

# FCC Sub6 REPORT

## Certification

**Applicant Name:**  
SAMSUNG Electronics Co., Ltd.

**Date of Issue:**  
November 05, 2021

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

**Location:**  
HCT CO., LTD.,  
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Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

**Report No.:** HCT-RF-2110-FC057-R1

**FCC ID:** A3LSMS901B

**APPLICANT:** SAMSUNG Electronics Co., Ltd.

Model(s): SM-S901B/DS  
 EUT Type: Mobile Phone  
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)  
 FCC Rule Part(s): §27, §2

-Lower-

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n66 (5)	1712.5 – 1777.5	4M54G7D	PI/2 BPSK	0.163	22.12
		4M53G7D	QPSK	0.163	22.11
		4M54W7D	16QAM	0.130	21.14
		4M52W7D	64QAM	0.094	19.71
		4M52W7D	256QAM	0.059	17.69
Sub6 n66 (10)	1715.0 – 1775.0	8M98G7D	PI/2 BPSK	0.172	22.36
		9M01G7D	QPSK	0.170	22.30
		8M99W7D	16QAM	0.136	21.32
		8M98W7D	64QAM	0.097	19.88
		8M99W7D	256QAM	0.062	17.91
Sub6 n66 (15)	1717.5 – 1772.5	13M5G7D	PI/2 BPSK	0.171	22.32
		13M4G7D	QPSK	0.170	22.31
		13M5W7D	16QAM	0.136	21.32
		13M5W7D	64QAM	0.097	19.88
		13M5W7D	256QAM	0.062	17.89
Sub6 n66 (20)	1720.0 – 1770.0	18M0G7D	PI/2 BPSK	0.180	22.55
		17M9G7D	QPSK	0.179	22.53
		17M9W7D	16QAM	0.144	21.57
		18M0W7D	64QAM	0.103	20.11
		17M9W7D	256QAM	0.065	18.11

-Upper-

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n66 (5)	1712.5 – 1777.5	4M51G7D	PI/2 BPSK	0.064	18.07
		4M53G7D	QPSK	0.064	18.05
		4M53W7D	16QAM	0.050	17.03
		4M53W7D	64QAM	0.035	15.44
		4M52W7D	256QAM	0.022	13.50
Sub6 n66 (10)	1715.0 – 1775.0	8M99G7D	PI/2 BPSK	0.065	18.16
		9M01G7D	QPSK	0.064	18.06
		8M98W7D	16QAM	0.052	17.20
		8M99W7D	64QAM	0.037	15.73
		9M00W7D	256QAM	0.023	13.65
Sub6 n66 (15)	1717.5 – 1772.5	13M5G7D	PI/2 BPSK	0.064	18.05
		13M4G7D	QPSK	0.063	18.02
		13M4W7D	16QAM	0.050	17.01
		13M5W7D	64QAM	0.036	15.61
		13M4W7D	256QAM	0.023	13.67
Sub6 n66 (20)	1720.0 – 1770.0	17M9G7D	PI/2 BPSK	0.068	18.31
		17M9G7D	QPSK	0.067	18.29
		17M9W7D	16QAM	0.054	17.32
		17M9W7D	64QAM	0.039	15.90
		17M8W7D	256QAM	0.024	13.85

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-2110-FC057-R1

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REVIEWED BY



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Report prepared by : Jung Ki Lim  
Engineer of Telecommunication Testing Center

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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-2110-FC057	October 28, 2021	- First Approval Report
HCT-RF-2110-FC057-R1	November 05, 2021	- Revised the 1, 7, 28 pages.

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

<b>Applicant Name:</b>	SAMSUNG Electronics Co., Ltd.
<b>Address:</b>	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
<b>FCC ID:</b>	A3LSMS901B
<b>Application Type:</b>	Certification
<b>FCC Classification:</b>	PCS Licensed Transmitter Held to Ear (PCE)
<b>FCC Rule Part(s):</b>	§27, §2
<b>EUT Type:</b>	Mobile Phone
<b>Model(s):</b>	SM-S901B/DS
<b>SCS(kHz):</b>	15
<b>Bandwidth(MHz):</b>	5, 10, 15, 20
<b>Waveform:</b>	CP-OFDM, DFT-S-OFDM
<b>Modulation:</b>	DFT-S-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
<b>Tx Frequency:</b>	1712.5 MHz – 1777.5 MHz (Sub6 n66(5 MHz)) 1715.0 MHz – 1775.0 MHz (Sub6 n66(10 MHz)) 1717.5 MHz – 1772.5 MHz (Sub6 n66(15 MHz)) 1720.0 MHz – 1770.0 MHz (Sub6 n66(20 MHz))
<b>Date(s) of Tests:</b>	October 01, 2021 ~ October 27, 2021
<b>Serial number:</b>	Radiated: R3CR809BWLE Conducted: R3CR809C67X

## **2. INTRODUCTION**

### **2.1. DESCRIPTION OF EUT**

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE, Sub6.

It also supports IEEE 802.11 a/b/g/n/ac/ax (20/40/80), Bluetooth, BT LE, NFC, WPT.

### **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 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points  $>$  2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

#### Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 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 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points  $>$  2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10<sup>th</sup> 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;

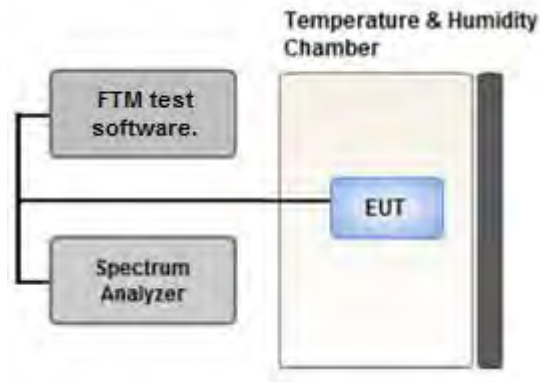
$$\text{Result}_{(dBm)} = P_g_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

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

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

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

### 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)**

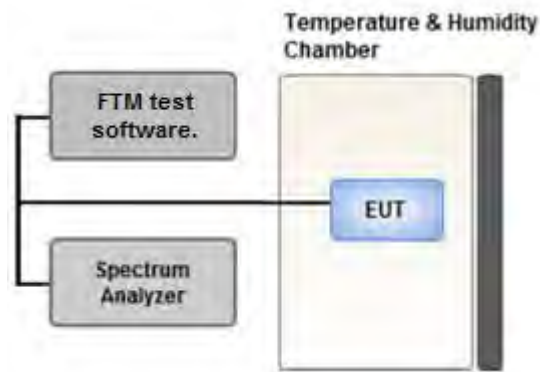
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW  $\geq 3 \times$  RBW.

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  $[10 \log (1/0.25)] = 6$  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.

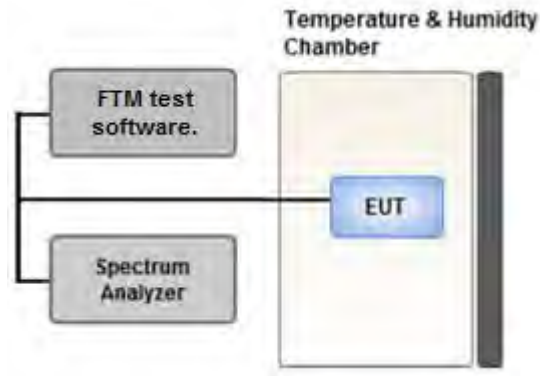
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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.

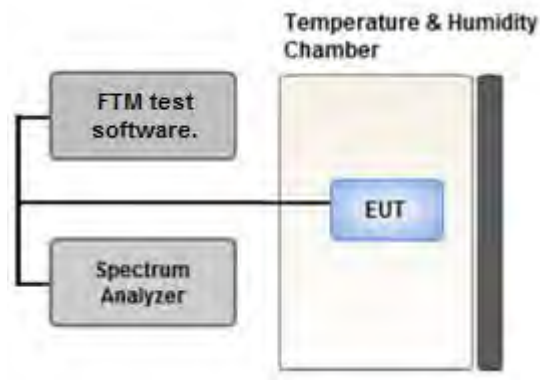
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

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 x Span / RBW

### 3.7 BAND EDGE



**Test setup**

#### **Test Overview**

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum 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**

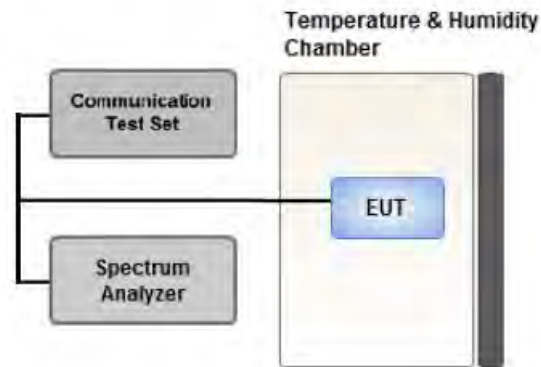
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

All measurements were done at 2 channels(low and high operational frequency range.)

The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.



### 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.

[Lower Antenna]:

Mode : SA,NSA

Worst case: NSA(5A-n66A)

[Upper Antenna]:

Mode : NSA Only

Worst case: NSA(2A-n66A)

- Radiated Spurious emissions are measured while operating in EN-DC mode with Sub 6 NR carrier as well as an LTE carrier (anchor).

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

(Worst case: 5A-n66A, 2A-n66A)

- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.

Please refer to the table below.

[ Lower Worst case ]

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

[ Upper Worst case ]

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

**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.

[Lower Antenna]:

Mode : SA,NSA

Worst case: NSA(5A-n66A)

[Upper Antenna]:

Mode : NSA Only

Worst case: NSA(2A-n66A)

- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.

Please refer to the table below.

[ Worst case ]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth, Peak-To-Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Band Edge	PI/2 BPSK	5	Low	1	0
			High	1	24
		10	Low	1	0
			High	1	51
		15	Low	1	0
			High	1	78
		20	Low	1	0
High	1		105		
		5, 10, 15, 20	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	5, 10, 15, 20	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	CERNEC	26822	06/15/2022	Annual
Power Amplifier	CBL18265035	CERNEC	22966	12/04/2021	Annual
Power Amplifier	CBL26405040	CERNEC	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.	6262116770	07/12/2022	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	01/07/2022	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
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

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

## 5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the  $U_{\text{CISPR}}$  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(h)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§2.1046	N/A	<b><u>See Note1</u></b>
Peak- to- Average Ratio	§27.50(d)(5)	< 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(d)(4)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(h)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	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

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

- 1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
- 2) During the test , the turn table is rotated until the maximum signal is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

### 7.2 EIRP Sample Calculation

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

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

- 1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
- 2) During the test , the turn table is rotated until the maximum signal is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

### 7.3. Emission Designator

#### GSM Emission Designator

**Emission Designator = 249KGXW**

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

#### EDGE Emission Designator

**Emission Designator = 249KG7W**

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

#### WCDMA Emission Designator

**Emission Designator = 4M17F9W**

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

#### PSK Modulation

**Emission Designator = 4M48G7D**

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

#### QAM Modulation

**Emission Designator = 4M48W7D**

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand



## 8. TEST DATA (Lower)

### 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
1712.5	Sub6 n66/ 5 MHz [15 kHz]	PI/2 BPSK	-18.42	14.44	9.76	2.08	V	< 1.00	0.163	22.12
		QPSK	-18.43	14.43	9.76	2.08	V		0.163	22.11
		16-QAM	-19.40	13.46	9.76	2.08	V		0.130	21.14
		64-QAM	-20.83	12.03	9.76	2.08	V		0.094	19.71
		256-QAM	-22.85	10.01	9.76	2.08	V		0.059	17.69
1745.0		PI/2 BPSK	-19.29	13.84	9.97	1.99	V		0.152	21.82
		QPSK	-19.30	13.83	9.97	1.99	V		0.152	21.81
		16-QAM	-20.27	12.86	9.97	1.99	V		0.121	20.84
		64-QAM	-21.68	11.45	9.97	1.99	V		0.088	19.43
		256-QAM	-23.68	9.45	9.97	1.99	V		0.055	17.43
1777.5	PI/2 BPSK	-20.34	12.87	10.12	2.14	V	0.122	20.85		
	QPSK	-20.36	12.85	10.12	2.14	V	0.121	20.83		
	16-QAM	-21.35	11.86	10.12	2.14	V	0.096	19.84		
	64-QAM	-22.79	10.42	10.12	2.14	V	0.069	18.40		
	256-QAM	-24.78	8.43	10.12	2.14	V	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
1715.0	Sub6 n66/ 10 MHz [15 kHz]	PI/2 BPSK	-18.38	14.64	9.79	2.07	V	< 1.00	0.172	22.36
		QPSK	-18.44	14.58	9.79	2.07	V		0.170	22.30
		16-QAM	-19.42	13.60	9.79	2.07	V		0.136	21.32
		64-QAM	-20.86	12.16	9.79	2.07	V		0.097	19.88
		256-QAM	-22.83	10.19	9.79	2.07	V		0.062	17.91
1745.0		PI/2 BPSK	-19.05	14.08	9.97	1.99	V		0.161	22.06
		QPSK	-19.06	14.07	9.97	1.99	V		0.160	22.05
		16-QAM	-20.00	13.13	9.97	1.99	V		0.129	21.11
		64-QAM	-21.45	11.68	9.97	1.99	V		0.092	19.66
		256-QAM	-23.41	9.72	9.97	1.99	V		0.059	17.70
1775.0	PI/2 BPSK	-20.03	13.20	10.10	2.14	V	0.131	21.16		
	QPSK	-20.04	13.19	10.10	2.14	V	0.130	21.15		
	16-QAM	-21.02	12.21	10.10	2.14	V	0.104	20.17		
	64-QAM	-22.47	10.76	10.10	2.14	V	0.074	18.72		
	256-QAM	-24.43	8.80	10.10	2.14	V	0.047	16.76		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1717.5	Sub6 n66/ 15 MHz [15 kHz]	PI/2 BPSK	-18.42	14.57	9.82	2.07	V	< 1.00	0.171	22.32
		QPSK	-18.43	14.56	9.82	2.07	V		0.170	22.31
		16-QAM	-19.42	13.57	9.82	2.07	V		0.136	21.32
		64-QAM	-20.86	12.13	9.82	2.07	V		0.097	19.88
		256-QAM	-22.85	10.14	9.82	2.07	V		0.062	17.89
1745.0		PI/2 BPSK	-19.02	14.11	9.97	1.99	V		0.162	22.09
		QPSK	-19.03	14.10	9.97	1.99	V		0.161	22.08
		16-QAM	-20.08	13.05	9.97	1.99	V		0.127	21.03
		64-QAM	-21.50	11.63	9.97	1.99	V		0.091	19.61
		256-QAM	-23.48	9.65	9.97	1.99	V		0.058	17.63
1772.5	PI/2 BPSK	-20.08	13.19	10.08	2.13	V	0.130	21.14		
	QPSK	-20.09	13.18	10.08	2.13	V	0.130	21.13		
	16-QAM	-21.07	12.20	10.08	2.13	V	0.104	20.15		
	64-QAM	-22.49	10.78	10.08	2.13	V	0.075	18.73		
	256-QAM	-24.51	8.76	10.08	2.13	V	0.047	16.71		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1720.0	Sub6 n66/ 20 MHz [15 kHz]	PI/2 BPSK	-18.39	14.78	9.82	2.05	V	< 1.00	0.180	22.55
		QPSK	-18.41	14.76	9.82	2.05	V		0.179	22.53
		16-QAM	-19.37	13.80	9.82	2.05	V		0.144	21.57
		64-QAM	-20.83	12.34	9.82	2.05	V		0.103	20.11
		256-QAM	-22.83	10.34	9.82	2.05	V		0.065	18.11
1745.0		PI/2 BPSK	-18.93	14.20	9.97	1.99	V		0.165	22.18
		QPSK	-18.94	14.19	9.97	1.99	V		0.165	22.17
		16-QAM	-19.92	13.21	9.97	1.99	V		0.132	21.19
		64-QAM	-21.35	11.78	9.97	1.99	V		0.095	19.76
		256-QAM	-23.32	9.81	9.97	1.99	V		0.060	17.79
1770.0	PI/2 BPSK	-20.20	13.12	10.08	2.13	V	0.128	21.07		
	QPSK	-20.23	13.09	10.08	2.13	V	0.127	21.04		
	16-QAM	-21.21	12.11	10.08	2.13	V	0.101	20.06		
	64-QAM	-22.66	10.66	10.08	2.13	V	0.073	18.61		
	256-QAM	-24.66	8.66	10.08	2.13	V	0.046	16.61		

### 8.2 RADIATED SPURIOUS EMISSIONS

- NR Band: N66
- LTE Band(Anchor): B5
- Bandwidth: 20 MHz
- Modulation: PI/2 BPSK
- Distance: 3 meters
- SCS: 15 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
344000 (1720.0)	3 440.00	-57.77	11.30	-58.52	3.07	H	-50.29	-13.00
	5 160.00	-61.13	11.42	-56.49	3.70	V	-48.77	-13.00
	6 880.00	-62.31	11.14	-50.31	4.48	V	-43.65	-13.00
	8 600.00	-61.03	10.90	-47.49	4.87	V	-41.46	-13.00
	10 320.00	-62.76	11.74	-45.30	5.41	V	-38.97	-13.00
349000 (1745.0)	3 490.00	-57.62	11.46	-58.93	3.05	H	-50.52	-13.00
	5 235.00	-58.41	11.57	-53.10	3.79	H	-45.32	-13.00
	6 980.00	-61.62	11.16	-49.39	4.51	H	-42.74	-13.00
	8 725.00	-60.42	11.10	-46.45	4.92	H	-40.27	-13.00
	10 470.00	-62.56	11.80	-45.18	5.45	H	-38.83	-13.00
354000 (1770.0)	3 540.00	-57.71	11.66	-59.42	3.07	V	-50.83	-13.00
	5 310.00	-61.06	11.72	-56.20	3.87	H	-48.35	-13.00
	7 080.00	-62.27	11.08	-48.44	4.48	H	-41.84	-13.00
	8 850.00	-60.42	11.00	-46.67	4.93	H	-40.60	-13.00
	10 620.00	-61.90	11.70	-43.13	5.47	H	-36.90	-13.00

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
20525 (836.5)	1673.00	-58.24	9.52	-67.89	2.03	V	-60.40	-13.00
	2509.50	-59.11	10.28	-64.09	2.51	V	-56.32	-13.00
	3346.00	-60.43	11.28	-63.21	2.99	H	-54.92	-13.00

**8.3 PEAK-TO-AVERAGE RATIO**

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB )
Sub6 n66	5 MHz	1745.0	BPSK	25	0	4.71
			QPSK			6.55
			16-QAM			6.72
			64-QAM			7.80
			256-QAM			7.18
	10 MHz		BPSK	50		5.63
			QPSK			6.66
			16-QAM			6.89
			64-QAM			7.66
			256-QAM			6.87
	15 MHz		BPSK	75		5.49
			QPSK			6.03
			16-QAM			6.77
			64-QAM			7.53
			256-QAM			7.07
	20 MHz		BPSK	100		6.01
			QPSK			6.07
			16-QAM			7.18
			64-QAM			7.45
			256-QAM			7.06

**Note:**

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 70 ~ 89.

**8.4 OCCUPIED BANDWIDTH**

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data ( MHz )
Sub6 n66	5 MHz	1745.0	BPSK	25	0	4.5408
			QPSK			4.5334
			16-QAM			4.5360
			64-QAM			4.5217
			256-QAM			4.5185
	10 MHz		BPSK	50		8.9752
			QPSK			9.0067
			16-QAM			8.9898
			64-QAM			8.9827
			256-QAM			8.9896
	15 MHz		BPSK	75		13.460
			QPSK			13.444
			16-QAM			13.489
			64-QAM			13.484
			256-QAM			13.447
	20 MHz		BPSK	100		17.959
			QPSK			17.942
			16-QAM			17.871
			64-QAM			17.980
			256-QAM			17.880

**Note:**

1. Plots of the EUT's Occupied Bandwidth are shown Page 50 ~ 69.

**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 n66	5	1712.5	4.0070	30.700	-69.568	-38.868	-13.00
		1745.0	0.8316	27.994	-64.870	-36.876	
		1777.5	9.4312	31.315	-70.428	-39.113	
	10	1715.0	8.3071	31.315	-70.347	-39.032	
		1745.0	8.2807	31.315	-70.564	-39.249	
		1775.0	4.0564	30.700	-69.979	-39.279	
	15	1717.5	8.2543	31.315	-69.922	-38.607	
		1745.0	8.0419	31.315	-70.301	-38.986	
		1772.5	4.5763	30.700	-69.992	-39.292	
	20	1720.0	3.7588	30.700	-70.096	-39.396	
		1745.0	9.0942	31.315	-71.295	-39.980	
		1770.0	6.9292	31.315	-70.349	-39.034	

**Note:**

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 114 ~ 137.
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.994
1 – 5	30.700
5 – 10	31.315
10 – 15	31.840
15 – 20	32.213
Above 20(26.5)	32.855

**8.6 BAND EDGE**

- Plots of the EUT's Band Edge are shown Page 90 ~ 113.



**8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE**

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1712.5	100 %	+20(Ref)	1712 500 004	0.0	0.000 000	0.000
	100 %	-30	1712 500 019	15.2	0.000 001	0.009
	100 %	-20	1712 500 011	6.9	0.000 000	0.004
	100 %	-10	1712 500 016	11.9	0.000 001	0.007
	100 %	0	1712 500 013	9.1	0.000 001	0.005
	100 %	+10	1712 500 020	16.7	0.000 001	0.010
	100 %	+30	1712 500 013	9.1	0.000 001	0.005
	100 %	+40	1712 500 015	11.5	0.000 001	0.007
	100 %	+50	1712 500 014	10.2	0.000 001	0.006
	Batt. Endpoint	+20	1712 500 020	16.2	0.000 001	0.009
1777.5	100 %	+20(Ref)	1777 500 011	0.0	0.000 000	0.000
	100 %	-30	1777 500 022	11.1	0.000 001	0.006
	100 %	-20	1777 500 014	3.3	0.000 000	0.002
	100 %	-10	1777 500 019	8.1	0.000 000	0.005
	100 %	0	1777 500 023	12.9	0.000 001	0.007
	100 %	+10	1777 500 026	15.1	0.000 001	0.008
	100 %	+30	1777 500 021	10.0	0.000 001	0.006
	100 %	+40	1777 500 024	13.5	0.000 001	0.008
	100 %	+50	1777 500 022	11.7	0.000 001	0.007
	Batt. Endpoint	+20	1777 500 018	7.0	0.000 000	0.004

- ▣ BandWidth: 10 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1715.0	100 %	+20(Ref)	1715 000 009	0.0	0.000 000	0.000
	100 %	-30	1715 000 017	8.2	0.000 000	0.005
	100 %	-20	1715 000 024	15.2	0.000 001	0.009
	100 %	-10	1715 000 019	10.0	0.000 001	0.006
	100 %	0	1715 000 013	4.0	0.000 000	0.002
	100 %	+10	1715 000 013	3.9	0.000 000	0.002
	100 %	+30	1715 000 016	7.4	0.000 000	0.004
	100 %	+40	1715 000 015	6.6	0.000 000	0.004
	100 %	+50	1715 000 021	12.2	0.000 001	0.007
	Batt. Endpoint	+20	1715 000 016	7.1	0.000 000	0.004
1775.0	100 %	+20(Ref)	1775 000 015	0.0	0.000 000	0.000
	100 %	-30	1775 000 026	10.9	0.000 001	0.006
	100 %	-20	1775 000 028	13.7	0.000 001	0.008
	100 %	-10	1775 000 019	4.7	0.000 000	0.003
	100 %	0	1775 000 022	7.2	0.000 000	0.004
	100 %	+10	1775 000 019	4.7	0.000 000	0.003
	100 %	+30	1775 000 029	13.9	0.000 001	0.008
	100 %	+40	1775 000 022	7.5	0.000 000	0.004
	100 %	+50	1775 000 019	4.4	0.000 000	0.002
	Batt. Endpoint	+20	1775 000 020	5.4	0.000 000	0.003

- ▣ BandWidth: 15 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1717.5	100 %	+20(Ref)	1717 500 008	0.0	0.000 000	0.000
	100 %	-30	1717 500 016	8.1	0.000 000	0.005
	100 %	-20	1717 500 011	3.7	0.000 000	0.002
	100 %	-10	1717 500 012	3.8	0.000 000	0.002
	100 %	0	1717 500 018	9.8	0.000 001	0.006
	100 %	+10	1717 500 018	9.9	0.000 001	0.006
	100 %	+30	1717 500 012	4.1	0.000 000	0.002
	100 %	+40	1717 500 019	11.4	0.000 001	0.007
	100 %	+50	1717 500 017	9.0	0.000 001	0.005
	Batt. Endpoint	+20	1717 500 019	10.7	0.000 001	0.006
1772.5	100 %	+20(Ref)	1772 500 010	0.0	0.000 000	0.000
	100 %	-30	1772 500 022	11.9	0.000 001	0.007
	100 %	-20	1772 500 024	13.6	0.000 001	0.008
	100 %	-10	1772 500 026	16.1	0.000 001	0.009
	100 %	0	1772 500 017	6.5	0.000 000	0.004
	100 %	+10	1772 500 024	14.2	0.000 001	0.008
	100 %	+30	1772 500 013	3.2	0.000 000	0.002
	100 %	+40	1772 500 016	5.3	0.000 000	0.003
	100 %	+50	1772 500 024	13.8	0.000 001	0.008
	Batt. Endpoint	+20	1772 500 027	16.5	0.000 001	0.009

- ▣ BandWidth: 20 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1720.0	100 %	+20(Ref)	1720 000 007	0.0	0.000 000	0.000
	100 %	-30	1720 000 017	10.4	0.000 001	0.006
	100 %	-20	1720 000 013	6.0	0.000 000	0.003
	100 %	-10	1720 000 013	6.7	0.000 000	0.004
	100 %	0	1720 000 022	14.9	0.000 001	0.009
	100 %	+10	1720 000 014	7.3	0.000 000	0.004
	100 %	+30	1720 000 016	9.6	0.000 001	0.006
	100 %	+40	1720 000 014	6.9	0.000 000	0.004
	100 %	+50	1720 000 020	13.2	0.000 001	0.008
	Batt. Endpoint	+20	1720 000 023	16.3	0.000 001	0.009
1770.0	100 %	+20(Ref)	1770 000 011	0.0	0.000 000	0.000
	100 %	-30	1770 000 018	6.5	0.000 000	0.004
	100 %	-20	1770 000 024	13.0	0.000 001	0.007
	100 %	-10	1770 000 026	15.2	0.000 001	0.009
	100 %	0	1770 000 017	6.1	0.000 000	0.003
	100 %	+10	1770 000 026	15.0	0.000 001	0.008
	100 %	+30	1770 000 015	4.0	0.000 000	0.002
	100 %	+40	1770 000 015	3.6	0.000 000	0.002
	100 %	+50	1770 000 025	14.1	0.000 001	0.008
	Batt. Endpoint	+20	1770 000 020	9.3	0.000 001	0.005

