TEST REPORT

FCC LTE B66(4) Test for TM19FNNAHD2
Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-RF-2412-FC028

DATE OF ISSUE
December 13, 2024

Tested by
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Applicant	**LG Electronics Inc.** 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
Product Name Model Name	Telematics TM19FNNAHD2
Date of Test	September 30, 2024 ~ December 10, 2024
FCC ID	BEJTM19FNNAHD2
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:	PCB Licensed Transmitter (PCB)
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	December 13, 2024	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:	LG Electronics Inc.
Address:	128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
FCC ID:	BEJTM19FNNAHD2
Application Type:	Certification
FCC Classification:	PCB Licensed Transmitter (PCB)
FCC Rule Part(s):	§ 27
EUT Type:	Telematics
Model(s):	TM19FNNAHD2
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:	September 30, 2024 ~ December 10, 2024
Serial number:	Radiated : Honda MY26 #03 Conducted : Honda MY26 #01
Antenna Information	Please refer to the Antenna Approval Specification document.

1.1. MAXIMUM OUTPUT POWER

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted Output Power	
				Max. Power (W)	Max. Power (dBm)
LTE – Band66/4 (1.4)	1710.7 – 1779.3	1M09G7D	QPSK	0.198	22.97
		1M10W7D	16QAM	0.168	22.26
		1M11W7D	64QAM	0.135	21.30
		1M09W7D	256QAM	0.066	18.21
LTE – Band66/4 (3)	1711.5 – 1778.5	2M71G7D	QPSK	0.199	22.98
		2M70W7D	16QAM	0.173	22.37
		2M71W7D	64QAM	0.134	21.27
		2M72W7D	256QAM	0.067	18.28
LTE – Band66/4 (5)	1712.5 – 1777.5	4M52G7D	QPSK	0.198	22.97
		4M50W7D	16QAM	0.177	22.49
		4M50W7D	64QAM	0.137	21.36
		4M50W7D	256QAM	0.070	18.48
LTE – Band66/4 (10)	1715.0 – 1775.0	8M97G7D	QPSK	0.202	23.06
		9M01W7D	16QAM	0.174	22.41
		8M98W7D	64QAM	0.138	21.39
		9M00W7D	256QAM	0.067	18.27
LTE – Band66/4 (15)	1717.5 – 1772.5	13M5G7D	QPSK	0.207	23.16
		13M5W7D	16QAM	0.174	22.41
		13M5W7D	64QAM	0.136	21.35
		13M5W7D	256QAM	0.070	18.47
LTE – Band66/4 (20)	1720.0 – 1770.0	18M0G7D	QPSK	0.205	23.12
		18M0W7D	16QAM	0.174	22.41
		18M0W7D	64QAM	0.138	21.40
		18M0W7D	256QAM	0.067	18.28

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Telematics with LTE, Sub 6.

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

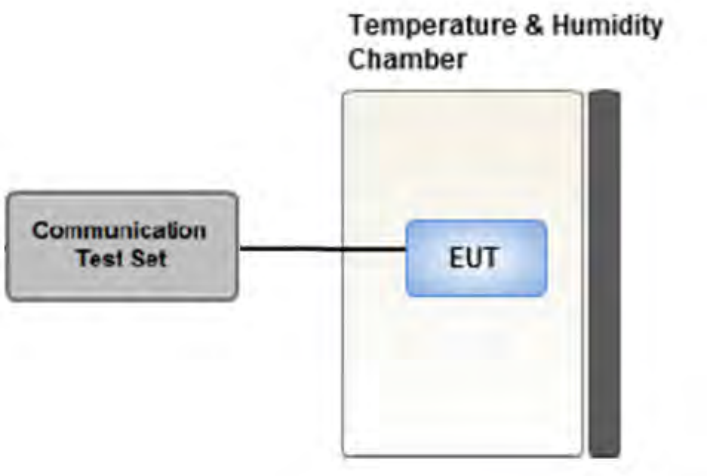
The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea.**

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	- KDB 971168 D01 v03r01 - Section 5.2.4 - ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2
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 CONDUCTED OUTPUT POWER



Test setup

Test Overview

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

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

3.3 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.
The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna.

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.

3.4 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method.

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;

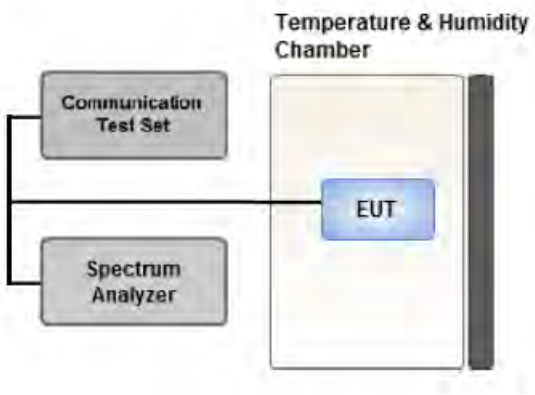
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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.

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

3.5 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)

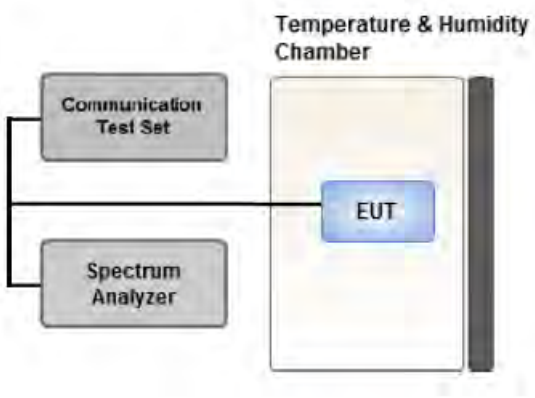
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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 %.

3.6 OCCUPIED BANDWIDTH.



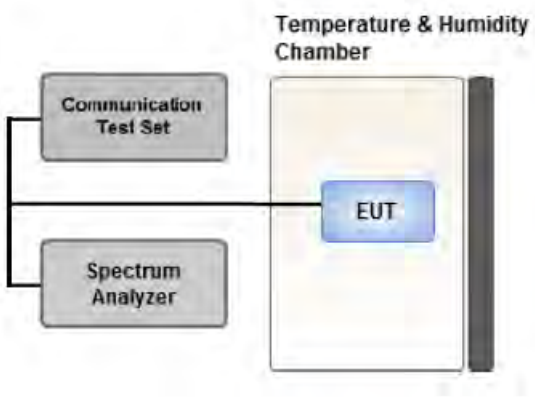
Test setup

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

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 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

3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

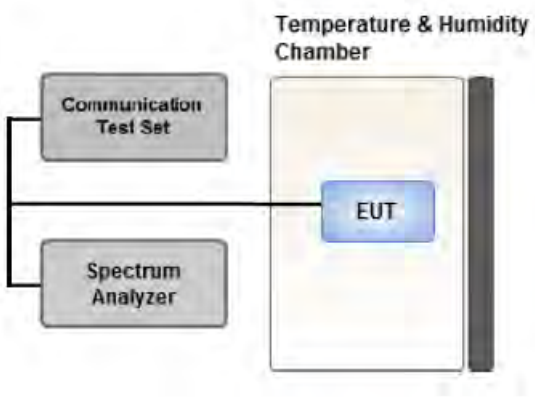
Test Overview

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

Test Settings

1. RBW = 1 MHz
2. VBW ≥ 3 MHz
3. Detector = Peak
4. Trace Mode = Max Hold
5. Sweep time = auto
6. Number of points in sweep ≥ 2 x Span / RBW

3.8 BAND EDGE



Test setup

Test Overview

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

Test Settings

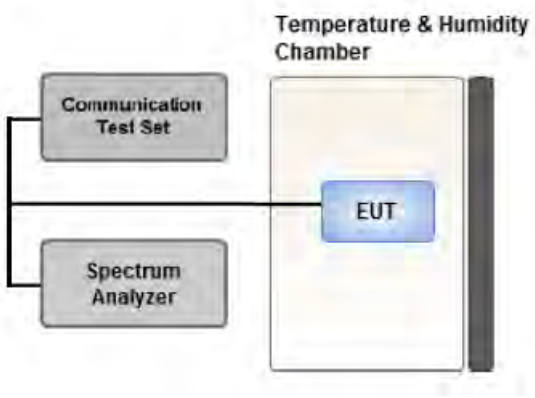
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
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.

3.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.

The frequency stability of the transmitter is measured by:

1. Temperature:

   The temperature is varied from -30 °C to +50 °C in 10 °C increments using an environmental chamber.

2. Primary Supply Voltage:

   .- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.

   .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter.

   Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

3.10 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
- 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 : 5 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.
- 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.

[Internal Antenna Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	See Section 8.3		Z
Radiated Spurious and Harmonic Emissions	QPSK	See Section 8.3		Z

3.11 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	Manufacture	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	12/11/2024	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.,	-	-	-

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)	1.98 (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	PASS
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

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

6.3. Data Referencing

Rule Part	Test item	Data Referencing	Comments
§2.1049	Occupied Bandwidth	Y	-
§2.1051, §27.53(h)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	Y	-
§27.50(d)(5)	Peak- to- Average Ratio	Y	-
§2.1055, §27.54	Frequency stability / variation of ambient temperature	Y	-
§27.50(d)(4)	Equivalent Isotropic Radiated Power	Y	Spot-check
§2.1053, §27.53(h)	Radiated Spurious and Harmonic Emissions	Y	Spot-check
§2.1046	Conducted Output Power	Y	-

Spot-Check Result

1. Data was leveraged from model TM19FNNAHD4 for the certification of TM19FNNAHD2.
2. Please refer to the [FCC Evaluation] Report.

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

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

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

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

7.2 EIRP Sample Calculation

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

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

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

7.3. Emission Designator

GSM Emission Designator

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

EDGE Emission Designator

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

WCDMA Emission Designator

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

QPSK Modulation

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

QAM Modulation

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

8. TEST DATA

8.1 Conducted Output Power

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	22.91	22.71	22.62	0	23
		1	3	22.97	22.73	22.72	0	23
		1	5	22.86	22.60	22.67	0	23
		3	0	22.86	22.67	22.70	1	22
		3	1	22.92	22.75	22.70	1	22
		3	3	22.92	22.65	22.73	1	22
		6	0	21.96	21.74	21.80	1	22
	16QAM	1	0	22.20	22.11	22.04	1	22
		1	3	22.26	22.13	22.07	1	22
		1	5	22.20	22.10	21.95	1	22
		3	0	21.98	21.88	21.82	2	21
		3	1	21.97	21.88	21.94	2	21
		3	3	21.95	21.97	21.87	2	21
		6	0	20.96	20.76	20.90	2	21
	64QAM	1	0	21.11	20.94	20.96	2	21
		1	3	21.30	21.09	21.01	2	21
		1	5	21.05	20.99	21.02	2	21
		3	0	20.99	20.96	20.87	3	20
		3	1	20.98	20.94	20.92	3	20
		3	3	20.94	20.89	20.96	3	20
		6	0	20.02	19.85	19.89	3	20
	256QAM	1	0	18.02	17.96	17.99	5	18
		1	3	18.09	18.17	18.21	5	18
		1	5	18.17	18.01	18.11	5	18
		3	0	18.07	18.07	18.03	5	18
		3	1	18.15	18.04	18.10	5	18
		3	3	18.06	17.90	18.01	5	18
		6	0	18.05	17.90	17.99	5	18

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	22.97	22.72	22.66	0	23
		1	7	22.95	22.79	22.76	0	23
		1	14	22.98	22.74	22.75	0	23
		8	0	22.00	21.75	21.86	1	22
		8	3	22.07	21.89	21.85	1	22
		8	7	22.04	21.83	21.91	1	22
		15	0	22.06	21.86	21.83	1	22
	16QAM	1	0	22.19	22.08	22.10	1	22
		1	7	22.37	22.19	22.18	1	22
		1	14	22.18	22.02	22.12	1	22
		8	0	21.08	20.84	20.87	2	21
		8	3	21.15	20.88	20.95	2	21
		8	7	21.12	20.91	20.97	2	21
		15	0	21.05	20.94	20.90	2	21
	64QAM	1	0	21.27	20.97	21.12	2	21
		1	7	21.17	20.97	20.95	2	21
		1	14	21.21	21.13	20.95	2	21
		8	0	20.12	19.80	19.95	3	20
		8	3	20.10	20.00	19.94	3	20
		8	7	20.14	19.89	19.94	3	20
		15	0	20.02	19.92	19.83	3	20
	256QAM	1	0	18.22	18.09	17.90	5	18
		1	7	18.28	18.02	17.94	5	18
		1	14	18.26	18.17	18.06	5	18
		8	0	18.12	17.92	17.95	5	18
		8	3	18.11	18.08	18.03	5	18
		8	7	18.12	17.98	18.15	5	18
		15	0	18.02	18.08	17.98	5	18

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	22.90	22.68	22.63	0	23
		1	12	22.97	22.73	22.79	0	23
		1	24	22.91	22.71	22.83	0	23
		12	0	22.04	21.76	21.84	1	22
		12	6	22.13	21.94	21.90	1	22
		12	11	22.05	21.86	21.86	1	22
		25	0	22.04	21.86	21.88	1	22
	16QAM	1	0	22.28	22.18	22.17	1	22
		1	12	22.49	22.16	22.17	1	22
		1	24	22.35	22.26	22.14	1	22
		12	0	21.14	20.86	20.86	2	21
		12	6	21.10	20.89	20.89	2	21
		12	11	21.09	20.88	20.95	2	21
		25	0	21.07	20.91	20.90	2	21
	64QAM	1	0	21.24	21.06	21.18	2	21
		1	12	21.36	21.10	21.04	2	21
		1	24	21.11	20.98	21.00	2	21
		12	0	20.03	19.88	19.87	3	20
		12	6	20.07	19.98	19.87	3	20
		12	11	20.16	19.92	19.94	3	20
		25	0	20.07	19.89	19.89	3	20
	256QAM	1	0	18.03	17.91	18.05	5	18
		1	12	18.00	18.05	17.90	5	18
		1	24	18.23	18.48	18.16	5	18
		12	0	17.98	18.03	17.94	5	18
		12	6	18.09	18.02	17.99	5	18
		12	11	18.09	18.13	17.99	5	18
		25	0	18.06	18.03	17.92	5	18

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	22.95	22.76	22.63	0	23
		1	24	22.99	22.56	22.74	0	23
		1	49	23.06	22.86	22.59	0	23
		25	0	21.94	21.81	21.89	1	22
		25	12	22.06	21.96	21.91	1	22
		25	24	22.05	21.85	21.90	1	22
		50	0	21.99	22.04	21.89	1	22
	16QAM	1	0	22.41	22.08	22.24	1	22
		1	24	22.21	21.98	22.13	1	22
		1	49	22.35	22.11	22.20	1	22
		25	0	21.04	20.81	20.75	2	21
		25	12	21.13	20.93	20.93	2	21
		25	24	21.09	20.89	20.93	2	21
		50	0	21.09	20.87	20.91	2	21
	64QAM	1	0	21.17	20.88	20.98	2	21
		1	24	21.39	21.07	20.87	2	21
		1	49	21.20	20.95	21.15	2	21
		25	0	20.08	19.94	19.84	3	20
		25	12	20.11	19.92	19.97	3	20
		25	24	20.02	19.86	19.94	3	20
		50	0	20.09	19.84	19.84	3	20
	256QAM	1	0	18.05	17.98	17.94	5	18
		1	24	18.16	18.12	18.22	5	18
		1	49	18.06	18.05	18.27	5	18
		25	0	17.89	18.00	17.89	5	18
		25	12	18.04	18.08	18.06	5	18
		25	24	18.07	18.07	17.92	5	18
		50	0	18.02	17.98	17.98	5	18

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	22.94	22.75	22.77	0	23
		1	36	23.16	22.89	22.90	0	23
		1	74	23.03	22.81	22.83	0	23
		36	0	21.90	21.80	21.81	1	22
		36	18	22.08	21.92	21.83	1	22
		36	39	22.10	21.86	21.87	1	22
		75	0	22.08	21.86	21.89	1	22
	16QAM	1	0	22.41	22.34	22.11	1	22
		1	36	22.32	22.21	22.14	1	22
		1	74	22.40	22.24	22.16	1	22
		36	0	20.99	20.90	20.77	2	21
		36	18	21.09	20.94	20.83	2	21
		36	39	21.06	20.92	20.96	2	21
		75	0	21.11	20.88	20.91	2	21
	64QAM	1	0	21.28	21.11	20.90	2	21
		1	36	21.34	21.04	21.24	2	21
		1	74	21.35	21.02	21.10	2	21
		36	0	19.95	19.95	19.85	3	20
		36	18	20.13	19.93	19.81	3	20
		36	39	20.11	19.92	19.88	3	20
		75	0	20.13	19.99	19.86	3	20
	256QAM	1	0	18.11	18.10	18.04	5	18
		1	36	18.47	18.20	18.14	5	18
		1	74	18.23	17.98	18.04	5	18
		36	0	18.00	18.04	17.93	5	18
		36	18	18.06	18.07	18.00	5	18
		36	39	18.01	18.08	18.03	5	18
		75	0	18.09	18.11	18.05	5	18

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	23.01	22.90	22.76	0	23
		1	49	22.94	22.62	22.58	0	23
		1	99	23.12	22.92	22.84	0	23
		50	0	22.09	21.79	21.78	1	22
		50	25	22.10	21.92	21.78	1	22
		50	49	22.16	21.92	21.87	1	22
		100	0	22.08	21.93	21.76	1	22
	16QAM	1	0	22.41	22.37	22.01	1	22
		1	49	22.39	22.19	22.15	1	22
		1	99	22.15	22.20	22.20	1	22
		50	0	21.02	20.87	20.75	2	21
		50	25	21.07	21.00	20.80	2	21
		50	49	21.10	20.93	20.92	2	21
		100	0	21.07	20.97	20.81	2	21
	64QAM	1	0	21.18	21.02	21.08	2	21
		1	49	21.17	21.18	21.11	2	21
		1	99	21.40	21.12	21.02	2	21
		50	0	20.04	19.88	19.75	3	20
		50	25	20.07	19.95	19.85	3	20
		50	49	20.14	19.86	19.88	3	20
		100	0	20.09	20.01	19.79	3	20
	256QAM	1	0	18.15	18.09	18.11	5	18
		1	49	18.12	18.07	18.02	5	18
		1	99	18.28	18.15	18.19	5	18
		50	0	17.84	17.94	17.92	5	18
		50	25	18.06	18.06	18.00	5	18
		50	49	17.98	18.10	18.03	5	18
		100	0	18.14	18.10	17.98	5	18

8.2 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1710.7	LTE B66/B4 1.4 MHz	QPSK	-16.18	17.19	10.04	2.06	H	< 1.00	0.329	25.17	1	5
		16-QAM	-16.93	16.44	10.04	2.06	H		0.277	24.42		
		64-QAM	-17.84	15.53	10.04	2.06	H		0.224	23.51		
		256-QAM	-20.79	12.58	10.04	2.06	H		0.114	20.56		
1745.0		QPSK	-15.71	17.75	10.18	2.07	H		0.385	25.86	1	5
		16-QAM	-16.38	17.08	10.18	2.07	H		0.330	25.19		
		64-QAM	-17.37	16.09	10.18	2.07	H		0.263	24.20		
		256-QAM	-20.40	13.06	10.18	2.07	H		0.131	21.17		
1779.3		QPSK	-14.84	18.98	10.26	2.09	H		0.519	27.15	1	0
		16-QAM	-15.53	18.29	10.26	2.09	H		0.443	26.46		
		64-QAM	-16.52	17.30	10.26	2.09	H		0.352	25.47		
		256-QAM	-19.54	14.28	10.26	2.09	H		0.176	22.45		

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 B66/B4 3 MHz	QPSK	-16.09	17.28	10.04	2.06	H	< 1.00	0.336	25.26	1	14
		16-QAM	-16.81	16.56	10.04	2.06	H		0.284	24.54		
		64-QAM	-17.82	15.55	10.04	2.06	H		0.225	23.53		
		256-QAM	-20.70	12.67	10.04	2.06	H		0.116	20.65		
1745.0		QPSK	-15.58	17.88	10.18	2.07	H		0.397	25.99	1	14
		16-QAM	-16.26	17.20	10.18	2.07	H		0.340	25.31		
		64-QAM	-17.29	16.17	10.18	2.07	H		0.268	24.28		
		256-QAM	-20.30	13.16	10.18	2.07	H		0.134	21.27		
1778.5		QPSK	-14.68	19.14	10.26	2.09	H		0.538	27.31	1	0
		16-QAM	-15.40	18.42	10.26	2.09	H		0.456	26.59		
		64-QAM	-16.37	17.45	10.26	2.09	H		0.365	25.62		
		256-QAM	-19.40	14.42	10.26	2.09	H		0.182	22.59		

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 B66/B4 5 MHz	QPSK	-15.94	17.45	10.06	2.06	H	< 1.00	0.351	25.45	1	24
		16-QAM	-16.62	16.77	10.06	2.06	H		0.300	24.77		
		64-QAM	-17.68	15.71	10.06	2.06	H		0.235	23.71		
		256-QAM	-20.68	12.71	10.06	2.06	H		0.118	20.71		
1745.0		QPSK	-15.55	17.91	10.18	2.07	H		0.400	26.02	1	24
		16-QAM	-16.28	17.18	10.18	2.07	H		0.338	25.29		
		64-QAM	-17.26	16.20	10.18	2.07	H		0.270	24.31		
		256-QAM	-20.29	13.17	10.18	2.07	H		0.134	21.28		
1777.5		QPSK	-14.66	19.16	10.26	2.09	H		0.541	27.33	1	0
		16-QAM	-15.37	18.45	10.26	2.09	H		0.459	26.62		
		64-QAM	-16.38	17.44	10.26	2.09	H		0.364	25.61		
		256-QAM	-19.41	14.41	10.26	2.09	H		0.181	22.58		

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 B66/B4 10 MHz	QPSK	-15.74	17.65	10.06	2.06	H	< 1.00	0.367	25.65	1	49
		16-QAM	-16.41	16.98	10.06	2.06	H		0.315	24.98		
		64-QAM	-17.45	15.94	10.06	2.06	H		0.248	23.94		
		256-QAM	-20.42	12.97	10.06	2.06	H		0.125	20.97		
1745.0		QPSK	-15.33	18.13	10.18	2.07	H		0.421	26.24	1	49
		16-QAM	-16.00	17.46	10.18	2.07	H		0.361	25.57		
		64-QAM	-17.06	16.40	10.18	2.07	H		0.282	24.51		
		256-QAM	-20.03	13.43	10.18	2.07	H		0.143	21.54		
1775.0		QPSK	-14.67	19.09	10.25	2.09	H		0.531	27.25	1	0
		16-QAM	-15.34	18.42	10.25	2.09	H		0.455	26.58		
		64-QAM	-16.41	17.35	10.25	2.09	H		0.356	25.51		
		256-QAM	-19.44	14.32	10.25	2.09	H		0.177	22.48		

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 B66/B4 15 MHz	QPSK	-15.59	17.83	10.08	2.06	H	< 1.00	0.385	25.85	1	74
		16-QAM	-16.21	17.21	10.08	2.06	H		0.333	25.23		
		64-QAM	-17.33	16.09	10.08	2.06	H		0.258	24.11		
		256-QAM	-20.25	13.17	10.08	2.06	H		0.132	21.19		
1745.0		QPSK	-15.10	18.36	10.18	2.07	H		0.444	26.47	1	74
		16-QAM	-15.82	17.64	10.18	2.07	H		0.376	25.75		
		64-QAM	-16.81	16.65	10.18	2.07	H		0.299	24.76		
		256-QAM	-19.85	13.61	10.18	2.07	H		0.149	21.72		
1772.5		QPSK	-14.66	19.10	10.25	2.09	H		0.532	27.26	1	0
		16-QAM	-15.38	18.38	10.25	2.09	H		0.451	26.54		
		64-QAM	-16.38	17.38	10.25	2.09	H		0.358	25.54		
		256-QAM	-19.52	14.24	10.25	2.09	H		0.174	22.40		

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 B66/B4 20 MHz	QPSK	-15.48	17.94	10.08	2.06	H	< 1.00	0.394	25.96	1	99
		16-QAM	-16.04	17.38	10.08	2.06	H		0.347	25.40		
		64-QAM	-17.11	16.31	10.08	2.06	H		0.271	24.33		
		256-QAM	-20.12	13.30	10.08	2.06	H		0.136	21.32		
1745.0		QPSK	-15.09	18.37	10.18	2.07	H		0.445	26.48	1	99
		16-QAM	-15.75	17.71	10.18	2.07	H		0.382	25.82		
		64-QAM	-16.74	16.72	10.18	2.07	H		0.304	24.83		
		256-QAM	-19.77	13.69	10.18	2.07	H		0.151	21.80		
1770.0		QPSK	-14.71	18.99	10.24	2.09	H		0.518	27.14	1	0
		16-QAM	-15.39	18.31	10.24	2.09	H		0.443	26.46		
		64-QAM	-16.41	17.29	10.24	2.09	H		0.350	25.44		
		256-QAM	-19.43	14.27	10.24	2.09	H		0.175	22.42		

8.3 RADIATED SPURIOUS EMISSIONS

▣ MODE: LTE B66/B4

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log10 (W) = -13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	RB	
								Size	Offset
131997 (1712.5)	3425.00	-49.41	12.43	-58.16	2.99	V	-48.72	1	0
	5137.50	-53.15	12.35	-53.75	3.80	V	-45.20		
	6850.00	-55.12	11.90	-48.48	4.36	V	-40.94		
132322 (1745)	3490.00	-48.49	12.34	-57.06	3.04	V	-47.76	1	0
	5235.00	-53.26	12.84	-53.20	3.78	V	-44.14		
	6980.00	-53.86	11.40	-46.28	4.48	V	-39.36		
132647 (1777.5)	3555.00	-49.37	12.34	-57.33	3.09	V	-48.08	1	0
	5332.50	-53.81	13.09	-54.86	3.79	V	-45.56		
	7110.00	-53.24	10.86	-44.62	4.48	V	-38.24		

8.4 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	5.22
			16-QAM			6.03
			64-QAM			6.76
			256-QAM			6.75
	3 MHz		QPSK	15		5.10
			16-QAM			6.00
			64-QAM			6.69
			256-QAM			6.73
	5 MHz		QPSK	25		5.10
			16-QAM			5.92
			64-QAM			6.69
			256-QAM			6.66
	10 MHz		QPSK	50		5.19
			16-QAM			5.88
			64-QAM			6.63
			256-QAM			6.69
	15 MHz		QPSK	75		5.46
			16-QAM			6.05
			64-QAM			6.72
			256-QAM			6.73
	20 MHz		QPSK	100		5.45
			16-QAM			6.14
			64-QAM			6.73
			256-QAM			6.74

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 58 ~ 81.

8.5 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	1.0930
			16-QAM			1.0964
			64-QAM			1.1075
			256-QAM			1.0898
	3 MHz		QPSK	15		2.7084
			16-QAM			2.7036
			64-QAM			2.7099
			256-QAM			2.7153
	5 MHz		QPSK	25		4.5150
			16-QAM			4.5007
			64-QAM			4.5038
			256-QAM			4.4952
	10 MHz		QPSK	50		8.9682
			16-QAM			9.0053
			64-QAM			8.9808
			256-QAM			8.9952
	15 MHz		QPSK	75		13.527
			16-QAM			13.451
			64-QAM			13.494
			256-QAM			13.473
	20 MHz		QPSK	100		17.976
			16-QAM			17.951
			64-QAM			18.013
			256-QAM			18.009

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 82 ~ 105.

8.6 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
66/4	1.4	1710.7	3.7089	28.112	-57.661	-29.549	-13.00
		1745.0	3.6790	28.112	-57.078	-28.966	
		1779.3	3.6790	28.112	-57.243	-29.131	
	3	1711.5	3.7289	28.112	-57.247	-29.135	
		1745.0	3.6790	28.112	-57.740	-29.628	
		1778.5	2.6820	28.112	-56.956	-28.844	
	5	1712.5	6.4906	28.634	-57.584	-28.950	
		1745.0	5.8625	28.634	-57.635	-29.001	
		1777.5	6.2313	28.634	-57.899	-29.265	
	10	1715.0	2.6122	28.112	-57.426	-29.314	
		1745.0	3.6990	28.112	-57.502	-29.390	
		1775.0	3.1805	28.112	-56.460	-28.348	
	15	1717.5	6.2613	28.634	-57.556	-28.922	
		1745.0	3.7089	28.112	-57.753	-29.641	
		1772.5	6.5504	28.634	-57.555	-28.921	
	20	1720.0	6.3310	28.634	-57.811	-29.177	
		1745.0	3.2005	28.112	-57.913	-29.801	
		1770.0	6.5903	28.634	-57.866	-29.232	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 106 ~ 141.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
4. Factor (dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.500
1 – 5	28.112
5 – 10	28.634
10 – 15	29.245
15 – 20	29.511
Above 20(26.5)	30.210

8.7 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 142 ~ 177.

8.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE 66/4

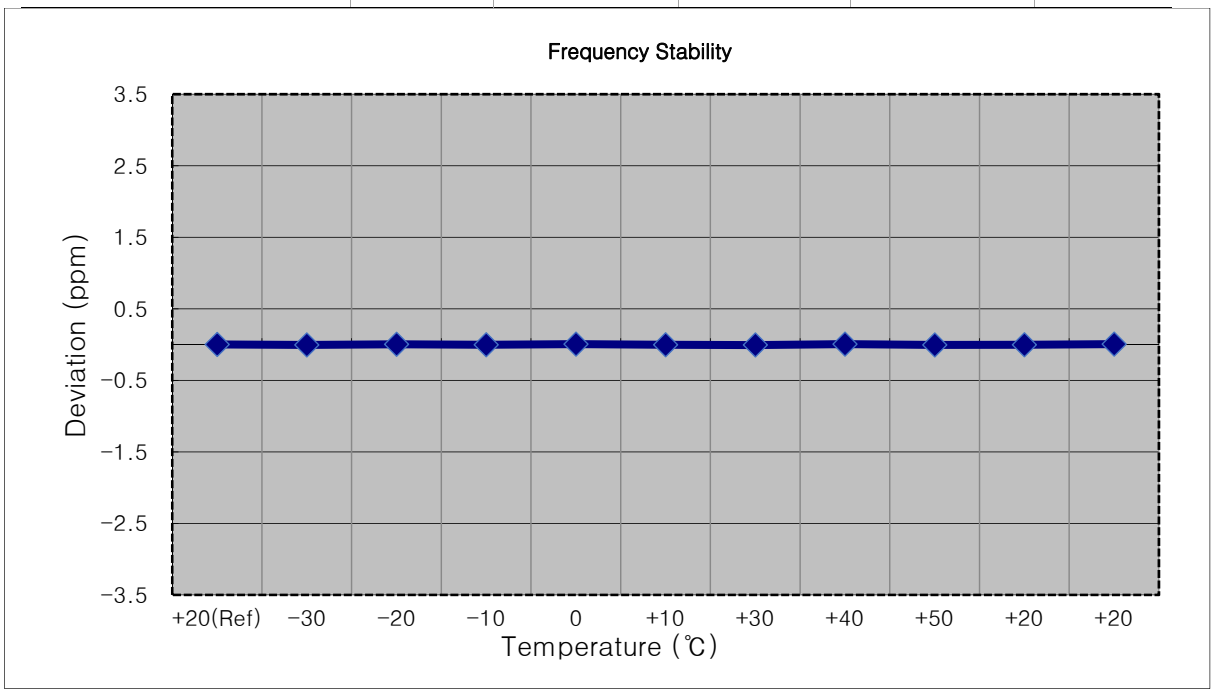
▣ OPERATING FREQUENCY: 1710,700,000 Hz

▣ CHANNEL: 131979 (1.4 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1710 700 003	0.0	0.000 000	0.000
100 %		-30	1710 699 994	-9.0	-0.000 001	-0.005
100 %		-20	1710 700 006	3.0	0.000 000	0.002
100 %		-10	1710 699 996	-7.6	0.000 000	-0.004
100 %		0	1710 700 010	6.8	0.000 000	0.004
100 %		+10	1710 699 998	-5.5	0.000 000	-0.003
100 %		+30	1710 699 992	-11.6	-0.000 001	-0.007
100 %		+40	1710 700 011	7.8	0.000 000	0.005
100 %		+50	1710 699 995	-8.6	-0.000 001	-0.005
115 %		+20	1710 699 996	-7.4	0.000 000	-0.004
85 %		+20	1710 700 012	8.8	0.000 001	0.005



▣ MODE: LTE 66/4

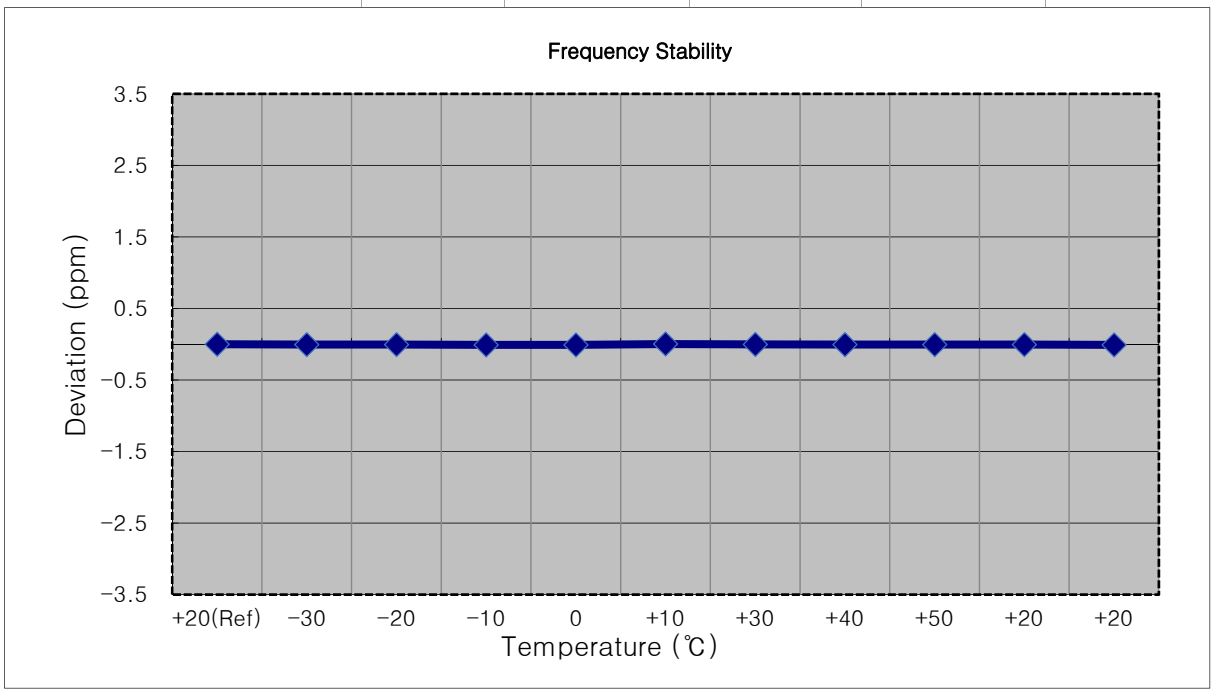
▣ OPERATING FREQUENCY: 1711,500,000 Hz

▣ CHANNEL: 131987 (3 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1711 499 995	0.0	0.000 000	0.000
100 %		-30	1711 499 988	-7.8	0.000 000	-0.005
100 %		-20	1711 499 986	-9.6	-0.000 001	-0.006
100 %		-10	1711 499 980	-15.4	-0.000 001	-0.009
100 %		0	1711 499 979	-16.6	-0.000 001	-0.010
100 %		+10	1711 500 000	4.5	0.000 000	0.003
100 %		+30	1711 499 991	-4.0	0.000 000	-0.002
100 %		+40	1711 499 986	-9.0	-0.000 001	-0.005
100 %		+50	1711 499 984	-11.0	-0.000 001	-0.006
115 %		+20	1711 499 985	-10.7	-0.000 001	-0.006
85 %		+20	1711 499 980	-15.2	-0.000 001	-0.009



