

TEST REPORT

FCC Sub6 n7 Test for SM-S931U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2410-FC063

DATE OF ISSUE
October 29, 2024

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TEST REPORT

REPORT NO.

HCT-RF-2410-FC063

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
Model Name

Mobile Phone
SM-S931U

Date of Test

August 26, 2024 ~ October 29, 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: § 27

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):	§ 27
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:	2502.5 MHz – 2567.5 MHz (Sub6 n7(5 MHz)) 2505.0 MHz – 2565.0 MHz (Sub6 n7(10 MHz)) 2507.5 MHz – 2562.5 MHz (Sub6 n7(15 MHz)) 2510.0 MHz – 2560.0 MHz (Sub6 n7(20 MHz)) 2512.5 MHz – 2557.5 MHz (Sub6 n7(25 MHz)) 2515.0 MHz – 2555.0 MHz (Sub6 n7(30 MHz)) 2517.5 MHz – 2552.5 MHz (Sub6 n7(35 MHz)) 2520.0 MHz – 2550.0 MHz (Sub6 n7(40 MHz))
Date(s) of Tests:	August 26, 2024 ~ October 29, 2024
Serial number:	Radiated : R3CXA0930CK Conducted : R3CX70H9JQN

1.1. MAXIMUM OUTPUT POWER

Main 2 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n7 (5)	2502.5 – 2567.5	4M52G7D	PI/2 BPSK	0.105	20.22
		4M49G7D	QPSK	0.105	20.20
		4M49W7D	16QAM	0.086	19.32
		4M52W7D	64QAM	0.058	17.66
		4M53W7D	256QAM	0.033	15.17
Sub6 n7 (10)	2505.0 – 2565.0	8M99G7D	PI/2 BPSK	0.112	20.51
		9M01G7D	QPSK	0.110	20.40
		8M99W7D	16QAM	0.087	19.38
		8M96W7D	64QAM	0.060	17.78
		8M98W7D	256QAM	0.034	15.32
Sub6 n7 (15)	2507.5 – 2562.5	13M5G7D	PI/2 BPSK	0.119	20.75
		13M5G7D	QPSK	0.115	20.62
		13M5W7D	16QAM	0.095	19.77
		13M5W7D	64QAM	0.065	18.13
		13M4W7D	256QAM	0.037	15.65
Sub6 n7 (20)	2510.0 – 2560.0	17M9G7D	PI/2 BPSK	0.117	20.68
		18M0G7D	QPSK	0.116	20.64
		17M9W7D	16QAM	0.098	19.91
		17M9W7D	64QAM	0.065	18.14
		18M0W7D	256QAM	0.037	15.63
Sub6 n7 (25)	2512.5 – 2557.5	23M0G7D	PI/2 BPSK	0.117	20.68
		22M9G7D	QPSK	0.115	20.62
		22M9W7D	16QAM	0.091	19.58
		22M9W7D	64QAM	0.064	18.09
		22M9W7D	256QAM	0.036	15.55
Sub6 n7 (30)	2515.0 – 2555.0	28M6G7D	PI/2 BPSK	0.119	20.74
		28M7G7D	QPSK	0.116	20.65
		28M6W7D	16QAM	0.096	19.83
		28M6W7D	64QAM	0.065	18.15
		28M6W7D	256QAM	0.036	15.62
Sub6 n7 (35)	2517.5 – 2552.5	32M2G7D	PI/2 BPSK	0.117	20.69
		32M3G7D	QPSK	0.114	20.58
		32M2W7D	16QAM	0.091	19.59
		32M2W7D	64QAM	0.064	18.07
		32M2W7D	256QAM	0.036	15.58
Sub6 n7 (40)	2520.0 – 2550.0	38M6G7D	PI/2 BPSK	0.111	20.45
		38M7G7D	QPSK	0.108	20.33
		38M7W7D	16QAM	0.084	19.25
		38M5W7D	64QAM	0.062	17.89
		38M6W7D	256QAM	0.034	15.28

Sub 2 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n7 (5)	2502.5 – 2567.5	4M63G7D	PI/2 BPSK	0.206	23.14
		4M60G7D	QPSK	0.203	23.08
		4M60W7D	16QAM	0.161	22.07
		4M62W7D	64QAM	0.120	20.80
		4M61W7D	256QAM	0.065	18.15
Sub6 n7 (10)	2505.0 – 2565.0	8M98G7D	PI/2 BPSK	0.214	23.31
		8M98G7D	QPSK	0.208	23.18
		8M99W7D	16QAM	0.161	22.08
		8M96W7D	64QAM	0.121	20.81
		8M96W7D	256QAM	0.064	18.08
Sub6 n7 (15)	2507.5 – 2562.5	13M5G7D	PI/2 BPSK	0.214	23.31
		13M5G7D	QPSK	0.201	23.04
		13M5W7D	16QAM	0.165	22.17
		13M5W7D	64QAM	0.121	20.81
		13M5W7D	256QAM	0.067	18.26
Sub6 n7 (20)	2510.0 – 2560.0	17M9G7D	PI/2 BPSK	0.207	23.16
		18M0G7D	QPSK	0.202	23.05
		18M0W7D	16QAM	0.163	22.11
		17M9W7D	64QAM	0.121	20.81
		18M0W7D	256QAM	0.064	18.07
Sub6 n7 (25)	2512.5 – 2557.5	23M0G7D	PI/2 BPSK	0.221	23.44
		22M9G7D	QPSK	0.204	23.09
		23M0W7D	16QAM	0.170	22.30
		23M0W7D	64QAM	0.122	20.88
		22M9W7D	256QAM	0.069	18.40
Sub6 n7 (30)	2515.0 – 2555.0	28M6G7D	PI/2 BPSK	0.221	23.45
		28M6G7D	QPSK	0.210	23.22
		28M7W7D	16QAM	0.165	22.17
		28M7W7D	64QAM	0.124	20.95
		28M6W7D	256QAM	0.067	18.29
Sub6 n7 (35)	2517.5 – 2552.5	32M2G7D	PI/2 BPSK	0.212	23.26
		32M2G7D	QPSK	0.202	23.06
		32M3W7D	16QAM	0.166	22.20
		32M2W7D	64QAM	0.121	20.84
		32M3W7D	256QAM	0.067	18.26
Sub6 n7 (40)	2520.0 – 2550.0	38M7G7D	PI/2 BPSK	0.219	23.40
		38M7G7D	QPSK	0.210	23.23
		38M7W7D	16QAM	0.167	22.23
		38M7W7D	64QAM	0.121	20.83
		38M7W7D	256QAM	0.069	18.37

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 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
Channel 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;

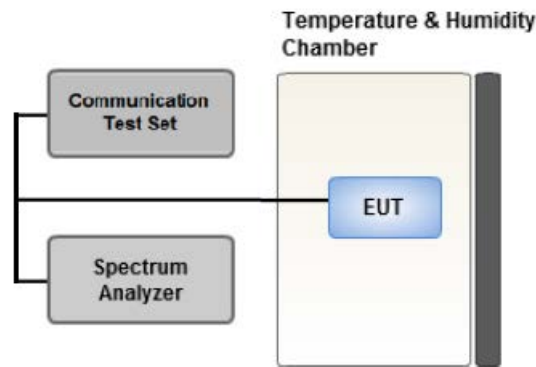
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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)

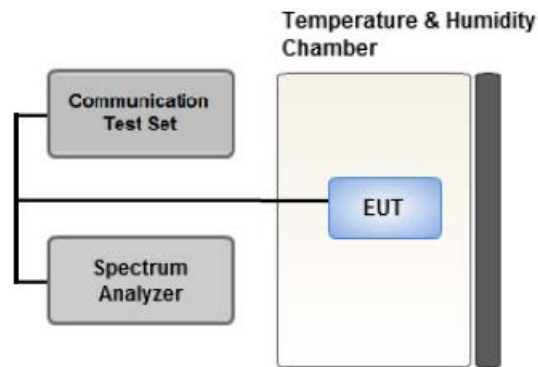
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW $\geq 3 \times$ RBW.

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.

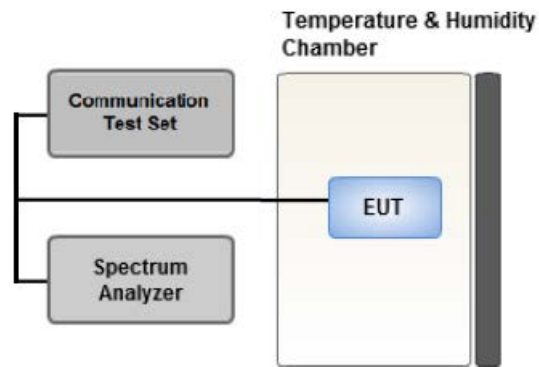
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

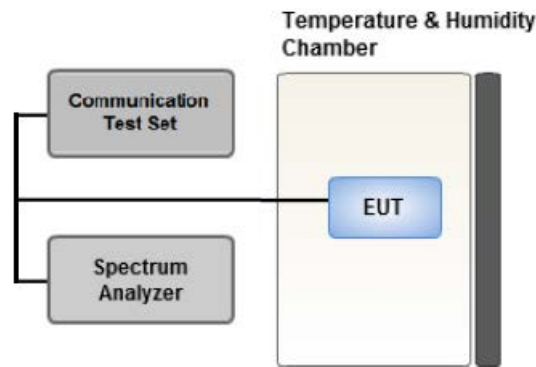
Test Overview

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 CHANNEL 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 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

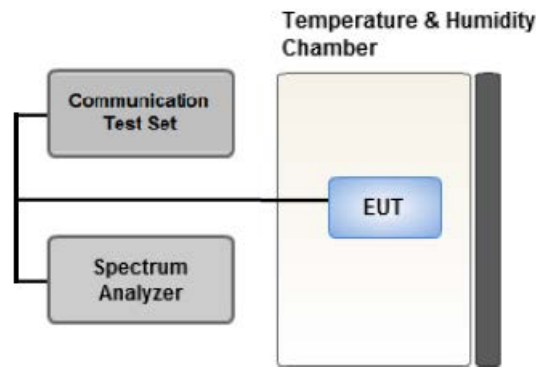
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. Within 1MHz of the channel edge the RBW should be 2% of EBW, then 1 MHz after that.
4. VBW > 3 x RBW
5.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

Test Notes

1. The attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge,
2. $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge.
3. $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge.
4. The attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz.
5. $55 + 10 \log (P)$ dB at or below 2490.5 MHz.
6. X is the greater of 6MHz or the actual emission bandwidth
7. 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: 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.
- SM-S931U & additional models were tested and the worst case results are reported.
(Worst case : SM-S931U)

[Main 2 ANT Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective 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
Effective 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: 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.
- 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
Channel 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, § 27.53(m)(4)	■ $< 40 + 10\log_{10} (P[\text{Watts}])$ at Channel edges ■ $< 43 + 10\log_{10} (P[\text{Watts}])$ between 5 and X MHz from Channel edges ■ $< 55 + 10\log_{10} (P[\text{Watts}])$ beyond X MHz beyond from Channel edges ■ $< 43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz	PASS
Conducted Output Power	§ 2.1046	N/A	<u>See Note1</u>
Frequency stability / variation of ambient temperature	§ 2.1055, § 27.54	Emission must remain in band	PASS

Note:

1. See SAR Report
2. All conducted tests were tested using 5G Wireless Tester.

6.2 Test Condition: Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§ 27.50(h)(2)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 27.53(m)(4)	$< 55 + 10\log_{10} (P[\text{Watts}])$	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 2 ANT)

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)			W	W	dBm	Size	Offset
2502.5	Sub6 n7/ 5 MHz [15 kHz]	PI/2 BPSK	-24.95	11.91	10.58	2.51	H		0.100	19.98	1	23
		QPSK	-24.96	11.90	10.58	2.51	H		0.099	19.97		
		16-QAM	-25.81	11.05	10.58	2.51	H		0.082	19.12		
		64-QAM	-27.54	9.32	10.58	2.51	H		0.055	17.39		
		256-QAM	-30.05	6.81	10.58	2.51	H		0.031	14.88		
2535.0		PI/2 BPSK	-24.38	12.08	10.59	2.54	H	< 2.00	0.103	20.13	1	12
		QPSK	-24.59	11.87	10.59	2.54	H		0.098	19.92		
		16-QAM	-25.41	11.05	10.59	2.54	H		0.081	19.10		
		64-QAM	-27.15	9.31	10.59	2.54	H		0.055	17.36		
		256-QAM	-29.54	6.92	10.59	2.54	H		0.031	14.97		
2567.5		PI/2 BPSK	-25.05	12.04	10.83	2.65	H		0.105	20.22	1	1
		QPSK	-25.07	12.02	10.83	2.65	H		0.105	20.20		
		16-QAM	-25.95	11.14	10.83	2.65	H		0.086	19.32		
		64-QAM	-27.61	9.48	10.83	2.65	H		0.058	17.66		
		256-QAM	-30.10	6.99	10.83	2.65	H		0.033	15.17		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2505.0	Sub6 n7/ 10 MHz [15 kHz]	Pl/2 BPSK	-24.48	12.38	10.58	2.51	H	< 2.00	0.111	20.45	1	50
		QPSK	-24.53	12.33	10.58	2.51	H		0.110	20.40		
		16-QAM	-25.56	11.30	10.58	2.51	H		0.087	19.37		
		64-QAM	-27.15	9.71	10.58	2.51	H		0.060	17.78		
		256-QAM	-29.65	7.21	10.58	2.51	H		0.034	15.28		
2535.0		Pl/2 BPSK	-24.24	12.22	10.59	2.54	H		0.106	20.27	1	26
		QPSK	-24.32	12.14	10.59	2.54	H		0.105	20.19		
		16-QAM	-25.44	11.02	10.59	2.54	H		0.081	19.07		
		64-QAM	-26.82	9.64	10.59	2.54	H		0.059	17.69		
		256-QAM	-29.50	6.96	10.59	2.54	H		0.032	15.01		
2565.0	Pl/2 BPSK	-24.74	12.34	10.79	2.62	H	0.113	20.51	1	26		
	QPSK	-24.96	12.12	10.79	2.62	H	0.107	20.29				
	16-QAM	-25.87	11.21	10.79	2.62	H	0.087	19.38				
	64-QAM	-27.49	9.59	10.79	2.62	H	0.060	17.76				
	256-QAM	-29.93	7.15	10.79	2.62	H	0.034	15.32				

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)			W	W	dBm	Size	Offset
2507.5	Sub6 n7/ 15 MHz [15 kHz]	PI/2 BPSK	-24.21	12.71	10.55	2.51	H	< 2.00	0.119	20.75	1	77
		QPSK	-24.34	12.58	10.55	2.51	H		0.115	20.62		
		16-QAM	-25.19	11.73	10.55	2.51	H		0.095	19.77		
		64-QAM	-26.83	10.09	10.55	2.51	H		0.065	18.13		
		256-QAM	-29.31	7.61	10.55	2.51	H		0.037	15.65		
2535.0		PI/2 BPSK	-24.27	12.19	10.59	2.54	H		0.106	20.24	1	39
		QPSK	-24.47	11.99	10.59	2.54	H		0.101	20.04		
		16-QAM	-25.50	10.96	10.59	2.54	H		0.080	19.01		
		64-QAM	-26.96	9.50	10.59	2.54	H		0.057	17.55		
		256-QAM	-29.49	6.97	10.59	2.54	H		0.032	15.02		
2562.5		PI/2 BPSK	-24.76	12.32	10.79	2.62	H		0.112	20.49	1	0
		QPSK	-24.81	12.27	10.79	2.62	H		0.111	20.44		
		16-QAM	-25.74	11.34	10.79	2.62	H		0.089	19.51		
		64-QAM	-27.42	9.66	10.79	2.62	H		0.061	17.83		
		256-QAM	-29.85	7.23	10.79	2.62	H		0.035	15.40		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2510.0	Sub6 n7/ 20 MHz [15 kHz]	Pl/2 BPSK	-24.28	12.64	10.55	2.51	H	< 2.00	0.117	20.68	1	104
		QPSK	-24.32	12.60	10.55	2.51	H		0.116	20.64		
		16-QAM	-25.05	11.87	10.55	2.51	H		0.098	19.91		
		64-QAM	-26.82	10.10	10.55	2.51	H		0.065	18.14		
		256-QAM	-29.33	7.59	10.55	2.51	H		0.037	15.63		
2535.0		Pl/2 BPSK	-24.30	12.16	10.59	2.54	H		0.105	20.21	1	53
		QPSK	-24.43	12.03	10.59	2.54	H		0.102	20.08		
		16-QAM	-25.45	11.01	10.59	2.54	H		0.081	19.06		
		64-QAM	-26.86	9.60	10.59	2.54	H		0.058	17.65		
		256-QAM	-29.49	6.97	10.59	2.54	H		0.032	15.02		
2560.0	Pl/2 BPSK	-24.63	12.43	10.76	2.59	H	0.115	20.60	1	1		
	QPSK	-24.68	12.38	10.76	2.59	H	0.114	20.55				
	16-QAM	-25.58	11.48	10.76	2.59	H	0.092	19.65				
	64-QAM	-27.17	9.89	10.76	2.59	H	0.064	18.06				
	256-QAM	-29.77	7.29	10.76	2.59	H	0.035	15.46				

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2512.5	Sub6 n7/ 25 MHz [15 kHz]	PI/2 BPSK	-24.26	12.67	10.52	2.53	H	< 2.00	0.116	20.66	1	66
		QPSK	-24.54	12.39	10.52	2.53	H		0.109	20.38		
		16-QAM	-25.34	11.59	10.52	2.53	H		0.091	19.58		
		64-QAM	-26.94	9.99	10.52	2.53	H		0.063	17.98		
		256-QAM	-29.48	7.45	10.52	2.53	H		0.035	15.44		
2535.0		PI/2 BPSK	-24.06	12.40	10.59	2.54	H		0.111	20.45	1	66
		QPSK	-24.28	12.18	10.59	2.54	H		0.105	20.23		
		16-QAM	-25.40	11.06	10.59	2.54	H		0.082	19.11		
		64-QAM	-26.90	9.56	10.59	2.54	H		0.058	17.61		
		256-QAM	-29.40	7.06	10.59	2.54	H		0.032	15.11		
2557.5		PI/2 BPSK	-24.55	12.51	10.76	2.59	H	0.117	20.68	1	1	
		QPSK	-24.61	12.45	10.76	2.59	H	0.115	20.62			
		16-QAM	-25.76	11.30	10.76	2.59	H	0.089	19.47			
		64-QAM	-27.14	9.92	10.76	2.59	H	0.064	18.09			
		256-QAM	-29.68	7.38	10.76	2.59	H	0.036	15.55			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2515.0	Sub6 n7/ 30 MHz [15 kHz]	PI/2 BPSK	-24.18	12.75	10.52	2.53	H	< 2.00	0.119	20.74	1	80
		QPSK	-24.27	12.66	10.52	2.53	H		0.116	20.65		
		16-QAM	-25.09	11.84	10.52	2.53	H		0.096	19.83		
		64-QAM	-26.77	10.16	10.52	2.53	H		0.065	18.15		
		256-QAM	-29.30	7.63	10.52	2.53	H		0.037	15.62		
2535.0		PI/2 BPSK	-24.23	12.23	10.59	2.54	H		0.107	20.28	1	80
		QPSK	-24.33	12.13	10.59	2.54	H		0.104	20.18		
		16-QAM	-25.39	11.07	10.59	2.54	H		0.082	19.12		
		64-QAM	-26.84	9.62	10.59	2.54	H		0.059	17.67		
		256-QAM	-29.42	7.04	10.59	2.54	H		0.032	15.09		
2555.0		PI/2 BPSK	-24.38	12.42	10.72	2.56	H	0.114	20.58	1	1	
		QPSK	-24.41	12.39	10.72	2.56	H	0.114	20.55			
		16-QAM	-25.47	11.33	10.72	2.56	H	0.089	19.49			
		64-QAM	-26.87	9.93	10.72	2.56	H	0.064	18.09			
		256-QAM	-29.36	7.44	10.72	2.56	H	0.036	15.60			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2517.5	Sub6 n7/ 35 MHz [15 kHz]	Pl/2 BPSK	-24.19	12.74	10.49	2.54	H	< 2.00	0.117	20.69	1	186
		QPSK	-24.30	12.63	10.49	2.54	H		0.114	20.58		
		16-QAM	-25.32	11.61	10.49	2.54	H		0.090	19.56		
		64-QAM	-26.81	10.12	10.49	2.54	H		0.064	18.07		
		256-QAM	-29.39	7.54	10.49	2.54	H		0.035	15.49		
2535.0		Pl/2 BPSK	-24.11	12.35	10.59	2.54	H		0.110	20.40	1	94
		QPSK	-24.40	12.06	10.59	2.54	H		0.103	20.11		
		16-QAM	-25.30	11.16	10.59	2.54	H		0.083	19.21		
		64-QAM	-26.94	9.52	10.59	2.54	H		0.057	17.57		
		256-QAM	-29.46	7.00	10.59	2.54	H		0.032	15.05		
2552.5		Pl/2 BPSK	-24.27	12.53	10.72	2.56	H	0.117	20.69	1	1	
		QPSK	-24.40	12.40	10.72	2.56	H	0.114	20.56			
		16-QAM	-25.37	11.43	10.72	2.56	H	0.091	19.59			
		64-QAM	-26.90	9.90	10.72	2.56	H	0.064	18.06			
		256-QAM	-29.38	7.42	10.72	2.56	H	0.036	15.58			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)				W	W	dBm	Size	Offset
2520.0		PI/2 BPSK	-24.43	12.50	10.49	2.54	H	< 2.00	0.111	20.45	1	214
		QPSK	-24.55	12.38	10.49	2.54	H		0.108	20.33		
		16-QAM	-25.63	11.30	10.49	2.54	H		0.084	19.25		
		64-QAM	-26.99	9.94	10.49	2.54	H		0.062	17.89		
		256-QAM	-29.60	7.33	10.49	2.54	H		0.034	15.28		
2535.0	Sub6 n7/ 40 MHz [15 kHz]	PI/2 BPSK	-24.22	12.24	10.59	2.54	H	< 2.00	0.107	20.29	1	108
		QPSK	-24.36	12.10	10.59	2.54	H		0.104	20.15		
		16-QAM	-25.39	11.07	10.59	2.54	H		0.082	19.12		
		64-QAM	-26.84	9.62	10.59	2.54	H		0.059	17.67		
		256-QAM	-29.47	6.99	10.59	2.54	H		0.032	15.04		
2550.0		PI/2 BPSK	-24.47	12.06	10.69	2.53	H	< 2.00	0.105	20.22	1	108
		QPSK	-24.58	11.95	10.69	2.53	H		0.103	20.11		
		16-QAM	-25.48	11.05	10.69	2.53	H		0.083	19.21		
		64-QAM	-27.11	9.42	10.69	2.53	H		0.057	17.58		
		256-QAM	-29.58	6.95	10.69	2.53	H		0.032	15.11		

8.2 RADIATED SPURIOUS EMISSIONS

NR Band:	<u>N7</u>
Bandwidth:	<u>5 MHz</u>
Modulation:	<u>PI/2 BPSK</u>
Distance:	<u>1 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
500500 (2502.5)	5 005.00	-61.37	11.20	-62.80	3.71	H	-55.31	-25.00	1	23
	7 507.50	-63.07	11.55	-55.53	4.60	H	-48.58			
	10 010.00	-62.43	11.47	-53.35	5.47	H	-47.35			
507000 (2535.0)	5 070.00	-61.18	11.25	-62.34	3.80	H	-54.89		1	12
	7 605.00	-62.28	11.60	-55.23	4.64	H	-48.27			
	10 140.00	-59.67	11.36	-49.73	5.48	H	-43.85			
513500 (2567.5)	5 135.00	-60.55	11.43	-61.48	3.81	H	-53.86		1	1
	7 702.50	-63.12	11.42	-55.59	4.66	H	-48.83			
	10 270.00	-62.28	11.51	-51.02	5.57	H	-45.08			

☐ NR Band: N7
☐ Bandwidth: 10 MHz
☐ Modulation: PI/2 BPSK
☐ Distance: 1 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
501000 (2505.0)	5 010.00	-61.46	11.18	-62.60	3.72	H	-55.14	-25.00	1	50
	7 515.00	-63.15	11.56	-55.57	4.60	H	-48.61			
	10 020.00	-62.45	11.46	-52.77	5.47	H	-46.78			
507000 (2535.0)	5 070.00	-61.26	11.25	-62.42	3.80	H	-54.97		1	26
	7 605.00	-62.34	11.60	-55.29	4.64	H	-48.33			
	10 140.00	-59.72	11.36	-49.78	5.48	H	-43.90			
513000 (2565.0)	5 130.00	-60.60	11.41	-61.57	3.81	H	-53.97		1	26
	7 695.00	-63.16	11.44	-55.43	4.66	H	-48.65			
	10 260.00	-62.37	11.49	-51.75	5.56	H	-45.82			

☐ NR Band: N7
☐ Bandwidth: 15 MHz
☐ Modulation: PI/2 BPSK
☐ Distance: 1 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
501500 (2507.5)	5 015.00	-61.39	11.17	-62.31	3.70	H	-54.84	-25.00	1	77
	7 522.50	-63.08	11.57	-55.43	4.61	H	-48.47			
	10 030.00	-62.43	11.45	-53.39	5.47	H	-47.41			
507000 (2535.0)	5 070.00	-61.20	11.25	-62.36	3.80	H	-54.91		1	39
	7 605.00	-62.33	11.60	-55.28	4.64	H	-48.32			
	10 140.00	-59.73	11.36	-49.79	5.48	H	-43.91			
512500 (2562.5)	5 125.00	-60.61	11.40	-61.78	3.81	H	-54.19		1	0
	7 687.50	-63.22	11.45	-55.46	4.66	H	-48.67			
	10 250.00	-62.32	11.47	-51.10	5.54	H	-45.17			

■ NR Band: N7
 ■ Bandwidth: 20 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
502000 (2510.0)	5 020.00	-61.42	11.17	-62.12	3.69	H	-54.64	-25.00	1	104
	7 530.00	-63.14	11.57	-55.48	4.60	H	-48.51			
	10 040.00	-62.50	11.44	-53.04	5.49	H	-47.09			
507000 (2535.0)	5 070.00	-61.26	11.25	-62.42	3.80	H	-54.97		1	53
	7 605.00	-62.30	11.60	-55.25	4.64	H	-48.29			
	10 140.00	-59.69	11.36	-49.75	5.48	H	-43.87			
512000 (2560.0)	5 120.00	-60.56	11.38	-61.93	3.81	H	-54.36		1	1
	7 680.00	-63.13	11.47	-55.47	4.70	H	-48.70			
	10 240.00	-62.36	11.45	-51.69	5.54	H	-45.78			

■ NR Band: N7
 ■ Bandwidth: 25 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
502500 (2512.5)	5 025.00	-61.38	11.18	-62.15	3.68	H	-54.65	-25.00	1	66
	7 537.50	-63.17	11.58	-55.64	4.61	H	-48.67			
	10 050.00	-62.44	11.43	-53.24	5.48	H	-47.29			
507000 (2535.0)	5 070.00	-61.27	11.25	-62.43	3.80	H	-54.98		1	66
	7 605.00	-62.30	11.60	-55.25	4.64	H	-48.29			
	10 140.00	-59.68	11.36	-49.74	5.48	H	-43.86			
511500 (2557.5)	5 115.00	-60.62	11.36	-62.00	3.80	H	-54.44		1	1
	7 672.50	-63.15	11.48	-55.58	4.70	H	-48.80			
	10 230.00	-62.31	11.43	-51.40	5.54	H	-45.51			

■ NR Band: N7
 ■ Bandwidth: 30 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
503000 (2515.0)	5 030.00	-61.45	11.19	-62.29	3.67	H	-54.77	-25.00	1	80
	7 545.00	-63.08	11.58	-55.62	4.62	H	-48.66			
	10 060.00	-62.51	11.42	-53.39	5.48	H	-47.45			
507000 (2535.0)	5 070.00	-61.19	11.25	-62.35	3.80	H	-54.90		1	80
	7 605.00	-62.32	11.60	-55.27	4.64	H	-48.31			
	10 140.00	-59.74	11.36	-49.80	5.48	H	-43.92			
511000 (2555.0)	5 110.00	-60.57	11.34	-61.96	3.79	H	-54.41		1	1
	7 665.00	-63.17	11.50	-55.88	4.70	H	-49.08			
	10 220.00	-62.35	11.42	-51.97	5.54	H	-46.09			

■ NR Band: N7
 ■ Bandwidth: 35 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
503500 (2517.5)	5 035.00	-61.38	11.19	-62.32	3.67	H	-54.80	-25.00	1	186
	7 552.50	-63.10	11.59	-55.64	4.63	H	-48.68			
	10 070.00	-62.50	11.42	-53.18	5.47	H	-47.23			
507000 (2535.0)	5 070.00	-61.28	11.25	-62.44	3.80	H	-54.99		1	94
	7 605.00	-62.32	11.60	-55.27	4.64	H	-48.31			
	10 140.00	-59.67	11.36	-49.73	5.48	H	-43.85			
510500 (2552.5)	5 105.00	-60.57	11.32	-61.85	3.79	H	-54.32		1	1
	7 657.50	-63.16	11.51	-56.08	4.69	H	-49.26			
	10 210.00	-62.30	11.40	-52.28	5.54	H	-46.42			

■ NR Band: N7
 ■ Bandwidth: 40 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
504000 (2520.0)	5 040.00	-61.43	11.20	-62.47	3.68	H	-54.95	-25.00	1	214
	7 560.00	-63.13	11.60	-55.59	4.64	H	-48.63			
	10 080.00	-62.47	11.41	-53.46	5.47	H	-47.52			
507000 (2535.0)	5 070.00	-61.27	11.25	-62.43	3.80	H	-54.98		1	108
	7 605.00	-62.36	11.60	-55.31	4.64	H	-48.35			
	10 140.00	-59.74	11.36	-49.80	5.48	H	-43.92			
510000 (2550.0)	5 100.00	-60.63	11.31	-61.82	3.78	H	-54.29		1	108
	7 650.00	-63.20	11.52	-56.07	4.68	H	-49.23			
	10 200.00	-62.32	11.38	-52.16	5.54	H	-46.32			

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n7	5 MHz	2535.0	BPSK	25	0	3.49
			QPSK			4.56
			16-QAM			5.44
			64-QAM			5.74
			256-QAM			6.49
	10 MHz		BPSK	50		3.63
			QPSK			4.70
			16-QAM			5.41
			64-QAM			5.87
			256-QAM			6.50
	15 MHz		BPSK	75		3.78
			QPSK			4.69
			16-QAM			5.54
			64-QAM			5.75
			256-QAM			6.27
	20 MHz		BPSK	100		3.89
			QPSK			4.70
			16-QAM			5.50
			64-QAM			5.88
			256-QAM			6.43
	25 MHz		BPSK	128		3.99
			QPSK			4.83
			16-QAM			5.61
			64-QAM			5.84
			256-QAM			6.36
	30 MHz		BPSK	160		3.61
			QPSK			4.69
			16-QAM			5.57
			64-QAM			5.89
			256-QAM			6.28

	35 MHz		BPSK	180		4.08
			QPSK			4.90
			16-QAM			5.73
			64-QAM			5.96
			256-QAM			6.32
	40 MHz		BPSK	216		3.67
			QPSK			4.76
			16-QAM			5.63
			64-QAM			5.96
			256-QAM			6.38

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 89 ~ 128.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n7	5 MHz	2535.0	BPSK	25	0	4.5199
			QPSK			4.4859
			16-QAM			4.4911
			64-QAM			4.5175
			256-QAM			4.5269
	10 MHz		BPSK	50		8.9865
			QPSK			9.0135
			16-QAM			8.9906
			64-QAM			8.9613
			256-QAM			8.9828
	15 MHz		BPSK	75		13.477
			QPSK			13.489
			16-QAM			13.503
			64-QAM			13.512
			256-QAM			13.444
	20 MHz		BPSK	100		17.918
			QPSK			17.946
			16-QAM			17.902
			64-QAM			17.932
			256-QAM			17.974
	25 MHz		BPSK	128		22.982
			QPSK			22.883
			16-QAM			22.864
			64-QAM			22.913
			256-QAM			22.922
	30 MHz		BPSK	160		28.587
			QPSK			28.657
			16-QAM			28.619
			64-QAM			28.596
			256-QAM			28.547

	35 MHz		BPSK	180		32.242
			QPSK			32.245
			16-QAM			32.188
			64-QAM			32.212
			256-QAM			32.235
	40 MHz		BPSK	216		38.601
			QPSK			38.661
			16-QAM			38.662
			64-QAM			38.538
			256-QAM			38.643

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 129 ~ 168.

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 n7	5	2502.500	6.0768	30.815	-70.374	-39.559	-25.00
		2535.000	8.8759	30.815	-70.198	-39.383	
		2567.500	9.4422	30.815	-70.858	-40.043	
	10	2505.000	9.6979	30.815	-69.600	-38.785	
		2535.000	3.7334	30.200	-71.055	-40.855	
		2565.000	3.7523	30.200	-70.223	-40.023	
	15	2507.500	5.2294	30.815	-69.391	-38.576	
		2535.000	5.9716	30.815	-70.570	-39.755	
		2562.500	3.1052	30.200	-70.325	-40.125	
	20	2510.000	9.9731	30.815	-70.174	-39.359	
		2535.000	8.5733	30.815	-70.713	-39.898	
		2560.000	3.7603	30.200	-70.245	-40.045	
	25	2512.500	6.9223	30.815	-70.897	-40.082	
		2535.000	8.8151	30.815	-70.395	-39.580	
		2557.500	8.0145	30.815	-71.188	-40.373	
	30	2515.000	3.7952	30.200	-70.804	-40.604	
		2535.000	8.2298	30.815	-70.649	-39.834	
		2555.000	9.6740	30.815	-70.218	-39.403	
	35	2517.500	9.6844	30.815	-70.403	-39.588	
		2535.000	8.0010	30.815	-70.314	-39.499	
		2552.500	8.2428	30.815	-70.869	-40.054	
	40	2520.000	8.2722	30.815	-70.157	-39.342	
		2535.000	9.7642	30.815	-71.121	-40.306	
		2550.000	3.7857	30.200	-70.629	-40.429	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 225 ~ 272.
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.494
1 – 5	30.200
5 – 10	30.815
10 – 15	31.340
15 – 20	31.713
Above 20	32.355

8.6 CHANNEL EDGE

BW (MHz)	Frequency (MHz)	Mod	RB (Size/ Offset)	2 500 MHz ~ 2 496 MHz	C.E ~ (C.E +1 MHz)	2 490.5 MHz ~ 2 496 MHz	(C.E + 1 MHz) ~ (C.E + 5 MHz)	Below 2 490.5 MHz	(C.E + 5 MHz) ~ (C.E + X MHz)	Above (C.E + X MHz)
				Lower	Upper	Lower	Upper	Lower	Upper	Upper
5	2502.500	BPSK	Full RB	-23.24	-24.28	-37.62	-25.85	-54.72	-40.23	-41.62
10	2505.000	BPSK	Full RB	-24.74	-26.87	-31.68	-24.32	-44.93	-30.32	-41.55
15	2507.500	BPSK	Full RB	-27.47	-34.02	-35.01	-31.31	-36.34	-31.03	-48.09
20	2510.000	BPSK	Full RB	-26.42	-26.66	-32.34	-25.76	-33.67	-30.36	-45.32
25	2512.500	BPSK	Full RB	-28.44	-33.13	-35.58	-32.84	-33.98	-33.15	-50.72
30	2515.000	BPSK	Full RB	-26.27	-25.65	-29.93	-24.55	-33.03	-28.50	-45.24
35	2517.500	BPSK	Full RB	-26.71	-30.54	-32.73	-28.76	-33.75	-31.03	-49.45
40	2520.000	BPSK	Full RB	-17.74	-16.23	-28.83	-24.75	-30.65	-28.07	-53.32
Limit(dBm)				-10.0	-10.0	-13.0	-10.0	-25.0	-13.0	-25.0

BW (MHz)	Frequency (MHz)	Mod	RB (Size/ Offset)	C.E ~ (C.E ± 1 MHz)		(C.E ± 1 MHz) ~ (C.E ± 5 MHz)	
				Lower	Upper	Lower	Upper
5	2535.000	BPSK	Full RB	-21.83	-22.57	-22.38	-20.33
	2567.500	BPSK	Full RB	-20.91	-22.78	-24.03	-22.75
10	2535.000	BPSK	Full RB	-22.24	-25.78	-23.09	-21.98
	2565.000	BPSK	Full RB	-25.20	-29.37	-26.02	-26.92
15	2535.000	BPSK	Full RB	-24.17	-26.14	-24.08	-22.45
	2562.500	BPSK	Full RB	-25.96	-31.50	-25.97	-28.52
20	2535.000	BPSK	Full RB	-22.59	-25.16	-22.74	-22.35
	2560.000	BPSK	Full RB	-24.23	-30.54	-25.42	-29.03
25	2535.000	BPSK	Full RB	-24.61	-25.08	-23.66	-22.00
	2557.500	BPSK	Full RB	-22.61	-26.41	-21.94	-25.96
30	2535.000	BPSK	Full RB	-25.07	-23.16	-25.97	-24.72
	2555.000	BPSK	Full RB	-21.88	-23.03	-21.86	-23.58
35	2535.000	BPSK	Full RB	-23.60	-25.66	-23.82	-23.84
	2552.500	BPSK	Full RB	-21.81	-24.73	-22.29	-23.29
40 MHz	2535.000	BPSK	Full RB	-16.24	-17.93	-26.68	-25.03
	2550.000	BPSK	Full RB	-16.00	-16.70	-24.38	-24.27
Limi(dBm)				-10.0		-10.0	

BW (MHz)	Frequency (MHz)	Mod	RB (Size/ Offset)	(C.E $\pm$ 5 MHz) ~ (C.E $\pm$ X MHz)		Above (C.E $\pm$ X MHz)	
				Lower	Upper	Lower	Upper
5	2535.000	BPSK	Full RB	-36.96	-36.72	-38.19	-38.65
	2567.500	BPSK	Full RB	-38.80	-47.08	-38.88	-49.62
10	2535.000	BPSK	Full RB	-26.77	-22.75	-41.99	-43.55
	2565.000	BPSK	Full RB	-30.02	-30.11	-42.25	-54.60
15	2535.000	BPSK	Full RB	-27.44	-23.14	-41.99	-41.98
	2562.500	BPSK	Full RB	-27.33	-31.76	-45.89	-55.35
20	2535.000	BPSK	Full RB	-26.05	-23.02	-44.88	-42.12
	2560.000	BPSK	Full RB	-28.65	-38.00	-52.24	-55.65
25	2535.000	BPSK	Full RB	-27.85	-24.97	-46.18	-42.62
	2557.500	BPSK	Full RB	-26.09	-33.90	-45.51	-55.51
30	2535.000	BPSK	Full RB	-30.65	-27.72	-51.51	-55.02
	2555.000	BPSK	Full RB	-23.54	-29.36	-44.18	-55.45
35	2535.000	BPSK	Full RB	-25.89	-26.22	-55.76	-55.60
	2552.500	BPSK	Full RB	-23.26	-30.65	-49.15	-55.45
40	2535.000	BPSK	Full RB	-29.67	-29.01	-55.70	-55.46
	2550.000	BPSK	Full RB	-25.25	-30.07	-49.44	-55.51
Limit(dBm)				-13.0		-25.0	

Note:

1. C.E = Channel Edge
2. X = X is the greater of 6 MHz or the actual emission bandwidth
3. Duty Cycle factor already applied on the factor.
 - Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter
 - Result(dBm) = Reading + Factor
4. Plots of the EUT's Channel Edge are shown Page 169 ~ 224.

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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2502.500	100 %	+20(Ref)	2502 499 992	0.0	0.000 000	0.000
	100 %	-30	2502 499 985	-6.6	0.000 000	-0.003
	100 %	-20	2502 499 986	-6.3	0.000 000	-0.003
	100 %	-10	2502 499 986	-6.0	0.000 000	-0.002
	100 %	0	2502 499 985	-6.7	0.000 000	-0.003
	100 %	+10	2502 499 986	-5.7	0.000 000	-0.002
	100 %	+30	2502 499 987	-4.8	0.000 000	-0.002
	100 %	+40	2502 499 986	-6.4	0.000 000	-0.003
	100 %	+50	2502 499 985	-7.4	0.000 000	-0.003
	Batt. Endpoint	+20	2502 499 985	-7.1	0.000 000	-0.003
2567.500	100 %	+20(Ref)	2567 499 999	0.0	0.000 000	0.000
	100 %	-30	2567 499 996	-2.6	0.000 000	-0.001
	100 %	-20	2567 499 995	-4.0	0.000 000	-0.002
	100 %	-10	2567 499 997	-1.4	0.000 000	-0.001
	100 %	0	2567 499 995	-3.9	0.000 000	-0.002
	100 %	+10	2567 499 997	-2.2	0.000 000	-0.001
	100 %	+30	2567 499 995	-3.6	0.000 000	-0.001
	100 %	+40	2567 499 996	-3.3	0.000 000	-0.001
	100 %	+50	2567 499 995	-4.1	0.000 000	-0.002
	Batt. Endpoint	+20	2567 499 997	-1.4	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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2505.000	100 %	+20(Ref)	2505 000 002	0.0	0.000 000	0.000
	100 %	-30	2505 000 004	2.3	0.000 000	0.001
	100 %	-20	2505 000 005	3.6	0.000 000	0.001
	100 %	-10	2505 000 005	3.1	0.000 000	0.001
	100 %	0	2505 000 005	3.3	0.000 000	0.001
	100 %	+10	2505 000 005	3.6	0.000 000	0.001
	100 %	+30	2505 000 006	4.4	0.000 000	0.002
	100 %	+40	2505 000 003	1.2	0.000 000	0.000
	100 %	+50	2505 000 004	2.4	0.000 000	0.001
	Batt. Endpoint	+20	2505 000 005	3.6	0.000 000	0.001
2565.000	100 %	+20(Ref)	2564 999 998	0.0	0.000 000	0.000
	100 %	-30	2565 000 001	2.5	0.000 000	0.001
	100 %	-20	2564 999 996	-1.6	0.000 000	-0.001
	100 %	-10	2564 999 996	-2.5	0.000 000	-0.001
	100 %	0	2564 999 997	-0.9	0.000 000	0.000
	100 %	+10	2565 000 000	1.9	0.000 000	0.001
	100 %	+30	2564 999 999	0.6	0.000 000	0.000
	100 %	+40	2564 999 998	-0.5	0.000 000	0.000
	100 %	+50	2565 000 000	2.2	0.000 000	0.001
	Batt. Endpoint	+20	2564 999 999	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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2507.500	100 %	+20(Ref)	2507 500 003	0.0	0.000 000	0.000
	100 %	-30	2507 500 005	2.5	0.000 000	0.001
	100 %	-20	2507 500 004	1.7	0.000 000	0.001
	100 %	-10	2507 500 004	1.7	0.000 000	0.001
	100 %	0	2507 500 004	1.4	0.000 000	0.001
	100 %	+10	2507 500 004	1.3	0.000 000	0.001
	100 %	+30	2507 500 004	1.7	0.000 000	0.001
	100 %	+40	2507 500 005	2.5	0.000 000	0.001
	100 %	+50	2507 500 005	2.7	0.000 000	0.001
	Batt. Endpoint	+20	2507 500 005	2.0	0.000 000	0.001
2562.500	100 %	+20(Ref)	2562 500 001	0.0	0.000 000	0.000
	100 %	-30	2562 500 002	1.8	0.000 000	0.001
	100 %	-20	2562 500 001	-0.1	0.000 000	0.000
	100 %	-10	2562 500 003	2.1	0.000 000	0.001
	100 %	0	2562 500 002	1.8	0.000 000	0.001
	100 %	+10	2562 500 003	2.3	0.000 000	0.001
	100 %	+30	2562 500 004	3.1	0.000 000	0.001
	100 %	+40	2562 500 003	2.3	0.000 000	0.001
	100 %	+50	2562 500 004	3.4	0.000 000	0.001
	Batt. Endpoint	+20	2562 500 003	2.7	0.000 000	0.001

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2510.000	100 %	+20(Ref)	2509 999 998	0.0	0.000 000	0.000
	100 %	-30	2509 999 996	-2.1	0.000 000	-0.001
	100 %	-20	2509 999 996	-2.5	0.000 000	-0.001
	100 %	-10	2509 999 996	-2.7	0.000 000	-0.001
	100 %	0	2509 999 997	-1.5	0.000 000	-0.001
	100 %	+10	2509 999 996	-2.7	0.000 000	-0.001
	100 %	+30	2509 999 996	-2.7	0.000 000	-0.001
	100 %	+40	2509 999 996	-2.7	0.000 000	-0.001
	100 %	+50	2509 999 998	-0.9	0.000 000	0.000
	Batt. Endpoint	+20	2509 999 996	-2.8	0.000 000	-0.001
2560.000	100 %	+20(Ref)	2560 000 002	0.0	0.000 000	0.000
	100 %	-30	2559 999 999	-3.4	0.000 000	-0.001
	100 %	-20	2560 000 000	-1.5	0.000 000	-0.001
	100 %	-10	2560 000 001	-0.7	0.000 000	0.000
	100 %	0	2560 000 002	0.3	0.000 000	0.000
	100 %	+10	2560 000 004	2.1	0.000 000	0.001
	100 %	+30	2560 000 004	2.4	0.000 000	0.001
	100 %	+40	2560 000 005	3.1	0.000 000	0.001
	100 %	+50	2560 000 002	-0.1	0.000 000	0.000
	Batt. Endpoint	+20	2560 000 006	3.8	0.000 000	0.002

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2512.500	100 %	+20(Ref)	2512 500 007	0.0	0.000 000	0.000
	100 %	-30	2512 500 012	5.2	0.000 000	0.002
	100 %	-20	2512 500 012	5.2	0.000 000	0.002
	100 %	-10	2512 500 014	6.7	0.000 000	0.003
	100 %	0	2512 500 011	3.8	0.000 000	0.002
	100 %	+10	2512 500 014	6.6	0.000 000	0.003
	100 %	+30	2512 500 014	6.5	0.000 000	0.003
	100 %	+40	2512 500 014	6.9	0.000 000	0.003
	100 %	+50	2512 500 013	5.8	0.000 000	0.002
	Batt. Endpoint	+20	2512 500 014	7.2	0.000 000	0.003
2557.500	100 %	+20(Ref)	2557 500 008	0.0	0.000 000	0.000
	100 %	-30	2557 500 016	8.8	0.000 000	0.003
	100 %	-20	2557 500 015	7.1	0.000 000	0.003
	100 %	-10	2557 500 017	9.8	0.000 000	0.004
	100 %	0	2557 500 018	10.2	0.000 000	0.004
	100 %	+10	2557 500 017	8.9	0.000 000	0.003
	100 %	+30	2557 500 018	10.6	0.000 000	0.004
	100 %	+40	2557 500 015	7.7	0.000 000	0.003
	100 %	+50	2557 500 017	9.5	0.000 000	0.004
	Batt. Endpoint	+20	2557 500 017	9.4	0.000 000	0.004

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2515.000	100 %	+20(Ref)	2515 000 007	0.0	0.000 000	0.000
	100 %	-30	2515 000 013	5.3	0.000 000	0.002
	100 %	-20	2515 000 013	5.7	0.000 000	0.002
	100 %	-10	2515 000 013	6.1	0.000 000	0.002
	100 %	0	2515 000 015	7.7	0.000 000	0.003
	100 %	+10	2515 000 014	6.3	0.000 000	0.003
	100 %	+30	2515 000 016	8.2	0.000 000	0.003
	100 %	+40	2515 000 012	5.1	0.000 000	0.002
	100 %	+50	2515 000 014	6.6	0.000 000	0.003
	Batt. Endpoint	+20	2515 000 011	4.0	0.000 000	0.002
2555.000	100 %	+20(Ref)	2555 000 003	0.0	0.000 000	0.000
	100 %	-30	2555 000 004	1.4	0.000 000	0.001
	100 %	-20	2555 000 007	3.6	0.000 000	0.001
	100 %	-10	2555 000 007	3.6	0.000 000	0.001
	100 %	0	2555 000 004	0.8	0.000 000	0.000
	100 %	+10	2555 000 005	2.2	0.000 000	0.001
	100 %	+30	2555 000 006	2.5	0.000 000	0.001
	100 %	+40	2555 000 007	3.7	0.000 000	0.001
	100 %	+50	2555 000 009	5.7	0.000 000	0.002
	Batt. Endpoint	+20	2555 000 005	1.9	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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2517.500	100 %	+20(Ref)	2517 500 010	0.0	0.000 000	0.000
	100 %	-30	2517 500 018	8.3	0.000 000	0.003
	100 %	-20	2517 500 017	7.2	0.000 000	0.003
	100 %	-10	2517 500 016	6.5	0.000 000	0.003
	100 %	0	2517 500 017	7.8	0.000 000	0.003
	100 %	+10	2517 500 018	8.6	0.000 000	0.003
	100 %	+30	2517 500 017	7.3	0.000 000	0.003
	100 %	+40	2517 500 017	7.9	0.000 000	0.003
	100 %	+50	2517 500 016	6.4	0.000 000	0.003
	Batt. Endpoint	+20	2517 500 017	7.8	0.000 000	0.003
2552.500	100 %	+20(Ref)	2552 500 003	0.0	0.000 000	0.000
	100 %	-30	2552 500 011	8.0	0.000 000	0.003
	100 %	-20	2552 500 011	8.0	0.000 000	0.003
	100 %	-10	2552 500 013	9.4	0.000 000	0.004
	100 %	0	2552 500 013	10.1	0.000 000	0.004
	100 %	+10	2552 500 011	7.6	0.000 000	0.003
	100 %	+30	2552 500 011	8.2	0.000 000	0.003
	100 %	+40	2552 500 013	9.4	0.000 000	0.004
	100 %	+50	2552 500 011	7.5	0.000 000	0.003
	Batt. Endpoint	+20	2552 500 006	2.3	0.000 000	0.001

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2520.000	100 %	+20(Ref)	2520 000 004	0.0	0.000 000	0.000
	100 %	-30	2520 000 007	2.9	0.000 000	0.001
	100 %	-20	2520 000 007	2.9	0.000 000	0.001
	100 %	-10	2520 000 010	6.1	0.000 000	0.002
	100 %	0	2520 000 008	3.7	0.000 000	0.001
	100 %	+10	2520 000 008	3.5	0.000 000	0.001
	100 %	+30	2520 000 007	3.2	0.000 000	0.001
	100 %	+40	2520 000 006	1.8	0.000 000	0.001
	100 %	+50	2520 000 009	5.2	0.000 000	0.002
	Batt. Endpoint	+20	2520 000 008	4.3	0.000 000	0.002
2550.000	100 %	+20(Ref)	2550 000 005	0.0	0.000 000	0.000
	100 %	-30	2550 000 012	6.6	0.000 000	0.003
	100 %	-20	2550 000 011	5.8	0.000 000	0.002
	100 %	-10	2550 000 011	6.3	0.000 000	0.002
	100 %	0	2550 000 011	5.7	0.000 000	0.002
	100 %	+10	2550 000 011	6.0	0.000 000	0.002
	100 %	+30	2550 000 012	6.7	0.000 000	0.003
	100 %	+40	2550 000 013	7.8	0.000 000	0.003
	100 %	+50	2550 000 009	4.2	0.000 000	0.002
	Batt. Endpoint	+20	2550 000 009	3.7	0.000 000	0.001

9. TEST DATA(Sub 2 ANT)

9.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)			W	W	dBm	Size	Offset
2502.5	Sub6 n7/ 5 MHz [15 kHz]	PI/2 BPSK	-21.79	15.07	10.58	2.51	H	< 2.00	0.206	23.14	1	1
		QPSK	-21.85	15.01	10.58	2.51	H		0.203	23.08		
		16-QAM	-22.86	14.00	10.58	2.51	H		0.161	22.07		
		64-QAM	-24.13	12.73	10.58	2.51	H		0.120	20.80		
		256-QAM	-26.78	10.08	10.58	2.51	H		0.065	18.15		
2535.0		PI/2 BPSK	-22.45	14.01	10.59	2.54	H		0.161	22.06	1	12
		QPSK	-22.51	13.95	10.59	2.54	H		0.159	22.00		
		16-QAM	-23.59	12.87	10.59	2.54	H		0.124	20.92		
		64-QAM	-24.99	11.47	10.59	2.54	H		0.090	19.52		
		256-QAM	-27.52	8.94	10.59	2.54	H		0.050	16.99		
2567.5		PI/2 BPSK	-24.52	12.57	10.83	2.65	H		0.119	20.75	1	1
		QPSK	-24.69	12.40	10.83	2.65	H		0.114	20.58		
		16-QAM	-25.68	11.41	10.83	2.65	H		0.091	19.59		
		64-QAM	-27.03	10.06	10.83	2.65	H		0.067	18.24		
		256-QAM	-29.63	7.46	10.83	2.65	H		0.037	15.64		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2505.0	Sub6 n7/ 10 MHz [15 kHz]	Pl/2 BPSK	-21.62	15.24	10.58	2.51	H	< 2.00	0.214	23.31	1	1
		QPSK	-21.75	15.11	10.58	2.51	H		0.208	23.18		
		16-QAM	-22.85	14.01	10.58	2.51	H		0.161	22.08		
		64-QAM	-24.12	12.74	10.58	2.51	H		0.121	20.81		
		256-QAM	-26.85	10.01	10.58	2.51	H		0.064	18.08		
2535.0		Pl/2 BPSK	-22.54	13.92	10.59	2.54	H		0.157	21.97	1	1
		QPSK	-22.61	13.85	10.59	2.54	H		0.155	21.90		
		16-QAM	-23.83	12.63	10.59	2.54	H		0.117	20.68		
		64-QAM	-25.15	11.31	10.59	2.54	H		0.086	19.36		
		256-QAM	-27.85	8.61	10.59	2.54	H		0.046	16.66		
2565.0	Pl/2 BPSK	-24.53	12.55	10.79	2.62	H	0.118	20.72	1	1		
	QPSK	-24.65	12.43	10.79	2.62	H	0.115	20.60				
	16-QAM	-25.73	11.35	10.79	2.62	H	0.090	19.52				
	64-QAM	-27.15	9.93	10.79	2.62	H	0.065	18.10				
	256-QAM	-29.70	7.38	10.79	2.62	H	0.036	15.55				

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)			W	W	dBm	Size	Offset
2507.5	Sub6 n7/ 15 MHz [15 kHz]	PI/2 BPSK	-21.65	15.27	10.55	2.51	H	< 2.00	0.214	23.31	1	1
		QPSK	-21.92	15.00	10.55	2.51	H		0.201	23.04		
		16-QAM	-22.79	14.13	10.55	2.51	H		0.165	22.17		
		64-QAM	-24.15	12.77	10.55	2.51	H		0.121	20.81		
		256-QAM	-26.70	10.22	10.55	2.51	H		0.067	18.26		
2535.0		PI/2 BPSK	-22.29	14.17	10.59	2.54	H		0.167	22.22	1	1
		QPSK	-22.47	13.99	10.59	2.54	H		0.160	22.04		
		16-QAM	-23.53	12.93	10.59	2.54	H		0.125	20.98		
		64-QAM	-24.94	11.52	10.59	2.54	H		0.091	19.57		
		256-QAM	-27.44	9.02	10.59	2.54	H		0.051	17.07		
2562.5		PI/2 BPSK	-23.93	13.15	10.79	2.62	H		0.136	21.32	1	1
		QPSK	-24.11	12.97	10.79	2.62	H		0.130	21.14		
		16-QAM	-25.11	11.97	10.79	2.62	H		0.103	20.14		
		64-QAM	-26.45	10.63	10.79	2.62	H		0.076	18.80		
		256-QAM	-29.04	8.04	10.79	2.62	H		0.042	16.21		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2510.0	Sub6 n7/ 20 MHz [15 kHz]	Pl/2 BPSK	-21.80	15.12	10.55	2.51	H	< 2.00	0.207	23.16	1	1
		QPSK	-21.91	15.01	10.55	2.51	H		0.202	23.05		
		16-QAM	-22.85	14.07	10.55	2.51	H		0.163	22.11		
		64-QAM	-24.15	12.77	10.55	2.51	H		0.121	20.81		
		256-QAM	-26.89	10.03	10.55	2.51	H		0.064	18.07		
2535.0		Pl/2 BPSK	-22.28	14.18	10.59	2.54	H		0.167	22.23	1	1
		QPSK	-22.31	14.15	10.59	2.54	H		0.166	22.20		
		16-QAM	-23.40	13.06	10.59	2.54	H		0.129	21.11		
		64-QAM	-24.78	11.68	10.59	2.54	H		0.094	19.73		
		256-QAM	-27.37	9.09	10.59	2.54	H		0.052	17.14		
2560.0		Pl/2 BPSK	-23.52	13.54	10.76	2.59	H	0.148	21.71	1	1	
		QPSK	-23.62	13.44	10.76	2.59	H	0.145	21.61			
		16-QAM	-24.75	12.31	10.76	2.59	H	0.112	20.48			
		64-QAM	-26.03	11.03	10.76	2.59	H	0.083	19.20			
		256-QAM	-28.71	8.35	10.76	2.59	H	0.045	16.52			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2512.5	Sub6 n7/ 25 MHz [15 kHz]	PI/2 BPSK	-21.48	15.45	10.52	2.53	H	< 2.00	0.221	23.44	1	1
		QPSK	-21.83	15.10	10.52	2.53	H		0.204	23.09		
		16-QAM	-22.62	14.31	10.52	2.53	H		0.170	22.30		
		64-QAM	-24.04	12.89	10.52	2.53	H		0.123	20.88		
		256-QAM	-26.52	10.41	10.52	2.53	H		0.069	18.40		
2535.0		PI/2 BPSK	-22.16	14.30	10.59	2.54	H		0.172	22.35	1	1
		QPSK	-22.17	14.29	10.59	2.54	H		0.171	22.34		
		16-QAM	-23.28	13.18	10.59	2.54	H		0.133	21.23		
		64-QAM	-24.67	11.79	10.59	2.54	H		0.096	19.84		
		256-QAM	-27.21	9.25	10.59	2.54	H		0.054	17.30		
2557.5		PI/2 BPSK	-23.24	13.82	10.76	2.59	H	0.158	21.99	1	1	
		QPSK	-23.31	13.75	10.76	2.59	H	0.156	21.92			
		16-QAM	-24.45	12.61	10.76	2.59	H	0.120	20.78			
		64-QAM	-25.64	11.42	10.76	2.59	H	0.091	19.59			
		256-QAM	-28.30	8.76	10.76	2.59	H	0.049	16.93			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2515.0	Sub6 n7/ 30 MHz [15 kHz]	Pl/2 BPSK	-21.47	15.46	10.52	2.53	H	< 2.00	0.221	23.45	1	1
		QPSK	-21.70	15.23	10.52	2.53	H		0.210	23.22		
		16-QAM	-22.75	14.18	10.52	2.53	H		0.165	22.17		
		64-QAM	-23.97	12.96	10.52	2.53	H		0.125	20.95		
		256-QAM	-26.63	10.30	10.52	2.53	H		0.068	18.29		
2535.0		Pl/2 BPSK	-21.96	14.50	10.59	2.54	H		0.180	22.55	1	1
		QPSK	-22.06	14.40	10.59	2.54	H		0.176	22.45		
		16-QAM	-23.13	13.33	10.59	2.54	H		0.137	21.38		
		64-QAM	-24.54	11.92	10.59	2.54	H		0.099	19.97		
		256-QAM	-27.10	9.36	10.59	2.54	H		0.055	17.41		
2555.0		Pl/2 BPSK	-22.72	14.08	10.72	2.56	H	0.168	22.24	1	1	
		QPSK	-22.91	13.89	10.72	2.56	H	0.160	22.05			
		16-QAM	-23.90	12.90	10.72	2.56	H	0.128	21.06			
		64-QAM	-25.23	11.57	10.72	2.56	H	0.094	19.73			
		256-QAM	-27.80	9.00	10.72	2.56	H	0.052	17.16			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2517.5	Sub6 n7/ 35 MHz [15 kHz]	Pl/2 BPSK	-21.62	15.31	10.49	2.54	H	< 2.00	0.212	23.26	1	1
		QPSK	-21.82	15.11	10.49	2.54	H		0.202	23.06		
		16-QAM	-22.68	14.25	10.49	2.54	H		0.166	22.20		
		64-QAM	-24.04	12.89	10.49	2.54	H		0.121	20.84		
		256-QAM	-26.62	10.31	10.49	2.54	H		0.067	18.26		
2535.0		Pl/2 BPSK	-22.12	14.34	10.59	2.54	H		0.173	22.39	1	1
		QPSK	-22.16	14.30	10.59	2.54	H		0.172	22.35		
		16-QAM	-23.18	13.28	10.59	2.54	H		0.136	21.33		
		64-QAM	-24.56	11.90	10.59	2.54	H		0.099	19.95		
		256-QAM	-27.05	9.41	10.59	2.54	H		0.056	17.46		
2552.5		Pl/2 BPSK	-22.58	14.22	10.72	2.56	H		0.173	22.38	1	1
		QPSK	-22.70	14.10	10.72	2.56	H		0.168	22.26		
		16-QAM	-23.74	13.06	10.72	2.56	H		0.132	21.22		
		64-QAM	-25.01	11.79	10.72	2.56	H		0.099	19.95		
		256-QAM	-27.61	9.19	10.72	2.56	H		0.054	17.35		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EIRP		RB	
			Level (dBm)	Level (dBm)	Gain (dBi)				W	W	dBm	Size
2520.0		PI/2 BPSK	-21.48	15.45	10.49	2.54	H		0.219	23.40	1	1
		QPSK	-21.65	15.28	10.49	2.54	H		0.210	23.23		
		16-QAM	-22.65	14.28	10.49	2.54	H		0.167	22.23		
		64-QAM	-24.05	12.88	10.49	2.54	H		0.121	20.83		
		256-QAM	-26.51	10.42	10.49	2.54	H		0.069	18.37		
2535.0	Sub6 n7/ 40 MHz [15 kHz]	PI/2 BPSK	-21.86	14.60	10.59	2.54	H	< 2.00	0.184	22.65	1	1
		QPSK	-21.94	14.52	10.59	2.54	H		0.181	22.57		
		16-QAM	-23.07	13.39	10.59	2.54	H		0.139	21.44		
		64-QAM	-24.42	12.04	10.59	2.54	H		0.102	20.09		
		256-QAM	-26.95	9.51	10.59	2.54	H		0.057	17.56		
2550.0		PI/2 BPSK	-22.52	14.01	10.69	2.53	H		0.165	22.17	1	1
		QPSK	-22.56	13.97	10.69	2.53	H		0.163	22.13		
		16-QAM	-23.65	12.88	10.69	2.53	H		0.127	21.04		
		64-QAM	-24.95	11.58	10.69	2.53	H		0.094	19.74		
		256-QAM	-27.47	9.06	10.69	2.53	H		0.053	17.22		

9.2 RADIATED SPURIOUS EMISSIONS

NR Band:	<u>N7</u>
Bandwidth:	<u>5 MHz</u>
Modulation:	<u>PI/2 BPSK</u>
Distance:	<u>1 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
500500 (2502.5)	5 005.00	-63.32	11.20	-64.75	3.71	V	-57.26	-25.00	1	1
	7 507.50	-63.87	11.55	-56.33	4.60	V	-49.38			
	10 010.00	-61.77	11.47	-52.69	5.47	V	-46.69			
507000 (2535.0)	5 070.00	-62.47	11.25	-63.63	3.80	V	-56.18		1	12
	7 605.00	-63.67	11.60	-56.62	4.64	V	-49.66			
	10 140.00	-63.30	11.36	-53.36	5.48	V	-47.48			
513500 (2567.5)	5 135.00	-61.77	11.43	-62.70	3.81	V	-55.08		1	1
	7 702.50	-64.53	11.42	-57.00	4.66	V	-50.24			
	10 270.00	-64.77	11.51	-53.51	5.57	V	-47.57			

☐ NR Band: N7
☐ Bandwidth: 10 MHz
☐ Modulation: PI/2 BPSK
☐ Distance: 1 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
501000 (2505.0)	5 010.00	-63.33	11.18	-64.47	3.72	V	-57.01	-25.00	1	1
	7 515.00	-63.95	11.56	-56.37	4.60	V	-49.41			
	10 020.00	-61.78	11.46	-52.10	5.47	V	-46.11			
507000 (2535.0)	5 070.00	-62.52	11.25	-63.68	3.80	V	-56.23		1	1
	7 605.00	-63.69	11.60	-56.64	4.64	V	-49.68			
	10 140.00	-63.37	11.36	-53.43	5.48	V	-47.55			
513000 (2565.0)	5 130.00	-61.83	11.41	-62.80	3.81	V	-55.20		1	1
	7 695.00	-64.61	11.44	-56.88	4.66	V	-50.10			
	10 260.00	-64.83	11.49	-54.21	5.56	V	-48.28			

■ NR Band: N7
 ■ Bandwidth: 15 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
501500 (2507.5)	5 015.00	-63.41	11.17	-64.33	3.70	V	-56.86	-25.00	1	1
	7 522.50	-63.93	11.57	-56.28	4.61	V	-49.32			
	10 030.00	-61.85	11.45	-52.81	5.47	V	-46.83			
507000 (2535.0)	5 070.00	-62.54	11.25	-63.70	3.80	V	-56.25		1	1
	7 605.00	-63.75	11.60	-56.70	4.64	V	-49.74			
	10 140.00	-63.33	11.36	-53.39	5.48	V	-47.51			
512500 (2562.5)	5 125.00	-61.83	11.40	-63.00	3.81	V	-55.41		1	1
	7 687.50	-64.55	11.45	-56.79	4.66	V	-50.00			
	10 250.00	-64.84	11.47	-53.62	5.54	V	-47.69			

☐ NR Band: N7
☐ Bandwidth: 20 MHz
☐ Modulation: PI/2 BPSK
☐ Distance: 1 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
502000 (2510.0)	5 020.00	-63.38	11.17	-64.08	3.69	V	-56.60	-25.00	1	1
	7 530.00	-63.91	11.57	-56.25	4.60	V	-49.28			
	10 040.00	-61.81	11.44	-52.35	5.49	V	-46.40			
507000 (2535.0)	5 070.00	-62.53	11.25	-63.69	3.80	V	-56.24		1	1
	7 605.00	-63.75	11.60	-56.70	4.64	V	-49.74			
	10 140.00	-63.38	11.36	-53.44	5.48	V	-47.56			
512000 (2560.0)	5 120.00	-61.85	11.38	-63.22	3.81	V	-55.65		1	1
	7 680.00	-64.55	11.47	-56.89	4.70	V	-50.12			
	10 240.00	-64.85	11.45	-54.18	5.54	V	-48.27			

☐ NR Band: N7
☐ Bandwidth: 25 MHz
☐ Modulation: PI/2 BPSK
☐ Distance: 1 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
502500 (2512.5)	5 025.00	-63.38	11.18	-64.15	3.68	V	-56.65	-25.00	1	1
	7 537.50	-63.94	11.58	-56.41	4.61	V	-49.44			
	10 050.00	-61.81	11.43	-52.61	5.48	V	-46.66			
507000 (2535.0)	5 070.00	-62.49	11.25	-63.65	3.80	V	-56.20		1	1
	7 605.00	-63.70	11.60	-56.65	4.64	V	-49.69			
	10 140.00	-63.40	11.36	-53.46	5.48	V	-47.58			
511500 (2557.5)	5 115.00	-61.86	11.36	-63.24	3.80	V	-55.68		1	1
	7 672.50	-64.54	11.48	-56.97	4.70	V	-50.19			
	10 230.00	-64.85	11.43	-53.94	5.54	V	-48.05			

■ NR Band: N7
 ■ Bandwidth: 30 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
503000 (2515.0)	5 030.00	-63.33	11.19	-64.17	3.67	V	-56.65	-25.00	1	1
	7 545.00	-63.96	11.58	-56.50	4.62	V	-49.54			
	10 060.00	-61.86	11.42	-52.74	5.48	V	-46.80			
507000 (2535.0)	5 070.00	-62.55	11.25	-63.71	3.80	V	-56.26		1	1
	7 605.00	-63.75	11.60	-56.70	4.64	V	-49.74			
	10 140.00	-63.40	11.36	-53.46	5.48	V	-47.58			
511000 (2555.0)	5 110.00	-61.79	11.34	-63.18	3.79	V	-55.63		1	1
	7 665.00	-64.57	11.50	-57.28	4.70	V	-50.48			
	10 220.00	-64.85	11.42	-54.47	5.54	V	-48.59			

☐ NR Band: N7
☐ Bandwidth: 35 MHz
☐ Modulation: PI/2 BPSK
☐ Distance: 1 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
503500 (2517.5)	5 035.00	-63.39	11.19	-64.33	3.67	V	-56.81	-25.00	1	1
	7 552.50	-63.97	11.59	-56.51	4.63	V	-49.55			
	10 070.00	-61.82	11.42	-52.50	5.47	V	-46.55			
507000 (2535.0)	5 070.00	-62.52	11.25	-63.68	3.80	V	-56.23		1	1
	7 605.00	-63.74	11.60	-56.69	4.64	V	-49.73			
	10 140.00	-63.34	11.36	-53.40	5.48	V	-47.52			
510500 (2552.5)	5 105.00	-61.81	11.32	-63.09	3.79	V	-55.56		1	1
	7 657.50	-64.57	11.51	-57.49	4.69	V	-50.67			
	10 210.00	-64.81	11.40	-54.79	5.54	V	-48.93			

■ NR Band: N7
 ■ Bandwidth: 40 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 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
504000 (2520.0)	5 040.00	-63.40	11.20	-64.44	3.68	V	-56.92	-25.00	1	1
	7 560.00	-63.93	11.60	-56.39	4.64	V	-49.43			
	10 080.00	-61.81	11.41	-52.80	5.47	V	-46.86			
507000 (2535.0)	5 070.00	-62.53	11.25	-63.69	3.80	V	-56.24		1	1
	7 605.00	-63.69	11.60	-56.64	4.64	V	-49.68			
	10 140.00	-63.35	11.36	-53.41	5.48	V	-47.53			
510000 (2550.0)	5 100.00	-61.86	11.31	-63.05	3.78	V	-55.52		1	1
	7 650.00	-64.60	11.52	-57.47	4.68	V	-50.63			
	10 200.00	-64.81	11.38	-54.65	5.54	V	-48.81			

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n7	5 MHz	2535.0	BPSK	25	0	4.35
			QPSK			4.85
			16-QAM			5.91
			64-QAM			6.39
			256-QAM			6.50
	10 MHz		BPSK	50		4.57
			QPSK			5.24
			16-QAM			5.77
			64-QAM			6.30
			256-QAM			6.84
	15 MHz		BPSK	75		4.33
			QPSK			5.22
			16-QAM			5.75
			64-QAM			6.31
			256-QAM			6.59
	20 MHz		BPSK	100		4.72
			QPSK			4.70
			16-QAM			5.93
			64-QAM			6.41
			256-QAM			6.78
	25 MHz		BPSK	128		4.04
			QPSK			4.60
			16-QAM			5.81
			64-QAM			6.18
			256-QAM			6.64
	30 MHz		BPSK	160		4.34
			QPSK			4.98
			16-QAM			6.11
			64-QAM			6.46
			256-QAM			6.69

	35 MHz		BPSK	180		4.18
			QPSK			4.87
			16-QAM			5.91
			64-QAM			6.39
			256-QAM			6.65
	40 MHz		BPSK	216		4.18
			QPSK			4.77
			16-QAM			5.87
			64-QAM			6.31
			256-QAM			6.63

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 274 ~ 313.

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n7	5 MHz	2535.0	BPSK	25	0	4.6274
			QPSK			4.5985
			16-QAM			4.6008
			64-QAM			4.6185
			256-QAM			4.6122
	10 MHz		BPSK	50		8.9801
			QPSK			8.9764
			16-QAM			8.9884
			64-QAM			8.9584
			256-QAM			8.9593
	15 MHz		BPSK	75		13.456
			QPSK			13.486
			16-QAM			13.489
			64-QAM			13.461
			256-QAM			13.489
	20 MHz		BPSK	100		17.935
			QPSK			17.951
			16-QAM			17.996
			64-QAM			17.912
			256-QAM			17.963
	25 MHz		BPSK	128		22.947
			QPSK			22.943
			16-QAM			22.956
			64-QAM			22.949
			256-QAM			22.884
	30 MHz		BPSK	160		28.637
			QPSK			28.634
			16-QAM			28.660
			64-QAM			28.715
			256-QAM			28.620

	35 MHz		BPSK	180		32.226
			QPSK			32.210
			16-QAM			32.302
			64-QAM			32.234
			256-QAM			32.322
	40 MHz		BPSK	216		38.722
			QPSK			38.688
			16-QAM			38.705
			64-QAM			38.698
			256-QAM			38.719

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 314 ~ 353.

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 n7	5	2502.500	3.7393	30.200	-70.388	-40.188	-25.00
		2535.000	9.7099	30.815	-70.976	-40.161	
		2567.500	8.3001	30.815	-71.042	-40.227	
	10	2505.000	3.7553	30.200	-69.871	-39.671	
		2535.000	6.0309	30.815	-70.629	-39.814	
		2565.000	5.1930	30.815	-70.408	-39.593	
	15	2507.500	8.2991	30.815	-70.367	-39.552	
		2535.000	3.7817	30.200	-70.638	-40.438	
		2562.500	4.0325	30.200	-70.758	-40.558	
	20	2510.000	9.1246	30.815	-70.688	-39.873	
		2535.000	9.1481	30.815	-70.209	-39.394	
		2560.000	8.8505	30.815	-70.851	-40.036	
	25	2512.500	8.6057	30.815	-70.657	-39.842	
		2535.000	9.4681	30.815	-70.363	-39.548	
		2557.500	9.1615	30.815	-70.366	-39.551	
	30	2515.000	8.2508	30.815	-69.979	-39.164	
		2535.000	5.1566	30.815	-70.444	-39.629	
		2555.000	9.9950	30.815	-71.450	-40.635	
	35	2517.500	8.3081	30.815	-70.682	-39.867	
		2535.000	9.9621	30.815	-70.581	-39.766	
		2552.500	8.8903	30.815	-70.852	-40.037	
	40	2520.000	5.2259	30.815	-70.370	-39.555	
		2535.000	6.0020	30.815	-70.347	-39.532	
		2550.000	4.0060	30.200	-70.506	-40.306	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 410 ~ 457
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.494
1 – 5	30.200
5 – 10	30.815
10 – 15	31.340
15 – 20	31.713
Above 20	32.355

9.6 CHANNEL EDGE

BW (MHz)	Frequency (MHz)	Mod	RB (Size/ Offset)	2 500 MHz ~ 2 496 MHz	C.E ~ (C.E +1 MHz)	2 490.5 MHz ~ 2 496 MHz	(C.E + 1 MHz) ~ (C.E + 5 MHz)	Below 2 490.5 MHz	(C.E + 5 MHz) ~ (C.E + X MHz)	Above (C.E + X MHz)
				Lower	Upper	Lower	Upper	Lower	Upper	Upper
5	2502.500	BPSK	Full RB	-24.48	-23.20	-41.70	-30.04	-54.57	-39.83	-40.23
10	2505.000	BPSK	Full RB	-30.26	-34.14	-37.82	-32.31	-49.48	-36.19	-44.01
15	2507.500	BPSK	Full RB	-28.21	-36.77	-33.31	-33.08	-39.21	-33.09	-47.08
20	2510.000	BPSK	Full RB	-27.32	-36.83	-32.57	-35.24	-35.84	-34.71	-49.59
25	2512.500	BPSK	Full RB	-31.29	-36.46	-38.06	-35.45	-36.38	-32.66	-53.99
30	2515.000	BPSK	Full RB	-28.33	-30.78	-38.34	-33.63	-39.88	-34.53	-54.67
35	2517.500	BPSK	Full RB	-27.56	-31.46	-33.94	-29.84	-40.30	-33.45	-51.74
40	2520.000	BPSK	Full RB	-17.91	-17.85	-39.98	-34.57	-41.22	-34.47	-55.18
Limit(dBm)				-10.0	-10.0	-13.0	-10.0	-25.0	-13.0	-25.0

BW (MHz)	Frequency (MHz)	Mod	RB (Size/ Offset)	C.E ~ (C.E ± 1 MHz)		(C.E ± 1 MHz) ~ (C.E ± 5 MHz)	
				Lower	Upper	Lower	Upper
5	2535.000	BPSK	Full RB	-22.43	-25.62	-29.69	-31.34
	2567.500	BPSK	Full RB	-23.41	-26.06	-30.34	-34.64
10	2535.000	BPSK	Full RB	-27.23	-33.37	-32.10	-30.60
	2565.000	BPSK	Full RB	-25.20	-38.87	-33.66	-39.91
15	2535.000	BPSK	Full RB	-26.29	-39.27	-36.42	-34.65
	2562.500	BPSK	Full RB	-26.23	-43.24	-35.27	-41.52
20	2535.000	BPSK	Full RB	-29.57	-34.37	-35.46	-34.71
	2560.000	BPSK	Full RB	-26.40	-42.53	-35.74	-42.63
25	2535.000	BPSK	Full RB	-28.16	-38.58	-32.75	-37.38
	2557.500	BPSK	Full RB	-28.99	-37.16	-32.30	-34.55
30	2535.000	BPSK	Full RB	-27.69	-29.23	-29.24	-29.10
	2555.000	BPSK	Full RB	-28.41	-30.32	-34.24	-35.61
35	2535.000	BPSK	Full RB	-27.73	-37.23	-34.15	-34.97
	2552.500	BPSK	Full RB	-25.85	-33.19	-31.32	-35.12
40	2535.000	BPSK	Full RB	-16.63	-18.03	-35.33	-36.31
	2550.000	BPSK	Full RB	-16.73	-19.04	-36.40	-35.83
Limi(dBm)				-10.0		-10.0	

BW (MHz)	Frequency (MHz)	Mod	RB (Size/ Offset)	(C.E $\pm$ 5 MHz) ~ (C.E $\pm$ X MHz)		Above (C.E $\pm$ X MHz)	
				Lower	Upper	Lower	Upper
5	2535.000	BPSK	Full RB	-43.82	-42.14	-46.09	-44.11
	2567.500	BPSK	Full RB	-44.85	-46.21	-46.26	-47.72
10	2535.000	BPSK	Full RB	-37.29	-37.49	-47.42	-43.74
	2565.000	BPSK	Full RB	-38.30	-44.92	-50.16	-51.48
15	2535.000	BPSK	Full RB	-39.62	-34.57	-53.79	-49.08
	2562.500	BPSK	Full RB	-35.55	-41.38	-48.94	-52.85
20	2535.000	BPSK	Full RB	-40.09	-35.07	-53.88	-46.57
	2560.000	BPSK	Full RB	-35.58	-44.12	-50.13	-55.36
25	2535.000	BPSK	Full RB	-38.30	-39.47	-55.16	-54.58
	2557.500	BPSK	Full RB	-35.46	-36.82	-54.56	-55.50
30	2535.000	BPSK	Full RB	-33.77	-36.24	-55.08	-52.36
	2555.000	BPSK	Full RB	-38.87	-39.20	-55.51	-55.66
35	2535.000	BPSK	Full RB	-36.92	-37.27	-55.79	-55.43
	2552.500	BPSK	Full RB	-35.96	-34.93	-55.25	-55.54
40	2535.000	BPSK	Full RB	-37.38	-38.43	-55.99	-55.60
	2550.000	BPSK	Full RB	-39.73	-39.16	-55.60	-55.49
Limit(dBm)				-13.0		-25.0	

Note:

1. C.E = Channel Edge
2. X = X is the greater of 6 MHz or the actual emission bandwidth
3. Duty Cycle factor already applied on the factor.
 - Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter
 - Result(dBm) = Reading + Factor
4. Plots of the EUT's Channel Edge are shown Page 354 ~ 409.

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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2502.500	100 %	+20(Ref)	2502 499 994	0.0	0.000 000	0.000
	100 %	-30	2502 499 987	-6.8	0.000 000	-0.003
	100 %	-20	2502 499 987	-6.8	0.000 000	-0.003
	100 %	-10	2502 499 990	-4.4	0.000 000	-0.002
	100 %	0	2502 499 989	-5.1	0.000 000	-0.002
	100 %	+10	2502 499 987	-6.6	0.000 000	-0.003
	100 %	+30	2502 499 988	-5.6	0.000 000	-0.002
	100 %	+40	2502 499 988	-6.3	0.000 000	-0.003
	100 %	+50	2502 499 987	-6.5	0.000 000	-0.003
	Batt. Endpoint	+20	2502 499 990	-4.0	0.000 000	-0.002
2567.500	100 %	+20(Ref)	2567 499 996	0.0	0.000 000	0.000
	100 %	-30	2567 499 995	-1.0	0.000 000	0.000
	100 %	-20	2567 499 993	-3.1	0.000 000	-0.001
	100 %	-10	2567 499 994	-2.2	0.000 000	-0.001
	100 %	0	2567 499 992	-3.6	0.000 000	-0.001
	100 %	+10	2567 499 991	-4.7	0.000 000	-0.002
	100 %	+30	2567 499 992	-3.7	0.000 000	-0.001
	100 %	+40	2567 499 994	-2.2	0.000 000	-0.001
	100 %	+50	2567 499 992	-4.4	0.000 000	-0.002
	Batt. Endpoint	+20	2567 499 994	-2.0	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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2505.000	100 %	+20(Ref)	2505 000 002	0.0	0.000 000	0.000
	100 %	-30	2505 000 005	2.7	0.000 000	0.001
	100 %	-20	2505 000 007	4.3	0.000 000	0.002
	100 %	-10	2505 000 005	2.4	0.000 000	0.001
	100 %	0	2505 000 004	1.9	0.000 000	0.001
	100 %	+10	2505 000 006	4.1	0.000 000	0.002
	100 %	+30	2505 000 005	3.0	0.000 000	0.001
	100 %	+40	2505 000 006	4.1	0.000 000	0.002
	100 %	+50	2505 000 006	4.2	0.000 000	0.002
	Batt. Endpoint	+20	2505 000 006	4.1	0.000 000	0.002
2565.000	100 %	+20(Ref)	2565 000 003	0.0	0.000 000	0.000
	100 %	-30	2565 000 003	0.5	0.000 000	0.000
	100 %	-20	2565 000 003	0.5	0.000 000	0.000
	100 %	-10	2565 000 002	-0.7	0.000 000	0.000
	100 %	0	2565 000 003	0.2	0.000 000	0.000
	100 %	+10	2565 000 003	0.7	0.000 000	0.000
	100 %	+30	2565 000 003	0.0	0.000 000	0.000
	100 %	+40	2565 000 006	2.8	0.000 000	0.001
	100 %	+50	2565 000 004	0.8	0.000 000	0.000
	Batt. Endpoint	+20	2565 000 004	1.0	0.000 000	0.000

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2507.500	100 %	+20(Ref)	2507 500 003	0.0	0.000 000	0.000
	100 %	-30	2507 500 005	2.4	0.000 000	0.001
	100 %	-20	2507 500 006	3.0	0.000 000	0.001
	100 %	-10	2507 500 005	2.4	0.000 000	0.001
	100 %	0	2507 500 006	2.8	0.000 000	0.001
	100 %	+10	2507 500 007	3.8	0.000 000	0.002
	100 %	+30	2507 500 006	2.8	0.000 000	0.001
	100 %	+40	2507 500 005	1.6	0.000 000	0.001
	100 %	+50	2507 500 007	4.1	0.000 000	0.002
	Batt. Endpoint	+20	2507 500 005	1.9	0.000 000	0.001
2562.500	100 %	+20(Ref)	2562 500 001	0.0	0.000 000	0.000
	100 %	-30	2562 500 003	1.9	0.000 000	0.001
	100 %	-20	2562 500 005	3.5	0.000 000	0.001
	100 %	-10	2562 500 005	3.6	0.000 000	0.001
	100 %	0	2562 500 005	3.7	0.000 000	0.001
	100 %	+10	2562 500 004	2.9	0.000 000	0.001
	100 %	+30	2562 500 004	2.7	0.000 000	0.001
	100 %	+40	2562 500 004	2.9	0.000 000	0.001
	100 %	+50	2562 500 004	2.9	0.000 000	0.001
	Batt. Endpoint	+20	2562 500 004	2.5	0.000 000	0.001

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2510.000	100 %	+20(Ref)	2510 000 000	0.0	0.000 000	0.000
	100 %	-30	2509 999 998	-2.4	0.000 000	-0.001
	100 %	-20	2509 999 999	-1.3	0.000 000	-0.001
	100 %	-10	2509 999 999	-0.9	0.000 000	0.000
	100 %	0	2509 999 999	-1.2	0.000 000	0.000
	100 %	+10	2509 999 999	-0.7	0.000 000	0.000
	100 %	+30	2509 999 999	-1.5	0.000 000	-0.001
	100 %	+40	2509 999 998	-2.4	0.000 000	-0.001
	100 %	+50	2509 999 998	-1.6	0.000 000	-0.001
	Batt. Endpoint	+20	2509 999 997	-2.9	0.000 000	-0.001
2560.000	100 %	+20(Ref)	2560 000 000	0.0	0.000 000	0.000
	100 %	-30	2560 000 001	1.8	0.000 000	0.001
	100 %	-20	2560 000 002	2.8	0.000 000	0.001
	100 %	-10	2560 000 003	3.2	0.000 000	0.001
	100 %	0	2560 000 002	2.3	0.000 000	0.001
	100 %	+10	2560 000 001	1.3	0.000 000	0.001
	100 %	+30	2559 999 999	-1.1	0.000 000	0.000
	100 %	+40	2560 000 001	1.4	0.000 000	0.001
	100 %	+50	2560 000 000	-0.2	0.000 000	0.000
	Batt. Endpoint	+20	2560 000 002	1.9	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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2512.500	100 %	+20(Ref)	2512 500 008	0.0	0.000 000	0.000
	100 %	-30	2512 500 015	7.7	0.000 000	0.003
	100 %	-20	2512 500 014	6.0	0.000 000	0.002
	100 %	-10	2512 500 015	7.2	0.000 000	0.003
	100 %	0	2512 500 015	7.5	0.000 000	0.003
	100 %	+10	2512 500 014	6.4	0.000 000	0.003
	100 %	+30	2512 500 016	8.7	0.000 000	0.003
	100 %	+40	2512 500 015	7.1	0.000 000	0.003
	100 %	+50	2512 500 014	6.0	0.000 000	0.002
	Batt. Endpoint	+20	2512 500 015	7.7	0.000 000	0.003
2557.500	100 %	+20(Ref)	2557 500 011	0.0	0.000 000	0.000
	100 %	-30	2557 500 023	12.5	0.000 000	0.005
	100 %	-20	2557 500 023	11.9	0.000 000	0.005
	100 %	-10	2557 500 021	10.3	0.000 000	0.004
	100 %	0	2557 500 020	9.4	0.000 000	0.004
	100 %	+10	2557 500 019	8.5	0.000 000	0.003
	100 %	+30	2557 500 023	12.6	0.000 000	0.005
	100 %	+40	2557 500 021	10.6	0.000 000	0.004
	100 %	+50	2557 500 022	11.0	0.000 000	0.004
	Batt. Endpoint	+20	2557 500 020	9.1	0.000 000	0.004

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2515.000	100 %	+20(Ref)	2515 000 007	0.0	0.000 000	0.000
	100 %	-30	2515 000 012	5.6	0.000 000	0.002
	100 %	-20	2515 000 013	6.4	0.000 000	0.003
	100 %	-10	2515 000 013	6.3	0.000 000	0.003
	100 %	0	2515 000 013	6.4	0.000 000	0.003
	100 %	+10	2515 000 014	7.2	0.000 000	0.003
	100 %	+30	2515 000 016	9.4	0.000 000	0.004
	100 %	+40	2515 000 013	6.0	0.000 000	0.002
	100 %	+50	2515 000 013	6.4	0.000 000	0.003
	Batt. Endpoint	+20	2515 000 014	6.7	0.000 000	0.003
2555.000	100 %	+20(Ref)	2555 000 004	0.0	0.000 000	0.000
	100 %	-30	2555 000 008	4.8	0.000 000	0.002
	100 %	-20	2555 000 008	4.3	0.000 000	0.002
	100 %	-10	2555 000 007	3.5	0.000 000	0.001
	100 %	0	2555 000 011	7.5	0.000 000	0.003
	100 %	+10	2555 000 007	3.4	0.000 000	0.001
	100 %	+30	2555 000 008	3.8	0.000 000	0.001
	100 %	+40	2555 000 008	4.4	0.000 000	0.002
	100 %	+50	2555 000 009	5.2	0.000 000	0.002
	Batt. Endpoint	+20	2555 000 007	3.7	0.000 000	0.001

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

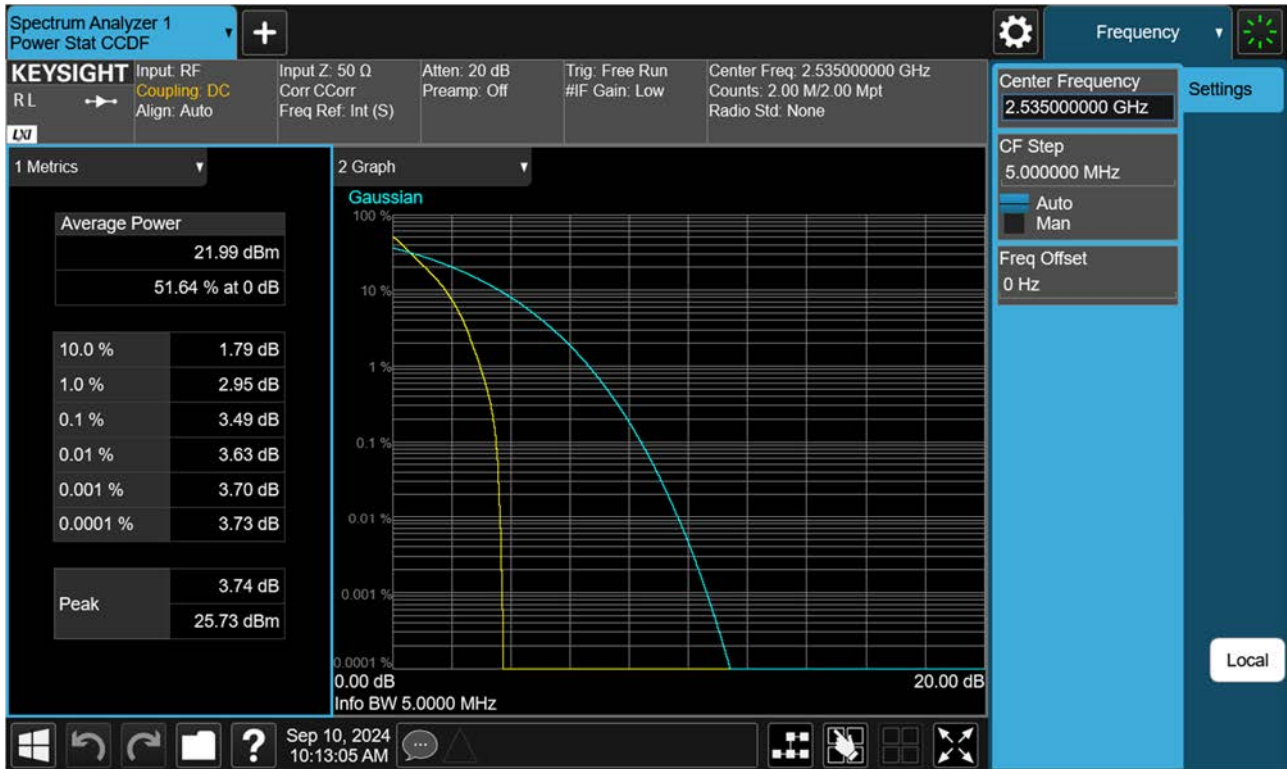
Test. Frequency	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2517.500	100 %	+20(Ref)	2517 500 011	0.0	0.000 000	0.000
	100 %	-30	2517 500 017	6.3	0.000 000	0.003
	100 %	-20	2517 500 018	7.2	0.000 000	0.003
	100 %	-10	2517 500 018	7.5	0.000 000	0.003
	100 %	0	2517 500 017	6.2	0.000 000	0.002
	100 %	+10	2517 500 017	6.0	0.000 000	0.002
	100 %	+30	2517 500 018	7.6	0.000 000	0.003
	100 %	+40	2517 500 017	6.5	0.000 000	0.003
	100 %	+50	2517 500 019	8.2	0.000 000	0.003
	Batt. Endpoint	+20	2517 500 017	6.8	0.000 000	0.003
2552.500	100 %	+20(Ref)	2552 500 009	0.0	0.000 000	0.000
	100 %	-30	2552 500 017	7.5	0.000 000	0.003
	100 %	-20	2552 500 018	8.8	0.000 000	0.003
	100 %	-10	2552 500 019	9.4	0.000 000	0.004
	100 %	0	2552 500 016	6.7	0.000 000	0.003
	100 %	+10	2552 500 019	9.4	0.000 000	0.004
	100 %	+30	2552 500 017	8.2	0.000 000	0.003
	100 %	+40	2552 500 017	7.8	0.000 000	0.003
	100 %	+50	2552 500 019	9.8	0.000 000	0.004
	Batt. Endpoint	+20	2552 500 017	7.5	0.000 000	0.003

- ▣ 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	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
2520.000	100 %	+20(Ref)	2520 000 007	0.0	0.000 000	0.000
	100 %	-30	2520 000 012	5.2	0.000 000	0.002
	100 %	-20	2520 000 013	5.7	0.000 000	0.002
	100 %	-10	2520 000 009	2.4	0.000 000	0.001
	100 %	0	2520 000 012	5.1	0.000 000	0.002
	100 %	+10	2520 000 010	3.6	0.000 000	0.001
	100 %	+30	2520 000 013	6.6	0.000 000	0.003
	100 %	+40	2520 000 011	4.0	0.000 000	0.002
	100 %	+50	2520 000 011	3.9	0.000 000	0.002
	Batt. Endpoint	+20	2520 000 012	4.6	0.000 000	0.002
2550.000	100 %	+20(Ref)	2550 000 003	0.0	0.000 000	0.000
	100 %	-30	2550 000 008	4.6	0.000 000	0.002
	100 %	-20	2550 000 009	5.6	0.000 000	0.002
	100 %	-10	2550 000 011	7.2	0.000 000	0.003
	100 %	0	2550 000 008	4.6	0.000 000	0.002
	100 %	+10	2550 000 008	4.1	0.000 000	0.002
	100 %	+30	2550 000 010	6.8	0.000 000	0.003
	100 %	+40	2550 000 011	7.2	0.000 000	0.003
	100 %	+50	2550 000 011	7.4	0.000 000	0.003
	Batt. Endpoint	+20	2550 000 008	4.9	0.000 000	0.002

10. TEST PLOTS(Main 2 ANT)

5 M_PAR_Mid_BPSK_FullRB



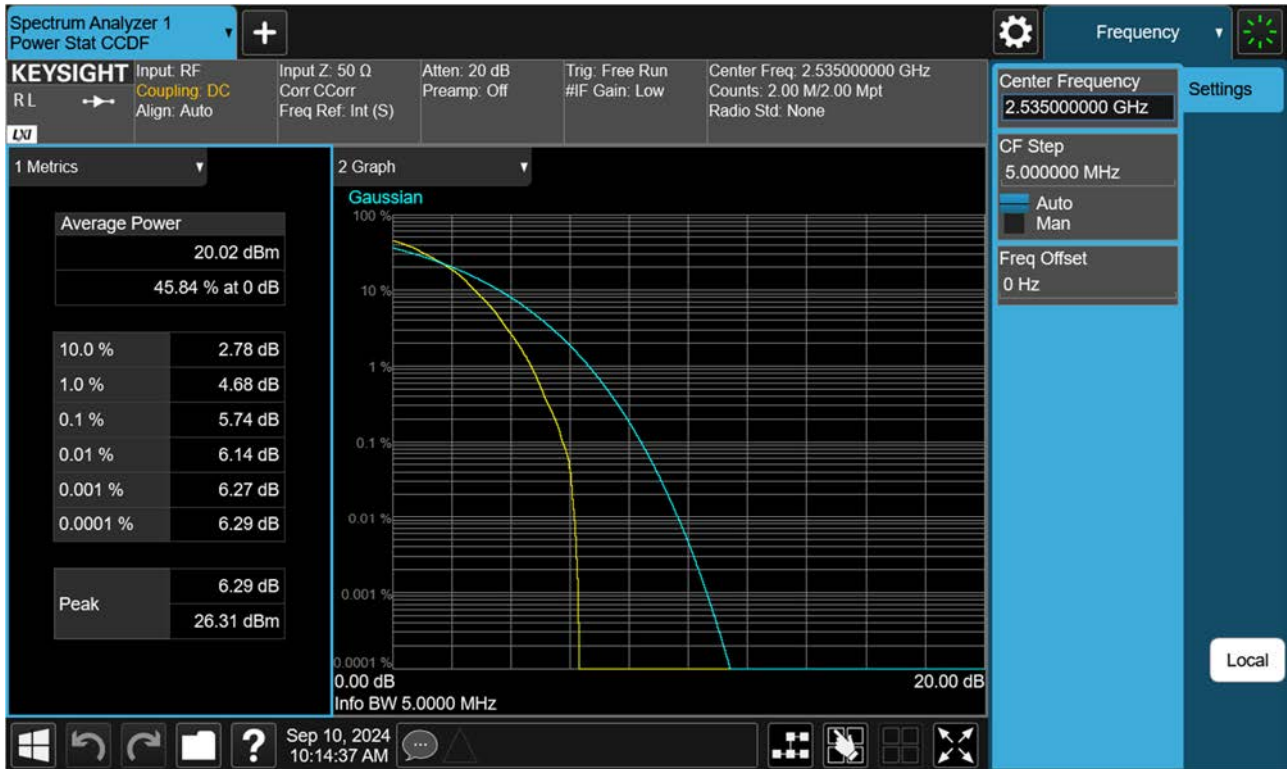
5 M_PAR_Mid_QPSK_FullRB



5 M_PAR_Mid_16QAM_FullRB



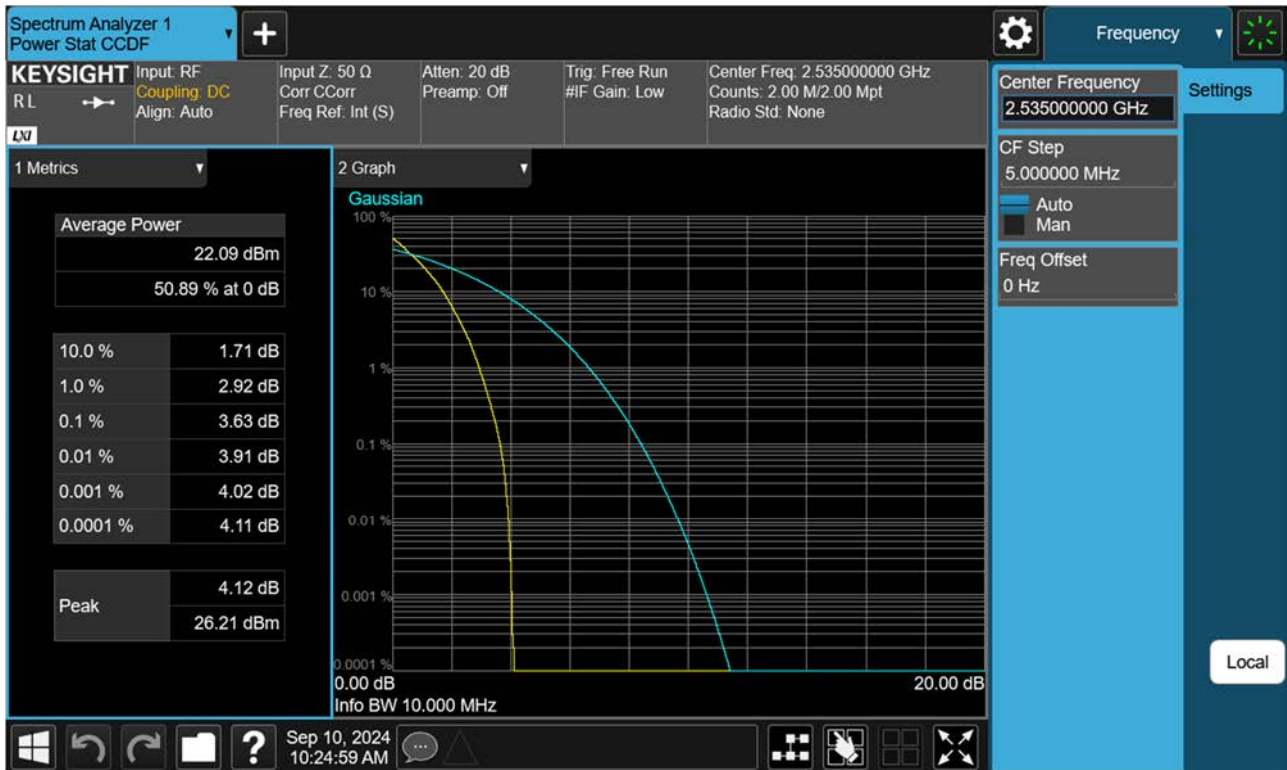
5 M_PAR_Mid_64QAM_FullRB



5 M_PAR_Mid_256QAM_FullRB



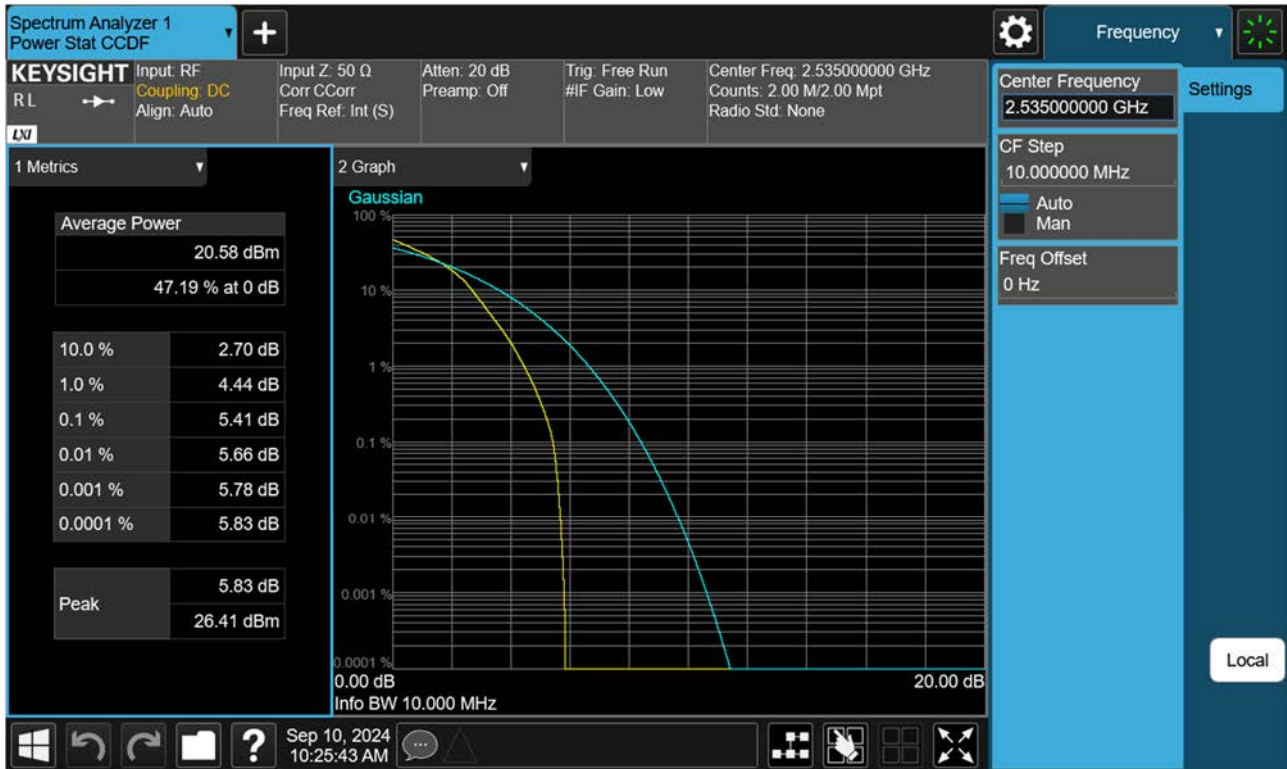
10 M_PAR_Mid_BPSK_FullRB



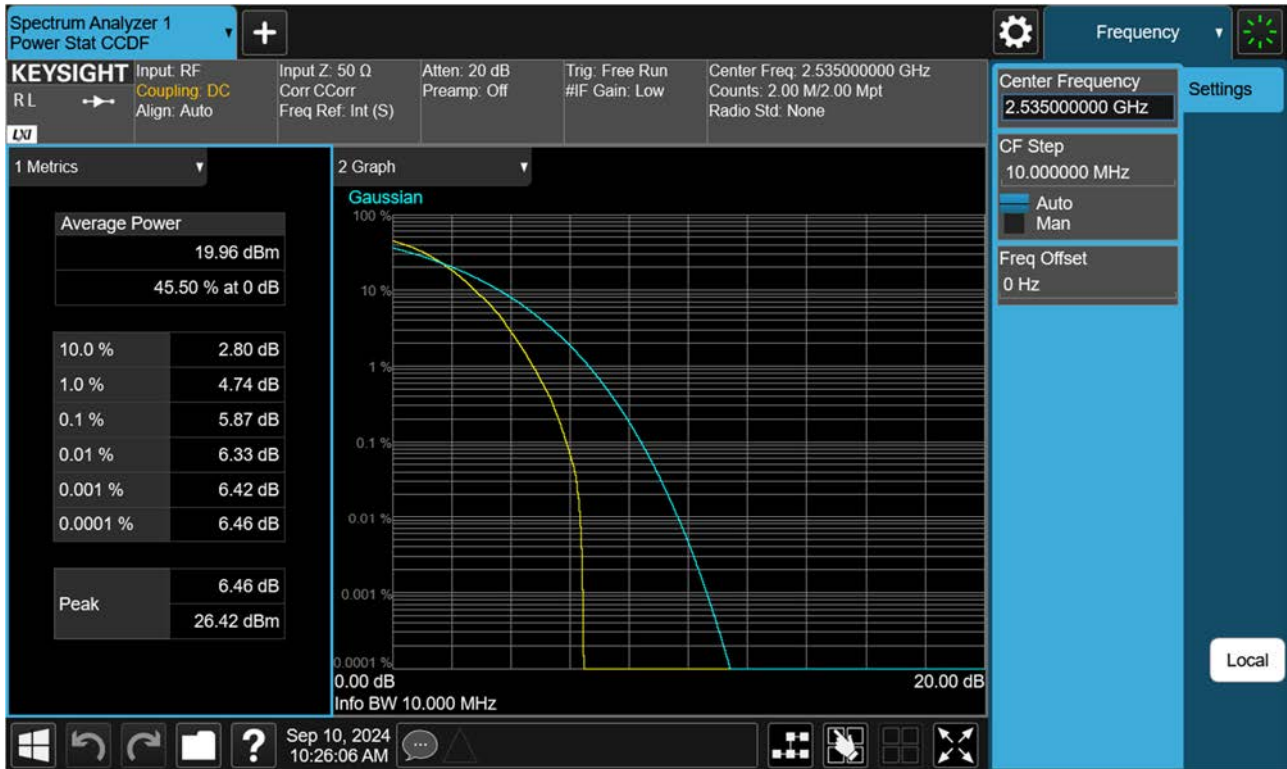
10 M_PAR_Mid_QPSK_FullRB



10 M_PAR_Mid_16QAM_FullRB



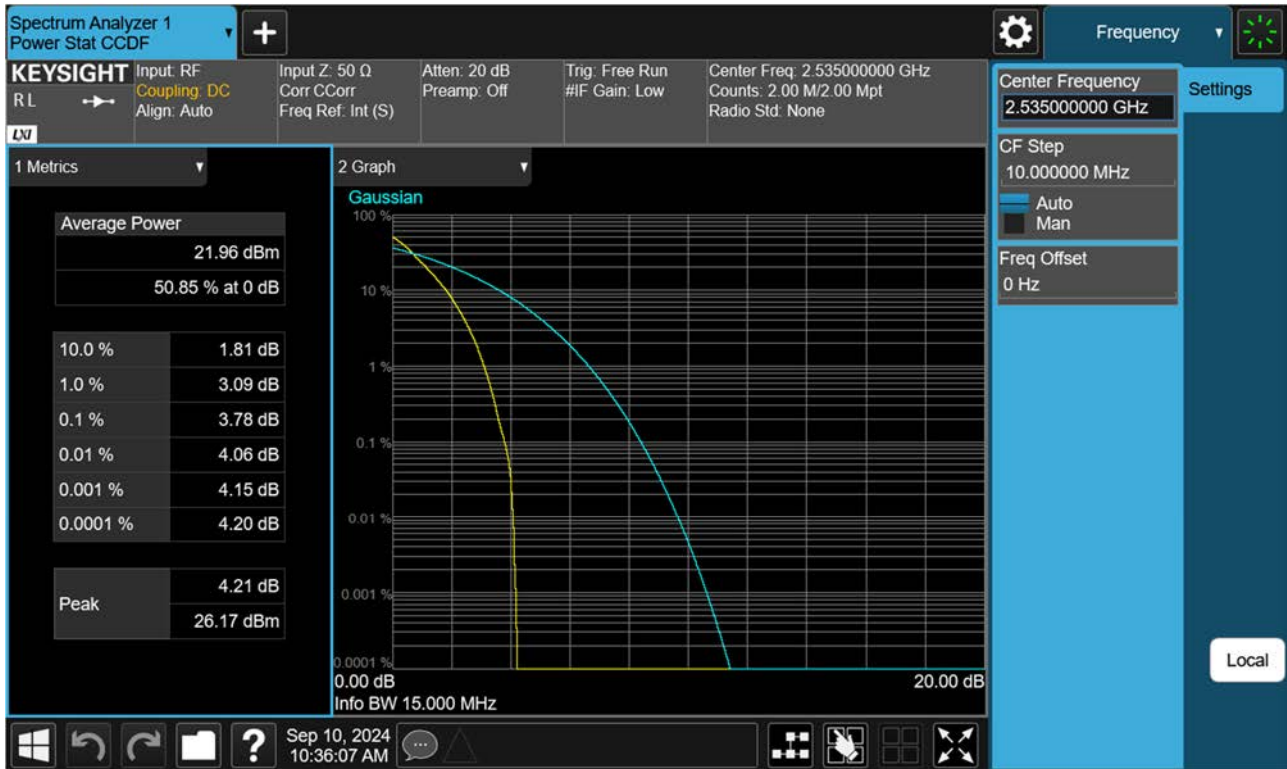
10 M_PAR_Mid_64QAM_FullRB



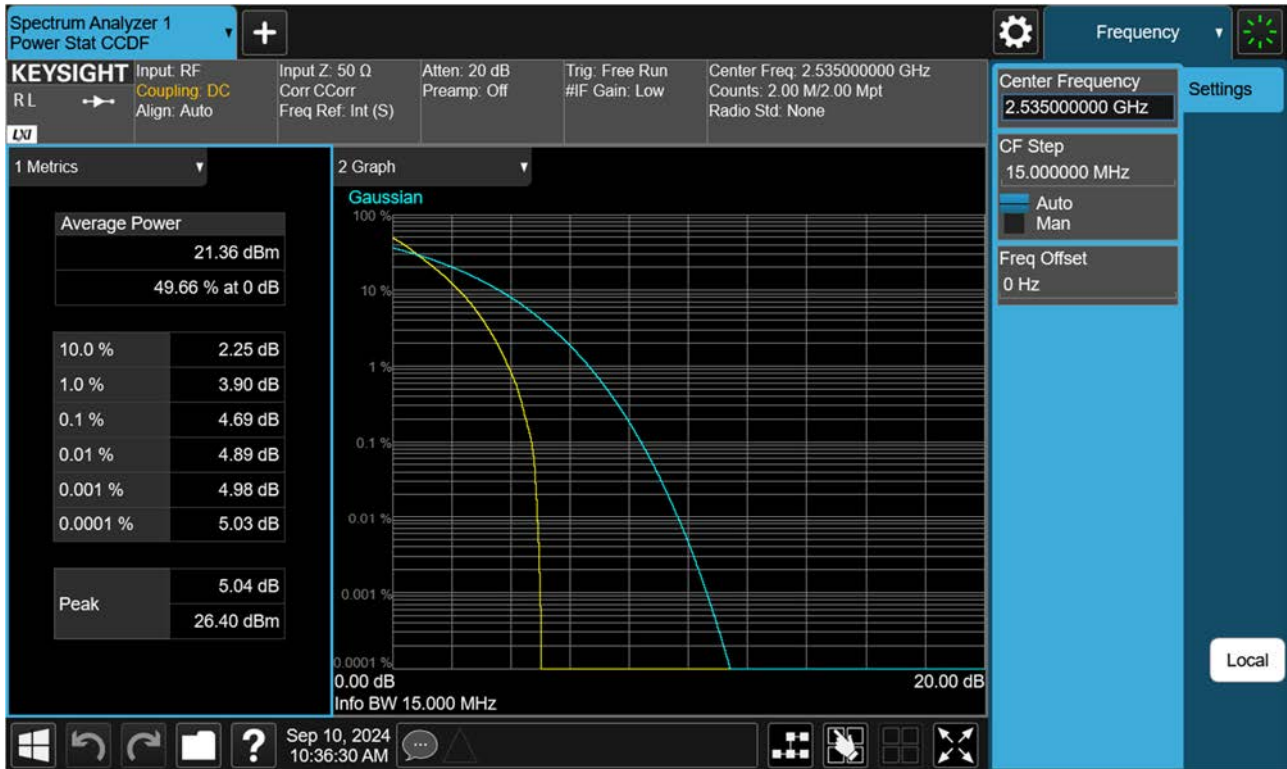
10 M_PAR_Mid_256QAM_FullRB



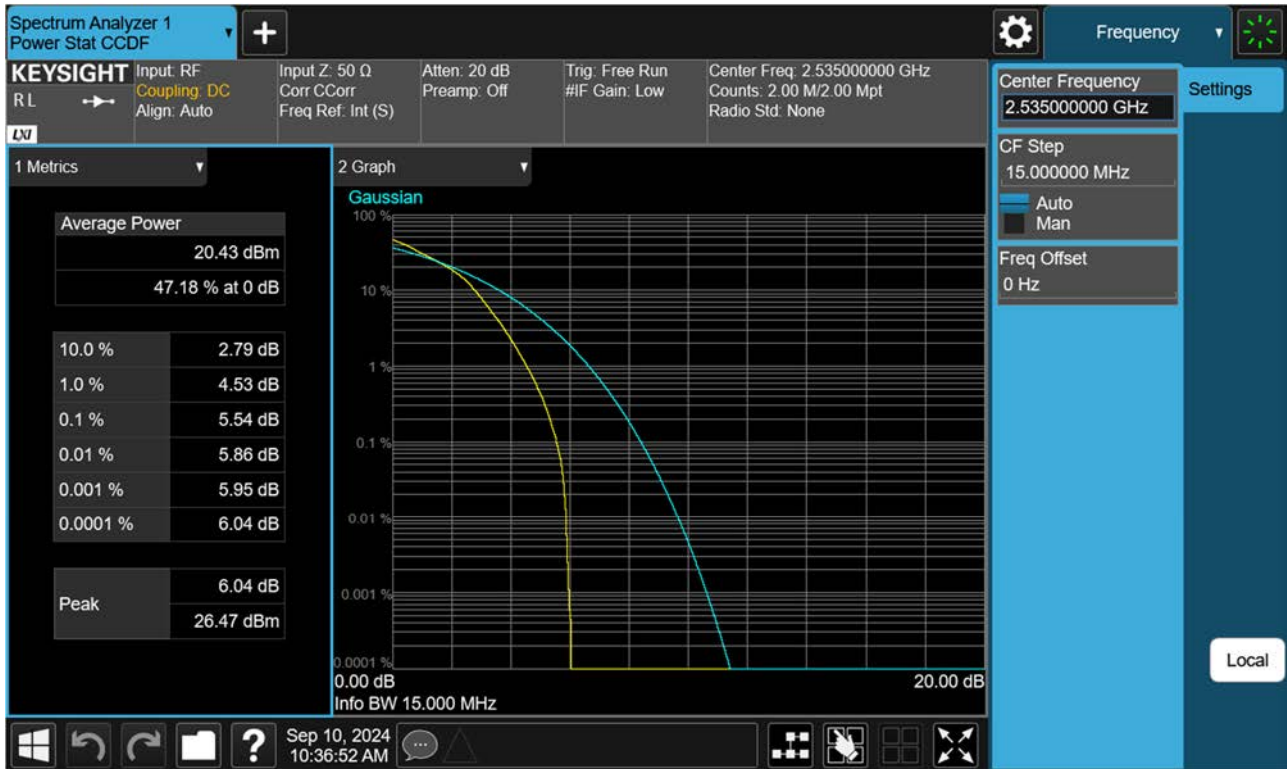
15 M_PAR_Mid_BPSK_FullRB



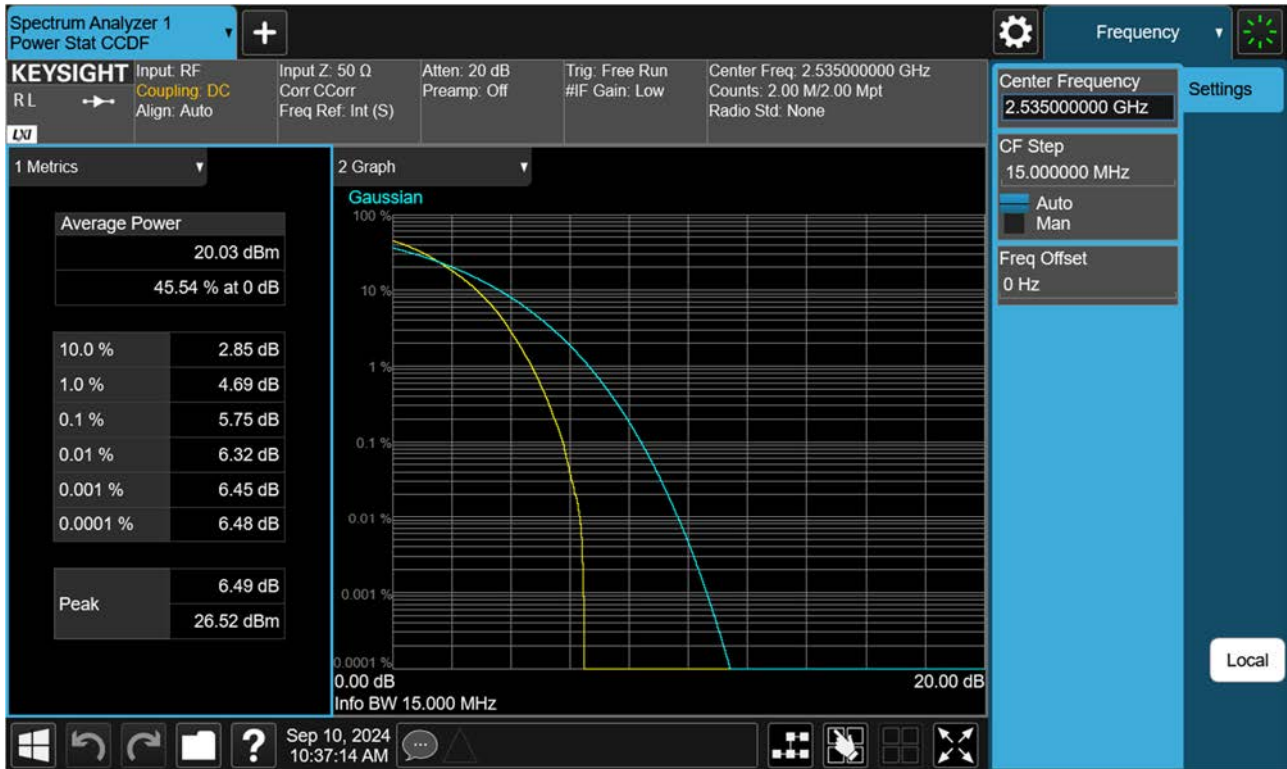
15 M_PAR_Mid_QPSK_FullRB



15 M_PAR_Mid_16QAM_FullRB



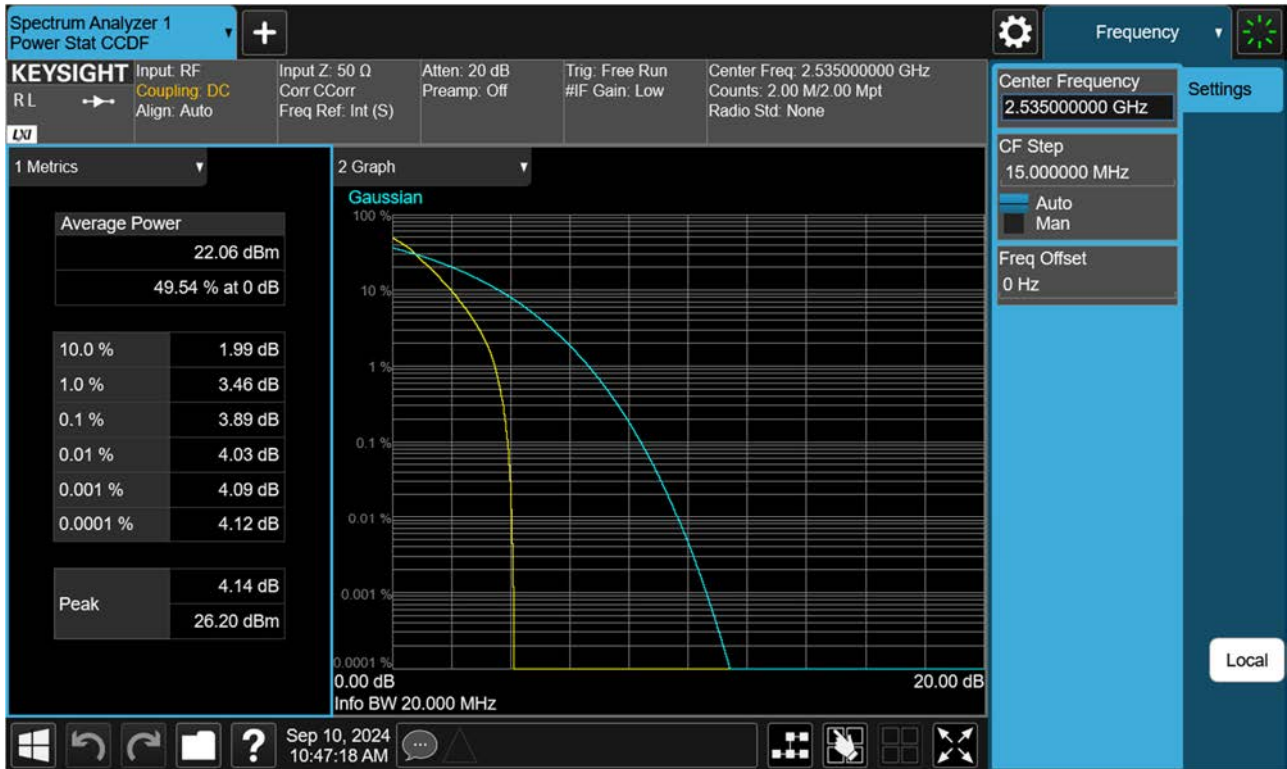
15 M_PAR_Mid_64QAM_FullRB



15 M_PAR_Mid_256QAM_FullRB



20 M_PAR_Mid_BPSK_FullIRB



20 M_PAR_Mid_QPSK_FullRB



20 M_PAR_Mid_16QAM_FullRB



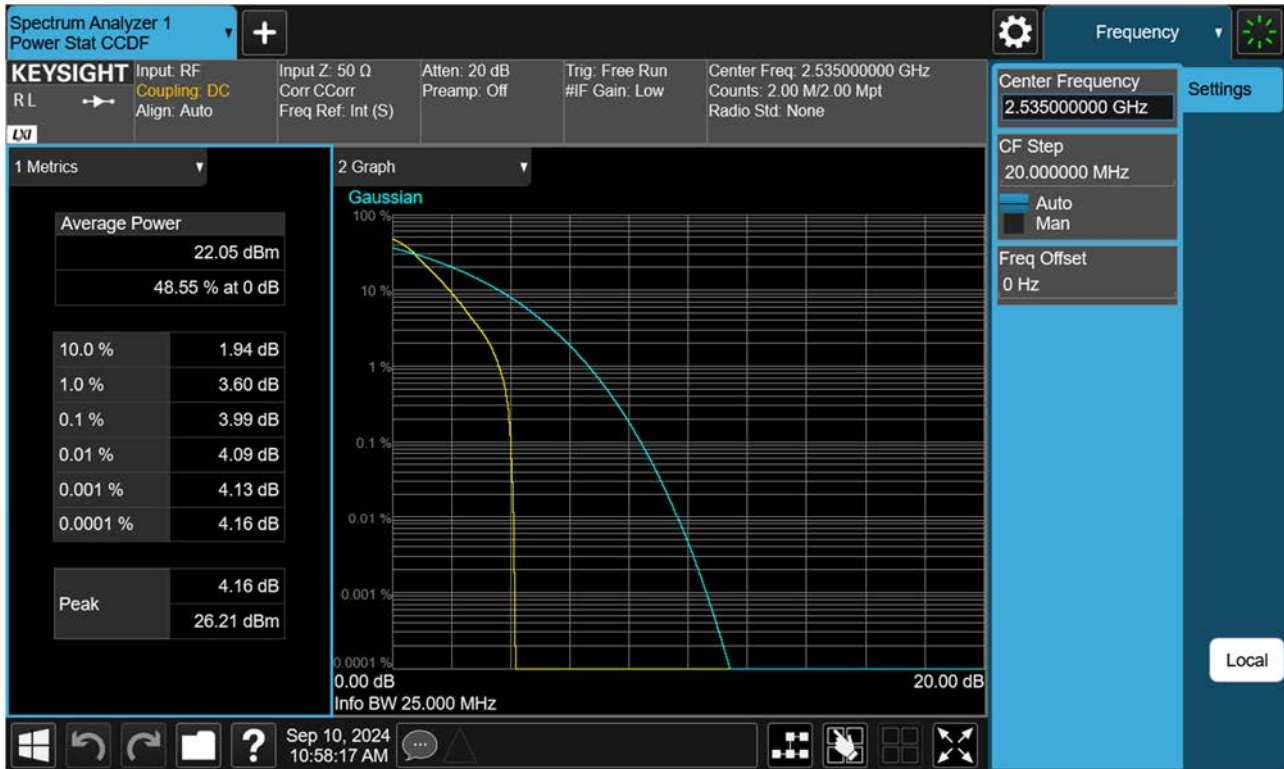
20 M_PAR_Mid_64QAM_FullRB



20 M_PAR_Mid_256QAM_FullRB



25 M_PAR_Mid_BPSK_FullRB



25 M_PAR_Mid_QPSK_FullRB



25 M_PAR_Mid_16QAM_FullRB



25 M_PAR_Mid_64QAM_FullRB



25 M_PAR_Mid_256QAM_FullRB



30 M_PAR_Mid_BPSK_FullRB



30 M_PAR_Mid_QPSK_FullRB



30 M_PAR_Mid_16QAM_FullRB



30 M_PAR_Mid_64QAM_FullRB



30 M_PAR_Mid_256QAM_FullRB



35 M_PAR_Mid_BPSK_FullRB



35 M_PAR_Mid_QPSK_FullRB



35 M_PAR_Mid_16QAM_FullRB



35 M_PAR_Mid_64QAM_FullRB



35 M_PAR_Mid_256QAM_FullRB



40 M_PAR_Mid_BPSK_FullRB



40 M_PAR_Mid_QPSK_FullRB



40 M_PAR_Mid_16QAM_FullRB



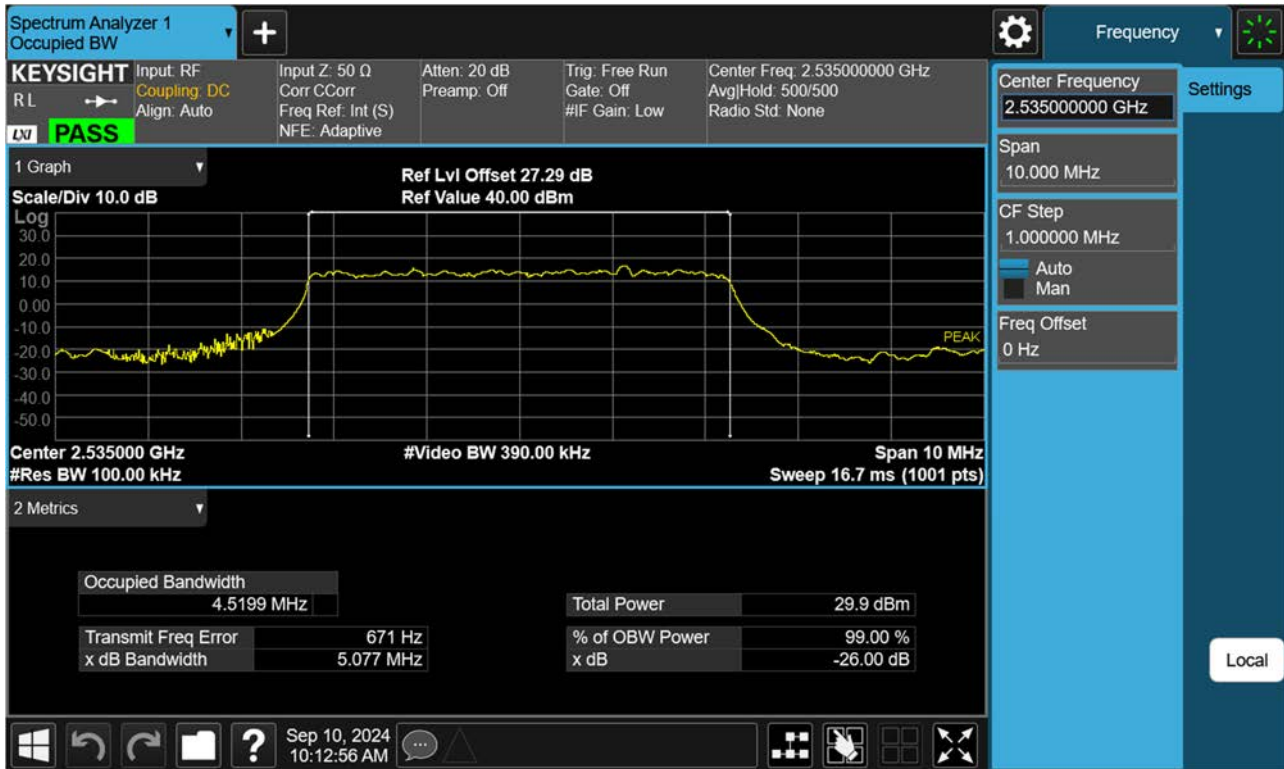
40 M_PAR_Mid_64QAM_FullRB



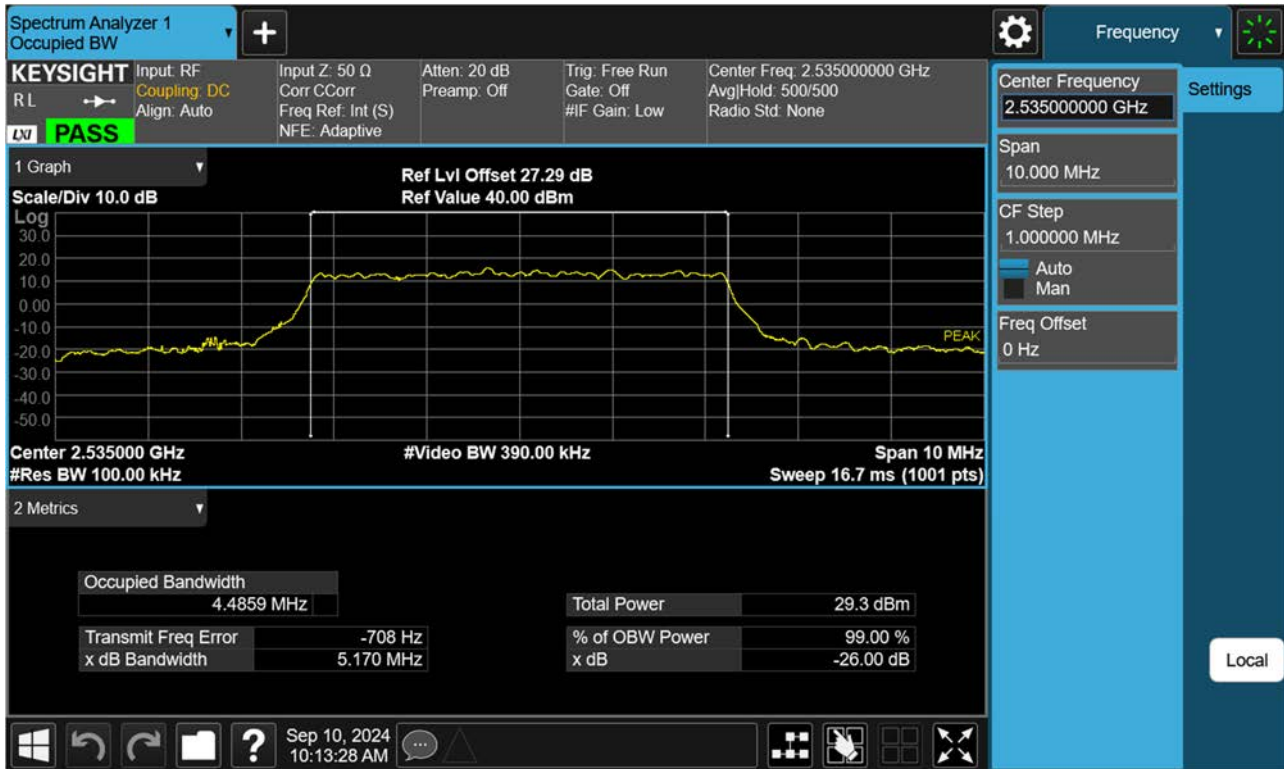
40 M_PAR_Mid_256QAM_FullRB



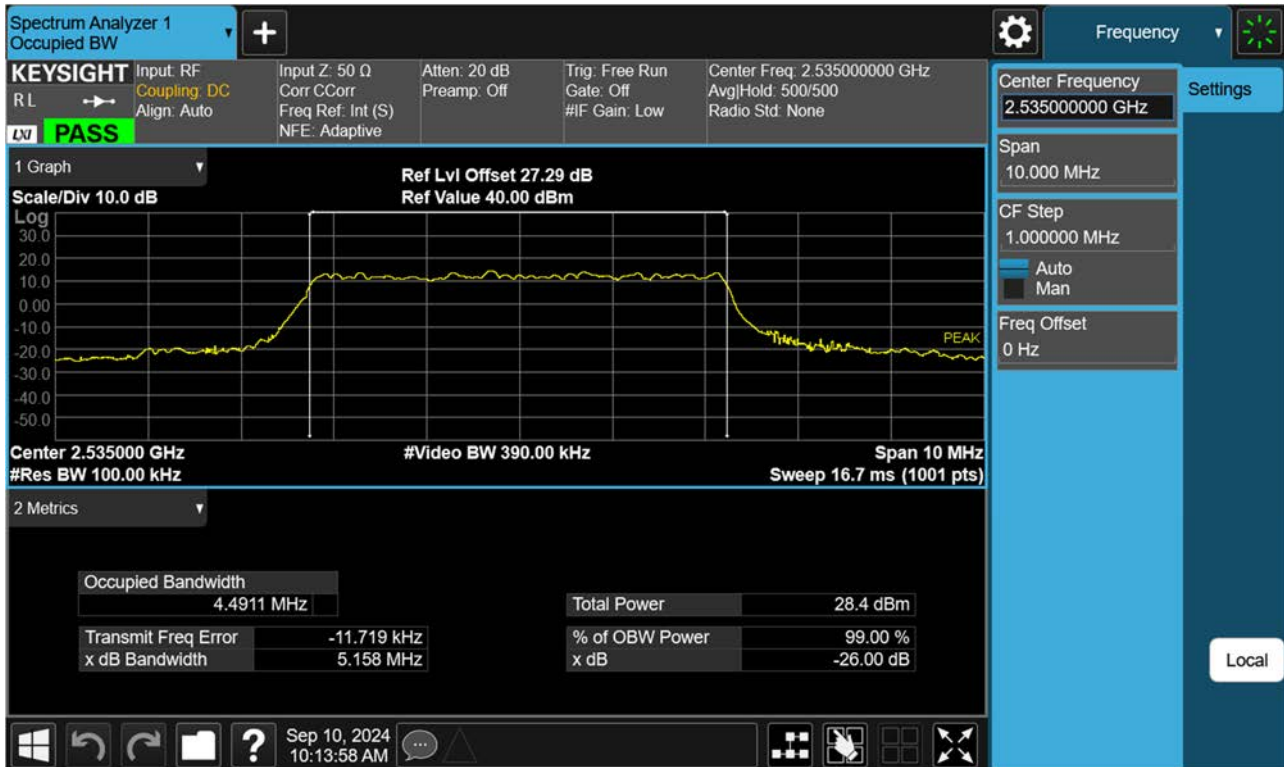
5 M_OBW_Mid_BPSK_FullIRB



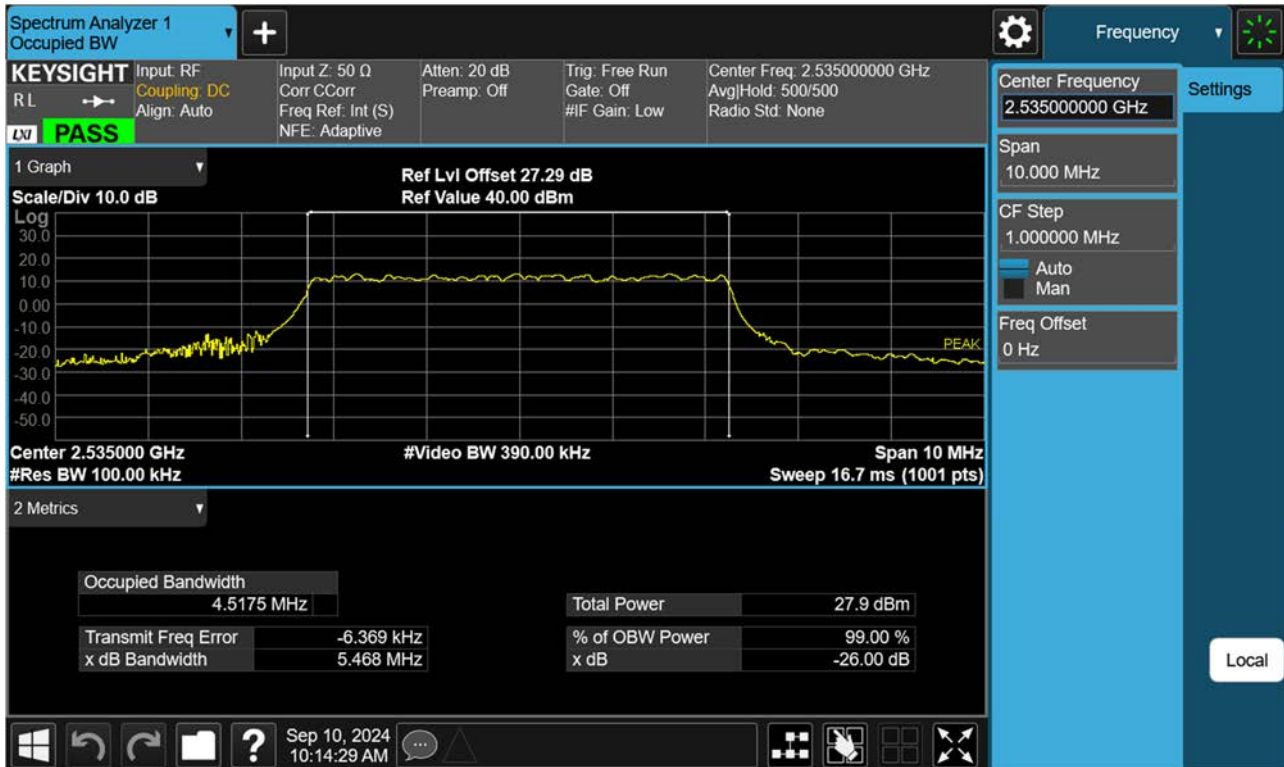
5 M_OBW_Mid_QPSK_FullRB



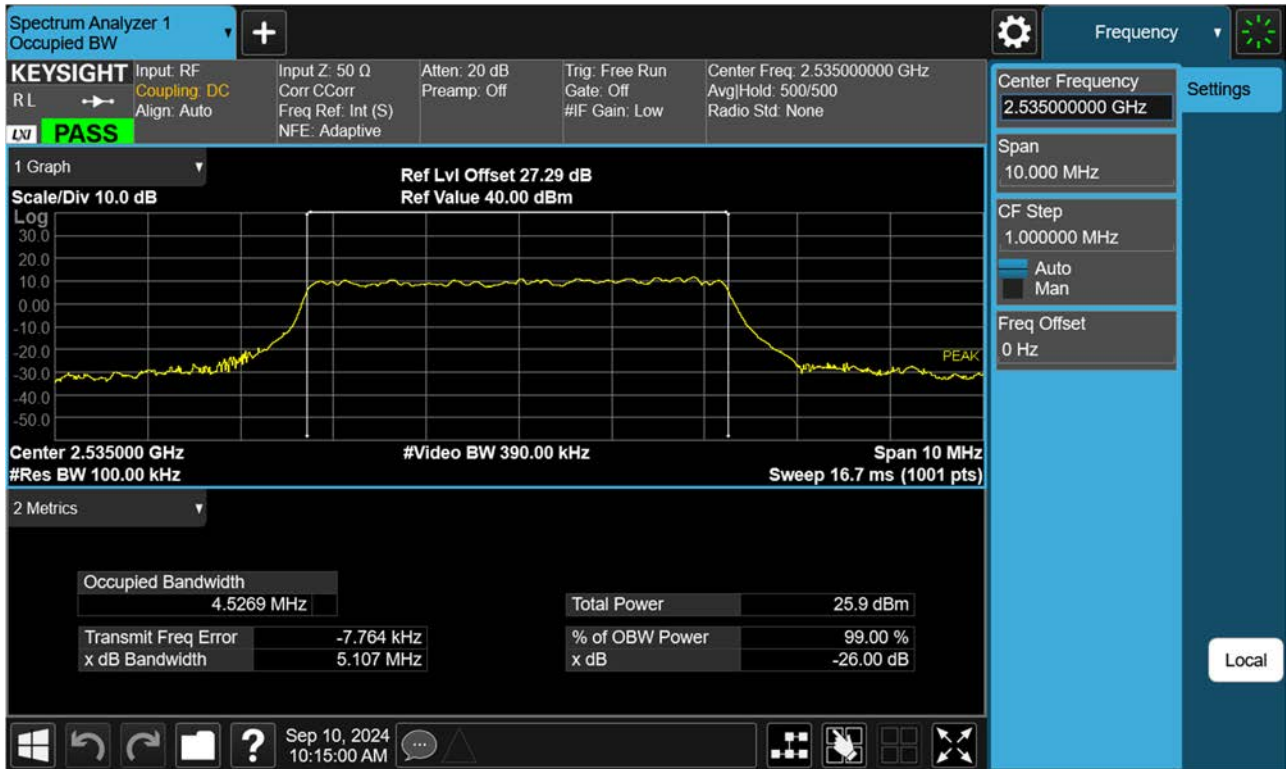
5 M_OBW_Mid_16QAM_FullRB



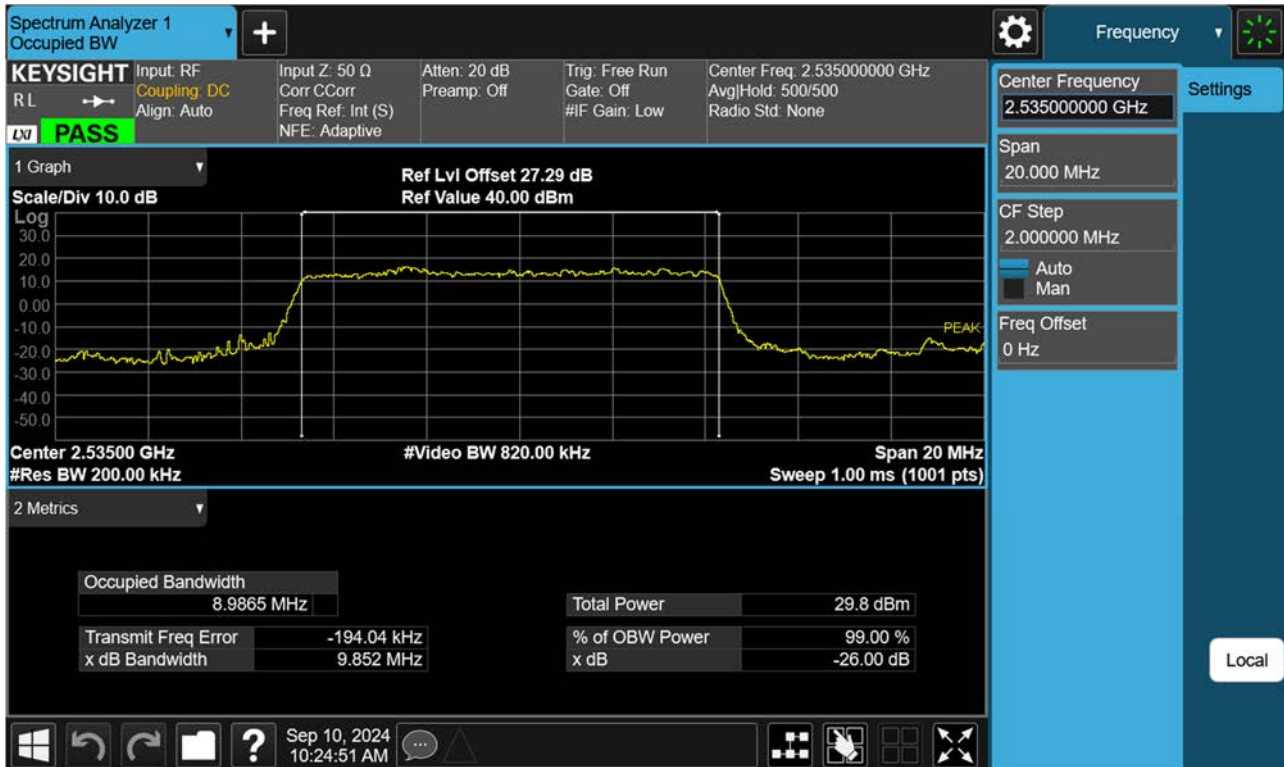
5 M_OBW_Mid_64QAM_FullRB



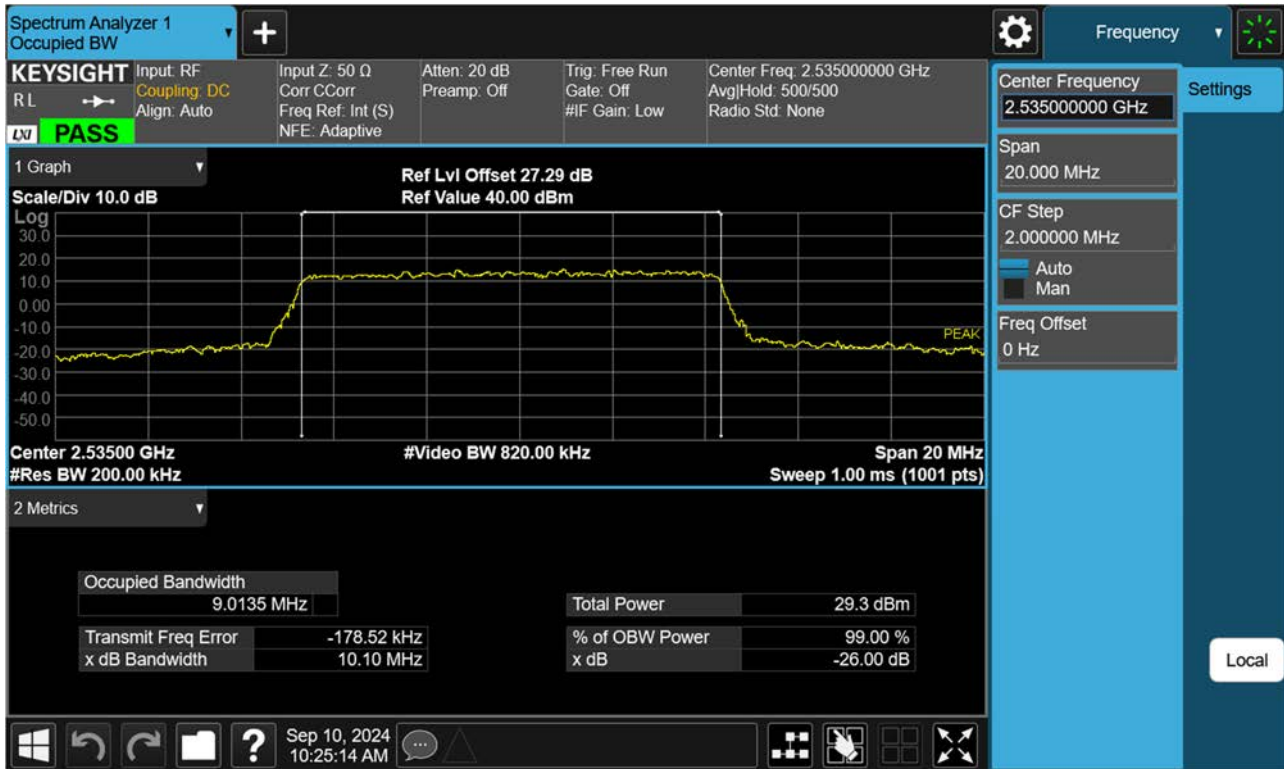
5 M_OBW_Mid_256QAM_FullIRB



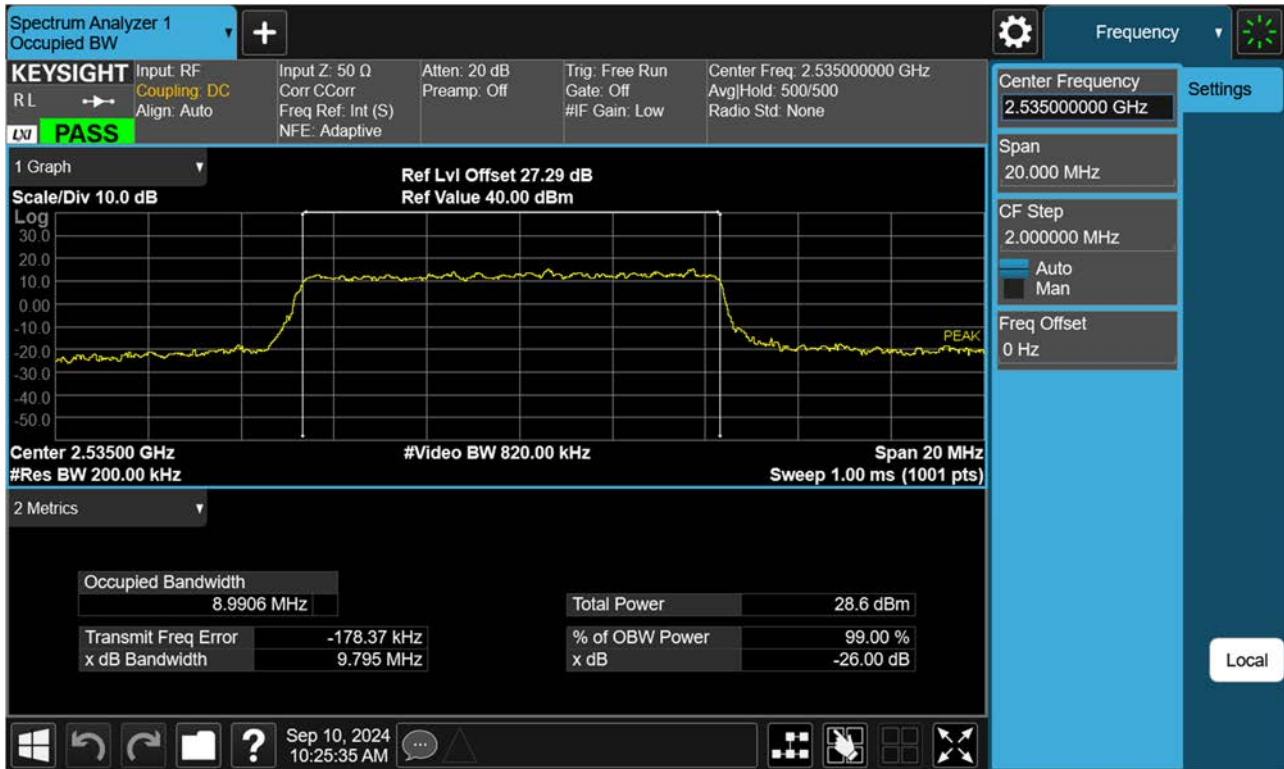
10 M_OBW_Mid_BPSK_FullRB



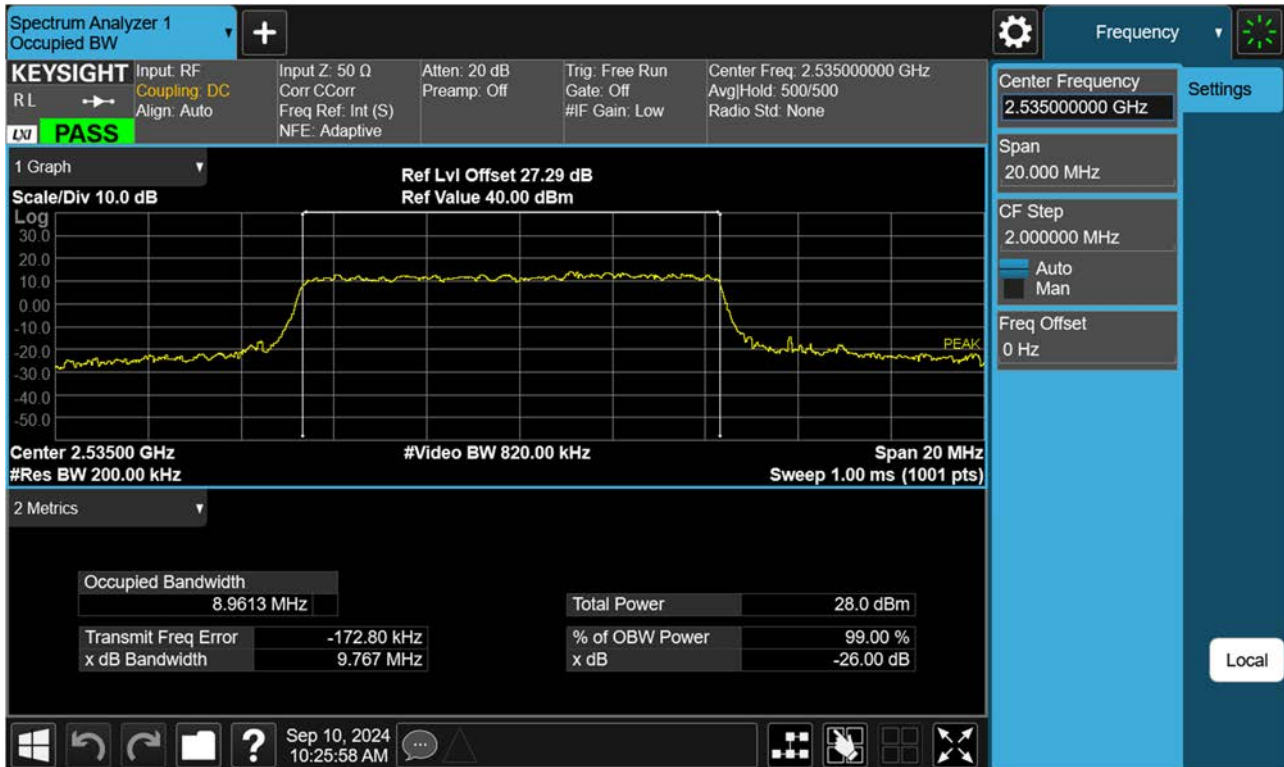
10 M_OBW_Mid_QPSK_FullRB



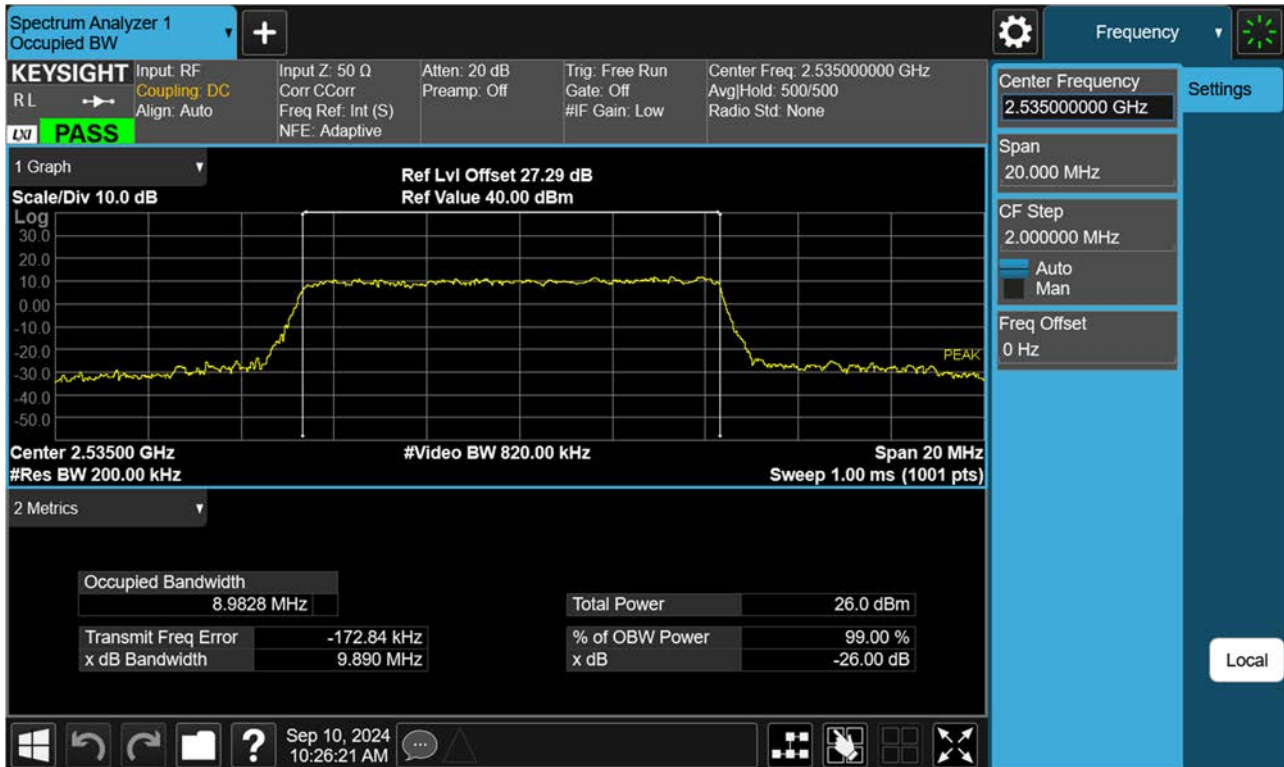
10 M_OBW_Mid_16QAM_FullRB



10 M_OBW_Mid_64QAM_FullRB



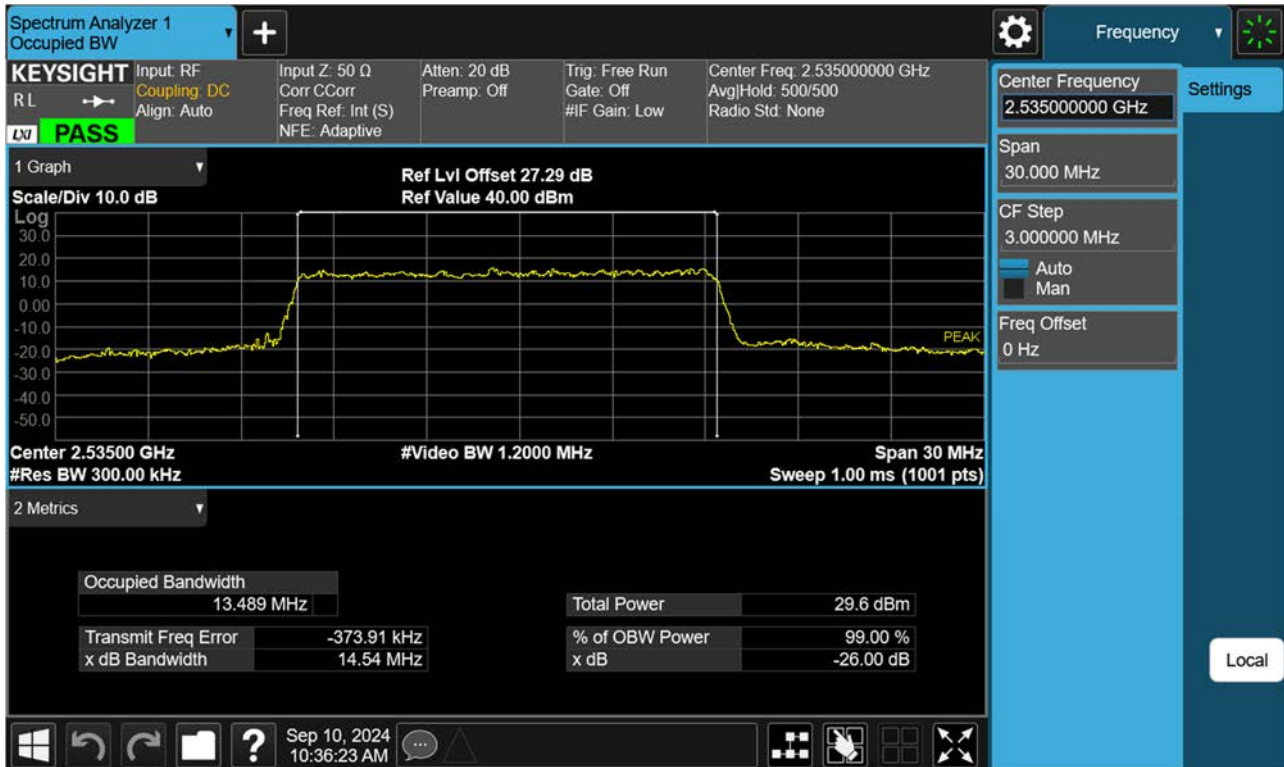
10 M_OBW_Mid_256QAM_FullRB



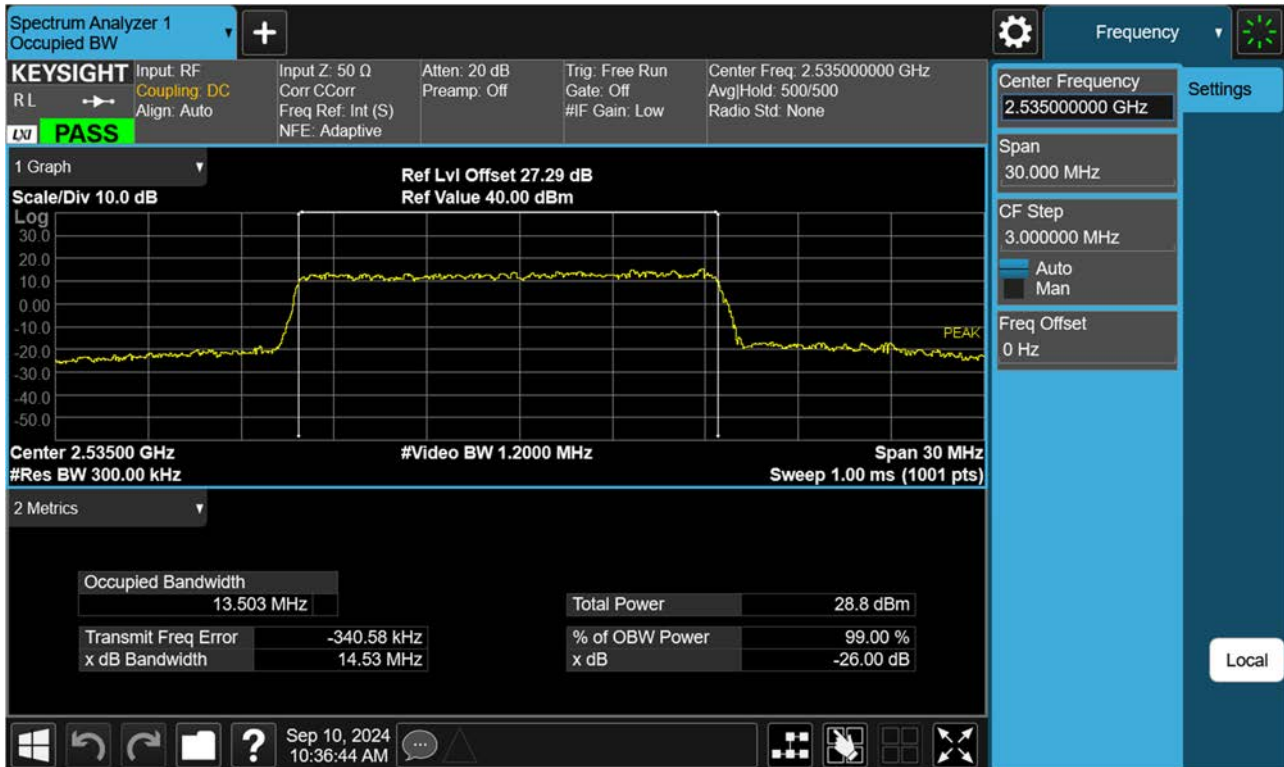
15 M_OBW_Mid_BPSK_FullRB



15 M_OBW_Mid_QPSK_FullRB



15 M_OBW_Mid_16QAM_FullIRB



Spectrum Analyzer 1
Occupied BW

KEYSIGHT
RL

PASS

Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 20 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2.53500000 GHz Avg/Hold: 500/500 Radio Std: None
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Frequency

Center Frequency
2.53500000 GHz

Span
30.000 MHz

CF Step
3.000000 MHz

Auto
Man

Freq Offset
0 Hz

1 Graph

Scale/Div 10.0 dB

Ref Lvl Offset 27.29 dB
Ref Value 40.00 dBm

Center 2.53500 GHz
#Res BW 300.00 kHz

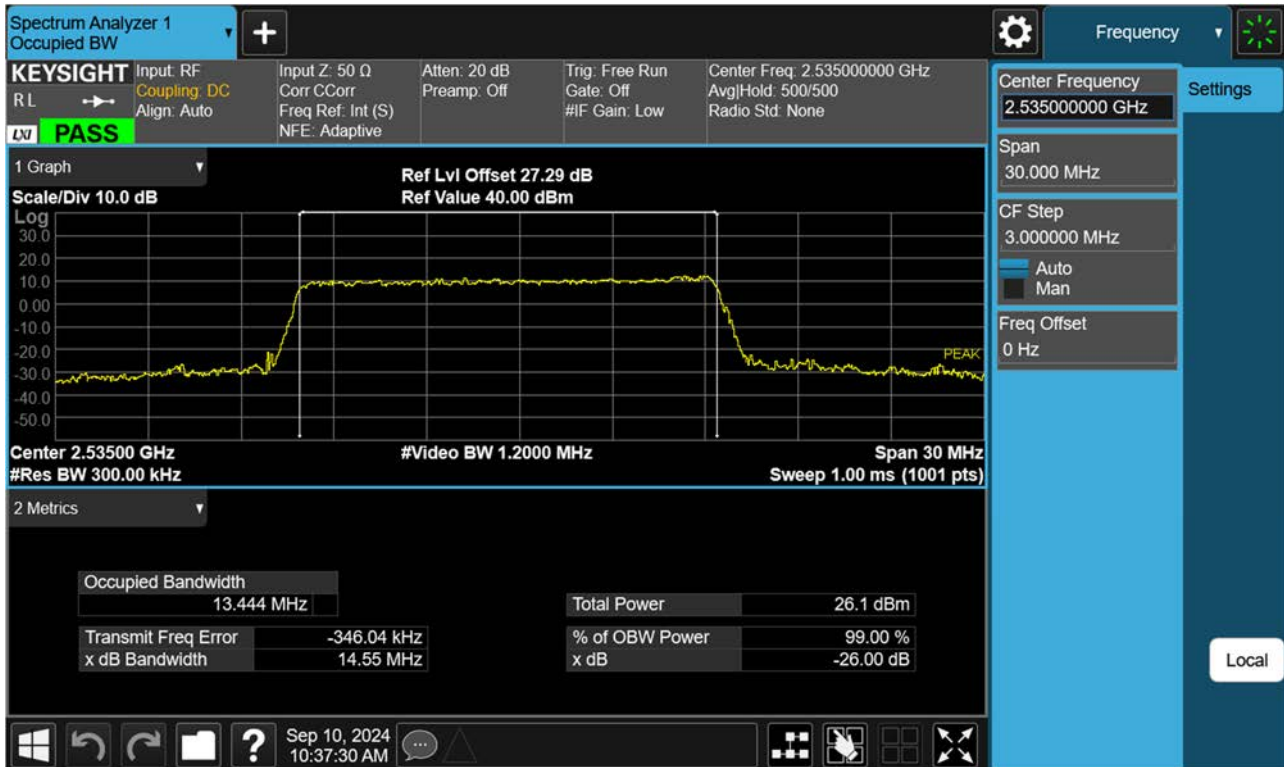
#Video BW 1.2000 MHz

Span 30 MHz
Sweep 1.00 ms (1001 pts)

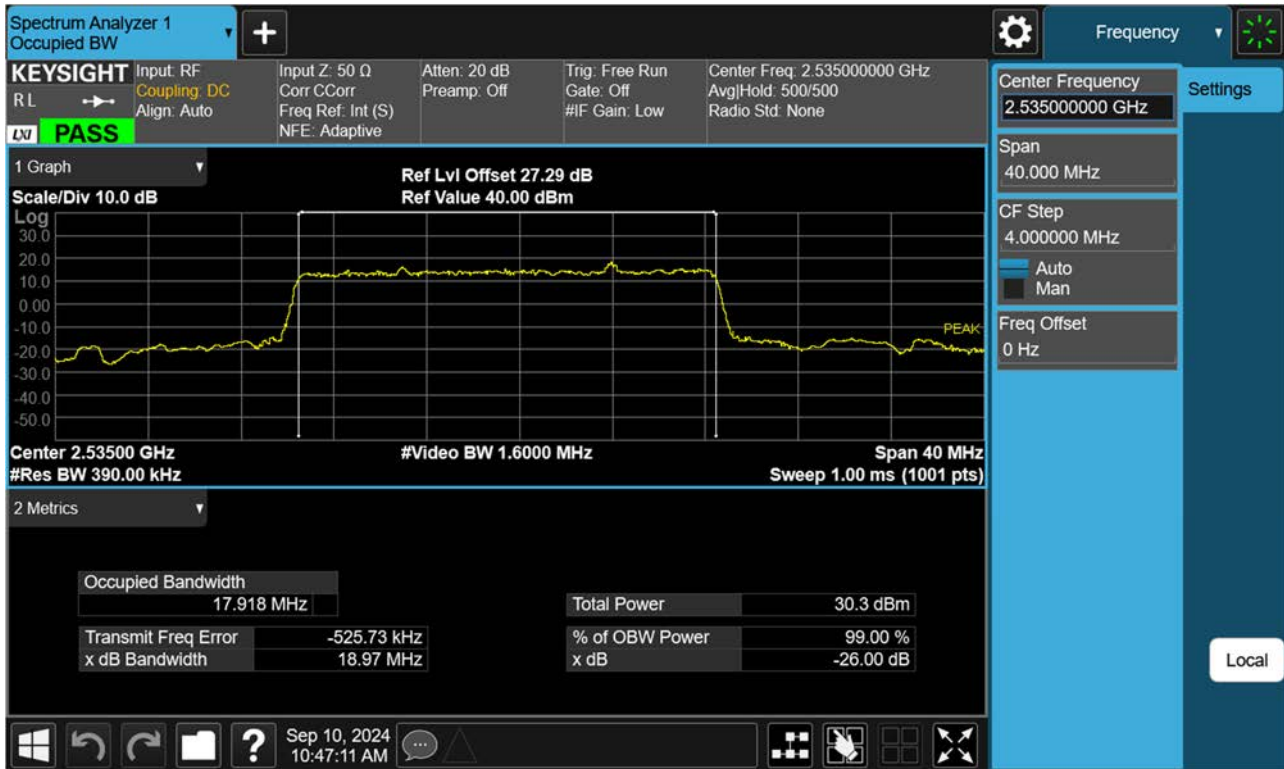
2 Metrics

Occupied Bandwidth	28.1 dBm
Transmit Freq Error	99.00 %
x dB Bandwidth	-26.00 dB

15 M_OBW_Mid_256QAM_FullRB



20 M_OBW_Mid_BPSK_FullRB



20 M_OBW_Mid_QPSK_FullRB

