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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:
July 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-2307-FC002

FCC ID:	**A3LSMX616B**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-X616B
EUT Type:	Tablet
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§24, §2

Main 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	0.154	21.87
		1M10W7D	16QAM	0.131	21.17
		1M10W7D	64QAM	0.104	20.16
		1M09W7D	256QAM	0.050	17.01
LTE – Band2 (3)	1851.5 - 1908.5	2M72G7D	QPSK	0.150	21.76
		2M72W7D	16QAM	0.126	21.01
		2M72W7D	64QAM	0.097	19.86
		2M72W7D	256QAM	0.048	16.83
LTE – Band2 (5)	1852.5 - 1907.5	4M53G7D	QPSK	0.143	21.54
		4M52W7D	16QAM	0.120	20.78
		4M53W7D	64QAM	0.094	19.72
		4M52W7D	256QAM	0.046	16.64
LTE – Band2 (10)	1855.0 - 1905.0	9M04G7D	QPSK	0.154	21.88
		9M02W7D	16QAM	0.126	21.01
		9M04W7D	64QAM	0.097	19.89
		9M00W7D	256QAM	0.049	16.88
LTE – Band2 (15)	1857.5 - 1902.5	13M5G7D	QPSK	0.141	21.50
		13M5W7D	16QAM	0.119	20.75
		13M5W7D	64QAM	0.094	19.72
		13M5W7D	256QAM	0.046	16.65
LTE – Band2 (20)	1860.0 - 1900.0	18M0G7D	QPSK	0.144	21.58
		18M0W7D	16QAM	0.121	20.81
		18M0W7D	64QAM	0.093	19.69
		18M0W7D	256QAM	0.046	16.62

Sub 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	1M09G7D	QPSK	0.084	19.25
		1M10W7D	16QAM	0.068	18.32
		1M10W7D	64QAM	0.054	17.33
		1M09W7D	256QAM	0.027	14.29
LTE – Band2 (3)	1851.5 - 1908.5	2M72G7D	QPSK	0.089	19.48
		2M71W7D	16QAM	0.072	18.60
		2M72W7D	64QAM	0.057	17.57
		2M72W7D	256QAM	0.029	14.55
LTE – Band2 (5)	1852.5 - 1907.5	4M52G7D	QPSK	0.090	19.52
		4M53W7D	16QAM	0.073	18.65
		4M53W7D	64QAM	0.057	17.59
		4M53W7D	256QAM	0.028	14.53
LTE – Band2 (10)	1855.0 - 1905.0	9M03G7D	QPSK	0.084	19.24
		9M02W7D	16QAM	0.069	18.36
		9M03W7D	64QAM	0.053	17.26
		9M02W7D	256QAM	0.026	14.15
LTE – Band2 (15)	1857.5 - 1902.5	13M5G7D	QPSK	0.083	19.17
		13M5W7D	16QAM	0.067	18.23
		13M4W7D	64QAM	0.054	17.33
		13M5W7D	256QAM	0.027	14.31
LTE – Band2 (20)	1860.0 - 1900.0	18M0G7D	QPSK	0.081	19.08
		18M0W7D	16QAM	0.067	18.25
		17M9W7D	64QAM	0.052	17.19
		18M0W7D	256QAM	0.027	14.24

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

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2307-FC002	July 13, 2023	- First Approval Report

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMX616B
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§24, §2
EUT Type:	Tablet
Model(s):	SM-X616B
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:	May 08, 2023 ~ July 06, 2023
Serial number:	Radiated: R32W3008GSN Conducted: R32W3007ZEN

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Tablet 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.

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;

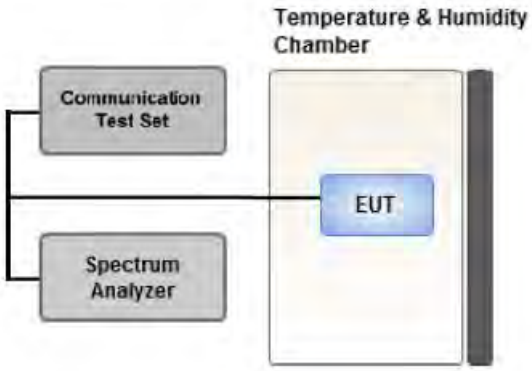
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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.

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

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:

$$P.A.R_{(dB)} = P_{Pk\,(dBm)} - P_{Avg\,(dBm)}\ (P_{Avg} = \text{Average Power} + \text{Duty cycle Factor})$$

Test Settings(Peak Power)

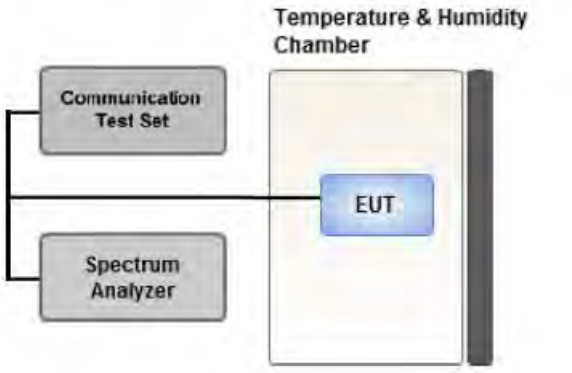
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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

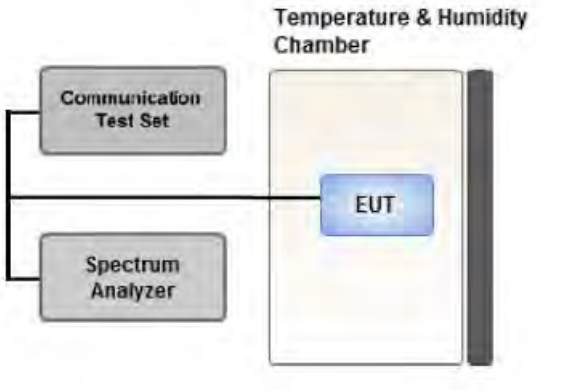
The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

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

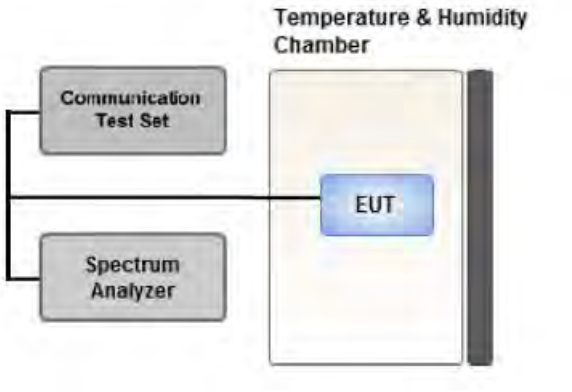
Test Overview

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

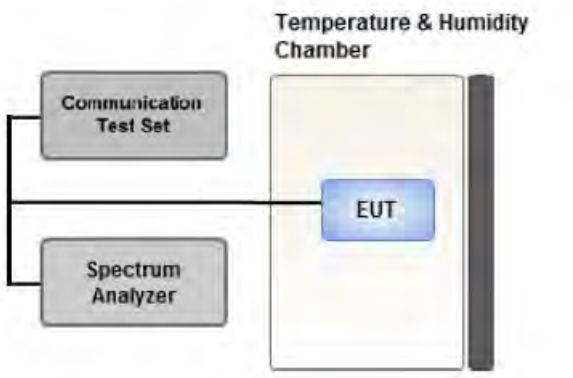
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
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 1 Ant Worst case : 10 MHz)
(Sub 2 Ant Worst case : 5 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 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	1	5	Y
			Mid, High	1	0	
		3	Low	1	14	
			Mid, High	1	0	
		5	Low	1	24	
			Mid, High	1	0	
		10	Low	1	49	
			Mid, High	1	0	
		15	Low	1	74	
			Mid, High	1	0	
		20	Low	1	99	
			Mid, High	1	0	
Radiated Spurious and Harmonic Emissions	QPSK	10	Low	1	49	Y
			Mid, High	1	0	

[Sub 2 Ant Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	1.4	Mid	1	0	X
			Low, High			
		3	Low	1	14	
			Mid, High	1	0	
		5	Mid	1	0	
			Low, High	1	13	
		10	Low	1	49	
			Mid, High	1	0	
		15	Low	1	74	
			Mid, High	1	38	
		20	Low	1	99	
			Mid, High	1	50	
Radiated Spurious and Harmonic Emissions	QPSK	5	Mid	1	0	X
			Low, High	1	13	

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	Manufacture	Serial No.	Due to Calibration	Calibration Interval
Precision Dipole Antenna	UHAP	Schwarzbeck	01273	03/27/2024	Biennial
Precision Dipole Antenna	UHAP	Schwarzbeck	01274	03/27/2024	Biennial
Horn Antenna(1~18 GHz)	BBHA 9120D	Schwarzbeck	02289	03/21/2024	Biennial
Horn Antenna(1~18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1299	04/27/2025	Biennial
Horn Antenna(15~40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/29/2024	Biennial
Horn Antenna(15~40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Loop Antenna(9 kHz~30 MHz)	FMZB1513	Rohde & Schwarz	1513-175	01/16/2025	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/09/2025	Biennial
Hybrid Antenna	VULB9160	Schwarzbeck	760	02/24/2025	Biennial
RF Switching System	FBSR-06B (1G HPF + LNA)	T&M SYSTEM	F3L1	05/22/2024	Annual
RF Switching System	FBSR-06B (3G HPF + LNA)	T&M SYSTEM	F3L2	05/22/2024	Annual
RF Switching System	FBSR-06B (6G HPF + LNA)	T&M SYSTEM	F3L3	05/22/2024	Annual
RF Switching System	FBSR-06B (LNA)	T&M SYSTEM	F3L4	05/22/2024	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/01/2023	Annual
Power Amplifier	CBL26405040	CERNEX	25956	03/02/2024	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	09/05/2023	Annual
Power Splitter(DC~26.5 GHz)	11667B	Hewlett Packard	11275	03/02/2024	Annual
Chamber	SU-642	ESPEC	93008124	02/22/2024	Annual
Signal Analyzer(10 Hz~26.5 GHz)	N9020A	Agilent	MY51110063	04/11/2024	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/19/2024	Annual
Spectrum Analyzer(10 Hz~40 GHz)	FSV40	REOHDE & SCHWARZ	101436	02/22/2024	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/18/2023	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262287701	05/22/2024	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/23/2024	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
4-Way Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/27/2023	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 1 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	-20.74	13.08	10.00	2.12	H	< 2.00	0.125	20.96
		16-QAM	-21.60	12.22	10.00	2.12	H		0.102	20.10
		64-QAM	-22.64	11.18	10.00	2.12	H		0.081	19.06
		256-QAM	-25.68	8.14	10.00	2.12	H		0.040	16.02
1880.0		QPSK	-19.79	13.81	10.00	2.21	H		0.145	21.60
		16-QAM	-20.62	12.98	10.00	2.21	H		0.119	20.77
		64-QAM	-21.68	11.92	10.00	2.21	H		0.094	19.71
		256-QAM	-24.77	8.83	10.00	2.21	H		0.046	16.62
1909.3		QPSK	-20.05	13.97	10.01	2.11	H		0.154	21.87
		16-QAM	-20.75	13.27	10.01	2.11	H		0.131	21.17
		64-QAM	-21.76	12.26	10.01	2.11	H		0.104	20.16
		256-QAM	-24.91	9.11	10.01	2.11	H		0.050	17.01

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	-20.67	13.15	10.00	2.12	H	< 2.00	0.127	21.03
		16-QAM	-21.43	12.39	10.00	2.12	H		0.107	20.27
		64-QAM	-22.51	11.31	10.00	2.12	H		0.083	19.19
		256-QAM	-25.59	8.23	10.00	2.12	H		0.041	16.11
1880.0		QPSK	-19.81	13.79	10.00	2.21	H		0.144	21.58
		16-QAM	-20.63	12.97	10.00	2.21	H		0.119	20.76
		64-QAM	-21.68	11.92	10.00	2.21	H		0.094	19.71
		256-QAM	-24.70	8.90	10.00	2.21	H		0.047	16.69
1908.5		QPSK	-20.16	13.86	10.01	2.11	H		0.150	21.76
		16-QAM	-20.91	13.11	10.01	2.11	H		0.126	21.01
		64-QAM	-22.06	11.96	10.01	2.11	H		0.097	19.86
		256-QAM	-25.09	8.93	10.01	2.11	H		0.048	16.83

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	-20.78	13.04	10.00	2.12	H	< 2.00	0.124	20.92
		16-QAM	-21.54	12.28	10.00	2.12	H		0.104	20.16
		64-QAM	-22.69	11.13	10.00	2.12	H		0.080	19.01
		256-QAM	-25.71	8.11	10.00	2.12	H		0.040	15.99
1880.0		QPSK	-19.88	13.72	10.00	2.21	H		0.142	21.51
		16-QAM	-20.61	12.99	10.00	2.21	H		0.120	20.78
		64-QAM	-21.67	11.93	10.00	2.21	H		0.094	19.72
		256-QAM	-24.75	8.85	10.00	2.21	H		0.046	16.64
1907.5		QPSK	-20.38	13.64	10.01	2.11	H		0.143	21.54
		16-QAM	-21.14	12.88	10.01	2.11	H		0.120	20.78
		64-QAM	-22.25	11.77	10.01	2.11	H		0.093	19.67
		256-QAM	-25.31	8.71	10.01	2.11	H		0.046	16.61

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	-20.28	13.31	10.00	2.15	H	< 2.00	0.131	21.16
		16-QAM	-21.07	12.52	10.00	2.15	H		0.109	20.37
		64-QAM	-22.18	11.41	10.00	2.15	H		0.084	19.26
		256-QAM	-25.24	8.35	10.00	2.15	H		0.042	16.20
1880.0		QPSK	-19.88	13.72	10.00	2.21	H		0.142	21.51
		16-QAM	-20.74	12.86	10.00	2.21	H		0.116	20.65
		64-QAM	-21.72	11.88	10.00	2.21	H		0.093	19.67
		256-QAM	-24.78	8.82	10.00	2.21	H		0.046	16.61
1905.0		QPSK	-19.97	14.00	10.01	2.13	H		0.154	21.88
		16-QAM	-20.84	13.13	10.01	2.13	H		0.126	21.01
		64-QAM	-21.96	12.01	10.01	2.13	H		0.097	19.89
		256-QAM	-24.97	9.00	10.01	2.13	H		0.049	16.88

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	-20.35	12.99	10.00	2.17	H	< 2.00	0.121	20.82
		16-QAM	-21.13	12.21	10.00	2.17	H		0.101	20.04
		64-QAM	-22.18	11.16	10.00	2.17	H		0.079	18.99
		256-QAM	-25.25	8.09	10.00	2.17	H		0.039	15.92
1880.0		QPSK	-20.01	13.59	10.00	2.21	H		0.137	21.38
		16-QAM	-20.83	12.77	10.00	2.21	H		0.114	20.56
		64-QAM	-21.85	11.75	10.00	2.21	H		0.090	19.54
		256-QAM	-24.91	8.69	10.00	2.21	H		0.045	16.48
1902.5		QPSK	-20.27	13.64	10.01	2.15	H		0.141	21.50
		16-QAM	-21.02	12.89	10.01	2.15	H		0.119	20.75
		64-QAM	-22.05	11.86	10.01	2.15	H		0.094	19.72
		256-QAM	-25.12	8.79	10.01	2.15	H		0.046	16.65

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	-20.12	13.22	10.00	2.17	H	< 2.00	0.127	21.05
		16-QAM	-20.94	12.40	10.00	2.17	H		0.105	20.23
		64-QAM	-22.03	11.31	10.00	2.17	H		0.082	19.14
		256-QAM	-25.10	8.24	10.00	2.17	H		0.041	16.07
1880.0		QPSK	-19.90	13.70	10.00	2.21	H		0.141	21.49
		16-QAM	-20.83	12.77	10.00	2.21	H		0.114	20.56
		64-QAM	-21.86	11.74	10.00	2.21	H		0.090	19.53
		256-QAM	-24.87	8.73	10.00	2.21	H		0.045	16.52
1900.0		QPSK	-20.19	13.72	10.01	2.15	H		0.144	21.58
		16-QAM	-20.96	12.95	10.01	2.15	H		0.121	20.81
		64-QAM	-22.08	11.83	10.01	2.15	H		0.093	19.69
		256-QAM	-25.15	8.76	10.01	2.15	H		0.046	16.62

8.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY: 1905.0 MHz

▣ MEASURED OUTPUT POWER: 21.88 dBm = 0.154 W

▣ MODE: LTE B2

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log10 (W) = 34.88 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18650 (1855.0)	3 710.00	-59.45	11.40	-59.83	3.11	H	-51.54	73.42
	5 565.00	-60.60	11.90	-54.92	3.85	V	-46.87	68.75
	7 420.00	-61.83	10.80	-46.89	4.46	V	-40.55	62.43
18900 (1880.0)	3 760.00	-59.45	11.30	-59.58	3.07	H	-51.35	73.23
	5 640.00	-60.44	11.90	-54.84	3.89	H	-46.83	68.71
	7 520.00	-61.54	11.10	-47.31	4.51	H	-40.72	62.60
19150 (1905.0)	3 810.00	-58.84	11.10	-58.60	3.10	V	-50.60	72.48
	5 715.00	-60.65	11.70	-55.09	3.84	H	-47.23	69.11
	7 620.00	-62.39	11.20	-48.97	4.52	H	-42.29	64.17

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	5.29
			16-QAM	6	0	5.75
			64-QAM	6	0	6.09
			256-QAM	6	0	6.16
	3 MHz		QPSK	15	0	5.43
			16-QAM	15	0	5.94
			64-QAM	15	0	6.12
			256-QAM	15	0	6.16
	5 MHz		QPSK	25	0	5.33
			16-QAM	25	0	5.94
			64-QAM	25	0	6.16
			256-QAM	25	0	6.16
	10 MHz		QPSK	50	0	5.39
			16-QAM	50	0	5.86
			64-QAM	50	0	6.13
			256-QAM	50	0	6.18
	15 MHz		QPSK	75	0	5.30
			16-QAM	75	0	5.86
			64-QAM	75	0	6.14
			256-QAM	75	0	6.19
	20 MHz		QPSK	100	0	5.27
			16-QAM	100	0	5.88
			64-QAM	100	0	6.08
			256-QAM	100	0	6.19

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	1.1012
			16-QAM	6	0	1.0984
			64-QAM	6	0	1.1013
			256-QAM	6	0	1.0910
	3 MHz		QPSK	15	0	2.7161
			16-QAM	15	0	2.7189
			64-QAM	15	0	2.7201
			256-QAM	15	0	2.7152
	5 MHz		QPSK	25	0	4.5247
			16-QAM	25	0	4.5208
			64-QAM	25	0	4.5294
			256-QAM	25	0	4.5203
	10 MHz		QPSK	50	0	9.0389
			16-QAM	50	0	9.0147
			64-QAM	50	0	9.0396
			256-QAM	50	0	9.0001
	15 MHz		QPSK	75	0	13.471
			16-QAM	75	0	13.476
			64-QAM	75	0	13.494
			256-QAM	75	0	13.447
	20 MHz		QPSK	100	0	17.961
			16-QAM	100	0	17.945
			64-QAM	100	0	17.951
			256-QAM	100	0	17.988

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	3.6920	27.976	-77.211	-49.235	-13.00
		1880.0	3.7049	27.976	-77.103	-49.127	
		1909.3	3.7349	27.976	-77.185	-49.209	
	3	1851.5	3.7064	27.976	-77.035	-49.059	
		1880.0	3.7044	27.976	-77.391	-49.415	
		1908.5	3.6980	27.976	-77.156	-49.180	
	5	1852.5	3.6915	27.976	-77.228	-49.252	
		1880.0	3.7059	27.976	-77.185	-49.209	
		1907.5	3.7079	27.976	-77.467	-49.491	
	10	1855.0	3.6820	27.976	-77.308	-49.332	
		1880.0	3.6586	27.976	-77.132	-49.156	
		1905.0	3.6780	27.976	-77.343	-49.367	
	15	1857.5	3.7089	27.976	-77.322	-49.346	
		1880.0	3.7015	27.976	-77.010	-49.034	
		1902.5	3.6621	27.976	-77.369	-49.393	
	20	1860.0	3.7079	27.976	-76.713	-48.737	
		1880.0	3.6676	27.976	-77.315	-49.339	
		1900.0	3.7139	27.976	-77.278	-49.302	

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

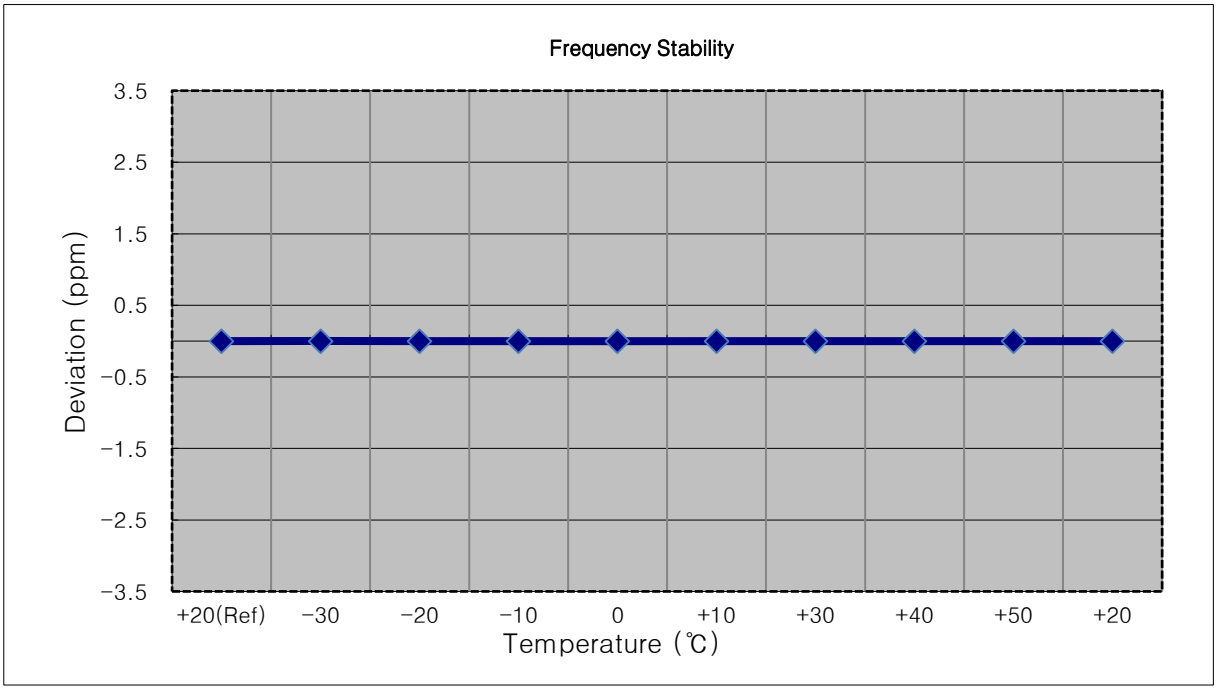
▣ OPERATING FREQUENCY: 1850,700,000 Hz

▣ 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 700 003	0.0	0.000 000	0.000
100 %		-30	1850 700 005	2.4	0.000 000	0.001
100 %		-20	1850 700 001	-1.8	0.000 000	-0.001
100 %		-10	1850 700 001	-1.6	0.000 000	-0.001
100 %		0	1850 700 000	-2.7	0.000 000	-0.001
100 %		+10	1850 700 005	1.5	0.000 000	0.001
100 %		+30	1850 700 001	-2.0	0.000 000	-0.001
100 %		+40	1850 700 004	1.4	0.000 000	0.001
100 %		+50	1850 700 005	1.6	0.000 000	0.001
Batt. Endpoint	3.400	+20	1850 700 005	1.9	0.000 000	0.001



▣ MODE: LTE B2

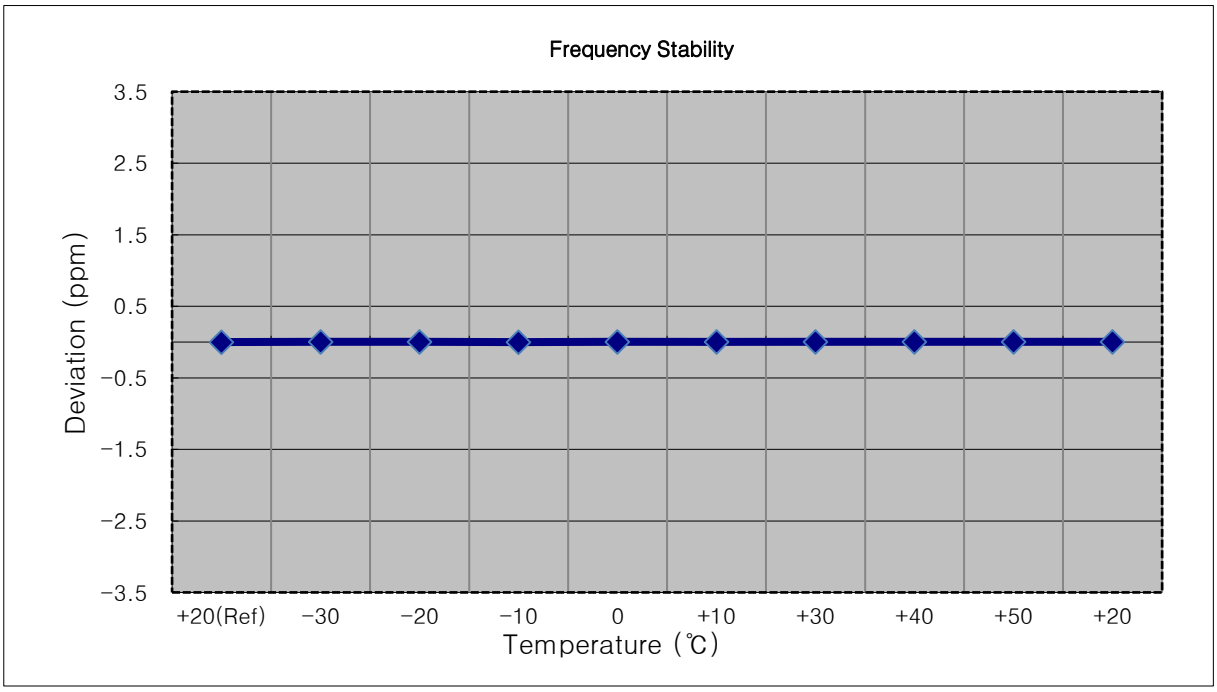
▣ OPERATING FREQUENCY: 1851,500,000 Hz

▣ 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 500 002	0.0	0.000 000	0.000
100 %		-30	1851 500 005	3.0	0.000 000	0.002
100 %		-20	1851 500 005	3.0	0.000 000	0.002
100 %		-10	1851 500 005	2.6	0.000 000	0.001
100 %		0	1851 500 005	2.9	0.000 000	0.002
100 %		+10	1851 500 007	4.6	0.000 000	0.002
100 %		+30	1851 500 006	3.6	0.000 000	0.002
100 %		+40	1851 500 005	2.9	0.000 000	0.002
100 %		+50	1851 500 006	3.6	0.000 000	0.002
Batt. Endpoint	3.400	+20	1851 500 005	2.8	0.000 000	0.002



▣ MODE: LTE B2

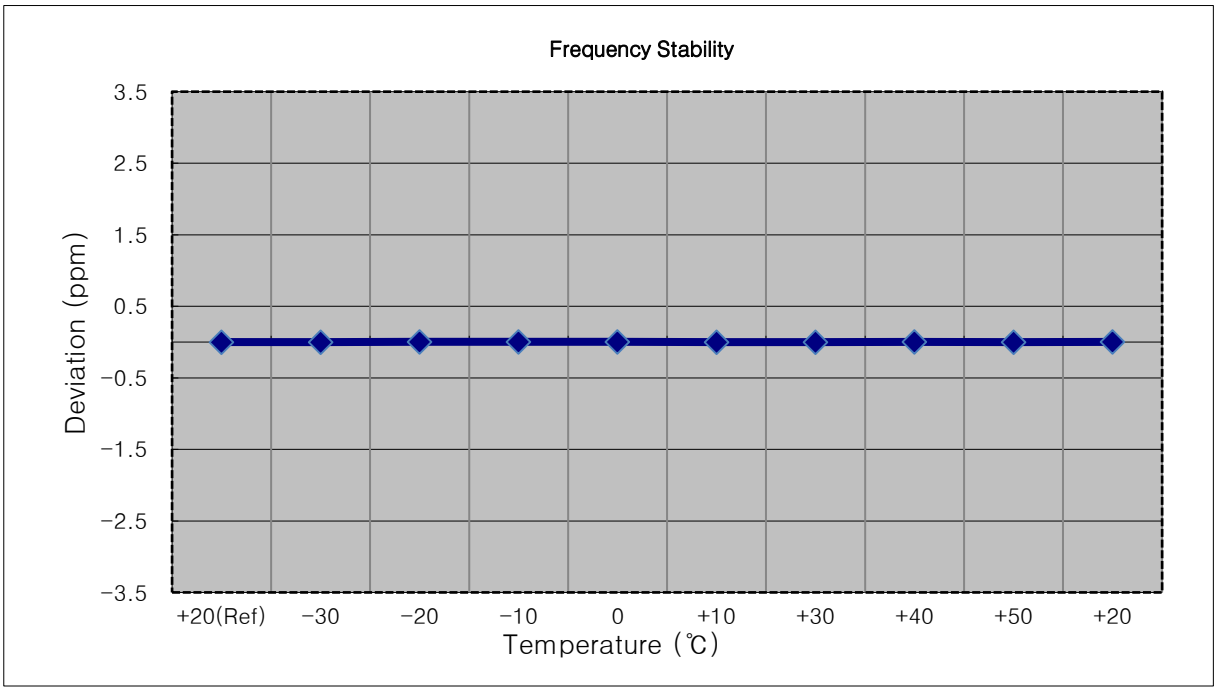
▣ OPERATING FREQUENCY: 1852,500,000 Hz

▣ 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 500 004	0.0	0.000 000	0.000
100 %		-30	1852 500 006	2.7	0.000 000	0.001
100 %		-20	1852 500 007	3.0	0.000 000	0.002
100 %		-10	1852 500 007	3.3	0.000 000	0.002
100 %		0	1852 500 007	3.2	0.000 000	0.002
100 %		+10	1852 500 006	2.3	0.000 000	0.001
100 %		+30	1852 500 006	2.7	0.000 000	0.001
100 %		+40	1852 500 008	4.3	0.000 000	0.002
100 %		+50	1852 500 006	2.0	0.000 000	0.001
Batt. Endpoint	3.400	+20	1852 500 008	4.3	0.000 000	0.002



▣ MODE: LTE B2

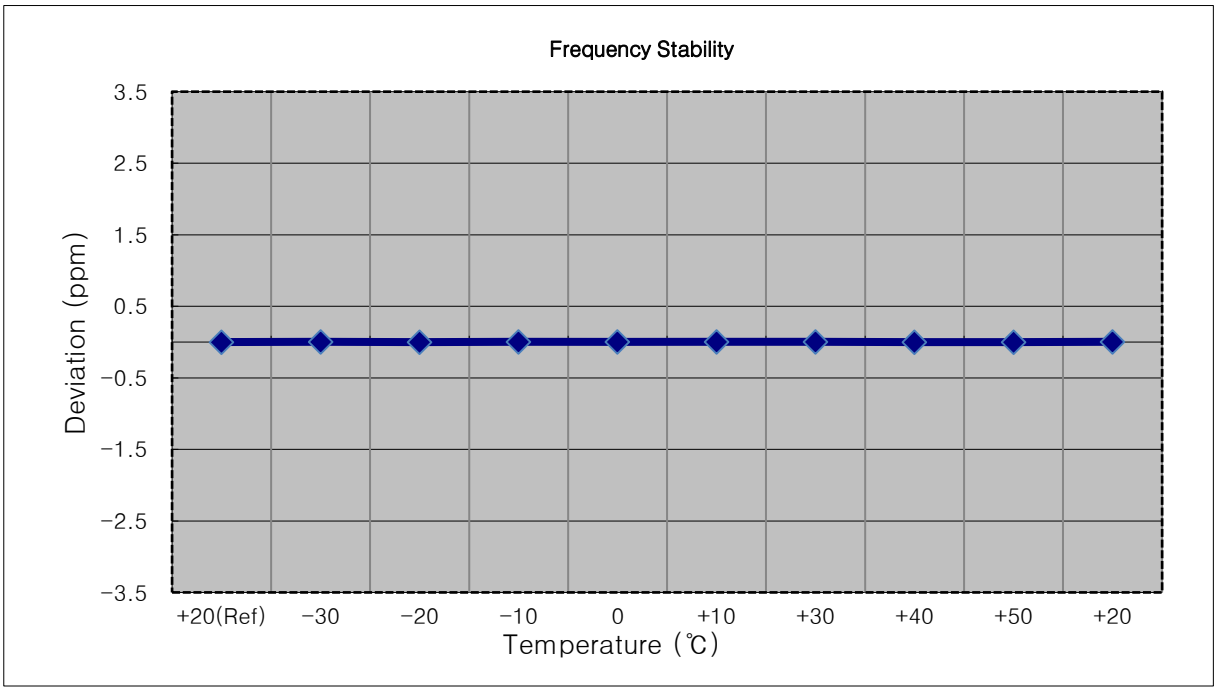
▣ OPERATING FREQUENCY: 1855,000,000 Hz

▣ 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 000 003	0.0	0.000 000	0.000
100 %		-30	1855 000 006	3.3	0.000 000	0.002
100 %		-20	1855 000 006	2.7	0.000 000	0.001
100 %		-10	1855 000 006	3.5	0.000 000	0.002
100 %		0	1855 000 008	5.1	0.000 000	0.003
100 %		+10	1855 000 006	2.9	0.000 000	0.002
100 %		+30	1855 000 006	3.3	0.000 000	0.002
100 %		+40	1855 000 005	2.6	0.000 000	0.001
100 %		+50	1855 000 005	2.6	0.000 000	0.001
Batt. Endpoint	3.400	+20	1855 000 006	3.4	0.000 000	0.002



▣ MODE: LTE B2

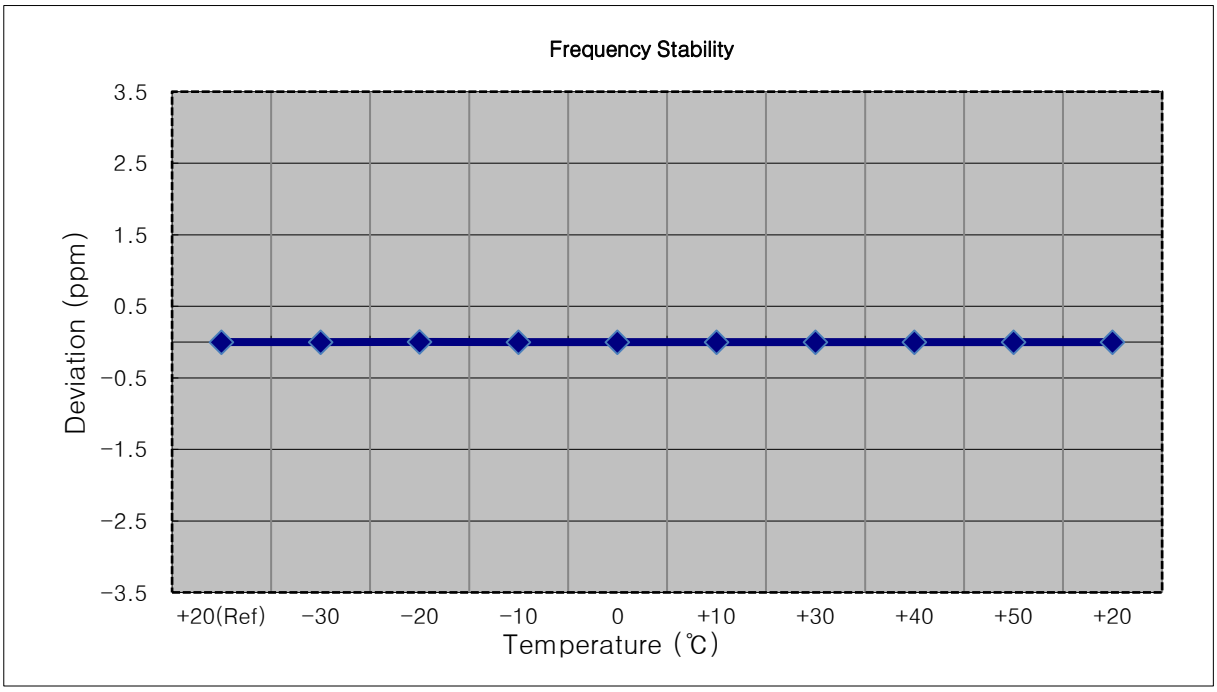
▣ OPERATING FREQUENCY: 1857,500,000 Hz

▣ 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 500 003	0.0	0.000 000	0.000
100 %		-30	1857 500 005	2.2	0.000 000	0.001
100 %		-20	1857 500 007	3.5	0.000 000	0.002
100 %		-10	1857 500 005	2.0	0.000 000	0.001
100 %		0	1857 500 005	2.1	0.000 000	0.001
100 %		+10	1857 500 006	2.7	0.000 000	0.001
100 %		+30	1857 500 006	2.5	0.000 000	0.001
100 %		+40	1857 500 005	1.4	0.000 000	0.001
100 %		+50	1857 500 005	2.1	0.000 000	0.001
Batt. Endpoint	3.400	+20	1857 500 005	1.7	0.000 000	0.001



▣ MODE: LTE B2

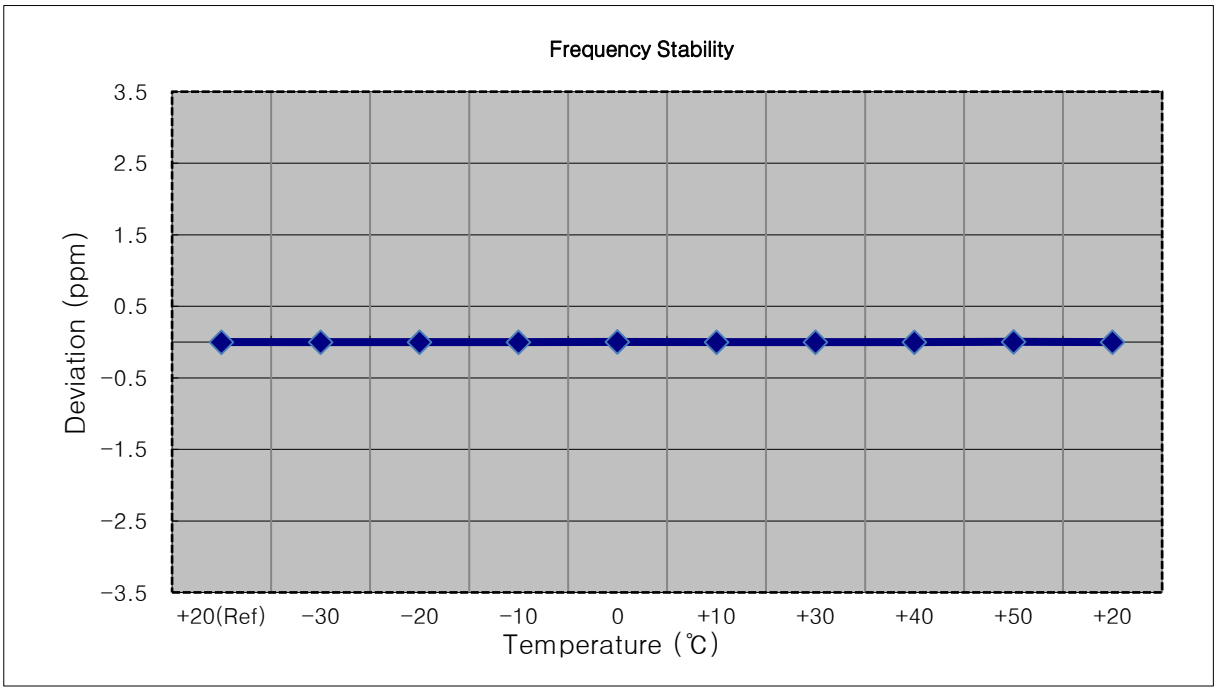
▣ OPERATING FREQUENCY: 1860,000,000 Hz

▣ 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	1860 000 006	2.7	0.000 000	0.001
100 %		-20	1860 000 005	1.9	0.000 000	0.001
100 %		-10	1860 000 005	2.3	0.000 000	0.001
100 %		0	1860 000 006	3.1	0.000 000	0.002
100 %		+10	1860 000 006	2.7	0.000 000	0.001
100 %		+30	1860 000 006	2.6	0.000 000	0.001
100 %		+40	1860 000 005	1.4	0.000 000	0.001
100 %		+50	1860 000 006	2.9	0.000 000	0.002
Batt. Endpoint	3.400	+20	1860 000 005	1.5	0.000 000	0.001



▣ MODE: LTE B2

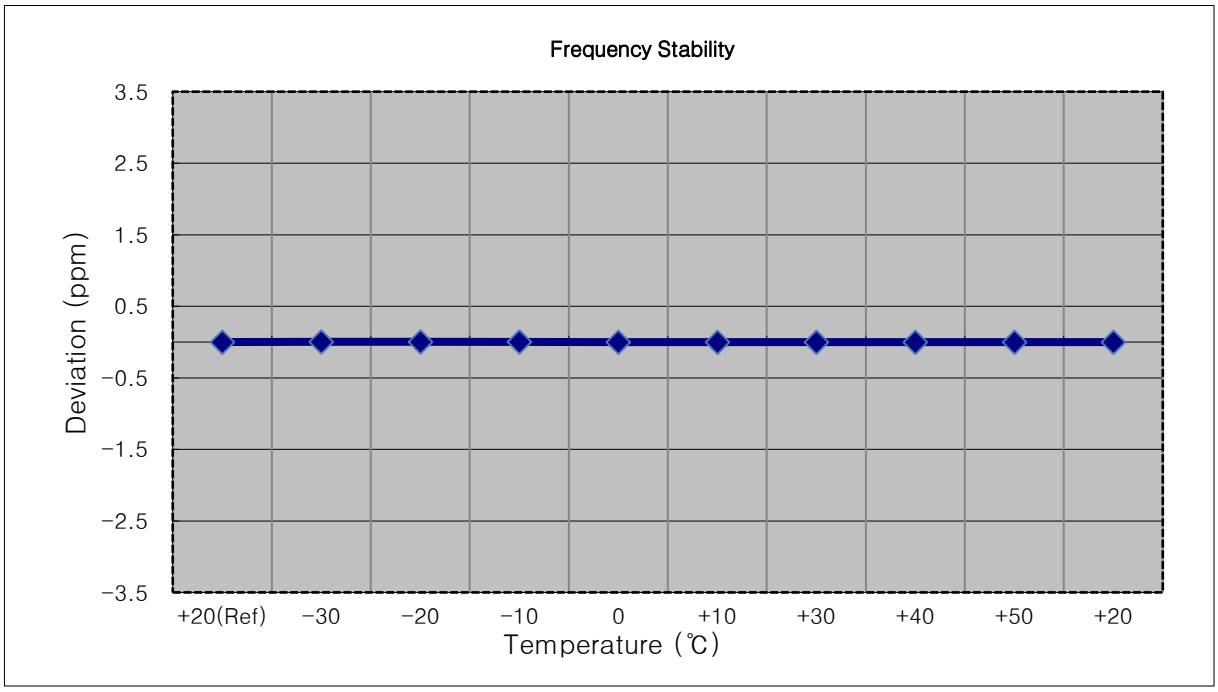
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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 000 002	0.0	0.000 000	0.000
100 %		-30	1880 000 005	2.8	0.000 000	0.001
100 %		-20	1880 000 005	2.9	0.000 000	0.002
100 %		-10	1880 000 006	3.3	0.000 000	0.002
100 %		0	1880 000 004	2.0	0.000 000	0.001
100 %		+10	1880 000 005	2.6	0.000 000	0.001
100 %		+30	1880 000 004	1.8	0.000 000	0.001
100 %		+40	1880 000 005	2.7	0.000 000	0.001
100 %		+50	1880 000 004	1.3	0.000 000	0.001
Batt. Endpoint	3.400	+20	1880 000 005	2.7	0.000 000	0.001



▣ MODE: LTE B2

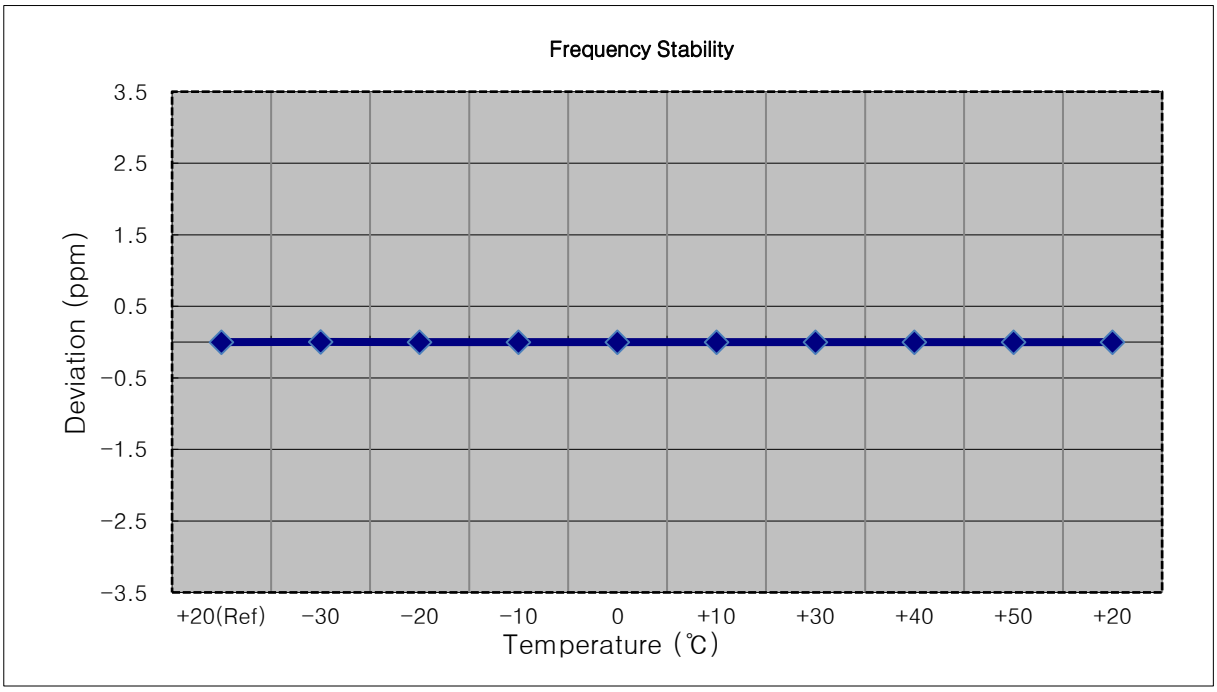
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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 000 002	0.0	0.000 000	0.000
100 %		-30	1880 000 006	3.4	0.000 000	0.002
100 %		-20	1880 000 005	2.1	0.000 000	0.001
100 %		-10	1880 000 005	2.6	0.000 000	0.001
100 %		0	1880 000 000	-2.4	0.000 000	-0.001
100 %		+10	1880 000 004	2.0	0.000 000	0.001
100 %		+30	1880 000 005	2.4	0.000 000	0.001
100 %		+40	1880 000 005	2.7	0.000 000	0.001
100 %		+50	1880 000 000	-2.9	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1880 000 005	2.2	0.000 000	0.001



▣ MODE: LTE B2

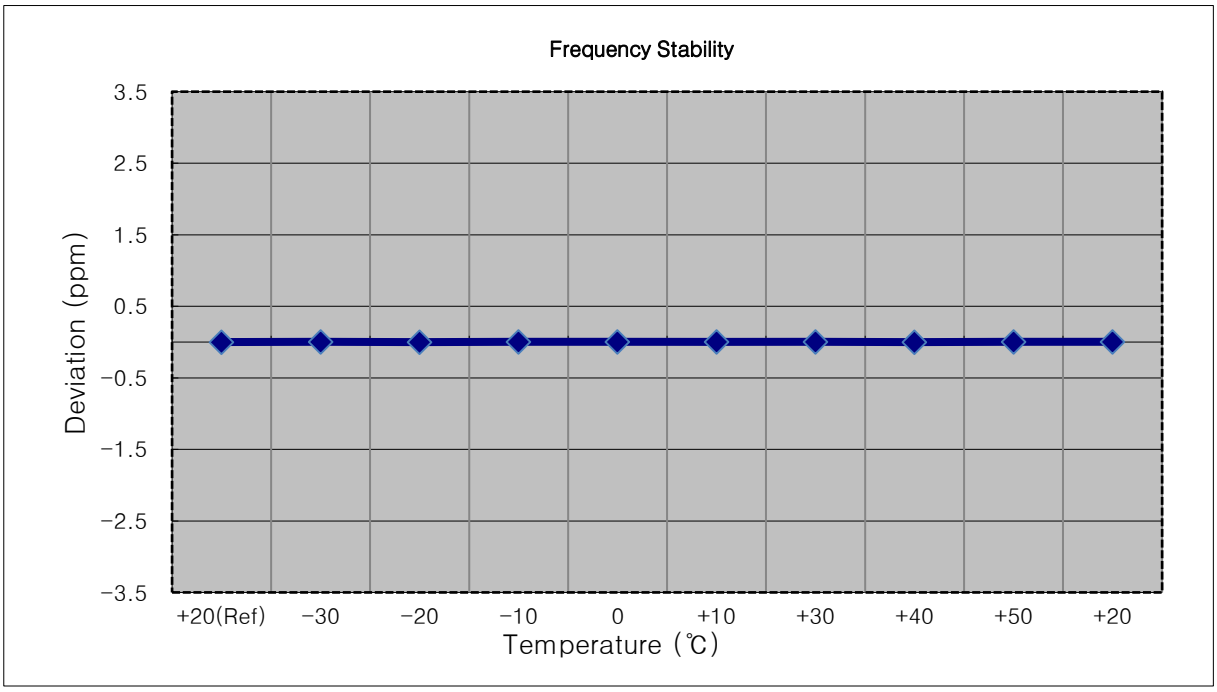
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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 000 004	0.0	0.000 000	0.000
100 %		-30	1880 000 008	3.5	0.000 000	0.002
100 %		-20	1880 000 007	2.5	0.000 000	0.001
100 %		-10	1880 000 008	3.4	0.000 000	0.002
100 %		0	1880 000 007	3.0	0.000 000	0.002
100 %		+10	1880 000 009	4.6	0.000 000	0.002
100 %		+30	1880 000 007	3.0	0.000 000	0.002
100 %		+40	1880 000 007	2.5	0.000 000	0.001
100 %		+50	1880 000 007	2.8	0.000 000	0.001
Batt. Endpoint	3.400	+20	1880 000 007	2.9	0.000 000	0.002



▣ MODE: LTE B2

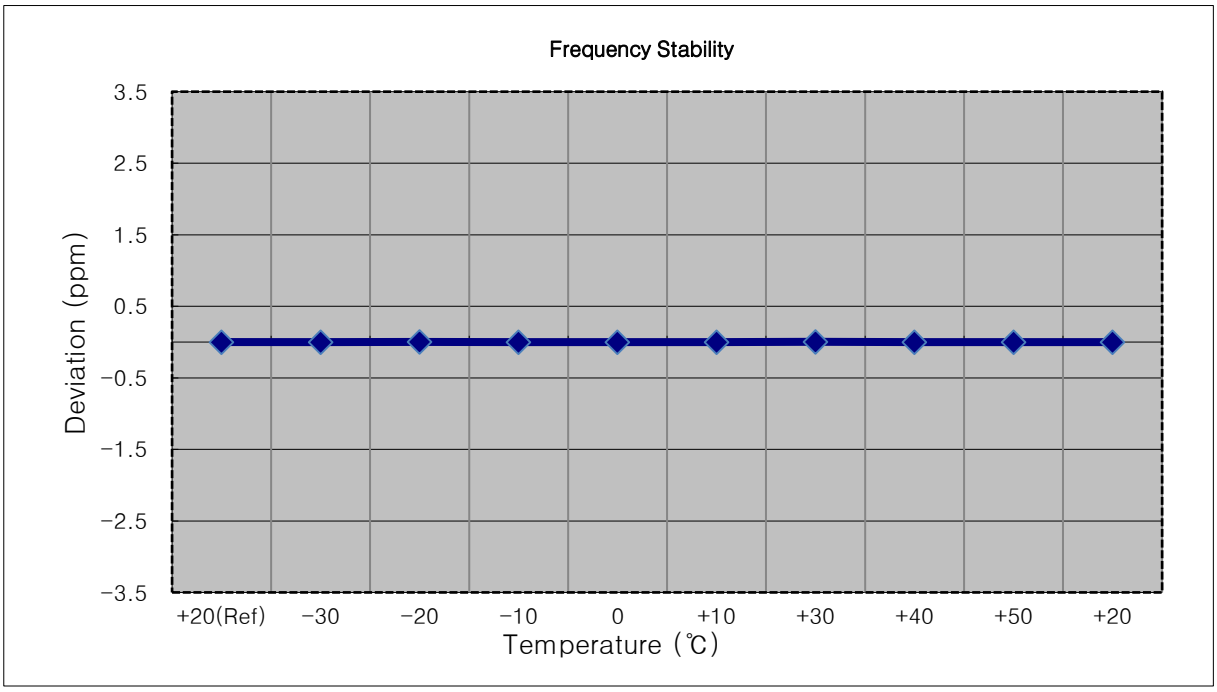
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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)	1880 000 003	0.0	0.000 000	0.000
100 %		-30	1880 000 004	1.8	0.000 000	0.001
100 %		-20	1880 000 006	3.6	0.000 000	0.002
100 %		-10	1880 000 005	2.6	0.000 000	0.001
100 %		0	1880 000 005	2.7	0.000 000	0.001
100 %		+10	1880 000 005	2.5	0.000 000	0.001
100 %		+30	1880 000 006	3.0	0.000 000	0.002
100 %		+40	1880 000 005	2.5	0.000 000	0.001
100 %		+50	1880 000 005	2.6	0.000 000	0.001
Batt. Endpoint	3.400	+20	1880 000 005	2.7	0.000 000	0.001