▣ MODE: LTE 66/4

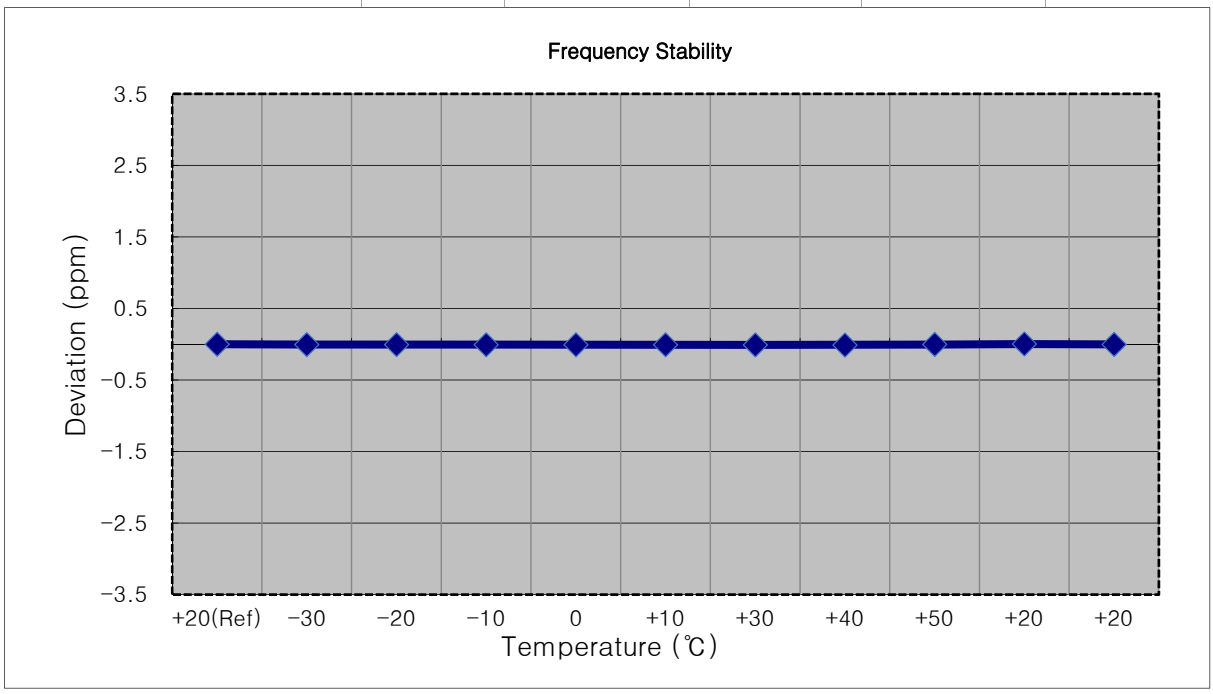
▣ OPERATING FREQUENCY: 1712,500,000 Hz

▣ CHANNEL: 131997 (5 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1712 499 993	0.0	0.000 000	0.000
100 %		-30	1712 499 984	-8.2	0.000 000	-0.005
100 %		-20	1712 499 983	-9.6	-0.000 001	-0.006
100 %		-10	1712 499 980	-12.7	-0.000 001	-0.007
100 %		0	1712 499 979	-13.6	-0.000 001	-0.008
100 %		+10	1712 499 978	-14.3	-0.000 001	-0.008
100 %		+30	1712 499 974	-18.5	-0.000 001	-0.011
100 %		+40	1712 499 974	-18.9	-0.000 001	-0.011
100 %		+50	1712 499 989	-3.8	0.000 000	-0.002
115 %		+20	1712 499 998	5.4	0.000 000	0.003
85 %		+20	1712 499 987	-5.6	0.000 000	-0.003



▣ MODE: LTE 66/4

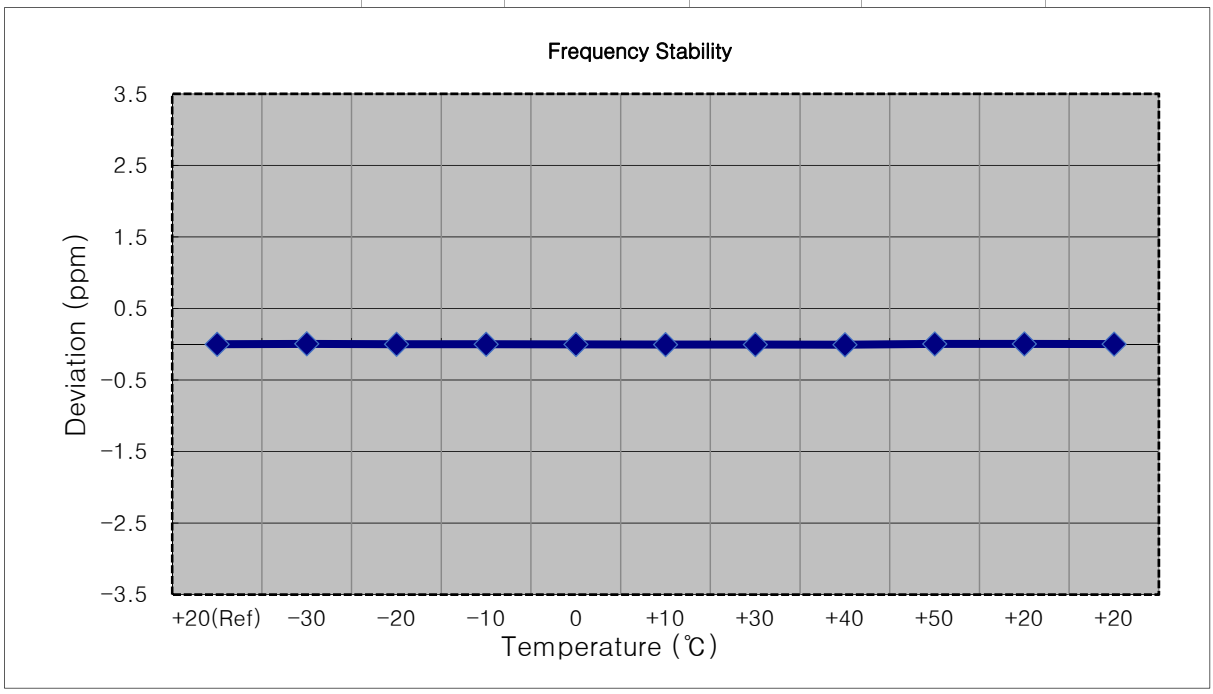
▣ OPERATING FREQUENCY: 1715,000,000 Hz

▣ CHANNEL: 132022 (10 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1715 000 010	0.0	0.000 000	0.000
100 %		-30	1715 000 018	8.1	0.000 000	0.005
100 %		-20	1715 000 008	-2.5	0.000 000	-0.001
100 %		-10	1715 000 007	-3.5	0.000 000	-0.002
100 %		0	1715 000 004	-6.5	0.000 000	-0.004
100 %		+10	1715 000 003	-7.4	0.000 000	-0.004
100 %		+30	1715 000 000	-9.8	-0.000 001	-0.006
100 %		+40	1714 999 997	-12.8	-0.000 001	-0.007
100 %		+50	1715 000 018	7.9	0.000 000	0.005
115 %		+20	1715 000 016	6.1	0.000 000	0.004
85 %		+20	1715 000 014	3.6	0.000 000	0.002



▣ MODE: LTE 66/4

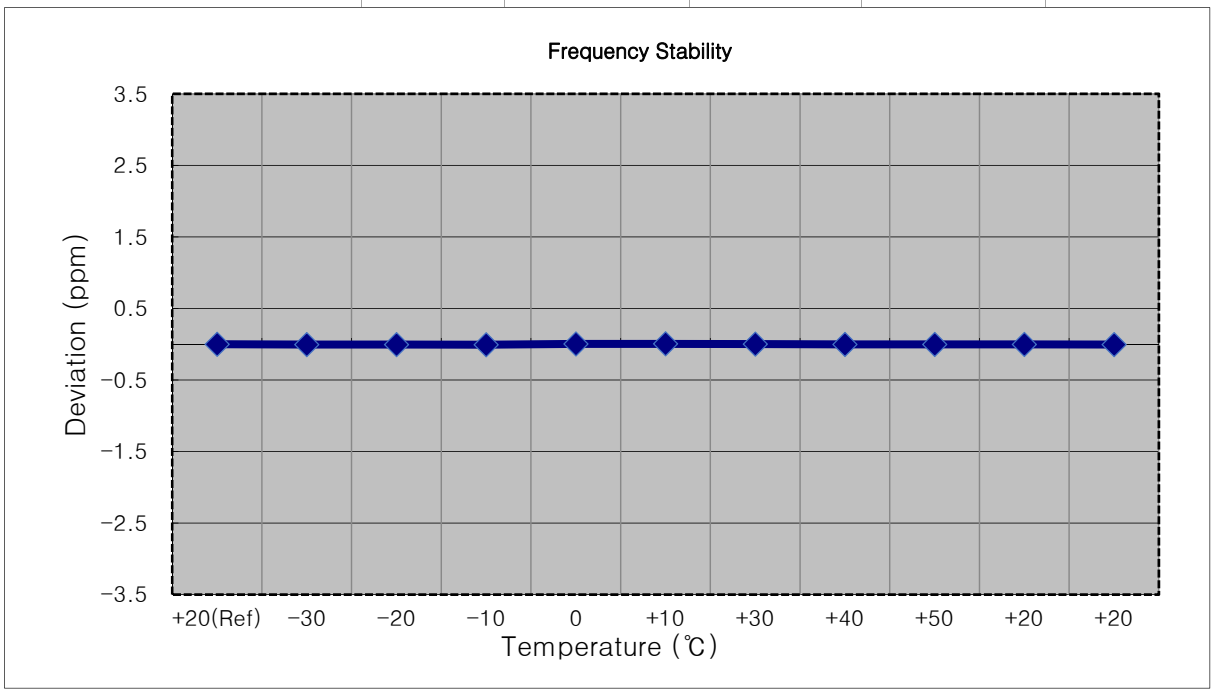
▣ OPERATING FREQUENCY: 1717,500,000 Hz

▣ CHANNEL: 132047 (15 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1717 499 996	0.0	0.000 000	0.000
100 %		-30	1717 499 988	-7.8	0.000 000	-0.005
100 %		-20	1717 499 986	-9.6	-0.000 001	-0.006
100 %		-10	1717 499 984	-11.7	-0.000 001	-0.007
100 %		0	1717 500 003	7.0	0.000 000	0.004
100 %		+10	1717 500 004	8.1	0.000 000	0.005
100 %		+30	1717 499 998	2.1	0.000 000	0.001
100 %		+40	1717 499 992	-4.2	0.000 000	-0.002
100 %		+50	1717 499 990	-5.5	0.000 000	-0.003
115 %		+20	1717 499 992	-3.9	0.000 000	-0.002
85 %		+20	1717 499 988	-7.7	0.000 000	-0.004



▣ MODE: LTE 66/4

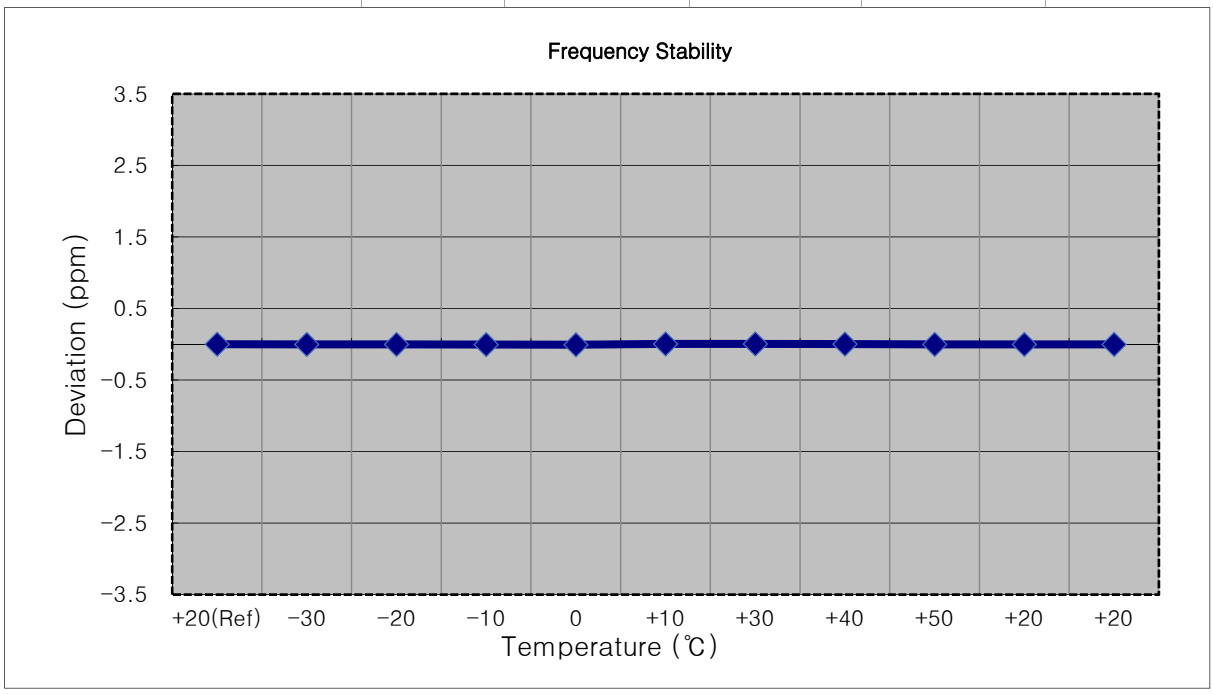
▣ OPERATING FREQUENCY: 1720,000,000 Hz

▣ CHANNEL: 132072 (20 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1720 000 003	0.0	0.000 000	0.000
100 %		-30	1719 999 999	-3.7	0.000 000	-0.002
100 %		-20	1719 999 997	-5.9	0.000 000	-0.003
100 %		-10	1719 999 993	-9.5	-0.000 001	-0.006
100 %		0	1719 999 989	-13.2	-0.000 001	-0.008
100 %		+10	1720 000 010	7.1	0.000 000	0.004
100 %		+30	1720 000 008	5.5	0.000 000	0.003
100 %		+40	1720 000 005	2.8	0.000 000	0.002
100 %		+50	1719 999 999	-3.6	0.000 000	-0.002
115 %		+20	1719 999 999	-4.1	0.000 000	-0.002
85 %		+20	1719 999 996	-6.2	0.000 000	-0.004



▣ MODE: LTE 66/4

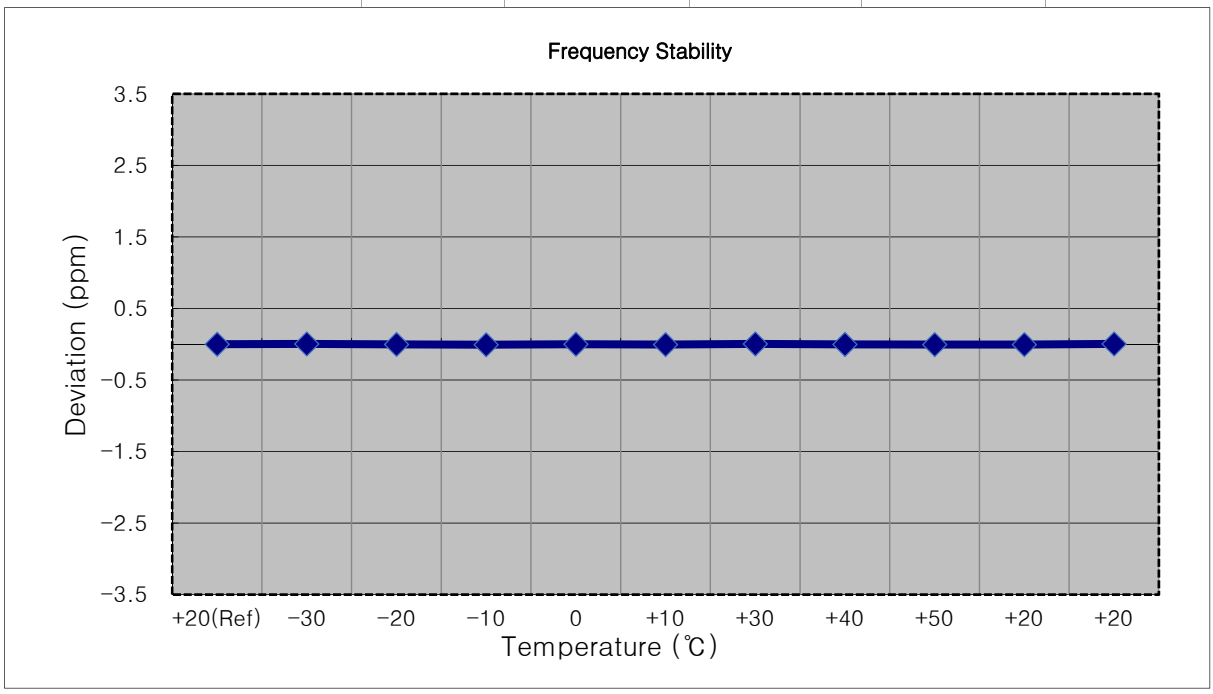
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (1.4 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1744 999 991	0.0	0.000 000	0.000
100 %		-30	1744 999 996	4.4	0.000 000	0.003
100 %		-20	1744 999 984	-6.7	0.000 000	-0.004
100 %		-10	1744 999 979	-12.5	-0.000 001	-0.007
100 %		0	1744 999 988	-2.8	0.000 000	-0.002
100 %		+10	1744 999 983	-8.2	0.000 000	-0.005
100 %		+30	1744 999 998	6.5	0.000 000	0.004
100 %		+40	1744 999 987	-4.4	0.000 000	-0.003
100 %		+50	1744 999 980	-10.8	-0.000 001	-0.006
115 %		+20	1744 999 983	-7.7	0.000 000	-0.004
85 %		+20	1744 999 996	5.1	0.000 000	0.003



▣ MODE: LTE 66/4

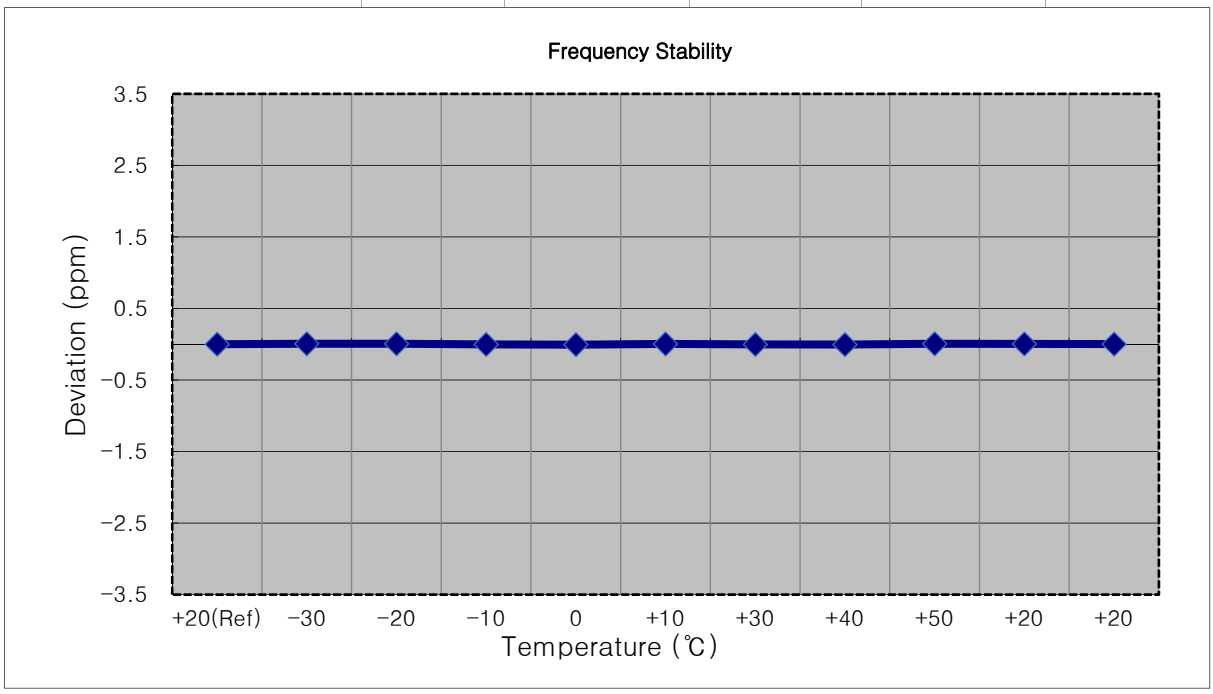
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (3 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1744 999 995	0.0	0.000 000	0.000
100 %		-30	1745 000 007	11.9	0.000 001	0.007
100 %		-20	1745 000 003	8.3	0.000 000	0.005
100 %		-10	1744 999 988	-6.7	0.000 000	-0.004
100 %		0	1744 999 984	-11.3	-0.000 001	-0.006
100 %		+10	1745 000 002	6.8	0.000 000	0.004
100 %		+30	1744 999 991	-4.2	0.000 000	-0.002
100 %		+40	1744 999 987	-8.1	0.000 000	-0.005
100 %		+50	1745 000 003	8.3	0.000 000	0.005
115 %		+20	1745 000 001	5.4	0.000 000	0.003
85 %		+20	1744 999 999	3.4	0.000 000	0.002



▣ MODE: LTE 66/4

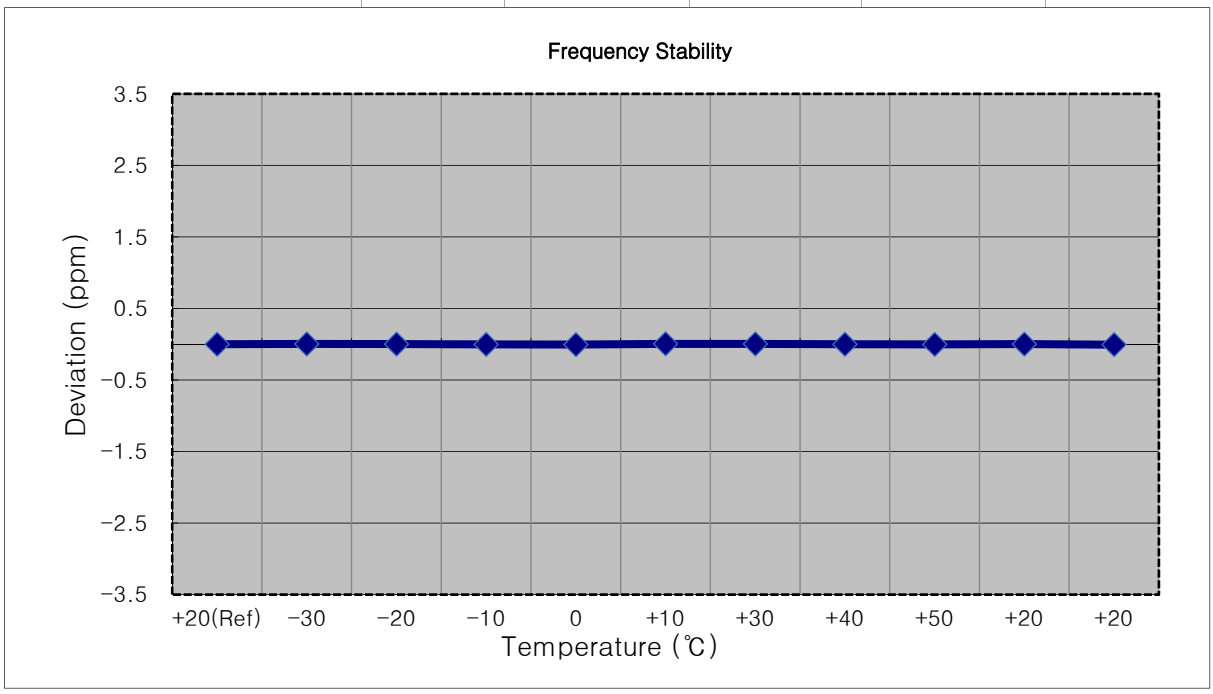
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (5 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1744 999 988	0.0	0.000 000	0.000
100 %		-30	1744 999 996	7.7	0.000 000	0.004
100 %		-20	1744 999 992	3.6	0.000 000	0.002
100 %		-10	1744 999 982	-6.2	0.000 000	-0.004
100 %		0	1744 999 979	-9.7	-0.000 001	-0.006
100 %		+10	1744 999 998	9.7	0.000 001	0.006
100 %		+30	1744 999 995	6.5	0.000 000	0.004
100 %		+40	1744 999 985	-3.2	0.000 000	-0.002
100 %		+50	1744 999 983	-5.9	0.000 000	-0.003
115 %		+20	1744 999 991	2.7	0.000 000	0.002
85 %		+20	1744 999 977	-11.3	-0.000 001	-0.006



▣ MODE: LTE 66/4

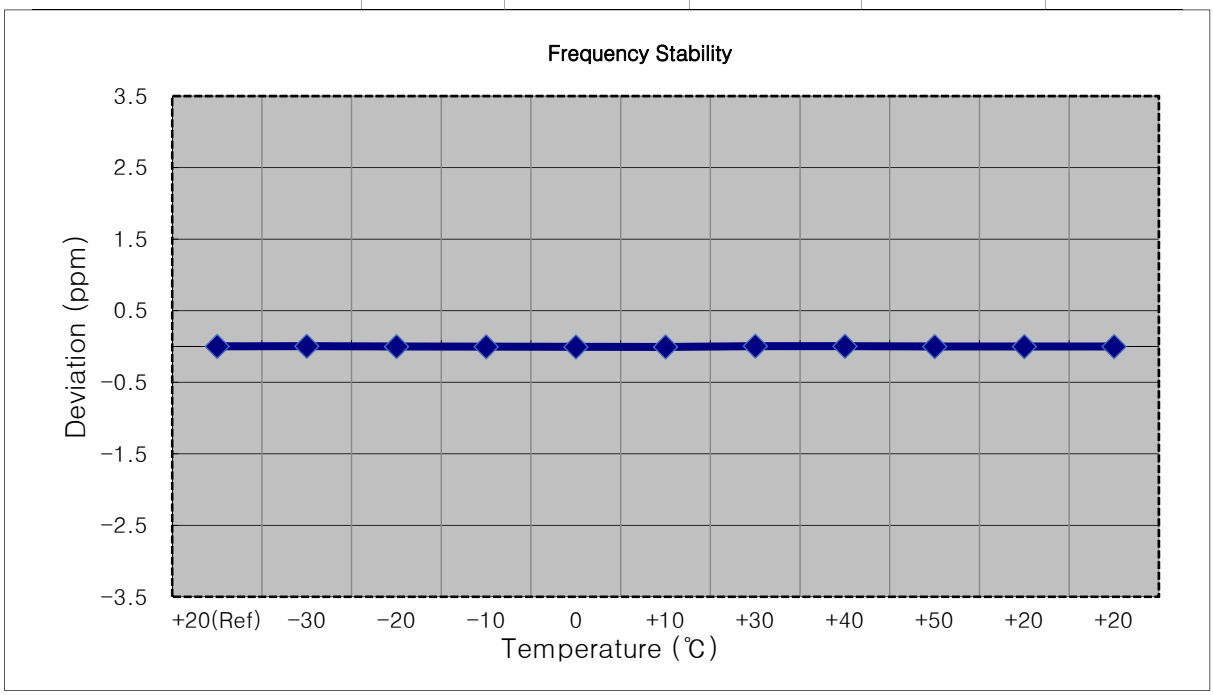
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (10 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1745 000 007	0.0	0.000 000	0.000
100 %		-30	1745 000 010	3.1	0.000 000	0.002
100 %		-20	1745 000 004	-3.7	0.000 000	-0.002
100 %		-10	1745 000 001	-6.0	0.000 000	-0.003
100 %		0	1744 999 998	-9.1	-0.000 001	-0.005
100 %		+10	1744 999 995	-12.1	-0.000 001	-0.007
100 %		+30	1745 000 015	7.2	0.000 000	0.004
100 %		+40	1745 000 013	5.6	0.000 000	0.003
100 %		+50	1745 000 005	-2.0	0.000 000	-0.001
115 %		+20	1745 000 004	-3.4	0.000 000	-0.002
85 %		+20	1745 000 002	-5.0	0.000 000	-0.003



▣ MODE: LTE 66/4

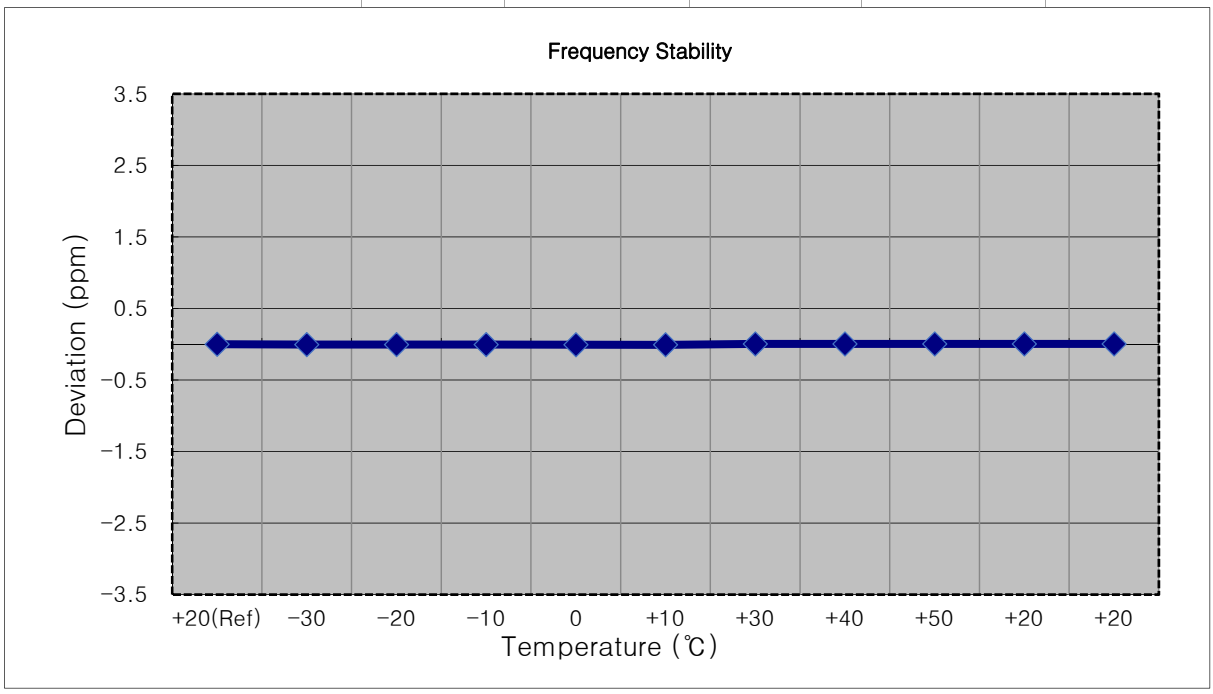
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (15 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1744 999 991	0.0	0.000 000	0.000
100 %		-30	1744 999 982	-9.8	-0.000 001	-0.006
100 %		-20	1744 999 982	-9.4	-0.000 001	-0.005
100 %		-10	1744 999 980	-10.9	-0.000 001	-0.006
100 %		0	1744 999 979	-11.9	-0.000 001	-0.007
100 %		+10	1744 999 978	-13.6	-0.000 001	-0.008
100 %		+30	1744 999 999	7.6	0.000 000	0.004
100 %		+40	1744 999 998	7.1	0.000 000	0.004
100 %		+50	1744 999 999	7.7	0.000 000	0.004
115 %		+20	1744 999 997	6.1	0.000 000	0.003
85 %		+20	1744 999 998	6.4	0.000 000	0.004



▣ MODE: LTE 66/4

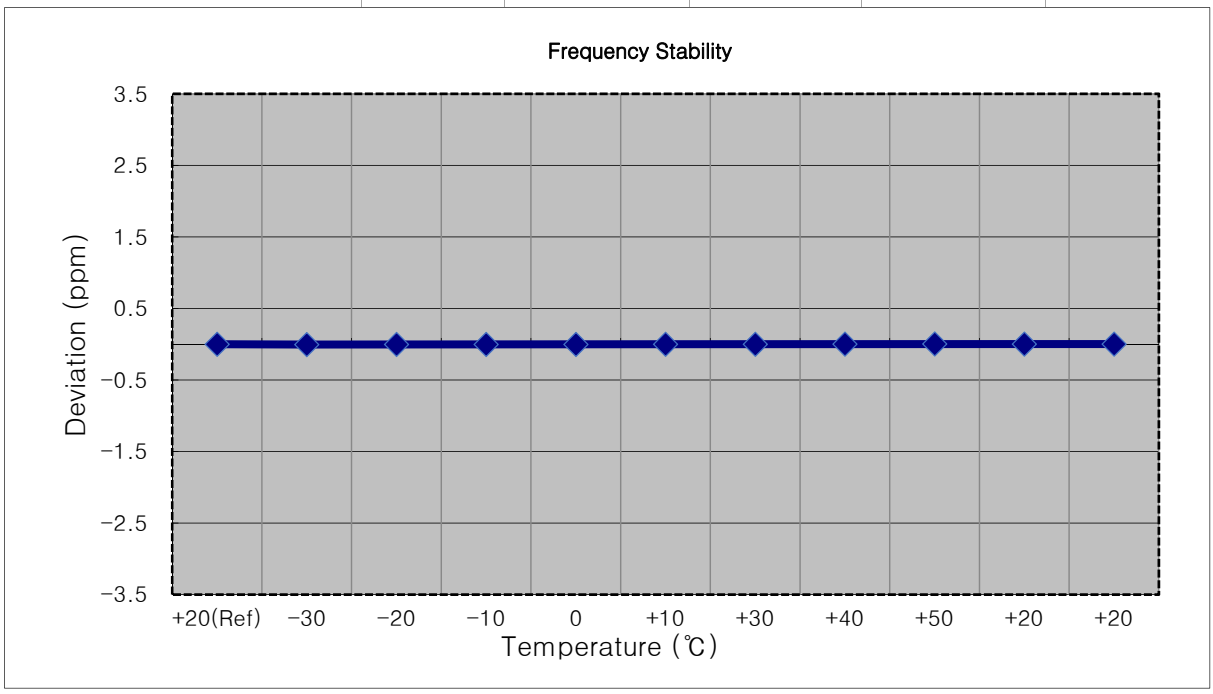
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (20 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1744 999 989	0.0	0.000 000	0.000
100 %		-30	1744 999 981	-8.1	0.000 000	-0.005
100 %		-20	1744 999 983	-6.1	0.000 000	-0.003
100 %		-10	1744 999 985	-4.5	0.000 000	-0.003
100 %		0	1744 999 983	-6.0	0.000 000	-0.003
100 %		+10	1744 999 986	-3.5	0.000 000	-0.002
100 %		+30	1744 999 987	-2.5	0.000 000	-0.001
100 %		+40	1744 999 991	2.0	0.000 000	0.001
100 %		+50	1744 999 994	4.5	0.000 000	0.003
115 %		+20	1744 999 993	3.9	0.000 000	0.002
85 %		+20	1744 999 993	3.9	0.000 000	0.002



▣ MODE: LTE 66/4

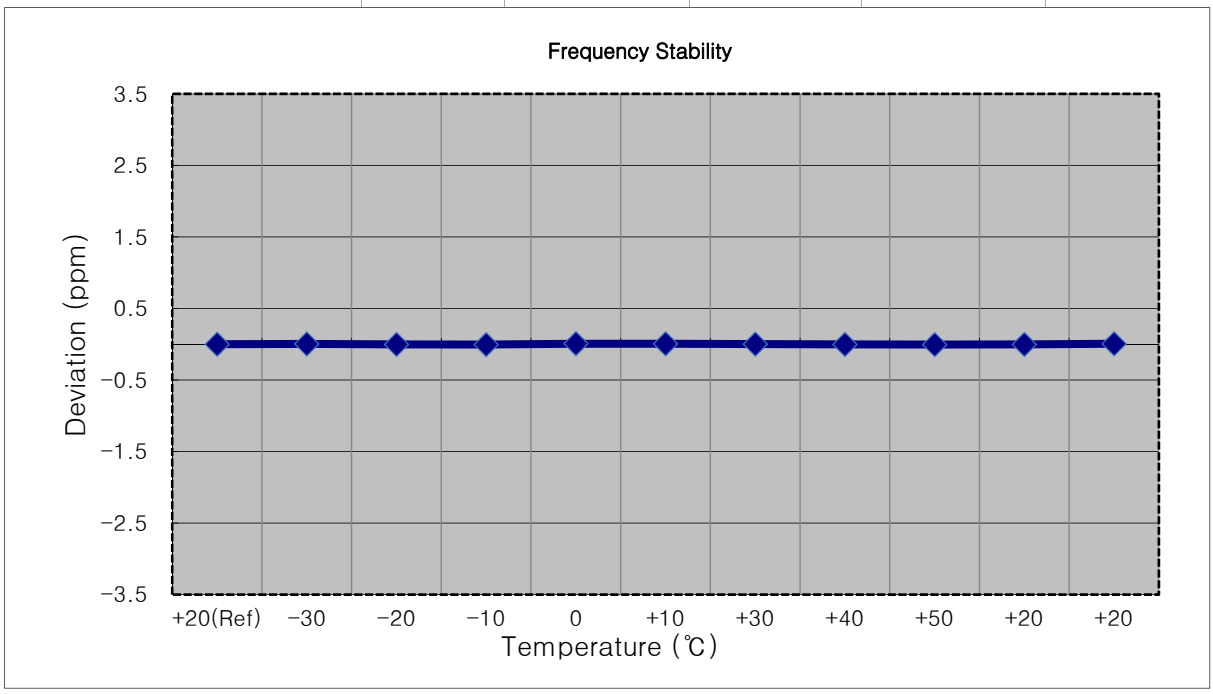
▣ OPERATING FREQUENCY: 1779,300,000 Hz

▣ CHANNEL: 132665 (1.4 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1779 299 989	0.0	0.000 000	0.000
100 %		-30	1779 299 996	7.0	0.000 000	0.004
100 %		-20	1779 299 985	-3.9	0.000 000	-0.002
100 %		-10	1779 299 980	-8.5	0.000 000	-0.005
100 %		0	1779 300 002	12.8	0.000 001	0.007
100 %		+10	1779 299 998	8.7	0.000 000	0.005
100 %		+30	1779 299 991	2.3	0.000 000	0.001
100 %		+40	1779 299 981	-7.5	0.000 000	-0.004
100 %		+50	1779 299 979	-9.5	-0.000 001	-0.005
115 %		+20	1779 299 982	-6.5	0.000 000	-0.004
85 %		+20	1779 299 999	10.3	0.000 001	0.006



