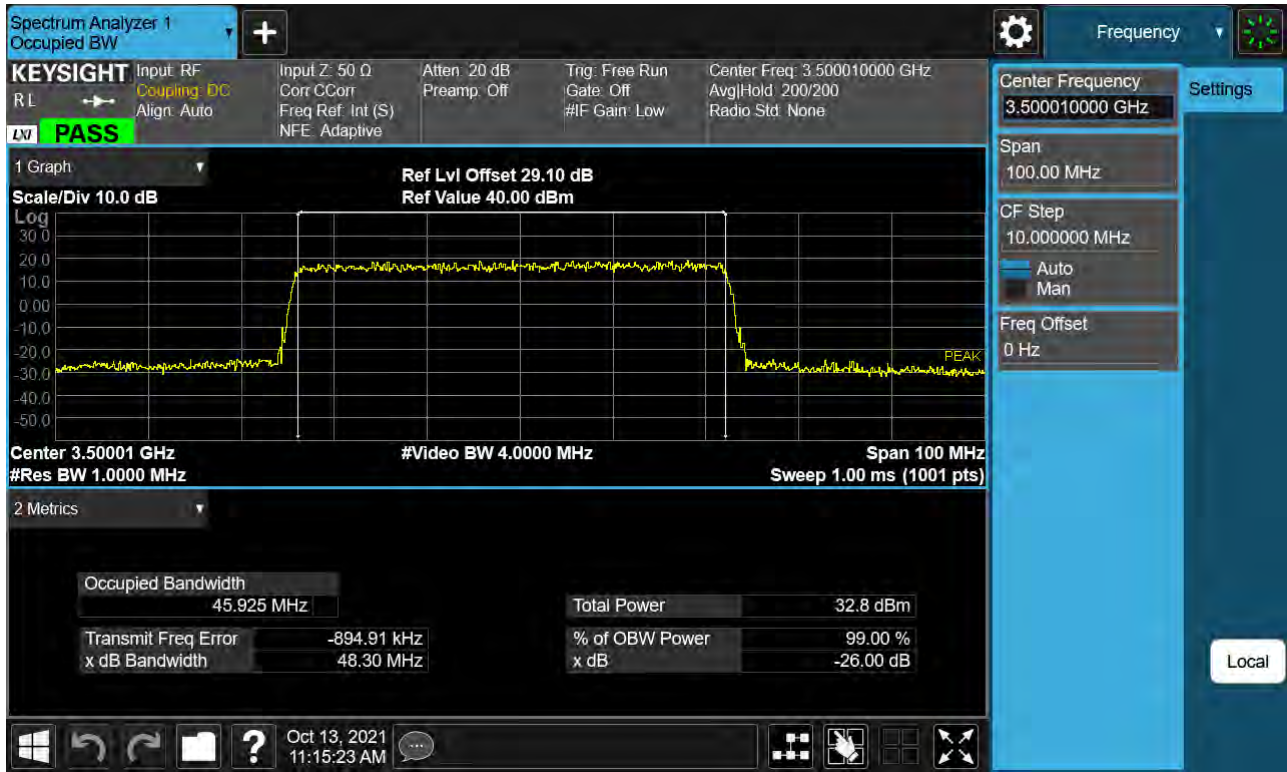
Sub6 n77. Occupied Bandwidth Plot (40 M BW Ch.633334 256QAM)



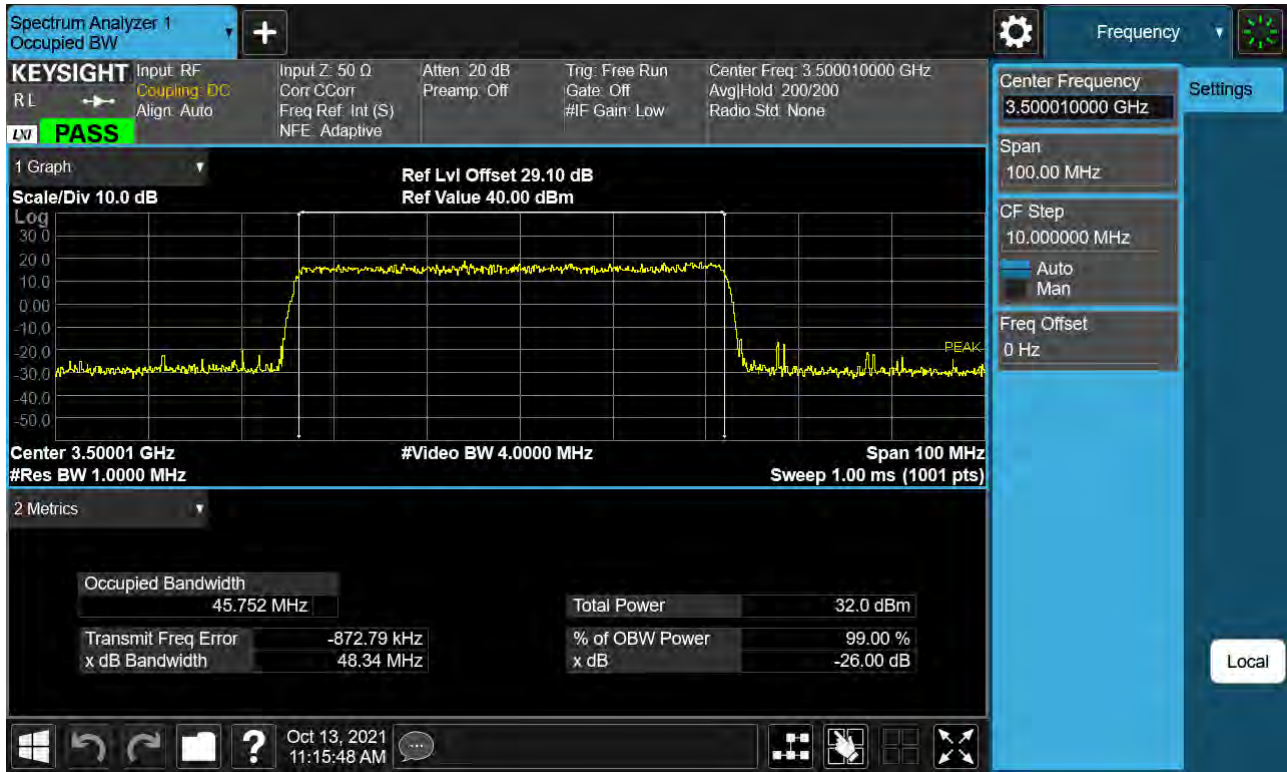
Sub6 n77. Occupied Bandwidth Plot (50 M BW Ch.633334 BPSK)



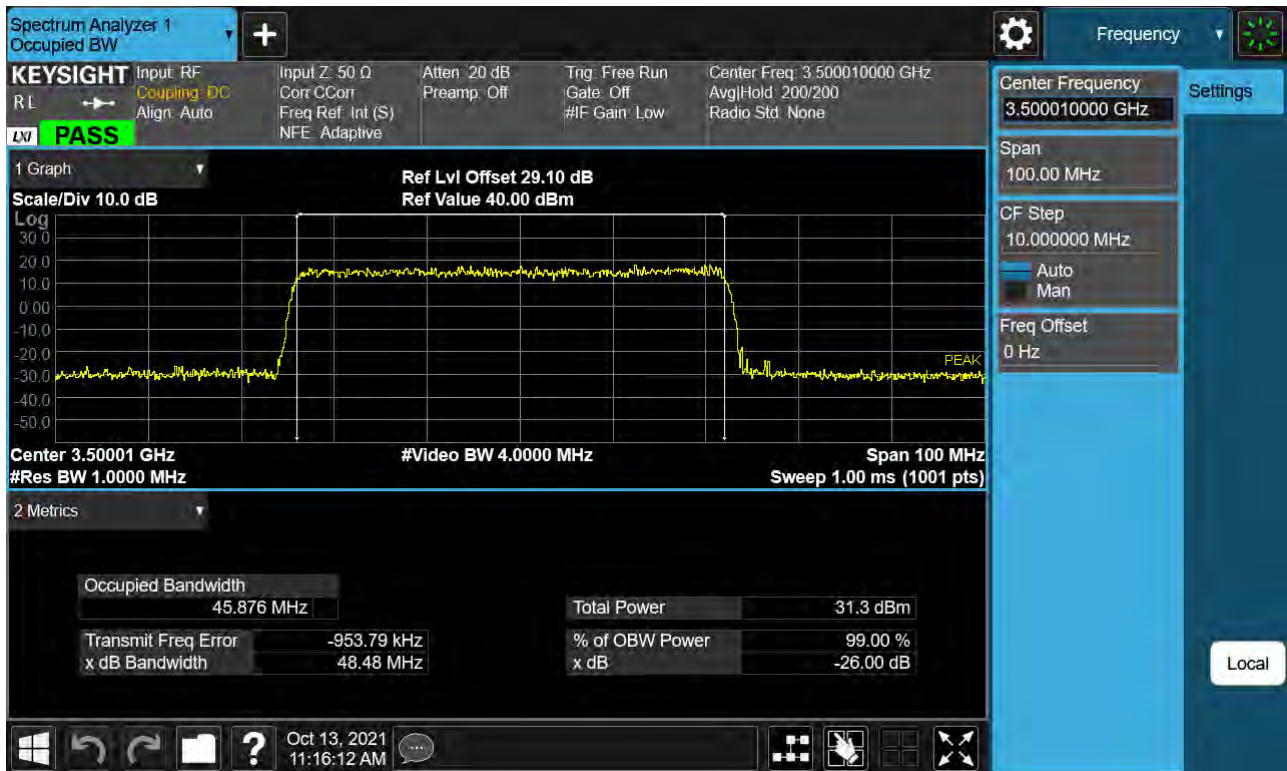
Sub6 n77. Occupied Bandwidth Plot (50 M BW Ch.633334 QPSK)



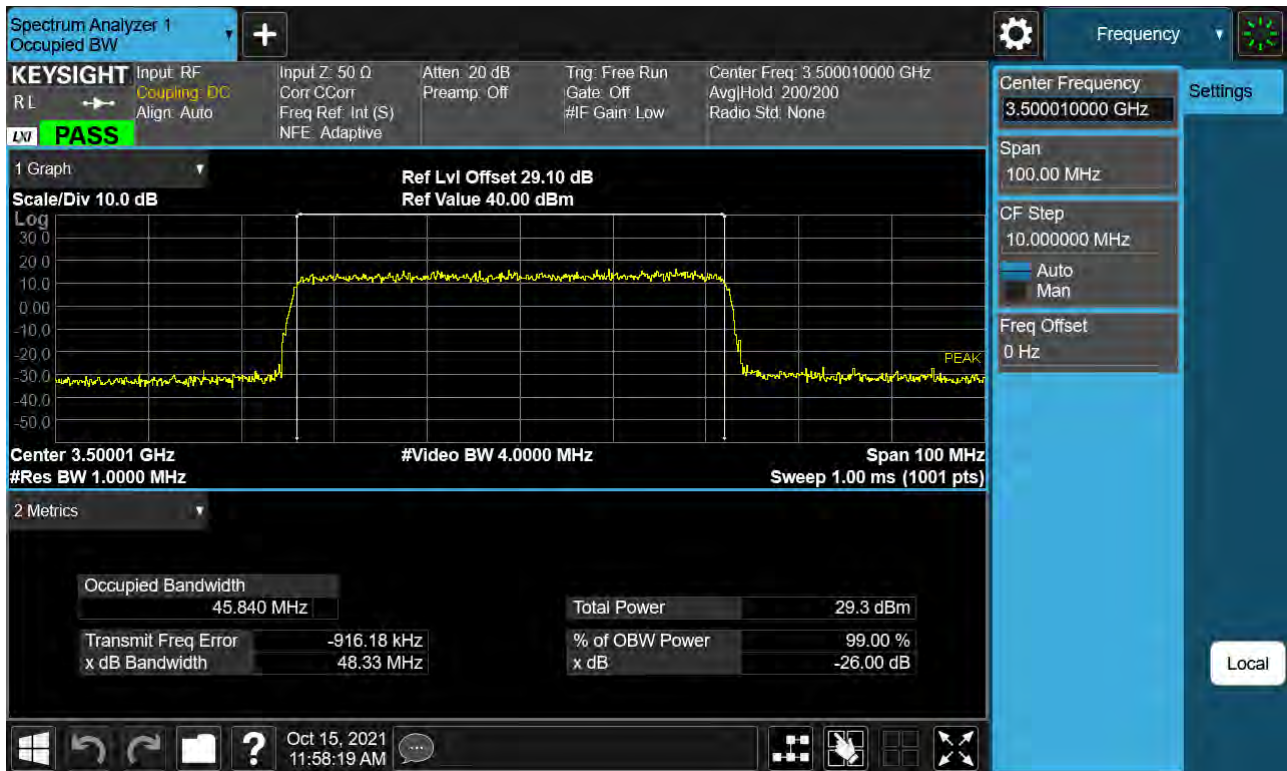
Sub6 n77. Occupied Bandwidth Plot (50 M BW Ch.633334 16QAM)



