

TEST REPORT

FCC Sub6 Test for SM-S731U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2507-FC031

DATE OF ISSUE
July 14, 2025

Tested by
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TEST REPORT

REPORT NO.

HCT-RF-2507-FC031

DATE OF ISSUE

July 14, 2025

Additional Model

SM-S731U1

Applicant

SAMSUNG Electronics Co., Ltd.

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

Product Name

Mobile Phone

Model Name

SM-S731U

Date of Test

May 13, 2025 ~ July 10, 2025

FCC ID

A3LSMS731U

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 Held to Ear (PCE)

Test Standard Used

FCC Rule Part : § 24

Test Results

PASS

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	July 14, 2025	Initial Release

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

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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MEASUREMENT REPORT

1. GENERAL INFORMATION

Model(s):	SM-S731U
Additional Model(s)	SM-S731U1
SCS(kHz):	15
Bandwidth(MHz):	5, 10, 15, 20, 25, 30, 35, 40
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:	1852.5 MHz – 1912.5 MHz (5 MHz) (Sub6 n25(2)) 1855.0 MHz – 1910.0 MHz (10 MHz) (Sub6 n25(2)) 1857.5 MHz – 1907.5 MHz (15 MHz) (Sub6 n25(2)) 1860.0 MHz – 1905.0 MHz (20 MHz) (Sub6 n25(2)) 1862.5 MHz – 1902.5 MHz (25 MHz) (Sub6 n25(2)) 1865.0 MHz – 1900.0 MHz (30 MHz) (Sub6 n25(2)) 1867.5 MHz – 1897.5 MHz (35 MHz) (Sub6 n25(2)) 1870.0 MHz – 1895.0 MHz (40 MHz) (Sub6 n25(2))
Serial number:	Radiated : R3CY40DEG0B Conducted : R3CY40XC6MR Uplink Carrier Aggregation (Main1 ANT) : R3CY50RAAJJ Uplink Carrier Aggregation (Sub2 ANT) : R3CY40DEG0B
Antenna Information	Please refer to the Antenna Specification document.

1.1. MAXIMUM OUTPUT POWER

Main 1 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n25(2) (5)	1852.5 - 1912.5	4M54G7D	PI/2 BPSK	0.301	24.79
		4M54G7D	QPSK	0.296	24.72
		4M53W7D	16QAM	0.231	23.64
		4M51W7D	64QAM	0.166	22.21
		4M52W7D	256QAM	0.104	20.16
Sub6 n25(2) (10)	1855.0 - 1910.0	8M99G7D	PI/2 BPSK	0.299	24.75
		9M01G7D	QPSK	0.297	24.73
		8M97W7D	16QAM	0.234	23.70
		8M97W7D	64QAM	0.167	22.22
		8M99W7D	256QAM	0.107	20.31
Sub6 n25(2) (15)	1857.5 - 1907.5	13M5G7D	PI/2 BPSK	0.303	24.82
		13M5G7D	QPSK	0.299	24.75
		13M5W7D	16QAM	0.234	23.69
		13M4W7D	64QAM	0.168	22.25
		13M5W7D	256QAM	0.107	20.28
Sub6 n25(2) (20)	1860.0 - 1905.0	17M9G7D	PI/2 BPSK	0.298	24.74
		18M0G7D	QPSK	0.294	24.68
		17M9W7D	16QAM	0.235	23.71
		17M9W7D	64QAM	0.170	22.30
		17M9W7D	256QAM	0.106	20.24
Sub6 n25(2) (25)	1862.5 - 1902.5	23M0G7D	PI/2 BPSK	0.303	24.82
		23M0G7D	QPSK	0.299	24.76
		23M0W7D	16QAM	0.235	23.71
		23M1W7D	64QAM	0.168	22.25
		23M0W7D	256QAM	0.107	20.29
Sub6 n25(2) (30)	1865.0 - 1900.0	28M8G7D	PI/2 BPSK	0.313	24.96
		28M8G7D	QPSK	0.313	24.95
		28M7W7D	16QAM	0.251	23.99
		28M7W7D	64QAM	0.175	22.43
		28M8W7D	256QAM	0.112	20.49
Sub6 n25(2) (35)	1867.5 - 1897.5	32M4G7D	PI/2 BPSK	0.309	24.90
		32M3G7D	QPSK	0.308	24.88
		32M2W7D	16QAM	0.244	23.87
		32M3W7D	64QAM	0.172	22.36
		32M3W7D	256QAM	0.109	20.38
Sub6 n25(2) (40)	1870.0 - 1895.0	38M8G7D	PI/2 BPSK	0.301	24.78
		38M8G7D	QPSK	0.299	24.76
		38M9W7D	16QAM	0.239	23.78
		38M8W7D	64QAM	0.167	22.22
		38M8W7D	256QAM	0.107	20.31

Sub 2 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n25(2) (5)	1852.5 - 1912.5	4M54G7D	PI/2 BPSK	0.112	20.48
		4M53G7D	QPSK	0.108	20.33
		4M53W7D	16QAM	0.086	19.37
		4M52W7D	64QAM	0.062	17.95
		4M53W7D	256QAM	0.040	15.98
Sub6 n25(2) (10)	1855.0 - 1910.0	9M01G7D	PI/2 BPSK	0.111	20.46
		9M00G7D	QPSK	0.111	20.45
		9M00W7D	16QAM	0.091	19.58
		8M99W7D	64QAM	0.063	17.97
		8M96W7D	256QAM	0.040	16.03
Sub6 n25(2) (15)	1857.5 - 1907.5	13M5G7D	PI/2 BPSK	0.114	20.55
		13M5G7D	QPSK	0.111	20.47
		13M5W7D	16QAM	0.092	19.64
		13M4W7D	64QAM	0.062	17.95
		13M4W7D	256QAM	0.041	16.12
Sub6 n25(2) (20)	1860.0 - 1905.0	17M9G7D	PI/2 BPSK	0.115	20.60
		17M9G7D	QPSK	0.111	20.45
		17M9W7D	16QAM	0.086	19.33
		17M9W7D	64QAM	0.064	18.07
		17M9W7D	256QAM	0.039	15.95
Sub6 n25(2) (25)	1862.5 - 1902.5	23M0G7D	PI/2 BPSK	0.113	20.53
		23M0G7D	QPSK	0.108	20.34
		23M0W7D	16QAM	0.090	19.56
		23M0W7D	64QAM	0.065	18.10
		23M0W7D	256QAM	0.040	16.03
Sub6 n25(2) (30)	1865.0 - 1900.0	28M8G7D	PI/2 BPSK	0.116	20.63
		28M8G7D	QPSK	0.113	20.53
		28M8W7D	16QAM	0.092	19.66
		28M8W7D	64QAM	0.065	18.15
		28M8W7D	256QAM	0.041	16.12
Sub6 n25(2) (35)	1867.5 - 1897.5	32M4G7D	PI/2 BPSK	0.121	20.84
		32M4G7D	QPSK	0.120	20.78
		32M3W7D	16QAM	0.094	19.73
		32M4W7D	64QAM	0.066	18.22
		32M4W7D	256QAM	0.043	16.36
Sub6 n25(2) (40)	1870.0 - 1895.0	38M8G7D	PI/2 BPSK	0.126	21.02
		38M9G7D	QPSK	0.121	20.81
		38M7W7D	16QAM	0.100	19.99
		38M9W7D	64QAM	0.070	18.42
		38M9W7D	256QAM	0.045	16.54

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, Republic 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
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 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.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method.

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;

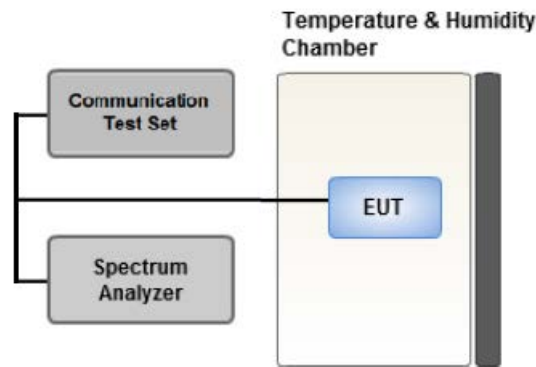
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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.

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

3.4 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)

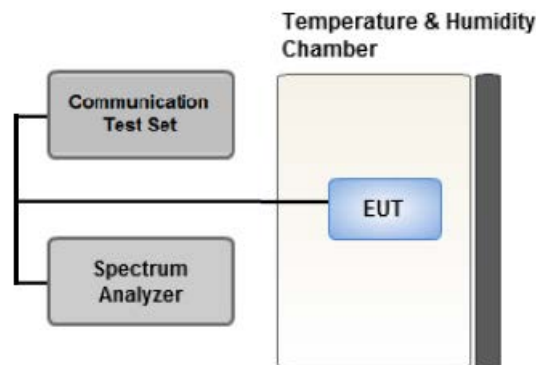
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW $\geq 3 \times$ RBW.

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.

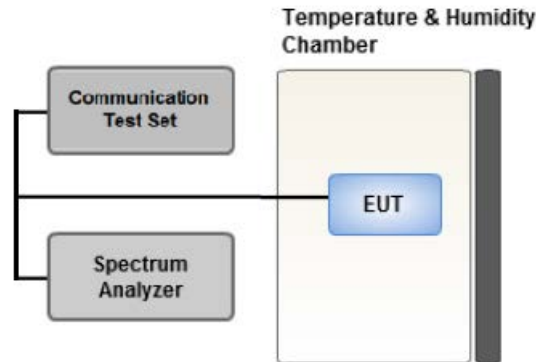
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

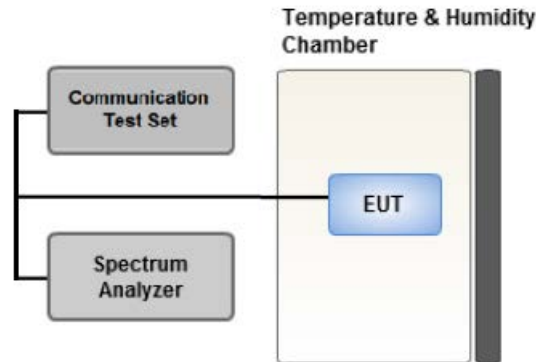
Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. RBW = 1 MHz
2. VBW $\geq$ 3 MHz
3. Detector = Peak
4. Trace Mode = max hold
5. Sweep time = auto
6. Number of points in sweep $\geq 2 \times \text{Span} / \text{RBW}$

3.7 BAND EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
7. Trace mode = trace average
8. Sweep Time > (Number of Points) (Symbol Period)
9. The trace was allowed to stabilize

Test Notes

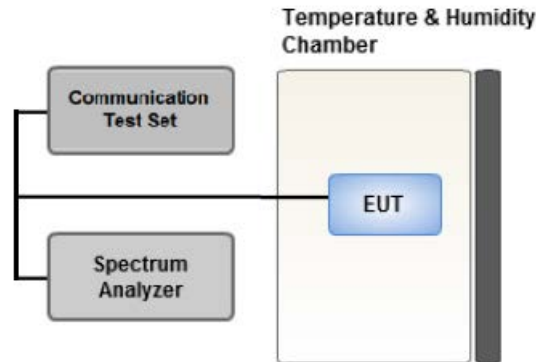
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block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

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

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

The frequency stability of the transmitter is measured by:

1. Temperature:

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

2. Primary Supply Voltage:

- .- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.
- .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter.
Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

3.9 WORST CASE(RADIATED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
(Worst case: DFT-S-OFDM)
- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
Mode: NSA. SA
Worst case: SA
Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
Worst case : Stand alone
- 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.
- 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 (=anchor) were investigated and the test results were measured No Peak Found.
The test results which are attenuated more than 20 dB below the permissible value, so it was not 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 : 30 MHz (Main 1 ANT), 40 MHz (Sub 2 ANT))
- Sub6 n25 (1 850 – 1 915 MHz, 5/10/15/20/25/30/35/40 MHz bandwidth) overlaps the entire frequency range of Sub6 n2 (1 850 – 1 910 MHz, 5/10/15/20/25/30/35/40 MHz bandwidth).
Therefore, test data provided in this report covers Sub6 n25 as well as Sub6 n2.
- SM-S731U & additional models were tested and the worst case results are reported.
(Worst case : SM-S731U)

[Main 1 ANT Worst case]

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

[Sub 2 ANT Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Equivalent Isotropic Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	See Section 9.1		Z
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	See Section 9.2		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.
Mode: NSA, SA
Worst case: SA
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
Please refer to the table below.
- Sub6 n25 (1 850 – 1 915 MHz, 5/10/15/20/25/30/35/40 MHz bandwidth) overlaps the entire frequency range of Sub6 n2 (1 850 – 1 910 MHz, 5/10/15/20/25/30/35/40 MHz bandwidth).
Therefore, test data provided in this report covers Sub6 n25 as well as Sub6 n2.
- SM-S731U & additional models were tested and the worst case results are reported.
(Worst case : SM-S731U)

[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, 25,30, 35, 40	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
		25	Low	1	0
			High	1	132
		30	Low	1	0
			High	1	159
		35	Low	1	0
			High	1	187
		40	Low	1	0
			High	1	215
		5, 10, 15, 20, 25,30, 35, 40	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	5, 10, 15, 20, 25,30, 35, 40	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	03/10/2026	Biennial
Precision Dipole Antenna	UHAP	Schwarzbeck	01274	03/10/2026	Biennial
Horn Antenna(1~18 GHz)	BBHA 9120D	Schwarzbeck	02289	02/14/2026	Biennial
Horn Antenna(1~18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1299	04/17/2026	Biennial
Horn Antenna(15~40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Horn Antenna(15~40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/23/2027	Biennial
Loop Antenna(9 kHz~30 MHz)	FMZB1513	Rohde & Schwarz	1513-175	01/06/2027	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/05/2027	Biennial
Hybrid Antenna	VULB9160	Schwarzbeck	760	02/17/2027	Biennial
RF Switching System	FBSR-06B (1G HPF + LNA)	T&M SYSTEM	F3L1	05/08/2026	Annual
RF Switching System	FBSR-06B (3G HPF + LNA)	T&M SYSTEM	F3L2	05/08/2026	Annual
RF Switching System	FBSR-06B (6G HPF + LNA)	T&M SYSTEM	F3L3	05/08/2026	Annual
RF Switching System	FBSR-06B (LNA)	T&M SYSTEM	F3L4	05/08/2026	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/07/2025	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/19/2026	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	08/22/2025	Annual
Power Splitter(DC~26.5 GHz)	11667B	Hewlett Packard	11275	02/04/2026	Annual
Chamber	SU-642	ESPEC	93008124	02/11/2026	Annual
Signal Analyzer(10 Hz~26.5 GHz)	N9020A	Agilent	MY51110063	03/21/2026	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/10/2026	Annual
Spectrum Analyzer (10 Hz~40 GHz)	FSV40	REOHDE & SCHWARZ	101436	02/04/2026	Annual
Signal & Spectrum Analyzer (2 Hz~67 GHz)	FSW67	REOHDE & SCHWARZ	101736	05/27/2026	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262287701	05/14/2026	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/08/2026	Annual
Signal Analyzer(5 Hz~40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/14/2026	Annual
4-Way Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/10/2025	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/26/2025	Annual
Automation Software	FCC 2G/3G/4G Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC NR Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC LTE Radiated	HCT CO., LTD	-	-	-
Automation Software	FCC NR Radiated	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_{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)	5.68 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.75 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.82 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, $k=2$)

6. SUMMARY OF TEST RESULTS

-. 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
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 24.238(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§ 2.1046	N/A	Note1
Peak- to- Average Ratio	§ 24.232(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§ 24.235	Emission must remain in band	PASS

Note:

1. Refer to the 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	§ 24.232(c)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 24.238(a)	< 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

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

- 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(Main 1 ANT)

