

TEST REPORT

FCC Sub6 n26(Part90) Test for TM15FNEUJL1
Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-RF-2502-FC092-R1

DATE OF ISSUE
April 8, 2025

Tested by
Beom Jin Cho



Technical Manager
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Accredited by KOLAS, Republic of KOREA

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TEST REPORT

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April 08, 2025

Applicant	LG Electronics Inc. 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
Product Name	Telematics
Model Name	TM15FNEUJL1
Date of Test	December 9, 2024 ~ February 24, 2025
FCC ID	BEJTM15FNEUJL1
Location of Test	☒ Permanent Testing Lab ☐ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)
FCC Classification	PCS Licensed Transmitter (PCB)
Test Standard Used	FCC Rule Part: § 90, § 22
Test Results	PASS

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	February 24, 2025	Initial Release
1	April 08, 2025	Revised the Product Name.

Notice

Content

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)

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

This test report provides test result(s) under the scope accredited by the Korea Laboratory Accreditation Scheme (KOLAS), which signed the ILAC-MRA.

(KOLAS (KS Q ISO/IEC 17025) Accreditation No. KT197)

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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics Inc.
Address:	128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
FCC ID:	BEJTM15FNEUJL1
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§ 90, § 22
EUT Type:	Telematics
Model(s):	TM15FNEUJL1
SCS(kHz):	15
Bandwidth(MHz):	5, 10, 15, 20
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:	816.5 MHz – 824.0 MHz (Sub6 n26 (5 MHz)) 819.0 MHz – 824.0 MHz (Sub6 n26 (10 MHz)) 821.5 MHz – 824.0 MHz (Sub6 n26 (15 MHz)) 824.0 MHz (Sub6 n26 (20 MHz))
Date(s) of Tests:	December 9, 2024 ~ February 24, 2025
Serial number:	Radiated : 410VIXV000304(NAD) Conducted : 410VIXV000305(NAD)
Antenna Information	Please refer to the Antenna Specification document.

1.1 MAXIMUM OUTPUT POWER

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted Output Power	
				Max. Power (W)	Max. Power (dBm)
Sub6 n26 (5)	816.5 – 824.0	4M51G7D	PI/2 BPSK	0.219	23.41
		4M50G7D	QPSK	0.218	23.39
		4M50W7D	16QAM	0.171	22.32
		4M50W7D	64QAM	0.124	20.92
		4M50W7D	256QAM	0.079	18.99
Sub6 n26 (10)	819.0 – 824.0	8M99G7D	PI/2 BPSK	0.210	23.23
		8M99G7D	QPSK	0.209	23.20
		8M99W7D	16QAM	0.168	22.25
		8M99W7D	64QAM	0.118	20.71
		8M98W7D	256QAM	0.072	18.58
Sub6 n26 (15)	821.5 – 824.0	13M5G7D	PI/2 BPSK	0.213	23.29
		13M5G7D	QPSK	0.217	23.37
		13M5W7D	16QAM	0.164	22.14
		13M5W7D	64QAM	0.117	20.68
		13M5W7D	256QAM	0.074	18.70
Sub6 n26 (20)	824.0	17M9G7D	PI/2 BPSK	0.207	23.15
		17M9G7D	QPSK	0.204	23.09
		17M9W7D	16QAM	0.163	22.11
		17M9W7D	64QAM	0.116	20.66
		17M9W7D	256QAM	0.072	18.59

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

Please refer to the [2G3G] Test Report.

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	- KDB 971168 D01 v03r01 – Section 5.2
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Radiated Power	- ANSI C63.26-2015 – Section 5.2.4.4 - KDB 971168 D01 v03r01 – Section 5.8
Radiated Spurious and Harmonic Emissions	- ANSI C63.26-2015 – Section 5.5.3 - KDB 971168 D01 v03r01 – Section 5.8

3.2 CONDUCTED OUTPUT POWER

Test Overview

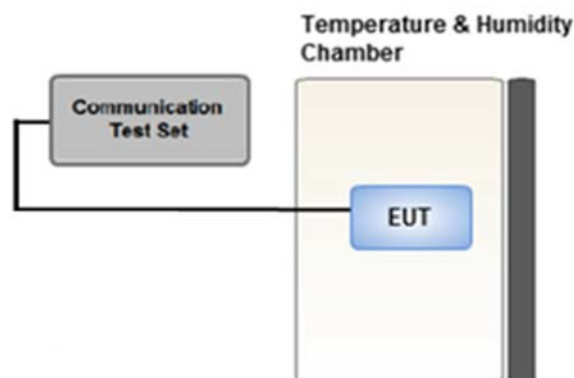
According to ANSI C63.26-2015 Section 5.2.1 when measuring the maximum RF output power from such devices, control over the EUT must be provided either through special test software (provided by manufacturer specifically for compliance testing, but not accessible by an end user) or through use of a base station emulator, communications test set, call box, or similar instrumentation that is capable of establishing a communications link with the EUT to enable control over variable parameters (e.g., output power, OBW, etc.).

In some cases, these instruments also include basic digital spectrum analyzer and/or power meter capabilities that can be utilized to measure the RF output power if the specified detectors and requirements can be realized and the measurement functions have been calibrated.

Test Procedure

1. The RF port of the EUT was connected to the Communication Tester via an RF cable.
2. Conducted average power was measured using a calibrated Radio Communication Tester.

Test setup



3.3 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.

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.

3.4 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method.

Test Settings

1. RBW = 100 kHz 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;

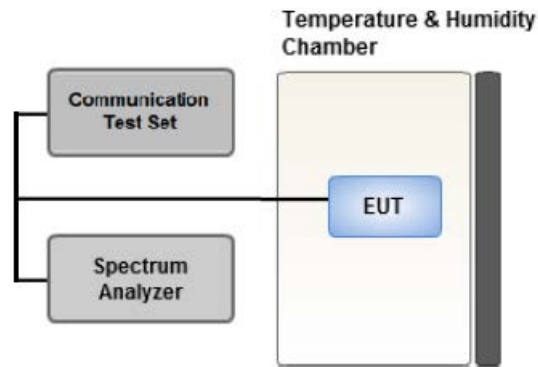
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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.

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

3.5 PEAK- TO- AVERAGE RATIO



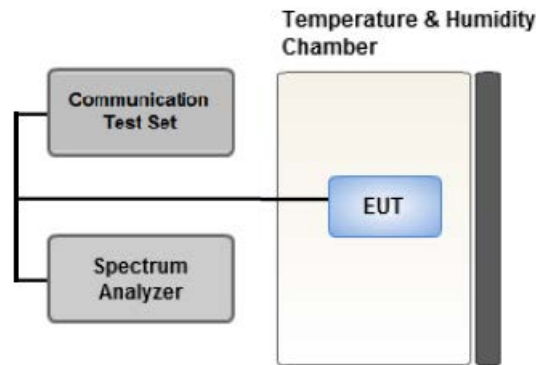
Test setup

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 %.

3.6 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.

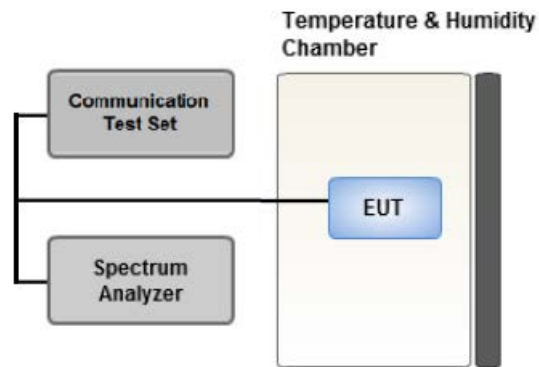
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5 % of the 99 % occupied bandwidth observed in Step 7

3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

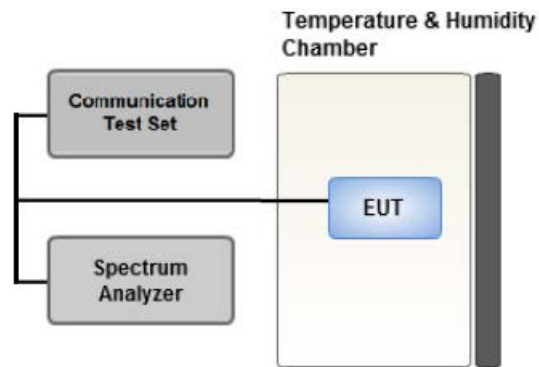
Test Overview

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 = Peak
4. Trace Mode = Max Hold
5. Sweep time = auto
6. Number of points in sweep $\geq$ 2 x Span / RBW

3.8 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

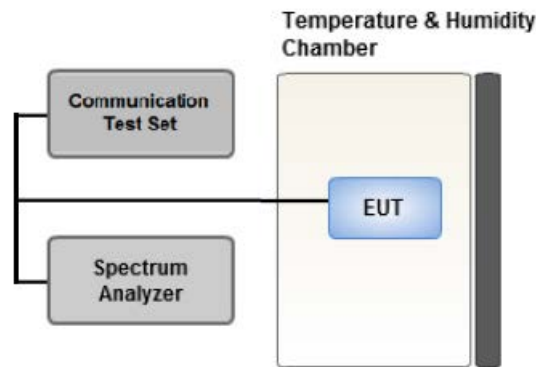
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block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

Where $\text{Margin} < 1$ dB the emission level is either corrected by $10 \log(1 \text{ MHz} / \text{RB})$ or the emission is integrated over a 1 MHz bandwidth to determine the final result. When using the integration method the integration window is either centered on the emission or, for emissions at the band edge, centered by an offset of 500 kHz from the block edge so that the integration window is the 1 MHz adjacent to the block edge.

3.9 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.

3.10 WORST CASE(RADIATED TEST)

- 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 : SA Only
- JIG was used to test the EUT. (EUT + JIG)
- All simultaneous transmission scenarios of operation were investigated, and the test results showed no additional significant emissions relative to the least restrictive limit were observed.
Therefore, only the worst case(stand-alone) results were reported.
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
Please refer to the table below.
- In the case of radiated spurious emissions, all bandwidth of operation was investigated and the worst case bandwidth results are reported. (Worst case : 5 MHz, 15MHz)

[Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	See Section 8.1		Z
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	See Section 8.2		Z

3.11 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 : SA Only
- JIG was used to test the EUT. (EUT + JIG)
- 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	High	Full RB	0
	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	10, 15, 20	Mid	Full RB	0
Channel Edge	PI/2 BPSK,	5	Low	1	0
			High	1	24
		10	Mid	1	0
				1	51
		15	Mid	1	0
				1	78
		20	Mid	1	0
				1	105
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK,	5	Low, High	Full RB	0
			Mid	Full RB	0
		10, 15, 20	Low, High	1	1
			Mid	1	1

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacture	Serial No.	Due to Calibration	Calibration Interval
RF Switching System	Switch box(1 G HPF+LNA)	HCT CO., LTD.,	F2L2	12/12/2025	Annual
RF Switching System	Switch box(3 G HPF+LNA)	HCT CO., LTD.,	F2L3	12/12/2025	Annual
RF Switching System	Switch box(LNA)	HCT CO., LTD.,	F2L5	12/12/2025	Annual
RF Switching System	Switch box(6 G HPF+LNA)	HCT CO., LTD.,	F2L14	12/12/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/07/2025	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/17/2025	Annual
DC Power Supply	E3632A	Agilent	MY40010147	08/06/2025	Annual
Dipole Antenna	UHAP	Schwarzbeck	01274	03/10/2026	Biennial
Dipole Antenna	UHAP	Schwarzbeck	01288	08/07/2026	Biennial
Chamber	SU-642	ESPEC	93022487	06/27/2025	Annual
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	03197	11/28/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	03201	11/28/2025	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/19/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	ROHDE & SCHWARZ	101733	09/19/2025	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/28/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	08/19/2026	Biennial
Radio Communication Test Station	MT8000A	Anritsu Corp.	6272613402	08/28/2025	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/26/2025	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/17/2025	Annual
Signal & Spectrum Analyzer (2 Hz~67 GHz)	FSW67	REOHDE & SCHWARZ	101736	05/23/2025	Annual
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 ($\pm$ kHz)
Occupied Bandwidth	95 (Confidence level about 95 %, $k=2$)
Frequency stability	28 (Confidence level about 95 %, $k=2$)

Parameter	Expanded Uncertainty ($\pm$ dB)
Block Edge	0.70 (Confidence level about 95 %, $k=2$)
Conducted Spurious Emissions	1.18 (Confidence level about 95 %, $k=2$)
Peak- to- Average Ratio	0.68 (Confidence level about 95 %, $k=2$)
Radiated Power	4.74 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, $k=2$)

6. SUMMARY OF TEST RESULTS

Note. The decision rule applies ‘simple acceptance’

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Channel Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 90.691	< 50 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions within 37.5 kHz of Block Edge	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 22.917(a)	< 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§ 2.1046 § 90.635	< 100 Watts	PASS
Frequency stability / variation of ambient temperature	§ 2.1055, § 90.213 § 22.355	< 2.5 ppm	PASS

Note:

1. Conducted test were tested using 5G Wireless Tester.

6.2 Test Condition: Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Effective Radiated Power	§ 22.913(a)(5)	< 7 Watts max. ERP (Only 15,20 MHz B.W & Straddle C.H)	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 90.691 § 22.917(a)	< 43 + 10log ₁₀ (P[Watts]) for all out-of band emissions	PASS

Note:

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

6.3. Data Referencing

Rule Part	Test item	Data Referencing	Comments
§2.1049	Occupied Bandwidth	Y	-
§2.1051, §90.691	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	Y	-
§2.1051, §22.917(a)	Channel Edge / Spurious and Harmonic Emissions at Antenna Terminal.	Y	-
§2.1055, §90.213 §22.355	Frequency stability / variation of ambient temperature	Y	-
§22.913(a)(5)	Effective Radiated Power Equivalent Isotropic Radiated Power	Y	Spot-check
§2.1053, §90.691 §22.917(a)	Radiated Spurious and Harmonic Emissions	Y	Spot-check
§2.1046	Conducted Output Power	Y	-

Spot-Check Result

1. Data was leveraged from model TM15FNEUJL0 for the certification of TM15FNEUJL1.
2. Please refer to the [FCC Evaluation] Report

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
20175	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)

QPSK Modulation

Emission Designator = 4M48G7D
LTE BW = 4.48 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D
LTE BW = 4.48 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 CONDUCTED OUTPUT POWER

Band Width (MHz)	Modulation	RB Size	RB Offset	Max. output power						Limit (W)
				816.5 MHz		821.5 MHz		824 MHz		
				dBm	W	dBm	W	dBm	W	
5	BPSK	1	1	23.41	0.219	23.35	0.216	23.33	0.215	100
		1	13	23.35	0.216	23.26	0.212	23.30	0.214	100
		1	23	23.30	0.214	23.19	0.208	23.29	0.213	100
		12	0	22.75	0.188	22.71	0.187	22.65	0.184	100
		12	7	23.11	0.205	23.05	0.202	22.89	0.195	100
		12	13	22.73	0.187	22.81	0.191	22.74	0.188	100
		25	0	22.81	0.191	22.69	0.186	22.70	0.186	100
	QPSK	1	1	23.39	0.218	23.31	0.214	23.21	0.209	100
		1	13	23.04	0.201	23.25	0.211	23.19	0.208	100
		1	23	23.08	0.203	23.29	0.213	23.15	0.207	100
		12	0	22.44	0.175	22.33	0.171	22.28	0.169	100
		12	7	23.25	0.211	23.11	0.205	23.06	0.202	100
		12	13	22.28	0.169	22.14	0.164	22.11	0.163	100
		25	0	22.35	0.172	22.32	0.171	22.29	0.169	100
	16QAM	1	1	22.32	0.171	22.30	0.170	22.15	0.164	100
	64QAM	1	1	20.92	0.124	20.89	0.123	20.79	0.120	100
	256QAM	1	1	18.99	0.079	18.76	0.075	18.80	0.076	100

Band Width (MHz)	Modulation	RB Size	RB Offset	Max. output power				Limit (W)
				819.0 MHz		824.0 MHz		
				dBm	W	dBm	W	
10	BPSK	1	1	23.11	0.205	23.05	0.202	100
		1	26	23.19	0.208	23.00	0.200	100
		1	50	23.23	0.210	22.98	0.199	100
		25	0	22.66	0.185	22.59	0.182	100
		25	14	23.17	0.207	23.04	0.201	100
		25	27	22.57	0.181	22.50	0.178	100
		50	0	22.66	0.185	22.53	0.179	100
	QPSK	1	1	23.12	0.205	23.06	0.202	100
		1	26	23.16	0.207	23.10	0.204	100
		1	50	23.19	0.208	23.11	0.205	100
		25	0	22.12	0.163	22.02	0.159	100
		25	14	23.20	0.209	23.07	0.203	100
		25	27	22.11	0.163	22.05	0.160	100
		50	0	22.19	0.166	22.10	0.162	100
	16QAM	1	1	22.25	0.168	22.16	0.164	100
	64QAM	1	1	20.70	0.117	20.71	0.118	100
	256QAM	1	1	18.58	0.072	18.44	0.070	100