▣ MODE: LTE B2

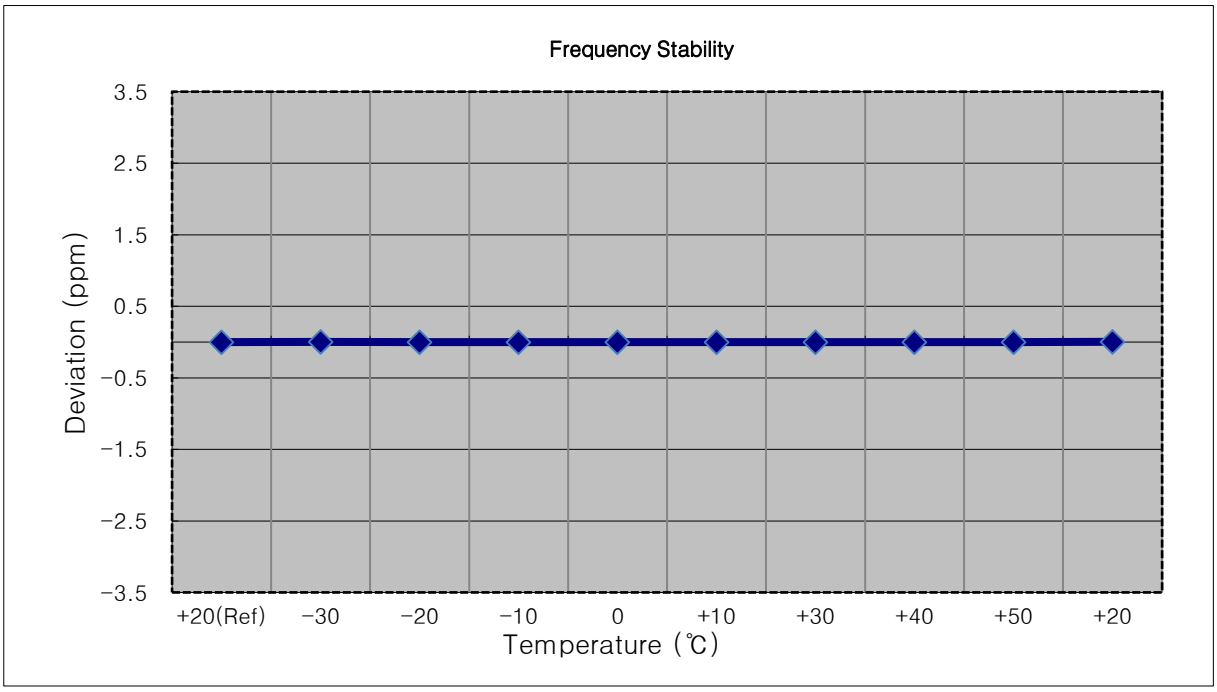
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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)	1880 000 002	0.0	0.000 000	0.000
100 %		-30	1880 000 006	4.0	0.000 000	0.002
100 %		-20	1880 000 005	2.5	0.000 000	0.001
100 %		-10	1880 000 005	2.5	0.000 000	0.001
100 %		0	1880 000 001	-1.8	0.000 000	-0.001
100 %		+10	1880 000 005	2.6	0.000 000	0.001
100 %		+30	1880 000 005	2.2	0.000 000	0.001
100 %		+40	1880 000 004	2.1	0.000 000	0.001
100 %		+50	1880 000 004	1.8	0.000 000	0.001
Batt. Endpoint	3.400	+20	1880 000 005	2.9	0.000 000	0.002



▣ MODE: LTE B2

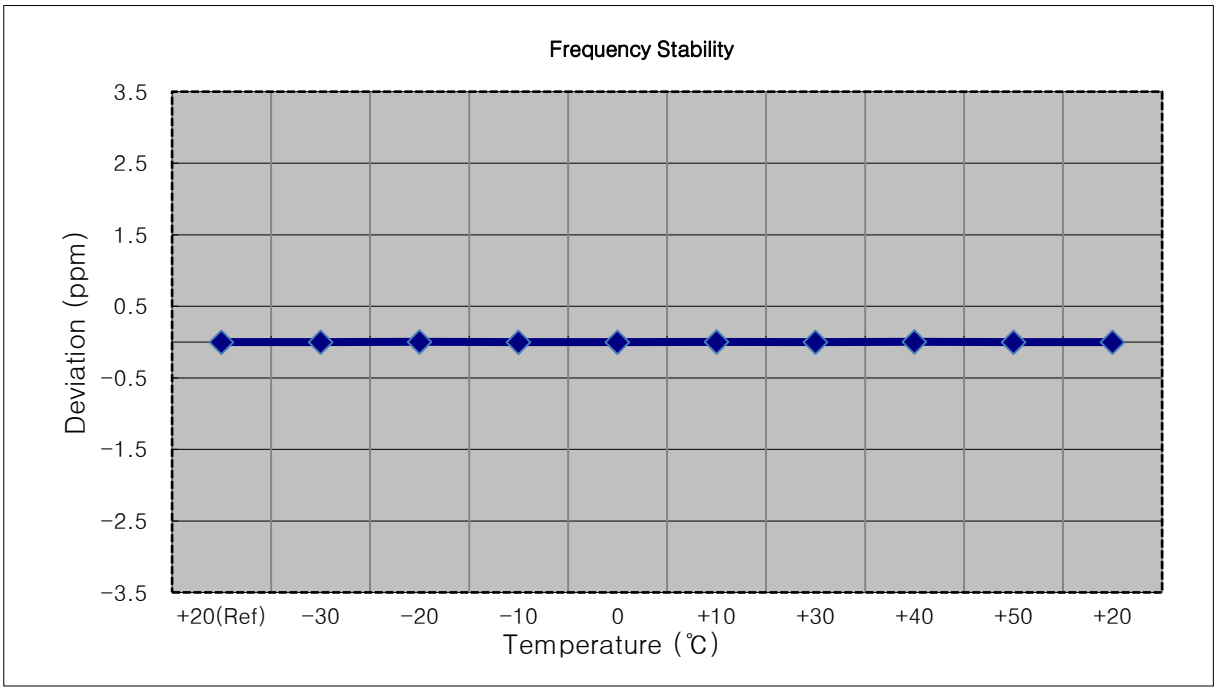
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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)	1880 000 003	0.0	0.000 000	0.000
100 %		-30	1880 000 004	1.5	0.000 000	0.001
100 %		-20	1880 000 005	2.8	0.000 000	0.001
100 %		-10	1880 000 005	1.9	0.000 000	0.001
100 %		0	1880 000 005	2.0	0.000 000	0.001
100 %		+10	1880 000 006	3.4	0.000 000	0.002
100 %		+30	1880 000 005	2.6	0.000 000	0.001
100 %		+40	1880 000 005	2.8	0.000 000	0.001
100 %		+50	1880 000 005	2.5	0.000 000	0.001
Batt. Endpoint	3.400	+20	1880 000 005	2.0	0.000 000	0.001



▣ MODE: LTE B2

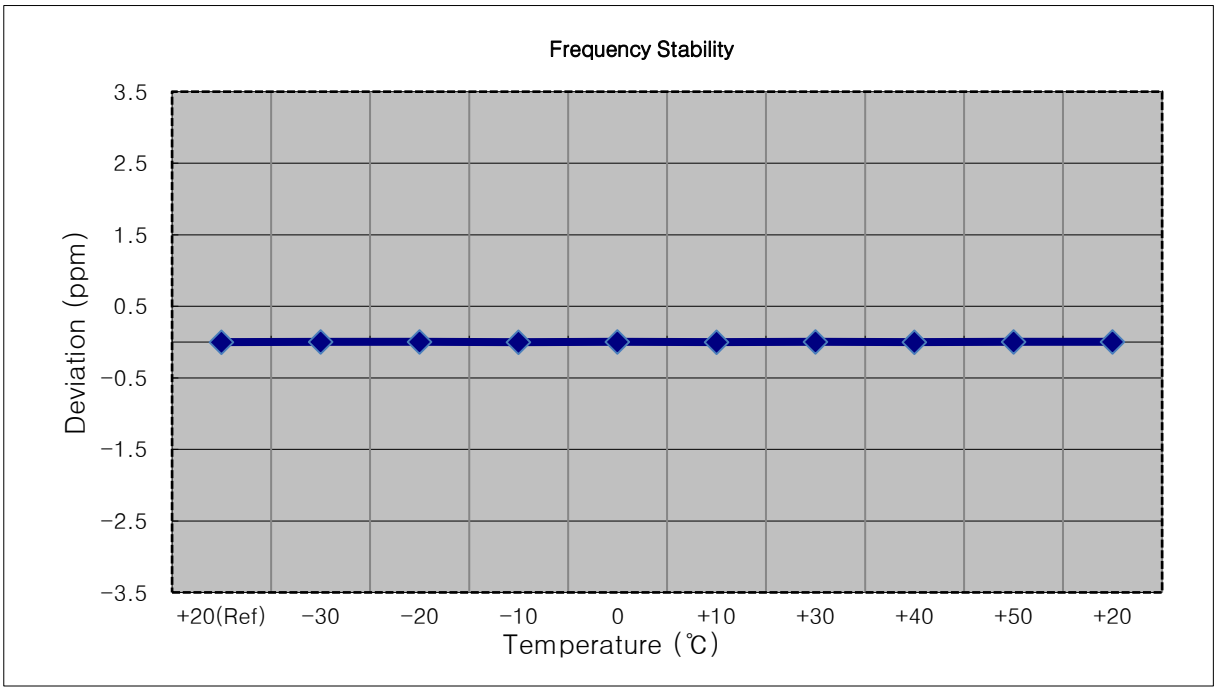
▣ OPERATING FREQUENCY: 1909,300,000 Hz

▣ 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 300 004	0.0	0.000 000	0.000
100 %		-30	1909 300 010	5.9	0.000 000	0.003
100 %		-20	1909 300 007	3.2	0.000 000	0.002
100 %		-10	1909 300 001	-2.8	0.000 000	-0.001
100 %		0	1909 300 009	5.2	0.000 000	0.003
100 %		+10	1909 300 002	-1.7	0.000 000	-0.001
100 %		+30	1909 300 008	4.7	0.000 000	0.002
100 %		+40	1909 300 006	2.5	0.000 000	0.001
100 %		+50	1909 300 007	3.4	0.000 000	0.002
Batt. Endpoint	3.400	+20	1909 300 007	3.2	0.000 000	0.002



▣ MODE: LTE B2

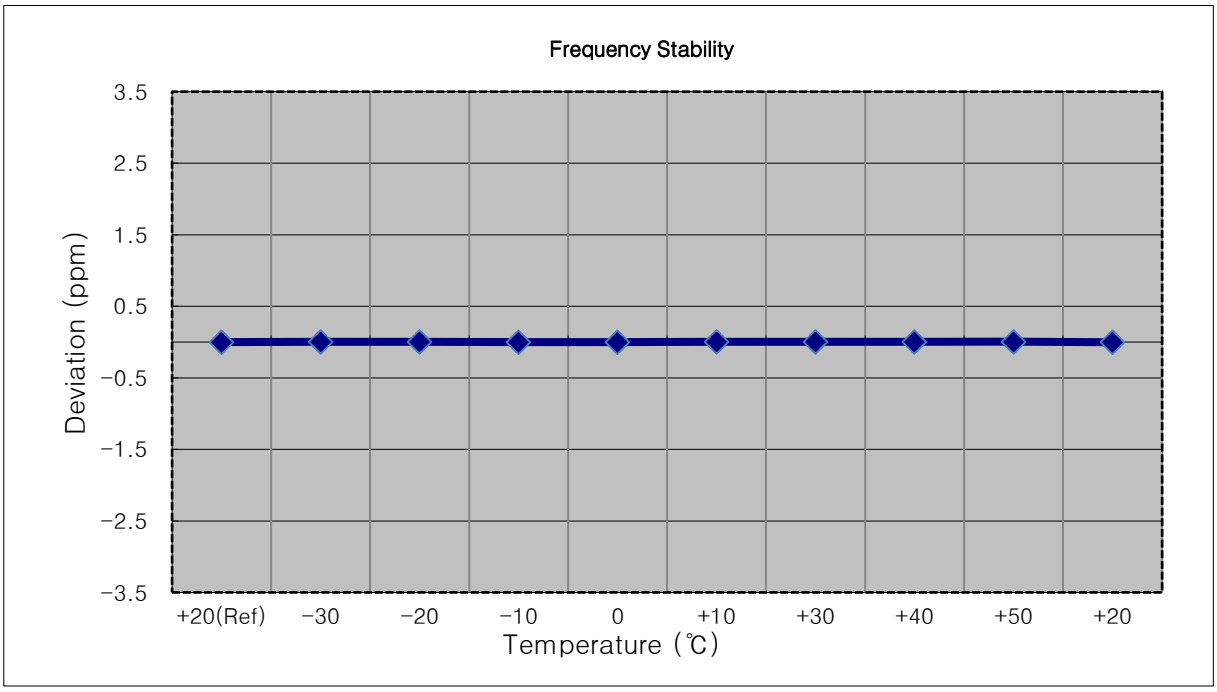
▣ OPERATING FREQUENCY: 1908,500,000 Hz

▣ 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 500 005	0.0	0.000 000	0.000
100 %		-30	1908 500 010	4.7	0.000 000	0.002
100 %		-20	1908 500 010	4.9	0.000 000	0.003
100 %		-10	1908 500 001	-4.3	0.000 000	-0.002
100 %		0	1908 500 000	-5.3	0.000 000	-0.003
100 %		+10	1908 500 012	6.6	0.000 000	0.003
100 %		+30	1908 500 009	3.9	0.000 000	0.002
100 %		+40	1908 500 009	3.7	0.000 000	0.002
100 %		+50	1908 500 016	11.1	0.000 001	0.006
Batt. Endpoint	3.400	+20	1908 499 999	-5.7	0.000 000	-0.003



▣ MODE: LTE B2

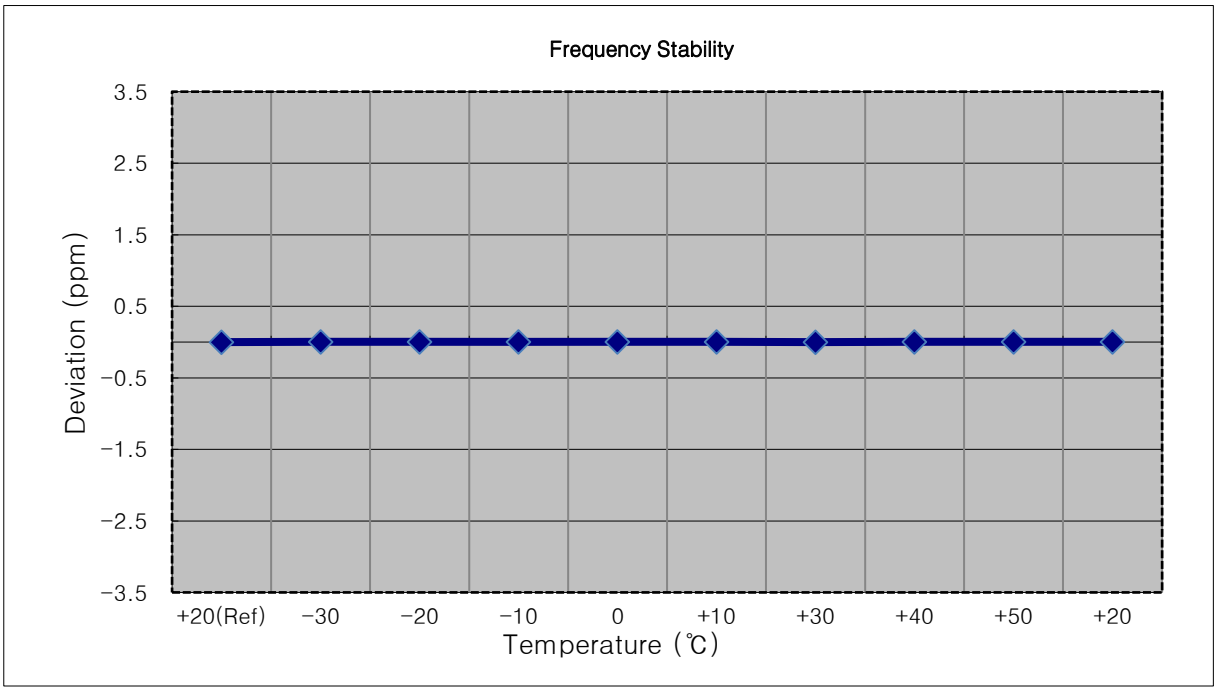
▣ OPERATING FREQUENCY: 1907,500,000 Hz

▣ 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 500 003	0.0	0.000 000	0.000
100 %		-30	1907 500 006	3.1	0.000 000	0.002
100 %		-20	1907 500 008	5.0	0.000 000	0.003
100 %		-10	1907 500 009	5.5	0.000 000	0.003
100 %		0	1907 500 007	3.5	0.000 000	0.002
100 %		+10	1907 500 006	2.8	0.000 000	0.001
100 %		+30	1907 500 002	-1.7	0.000 000	-0.001
100 %		+40	1907 500 007	3.2	0.000 000	0.002
100 %		+50	1907 500 007	3.5	0.000 000	0.002
Batt. Endpoint	3.400	+20	1907 500 006	3.1	0.000 000	0.002



▣ MODE: LTE B2

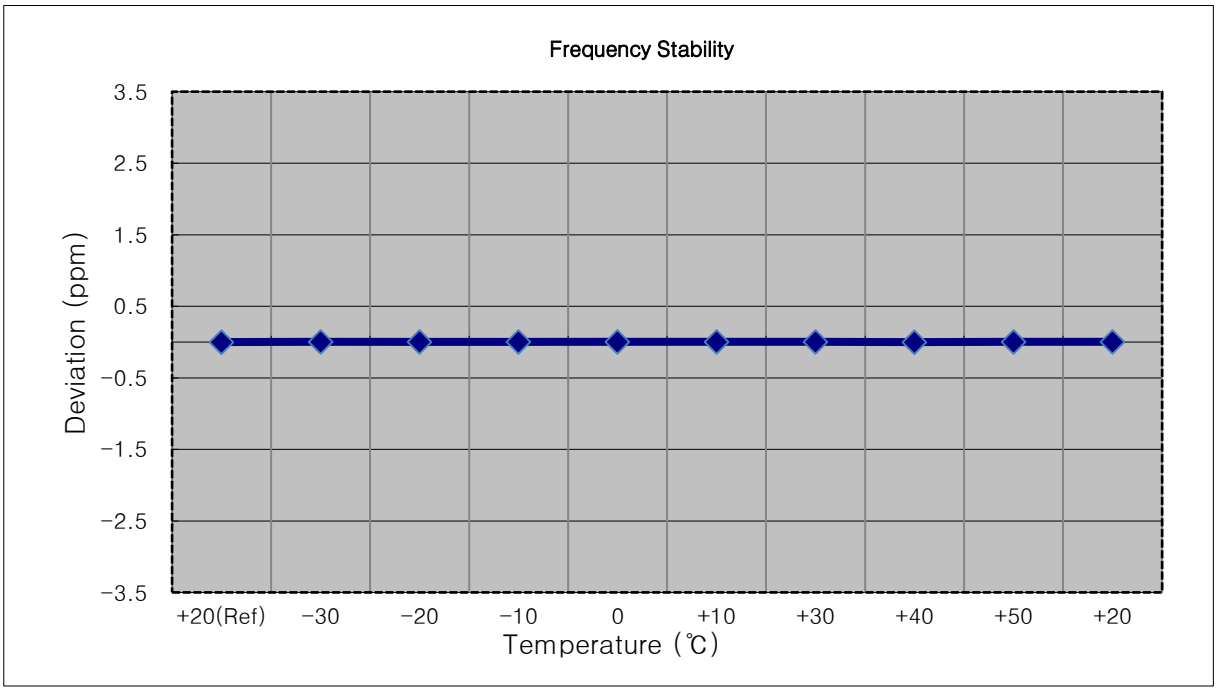
▣ OPERATING FREQUENCY: 1905,000,000 Hz

▣ 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)	1905 000 005	0.0	0.000 000	0.000
100 %		-30	1905 000 009	3.4	0.000 000	0.002
100 %		-20	1905 000 010	5.0	0.000 000	0.003
100 %		-10	1905 000 010	5.0	0.000 000	0.003
100 %		0	1905 000 009	4.2	0.000 000	0.002
100 %		+10	1905 000 010	4.5	0.000 000	0.002
100 %		+30	1905 000 009	3.8	0.000 000	0.002
100 %		+40	1905 000 007	2.2	0.000 000	0.001
100 %		+50	1905 000 009	3.8	0.000 000	0.002
Batt. Endpoint	3.400	+20	1905 000 008	3.1	0.000 000	0.002



▣ MODE: LTE B2

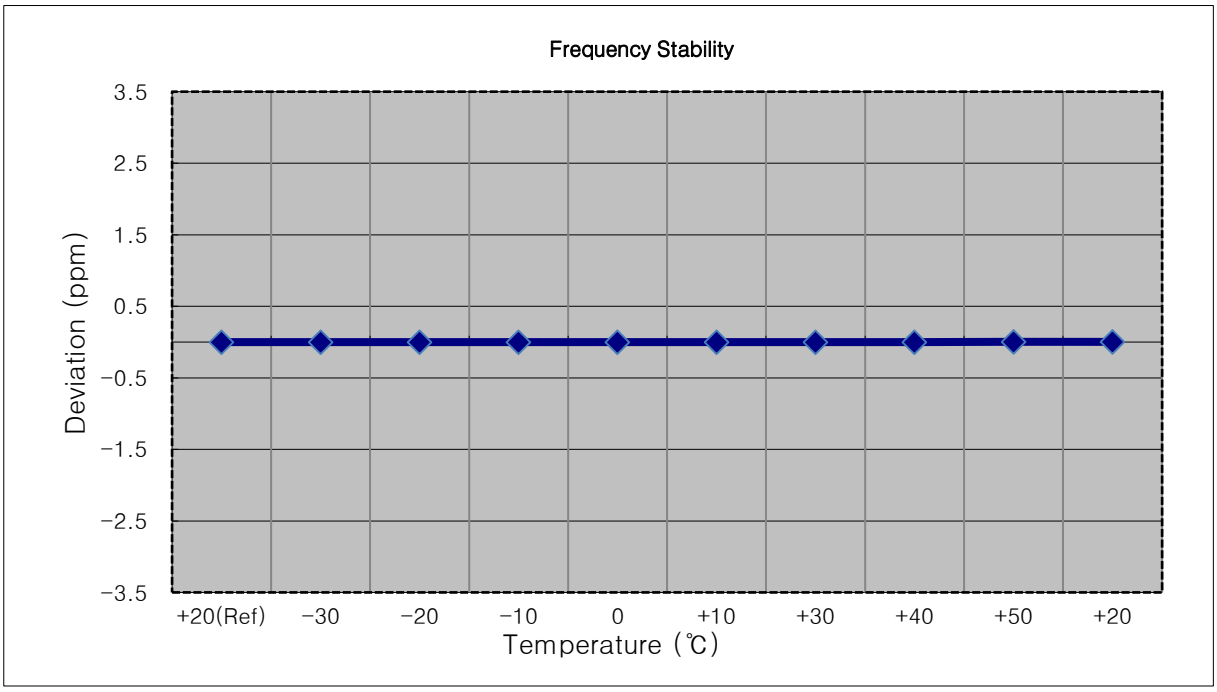
▣ OPERATING FREQUENCY: 1902,500,000 Hz

▣ 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 500 004	0.0	0.000 000	0.000
100 %		-30	1902 500 006	1.7	0.000 000	0.001
100 %		-20	1902 500 006	2.0	0.000 000	0.001
100 %		-10	1902 500 003	-1.2	0.000 000	-0.001
100 %		0	1902 500 006	2.3	0.000 000	0.001
100 %		+10	1902 500 006	2.2	0.000 000	0.001
100 %		+30	1902 500 006	2.2	0.000 000	0.001
100 %		+40	1902 500 006	2.0	0.000 000	0.001
100 %		+50	1902 500 007	3.3	0.000 000	0.002
Batt. Endpoint	3.400	+20	1902 500 008	4.6	0.000 000	0.002



▣ MODE: LTE B2

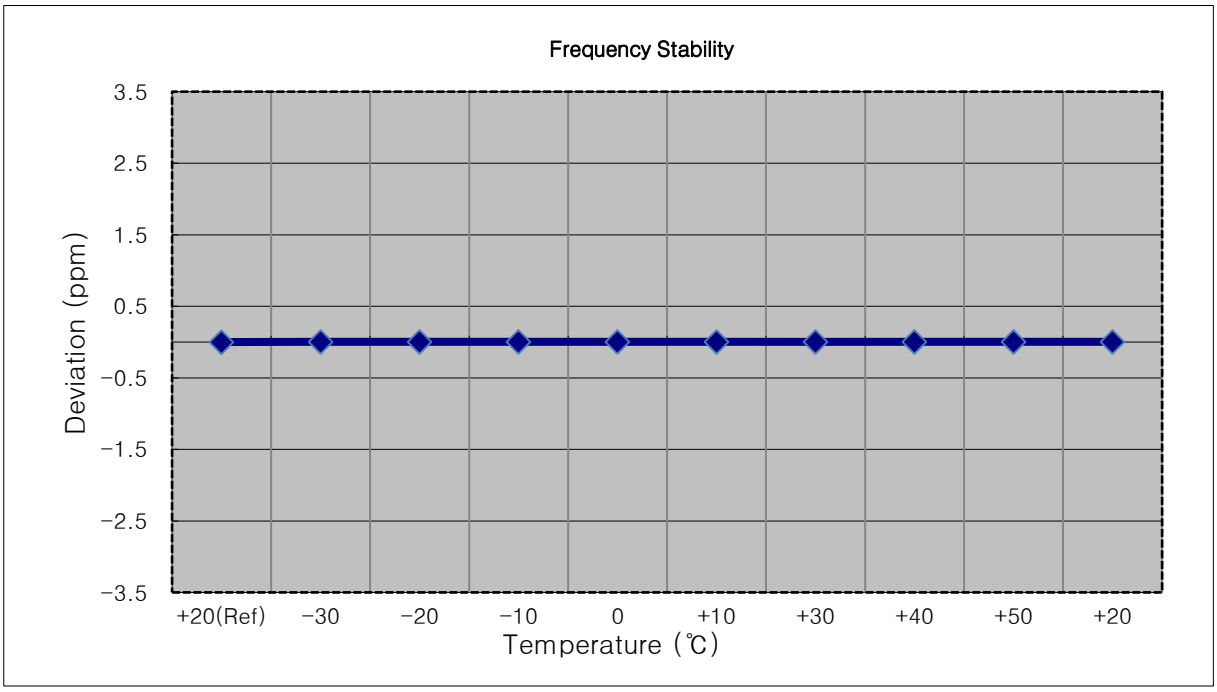
▣ OPERATING FREQUENCY: 1900,000,000 Hz

▣ 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)	1900 000 004	0.0	0.000 000	0.000
100 %		-30	1900 000 009	5.0	0.000 000	0.003
100 %		-20	1900 000 009	5.1	0.000 000	0.003
100 %		-10	1900 000 007	3.0	0.000 000	0.002
100 %		0	1900 000 008	3.6	0.000 000	0.002
100 %		+10	1900 000 009	5.0	0.000 000	0.003
100 %		+30	1900 000 010	5.8	0.000 000	0.003
100 %		+40	1900 000 010	5.4	0.000 000	0.003
100 %		+50	1900 000 008	3.7	0.000 000	0.002
Batt. Endpoint	3.400	+20	1900 000 007	3.2	0.000 000	0.002



9. TEST DATA (Sub 2 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	-23.44	10.38	10.00	2.12	H	< 2.00	0.067	18.26
		16-QAM	-24.41	9.41	10.00	2.12	H		0.054	17.29
		64-QAM	-25.41	8.41	10.00	2.12	H		0.043	16.29
		256-QAM	-28.48	5.34	10.00	2.12	H		0.021	13.22
1880.0		QPSK	-22.14	11.46	10.00	2.21	H		0.084	19.25
		16-QAM	-23.07	10.53	10.00	2.21	H		0.068	18.32
		64-QAM	-24.06	9.54	10.00	2.21	H		0.054	17.33
		256-QAM	-27.10	6.50	10.00	2.21	H		0.027	14.29
1909.3		QPSK	-23.72	10.30	10.01	2.11	H		0.066	18.20
		16-QAM	-24.66	9.36	10.01	2.11	H		0.053	17.26
		64-QAM	-25.60	8.42	10.01	2.11	H		0.043	16.32
		256-QAM	-28.40	5.62	10.01	2.11	H		0.023	13.52

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	-22.70	11.12	10.00	2.12	H	< 2.00	0.080	19.00
		16-QAM	-23.66	10.16	10.00	2.12	H		0.064	18.04
		64-QAM	-24.71	9.11	10.00	2.12	H		0.050	16.99
		256-QAM	-27.77	6.05	10.00	2.12	H		0.025	13.93
1880.0		QPSK	-21.91	11.69	10.00	2.21	H		0.089	19.48
		16-QAM	-22.79	10.81	10.00	2.21	H		0.072	18.60
		64-QAM	-23.82	9.78	10.00	2.21	H		0.057	17.57
		256-QAM	-26.84	6.76	10.00	2.21	H		0.029	14.55
1908.5		QPSK	-23.33	10.69	10.01	2.11	H		0.072	18.59
		16-QAM	-24.21	9.81	10.01	2.11	H		0.059	17.71
		64-QAM	-25.10	8.92	10.01	2.11	H		0.048	16.82
		256-QAM	-28.34	5.68	10.01	2.11	H		0.023	13.58

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	-22.85	10.97	10.00	2.12	H	< 2.00	0.077	18.85
		16-QAM	-23.81	10.01	10.00	2.12	H		0.062	17.89
		64-QAM	-24.84	8.98	10.00	2.12	H		0.049	16.86
		256-QAM	-27.90	5.92	10.00	2.12	H		0.024	13.80
1880.0		QPSK	-21.87	11.73	10.00	2.21	H		0.090	19.52
		16-QAM	-22.74	10.86	10.00	2.21	H		0.073	18.65
		64-QAM	-23.80	9.80	10.00	2.21	H		0.057	17.59
		256-QAM	-26.86	6.74	10.00	2.21	H		0.028	14.53
1907.5		QPSK	-23.63	10.39	10.01	2.11	H		0.068	18.29
		16-QAM	-24.16	9.86	10.01	2.11	H		0.060	17.76
		64-QAM	-25.13	8.89	10.01	2.11	H		0.048	16.79
		256-QAM	-28.13	5.89	10.01	2.11	H		0.024	13.79

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	-22.67	10.92	10.00	2.15	H	< 2.00	0.075	18.77
		16-QAM	-23.59	10.00	10.00	2.15	H		0.061	17.85
		64-QAM	-24.64	8.95	10.00	2.15	H		0.048	16.80
		256-QAM	-27.70	5.89	10.00	2.15	H		0.024	13.74
1880.0		QPSK	-22.15	11.45	10.00	2.21	H		0.084	19.24
		16-QAM	-23.03	10.57	10.00	2.21	H		0.069	18.36
		64-QAM	-24.13	9.47	10.00	2.21	H		0.053	17.26
		256-QAM	-27.24	6.36	10.00	2.21	H		0.026	14.15
1905.0		QPSK	-23.02	10.95	10.01	2.13	H		0.076	18.83
		16-QAM	-23.73	10.24	10.01	2.13	H		0.065	18.12
		64-QAM	-24.80	9.17	10.01	2.13	H		0.051	17.05
		256-QAM	-27.95	6.02	10.01	2.13	H		0.025	13.90

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	-22.69	10.65	10.00	2.17	H	< 2.00	0.071	18.48
		16-QAM	-23.60	9.74	10.00	2.17	H		0.057	17.57
		64-QAM	-24.61	8.73	10.00	2.17	H		0.045	16.56
		256-QAM	-27.69	5.65	10.00	2.17	H		0.022	13.48
1880.0		QPSK	-22.22	11.38	10.00	2.21	H		0.083	19.17
		16-QAM	-23.16	10.44	10.00	2.21	H		0.067	18.23
		64-QAM	-24.06	9.54	10.00	2.21	H		0.054	17.33
		256-QAM	-27.08	6.52	10.00	2.21	H		0.027	14.31
1902.5		QPSK	-23.73	10.18	10.01	2.15	H		0.064	18.04
		16-QAM	-23.89	10.02	10.01	2.15	H		0.061	17.88
		64-QAM	-24.87	9.04	10.01	2.15	H		0.049	16.90
		256-QAM	-27.80	6.11	10.01	2.15	H		0.025	13.97

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	-22.46	10.88	10.00	2.17	H	< 2.00	0.074	18.71
		16-QAM	-23.29	10.05	10.00	2.17	H		0.061	17.88
		64-QAM	-24.32	9.02	10.00	2.17	H		0.048	16.85
		256-QAM	-27.33	6.01	10.00	2.17	H		0.024	13.84
1880.0		QPSK	-22.31	11.29	10.00	2.21	H		0.081	19.08
		16-QAM	-23.14	10.46	10.00	2.21	H		0.067	18.25
		64-QAM	-24.20	9.40	10.00	2.21	H		0.052	17.19
		256-QAM	-27.15	6.45	10.00	2.21	H		0.027	14.24
1900.0		QPSK	-23.16	10.75	10.01	2.15	H		0.073	18.61
		16-QAM	-24.06	9.85	10.01	2.15	H		0.059	17.71
		64-QAM	-25.03	8.88	10.01	2.15	H		0.047	16.74
		256-QAM	-28.13	5.78	10.01	2.15	H		0.023	13.64

9.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY: 1880.0 MHz

▣ MEASURED OUTPUT POWER: 19.52 dBm = 0.090 W

▣ MODE: LTE B2

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log10 (W) = 32.52 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18625 (1852.5)	3 705.00	-56.19	11.40	-56.82	3.09	V	-48.51	68.03
	5 557.50	-62.14	11.90	-56.65	3.83	V	-48.58	68.10
	7 410.00	-63.42	10.80	-48.64	4.47	V	-42.31	61.83
	9 262.50	-61.84	10.80	-47.34	5.13	V	-41.67	61.19
	11 115.00	-64.23	11.30	-45.63	5.61	V	-39.93	59.45
18900 (1880.0)	3 760.00	-54.35	11.30	-54.48	3.07	H	-46.25	65.77
	5 640.00	-62.94	11.90	-57.34	3.89	H	-49.33	68.85
	7 520.00	-64.32	11.10	-50.09	4.51	H	-43.50	63.02
	9 400.00	-62.40	10.80	-47.12	5.07	H	-41.39	60.91
	11 280.00	-62.55	11.40	-43.25	5.62	H	-37.47	56.99
19175 (1907.5)	3 815.00	-54.46	11.10	-53.88	3.10	H	-45.88	65.40
	5 722.50	-57.97	11.70	-52.23	3.84	H	-44.37	63.89
	7 630.00	-63.83	11.20	-50.39	4.52	V	-43.71	63.23
	9 537.50	-63.46	10.90	-48.42	5.15	V	-42.67	62.19
	11 445.00	-65.89	11.40	-46.11	5.68	V	-40.39	59.91

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	5.34
			16-QAM	6	0	5.70
			64-QAM	6	0	5.93
			256-QAM	6	0	6.19
	3 MHz		QPSK	15	0	5.50
			16-QAM	15	0	5.81
			64-QAM	15	0	6.07
			256-QAM	15	0	6.28
	5 MHz		QPSK	25	0	5.52
			16-QAM	25	0	5.94
			64-QAM	25	0	6.18
			256-QAM	25	0	6.25
	10 MHz		QPSK	50	0	5.54
			16-QAM	50	0	5.98
			64-QAM	50	0	6.22
			256-QAM	50	0	6.30
	15 MHz		QPSK	75	0	5.55
			16-QAM	75	0	5.95
			64-QAM	75	0	6.22
			256-QAM	75	0	6.28
	20 MHz		QPSK	100	0	5.58
			16-QAM	100	0	6.04
			64-QAM	100	0	6.27
			256-QAM	100	0	6.32

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	1.0932
			16-QAM	6	0	1.0963
			64-QAM	6	0	1.0959
			256-QAM	6	0	1.0907
	3 MHz		QPSK	15	0	2.7153
			16-QAM	15	0	2.7091
			64-QAM	15	0	2.7181
			256-QAM	15	0	2.7202
	5 MHz		QPSK	25	0	4.5148
			16-QAM	25	0	4.5326
			64-QAM	25	0	4.5252
			256-QAM	25	0	4.5316
	10 MHz		QPSK	50	0	9.0290
			16-QAM	50	0	9.0145
			64-QAM	50	0	9.0276
			256-QAM	50	0	9.0170
	15 MHz		QPSK	75	0	13.483
			16-QAM	75	0	13.476
			64-QAM	75	0	13.444
			256-QAM	75	0	13.482
	20 MHz		QPSK	100	0	17.969
			16-QAM	100	0	17.984
			64-QAM	100	0	17.924
			256-QAM	100	0	17.988

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	3.7011	30.200	-66.344	-36.144	-13.00
		1880.0	3.7588	30.200	-60.502	-30.302	
		1909.3	3.8196	30.200	-60.988	-30.788	
	3	1851.5	3.7005	30.200	-61.225	-31.025	
		1880.0	3.7573	30.200	-60.806	-30.606	
		1908.5	3.8196	30.200	-59.272	-29.072	
	5	1852.5	3.7005	30.200	-61.738	-31.538	
		1880.0	3.7558	30.200	-63.683	-33.483	
		1907.5	3.8191	30.200	-60.723	-30.523	
	10	1855.0	3.7015	30.200	-70.248	-40.048	
		1880.0	3.7513	30.200	-61.004	-30.804	
		1905.0	3.8186	30.200	-59.191	-28.991	
	15	1857.5	3.7020	30.200	-63.683	-33.483	
		1880.0	3.7468	30.200	-64.376	-34.176	
		1902.5	3.8181	30.200	-62.928	-32.728	
	20	1860.0	3.7020	30.200	-66.054	-35.854	
		1880.0	3.7423	30.200	-65.019	-34.819	
		1900.0	3.8176	30.200	-59.107	-28.907	

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	27.494
1 – 5	30.200
5 – 10	30.815
10 – 15	31.340
15 – 20	31.713
Above 20(26.5)	32.355

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

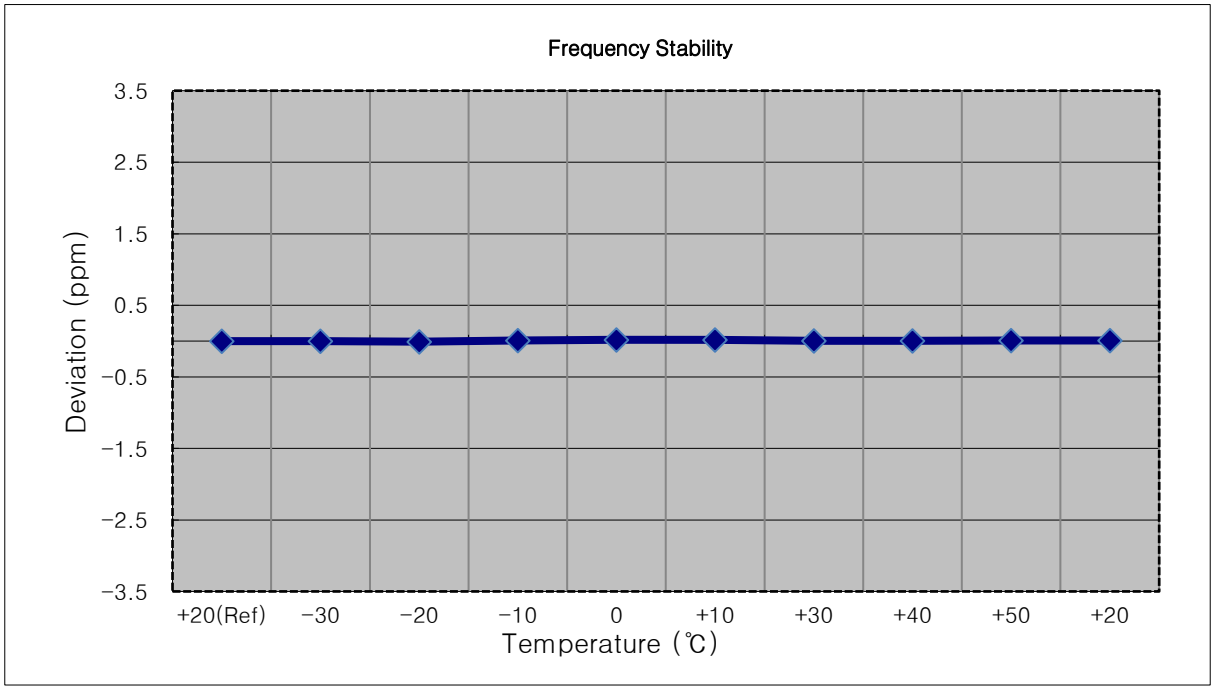
▣ OPERATING FREQUENCY: 1850,700,000 Hz

▣ 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)	185 069 999	0.0	0.000 000	0.000
100 %		-30	185 069 999	0.1	0.000 000	0.000
100 %		-20	185 069 997	-1.5	-0.000 001	-0.008
100 %		-10	185 070 000	1.3	0.000 001	0.007
100 %		0	185 070 002	3.3	0.000 002	0.018
100 %		+10	185 070 002	3.2	0.000 002	0.018
100 %		+30	185 070 000	0.7	0.000 000	0.004
100 %		+40	185 070 000	0.7	0.000 000	0.004
100 %		+50	185 070 001	1.9	0.000 001	0.010
Batt. Endpoint	3.400	+20	185 070 000	1.3	0.000 001	0.007



▣ MODE: LTE B2

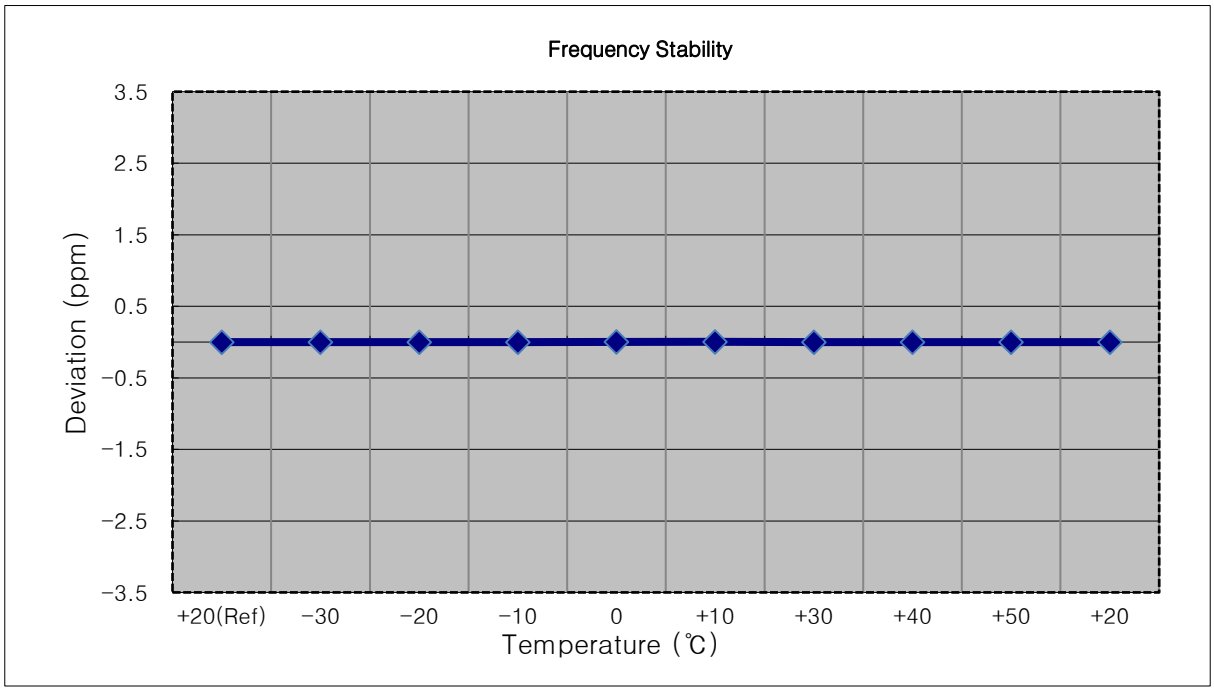
▣ OPERATING FREQUENCY: 1851,500,000 Hz

▣ 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 499 001	0.0	0.000 000	0.000
100 %		-30	1851 499 001	0.1	0.000 000	0.000
100 %		-20	1851 498 999	-1.5	0.000 000	-0.001
100 %		-10	1851 499 002	1.3	0.000 000	0.001
100 %		0	1851 499 004	3.3	0.000 000	0.002
100 %		+10	1851 499 004	3.2	0.000 000	0.002
100 %		+30	1851 499 002	0.7	0.000 000	0.000
100 %		+40	1851 499 002	0.7	0.000 000	0.000
100 %		+50	1851 499 003	1.9	0.000 000	0.001
Batt. Endpoint	3.400	+20	1851 499 002	1.3	0.000 000	0.001



▣ MODE: LTE B2

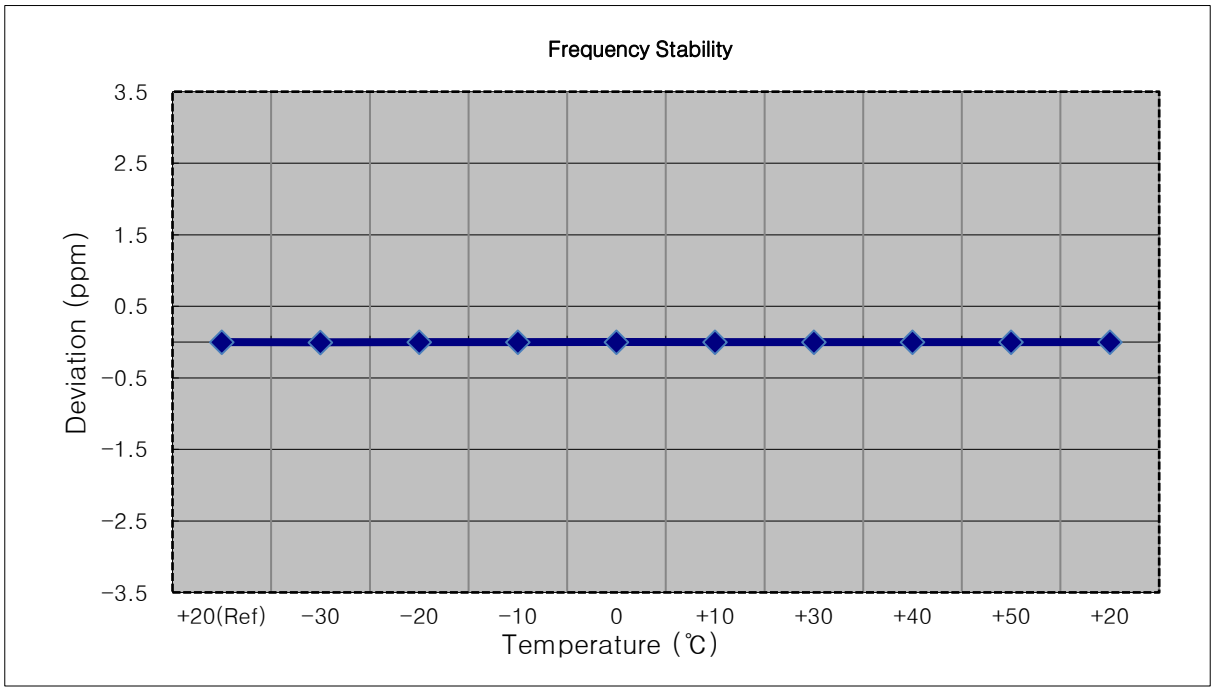
▣ OPERATING FREQUENCY: 1852,500,000 Hz

▣ 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 499 997	0.0	0.000 000	0.000
100 %		-30	1852 499 991	-6.2	0.000 000	-0.003
100 %		-20	1852 499 997	0.1	0.000 000	0.000
100 %		-10	1852 499 998	0.4	0.000 000	0.000
100 %		0	1852 499 999	1.9	0.000 000	0.001
100 %		+10	1852 499 997	-0.1	0.000 000	0.000
100 %		+30	1852 499 998	0.6	0.000 000	0.000
100 %		+40	1852 499 998	1.3	0.000 000	0.001
100 %		+50	1852 499 997	-0.4	0.000 000	0.000
Batt. Endpoint	3.400	+20	1852 499 995	-2.0	0.000 000	-0.001



▣ MODE: LTE B2

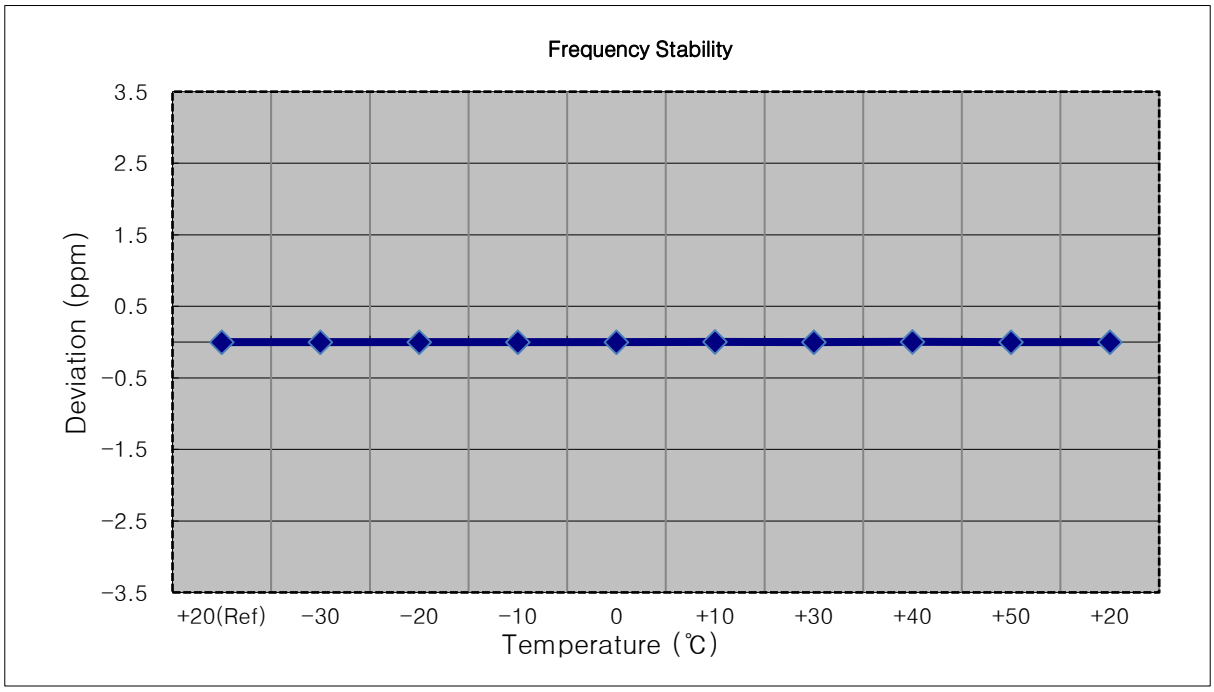
▣ OPERATING FREQUENCY: 1855,000,000 Hz

▣ 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	1855 000 005	0.7	0.000 000	0.000
100 %		-20	1855 000 004	0.2	0.000 000	0.000
100 %		-10	1855 000 005	0.7	0.000 000	0.000
100 %		0	1855 000 005	1.2	0.000 000	0.001
100 %		+10	1855 000 008	4.1	0.000 000	0.002
100 %		+30	1855 000 003	-1.2	0.000 000	-0.001
100 %		+40	1855 000 007	2.9	0.000 000	0.002
100 %		+50	1855 000 005	0.8	0.000 000	0.000
Batt. Endpoint	3.400	+20	1855 000 004	-0.2	0.000 000	0.000