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		RB	
								W	W	dBm	Size	Offset
1852.5	Sub6 n25(2)/ 5 MHz [15 kHz]	PI/2 BPSK	-18.33	15.30	10.45	2.08	H	< 2.00	0.233	23.67	1	12
		QPSK	-18.40	15.23	10.45	2.08	H		0.229	23.60		
		16-QAM	-19.41	14.22	10.45	2.08	H		0.182	22.59		
		64-QAM	-20.86	12.77	10.45	2.08	H		0.130	21.14		
		256-QAM	-22.94	10.69	10.45	2.08	H		0.080	19.06		
1882.5		PI/2 BPSK	-17.21	16.68	10.32	2.21	H		0.301	24.79	1	12
		QPSK	-17.28	16.61	10.32	2.21	H		0.296	24.72		
		16-QAM	-18.36	15.53	10.32	2.21	H		0.231	23.64		
		64-QAM	-19.79	14.10	10.32	2.21	H		0.166	22.21		
		256-QAM	-21.84	12.05	10.32	2.21	H		0.104	20.16		
1912.5		PI/2 BPSK	-18.85	15.33	10.19	2.17	H		0.216	23.35	1	1
		QPSK	-18.86	15.32	10.19	2.17	H		0.216	23.34		
		16-QAM	-19.86	14.32	10.19	2.17	H		0.171	22.34		
		64-QAM	-21.24	12.94	10.19	2.17	H		0.125	20.96		
		256-QAM	-23.38	10.80	10.19	2.17	H		0.076	18.82		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1855.0		PI/2 BPSK	-18.33	15.30	10.45	2.08	H	< 2.00	0.233	23.67	1	50
		QPSK	-18.31	15.32	10.45	2.08	H		0.234	23.69		
		16-QAM	-19.36	14.27	10.45	2.08	H		0.184	22.64		
		64-QAM	-20.85	12.78	10.45	2.08	H		0.130	21.15		
		256-QAM	-22.74	10.89	10.45	2.08	H		0.084	19.26		
1882.5	Sub6 n25(2)/ 10 MHz [15 kHz]	PI/2 BPSK	-17.25	16.64	10.32	2.21	H	< 2.00	0.299	24.75	1	26
		QPSK	-17.27	16.62	10.32	2.21	H		0.297	24.73		
		16-QAM	-18.30	15.59	10.32	2.21	H		0.234	23.70		
		64-QAM	-19.78	14.11	10.32	2.21	H		0.167	22.22		
		256-QAM	-21.69	12.20	10.32	2.21	H		0.107	20.31		
1910.0		PI/2 BPSK	-18.66	15.24	10.21	2.17	H	< 2.00	0.213	23.28	1	26
		QPSK	-18.71	15.19	10.21	2.17	H		0.211	23.23		
		16-QAM	-19.64	14.26	10.21	2.17	H		0.170	22.30		
		64-QAM	-21.11	12.79	10.21	2.17	H		0.121	20.83		
		256-QAM	-23.21	10.69	10.21	2.17	H		0.075	18.73		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1857.5		PI/2 BPSK	-18.24	15.08	10.43	2.10	H	< 2.00	0.219	23.41	1	77
		QPSK	-18.27	15.05	10.43	2.10	H		0.218	23.38		
		16-QAM	-19.23	14.09	10.43	2.10	H		0.175	22.42		
		64-QAM	-20.73	12.59	10.43	2.10	H		0.124	20.92		
		256-QAM	-22.74	10.58	10.43	2.10	H		0.078	18.91		
1882.5	Sub6 n25(2)/ 15 MHz [15 kHz]	PI/2 BPSK	-17.18	16.71	10.32	2.21	H	< 2.00	0.303	24.82	1	39
		QPSK	-17.25	16.64	10.32	2.21	H		0.299	24.75		
		16-QAM	-18.31	15.58	10.32	2.21	H		0.234	23.69		
		64-QAM	-19.75	14.14	10.32	2.21	H		0.168	22.25		
		256-QAM	-21.72	12.17	10.32	2.21	H		0.107	20.28		
1907.5		PI/2 BPSK	-18.25	15.65	10.21	2.17	H	< 2.00	0.234	23.69	1	1
		QPSK	-18.27	15.63	10.21	2.17	H		0.233	23.67		
		16-QAM	-19.29	14.61	10.21	2.17	H		0.184	22.65		
		64-QAM	-20.82	13.08	10.21	2.17	H		0.129	21.12		
		256-QAM	-22.72	11.18	10.21	2.17	H		0.084	19.22		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1860.0		PI/2 BPSK	-17.89	15.43	10.43	2.10	H	< 2.00	0.238	23.76	1	104
		QPSK	-17.91	15.41	10.43	2.10	H		0.236	23.74		
		16-QAM	-18.87	14.45	10.43	2.10	H		0.190	22.78		
		64-QAM	-20.38	12.94	10.43	2.10	H		0.134	21.27		
		256-QAM	-22.35	10.97	10.43	2.10	H		0.085	19.30		
1882.5	Sub6 n25(2)/ 20 MHz [15 kHz]	PI/2 BPSK	-17.26	16.63	10.32	2.21	H	< 2.00	0.298	24.74	1	53
		QPSK	-17.32	16.57	10.32	2.21	H		0.294	24.68		
		16-QAM	-18.29	15.60	10.32	2.21	H		0.235	23.71		
		64-QAM	-19.70	14.19	10.32	2.21	H		0.170	22.30		
		256-QAM	-21.76	12.13	10.32	2.21	H		0.106	20.24		
1905.0		PI/2 BPSK	-18.00	16.04	10.23	2.19	H	< 2.00	0.256	24.08	1	1
		QPSK	-18.02	16.02	10.23	2.19	H		0.255	24.06		
		16-QAM	-19.00	15.04	10.23	2.19	H		0.203	23.08		
		64-QAM	-20.53	13.51	10.23	2.19	H		0.143	21.55		
		256-QAM	-22.45	11.59	10.23	2.19	H		0.092	19.63		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1862.5		PI/2 BPSK	-17.82	15.79	10.41	2.13	H	< 2.00	0.255	24.07	1	131
		QPSK	-17.84	15.77	10.41	2.13	H		0.254	24.05		
		16-QAM	-18.79	14.82	10.41	2.13	H		0.204	23.10		
		64-QAM	-20.27	13.34	10.41	2.13	H		0.145	21.62		
		256-QAM	-22.30	11.31	10.41	2.13	H		0.091	19.59		
1882.5	Sub6 n25(2)/ 25 MHz [15 kHz]	PI/2 BPSK	-17.18	16.71	10.32	2.21	H	< 2.00	0.303	24.82	1	66
		QPSK	-17.24	16.65	10.32	2.21	H		0.299	24.76		
		16-QAM	-18.29	15.60	10.32	2.21	H		0.235	23.71		
		64-QAM	-19.75	14.14	10.32	2.21	H		0.168	22.25		
		256-QAM	-21.71	12.18	10.32	2.21	H		0.107	20.29		
1902.5		PI/2 BPSK	-17.72	16.32	10.23	2.19	H	< 2.00	0.273	24.36	1	1
		QPSK	-17.73	16.31	10.23	2.19	H		0.272	24.35		
		16-QAM	-18.73	15.31	10.23	2.19	H		0.216	23.35		
		64-QAM	-20.24	13.80	10.23	2.19	H		0.153	21.84		
		256-QAM	-22.17	11.87	10.23	2.19	H		0.098	19.91		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1865.0		PI/2 BPSK	-17.36	16.25	10.41	2.13	H	< 2.00	0.284	24.53	1	158
		QPSK	-17.37	16.24	10.41	2.13	H		0.283	24.52		
		16-QAM	-18.34	15.27	10.41	2.13	H		0.226	23.55		
		64-QAM	-19.82	13.79	10.41	2.13	H		0.161	22.07		
		256-QAM	-21.84	11.77	10.41	2.13	H		0.101	20.05		
1882.5	Sub6 n25(2)/ 30 MHz [15 kHz]	PI/2 BPSK	-17.24	16.65	10.32	2.21	H		0.299	24.76	1	80
		QPSK	-17.30	16.59	10.32	2.21	H		0.295	24.70		
		16-QAM	-18.30	15.59	10.32	2.21	H		0.234	23.70		
		64-QAM	-19.69	14.20	10.32	2.21	H		0.170	22.31		
		256-QAM	-21.73	12.16	10.32	2.21	H		0.106	20.27		
1900.0		PI/2 BPSK	-17.26	16.91	10.25	2.20	H		0.313	24.96	1	1
		QPSK	-17.27	16.90	10.25	2.20	H		0.313	24.95		
		16-QAM	-18.23	15.94	10.25	2.20	H		0.251	23.99		
		64-QAM	-19.79	14.38	10.25	2.20	H		0.175	22.43		
		256-QAM	-21.73	12.44	10.25	2.20	H		0.112	20.49		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1867.5		PI/2 BPSK	-17.24	16.67	10.39	2.16	H	< 2.00	0.309	24.90	1	186
		QPSK	-17.29	16.62	10.39	2.16	H		0.305	24.85		
		16-QAM	-18.32	15.59	10.39	2.16	H		0.241	23.82		
		64-QAM	-19.81	14.10	10.39	2.16	H		0.171	22.33		
		256-QAM	-21.78	12.13	10.39	2.16	H		0.109	20.36		
1882.5	Sub6 n25(2)/ 35 MHz [15 kHz]	PI/2 BPSK	-17.19	16.70	10.32	2.21	H	< 2.00	0.303	24.81	1	94
		QPSK	-17.23	16.66	10.32	2.21	H		0.300	24.77		
		16-QAM	-18.28	15.61	10.32	2.21	H		0.236	23.72		
		64-QAM	-19.73	14.16	10.32	2.21	H		0.169	22.27		
		256-QAM	-21.64	12.25	10.32	2.21	H		0.109	20.36		
1897.5		PI/2 BPSK	-17.33	16.84	10.25	2.20	H	< 2.00	0.308	24.89	1	1
		QPSK	-17.34	16.83	10.25	2.20	H		0.308	24.88		
		16-QAM	-18.35	15.82	10.25	2.20	H		0.244	23.87		
		64-QAM	-19.86	14.31	10.25	2.20	H		0.172	22.36		
		256-QAM	-21.84	12.33	10.25	2.20	H		0.109	20.38		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1870.0		PI/2 BPSK	-17.53	16.38	10.39	2.16	H	< 2.00	0.289	24.61	1	214
		QPSK	-17.56	16.35	10.39	2.16	H		0.287	24.58		
		16-QAM	-18.63	15.28	10.39	2.16	H		0.225	23.51		
		64-QAM	-20.09	13.82	10.39	2.16	H		0.161	22.05		
		256-QAM	-22.01	11.90	10.39	2.16	H		0.103	20.13		
1882.5	Sub6 n25(2)/ 40 MHz [15 kHz]	PI/2 BPSK	-17.22	16.67	10.32	2.21	H	< 2.00	0.301	24.78	1	108
		QPSK	-17.24	16.65	10.32	2.21	H		0.299	24.76		
		16-QAM	-18.22	15.67	10.32	2.21	H		0.239	23.78		
		64-QAM	-19.78	14.11	10.32	2.21	H		0.167	22.22		
		256-QAM	-21.78	12.11	10.32	2.21	H		0.105	20.22		
1895.0		PI/2 BPSK	-17.58	16.60	10.28	2.20	H	< 2.00	0.294	24.68	1	1
		QPSK	-17.59	16.59	10.28	2.20	H		0.293	24.67		
		16-QAM	-18.59	15.59	10.28	2.20	H		0.233	23.67		
		64-QAM	-20.10	14.08	10.28	2.20	H		0.165	22.16		
		256-QAM	-21.95	12.23	10.28	2.20	H		0.107	20.31		

8.2 RADIATED SPURIOUS EMISSIONS

☐ NR Band: N25(2)
☐ Bandwidth: 30 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
373000 (1865.0)	3 730.00	-59.61	12.04	-59.47	3.17	V	-50.60	-13.00	1	158
	5 595.00	-59.64	12.22	-53.43	3.95	V	-45.16	-13.00		
	7 460.00	-63.07	11.37	-48.00	4.61	V	-41.24	-13.00		
376500 (1882.5)	3 765.00	-59.83	11.88	-59.22	3.11	V	-50.45	-13.00	1	80
	5 647.50	-59.98	12.11	-53.79	3.96	V	-45.64	-13.00		
	7 530.00	-63.48	11.57	-48.71	4.60	V	-41.74	-13.00		
380000 (1900.0)	3 800.00	-60.39	11.71	-59.96	3.21	V	-51.46	-13.00	1	0
	5 700.00	-62.39	11.95	-55.27	4.02	V	-47.34	-13.00		
	7 600.00	-62.86	11.61	-48.85	4.64	V	-41.88	-13.00		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	Limit (dB)
Sub6 n25(2)	5 MHz	1882.5	BPSK	25	0	6.03	13.00
			QPSK			6.22	
			16-QAM			6.68	
			64-QAM			6.77	
			256-QAM			6.85	
	10 MHz		BPSK	50		5.53	
			QPSK			5.86	
			16-QAM			6.44	
			64-QAM			6.66	
			256-QAM			6.82	
	15 MHz		BPSK	75		4.67	
			QPSK			5.75	
			16-QAM			6.43	
			64-QAM			6.60	
			256-QAM			6.85	
	20 MHz		BPSK	100		5.89	
			QPSK			6.08	
			16-QAM			6.53	
			64-QAM			6.67	
			256-QAM			6.85	

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	Limit (dB)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	4.60	13.00
			QPSK			5.73	
			16-QAM			6.48	
			64-QAM			6.67	
			256-QAM			6.79	
	30 MHz		BPSK	160		4.65	
			QPSK			5.71	
			16-QAM			6.45	
			64-QAM			6.63	
			256-QAM			6.73	
	35 MHz		BPSK	180		4.65	
			QPSK			5.73	
			16-QAM			6.45	
			64-QAM			6.59	
			256-QAM			6.75	
	40 MHz		BPSK	216		4.84	
			QPSK			5.74	
			16-QAM			6.49	
			64-QAM			6.58	
			256-QAM			6.82	

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 74 ~ 113.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n25(2)	5 MHz	1882.5	BPSK	25	0	4.5347
			QPSK			4.5442
			16-QAM			4.5252
			64-QAM			4.5089
			256-QAM			4.5155
	10 MHz		BPSK	50		8.9937
			QPSK			9.0128
			16-QAM			8.9707
			64-QAM			8.9663
			256-QAM			8.9914
	15 MHz		BPSK	75		13.459
			QPSK			13.475
			16-QAM			13.460
			64-QAM			13.436
			256-QAM			13.456
	20 MHz		BPSK	100		17.925
			QPSK			17.988
			16-QAM			17.891
			64-QAM			17.940
			256-QAM			17.915

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	22.989
			QPSK			23.023
			16-QAM			23.024
			64-QAM			23.083
			256-QAM			22.982
	30 MHz		BPSK	160		28.787
			QPSK			28.825
			16-QAM			28.711
			64-QAM			28.726
			256-QAM			28.760
	35 MHz		BPSK	180		32.389
			QPSK			32.332
			16-QAM			32.237
			64-QAM			32.314
			256-QAM			32.293
	40 MHz		BPSK	216		38.748
			QPSK			38.745
			16-QAM			38.865
			64-QAM			38.828
			256-QAM			38.802

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 114 ~ 153.

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 n25(2)	5	1852.5	8.3550	30.315	-63.207	-32.892	-13.00
		1882.5	7.9462	30.315	-62.711	-32.396	
		1912.5	8.9033	30.315	-63.544	-33.229	
	10	1855.0	3.8186	29.722	-63.361	-33.639	
		1882.5	5.9821	30.315	-63.334	-33.019	
		1910.0	4.0280	29.722	-62.939	-33.217	
	15	1857.5	3.7488	29.722	-62.687	-32.965	
		1882.5	4.8854	29.722	-63.950	-34.228	
		1907.5	3.7787	29.722	-63.141	-33.419	
	20	1860.0	9.6511	30.315	-62.644	-32.329	
		1882.5	9.7109	30.315	-63.429	-33.114	
		1905.0	8.0359	30.315	-62.833	-32.518	
	25	1862.5	9.0927	30.315	-62.807	-32.492	
		1882.5	9.2722	30.315	-63.568	-33.253	
		1902.5	3.7189	29.722	-64.011	-34.289	
	30	1865.0	5.8026	30.315	-63.162	-32.847	
		1882.5	7.4776	30.315	-63.527	-33.212	
		1900.0	8.8136	30.315	-62.487	-32.172	
	35	1867.5	3.8286	29.722	-63.092	-33.370	
		1882.5	9.6710	30.315	-62.895	-32.580	
		1897.5	5.1945	30.315	-63.600	-33.285	
	40	1870.0	6.0020	30.315	-63.828	-33.513	
		1882.5	9.9003	30.315	-63.617	-33.302	
		1895.0	9.0130	30.315	-63.037	-32.722	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 154 ~ 201.
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Factor(dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.012
1 – 5	29.722
5 – 10	30.315
10 – 15	30.840
15 – 20	31.213
Above 20	31.855

8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 202 ~ 249.

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.300 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1852.5	100 %	+20(Ref)	1852 499 998	0.0	0.000 000	0.000
	100 %	-30	1852 499 996	-2.4	0.000 000	-0.001
	100 %	-20	1852 499 996	-2.0	0.000 000	-0.001
	100 %	-10	1852 499 996	-1.6	0.000 000	-0.001
	100 %	0	1852 499 996	-2.1	0.000 000	-0.001
	100 %	+10	1852 499 996	-1.9	0.000 000	-0.001
	100 %	+30	1852 499 995	-3.0	0.000 000	-0.002
	100 %	+40	1852 499 997	-1.0	0.000 000	-0.001
	100 %	+50	1852 499 996	-2.0	0.000 000	-0.001
	Batt. Endpoint	+20	1852 499 996	-2.4	0.000 000	-0.001
1912.5	100 %	+20(Ref)	1912 500 000	0.0	0.000 000	0.000
	100 %	-30	1912 500 000	-0.3	0.000 000	0.000
	100 %	-20	1912 499 998	-1.7	0.000 000	-0.001
	100 %	-10	1912 500 000	-0.4	0.000 000	0.000
	100 %	0	1912 499 999	-0.9	0.000 000	0.000
	100 %	+10	1912 500 001	0.6	0.000 000	0.000
	100 %	+30	1912 500 000	-0.2	0.000 000	0.000
	100 %	+40	1912 499 999	-0.6	0.000 000	0.000
	100 %	+50	1912 500 000	-0.1	0.000 000	0.000
	Batt. Endpoint	+20	1912 500 001	1.3	0.000 000	0.001

■ BandWidth:	<u>10 MHz</u>
■ Voltage(100 %):	<u>3.880 VDC</u>
■ Batt. Endpoint:	<u>3.300 VDC</u>
■ LIMIT:	<u>Emission must remain in band</u>

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1855.0	100 %	+20(Ref)	1855 000 000	0.0	0.000 000	0.000
	100 %	-30	1855 000 000	0.2	0.000 000	0.000
	100 %	-20	1854 999 999	-1.0	0.000 000	-0.001
	100 %	-10	1854 999 999	-0.9	0.000 000	0.000
	100 %	0	1854 999 999	-0.8	0.000 000	0.000
	100 %	+10	1854 999 997	-2.3	0.000 000	-0.001
	100 %	+30	1855 000 000	0.1	0.000 000	0.000
	100 %	+40	1855 000 001	0.7	0.000 000	0.000
	100 %	+50	1855 000 000	-0.1	0.000 000	0.000
	Batt. Endpoint	+20	1854 999 998	-1.7	0.000 000	-0.001
1910.0	100 %	+20(Ref)	1909 999 999	0.0	0.000 000	0.000
	100 %	-30	1909 999 998	-1.1	0.000 000	-0.001
	100 %	-20	1909 999 997	-2.1	0.000 000	-0.001
	100 %	-10	1909 999 998	-1.3	0.000 000	-0.001
	100 %	0	1909 999 998	-0.6	0.000 000	0.000
	100 %	+10	1909 999 999	0.0	0.000 000	0.000
	100 %	+30	1909 999 999	0.2	0.000 000	0.000
	100 %	+40	1909 999 997	-1.8	0.000 000	-0.001
	100 %	+50	1909 999 998	-0.7	0.000 000	0.000
	Batt. Endpoint	+20	1909 999 998	-1.5	0.000 000	-0.001

■ BandWidth:	<u>15 MHz</u>
■ Voltage(100 %):	<u>3.880 VDC</u>
■ Batt. Endpoint:	<u>3.300 VDC</u>
■ LIMIT:	<u>Emission must remain in band</u>

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1857.5	100 %	+20(Ref)	1857 499 999	0.0	0.000 000	0.000
	100 %	-30	1857 499 999	-0.4	0.000 000	0.000
	100 %	-20	1857 499 997	-2.0	0.000 000	-0.001
	100 %	-10	1857 499 997	-2.3	0.000 000	-0.001
	100 %	0	1857 499 997	-2.5	0.000 000	-0.001
	100 %	+10	1857 500 000	1.0	0.000 000	0.001
	100 %	+30	1857 499 999	-0.4	0.000 000	0.000
	100 %	+40	1857 499 999	-0.5	0.000 000	0.000
	100 %	+50	1857 499 998	-1.0	0.000 000	-0.001
	Batt. Endpoint	+20	1857 499 998	-0.8	0.000 000	0.000
1907.5	100 %	+20(Ref)	1907 500 000	0.0	0.000 000	0.000
	100 %	-30	1907 499 998	-1.7	0.000 000	-0.001
	100 %	-20	1907 500 001	1.2	0.000 000	0.001
	100 %	-10	1907 499 998	-1.8	0.000 000	-0.001
	100 %	0	1907 499 997	-2.7	0.000 000	-0.001
	100 %	+10	1907 499 999	-0.9	0.000 000	0.000
	100 %	+30	1907 499 999	-0.8	0.000 000	0.000
	100 %	+40	1907 499 998	-2.0	0.000 000	-0.001
	100 %	+50	1907 499 998	-1.4	0.000 000	-0.001
	Batt. Endpoint	+20	1907 500 002	2.4	0.000 000	0.001

■ BandWidth:	<u>20 MHz</u>
■ Voltage(100 %):	<u>3.880 VDC</u>
■ Batt. Endpoint:	<u>3.300 VDC</u>
■ LIMIT:	<u>Emission must remain in band</u>

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1860.0	100 %	+20(Ref)	1859 999 998	0.0	0.000 000	0.000
	100 %	-30	1859 999 999	1.5	0.000 000	0.001
	100 %	-20	1859 999 998	0.6	0.000 000	0.000
	100 %	-10	1859 999 999	1.2	0.000 000	0.001
	100 %	0	1859 999 999	0.9	0.000 000	0.000
	100 %	+10	1859 999 998	0.1	0.000 000	0.000
	100 %	+30	1859 999 997	-0.6	0.000 000	0.000
	100 %	+40	1859 999 998	0.6	0.000 000	0.000
	100 %	+50	1859 999 997	-0.4	0.000 000	0.000
	Batt. Endpoint	+20	1859 999 996	-2.0	0.000 000	-0.001
1905.0	100 %	+20(Ref)	1905 000 002	0.0	0.000 000	0.000
	100 %	-30	1905 000 003	1.0	0.000 000	0.001
	100 %	-20	1905 000 006	3.2	0.000 000	0.002
	100 %	-10	1905 000 005	3.1	0.000 000	0.002
	100 %	0	1905 000 004	1.7	0.000 000	0.001
	100 %	+10	1905 000 003	1.1	0.000 000	0.001
	100 %	+30	1905 000 001	-1.7	0.000 000	-0.001
	100 %	+40	1905 000 004	1.5	0.000 000	0.001
	100 %	+50	1905 000 003	0.8	0.000 000	0.000
	Batt. Endpoint	+20	1905 000 003	0.9	0.000 000	0.000

- BandWidth: 25 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1862.5	100 %	+20(Ref)	1862 499 999	0.0	0.000 000	0.000
	100 %	-30	1862 499 996	-2.9	0.000 000	-0.002
	100 %	-20	1862 499 997	-1.7	0.000 000	-0.001
	100 %	-10	1862 499 997	-1.5	0.000 000	-0.001
	100 %	0	1862 499 995	-3.5	0.000 000	-0.002
	100 %	+10	1862 499 997	-1.8	0.000 000	-0.001
	100 %	+30	1862 499 996	-3.2	0.000 000	-0.002
	100 %	+40	1862 499 996	-3.0	0.000 000	-0.002
	100 %	+50	1862 499 996	-2.9	0.000 000	-0.002
	Batt. Endpoint	+20	1862 499 997	-1.8	0.000 000	-0.001
1902.5	100 %	+20(Ref)	1902 499 999	0.0	0.000 000	0.000
	100 %	-30	1902 499 994	-4.5	0.000 000	-0.002
	100 %	-20	1902 499 997	-1.5	0.000 000	-0.001
	100 %	-10	1902 499 995	-3.4	0.000 000	-0.002
	100 %	0	1902 499 995	-3.6	0.000 000	-0.002
	100 %	+10	1902 499 995	-3.0	0.000 000	-0.002
	100 %	+30	1902 499 992	-6.7	0.000 000	-0.004
	100 %	+40	1902 499 994	-4.3	0.000 000	-0.002
	100 %	+50	1902 499 994	-4.5	0.000 000	-0.002
	Batt. Endpoint	+20	1902 499 995	-3.6	0.000 000	-0.002