Band Width (MHz)	Modulation	RB Size	RB Offset	Max. output power				Limit (W)
				821.5 MHz		824.0 MHz		
				dBm	W	dBm	W	
15	BPSK	1	1	23.15	0.207	23.14	0.206	100
		1	40	23.28	0.213	23.05	0.202	100
		1	77	23.29	0.213	23.11	0.205	100
		36	0	22.75	0.188	22.73	0.187	100
		36	22	23.26	0.212	23.01	0.200	100
		36	43	22.84	0.192	22.68	0.185	100
		75	0	22.80	0.191	22.64	0.184	100
	QPSK	1	1	23.15	0.207	22.99	0.199	100
		1	40	23.18	0.208	23.00	0.200	100
		1	77	23.37	0.217	23.15	0.207	100
		36	0	22.28	0.169	22.31	0.170	100
		36	22	23.27	0.212	23.15	0.207	100
		36	43	22.38	0.173	22.40	0.174	100
		75	0	22.33	0.171	22.19	0.166	100
	16QAM	1	1	22.14	0.164	22.03	0.160	100
	64QAM	1	1	20.68	0.117	20.59	0.115	100
	256QAM	1	1	18.70	0.074	18.65	0.073	100

Band Width (MHz)	Modulation	RB Size	RB Offset	Max. output power		Limit (W)
				824.0 MHz		
				dBm	W	
20	BPSK	1	1	23.10	0.204	100
		1	53	23.15	0.207	100
		1	104	23.06	0.202	100
		50	0	22.77	0.189	100
		50	28	23.05	0.202	100
		50	56	22.95	0.197	100
		100	0	22.90	0.195	100
	QPSK	1	1	23.05	0.202	100
		1	53	23.09	0.204	100
		1	104	22.98	0.199	100
		50	0	22.65	0.184	100
		50	28	23.01	0.200	100
		50	56	22.84	0.192	100
		100	0	22.65	0.184	100
	16QAM	1	1	22.11	0.163	100
	64QAM	1	1	20.66	0.116	100
	256QAM	1	1	18.59	0.072	100

8.2 EFFECTIVE RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBd)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
816.5	Sub6 n26 5 MHz [15 kHz]	PI/2 BPSK	-28.06	35.14	-10.05	1.44	H	< 7.00	0.232	23.65	1	12
		QPSK	-28.11	35.09	-10.05	1.44	H		0.229	23.60		
		16-QAM	-29.08	34.12	-10.05	1.44	H		0.183	22.63		
		64-QAM	-30.56	32.64	-10.05	1.44	H		0.130	21.15		
		256-QAM	-32.63	30.57	-10.05	1.44	H		0.081	19.08		
821.5		PI/2 BPSK	-28.00	35.10	-9.95	1.44	H		0.235	23.71	1	1
		QPSK	-28.05	35.05	-9.95	1.44	H		0.232	23.66		
		16-QAM	-29.04	34.06	-9.95	1.44	H		0.185	22.67		
		64-QAM	-30.49	32.61	-9.95	1.44	H		0.132	21.22		
		256-QAM	-32.36	30.74	-9.95	1.44	H		0.086	19.35		
824.0		PI/2 BPSK	-28.29	34.71	-9.95	1.44	H		0.215	23.32	1	12
		QPSK	-28.31	34.69	-9.95	1.44	H		0.214	23.30		
		16-QAM	-29.38	33.62	-9.95	1.44	H		0.167	22.23		
		64-QAM	-30.85	32.15	-9.95	1.44	H		0.119	20.76		
		256-QAM	-32.89	30.11	-9.95	1.44	H		0.075	18.72		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBd)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
819.0	Sub6 n26 10 MHz [15 kHz]	PI/2 BPSK	-28.00	35.16	-10.05	1.44	H	< 7.00	0.233	23.67	1	26
		QPSK	-28.07	35.09	-10.05	1.44	H		0.229	23.60		
		16-QAM	-28.96	34.20	-10.05	1.44	H		0.187	22.71		
		64-QAM	-30.50	32.66	-10.05	1.44	H		0.131	21.17		
		256-QAM	-32.41	30.75	-10.05	1.44	H		0.084	19.26		
824.0		PI/2 BPSK	-28.13	34.87	-9.95	1.44	H		0.223	23.48	1	1
		QPSK	-28.18	34.82	-9.95	1.44	H		0.220	23.43		
		16-QAM	-29.17	33.83	-9.95	1.44	H		0.176	22.44		
		64-QAM	-30.65	32.35	-9.95	1.44	H		0.125	20.96		
		256-QAM	-32.64	30.36	-9.95	1.44	H		0.079	18.97		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBd)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
821.5	Sub6 n26 15 MHz [15 kHz]	PI/2 BPSK	-28.19	34.91	-9.95	1.44	H	< 7.00	0.225	23.52	1	39
		QPSK	-28.24	34.86	-9.95	1.44	H		0.222	23.47		
		16-QAM	-29.30	33.80	-9.95	1.44	H		0.174	22.41		
		64-QAM	-30.74	32.36	-9.95	1.44	H		0.125	20.97		
		256-QAM	-32.69	30.41	-9.95	1.44	H		0.080	19.02		
824.0		PI/2 BPSK	-27.63	35.37	-9.95	1.44	H		0.250	23.98	1	1
		QPSK	-27.69	35.31	-9.95	1.44	H		0.247	23.92		
		16-QAM	-28.77	34.23	-9.95	1.44	H		0.192	22.84		
		64-QAM	-30.26	32.74	-9.95	1.44	H		0.137	21.35		
		256-QAM	-32.24	30.76	-9.95	1.44	H		0.087	19.37		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBd)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
824.0	Sub6 n26 20 MHz [15 kHz]	PI/2 BPSK	-28.57	34.43	-9.95	1.44	H	< 7.00	0.201	23.04	1	1
		QPSK	-28.58	34.42	-9.95	1.44	H		0.201	23.03		
		16-QAM	-29.67	33.33	-9.95	1.44	H		0.156	21.94		
		64-QAM	-31.03	31.97	-9.95	1.44	H		0.114	20.58		
		256-QAM	-33.03	29.97	-9.95	1.44	H		0.072	18.58		

8.3 RADIATED SPURIOUS EMISSIONS

- ▣ NR Band: N26
- ▣ Bandwidth: 5 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)	RB	
									Size	Offset
163300 (816.5)	1 633.00	-48.71	9.28	-63.32	1.98	H	-56.02	-13.00	1	12
	2 449.50	-52.37	10.41	-63.52	2.53	H	-55.64	-13.00		
	3 266.00	-51.82	10.84	-60.03	2.95	H	-52.14	-13.00		
	4 082.50	-52.42	11.57	-58.66	3.32	H	-50.41	-13.00		
	4 899.00	-53.90	11.35	-55.48	3.65	H	-47.78	-13.00		
164300 (821.5)	1 643.00	-49.36	9.39	-64.20	2.00	H	-56.81	-13.00	1	1
	2 464.50	-51.85	10.37	-63.01	2.59	H	-55.23	-13.00		
	3 286.00	-53.09	10.98	-61.20	2.95	H	-53.17	-13.00		
	4 107.50	-53.52	11.63	-59.84	3.33	H	-51.54	-13.00		
	4 929.00	-55.08	11.31	-56.74	3.64	H	-49.07	-13.00		

☐ NR Band: N26
☐ Bandwidth: 15 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)	RB	
									Size	Offset
164300 (821.5)	1 643.00	-53.29	9.39	-68.13	2.00	H	-60.74	-13.00	1	39
	2 464.50	-55.13	10.37	-66.29	2.59	H	-58.51	-13.00		
	3 286.00	-56.07	10.98	-64.18	2.95	H	-56.15	-13.00		
	4 107.50	-54.72	11.63	-61.04	3.33	H	-52.74	-13.00		
	4 929.00	-57.39	11.31	-59.05	3.64	H	-51.38	-13.00		
164800 (824.0)	1 648.00	-52.99	9.44	-67.93	2.02	H	-60.51	-13.00	1	1
	2 472.00	-54.15	10.35	-65.35	2.59	H	-57.59	-13.00		
	3 296.00	-56.08	11.06	-64.24	2.95	H	-56.13	-13.00		
	4 120.00	-55.86	11.65	-62.22	3.31	H	-53.88	-13.00		
	4 944.00	-57.75	11.28	-59.41	3.68	H	-51.81	-13.00		

8.4 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n26	5 MHz	821.5	BPSK	25	0	4.13
			QPSK			4.64
			16-QAM			5.87
			64-QAM			6.22
			256-QAM			6.77
	10 MHz	819.0	BPSK	50		3.96
			QPSK			4.59
			16-QAM			5.57
			64-QAM			6.07
			256-QAM			6.66
	15 MHz	## 821.5	BPSK	75		4.01
			QPSK			4.58
			16-QAM			5.50
			64-QAM			5.99
			256-QAM			6.66
	20 MHz	## 824.0	BPSK	100		3.93
			QPSK			4.50
			16-QAM			5.50
			64-QAM			5.98
			256-QAM			6.61

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 43 ~ 62.
2. ##: Straddle Channel
3. Straddle channel does not exceed the Part22 and Part90 limits.

8.5 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n26	5 MHz	821.5	BPSK	25	0	4.5068
			QPSK			4.5025
			16QAM			4.4984
			64QAM			4.4974
			256QAM			4.5032
	10 MHz	819.0	BPSK	50		8.9908
			QPSK			8.9871
			16QAM			8.9920
			64QAM			8.9927
			256QAM			8.9775
	15 MHz	## 821.5	BPSK	75		13.461
			QPSK			13.473
			16QAM			13.453
			64QAM			13.489
			256QAM			13.463
	20 MHz	## 824.0	BPSK	100		17.878
			QPSK			17.926
			16QAM			17.911
			64QAM			17.910
			256QAM			17.874

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 63 ~ 82.
2. ##: Straddle Channel
3. Straddle channel does not exceed the Part22 and Part90 limits.

8.6 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
26	5	816.5	5.1845	27.520	-61.156	-33.636	-13.00
		821.5	3.8385	26.600	-61.387	-34.787	
		## 824.0	3.7688	26.600	-61.873	-35.273	
	10	819.0	3.7987	26.600	-61.833	-35.233	
		## 824.0	4.0180	26.600	-61.843	-35.243	
	15	## 821.5	9.5514	27.520	-61.289	-33.769	
		## 824.0	4.9652	26.600	-61.787	-35.187	
	20	## 824.0	4.0080	26.600	-61.340	-34.740	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 109 ~ 116.
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	26.080
1 – 5	26.600
5 – 10	27.520
10 – 15	29.120
15 – 20	31.710
Above 20	32.350

5. ##: Straddle Channel

6. Straddle channel does not exceed the Part22 and Part90 limit

8.7 CHANNEL EDGE (Part90)

- Test Channel : 164800(824.0MHz)
- Plots of the EUT's Band Edge are shown Page 83 ~ 98.

8.8 BAND EDGE(Part22)

- Test Channel : 164800(824.0 MHz)
- Plots of the EUT's Band Edge are shown Page 99 ~ 108.

8.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100 %): 12.000 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
821.5	100 %	+20(Ref)	821 500 002	0.0	0.000 000	0.000
	100 %	-30	821 500 004	2.0	0.000 000	0.002
	100 %	-20	821 500 004	1.9	0.000 000	0.002
	100 %	-10	821 500 004	1.8	0.000 000	0.002
	100 %	0	821 500 004	2.0	0.000 000	0.002
	100 %	+10	821 500 004	2.0	0.000 000	0.002
	100 %	+30	821 500 004	1.8	0.000 000	0.002
	100 %	+40	821 500 004	2.0	0.000 000	0.002
	100 %	+50	821 500 004	1.7	0.000 000	0.002
	85%	+20	821 500 005	3.1	0.000 000	0.004
	115%	+20	821 500 003	1.1	0.000 000	0.001

- ☐ BandWidth: 10 MHz
☐ Voltage(100 %): 12.000 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
819.0	100 %	+20(Ref)	819 000 008	0.0	0.000 000	0.000
	100 %	-30	819 000 016	8.1	0.000 001	0.010
	100 %	-20	819 000 016	8.2	0.000 001	0.010
	100 %	-10	819 000 016	8.0	0.000 001	0.010
	100 %	0	819 000 016	7.7	0.000 001	0.009
	100 %	+10	819 000 016	8.0	0.000 001	0.010
	100 %	+30	819 000 016	7.5	0.000 001	0.009
	100 %	+40	819 000 016	7.5	0.000 001	0.009
	100 %	+50	819 000 016	7.5	0.000 001	0.009
	85%	+20	819 000 013	5.2	0.000 001	0.006
	115%	+20	819 000 015	6.9	0.000 001	0.008

- ☐ BandWidth: 15 MHz
☐ Voltage(100 %): 12.000 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
## 821.5	100 %	+20(Ref)	821 499 998	0.0	0.000 000	0.000
	100 %	-30	821 499 996	-2.2	0.000 000	-0.003
	100 %	-20	821 499 996	-2.1	0.000 000	-0.003
	100 %	-10	821 499 996	-2.3	0.000 000	-0.003
	100 %	0	821 499 995	-2.6	0.000 000	-0.003
	100 %	+10	821 499 995	-2.7	0.000 000	-0.003
	100 %	+30	821 499 995	-2.7	0.000 000	-0.003
	100 %	+40	821 499 995	-2.7	0.000 000	-0.003
	100 %	+50	821 499 995	-2.9	0.000 000	-0.004
	85%	+20	821 499 996	-2.0	0.000 000	-0.002
	115%	+20	821 499 996	-1.7	0.000 000	-0.002

Note:

1. ##: Straddle Channel
2. Straddle channel does not exceed the Part22 and Part90 limits.

- ☐ BandWidth: 20 MHz
☐ Voltage(100 %): 12.000 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
## 824.0	100 %	+20(Ref)	824 000 001	0.0	0.000 000	0.000
	100 %	-30	824 000 001	0.5	0.000 000	0.001
	100 %	-20	824 000 001	0.3	0.000 000	0.000
	100 %	-10	824 000 001	0.6	0.000 000	0.001
	100 %	0	824 000 001	0.3	0.000 000	0.000
	100 %	+10	824 000 001	0.3	0.000 000	0.000
	100 %	+30	824 000 001	0.3	0.000 000	0.000
	100 %	+40	824 000 001	-0.1	0.000 000	0.000
	100 %	+50	824 000 000	-0.2	0.000 000	0.000
	85%	+20	824 000 001	0.9	0.000 000	0.001
	115%	+20	824 000 003	2.2	0.000 000	0.003

Note:

1. ##: Straddle Channel
2. Straddle channel does not exceed the Part22 and Part90 limits.

9. TEST PLOTS

Sub6 n26. PAR Plot (5 M BW Ch.164300 BPSK RB 25_0)



Sub6 n26. PAR Plot (5 M BW Ch.164300 QPSK RB 25_0)



Sub6 n26. PAR Plot (5 M BW Ch.164300 16QAM RB 25_0)



Sub6 n26. PAR Plot (5 M BW Ch.164300 64QAM RB 25_0)



Sub6 n26. PAR Plot (5 M BW Ch.164300 256QAM RB 25_0)



Sub6 n26. PAR Plot (10 M BW Ch.163800 BPSK RB 50_0)



Sub6 n26. PAR Plot (10 M BW Ch.163800 QPSK RB 50_0)



Sub6 n26. PAR Plot (10 M BW Ch.163800 16QAM RB 50_0)



Sub6 n26. PAR Plot (10 M BW Ch.163800 64QAM RB 50_0)



Sub6 n26. PAR Plot (10 M BW Ch.163800 256QAM RB 50_0)



Sub6 n26. PAR Plot (15 M BW Ch.164300 BPSK RB 75_0)



Sub6 n26. PAR Plot (15 M BW Ch.164300 QPSK RB 75_0)



Sub6 n26. PAR Plot (15 M BW Ch.164300 16QAM RB 75_0)



Sub6 n26. PAR Plot (15 M BW Ch.164300 64QAM RB 75_0)



Sub6 n26. PAR Plot (15 M BW Ch.164300 256QAM RB 100_0)



Sub6 n26. PAR Plot (20 M BW Ch.164800 BPSK RB 100_0)



Sub6 n26. PAR Plot (20 M BW Ch.164800 QPSK RB 100_0)



Sub6 n26. PAR Plot (20 M BW Ch.164800 16QAM RB 100_0)



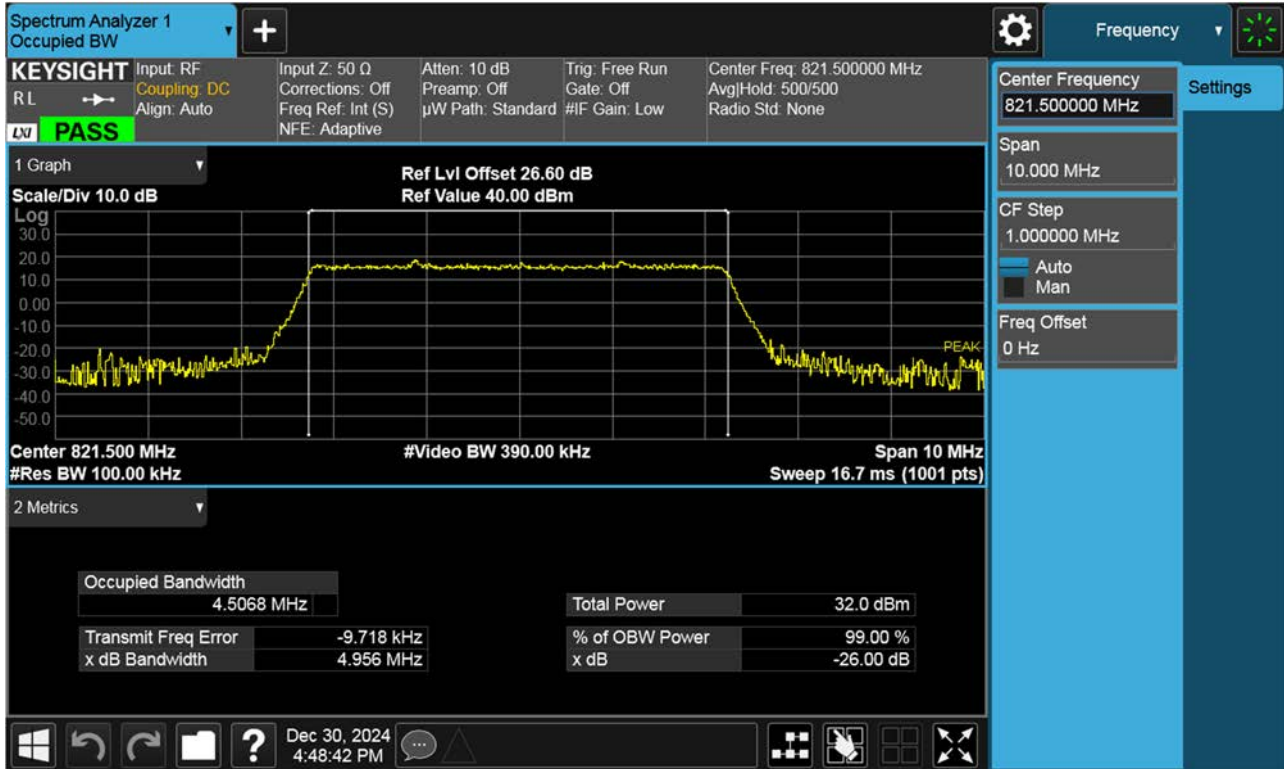
Sub6 n26. PAR Plot (20 M BW Ch.164800 64QAM RB 100_0)