### 9. TEST DATA (Upper)

#### 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
1712.5	Sub6 n66/ 5 MHz [15 kHz]	PI/2 BPSK	-22.92	9.94	9.76	2.08	V	< 1.00	0.058	17.62
		QPSK	-22.93	9.93	9.76	2.08	V		0.058	17.61
		16-QAM	-23.91	8.95	9.76	2.08	V		0.046	16.63
		64-QAM	-25.44	7.42	9.76	2.08	V		0.032	15.10
		256-QAM	-27.40	5.46	9.76	2.08	V		0.021	13.14
1745.0		PI/2 BPSK	-23.04	10.09	9.97	1.99	V		0.064	18.07
		QPSK	-23.06	10.07	9.97	1.99	V		0.064	18.05
		16-QAM	-24.08	9.05	9.97	1.99	V		0.050	17.03
		64-QAM	-25.67	7.46	9.97	1.99	V		0.035	15.44
		256-QAM	-27.61	5.52	9.97	1.99	V		0.022	13.50
1777.5	PI/2 BPSK	-23.37	9.84	10.12	2.14	V	0.061	17.82		
	QPSK	-23.38	9.83	10.12	2.14	V	0.060	17.81		
	16-QAM	-24.36	8.85	10.12	2.14	V	0.048	16.83		
	64-QAM	-25.95	7.26	10.12	2.14	V	0.033	15.24		
	256-QAM	-28.06	5.15	10.12	2.14	V	0.021	13.13		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
									W	W dBm
1715.0	Sub6 n66/ 10 MHz [15 kHz]	PI/2 BPSK	-22.97	10.05	9.79	2.07	V	< 1.00	0.060	17.77
		QPSK	-22.99	10.03	9.79	2.07	V		0.060	17.75
		16-QAM	-23.98	9.04	9.79	2.07	V		0.047	16.76
		64-QAM	-25.45	7.57	9.79	2.07	V		0.034	15.29
		256-QAM	-27.40	5.62	9.79	2.07	V		0.022	13.34
1745.0		PI/2 BPSK	-22.95	10.18	9.97	1.99	V		0.065	18.16
		QPSK	-23.05	10.08	9.97	1.99	V		0.064	18.06
		16-QAM	-23.91	9.22	9.97	1.99	V		0.052	17.20
		64-QAM	-25.38	7.75	9.97	1.99	V		0.037	15.73
		256-QAM	-27.46	5.67	9.97	1.99	V		0.023	13.65
1775.0	PI/2 BPSK	-23.29	9.94	10.10	2.14	V	0.062	17.90		
	QPSK	-23.30	9.93	10.10	2.14	V	0.062	17.89		
	16-QAM	-24.26	8.97	10.10	2.14	V	0.049	16.93		
	64-QAM	-25.78	7.45	10.10	2.14	V	0.035	15.41		
	256-QAM	-27.68	5.55	10.10	2.14	V	0.022	13.51		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1717.5	Sub6 n66/ 15 MHz [15 kHz]	PI/2 BPSK	-22.87	10.12	9.82	2.07	V	< 1.00	0.061	17.87
		QPSK	-22.88	10.11	9.82	2.07	V		0.061	17.86
		16-QAM	-23.88	9.11	9.82	2.07	V		0.049	16.86
		64-QAM	-25.42	7.57	9.82	2.07	V		0.034	15.32
		256-QAM	-27.37	5.62	9.82	2.07	V		0.022	13.37
1745.0		PI/2 BPSK	-23.06	10.07	9.97	1.99	V		0.064	18.05
		QPSK	-23.09	10.04	9.97	1.99	V		0.063	18.02
		16-QAM	-24.10	9.03	9.97	1.99	V		0.050	17.01
		64-QAM	-25.50	7.63	9.97	1.99	V		0.036	15.61
		256-QAM	-27.44	5.69	9.97	1.99	V		0.023	13.67
1772.5	PI/2 BPSK	-23.34	9.93	10.08	2.13	V	0.061	17.88		
	QPSK	-23.35	9.92	10.08	2.13	V	0.061	17.87		
	16-QAM	-24.35	8.92	10.08	2.13	V	0.049	16.87		
	64-QAM	-25.80	7.47	10.08	2.13	V	0.035	15.42		
	256-QAM	-27.72	5.55	10.08	2.13	V	0.022	13.50		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1720.0	Sub6 n66/ 20 MHz [15 kHz]	PI/2 BPSK	-22.87	10.30	9.82	2.05	V	< 1.00	0.064	18.07
		QPSK	-22.88	10.29	9.82	2.05	V		0.064	18.06
		16-QAM	-23.90	9.27	9.82	2.05	V		0.051	17.04
		64-QAM	-25.36	7.81	9.82	2.05	V		0.036	15.58
		256-QAM	-27.37	5.80	9.82	2.05	V		0.023	13.57
1745.0		PI/2 BPSK	-22.80	10.33	9.97	1.99	V		0.068	18.31
		QPSK	-22.82	10.31	9.97	1.99	V		0.067	18.29
		16-QAM	-23.79	9.34	9.97	1.99	V		0.054	17.32
		64-QAM	-25.21	7.92	9.97	1.99	V		0.039	15.90
		256-QAM	-27.26	5.87	9.97	1.99	V		0.024	13.85
1770.0	PI/2 BPSK	-23.40	9.92	10.08	2.13	V	0.061	17.87		
	QPSK	-23.41	9.91	10.08	2.13	V	0.061	17.86		
	16-QAM	-24.41	8.91	10.08	2.13	V	0.049	16.86		
	64-QAM	-25.89	7.43	10.08	2.13	V	0.034	15.38		
	256-QAM	-27.89	5.43	10.08	2.13	V	0.022	13.38		



**9.2 RADIATED SPURIOUS EMISSIONS**

- ▣ NR Band: N66
- ▣ LTE Band(Anchor): B2
- ▣ Bandwidth: 20 MHz
- ▣ Modulation: PI/2 BPSK
- ▣ Distance: 3 meters
- ▣ SCS: 15 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
344000 (1720.0)	3 440.00	-56.47	11.30	-57.22	3.07	V	-48.99	-13.00
	5 160.00	-60.60	11.42	-55.96	3.70	V	-48.24	-13.00
	6 880.00	-60.85	11.14	-48.85	4.48	V	-42.19	-13.00
	8 600.00	-59.85	10.90	-46.31	4.87	V	-40.28	-13.00
	10 320.00	-62.56	11.74	-45.10	5.41	V	-38.77	-13.00
349000 (1745.0)	3 490.00	-56.90	11.46	-58.21	3.05	V	-49.80	-13.00
	5 235.00	-60.51	11.57	-55.20	3.79	V	-47.42	-13.00
	6 980.00	-61.94	11.16	-49.71	4.51	V	-43.06	-13.00
	8 725.00	-61.88	11.10	-47.91	4.92	V	-41.73	-13.00
	10 470.00	-63.20	11.80	-45.82	5.45	V	-39.47	-13.00
354000 (1770.0)	3 540.00	-55.66	11.66	-57.37	3.07	H	-48.78	-13.00
	5 310.00	-57.54	11.72	-52.68	3.87	V	-44.83	-13.00
	7 080.00	-61.90	11.08	-48.07	4.48	V	-41.47	-13.00
	8 850.00	-60.08	11.00	-46.33	4.93	V	-40.26	-13.00
	10 620.00	-62.31	11.70	-43.54	5.47	V	-37.31	-13.00

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
18900 (1880.0)	3760.00	-60.87	11.64	-61.10	3.16	V	-52.62	-13.00
	5640.00	-61.58	12.00	-55.40	3.93	H	-47.33	-13.00
	7520.00	-61.54	11.54	-47.09	4.51	H	-40.06	-13.00

**9.3 PEAK-TO-AVERAGE RATIO**

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB )
Sub6 n66	5 MHz	1745.0	BPSK	25	0	4.46
			QPSK			5.79
			16-QAM			6.15
			64-QAM			6.36
			256-QAM			6.50
	10 MHz		BPSK	50		4.59
			QPSK			5.99
			16-QAM			6.10
			64-QAM			6.20
			256-QAM			6.23
	15 MHz		BPSK	75		4.44
			QPSK			5.75
			16-QAM			5.94
			64-QAM			6.03
			256-QAM			6.26
	20 MHz		BPSK	100		4.54
			QPSK			5.77
			16-QAM			5.88
			64-QAM			5.98
			256-QAM			6.25

**Note:**

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 159 ~ 178.

**9.4 OCCUPIED BANDWIDTH**

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data ( MHz )
Sub6 n66	5 MHz	1745.0	BPSK	25	0	4.5143
			QPSK			4.5280
			16-QAM			4.5246
			64-QAM			4.5247
			256-QAM			4.5260
	10 MHz		BPSK	50		8.9925
			QPSK			9.0122
			16-QAM			8.9810
			64-QAM			8.9939
			256-QAM			8.9996
	15 MHz		BPSK	75		13.461
			QPSK			13.443
			16-QAM			13.438
			64-QAM			13.466
			256-QAM			13.411
	20 MHz		BPSK	100		17.924
			QPSK			17.889
			16-QAM			17.896
			64-QAM			17.896
			256-QAM			17.842

**Note:**

1. Plots of the EUT's Occupied Bandwidth are shown Page 139 ~ 158.

**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 n66	5	1712.5	8.3116	31.315	-70.845	-39.530	-13.00
		1745.0	4.0559	30.700	-69.949	-39.249	
		1777.5	9.7208	31.315	-70.632	-39.317	
	10	1715.0	3.8355	30.700	-70.822	-40.122	
		1745.0	4.9283	30.700	-70.674	-39.974	
		1775.0	3.8131	30.700	-70.574	-39.874	
	15	1717.5	3.7538	30.700	-70.456	-39.756	
		1745.0	4.0524	30.700	-70.485	-39.785	
		1772.5	6.0220	31.315	-69.740	-38.425	
	20	1720.0	9.1296	31.315	-70.322	-39.007	
		1745.0	9.1481	31.315	-70.892	-39.577	
		1770.0	3.7732	30.700	-70.955	-40.255	

**Note:**

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 203 ~ 226.
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.994
1 – 5	30.700
5 – 10	31.315
10 – 15	31.840
15 – 20	32.213
Above 20(26.5)	32.855

**9.6 BAND EDGE**

- Plots of the EUT's Band Edge are shown Page 179 ~ 202.

**9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE**

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1712.5	100 %	+20(Ref)	1712 500 010	0.0	0.000 000	0.000
	100 %	-30	1712 500 024	14.5	0.000 001	0.008
	100 %	-20	1712 500 026	16.6	0.000 001	0.010
	100 %	-10	1712 500 014	4.3	0.000 000	0.002
	100 %	0	1712 500 024	14.5	0.000 001	0.008
	100 %	+10	1712 500 020	10.7	0.000 001	0.006
	100 %	+30	1712 500 022	12.3	0.000 001	0.007
	100 %	+40	1712 500 023	13.6	0.000 001	0.008
	100 %	+50	1712 500 022	12.1	0.000 001	0.007
	Batt. Endpoint	+20	1712 500 019	9.6	0.000 001	0.006
1777.5	100 %	+20(Ref)	1777 500 015	0.0	0.000 000	0.000
	100 %	-30	1777 500 030	14.9	0.000 001	0.008
	100 %	-20	1777 500 021	6.8	0.000 000	0.004
	100 %	-10	1777 500 028	12.9	0.000 001	0.007
	100 %	0	1777 500 025	10.4	0.000 001	0.006
	100 %	+10	1777 500 026	11.5	0.000 001	0.006
	100 %	+30	1777 500 024	9.5	0.000 001	0.005
	100 %	+40	1777 500 030	15.0	0.000 001	0.008
	100 %	+50	1777 500 025	10.3	0.000 001	0.006
	Batt. Endpoint	+20	1777 500 023	8.1	0.000 000	0.005

- ▣ BandWidth: 10 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1715.0	100 %	+20(Ref)	1715 000 012	0.0	0.000 000	0.000
	100 %	-30	1715 000 028	16.1	0.000 001	0.009
	100 %	-20	1715 000 022	10.0	0.000 001	0.006
	100 %	-10	1715 000 022	10.4	0.000 001	0.006
	100 %	0	1715 000 026	13.6	0.000 001	0.008
	100 %	+10	1715 000 016	4.4	0.000 000	0.003
	100 %	+30	1715 000 023	11.2	0.000 001	0.007
	100 %	+40	1715 000 019	6.7	0.000 000	0.004
	100 %	+50	1715 000 017	5.0	0.000 000	0.003
	Batt. Endpoint	+20	1715 000 019	7.0	0.000 000	0.004
1775.0	100 %	+20(Ref)	1775 000 010	0.0	0.000 000	0.000
	100 %	-30	1775 000 020	9.8	0.000 001	0.006
	100 %	-20	1775 000 019	9.2	0.000 001	0.005
	100 %	-10	1775 000 014	3.6	0.000 000	0.002
	100 %	0	1775 000 024	14.2	0.000 001	0.008
	100 %	+10	1775 000 019	9.1	0.000 001	0.005
	100 %	+30	1775 000 022	11.9	0.000 001	0.007
	100 %	+40	1775 000 022	12.2	0.000 001	0.007
	100 %	+50	1775 000 018	8.0	0.000 000	0.004
	Batt. Endpoint	+20	1775 000 022	11.9	0.000 001	0.007

- ▣ BandWidth: 15 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1717.5	100 %	+20(Ref)	1717 500 006	0.0	0.000 000	0.000
	100 %	-30	1717 500 010	3.6	0.000 000	0.002
	100 %	-20	1717 500 019	12.8	0.000 001	0.007
	100 %	-10	1717 500 013	6.5	0.000 000	0.004
	100 %	0	1717 500 021	14.9	0.000 001	0.009
	100 %	+10	1717 500 013	6.4	0.000 000	0.004
	100 %	+30	1717 500 013	6.7	0.000 000	0.004
	100 %	+40	1717 500 020	14.3	0.000 001	0.008
	100 %	+50	1717 500 012	5.5	0.000 000	0.003
	Batt. Endpoint	+20	1717 500 012	5.5	0.000 000	0.003
1772.5	100 %	+20(Ref)	1772 500 004	0.0	0.000 000	0.000
	100 %	-30	1772 500 011	6.6	0.000 000	0.004
	100 %	-20	1772 500 013	8.6	0.000 000	0.005
	100 %	-10	1772 500 014	9.3	0.000 001	0.005
	100 %	0	1772 500 011	6.5	0.000 000	0.004
	100 %	+10	1772 500 012	7.6	0.000 000	0.004
	100 %	+30	1772 500 011	6.5	0.000 000	0.004
	100 %	+40	1772 500 019	14.3	0.000 001	0.008
	100 %	+50	1772 500 012	7.7	0.000 000	0.004
	Batt. Endpoint	+20	1772 500 010	5.6	0.000 000	0.003

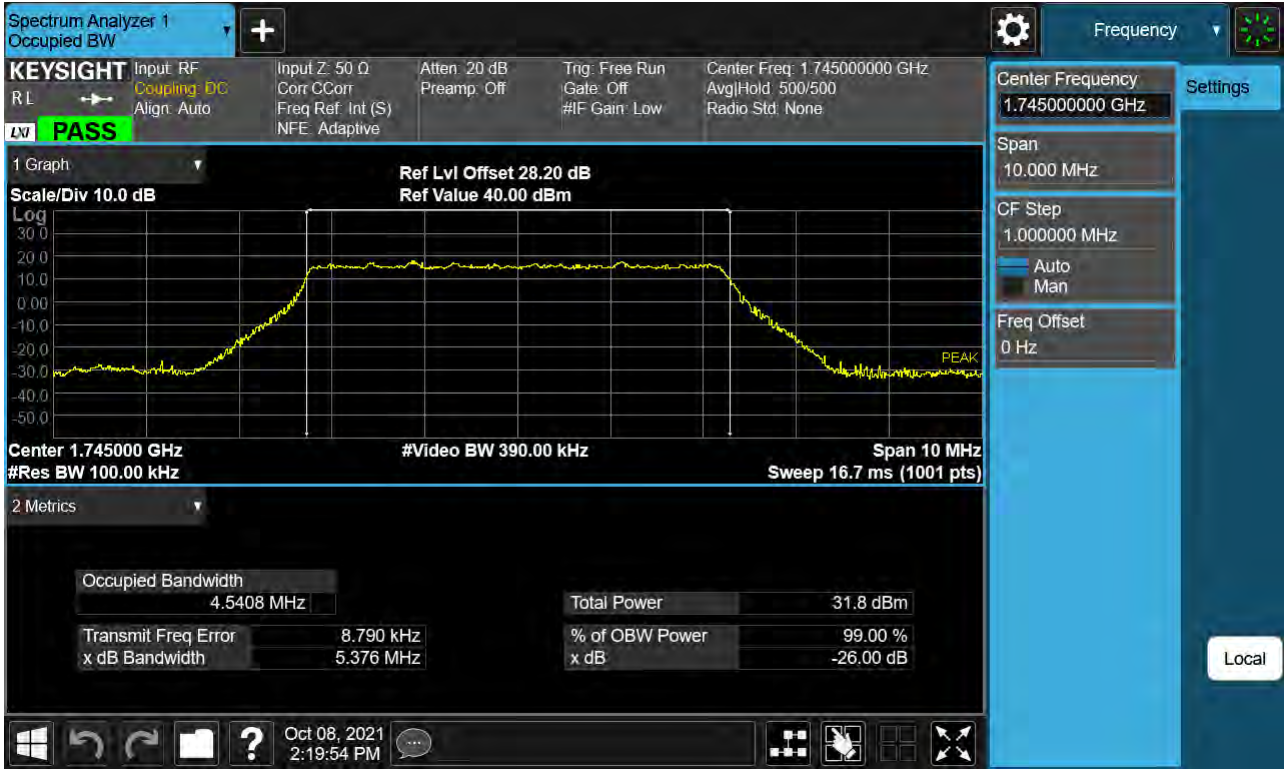
- ▣ BandWidth: 20 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.350 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1720.0	100 %	+20(Ref)	1720 000 013	0.0	0.000 000	0.000
	100 %	-30	1720 000 018	4.8	0.000 000	0.003
	100 %	-20	1720 000 021	8.2	0.000 000	0.005
	100 %	-10	1720 000 020	6.5	0.000 000	0.004
	100 %	0	1720 000 025	11.7	0.000 001	0.007
	100 %	+10	1720 000 023	9.7	0.000 001	0.006
	100 %	+30	1720 000 024	10.4	0.000 001	0.006
	100 %	+40	1720 000 021	7.9	0.000 000	0.005
	100 %	+50	1720 000 028	15.2	0.000 001	0.009
	Batt. Endpoint	+20	1720 000 019	5.3	0.000 000	0.003
1770.0	100 %	+20(Ref)	1770 000 015	0.0	0.000 000	0.000
	100 %	-30	1770 000 031	15.8	0.000 001	0.009
	100 %	-20	1770 000 031	15.8	0.000 001	0.009
	100 %	-10	1770 000 022	6.6	0.000 000	0.004
	100 %	0	1770 000 027	11.9	0.000 001	0.007
	100 %	+10	1770 000 024	9.1	0.000 001	0.005
	100 %	+30	1770 000 020	4.7	0.000 000	0.003
	100 %	+40	1770 000 026	10.5	0.000 001	0.006
	100 %	+50	1770 000 021	6.0	0.000 000	0.003
	Batt. Endpoint	+20	1770 000 032	16.3	0.000 001	0.009

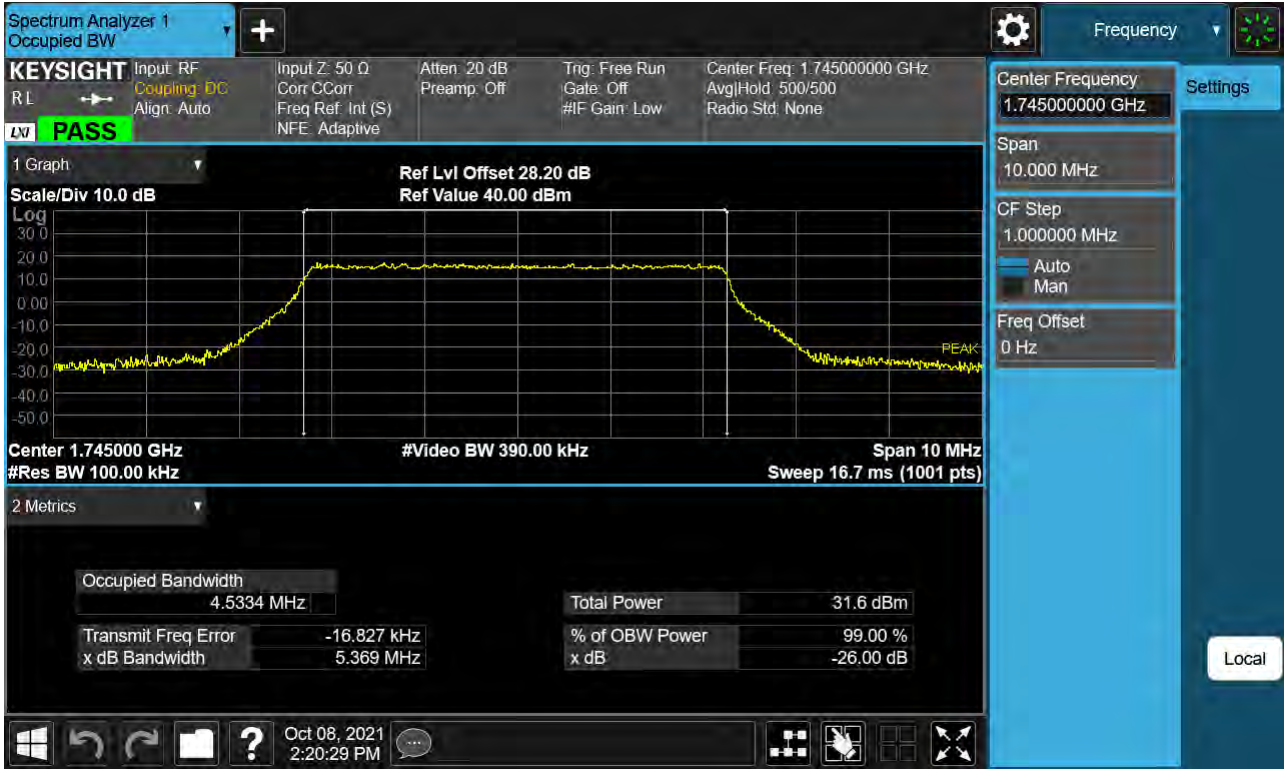


## 10. TEST PLOTS (Lower)

Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 BPSK Full RB)



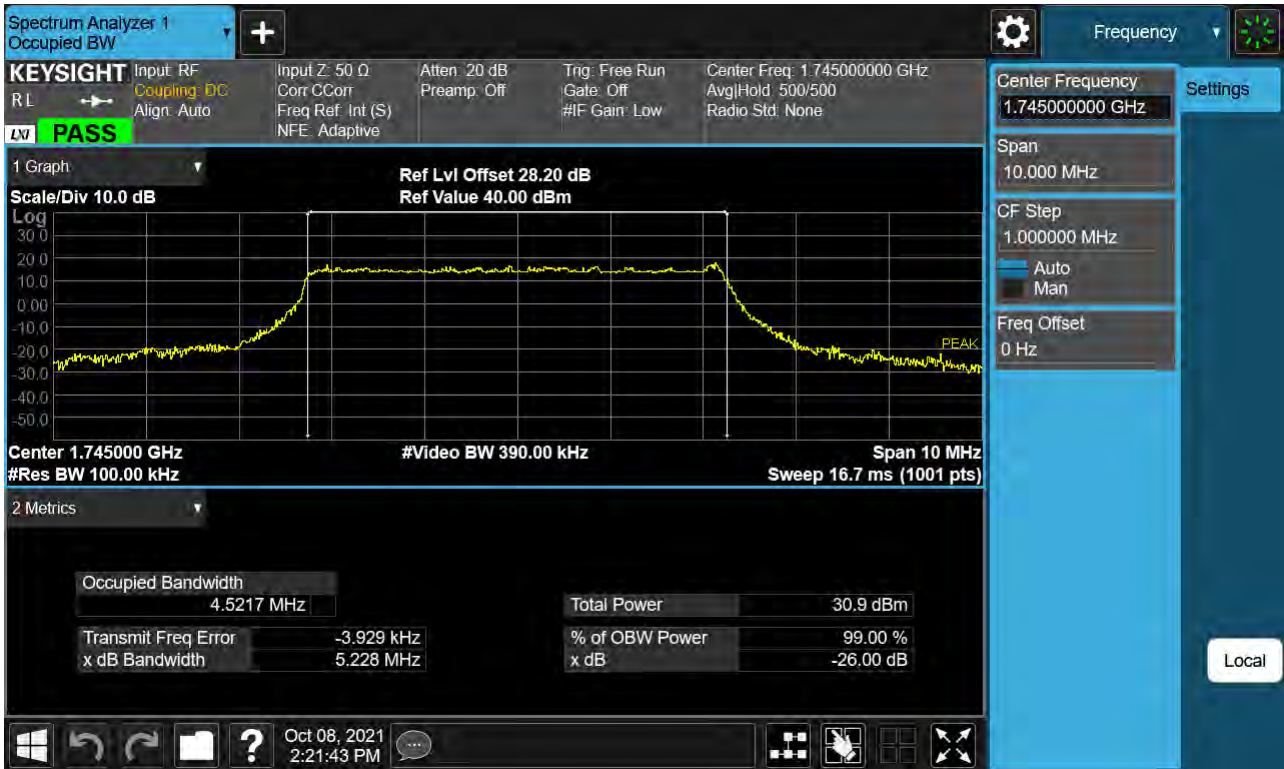
Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 QPSK Full RB)



Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 16QAM Full RB)

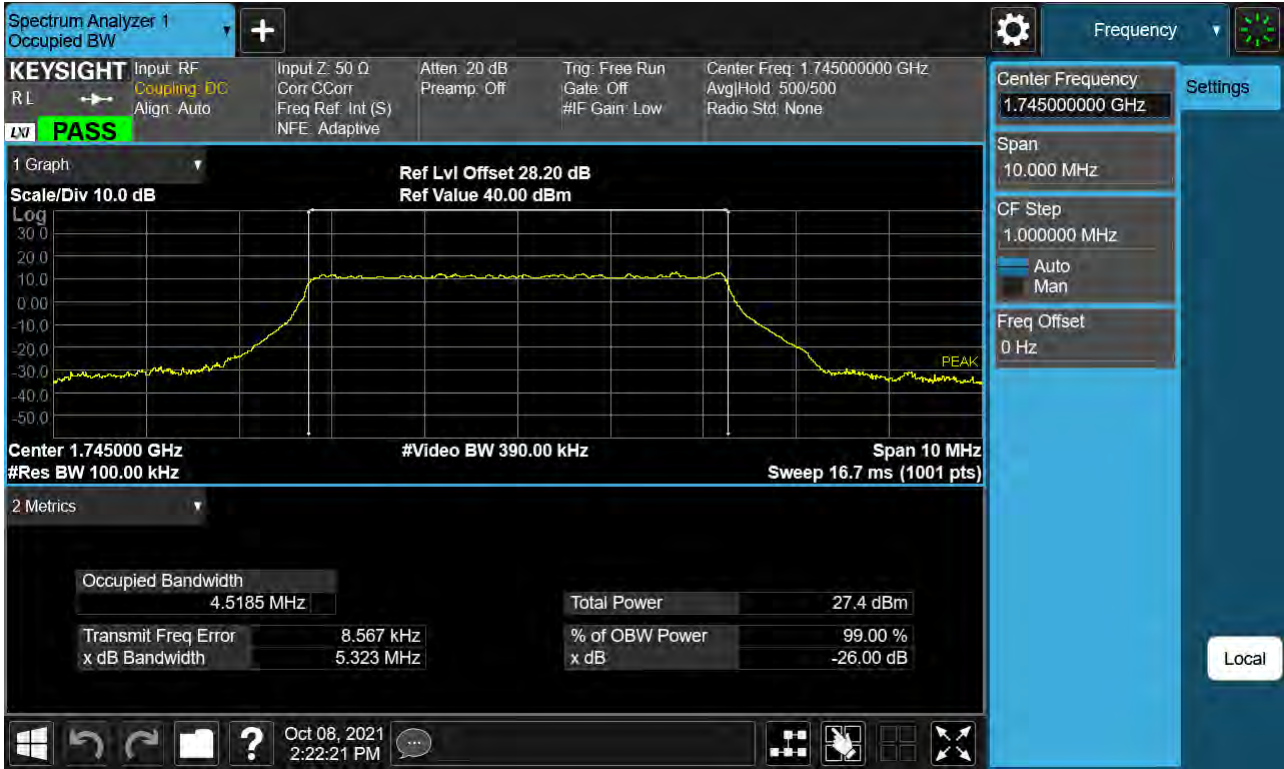


Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 64QAM Full RB)

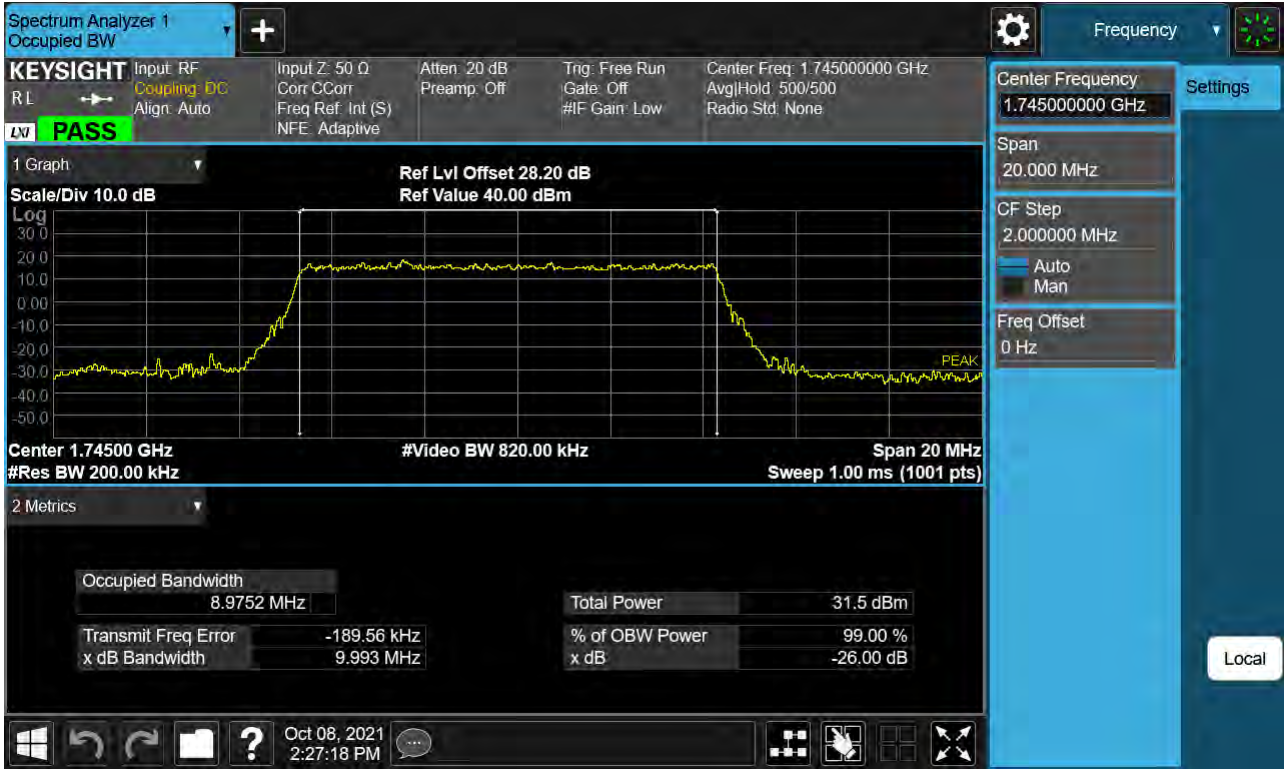




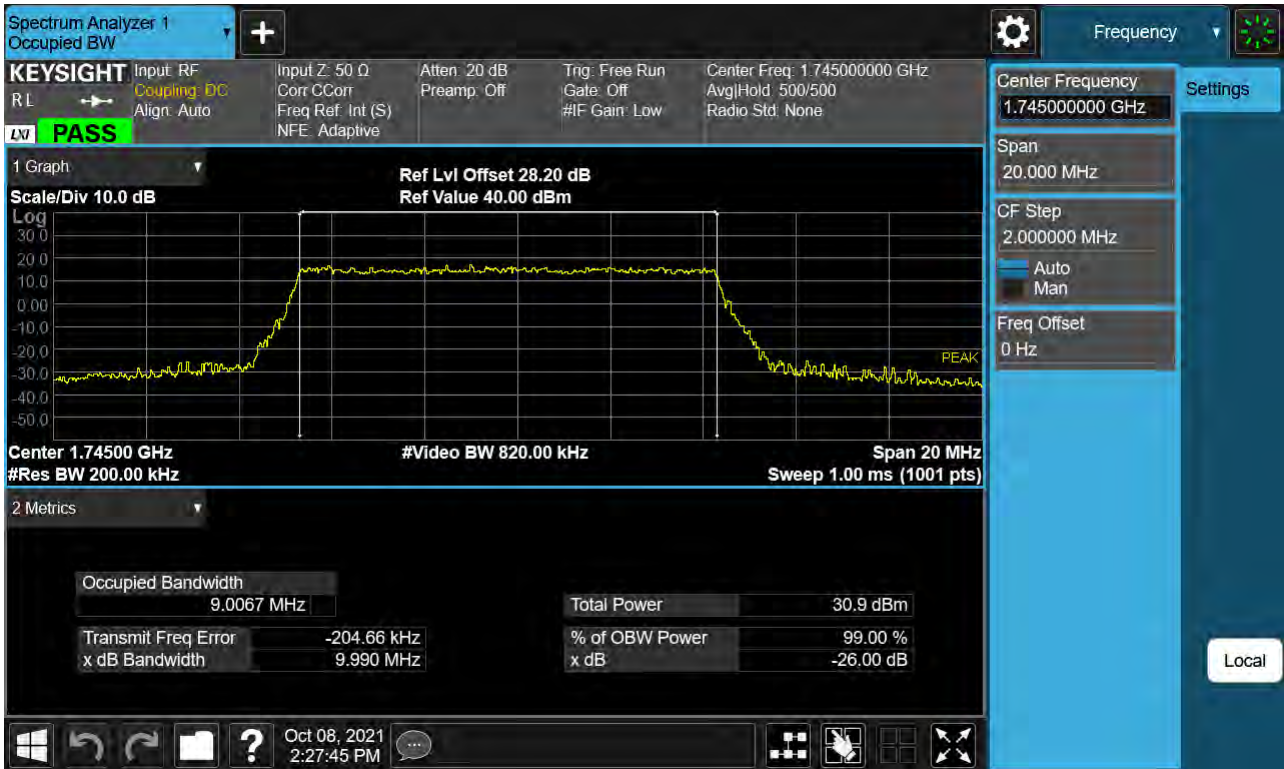
Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 256QAM Full RB)



