74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 FAX: +82-31-645-6401

FCC LTE REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

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

Date of Issue:
November 13, 2023

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

Report No.: HCT-RF-2311-FC029

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

Model(s):	SM-G556B
EUT Type:	Mobile phone
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27

Main 2 Ant

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band66/4 (1.4)	1710.7 – 1779.3	1M10G7D	QPSK	0.230	23.61
		1M09W7D	16QAM	0.197	22.95
		1M10W7D	64QAM	0.156	21.94
		1M09W7D	256QAM	0.078	18.90
LTE – Band66/4 (3)	1711.5 – 1778.5	2M70G7D	QPSK	0.232	23.66
		2M69W7D	16QAM	0.200	23.00
		2M70W7D	64QAM	0.158	22.00
		2M70W7D	256QAM	0.079	18.96
LTE – Band66/4 (5)	1712.5 – 1777.5	4M50G7D	QPSK	0.236	23.73
		4M49W7D	16QAM	0.204	23.09
		4M50W7D	64QAM	0.161	22.07
		4M50W7D	256QAM	0.081	19.06
LTE – Band66/4 (10)	1715.0 – 1775.0	8M98G7D	QPSK	0.231	23.64
		8M96W7D	16QAM	0.196	22.93
		8M98W7D	64QAM	0.157	21.97
		8M99W7D	256QAM	0.080	19.04
LTE – Band66/4 (15)	1717.5 – 1772.5	13M4G7D	QPSK	0.237	23.74
		13M5W7D	16QAM	0.200	23.00
		13M5W7D	64QAM	0.156	21.93
		13M4W7D	256QAM	0.079	18.96
LTE – Band66/4 (20)	1720.0 – 1770.0	18M0G7D	QPSK	0.237	23.75
		17M9W7D	16QAM	0.204	23.10
		17M9W7D	64QAM	0.158	22.00
		17M9W7D	256QAM	0.079	18.97

Sub 1 Ant

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band66/4 (1.4)	1710.7 – 1779.3	1M10G7D	QPSK	0.089	19.48
		1M09W7D	16QAM	0.077	18.86
		1M10W7D	64QAM	0.063	18.02
		1M09W7D	256QAM	0.036	15.58
LTE – Band66/4 (3)	1711.5 – 1778.5	2M71G7D	QPSK	0.089	19.48
		2M70W7D	16QAM	0.077	18.87
		2M71W7D	64QAM	0.064	18.04
		2M70W7D	256QAM	0.036	15.58
LTE – Band66/4 (5)	1712.5 – 1777.5	4M51G7D	QPSK	0.089	19.49
		4M50W7D	16QAM	0.078	18.90
		4M50W7D	64QAM	0.065	18.14
		4M51W7D	256QAM	0.037	15.66
LTE – Band66/4 (10)	1715.0 – 1775.0	8M96G7D	QPSK	0.088	19.46
		9M00W7D	16QAM	0.078	18.90
		9M00W7D	64QAM	0.066	18.18
		8M98W7D	256QAM	0.037	15.67
LTE – Band66/4 (15)	1717.5 – 1772.5	13M4G7D	QPSK	0.083	19.21
		13M4W7D	16QAM	0.073	18.66
		13M4W7D	64QAM	0.062	17.93
		13M5W7D	256QAM	0.035	15.44
LTE – Band66/4 (20)	1720.0 – 1770.0	17M9G7D	QPSK	0.084	19.24
		17M9W7D	16QAM	0.074	18.70
		17M9W7D	64QAM	0.063	17.97
		17M9W7D	256QAM	0.035	15.46

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.
HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

REVIEWED BY

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

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

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

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

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2311-FC029	November 13, 2023	- First Approval Report

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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:	A3LSMG556B
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27
EUT Type:	Mobile phone
Model(s):	SM-G556B
Tx Frequency:	1710.7 MHz – 1779.3 MHz (LTE – Band 66/4 (1.4 MHz)) 1711.5 MHz – 1778.5 MHz (LTE – Band 66/4 (3 MHz)) 1712.5 MHz – 1777.5 MHz (LTE – Band 66/4 (5 MHz)) 1715.0 MHz – 1775.0 MHz (LTE – Band 66/4 (10 MHz)) 1717.5 MHz – 1772.5 MHz (LTE – Band 66/4 (15 MHz)) 1720.0 MHz – 1770.0 MHz (LTE – Band 66/4 (20 MHz))
Date(s) of Tests:	October 04, 2023 ~ November 09, 2023
Serial number:	Radiated: R3CWA0MQFKL Conducted: R3CW905GSTD

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

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

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

2.2. MEASURING INSTRUMENT CALIBRATION

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

2.3. TEST FACILITY

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

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- N/A (See SAR Report)
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

Test Settings

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

Test Note

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

   The power is calculated by the following formula;

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

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

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

Test Settings

1. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10^{th} harmonics from 9 kHz.

Test Note

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

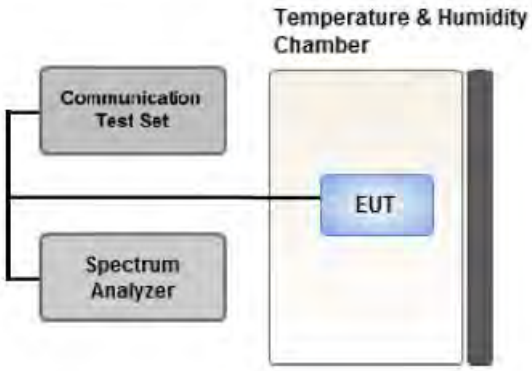
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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 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:

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

Test Settings(Peak Power)

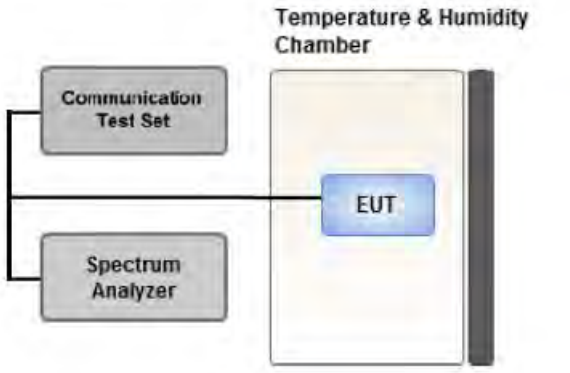
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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.

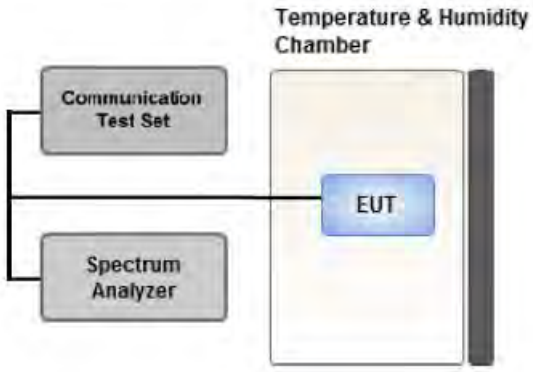
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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.

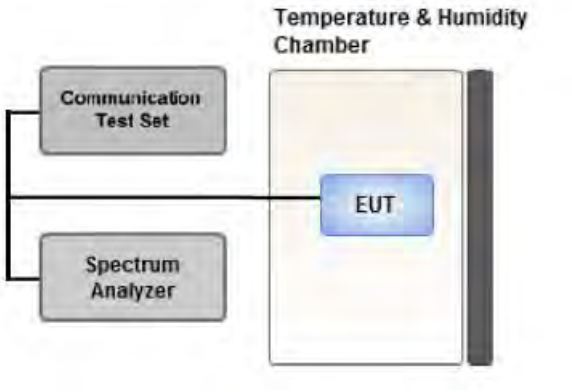
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

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 = trace average
5. Sweep time = auto
6. Number of points in sweep ≥ 2 x Span / RBW

3.7 BAND EDGE



Test setup

Test Overview

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

Test Settings

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

Test Notes

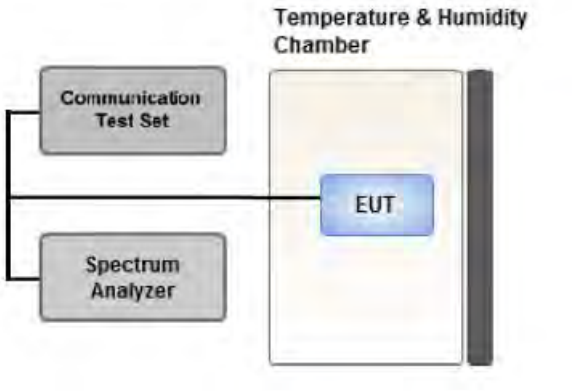
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a 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. (Worst case : 20 MHz(Main 2 Ant), 5 MHz(Sub 1 Ant))
- The worst case is reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data.
- Please refer to the table below.
- LTE Band 66 (1710 – 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz) and they have the same Tune-up power. Therefore, test data provided in this report covers Band 4 as well as Band 66.

[Main 2 Ant Worst case]

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

[Sub 1 Ant Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	1.4	Mid	1	5	X
			Low, High	1	0	
		3	Low	1	0	
			Mid, High	1	14	
		5	Low	1	0	
			Mid, High	1	24	
		10	Low Mid, High	1	49	
		15	Low Mid, High	1	74	
		20	Low	1	50	
			Mid, High	1	99	
Radiated Spurious and Harmonic Emissions	QPSK	5	Low	1	0	Z
			Mid, High	1	24	

3.10 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.
- LTE Band 66 (1710 – 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz) and they have the same Tune-up power. Therefore, test data provided in this report covers Band 4 as well as Band 66.

[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

4. LIST OF TEST EQUIPMENT

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

Note:

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

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.90 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.14 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.16 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.57 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.76 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.52 (Confidence level about 95 %, k=2)

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §27.53(h)	< 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	§27.50(d)(5)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§2.1055, § 27.54	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	§27.50(d)(4)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(h)	< 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
132322	1,732.50	-15.75	18.45	9.90	1.76	H	0.456	26.59

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

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
2) During the test , the turn table is rotated until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA (Main 2 Ant)

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1710.7	LTE B66/B4 1.4 MHz	QPSK	-17.84	15.89	9.94	2.24	V	< 1.00	0.229	23.59
		16-QAM	-18.54	15.19	9.94	2.24	V		0.195	22.89
		64-QAM	-19.57	14.16	9.94	2.24	V		0.153	21.86
		256-QAM	-22.61	11.12	9.94	2.24	V		0.076	18.82
1745.0		QPSK	-18.10	15.58	10.15	2.15	V		0.228	23.58
		16-QAM	-18.79	14.89	10.15	2.15	V		0.195	22.89
		64-QAM	-19.83	13.85	10.15	2.15	V		0.153	21.85
		256-QAM	-22.85	10.83	10.15	2.15	V		0.076	18.83
1779.3		QPSK	-18.03	15.66	10.21	2.26	V		0.230	23.61
		16-QAM	-18.69	15.00	10.21	2.26	V		0.197	22.95
		64-QAM	-19.70	13.99	10.21	2.26	V		0.156	21.94
		256-QAM	-22.74	10.95	10.21	2.26	V		0.078	18.90

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1711.5	LTE B66/B4 3 MHz	QPSK	-17.83	15.90	9.94	2.24	V	< 1.00	0.229	23.60
		16-QAM	-18.54	15.19	9.94	2.24	V		0.195	22.89
		64-QAM	-19.54	14.19	9.94	2.24	V		0.155	21.89
		256-QAM	-22.58	11.15	9.94	2.24	V		0.077	18.85
1745.0		QPSK	-18.11	15.57	10.15	2.15	V		0.228	23.57
		16-QAM	-18.82	14.86	10.15	2.15	V		0.193	22.86
		64-QAM	-19.82	13.86	10.15	2.15	V		0.153	21.86
		256-QAM	-22.87	10.81	10.15	2.15	V		0.076	18.81
1778.5		QPSK	-17.98	15.71	10.21	2.26	V		0.232	23.66
		16-QAM	-18.64	15.05	10.21	2.26	V		0.200	23.00
		64-QAM	-19.64	14.05	10.21	2.26	V		0.158	22.00
		256-QAM	-22.68	11.01	10.21	2.26	V		0.079	18.96

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1712.5	LTE B66/B4 5 MHz	QPSK	-17.79	15.94	9.94	2.24	V	< 1.00	0.231	23.64
		16-QAM	-18.48	15.25	9.94	2.24	V		0.197	22.95
		64-QAM	-19.54	14.19	9.94	2.24	V		0.155	21.89
		256-QAM	-22.56	11.17	9.94	2.24	V		0.077	18.87
1745.0		QPSK	-18.09	15.59	10.15	2.15	V		0.229	23.59
		16-QAM	-18.77	14.91	10.15	2.15	V		0.195	22.91
		64-QAM	-19.84	13.84	10.15	2.15	V		0.153	21.84
		256-QAM	-22.85	10.83	10.15	2.15	V		0.076	18.83
1777.5		QPSK	-17.91	15.78	10.21	2.26	V		0.236	23.73
		16-QAM	-18.55	15.14	10.21	2.26	V		0.204	23.09
		64-QAM	-19.57	14.12	10.21	2.26	V		0.161	22.07
		256-QAM	-22.58	11.11	10.21	2.26	V		0.081	19.06

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1715.0	LTE B66/B4 10 MHz	QPSK	-17.77	15.87	9.98	2.23	V	< 1.00	0.230	23.61
		16-QAM	-18.78	14.86	9.98	2.23	V		0.182	22.60
		64-QAM	-19.94	13.70	9.98	2.23	V		0.139	21.44
		256-QAM	-22.53	11.11	9.98	2.23	V		0.077	18.85
1745.0		QPSK	-18.12	15.56	10.15	2.15	V		0.227	23.56
		16-QAM	-18.83	14.85	10.15	2.15	V		0.193	22.85
		64-QAM	-19.85	13.83	10.15	2.15	V		0.152	21.83
		256-QAM	-22.86	10.82	10.15	2.15	V		0.076	18.82
1775.0		QPSK	-17.97	15.68	10.21	2.25	V		0.231	23.64
		16-QAM	-18.68	14.97	10.21	2.25	V		0.196	22.93
		64-QAM	-19.64	14.01	10.21	2.25	V		0.157	21.97
		256-QAM	-22.57	11.08	10.21	2.25	V		0.080	19.04

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1717.5	LTE B66/B4 15 MHz	QPSK	-17.77	15.87	10.01	2.22	V	< 1.00	0.232	23.66
		16-QAM	-18.43	15.21	10.01	2.22	V		0.200	23.00
		64-QAM	-19.50	14.14	10.01	2.22	V		0.156	21.93
		256-QAM	-22.55	11.09	10.01	2.22	V		0.077	18.88
1745.0		QPSK	-17.98	15.70	10.15	2.15	V		0.234	23.70
		16-QAM	-18.81	14.87	10.15	2.15	V		0.194	22.87
		64-QAM	-19.81	13.87	10.15	2.15	V		0.154	21.87
		256-QAM	-22.76	10.92	10.15	2.15	V		0.078	18.92
1772.5		QPSK	-17.84	15.77	10.20	2.23	V		0.237	23.74
		16-QAM	-18.64	14.97	10.20	2.23	V		0.197	22.94
		64-QAM	-19.71	13.90	10.20	2.23	V		0.154	21.87
		256-QAM	-22.62	10.99	10.20	2.23	V		0.079	18.96

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1720.0	LTE B66/B4 20 MHz	QPSK	-17.77	15.74	10.01	2.22	V	< 1.00	0.225	23.53
		16-QAM	-18.43	15.08	10.01	2.22	V		0.194	22.87
		64-QAM	-19.53	13.98	10.01	2.22	V		0.150	21.77
		256-QAM	-22.54	10.97	10.01	2.22	V		0.075	18.76
1745.0		QPSK	-17.94	15.74	10.15	2.15	V		0.237	23.74
		16-QAM	-18.62	15.06	10.15	2.15	V		0.202	23.06
		64-QAM	-19.72	13.96	10.15	2.15	V		0.157	21.96
		256-QAM	-22.75	10.93	10.15	2.15	V		0.078	18.93
1770.0		QPSK	-17.83	15.78	10.20	2.23	V		0.237	23.75
		16-QAM	-18.48	15.13	10.20	2.23	V		0.204	23.10
		64-QAM	-19.58	14.03	10.20	2.23	V		0.158	22.00
		256-QAM	-22.61	11.00	10.20	2.23	V		0.079	18.97

8.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY: 1770.0 MHz

▣ MEASURED OUTPUT POWER: 23.75 dBm = 0.237 W

▣ MODE: LTE B66/B4

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log10 (W) = 36.75 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
132072 (1720.0)	3 440.00	-54.04	12.40	-60.16	3.14	H	-50.90	74.64
	5 160.00	-56.08	12.44	-54.24	3.78	H	-45.58	69.33
	6 880.00	-47.30	11.82	-40.59	4.51	V	-33.28	57.03
132322 (1745.0)	3 490.00	-55.36	12.34	-61.37	3.08	H	-52.11	75.86
	5 235.00	-55.55	12.84	-54.63	3.95	H	-45.74	69.49
	6 980.00	-47.44	11.40	-39.83	4.56	V	-32.99	56.74
132572 (1770.0)	3 540.00	-54.39	12.34	-60.12	3.18	H	-50.96	74.70
	5 310.00	-55.14	13.08	-54.48	3.98	V	-45.38	69.13
	7 080.00	-43.35	10.93	-34.11	4.58	H	-27.76	51.50

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
66/4	1.4 MHz	1745.0	QPSK	6	0	5.38
			16-QAM			6.11
			64-QAM			6.52
			256-QAM			6.62
	3 MHz		QPSK	15		5.47
			16-QAM			6.17
			64-QAM			6.52
			256-QAM			6.74
	5 MHz		QPSK	25		5.43
			16-QAM			6.11
			64-QAM			6.48
			256-QAM			6.71
	10 MHz		QPSK	50		5.50
			16-QAM			6.13
			64-QAM			6.44
			256-QAM			6.70
	15 MHz		QPSK	75		5.42
			16-QAM			6.11
			64-QAM			6.47
			256-QAM			6.72
	20 MHz		QPSK	100		5.35
			16-QAM			6.11
			64-QAM			6.44
			256-QAM			6.69

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 139 ~ 162.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
66/4	1.4 MHz	1745.0	QPSK	6	0	1.0953
			16-QAM			1.0885
			64-QAM			1.0964
			256-QAM			1.0885
	3 MHz		QPSK	15		2.7000
			16-QAM			2.6877
			64-QAM			2.6997
			256-QAM			2.6957
	5 MHz		QPSK	25		4.4986
			16-QAM			4.4874
			64-QAM			4.5034
			256-QAM			4.4988
	10 MHz		QPSK	50		8.9789
			16-QAM			8.9593
			64-QAM			8.9777
			256-QAM			8.9907
	15 MHz		QPSK	75		13.430
			16-QAM			13.472
			64-QAM			13.452
			256-QAM			13.436
	20 MHz		QPSK	100		17.973
			16-QAM			17.932
			64-QAM			17.925
			256-QAM			17.932

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 115 ~ 138.

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)
66/4	1.4	1710.7	6.8410	28.591	-75.015	-46.424	-13.00
		1745.0	6.9781	28.591	-76.920	-48.329	
		1779.3	7.1187	28.591	-75.689	-47.098	
	3	1711.5	6.8410	28.591	-76.026	-47.435	
		1745.0	6.9751	28.591	-74.142	-45.551	
		1778.5	7.1192	28.591	-73.573	-44.982	
	5	1712.5	6.8415	28.591	-73.132	-44.541	
		1745.0	6.9711	28.591	-75.084	-46.493	
		1777.5	7.1187	28.591	-74.192	-45.601	
	10	1715.0	6.8420	28.591	-75.457	-46.866	
		1745.0	6.9626	28.591	-75.265	-46.674	
		1775.0	7.1177	28.591	-76.262	-47.671	
	15	1717.5	6.8435	28.591	-75.109	-46.518	
		1745.0	6.9532	28.591	-74.705	-46.114	
		1772.5	7.1167	28.591	-75.047	-46.456	
	20	1720.0	6.8445	28.591	-72.294	-43.703	
		1745.0	6.9442	28.591	-74.491	-45.900	
		1770.0	7.1157	28.591	-73.989	-45.398	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 163 ~ 198.

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 79~114.

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE 66/4

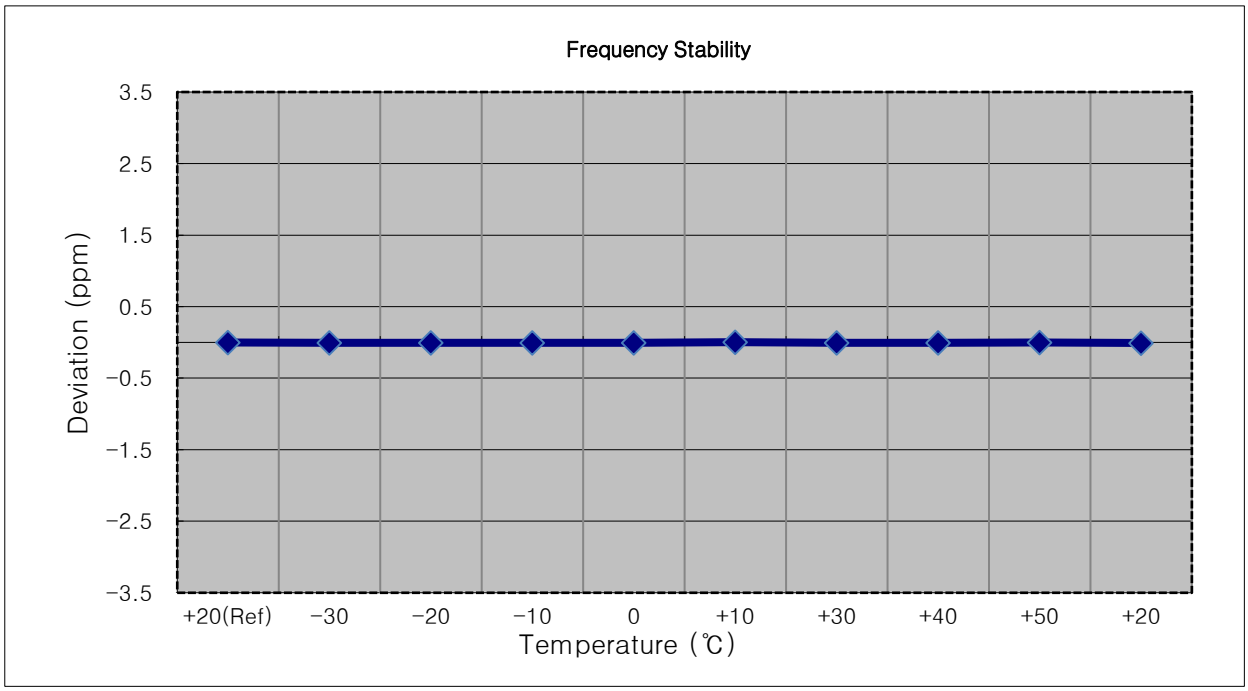
▣ OPERATING FREQUENCY: 1710,700,000 Hz

▣ CHANNEL: 131979 (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)	1710 699 992	0.0	0.000 000	0.000
100 %		-30	1710 699 984	-8.3	0.000 000	-0.005
100 %		-20	1710 699 986	-6.2	0.000 000	-0.004
100 %		-10	1710 699 985	-7.7	0.000 000	-0.005
100 %		0	1710 699 984	-8.0	0.000 000	-0.005
100 %		+10	1710 699 998	5.4	0.000 000	0.003
100 %		+30	1710 699 983	-9.3	-0.000 001	-0.005
100 %		+40	1710 699 983	-9.5	-0.000 001	-0.006
100 %		+50	1710 699 990	-2.4	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1710 699 979	-13.6	-0.000 001	-0.008



▣ MODE: LTE 66/4

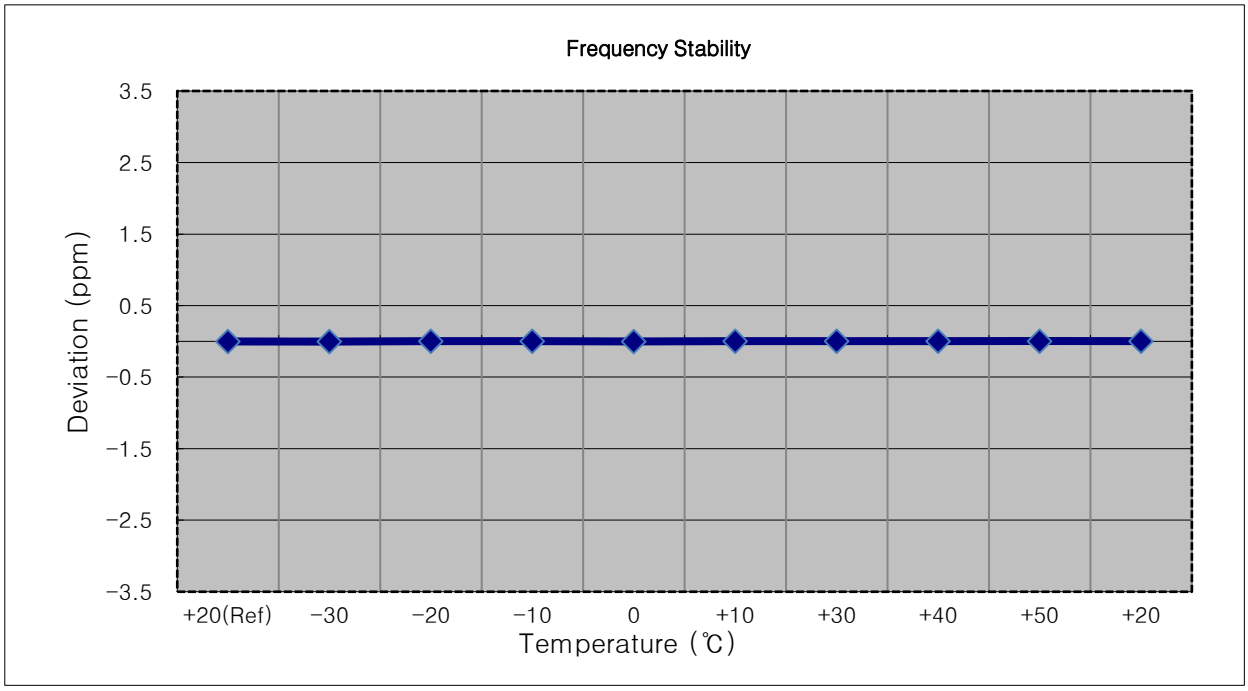
▣ OPERATING FREQUENCY: 1711,500,000 Hz

▣ CHANNEL: 131987 (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)	1711 500 003	0.0	0.000 000	0.000
100 %		-30	1711 499 998	-5.1	0.000 000	-0.003
100 %		-20	1711 500 009	5.8	0.000 000	0.003
100 %		-10	1711 500 006	3.2	0.000 000	0.002
100 %		0	1711 499 999	-3.9	0.000 000	-0.002
100 %		+10	1711 500 008	4.9	0.000 000	0.003
100 %		+30	1711 500 009	5.8	0.000 000	0.003
100 %		+40	1711 500 010	6.6	0.000 000	0.004
100 %		+50	1711 500 012	9.2	0.000 001	0.005
Batt. Endpoint	3.400	+20	1711 500 007	3.5	0.000 000	0.002



▣ MODE: LTE 66/4

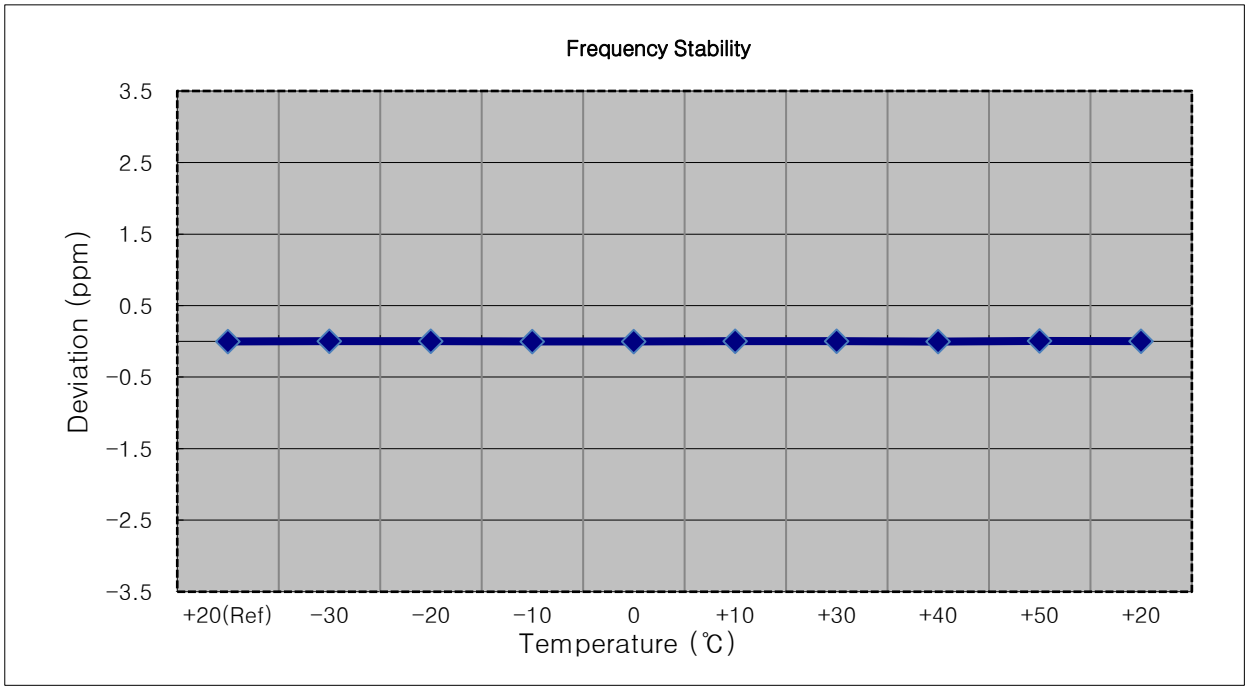
▣ OPERATING FREQUENCY: 1712,500,000 Hz

▣ CHANNEL: 131997 (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)	1712 499 994	0.0	0.000 000	0.000
100 %		-30	1712 499 997	2.5	0.000 000	0.001
100 %		-20	1712 500 002	7.5	0.000 000	0.004
100 %		-10	1712 499 990	-4.0	0.000 000	-0.002
100 %		0	1712 499 989	-4.8	0.000 000	-0.003
100 %		+10	1712 499 997	2.7	0.000 000	0.002
100 %		+30	1712 499 997	3.1	0.000 000	0.002
100 %		+40	1712 499 989	-5.2	0.000 000	-0.003
100 %		+50	1712 500 004	10.0	0.000 001	0.006
Batt. Endpoint	3.400	+20	1712 500 001	7.1	0.000 000	0.004



▣ MODE: LTE 66/4

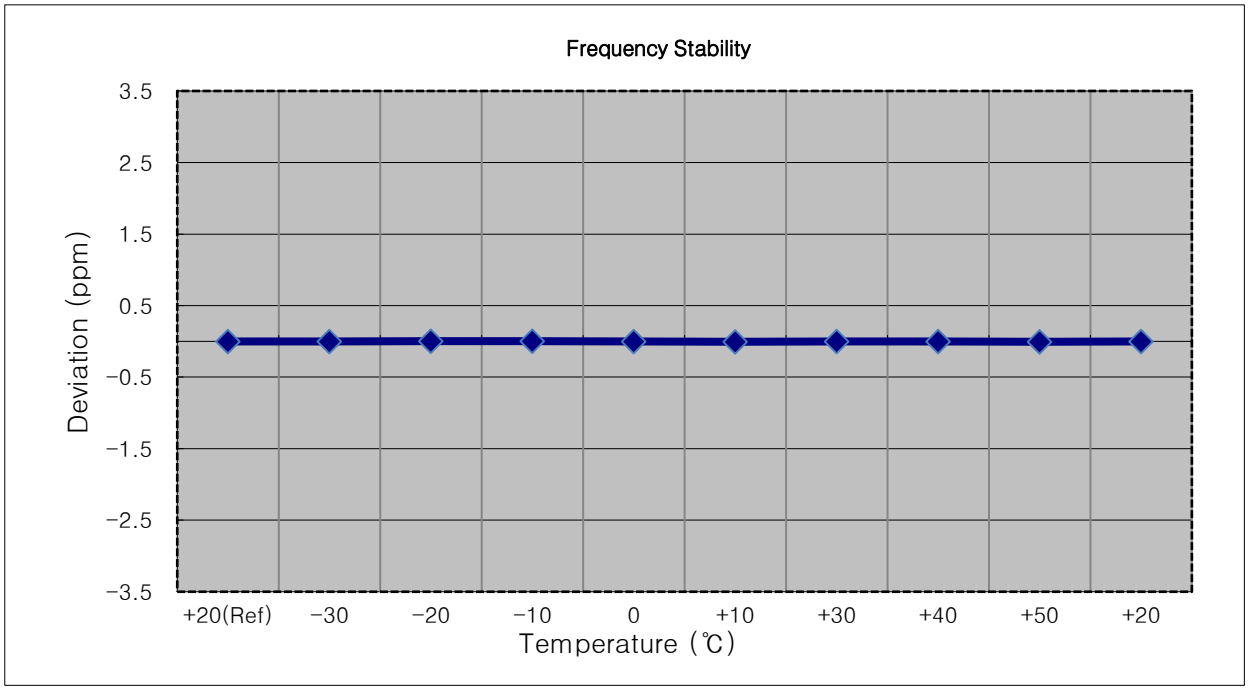
▣ OPERATING FREQUENCY: 1715,000,000 Hz

▣ CHANNEL: 132022 (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)	1715 000 004	0.0	0.000 000	0.000
100 %		-30	1714 999 999	-5.7	0.000 000	-0.003
100 %		-20	1715 000 008	3.5	0.000 000	0.002
100 %		-10	1715 000 009	4.9	0.000 000	0.003
100 %		0	1714 999 999	-5.7	0.000 000	-0.003
100 %		+10	1714 999 995	-9.5	-0.000 001	-0.006
100 %		+30	1715 000 006	1.2	0.000 000	0.001
100 %		+40	1715 000 002	-2.4	0.000 000	-0.001
100 %		+50	1714 999 996	-8.2	0.000 000	-0.005
Batt. Endpoint	3.400	+20	1714 999 999	-5.4	0.000 000	-0.003



▣ MODE: LTE 66/4

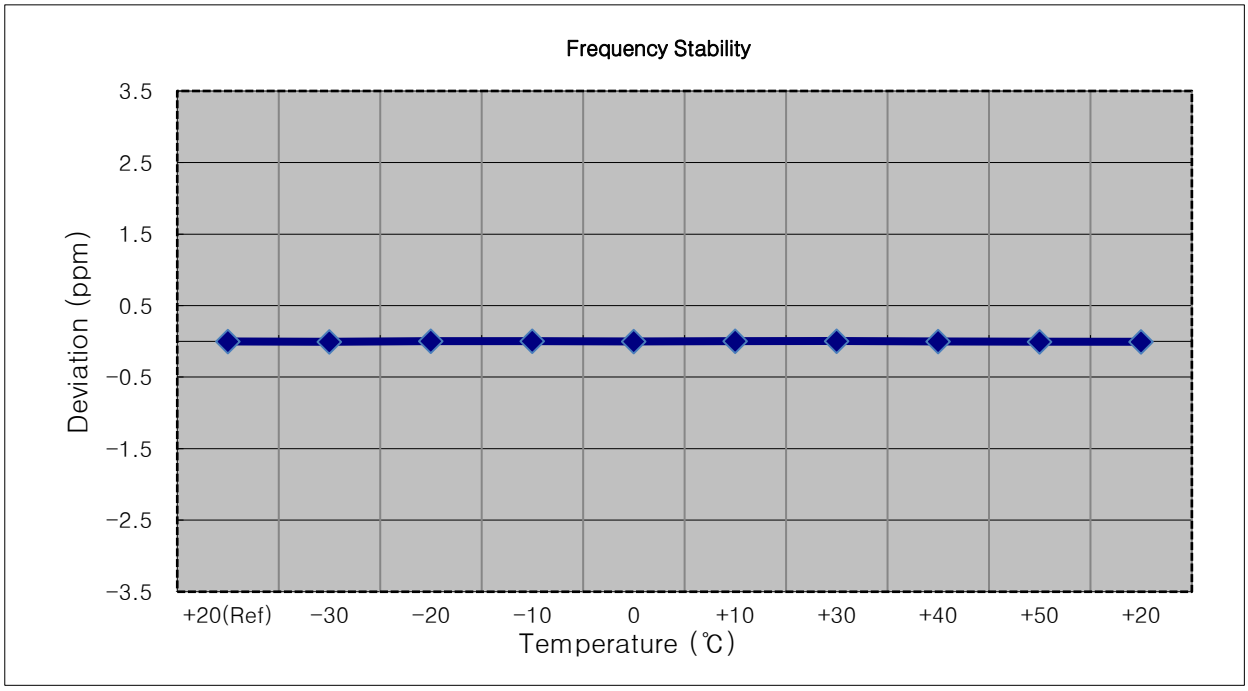
▣ OPERATING FREQUENCY: 1717,500,000 Hz

▣ CHANNEL: 132047 (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)	1717 499 996	0.0	0.000 000	0.000
100 %		-30	1717 499 990	-6.4	0.000 000	-0.004
100 %		-20	1717 500 003	6.8	0.000 000	0.004
100 %		-10	1717 500 001	5.3	0.000 000	0.003
100 %		0	1717 499 992	-3.7	0.000 000	-0.002
100 %		+10	1717 500 002	5.7	0.000 000	0.003
100 %		+30	1717 500 005	8.7	0.000 001	0.005
100 %		+40	1717 499 994	-2.1	0.000 000	-0.001
100 %		+50	1717 499 988	-8.0	0.000 000	-0.005
Batt. Endpoint	3.400	+20	1717 499 988	-7.8	0.000 000	-0.005