▣ MODE: LTE B2

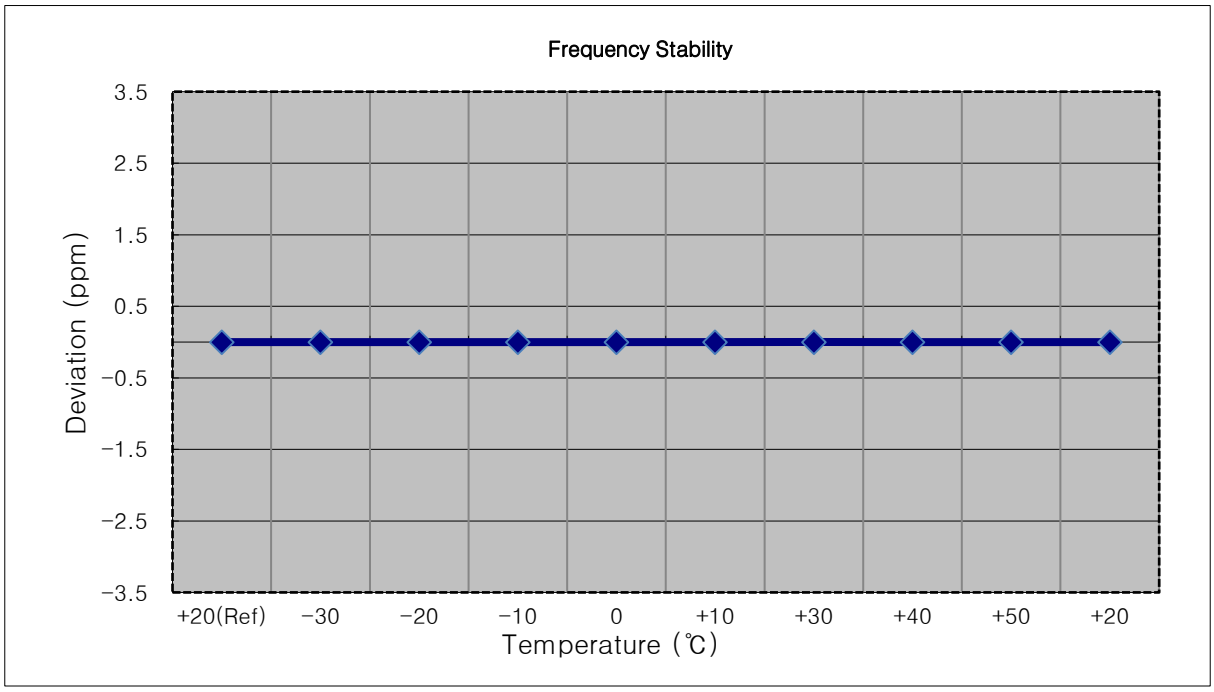
▣ OPERATING FREQUENCY: 1857,500,000 Hz

▣ 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 500 000	0.0	0.000 000	0.000
100 %		-30	1857 500 000	0.4	0.000 000	0.000
100 %		-20	1857 500 002	2.0	0.000 000	0.001
100 %		-10	1857 499 999	-0.6	0.000 000	0.000
100 %		0	1857 500 000	0.2	0.000 000	0.000
100 %		+10	1857 499 999	-1.0	0.000 000	-0.001
100 %		+30	1857 500 002	2.2	0.000 000	0.001
100 %		+40	1857 500 001	0.9	0.000 000	0.000
100 %		+50	1857 499 999	-0.5	0.000 000	0.000
Batt. Endpoint	3.400	+20	1857 500 000	0.5	0.000 000	0.000



▣ MODE: LTE B2

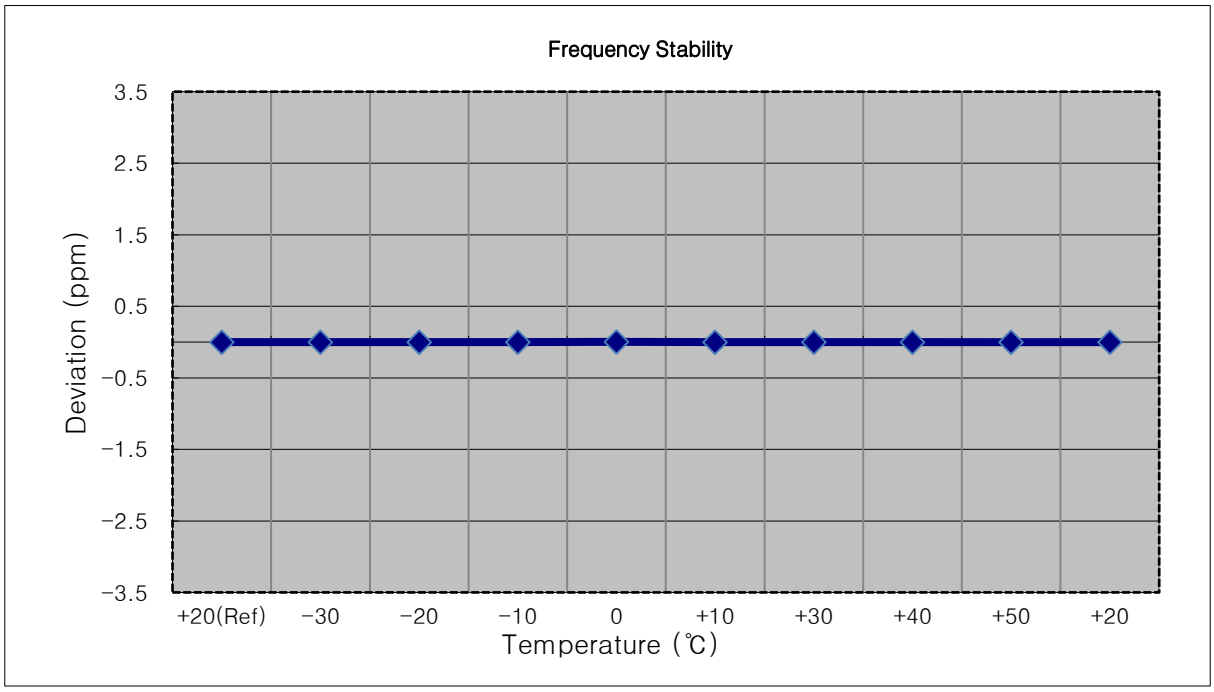
▣ OPERATING FREQUENCY: 1860,000,000 Hz

▣ 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 999 998	0.0	0.000 000	0.000
100 %		-30	1859 999 995	-2.6	0.000 000	-0.001
100 %		-20	1859 999 999	1.2	0.000 000	0.001
100 %		-10	1859 999 996	-2.5	0.000 000	-0.001
100 %		0	1860 000 004	5.5	0.000 000	0.003
100 %		+10	1860 000 000	1.9	0.000 000	0.001
100 %		+30	1859 999 997	-0.6	0.000 000	0.000
100 %		+40	1859 999 999	0.7	0.000 000	0.000
100 %		+50	1859 999 995	-3.2	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1859 999 999	0.8	0.000 000	0.000



▣ MODE: LTE B2

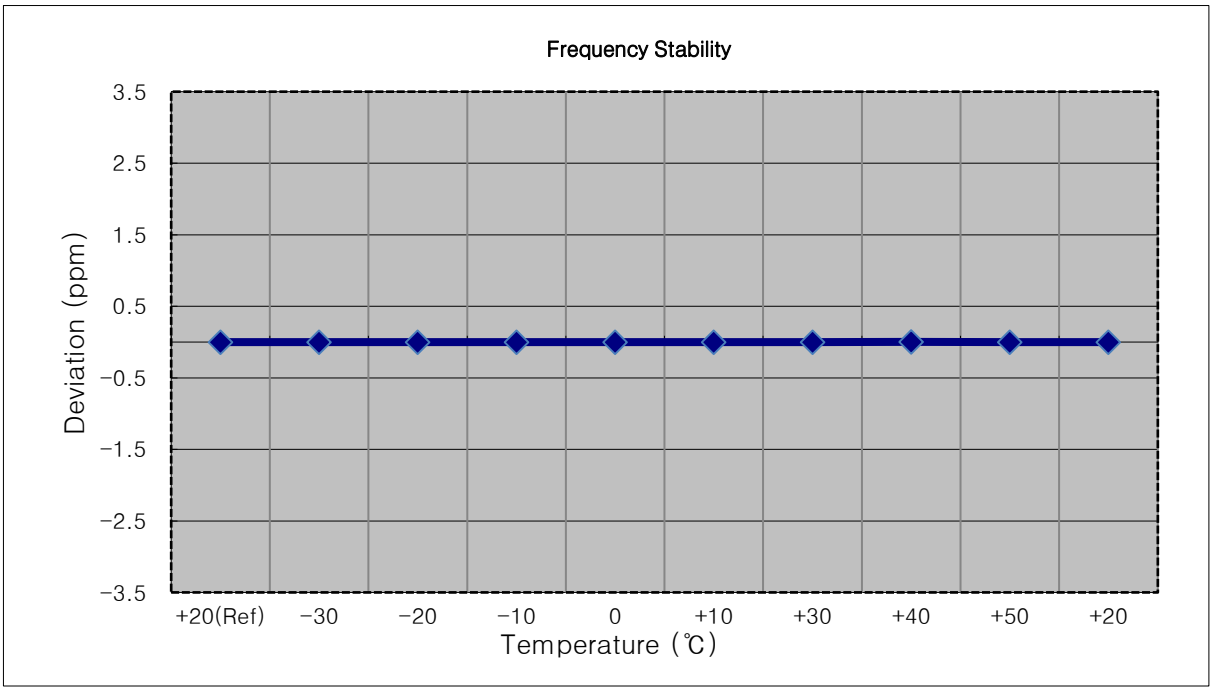
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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)	1879 999 998	0.0	0.000 000	0.000
100 %		-30	1879 999 998	0.2	0.000 000	0.000
100 %		-20	1879 999 999	0.4	0.000 000	0.000
100 %		-10	1879 999 999	1.0	0.000 000	0.001
100 %		0	1880 000 000	1.5	0.000 000	0.001
100 %		+10	1879 999 997	-1.8	0.000 000	-0.001
100 %		+30	1879 999 999	0.5	0.000 000	0.000
100 %		+40	1880 000 003	4.6	0.000 000	0.002
100 %		+50	1879 999 999	0.9	0.000 000	0.000
Batt. Endpoint	3.400	+20	1879 999 997	-1.6	0.000 000	-0.001



▣ MODE: LTE B2

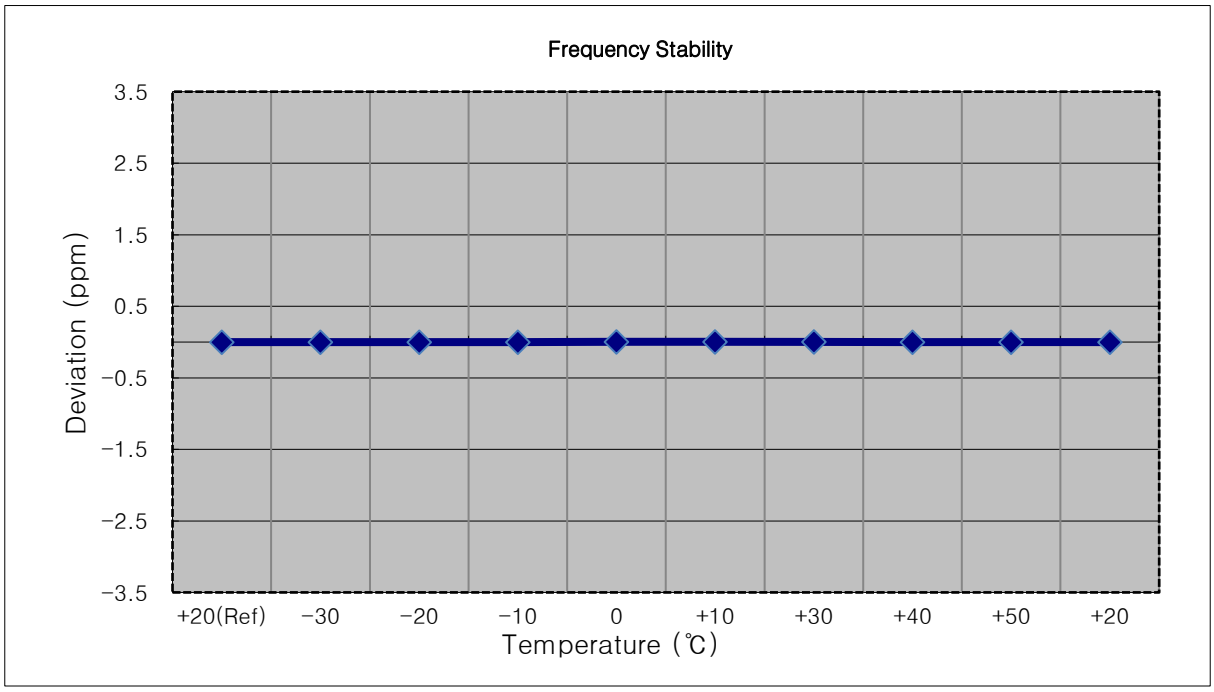
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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 000 000	0.0	0.000 000	0.000
100 %		-30	1880 000 001	0.9	0.000 000	0.000
100 %		-20	1880 000 002	2.2	0.000 000	0.001
100 %		-10	1880 000 001	0.5	0.000 000	0.000
100 %		0	1880 000 003	2.9	0.000 000	0.002
100 %		+10	1880 000 004	3.7	0.000 000	0.002
100 %		+30	1880 000 004	3.9	0.000 000	0.002
100 %		+40	1880 000 001	1.1	0.000 000	0.001
100 %		+50	1880 000 000	-0.3	0.000 000	0.000
Batt. Endpoint	3.400	+20	1880 000 000	-0.2	0.000 000	0.000



▣ MODE: LTE B2

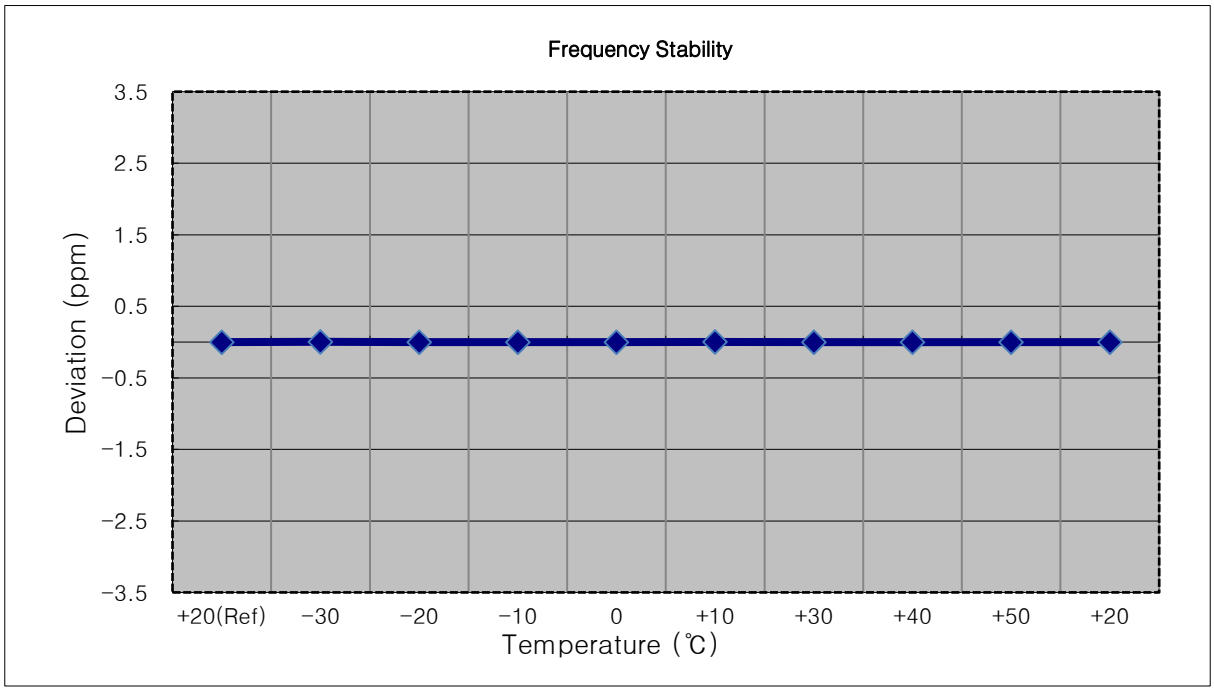
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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 000 000	0.0	0.000 000	0.000
100 %		-30	1880 000 002	2.8	0.000 000	0.001
100 %		-20	1880 000 002	2.6	0.000 000	0.001
100 %		-10	1880 000 001	1.2	0.000 000	0.001
100 %		0	1880 000 000	0.2	0.000 000	0.000
100 %		+10	1880 000 003	2.9	0.000 000	0.002
100 %		+30	1880 000 001	1.7	0.000 000	0.001
100 %		+40	1879 999 997	-2.6	0.000 000	-0.001
100 %		+50	1880 000 002	2.0	0.000 000	0.001
Batt. Endpoint	3.400	+20	1880 000 000	0.3	0.000 000	0.000



▣ MODE: LTE B2

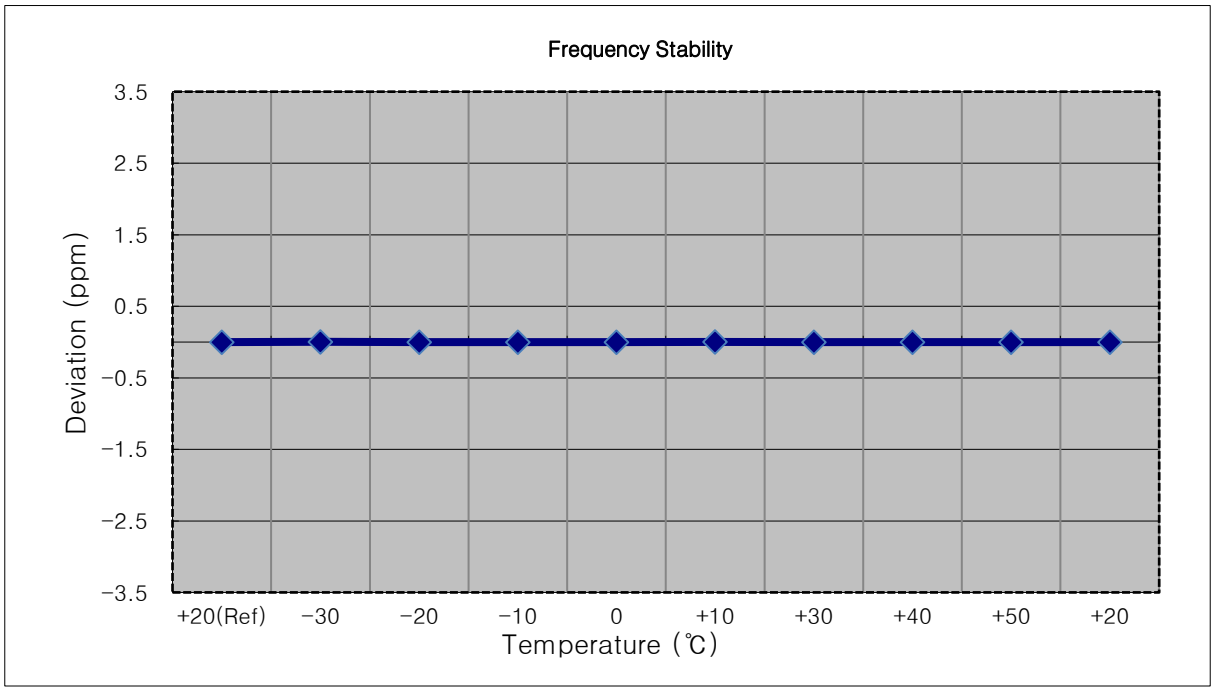
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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)	1880 000 001	0.0	0.000 000	0.000
100 %		-30	1880 000 004	2.9	0.000 000	0.002
100 %		-20	1880 000 003	2.7	0.000 000	0.001
100 %		-10	1880 000 001	0.1	0.000 000	0.000
100 %		0	1880 000 000	-0.4	0.000 000	0.000
100 %		+10	1880 000 004	3.6	0.000 000	0.002
100 %		+30	1880 000 002	0.8	0.000 000	0.000
100 %		+40	1880 000 000	-1.0	0.000 000	-0.001
100 %		+50	1880 000 001	0.6	0.000 000	0.000
Batt. Endpoint	3.400	+20	1880 000 002	0.9	0.000 000	0.000



▣ MODE: LTE B2

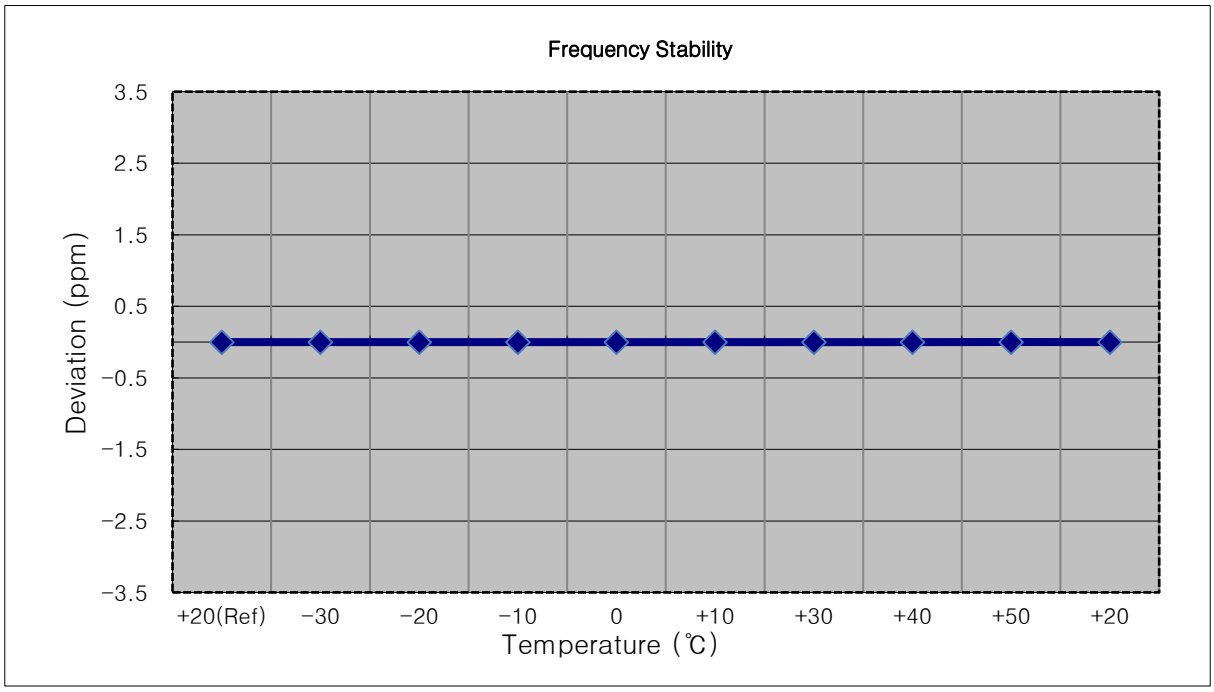
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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)	1880 000 000	0.0	0.000 000	0.000
100 %		-30	1880 000 000	-0.3	0.000 000	0.000
100 %		-20	1880 000 000	0.0	0.000 000	0.000
100 %		-10	1880 000 000	-0.7	0.000 000	0.000
100 %		0	1880 000 002	1.4	0.000 000	0.001
100 %		+10	1879 999 999	-1.1	0.000 000	-0.001
100 %		+30	1879 999 998	-2.1	0.000 000	-0.001
100 %		+40	1880 000 002	1.6	0.000 000	0.001
100 %		+50	1880 000 002	1.6	0.000 000	0.001
Batt. Endpoint	3.400	+20	1880 000 000	-0.8	0.000 000	0.000



▣ MODE: LTE B2

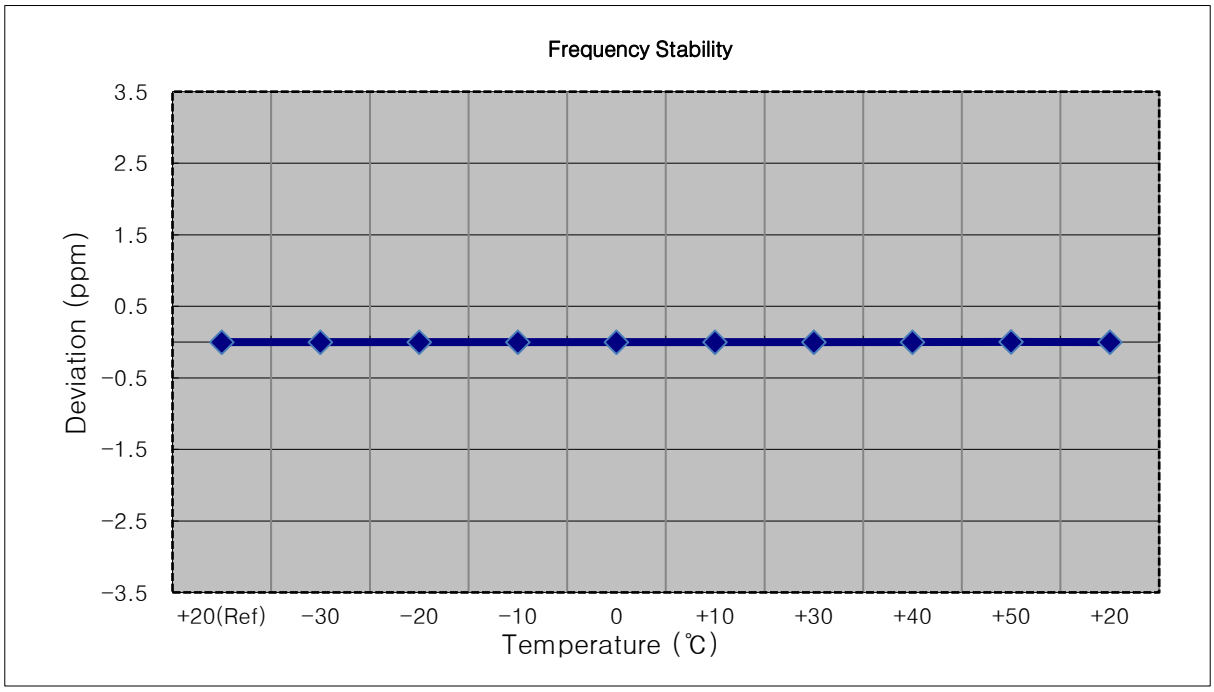
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ 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 999 998	0.0	0.000 000	0.000
100 %		-30	1880 000 000	2.1	0.000 000	0.001
100 %		-20	1879 999 999	0.7	0.000 000	0.000
100 %		-10	1879 999 999	0.8	0.000 000	0.000
100 %		0	1879 999 998	0.4	0.000 000	0.000
100 %		+10	1879 999 998	-0.3	0.000 000	0.000
100 %		+30	1879 999 999	0.6	0.000 000	0.000
100 %		+40	1879 999 998	-0.4	0.000 000	0.000
100 %		+50	1880 000 001	3.5	0.000 000	0.002
Batt. Endpoint	3.400	+20	1879 999 998	0.3	0.000 000	0.000



▣ MODE: LTE B2

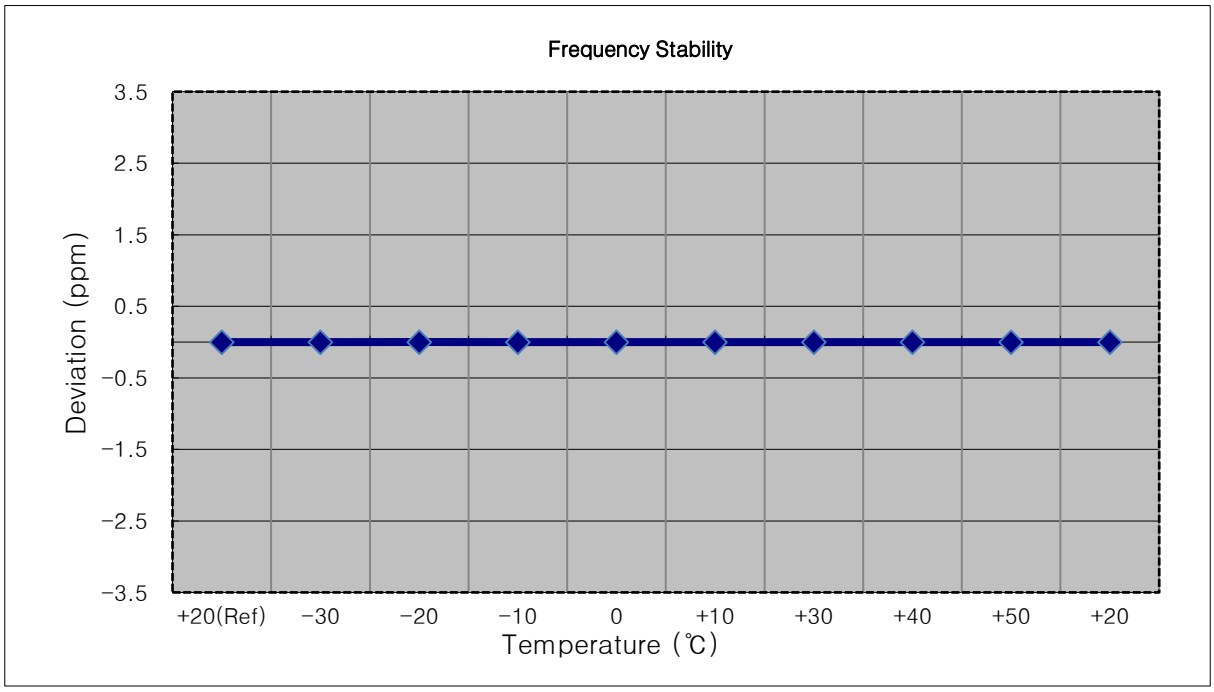
▣ OPERATING FREQUENCY: 1909,300,000 Hz

▣ 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 299 001	0.0	0.000 000	0.000
100 %		-30	1909 299 002	0.5	0.000 000	0.000
100 %		-20	1909 299 003	1.7	0.000 000	0.001
100 %		-10	1909 299 000	-1.2	0.000 000	-0.001
100 %		0	1909 299 000	-0.6	0.000 000	0.000
100 %		+10	1909 299 001	-0.1	0.000 000	0.000
100 %		+30	1909 299 000	-0.5	0.000 000	0.000
100 %		+40	1909 299 002	1.2	0.000 000	0.001
100 %		+50	1909 299 003	1.5	0.000 000	0.001
Batt. Endpoint	3.400	+20	1909 299 000	-1.4	0.000 000	-0.001



▣ MODE: LTE B2

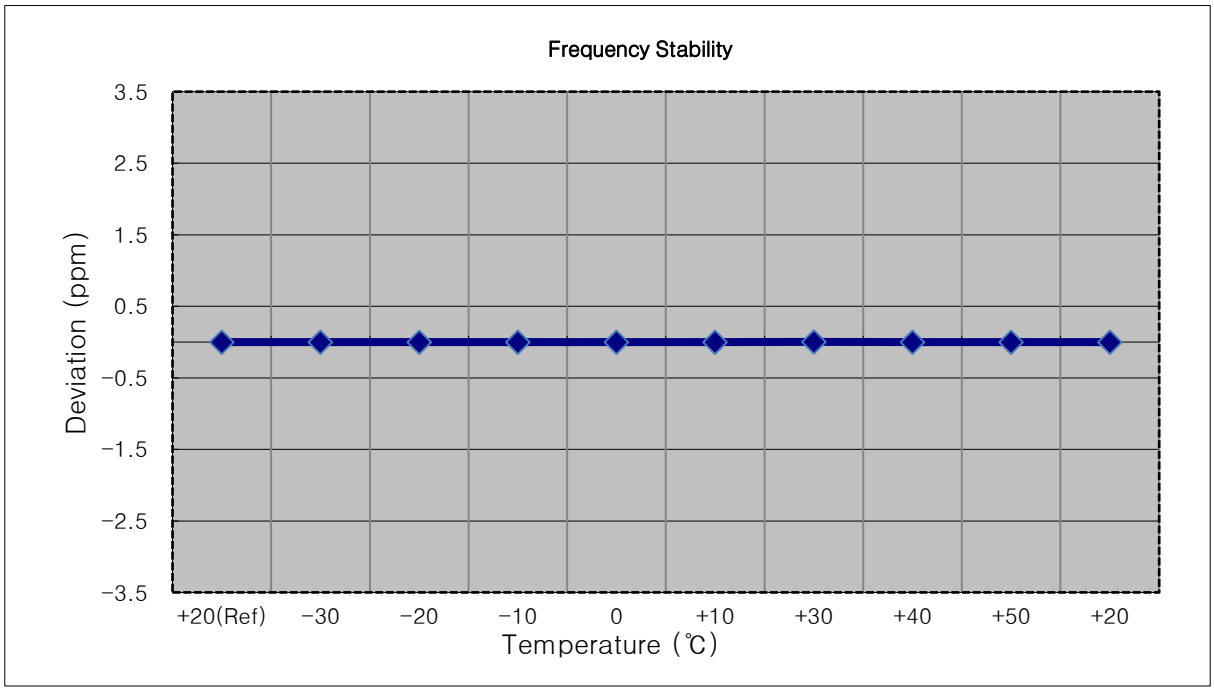
▣ OPERATING FREQUENCY: 1908,500,000 Hz

▣ 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 500 000	0.0	0.000 000	0.000
100 %		-30	1908 499 999	-1.0	0.000 000	-0.001
100 %		-20	1908 499 999	-1.1	0.000 000	-0.001
100 %		-10	1908 500 001	0.5	0.000 000	0.000
100 %		0	1908 500 002	1.2	0.000 000	0.001
100 %		+10	1908 500 001	0.5	0.000 000	0.000
100 %		+30	1908 500 005	4.8	0.000 000	0.003
100 %		+40	1908 500 001	0.9	0.000 000	0.000
100 %		+50	1908 500 000	0.1	0.000 000	0.000
Batt. Endpoint	3.400	+20	1908 500 000	-0.6	0.000 000	0.000



▣ MODE: LTE B2

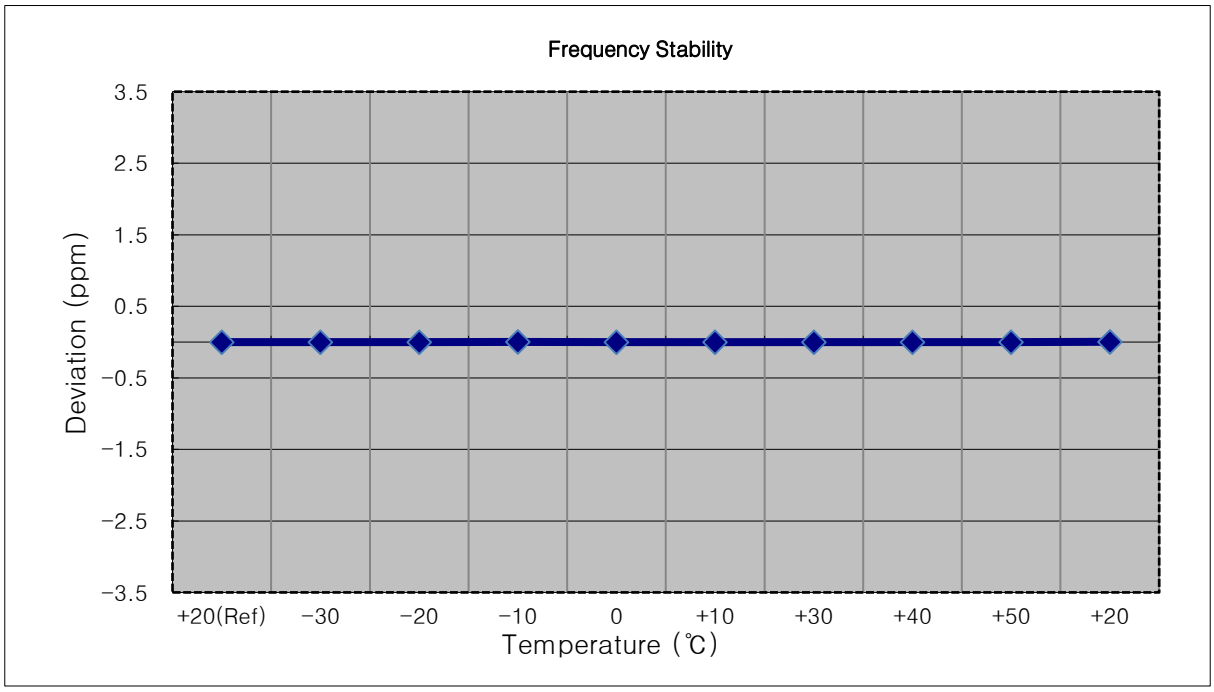
▣ OPERATING FREQUENCY: 1907,500,000 Hz

▣ 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 500 002	0.0	0.000 000	0.000
100 %		-30	1907 500 001	-1.1	0.000 000	-0.001
100 %		-20	1907 500 003	0.4	0.000 000	0.000
100 %		-10	1907 500 006	3.4	0.000 000	0.002
100 %		0	1907 500 002	-0.4	0.000 000	0.000
100 %		+10	1907 500 000	-2.3	0.000 000	-0.001
100 %		+30	1907 500 002	-0.5	0.000 000	0.000
100 %		+40	1907 500 002	0.1	0.000 000	0.000
100 %		+50	1907 500 004	1.3	0.000 000	0.001
Batt. Endpoint	3.400	+20	1907 500 005	2.9	0.000 000	0.002



▣ MODE: LTE B2

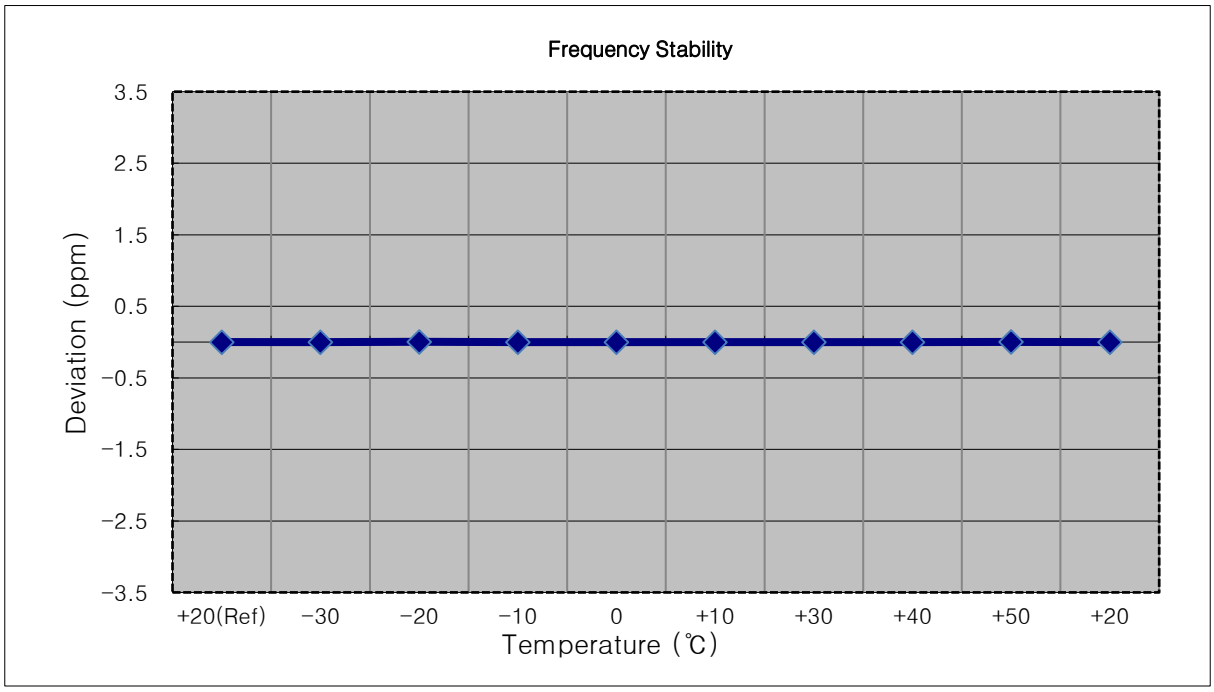
▣ OPERATING FREQUENCY: 1905,000,000 Hz

▣ 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)	1905 000 002	0.0	0.000 000	0.000
100 %		-30	1905 000 002	0.4	0.000 000	0.000
100 %		-20	1905 000 005	2.9	0.000 000	0.002
100 %		-10	1905 000 003	0.9	0.000 000	0.000
100 %		0	1905 000 004	2.2	0.000 000	0.001
100 %		+10	1905 000 002	0.2	0.000 000	0.000
100 %		+30	1905 000 002	0.5	0.000 000	0.000
100 %		+40	1905 000 003	1.1	0.000 000	0.001
100 %		+50	1905 000 005	3.5	0.000 000	0.002
Batt. Endpoint	3.400	+20	1905 000 004	2.2	0.000 000	0.001



▣ MODE: LTE B2

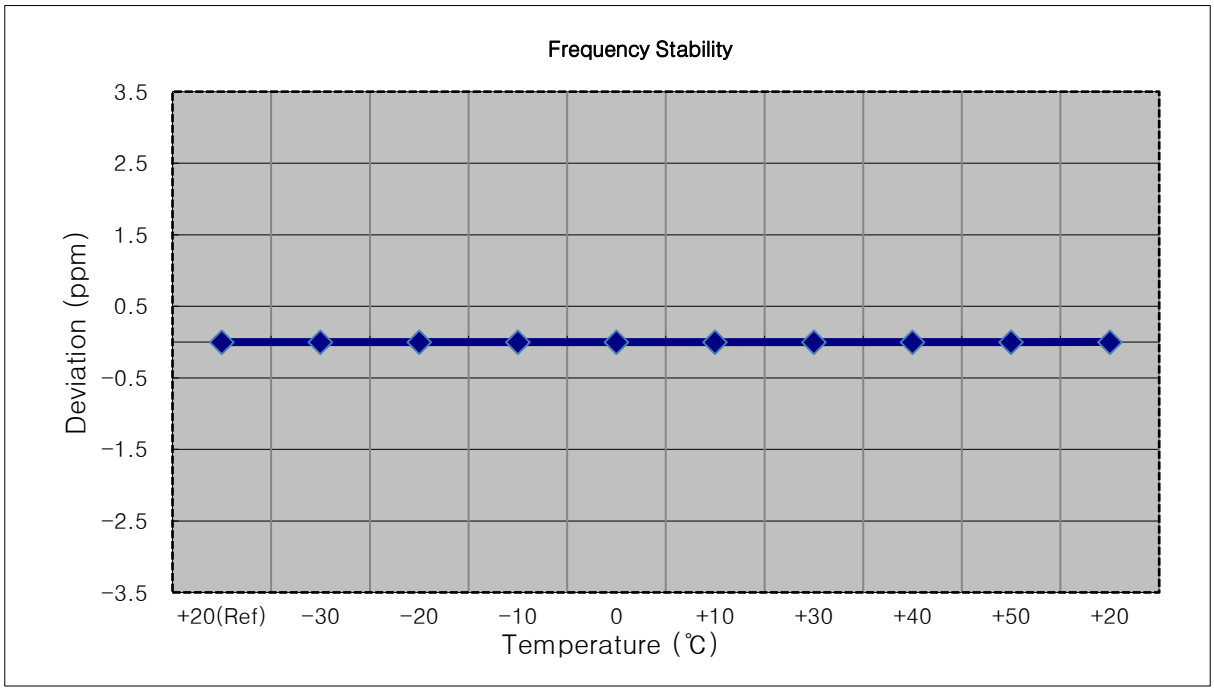
▣ OPERATING FREQUENCY: 1902,500,000 Hz

▣ 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 500 001	0.0	0.000 000	0.000
100 %		-30	1902 500 000	-0.9	0.000 000	0.000
100 %		-20	1902 500 000	-0.7	0.000 000	0.000
100 %		-10	1902 500 001	0.1	0.000 000	0.000
100 %		0	1902 500 001	0.3	0.000 000	0.000
100 %		+10	1902 499 999	-2.1	0.000 000	-0.001
100 %		+30	1902 500 003	1.7	0.000 000	0.001
100 %		+40	1902 500 001	-0.3	0.000 000	0.000
100 %		+50	1902 500 002	1.4	0.000 000	0.001
Batt. Endpoint	3.400	+20	1902 500 003	2.3	0.000 000	0.001



▣ MODE: LTE B2

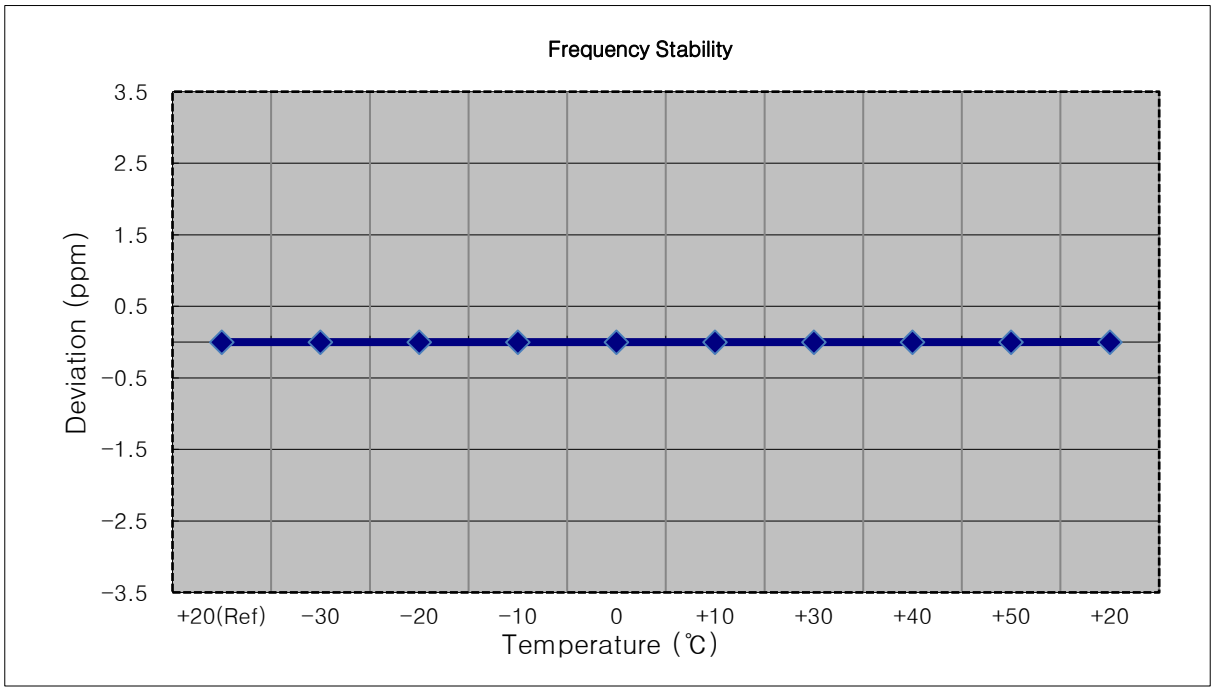
▣ OPERATING FREQUENCY: 1900,000,000 Hz

▣ CHANNEL: 19100 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

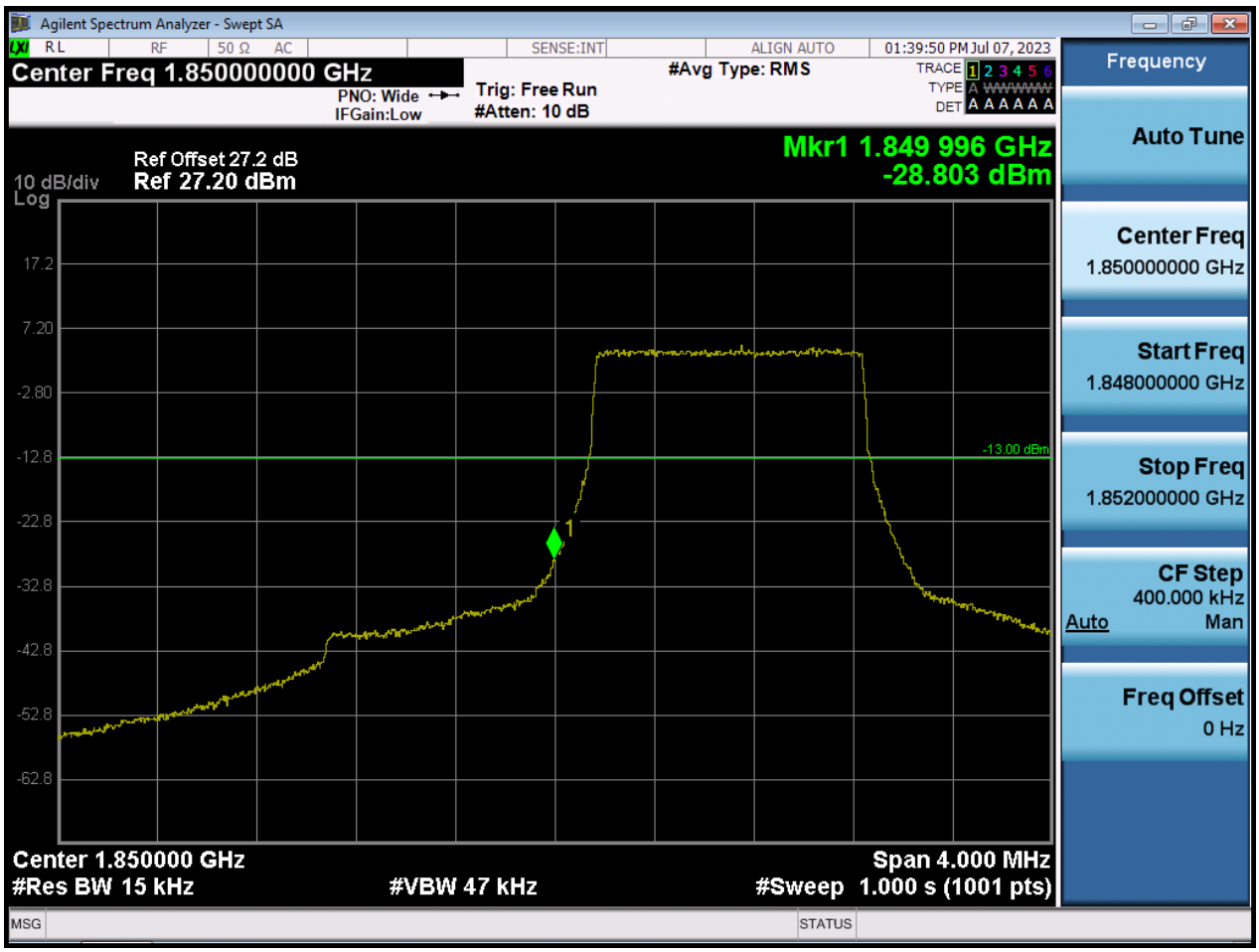
▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1899 999 998	0.0	0.000 000	0.000
100 %		-30	1900 000 000	2.4	0.000 000	0.001
100 %		-20	1899 999 999	1.8	0.000 000	0.001
100 %		-10	1899 999 996	-1.5	0.000 000	-0.001
100 %		0	1899 999 998	0.6	0.000 000	0.000
100 %		+10	1899 999 999	0.9	0.000 000	0.000
100 %		+30	1899 999 998	0.1	0.000 000	0.000
100 %		+40	1899 999 997	-0.9	0.000 000	0.000
100 %		+50	1899 999 999	1.4	0.000 000	0.001
Batt. Endpoint	3.400	+20	1900 000 000	2.4	0.000 000	0.001

