

TEST REPORT

FCC Sub6 n25(2) Test for SM-S931U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2410-FC032

DATE OF ISSUE
October 29, 2024

Tested by
Jin Woo Yu

유준우

Technical Manager
Jong Seok Lee

이정석

HCT CO., LTD.
Bongjai Huh
BongJai Huh / CEO

**HCT CO.,LTD.**

2-6, 73, 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea
Tel. +82 31 645 6300 Fax. +82 31 645 6401

TEST REPORT

REPORT NO.

HCT-RF-2410-FC032

DATE OF ISSUE

October 29, 2024

Additional Model

SM-S931U1

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-S931U

Date of Test

August 26, 2024 ~ October 28, 2024

FCC ID

A3LSMS931U

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	October 29, 2024	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

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMS931U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 24
EUT Type:	Mobile phone
Model(s):	SM-S931U
Additional Model(s)	SM-S931U1
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))
Date(s) of Tests:	August 26, 2024 ~ October 28, 2024
Serial number:	Radiated : R3CX80BGBQR(Main 1 ANT), R3CXA0930CK(Sub 2 ANT) Conducted : R3CX70H9JQN UPLINK CARRIER AGGREGATION : 8740cd95a73a7ece

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	4M55G7D	PI/2 BPSK	0.185	22.67
		4M57G7D	QPSK	0.183	22.62
		4M58W7D	16QAM	0.145	21.60
		4M63W7D	64QAM	0.106	20.27
		4M61W7D	256QAM	0.058	17.60
Sub6 n25(2) (10)	1855.0 - 1910.0	8M95G7D	PI/2 BPSK	0.185	22.67
		9M03G7D	QPSK	0.180	22.55
		8M98W7D	16QAM	0.139	21.44
		8M99W7D	64QAM	0.104	20.19
		8M97W7D	256QAM	0.056	17.49
Sub6 n25(2) (15)	1857.5 - 1907.5	13M5G7D	PI/2 BPSK	0.170	22.30
		13M5G7D	QPSK	0.169	22.28
		13M5W7D	16QAM	0.132	21.20
		13M5W7D	64QAM	0.098	19.90
		13M5W7D	256QAM	0.052	17.20
Sub6 n25(2) (20)	1860.0 - 1905.0	17M9G7D	PI/2 BPSK	0.169	22.29
		17M9G7D	QPSK	0.169	22.27
		18M0W7D	16QAM	0.128	21.08
		17M9W7D	64QAM	0.095	19.78
		17M9W7D	256QAM	0.052	17.12
Sub6 n25(2) (25)	1862.5 - 1902.5	23M0G7D	PI/2 BPSK	0.180	22.56
		23M0G7D	QPSK	0.175	22.44
		23M0W7D	16QAM	0.142	21.51
		23M0W7D	64QAM	0.102	20.08
		23M0W7D	256QAM	0.056	17.45
Sub6 n25(2) (30)	1865.0 - 1900.0	28M7G7D	PI/2 BPSK	0.190	22.78
		28M8G7D	QPSK	0.184	22.64
		28M7W7D	16QAM	0.143	21.55
		28M7W7D	64QAM	0.104	20.17
		28M7W7D	256QAM	0.057	17.54
Sub6 n25(2) (35)	1867.5 - 1897.5	32M2G7D	PI/2 BPSK	0.189	22.77
		32M2G7D	QPSK	0.183	22.63
		32M3W7D	16QAM	0.142	21.51
		32M2W7D	64QAM	0.108	20.33
		32M3W7D	256QAM	0.059	17.69
Sub6 n25(2) (40)	1870.0 - 1895.0	38M8G7D	PI/2 BPSK	0.189	22.76
		38M7G7D	QPSK	0.184	22.64
		38M7W7D	16QAM	0.148	21.69
		38M8W7D	64QAM	0.109	20.36
		38M8W7D	256QAM	0.059	17.74

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	4M51G7D	PI/2 BPSK	0.095	19.78
		4M52G7D	QPSK	0.081	19.11
		4M49W7D	16QAM	0.066	18.21
		4M52W7D	64QAM	0.048	16.85
		4M52W7D	256QAM	0.029	14.65
Sub6 n25(2) (10)	1855.0 - 1910.0	8M98G7D	PI/2 BPSK	0.091	19.60
		8M96G7D	QPSK	0.090	19.54
		8M98W7D	16QAM	0.070	18.47
		9M01W7D	64QAM	0.052	17.18
		8M98W7D	256QAM	0.029	14.56
Sub6 n25(2) (15)	1857.5 - 1907.5	13M4G7D	PI/2 BPSK	0.085	19.30
		13M5G7D	QPSK	0.080	19.01
		13M4W7D	16QAM	0.063	18.00
		13M5W7D	64QAM	0.046	16.64
		13M5W7D	256QAM	0.027	14.25
Sub6 n25(2) (20)	1860.0 - 1905.0	17M9G7D	PI/2 BPSK	0.089	19.51
		17M9G7D	QPSK	0.086	19.37
		17M9W7D	16QAM	0.068	18.30
		17M9W7D	64QAM	0.050	16.99
		17M9W7D	256QAM	0.027	14.30
Sub6 n25(2) (25)	1862.5 - 1902.5	22M9G7D	PI/2 BPSK	0.090	19.52
		23M0G7D	QPSK	0.089	19.51
		23M0W7D	16QAM	0.067	18.26
		23M0W7D	64QAM	0.051	17.09
		23M0W7D	256QAM	0.027	14.34
Sub6 n25(2) (30)	1865.0 - 1900.0	28M7G7D	PI/2 BPSK	0.091	19.60
		28M7G7D	QPSK	0.090	19.53
		28M7W7D	16QAM	0.069	18.40
		28M7W7D	64QAM	0.052	17.15
		28M7W7D	256QAM	0.028	14.40
Sub6 n25(2) (35)	1867.5 - 1897.5	32M3G7D	PI/2 BPSK	0.102	20.09
		32M4G7D	QPSK	0.090	19.55
		32M4W7D	16QAM	0.074	18.69
		32M3W7D	64QAM	0.053	17.23
		32M4W7D	256QAM	0.032	15.01
Sub6 n25(2) (40)	1870.0 - 1895.0	38M7G7D	PI/2 BPSK	0.103	20.11
		38M9G7D	QPSK	0.093	19.68
		38M7W7D	16QAM	0.075	18.77
		38M7W7D	64QAM	0.056	17.46
		38M7W7D	256QAM	0.031	14.89

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE, Sub 6, mmWave. It also supports IEEE 802.11 a/b/g/n/ac/ax/be (20/40/80/160/320 MHz), Bluetooth(iPA, ePA), BT LE(iPA, ePA), NFC, WPT, WIFI 6E.

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 - ANSI C63.26-2015 – Section 5.2.6(only GSM)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5 % of the expected OBW, not to exceed 1 MHz
3. VBW $\geq$ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

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

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.
These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration
4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

Test Settings

1. RBW = 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;

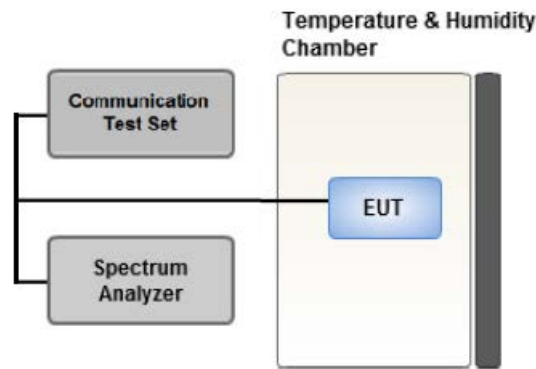
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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)

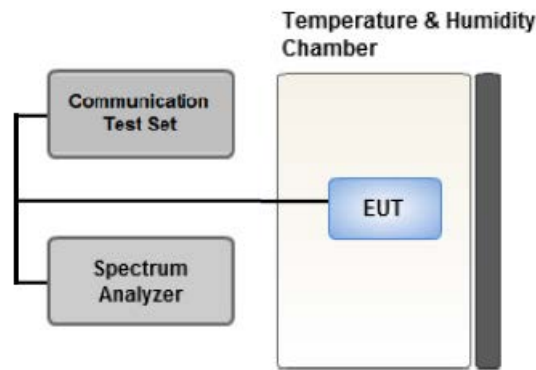
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW $\geq 3 \times$ RBW.

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 $[10 \log (1/0.25)] = 6 \text{ dB}$ if the duty cycle is a constant 25 %.

3.5 OCCUPIED BANDWIDTH.



Test setup

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

The EUT makes a call to the communication simulator.

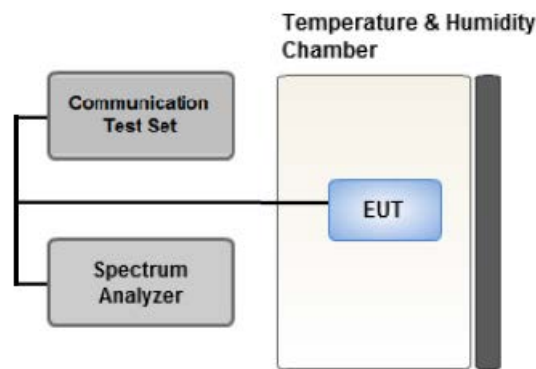
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5 % of the expected OBW
3. VBW $\geq$ 3 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

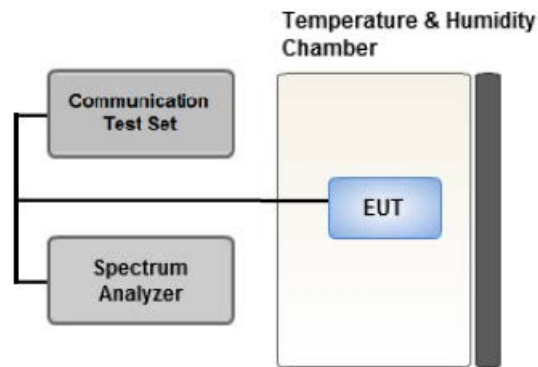
Test Overview

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 = RMS
4. Trace Mode = trace average
5. Sweep time = auto
6. Number of points in sweep $\geq$ 2 x Span / RBW

3.7 BAND EDGE



Test setup

Test Overview

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

Test Settings

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

Test Notes

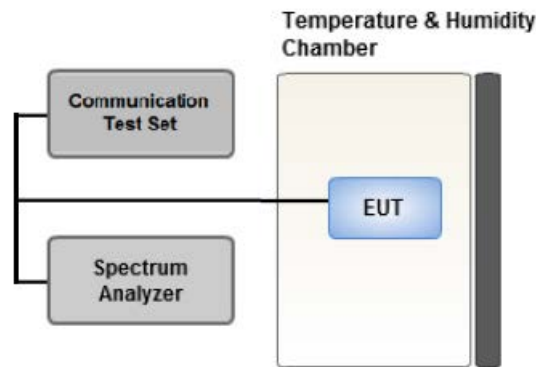
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block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

3.8 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: SA, NSA
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.
- NR n25 (1850 – 1915 MHz) overlaps the entire frequency range of NR n2 (1850 - 1910 MHz) and they have the same Tune-up power.
Therefore, test data provided in this report covers n2 as well as n25.
- 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).
- SM-S931U & additional models were tested and the worst case results are reported.
(Worst case : SM-S931U)

[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		Y

[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		X
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	See Section 9.2		X

3.10 WORST CASE(CONDUCTED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
(Worst case: DFT-S-OFDM)
- Modulation : All Modulation of operation were investigated and the worst case configuration results are reported.
(Worst case: PI/2 BPSK)
- All modes of operation were investigated and the worst case configuration results are reported.
Mode: SA, NSA
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.
- NR n25 (1850 – 1915 MHz) overlaps the entire frequency range of NR n2 (1850 - 1910 MHz) and they have the same Tune-up power.
Therefore, test data provided in this report covers n2 as well as n25.
- SM-S931U & additional models were tested and the worst case results are reported.
(Worst case : SM-S931U)

[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	04/27/2025	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
Loop Antenna(9 kHz~30 MHz)	FMZB1513	Rohde & Schwarz	1513-175	01/16/2025	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/09/2025	Biennial
Hybrid Antenna	VULB9160	Schwarzbeck	760	02/24/2025	Biennial
RF Switching System	FBSR-06B (1G HPF + LNA)	T&M SYSTEM	F3L1	05/14/2025	Annual
RF Switching System	FBSR-06B (3G HPF + LNA)	T&M SYSTEM	F3L2	05/14/2025	Annual
RF Switching System	FBSR-06B (6G HPF + LNA)	T&M SYSTEM	F3L3	05/14/2025	Annual
RF Switching System	FBSR-06B (LNA)	T&M SYSTEM	F3L4	05/14/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/17/2024	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	08/22/2025	Annual
Power Splitter(DC~26.5 GHz)	11667B	Hewlett Packard	11275	02/29/2025	Annual
Chamber	SU-642	ESPEC	93008124	02/19/2025	Annual
Signal Analyzer(10 Hz~26.5 GHz)	N9020A	Agilent	MY51110063	04/04/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
Spectrum Analyzer(10 Hz~40 GHz)	FSV40	REOHDE & SCHWARZ	101436	02/13/2025	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262287701	05/16/2025	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/14/2025	Annual
Signal Analyzer(5 Hz~40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/17/2025	Annual
4-Way Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/10/2025	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 ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (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

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	<u>See Note1</u>
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. See SAR Report
2. All conducted tests were tested using 5G Wireless Tester.

6.2 Test Condition: Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§ 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	-19.33	14.30	10.45	2.08	H	< 2.00	0.185	22.67	1	23
		QPSK	-19.38	14.25	10.45	2.08	H		0.183	22.62		
		16-QAM	-20.40	13.23	10.45	2.08	H		0.145	21.60		
		64-QAM	-21.73	11.90	10.45	2.08	H		0.106	20.27		
		256-QAM	-24.40	9.23	10.45	2.08	H		0.058	17.60		
1882.5		PI/2 BPSK	-19.71	14.18	10.32	2.21	H		0.169	22.29	1	23
		QPSK	-19.83	14.06	10.32	2.21	H		0.165	22.17		
		16-QAM	-20.95	12.94	10.32	2.21	H		0.127	21.05		
		64-QAM	-22.10	11.79	10.32	2.21	H		0.098	19.90		
		256-QAM	-24.88	9.01	10.32	2.21	H		0.052	17.12		
1912.5		PI/2 BPSK	-21.23	12.95	10.19	2.17	H	0.125	20.97	1	1	
		QPSK	-21.30	12.88	10.19	2.17	H	0.123	20.90			
		16-QAM	-22.28	11.90	10.19	2.17	H	0.098	19.92			
		64-QAM	-23.55	10.63	10.19	2.17	H	0.073	18.65			
		256-QAM	-26.03	8.15	10.19	2.17	H	0.041	16.17			

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	-19.33	14.30	10.45	2.08	H	< 2.00	0.185	22.67	1	26
		QPSK	-19.45	14.18	10.45	2.08	H		0.180	22.55		
		16-QAM	-20.56	13.07	10.45	2.08	H		0.139	21.44		
		64-QAM	-21.81	11.82	10.45	2.08	H		0.105	20.19		
		256-QAM	-24.51	9.12	10.45	2.08	H		0.056	17.49		
1882.5	Sub6 n25(2)/ 10 MHz [15 kHz]	PI/2 BPSK	-19.61	14.28	10.32	2.21	H	< 2.00	0.173	22.39	1	1
		QPSK	-19.66	14.23	10.32	2.21	H		0.171	22.34		
		16-QAM	-20.84	13.05	10.32	2.21	H		0.131	21.16		
		64-QAM	-22.04	11.85	10.32	2.21	H		0.099	19.96		
		256-QAM	-24.68	9.21	10.32	2.21	H		0.054	17.32		
1910.0		PI/2 BPSK	-20.82	13.08	10.21	2.17	H	< 2.00	0.129	21.12	1	1
		QPSK	-21.02	12.88	10.21	2.17	H		0.124	20.92		
		16-QAM	-22.13	11.77	10.21	2.17	H		0.096	19.81		
		64-QAM	-23.42	10.48	10.21	2.17	H		0.071	18.52		
		256-QAM	-25.98	7.92	10.21	2.17	H		0.039	15.96		

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	Sub6 n25(2)/ 15 MHz [15 kHz]	PI/2 BPSK	-19.58	13.74	10.43	2.10	H	< 2.00	0.161	22.07	1	39
		QPSK	-19.74	13.58	10.43	2.10	H		0.155	21.91		
		16-QAM	-20.75	12.57	10.43	2.10	H		0.123	20.90		
		64-QAM	-21.96	11.36	10.43	2.10	H		0.093	19.69		
		256-QAM	-24.67	8.65	10.43	2.10	H		0.050	16.98		
1882.5		PI/2 BPSK	-19.70	14.19	10.32	2.21	H		0.170	22.30	1	1
		QPSK	-19.72	14.17	10.32	2.21	H		0.169	22.28		
		16-QAM	-20.80	13.09	10.32	2.21	H		0.132	21.20		
		64-QAM	-22.10	11.79	10.32	2.21	H		0.098	19.90		
		256-QAM	-24.80	9.09	10.32	2.21	H		0.053	17.20		
1907.5		PI/2 BPSK	-20.43	13.47	10.21	2.17	H	0.142	21.51	1	1	
		QPSK	-20.51	13.39	10.21	2.17	H	0.139	21.43			
		16-QAM	-21.41	12.49	10.21	2.17	H	0.113	20.53			
		64-QAM	-22.78	11.12	10.21	2.17	H	0.082	19.16			
		256-QAM	-25.38	8.52	10.21	2.17	H	0.045	16.56			

