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TEL: +82-31-645-6300 FAX: +82-31-645-6401

FCC LTE REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

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

Date of Issue:
November 13, 2023

Location:
HCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-2311-FC022

FCC ID:	**A3LSMG556B**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-G556B
EUT Type:	Mobile phone
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§24

Main 2 Ant

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	1M10G7D	QPSK	0.221	23.44
		1M09W7D	16QAM	0.196	22.93
		1M10W7D	64QAM	0.155	21.90
		1M09W7D	256QAM	0.086	19.35
LTE – Band2 (3)	1851.5 - 1908.5	2M70G7D	QPSK	0.219	23.40
		2M69W7D	16QAM	0.198	22.96
		2M70W7D	64QAM	0.155	21.89
		2M70W7D	256QAM	0.087	19.38
LTE – Band2 (5)	1852.5 - 1907.5	4M50G7D	QPSK	0.226	23.54
		4M49W7D	16QAM	0.200	23.02
		4M52W7D	64QAM	0.157	21.96
		4M50W7D	256QAM	0.087	19.42
LTE – Band2 (10)	1855.0 - 1905.0	8M96G7D	QPSK	0.230	23.61
		8M97W7D	16QAM	0.206	23.13
		8M97W7D	64QAM	0.161	22.07
		8M98W7D	256QAM	0.090	19.52
LTE – Band2 (15)	1857.5 - 1902.5	13M5G7D	QPSK	0.231	23.64
		13M5W7D	16QAM	0.203	23.07
		13M4W7D	64QAM	0.159	22.02
		13M5W7D	256QAM	0.089	19.48
LTE – Band2 (20)	1860.0 - 1900.0	18M0G7D	QPSK	0.226	23.55
		17M9W7D	16QAM	0.201	23.03
		18M0W7D	64QAM	0.156	21.94
		17M9W7D	256QAM	0.087	19.41

Sub 1 Ant

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	1M10G7D	QPSK	0.194	22.88
		1M10W7D	16QAM	0.169	22.29
		1M10W7D	64QAM	0.151	21.78
		1M09W7D	256QAM	0.085	19.27
LTE – Band2 (3)	1851.5 - 1908.5	2M72G7D	QPSK	0.199	22.98
		2M71W7D	16QAM	0.176	22.46
		2M71W7D	64QAM	0.154	21.87
		2M70W7D	256QAM	0.086	19.35
LTE – Band2 (5)	1852.5 - 1907.5	4M53G7D	QPSK	0.200	23.00
		4M50W7D	16QAM	0.174	22.41
		4M51W7D	64QAM	0.153	21.86
		4M51W7D	256QAM	0.087	19.40
LTE – Band2 (10)	1855.0 - 1905.0	9M02G7D	QPSK	0.201	23.04
		9M02W7D	16QAM	0.173	22.38
		8M99W7D	64QAM	0.142	21.51
		8M98W7D	256QAM	0.082	19.15
LTE – Band2 (15)	1857.5 - 1902.5	13M5G7D	QPSK	0.205	23.12
		13M5W7D	16QAM	0.178	22.50
		13M5W7D	64QAM	0.137	21.37
		13M5W7D	256QAM	0.079	18.95
LTE – Band2 (20)	1860.0 - 1900.0	18M0G7D	QPSK	0.208	23.19
		18M0W7D	16QAM	0.181	22.58
		18M0W7D	64QAM	0.140	21.47
		18M0W7D	256QAM	0.079	18.95

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)

REVIEWED BY

Report prepared by : Jae Mun Do
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test results were applied only to the test methods required by the standard.

Test Report Statement:
The above Test Report is not related to the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA.

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2311-FC022	November 13, 2023	- First Approval Report

Table of Contents

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:	A3LSMG556B
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§24
EUT Type:	Mobile phone
Model(s):	SM-G556B
Tx Frequency:	1850.7 MHz – 1909.3 MHz (LTE – Band2 (1.4 MHz)) 1851.5 MHz – 1908.5 MHz (LTE – Band2 (3 MHz)) 1852.5 MHz – 1907.5 MHz (LTE – Band2 (5 MHz)) 1855.0 MHz – 1905.0 MHz (LTE – Band2 (10 MHz)) 1857.5 MHz – 1902.5 MHz (LTE – Band2 (15 MHz)) 1860.0 MHz – 1900.0 MHz (LTE – Band2 (20 MHz))
Date(s) of Tests:	October 04, 2023 ~ November 08, 2023
Serial number:	Radiated: R3CWA0MQFKL Conducted: R3CW905GSTD(Main 2 Ant), 7A35E6B174357ECE(Sub 1 Ant)

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

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

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

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.**

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- N/A (See SAR Report)
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
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 ≥ 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;

   $$P_{d\ (dBm)} = Pg_{\ (dBm)} - \text{cable loss}_{\ (dB)} + \text{antenna gain}_{\ (dB)}$$

   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 ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10^{th} harmonics from 9 kHz.

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data
3. For spurious emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.
   The spurious emissions is calculated by the following formula;

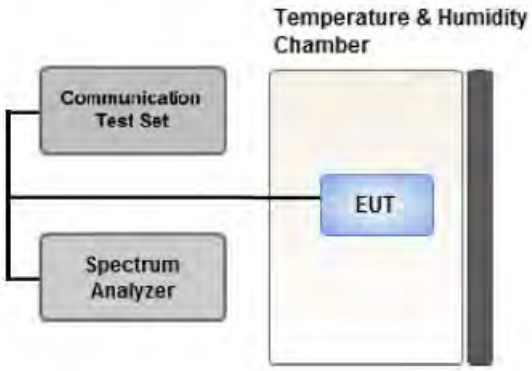
$$\text{Result}_{(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

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

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

$$EIRP_{(dBm)} = ERP_{(dBm)} + 2.15$$

3.4 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

1. Set resolution/measurement bandwidth ≥ 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 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)

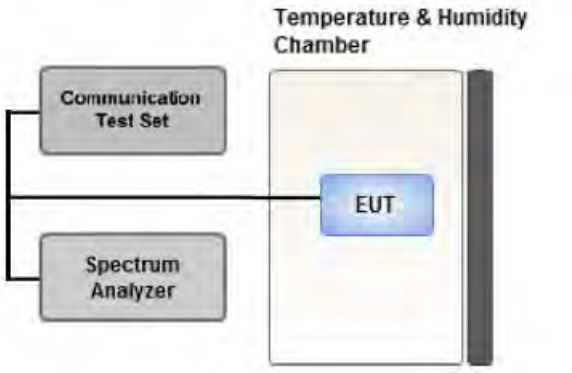
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

1. Set the RBW ≥ OBW.
2. Set VBW ≥ 3 × RBW.
3. Set span ≥ 2 × OBW.
4. Sweep time ≥ 10 × (number of points in sweep) × (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 × to 3 × the OBW.
2. Set RBW ≥ OBW.
3. Set VBW ≥ 3 × RBW.
4. Set number of measurement points in sweep ≥ 2 × span / RBW.
5. Sweep time:
   Set ≥ [10 × (number of points in sweep) × (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/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25 %.

3.5 OCCUPIED BANDWIDTH.



Test setup

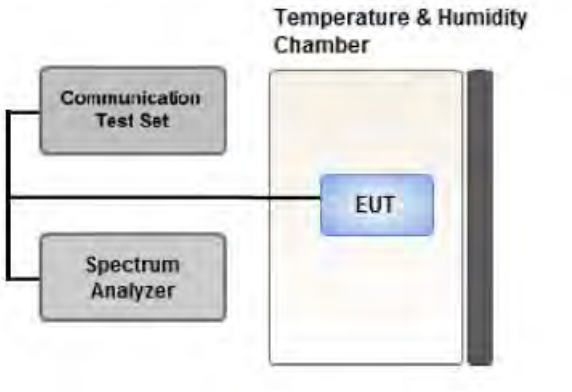
The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

The EUT makes a call to the communication simulator.
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

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

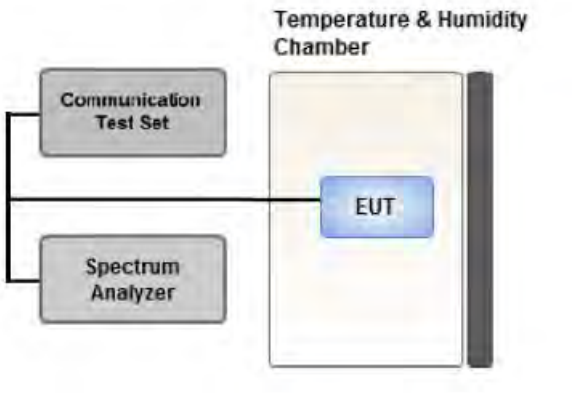
Test Overview

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 ≥ 3 MHz
3. Detector = RMS
4. Trace Mode = Average
5. Sweep time = auto
6. Number of points in sweep ≥ 2 * Span / RBW

3.7 BAND EDGE



Test setup

Test Overview

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

Test Settings

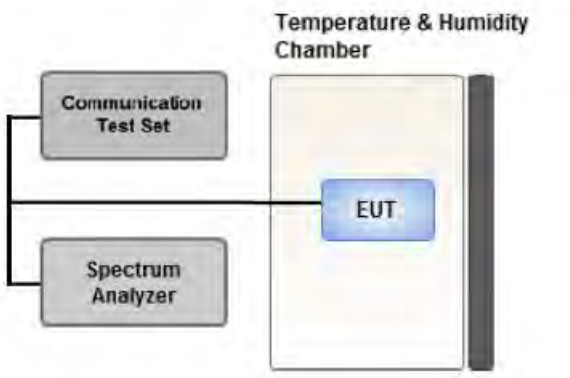
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW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

Test Notes

According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.
All measurements were done at 2 channels(low and high operational frequency range.)
The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

Where Margin < 1 dB the emission level is either corrected by 10 log(1 MHz/ 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)

- 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 : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
  Worst case : Stand alone
- We were performed the RSE test in condition of co-location.
  Mode : Stand alone, Simultaneous transmission scenarios
  Worst case : Stand alone
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported.

(Main 2 Ant Worst case : 15 MHz)
(Sub 1 Ant Worst case : 20 MHz)

- The worst case is reported with the EUT positioning, modulations, and paging service configurations shown in the test data.
- Please refer to the table below.

[Main 2 Ant Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	1	0	Z
Radiated Spurious and Harmonic Emissions	QPSK	1	0	X

[Sub 1 Ant Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	1.4	Low, Mid	1	0	X
			High	1	5	
		3	Low, Mid	1	0	
			High	1	14	
		5	Low, Mid	1	0	
			High	1	24	
		10	Low, Mid High	1	0	
		15	Low, Mid High	1	0	
		20	Low	1	99	
			Mid, High	1	0	
Radiated Spurious and Harmonic Emissions	QPSK	20	Low	1	99	Y
			Mid, High	1	0	

3.10 WORST CASE(CONDUCTED TEST)

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth	QPSK, 16QAM, 64QAM, 256QAM	1.4, 3, 5, 10, 15, 20	Mid	Full RB	0
Peak-To-Average Ratio	QPSK, 16QAM, 64QAM, 256QAM	1.4, 3, 5, 10, 15, 20	Mid	Full RB	0
Band Edge	QPSK	1.4	Low	1	0
			High	1	5
		3	Low	1	0
			High	1	14
		5	Low	1	0
			High	1	24
		10	Low	1	0
			High	1	49
		15	Low	1	0
			High	1	74
		20	Low	1	0
			High	1	99
		1.4, 3, 5, 10, 15, 20	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	QPSK	1.4, 3, 5, 10, 15, 20	Low, Mid, High	1	0

- All modes of operation were investigated and the worst case configuration results are reported.

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
RF Switching System	FBSR-02B(1.2G HPF+LNA)	T&M SYSTEM	F1L1	01/19/2024	Annual
RF Switching System	FBSR-02B(3.3G HPF+LNA)	T&M SYSTEM	F1L2	01/19/2024	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/19/2024	Annual
DC Power Supply	E3632A	Agilent	MY40010147	06/23/2024	Annual
Dipole Antenna	UHAP	Schwarzbeck	557	03/09/2025	Biennial
Dipole Antenna	UHAP	Schwarzbeck	558	03/09/2025	Biennial
Chamber	SU-642	ESPEC	93008124	02/22/2024	Annual
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	147	08/17/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1298	09/11/2025	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/29/2024	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/20/2024	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/19/2024	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/17/2024	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/10/2024	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/17/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/16/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	03/21/2024	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	12/01/2023	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	01/05/2024	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	06/22/2024	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/24/2024	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

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

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{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 (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.90 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.14 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.16 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.57 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.76 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.52 (Confidence level about 95 %, k=2)

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §24.238(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§2.1046	N/A	**See Note1**
Peak- to- Average Ratio	§24.232(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§24.235	Emission must remain in band	PASS

Note:

1. See SAR Report

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§24.232(c)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §24.238(a)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	PASS

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch./ Freq.		Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
channel	Freq.(MHz)						W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	H	0.483	26.84

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

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test , the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch./ Freq.		Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
channel	Freq.(MHz)						W	dBm
20175	1,732.50	-15.75	18.45	9.90	1.76	H	0.456	26.59

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

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test , the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

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	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1850.7	LTE B2/ 1.4 MHz	QPSK	-19.31	14.58	10.31	2.30	V	< 2.00	0.182	22.59
		16-QAM	-19.94	13.95	10.31	2.30	V		0.157	21.96
		64-QAM	-20.98	12.91	10.31	2.30	V		0.124	20.92
		256-QAM	-23.52	10.37	10.31	2.30	V		0.069	18.38
1880.0		QPSK	-19.28	15.42	10.35	2.33	V		0.221	23.44
		16-QAM	-19.79	14.91	10.35	2.33	V		0.196	22.93
		64-QAM	-20.82	13.88	10.35	2.33	V		0.155	21.90
		256-QAM	-23.37	11.33	10.35	2.33	V		0.086	19.35
1909.3		QPSK	-19.64	14.40	10.40	2.29	V		0.178	22.51
		16-QAM	-20.26	13.78	10.40	2.29	V		0.155	21.89
		64-QAM	-21.33	12.71	10.40	2.29	V		0.121	20.82
		256-QAM	-23.82	10.22	10.40	2.29	V		0.068	18.33

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1851.5	LTE B2/ 3 MHz	QPSK	-19.32	14.57	10.31	2.30	V	< 2.00	0.181	22.58
		16-QAM	-19.97	13.92	10.31	2.30	V		0.156	21.93
		64-QAM	-20.98	12.91	10.31	2.30	V		0.124	20.92
		256-QAM	-23.52	10.37	10.31	2.30	V		0.069	18.38
1880.0		QPSK	-19.32	15.38	10.35	2.33	V		0.219	23.40
		16-QAM	-19.76	14.94	10.35	2.33	V		0.198	22.96
		64-QAM	-20.83	13.87	10.35	2.33	V		0.155	21.89
		256-QAM	-23.34	11.36	10.35	2.33	V		0.087	19.38
1908.5		QPSK	-19.32	14.72	10.40	2.29	V		0.192	22.83
		16-QAM	-19.99	14.05	10.40	2.29	V		0.164	22.16
		64-QAM	-21.01	13.03	10.40	2.29	V		0.130	21.14
		256-QAM	-23.56	10.48	10.40	2.29	V		0.072	18.59

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1852.5	LTE B2/ 5 MHz	QPSK	-19.27	14.62	10.31	2.30	V	< 2.00	0.183	22.63
		16-QAM	-19.86	14.03	10.31	2.30	V		0.160	22.04
		64-QAM	-20.90	12.99	10.31	2.30	V		0.126	21.00
		256-QAM	-23.44	10.45	10.31	2.30	V		0.070	18.46
1880.0		QPSK	-19.18	15.52	10.35	2.33	V		0.226	23.54
		16-QAM	-19.70	15.00	10.35	2.33	V		0.201	23.02
		64-QAM	-20.76	13.94	10.35	2.33	V		0.157	21.96
		256-QAM	-23.30	11.40	10.35	2.33	V		0.087	19.42
1907.5		QPSK	-19.09	14.95	10.40	2.29	V		0.202	23.06
		16-QAM	-19.70	14.34	10.40	2.29	V		0.176	22.45
		64-QAM	-20.77	13.27	10.40	2.29	V		0.137	21.38
		256-QAM	-23.31	10.73	10.40	2.29	V		0.077	18.84

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1855.0	LTE B2/ 10 MHz	QPSK	-19.19	14.72	10.32	2.25	V	< 2.00	0.190	22.79
		16-QAM	-19.81	14.10	10.32	2.25	V		0.165	22.17
		64-QAM	-20.87	13.04	10.32	2.25	V		0.129	21.11
		256-QAM	-23.41	10.50	10.32	2.25	V		0.072	18.57
1880.0		QPSK	-19.11	15.59	10.35	2.33	V		0.230	23.61
		16-QAM	-19.59	15.11	10.35	2.33	V		0.206	23.13
		64-QAM	-20.65	14.05	10.35	2.33	V		0.161	22.07
		256-QAM	-23.20	11.50	10.35	2.33	V		0.090	19.52
1905.0		QPSK	-19.41	14.74	10.39	2.30	V		0.192	22.84
		16-QAM	-20.00	14.15	10.39	2.30	V		0.168	22.25
		64-QAM	-21.06	13.09	10.39	2.30	V		0.132	21.19
		256-QAM	-23.61	10.54	10.39	2.30	V		0.073	18.64

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1857.5	LTE B2/ 15 MHz	QPSK	-19.20	14.80	10.32	2.26	V	< 2.00	0.193	22.86
		16-QAM	-19.83	14.17	10.32	2.26	V		0.167	22.23
		64-QAM	-20.89	13.11	10.32	2.26	V		0.131	21.17
		256-QAM	-23.42	10.58	10.32	2.26	V		0.073	18.64
1880.0		QPSK	-19.08	15.62	10.35	2.33	V		0.231	23.64
		16-QAM	-19.65	15.05	10.35	2.33	V		0.203	23.07
		64-QAM	-20.70	14.00	10.35	2.33	V		0.159	22.02
		256-QAM	-23.24	11.46	10.35	2.33	V		0.089	19.48
1902.5		QPSK	-19.54	14.73	10.38	2.30	V		0.191	22.81
		16-QAM	-20.04	14.23	10.38	2.30	V		0.170	22.31
		64-QAM	-21.11	13.16	10.38	2.30	V		0.133	21.24
		256-QAM	-23.66	10.61	10.38	2.30	V		0.074	18.69

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1860.0	LTE B2/ 20 MHz	QPSK	-19.25	14.75	10.32	2.26	V	< 2.00	0.191	22.81
		16-QAM	-19.86	14.14	10.32	2.26	V		0.166	22.20
		64-QAM	-20.95	13.05	10.32	2.26	V		0.129	21.11
		256-QAM	-23.48	10.52	10.32	2.26	V		0.072	18.58
1880.0		QPSK	-19.17	15.53	10.35	2.33	V		0.226	23.55
		16-QAM	-19.69	15.01	10.35	2.33	V		0.201	23.03
		64-QAM	-20.78	13.92	10.35	2.33	V		0.156	21.94
		256-QAM	-23.31	11.39	10.35	2.33	V		0.087	19.41
1900.0		QPSK	-19.36	14.91	10.38	2.30	V		0.199	22.99
		16-QAM	-19.86	14.41	10.38	2.30	V		0.177	22.49
		64-QAM	-20.96	13.31	10.38	2.30	V		0.138	21.39
		256-QAM	-23.48	10.79	10.38	2.30	V		0.077	18.87

8.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY: 1880.0 MHz

▣ MEASURED OUTPUT POWER: 23.64 dBm = 0.231 W

▣ MODE: LTE B2

▣ MODULATION SIGNAL: 15 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log10 (W) = 36.64 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18675 (1857.5)	3 715.00	-55.69	12.28	-60.60	3.20	H	-51.52	75.16
	5 572.50	-57.35	13.06	-55.49	3.93	H	-46.36	70.00
	7 430.00	-48.59	10.78	-38.02	4.69	H	-31.93	55.57
18900 (1880.0)	3 760.00	-54.98	12.22	-59.61	3.27	V	-50.66	74.30
	5 640.00	-56.33	13.12	-54.06	4.07	H	-45.01	68.65
	7 520.00	-52.90	10.82	-42.09	4.71	V	-35.98	59.62
19125 (1902.5)	3 805.00	-54.19	12.16	-59.26	3.24	H	-50.34	73.98
	5 707.50	-54.21	13.09	-51.66	4.16	H	-42.73	66.37
	7 610.00	-54.39	11.11	-43.75	4.77	H	-37.41	61.05

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
2	1.4 MHz	1880.0	QPSK	6	0	5.38
			16-QAM	6	0	6.11
			64-QAM	6	0	6.46
			256-QAM	6	0	6.55
	3 MHz		QPSK	15	0	5.41
			16-QAM	15	0	6.07
			64-QAM	15	0	6.45
			256-QAM	15	0	6.63
	5 MHz		QPSK	25	0	5.30
			16-QAM	25	0	6.03
			64-QAM	25	0	6.44
			256-QAM	25	0	6.66
	10 MHz		QPSK	50	0	5.43
			16-QAM	50	0	6.09
			64-QAM	50	0	6.40
			256-QAM	50	0	6.66
	15 MHz		QPSK	75	0	5.34
			16-QAM	75	0	6.02
			64-QAM	75	0	6.44
			256-QAM	75	0	6.65
	20 MHz		QPSK	100	0	5.29
			16-QAM	100	0	5.99
			64-QAM	100	0	6.41
			256-QAM	100	0	6.64

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 138 ~ 161.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
2	1.4 MHz	1880.0	QPSK	6	0	1.0945
			16-QAM	6	0	1.0885
			64-QAM	6	0	1.0960
			256-QAM	6	0	1.0886
	3 MHz		QPSK	15	0	2.6995
			16-QAM	15	0	2.6853
			64-QAM	15	0	2.6965
			256-QAM	15	0	2.6968
	5 MHz		QPSK	25	0	4.5023
			16-QAM	25	0	4.4863
			64-QAM	25	0	4.5197
			256-QAM	25	0	4.4995
	10 MHz		QPSK	50	0	8.9621
			16-QAM	50	0	8.9688
			64-QAM	50	0	8.9683
			256-QAM	50	0	8.9792
	15 MHz		QPSK	75	0	13.462
			16-QAM	75	0	13.450
			64-QAM	75	0	13.437
			256-QAM	75	0	13.489
	20 MHz		QPSK	100	0	17.948
			16-QAM	100	0	17.937
			64-QAM	100	0	17.965
			256-QAM	100	0	17.896

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 114 ~ 137.

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)
2	1.4	1850.7	9.2513	28.591	-79.943	-51.352	-13.00
		1880.0	7.5180	28.591	-78.695	-50.104	
		1909.3	7.6391	28.591	-79.988	-51.397	
	3	1851.5	7.4008	28.591	-78.264	-49.673	
		1880.0	3.8261	27.976	-80.327	-52.351	
		1908.5	5.7294	28.591	-77.608	-49.017	
	5	1852.5	7.4013	28.591	-79.890	-51.299	
		1880.0	7.5110	28.591	-79.380	-50.789	
		1907.5	5.7289	28.591	-79.127	-50.536	
	10	1855.0	5.5514	28.591	-79.677	-51.086	
		1880.0	5.6267	28.591	-79.314	-50.723	
		1905.0	5.7284	28.591	-79.296	-50.705	
	15	1857.5	7.4033	28.591	-78.100	-49.509	
		1880.0	5.6197	28.591	-80.435	-51.844	
		1902.5	5.7274	28.591	-78.390	-49.799	
	20	1860.0	3.7822	27.976	-79.850	-51.874	
		1880.0	7.4846	28.591	-79.474	-50.883	
		1900.0	5.7264	28.591	-79.232	-50.641	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 162 ~ 197.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
4. Factor (dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20(26.5)	30.131

8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 78 ~ 113.

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE B2

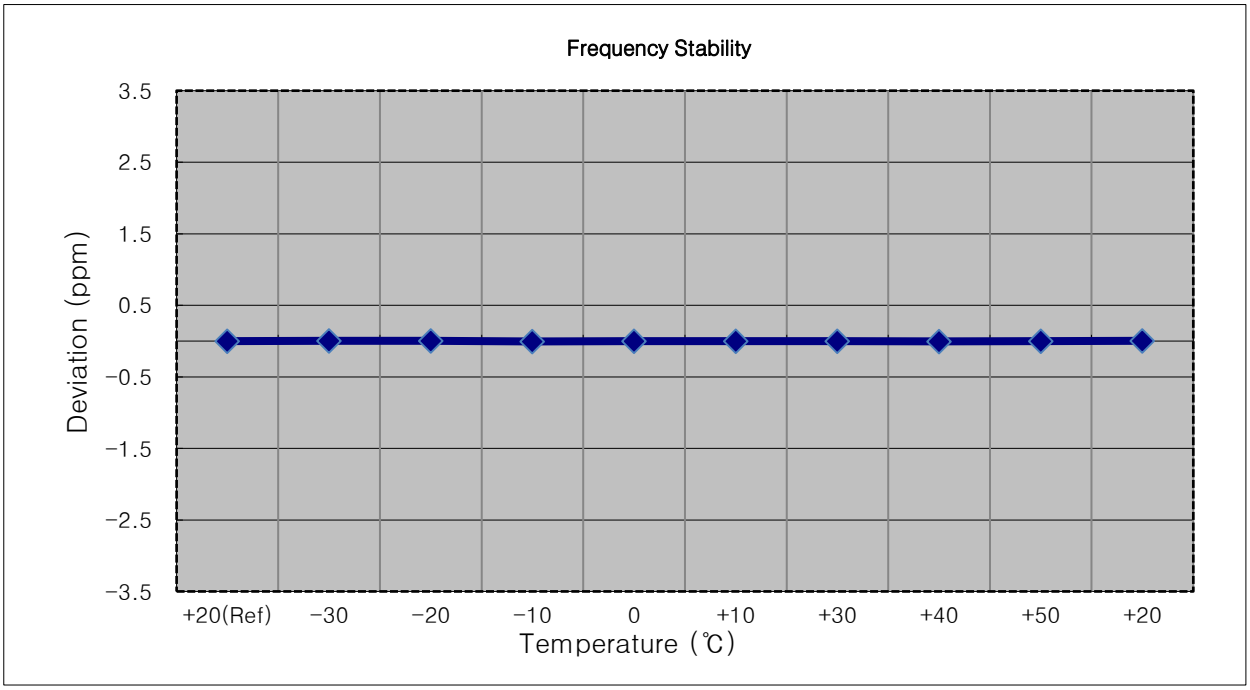
▣ OPERATING FREQUENCY: 1850,700,000 Hz

▣ CHANNEL: 18607 (1.4 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1850 700 002	0.0	0.000 000	0.000
100 %		-30	1850 700 006	4.4	0.000 000	0.002
100 %		-20	1850 700 008	5.6	0.000 000	0.003
100 %		-10	1850 699 995	-6.5	0.000 000	-0.004
100 %		0	1850 699 996	-5.5	0.000 000	-0.003
100 %		+10	1850 699 999	-2.7	0.000 000	-0.001
100 %		+30	1850 700 000	-1.8	0.000 000	-0.001
100 %		+40	1850 699 994	-7.8	0.000 000	-0.004
100 %		+50	1850 699 999	-3.4	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1850 700 009	6.8	0.000 000	0.004



▣ MODE: LTE B2

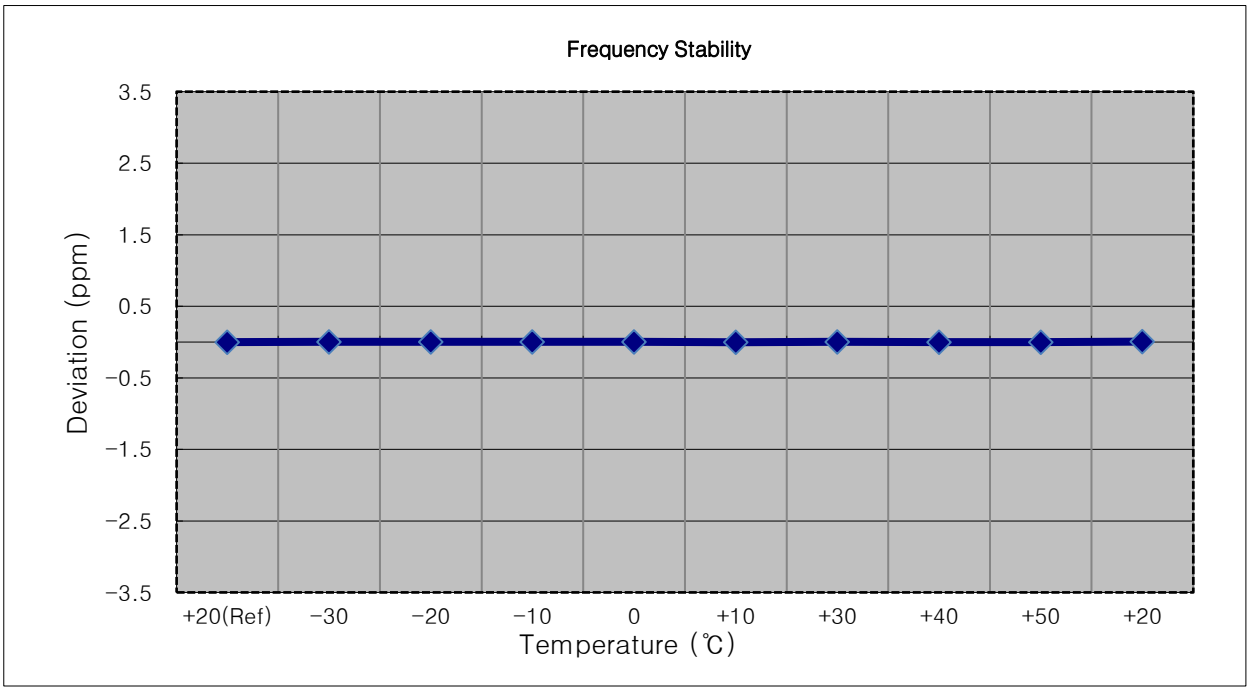
▣ OPERATING FREQUENCY: 1851,500,000 Hz

▣ CHANNEL: 18615 (3 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1851 500 006	0.0	0.000 000	0.000
100 %		-30	1851 500 014	8.6	0.000 000	0.005
100 %		-20	1851 500 013	7.7	0.000 000	0.004
100 %		-10	1851 500 014	8.6	0.000 000	0.005
100 %		0	1851 500 010	4.3	0.000 000	0.002
100 %		+10	1851 500 001	-4.7	0.000 000	-0.003
100 %		+30	1851 500 011	5.3	0.000 000	0.003
100 %		+40	1851 500 001	-4.3	0.000 000	-0.002
100 %		+50	1851 500 002	-3.9	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1851 500 017	11.0	0.000 001	0.006



▣ MODE: LTE B2

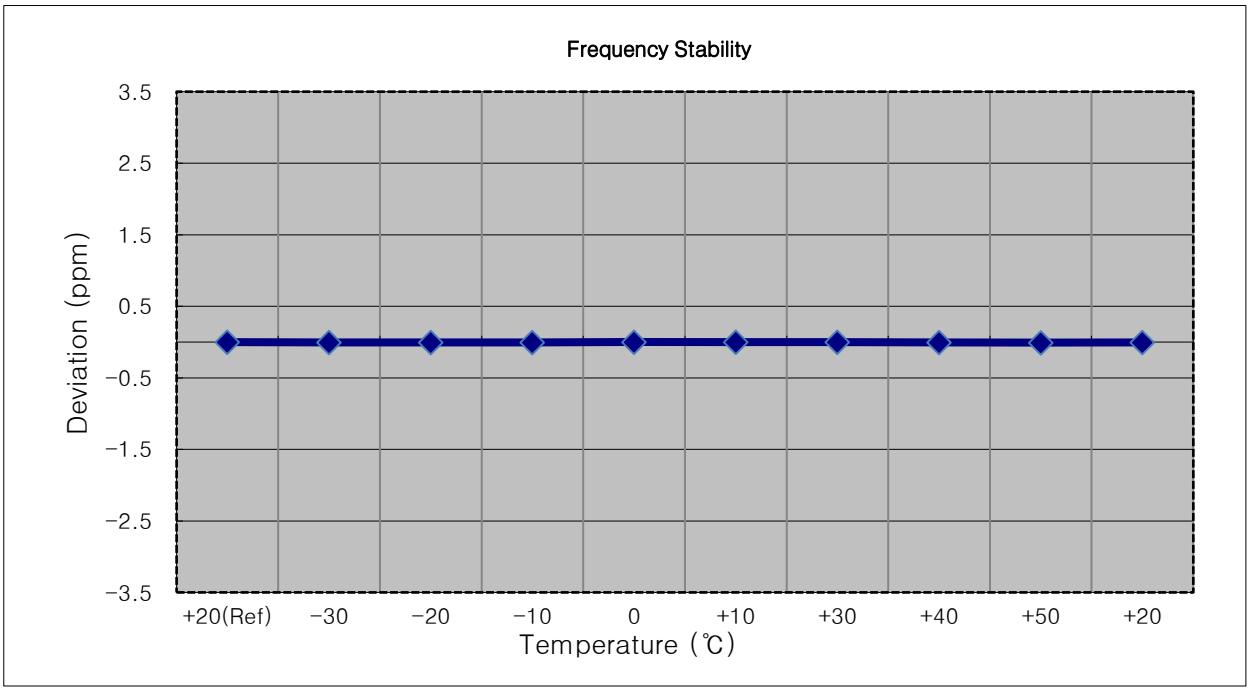
▣ OPERATING FREQUENCY: 1852,500,000 Hz

▣ CHANNEL: 18625 (5 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1852 499 987	0.0	0.000 000	0.000
100 %		-30	1852 499 977	-9.9	-0.000 001	-0.005
100 %		-20	1852 499 976	-11.7	-0.000 001	-0.006
100 %		-10	1852 499 976	-11.3	-0.000 001	-0.006
100 %		0	1852 499 989	2.0	0.000 000	0.001
100 %		+10	1852 499 983	-4.0	0.000 000	-0.002
100 %		+30	1852 499 985	-1.9	0.000 000	-0.001
100 %		+40	1852 499 977	-10.3	-0.000 001	-0.006
100 %		+50	1852 499 973	-14.1	-0.000 001	-0.008
Batt. Endpoint	3.400	+20	1852 499 975	-11.9	-0.000 001	-0.006



▣ MODE: LTE B2

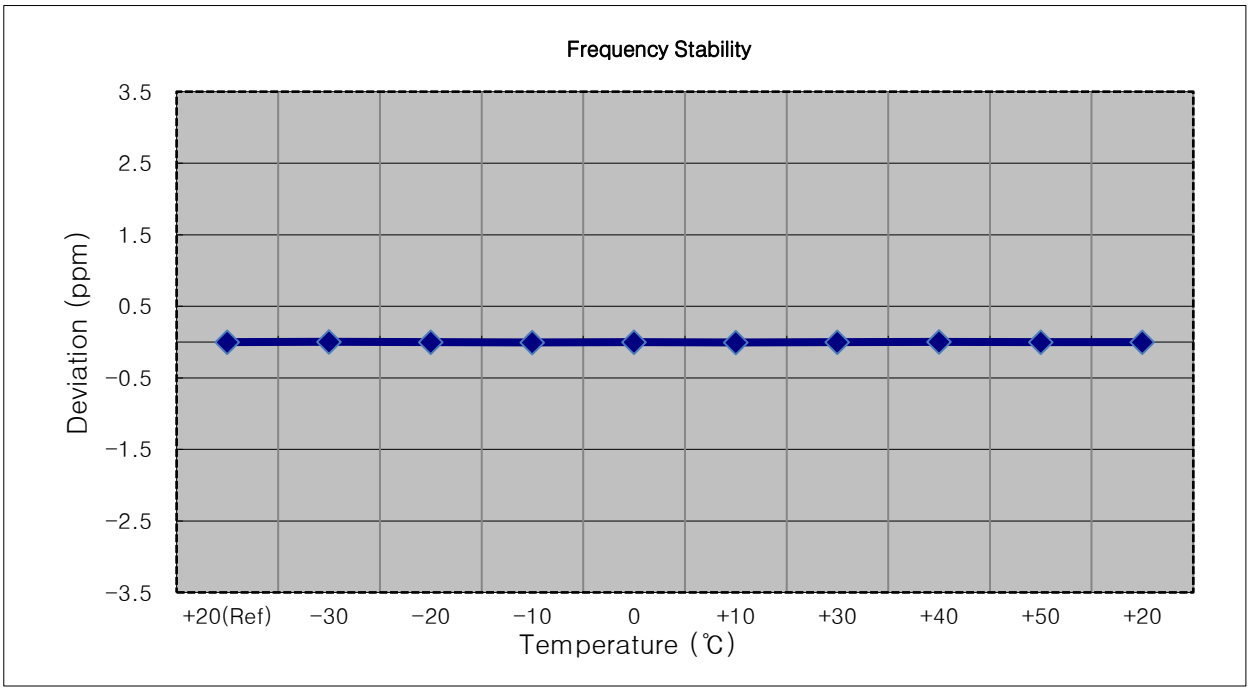
▣ OPERATING FREQUENCY: 1855,000,000 Hz

▣ CHANNEL: 18650 (10 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1854 999 997	0.0	0.000 000	0.000
100 %		-30	1855 000 000	3.6	0.000 000	0.002
100 %		-20	1854 999 992	-5.1	0.000 000	-0.003
100 %		-10	1854 999 991	-6.0	0.000 000	-0.003
100 %		0	1854 999 995	-1.5	0.000 000	-0.001
100 %		+10	1854 999 987	-10.3	-0.000 001	-0.006
100 %		+30	1854 999 993	-3.4	0.000 000	-0.002
100 %		+40	1855 000 001	4.0	0.000 000	0.002
100 %		+50	1854 999 991	-5.4	0.000 000	-0.003
Batt. Endpoint	3.400	+20	1854 999 993	-4.2	0.000 000	-0.002



▣ MODE: LTE B2

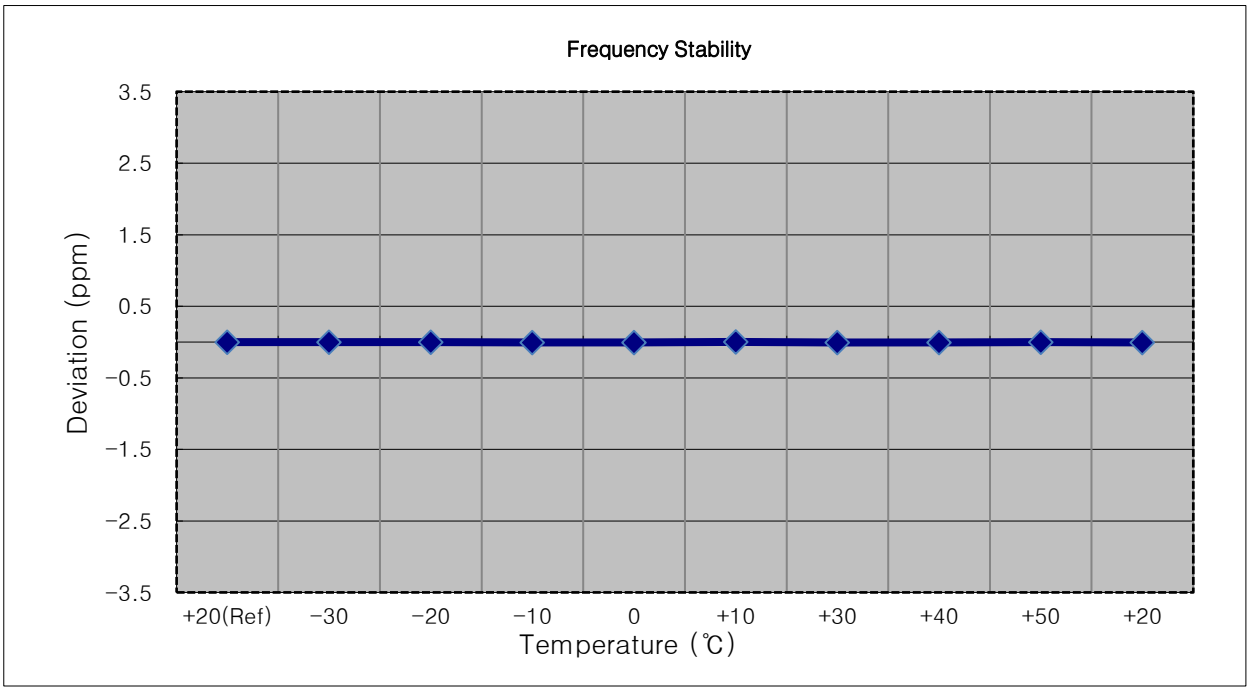
▣ OPERATING FREQUENCY: 1857,500,000 Hz

▣ CHANNEL: 18675 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1857 500 003	0.0	0.000 000	0.000
100 %		-30	1857 500 001	-2.2	0.000 000	-0.001
100 %		-20	1857 500 005	2.5	0.000 000	0.001
100 %		-10	1857 499 993	-9.9	-0.000 001	-0.005
100 %		0	1857 499 996	-6.5	0.000 000	-0.003
100 %		+10	1857 500 006	3.4	0.000 000	0.002
100 %		+30	1857 499 992	-11.4	-0.000 001	-0.006
100 %		+40	1857 499 996	-7.1	0.000 000	-0.004
100 %		+50	1857 500 001	-2.0	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1857 499 997	-5.9	0.000 000	-0.003