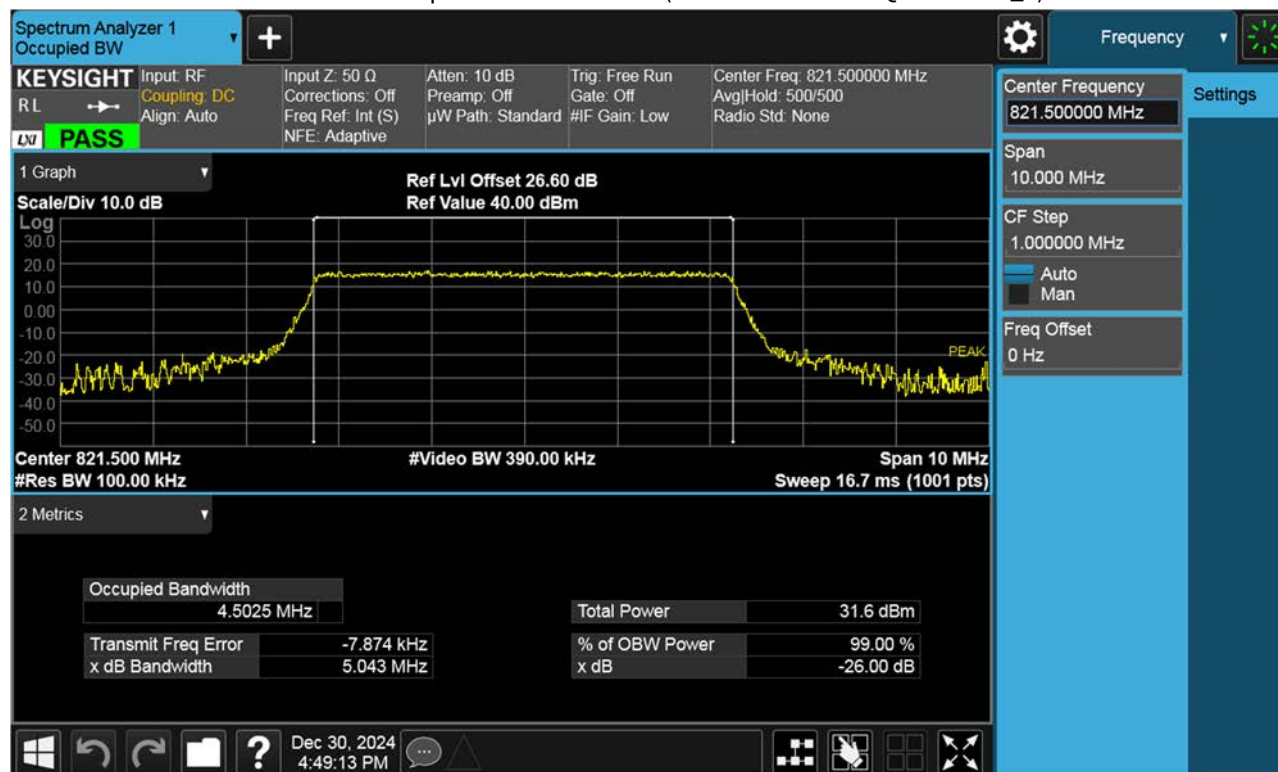
Sub6 n26. PAR Plot (20 M BW Ch.164800 256QAM RB 100_0)



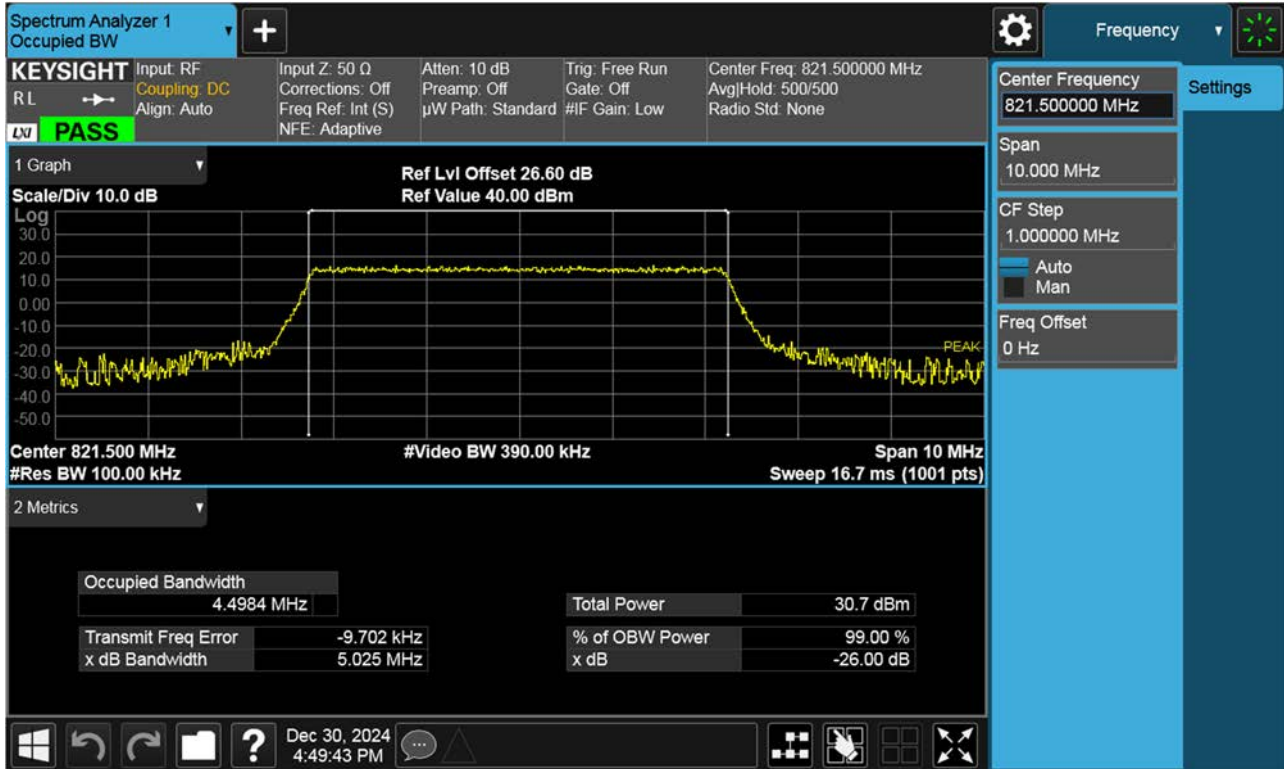
Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.164300 BPSK RB 25_0)



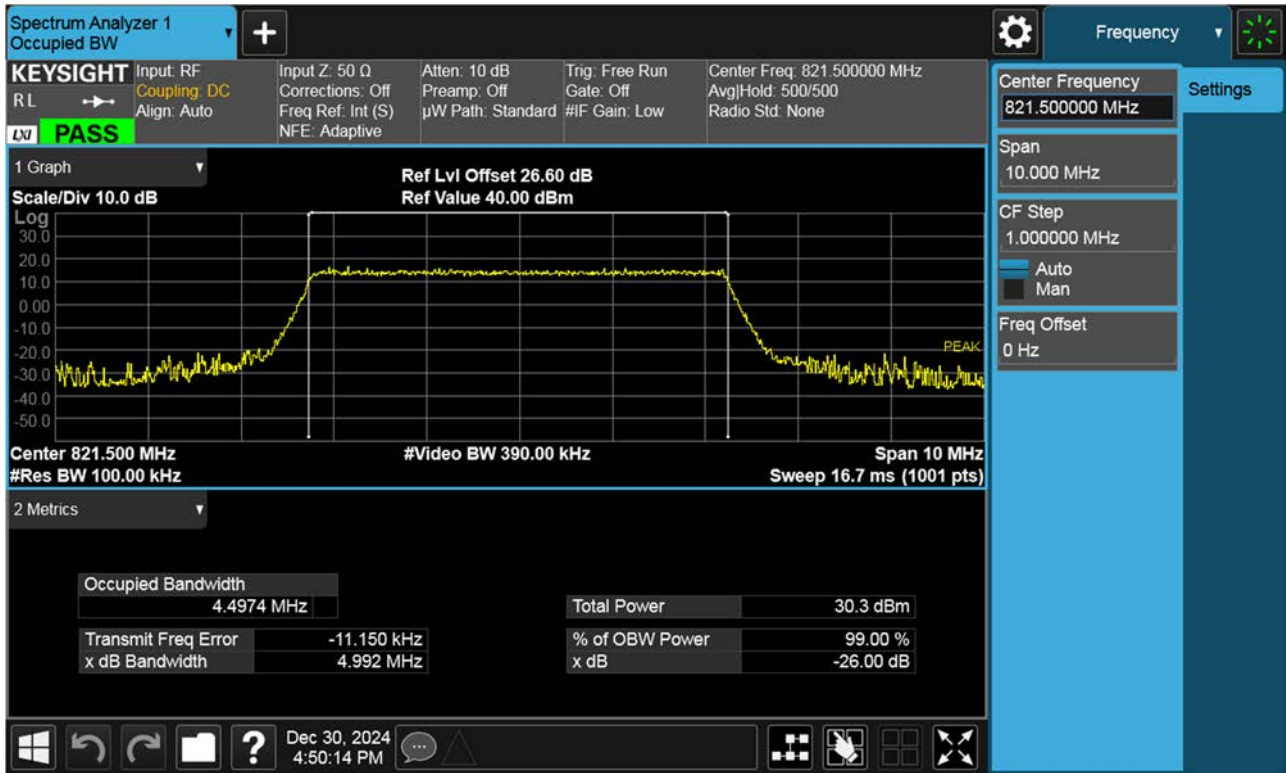
Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.164300 QPSK RB 25_0)



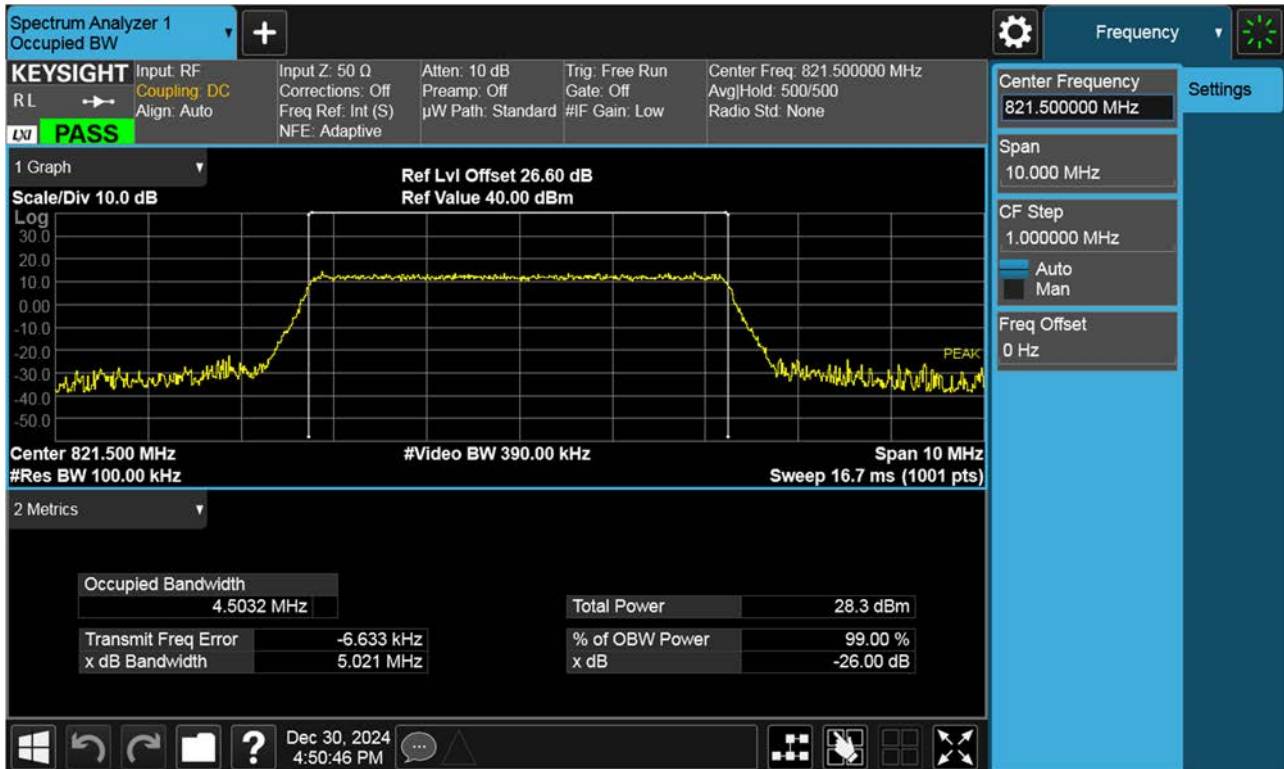
Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.164300 16QAM RB 25_0)



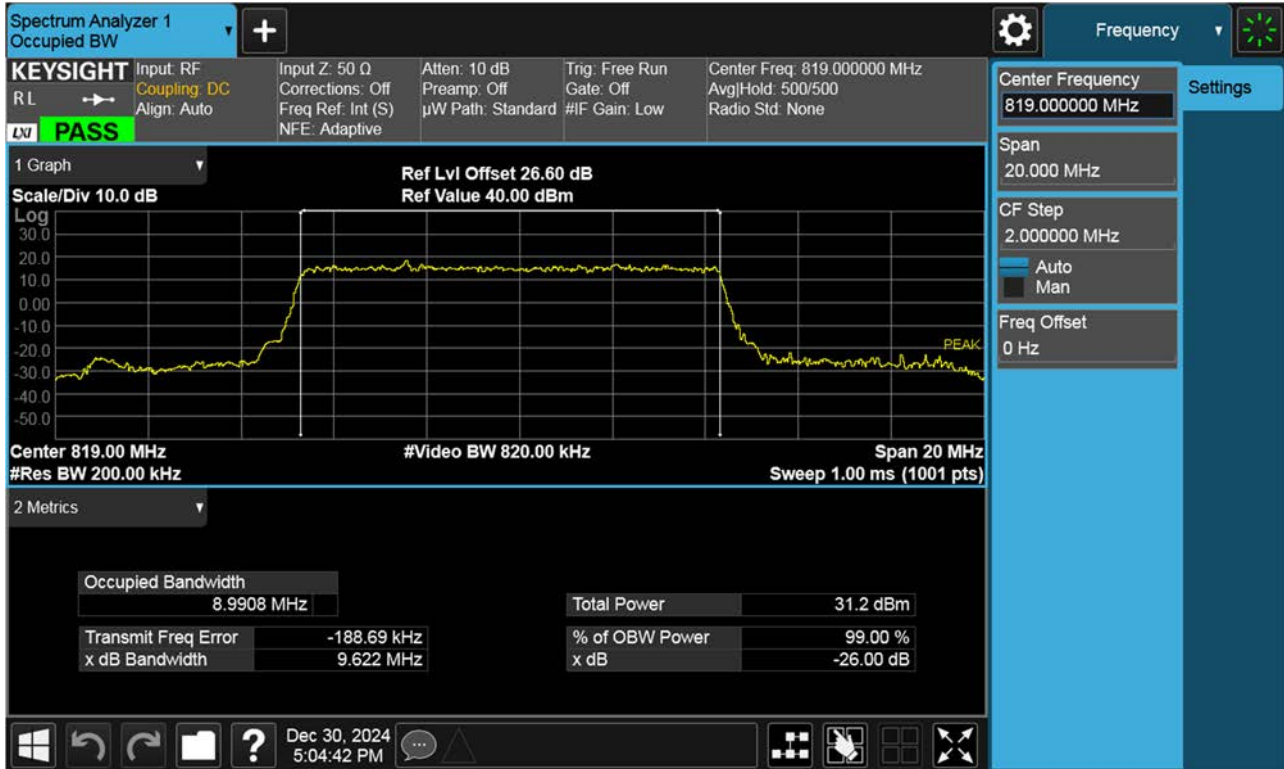
Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.164300 64QAM RB 25_0)