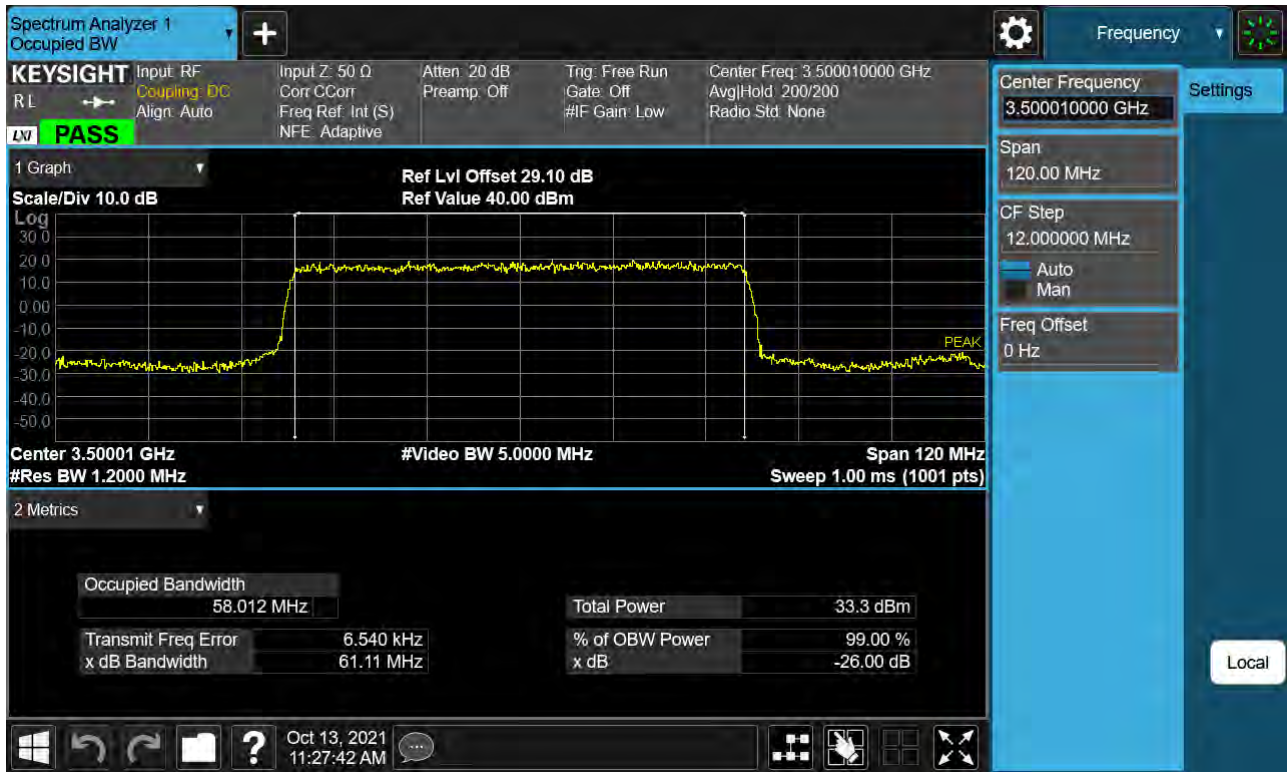
Sub6 n77. Occupied Bandwidth Plot (50 M BW Ch.633334 64QAM)



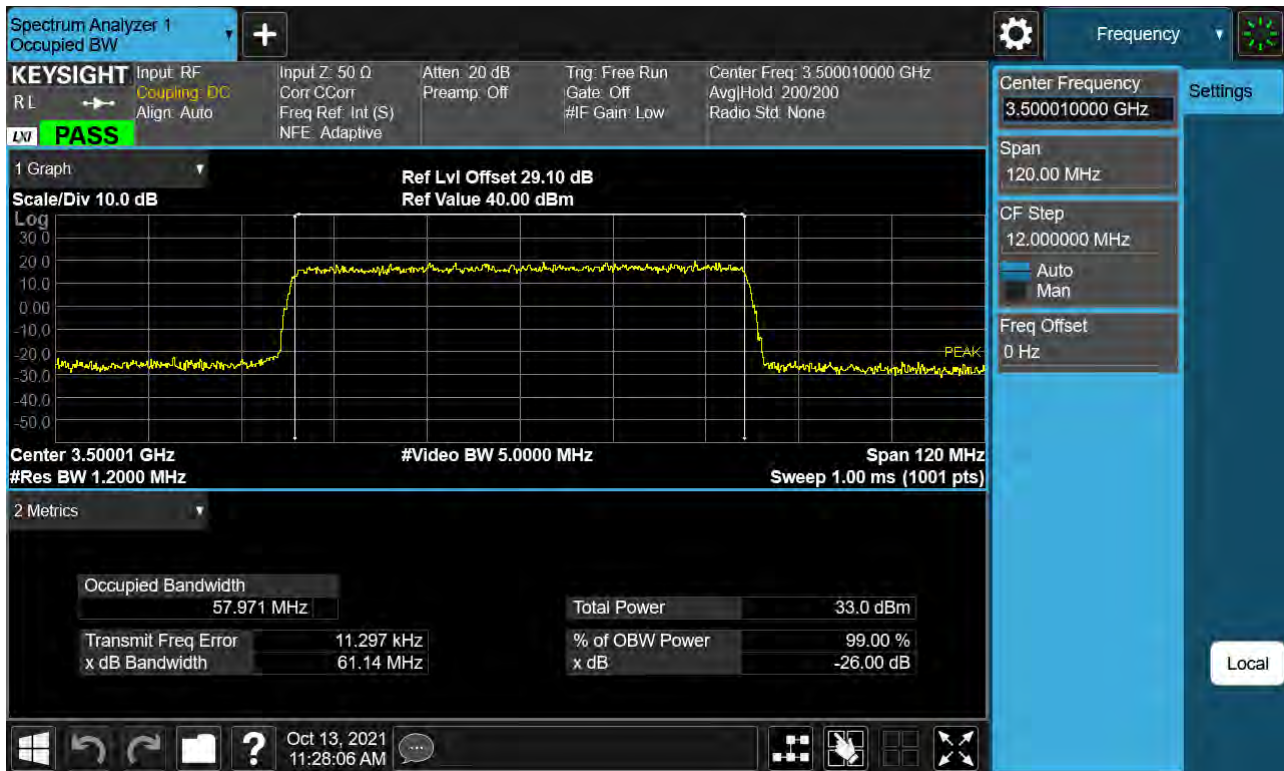
Sub6 n77. Occupied Bandwidth Plot (50 M BW Ch.633334 256QAM)



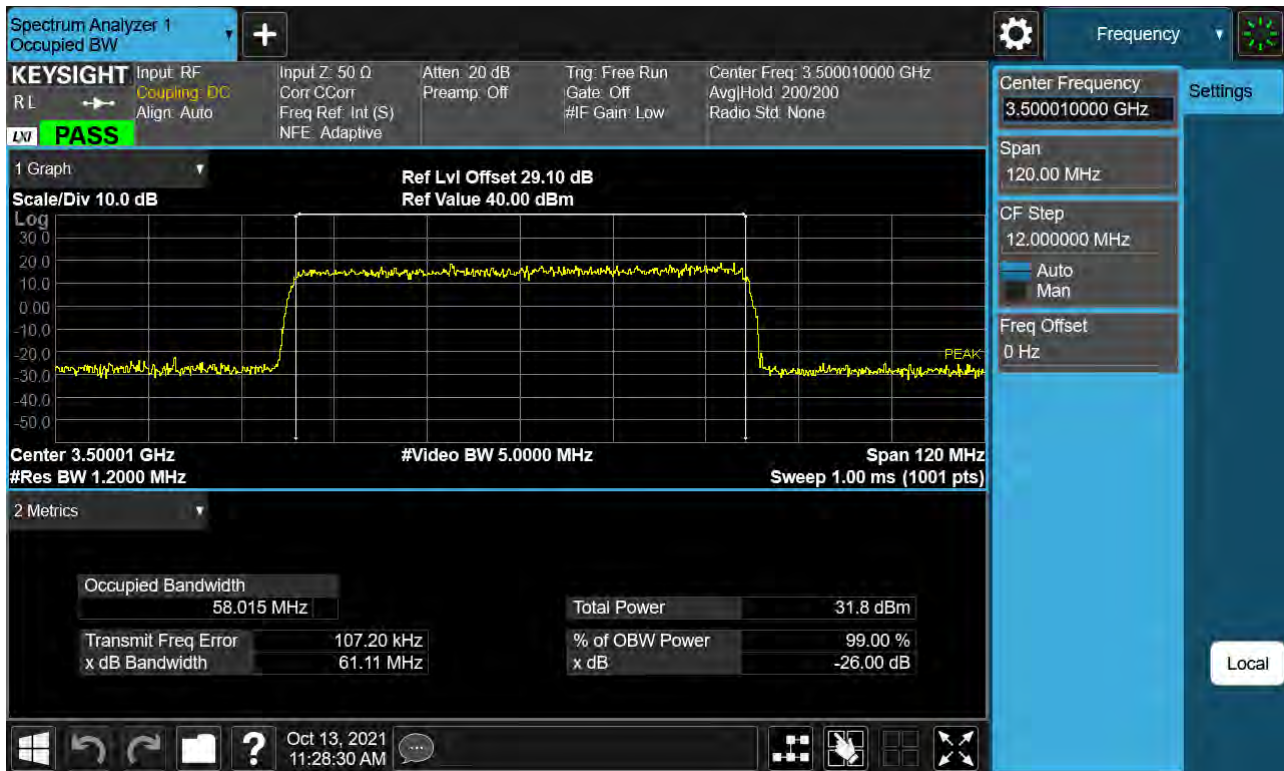
Sub6 n77. Occupied Bandwidth Plot (60 M BW Ch.633334 BPSK)



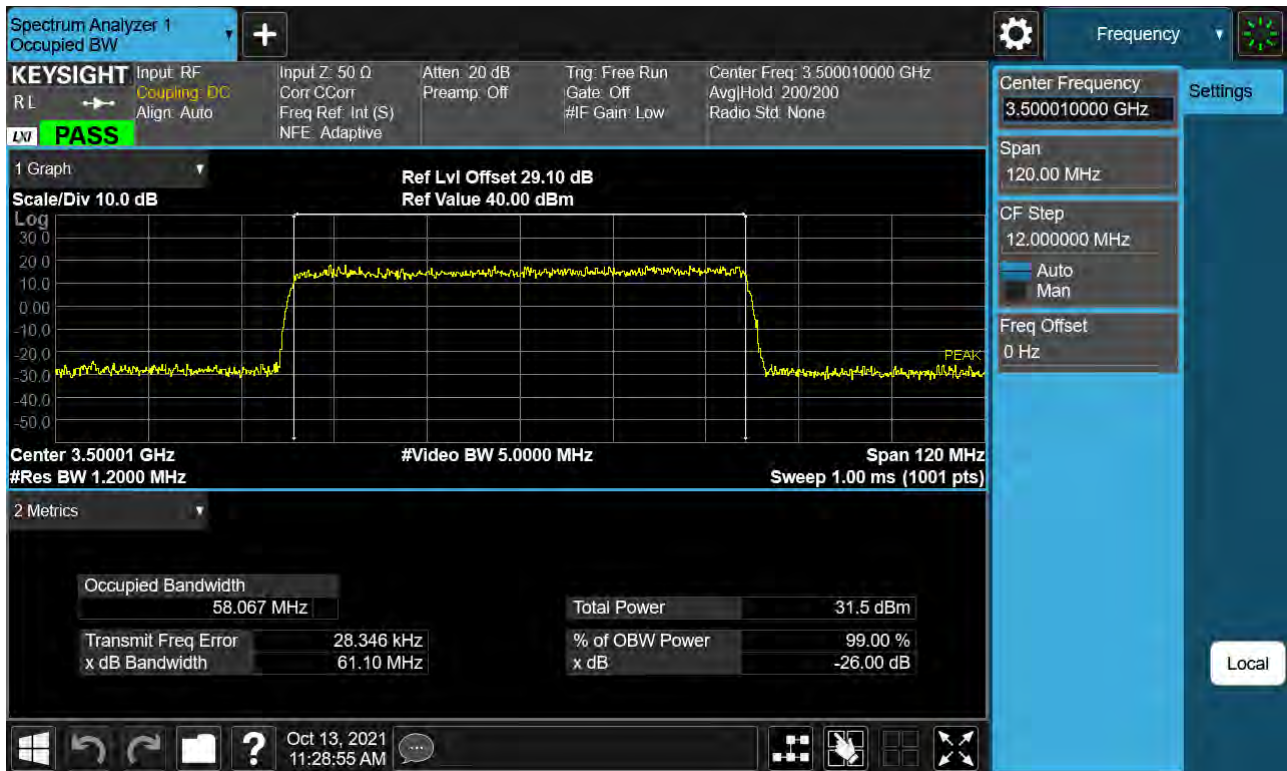
Sub6 n77. Occupied Bandwidth Plot (60 M BW Ch.633334 QPSK)



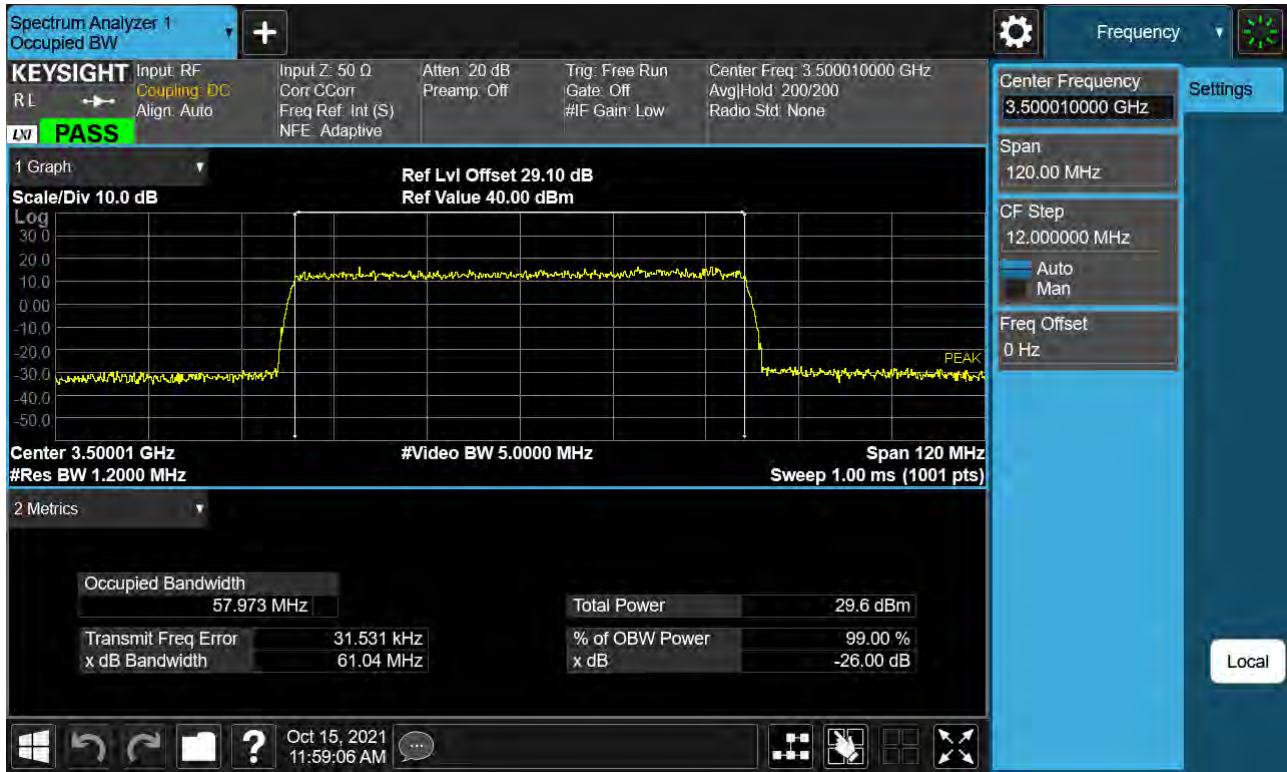
Sub6 n77. Occupied Bandwidth Plot (60 M BW Ch.633334 16QAM)