▣ MODE: LTE B2

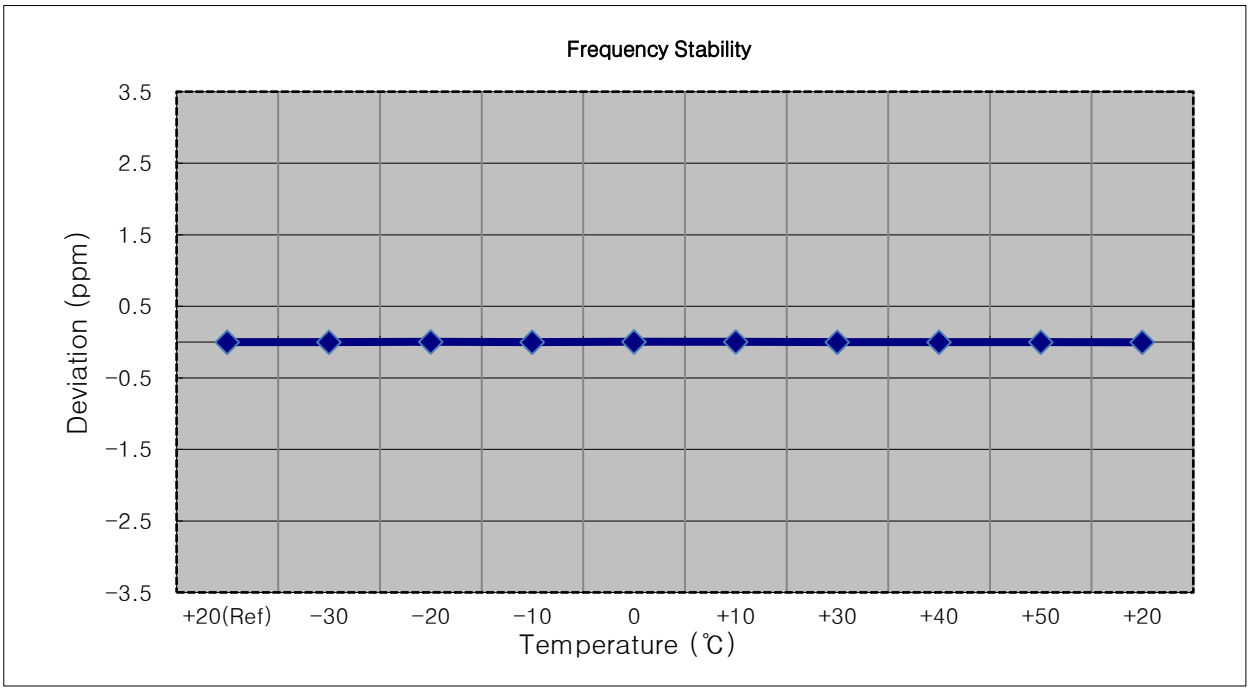
▣ OPERATING FREQUENCY: 1860,000,000 Hz

▣ CHANNEL: 18700 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1859 999 995	0.0	0.000 000	0.000
100 %		-30	1859 999 994	-1.4	0.000 000	-0.001
100 %		-20	1859 999 998	3.5	0.000 000	0.002
100 %		-10	1859 999 994	-1.3	0.000 000	-0.001
100 %		0	1860 000 004	9.3	0.000 001	0.005
100 %		+10	1859 999 998	3.0	0.000 000	0.002
100 %		+30	1859 999 993	-2.0	0.000 000	-0.001
100 %		+40	1859 999 994	-1.2	0.000 000	-0.001
100 %		+50	1859 999 993	-1.5	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1859 999 990	-4.9	0.000 000	-0.003



▣ MODE: LTE B2

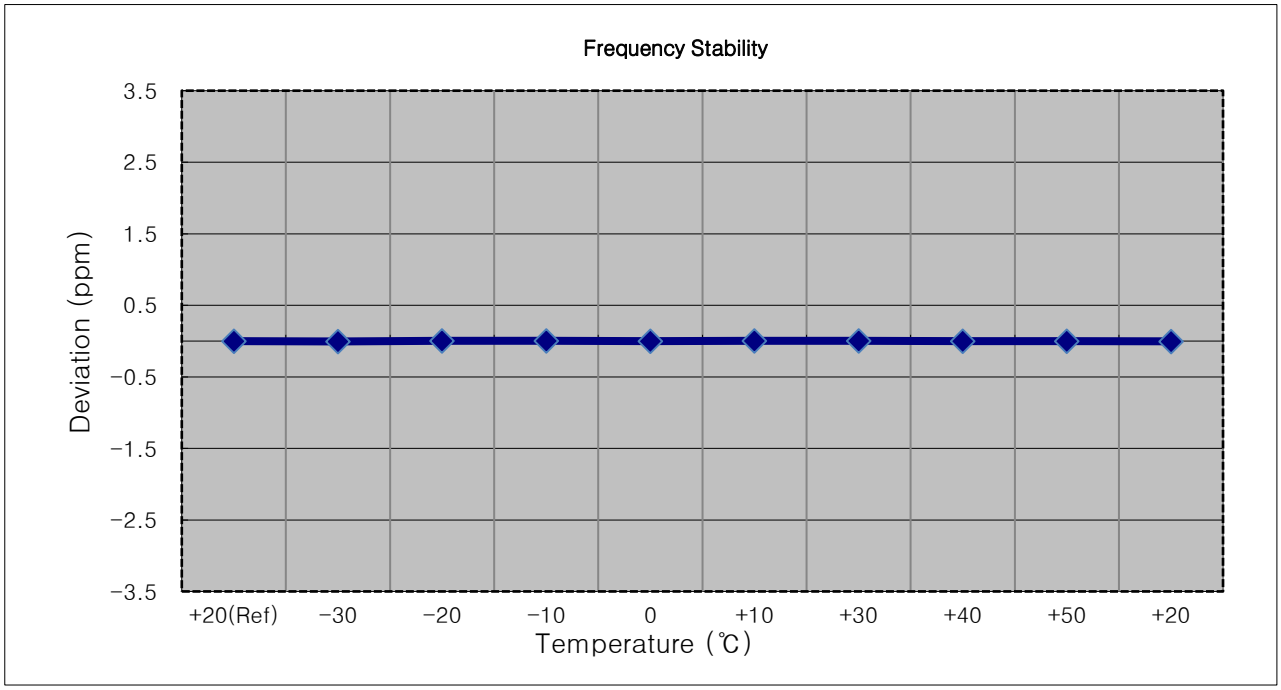
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (1.4 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1880 000 003	0.0	0.000 000	0.000
100 %		-30	1879 999 997	-6.6	0.000 000	-0.004
100 %		-20	1880 000 011	7.2	0.000 000	0.004
100 %		-10	1880 000 011	7.8	0.000 000	0.004
100 %		0	1879 999 998	-5.5	0.000 000	-0.003
100 %		+10	1880 000 008	4.7	0.000 000	0.002
100 %		+30	1880 000 007	3.8	0.000 000	0.002
100 %		+40	1879 999 999	-4.6	0.000 000	-0.002
100 %		+50	1879 999 999	-4.0	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1879 999 997	-6.7	0.000 000	-0.004



▣ MODE: LTE B2

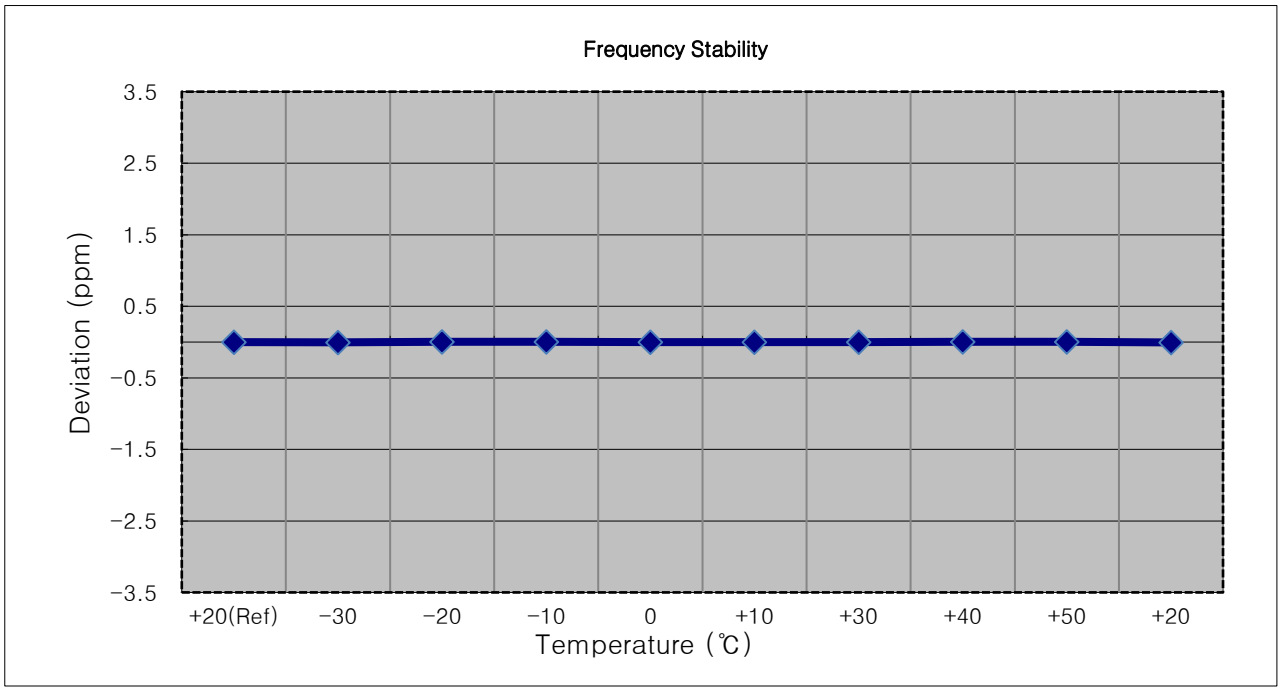
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (3 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 991	0.0	0.000 000	0.000
100 %		-30	1879 999 984	-7.0	0.000 000	-0.004
100 %		-20	1879 999 994	2.9	0.000 000	0.002
100 %		-10	1879 999 995	3.6	0.000 000	0.002
100 %		0	1879 999 986	-4.6	0.000 000	-0.002
100 %		+10	1879 999 988	-3.2	0.000 000	-0.002
100 %		+30	1879 999 986	-5.5	0.000 000	-0.003
100 %		+40	1879 999 995	4.0	0.000 000	0.002
100 %		+50	1879 999 998	7.0	0.000 000	0.004
Batt. Endpoint	3.400	+20	1879 999 984	-6.6	0.000 000	-0.004



▣ MODE: LTE B2

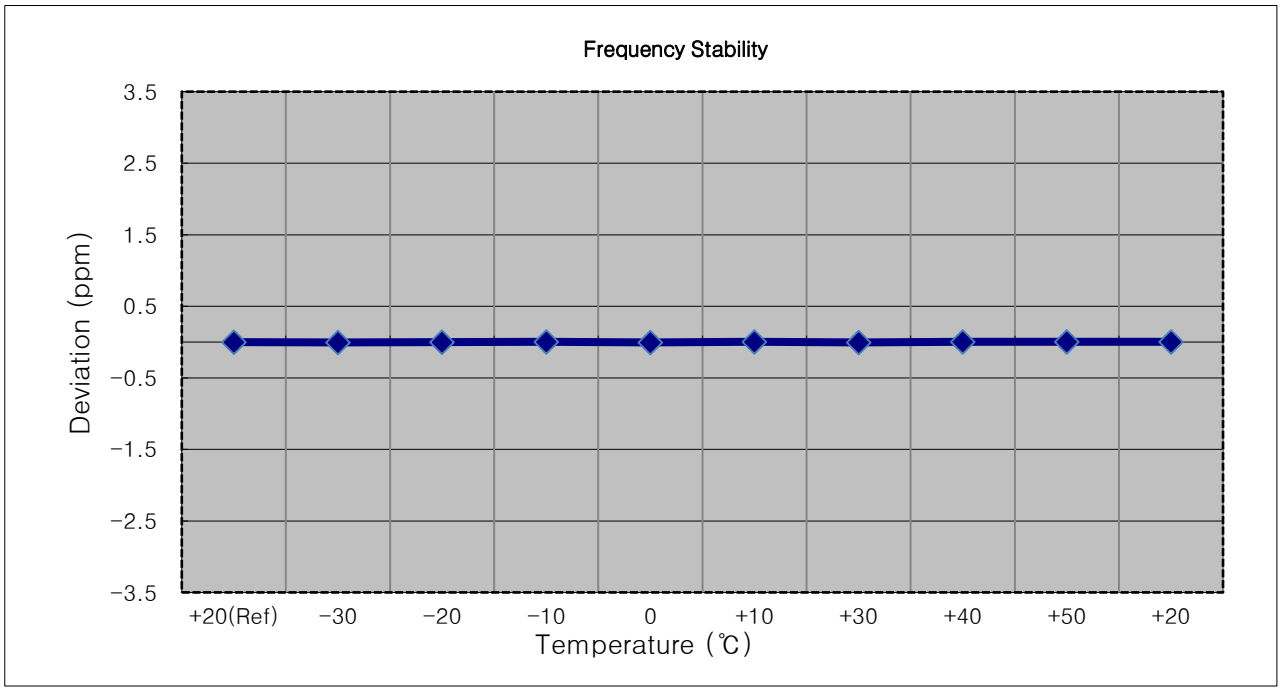
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (5 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 995	0.0	0.000 000	0.000
100 %		-30	1879 999 986	-8.7	0.000 000	-0.005
100 %		-20	1879 999 991	-4.6	0.000 000	-0.002
100 %		-10	1880 000 002	6.7	0.000 000	0.004
100 %		0	1879 999 985	-10.0	-0.000 001	-0.005
100 %		+10	1880 000 003	7.5	0.000 000	0.004
100 %		+30	1879 999 989	-5.8	0.000 000	-0.003
100 %		+40	1879 999 999	3.5	0.000 000	0.002
100 %		+50	1880 000 002	7.3	0.000 000	0.004
Batt. Endpoint	3.400	+20	1880 000 001	5.7	0.000 000	0.003



▣ MODE: LTE B2

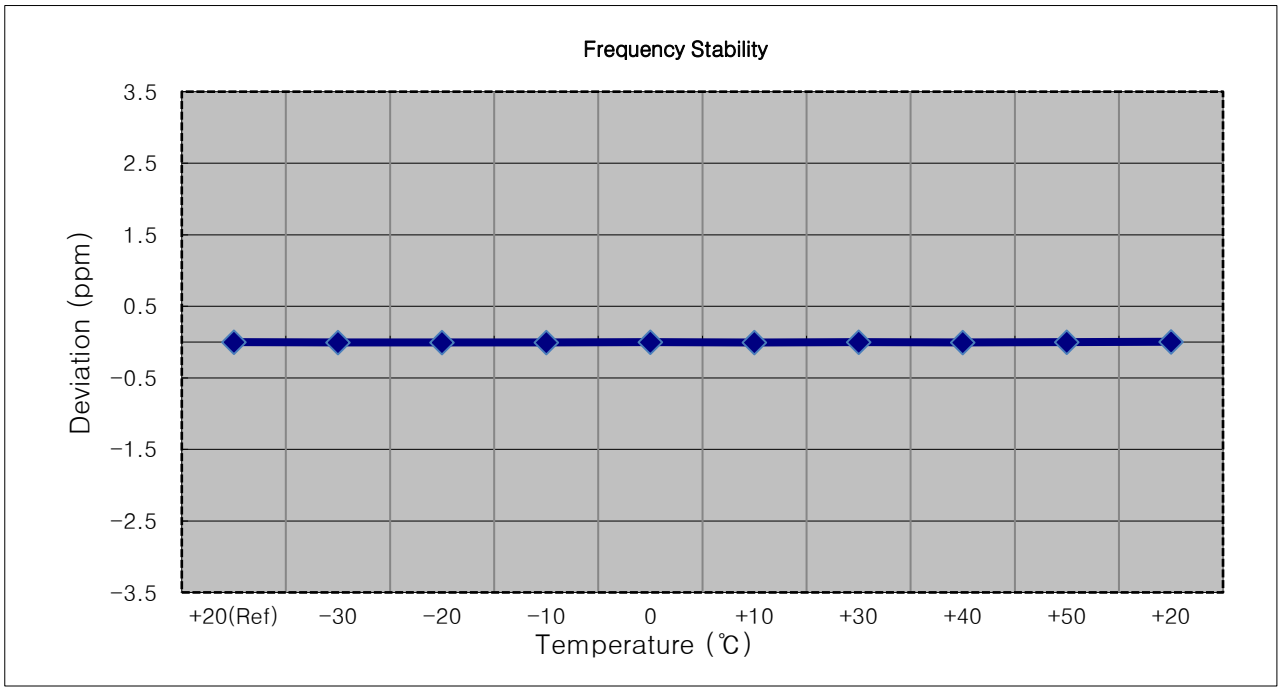
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (10 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 998	0.0	0.000 000	0.000
100 %		-30	1879 999 992	-5.8	0.000 000	-0.003
100 %		-20	1879 999 989	-9.1	0.000 000	-0.005
100 %		-10	1879 999 987	-10.9	-0.000 001	-0.006
100 %		0	1880 000 000	1.9	0.000 000	0.001
100 %		+10	1879 999 986	-12.0	-0.000 001	-0.006
100 %		+30	1879 999 994	-4.1	0.000 000	-0.002
100 %		+40	1879 999 988	-9.7	-0.000 001	-0.005
100 %		+50	1879 999 992	-5.6	0.000 000	-0.003
Batt. Endpoint	3.400	+20	1880 000 006	7.9	0.000 000	0.004



▣ MODE: LTE B2

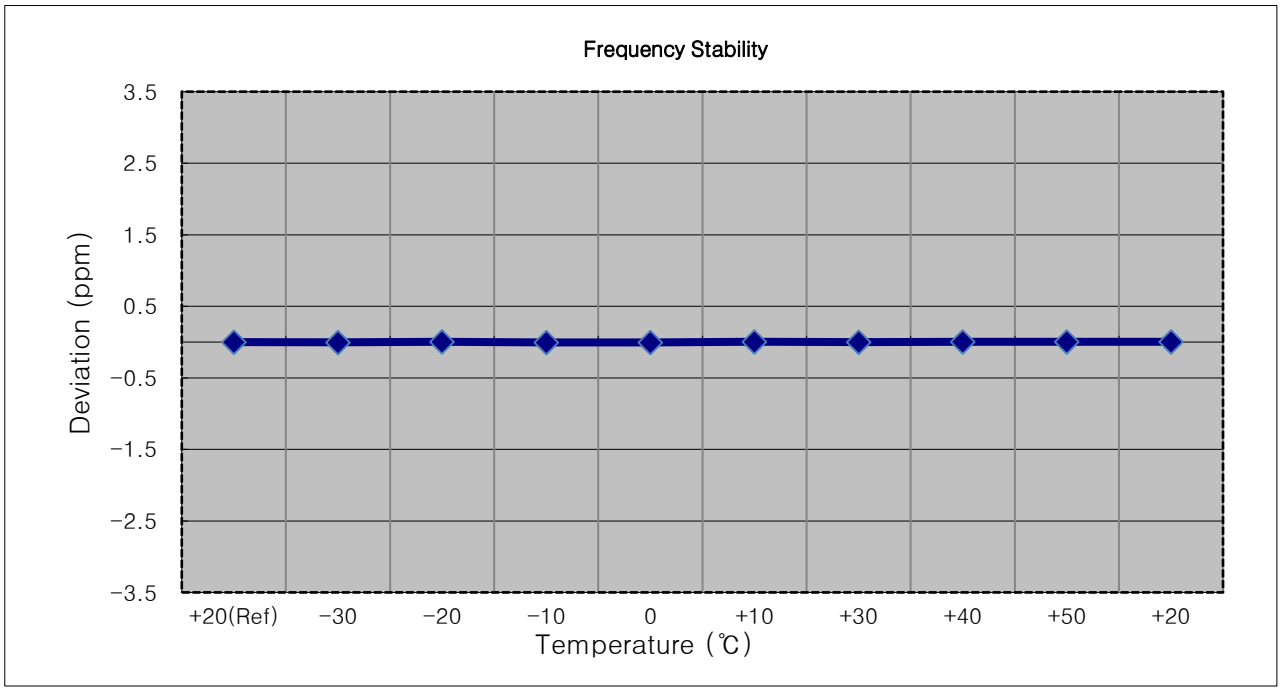
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 992	0.0	0.000 000	0.000
100 %		-30	1879 999 986	-6.5	0.000 000	-0.003
100 %		-20	1879 999 999	6.2	0.000 000	0.003
100 %		-10	1879 999 986	-6.2	0.000 000	-0.003
100 %		0	1879 999 986	-6.2	0.000 000	-0.003
100 %		+10	1880 000 001	8.5	0.000 000	0.005
100 %		+30	1879 999 988	-4.3	0.000 000	-0.002
100 %		+40	1879 999 997	4.9	0.000 000	0.003
100 %		+50	1879 999 999	6.8	0.000 000	0.004
Batt. Endpoint	3.400	+20	1879 999 997	5.0	0.000 000	0.003



▣ MODE: LTE B2

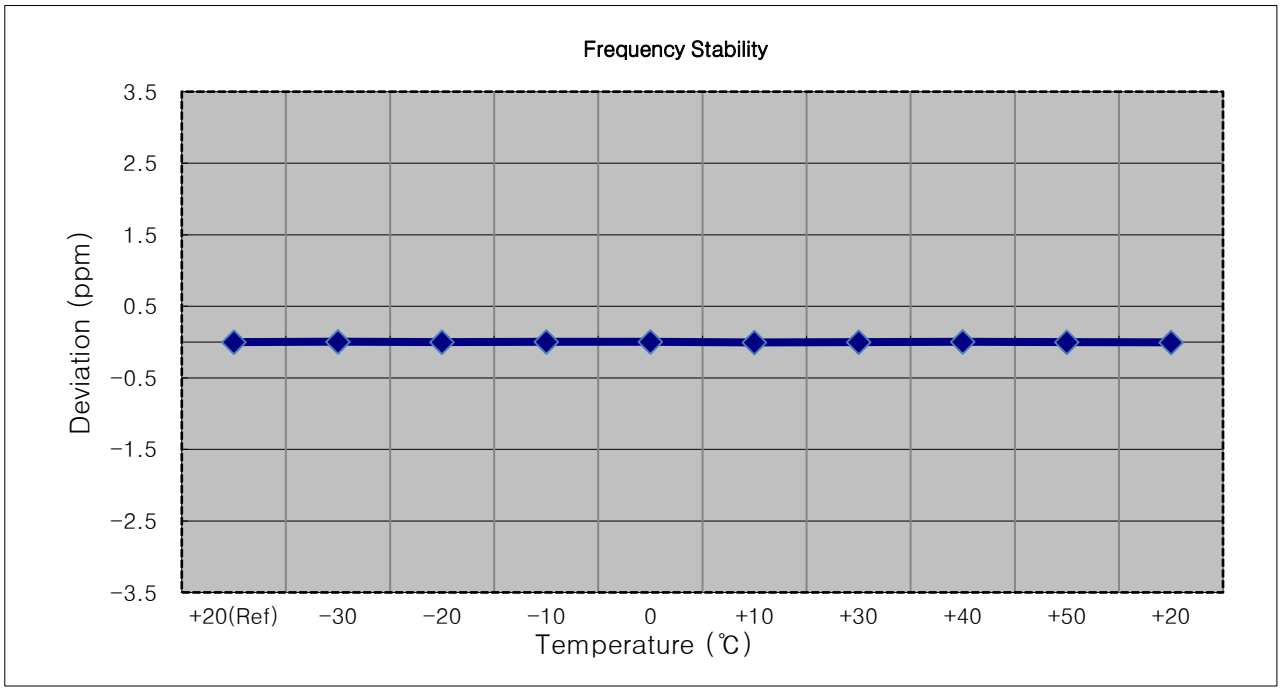
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 995	0.0	0.000 000	0.000
100 %		-30	1880 000 005	9.6	0.000 001	0.005
100 %		-20	1879 999 998	2.4	0.000 000	0.001
100 %		-10	1880 000 003	7.6	0.000 000	0.004
100 %		0	1880 000 001	5.4	0.000 000	0.003
100 %		+10	1879 999 989	-6.6	0.000 000	-0.004
100 %		+30	1879 999 991	-3.8	0.000 000	-0.002
100 %		+40	1879 999 999	3.6	0.000 000	0.002
100 %		+50	1879 999 997	1.3	0.000 000	0.001
Batt. Endpoint	3.400	+20	1879 999 988	-6.9	0.000 000	-0.004



▣ MODE: LTE B2

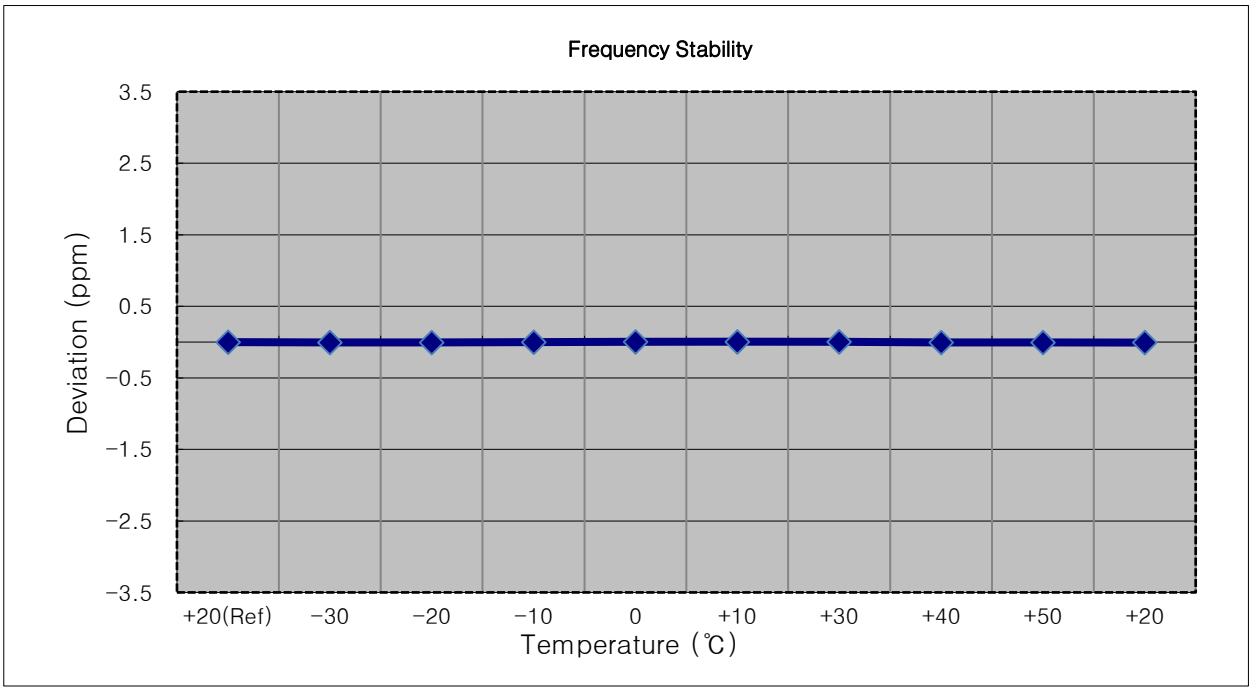
▣ OPERATING FREQUENCY: 1909,300,000 Hz

▣ CHANNEL: 19193 (1.4 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1909 300 007	0.0	0.000 000	0.000
100 %		-30	1909 300 001	-6.1	0.000 000	-0.003
100 %		-20	1909 300 000	-7.5	0.000 000	-0.004
100 %		-10	1909 300 002	-5.1	0.000 000	-0.003
100 %		0	1909 300 014	6.4	0.000 000	0.003
100 %		+10	1909 300 017	10.0	0.000 001	0.005
100 %		+30	1909 300 013	5.5	0.000 000	0.003
100 %		+40	1909 299 996	-10.7	-0.000 001	-0.006
100 %		+50	1909 299 996	-11.0	-0.000 001	-0.006
Batt. Endpoint	3.400	+20	1909 299 994	-13.6	-0.000 001	-0.007



▣ MODE: LTE B2

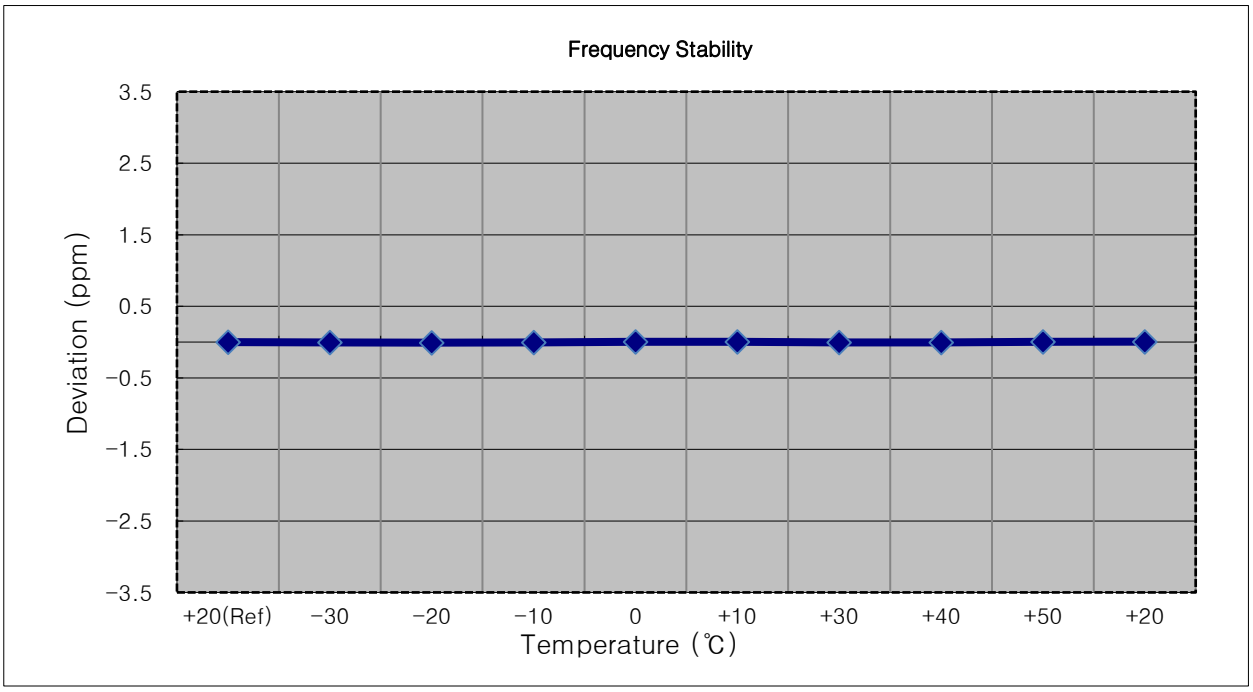
▣ OPERATING FREQUENCY: 1908,500,000 Hz

▣ CHANNEL: 19185 (3 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1908 499 993	0.0	0.000 000	0.000
100 %		-30	1908 499 987	-6.5	0.000 000	-0.003
100 %		-20	1908 499 978	-15.9	-0.000 001	-0.008
100 %		-10	1908 499 985	-8.4	0.000 000	-0.004
100 %		0	1908 500 000	6.9	0.000 000	0.004
100 %		+10	1908 500 000	6.6	0.000 000	0.003
100 %		+30	1908 499 984	-9.3	0.000 000	-0.005
100 %		+40	1908 499 983	-10.8	-0.000 001	-0.006
100 %		+50	1908 500 002	8.6	0.000 000	0.005
Batt. Endpoint	3.400	+20	1908 500 004	10.7	0.000 001	0.006



▣ MODE: LTE B2

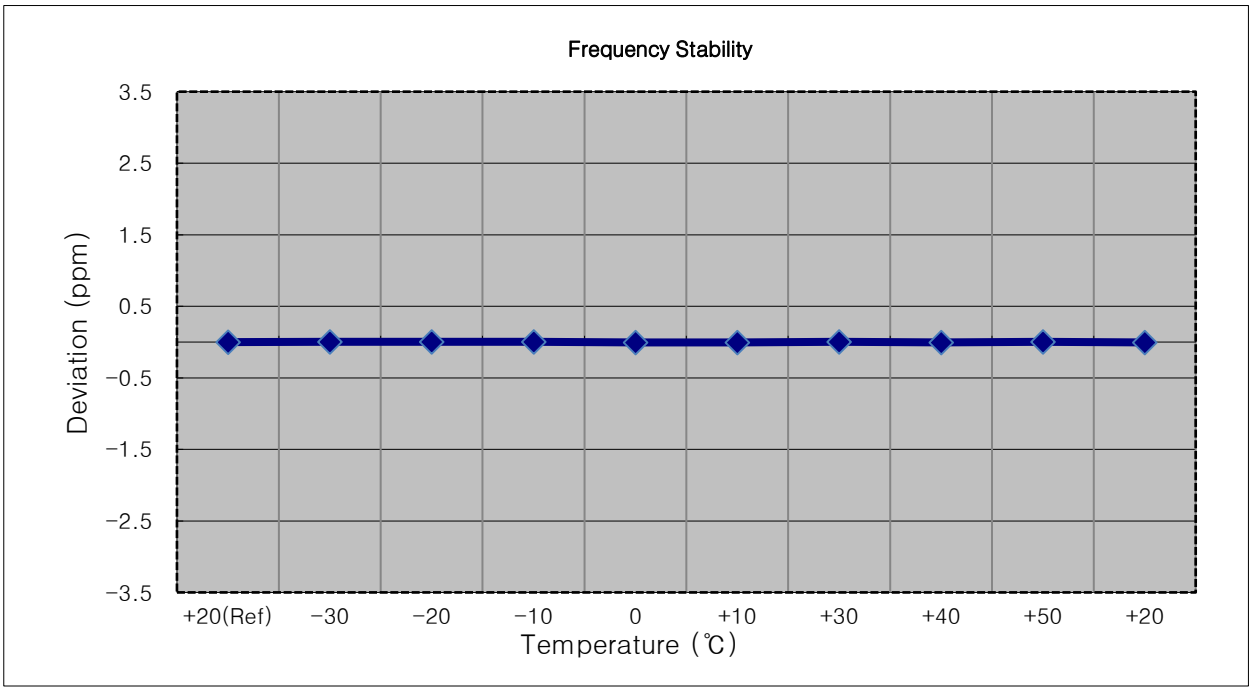
▣ OPERATING FREQUENCY: 1907,500,000 Hz

▣ CHANNEL: 19175 (5 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1907 499 995	0.0	0.000 000	0.000
100 %		-30	1907 500 000	5.6	0.000 000	0.003
100 %		-20	1907 500 001	6.2	0.000 000	0.003
100 %		-10	1907 499 999	4.6	0.000 000	0.002
100 %		0	1907 499 988	-6.8	0.000 000	-0.004
100 %		+10	1907 499 987	-7.5	0.000 000	-0.004
100 %		+30	1907 499 999	4.6	0.000 000	0.002
100 %		+40	1907 499 985	-9.6	-0.000 001	-0.005
100 %		+50	1907 500 001	6.3	0.000 000	0.003
Batt. Endpoint	3.400	+20	1907 499 988	-6.8	0.000 000	-0.004



▣ MODE: LTE B2

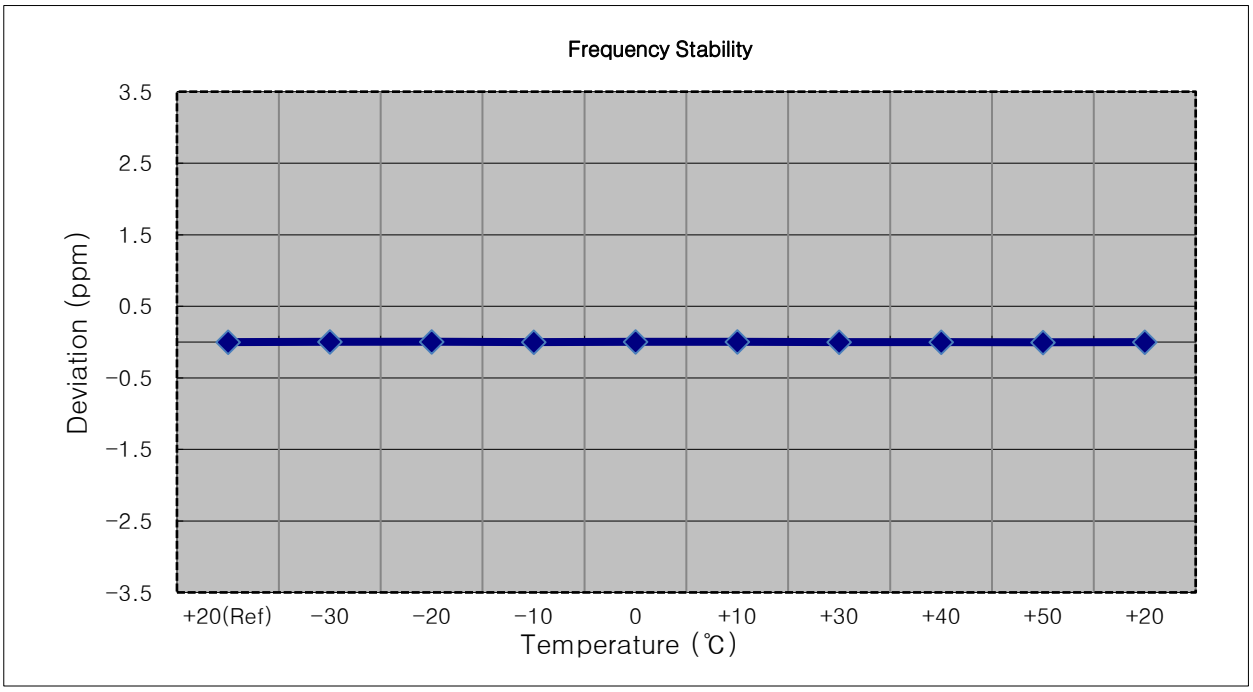
▣ OPERATING FREQUENCY: 1905,000,000 Hz

▣ CHANNEL: 19150 (10 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1904 999 998	0.0	0.000 000	0.000
100 %		-30	1905 000 006	7.3	0.000 000	0.004
100 %		-20	1905 000 007	9.0	0.000 000	0.005
100 %		-10	1904 999 994	-4.0	0.000 000	-0.002
100 %		0	1905 000 004	6.0	0.000 000	0.003
100 %		+10	1905 000 006	7.9	0.000 000	0.004
100 %		+30	1904 999 994	-4.6	0.000 000	-0.002
100 %		+40	1904 999 995	-3.8	0.000 000	-0.002
100 %		+50	1904 999 992	-6.1	0.000 000	-0.003
Batt. Endpoint	3.400	+20	1904 999 994	-4.3	0.000 000	-0.002



▣ MODE: LTE B2

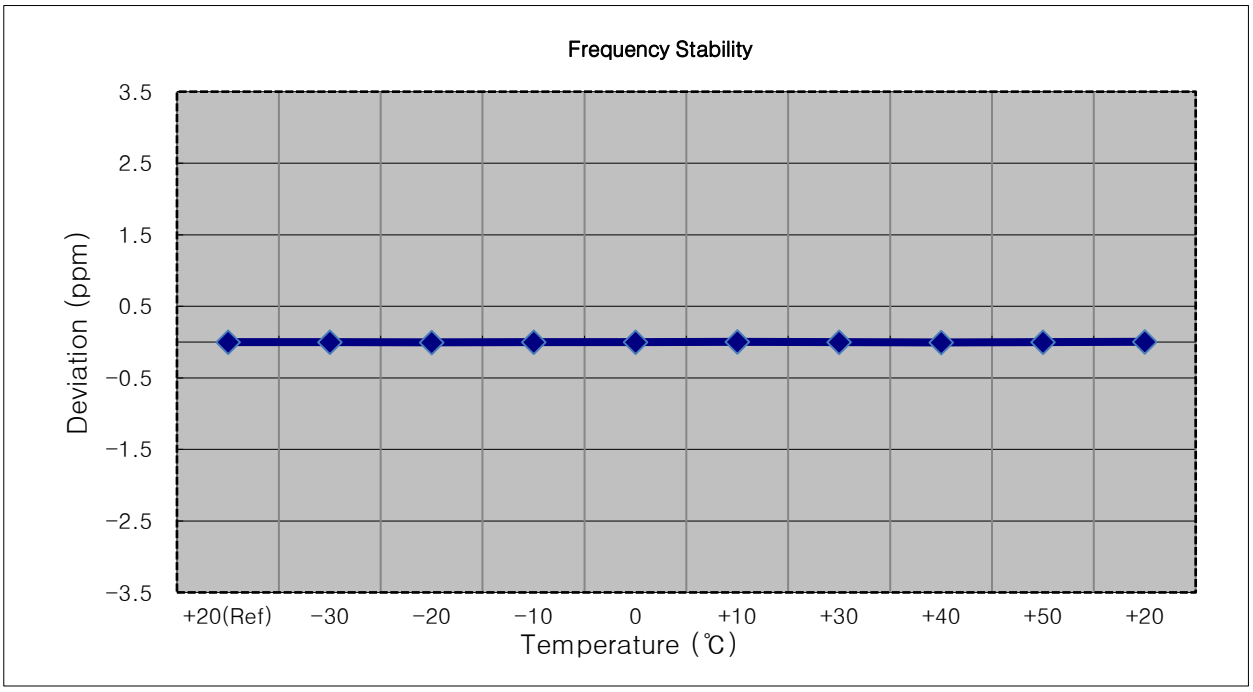
▣ OPERATING FREQUENCY: 1902,500,000 Hz

▣ CHANNEL: 19125 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1902 499 996	0.0	0.000 000	0.000
100 %		-30	1902 499 999	2.2	0.000 000	0.001
100 %		-20	1902 499 990	-6.9	0.000 000	-0.004
100 %		-10	1902 499 992	-4.4	0.000 000	-0.002
100 %		0	1902 499 998	1.5	0.000 000	0.001
100 %		+10	1902 500 002	5.5	0.000 000	0.003
100 %		+30	1902 499 993	-3.6	0.000 000	-0.002
100 %		+40	1902 499 991	-5.8	0.000 000	-0.003
100 %		+50	1902 499 999	2.6	0.000 000	0.001
Batt. Endpoint	3.400	+20	1902 500 000	3.8	0.000 000	0.002