▣ MODE: LTE 66/4

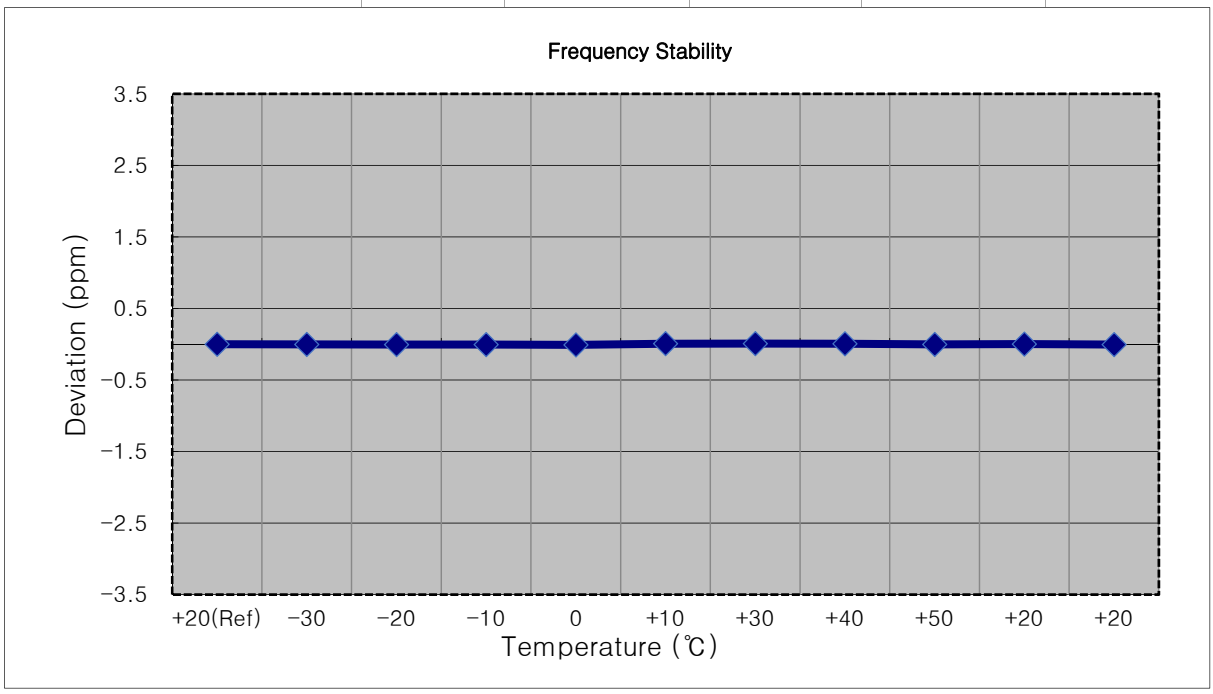
▣ OPERATING FREQUENCY: 1778,500,000 Hz

▣ CHANNEL: 132657 (3 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1778 499 994	0.0	0.000 000	0.000
100 %		-30	1778 499 987	-7.1	0.000 000	-0.004
100 %		-20	1778 499 983	-11.2	-0.000 001	-0.006
100 %		-10	1778 499 982	-11.5	-0.000 001	-0.006
100 %		0	1778 499 978	-15.8	-0.000 001	-0.009
100 %		+10	1778 500 006	12.6	0.000 001	0.007
100 %		+30	1778 500 006	12.5	0.000 001	0.007
100 %		+40	1778 500 002	8.5	0.000 000	0.005
100 %		+50	1778 499 989	-4.4	0.000 000	-0.002
115 %		+20	1778 499 998	3.9	0.000 000	0.002
85 %		+20	1778 499 983	-10.8	-0.000 001	-0.006



▣ MODE: LTE 66/4

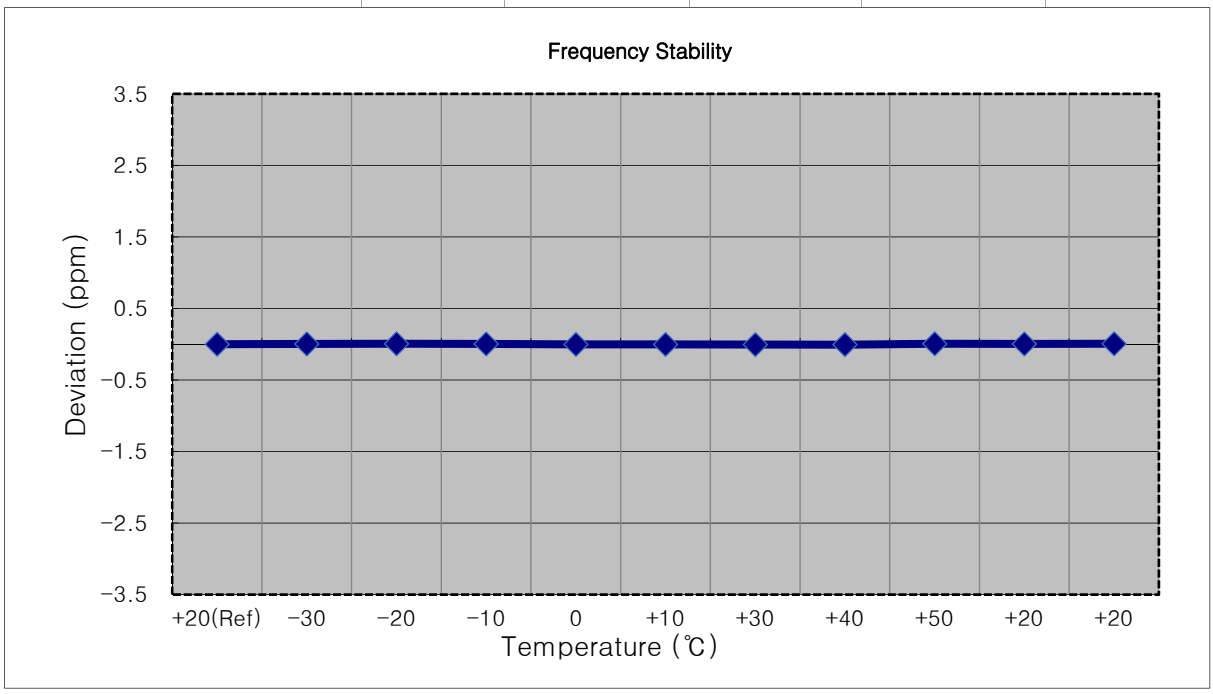
▣ OPERATING FREQUENCY: 1777,500,000 Hz

▣ CHANNEL: 132647 (5 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1777 500 006	0.0	0.000 000	0.000
100 %		-30	1777 500 012	6.0	0.000 000	0.003
100 %		-20	1777 500 015	8.6	0.000 000	0.005
100 %		-10	1777 500 012	6.0	0.000 000	0.003
100 %		0	1777 499 999	-7.3	0.000 000	-0.004
100 %		+10	1777 500 000	-6.7	0.000 000	-0.004
100 %		+30	1777 499 997	-9.0	-0.000 001	-0.005
100 %		+40	1777 499 995	-11.2	-0.000 001	-0.006
100 %		+50	1777 500 017	10.2	0.000 001	0.006
115 %		+20	1777 500 014	7.3	0.000 000	0.004
85 %		+20	1777 500 016	9.6	0.000 001	0.005



▣ MODE: LTE 66/4

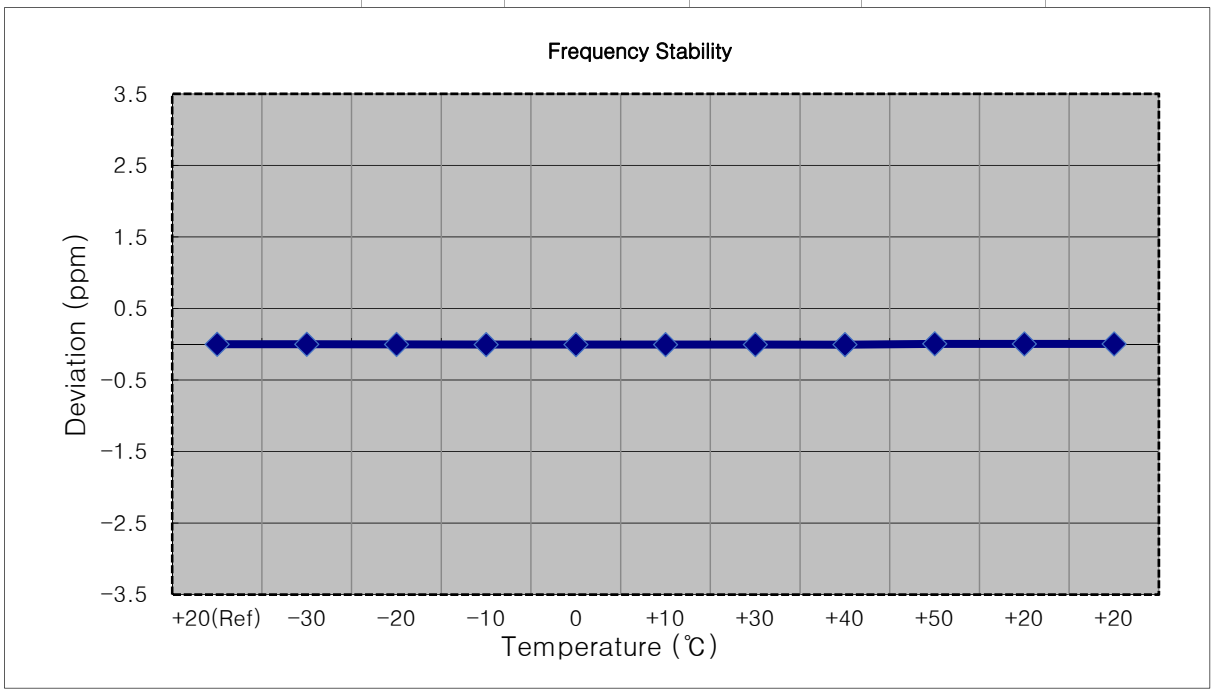
▣ OPERATING FREQUENCY: 1775,000,000 Hz

▣ CHANNEL: 132622 (10 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1774 999 996	0.0	0.000 000	0.000
100 %		-30	1774 999 993	-2.9	0.000 000	-0.002
100 %		-20	1774 999 990	-5.9	0.000 000	-0.003
100 %		-10	1774 999 988	-7.7	0.000 000	-0.004
100 %		0	1774 999 987	-9.1	-0.000 001	-0.005
100 %		+10	1774 999 986	-9.7	-0.000 001	-0.005
100 %		+30	1774 999 985	-10.8	-0.000 001	-0.006
100 %		+40	1774 999 985	-11.1	-0.000 001	-0.006
100 %		+50	1775 000 004	8.5	0.000 000	0.005
115 %		+20	1775 000 002	6.6	0.000 000	0.004
85 %		+20	1775 000 003	7.6	0.000 000	0.004



▣ MODE: LTE 66/4

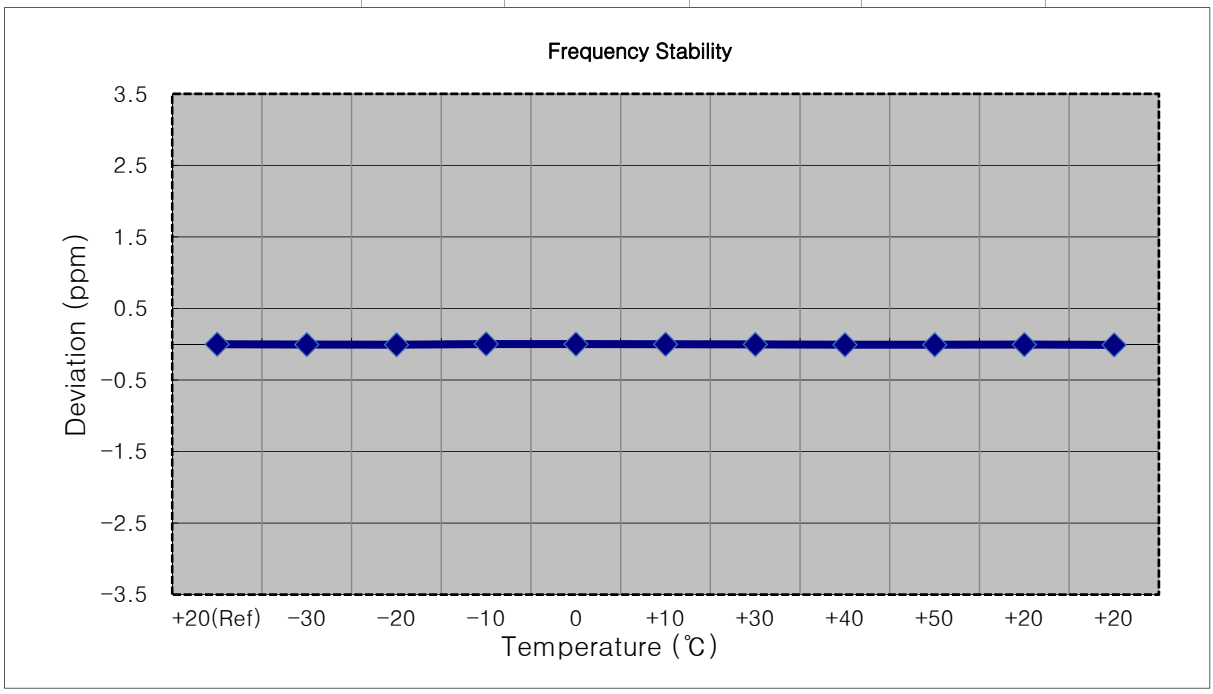
▣ OPERATING FREQUENCY: 1772,500,000 Hz

▣ CHANNEL: 132597 (15 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1772 499 991	0.0	0.000 000	0.000
100 %		-30	1772 499 981	-10.2	-0.000 001	-0.006
100 %		-20	1772 499 976	-15.0	-0.000 001	-0.008
100 %		-10	1772 499 996	5.2	0.000 000	0.003
100 %		0	1772 499 994	3.1	0.000 000	0.002
100 %		+10	1772 499 987	-3.6	0.000 000	-0.002
100 %		+30	1772 499 984	-6.5	0.000 000	-0.004
100 %		+40	1772 499 978	-13.2	-0.000 001	-0.007
100 %		+50	1772 499 978	-13.1	-0.000 001	-0.007
115 %		+20	1772 499 980	-10.7	-0.000 001	-0.006
85 %		+20	1772 499 975	-16.4	-0.000 001	-0.009



▣ MODE: LTE 66/4

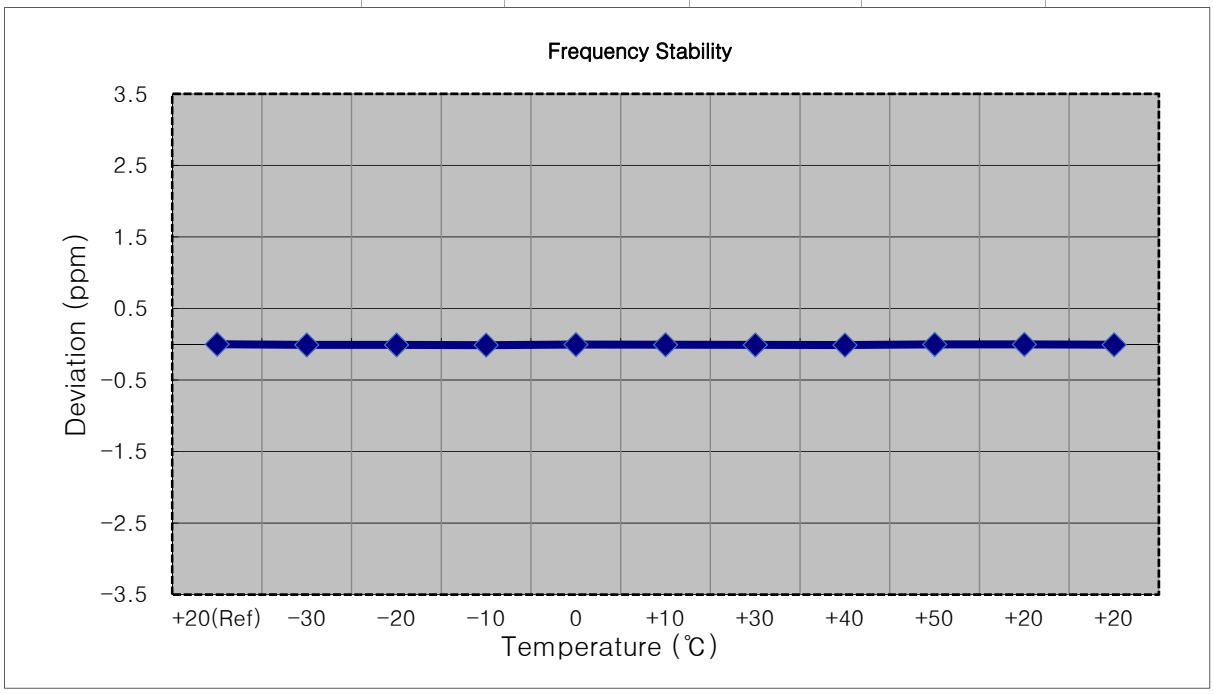
▣ OPERATING FREQUENCY: 1770,000,000 Hz

▣ CHANNEL: 132572 (20 MHz)

▣ REFERENCE VOLTAGE: 13.200 VDC

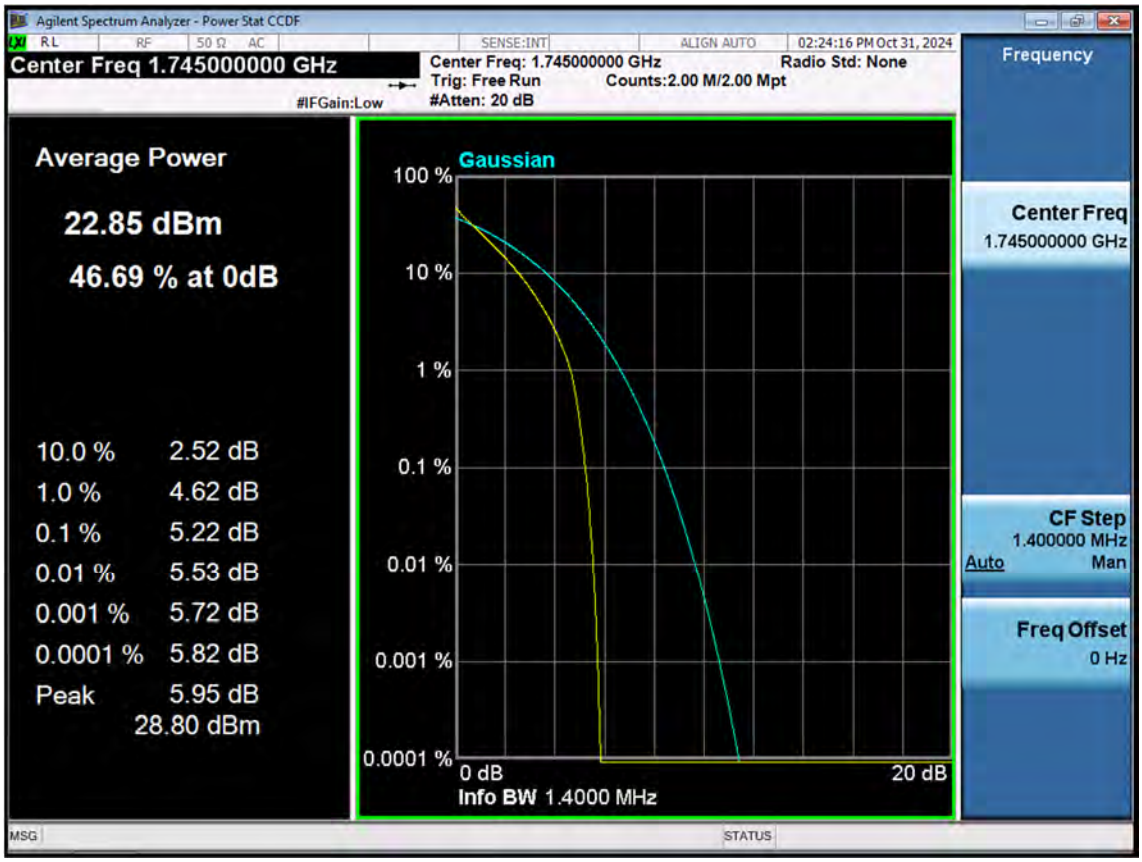
▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	13.200	+20(Ref)	1769 999 991	0.0	0.000 000	0.000
100 %		-30	1769 999 975	-15.9	-0.000 001	-0.009
100 %		-20	1769 999 973	-17.7	-0.000 001	-0.010
100 %		-10	1769 999 968	-23.3	-0.000 001	-0.013
100 %		0	1769 999 982	-8.9	-0.000 001	-0.005
100 %		+10	1769 999 977	-14.6	-0.000 001	-0.008
100 %		+30	1769 999 974	-17.1	-0.000 001	-0.010
100 %		+40	1769 999 970	-21.2	-0.000 001	-0.012
100 %		+50	1769 999 985	-6.0	0.000 000	-0.003
115 %		+20	1769 999 987	-4.4	0.000 000	-0.002
85 %		+20	1769 999 979	-11.8	-0.000 001	-0.007