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	Sub6 n25(2)/ 20 MHz [15 kHz]	PI/2 BPSK	-19.36	13.96	10.43	2.10	H	<2.00	0.169	22.29	1	53
		QPSK	-19.38	13.94	10.43	2.10	H		0.169	22.27		
		16-QAM	-20.57	12.75	10.43	2.10	H		0.128	21.08		
		64-QAM	-21.87	11.45	10.43	2.10	H		0.095	19.78		
		256-QAM	-24.53	8.79	10.43	2.10	H		0.052	17.12		
1882.5		PI/2 BPSK	-19.88	14.01	10.32	2.21	H		0.163	22.12	1	1
		QPSK	-19.89	14.00	10.32	2.21	H		0.163	22.11		
		16-QAM	-21.03	12.86	10.32	2.21	H		0.125	20.97		
		64-QAM	-22.42	11.47	10.32	2.21	H		0.091	19.58		
		256-QAM	-24.89	9.00	10.32	2.21	H		0.051	17.11		
1905.0		PI/2 BPSK	-20.19	13.85	10.23	2.19	H	0.155	21.89	1	1	
		QPSK	-20.20	13.84	10.23	2.19	H	0.154	21.88			
		16-QAM	-21.39	12.65	10.23	2.19	H	0.117	20.69			
		64-QAM	-22.70	11.34	10.23	2.19	H	0.087	19.38			
		256-QAM	-25.45	8.59	10.23	2.19	H	0.046	16.63			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1862.5	Sub6 n25(2)/ 25 MHz [15 kHz]	PI/2 BPSK	-19.33	14.28	10.41	2.13	H	< 2.00	0.180	22.56	1	66
		QPSK	-19.45	14.16	10.41	2.13	H		0.175	22.44		
		16-QAM	-20.38	13.23	10.41	2.13	H		0.142	21.51		
		64-QAM	-21.89	11.72	10.41	2.13	H		0.100	20.00		
		256-QAM	-24.53	9.08	10.41	2.13	H		0.055	17.36		
1882.5		PI/2 BPSK	-19.48	14.41	10.32	2.21	H		0.179	22.52	1	1
		QPSK	-19.60	14.29	10.32	2.21	H		0.174	22.40		
		16-QAM	-20.56	13.33	10.32	2.21	H		0.139	21.44		
		64-QAM	-21.92	11.97	10.32	2.21	H		0.102	20.08		
		256-QAM	-24.55	9.34	10.32	2.21	H		0.056	17.45		
1902.5		PI/2 BPSK	-19.91	14.13	10.23	2.19	H	0.165	22.17	1	1	
		QPSK	-19.92	14.12	10.23	2.19	H	0.164	22.16			
		16-QAM	-21.10	12.94	10.23	2.19	H	0.125	20.98			
		64-QAM	-22.37	11.67	10.23	2.19	H	0.094	19.71			
		256-QAM	-24.96	9.08	10.23	2.19	H	0.052	17.12			

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	Sub6 n25(2)/ 30 MHz [15 kHz]	PI/2 BPSK	-19.46	14.15	10.41	2.13	H	< 2.00	0.175	22.43	1	80
		QPSK	-19.56	14.05	10.41	2.13	H		0.171	22.33		
		16-QAM	-20.70	12.91	10.41	2.13	H		0.132	21.19		
		64-QAM	-22.11	11.50	10.41	2.13	H		0.095	19.78		
		256-QAM	-24.75	8.86	10.41	2.13	H		0.052	17.14		
1882.5		PI/2 BPSK	-19.22	14.67	10.32	2.21	H		0.190	22.78	1	1
		QPSK	-19.36	14.53	10.32	2.21	H		0.184	22.64		
		16-QAM	-20.45	13.44	10.32	2.21	H		0.143	21.55		
		64-QAM	-21.90	11.99	10.32	2.21	H		0.102	20.10		
		256-QAM	-24.48	9.41	10.32	2.21	H		0.057	17.52		
1900.0		PI/2 BPSK	-19.63	14.54	10.25	2.20	H	0.182	22.59	1	1	
		QPSK	-19.71	14.46	10.25	2.20	H	0.178	22.51			
		16-QAM	-20.75	13.42	10.25	2.20	H	0.140	21.47			
		64-QAM	-22.05	12.12	10.25	2.20	H	0.104	20.17			
		256-QAM	-24.68	9.49	10.25	2.20	H	0.057	17.54			

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	Sub6 n25(2)/ 35 MHz [15 kHz]	PI/2 BPSK	-19.37	14.54	10.39	2.16	H	< 2.00	0.189	22.77	1	94
		QPSK	-19.51	14.40	10.39	2.16	H		0.183	22.63		
		16-QAM	-20.63	13.28	10.39	2.16	H		0.142	21.51		
		64-QAM	-21.81	12.10	10.39	2.16	H		0.108	20.33		
		256-QAM	-24.45	9.46	10.39	2.16	H		0.059	17.69		
1882.5		PI/2 BPSK	-19.55	14.34	10.32	2.21	H		0.176	22.45	1	1
		QPSK	-19.60	14.29	10.32	2.21	H		0.174	22.40		
		16-QAM	-20.62	13.27	10.32	2.21	H		0.137	21.38		
		64-QAM	-22.06	11.83	10.32	2.21	H		0.099	19.94		
		256-QAM	-24.70	9.19	10.32	2.21	H		0.054	17.30		
1897.5		PI/2 BPSK	-19.94	14.23	10.25	2.20	H	0.169	22.28	1	1	
		QPSK	-20.04	14.13	10.25	2.20	H	0.165	22.18			
		16-QAM	-21.05	13.12	10.25	2.20	H	0.131	21.17			
		64-QAM	-22.30	11.87	10.25	2.20	H	0.098	19.92			
		256-QAM	-24.94	9.23	10.25	2.20	H	0.054	17.28			

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	-19.38	14.53	10.39	2.16	H	< 2.00	0.189	22.76	1	108
		QPSK	-19.50	14.41	10.39	2.16	H		0.184	22.64		
		16-QAM	-20.45	13.46	10.39	2.16	H		0.148	21.69		
		64-QAM	-21.83	12.08	10.39	2.16	H		0.107	20.31		
		256-QAM	-24.40	9.51	10.39	2.16	H		0.059	17.74		
1882.5	Sub6 n25(2)/ 40 MHz [15 kHz]	PI/2 BPSK	-19.39	14.50	10.32	2.21	H	< 2.00	0.182	22.61	1	1
		QPSK	-19.42	14.47	10.32	2.21	H		0.181	22.58		
		16-QAM	-20.38	13.51	10.32	2.21	H		0.145	21.62		
		64-QAM	-21.64	12.25	10.32	2.21	H		0.109	20.36		
		256-QAM	-24.44	9.45	10.32	2.21	H		0.057	17.56		
1895.0		PI/2 BPSK	-19.64	14.54	10.28	2.20	H	< 2.00	0.183	22.62	1	1
		QPSK	-19.66	14.52	10.28	2.20	H		0.182	22.60		
		16-QAM	-20.64	13.54	10.28	2.20	H		0.145	21.62		
		64-QAM	-22.06	12.12	10.28	2.20	H		0.105	20.20		
		256-QAM	-24.76	9.42	10.28	2.20	H		0.056	17.50		

8.2 RADIATED SPURIOUS EMISSIONS

■ NR Band:	<u>N25(2)</u>
■ Bandwidth:	<u>30 MHz</u>
■ Modulation:	<u>PI/2 BPSK</u>
■ Distance:	<u>3 meters</u>
■ SCS:	<u>15 kHz</u>

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	-60.45	12.04	-60.31	3.17	V	-51.44	-13.00	1	80
	5 595.00	-61.48	12.22	-55.27	3.95	V	-47.00	-13.00		
	7 460.00	-64.27	11.37	-49.20	4.61	V	-42.44	-13.00		
376500 (1882.5)	3 765.00	-60.25	11.88	-59.64	3.11	V	-50.87	-13.00	1	1
	5 647.50	-62.08	12.11	-55.89	3.96	V	-47.74	-13.00		
	7 530.00	-64.05	11.57	-49.28	4.60	V	-42.31	-13.00		
380000 (1900.0)	3 800.00	-60.17	11.71	-59.74	3.21	V	-51.24	-13.00	1	1
	5 700.00	-61.71	11.95	-54.59	4.02	V	-46.66	-13.00		
	7 600.00	-63.12	11.61	-49.11	4.64	V	-42.14	-13.00		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n25(2)	5 MHz	1882.5	BPSK	25	0	3.68
			QPSK			4.36
			16-QAM			5.30
			64-QAM			5.66
			256-QAM			6.32
	10 MHz		BPSK	50		3.88
			QPSK			4.42
			16-QAM			5.32
			64-QAM			5.83
			256-QAM			6.31
	15 MHz		BPSK	75		3.65
			QPSK			4.28
			16-QAM			5.35
			64-QAM			5.89
			256-QAM			6.52
	20 MHz		BPSK	100		3.71
			QPSK			4.61
			16-QAM			5.57
			64-QAM			5.97
			256-QAM			6.53

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	4.01
			QPSK			4.75
			16-QAM			5.56
			64-QAM			6.00
			256-QAM			6.51
	30 MHz		BPSK	160		3.79
			QPSK			4.45
			16-QAM			5.45
			64-QAM			5.92
			256-QAM			6.53
	35 MHz		BPSK	180		3.82
			QPSK			4.56
			16-QAM			5.43
			64-QAM			5.89
			256-QAM			6.52
	40 MHz		BPSK	216		3.87
			QPSK			4.59
			16-QAM			5.55
			64-QAM			6.01
			256-QAM			6.49

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	4.5498
			QPSK			4.5708
			16-QAM			4.5795
			64-QAM			4.6309
			256-QAM			4.6134
	10 MHz		BPSK	50		8.9520
			QPSK			9.0257
			16-QAM			8.9756
			64-QAM			8.9936
			256-QAM			8.9682
	15 MHz		BPSK	75		13.471
			QPSK			13.483
			16-QAM			13.454
			64-QAM			13.481
			256-QAM			13.481
	20 MHz		BPSK	100		17.905
			QPSK			17.919
			16-QAM			17.961
			64-QAM			17.916
			256-QAM			17.926

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	22.966
			QPSK			23.030
			16-QAM			22.947
			64-QAM			22.998
			256-QAM			22.986
	30 MHz		BPSK	160		28.729
			QPSK			28.791
			16-QAM			28.687
			64-QAM			28.667
			256-QAM			28.738
	35 MHz		BPSK	180		32.217
			QPSK			32.228
			16-QAM			32.277
			64-QAM			32.214
			256-QAM			32.283
	40 MHz		BPSK	216		38.750
			QPSK			38.716
			16-QAM			38.718
			64-QAM			38.751
			256-QAM			38.800

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	4.8964	30.200	-70.433	-40.233	-13.00
		1882.5	3.7543	30.200	-70.770	-40.570	
		1912.5	9.1381	30.815	-69.592	-38.777	
	10	1855.0	3.7867	30.200	-70.863	-40.663	
		1882.5	9.8983	30.815	-70.534	-39.719	
		1910.0	5.1915	30.815	-70.478	-39.663	
	15	1857.5	8.2637	30.815	-70.755	-39.940	
		1882.5	5.4691	30.815	-71.086	-40.271	
		1907.5	9.6540	30.815	-70.575	-39.760	
	20	1860.0	4.0150	30.200	-70.477	-40.277	
		1882.5	3.7917	30.200	-70.603	-40.403	
		1905.0	9.4691	30.815	-70.783	-39.968	
	25	1862.5	3.7284	30.200	-70.255	-40.055	
		1882.5	9.1371	30.815	-71.394	-40.579	
		1902.5	8.8878	30.815	-70.282	-39.467	
	30	1865.0	8.2837	30.815	-69.771	-38.956	
		1882.5	9.9796	30.815	-69.611	-38.796	
		1900.0	3.9966	30.200	-70.154	-39.954	
	35	1867.5	6.0404	30.815	-69.952	-39.137	
		1882.5	9.9796	30.815	-71.094	-40.279	
		1897.5	8.8839	30.815	-70.412	-39.597	
	40	1870.0	9.1441	30.815	-69.944	-39.129	
		1882.5	8.6062	30.815	-70.681	-39.866	
		1895.0	4.0439	30.200	-71.248	-41.048	

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	27.494
1 – 5	30.200
5 – 10	30.815
10 – 15	31.340
15 – 20	31.713
Above 20	32.355

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 499 997	0.0	0.000 000	0.000
	100 %	-30	1852 499 997	0.1	0.000 000	0.000
	100 %	-20	1852 499 993	-4.2	0.000 000	-0.002
	100 %	-10	1852 499 995	-2.1	0.000 000	-0.001
	100 %	0	1852 499 995	-1.9	0.000 000	-0.001
	100 %	+10	1852 499 995	-2.3	0.000 000	-0.001
	100 %	+30	1852 499 995	-2.4	0.000 000	-0.001
	100 %	+40	1852 499 995	-1.7	0.000 000	-0.001
	100 %	+50	1852 499 994	-3.5	0.000 000	-0.002
	Batt. Endpoint	+20	1852 499 996	-1.4	0.000 000	-0.001
1912.5	100 %	+20(Ref)	1912 499 997	0.0	0.000 000	0.000
	100 %	-30	1912 499 993	-3.9	0.000 000	-0.002
	100 %	-20	1912 499 993	-3.5	0.000 000	-0.002
	100 %	-10	1912 499 995	-1.8	0.000 000	-0.001
	100 %	0	1912 499 995	-1.6	0.000 000	-0.001
	100 %	+10	1912 499 994	-2.6	0.000 000	-0.001
	100 %	+30	1912 499 994	-2.9	0.000 000	-0.002
	100 %	+40	1912 499 996	-1.1	0.000 000	-0.001
	100 %	+50	1912 499 992	-5.0	0.000 000	-0.003
	Batt. Endpoint	+20	1912 499 997	-0.1	0.000 000	0.000

- ▣ 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 000 000	0.0	0.000 000	0.000
	100 %	-30	1855 000 001	0.9	0.000 000	0.001
	100 %	-20	1855 000 000	0.8	0.000 000	0.000
	100 %	-10	1855 000 001	1.2	0.000 000	0.001
	100 %	0	1855 000 000	0.8	0.000 000	0.000
	100 %	+10	1855 000 000	0.6	0.000 000	0.000
	100 %	+30	1854 999 999	-0.6	0.000 000	0.000
	100 %	+40	1854 999 999	-0.9	0.000 000	0.000
	100 %	+50	1854 999 999	-0.7	0.000 000	0.000
	Batt. Endpoint	+20	1855 000 002	2.0	0.000 000	0.001
1910.0	100 %	+20(Ref)	1910 000 004	0.0	0.000 000	0.000
	100 %	-30	1910 000 005	1.5	0.000 000	0.001
	100 %	-20	1910 000 005	1.3	0.000 000	0.001
	100 %	-10	1910 000 004	0.3	0.000 000	0.000
	100 %	0	1910 000 007	3.3	0.000 000	0.002
	100 %	+10	1910 000 007	3.5	0.000 000	0.002
	100 %	+30	1910 000 009	5.1	0.000 000	0.003
	100 %	+40	1910 000 006	2.9	0.000 000	0.002
	100 %	+50	1910 000 006	2.5	0.000 000	0.001
	Batt. Endpoint	+20	1910 000 005	1.5	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 500 003	0.0	0.000 000	0.000
	100 %	-30	1857 500 004	1.0	0.000 000	0.001
	100 %	-20	1857 500 005	2.5	0.000 000	0.001
	100 %	-10	1857 500 004	1.6	0.000 000	0.001
	100 %	0	1857 500 004	1.3	0.000 000	0.001
	100 %	+10	1857 500 003	0.3	0.000 000	0.000
	100 %	+30	1857 500 003	0.6	0.000 000	0.000
	100 %	+40	1857 500 004	0.7	0.000 000	0.000
	100 %	+50	1857 500 004	1.3	0.000 000	0.001
	Batt. Endpoint	+20	1857 500 003	0.3	0.000 000	0.000
1907.5	100 %	+20(Ref)	1907 500 003	0.0	0.000 000	0.000
	100 %	-30	1907 500 007	4.5	0.000 000	0.002
	100 %	-20	1907 500 007	3.9	0.000 000	0.002
	100 %	-10	1907 500 005	2.0	0.000 000	0.001
	100 %	0	1907 500 006	2.7	0.000 000	0.001
	100 %	+10	1907 500 007	3.7	0.000 000	0.002
	100 %	+30	1907 500 006	3.5	0.000 000	0.002
	100 %	+40	1907 500 007	4.5	0.000 000	0.002
	100 %	+50	1907 500 007	3.6	0.000 000	0.002
	Batt. Endpoint	+20	1907 500 007	4.1	0.000 000	0.002

- ▣ BandWidth: 20 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)	(%)	
1860.0	100 %	+20(Ref)	1860 000 000	0.0	0.000 000	0.000
	100 %	-30	1859 999 998	-1.8	0.000 000	-0.001
	100 %	-20	1859 999 999	-1.1	0.000 000	-0.001
	100 %	-10	1859 999 999	-1.1	0.000 000	-0.001
	100 %	0	1859 999 998	-2.2	0.000 000	-0.001
	100 %	+10	1859 999 998	-1.7	0.000 000	-0.001
	100 %	+30	1859 999 999	-0.7	0.000 000	0.000
	100 %	+40	1859 999 998	-2.0	0.000 000	-0.001
	100 %	+50	1859 999 999	-1.2	0.000 000	-0.001
	Batt. Endpoint	+20	1859 999 998	-1.6	0.000 000	-0.001
1905.0	100 %	+20(Ref)	1904 999 998	0.0	0.000 000	0.000
	100 %	-30	1904 999 994	-3.8	0.000 000	-0.002
	100 %	-20	1904 999 995	-2.8	0.000 000	-0.001
	100 %	-10	1904 999 994	-3.7	0.000 000	-0.002
	100 %	0	1904 999 998	0.1	0.000 000	0.000
	100 %	+10	1904 999 994	-3.7	0.000 000	-0.002
	100 %	+30	1904 999 996	-1.4	0.000 000	-0.001
	100 %	+40	1904 999 994	-3.5	0.000 000	-0.002
	100 %	+50	1904 999 996	-2.3	0.000 000	-0.001
	Batt. Endpoint	+20	1904 999 997	-1.1	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 500 008	0.0	0.000 000	0.000
	100 %	-30	1862 500 016	8.3	0.000 000	0.004
	100 %	-20	1862 500 017	9.3	0.000 000	0.005
	100 %	-10	1862 500 019	11.3	0.000 001	0.006
	100 %	0	1862 500 018	9.8	0.000 001	0.005
	100 %	+10	1862 500 018	10.4	0.000 001	0.006
	100 %	+30	1862 500 016	8.2	0.000 000	0.004
	100 %	+40	1862 500 017	9.6	0.000 001	0.005
	100 %	+50	1862 500 016	7.9	0.000 000	0.004
	Batt. Endpoint	+20	1862 500 017	8.7	0.000 000	0.005
1902.5	100 %	+20(Ref)	1902 500 011	0.0	0.000 000	0.000
	100 %	-30	1902 500 021	9.7	0.000 001	0.005
	100 %	-20	1902 500 021	10.0	0.000 001	0.005
	100 %	-10	1902 500 022	11.5	0.000 001	0.006
	100 %	0	1902 500 021	10.5	0.000 001	0.006
	100 %	+10	1902 500 024	12.8	0.000 001	0.007
	100 %	+30	1902 500 024	12.9	0.000 001	0.007
	100 %	+40	1902 500 022	10.7	0.000 001	0.006
	100 %	+50	1902 500 021	9.8	0.000 001	0.005
	Batt. Endpoint	+20	1902 500 023	11.6	0.000 001	0.006

