TEST REPORT

FCC LTE B4 Test for SM-A266M/DS
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2501-FC039

DATE OF ISSUE
January 22, 2025

Tested by
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TEST REPORT

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Additional Model
SM-A266M

Applicant	**SAMSUNG Electronics Co., Ltd.** 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Product Name Model Name	Mobile Phone SM-A266M/DS
Date of Test	December 09, 2024~ January 17, 2025
FCC ID	A3LSMA266M
Location of Test	■ Permanent Testing Lab ☐ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Test Standard Used	FCC Rule Part: § 27
Test Results	PASS

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	January 22, 2025	Initial Release

Notice

Content
The measurements shown in this report were made in accordance with the procedures specified in CFR47 section § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)
The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated. The test results have only been applied with the test methods required by the standard(s).
The laboratory is not accredited for the test results marked *. Information provided by the applicant is marked **. Test results provided by external providers are marked ***.
When confirmation of authenticity of this test report is required, please contact www.hct.co.kr
The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

CONTENTS

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMA266M
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 27
EUT Type:	Mobile phone
Model(s):	SM-A266M/DS
Additional Model(s)	SM-A266M
Tx Frequency:	1710.7 MHz – 1754.3 MHz (LTE – Band 4 (1.4 MHz)) 1711.5 MHz – 1753.5 MHz (LTE – Band 4 (3 MHz)) 1712.5 MHz – 1752.5 MHz (LTE – Band 4 (5 MHz)) 1715.0 MHz – 1750.0 MHz (LTE – Band 4 (10 MHz)) 1717.5 MHz – 1747.5 MHz (LTE – Band 4 (15 MHz)) 1720.0 MHz – 1745.0 MHz (LTE – Band 4 (20 MHz))
Date(s) of Tests:	December 09, 2024~ January 17, 2025
Serial number:	Radiated : R3CXB0V4KLT Conducted : 855de5dce5297ece

1.1. MAXIMUM OUTPUT POWER

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band4 (1.4)	1710.7 – 1754.3	1M10G7D	QPSK	0.194	22.87
		1M10W7D	16QAM	0.161	22.07
		1M10W7D	64QAM	0.129	21.09
		1M10W7D	256QAM	0.066	18.20
LTE – Band4 (3)	1711.5 – 1753.5	2M72G7D	QPSK	0.185	22.68
		2M72W7D	16QAM	0.159	22.02
		2M71W7D	64QAM	0.134	21.27
		2M72W7D	256QAM	0.068	18.35
LTE – Band4 (5)	1712.5 – 1752.5	4M54G7D	QPSK	0.186	22.69
		4M53W7D	16QAM	0.162	22.09
		4M53W7D	64QAM	0.126	20.99
		4M54W7D	256QAM	0.066	18.17
LTE – Band4 (10)	1715.0 – 1750.0	9M03G7D	QPSK	0.194	22.88
		9M05W7D	16QAM	0.163	22.13
		9M02W7D	64QAM	0.130	21.13
		9M00W7D	256QAM	0.066	18.20
LTE – Band4 (15)	1717.5 – 1747.5	13M5G7D	QPSK	0.189	22.76
		13M5W7D	16QAM	0.153	21.85
		13M5W7D	64QAM	0.127	21.05
		13M4W7D	256QAM	0.066	18.17
LTE – Band4 (20)	1720.0 – 1745.0	18M0G7D	QPSK	0.184	22.65
		17M9W7D	16QAM	0.156	21.92
		18M0W7D	64QAM	0.151	21.80
		18M0W7D	256QAM	0.065	18.14

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

Please refer to the [2G3G] Test Report.

2.2. MEASURING INSTRUMENT CALIBRATION

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

2.3. TEST FACILITY

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

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
Radiated Power	- ANSI C63.26-2015 – Section 5.2.4.4 - KDB 971168 D01 v03r01 – Section 5.8
Radiated Spurious and Harmonic Emissions	- ANSI C63.26-2015 – Section 5.5.3 - KDB 971168 D01 v03r01 – Section 5.8

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.

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.

Test Settings

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

Test Note

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

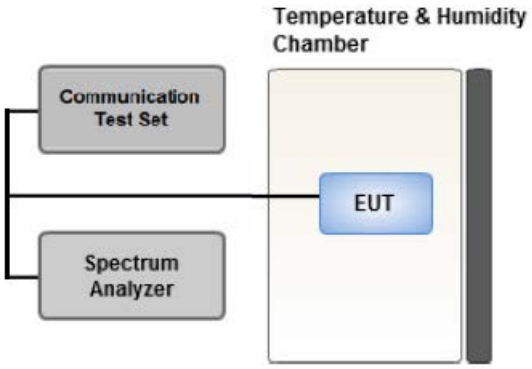
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

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

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

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

3.4 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

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

② Alternate Procedure for PAPR

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

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

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

Test Settings(Peak Power)

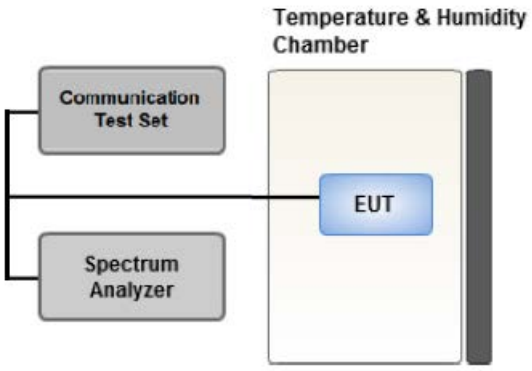
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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

Test Settings(Average Power)

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

3.5 OCCUPIED BANDWIDTH.



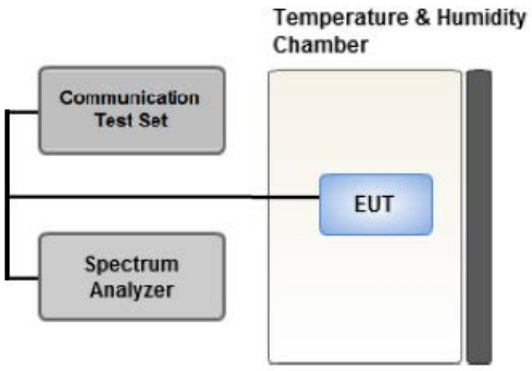
Test setup

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.
The EUT makes a call to the communication simulator.
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.
Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

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

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

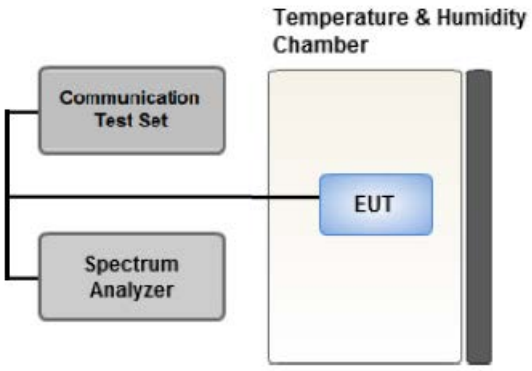
Test Overview

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

Test Settings

1. RBW = 1 MHz
2. VBW ≥ 3 MHz
3. Detector = Peak
4. Trace Mode = max hold
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

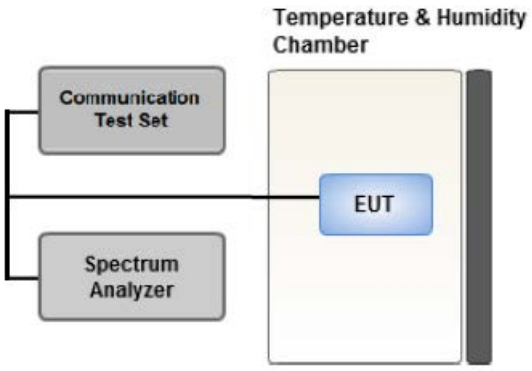
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
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
- All simultaneous transmission scenarios of operation were investigated, and the test results showed no additional significant emissions relative to the least restrictive limit were observed.
  Therefore, only the worst case(stand-alone) results were reported.
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported. (Worst case : 10 MHz)
- 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.
- SM-A266M/DS & additional models were tested and the worst case results are reported.
  (Worst case : SM-A266M/DS)

[Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	See Section 8.1		X
Radiated Spurious and Harmonic Emissions	QPSK	See Section 8.2		X

3.10 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.
- SM-A266M/DS & additional models were tested and the worst case results are reported.
(Worst case : SM-A266M/DS)

[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	Switch box(1.2 G HPF+LNA)	HCT CO., LTD.,	F1L1	11/11/2025	Annual
RF Switching System	Switch box(3.3 G HPF+LNA)	HCT CO., LTD.,	F1L2	11/11/2025	Annual
RF Switching System	Switch box(LNA)	HCT CO., LTD.,	F1L4	11/11/2025	Annual
RF Switching System	Switch box(6 G HPF+LNA)	HCT CO., LTD.,	F1L7	11/11/2025	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/17/2025	Annual
DC Power Supply	E3632A	Agilent	MY40010147	08/06/2025	Annual
Dipole Antenna	UHAP	Schwarzbeck	01274	03/10/2026	Biennial
Dipole Antenna	UHAP	Schwarzbeck	01288	08/07/2026	Biennial
Chamber	SU-642	ESPEC	93008124	02/19/2025	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	09/20/2026	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/19/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/06/2025	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/28/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	08/19/2026	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	11/13/2025	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	11/20/2025	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/26/2025	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/17/2025	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

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 (±kHz)
Occupied Bandwidth	95 (Confidence level about 95 %, k=2)
Frequency stability	28 (Confidence level about 95 %, k=2)

Parameter	Expanded Uncertainty (±dB)
Block Edge	0.70 (Confidence level about 95 %, k=2)
Conducted Spurious Emissions	1.18 (Confidence level about 95 %, k=2)
Peak- to- Average Ratio	0.68 (Confidence level about 95 %, k=2)
Radiated Power	4.74 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, k=2)

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 27.53(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
20175	1,732.50	-15.75	18.45	9.90	1.76	H	0.456	26.59

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

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

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW
GSM BW = 249 kHz
G = Phase Modulation
X = Cases not otherwise covered
W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W
GSM BW = 249 kHz
G = Phase Modulation
7 = Quantized/Digital Info
W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W
WCDMA BW = 4.17 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D
LTE BW = 4.48 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D
LTE BW = 4.48 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1710.7	LTE B4 1.4 MHz	QPSK	-19.16	14.21	10.04	2.06	H	< 1.00	0.166	22.19	1	5
		16-QAM	-20.03	13.34	10.04	2.06	H		0.136	21.32		
		64-QAM	-20.93	12.44	10.04	2.06	H		0.110	20.42		
		256-QAM	-23.90	9.47	10.04	2.06	H		0.056	17.45		
1732.5		QPSK	-18.64	14.81	10.14	2.08	H		0.194	22.87	1	5
		16-QAM	-19.44	14.01	10.14	2.08	H		0.161	22.07		
		64-QAM	-20.42	13.03	10.14	2.08	H		0.129	21.09		
		256-QAM	-23.31	10.14	10.14	2.08	H		0.066	18.20		
1754.3		QPSK	-18.91	14.62	10.21	2.08	H		0.188	22.75	1	5
		16-QAM	-19.74	13.79	10.21	2.08	H		0.156	21.92		
		64-QAM	-20.76	12.77	10.21	2.08	H		0.123	20.90		
		256-QAM	-23.70	9.83	10.21	2.08	H		0.063	17.96		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1711.5	LTE B4 3 MHz	QPSK	-19.24	14.13	10.04	2.06	H	< 1.00	0.163	22.11	1	14
		16-QAM	-20.00	13.37	10.04	2.06	H		0.136	21.35		
		64-QAM	-20.96	12.41	10.04	2.06	H		0.109	20.39		
		256-QAM	-23.70	9.67	10.04	2.06	H		0.058	17.65		
1732.5		QPSK	-18.83	14.62	10.14	2.08	H		0.185	22.68	1	0
		16-QAM	-19.49	13.96	10.14	2.08	H		0.159	22.02		
		64-QAM	-20.24	13.21	10.14	2.08	H		0.134	21.27		
		256-QAM	-23.16	10.29	10.14	2.08	H		0.068	18.35		
1752.5		QPSK	-19.19	14.34	10.21	2.08	H		0.177	22.47	1	0
		16-QAM	-19.71	13.82	10.21	2.08	H		0.157	21.95		
		64-QAM	-20.52	13.01	10.21	2.08	H		0.130	21.14		
		256-QAM	-23.58	9.95	10.21	2.08	H		0.064	18.08		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1712.5	LTE B4 5 MHz	QPSK	-19.10	14.29	10.06	2.06	H	< 1.00	0.169	22.29	1	24
		16-QAM	-19.75	13.64	10.06	2.06	H		0.146	21.64		
		64-QAM	-20.86	12.53	10.06	2.06	H		0.113	20.53		
		256-QAM	-23.77	9.62	10.06	2.06	H		0.058	17.62		
1732.5		QPSK	-18.82	14.63	10.14	2.08	H		0.186	22.69	1	0
		16-QAM	-19.42	14.03	10.14	2.08	H		0.162	22.09		
		64-QAM	-20.52	12.93	10.14	2.08	H		0.126	20.99		
		256-QAM	-23.34	10.11	10.14	2.08	H		0.066	18.17		
1752.5		QPSK	-18.97	14.56	10.21	2.08	H		0.186	22.69	1	24
		16-QAM	-19.82	13.71	10.21	2.08	H		0.153	21.84		
		64-QAM	-20.74	12.79	10.21	2.08	H		0.124	20.92		
		256-QAM	-23.55	9.98	10.21	2.08	H		0.065	18.11		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1715.0	LTE B4 10 MHz	QPSK	-19.05	14.34	10.06	2.06	H	< 1.00	0.171	22.34	1	49
		16-QAM	-19.81	13.58	10.06	2.06	H		0.144	21.58		
		64-QAM	-20.67	12.72	10.06	2.06	H		0.118	20.72		
		256-QAM	-23.55	9.84	10.06	2.06	H		0.061	17.84		
1732.5		QPSK	-18.63	14.82	10.14	2.08	H		0.194	22.88	1	0
		16-QAM	-19.38	14.07	10.14	2.08	H		0.163	22.13		
		64-QAM	-20.38	13.07	10.14	2.08	H		0.130	21.13		
		256-QAM	-23.31	10.14	10.14	2.08	H		0.066	18.20		
1750.0		QPSK	-19.08	14.40	10.20	2.07	H		0.179	22.53	1	0
		16-QAM	-19.68	13.80	10.20	2.07	H		0.156	21.93		
		64-QAM	-20.57	12.91	10.20	2.07	H		0.127	21.04		
		256-QAM	-23.54	9.94	10.20	2.07	H		0.064	18.07		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1717.5	LTE B4 15 MHz	QPSK	-19.00	14.42	10.08	2.06	H	< 1.00	0.175	22.44	1	74
		16-QAM	-19.73	13.69	10.08	2.06	H		0.148	21.71		
		64-QAM	-20.65	12.77	10.08	2.06	H		0.120	20.79		
		256-QAM	-23.46	9.96	10.08	2.06	H		0.063	17.98		
1732.5		QPSK	-18.92	14.53	10.14	2.08	H		0.182	22.59	1	74
		16-QAM	-19.66	13.79	10.14	2.08	H		0.153	21.85		
		64-QAM	-20.46	12.99	10.14	2.08	H		0.127	21.05		
		256-QAM	-23.34	10.11	10.14	2.08	H		0.066	18.17		
1747.5		QPSK	-18.85	14.63	10.20	2.07	H		0.189	22.76	1	0
		16-QAM	-19.82	13.66	10.20	2.07	H		0.151	21.79		
		64-QAM	-20.56	12.92	10.20	2.07	H		0.127	21.05		
		256-QAM	-23.48	10.00	10.20	2.07	H		0.065	18.13		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1720.0	LTE B4 20 MHz	QPSK	-18.92	14.50	10.08	2.06	H	< 1.00	0.179	22.52	1	99
		16-QAM	-19.63	13.79	10.08	2.06	H		0.152	21.81		
		64-QAM	-19.64	13.78	10.08	2.06	H		0.151	21.80		
		256-QAM	-23.39	10.03	10.08	2.06	H		0.064	18.05		
1732.5		QPSK	-19.02	14.43	10.14	2.08	H		0.177	22.49	1	99
		16-QAM	-19.85	13.60	10.14	2.08	H		0.147	21.66		
		64-QAM	-20.47	12.98	10.14	2.08	H		0.127	21.04		
		256-QAM	-23.55	9.90	10.14	2.08	H		0.063	17.96		
1745.0		QPSK	-18.92	14.54	10.18	2.07	H		0.184	22.65	1	0
		16-QAM	-19.65	13.81	10.18	2.07	H		0.156	21.92		
		64-QAM	-20.38	13.08	10.18	2.07	H		0.132	21.19		
		256-QAM	-23.43	10.03	10.18	2.07	H		0.065	18.14		

8.2 RADIATED SPURIOUS EMISSIONS

▣ MODE: LTE B4

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: -13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	RB	
								Size	Offset
19957 (1710.7)	3 421.40	-31.55	12.44	-50.53	2.97	H	-41.06	1	5
	5 132.10	-39.38	12.31	-51.85	3.81	H	-43.35		
	6 842.80	-44.29	11.91	-51.40	4.35	V	-43.84		
20175 (1732.5)	3 465.00	-36.05	12.34	-54.50	3.02	H	-45.18	1	5
	5 197.50	-41.62	12.63	-54.46	3.78	H	-45.61		
	6 930.00	-43.56	11.65	-50.38	4.40	V	-43.13		
20393 (1754.3)	3 508.60	-36.80	12.34	-54.75	3.05	H	-45.46	1	5
	5 262.90	-43.17	13.02	-55.58	3.79	H	-46.35		
	7 017.20	-43.13	11.24	-48.58	4.42	V	-41.76		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
4	1.4 MHz	1732.5	QPSK	6	0	4.75
			16-QAM			5.43
			64-QAM			5.83
			256-QAM			6.35
	3 MHz		QPSK	15		5.01
			16-QAM			5.64
			64-QAM			5.91
			256-QAM			6.38
	5 MHz		QPSK	25		4.89
			16-QAM			5.63
			64-QAM			5.91
			256-QAM			6.36
	10 MHz		QPSK	50		5.00
			16-QAM			5.65
			64-QAM			5.96
			256-QAM			6.40
	15 MHz		QPSK	75		4.98
			16-QAM			5.64
			64-QAM			5.98
			256-QAM			6.43
	20 MHz		QPSK	100		5.05
			16-QAM			5.73
			64-QAM			6.12
			256-QAM			6.49

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 51 ~ 74.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
4	1.4 MHz	1732.5	QPSK	6	0	1.1027
			16-QAM			1.0989
			64-QAM			1.0985
			256-QAM			1.0985
	3 MHz		QPSK	15		2.7189
			16-QAM			2.7222
			64-QAM			2.7131
			256-QAM			2.7175
	5 MHz		QPSK	25		4.5400
			16-QAM			4.5257
			64-QAM			4.5338
			256-QAM			4.5435
	10 MHz		QPSK	50		9.0311
			16-QAM			9.0499
			64-QAM			9.0190
			256-QAM			8.9954
	15 MHz		QPSK	75		13.501
			16-QAM			13.471
			64-QAM			13.480
			256-QAM			13.443
	20 MHz		QPSK	100		17.963
			16-QAM			17.936
			64-QAM			17.986
			256-QAM			17.977

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 75 ~ 98.

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)
4	1.4	1710.7	3.7089	27.976	-67.336	-39.360	-13.00
		1732.5	3.4697	27.976	-67.485	-39.509	
		1754.3	3.5095	27.976	-67.439	-39.463	
	3	1711.5	2.6920	27.976	-67.057	-39.081	
		1732.5	3.4597	27.976	-67.332	-39.356	
		1753.5	2.5823	27.976	-68.252	-40.276	
	5	1712.5	3.7089	27.976	-68.024	-40.048	
		1732.5	3.4597	27.976	-66.836	-38.860	
		1752.5	5.9123	28.591	-68.029	-39.438	
	10	1715.0	3.4198	27.976	-66.880	-38.904	
		1732.5	2.6820	27.976	-68.247	-40.271	
		1750.0	3.6890	27.976	-66.432	-38.456	
	15	1717.5	3.4198	27.976	-66.060	-38.084	
		1732.5	3.4497	27.976	-68.070	-40.094	
		1747.5	3.5095	27.976	-65.755	-37.779	
	20	1720.0	3.4198	27.976	-67.501	-39.525	
		1732.5	3.4497	27.976	-65.519	-37.543	
		1745.0	3.5095	27.976	-67.467	-39.491	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 99 ~ 134.
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 135 ~ 170.

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE 4

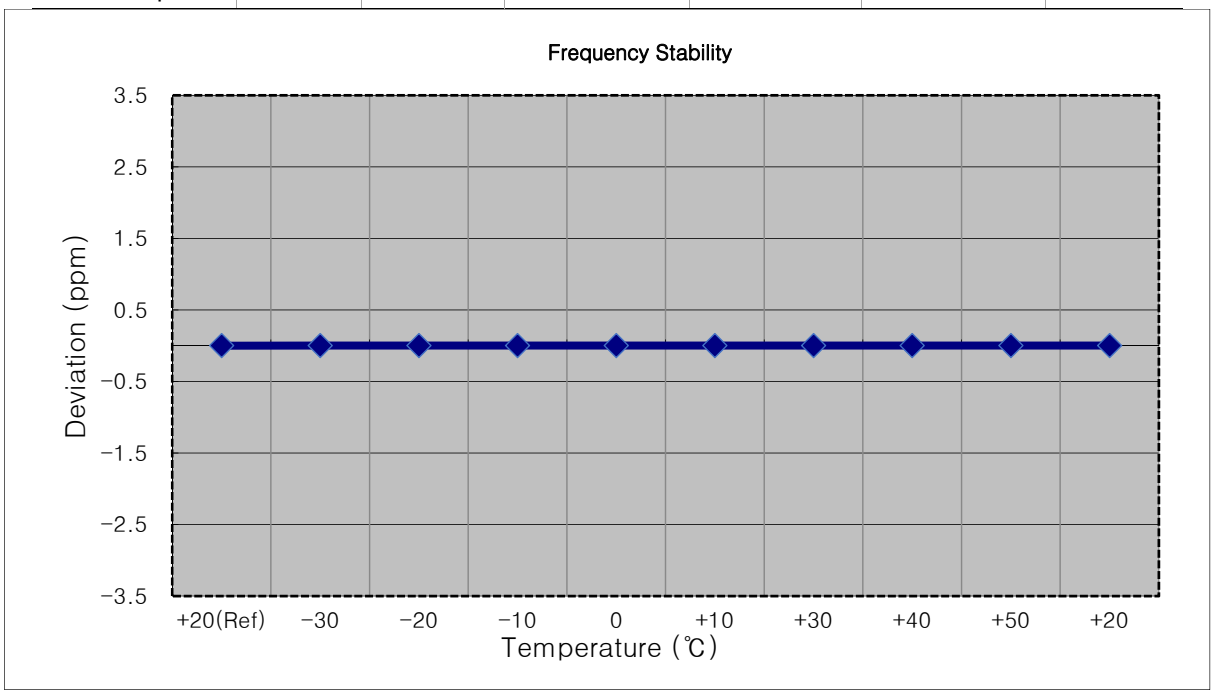
▣ OPERATING FREQUENCY: 1710,700,000 Hz

▣ CHANNEL: 19957 (1.4 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1710 699 998	0.0	0.000 000	0.000
100 %		-30	1710 700 000	1.9	0.000 000	0.001
100 %		-20	1710 700 000	1.6	0.000 000	0.001
100 %		-10	1710 700 000	2.4	0.000 000	0.001
100 %		0	1710 700 001	2.8	0.000 000	0.002
100 %		+10	1710 700 001	2.8	0.000 000	0.002
100 %		+30	1710 700 001	2.5	0.000 000	0.001
100 %		+40	1710 700 000	1.6	0.000 000	0.001
100 %		+50	1710 700 000	1.5	0.000 000	0.001
Batt. Endpoint	3.400	+20	1710 700 001	3.0	0.000 000	0.002



▣ MODE: LTE 4

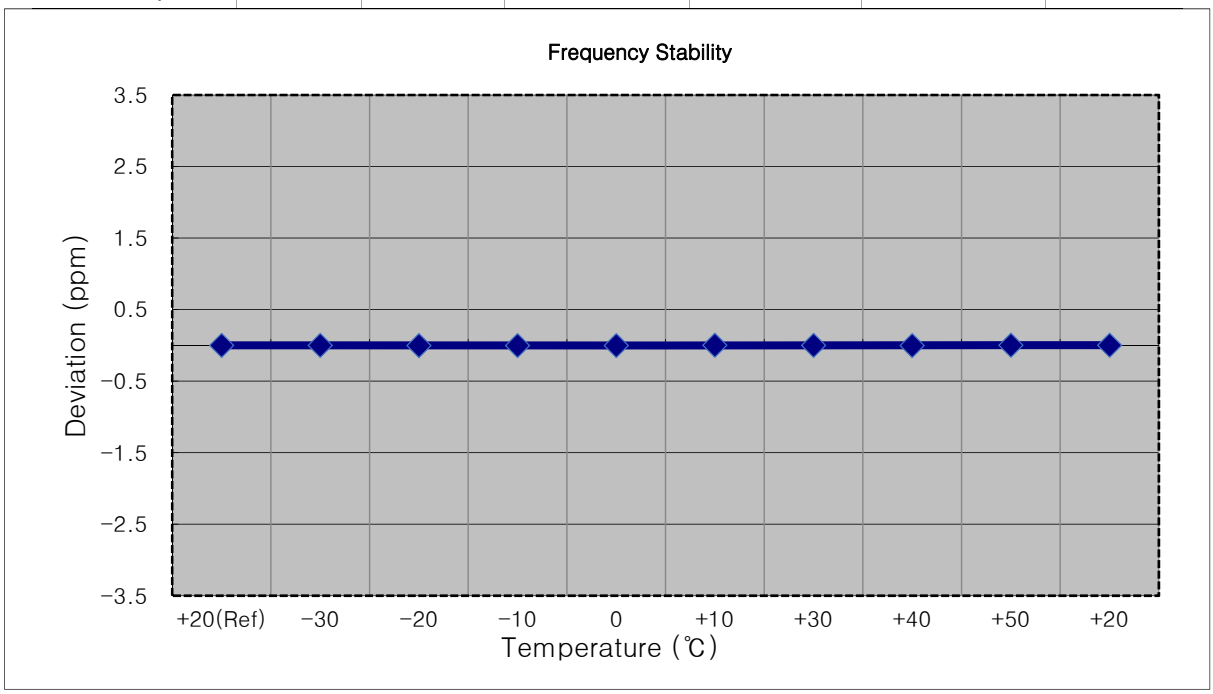
▣ OPERATING FREQUENCY: 1711,500,000 Hz

▣ CHANNEL: 19965 (3 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1711 500 003	0.0	0.000 000	0.000
100 %		-30	1711 500 001	-2.3	0.000 000	-0.001
100 %		-20	1711 499 999	-3.6	0.000 000	-0.002
100 %		-10	1711 500 000	-2.8	0.000 000	-0.002
100 %		0	1711 499 999	-3.7	0.000 000	-0.002
100 %		+10	1711 500 006	3.1	0.000 000	0.002
100 %		+30	1711 500 001	-2.2	0.000 000	-0.001
100 %		+40	1711 500 000	-3.1	0.000 000	-0.002
100 %		+50	1711 500 006	3.4	0.000 000	0.002
Batt. Endpoint	3.400	+20	1711 500 006	2.8	0.000 000	0.002



▣ MODE: LTE 4

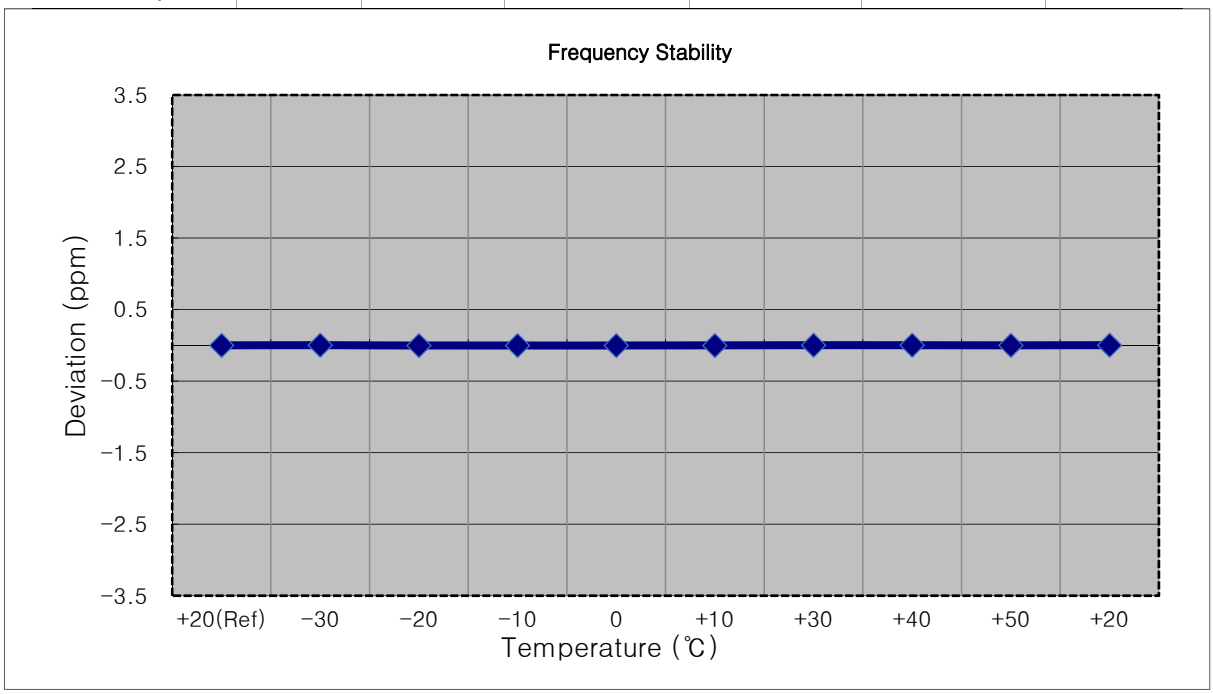
▣ OPERATING FREQUENCY: 1712,500,000 Hz

▣ CHANNEL: 19975 (5 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1712 500 002	0.0	0.000 000	0.000
100 %		-30	1712 500 006	3.5	0.000 000	0.002
100 %		-20	1712 499 999	-3.2	0.000 000	-0.002
100 %		-10	1712 499 999	-3.6	0.000 000	-0.002
100 %		0	1712 499 999	-3.3	0.000 000	-0.002
100 %		+10	1712 500 000	-2.8	0.000 000	-0.002
100 %		+30	1712 500 005	2.4	0.000 000	0.001
100 %		+40	1712 500 005	2.7	0.000 000	0.002
100 %		+50	1712 500 001	-1.6	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1712 500 004	2.0	0.000 000	0.001



▣ MODE: LTE 4

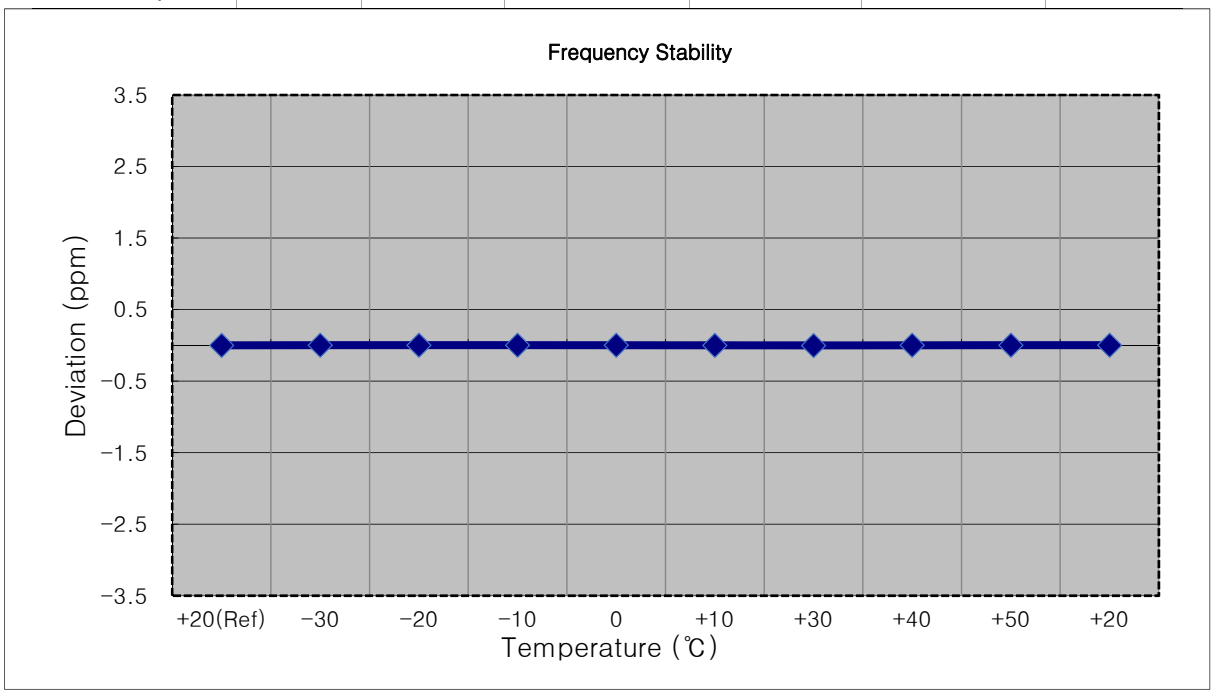
▣ OPERATING FREQUENCY: 1715,000,000 Hz

▣ CHANNEL: 20000 (10 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1715 000 002	0.0	0.000 000	0.000
100 %		-30	1715 000 004	2.2	0.000 000	0.001
100 %		-20	1715 000 006	3.4	0.000 000	0.002
100 %		-10	1715 000 004	2.1	0.000 000	0.001
100 %		0	1715 000 005	2.7	0.000 000	0.002
100 %		+10	1715 000 000	-2.0	0.000 000	-0.001
100 %		+30	1714 999 999	-2.8	0.000 000	-0.002
100 %		+40	1715 000 004	2.0	0.000 000	0.001
100 %		+50	1715 000 005	3.1	0.000 000	0.002
Batt. Endpoint	3.400	+20	1715 000 005	3.1	0.000 000	0.002