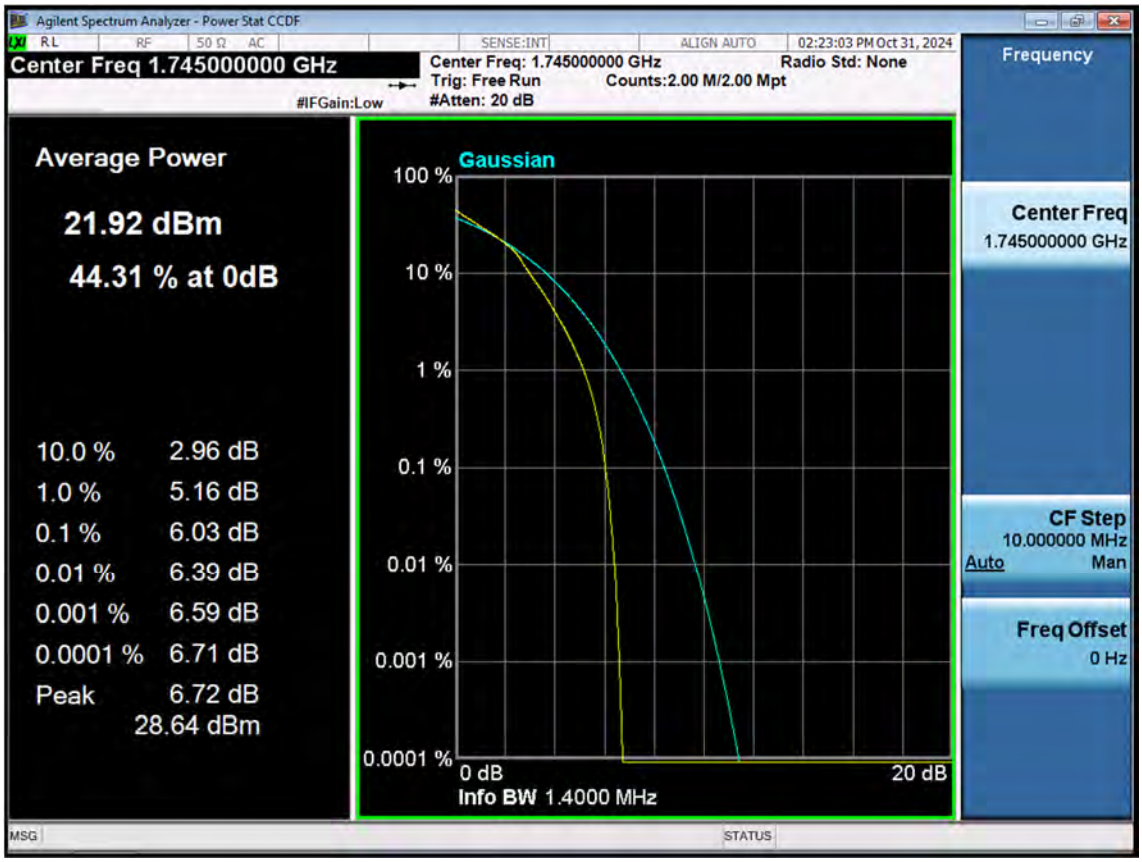


9. TEST PLOTS

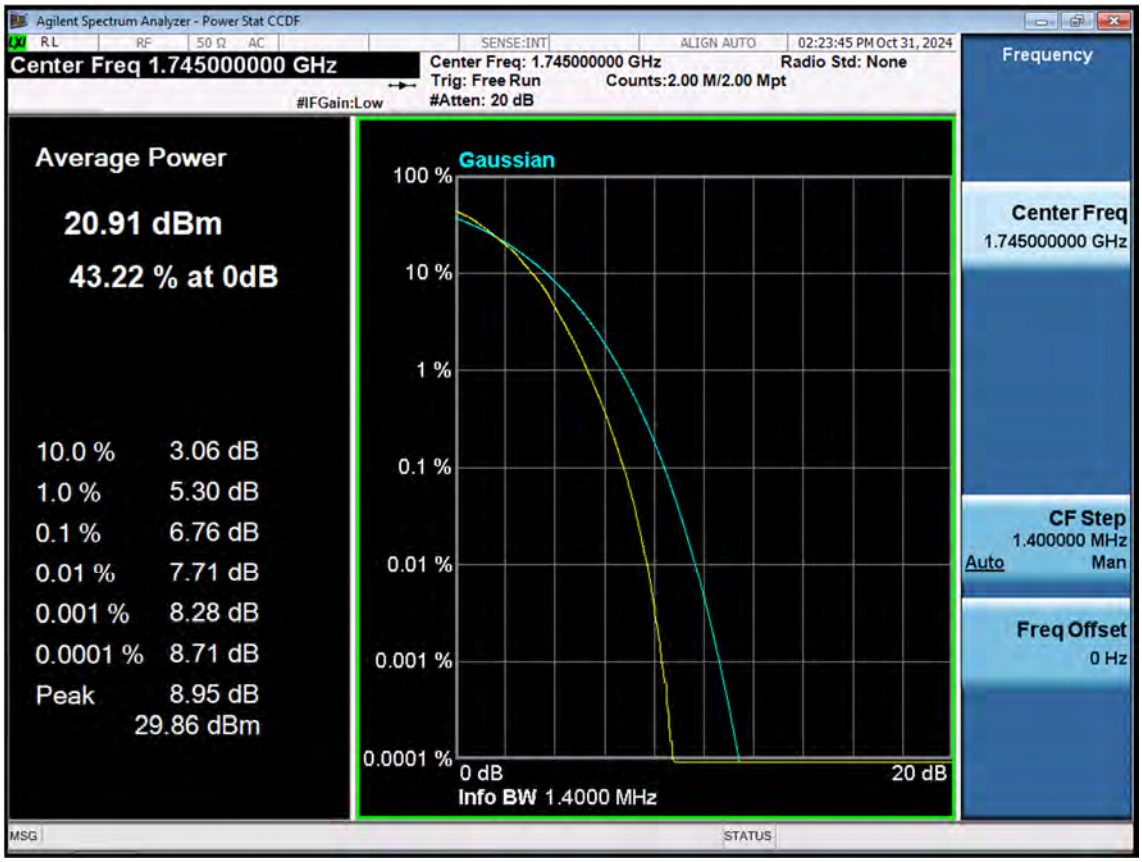
LTE B66_1.4M_PAR_Mid_QPSK_FullRB



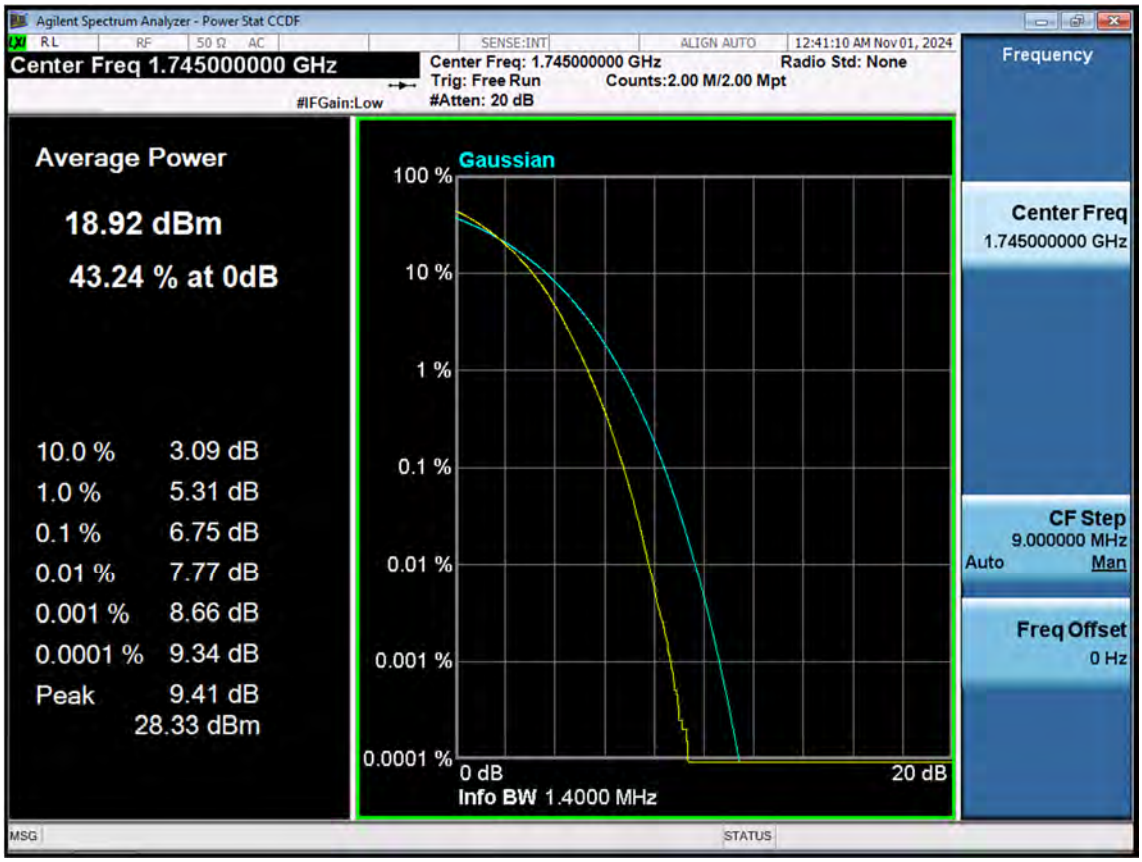
LTE B66_1.4M_PAR_Mid_16QAM_FullRB



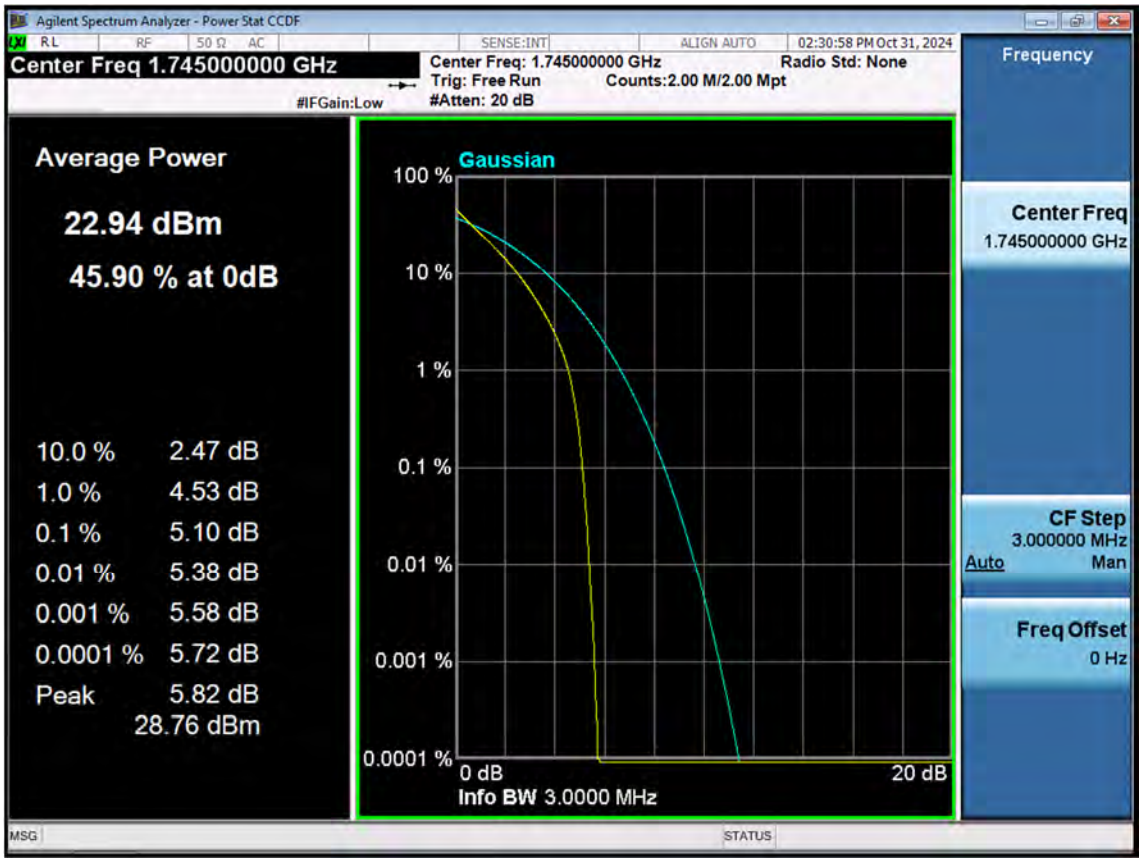
LTE B66_1.4M_PAR_Mid_64QAM_FullRB



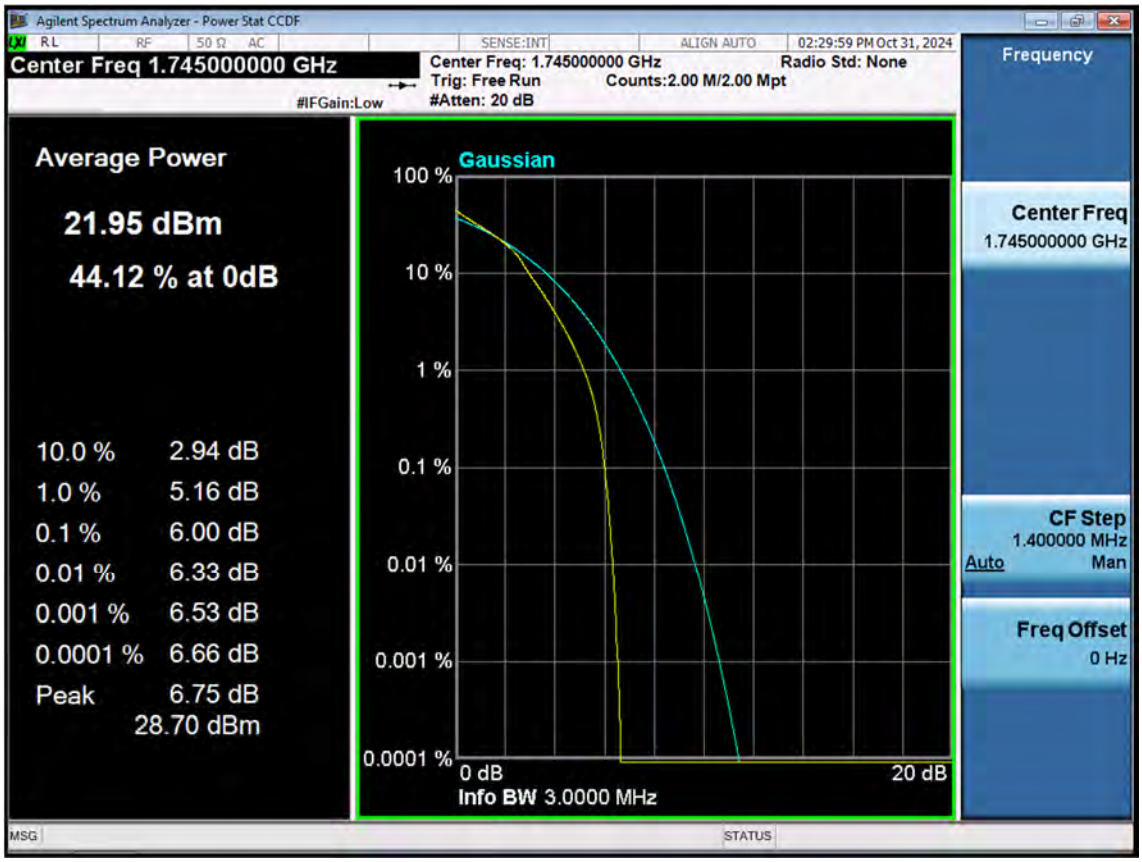
LTE B66_1.4M_PAR_Mid_256QAM_FullRB



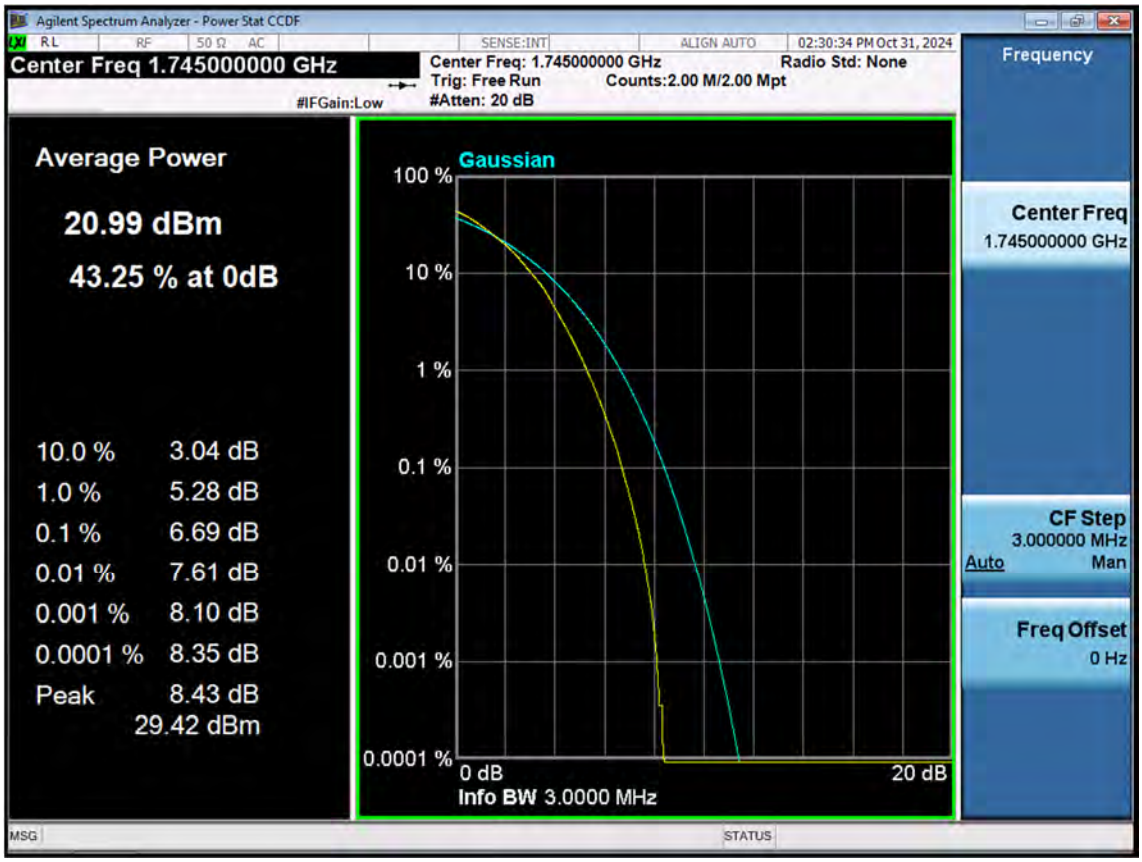
LTE B66_3 M_PAR_Mid_QPSK_FullRB



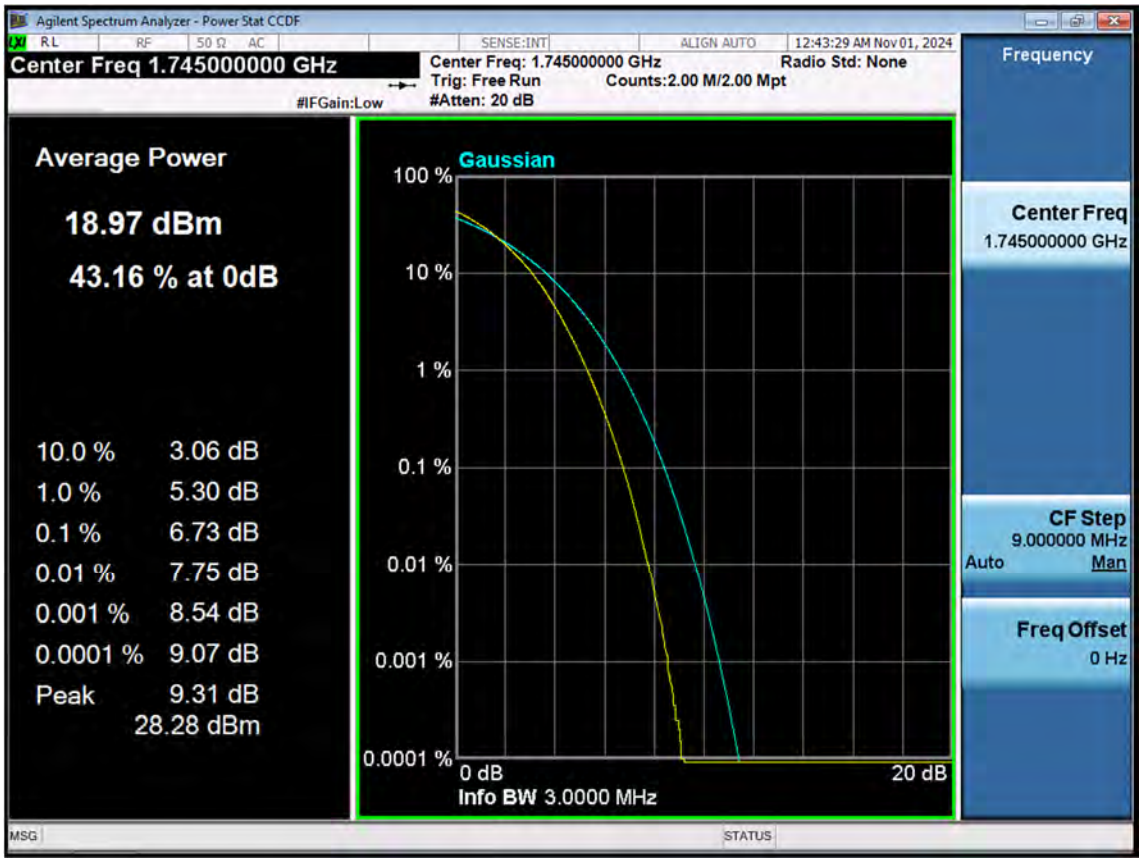
LTE B66_3 M_PAR_Mid_16QAM_FullRB



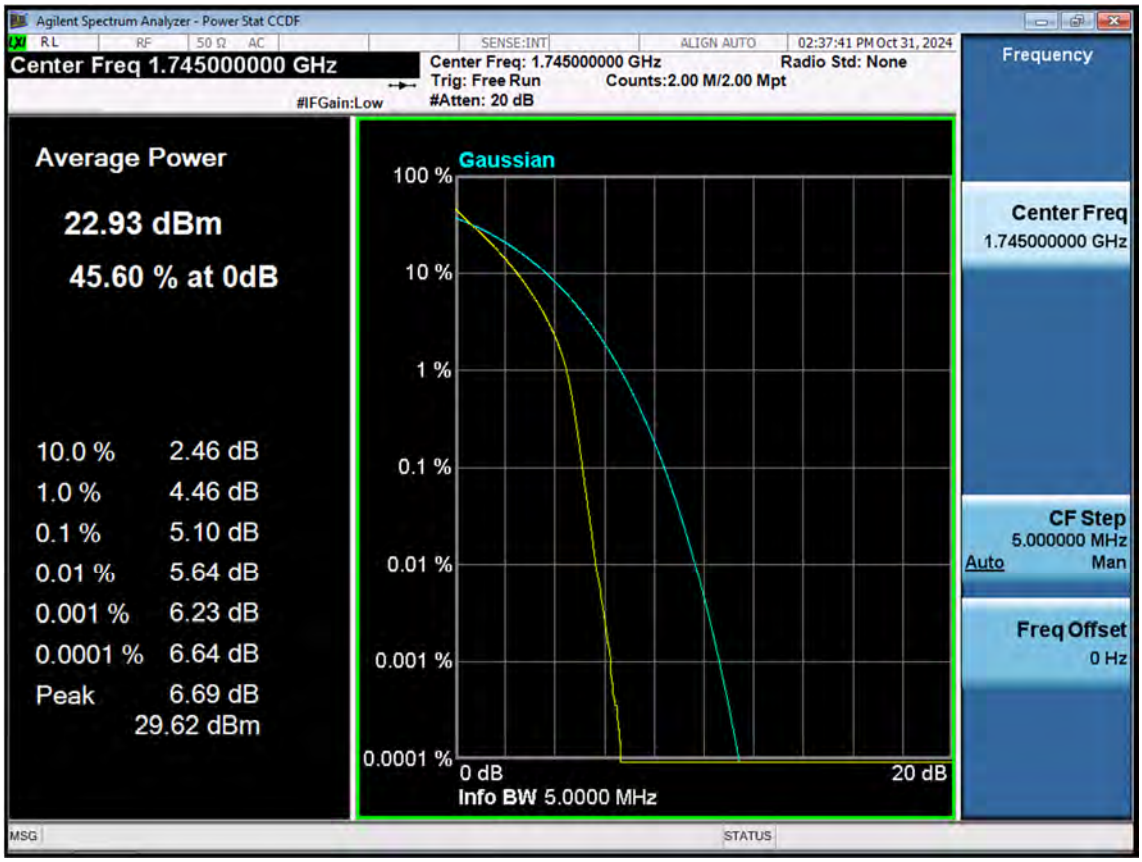
LTE B66_3 M_PAR_Mid_64QAM_FullRB



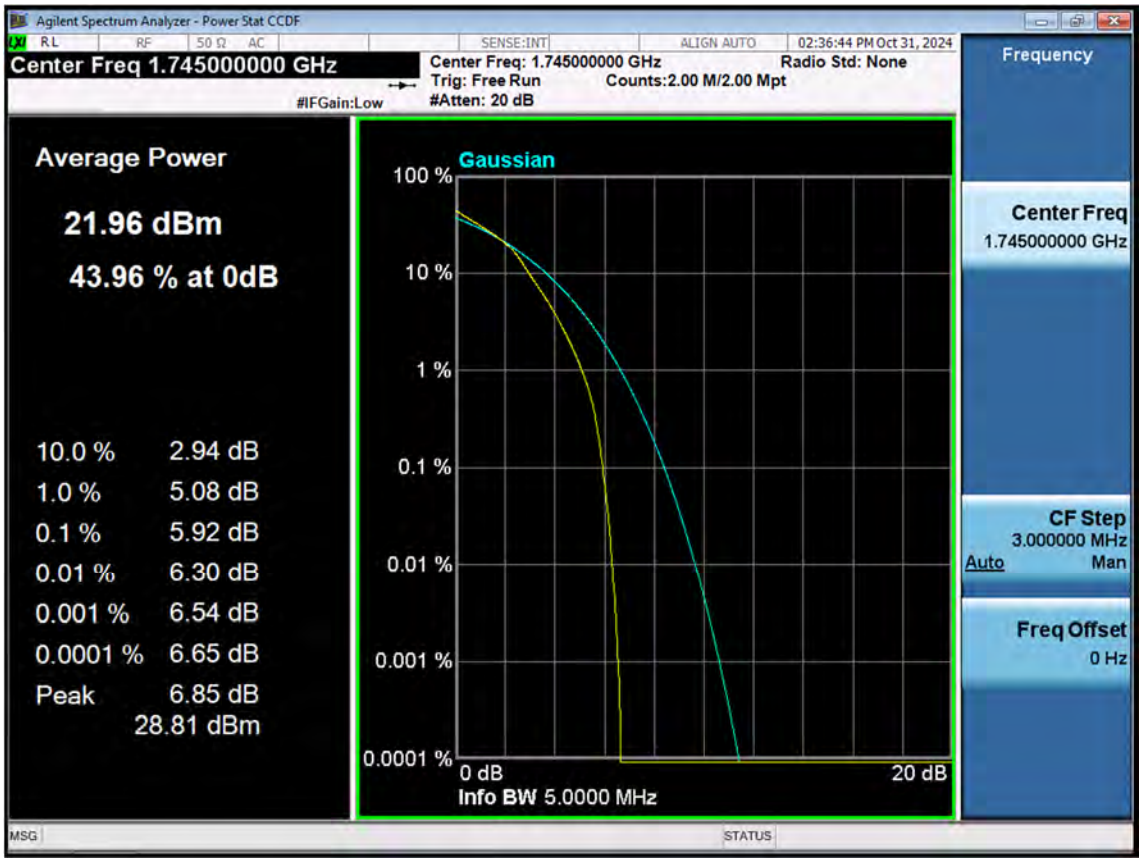
LTE B66_3 M_PAR_Mid_256QAM_FullRB



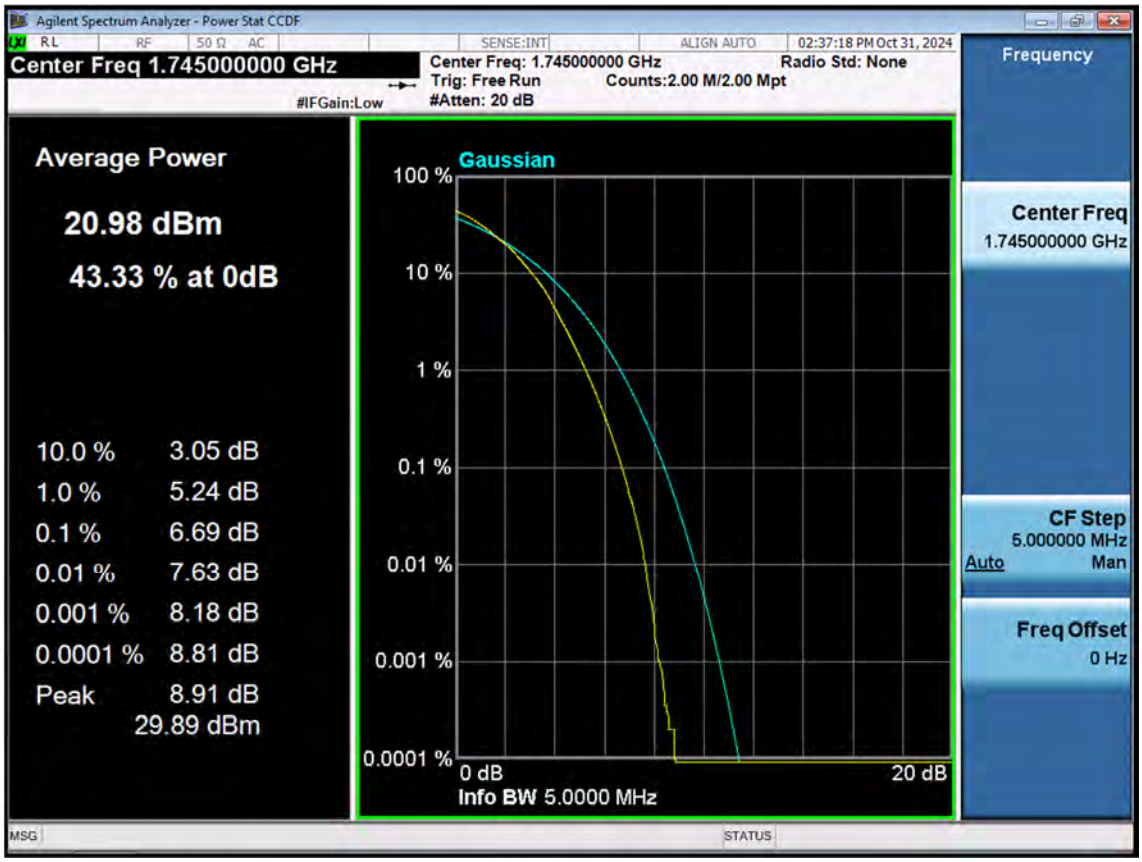
LTE B66_5 M_PAR_Mid_QPSK_FullRB



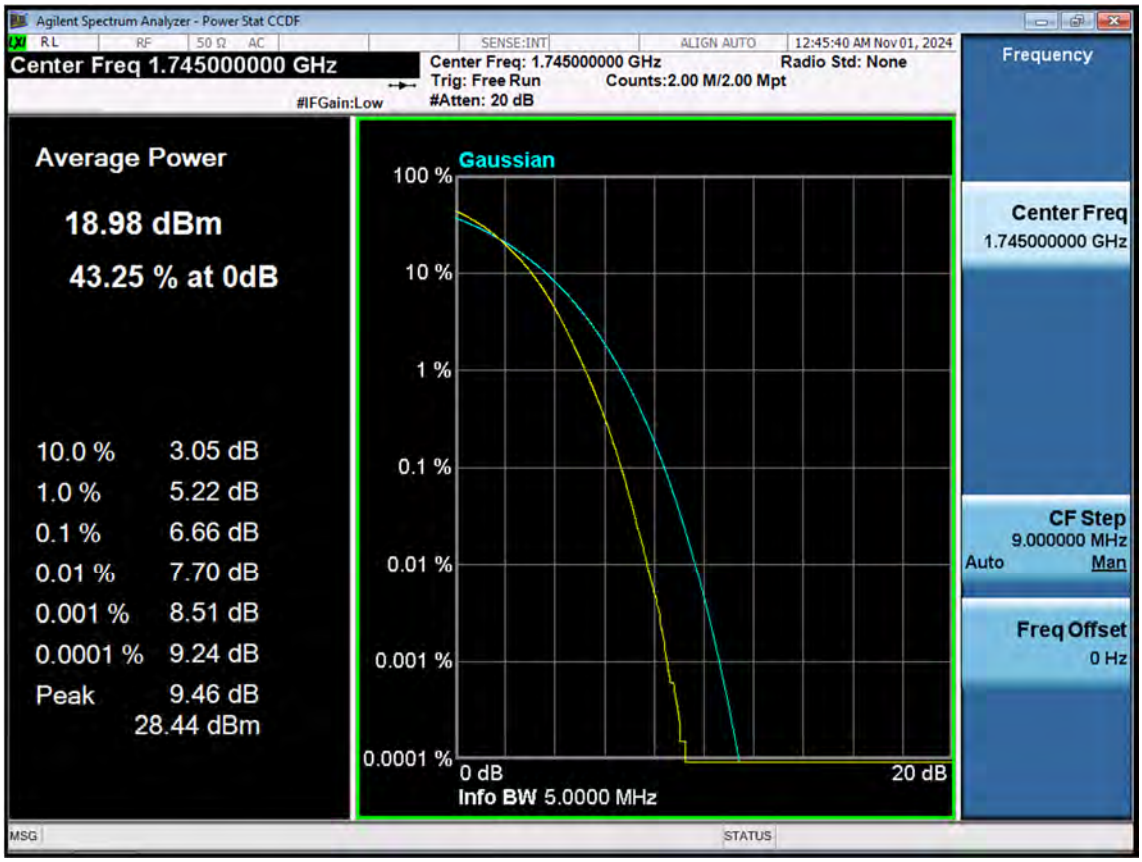
LTE B66_5 M_PAR_Mid_16QAM_FullRB



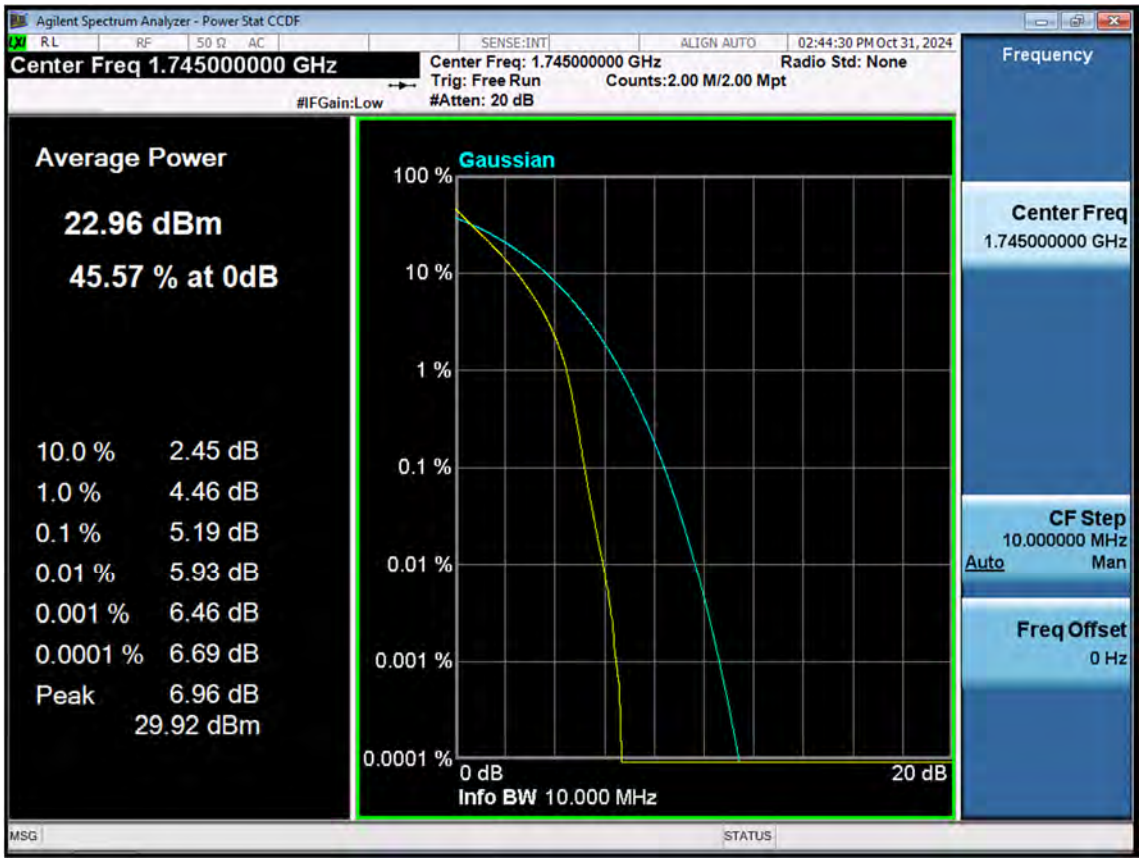
LTE B66_5 M_PAR_Mid_64QAM_FullRB



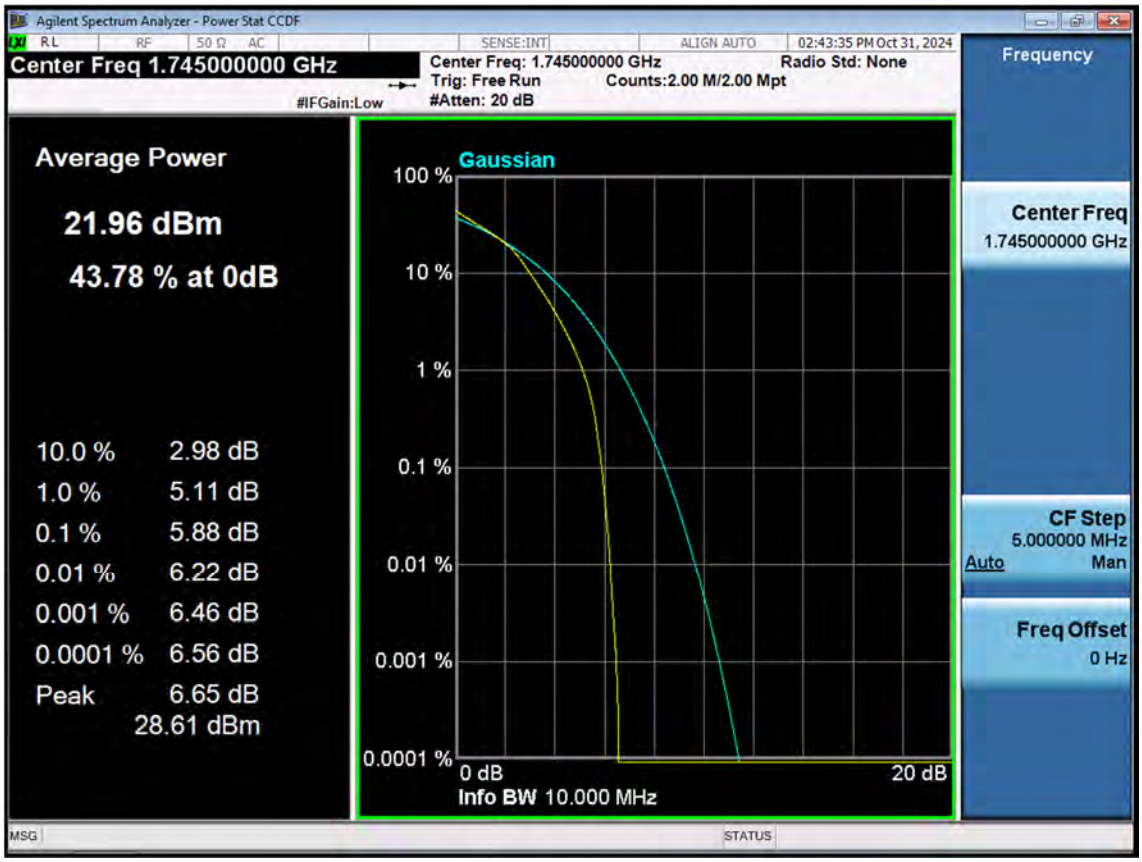
LTE B66_5 M_PAR_Mid_256QAM_FullRB



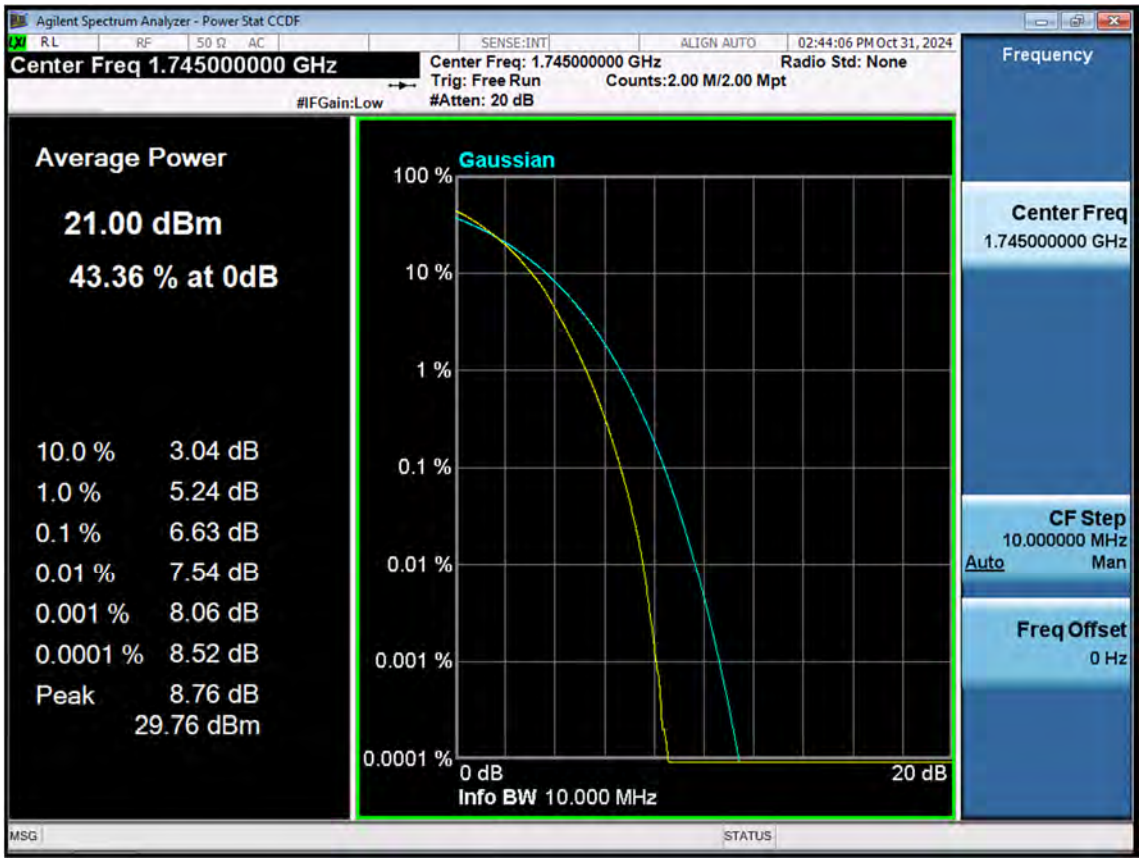
LTE B66_10 M_PAR_Mid_QPSK_FullRB



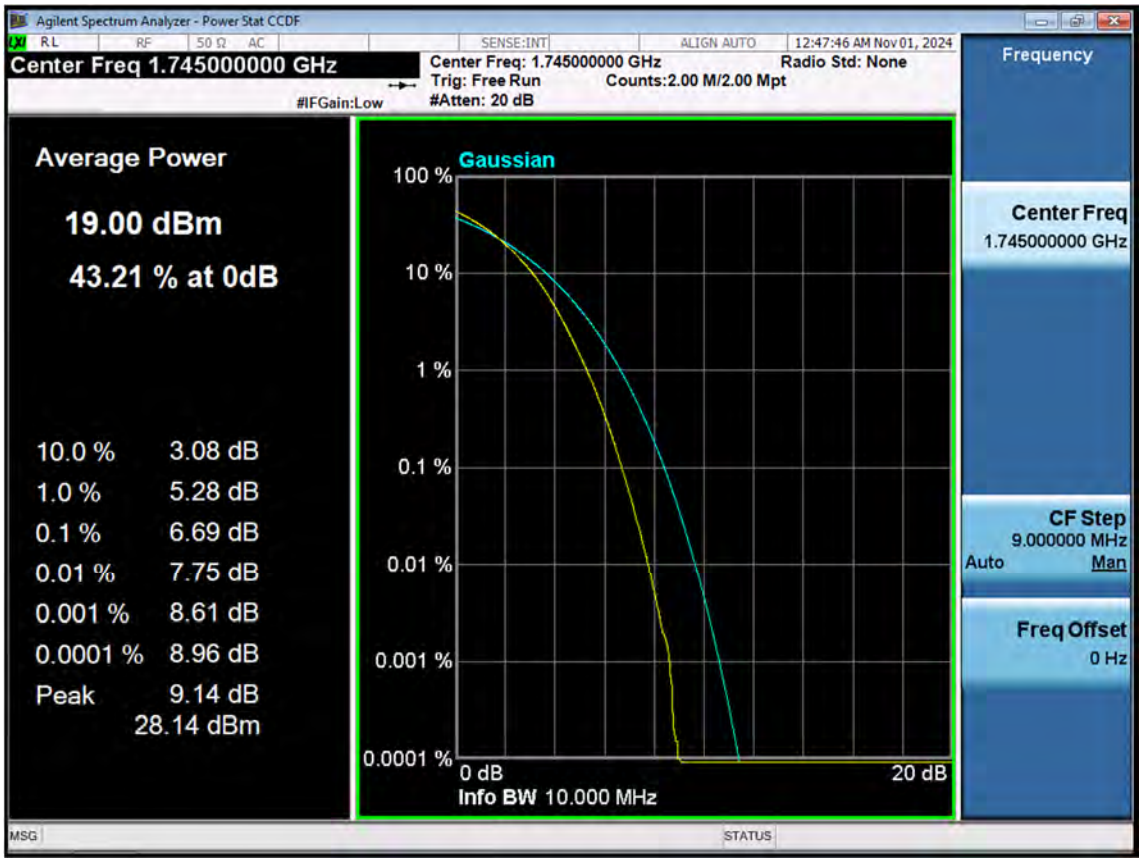