- BandWidth: 30 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1865.0	100 %	+20(Ref)	1864 999 998	0.0	0.000 000	0.000
	100 %	-30	1864 999 998	0.2	0.000 000	0.000
	100 %	-20	1864 999 998	-0.2	0.000 000	0.000
	100 %	-10	1864 999 999	0.8	0.000 000	0.000
	100 %	0	1864 999 996	-1.7	0.000 000	-0.001
	100 %	+10	1864 999 998	0.4	0.000 000	0.000
	100 %	+30	1864 999 995	-3.0	0.000 000	-0.002
	100 %	+40	1864 999 999	0.7	0.000 000	0.000
	100 %	+50	1865 000 000	1.6	0.000 000	0.001
	Batt. Endpoint	+20	1864 999 998	0.0	0.000 000	0.000
1900.0	100 %	+20(Ref)	1900 000 000	0.0	0.000 000	0.000
	100 %	-30	1900 000 000	-0.6	0.000 000	0.000
	100 %	-20	1900 000 002	1.7	0.000 000	0.001
	100 %	-10	1899 999 999	-1.4	0.000 000	-0.001
	100 %	0	1900 000 000	-0.8	0.000 000	0.000
	100 %	+10	1900 000 002	1.6	0.000 000	0.001
	100 %	+30	1900 000 001	0.4	0.000 000	0.000
	100 %	+40	1899 999 999	-1.7	0.000 000	-0.001
	100 %	+50	1900 000 000	-0.2	0.000 000	0.000
	Batt. Endpoint	+20	1900 000 003	2.4	0.000 000	0.001

- BandWidth: 35 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1867.5	100 %	+20(Ref)	1867 500 001	0.0	0.000 000	0.000
	100 %	-30	1867 500 000	-0.7	0.000 000	0.000
	100 %	-20	1867 499 999	-2.0	0.000 000	-0.001
	100 %	-10	1867 500 002	1.5	0.000 000	0.001
	100 %	0	1867 500 004	2.7	0.000 000	0.001
	100 %	+10	1867 500 002	0.6	0.000 000	0.000
	100 %	+30	1867 500 001	-0.4	0.000 000	0.000
	100 %	+40	1867 500 002	0.8	0.000 000	0.000
	100 %	+50	1867 500 002	0.9	0.000 000	0.000
	Batt. Endpoint	+20	1867 500 002	0.6	0.000 000	0.000
1897.5	100 %	+20(Ref)	1897 500 000	0.0	0.000 000	0.000
	100 %	-30	1897 500 000	0.4	0.000 000	0.000
	100 %	-20	1897 500 004	3.6	0.000 000	0.002
	100 %	-10	1897 500 000	-0.1	0.000 000	0.000
	100 %	0	1897 499 999	-1.2	0.000 000	-0.001
	100 %	+10	1897 500 000	0.1	0.000 000	0.000
	100 %	+30	1897 500 000	0.1	0.000 000	0.000
	100 %	+40	1897 499 999	-0.7	0.000 000	0.000
	100 %	+50	1897 500 000	-0.2	0.000 000	0.000
	Batt. Endpoint	+20	1897 500 001	0.8	0.000 000	0.000

- BandWidth: 40 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1870.0	100 %	+20(Ref)	1870 000 000	0.0	0.000 000	0.000
	100 %	-30	1869 999 998	-2.1	0.000 000	-0.001
	100 %	-20	1869 999 999	-0.8	0.000 000	0.000
	100 %	-10	1869 999 998	-1.7	0.000 000	-0.001
	100 %	0	1869 999 999	-1.2	0.000 000	-0.001
	100 %	+10	1869 999 997	-2.7	0.000 000	-0.001
	100 %	+30	1869 999 999	-0.7	0.000 000	0.000
	100 %	+40	1870 000 001	1.1	0.000 000	0.001
	100 %	+50	1869 999 997	-2.9	0.000 000	-0.002
	Batt. Endpoint	+20	1869 999 998	-1.7	0.000 000	-0.001
1895.0	100 %	+20(Ref)	1894 999 997	0.0	0.000 000	0.000
	100 %	-30	1894 999 995	-2.3	0.000 000	-0.001
	100 %	-20	1894 999 995	-2.6	0.000 000	-0.001
	100 %	-10	1894 999 998	0.4	0.000 000	0.000
	100 %	0	1894 999 997	-0.2	0.000 000	0.000
	100 %	+10	1894 999 996	-1.6	0.000 000	-0.001
	100 %	+30	1894 999 996	-1.6	0.000 000	-0.001
	100 %	+40	1894 999 996	-1.0	0.000 000	-0.001
	100 %	+50	1894 999 997	0.3	0.000 000	0.000
	Batt. Endpoint	+20	1894 999 996	-0.8	0.000 000	0.000

8.8 UPLINK CARRIER AGGREGATION

Test Note

1. All tests were evaluated for the two bands using various combinations of RB size, RB offset, modulation, and channel bandwidth.
2. All modes of operation were investigated and the worst case configuration results are reported in this section.

Please refer to the table below.

3. The worst case is reported with the modulations, RB sizes and offsets.

- n25A(Main 1)-n48A(Sub 2)

(PCC - Modulation: BPSK, RB: 1, RB Offset: 158, SCC - Modulation: BPSK, RB: 1, RB Offset: 12)

Radiated Spurious Emissions

PCC	SCC	PCC		SCC	
		BW(MHz)	Channel	BW(MHz)	Channel
n25A(Main 1)-	n48A(Sub 2)	30	373000	10	637000

8.8.1 RADIATED SPURIOUS EMISSIONS

n25A(Main 1) (PCC)- n48A(Sub 2) (SCC)

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
3 730.00	-61.09	12.04	-60.95	3.17	V	-52.08	-13.00
5 595.00	-62.74	12.22	-56.53	3.95	V	-48.26	-13.00
7 460.00	-63.66	11.37	-48.59	4.61	V	-41.83	-13.00

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
7 110.00	-64.59	10.80	-56.95	4.48	V	-50.63	-40.00
10 665.00	-62.84	11.57	-51.45	5.68	V	-45.56	-40.00
14 220.00	-60.29	12.90	-50.98	6.63	V	-44.71	-40.00

9. TEST DATA(Sub 2 ANT)

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		RB	
								W	W	dBm	Size	Offset
1852.5		PI/2 BPSK	-21.52	12.11	10.45	2.08	V	< 2.00	0.112	20.48	1	12
		QPSK	-21.69	11.94	10.45	2.08	V		0.107	20.31		
		16-QAM	-22.63	11.00	10.45	2.08	V		0.086	19.37		
		64-QAM	-24.05	9.58	10.45	2.08	V		0.062	17.95		
		256-QAM	-26.02	7.61	10.45	2.08	V		0.040	15.98		
1882.5	Sub6 n25(2)/ 5 MHz [15 kHz]	PI/2 BPSK	-21.55	12.34	10.32	2.21	V	< 2.00	0.111	20.45	1	1
		QPSK	-21.67	12.22	10.32	2.21	V		0.108	20.33		
		16-QAM	-22.77	11.12	10.32	2.21	V		0.084	19.23		
		64-QAM	-24.14	9.75	10.32	2.21	V		0.061	17.86		
		256-QAM	-26.12	7.77	10.32	2.21	V		0.039	15.88		
1912.5		PI/2 BPSK	-22.14	12.04	10.19	2.17	V	< 2.00	0.101	20.06	1	12
		QPSK	-22.25	11.93	10.19	2.17	V		0.099	19.95		
		16-QAM	-23.31	10.87	10.19	2.17	V		0.078	18.89		
		64-QAM	-24.70	9.48	10.19	2.17	V		0.056	17.50		
		256-QAM	-26.69	7.49	10.19	2.17	V		0.036	15.51		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1855.0	Sub6 n25(2)/ 10 MHz [15 kHz]	PI/2 BPSK	-21.62	12.01	10.45	2.08	V	< 2.00	0.109	20.38	1	1
		QPSK	-21.70	11.93	10.45	2.08	V		0.107	20.30		
		16-QAM	-22.42	11.21	10.45	2.08	V		0.091	19.58		
		64-QAM	-24.13	9.50	10.45	2.08	V		0.061	17.87		
		256-QAM	-26.20	7.43	10.45	2.08	V		0.038	15.80		
1882.5		PI/2 BPSK	-21.54	12.35	10.32	2.21	V		0.111	20.46	1	1
		QPSK	-21.55	12.34	10.32	2.21	V		0.111	20.45		
		16-QAM	-22.64	11.25	10.32	2.21	V		0.086	19.36		
		64-QAM	-24.03	9.86	10.32	2.21	V		0.063	17.97		
		256-QAM	-25.97	7.92	10.32	2.21	V		0.040	16.03		
1910.0		PI/2 BPSK	-21.81	12.09	10.21	2.17	V	0.103	20.13	1	26	
		QPSK	-22.01	11.89	10.21	2.17	V	0.099	19.93			
		16-QAM	-22.90	11.00	10.21	2.17	V	0.080	19.04			
		64-QAM	-24.41	9.49	10.21	2.17	V	0.057	17.53			
		256-QAM	-26.41	7.49	10.21	2.17	V	0.036	15.53			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1857.5		PI/2 BPSK	-21.82	11.50	10.43	2.10	V	< 2.00	0.096	19.83	1	39
		QPSK	-21.91	11.41	10.43	2.10	V		0.094	19.74		
		16-QAM	-22.74	10.58	10.43	2.10	V		0.078	18.91		
		64-QAM	-24.42	8.90	10.43	2.10	V		0.053	17.23		
		256-QAM	-26.21	7.11	10.43	2.10	V		0.035	15.44		
1882.5	Sub6 n25(2)/ 15 MHz [15 kHz]	PI/2 BPSK	-21.45	12.44	10.32	2.21	V	< 2.00	0.114	20.55	1	1
		QPSK	-21.53	12.36	10.32	2.21	V		0.111	20.47		
		16-QAM	-22.36	11.53	10.32	2.21	V		0.092	19.64		
		64-QAM	-24.05	9.84	10.32	2.21	V		0.062	17.95		
		256-QAM	-25.88	8.01	10.32	2.21	V		0.041	16.12		
1907.5		PI/2 BPSK	-21.90	12.00	10.21	2.17	V	< 2.00	0.101	20.04	1	39
		QPSK	-22.00	11.90	10.21	2.17	V		0.099	19.94		
		16-QAM	-22.85	11.05	10.21	2.17	V		0.081	19.09		
		64-QAM	-24.33	9.57	10.21	2.17	V		0.058	17.61		
		256-QAM	-26.27	7.63	10.21	2.17	V		0.037	15.67		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1860.0		PI/2 BPSK	-21.43	11.89	10.43	2.10	V	< 2.00	0.105	20.22	1	104
		QPSK	-21.58	11.74	10.43	2.10	V		0.102	20.07		
		16-QAM	-22.49	10.83	10.43	2.10	V		0.082	19.16		
		64-QAM	-23.90	9.42	10.43	2.10	V		0.060	17.75		
		256-QAM	-25.86	7.46	10.43	2.10	V		0.038	15.79		
1882.5	Sub6 n25(2)/ 20 MHz [15 kHz]	PI/2 BPSK	-21.40	12.49	10.32	2.21	V	< 2.00	0.115	20.60	1	1
		QPSK	-21.55	12.34	10.32	2.21	V		0.111	20.45		
		16-QAM	-22.67	11.22	10.32	2.21	V		0.086	19.33		
		64-QAM	-23.93	9.96	10.32	2.21	V		0.064	18.07		
		256-QAM	-26.05	7.84	10.32	2.21	V		0.039	15.95		
1905.0		PI/2 BPSK	-21.95	12.09	10.23	2.19	V	< 2.00	0.103	20.13	1	1
		QPSK	-22.09	11.95	10.23	2.19	V		0.100	19.99		
		16-QAM	-23.09	10.95	10.23	2.19	V		0.079	18.99		
		64-QAM	-24.54	9.50	10.23	2.19	V		0.057	17.54		
		256-QAM	-26.51	7.53	10.23	2.19	V		0.036	15.57		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1862.5		PI/2 BPSK	-21.42	12.19	10.41	2.13	V	< 2.00	0.111	20.47	1	1
		QPSK	-21.73	11.88	10.41	2.13	V		0.104	20.16		
		16-QAM	-22.52	11.09	10.41	2.13	V		0.086	19.37		
		64-QAM	-23.88	9.73	10.41	2.13	V		0.063	18.01		
		256-QAM	-25.91	7.70	10.41	2.13	V		0.040	15.98		
1882.5	Sub6 n25(2)/ 25 MHz [15 kHz]	PI/2 BPSK	-21.47	12.42	10.32	2.21	V	< 2.00	0.113	20.53	1	1
		QPSK	-21.66	12.23	10.32	2.21	V		0.108	20.34		
		16-QAM	-22.44	11.45	10.32	2.21	V		0.090	19.56		
		64-QAM	-23.90	9.99	10.32	2.21	V		0.065	18.10		
		256-QAM	-25.97	7.92	10.32	2.21	V		0.040	16.03		
1902.5		PI/2 BPSK	-21.67	12.37	10.23	2.19	V	< 2.00	0.110	20.41	1	66
		QPSK	-21.92	12.12	10.23	2.19	V		0.104	20.16		
		16-QAM	-22.82	11.22	10.23	2.19	V		0.084	19.26		
		64-QAM	-24.28	9.76	10.23	2.19	V		0.060	17.80		
		256-QAM	-26.13	7.91	10.23	2.19	V		0.039	15.95		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1865.0		PI/2 BPSK	-21.41	12.20	10.41	2.13	V	< 2.00	0.112	20.48	1	158
		QPSK	-21.44	12.17	10.41	2.13	V		0.111	20.45		
		16-QAM	-22.51	11.10	10.41	2.13	V		0.087	19.38		
		64-QAM	-23.74	9.87	10.41	2.13	V		0.065	18.15		
		256-QAM	-25.87	7.74	10.41	2.13	V		0.040	16.02		
1882.5	Sub6 n25(2)/ 30 MHz [15 kHz]	PI/2 BPSK	-21.37	12.52	10.32	2.21	V	< 2.00	0.116	20.63	1	1
		QPSK	-21.47	12.42	10.32	2.21	V		0.113	20.53		
		16-QAM	-22.34	11.55	10.32	2.21	V		0.092	19.66		
		64-QAM	-23.91	9.98	10.32	2.21	V		0.064	18.09		
		256-QAM	-25.88	8.01	10.32	2.21	V		0.041	16.12		
1900.0		PI/2 BPSK	-21.70	12.47	10.25	2.20	V	< 2.00	0.113	20.52	1	1
		QPSK	-21.74	12.43	10.25	2.20	V		0.112	20.48		
		16-QAM	-22.82	11.35	10.25	2.20	V		0.087	19.40		
		64-QAM	-24.19	9.98	10.25	2.20	V		0.063	18.03		
		256-QAM	-26.18	7.99	10.25	2.20	V		0.040	16.04		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1867.5		PI/2 BPSK	-21.45	12.46	10.39	2.16	V	< 2.00	0.117	20.69	1	1
		QPSK	-21.48	12.43	10.39	2.16	V		0.116	20.66		
		16-QAM	-22.47	11.44	10.39	2.16	V		0.093	19.67		
		64-QAM	-24.02	9.89	10.39	2.16	V		0.065	18.12		
		256-QAM	-25.79	8.12	10.39	2.16	V		0.043	16.35		
1882.5	Sub6 n25(2)/ 35 MHz [15 kHz]	PI/2 BPSK	-21.50	12.39	10.32	2.21	V	< 2.00	0.112	20.50	1	94
		QPSK	-21.64	12.25	10.32	2.21	V		0.109	20.36		
		16-QAM	-22.66	11.23	10.32	2.21	V		0.086	19.34		
		64-QAM	-23.97	9.92	10.32	2.21	V		0.064	18.03		
		256-QAM	-25.91	7.98	10.32	2.21	V		0.041	16.09		
1897.5		PI/2 BPSK	-21.38	12.79	10.25	2.20	V	< 2.00	0.121	20.84	1	1
		QPSK	-21.44	12.73	10.25	2.20	V		0.120	20.78		
		16-QAM	-22.49	11.68	10.25	2.20	V		0.094	19.73		
		64-QAM	-24.00	10.17	10.25	2.20	V		0.066	18.22		
		256-QAM	-25.86	8.31	10.25	2.20	V		0.043	16.36		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1870.0		PI/2 BPSK	-21.12	12.79	10.39	2.16	V	< 2.00	0.126	21.02	1	108
		QPSK	-21.41	12.50	10.39	2.16	V		0.118	20.73		
		16-QAM	-22.30	11.61	10.39	2.16	V		0.096	19.84		
		64-QAM	-23.75	10.16	10.39	2.16	V		0.069	18.39		
		256-QAM	-25.83	8.08	10.39	2.16	V		0.043	16.31		
1882.5	Sub6 n25(2)/ 40 MHz [15 kHz]	PI/2 BPSK	-21.60	12.29	10.32	2.21	V		0.110	20.40	1	108
		QPSK	-21.74	12.15	10.32	2.21	V		0.106	20.26		
		16-QAM	-22.60	11.29	10.32	2.21	V		0.087	19.40		
		64-QAM	-23.90	9.99	10.32	2.21	V		0.065	18.10		
		256-QAM	-25.88	8.01	10.32	2.21	V		0.041	16.12		
1895.0		PI/2 BPSK	-21.25	12.93	10.28	2.20	V		0.126	21.01	1	1
		QPSK	-21.45	12.73	10.28	2.20	V		0.121	20.81		
		16-QAM	-22.27	11.91	10.28	2.20	V		0.100	19.99		
		64-QAM	-23.84	10.34	10.28	2.20	V		0.070	18.42		
		256-QAM	-25.72	8.46	10.28	2.20	V		0.045	16.54		

9.2 RADIATED SPURIOUS EMISSIONS

☐ NR Band: N25(2)
☐ Bandwidth: 40 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
374000 (1870.0)	3 740.00	-60.04	12.00	-59.98	3.19	V	-51.17	-13.00	1	108
	5 610.00	-50.91	12.21	-45.18	3.92	V	-36.89	-13.00		
	7 480.00	-62.54	11.45	-47.74	4.62	V	-40.91	-13.00		
376500 (1882.5)	3 765.00	-58.40	11.88	-57.79	3.11	H	-49.02	-13.00	1	108
	5 647.50	-49.53	12.11	-43.34	3.96	H	-35.19	-13.00		
	7 530.00	-63.12	11.57	-48.35	4.60	H	-41.38	-13.00		
379000 (1895.0)	3 790.00	-59.46	11.76	-58.61	3.19	V	-50.04	-13.00	1	1
	5 685.00	-49.23	12.00	-42.96	4.01	H	-34.97	-13.00		
	7 580.00	-61.68	11.61	-47.11	4.65	H	-40.15	-13.00		

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	Limit (dB)
Sub6 n25(2)	5 MHz	1882.5	BPSK	25	0	5.08	13.00
			QPSK			5.86	
			16-QAM			6.52	
			64-QAM			6.72	
			256-QAM			6.71	
	10 MHz		BPSK	50		5.53	
			QPSK			5.80	
			16-QAM			6.36	
			64-QAM			6.63	
			256-QAM			6.65	
	15 MHz		BPSK	75		4.46	
			QPSK			5.68	
			16-QAM			6.40	
			64-QAM			6.59	
			256-QAM			6.56	
	20 MHz		BPSK	100		5.97	
			QPSK			6.13	
			16-QAM			6.49	
			64-QAM			6.65	
			256-QAM			6.70	

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	Limit (dB)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	4.65	13.00
			QPSK			5.86	
			16-QAM			6.57	
			64-QAM			6.67	
			256-QAM			6.81	
	30 MHz		BPSK	160		4.89	
			QPSK			5.90	
			16-QAM			6.73	
			64-QAM			6.74	
			256-QAM			6.77	
	35 MHz		BPSK	180		4.78	
			QPSK			6.01	
			16-QAM			6.77	
			64-QAM			6.80	
			256-QAM			6.91	
	40 MHz		BPSK	216		4.95	
			QPSK			6.03	
			16-QAM			6.70	
			64-QAM			6.81	
			256-QAM			6.97	

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 251 ~ 290.

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n25(2)	5 MHz	1882.5	BPSK	25	0	4.5392
			QPSK			4.5264
			16-QAM			4.5311
			64-QAM			4.5228
			256-QAM			4.5268
	10 MHz		BPSK	50		9.0070
			QPSK			9.0038
			16-QAM			8.9957
			64-QAM			8.9871
			256-QAM			8.9571
	15 MHz		BPSK	75		13.475
			QPSK			13.476
			16-QAM			13.466
			64-QAM			13.444
			256-QAM			13.421
	20 MHz		BPSK	100		17.921
			QPSK			17.906
			16-QAM			17.890
			64-QAM			17.872
			256-QAM			17.930

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	23.027
			QPSK			23.030
			16-QAM			23.011
			64-QAM			22.983
			256-QAM			22.978
	30 MHz		BPSK	160		28.774
			QPSK			28.755
			16-QAM			28.769
			64-QAM			28.810
			256-QAM			28.780
	35 MHz		BPSK	180		32.379
			QPSK			32.358
			16-QAM			32.287
			64-QAM			32.356
			256-QAM			32.367
	40 MHz		BPSK	216		38.812
			QPSK			38.907
			16-QAM			38.726
			64-QAM			38.860
			256-QAM			38.885

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 291 ~ 330.