▣ MODE: LTE 4

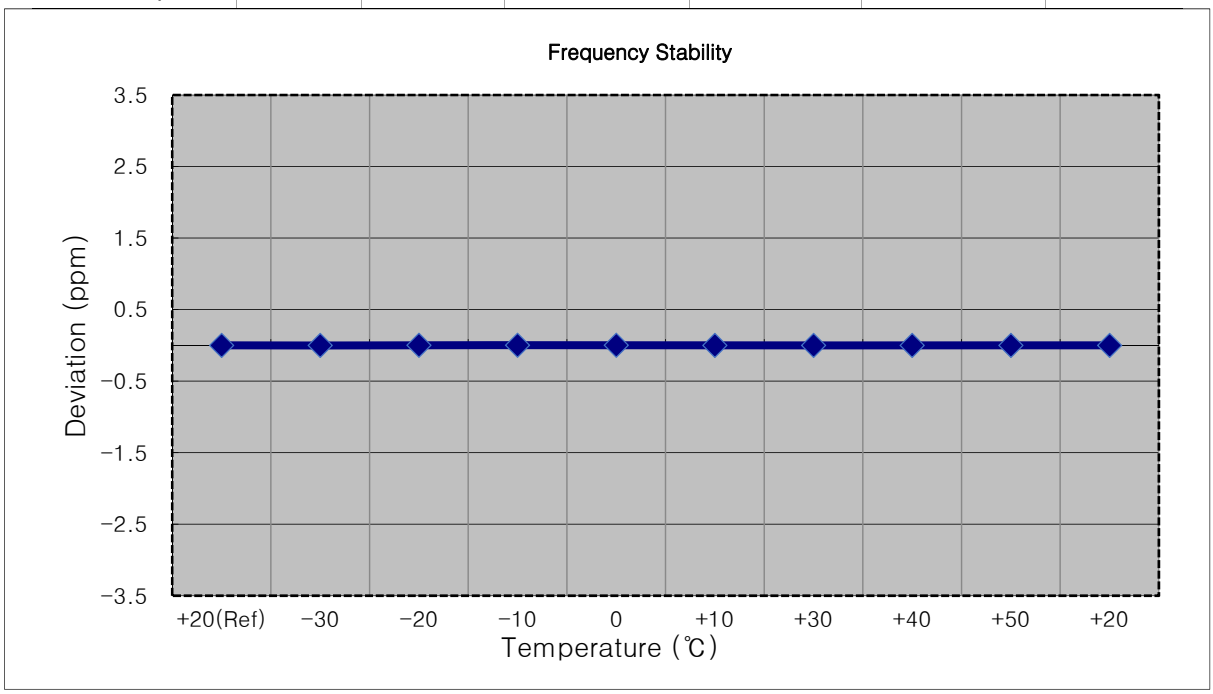
▣ OPERATING FREQUENCY: 1717,500,000 Hz

▣ CHANNEL: 20025 (15 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1717 499 997	0.0	0.000 000	0.000
100 %		-30	1717 499 994	-2.5	0.000 000	-0.001
100 %		-20	1717 499 998	1.3	0.000 000	0.001
100 %		-10	1717 499 998	1.4	0.000 000	0.001
100 %		0	1717 499 999	2.0	0.000 000	0.001
100 %		+10	1717 499 995	-1.5	0.000 000	-0.001
100 %		+30	1717 499 996	-1.1	0.000 000	-0.001
100 %		+40	1717 499 995	-2.4	0.000 000	-0.001
100 %		+50	1717 499 995	-2.4	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1717 499 995	-1.9	0.000 000	-0.001



▣ MODE: LTE 4

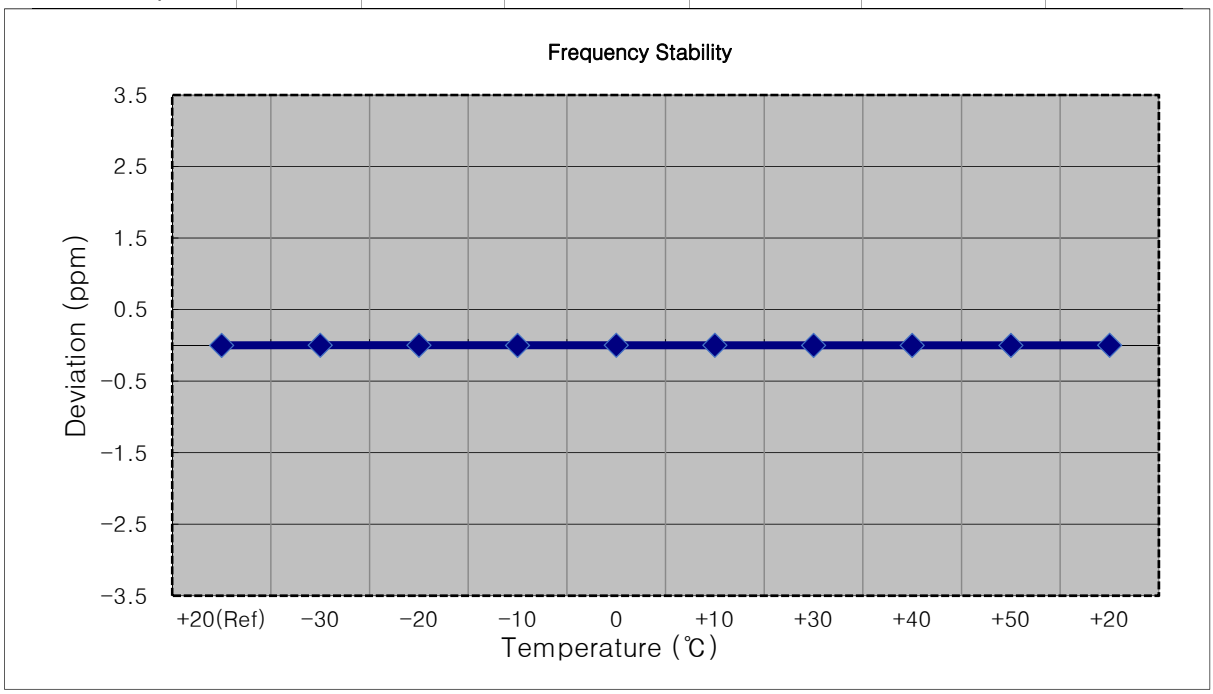
▣ OPERATING FREQUENCY: 1720,000,000 Hz

▣ CHANNEL: 20050 (20 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1720 000 002	0.0	0.000 000	0.000
100 %		-30	1720 000 005	2.2	0.000 000	0.001
100 %		-20	1720 000 005	2.2	0.000 000	0.001
100 %		-10	1720 000 001	-1.3	0.000 000	-0.001
100 %		0	1720 000 004	1.3	0.000 000	0.001
100 %		+10	1720 000 004	1.6	0.000 000	0.001
100 %		+30	1720 000 000	-2.4	0.000 000	-0.001
100 %		+40	1720 000 000	-1.9	0.000 000	-0.001
100 %		+50	1720 000 001	-1.3	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1720 000 005	2.7	0.000 000	0.002



▣ MODE: LTE 4

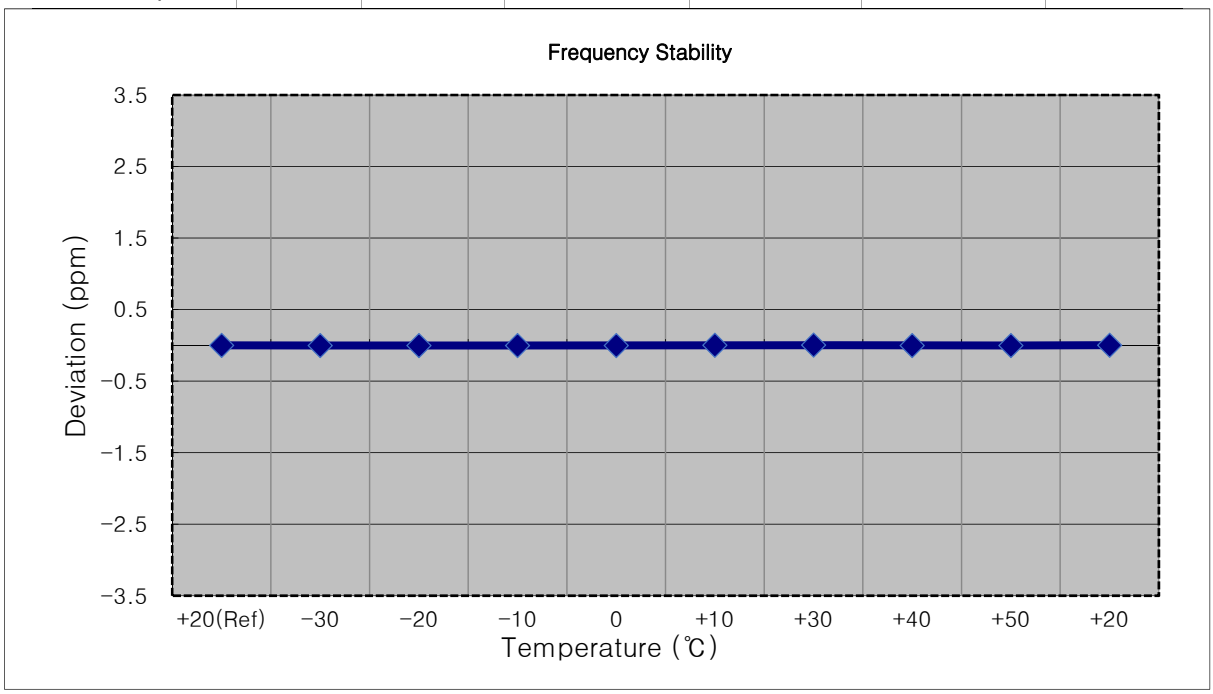
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (1.4 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1732 499 996	0.0	0.000 000	0.000
100 %		-30	1732 499 992	-3.8	0.000 000	-0.002
100 %		-20	1732 499 993	-3.1	0.000 000	-0.002
100 %		-10	1732 499 993	-2.9	0.000 000	-0.002
100 %		0	1732 499 993	-3.4	0.000 000	-0.002
100 %		+10	1732 500 000	4.3	0.000 000	0.002
100 %		+30	1732 500 002	5.4	0.000 000	0.003
100 %		+40	1732 499 992	-4.5	0.000 000	-0.003
100 %		+50	1732 499 992	-4.2	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1732 500 000	4.2	0.000 000	0.002



▣ MODE: LTE 4

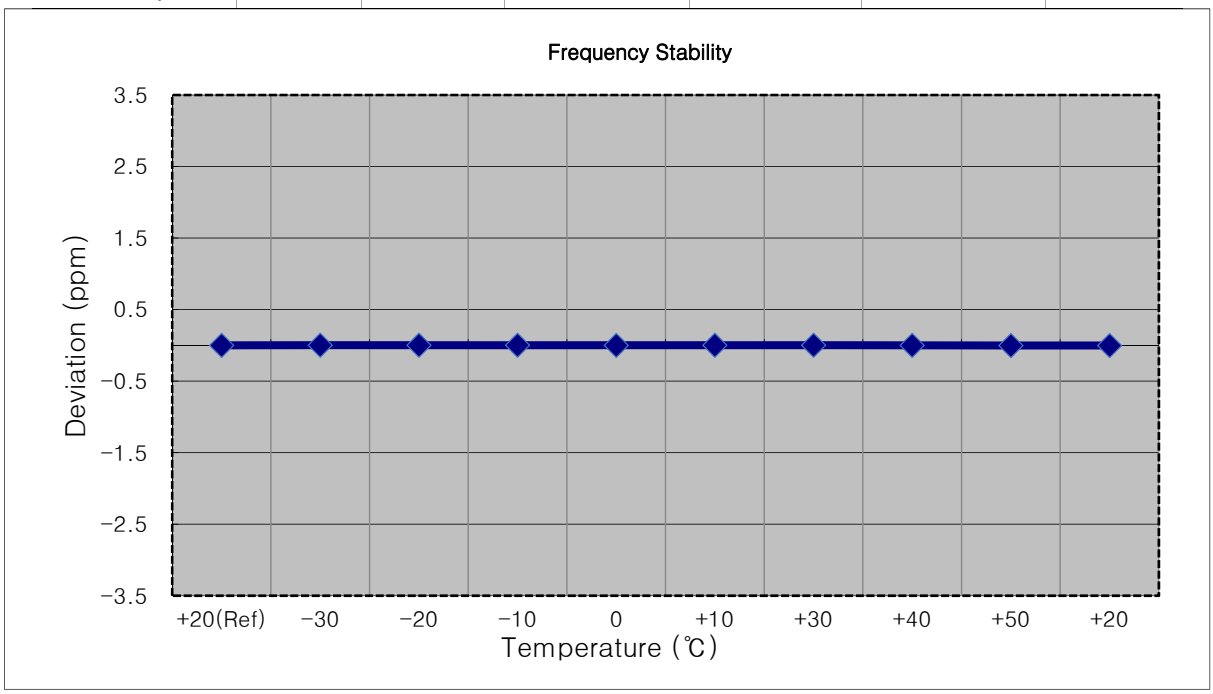
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (3 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1732 499 996	0.0	0.000 000	0.000
100 %		-30	1732 499 999	3.0	0.000 000	0.002
100 %		-20	1732 499 997	1.7	0.000 000	0.001
100 %		-10	1732 499 998	2.3	0.000 000	0.001
100 %		0	1732 499 993	-2.5	0.000 000	-0.001
100 %		+10	1732 499 999	3.9	0.000 000	0.002
100 %		+30	1732 499 998	2.1	0.000 000	0.001
100 %		+40	1732 499 993	-2.3	0.000 000	-0.001
100 %		+50	1732 499 993	-3.0	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1732 499 992	-3.1	0.000 000	-0.002



▣ MODE: LTE 4

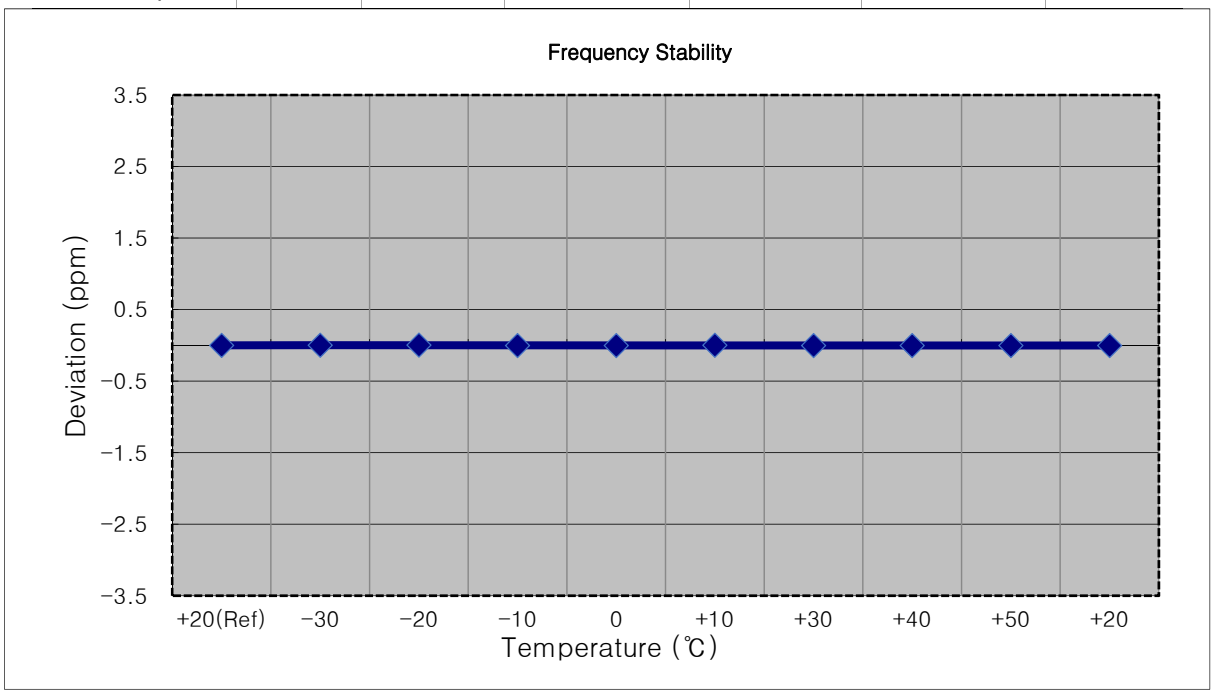
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (5 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1732 499 997	0.0	0.000 000	0.000
100 %		-30	1732 500 001	4.4	0.000 000	0.003
100 %		-20	1732 500 002	5.3	0.000 000	0.003
100 %		-10	1732 499 993	-4.2	0.000 000	-0.002
100 %		0	1732 499 992	-4.6	0.000 000	-0.003
100 %		+10	1732 500 001	3.9	0.000 000	0.002
100 %		+30	1732 499 994	-3.0	0.000 000	-0.002
100 %		+40	1732 499 993	-3.6	0.000 000	-0.002
100 %		+50	1732 499 993	-4.2	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1732 499 993	-3.9	0.000 000	-0.002



▣ MODE: LTE 4

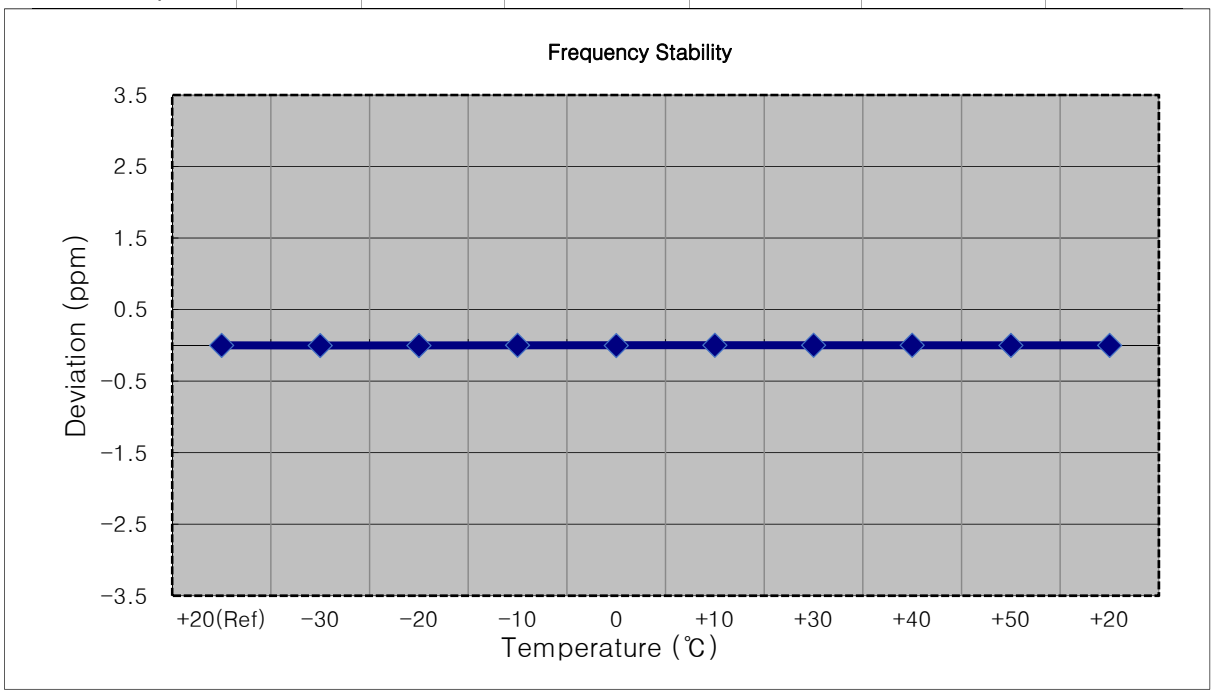
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (10 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1732 500 003	0.0	0.000 000	0.000
100 %		-30	1732 500 000	-2.9	0.000 000	-0.002
100 %		-20	1732 499 999	-3.3	0.000 000	-0.002
100 %		-10	1732 500 005	2.2	0.000 000	0.001
100 %		0	1732 500 000	-2.9	0.000 000	-0.002
100 %		+10	1732 500 006	3.1	0.000 000	0.002
100 %		+30	1732 500 006	2.9	0.000 000	0.002
100 %		+40	1732 500 006	3.4	0.000 000	0.002
100 %		+50	1732 500 001	-1.9	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1732 500 000	-2.2	0.000 000	-0.001



▣ MODE: LTE 4

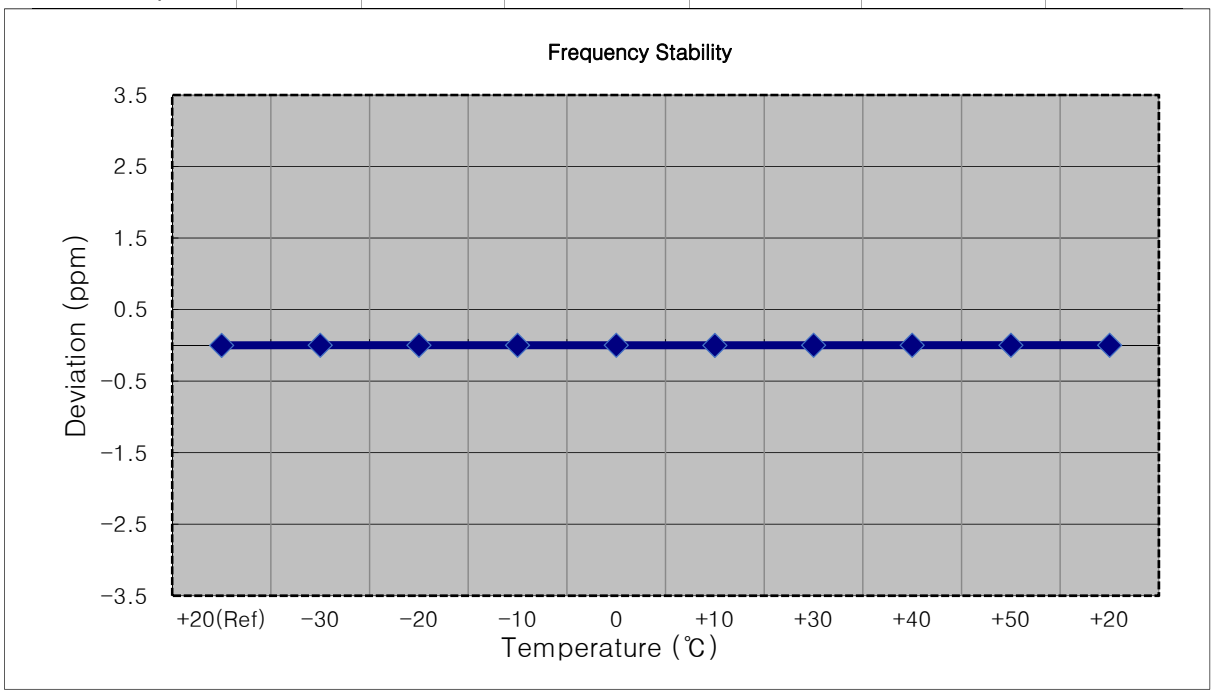
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (15 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1732 499 995	0.0	0.000 000	0.000
100 %		-30	1732 499 999	3.6	0.000 000	0.002
100 %		-20	1732 499 998	3.3	0.000 000	0.002
100 %		-10	1732 499 998	2.9	0.000 000	0.002
100 %		0	1732 499 997	2.2	0.000 000	0.001
100 %		+10	1732 499 992	-2.6	0.000 000	-0.002
100 %		+30	1732 499 998	3.4	0.000 000	0.002
100 %		+40	1732 500 000	5.0	0.000 000	0.003
100 %		+50	1732 499 998	2.7	0.000 000	0.002
Batt. Endpoint	3.400	+20	1732 499 998	3.2	0.000 000	0.002



▣ MODE: LTE 4

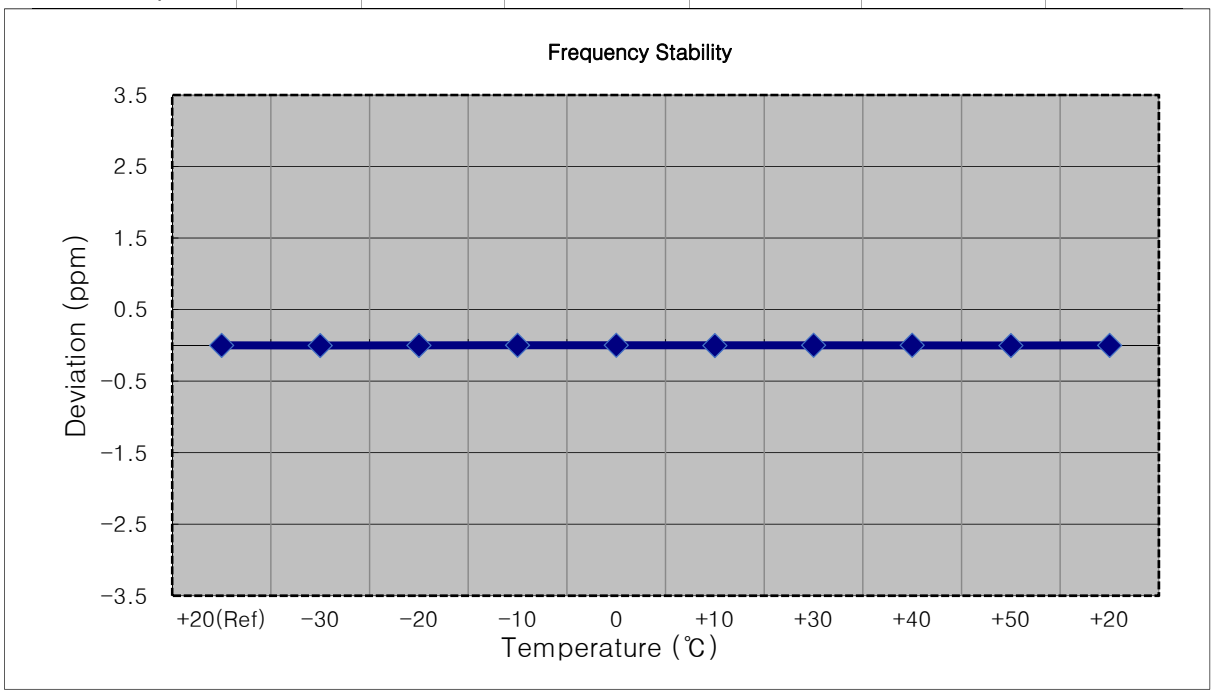
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (20 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1732 500 003	0.0	0.000 000	0.000
100 %		-30	1732 499 999	-3.3	0.000 000	-0.002
100 %		-20	1732 500 001	-1.5	0.000 000	-0.001
100 %		-10	1732 500 005	2.4	0.000 000	0.001
100 %		0	1732 500 005	2.1	0.000 000	0.001
100 %		+10	1732 499 999	-3.4	0.000 000	-0.002
100 %		+30	1732 500 005	2.8	0.000 000	0.002
100 %		+40	1732 500 005	2.3	0.000 000	0.001
100 %		+50	1732 500 000	-3.0	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1732 500 000	-2.5	0.000 000	-0.001



▣ MODE: LTE 4

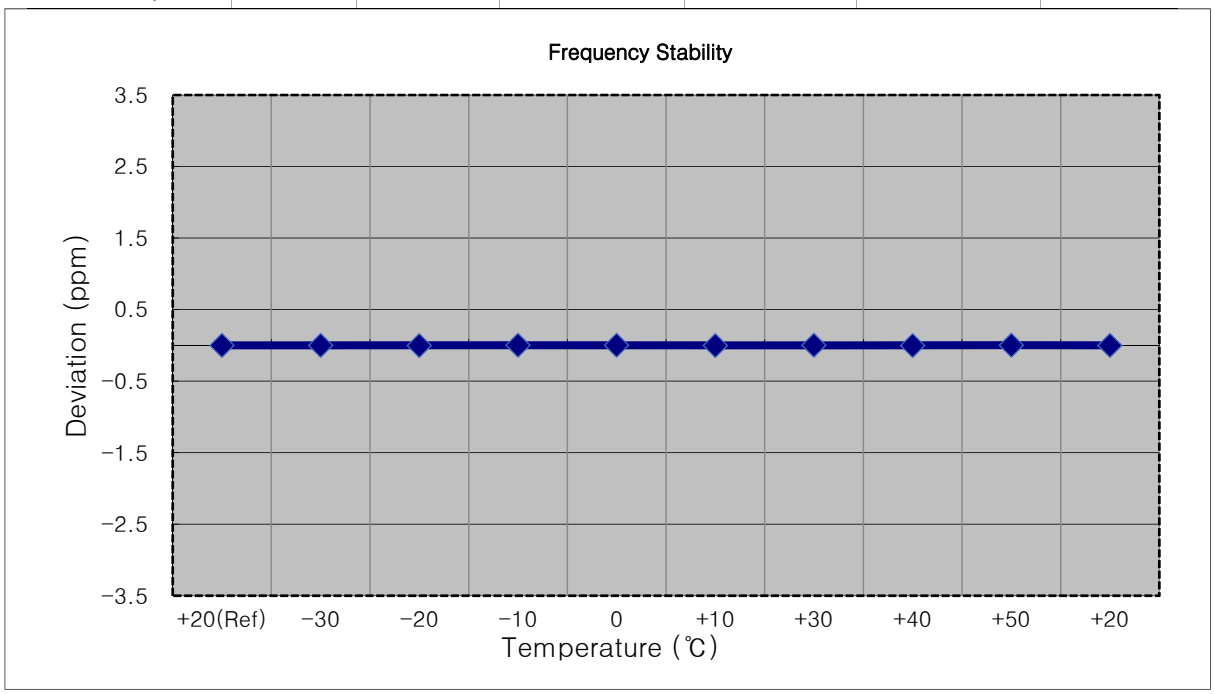
▣ OPERATING FREQUENCY: 1754,300,000 Hz

▣ CHANNEL: 20393 (1.4 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1754 299 998	0.0	0.000 000	0.000
100 %		-30	1754 299 995	-2.5	0.000 000	-0.001
100 %		-20	1754 299 993	-4.1	0.000 000	-0.002
100 %		-10	1754 300 001	3.3	0.000 000	0.002
100 %		0	1754 300 000	2.5	0.000 000	0.001
100 %		+10	1754 299 994	-4.0	0.000 000	-0.002
100 %		+30	1754 300 001	3.6	0.000 000	0.002
100 %		+40	1754 299 993	-4.7	0.000 000	-0.003
100 %		+50	1754 300 000	2.9	0.000 000	0.002
Batt. Endpoint	3.400	+20	1754 299 995	-2.5	0.000 000	-0.001



▣ MODE: LTE 4

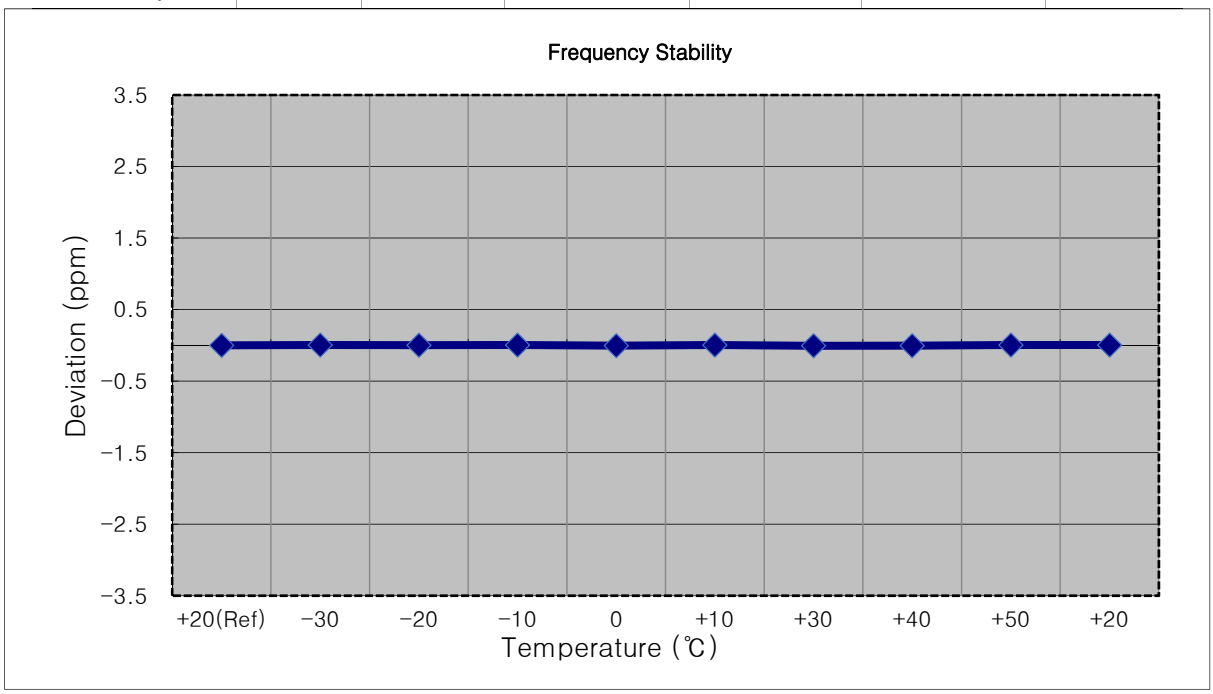
▣ OPERATING FREQUENCY: 1753,500,000 Hz

▣ CHANNEL: 20385 (3 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1753 499 993	0.0	0.000 000	0.000
100 %		-30	1753 500 002	8.9	0.000 001	0.005
100 %		-20	1753 499 997	4.8	0.000 000	0.003
100 %		-10	1753 500 001	8.2	0.000 000	0.005
100 %		0	1753 499 984	-8.9	-0.000 001	-0.005
100 %		+10	1753 500 000	7.6	0.000 000	0.004
100 %		+30	1753 499 982	-10.2	-0.000 001	-0.006
100 %		+40	1753 499 985	-7.4	0.000 000	-0.004
100 %		+50	1753 499 999	6.8	0.000 000	0.004
Batt. Endpoint	3.400	+20	1753 499 999	6.5	0.000 000	0.004