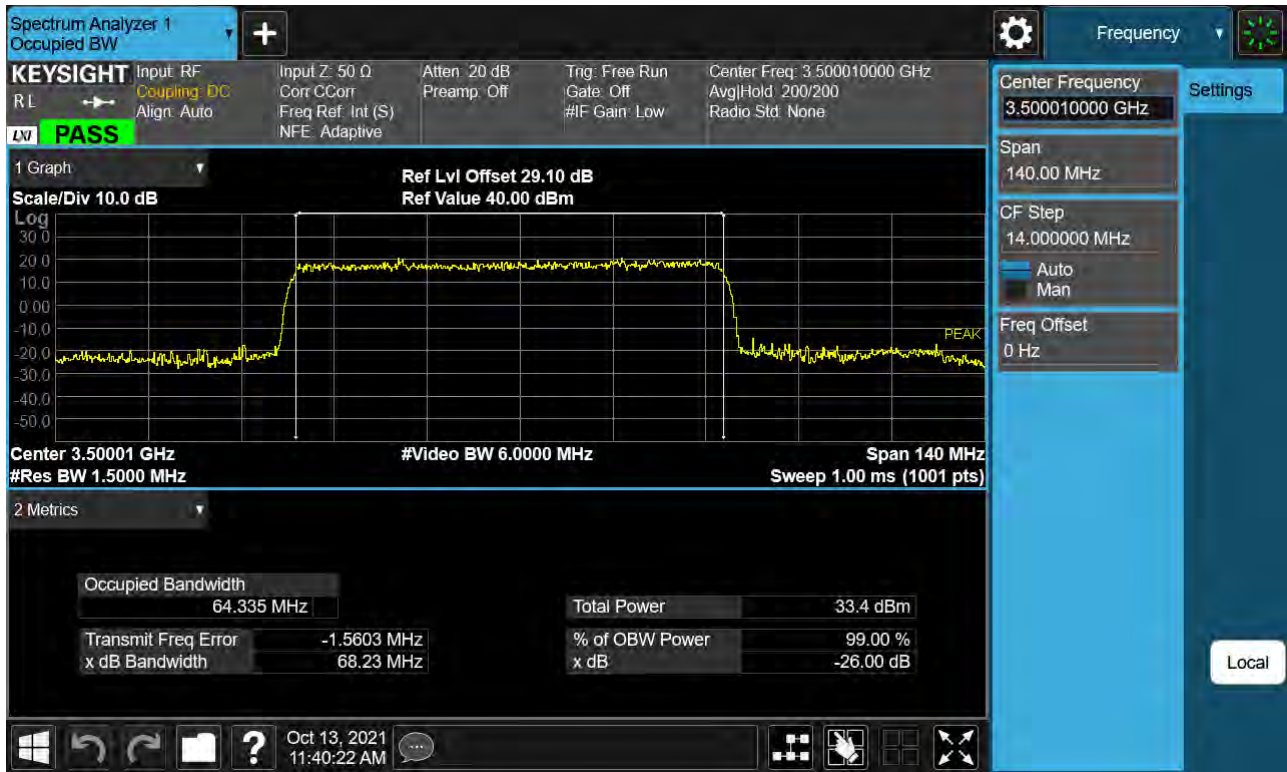
Sub6 n77. Occupied Bandwidth Plot (60 M BW Ch.633334 64QAM)



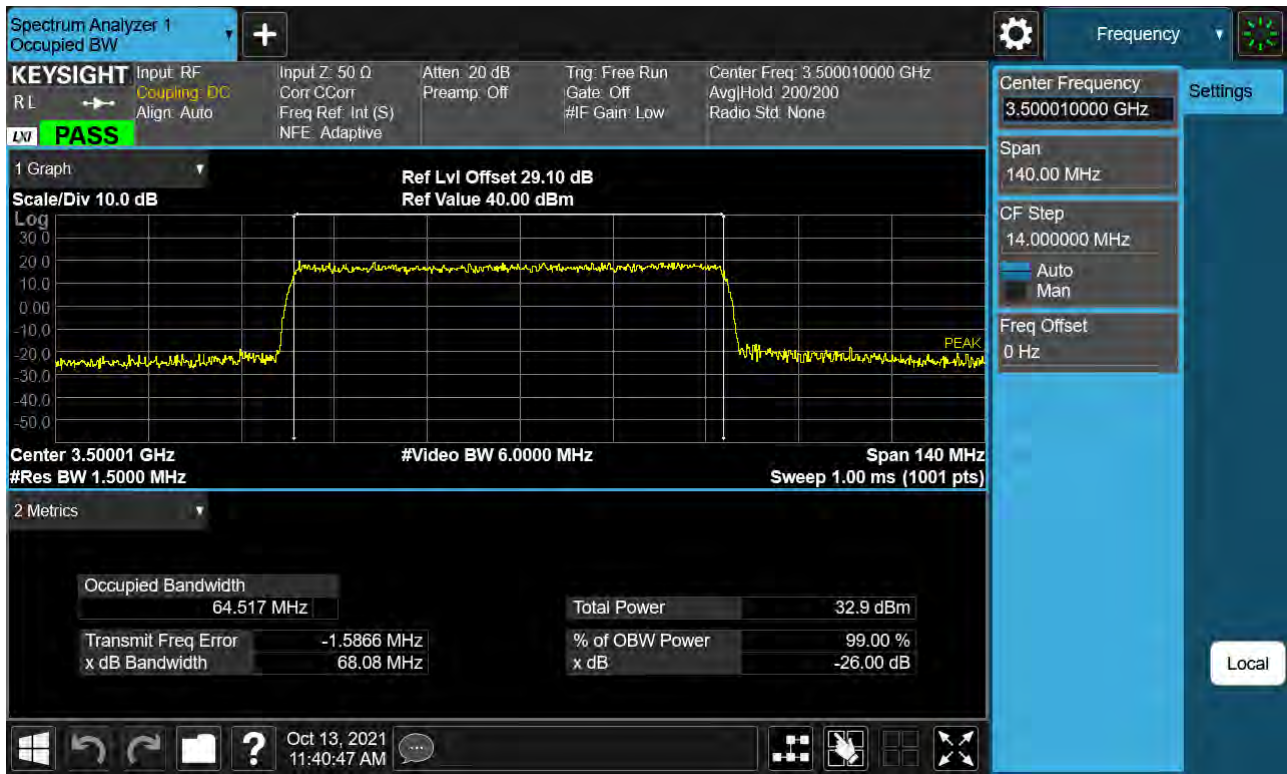
Sub6 n77. Occupied Bandwidth Plot (60 M BW Ch.633334 256QAM)



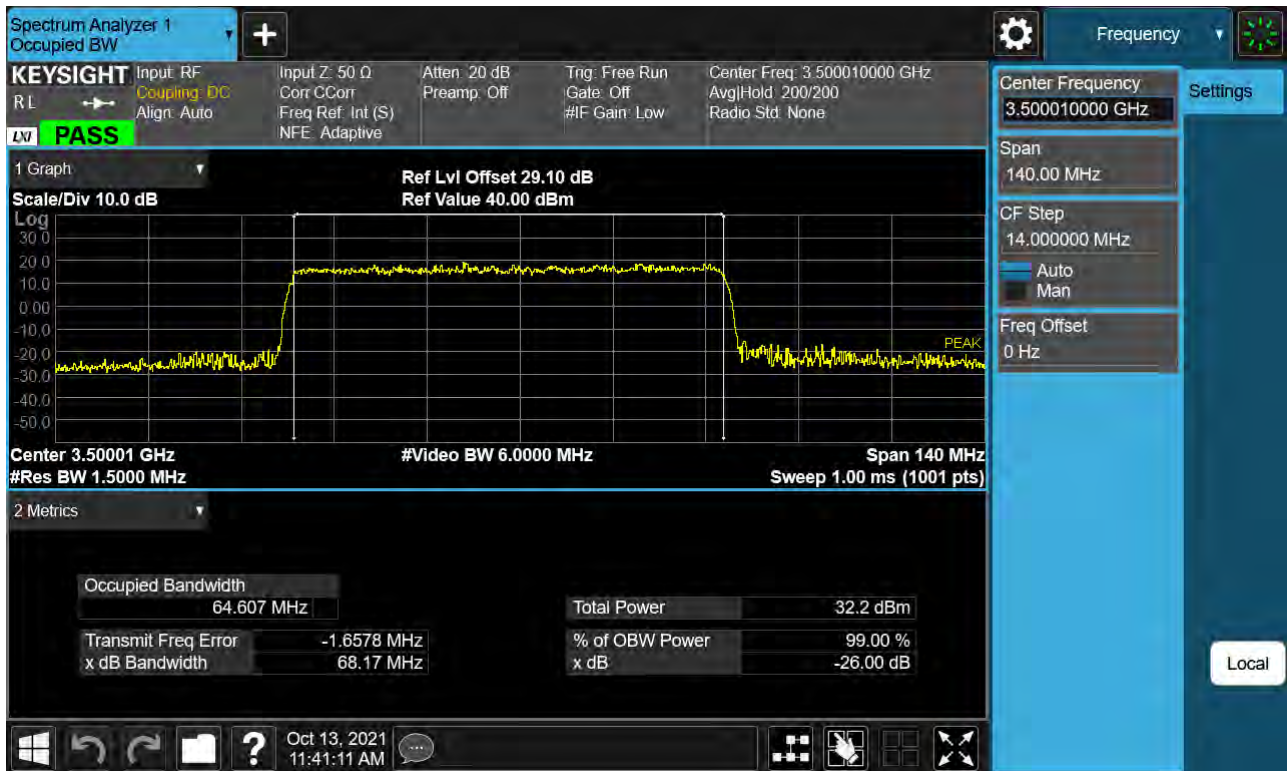
Sub6 n77. Occupied Bandwidth Plot (70 M BW Ch.633334 BPSK)



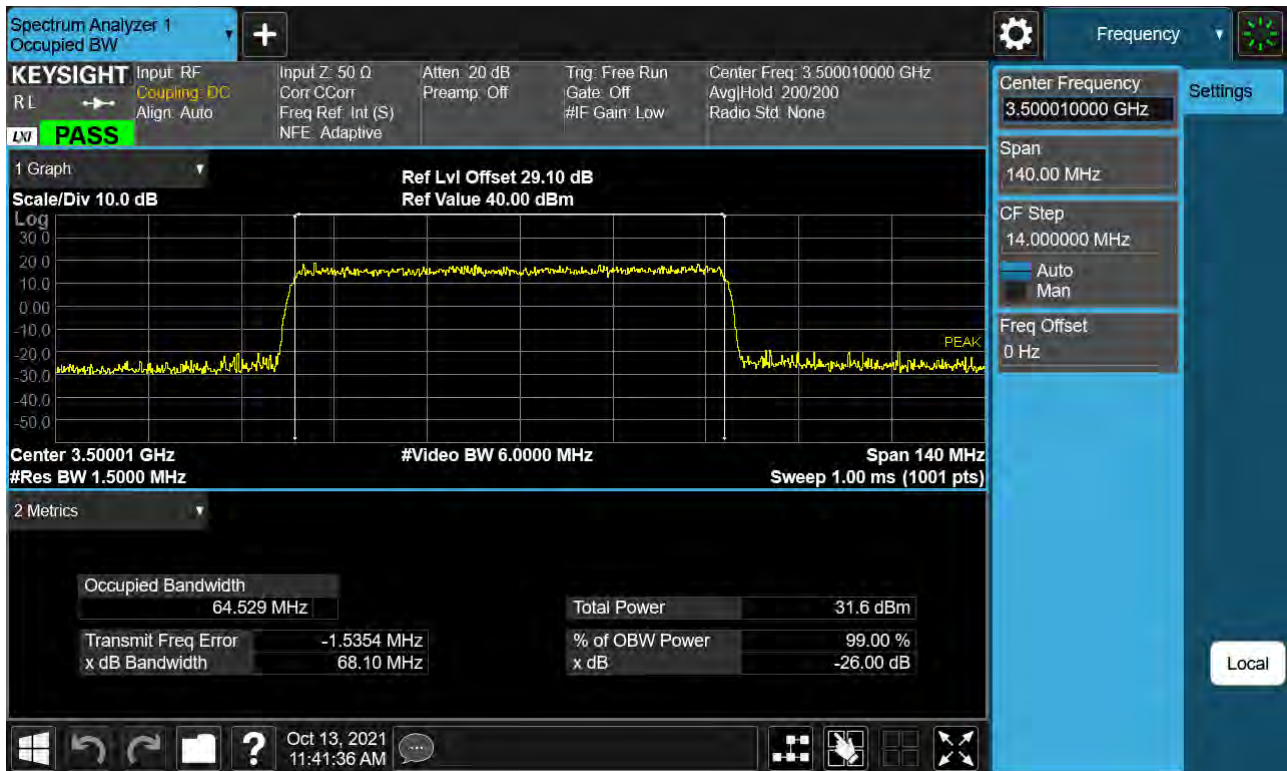
Sub6 n77. Occupied Bandwidth Plot (70 M BW Ch.633334 QPSK)