▣ MODE: LTE B2

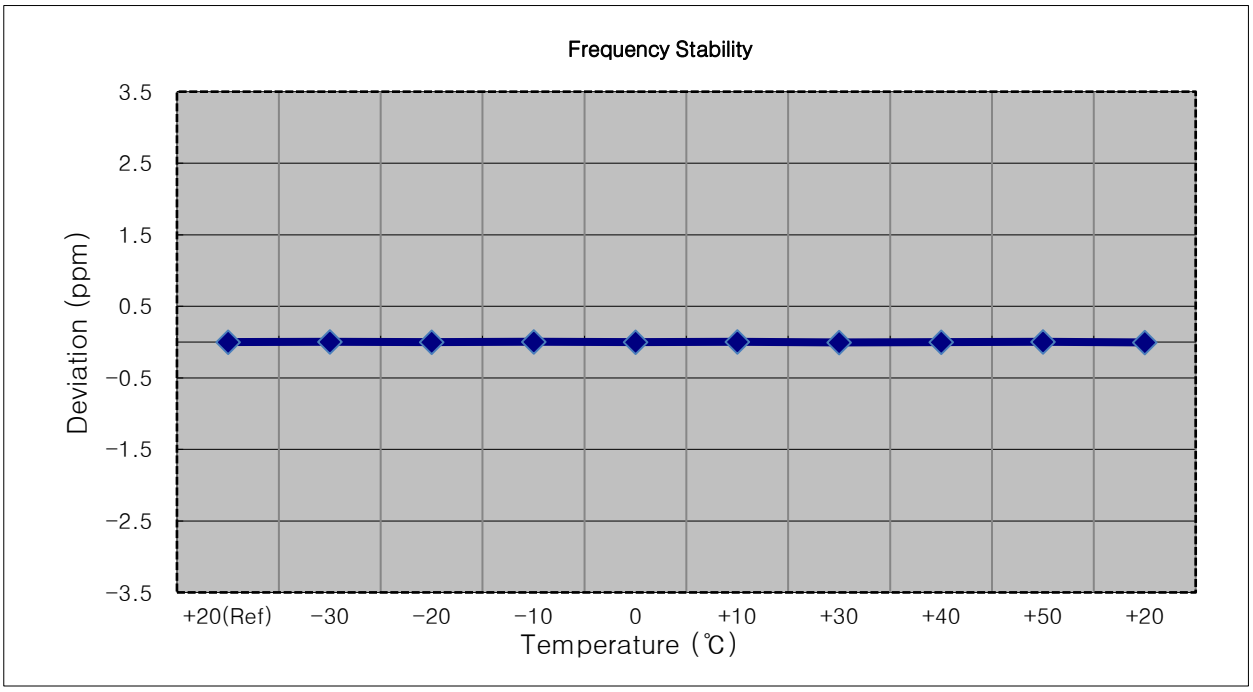
▣ OPERATING FREQUENCY: 1900,000,000 Hz

▣ CHANNEL: 19100 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1899 999 996	0.0	0.000 000	0.000
100 %		-30	1900 000 004	7.5	0.000 000	0.004
100 %		-20	1899 999 992	-3.8	0.000 000	-0.002
100 %		-10	1900 000 005	8.5	0.000 000	0.004
100 %		0	1899 999 993	-3.4	0.000 000	-0.002
100 %		+10	1900 000 002	5.4	0.000 000	0.003
100 %		+30	1899 999 987	-9.7	-0.000 001	-0.005
100 %		+40	1899 999 998	1.7	0.000 000	0.001
100 %		+50	1900 000 001	5.0	0.000 000	0.003
Batt. Endpoint	3.400	+20	1899 999 987	-9.1	0.000 000	-0.005



9. TEST DATA (Sub 1 Ant)

9.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1850.7	LTE B2/ 1.4 MHz	QPSK	-18.82	15.00	10.00	2.12	H	< 2.00	0.194	22.88
		16-QAM	-19.41	14.41	10.00	2.12	H		0.169	22.29
		64-QAM	-19.92	13.90	10.00	2.12	H		0.151	21.78
		256-QAM	-22.43	11.39	10.00	2.12	H		0.085	19.27
1880.0		QPSK	-18.53	15.07	10.00	2.21	H		0.193	22.86
		16-QAM	-19.20	14.40	10.00	2.21	H		0.166	22.19
		64-QAM	-20.21	13.39	10.00	2.21	H		0.131	21.18
		256-QAM	-22.74	10.86	10.00	2.21	H		0.073	18.65
1909.3		QPSK	-19.60	14.42	10.01	2.11	H		0.171	22.32
		16-QAM	-20.28	13.74	10.01	2.11	H		0.146	21.64
		64-QAM	-21.23	12.79	10.01	2.11	H		0.117	20.69
		256-QAM	-23.77	10.25	10.01	2.11	H		0.065	18.15

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1851.5	LTE B2/ 3 MHz	QPSK	-18.75	15.07	10.00	2.12	H	< 2.00	0.197	22.95
		16-QAM	-19.24	14.58	10.00	2.12	H		0.176	22.46
		64-QAM	-19.83	13.99	10.00	2.12	H		0.154	21.87
		256-QAM	-22.35	11.47	10.00	2.12	H		0.086	19.35
1880.0		QPSK	-18.41	15.19	10.00	2.21	H		0.199	22.98
		16-QAM	-19.09	14.51	10.00	2.21	H		0.170	22.30
		64-QAM	-20.11	13.49	10.00	2.21	H		0.134	21.28
		256-QAM	-22.67	10.93	10.00	2.21	H		0.074	18.72
1908.5		QPSK	-19.54	14.48	10.01	2.11	H		0.173	22.38
		16-QAM	-20.19	13.83	10.01	2.11	H		0.149	21.73
		64-QAM	-21.13	12.89	10.01	2.11	H		0.120	20.79
		256-QAM	-23.73	10.29	10.01	2.11	H		0.066	18.19

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1852.5	LTE B2/ 5 MHz	QPSK	-18.82	15.00	10.00	2.12	H	< 2.00	0.194	22.88
		16-QAM	-19.29	14.53	10.00	2.12	H		0.174	22.41
		64-QAM	-19.84	13.98	10.00	2.12	H		0.153	21.86
		256-QAM	-22.30	11.52	10.00	2.12	H		0.087	19.40
1880.0		QPSK	-18.39	15.21	10.00	2.21	H		0.200	23.00
		16-QAM	-19.04	14.56	10.00	2.21	H		0.172	22.35
		64-QAM	-20.10	13.50	10.00	2.21	H		0.135	21.29
		256-QAM	-22.63	10.97	10.00	2.21	H		0.075	18.76
1907.5		QPSK	-19.49	14.53	10.01	2.11	H		0.175	22.43
		16-QAM	-20.17	13.85	10.01	2.11	H		0.150	21.75
		64-QAM	-21.13	12.89	10.01	2.11	H		0.120	20.79
		256-QAM	-23.67	10.35	10.01	2.11	H		0.067	18.25

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1855.0	LTE B2/ 10 MHz	QPSK	-18.92	14.67	10.00	2.15	H	< 2.00	0.179	22.52
		16-QAM	-19.40	14.19	10.00	2.15	H		0.160	22.04
		64-QAM	-19.93	13.66	10.00	2.15	H		0.142	21.51
		256-QAM	-22.29	11.30	10.00	2.15	H		0.082	19.15
1880.0		QPSK	-18.35	15.25	10.00	2.21	H		0.201	23.04
		16-QAM	-19.01	14.59	10.00	2.21	H		0.173	22.38
		64-QAM	-20.11	13.49	10.00	2.21	H		0.134	21.28
		256-QAM	-22.64	10.96	10.00	2.21	H		0.075	18.75
1905.0		QPSK	-19.12	14.85	10.01	2.13	H		0.187	22.73
		16-QAM	-19.78	14.19	10.01	2.13	H		0.161	22.07
		64-QAM	-20.81	13.16	10.01	2.13	H		0.127	21.04
		256-QAM	-23.35	10.62	10.01	2.13	H		0.071	18.50

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1857.5	LTE B2/ 15 MHz	QPSK	-18.90	14.44	10.00	2.17	H	< 2.00	0.169	22.27
		16-QAM	-19.37	13.97	10.00	2.17	H		0.151	21.80
		64-QAM	-19.84	13.50	10.00	2.17	H		0.136	21.33
		256-QAM	-22.22	11.12	10.00	2.17	H		0.079	18.95
1880.0		QPSK	-18.27	15.33	10.00	2.21	H		0.205	23.12
		16-QAM	-18.89	14.71	10.00	2.21	H		0.178	22.50
		64-QAM	-20.02	13.58	10.00	2.21	H		0.137	21.37
		256-QAM	-22.58	11.02	10.00	2.21	H		0.076	18.81
1902.5		QPSK	-19.16	14.75	10.01	2.15	H		0.182	22.61
		16-QAM	-19.79	14.12	10.01	2.15	H		0.158	21.98
		64-QAM	-20.86	13.05	10.01	2.15	H		0.123	20.91
		256-QAM	-23.40	10.51	10.01	2.15	H		0.069	18.37

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1860.0	LTE B2/ 20 MHz	QPSK	-18.13	15.21	10.00	2.17	H	< 2.00	0.201	23.04
		16-QAM	-18.77	14.57	10.00	2.17	H		0.174	22.40
		64-QAM	-19.81	13.53	10.00	2.17	H		0.137	21.36
		256-QAM	-22.31	11.03	10.00	2.17	H		0.077	18.86
1880.0		QPSK	-18.20	15.40	10.00	2.21	H		0.208	23.19
		16-QAM	-18.81	14.79	10.00	2.21	H		0.181	22.58
		64-QAM	-19.92	13.68	10.00	2.21	H		0.140	21.47
		256-QAM	-22.44	11.16	10.00	2.21	H		0.079	18.95
1900.0		QPSK	-18.98	14.93	10.01	2.15	H		0.190	22.79
		16-QAM	-19.59	14.32	10.01	2.15	H		0.165	22.18
		64-QAM	-20.67	13.24	10.01	2.15	H		0.129	21.10
		256-QAM	-23.15	10.76	10.01	2.15	H		0.073	18.62

9.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY: 1880.0 MHz

▣ MEASURED OUTPUT POWER: 23.19 dBm = 0.208 W

▣ MODE: LTE B2

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log10 (W) = 36.19 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18700 (1860.0)	3 720.00	-53.42	11.40	-53.80	3.14	H	-45.54	68.73
	5 580.00	-44.76	11.90	-39.09	3.86	H	-31.05	54.24
	7 440.00	-43.26	10.80	-28.61	4.46	H	-22.27	45.46
	9 300.00	-55.72	10.80	-40.39	5.00	H	-34.59	57.78
	11 160.00	-60.49	11.50	-41.55	5.61	H	-35.66	58.85
18900 (1880.0)	3 760.00	-55.17	11.30	-55.30	3.07	H	-47.07	70.26
	5 640.00	-46.13	11.90	-40.53	3.89	V	-32.52	55.71
	7 520.00	-42.90	11.10	-28.67	4.51	H	-22.08	45.27
	9 400.00	-56.51	10.80	-41.23	5.07	H	-35.50	58.69
	11 280.00	-61.48	11.40	-42.18	5.62	H	-36.40	59.59
19100 (1900.0)	3 800.00	-53.90	11.10	-54.30	3.12	H	-46.32	69.51
	5 700.00	-46.39	11.70	-40.54	3.87	H	-32.71	55.90
	7 600.00	-44.98	11.20	-30.85	4.53	H	-24.18	47.37
	9 500.00	-56.35	10.90	-40.97	5.12	H	-35.19	58.38
	11 400.00	-63.46	11.40	-43.13	5.67	H	-37.40	60.59

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
2	1.4 MHz	1880.0	QPSK	6	0	4.20
			16-QAM	6	0	4.94
			64-QAM	6	0	5.31
			256-QAM	6	0	6.31
	3 MHz		QPSK	15	0	4.33
			16-QAM	15	0	4.79
			64-QAM	15	0	5.47
			256-QAM	15	0	6.43
	5 MHz		QPSK	25	0	4.32
			16-QAM	25	0	4.92
			64-QAM	25	0	5.53
			256-QAM	25	0	6.43
	10 MHz		QPSK	50	0	4.37
			16-QAM	50	0	5.01
			64-QAM	50	0	5.60
			256-QAM	50	0	6.42
	15 MHz		QPSK	75	0	4.31
			16-QAM	75	0	4.95
			64-QAM	75	0	5.56
			256-QAM	75	0	6.43
	20 MHz		QPSK	100	0	4.27
			16-QAM	100	0	4.83
			64-QAM	100	0	5.51
			256-QAM	100	0	6.49

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 259 ~ 282.

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
2	1.4 MHz	1880.0	QPSK	6	0	1.1009
			16-QAM	6	0	1.0968
			64-QAM	6	0	1.0995
			256-QAM	6	0	1.0932
	3 MHz		QPSK	15	0	2.7227
			16-QAM	15	0	2.7136
			64-QAM	15	0	2.7092
			256-QAM	15	0	2.7035
	5 MHz		QPSK	25	0	4.5288
			16-QAM	25	0	4.5033
			64-QAM	25	0	4.5074
			256-QAM	25	0	4.5091
	10 MHz		QPSK	50	0	9.0175
			16-QAM	50	0	9.0150
			64-QAM	50	0	8.9893
			256-QAM	50	0	8.9801
	15 MHz		QPSK	75	0	13.493
			16-QAM	75	0	13.503
			64-QAM	75	0	13.469
			256-QAM	75	0	13.514
	20 MHz		QPSK	100	0	18.022
			16-QAM	100	0	18.002
			64-QAM	100	0	17.977
			256-QAM	100	0	17.983

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 235 ~ 258.

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)
2	1.4	1850.7	3.6825	27.976	-77.262	-49.286	-13.00
		1880.0	3.6960	27.976	-77.590	-49.614	
		1909.3	3.7034	27.976	-77.012	-49.036	
	3	1851.5	3.7194	27.976	-77.170	-49.194	
		1880.0	3.6950	27.976	-77.309	-49.333	
		1908.5	3.7199	27.976	-77.229	-49.253	
	5	1852.5	3.7129	27.976	-77.425	-49.449	
		1880.0	3.7154	27.976	-77.120	-49.144	
		1907.5	3.1765	27.976	-77.408	-49.432	
	10	1855.0	3.6785	27.976	-77.421	-49.445	
		1880.0	3.6950	27.976	-77.123	-49.147	
		1905.0	3.1860	27.976	-77.217	-49.241	
	15	1857.5	3.7099	27.976	-77.194	-49.218	
		1880.0	3.6875	27.976	-77.150	-49.174	
		1902.5	3.6870	27.976	-77.006	-49.030	
	20	1860.0	3.7174	27.976	-77.445	-49.469	
		1880.0	3.7104	27.976	-77.075	-49.099	
		1900.0	3.7139	27.976	-77.165	-49.189	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 283 ~ 318.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
4. Factor (dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20(26.5)	30.131

9.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 199 ~ 234.

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE B2

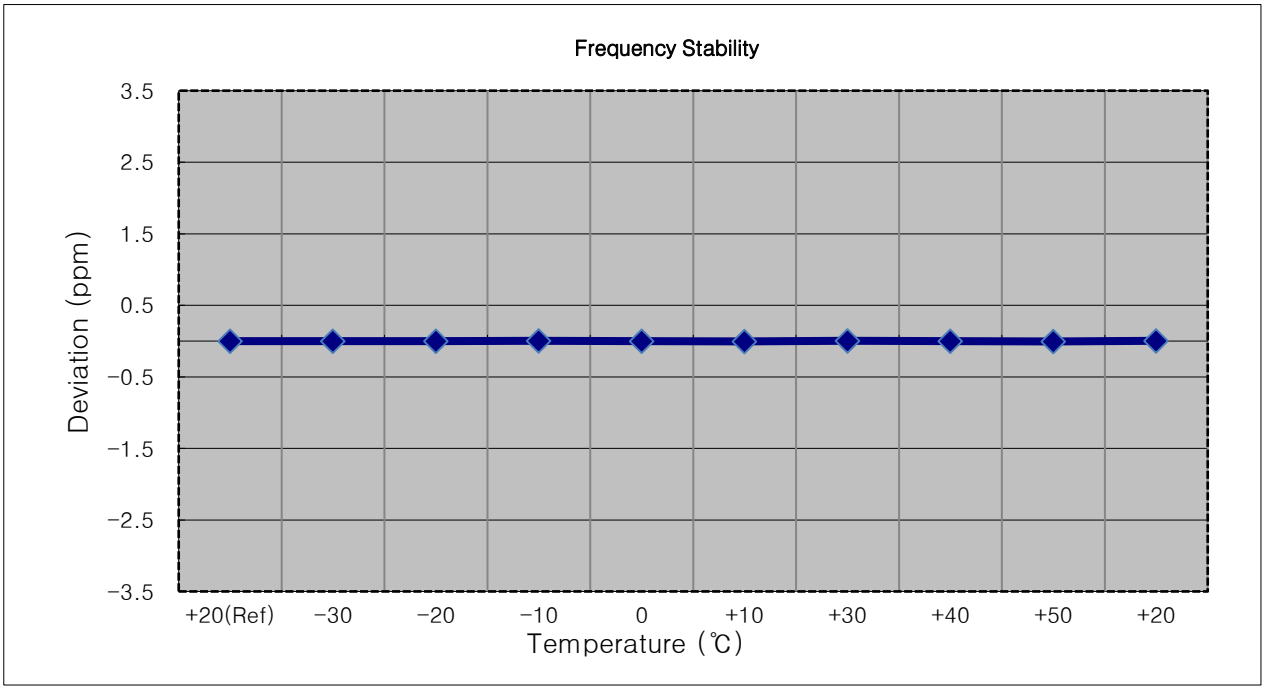
▣ OPERATING FREQUENCY: 1850,700,000 Hz

▣ CHANNEL: 18607 (1.4 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1850 700 006	0.0	0.000 000	0.000
100 %		-30	1850 700 002	-4.6	0.000 000	-0.002
100 %		-20	1850 700 003	-3.7	0.000 000	-0.002
100 %		-10	1850 700 013	7.1	0.000 000	0.004
100 %		0	1850 700 001	-5.4	0.000 000	-0.003
100 %		+10	1850 699 998	-8.0	0.000 000	-0.004
100 %		+30	1850 700 014	7.4	0.000 000	0.004
100 %		+40	1850 700 004	-1.9	0.000 000	-0.001
100 %		+50	1850 700 000	-6.3	0.000 000	-0.003
Batt. Endpoint	3.400	+20	1850 700 012	5.2	0.000 000	0.003



▣ MODE: LTE B2

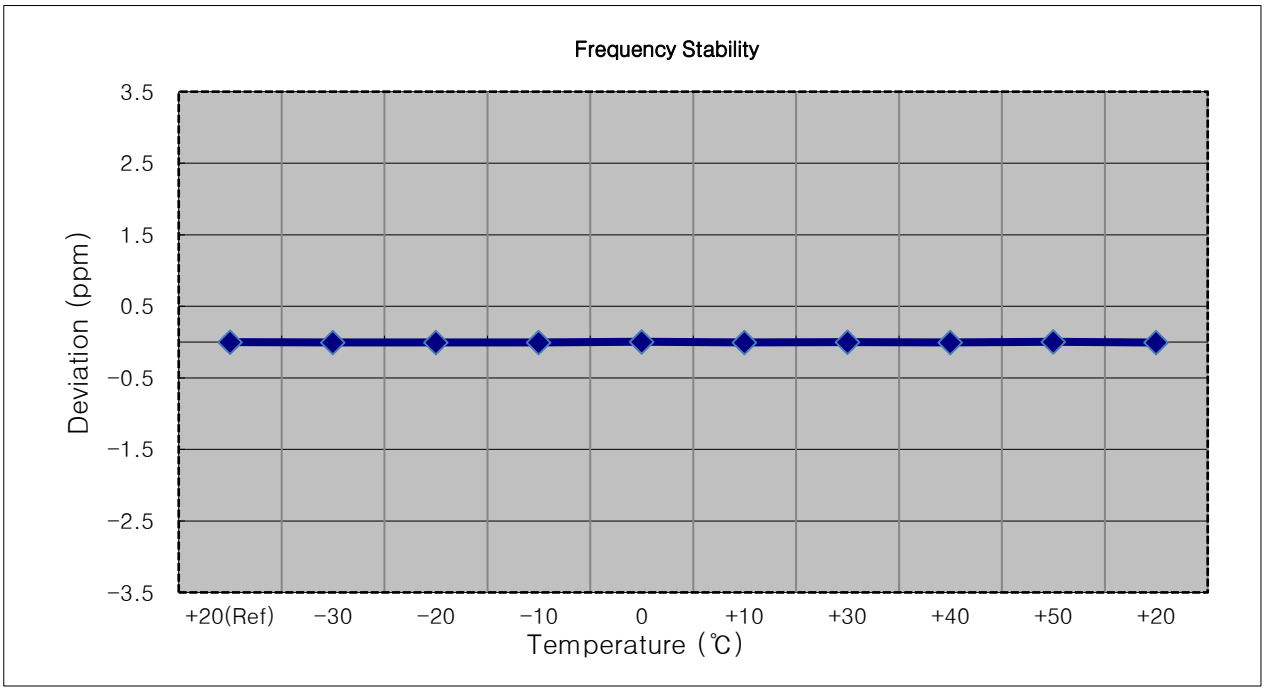
▣ OPERATING FREQUENCY: 1851,500,000 Hz

▣ CHANNEL: 18615 (3 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1851 500 009	0.0	0.000 000	0.000
100 %		-30	1851 500 002	-6.3	0.000 000	-0.003
100 %		-20	1851 500 003	-5.8	0.000 000	-0.003
100 %		-10	1851 500 002	-7.2	0.000 000	-0.004
100 %		0	1851 500 017	8.0	0.000 000	0.004
100 %		+10	1851 499 999	-9.5	-0.000 001	-0.005
100 %		+30	1851 500 005	-3.7	0.000 000	-0.002
100 %		+40	1851 500 003	-5.6	0.000 000	-0.003
100 %		+50	1851 500 014	5.1	0.000 000	0.003
Batt. Endpoint	3.400	+20	1851 499 996	-12.7	-0.000 001	-0.007



▣ MODE: LTE B2

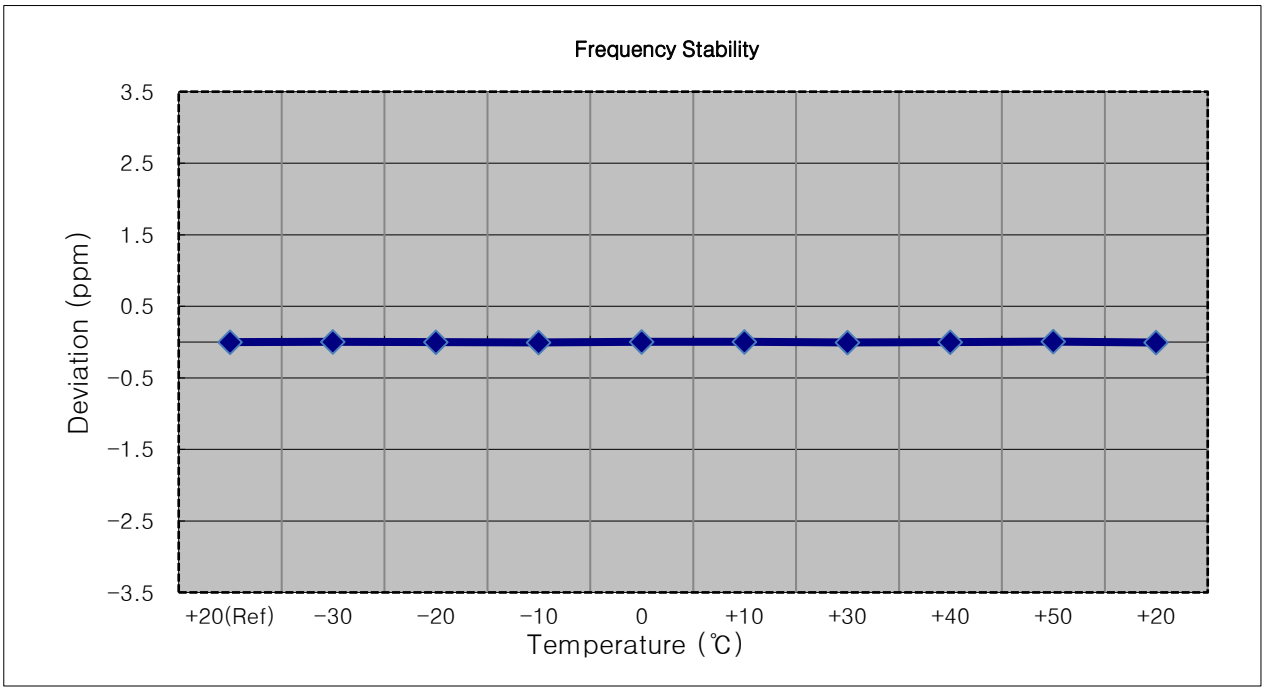
▣ OPERATING FREQUENCY: 1852,500,000 Hz

▣ CHANNEL: 18625 (5 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1852 499 993	0.0	0.000 000	0.000
100 %		-30	1852 500 001	8.2	0.000 000	0.004
100 %		-20	1852 499 990	-2.8	0.000 000	-0.002
100 %		-10	1852 499 985	-8.4	0.000 000	-0.005
100 %		0	1852 500 002	8.7	0.000 000	0.005
100 %		+10	1852 500 001	7.7	0.000 000	0.004
100 %		+30	1852 499 983	-10.5	-0.000 001	-0.006
100 %		+40	1852 499 991	-1.8	0.000 000	-0.001
100 %		+50	1852 500 005	11.9	0.000 001	0.006
Batt. Endpoint	3.400	+20	1852 499 981	-12.5	-0.000 001	-0.007



▣ MODE: LTE B2

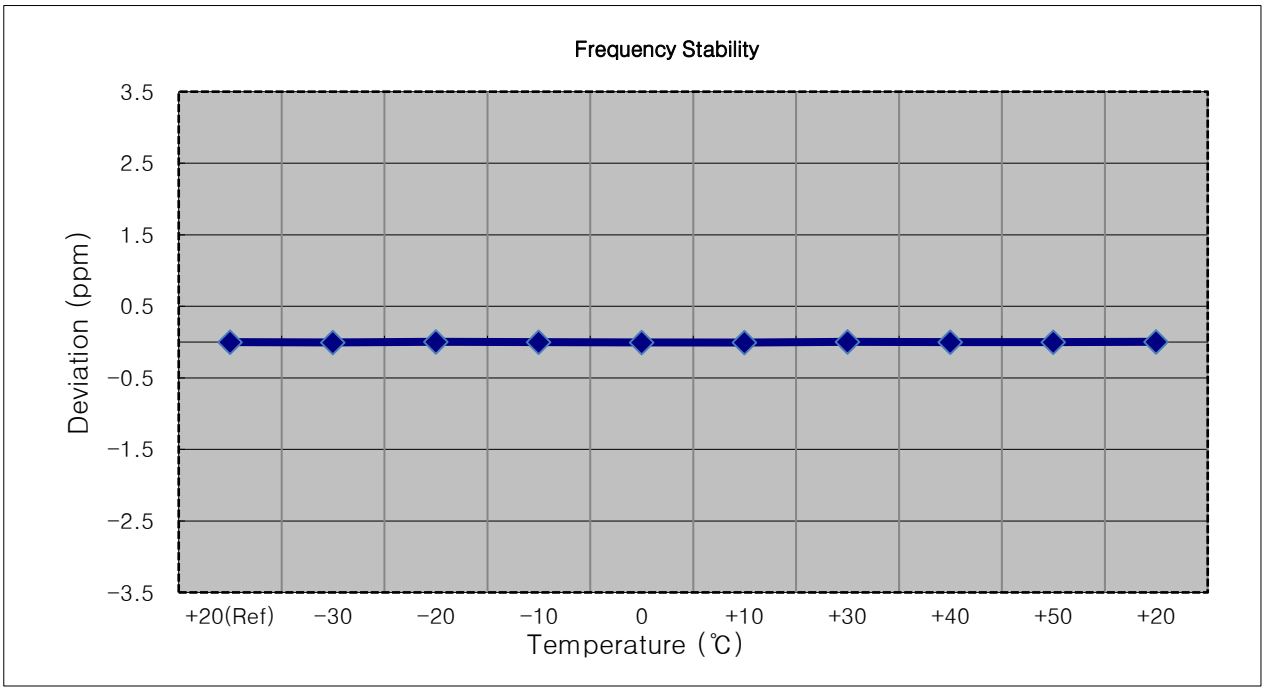
▣ OPERATING FREQUENCY: 1855,000,000 Hz

▣ CHANNEL: 18650 (10 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1855 000 004	0.0	0.000 000	0.000
100 %		-30	1854 999 998	-5.8	0.000 000	-0.003
100 %		-20	1855 000 007	3.1	0.000 000	0.002
100 %		-10	1855 000 001	-3.2	0.000 000	-0.002
100 %		0	1854 999 992	-11.4	-0.000 001	-0.006
100 %		+10	1854 999 992	-12.3	-0.000 001	-0.007
100 %		+30	1855 000 009	5.3	0.000 000	0.003
100 %		+40	1855 000 000	-3.9	0.000 000	-0.002
100 %		+50	1854 999 999	-4.5	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1855 000 007	3.4	0.000 000	0.002



▣ MODE: LTE B2

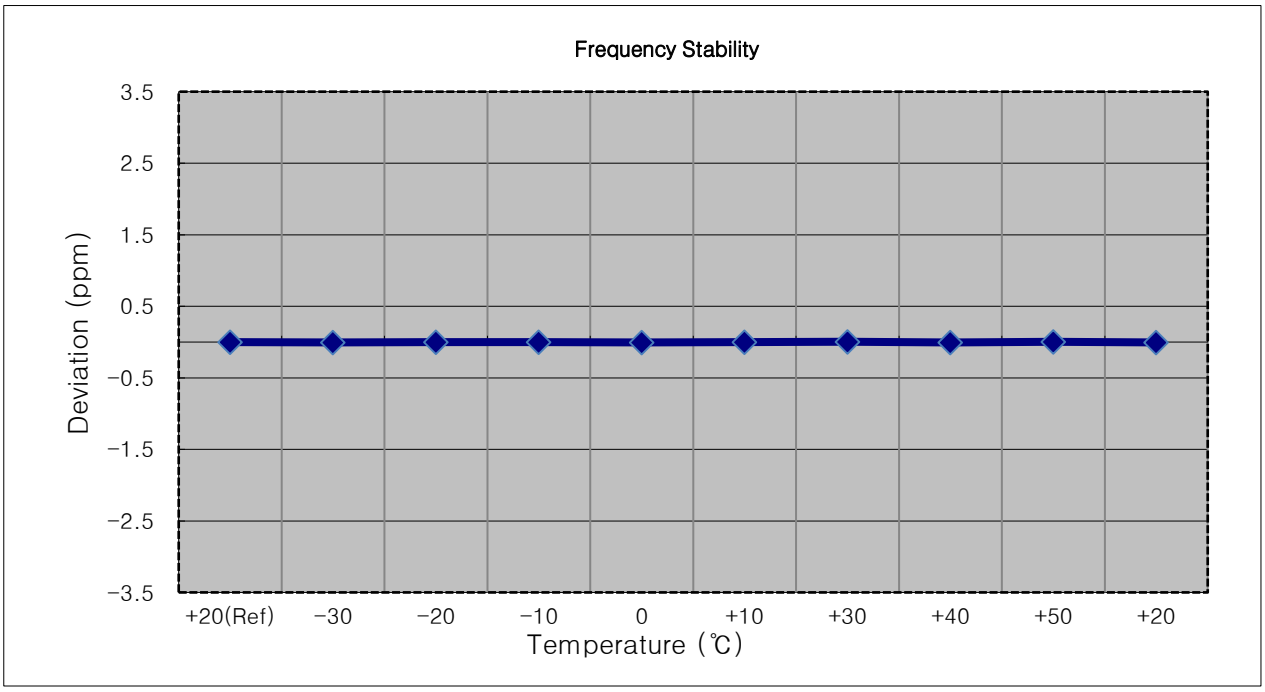
▣ OPERATING FREQUENCY: 1857,500,000 Hz

▣ CHANNEL: 18675 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1857 500 008	0.0	0.000 000	0.000
100 %		-30	1857 499 999	-9.2	0.000 000	-0.005
100 %		-20	1857 500 006	-2.6	0.000 000	-0.001
100 %		-10	1857 500 010	1.5	0.000 000	0.001
100 %		0	1857 500 001	-7.1	0.000 000	-0.004
100 %		+10	1857 500 004	-4.4	0.000 000	-0.002
100 %		+30	1857 500 017	8.4	0.000 000	0.005
100 %		+40	1857 499 998	-10.3	-0.000 001	-0.006
100 %		+50	1857 500 012	3.5	0.000 000	0.002
Batt. Endpoint	3.400	+20	1857 499 999	-9.6	-0.000 001	-0.005



▣ MODE: LTE B2

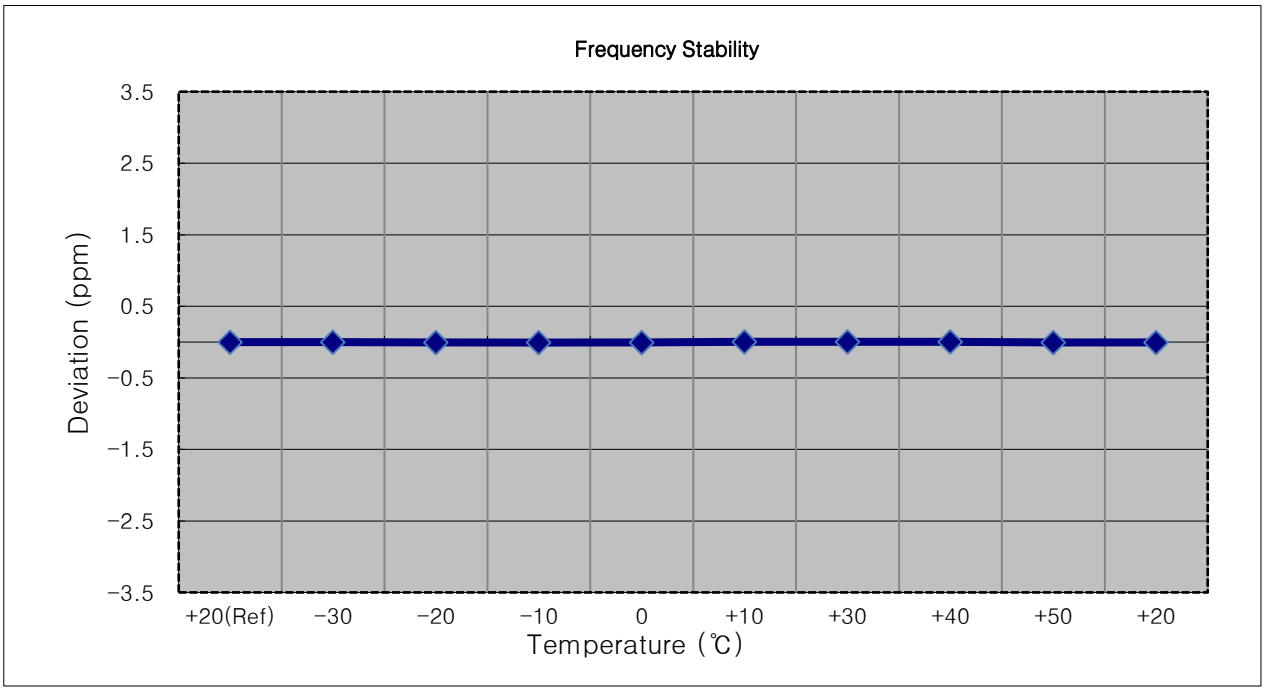
▣ OPERATING FREQUENCY: 1860,000,000 Hz

▣ CHANNEL: 18700 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1860 000 003	0.0	0.000 000	0.000
100 %		-30	1859 999 998	-4.2	0.000 000	-0.002
100 %		-20	1859 999 997	-6.1	0.000 000	-0.003
100 %		-10	1859 999 989	-13.2	-0.000 001	-0.007
100 %		0	1859 999 994	-9.1	0.000 000	-0.005
100 %		+10	1860 000 006	3.4	0.000 000	0.002
100 %		+30	1860 000 006	3.2	0.000 000	0.002
100 %		+40	1860 000 009	6.4	0.000 000	0.003
100 %		+50	1859 999 992	-10.6	-0.000 001	-0.006
Batt. Endpoint	3.400	+20	1859 999 996	-6.9	0.000 000	-0.004



▣ MODE: LTE B2

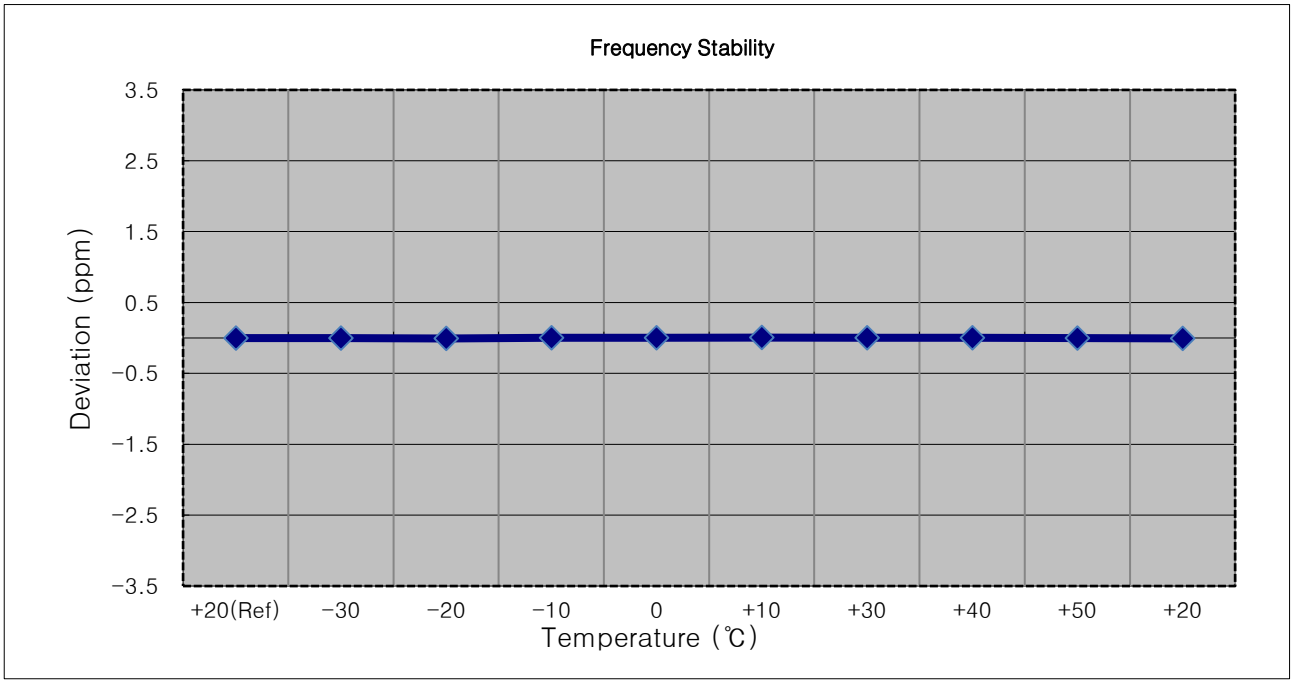
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (1.4 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1880 000 010	0.0	0.000 000	0.000
100 %		-30	1880 000 006	-4.2	0.000 000	-0.002
100 %		-20	1879 999 996	-14.0	-0.000 001	-0.007
100 %		-10	1880 000 013	3.5	0.000 000	0.002
100 %		0	1880 000 016	6.1	0.000 000	0.003
100 %		+10	1880 000 020	9.7	0.000 001	0.005
100 %		+30	1880 000 019	9.5	0.000 001	0.005
100 %		+40	1880 000 019	8.7	0.000 000	0.005
100 %		+50	1880 000 005	-4.6	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1880 000 001	-9.0	0.000 000	-0.005