- ▣ 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)	1865 000 004	0.0	0.000 000	0.000
	100 %	-30	1865 000 009	4.7	0.000 000	0.003
	100 %	-20	1865 000 009	4.7	0.000 000	0.003
	100 %	-10	1865 000 013	8.4	0.000 000	0.005
	100 %	0	1865 000 013	8.5	0.000 000	0.005
	100 %	+10	1865 000 008	4.3	0.000 000	0.002
	100 %	+30	1865 000 011	6.5	0.000 000	0.003
	100 %	+40	1865 000 010	5.9	0.000 000	0.003
	100 %	+50	1865 000 010	6.0	0.000 000	0.003
	Batt. Endpoint	+20	1865 000 011	7.2	0.000 000	0.004
1900.0	100 %	+20(Ref)	1900 000 005	0.0	0.000 000	0.000
	100 %	-30	1900 000 011	5.9	0.000 000	0.003
	100 %	-20	1900 000 010	5.1	0.000 000	0.003
	100 %	-10	1900 000 009	4.6	0.000 000	0.002
	100 %	0	1900 000 010	4.7	0.000 000	0.002
	100 %	+10	1900 000 010	5.1	0.000 000	0.003
	100 %	+30	1900 000 008	3.2	0.000 000	0.002
	100 %	+40	1900 000 010	5.0	0.000 000	0.003
	100 %	+50	1900 000 008	3.1	0.000 000	0.002
	Batt. Endpoint	+20	1900 000 011	6.2	0.000 000	0.003

- ▣ 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 500 008	0.0	0.000 000	0.000
	100 %	-30	1867 500 016	8.0	0.000 000	0.004
	100 %	-20	1867 500 014	5.6	0.000 000	0.003
	100 %	-10	1867 500 017	8.5	0.000 000	0.005
	100 %	0	1867 500 015	6.9	0.000 000	0.004
	100 %	+10	1867 500 017	9.4	0.000 001	0.005
	100 %	+30	1867 500 014	6.3	0.000 000	0.003
	100 %	+40	1867 500 017	9.3	0.000 000	0.005
	100 %	+50	1867 500 017	8.5	0.000 000	0.005
	Batt. Endpoint	+20	1867 500 018	9.9	0.000 001	0.005
1897.5	100 %	+20(Ref)	1897 500 007	0.0	0.000 000	0.000
	100 %	-30	1897 500 016	8.2	0.000 000	0.004
	100 %	-20	1897 500 016	8.5	0.000 000	0.004
	100 %	-10	1897 500 015	7.5	0.000 000	0.004
	100 %	0	1897 500 016	8.4	0.000 000	0.004
	100 %	+10	1897 500 014	6.8	0.000 000	0.004
	100 %	+30	1897 500 015	8.1	0.000 000	0.004
	100 %	+40	1897 500 013	6.0	0.000 000	0.003
	100 %	+50	1897 500 015	7.4	0.000 000	0.004
	Batt. Endpoint	+20	1897 500 014	6.9	0.000 000	0.004

- ▣ 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 000 006	0.0	0.000 000	0.000
	100 %	-30	1870 000 012	6.3	0.000 000	0.003
	100 %	-20	1870 000 013	6.9	0.000 000	0.004
	100 %	-10	1870 000 013	7.1	0.000 000	0.004
	100 %	0	1870 000 012	5.7	0.000 000	0.003
	100 %	+10	1870 000 012	6.2	0.000 000	0.003
	100 %	+30	1870 000 014	7.7	0.000 000	0.004
	100 %	+40	1870 000 012	6.0	0.000 000	0.003
	100 %	+50	1870 000 012	5.9	0.000 000	0.003
	Batt. Endpoint	+20	1870 000 012	5.5	0.000 000	0.003
1895.0	100 %	+20(Ref)	1895 000 008	0.0	0.000 000	0.000
	100 %	-30	1895 000 015	7.3	0.000 000	0.004
	100 %	-20	1895 000 015	7.5	0.000 000	0.004
	100 %	-10	1895 000 015	7.3	0.000 000	0.004
	100 %	0	1895 000 014	6.7	0.000 000	0.004
	100 %	+10	1895 000 015	7.5	0.000 000	0.004
	100 %	+30	1895 000 016	8.6	0.000 000	0.005
	100 %	+40	1895 000 015	7.6	0.000 000	0.004
	100 %	+50	1895 000 014	6.6	0.000 000	0.003
	Batt. Endpoint	+20	1895 000 016	8.6	0.000 000	0.005

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.
 - N25(2)A (Main 1)-N48A (Sub 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(Main 1)	N48A(Sub 2)	30	376500	40	641666

8.8.1 RADIATED SPURIOUS EMISSIONS

N25(2)A (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)
3 765.00	-60.57	11.88	-59.96	3.11	V	-51.19	-13.00
5 647.50	-62.17	12.11	-55.98	3.96	V	-47.83	-13.00
7 530.00	-62.13	11.57	-47.36	4.60	V	-40.39	-13.00

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
7 249.98	-64.68	10.58	-56.28	4.53	V	-50.23	-40.00
10 874.97	-64.58	11.73	-53.58	5.82	V	-47.67	-40.00
14 499.96	-57.89	13.20	-50.99	6.69	V	-44.48	-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	Sub6 n25(2)/ 5 MHz [15 kHz]	PI/2 BPSK	-22.22	11.41	10.45	2.08	H	<2.00	0.095	19.78	1	12
		QPSK	-22.89	10.74	10.45	2.08	H		0.082	19.11		
		16-QAM	-23.79	9.84	10.45	2.08	H		0.066	18.21		
		64-QAM	-25.15	8.48	10.45	2.08	H		0.048	16.85		
		256-QAM	-27.35	6.28	10.45	2.08	H		0.029	14.65		
1882.5		PI/2 BPSK	-23.15	10.74	10.32	2.21	H		0.077	18.85	1	1
		QPSK	-23.71	10.18	10.32	2.21	H		0.068	18.29		
		16-QAM	-24.55	9.34	10.32	2.21	H		0.056	17.45		
		64-QAM	-25.94	7.95	10.32	2.21	H		0.040	16.06		
		256-QAM	-28.13	5.76	10.32	2.21	H		0.024	13.87		
1912.5		PI/2 BPSK	-24.42	9.76	10.19	2.17	H	0.060	17.78	1	12	
		QPSK	-25.52	8.66	10.19	2.17	H	0.047	16.68			
		16-QAM	-26.38	7.80	10.19	2.17	H	0.038	15.82			
		64-QAM	-27.83	6.35	10.19	2.17	H	0.027	14.37			
		256-QAM	-29.88	4.30	10.19	2.17	H	0.017	12.32			

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	-22.40	11.23	10.45	2.08	H	<2.00	0.091	19.60	1	50
		QPSK	-22.46	11.17	10.45	2.08	H		0.090	19.54		
		16-QAM	-23.53	10.10	10.45	2.08	H		0.070	18.47		
		64-QAM	-24.82	8.81	10.45	2.08	H		0.052	17.18		
		256-QAM	-27.44	6.19	10.45	2.08	H		0.029	14.56		
1882.5	Sub6 n25(2)/ 10 MHz [15 kHz]	PI/2 BPSK	-22.84	11.05	10.32	2.21	H	<2.00	0.082	19.16	1	1
		QPSK	-23.49	10.40	10.32	2.21	H		0.071	18.51		
		16-QAM	-24.36	9.53	10.32	2.21	H		0.058	17.64		
		64-QAM	-25.72	8.17	10.32	2.21	H		0.043	16.28		
		256-QAM	-27.82	6.07	10.32	2.21	H		0.026	14.18		
1910.0		PI/2 BPSK	-24.46	9.44	10.21	2.17	H	<2.00	0.056	17.48	1	50
		QPSK	-25.37	8.53	10.21	2.17	H		0.045	16.57		
		16-QAM	-26.22	7.68	10.21	2.17	H		0.037	15.72		
		64-QAM	-27.42	6.48	10.21	2.17	H		0.028	14.52		
		256-QAM	-29.50	4.40	10.21	2.17	H		0.018	12.44		

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	Sub6 n25(2)/ 15 MHz [15 kHz]	PI/2 BPSK	-22.38	10.94	10.43	2.10	H	< 2.00	0.085	19.27	1	39
		QPSK	-22.64	10.68	10.43	2.10	H		0.080	19.01		
		16-QAM	-23.68	9.64	10.43	2.10	H		0.063	17.97		
		64-QAM	-25.01	8.31	10.43	2.10	H		0.046	16.64		
		256-QAM	-27.40	5.92	10.43	2.10	H		0.027	14.25		
1882.5		PI/2 BPSK	-22.70	11.19	10.32	2.21	H		0.085	19.30	1	1
		QPSK	-23.04	10.85	10.32	2.21	H		0.079	18.96		
		16-QAM	-24.00	9.89	10.32	2.21	H		0.063	18.00		
		64-QAM	-25.46	8.43	10.32	2.21	H		0.045	16.54		
		256-QAM	-27.94	5.95	10.32	2.21	H		0.026	14.06		
1907.5		PI/2 BPSK	-23.70	10.20	10.21	2.17	H		0.067	18.24	1	1
		QPSK	-24.05	9.85	10.21	2.17	H		0.062	17.89		
		16-QAM	-24.97	8.93	10.21	2.17	H		0.050	16.97		
		64-QAM	-26.37	7.53	10.21	2.17	H		0.036	15.57		
		256-QAM	-28.83	5.07	10.21	2.17	H		0.021	13.11		

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	-22.14	11.18	10.43	2.10	H	<2.00	0.089	19.51	1	53
		QPSK	-22.28	11.04	10.43	2.10	H		0.087	19.37		
		16-QAM	-23.35	9.97	10.43	2.10	H		0.068	18.30		
		64-QAM	-24.66	8.66	10.43	2.10	H		0.050	16.99		
		256-QAM	-27.35	5.97	10.43	2.10	H		0.027	14.30		
1882.5	Sub6 n25(2)/ 20 MHz [15 kHz]	PI/2 BPSK	-22.78	11.11	10.32	2.21	H	<2.00	0.084	19.22	1	1
		QPSK	-22.90	10.99	10.32	2.21	H		0.081	19.10		
		16-QAM	-23.94	9.95	10.32	2.21	H		0.064	18.06		
		64-QAM	-25.28	8.61	10.32	2.21	H		0.047	16.72		
		256-QAM	-27.97	5.92	10.32	2.21	H		0.025	14.03		
1905.0		PI/2 BPSK	-23.72	10.32	10.23	2.19	H	<2.00	0.069	18.36	1	1
		QPSK	-23.78	10.26	10.23	2.19	H		0.068	18.30		
		16-QAM	-24.92	9.12	10.23	2.19	H		0.052	17.16		
		64-QAM	-26.25	7.79	10.23	2.19	H		0.038	15.83		
		256-QAM	-29.07	4.97	10.23	2.19	H		0.020	13.01		

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	Sub6 n25(2)/ 25 MHz [15 kHz]	PI/2 BPSK	-22.37	11.24	10.41	2.13	H	<2.00	0.090	19.52	1	1
		QPSK	-22.38	11.23	10.41	2.13	H		0.089	19.51		
		16-QAM	-24.27	9.34	10.41	2.13	H		0.058	17.62		
		64-QAM	-25.52	8.09	10.41	2.13	H		0.043	16.37		
		256-QAM	-27.76	5.85	10.41	2.13	H		0.026	14.13		
1882.5		PI/2 BPSK	-22.58	11.31	10.32	2.21	H		0.088	19.42	1	1
		QPSK	-22.64	11.25	10.32	2.21	H		0.086	19.36		
		16-QAM	-23.74	10.15	10.32	2.21	H		0.067	18.26		
		64-QAM	-24.91	8.98	10.32	2.21	H		0.051	17.09		
		256-QAM	-27.66	6.23	10.32	2.21	H		0.027	14.34		
1902.5		PI/2 BPSK	-23.32	10.72	10.23	2.19	H	0.075	18.76	1	1	
		QPSK	-23.85	10.19	10.23	2.19	H	0.067	18.23			
		16-QAM	-24.74	9.30	10.23	2.19	H	0.054	17.34			
		64-QAM	-26.11	7.93	10.23	2.19	H	0.040	15.97			
		256-QAM	-28.48	5.56	10.23	2.19	H	0.023	13.60			

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	Sub6 n25(2)/ 30 MHz [15 kHz]	PI/2 BPSK	-22.34	11.27	10.41	2.13	H	<2.00	0.090	19.55	1	1
		QPSK	-23.34	10.27	10.41	2.13	H		0.072	18.55		
		16-QAM	-24.22	9.39	10.41	2.13	H		0.059	17.67		
		64-QAM	-25.52	8.09	10.41	2.13	H		0.043	16.37		
		256-QAM	-27.67	5.94	10.41	2.13	H		0.026	14.22		
1882.5		PI/2 BPSK	-22.40	11.49	10.32	2.21	H		0.091	19.60	1	1
		QPSK	-22.47	11.42	10.32	2.21	H		0.090	19.53		
		16-QAM	-23.60	10.29	10.32	2.21	H		0.069	18.40		
		64-QAM	-24.85	9.04	10.32	2.21	H		0.052	17.15		
		256-QAM	-27.60	6.29	10.32	2.21	H		0.028	14.40		
1900.0		PI/2 BPSK	-23.24	10.93	10.25	2.20	H	0.079	18.98	1	1	
		QPSK	-24.19	9.98	10.25	2.20	H	0.064	18.03			
		16-QAM	-25.04	9.13	10.25	2.20	H	0.052	17.18			
		64-QAM	-26.40	7.77	10.25	2.20	H	0.038	15.82			
		256-QAM	-28.48	5.69	10.25	2.20	H	0.024	13.74			

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	Sub6 n25(2)/ 35 MHz [15 kHz]	PI/2 BPSK	-22.05	11.86	10.39	2.16	H	<2.00	0.102	20.09	1	1
		QPSK	-22.59	11.32	10.39	2.16	H		0.090	19.55		
		16-QAM	-23.45	10.46	10.39	2.16	H		0.074	18.69		
		64-QAM	-24.91	9.00	10.39	2.16	H		0.053	17.23		
		256-QAM	-27.13	6.78	10.39	2.16	H		0.032	15.01		
1882.5		PI/2 BPSK	-22.51	11.38	10.32	2.21	H		0.089	19.49	1	1
		QPSK	-22.57	11.32	10.32	2.21	H		0.088	19.43		
		16-QAM	-23.59	10.30	10.32	2.21	H		0.069	18.41		
		64-QAM	-24.84	9.05	10.32	2.21	H		0.052	17.16		
		256-QAM	-27.69	6.20	10.32	2.21	H		0.027	14.31		
1897.5		PI/2 BPSK	-23.00	11.17	10.25	2.20	H	0.084	19.22	1	1	
		QPSK	-23.27	10.90	10.25	2.20	H	0.079	18.95			
		16-QAM	-24.00	10.17	10.25	2.20	H	0.066	18.22			
		64-QAM	-25.51	8.66	10.25	2.20	H	0.047	16.71			
		256-QAM	-28.15	6.02	10.25	2.20	H	0.026	14.07			

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	-22.03	11.88	10.39	2.16	H	<2.00	0.103	20.11	1	1
		QPSK	-22.46	11.45	10.39	2.16	H		0.093	19.68		
		16-QAM	-23.37	10.54	10.39	2.16	H		0.075	18.77		
		64-QAM	-24.68	9.23	10.39	2.16	H		0.056	17.46		
		256-QAM	-27.25	6.66	10.39	2.16	H		0.031	14.89		
1882.5	Sub6 n25(2)/ 40 MHz [15 kHz]	PI/2 BPSK	-22.44	11.45	10.32	2.21	H	<2.00	0.090	19.56	1	1
		QPSK	-22.51	11.38	10.32	2.21	H		0.089	19.49		
		16-QAM	-23.57	10.32	10.32	2.21	H		0.070	18.43		
		64-QAM	-24.74	9.15	10.32	2.21	H		0.053	17.26		
		256-QAM	-27.54	6.35	10.32	2.21	H		0.028	14.46		
1895.0		PI/2 BPSK	-22.73	11.45	10.28	2.20	H	<2.00	0.090	19.53	1	1
		QPSK	-22.77	11.41	10.28	2.20	H		0.089	19.49		
		16-QAM	-23.80	10.38	10.28	2.20	H		0.070	18.46		
		64-QAM	-25.22	8.96	10.28	2.20	H		0.051	17.04		
		256-QAM	-28.03	6.15	10.28	2.20	H		0.027	14.23		

9.2 RADIATED SPURIOUS EMISSIONS

■ NR Band:	<u>N25(2)</u>
■ Bandwidth:	<u>40 MHz</u>
■ Modulation:	<u>PI/2 BPSK</u>
■ Distance:	<u>3 meters</u>
■ SCS:	<u>15 kHz</u>