▣ MODE: LTE 4

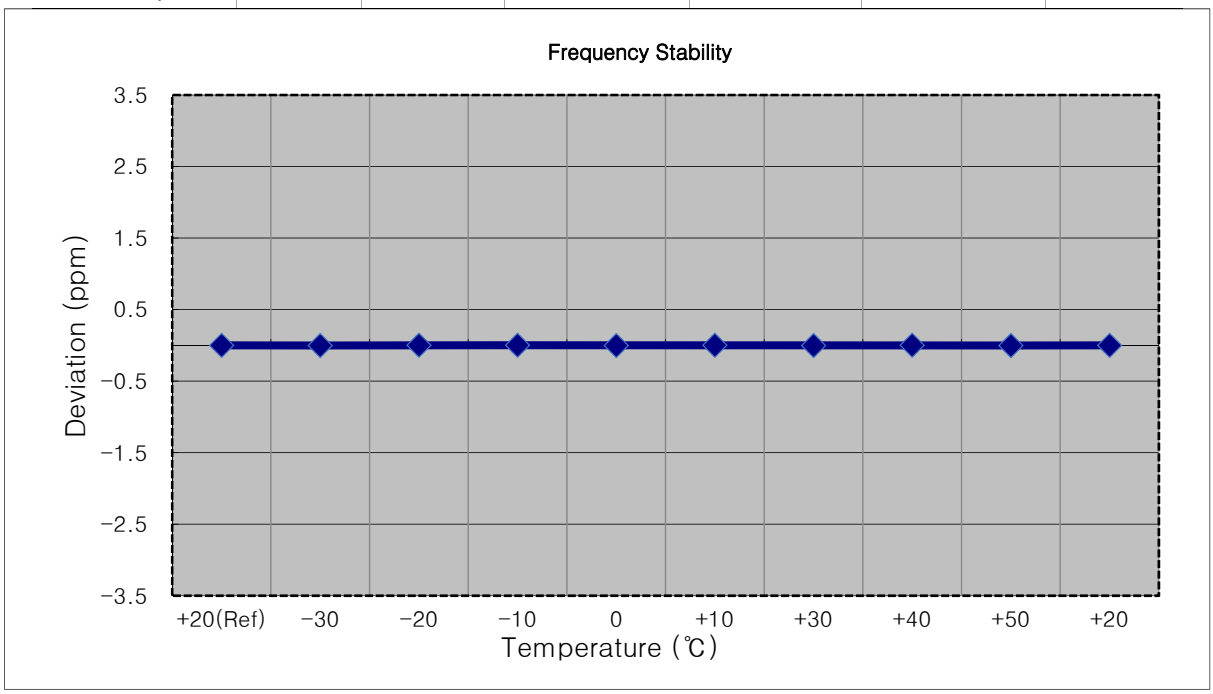
▣ OPERATING FREQUENCY: 1752,500,000 Hz

▣ CHANNEL: 20375 (5 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1752 500 004	0.0	0.000 000	0.000
100 %		-30	1752 500 001	-3.6	0.000 000	-0.002
100 %		-20	1752 500 008	3.3	0.000 000	0.002
100 %		-10	1752 500 006	2.1	0.000 000	0.001
100 %		0	1752 500 001	-3.4	0.000 000	-0.002
100 %		+10	1752 500 006	2.1	0.000 000	0.001
100 %		+30	1752 500 001	-3.7	0.000 000	-0.002
100 %		+40	1752 500 007	3.1	0.000 000	0.002
100 %		+50	1752 500 001	-3.5	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1752 500 002	-2.1	0.000 000	-0.001



▣ MODE: LTE 4

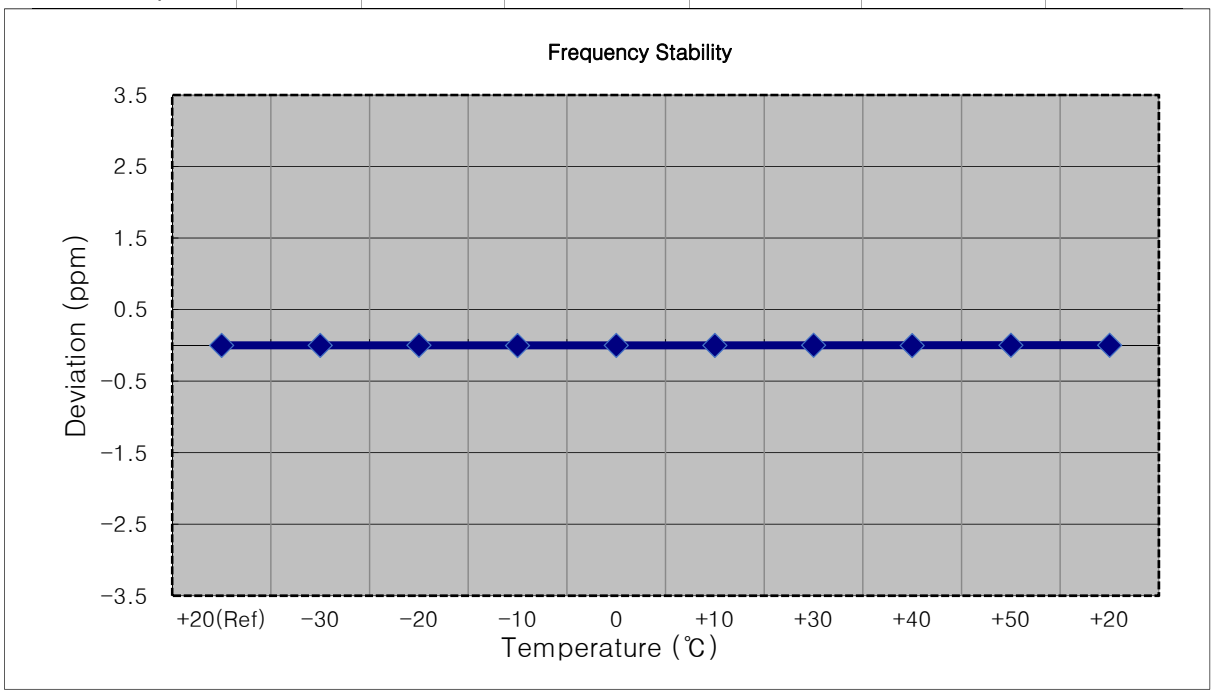
▣ OPERATING FREQUENCY: 1750,000,000 Hz

▣ CHANNEL: 20350 (10 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1750 000 003	0.0	0.000 000	0.000
100 %		-30	1750 000 001	-2.6	0.000 000	-0.001
100 %		-20	1750 000 007	3.3	0.000 000	0.002
100 %		-10	1750 000 001	-2.7	0.000 000	-0.002
100 %		0	1750 000 001	-2.1	0.000 000	-0.001
100 %		+10	1750 000 001	-2.6	0.000 000	-0.001
100 %		+30	1750 000 006	2.7	0.000 000	0.002
100 %		+40	1750 000 000	-2.8	0.000 000	-0.002
100 %		+50	1750 000 006	3.2	0.000 000	0.002
Batt. Endpoint	3.400	+20	1750 000 006	2.5	0.000 000	0.001



▣ MODE: LTE 4

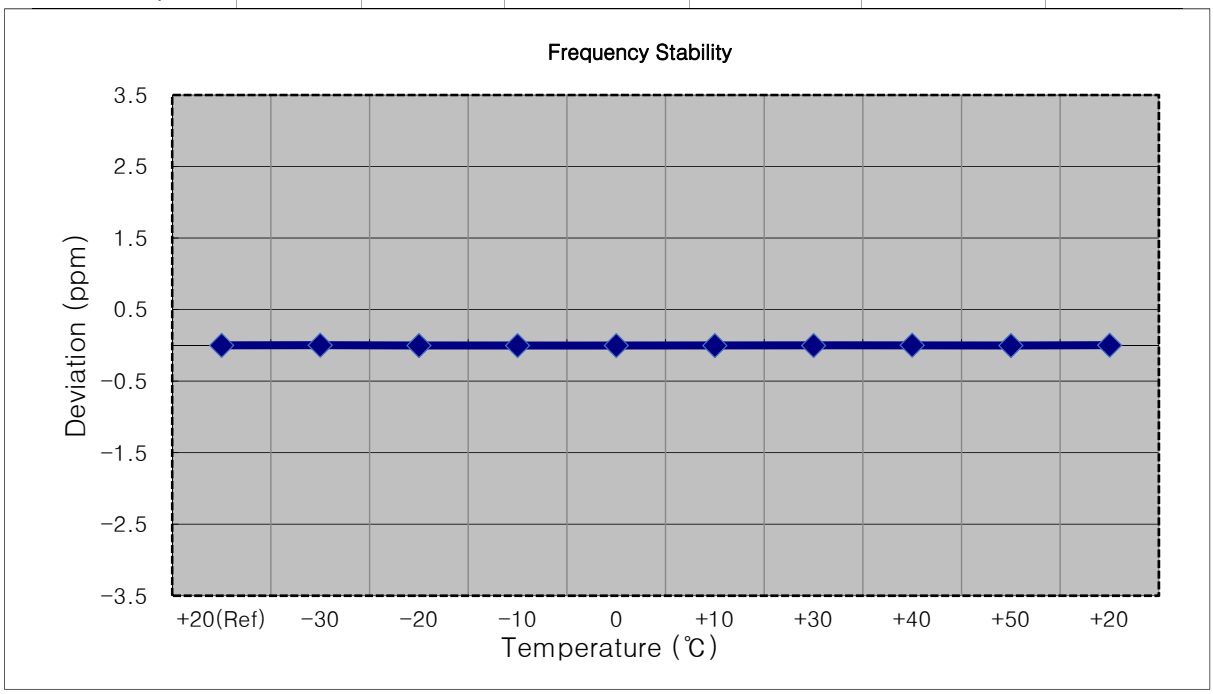
▣ OPERATING FREQUENCY: 1747,500,000 Hz

▣ CHANNEL: 20325 (15 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1747 499 998	0.0	0.000 000	0.000
100 %		-30	1747 500 001	3.9	0.000 000	0.002
100 %		-20	1747 499 995	-3.0	0.000 000	-0.002
100 %		-10	1747 499 994	-3.4	0.000 000	-0.002
100 %		0	1747 499 994	-3.9	0.000 000	-0.002
100 %		+10	1747 499 994	-3.4	0.000 000	-0.002
100 %		+30	1747 499 994	-3.3	0.000 000	-0.002
100 %		+40	1747 500 000	2.2	0.000 000	0.001
100 %		+50	1747 499 994	-3.9	0.000 000	-0.002
Batt. Endpoint	3.400	+20	1747 500 001	3.6	0.000 000	0.002



▣ MODE: LTE 4

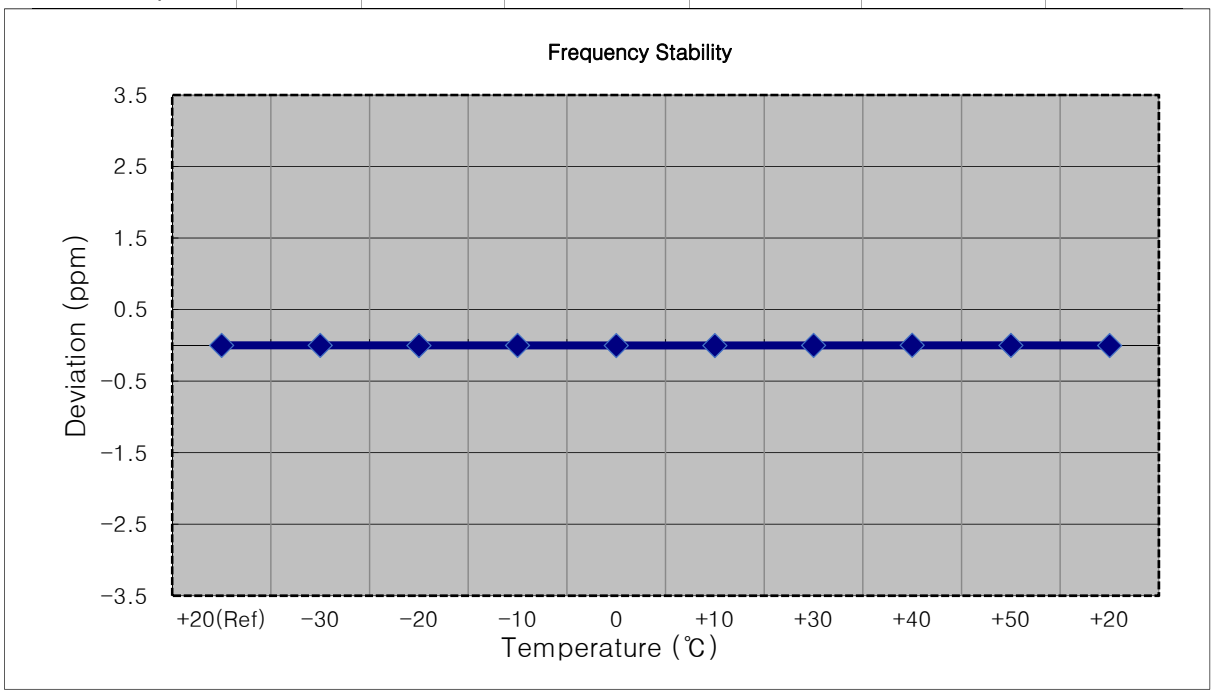
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 20300 (20 MHz)

▣ REFERENCE VOLTAGE: 4.200 VDC

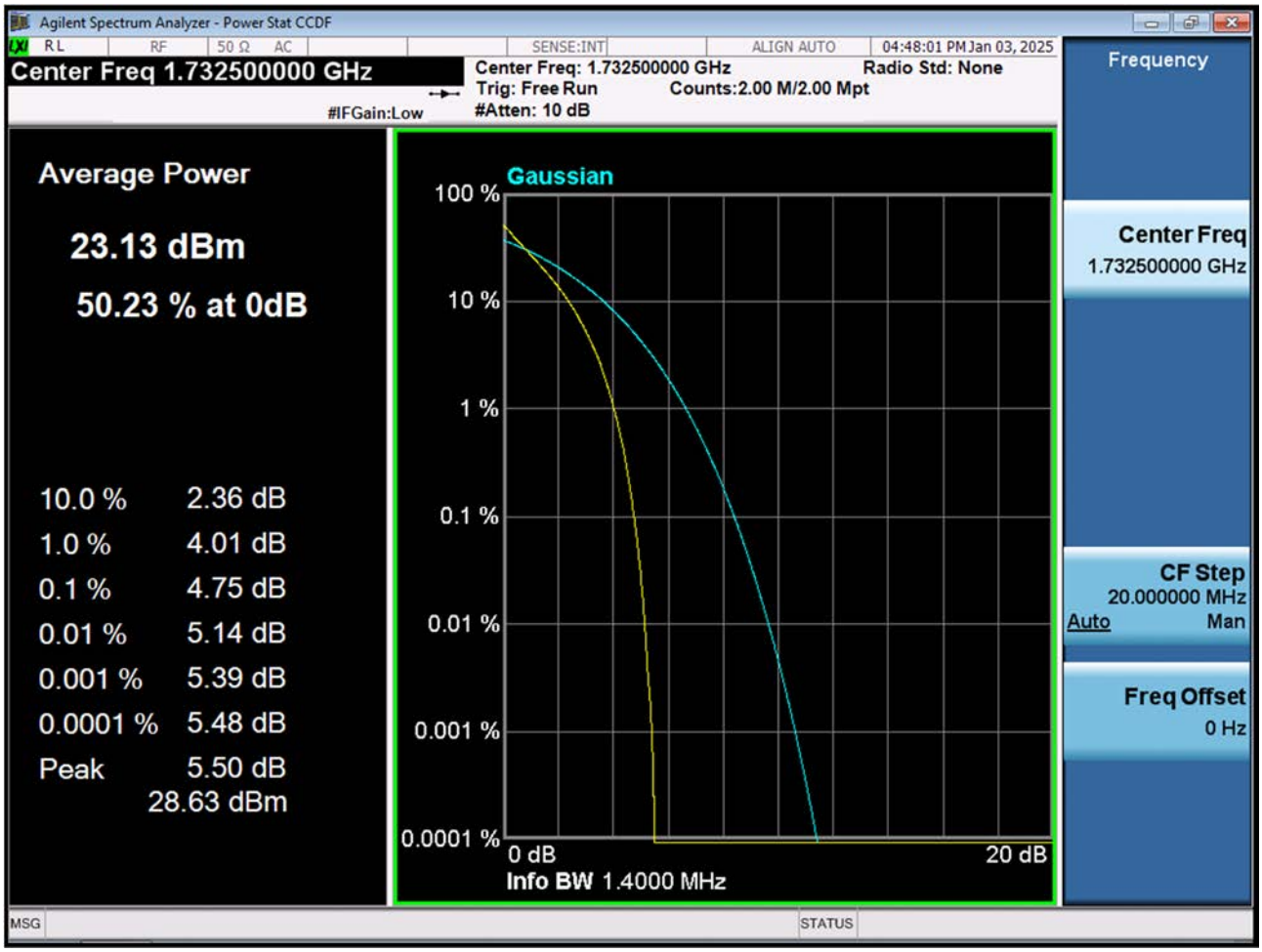
▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	4.200	+20(Ref)	1744 999 997	0.0	0.000 000	0.000
100 %		-30	1744 999 994	-2.1	0.000 000	-0.001
100 %		-20	1744 999 994	-3.0	0.000 000	-0.002
100 %		-10	1744 999 994	-2.4	0.000 000	-0.001
100 %		0	1744 999 994	-2.7	0.000 000	-0.002
100 %		+10	1744 999 993	-3.3	0.000 000	-0.002
100 %		+30	1744 999 994	-2.1	0.000 000	-0.001
100 %		+40	1744 999 999	2.8	0.000 000	0.002
100 %		+50	1744 999 995	-1.8	0.000 000	-0.001
Batt. Endpoint	3.400	+20	1744 999 994	-2.7	0.000 000	-0.002

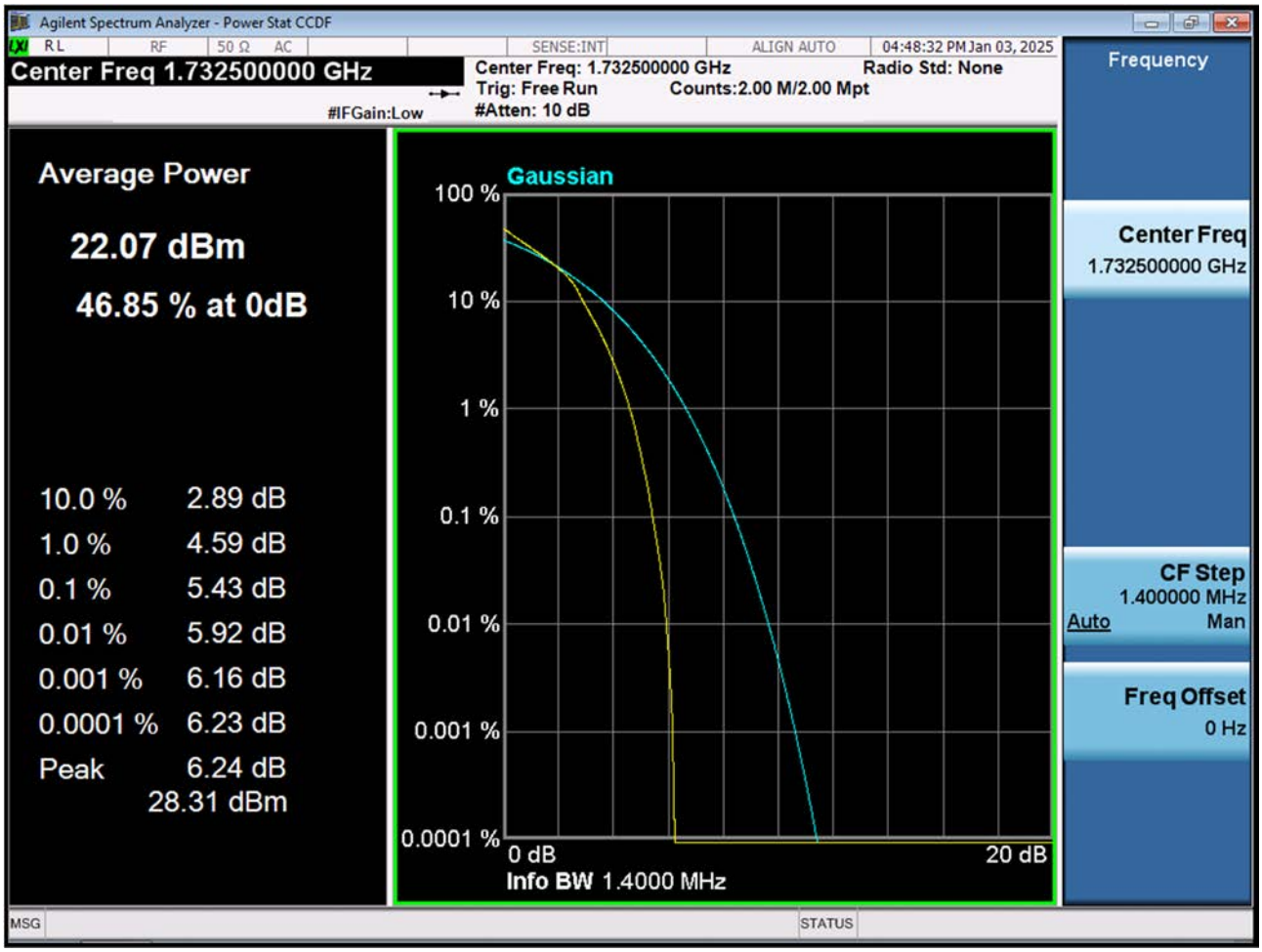


9. TEST PLOTS

LTE B4_1.4M_PAR_Mid_QPSK_FullRB

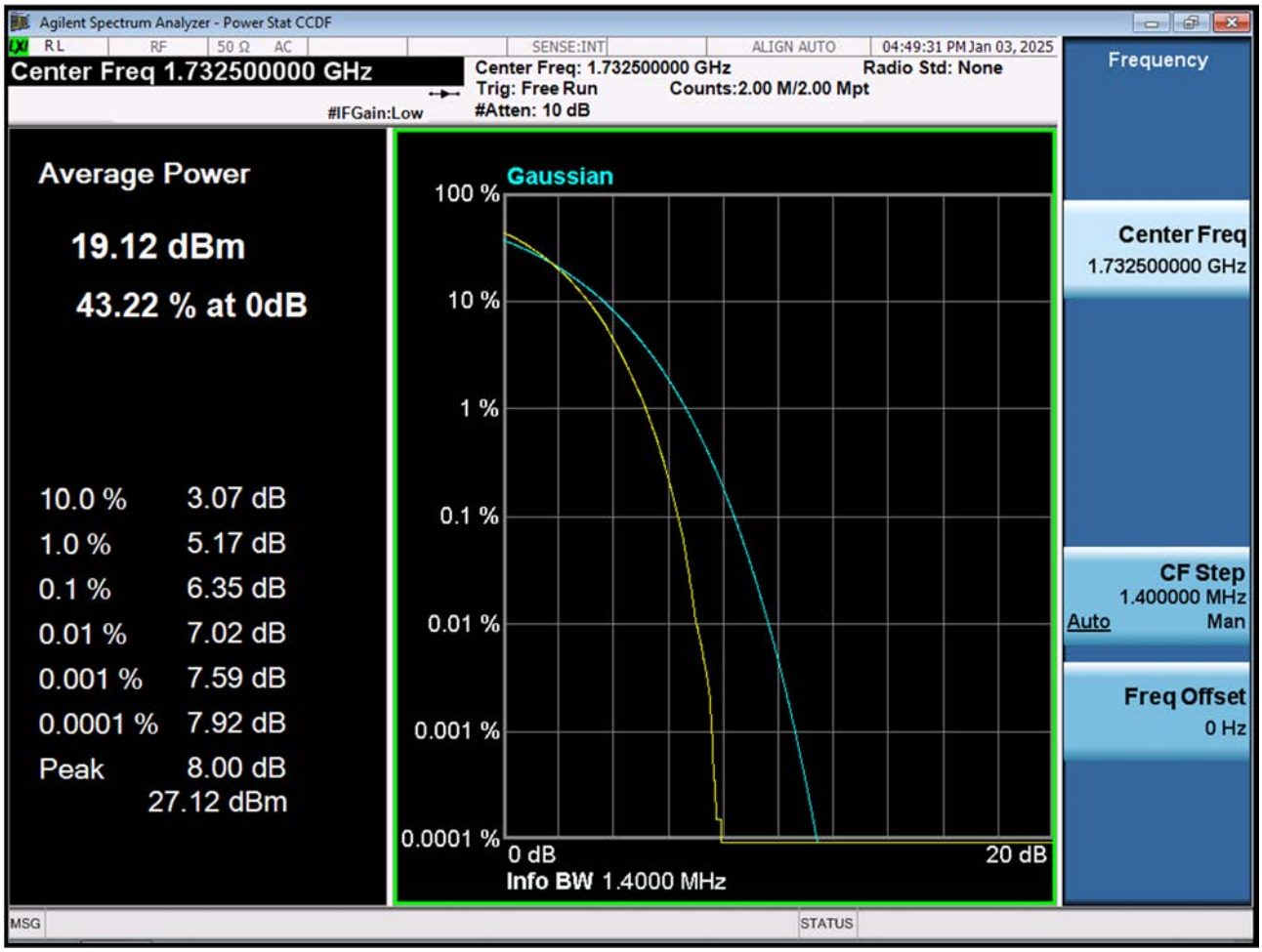


LTE B4_1.4M_PAR_Mid_16QAM_FullRB



LTE B4_1.4M_PAR_Mid_64QAM_FullRB

LTE B4_1.4M_PAR_Mid_256QAM_FullRB



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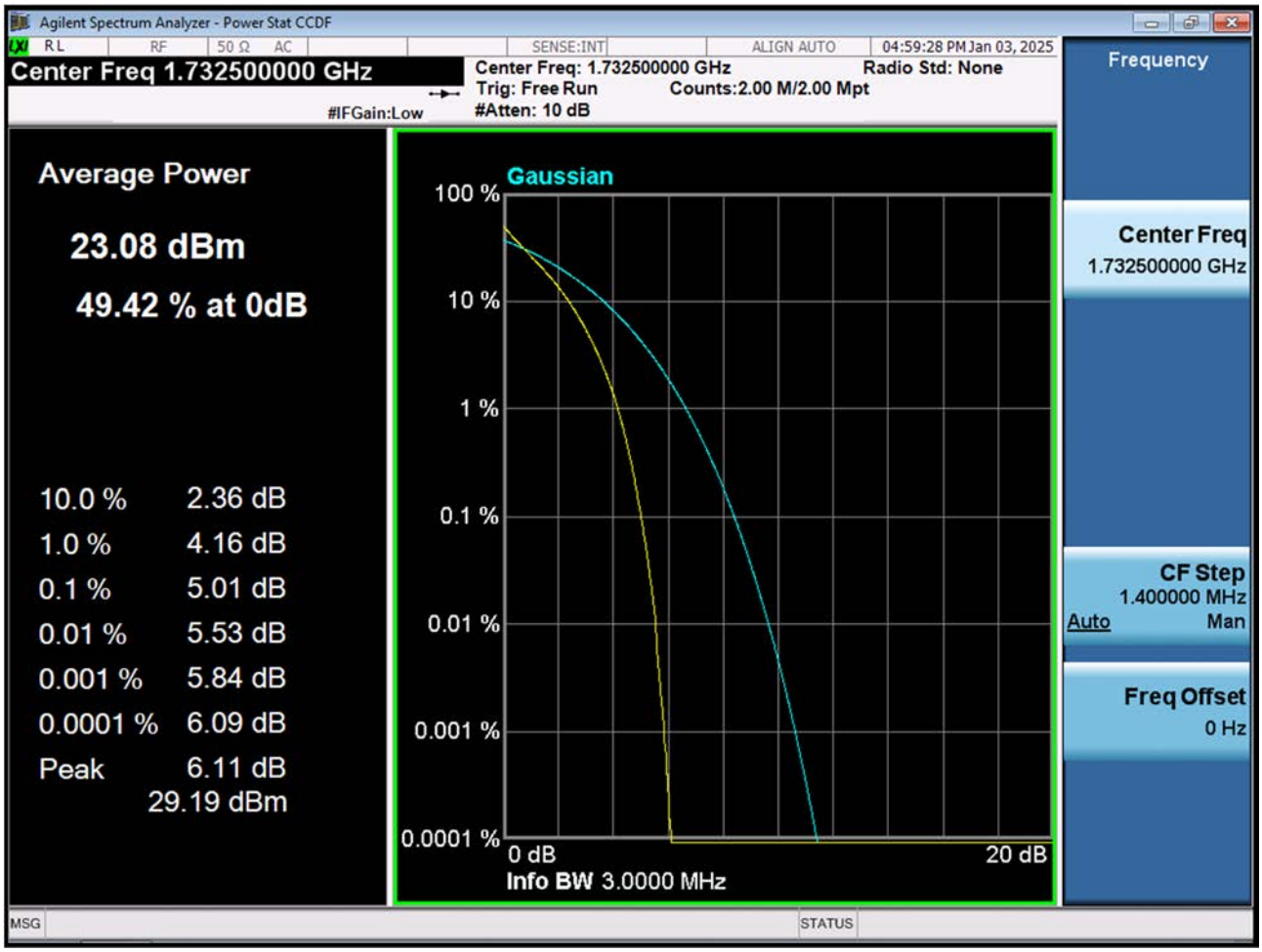

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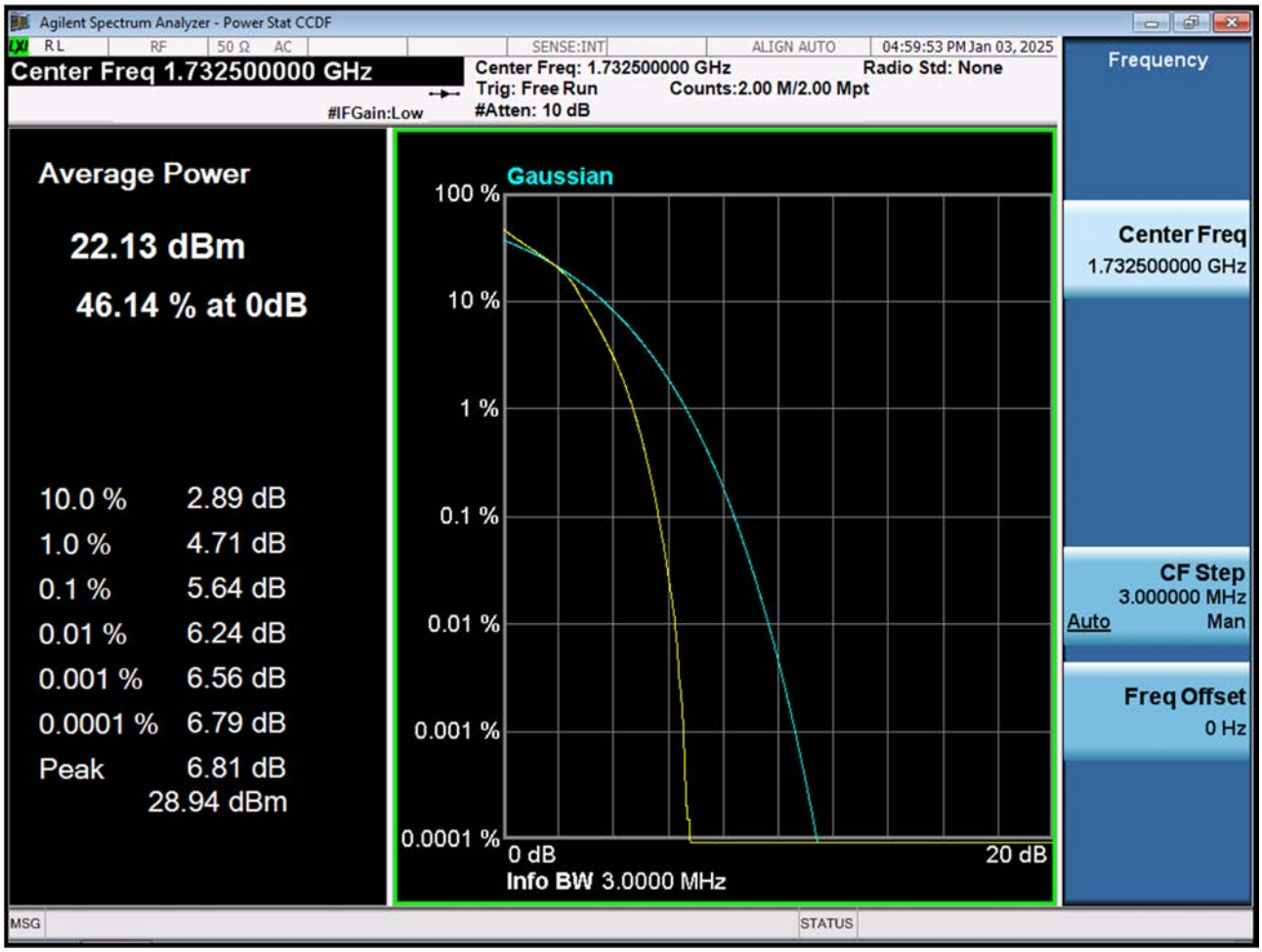