▣ MODE: LTE B2

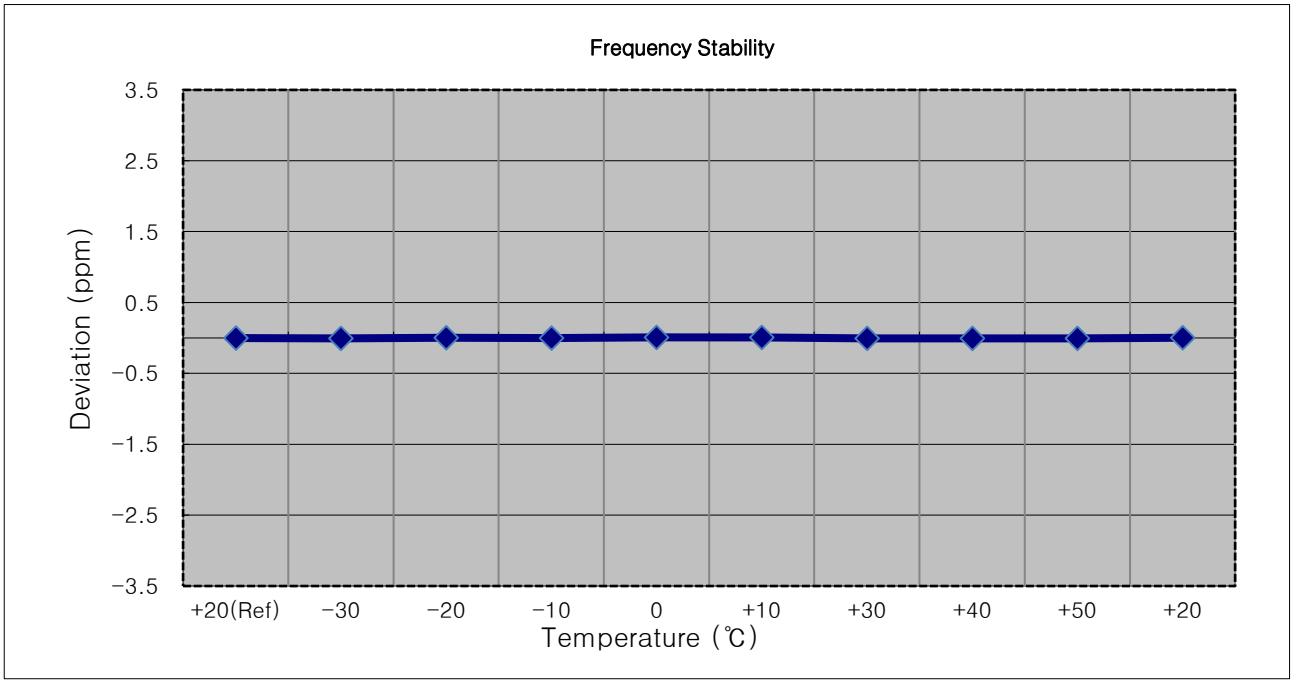
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (3 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1880 000 005	0.0	0.000 000	0.000
100 %		-30	1879 999 997	-8.1	0.000 000	-0.004
100 %		-20	1880 000 011	5.2	0.000 000	0.003
100 %		-10	1879 999 999	-6.5	0.000 000	-0.003
100 %		0	1880 000 022	16.3	0.000 001	0.009
100 %		+10	1880 000 020	14.2	0.000 001	0.008
100 %		+30	1879 999 997	-8.1	0.000 000	-0.004
100 %		+40	1879 999 994	-11.7	-0.000 001	-0.006
100 %		+50	1879 999 995	-9.9	-0.000 001	-0.005
Batt. Endpoint	3.400	+20	1880 000 013	7.4	0.000 000	0.004



▣ MODE: LTE B2

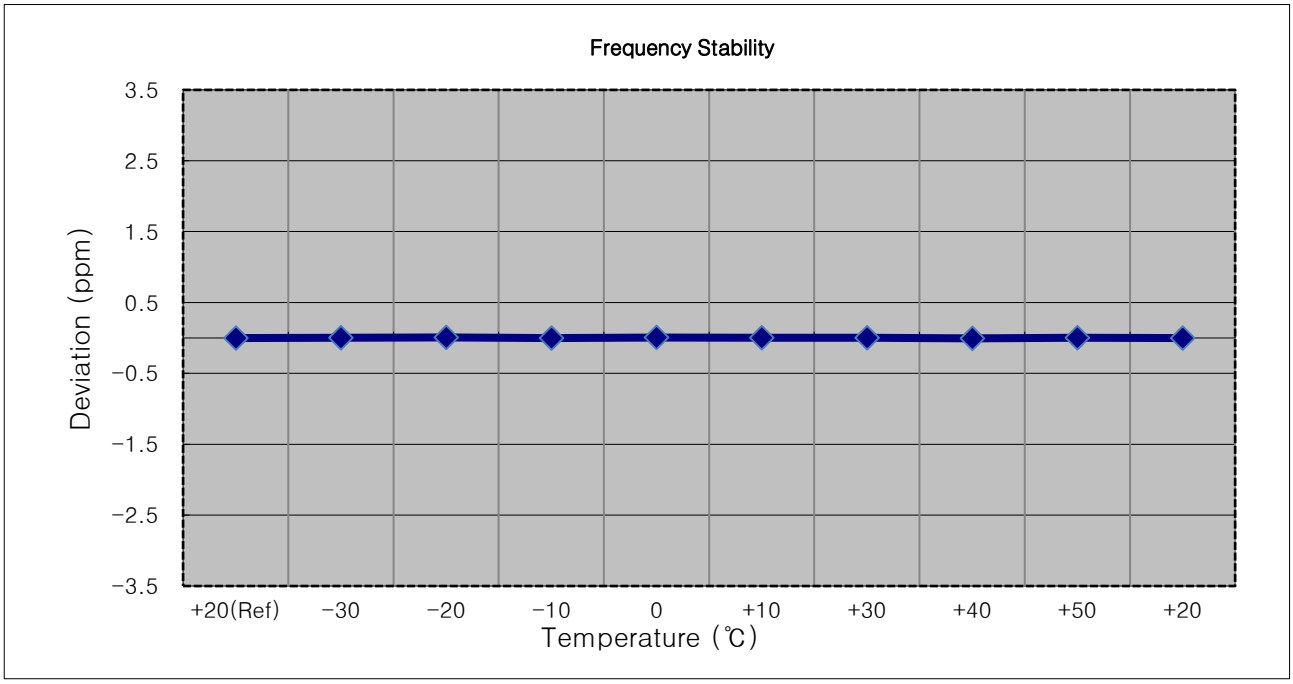
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (5 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1880 000 005	0.0	0.000 000	0.000
100 %		-30	1880 000 011	5.8	0.000 000	0.003
100 %		-20	1880 000 016	11.3	0.000 001	0.006
100 %		-10	1880 000 000	-5.4	0.000 000	-0.003
100 %		0	1880 000 016	11.4	0.000 001	0.006
100 %		+10	1880 000 012	6.5	0.000 000	0.003
100 %		+30	1880 000 011	5.5	0.000 000	0.003
100 %		+40	1879 999 994	-10.9	-0.000 001	-0.006
100 %		+50	1880 000 014	8.8	0.000 000	0.005
Batt. Endpoint	3.400	+20	1879 999 999	-5.8	0.000 000	-0.003



▣ MODE: LTE B2

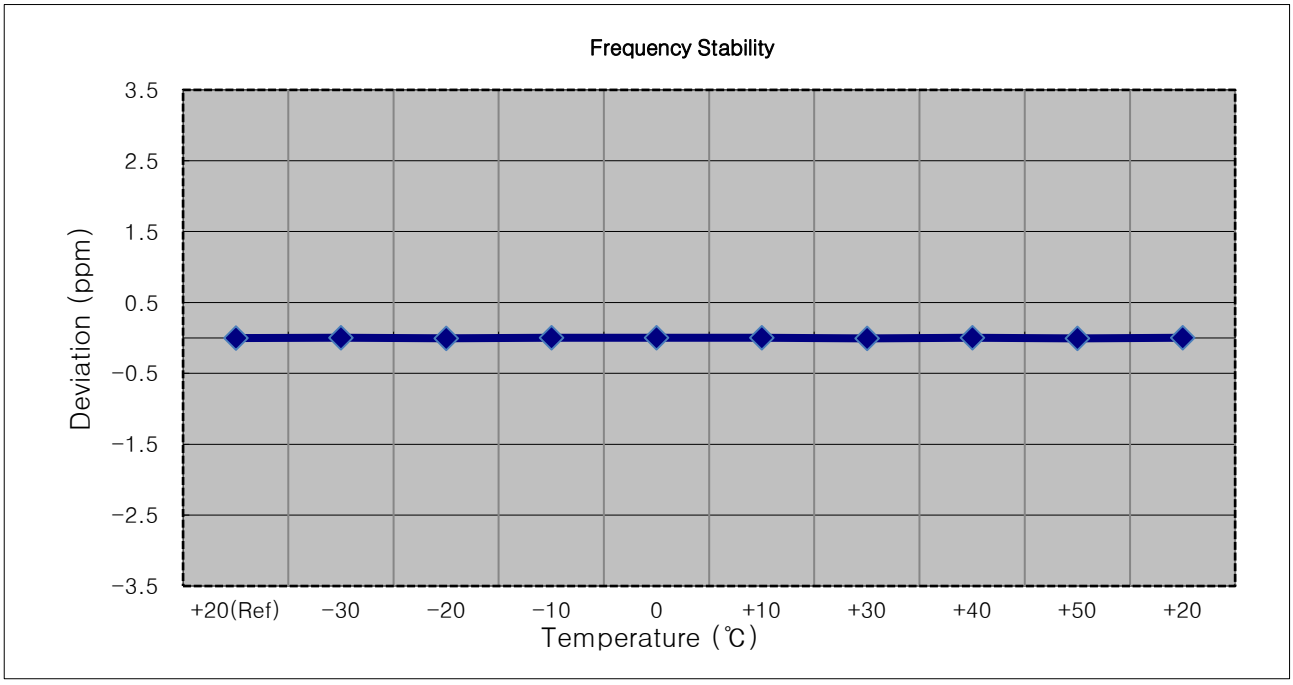
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (10 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 992	0.0	0.000 000	0.000
100 %		-30	1879 999 998	6.5	0.000 000	0.003
100 %		-20	1879 999 983	-8.4	0.000 000	-0.004
100 %		-10	1879 999 995	3.6	0.000 000	0.002
100 %		0	1879 999 995	2.9	0.000 000	0.002
100 %		+10	1879 999 998	6.4	0.000 000	0.003
100 %		+30	1879 999 984	-8.1	0.000 000	-0.004
100 %		+40	1879 999 994	2.2	0.000 000	0.001
100 %		+50	1879 999 983	-8.3	0.000 000	-0.004
Batt. Endpoint	3.400	+20	1879 999 996	4.0	0.000 000	0.002



▣ MODE: LTE B2

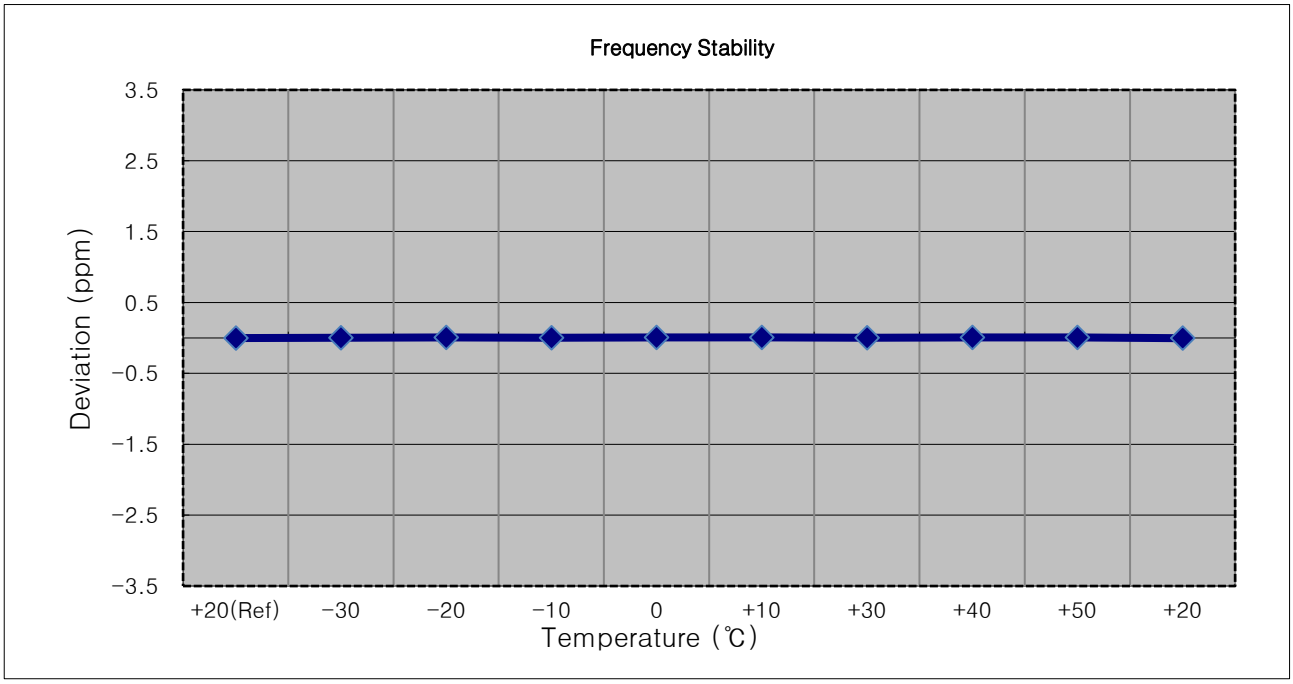
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 994	0.0	0.000 000	0.000
100 %		-30	1879 999 998	4.0	0.000 000	0.002
100 %		-20	1880 000 006	12.1	0.000 001	0.006
100 %		-10	1879 999 997	3.8	0.000 000	0.002
100 %		0	1880 000 005	11.0	0.000 001	0.006
100 %		+10	1880 000 009	15.2	0.000 001	0.008
100 %		+30	1880 000 003	9.1	0.000 000	0.005
100 %		+40	1880 000 004	10.4	0.000 001	0.006
100 %		+50	1880 000 007	13.0	0.000 001	0.007
Batt. Endpoint	3.400	+20	1879 999 987	-6.8	0.000 000	-0.004



▣ MODE: LTE B2

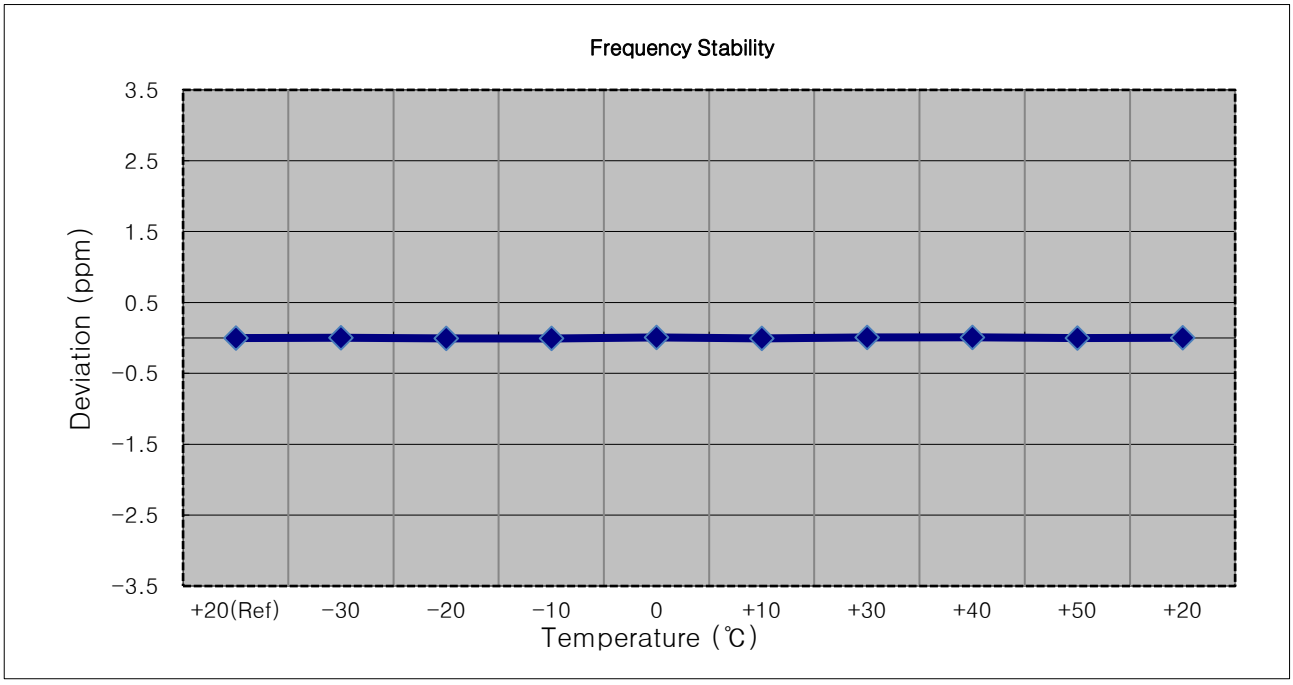
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1879 999 989	0.0	0.000 000	0.000
100 %		-30	1879 999 995	5.6	0.000 000	0.003
100 %		-20	1879 999 980	-8.8	0.000 000	-0.005
100 %		-10	1879 999 975	-14.4	-0.000 001	-0.008
100 %		0	1880 000 001	11.7	0.000 001	0.006
100 %		+10	1879 999 977	-12.6	-0.000 001	-0.007
100 %		+30	1880 000 002	13.1	0.000 001	0.007
100 %		+40	1880 000 007	17.4	0.000 001	0.009
100 %		+50	1879 999 985	-4.1	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1879 999 997	7.4	0.000 000	0.004



▣ MODE: LTE B2

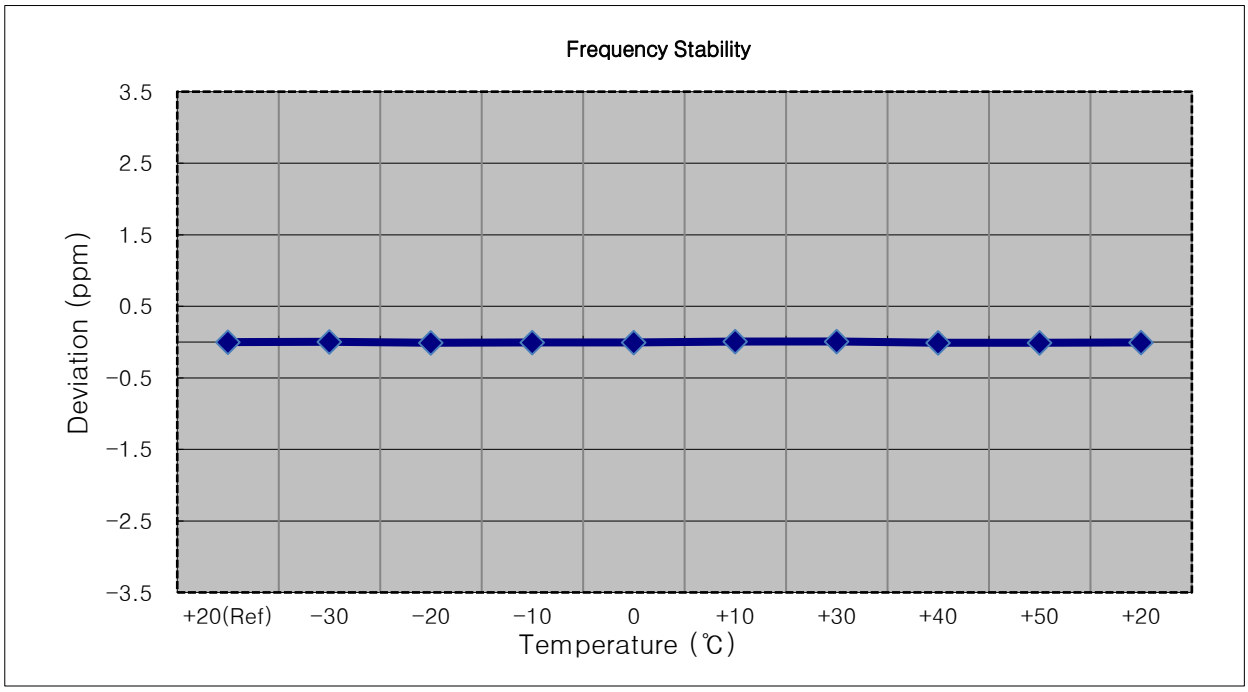
▣ OPERATING FREQUENCY: 1909,300,000 Hz

▣ CHANNEL: 19193 (1.4 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1909 300 008	0.0	0.000 000	0.000
100 %		-30	1909 300 018	9.9	0.000 001	0.005
100 %		-20	1909 299 990	-18.5	-0.000 001	-0.010
100 %		-10	1909 299 997	-11.7	-0.000 001	-0.006
100 %		0	1909 300 002	-5.9	0.000 000	-0.003
100 %		+10	1909 300 021	13.2	0.000 001	0.007
100 %		+30	1909 300 021	12.8	0.000 001	0.007
100 %		+40	1909 299 990	-17.8	-0.000 001	-0.009
100 %		+50	1909 299 993	-15.0	-0.000 001	-0.008
Batt. Endpoint	3.400	+20	1909 299 997	-11.0	-0.000 001	-0.006



▣ MODE: LTE B2

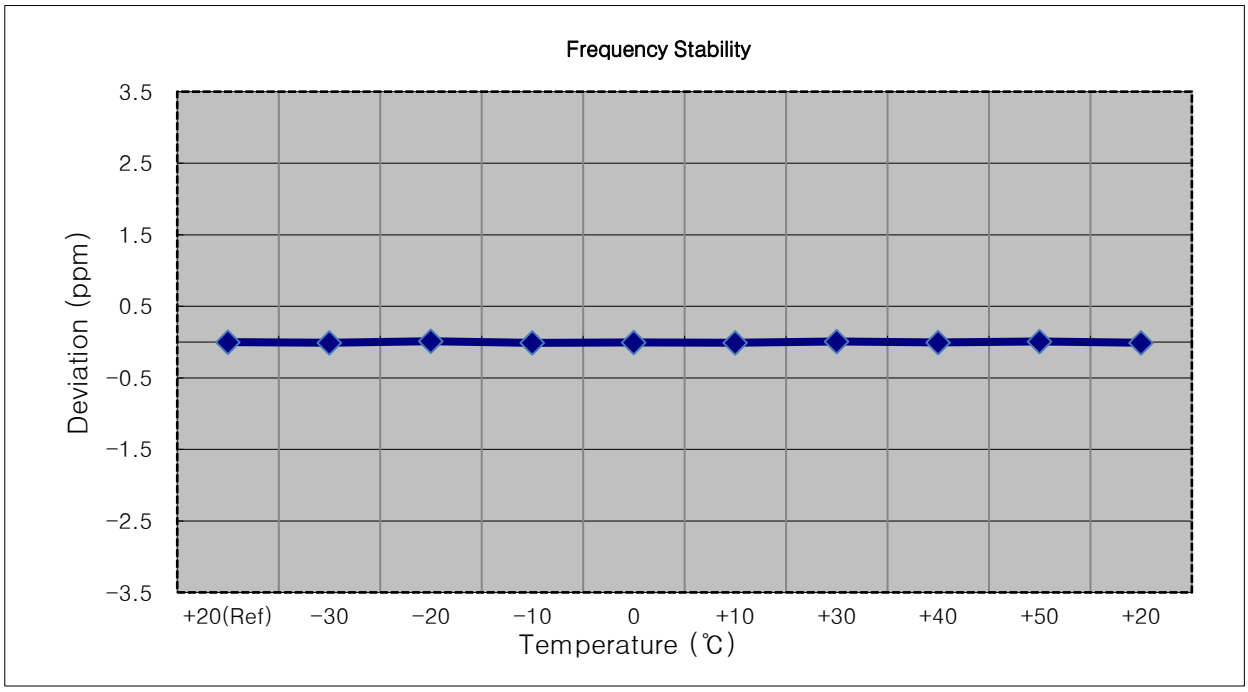
▣ OPERATING FREQUENCY: 1908,500,000 Hz

▣ CHANNEL: 19185 (3 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1908 499 985	0.0	0.000 000	0.000
100 %		-30	1908 499 967	-17.4	-0.000 001	-0.009
100 %		-20	1908 500 006	21.8	0.000 001	0.011
100 %		-10	1908 499 963	-22.1	-0.000 001	-0.012
100 %		0	1908 499 973	-11.9	-0.000 001	-0.006
100 %		+10	1908 499 968	-16.8	-0.000 001	-0.009
100 %		+30	1908 500 002	17.6	0.000 001	0.009
100 %		+40	1908 499 973	-11.8	-0.000 001	-0.006
100 %		+50	1908 500 001	16.1	0.000 001	0.008
Batt. Endpoint	3.400	+20	1908 499 964	-20.6	-0.000 001	-0.011



▣ MODE: LTE B2

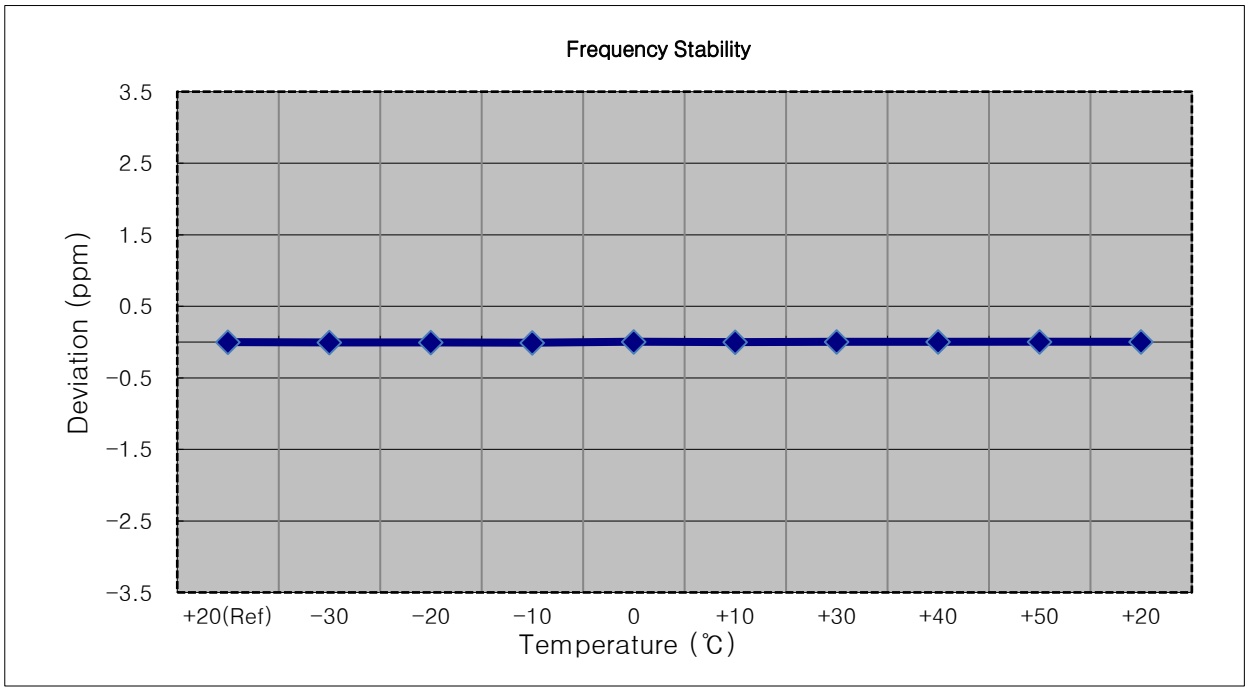
▣ OPERATING FREQUENCY: 1907,500,000 Hz

▣ CHANNEL: 19175 (5 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1907 499 987	0.0	0.000 000	0.000
100 %		-30	1907 499 980	-7.6	0.000 000	-0.004
100 %		-20	1907 499 981	-5.8	0.000 000	-0.003
100 %		-10	1907 499 970	-17.1	-0.000 001	-0.009
100 %		0	1907 499 997	9.4	0.000 000	0.005
100 %		+10	1907 499 984	-3.5	0.000 000	-0.002
100 %		+30	1907 499 996	9.2	0.000 000	0.005
100 %		+40	1907 499 993	5.4	0.000 000	0.003
100 %		+50	1907 499 997	9.4	0.000 000	0.005
Batt. Endpoint	3.400	+20	1907 499 994	6.4	0.000 000	0.003



▣ MODE: LTE B2

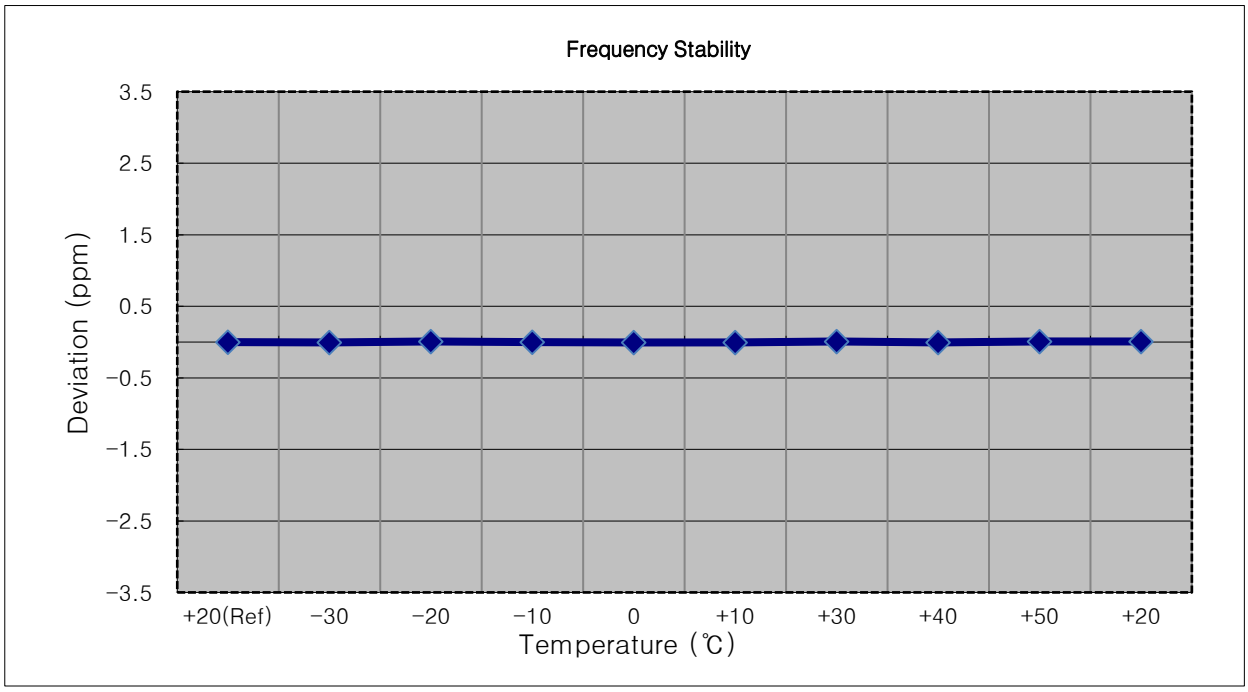
▣ OPERATING FREQUENCY: 1905,000,000 Hz

▣ CHANNEL: 19150 (10 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1904 999 986	0.0	0.000 000	0.000
100 %		-30	1904 999 980	-6.3	0.000 000	-0.003
100 %		-20	1904 999 998	12.0	0.000 001	0.006
100 %		-10	1904 999 981	-5.7	0.000 000	-0.003
100 %		0	1904 999 976	-10.5	-0.000 001	-0.006
100 %		+10	1904 999 978	-8.1	0.000 000	-0.004
100 %		+30	1904 999 999	12.7	0.000 001	0.007
100 %		+40	1904 999 980	-6.7	0.000 000	-0.004
100 %		+50	1905 000 003	16.3	0.000 001	0.009
Batt. Endpoint	3.400	+20	1904 999 998	11.5	0.000 001	0.006



▣ MODE: LTE B2

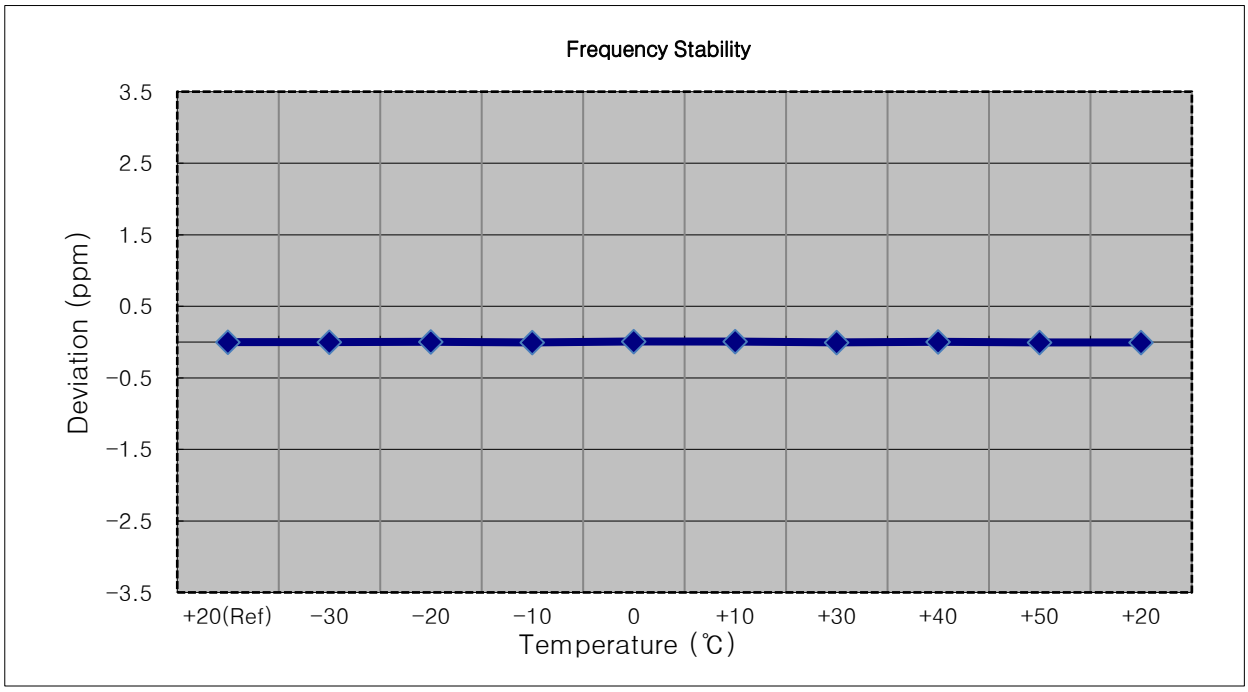
▣ OPERATING FREQUENCY: 1902,500,000 Hz

▣ CHANNEL: 19125 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1902 500 003	0.0	0.000 000	0.000
100 %		-30	1902 499 998	-4.9	0.000 000	-0.003
100 %		-20	1902 500 010	7.4	0.000 000	0.004
100 %		-10	1902 499 997	-6.4	0.000 000	-0.003
100 %		0	1902 500 014	11.3	0.000 001	0.006
100 %		+10	1902 500 016	13.0	0.000 001	0.007
100 %		+30	1902 499 994	-8.9	0.000 000	-0.005
100 %		+40	1902 500 011	8.2	0.000 000	0.004
100 %		+50	1902 499 996	-6.8	0.000 000	-0.004
Batt. Endpoint	3.400	+20	1902 499 995	-8.3	0.000 000	-0.004



▣ MODE: LTE B2

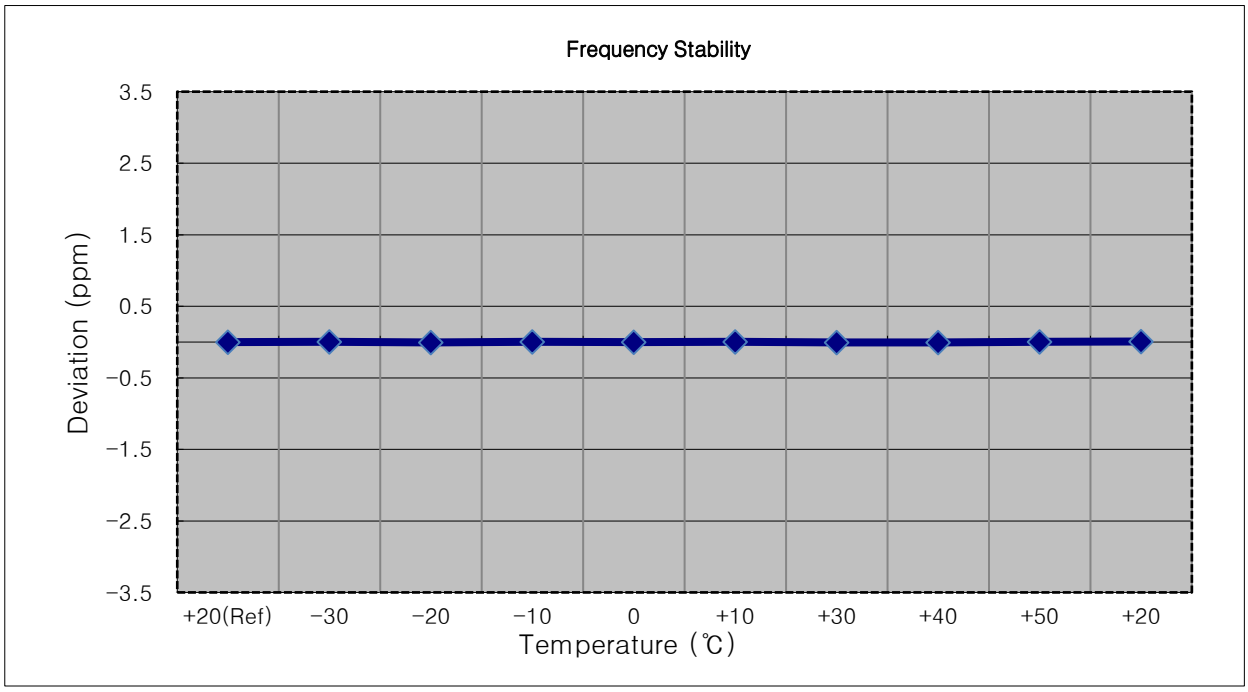
▣ OPERATING FREQUENCY: 1900,000,000 Hz

▣ CHANNEL: 19100 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

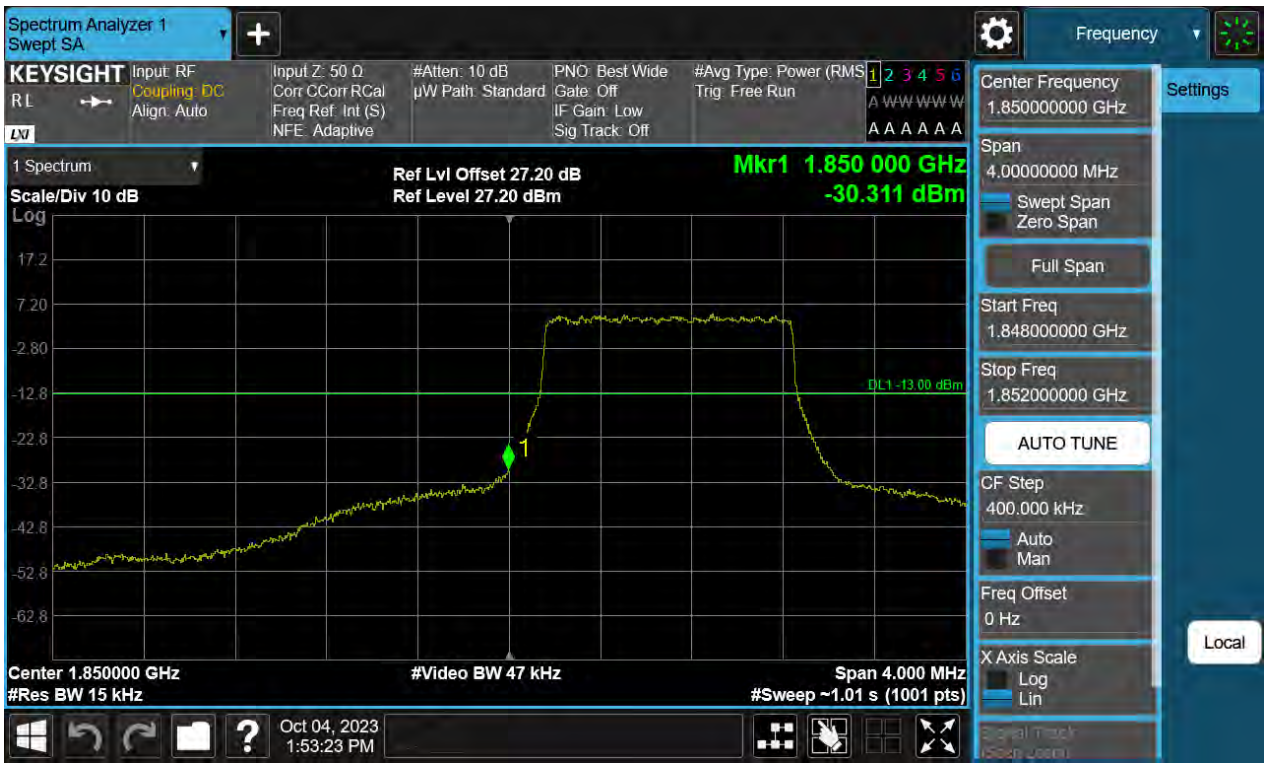
▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1900 000 016	0.0	0.000 000	0.000
100 %		-30	1900 000 026	10.3	0.000 001	0.005
100 %		-20	1900 000 007	-8.7	0.000 000	-0.005
100 %		-10	1900 000 026	9.9	0.000 001	0.005
100 %		0	1900 000 012	-4.0	0.000 000	-0.002
100 %		+10	1900 000 026	10.2	0.000 001	0.005
100 %		+30	1900 000 006	-9.9	-0.000 001	-0.005
100 %		+40	1900 000 008	-7.9	0.000 000	-0.004
100 %		+50	1900 000 025	8.7	0.000 000	0.005
Batt. Endpoint	3.400	+20	1900 000 030	14.6	0.000 001	0.008