LTE B66_10 M_PAR_Mid_16QAM_FullRB



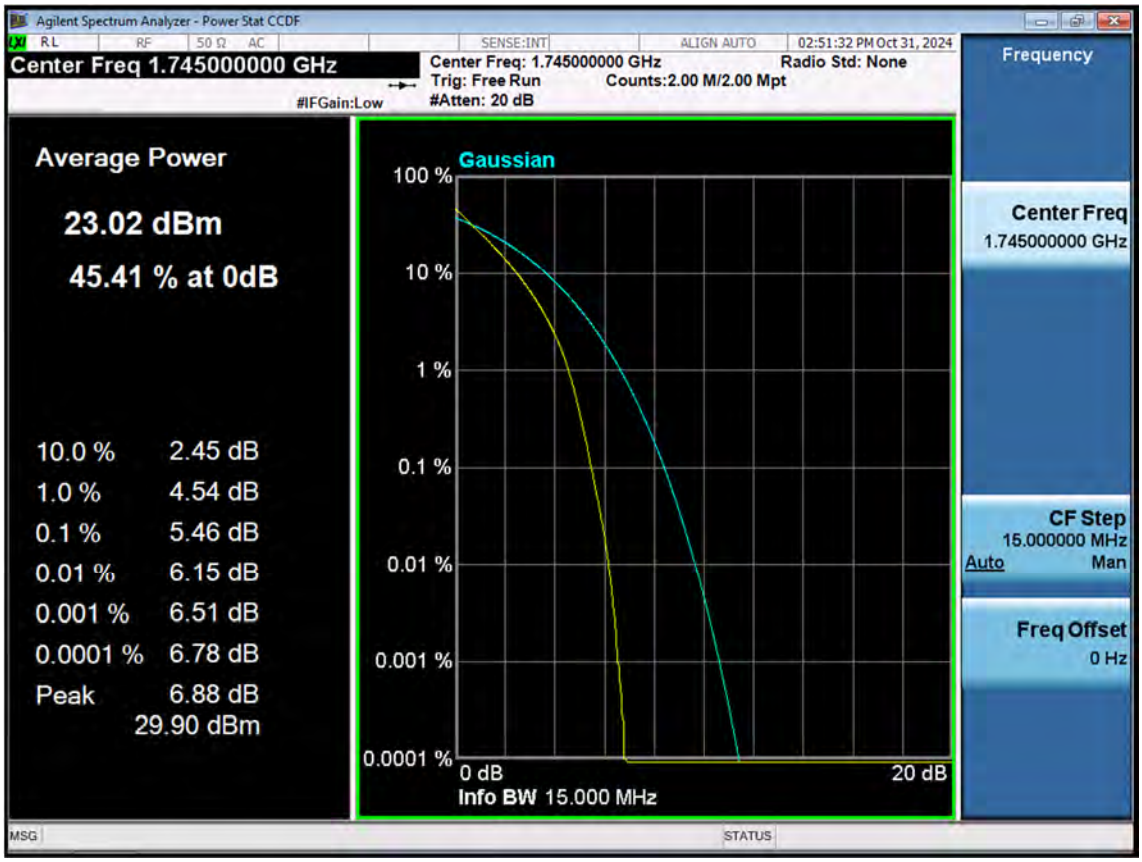
LTE B66_10 M_PAR_Mid_64QAM_FullRB



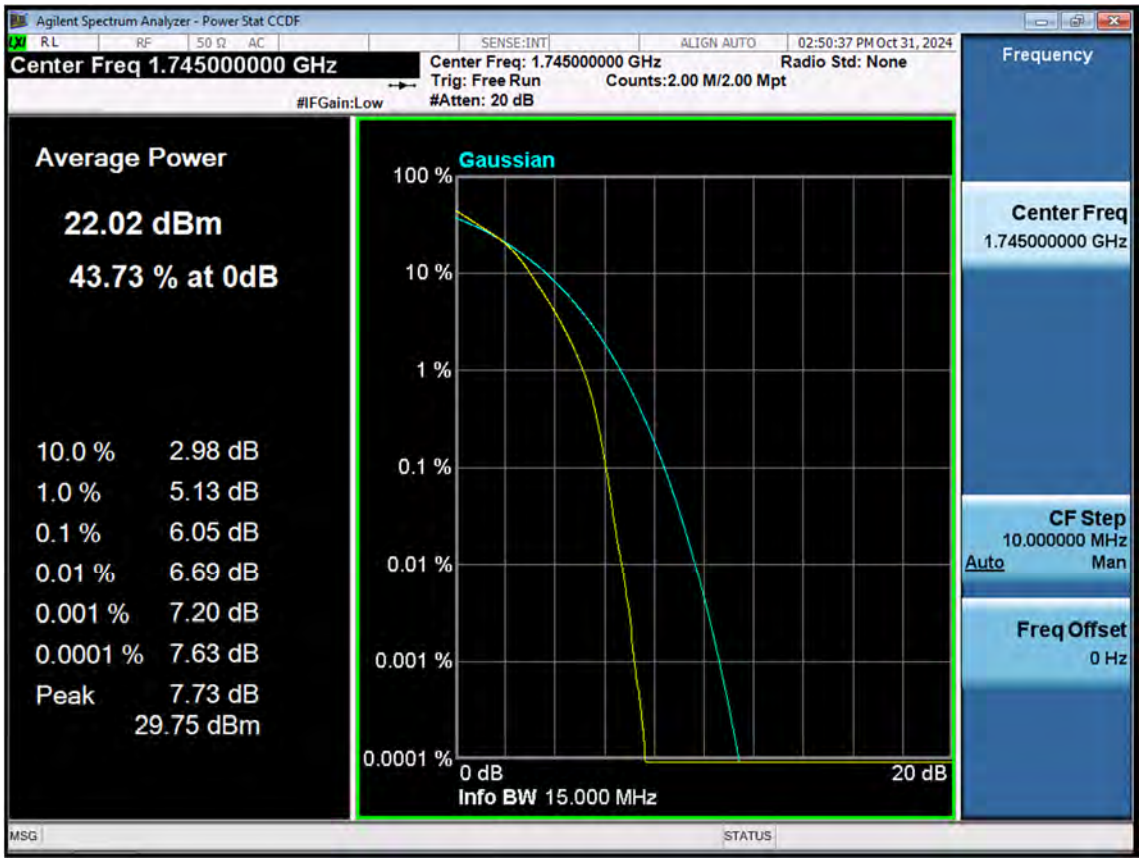
LTE B66_10 M_PAR_Mid_256QAM_FullRB



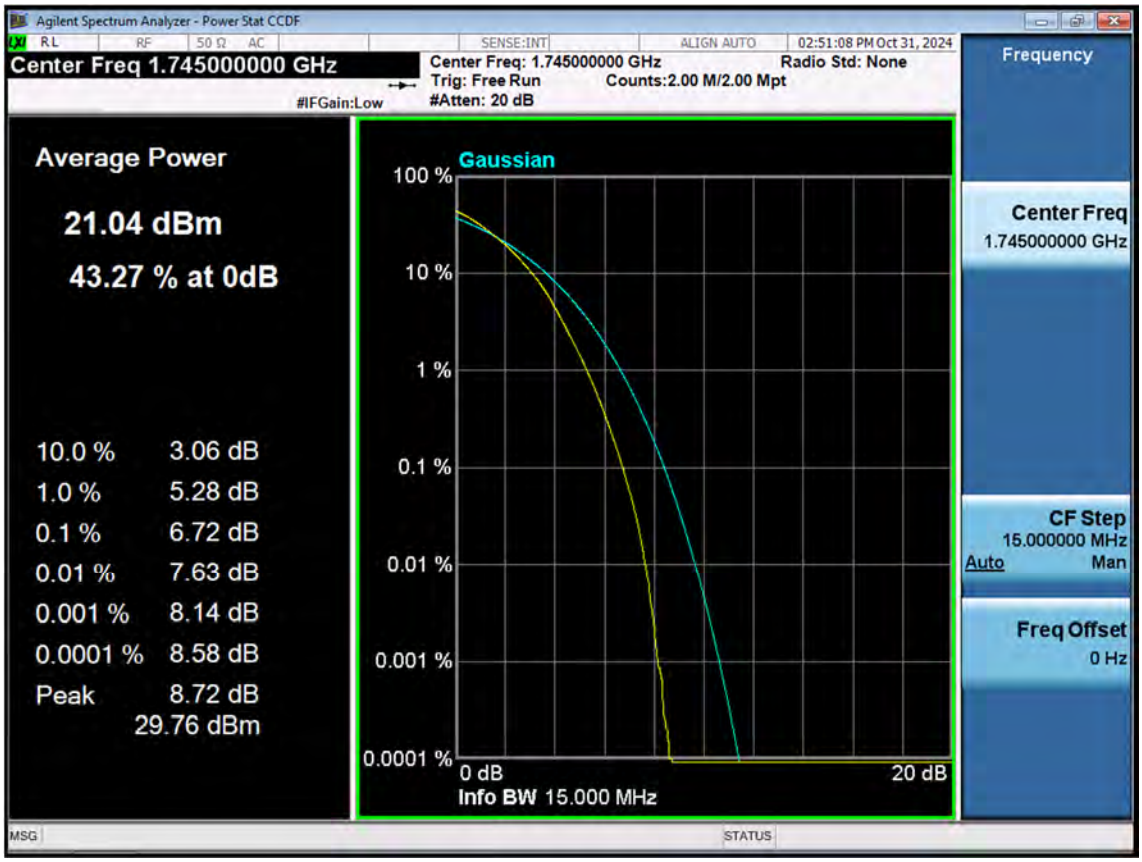
LTE B66_15 M_PAR_Mid_QPSK_FullRB



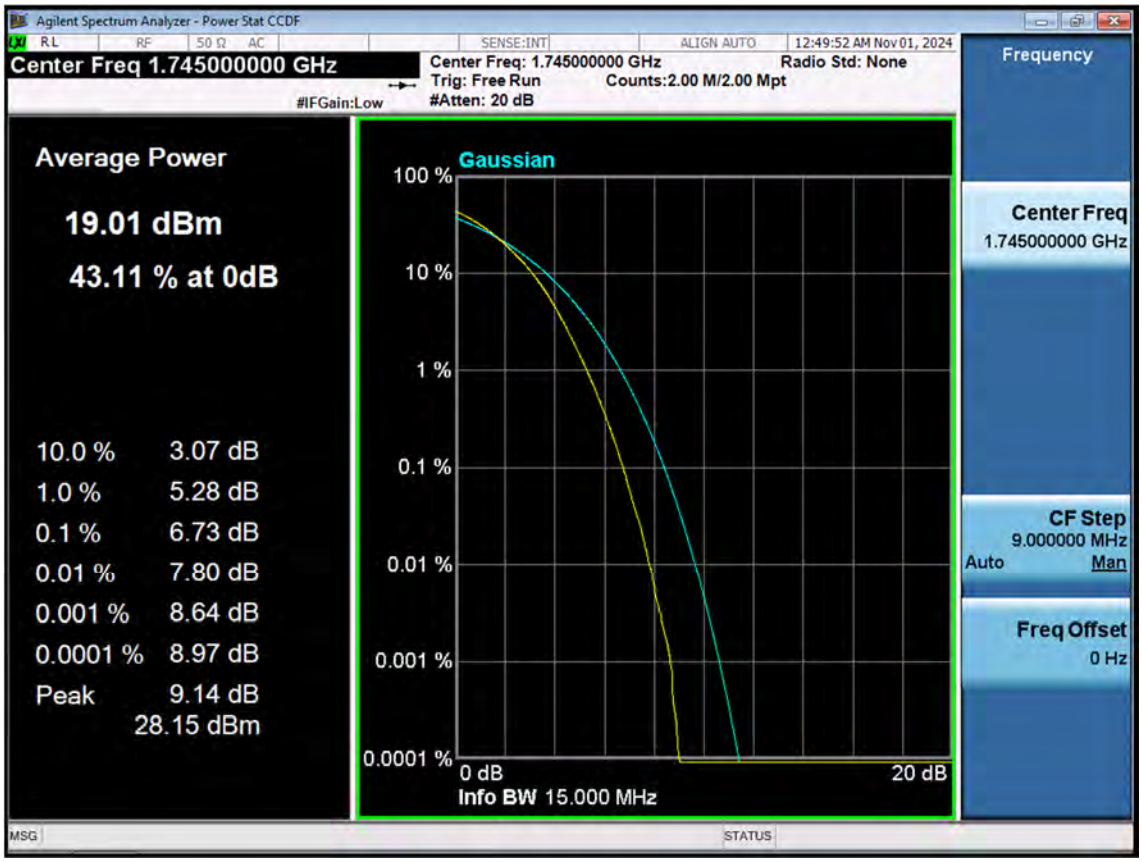
LTE B66_15 M_PAR_Mid_16QAM_FullRB



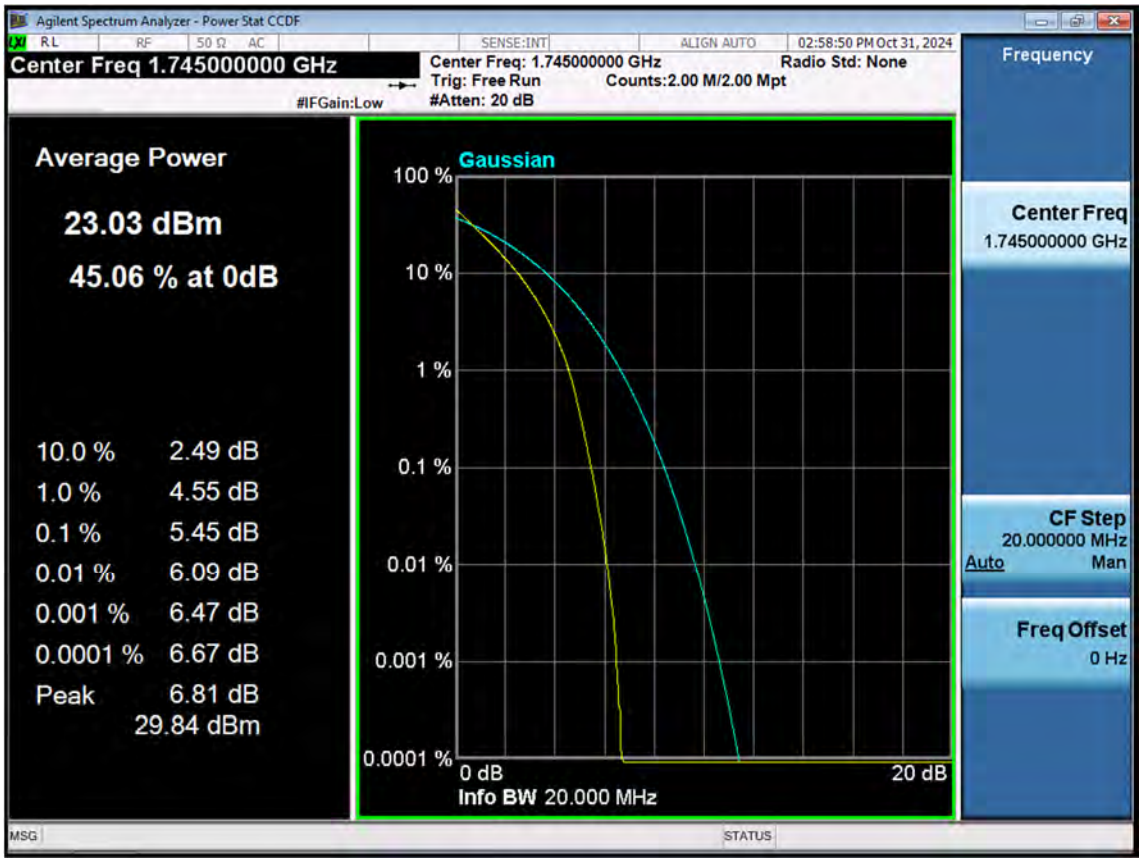
LTE B66_15 M_PAR_Mid_64QAM_FullRB



LTE B66_15 M_PAR_Mid_256QAM_FullRB



LTE B66_20 M_PAR_Mid_QPSK_FullRB



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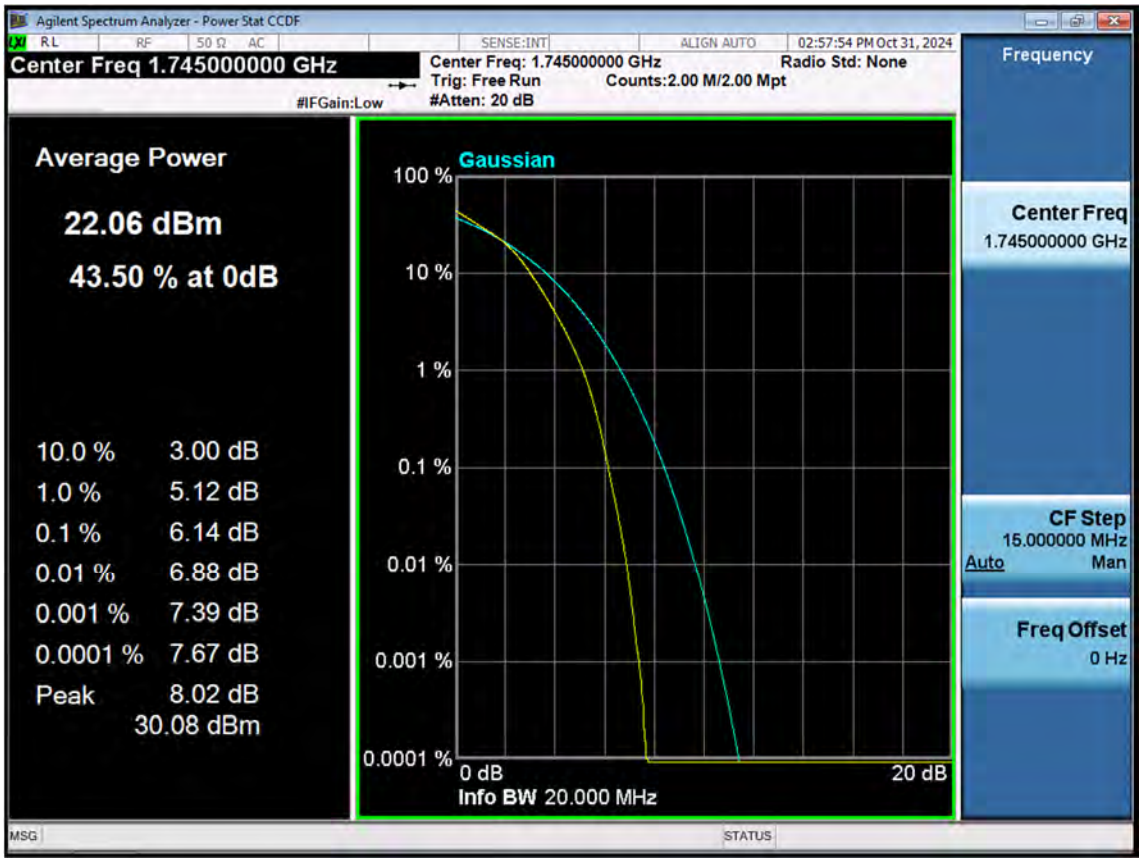

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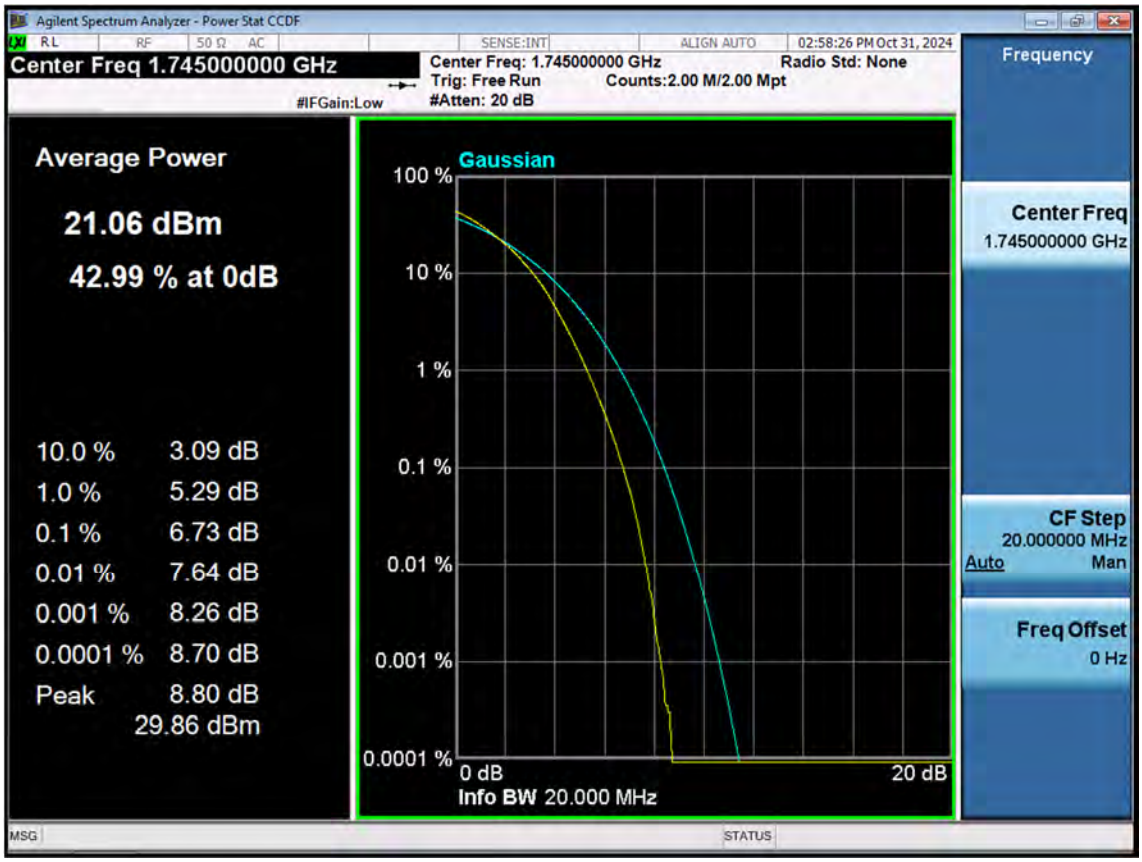

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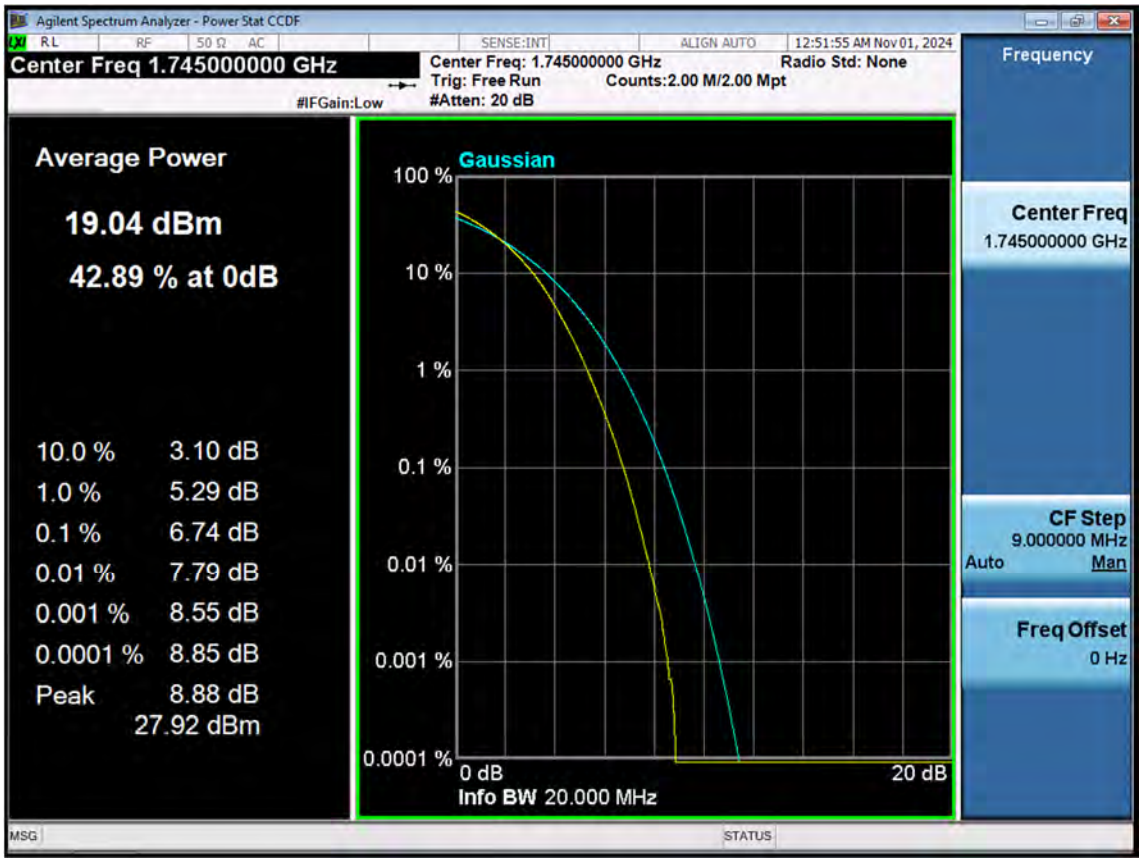
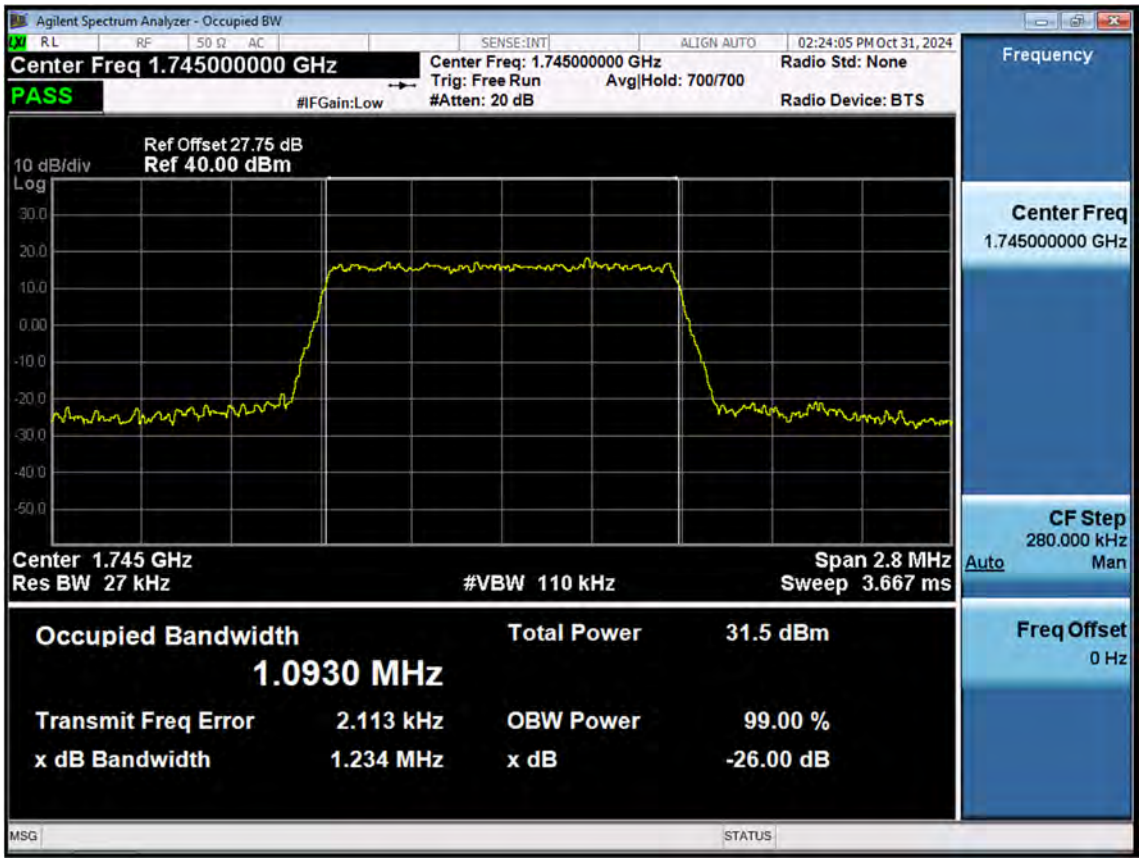


LTE B66_1.4M_OBW_Mid_QPSK_FullRB



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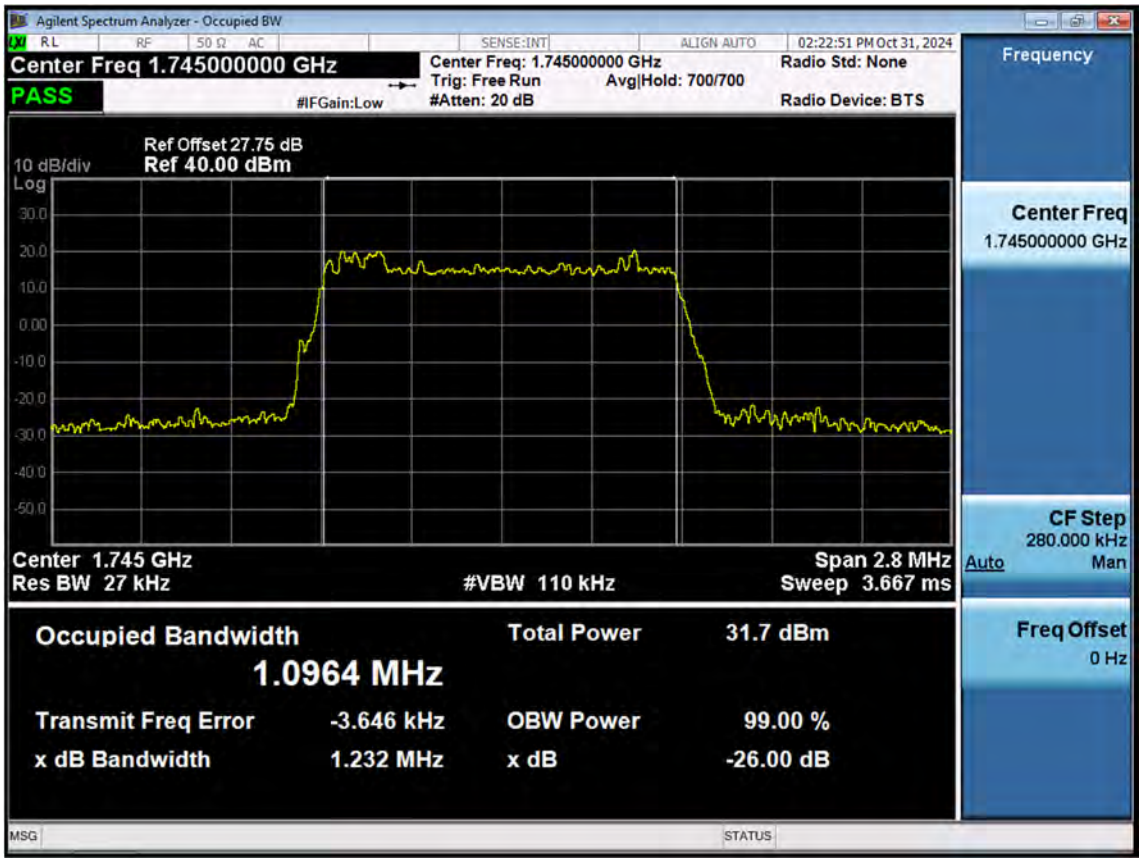

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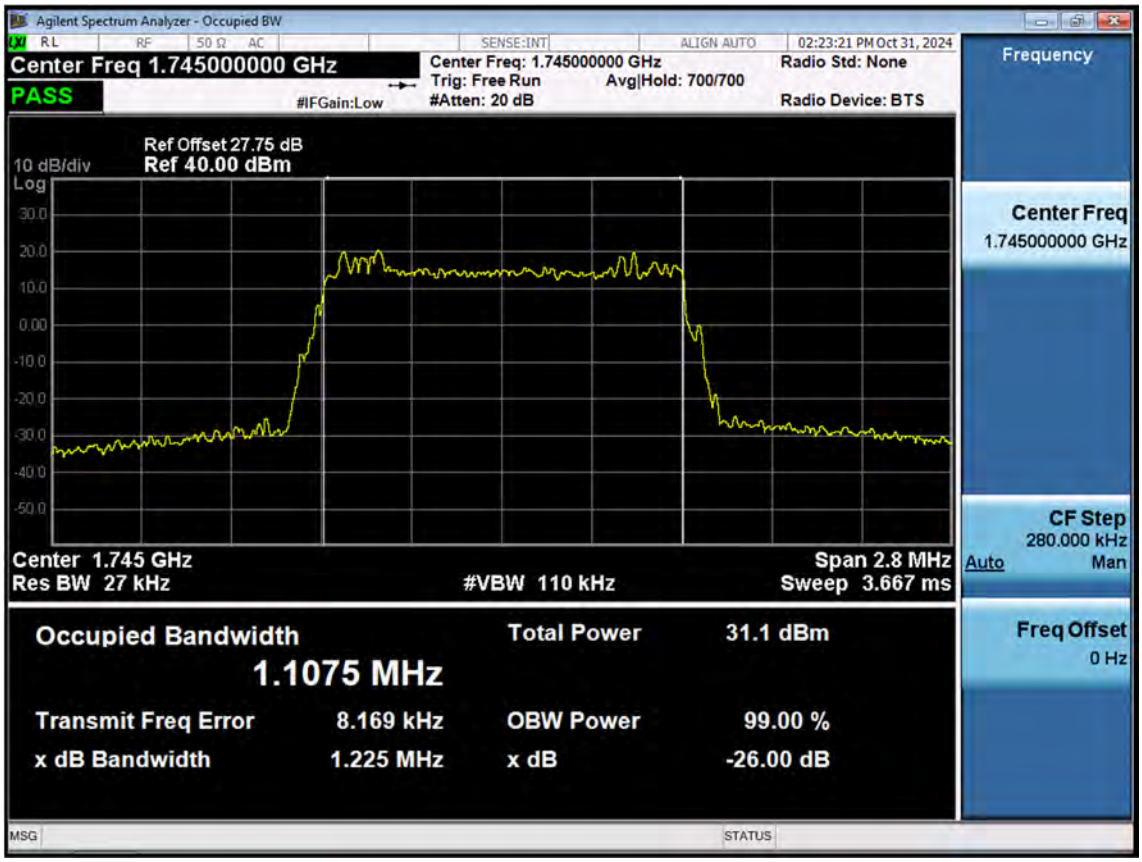
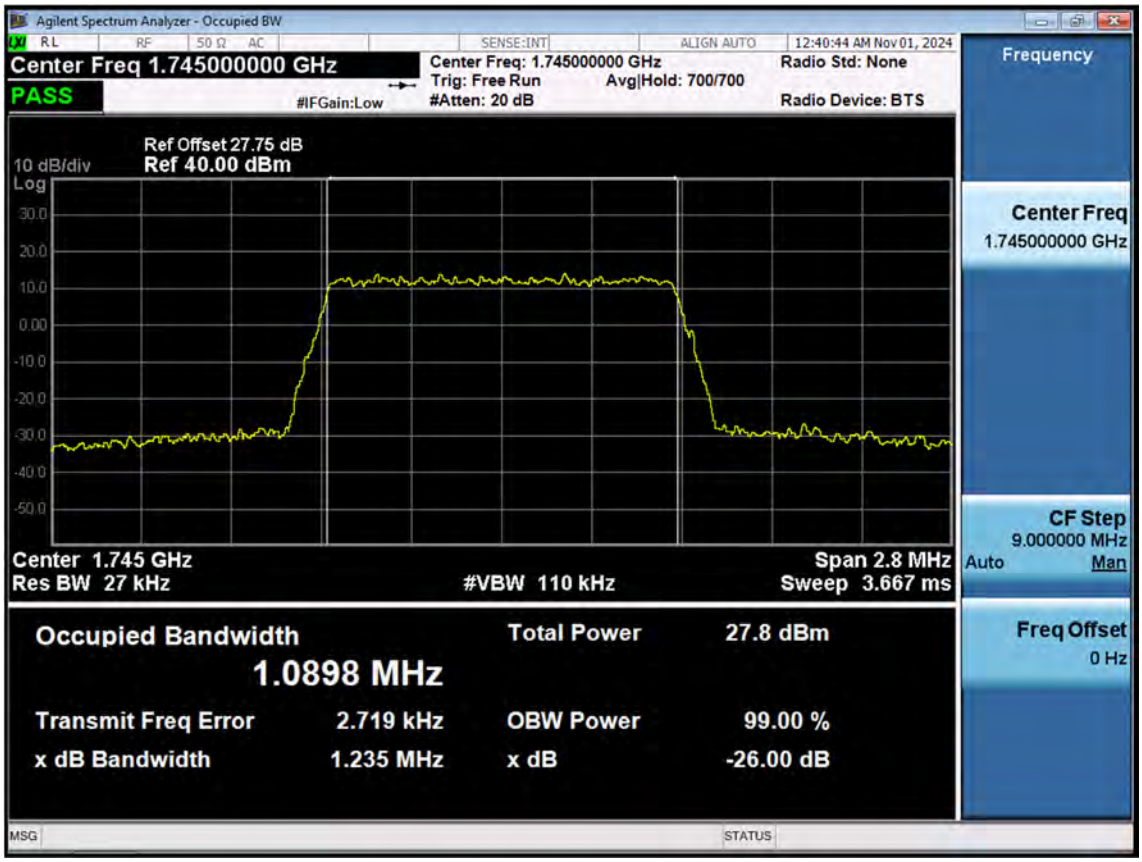
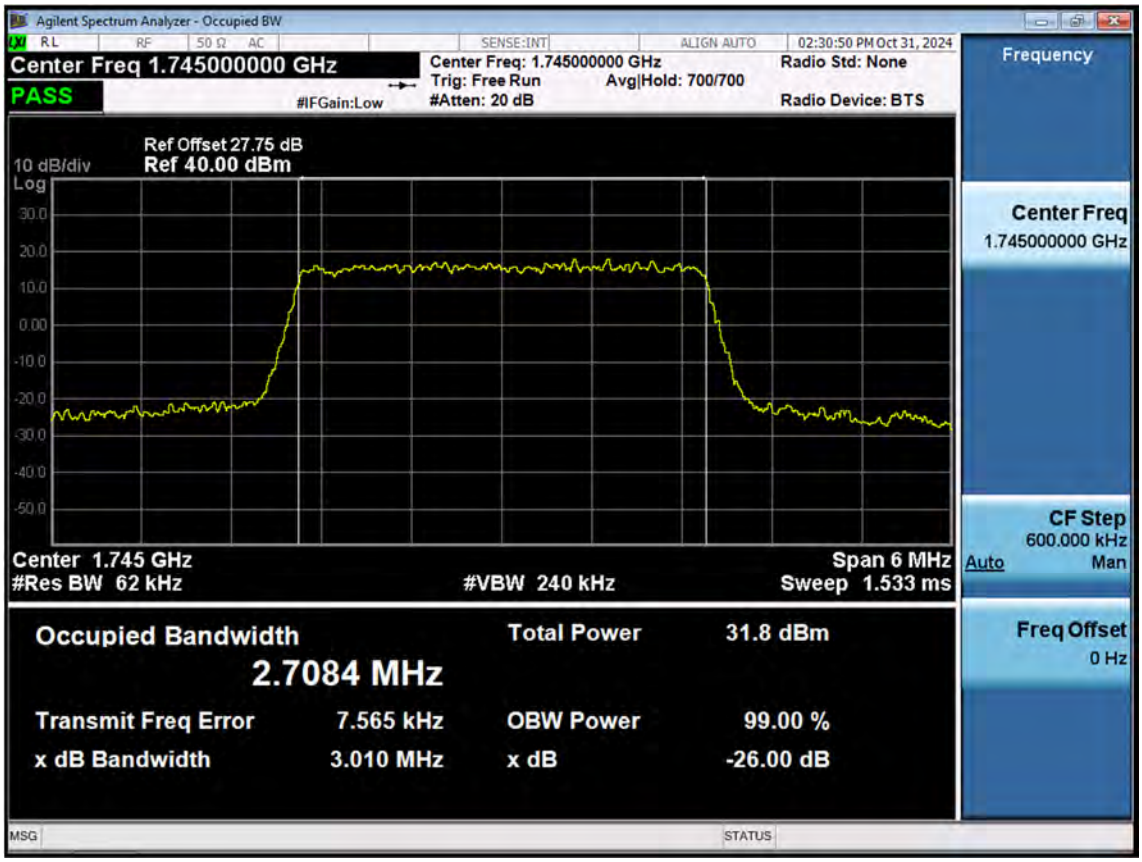