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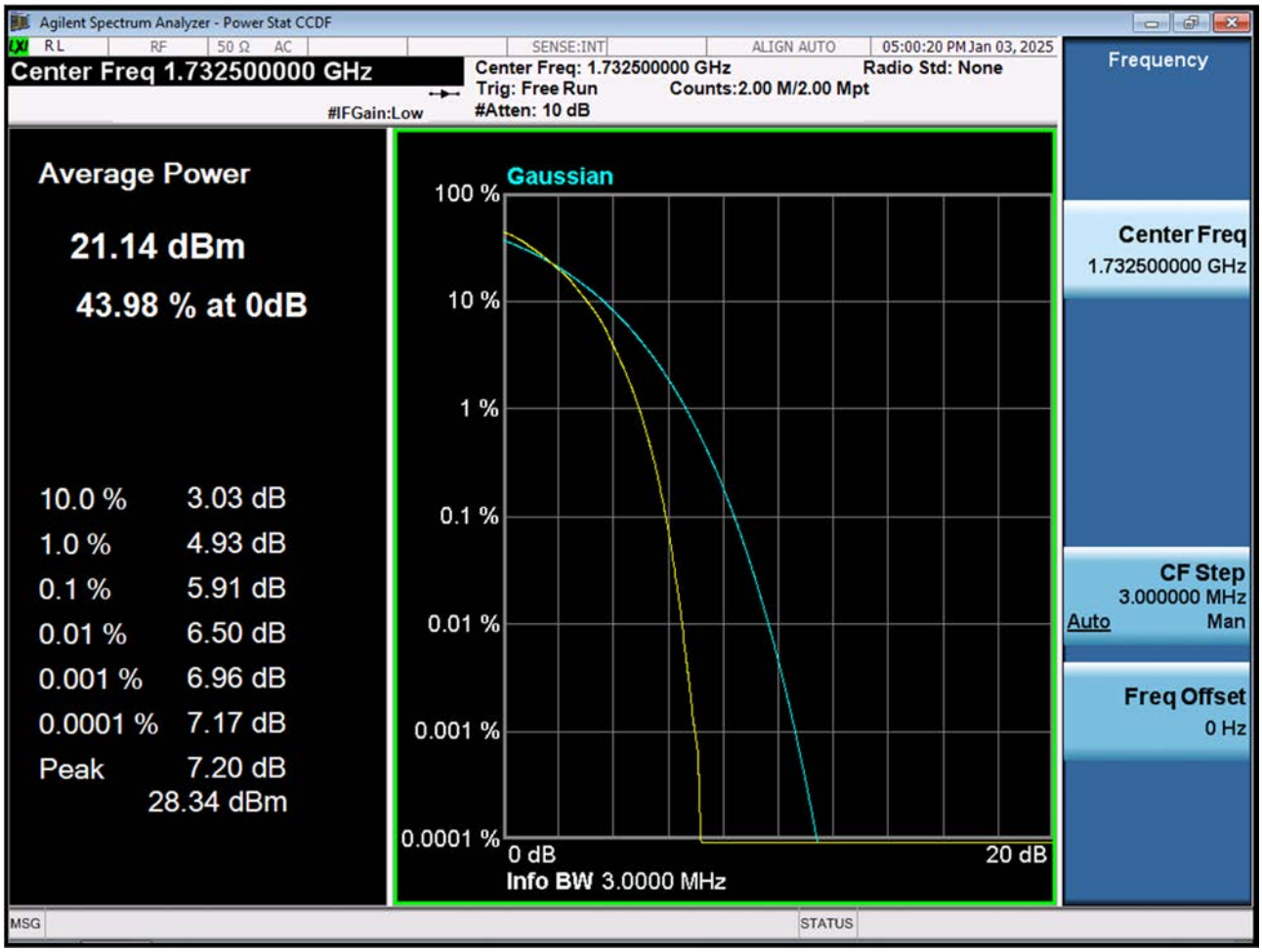

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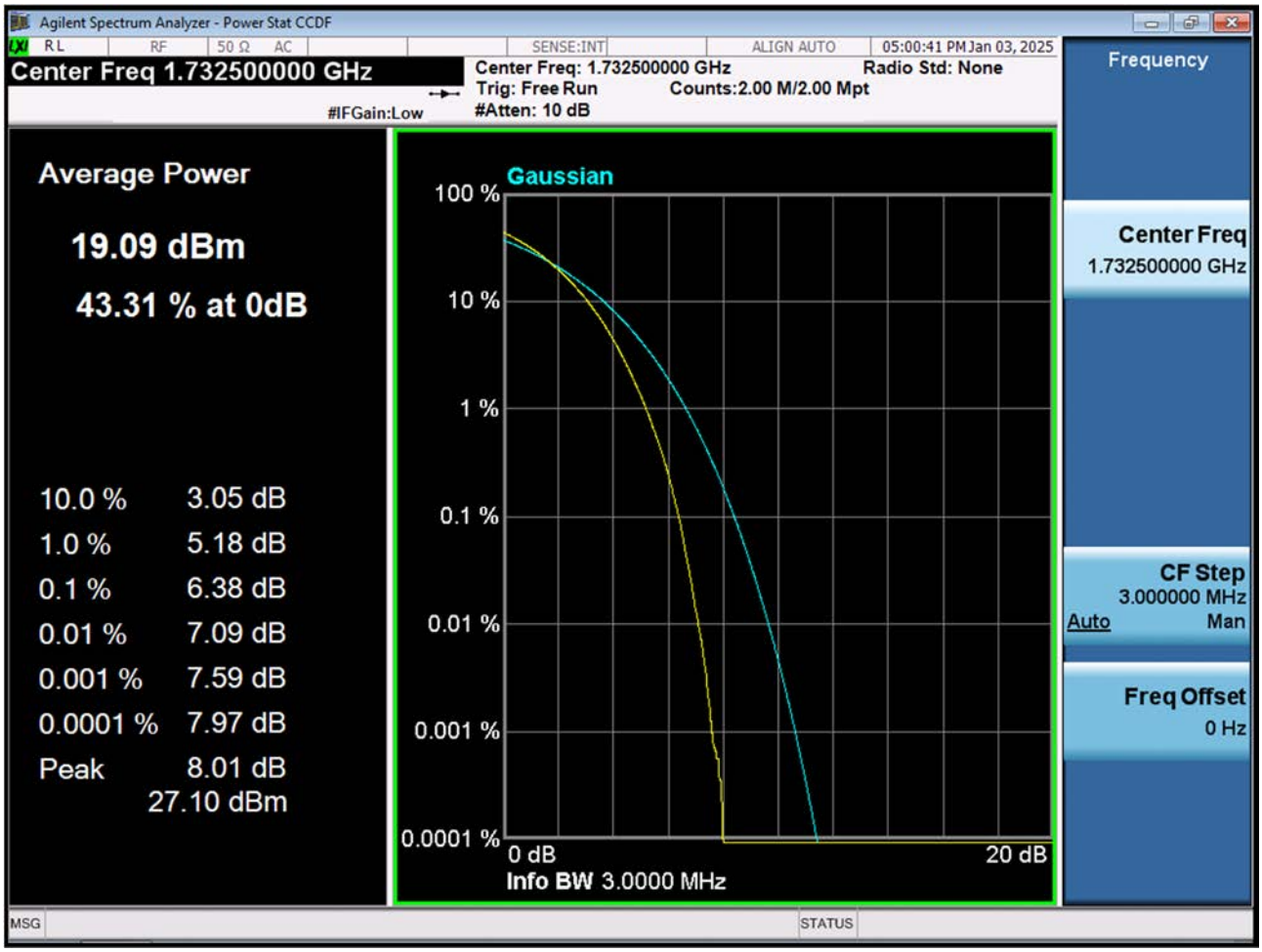

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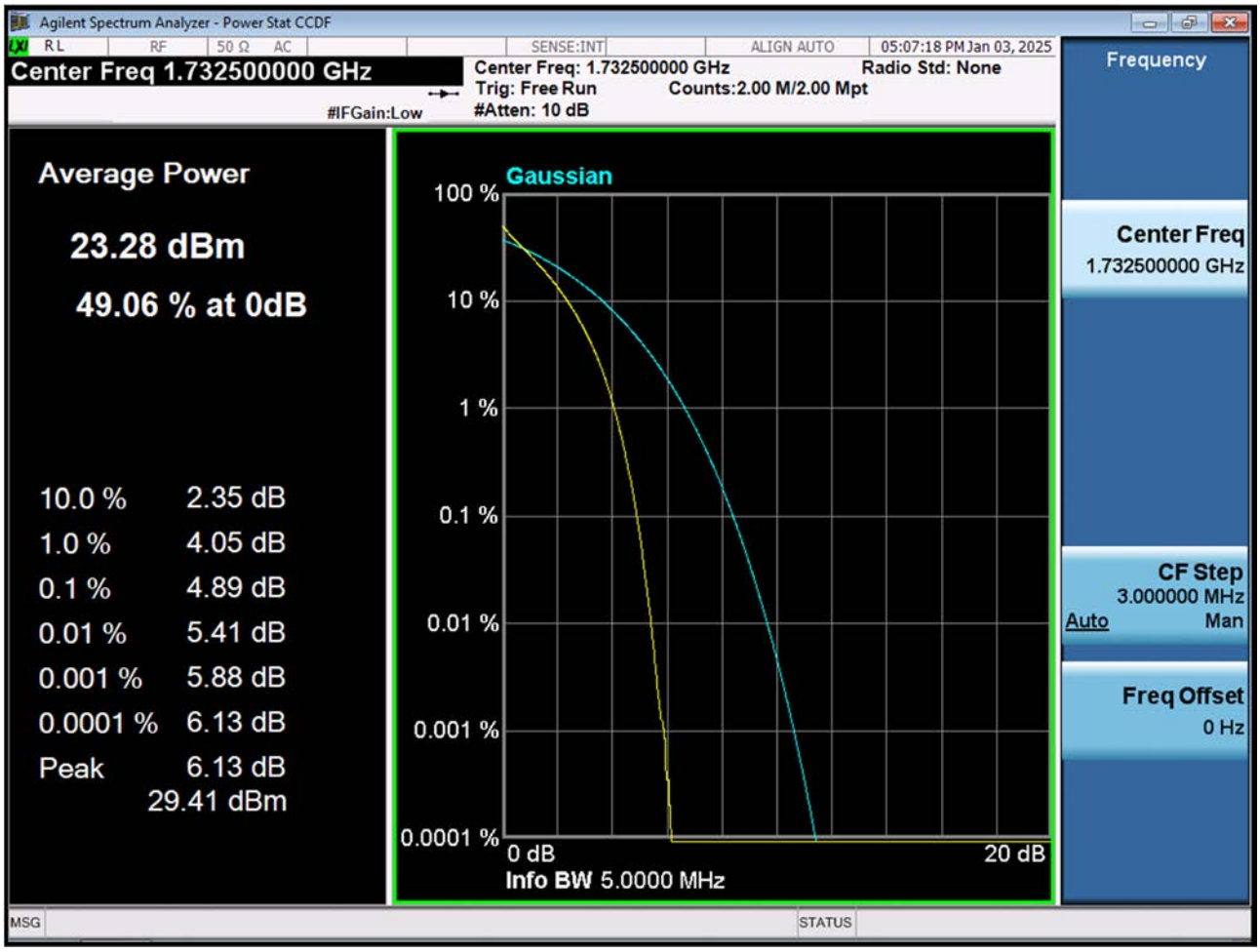

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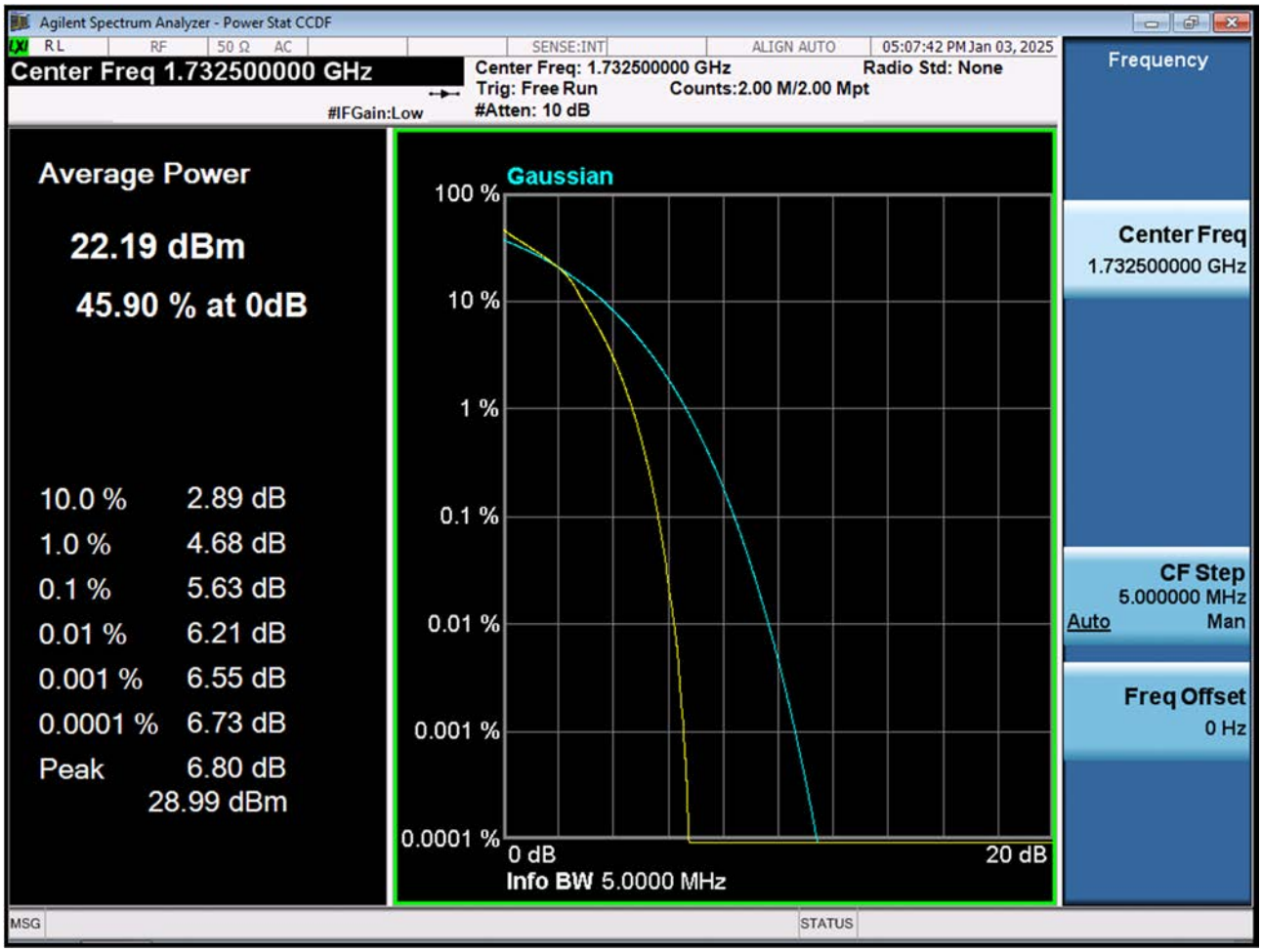

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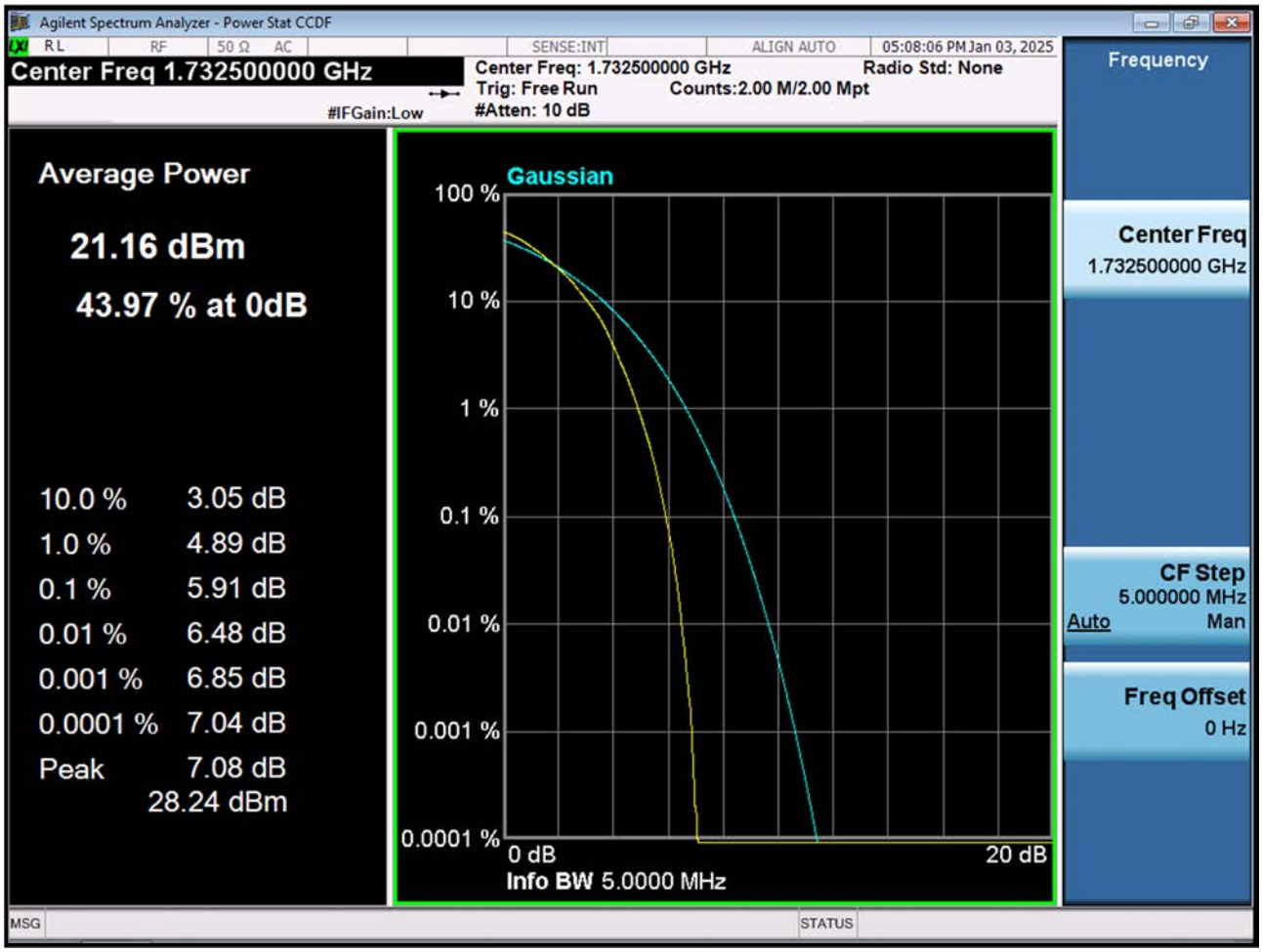

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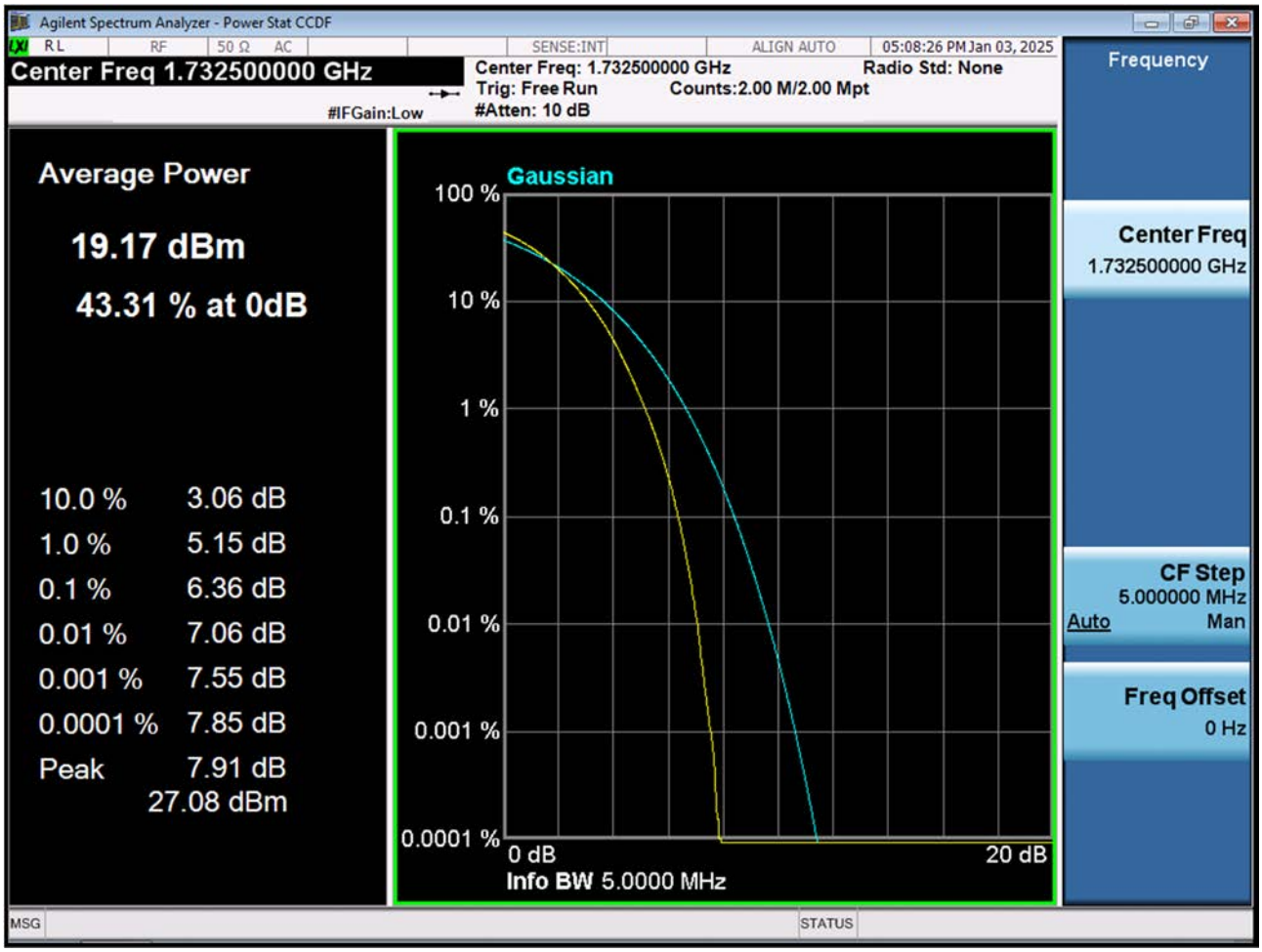
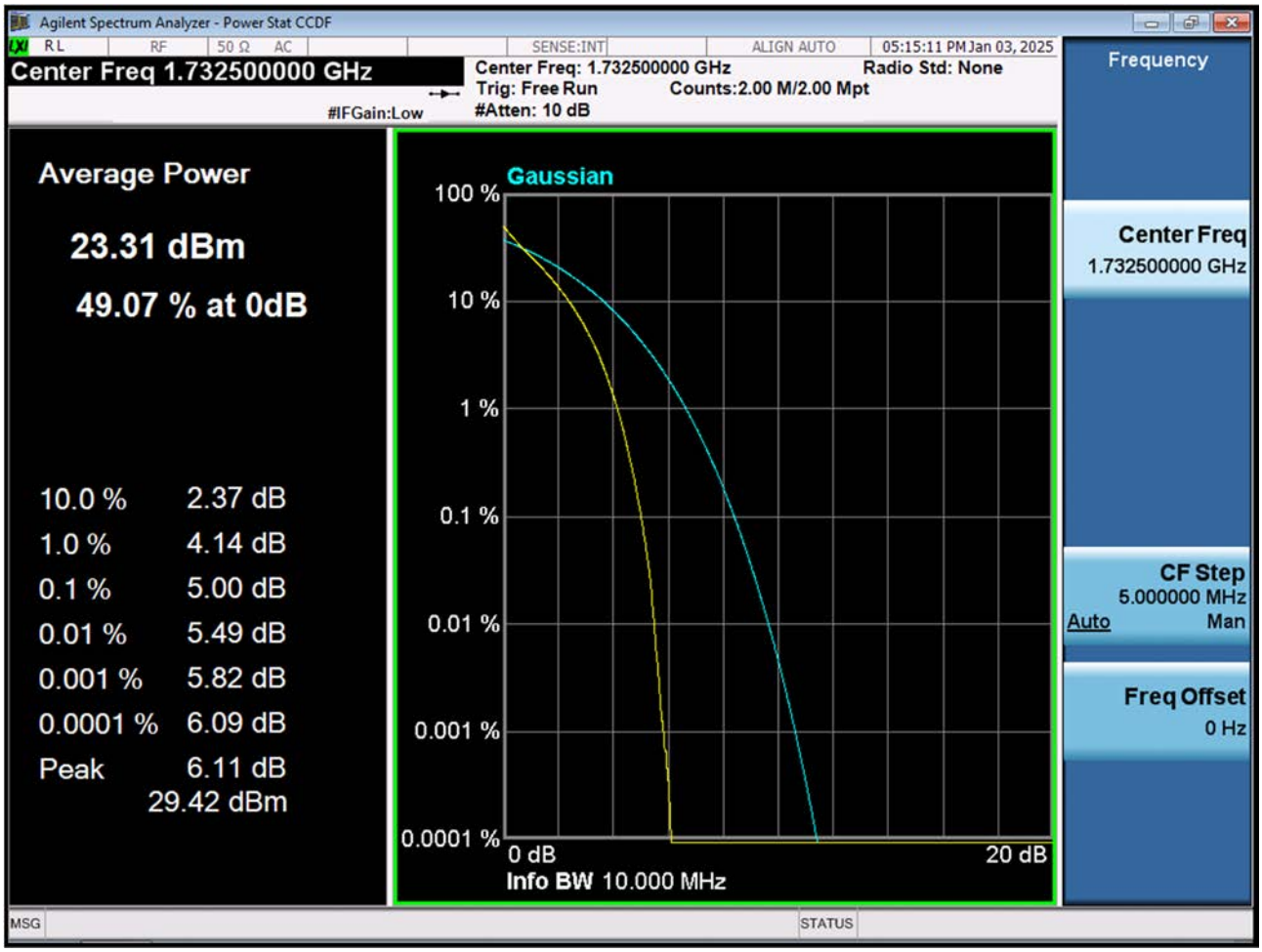


LTE B4_10 M_PAR_Mid_QPSK_FullRB



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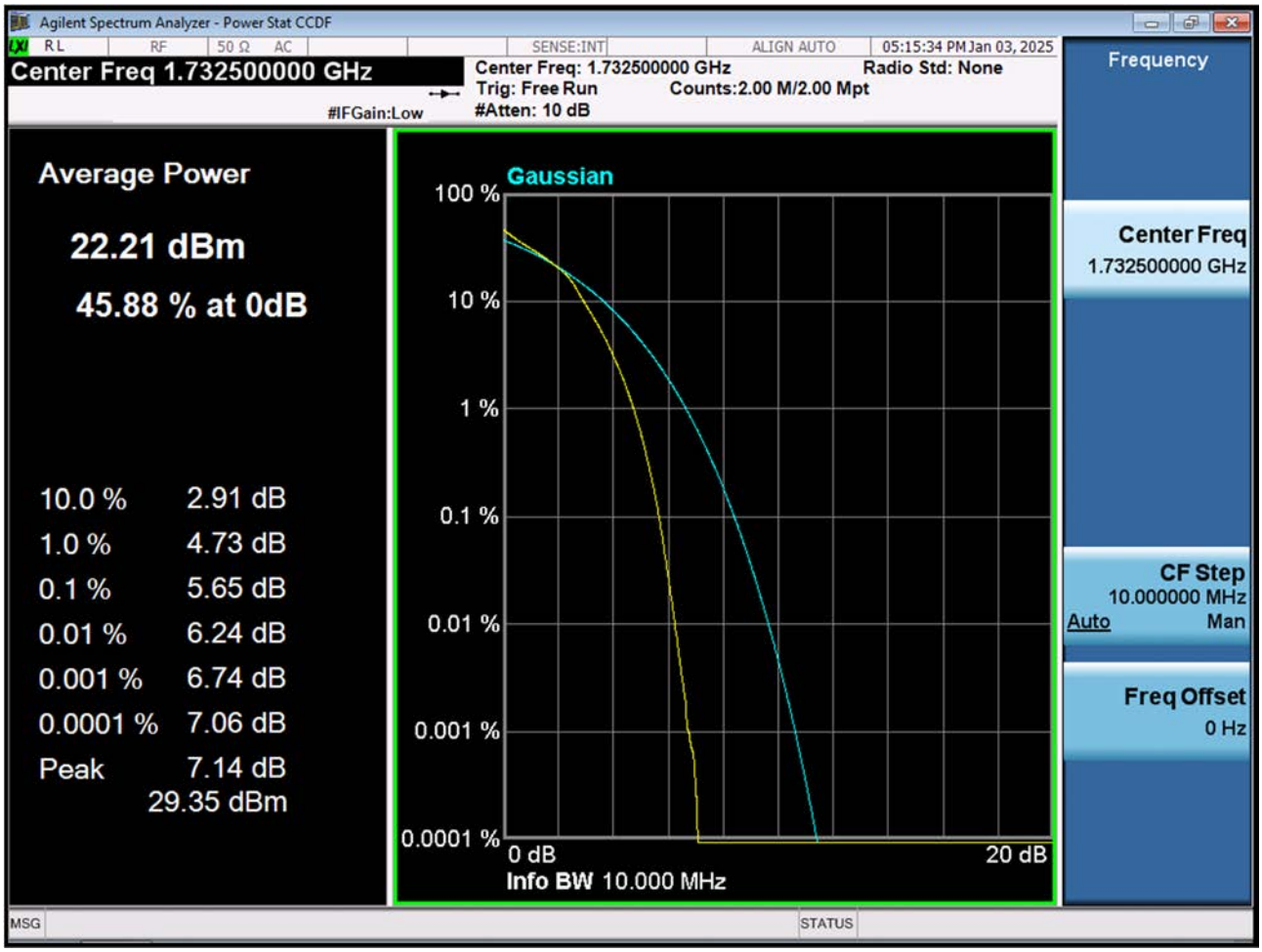

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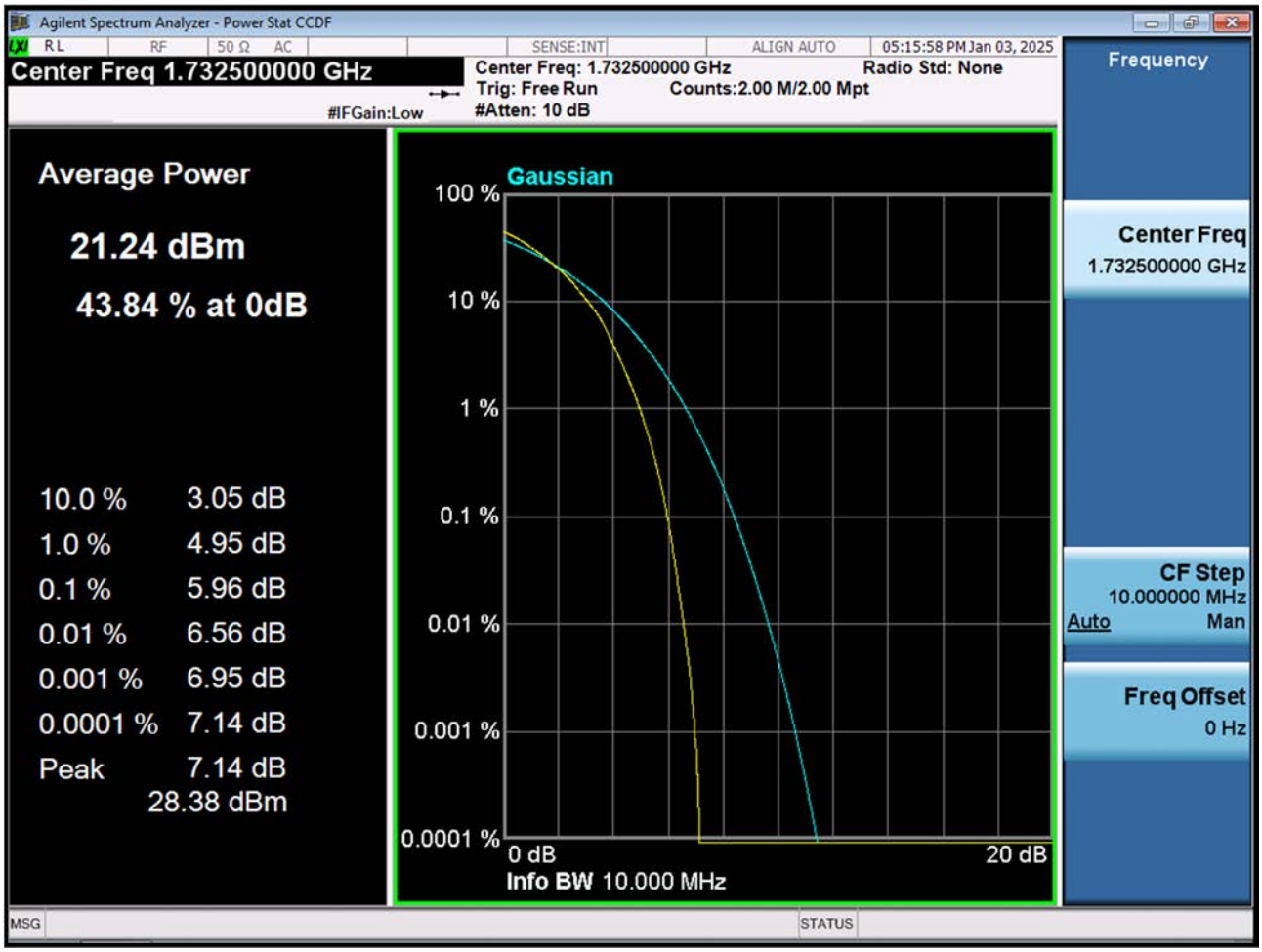