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	-60.95	12.00	-60.89	3.19	H	-52.08	-13.00	1	1
	5 610.00	-61.16	12.21	-55.43	3.92	H	-47.14	-13.00		
	7 480.00	-60.62	11.45	-45.82	4.62	H	-38.99	-13.00		
376500 (1882.5)	3 765.00	-59.48	11.88	-58.87	3.11	H	-50.10	-13.00	1	1
	5 647.50	-61.19	12.11	-55.00	3.96	H	-46.85	-13.00		
	7 530.00	-61.34	11.57	-46.57	4.60	H	-39.60	-13.00		
379000 (1895.0)	3 790.00	-60.26	11.76	-59.41	3.19	H	-50.84	-13.00	1	1
	5 685.00	-61.04	12.00	-54.77	4.01	H	-46.78	-13.00		
	7 580.00	-61.78	11.61	-47.21	4.65	H	-40.25	-13.00		

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n25(2)	5 MHz	1882.5	BPSK	25	0	4.00
			QPSK			5.00
			16-QAM			5.76
			64-QAM			6.16
			256-QAM			6.63
	10 MHz		BPSK	50		3.86
			QPSK			4.89
			16-QAM			5.66
			64-QAM			5.99
			256-QAM			6.37
	15 MHz		BPSK	75		3.97
			QPSK			4.84
			16-QAM			5.58
			64-QAM			5.96
			256-QAM			6.62
	20 MHz		BPSK	100		3.64
			QPSK			4.65
			16-QAM			5.55
			64-QAM			5.88
			256-QAM			6.45

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	3.99
			QPSK			4.84
			16-QAM			5.57
			64-QAM			5.89
			256-QAM			6.53
	30 MHz		BPSK	160		3.93
			QPSK			4.71
			16-QAM			5.51
			64-QAM			5.85
			256-QAM			6.48
	35 MHz		BPSK	180		3.69
			QPSK			4.78
			16-QAM			5.56
			64-QAM			5.90
			256-QAM			6.57
	40 MHz		BPSK	216		3.73
			QPSK			4.76
			16-QAM			5.61
			64-QAM			5.83
			256-QAM			6.52

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	4.5084
			QPSK			4.5234
			16-QAM			4.4852
			64-QAM			4.5176
			256-QAM			4.5180
	10 MHz		BPSK	50		8.9814
			QPSK			8.9622
			16-QAM			8.9783
			64-QAM			9.0081
			256-QAM			8.9776
	15 MHz		BPSK	75		13.443
			QPSK			13.479
			16-QAM			13.410
			64-QAM			13.477
			256-QAM			13.478
	20 MHz		BPSK	100		17.924
			QPSK			17.914
			16-QAM			17.916
			64-QAM			17.935
			256-QAM			17.892

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n25(2)	25 MHz	1882.5	BPSK	128	0	22.938
			QPSK			22.982
			16-QAM			22.977
			64-QAM			22.948
			256-QAM			23.009
	30 MHz		BPSK	160		28.652
			QPSK			28.711
			16-QAM			28.673
			64-QAM			28.686
			256-QAM			28.661
	35 MHz		BPSK	180		32.295
			QPSK			32.364
			16-QAM			32.376
			64-QAM			32.284
			256-QAM			32.419
	40 MHz		BPSK	216		38.661
			QPSK			38.854
			16-QAM			38.693
			64-QAM			38.700
			256-QAM			38.690

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	1882.5	8.8619	30.815	-70.273	-39.458	-13.00
		1882.5	9.6825	30.815	-70.490	-39.675	
		1882.5	3.7982	30.200	-70.570	-40.370	
	10	1882.5	9.1565	30.815	-70.126	-39.311	
		1882.5	9.7517	30.815	-70.573	-39.758	
		1882.5	3.7967	30.200	-70.403	-40.203	
	15	1882.5	8.8186	30.815	-70.774	-39.959	
		1882.5	5.1979	30.815	-70.182	-39.367	
		1882.5	8.2906	30.815	-70.723	-39.908	
	20	1882.5	4.0444	30.200	-70.573	-40.373	
		1882.5	4.0474	30.200	-68.792	-38.592	
		1882.5	8.8799	30.815	-69.320	-38.505	
	25	1862.5	9.1182	30.815	-71.137	-40.322	
		1882.5	3.7388	30.200	-70.679	-40.479	
		1902.5	9.6695	30.815	-70.502	-39.687	
	30	1865.0	9.3893	30.815	-69.488	-38.673	
		1882.5	9.1516	30.815	-69.956	-39.141	
		1900.0	8.8345	30.815	-70.503	-39.688	
	35	1867.5	8.2971	30.815	-70.569	-39.754	
		1882.5	4.0080	30.200	-70.882	-40.682	
		1897.5	3.8096	30.200	-70.127	-39.927	
	40	1870.0	5.2408	30.815	-70.537	-39.722	
		1882.5	4.9198	30.200	-70.694	-40.494	
		1895.0	3.8131	30.200	-70.363	-40.163	

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	27.494
1 – 5	30.200
5 – 10	30.815
10 – 15	31.340
15 – 20	31.713
Above 20	32.355

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	-2.8	0.000 000	-0.002
	100 %	-20	1852 499 995	-3.2	0.000 000	-0.002
	100 %	-10	1852 499 995	-3.2	0.000 000	-0.002
	100 %	0	1852 499 996	-2.0	0.000 000	-0.001
	100 %	+10	1852 499 996	-1.8	0.000 000	-0.001
	100 %	+30	1852 499 995	-2.5	0.000 000	-0.001
	100 %	+40	1852 499 997	-0.5	0.000 000	0.000
	100 %	+50	1852 499 996	-2.1	0.000 000	-0.001
	Batt. Endpoint	+20	1852 499 995	-2.9	0.000 000	-0.002
1912.5	100 %	+20(Ref)	1912 499 997	0.0	0.000 000	0.000
	100 %	-30	1912 499 993	-3.4	0.000 000	-0.002
	100 %	-20	1912 499 992	-4.3	0.000 000	-0.002
	100 %	-10	1912 499 994	-2.2	0.000 000	-0.001
	100 %	0	1912 499 994	-3.0	0.000 000	-0.002
	100 %	+10	1912 499 994	-2.3	0.000 000	-0.001
	100 %	+30	1912 499 994	-2.3	0.000 000	-0.001
	100 %	+40	1912 499 992	-4.6	0.000 000	-0.002
	100 %	+50	1912 499 994	-3.1	0.000 000	-0.002
	Batt. Endpoint	+20	1912 499 992	-4.6	0.000 000	-0.002

- ▣ 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 000 000	0.0	0.000 000	0.000
	100 %	-30	1854 999 999	-1.6	0.000 000	-0.001
	100 %	-20	1855 000 001	1.1	0.000 000	0.001
	100 %	-10	1854 999 999	-1.5	0.000 000	-0.001
	100 %	0	1854 999 999	-1.5	0.000 000	-0.001
	100 %	+10	1855 000 001	0.8	0.000 000	0.000
	100 %	+30	1854 999 999	-0.9	0.000 000	0.000
	100 %	+40	1855 000 000	-0.3	0.000 000	0.000
	100 %	+50	1855 000 000	-0.5	0.000 000	0.000
	Batt. Endpoint	+20	1854 999 999	-1.2	0.000 000	-0.001
1910.0	100 %	+20(Ref)	1910 000 003	0.0	0.000 000	0.000
	100 %	-30	1910 000 004	1.7	0.000 000	0.001
	100 %	-20	1910 000 005	2.5	0.000 000	0.001
	100 %	-10	1910 000 005	2.1	0.000 000	0.001
	100 %	0	1910 000 004	1.5	0.000 000	0.001
	100 %	+10	1910 000 004	1.3	0.000 000	0.001
	100 %	+30	1910 000 005	2.7	0.000 000	0.001
	100 %	+40	1910 000 006	3.5	0.000 000	0.002
	100 %	+50	1910 000 004	1.9	0.000 000	0.001
	Batt. Endpoint	+20	1910 000 005	2.3	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 500 000	0.0	0.000 000	0.000
	100 %	-30	1857 500 002	2.0	0.000 000	0.001
	100 %	-20	1857 500 003	2.7	0.000 000	0.001
	100 %	-10	1857 500 002	1.1	0.000 000	0.001
	100 %	0	1857 500 002	1.8	0.000 000	0.001
	100 %	+10	1857 500 001	0.6	0.000 000	0.000
	100 %	+30	1857 500 002	1.9	0.000 000	0.001
	100 %	+40	1857 500 003	2.5	0.000 000	0.001
	100 %	+50	1857 500 001	0.2	0.000 000	0.000
	Batt. Endpoint	+20	1857 500 003	2.4	0.000 000	0.001
1907.5	100 %	+20(Ref)	1907 500 005	0.0	0.000 000	0.000
	100 %	-30	1907 500 010	4.5	0.000 000	0.002
	100 %	-20	1907 500 009	3.2	0.000 000	0.002
	100 %	-10	1907 500 009	3.7	0.000 000	0.002
	100 %	0	1907 500 010	4.8	0.000 000	0.002
	100 %	+10	1907 500 009	3.4	0.000 000	0.002
	100 %	+30	1907 500 009	3.4	0.000 000	0.002
	100 %	+40	1907 500 010	4.9	0.000 000	0.003
	100 %	+50	1907 500 010	4.9	0.000 000	0.003
	Batt. Endpoint	+20	1907 500 010	4.7	0.000 000	0.002

- ▣ BandWidth: 20 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)	(%)	
1860.0	100 %	+20(Ref)	1859 999 999	0.0	0.000 000	0.000
	100 %	-30	1859 999 996	-3.3	0.000 000	-0.002
	100 %	-20	1859 999 996	-2.9	0.000 000	-0.002
	100 %	-10	1859 999 996	-3.3	0.000 000	-0.002
	100 %	0	1859 999 999	-0.3	0.000 000	0.000
	100 %	+10	1859 999 999	-0.2	0.000 000	0.000
	100 %	+30	1859 999 997	-2.3	0.000 000	-0.001
	100 %	+40	1859 999 997	-2.4	0.000 000	-0.001
	100 %	+50	1859 999 997	-2.4	0.000 000	-0.001
	Batt. Endpoint	+20	1859 999 999	-0.2	0.000 000	0.000
1905.0	100 %	+20(Ref)	1905 000 003	0.0	0.000 000	0.000
	100 %	-30	1905 000 002	-0.7	0.000 000	0.000
	100 %	-20	1905 000 003	-0.2	0.000 000	0.000
	100 %	-10	1905 000 001	-1.3	0.000 000	-0.001
	100 %	0	1905 000 000	-3.1	0.000 000	-0.002
	100 %	+10	1905 000 001	-1.2	0.000 000	-0.001
	100 %	+30	1905 000 002	-1.0	0.000 000	0.000
	100 %	+40	1905 000 002	-0.9	0.000 000	0.000
	100 %	+50	1905 000 002	-0.8	0.000 000	0.000
	Batt. Endpoint	+20	1905 000 000	-2.6	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 500 010	0.0	0.000 000	0.000
	100 %	-30	1862 500 019	9.3	0.000 000	0.005
	100 %	-20	1862 500 019	9.0	0.000 000	0.005
	100 %	-10	1862 500 021	11.2	0.000 001	0.006
	100 %	0	1862 500 019	9.5	0.000 001	0.005
	100 %	+10	1862 500 019	9.5	0.000 001	0.005
	100 %	+30	1862 500 019	9.6	0.000 001	0.005
	100 %	+40	1862 500 019	9.5	0.000 001	0.005
	100 %	+50	1862 500 018	8.4	0.000 000	0.005
	Batt. Endpoint	+20	1862 500 019	8.9	0.000 000	0.005
1902.5	100 %	+20(Ref)	1902 500 011	0.0	0.000 000	0.000
	100 %	-30	1902 500 021	10.3	0.000 001	0.005
	100 %	-20	1902 500 023	12.4	0.000 001	0.007
	100 %	-10	1902 500 023	12.2	0.000 001	0.006
	100 %	0	1902 500 021	10.2	0.000 001	0.005
	100 %	+10	1902 500 021	10.3	0.000 001	0.005
	100 %	+30	1902 500 022	11.2	0.000 001	0.006
	100 %	+40	1902 500 021	10.4	0.000 001	0.005
	100 %	+50	1902 500 020	9.6	0.000 001	0.005
	Batt. Endpoint	+20	1902 500 022	11.1	0.000 001	0.006

- ▣ 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)	1865 000 009	0.0	0.000 000	0.000
	100 %	-30	1865 000 014	5.6	0.000 000	0.003
	100 %	-20	1865 000 015	6.1	0.000 000	0.003
	100 %	-10	1865 000 015	6.1	0.000 000	0.003
	100 %	0	1865 000 016	7.4	0.000 000	0.004
	100 %	+10	1865 000 018	9.0	0.000 000	0.005
	100 %	+30	1865 000 016	7.2	0.000 000	0.004
	100 %	+40	1865 000 016	7.3	0.000 000	0.004
	100 %	+50	1865 000 015	6.4	0.000 000	0.003
	Batt. Endpoint	+20	1865 000 014	5.3	0.000 000	0.003
1900.0	100 %	+20(Ref)	1900 000 006	0.0	0.000 000	0.000
	100 %	-30	1900 000 011	5.6	0.000 000	0.003
	100 %	-20	1900 000 010	4.2	0.000 000	0.002
	100 %	-10	1900 000 009	3.7	0.000 000	0.002
	100 %	0	1900 000 010	4.1	0.000 000	0.002
	100 %	+10	1900 000 010	4.1	0.000 000	0.002
	100 %	+30	1900 000 010	4.5	0.000 000	0.002
	100 %	+40	1900 000 010	4.5	0.000 000	0.002
	100 %	+50	1900 000 012	6.6	0.000 000	0.003
	Batt. Endpoint	+20	1900 000 011	5.6	0.000 000	0.003

- ▣ 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 500 006	0.0	0.000 000	0.000
	100 %	-30	1867 500 013	7.9	0.000 000	0.004
	100 %	-20	1867 500 015	9.6	0.000 001	0.005
	100 %	-10	1867 500 012	6.2	0.000 000	0.003
	100 %	0	1867 500 014	8.8	0.000 000	0.005
	100 %	+10	1867 500 013	7.2	0.000 000	0.004
	100 %	+30	1867 500 014	8.6	0.000 000	0.005
	100 %	+40	1867 500 012	6.7	0.000 000	0.004
	100 %	+50	1867 500 014	8.0	0.000 000	0.004
	Batt. Endpoint	+20	1867 500 015	9.7	0.000 001	0.005
1897.5	100 %	+20(Ref)	1897 500 010	0.0	0.000 000	0.000
	100 %	-30	1897 500 017	6.4	0.000 000	0.003
	100 %	-20	1897 500 016	5.5	0.000 000	0.003
	100 %	-10	1897 500 018	7.6	0.000 000	0.004
	100 %	0	1897 500 018	7.5	0.000 000	0.004
	100 %	+10	1897 500 020	10.0	0.000 001	0.005
	100 %	+30	1897 500 020	9.8	0.000 001	0.005
	100 %	+40	1897 500 020	9.8	0.000 001	0.005
	100 %	+50	1897 500 017	7.0	0.000 000	0.004
	Batt. Endpoint	+20	1897 500 019	8.3	0.000 000	0.004

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

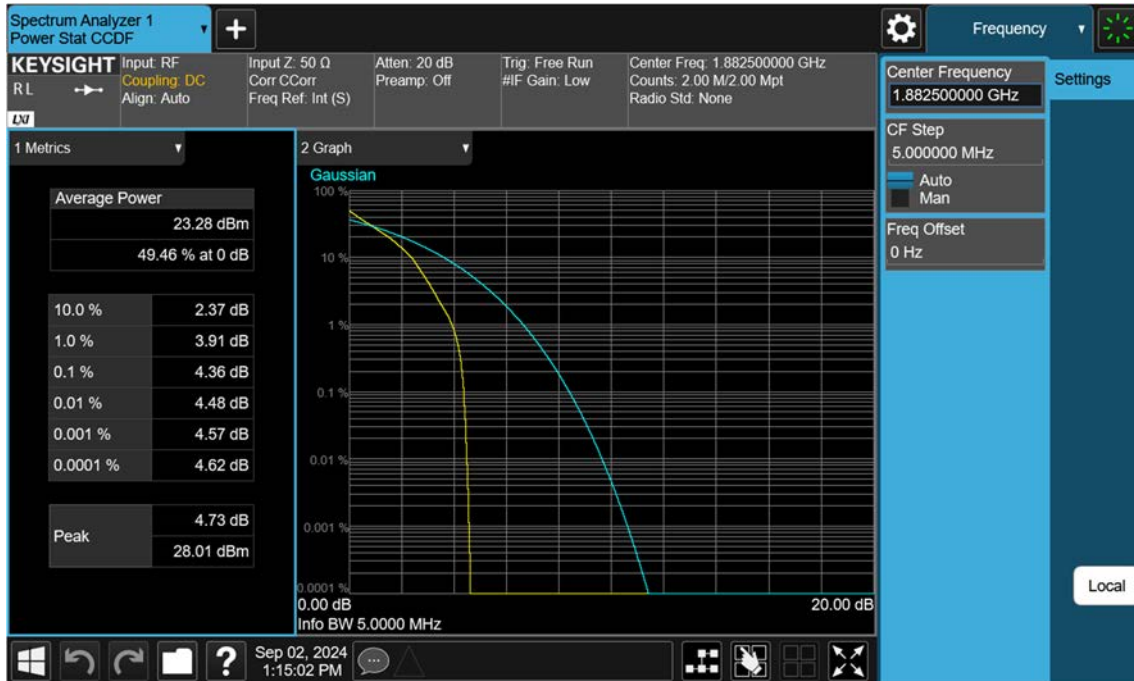
Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
1870.0	100 %	+20(Ref)	1870 000 006	0.0	0.000 000	0.000
	100 %	-30	1870 000 015	8.9	0.000 000	0.005
	100 %	-20	1870 000 014	7.7	0.000 000	0.004
	100 %	-10	1870 000 013	6.5	0.000 000	0.003
	100 %	0	1870 000 012	5.6	0.000 000	0.003
	100 %	+10	1870 000 014	7.8	0.000 000	0.004
	100 %	+30	1870 000 012	6.0	0.000 000	0.003
	100 %	+40	1870 000 011	4.6	0.000 000	0.002
	100 %	+50	1870 000 014	7.5	0.000 000	0.004
	Batt. Endpoint	+20	1870 000 013	6.8	0.000 000	0.004
1895.0	100 %	+20(Ref)	1895 000 009	0.0	0.000 000	0.000
	100 %	-30	1895 000 017	8.4	0.000 000	0.004
	100 %	-20	1895 000 017	8.1	0.000 000	0.004
	100 %	-10	1895 000 015	6.6	0.000 000	0.004
	100 %	0	1895 000 016	7.7	0.000 000	0.004
	100 %	+10	1895 000 016	7.7	0.000 000	0.004
	100 %	+30	1895 000 018	9.6	0.000 001	0.005
	100 %	+40	1895 000 018	9.4	0.000 000	0.005
	100 %	+50	1895 000 017	8.2	0.000 000	0.004
	Batt. Endpoint	+20	1895 000 018	9.5	0.000 001	0.005