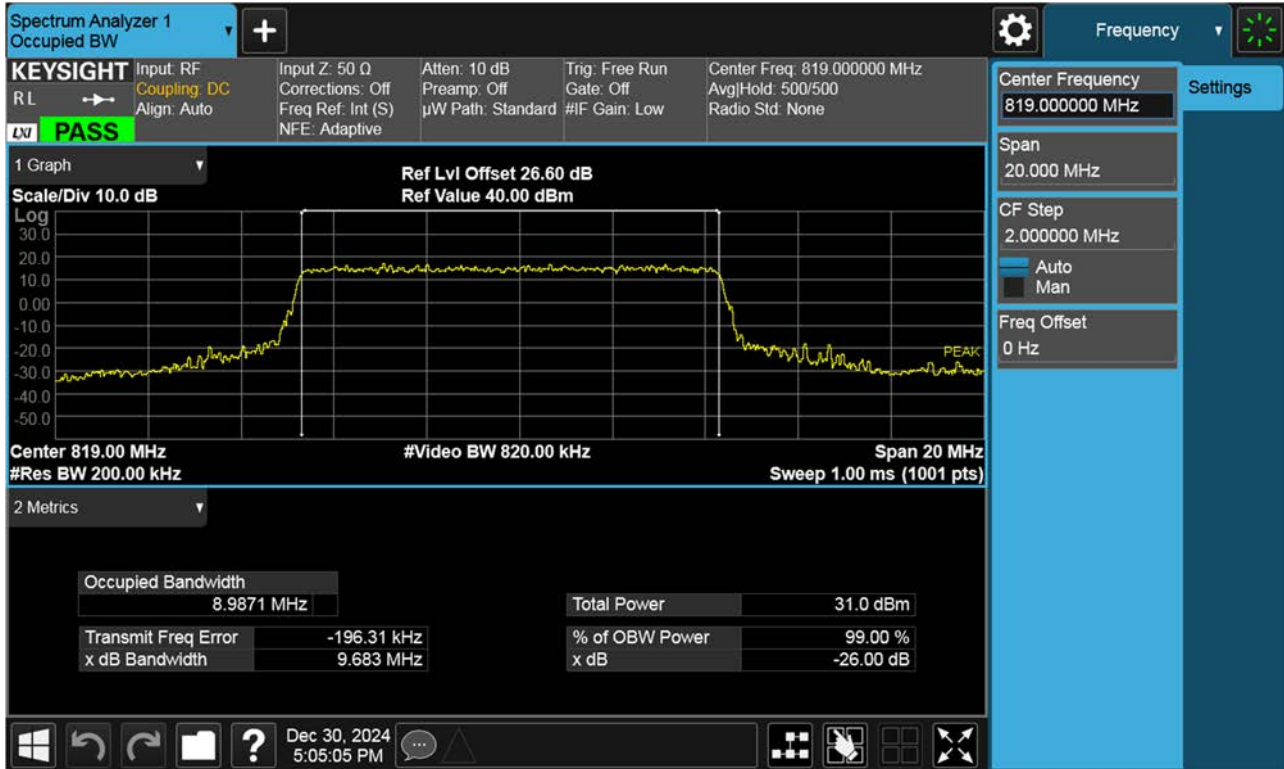
Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.164300 256QAM RB 25_0)



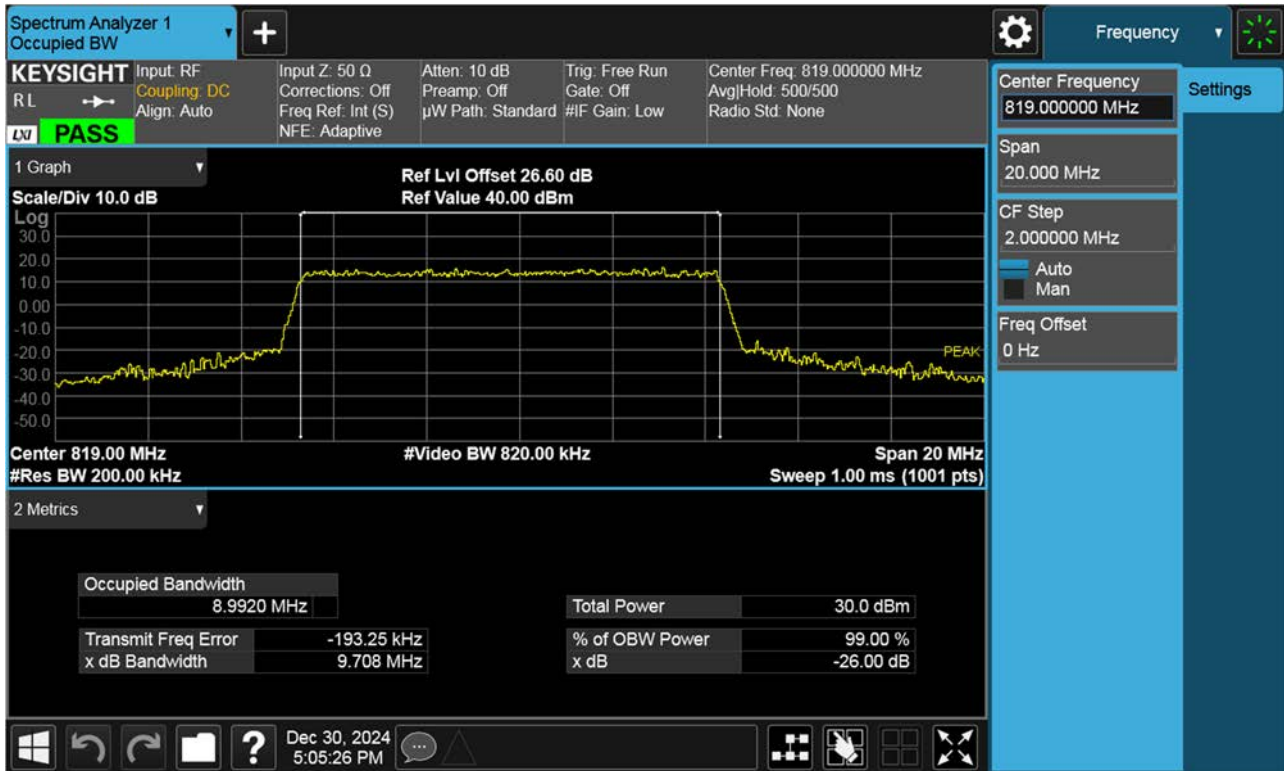
Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.163800 BPSK RB 50_0)



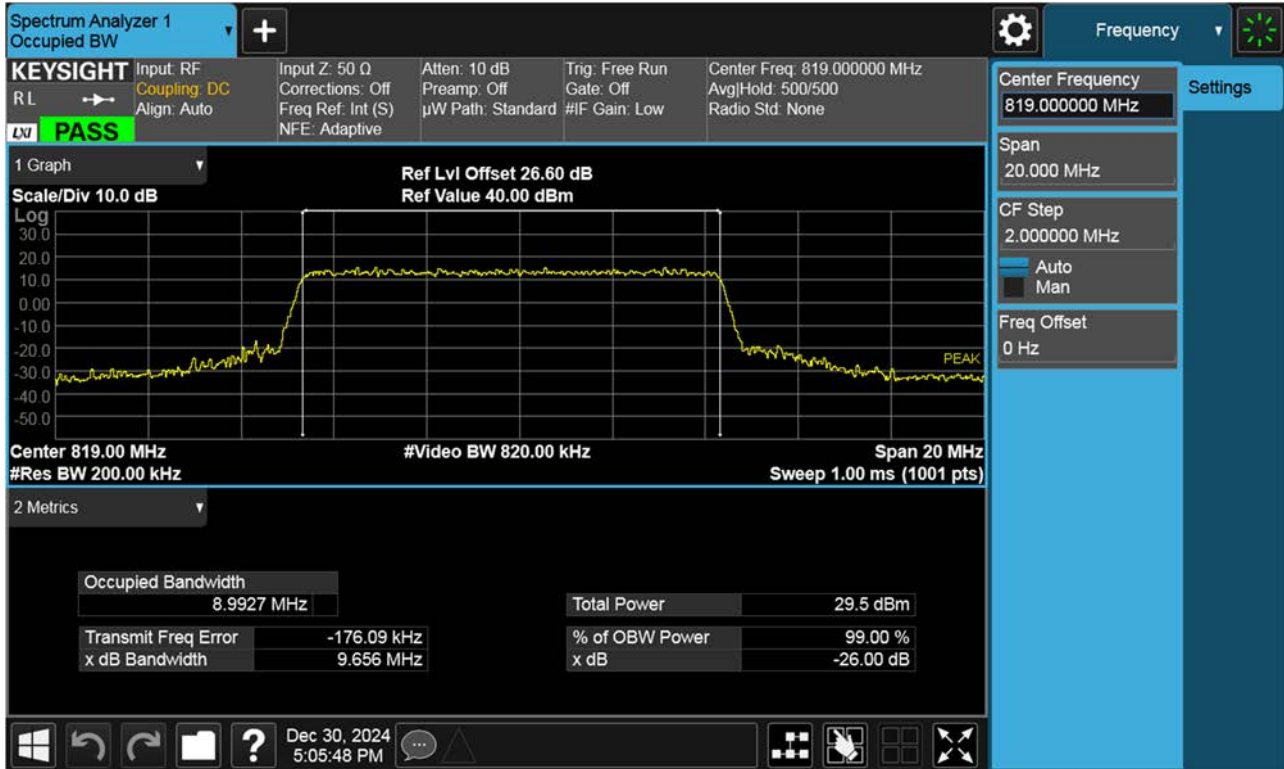
Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.163800 QPSK RB 50_0)



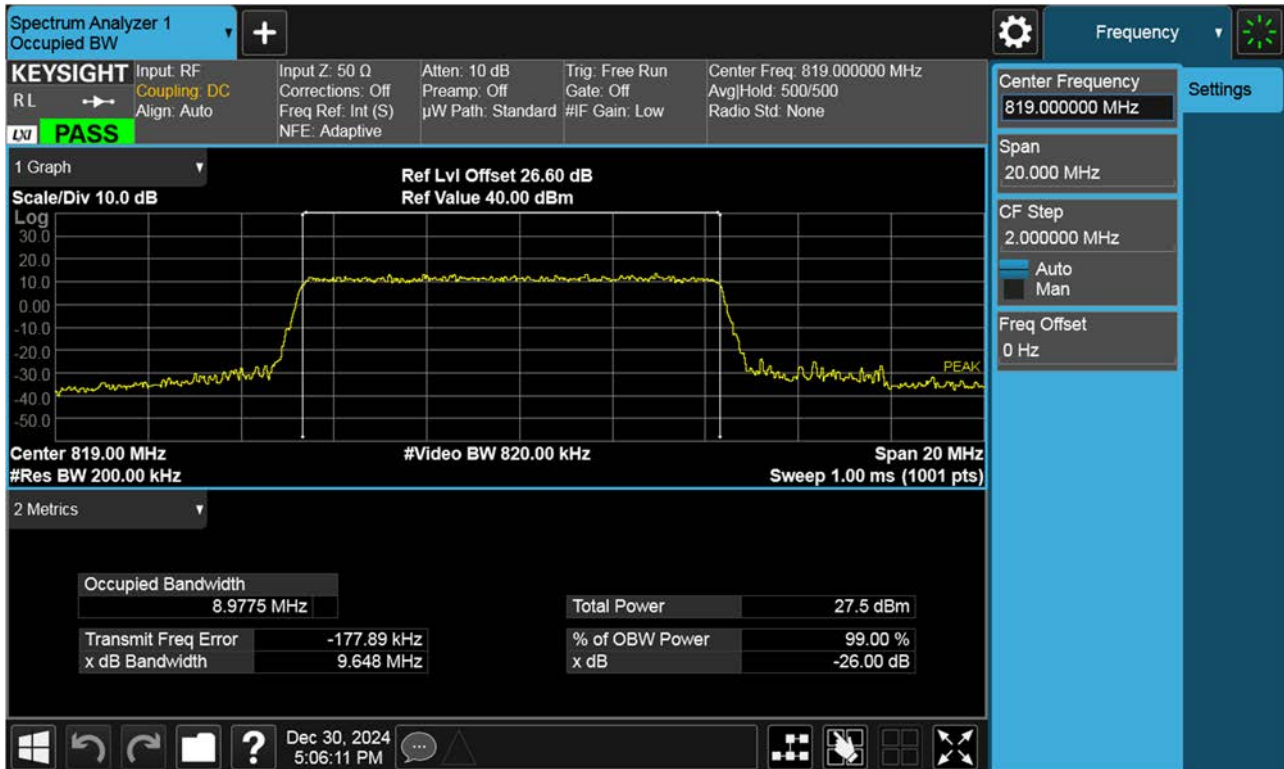
Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.163800 16QAM RB 50_0)



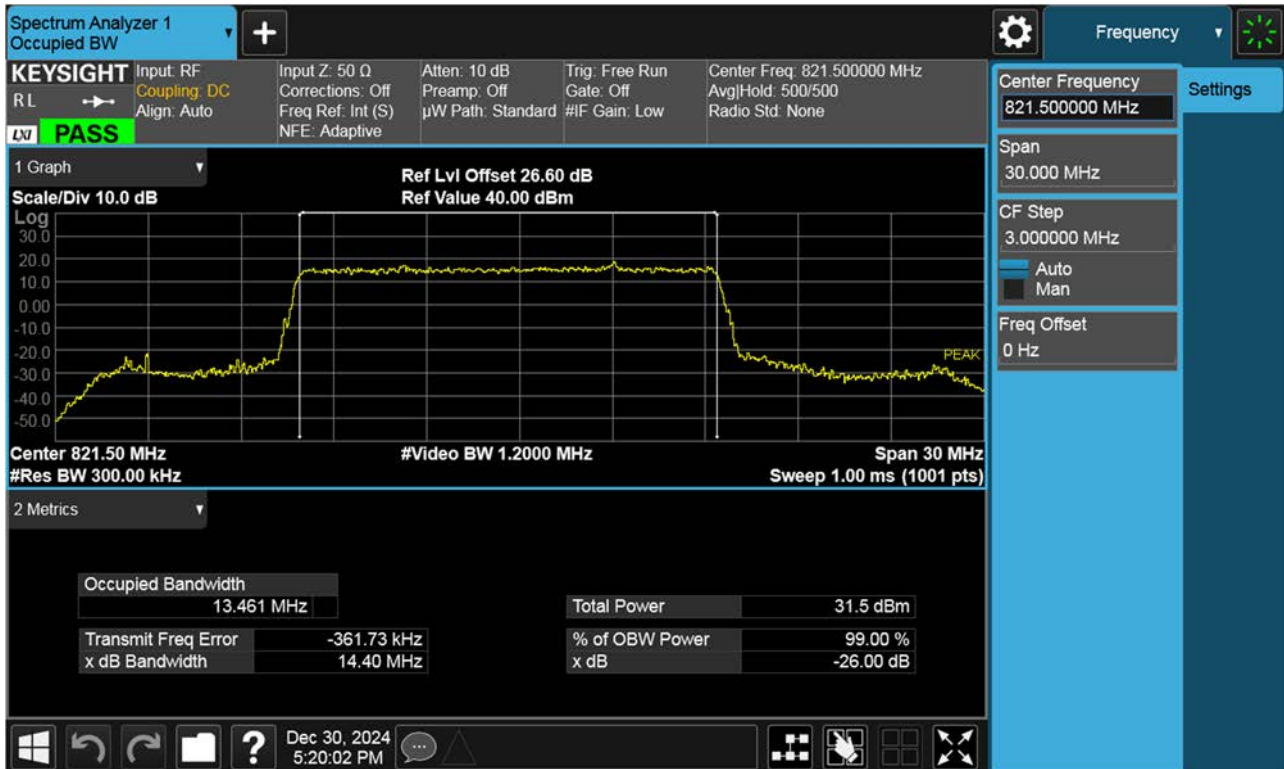
Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.163800 64QAM RB 50_0)



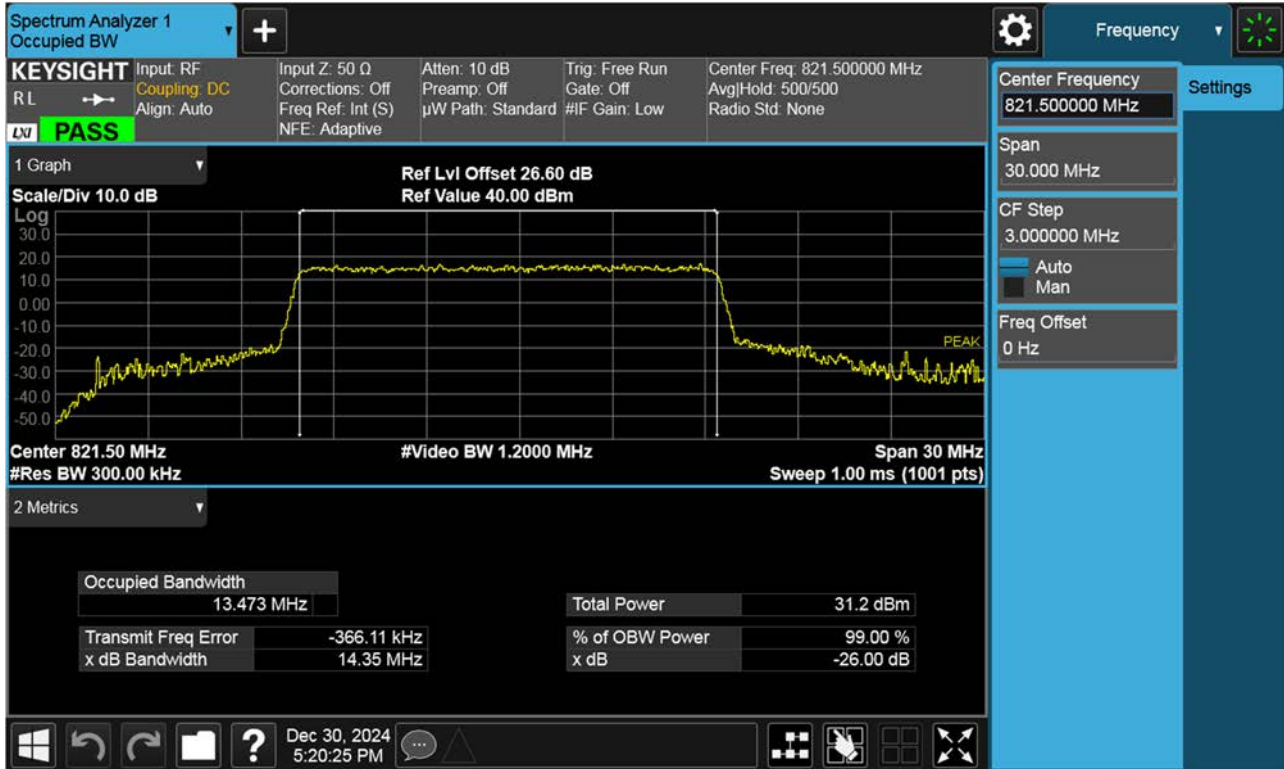
Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.163800 256QAM RB 50_0)