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 n25(2)	5	1852.5	8.8634	30.315	-63.230	-32.915	-13.00
		1882.5	4.9552	29.722	-63.645	-33.923	
		1912.5	8.6042	30.315	-63.495	-33.180	
	10	1855.0	5.9921	30.315	-63.034	-32.719	
		1882.5	9.9302	30.315	-62.835	-32.520	
		1910.0	3.8186	29.722	-63.324	-33.602	
	15	1857.5	9.9302	30.315	-63.295	-32.980	
		1882.5	4.8954	29.722	-62.933	-33.211	
		1907.5	3.7887	29.722	-63.237	-33.515	
	20	1860.0	9.9900	30.315	-62.935	-32.620	
		1882.5	5.0449	30.315	-63.010	-32.695	
		1905.0	3.7787	29.722	-63.473	-33.751	
	25	1862.5	9.6810	30.315	-62.591	-32.276	
		1882.5	9.8704	30.315	-63.372	-33.057	
		1902.5	9.6909	30.315	-63.514	-33.199	
	30	1865.0	5.2543	30.315	-63.282	-32.967	
		1882.5	4.9851	29.722	-62.894	-33.172	
		1900.0	4.0579	29.722	-63.572	-33.850	
	35	1867.5	4.9053	29.722	-63.635	-33.913	
		1882.5	9.4517	30.315	-63.133	-32.818	
		1897.5	9.7308	30.315	-63.456	-33.141	
	40	1870.0	9.7109	30.315	-62.231	-31.916	
		1882.5	1.8246	29.722	-61.623	-31.901	
		1895.0	9.3619	30.315	-63.130	-32.815	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 331 ~ 378.
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Factor(dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.012
1 – 5	29.722
5 – 10	30.315
10 – 15	30.840
15 – 20	31.213
Above 20	31.855

9.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 379 ~ 426.

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100 %): 3.880 VDC
- ▣ Batt. Endpoint: 3.300 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1852.5	100 %	+20(Ref)	1852 499 998	0.0	0.000 000	0.000
	100 %	-30	1852 499 995	-2.6	0.000 000	-0.001
	100 %	-20	1852 499 997	-0.9	0.000 000	0.000
	100 %	-10	1852 499 998	0.2	0.000 000	0.000
	100 %	0	1852 499 997	-1.5	0.000 000	-0.001
	100 %	+10	1852 499 997	-1.3	0.000 000	-0.001
	100 %	+30	1852 499 996	-1.9	0.000 000	-0.001
	100 %	+40	1852 499 998	-0.6	0.000 000	0.000
	100 %	+50	1852 499 998	0.0	0.000 000	0.000
	Batt. Endpoint	+20	1852 499 997	-1.2	0.000 000	-0.001
1912.5	100 %	+20(Ref)	1912 499 999	0.0	0.000 000	0.000
	100 %	-30	1912 499 995	-3.5	0.000 000	-0.002
	100 %	-20	1912 499 992	-7.1	0.000 000	-0.004
	100 %	-10	1912 499 997	-2.4	0.000 000	-0.001
	100 %	0	1912 499 997	-2.3	0.000 000	-0.001
	100 %	+10	1912 499 999	-0.2	0.000 000	0.000
	100 %	+30	1912 499 996	-2.9	0.000 000	-0.002
	100 %	+40	1912 499 995	-3.5	0.000 000	-0.002
	100 %	+50	1912 499 996	-3.0	0.000 000	-0.002
	Batt. Endpoint	+20	1912 500 000	1.3	0.000 000	0.001

- BandWidth: 10 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1855.0	100 %	+20(Ref)	1855 000 001	0.0	0.000 000	0.000
	100 %	-30	1855 000 000	-1.0	0.000 000	-0.001
	100 %	-20	1855 000 001	-0.7	0.000 000	0.000
	100 %	-10	1855 000 001	0.0	0.000 000	0.000
	100 %	0	1855 000 001	-0.1	0.000 000	0.000
	100 %	+10	1855 000 001	-0.4	0.000 000	0.000
	100 %	+30	1855 000 004	2.1	0.000 000	0.001
	100 %	+40	1855 000 000	-1.0	0.000 000	-0.001
	100 %	+50	1855 000 035	33.1	0.000 002	0.018
	Batt. Endpoint	+20	1855 000 002	0.8	0.000 000	0.000
1910.0	100 %	+20(Ref)	1909 999 999	0.0	0.000 000	0.000
	100 %	-30	1909 999 994	-5.1	0.000 000	-0.003
	100 %	-20	1909 999 997	-2.9	0.000 000	-0.001
	100 %	-10	1909 999 999	-0.4	0.000 000	0.000
	100 %	0	1909 999 998	-1.0	0.000 000	-0.001
	100 %	+10	1909 999 997	-2.8	0.000 000	-0.001
	100 %	+30	1909 999 999	-0.5	0.000 000	0.000
	100 %	+40	1909 999 997	-2.6	0.000 000	-0.001
	100 %	+50	1909 999 998	-1.4	0.000 000	-0.001
	Batt. Endpoint	+20	1909 999 997	-2.0	0.000 000	-0.001

- BandWidth: 15 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1857.5	100 %	+20(Ref)	1857 499 997	0.0	0.000 000	0.000
	100 %	-30	1857 499 997	0.0	0.000 000	0.000
	100 %	-20	1857 499 997	0.2	0.000 000	0.000
	100 %	-10	1857 499 995	-1.8	0.000 000	-0.001
	100 %	0	1857 499 996	-1.0	0.000 000	-0.001
	100 %	+10	1857 499 995	-1.3	0.000 000	-0.001
	100 %	+30	1857 499 997	0.3	0.000 000	0.000
	100 %	+40	1857 499 996	-0.4	0.000 000	0.000
	100 %	+50	1857 499 995	-1.1	0.000 000	-0.001
	Batt. Endpoint	+20	1857 499 995	-1.1	0.000 000	-0.001
1907.5	100 %	+20(Ref)	1907 500 001	0.0	0.000 000	0.000
	100 %	-30	1907 500 000	-1.2	0.000 000	-0.001
	100 %	-20	1907 500 002	0.8	0.000 000	0.000
	100 %	-10	1907 500 000	-1.3	0.000 000	-0.001
	100 %	0	1907 500 001	-0.5	0.000 000	0.000
	100 %	+10	1907 500 002	0.8	0.000 000	0.000
	100 %	+30	1907 500 003	1.4	0.000 000	0.001
	100 %	+40	1907 500 000	-1.4	0.000 000	-0.001
	100 %	+50	1907 500 001	0.2	0.000 000	0.000
	Batt. Endpoint	+20	1907 500 000	-1.2	0.000 000	-0.001

■ BandWidth:	<u>20 MHz</u>
■ Voltage(100 %):	<u>3.880 VDC</u>
■ Batt. Endpoint:	<u>3.300 VDC</u>
■ LIMIT:	<u>Emission must remain in band</u>

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1860.0	100 %	+20(Ref)	1859 999 998	0.0	0.000 000	0.000
	100 %	-30	1859 999 999	0.9	0.000 000	0.000
	100 %	-20	1859 999 998	0.2	0.000 000	0.000
	100 %	-10	1860 000 001	2.6	0.000 000	0.001
	100 %	0	1859 999 998	-0.4	0.000 000	0.000
	100 %	+10	1859 999 999	1.2	0.000 000	0.001
	100 %	+30	1859 999 997	-0.7	0.000 000	0.000
	100 %	+40	1859 999 996	-2.0	0.000 000	-0.001
	100 %	+50	1859 999 998	0.4	0.000 000	0.000
	Batt. Endpoint	+20	1859 999 997	-0.8	0.000 000	0.000
1905.0	100 %	+20(Ref)	1905 000 002	0.0	0.000 000	0.000
	100 %	-30	1905 000 003	0.3	0.000 000	0.000
	100 %	-20	1905 000 002	-0.4	0.000 000	0.000
	100 %	-10	1905 000 004	1.6	0.000 000	0.001
	100 %	0	1905 000 004	1.3	0.000 000	0.001
	100 %	+10	1905 000 001	-0.8	0.000 000	0.000
	100 %	+30	1905 000 001	-0.7	0.000 000	0.000
	100 %	+40	1905 000 004	1.3	0.000 000	0.001
	100 %	+50	1905 000 003	0.9	0.000 000	0.000
	Batt. Endpoint	+20	1905 000 001	-1.0	0.000 000	-0.001

- BandWidth: 25 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1862.5	100 %	+20(Ref)	1862 499 999	0.0	0.000 000	0.000
	100 %	-30	1862 499 997	-1.8	0.000 000	-0.001
	100 %	-20	1862 499 997	-1.3	0.000 000	-0.001
	100 %	-10	1862 499 997	-1.1	0.000 000	-0.001
	100 %	0	1862 499 997	-1.6	0.000 000	-0.001
	100 %	+10	1862 499 999	0.0	0.000 000	0.000
	100 %	+30	1862 499 998	-0.9	0.000 000	0.000
	100 %	+40	1862 499 998	-0.3	0.000 000	0.000
	100 %	+50	1862 499 998	-0.5	0.000 000	0.000
	Batt. Endpoint	+20	1862 499 997	-1.2	0.000 000	-0.001
1902.5	100 %	+20(Ref)	1902 499 995	0.0	0.000 000	0.000
	100 %	-30	1902 499 991	-3.7	0.000 000	-0.002
	100 %	-20	1902 499 994	-1.3	0.000 000	-0.001
	100 %	-10	1902 499 989	-6.4	0.000 000	-0.003
	100 %	0	1902 499 991	-3.8	0.000 000	-0.002
	100 %	+10	1902 499 993	-1.6	0.000 000	-0.001
	100 %	+30	1902 499 990	-4.6	0.000 000	-0.002
	100 %	+40	1902 499 992	-3.4	0.000 000	-0.002
	100 %	+50	1902 499 993	-2.1	0.000 000	-0.001
	Batt. Endpoint	+20	1902 499 991	-3.8	0.000 000	-0.002

- BandWidth: 30 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1865.0	100 %	+20(Ref)	1864 999 998	0.0	0.000 000	0.000
	100 %	-30	1864 999 999	0.6	0.000 000	0.000
	100 %	-20	1864 999 998	-0.3	0.000 000	0.000
	100 %	-10	1864 999 997	-0.9	0.000 000	0.000
	100 %	0	1865 000 000	1.8	0.000 000	0.001
	100 %	+10	1864 999 998	0.0	0.000 000	0.000
	100 %	+30	1864 999 999	0.9	0.000 000	0.000
	100 %	+40	1864 999 998	-0.4	0.000 000	0.000
	100 %	+50	1864 999 997	-1.4	0.000 000	-0.001
	Batt. Endpoint	+20	1864 999 998	-0.3	0.000 000	0.000
1900.0	100 %	+20(Ref)	1900 000 002	0.0	0.000 000	0.000
	100 %	-30	1900 000 001	-0.1	0.000 000	0.000
	100 %	-20	1900 000 002	0.1	0.000 000	0.000
	100 %	-10	1900 000 004	2.0	0.000 000	0.001
	100 %	0	1900 000 002	0.4	0.000 000	0.000
	100 %	+10	1900 000 003	1.9	0.000 000	0.001
	100 %	+30	1900 000 002	0.1	0.000 000	0.000
	100 %	+40	1900 000 001	-0.5	0.000 000	0.000
	100 %	+50	1900 000 001	-0.8	0.000 000	0.000
	Batt. Endpoint	+20	1900 000 004	2.0	0.000 000	0.001

- BandWidth: 35 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1867.5	100 %	+20(Ref)	1867 499 998	0.0	0.000 000	0.000
	100 %	-30	1867 499 997	-1.0	0.000 000	-0.001
	100 %	-20	1867 499 997	-0.8	0.000 000	0.000
	100 %	-10	1867 499 997	-0.2	0.000 000	0.000
	100 %	0	1867 499 996	-2.1	0.000 000	-0.001
	100 %	+10	1867 499 999	0.9	0.000 000	0.000
	100 %	+30	1867 499 996	-1.3	0.000 000	-0.001
	100 %	+40	1867 499 996	-1.3	0.000 000	-0.001
	100 %	+50	1867 499 996	-2.1	0.000 000	-0.001
	Batt. Endpoint	+20	1867 499 999	1.0	0.000 000	0.001
1897.5	100 %	+20(Ref)	1897 500 000	0.0	0.000 000	0.000
	100 %	-30	1897 500 000	-0.3	0.000 000	0.000
	100 %	-20	1897 500 002	2.1	0.000 000	0.001
	100 %	-10	1897 499 999	-1.0	0.000 000	-0.001
	100 %	0	1897 500 001	0.8	0.000 000	0.000
	100 %	+10	1897 500 001	0.9	0.000 000	0.000
	100 %	+30	1897 500 002	1.7	0.000 000	0.001
	100 %	+40	1897 500 002	1.6	0.000 000	0.001
	100 %	+50	1897 500 002	1.9	0.000 000	0.001
	Batt. Endpoint	+20	1897 500 001	0.6	0.000 000	0.000

- BandWidth: 40 MHz
- Voltage(100 %): 3.880 VDC
- Batt. Endpoint: 3.300 VDC
- LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1870.0	100 %	+20(Ref)	1870 000 001	0.0	0.000 000	0.000
	100 %	-30	1870 000 003	1.8	0.000 000	0.001
	100 %	-20	1870 000 002	1.3	0.000 000	0.001
	100 %	-10	1870 000 003	1.5	0.000 000	0.001
	100 %	0	1870 000 003	1.3	0.000 000	0.001
	100 %	+10	1870 000 004	2.8	0.000 000	0.002
	100 %	+30	1870 000 000	-1.3	0.000 000	-0.001
	100 %	+40	1870 000 003	1.4	0.000 000	0.001
	100 %	+50	1869 999 999	-2.2	0.000 000	-0.001
	Batt. Endpoint	+20	1870 000 002	0.4	0.000 000	0.000
1895.0	100 %	+20(Ref)	1895 000 001	0.0	0.000 000	0.000
	100 %	-30	1894 999 999	-2.0	0.000 000	-0.001
	100 %	-20	1894 999 999	-1.5	0.000 000	-0.001
	100 %	-10	1894 999 999	-1.8	0.000 000	-0.001
	100 %	0	1894 999 999	-1.2	0.000 000	-0.001
	100 %	+10	1895 000 000	-0.7	0.000 000	0.000
	100 %	+30	1894 999 999	-1.2	0.000 000	-0.001
	100 %	+40	1895 000 000	-0.8	0.000 000	0.000
	100 %	+50	1895 000 002	1.2	0.000 000	0.001
	Batt. Endpoint	+20	1895 000 002	1.0	0.000 000	0.001

9.8 UPLINK CARRIER AGGREGATION

Test Note

1. All tests were evaluated for the two bands using various combinations of RB size, RB offset, modulation, and channel bandwidth.
2. All modes of operation were investigated and the worst case configuration results are reported in this section.

Please refer to the table below.

3. The worst case is reported with the modulations, RB sizes and offsets.

- n25A(Sub 2)-n41A(Main 2)

(PCC - Modulation: BPSK, RB: 1, RB Offset: 1, SCC - Modulation: BPSK, RB: 1, RB Offset: 1)

Radiated Spurious Emissions

PCC	SCC	PCC		SCC	
		BW(MHz)	Channel	BW(MHz)	Channel
n25A(Sub 2)-	n41A(Main 2)	40	379000	10	518598

9.8.1 RADIATED SPURIOUS EMISSIONS

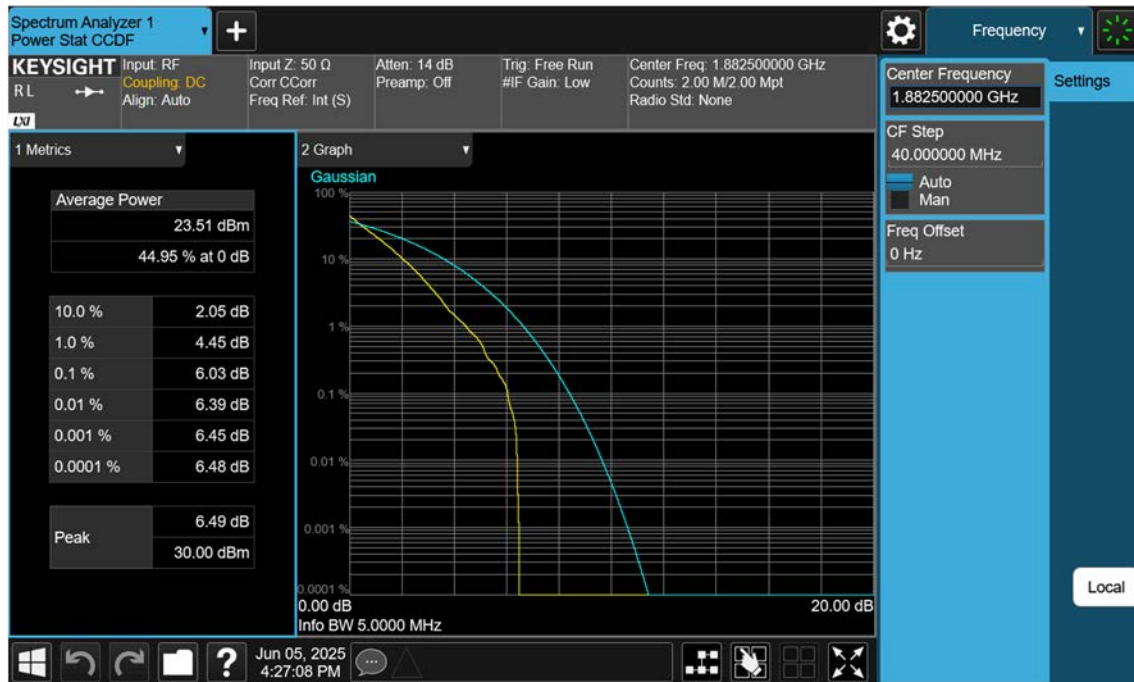
n25A(Sub 2) (PCC)- n41A(Main 2) (SCC)

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
3 790.00	-61.36	11.76	-60.51	3.19	V	-51.94	-13.00
5 685.00	-49.30	12.00	-43.03	4.01	V	-35.04	-13.00
7 580.00	-63.06	11.61	-48.49	4.65	V	-41.53	-13.00

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
5 185.98	-59.16	11.61	-60.33	3.80	V	-52.52	-25.00
7 778.97	-59.53	11.26	-52.46	4.70	V	-45.90	-25.00
10 371.96	-61.73	11.68	-50.64	5.55	V	-44.51	-25.00

10. TEST PLOTS(Main 1 ANT)

NR25_5 M_PAR_Mid_BPSK_FullRB



NR25_5 M_PAR_Mid_QPSK_FullRB



NR25_5 M_PAR_Mid_16QAM_FullRB



NR25_5 M_PAR_Mid_64QAM_FullRB



NR25_5 M_PAR_Mid_256QAM_FullRB



NR25_10 M_PAR_Mid_BPSK_FullIRB



NR25_10 M_PAR_Mid_QPSK_FullRB



NR25_10 M_PAR_Mid_16QAM_FullRB



NR25_10 M_PAR_Mid_64QAM_FullRB



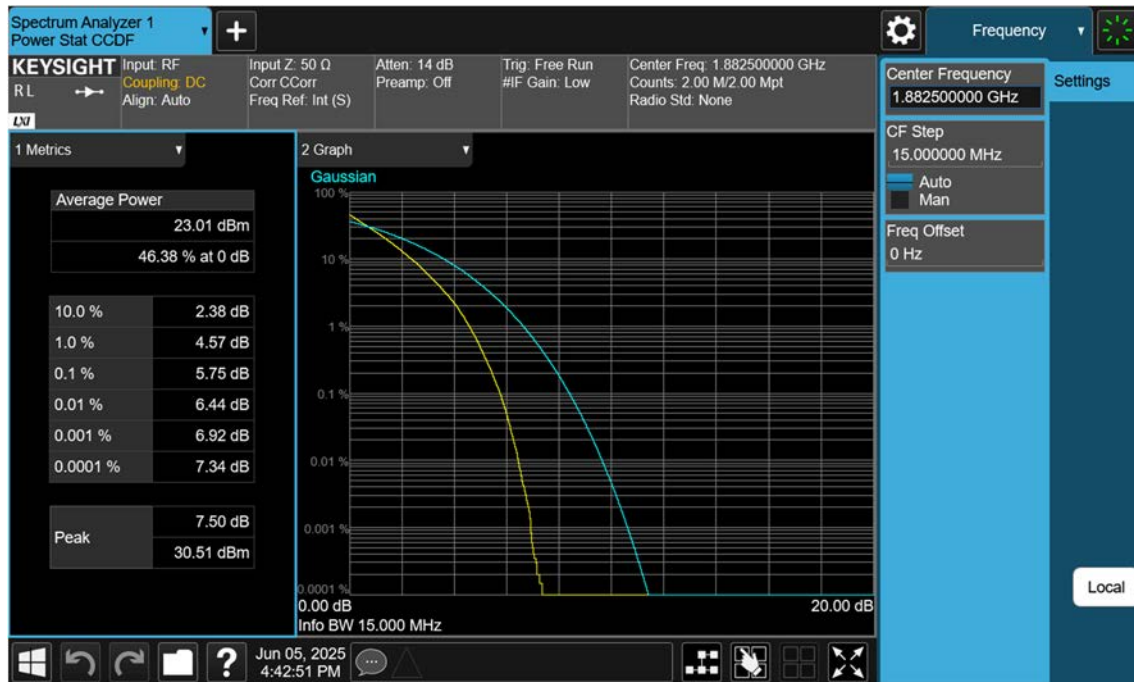
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NR25_15 M_PAR_Mid_BPSK_FullRB