10. TEST PLOTS(Main 1 ANT)

NR25(2)_5 M_PAR_Mid_BPSK_FullIRB



NR25(2)_5 M_PAR_Mid_QPSK_FullRB



NR25(2)_5 M_PAR_Mid_16QAM_FullRB



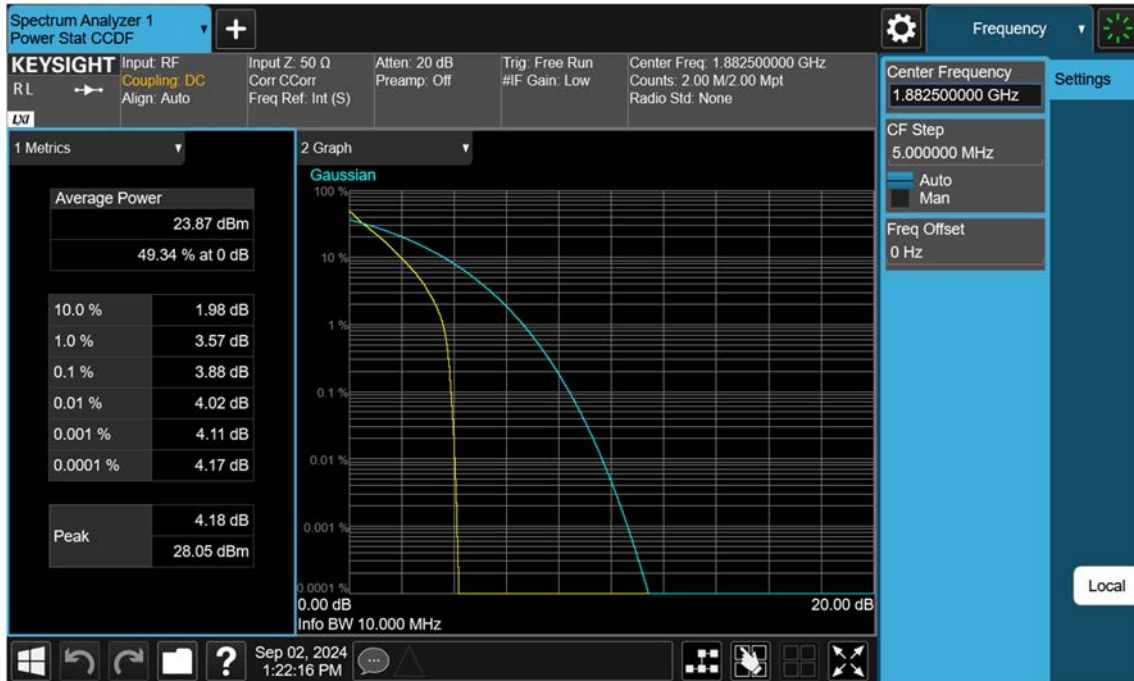
NR25(2)_5 M_PAR_Mid_64QAM_FullRB



NR25(2)_5 M_PAR_Mid_256QAM_FullRB



NR25(2)_10 M_PAR_Mid_BPSK_FullRB



NR25(2)_10 M_PAR_Mid_QPSK_FullRB



NR25(2)_10 M_PAR_Mid_16QAM_FullRB



NR25(2)_10 M_PAR_Mid_64QAM_FullRB



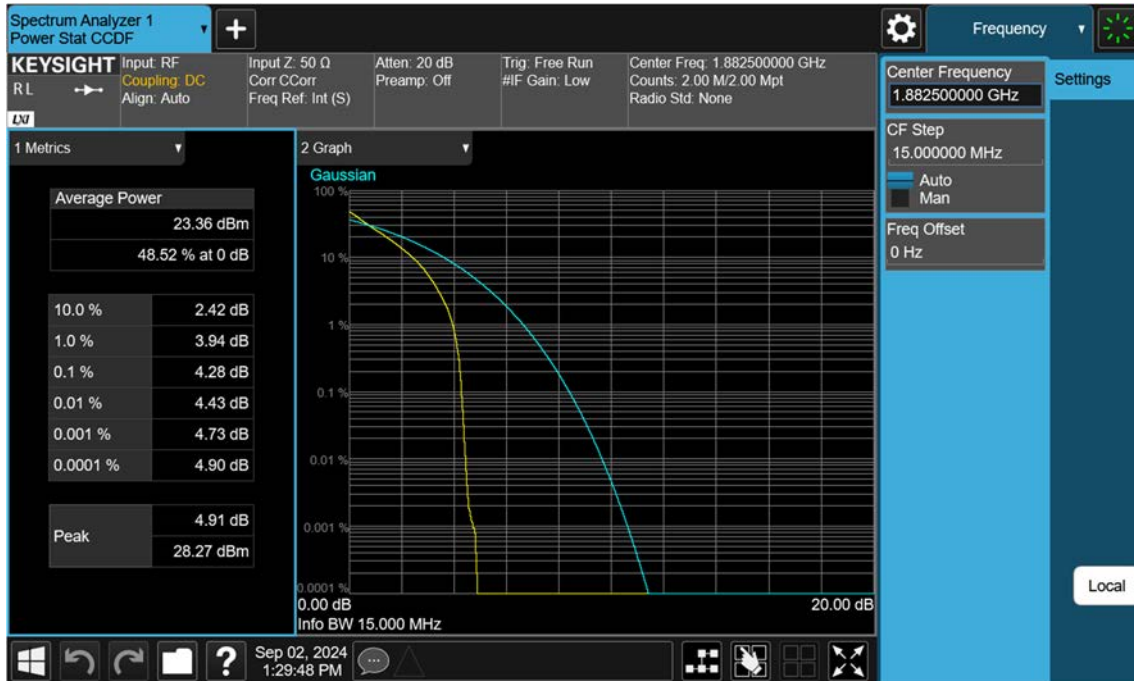
NR25(2)_10 M_PAR_Mid_256QAM_FullRB



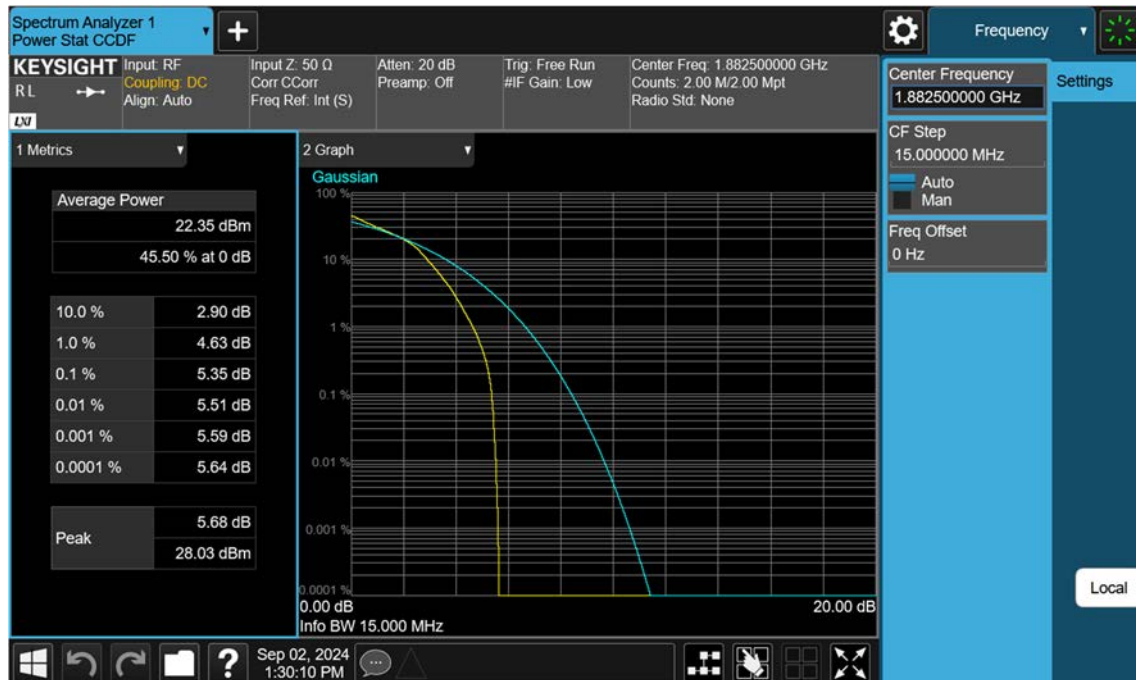
NR25(2)_15 M_PAR_Mid_BPSK_FullRB



NR25(2)_15 M_PAR_Mid_QPSK_FullRB



NR25(2)_15 M_PAR_Mid_16QAM_FullRB



NR25(2)_15 M_PAR_Mid_64QAM_FullRB



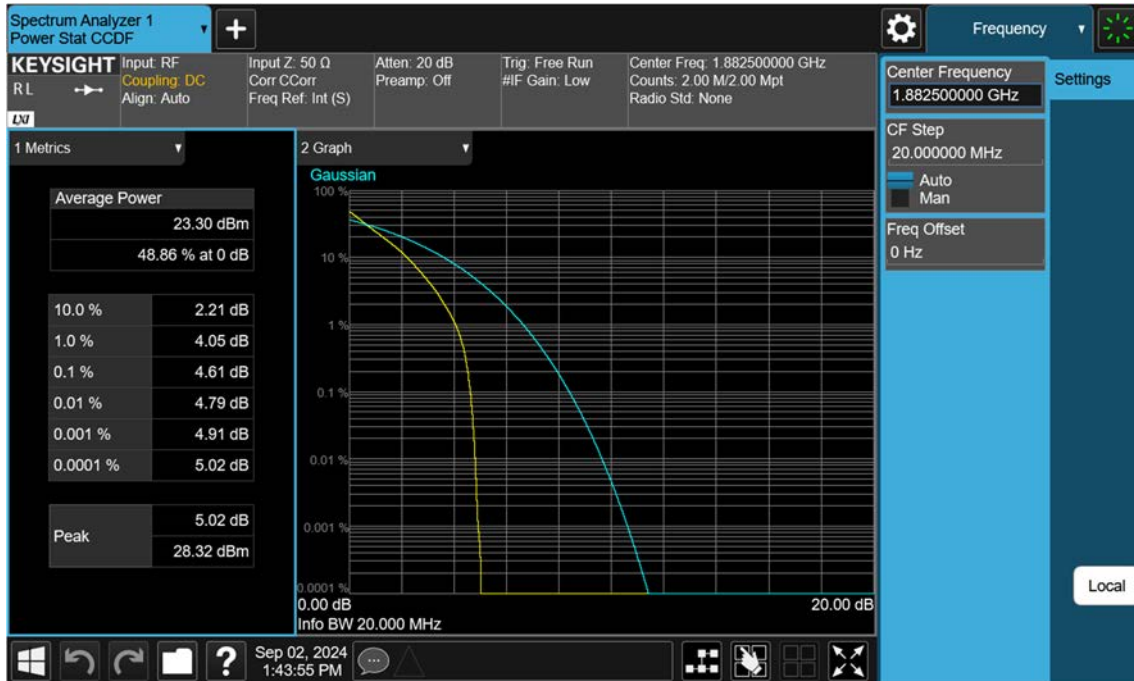
NR25(2)_15 M_PAR_Mid_256QAM_FullRB



NR25(2)_20 M_PAR_Mid_BPSK_FullRB



NR25(2)_20 M_PAR_Mid_QPSK_FullRB



NR25(2)_20 M_PAR_Mid_16QAM_FullRB



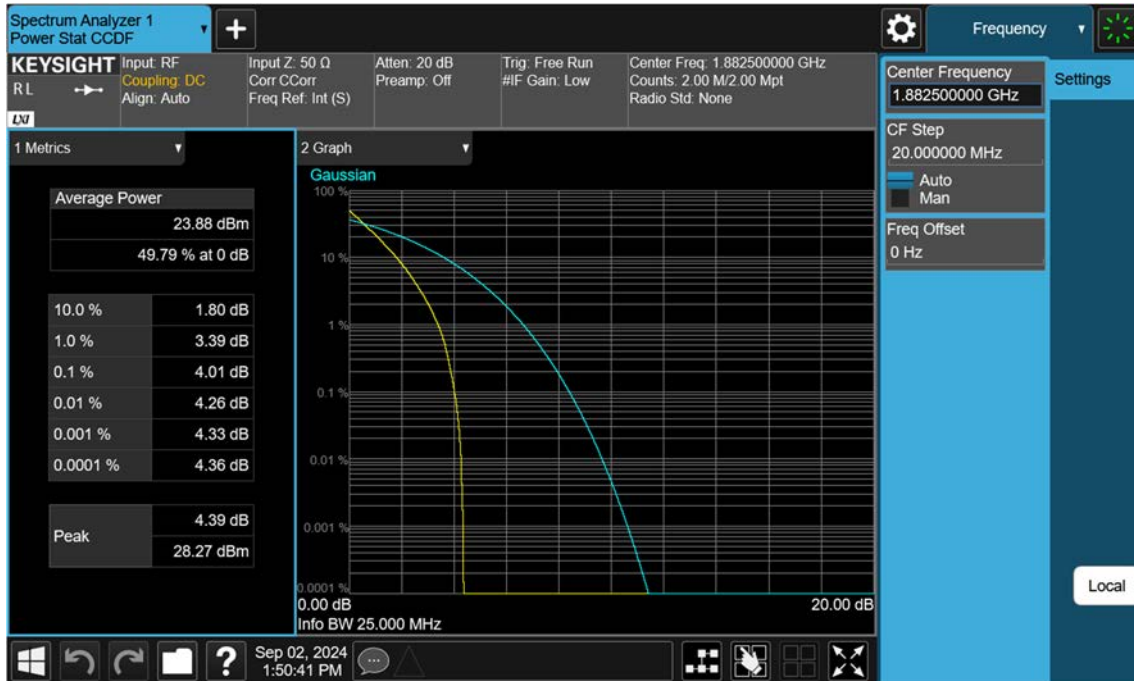
NR25(2)_20 M_PAR_Mid_64QAM_FullRB



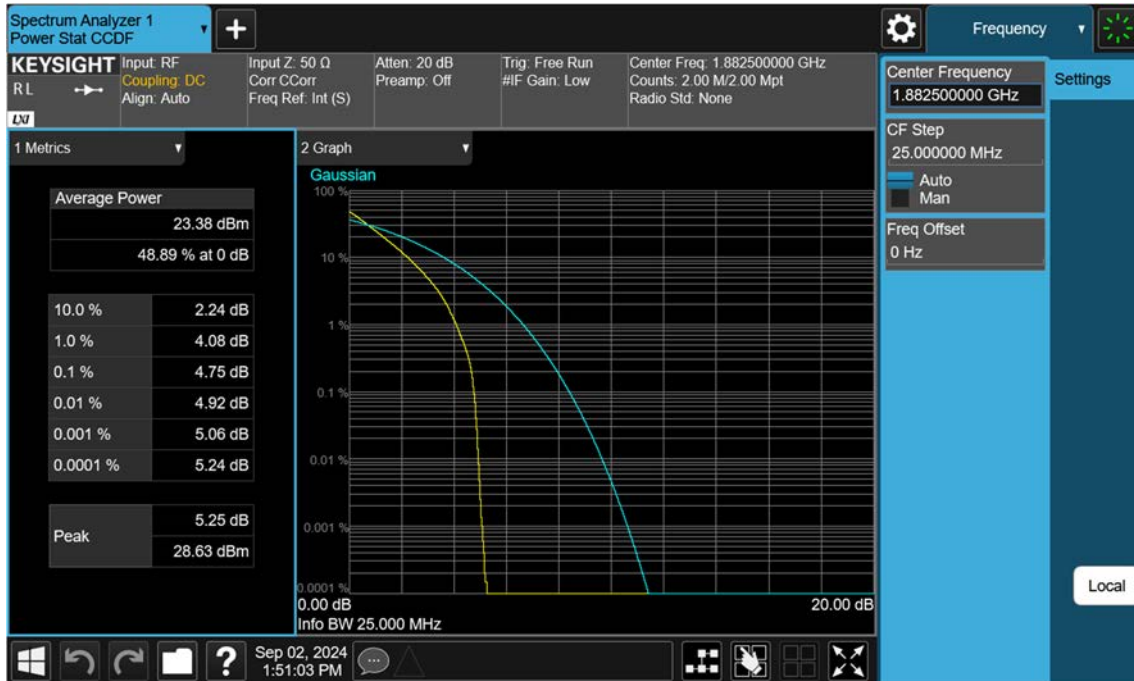
NR25(2)_20 M_PAR_Mid_256QAM_FullRB



NR25(2)_25 M_PAR_Mid_BPSK_FullRB



NR25(2)_25 M_PAR_Mid_QPSK_FullRB



NR25(2)_25 M_PAR_Mid_16QAM_FullRB



NR25(2)_25 M_PAR_Mid_64QAM_FullRB



NR25(2)_25 M_PAR_Mid_256QAM_FullRB



NR25(2)_30 M_PAR_Mid_BPSK_FullRB



NR25(2)_30 M_PAR_Mid_QPSK_FullRB



NR25(2)_30 M_PAR_Mid_16QAM_FullRB



NR25(2)_30 M_PAR_Mid_64QAM_FullRB



NR25(2)_30 M_PAR_Mid_256QAM_FullRB



NR25(2)_35 M_PAR_Mid_BPSK_FullRB



NR25(2)_35 M_PAR_Mid_QPSK_FullRB



NR25(2)_35 M_PAR_Mid_16QAM_FullRB



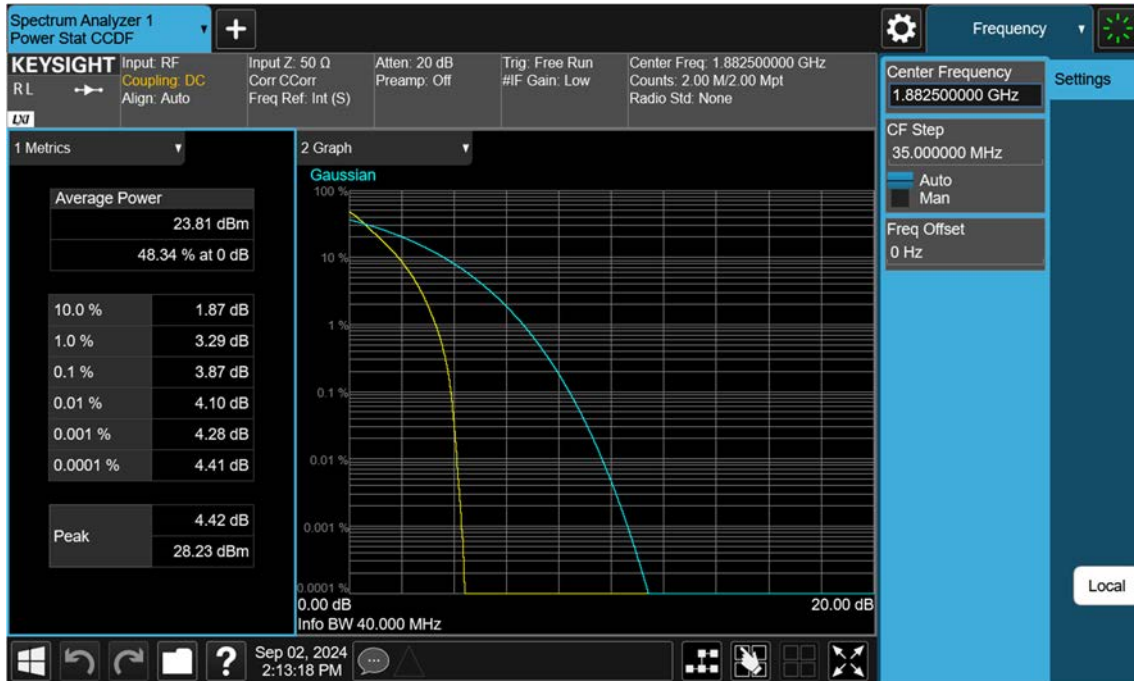
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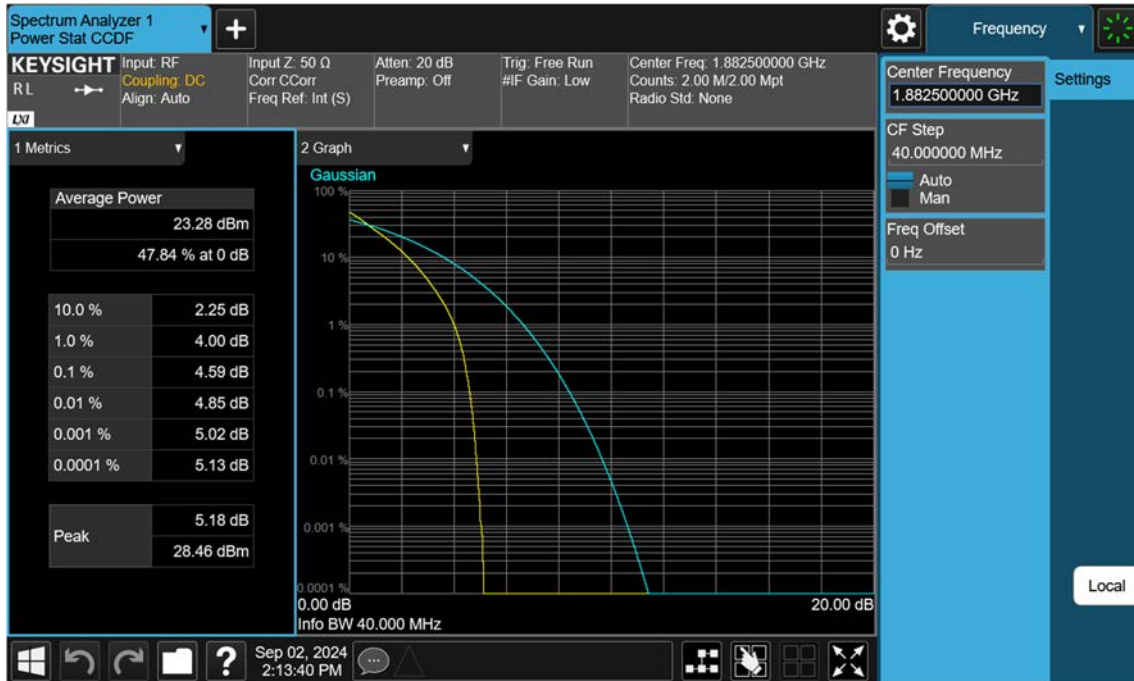
NR25(2)_35 M_PAR_Mid_256QAM_FullRB



NR25(2)_40 M_PAR_Mid_BPSK_FullRB



NR25(2)_40 M_PAR_Mid_QPSK_FullRB



NR25(2)_40 M_PAR_Mid_16QAM_FullRB



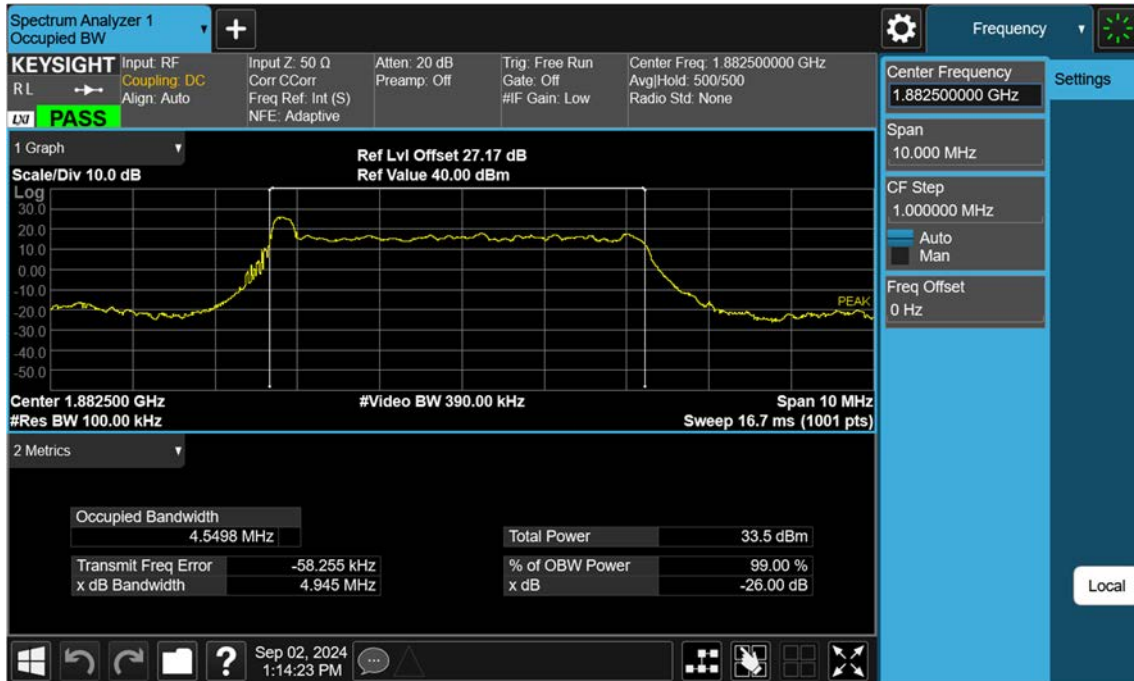
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NR25(2)_40 M_PAR_Mid_256QAM_FullRB