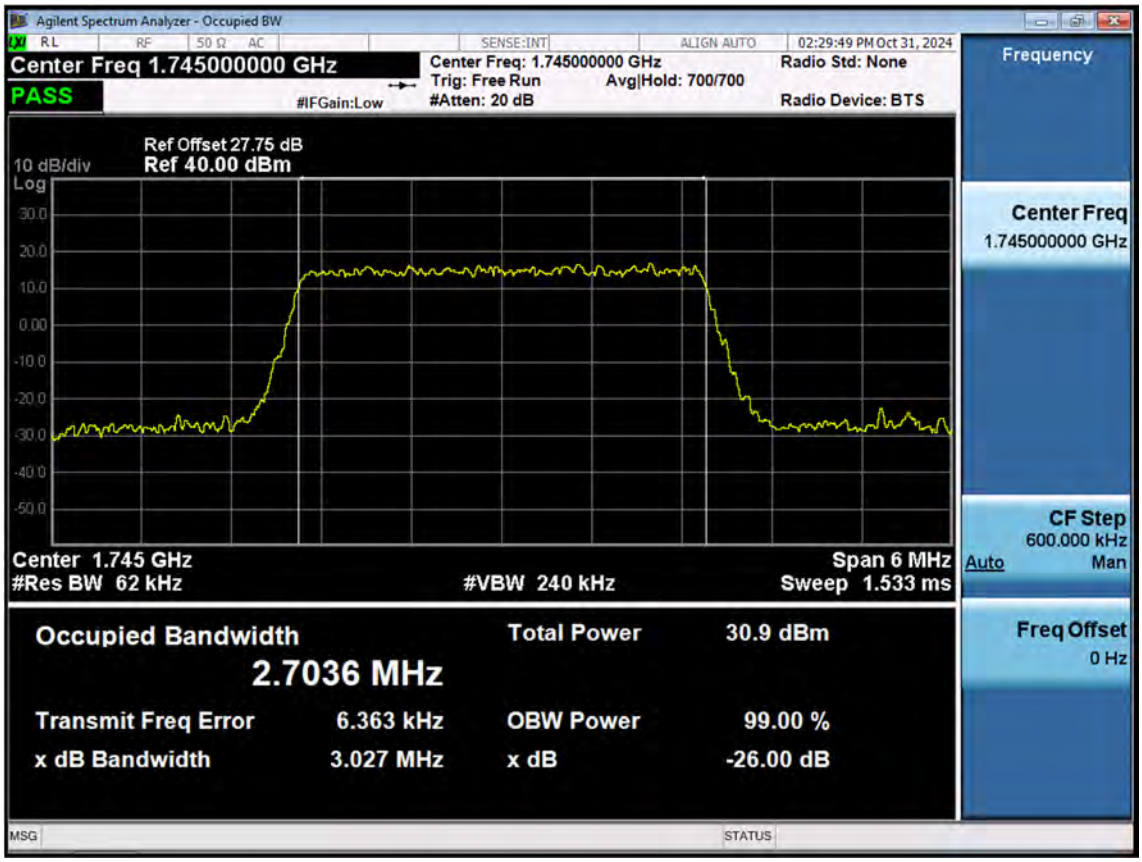
LTE B66_1.4M_OBW_Mid_256QAM_FullRB



LTE B66_3 M_OBW_Mid_QPSK_FullRB



LTE B66_3 M_OBW_Mid_16QAM_FullRB



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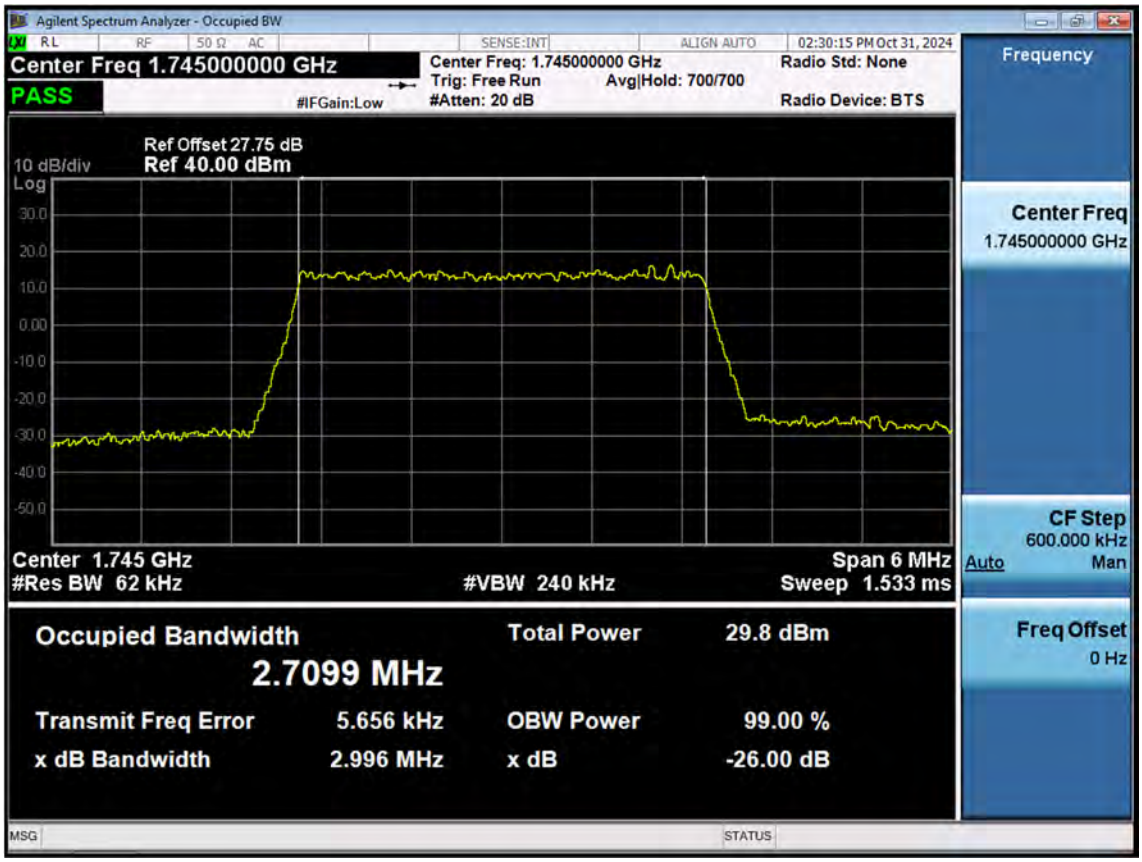
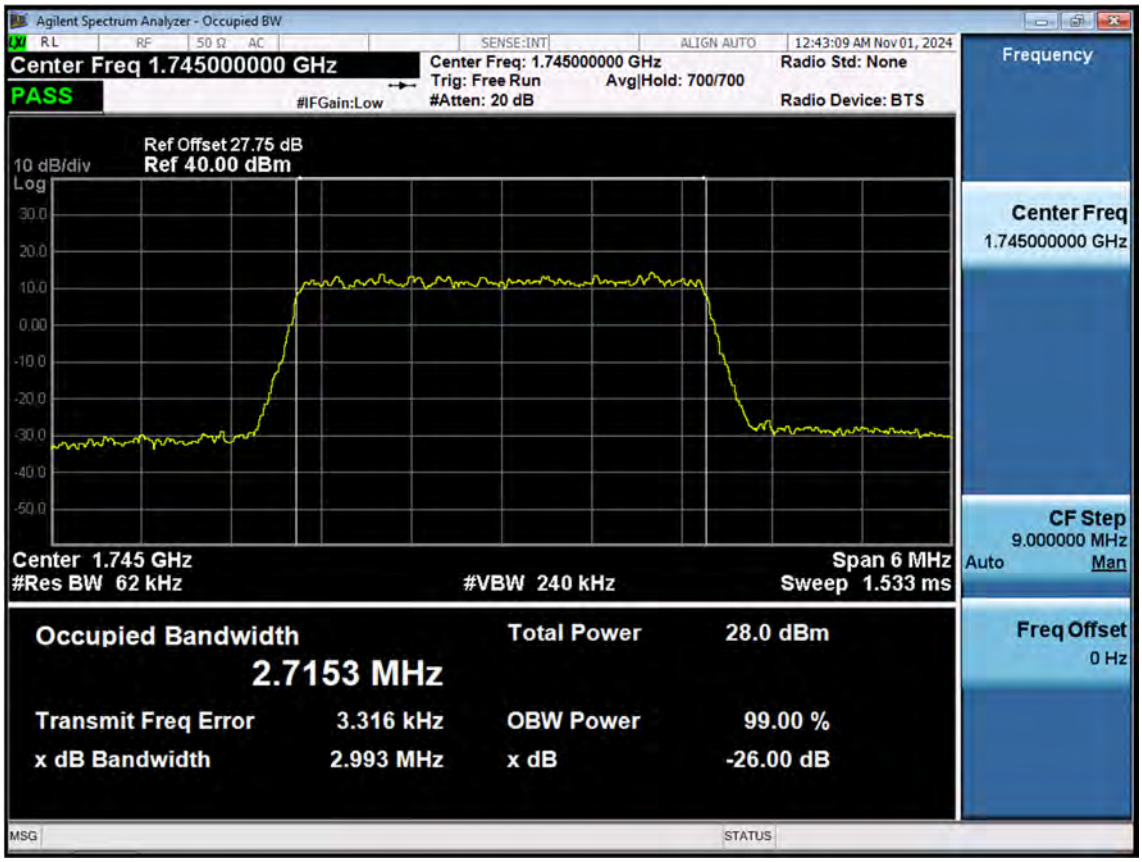
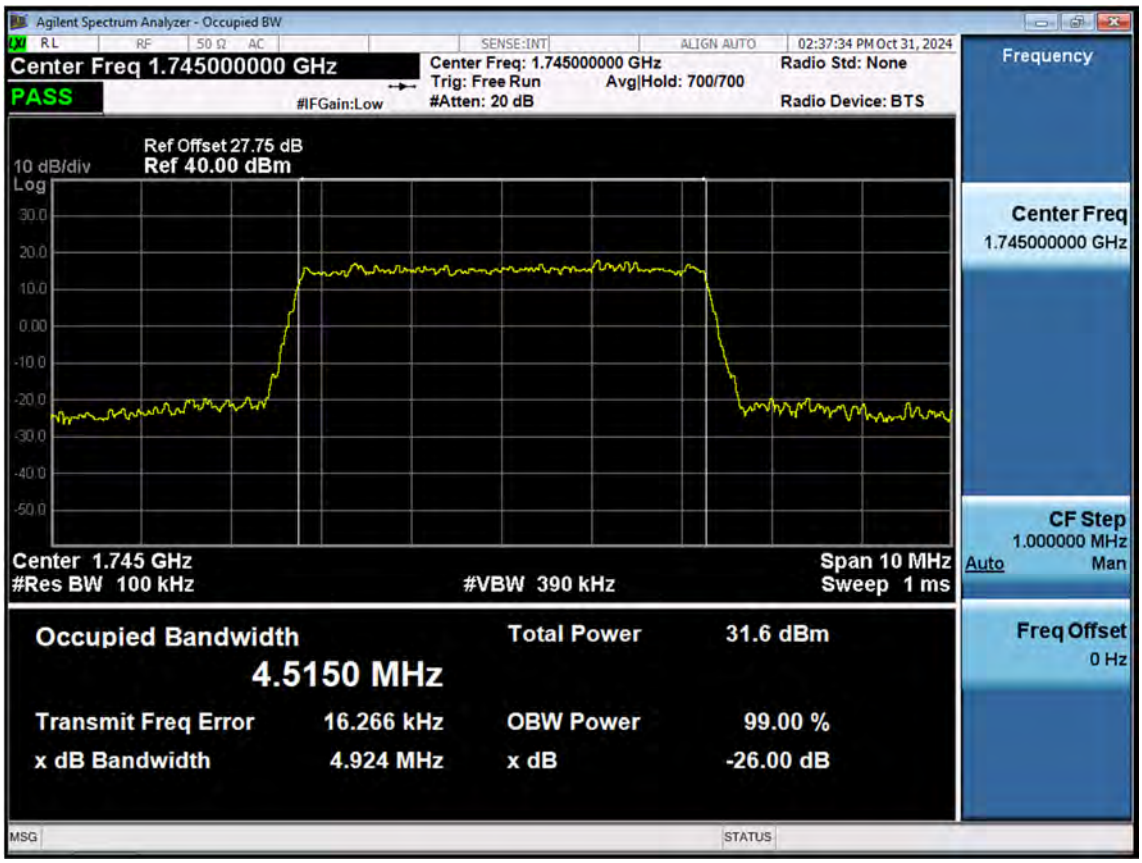


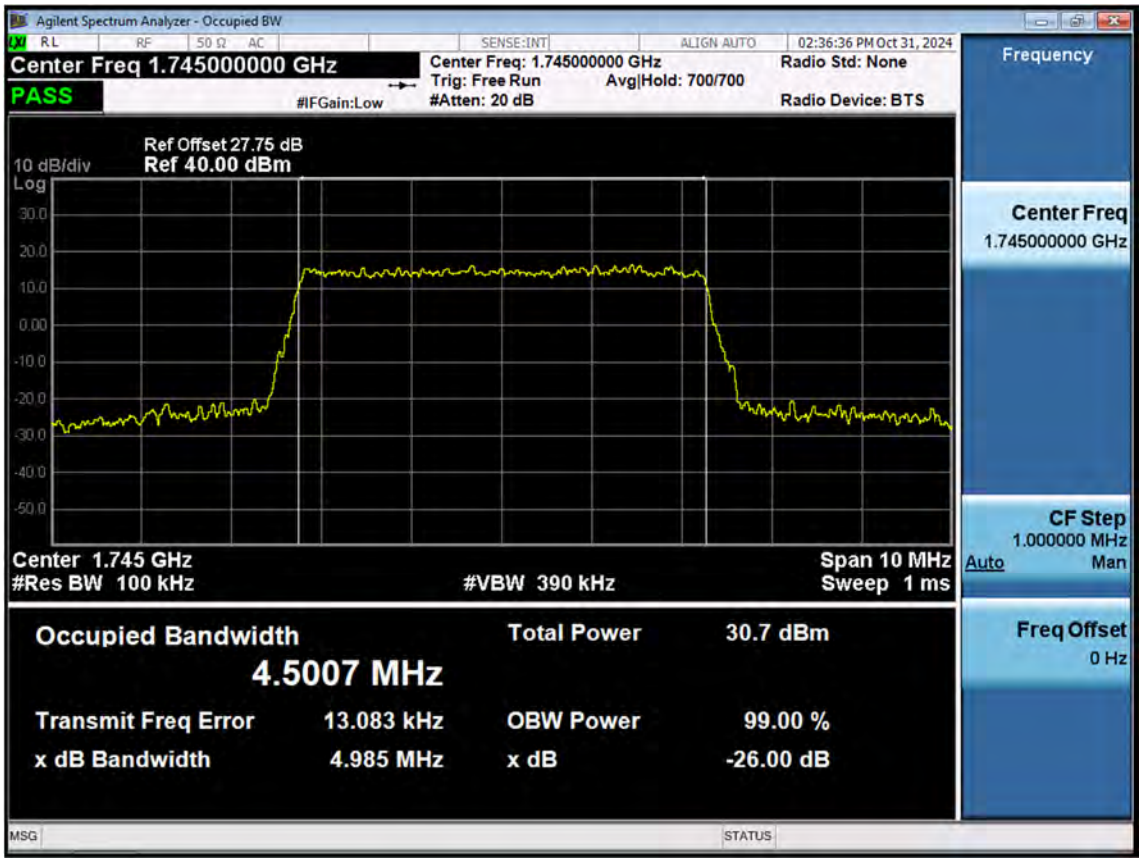
LTE B66_3 M_OBW_Mid_256QAM_FullRB



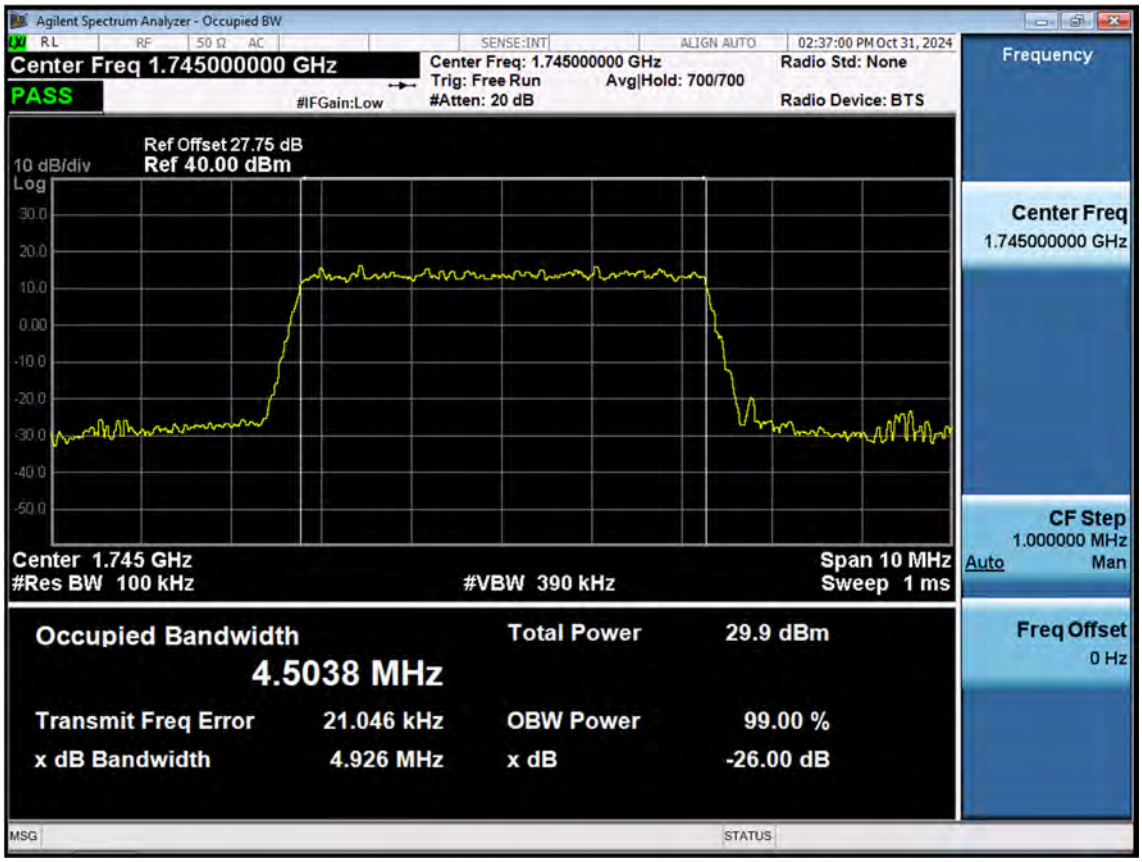
LTE B66_5 M_OBW_Mid_QPSK_FullRB



LTE B66_5 M_OBW_Mid_16QAM_FullRB



LTE B66_5 M_OBW_Mid_64QAM_FullRB



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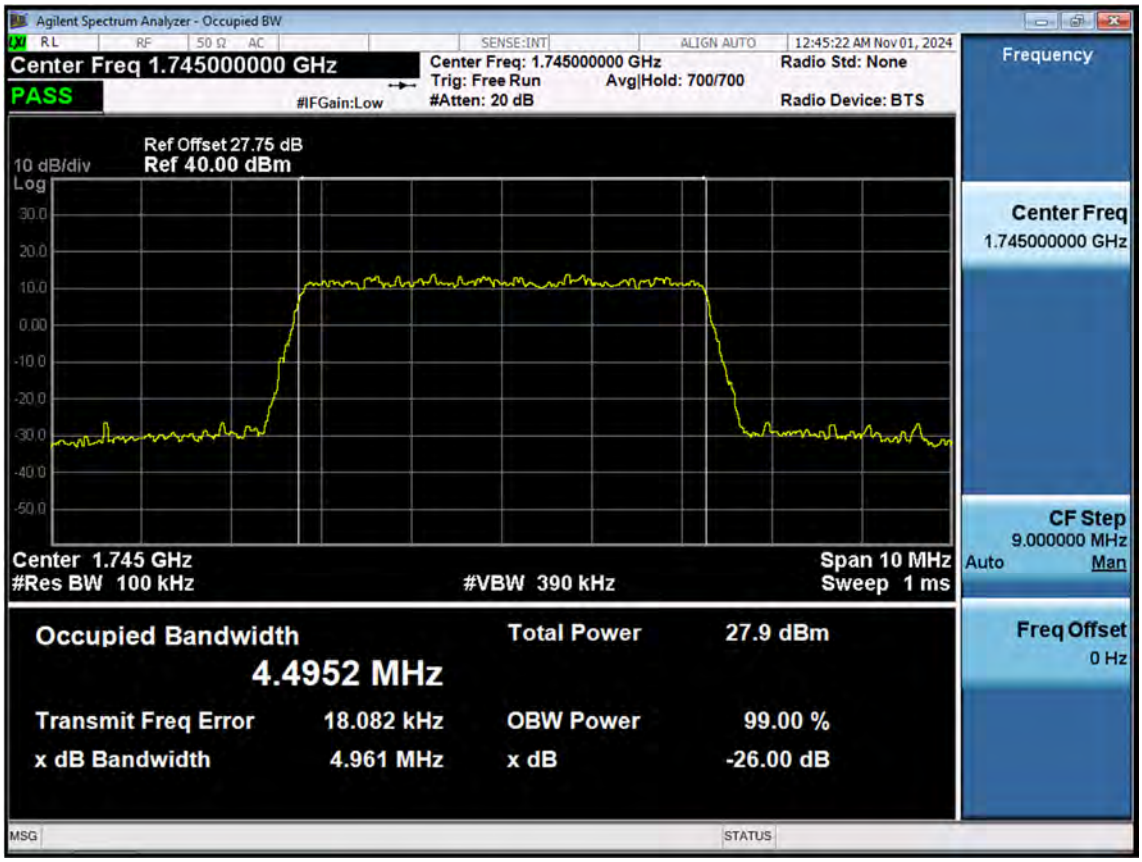
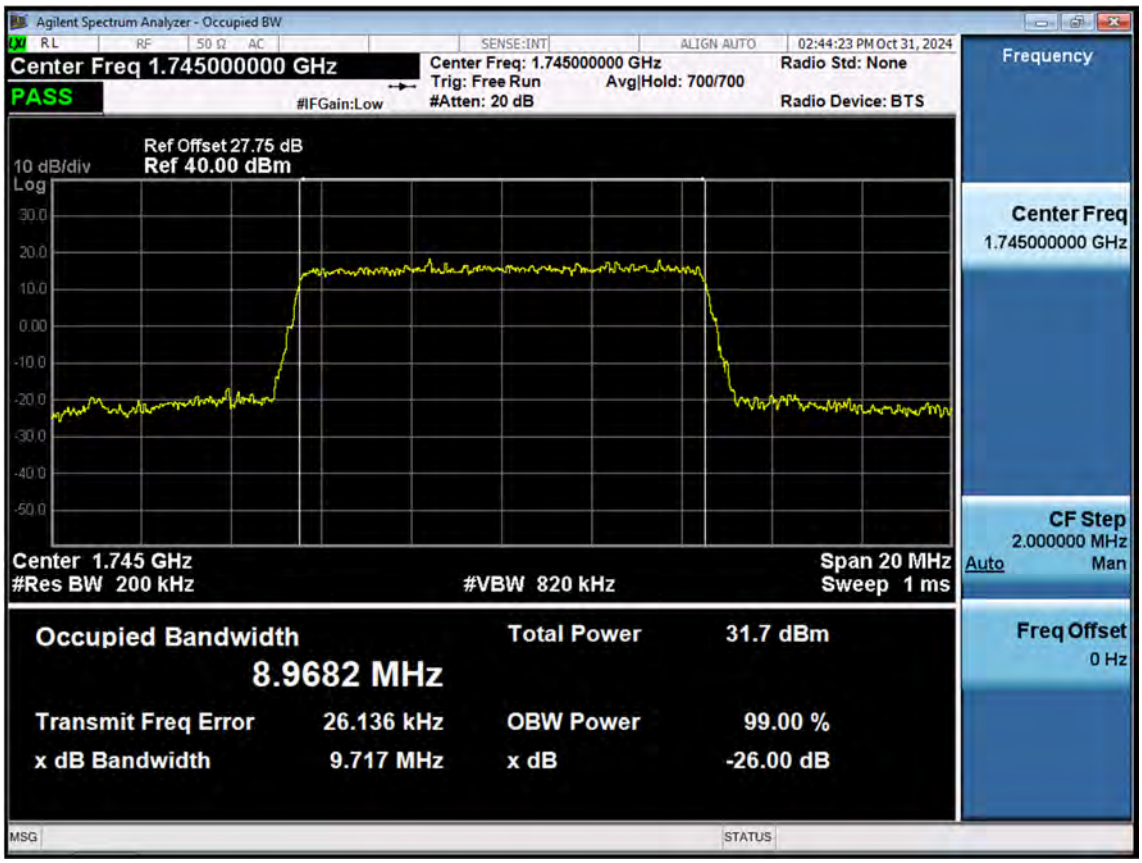


LTE B66_10 M_OBW_Mid_QPSK_FullRB



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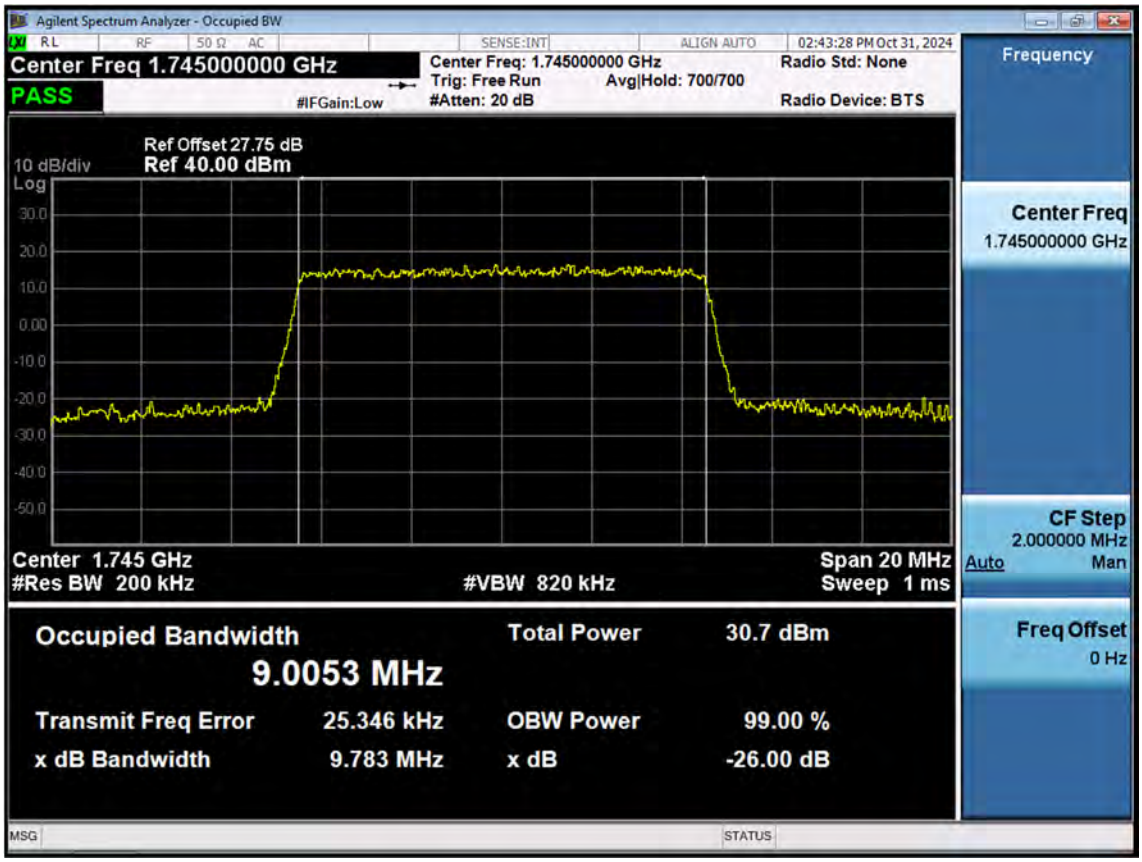

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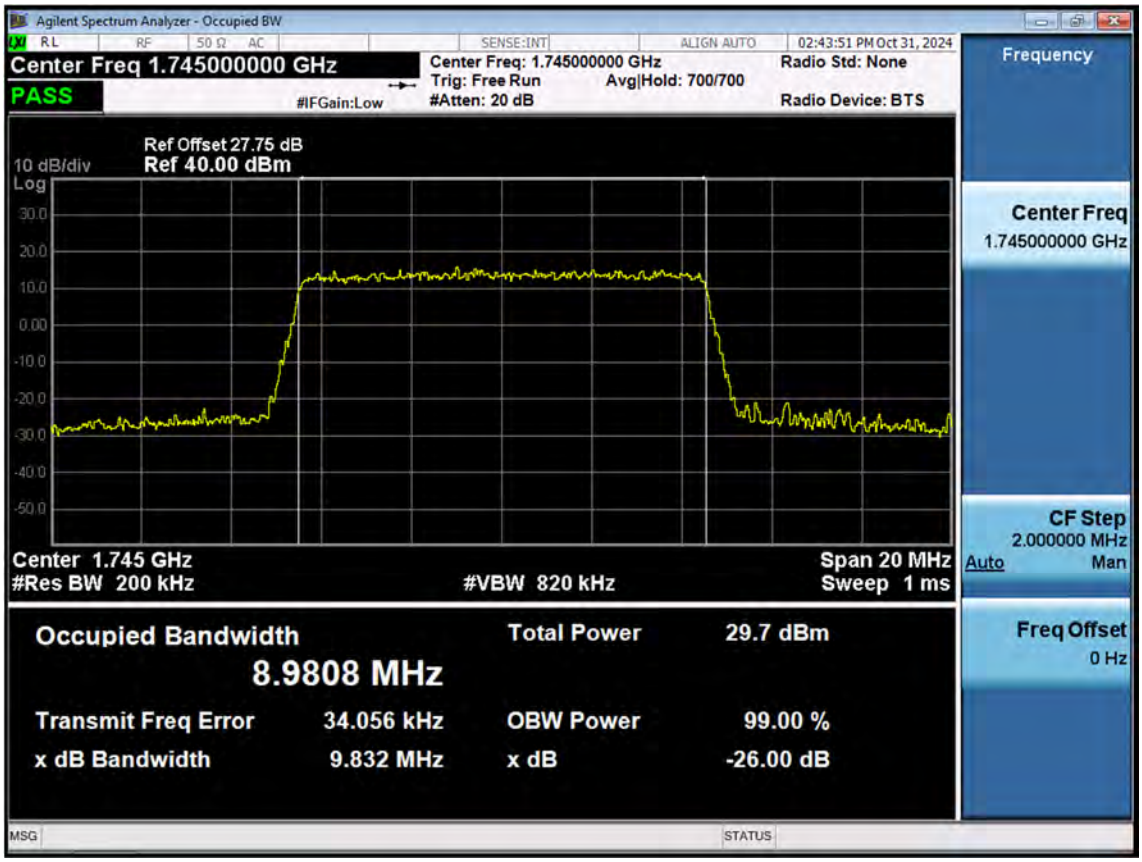
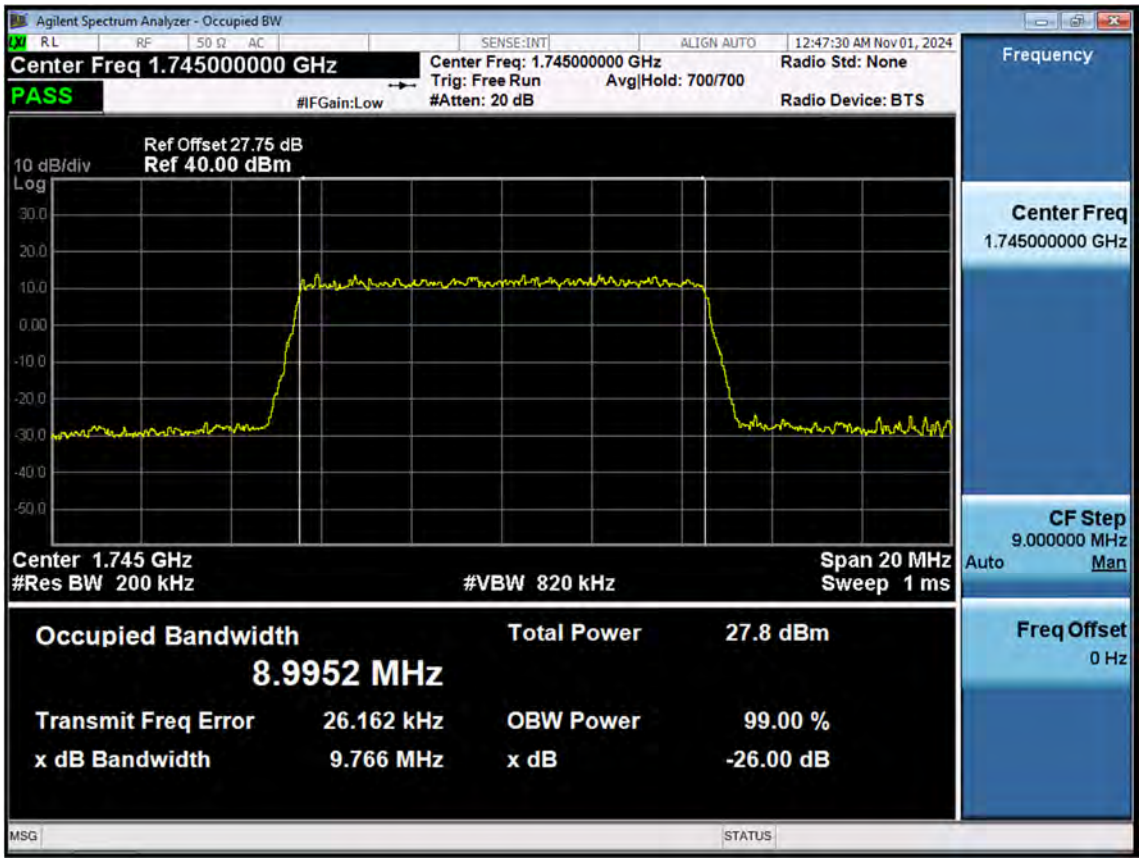
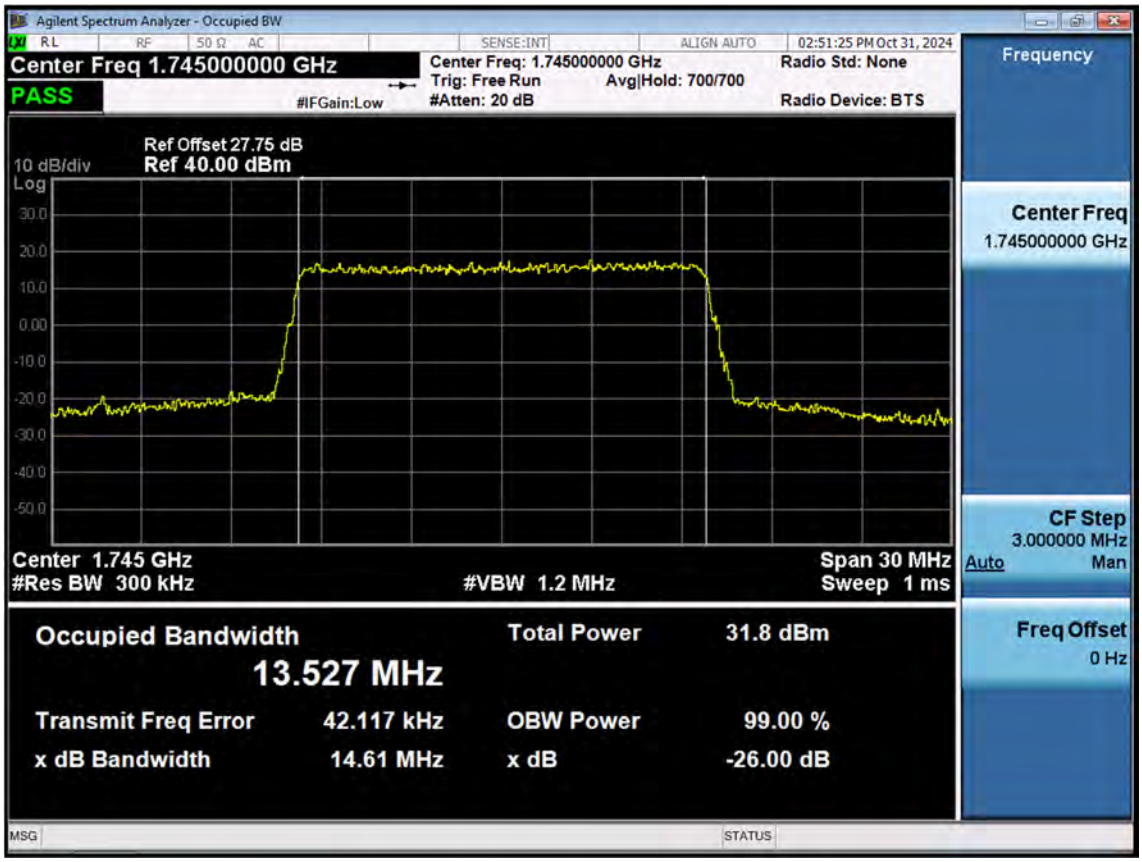