Sub6 n66. Occupied Bandwidth Plot (10 M BW Ch.349000 BPSK Full RB)



Sub6 n66. Occupied Bandwidth Plot (10 M BW Ch.349000 QPSK Full RB)

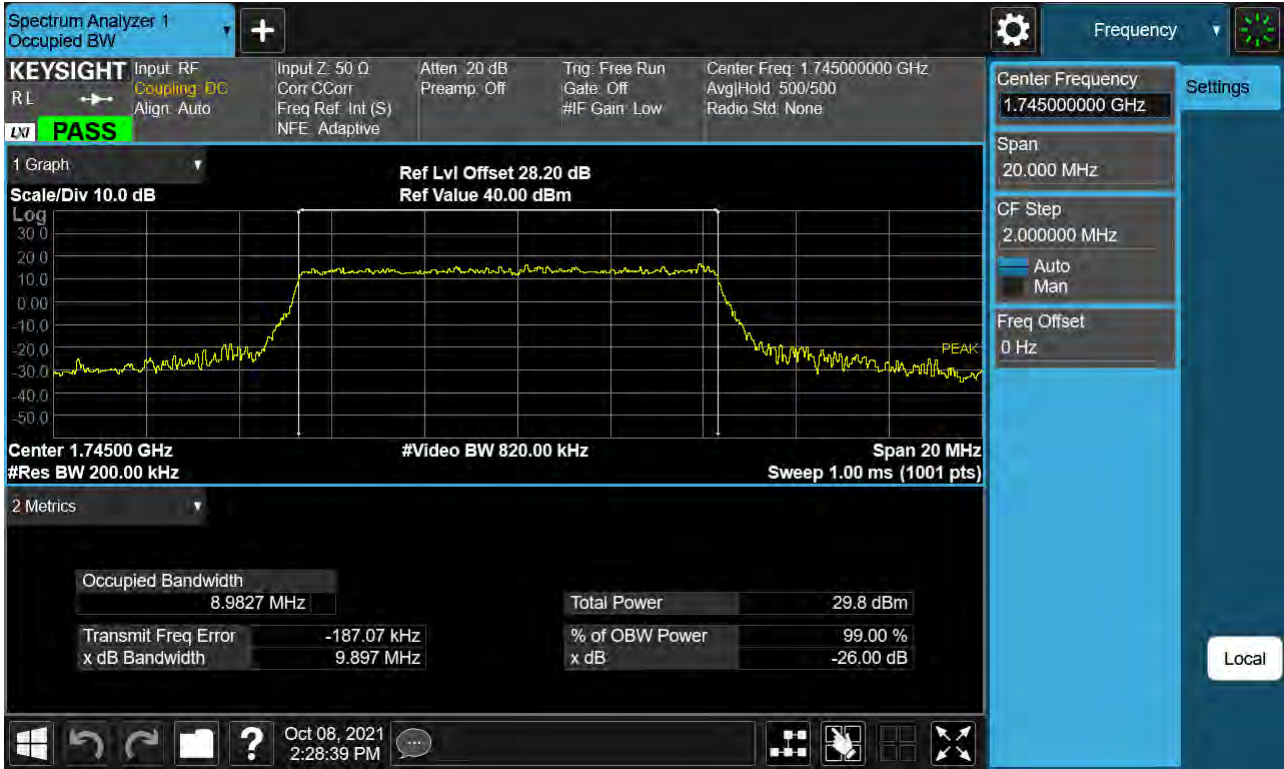




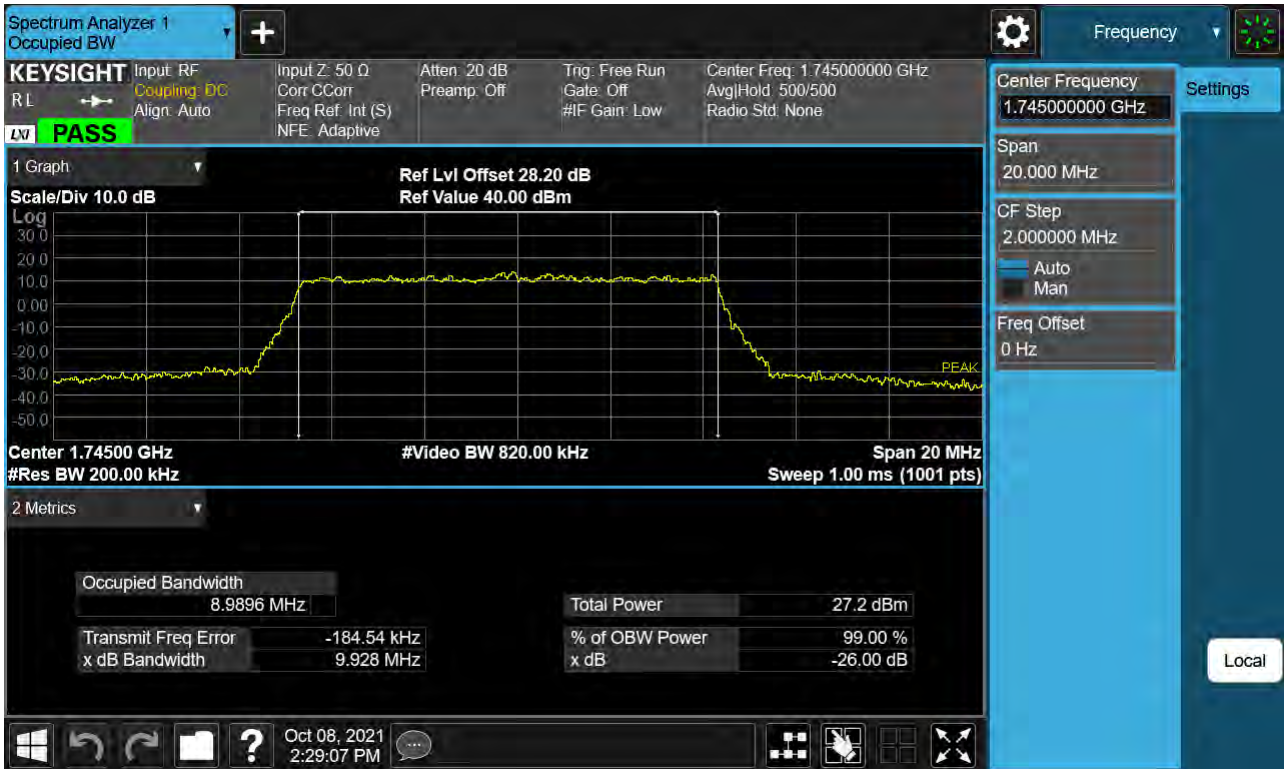
Sub6 n66. Occupied Bandwidth Plot (10 M BW Ch.349000 16QAM Full RB)



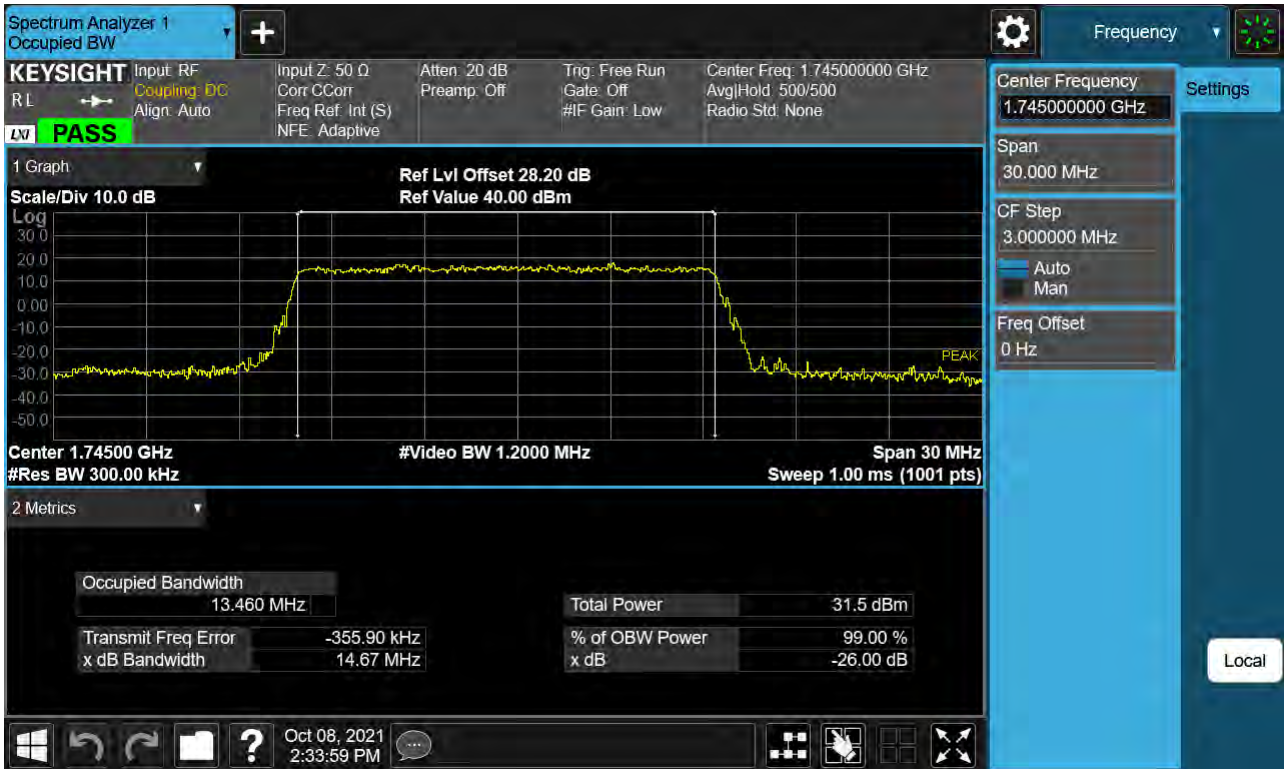
Sub6 n66. Occupied Bandwidth Plot (10 M BW Ch.349000 64QAM Full RB)



Sub6 n66. Occupied Bandwidth Plot (10 M BW Ch.349000 256QAM Full RB)



Sub6 n66. Occupied Bandwidth Plot (15 M BW Ch.349000 BPSK Full RB)





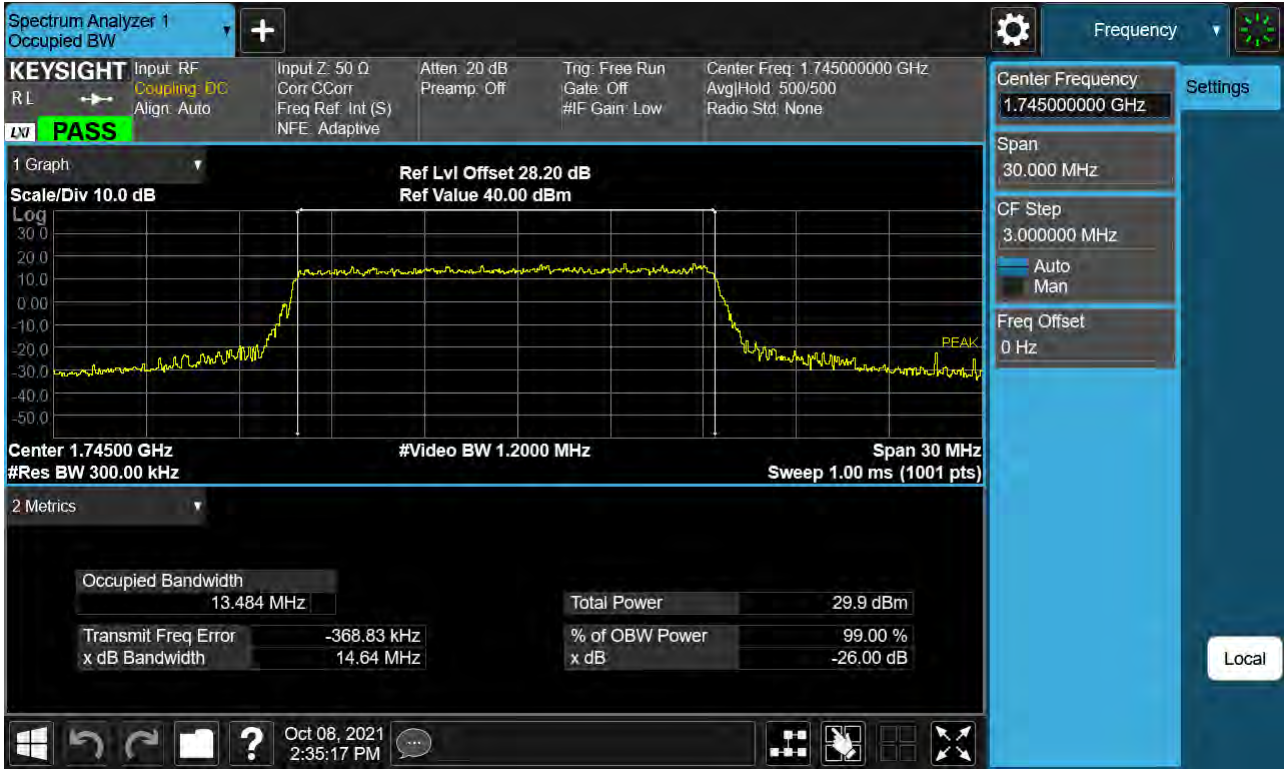
Sub6 n66. Occupied Bandwidth Plot (15 M BW Ch.349000 QPSK Full RB)



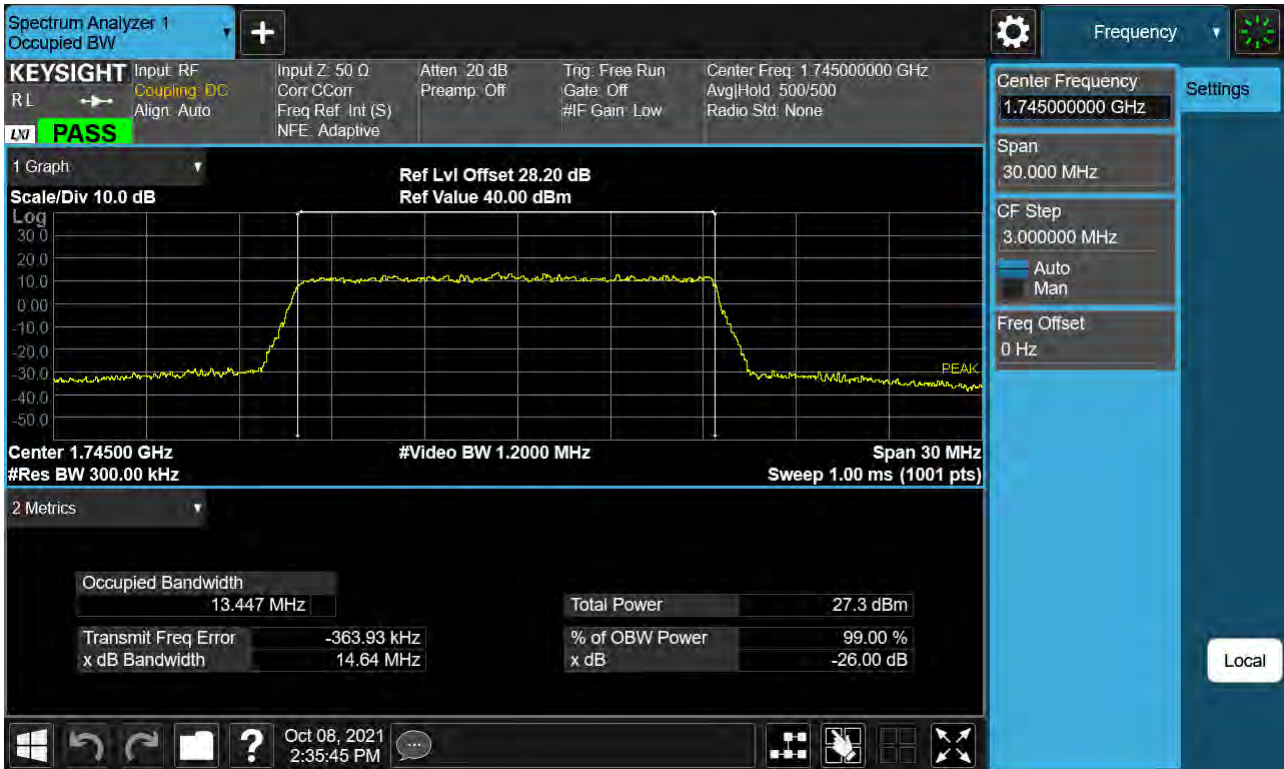
Sub6 n66. Occupied Bandwidth Plot (15 M BW Ch.349000 16QAM Full RB)



Sub6 n66. Occupied Bandwidth Plot (15 M BW Ch.349000 64QAM Full RB)

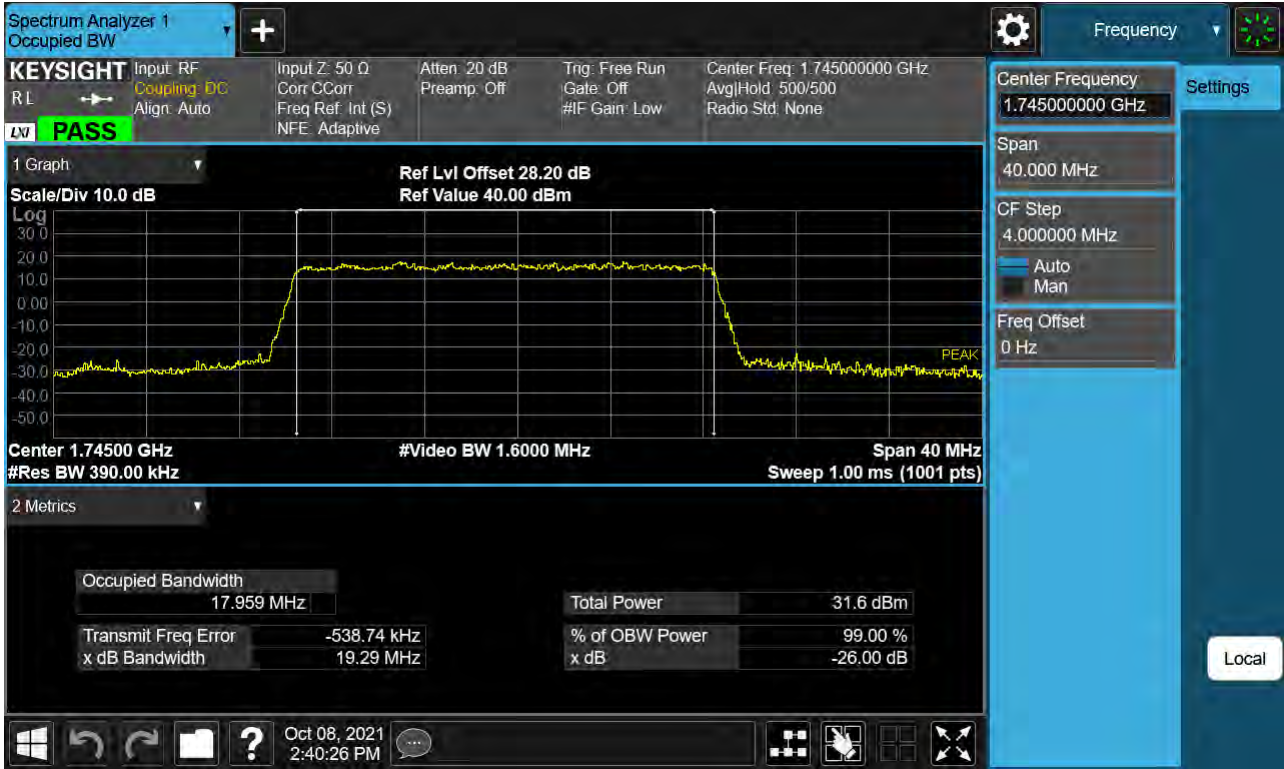


Sub6 n66. Occupied Bandwidth Plot (15 M BW Ch.349000 256QAM Full RB)

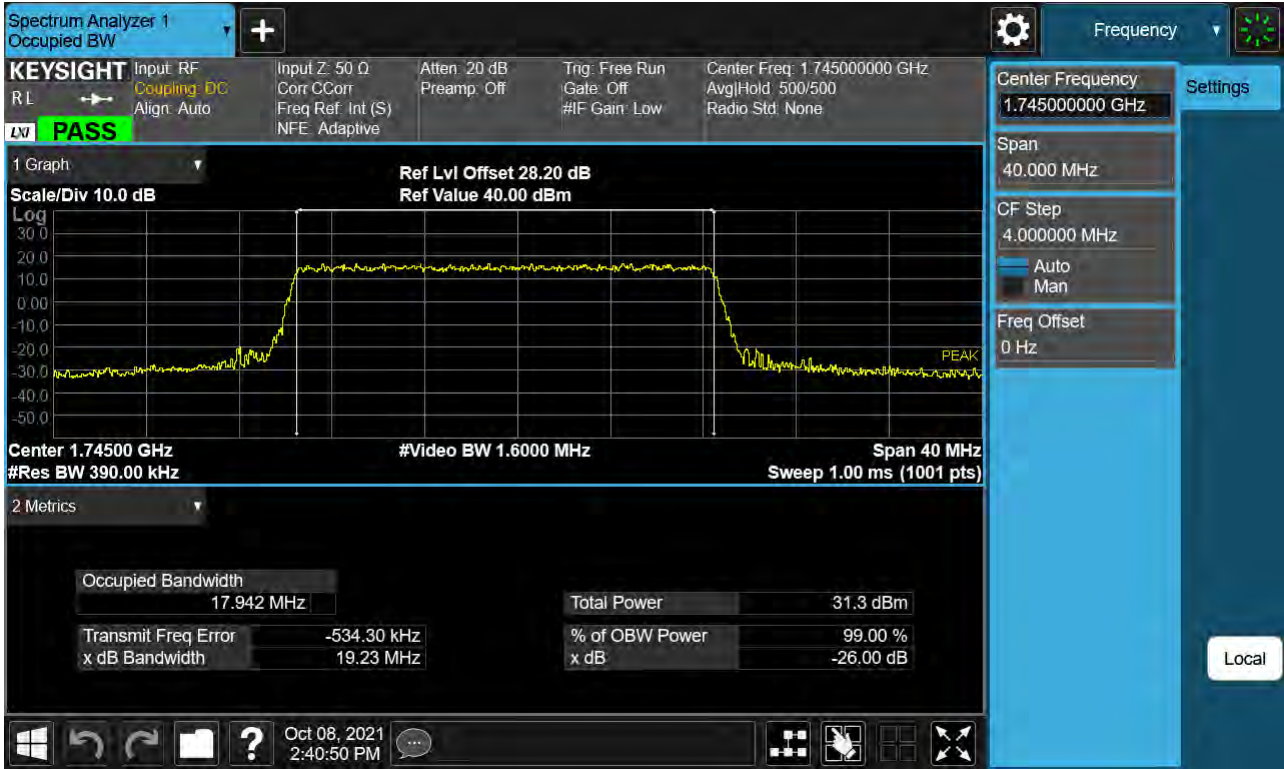




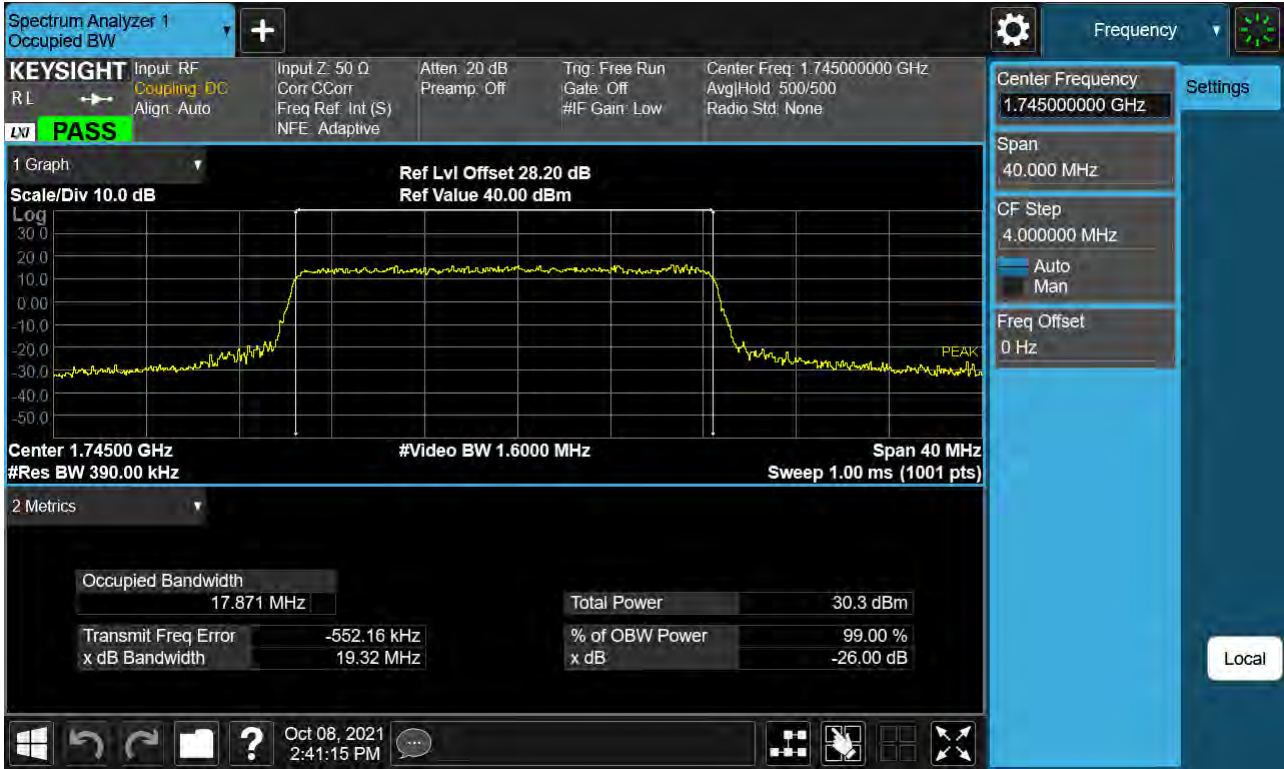
Sub6 n66. Occupied Bandwidth Plot (20 M BW Ch.349000 BPSK Full RB)