NR25(2)_5 M_OBW_Mid_BPSK_FullRB



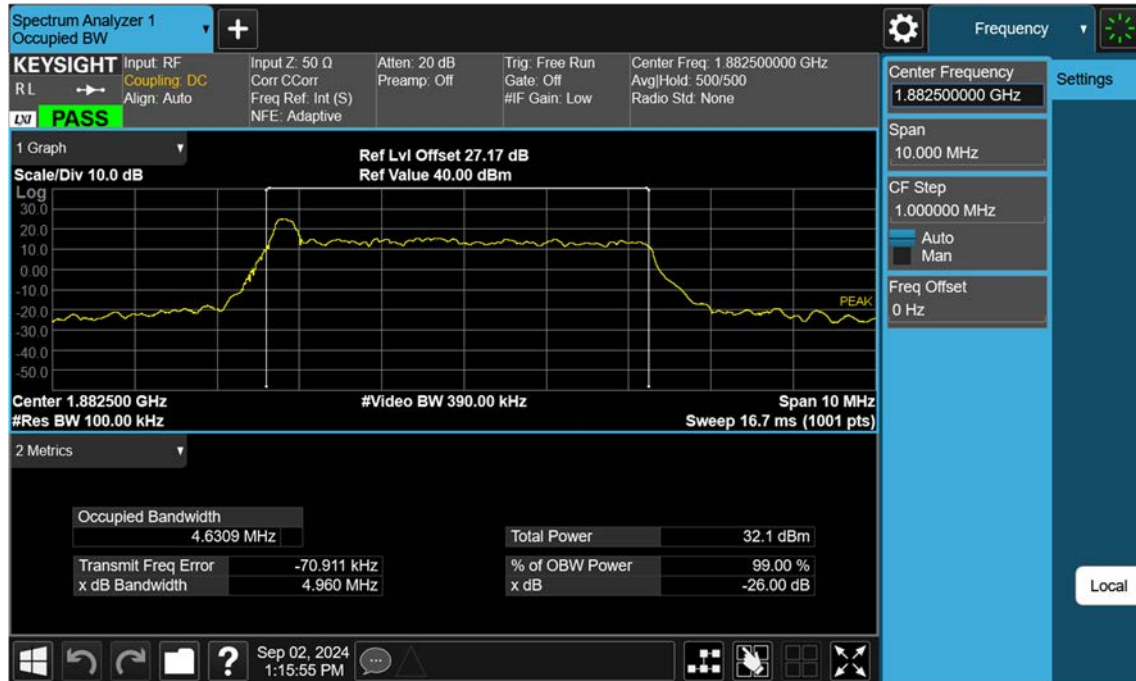
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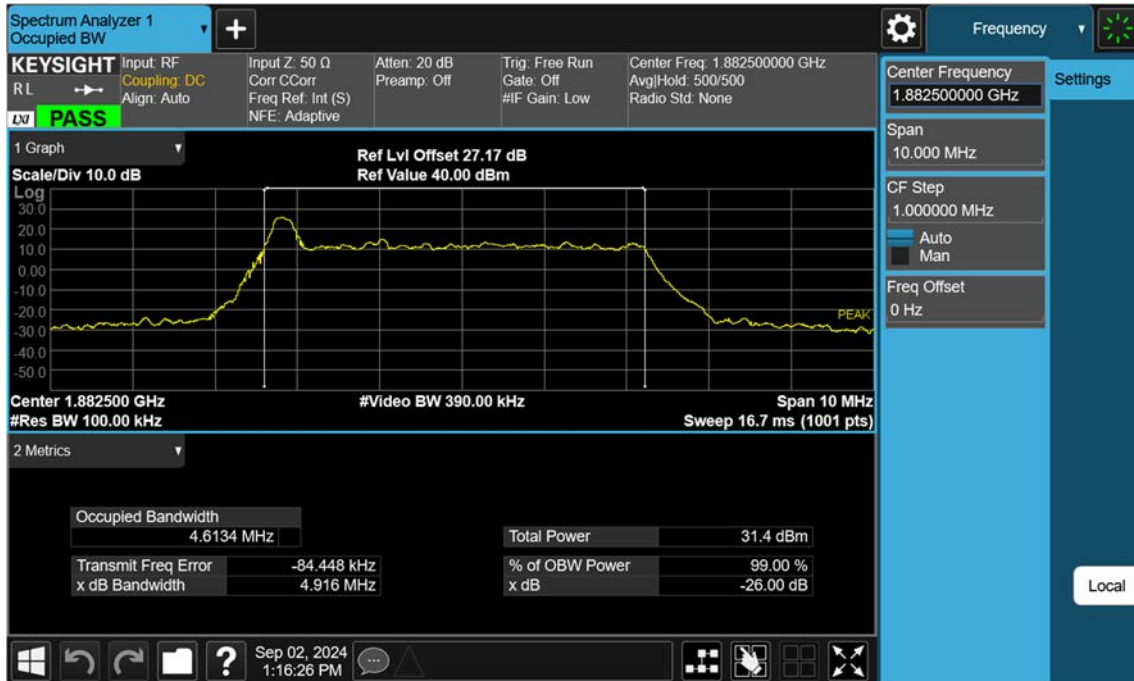
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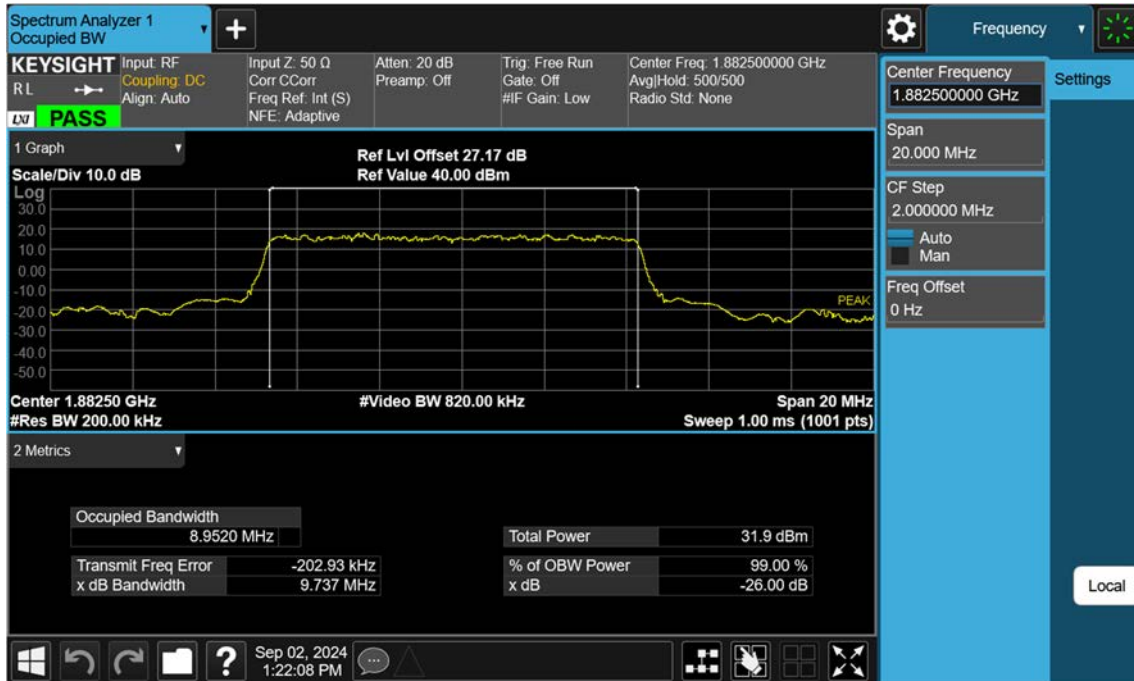
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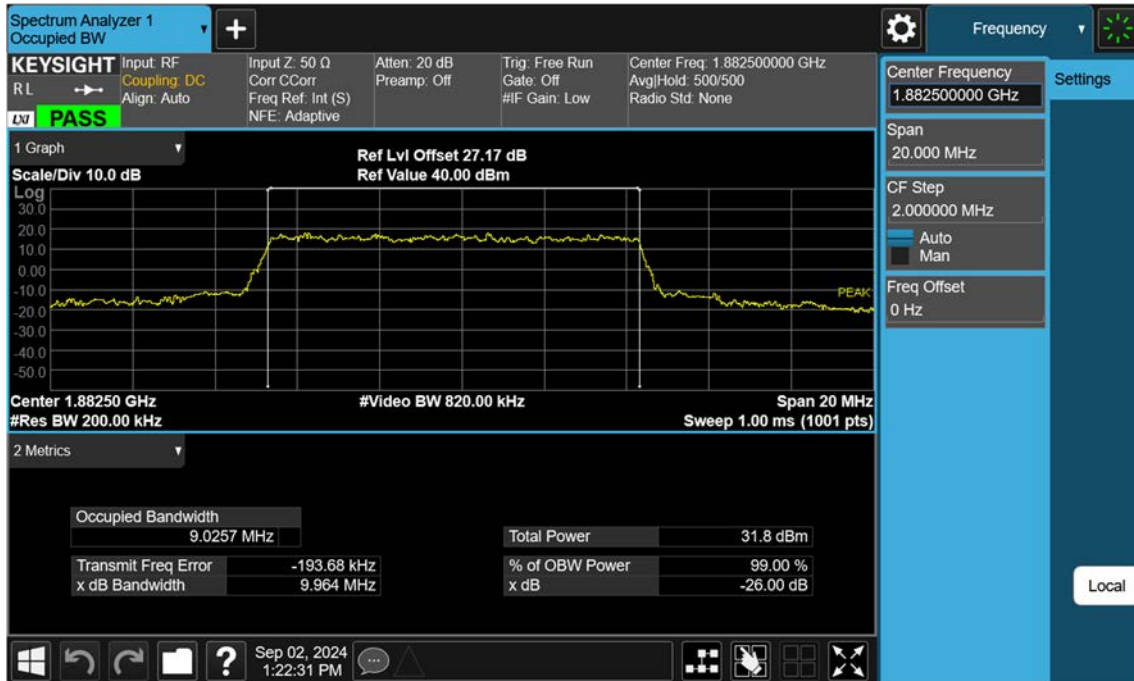
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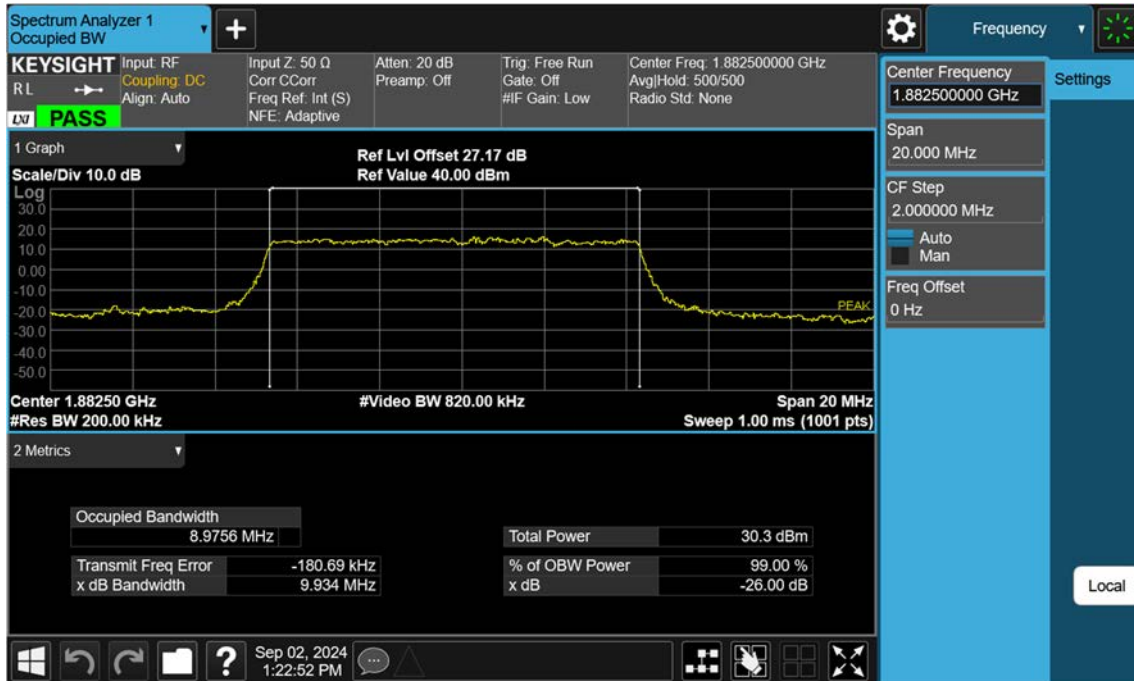
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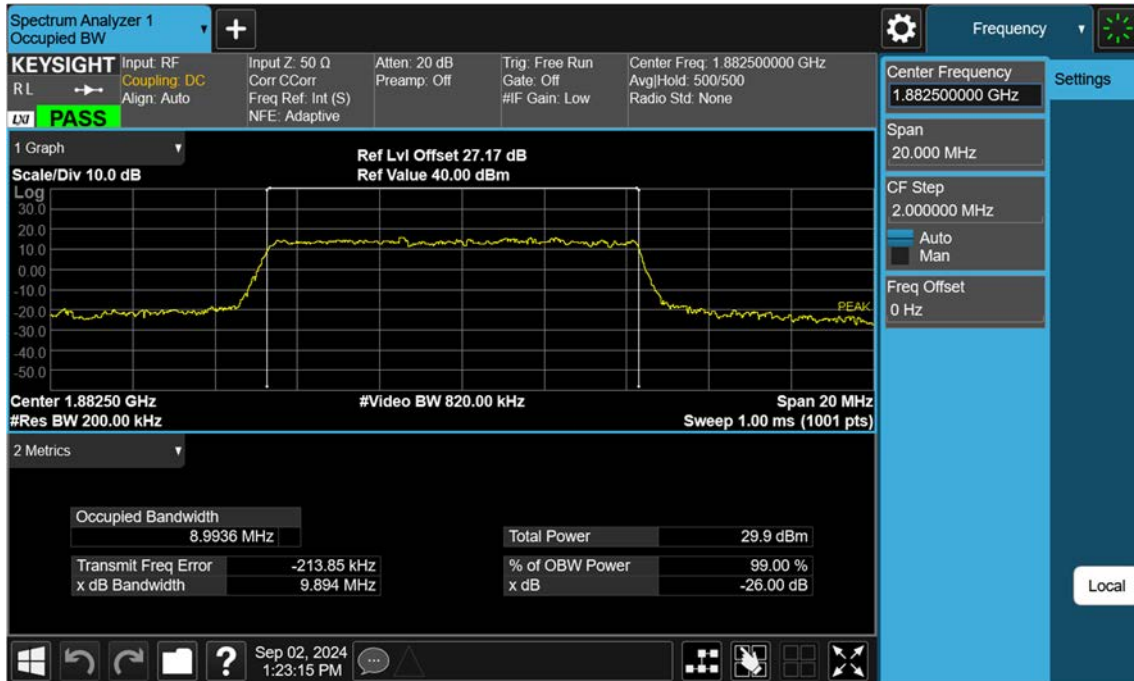
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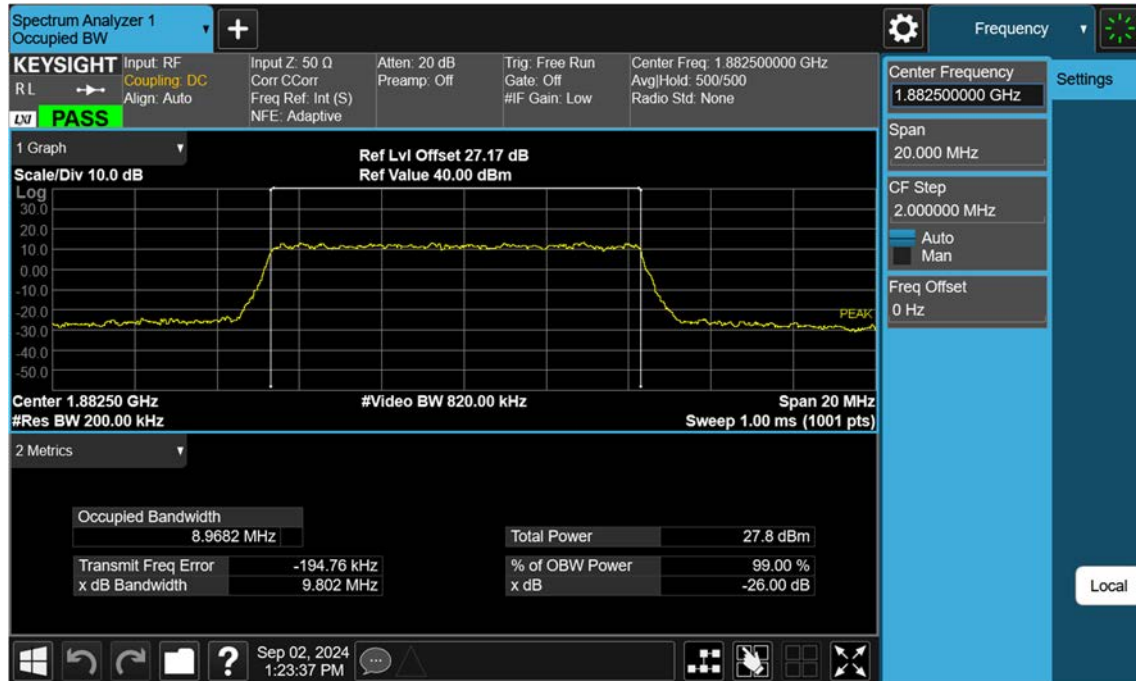