NR25_15 M_PAR_Mid_QPSK_FullRB



NR25_15 M_PAR_Mid_16QAM_FullRB



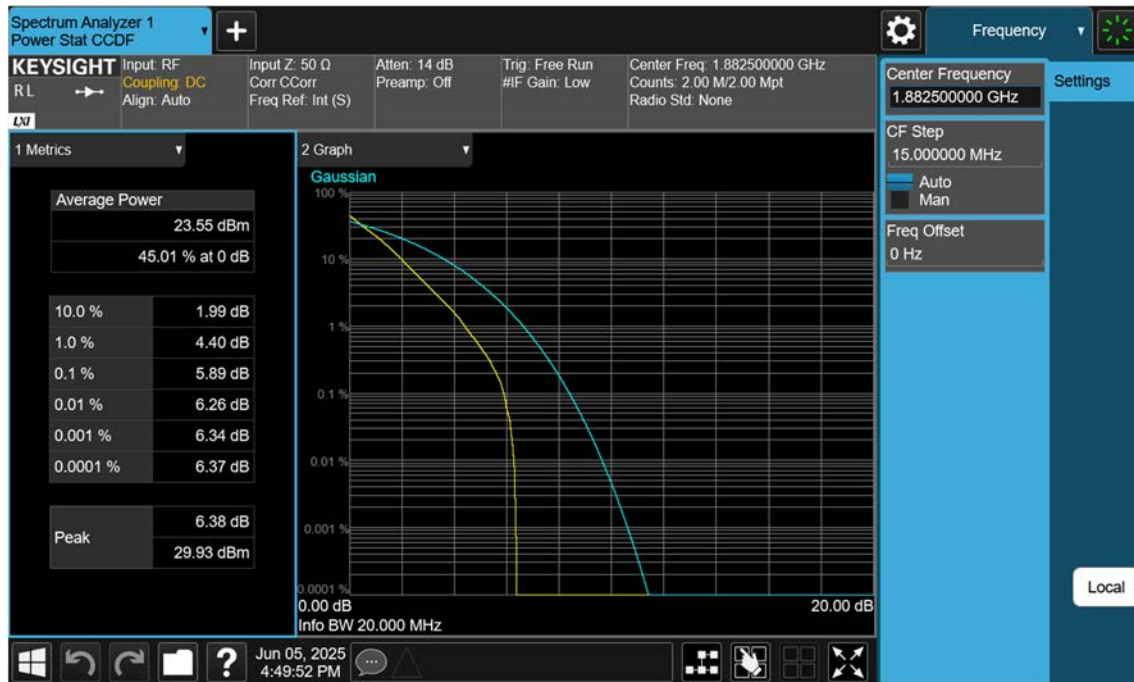
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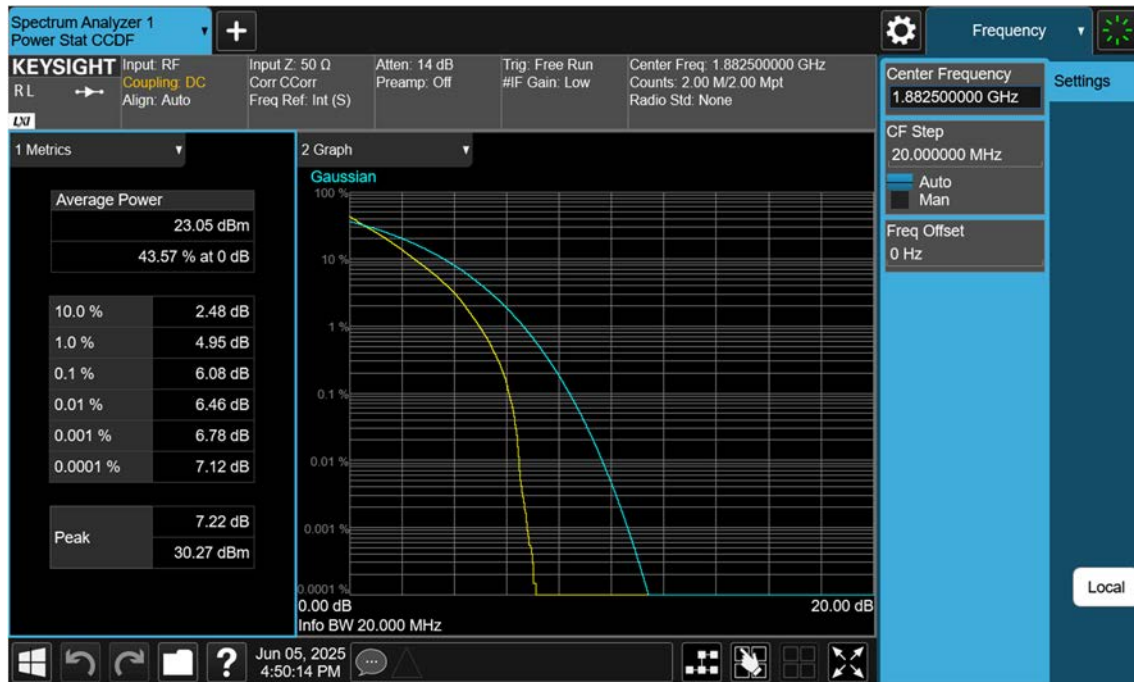
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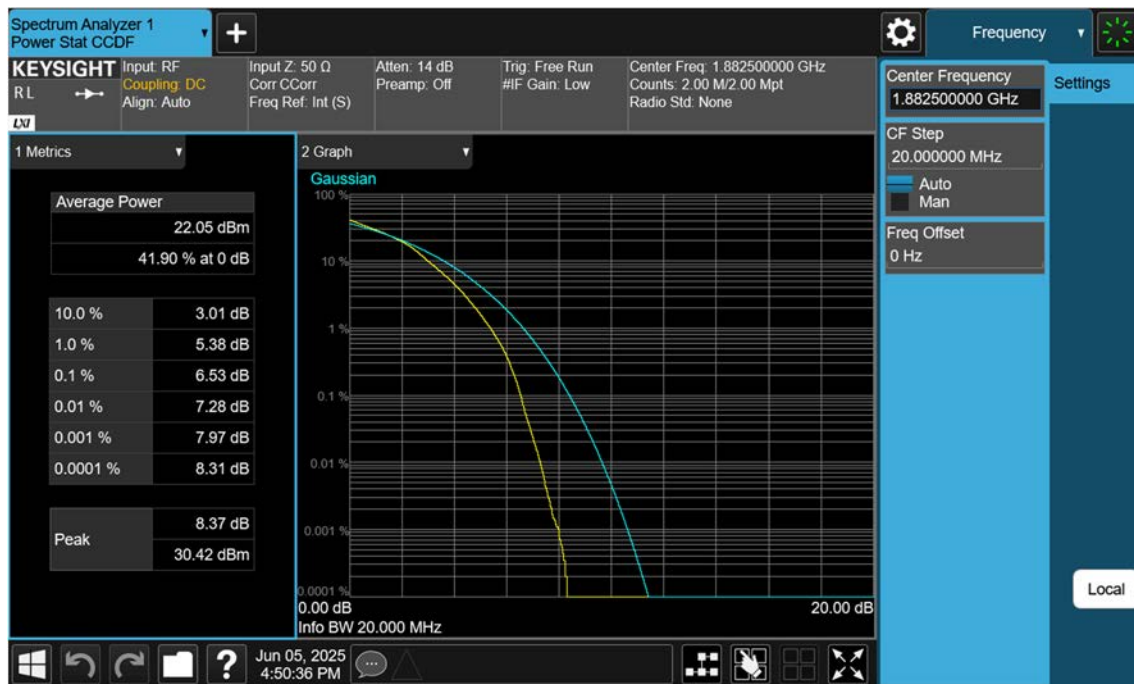
NR25_20 M_PAR_Mid_BPSK_FullRB



NR25_20 M_PAR_Mid_QPSK_FullRB



NR25_20 M_PAR_Mid_16QAM_FullRB



NR25_20 M_PAR_Mid_64QAM_FullRB



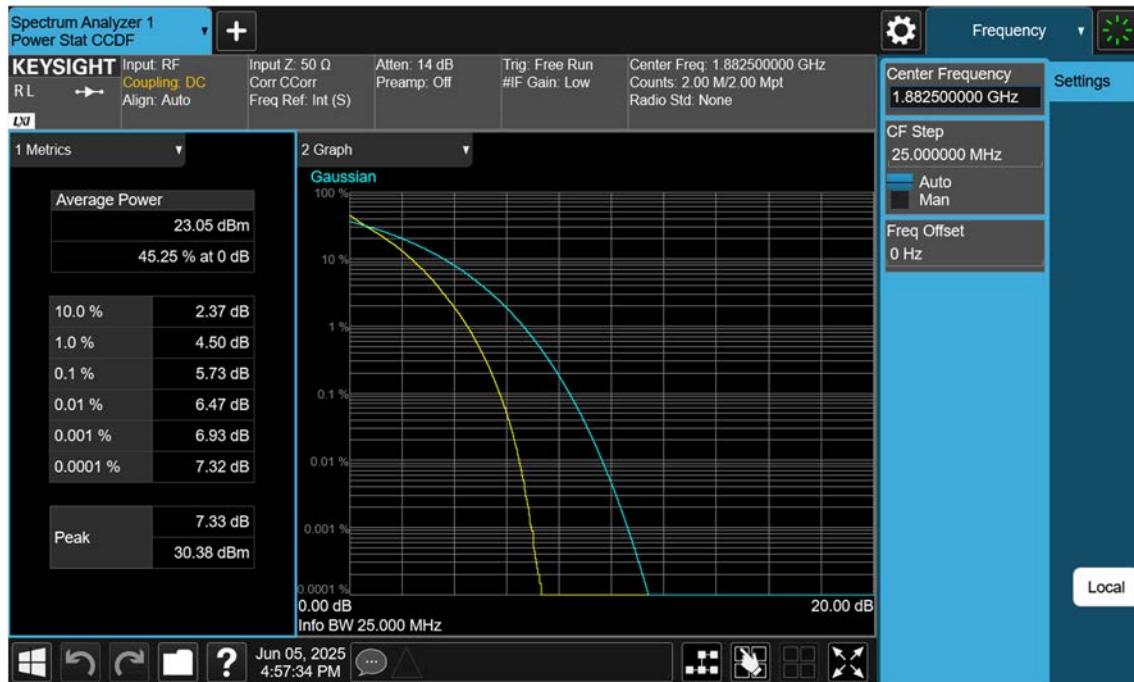
NR25_20 M_PAR_Mid_256QAM_FullRB



NR25_25 M_PAR_Mid_BPSK_FullIRB



NR25_25 M_PAR_Mid_QPSK_FullIRB



NR25_25 M_PAR_Mid_16QAM_FullRB



NR25_25 M_PAR_Mid_64QAM_FullRB



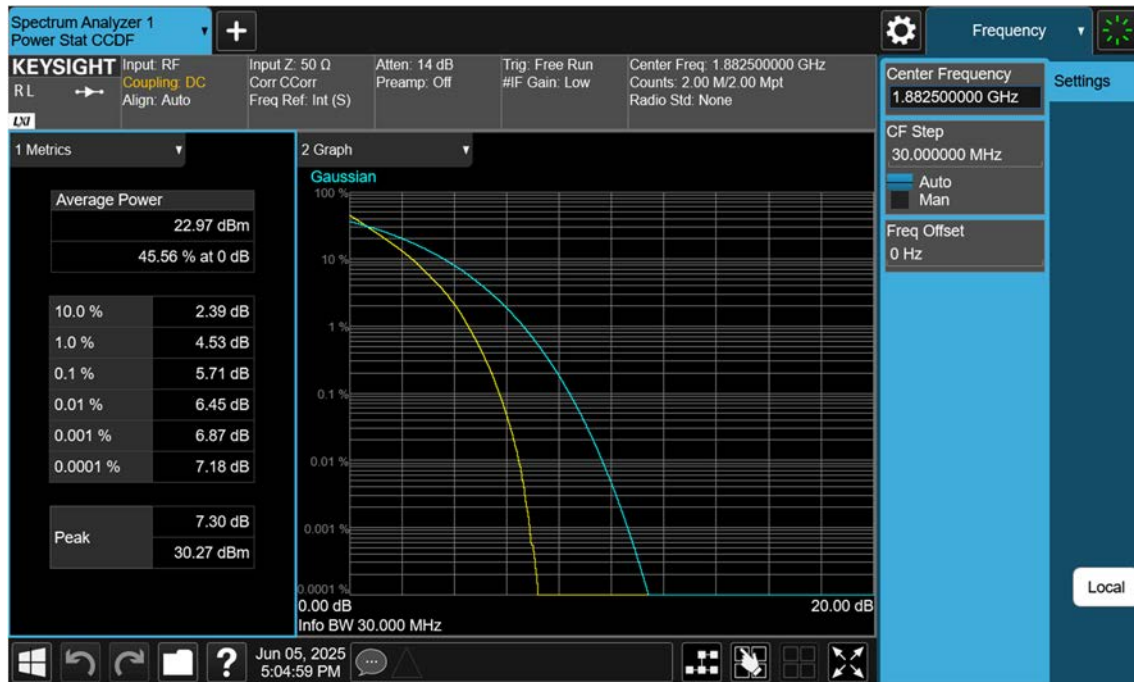
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NR25_30 M_PAR_Mid_BPSK_FullIRB



NR25_30 M_PAR_Mid_QPSK_FullRB



NR25_30 M_PAR_Mid_16QAM_FullRB



NR25_30 M_PAR_Mid_64QAM_FullRB



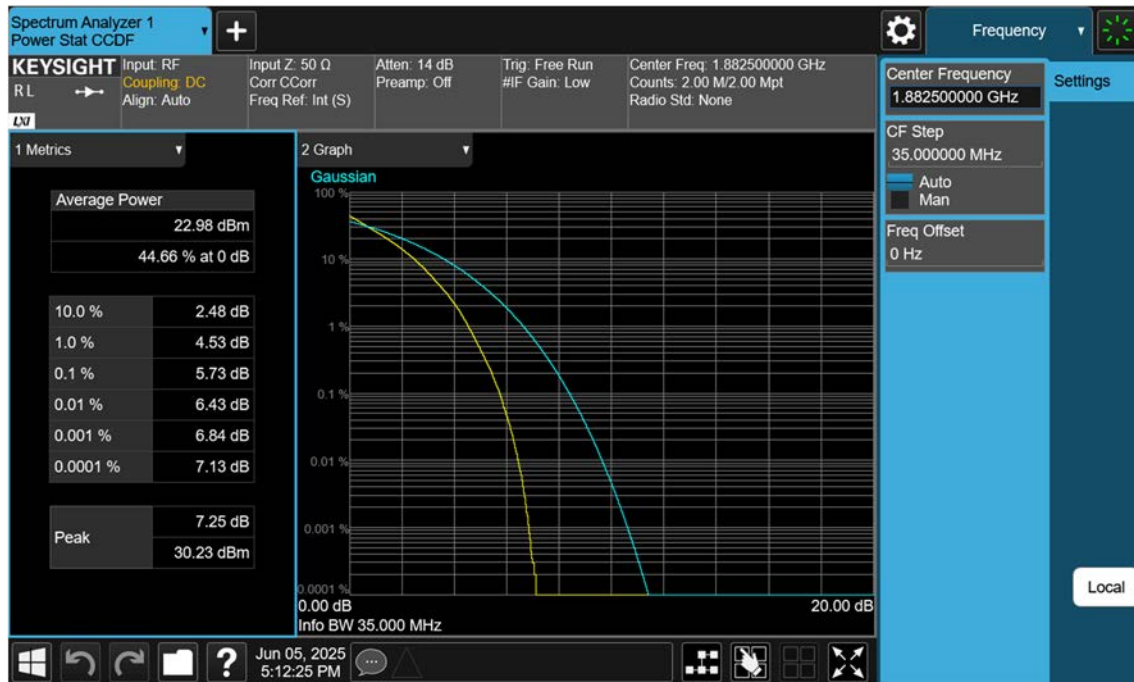
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NR25_35 M_PAR_Mid_BPSK_FullIRB