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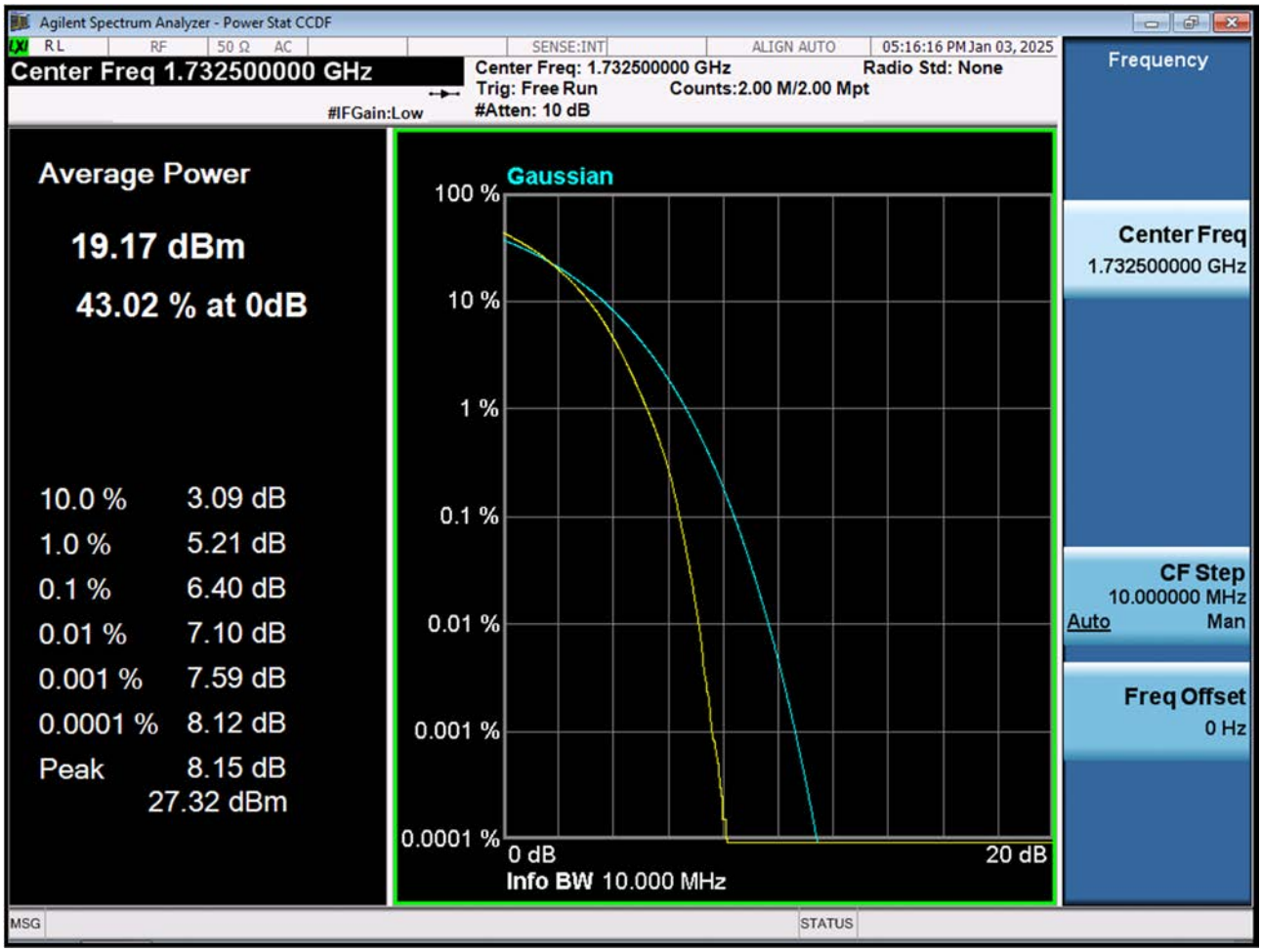
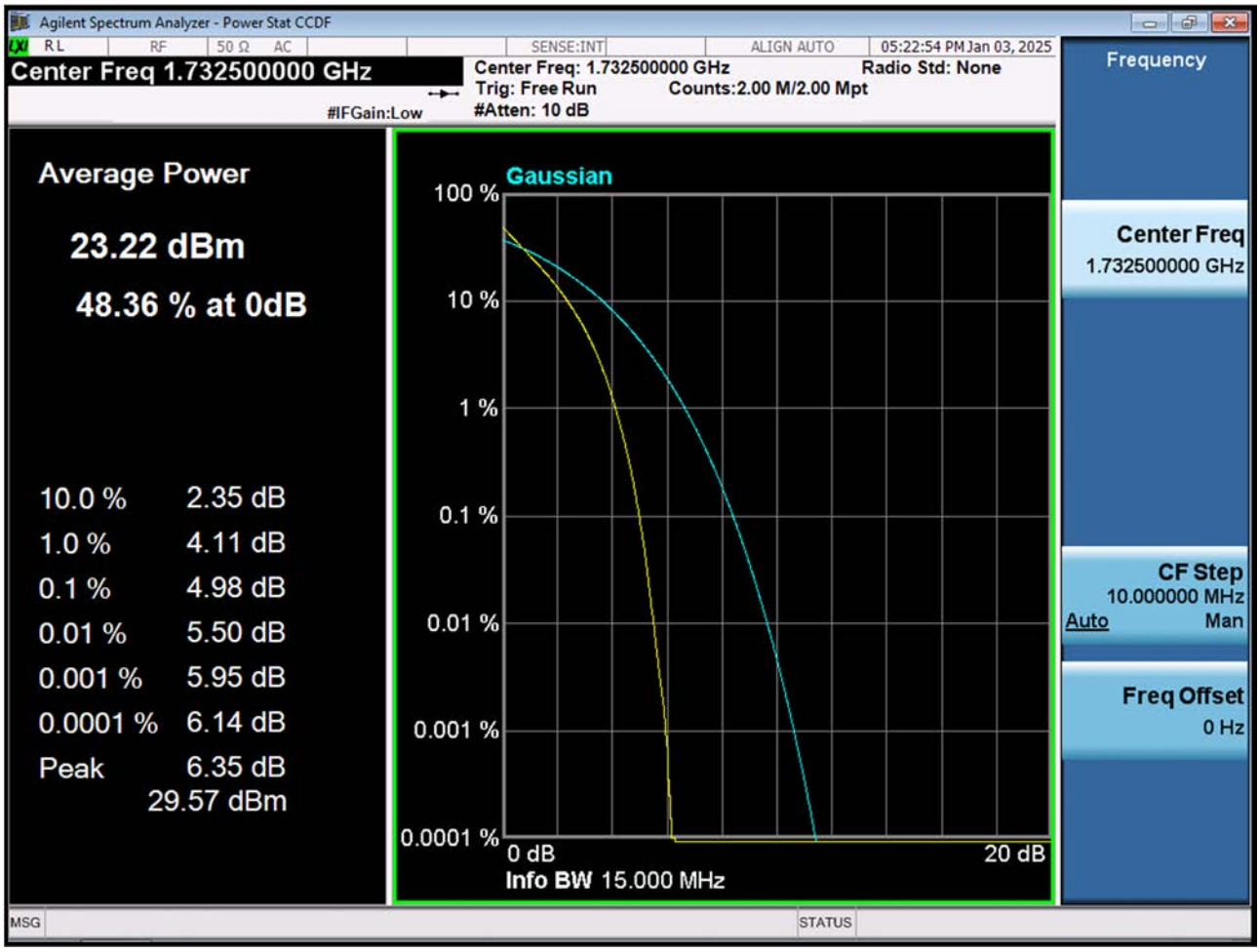


LTE B4_15 M_PAR_Mid_QPSK_FullRB



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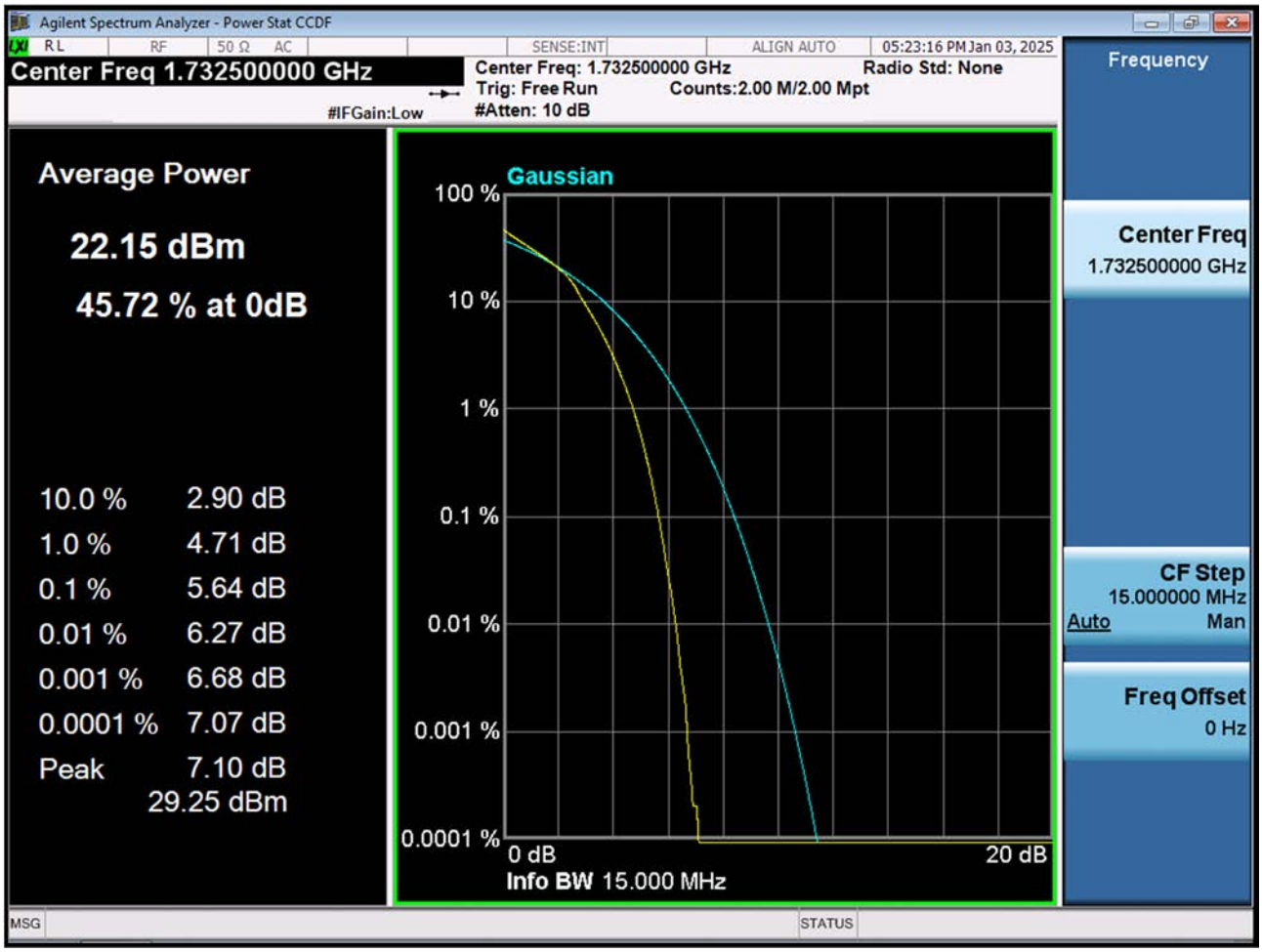

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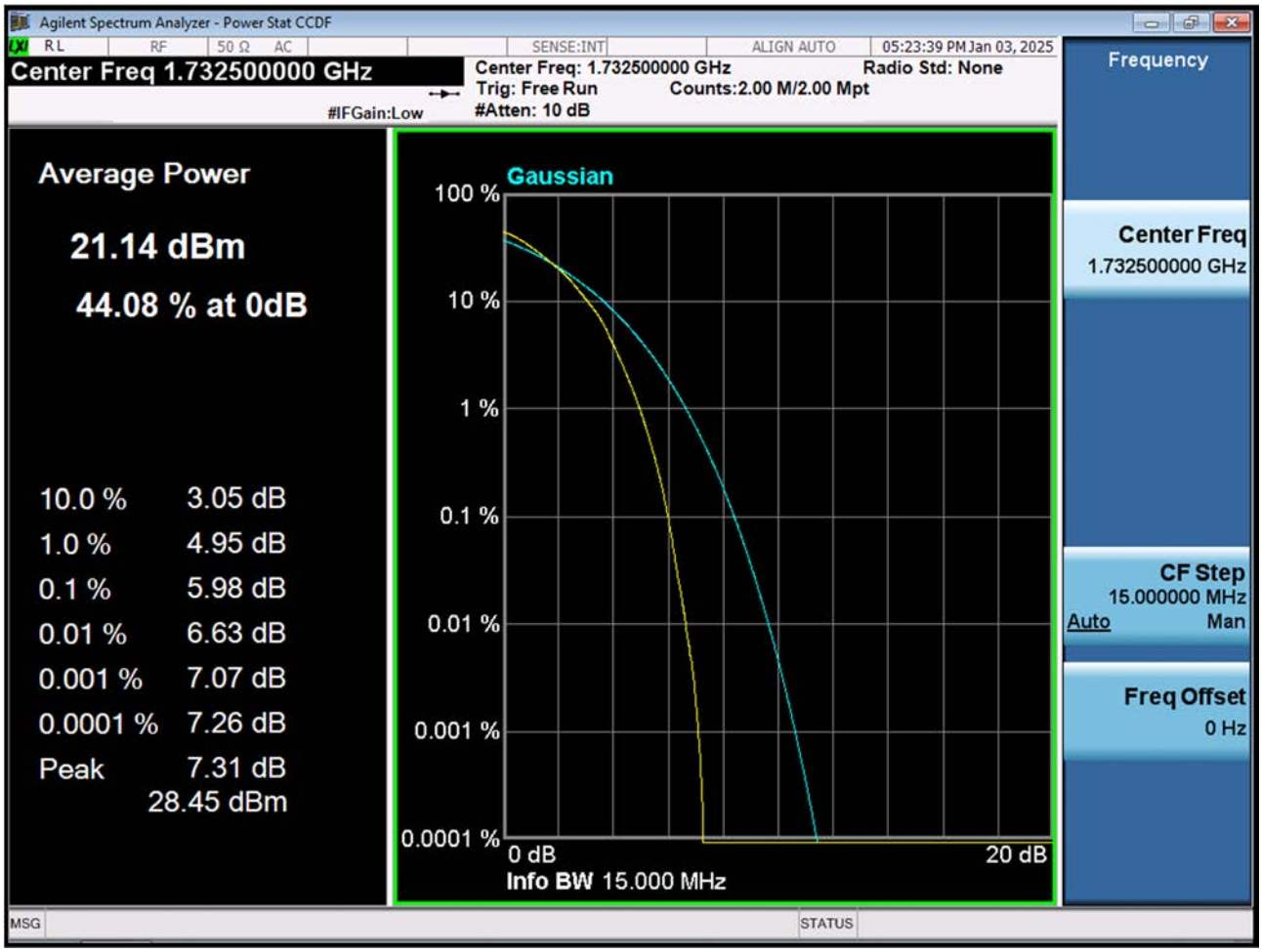

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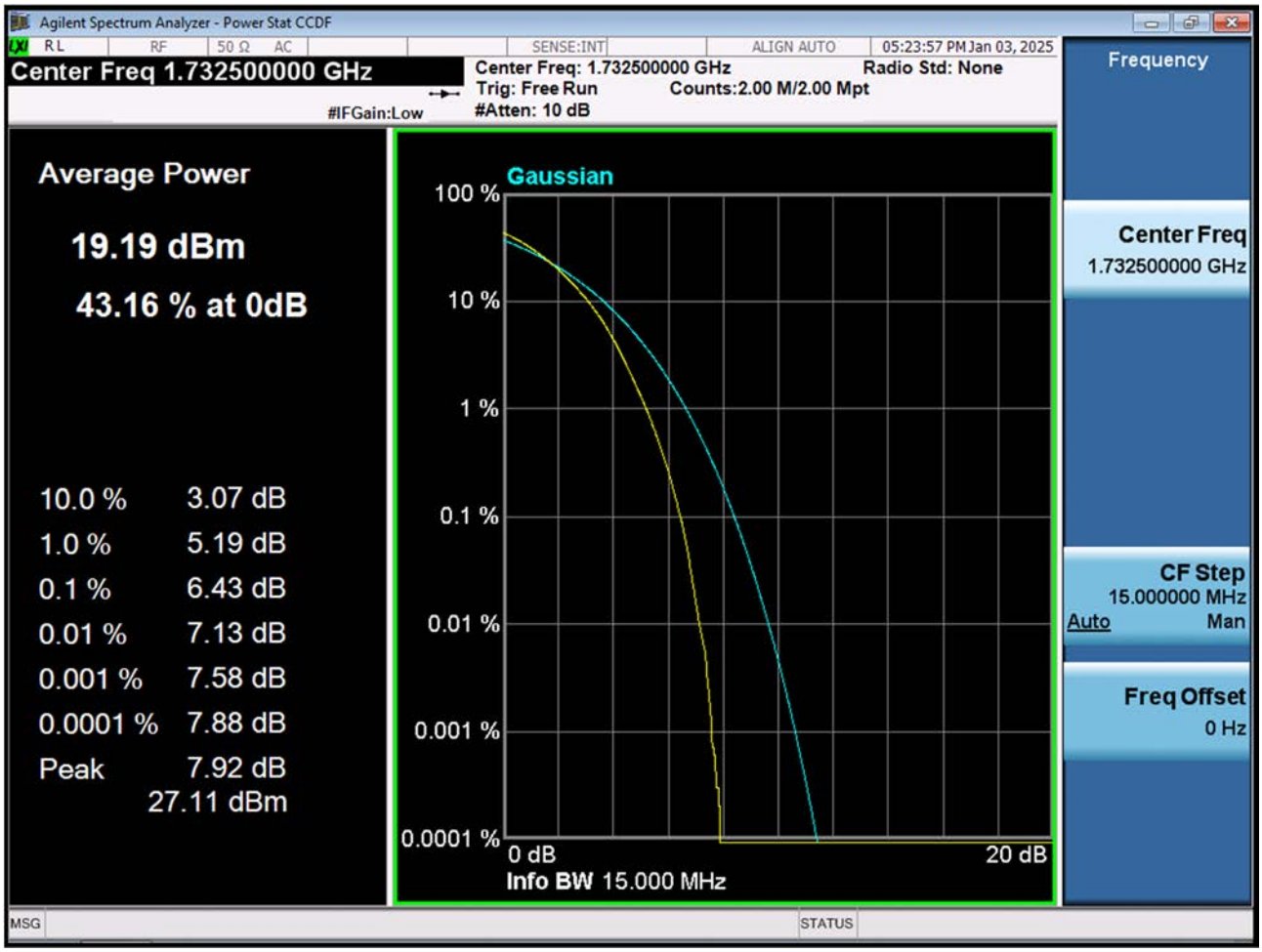
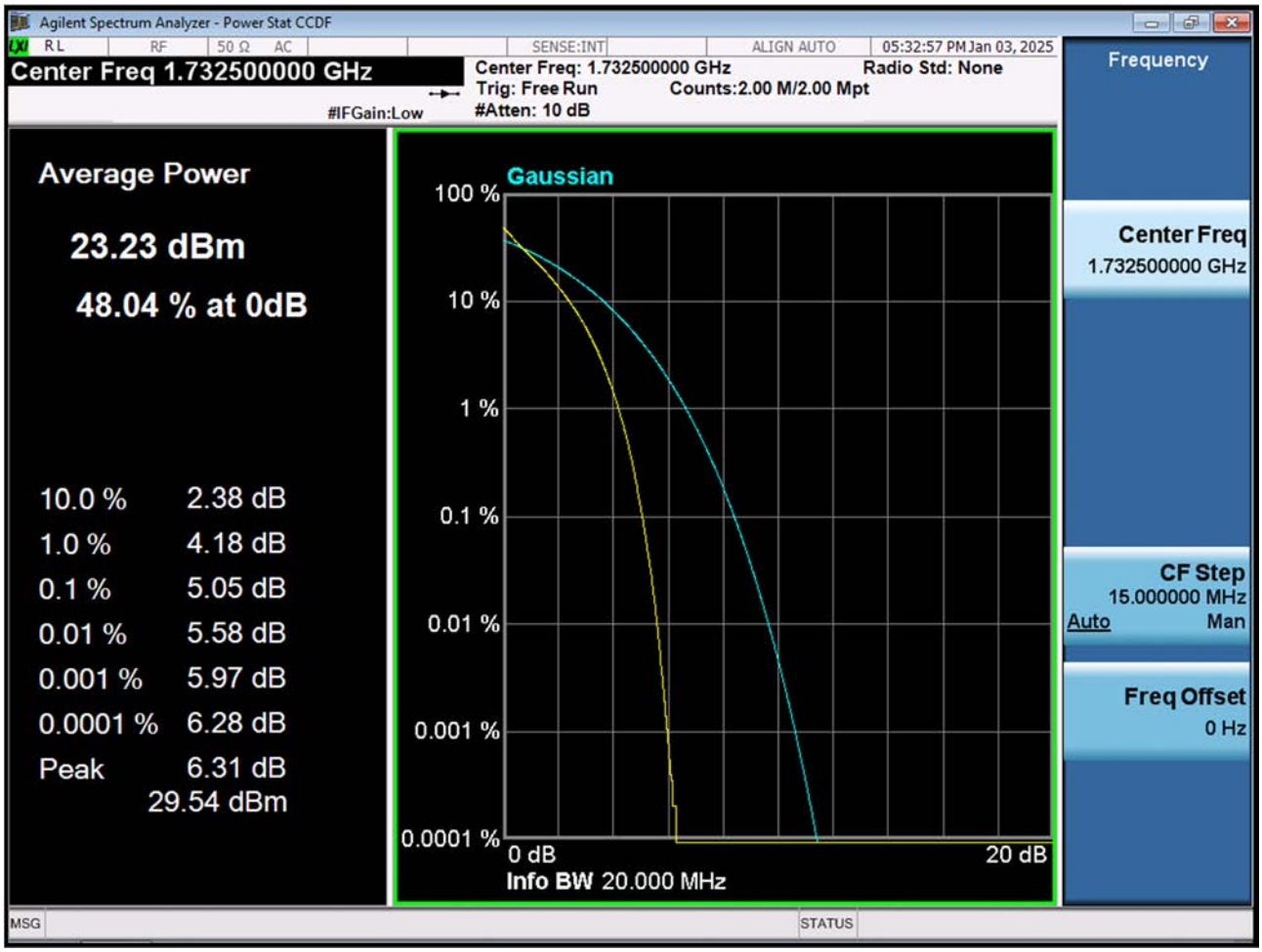


LTE B4_20 M_PAR_Mid_QPSK_FullRB



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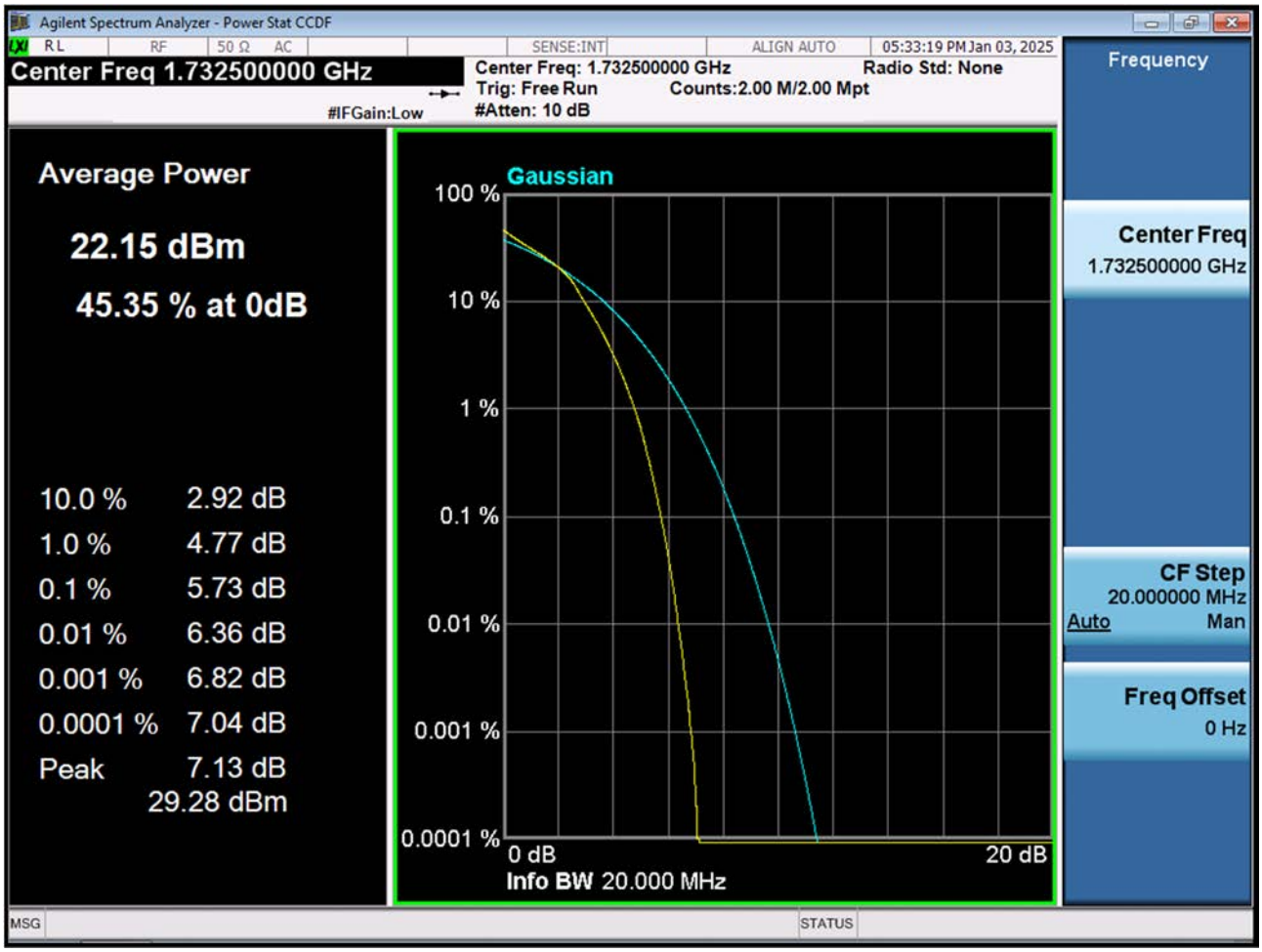

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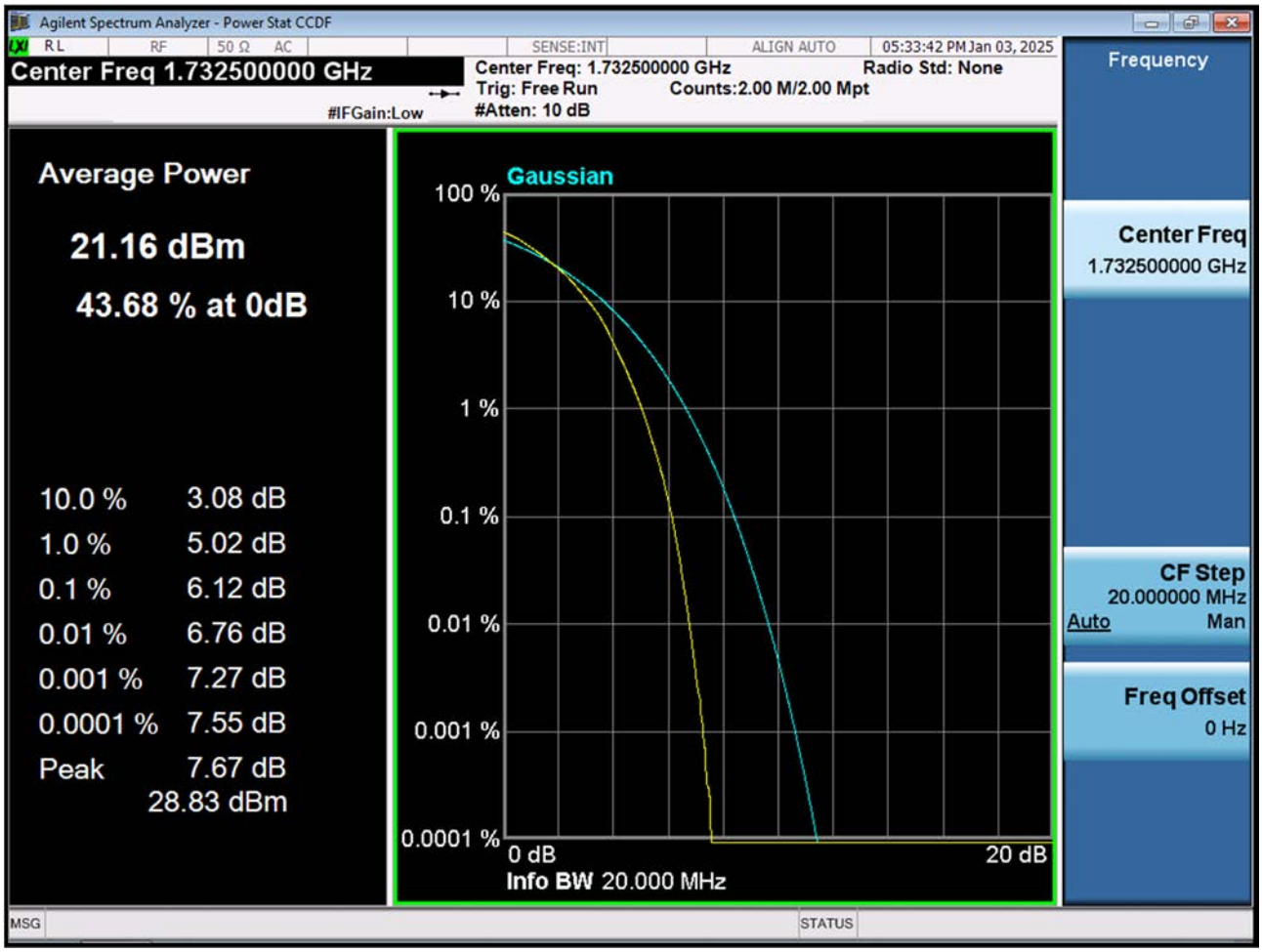

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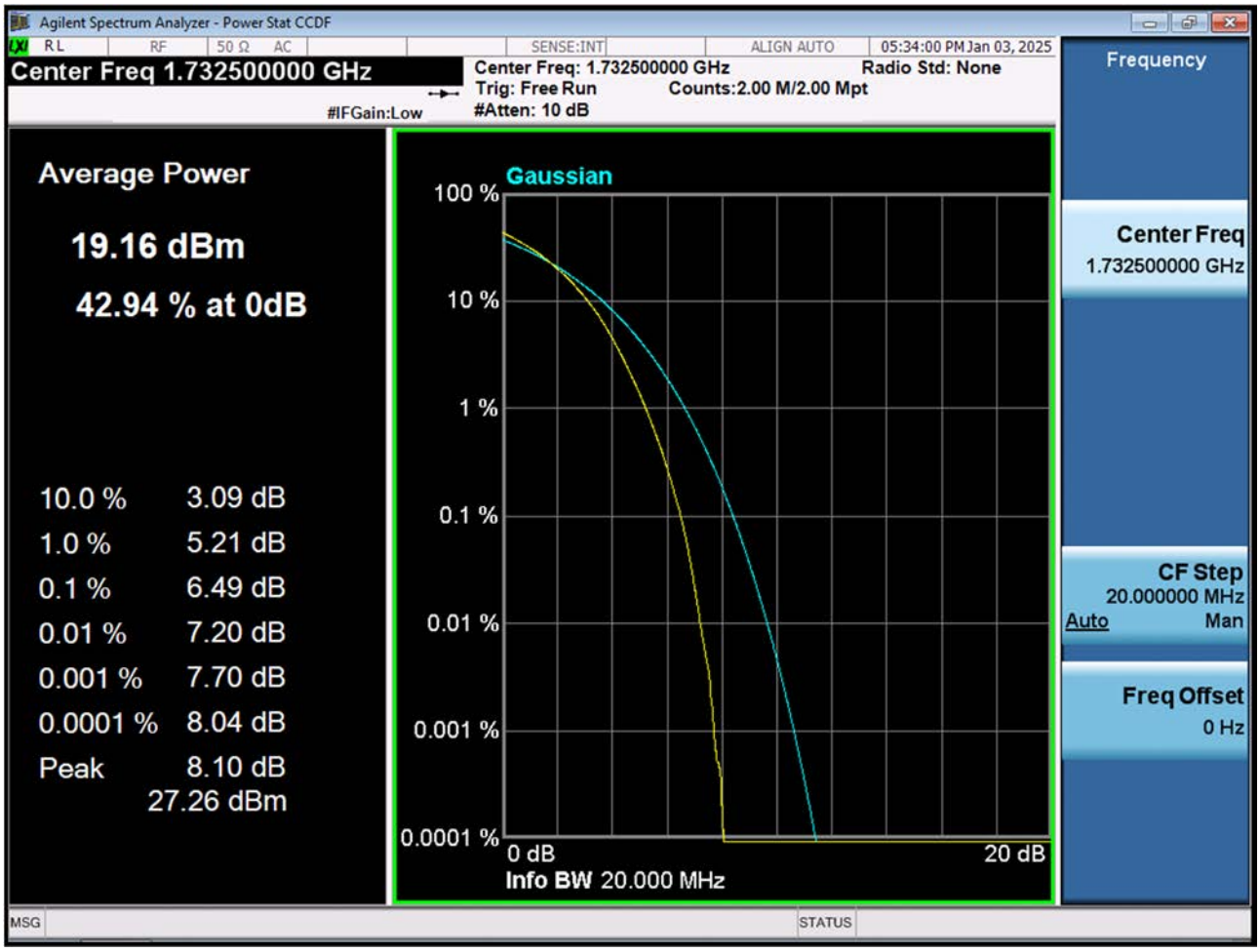
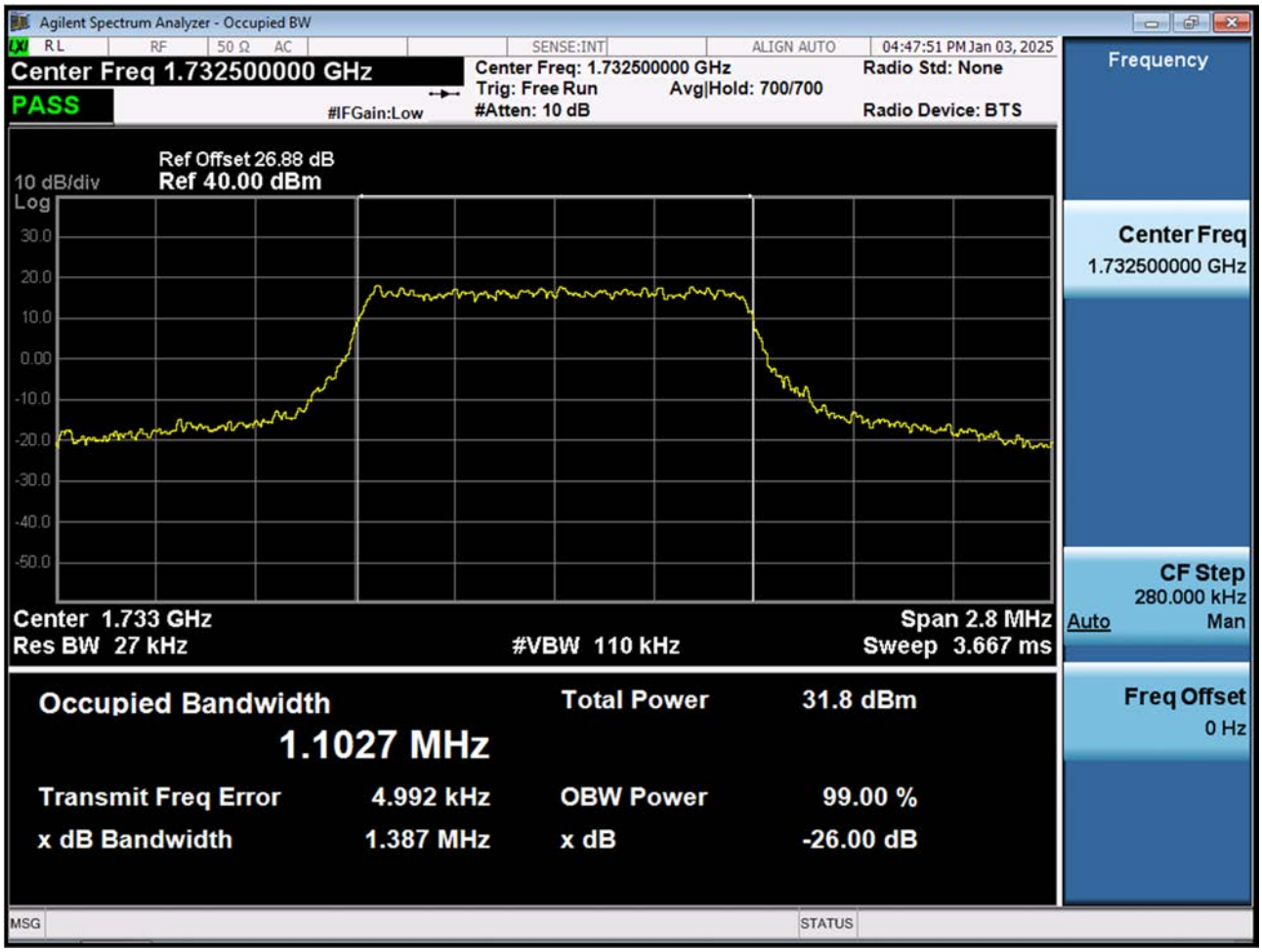