▣ MODE: LTE 66/4

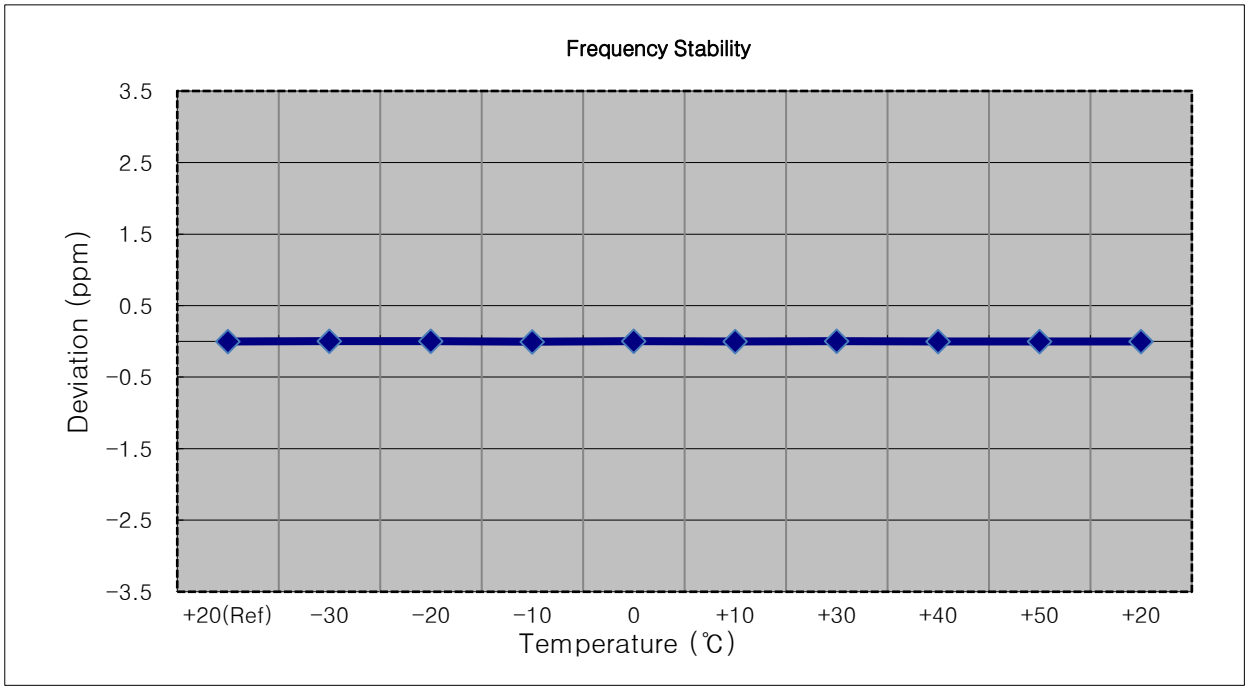
▣ OPERATING FREQUENCY: 1720,000,000 Hz

▣ CHANNEL: 132072 (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)	1720 000 004	0.0	0.000 000	0.000
100 %		-30	1720 000 010	6.1	0.000 000	0.004
100 %		-20	1720 000 010	5.5	0.000 000	0.003
100 %		-10	1719 999 996	-7.9	0.000 000	-0.005
100 %		0	1720 000 009	4.5	0.000 000	0.003
100 %		+10	1719 999 998	-5.8	0.000 000	-0.003
100 %		+30	1720 000 007	3.1	0.000 000	0.002
100 %		+40	1720 000 006	1.7	0.000 000	0.001
100 %		+50	1720 000 006	1.3	0.000 000	0.001
Batt. Endpoint	3.400	+20	1720 000 000	-4.3	0.000 000	-0.002



▣ MODE: LTE 66/4

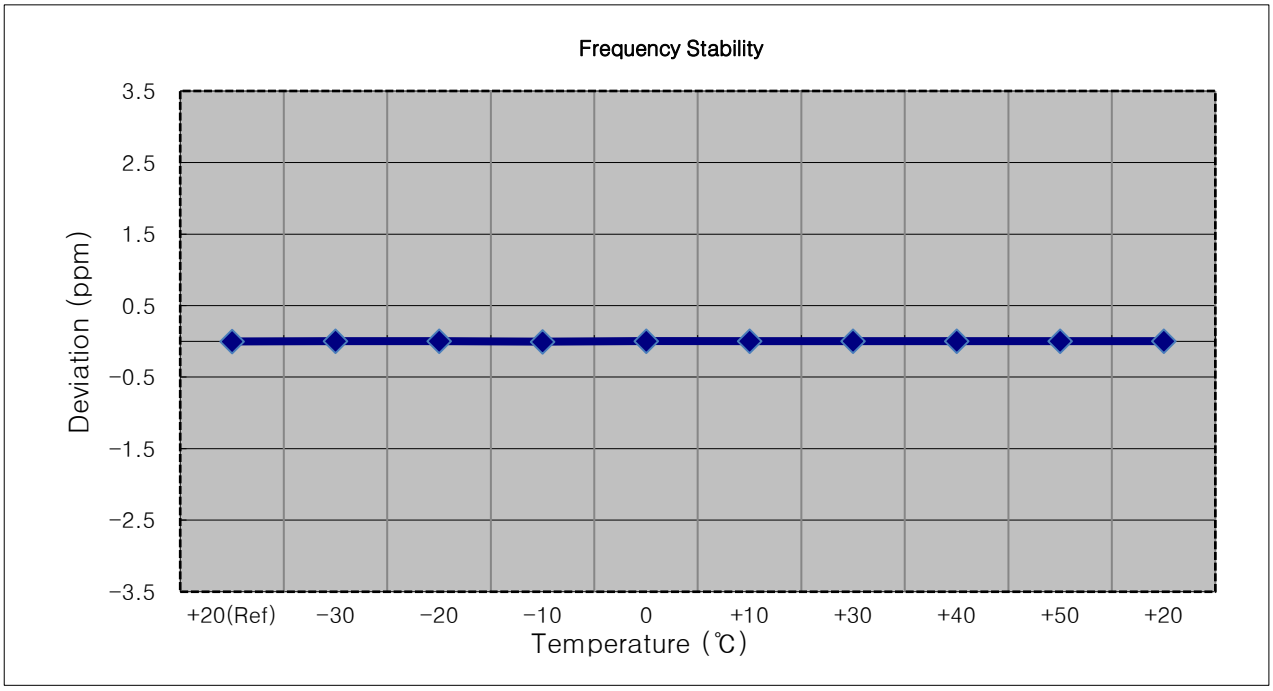
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1744 999 996	0.0	0.000 000	0.000
100 %		-30	1745 000 001	5.7	0.000 000	0.003
100 %		-20	1745 000 002	6.8	0.000 000	0.004
100 %		-10	1744 999 989	-6.4	0.000 000	-0.004
100 %		0	1745 000 003	7.9	0.000 000	0.005
100 %		+10	1745 000 003	7.4	0.000 000	0.004
100 %		+30	1745 000 000	4.7	0.000 000	0.003
100 %		+40	1744 999 998	2.8	0.000 000	0.002
100 %		+50	1745 000 000	4.1	0.000 000	0.002
Batt. Endpoint	3.400	+20	1745 000 000	4.9	0.000 000	0.003



▣ MODE: LTE 66/4

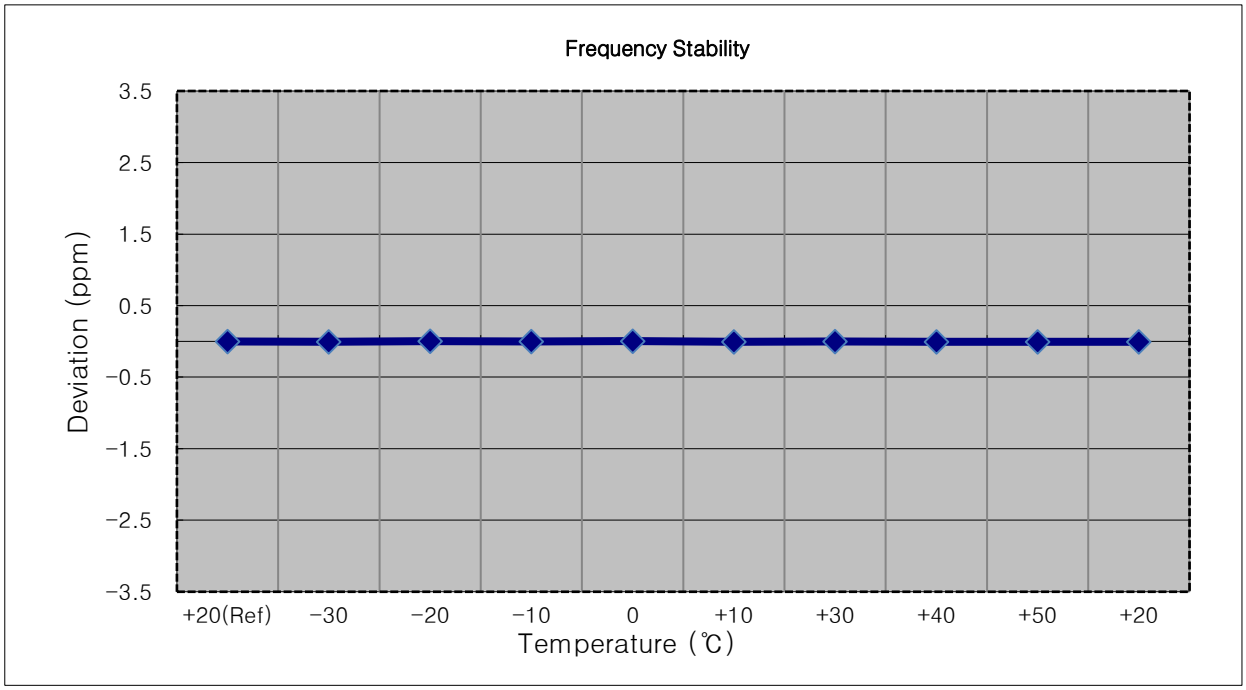
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1745 000 006	0.0	0.000 000	0.000
100 %		-30	1744 999 997	-9.0	-0.000 001	-0.005
100 %		-20	1745 000 009	3.2	0.000 000	0.002
100 %		-10	1745 000 000	-5.6	0.000 000	-0.003
100 %		0	1745 000 014	7.9	0.000 000	0.005
100 %		+10	1744 999 998	-8.4	0.000 000	-0.005
100 %		+30	1745 000 000	-5.8	0.000 000	-0.003
100 %		+40	1744 999 997	-8.6	0.000 000	-0.005
100 %		+50	1744 999 999	-7.4	0.000 000	-0.004
Batt. Endpoint	3.400	+20	1744 999 998	-7.8	0.000 000	-0.004



▣ MODE: LTE 66/4

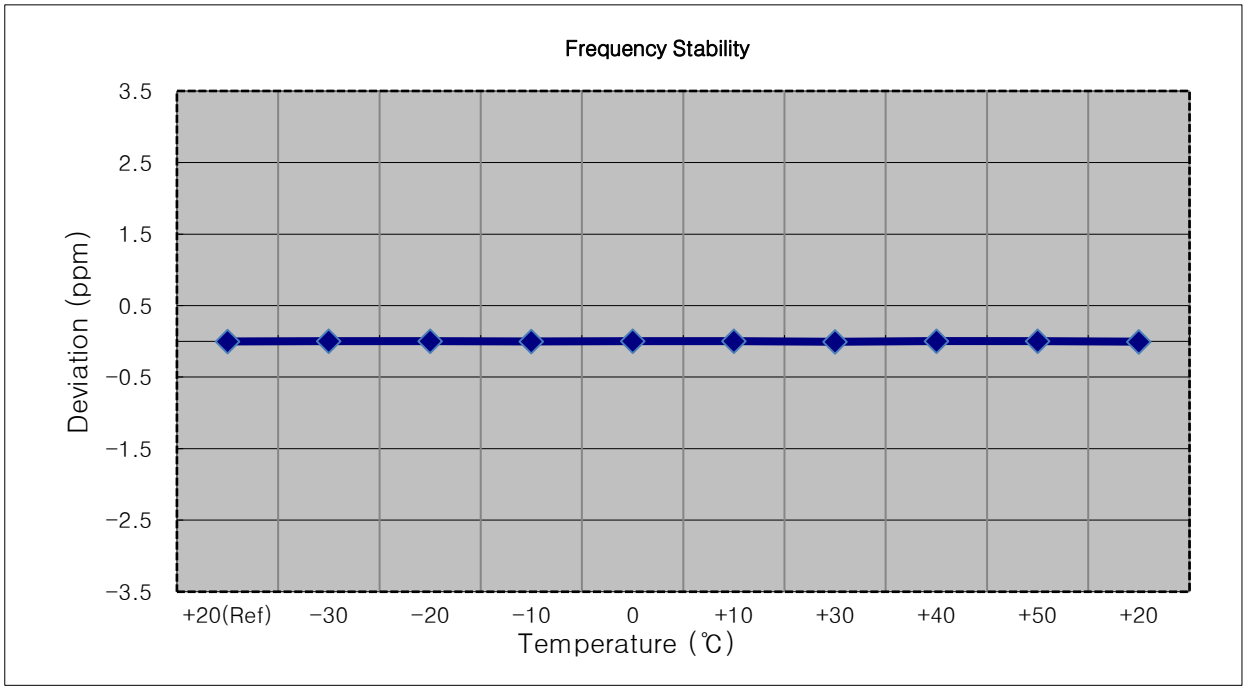
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1745 000 007	0.0	0.000 000	0.000
100 %		-30	1745 000 011	4.7	0.000 000	0.003
100 %		-20	1745 000 013	6.6	0.000 000	0.004
100 %		-10	1745 000 002	-4.9	0.000 000	-0.003
100 %		0	1745 000 010	3.3	0.000 000	0.002
100 %		+10	1745 000 012	5.7	0.000 000	0.003
100 %		+30	1745 000 000	-6.4	0.000 000	-0.004
100 %		+40	1745 000 014	7.5	0.000 000	0.004
100 %		+50	1745 000 011	4.3	0.000 000	0.002
Batt. Endpoint	3.400	+20	1744 999 999	-7.2	0.000 000	-0.004



▣ MODE: LTE 66/4

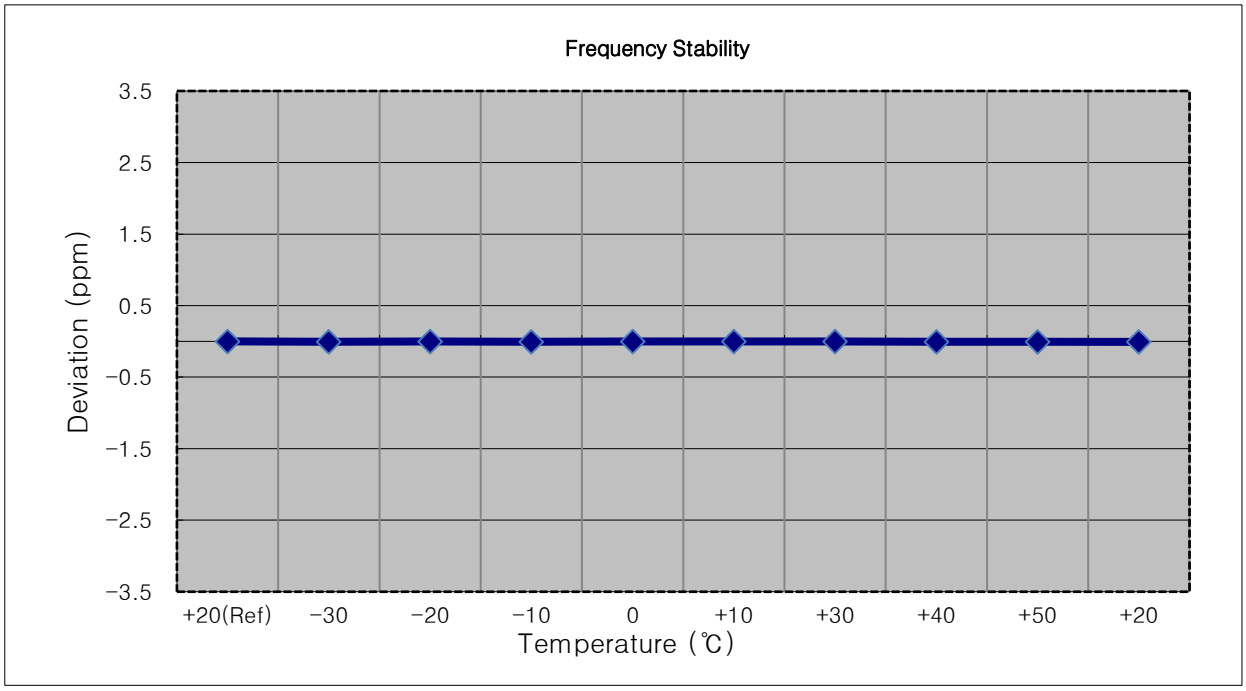
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1744 999 994	0.0	0.000 000	0.000
100 %		-30	1744 999 986	-7.5	0.000 000	-0.004
100 %		-20	1744 999 993	-1.3	0.000 000	-0.001
100 %		-10	1744 999 986	-7.4	0.000 000	-0.004
100 %		0	1744 999 989	-5.0	0.000 000	-0.003
100 %		+10	1744 999 988	-5.7	0.000 000	-0.003
100 %		+30	1744 999 991	-2.6	0.000 000	-0.001
100 %		+40	1744 999 983	-10.8	-0.000 001	-0.006
100 %		+50	1744 999 983	-11.2	-0.000 001	-0.006
Batt. Endpoint	3.400	+20	1744 999 981	-12.5	-0.000 001	-0.007



▣ MODE: LTE 66/4

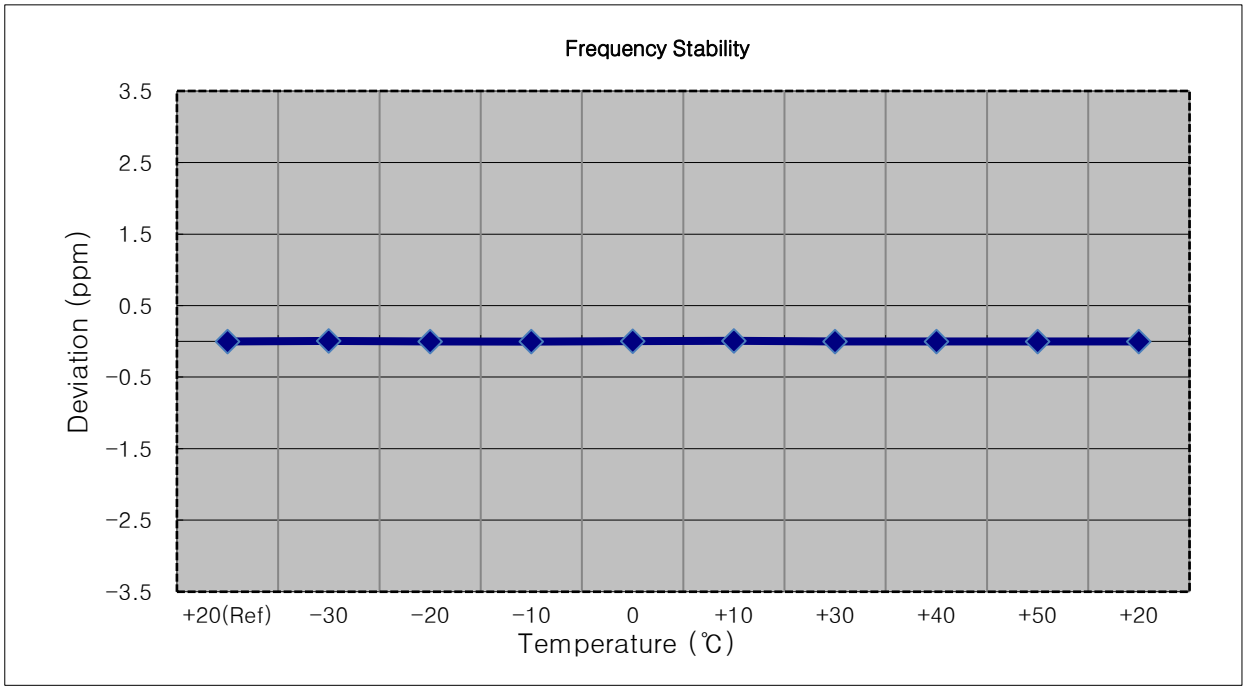
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1744 999 995	0.0	0.000 000	0.000
100 %		-30	1745 000 006	10.4	0.000 001	0.006
100 %		-20	1744 999 990	-4.8	0.000 000	-0.003
100 %		-10	1744 999 990	-5.7	0.000 000	-0.003
100 %		0	1744 999 999	3.6	0.000 000	0.002
100 %		+10	1745 000 005	9.9	0.000 001	0.006
100 %		+30	1744 999 992	-2.9	0.000 000	-0.002
100 %		+40	1744 999 992	-3.2	0.000 000	-0.002
100 %		+50	1744 999 997	1.4	0.000 000	0.001
Batt. Endpoint	3.400	+20	1744 999 993	-2.4	0.000 000	-0.001



▣ MODE: LTE 66/4

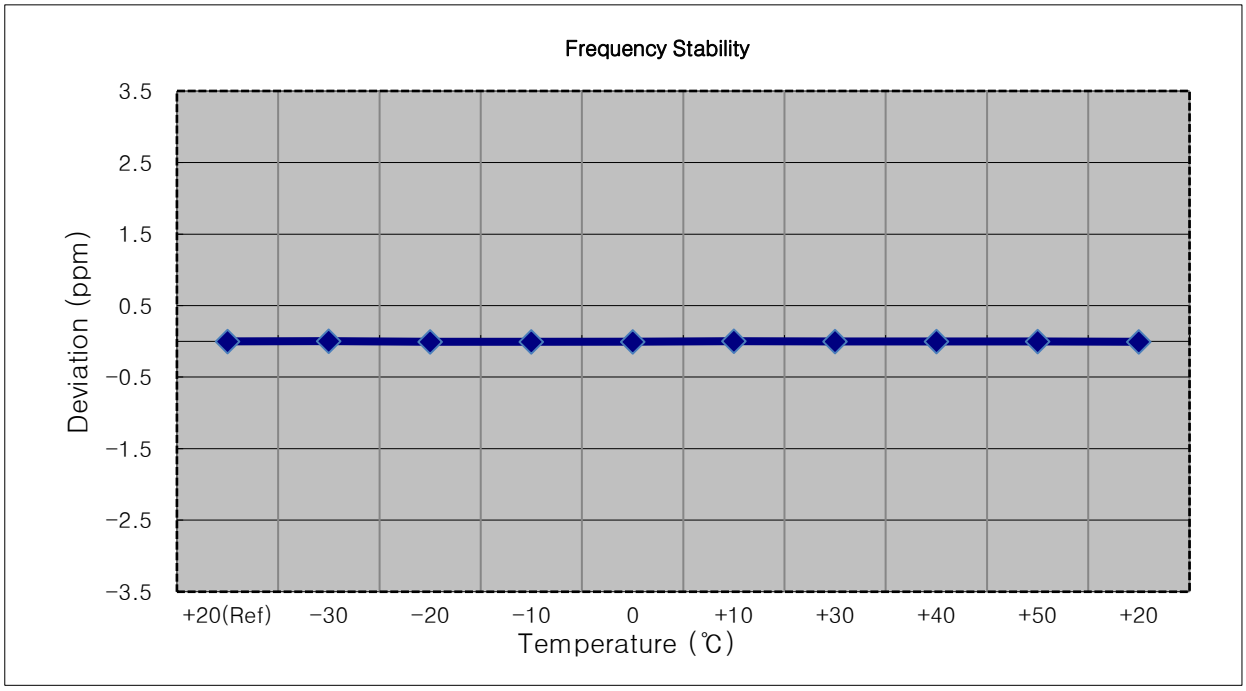
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1744 999 993	0.0	0.000 000	0.000
100 %		-30	1744 999 996	2.5	0.000 000	0.001
100 %		-20	1744 999 986	-6.9	0.000 000	-0.004
100 %		-10	1744 999 987	-6.2	0.000 000	-0.004
100 %		0	1744 999 985	-7.8	0.000 000	-0.004
100 %		+10	1744 999 998	4.5	0.000 000	0.003
100 %		+30	1744 999 989	-4.4	0.000 000	-0.003
100 %		+40	1744 999 988	-5.7	0.000 000	-0.003
100 %		+50	1744 999 988	-5.4	0.000 000	-0.003
Batt. Endpoint	3.400	+20	1744 999 986	-7.0	0.000 000	-0.004



▣ MODE: LTE 66/4

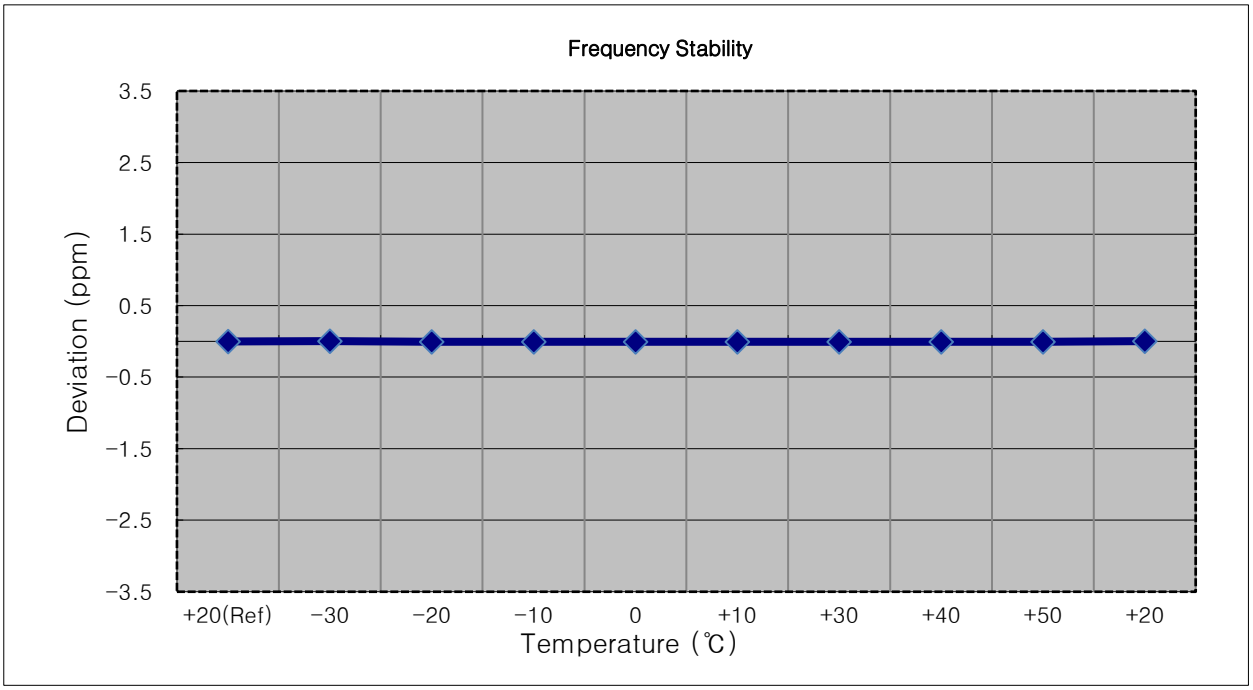
▣ OPERATING FREQUENCY: 1779,300,000 Hz

▣ CHANNEL: 132665 (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)	1779 299 991	0.0	0.000 000	0.000
100 %		-30	1779 299 997	6.4	0.000 000	0.004
100 %		-20	1779 299 981	-9.4	-0.000 001	-0.005
100 %		-10	1779 299 983	-7.4	0.000 000	-0.004
100 %		0	1779 299 983	-7.6	0.000 000	-0.004
100 %		+10	1779 299 983	-7.3	0.000 000	-0.004
100 %		+30	1779 299 980	-10.8	-0.000 001	-0.006
100 %		+40	1779 299 981	-9.2	-0.000 001	-0.005
100 %		+50	1779 299 982	-8.8	0.000 000	-0.005
Batt. Endpoint	3.400	+20	1779 299 995	4.3	0.000 000	0.002



▣ MODE: LTE 66/4

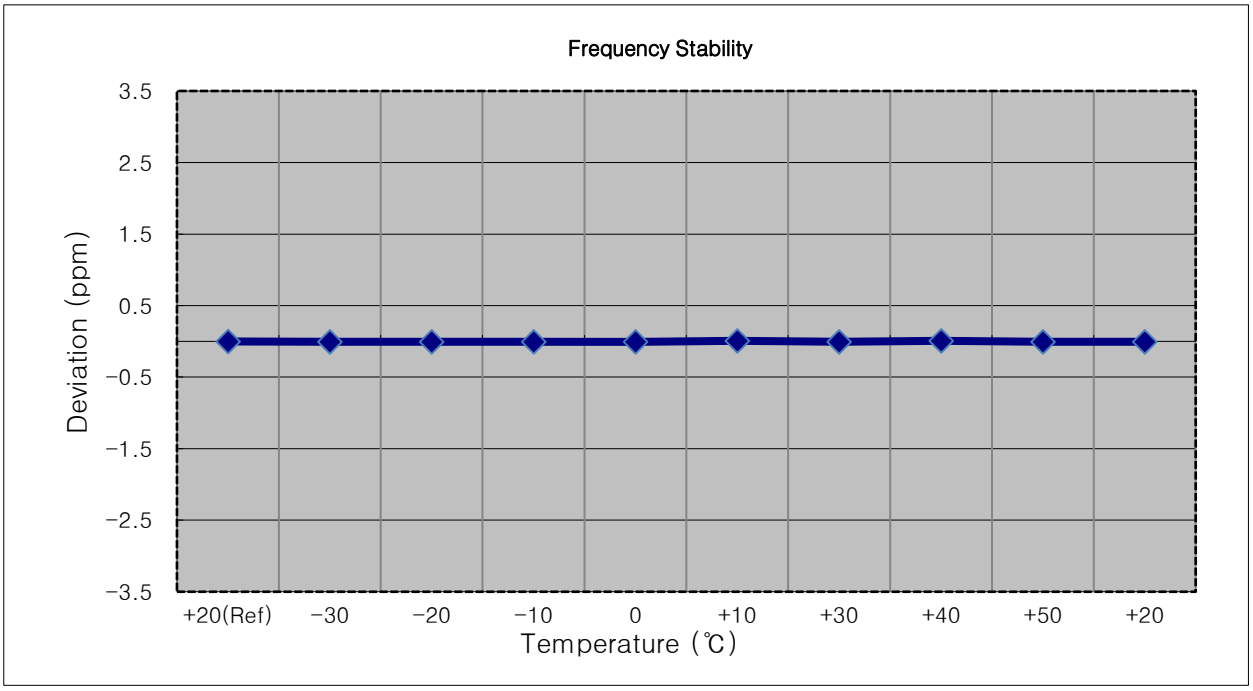
▣ OPERATING FREQUENCY: 1778,500,000 Hz

▣ CHANNEL: 132657 (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)	1778 499 987	0.0	0.000 000	0.000
100 %		-30	1778 499 975	-12.0	-0.000 001	-0.007
100 %		-20	1778 499 978	-8.7	0.000 000	-0.005
100 %		-10	1778 499 977	-10.1	-0.000 001	-0.006
100 %		0	1778 499 975	-12.5	-0.000 001	-0.007
100 %		+10	1778 500 001	14.2	0.000 001	0.008
100 %		+30	1778 499 980	-6.8	0.000 000	-0.004
100 %		+40	1778 500 001	13.5	0.000 001	0.008
100 %		+50	1778 499 975	-12.1	-0.000 001	-0.007
Batt. Endpoint	3.400	+20	1778 499 980	-6.8	0.000 000	-0.004



▣ MODE: LTE 66/4

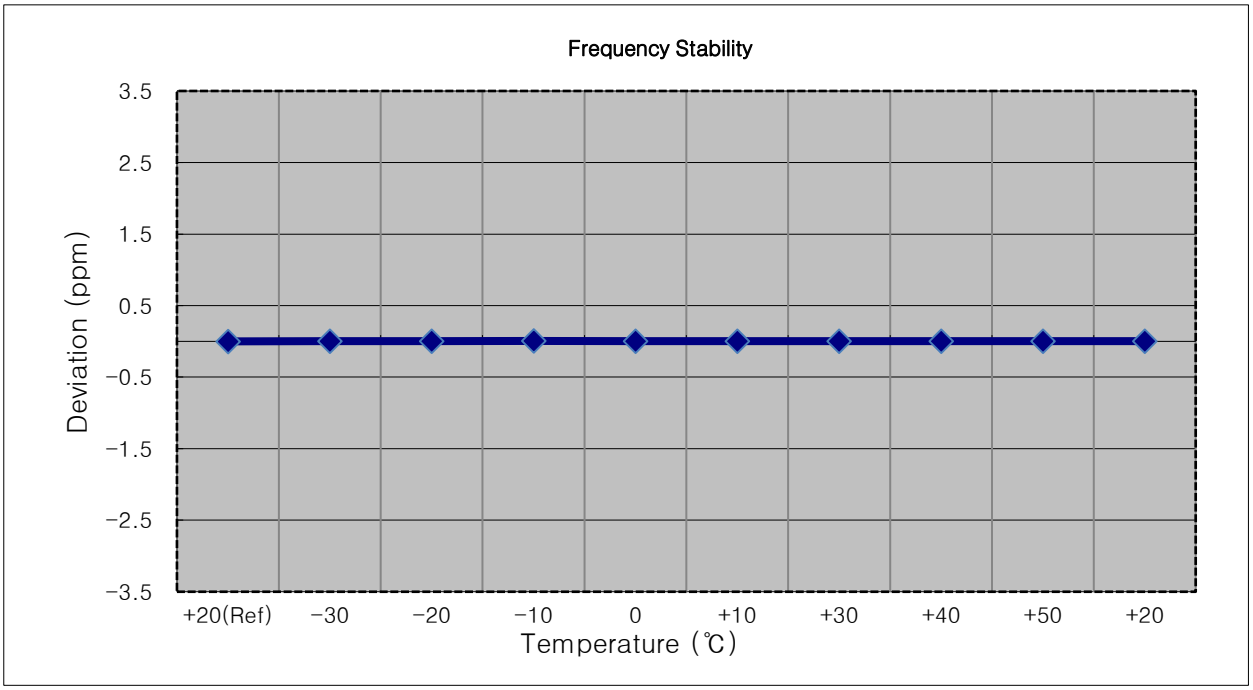
▣ OPERATING FREQUENCY: 1777,500,000 Hz

▣ CHANNEL: 132647 (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)	1777 499 997	0.0	0.000 000	0.000
100 %		-30	1777 500 005	8.2	0.000 000	0.005
100 %		-20	1777 500 006	8.9	0.000 001	0.005
100 %		-10	1777 500 008	10.6	0.000 001	0.006
100 %		0	1777 500 007	9.7	0.000 001	0.005
100 %		+10	1777 500 006	9.4	0.000 001	0.005
100 %		+30	1777 500 004	7.2	0.000 000	0.004
100 %		+40	1777 500 006	9.5	0.000 001	0.005
100 %		+50	1777 500 005	8.1	0.000 000	0.005
Batt. Endpoint	3.400	+20	1777 500 005	8.4	0.000 000	0.005