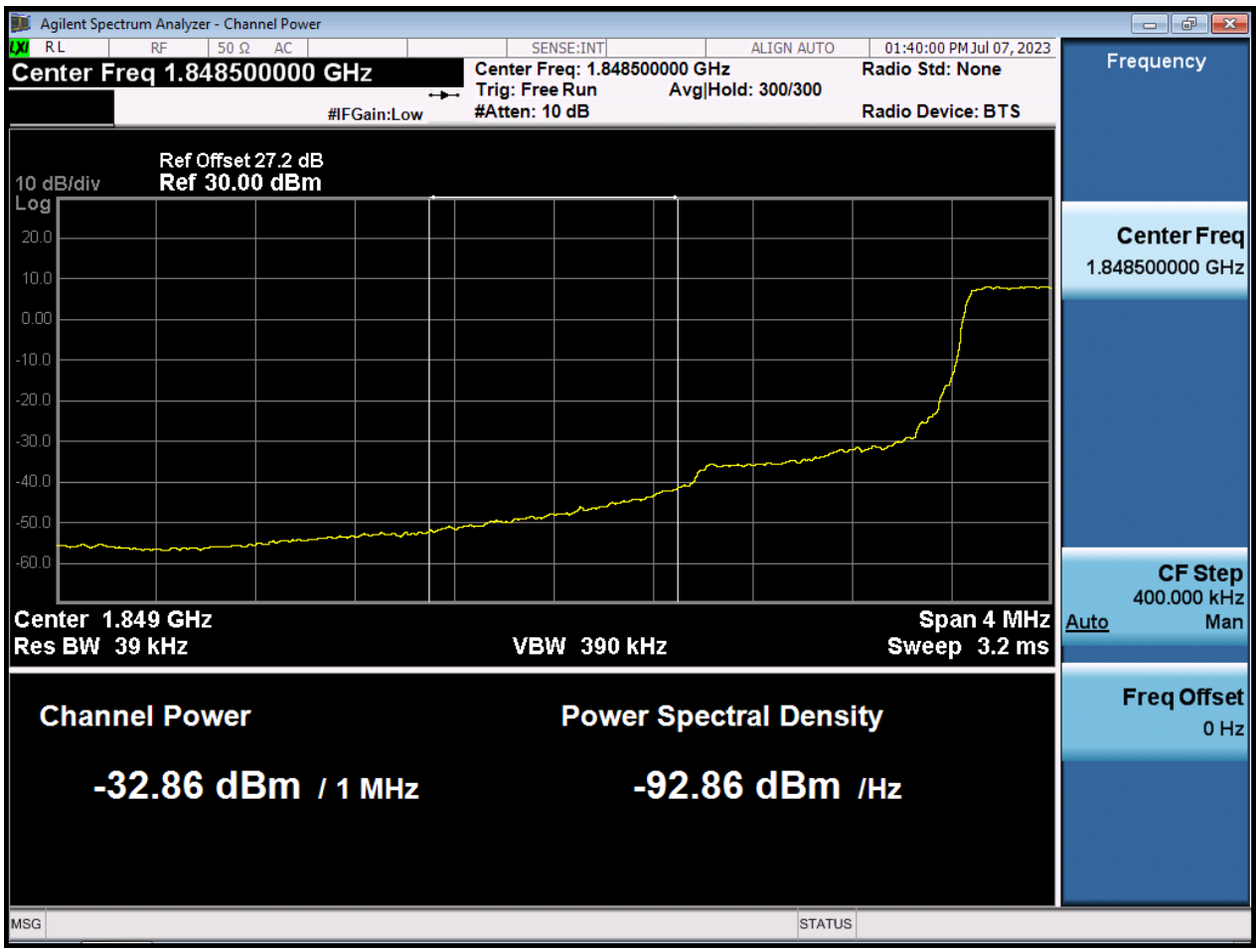


10. TEST PLOTS (Main 1 Ant)

BW1.4 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

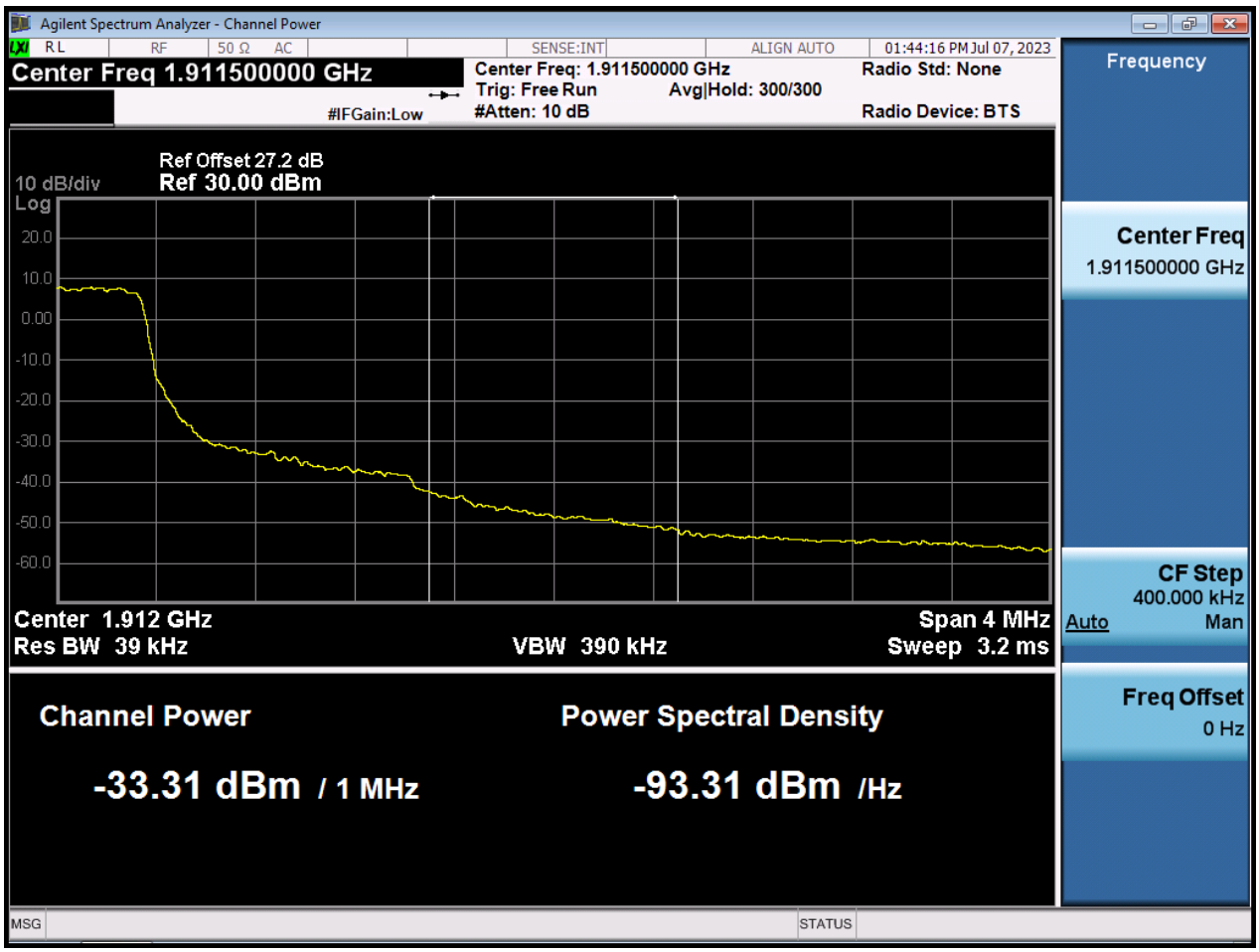


BW1.4 M_BandEdge_Lowest Channel_QPSK_FullRB(2)

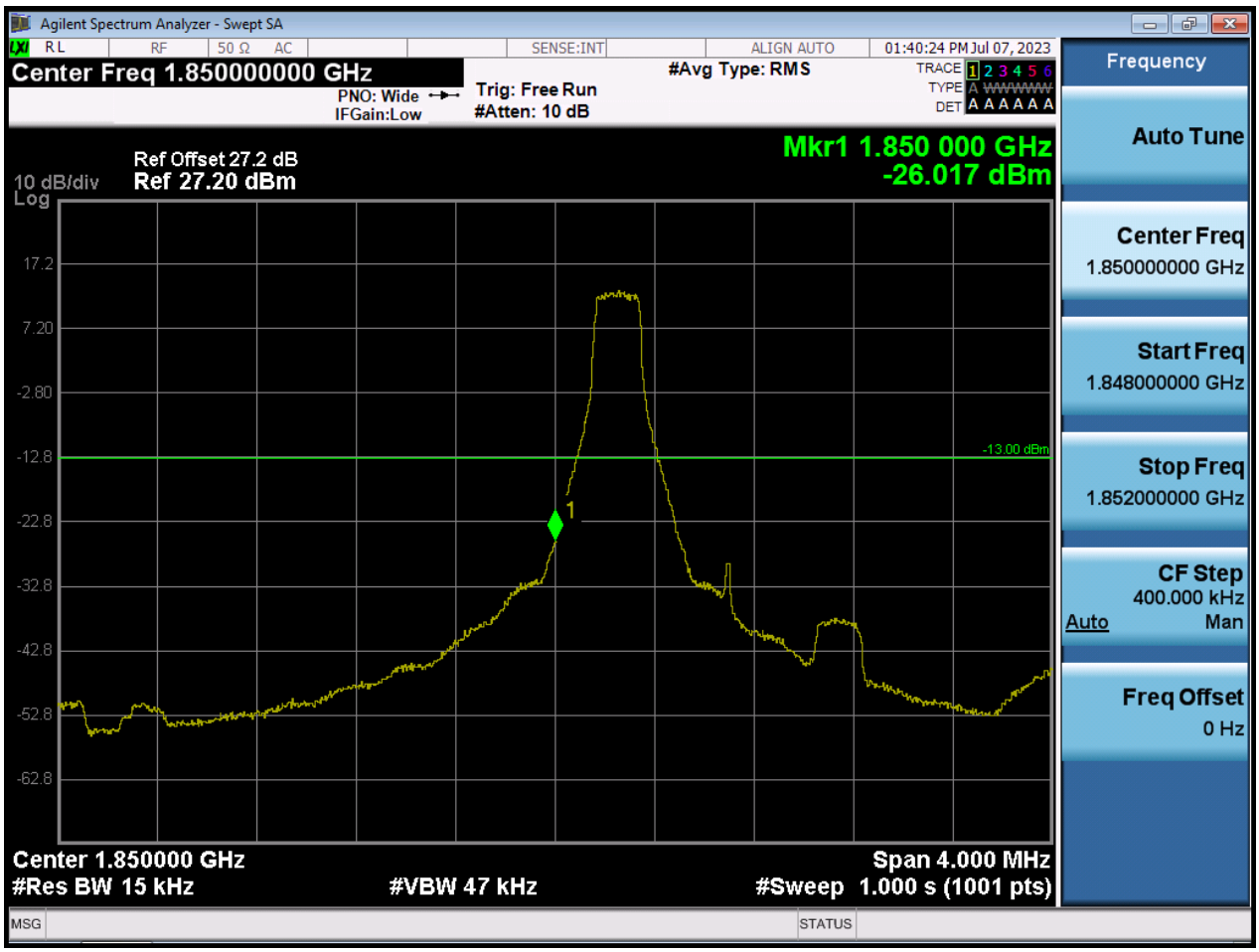


BW1.4 M_BandEdge_Highest Channel_QPSK_FullRB(1)

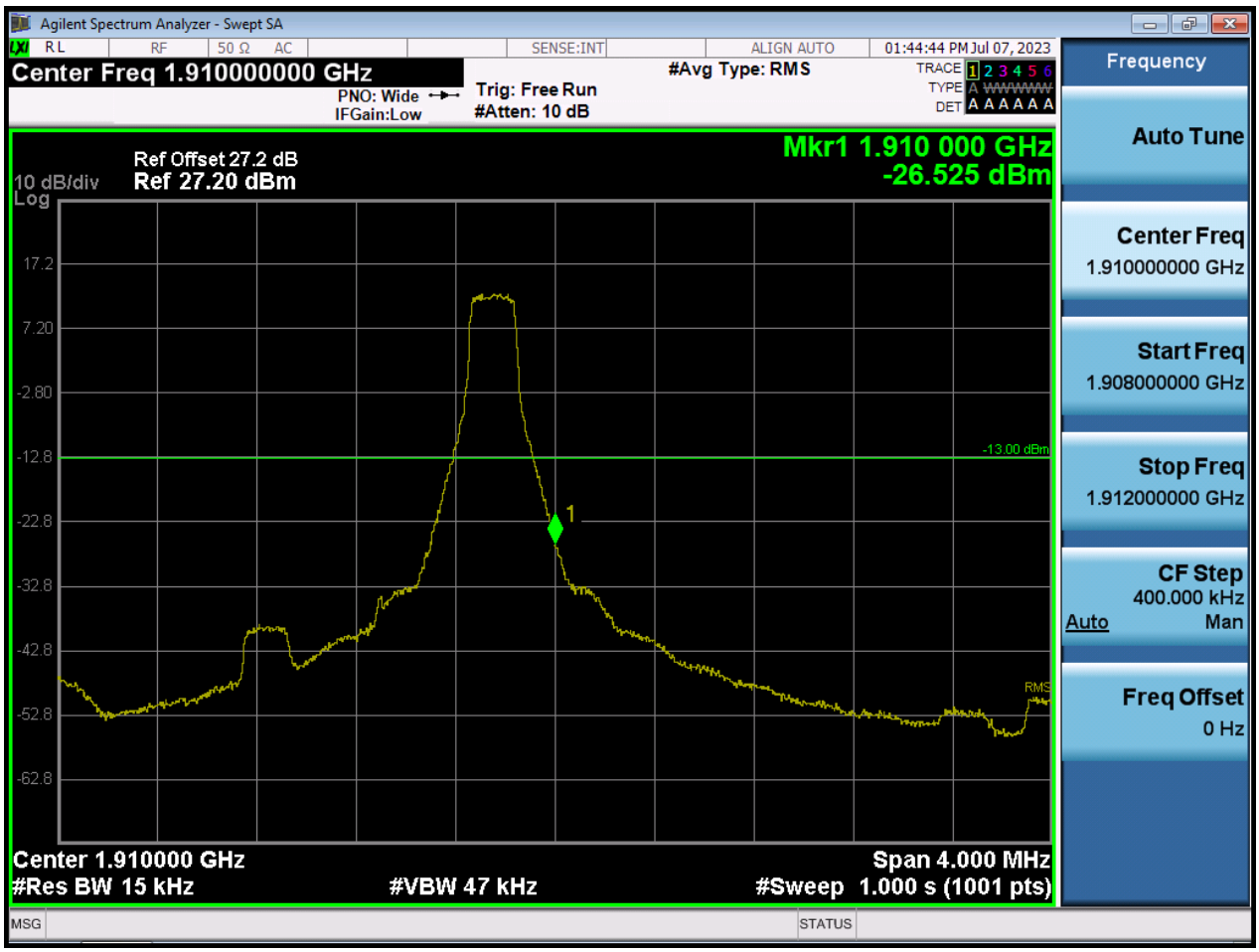
BW1.4 M_BandEdge_Highest Channel_QPSK_FullRB(2)



BW1.4 M_BandEdge_Lowest Channel_QPSK_1RB

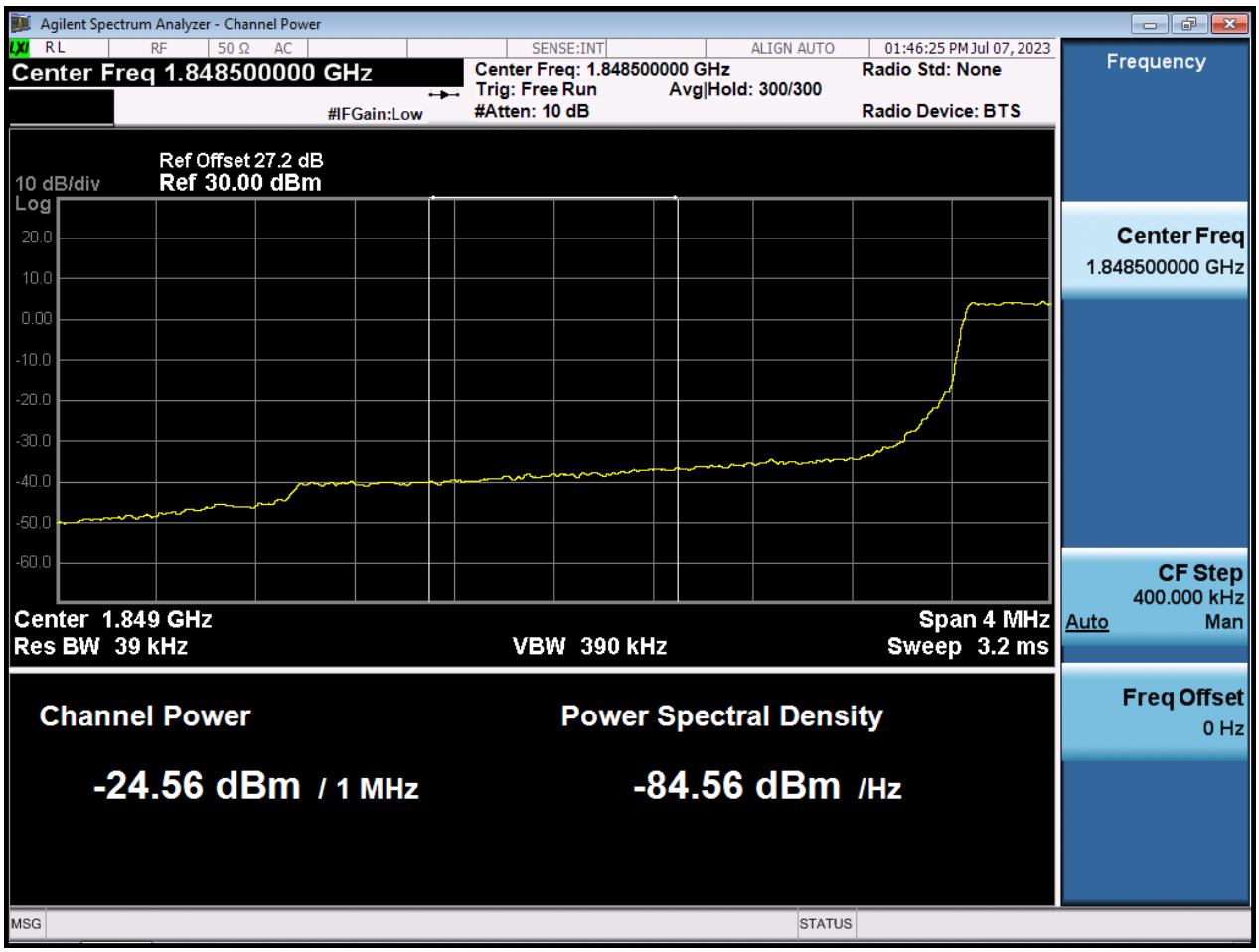


BW1.4 M_BandEdge_Highest Channel_QPSK_1RB



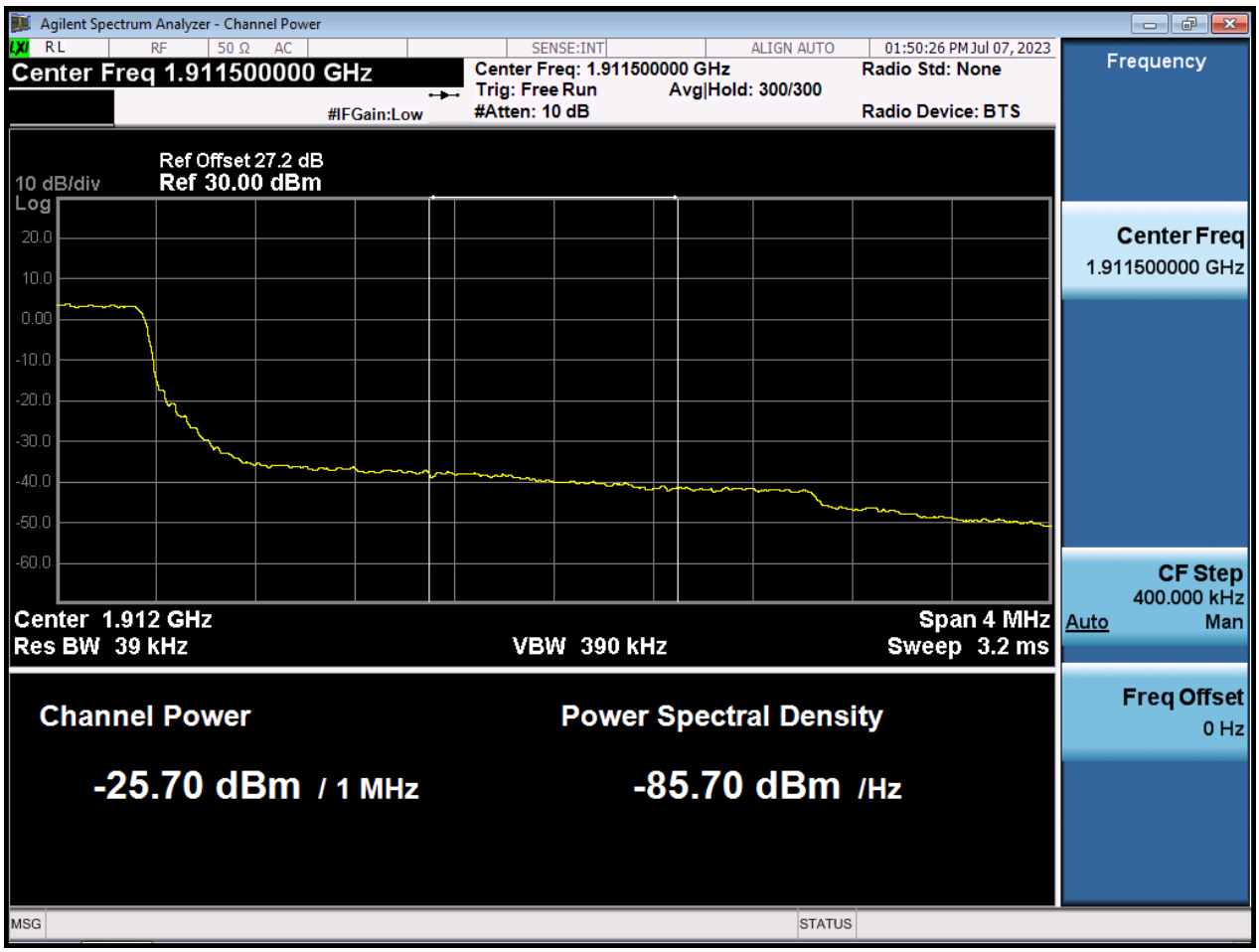
BW3 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW3 M_BandEdge_Lowest Channel_QPSK_FullRB(2)

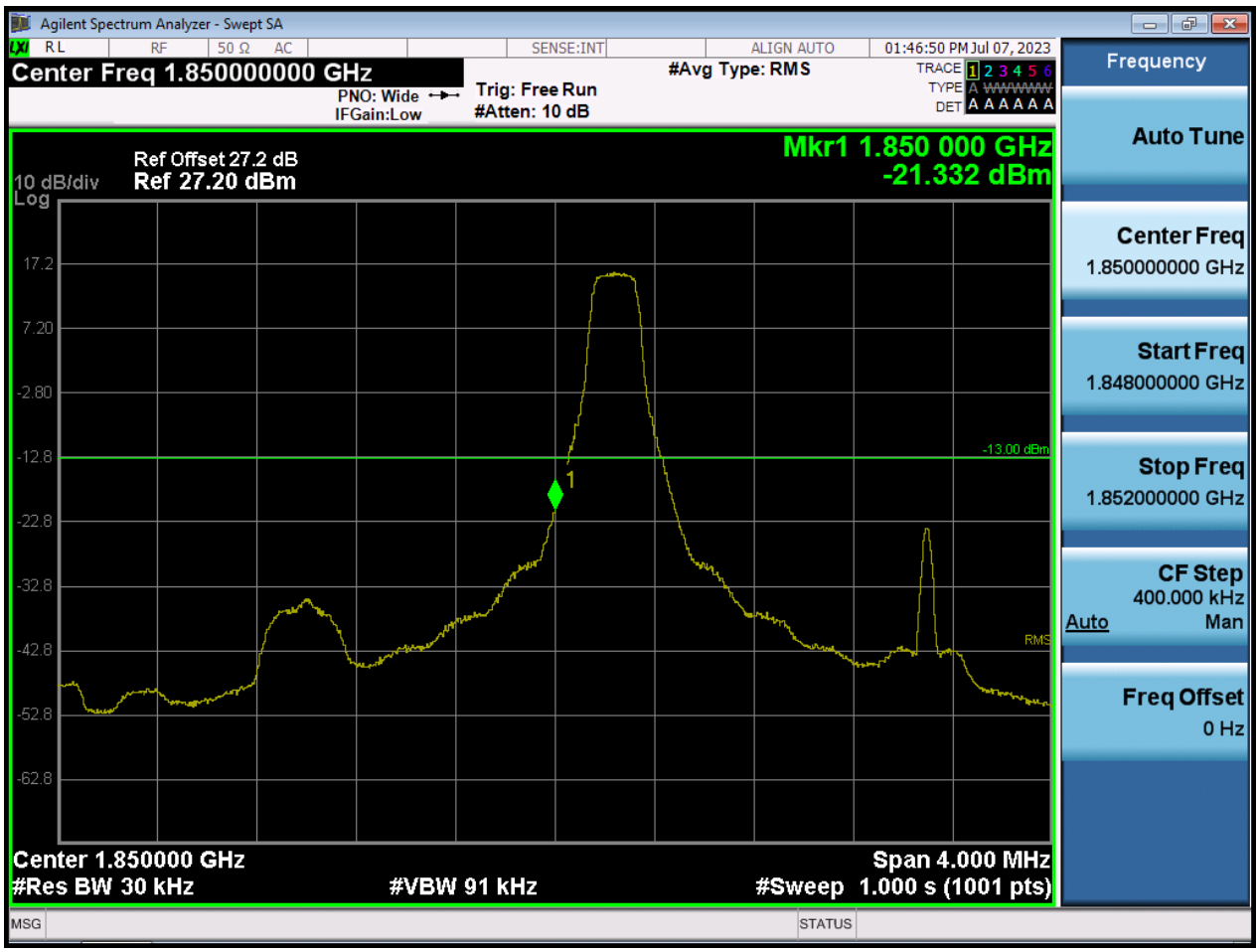


BW3 M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW3 M_BandEdge_Highest Channel_QPSK_FullRB(2)



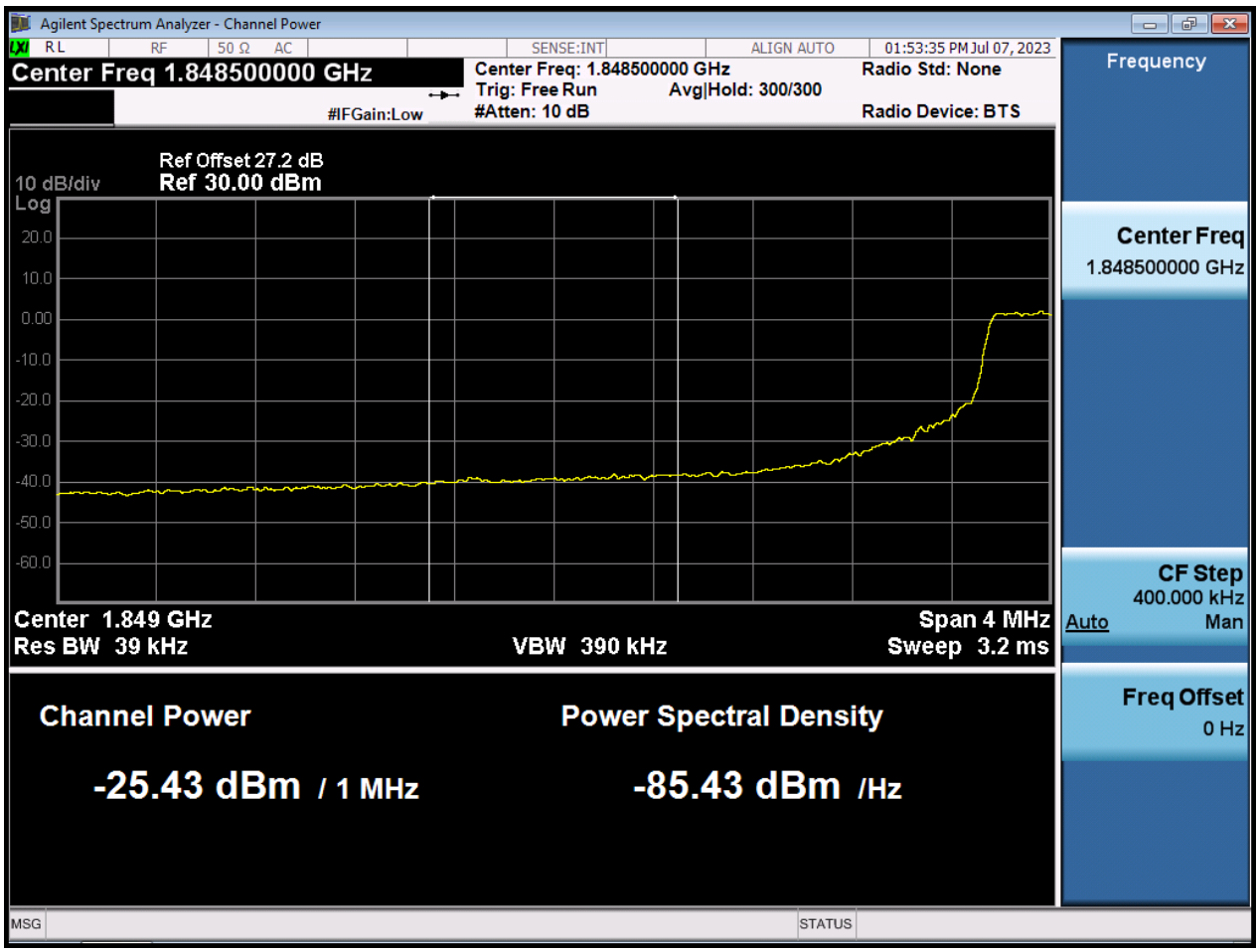
BW3 M_BandEdge_Lowest Channel_QPSK_1RB



BW3 M_BandEdge_Highest Channel_QPSK_1RB

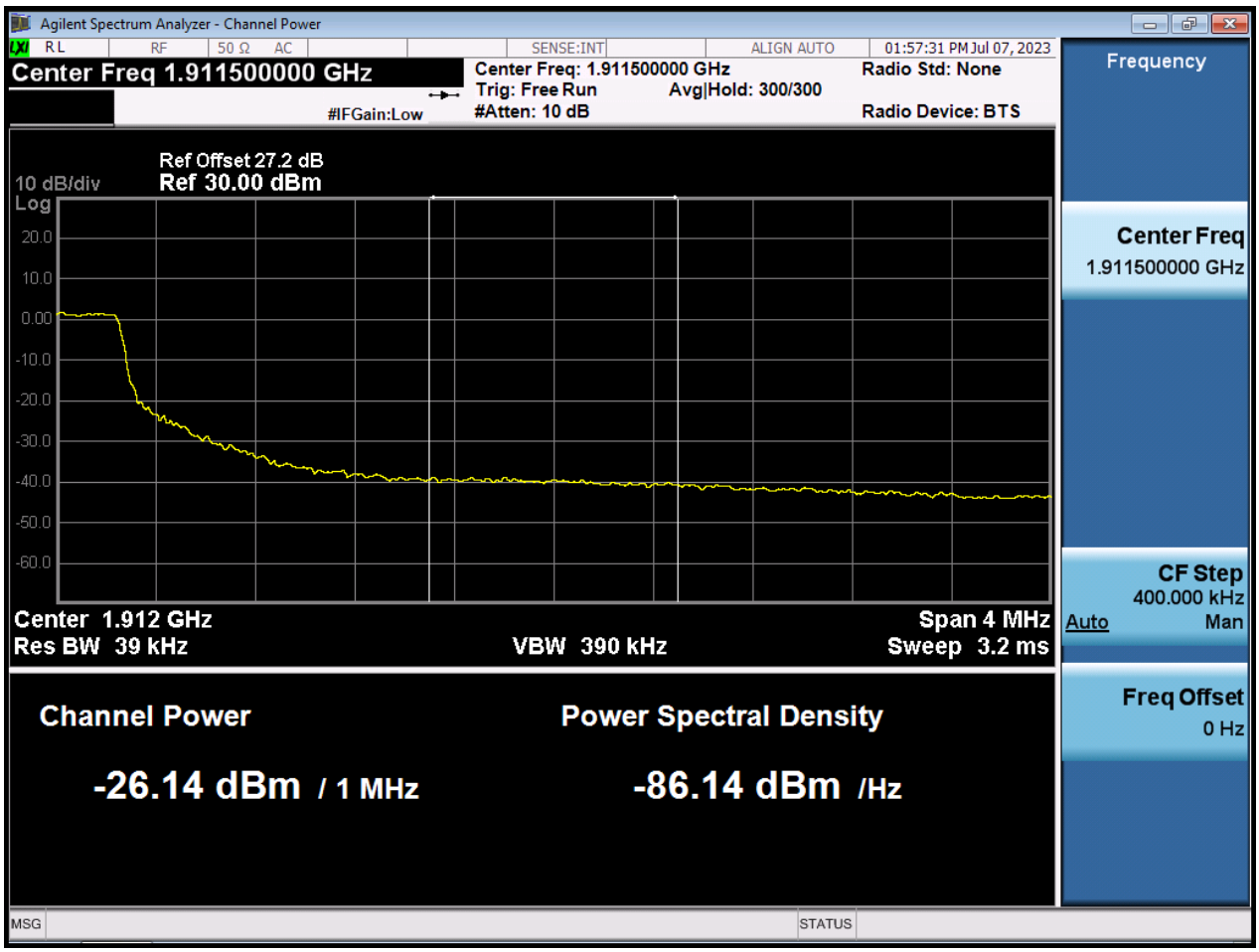
BW5 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW5 M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW5 M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW5 M_BandEdge_Highest Channel_QPSK_FullRB(2)

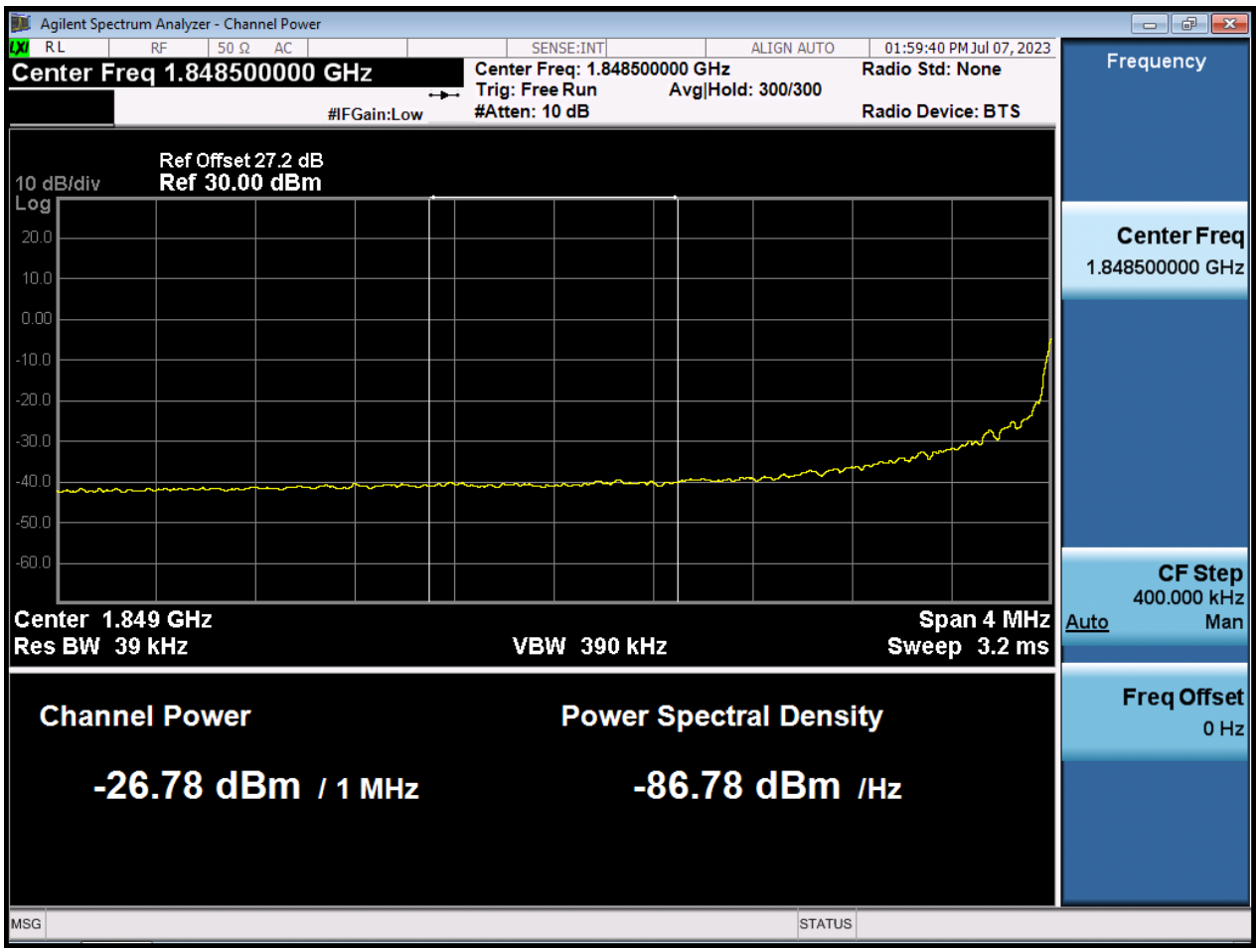


BW5 M_BandEdge_Lowest Channel_QPSK_1RB

BW5 M_BandEdge_Highest Channel_QPSK_1RB

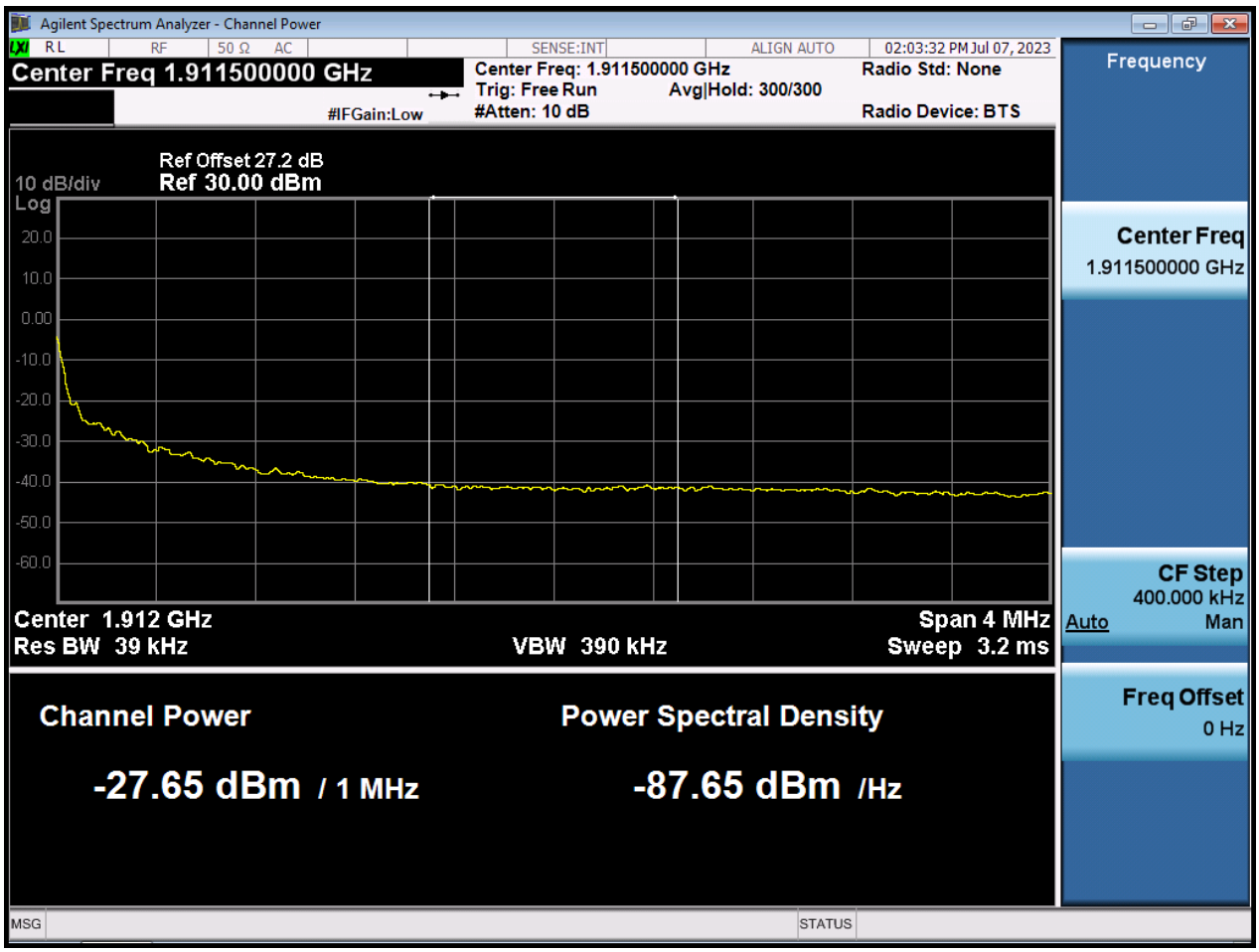
BW10 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW10 M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW10 M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW10 M_BandEdge_Highest Channel_QPSK_FullRB(2)

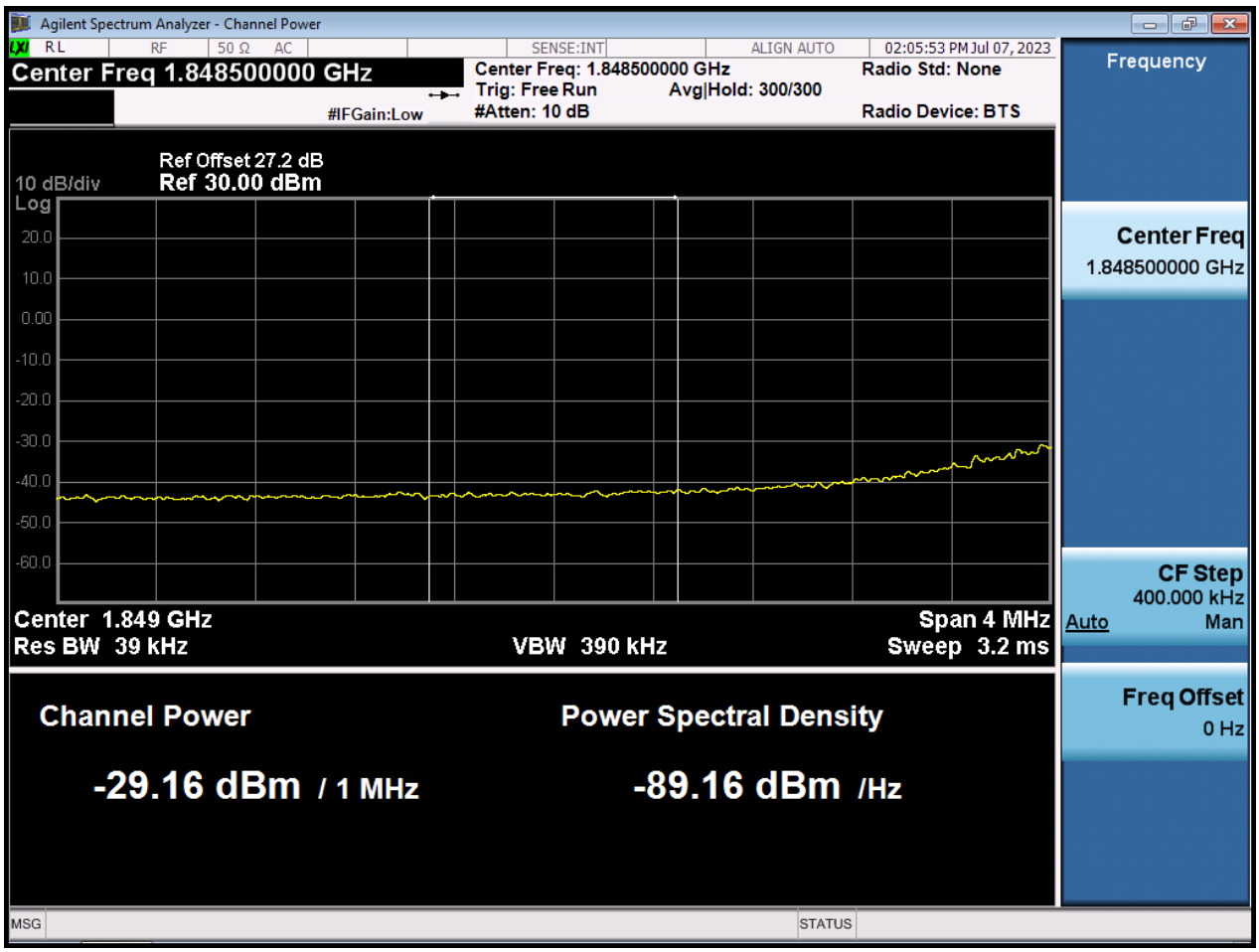


BW10 M_BandEdge_Lowest Channel_QPSK_1RB

BW10 M_BandEdge_Highest Channel_QPSK_1RB

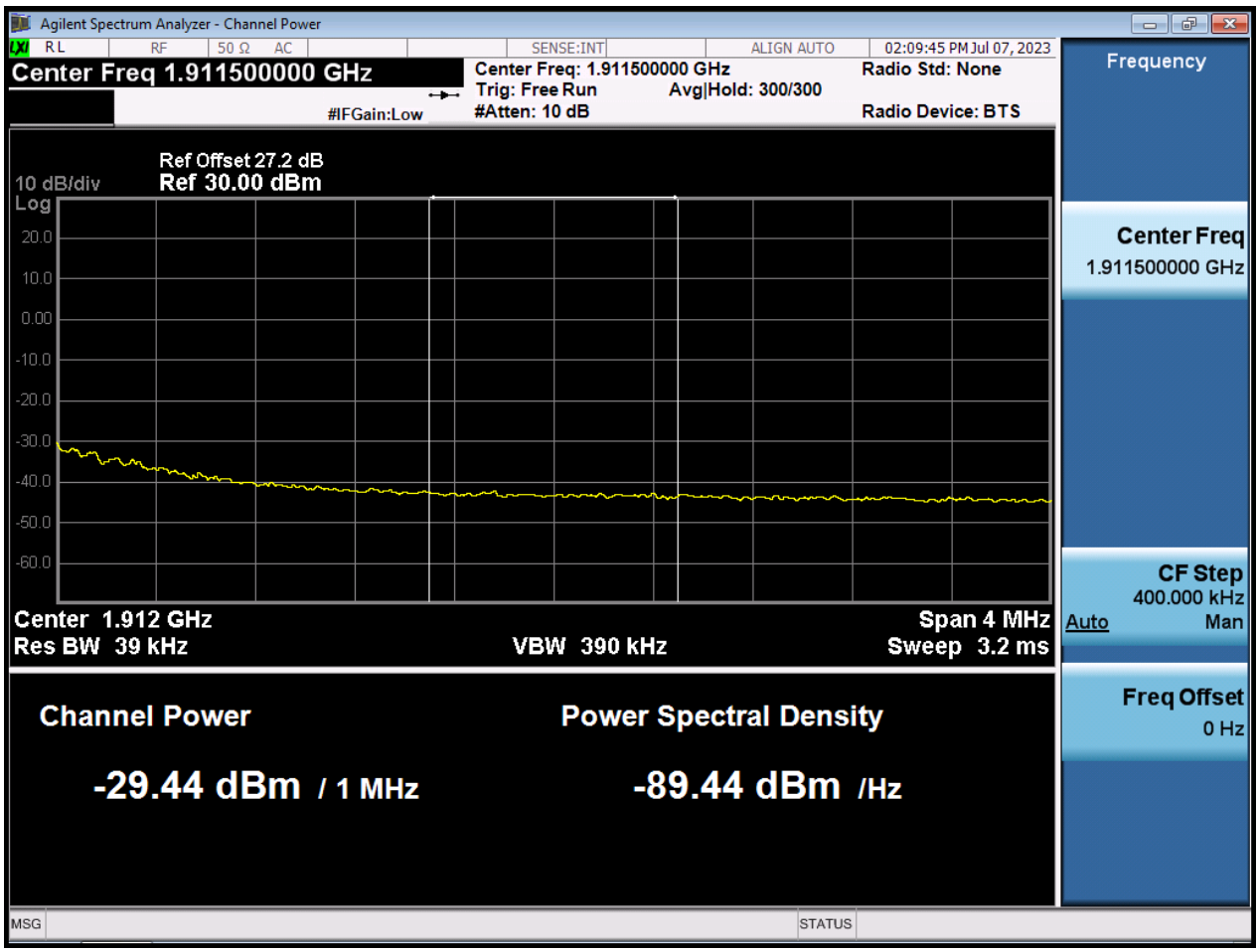
BW15 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW15 M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW15 M_BandEdge_Highest Channel_QPSK_FullRB(1)

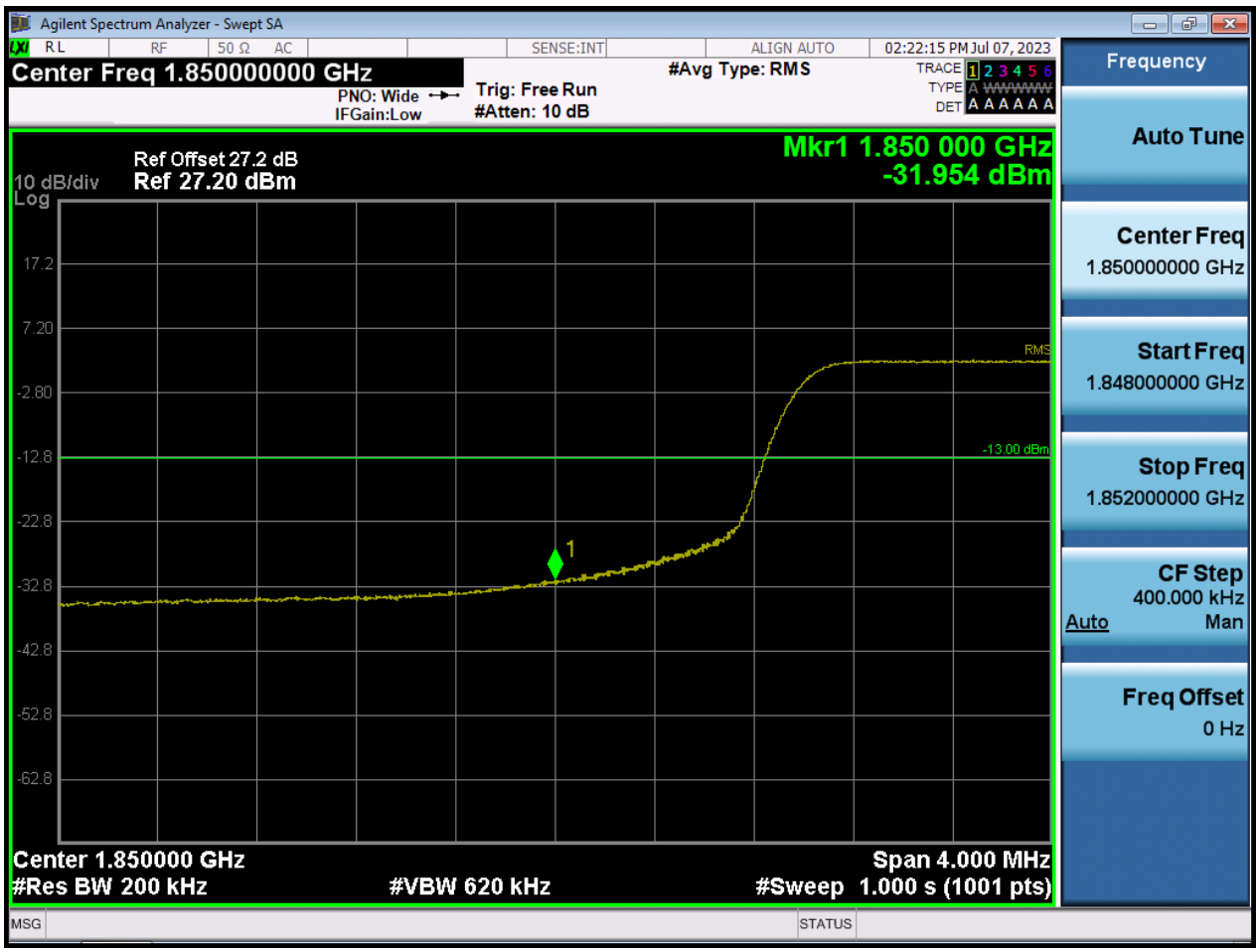
BW15 M_BandEdge_Highest Channel_QPSK_FullRB(2)