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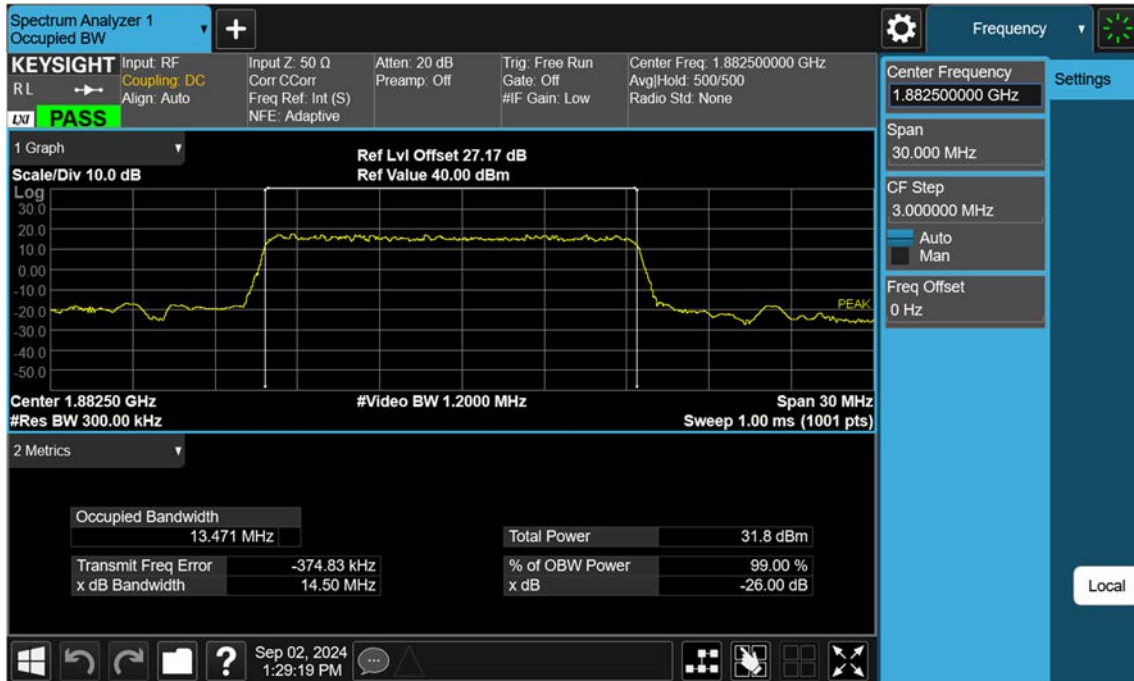
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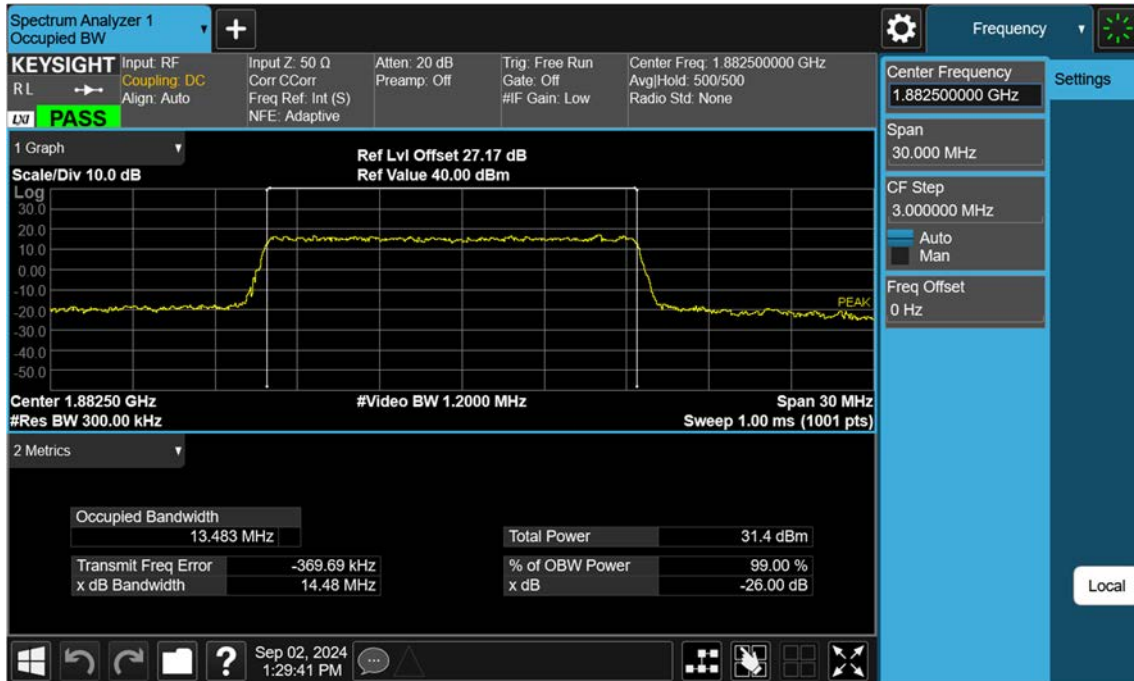
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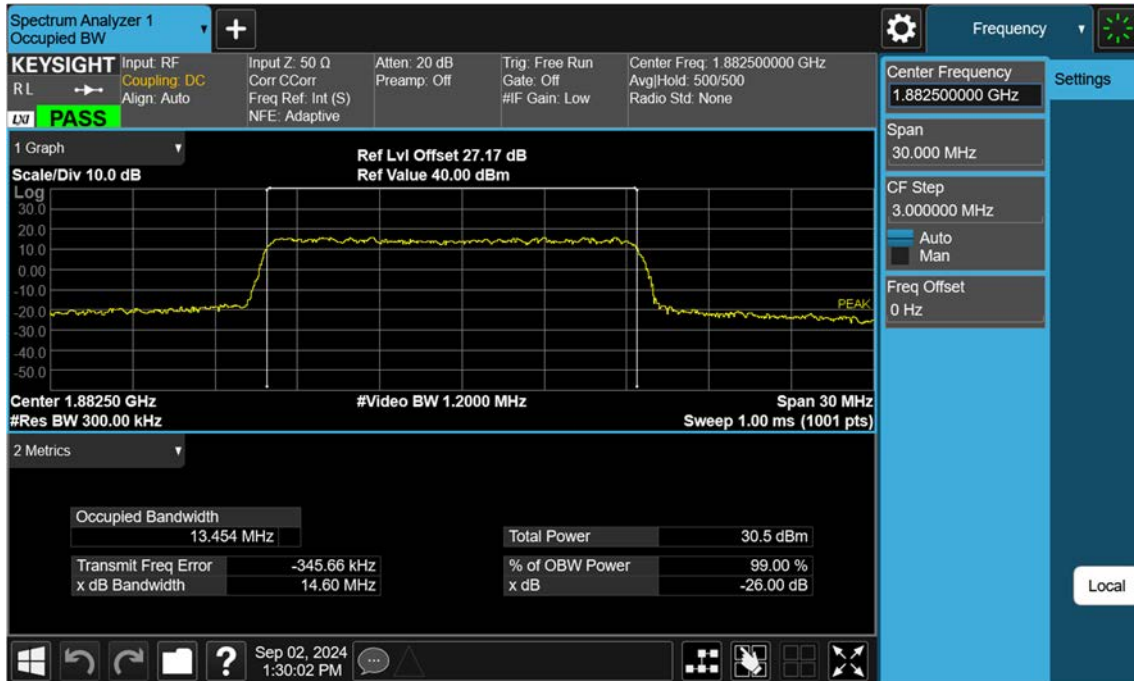
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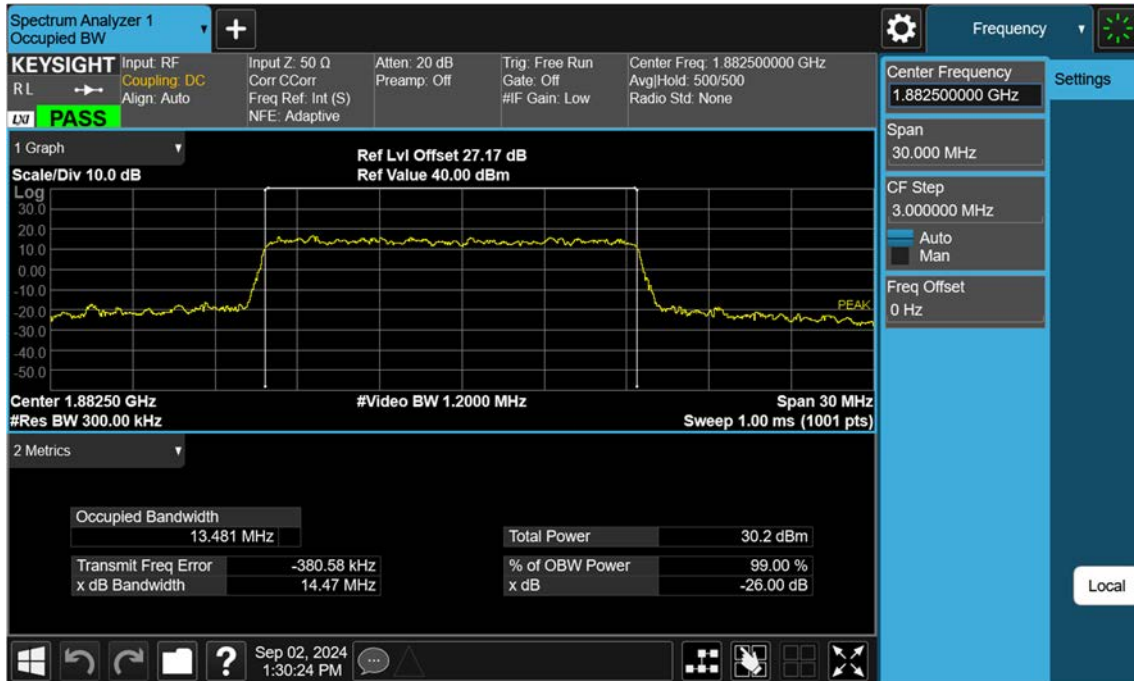
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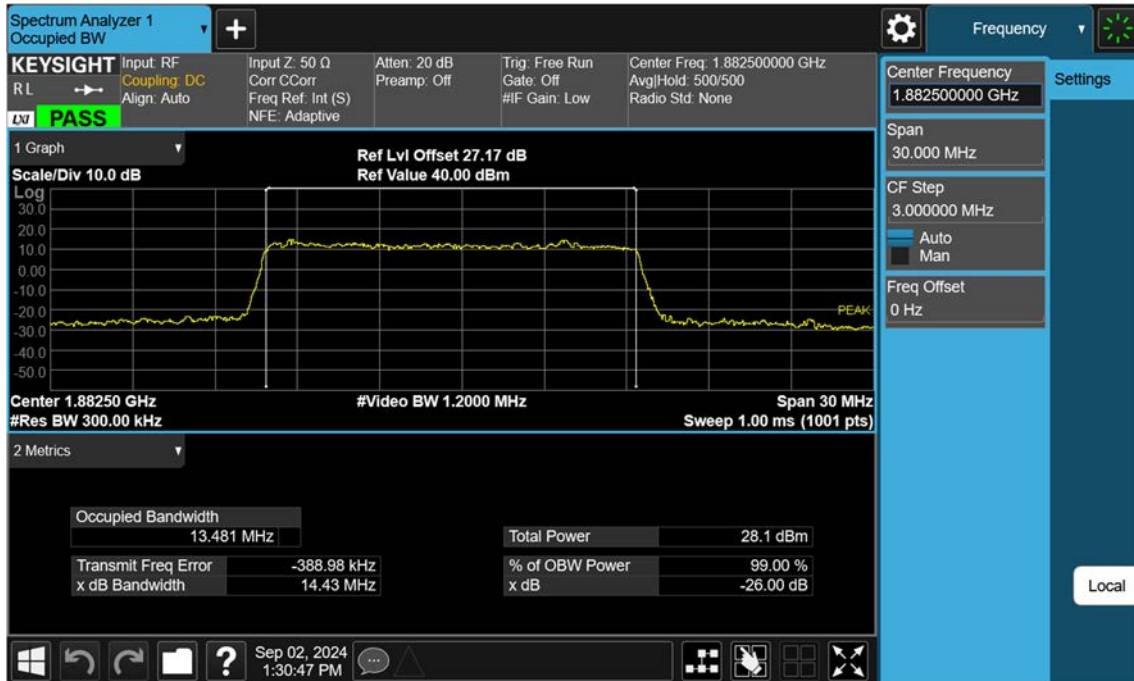
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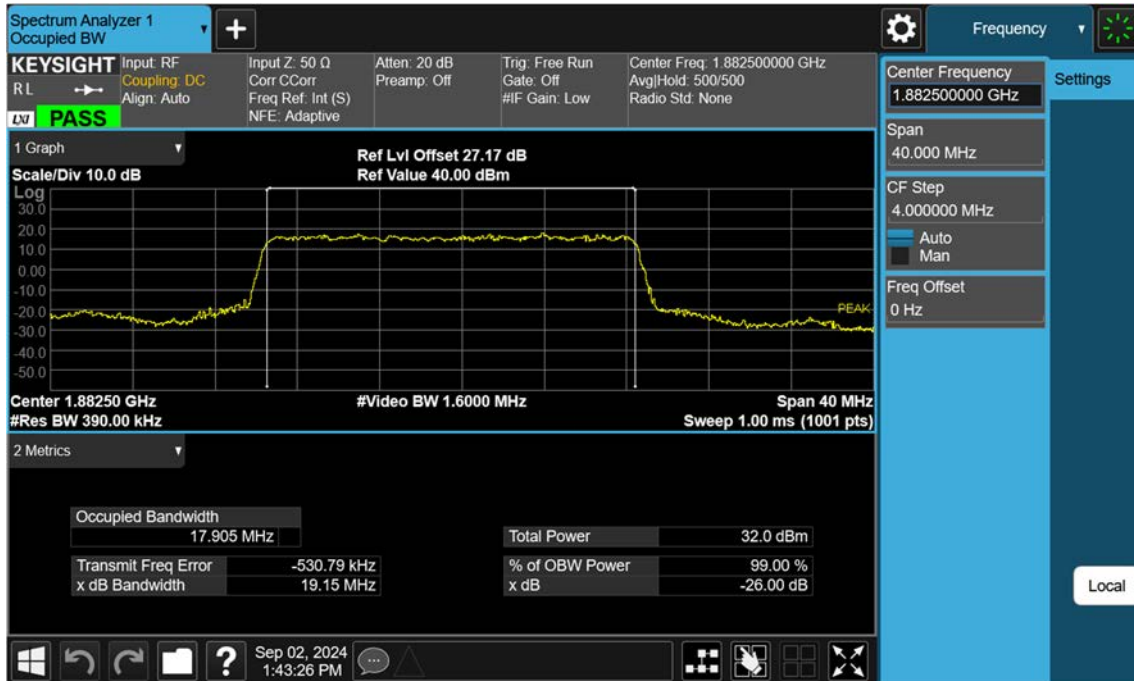
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NR25(2)_15 M_OBW_Mid_256QAM_FullRB