▣ MODE: LTE 66/4

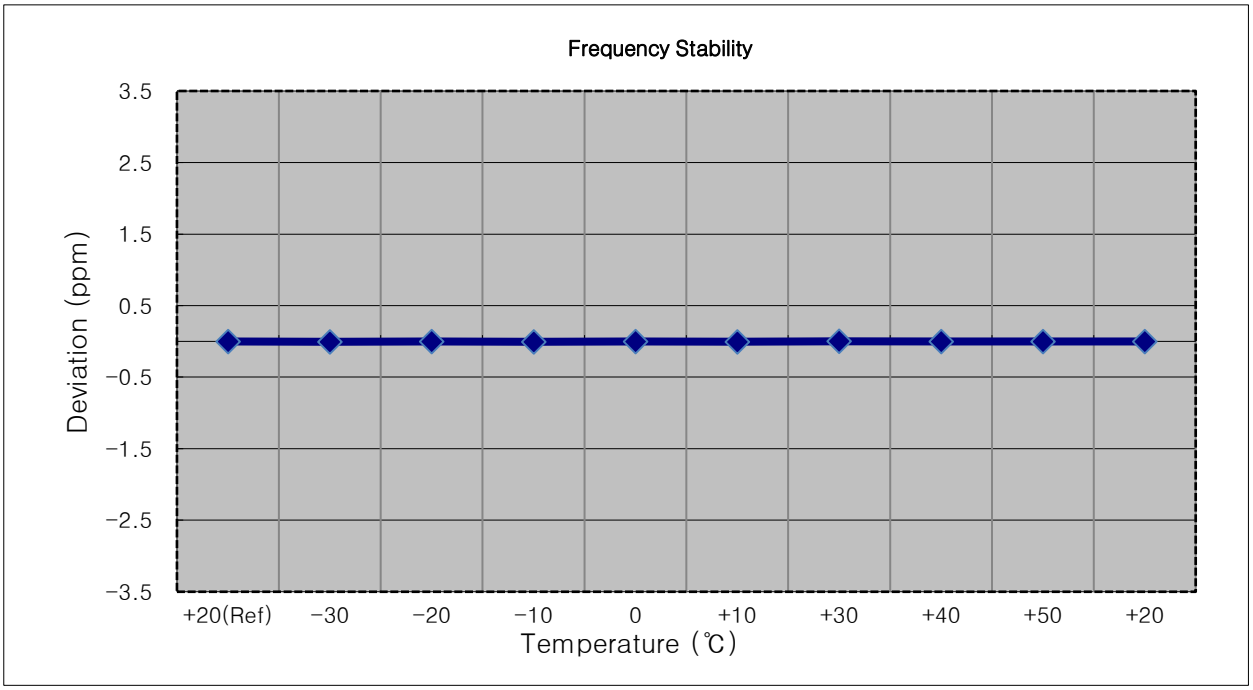
▣ OPERATING FREQUENCY: 1775,000,000 Hz

▣ CHANNEL: 132622 (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)	1774 999 996	0.0	0.000 000	0.000
100 %		-30	1774 999 989	-7.1	0.000 000	-0.004
100 %		-20	1774 999 990	-5.6	0.000 000	-0.003
100 %		-10	1774 999 989	-6.7	0.000 000	-0.004
100 %		0	1774 999 992	-4.0	0.000 000	-0.002
100 %		+10	1774 999 988	-7.8	0.000 000	-0.004
100 %		+30	1774 999 998	2.2	0.000 000	0.001
100 %		+40	1774 999 993	-3.0	0.000 000	-0.002
100 %		+50	1774 999 998	1.8	0.000 000	0.001
Batt. Endpoint	3.400	+20	1774 999 993	-2.4	0.000 000	-0.001



▣ MODE: LTE 66/4

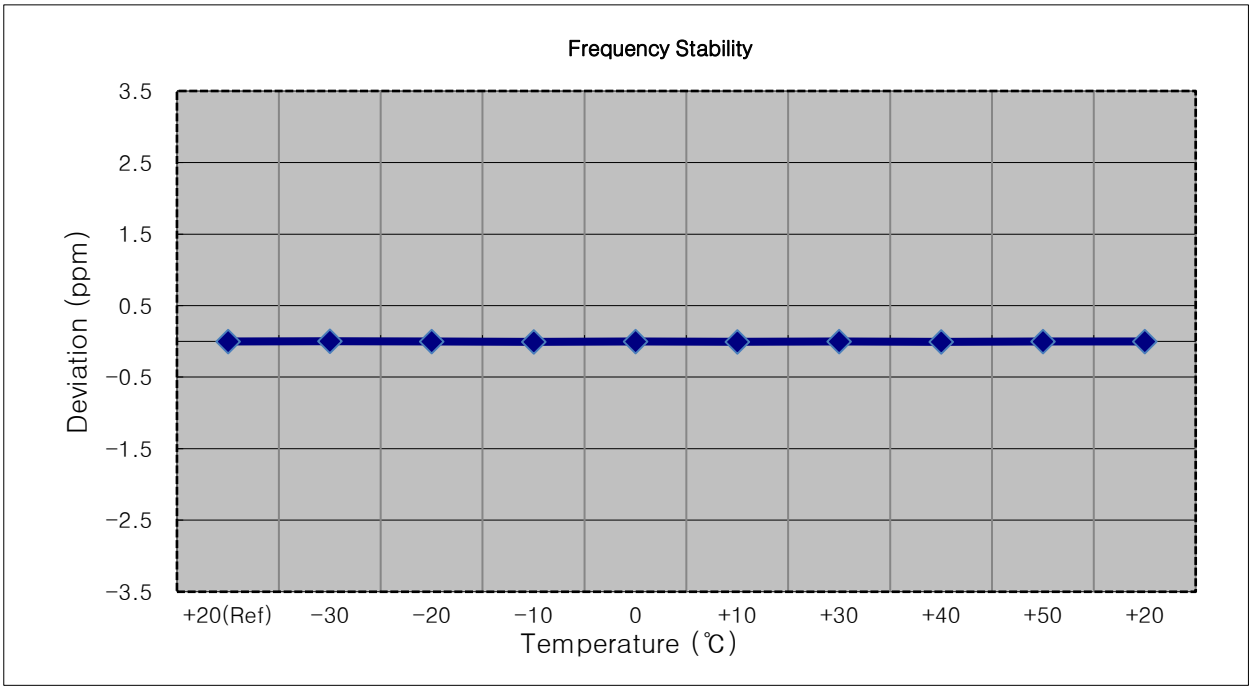
▣ OPERATING FREQUENCY: 1772,500,000 Hz

▣ CHANNEL: 132597 (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)	1772 499 996	0.0	0.000 000	0.000
100 %		-30	1772 500 000	4.1	0.000 000	0.002
100 %		-20	1772 499 994	-2.3	0.000 000	-0.001
100 %		-10	1772 499 984	-12.0	-0.000 001	-0.007
100 %		0	1772 499 993	-2.8	0.000 000	-0.002
100 %		+10	1772 499 987	-8.4	0.000 000	-0.005
100 %		+30	1772 499 990	-5.5	0.000 000	-0.003
100 %		+40	1772 499 984	-12.0	-0.000 001	-0.007
100 %		+50	1772 499 991	-5.3	0.000 000	-0.003
Batt. Endpoint	3.400	+20	1772 499 997	1.6	0.000 000	0.001



▣ MODE: LTE 66/4

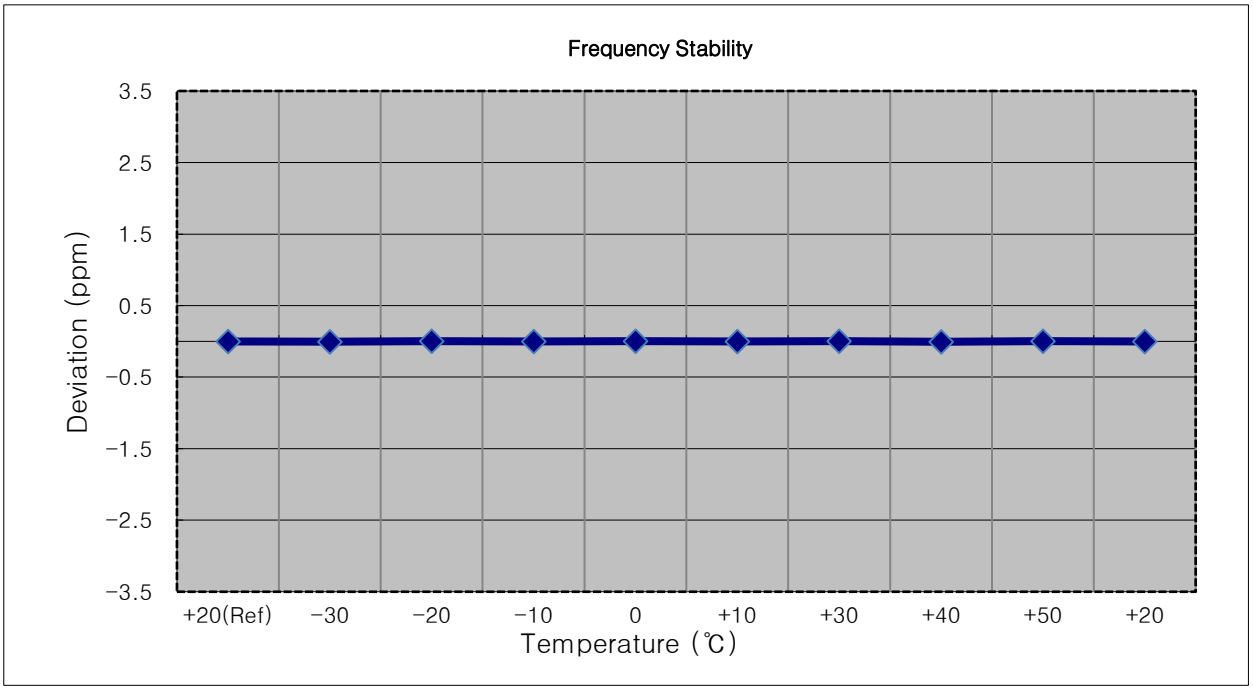
▣ OPERATING FREQUENCY: 1770,000,000 Hz

▣ CHANNEL: 132572 (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)	1769 999 992	0.0	0.000 000	0.000
100 %		-30	1769 999 984	-7.4	0.000 000	-0.004
100 %		-20	1769 999 997	5.0	0.000 000	0.003
100 %		-10	1769 999 987	-4.2	0.000 000	-0.002
100 %		0	1769 999 996	3.9	0.000 000	0.002
100 %		+10	1769 999 990	-1.4	0.000 000	-0.001
100 %		+30	1769 999 996	4.6	0.000 000	0.003
100 %		+40	1769 999 985	-6.5	0.000 000	-0.004
100 %		+50	1769 999 996	4.3	0.000 000	0.002
Batt. Endpoint	3.400	+20	1769 999 987	-4.9	0.000 000	-0.003



9. TEST DATA (Sub 1 Ant)

9.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1710.7	LTE B66/B4 1.4 MHz	QPSK	-24.47	8.73	9.60	1.99	H	< 1.00	0.043	16.34
		16-QAM	-25.11	8.09	9.60	1.99	H		0.037	15.70
		64-QAM	-26.01	7.19	9.60	1.99	H		0.030	14.80
		256-QAM	-28.44	4.76	9.60	1.99	H		0.017	12.37
1745.0		QPSK	-25.33	8.27	9.75	2.04	H		0.040	15.98
		16-QAM	-26.04	7.56	9.75	2.04	H		0.034	15.27
		64-QAM	-26.88	6.72	9.75	2.04	H		0.028	14.43
		256-QAM	-29.15	4.45	9.75	2.04	H		0.016	12.16
1779.3		QPSK	-21.80	11.66	9.90	2.08	H		0.089	19.48
		16-QAM	-22.42	11.04	9.90	2.08	H		0.077	18.86
		64-QAM	-23.26	10.20	9.90	2.08	H		0.063	18.02
		256-QAM	-25.70	7.76	9.90	2.08	H		0.036	15.58

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1711.5	LTE B66/B4 3 MHz	QPSK	-24.45	8.75	9.60	1.99	H	< 1.00	0.043	16.36
		16-QAM	-25.05	8.15	9.60	1.99	H		0.038	15.76
		64-QAM	-25.96	7.24	9.60	1.99	H		0.031	14.85
		256-QAM	-28.43	4.77	9.60	1.99	H		0.017	12.38
1745.0		QPSK	-25.18	8.42	9.75	2.04	H		0.041	16.13
		16-QAM	-25.74	7.86	9.75	2.04	H		0.036	15.57
		64-QAM	-26.59	7.01	9.75	2.04	H		0.030	14.72
		256-QAM	-28.84	4.76	9.75	2.04	H		0.018	12.47
1778.5		QPSK	-21.80	11.66	9.90	2.08	H		0.089	19.48
		16-QAM	-22.41	11.05	9.90	2.08	H		0.077	18.87
		64-QAM	-23.24	10.22	9.90	2.08	H		0.064	18.04
		256-QAM	-25.70	7.76	9.90	2.08	H		0.036	15.58

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1712.5	LTE B66/B4 5 MHz	QPSK	-24.39	8.97	9.60	2.00	H	< 1.00	0.045	16.57
		16-QAM	-25.02	8.34	9.60	2.00	H		0.039	15.94
		64-QAM	-25.95	7.41	9.60	2.00	H		0.032	15.01
		256-QAM	-28.42	4.94	9.60	2.00	H		0.018	12.54
1745.0		QPSK	-24.79	8.81	9.75	2.04	H		0.045	16.52
		16-QAM	-25.37	8.23	9.75	2.04	H		0.039	15.94
		64-QAM	-26.22	7.38	9.75	2.04	H		0.032	15.09
		256-QAM	-28.44	5.16	9.75	2.04	H		0.019	12.87
1777.5		QPSK	-21.87	11.67	9.90	2.08	H		0.089	19.49
		16-QAM	-22.46	11.08	9.90	2.08	H		0.078	18.90
		64-QAM	-23.22	10.32	9.90	2.08	H		0.065	18.14
		256-QAM	-25.70	7.84	9.90	2.08	H		0.037	15.66

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1715.0	LTE B66/B4 10 MHz	QPSK	-23.71	9.65	9.60	2.00	H	< 1.00	0.053	17.25
		16-QAM	-24.37	8.99	9.60	2.00	H		0.046	16.59
		64-QAM	-25.41	7.95	9.60	2.00	H		0.036	15.55
		256-QAM	-27.96	5.40	9.60	2.00	H		0.020	13.00
1745.0		QPSK	-23.87	9.73	9.75	2.04	H		0.055	17.44
		16-QAM	-24.43	9.17	9.75	2.04	H		0.049	16.88
		64-QAM	-25.26	8.34	9.75	2.04	H		0.040	16.05
		256-QAM	-27.42	6.18	9.75	2.04	H		0.024	13.89
1775.0		QPSK	-21.90	11.64	9.90	2.08	H		0.088	19.46
		16-QAM	-22.46	11.08	9.90	2.08	H		0.078	18.90
		64-QAM	-23.18	10.36	9.90	2.08	H		0.066	18.18
		256-QAM	-25.69	7.85	9.90	2.08	H		0.037	15.67

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1717.5	LTE B66/B4 15 MHz	QPSK	-23.62	9.74	9.60	2.00	H	< 1.00	0.054	17.34
		16-QAM	-24.27	9.09	9.60	2.00	H		0.047	16.69
		64-QAM	-25.38	7.98	9.60	2.00	H		0.036	15.58
		256-QAM	-27.93	5.43	9.60	2.00	H		0.020	13.03
1745.0		QPSK	-23.32	10.28	9.75	2.04	H		0.063	17.99
		16-QAM	-23.90	9.70	9.75	2.04	H		0.055	17.41
		64-QAM	-24.67	8.93	9.75	2.04	H		0.046	16.64
		256-QAM	-27.03	6.57	9.75	2.04	H		0.027	14.28
1772.5		QPSK	-22.15	11.39	9.90	2.08	H		0.083	19.21
		16-QAM	-22.70	10.84	9.90	2.08	H		0.073	18.66
		64-QAM	-23.43	10.11	9.90	2.08	H		0.062	17.93
		256-QAM	-25.92	7.62	9.90	2.08	H		0.035	15.44

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1720.0	LTE B66/B4 20 MHz	QPSK	-23.77	9.73	9.60	2.00	H	< 1.00	0.054	17.33
		16-QAM	-24.44	9.06	9.60	2.00	H		0.046	16.66
		64-QAM	-25.53	7.97	9.60	2.00	H		0.036	15.57
		256-QAM	-28.07	5.43	9.60	2.00	H		0.020	13.03
1745.0		QPSK	-22.79	10.81	9.75	2.04	H		0.071	18.52
		16-QAM	-23.47	10.13	9.75	2.04	H		0.061	17.84
		64-QAM	-24.44	9.16	9.75	2.04	H		0.049	16.87
		256-QAM	-26.97	6.63	9.75	2.04	H		0.027	14.34
1770.0		QPSK	-22.21	11.43	9.90	2.09	H		0.084	19.24
		16-QAM	-22.75	10.89	9.90	2.09	H		0.074	18.70
		64-QAM	-23.48	10.16	9.90	2.09	H		0.063	17.97
		256-QAM	-25.99	7.65	9.90	2.09	H		0.035	15.46

9.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY: 1777.5 MHz

▣ MEASURED OUTPUT POWER: 19.49 dBm = 0.089 W

▣ MODE: LTE B66/B4

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log10 (W) = 32.49 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
131997 (1712.5)	3 425.00	-45.02	11.10	-45.97	2.96	H	-37.83	57.32
	5 137.50	-43.11	10.80	-37.84	3.62	H	-30.66	50.15
	6 850.00	-50.02	10.80	-39.07	4.32	V	-32.59	52.08
	8 562.50	-53.84	10.50	-40.08	4.88	H	-34.46	53.95
	10 275.00	-60.55	11.00	-43.21	5.35	H	-37.56	57.05
132322 (1745.0)	3 490.00	-50.87	11.20	-52.31	3.00	H	-44.11	63.60
	5 235.00	-49.91	11.10	-44.98	3.70	H	-37.58	57.07
	6 980.00	-58.30	10.90	-45.59	4.30	H	-38.99	58.48
	8 725.00	-59.24	10.30	-44.88	4.88	V	-39.46	58.95
	10 470.00	-60.41	11.30	-42.68	5.43	V	-36.81	56.30
132647 (1777.5)	3 555.00	-52.89	11.40	-54.86	3.02	V	-46.48	65.97
	5 332.50	-43.93	11.40	-38.88	3.73	H	-31.21	50.70
	7 110.00	-44.60	10.50	-30.66	4.36	V	-24.52	44.01
	8 887.50	-55.71	10.50	-41.67	4.92	H	-36.09	55.58
	10 665.00	-60.69	11.10	-41.37	5.48	V	-35.75	55.24

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
66/4	1.4 MHz	1745.0	QPSK	6	0	5.03
			16-QAM			5.79
			64-QAM			6.28
			256-QAM			7.00
	3 MHz		QPSK	15		5.20
			16-QAM			5.89
			64-QAM			6.30
			256-QAM			6.84
	5 MHz		QPSK	25		5.11
			16-QAM			5.84
			64-QAM			6.29
			256-QAM			6.85
	10 MHz		QPSK	50		5.12
			16-QAM			5.86
			64-QAM			6.25
			256-QAM			6.82
	15 MHz		QPSK	75		4.99
			16-QAM			5.78
			64-QAM			6.23
			256-QAM			6.80
	20 MHz		QPSK	100		4.88
			16-QAM			5.71
			64-QAM			6.16
			256-QAM			6.77

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 260 ~ 283.

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
66/4	1.4 MHz	1745.0	QPSK	6	0	1.0956
			16-QAM			1.0931
			64-QAM			1.0975
			256-QAM			1.0933
	3 MHz		QPSK	15		2.7116
			16-QAM			2.6950
			64-QAM			2.7086
			256-QAM			2.6995
	5 MHz		QPSK	25		4.5106
			16-QAM			4.5006
			64-QAM			4.5016
			256-QAM			4.5051
	10 MHz		QPSK	50		8.9549
			16-QAM			9.0036
			64-QAM			9.0008
			256-QAM			8.9812
	15 MHz		QPSK	75		13.426
			16-QAM			13.441
			64-QAM			13.404
			256-QAM			13.465
	20 MHz		QPSK	100		17.916
			16-QAM			17.893
			64-QAM			17.875
			256-QAM			17.859

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 236 ~ 259.

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)
66/4	1.4	1710.7	3.4213	27.976	-75.493	-47.517	-13.00
		1745.0	3.4896	27.976	-75.459	-47.483	
		1779.3	3.5604	27.976	-76.106	-48.130	
	3	1711.5	3.4213	27.976	-76.387	-48.411	
		1745.0	2.1466	27.976	-76.657	-48.681	
		1778.5	3.5599	27.976	-75.947	-47.971	
	5	1712.5	3.4213	27.976	-76.082	-48.106	
		1745.0	3.4861	27.976	-75.833	-47.857	
		1777.5	3.5599	27.976	-75.828	-47.852	
	10	1715.0	3.4218	27.976	-75.032	-47.056	
		1745.0	3.4816	27.976	-76.222	-48.246	
		1775.0	3.5594	27.976	-76.053	-48.077	
	15	1717.5	3.4223	27.976	-75.672	-47.696	
		1745.0	2.1476	27.976	-75.986	-48.010	
		1772.5	3.5589	27.976	-74.924	-46.948	
	20	1720.0	3.4228	27.976	-75.531	-47.555	
		1745.0	2.1421	27.976	-75.958	-47.982	
		1770.0	3.5584	27.976	-75.339	-47.363	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 284 ~ 319.

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	33.494
1 – 5	36.200
5 – 10	36.815
10 – 15	37.340
15 – 20	37.713
Above 20(26.5)	38.355

9.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 200~235.

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE 66/4

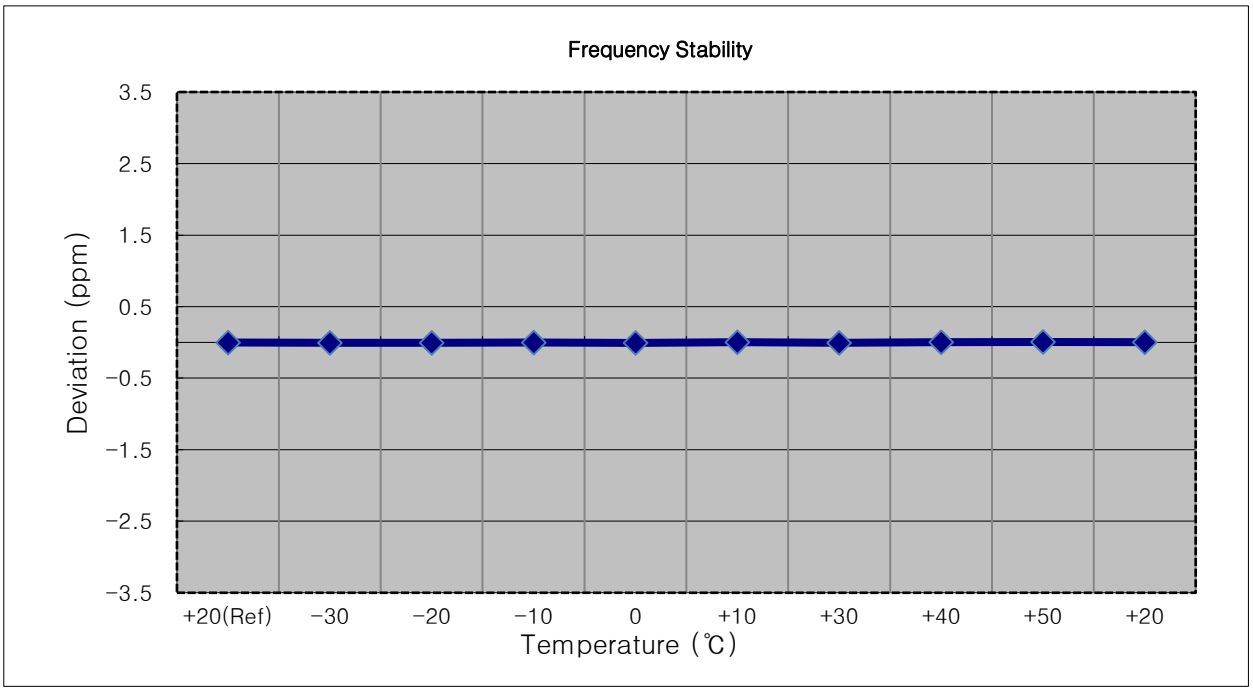
▣ OPERATING FREQUENCY: 1710,700,000 Hz

▣ CHANNEL: 131979 (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)	1710 699 988	0.0	0.000 000	0.000
100 %		-30	1710 699 979	-9.7	-0.000 001	-0.006
100 %		-20	1710 699 981	-7.3	0.000 000	-0.004
100 %		-10	1710 699 984	-4.7	0.000 000	-0.003
100 %		0	1710 699 975	-13.0	-0.000 001	-0.008
100 %		+10	1710 699 996	7.8	0.000 000	0.005
100 %		+30	1710 699 978	-10.0	-0.000 001	-0.006
100 %		+40	1710 699 996	8.1	0.000 000	0.005
100 %		+50	1710 699 998	9.8	0.000 001	0.006
Batt. Endpoint	3.400	+20	1710 699 996	7.5	0.000 000	0.004



▣ MODE: LTE 66/4

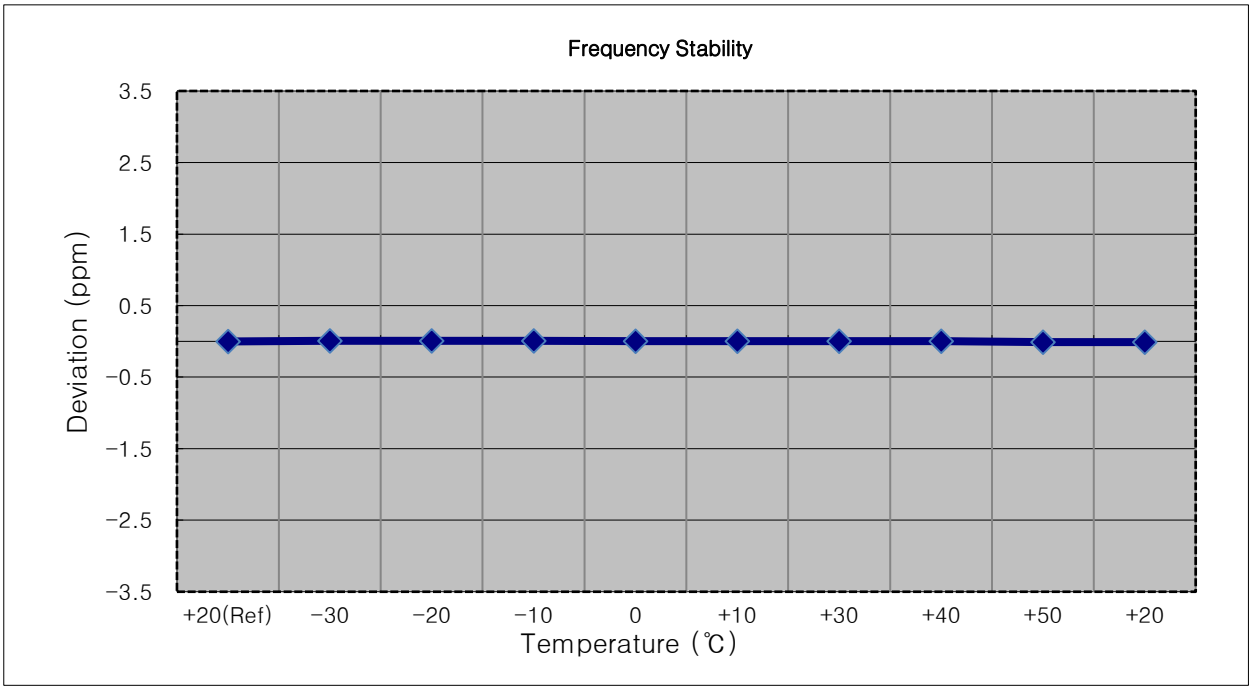
▣ OPERATING FREQUENCY: 1711,500,000 Hz

▣ CHANNEL: 131987 (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)	1711 500 006	0.0	0.000 000	0.000
100 %		-30	1711 500 020	13.7	0.000 001	0.008
100 %		-20	1711 500 017	10.7	0.000 001	0.006
100 %		-10	1711 500 018	11.8	0.000 001	0.007
100 %		0	1711 500 014	7.4	0.000 000	0.004
100 %		+10	1711 500 012	6.1	0.000 000	0.004
100 %		+30	1711 500 012	6.1	0.000 000	0.004
100 %		+40	1711 500 015	8.3	0.000 000	0.005
100 %		+50	1711 499 989	-17.2	-0.000 001	-0.010
Batt. Endpoint	3.400	+20	1711 499 988	-17.9	-0.000 001	-0.010



▣ MODE: LTE 66/4

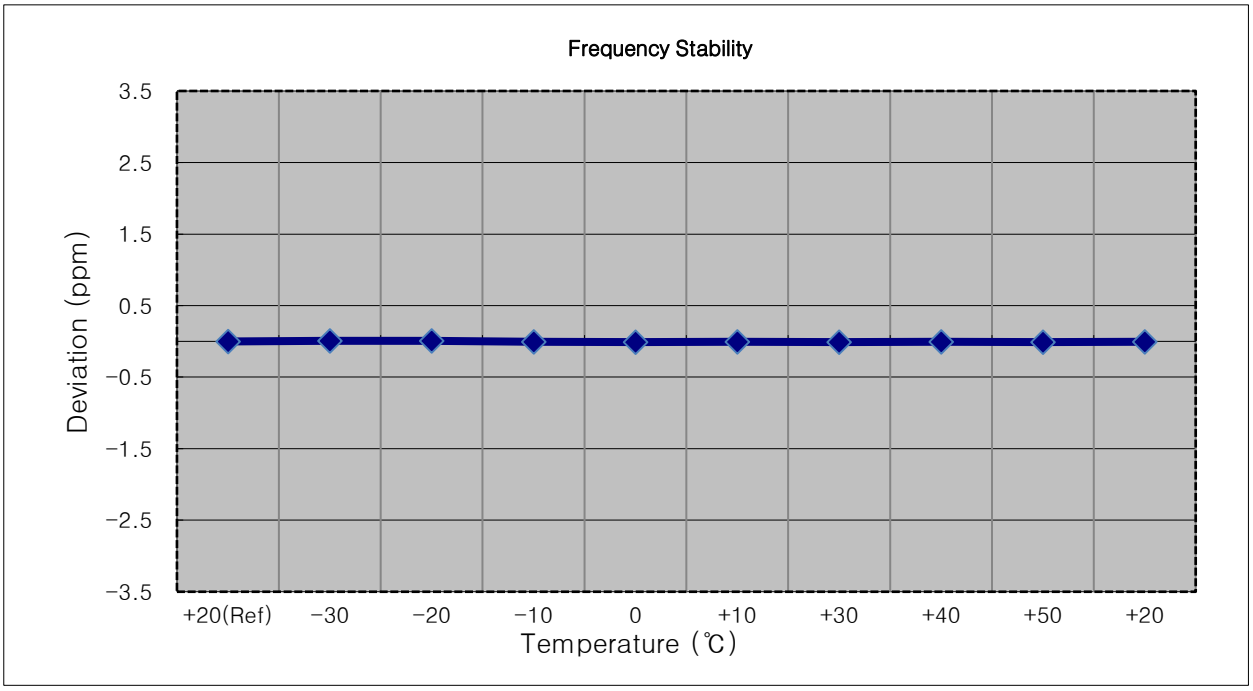
▣ OPERATING FREQUENCY: 1712,500,000 Hz

▣ CHANNEL: 131997 (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)	1712 500 013	0.0	0.000 000	0.000
100 %		-30	1712 500 023	10.2	0.000 001	0.006
100 %		-20	1712 500 026	12.5	0.000 001	0.007
100 %		-10	1712 500 004	-9.1	-0.000 001	-0.005
100 %		0	1712 500 000	-13.6	-0.000 001	-0.008
100 %		+10	1712 500 006	-7.3	0.000 000	-0.004
100 %		+30	1712 499 996	-17.3	-0.000 001	-0.010
100 %		+40	1712 500 007	-5.8	0.000 000	-0.003
100 %		+50	1712 499 997	-15.9	-0.000 001	-0.009
Batt. Endpoint	3.400	+20	1712 500 005	-8.1	0.000 000	-0.005



▣ MODE: LTE 66/4

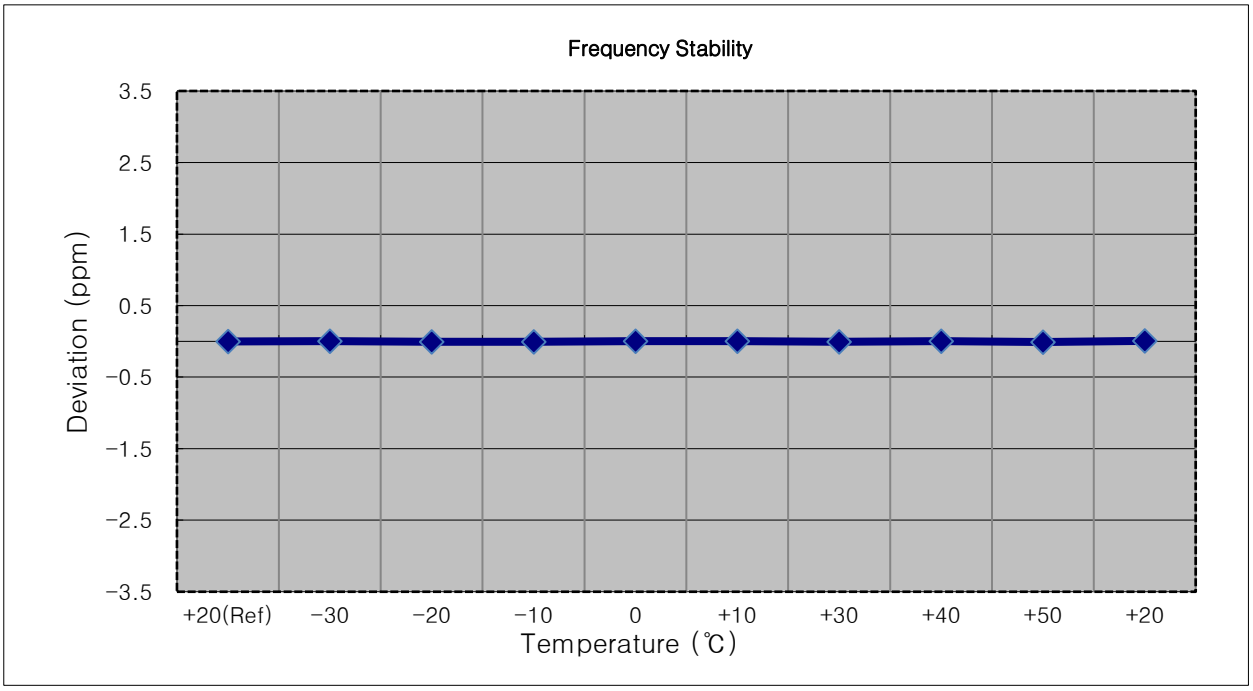
▣ OPERATING FREQUENCY: 1715,000,000 Hz

▣ CHANNEL: 132022 (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)	1714 999 987	0.0	0.000 000	0.000
100 %		-30	1714 999 996	8.9	0.000 001	0.005
100 %		-20	1714 999 981	-6.4	0.000 000	-0.004
100 %		-10	1714 999 975	-12.2	-0.000 001	-0.007
100 %		0	1714 999 991	4.2	0.000 000	0.002
100 %		+10	1714 999 995	7.7	0.000 000	0.004
100 %		+30	1714 999 975	-12.2	-0.000 001	-0.007
100 %		+40	1714 999 992	5.0	0.000 000	0.003
100 %		+50	1714 999 972	-15.3	-0.000 001	-0.009
Batt. Endpoint	3.400	+20	1714 999 998	11.2	0.000 001	0.007



▣ MODE: LTE 66/4

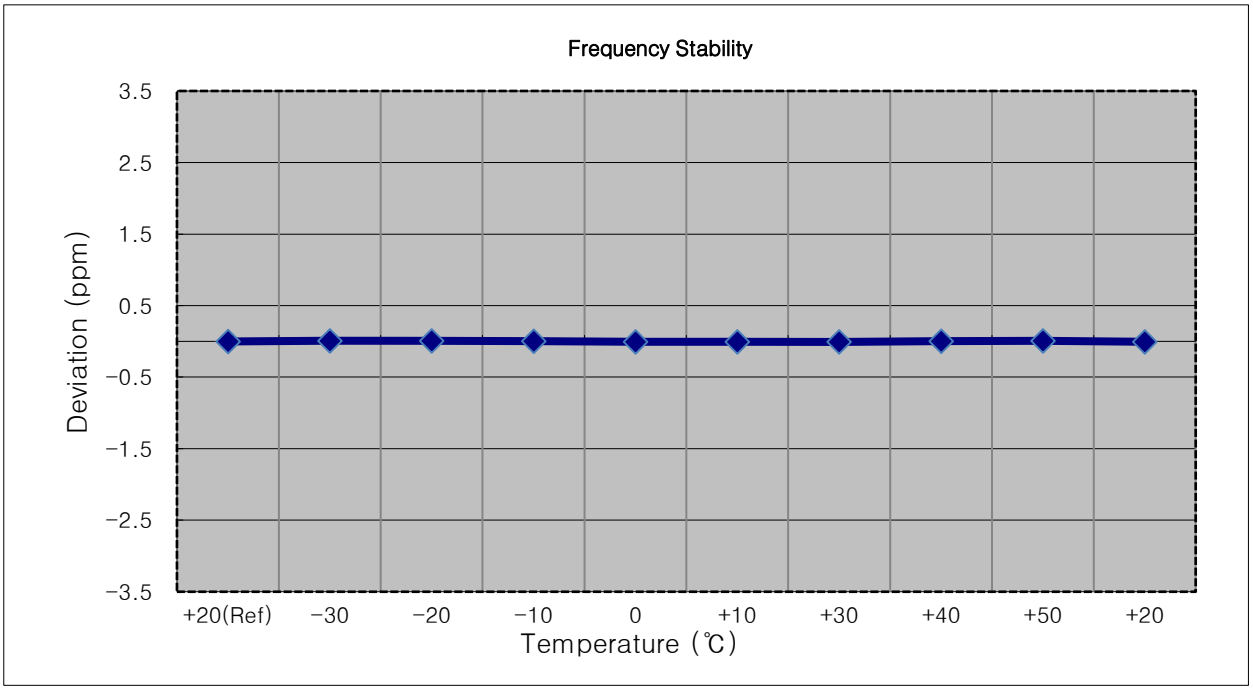
▣ OPERATING FREQUENCY: 1717,500,000 Hz

▣ CHANNEL: 132047 (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)	1717 500 012	0.0	0.000 000	0.000
100 %		-30	1717 500 027	15.2	0.000 001	0.009
100 %		-20	1717 500 022	10.0	0.000 001	0.006
100 %		-10	1717 500 018	6.1	0.000 000	0.004
100 %		0	1717 499 999	-12.9	-0.000 001	-0.008
100 %		+10	1717 500 000	-12.3	-0.000 001	-0.007
100 %		+30	1717 499 999	-13.2	-0.000 001	-0.008
100 %		+40	1717 500 019	6.8	0.000 000	0.004
100 %		+50	1717 500 027	14.7	0.000 001	0.009
Batt. Endpoint	3.400	+20	1717 500 005	-7.0	0.000 000	-0.004