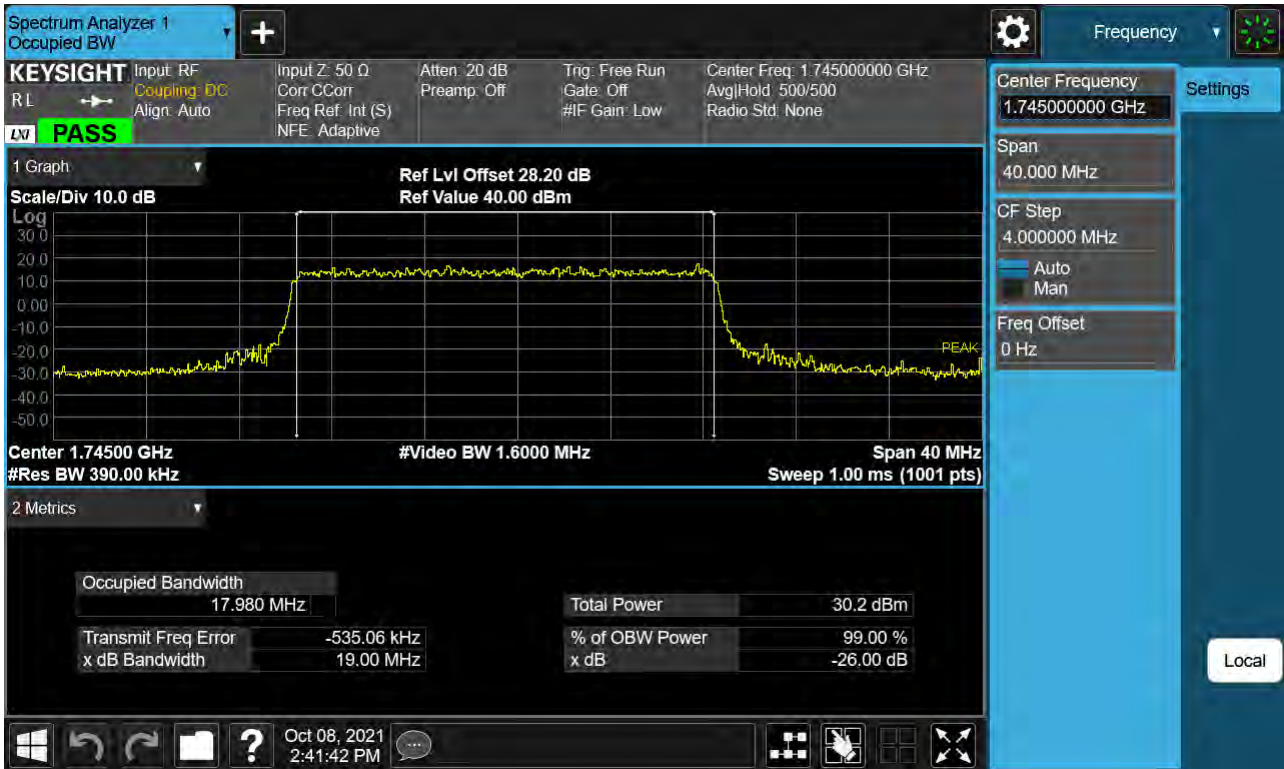
Sub6 n66. Occupied Bandwidth Plot (20 M BW Ch.349000 QPSK Full RB)



Sub6 n66. Occupied Bandwidth Plot (20 M BW Ch.349000 16QAM Full RB)

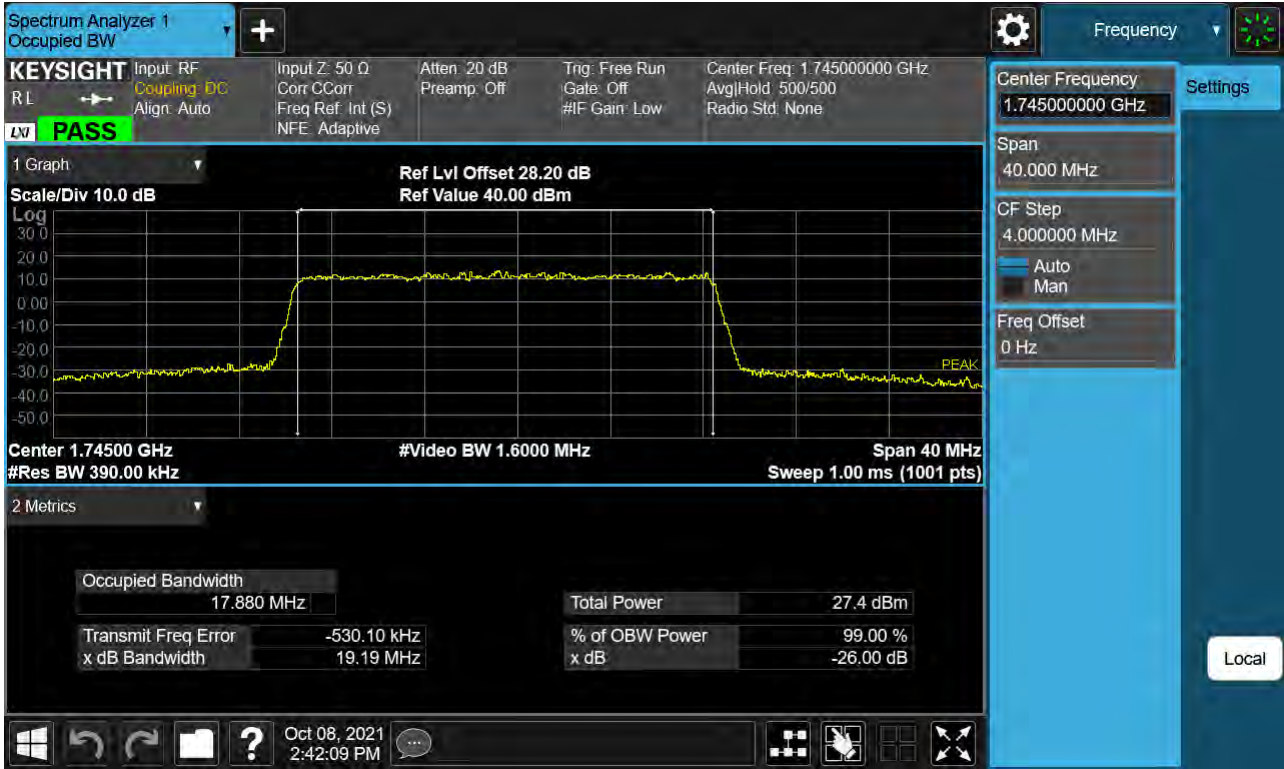


Sub6 n66. Occupied Bandwidth Plot (20 M BW Ch.349000 64QAM Full RB)





Sub6 n66. Occupied Bandwidth Plot (20 M BW Ch.349000 256QAM Full RB)



Sub6 n66. PAR Plot (5 M BW\_Ch.349000\_ BPSK\_ Full RB)



Sub6 n66. PAR Plot (5 M BW\_Ch.349000\_QPSK\_Full RB)



Sub6 n66. PAR Plot (5 M BW\_Ch.349000\_16QAM\_Full RB)





Sub6 n66. PAR Plot (5 M BW\_Ch.349000\_64QAM\_Full RB)



Sub6 n66. PAR Plot (5 M BW\_Ch.349000\_256QAM\_Full RB)



Sub6 n66. PAR Plot (10 M BW\_Ch.349000\_ BPSK\_ Full RB)



Sub6 n66. PAR Plot (10 M BW\_Ch.349000\_QPSK\_Full RB)





Sub6 n66. PAR Plot (10 M BW\_Ch.349000\_16QAM\_Full RB)



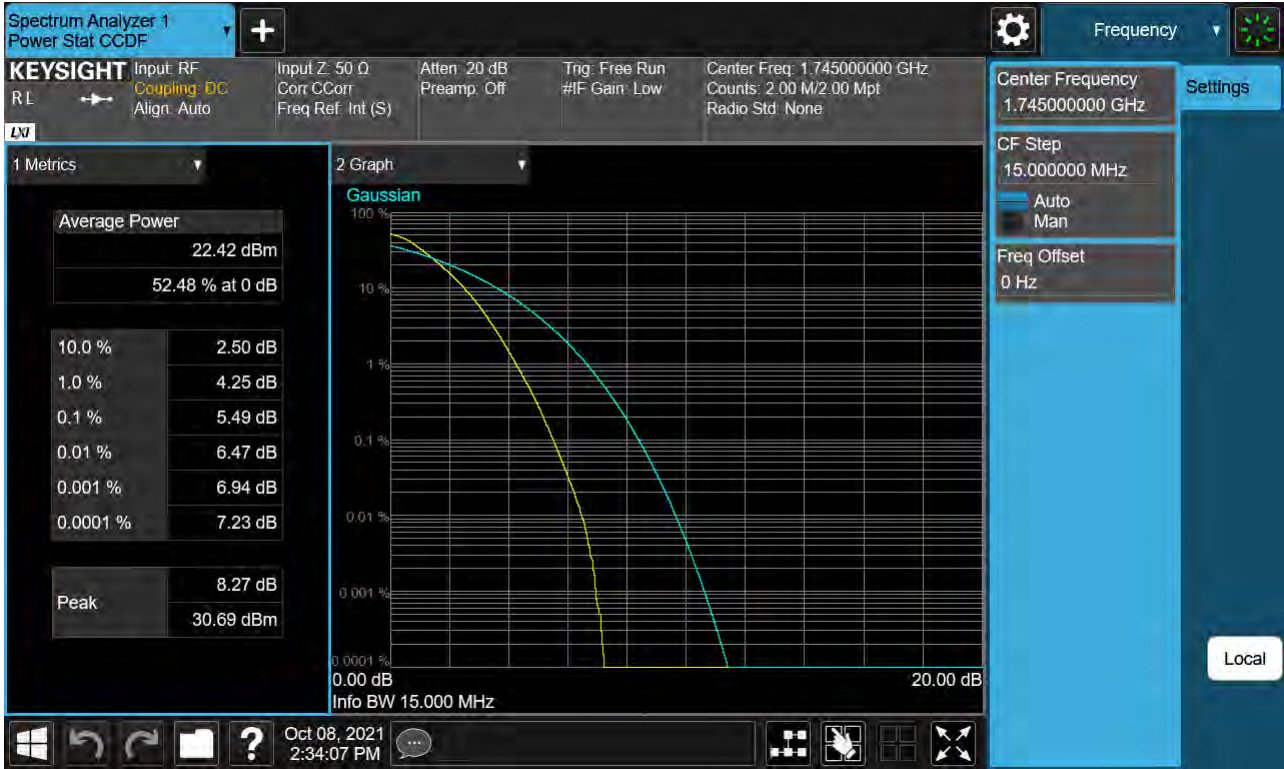
Sub6 n66. PAR Plot (10 M BW\_Ch.349000\_64QAM\_Full RB)



Sub6 n66. PAR Plot (10 M BW\_Ch.349000\_256QAM\_Full RB)

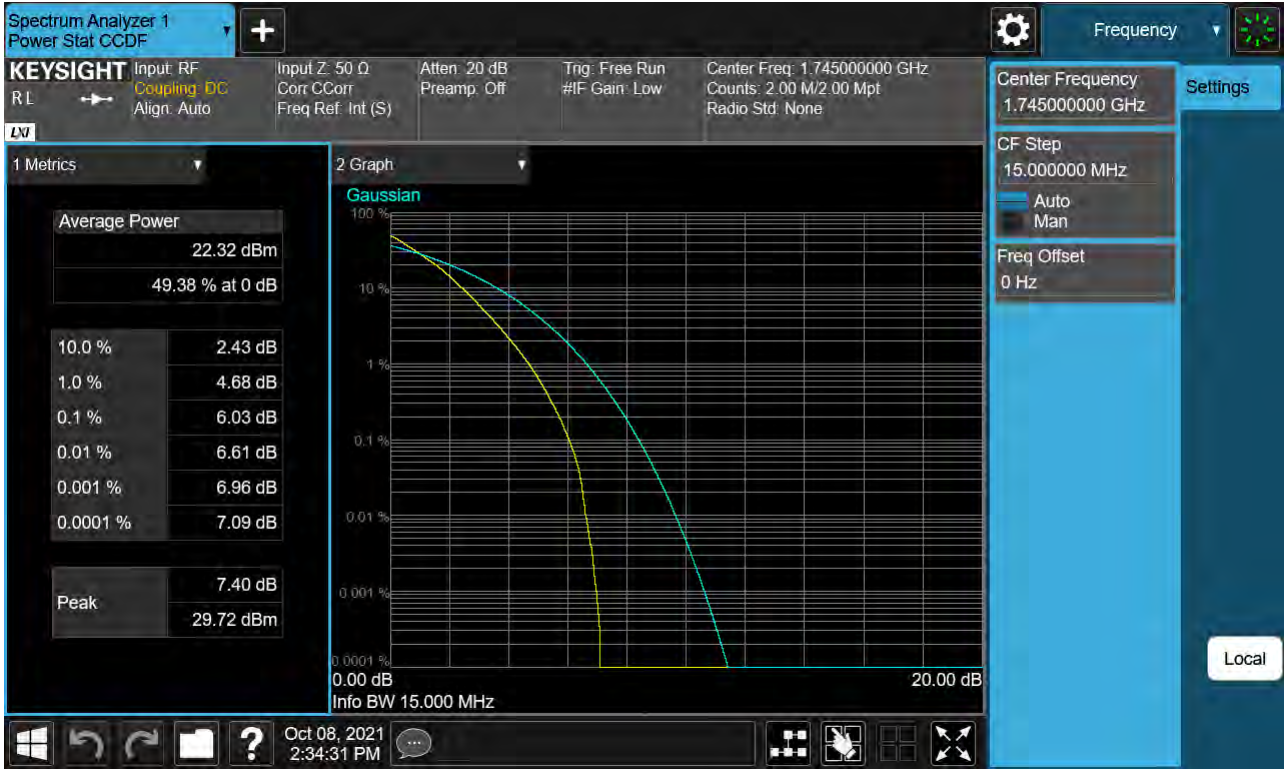


Sub6 n66. PAR Plot (15 M BW\_Ch.349000\_ BPSK\_ Full RB)





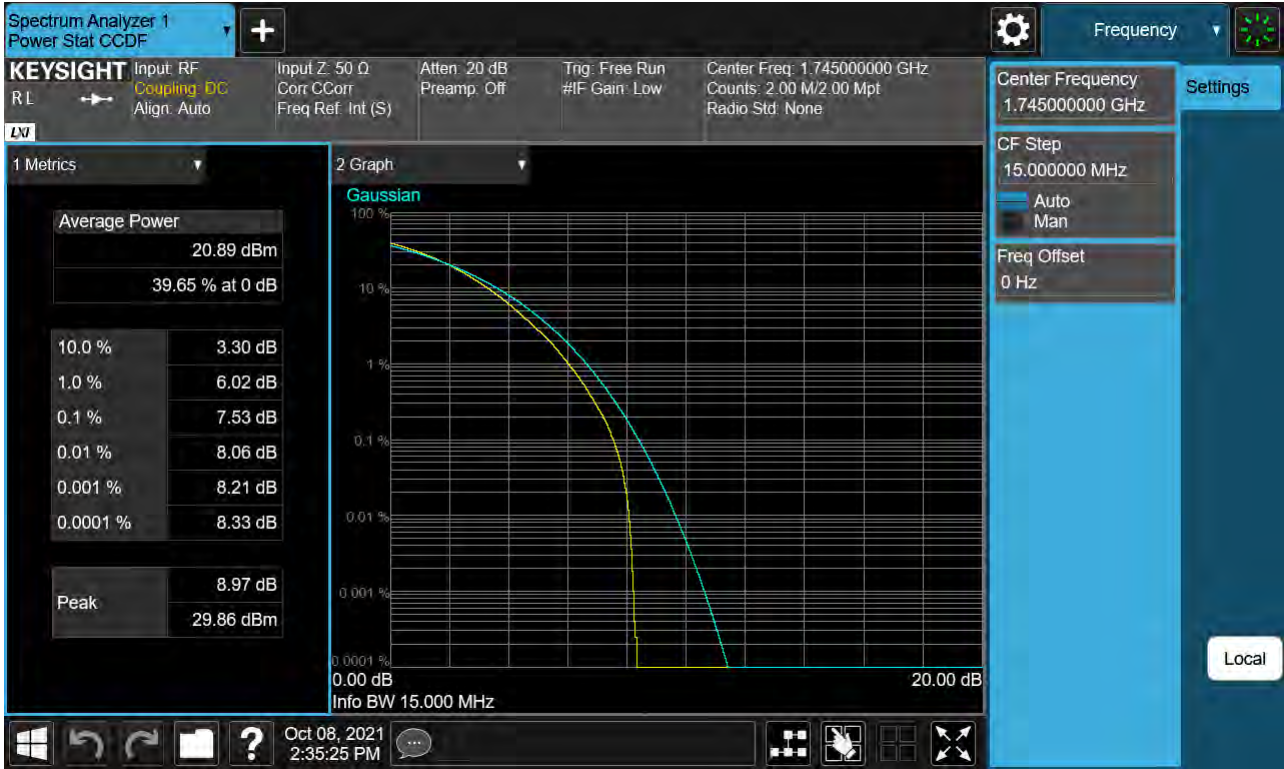
Sub6 n66. PAR Plot (15 M BW\_Ch.349000\_QPSK\_Full RB)



Sub6 n66. PAR Plot (15 M BW\_Ch.349000\_16QAM\_Full RB)



Sub6 n66. PAR Plot (15 M BW\_Ch.349000\_64QAM\_Full RB)

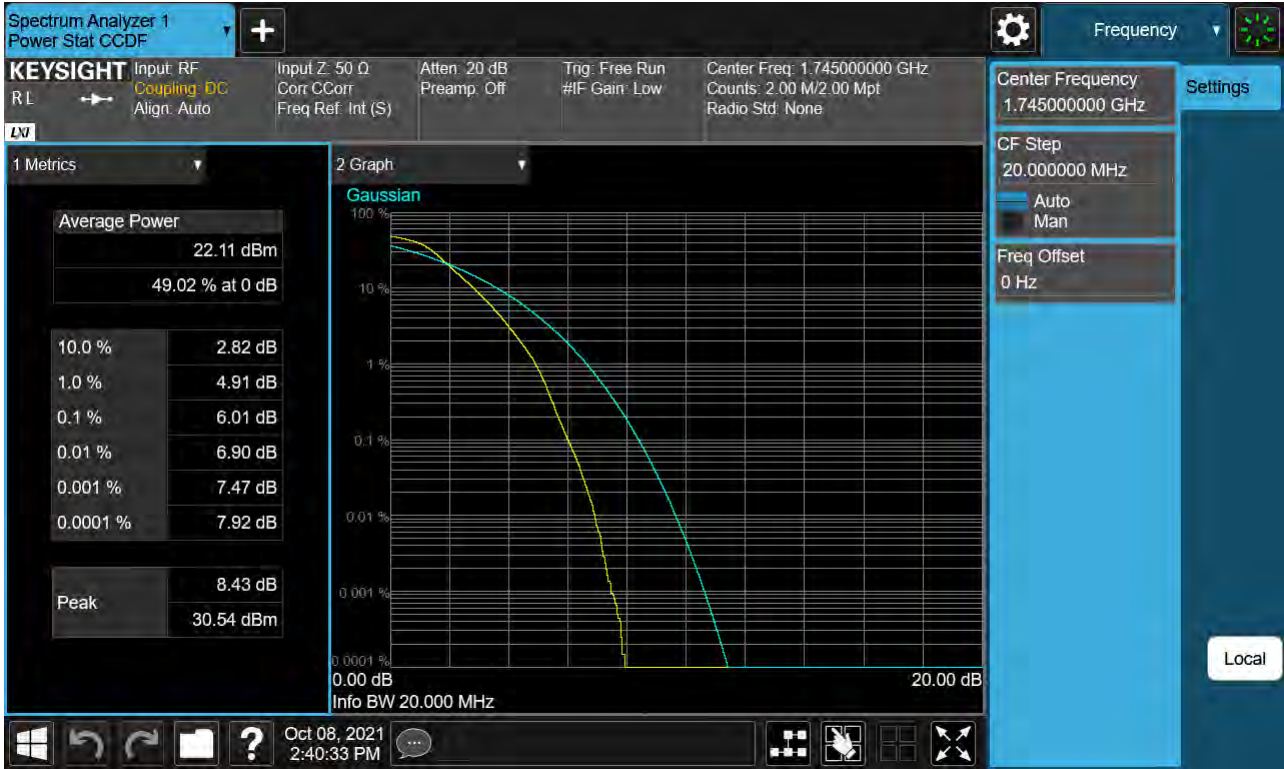


Sub6 n66. PAR Plot (15 M BW\_Ch.349000\_256QAM\_Full RB)

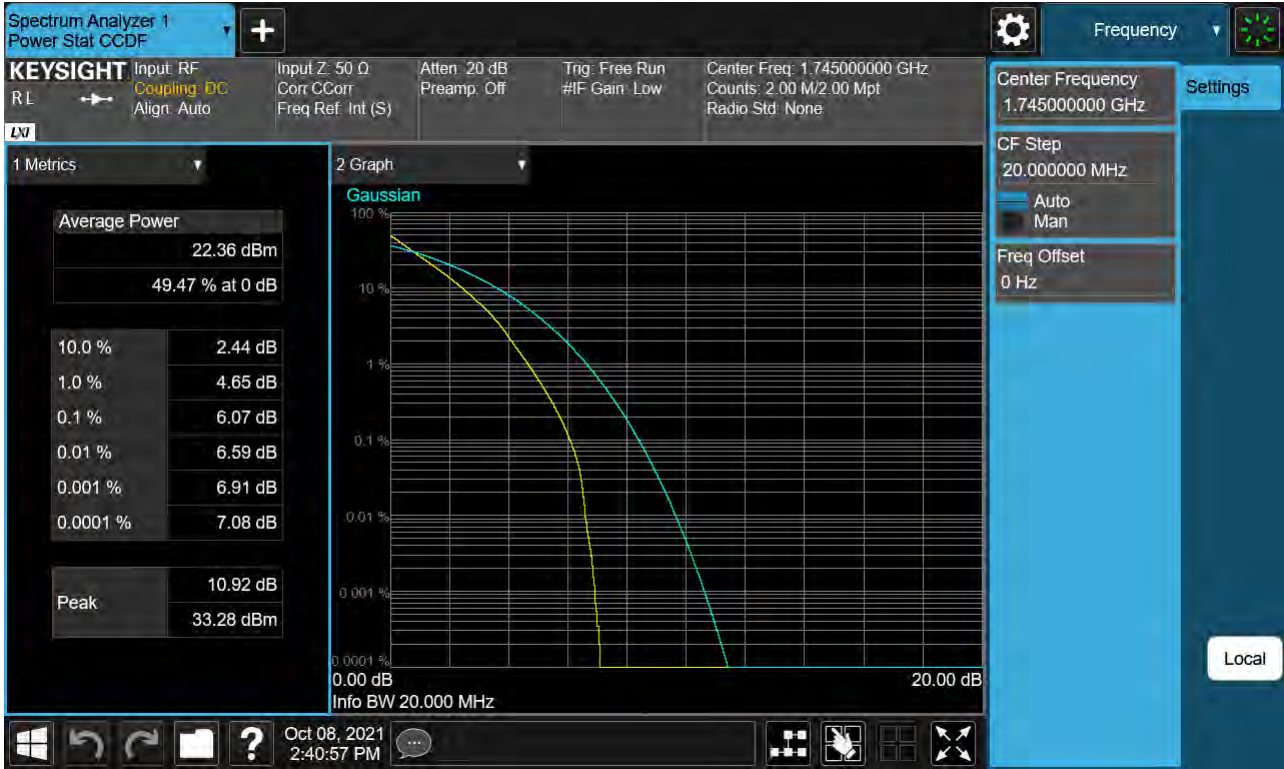




Sub6 n66. PAR Plot (20 M BW\_Ch.349000\_ BPSK\_ Full RB)



Sub6 n66. PAR Plot (20 M BW\_Ch.349000\_QPSK\_Full RB)



Sub6 n66. PAR Plot (20 M BW\_Ch.349000\_16QAM\_Full RB)



Sub6 n66. PAR Plot (20 M BW\_Ch.349000\_64QAM\_Full RB)

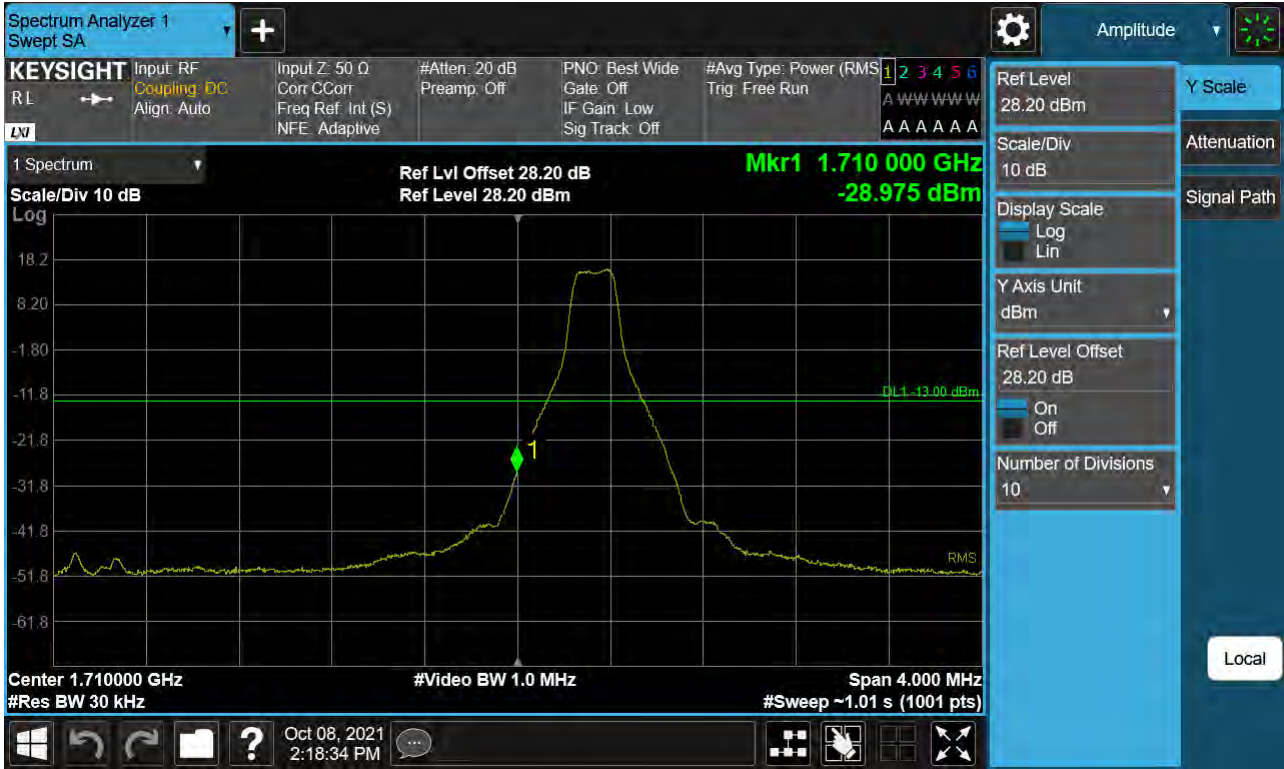




Sub6 n66. PAR Plot (20 M BW\_Ch.349000\_256QAM\_Full RB)