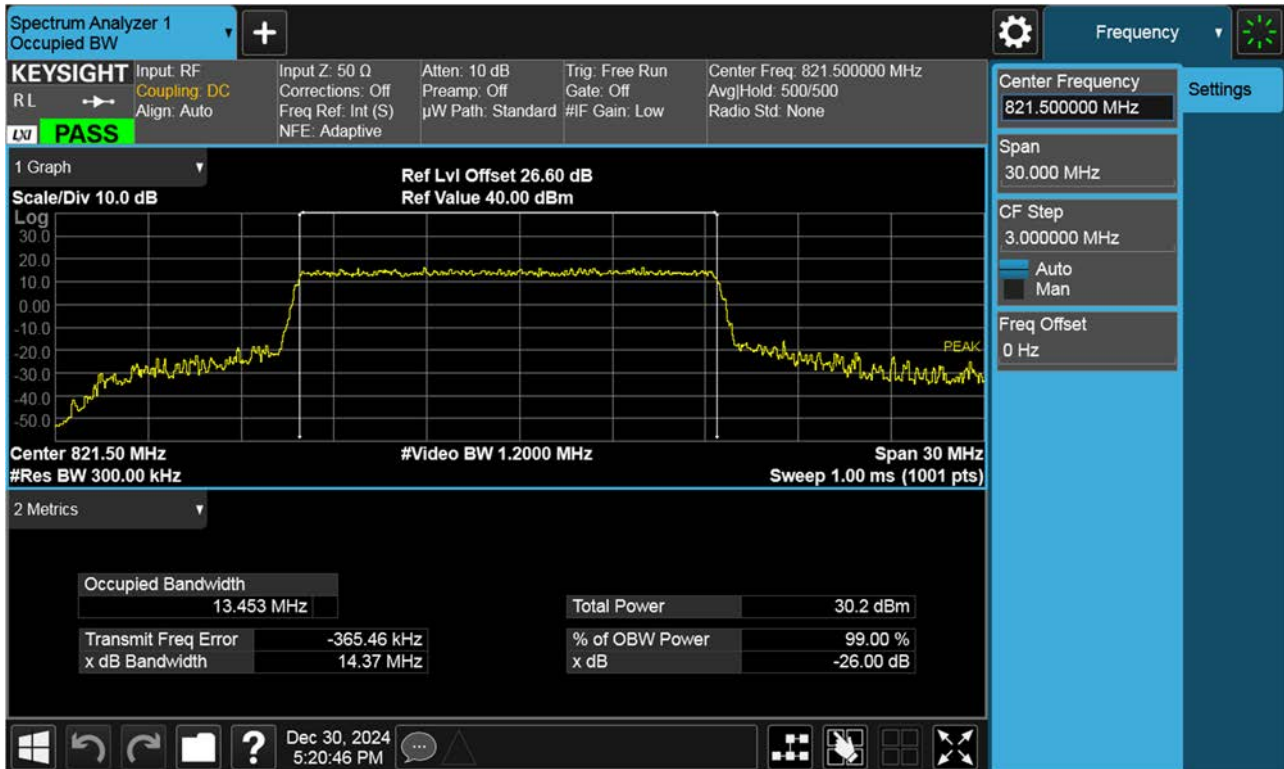
Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.164300 BPSK RB 75_0)



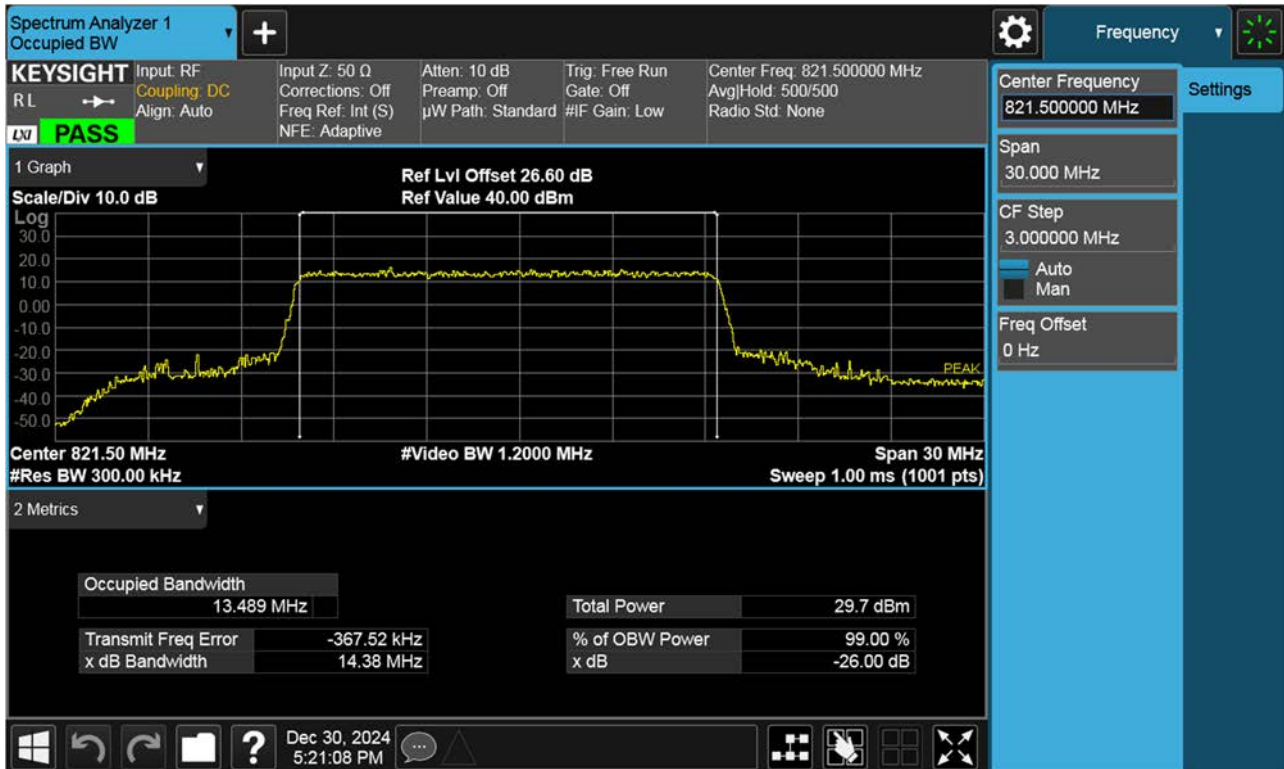
Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.164300 QPSK RB 75_0)



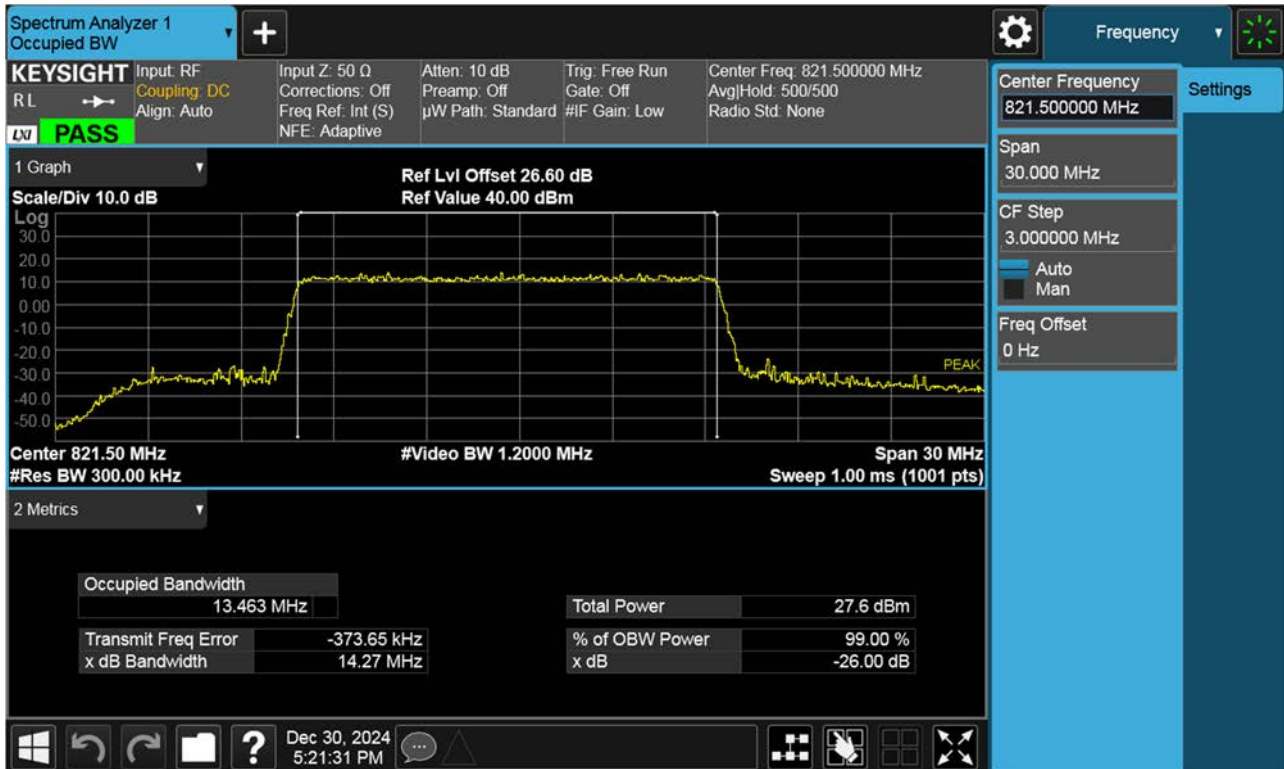
Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.164300 16QAM RB 75_0)



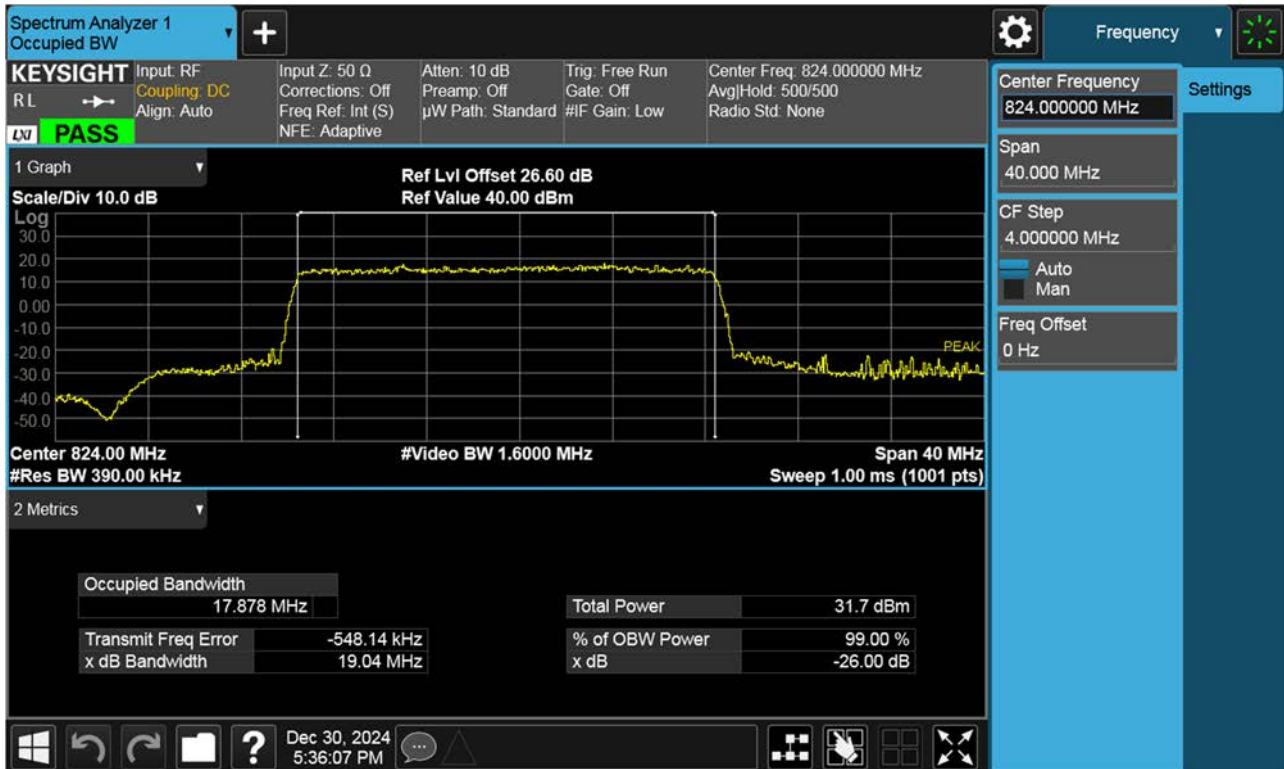
Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.164300 64QAM RB 75_0)



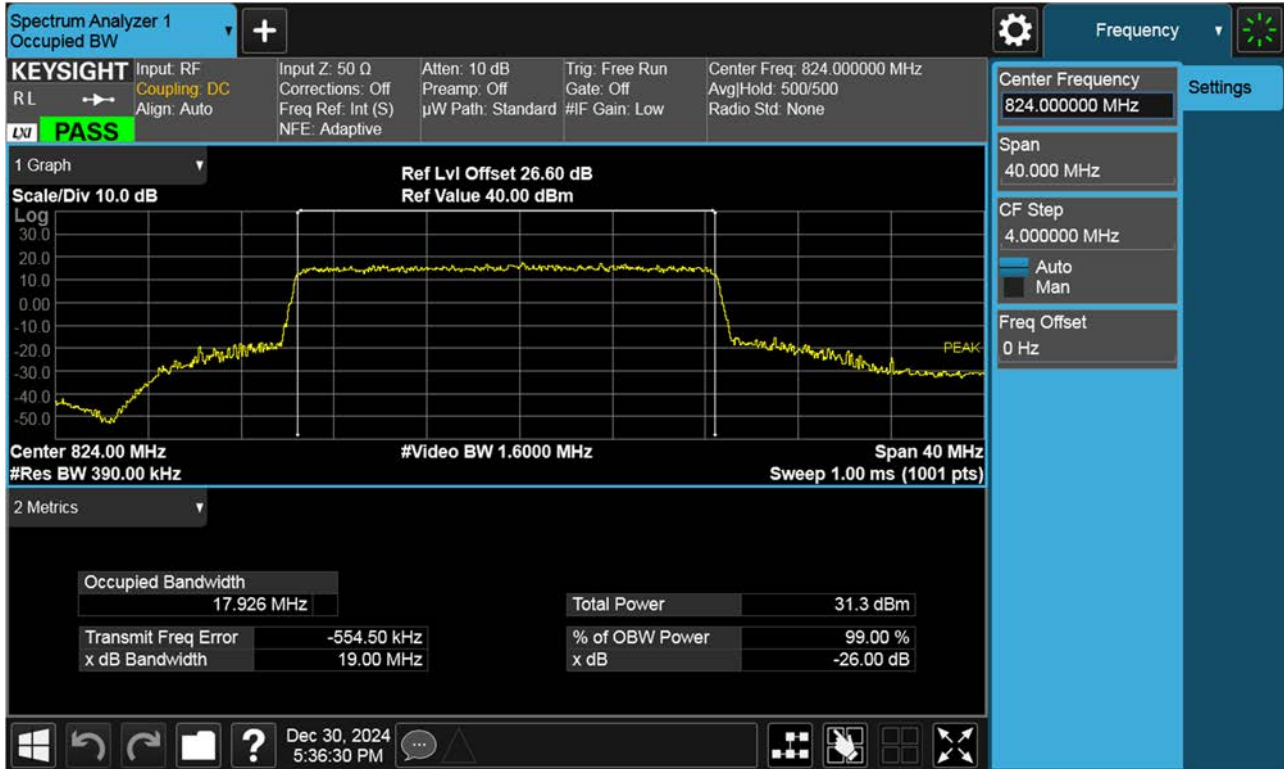
Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.164300 256QAM RB 100_0)