NR25_35 M_PAR_Mid_QPSK_FullIRB



NR25_35 M_PAR_Mid_16QAM_FullRB



NR25_35 M_PAR_Mid_64QAM_FullRB



NR25_35 M_PAR_Mid_256QAM_FullRB



NR25_40 M_PAR_Mid_BPSK_FullIRB



NR25_40 M_PAR_Mid_QPSK_FullIRB



NR25_40 M_PAR_Mid_16QAM_FullRB



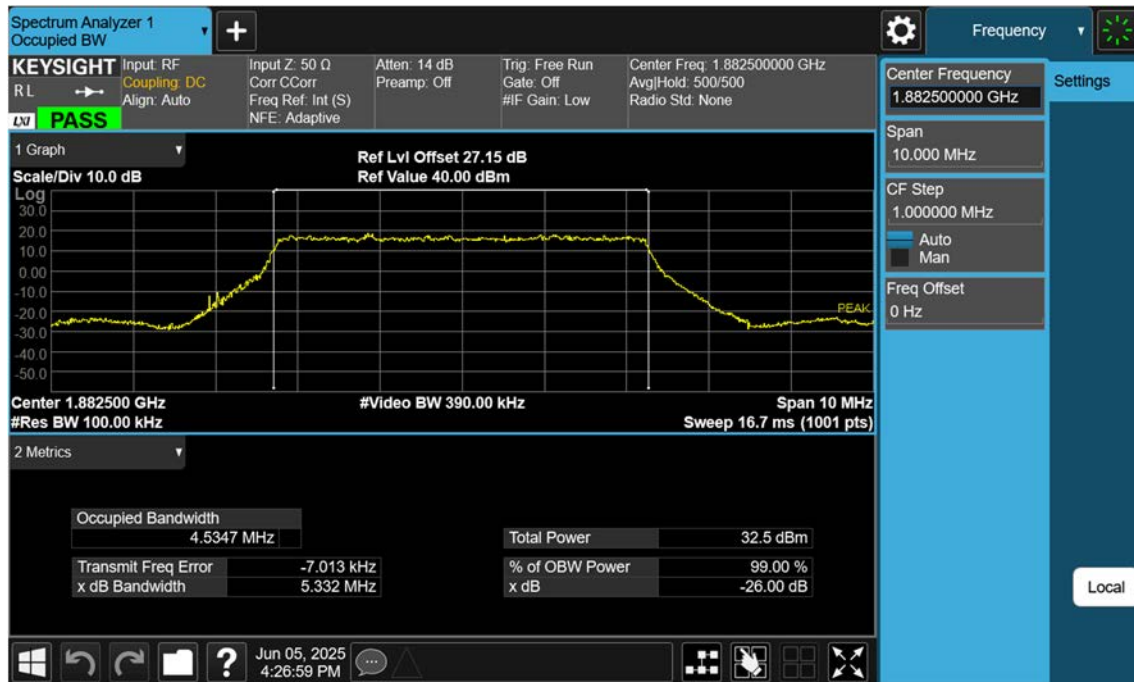
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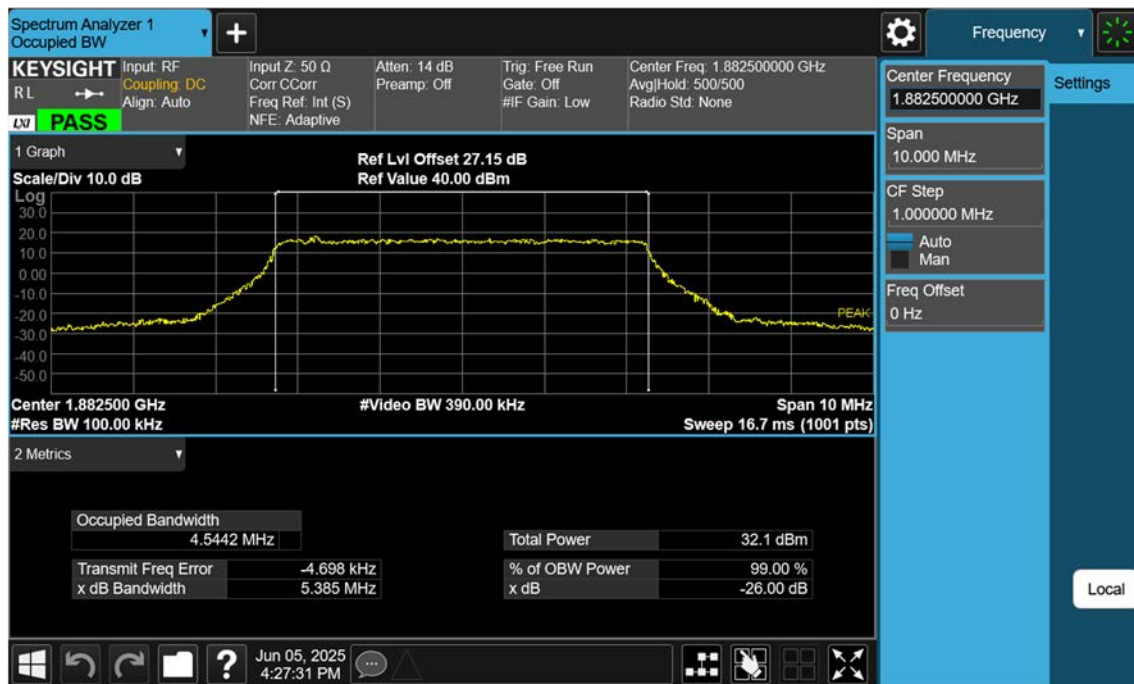
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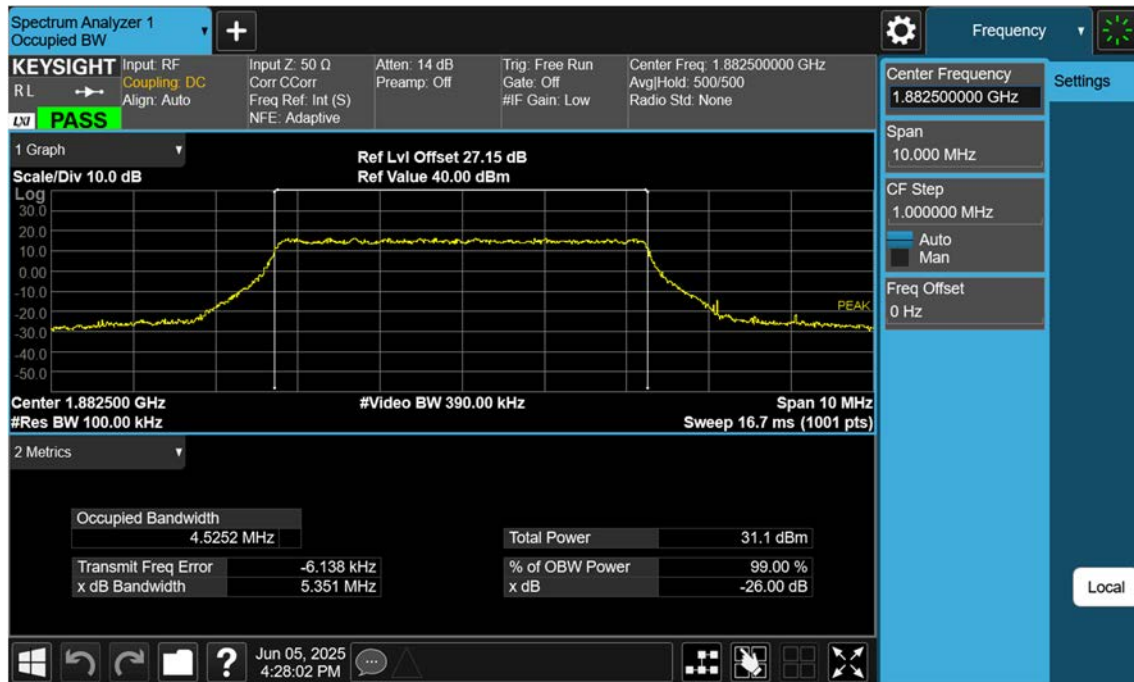
NR25_5 M_OBW_Mid_BPSK_FullIRB



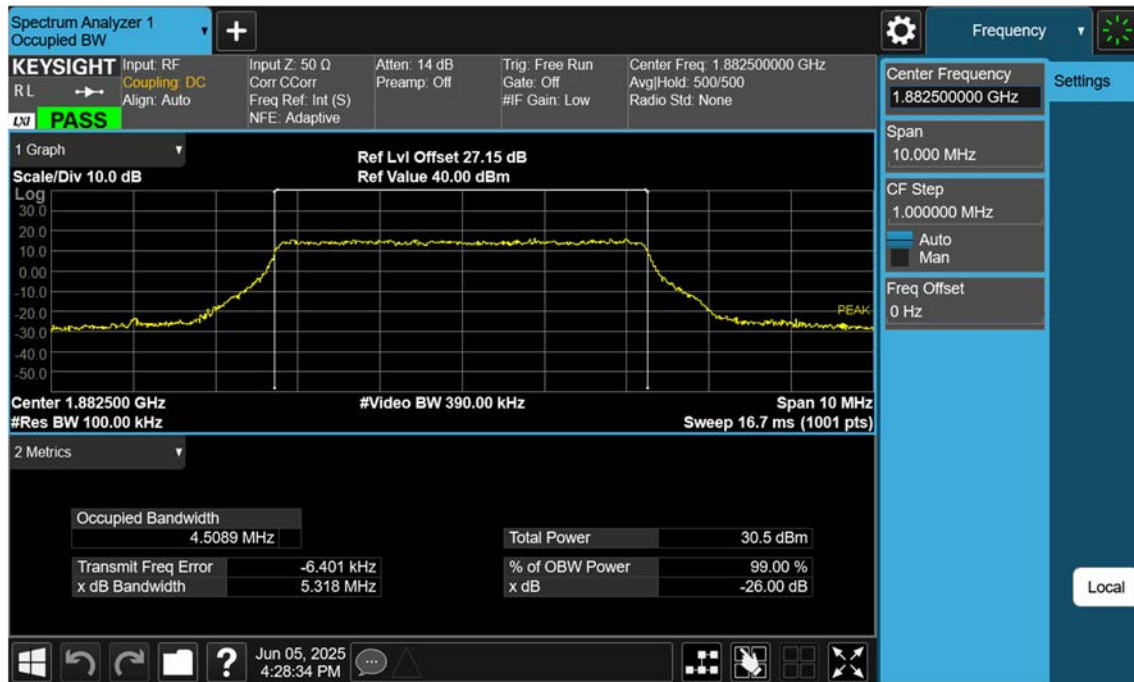
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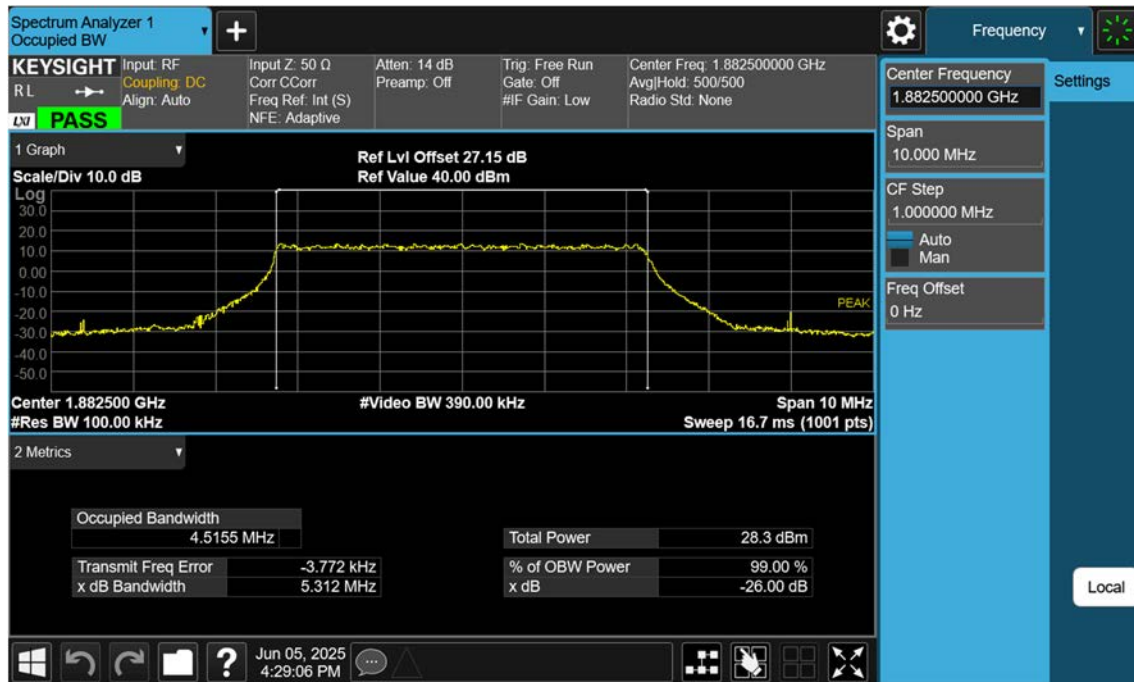
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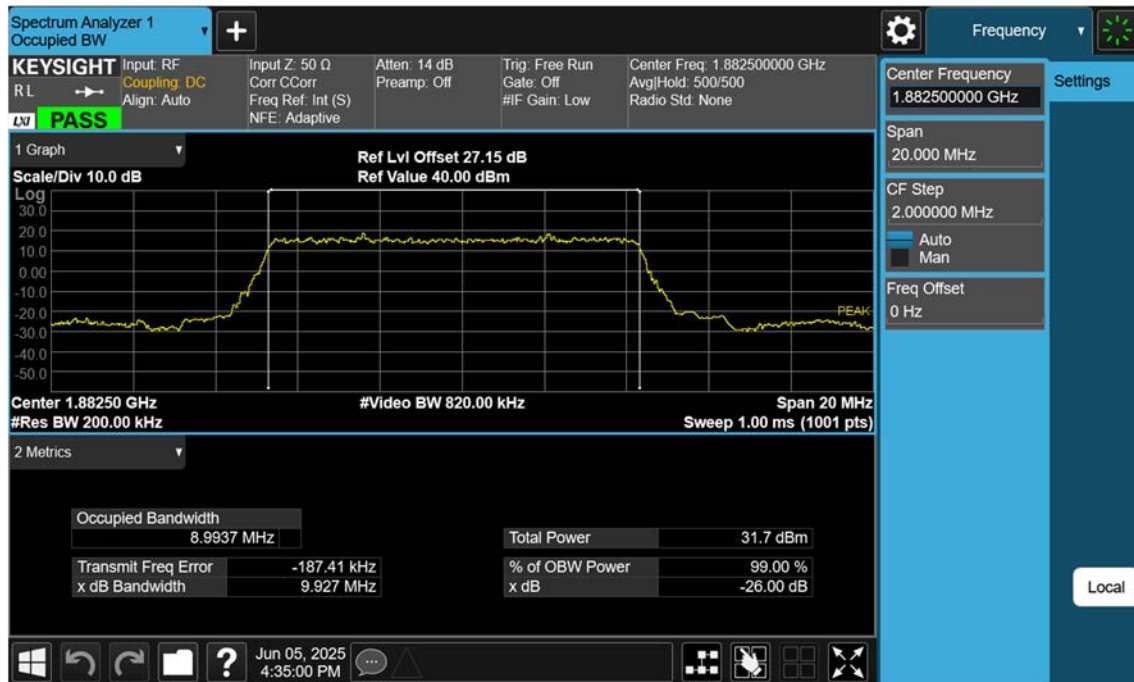
NR25_5 M_OBW_Mid_64QAM_FullRB



NR25_5 M_OBW_Mid_256QAM_FullRB



NR25_10 M_OBW_Mid_BPSK_FullRB



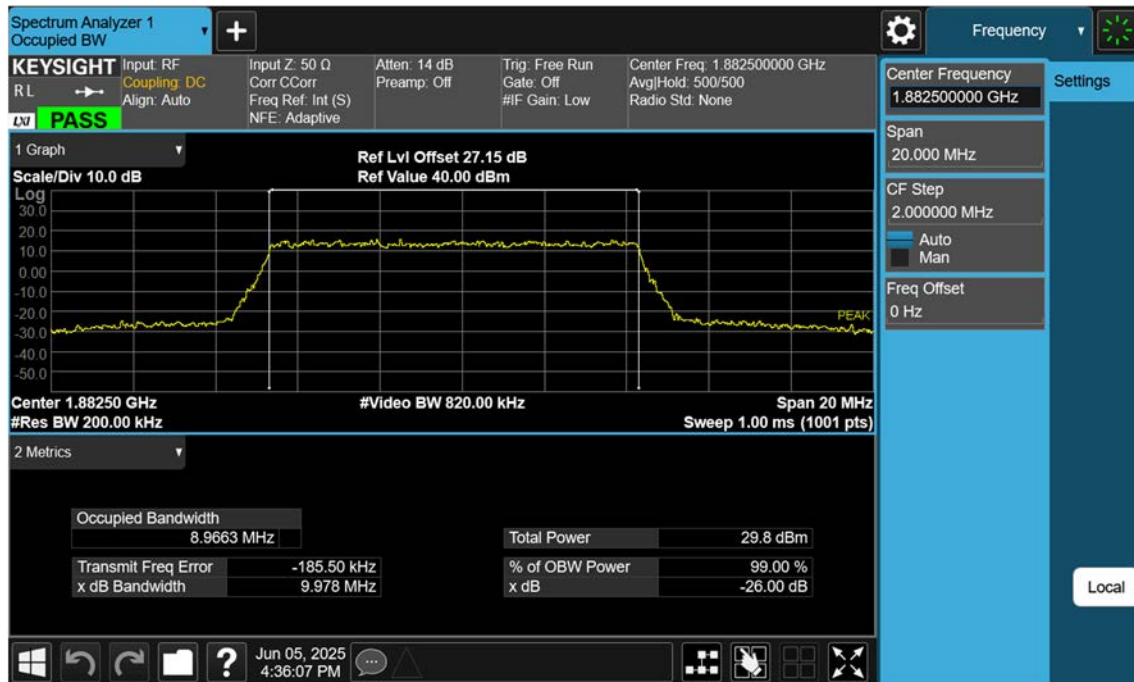
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NR25_10 M_OBW_Mid_16QAM_FullRB



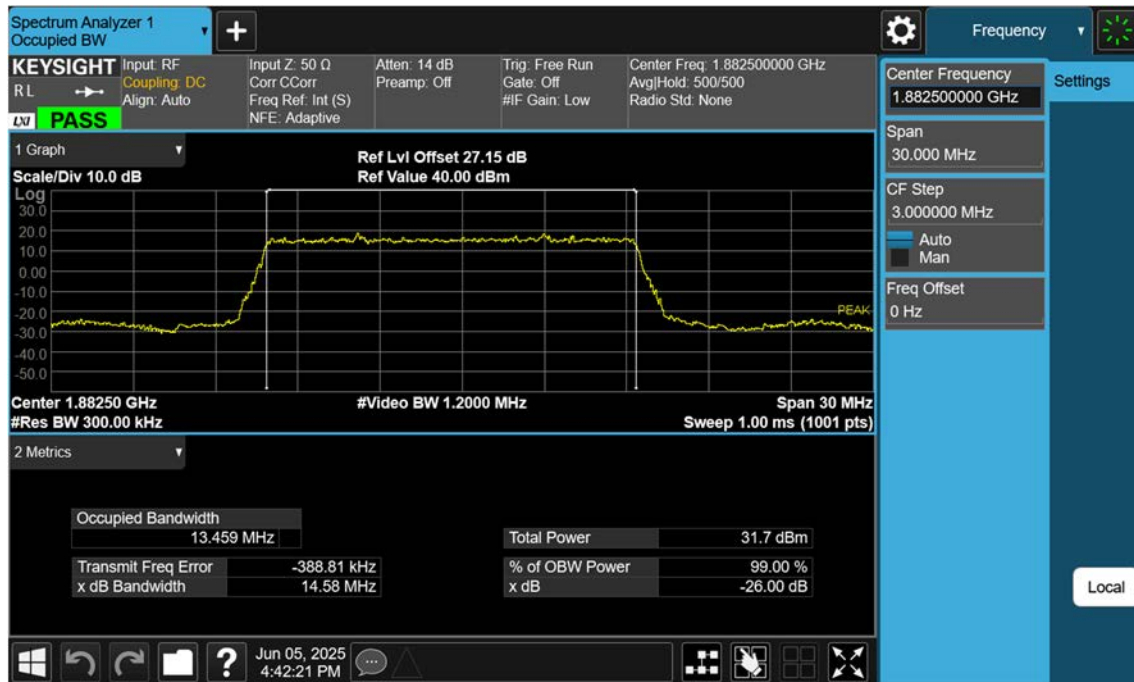
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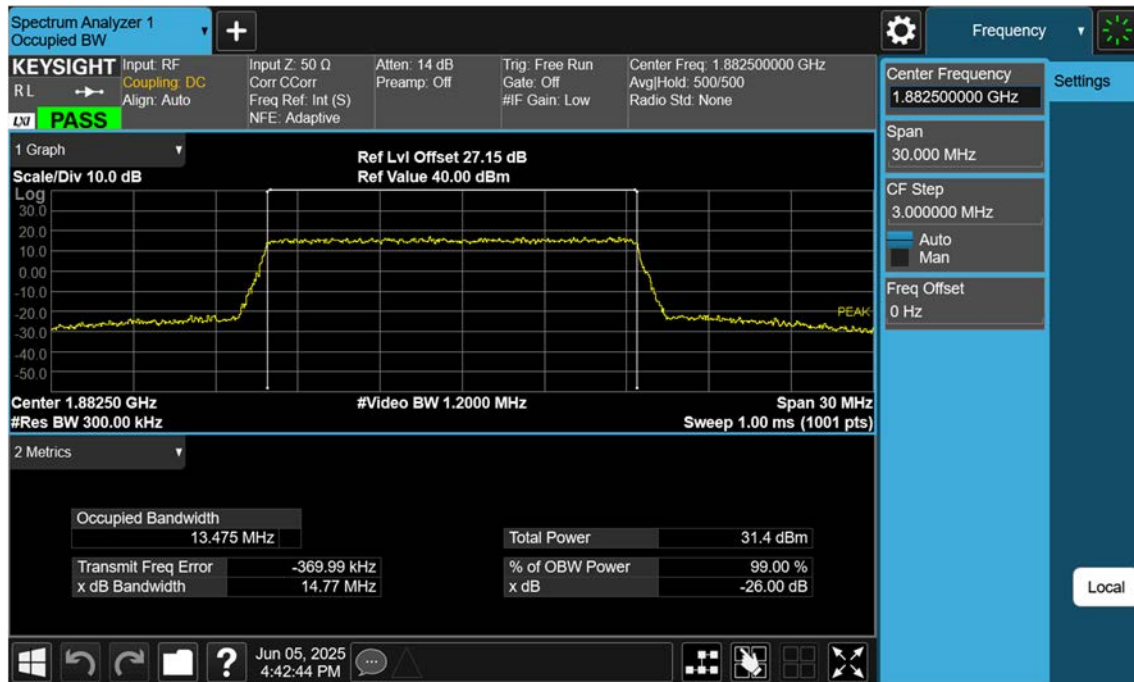
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NR25_15 M_OBW_Mid_BPSK_FullRB