Sub6 n66. Lower Band Edge Plot (5 M BW Ch.342500 BPSK RB 1, Offset 0) -1



Sub6 n66. Lower Band Edge Plot (5 M BW Ch.342500 BPSK Full RB) -2

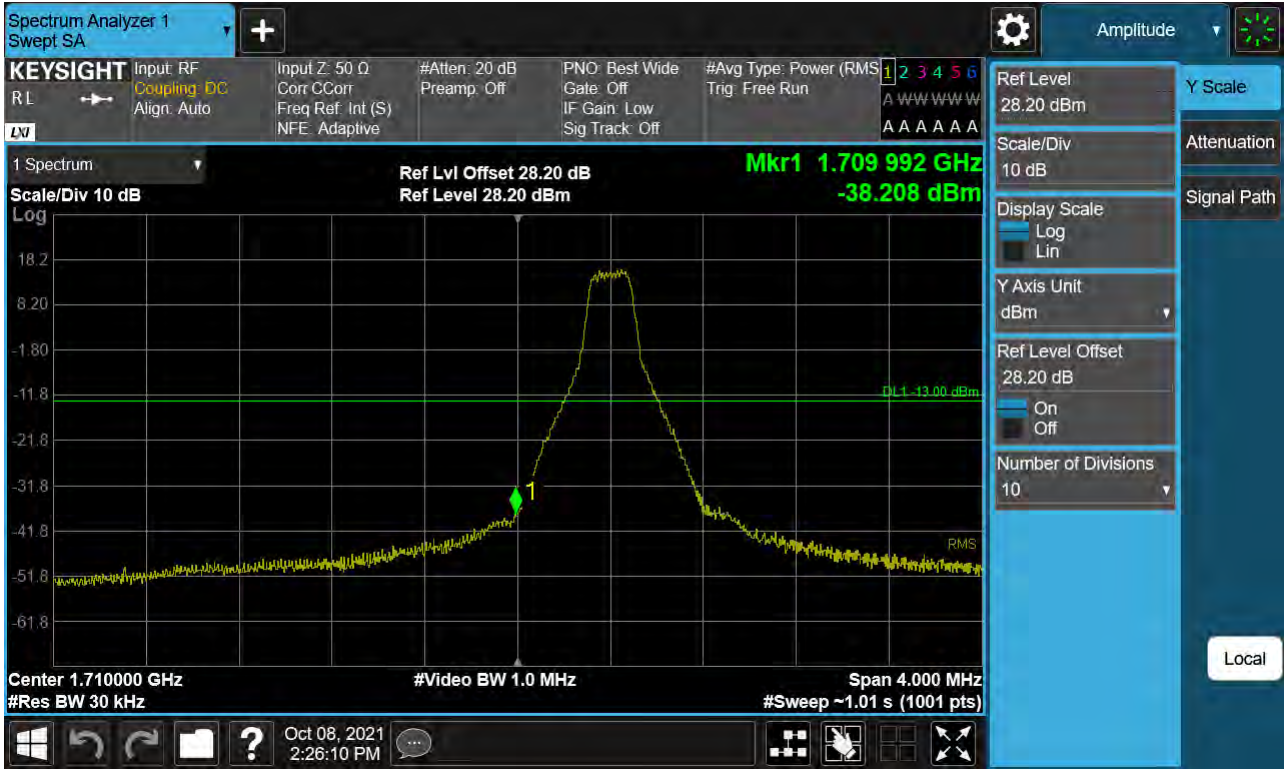


Sub6 n66. Lower Extended Band Edge Plot (5 M BW Ch.342500 BPSK\_ Full RB) -3





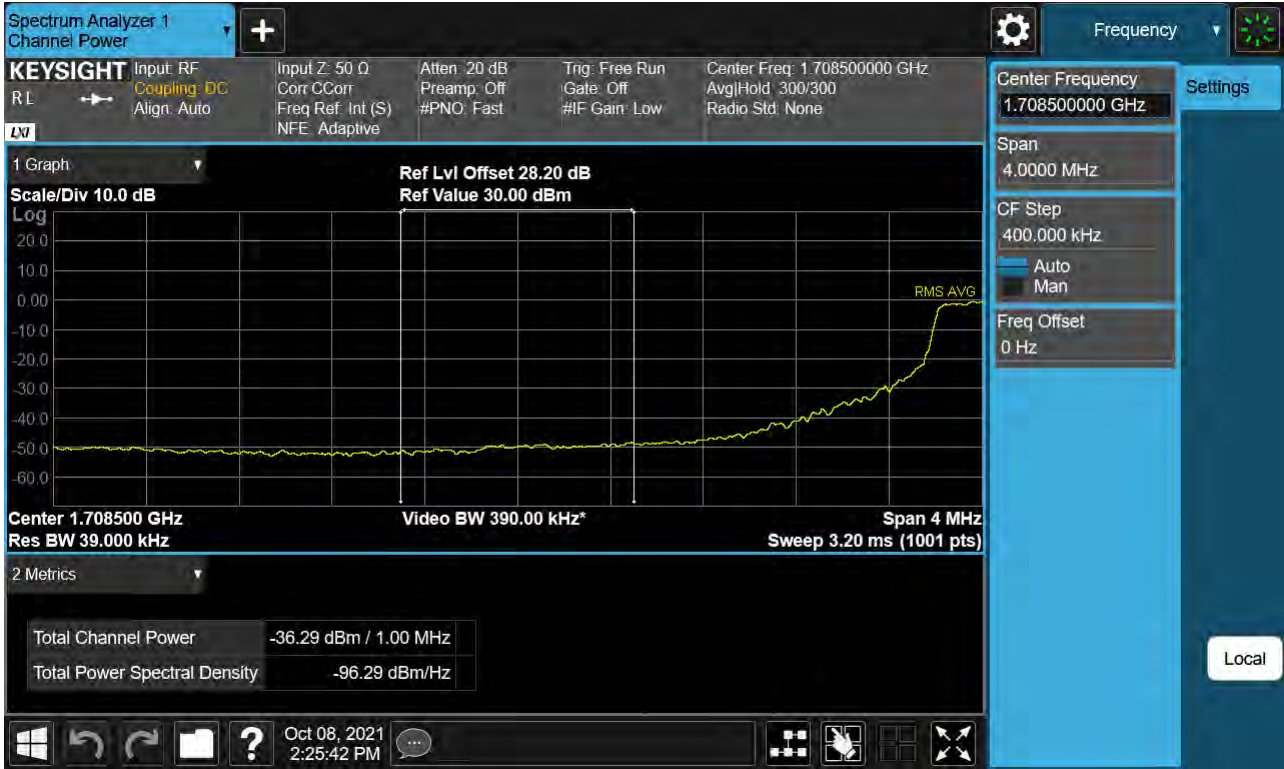
Sub6 n66. Lower Band Edge Plot (10 M BW Ch.343000 BPSK RB 1, Offset 0) -1



Sub6 n66. Lower Band Edge Plot (10 M BW Ch.343000 BPSK Full RB) -2



Sub6 n66. Lower Extended Band Edge Plot (10 M BW Ch.343000 BPSK\_ Full RB) -3







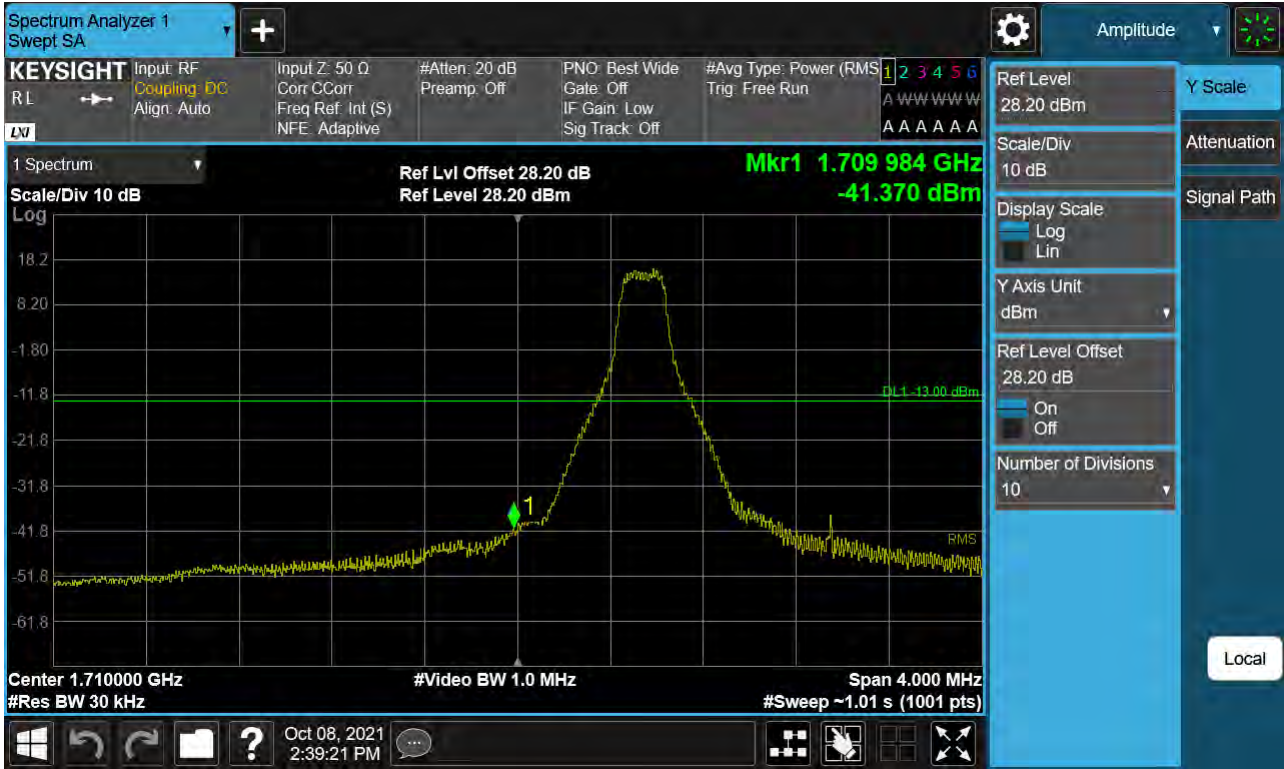
Sub6 n66. Lower Band Edge Plot (15 M BW Ch.343500 BPSK Full RB) -2



Sub6 n66. Lower Extended Band Edge Plot (15 M BW Ch.343500 BPSK\_ Full RB) -3



Sub6 n66. Lower Band Edge Plot (20 M BW Ch.344000 BPSK RB 1, Offset 0) -1



Sub6 n66. Lower Band Edge Plot (20 M BW Ch.344000 BPSK Full RB) -2

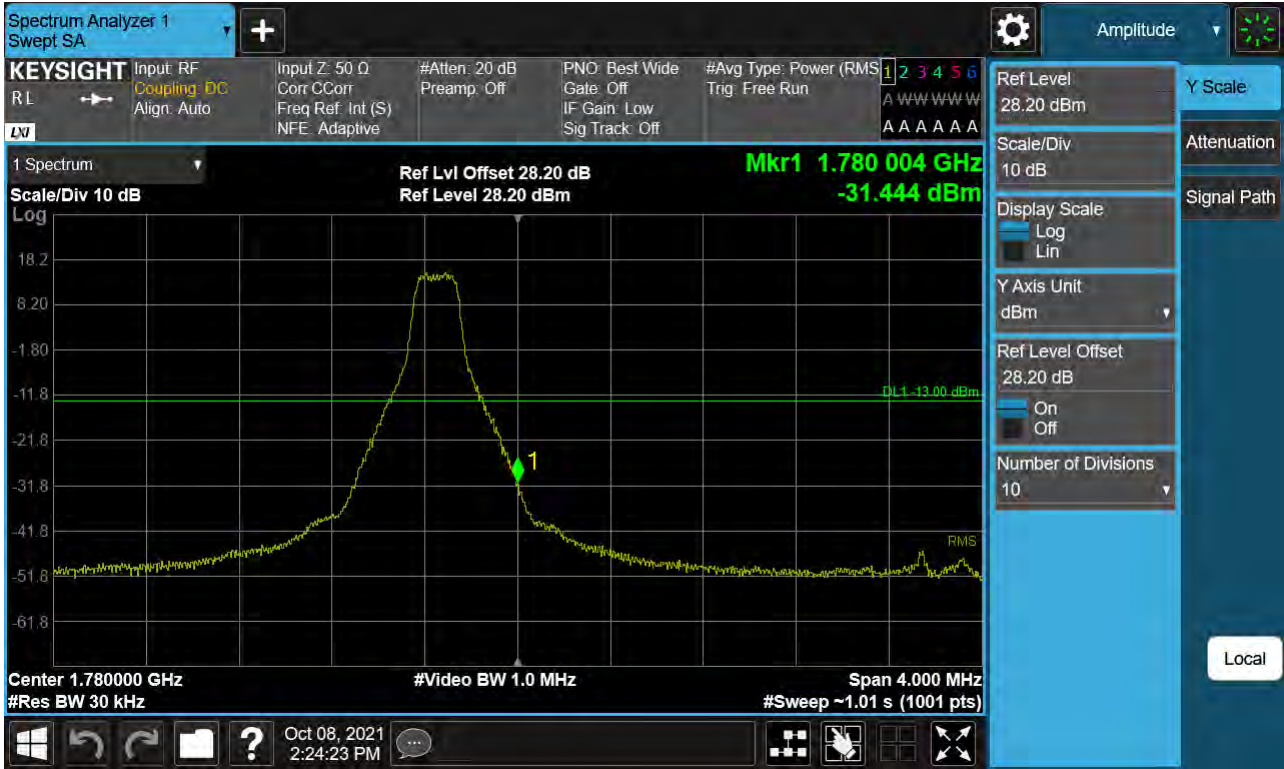




Sub6 n66. Lower Extended Band Edge Plot (20 M BW Ch.344000 BPSK\_ Full RB) -3



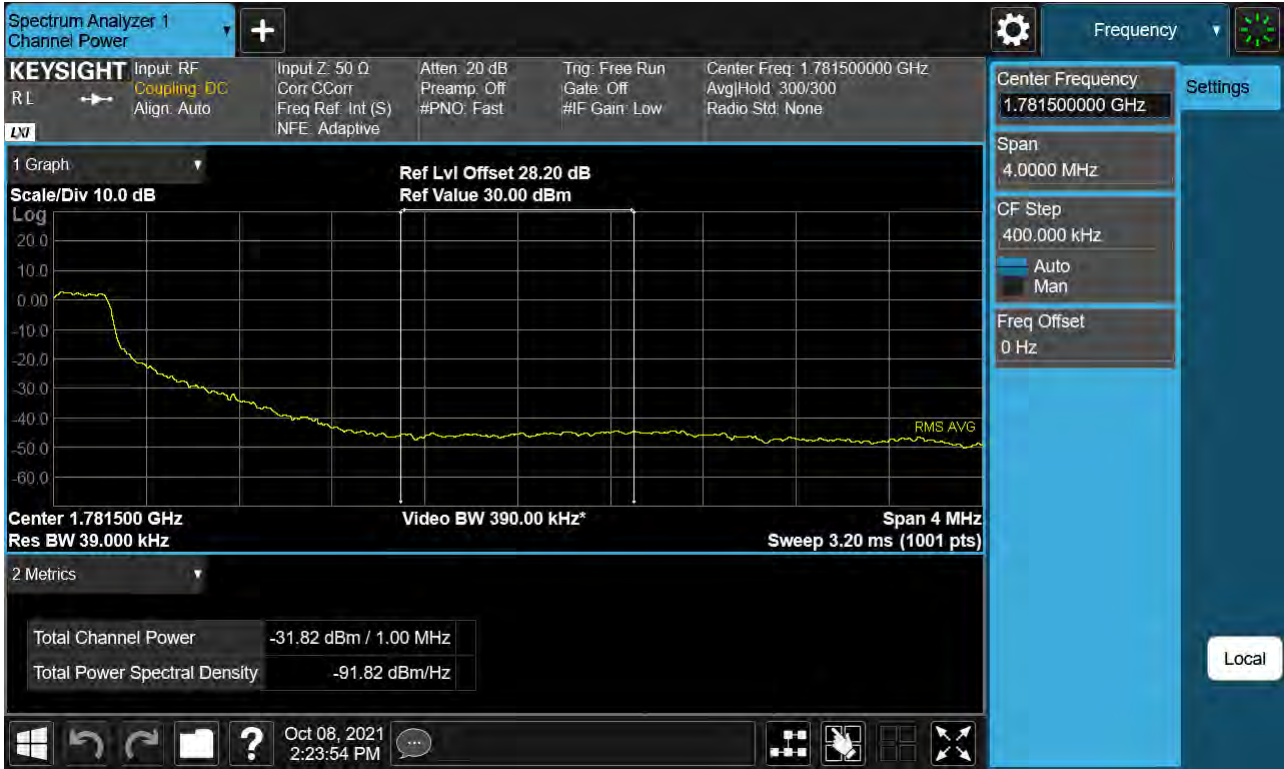
Sub6 n66. Upper Band Edge Plot (5 M BW Ch.355500 BPSK\_RB1\_Offset 24) -1



Sub6 n66. Upper Band Edge Plot (5 M BW Ch.355500 BPSK\_ Full RB) -2

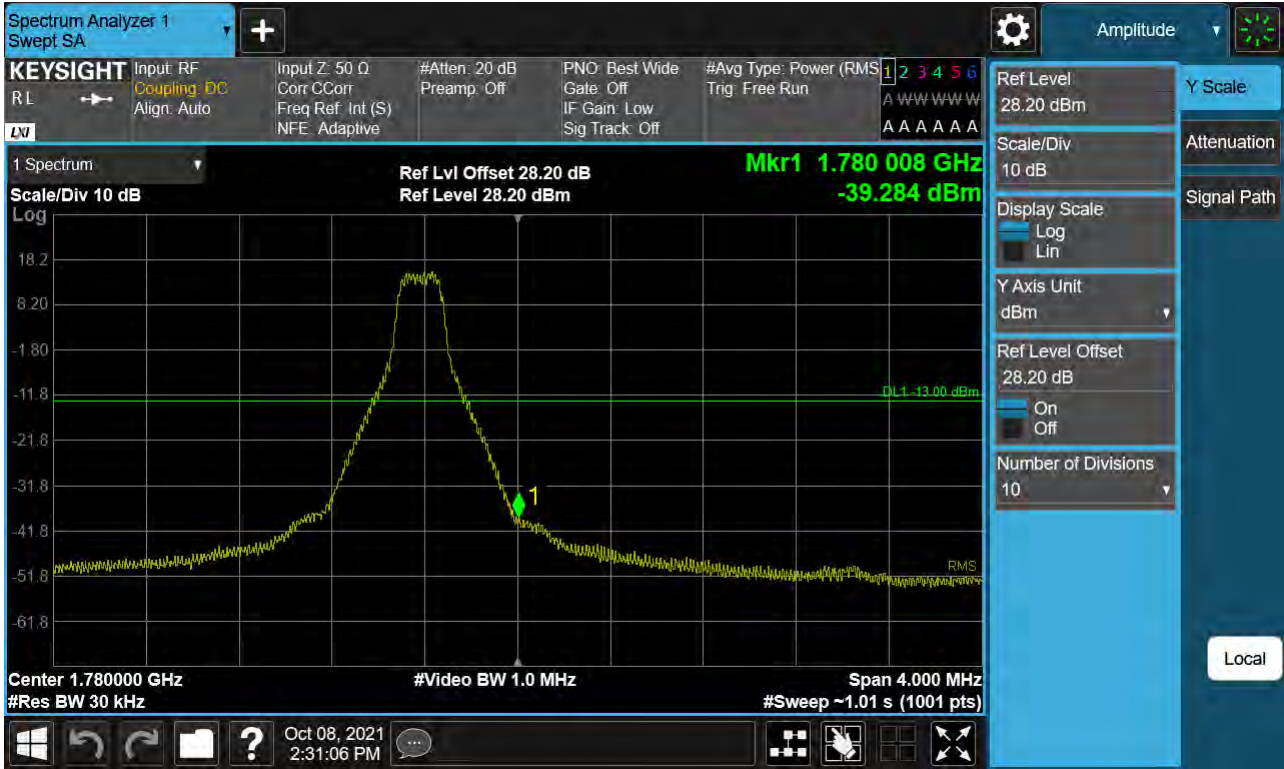


Sub6 n66. Upper Extended Band Edge Plot (5 M BW Ch.355500 BPSK\_ Full RB) -3





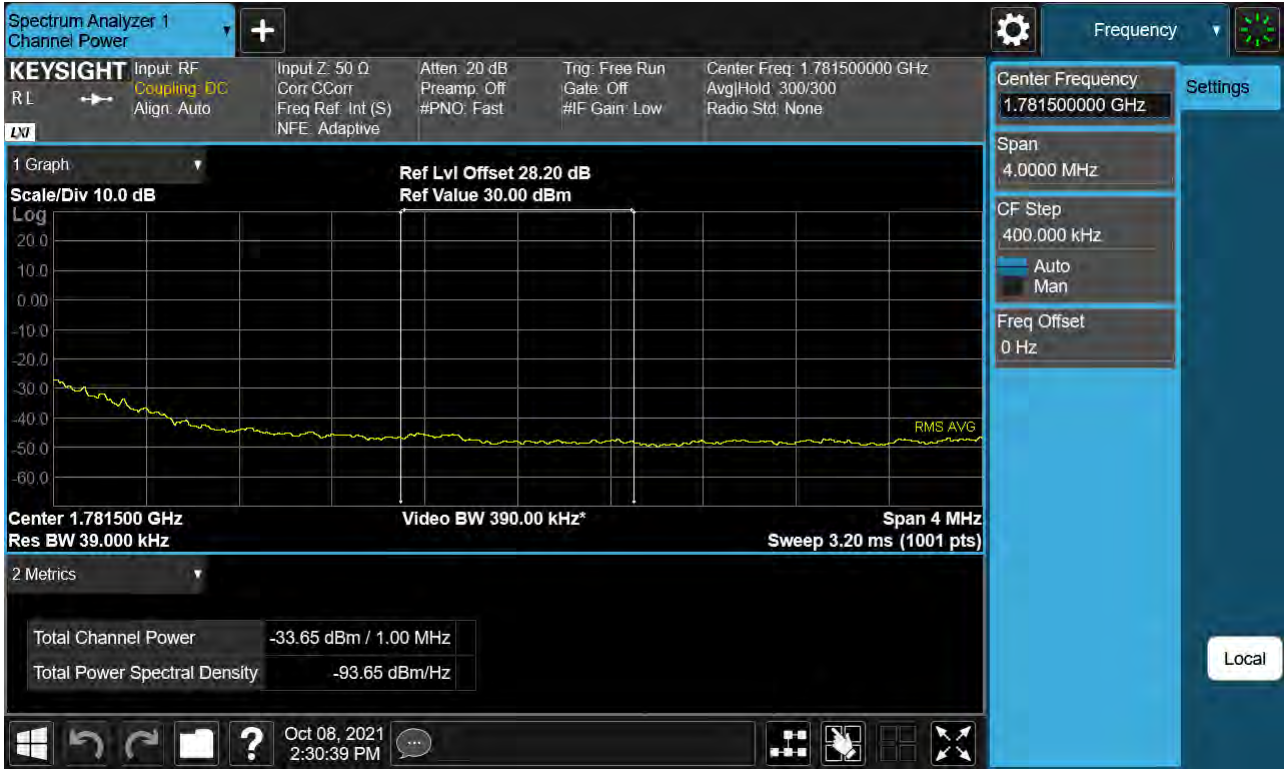
Sub6 n66. Upper Band Edge Plot (10 M BW Ch.355000 BPSK\_RB1\_Offset 51) -1



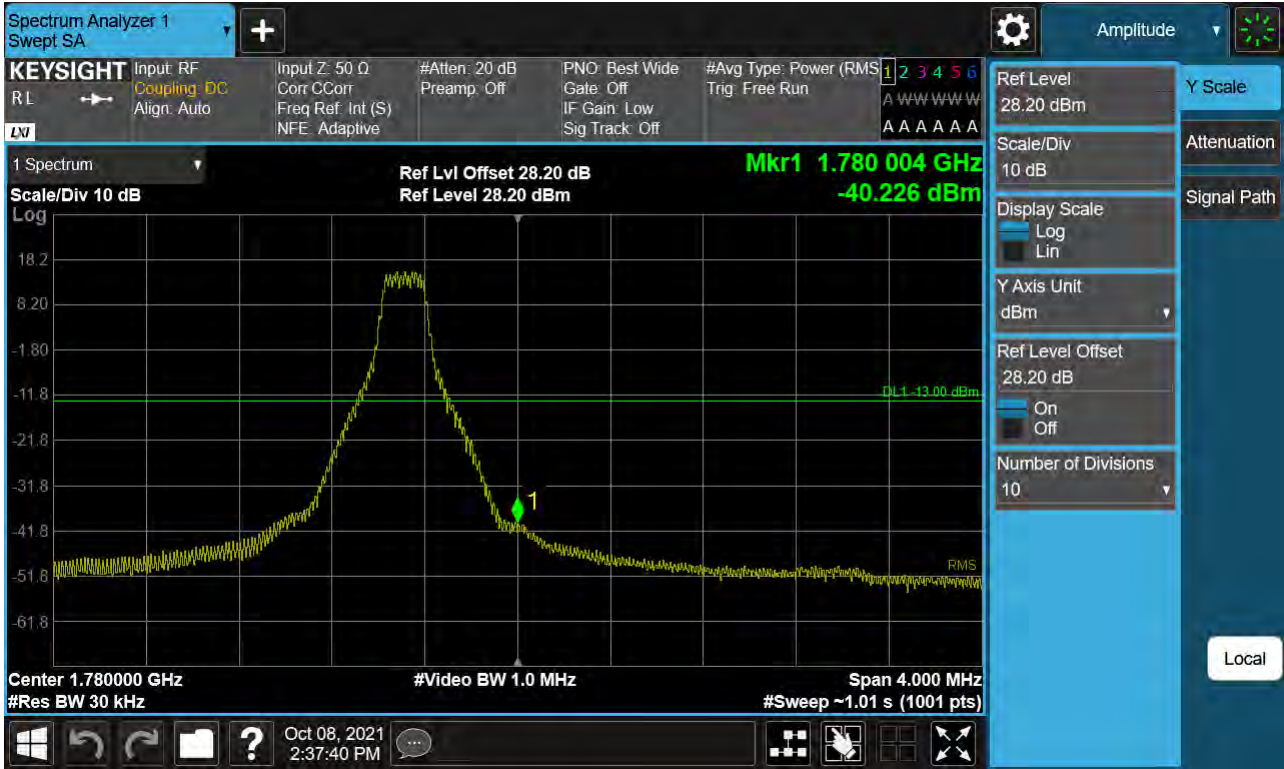
Sub6 n66. Upper Band Edge Plot (10 M BW Ch.355000 BPSK\_ Full RB) -2



Sub6 n66. Upper Extended Band Edge Plot (10 M BW Ch.355000 BPSK\_ Full RB) -3



Sub6 n66. Upper Band Edge Plot (15 M BW Ch.354500 BPSK\_RB1\_Offset 78) -1

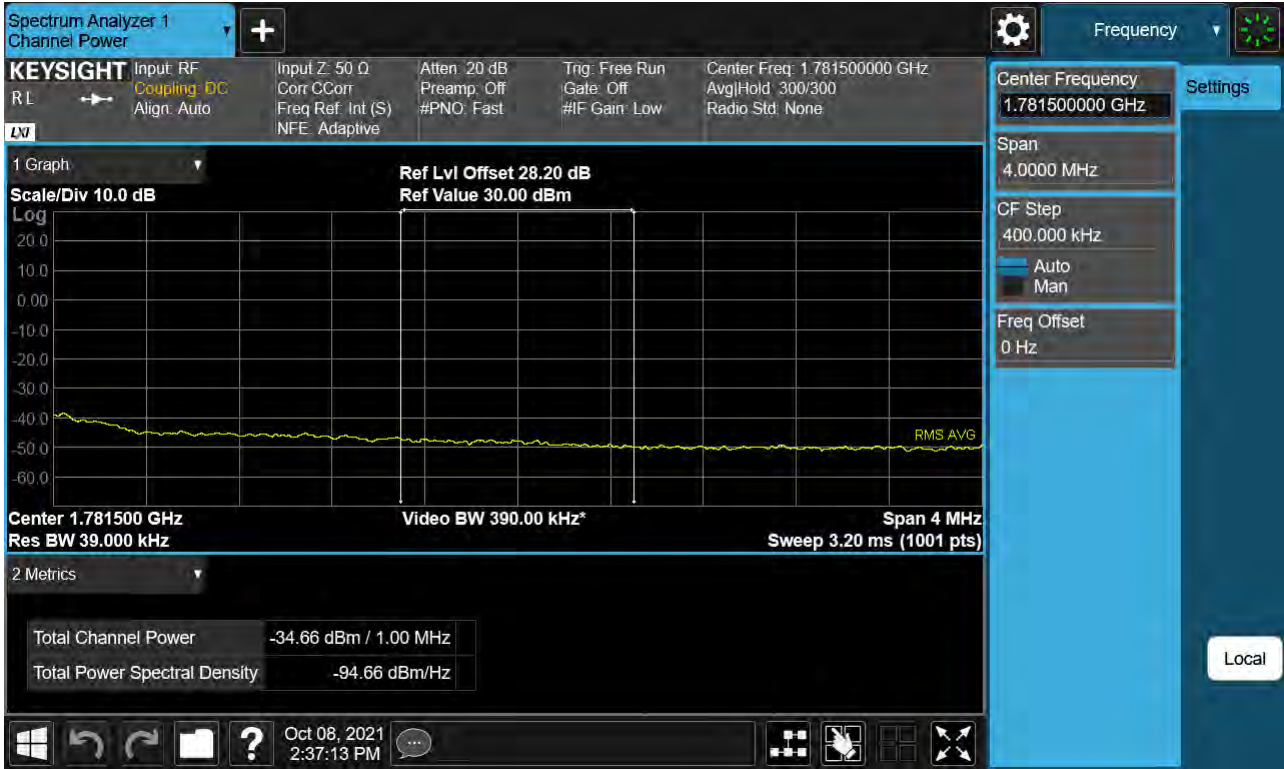




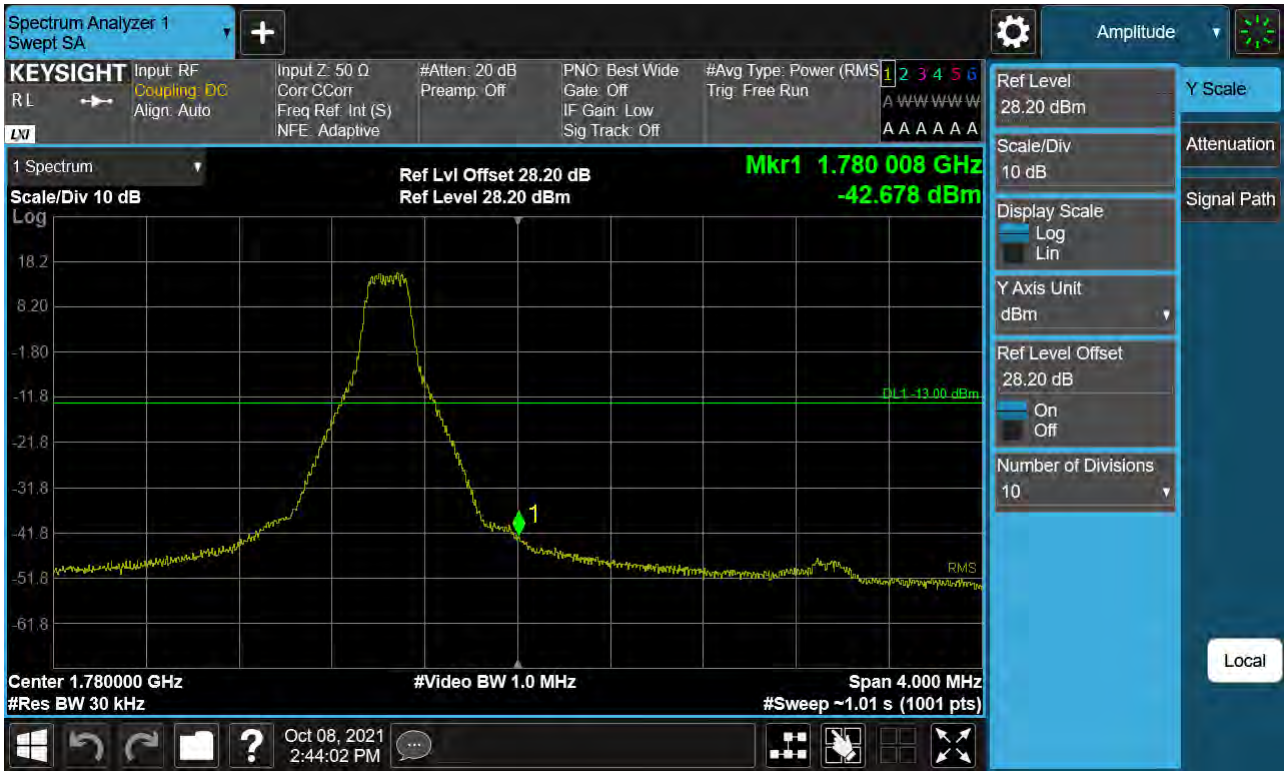
Sub6 n66. Upper Band Edge Plot (15 M BW Ch.354500 BPSK\_ Full RB) -2