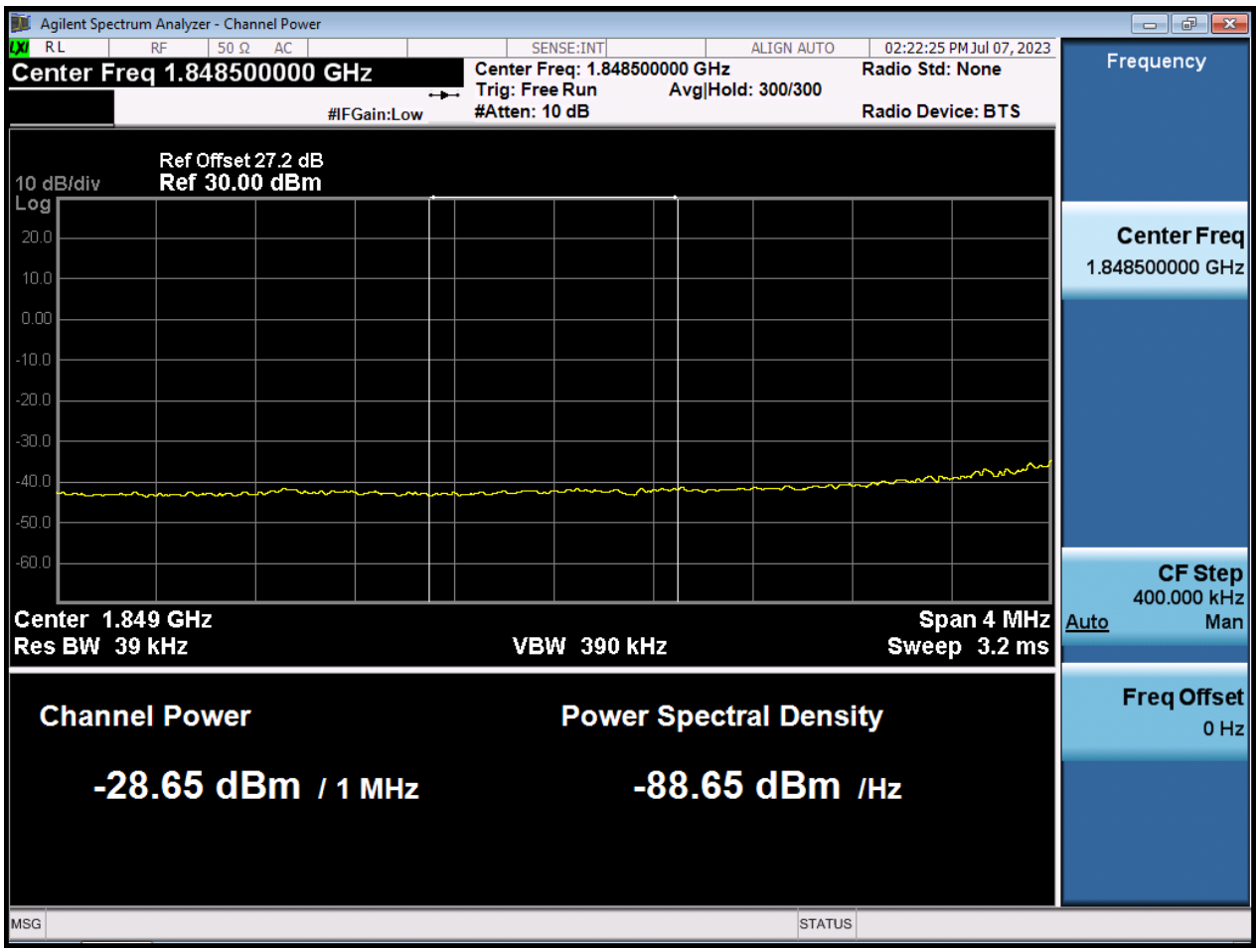
BW15 M_BandEdge_Lowest Channel_QPSK_1RB

BW15 M_BandEdge_Highest Channel_QPSK_1RB

BW20 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

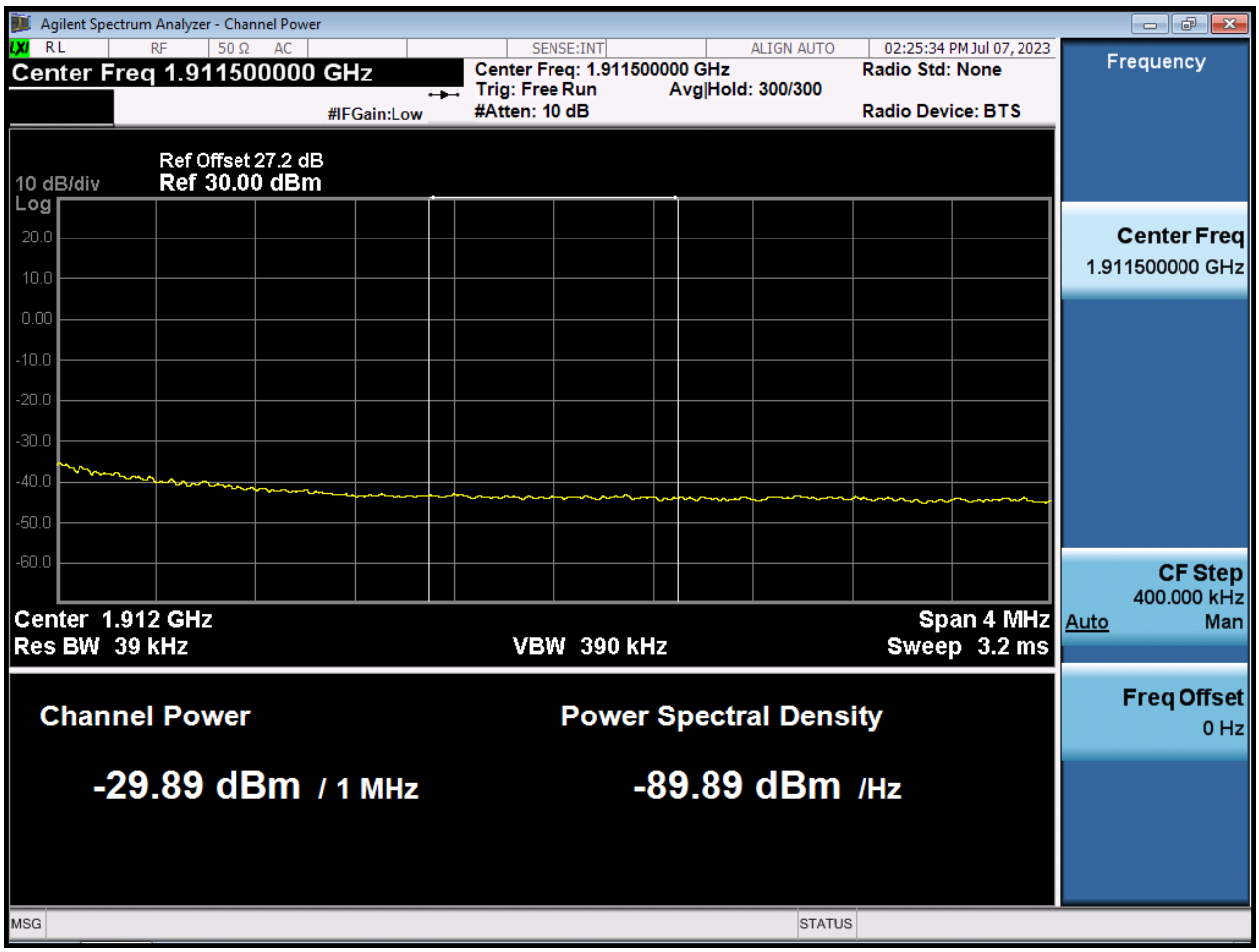


BW20 M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW20 M_BandEdge_Highest Channel_QPSK_FullRB(1)

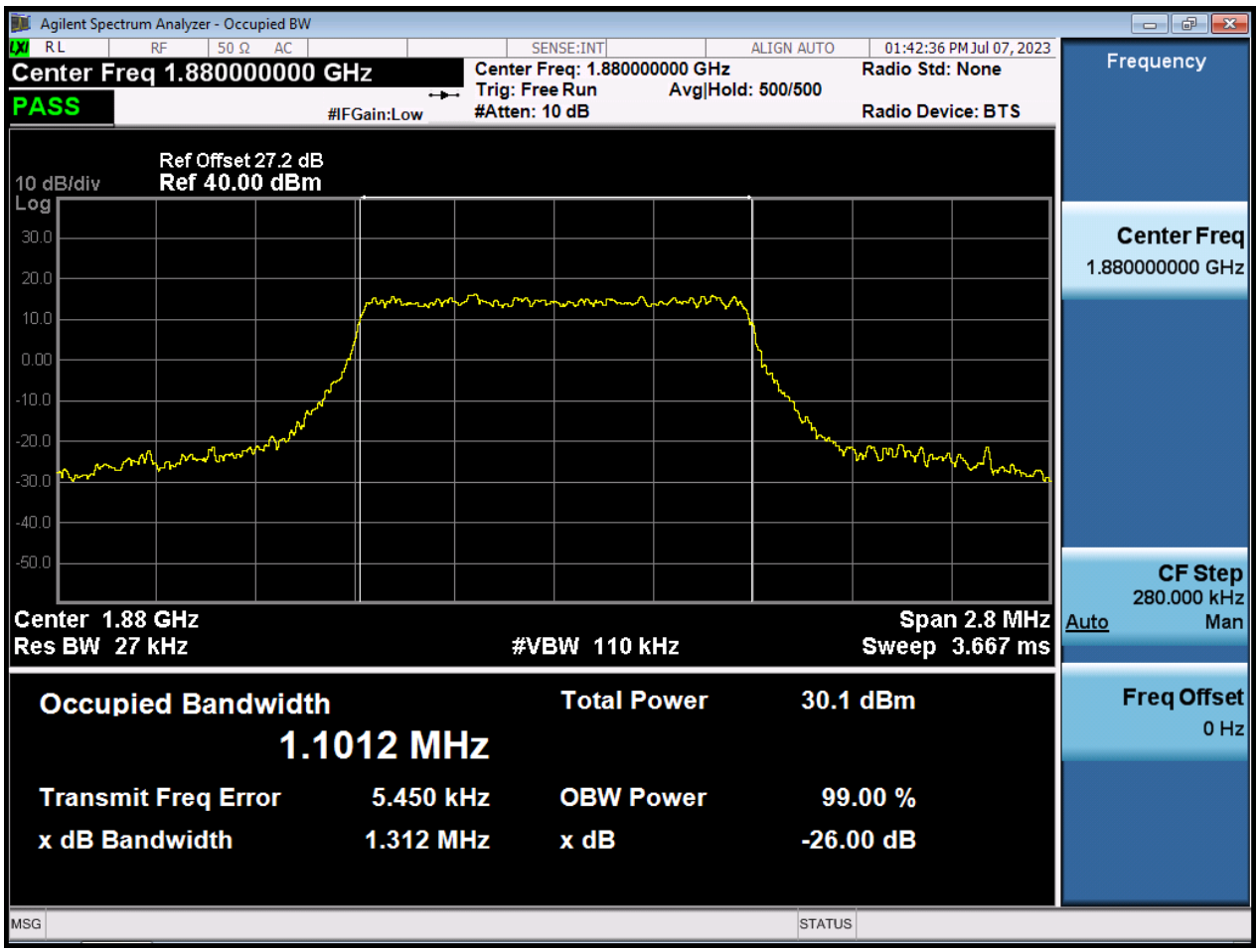
BW20 M_BandEdge_Highest Channel_QPSK_FullRB(2)



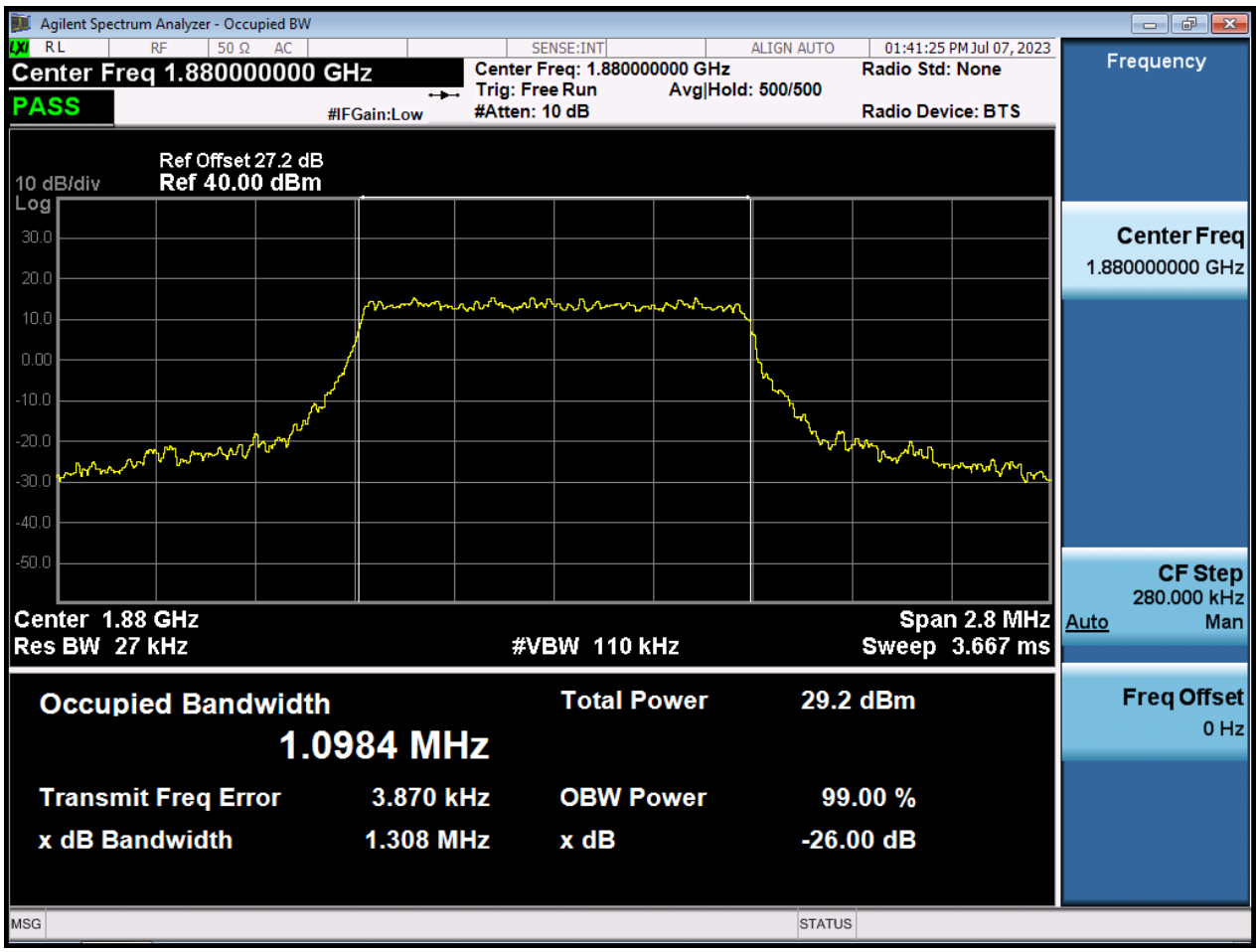
BW20 M_BandEdge_Lowest Channel_QPSK_1RB

BW20 M_BandEdge_Highest Channel_QPSK_1RB

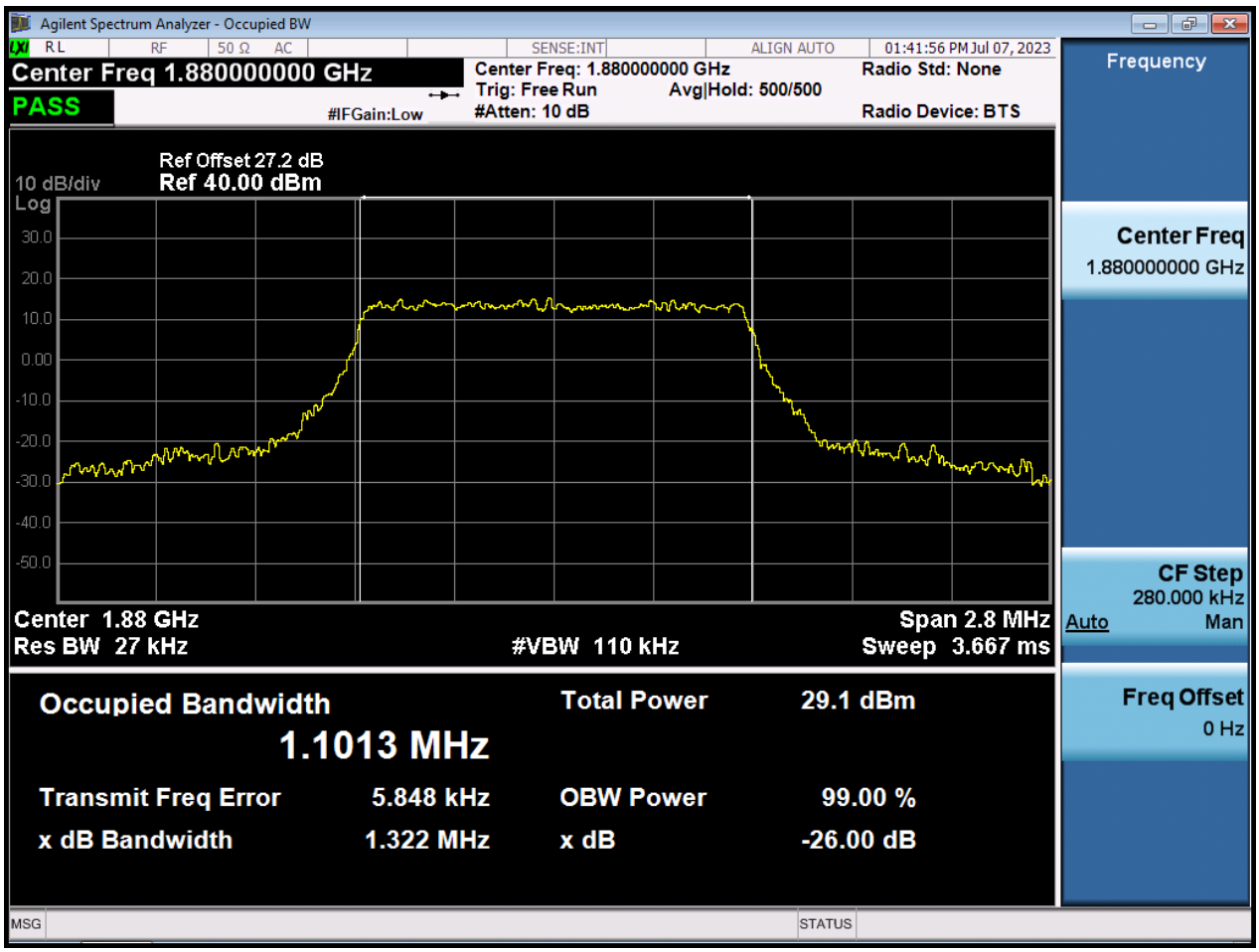
BW1.4 M_OBW_Middle Channel_QPSK_FullRB



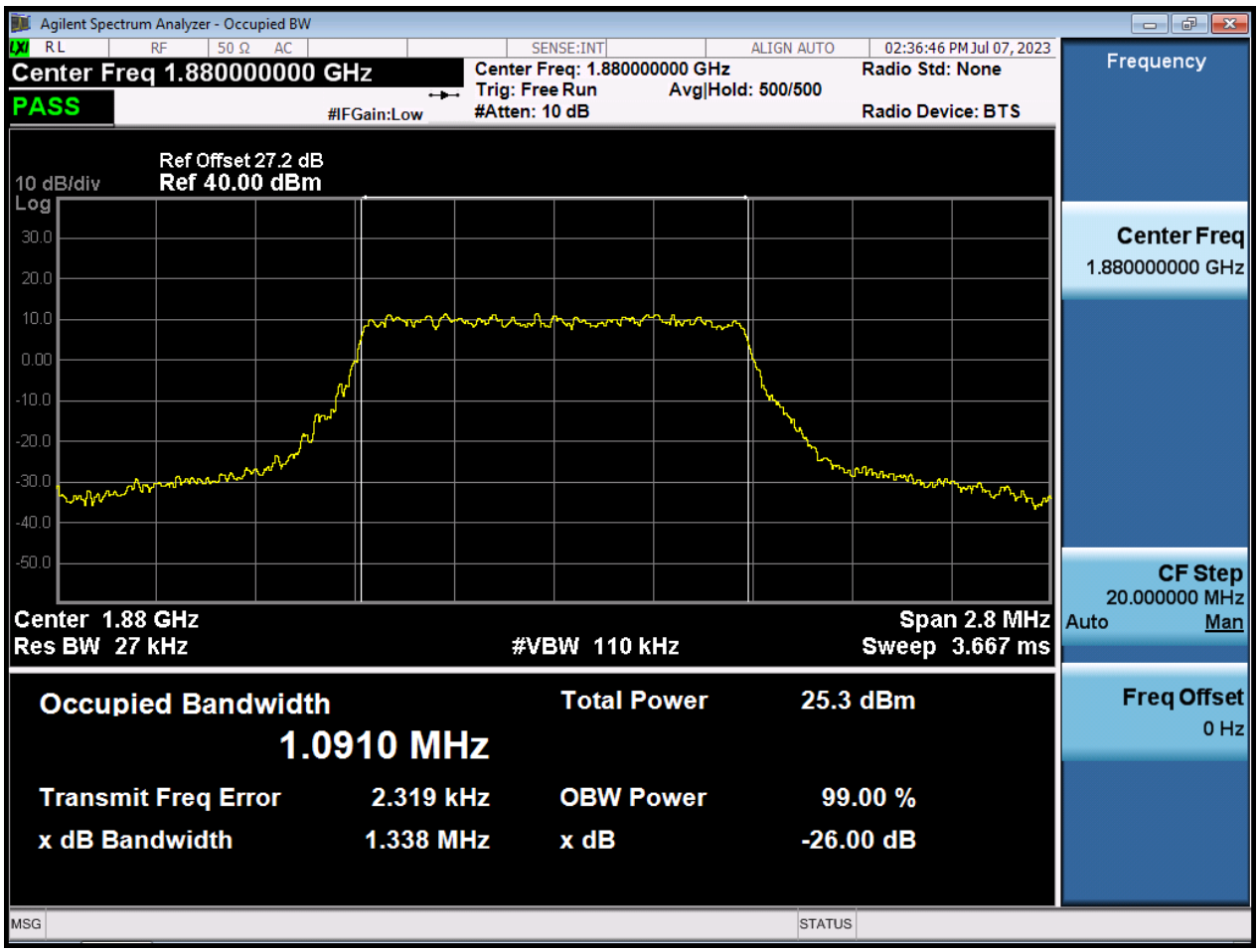
BW1.4 M_OBW_Middle Channel_16QAM_FullRB



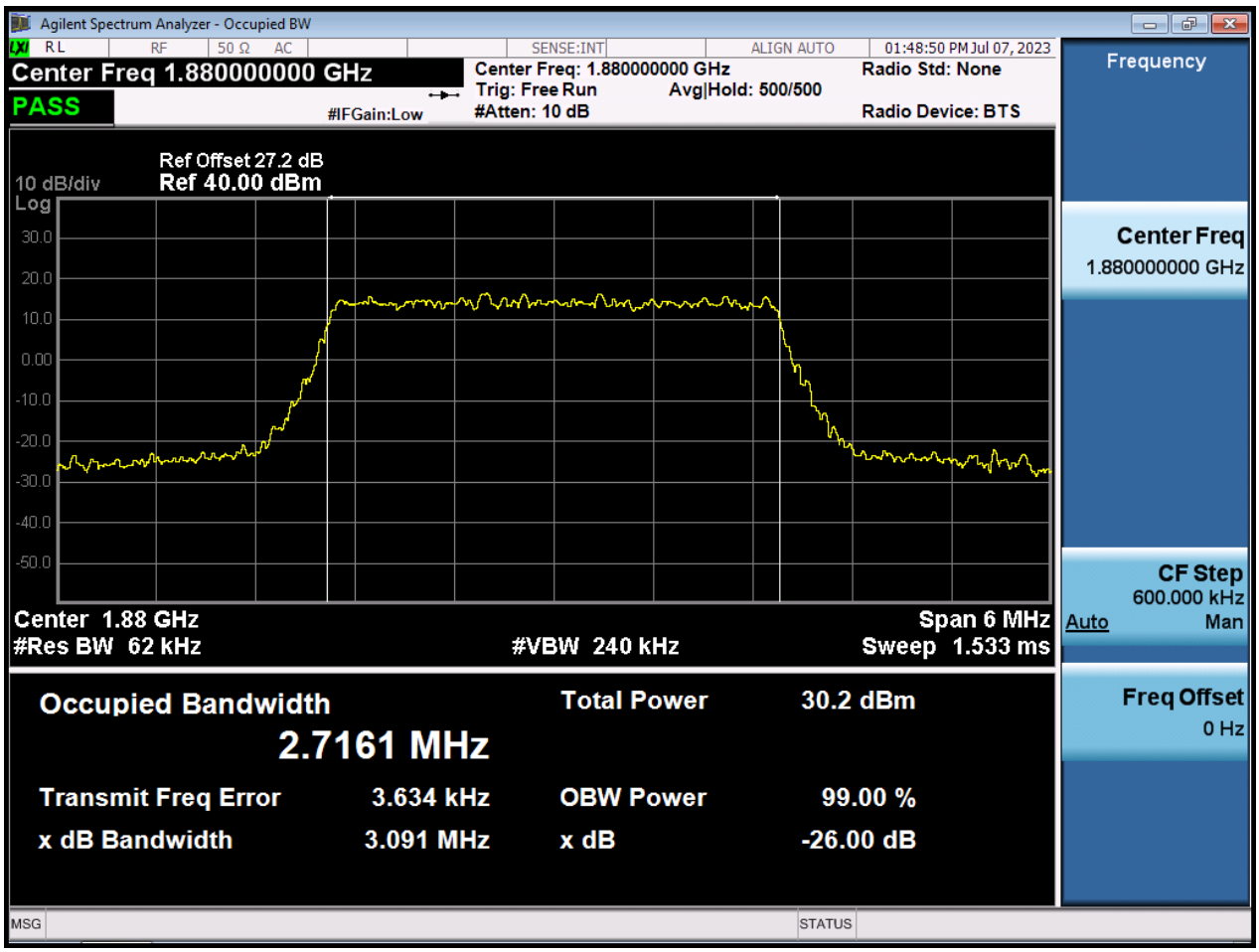
BW1.4 M_OBW_Middle Channel_64QAM_FullRB



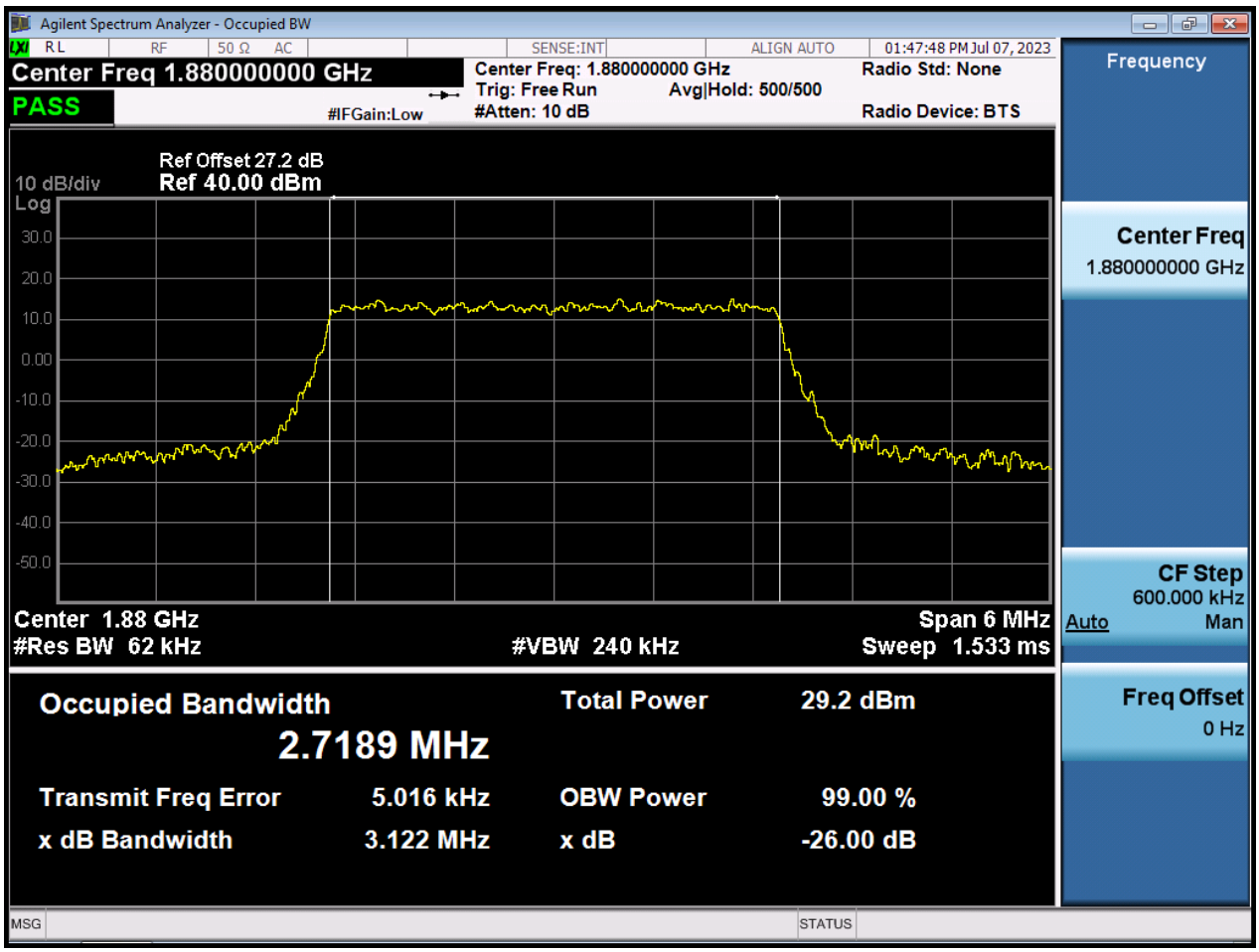
BW1.4 M_OBW_Middle Channel_256QAM_FullRB