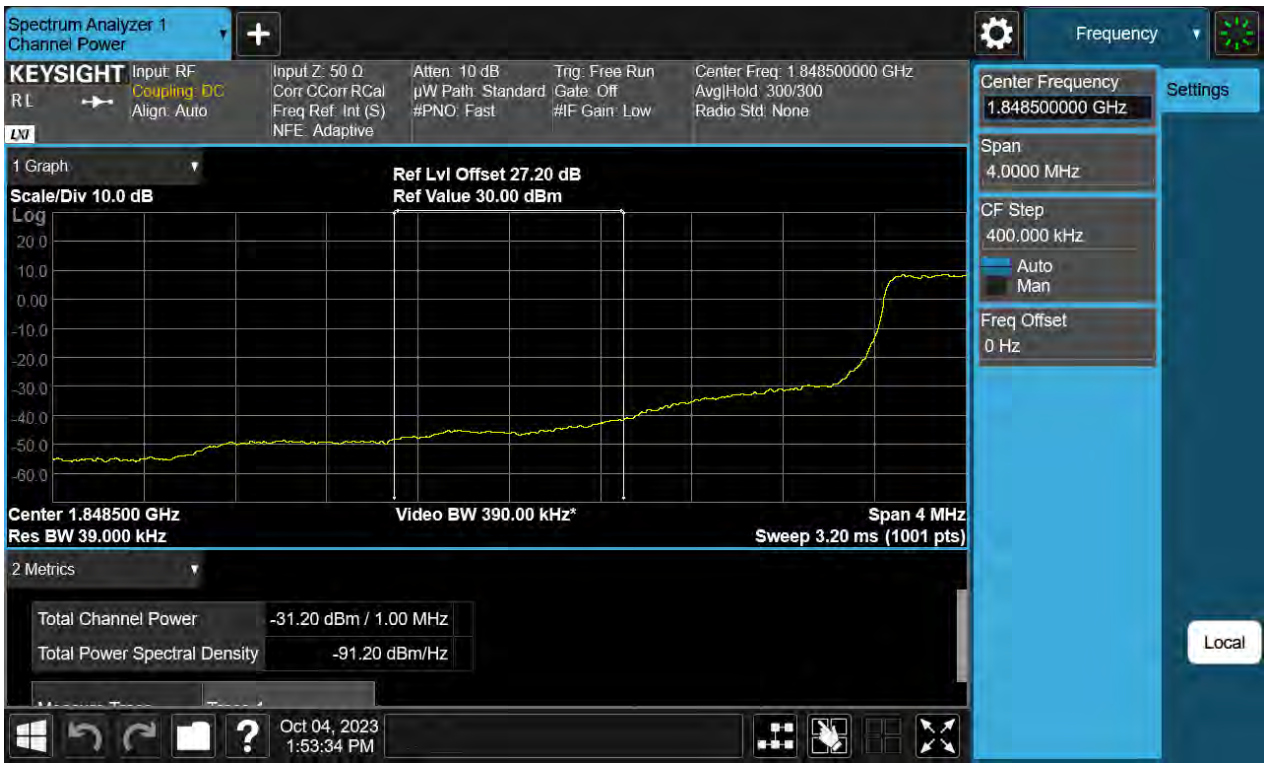


10. TEST PLOTS (Main 2 Ant)

BW1.4M_BandEdge_Lowest Channel_QPSK_FullRB(1)

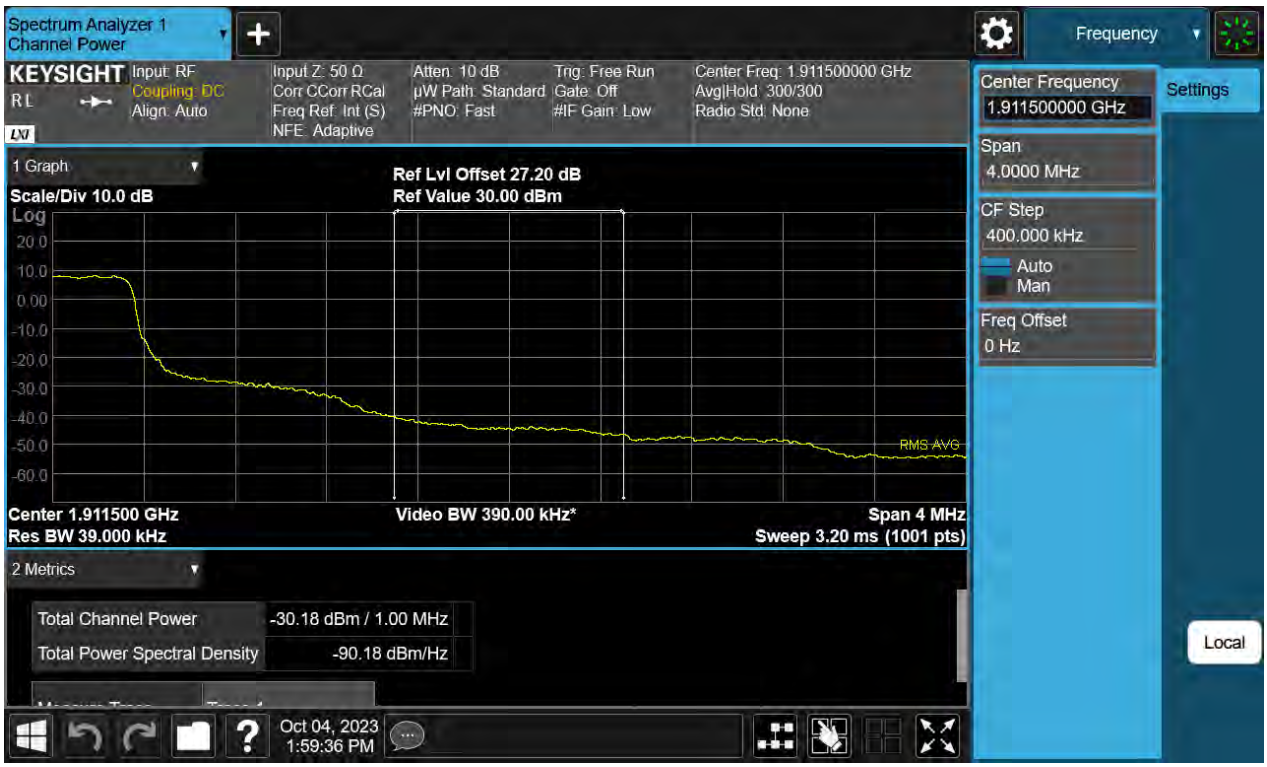


BW1.4M_BandEdge_Lowest Channel_QPSK_FullRB(2)

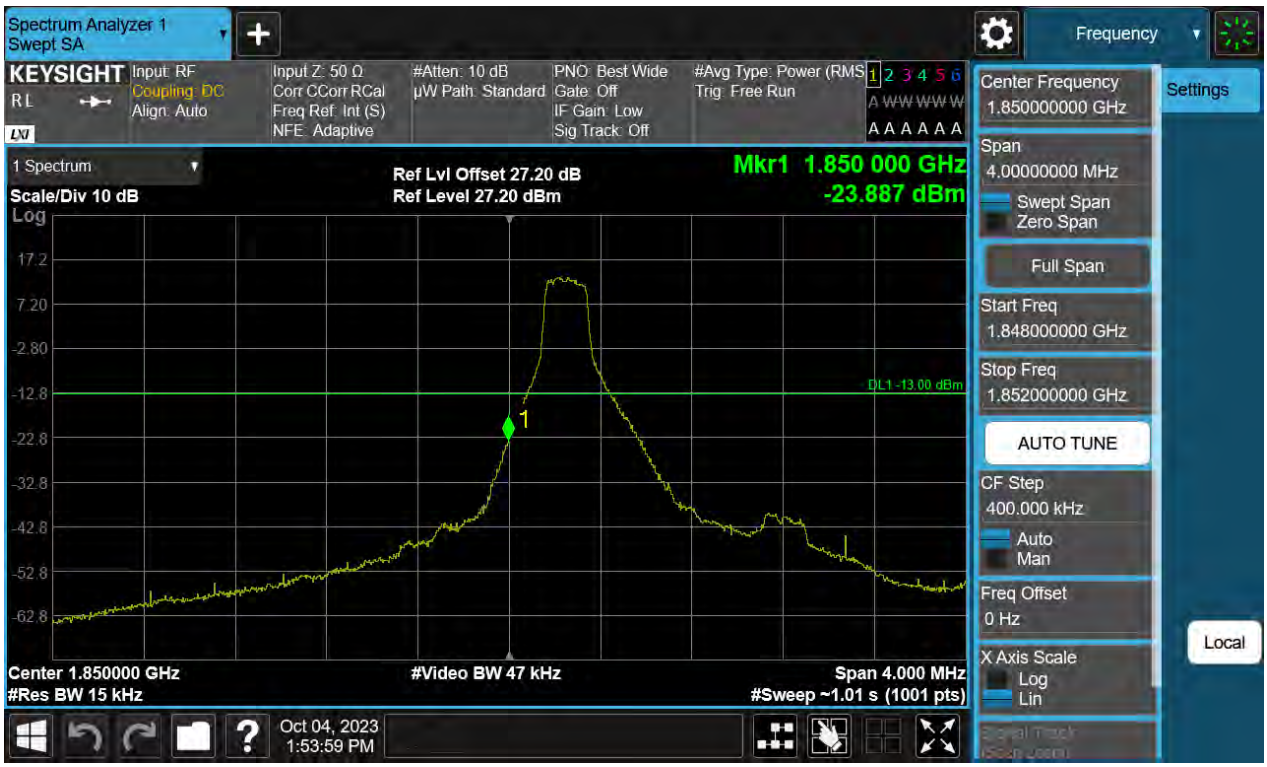


BW1.4M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW1.4M_BandEdge_Highest Channel_QPSK_FullRB(2)



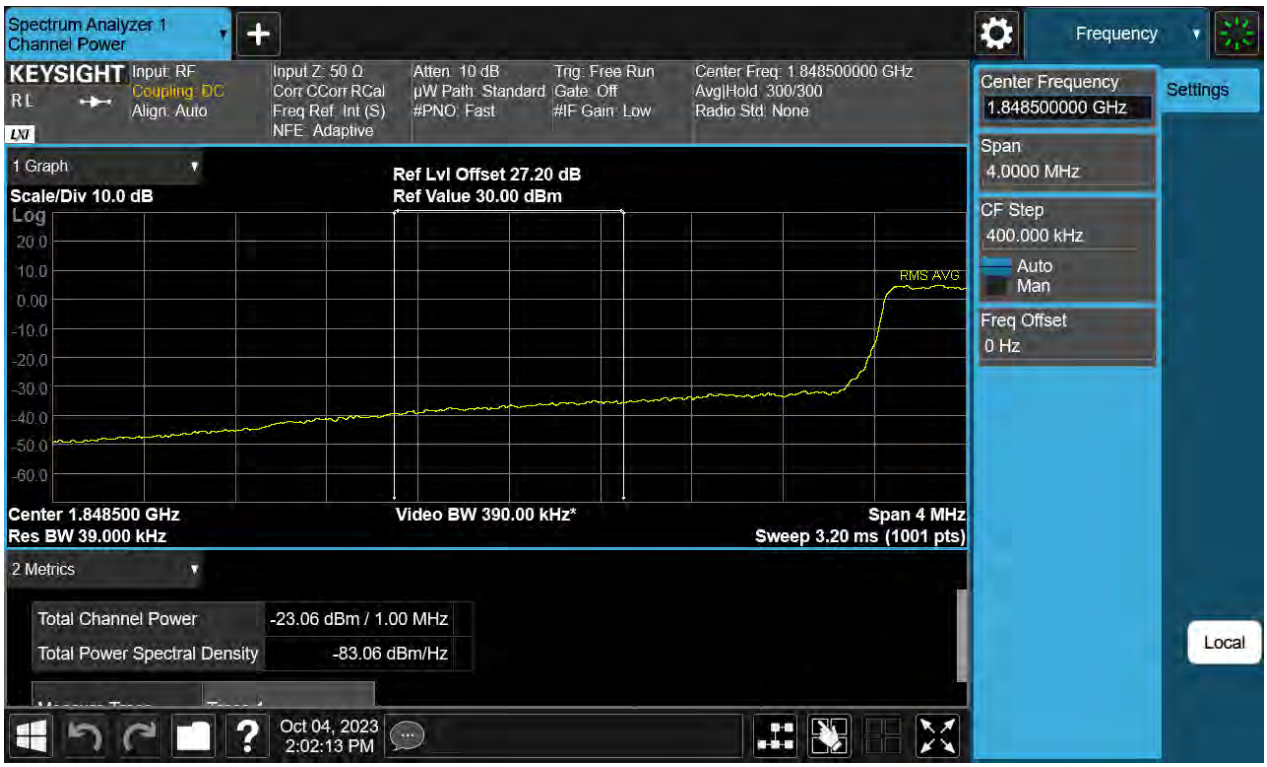
BW1.4M_BandEdge_Lowest Channel_QPSK_1RB



BW1.4M_BandEdge_Highest Channel_QPSK_1RB

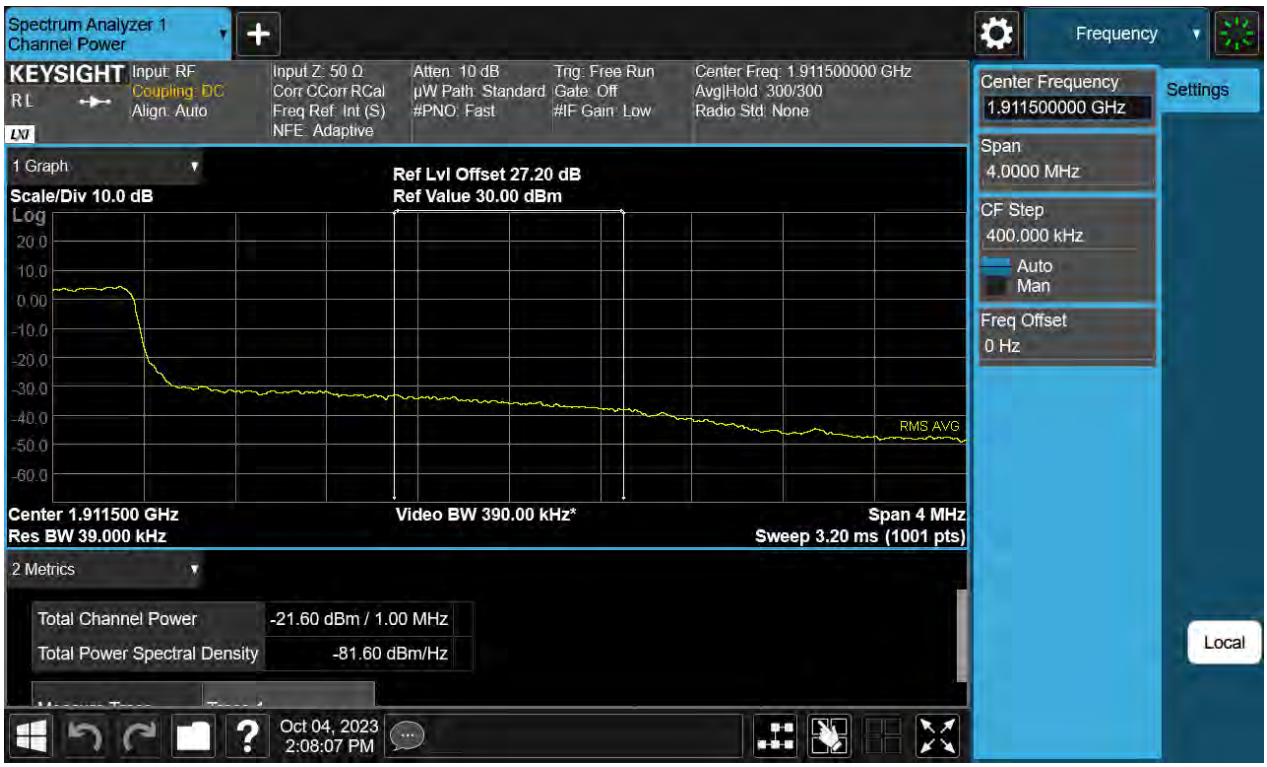
BW3M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW3M_BandEdge_Lowest Channel_QPSK_FullRB(2)

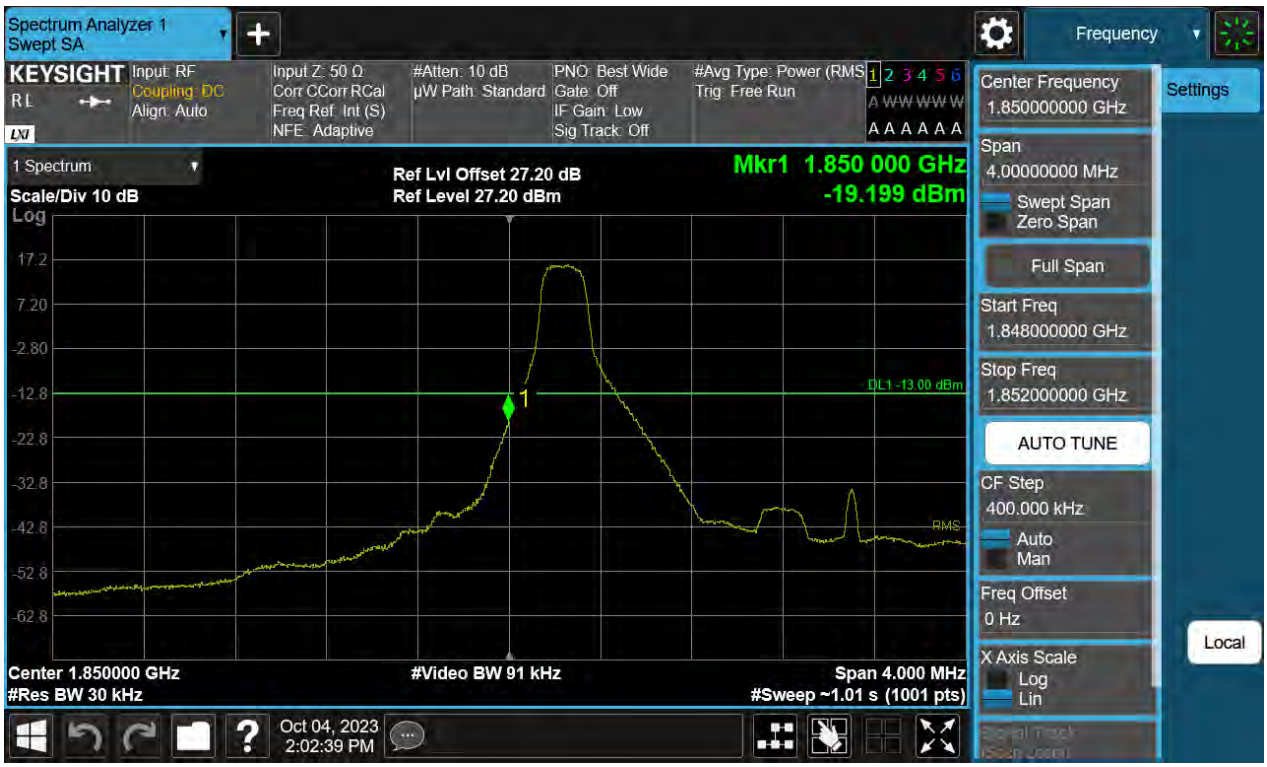


BW3M_BandEdge_Highest Channel_QPSK_FullRB(1)

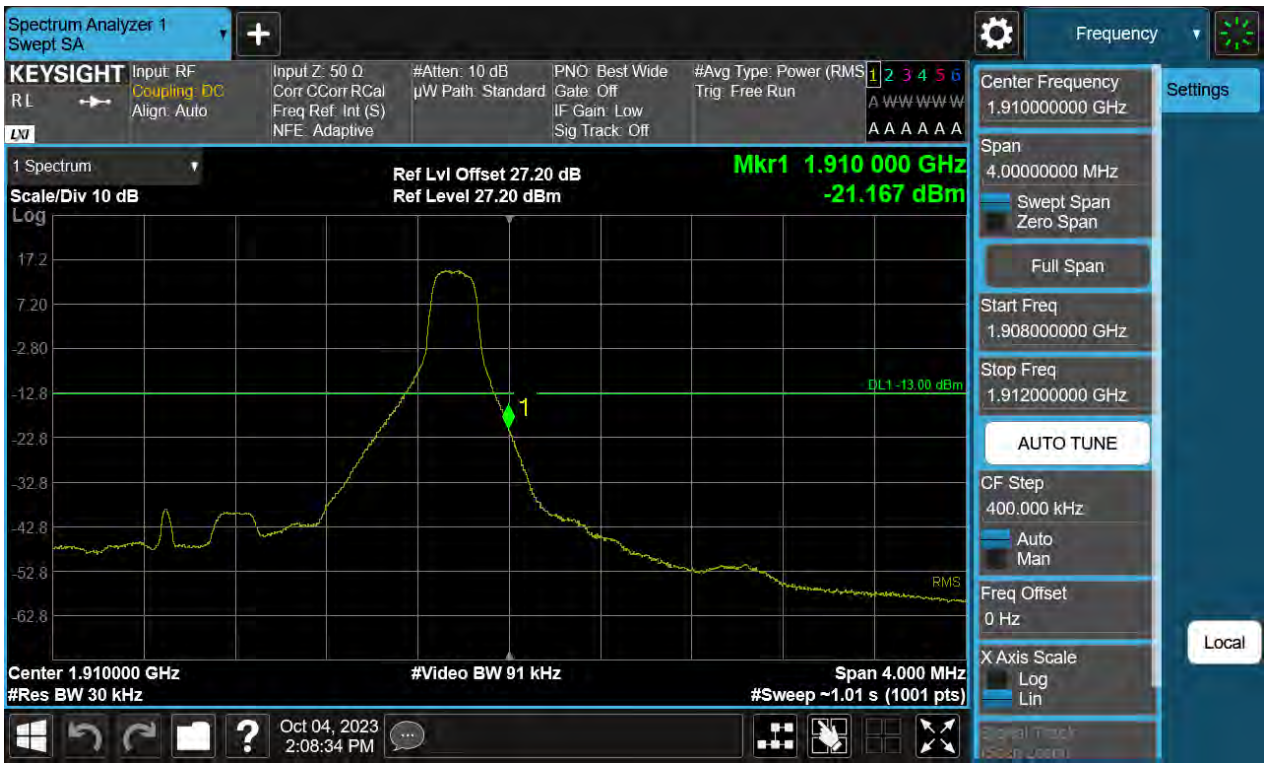
BW3M_BandEdge_Highest Channel_QPSK_FullRB(2)



BW3M_BandEdge_Lowest Channel_QPSK_1RB

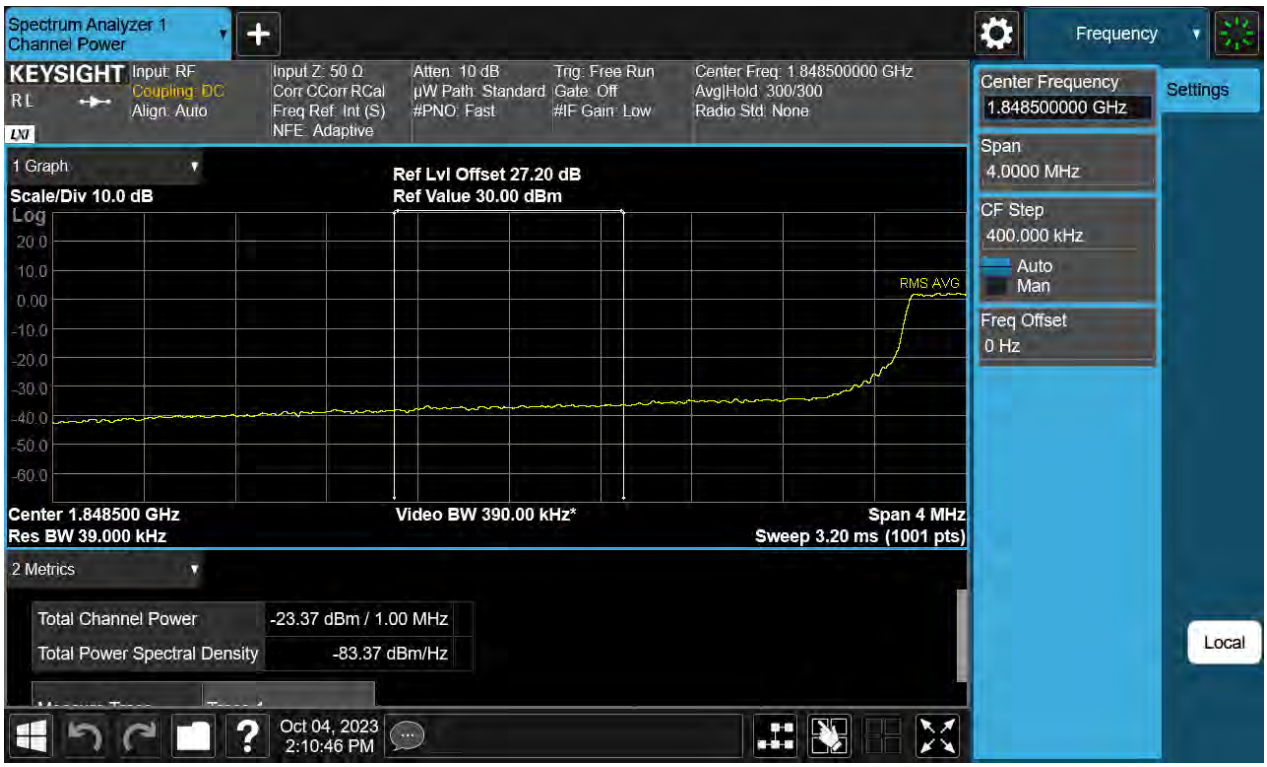


BW3M_BandEdge_Highest Channel_QPSK_1RB



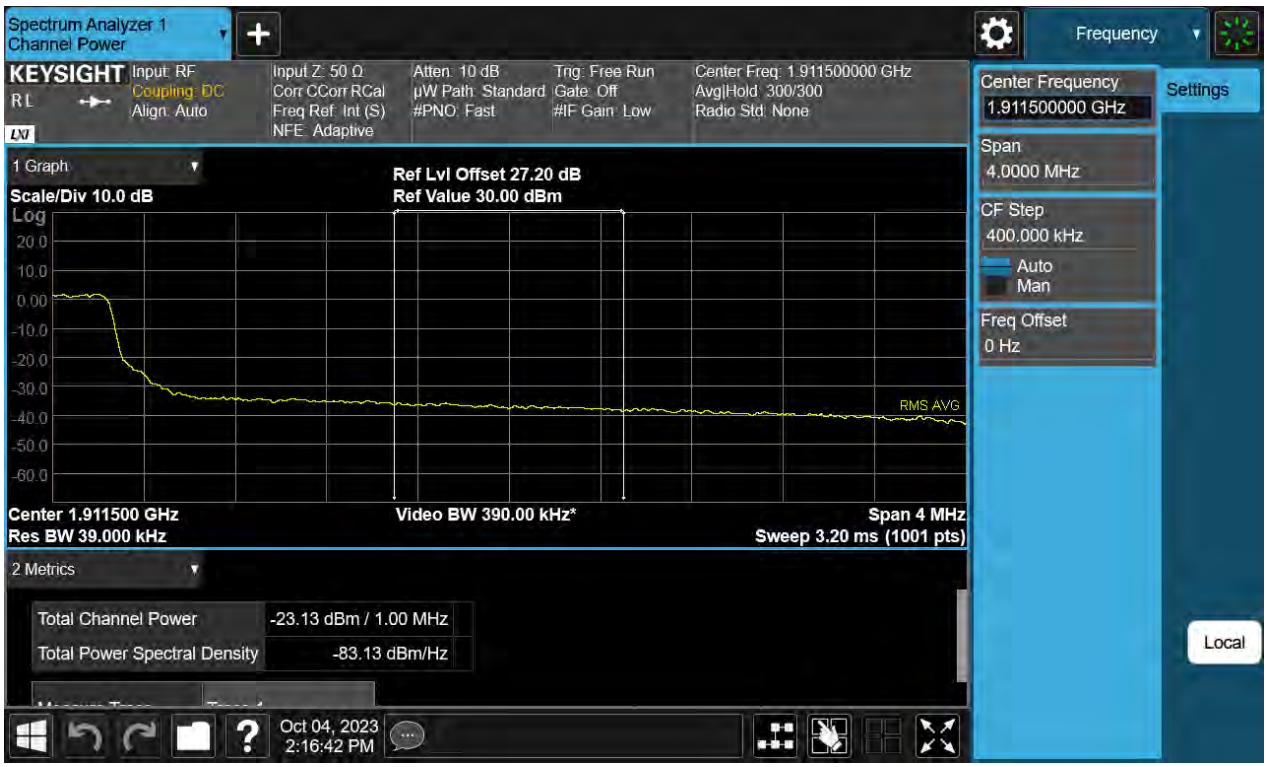
BW5M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW5M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW5M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW5M_BandEdge_Highest Channel_QPSK_FullRB(2)

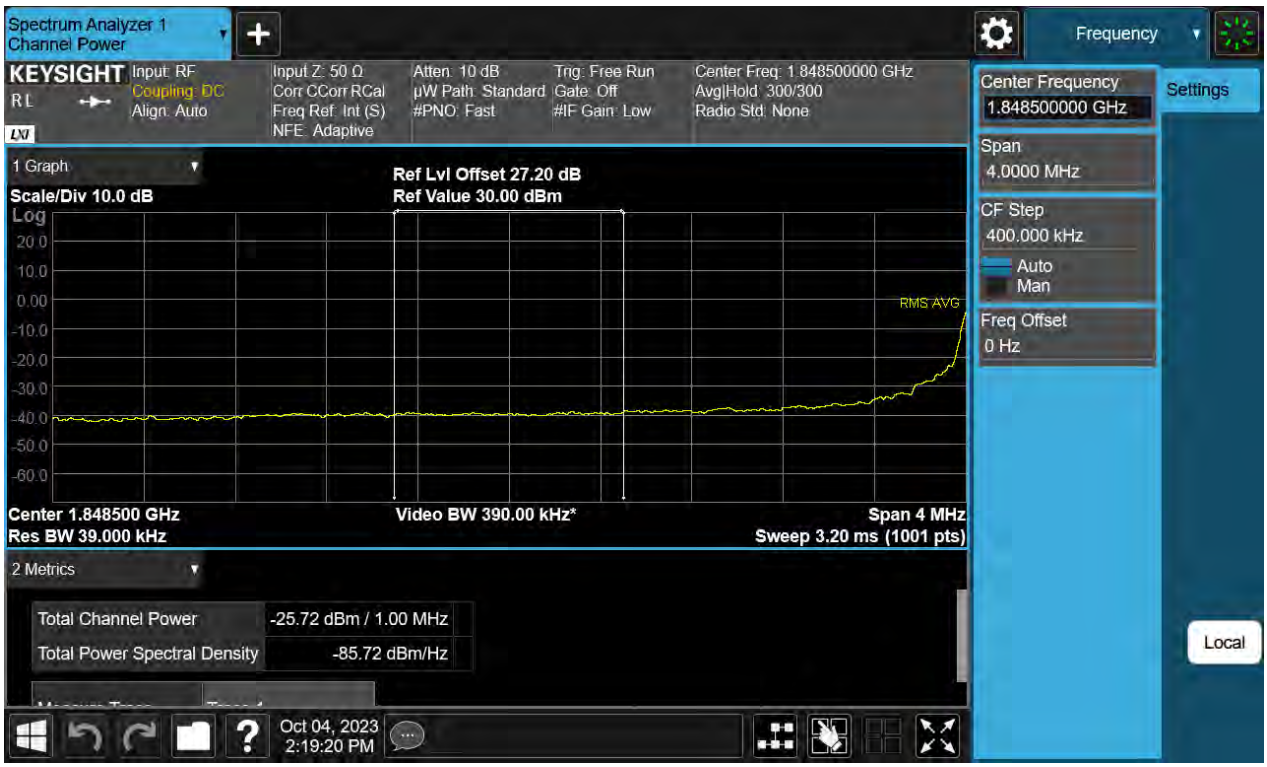


BW5M_BandEdge_Lowest Channel_QPSK_1RB

BW5M_BandEdge_Highest Channel_QPSK_1RB

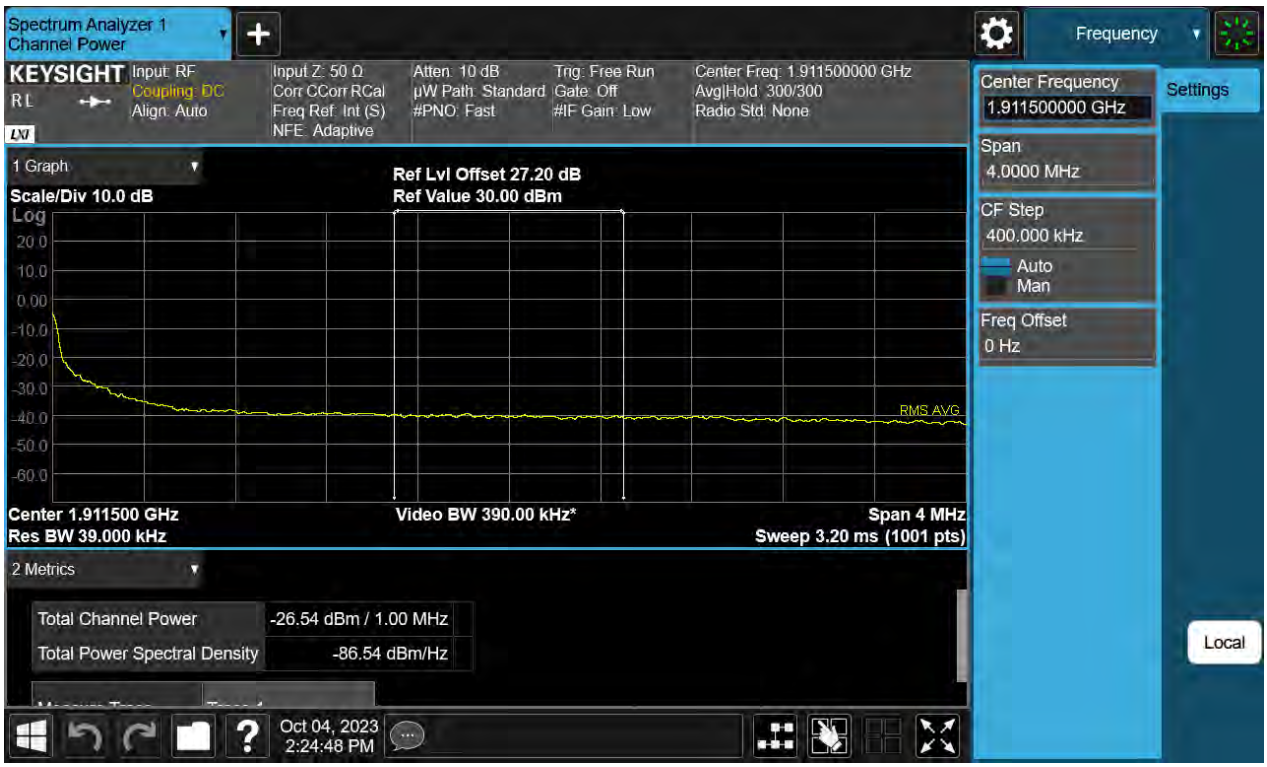
BW10M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW10M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW10M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW10M_BandEdge_Highest Channel_QPSK_FullRB(2)

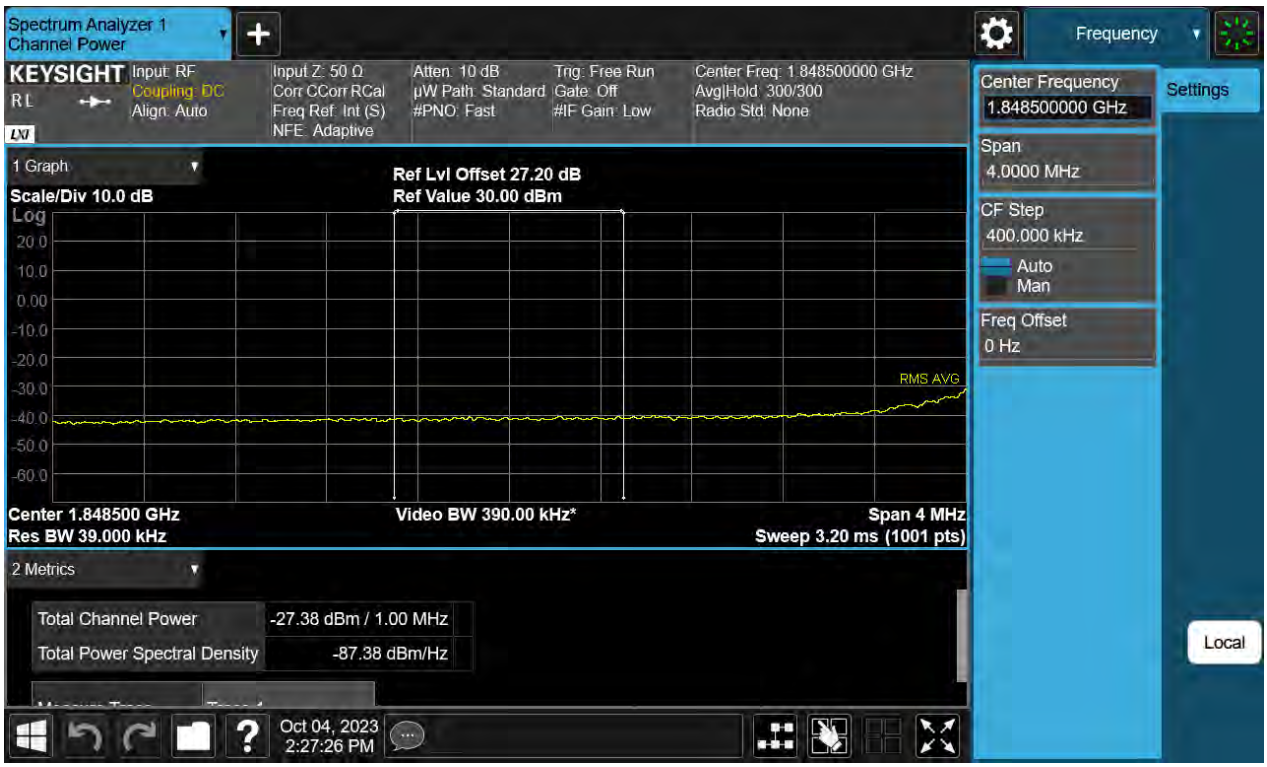


BW10M_BandEdge_Lowest Channel_QPSK_1RB

BW10M_BandEdge_Highest Channel_QPSK_1RB

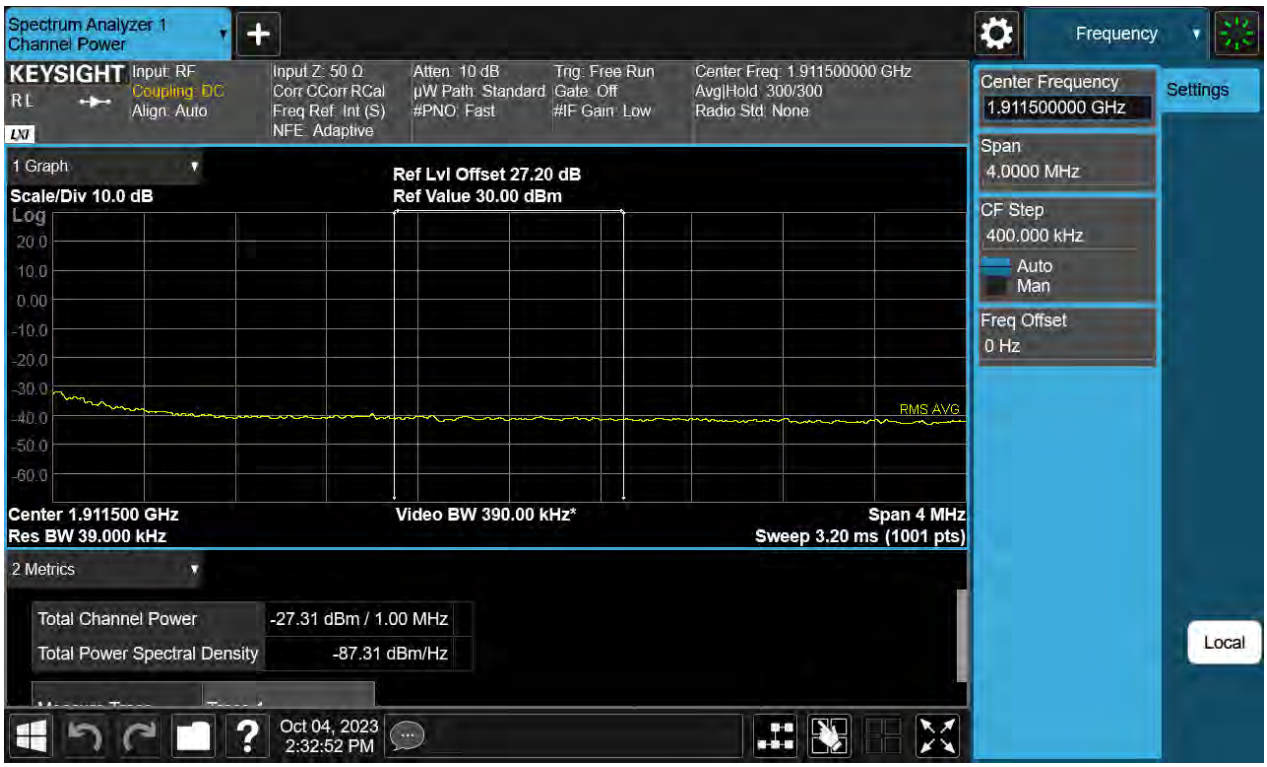
BW15M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW15M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW15M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW15M_BandEdge_Highest Channel_QPSK_FullRB(2)