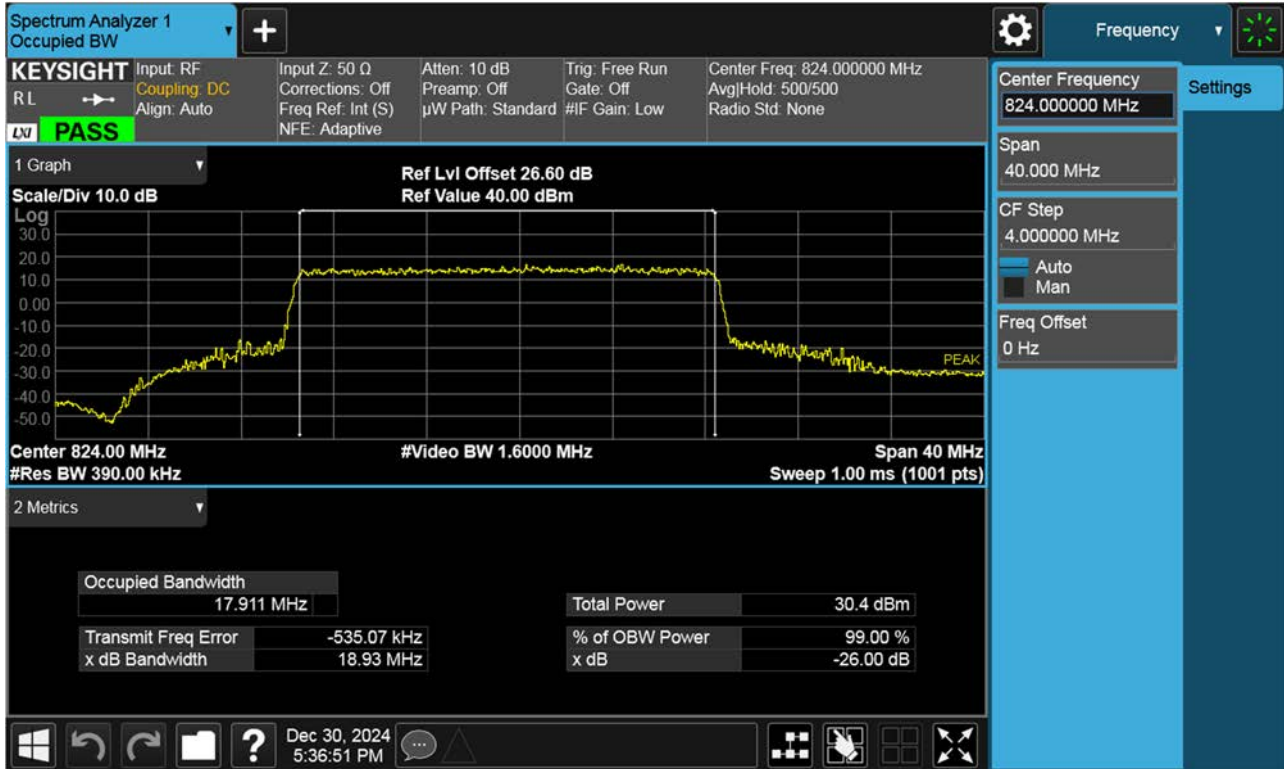
Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.164800 BPSK RB 100_0)



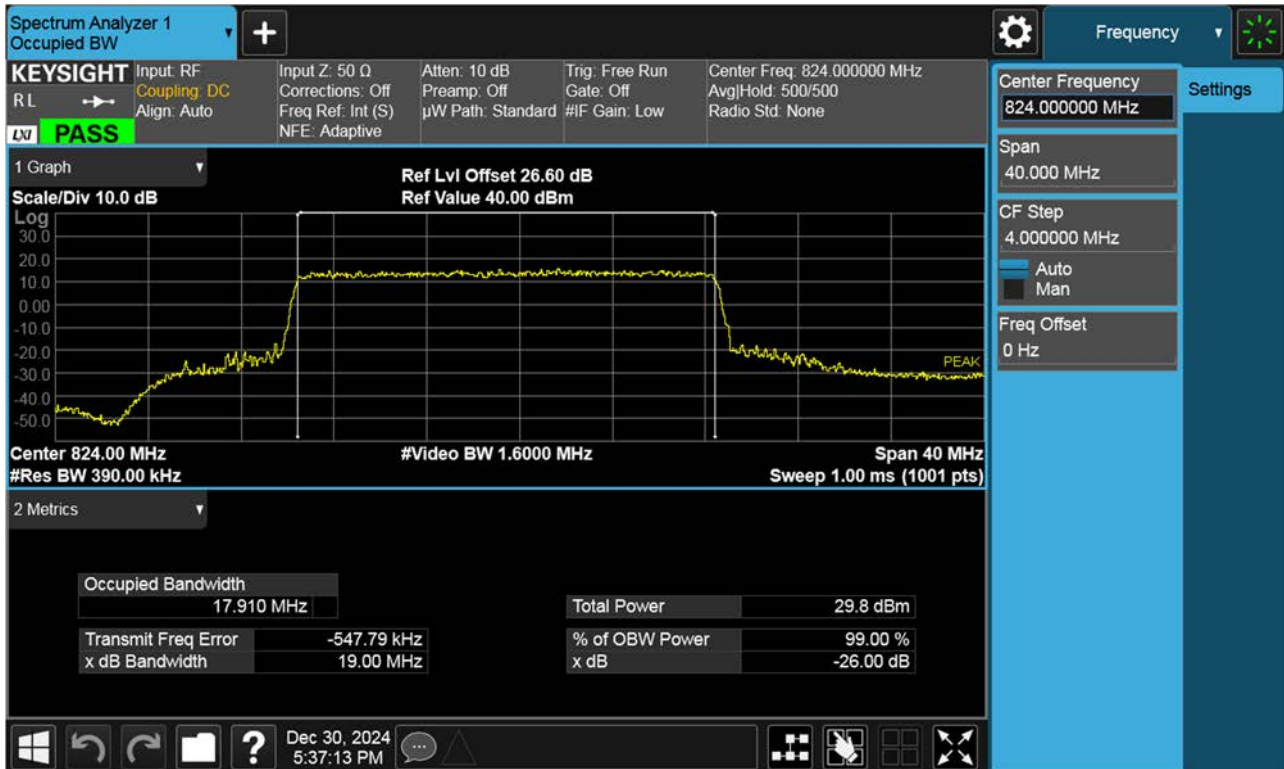
Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.164800 QPSK RB 100_0)



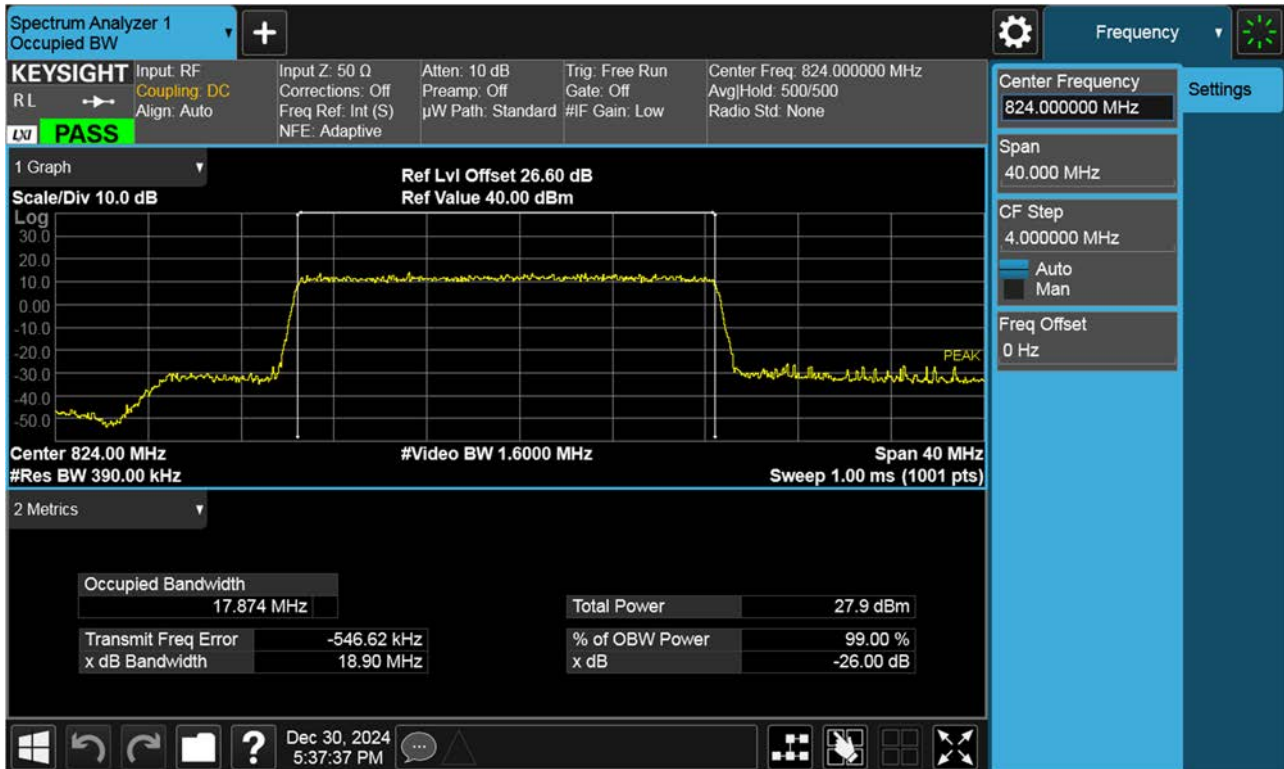
Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.164800 16QAM RB 100_0)



Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.164800 64QAM RB 100_0)



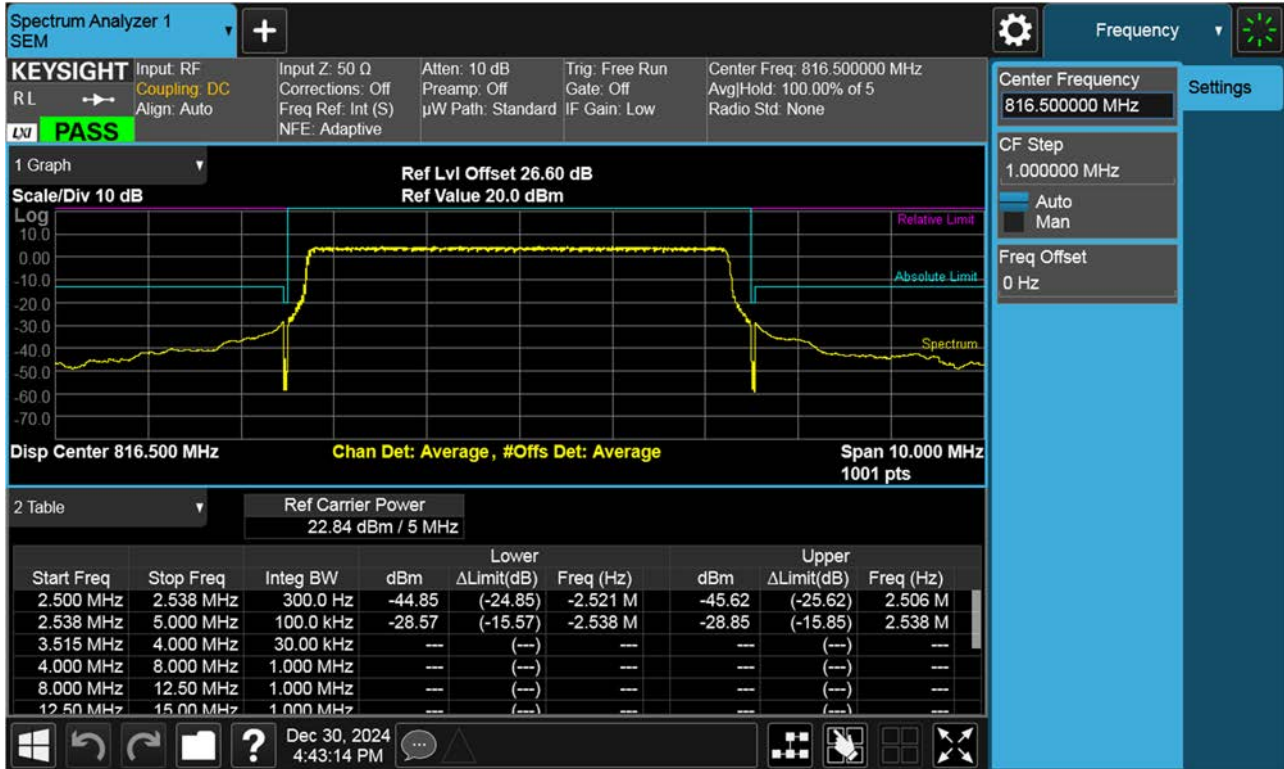
Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.164800 256QAM RB 100_0)



Sub6 n26. Lower Channel Edge Plot (5 M BW Ch.163300 BPSK RB 1, Offset 0)



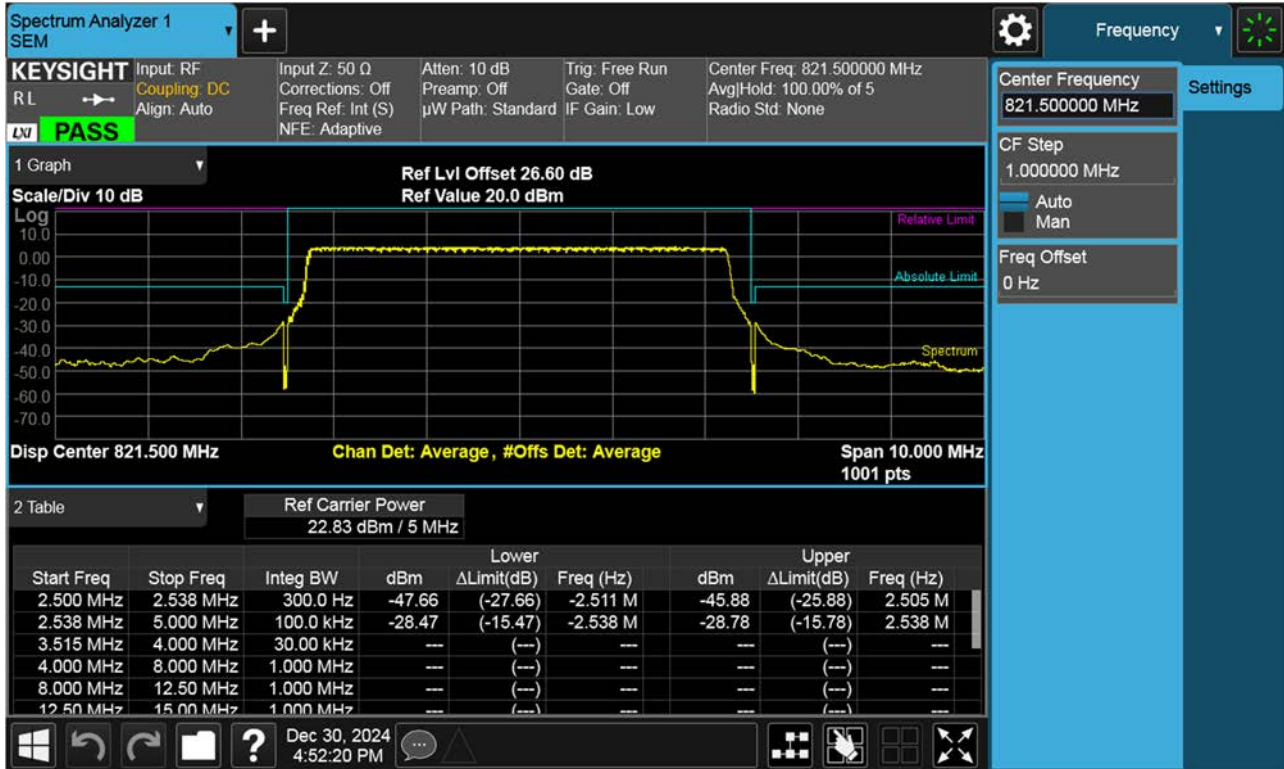
Sub6 n26. Lower Channel Edge Plot (5 M BW Ch.163300 BPSK_RB25_Offset 0)



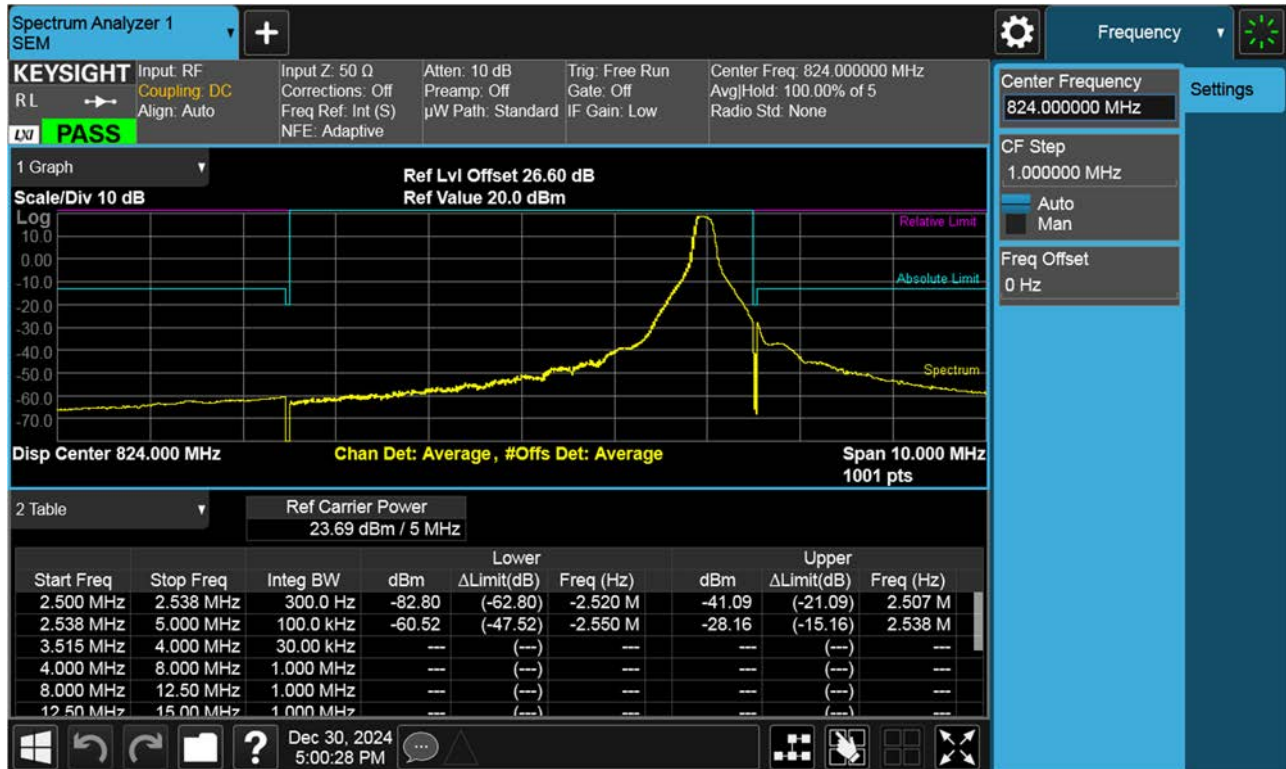
Sub6 n26. Mid Channel Edge Plot (5 M BW Ch.164300 BPSK_RB1_Offset 0)