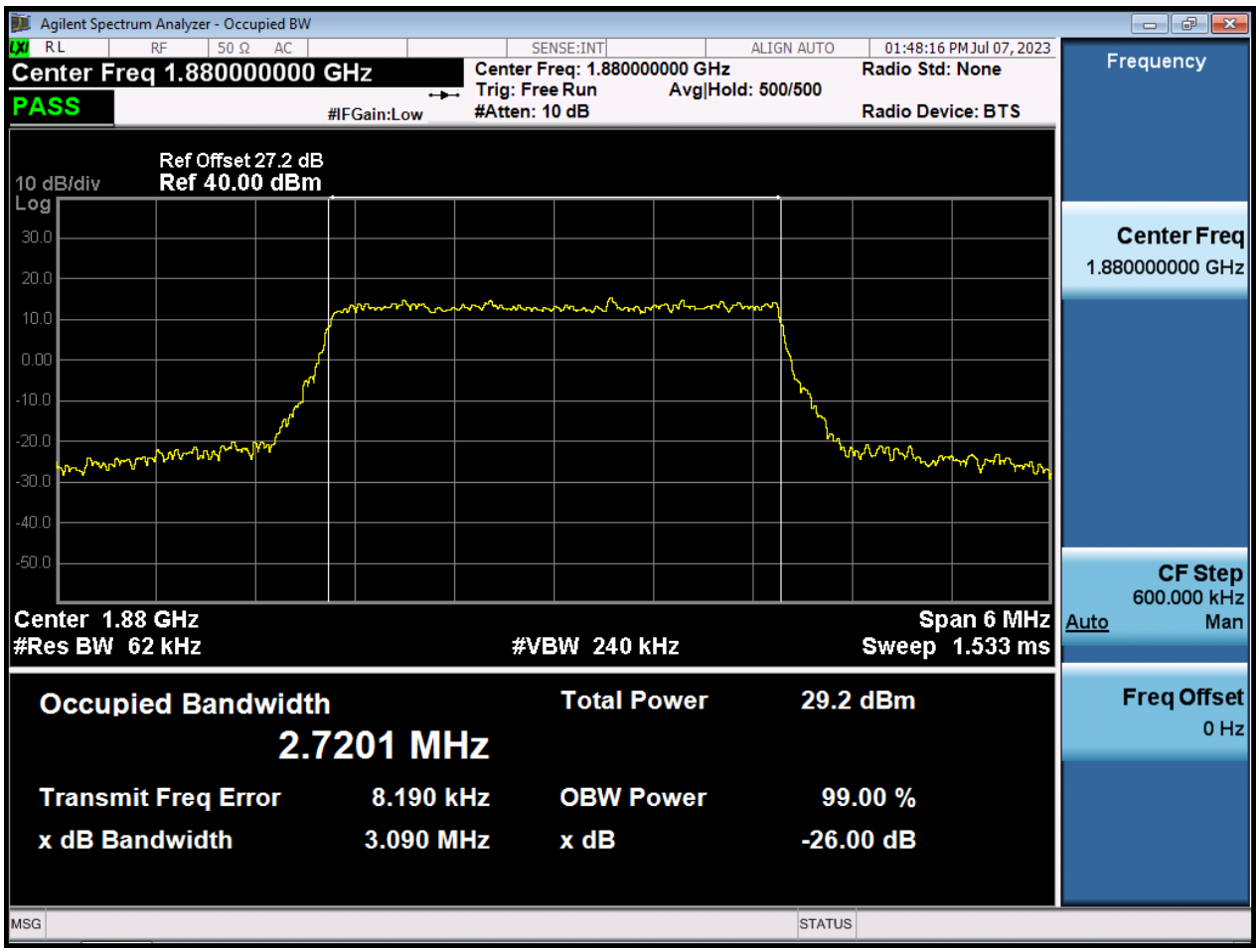
BW3 M_OBW_Middle Channel_QPSK_FullRB



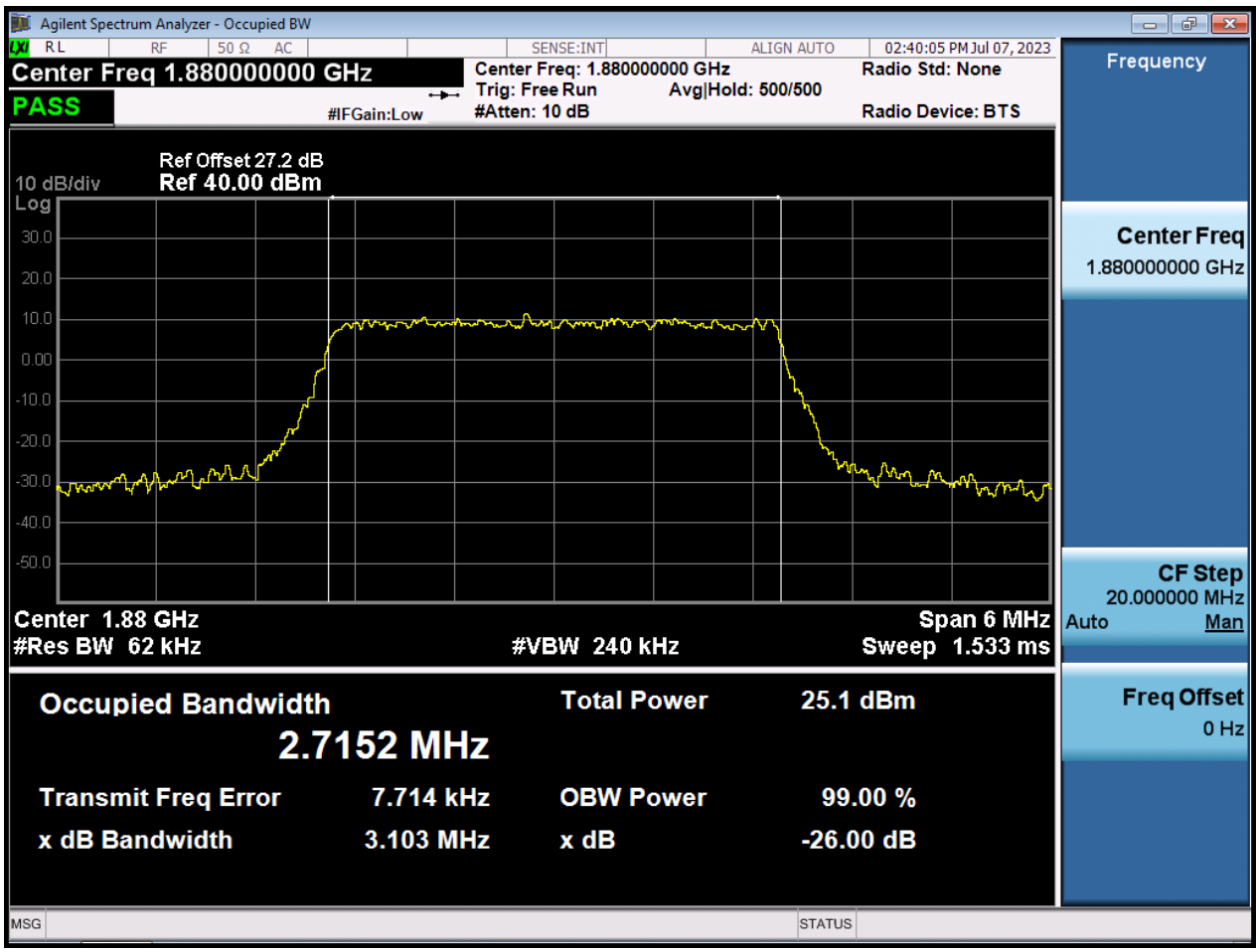
BW3 M_OBW_Middle Channel_16QAM_FullRB



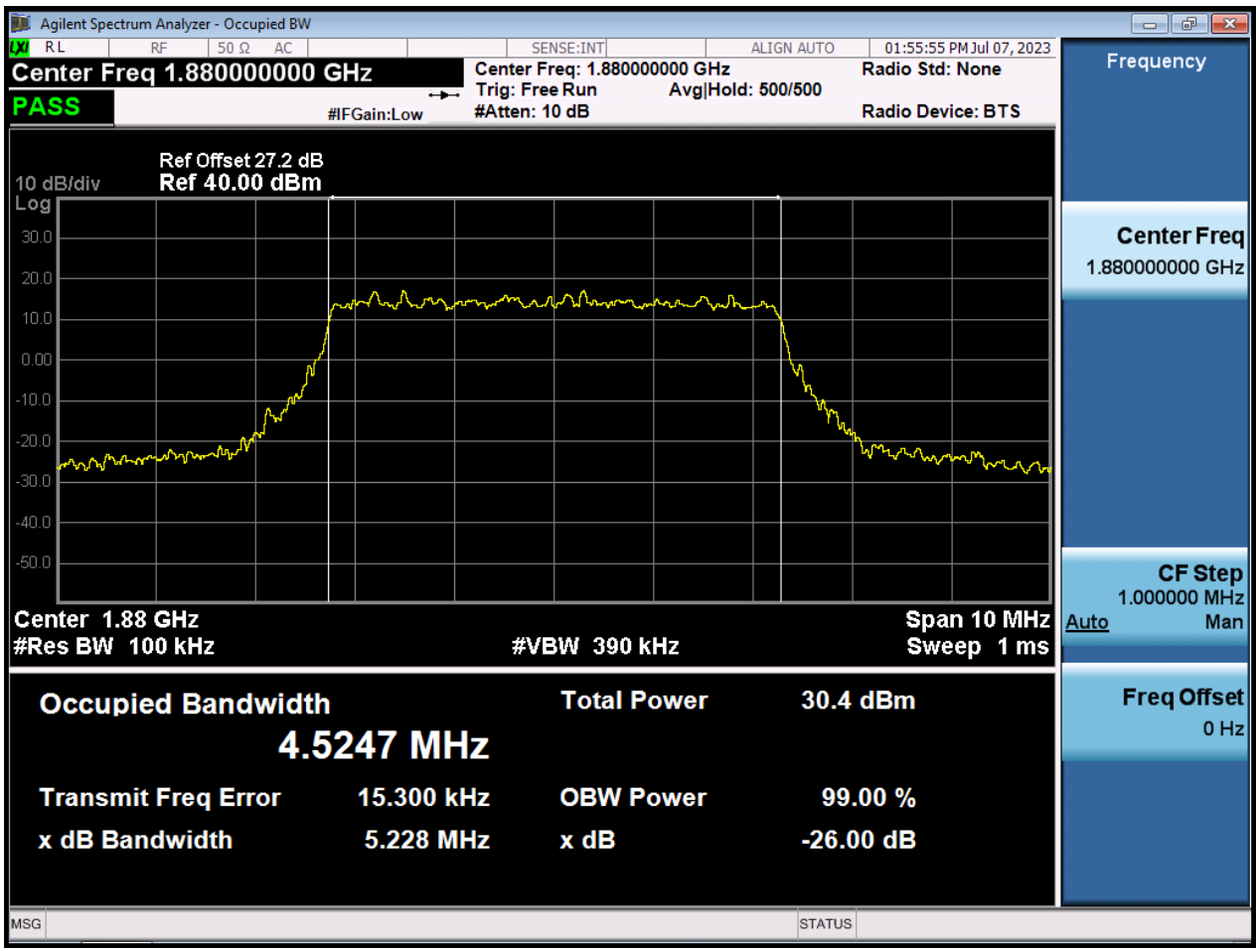
BW3 M_OBW_Middle Channel_64QAM_FullRB



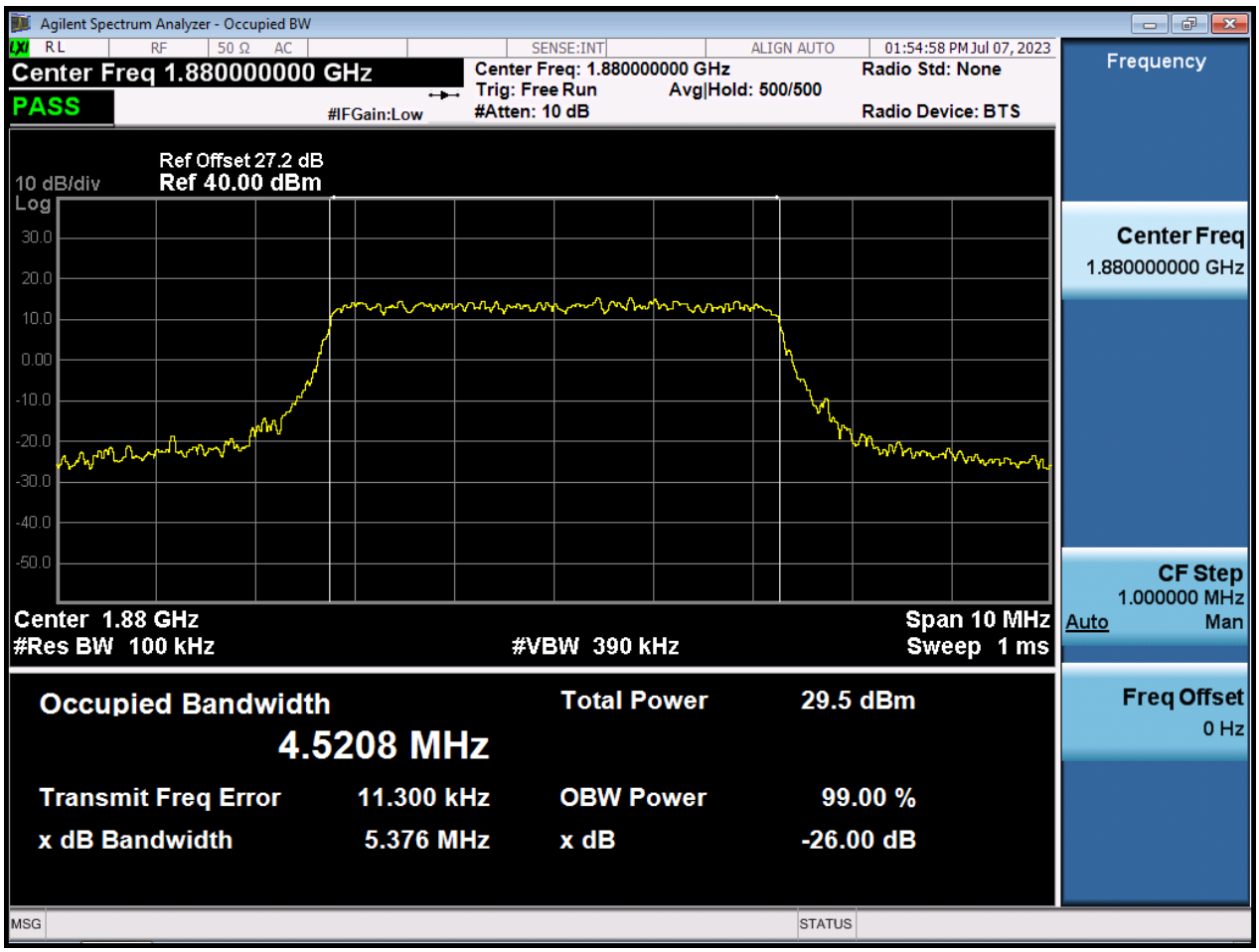
BW3 M_OBW_Middle Channel_256QAM_FullRB



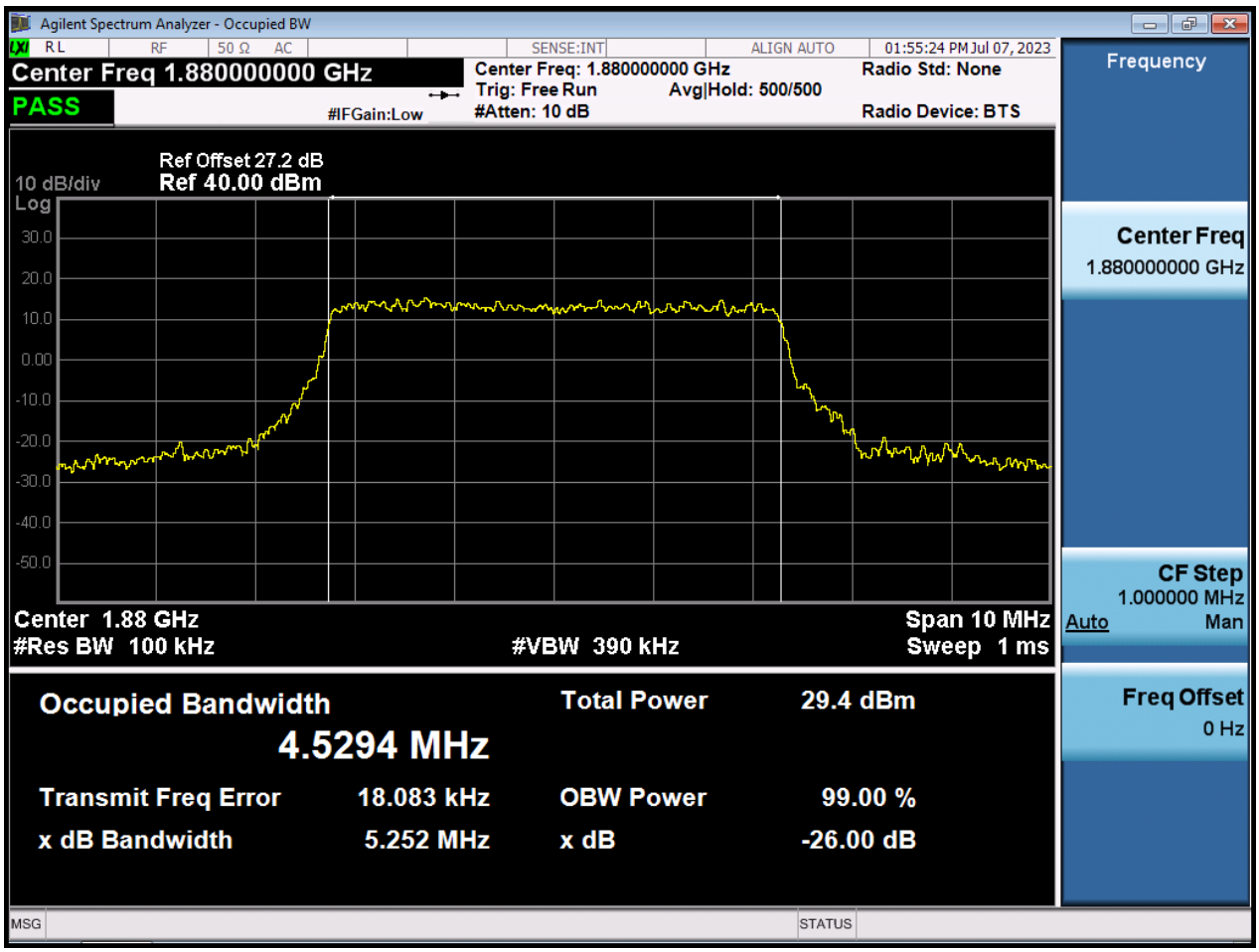
BW5 M_OBW_Middle Channel_QPSK_FullRB



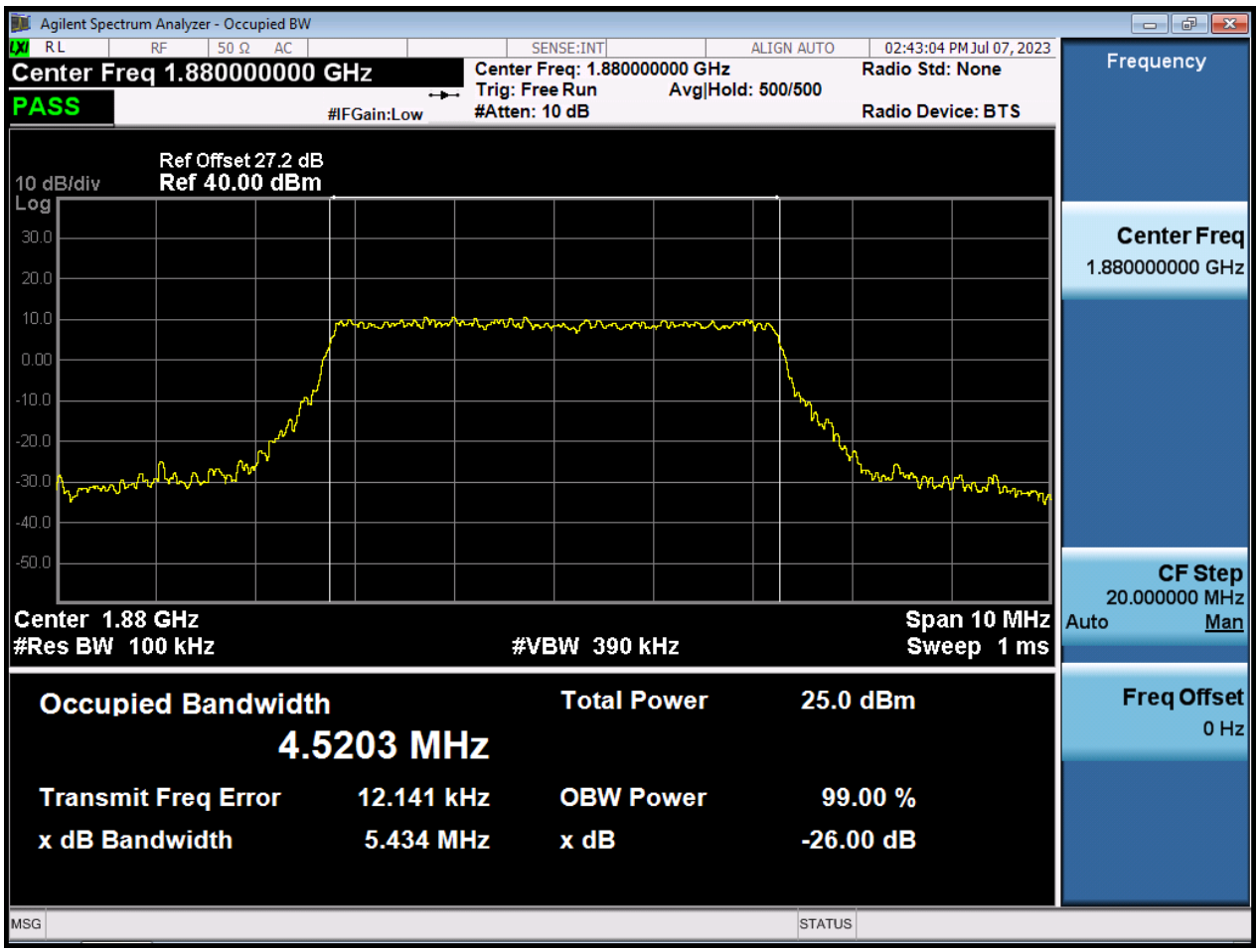
BW5 M_OBW_Middle Channel_16QAM_FullRB



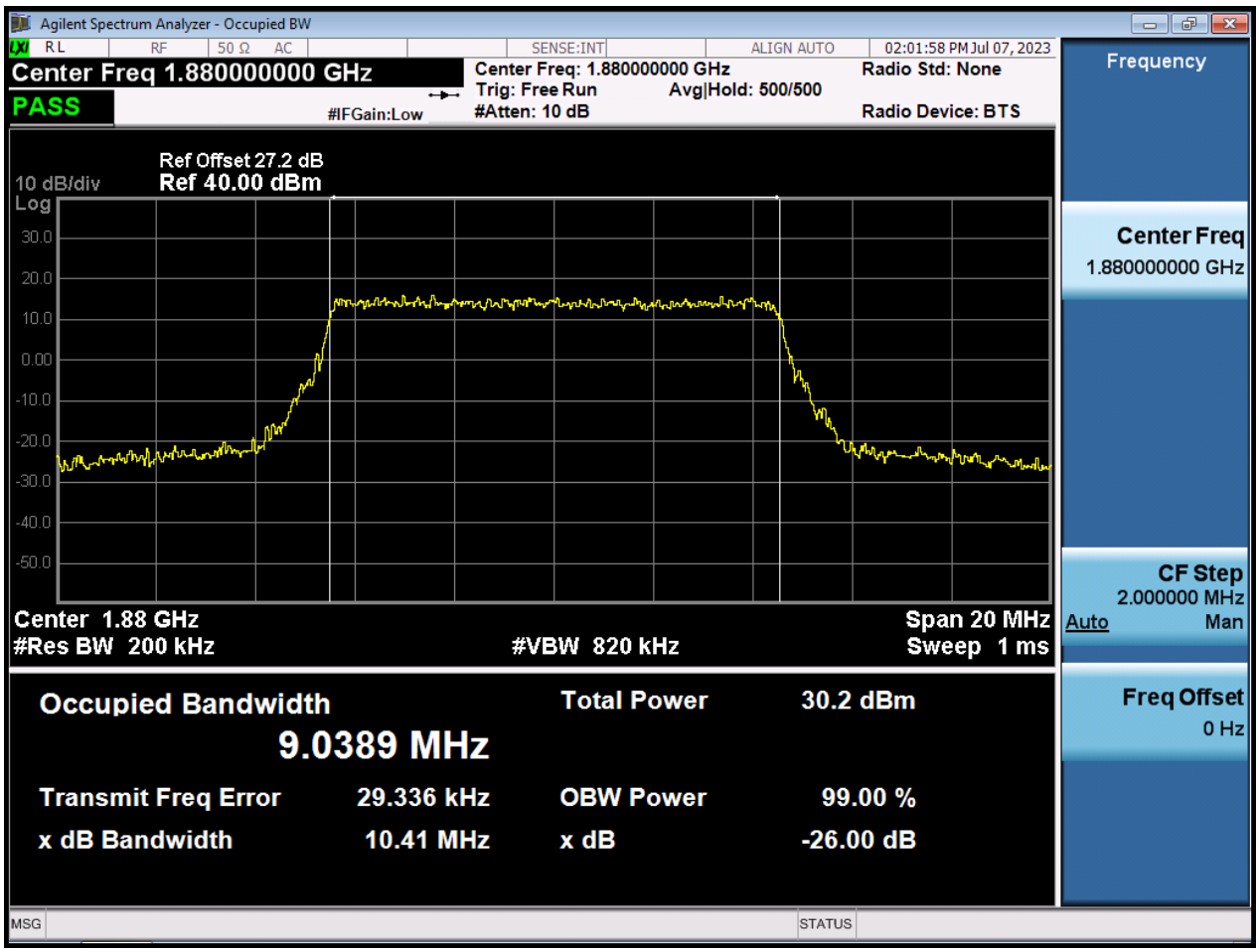
BW5 M_OBW_Middle Channel_64QAM_FullRB



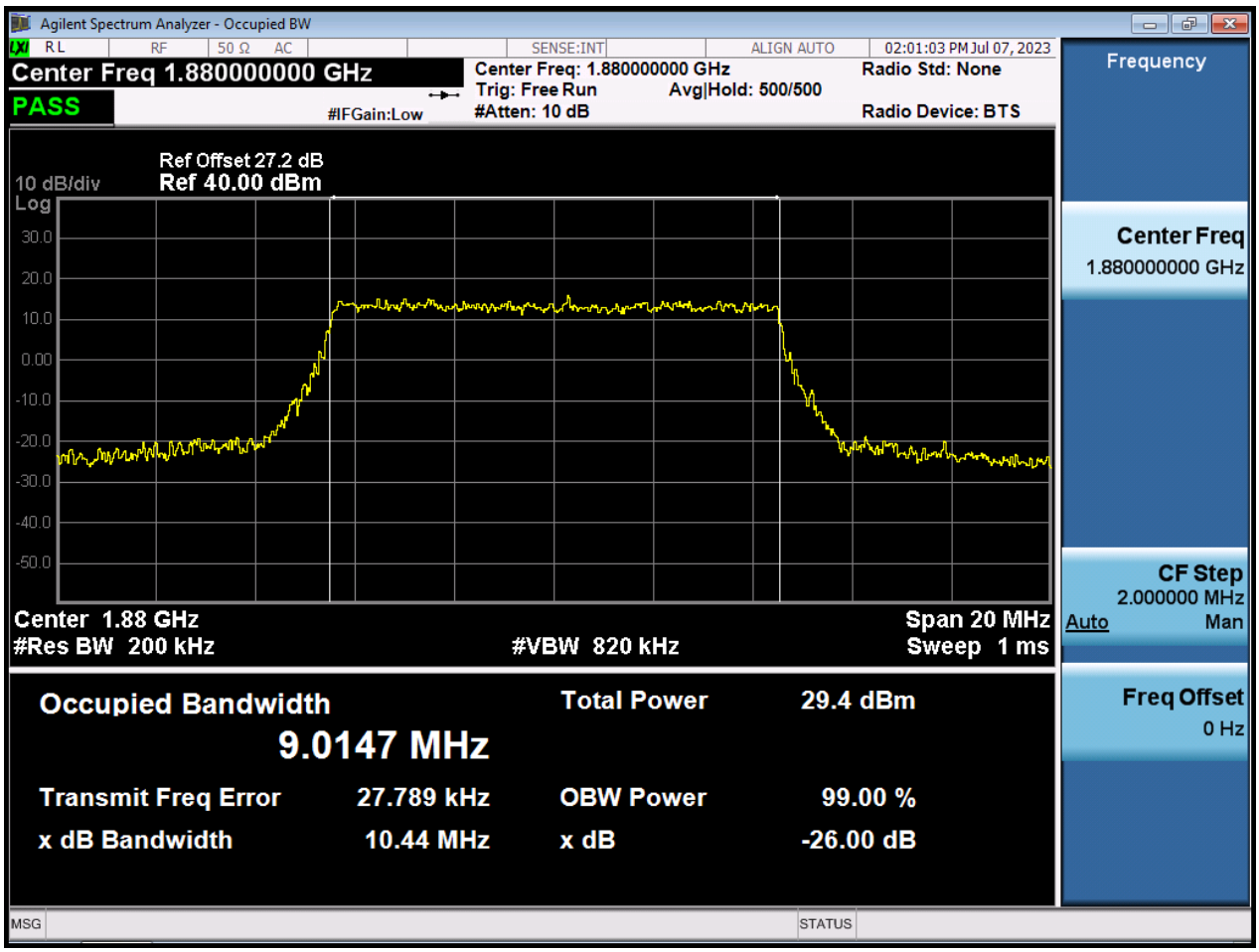
BW5 M_OBW_Middle Channel_256QAM_FullRB



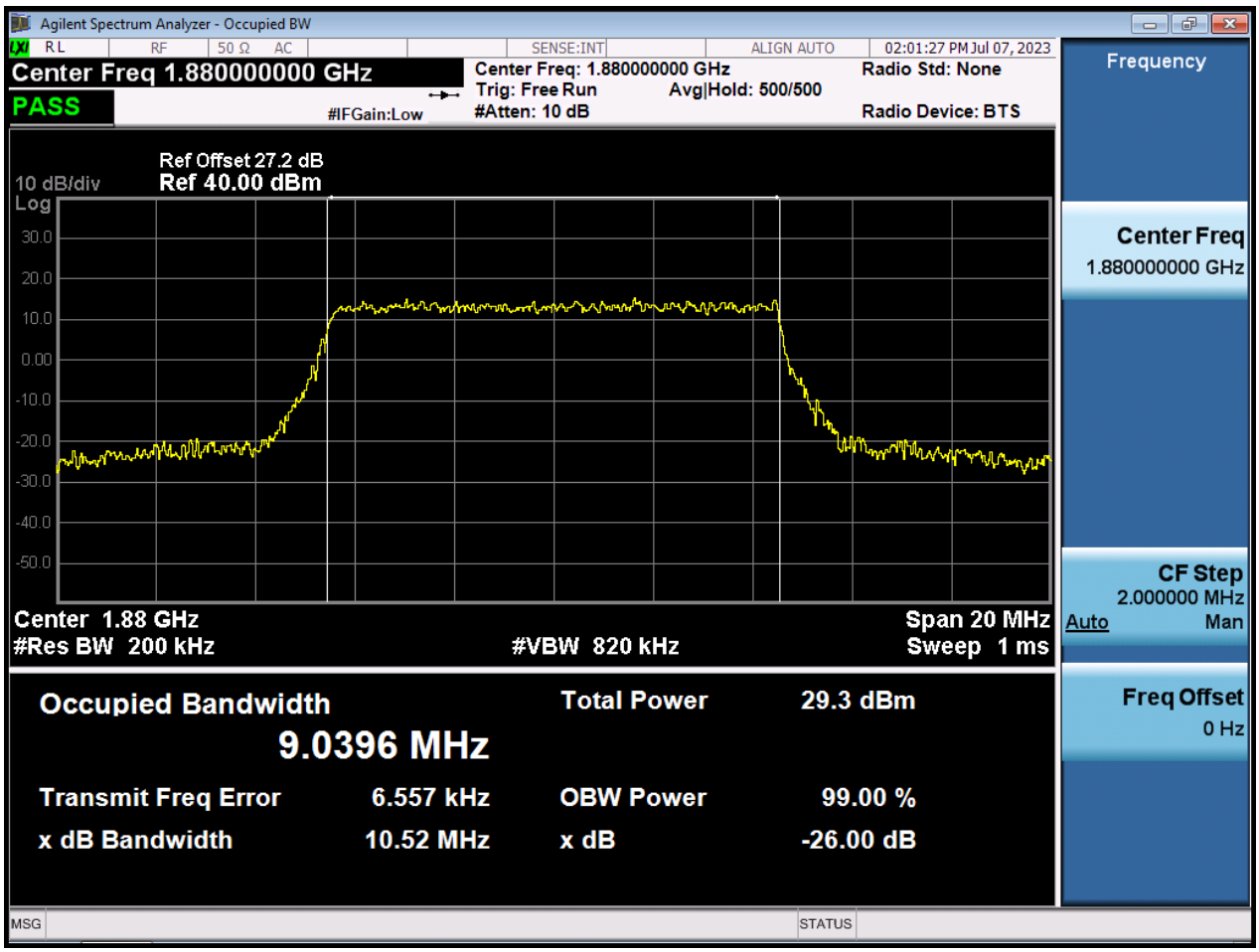
BW10 M_OBW_Middle Channel_QPSK_FullRB



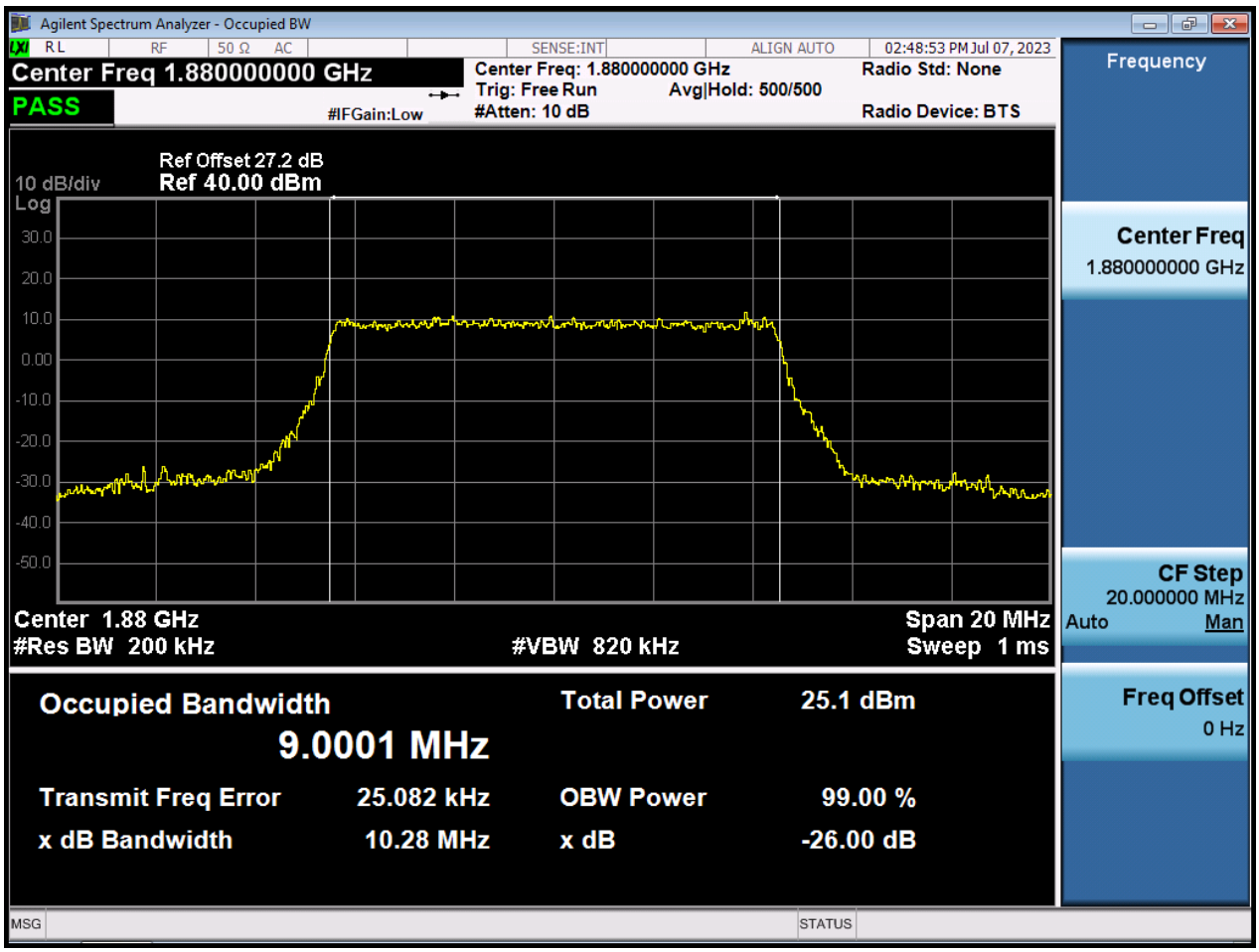
BW10 M_OBW_Middle Channel_16QAM_FullRB



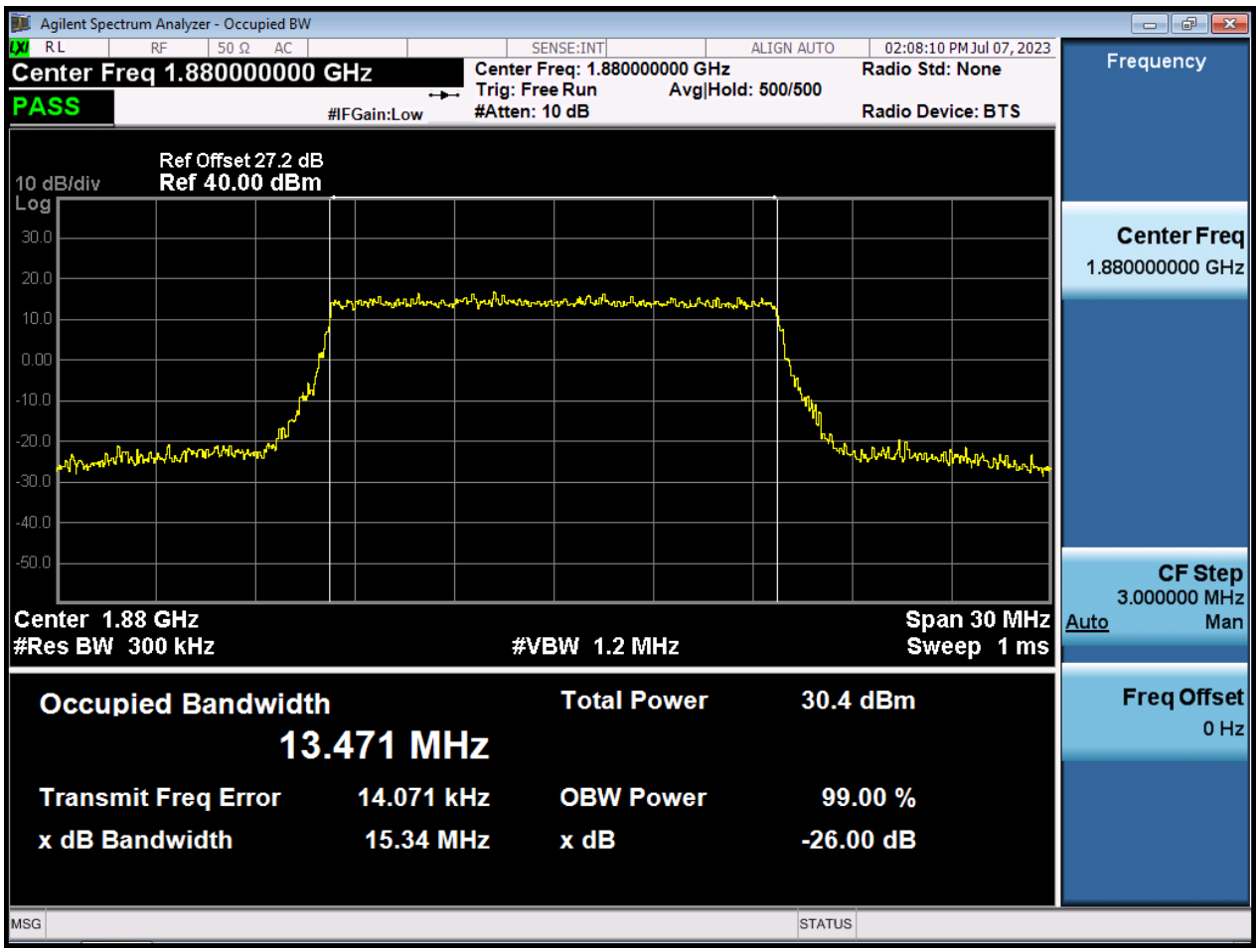
BW10 M_OBW_Middle Channel_64QAM_FullRB



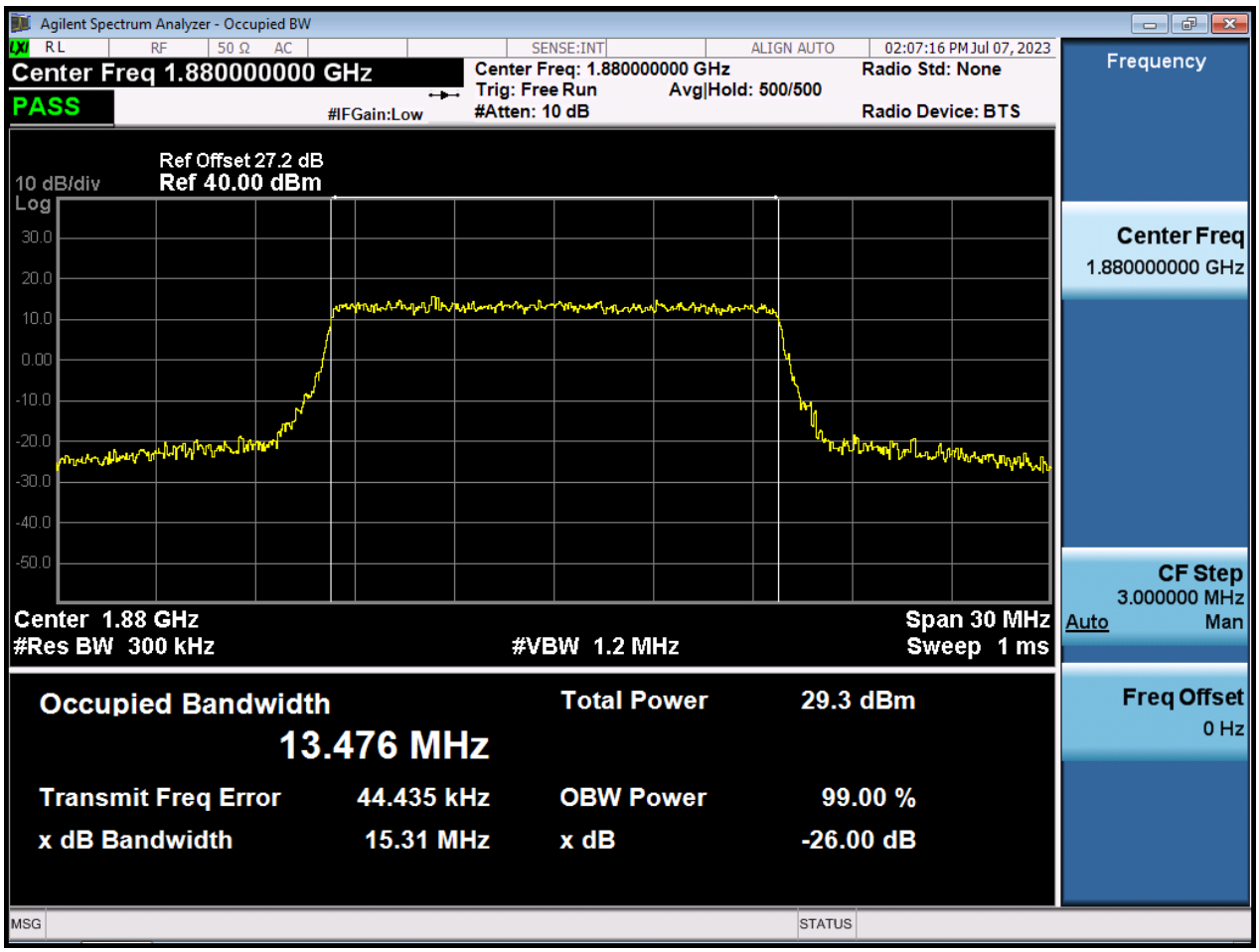
BW10 M_OBW_Middle Channel_256QAM_FullRB



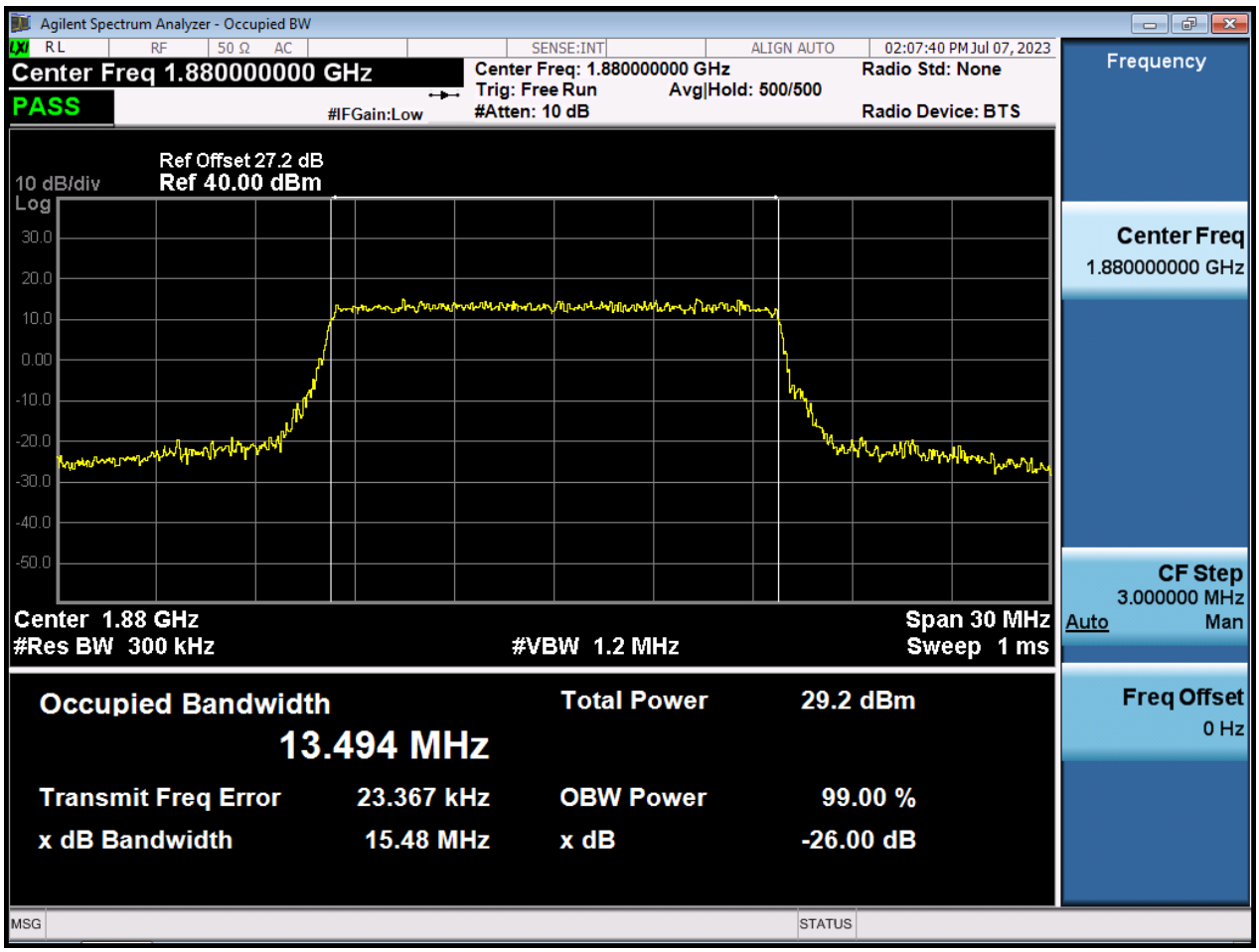
BW15 M_OBW_Middle Channel_QPSK_FullRB



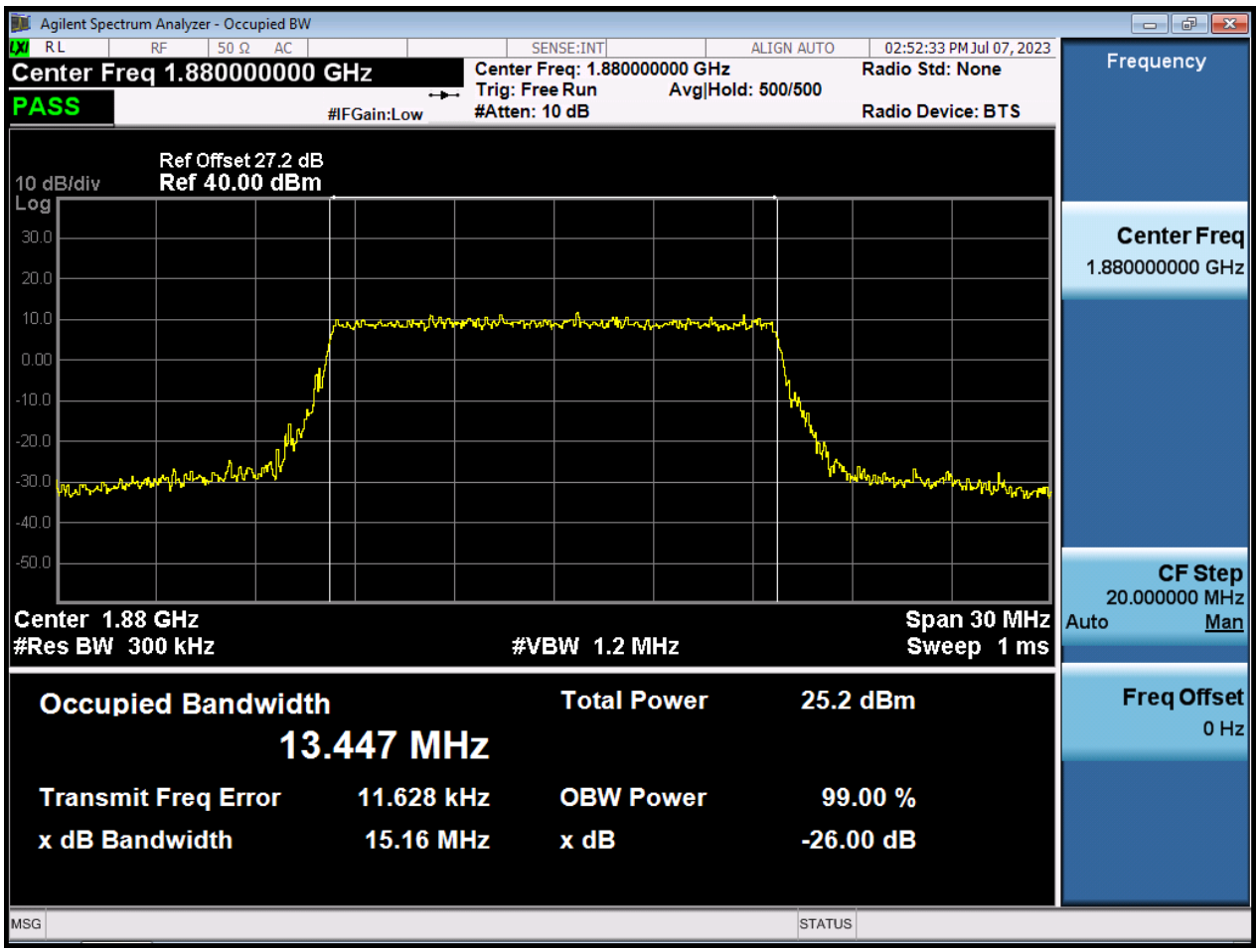
BW15 M_OBW_Middle Channel_16QAM_FullRB



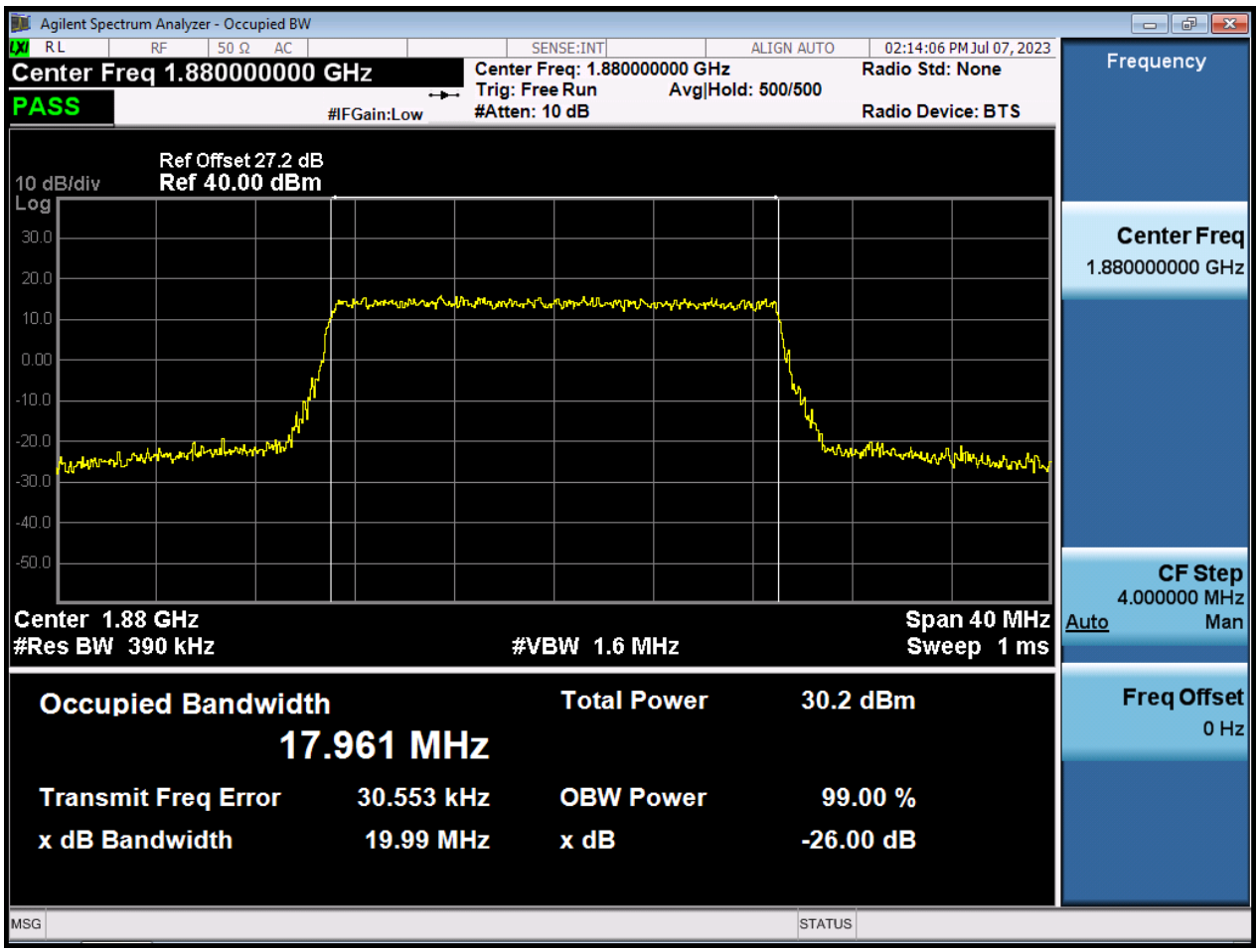
BW15 M_OBW_Middle Channel_64QAM_FullRB



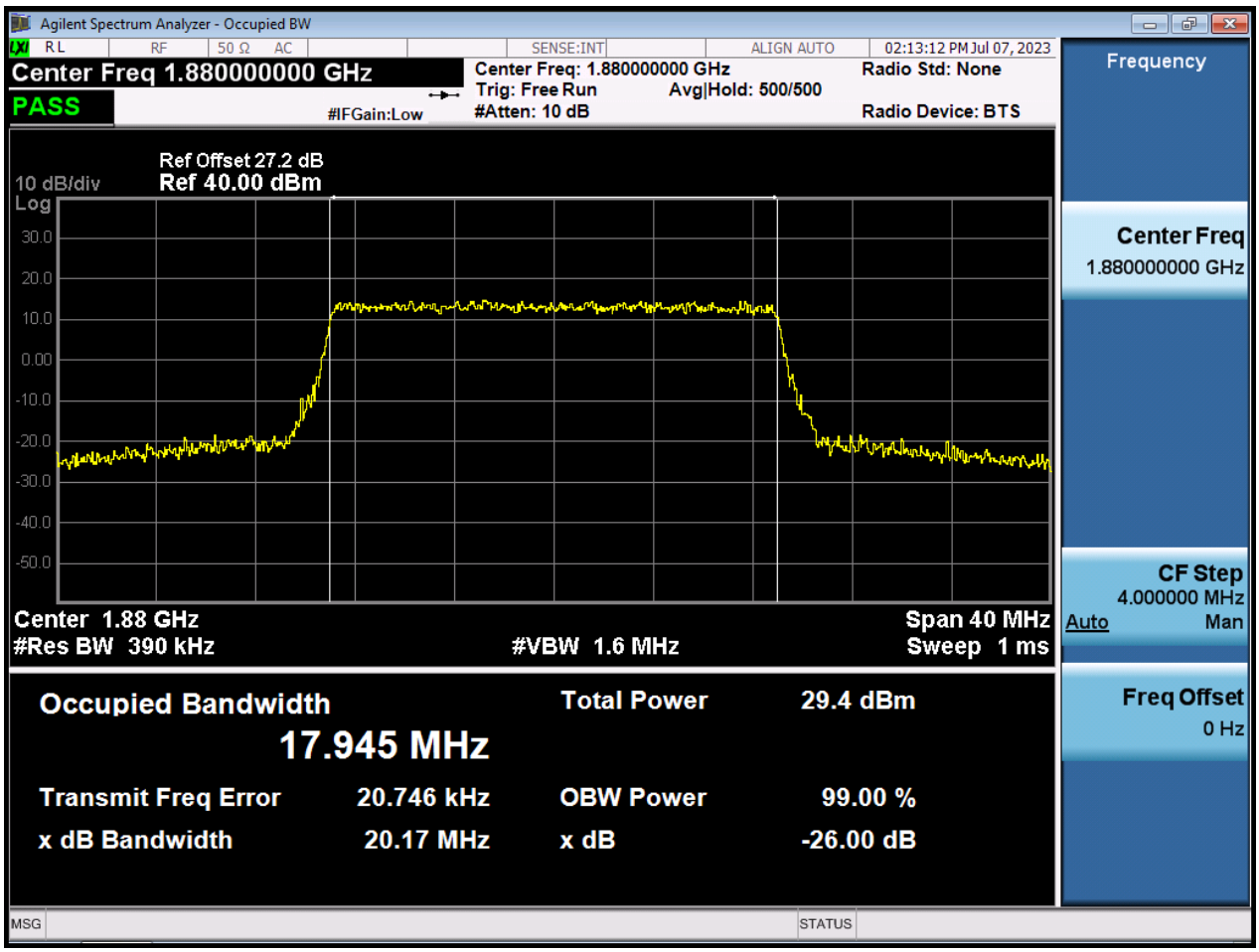
BW15 M_OBW_Middle Channel_256QAM_FullRB



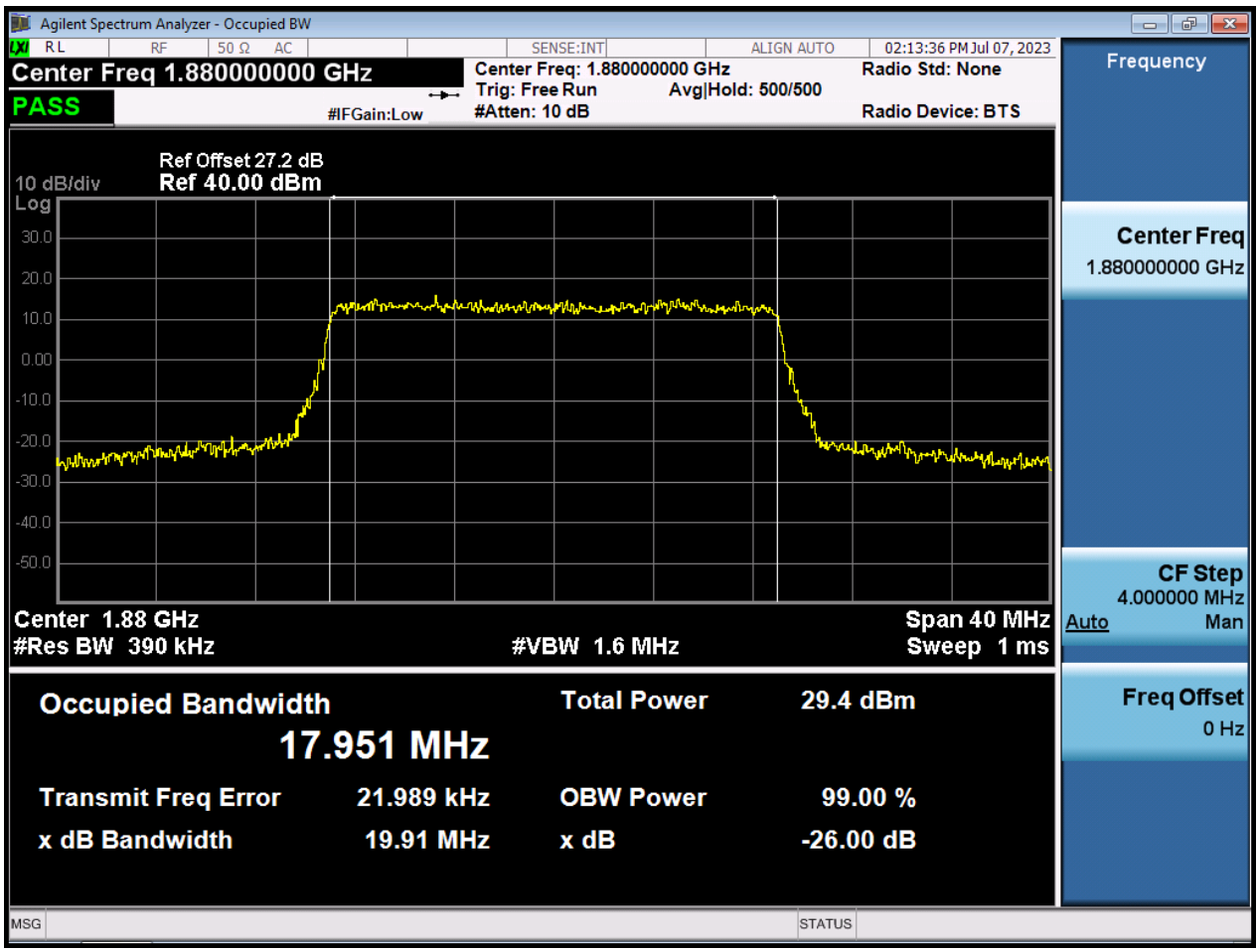
BW20 M_OBW_Middle Channel_QPSK_FullRB



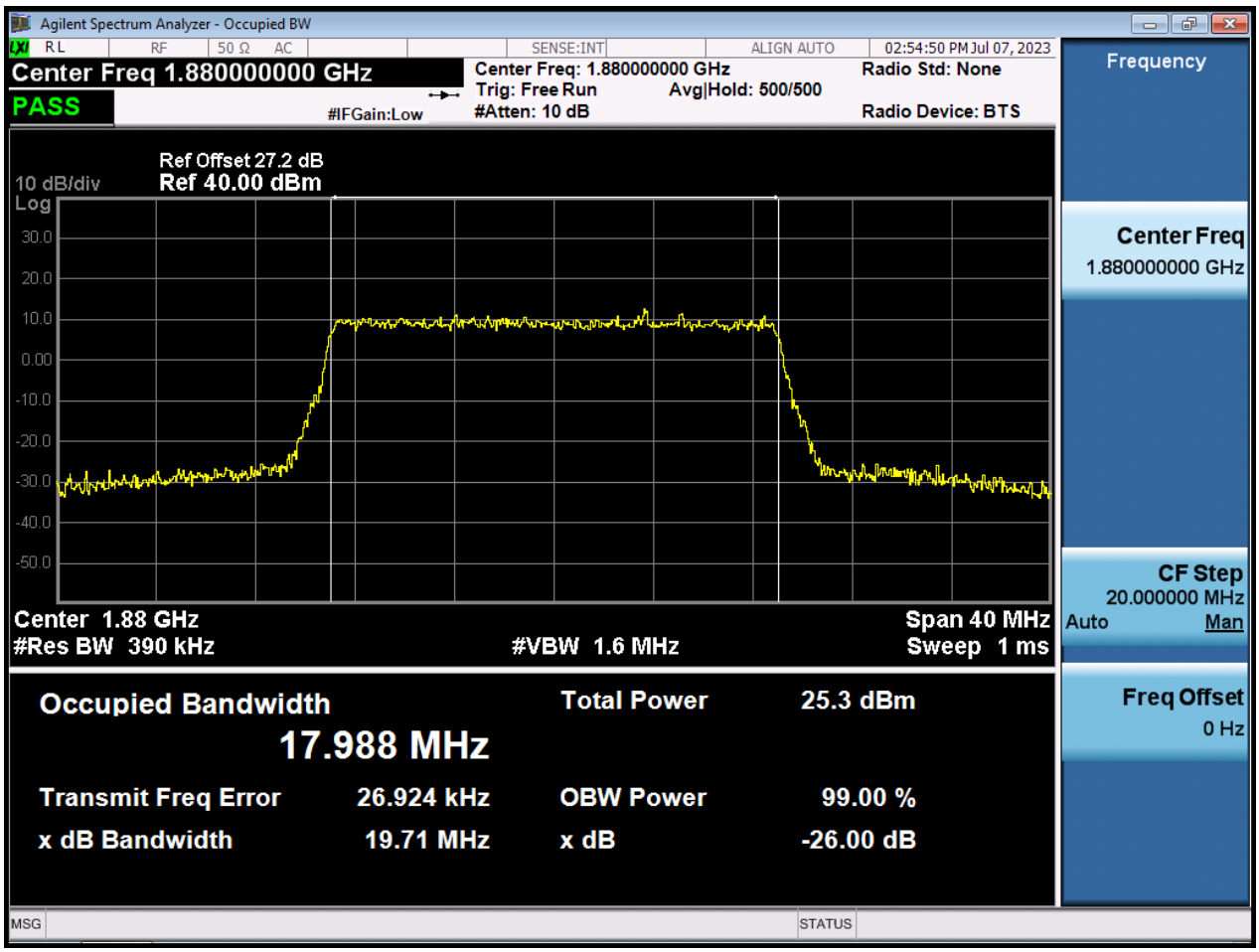
BW20 M_OBW_Middle Channel_16QAM_FullRB



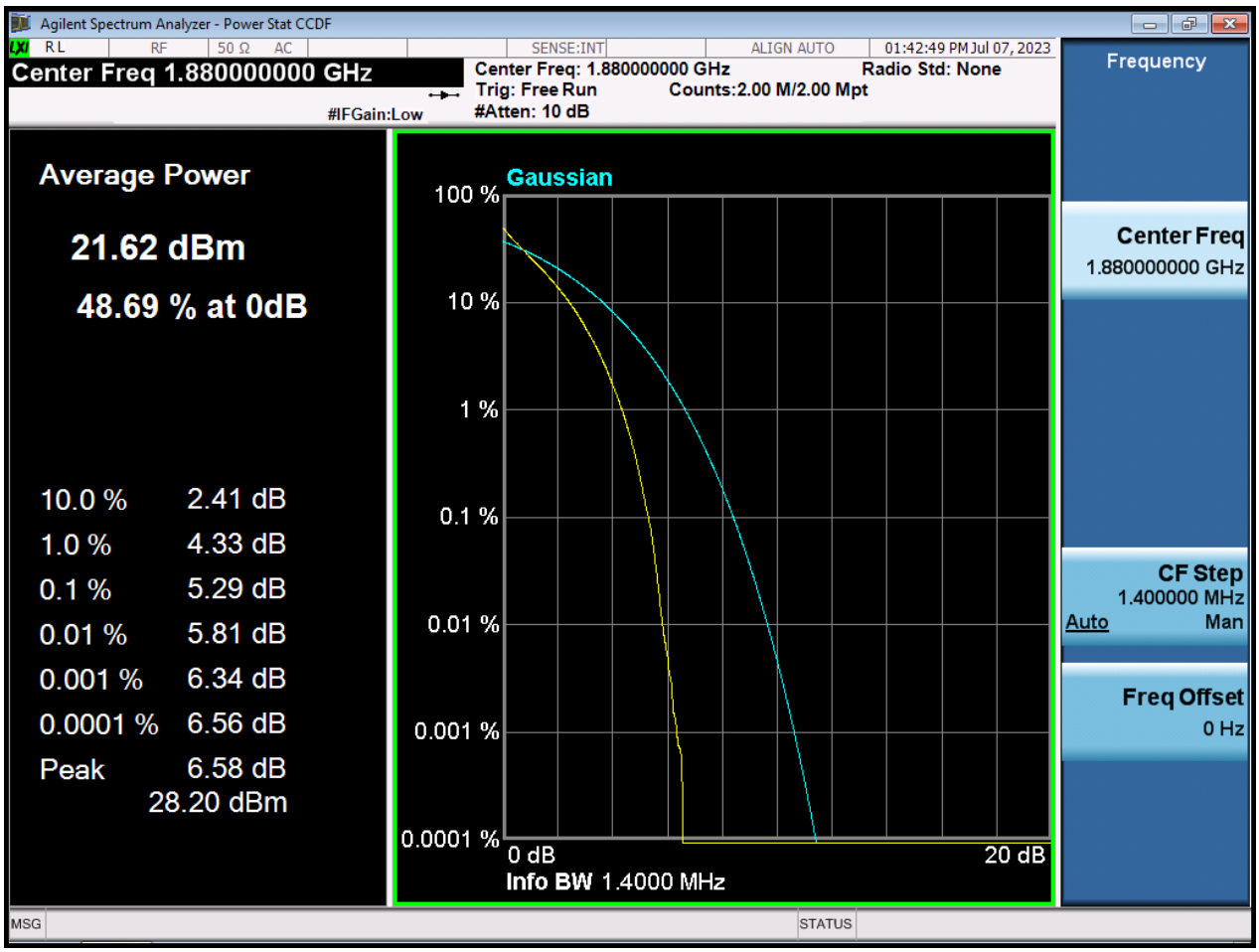
BW20 M_OBW_Middle Channel_64QAM_FullRB



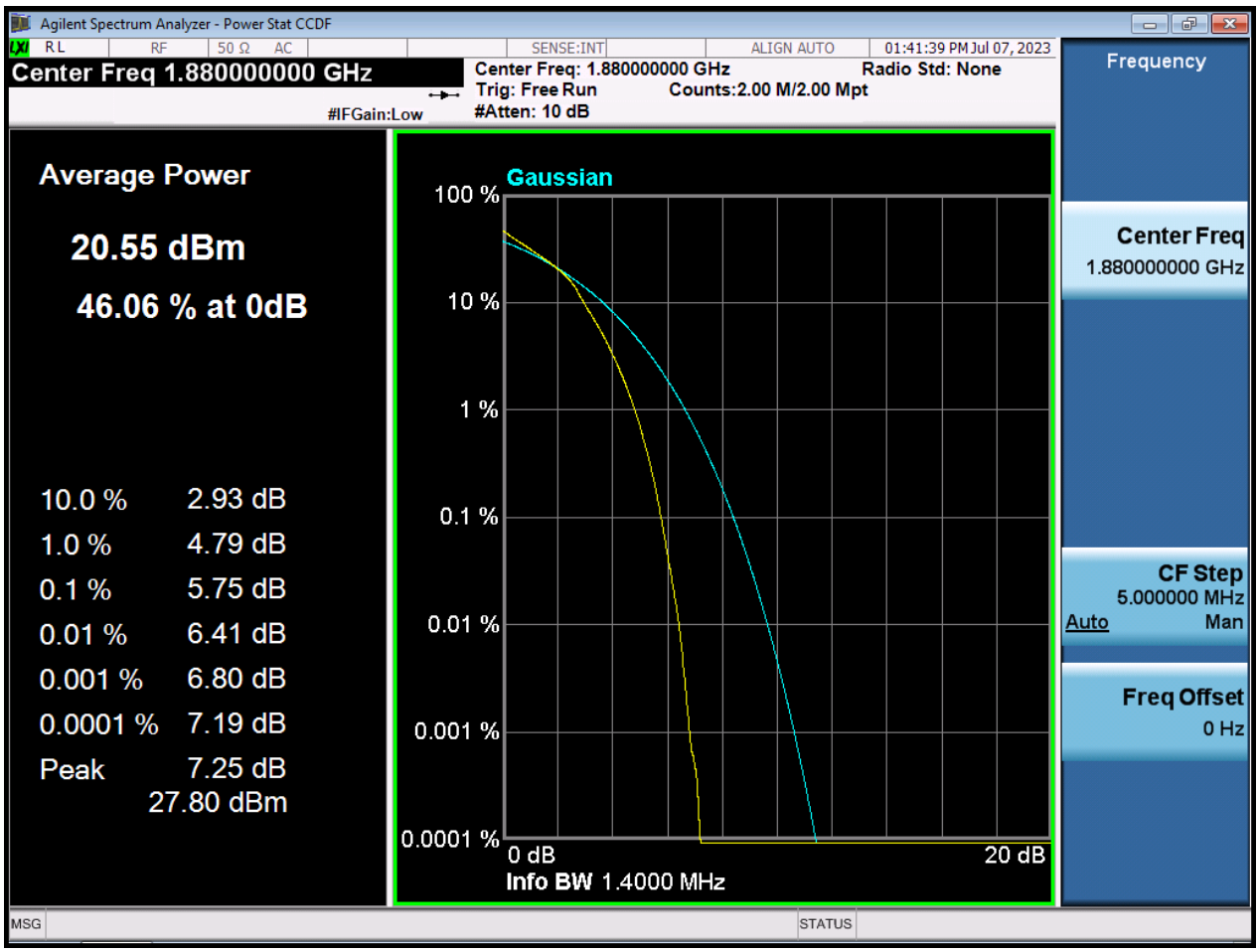
BW20 M_OBW_Middle Channel_256QAM_FullRB



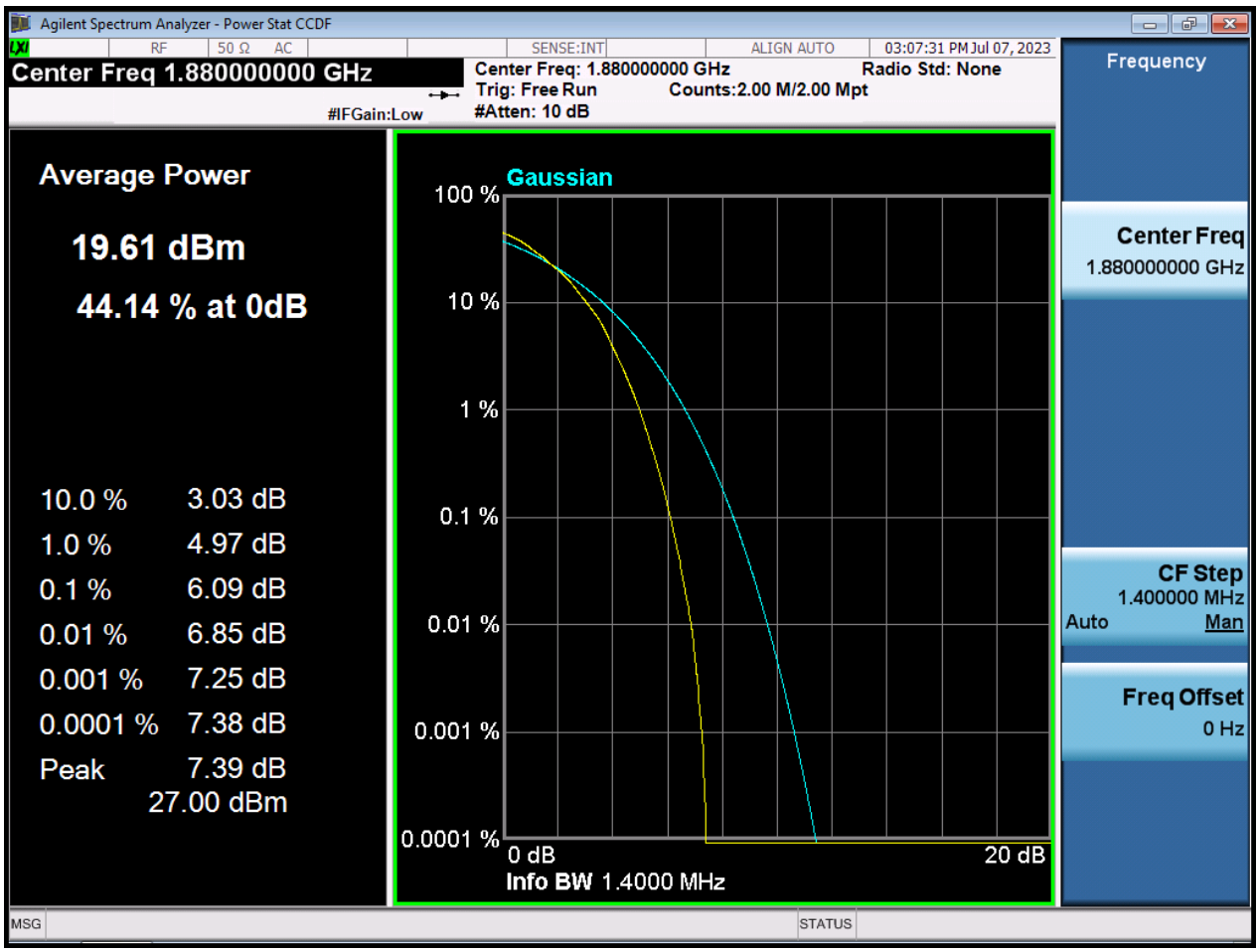
BW1.4 M_PAR_Middle Channel_QPSK_FullRB



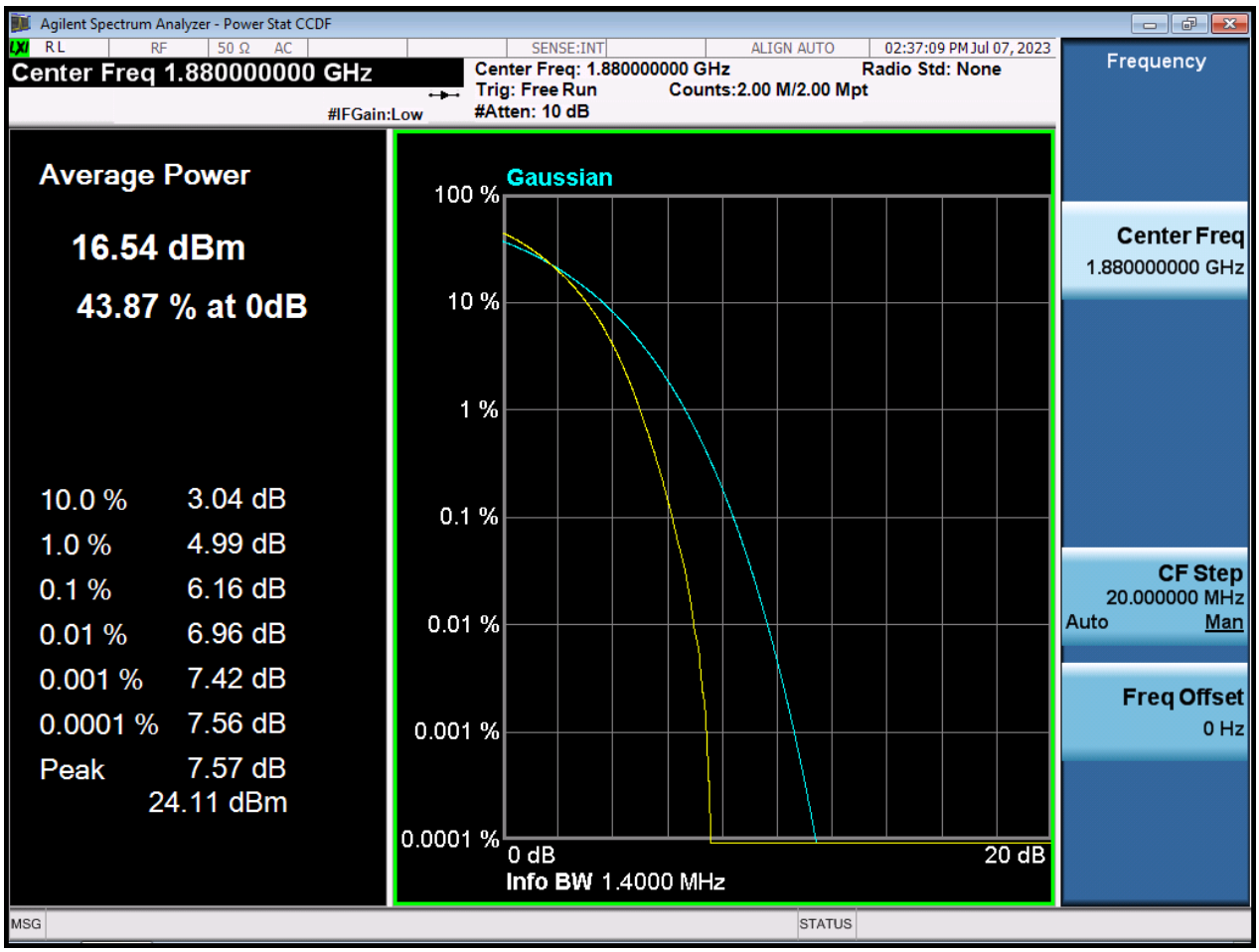
BW1.4 M_PAR_Middle Channel_16QAM_FullRB



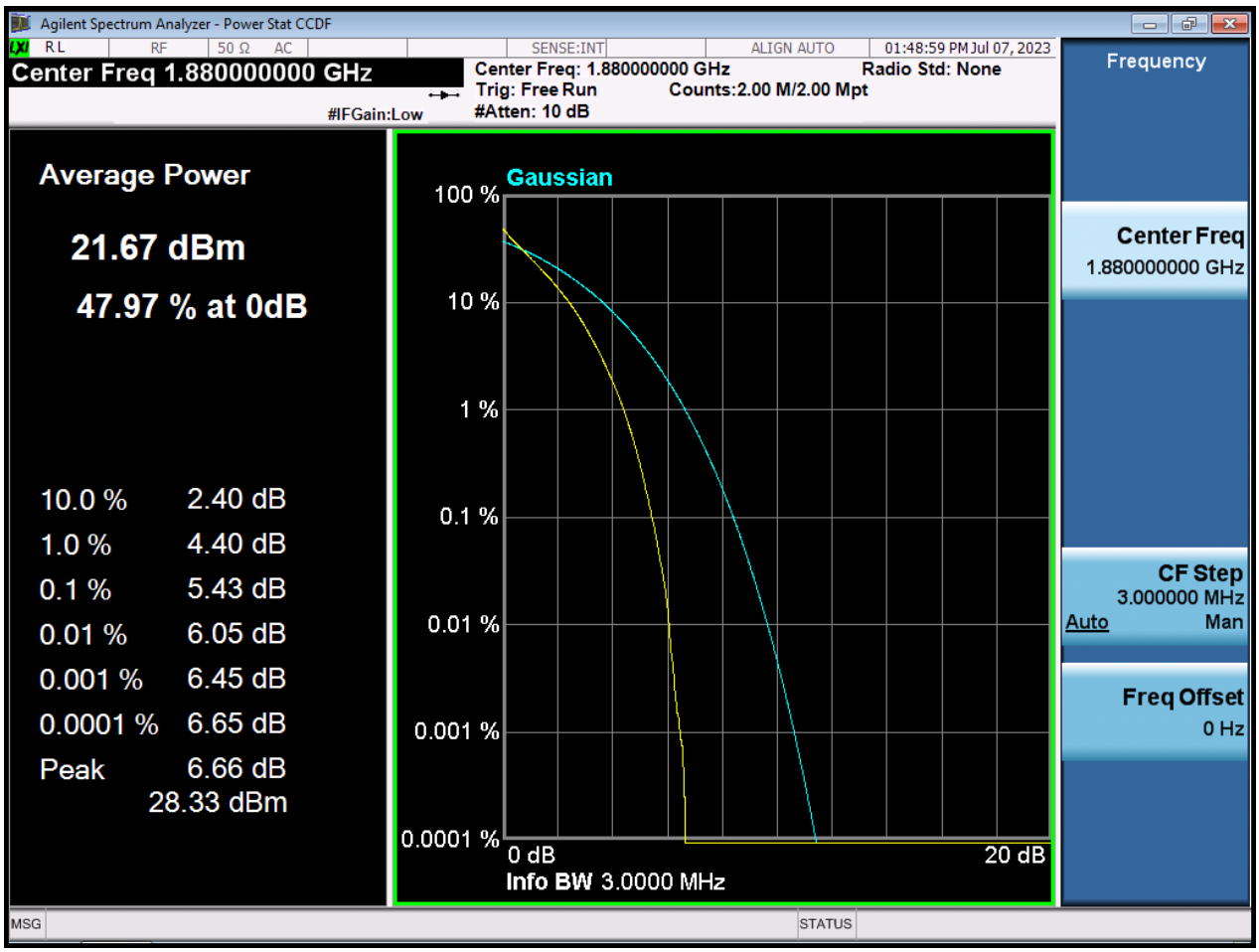
BW1.4 M_PAR_Middle Channel_64QAM_FullRB



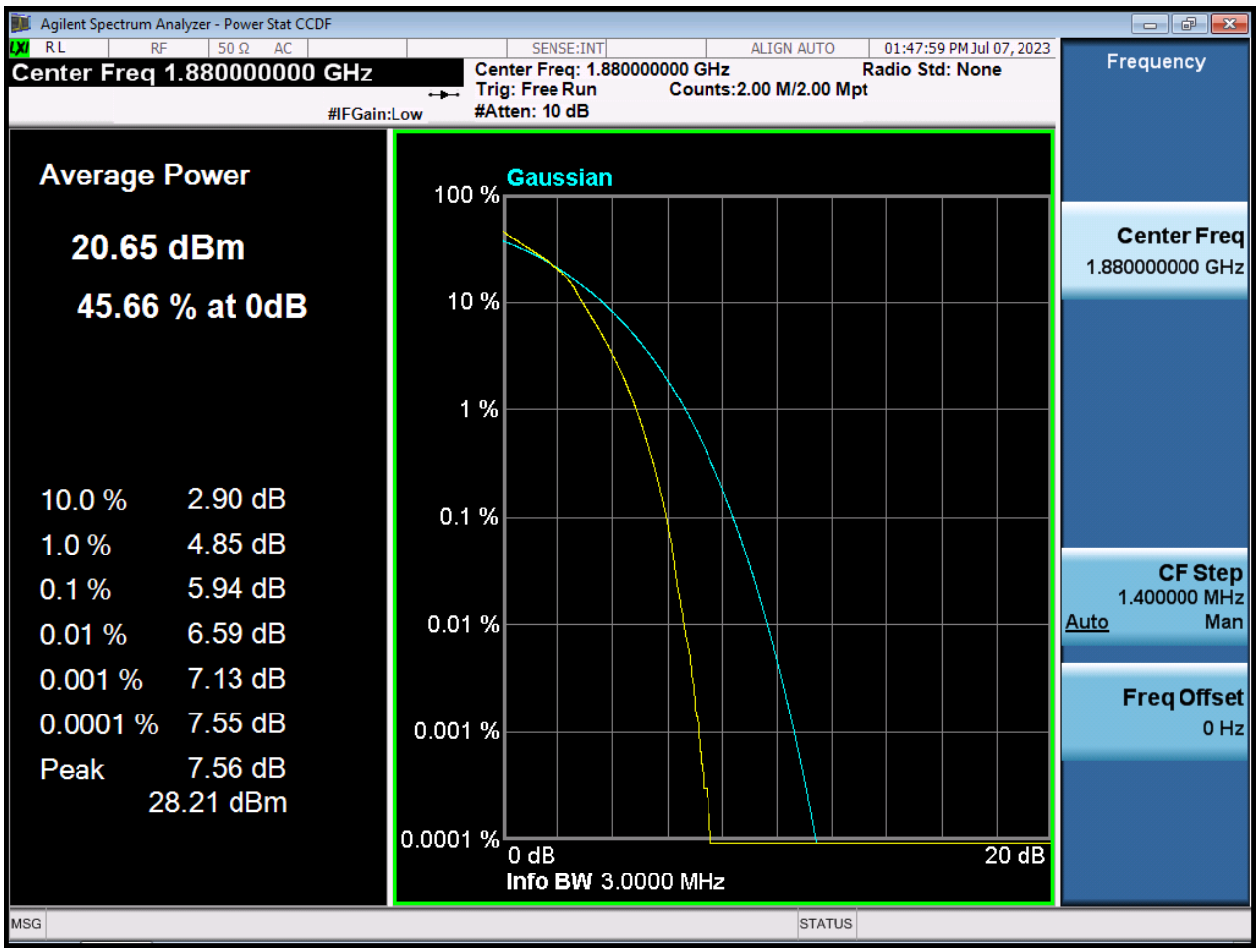
BW1.4 M_PAR_Middle Channel_256QAM_FullRB