▣ MODE: LTE 66/4

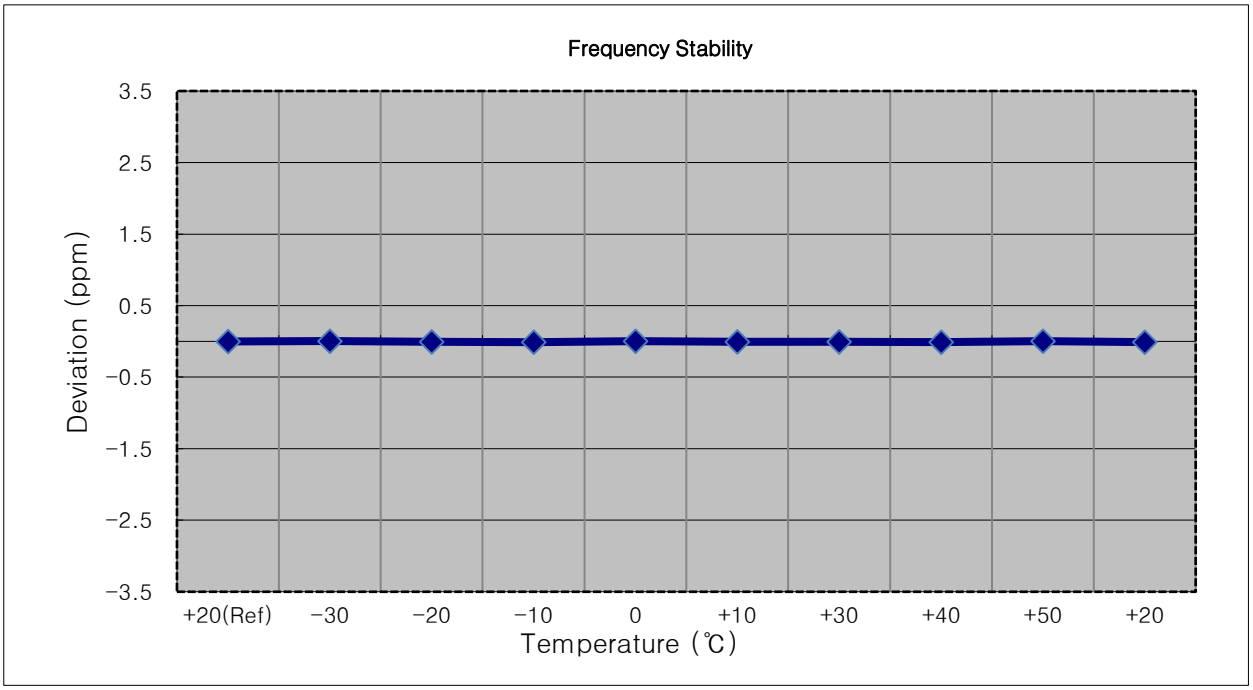
▣ OPERATING FREQUENCY: 1720,000,000 Hz

▣ CHANNEL: 132072 (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)	1719 999 987	0.0	0.000 000	0.000
100 %		-30	1719 999 995	8.2	0.000 000	0.005
100 %		-20	1719 999 978	-8.8	-0.000 001	-0.005
100 %		-10	1719 999 968	-19.0	-0.000 001	-0.011
100 %		0	1719 999 994	6.5	0.000 000	0.004
100 %		+10	1719 999 974	-13.2	-0.000 001	-0.008
100 %		+30	1719 999 977	-10.6	-0.000 001	-0.006
100 %		+40	1719 999 969	-18.4	-0.000 001	-0.011
100 %		+50	1719 999 993	6.1	0.000 000	0.004
Batt. Endpoint	3.400	+20	1719 999 969	-17.8	-0.000 001	-0.010



▣ MODE: LTE 66/4

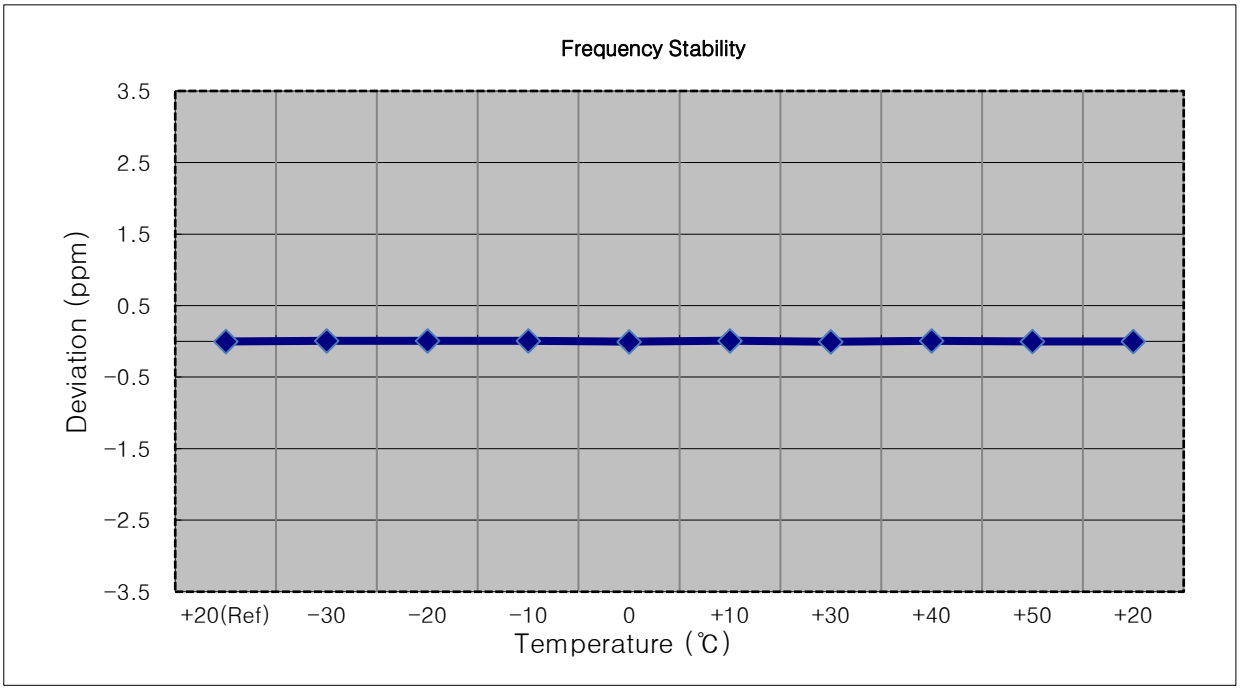
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1745 000 006	0.0	0.000 000	0.000
100 %		-30	1745 000 020	14.2	0.000 001	0.008
100 %		-20	1745 000 019	13.2	0.000 001	0.008
100 %		-10	1745 000 019	13.0	0.000 001	0.007
100 %		0	1745 000 000	-6.1	0.000 000	-0.003
100 %		+10	1745 000 023	16.6	0.000 001	0.010
100 %		+30	1745 000 000	-6.0	0.000 000	-0.003
100 %		+40	1745 000 022	15.6	0.000 001	0.009
100 %		+50	1745 000 000	-5.6	0.000 000	-0.003
Batt. Endpoint	3.400	+20	1745 000 000	-5.8	0.000 000	-0.003



▣ MODE: LTE 66/4

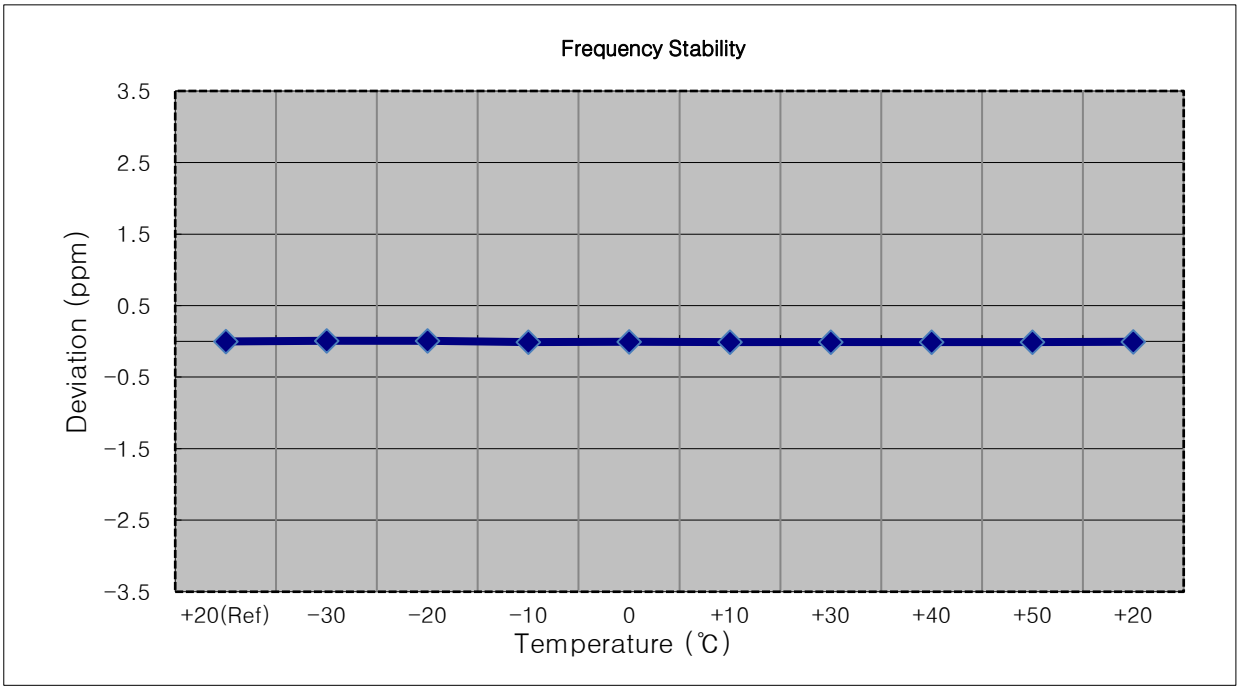
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1744 999 992	0.0	0.000 000	0.000
100 %		-30	1745 000 006	14.0	0.000 001	0.008
100 %		-20	1745 000 002	10.5	0.000 001	0.006
100 %		-10	1744 999 978	-13.9	-0.000 001	-0.008
100 %		0	1744 999 979	-12.9	-0.000 001	-0.007
100 %		+10	1744 999 976	-16.2	-0.000 001	-0.009
100 %		+30	1744 999 975	-16.3	-0.000 001	-0.009
100 %		+40	1744 999 976	-16.2	-0.000 001	-0.009
100 %		+50	1744 999 977	-14.7	-0.000 001	-0.008
Batt. Endpoint	3.400	+20	1744 999 983	-9.2	-0.000 001	-0.005



▣ MODE: LTE 66/4

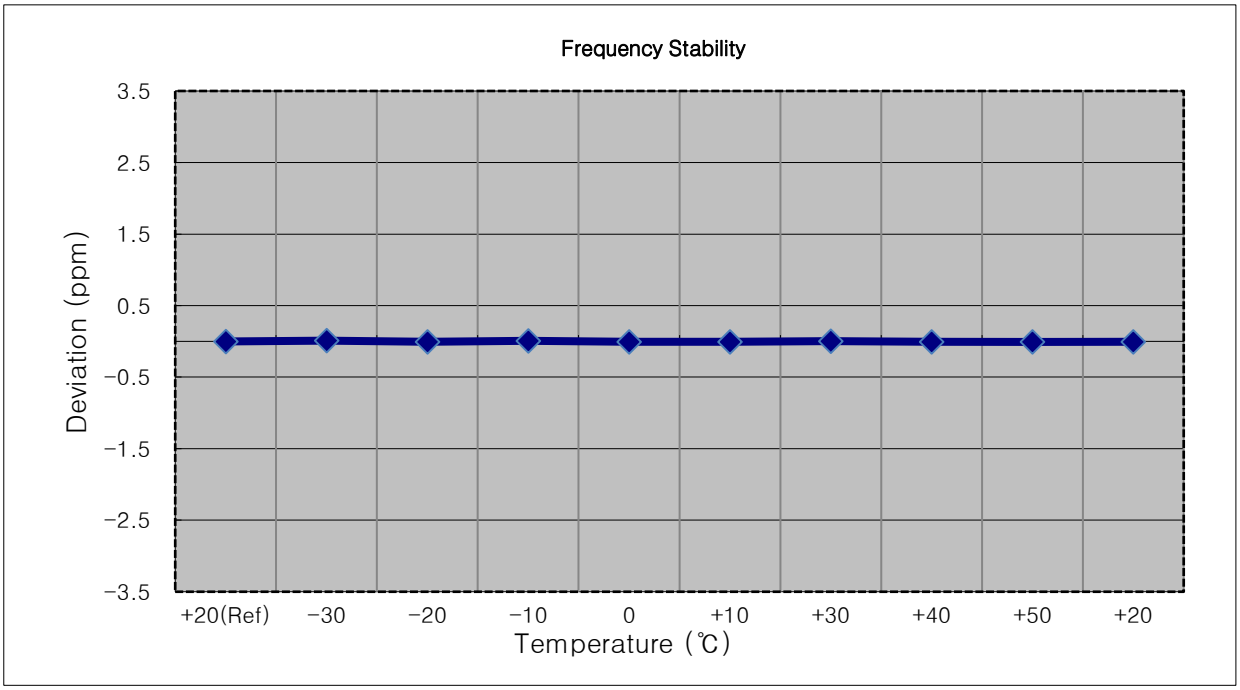
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1745 000 010	0.0	0.000 000	0.000
100 %		-30	1745 000 028	17.7	0.000 001	0.010
100 %		-20	1744 999 998	-12.5	-0.000 001	-0.007
100 %		-10	1745 000 023	12.7	0.000 001	0.007
100 %		0	1745 000 000	-9.8	-0.000 001	-0.006
100 %		+10	1744 999 999	-11.1	-0.000 001	-0.006
100 %		+30	1745 000 016	6.0	0.000 000	0.003
100 %		+40	1745 000 000	-10.7	-0.000 001	-0.006
100 %		+50	1744 999 997	-13.6	-0.000 001	-0.008
Batt. Endpoint	3.400	+20	1745 000 001	-9.4	-0.000 001	-0.005



▣ MODE: LTE 66/4

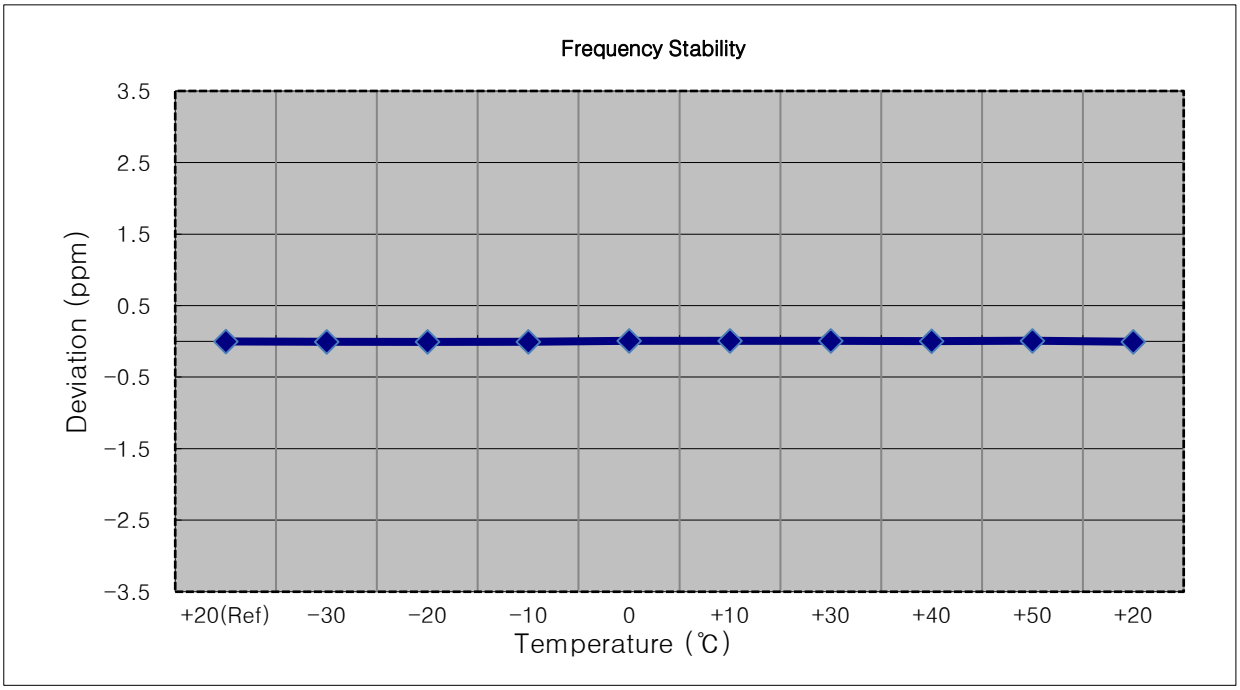
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1744 999 985	0.0	0.000 000	0.000
100 %		-30	1744 999 973	-12.3	-0.000 001	-0.007
100 %		-20	1744 999 972	-13.0	-0.000 001	-0.007
100 %		-10	1744 999 976	-9.2	-0.000 001	-0.005
100 %		0	1744 999 996	10.7	0.000 001	0.006
100 %		+10	1744 999 996	10.8	0.000 001	0.006
100 %		+30	1744 999 996	10.3	0.000 001	0.006
100 %		+40	1744 999 992	6.5	0.000 000	0.004
100 %		+50	1745 000 001	16.1	0.000 001	0.009
Batt. Endpoint	3.400	+20	1744 999 978	-7.2	0.000 000	-0.004



▣ MODE: LTE 66/4

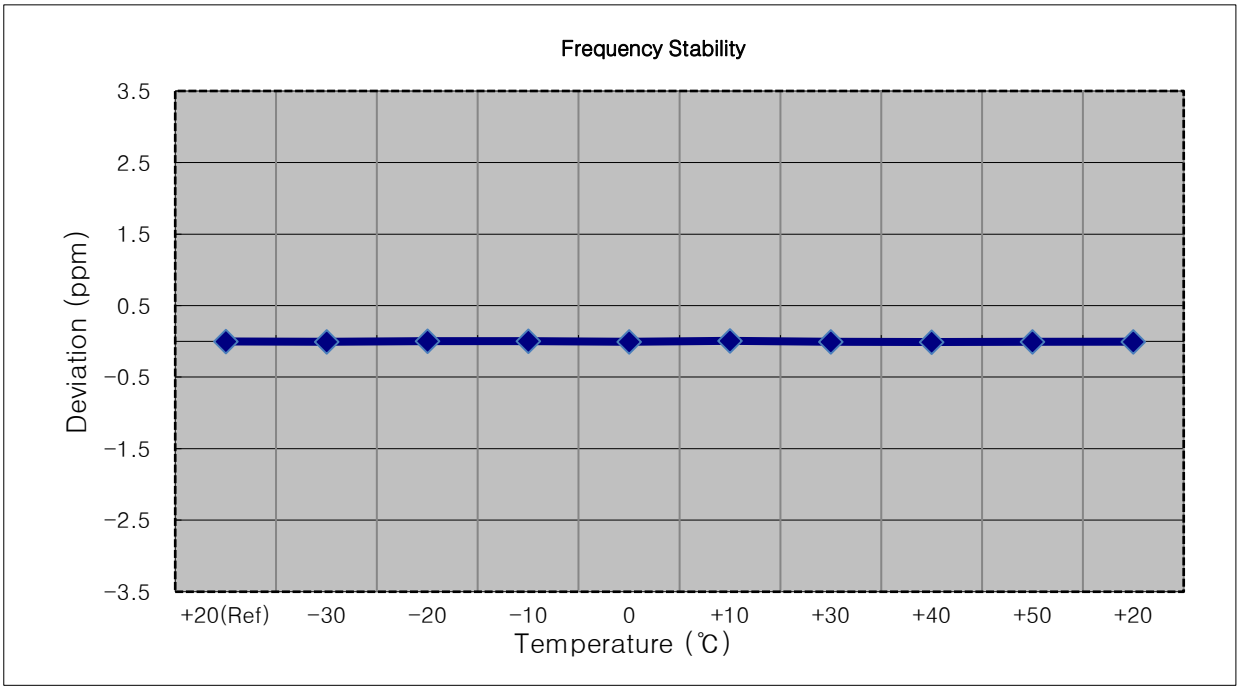
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1745 000 009	0.0	0.000 000	0.000
100 %		-30	1745 000 002	-7.3	0.000 000	-0.004
100 %		-20	1745 000 017	8.2	0.000 000	0.005
100 %		-10	1745 000 013	4.1	0.000 000	0.002
100 %		0	1745 000 001	-8.3	0.000 000	-0.005
100 %		+10	1745 000 022	12.7	0.000 001	0.007
100 %		+30	1745 000 002	-7.2	0.000 000	-0.004
100 %		+40	1744 999 994	-15.5	-0.000 001	-0.009
100 %		+50	1744 999 998	-11.3	-0.000 001	-0.006
Batt. Endpoint	3.400	+20	1745 000 001	-7.7	0.000 000	-0.004



▣ MODE: LTE 66/4

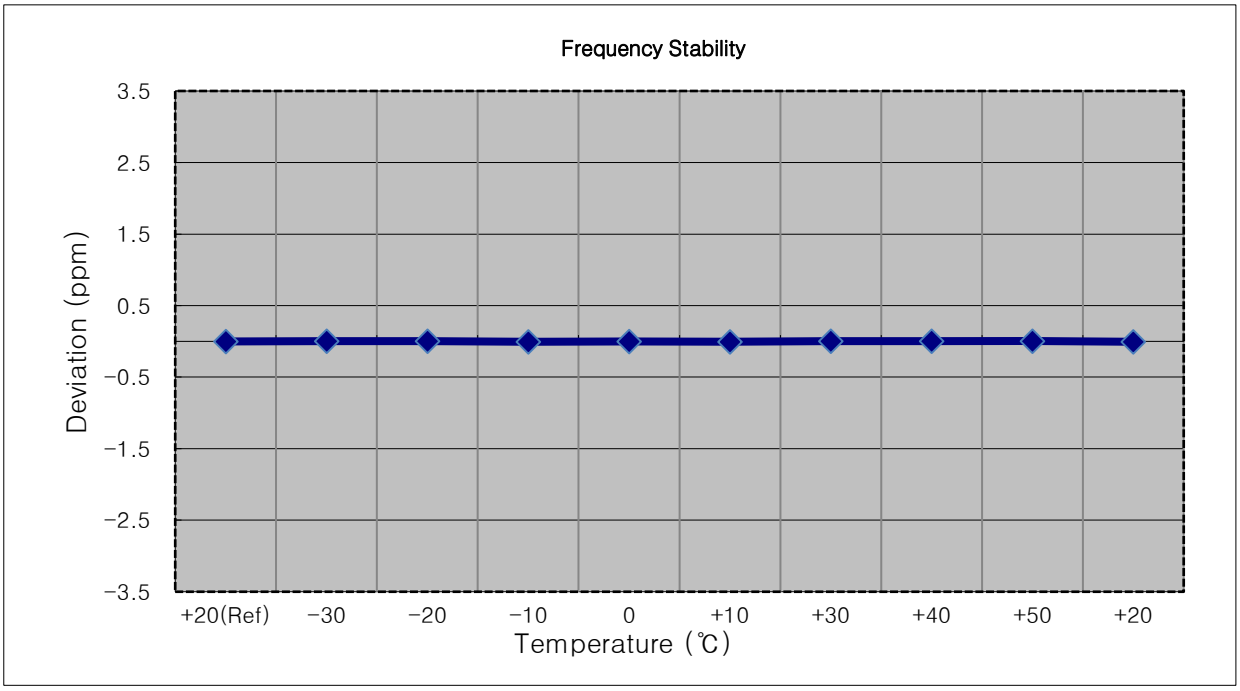
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (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)	1744 999 992	0.0	0.000 000	0.000
100 %		-30	1745 000 001	8.8	0.000 001	0.005
100 %		-20	1744 999 995	3.7	0.000 000	0.002
100 %		-10	1744 999 984	-7.9	0.000 000	-0.005
100 %		0	1744 999 986	-5.9	0.000 000	-0.003
100 %		+10	1744 999 983	-8.6	0.000 000	-0.005
100 %		+30	1745 000 000	8.0	0.000 000	0.005
100 %		+40	1744 999 995	3.1	0.000 000	0.002
100 %		+50	1745 000 001	9.3	0.000 001	0.005
Batt. Endpoint	3.400	+20	1744 999 985	-6.8	0.000 000	-0.004



▣ MODE: LTE 66/4

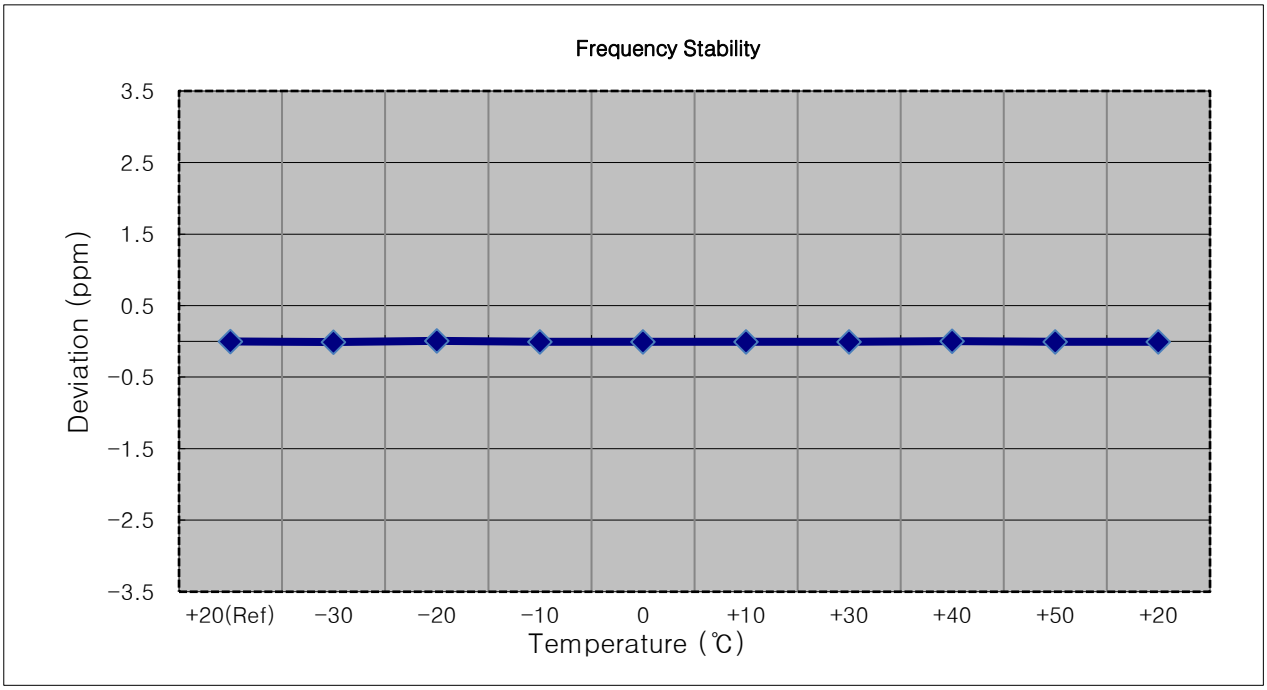
▣ OPERATING FREQUENCY: 1779,300,000 Hz

▣ CHANNEL: 132665 (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)	1779 300 011	0.0	0.000 000	0.000
100 %		-30	1779 299 994	-16.4	-0.000 001	-0.009
100 %		-20	1779 300 023	12.8	0.000 001	0.007
100 %		-10	1779 299 999	-11.8	-0.000 001	-0.007
100 %		0	1779 299 998	-13.0	-0.000 001	-0.007
100 %		+10	1779 300 000	-10.7	-0.000 001	-0.006
100 %		+30	1779 299 997	-13.9	-0.000 001	-0.008
100 %		+40	1779 300 015	4.0	0.000 000	0.002
100 %		+50	1779 300 002	-8.9	-0.000 001	-0.005
Batt. Endpoint	3.400	+20	1779 300 002	-8.5	0.000 000	-0.005



▣ MODE: LTE 66/4

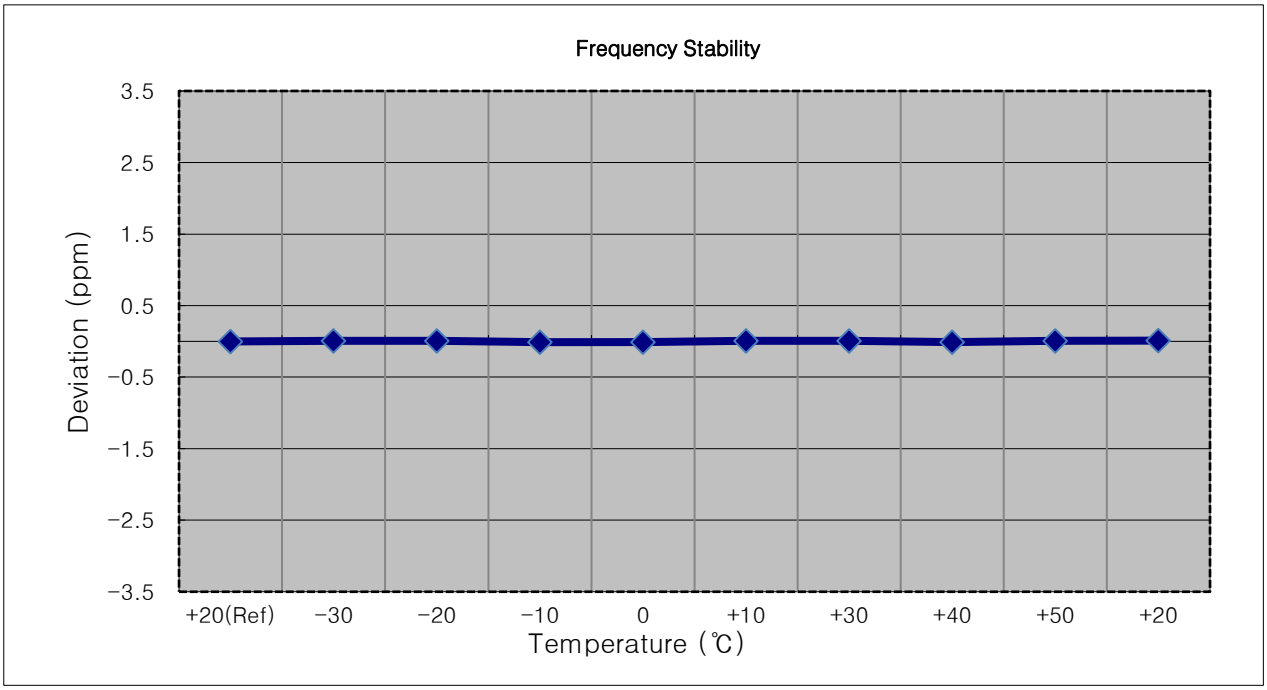
▣ OPERATING FREQUENCY: 1778,500,000 Hz

▣ CHANNEL: 132657 (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)	1778 500 012	0.0	0.000 000	0.000
100 %		-30	1778 500 028	15.4	0.000 001	0.009
100 %		-20	1778 500 027	14.4	0.000 001	0.008
100 %		-10	1778 499 993	-19.3	-0.000 001	-0.011
100 %		0	1778 499 994	-18.3	-0.000 001	-0.010
100 %		+10	1778 500 027	14.4	0.000 001	0.008
100 %		+30	1778 500 027	15.0	0.000 001	0.008
100 %		+40	1778 499 996	-16.3	-0.000 001	-0.009
100 %		+50	1778 500 028	15.2	0.000 001	0.009
Batt. Endpoint	3.400	+20	1778 500 031	18.7	0.000 001	0.011



▣ MODE: LTE 66/4

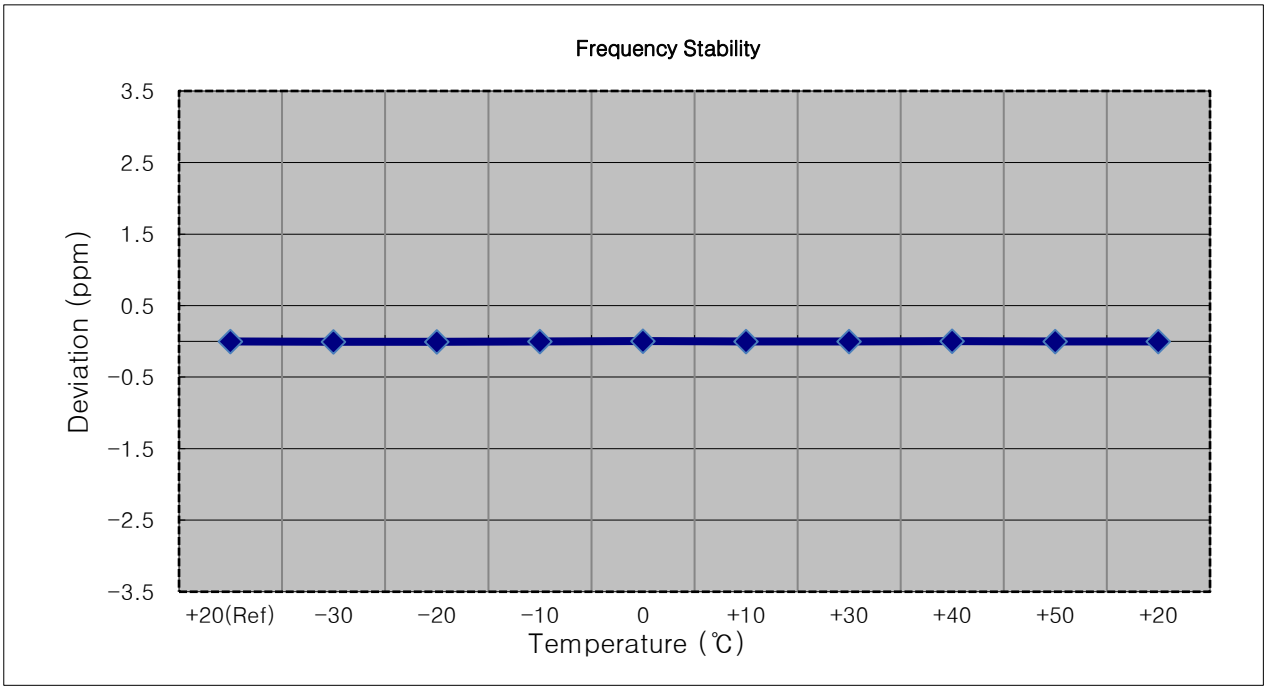
▣ OPERATING FREQUENCY: 1777,500,000 Hz

▣ CHANNEL: 132647 (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)	1777 499 996	0.0	0.000 000	0.000
100 %		-30	1777 499 986	-9.7	-0.000 001	-0.005
100 %		-20	1777 499 986	-10.4	-0.000 001	-0.006
100 %		-10	1777 499 990	-5.7	0.000 000	-0.003
100 %		0	1777 500 004	7.9	0.000 000	0.004
100 %		+10	1777 499 991	-5.5	0.000 000	-0.003
100 %		+30	1777 499 992	-4.2	0.000 000	-0.002
100 %		+40	1777 500 001	5.2	0.000 000	0.003
100 %		+50	1777 499 993	-2.8	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1777 499 992	-4.1	0.000 000	-0.002