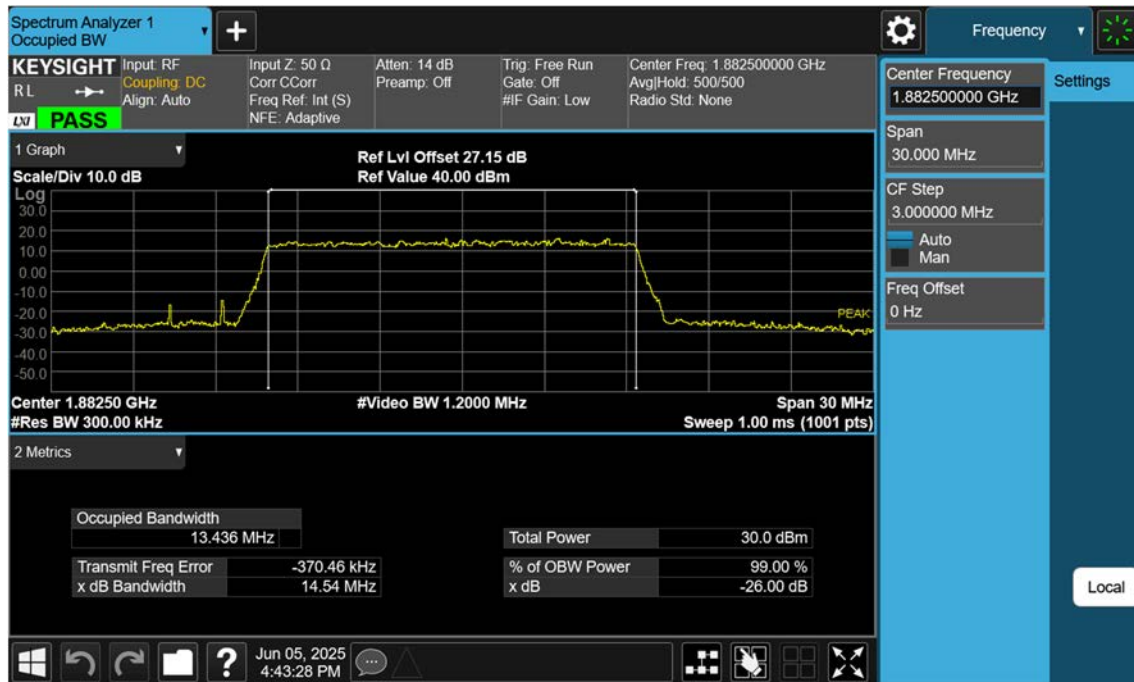
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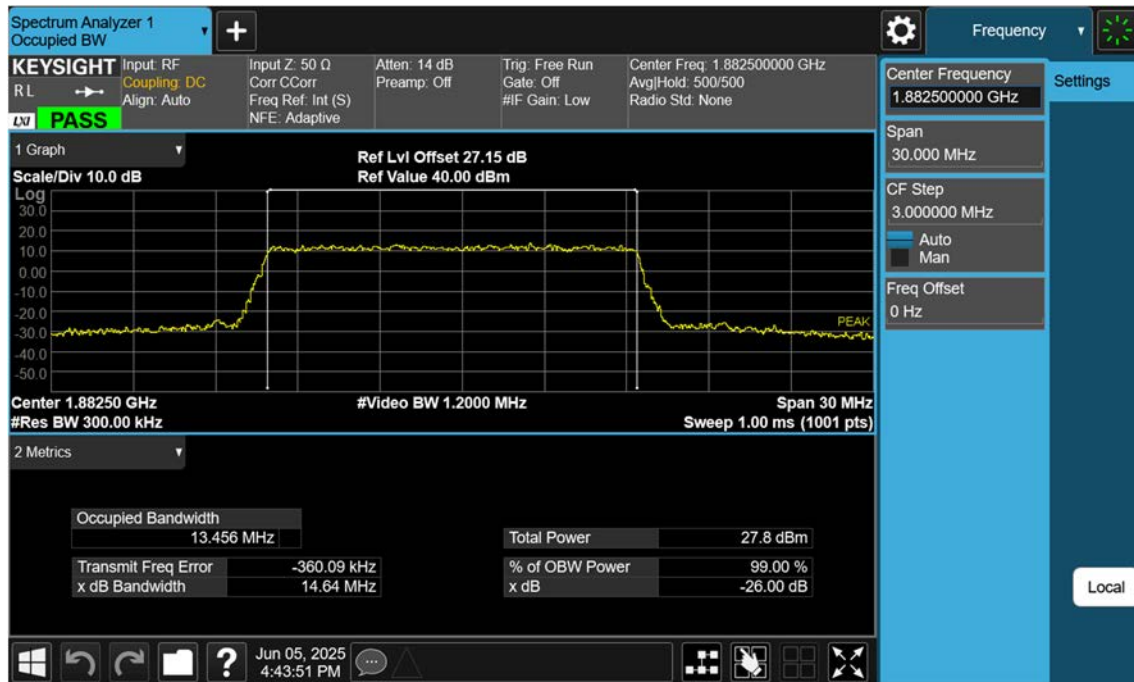
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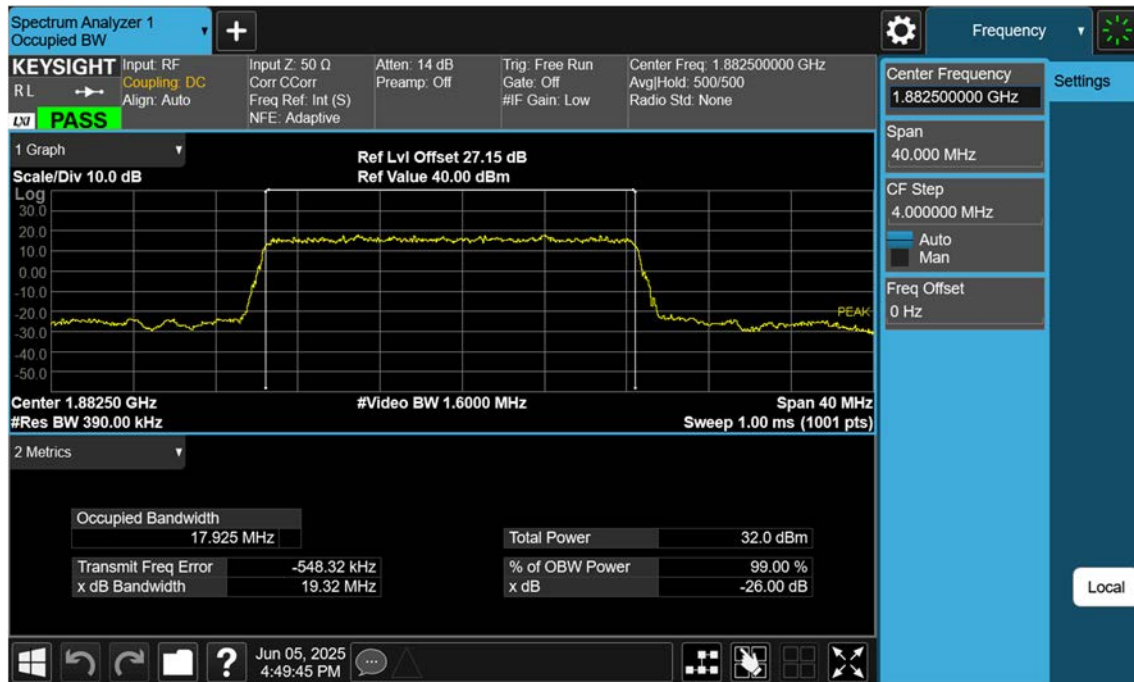
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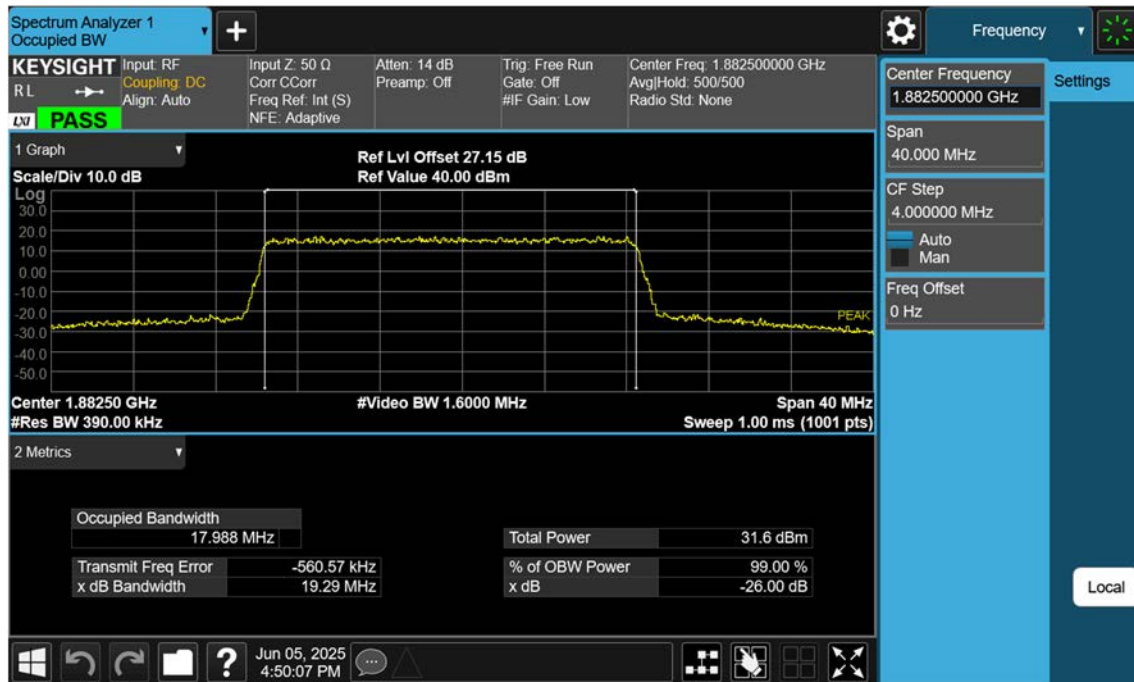
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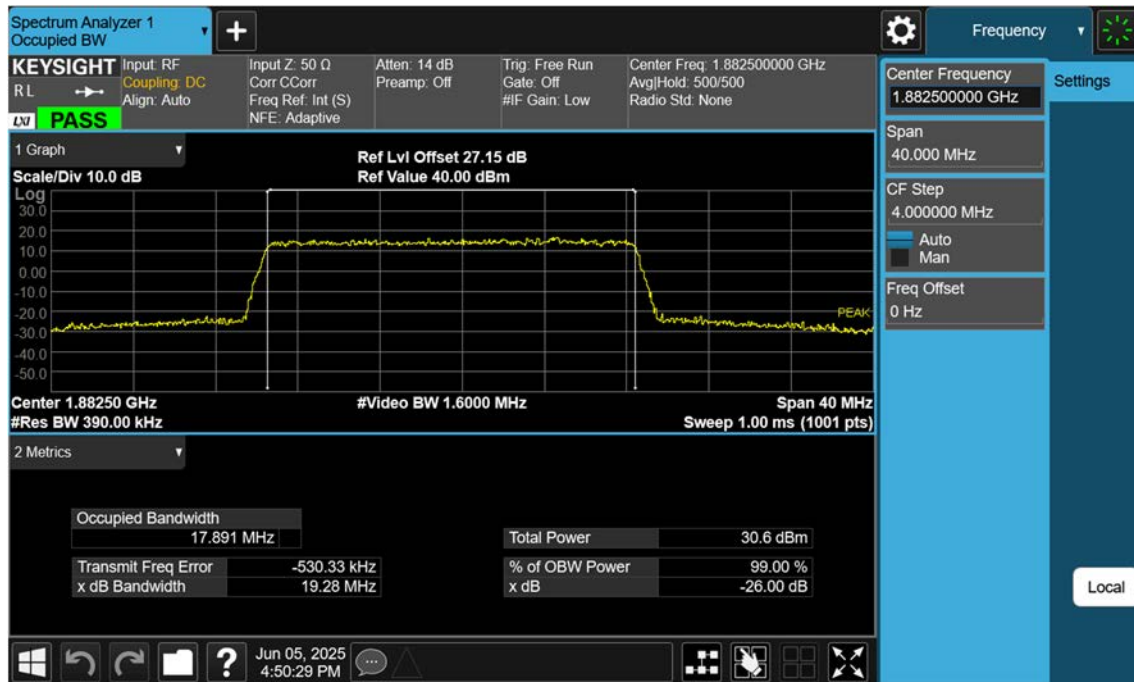
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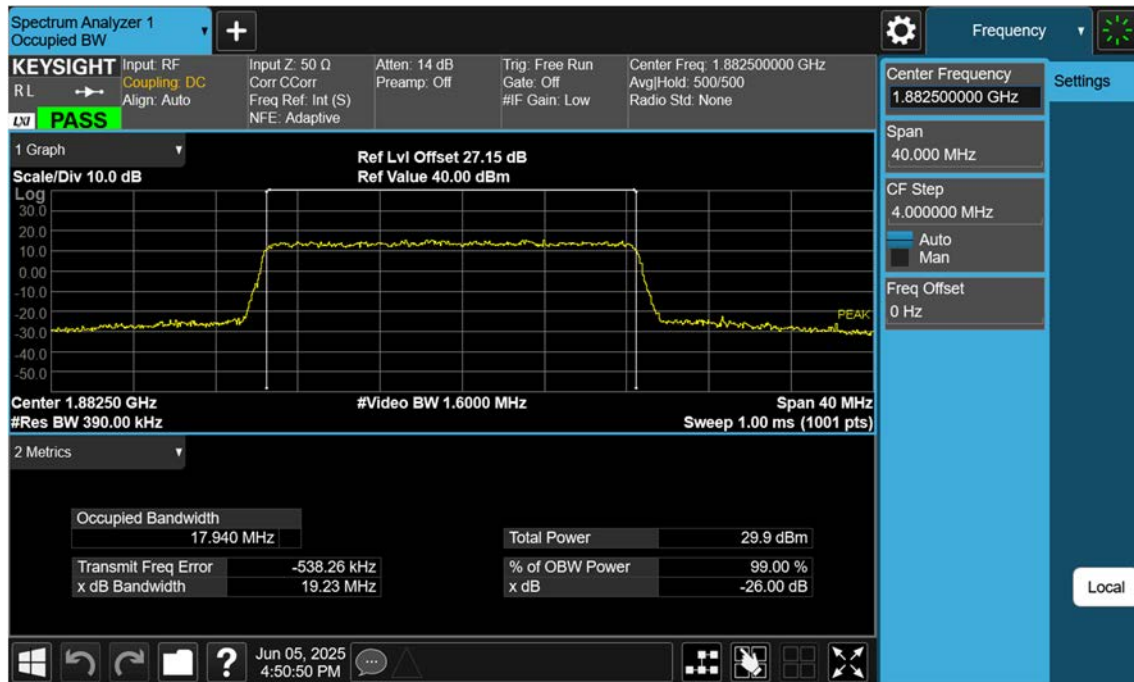
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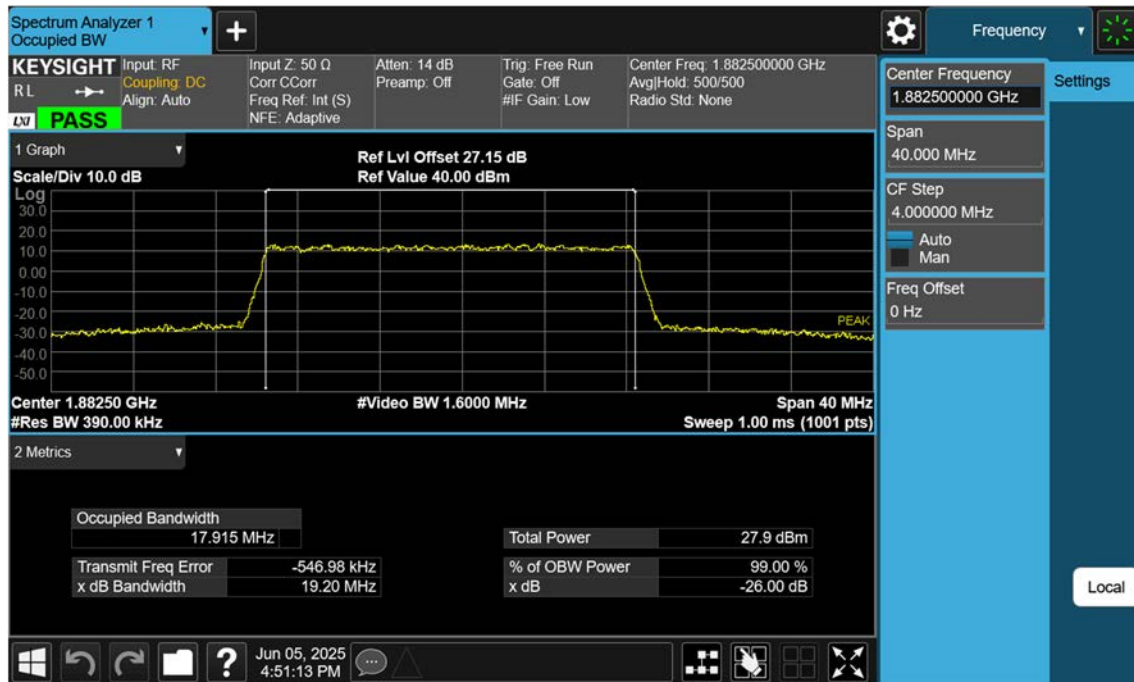
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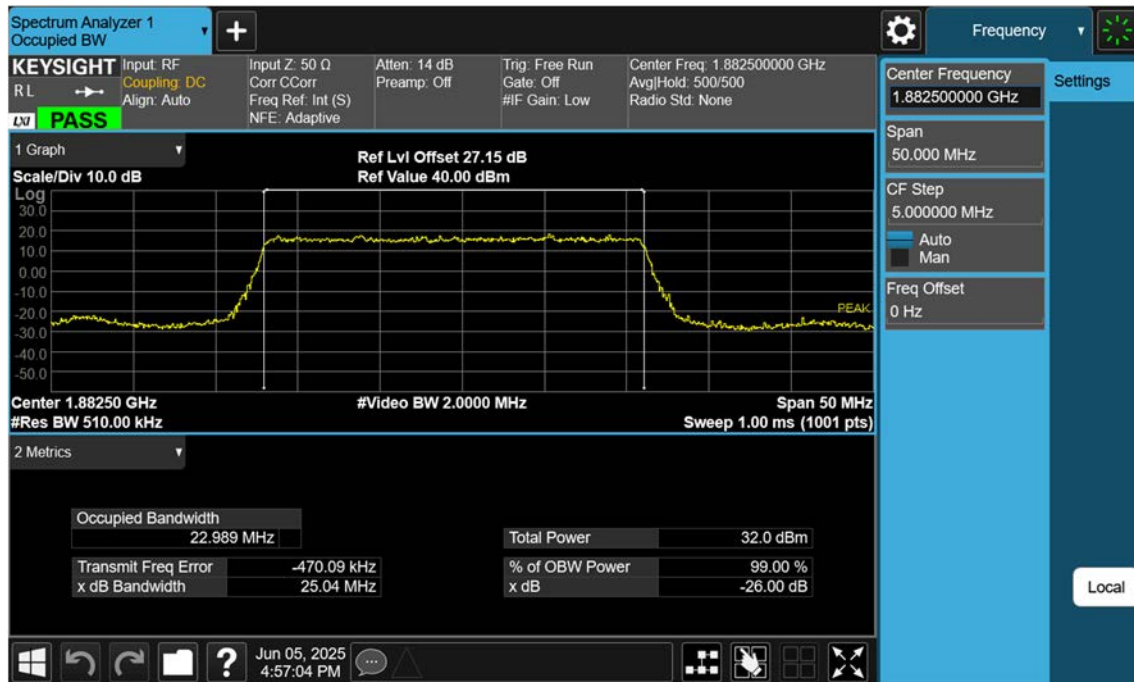
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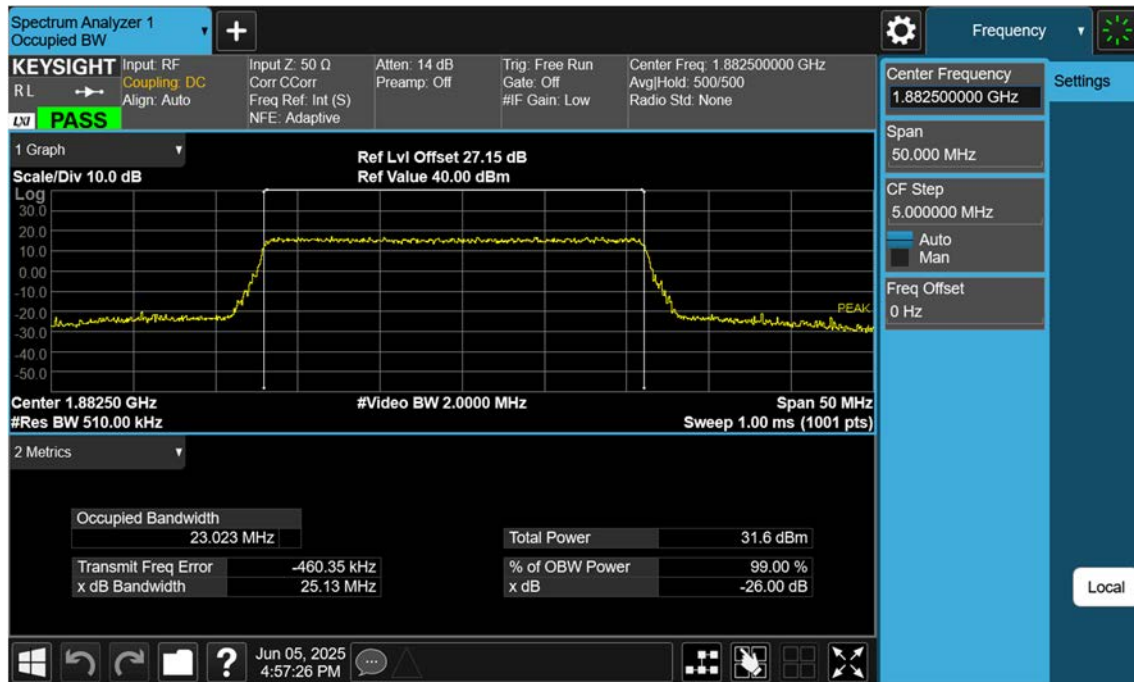
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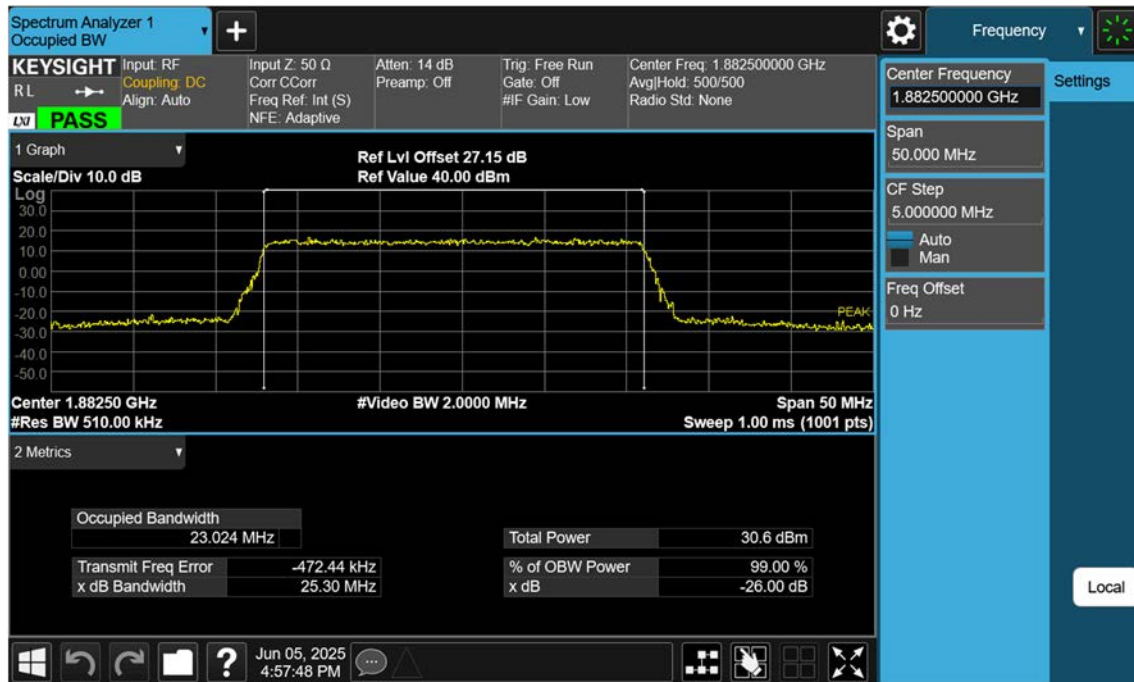