LTE B4_1.4M_OBW_Mid_QPSK_FullRB



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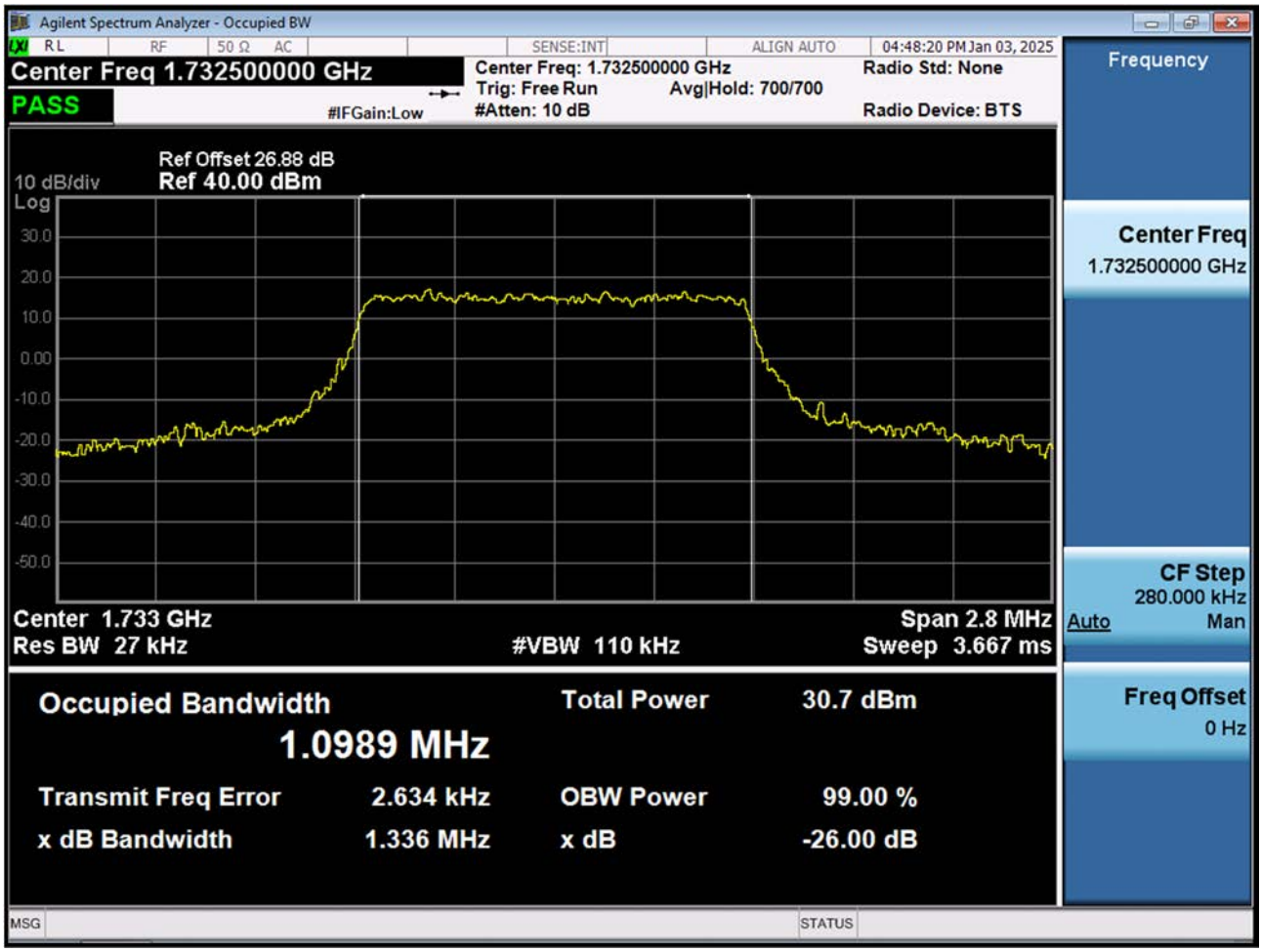

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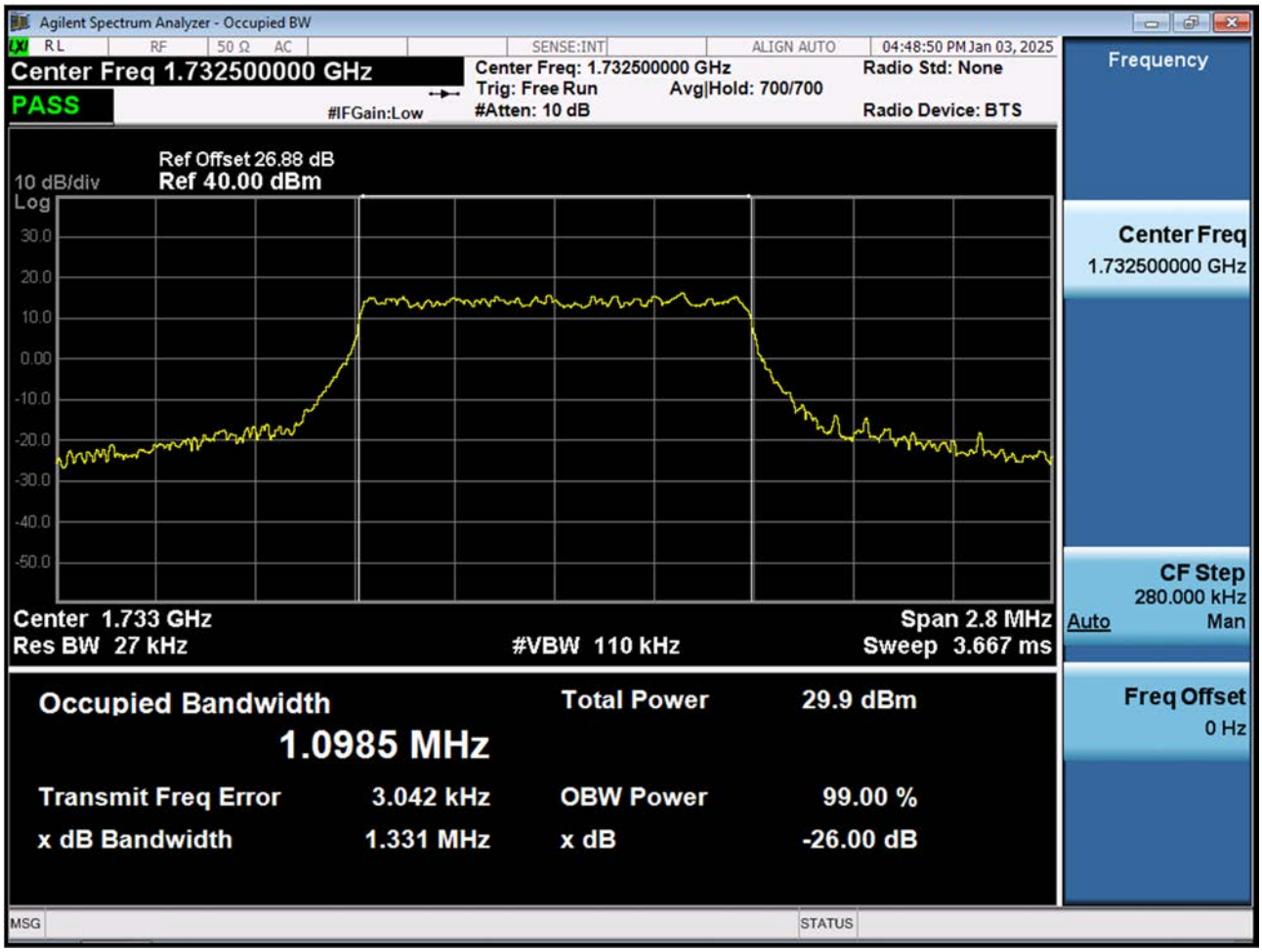

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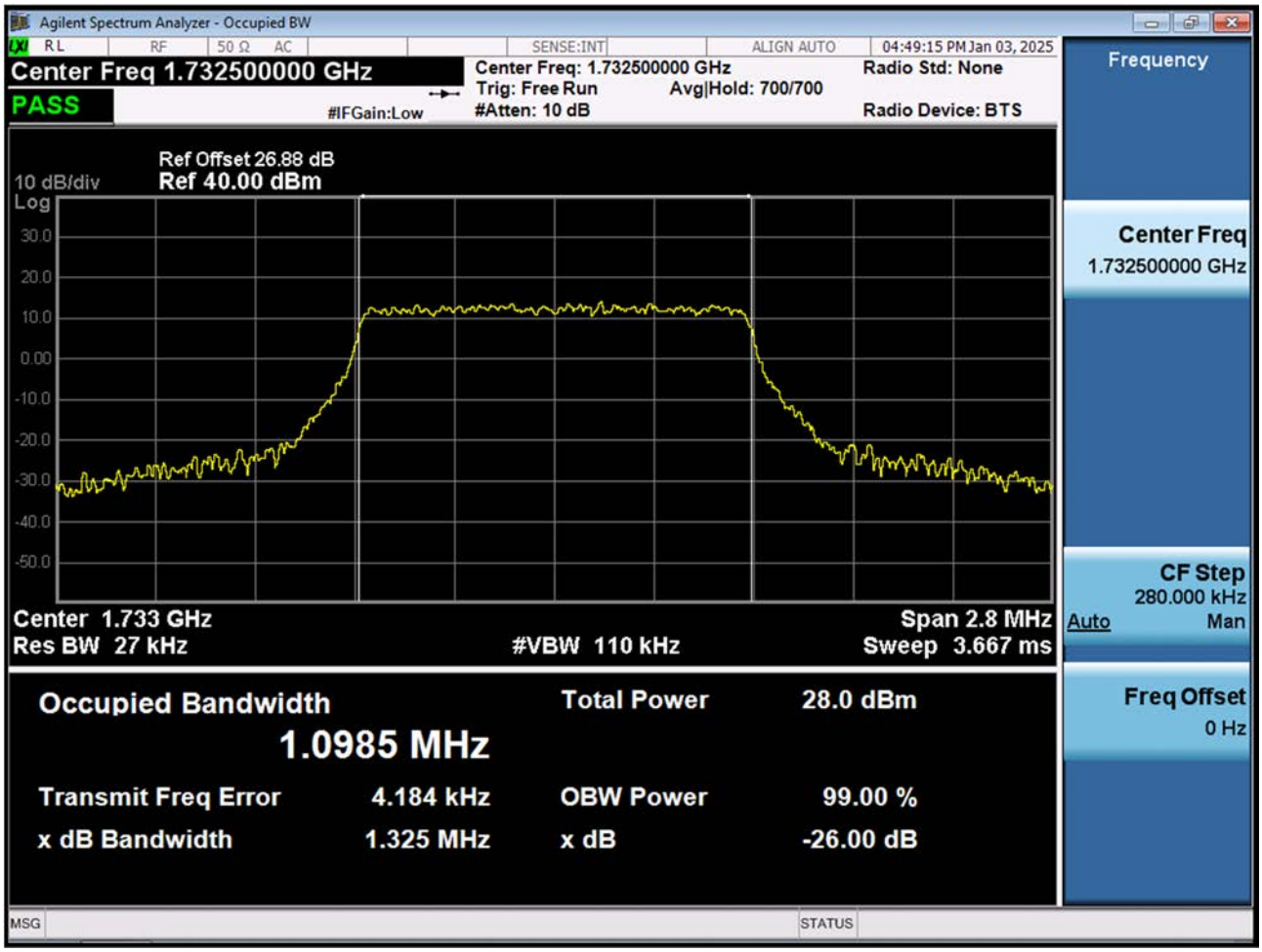

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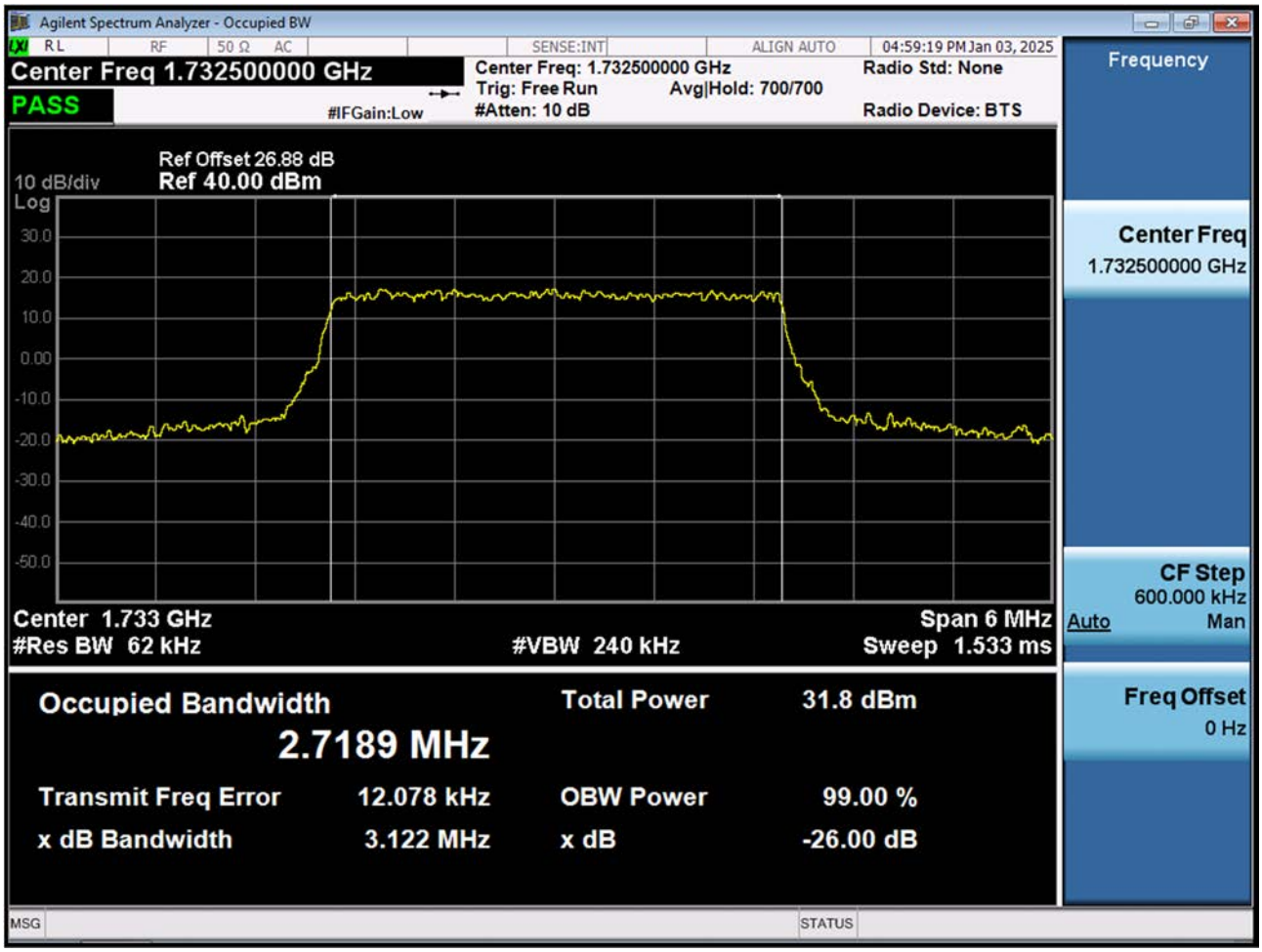

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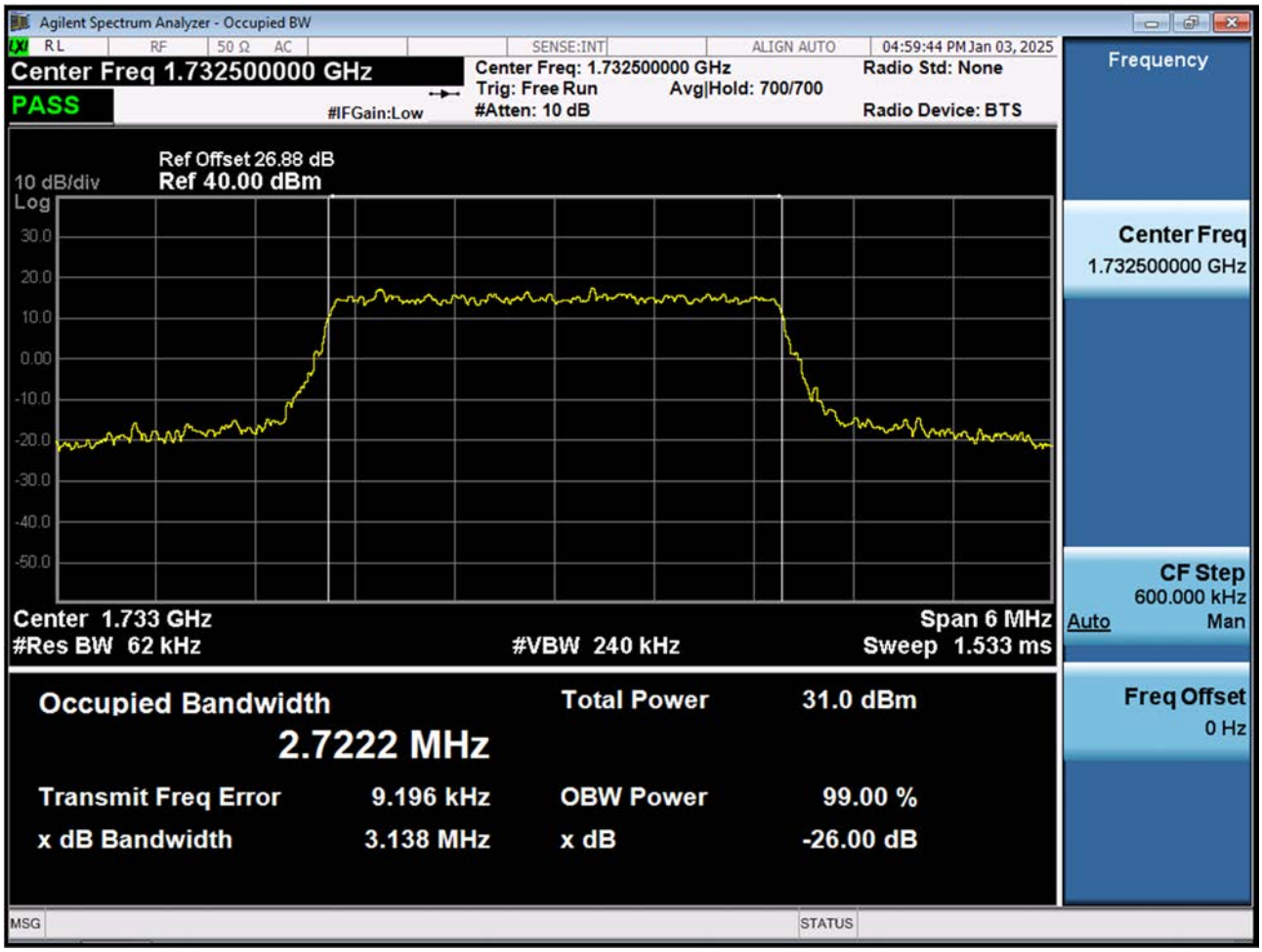

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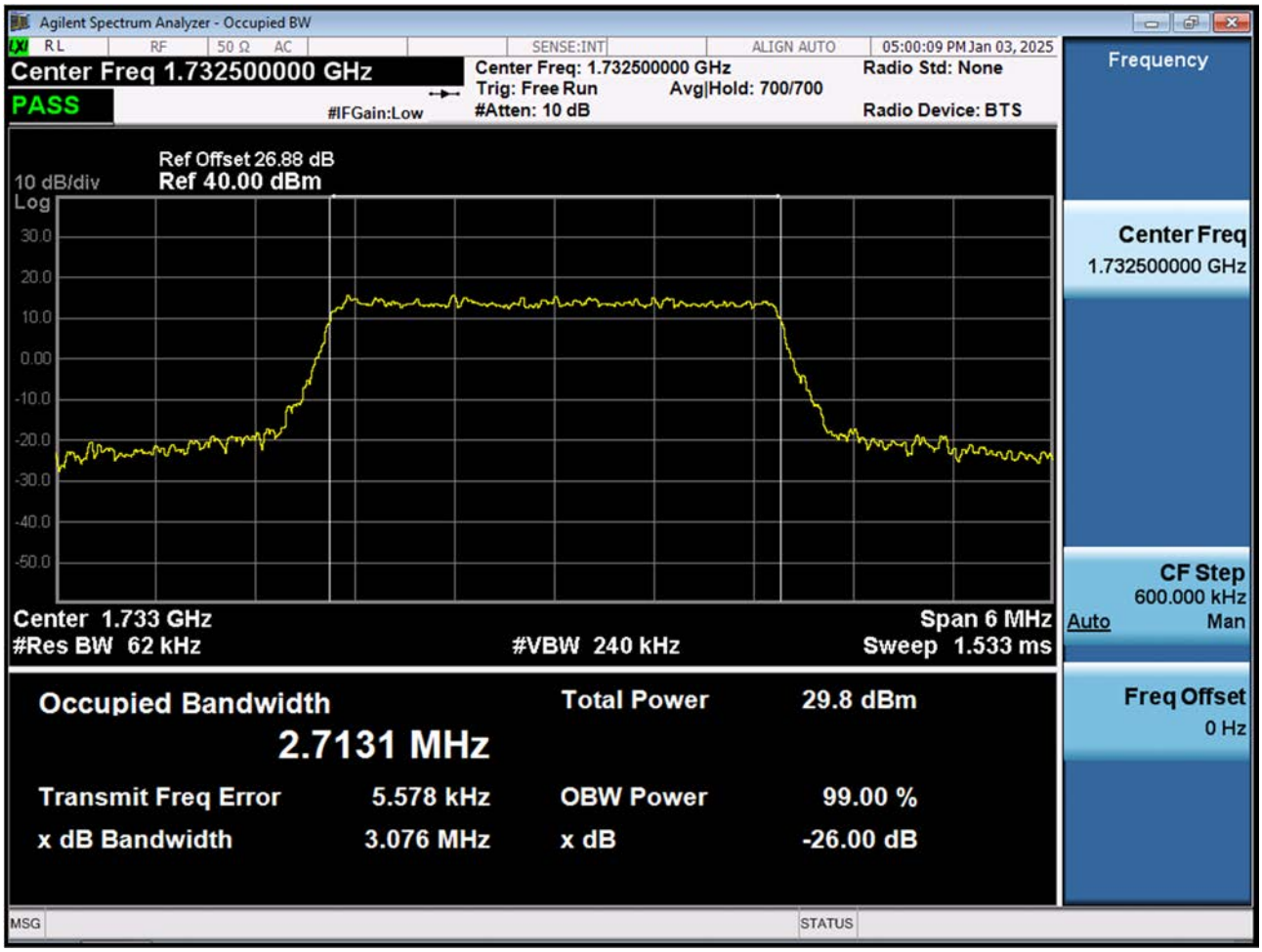

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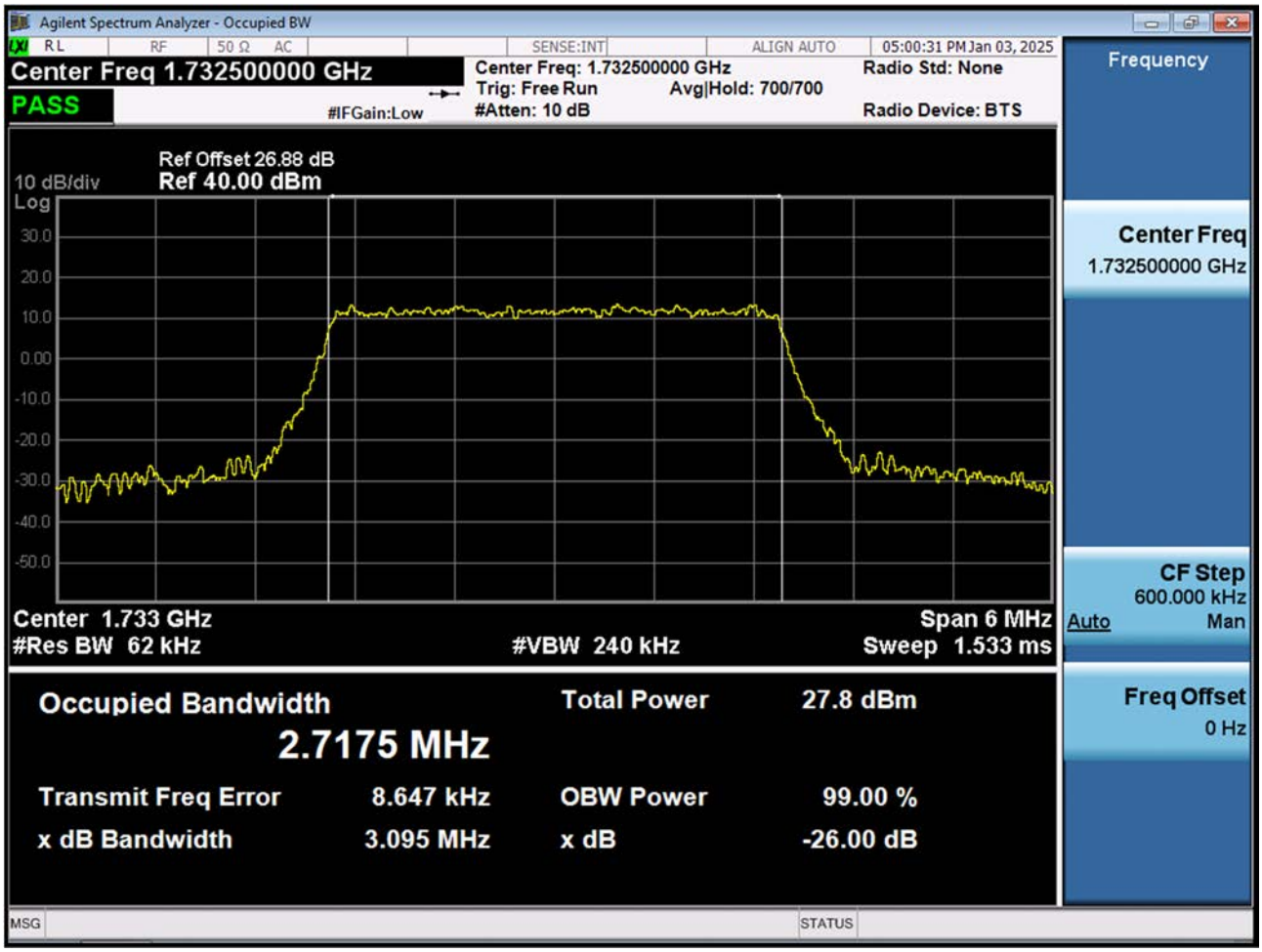

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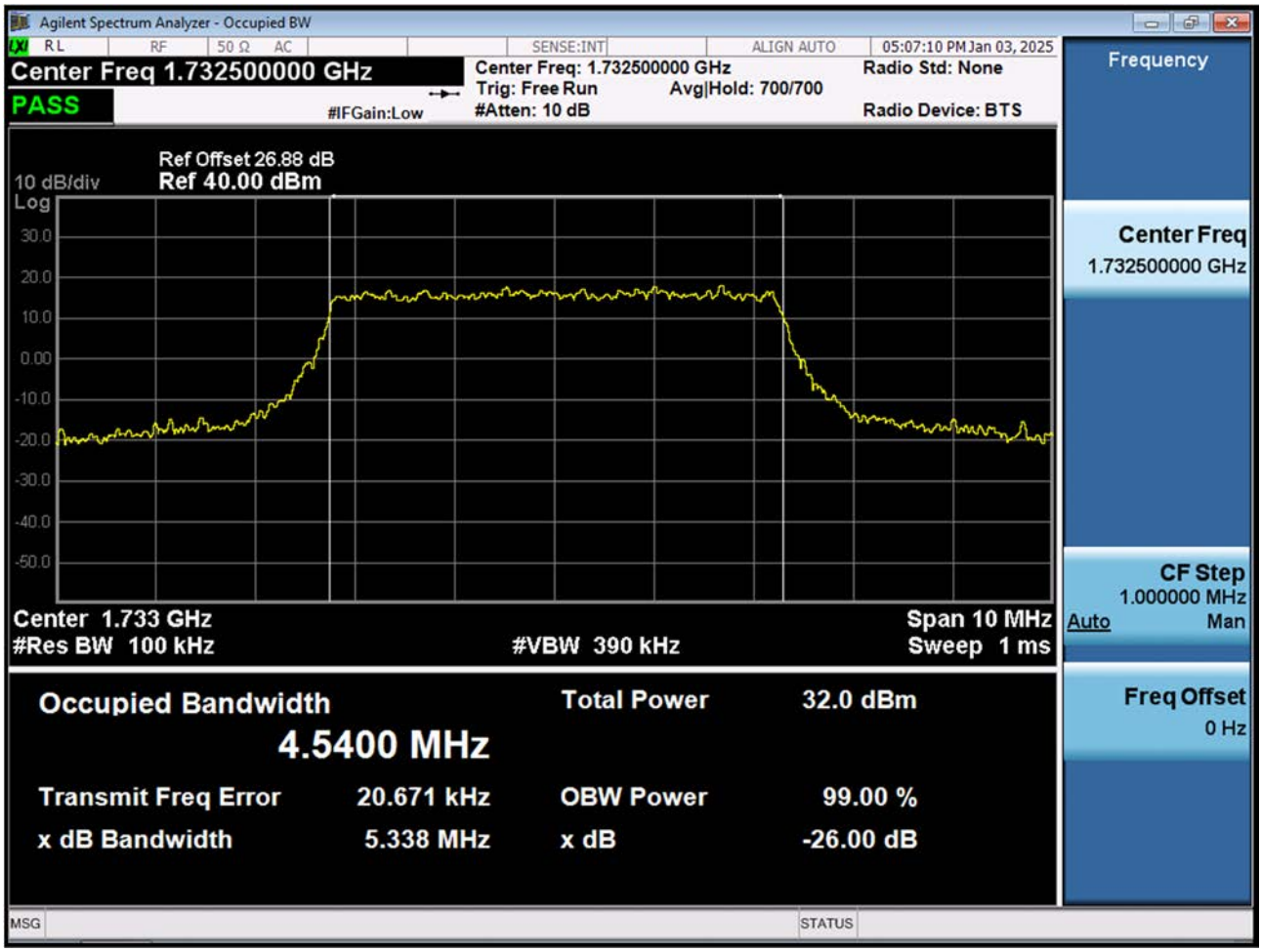