LTE B66_10 M_OBW_Mid_256QAM_FullRB



LTE B66_15 M_OBW_Mid_QPSK_FullRB



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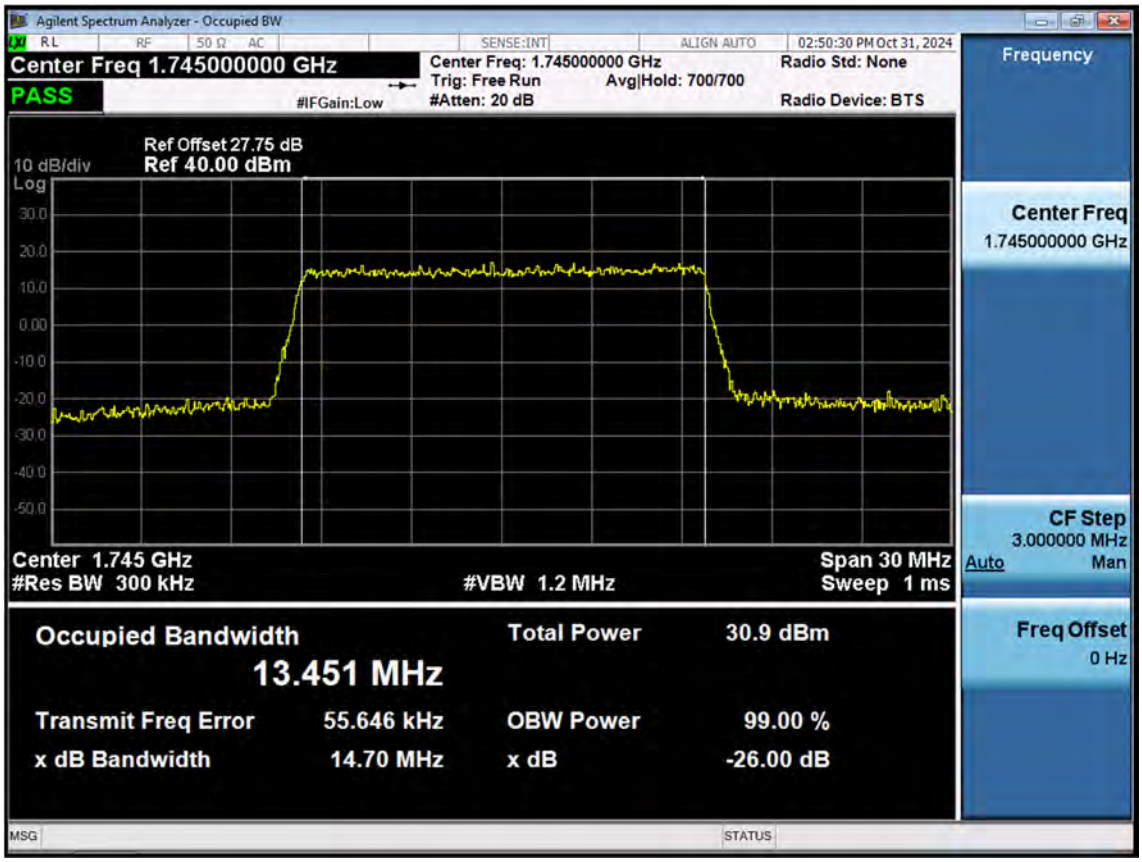

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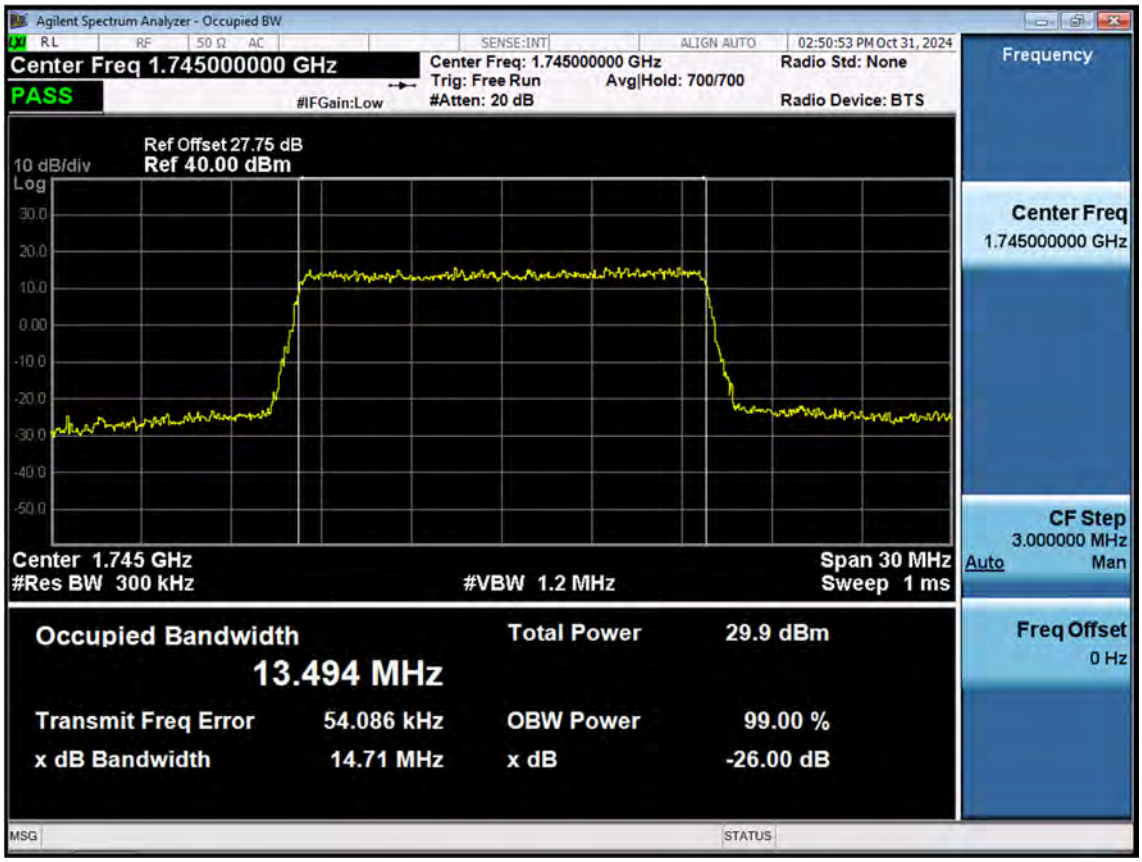

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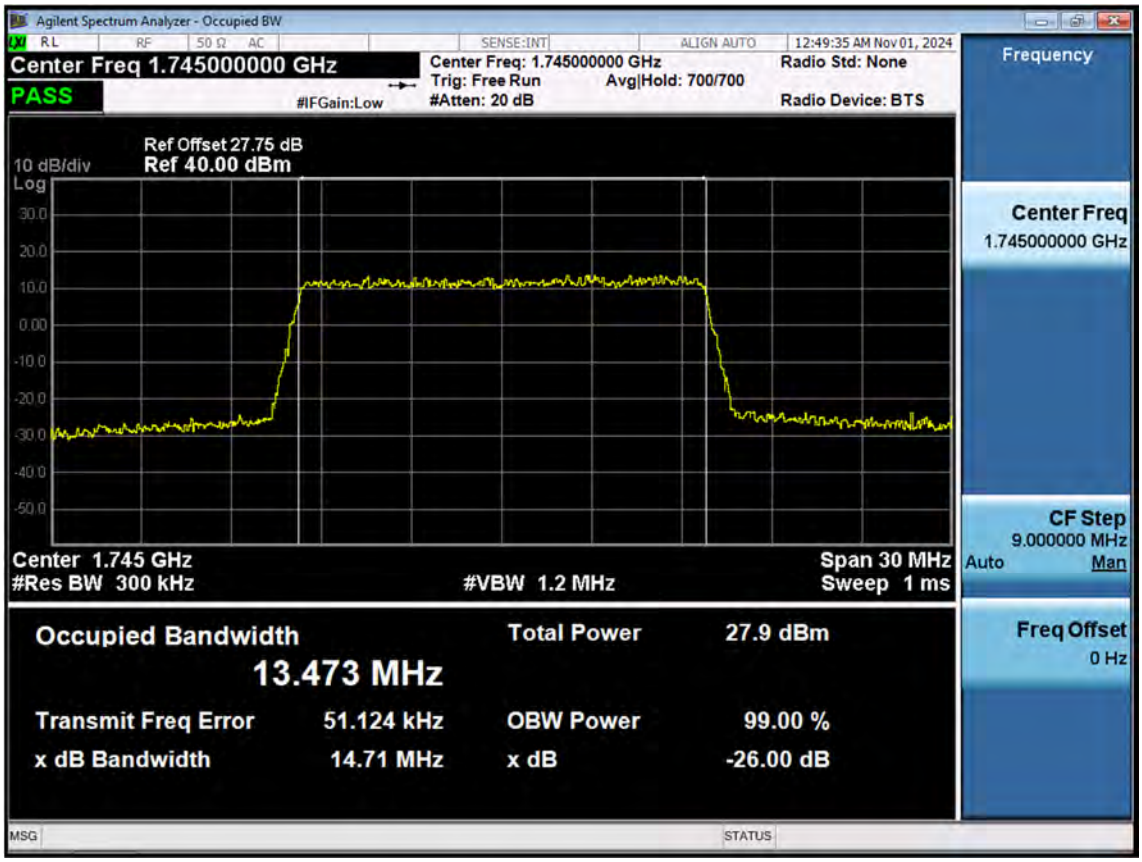
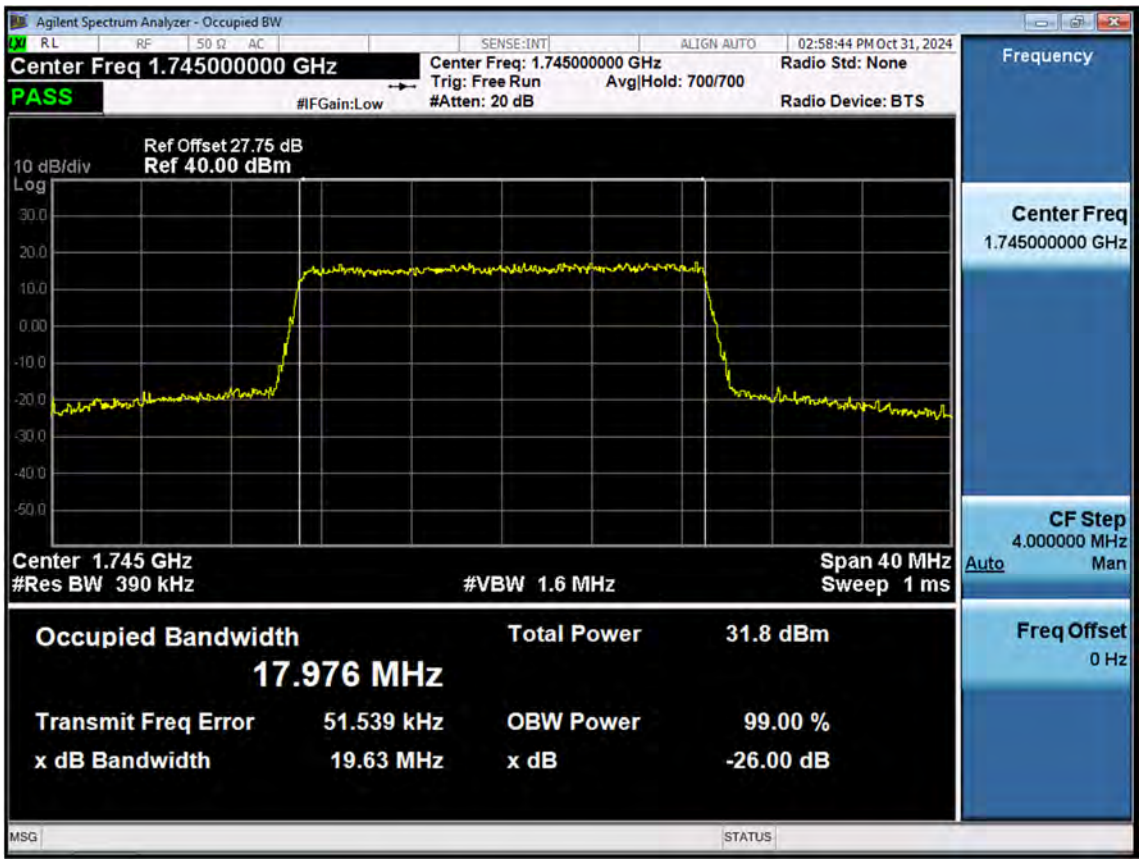


LTE B66_20 M_OBW_Mid_QPSK_FullRB



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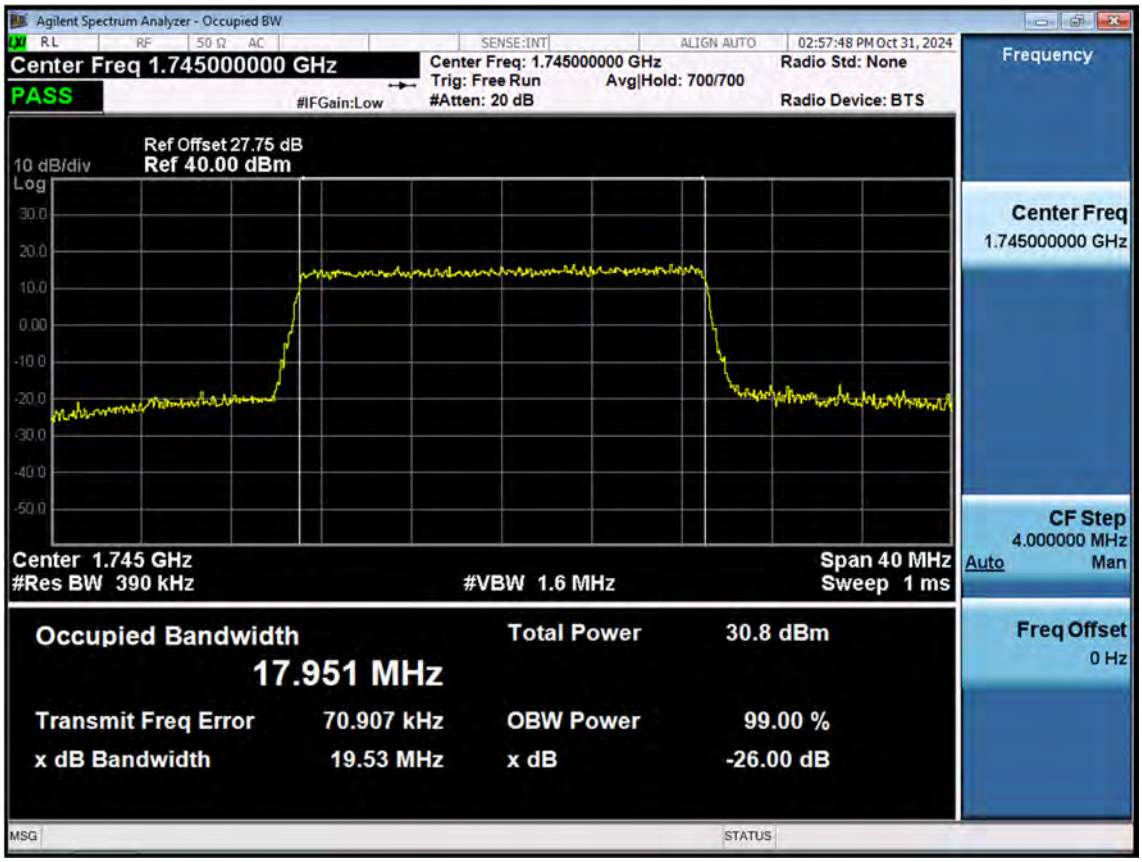

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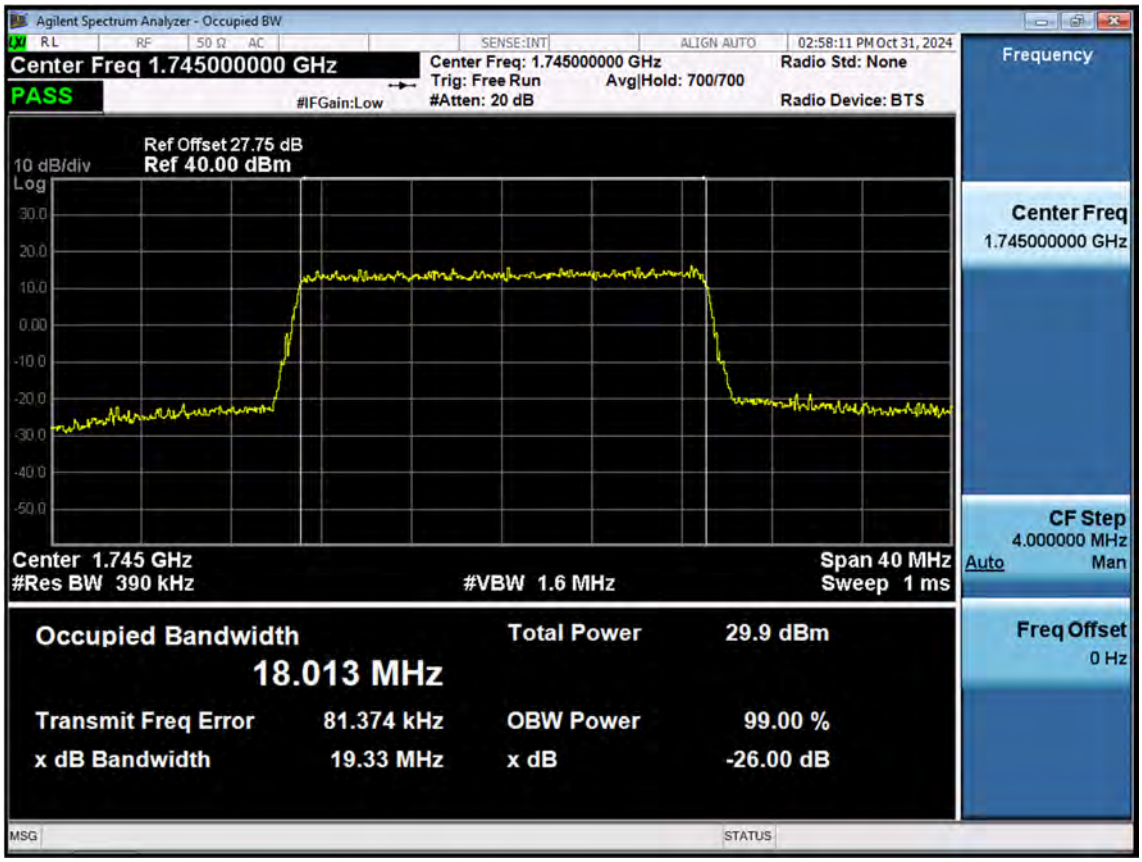

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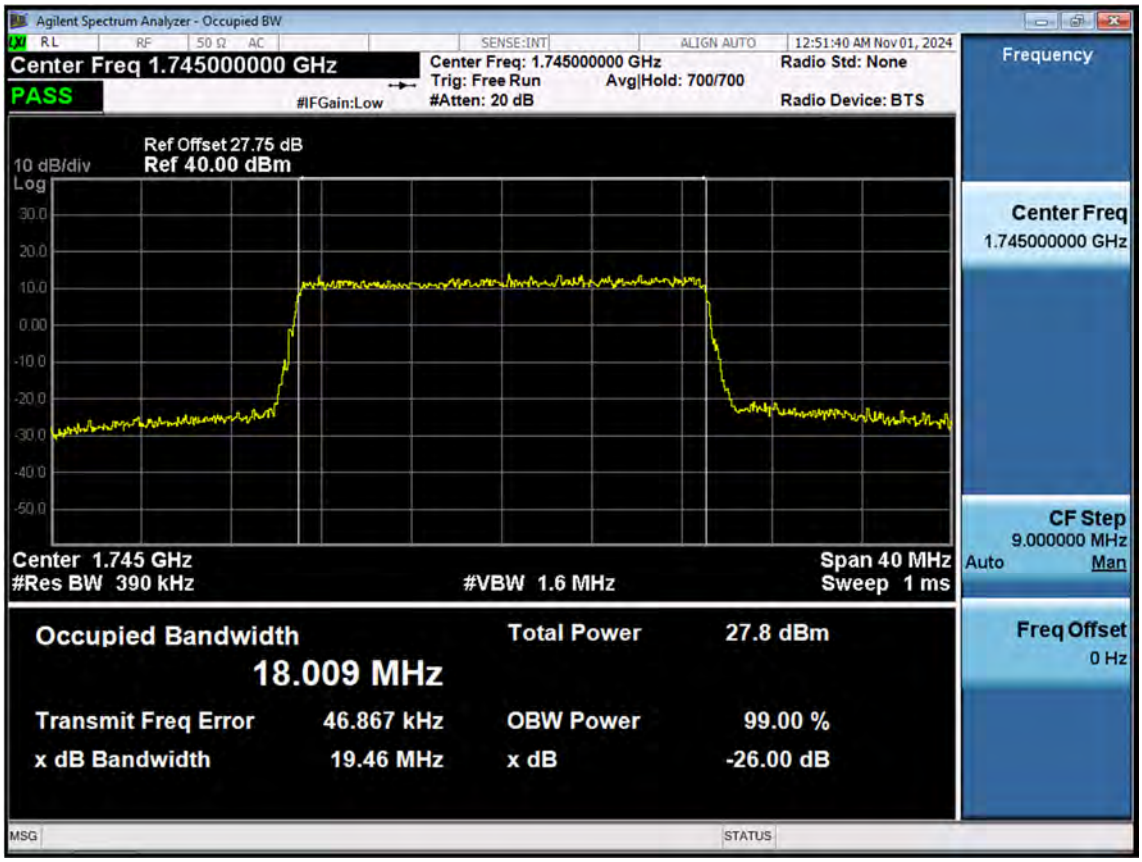
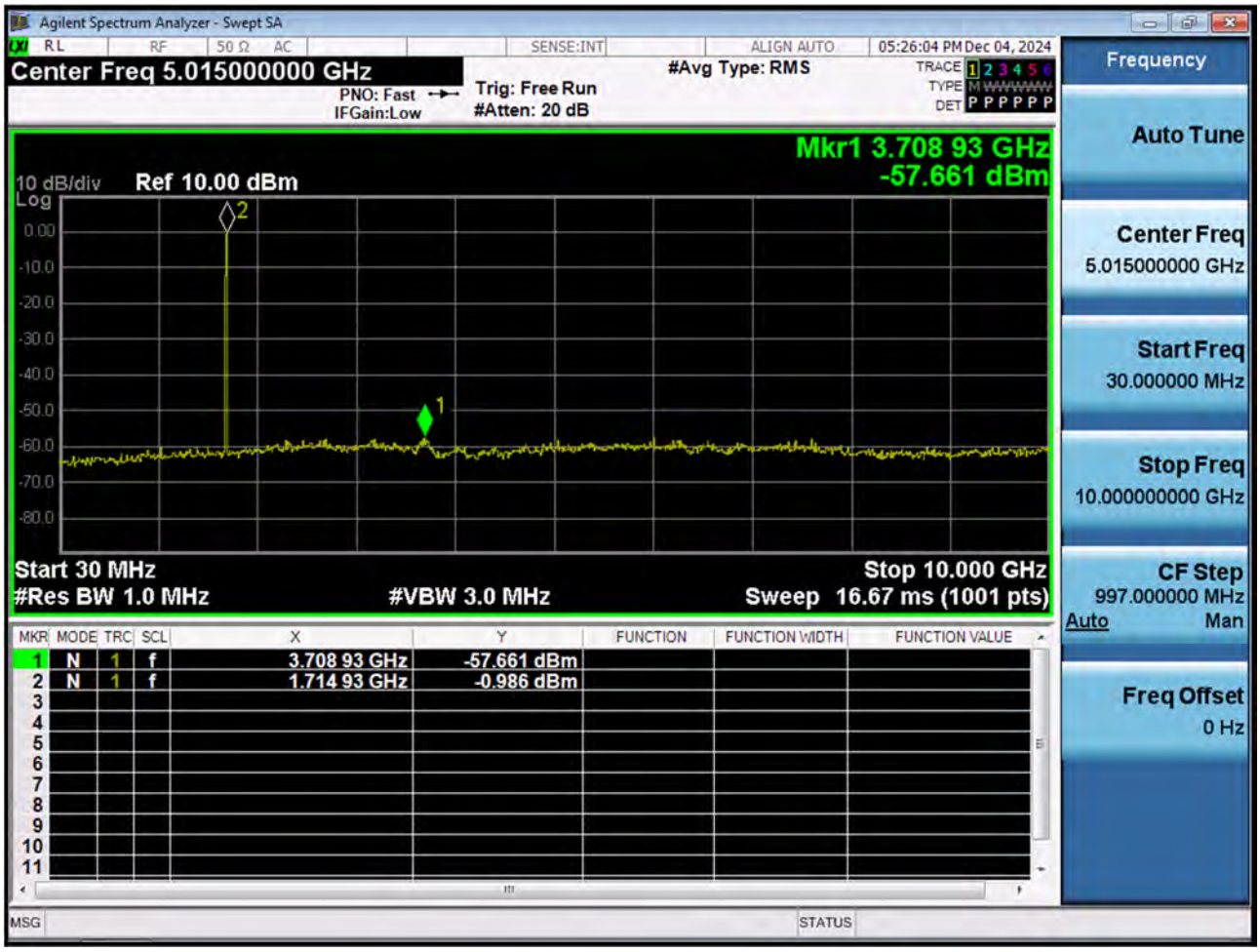
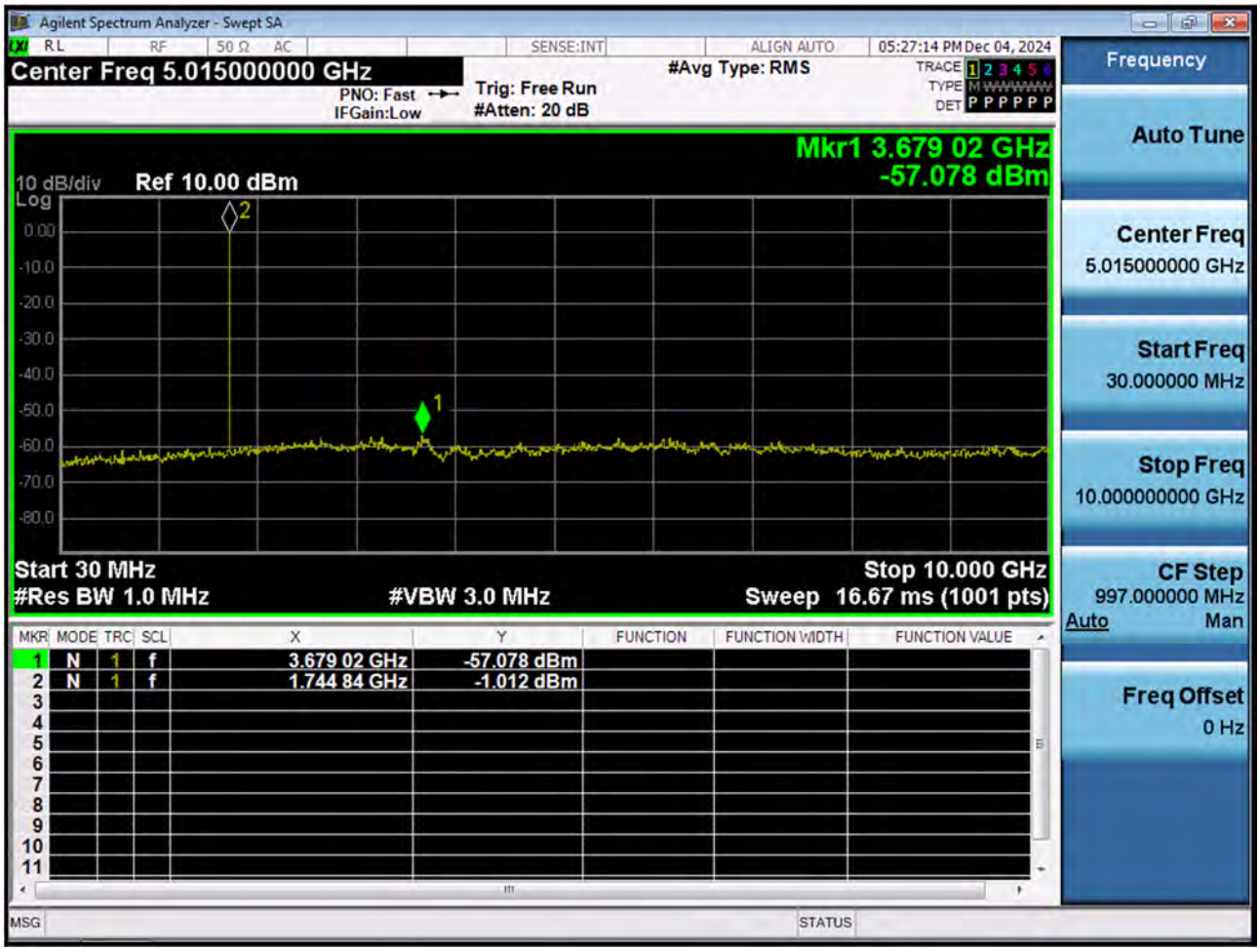


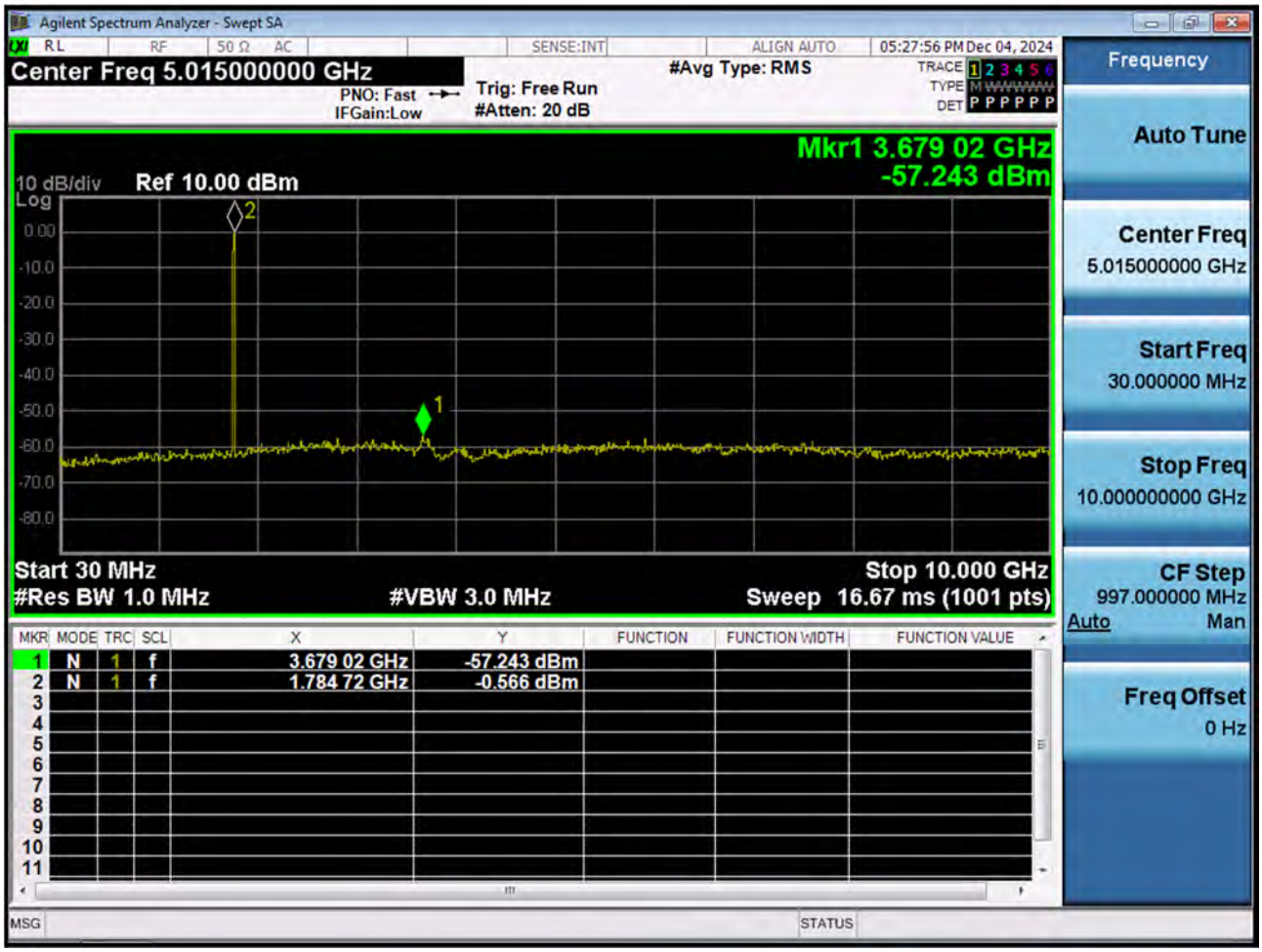
LTE B66_1.4M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



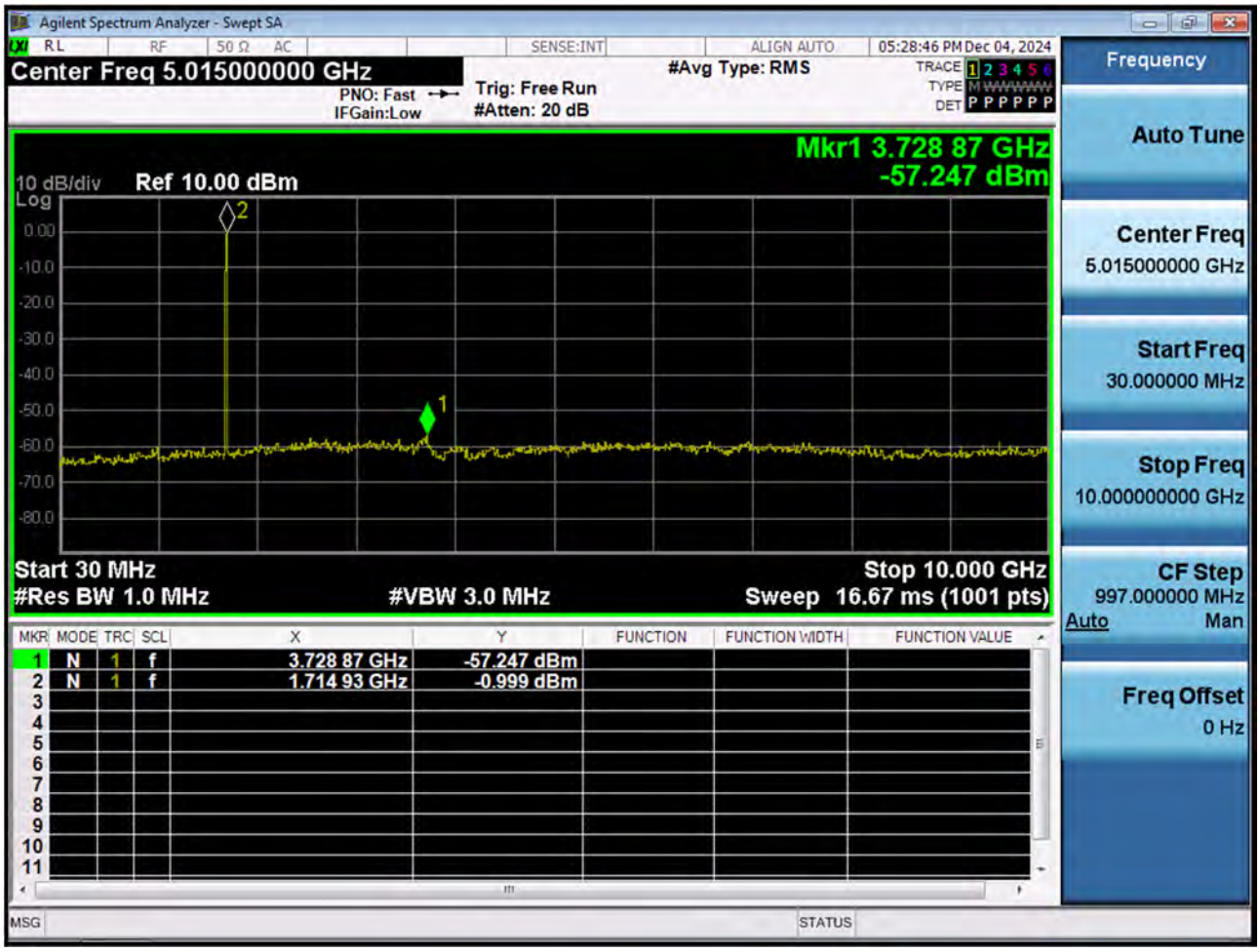
LTE B66_1.4M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