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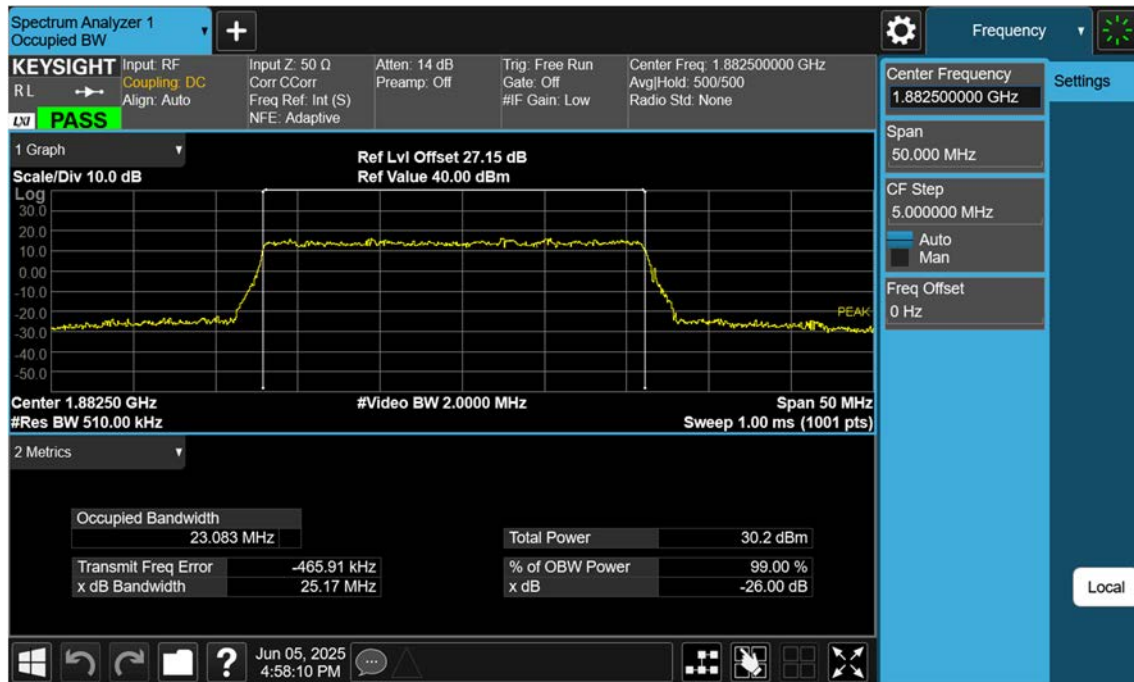
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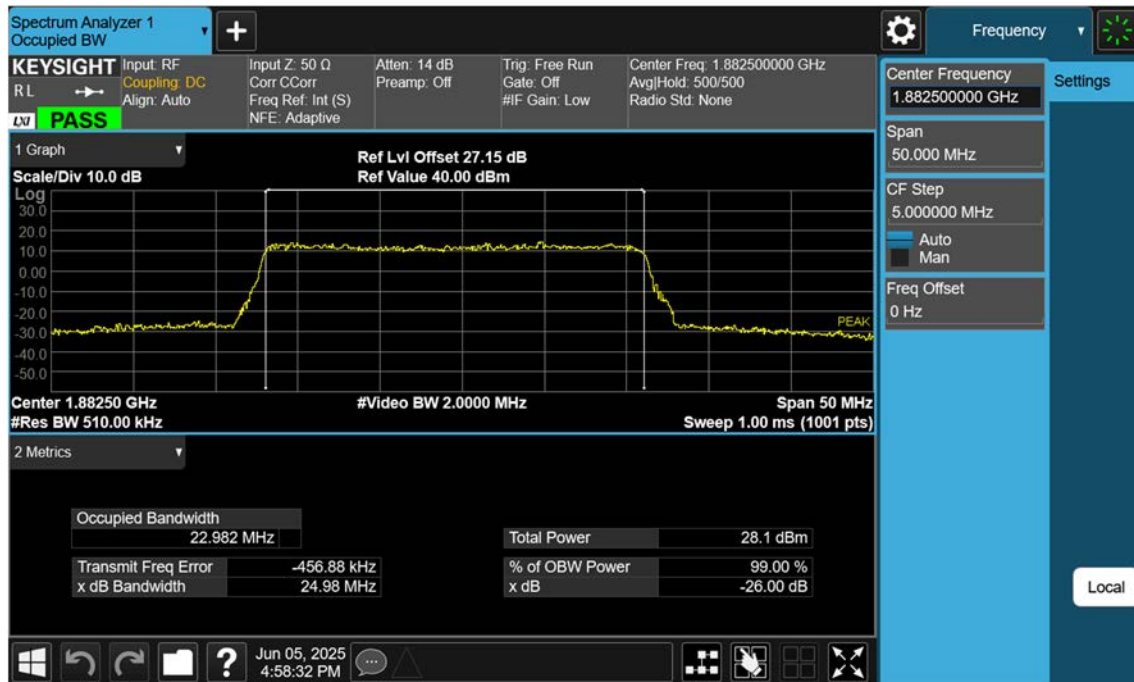
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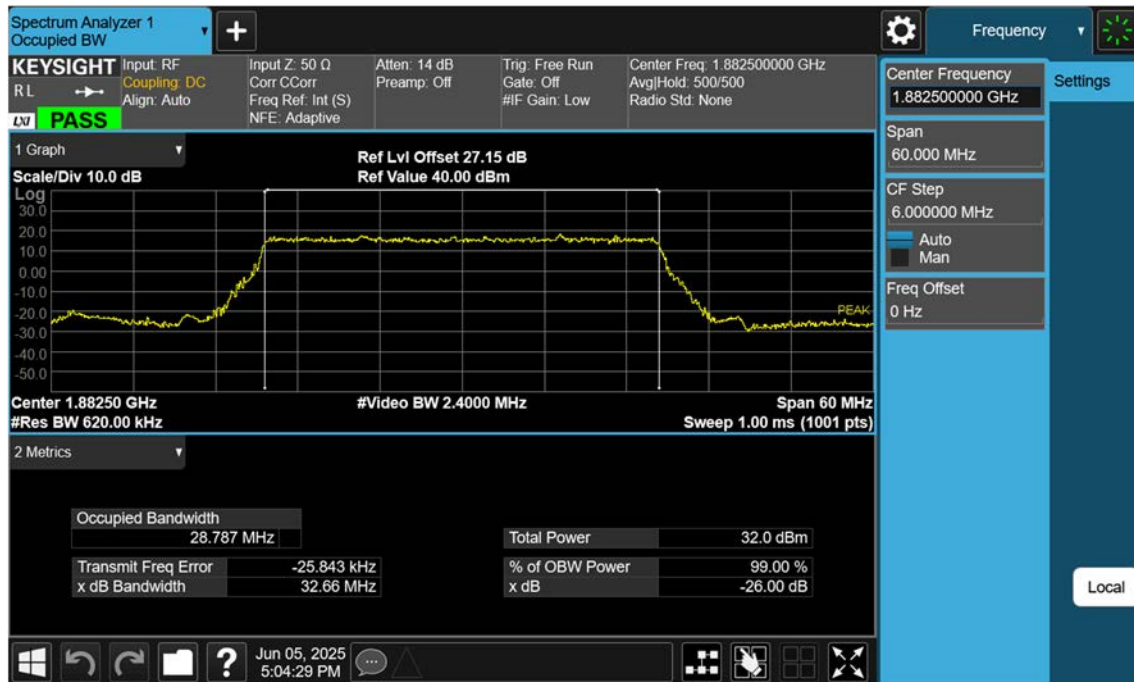
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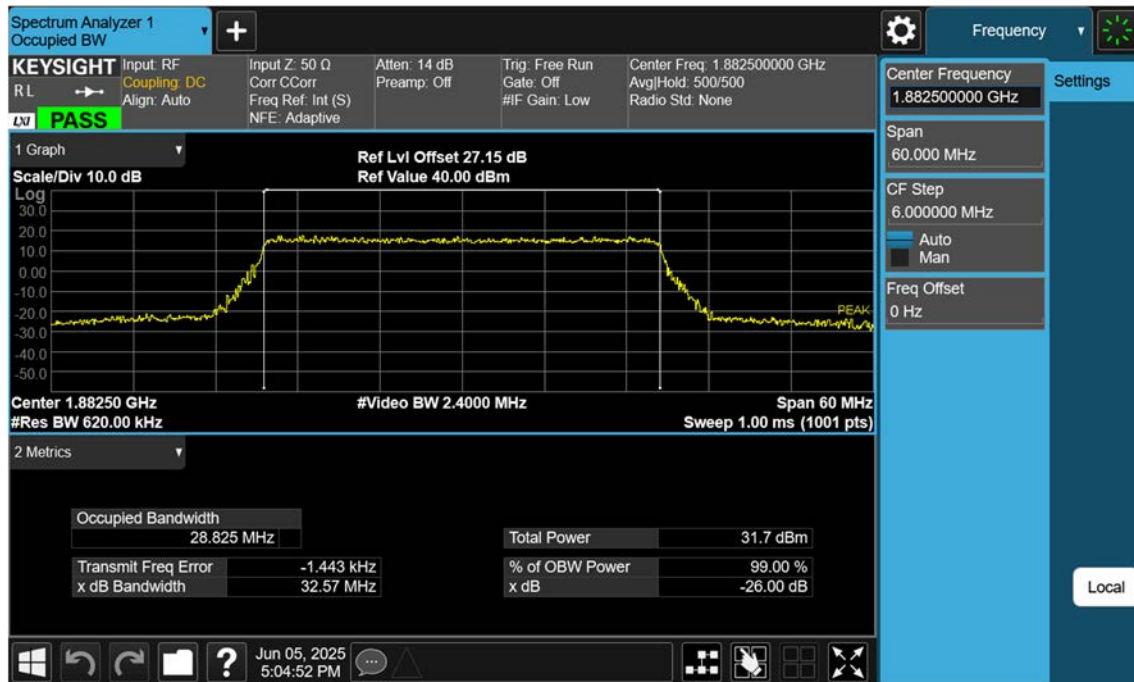
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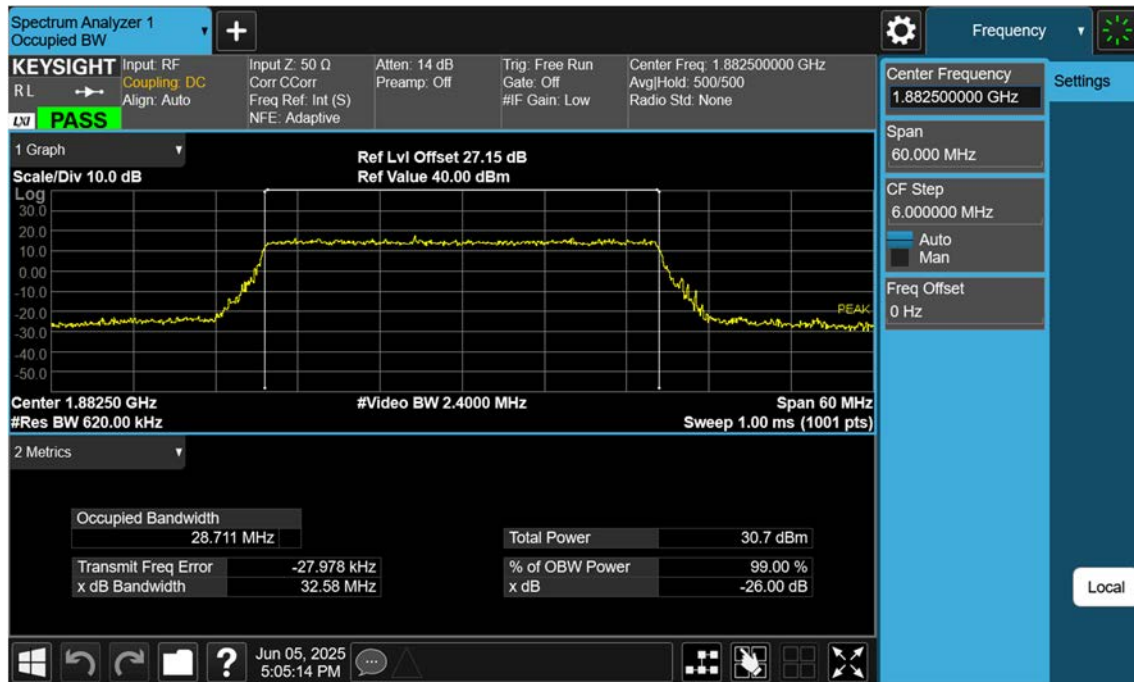
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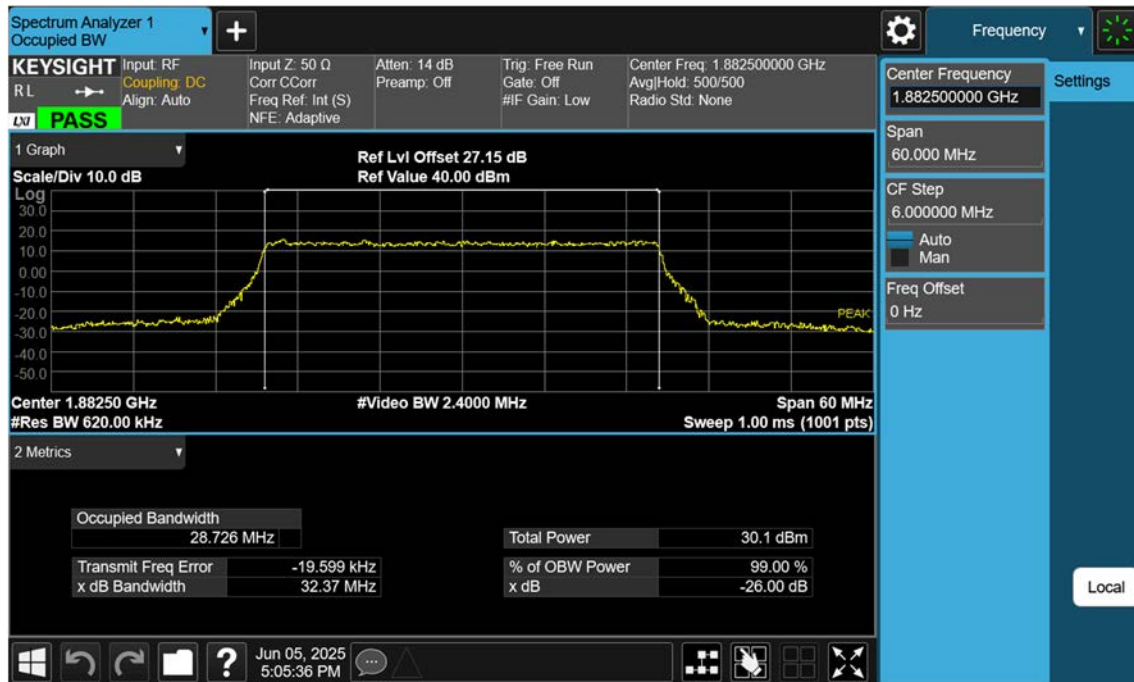
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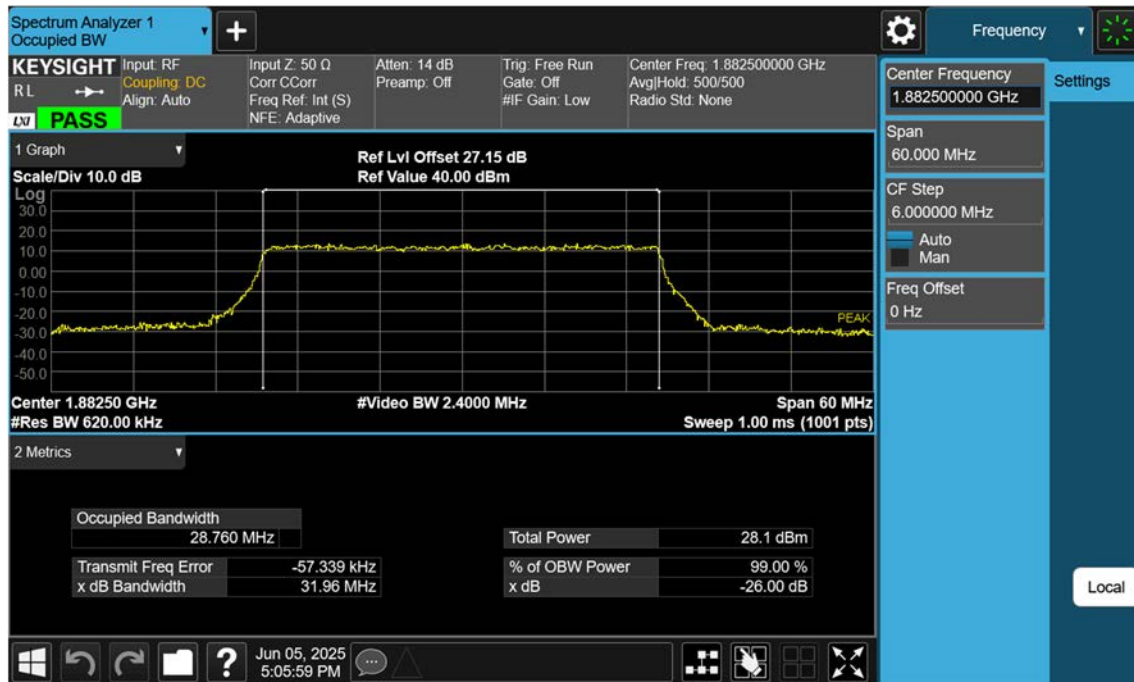
NR25_30 M_OBW_Mid_16QAM_FullRB



NR25_30 M_OBW_Mid_64QAM_FullRB



NR25_30 M_OBW_Mid_256QAM_FullRB



NR25_35 M_OBW_Mid_BPSK_FullRB



NR25_35 M_OBW_Mid_QPSK_FullRB