▣ MODE: LTE 66/4

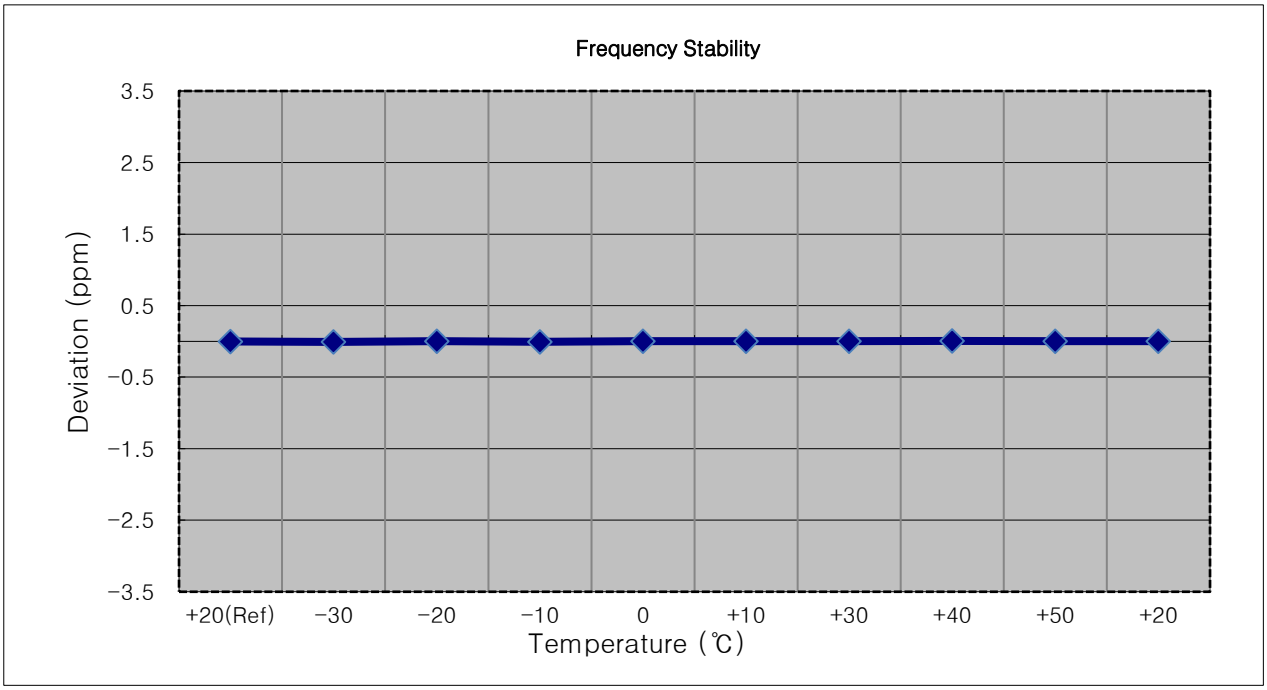
▣ OPERATING FREQUENCY: 1775,000,000 Hz

▣ CHANNEL: 132622 (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)	1774 999 985	0.0	0.000 000	0.000
100 %		-30	1774 999 972	-13.1	-0.000 001	-0.007
100 %		-20	1774 999 989	3.4	0.000 000	0.002
100 %		-10	1774 999 979	-6.3	0.000 000	-0.004
100 %		0	1774 999 988	3.1	0.000 000	0.002
100 %		+10	1774 999 991	5.9	0.000 000	0.003
100 %		+30	1774 999 995	9.6	0.000 001	0.005
100 %		+40	1774 999 997	11.4	0.000 001	0.006
100 %		+50	1774 999 988	2.3	0.000 000	0.001
Batt. Endpoint	3.400	+20	1774 999 991	6.0	0.000 000	0.003



▣ MODE: LTE 66/4

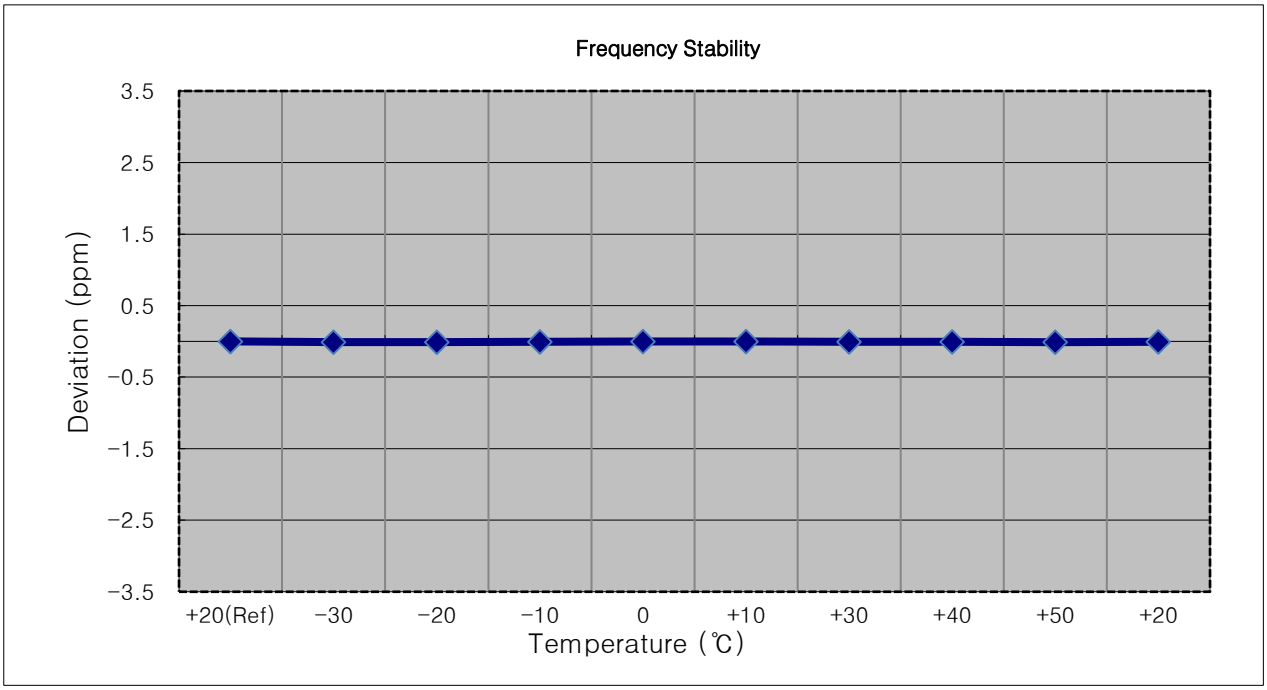
▣ OPERATING FREQUENCY: 1772,500,000 Hz

▣ CHANNEL: 132597 (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)	1772 499 997	0.0	0.000 000	0.000
100 %		-30	1772 499 982	-14.6	-0.000 001	-0.008
100 %		-20	1772 499 979	-17.7	-0.000 001	-0.010
100 %		-10	1772 499 988	-8.7	0.000 000	-0.005
100 %		0	1772 499 993	-3.7	0.000 000	-0.002
100 %		+10	1772 499 993	-3.9	0.000 000	-0.002
100 %		+30	1772 499 987	-10.2	-0.000 001	-0.006
100 %		+40	1772 499 991	-6.4	0.000 000	-0.004
100 %		+50	1772 499 977	-19.9	-0.000 001	-0.011
Batt. Endpoint	3.400	+20	1772 499 984	-13.2	-0.000 001	-0.007



▣ MODE: LTE 66/4

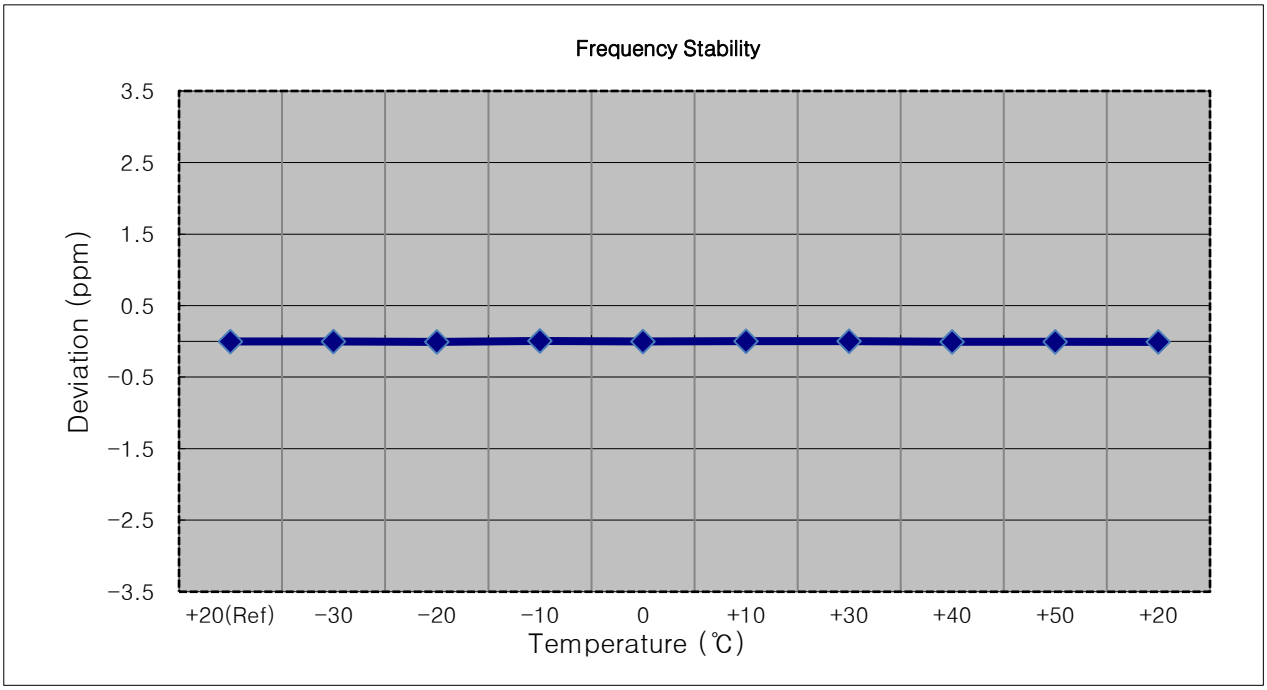
▣ OPERATING FREQUENCY: 1770,000,000 Hz

▣ CHANNEL: 132572 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

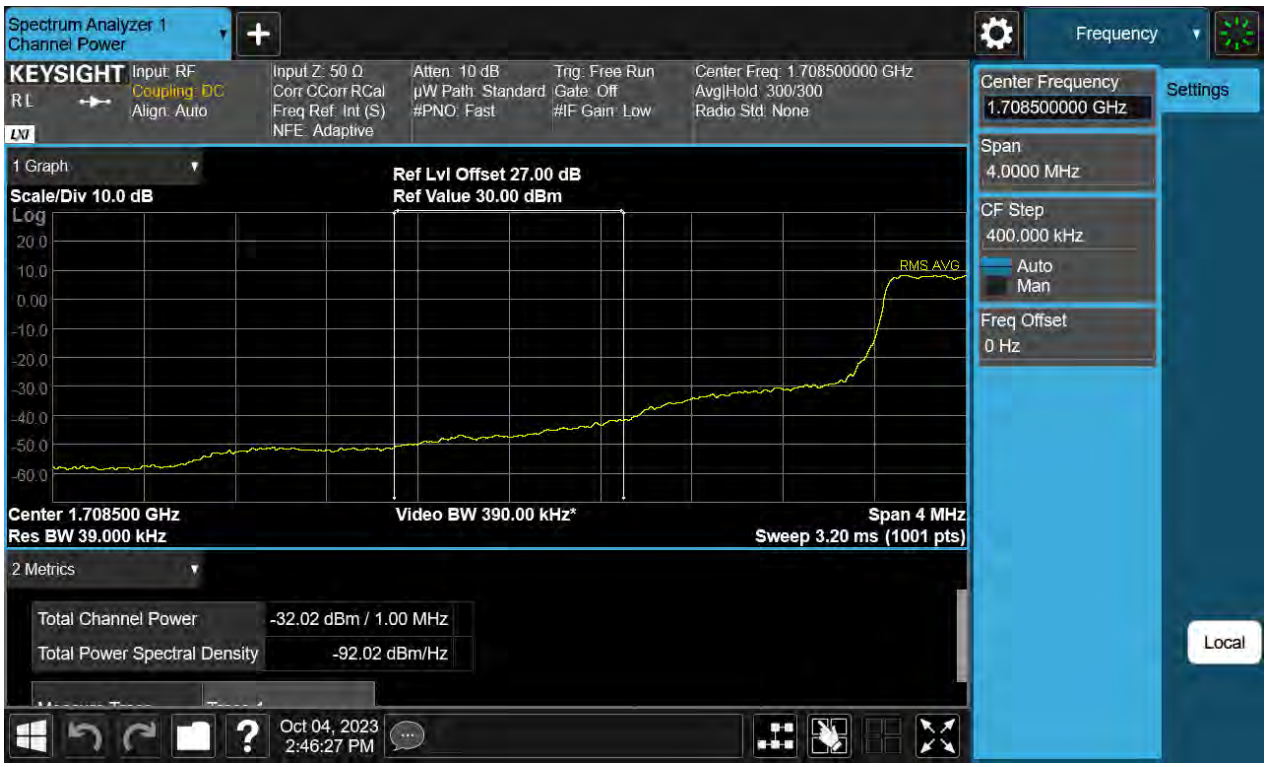
Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	1769 999 982	0.0	0.000 000	0.000
100 %		-30	1769 999 977	-4.4	0.000 000	-0.002
100 %		-20	1769 999 968	-13.1	-0.000 001	-0.007
100 %		-10	1769 999 992	10.0	0.000 001	0.006
100 %		0	1769 999 979	-2.9	0.000 000	-0.002
100 %		+10	1769 999 986	4.5	0.000 000	0.003
100 %		+30	1769 999 984	2.9	0.000 000	0.002
100 %		+40	1769 999 973	-8.7	0.000 000	-0.005
100 %		+50	1769 999 975	-6.5	0.000 000	-0.004
Batt. Endpoint	3.400	+20	1769 999 968	-13.1	-0.000 001	-0.007



10. TEST PLOTS (Main 2 Ant)

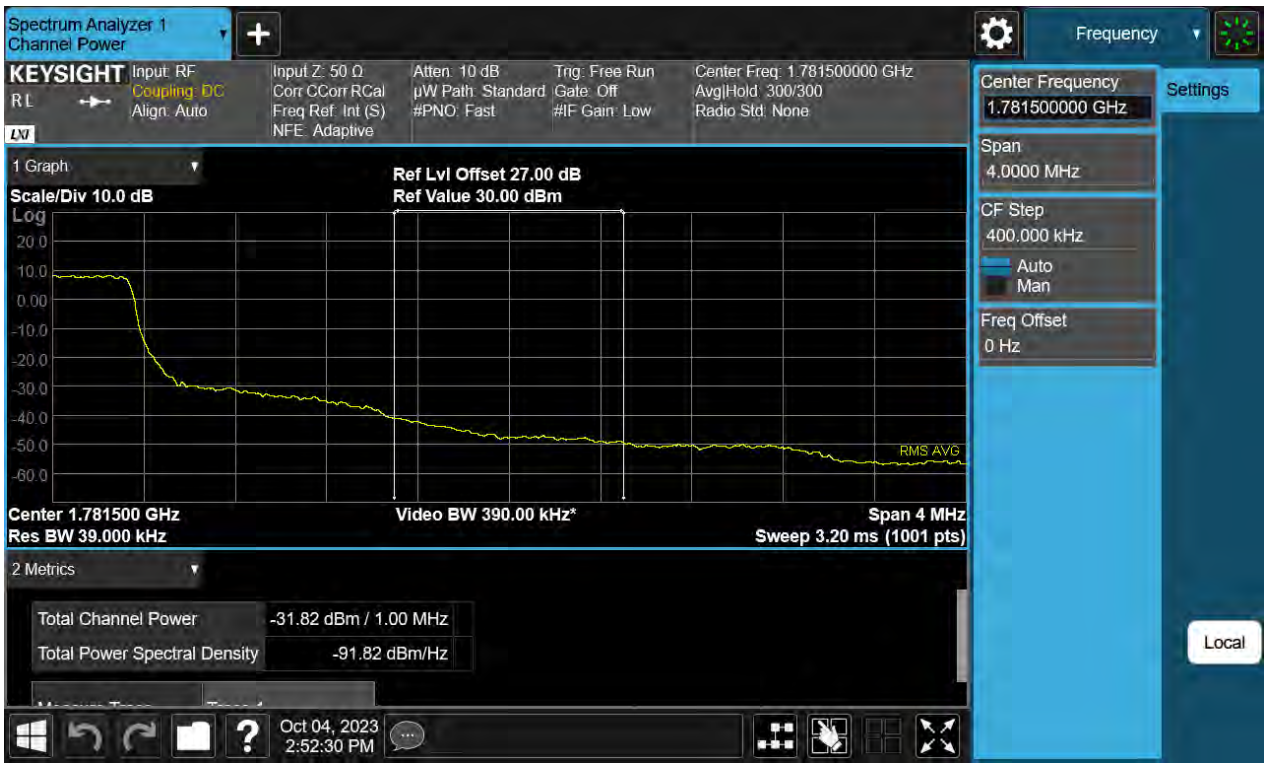
BW1.4 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

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)

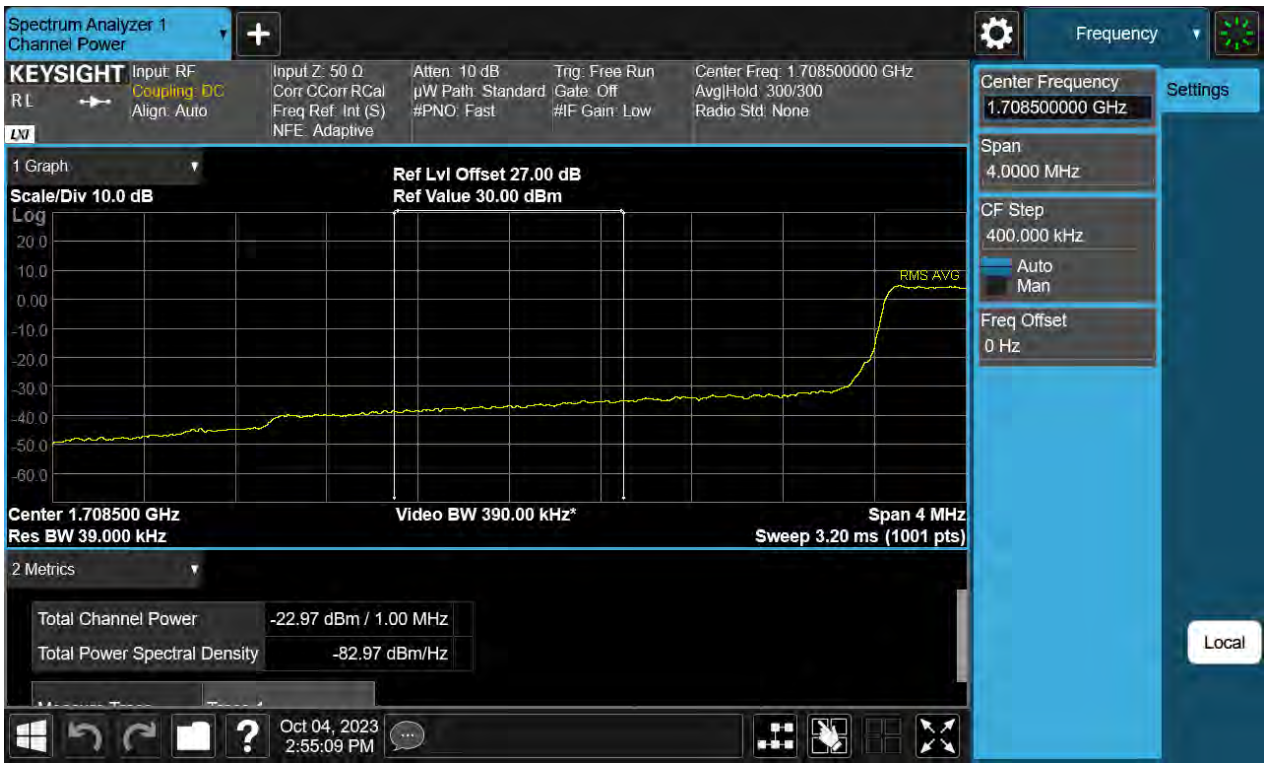


BW1.4 M_BandEdge_Lowest Channel_QPSK_1RB

BW1.4 M_BandEdge_Highest Channel_QPSK_1RB

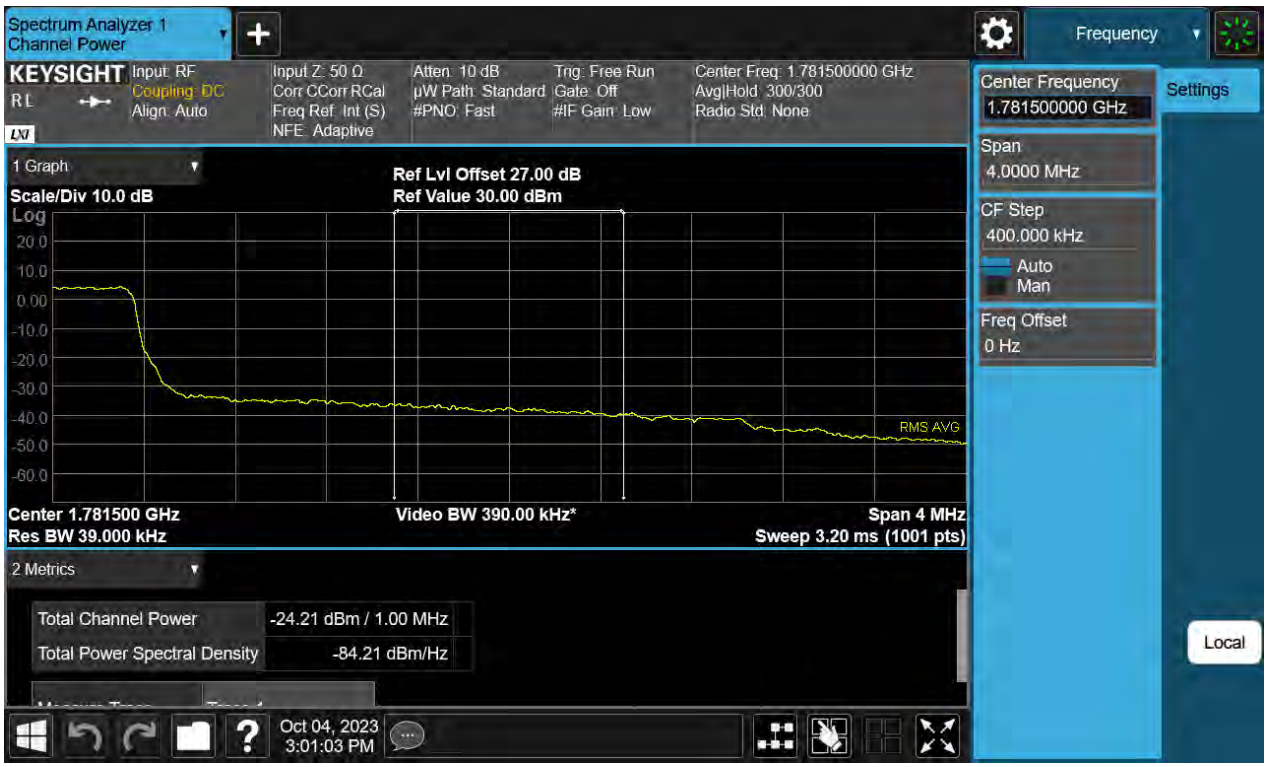
BW3 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW3 M_BandEdge_Lowest Channel_QPSK_FullRB(2)

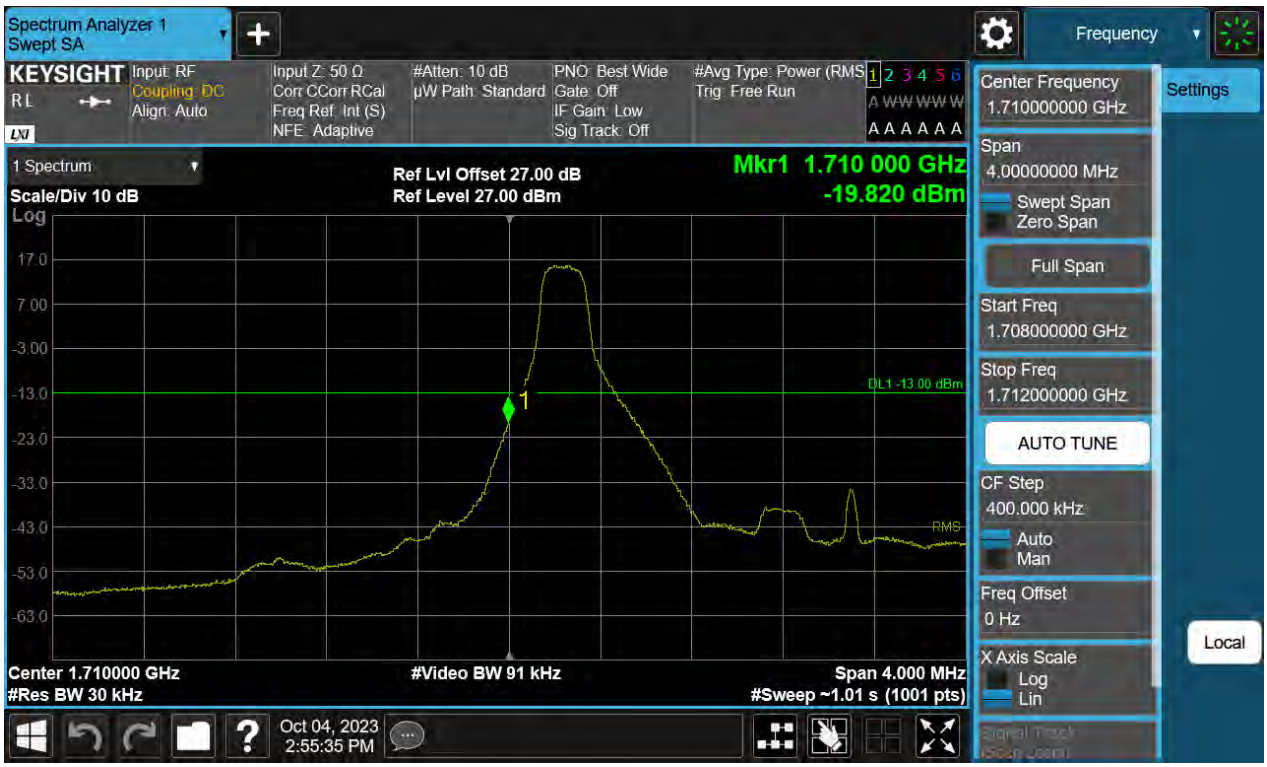


BW3 M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW3 M_BandEdge_Highest Channel_QPSK_FullRB(2)



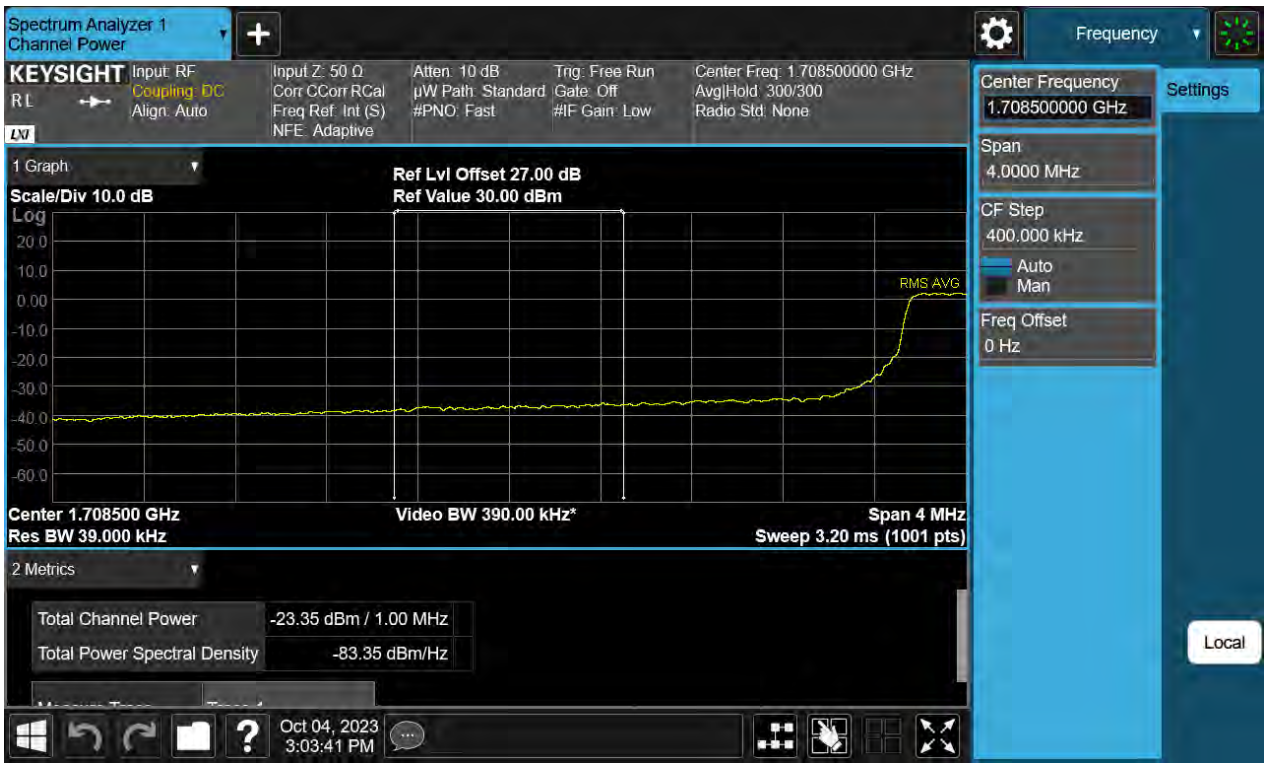
BW3 M_BandEdge_Lowest Channel_QPSK_1RB



BW3 M_BandEdge_Highest Channel_QPSK_1RB

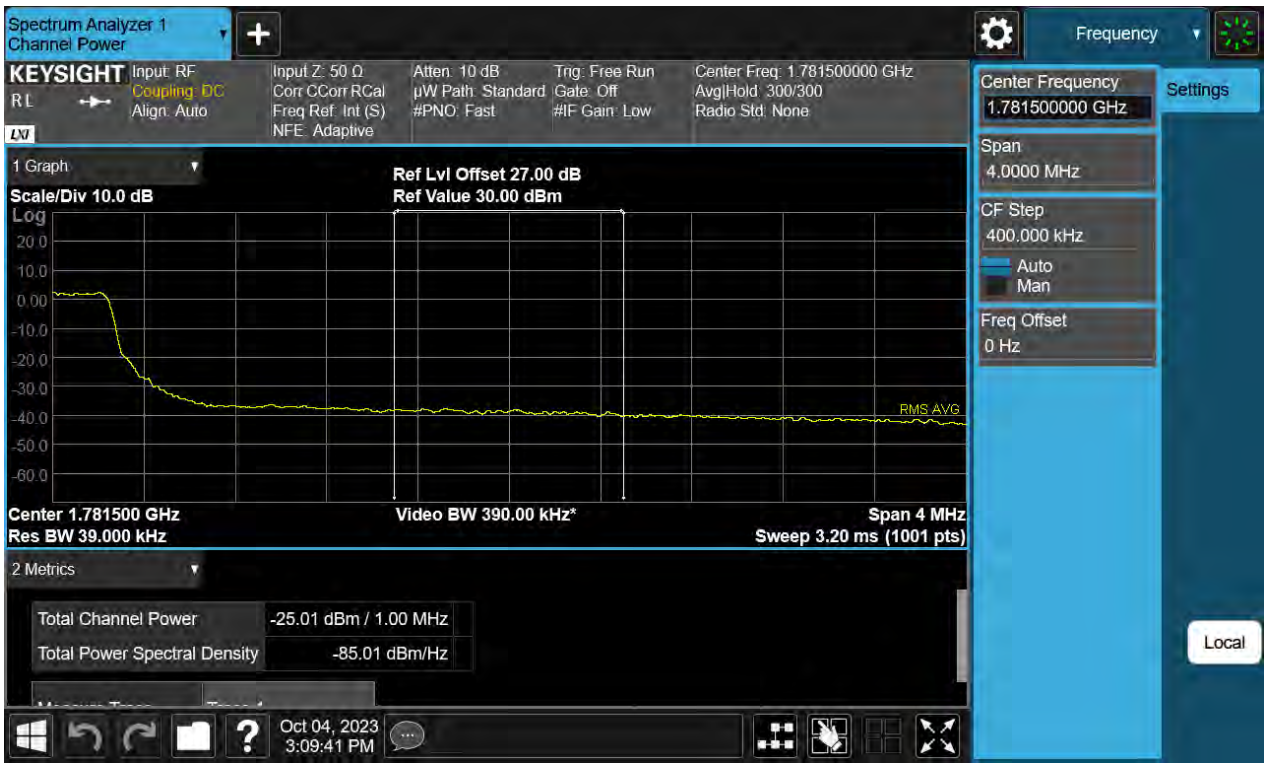
BW5 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW5 M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW5 M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW5 M_BandEdge_Highest Channel_QPSK_FullRB(2)

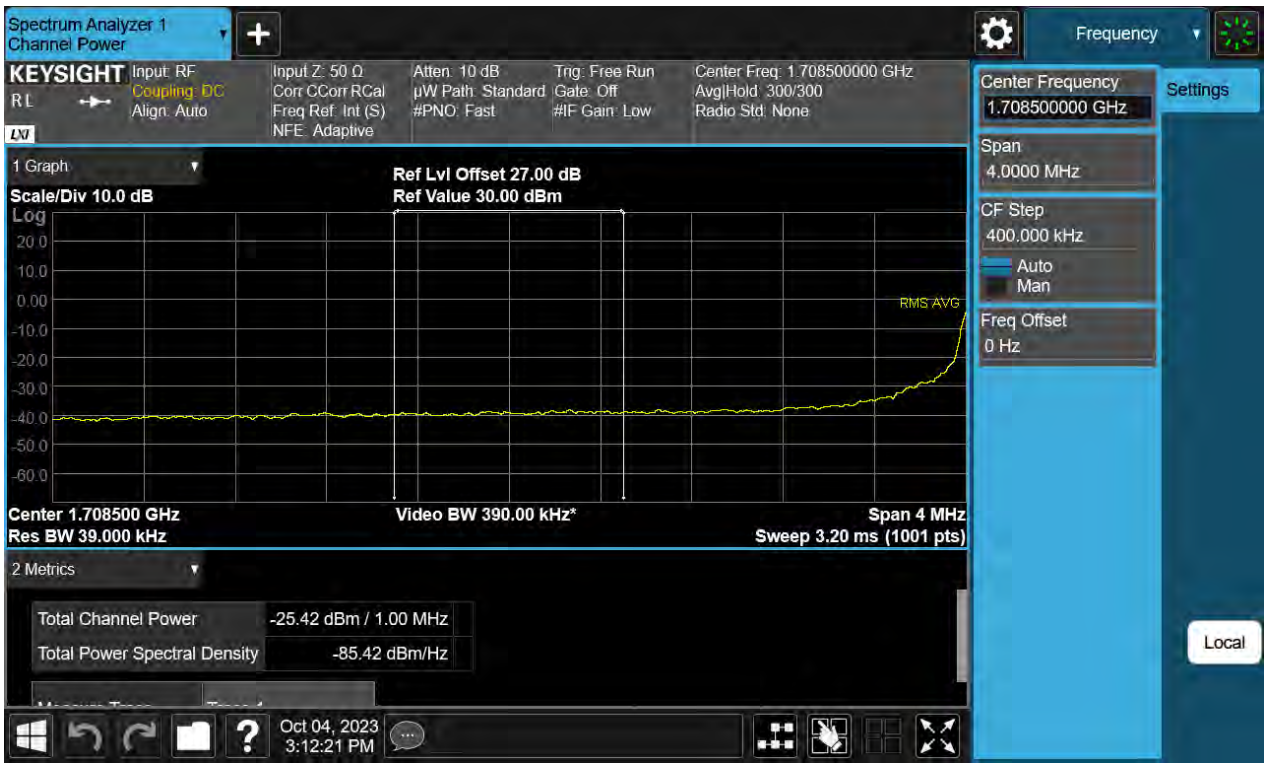


BW5 M_BandEdge_Lowest Channel_QPSK_1RB

BW5 M_BandEdge_Highest Channel_QPSK_1RB

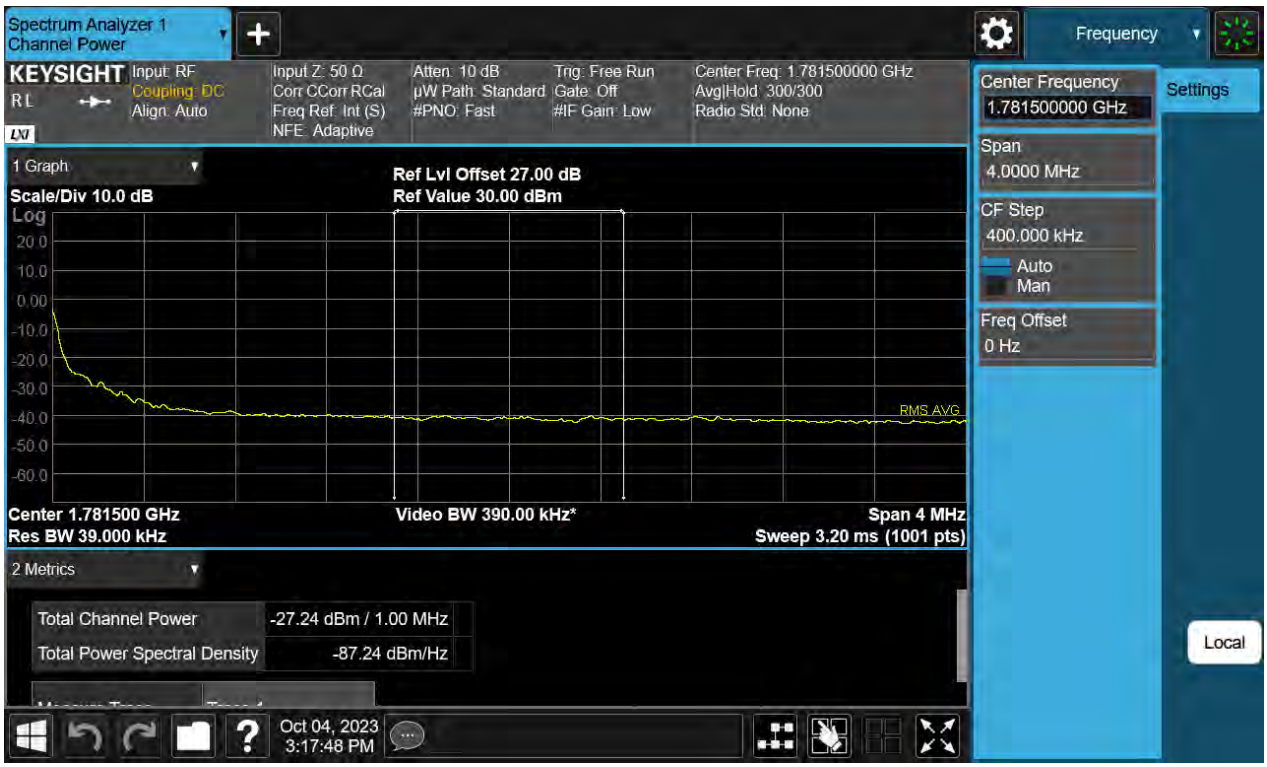
BW10 M_BandEdge_Lowest Channel_QPSK_FullRB(1)