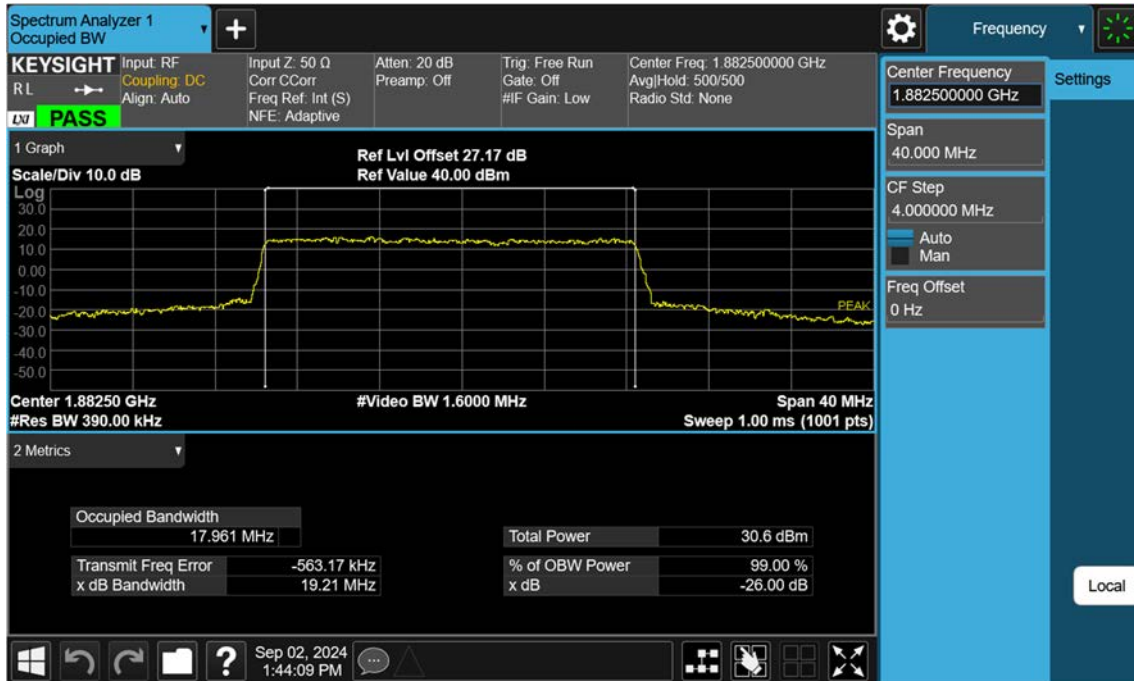
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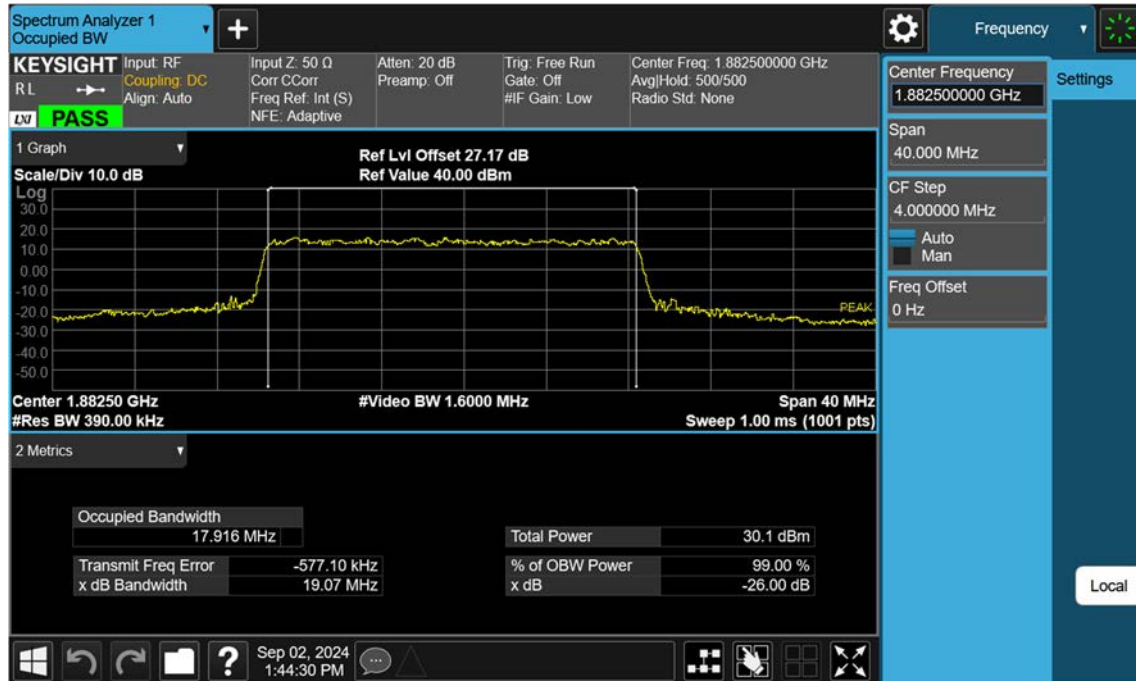
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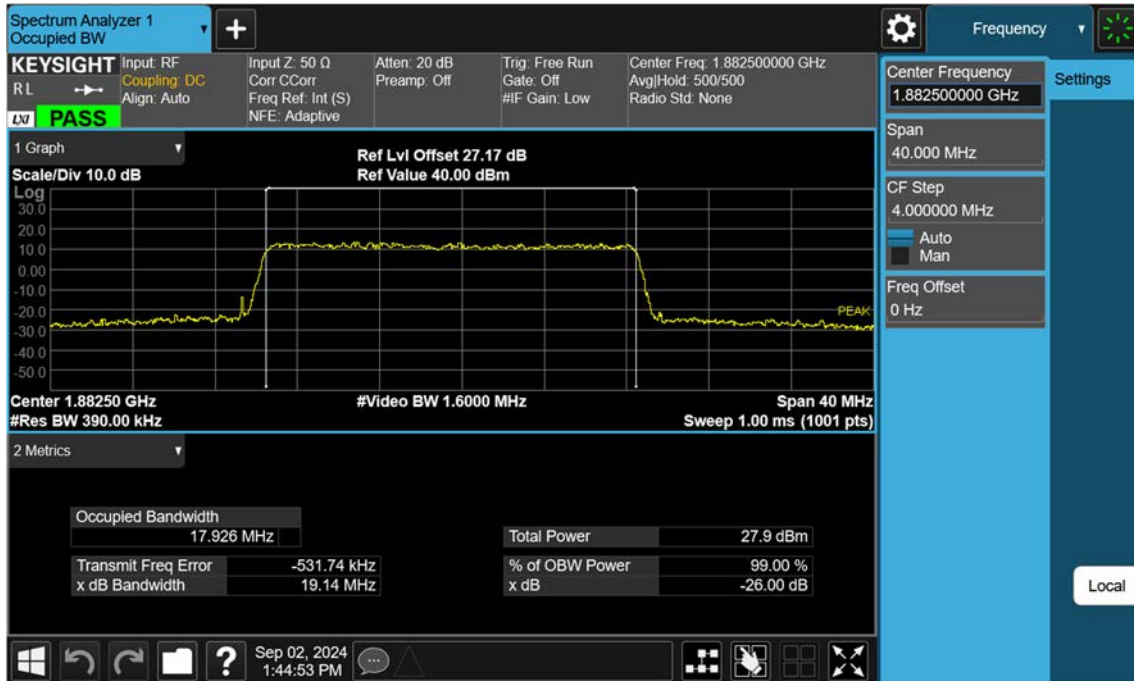
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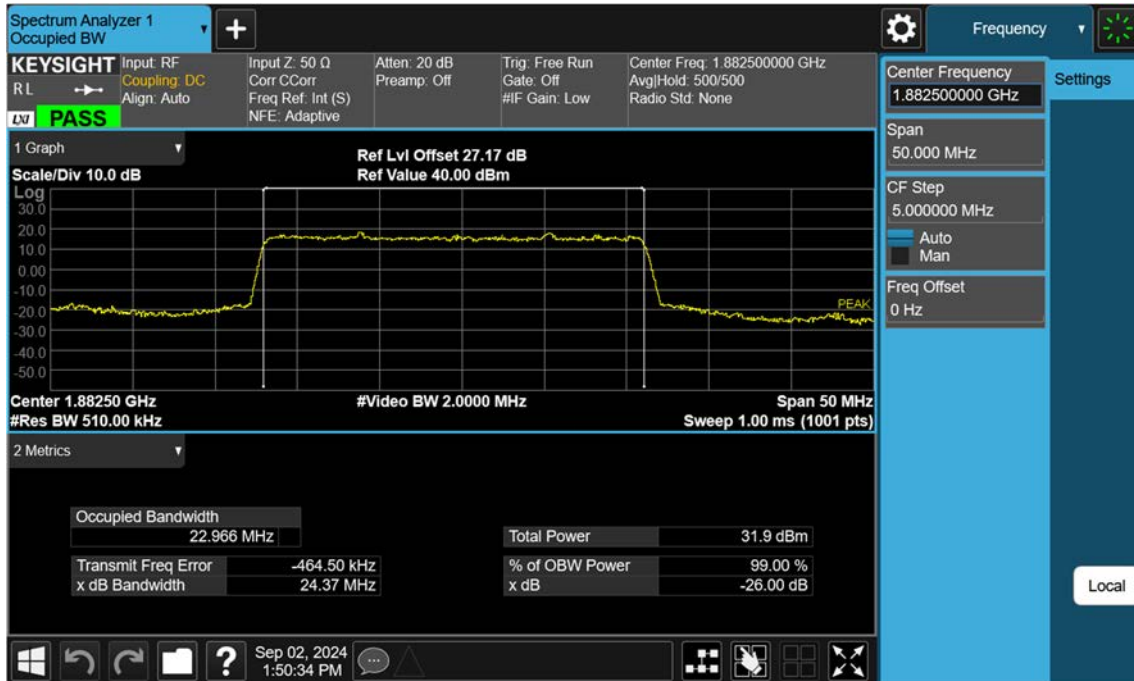
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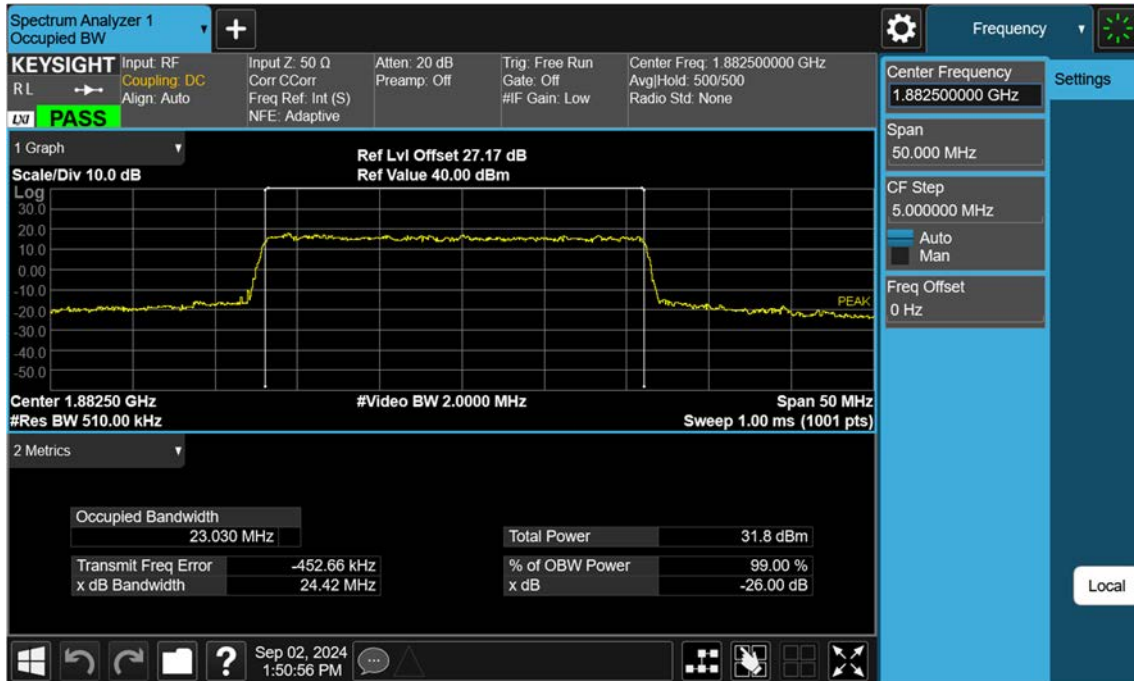
NR25(2)_20 M_OBW_Mid_256QAM_FullRB



NR25(2)_25 M_OBW_Mid_BPSK_FullRB



NR25(2)_25 M_OBW_Mid_QPSK_FullRB



NR25(2)_25 M_OBW_Mid_16QAM_FullRB