Sub6 n66. Upper Extended Band Edge Plot (15 M BW Ch.354500 BPSK\_ Full RB) -3



Sub6 n66. Upper Band Edge Plot (20 M BW Ch.354000 BPSK\_RB1\_Offset 105) -1

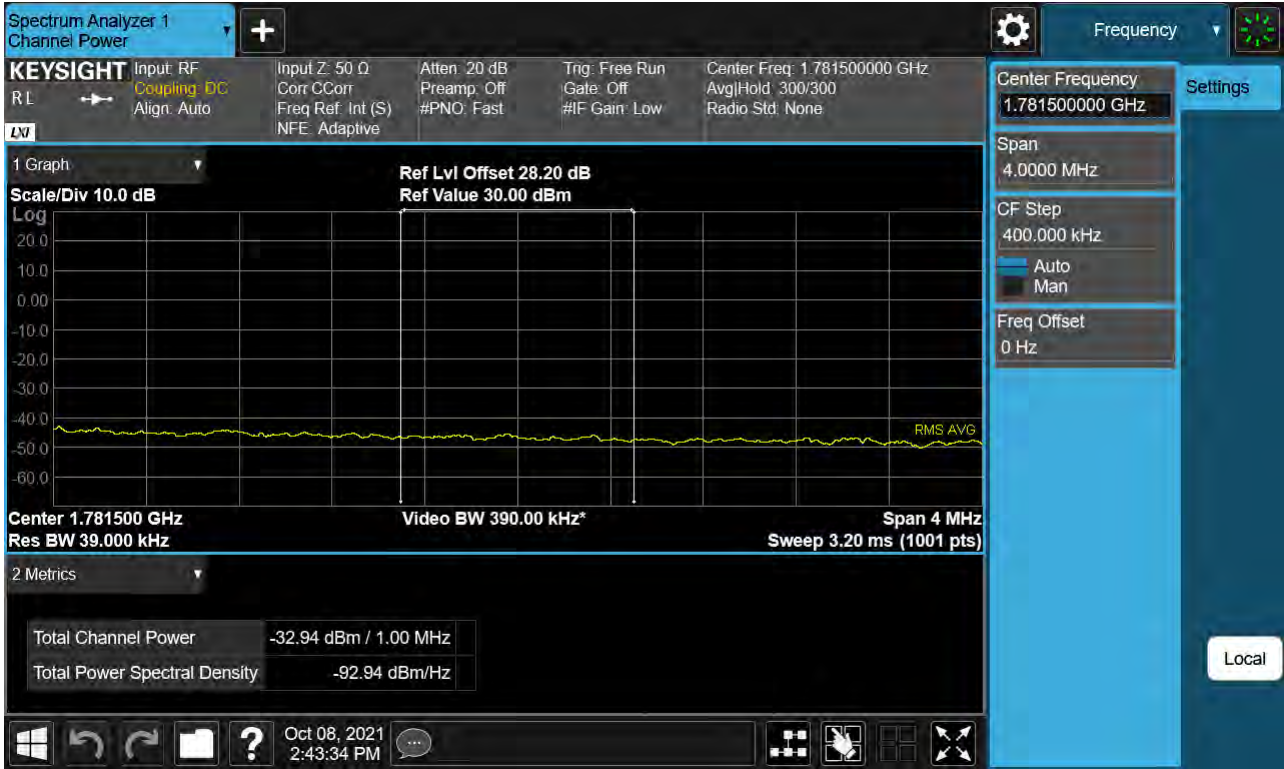


Sub6 n66. Upper Band Edge Plot (20 M BW Ch.354000 BPSK\_ Full RB) -2

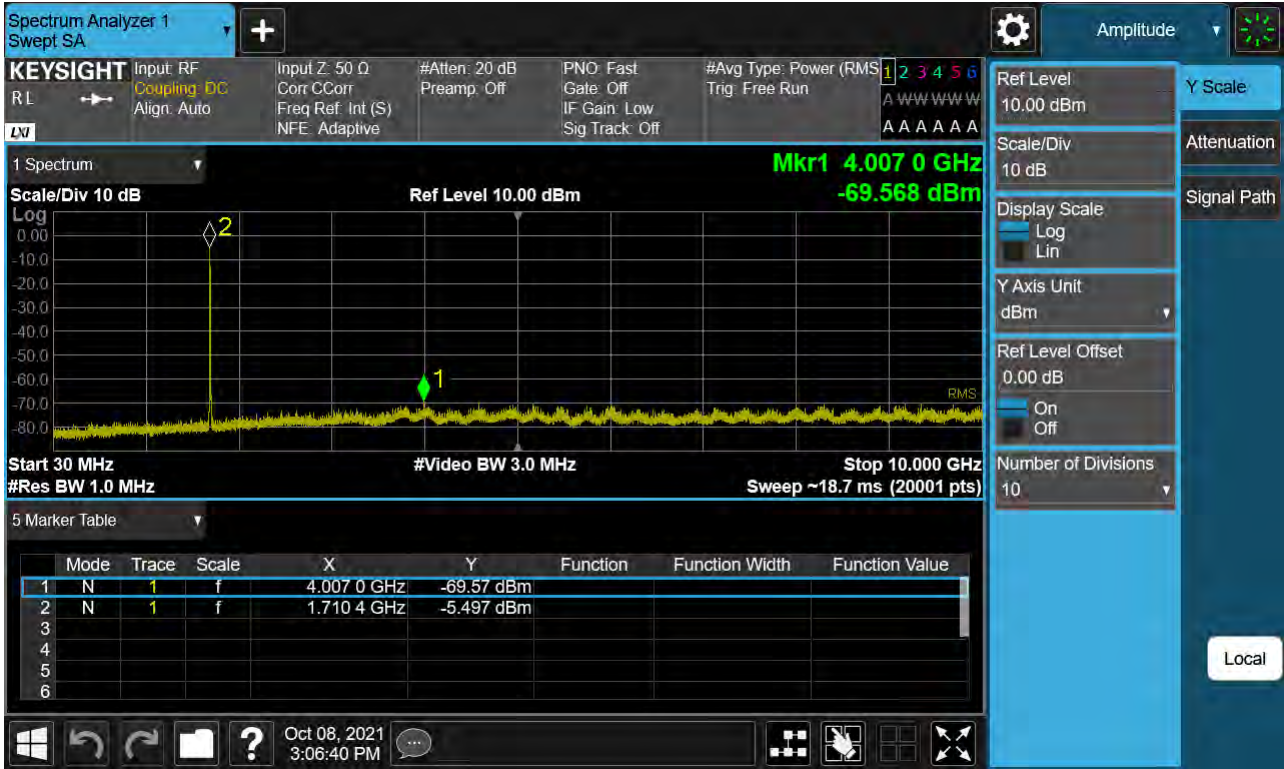




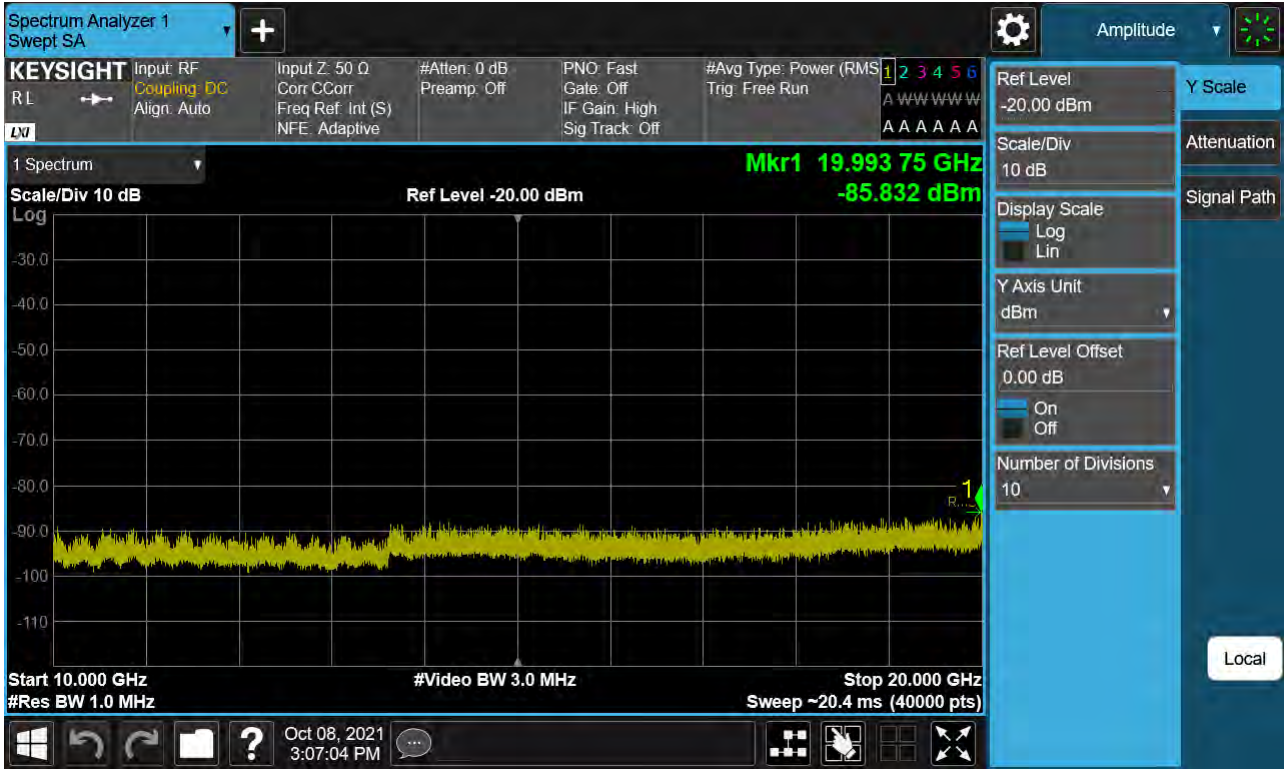
Sub6 n66. Upper Extended Band Edge Plot (20 M BW Ch.354000 BPSK\_ Full RB) -3



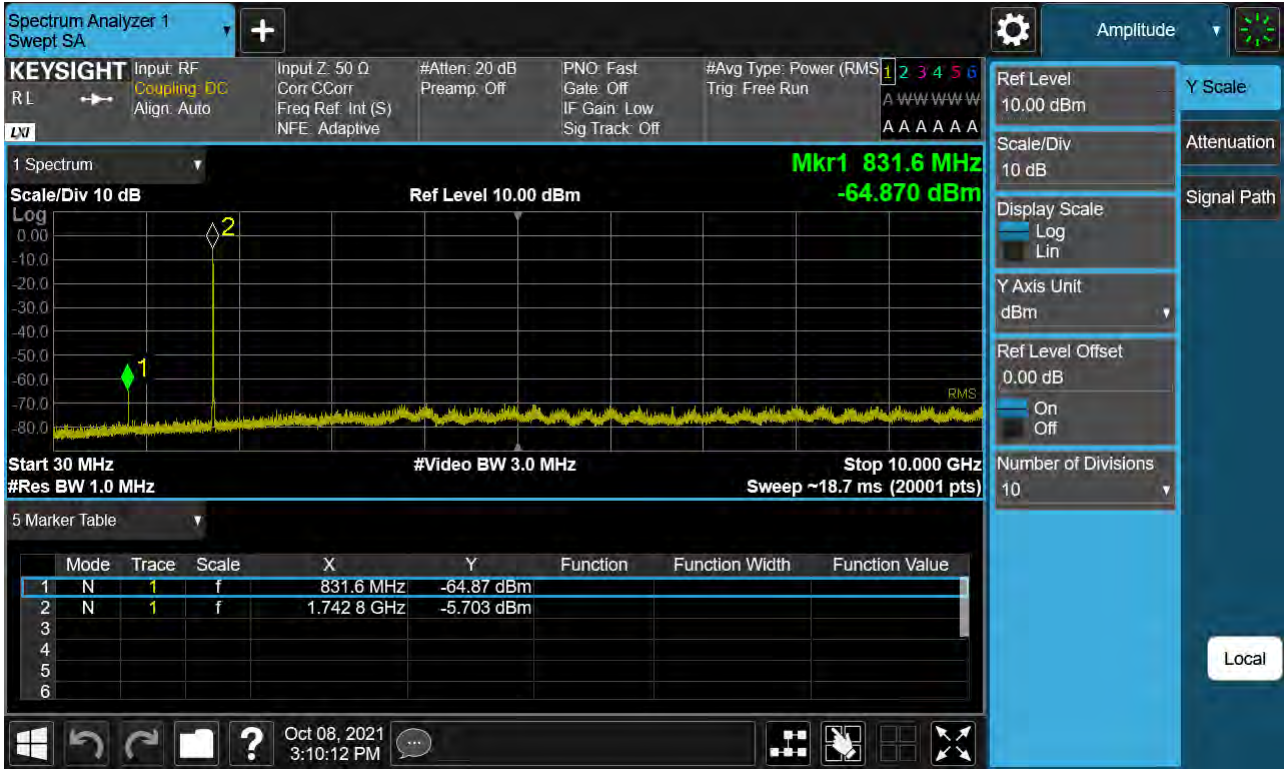
Sub6 n66. Conducted Spurious Plot\_1 (342500ch\_5 MHz\_BPSK\_RB 1\_1)



Sub6 n66. Conducted Spurious Plot\_2 (342500ch\_5 MHz\_BPSK\_RB 1\_1)

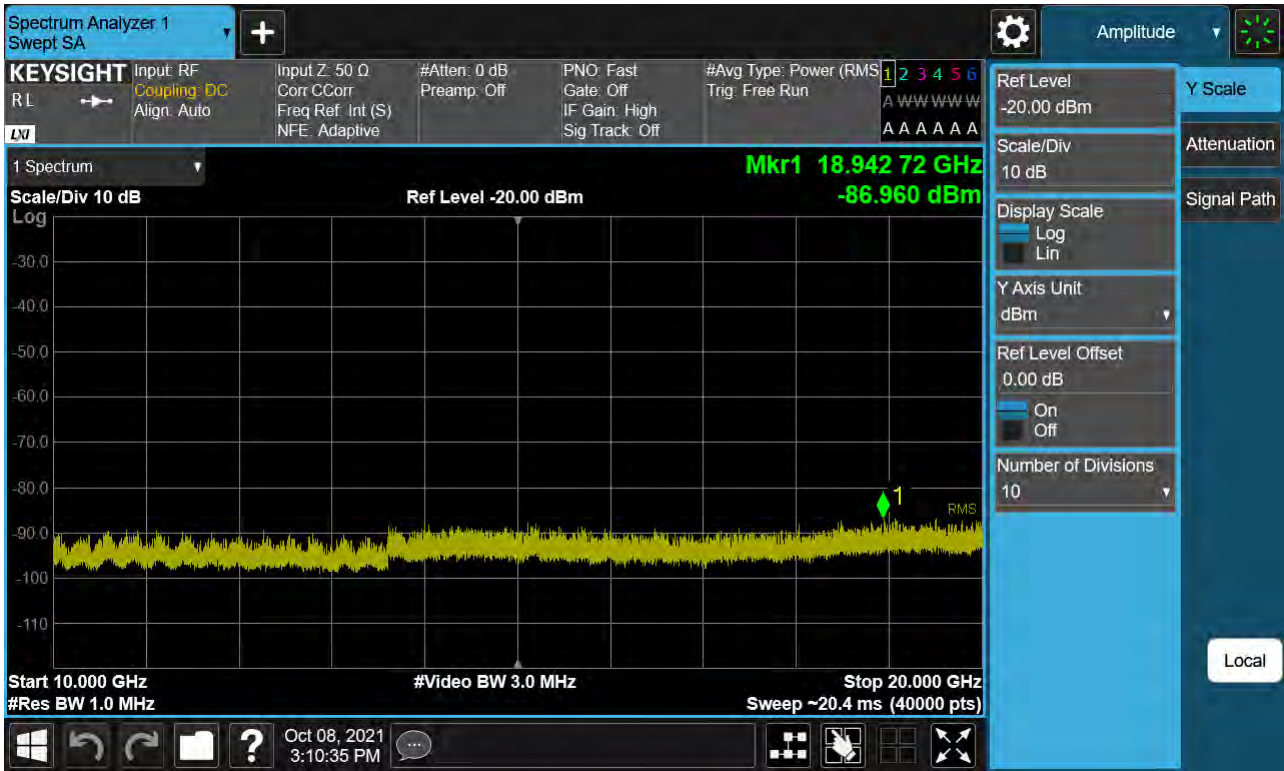


Sub6 n66. Conducted Spurious Plot\_1 (349000ch\_5 MHz\_BPSK\_RB 1\_1)

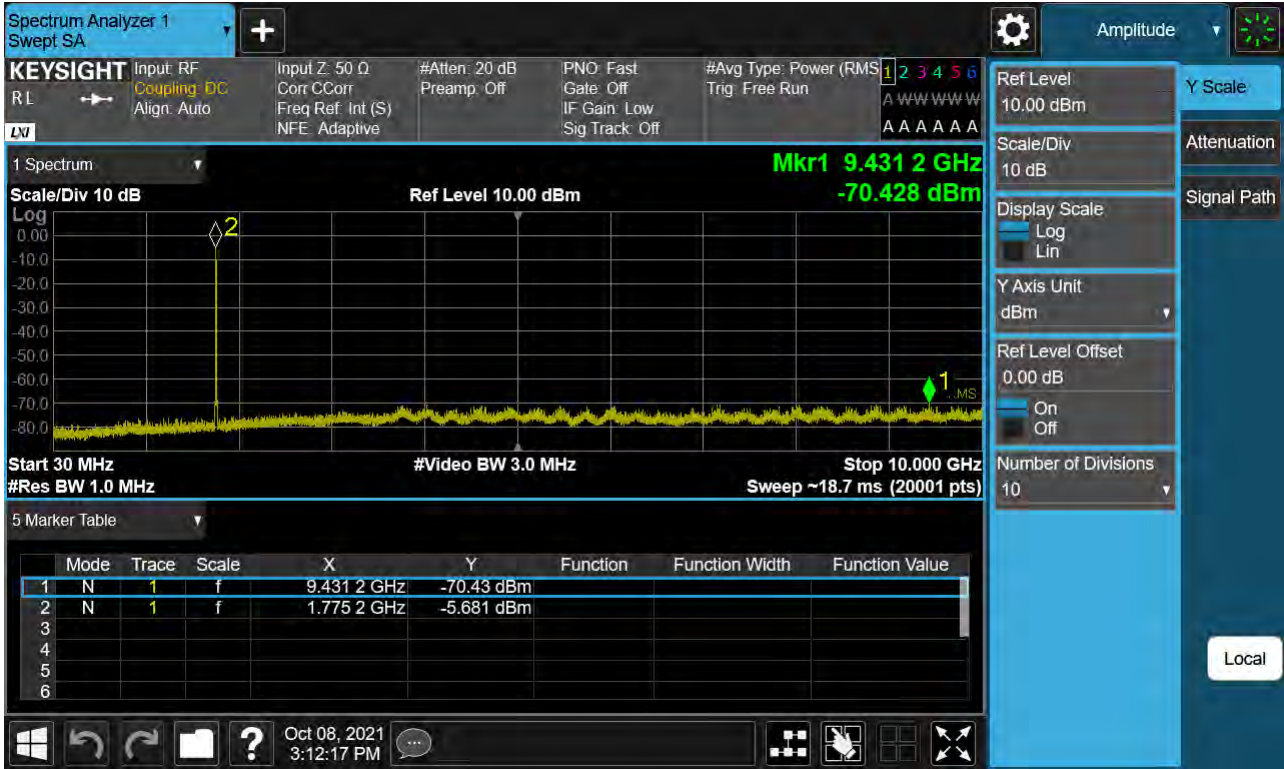




Sub6 n66. Conducted Spurious Plot\_2 (349000ch\_5 MHz\_BPSK\_ RB 1\_1)



Sub6 n66. Conducted Spurious Plot\_1 (355500ch\_5 MHz\_BPSK\_RB 1\_1)

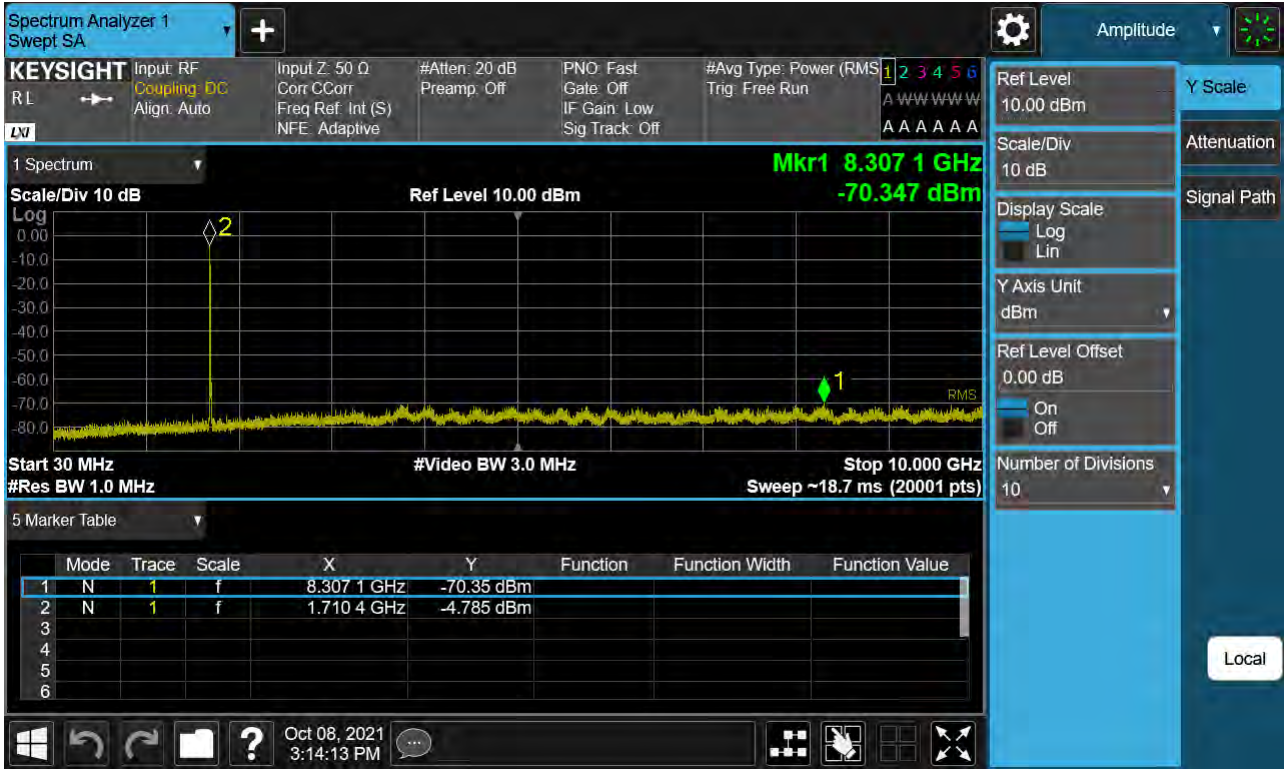


Sub6 n66. Conducted Spurious Plot\_2 (355500ch\_5 MHz\_BPSK\_RB 1\_1)



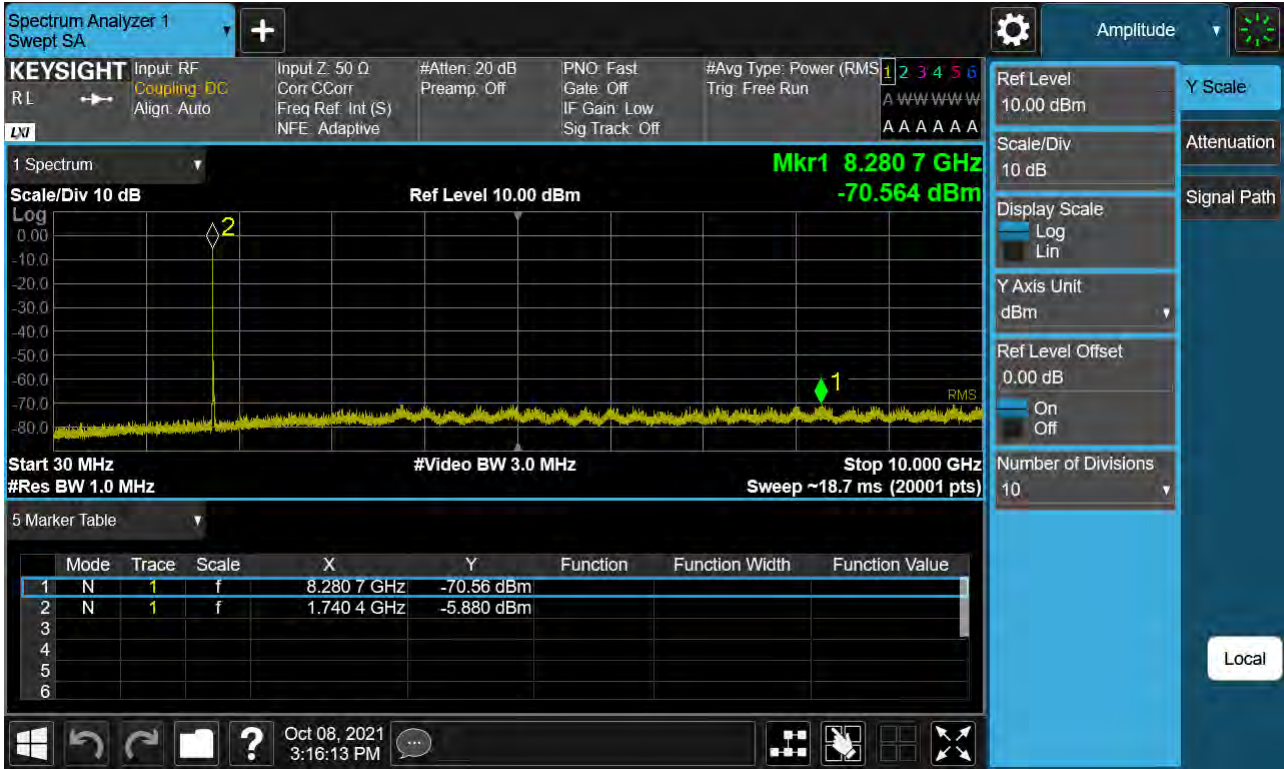


Sub6 n66. Conducted Spurious Plot\_1 (343000ch\_10 MHz\_BPSK\_RB 1\_1)

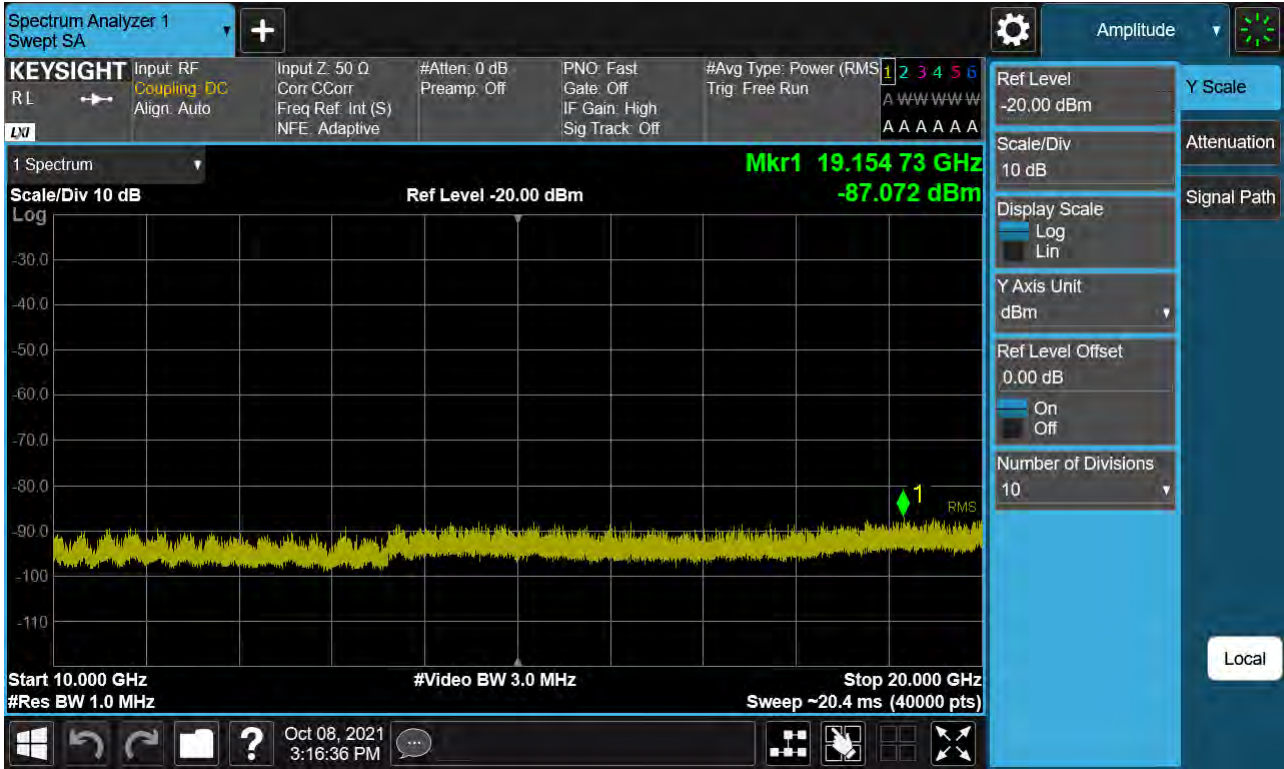




Sub6 n66. Conducted Spurious Plot\_1 (349000ch\_10 MHz\_BPSK\_RB 1\_1)