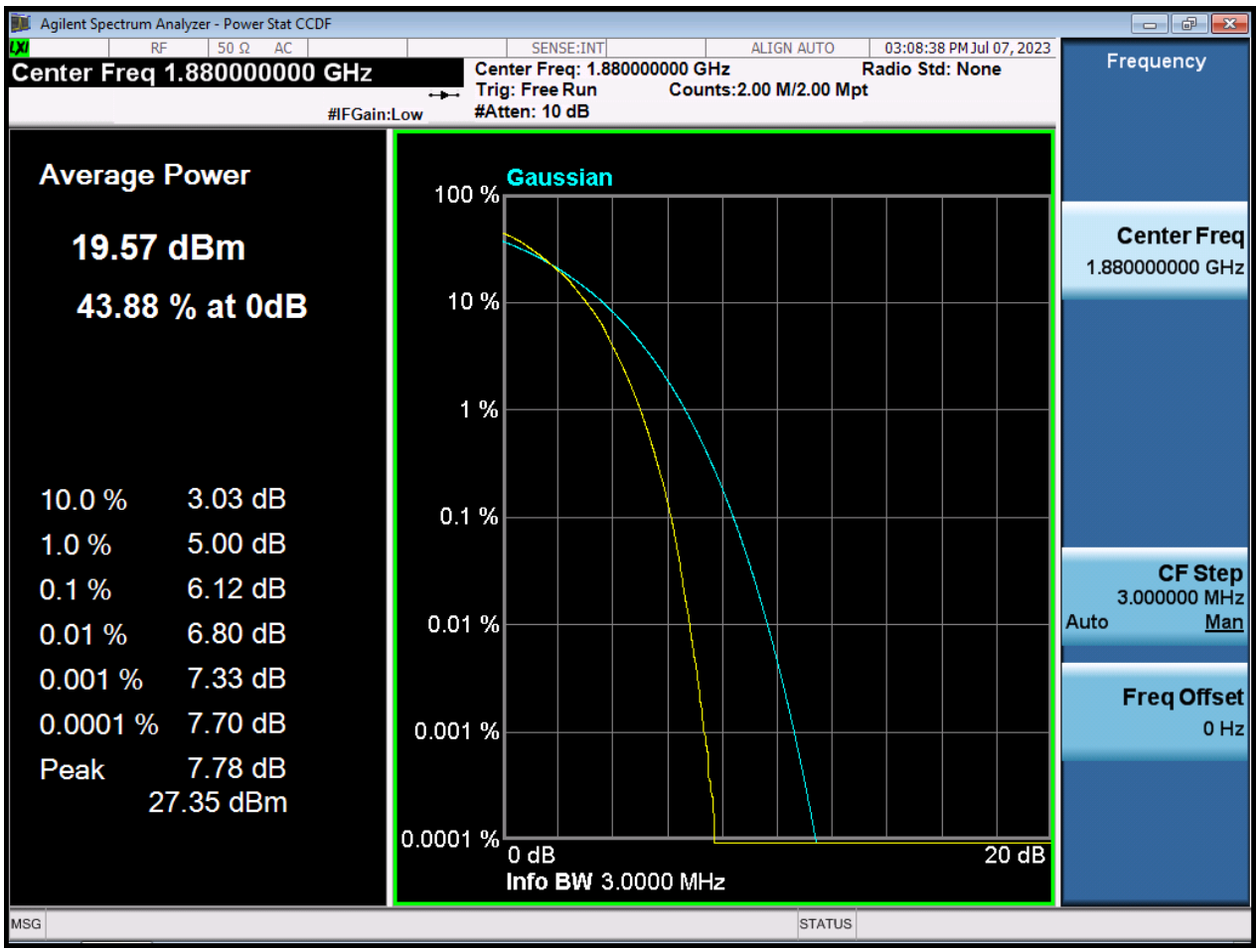
BW3 M_PAR_Middle Channel_QPSK_FullRB



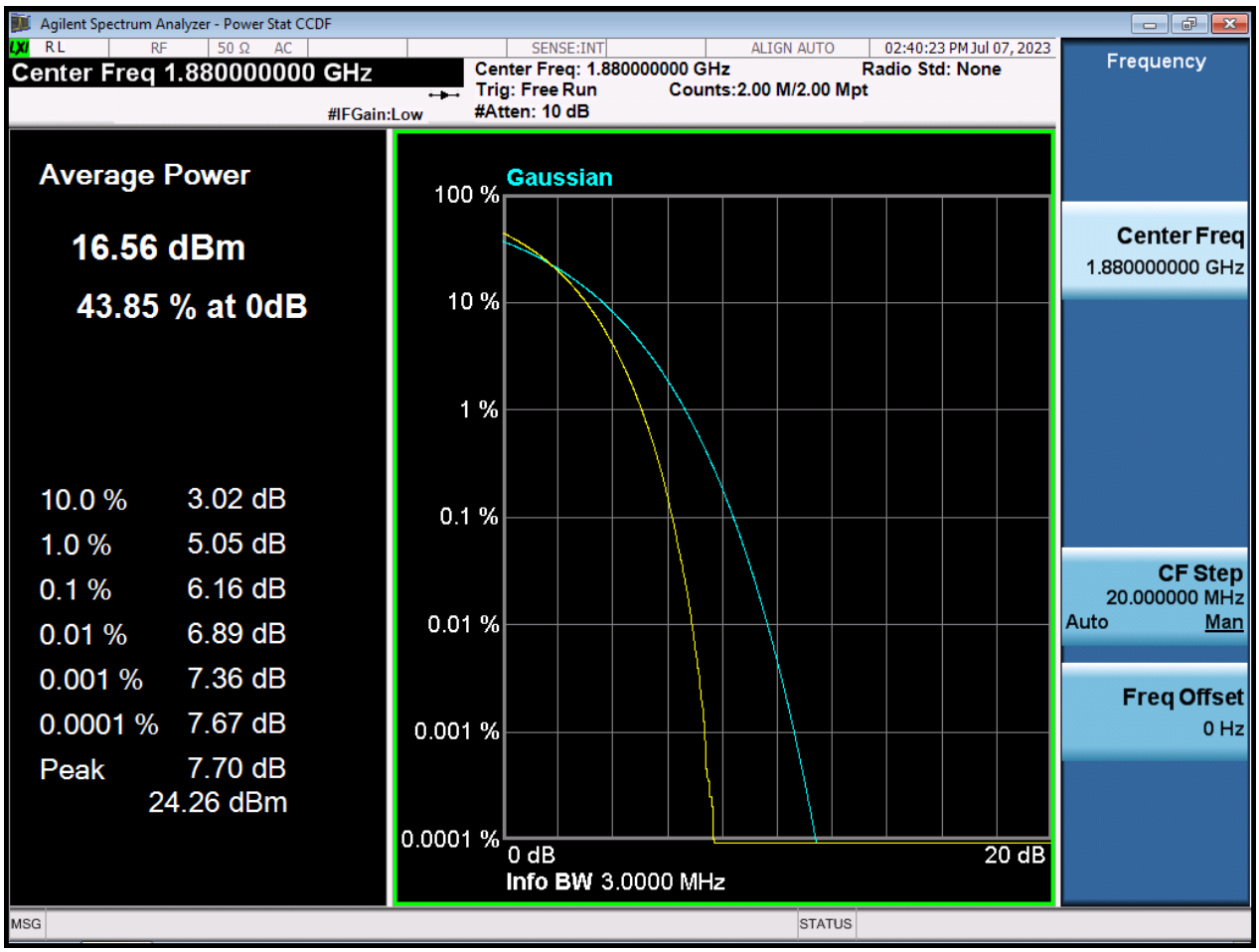
BW3 M_PAR_Middle Channel_16QAM_FullRB



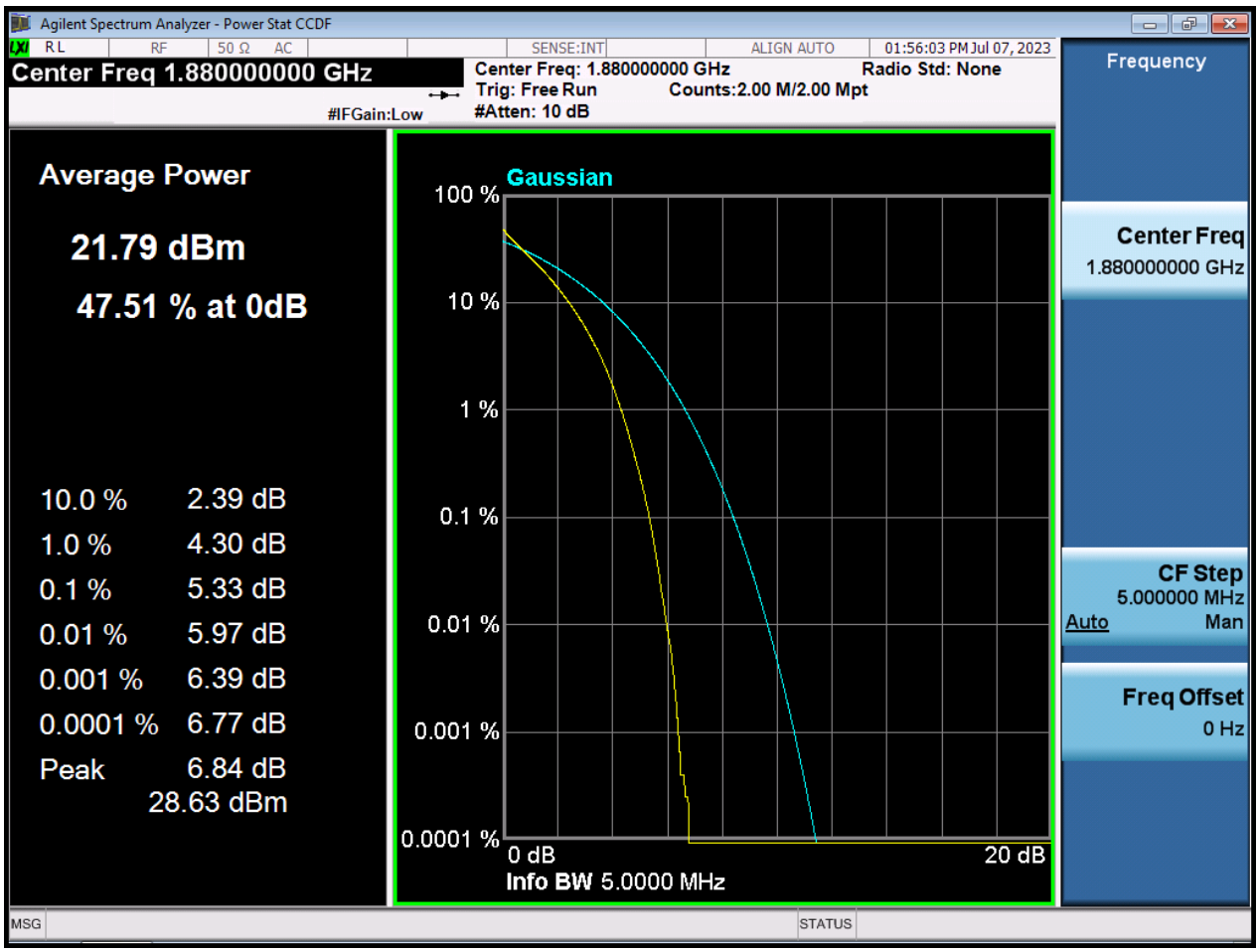
BW3 M_PAR_Middle Channel_64QAM_FullRB



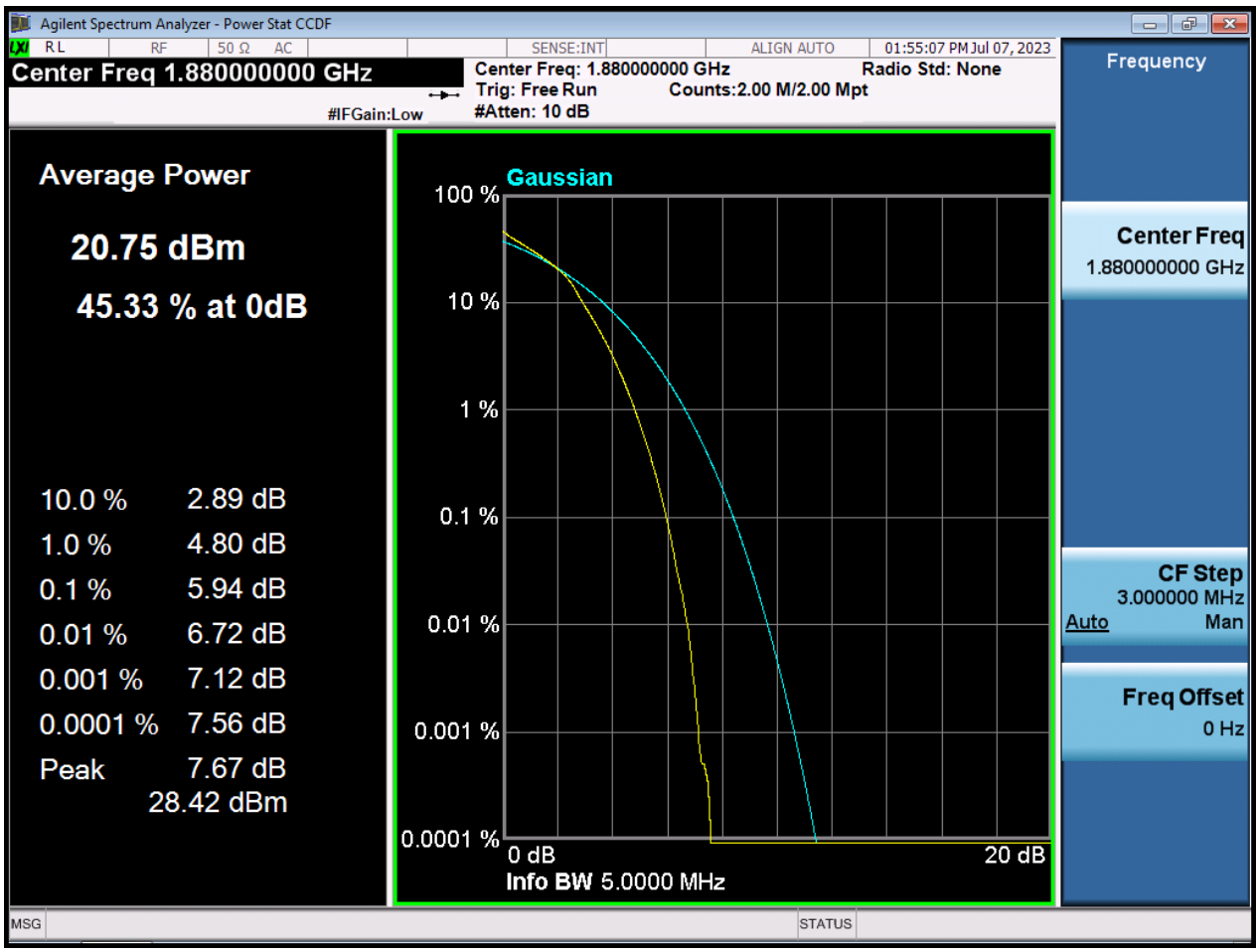
BW3 M_PAR_Middle Channel_256QAM_FullRB



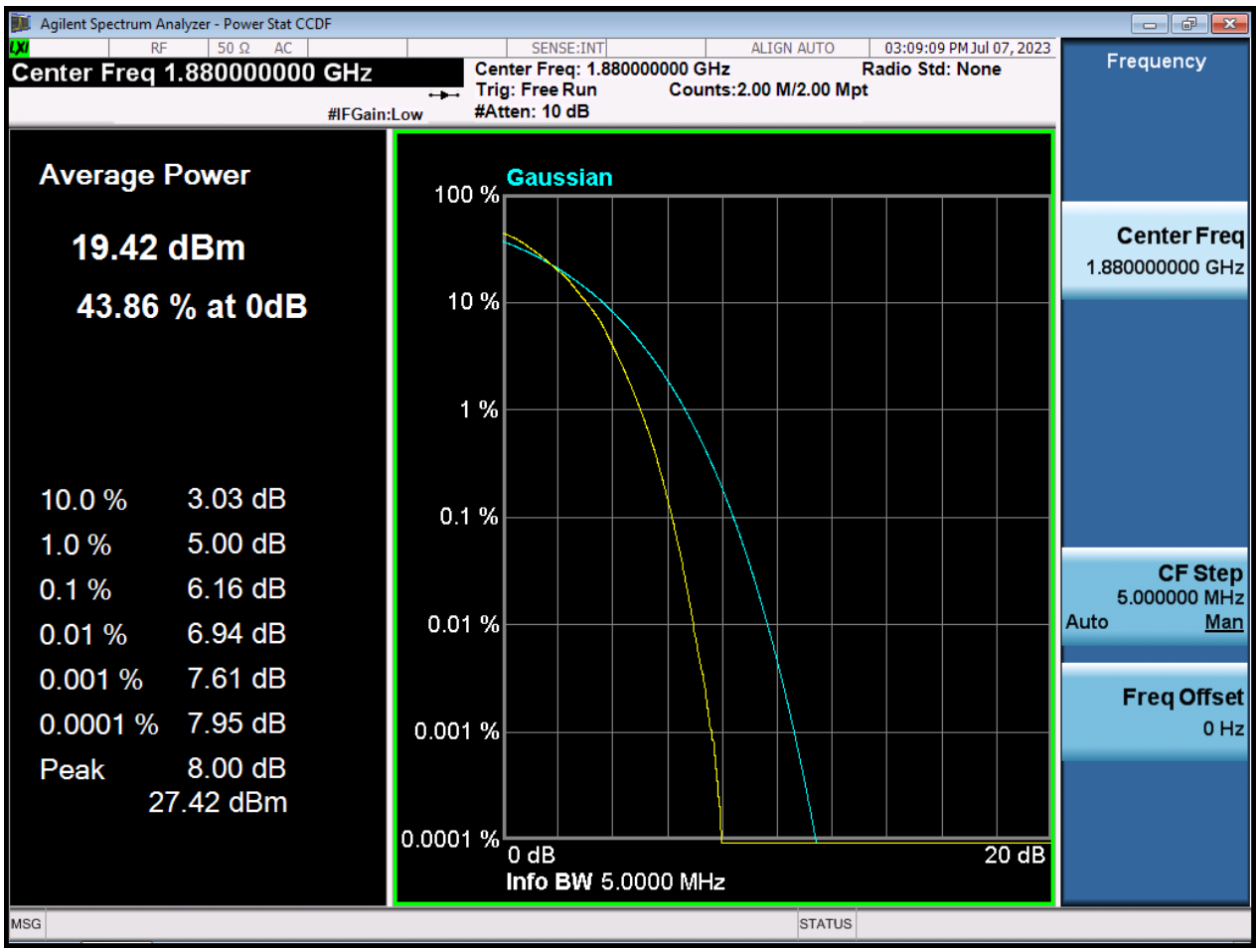
BW5 M_PAR_Middle Channel_QPSK_FullRB



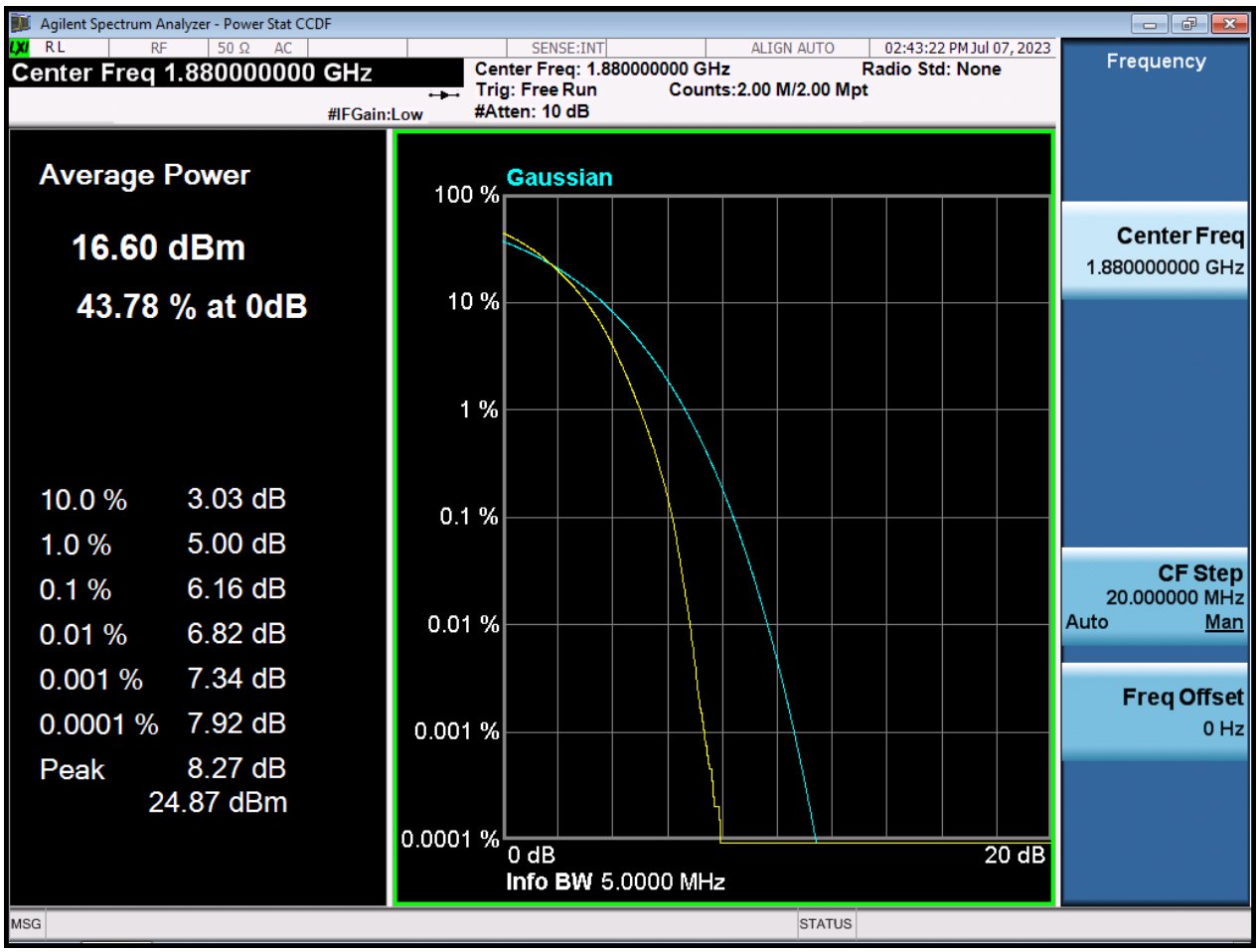
BW5 M_PAR_Middle Channel_16QAM_FullRB



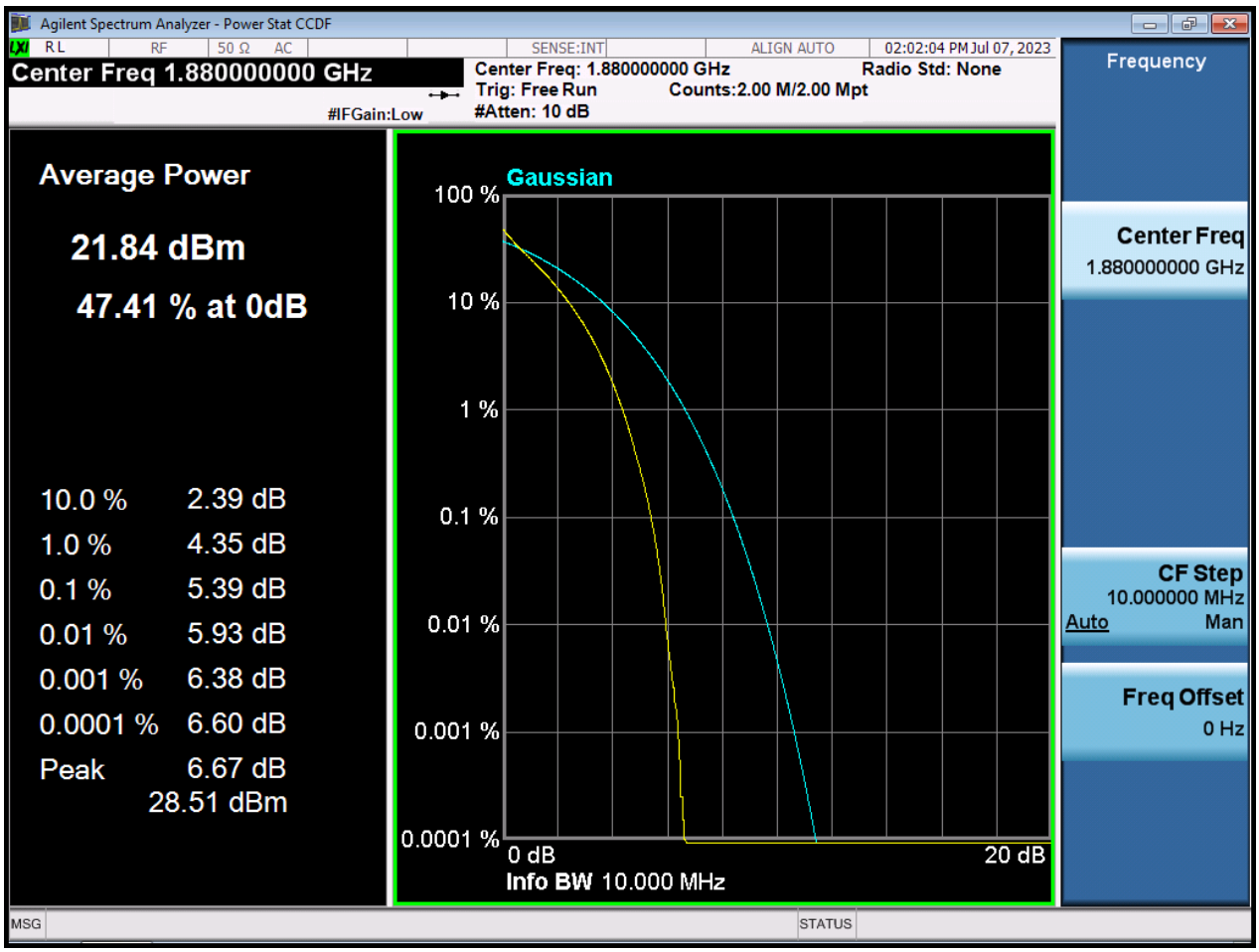
BW5 M_PAR_Middle Channel_64QAM_FullRB



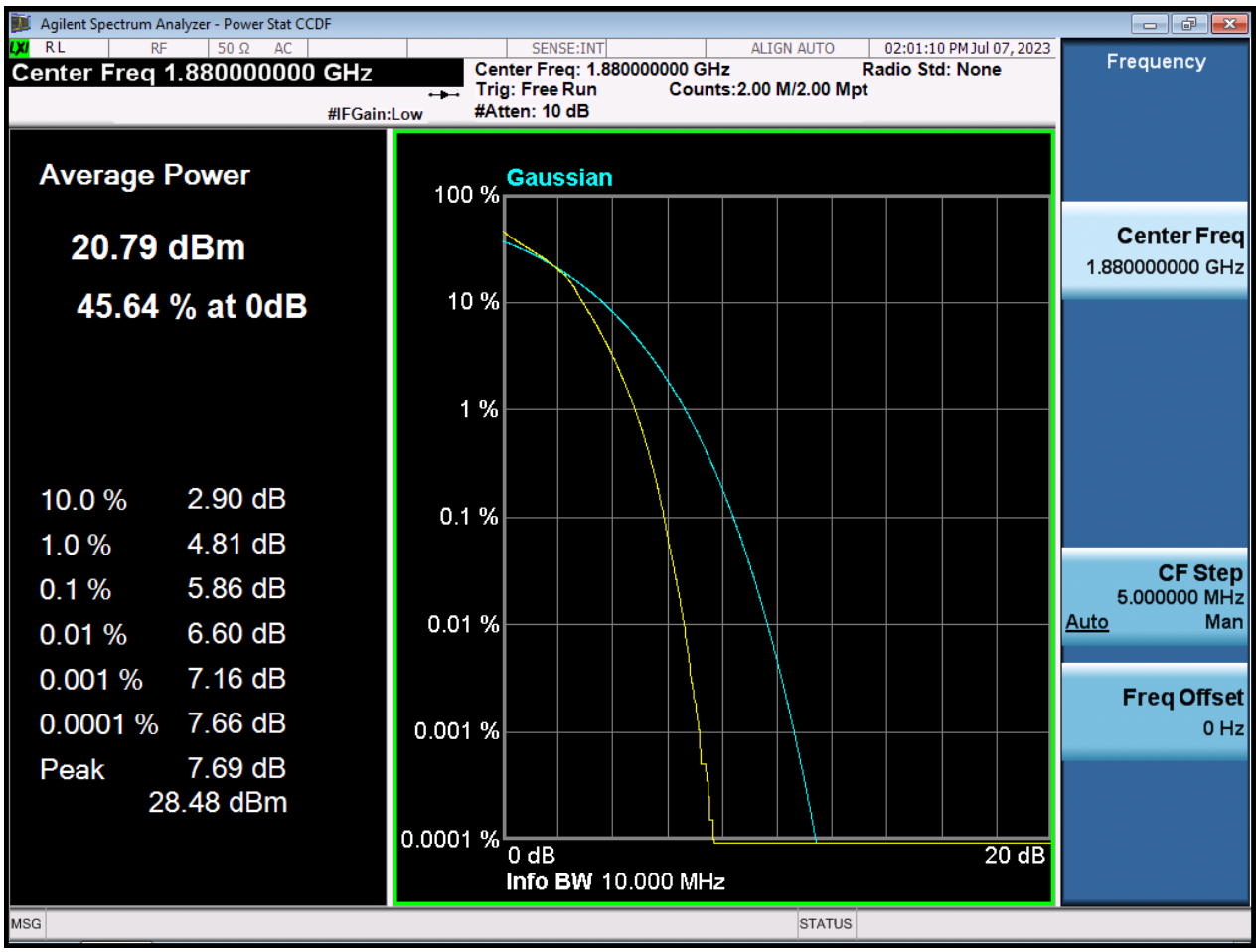
BW5 M_PAR_Middle Channel_256QAM_FullRB



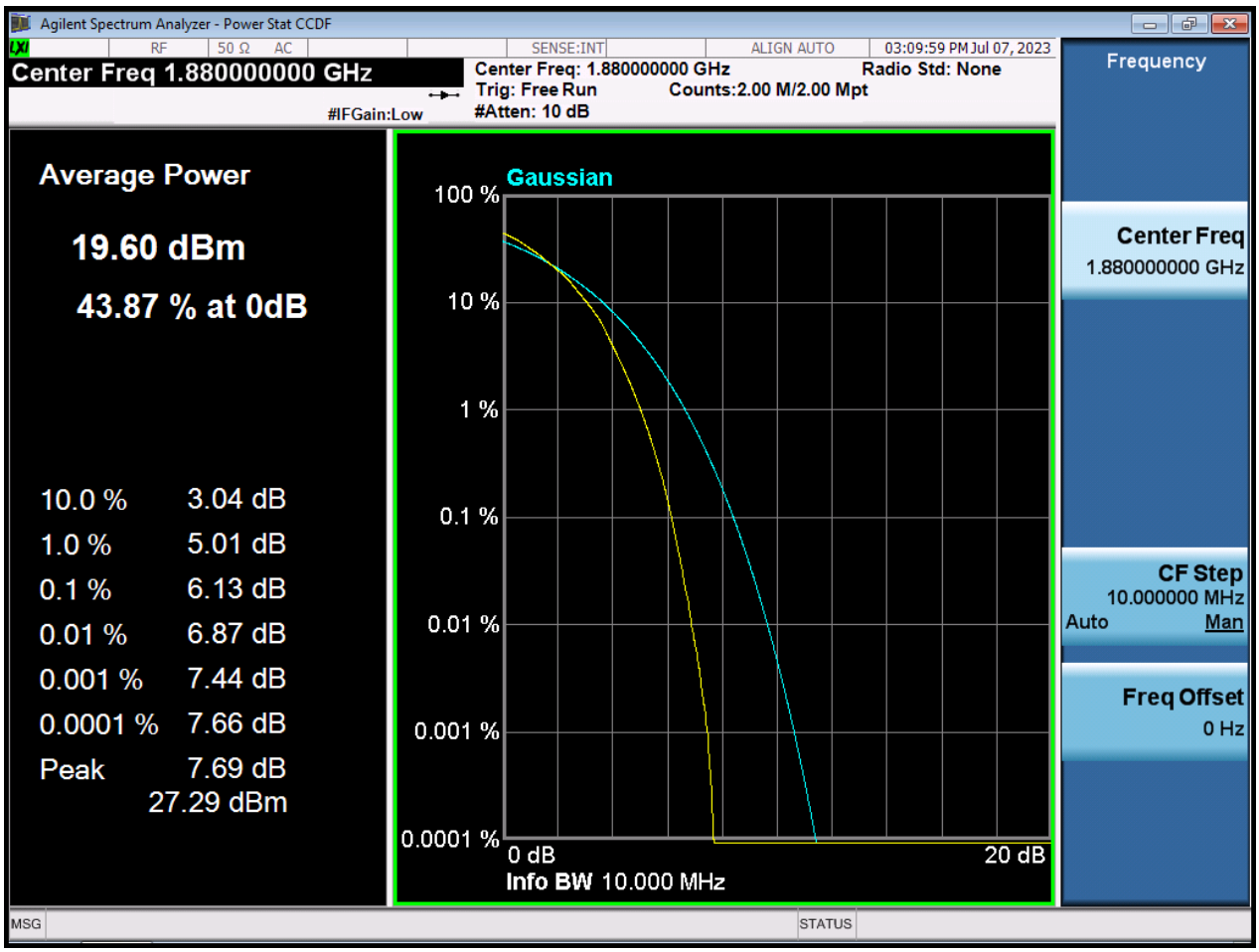
BW10 M_PAR_Middle Channelz_QPSK_FullRB



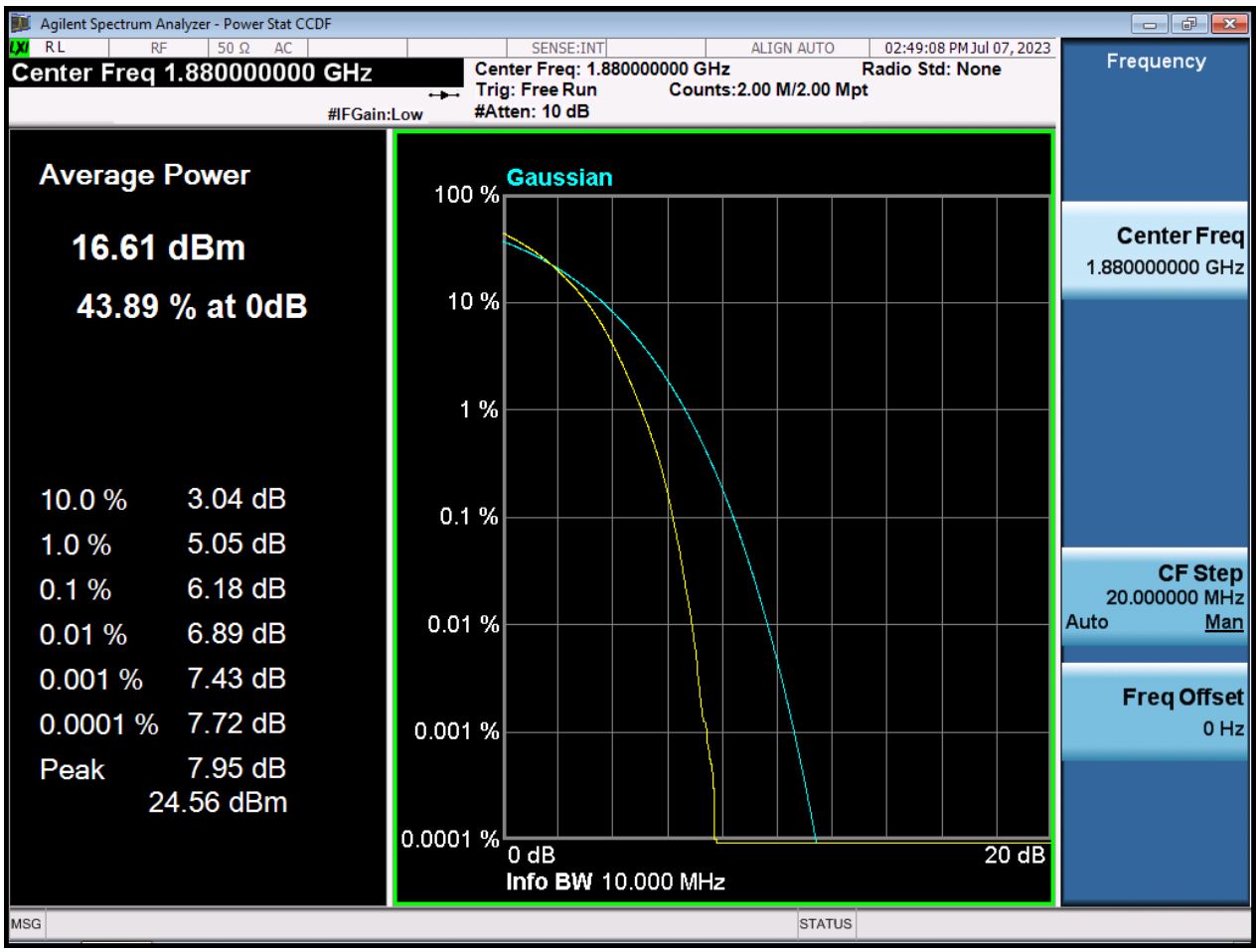
BW10 M_PAR_Middle Channel_16QAM_FullRB



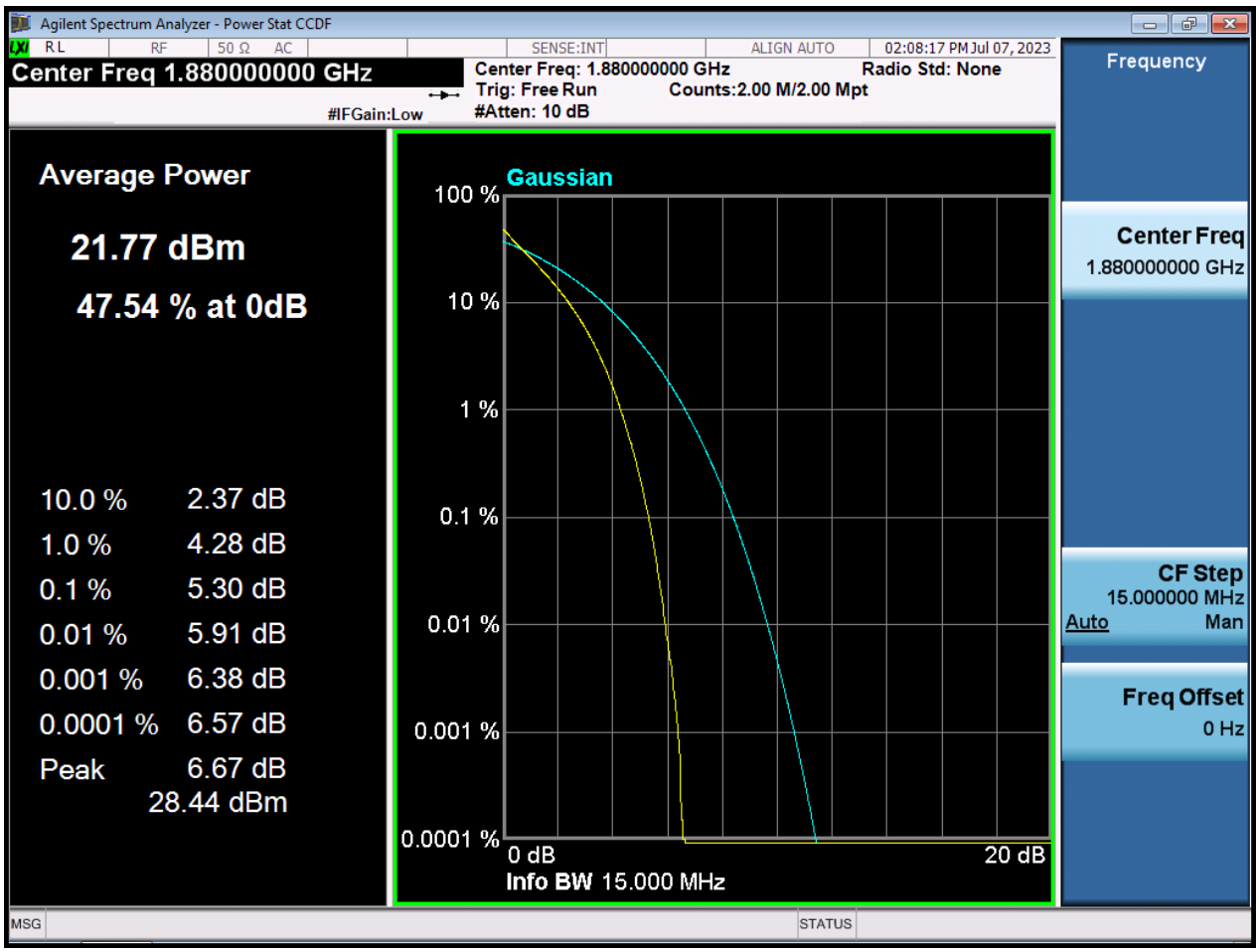
BW10 M_PAR_Middle Channel_64QAM_FullRB



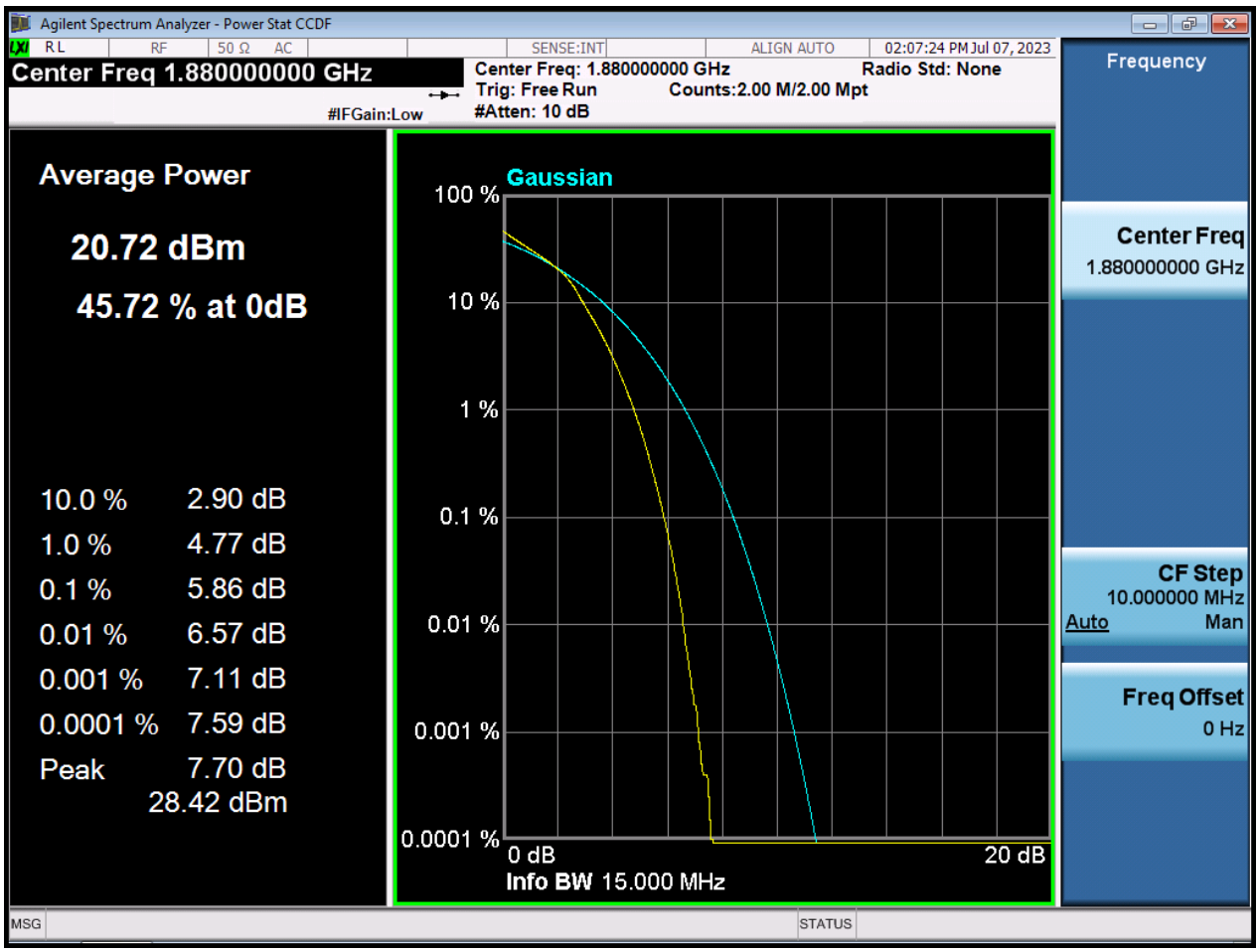
BW10 M_PAR_Middle Channel_256QAM_FullRB



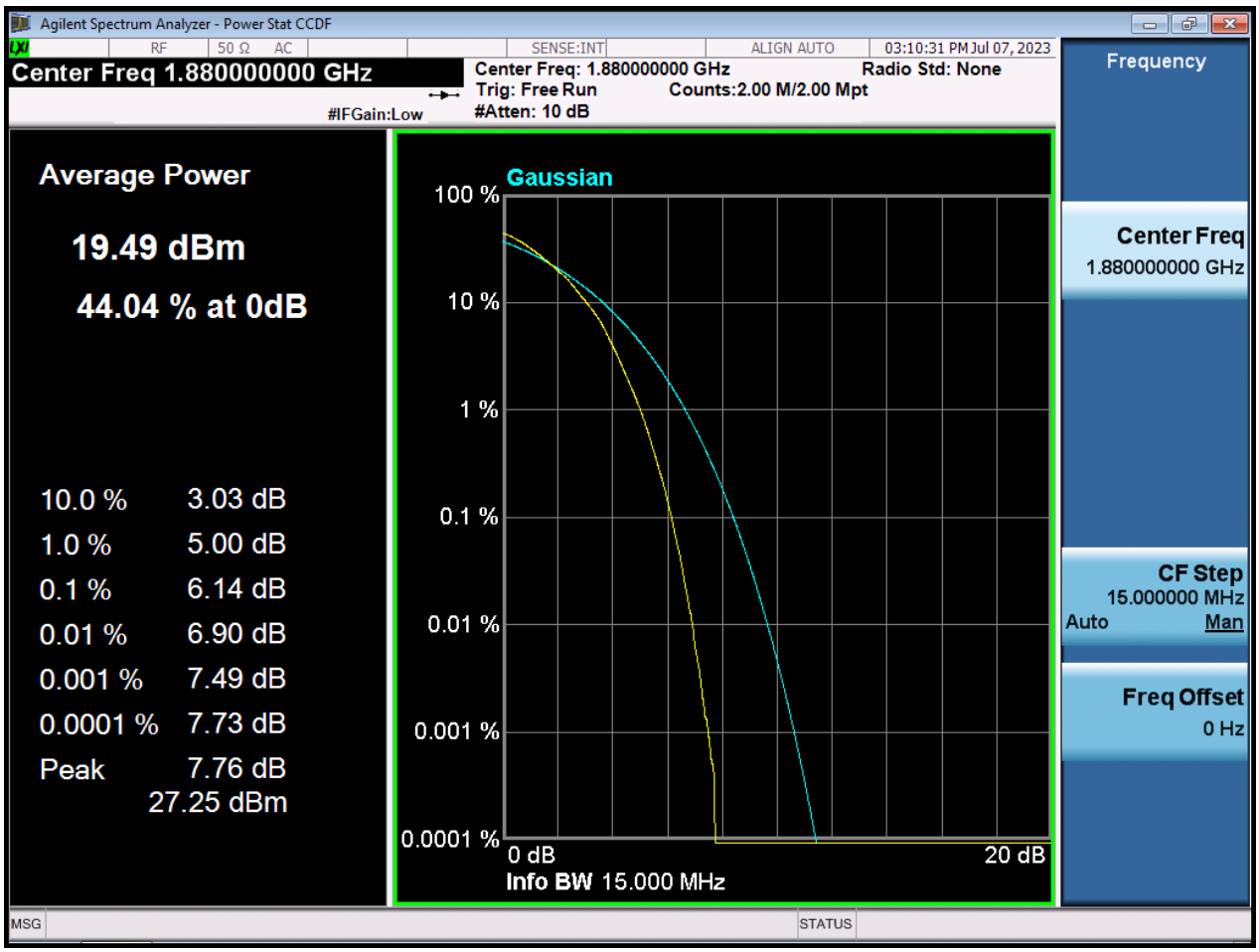
BW15 M_PAR_Middle Channel_QPSK_FullRB