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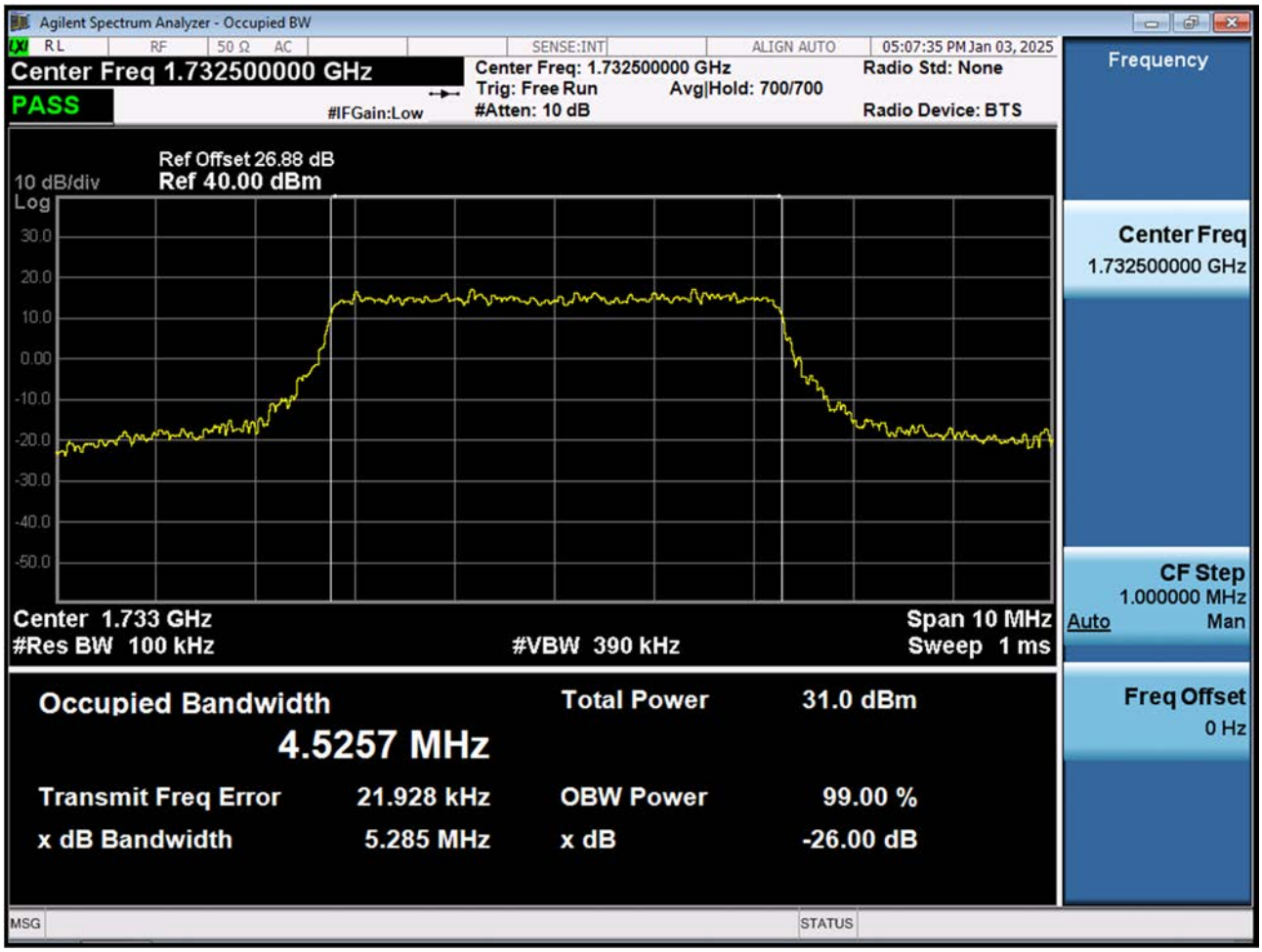

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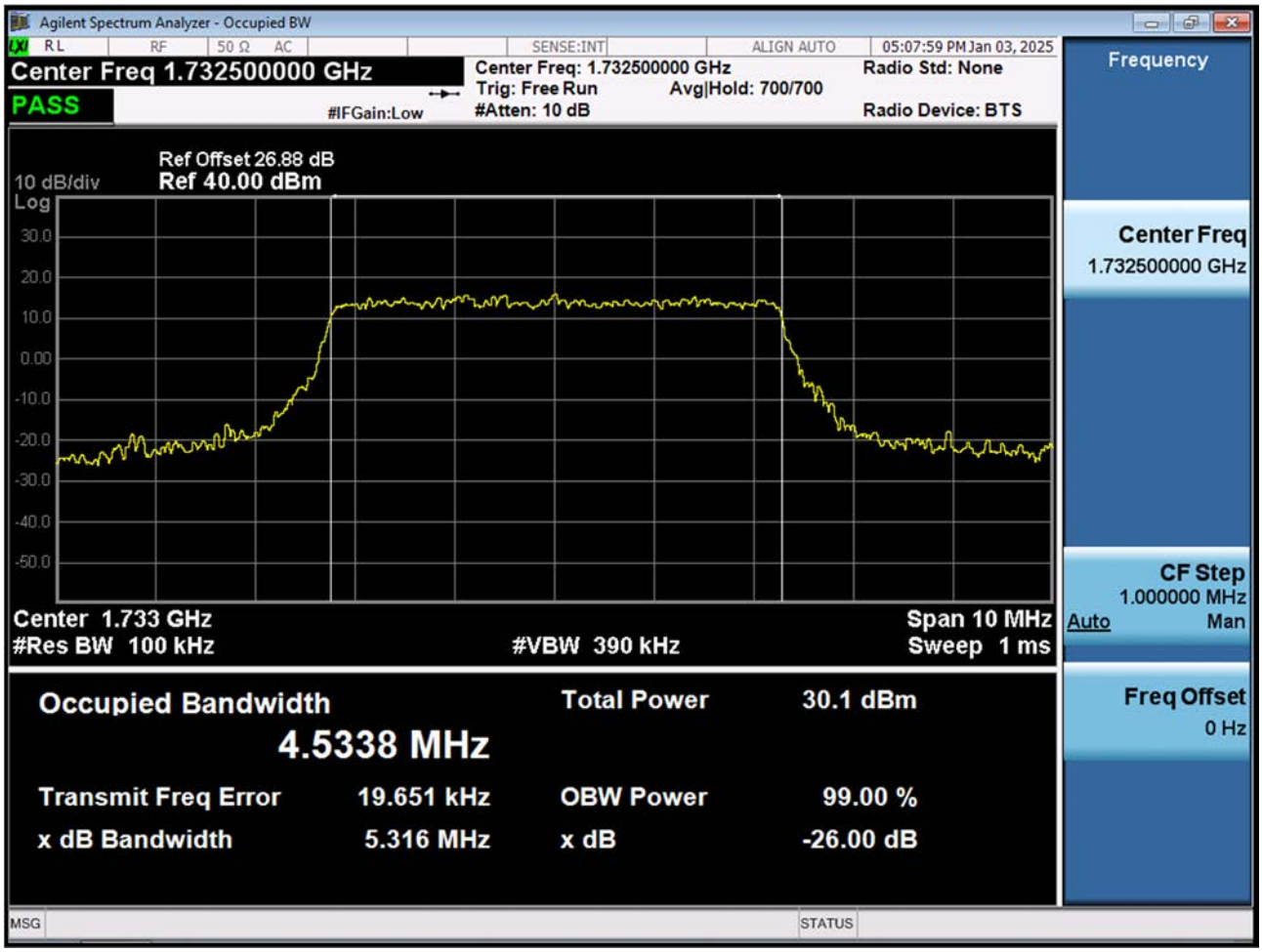

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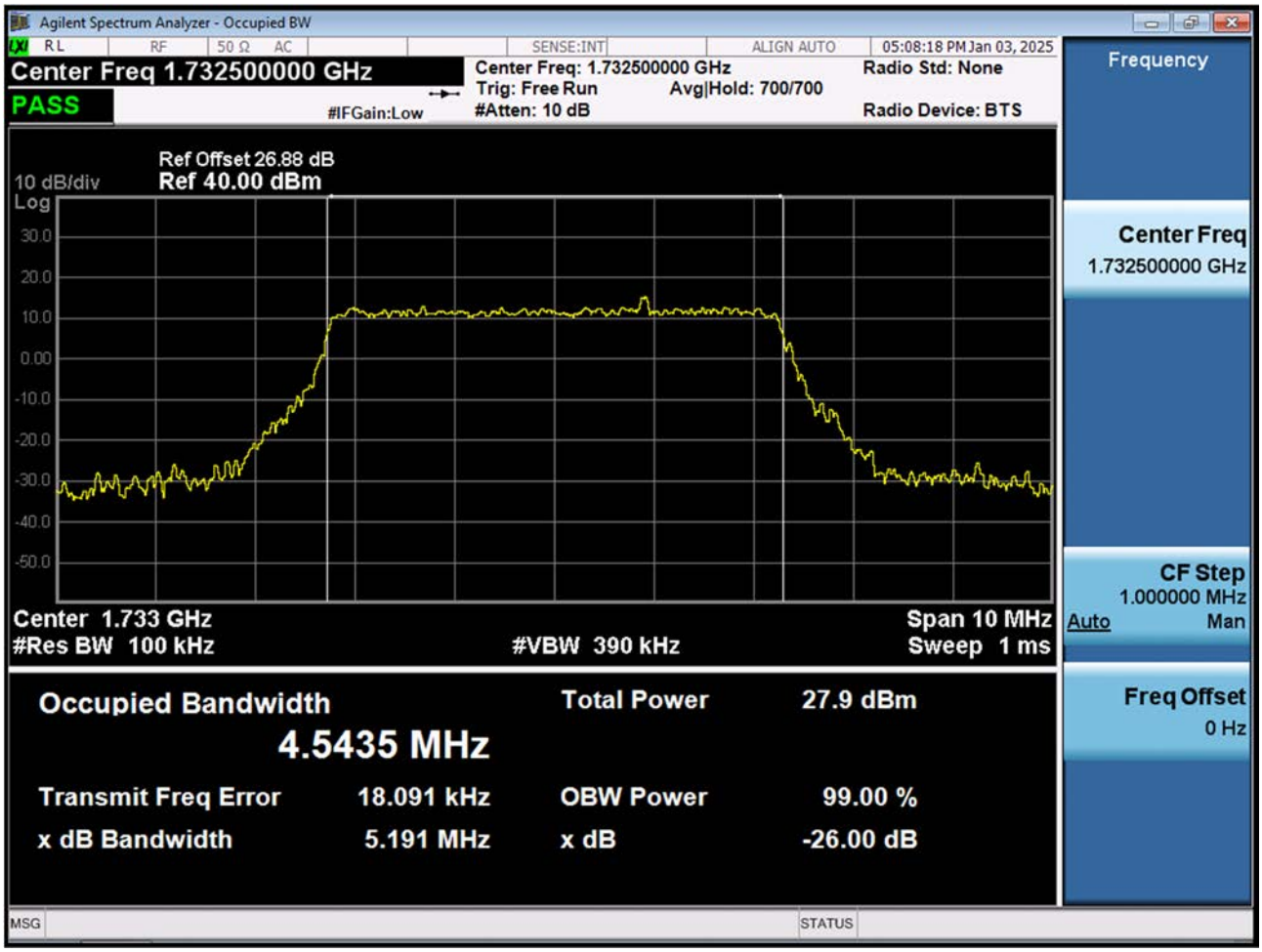

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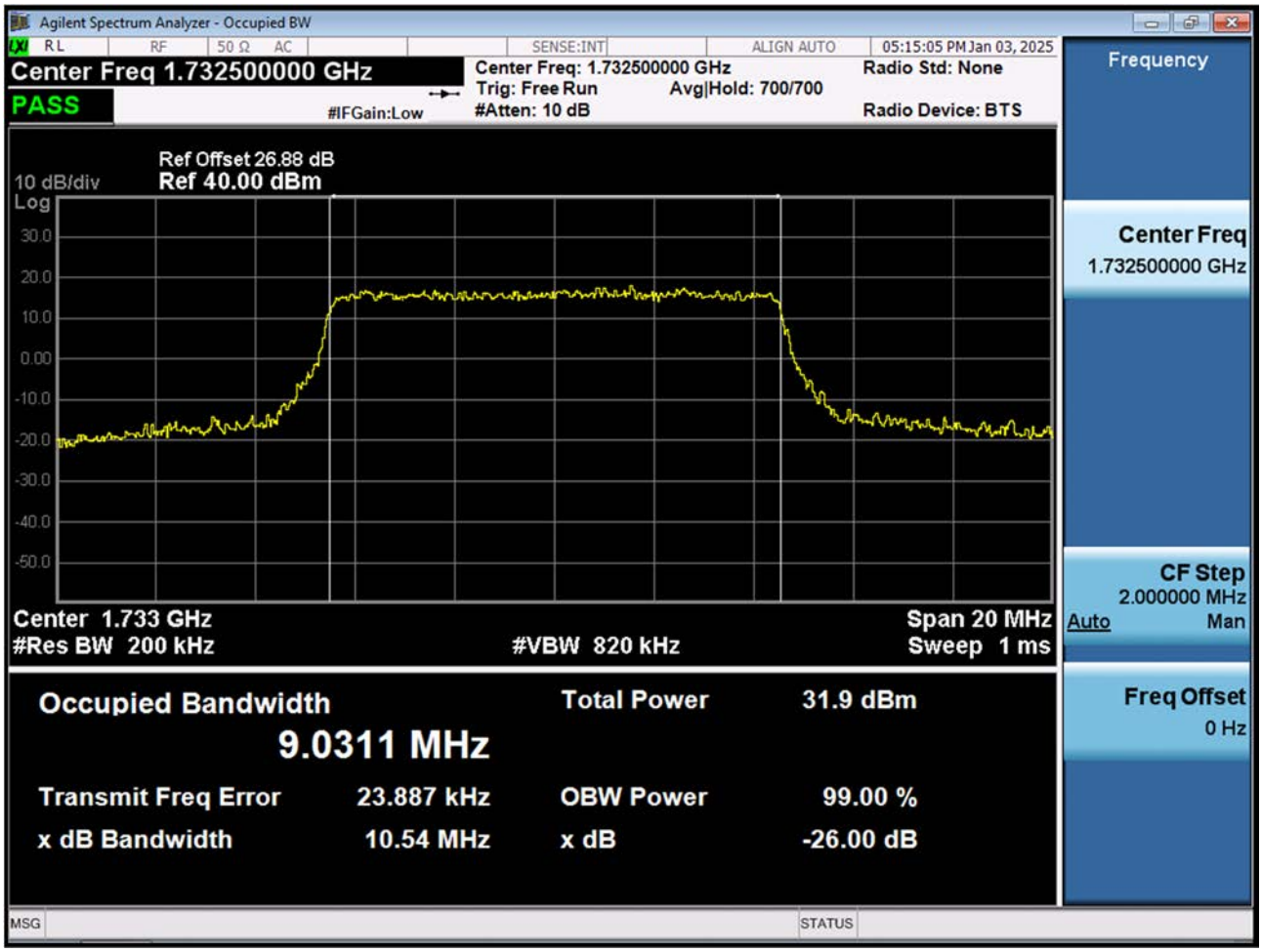

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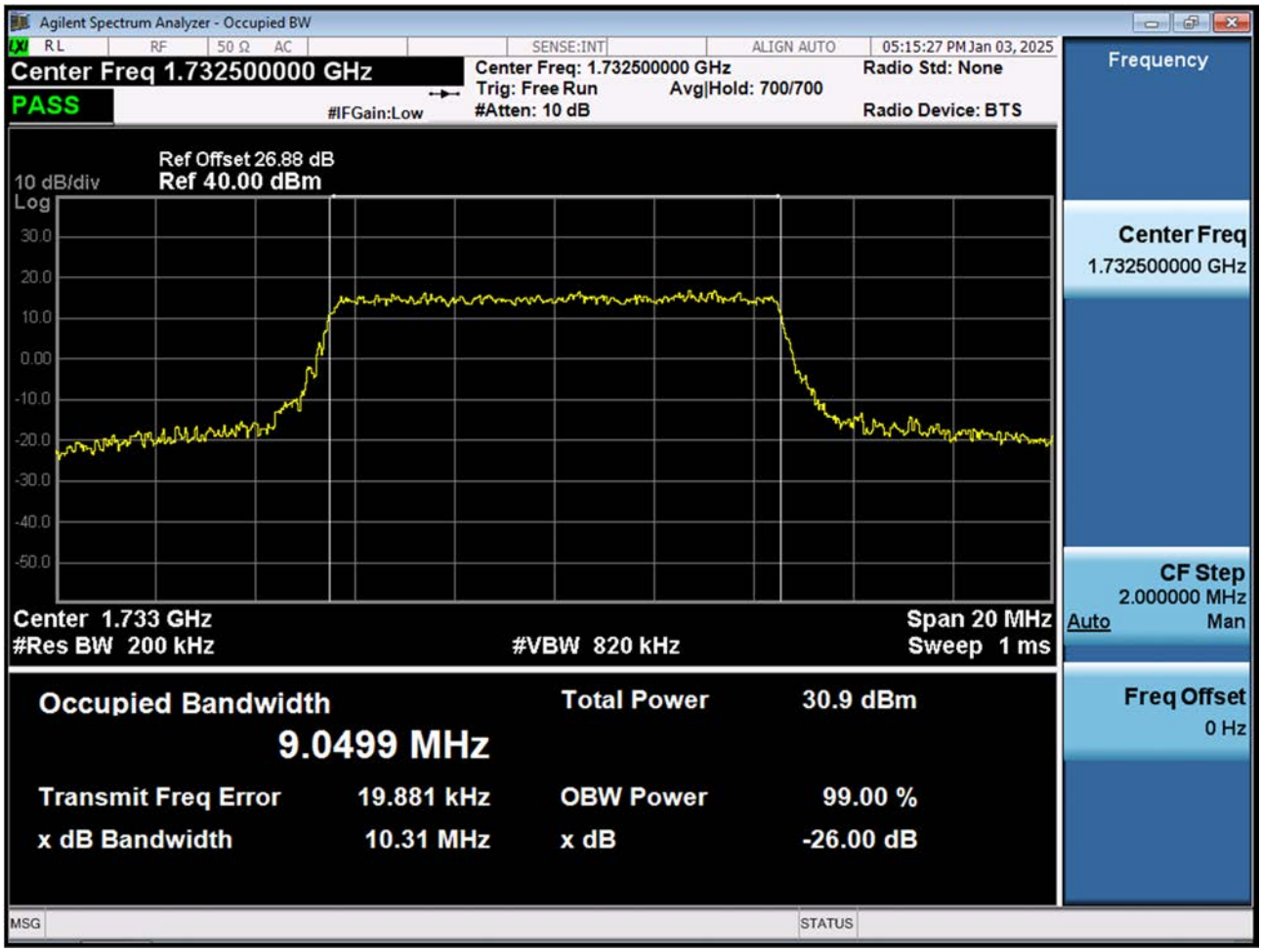

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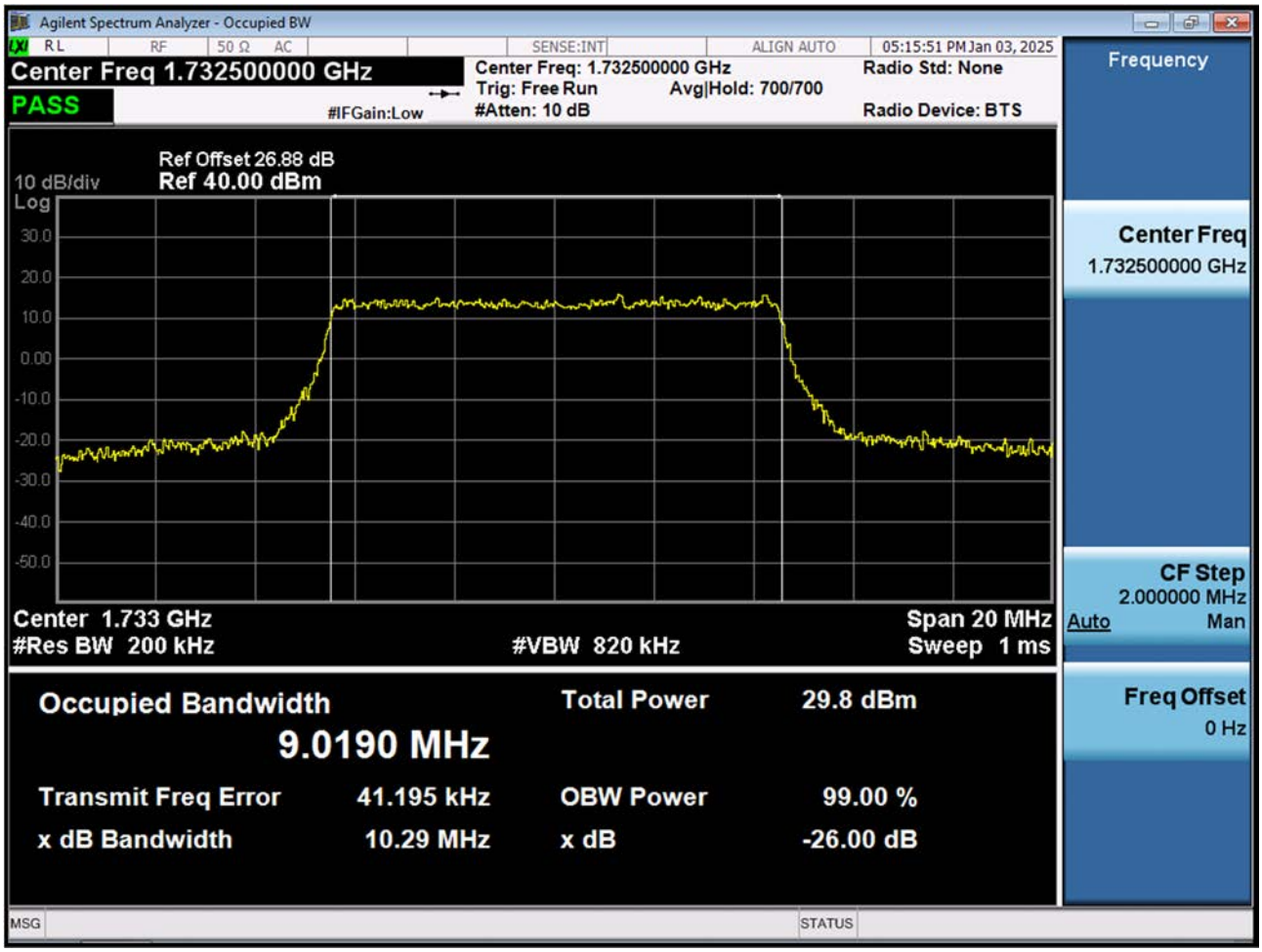

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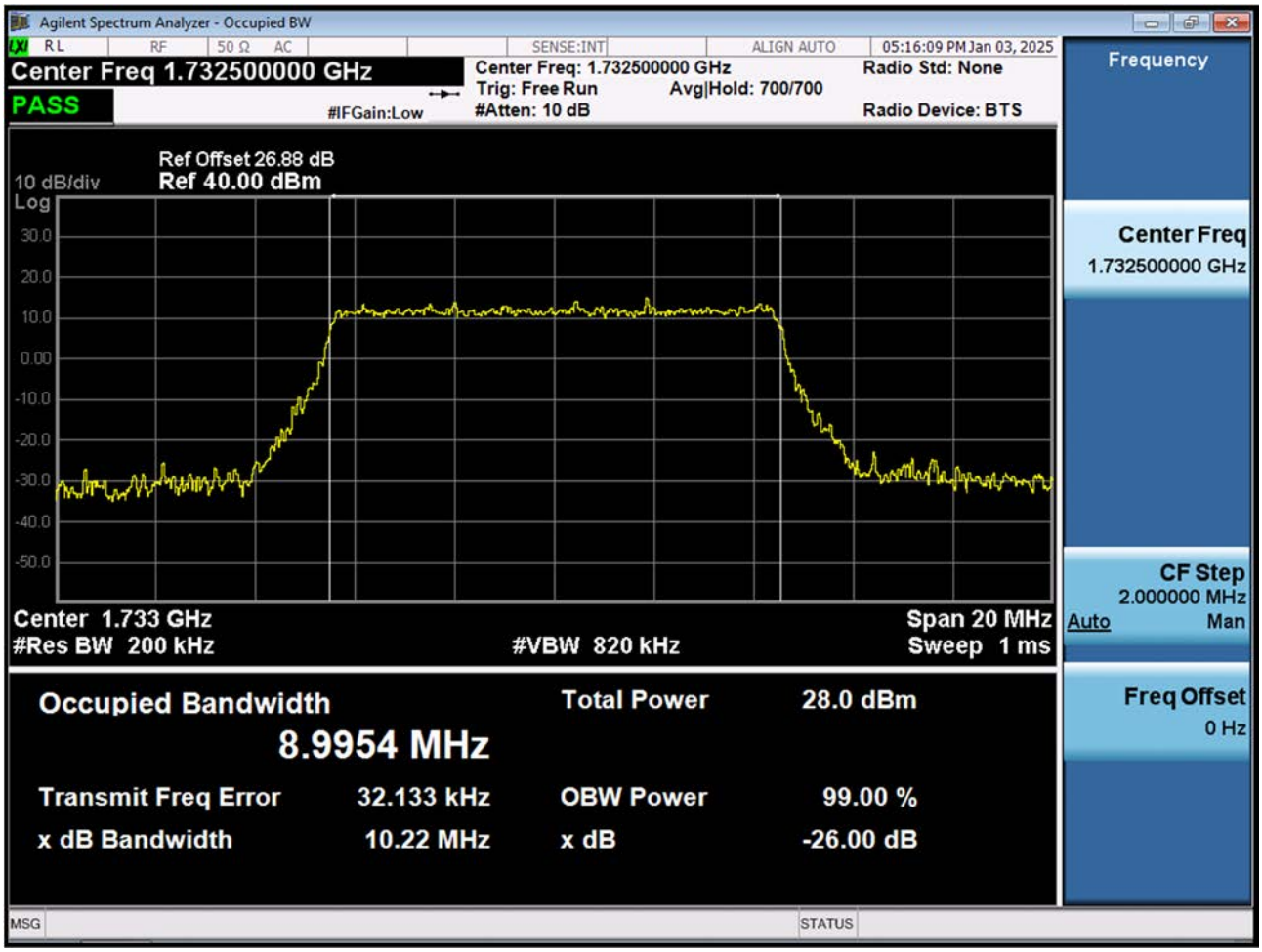
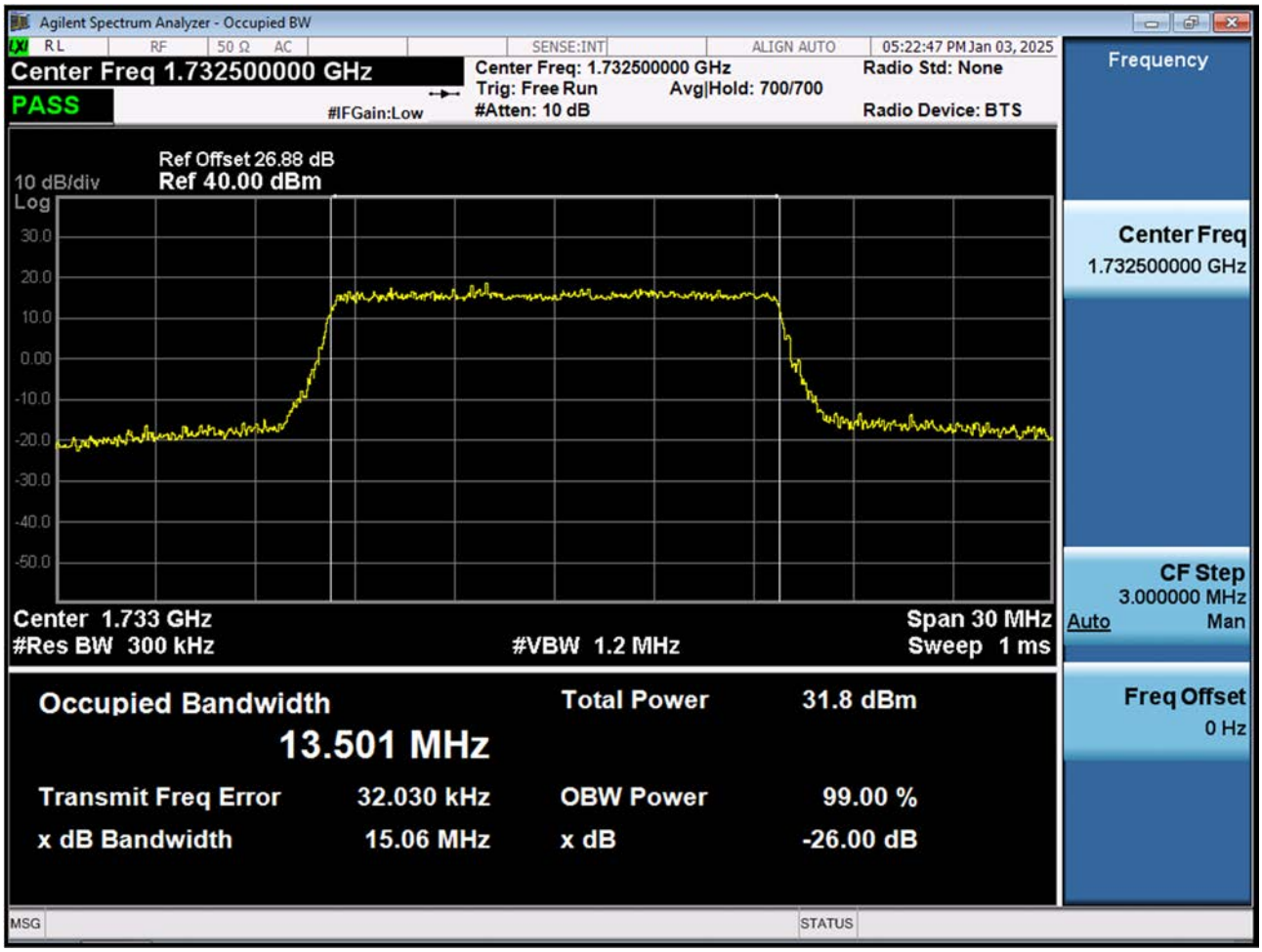


LTE B4_15 M_OBW_Mid_QPSK_FullRB



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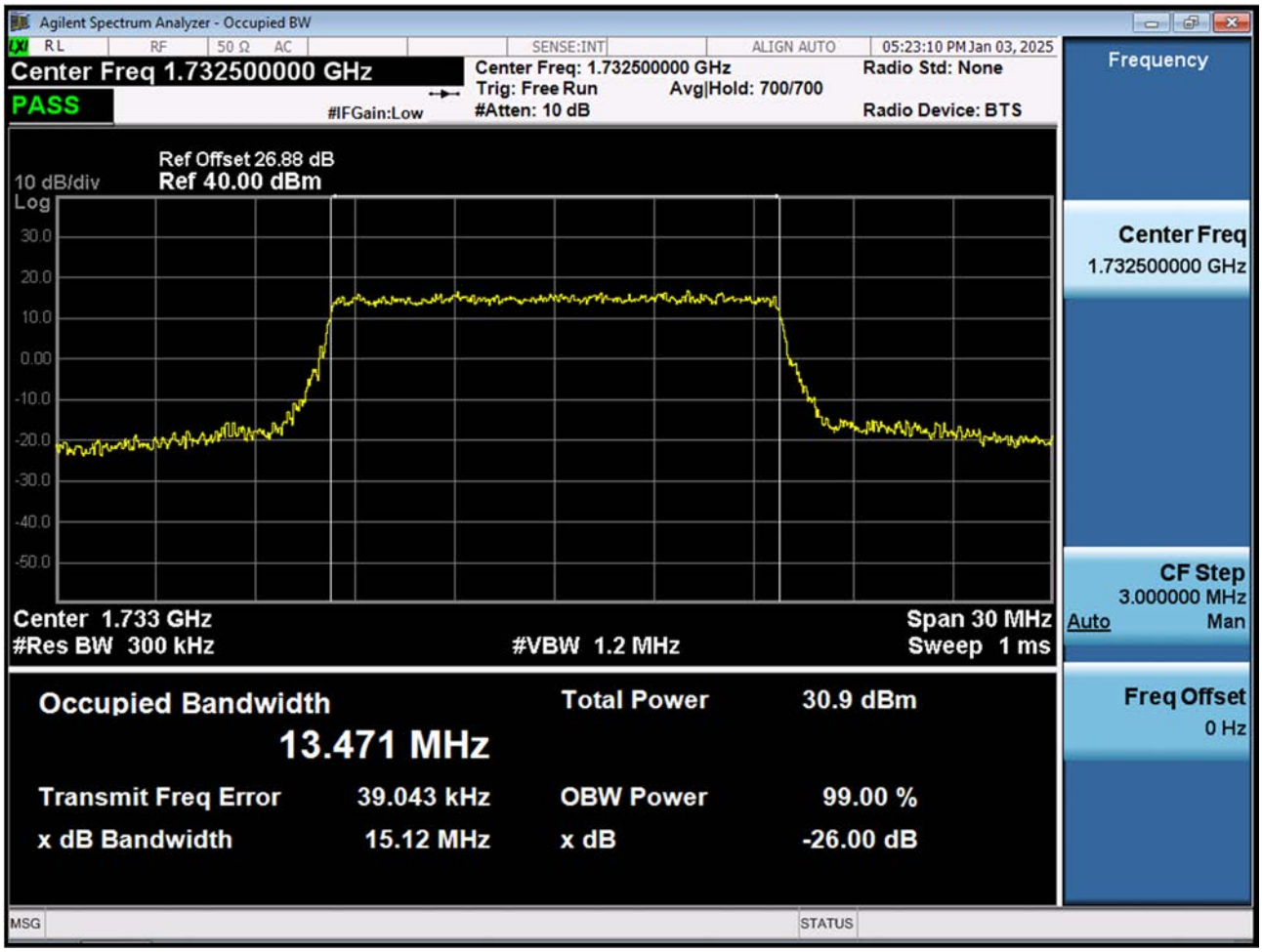