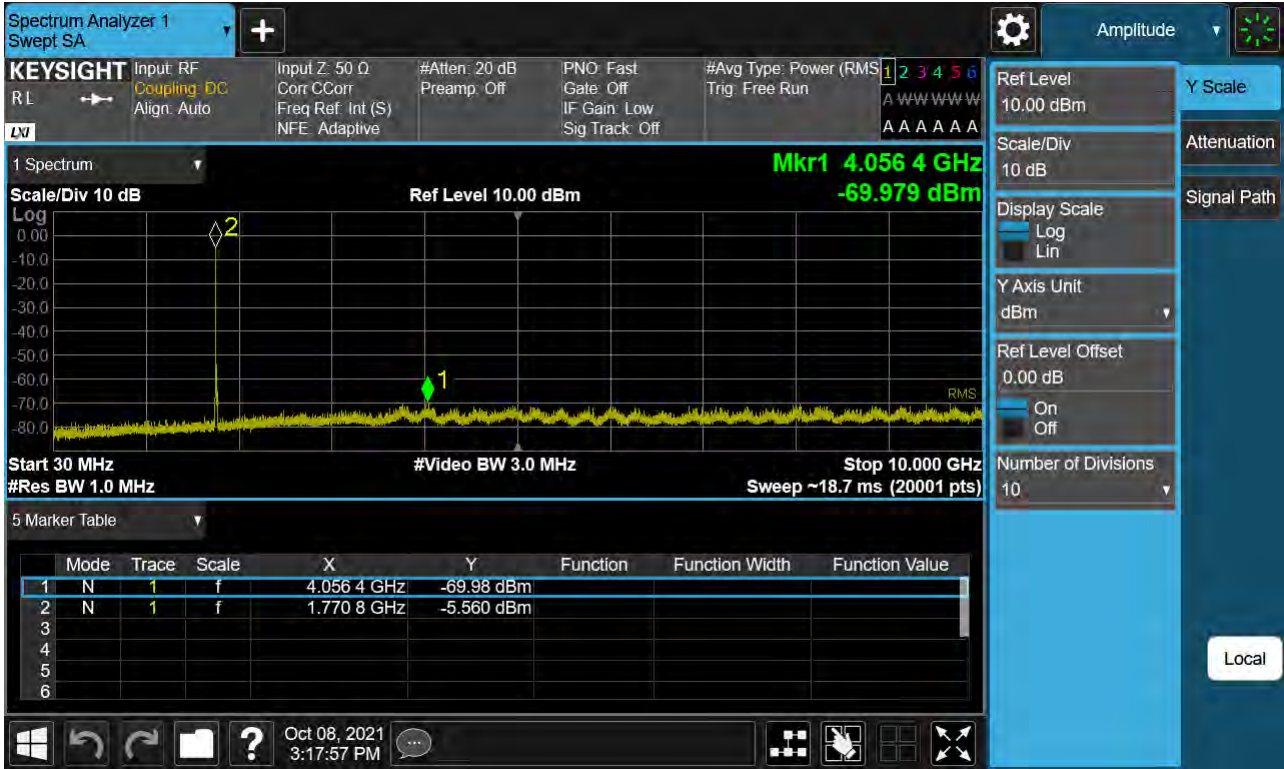


Sub6 n66. Conducted Spurious Plot\_2 (349000ch\_10 MHz\_BPSK\_RB 1\_1)

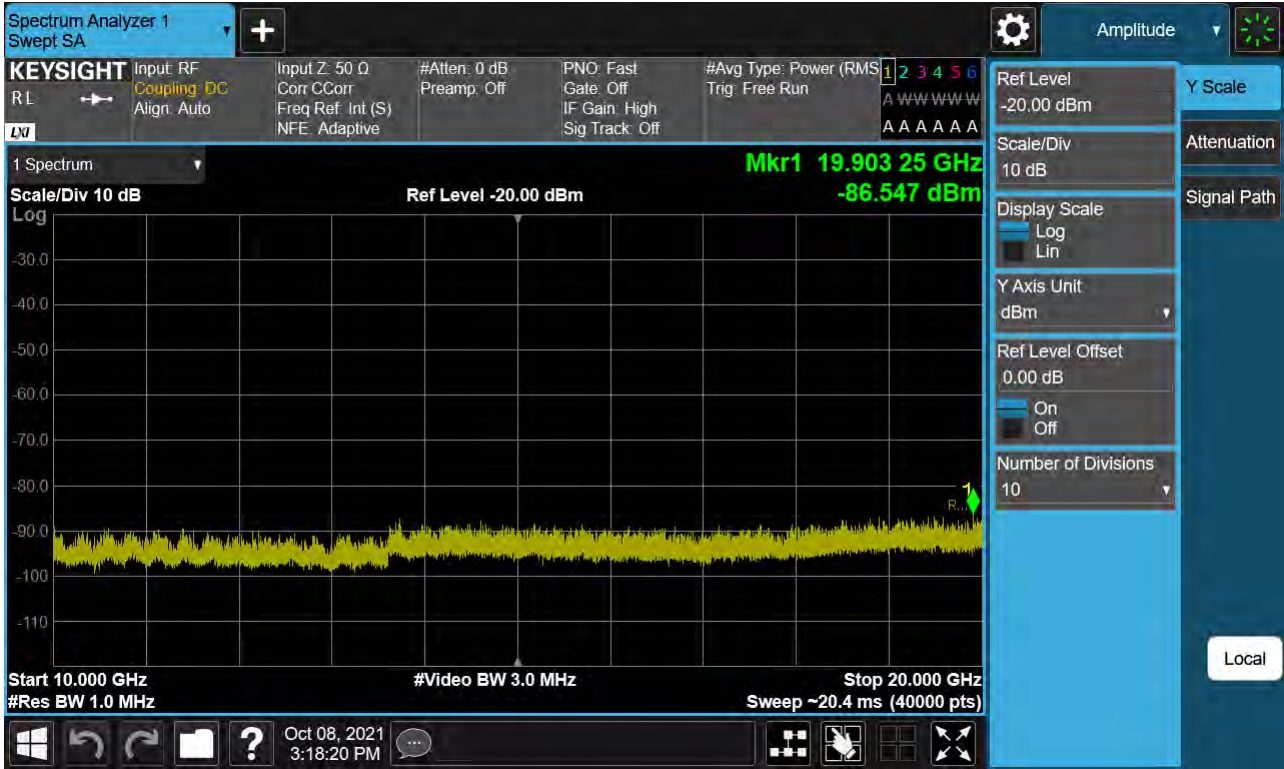




Sub6 n66. Conducted Spurious Plot\_1 (355000ch\_10 MHz\_BPSK\_RB 1\_1)



Sub6 n66. Conducted Spurious Plot\_2 (355000ch\_10 MHz\_BPSK\_RB 1\_1)

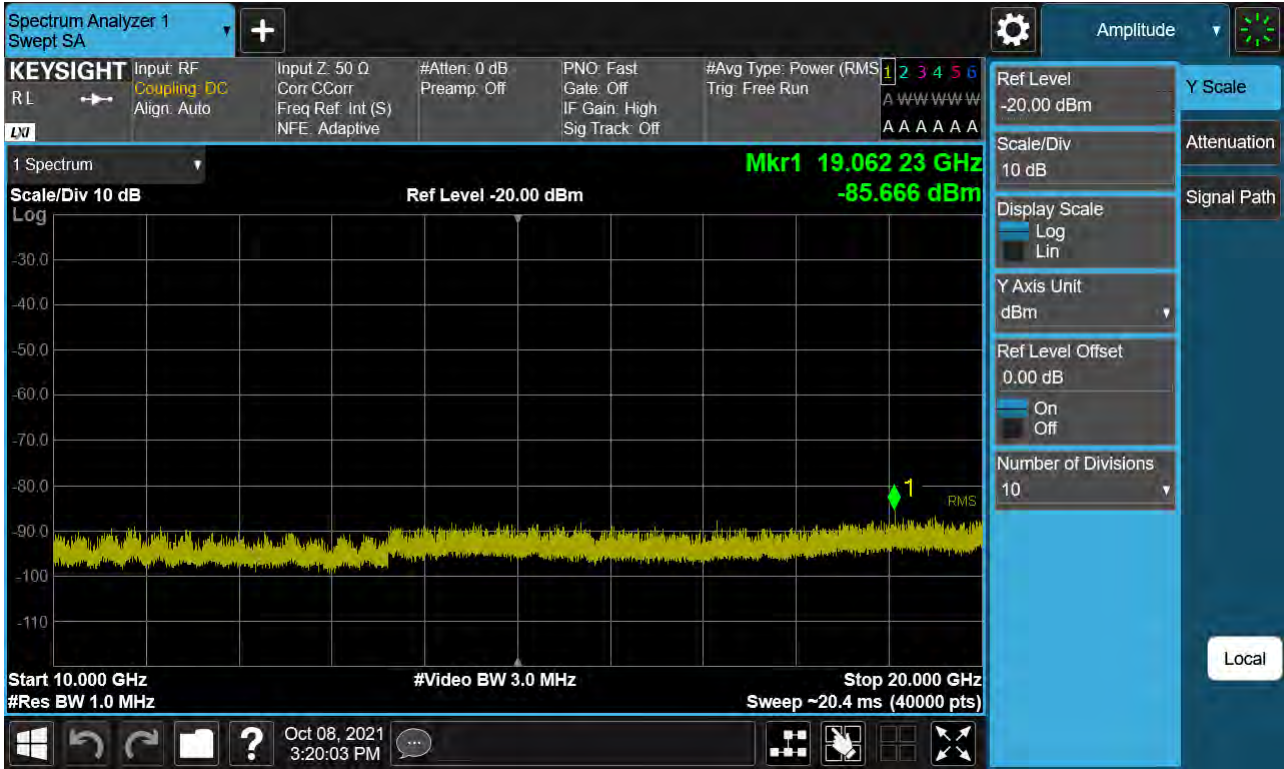


Sub6 n66. Conducted Spurious Plot\_1 (343500ch\_15 MHz\_BPSK\_RB 1\_1)

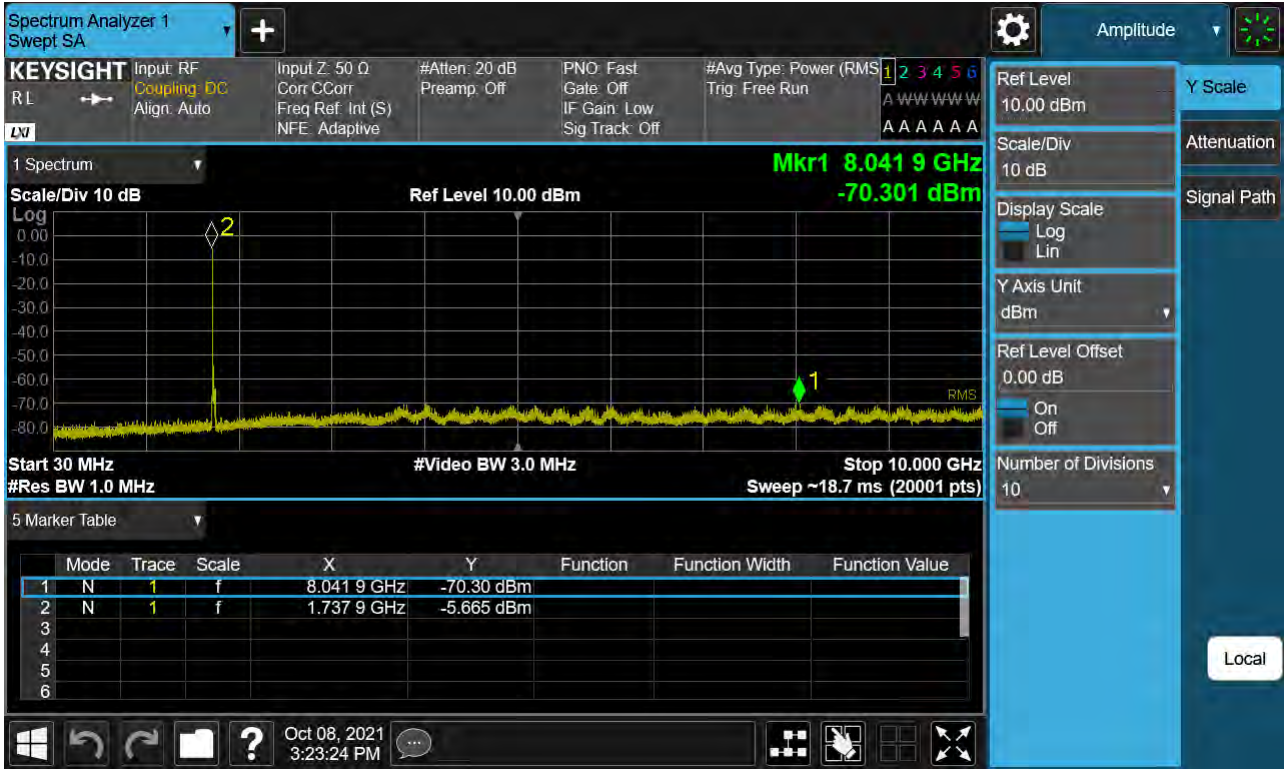




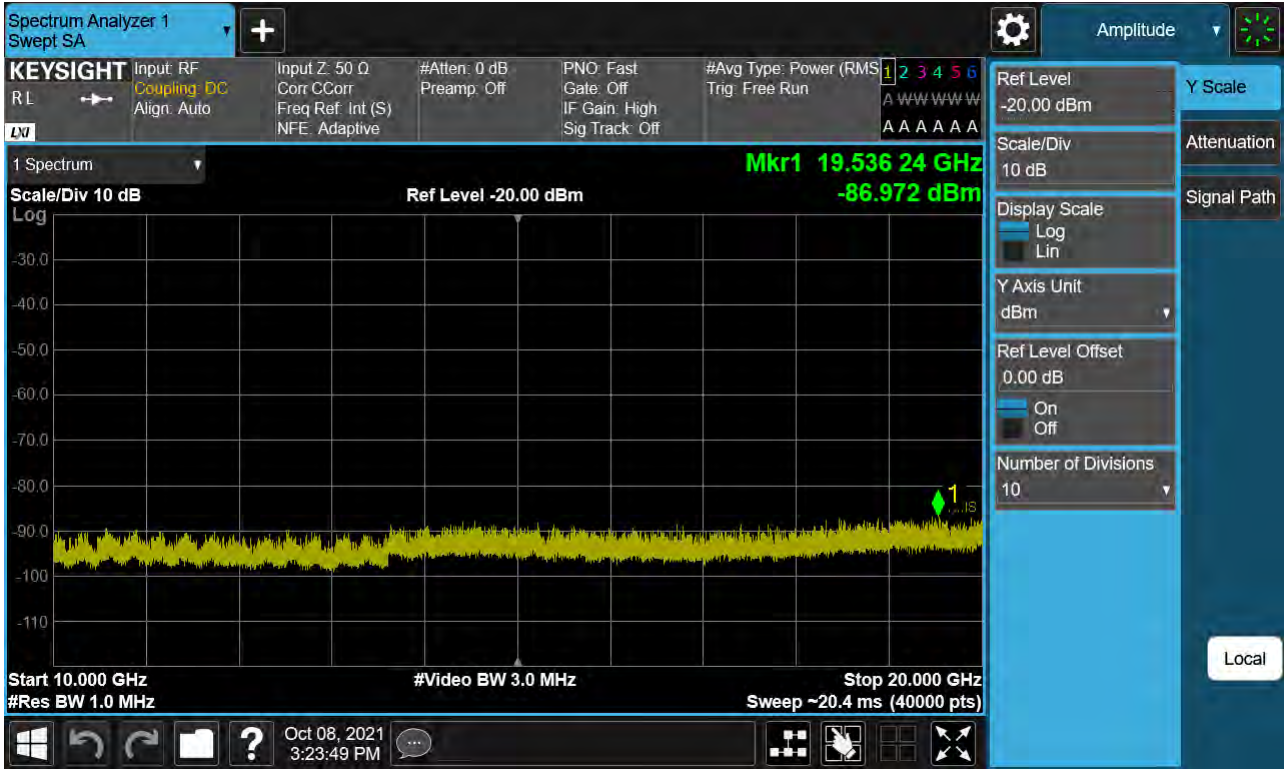
Sub6 n66. Conducted Spurious Plot\_2 (343500ch\_15 MHz\_BPSK\_RB 1\_1)



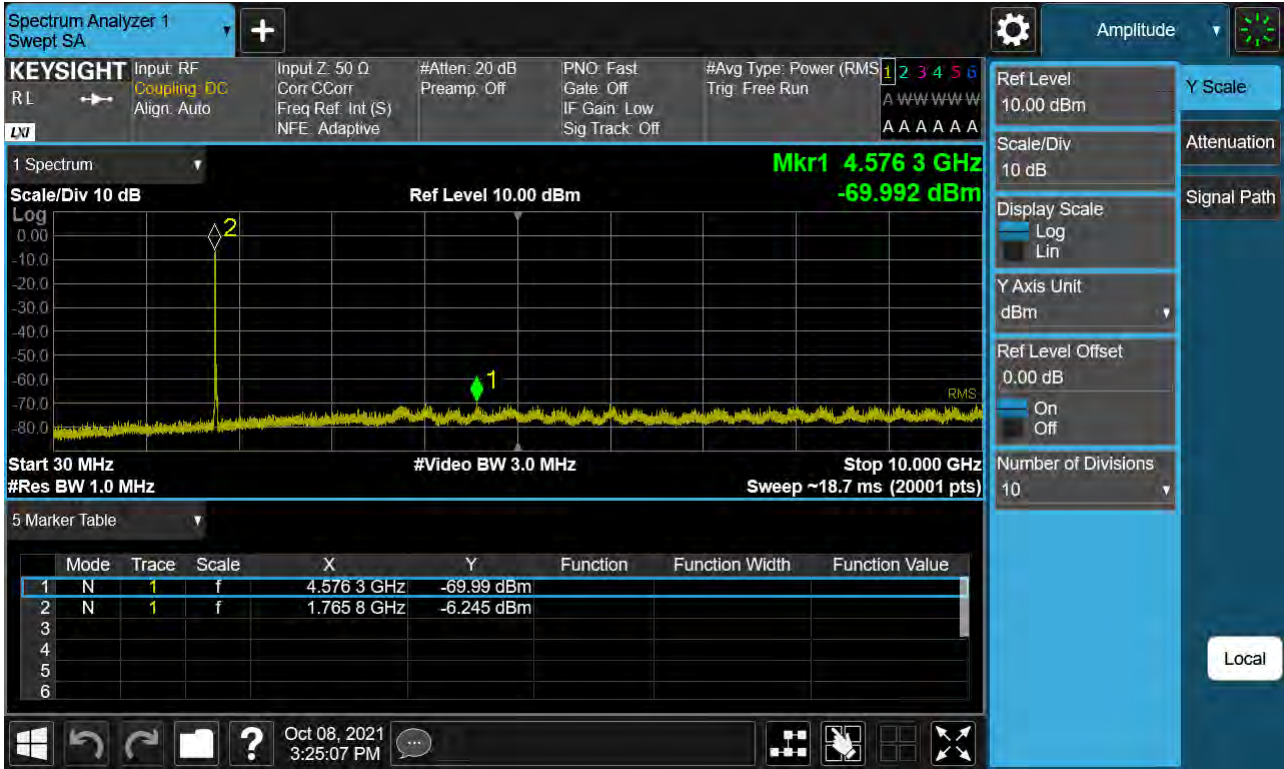
Sub6 n66. Conducted Spurious Plot\_1 (349000ch\_15 MHz\_BPSK\_RB 1\_1)



Sub6 n66. Conducted Spurious Plot\_2 (349000ch\_15 MHz\_BPSK\_RB 1\_1)

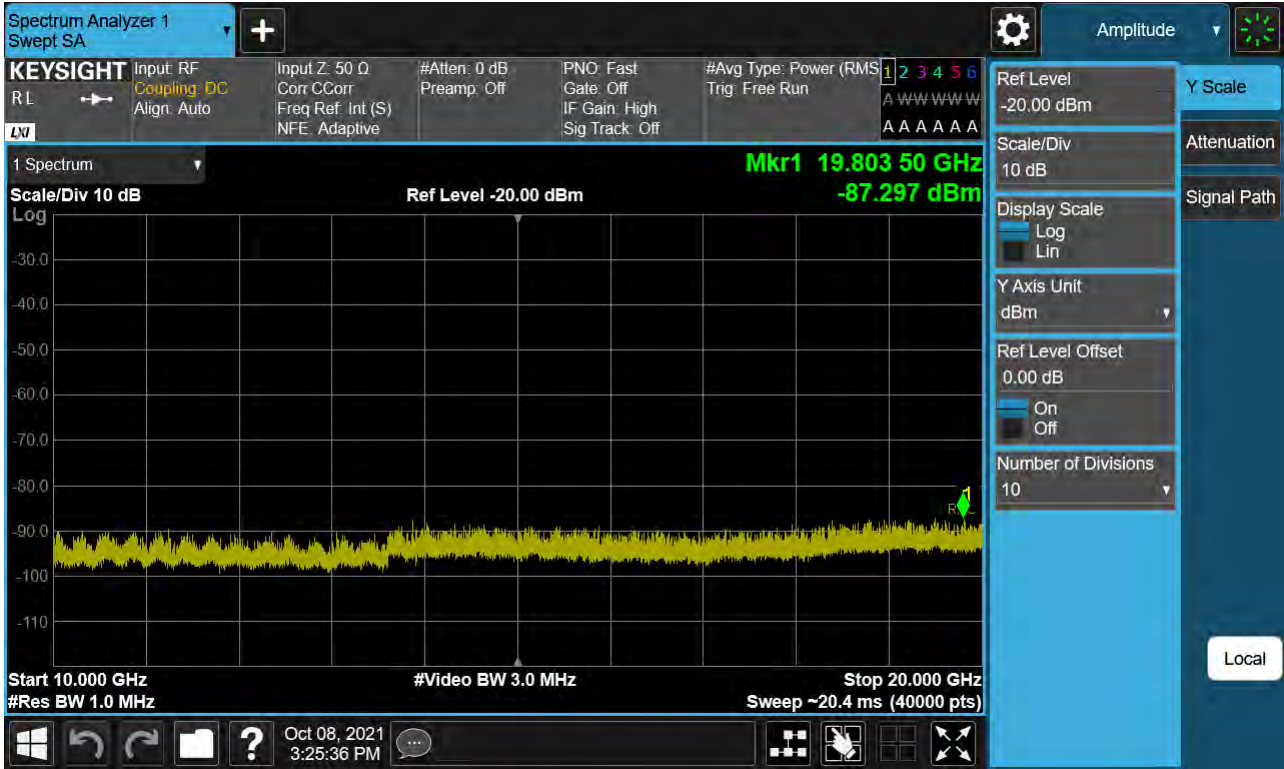


Sub6 n66. Conducted Spurious Plot\_1 (354500ch\_15 MHz\_BPSK\_RB 1\_1)

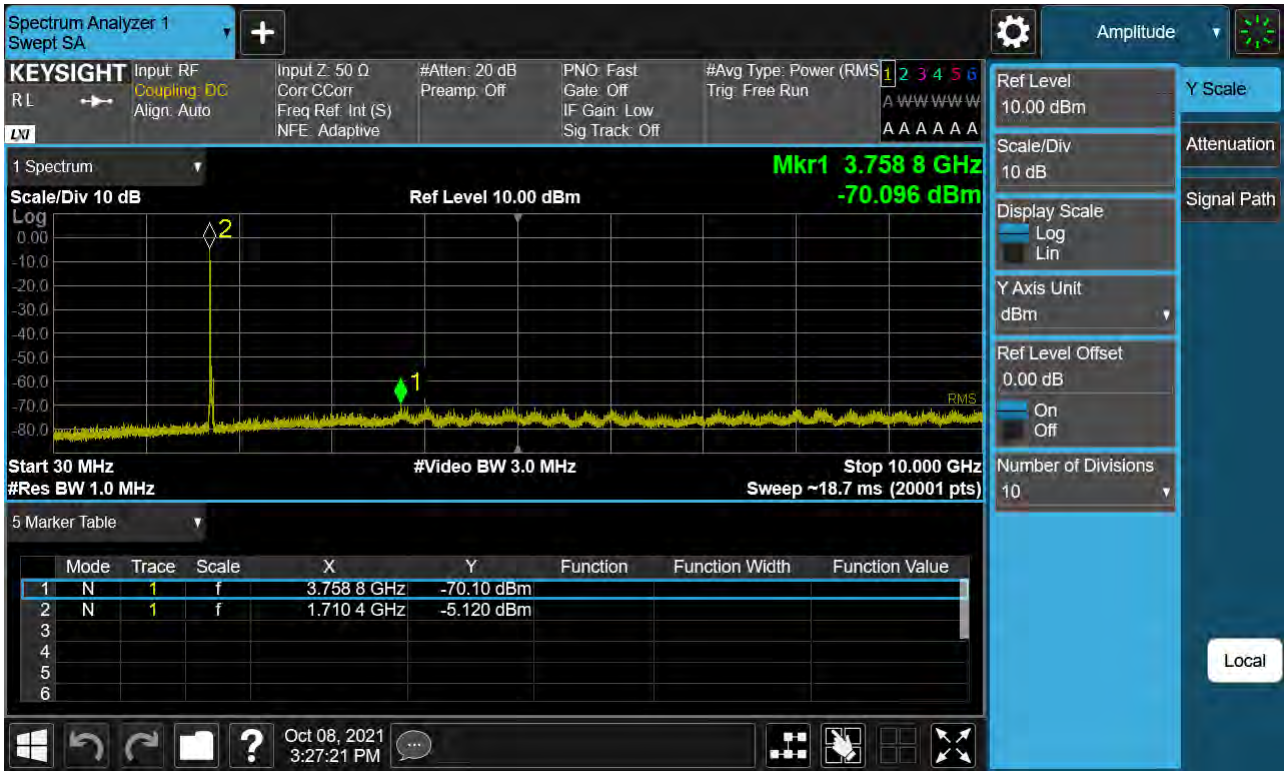




Sub6 n66. Conducted Spurious Plot\_2 (354500ch\_15 MHz\_BPSK\_RB 1\_1)

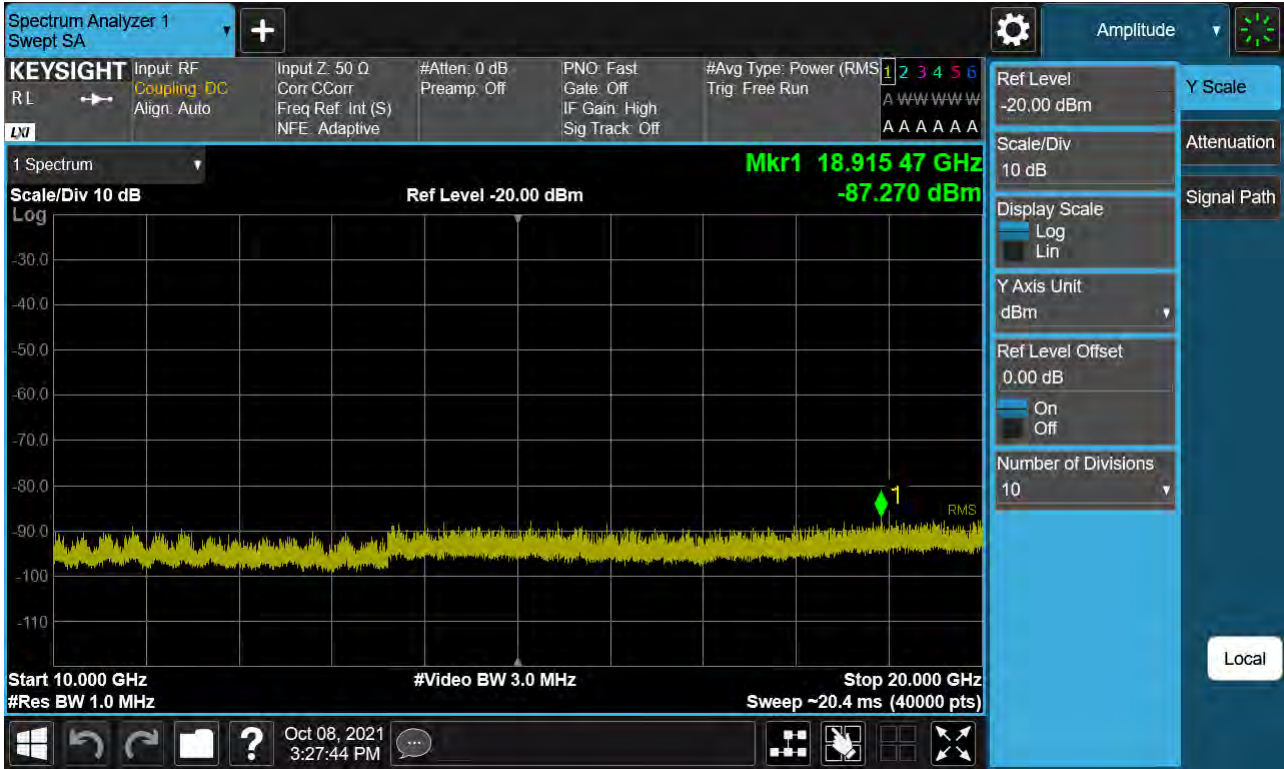


Sub6 n66. Conducted Spurious Plot\_1 (344000ch\_20 MHz\_BPSK\_ RB 1\_1)