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



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



Spectrum Analyzer 1
Occupied BW

KEYSIGHT Input RF
RL Coupling: DC
Align: Auto

Input Z: 50 Ω
Corr C: Corr
Freq Ref: Int (S)
NFE: Adaptive

Atten: 20 dB
Preamp: Off

Trig: Free Run
Gate: Off
#IF Gain: Low

Center Freq: 3.500010000 GHz
Avg/Hold: 200/200
Radio Std: None

Center Frequency
3.500010000 GHz

Settings

Span
140.00 MHz

CF Step
14.000000 MHz

Auto Man

Freq Offset
0 Hz

1 Graph
Scale/Div 10.0 dB
Ref Lvl Offset 29.10 dB
Ref Value 40.00 dBm

Center 3.50001 GHz
#Res BW 1.5000 MHz

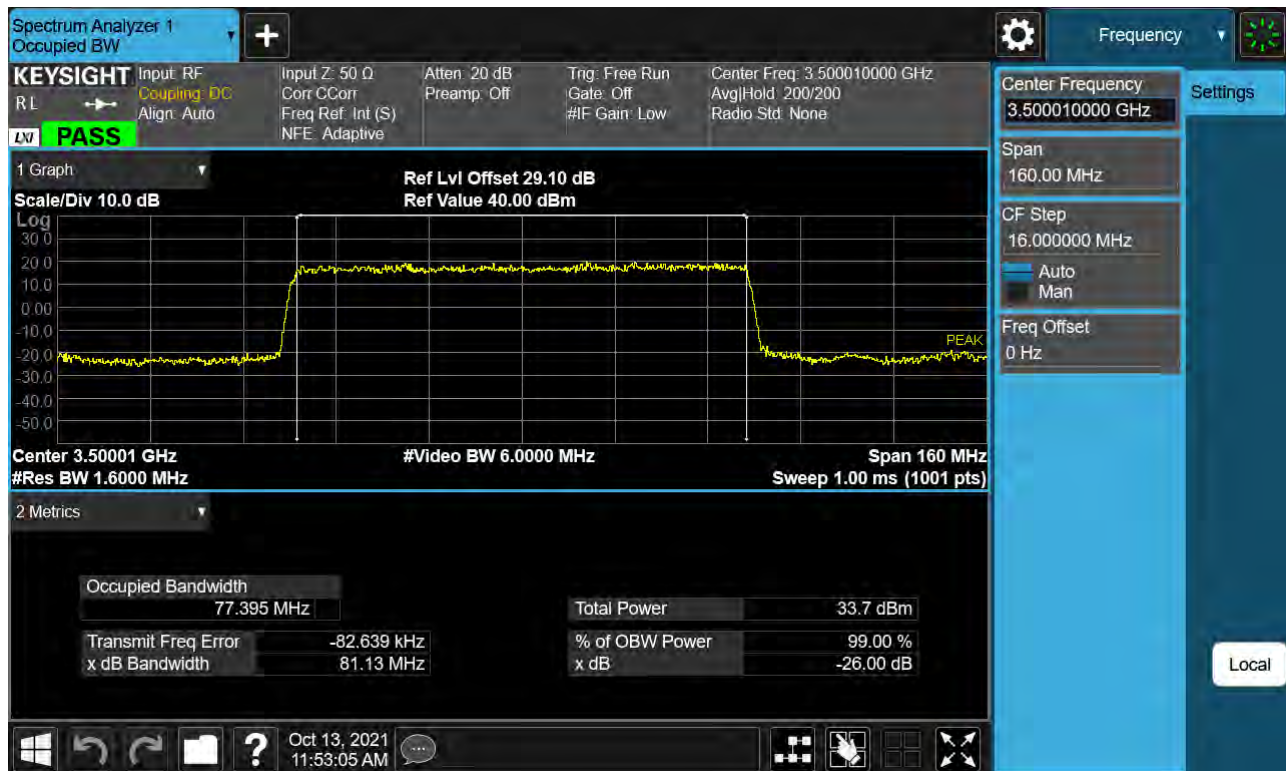
#Video BW 6.0000 MHz
Span 140 MHz
Sweep 1.00 ms (1001 pts)

2 Metrics

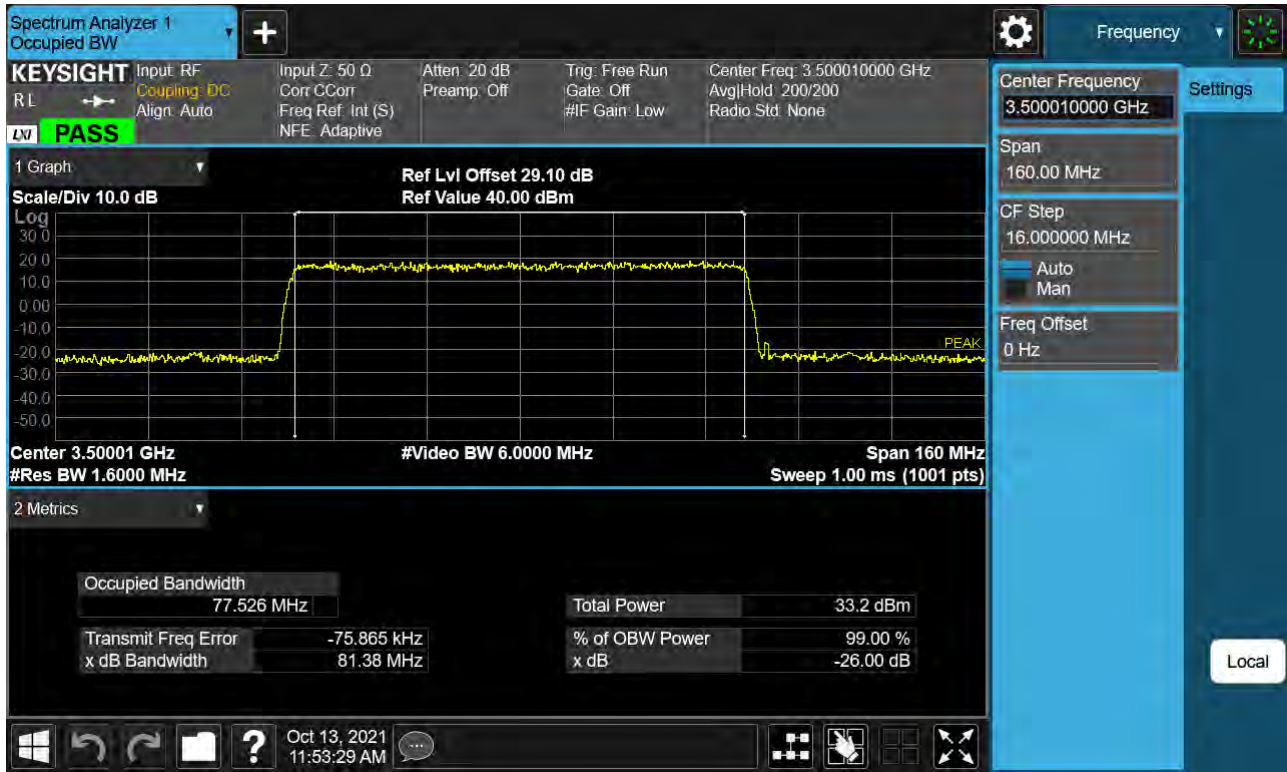
Metric	Value
Occupied Bandwidth	64.463 MHz
Total Power	29.6 dBm
Transmit Freq Error	-1.5966 MHz
% of OBW Power	99.00 %
x dB Bandwidth	67.96 MHz
	-26.00 dB

Oct 15, 2021 11:59:54 AM

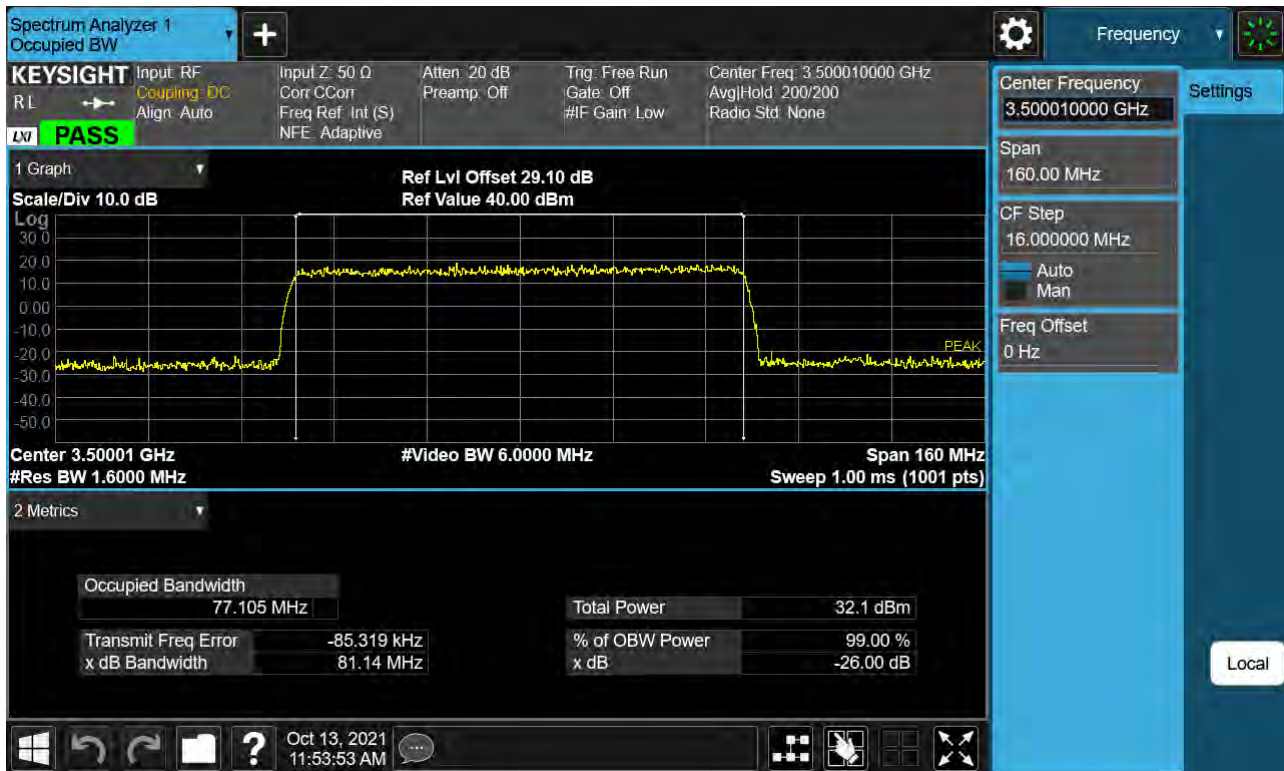
Sub6 n77. Occupied Bandwidth Plot (80 M BW Ch.633334 BPSK)



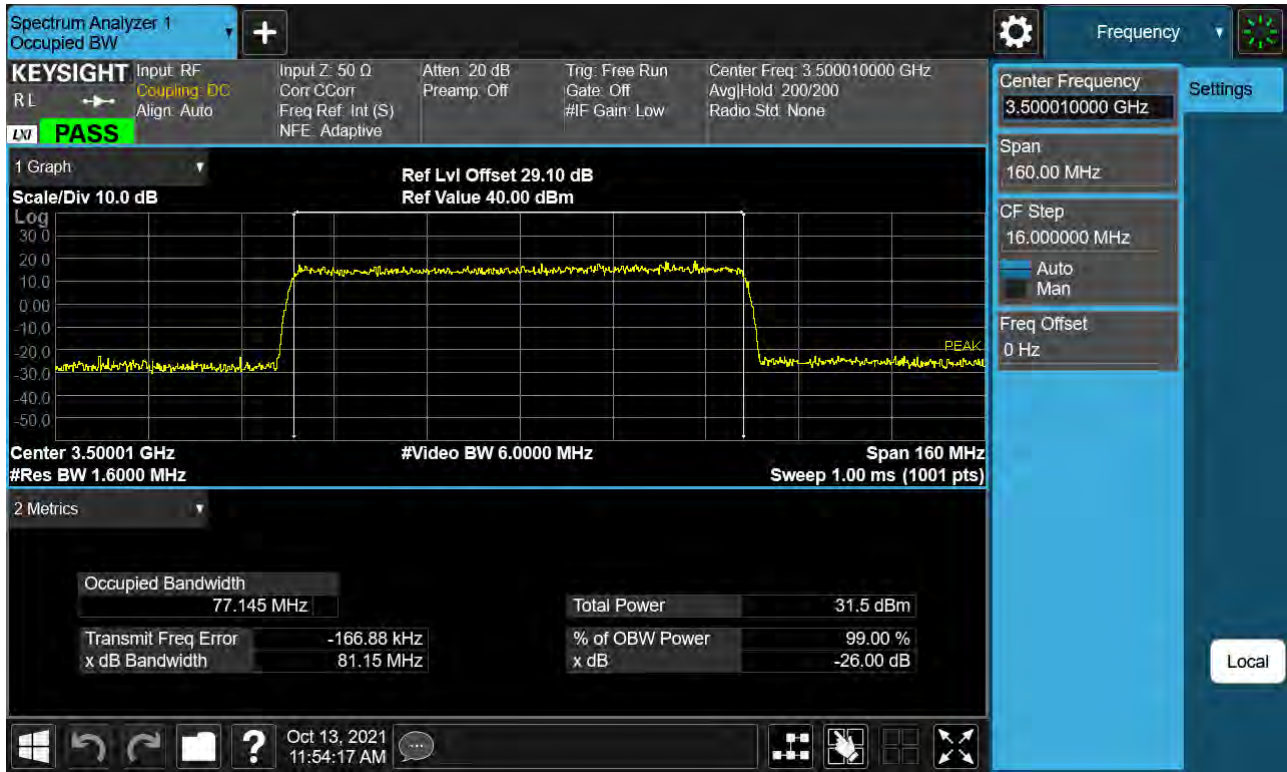
Sub6 n77. Occupied Bandwidth Plot (80 M BW Ch.633334 QPSK)



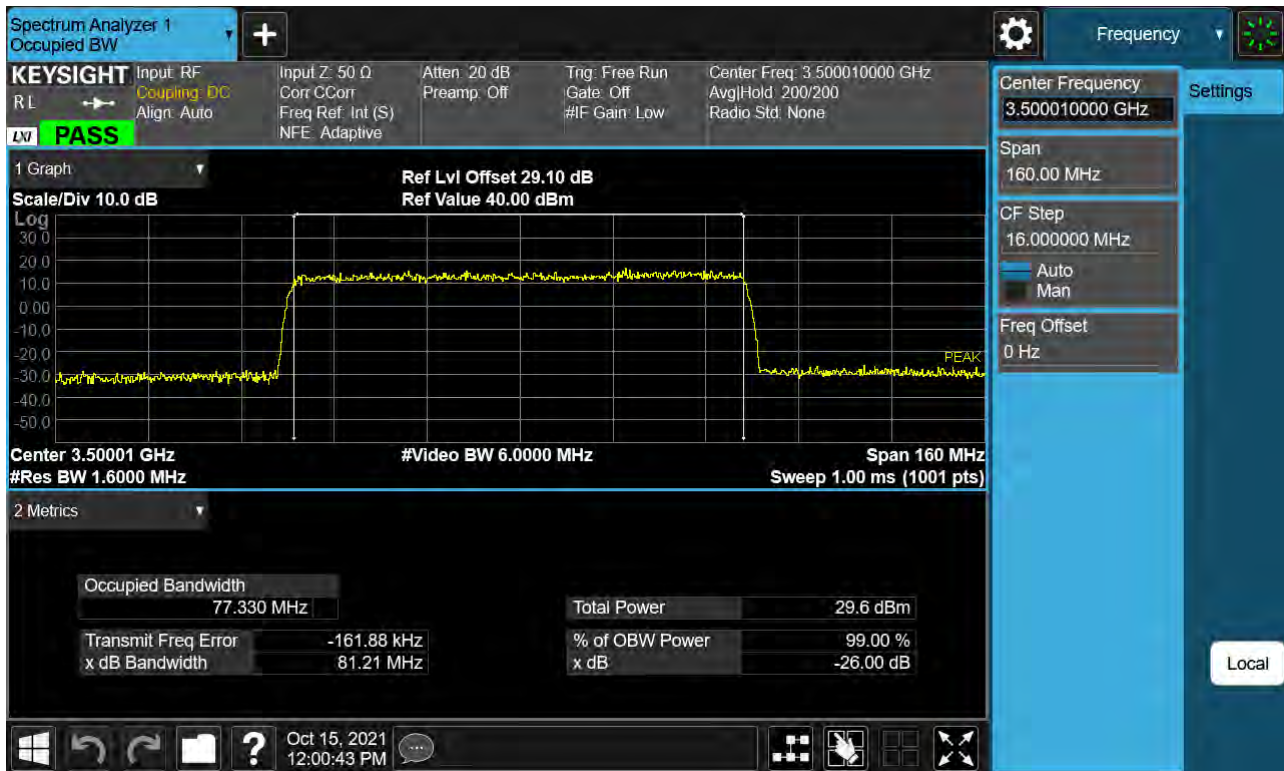
Sub6 n77. Occupied Bandwidth Plot (80 M BW Ch.633334 16QAM)



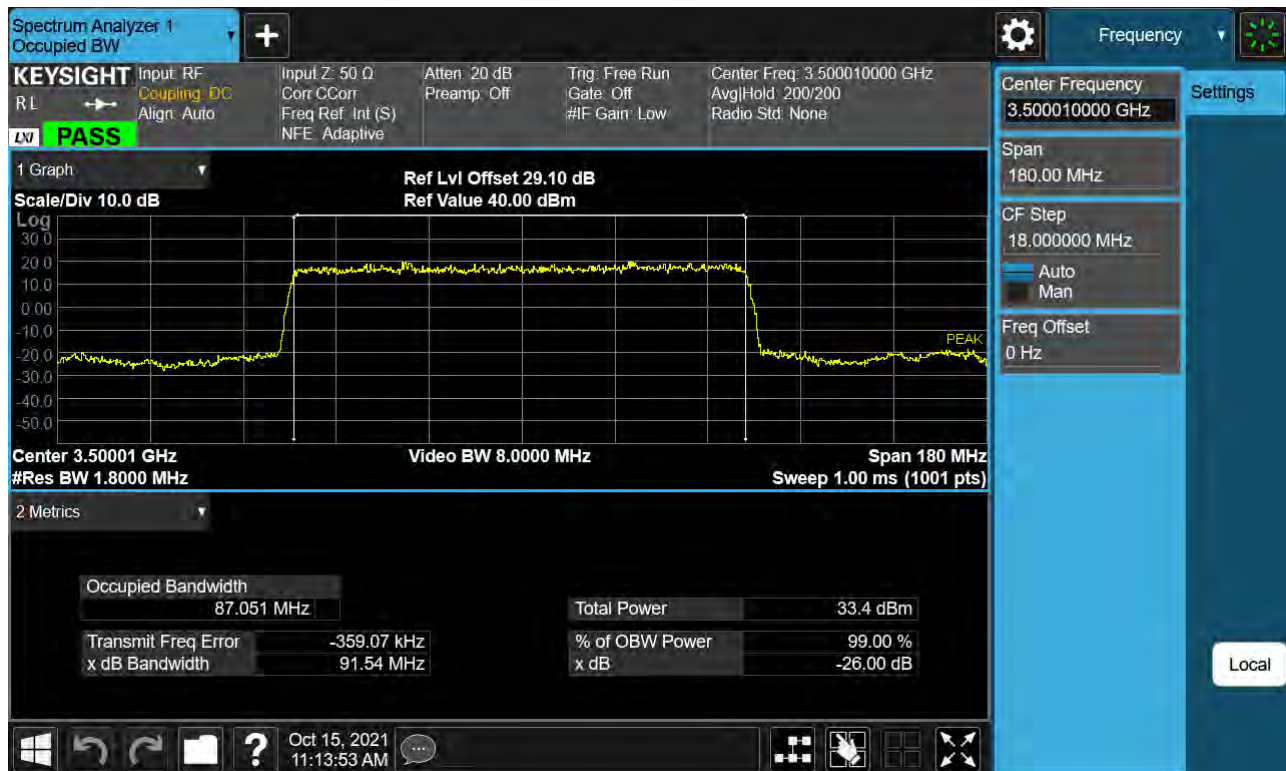
Sub6 n77. Occupied Bandwidth Plot (80 M BW Ch.633334 64QAM)



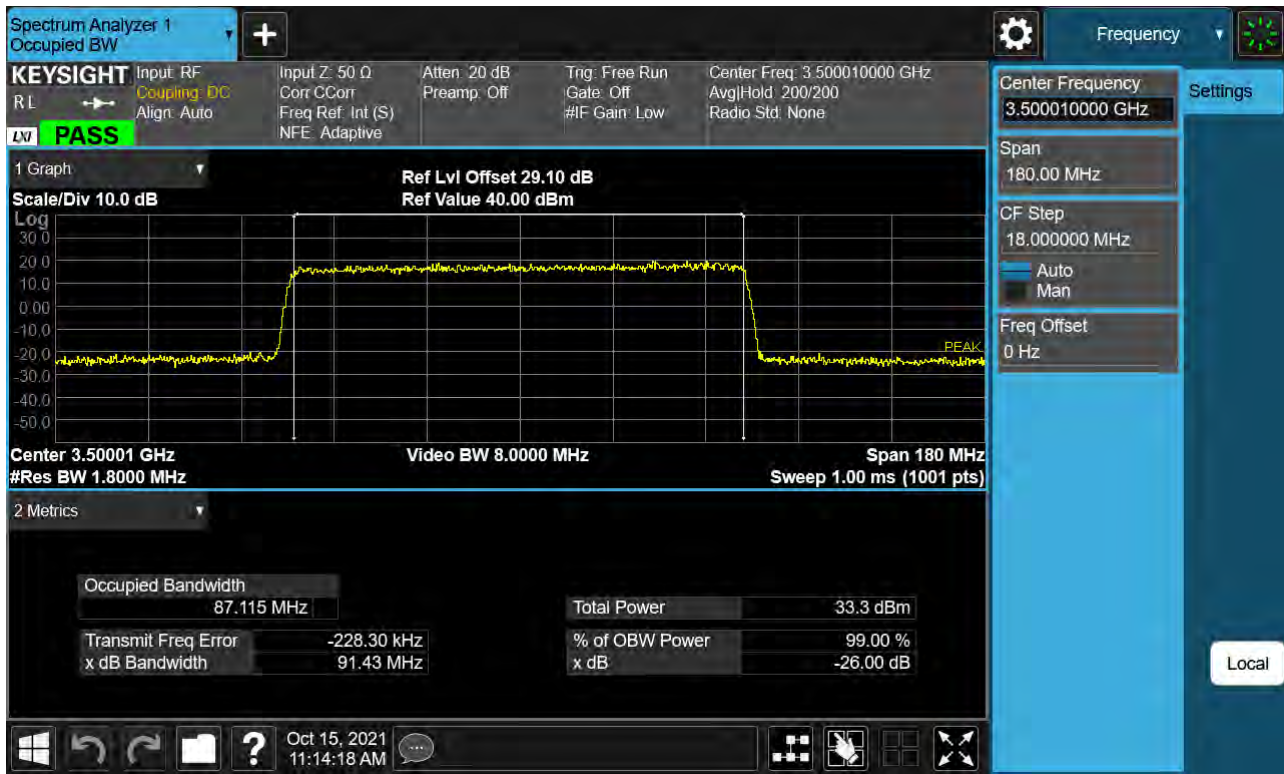
Sub6 n77. Occupied Bandwidth Plot (80 M BW Ch.633334 256QAM)



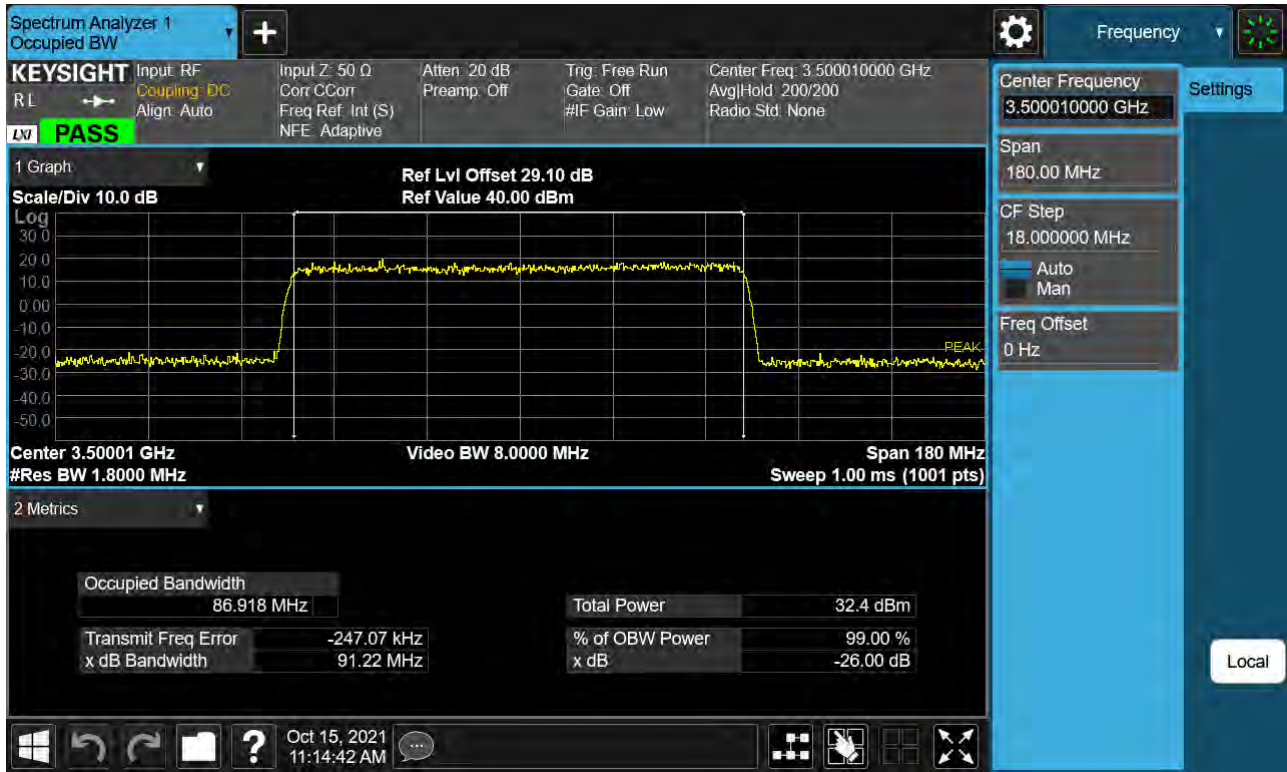
Sub6 n77. Occupied Bandwidth Plot (90 M BW Ch.633334 BPSK)



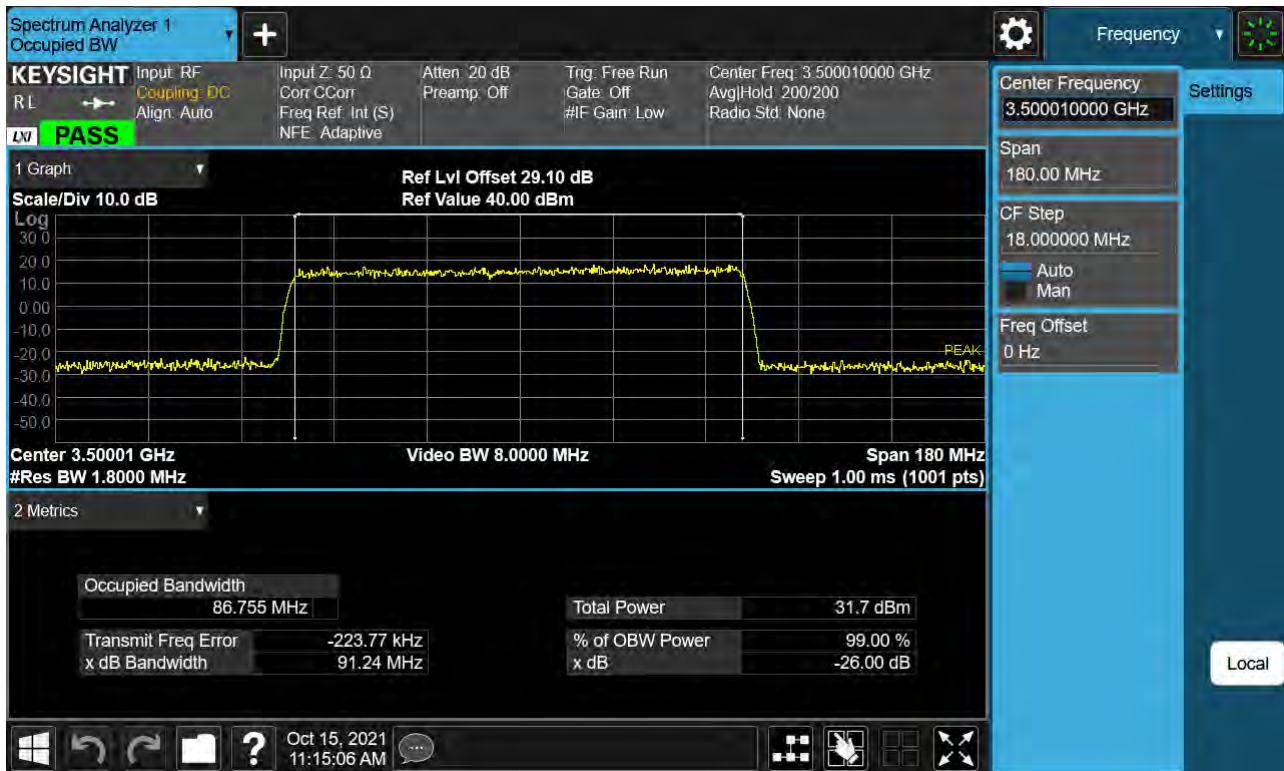
Sub6 n77. Occupied Bandwidth Plot (90 M BW Ch.633334 QPSK)



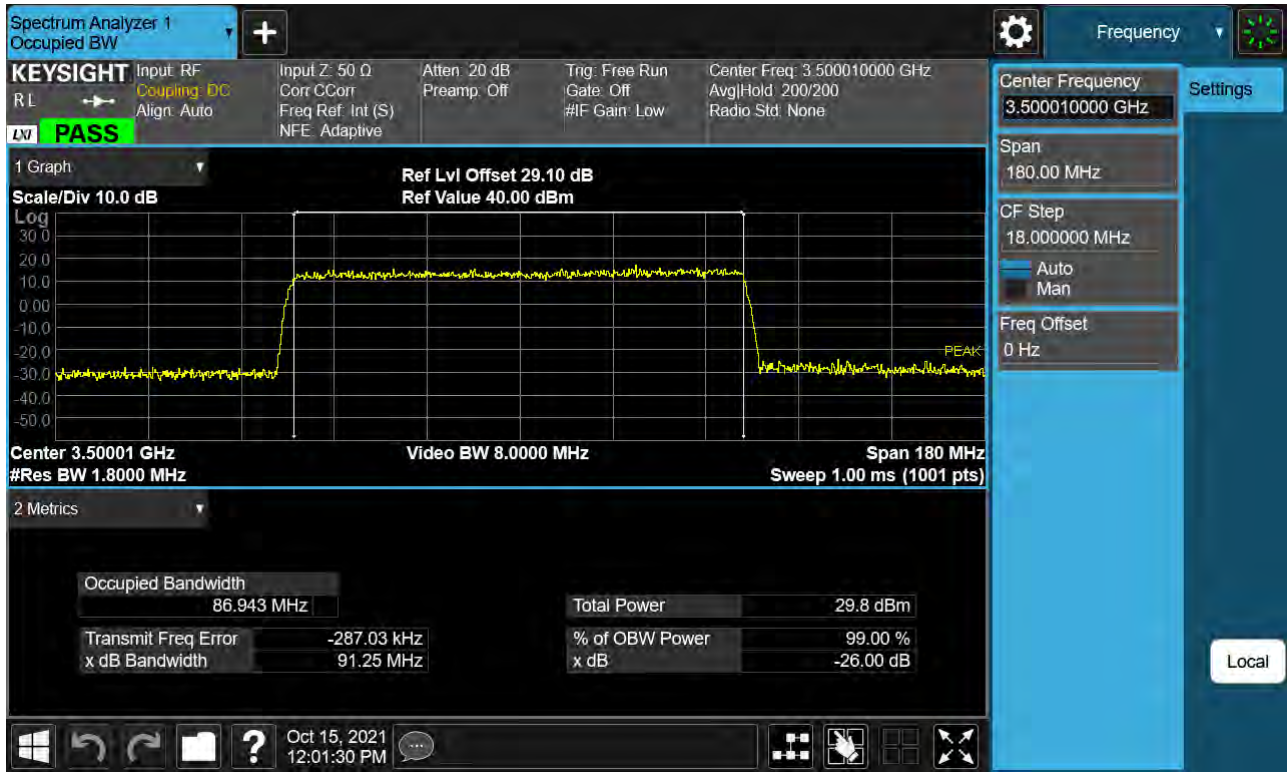
Sub6 n77. Occupied Bandwidth Plot (90 M BW Ch.633334 16QAM)



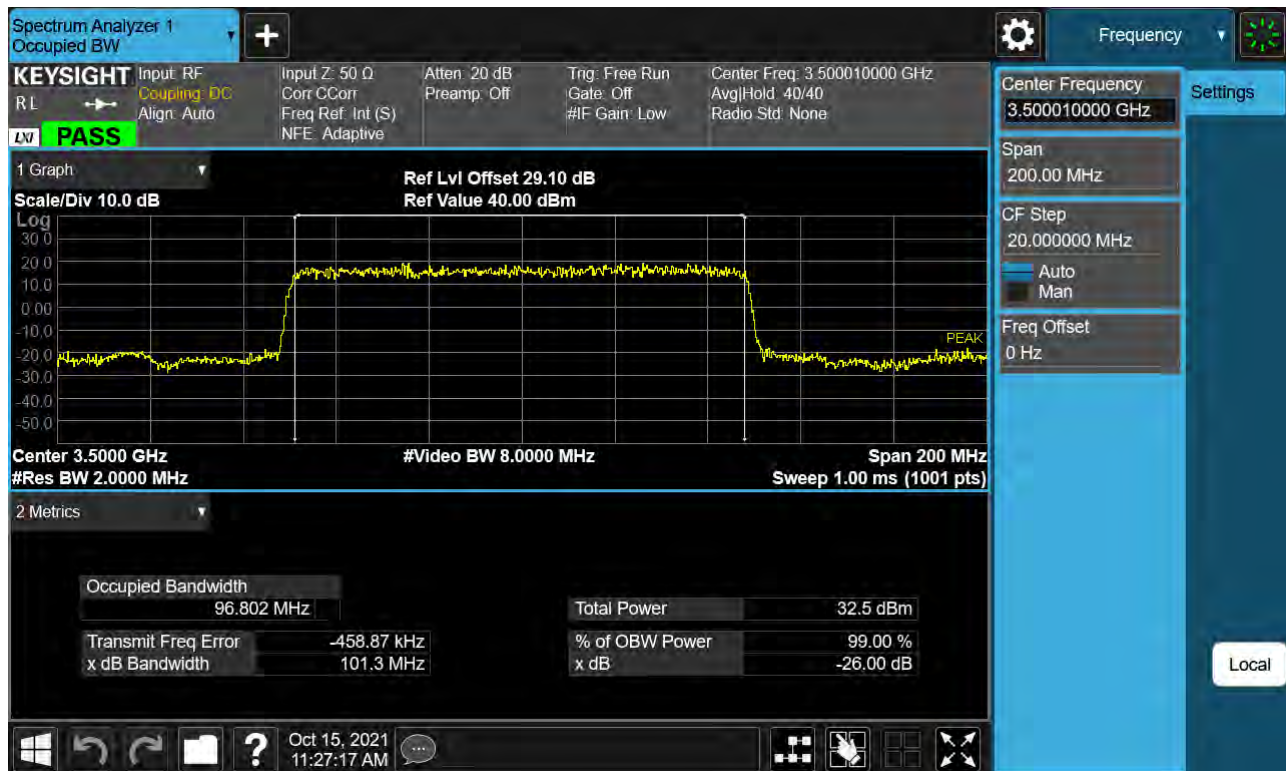
Sub6 n77. Occupied Bandwidth Plot (90 M BW Ch.633334 64QAM)



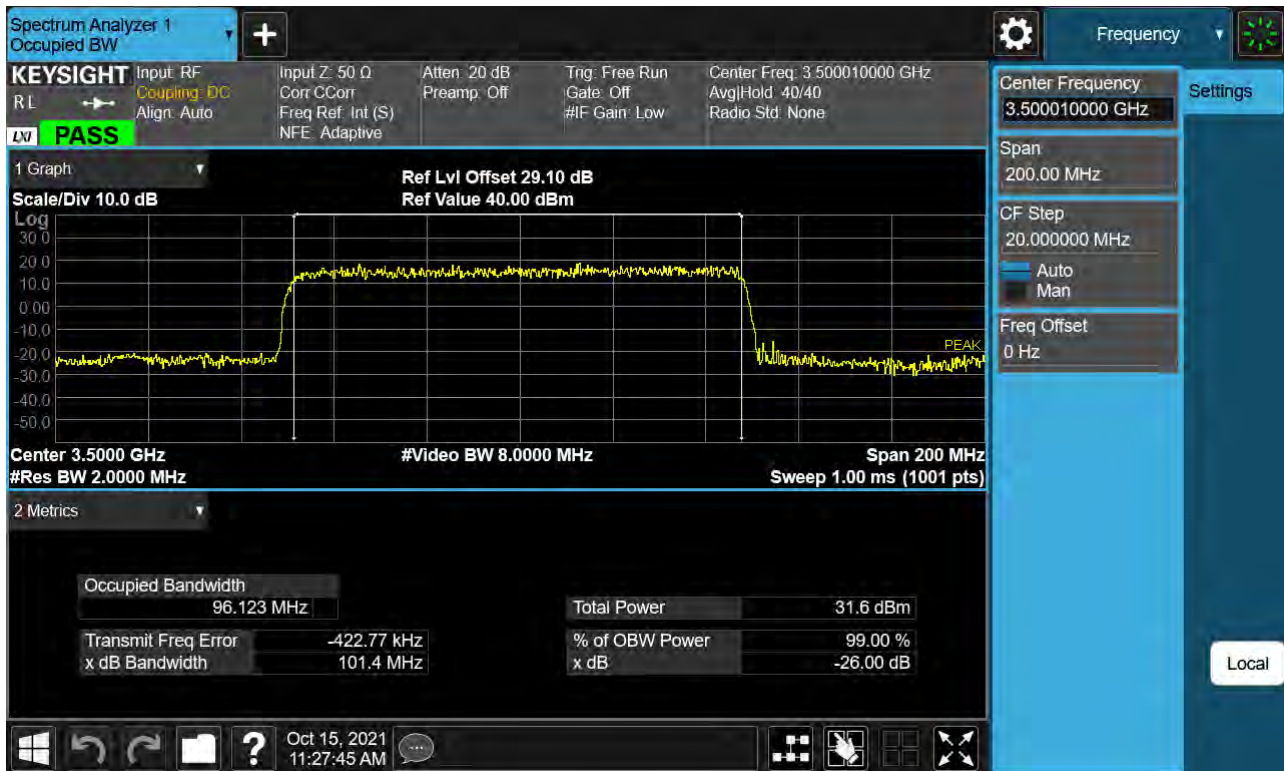
Sub6 n77. Occupied Bandwidth Plot (90 M BW Ch.633334 256QAM)



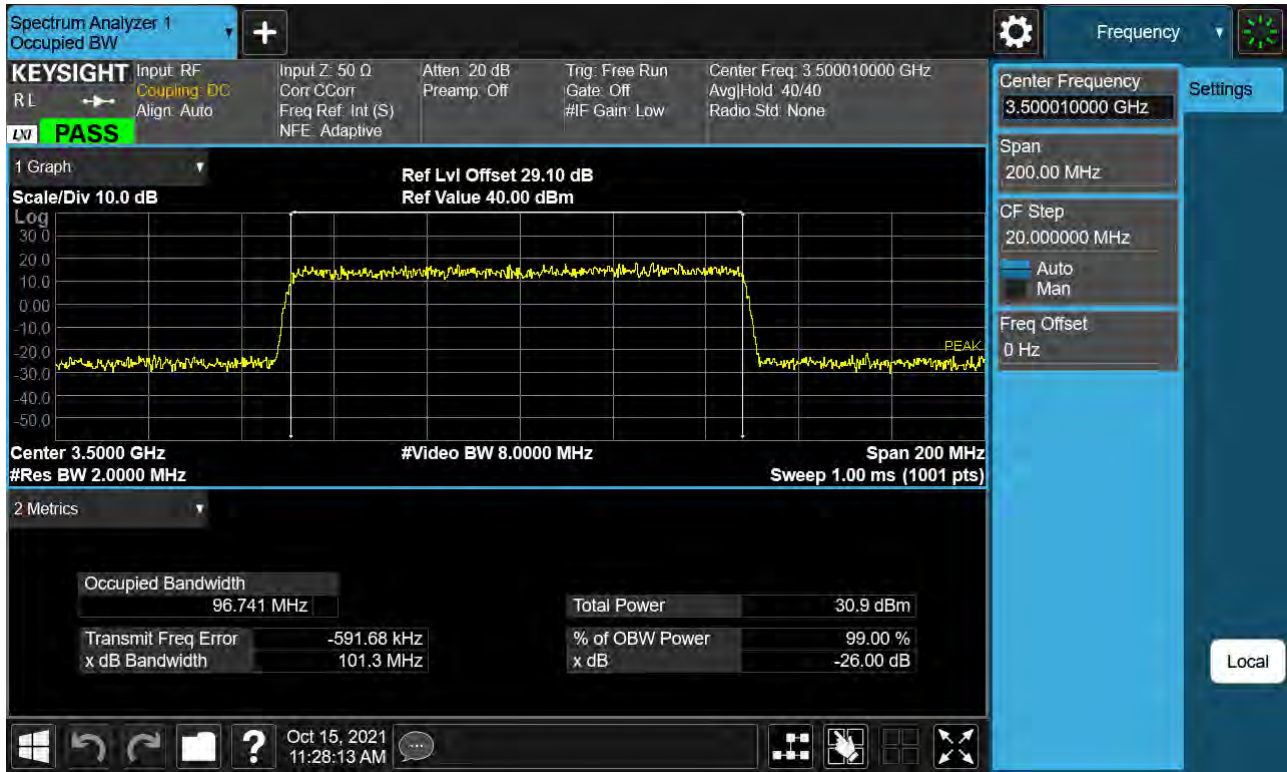
Sub6 n77. Occupied Bandwidth Plot (100 M BW Ch.633334 BPSK)



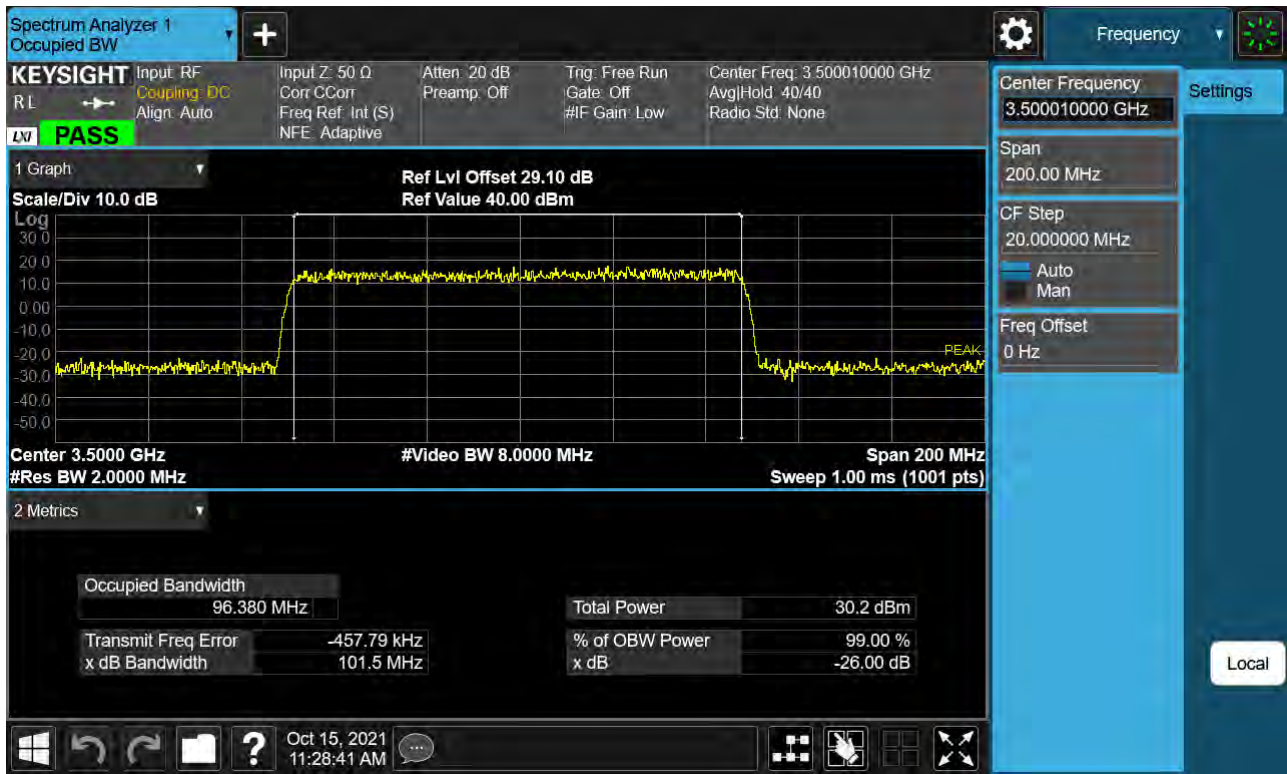
Sub6 n77. Occupied Bandwidth Plot (100 M BW Ch.633334 QPSK)



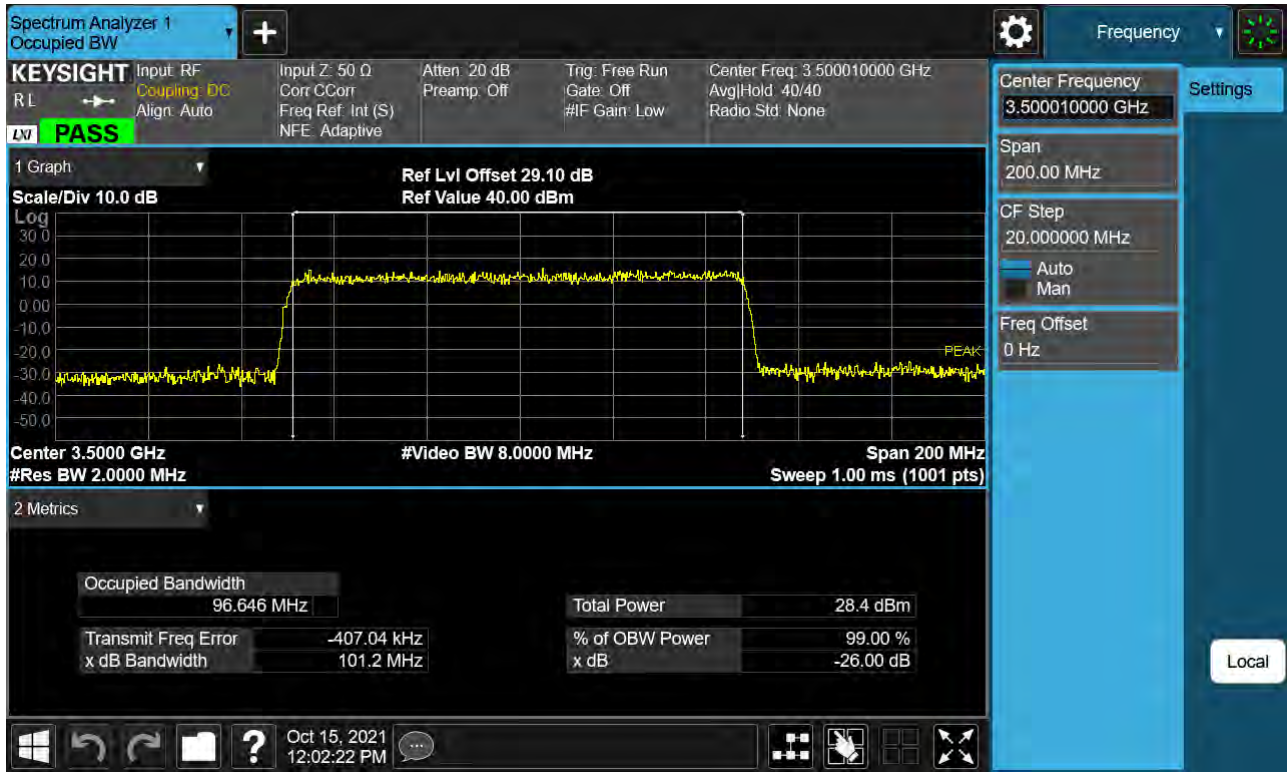
Sub6 n77. Occupied Bandwidth Plot (100 M BW Ch.633334 16QAM)



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



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



Sub6 n77. PAR Plot (10 M BW_Ch.633334_ BPSK)



Sub6 n77. PAR Plot (10 M BW_Ch.633334_QPSK)



Sub6 n77. PAR Plot (10 M BW_Ch.633334_16QAM)



Sub6 n77. PAR Plot (10 M BW_Ch.633334_64QAM)



Sub6 n77. PAR Plot (10 M BW_Ch.633334_256QAM)



Sub6 n77. PAR Plot (15 M BW_Ch.633334_ BPSK)



Sub6 n77. PAR Plot (15 M BW_Ch.633334_QPSK)



Sub6 n77. PAR Plot (15 M BW_Ch.633334_16QAM)



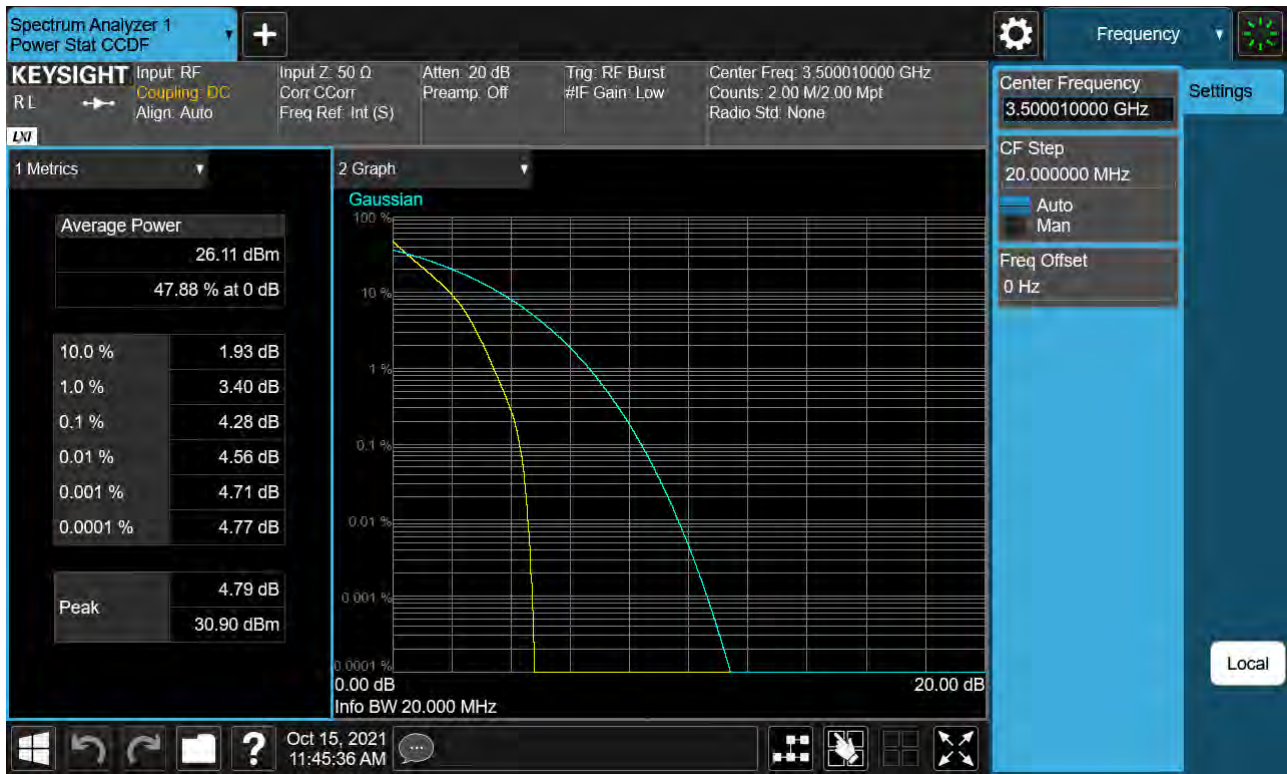
Sub6 n77. PAR Plot (15 M BW_Ch.633334_64QAM)



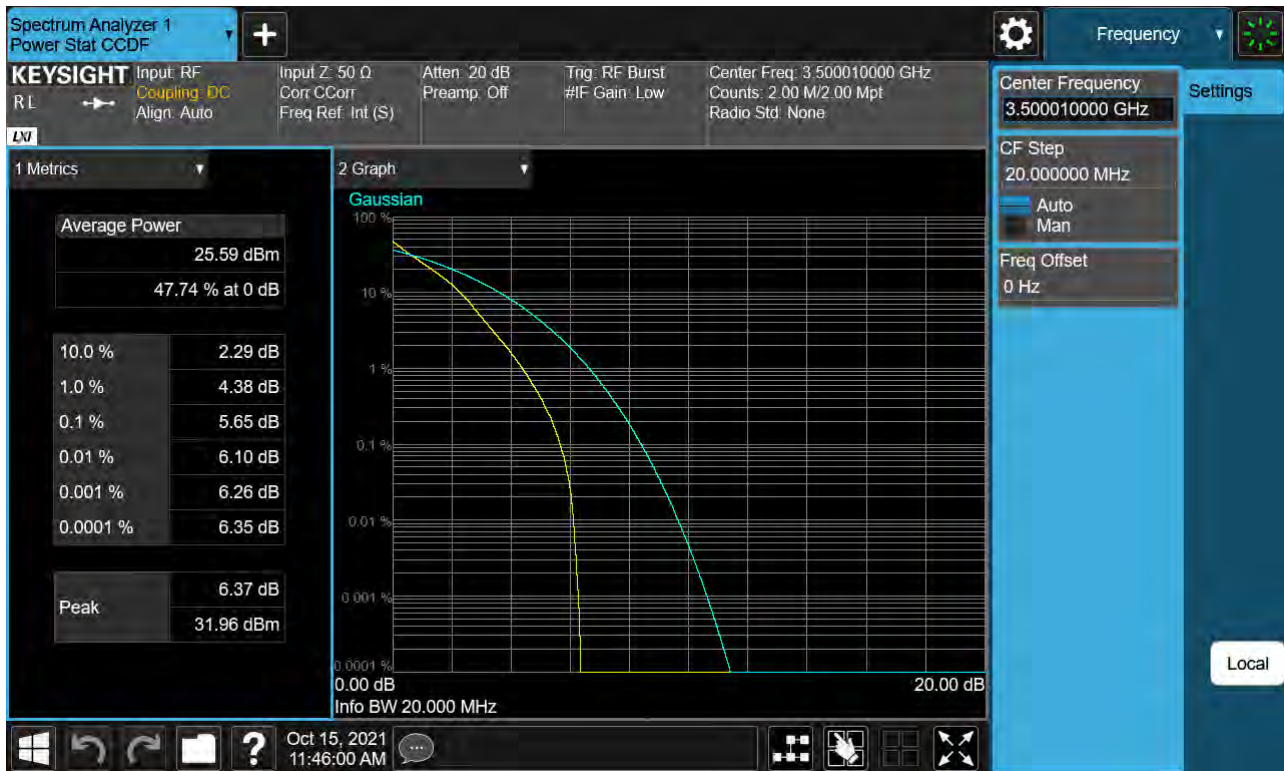
Sub6 n77. PAR Plot (15 M BW_Ch.633334_256QAM)



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



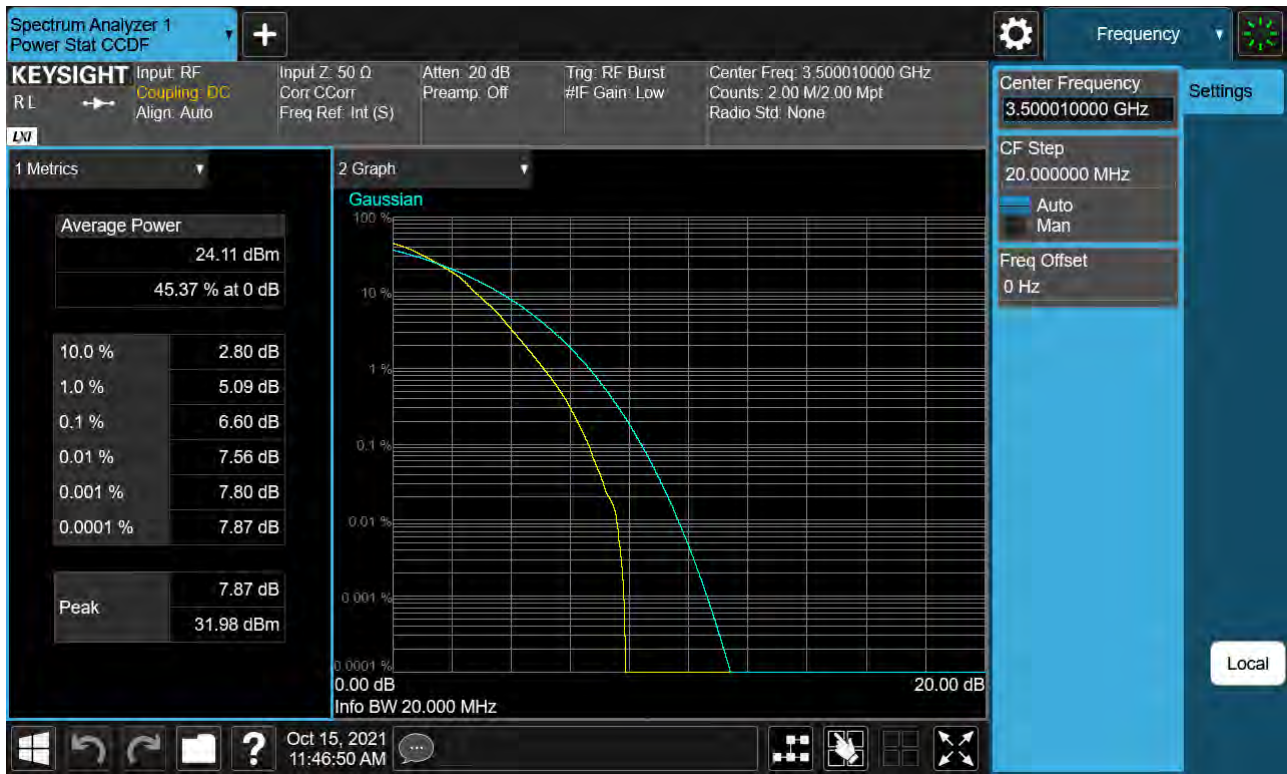
Sub6 n77. PAR Plot (20 M BW_Ch.633334_QPSK)



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



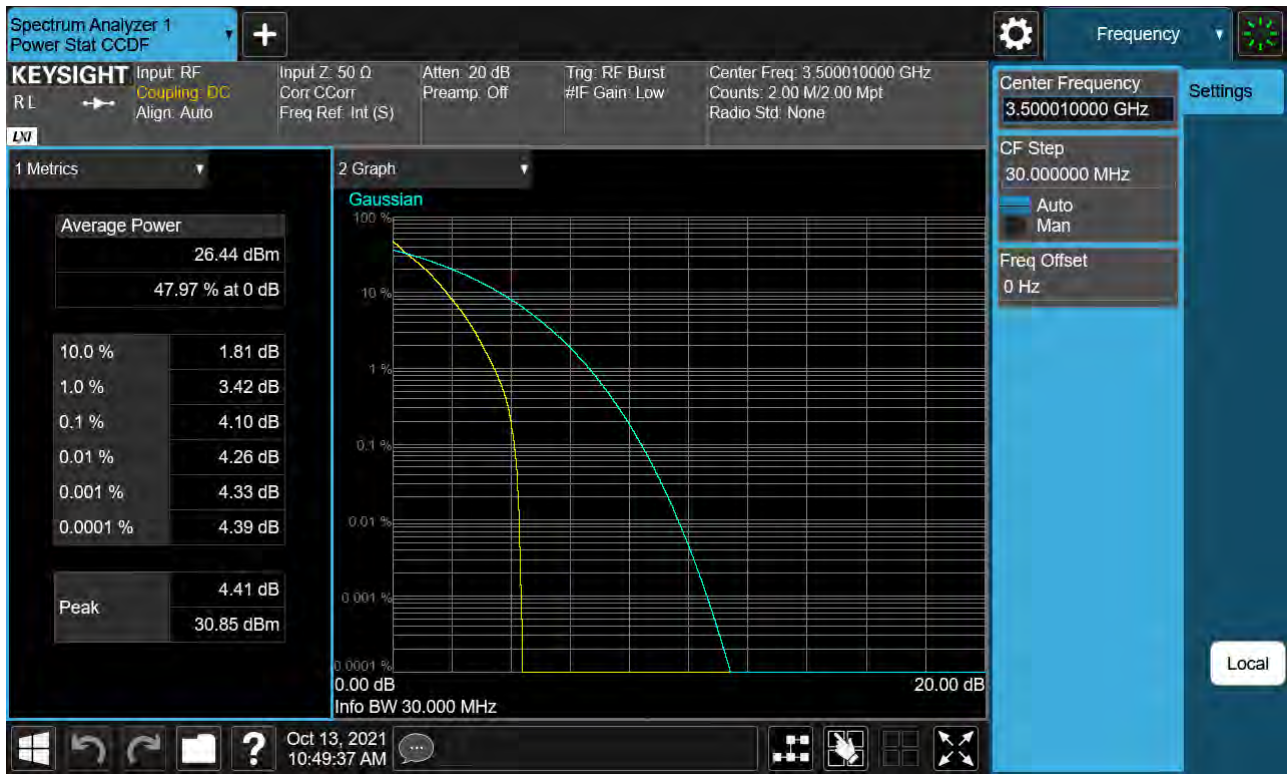
Sub6 n77. PAR Plot (20 M BW_Ch.633334_64QAM)



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



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



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



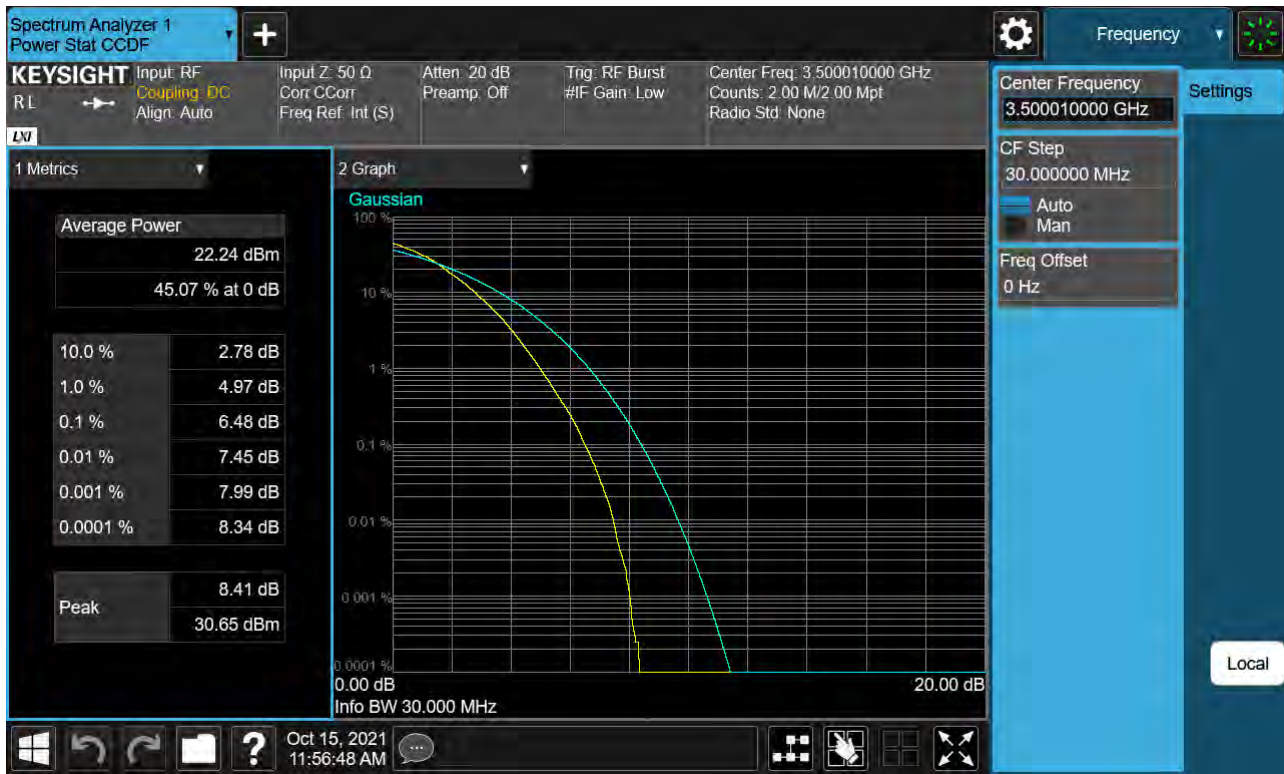
Sub6 n77. PAR Plot (30 M BW_Ch.633334_16QAM)



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



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



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



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



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



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



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



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



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



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



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



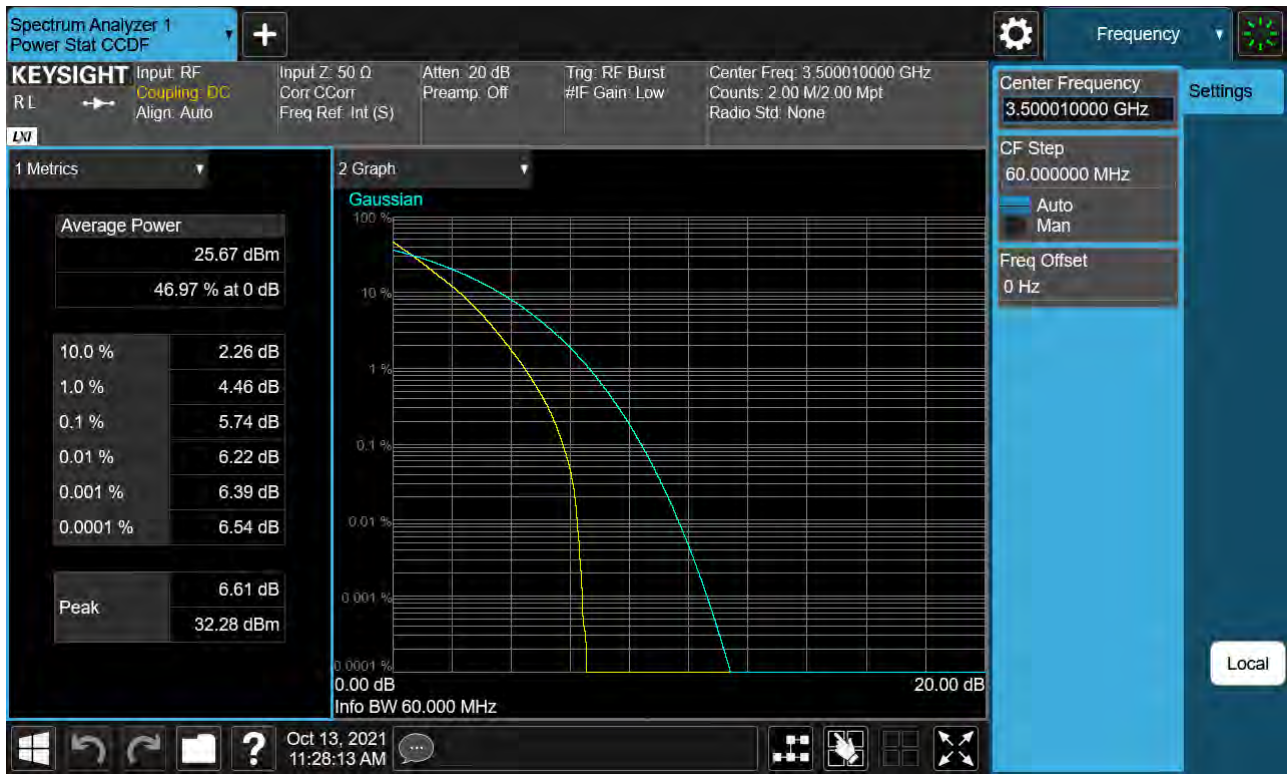
Sub6 n77. PAR Plot (50 M BW_Ch.633334_256QAM)



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



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



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



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