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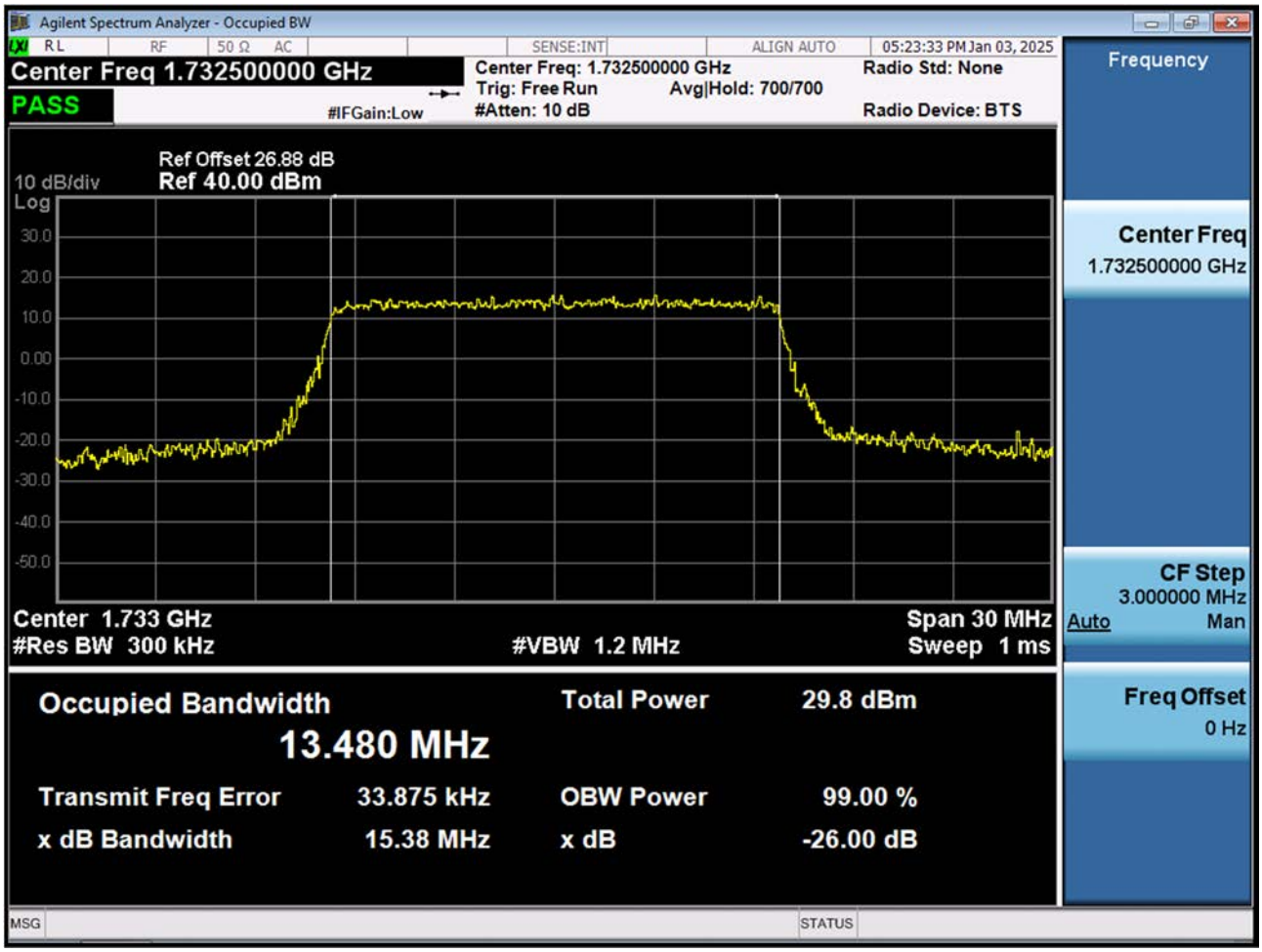

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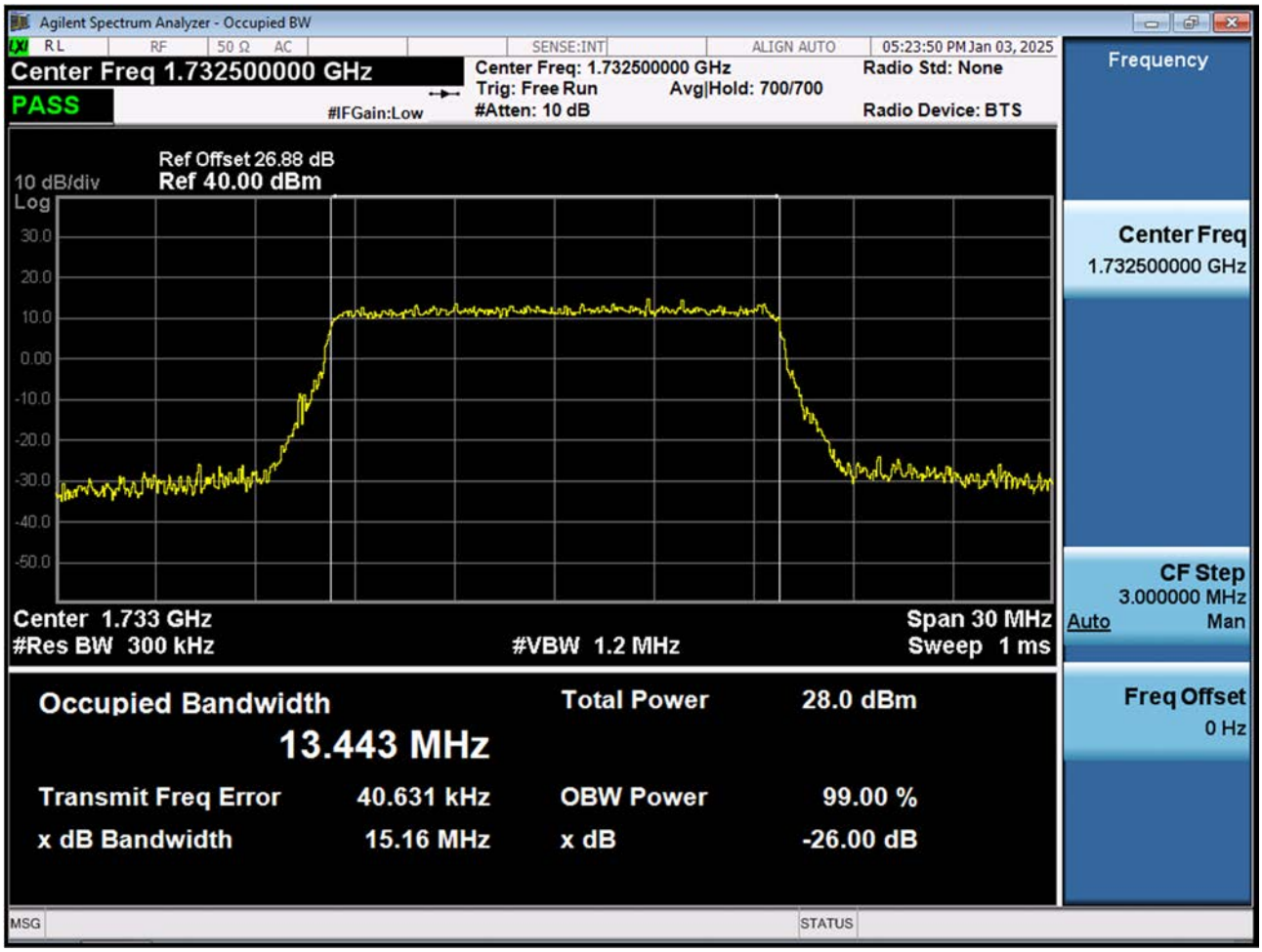

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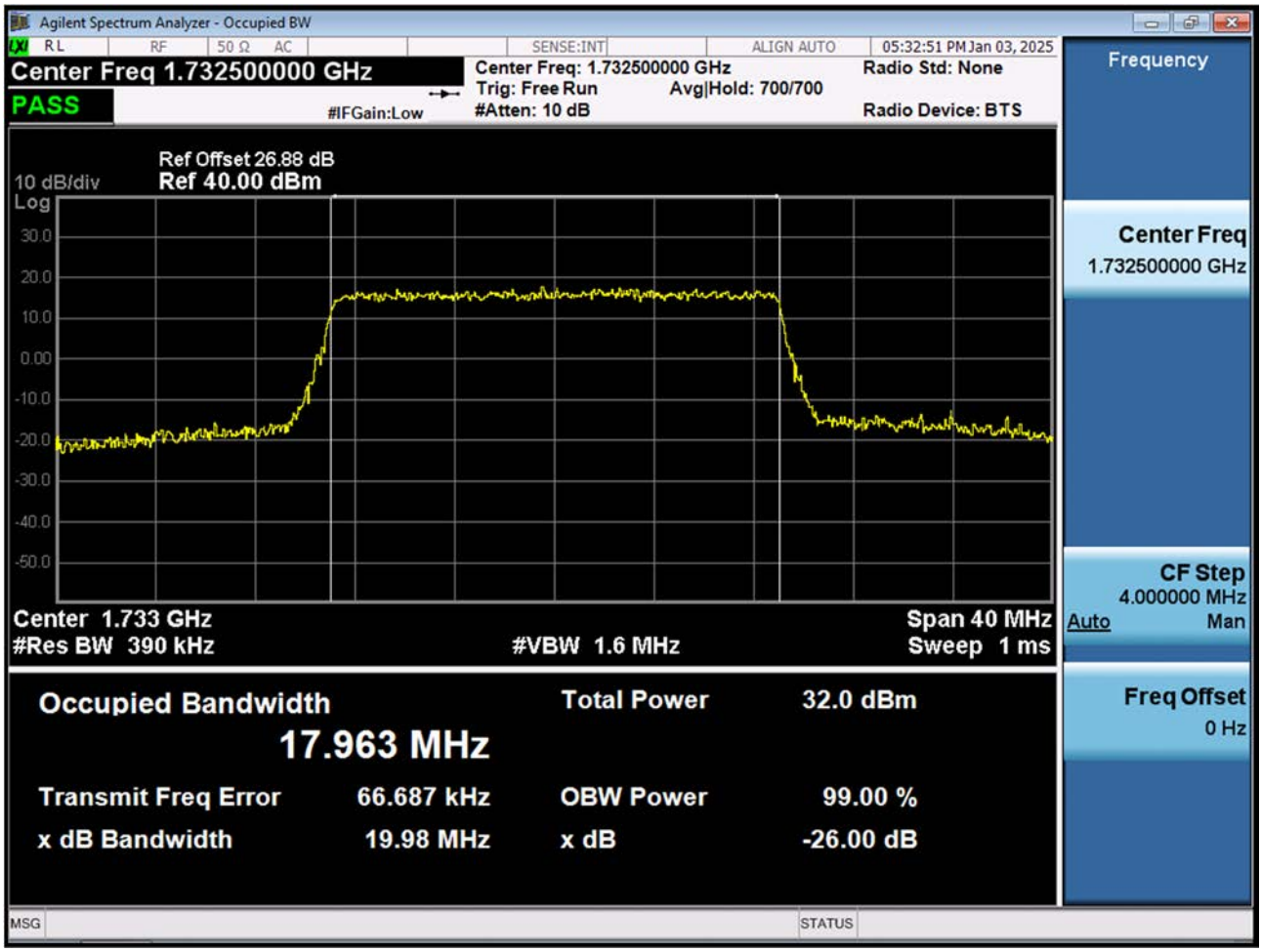

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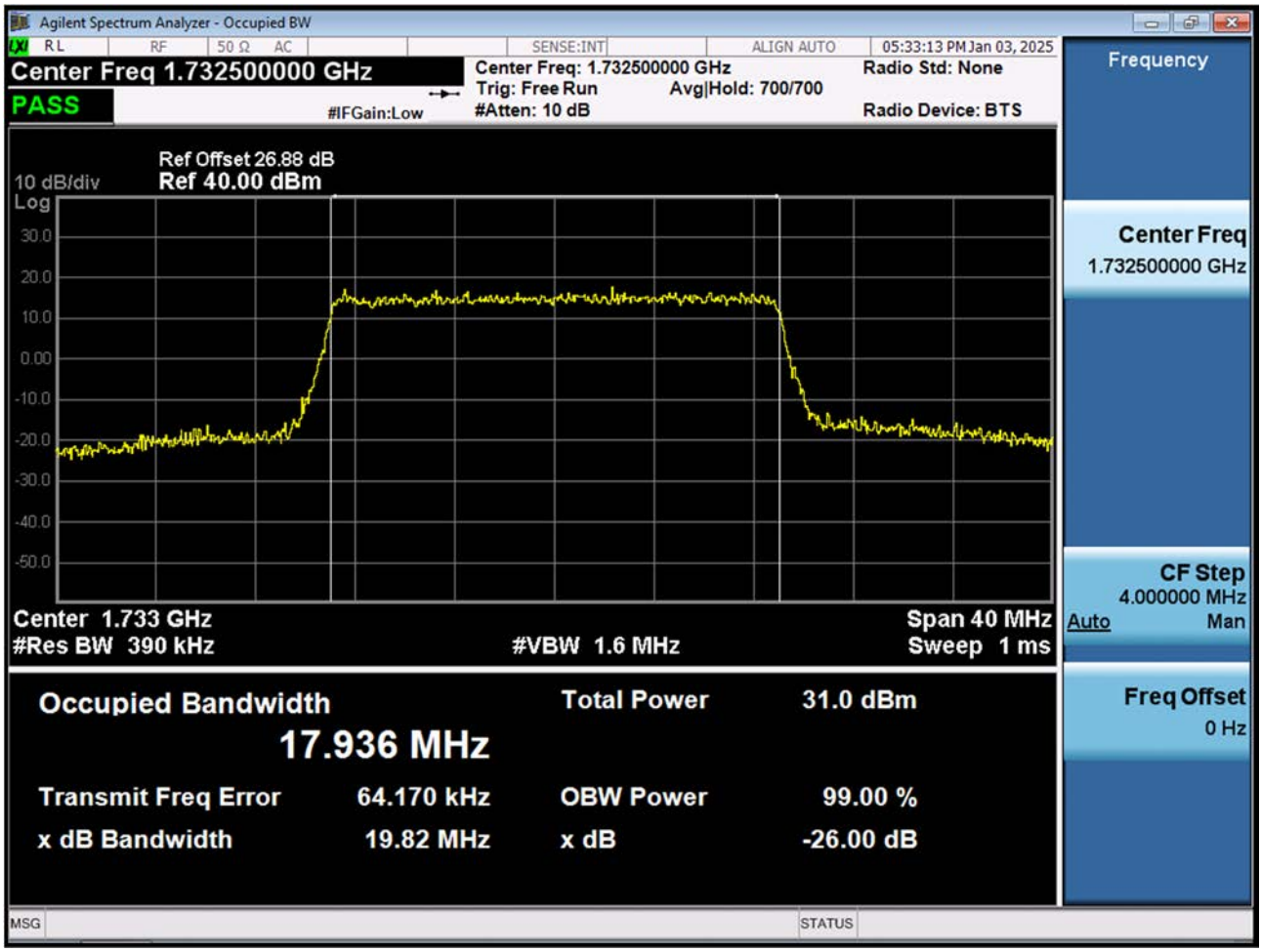

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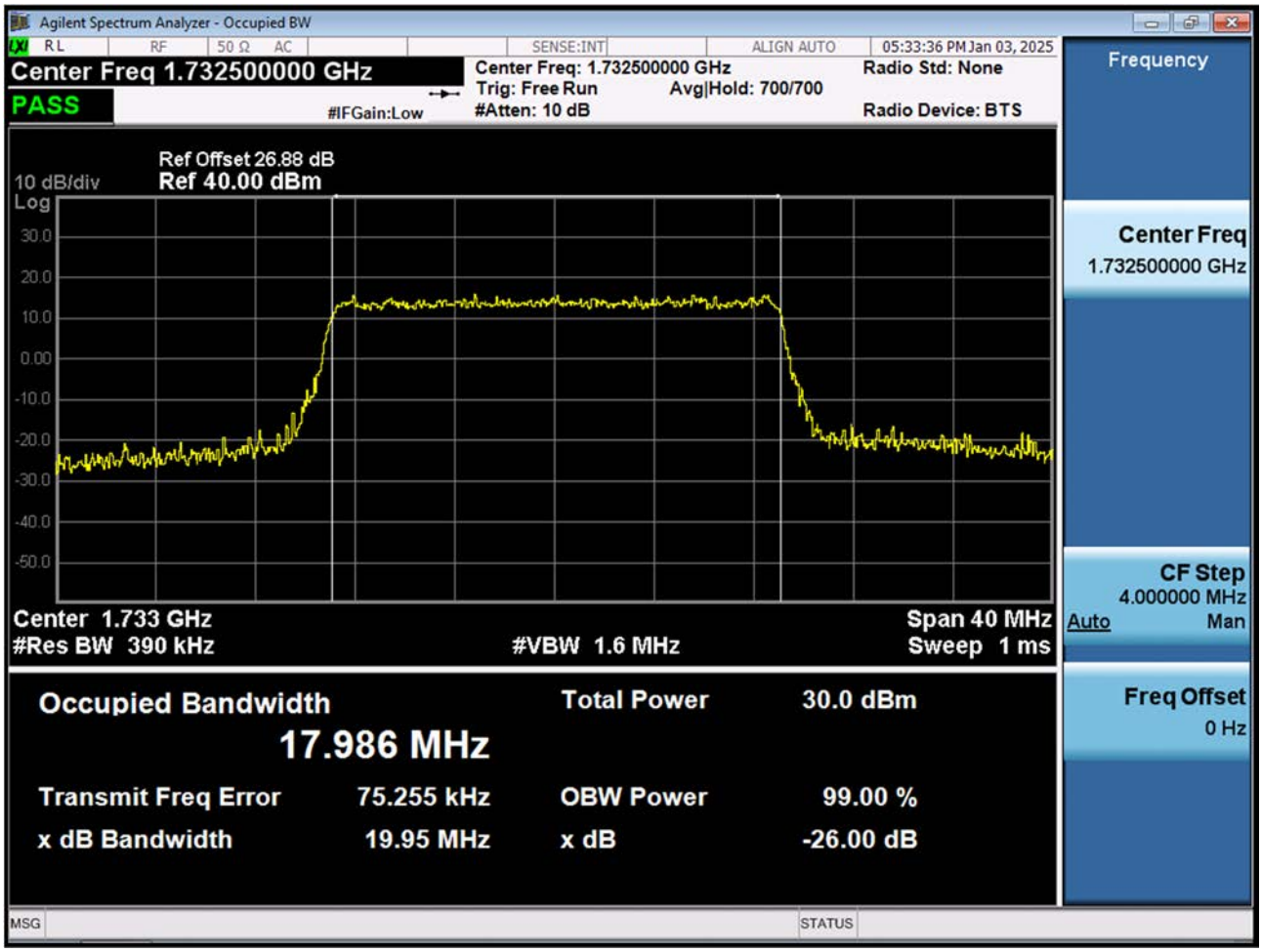

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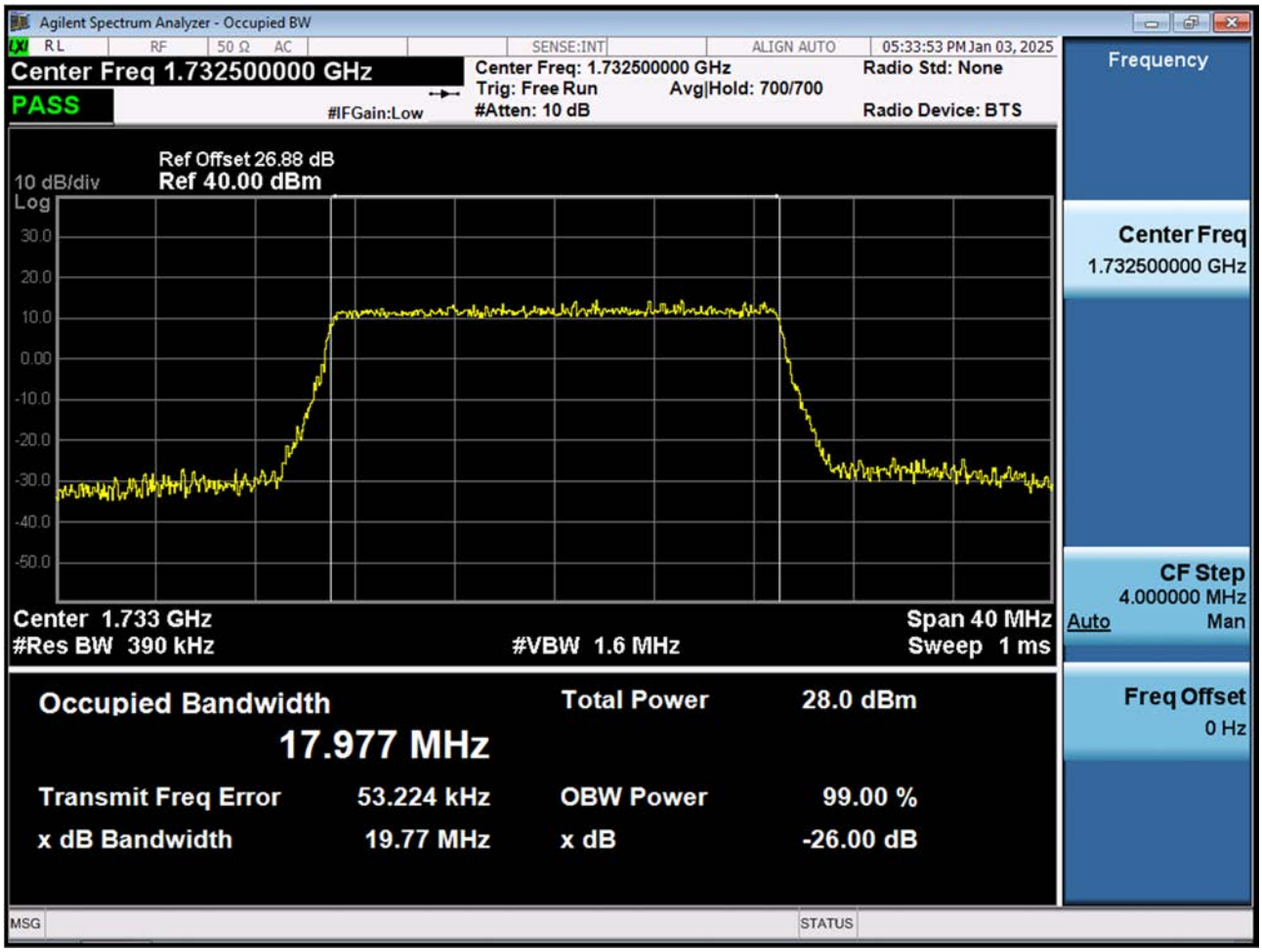
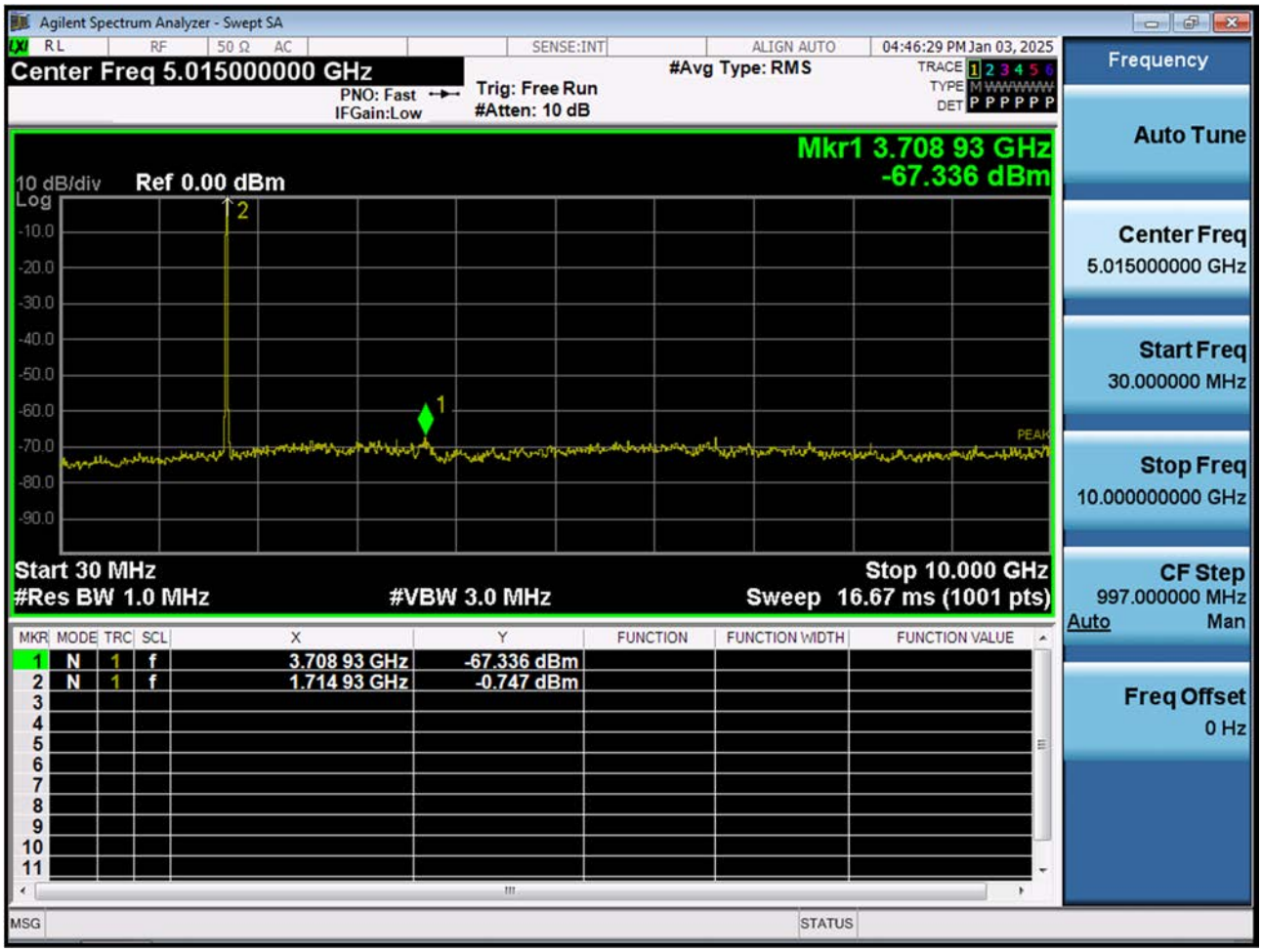
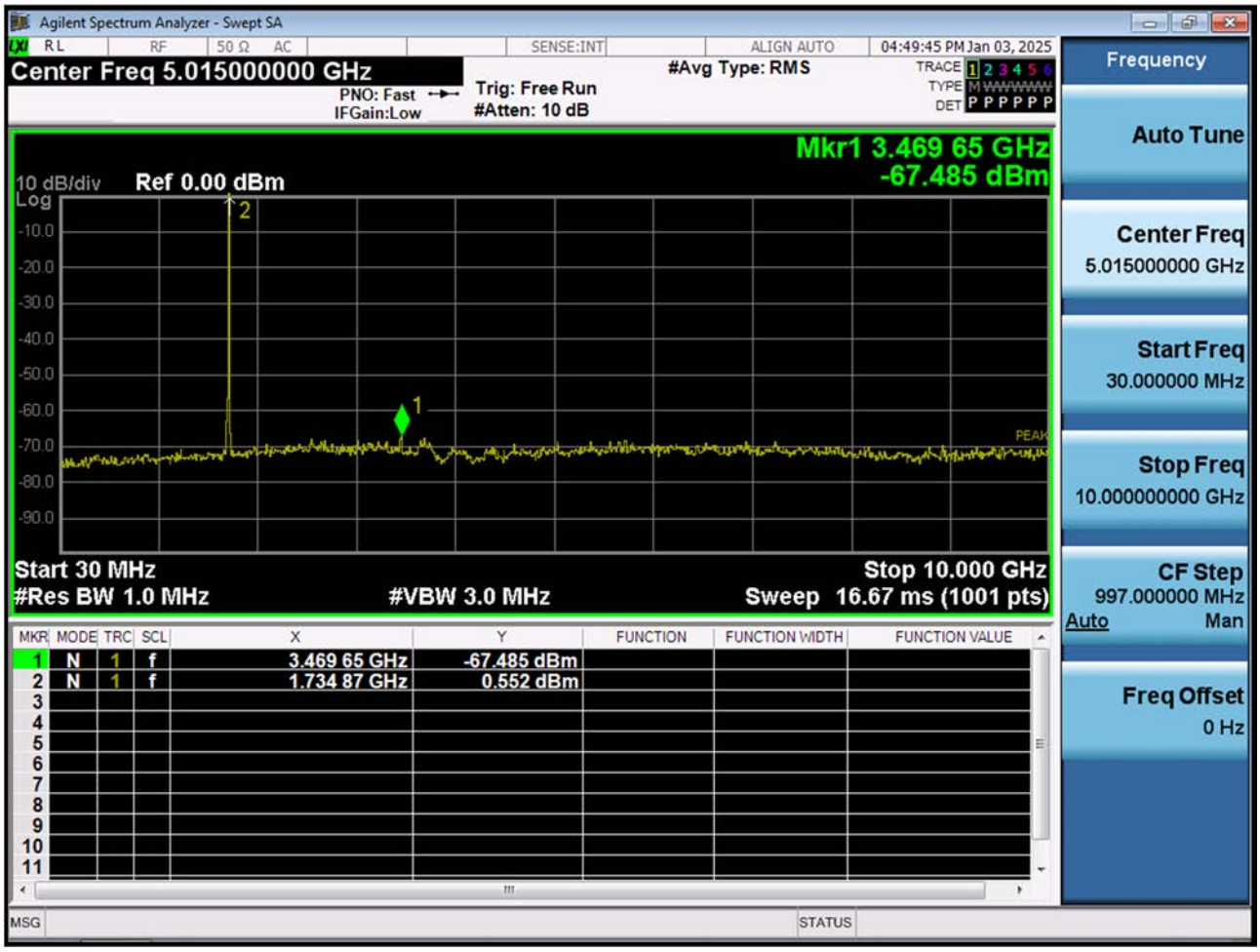


LTE B4_1.4M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



LTE B4_1.4M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



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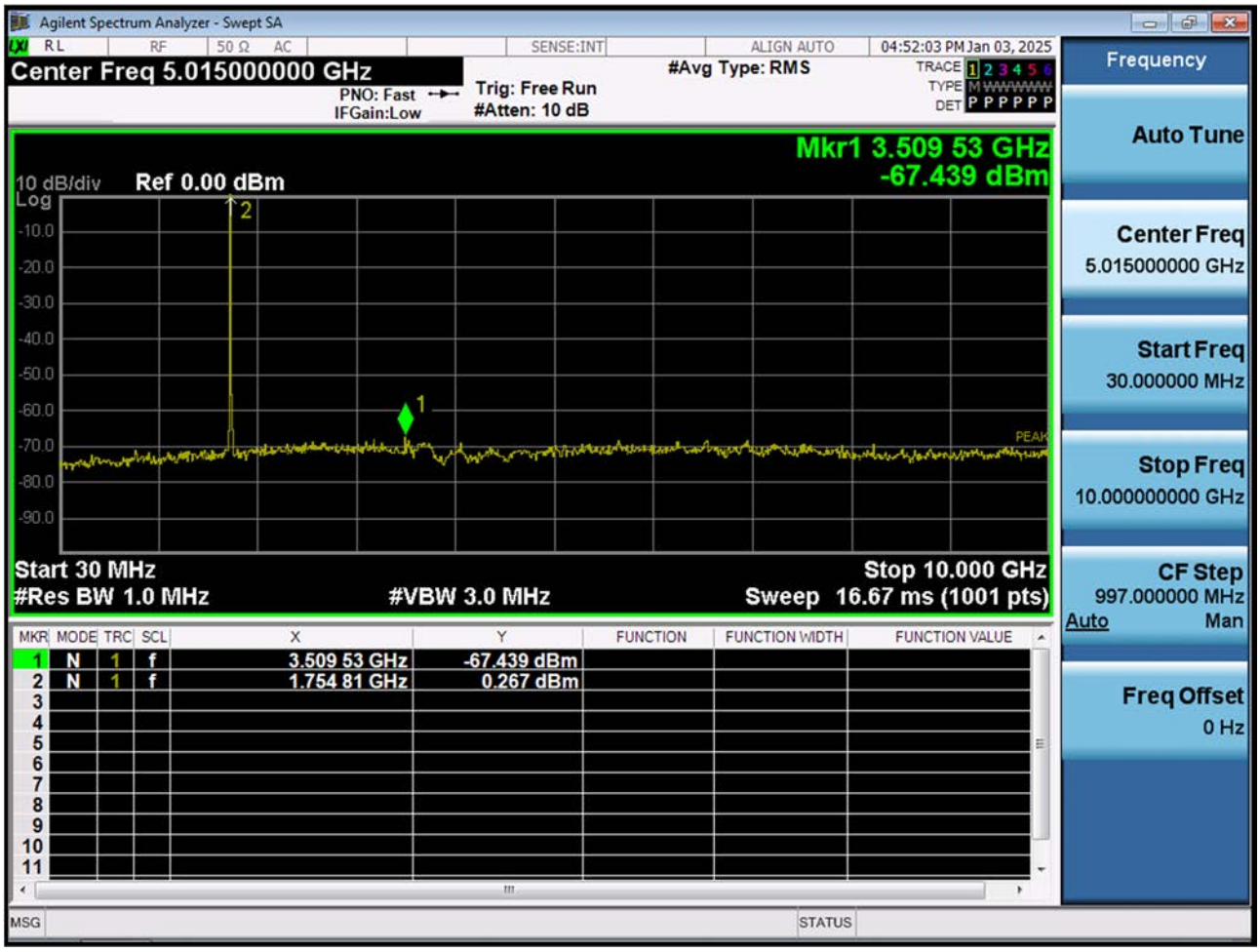

LTE B4_3 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB