

# TEST REPORT

FCC LTE B2 Test for TC10AN3NUN8  
Class II Permissive Change

**APPLICANT**  
LG Electronics Inc.

**REPORT NO.**  
HCT-RF-2107-FC002-R1

**DATE OF ISSUE**  
July 20, 2021

**Tested by**  
Jae Mun Do

**Technical Manager**  
Jong Seok Lee

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



**HCT Co., Ltd.**

74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA  
Tel. +82 31 634 6300 Fax. +82 31 645 6401

<p><b>TEST REPORT</b></p> <p>FCC LTE Test for TC10AN3NUN8</p>	<p><b>REPORT NO.</b> HCT-RF-2107-FC002-R1</p> <p><b>DATE OF ISSUE</b> July 20, 2021</p> <p><b>Additional Model</b> TC10AN3NUN5, TC10AN3NUN6, TC10AN3NUN7</p>
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<b>Applicant</b>	<b>LG Electronics Inc.</b> 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea
<b>Eut Type Model Name</b>	GSM/WCDMA/LTE Telematics TC10AN3NUN8
<b>FCC ID</b>	BEJLTC10N
<b>FCC Rule Part(s):</b>	§ 24, § 2
<b>FCC Classification:</b>	PCS Licensed Transmitter (PCB)

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

## REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	July 09, 2021	Initial Release
1	July 20, 2021	Revised the EUT Type

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)

If this report is required to confirmation of authenticity, please contact to [www.hct.co.kr](http://www.hct.co.kr)

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## MEASUREMENT REPORT

### 1. GENERAL INFORMATION

Applicant Name:	LG Electronics Inc.
Address:	222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea
FCC ID:	BEJLTC10N
Application Type:	Class II Permissive Change
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule(s):	§ 24, § 2
EUT Type:	GSM/WCDMA/LTE Telematics
Model(s):	TC10AN3NUN8
Additional Model:	TC10AN3NUN5, TC10AN3NUN6, TC10AN3NUN7
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 03, 2021 ~ June 28, 2021
Serial number:	Radiated: TC10AN3NUN8-02 Conducted: TC10AN3NUN8-01

### 1.1. MAXIMUM OUTPUT POWER

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	0.092	19.62
		1M09W7D	16QAM	0.073	18.61
LTE - Band2 (3)	1851.5 - 1908.5	2M71G7D	QPSK	0.095	19.76
		2M70W7D	16QAM	0.075	18.76
LTE - Band2 (5)	1852.5 - 1907.5	4M50G7D	QPSK	0.100	20.02
		4M52W7D	16QAM	0.079	18.96
LTE - Band2 (10)	1855.0 - 1905.0	8M99G7D	QPSK	0.106	20.24
		8M96W7D	16QAM	0.084	19.26
LTE - Band2 (15)	1857.5 - 1902.5	13M4G7D	QPSK	0.102	20.09
		13M4W7D	16QAM	0.081	19.11
LTE - Band2 (20)	1860.0 - 1900.0	18M0G7D	QPSK	0.102	20.08
		17M9W7D	16QAM	0.080	19.02

## 2. INTRODUCTION

### 2.1. DESCRIPTION OF EUT

The EUT was a GSM/WCDMA/LTE Telematics device with GSM/GPRS/EGPRS/UMTS and LTE.

### 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

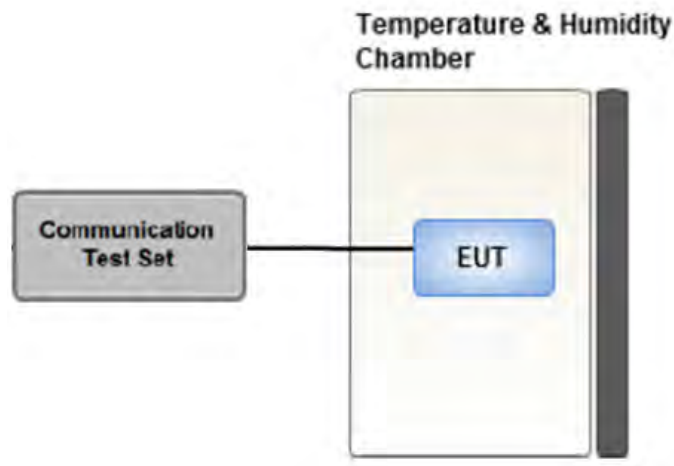
The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.

### 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	- KDB 971168 D01 v03r01 – Section 5.2
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4 - ANSI C63.26-2015 – Section 5.2.6(only GSM)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

### 3.2 CONDUCTED OUTPUT POWER



Test setup

#### Test Overview

When an average power meter is used to perform RF output power measurements, the fundamental condition that measurements be performed only over durations of active transmissions at maximum output power level applies.

Conducted Output Power was tested in accordance with KDB971168 D01 Power Meas License Digital Systems v03r01, Section 5.2.

### 3.3 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 1MHz
3. VBW  $\geq$  3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

#### Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, 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;

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

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.

### 3.4 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 = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq$  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<sup>th</sup> 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 dat
3. For spurious emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated. The spurious emissions is calculated by the following formula;

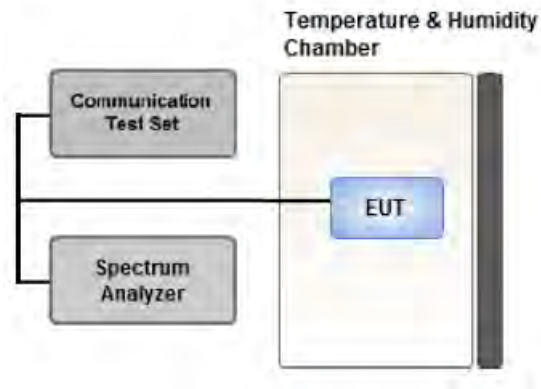
$$\text{Result}_{(\text{dBm})} = P_{g(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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

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

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

### 3.5 PEAK- TO- AVERAGE RATIO



Test setup

#### ① CCDF Procedure for PAPR

##### Test Settings

1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Set the measurement interval as follows:
  - for continuous transmissions, set to 1 ms,
  - or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
4. Record the maximum PAPR level associated with a probability of 0.1%.

② Alternate Procedure for PAPR

Use one of the procedures presented in 5.2(ANSI C63.26-2015) to measure the total peak power and record as  $P_{Pk}$ .

Use one of the applicable procedures presented 5.2(ANSI C63.26-2015) to measure the total average power and record as  $P_{Avg}$ . Determine the P.A.R. from:

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

**Test Settings(Peak Power)**

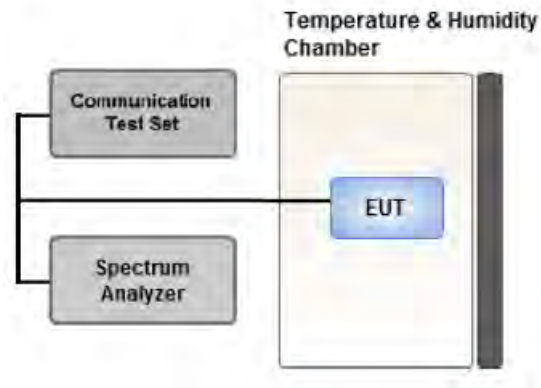
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW  $\geq 3 \times$  RBW.

1. Set the RBW  $\geq$  OBW.
2. Set VBW  $\geq 3 \times$  RBW.
3. Set span  $\geq 2 \times$  OBW.
4. Sweep time  $\geq 10 \times$  (number of points in sweep)  $\times$  (transmission symbol period).
5. Detector = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the peak amplitude level.

**Test Settings(Average Power)**

1. Set span to  $2 \times$  to  $3 \times$  the OBW.
2. Set RBW  $\geq$  OBW.
3. Set VBW  $\geq 3 \times$  RBW.
4. Set number of measurement points in sweep  $\geq 2 \times$  span / RBW.
5. Sweep time:  
Set  $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission period})]$  for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
6. Detector = power averaging (rms).
7. Set sweep trigger to "free run."
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
9. Use the peak marker function to determine the maximum amplitude level.
10. Add  $[10 \times \log (1/\text{duty cycle})]$  to the measured maximum power level to compute the average power during continuous transmission. For example, add  $[10 \times \log (1/0.25)] = 6$  dB if the duty cycle is a constant 25%.

### 3.6 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.

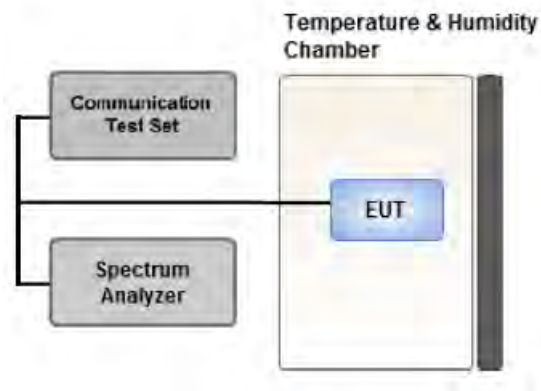
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 - 5% of the expected OBW
3. VBW  $\geq$  3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 - 7 were repeated after changing the RBW such that it would be within 1 - 5% of the 99% occupied bandwidth observed in Step 7

### 3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

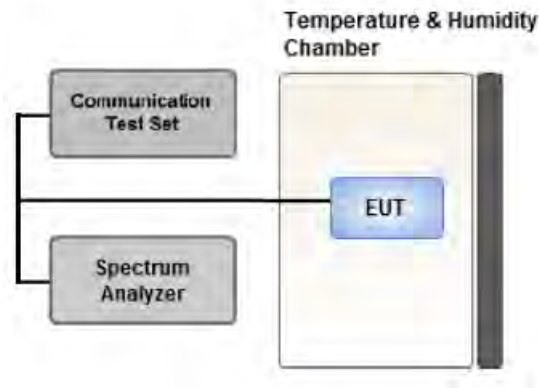
#### Test Overview

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

#### Test Settings

1. RBW = 1 MHz
2. VBW  $\geq$  3 MHz
3. Detector = RMS
4. Trace Mode = trace average
5. Sweep time = auto
6. Number of points in sweep  $\geq$  2 x Span / RBW

### 3.8 BAND EDGE



Test setup

#### Test Overview

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

#### Test Settings

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

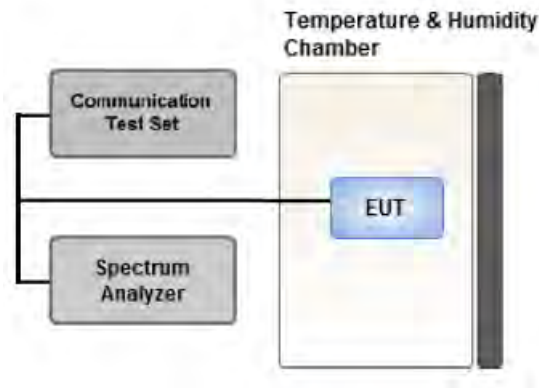
#### Test Notes

According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \times \log(P)$  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.

### 3.9 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.

### 3.10 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.
  - 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.
  - TC10AN3NUN8 & additional models were tested and the worst case results are reported.
- (Worst case : TC10AN3NUN8)

[ Worst case ]

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

### 3.11 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.
- TC10AN3NUN8 & additional models were tested and the worst case results are reported.

(Worst case : TC10AN3NUN8)

[ Worst case ]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset		
Occupied Bandwidth	QPSK, 16QAM	1.4, 3, 5, 10, 15, 20	Mid	Full RB	0		
Peak-To-Average Ratio	QPSK, 16QAM	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

#### 4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
T&M SYSTEM	FBSR-02B(WHK1.2/15G-10EF)/H.P.F	-	03/02/2021	Annual	03/02/2022
T&M SYSTEM	FBSR-02B(WHK3.3/18G-10EF)/H.P.F	-	03/02/2021	Annual	03/02/2022
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	04/07/2021	Annual	04/07/2022
Hewlett Packard	E3632A/DC Power Supply	MY40004427	09/16/2020	Annual	09/16/2021
Schwarzbeck	UHAP/ Dipole Antenna	557	04/05/2021	Biennial	04/05/2023
Schwarzbeck	UHAP/ Dipole Antenna	558	04/05/2021	Biennial	04/05/2023
ESPEC	SU-642 / Chamber	93008124	03/15/2021	Annual	03/15/2022
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	147	08/29/2019	Biennial	08/29/2021
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1298	09/25/2019	Biennial	09/25/2021
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	10/13/2020	Biennial	10/13/2022
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	02/11/2020	Biennial	02/11/2022
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY50200093	11/17/2020	Annual	11/17/2021
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/01/2021	Annual	06/01/2022
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	100931	10/14/2020	Annual	10/14/2021
Agilent	8960 (E5515C)/ Base Station	MY48360800	08/26/2020	Annual	08/26/2021
Schwarzbeck	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-333	03/19/2020	Biennial	03/19/2022
Schwarzbeck	VULB9160/ Bilog Antenna	3150	03/03/2021	Biennial	03/03/2023
Schwarzbeck	VULB9168/ Hybrid Antenna	760	02/22/2021	Biennial	02/22/2023
Anritsu Corp.	MT8821C/Wideband Radio Communication Tester	6262116770	07/22/2020	Annual	07/22/2021
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	01/07/2021	Annual	01/07/2022
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/13/2020	Annual	07/13/2021
KEYSIGHT	N9030B / Signal Analyzer(5Hz~40.0GHz)	MY55480167	06/02/2021	Annual	06/02/2022
HCT CO., LTD.,	FCC LTE Mobile Conducted RF Automation Test Software	-	-	-	-

**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  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty ( $\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

## 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 + 10log <sub>10</sub> (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§ 2.1046	N/A	PASS
Peak- to- Average Ratio	§ 24.232(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§ 24.235	Emission must remain in band	PASS

### 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 + 10log <sub>10</sub> (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

### 8.1 CONDUCTED OUTPUT POWER

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
				18607	18900	19193
				1850.7 MHz	1880 MHz	1909.3 MHz
1.4 MHz	QPSK	1	0	23.80	23.65	23.26
		1	3	23.77	23.60	23.26
		1	5	23.76	23.56	23.22
		3	0	23.71	23.62	23.23
		3	1	23.76	23.52	23.26
		3	3	23.72	23.59	23.17
		6	0	22.77	22.68	22.29
	16QAM	1	0	22.74	22.65	22.36
		1	3	22.59	22.62	22.30
		1	5	22.67	22.70	22.32
		3	0	22.75	22.65	22.38
		3	1	22.69	22.64	22.30
		3	3	22.69	22.63	22.29
		6	0	21.87	21.74	21.45

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
				18615	18900	19185
				1851.5 MHz	1880 MHz	1908.5 MHz
3 MHz	QPSK	1	0	23.83	23.71	23.58
		1	7	23.81	23.61	23.41
		1	14	23.82	23.59	23.34
		8	0	22.83	22.77	22.47
		8	3	22.78	22.73	22.47
		8	7	22.77	22.69	22.35
		15	0	22.78	22.68	22.41
	16QAM	1	0	22.72	22.71	22.58
		1	7	22.79	22.61	22.33
		1	14	22.74	22.60	22.34
		8	0	21.92	21.76	21.59
		8	3	21.95	21.74	21.56
		8	7	21.93	21.71	21.44
		15	0	21.93	21.78	21.51

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
				18625	18900	19175
				1852.5 MHz	1880 MHz	1907.5 MHz
5 MHz	QPSK	1	0	23.87	23.76	23.53
		1	12	23.75	23.59	23.55
		1	24	23.65	23.73	23.31
		12	0	22.78	22.74	22.53
		12	6	22.76	22.71	22.54
		12	11	22.79	22.63	22.47
		25	0	22.76	22.66	22.53
	16QAM	1	0	22.80	22.72	22.51
		1	12	22.76	22.58	22.50
		1	24	22.55	22.70	22.26
		12	0	21.91	21.78	21.64
		12	6	21.88	21.73	21.66
		12	11	21.86	21.67	21.51
		25	0	21.95	21.69	21.65

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
				18650	18900	19150
				1855 MHz	1880 MHz	1905 MHz
10 MHz	QPSK	1	0	23.82	23.88	23.85
		1	24	23.61	23.62	23.62
		1	49	23.44	23.76	23.31
		25	0	22.79	22.72	22.72
		25	12	22.68	22.64	22.60
		25	24	22.53	22.77	22.55
		50	0	22.66	22.80	22.52
	16QAM	1	0	22.77	22.84	22.77
		1	24	22.52	22.73	22.56
		1	49	22.52	22.69	22.21
		25	0	21.90	21.85	21.83
		25	12	21.71	21.76	21.75
		25	24	21.65	21.79	21.59
		50	0	21.79	21.77	21.66

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
				18675	18900	19125
				1857.5 MHz	1880 MHz	1902.5 MHz
15 MHz	QPSK	1	0	23.80	23.96	23.83
		1	36	23.50	23.59	23.78
		1	74	23.81	23.62	23.29
		36	0	22.66	22.77	22.85
		36	18	22.58	22.71	22.65
		36	39	22.55	22.68	22.61
		75	0	22.67	22.69	22.70
	16QAM	1	0	22.75	22.96	22.81
		1	36	22.44	22.64	22.74
		1	74	22.74	22.68	22.30
		36	0	21.84	21.78	21.94
		36	18	21.70	21.75	21.82
		36	39	21.63	21.79	21.75
		75	0	21.76	21.80	21.79

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
				18700	18900	19100
				1860 MHz	1880 MHz	1900 MHz
20 MHz	QPSK	1	0	23.84	23.93	23.86
		1	49	23.56	23.53	23.71
		1	99	23.91	23.75	23.37
		50	0	22.68	22.86	22.81
		50	25	22.51	22.71	22.81
		50	49	22.75	22.74	22.63
		100	0	22.68	22.76	22.74
	16QAM	1	0	22.80	22.91	22.76
		1	49	22.44	22.57	22.74
		1	99	22.89	22.74	22.26
		50	0	21.74	21.87	21.80
		50	25	21.67	21.80	21.84
		50	49	21.91	21.75	21.66
		100	0	21.77	21.88	21.87

### 8.2 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
1850.7	LTE B2/ 1.4 MHz	QPSK	-23.30	10.78	10.10	2.11	H	< 2.00	0.075	18.77
		16-QAM	-24.38	9.70	10.10	2.11	H		0.059	17.69
1880.0		QPSK	-22.93	11.62	10.15	2.15	H		0.092	19.62
		16-QAM	-23.94	10.61	10.15	2.15	H		0.073	18.61
1909.3		QPSK	-23.65	10.89	10.23	2.15	H		0.079	18.97
		16-QAM	-24.74	9.80	10.23	2.15	H		0.061	17.88

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
									W	W
1851.5	LTE B2/ 3 MHz	QPSK	-23.33	10.75	10.10	2.11	H	< 2.00	0.075	18.74
		16-QAM	-24.39	9.69	10.10	2.11	H		0.059	17.68
1880.0		QPSK	-22.79	11.76	10.15	2.15	H		0.095	19.76
		16-QAM	-23.79	10.76	10.15	2.15	H		0.075	18.76
1908.5		QPSK	-23.36	11.18	10.23	2.15	H		0.084	19.26
		16-QAM	-24.40	10.14	10.23	2.15	H		0.066	18.22



Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
									W	W
1852.5	LTE B2/ 5 MHz	QPSK	-23.35	10.73	10.10	2.11	H	< 2.00	0.074	18.72
		16-QAM	-24.44	9.64	10.10	2.11	H		0.058	17.63
1880.0		QPSK	-22.53	12.02	10.15	2.15	H		0.100	20.02
		16-QAM	-23.59	10.96	10.15	2.15	H		0.079	18.96
1907.5		QPSK	-23.41	11.13	10.23	2.15	H		0.083	19.21
		16-QAM	-24.45	10.09	10.23	2.15	H		0.066	18.17

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
									W	W
1855.0	LTE B2/ 10 MHz	QPSK	-23.39	10.76	10.12	2.12	H	< 2.00	0.075	18.76
		16-QAM	-24.47	9.68	10.12	2.12	H		0.059	17.68
1880.0		QPSK	-22.31	12.24	10.15	2.15	H		0.106	20.24
		16-QAM	-23.29	11.26	10.15	2.15	H		0.084	19.26
1905.0		QPSK	-23.02	11.64	10.22	2.15	H		0.094	19.71
		16-QAM	-24.12	10.54	10.22	2.15	H		0.073	18.61



Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
									W	W
1857.5	LTE B2/ 15 MHz	QPSK	-23.40	10.81	10.13	2.12	H	< 2.00	0.076	18.82
		16-QAM	-24.48	9.73	10.13	2.12	H		0.059	17.74
1880.0		QPSK	-22.46	12.09	10.15	2.15	H		0.102	20.09
		16-QAM	-23.44	11.11	10.15	2.15	H		0.081	19.11
1902.5		QPSK	-22.98	11.81	10.20	2.15	H		0.097	19.86
		16-QAM	-24.07	10.72	10.20	2.15	H		0.075	18.77

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
									W	W
1860.0	LTE B2/ 20 MHz	QPSK	-23.40	10.81	10.13	2.12	H	< 2.00	0.076	18.82
		16-QAM	-24.50	9.71	10.13	2.12	H		0.059	17.72
1880.0		QPSK	-22.47	12.08	10.15	2.15	H		0.102	20.08
		16-QAM	-23.53	11.02	10.15	2.15	H		0.080	19.02
1900.0		QPSK	-22.84	11.95	10.20	2.15	H		0.100	20.00
		16-QAM	-23.94	10.85	10.20	2.15	H		0.078	18.90



### 8.3 RADIATED SPURIOUS EMISSIONS

- ▣ OPERATING FREQUENCY:                    1880.0 MHz
- ▣ MEASURED OUTPUT POWER:                19.62 dBm = 0.092 W
- ▣ MODE:                                         LTE B2
- ▣ MODULATION SIGNAL:                    1.4 MHz QPSK
- ▣ DISTANCE:                                  3 meters
- ▣ LIMIT:  $43 + 10 \log_{10}(W) =$             32.62 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18607 (1850.7)	3 701.40	-51.87	12.40	-55.94	3.08	V	-46.62	66.24
	5 552.10	-47.75	13.10	-45.72	3.81	V	-36.43	56.05
	7 402.80	-56.83	11.10	-46.87	4.44	V	-40.21	59.83
	9 253.50	-54.41	10.70	-38.20	5.06	V	-32.56	52.18
18900 (1880.0)	3 760.00	-41.34	12.48	-45.21	3.10	V	-35.83	55.45
	5 640.00	-35.37	13.30	-33.20	3.85	V	-23.75	43.37
	7 520.00	-52.96	11.30	-42.39	4.46	V	-35.55	55.18
19193 (1909.3)	3 818.60	-34.65	12.40	-39.08	3.14	V	-29.82	49.44
	5 727.90	-34.80	13.35	-32.14	3.87	V	-22.66	42.28
	7 637.20	-49.69	11.65	-39.16	4.47	V	-31.98	51.60
	9 546.50	-55.47	10.99	-39.64	5.14	V	-33.79	53.41

- ▣ OPERATING FREQUENCY: 1880.0 MHz
- ▣ MEASURED OUTPUT POWER: 19.76 dBm = 0.095 W
- ▣ MODE: LTE B2
- ▣ MODULATION SIGNAL: 3 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ LIMIT:  $43 + 10 \log_{10}(W) =$  32.76 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18615 (1851.5)	3 703.00	-50.24	12.40	-54.31	3.08	V	-44.99	64.75
	5 554.50	-45.29	13.18	-43.42	3.82	V	-34.06	53.82
	7 406.00	-53.57	11.12	-43.49	4.45	V	-36.83	56.59
18900 (1880.0)	3 760.00	-40.97	12.48	-44.84	3.10	V	-35.46	55.22
	5 640.00	-35.93	13.30	-33.76	3.85	V	-24.31	44.07
	7 520.00	-52.51	11.30	-41.94	4.46	V	-35.10	54.86
19185 (1908.5)	3 817.00	-33.49	12.40	-37.92	3.14	V	-28.66	48.42
	5 725.50	-32.66	13.35	-29.85	3.88	V	-20.37	40.13
	7 634.00	-48.75	11.63	-38.32	4.48	V	-31.17	50.93

- ▣ OPERATING FREQUENCY: 1880.0 MHz
- ▣ MEASURED OUTPUT POWER: 20.02 dBm = 0.100 W
- ▣ MODE: LTE B2
- ▣ MODULATION SIGNAL: 5 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ LIMIT:  $43 + 10 \log_{10}(W) =$  33.02 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	-50.73	12.42	-54.88	3.08	V	-45.54	65.56
	5 557.50	-49.11	13.15	-47.30	3.82	V	-37.97	57.99
	7 410.00	-56.81	11.13	-46.63	4.45	V	-39.95	59.97
18900 (1880.0)	3 760.00	-46.84	12.48	-50.71	3.10	V	-41.33	61.35
	5 640.00	-40.74	13.30	-38.57	3.85	V	-29.12	49.14
	7 520.00	-54.72	11.30	-44.15	4.46	V	-37.31	57.33
19175 (1907.5)	3 815.00	-33.34	12.40	-37.72	3.14	V	-28.46	48.48
	5 722.50	-34.02	13.35	-31.05	3.88	V	-21.58	41.60
	7 630.00	-48.52	11.60	-38.19	4.48	V	-31.07	51.09
	9 537.50	-54.81	10.98	-39.06	5.12	V	-33.20	53.22

- ▣ OPERATING FREQUENCY: 1880.0 MHz
- ▣ MEASURED OUTPUT POWER: 20.24 dBm = 0.106 W
- ▣ MODE: LTE B2
- ▣ MODULATION SIGNAL: 10 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ LIMIT:  $43 + 10 \log_{10}(W) =$  33.24 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	-51.57	12.43	-55.80	3.08	V	-46.45	66.69
	5 565.00	-47.99	13.18	-46.09	3.83	V	-36.74	56.98
	7 420.00	-55.02	11.15	-44.48	4.43	V	-37.76	58.00
18900 (1880.0)	3 760.00	-45.18	12.48	-49.05	3.10	V	-39.67	59.91
	5 640.00	-43.09	13.30	-40.92	3.85	H	-31.47	51.71
	7 520.00	-56.00	11.30	-45.43	4.46	V	-38.59	58.83
19150 (1905.0)	3 810.00	-33.13	12.40	-37.48	3.13	V	-28.21	48.45
	5 715.00	-34.06	13.37	-31.28	3.88	V	-21.80	42.04
	7 620.00	-48.40	11.60	-38.19	4.48	V	-31.07	51.31
	9 525.00	-55.75	10.95	-39.59	5.10	V	-33.74	53.98



- ▣ OPERATING FREQUENCY: 1880.0 MHz
- ▣ MEASURED OUTPUT POWER: 20.09 dBm = 0.102 W
- ▣ MODE: LTE B2
- ▣ MODULATION SIGNAL: 15 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ LIMIT:  $43 + 10 \log_{10}(W) =$  33.09 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18675 (1857.5)	3 715.00	-50.76	12.44	-55.01	3.09	V	-45.66	65.75
	5 572.50	-50.10	13.20	-48.12	3.83	V	-38.75	58.84
	7 430.00	-55.62	11.15	-45.10	4.41	V	-38.36	58.45
18900 (1880.0)	3 760.00	-47.19	12.48	-51.06	3.10	V	-41.68	61.77
	5 640.00	-38.22	13.30	-36.05	3.85	V	-26.60	46.69
	7 520.00	-54.05	11.30	-43.48	4.46	V	-36.64	56.74
19125 (1902.5)	3 805.00	-33.77	12.40	-37.95	3.14	V	-28.69	48.78
	5 707.50	-33.42	13.38	-30.84	3.88	V	-21.34	41.43
	7 610.00	-49.97	11.55	-39.66	4.48	V	-32.59	52.68
	9 512.50	-55.28	10.93	-39.07	5.12	V	-33.26	53.35
	11 415.00	-55.20	11.37	-35.24	5.74	V	-29.61	49.70

- ▣ OPERATING FREQUENCY: 1880.0 MHz
- ▣ MEASURED OUTPUT POWER: 20.08 dBm = 0.102 W
- ▣ MODE: LTE B2
- ▣ MODULATION SIGNAL: 20 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ LIMIT:  $43 + 10 \log_{10}(W) =$  33.08 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
18700 (1860.0)	3 720.00	-52.52	12.45	-56.80	3.09	V	-47.44	67.52
	5 580.00	-51.95	13.20	-50.04	3.84	H	-40.68	60.76
	7 440.00	-54.21	11.18	-43.80	4.40	H	-37.02	57.10
18900 (1880.0)	3 760.00	-45.54	12.48	-49.41	3.10	V	-40.03	60.11
	5 640.00	-42.21	13.30	-40.04	3.85	H	-30.59	50.67
	7 520.00	-56.04	11.30	-45.47	4.46	V	-38.63	58.72
19100 (1900.0)	3 800.00	-37.35	12.40	-41.36	3.14	V	-32.10	52.19
	5 700.00	-34.99	13.40	-32.73	3.87	V	-23.20	43.28
	7 600.00	-49.18	11.50	-38.64	4.49	V	-31.63	51.71

### 8.4 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	5.68
			16-QAM	6	0	6.34
	3 MHz		QPSK	15	0	5.64
			16-QAM	15	0	6.34
	5 MHz		QPSK	25	0	5.49
			16-QAM	25	0	6.29
	10 MHz		QPSK	50	0	5.64
			16-QAM	50	0	6.29
	15 MHz		QPSK	75	0	5.50
			16-QAM	75	0	6.23
	20 MHz		QPSK	100	0	5.52
			16-QAM	100	0	6.24

**Note:**

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 110 ~ 121.

### 8.5 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	1.0927
			16-QAM	6	0	1.0943
	3 MHz		QPSK	15	0	2.7078
			16-QAM	15	0	2.6977
	5 MHz		QPSK	25	0	4.5041
			16-QAM	25	0	4.5235
	10 MHz		QPSK	50	0	8.9903
			16-QAM	50	0	8.9618
	15 MHz		QPSK	75	0	13.434
			16-QAM	75	0	13.433
	20 MHz		QPSK	100	0	17.956
			16-QAM	100	0	17.918

**Note:**

1. Plots of the EUT's Occupied Bandwidth are shown Page 98 ~ 109.

### 8.6 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	3.6880	28.976	-77.316	-48.340	-13.00
		1880.0	3.7034	28.976	-77.338	-48.362	
		1909.3	3.6900	28.976	-77.302	-48.326	
	3	1851.5	3.7084	28.976	-77.031	-48.055	
		1880.0	3.7089	28.976	-77.163	-48.187	
		1908.5	3.6636	28.976	-77.120	-48.144	
	5	1852.5	3.7094	28.976	-77.444	-48.468	
		1880.0	3.7039	28.976	-77.251	-48.275	
		1907.5	3.7029	28.976	-77.030	-48.054	
	10	1855.0	3.7109	28.976	-77.404	-48.428	
		1880.0	3.6940	28.976	-77.260	-48.284	
		1905.0	3.7114	28.976	-77.523	-48.547	
	15	1857.5	3.6925	28.976	-77.192	-48.216	
		1880.0	3.7029	28.976	-77.258	-48.282	
		1902.5	3.7099	28.976	-77.511	-48.535	
	20	1860.0	3.7084	28.976	-76.916	-47.940	
		1880.0	3.6885	28.976	-77.550	-48.574	
		1900.0	3.6950	28.976	-77.051	-48.075	

**Note:**

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 122 ~ 157.
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	26.270
1 – 5	28.976
5 – 10	29.591
10 – 15	30.116
15 – 20	30.489
Above 20(26.5)	31.131

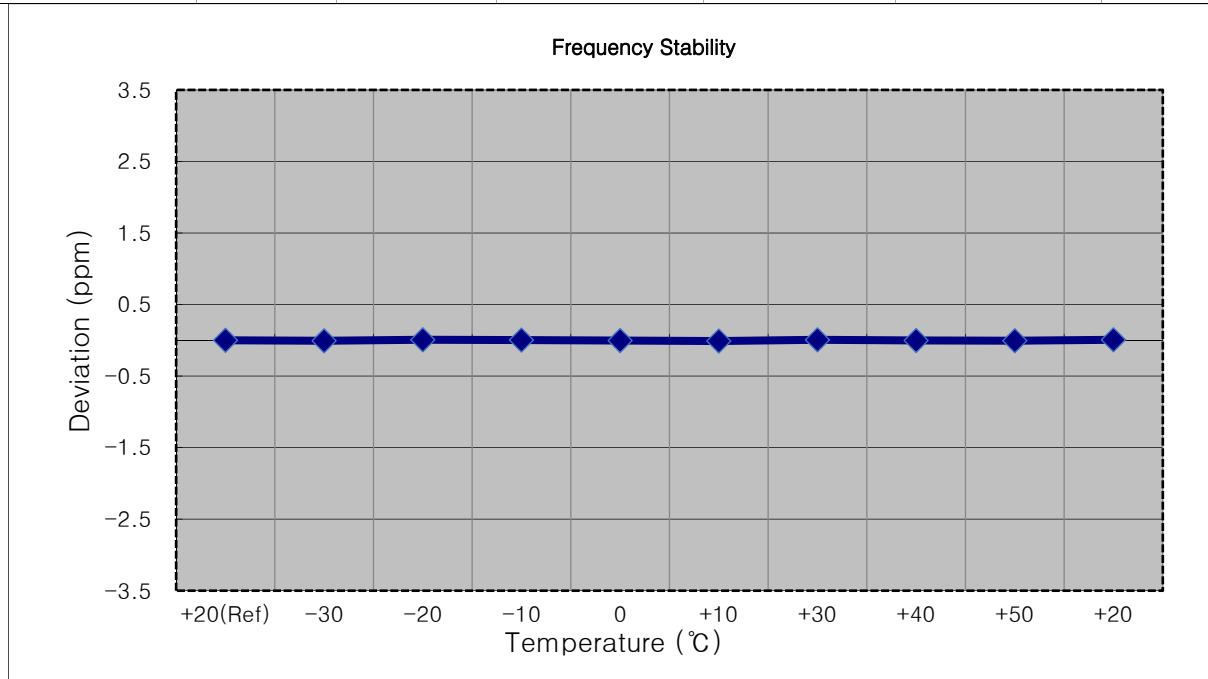
### 8.7 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 62 ~ 97.

### 8.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

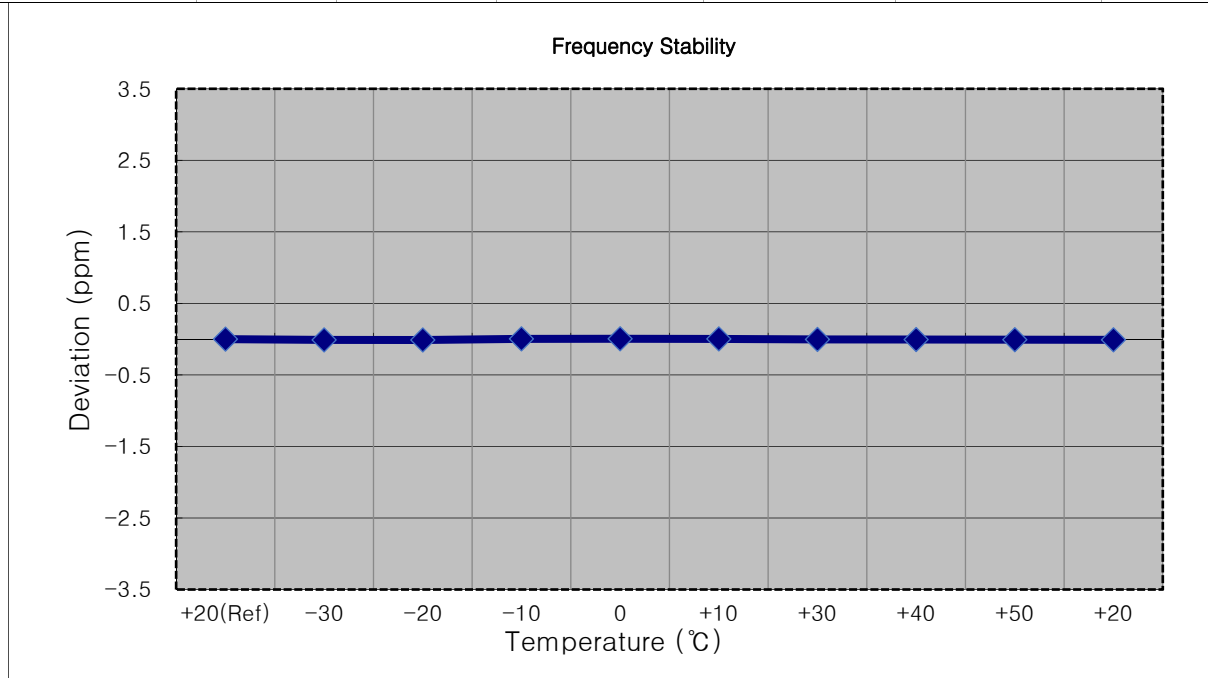
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1850,700,000 Hz
- ▣ CHANNEL: 18607 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1850 699 993	0.0	0.000 000	0.000
100%		-30	1850 699 980	-13.1	-0.000 001	-0.007
100%		-20	1850 700 006	13.2	0.000 001	0.007
100%		-10	1850 699 998	5.5	0.000 000	0.003
100%		0	1850 699 986	-6.4	0.000 000	-0.003
100%		+10	1850 699 974	-18.7	-0.000 001	-0.010
100%		+30	1850 700 005	12.0	0.000 001	0.006
100%		+40	1850 699 989	-4.3	0.000 000	-0.002
100%		+50	1850 699 982	-11.0	-0.000 001	-0.006
Batt. Endpoint	10.200	+20	1850 700 006	13.4	0.000 001	0.007



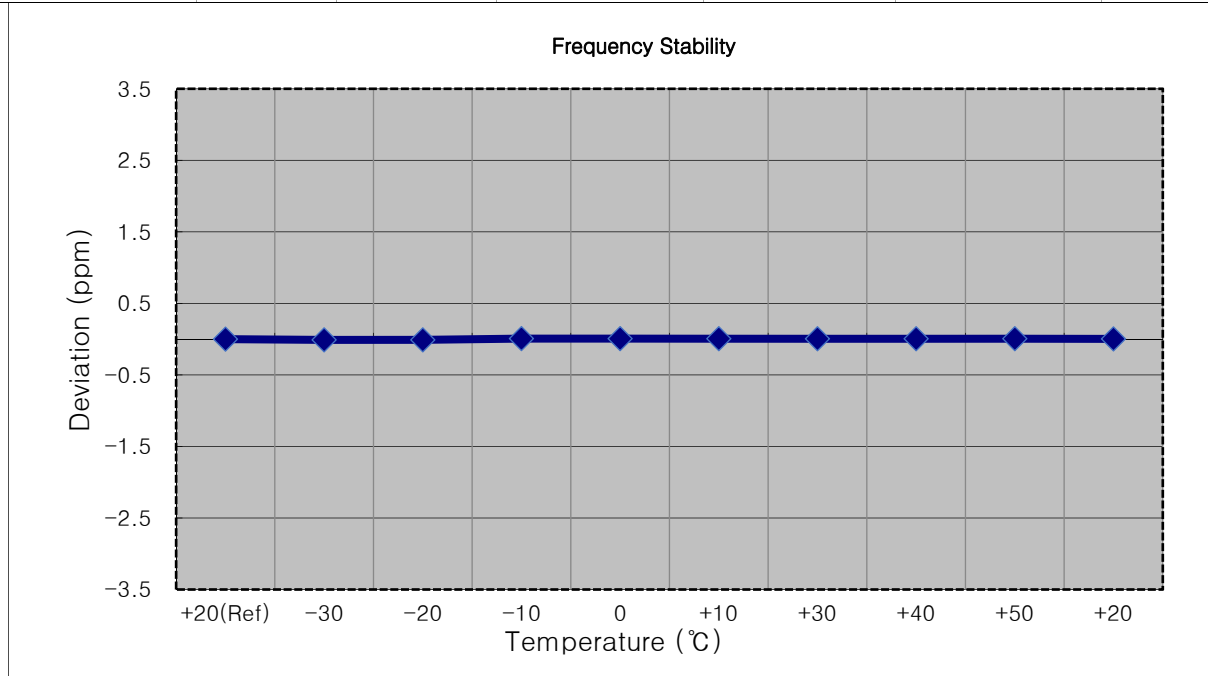
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1851,500,000 Hz
- ▣ CHANNEL: 18615 (3 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1851 499 983	0.0	0.000 000	0.000
100%		-30	1851 499 964	-19.7	-0.000 001	-0.011
100%		-20	1851 499 961	-22.0	-0.000 001	-0.012
100%		-10	1851 499 990	6.8	0.000 000	0.004
100%		0	1851 499 993	9.3	0.000 001	0.005
100%		+10	1851 499 989	5.3	0.000 000	0.003
100%		+30	1851 499 976	-7.4	0.000 000	-0.004
100%		+40	1851 499 973	-10.6	-0.000 001	-0.006
100%		+50	1851 499 969	-14.8	-0.000 001	-0.008
Batt. Endpoint		10.200	+20	1851 499 965	-18.2	-0.000 001



- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1852,500,000 Hz
- ▣ CHANNEL: 18625 (5 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

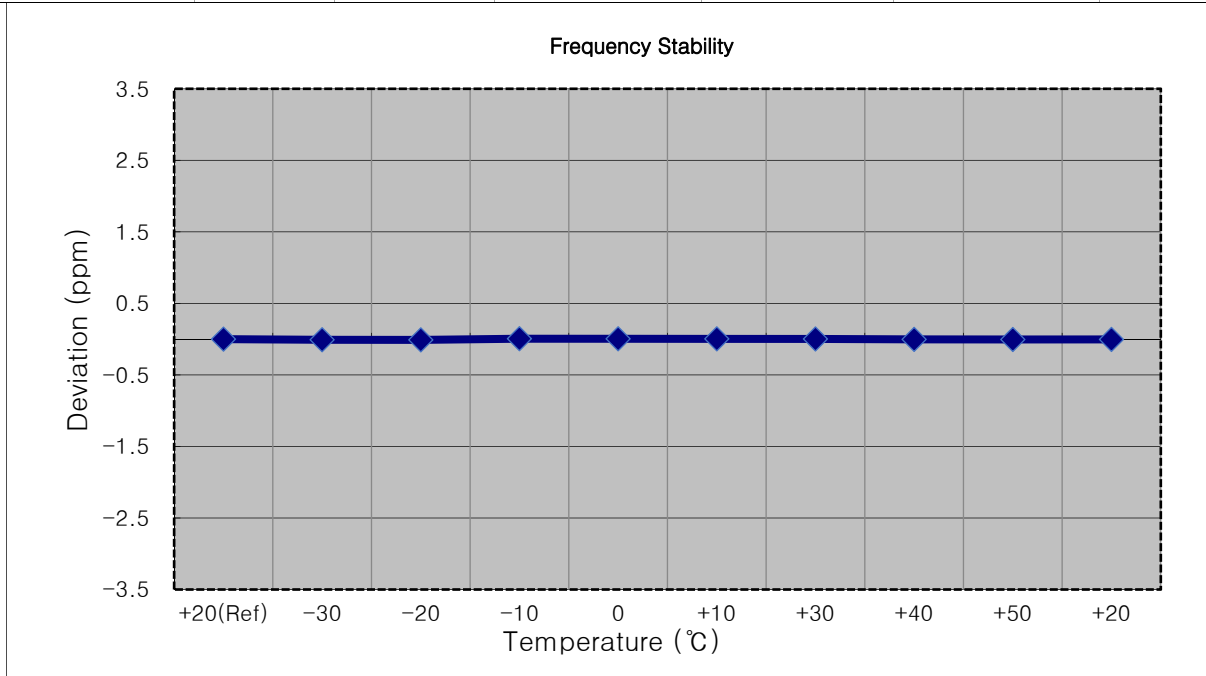
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1852 499 984	0.0	0.000 000	0.000
100%		-30	1852 499 964	-19.6	-0.000 001	-0.011
100%		-20	1852 499 965	-18.3	-0.000 001	-0.010
100%		-10	1852 499 998	14.4	0.000 001	0.008
100%		0	1852 499 997	13.4	0.000 001	0.007
100%		+10	1852 499 994	10.8	0.000 001	0.006
100%		+30	1852 499 993	9.4	0.000 001	0.005
100%		+40	1852 499 993	9.9	0.000 001	0.005
100%		+50	1852 499 994	10.8	0.000 001	0.006
Batt. Endpoint		10.200	+20	1852 499 990	6.4	0.000 000





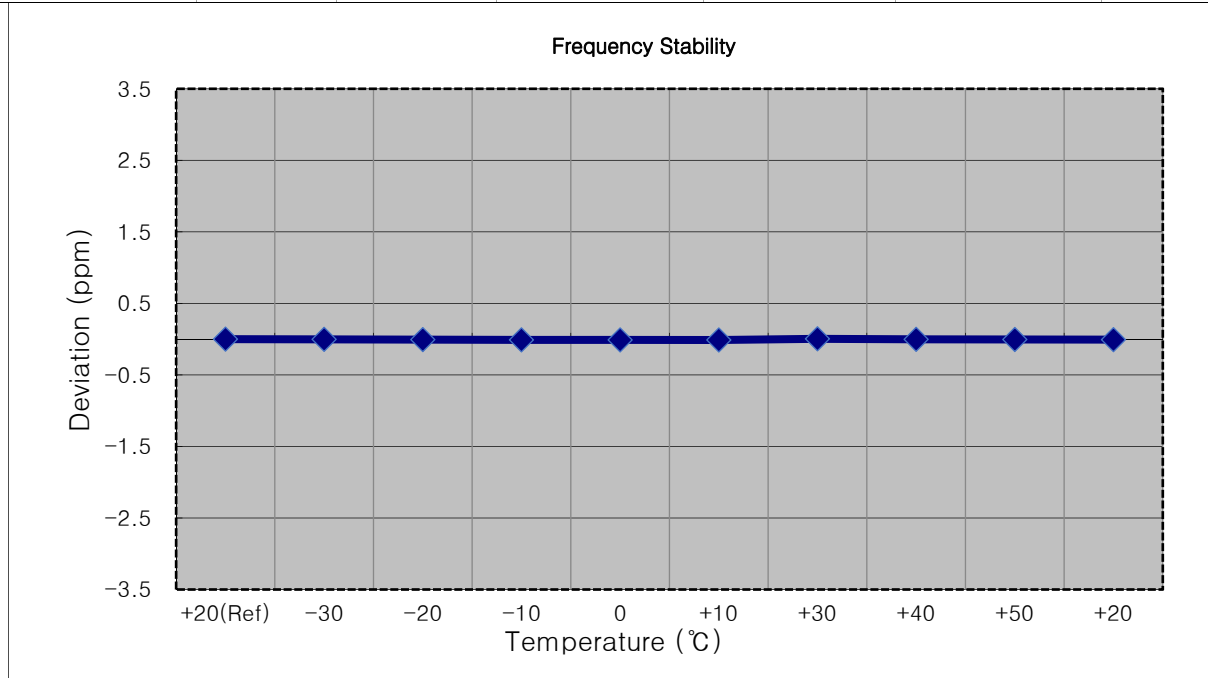
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1855,000,000 Hz
- ▣ CHANNEL: 18650 (10 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100%	12.000	+20(Ref)	1854 999 985	0.0	0.000 000	0.000
100%		-30	1854 999 968	-16.6	-0.000 001	-0.009
100%		-20	1854 999 966	-18.8	-0.000 001	-0.010
100%		-10	1854 999 997	11.9	0.000 001	0.006
100%		0	1854 999 994	8.8	0.000 000	0.005
100%		+10	1854 999 991	6.6	0.000 000	0.004
100%		+30	1854 999 990	5.1	0.000 000	0.003
100%		+40	1854 999 978	-6.5	0.000 000	-0.004
100%		+50	1854 999 975	-9.3	-0.000 001	-0.005
Batt. Endpoint		10.200	+20	1854 999 977	-7.5	0.000 000



- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1857,500,000 Hz
- ▣ CHANNEL: 18675 (15 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

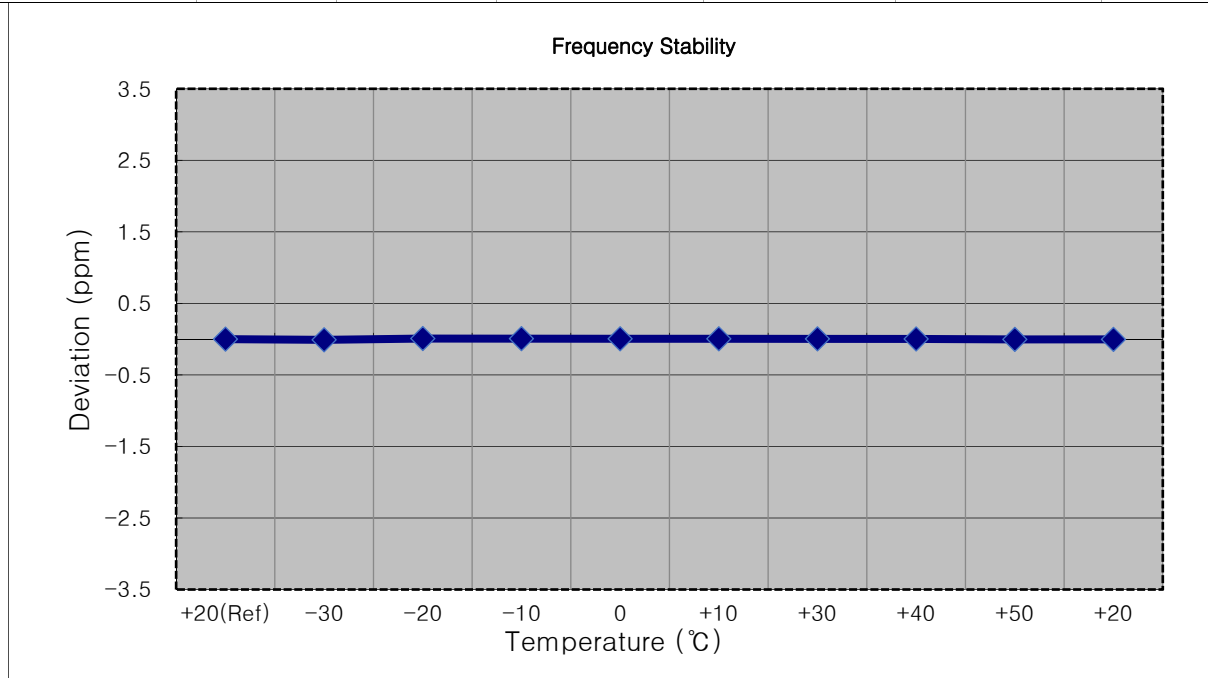
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1857 500 005	0.0	0.000 000	0.000
100%		-30	1857 499 999	-5.7	0.000 000	-0.003
100%		-20	1857 499 992	-12.5	-0.000 001	-0.007
100%		-10	1857 499 985	-19.4	-0.000 001	-0.010
100%		0	1857 499 984	-20.3	-0.000 001	-0.011
100%		+10	1857 499 982	-22.1	-0.000 001	-0.012
100%		+30	1857 500 013	8.6	0.000 000	0.005
100%		+40	1857 500 000	-4.6	0.000 000	-0.002
100%		+50	1857 499 995	-9.2	0.000 000	-0.005
Batt. Endpoint		10.200	+20	1857 499 992	-13.0	-0.000 001





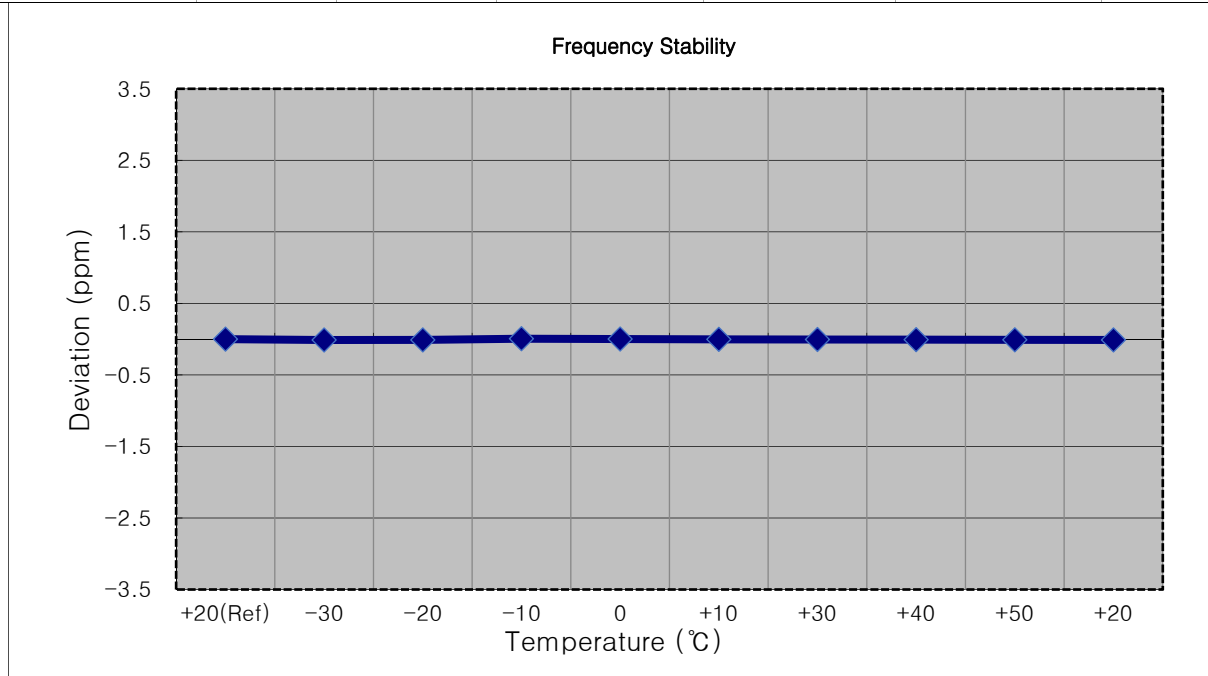
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1860,000,000 Hz
- ▣ CHANNEL: 18700 (20 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1859 999 985	0.0	0.000 000	0.000
100%		-30	1859 999 968	-17.1	-0.000 001	-0.009
100%		-20	1860 000 000	15.1	0.000 001	0.008
100%		-10	1859 999 997	12.7	0.000 001	0.007
100%		0	1859 999 994	9.3	0.000 001	0.005
100%		+10	1859 999 994	9.2	0.000 000	0.005
100%		+30	1859 999 992	6.9	0.000 000	0.004
100%		+40	1859 999 990	4.9	0.000 000	0.003
100%		+50	1859 999 978	-7.2	0.000 000	-0.004
Batt. Endpoint		10.200	+20	1859 999 978	-6.5	0.000 000



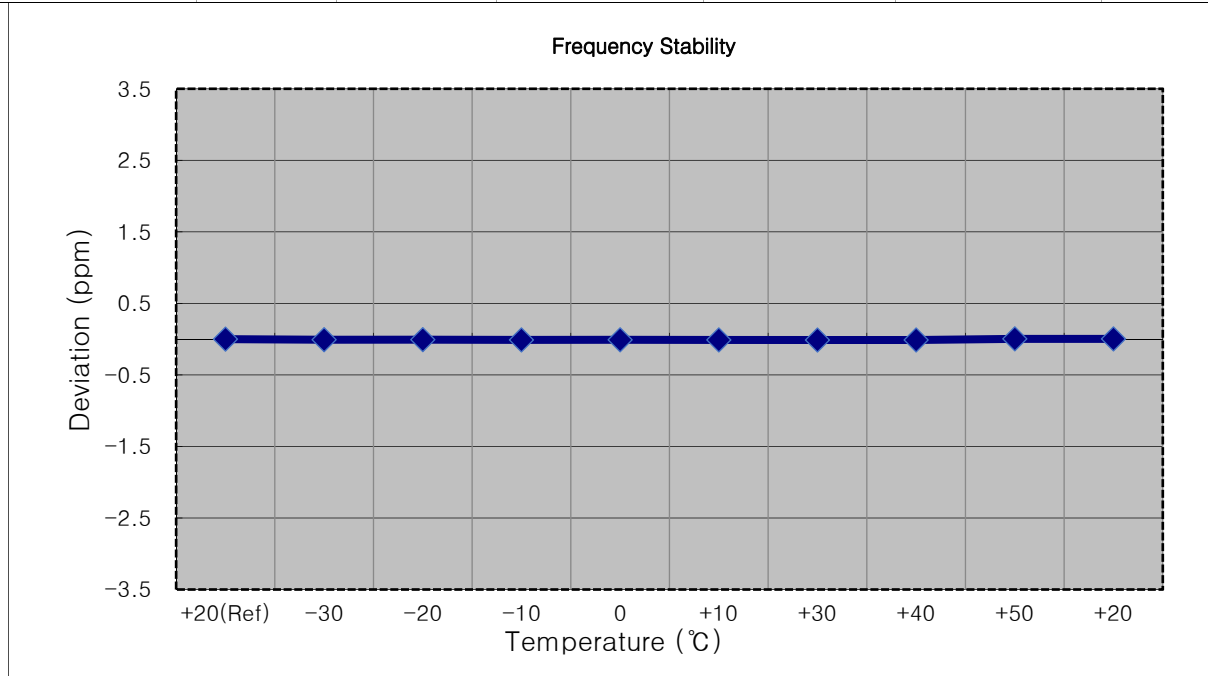
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1879 999 984	0.0	0.000 000	0.000
100%		-30	1879 999 962	-22.1	-0.000 001	-0.012
100%		-20	1879 999 964	-20.3	-0.000 001	-0.011
100%		-10	1879 999 995	11.0	0.000 001	0.006
100%		0	1879 999 987	2.7	0.000 000	0.001
100%		+10	1879 999 979	-5.7	0.000 000	-0.003
100%		+30	1879 999 975	-9.7	-0.000 001	-0.005
100%		+40	1879 999 971	-13.2	-0.000 001	-0.007
100%		+50	1879 999 967	-17.9	-0.000 001	-0.010
Batt. Endpoint		10.200	+20	1879 999 964	-20.9	-0.000 001



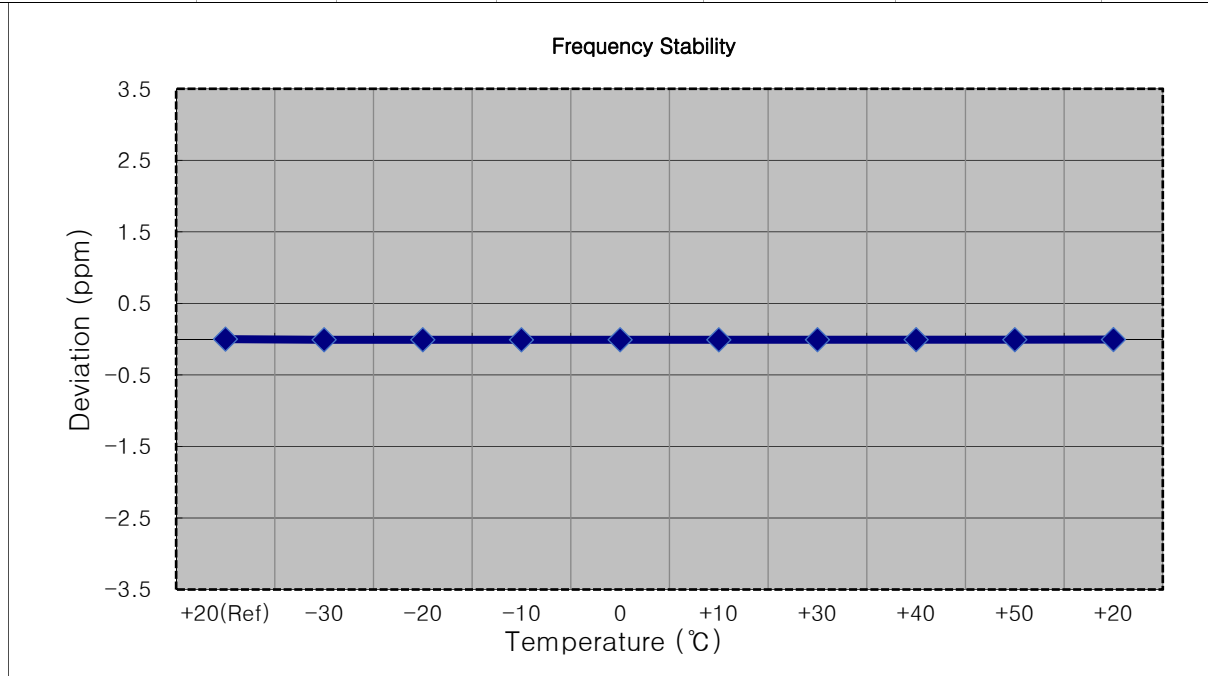
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (3 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1879 999 988	0.0	0.000 000	0.000
100%		-30	1879 999 972	-15.7	-0.000 001	-0.008
100%		-20	1879 999 974	-13.8	-0.000 001	-0.007
100%		-10	1879 999 967	-20.2	-0.000 001	-0.011
100%		0	1879 999 970	-17.5	-0.000 001	-0.009
100%		+10	1879 999 967	-20.8	-0.000 001	-0.011
100%		+30	1879 999 965	-22.8	-0.000 001	-0.012
100%		+40	1879 999 965	-22.1	-0.000 001	-0.012
100%		+50	1879 999 995	7.6	0.000 000	0.004
Batt. Endpoint		10.200	+20	1879 999 994	6.1	0.000 000



- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (5 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

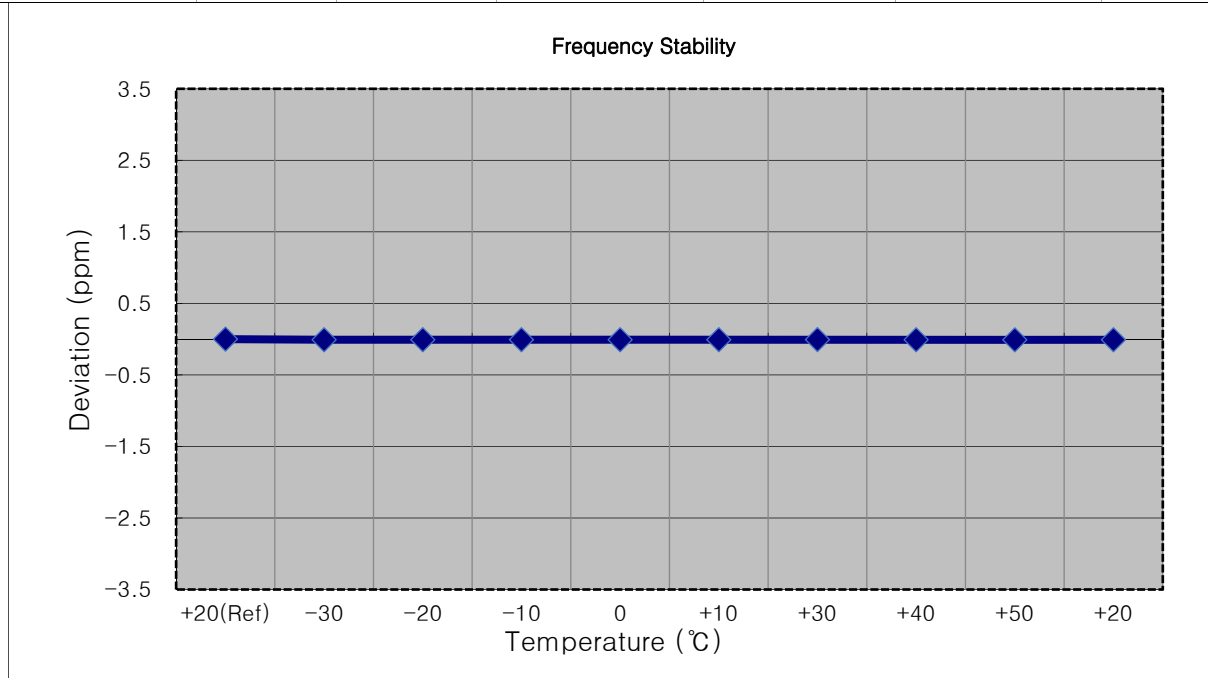
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1879 999 982	0.0	0.000 000	0.000
100%		-30	1879 999 965	-17.0	-0.000 001	-0.009
100%		-20	1879 999 966	-16.2	-0.000 001	-0.009
100%		-10	1879 999 964	-18.0	-0.000 001	-0.010
100%		0	1879 999 965	-17.1	-0.000 001	-0.009
100%		+10	1879 999 965	-17.7	-0.000 001	-0.009
100%		+30	1879 999 968	-14.9	-0.000 001	-0.008
100%		+40	1879 999 969	-13.8	-0.000 001	-0.007
100%		+50	1879 999 968	-14.7	-0.000 001	-0.008
Batt. Endpoint		10.200	+20	1879 999 972	-10.6	-0.000 001





- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (10 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

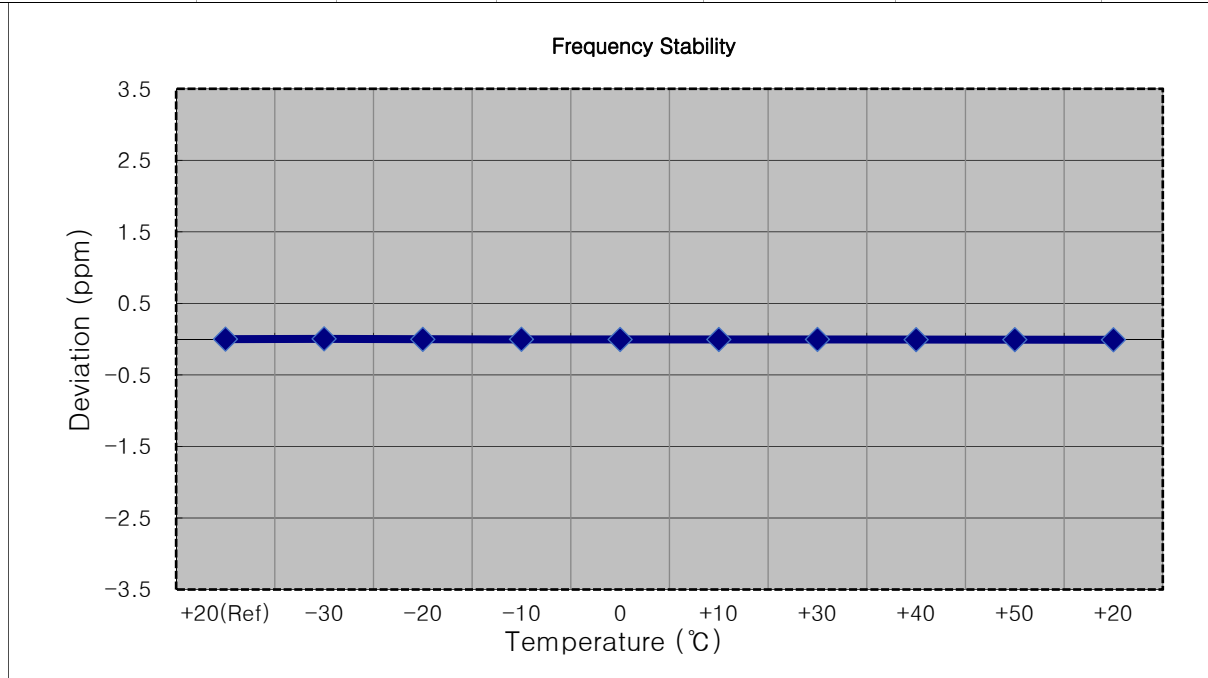
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1879 999 982	0.0	0.000 000	0.000
100%		-30	1879 999 965	-16.3	-0.000 001	-0.009
100%		-20	1879 999 967	-15.1	-0.000 001	-0.008
100%		-10	1879 999 966	-15.6	-0.000 001	-0.008
100%		0	1879 999 965	-16.8	-0.000 001	-0.009
100%		+10	1879 999 966	-15.7	-0.000 001	-0.008
100%		+30	1879 999 969	-12.7	-0.000 001	-0.007
100%		+40	1879 999 965	-16.8	-0.000 001	-0.009
100%		+50	1879 999 964	-17.6	-0.000 001	-0.009
Batt. Endpoint		10.200	+20	1879 999 965	-16.7	-0.000 001





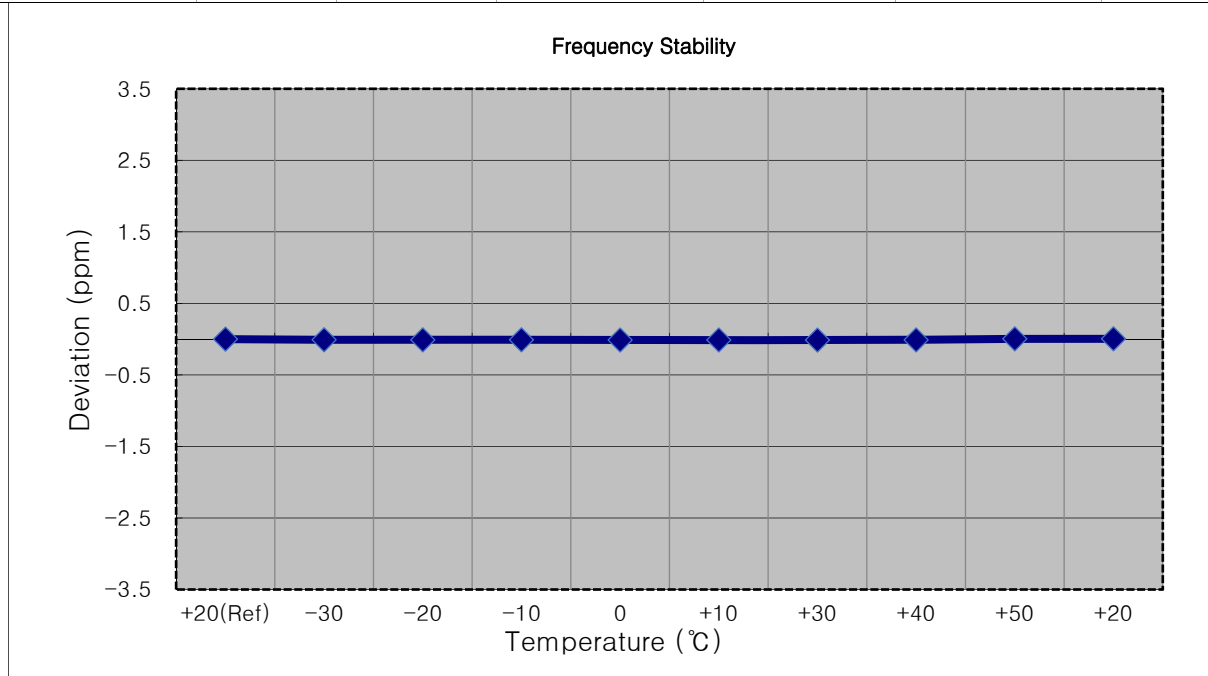
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (15 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1880 000 007	0.0	0.000 000	0.000
100%		-30	1880 000 013	6.7	0.000 000	0.004
100%		-20	1880 000 002	-4.7	0.000 000	-0.002
100%		-10	1880 000 003	-4.1	0.000 000	-0.002
100%		0	1879 999 997	-9.2	0.000 000	-0.005
100%		+10	1879 999 997	-9.6	-0.000 001	-0.005
100%		+30	1879 999 999	-7.9	0.000 000	-0.004
100%		+40	1879 999 993	-13.3	-0.000 001	-0.007
100%		+50	1879 999 993	-13.8	-0.000 001	-0.007
Batt. Endpoint		10.200	+20	1879 999 990	-16.8	-0.000 001



- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (20 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

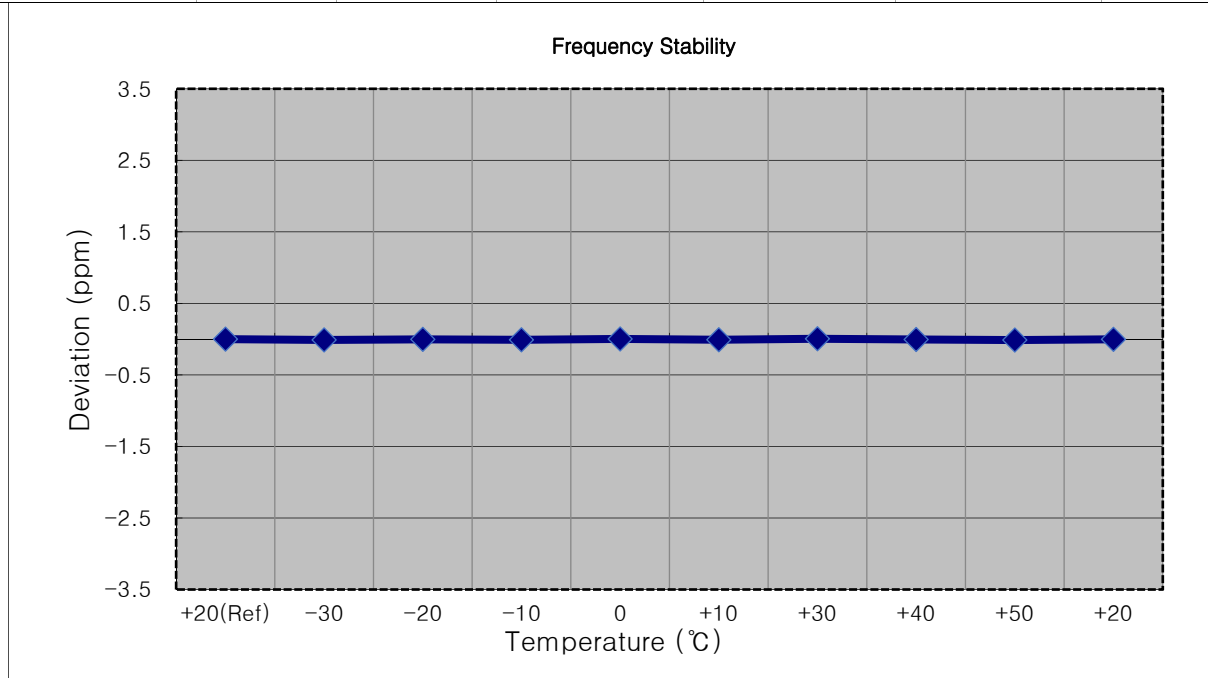
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1879 999 985	0.0	0.000 000	0.000
100%		-30	1879 999 968	-16.8	-0.000 001	-0.009
100%		-20	1879 999 965	-19.5	-0.000 001	-0.010
100%		-10	1879 999 967	-17.5	-0.000 001	-0.009
100%		0	1879 999 962	-22.8	-0.000 001	-0.012
100%		+10	1879 999 963	-21.6	-0.000 001	-0.011
100%		+30	1879 999 960	-25.3	-0.000 001	-0.013
100%		+40	1879 999 965	-20.3	-0.000 001	-0.011
100%		+50	1879 999 992	7.0	0.000 000	0.004
Batt. Endpoint		10.200	+20	1879 999 994	9.0	0.000 000





- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1909,300,000 Hz
- ▣ CHANNEL: 19193 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

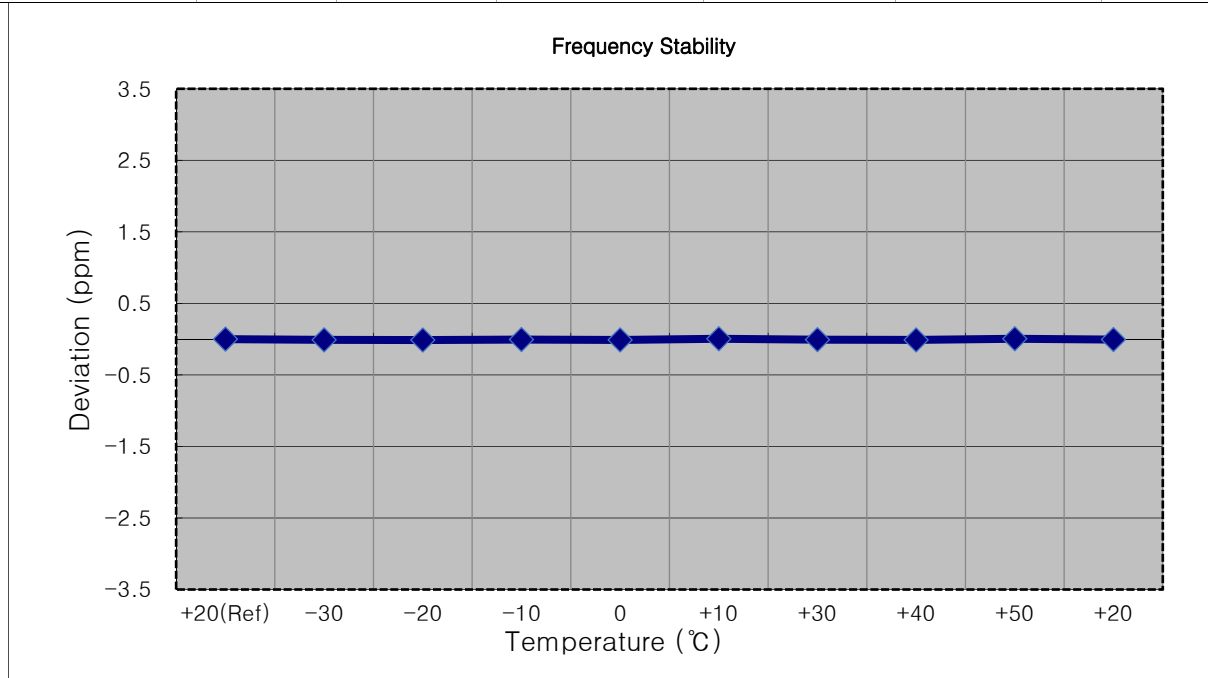
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1909 299 991	0.0	0.000 000	0.000
100%		-30	1909 299 970	-21.1	-0.000 001	-0.011
100%		-20	1909 299 986	-5.5	0.000 000	-0.003
100%		-10	1909 299 973	-17.9	-0.000 001	-0.009
100%		0	1909 299 996	5.1	0.000 000	0.003
100%		+10	1909 299 975	-16.4	-0.000 001	-0.009
100%		+30	1909 300 001	9.9	0.000 001	0.005
100%		+40	1909 299 982	-9.1	0.000 000	-0.005
100%		+50	1909 299 967	-23.6	-0.000 001	-0.012
Batt. Endpoint		10.200	+20	1909 299 986	-4.7	0.000 000





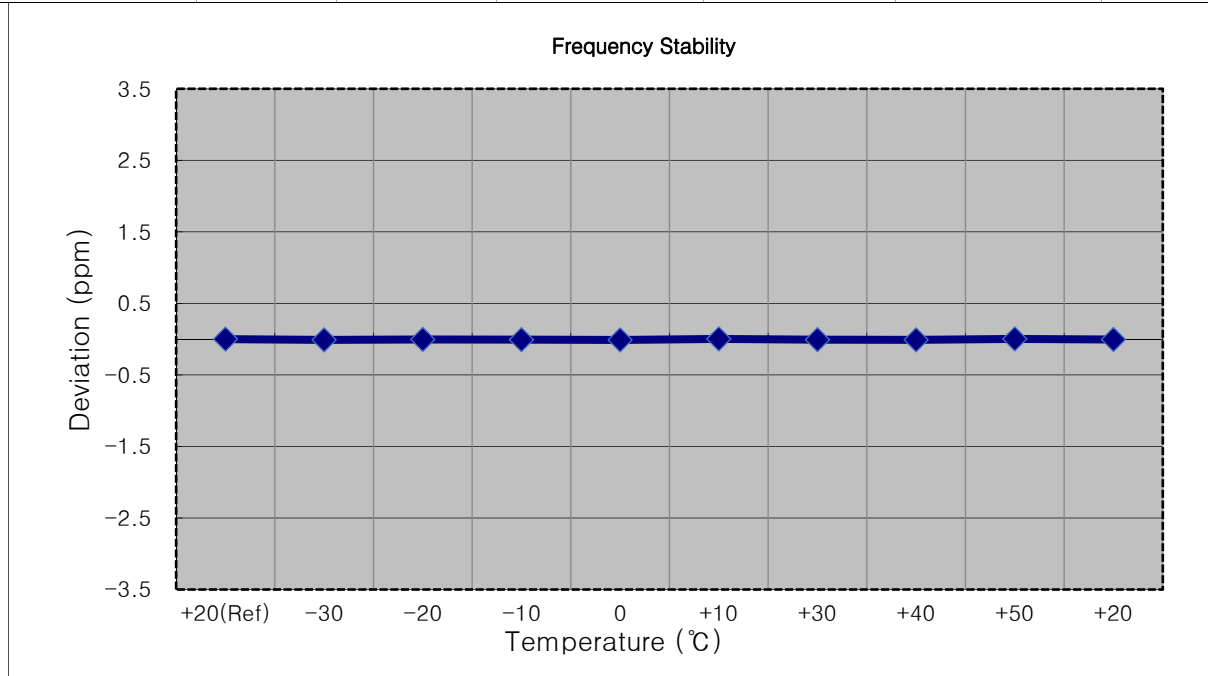
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1908,500,000 Hz
- ▣ CHANNEL: 19185 (3 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1908 499 988	0.0	0.000 000	0.000
100%		-30	1908 499 969	-19.2	-0.000 001	-0.010
100%		-20	1908 499 964	-23.9	-0.000 001	-0.013
100%		-10	1908 499 976	-11.5	-0.000 001	-0.006
100%		0	1908 499 967	-21.2	-0.000 001	-0.011
100%		+10	1908 499 998	10.3	0.000 001	0.005
100%		+30	1908 499 973	-14.5	-0.000 001	-0.008
100%		+40	1908 499 967	-20.4	-0.000 001	-0.011
100%		+50	1908 499 998	10.1	0.000 001	0.005
Batt. Endpoint		10.200	+20	1908 499 976	-11.6	-0.000 001



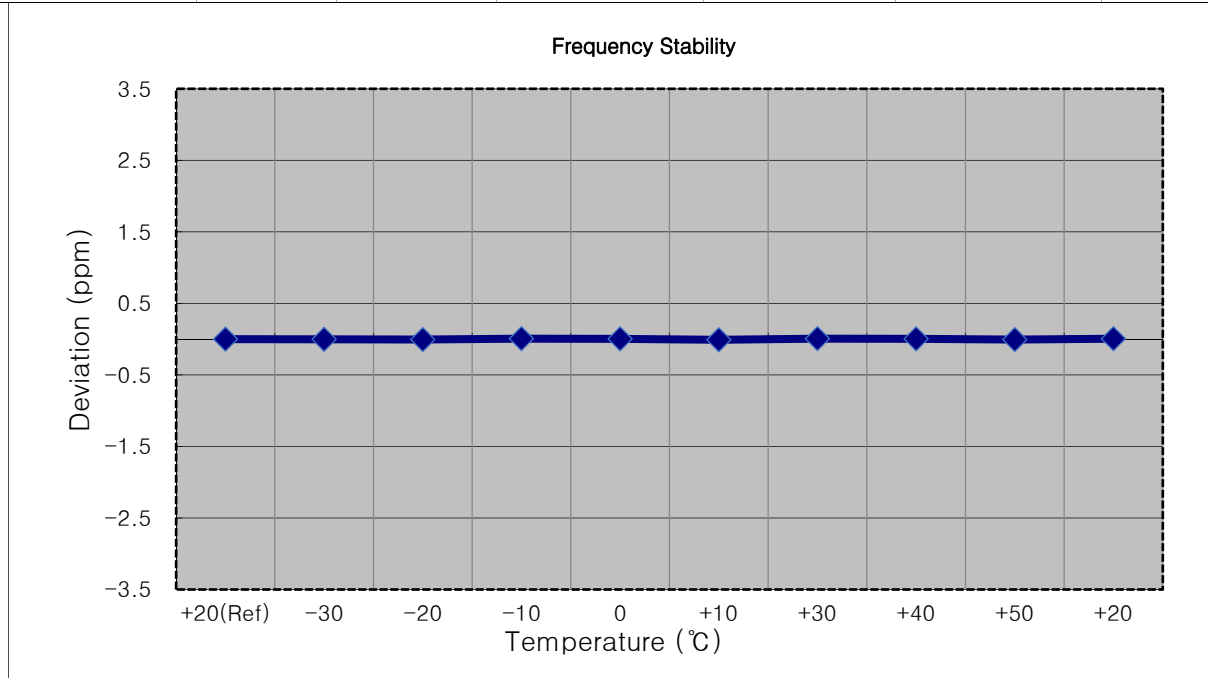
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1907,500,000 Hz
- ▣ CHANNEL: 19175 (5 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1907 499 988	0.0	0.000 000	0.000
100%		-30	1907 499 968	-19.8	-0.000 001	-0.010
100%		-20	1907 499 979	-8.5	0.000 000	-0.004
100%		-10	1907 499 974	-13.2	-0.000 001	-0.007
100%		0	1907 499 966	-21.3	-0.000 001	-0.011
100%		+10	1907 499 994	6.4	0.000 000	0.003
100%		+30	1907 499 974	-14.0	-0.000 001	-0.007
100%		+40	1907 499 969	-18.2	-0.000 001	-0.010
100%		+50	1907 499 993	5.6	0.000 000	0.003
Batt. Endpoint		10.200	+20	1907 499 978	-9.8	-0.000 001



- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1905,000,000 Hz
- ▣ CHANNEL: 19150 (10 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

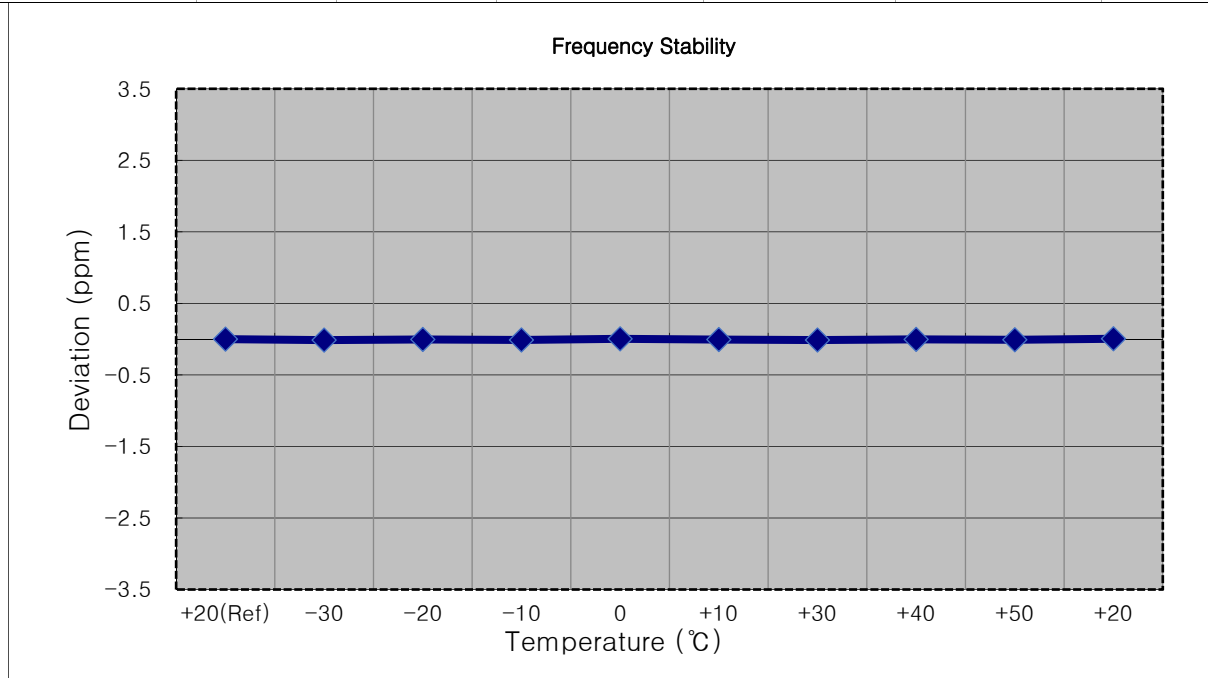
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1904 999 985	0.0	0.000 000	0.000
100%		-30	1904 999 980	-4.7	0.000 000	-0.002
100%		-20	1904 999 974	-10.7	-0.000 001	-0.006
100%		-10	1904 999 998	12.5	0.000 001	0.007
100%		0	1904 999 992	7.0	0.000 000	0.004
100%		+10	1904 999 968	-17.3	-0.000 001	-0.009
100%		+30	1904 999 998	12.9	0.000 001	0.007
100%		+40	1904 999 993	7.9	0.000 000	0.004
100%		+50	1904 999 974	-11.5	-0.000 001	-0.006
Batt. Endpoint		10.200	+20	1904 999 997	11.5	0.000 001





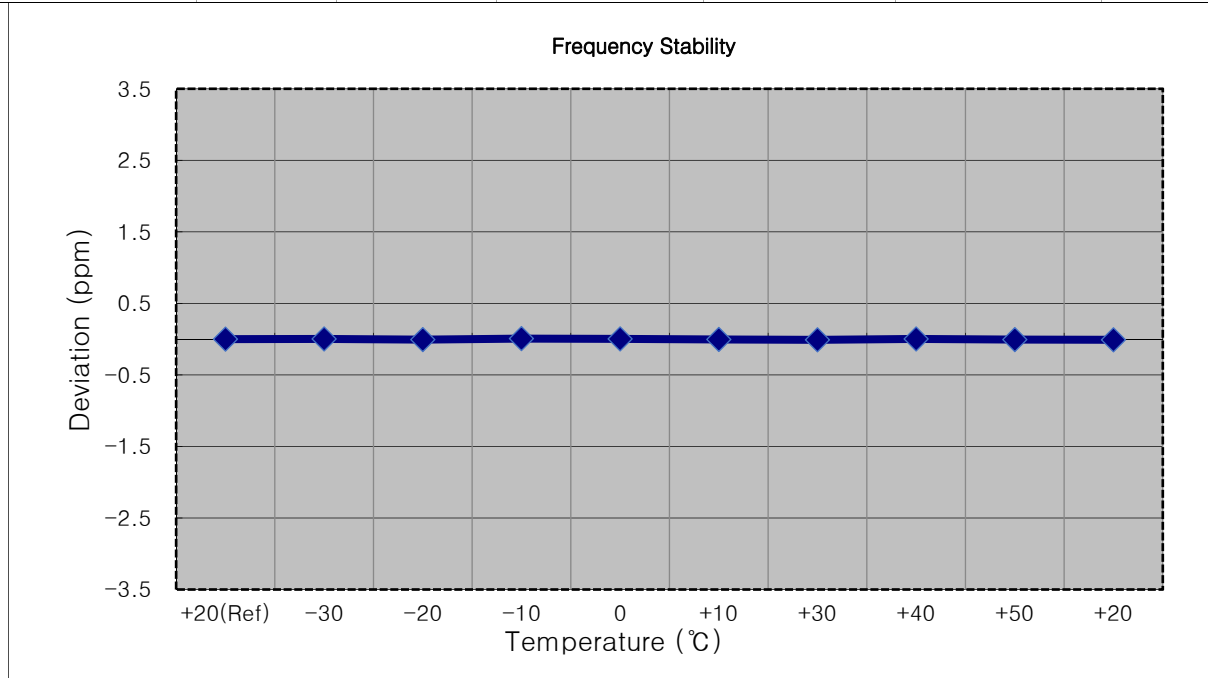
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1902,500,000 Hz
- ▣ CHANNEL: 19125 (15 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1902 499 989	0.0	0.000 000	0.000
100%		-30	1902 499 964	-25.0	-0.000 001	-0.013
100%		-20	1902 499 981	-8.5	0.000 000	-0.004
100%		-10	1902 499 967	-21.9	-0.000 001	-0.012
100%		0	1902 499 997	8.0	0.000 000	0.004
100%		+10	1902 499 978	-11.6	-0.000 001	-0.006
100%		+30	1902 499 965	-24.1	-0.000 001	-0.013
100%		+40	1902 499 983	-6.4	0.000 000	-0.003
100%		+50	1902 499 973	-16.7	-0.000 001	-0.009
Batt. Endpoint		10.200	+20	1902 499 999	9.9	0.000 001



- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1900,000,000 Hz
- ▣ CHANNEL: 19100 (20 MHz)
- ▣ REFERENCE VOLTAGE: 12.000 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.000	+20(Ref)	1900 000 012	0.0	0.000 000	0.000
100%		-30	1900 000 017	5.2	0.000 000	0.003
100%		-20	1900 000 000	-12.5	-0.000 001	-0.007
100%		-10	1900 000 027	15.1	0.000 001	0.008
100%		0	1900 000 018	6.1	0.000 000	0.003
100%		+10	1900 000 003	-8.6	0.000 000	-0.005
100%		+30	1899 999 994	-18.0	-0.000 001	-0.009
100%		+40	1900 000 017	4.7	0.000 000	0.002
100%		+50	1900 000 000	-11.7	-0.000 001	-0.006
Batt. Endpoint		10.200	+20	1899 999 994	-17.6	-0.000 001



## 9. TEST PLOTS

BW1.4M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(1)





BW1.4M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(2)



BW1.4M\_BandEdge\_Highest Channel\_QPSK\_FullRB(1)



BW1.4M\_BandEdge\_Highest Channel\_QPSK\_FullRB(2)



BW1.4M\_BandEdge\_Lowest Channel\_QPSK\_1RB



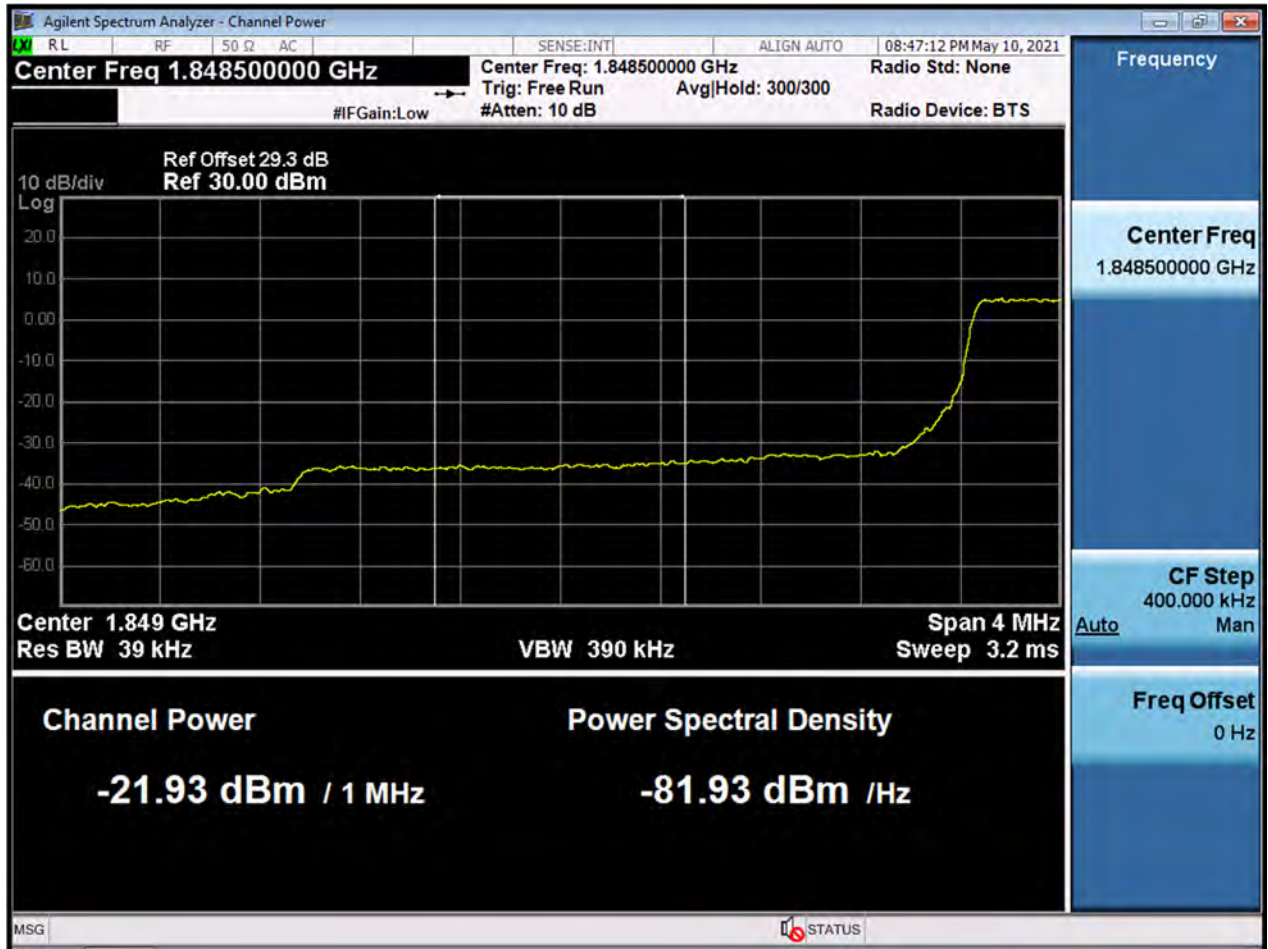
BW1.4M\_BandEdge\_Highest Channel\_QPSK\_1RB



BW3M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(1)



BW3M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(2)

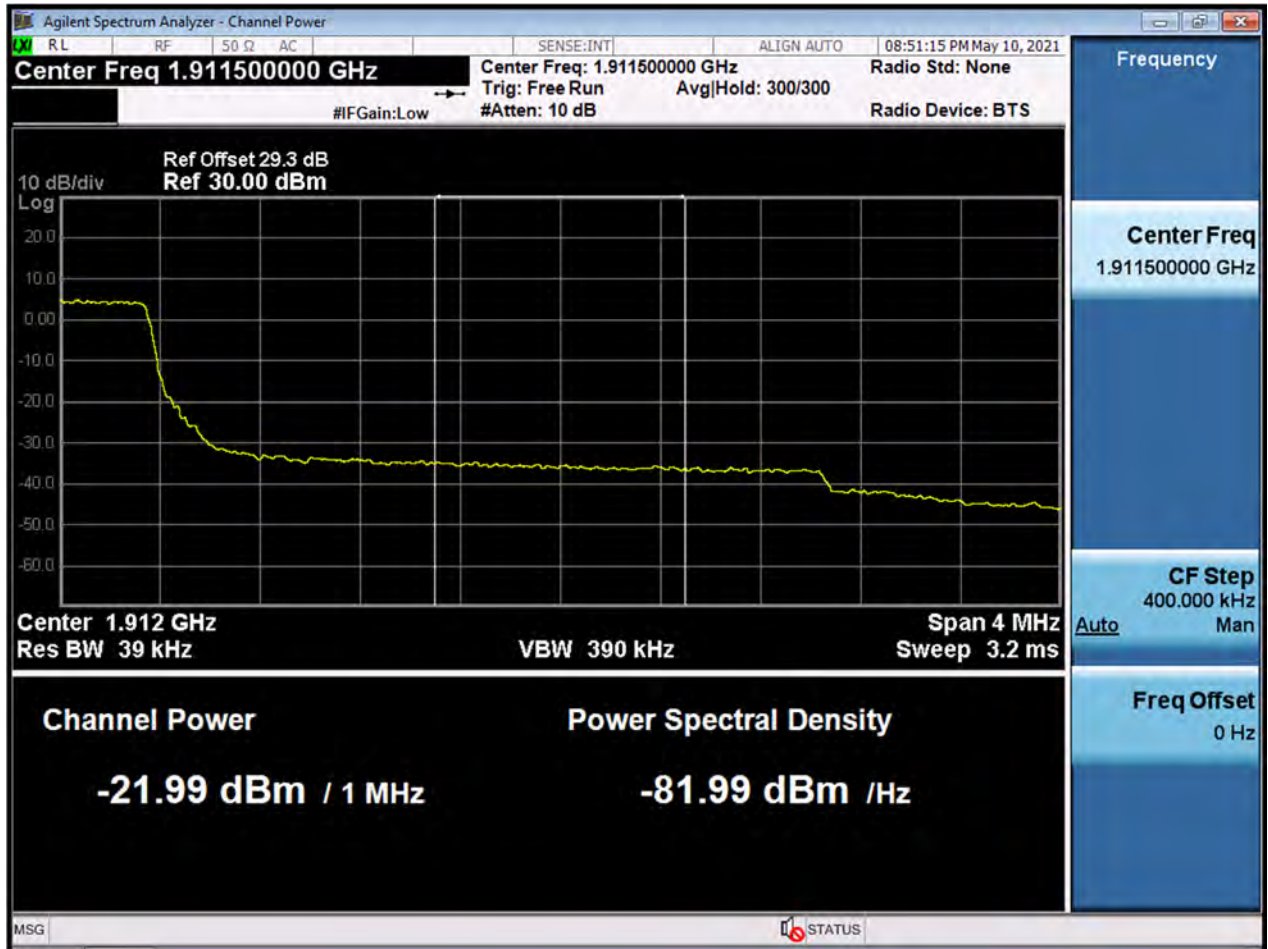


BW3M\_BandEdge\_Highest Channel\_QPSK\_FullRB(1)

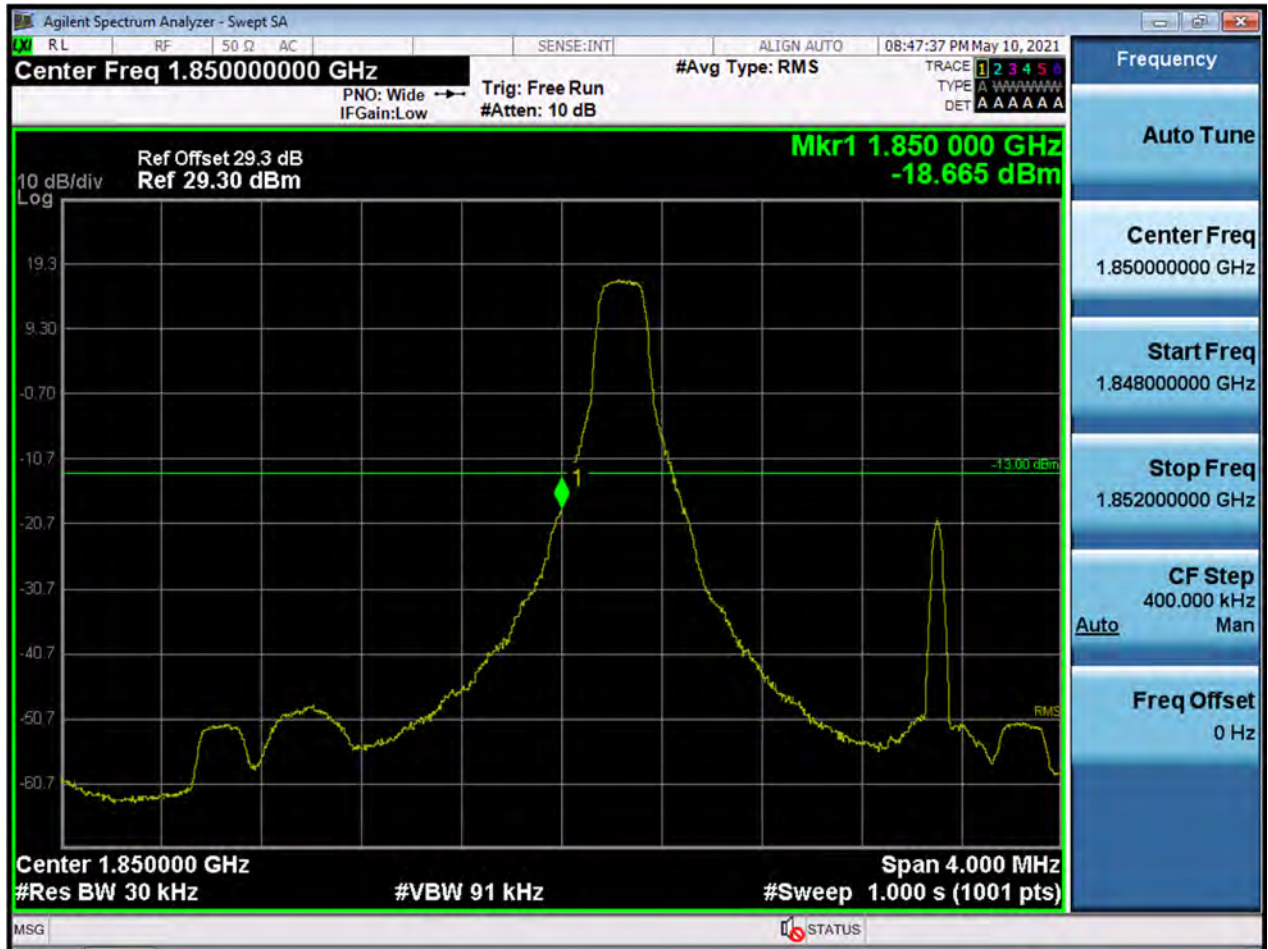




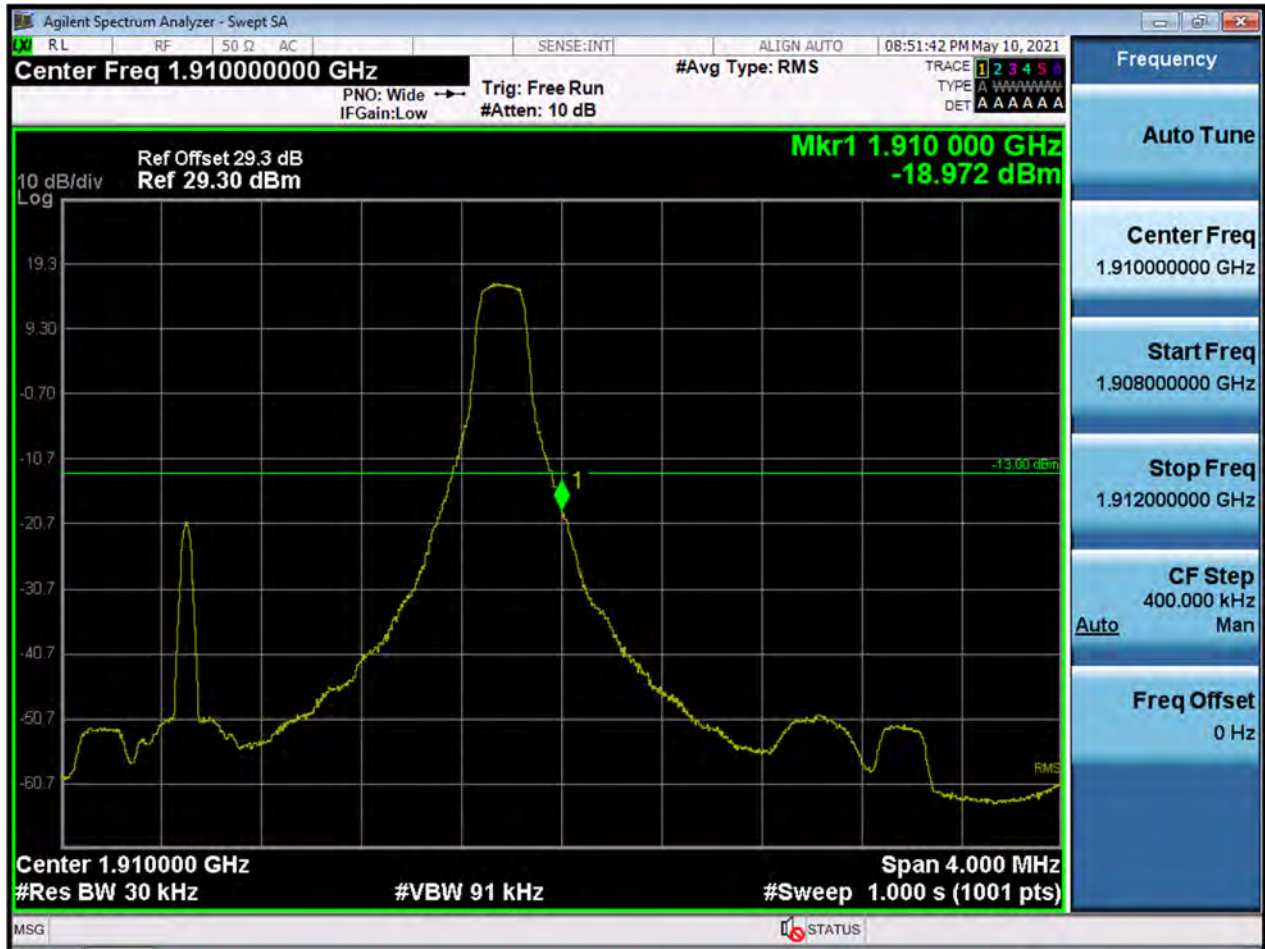
BW3M\_BandEdge\_Highest Channel\_QPSK\_FullRB(2)



BW3M\_BandEdge\_Lowest Channel\_QPSK\_1RB



BW3M\_BandEdge\_Highest Channel\_QPSK\_1RB



BW5M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(1)



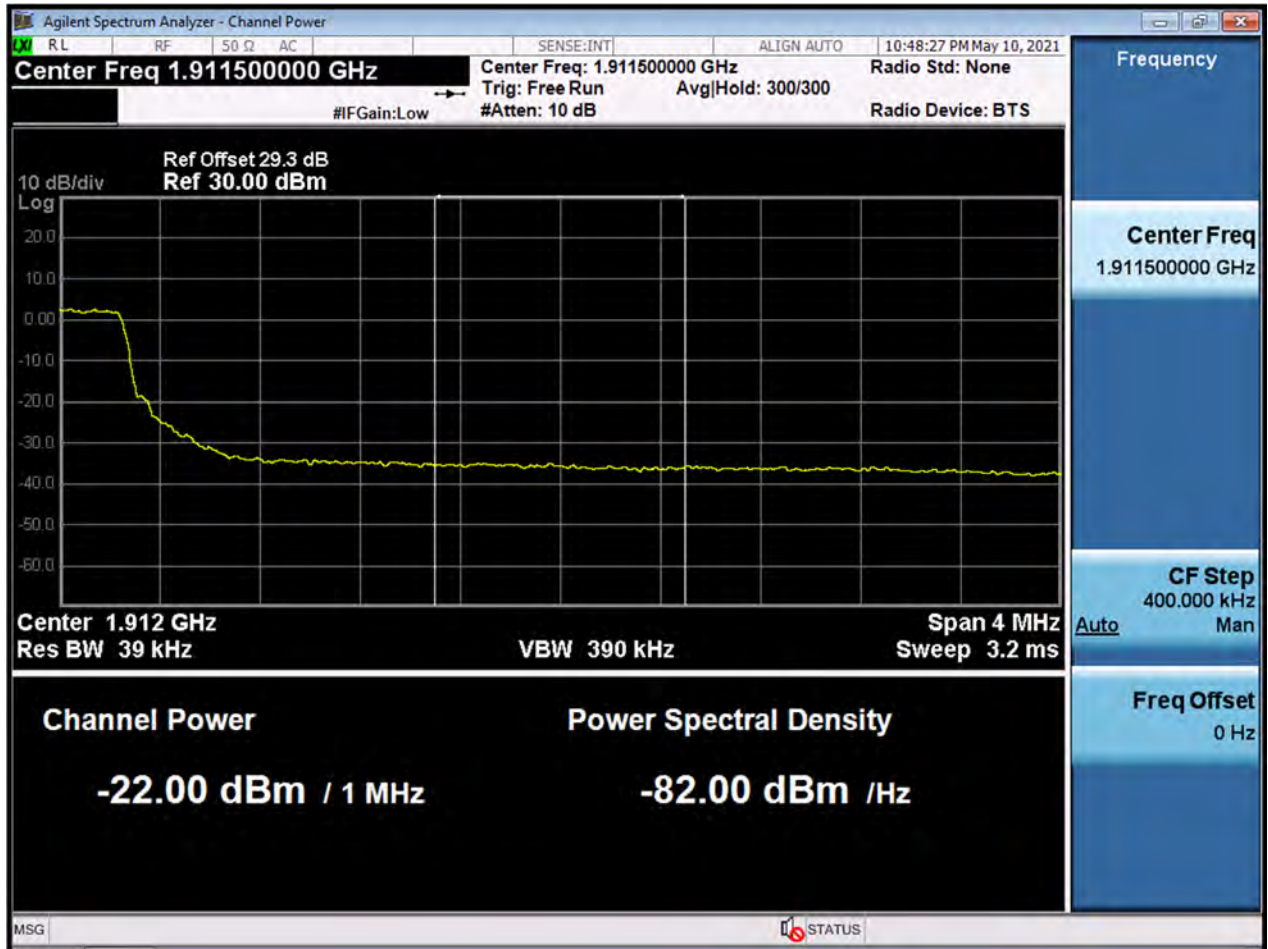
BW5M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(2)



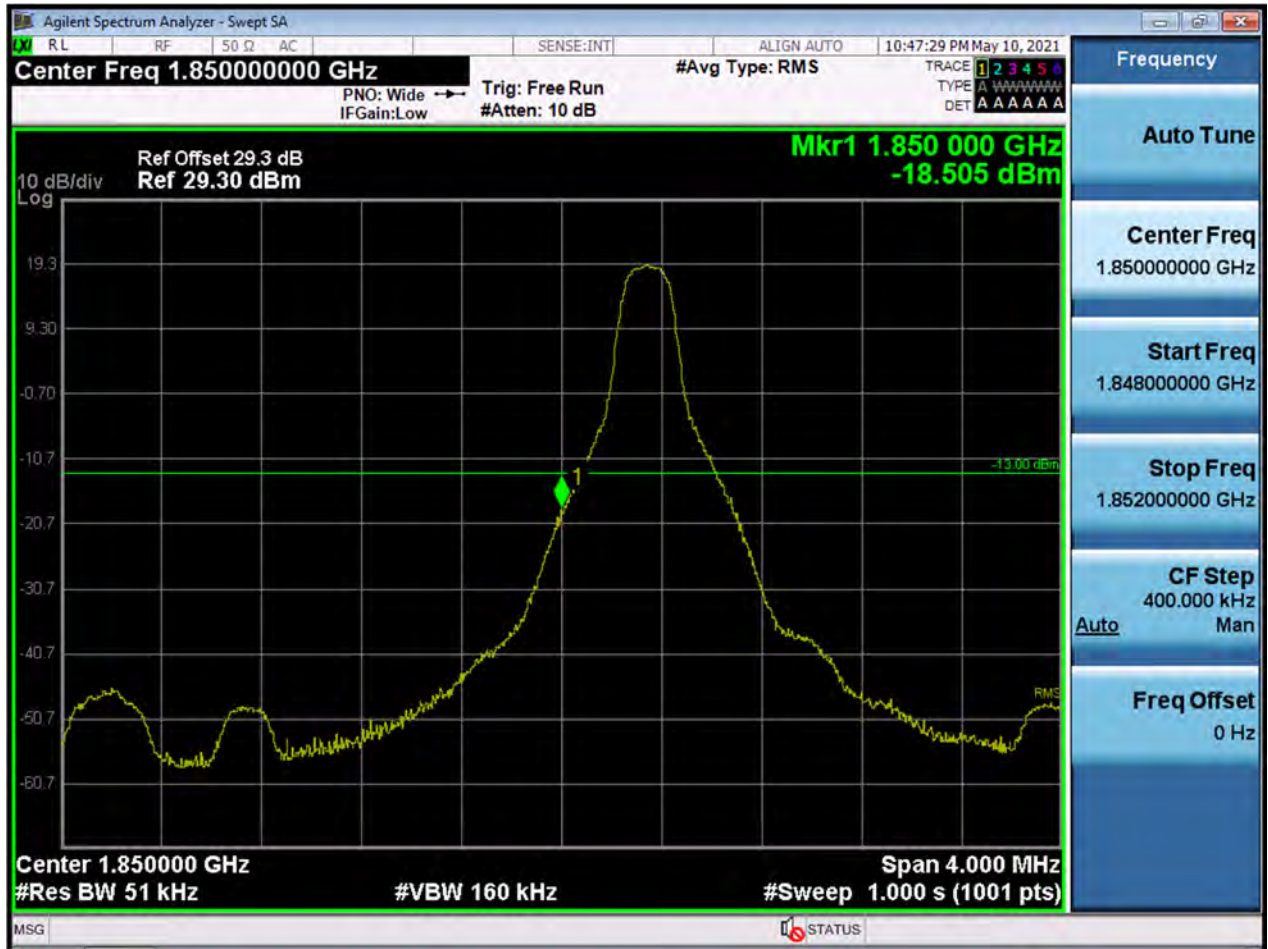
BW5M\_BandEdge\_Highest Channel\_QPSK\_FullRB(1)



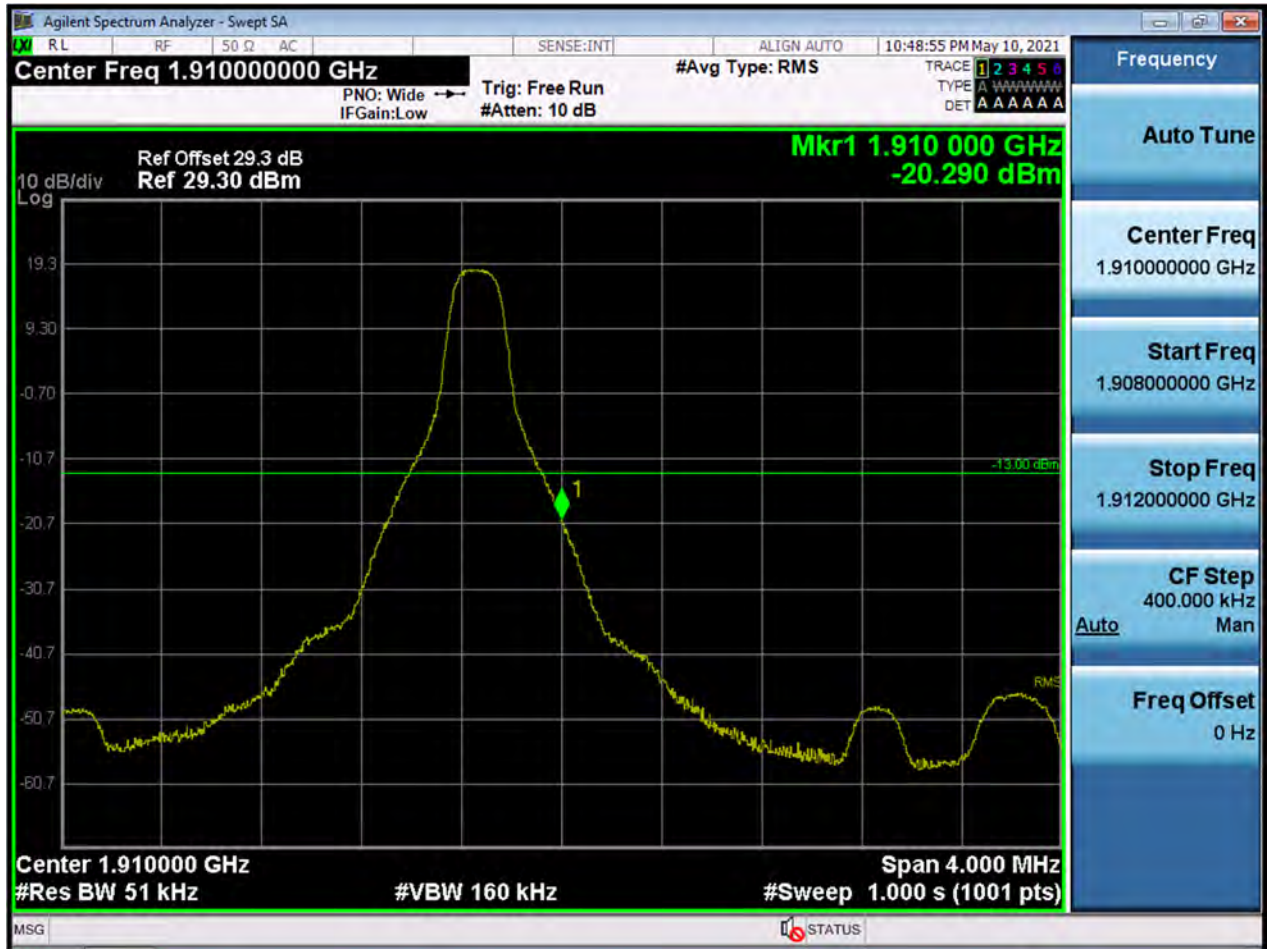
BW5M\_BandEdge\_Highest Channel\_QPSK\_FullRB(2)



BW5M\_BandEdge\_Lowest Channel\_QPSK\_1RB



BW5M\_BandEdge\_Highest Channel\_QPSK\_1RB



BW10M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(1)



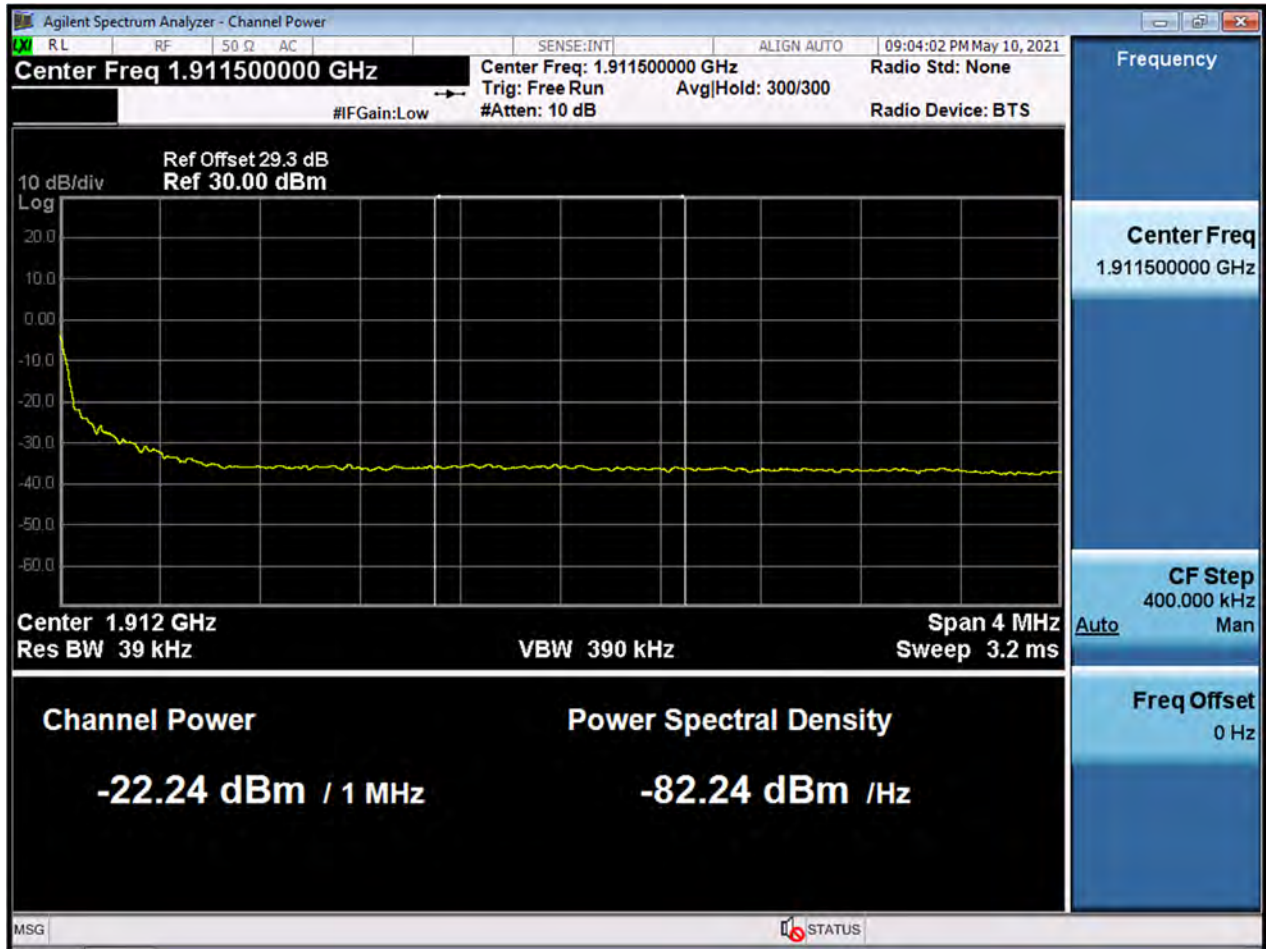
BW10M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(2)



BW10M\_BandEdge\_Highest Channel\_QPSK\_FullRB(1)



BW10M\_BandEdge\_Highest Channel\_QPSK\_FullRB(2)



BW10M\_BandEdge\_Lowest Channel\_QPSK\_1RB



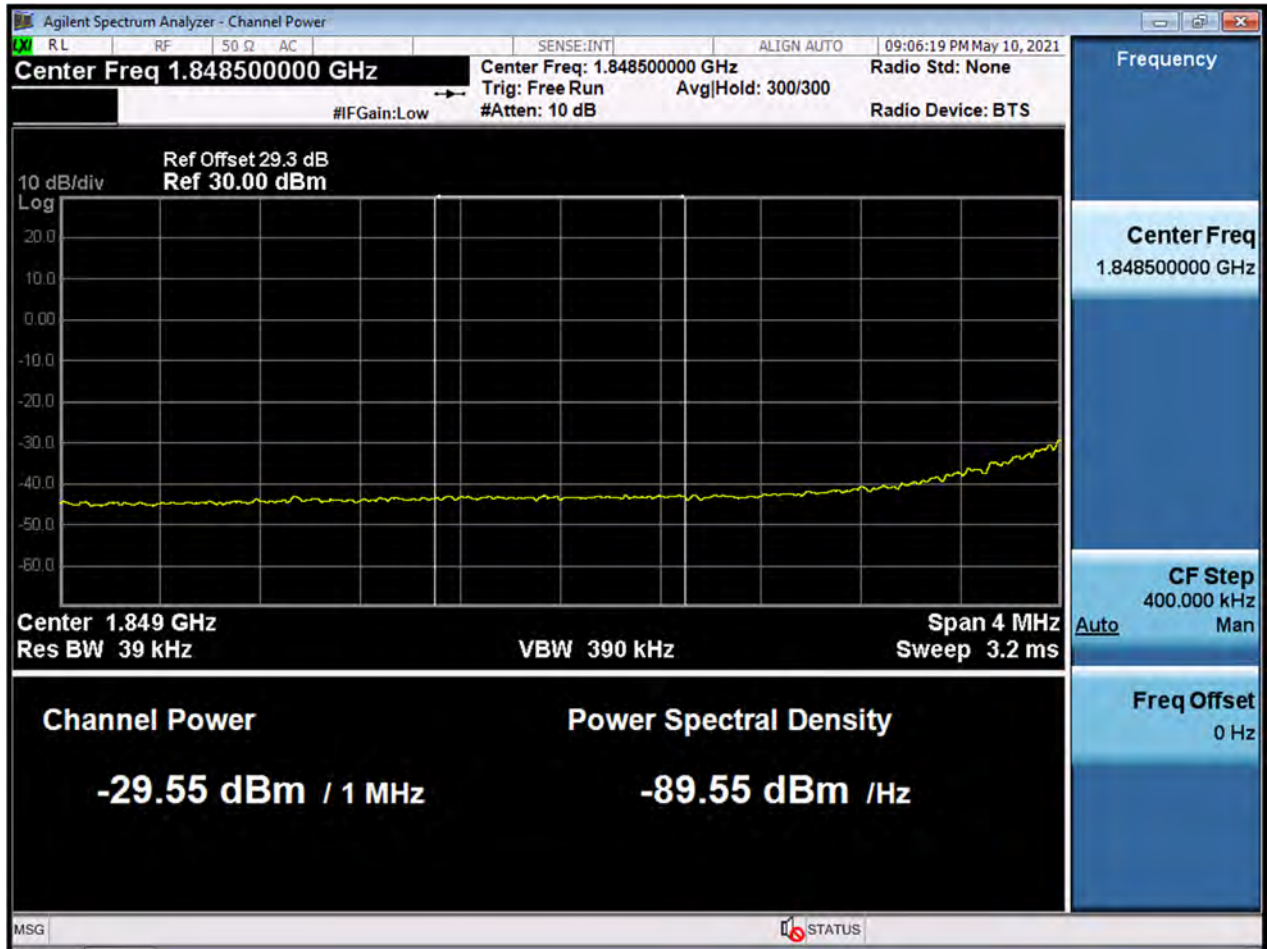
BW10M\_BandEdge\_Highest Channel\_QPSK\_1RB



BW15M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(1)



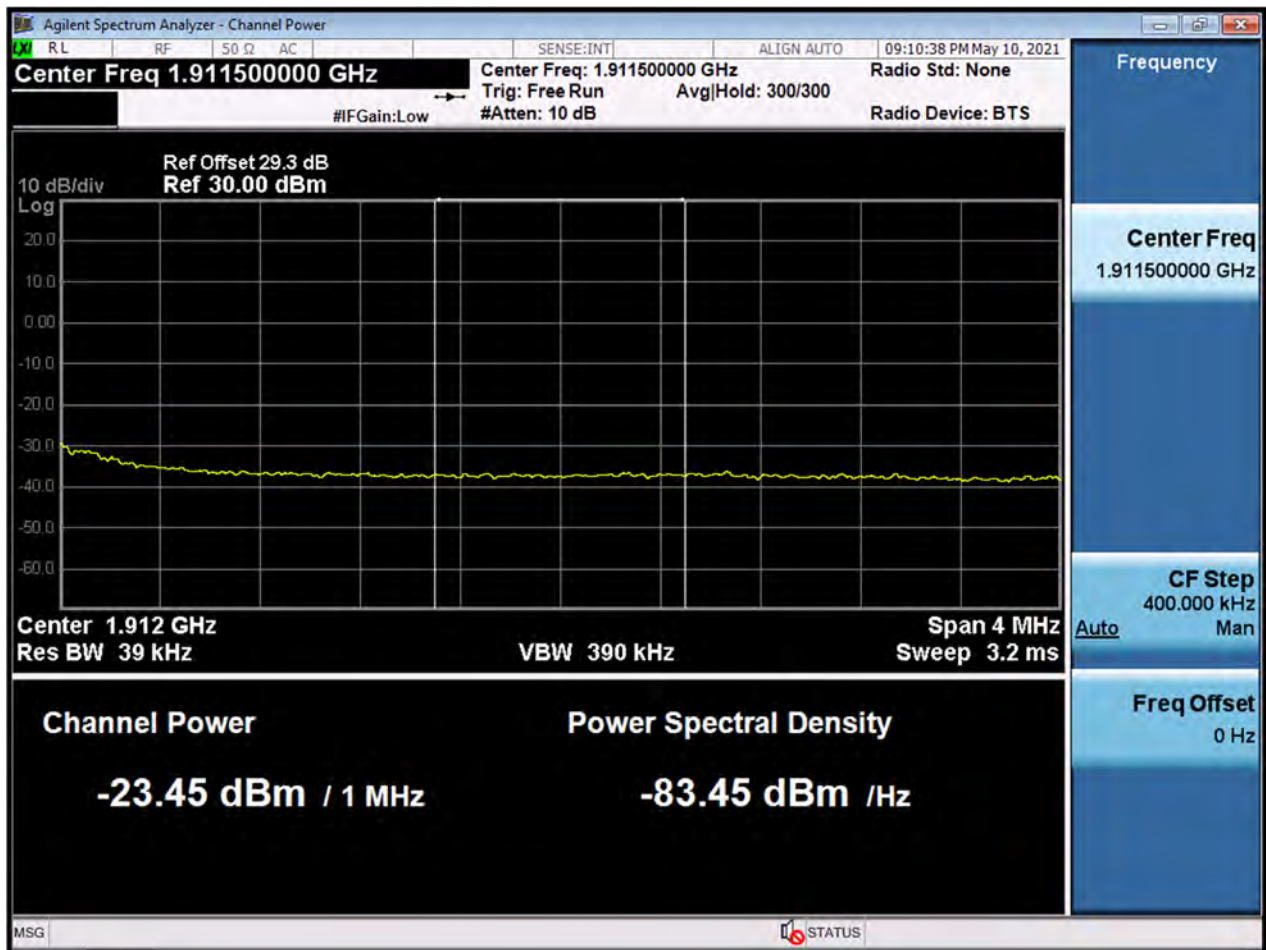
BW15M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(2)



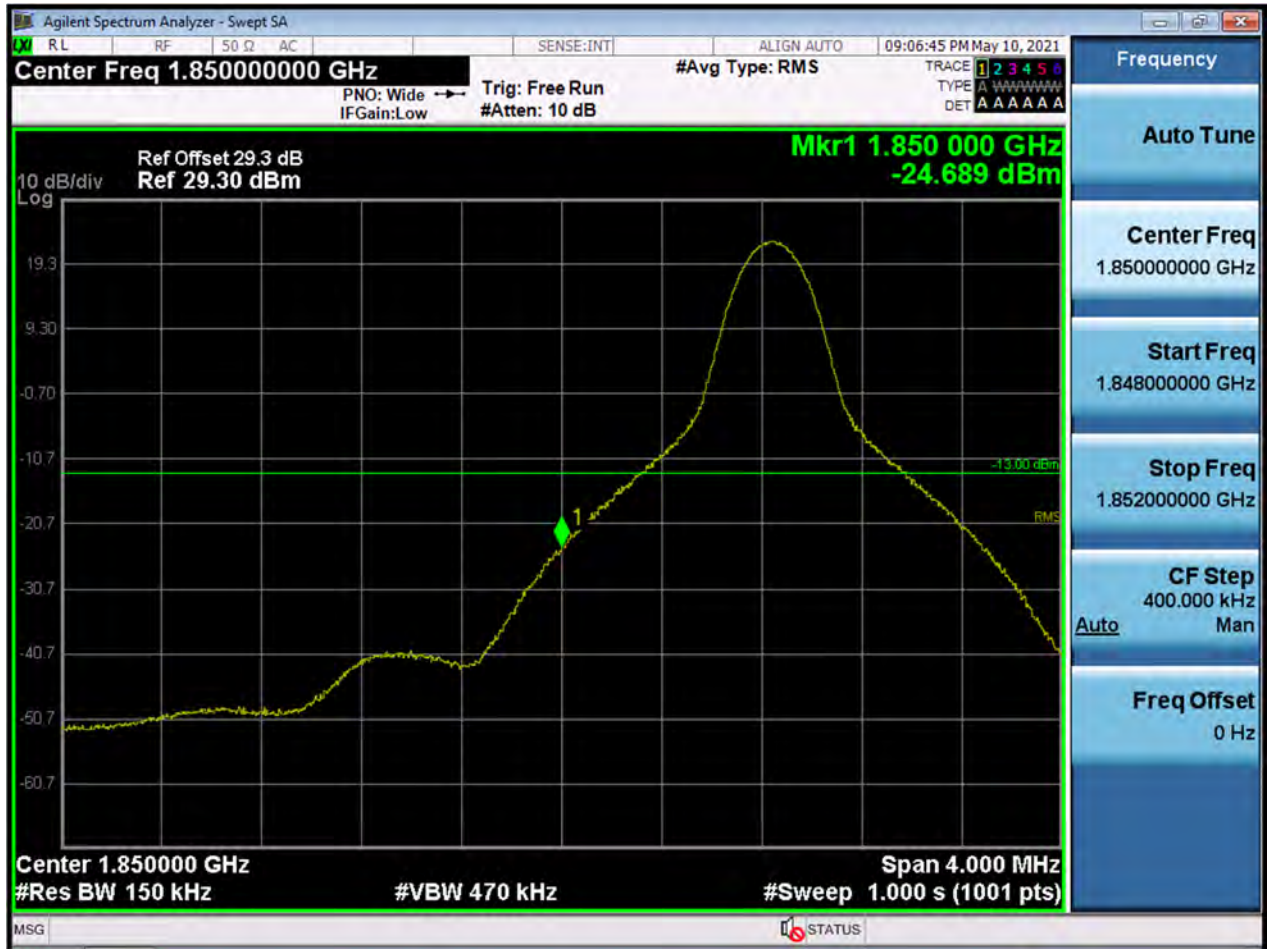
BW15M\_BandEdge\_Highest Channel\_QPSK\_FullRB(1)



BW15M\_BandEdge\_Highest Channel\_QPSK\_FullRB(2)



BW15M\_BandEdge\_Lowest Channel\_QPSK\_1RB



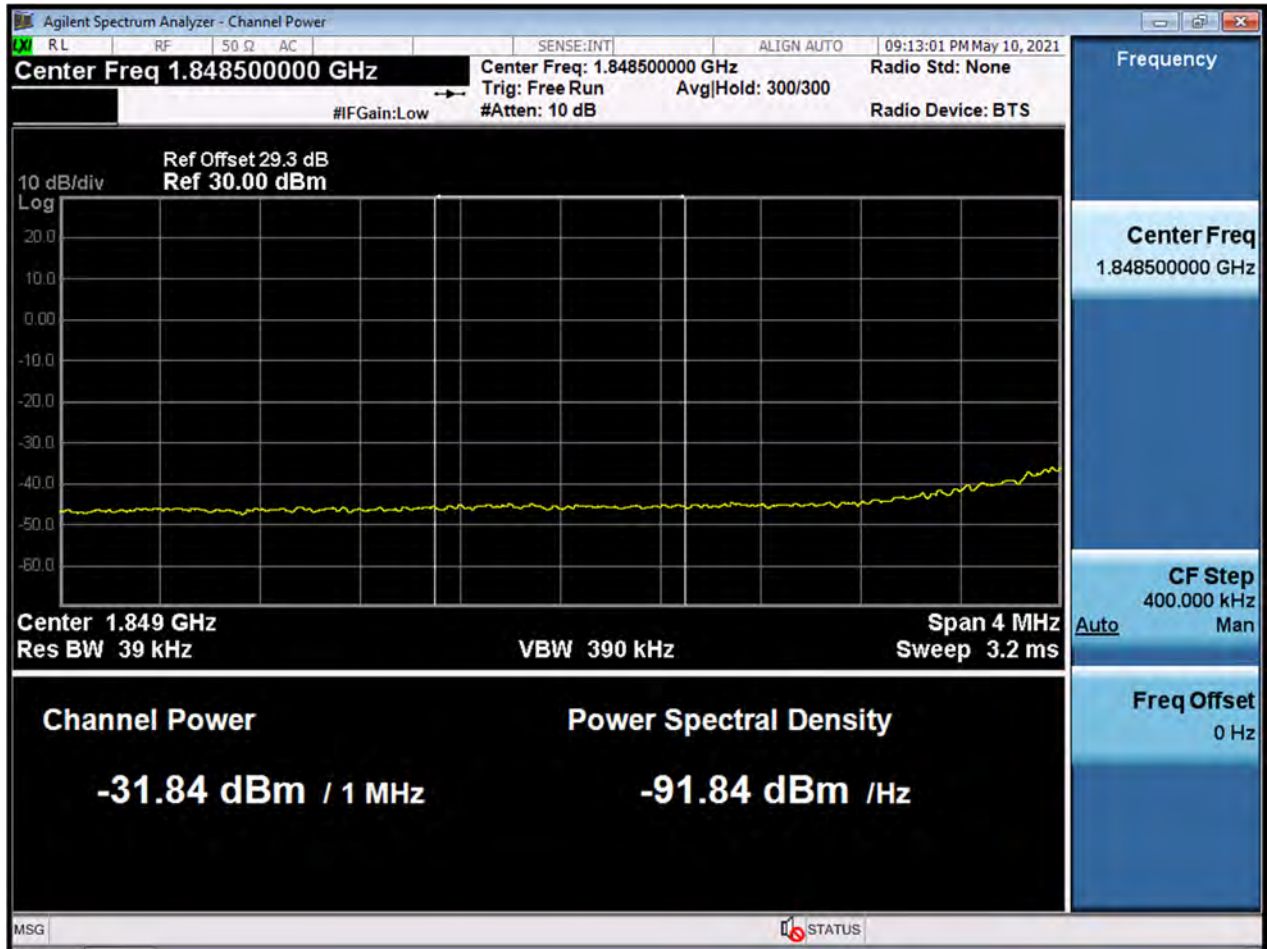
BW15M\_BandEdge\_Highest Channel\_QPSK\_1RB



BW20M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(1)



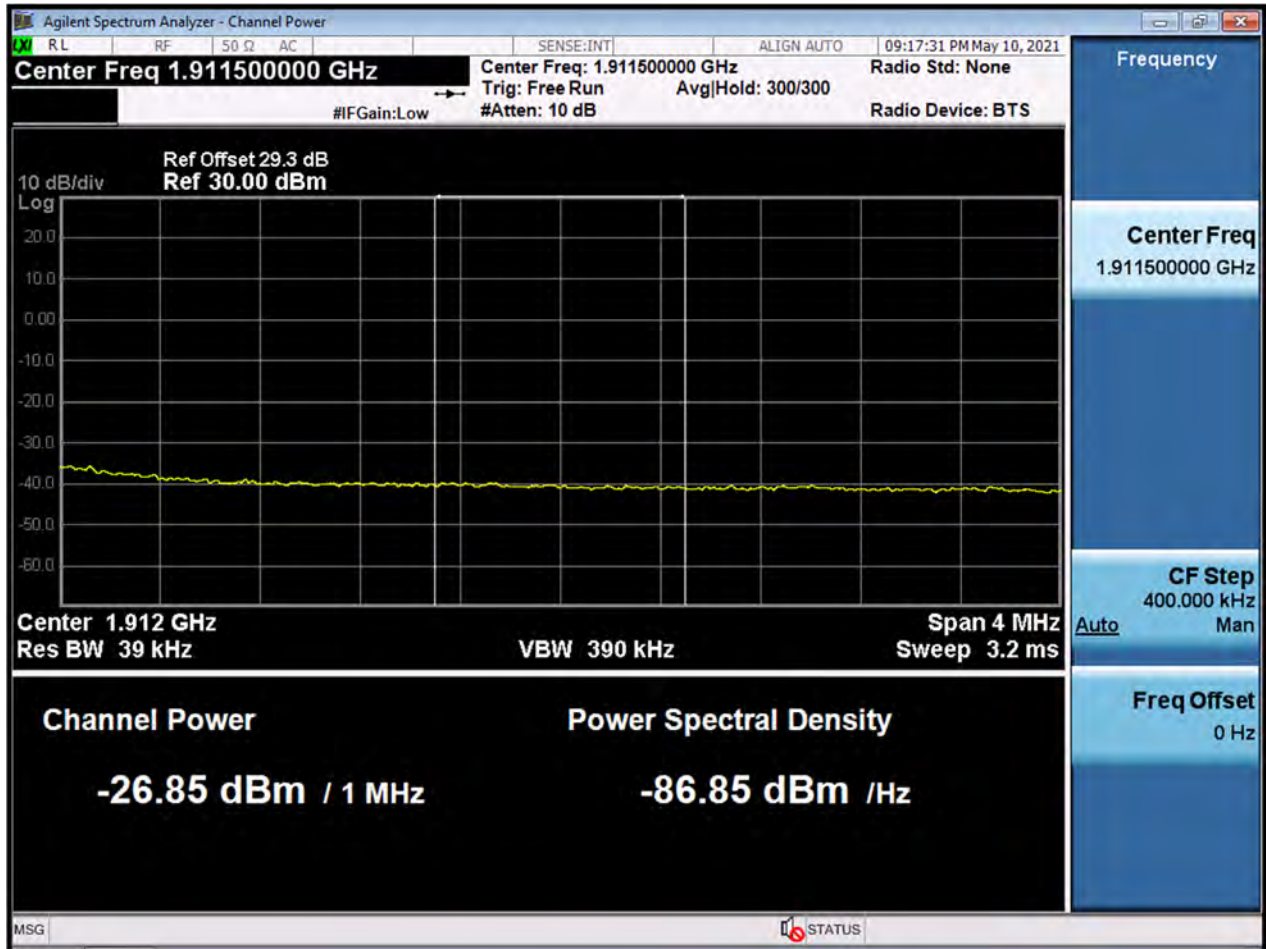
BW20M\_BandEdge\_Lowest Channel\_QPSK\_FullRB(2)



BW20M\_BandEdge\_Highest Channel\_QPSK\_FullRB(1)



BW20M\_BandEdge\_Highest Channel\_QPSK\_FullRB(2)

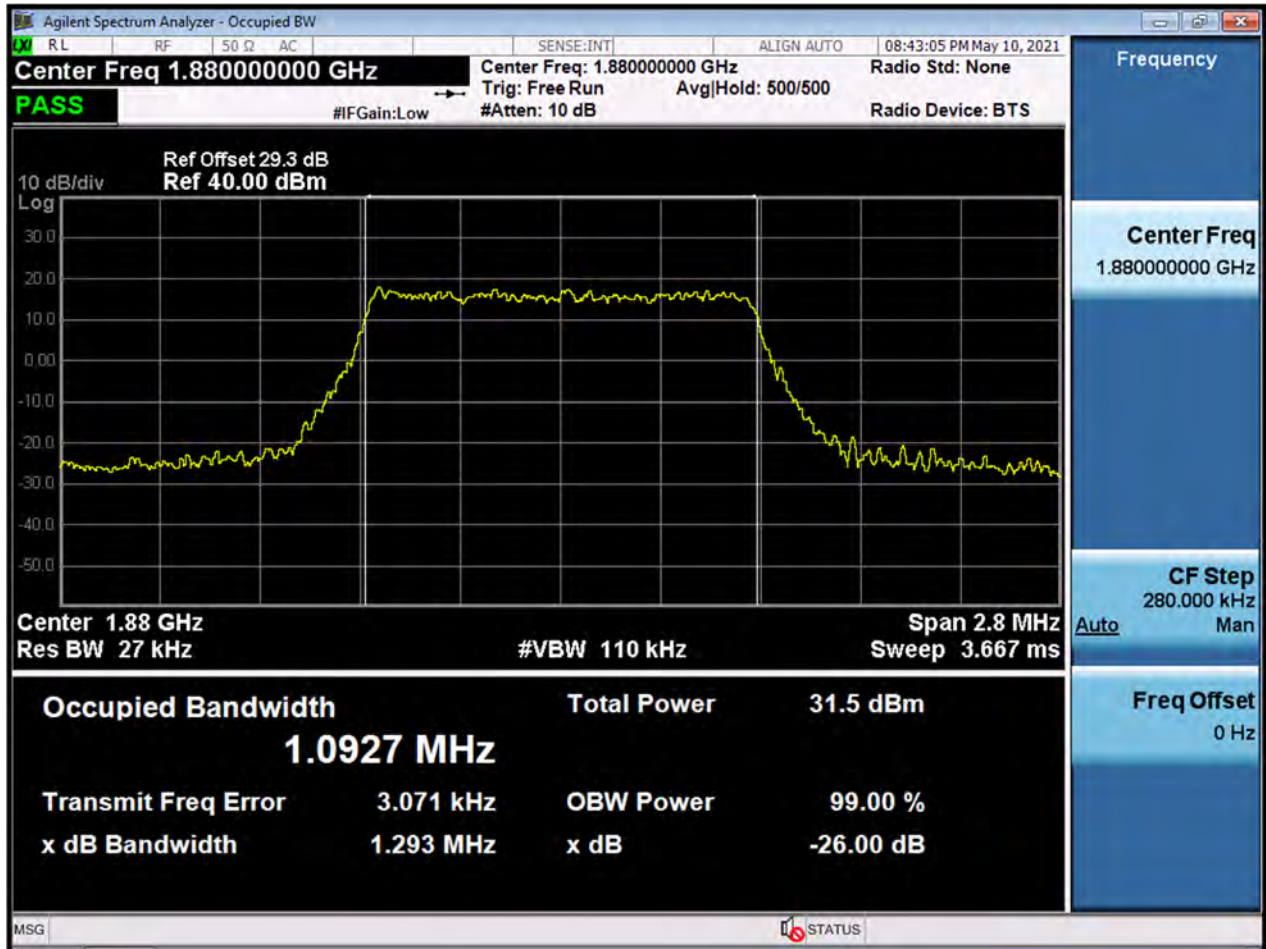


BW20M\_BandEdge\_Lowest Channel\_QPSK\_1RB

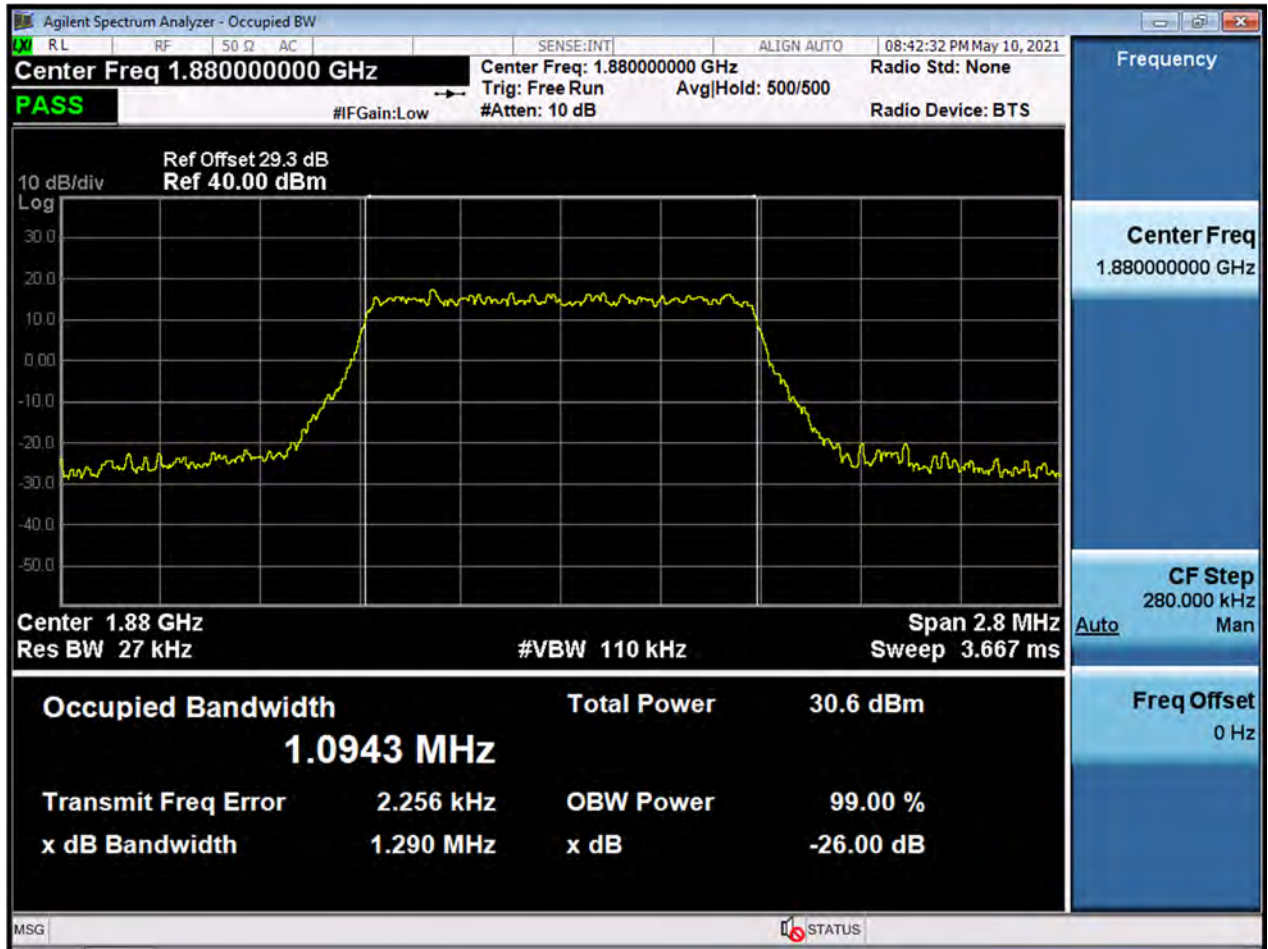




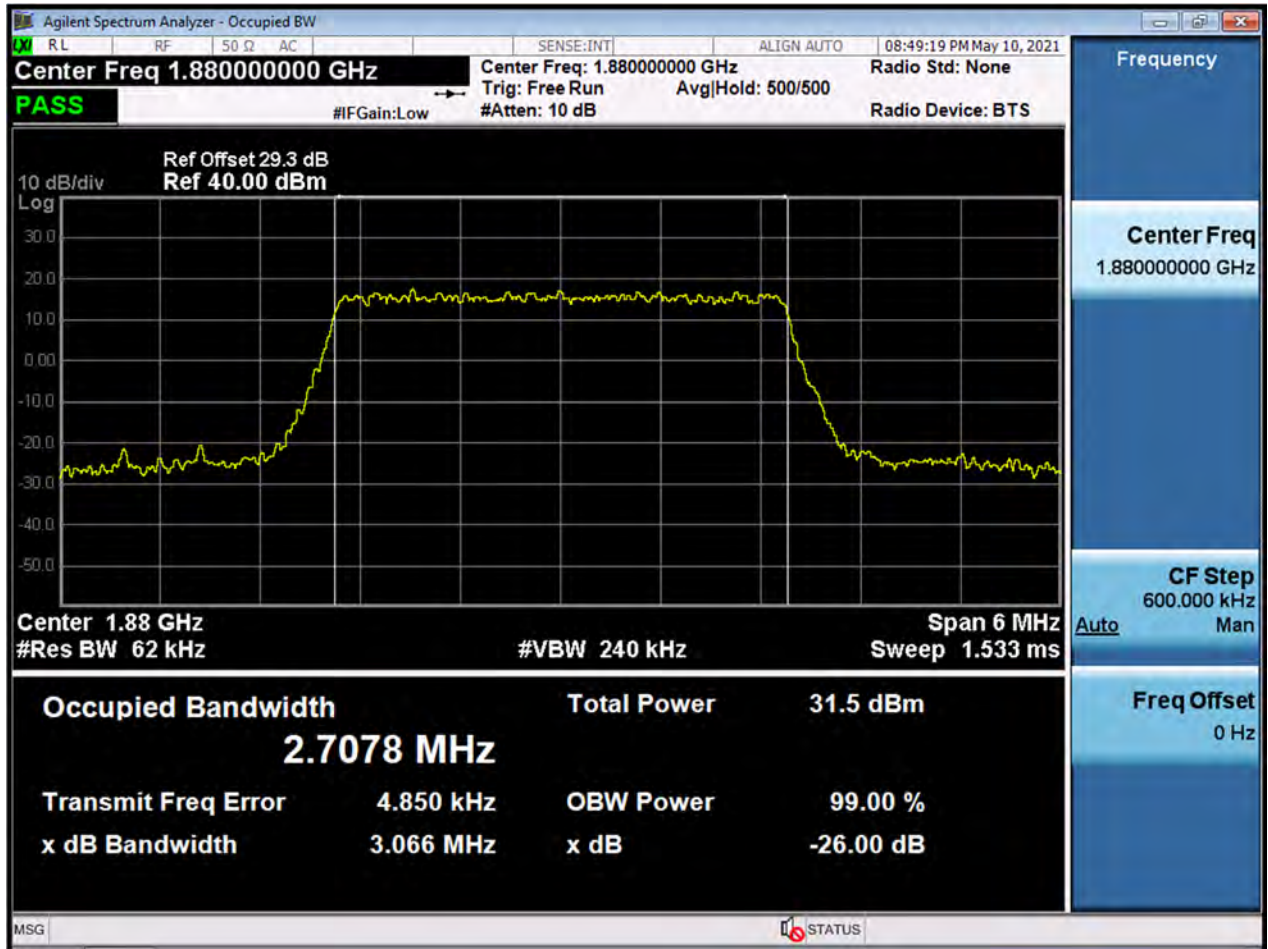
BW1.4M\_OBW\_Middle Channel\_QPSK\_FullRB



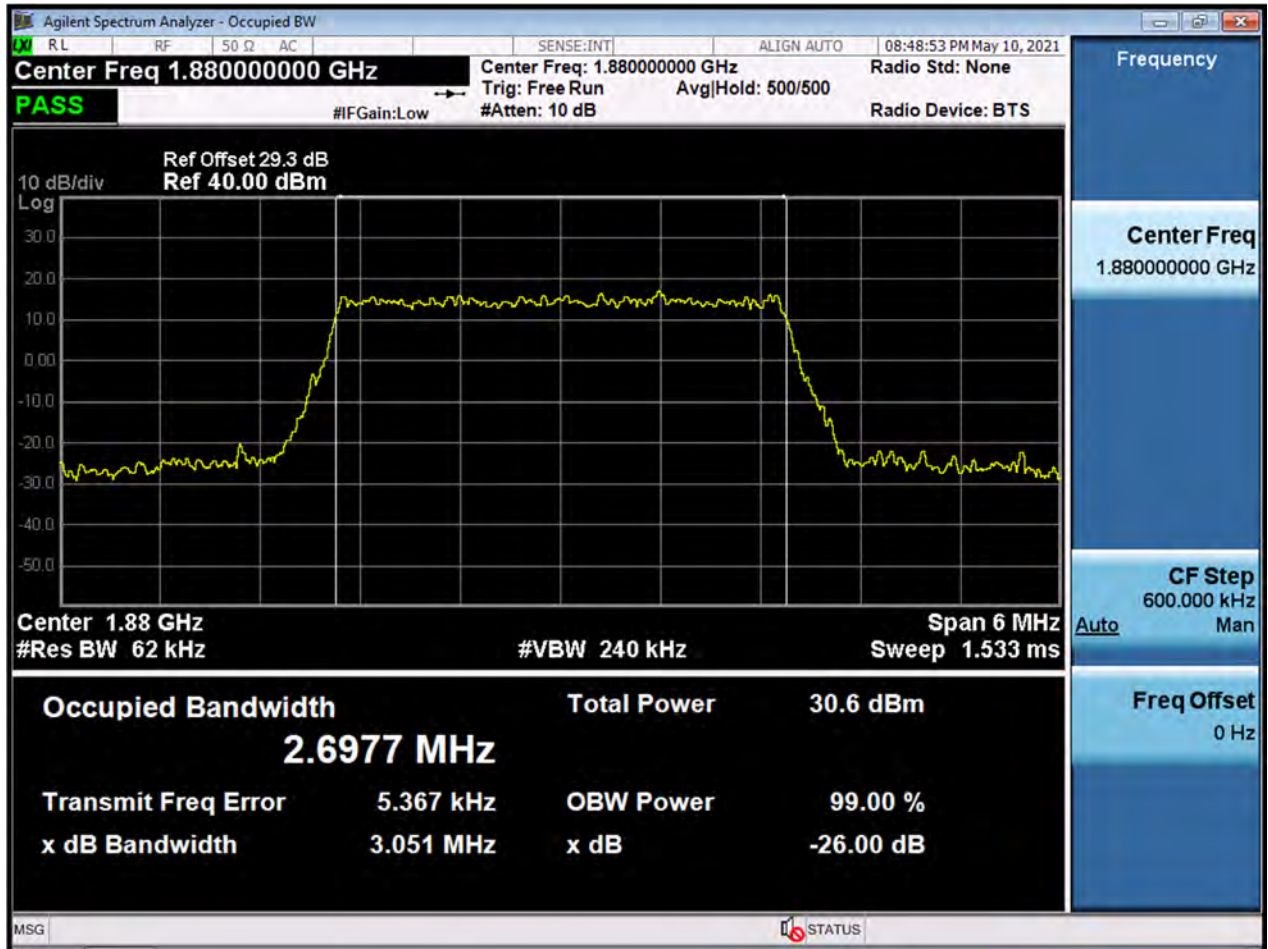
BW1.4M\_OBW\_Middle Channel\_16QAM\_FullRB



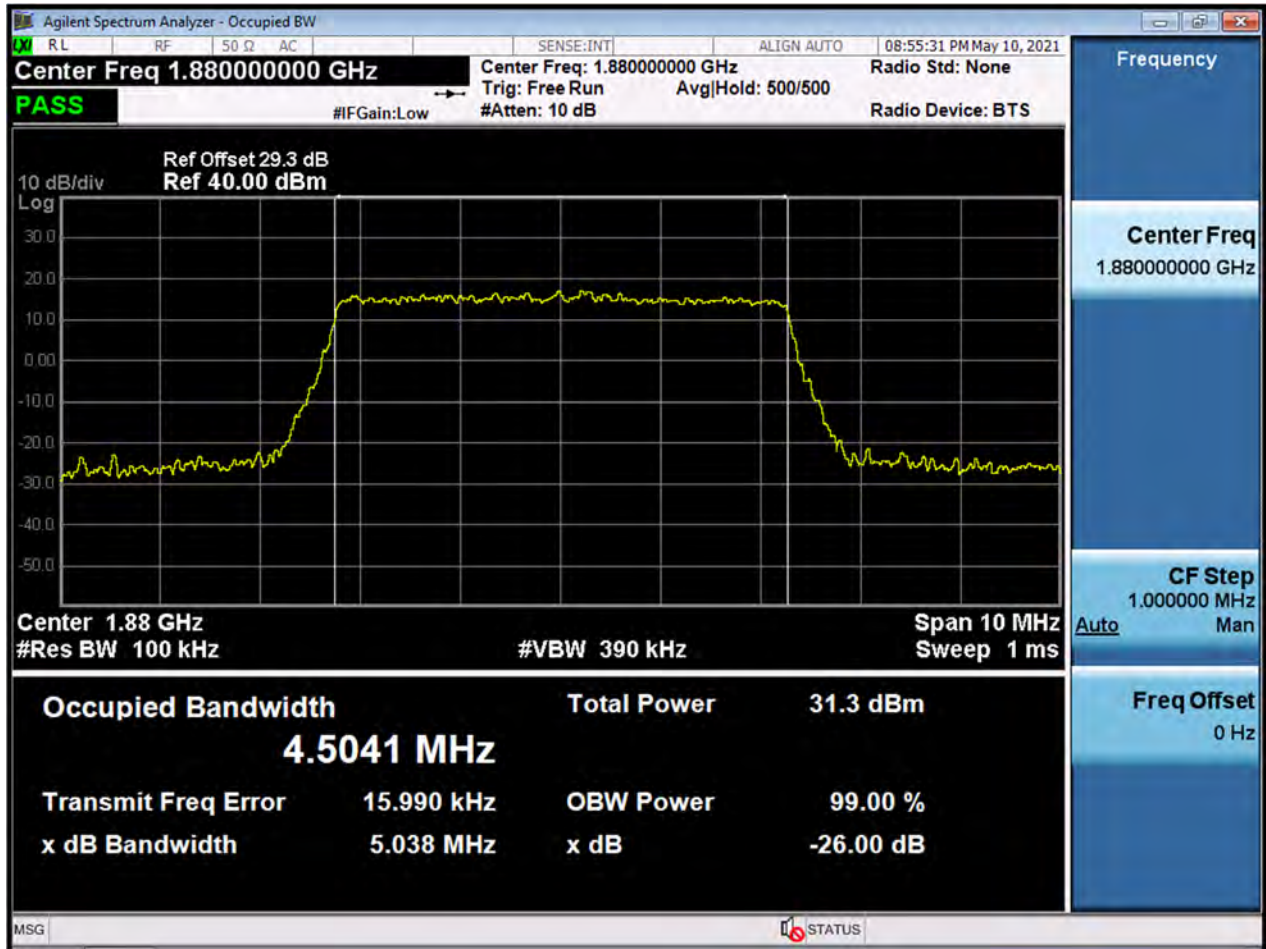
BW3M\_OBW\_Middle Channel\_QPSK\_FullRB



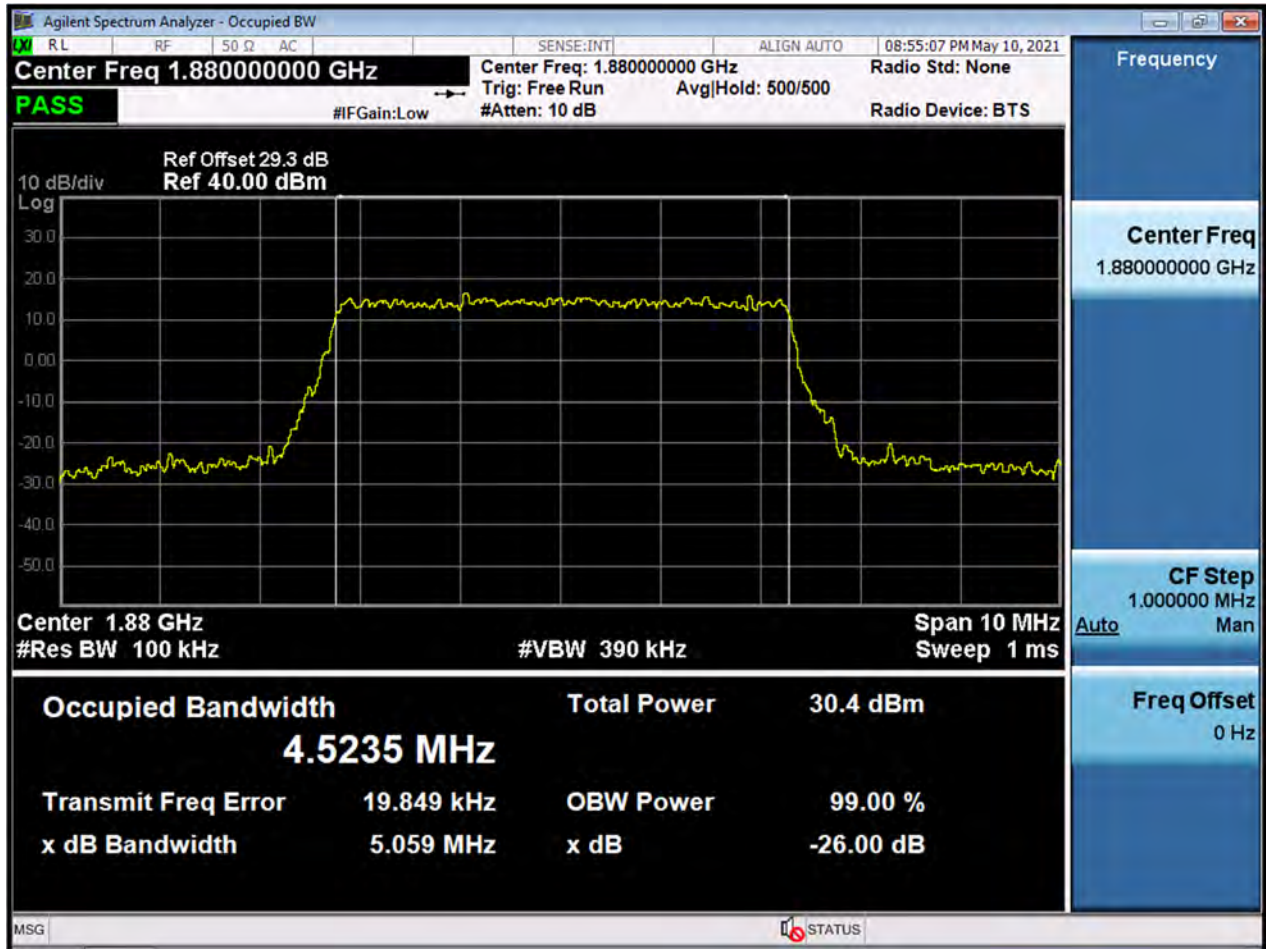
BW3M\_OBW\_Middle Channel\_16QAM\_FullRB



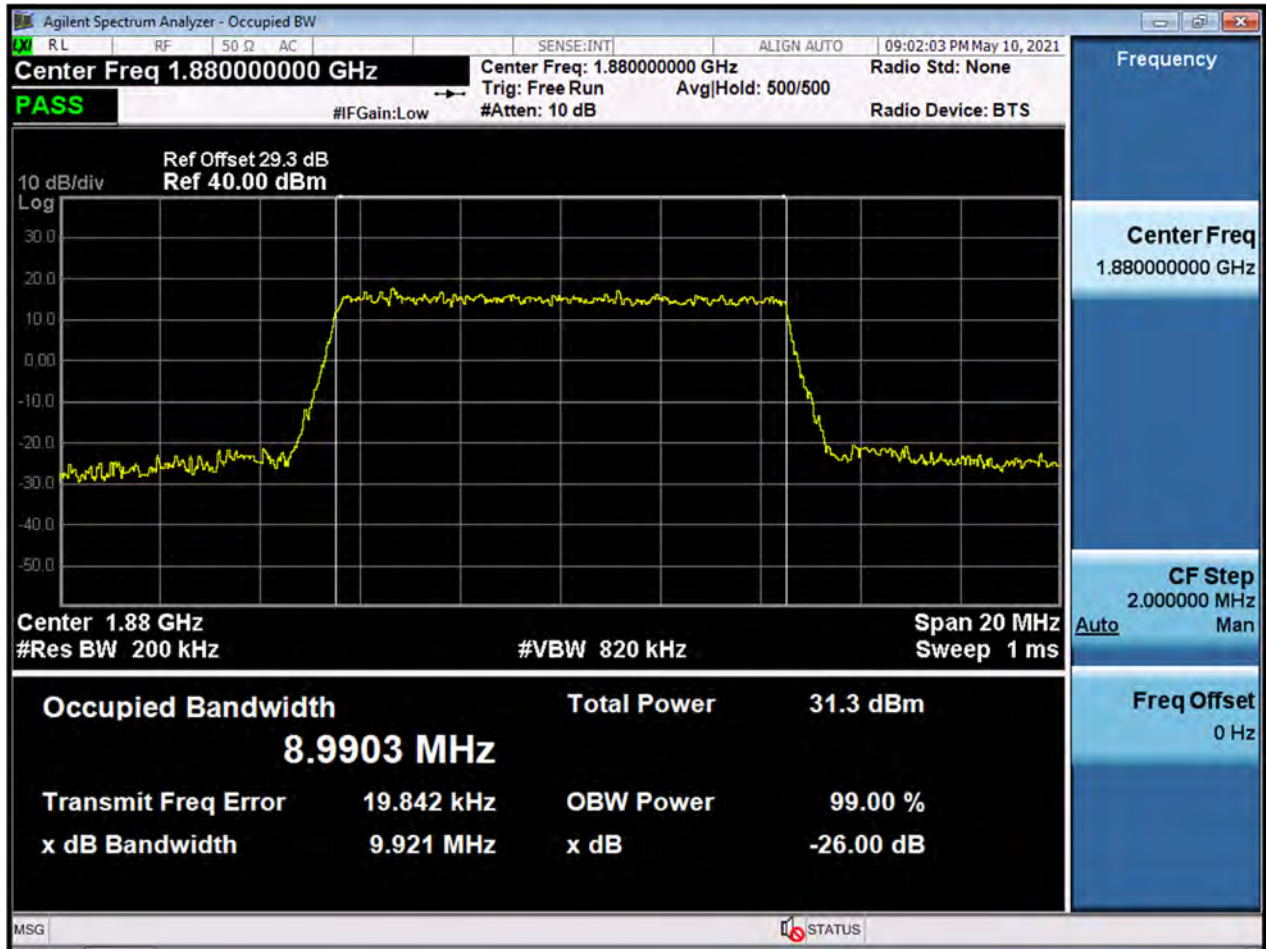
BW5M\_OBW\_Middle Channel\_QPSK\_FullRB



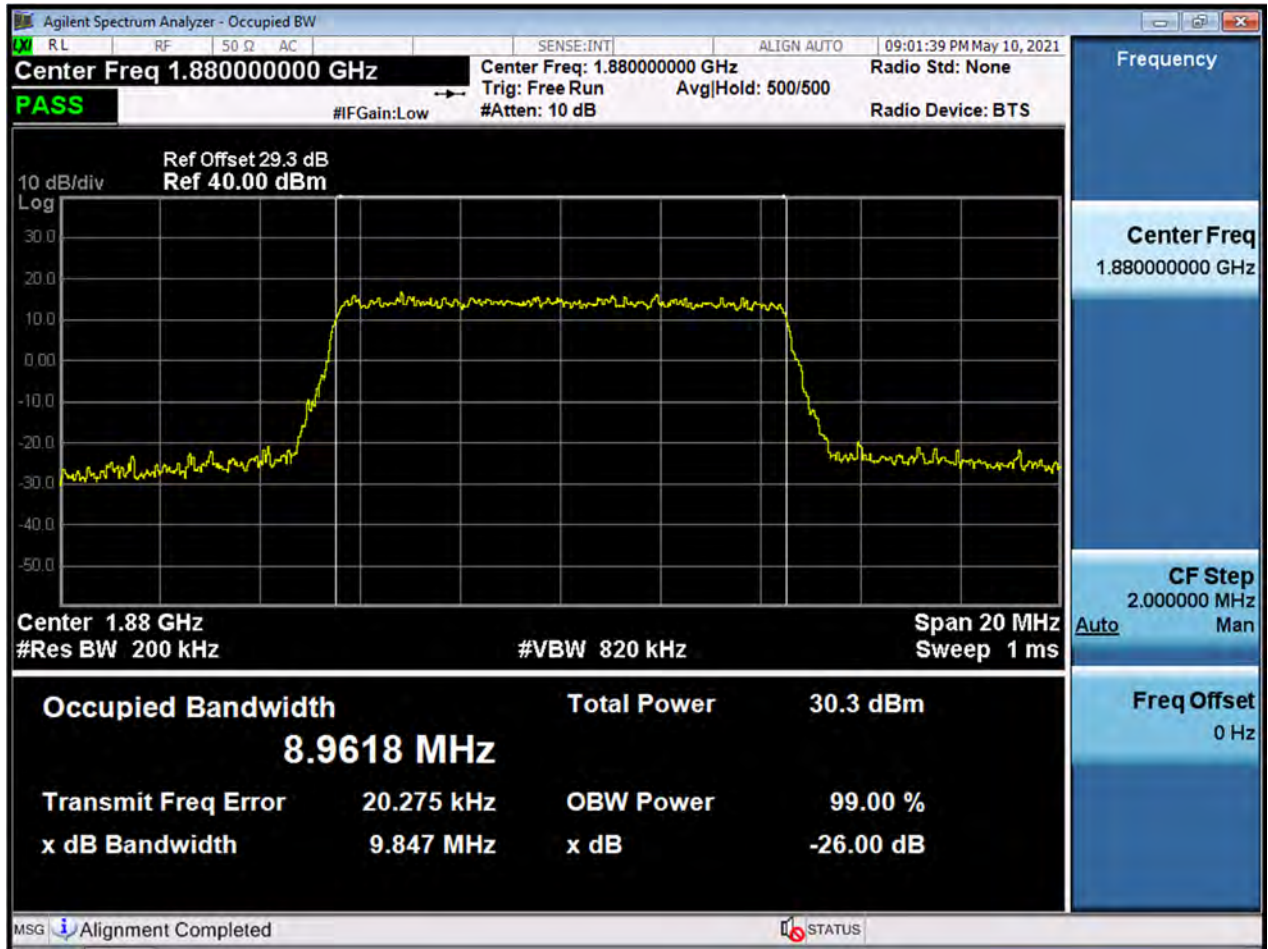
BW5M\_OBW\_Middle Channel\_16QAM\_FullRB



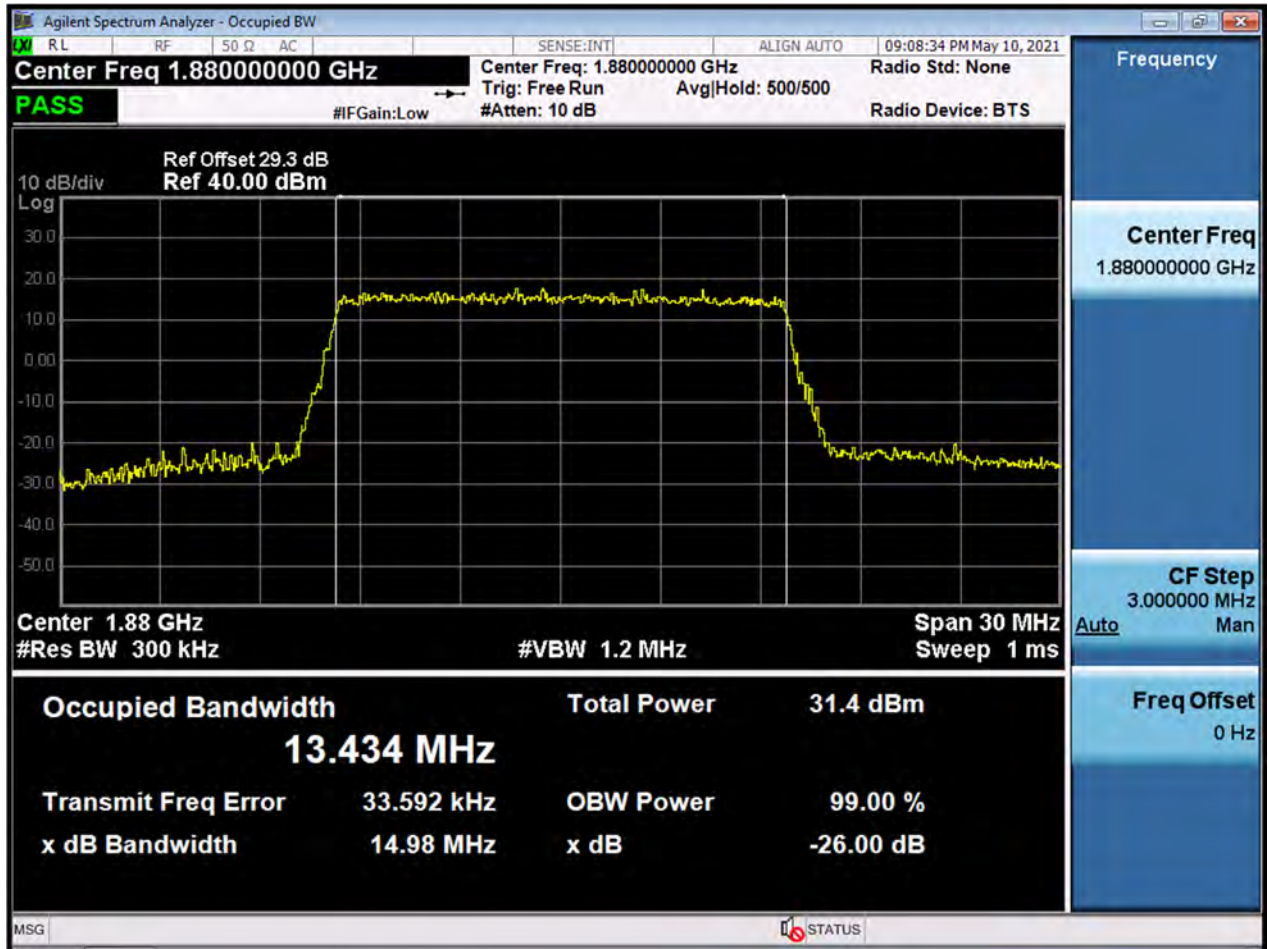
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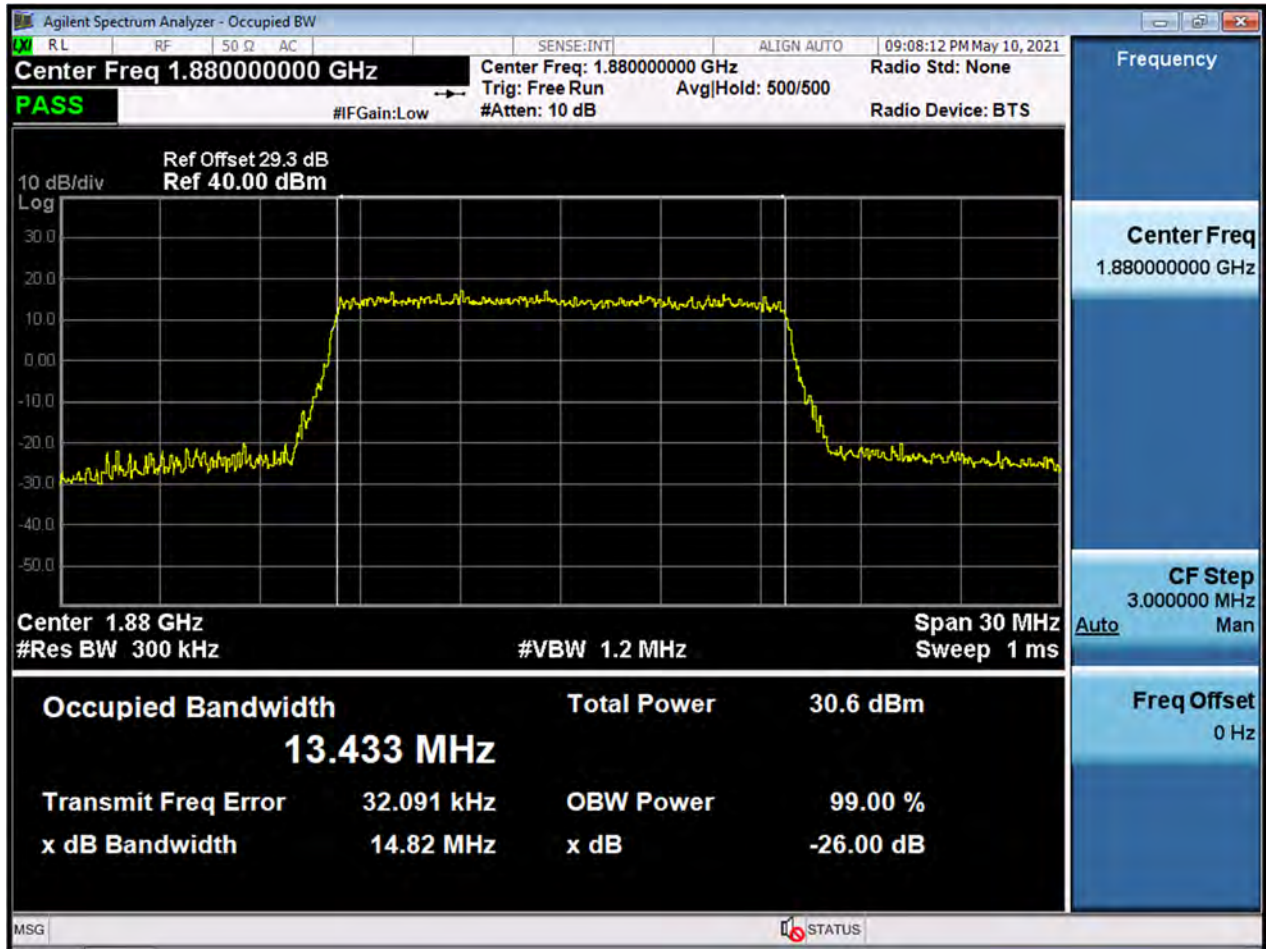
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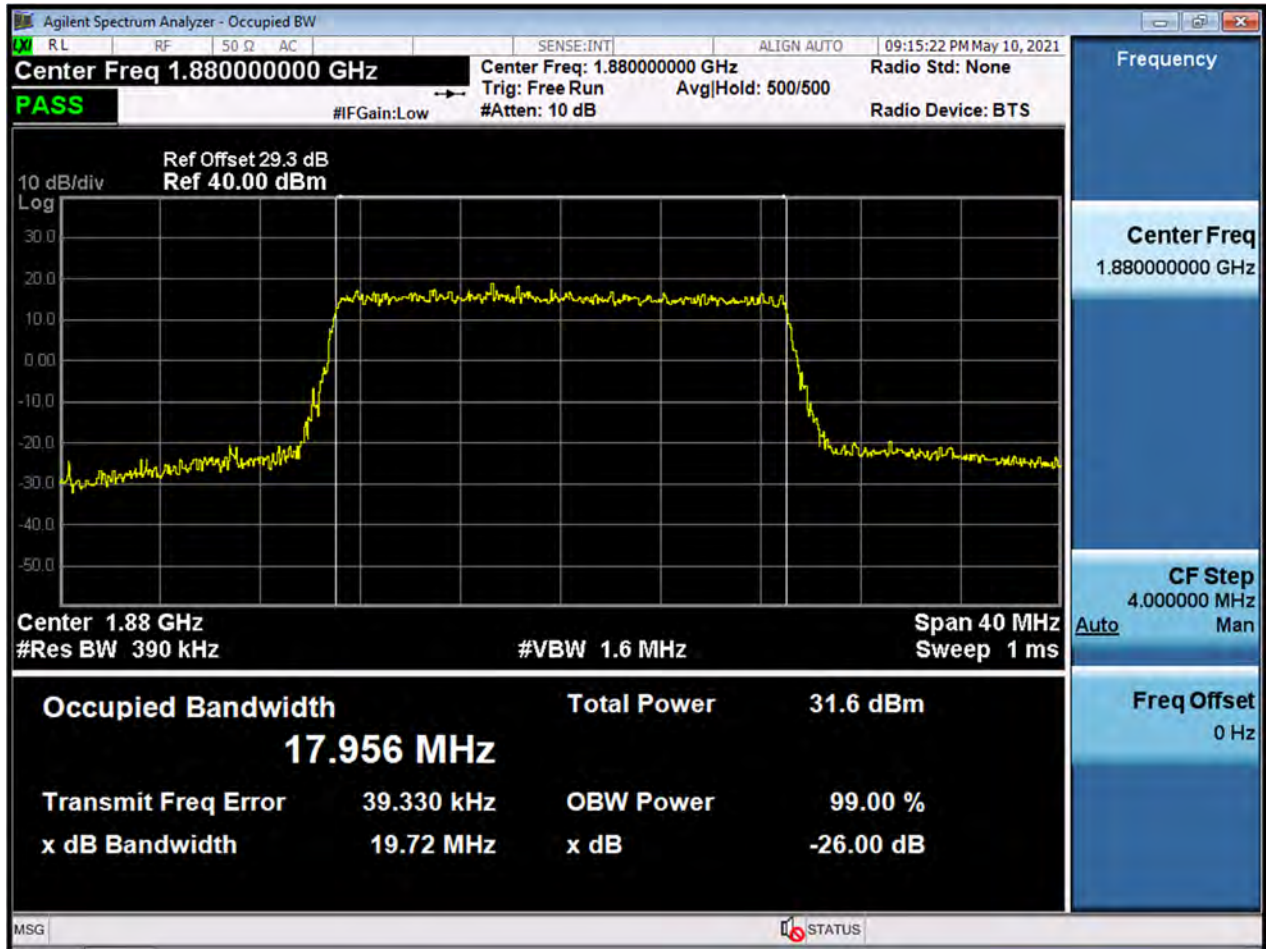
BW15M\_OBW\_Middle Channel\_QPSK\_FullRB



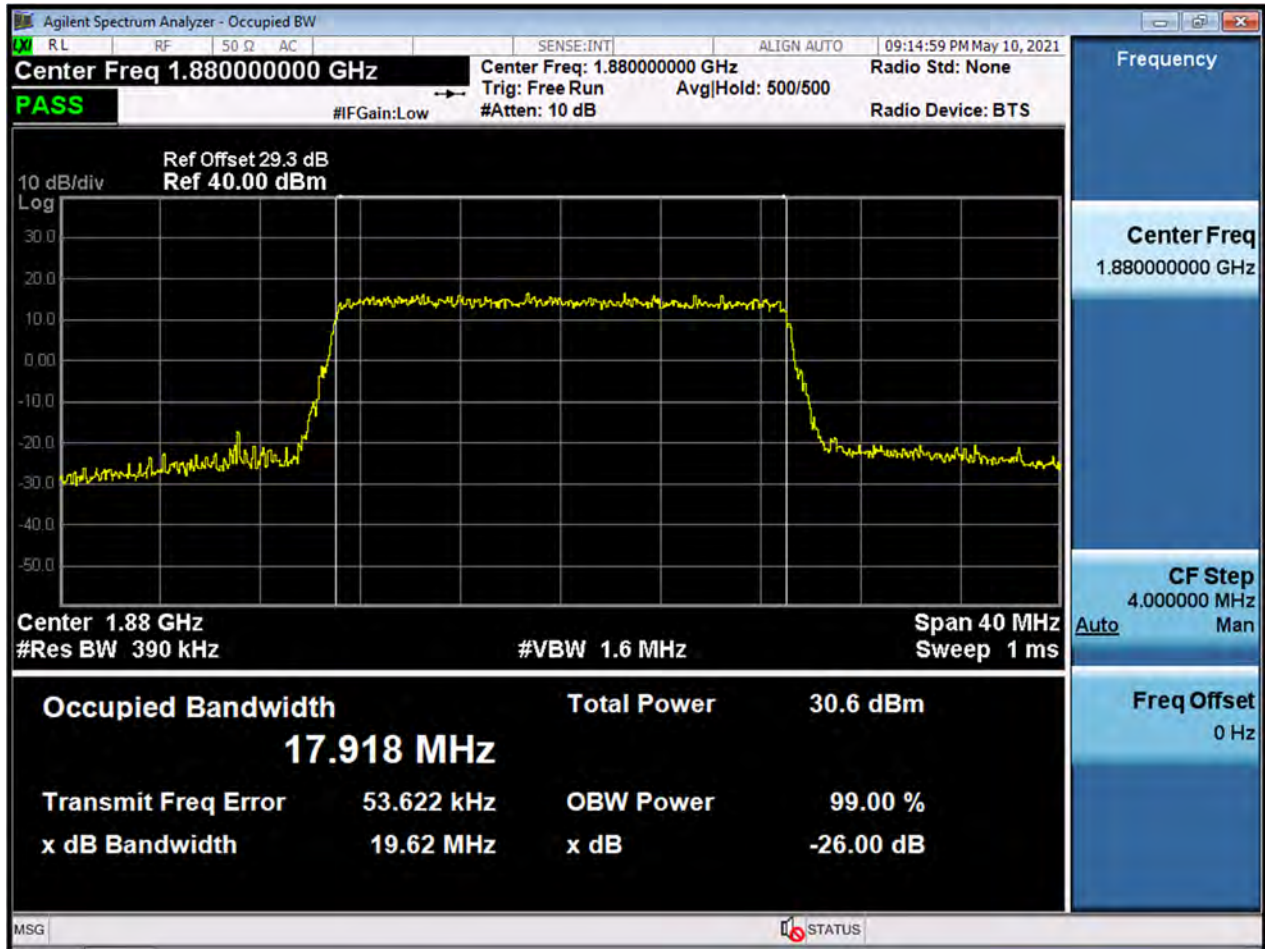
BW15M\_OBW\_Middle Channel\_16QAM\_FullRB



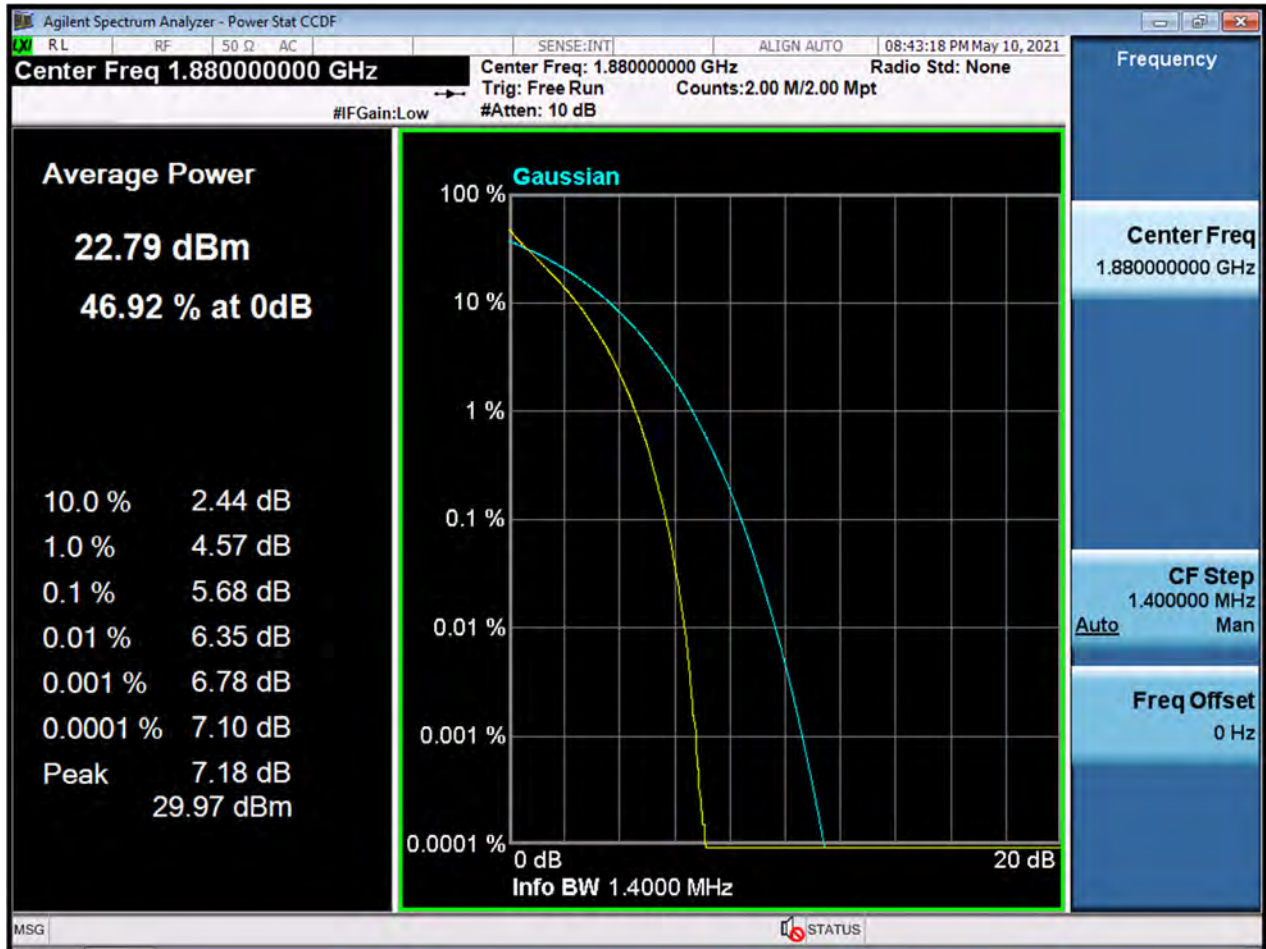
BW20M\_OBW\_Middle Channel\_QPSK\_FullRB



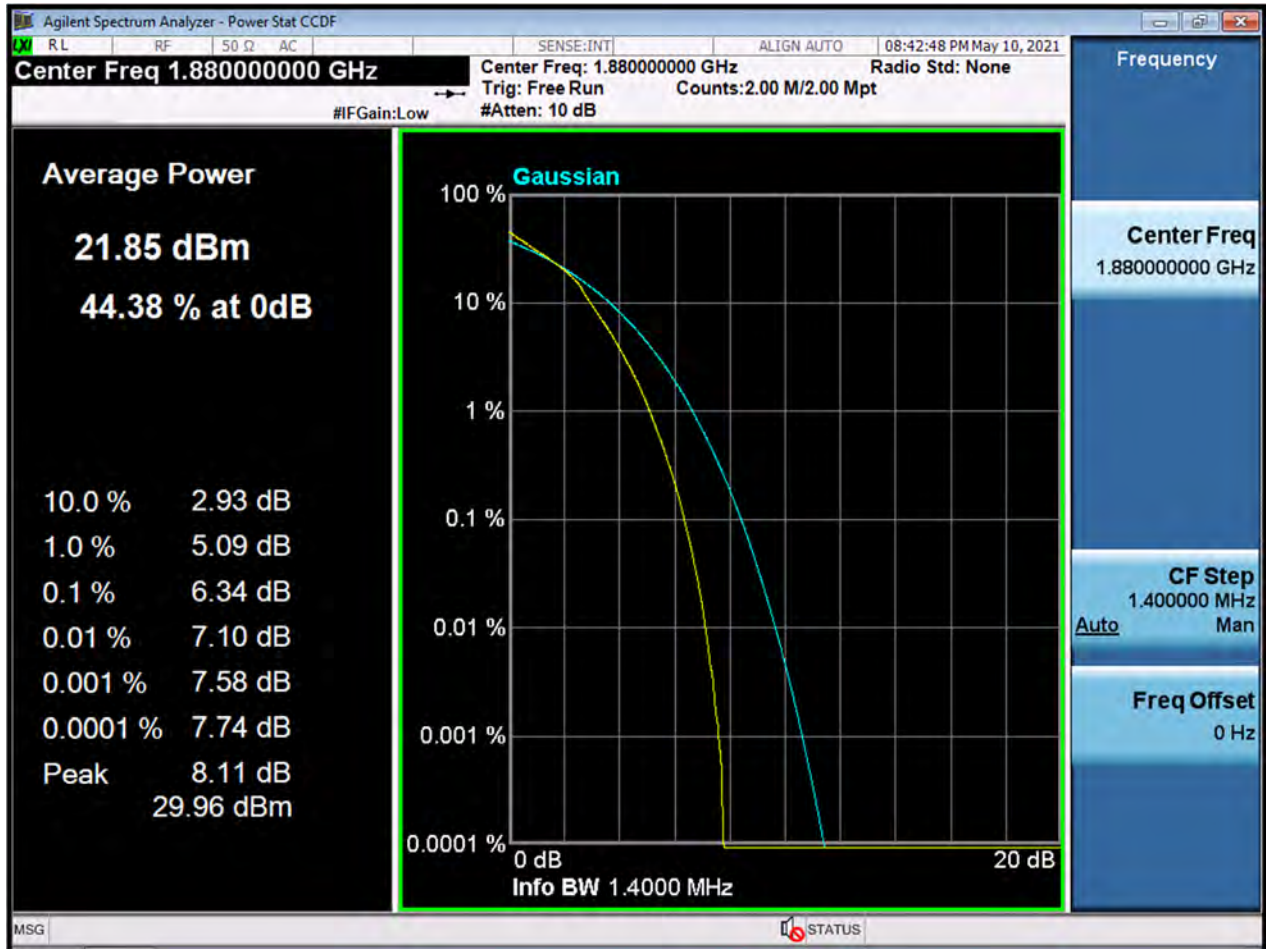
BW20M\_OBW\_Middle Channel\_16QAM\_FullRB



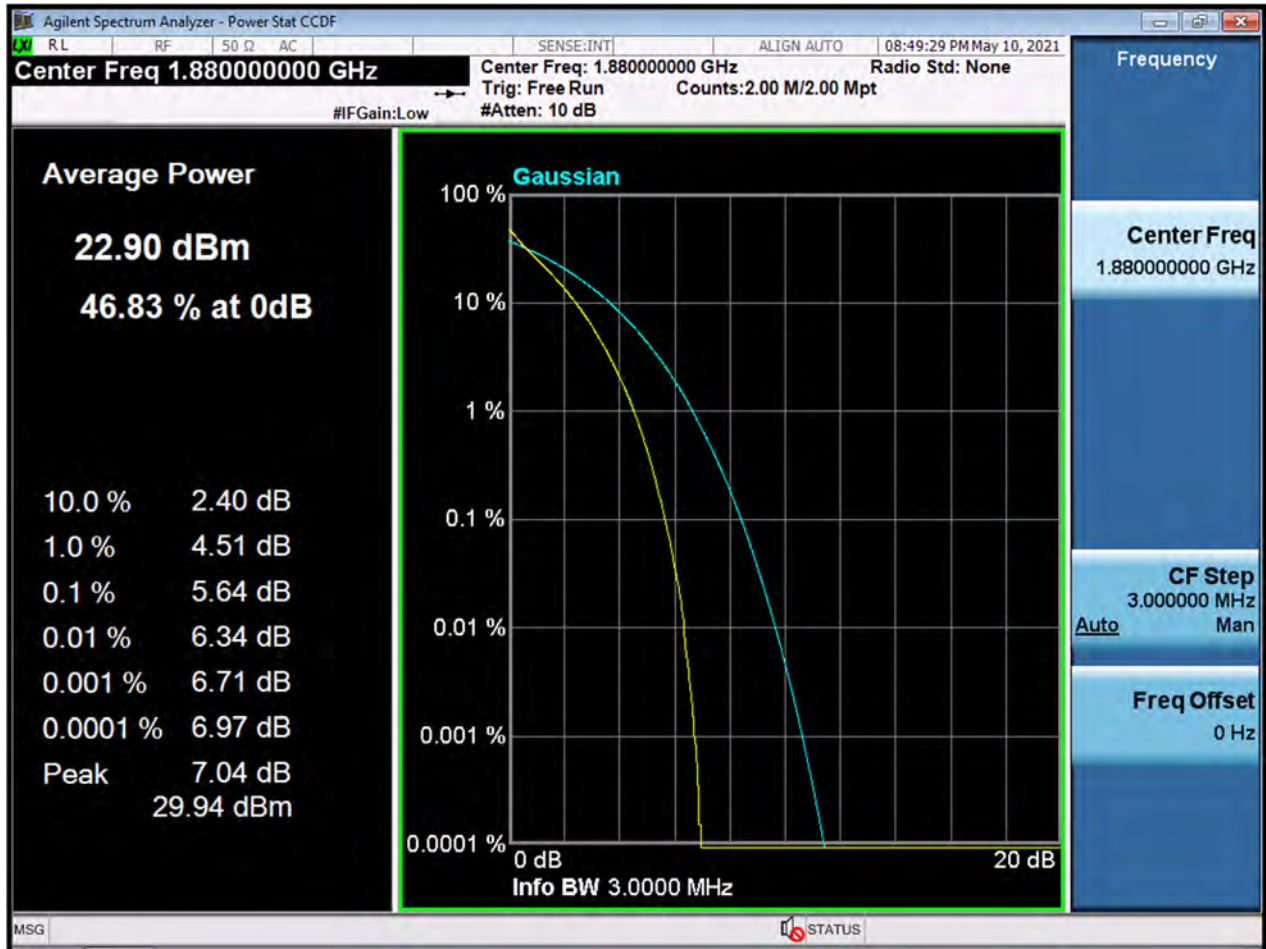
BW1.4M\_PAR\_Middle Channel\_QPSK\_FullRB



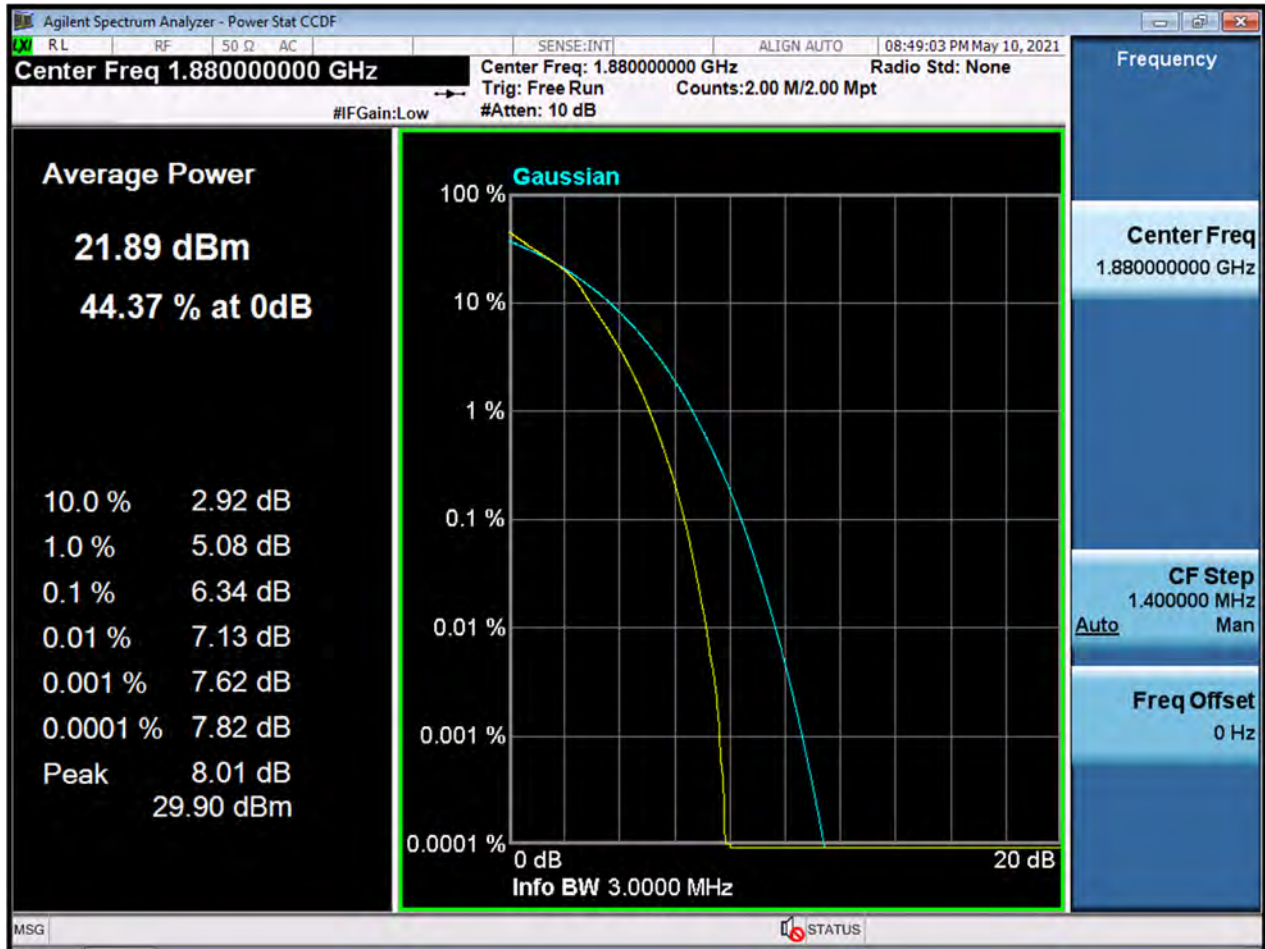
BW1.4M\_PAR\_Middle Channel\_16QAM\_FullRB



BW3M\_PAR\_Middle Channel\_QPSK\_FullRB



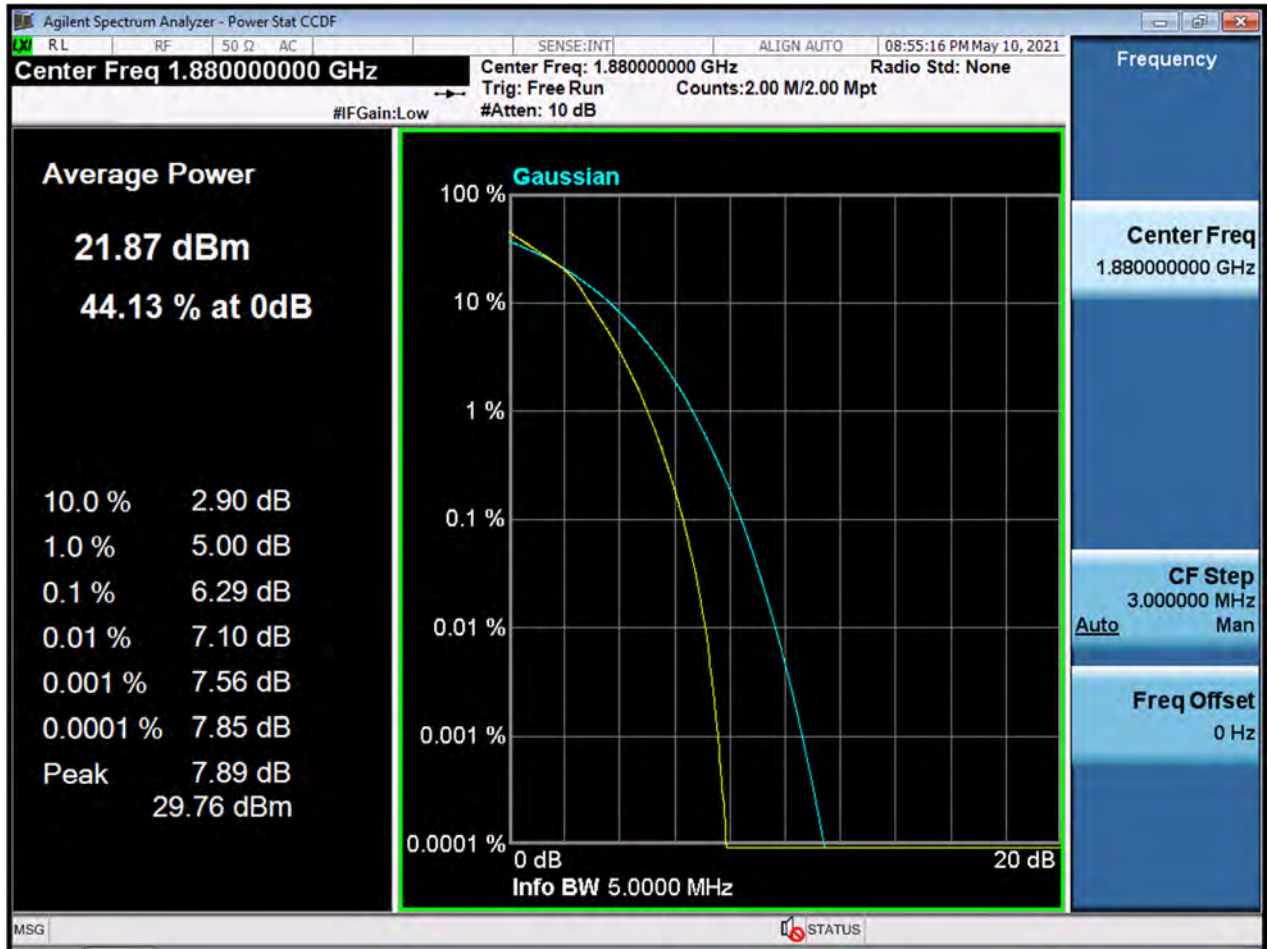
BW3M\_PAR\_Middle Channel\_16QAM\_FullRB



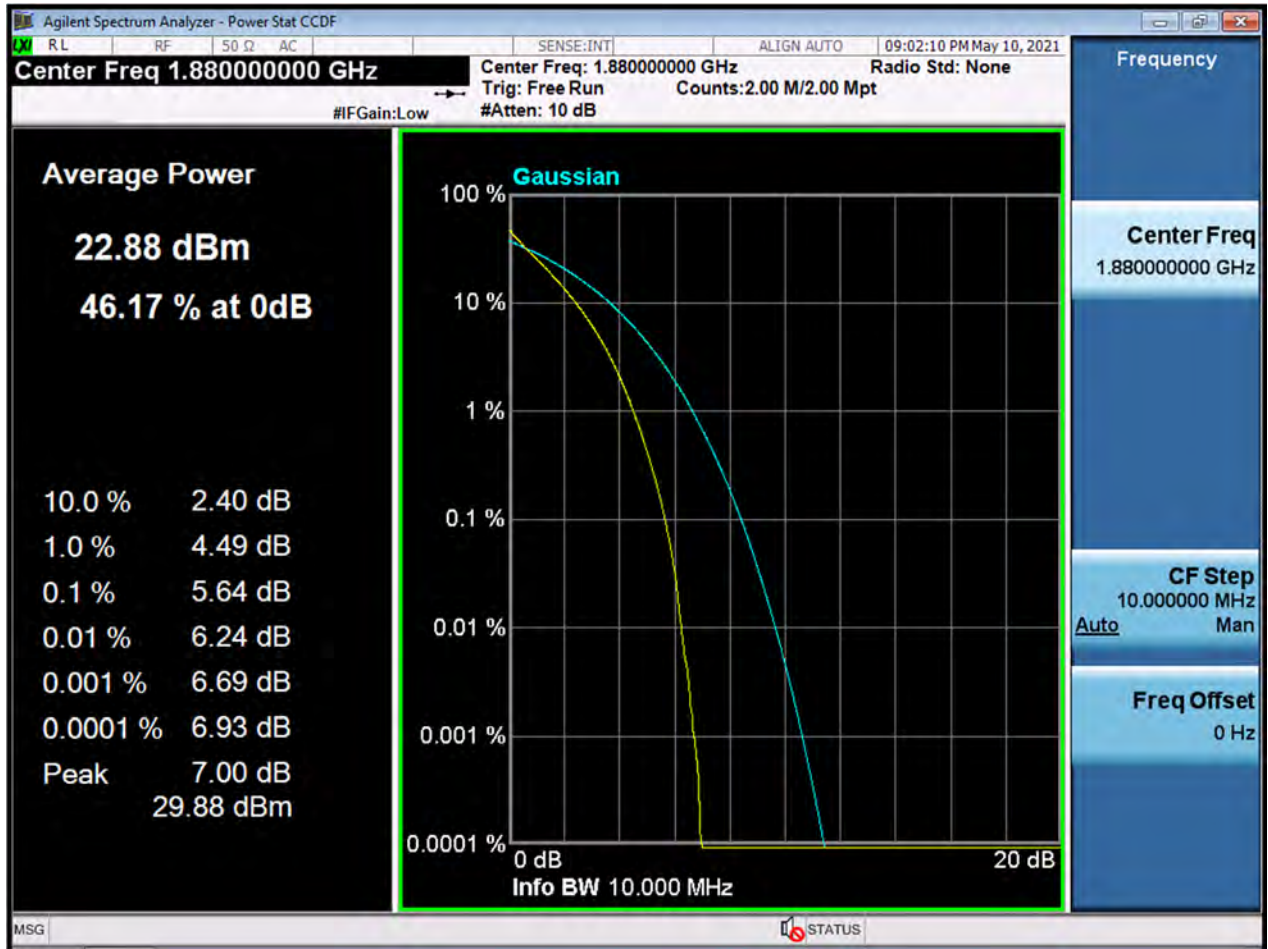
BW5M\_PAR\_Middle Channel\_QPSK\_FullRB



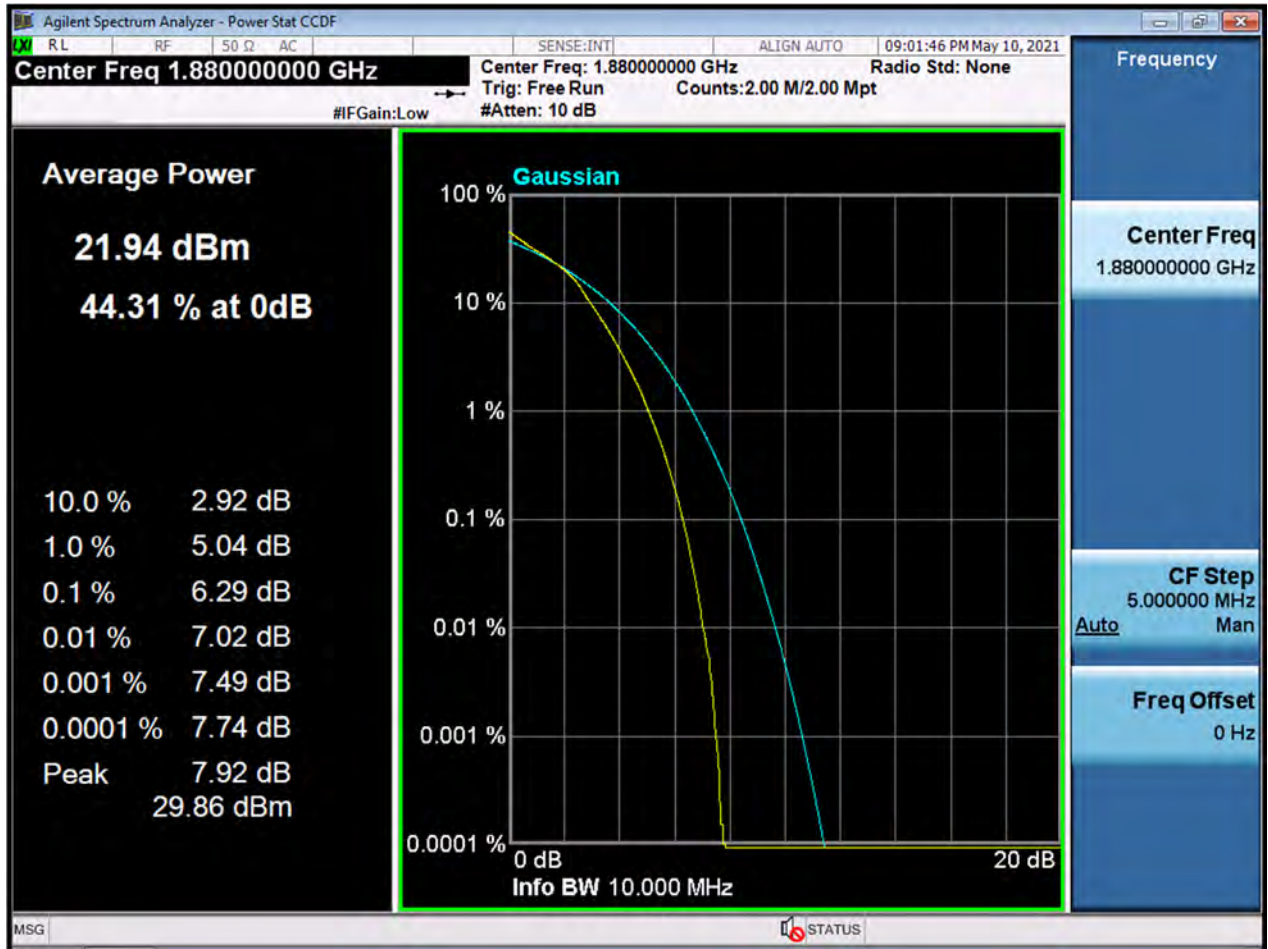
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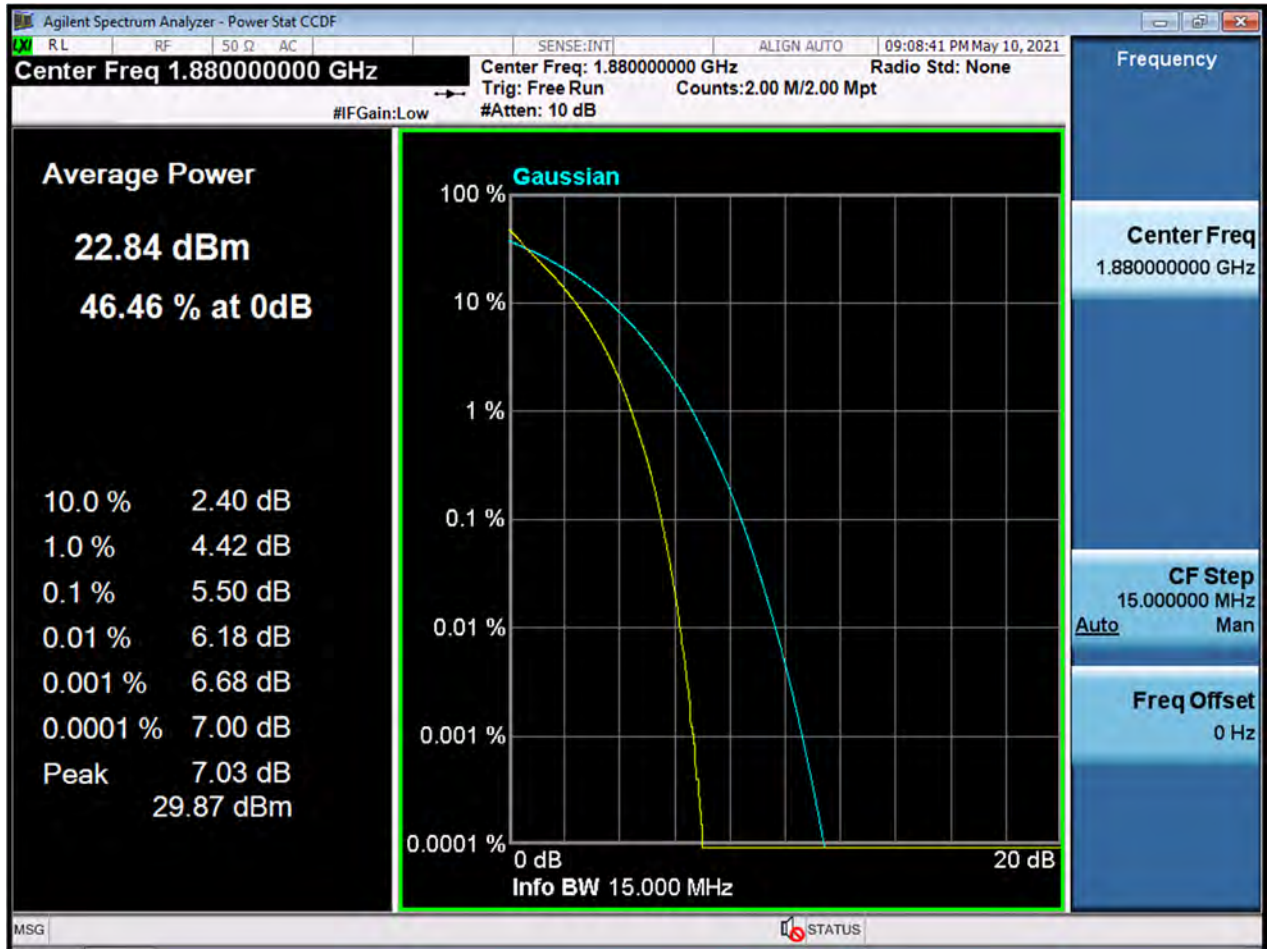
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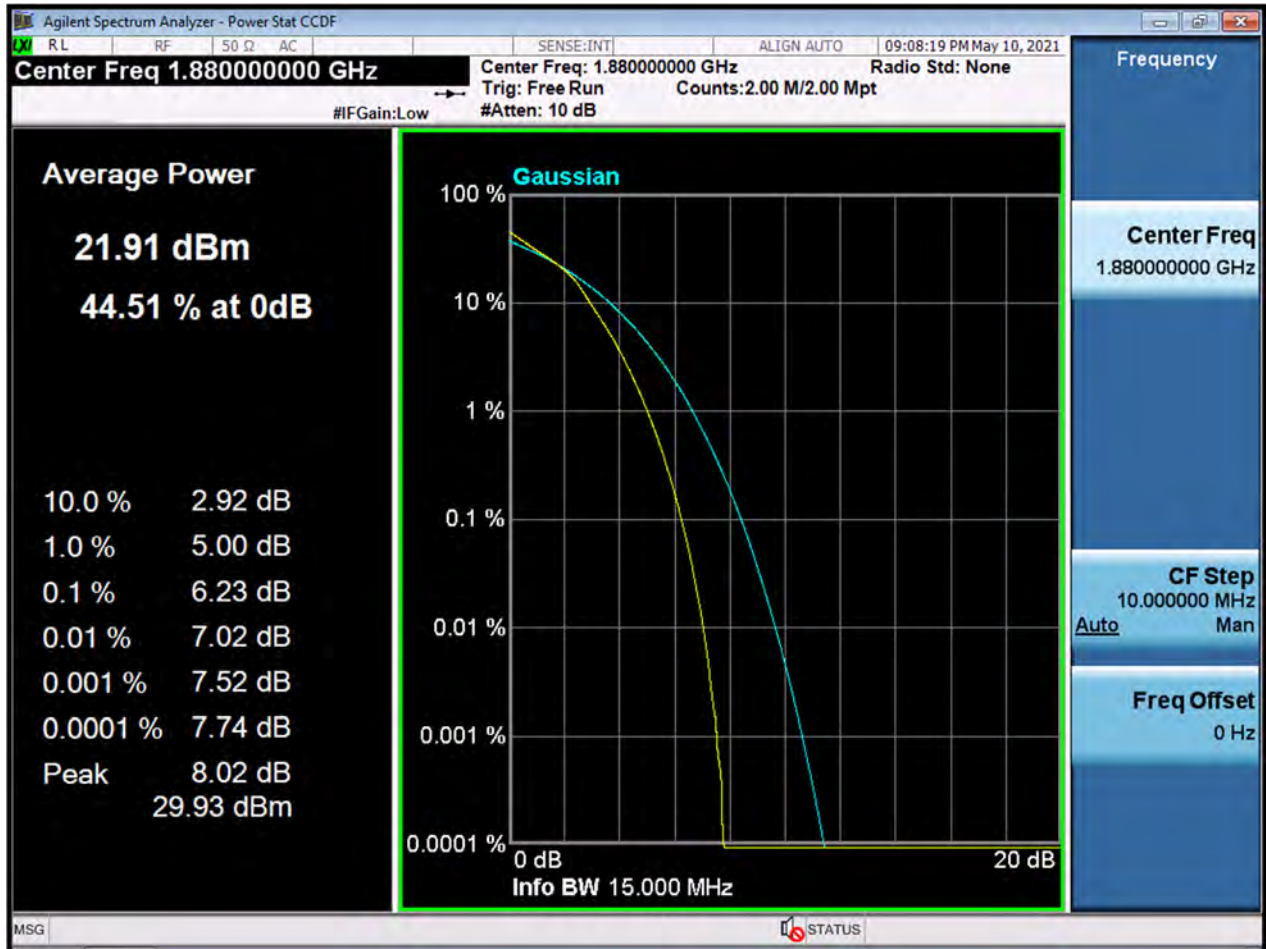
BW10M\_PAR\_Middle Channel\_16QAM\_FullRB



BW15M\_PAR\_Middle Channel\_QPSK\_FullRB



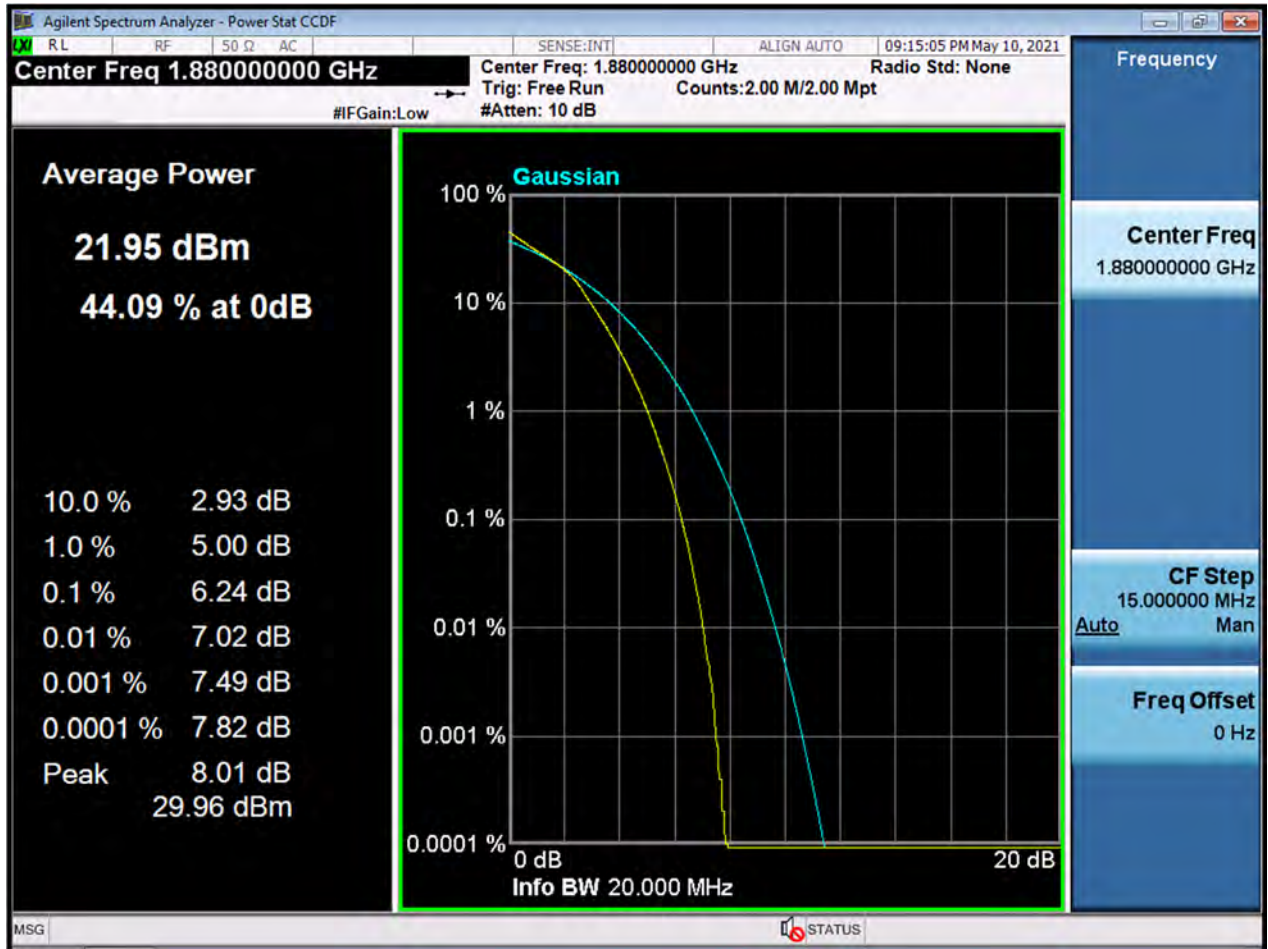
BW15M\_PAR\_Middle Channel\_16QAM\_FullRB



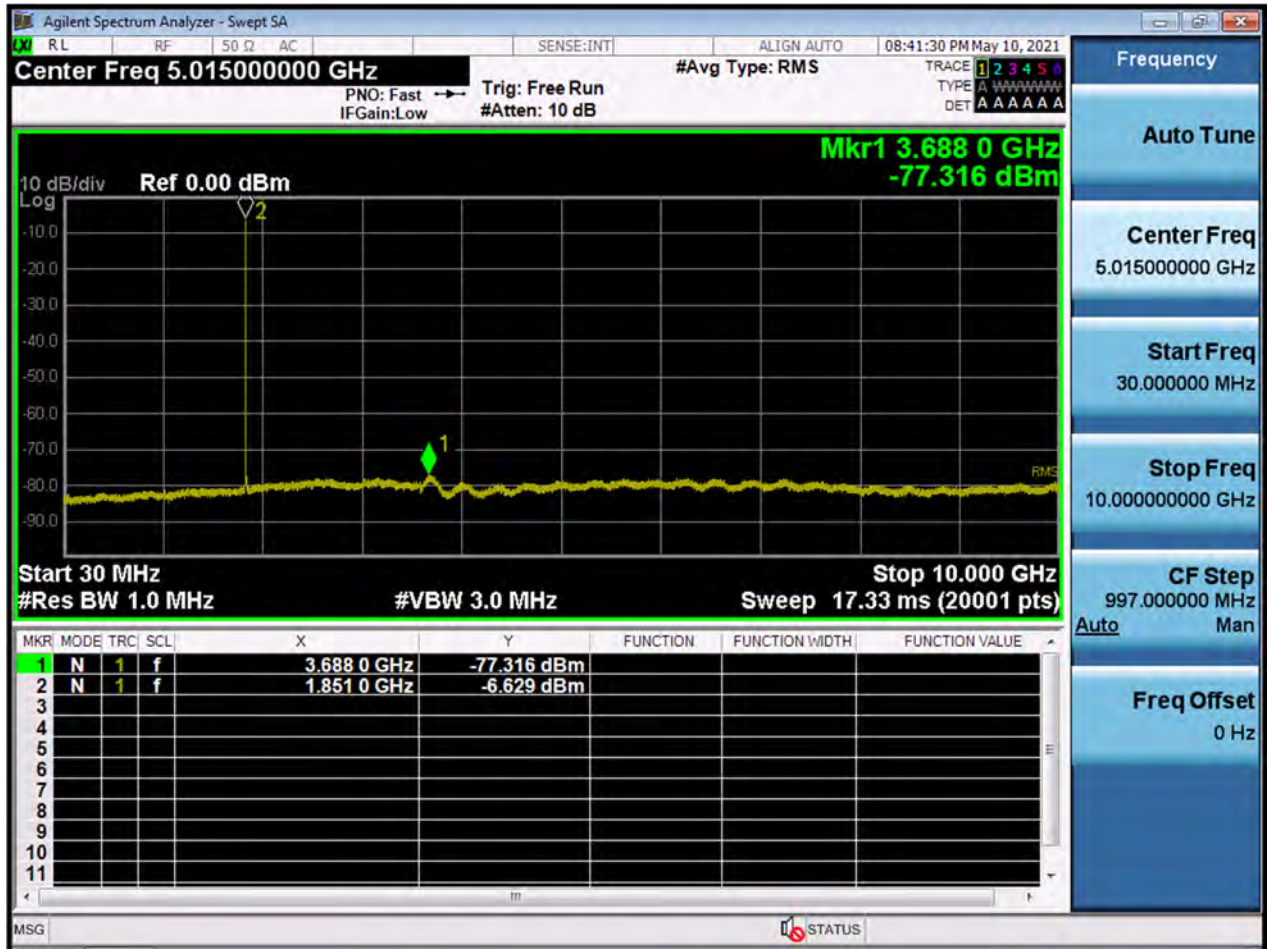
BW20M\_PAR\_Middle Channel\_QPSK\_FullRB



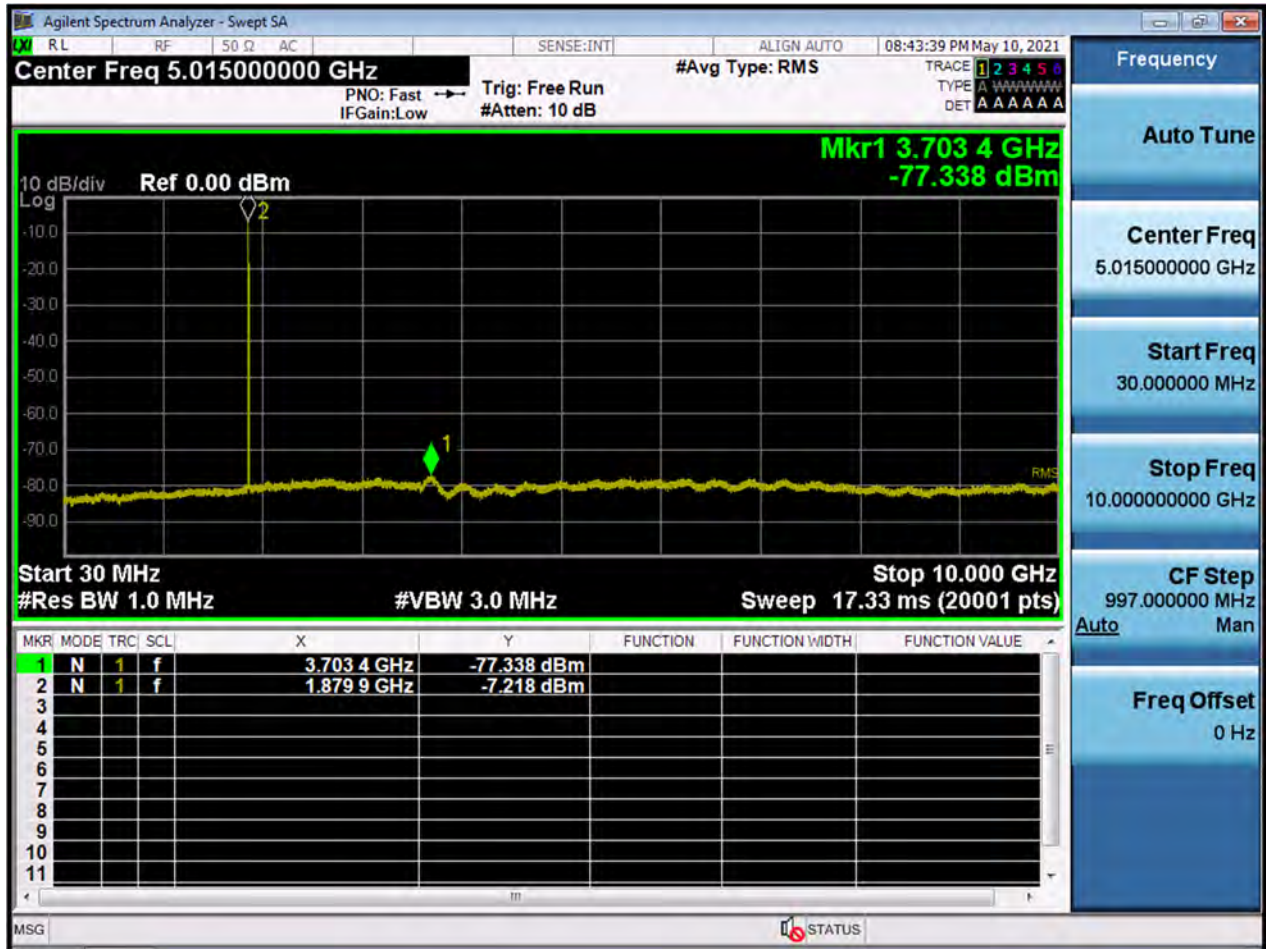
BW20M\_PAR\_Middle Channel\_16QAM\_FullRB



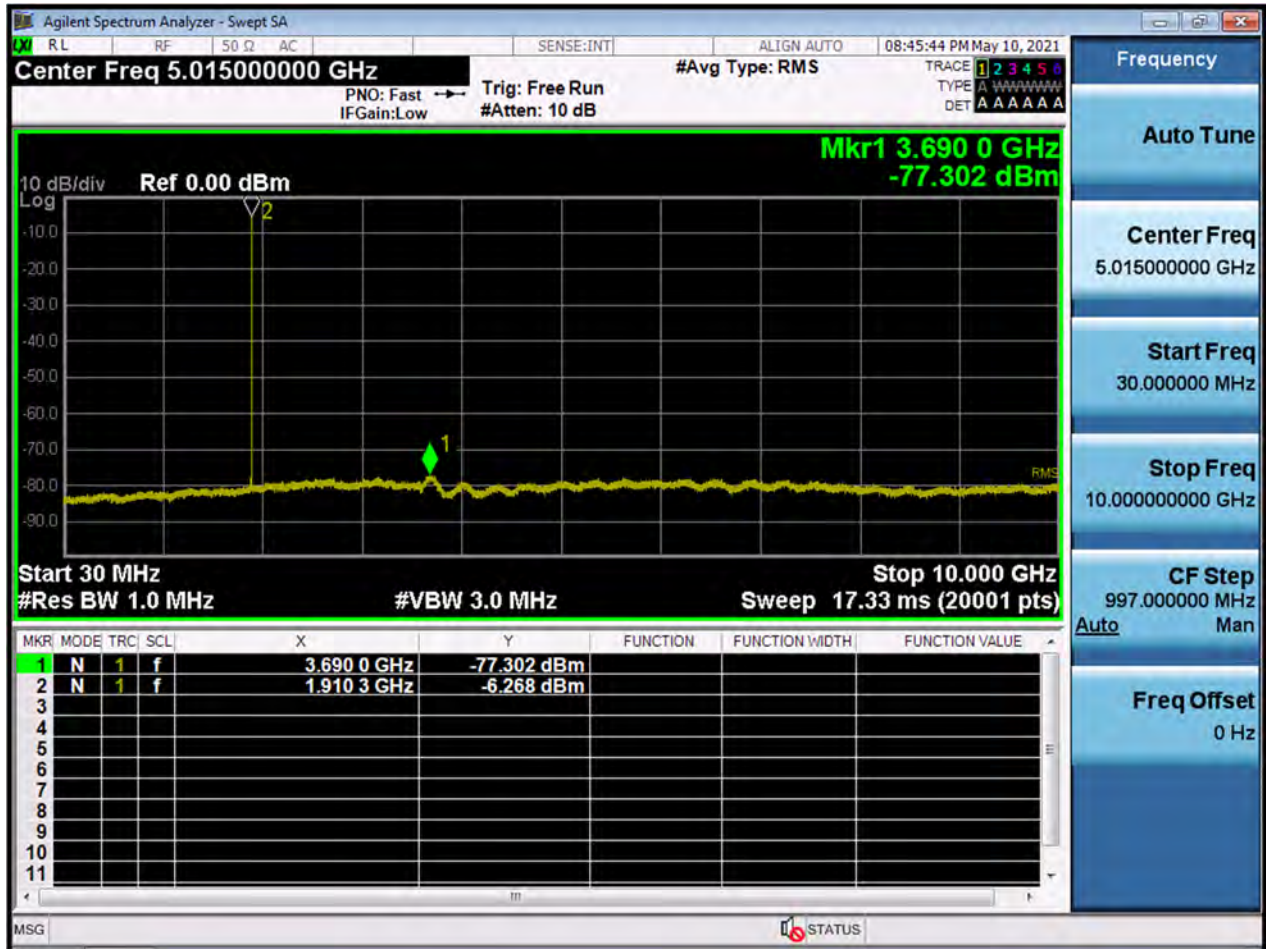
BW1.4M\_CSE(30M-10G)\_Lowest Channel\_QPSK\_1RB



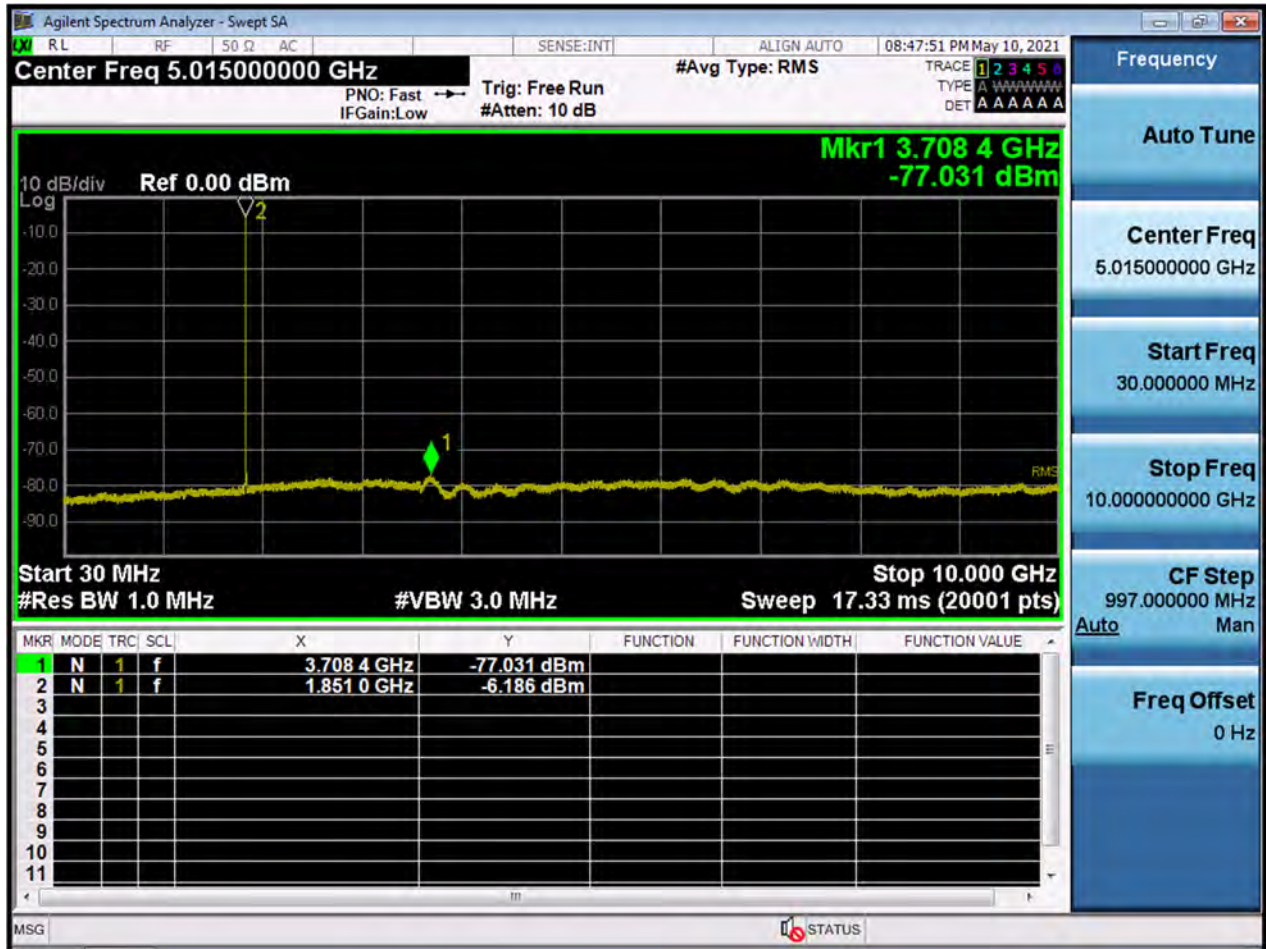
BW1.4M\_CSE(30M-10G)\_Middle Channel\_QPSK\_1RB



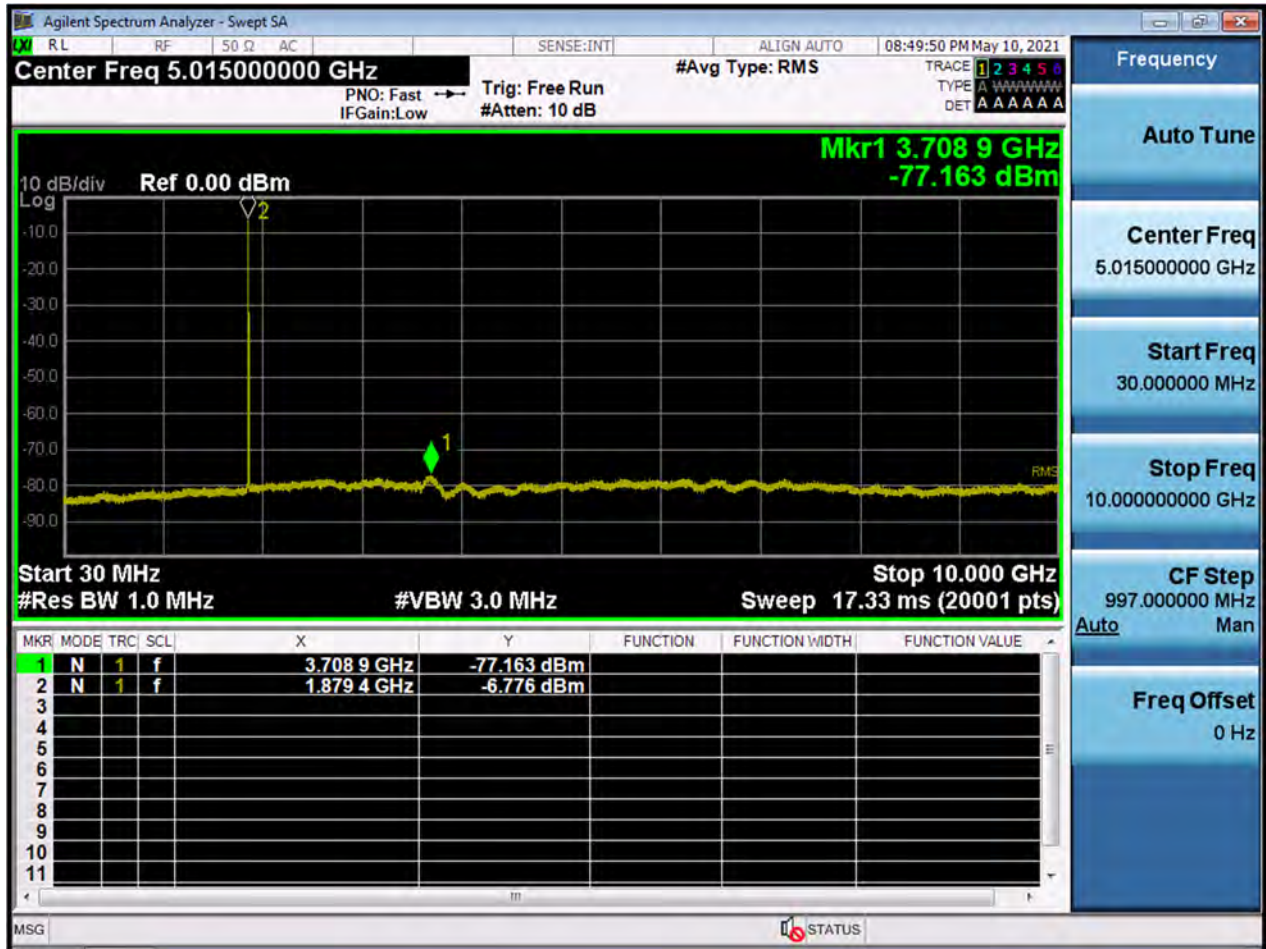
BW1.4M\_CSE(30M-10G)\_Highest Channel\_QPSK\_1RB



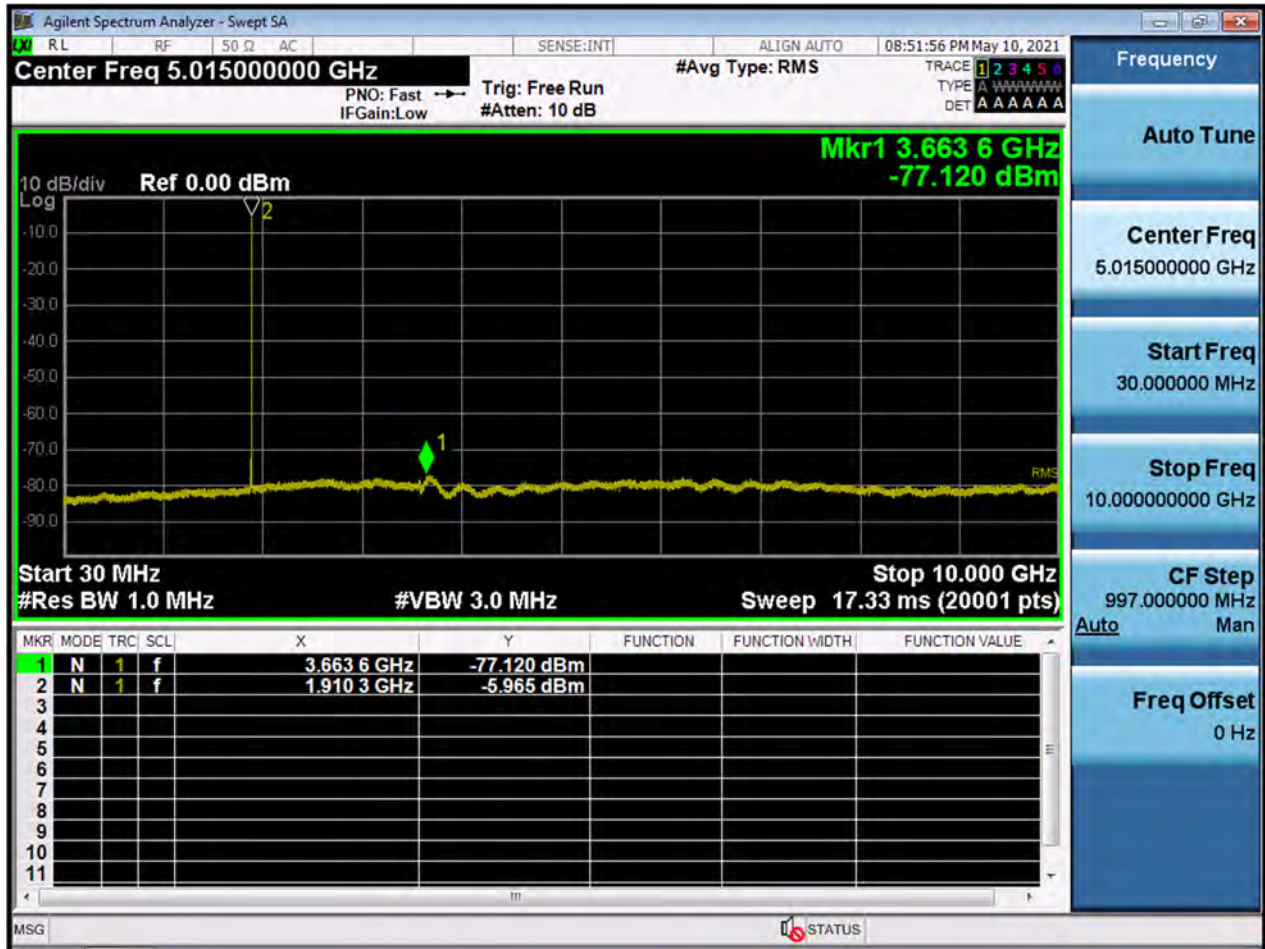
BW3M\_CSE(30M-10G)\_Lowest Channel\_QPSK\_1RB



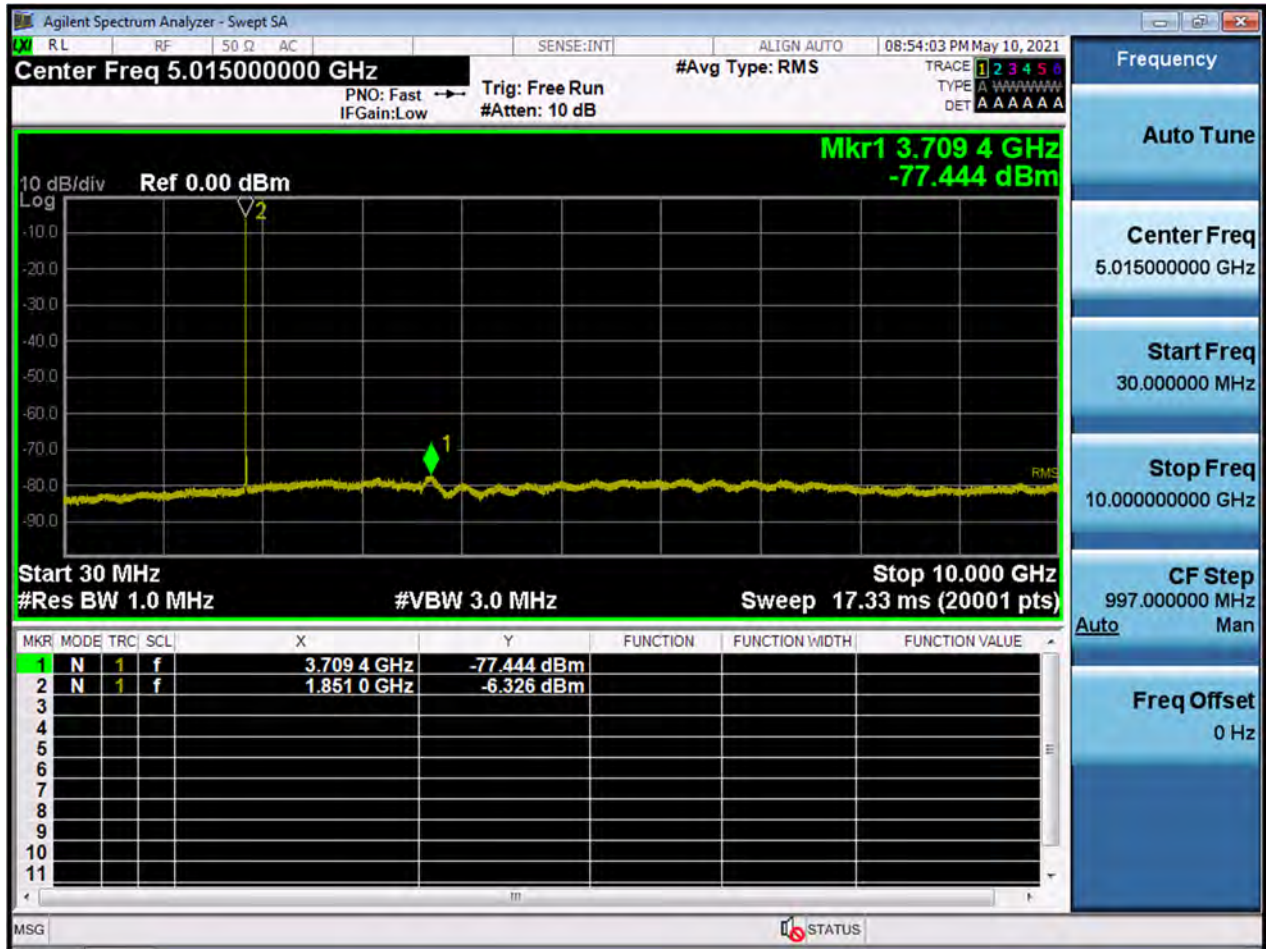
BW3M\_CSE(30M-10G)\_Middle Channel\_QPSK\_1RB



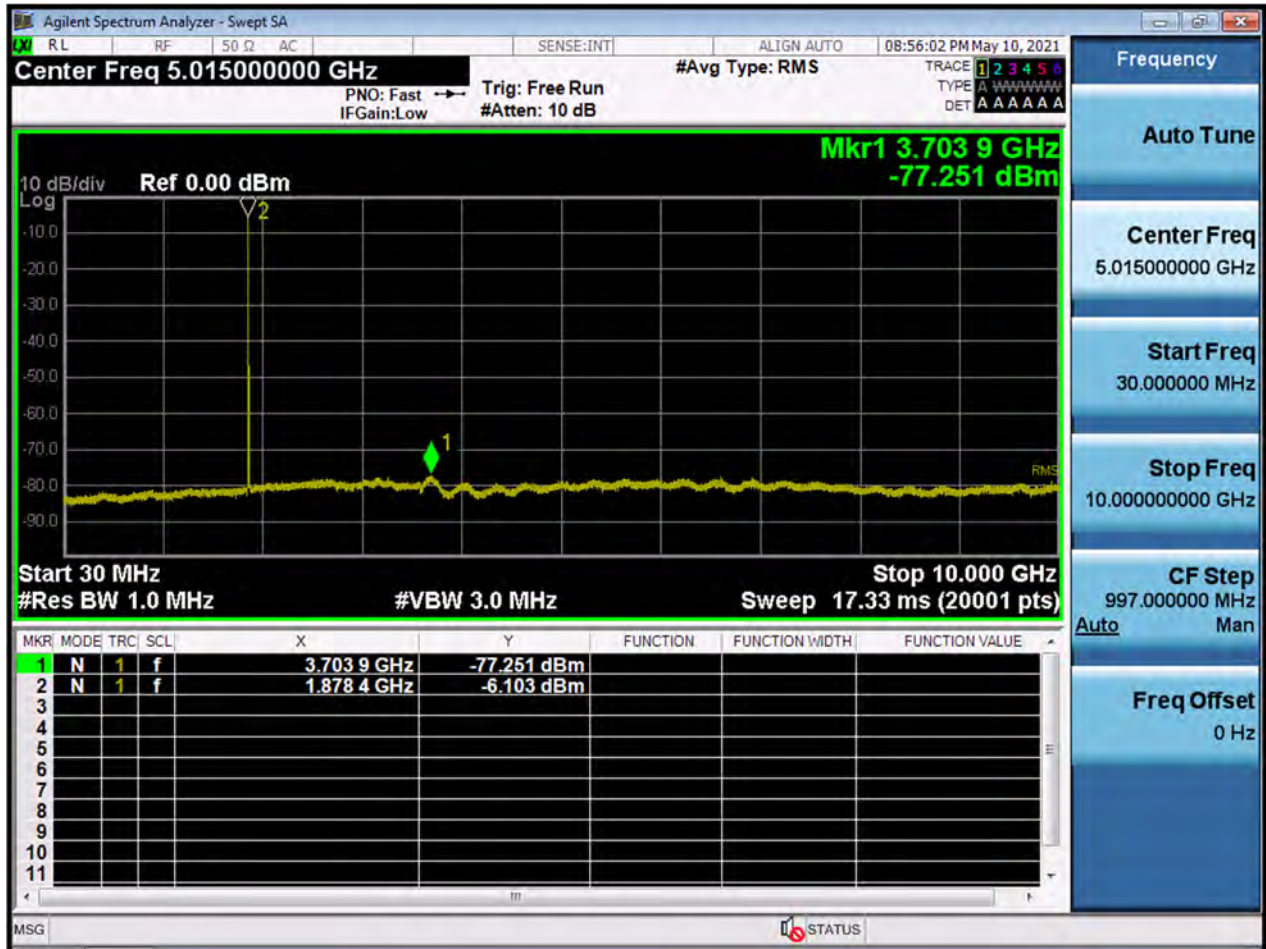
BW3M\_CSE(30M-10G)\_Highest Channel\_QPSK\_1RB



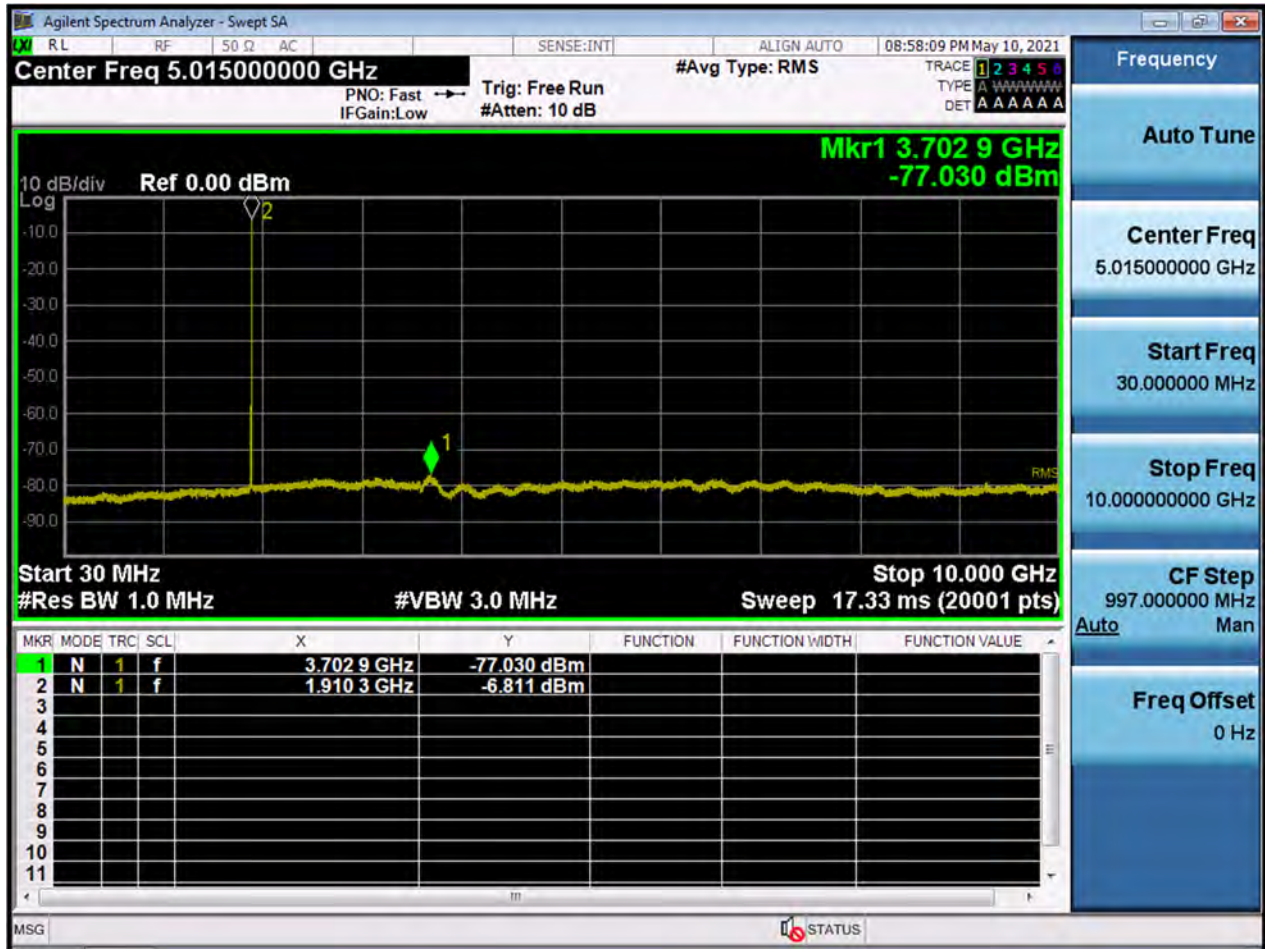
BW5M\_CSE(30M-10G)\_Lowest Channel\_QPSK\_1RB



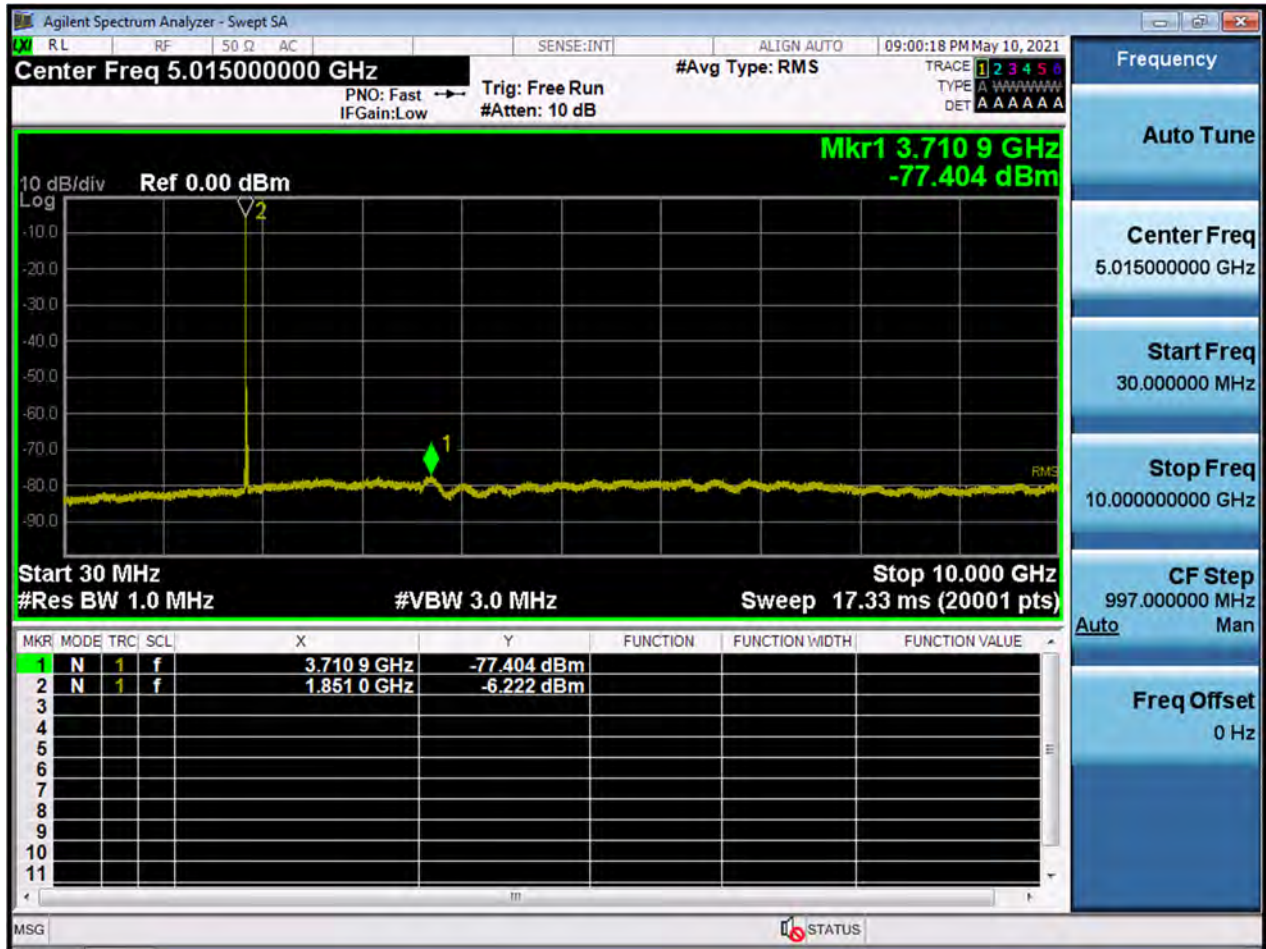
BW5M\_CSE(30M-10G)\_Middle Channel\_QPSK\_1RB



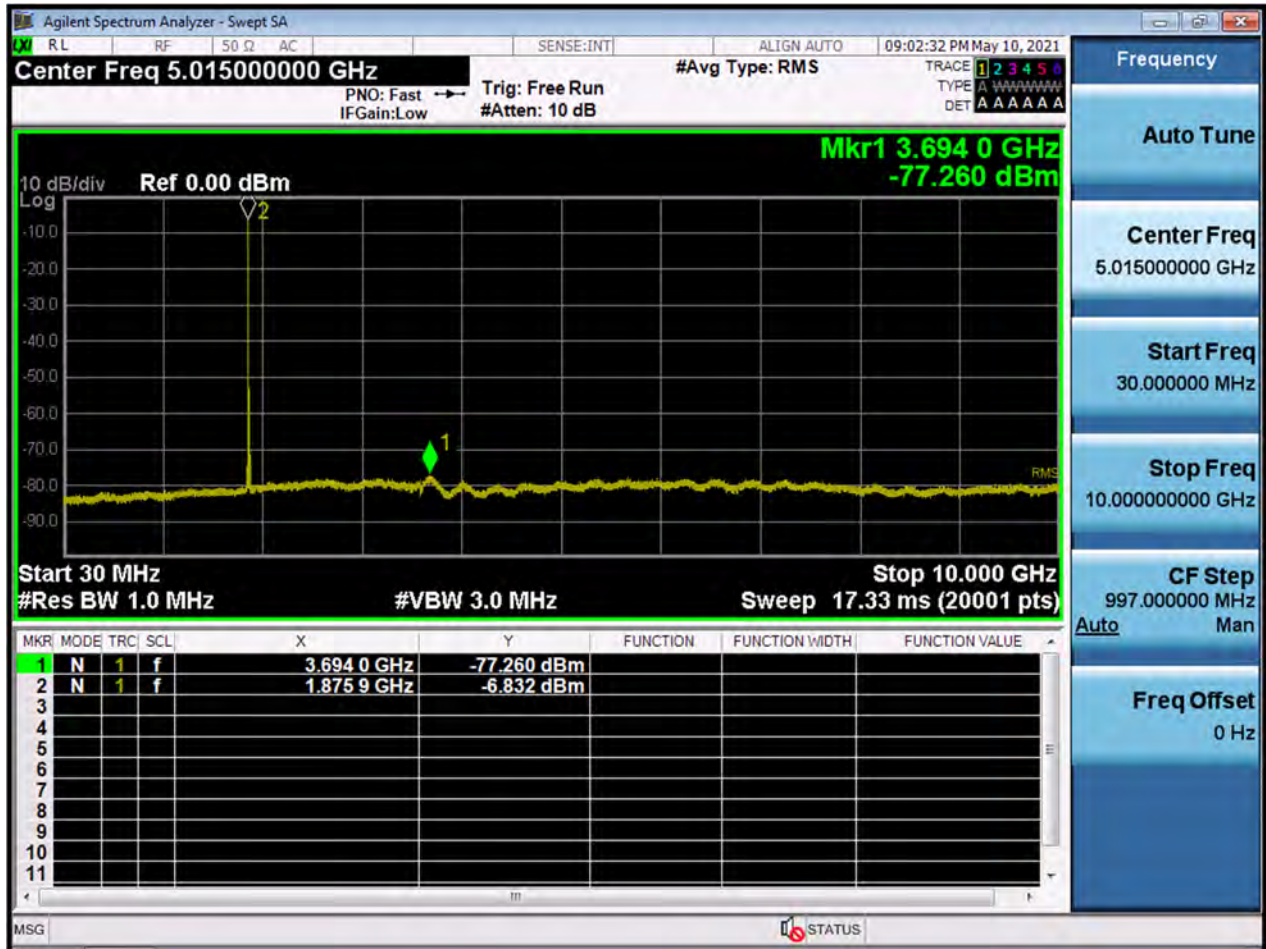
BW5M\_CSE(30M-10G)\_Highest Channel\_QPSK\_1RB



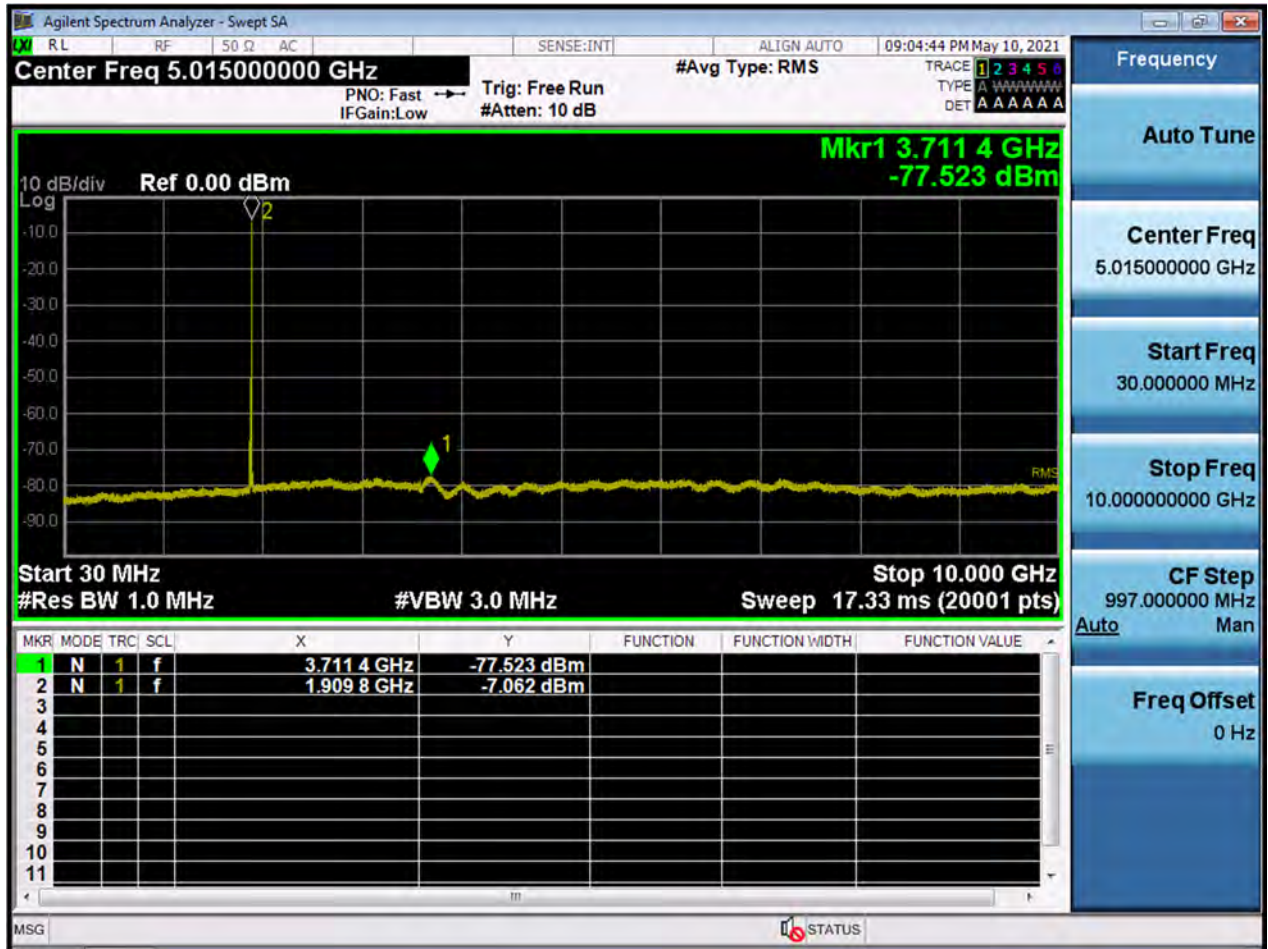
BW10M\_CSE(30M-10G)\_Lowest Channel\_QPSK\_1RB



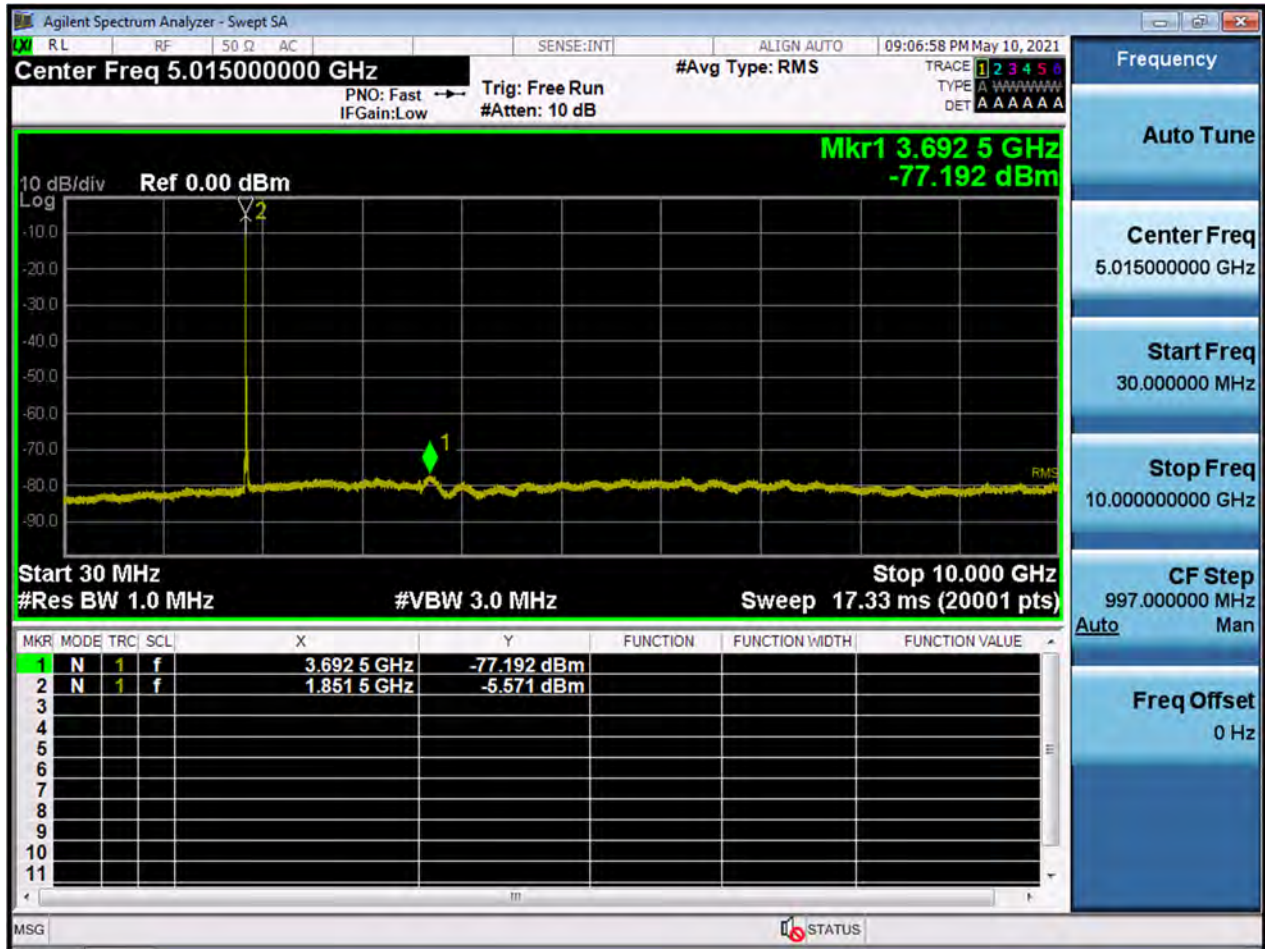
BW10M\_CSE(30M-10G)\_Middle Channel\_QPSK\_1RB



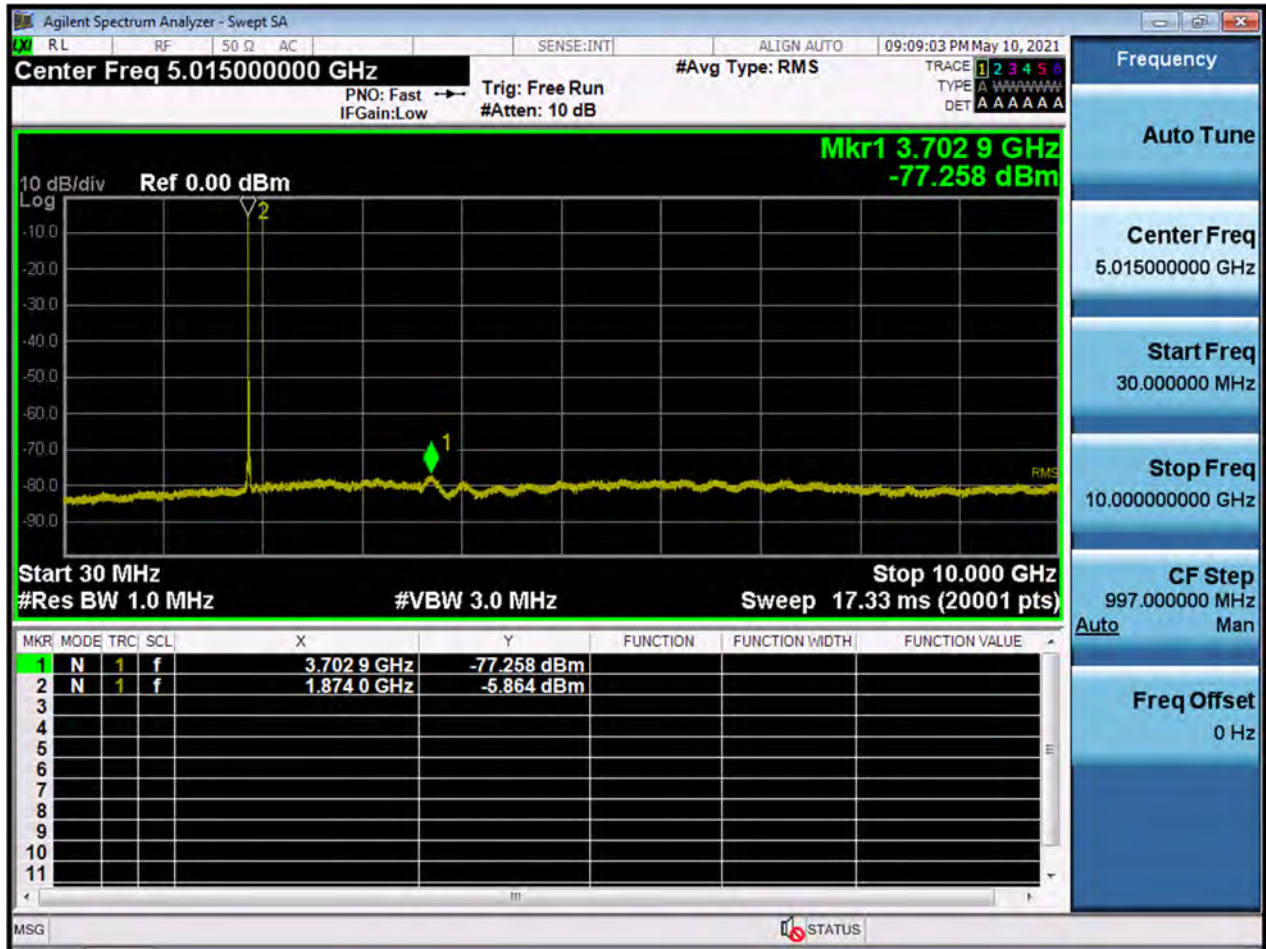
BW10M\_CSE(30M-10G)\_Highest Channel\_QPSK\_1RB



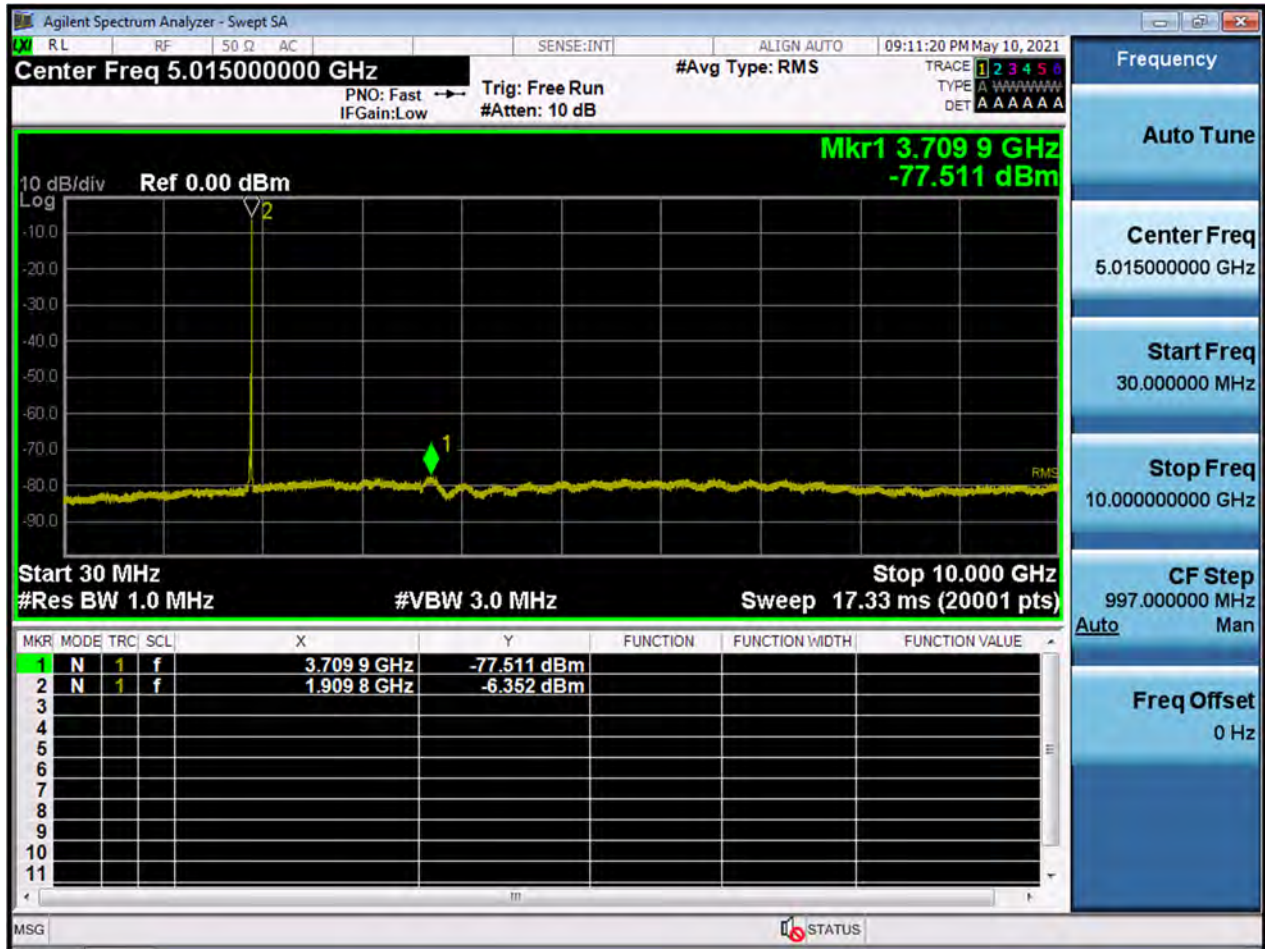
BW15M\_CSE(30M-10G)\_Lowest Channel\_QPSK\_1RB



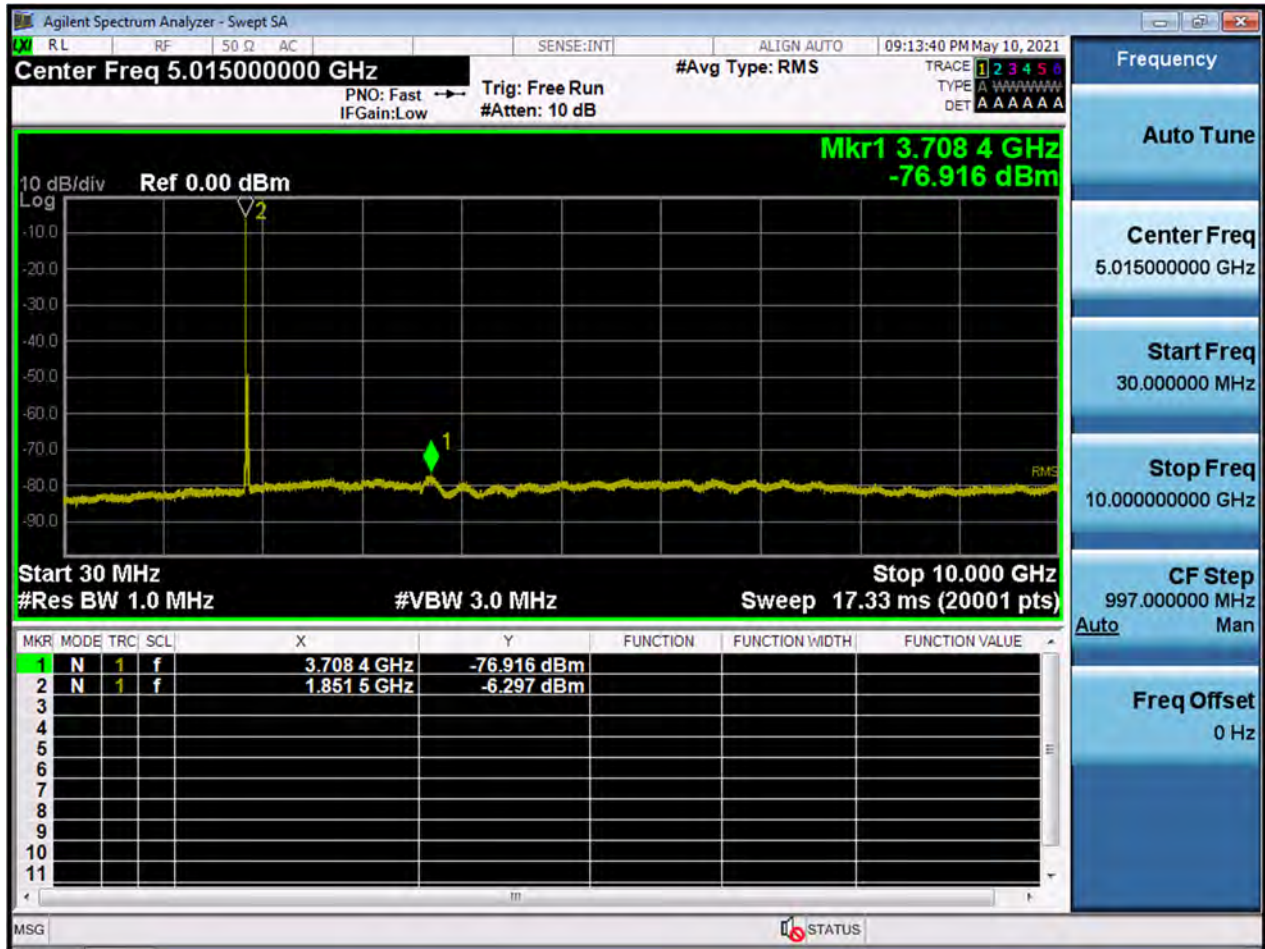
BW15M\_CSE(30M-10G)\_Middle Channel\_QPSK\_1RB



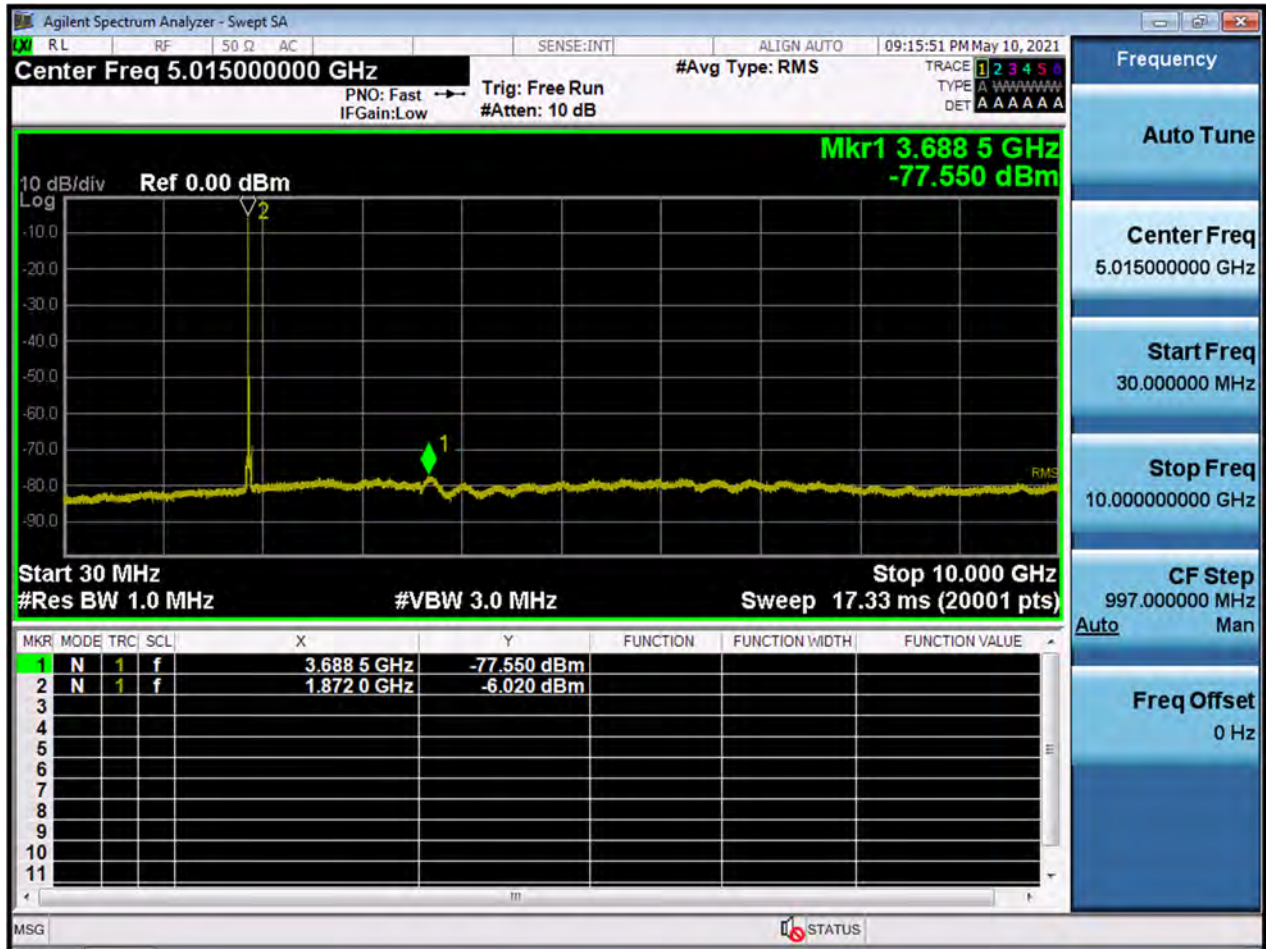
BW15M\_CSE(30M-10G)\_Highest Channel\_QPSK\_1RB



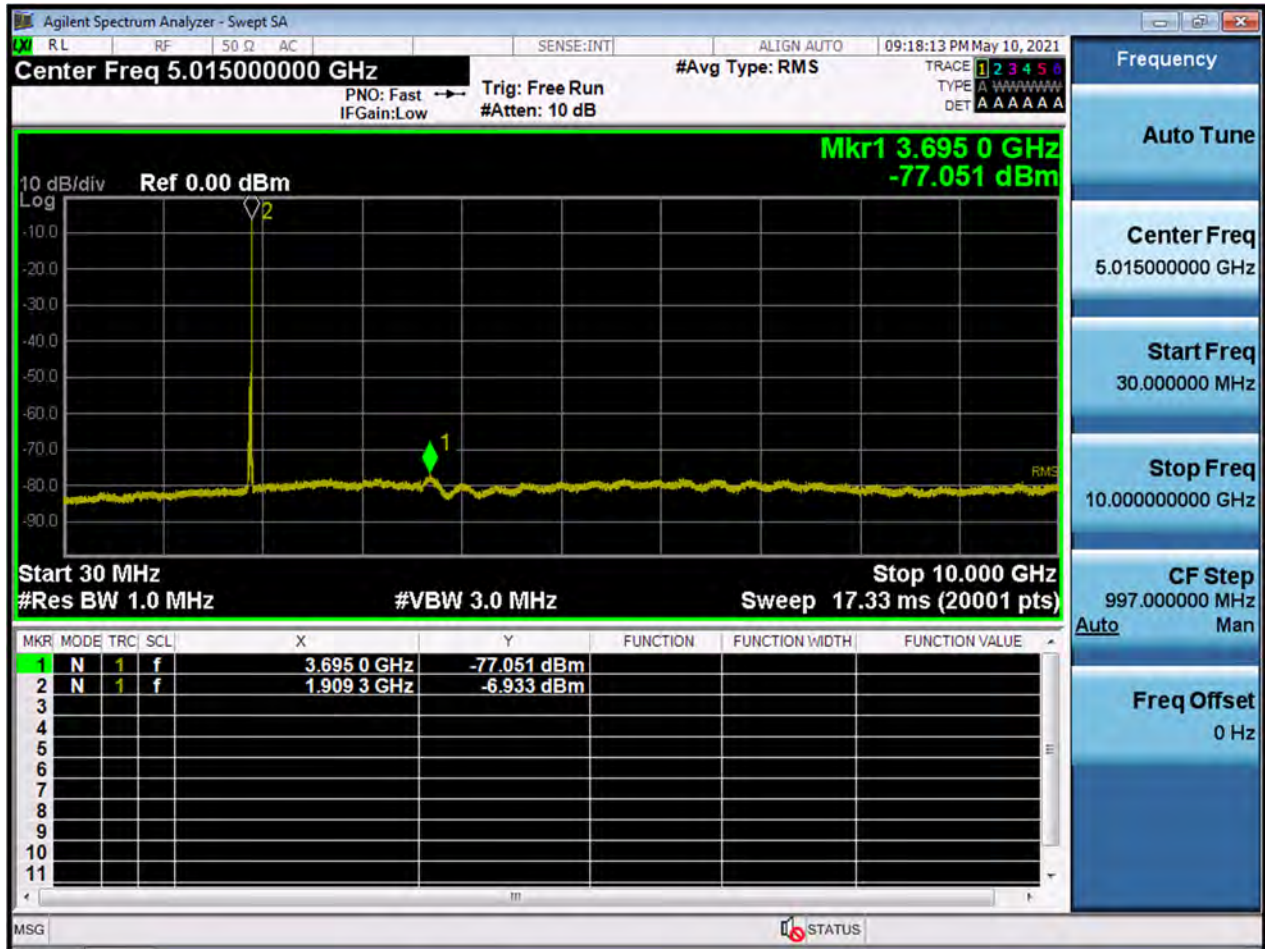
BW20M\_CSE(30M-10G)\_Lowest Channel\_QPSK\_1RB



BW20M\_CSE(30M-10G)\_Middle Channel\_QPSK\_1RB



BW20M\_CSE(30M-10G)\_Highest Channel\_QPSK\_1RB



BW1.4M\_CSE(10G-26.5G)\_Lowest Channel\_QPSK\_1RB



BW1.4M\_CSE(10G-26.5G)\_Middle Channel\_QPSK\_1RB



BW1.4M\_CSE(10G-26.5G)\_Highest Channel\_QPSK\_1RB



BW3M\_CSE(10G-26.5G)\_Lowest Channel\_QPSK\_1RB



BW3M\_CSE(10G-26.5G)\_Middle Channel\_QPSK\_1RB



BW3M\_CSE(10G-26.5G)\_Highest Channel\_QPSK\_1RB



BW5M\_CSE(10G-26.5G)\_Lowest Channel\_QPSK\_1RB



BW5M\_CSE(10G-26.5G)\_Middle Channel\_QPSK\_1RB



BW5M\_CSE(10G-26.5G)\_Highest Channel\_QPSK\_1RB



BW10M\_CSE(10G-26.5G)\_Lowest Channel\_QPSK\_1RB



BW10M\_CSE(10G-26.5G)\_Middle Channel\_QPSK\_1RB



BW10M\_CSE(10G-26.5G)\_Highest Channel\_QPSK\_1RB



BW15M\_CSE(10G-26.5G)\_Lowest Channel\_QPSK\_1RB



BW15M\_CSE(10G-26.5G)\_Middle Channel\_QPSK\_1RB





BW15M\_CSE(10G-26.5G)\_Highest Channel\_QPSK\_1RB



BW20M\_CSE(10G-26.5G)\_Lowest Channel\_QPSK\_1RB



BW20M\_CSE(10G-26.5G)\_Middle Channel\_QPSK\_1RB





BW20M\_CSE(10G-26.5G)\_Highest Channel\_QPSK\_1RB



## 10 ANNEX A\_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2107-FC002-P