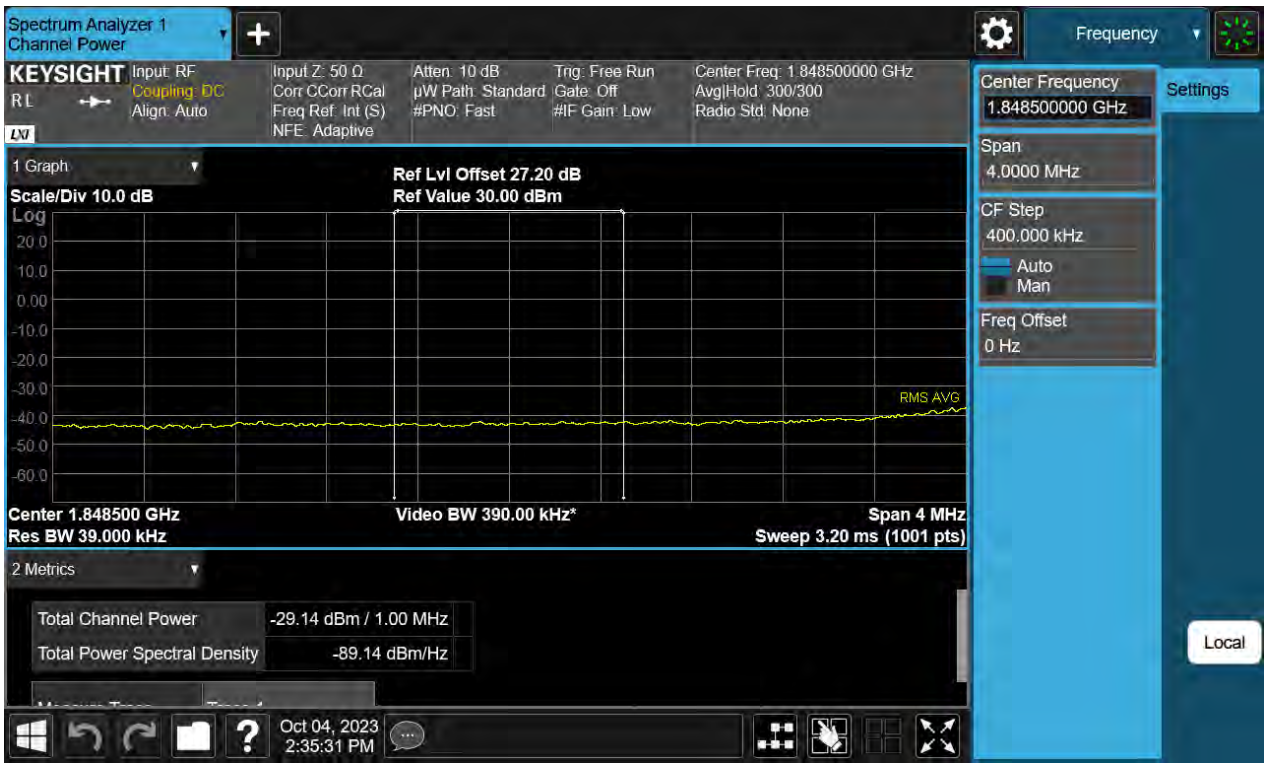


BW15M_BandEdge_Lowest Channel_QPSK_1RB

BW15M_BandEdge_Highest Channel_QPSK_1RB

BW20M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW20M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW20M_BandEdge_Highest Channel_QPSK_FullRB(1)

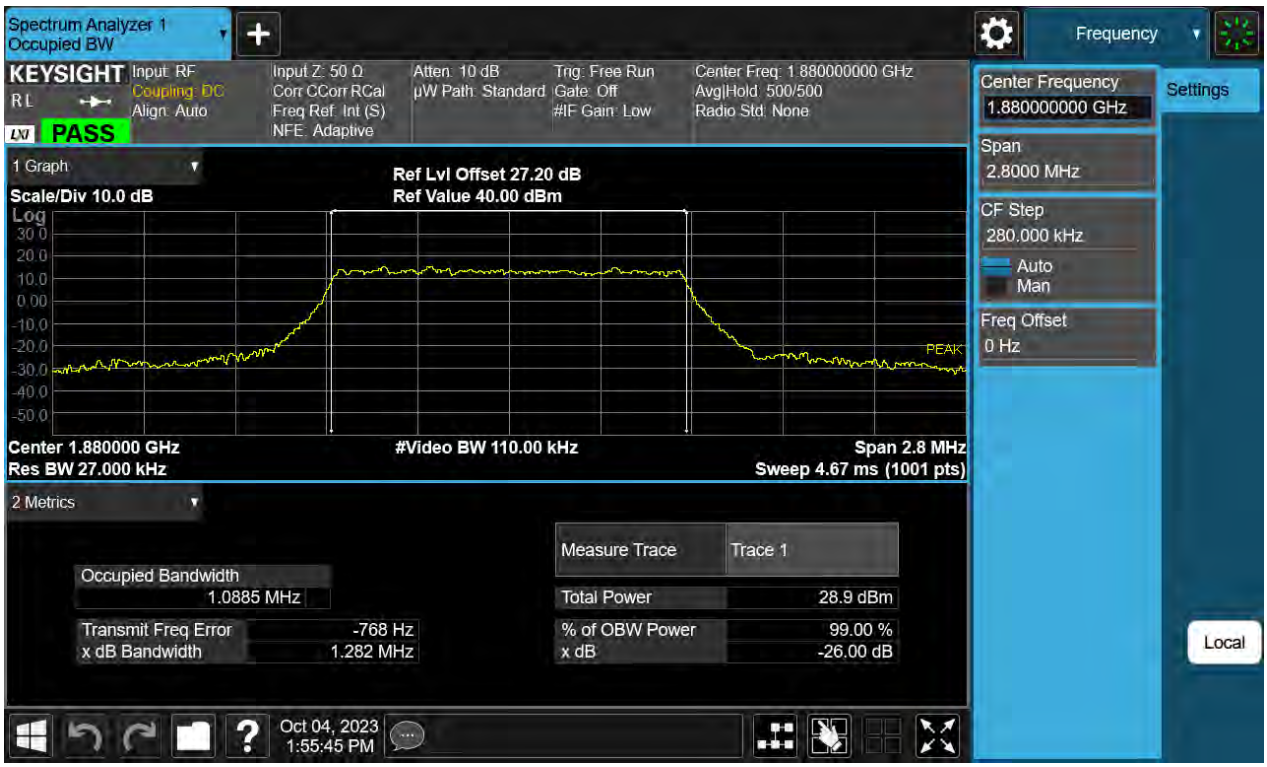
BW20M_BandEdge_Highest Channel_QPSK_FullRB(2)