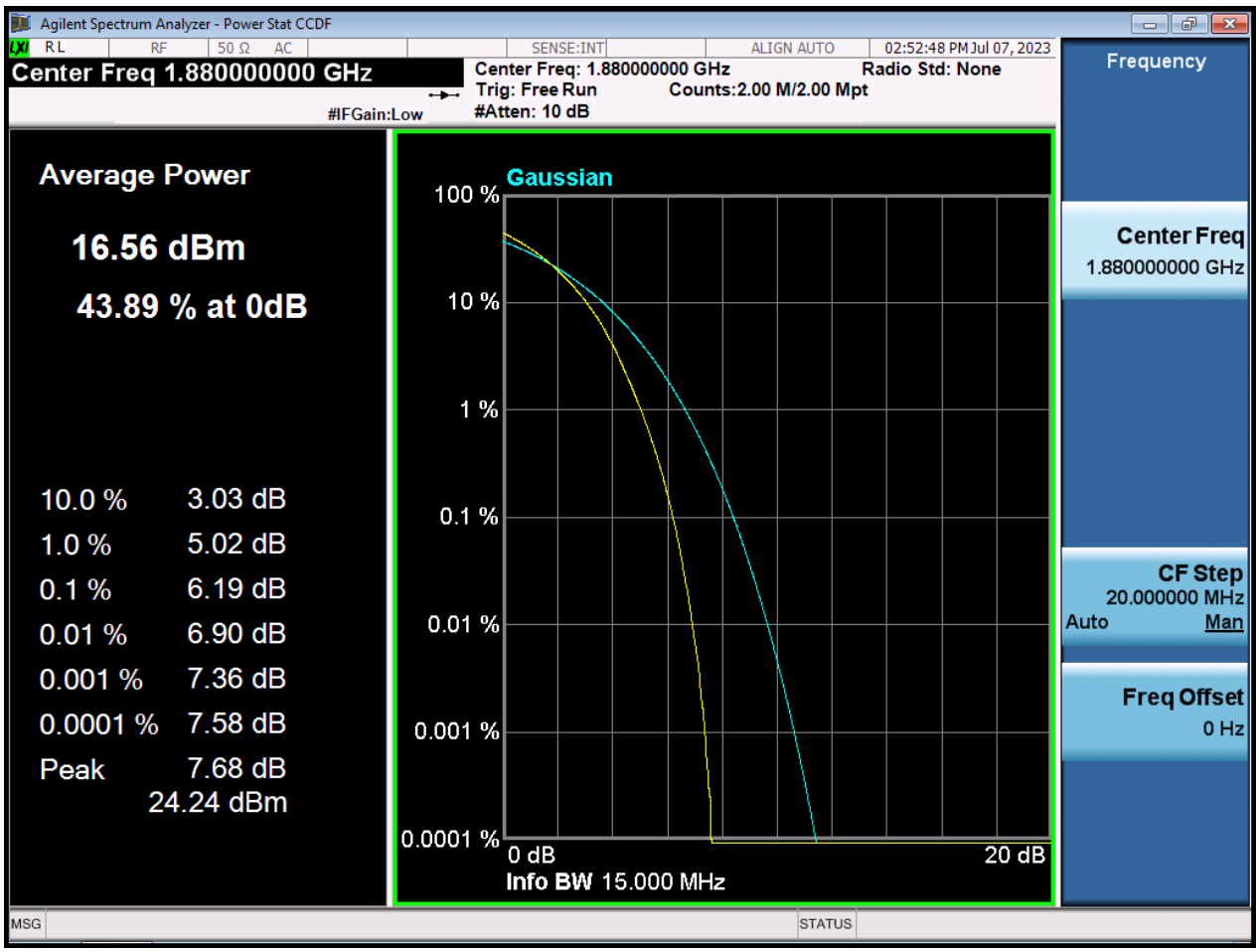
BW15 M_PAR_Middle Channel_16QAM_FullRB



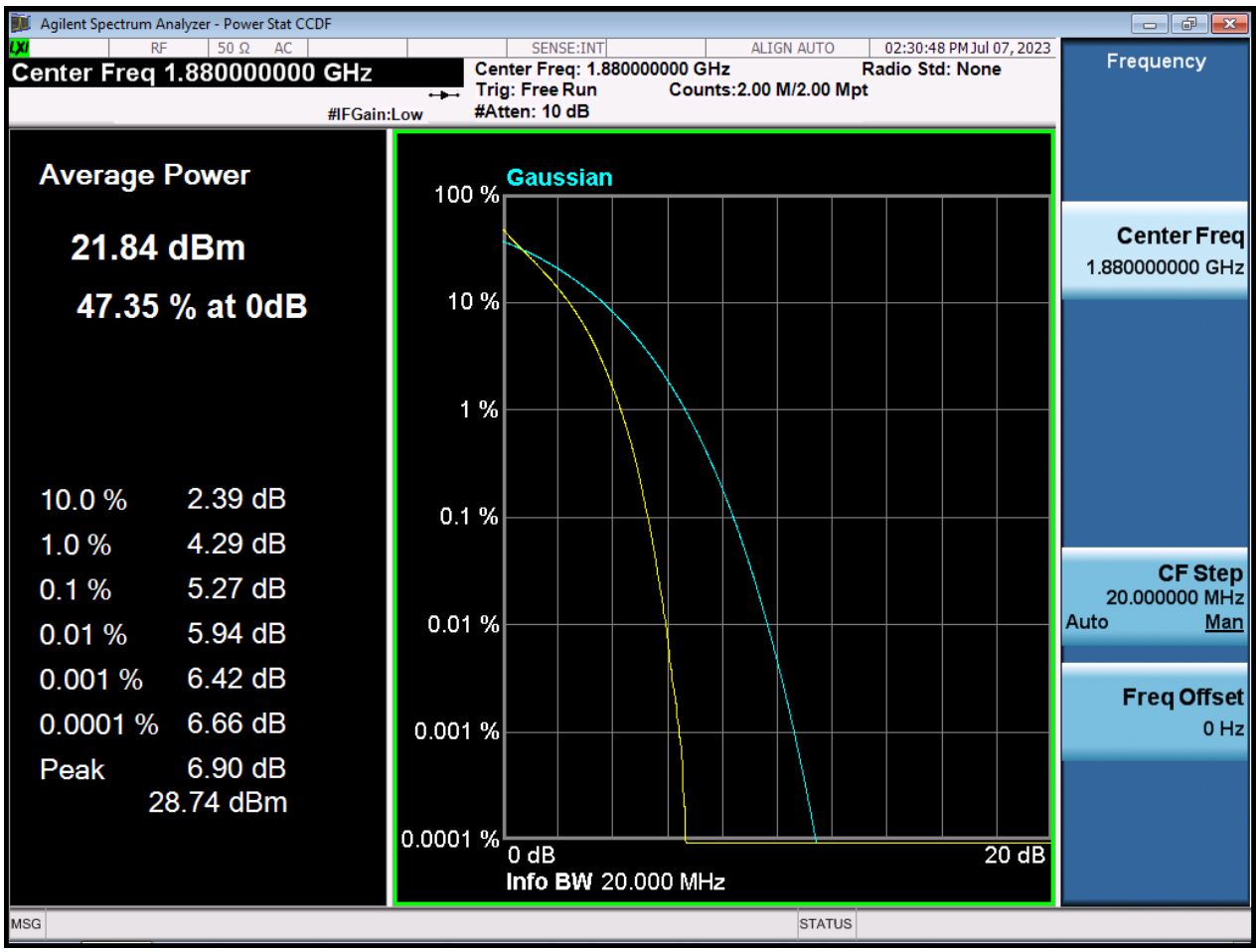
BW15 M_PAR_Middle Channel_64QAM_FullRB



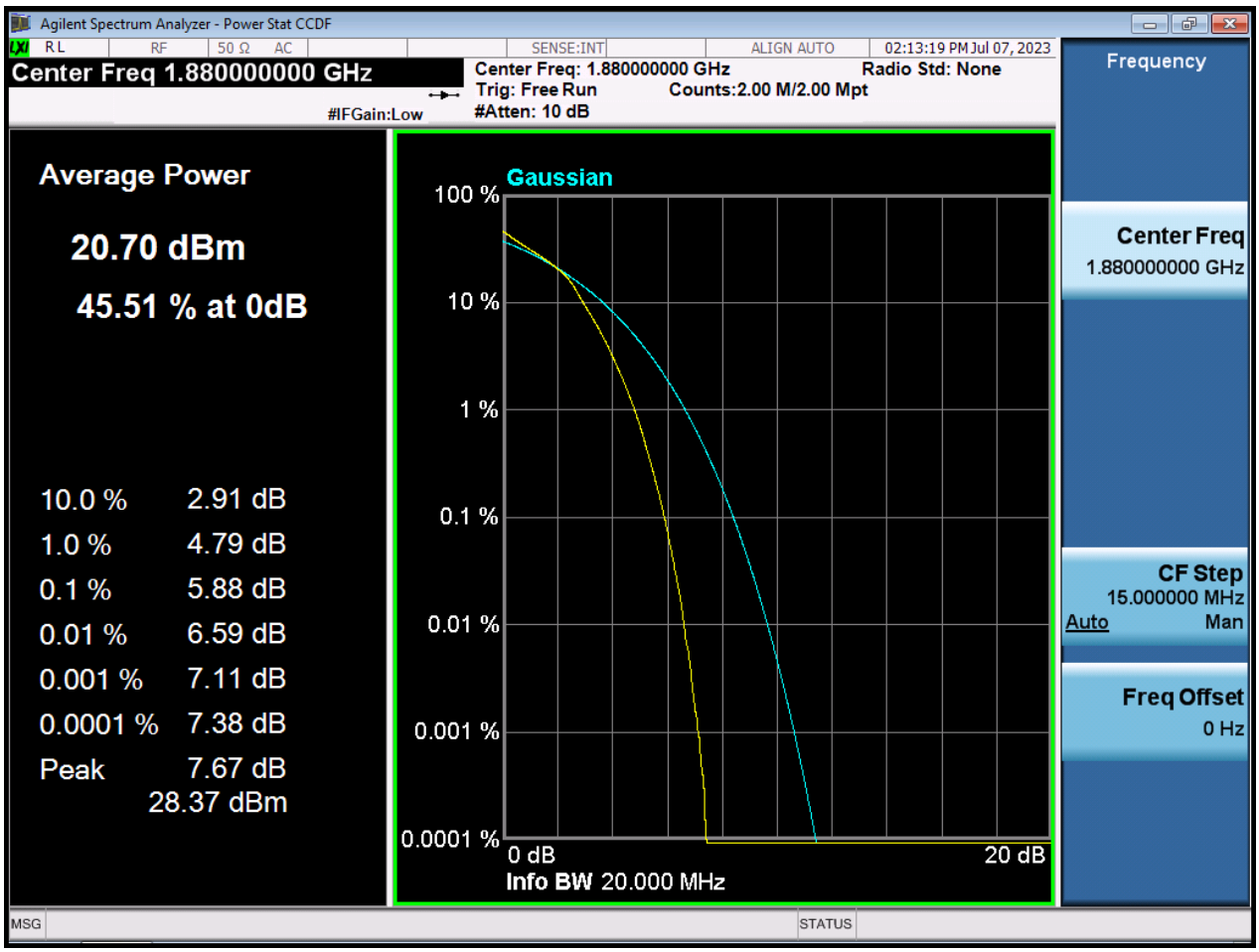
BW15 M_PAR_Middle Channel_256QAM_FullRB



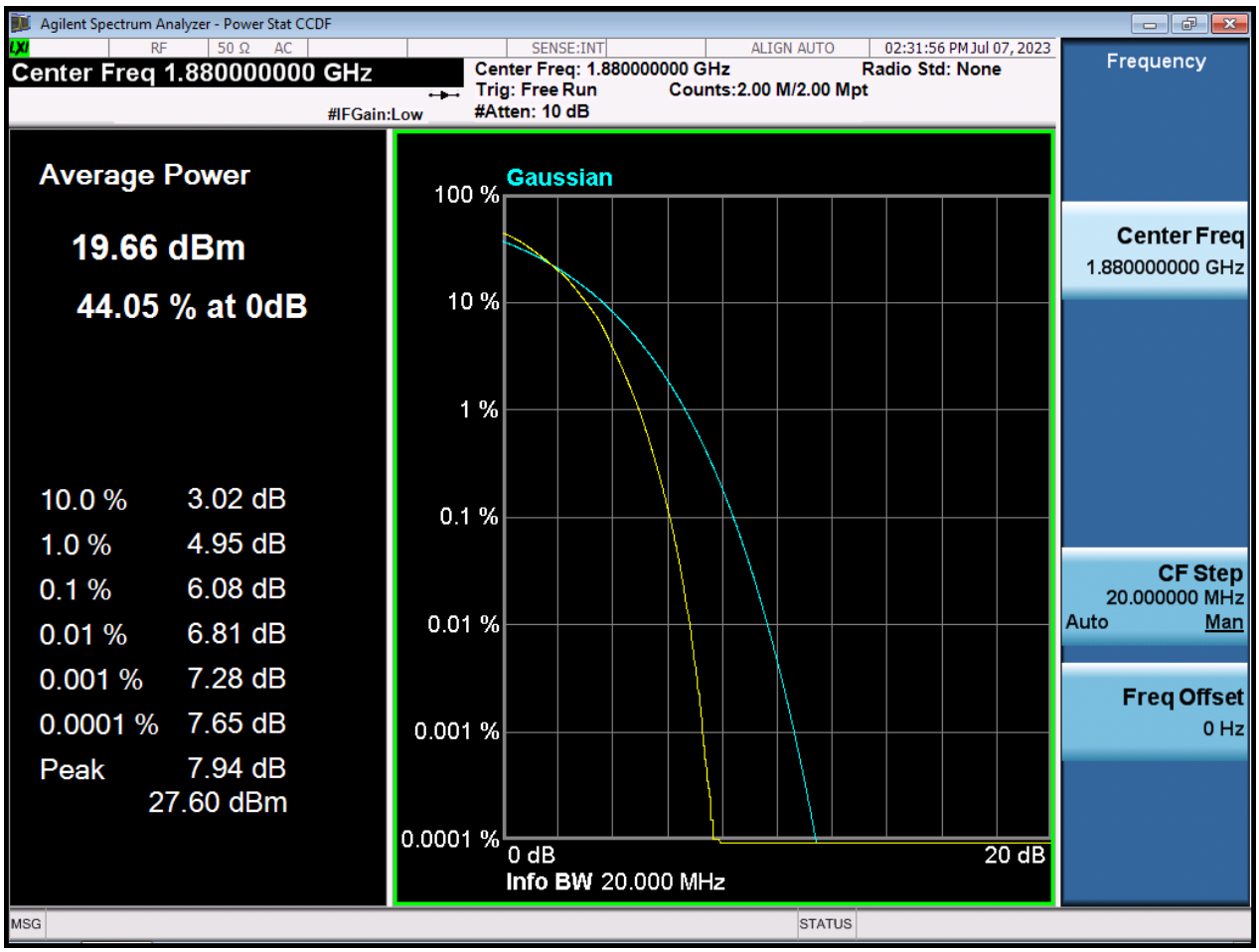
BW20 M_PAR_Middle Channel_QPSK_FullRB



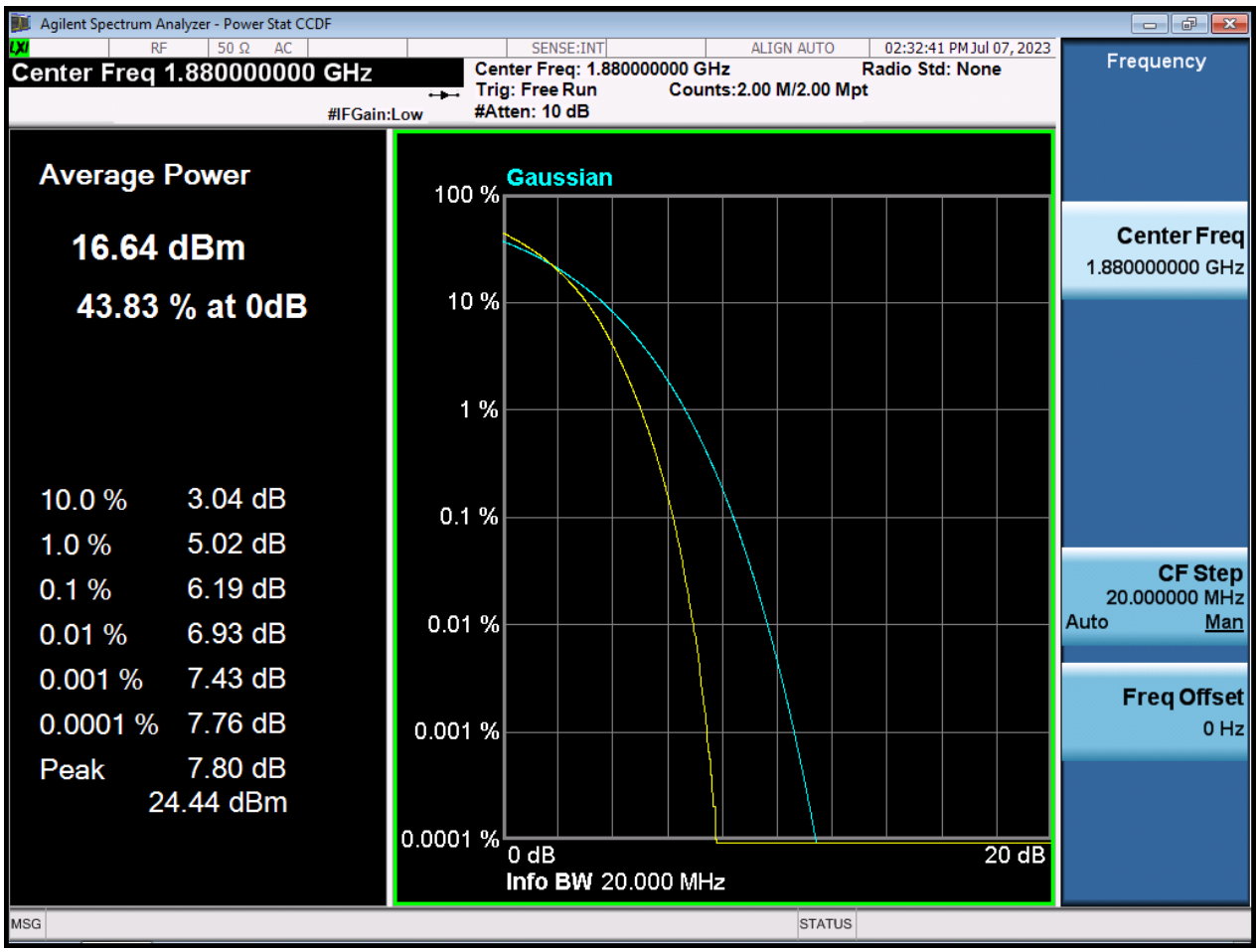
BW20 M_PAR_Middle Channel_16QAM_FullRB



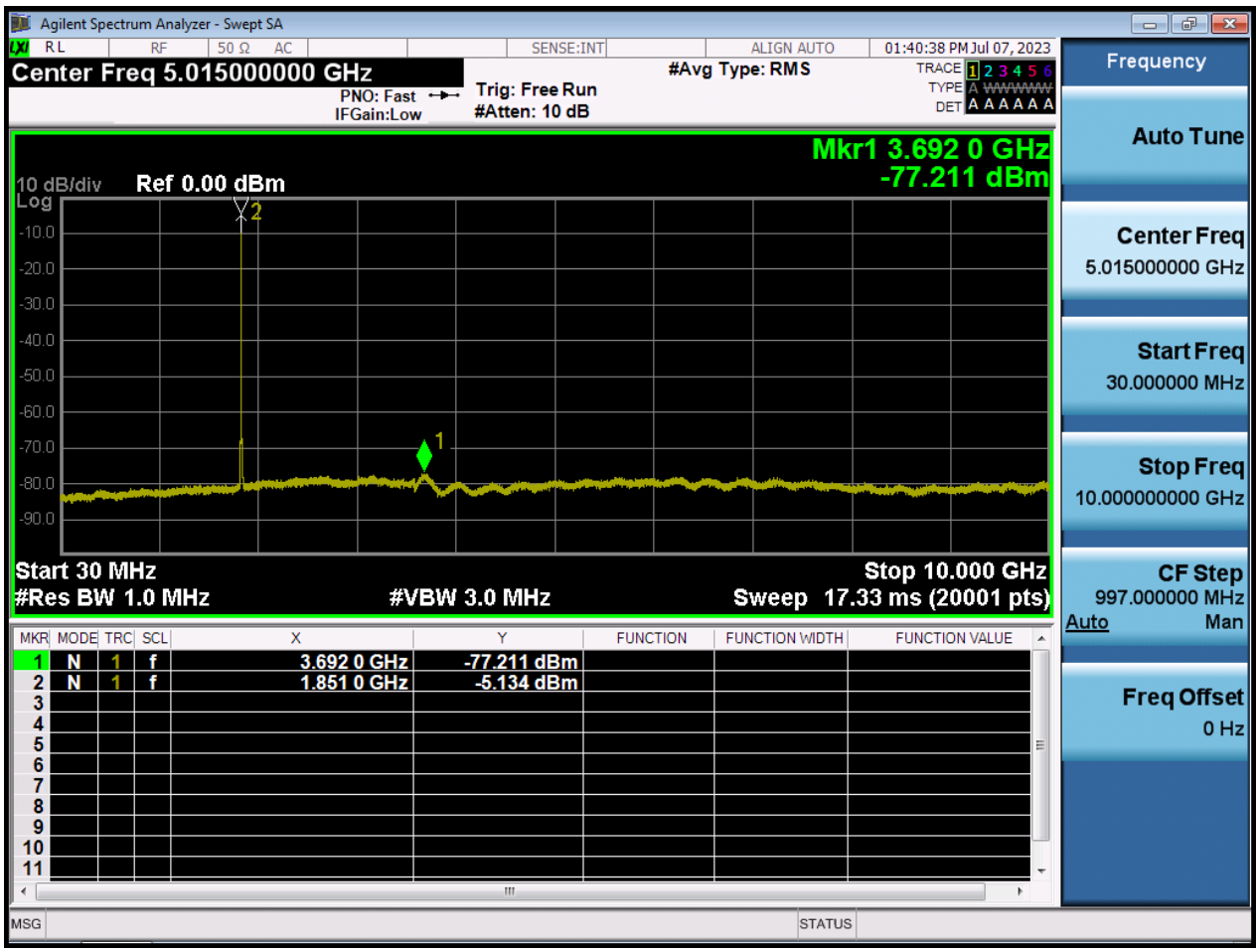
BW20 M_PAR_Middle Channel_64QAM_FullRB



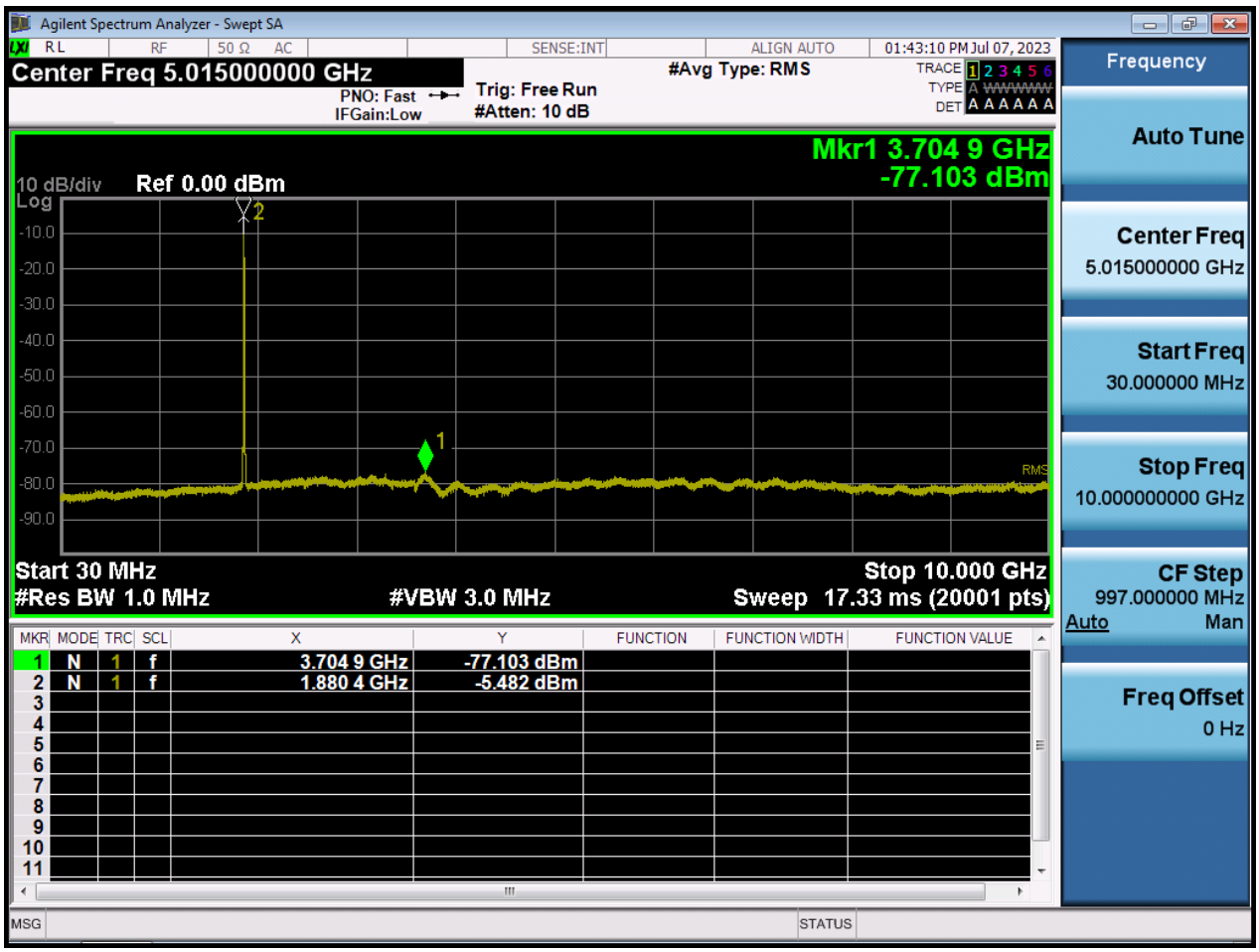
BW20 M_PAR_Middle Channel_256QAM_FullRB



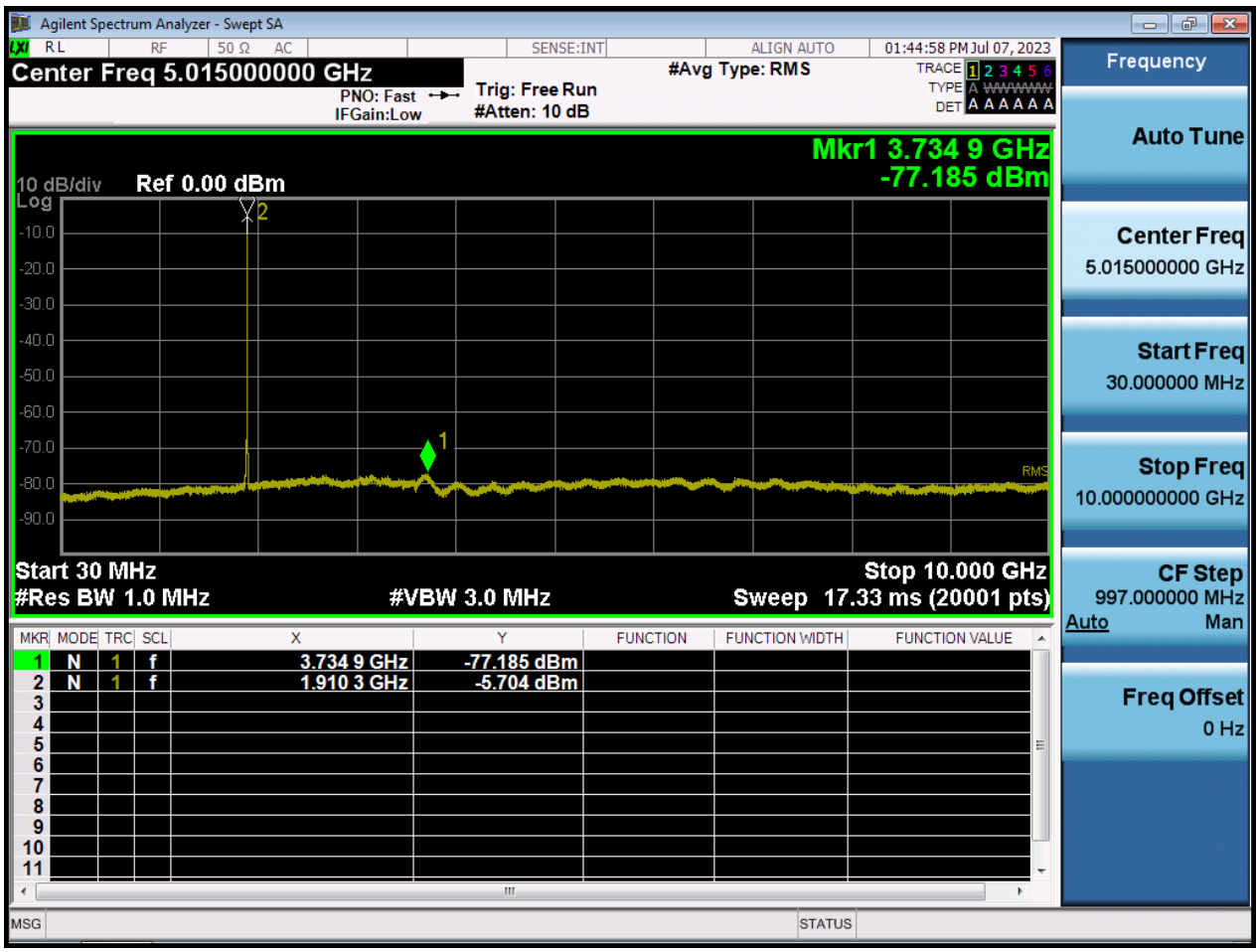
BW1.4 M_CSE(30 M-10 G)_Lowest Channel_QPSK_1RB



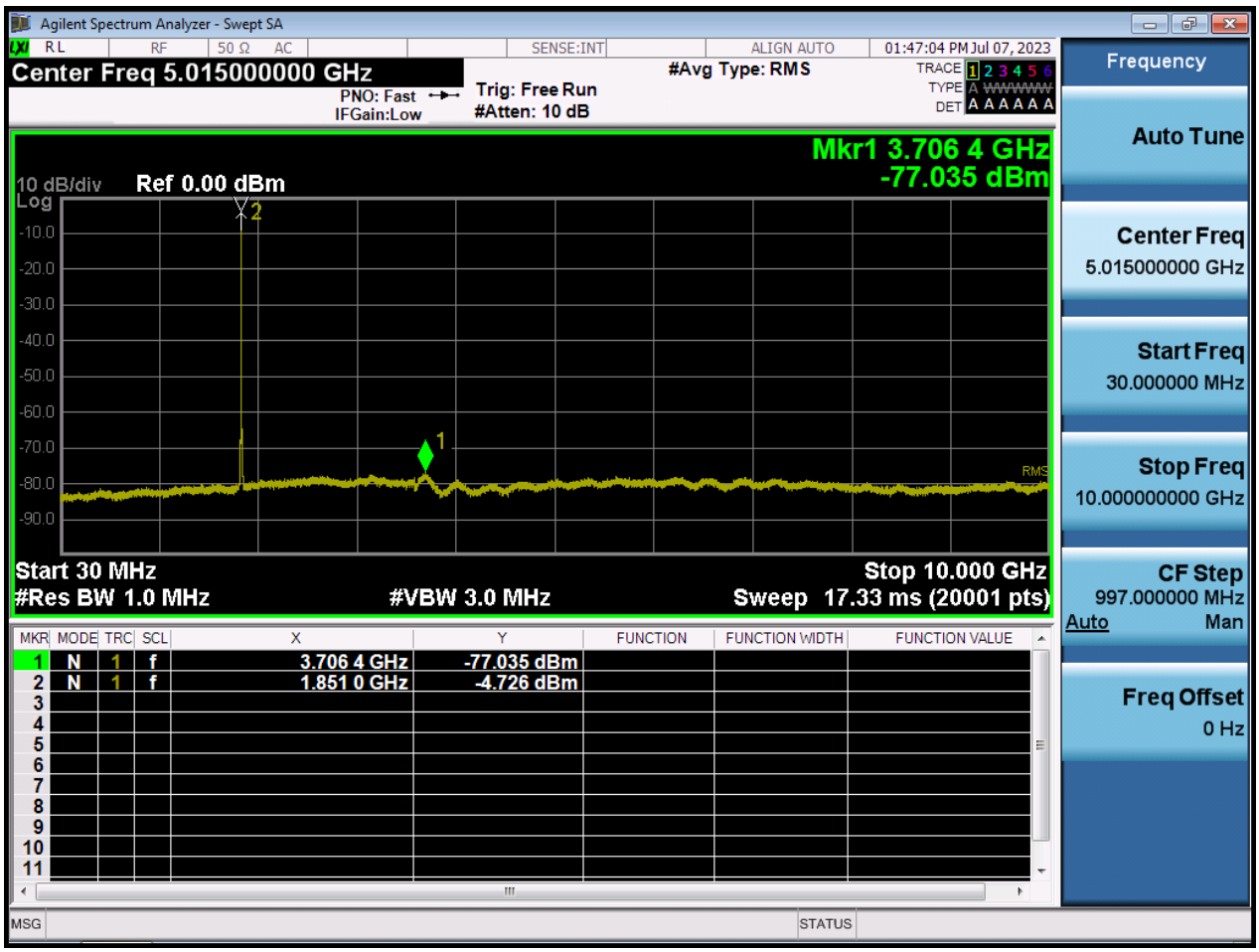
BW1.4 M_CSE(30 M-10 G)_Middle Channel_QPSK_1RB



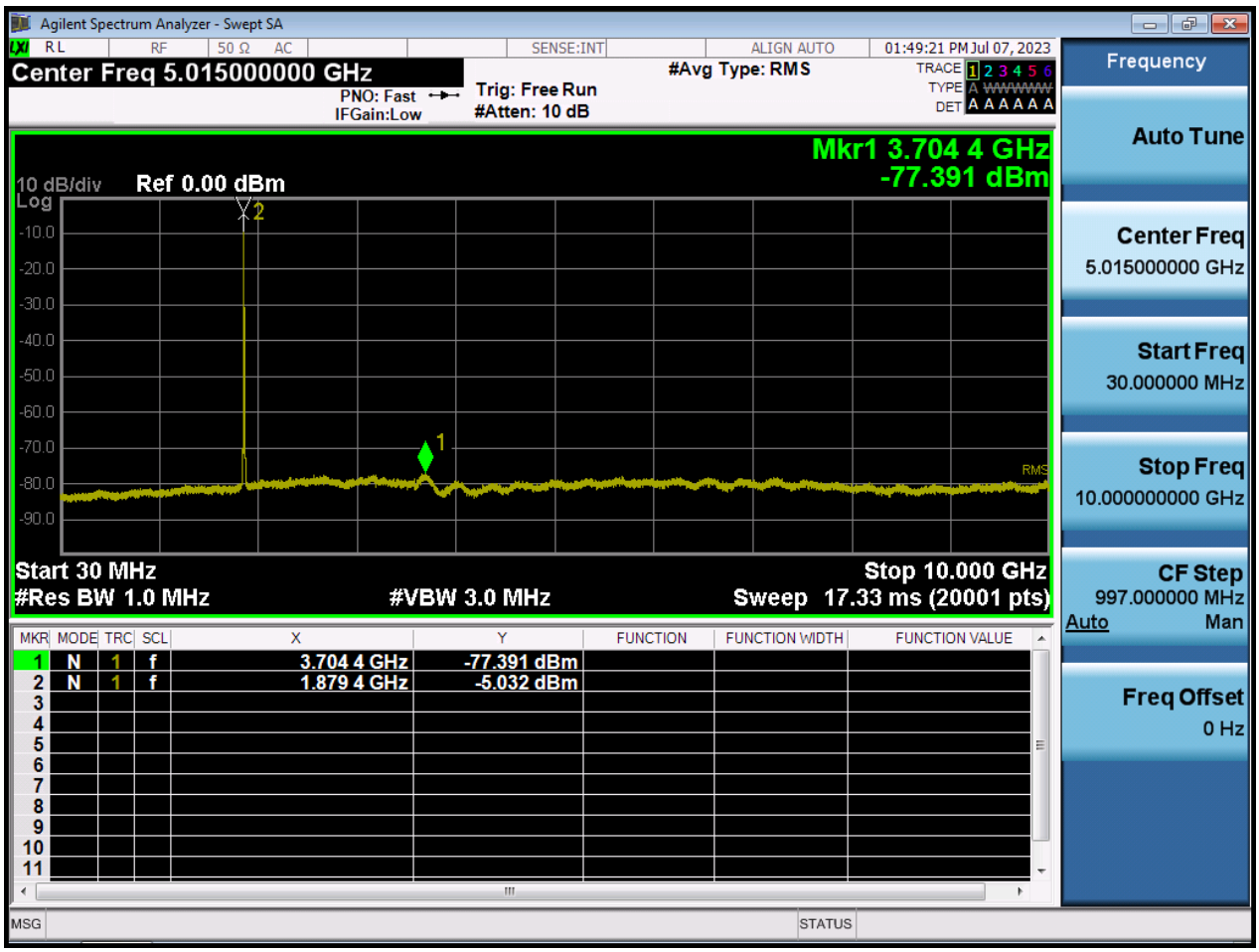
BW1.4 M_CSE(30 M-10 G)_Highest Channel_QPSK_1RB



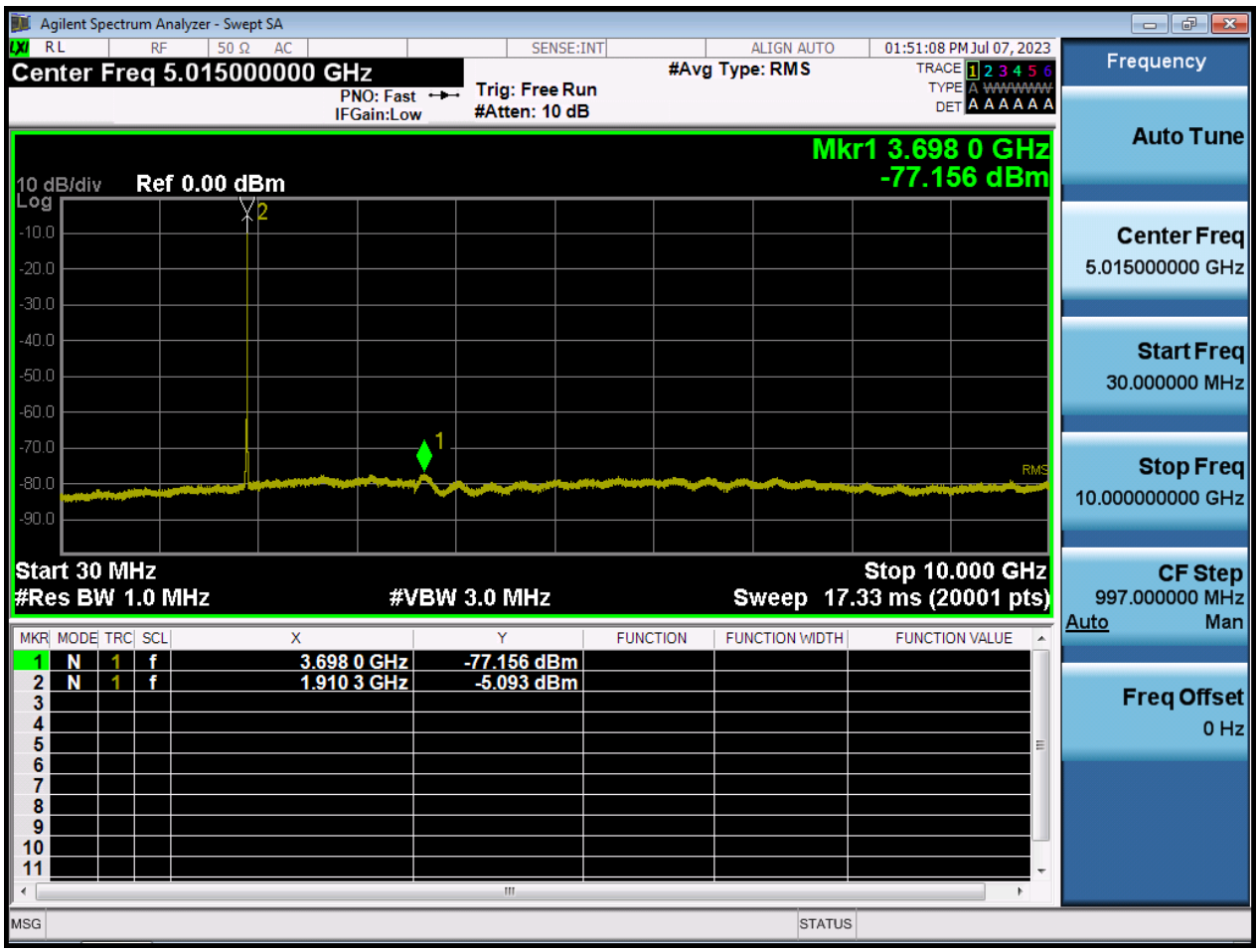
BW3 M_CSE(30 M-10 G)_Lowest Channel_QPSK_1RB



BW3 M_CSE(30 M-10 G)_Middle Channel_QPSK_1RB



BW3 M_CSE(30 M-10 G)_Highest Channel_QPSK_1RB



BW5 M_CSE(30 M-10 G)_Lowest Channel_QPSK_1RB