BW10 M_BandEdge_Lowest Channel_QPSK_FullRB(2)



BW10 M_BandEdge_Highest Channel_QPSK_FullRB(1)

BW10 M_BandEdge_Highest Channel_QPSK_FullRB(2)

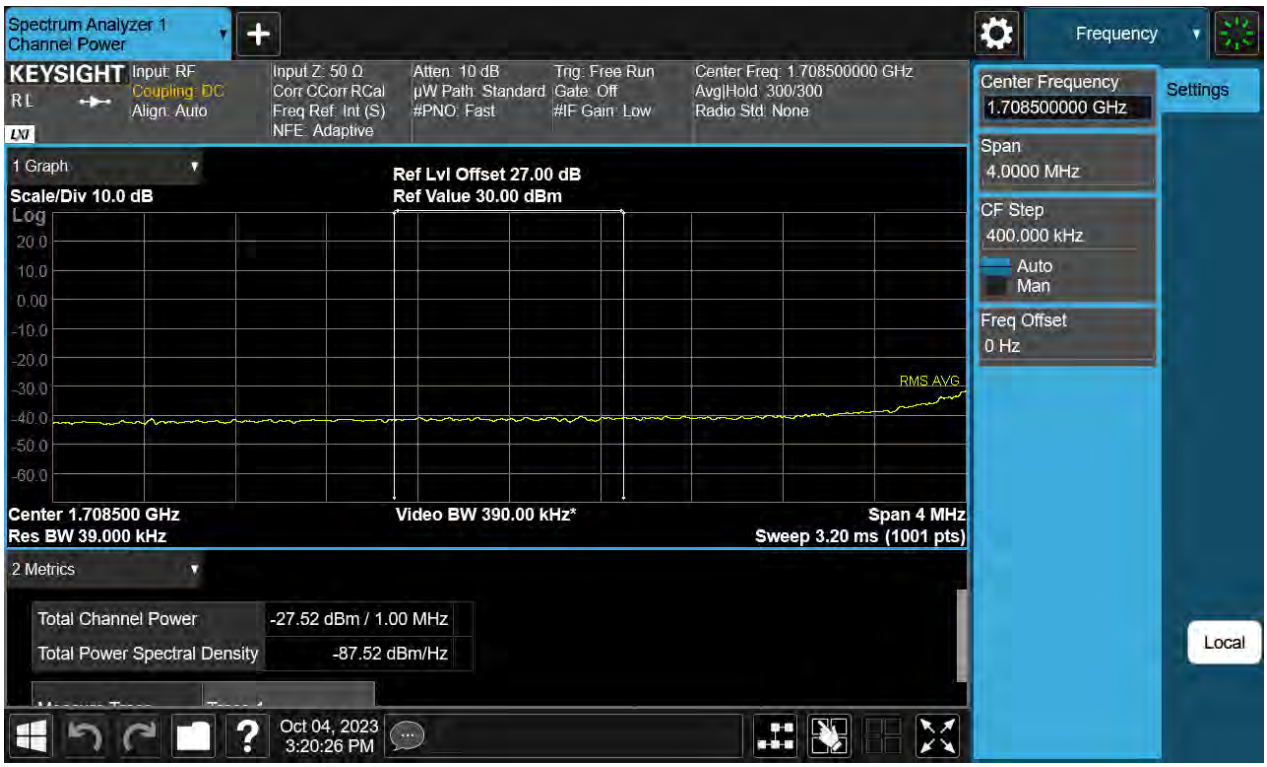


BW10 M_BandEdge_Lowest Channel_QPSK_1RB

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)

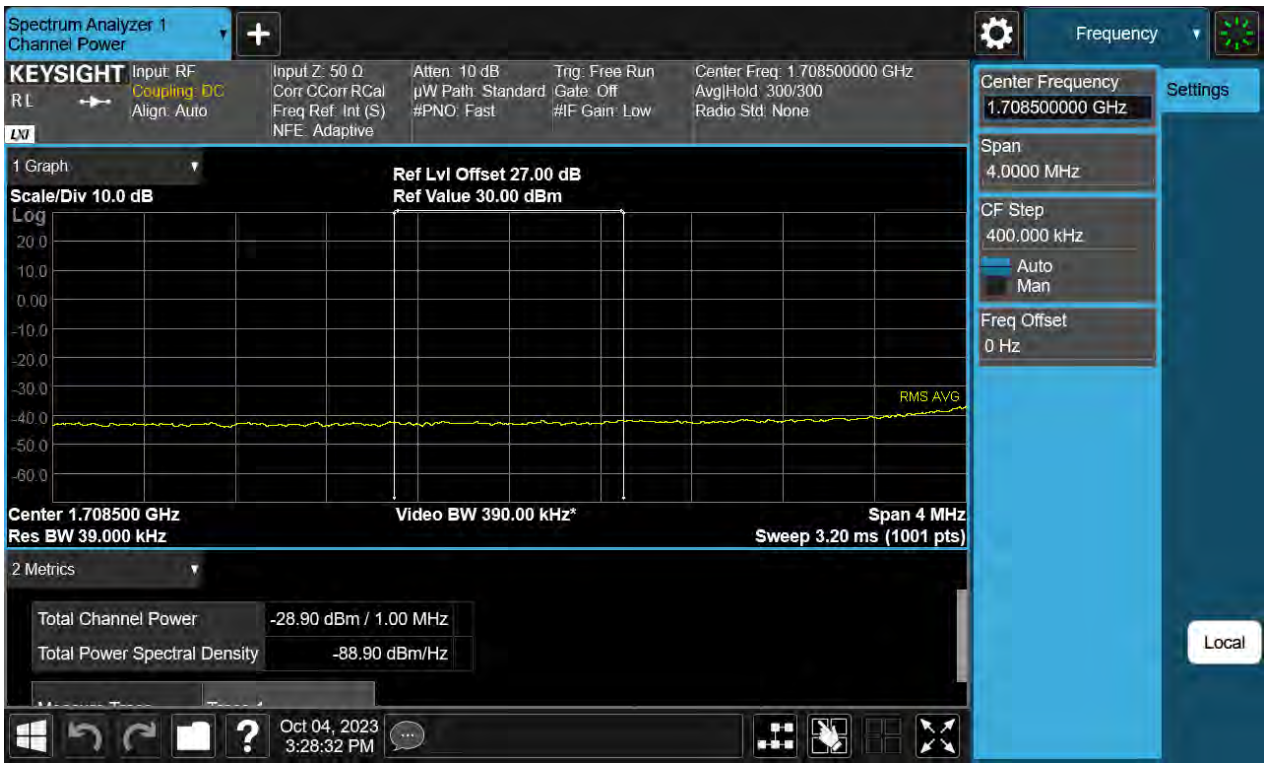
BW15 M_BandEdge_Highest Channel_QPSK_FullRB(2)

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)