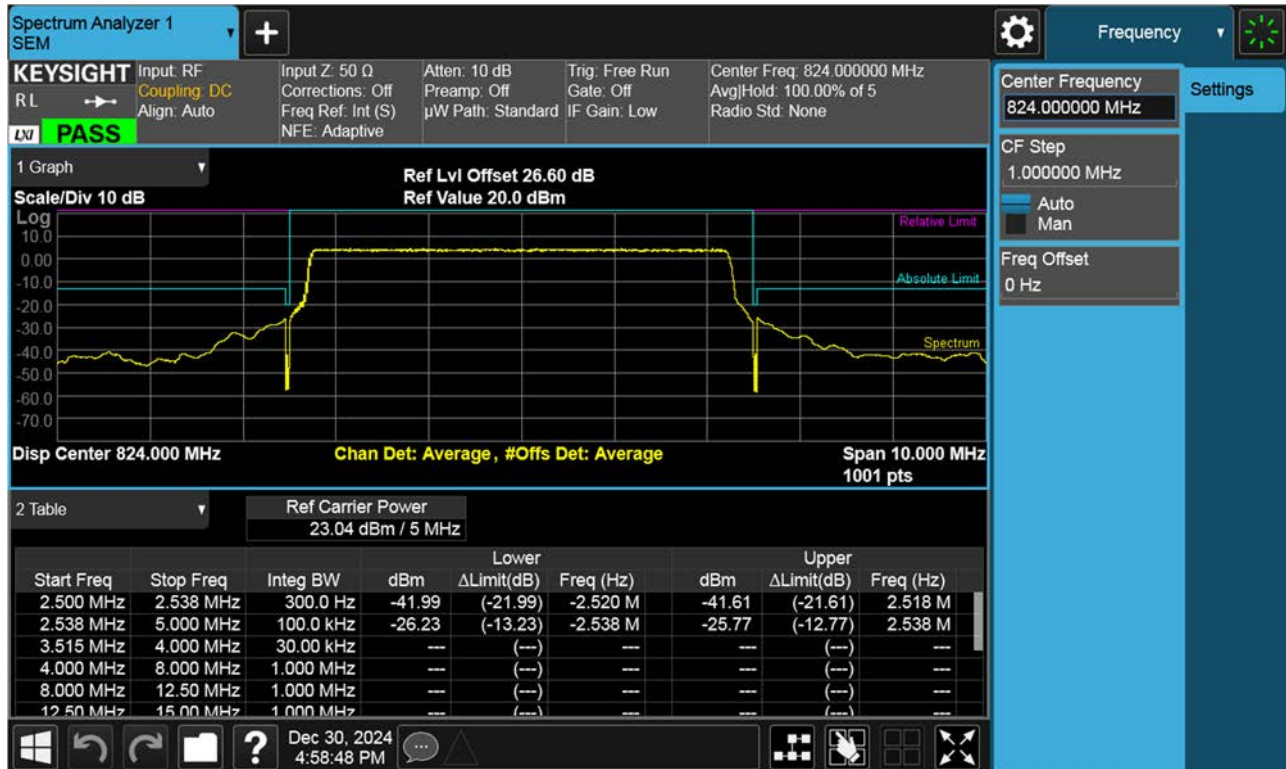
Sub6 n26. Mid Channel Edge Plot (5 M BW Ch.164300 BPSK_ RB25_Offset 0)



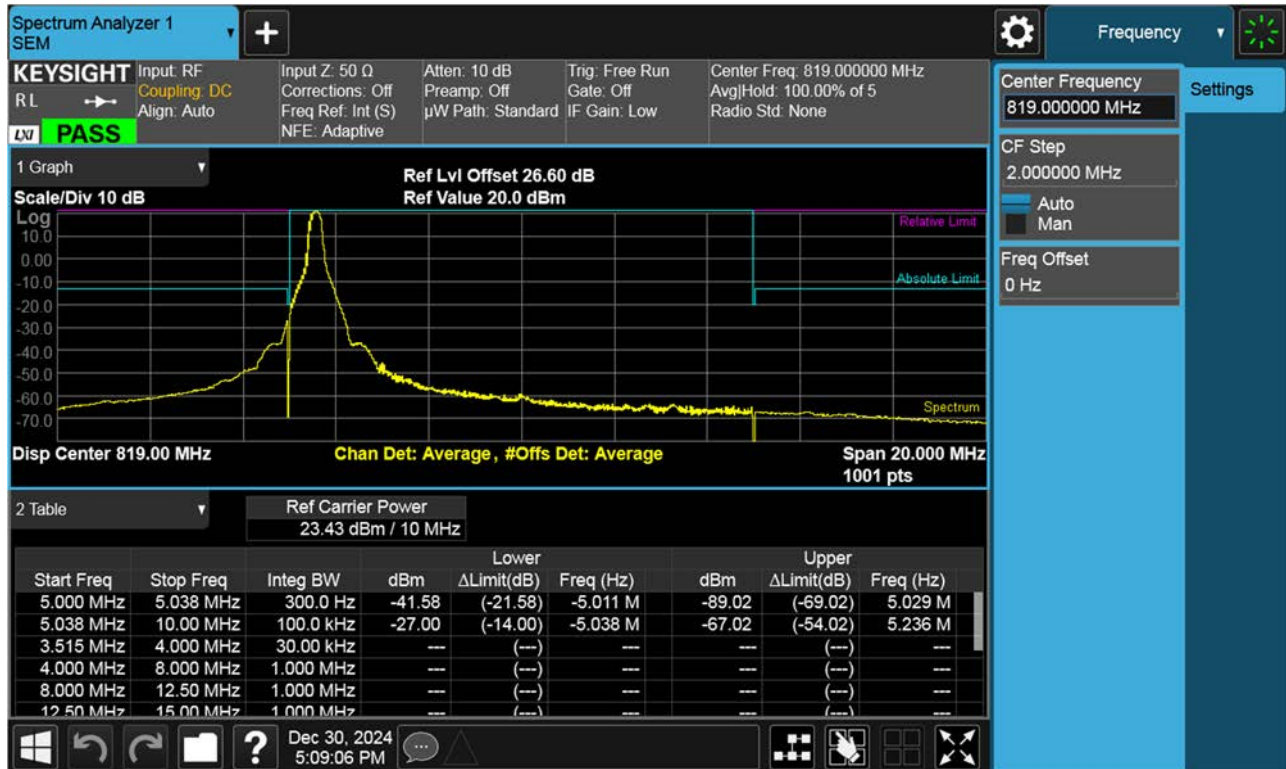
Sub6 n26. Upper Channel Edge Plot (5 M BW Ch.164800 BPSK_RB1_Offset 24)



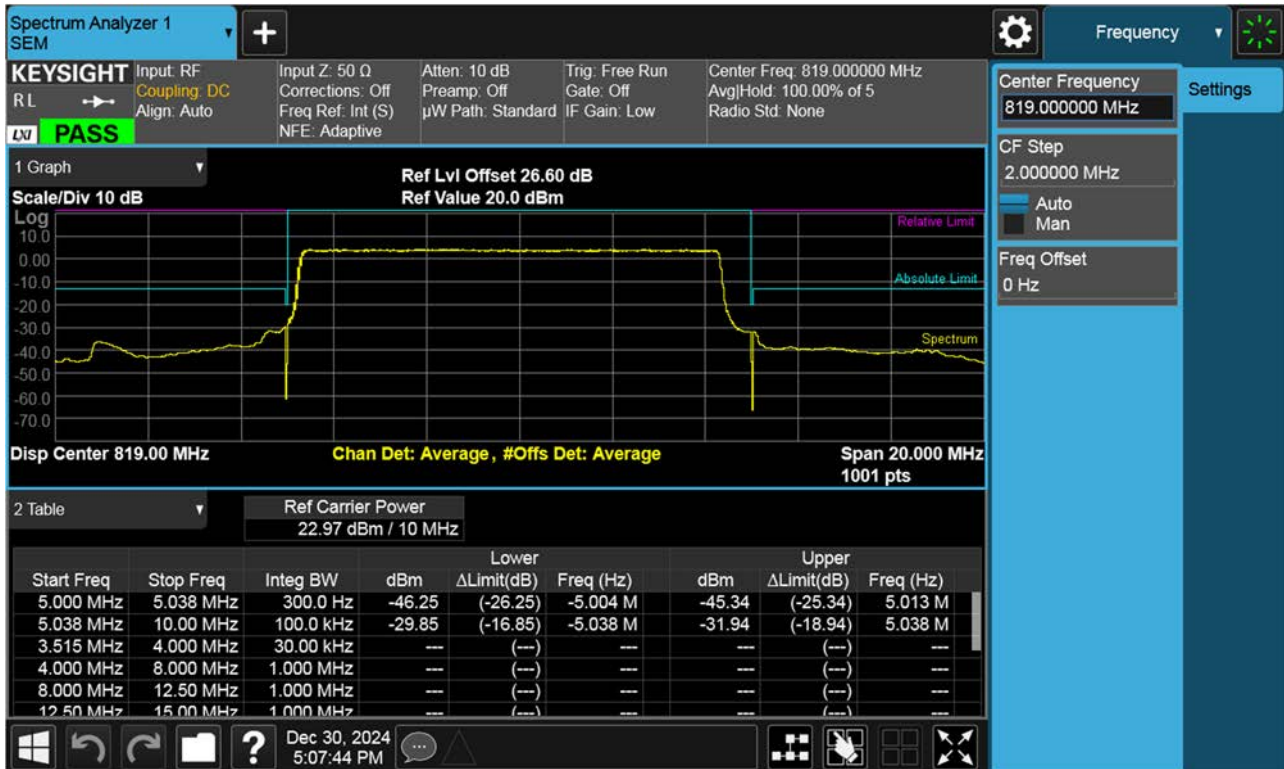
Sub6 n26. Upper Channel Edge Plot (5 M BW Ch.164800 BPSK_RB25_Offset 0)



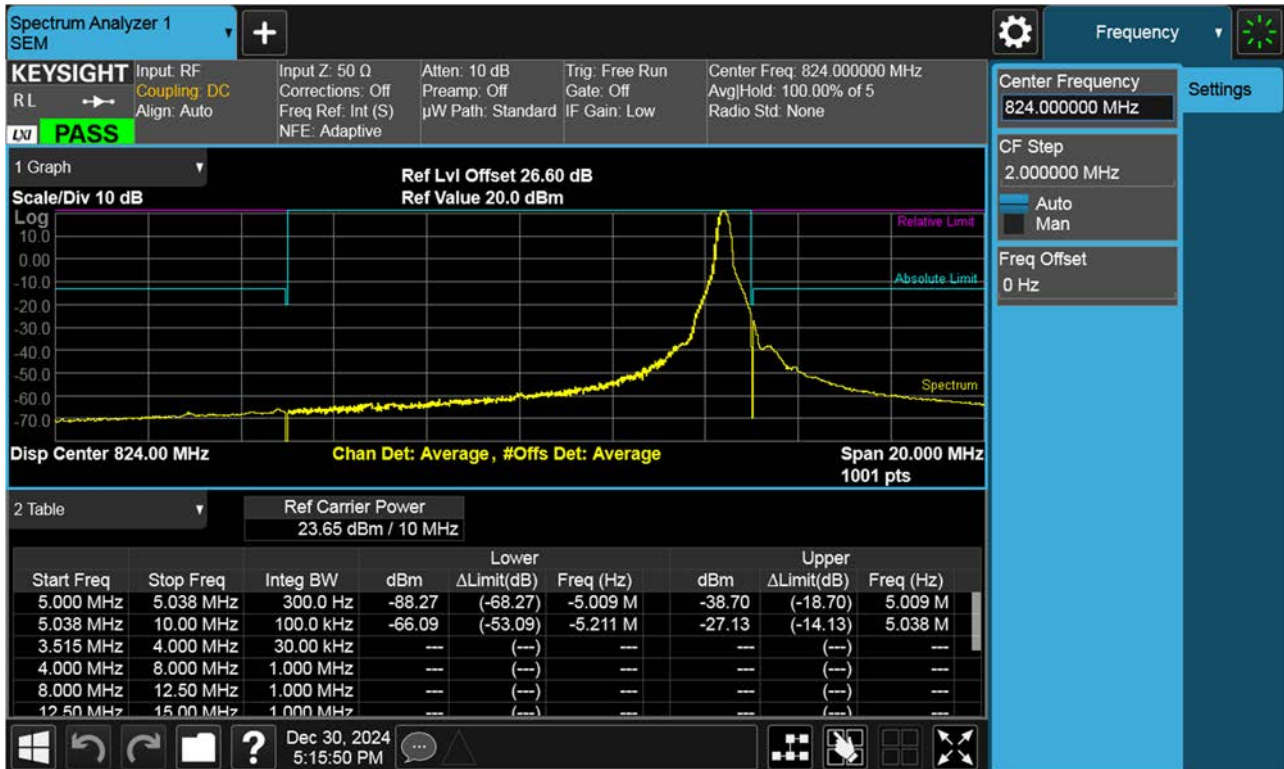
Sub6 n26. Low Channel Edge Plot (10 M BW Ch.163800 BPSK RB 1, Offset 0)



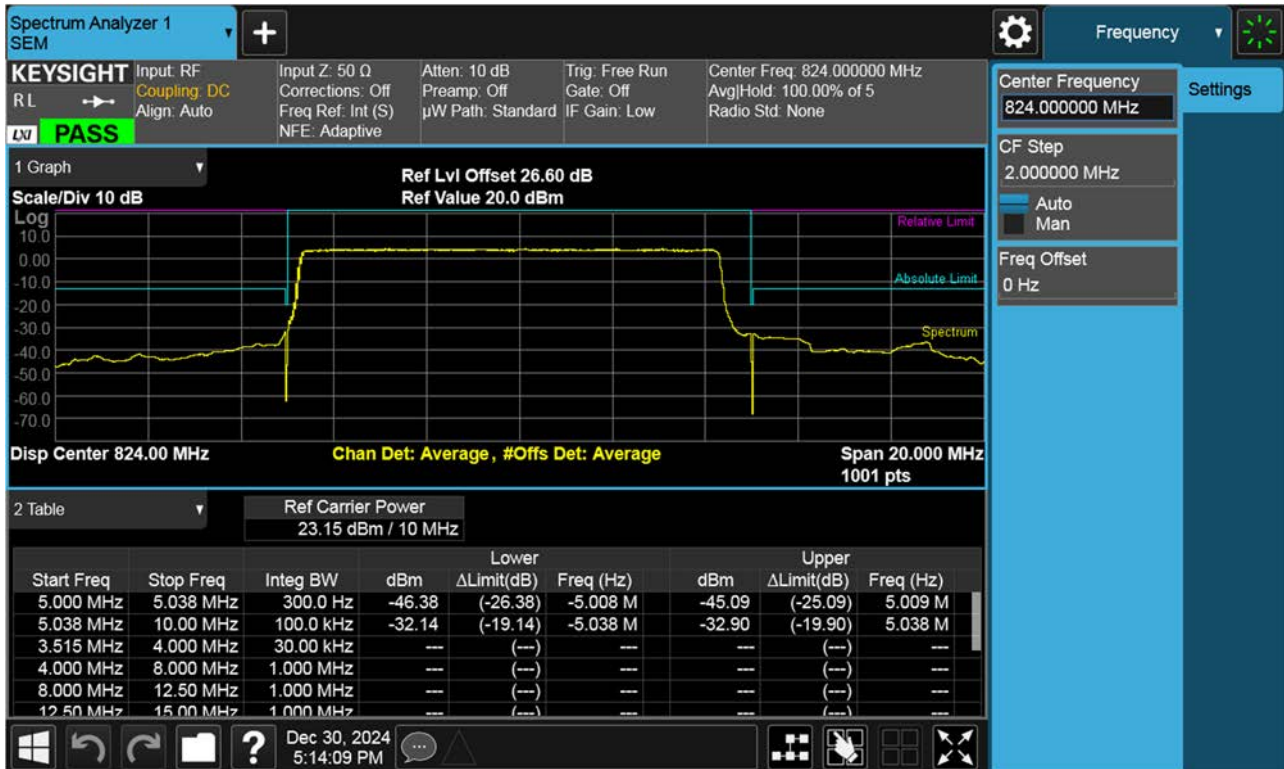
Sub6 n26. Low Channel Edge Plot (10 M BW Ch.163800 BPSK_RB50_Offset 0)