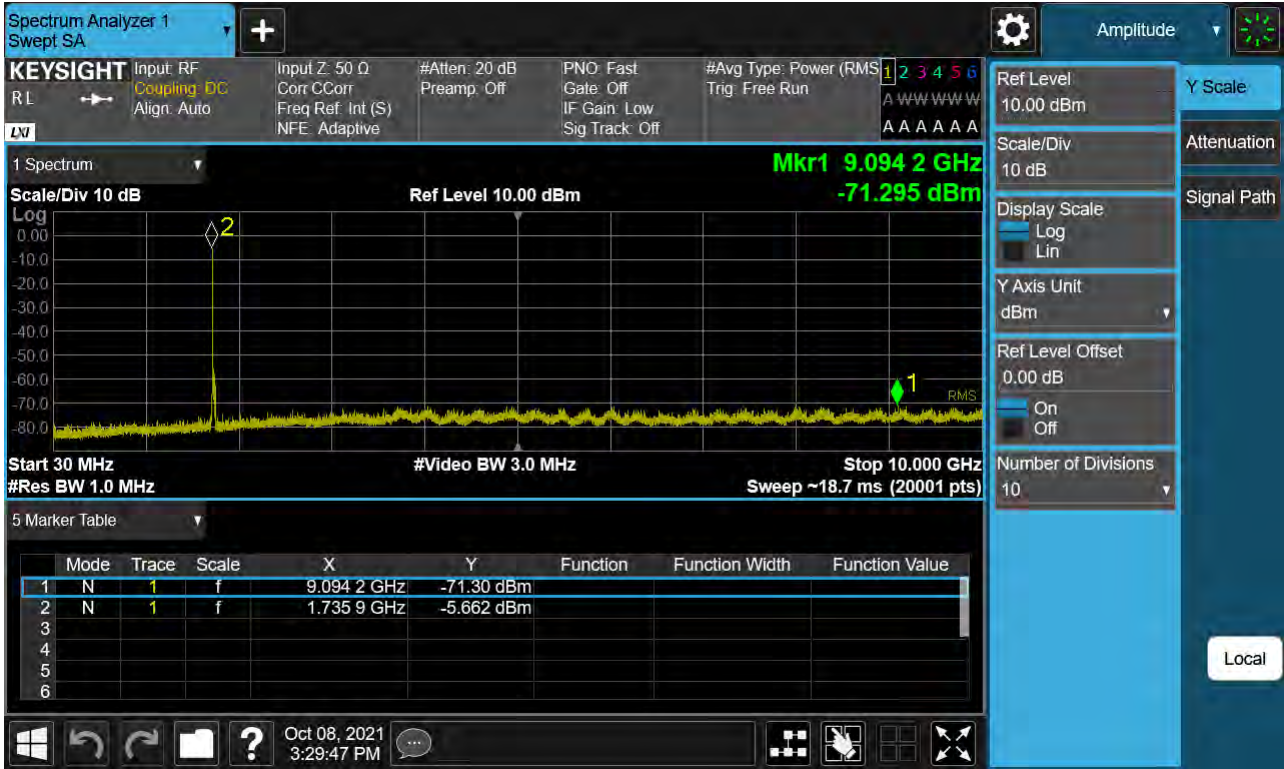




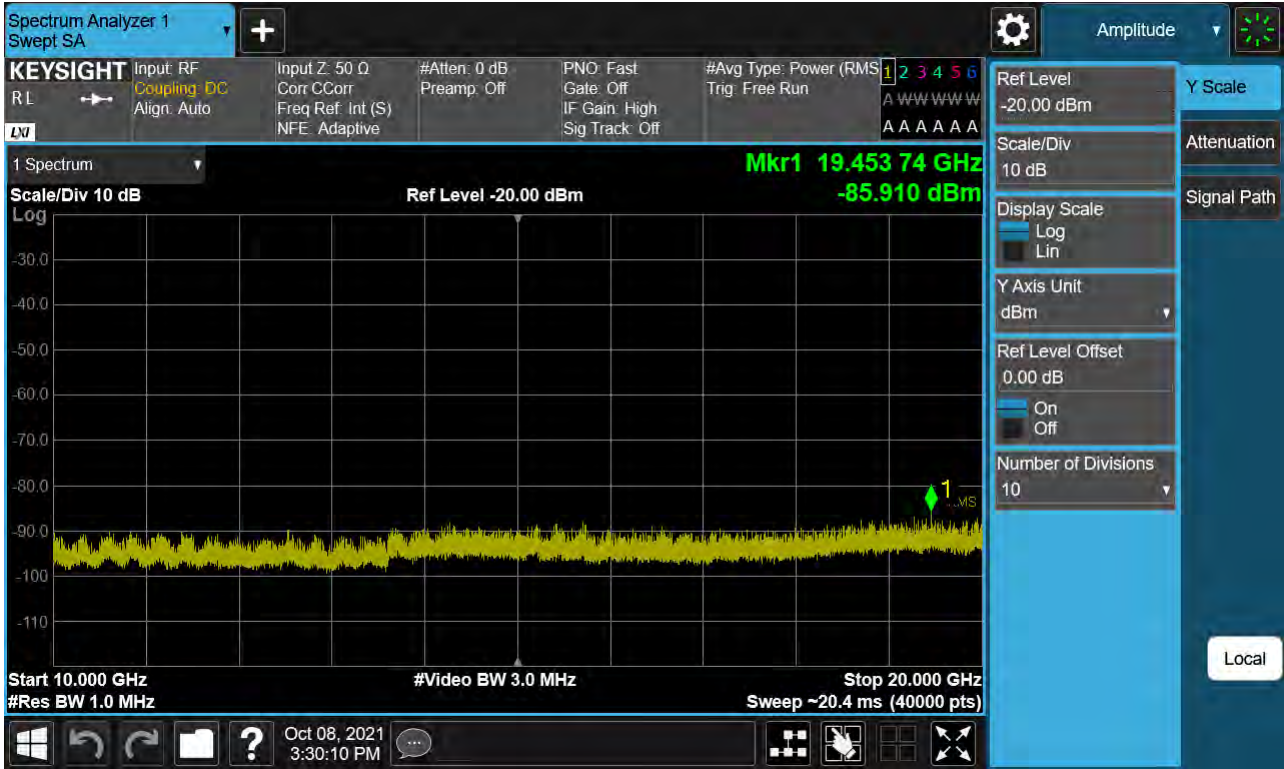
Sub6 n66. Conducted Spurious Plot\_2 (344000ch\_20 MHz\_BPSK\_RB 1\_1)



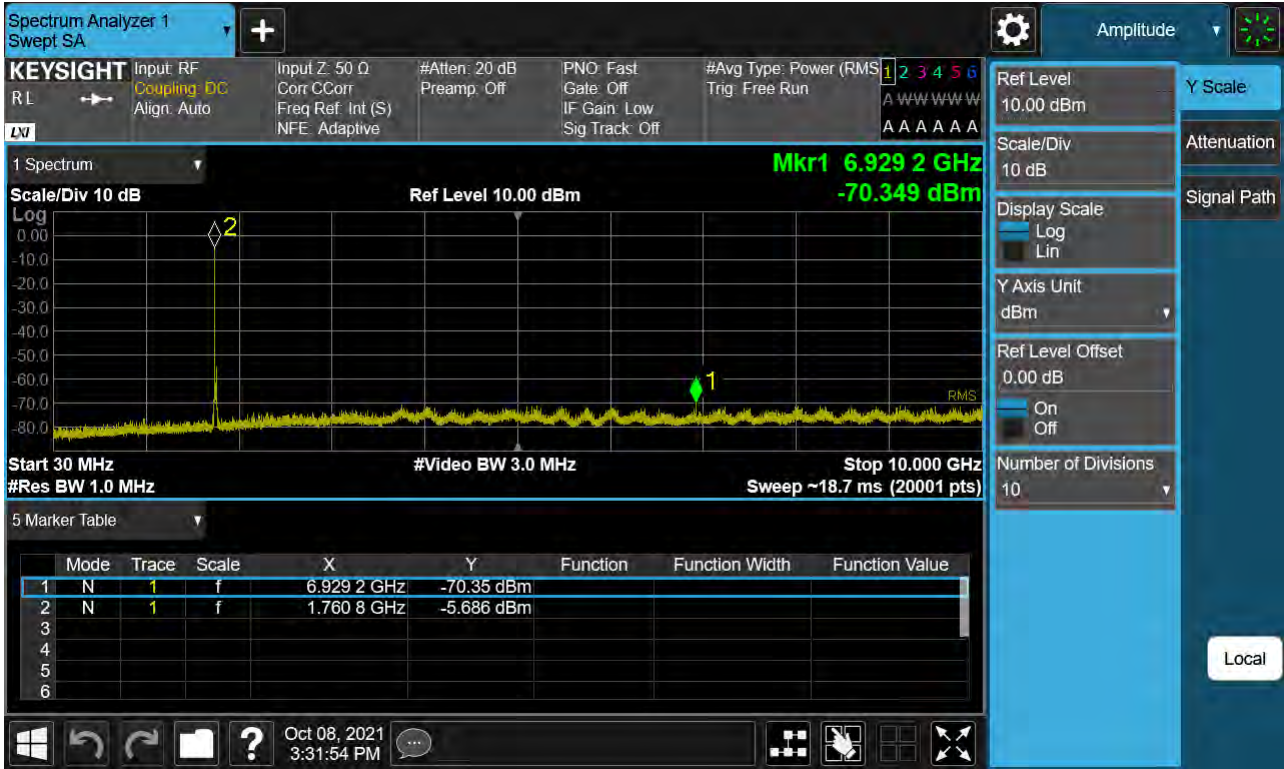
Sub6 n66. Conducted Spurious Plot\_1 (349000ch\_20 MHz\_BPSK\_ RB 1\_1)



Sub6 n66. Conducted Spurious Plot\_2 (349000ch\_20 MHz\_BPSK\_RB 1\_1)

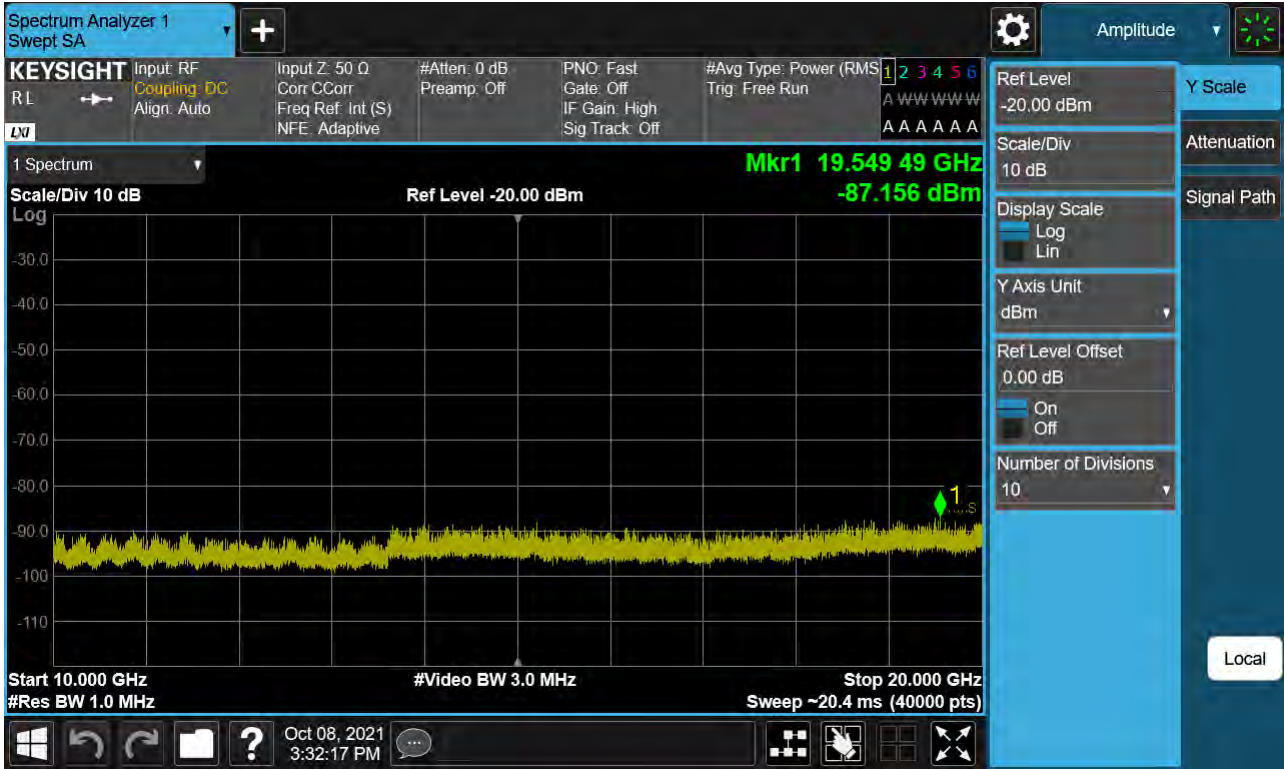


Sub6 n66. Conducted Spurious Plot\_1 (354000ch\_20 MHz\_BPSK\_ RB 1\_1)





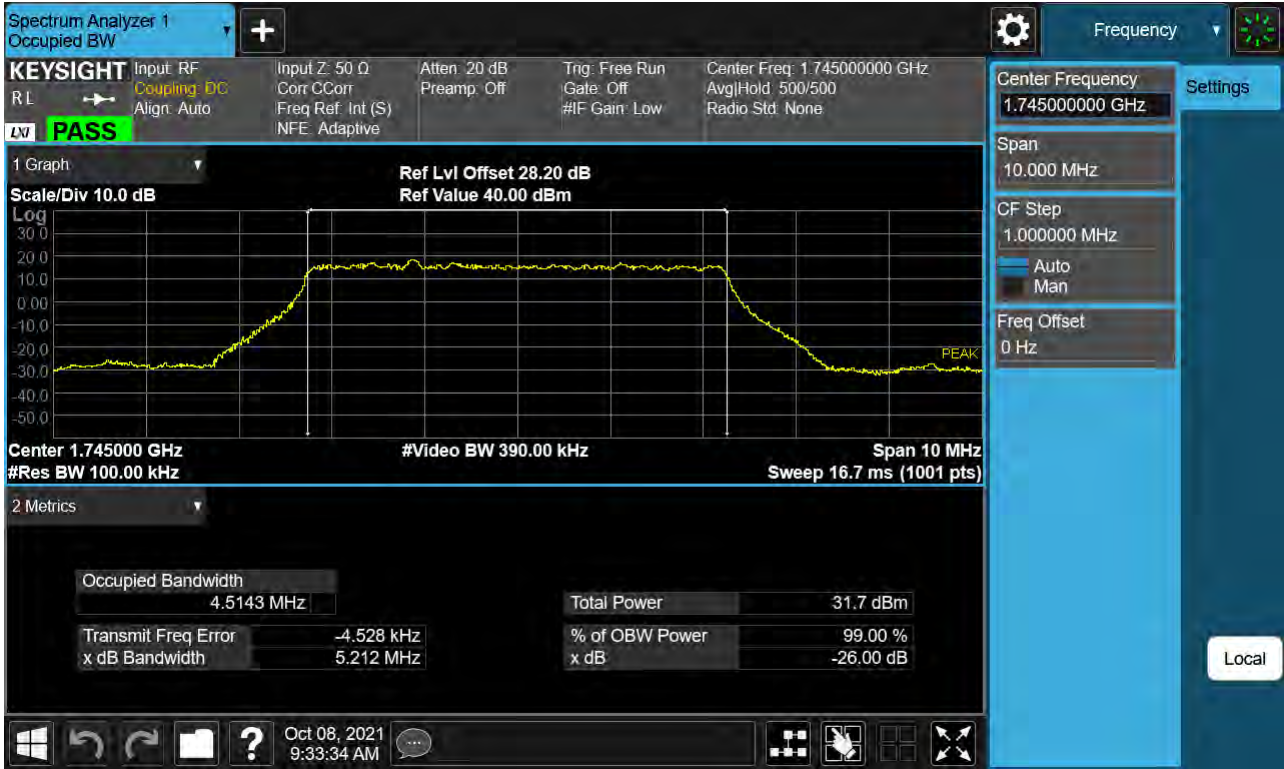
Sub6 n66. Conducted Spurious Plot\_2 (354000ch\_20 MHz\_BPSK\_RB 1\_1)



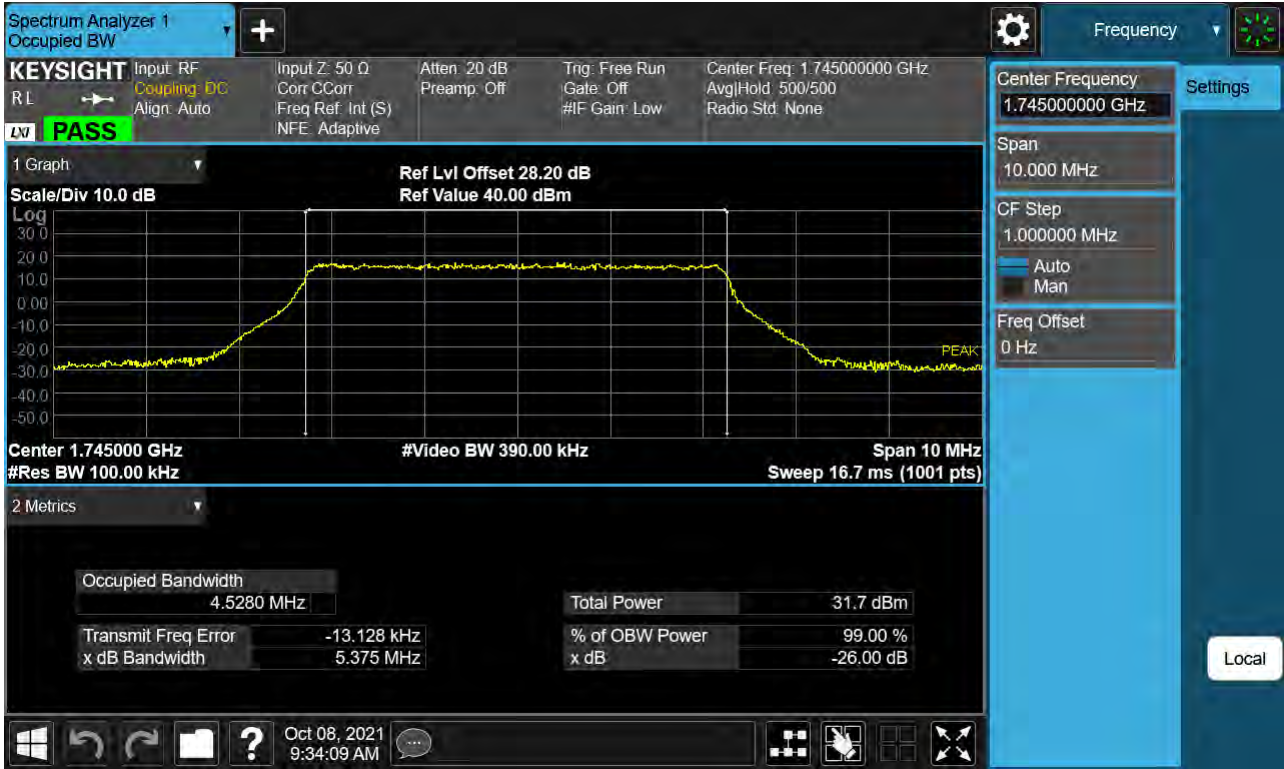
## 11. TEST PLOTS (Upper)



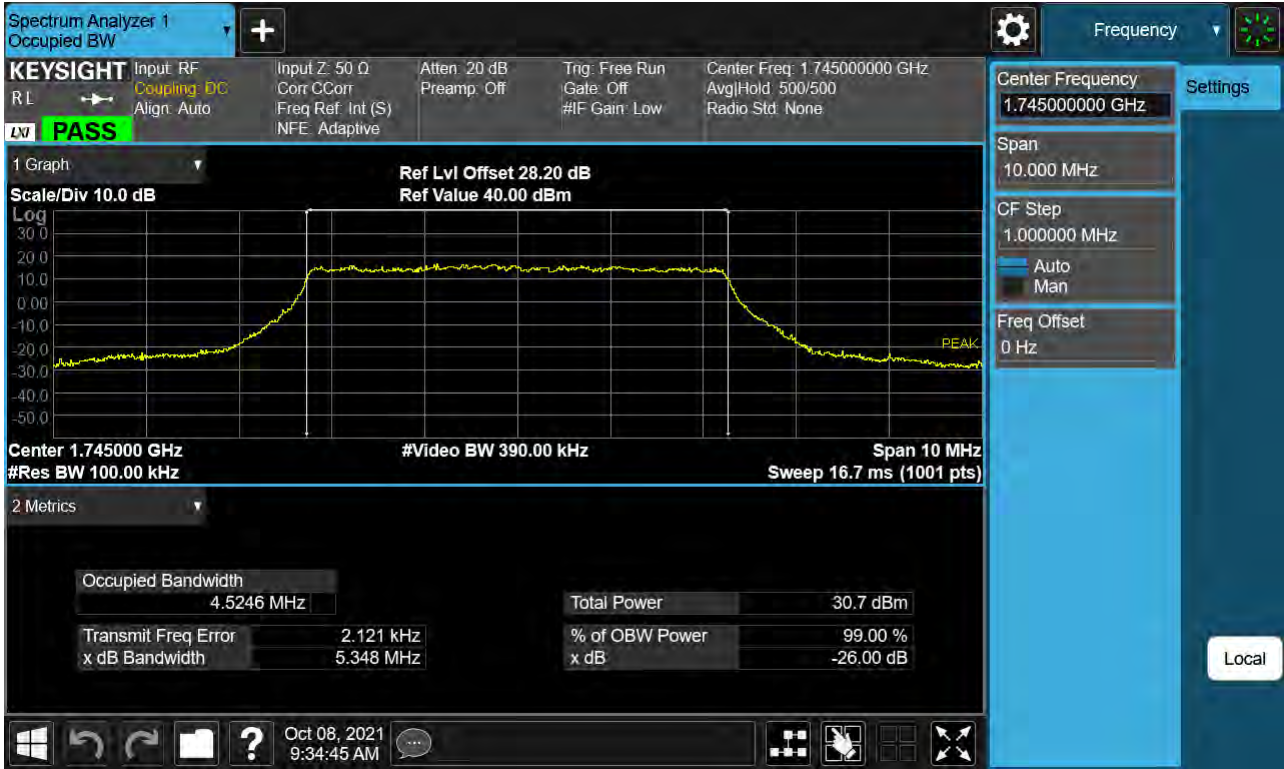
Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 BPSK Full RB)



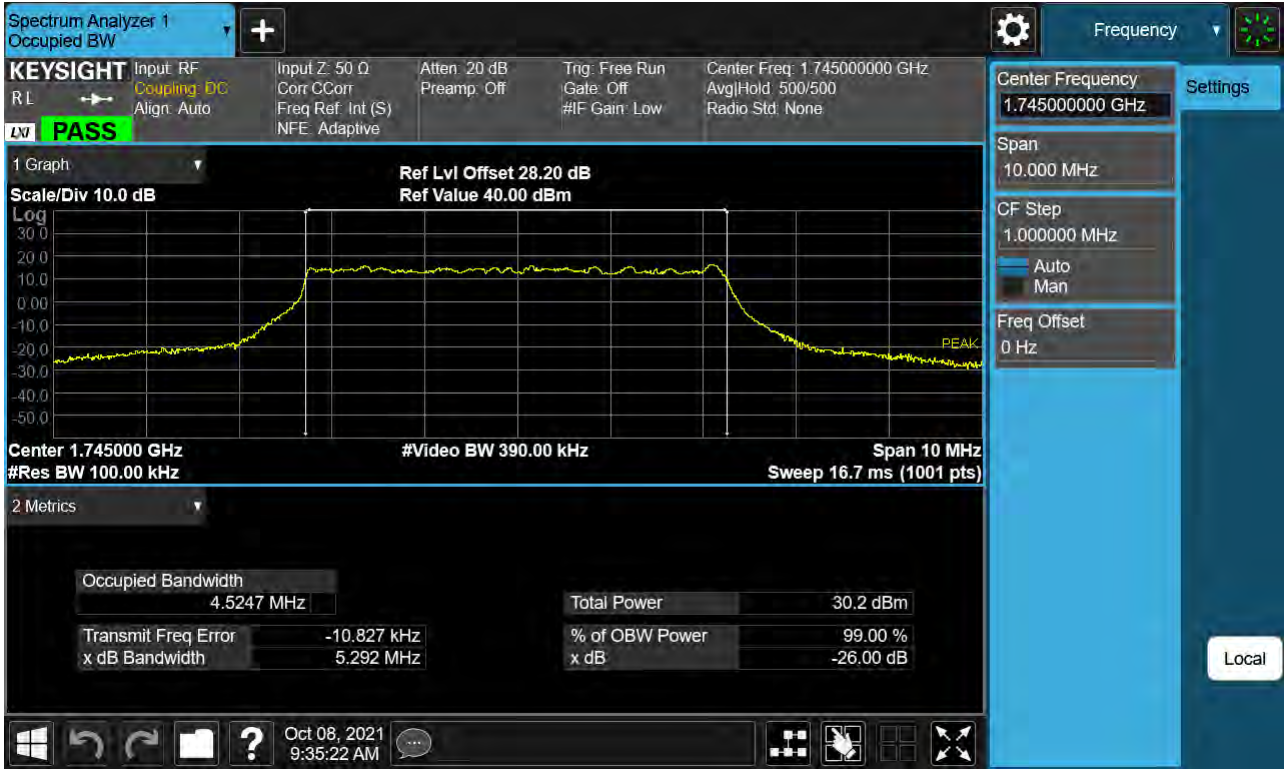
Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 QPSK Full RB)



Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 16QAM Full RB)

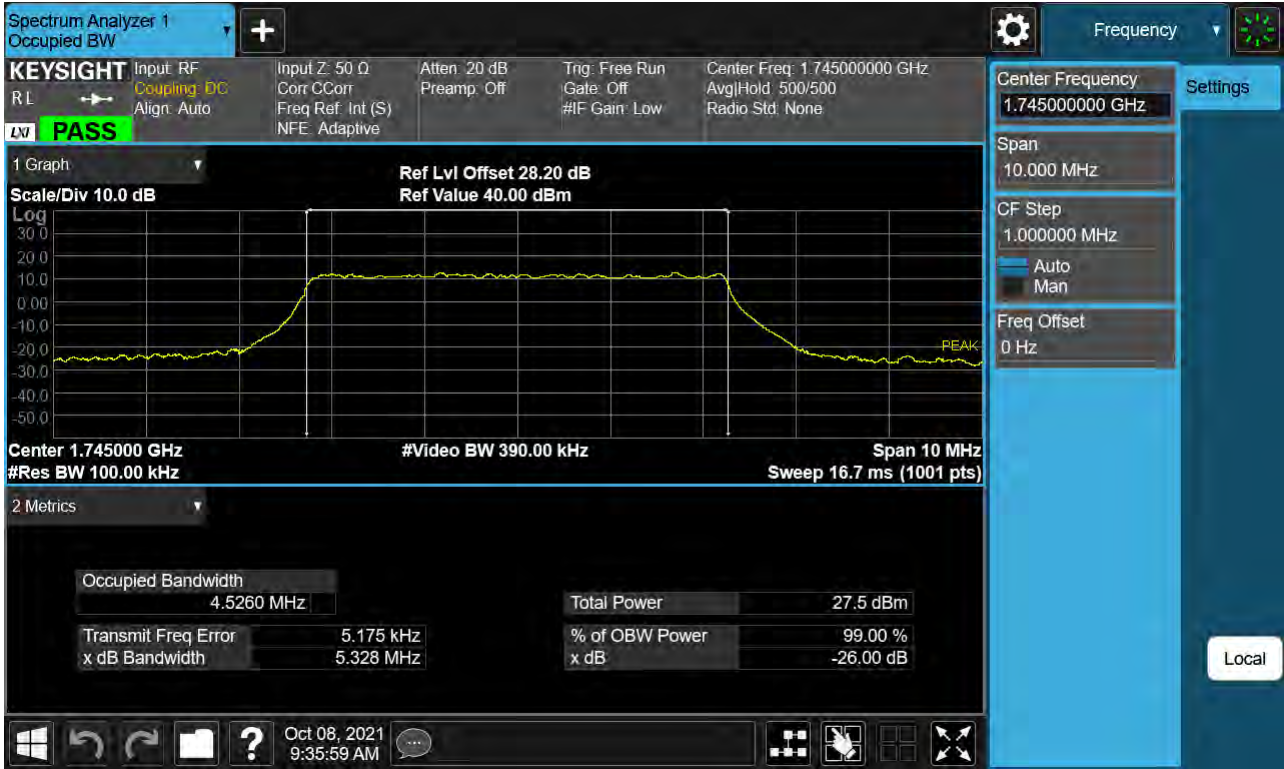


Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 64QAM Full RB)





Sub6 n66. Occupied Bandwidth Plot (5 M BW Ch.349000 256QAM Full RB)



Sub6 n66. Occupied Bandwidth Plot (10 M BW Ch.349000 BPSK Full RB)