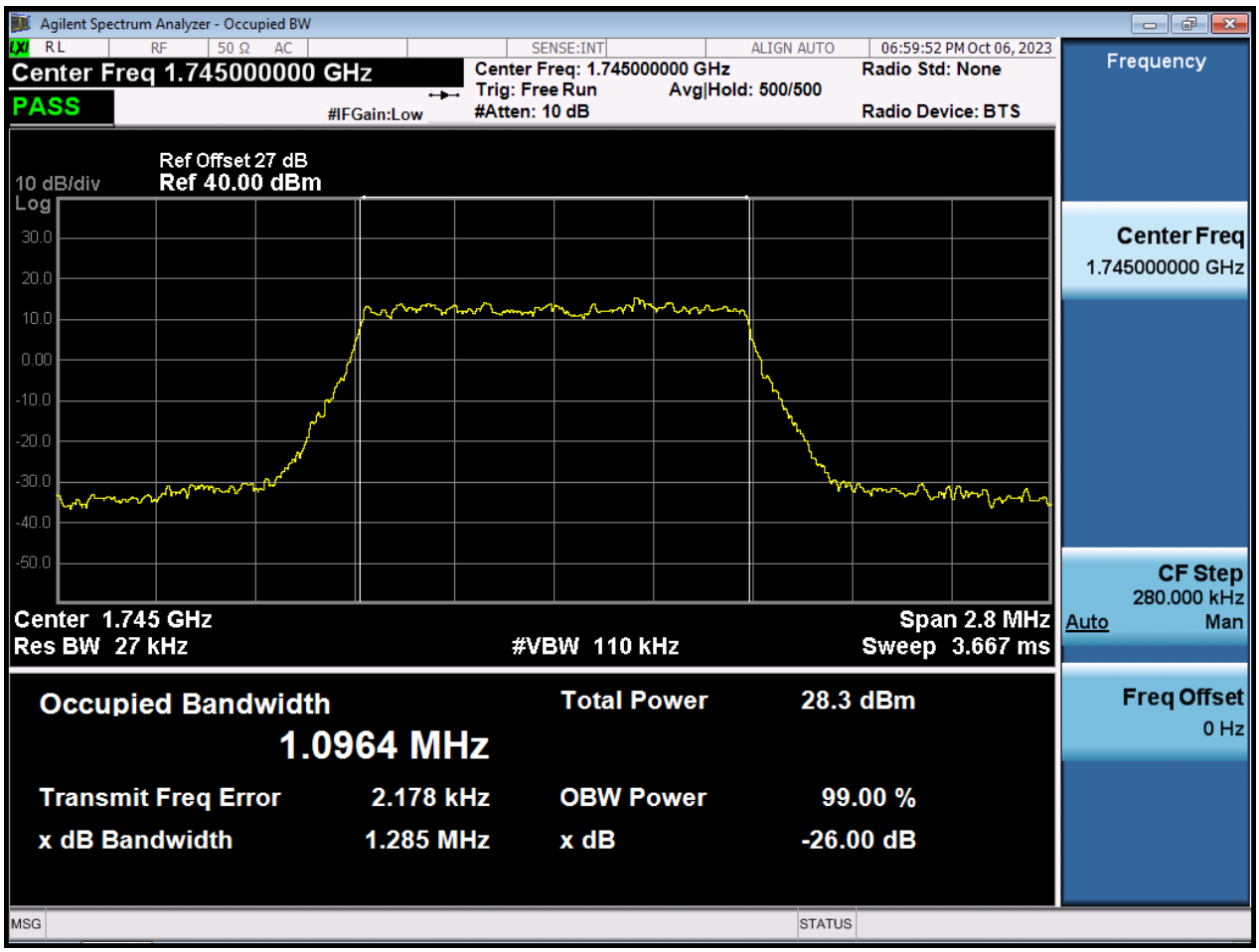
BW20 M_BandEdge_Lowest Channel_QPSK_1RB

BW20 M_BandEdge_Highest Channel_QPSK_1RB

BW1.4 M_OBW_Middle Channel_QPSK_FullRB

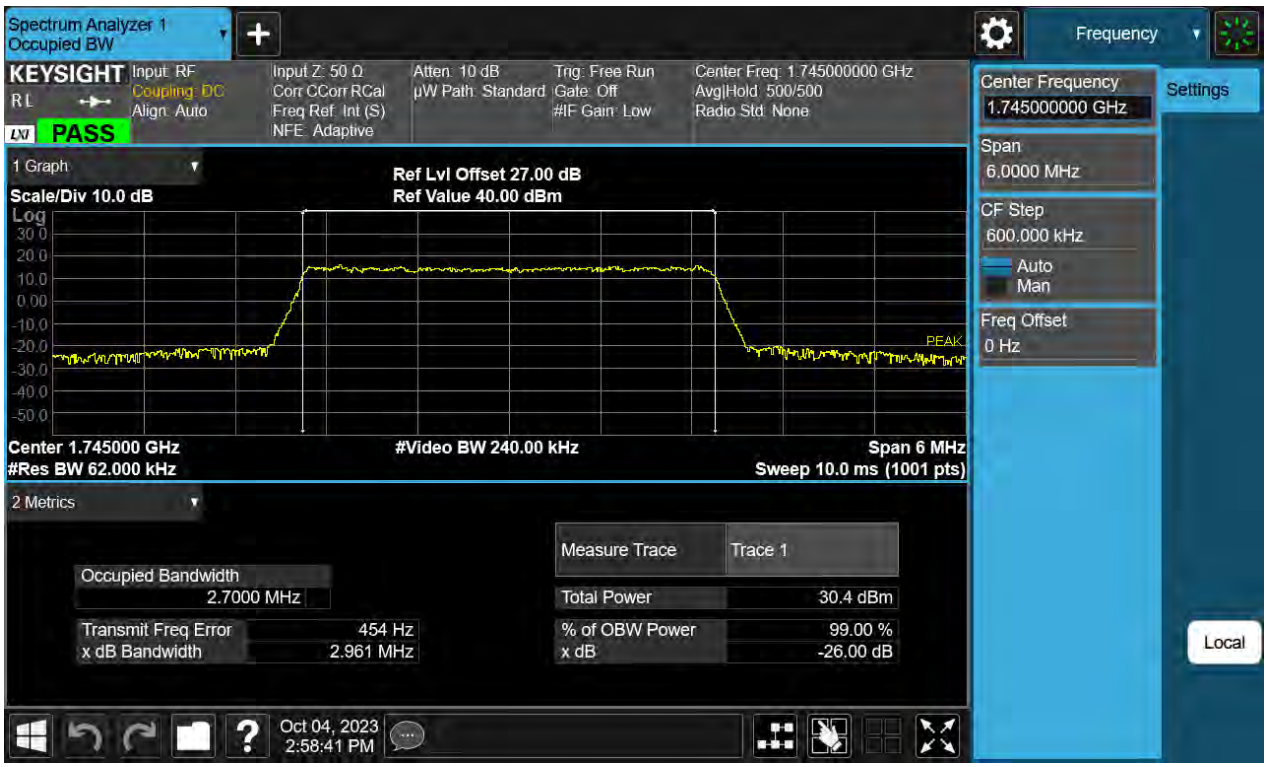
BW1.4 M_OBW_Middle Channel_16QAM_FullRB

BW1.4 M_OBW_Middle Channel_64QAM_FullRB

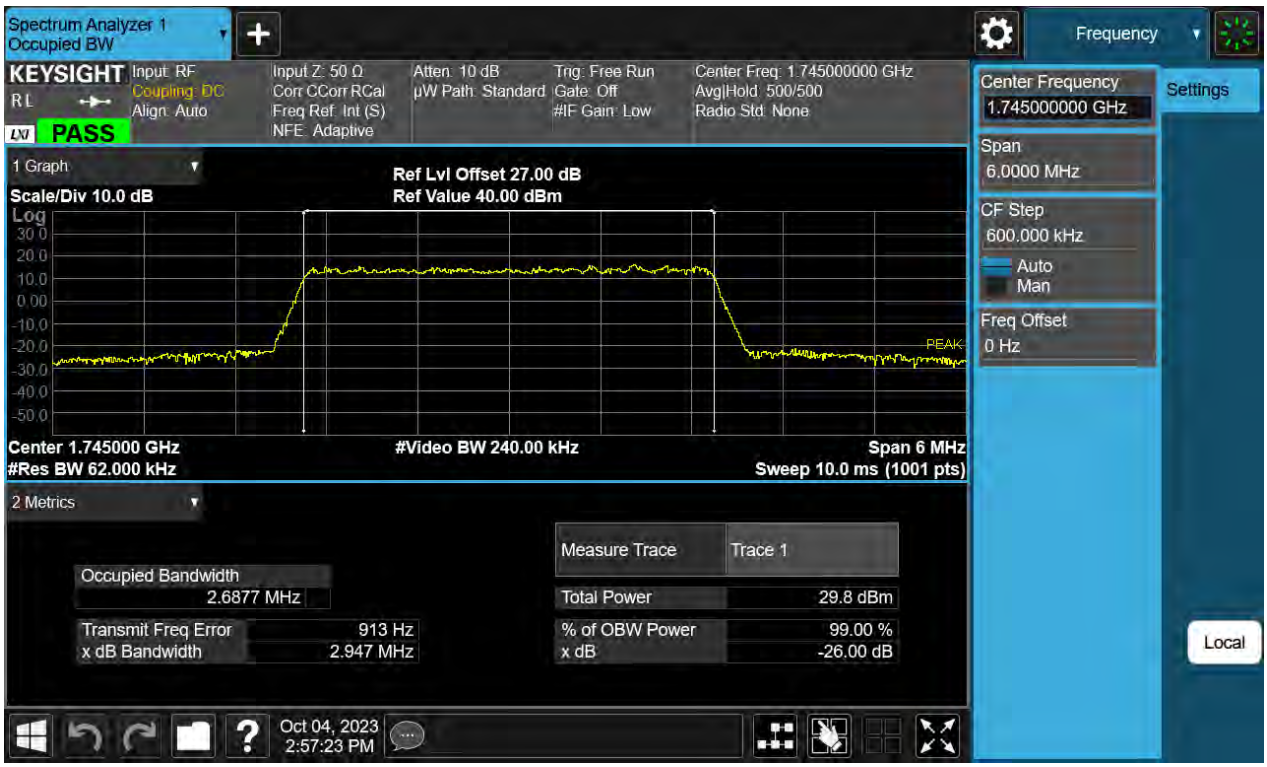


BW1.4 M_OBW_Middle Channel_256QAM_FullRB

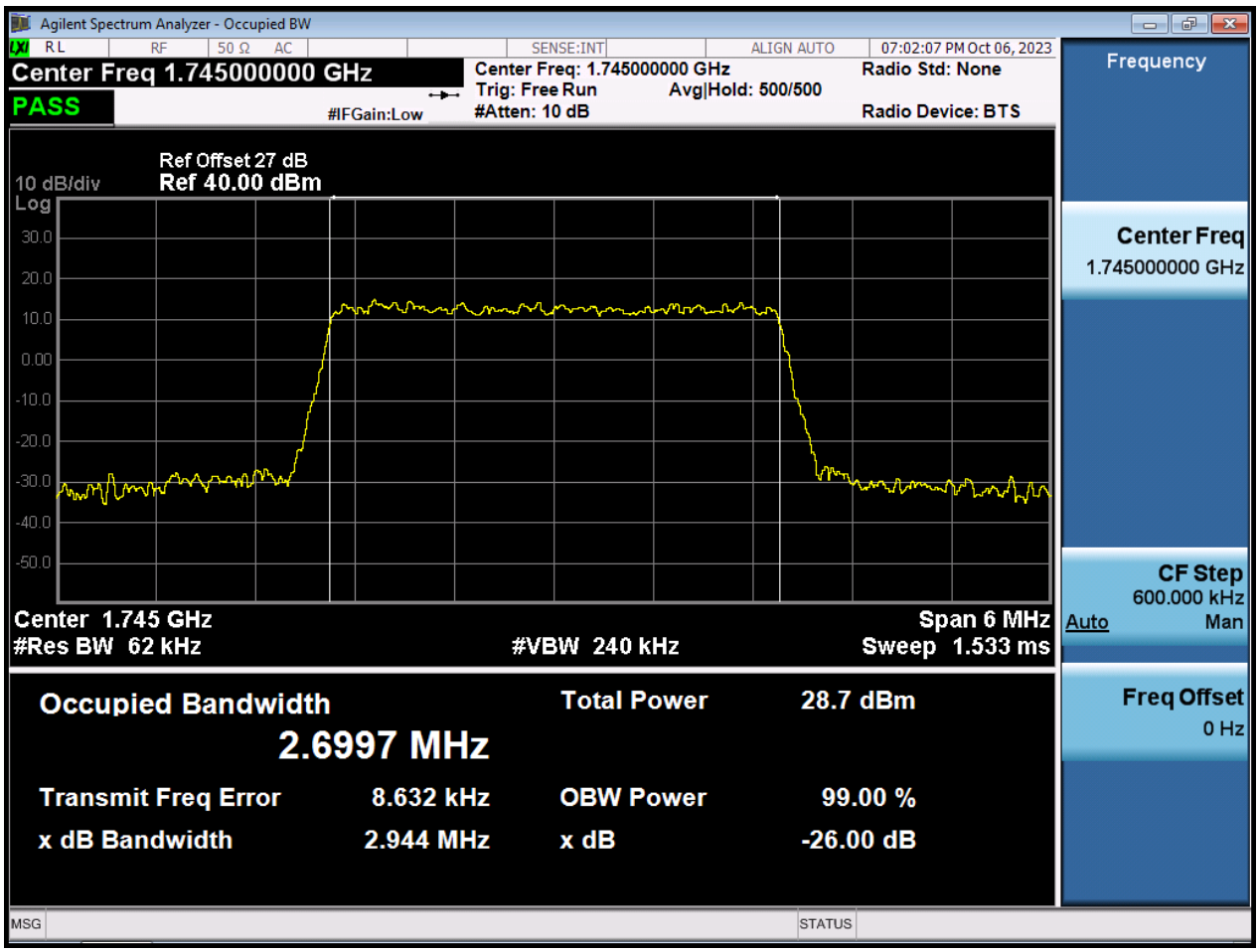
BW3 M_OBW_Middle Channel_QPSK_FullRB



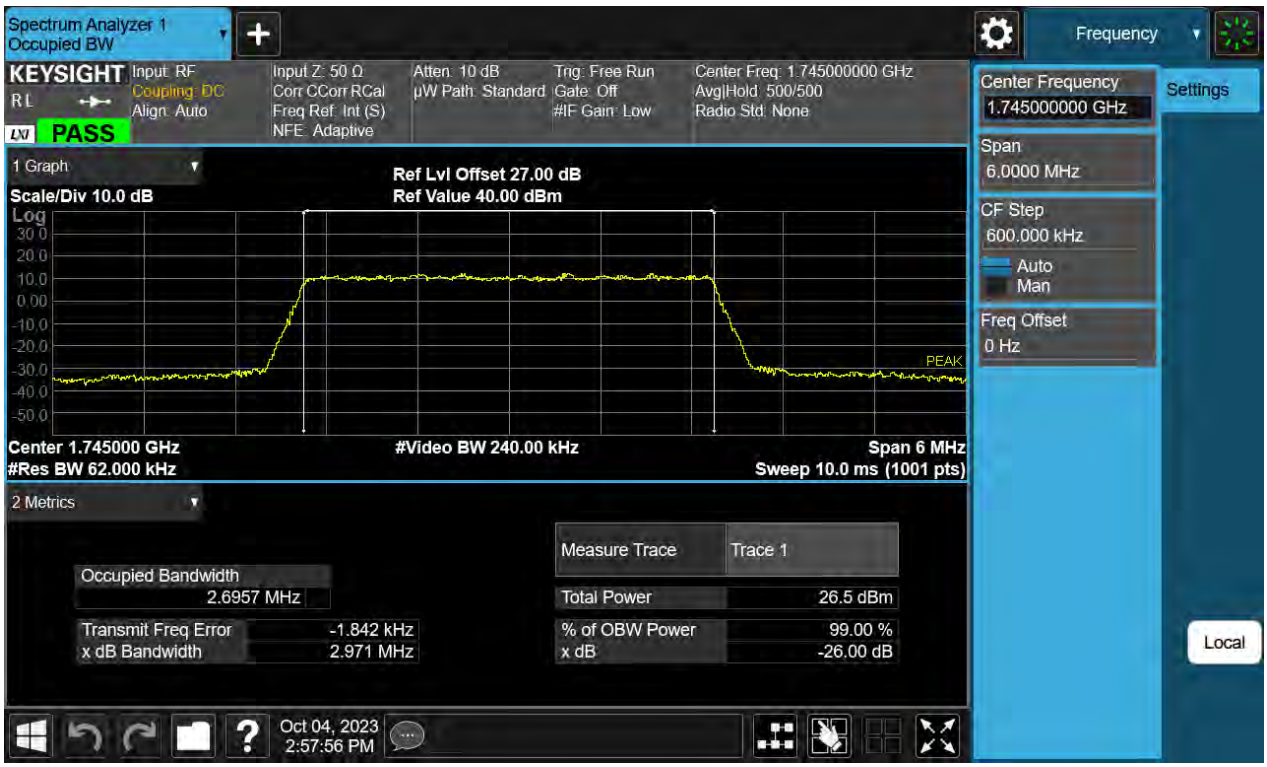
BW3 M_OBW_Middle Channel_16QAM_FullRB



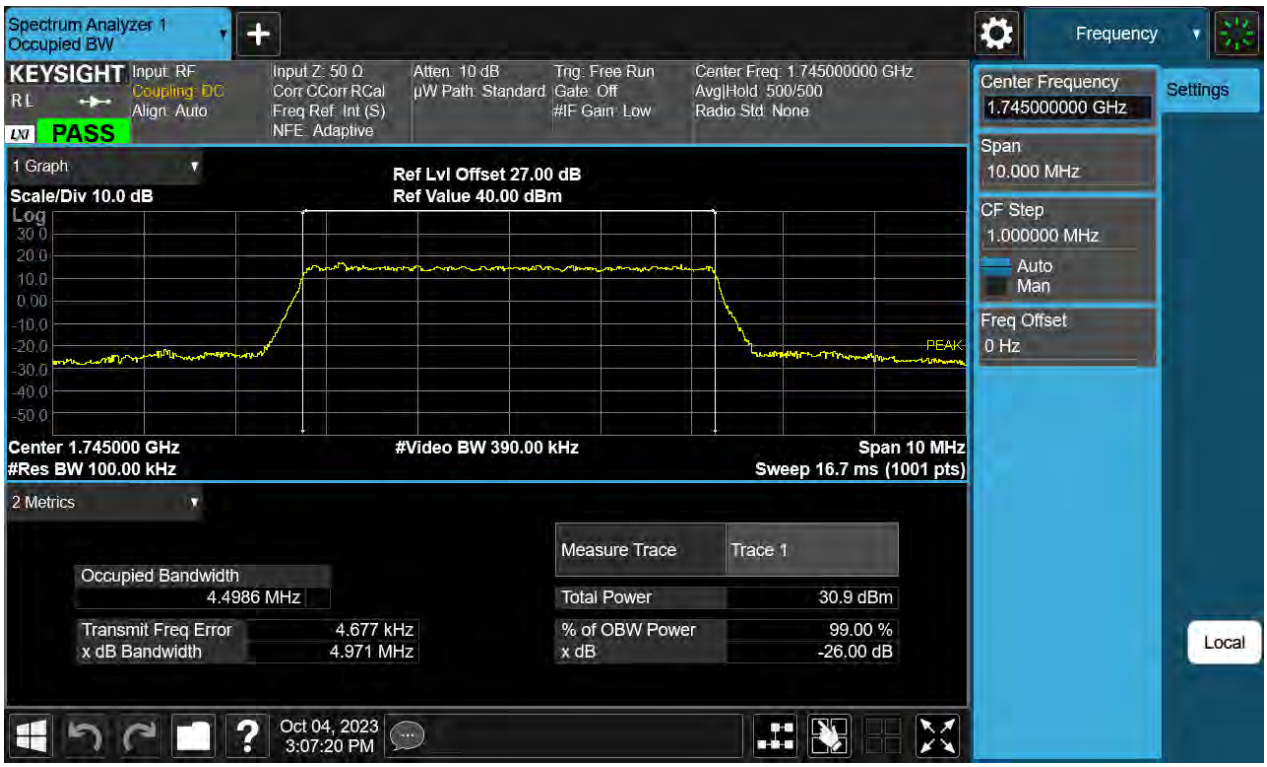
BW3 M_OBW_Middle Channel_64QAM_FullRB



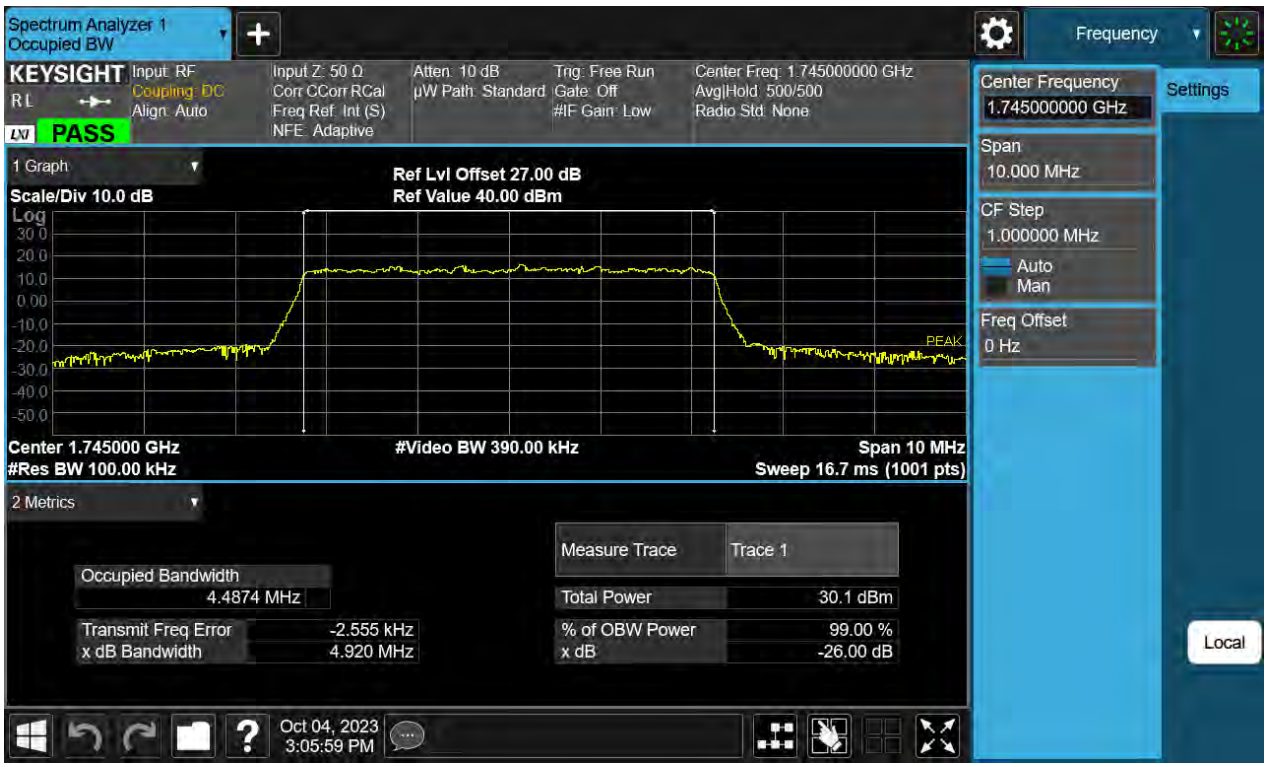
BW3 M_OBW_Middle Channel_256QAM_FullRB



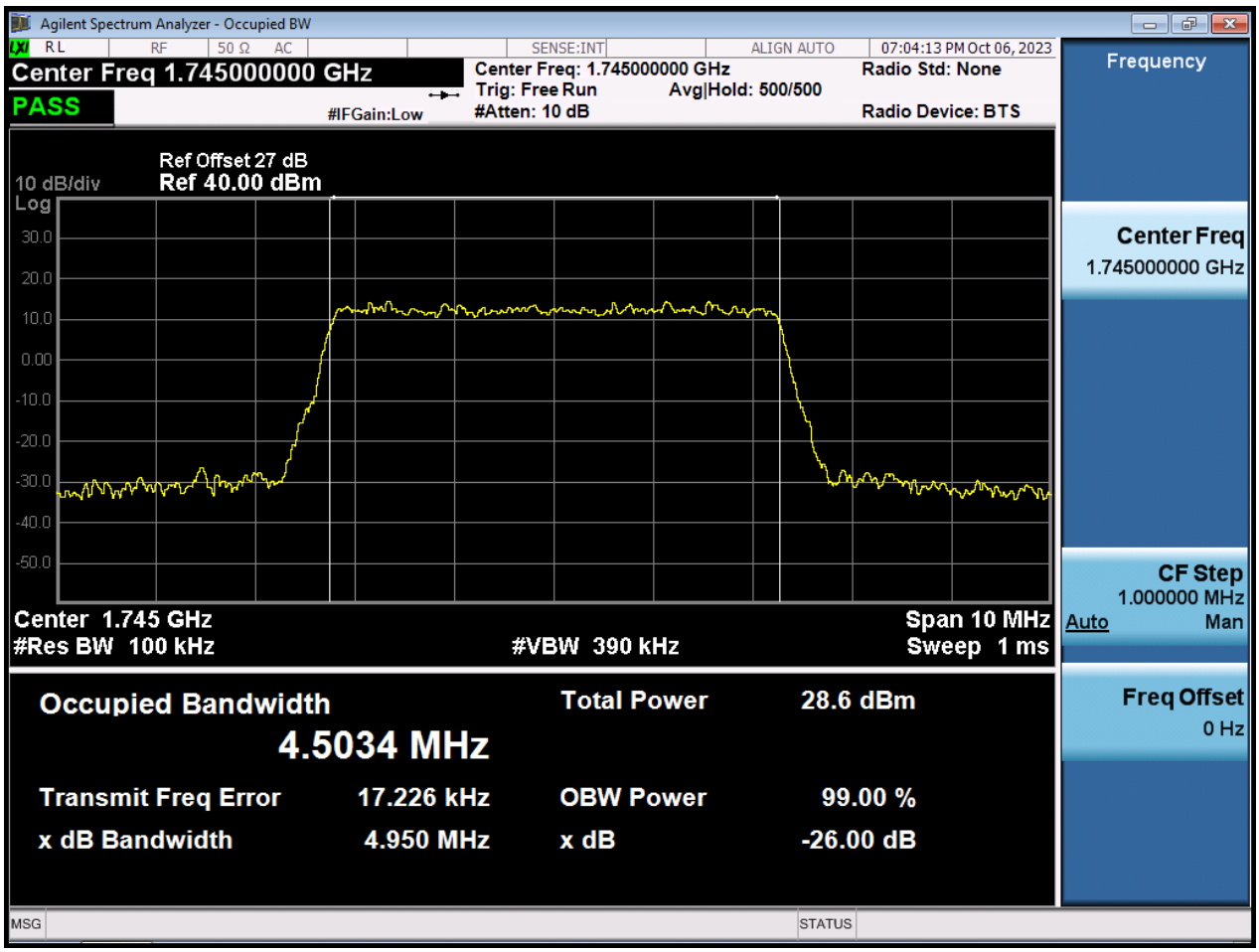
BW5 M_OBW_Middle Channel_QPSK_FullRB



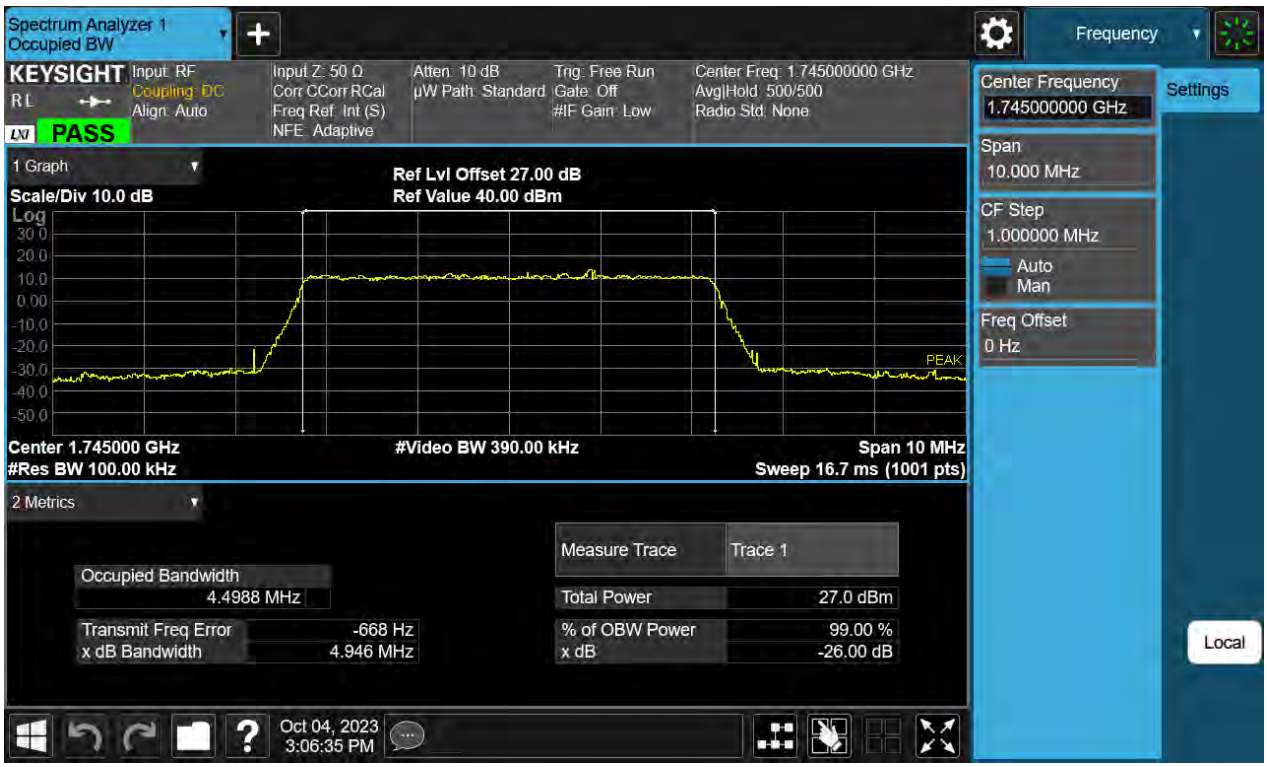
BW5 M_OBW_Middle Channel_16QAM_FullRB



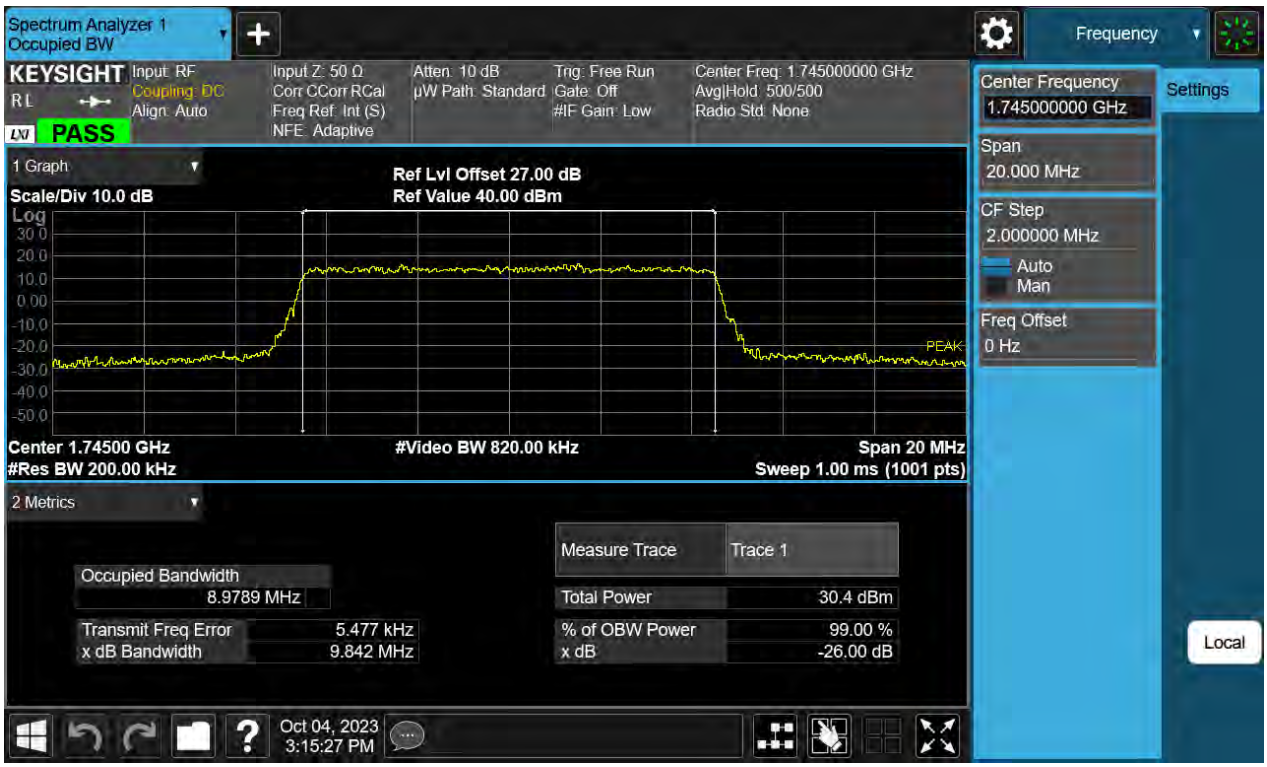
BW5 M_OBW_Middle Channel_64QAM_FullRB



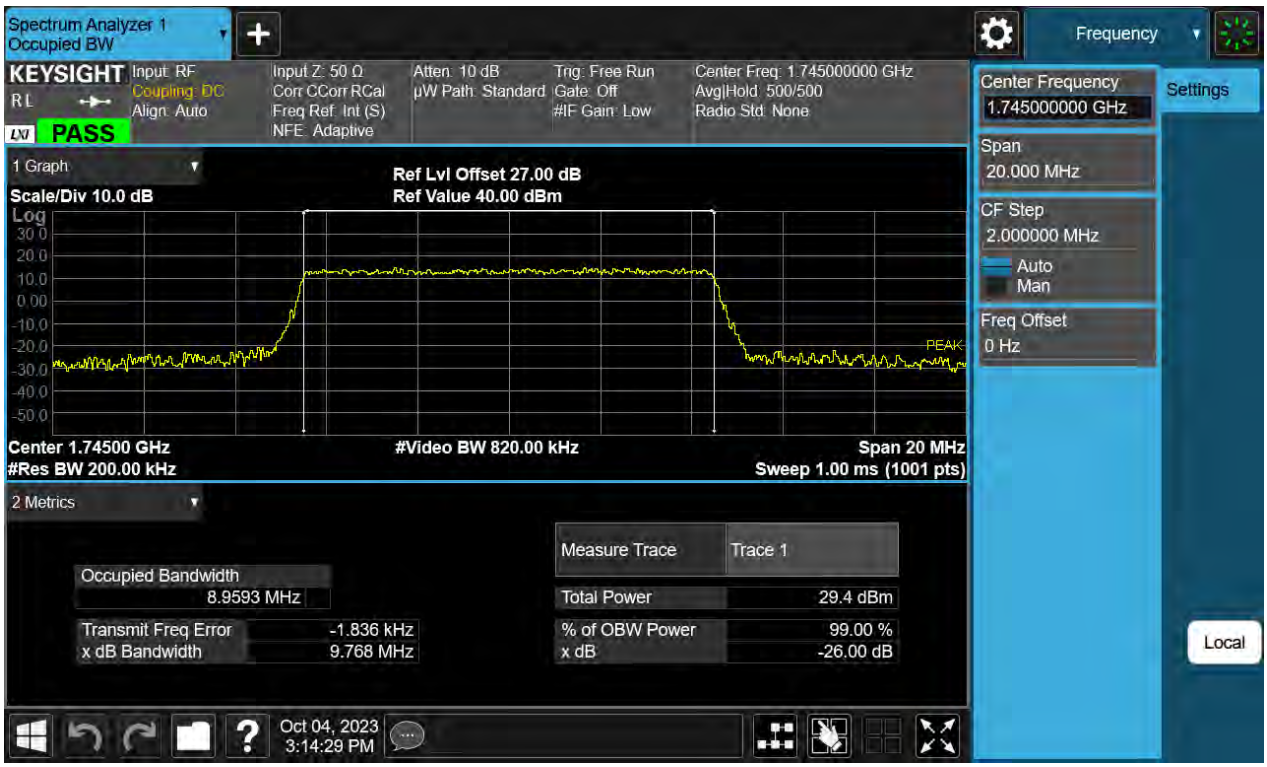
BW5 M_OBW_Middle Channel_256QAM_FullRB



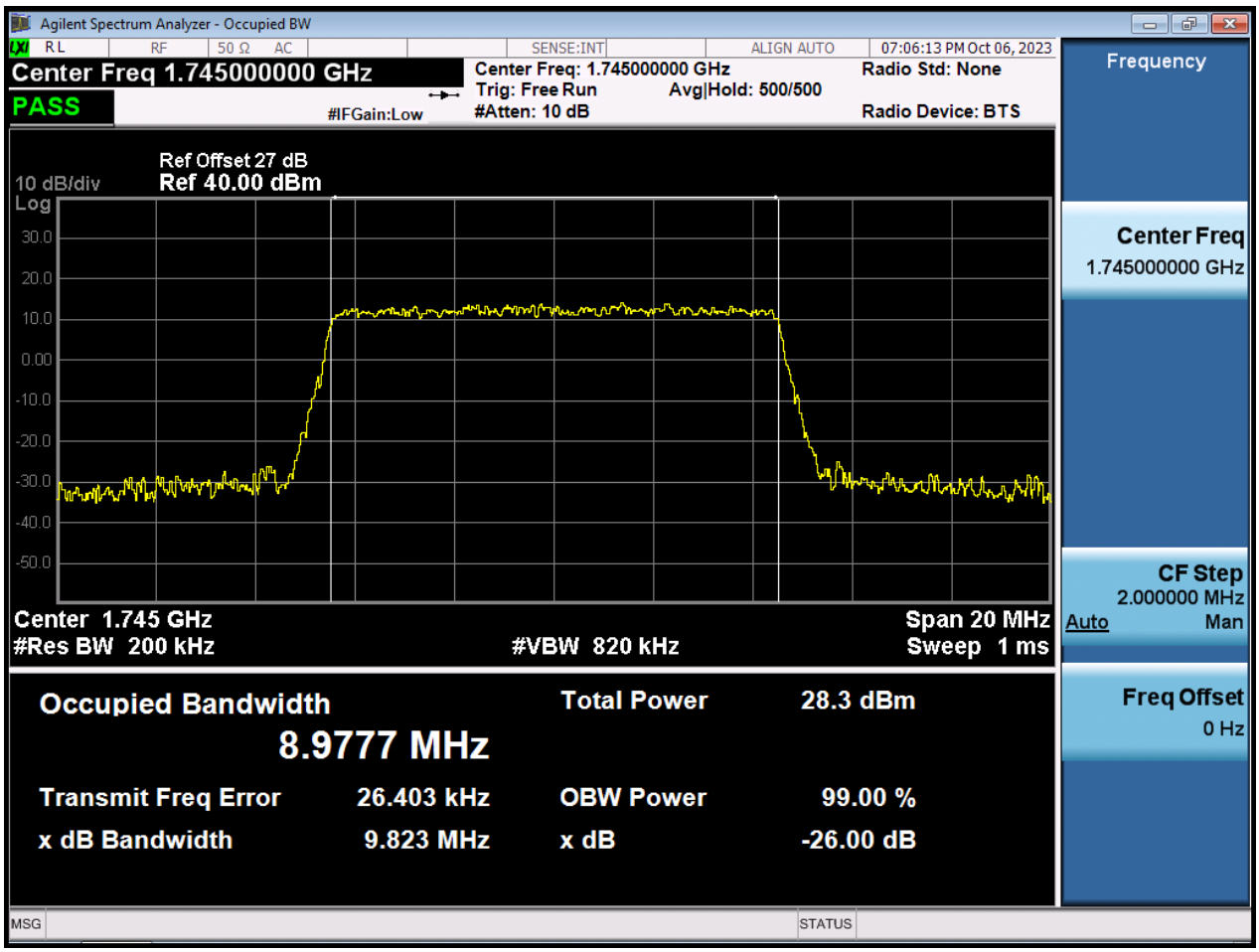
BW10 M_OBW_Middle Channel_QPSK_FullRB



BW10 M_OBW_Middle Channel_16QAM_FullRB

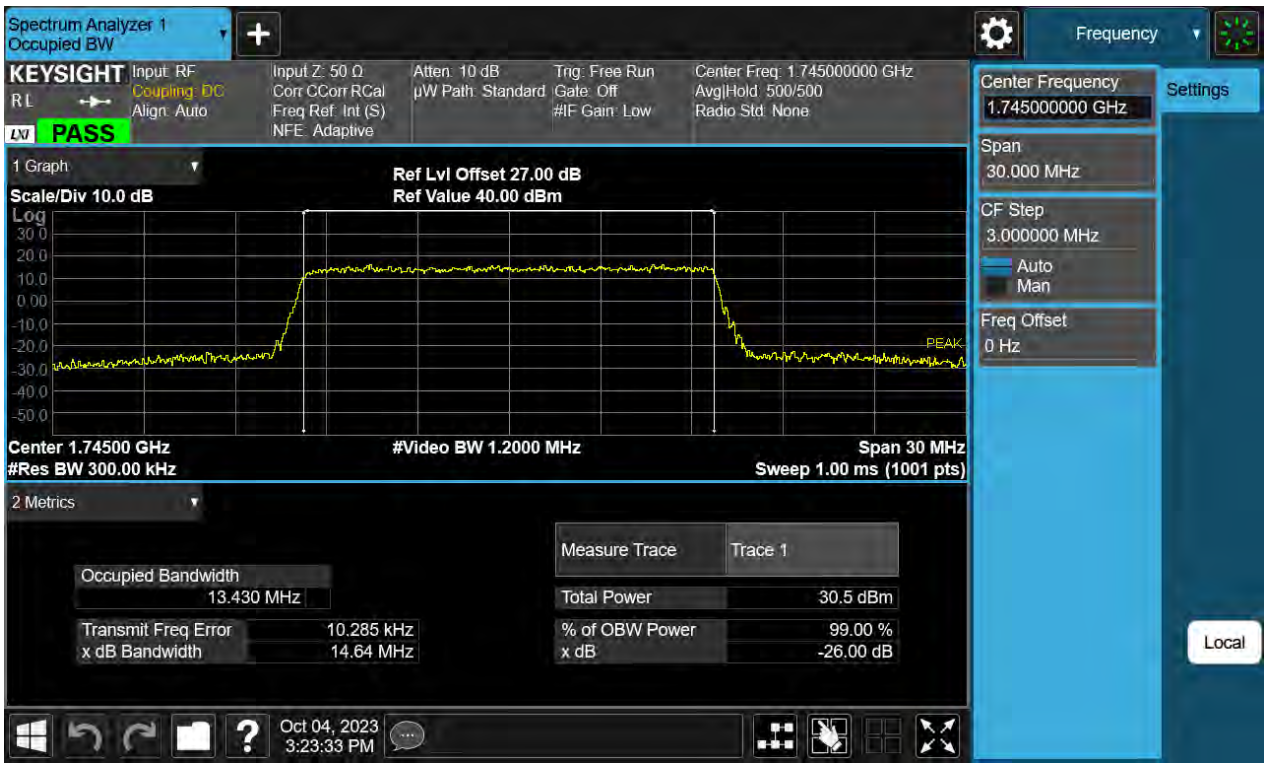


BW10 M_OBW_Middle Channel_64QAM_FullRB

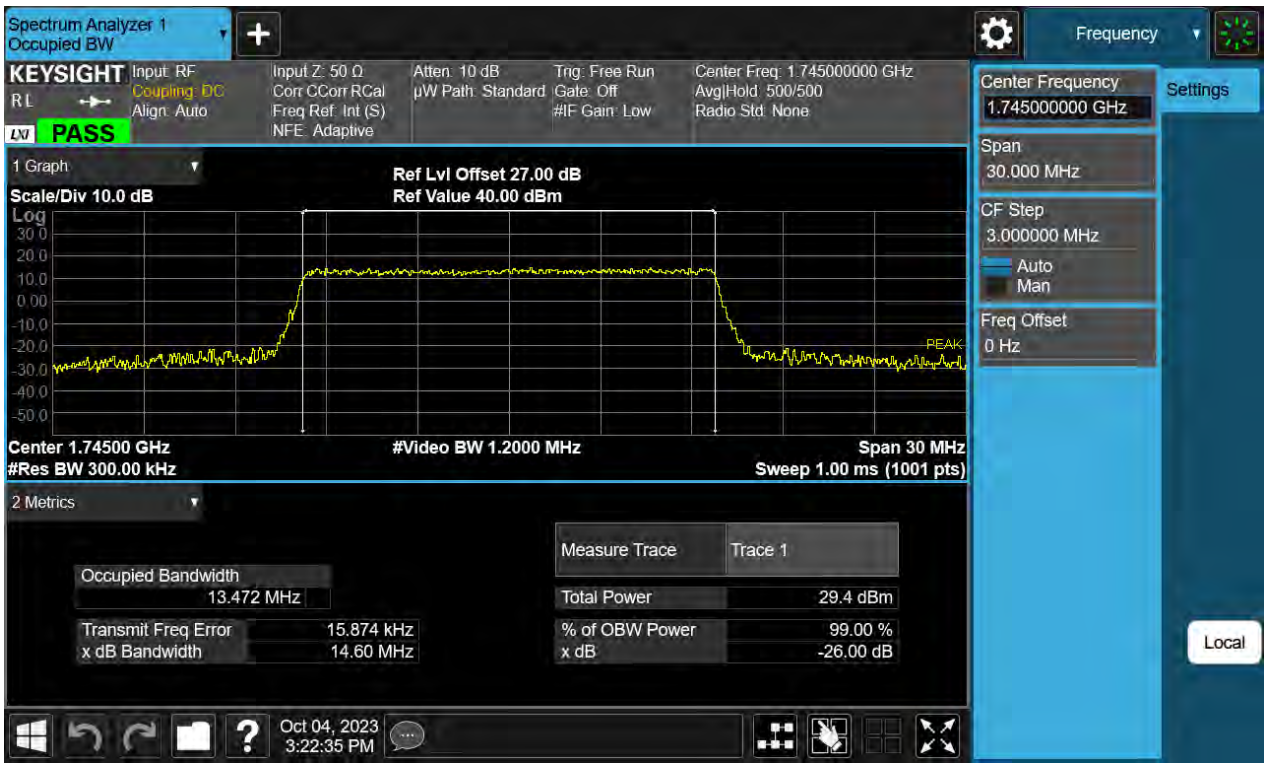


BW10 M_OBW_Middle Channel_256QAM_FullRB

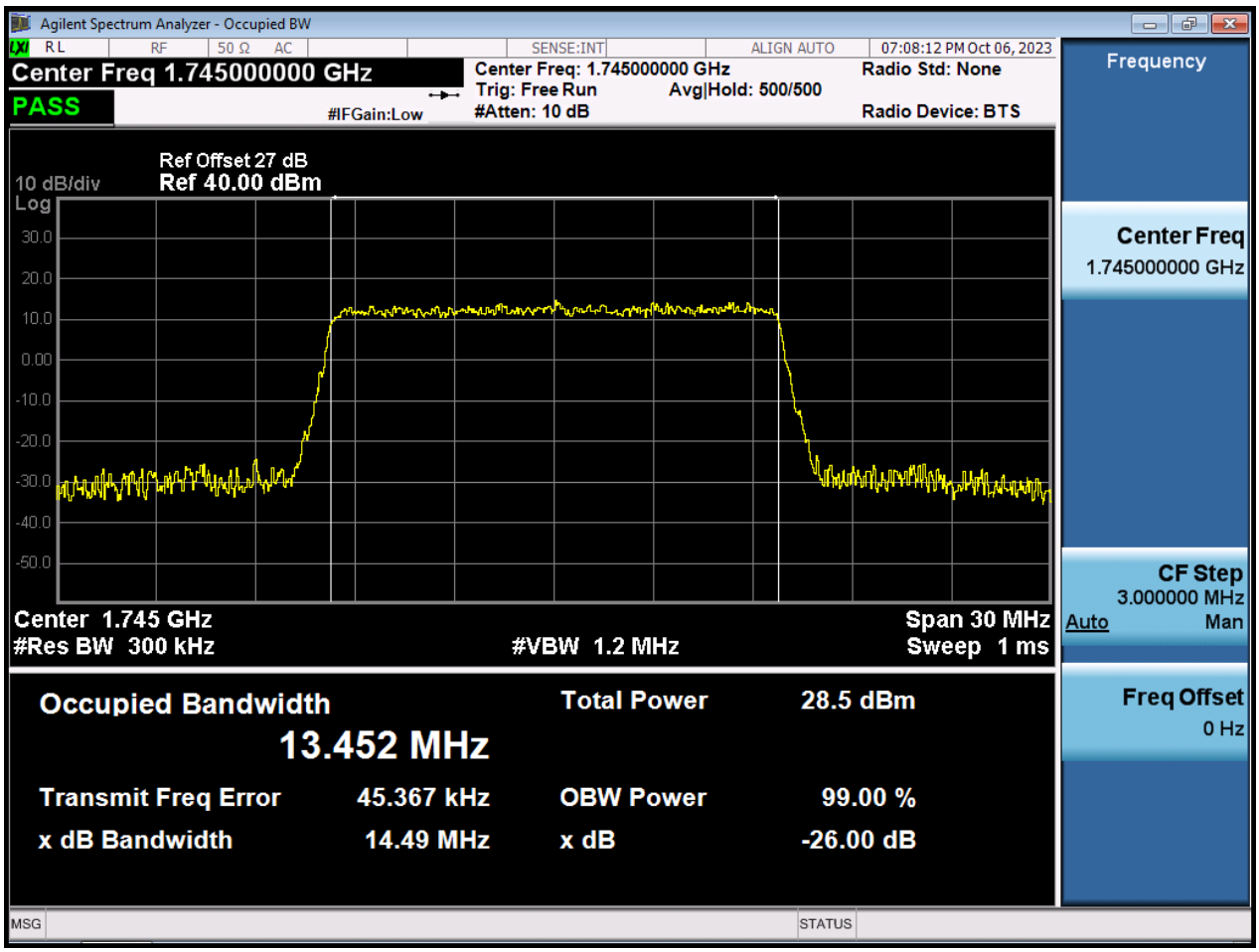
BW15 M_OBW_Middle Channel_QPSK_FullRB



BW15 M_OBW_Middle Channel_16QAM_FullRB



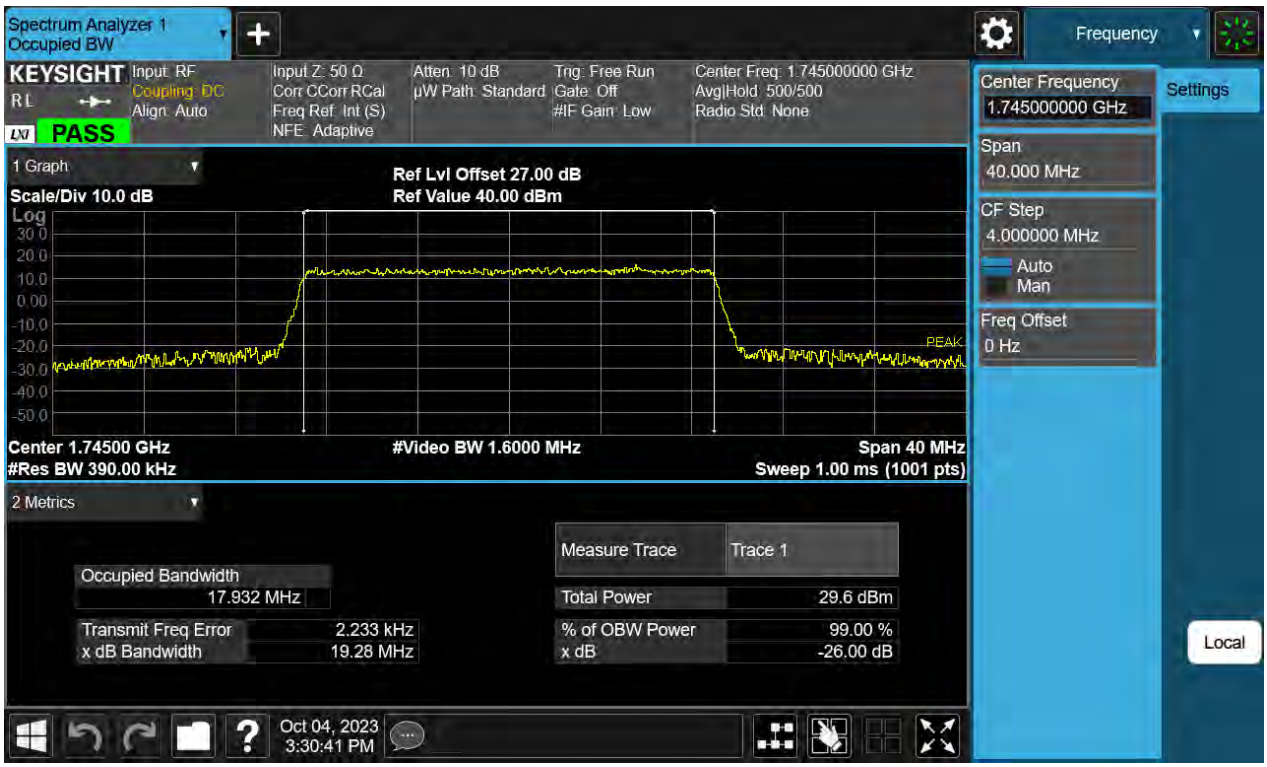
BW15 M_OBW_Middle Channel_64QAM_FullRB



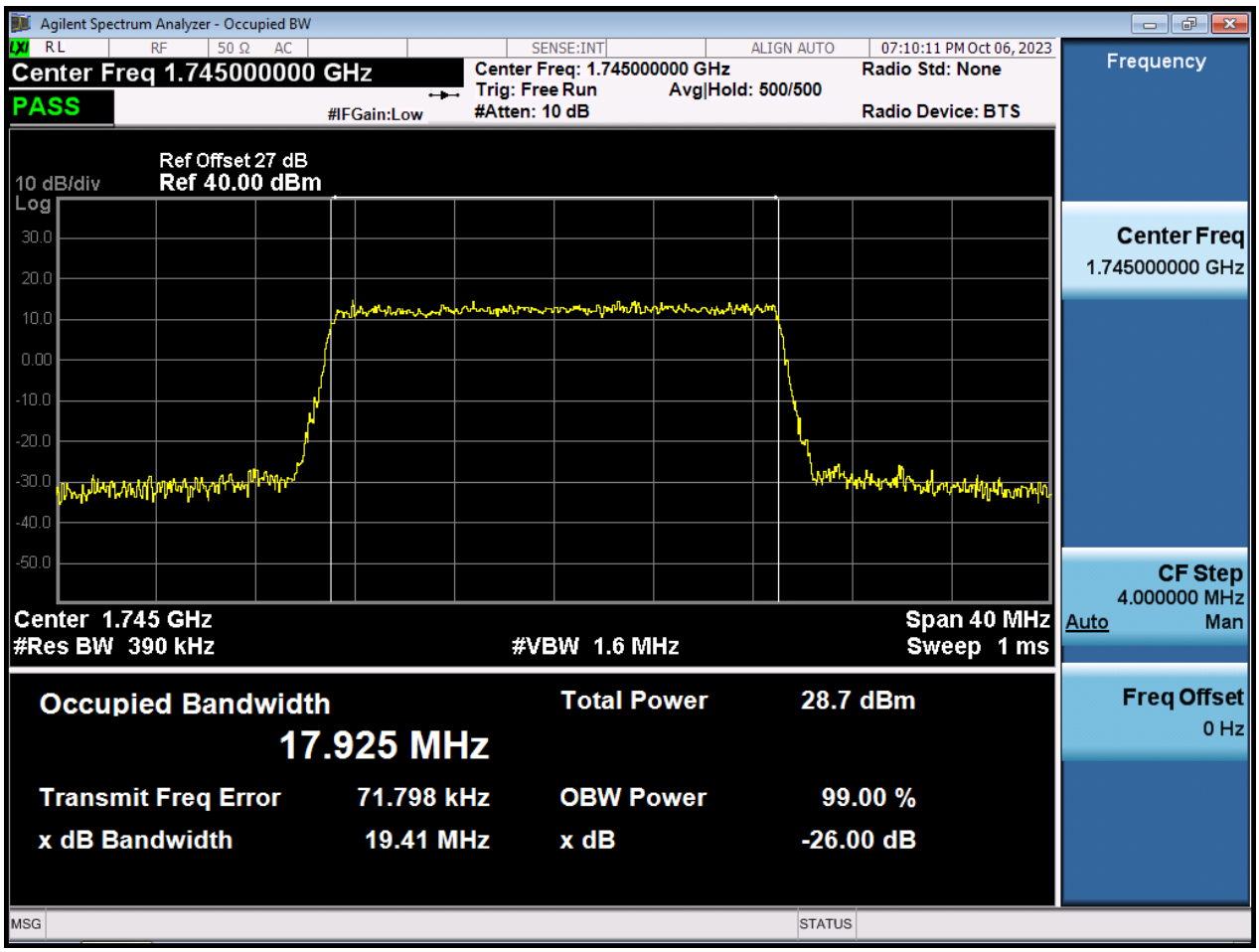
BW15 M_OBW_Middle Channel_256QAM_FullRB

BW20 M_OBW_Middle Channel_QPSK_FullRB

BW20 M_OBW_Middle Channel_16QAM_FullRB



BW20 M_OBW_Middle Channel_64QAM_FullRB

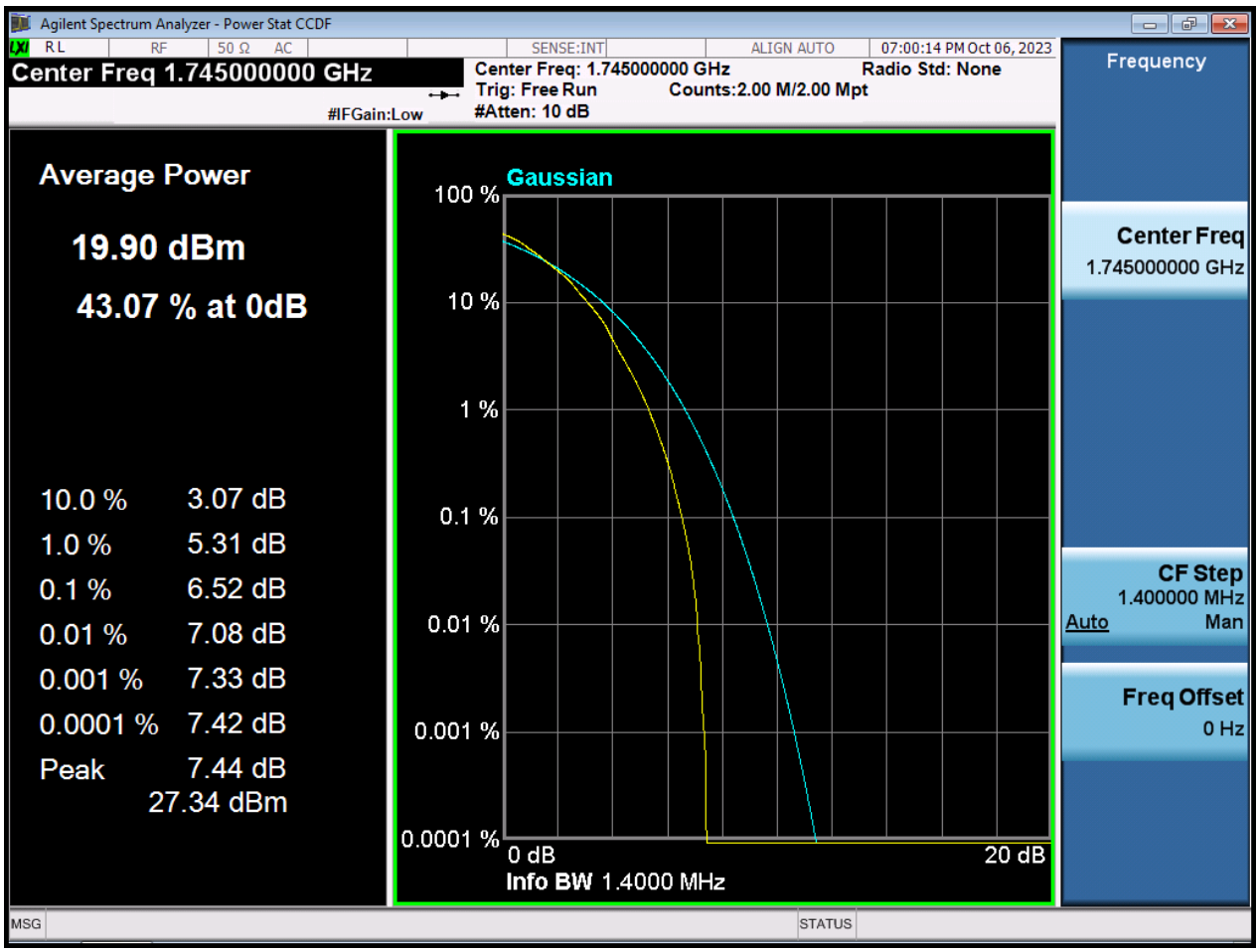