BW20M_BandEdge_Lowest Channel_QPSK_1RB

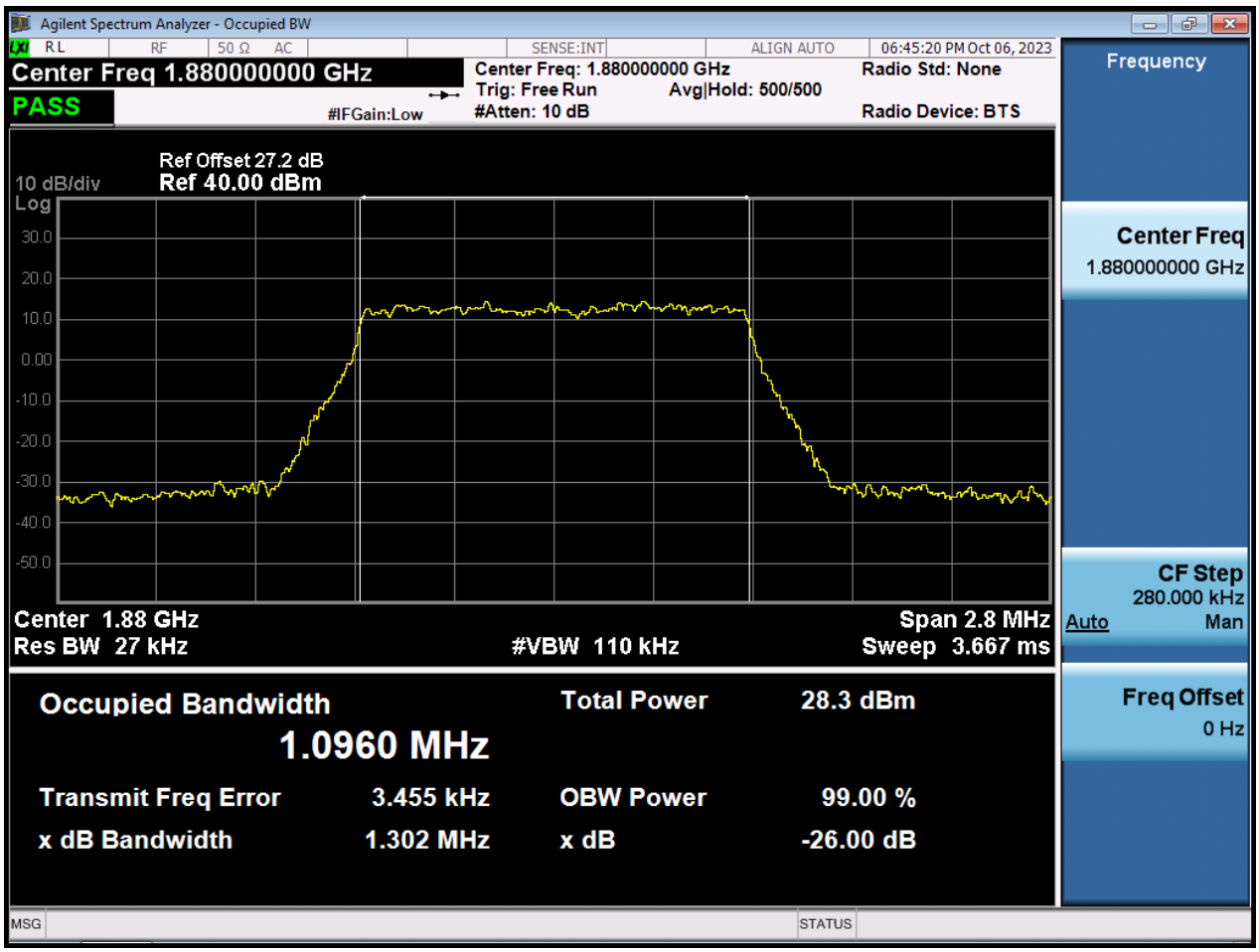
BW20M_BandEdge_Highest Channel_QPSK_1RB

BW1.4M_OBW_Middle Channel_QPSK_FullRB

BW1.4M_OBW_Middle Channel_16QAM_FullRB

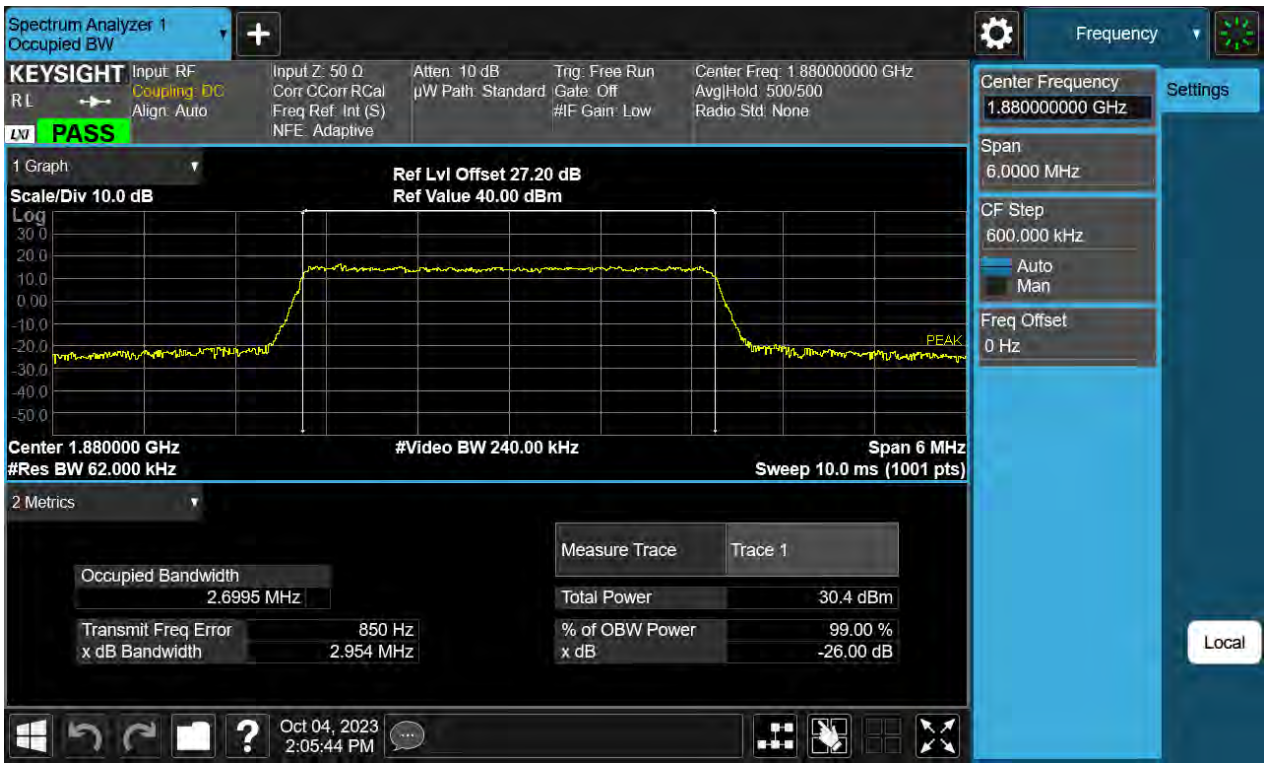


BW1.4M_OBW_Middle Channel_64QAM_FullRB

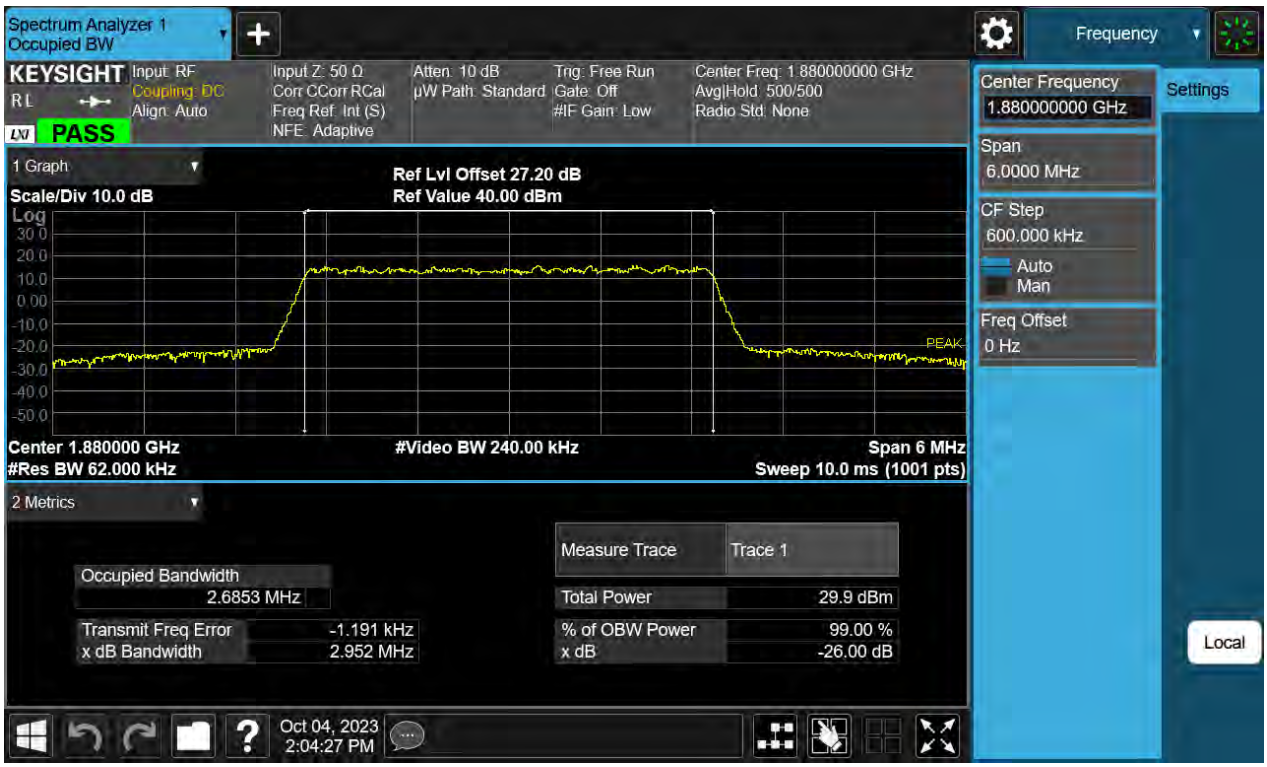


BW1.4M_OBW_Middle Channel_256QAM_FullRB

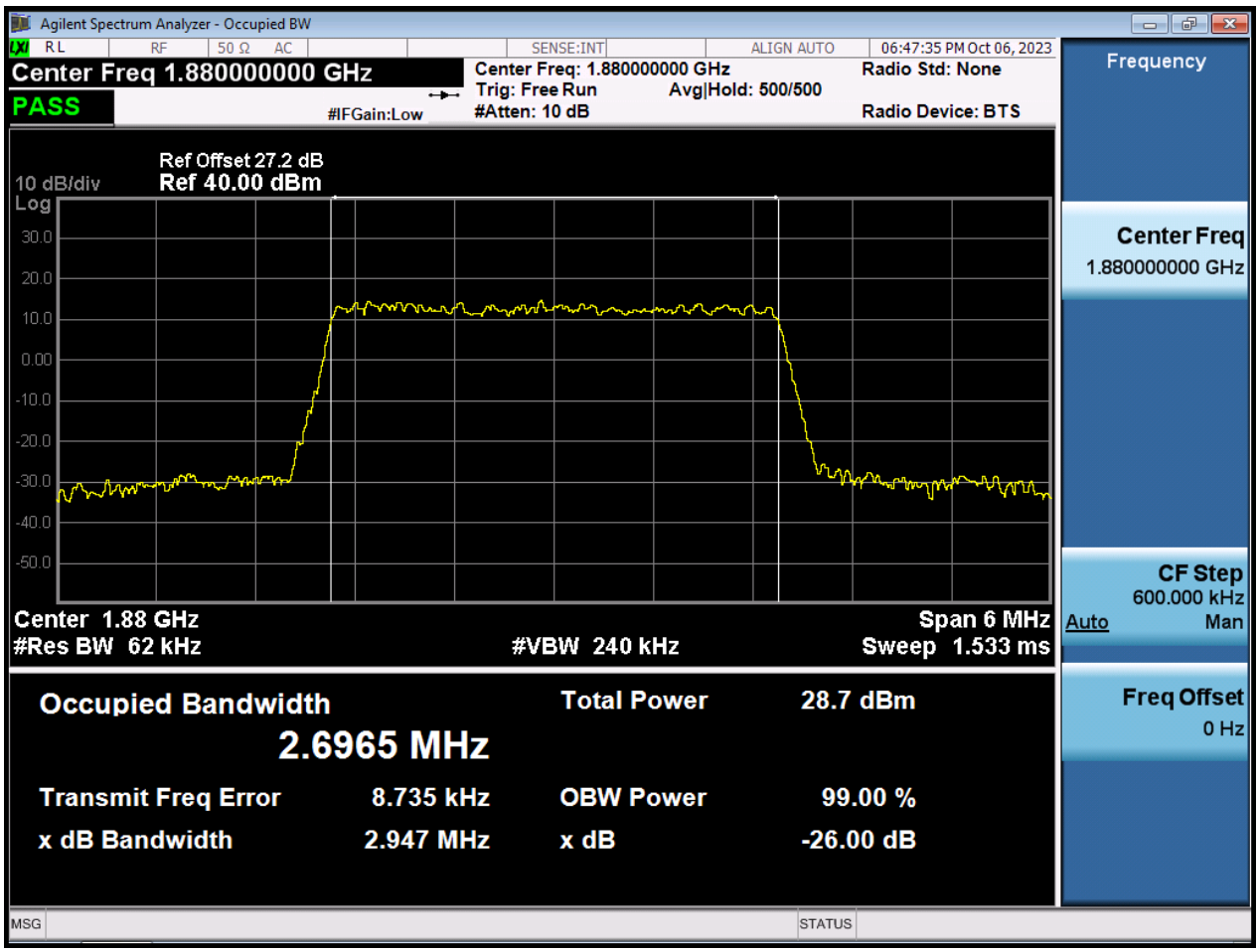
BW3M_OBW_Middle Channel_QPSK_FullRB



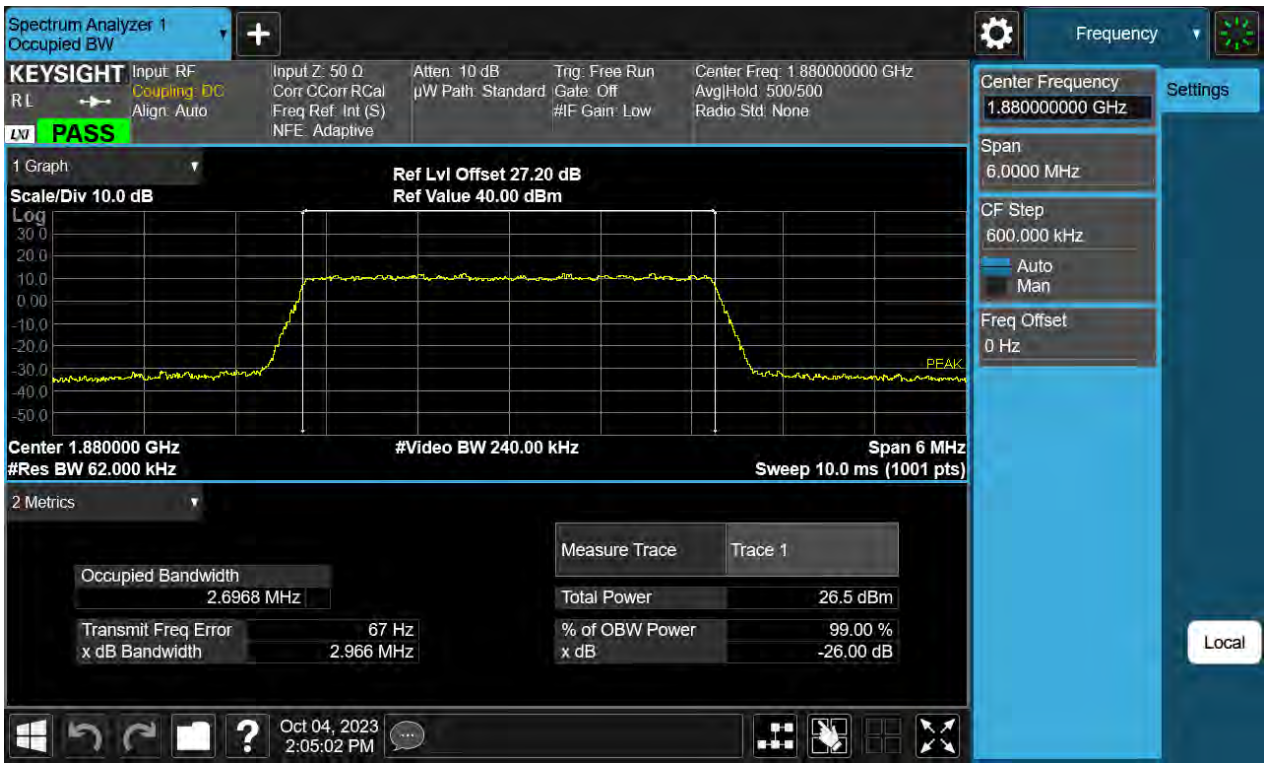
BW3M_OBW_Middle Channel_16QAM_FullRB



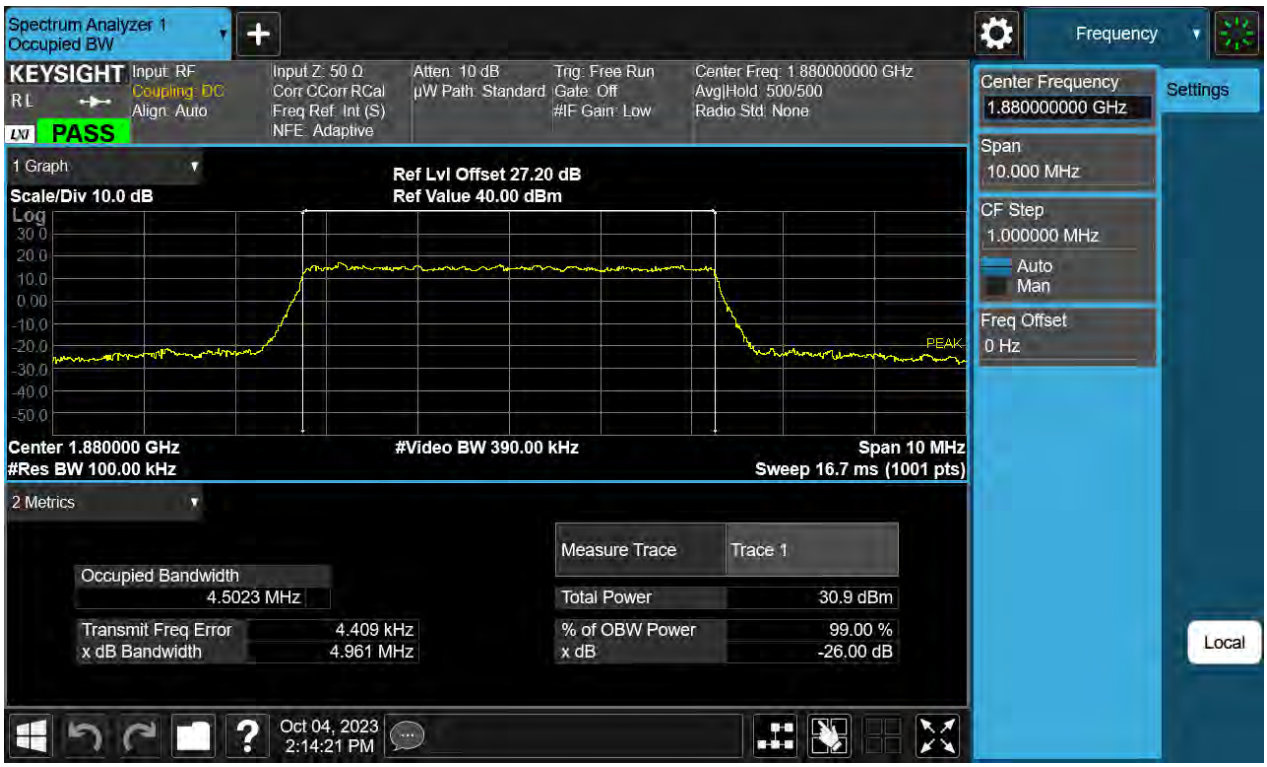
BW3M_OBW_Middle Channel_64QAM_FullRB



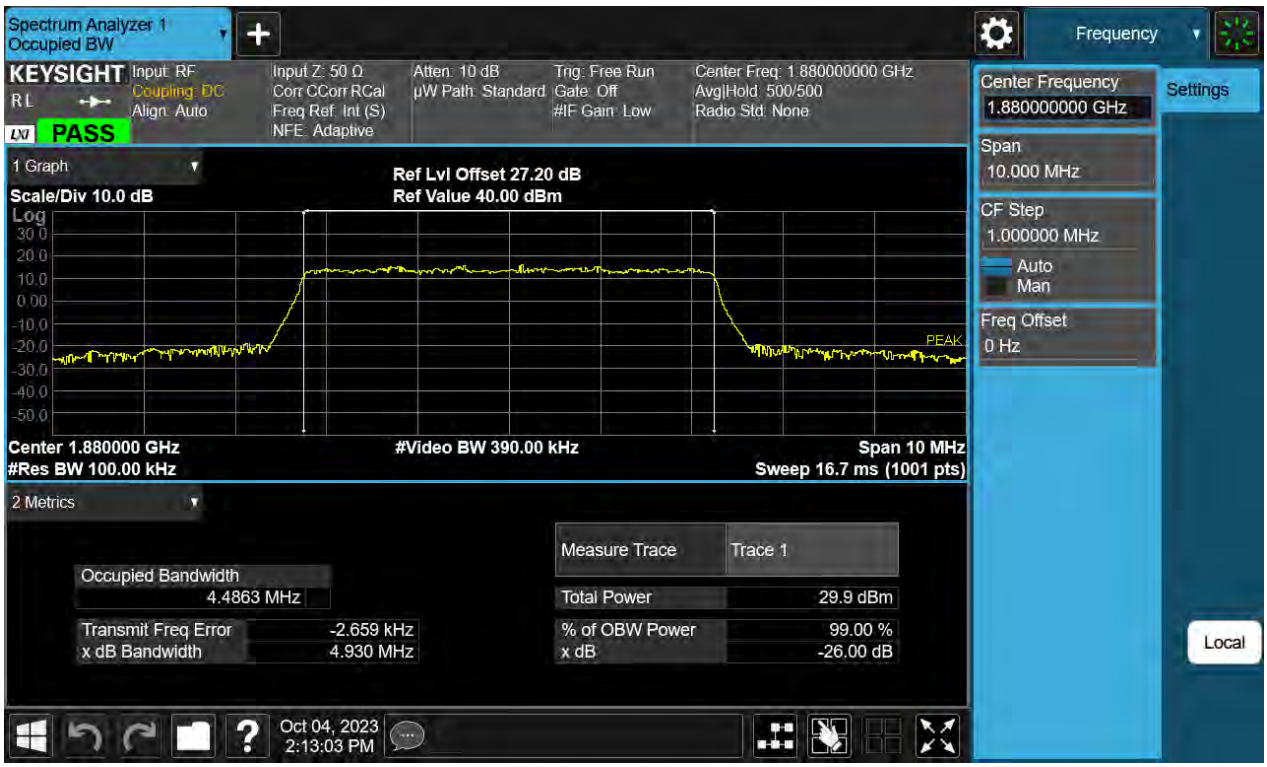
BW3M_OBW_Middle Channel_256QAM_FullRB



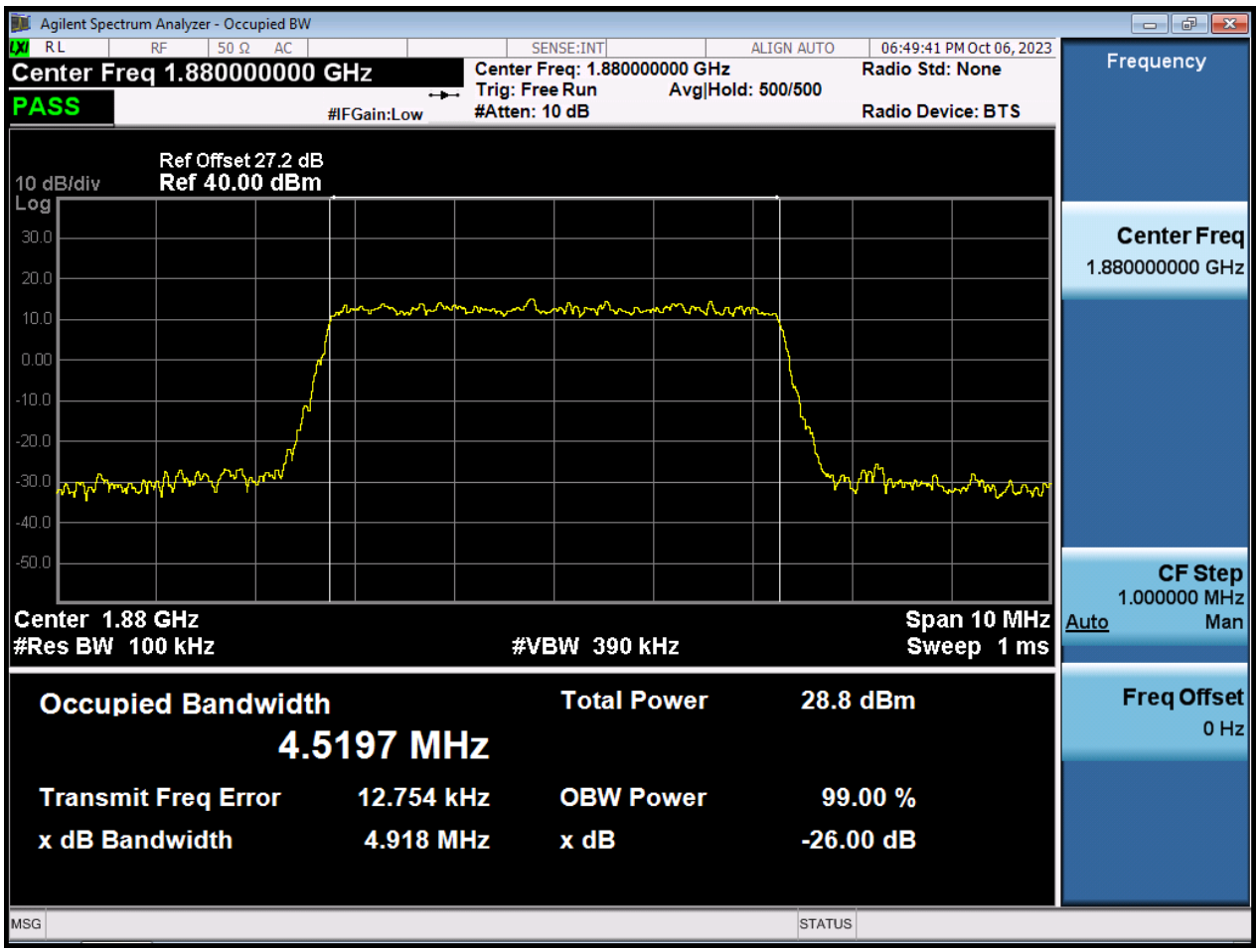
BW5M_OBW_Middle Channel_QPSK_FullRB



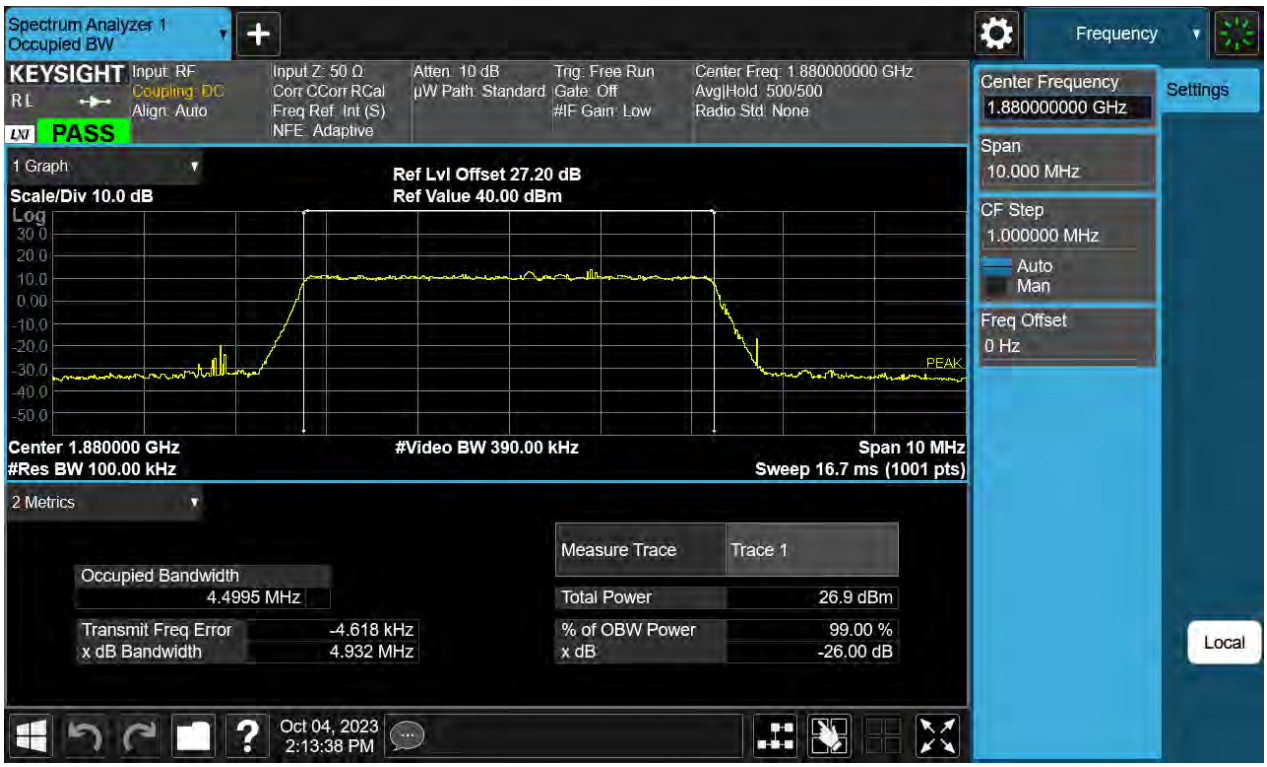
BW5M_OBW_Middle Channel_16QAM_FullRB



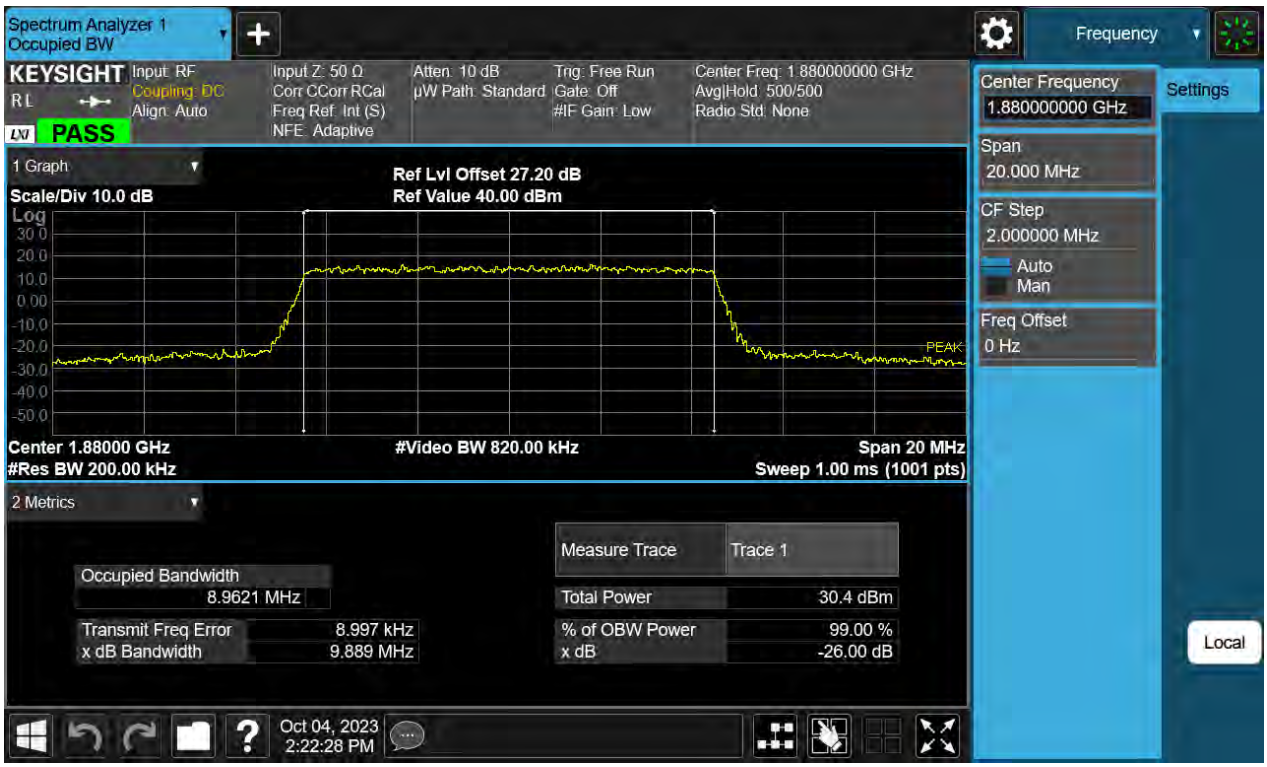
BW5M_OBW_Middle Channel_64QAM_FullRB



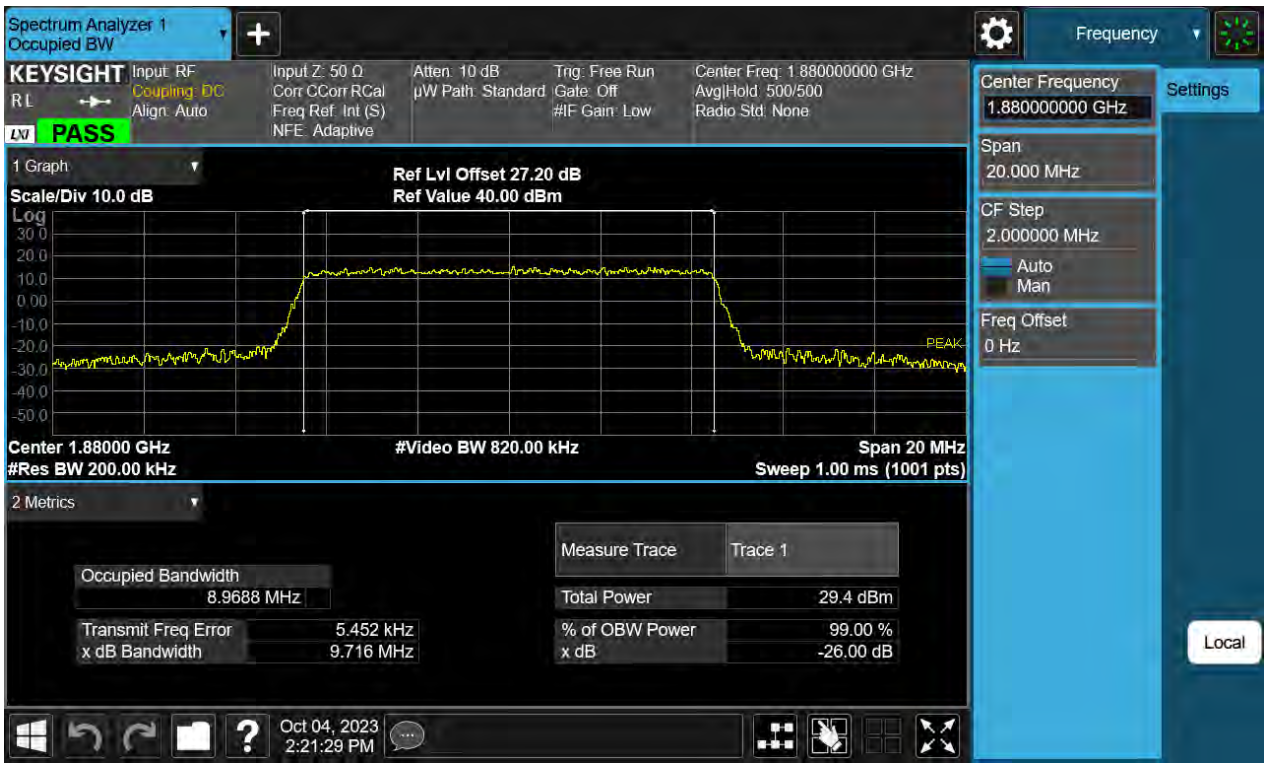
BW5M_OBW_Middle Channel_256QAM_FullRB



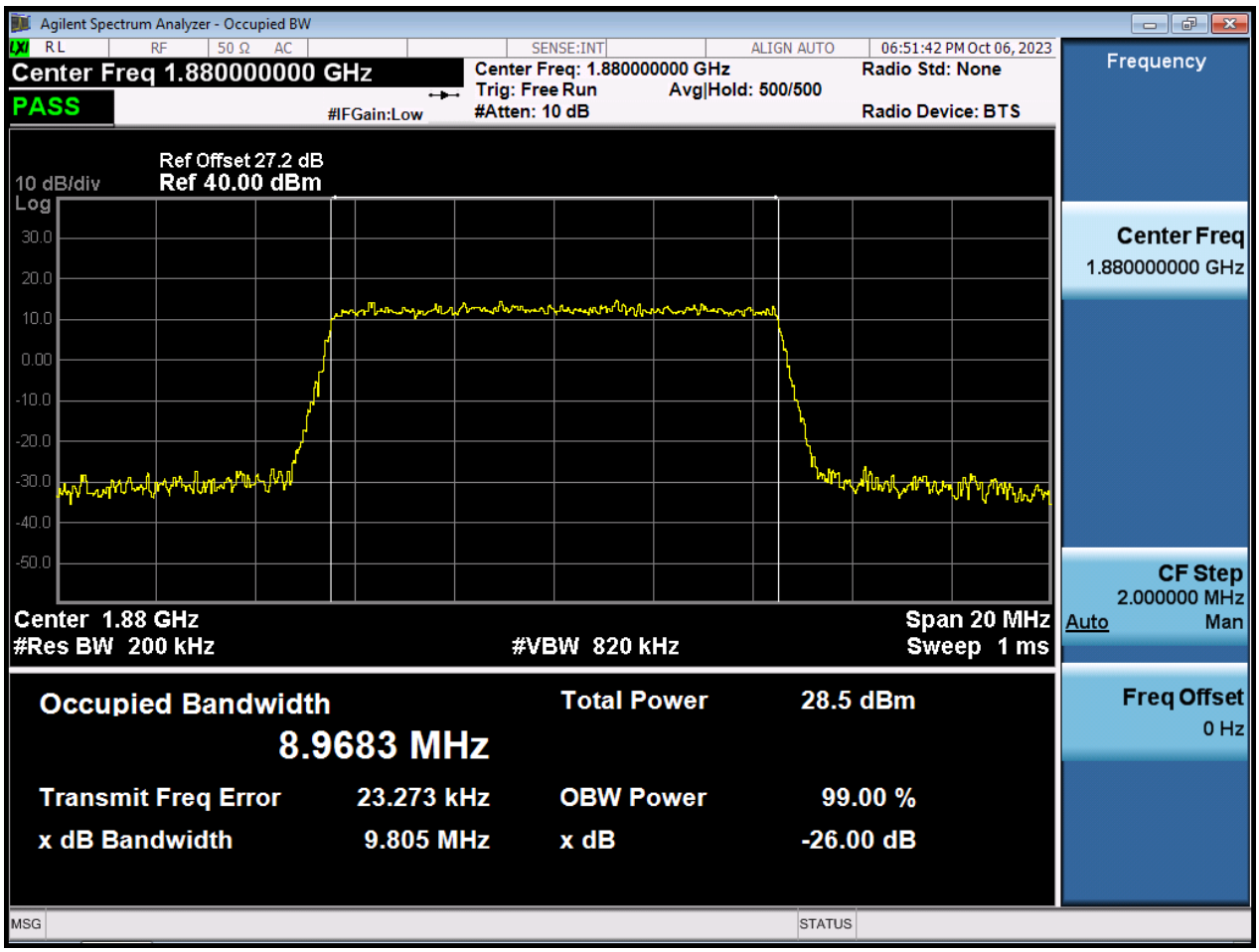
BW10M_OBW_Middle Channel_QPSK_FullRB



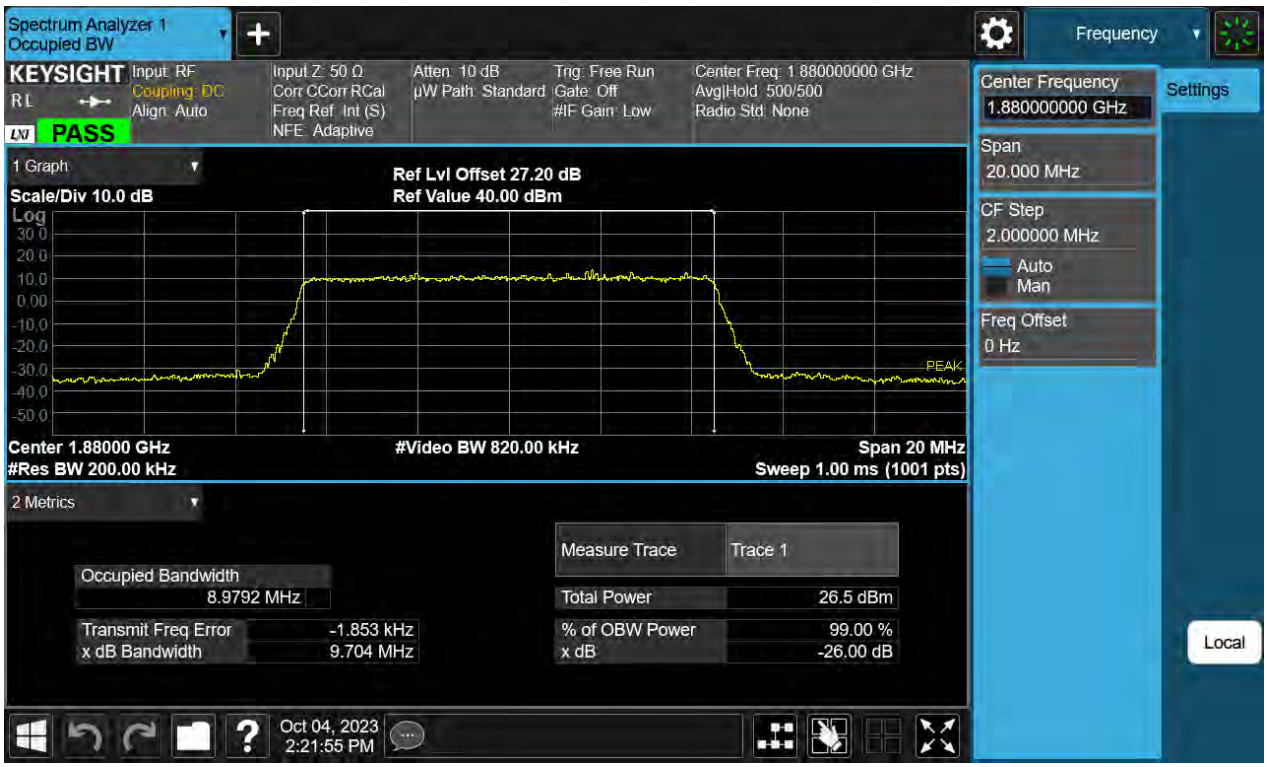
BW10M_OBW_Middle Channel_16QAM_FullRB



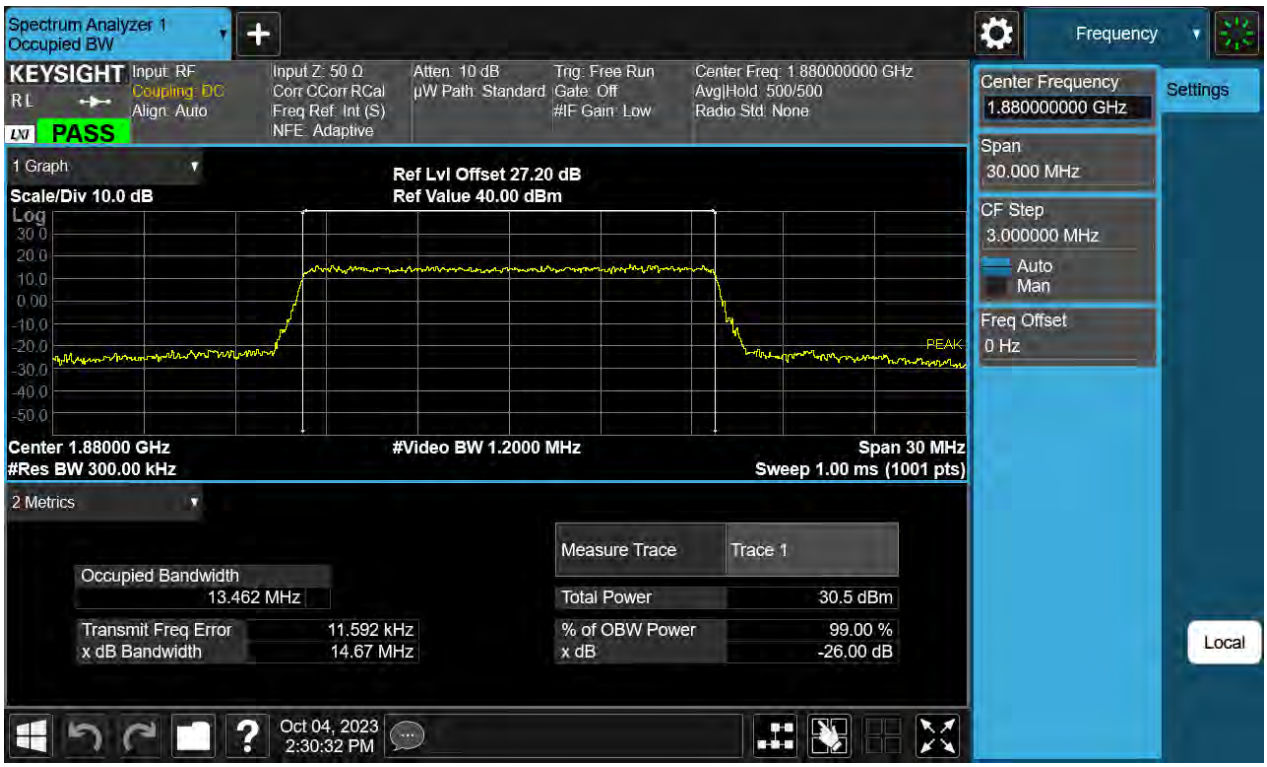
BW10M_OBW_Middle Channel_64QAM_FullRB



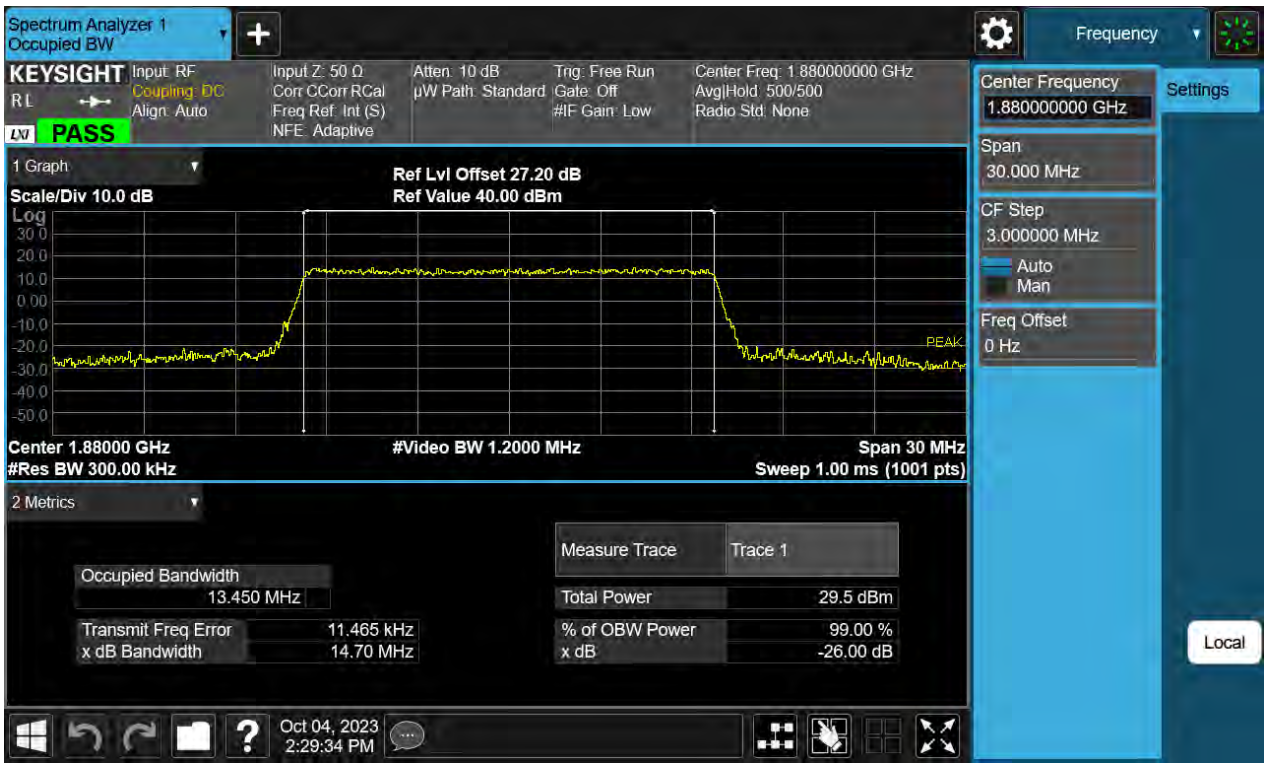
BW10M_OBW_Middle Channel_256QAM_FullRB



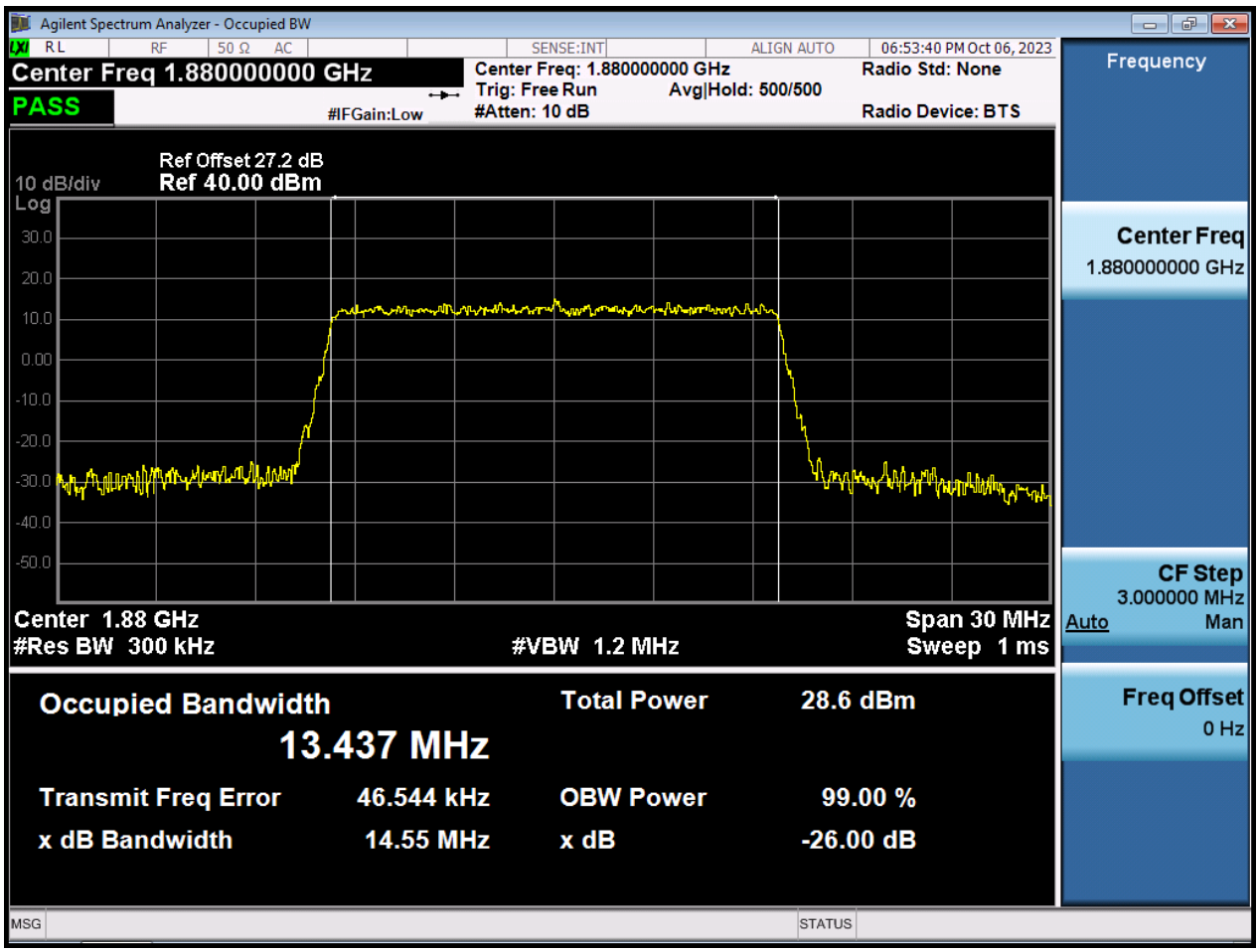
BW15M_OBW_Middle Channel_QPSK_FullRB



BW15M_OBW_Middle Channel_16QAM_FullRB

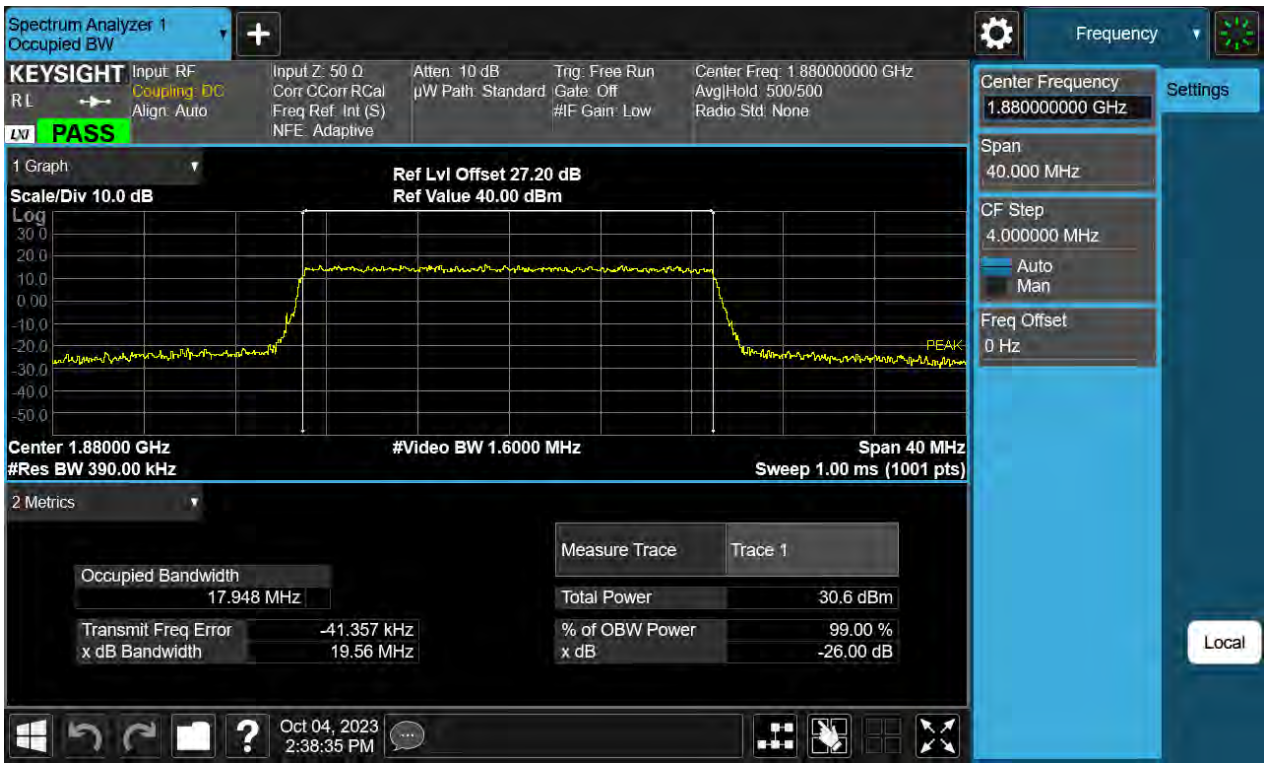


BW15M_OBW_Middle Channel_64QAM_FullRB

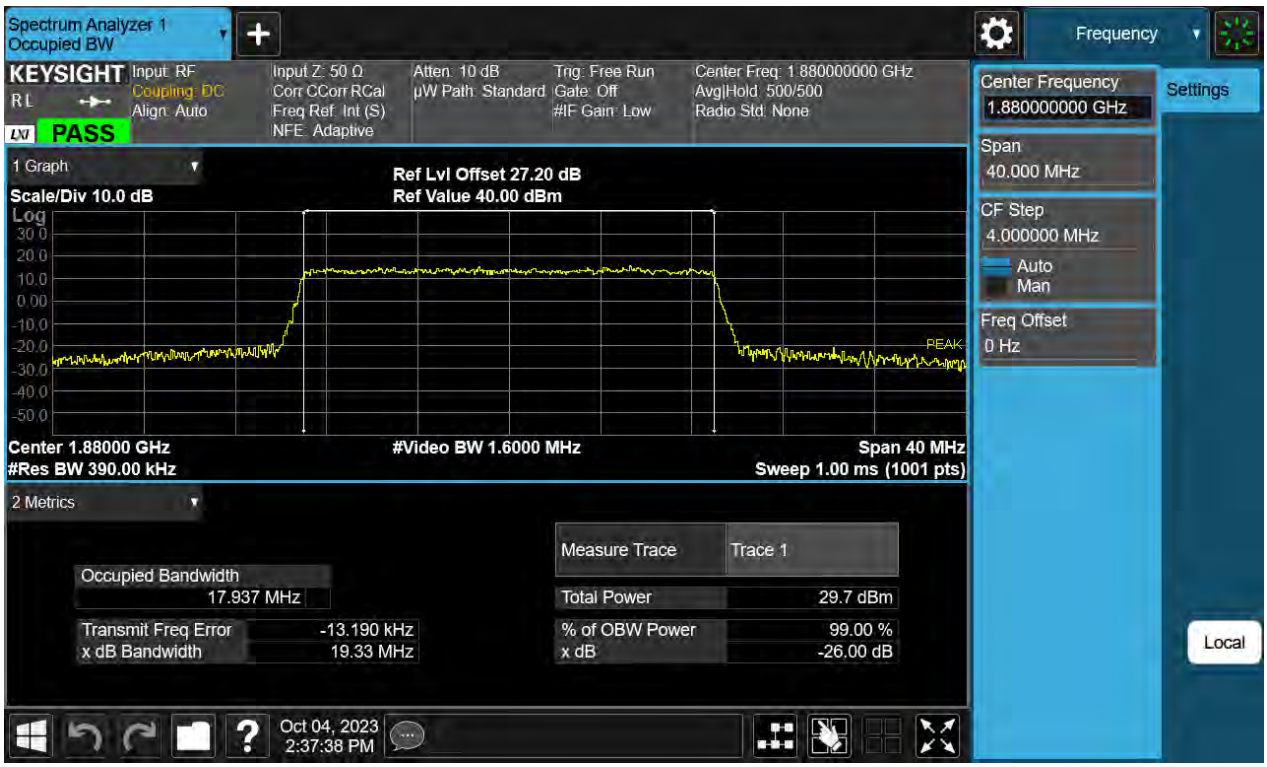


BW15M_OBW_Middle Channel_256QAM_FullRB

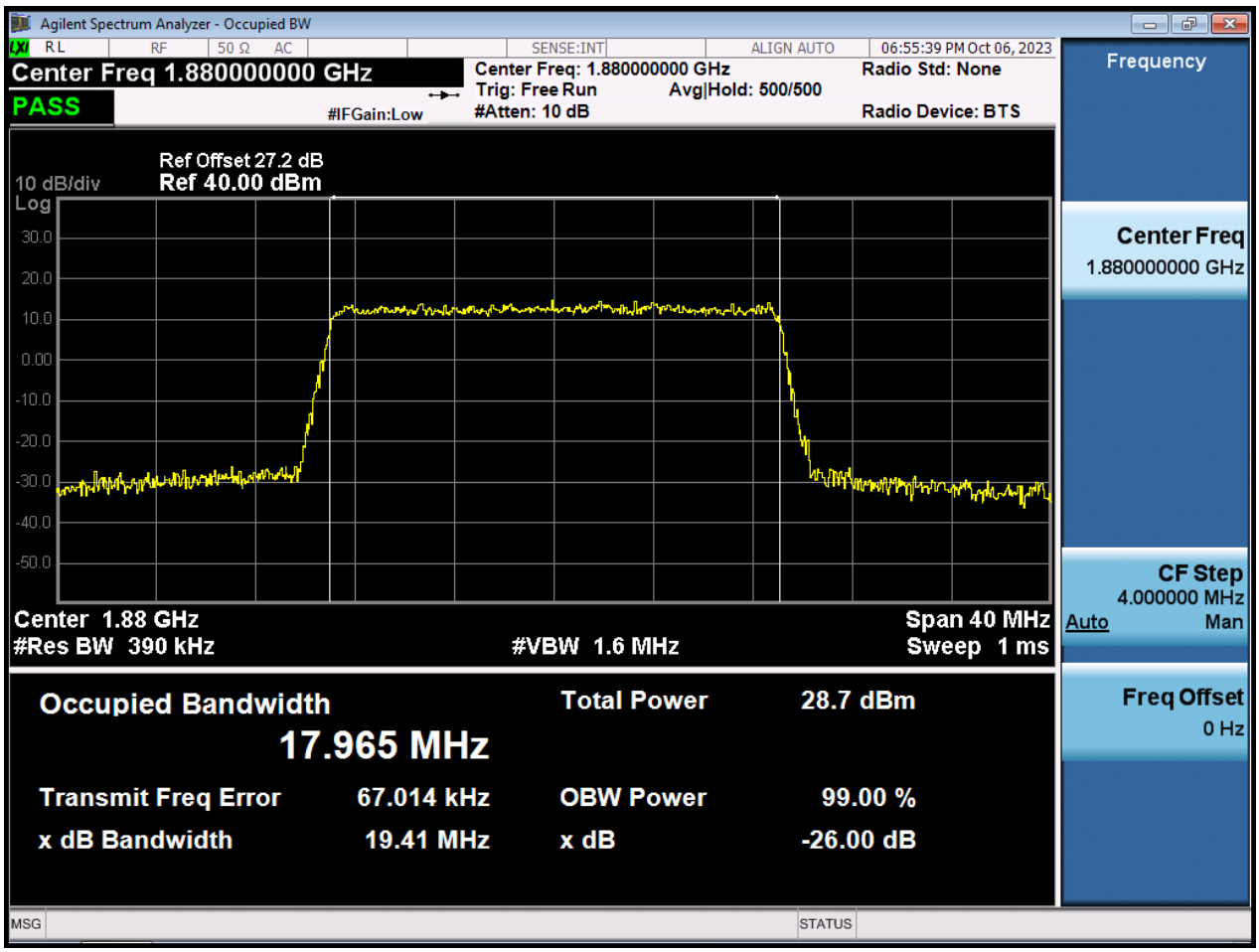
BW20M_OBW_Middle Channel_QPSK_FullRB



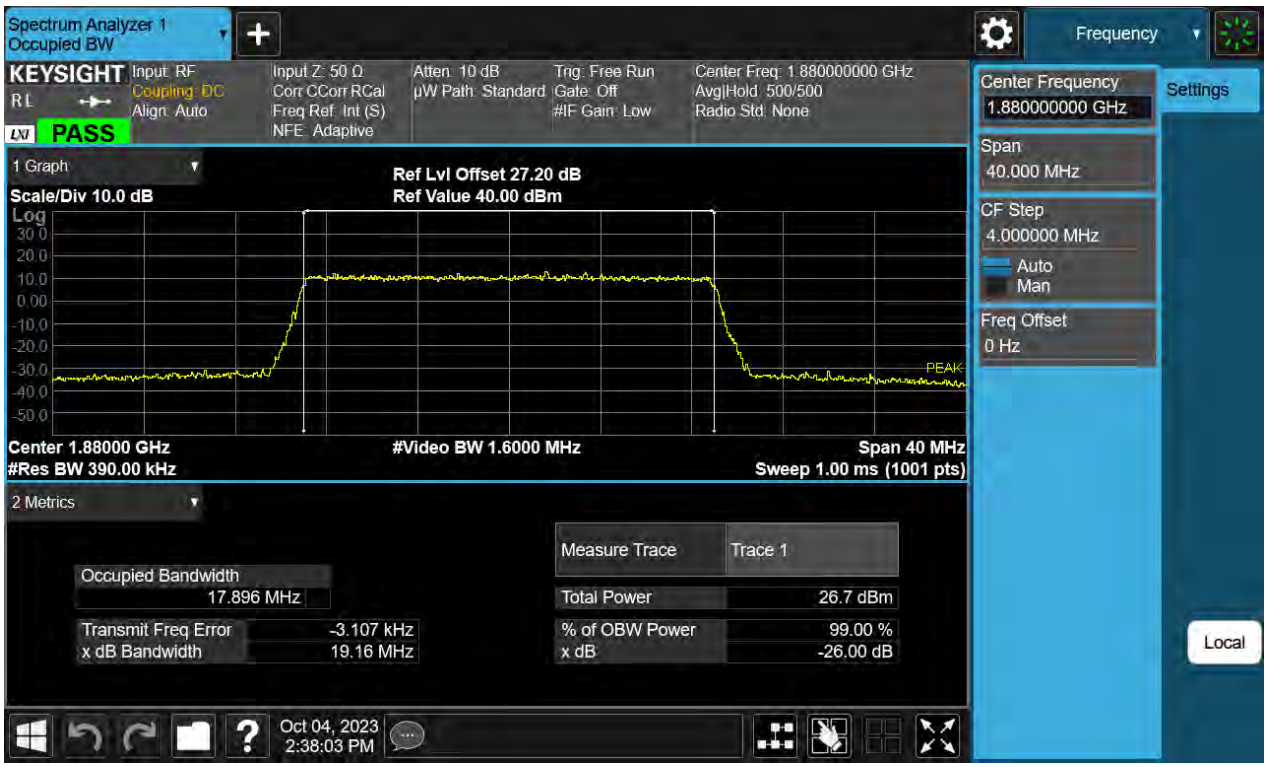
BW20M_OBW_Middle Channel_16QAM_FullRB



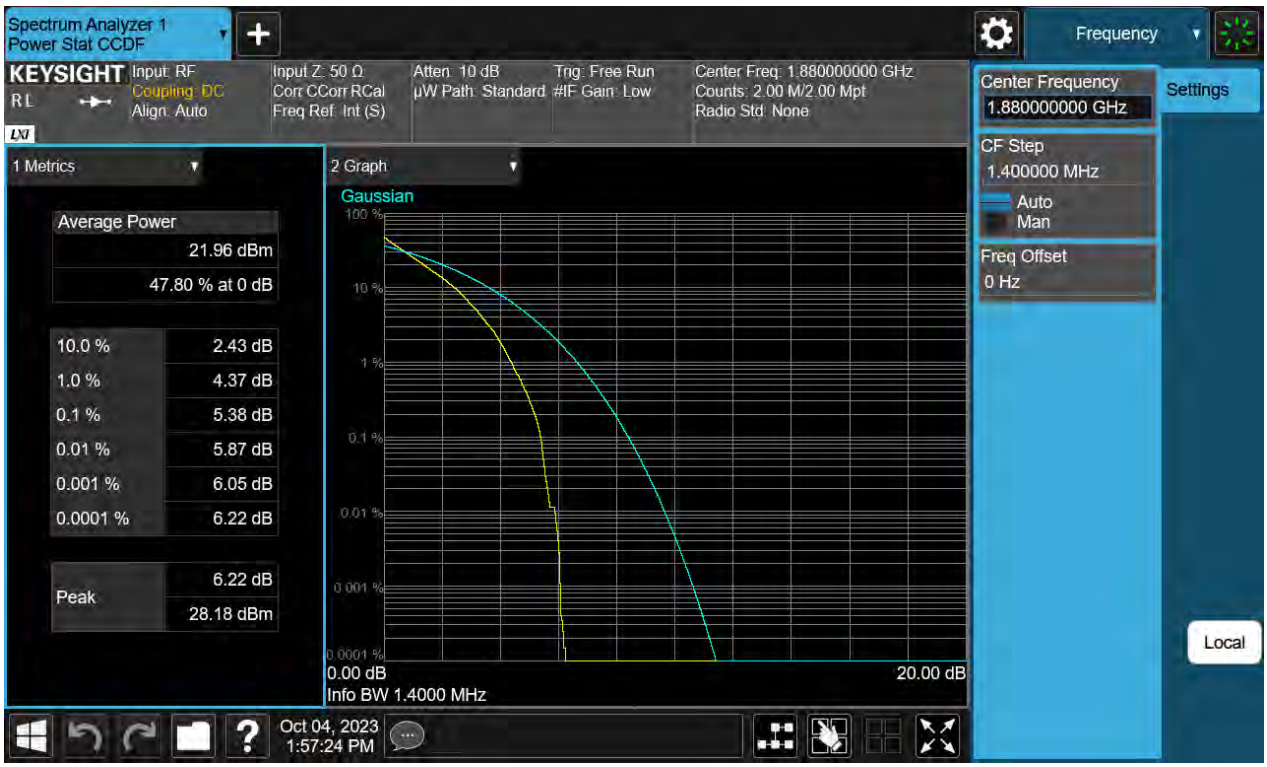
BW20M_OBW_Middle Channel_64QAM_FullRB



BW20M_OBW_Middle Channel_256QAM_FullRB

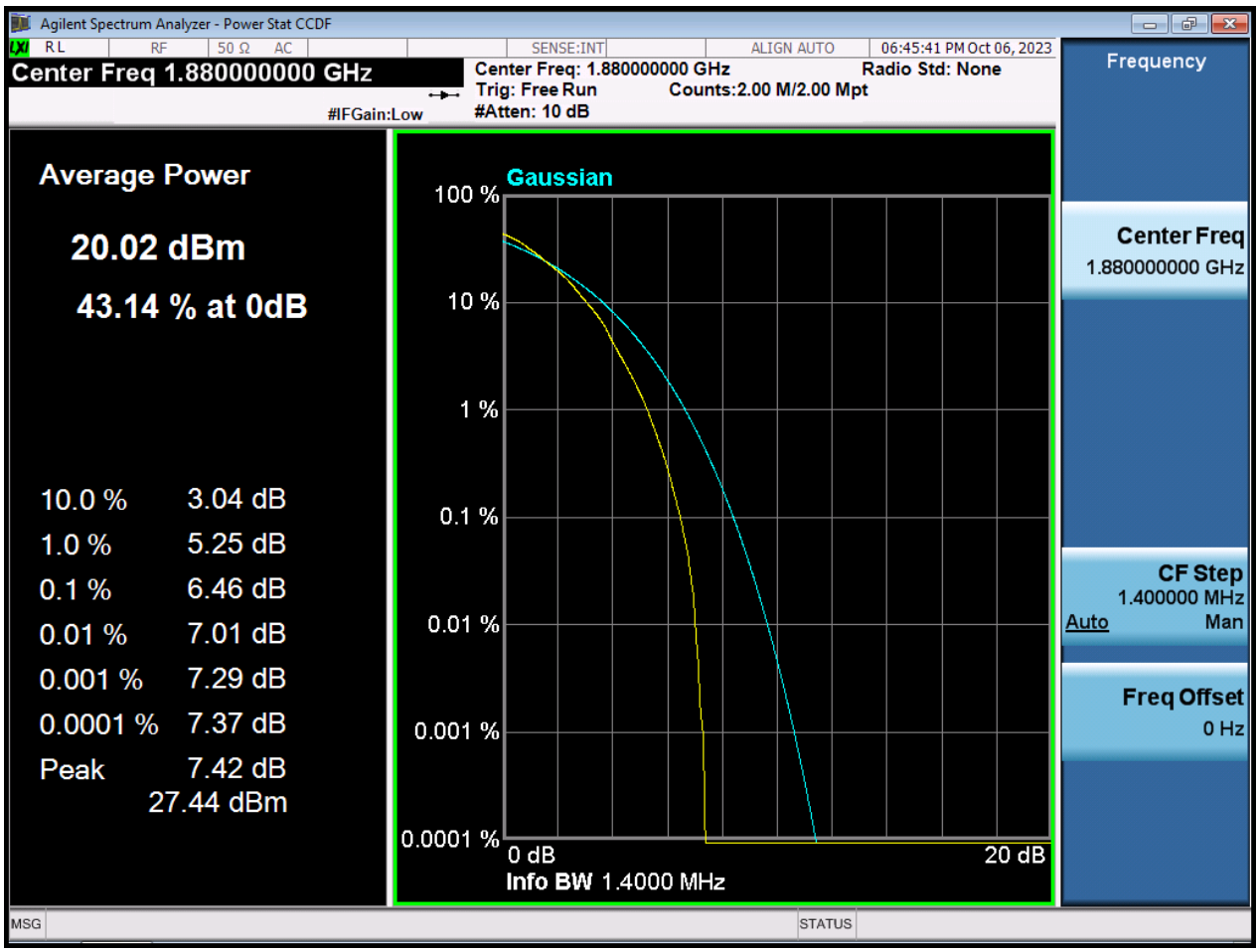


BW1.4M_PAR_Middle Channel_QPSK_FullRB



BW1.4M_PAR_Middle Channel_16QAM_FullRB

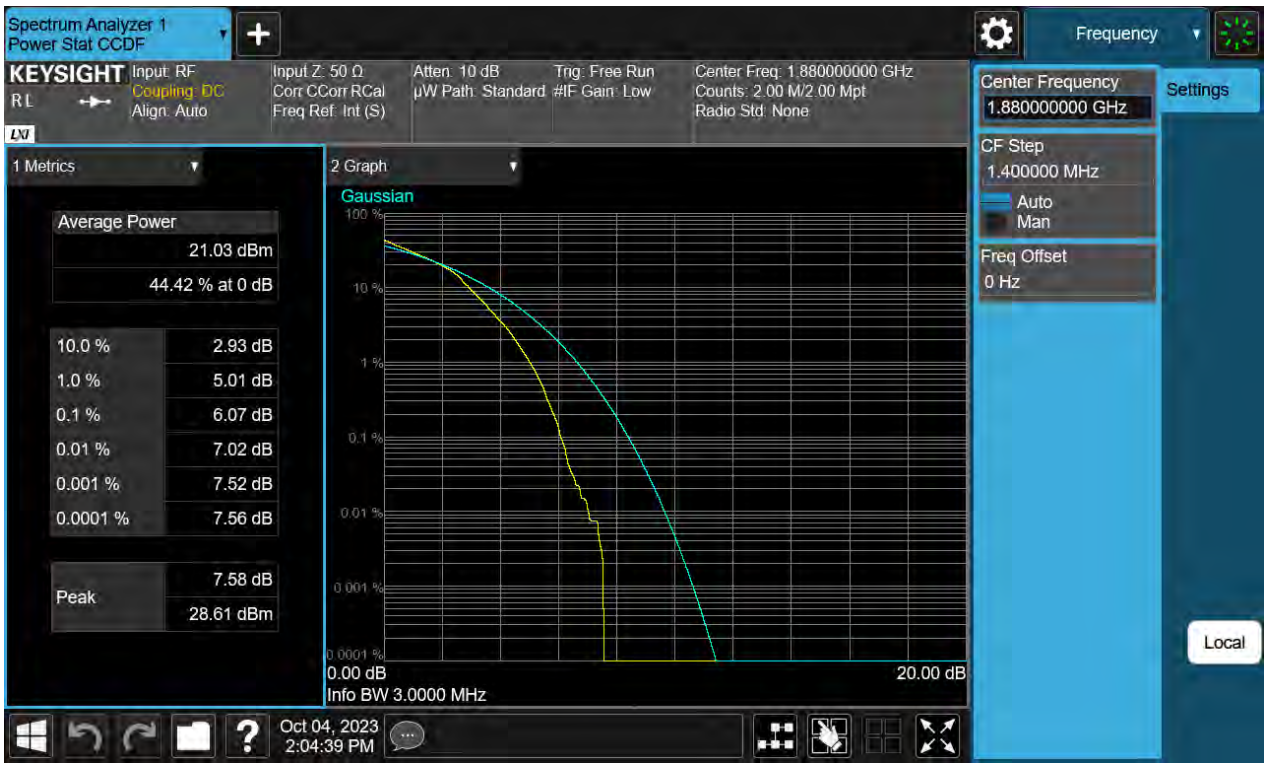
BW1.4M_PAR_Middle Channel_64QAM_FullRB



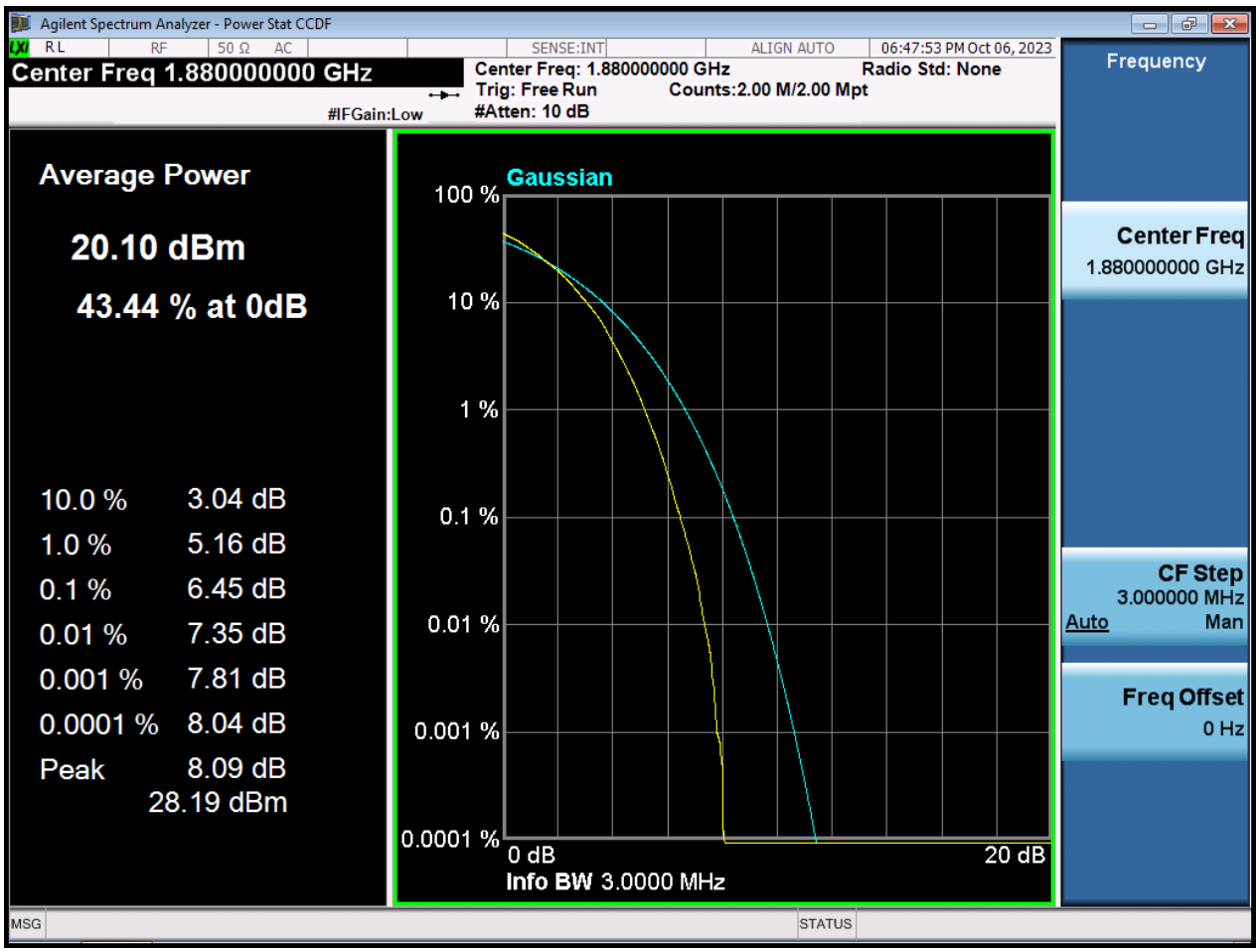
BW1.4M_PAR_Middle Channel_256QAM_FullRB

BW3M_PAR_Middle Channel_QPSK_FullRB

BW3M_PAR_Middle Channel_16QAM_FullRB



BW3M_PAR_Middle Channel_64QAM_FullRB

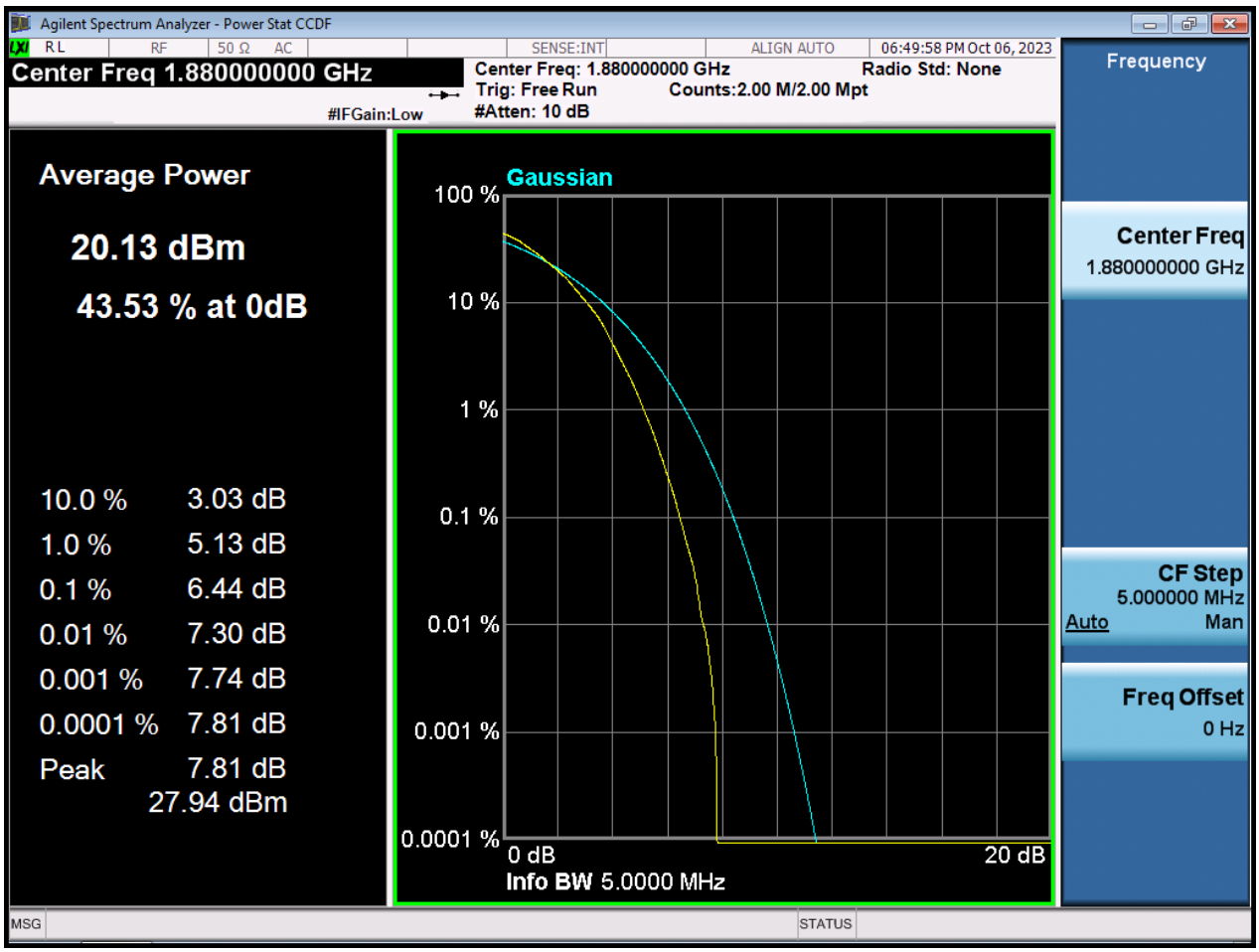


BW3M_PAR_Middle Channel_256QAM_FullRB

BW5M_PAR_Middle Channel_QPSK_FullRB

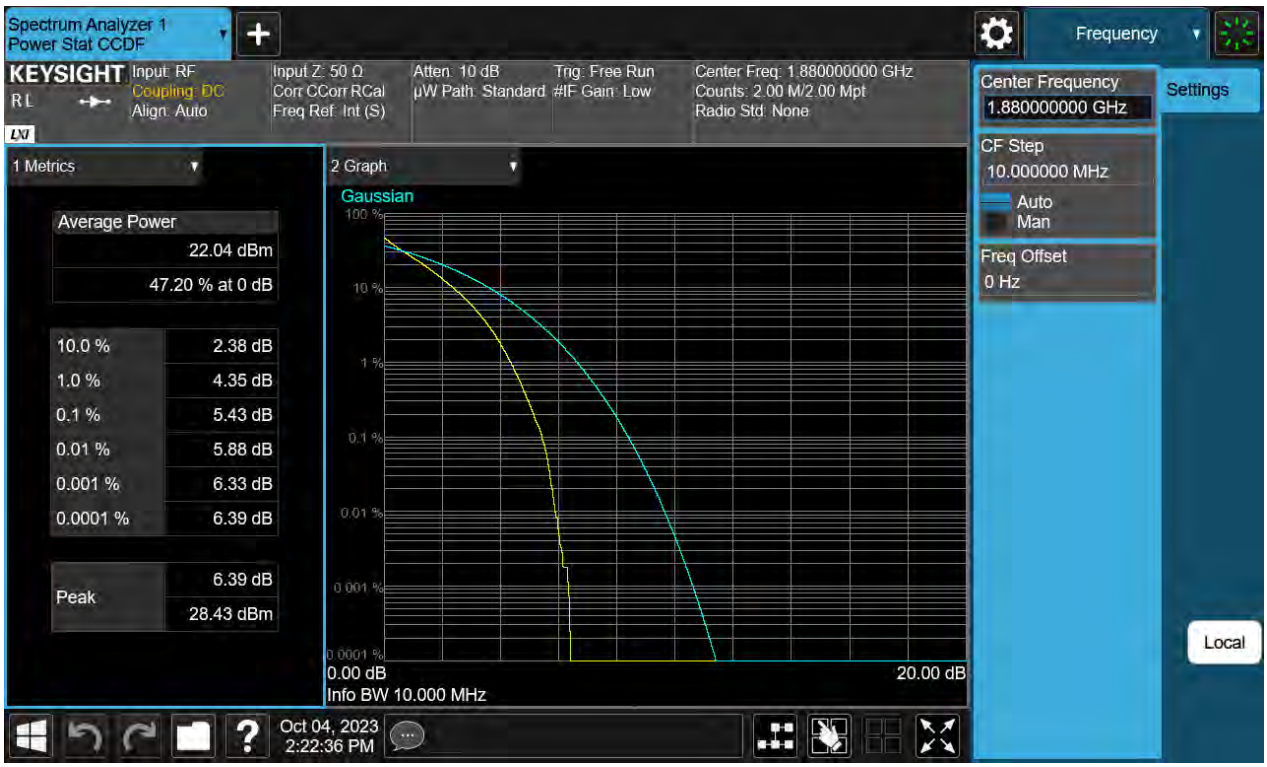
BW5M_PAR_Middle Channel_16QAM_FullRB

BW5M_PAR_Middle Channel_64QAM_FullRB



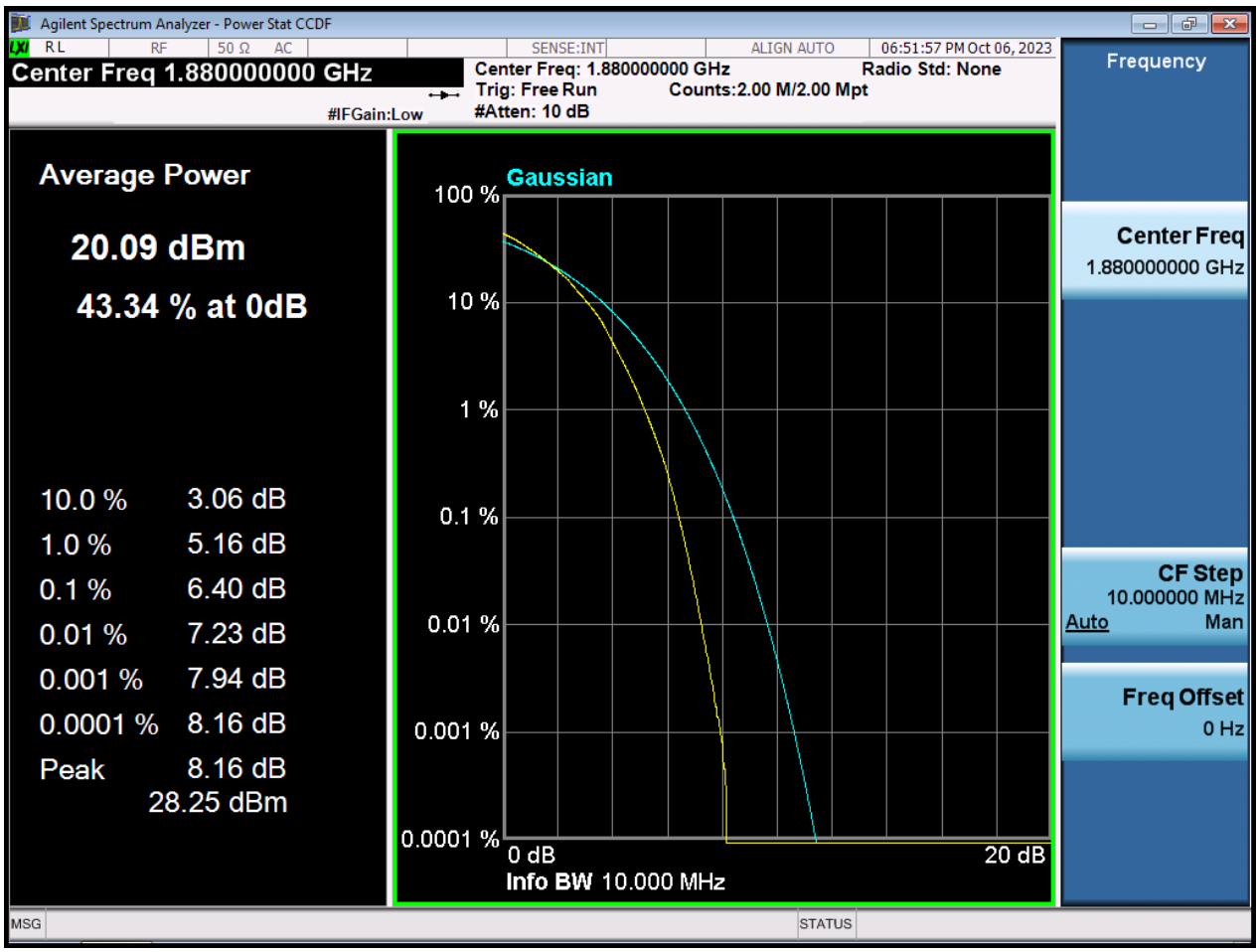
BW5M_PAR_Middle Channel_256QAM_FullRB

BW10M_PAR_Middle Channelz_QPSK_FullRB



BW10M_PAR_Middle Channel_16QAM_FullRB

BW10M_PAR_Middle Channel_64QAM_FullRB

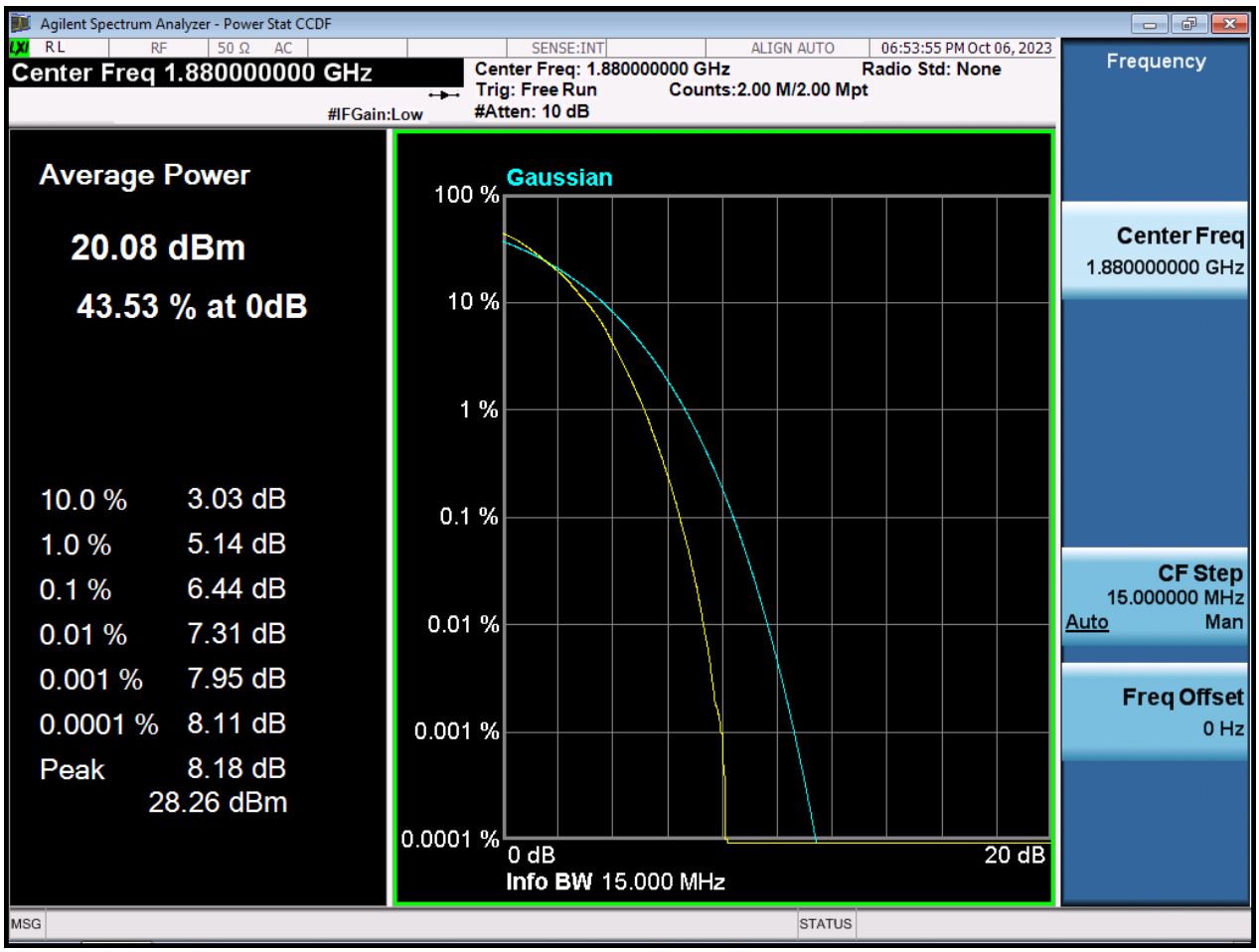


BW10M_PAR_Middle Channel_256QAM_FullRB

BW15M_PAR_Middle Channel_QPSK_FullRB

BW15M_PAR_Middle Channel_16QAM_FullRB

BW15M_PAR_Middle Channel_64QAM_FullRB

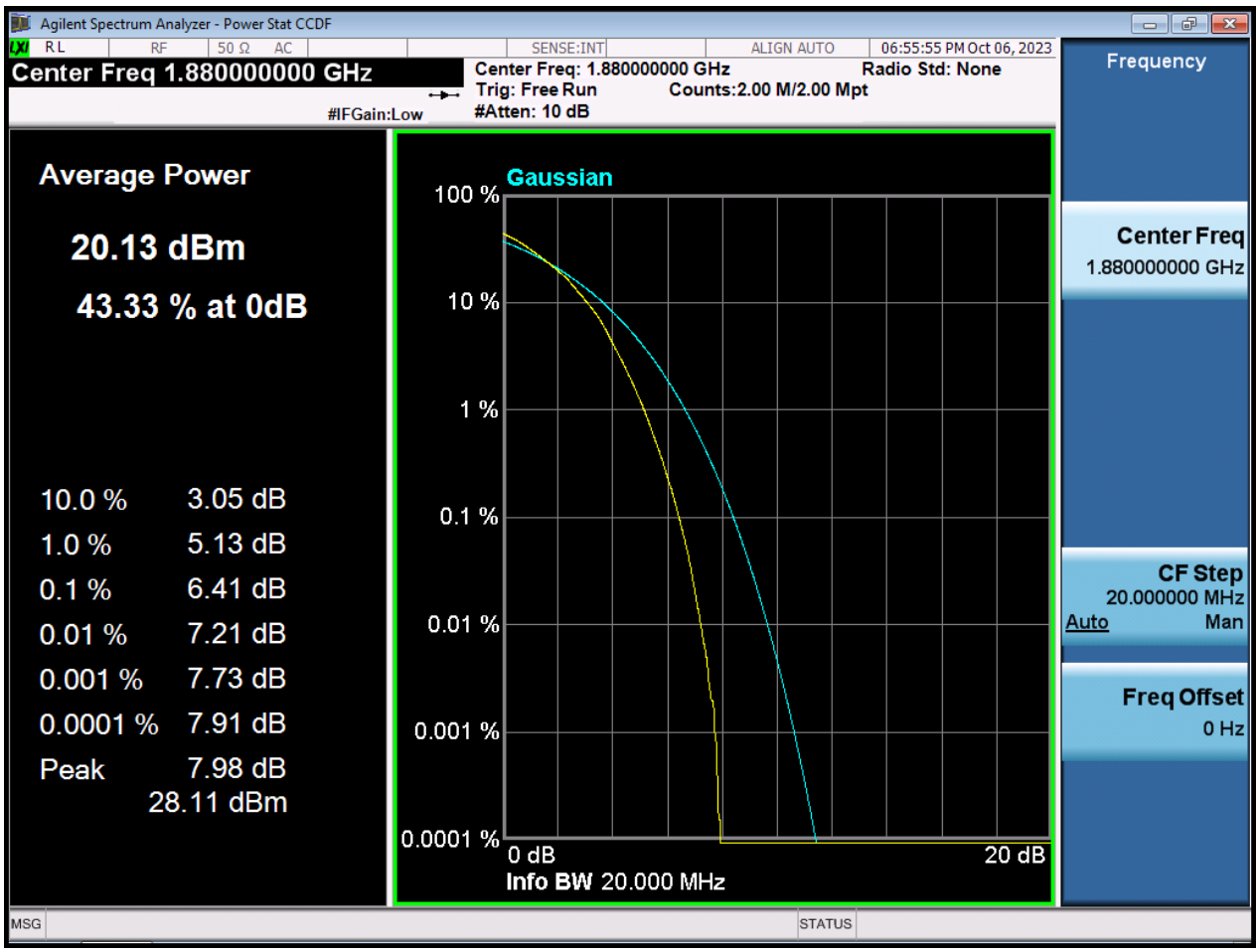


BW15M_PAR_Middle Channel_256QAM_FullRB

BW20M_PAR_Middle Channel_QPSK_FullRB

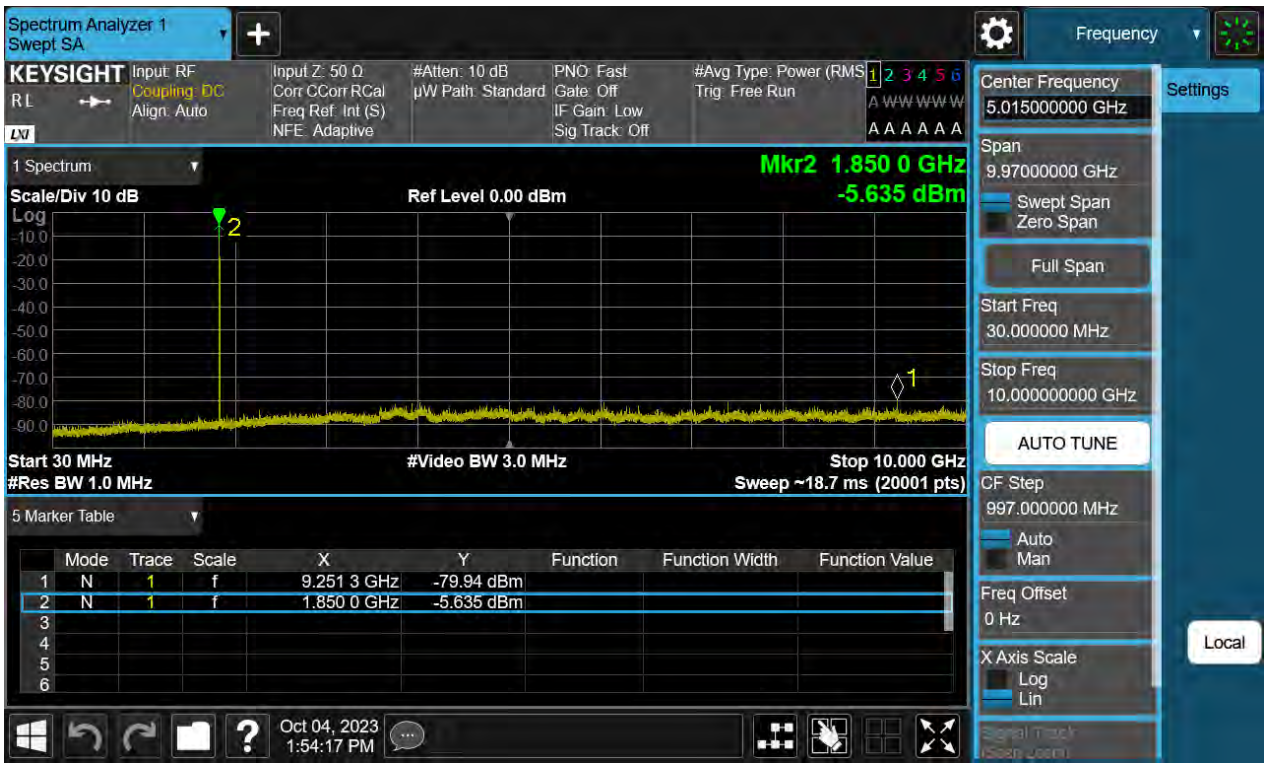
BW20M_PAR_Middle Channel_16QAM_FullRB

BW20M_PAR_Middle Channel_64QAM_FullRB

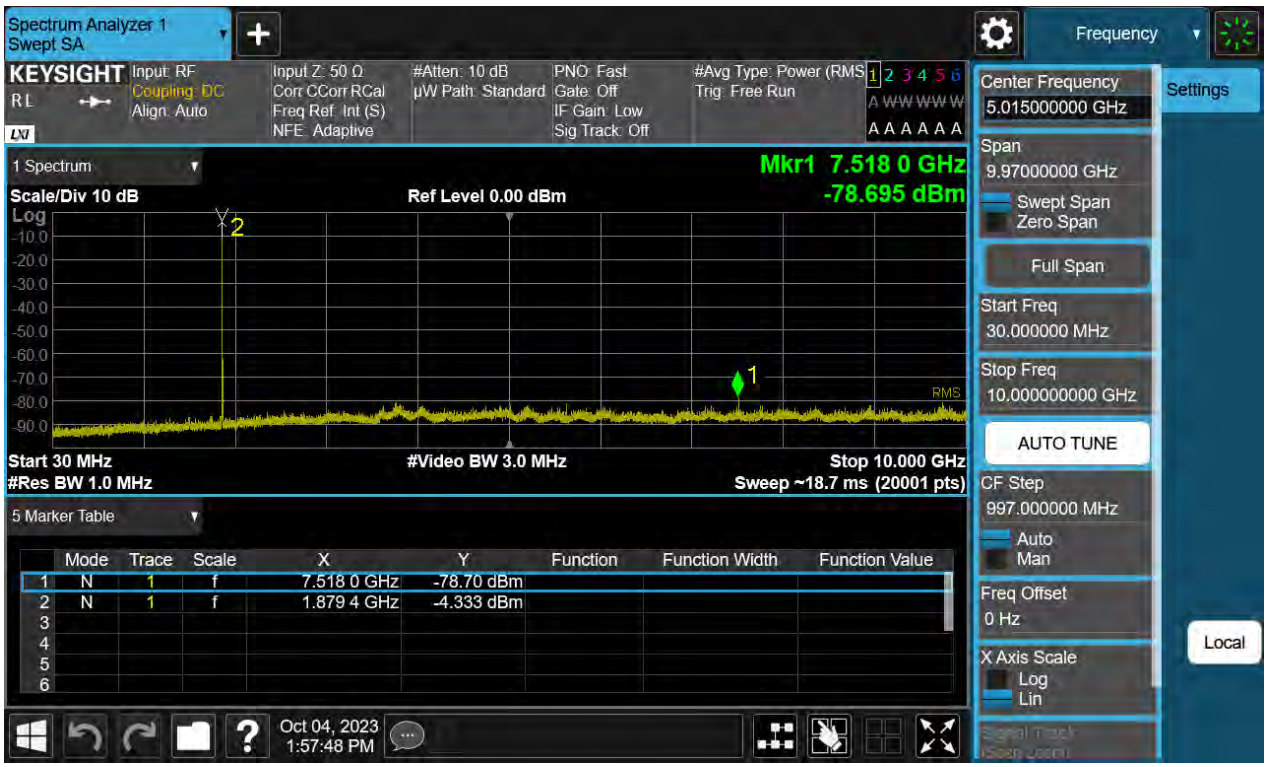


BW20M_PAR_Middle Channel_256QAM_FullRB

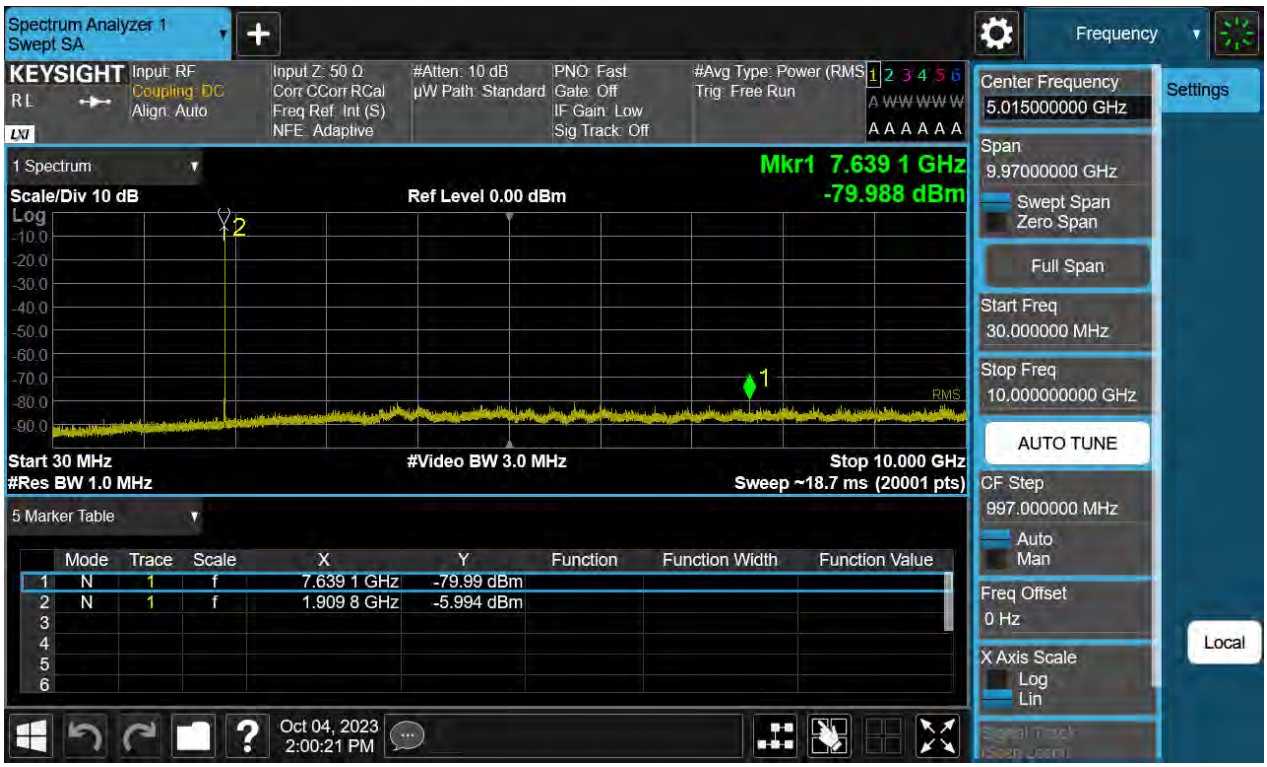
BW1.4M_CSE(30M-10G)_Lowest Channel_QPSK_1RB



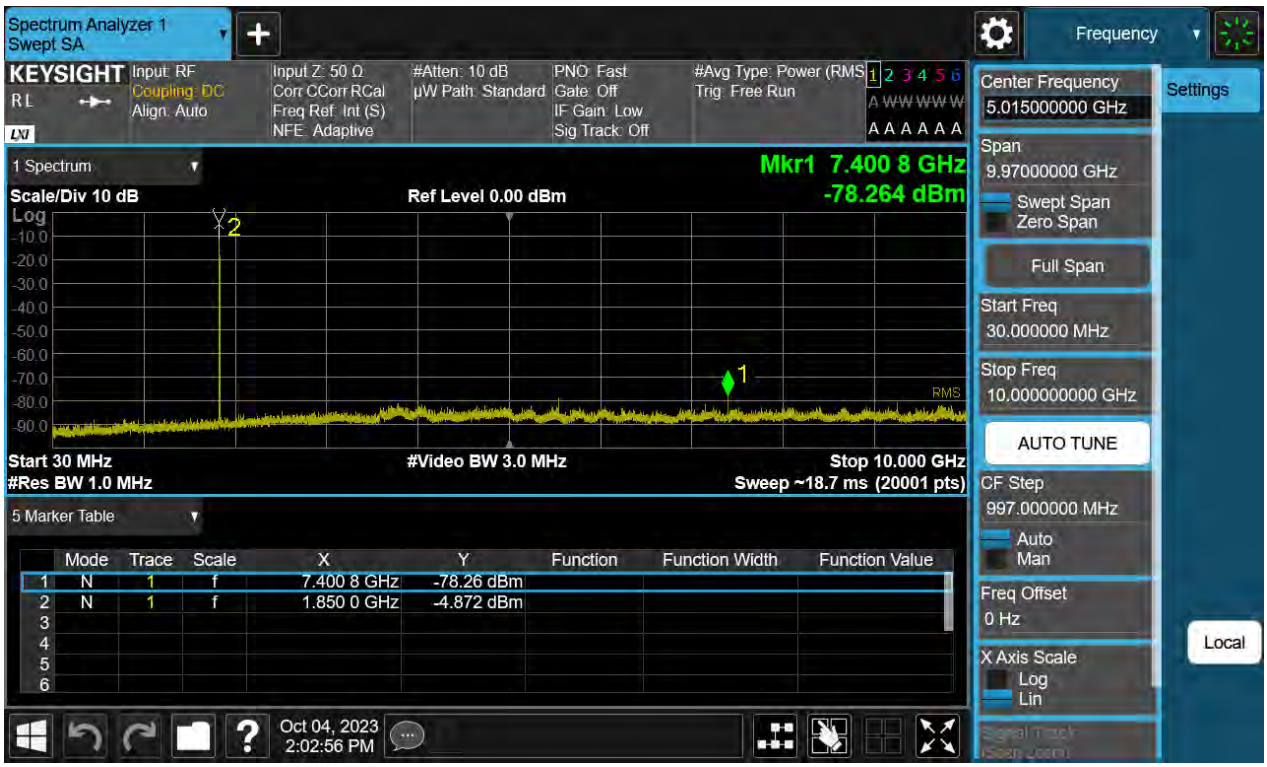
BW1.4M_CSE(30M-10G)_Middle Channel_QPSK_1RB



BW1.4M_CSE(30M-10G)_Highest Channel_QPSK_1RB

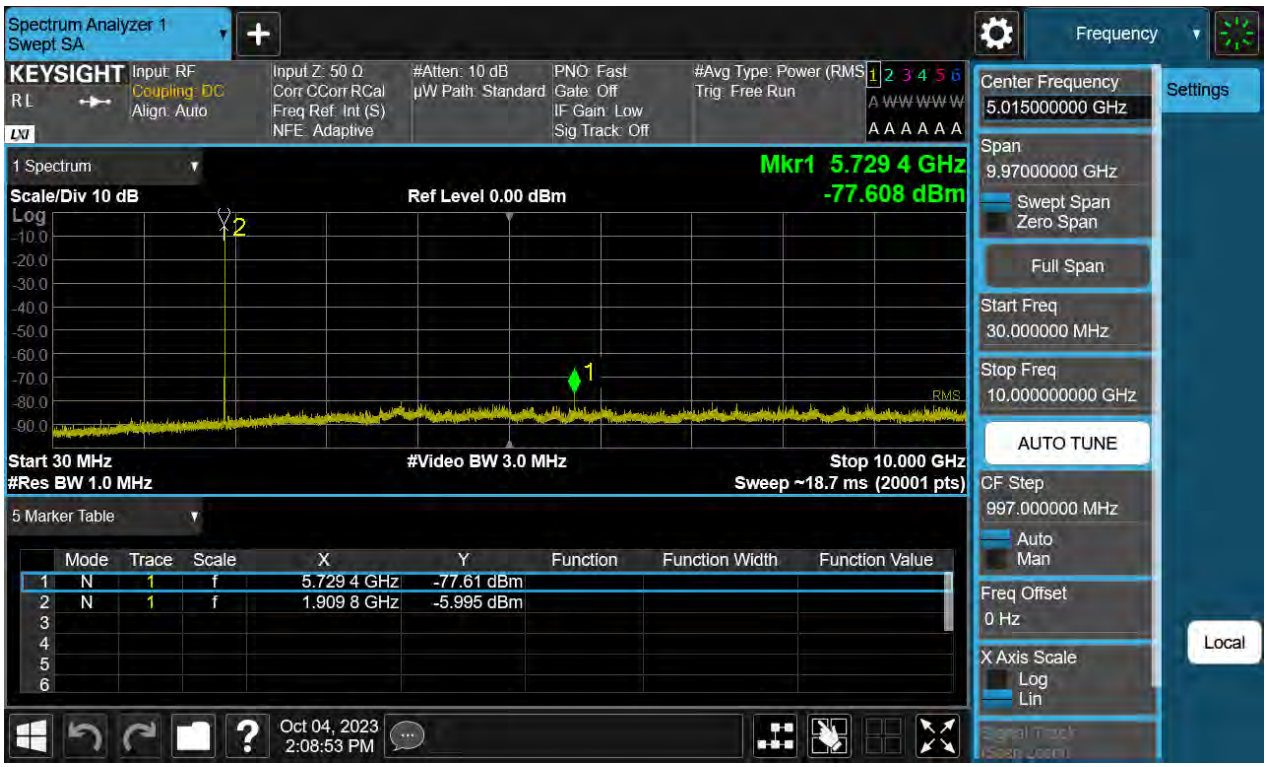


BW3M_CSE(30M-10G)_Lowest Channel_QPSK_1RB



BW3M_CSE(30M-10G)_Middle Channel_QPSK_1RB

BW3M_CSE(30M-10G)_Highest Channel_QPSK_1RB



BW5M_CSE(30M-10G)_Lowest Channel_QPSK_1RB