Sub6 n26. Upper Channel Edge Plot (10 M BW Ch.164800 BPSK_RB1_Offset 51)



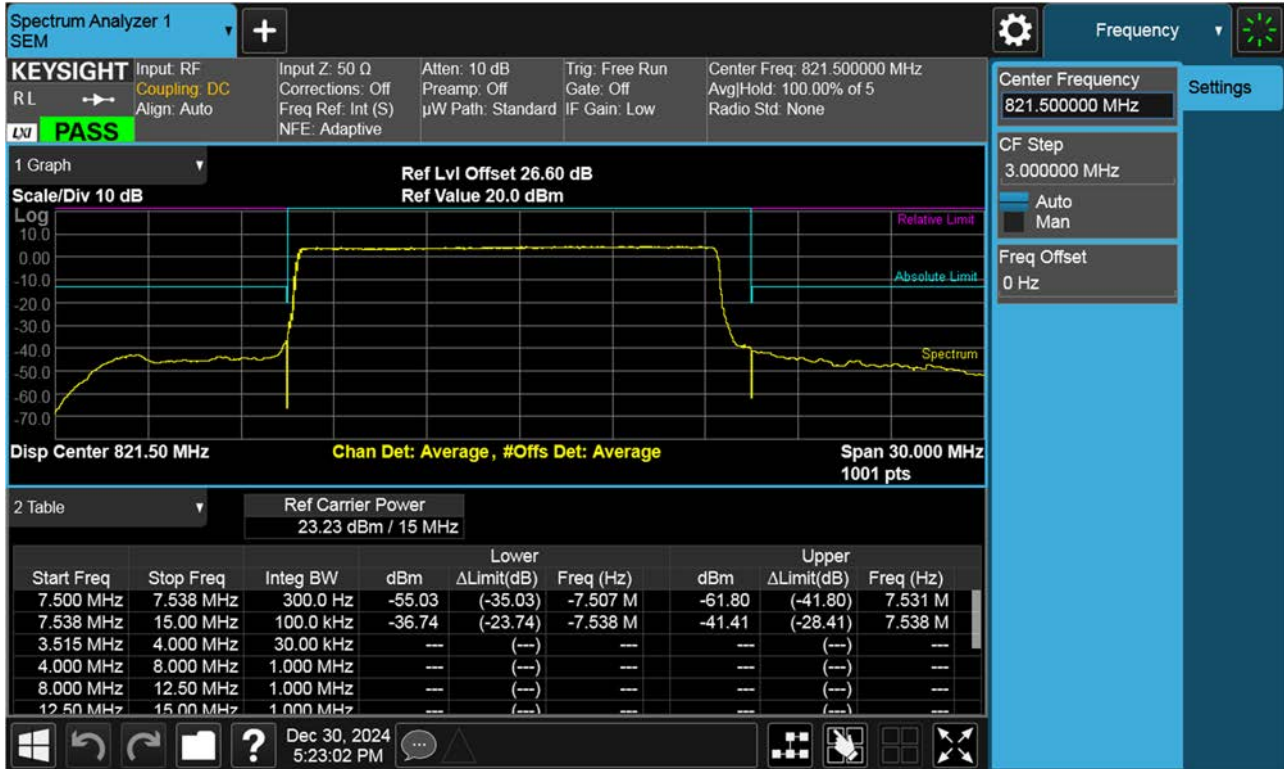
Sub6 n26. Upper Channel Edge Plot (10 M BW Ch.164800 BPSK_RB50_Offset 0)



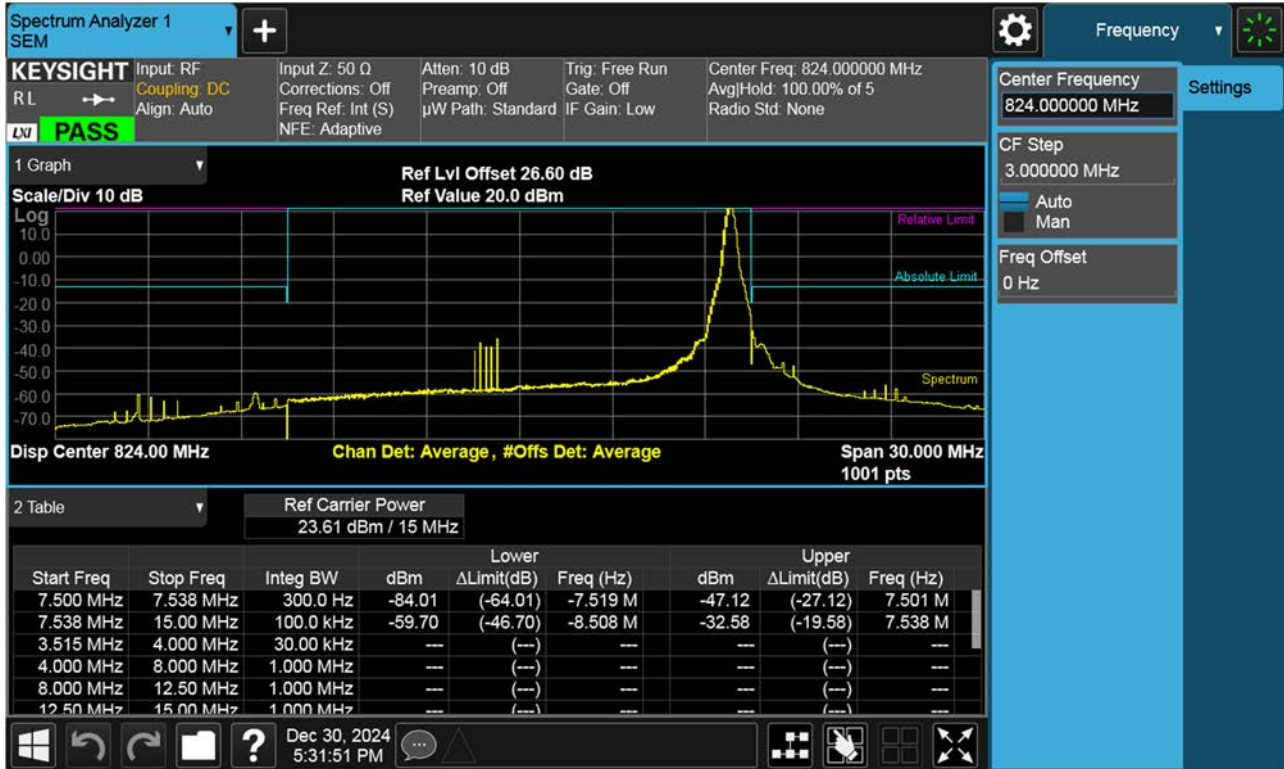
Sub6 n26. Low Channel Edge Plot (15 M BW Ch.164300 BPSK RB 1, Offset 0)



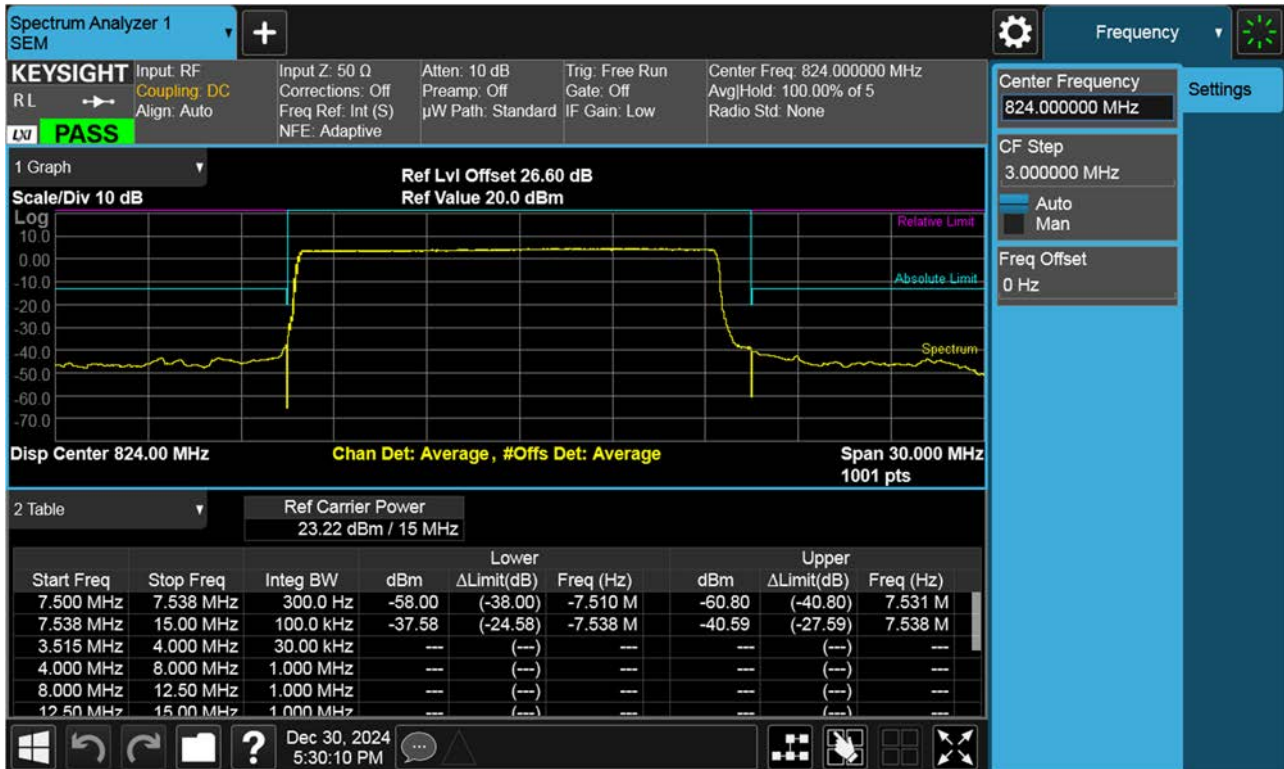
Sub6 n26. Low Channel Edge Plot (15 M BW Ch.164300 BPSK_RB75_Offset 0)



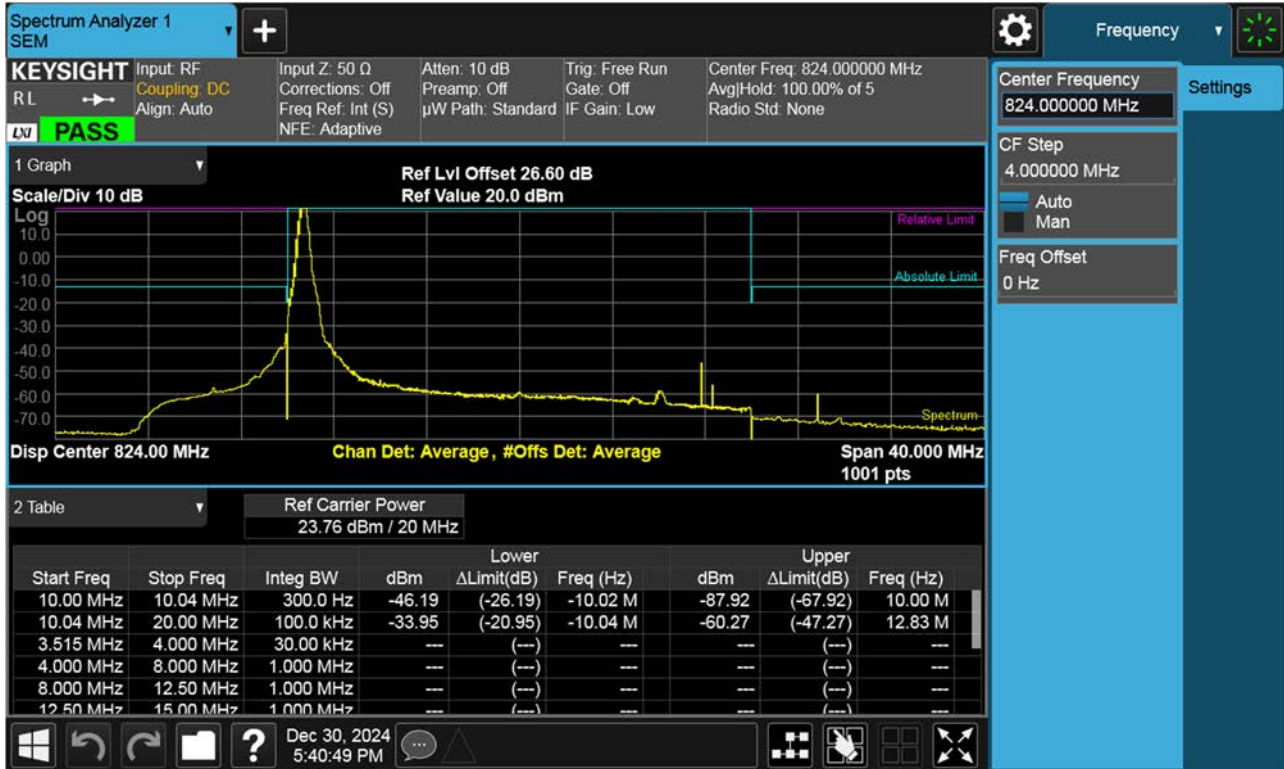
Sub6 n26. Upper Channel Edge Plot (15 M BW Ch.164800 BPSK_RB1_Offset 78)



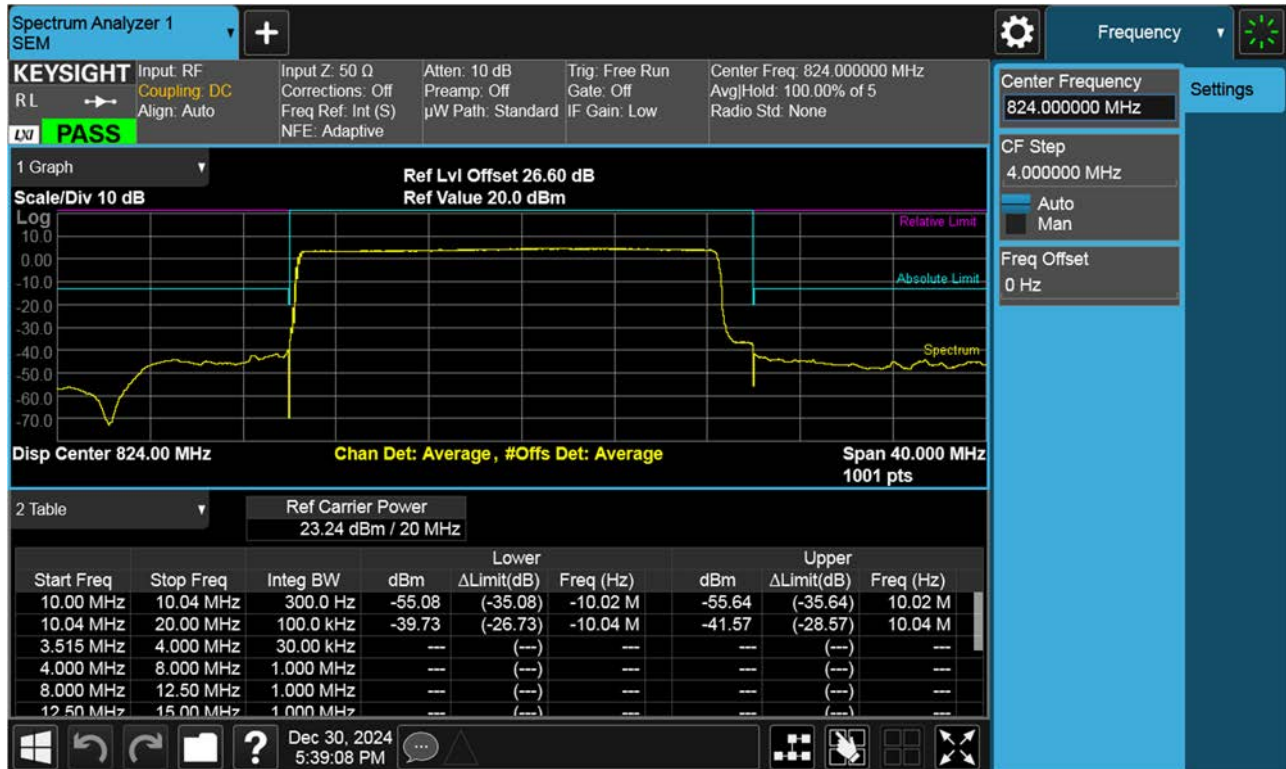
Sub6 n26. Upper Channel Edge Plot (15 M BW Ch.164800 BPSK_RB75_Offset 0)



Sub6 n26. Mid Channel Edge Plot (20 M BW Ch.164800 QPSK_ RB1_Offset 105)



Sub6 n26. Mid Channel Edge Plot (20 M BW Ch.164800 BPSK_ RB100_Offset 0)



Sub6 n26. Upper Band Edge Plot (5 M BW Ch.164800 BPSK_RB1_Offset 24)



Sub6 n26. Upper Band Edge Plot (5 M BW Ch.164800 BPSK_RB25_Offset 0)



Sub6 n26. Upper Band Edge Plot (10 M BW Ch.164800 BPSK_RB1_Offset 51)



Sub6 n26. Upper Band Edge Plot (10 M BW Ch.164800 BPSK_RB50_Offset 0)



Sub6 n26. Lower Band Edge Plot (15 M BW Ch.164300 BPSK_RB1_Offset 78)



Sub6 n26. Lower Band Edge Plot (15 M BW Ch.164300 BPSK_RB75_Offset 0)