BW20 M_OBW_Middle Channel_256QAM_FullRB

BW1.4 M_PAR_Middle Channel_QPSK_FullRB

BW1.4 M_PAR_Middle Channel_16QAM_FullRB

BW1.4 M_PAR_Middle Channel_64QAM_FullRB

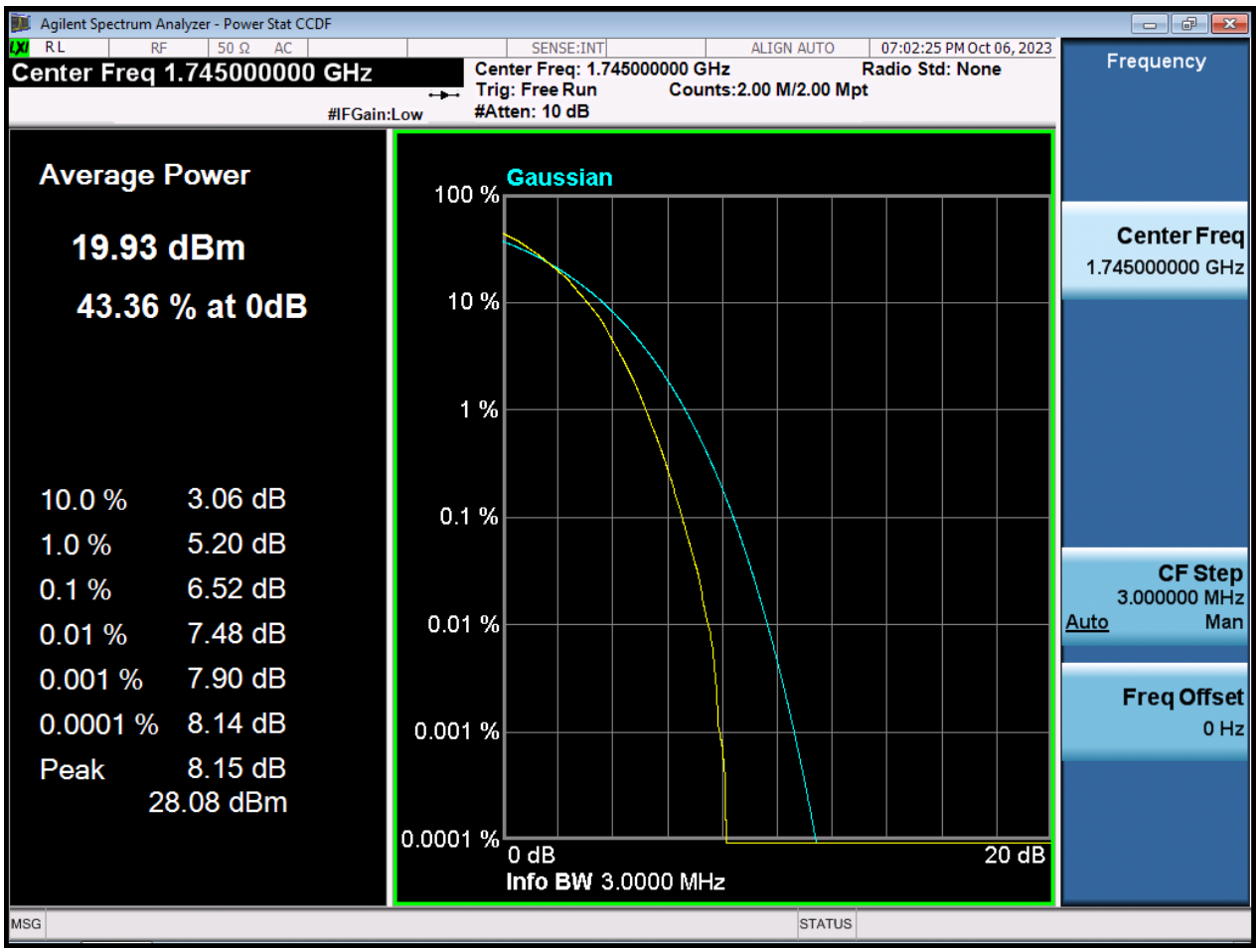


BW1.4 M_PAR_Middle Channel_256QAM_FullRB

BW3 M_PAR_Middle Channel_QPSK_FullRB

BW3 M_PAR_Middle Channel_16QAM_FullRB

BW3 M_PAR_Middle Channel_64QAM_FullRB

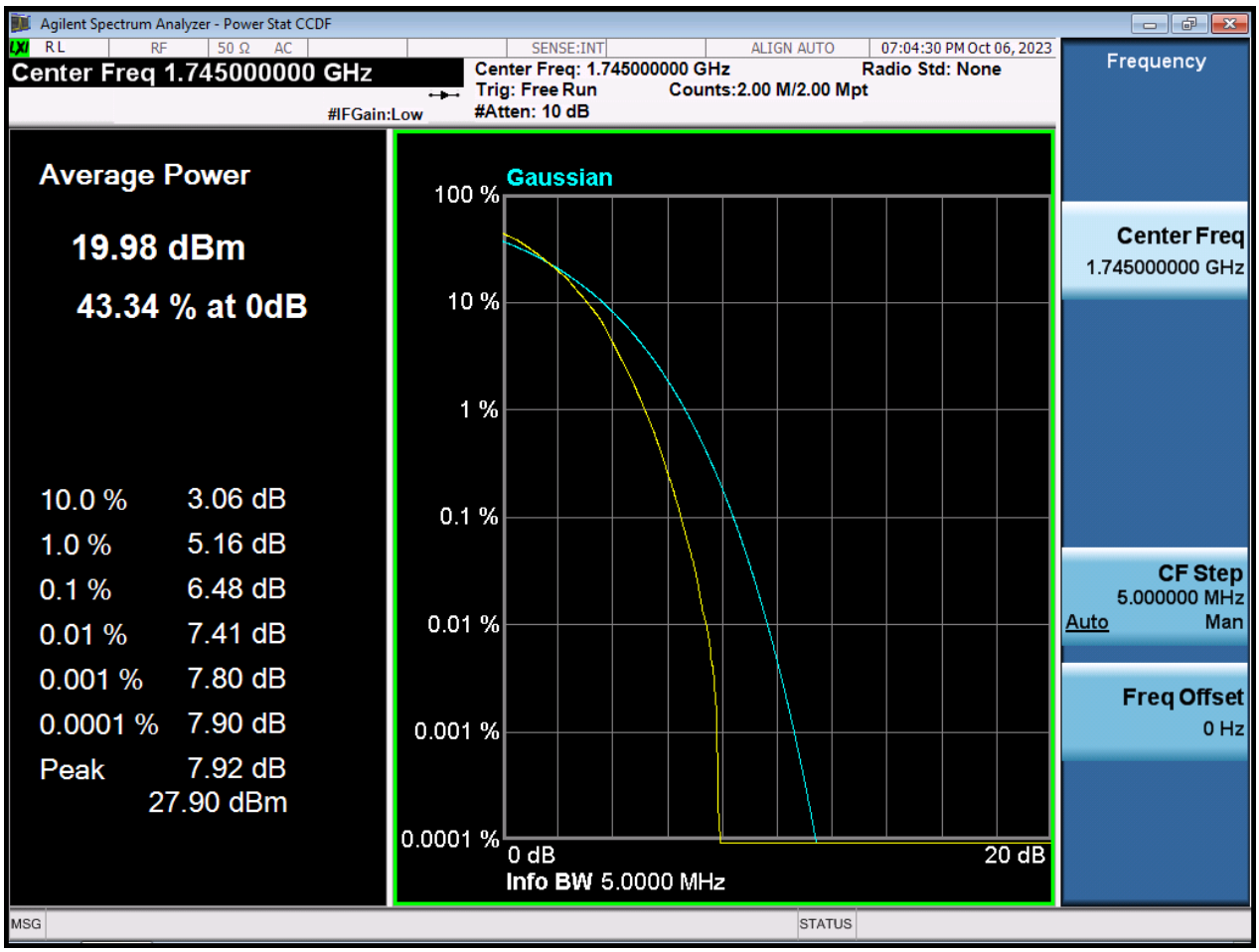


BW3 M_PAR_Middle Channel_256QAM_FullRB

BW5 M_PAR_Middle Channel_QPSK_FullRB

BW5 M_PAR_Middle Channel_16QAM_FullRB

BW5 M_PAR_Middle Channel_64QAM_FullRB

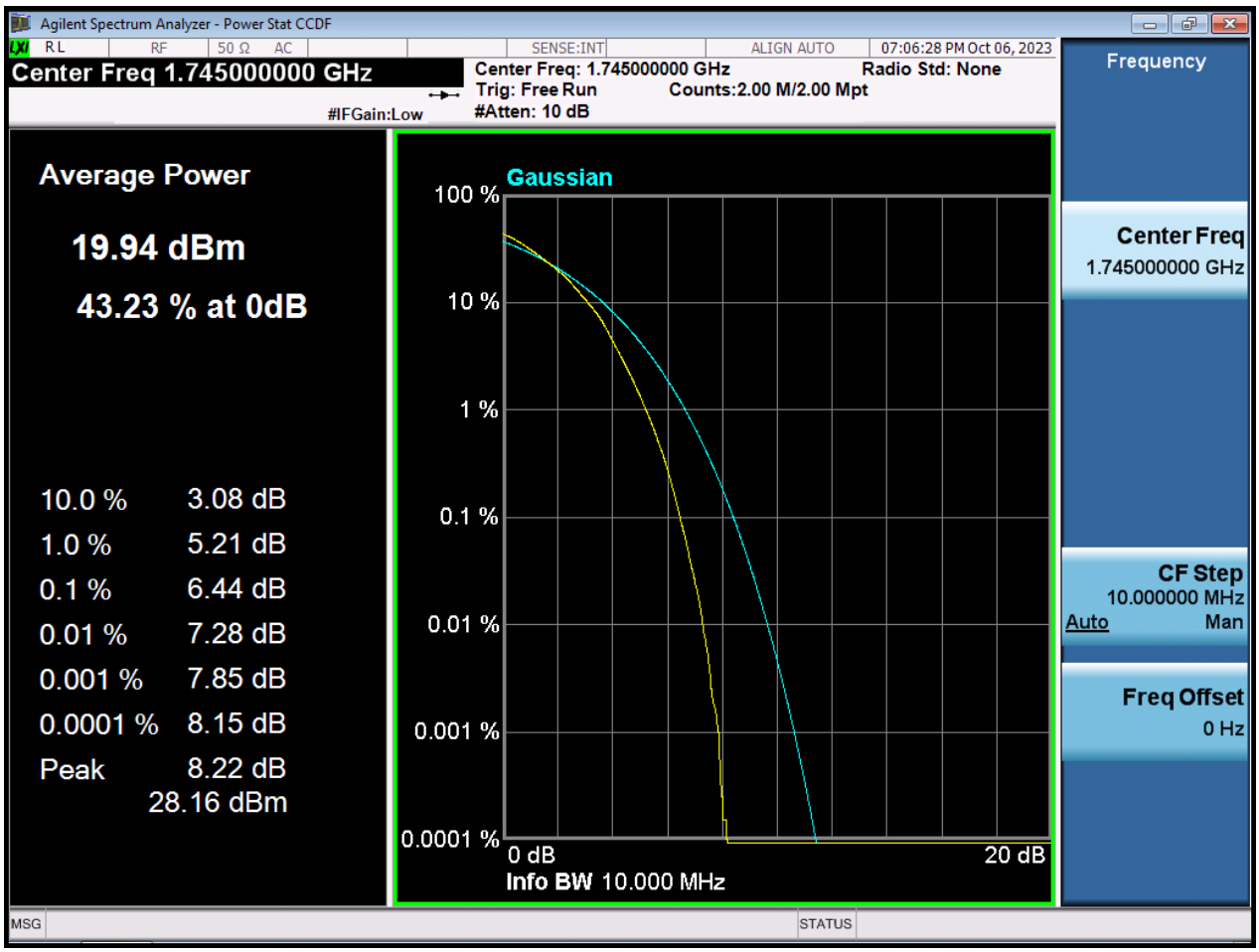


BW5 M_PAR_Middle Channel_256QAM_FullRB

BW10 M_PAR_Middle Channelz_QPSK_FullRB

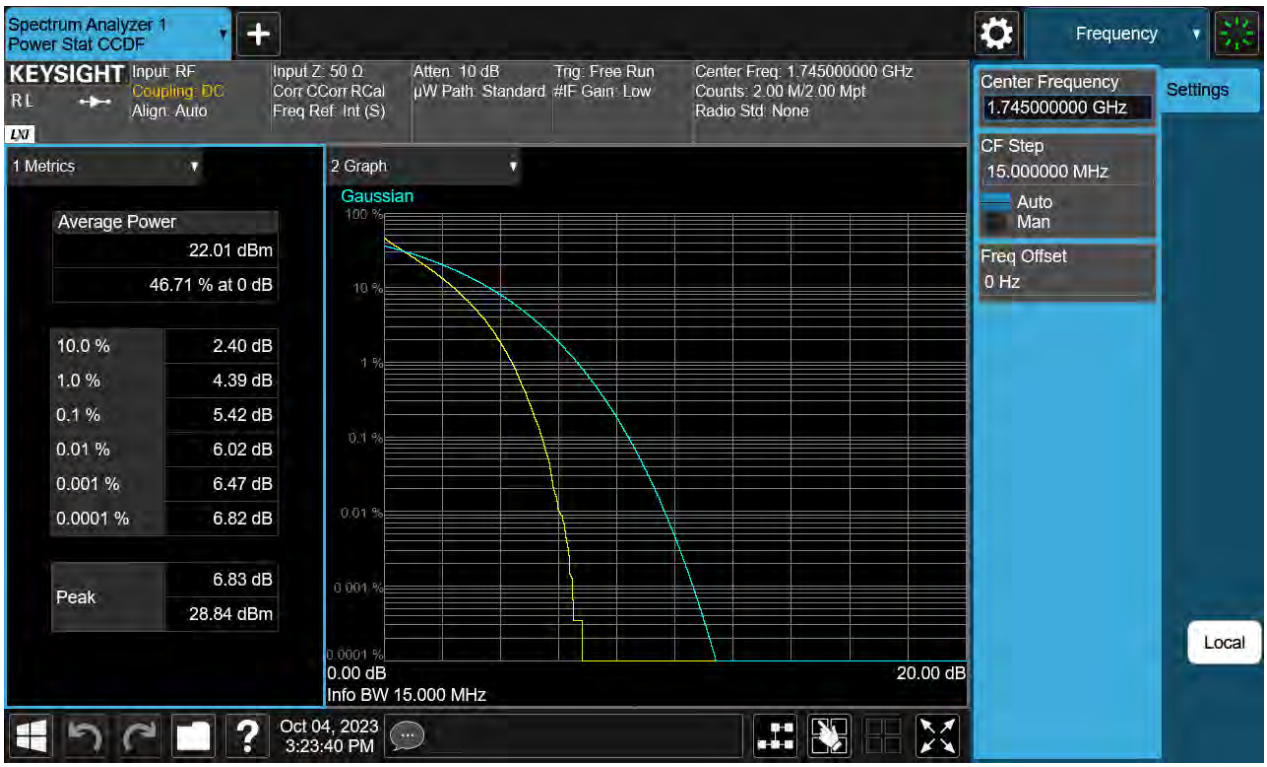
BW10 M_PAR_Middle Channel_16QAM_FullRB

BW10 M_PAR_Middle Channel_64QAM_FullRB



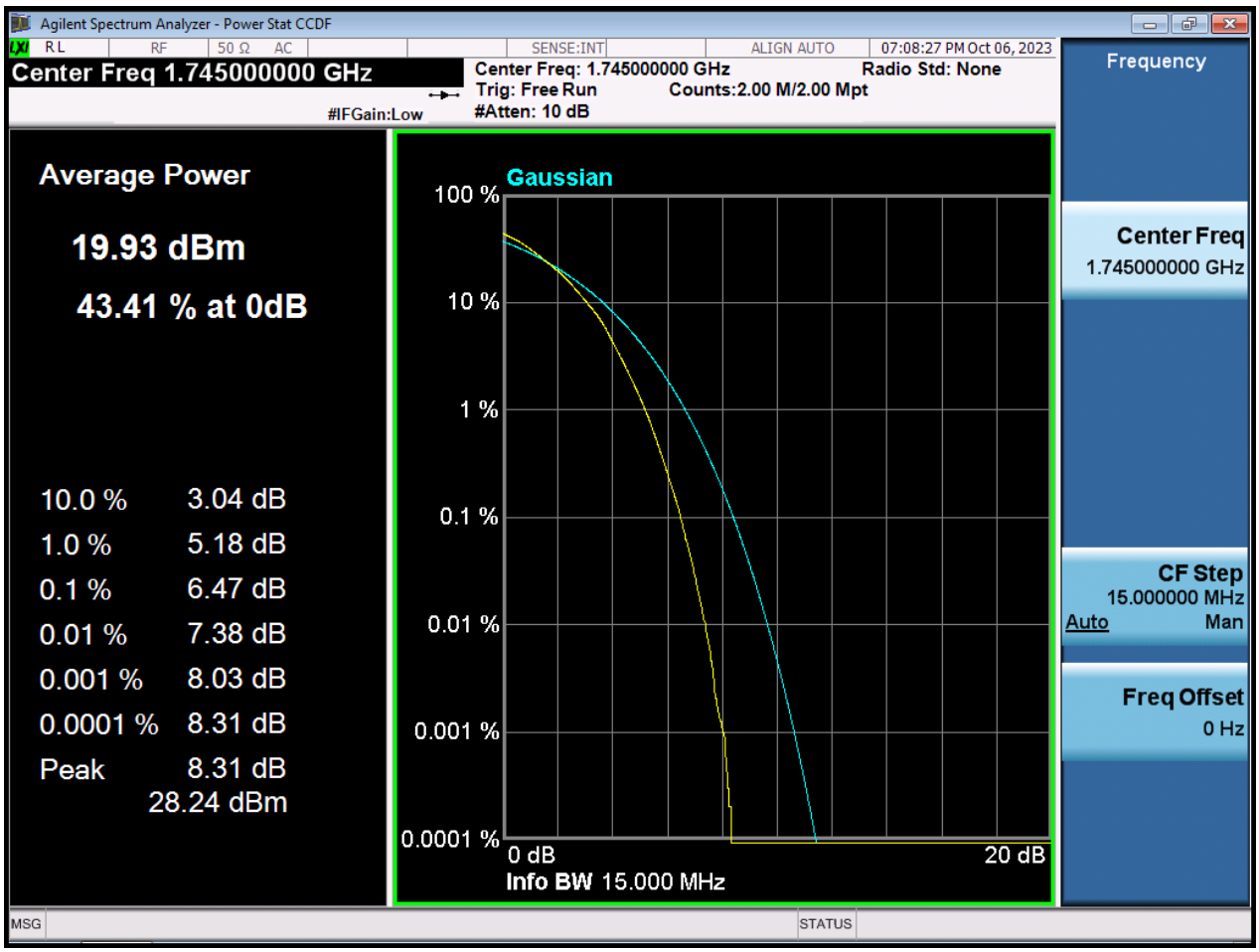
BW10 M_PAR_Middle Channel_256QAM_FullRB

BW15 M_PAR_Middle Channel_QPSK_FullRB



BW15 M_PAR_Middle Channel_16QAM_FullRB

BW15 M_PAR_Middle Channel_64QAM_FullRB

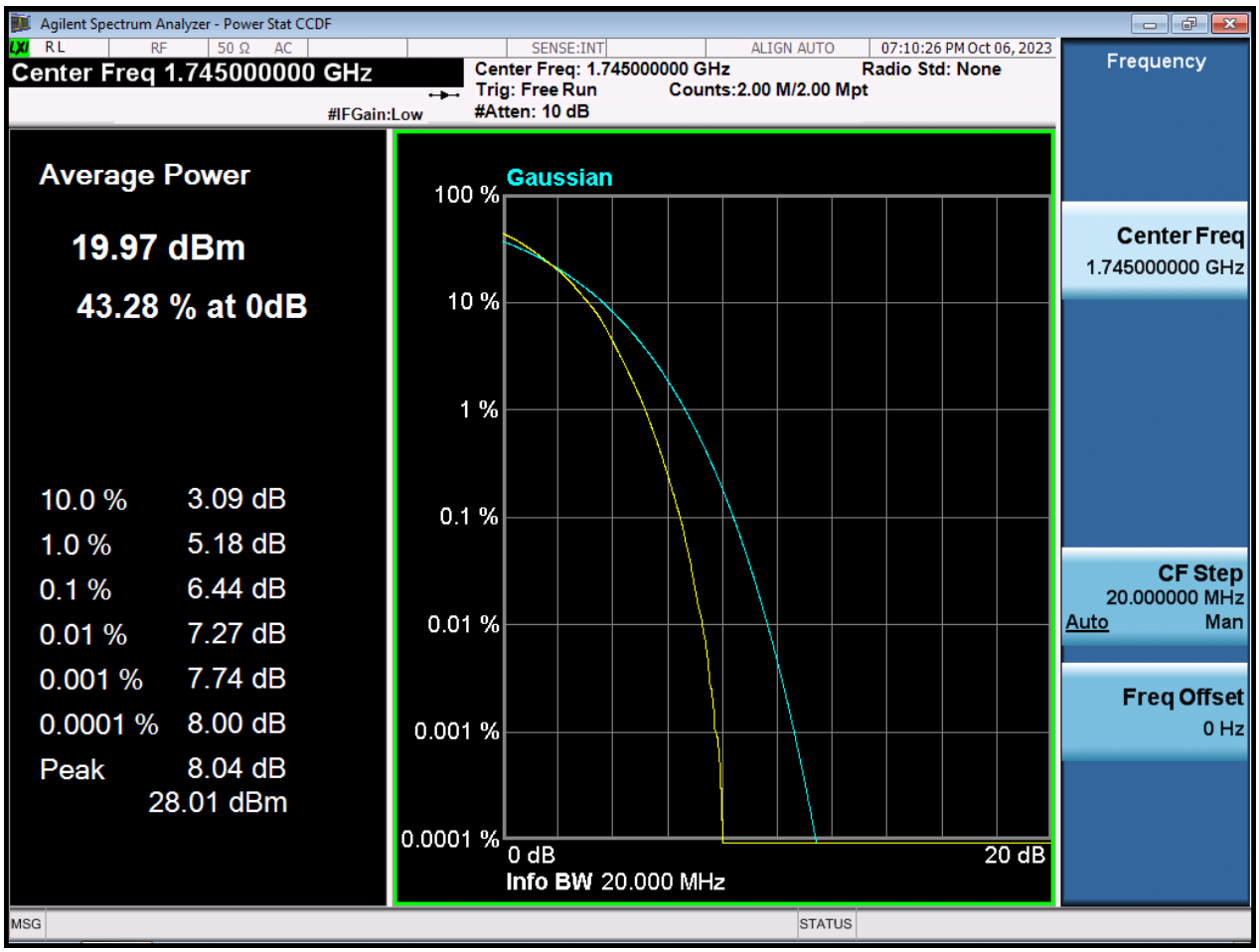


BW15 M_PAR_Middle Channel_256QAM_FullRB

BW20 M_PAR_Middle Channel_QPSK_FullRB

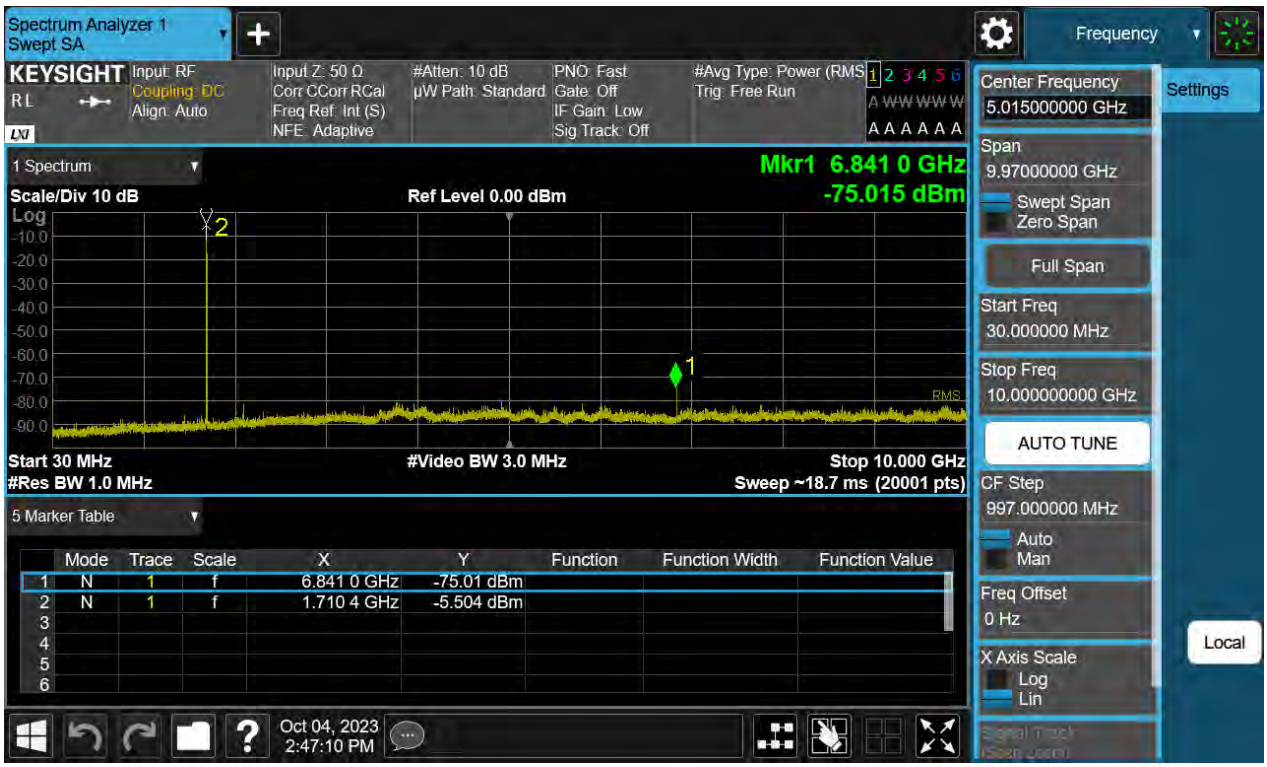
BW20 M_PAR_Middle Channel_16QAM_FullRB

BW20 M_PAR_Middle Channel_64QAM_FullRB

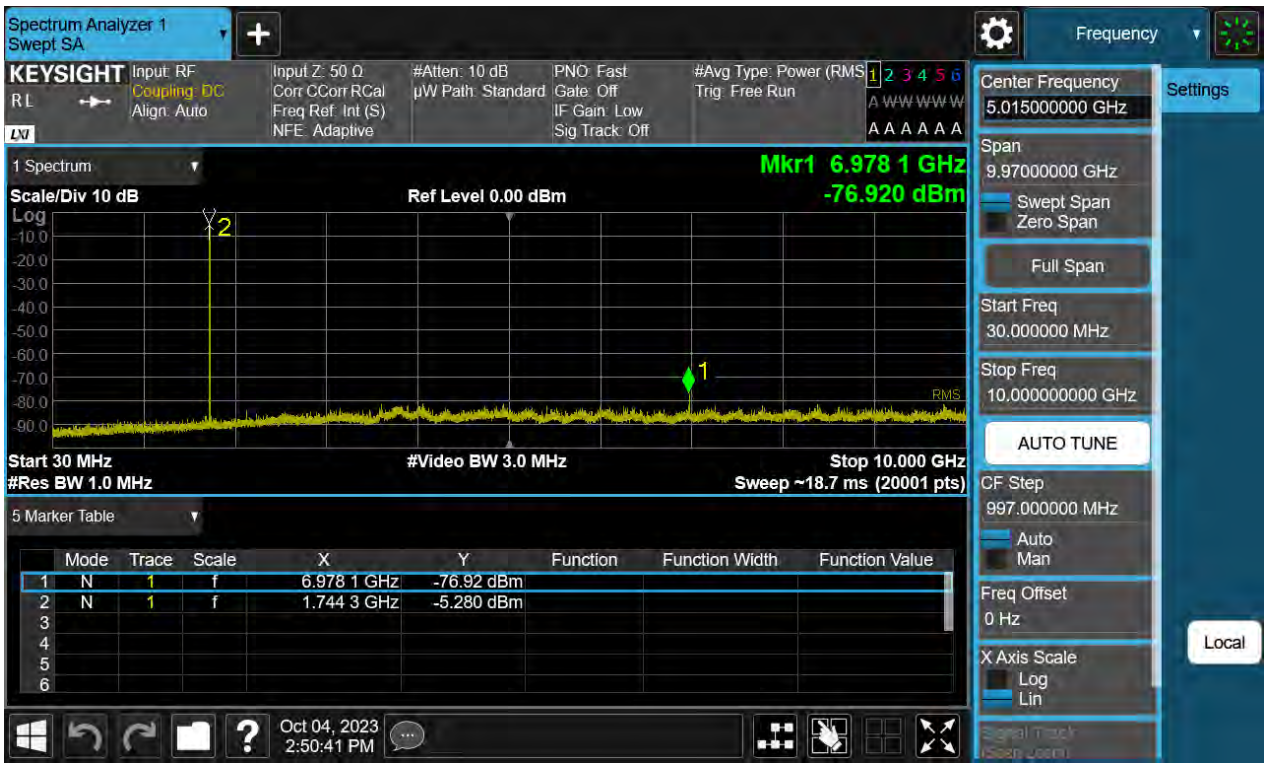


BW20 M_PAR_Middle Channel_256QAM_FullRB

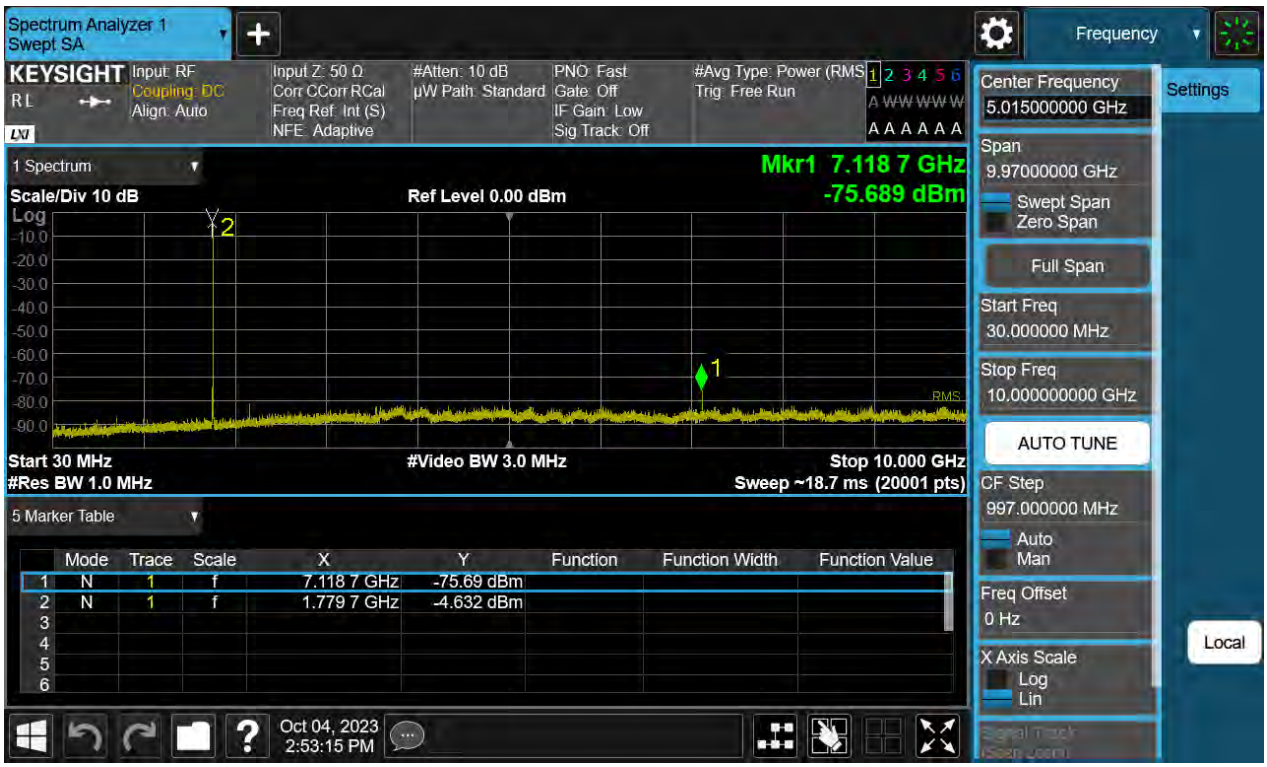
BW1.4 M_CSE(30 M-10 G)_Lowest Channel_QPSK_1RB



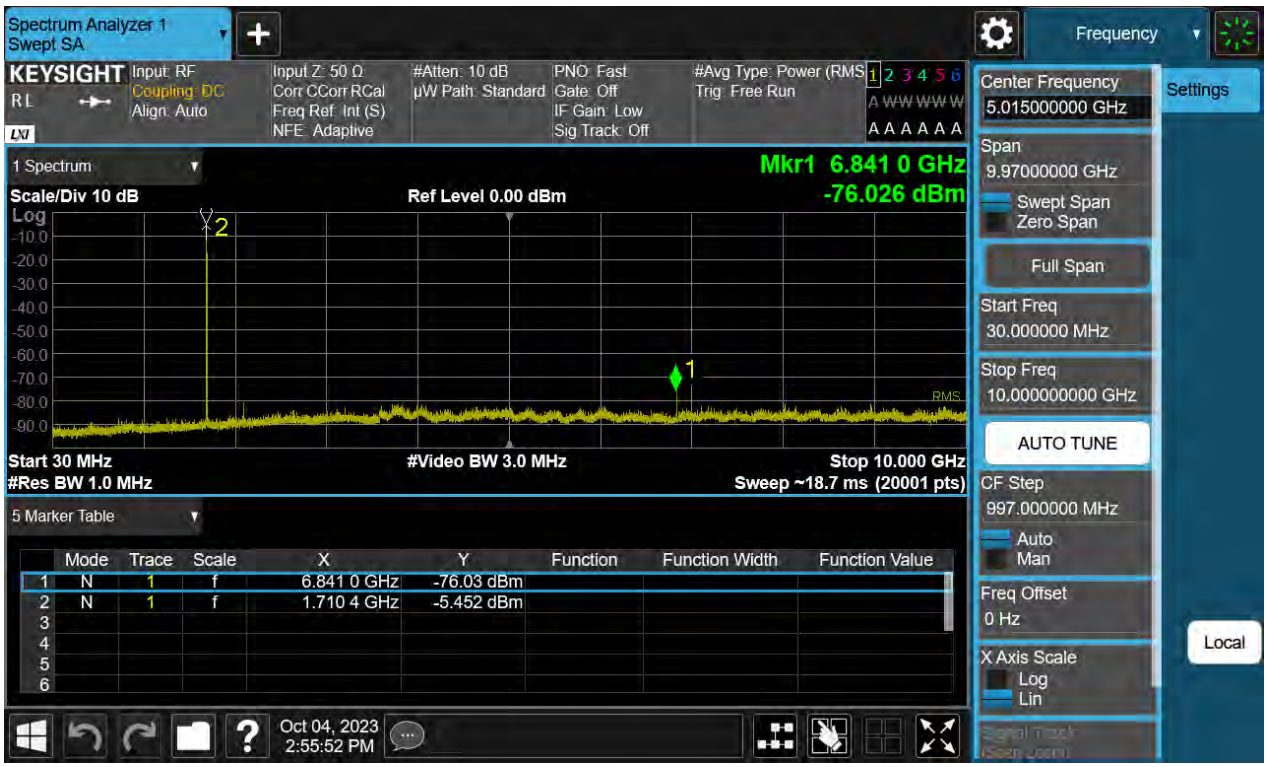
BW1.4 M_CSE(30 M-10 G)_Middle Channel_QPSK_1RB



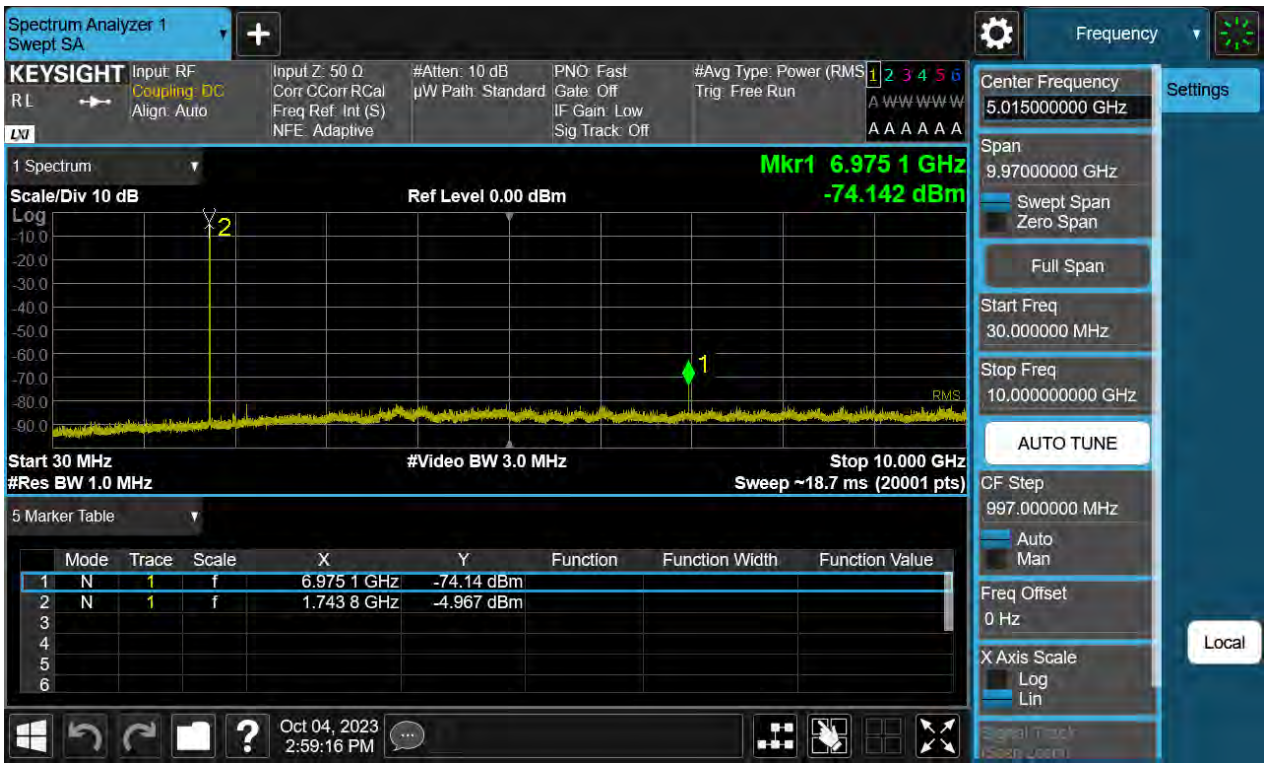
BW1.4 M_CSE(30 M-10 G)_Highest Channel_QPSK_1RB



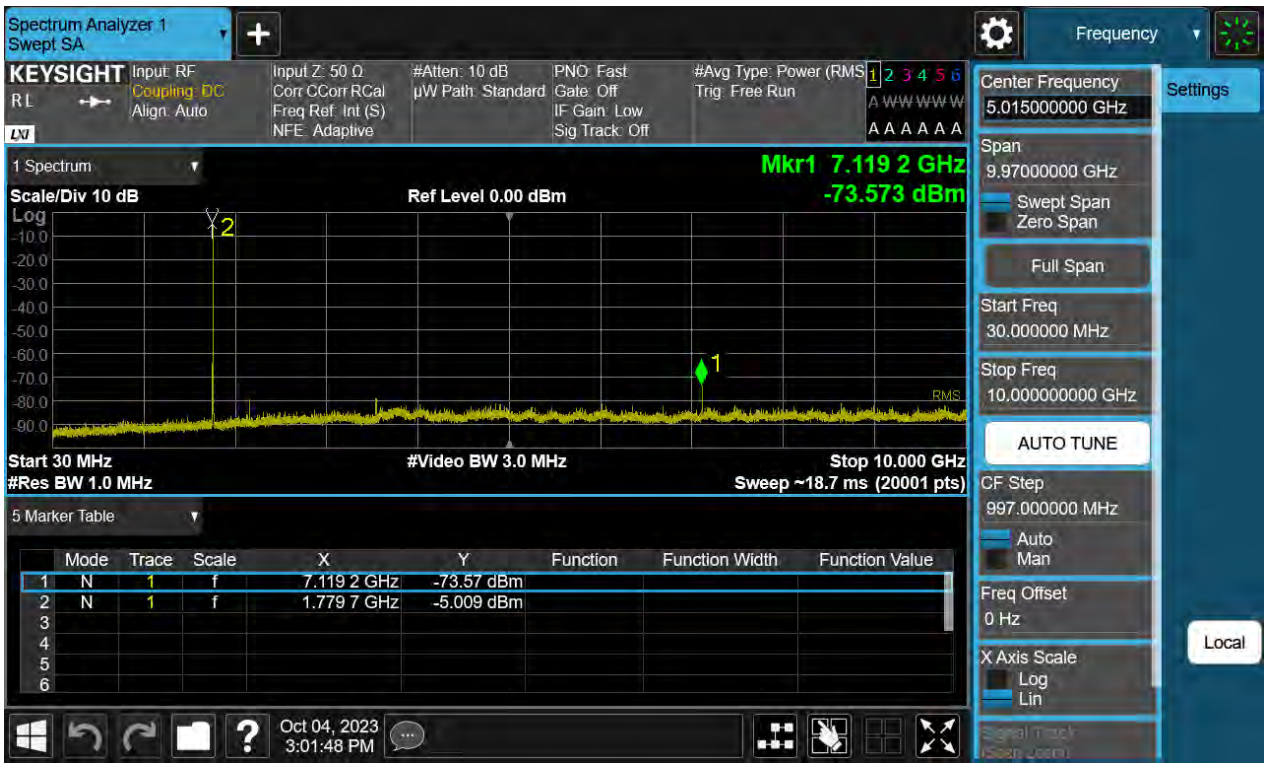
BW3 M_CSE(30 M-10 G)_Lowest Channel_QPSK_1RB



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