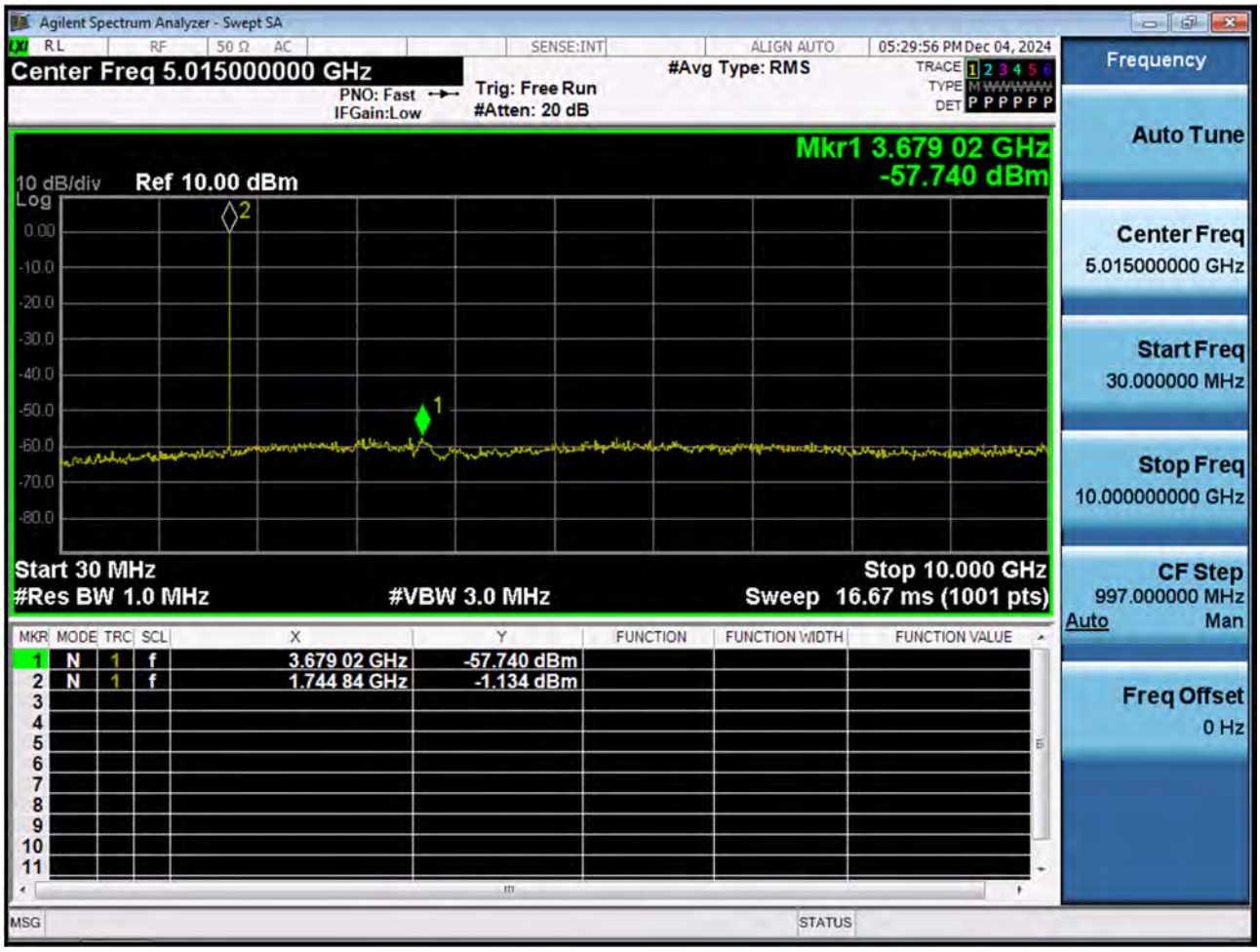
LTE B66_1.4M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



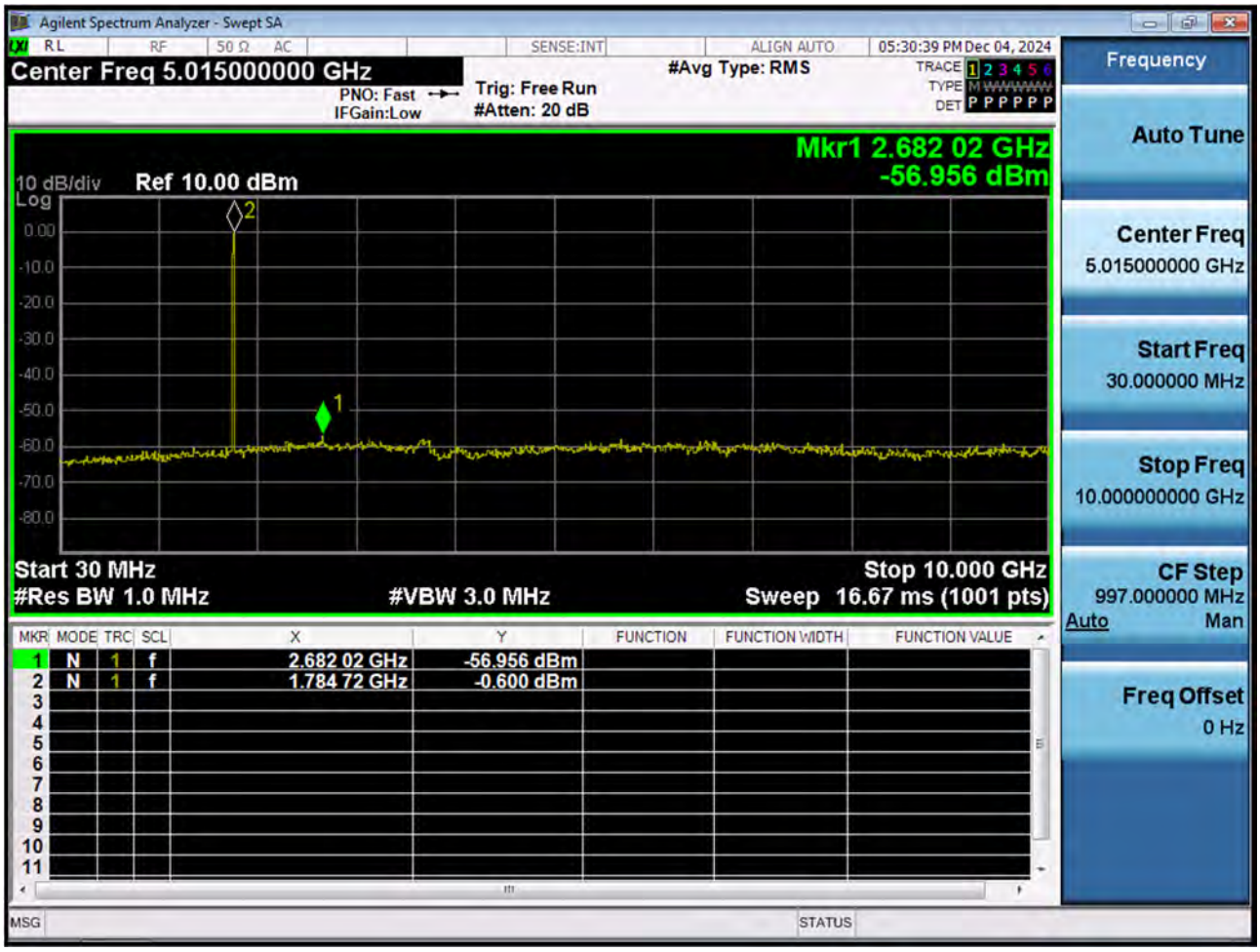
LTE B66_3 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



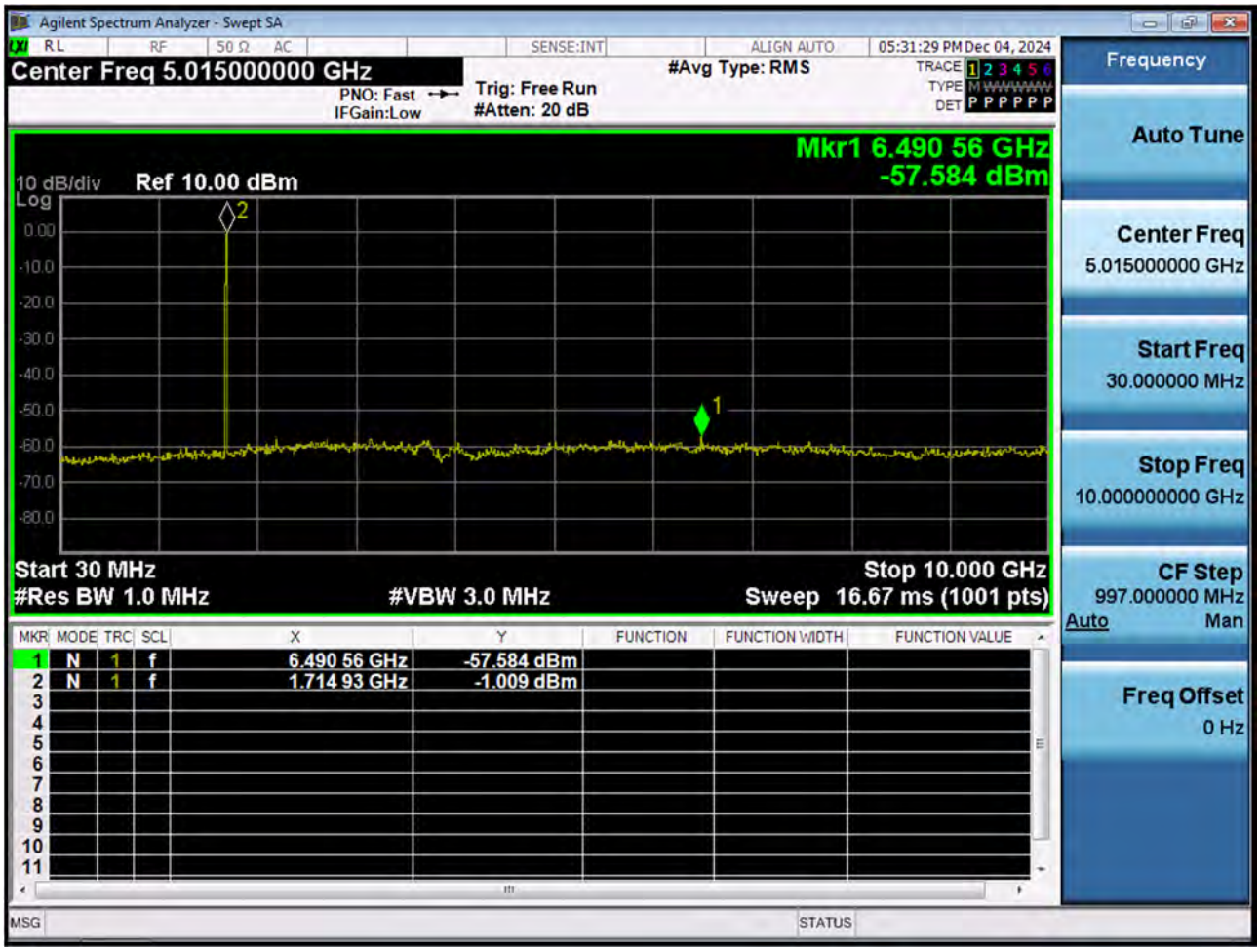
LTE B66_3 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



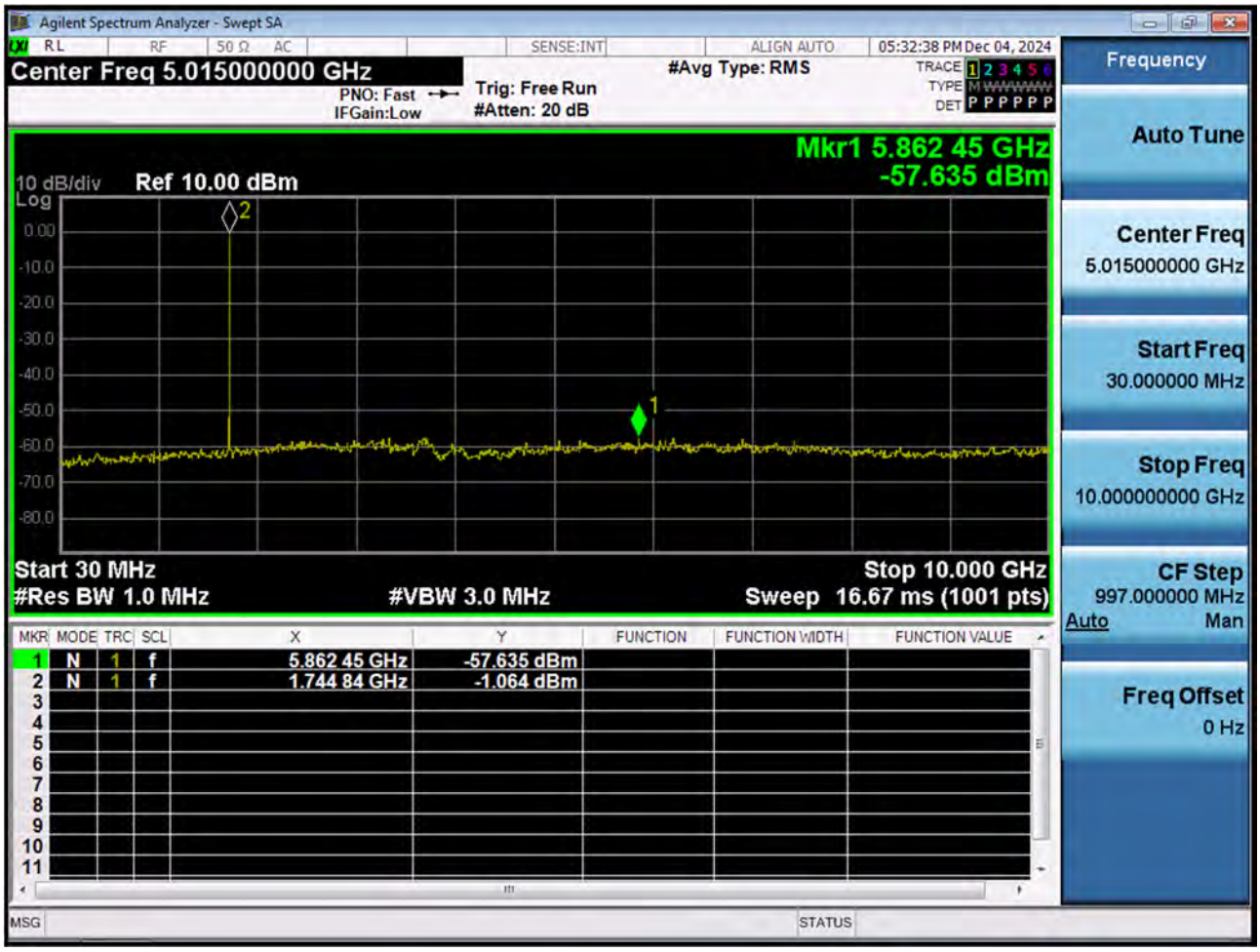
LTE B66_3 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



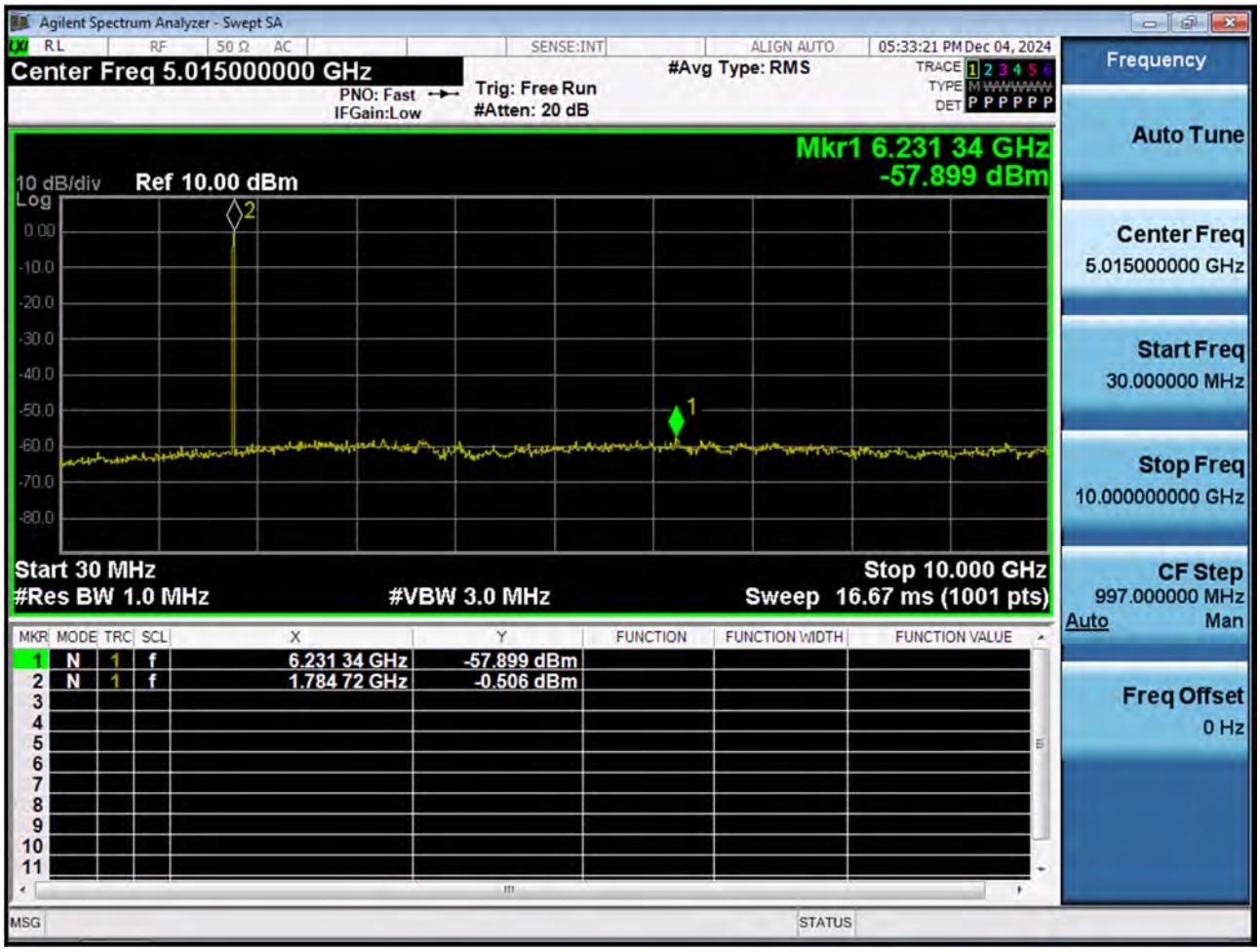
LTE B66_5 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



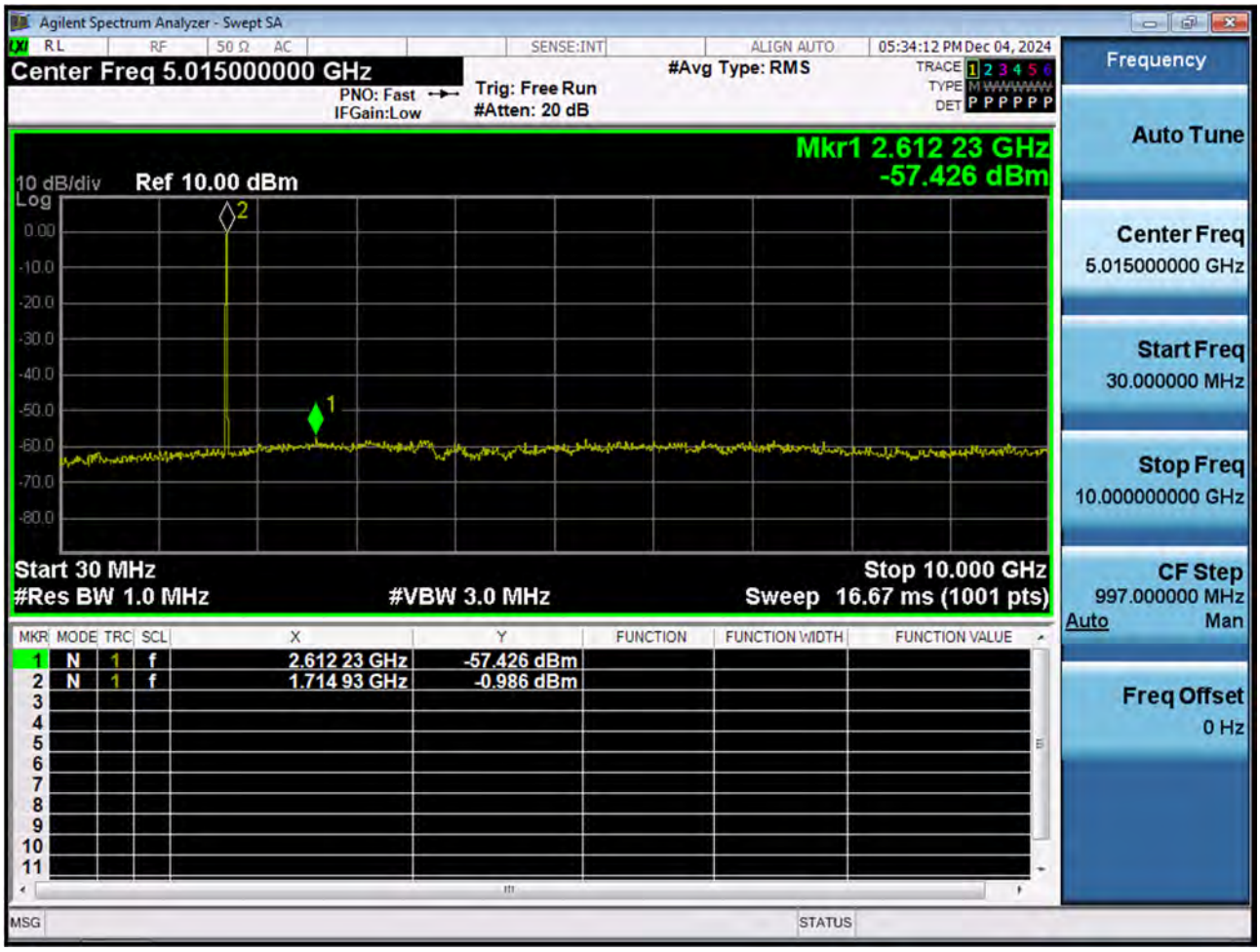
LTE B66_5 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



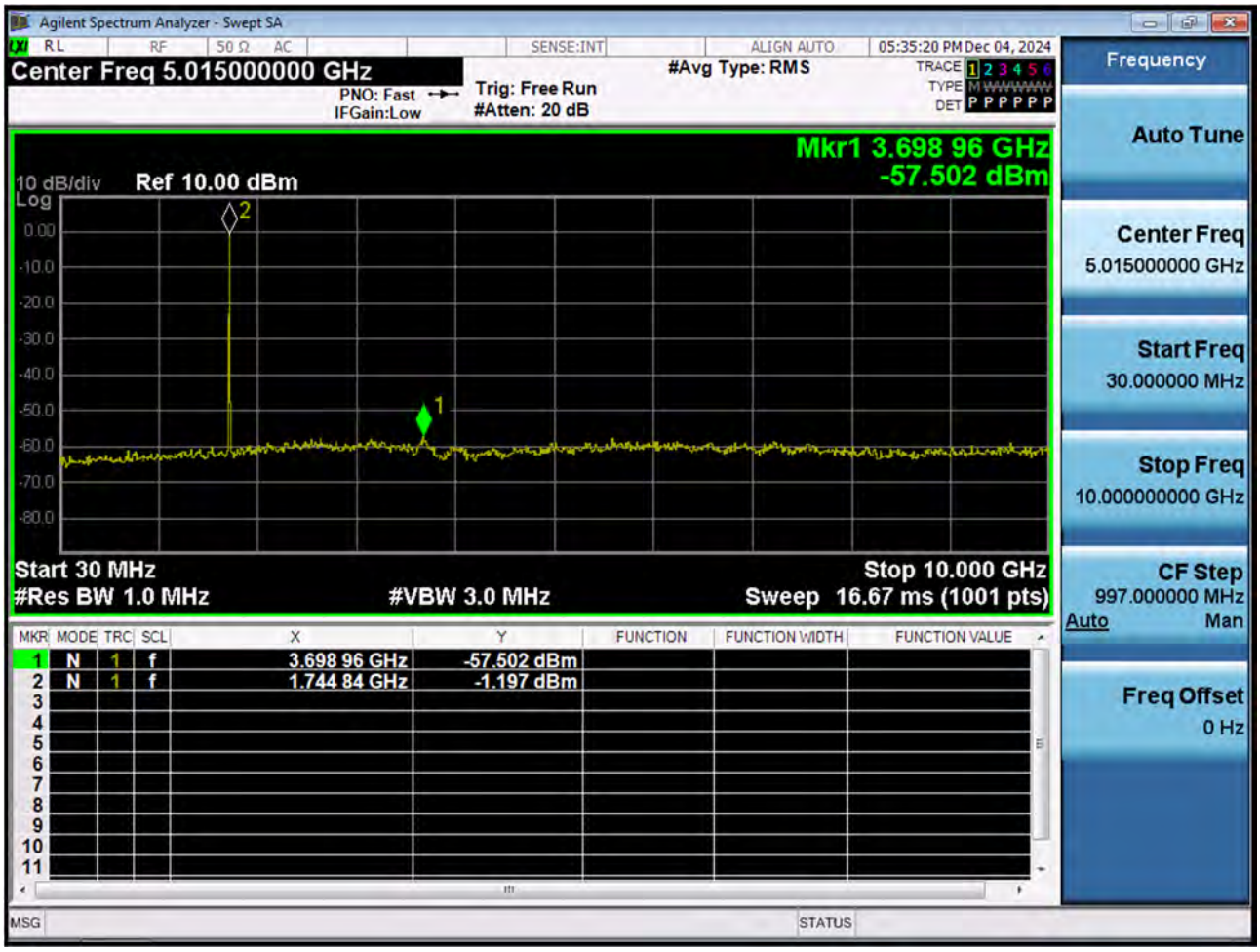
LTE B66_5 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



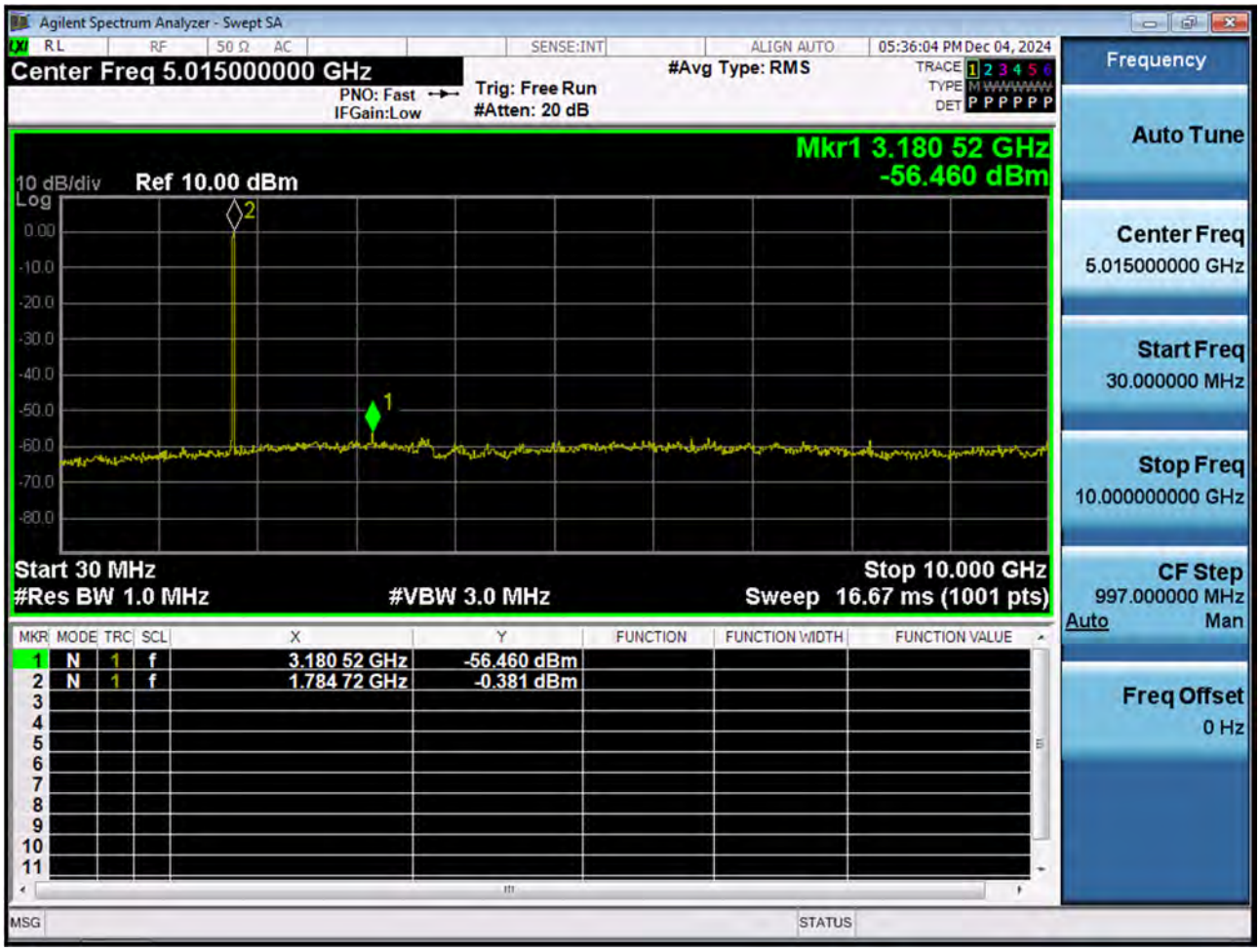
LTE B66_10 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



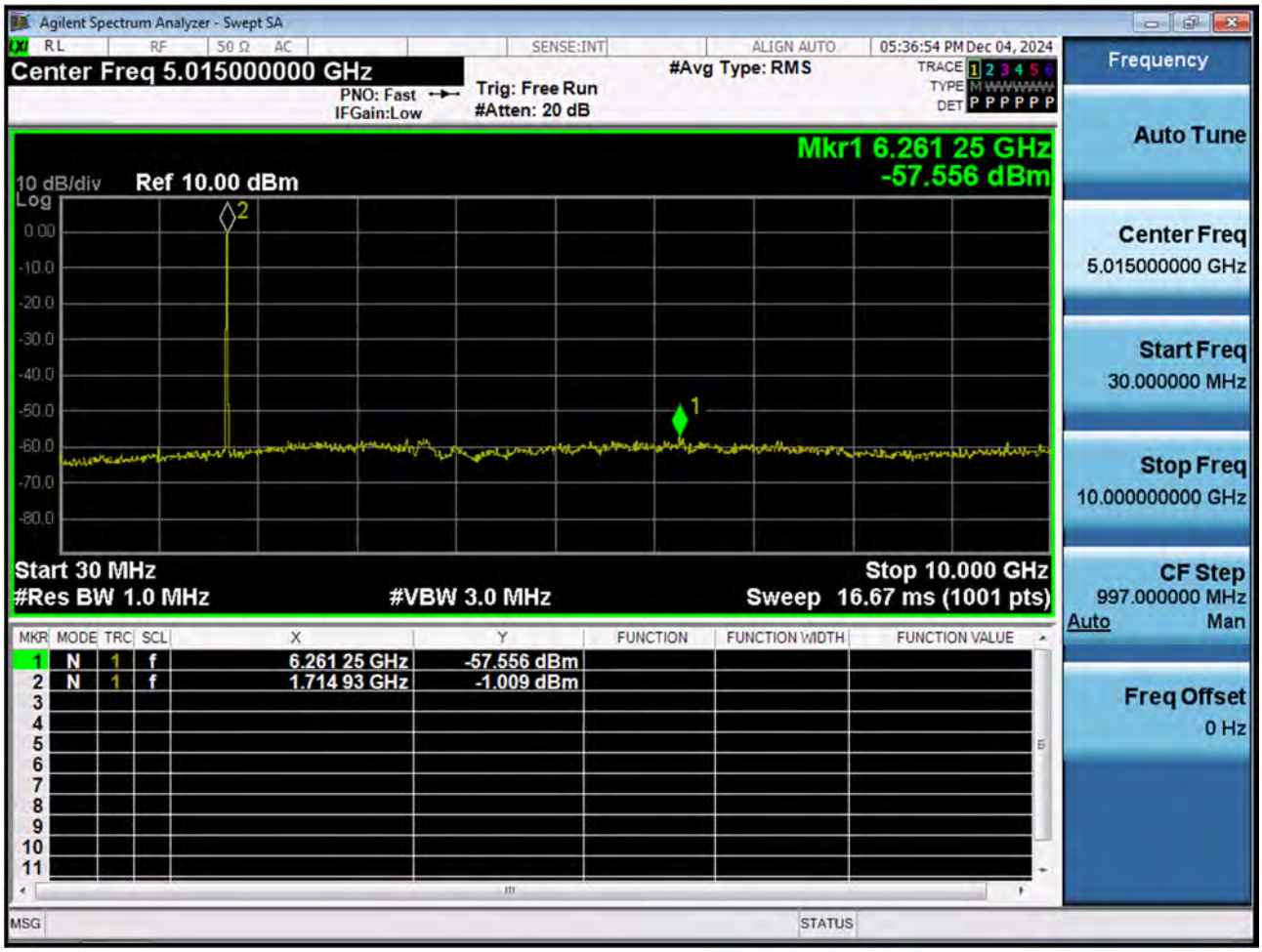
LTE B66_10 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



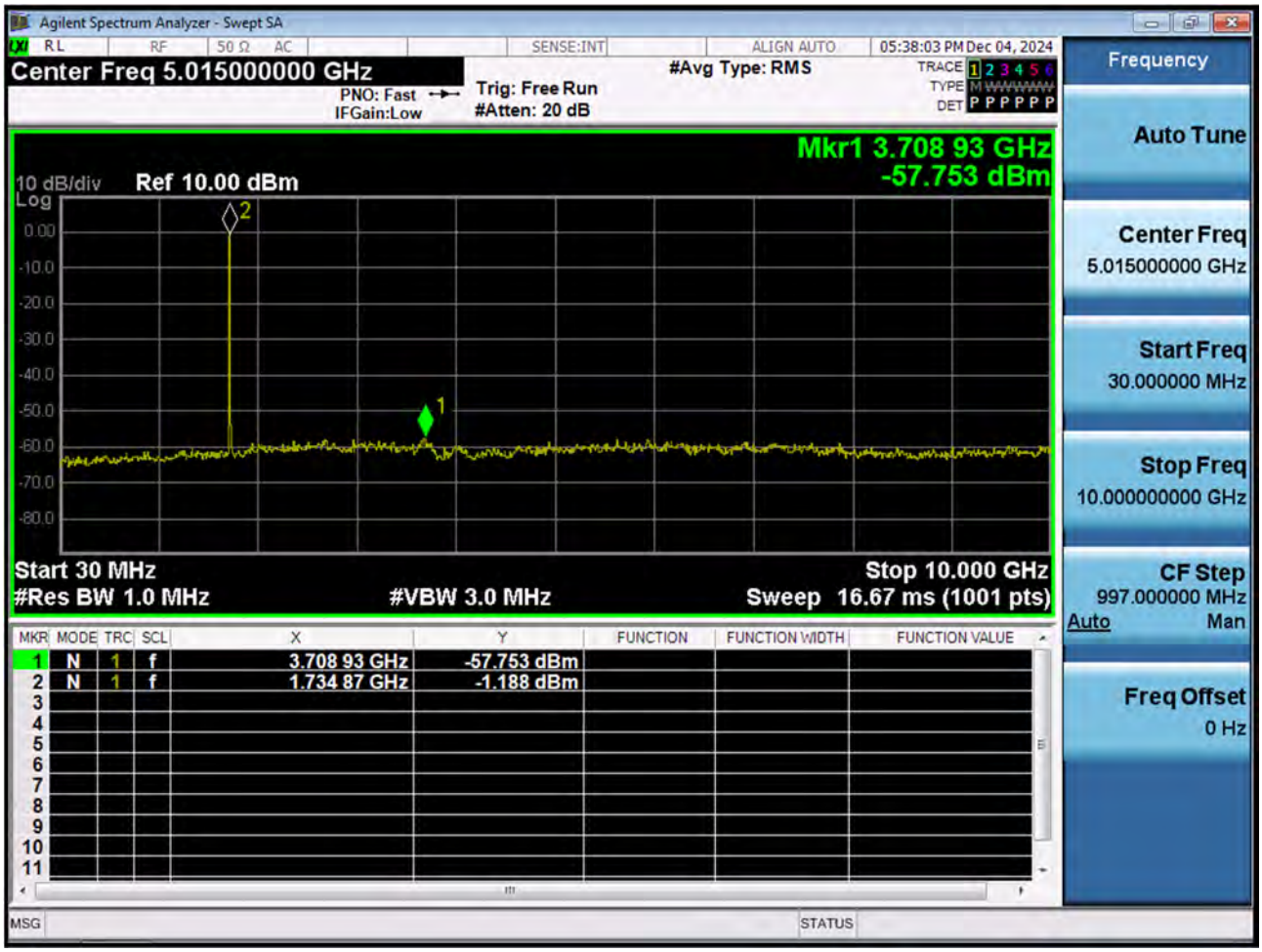
LTE B66_10 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



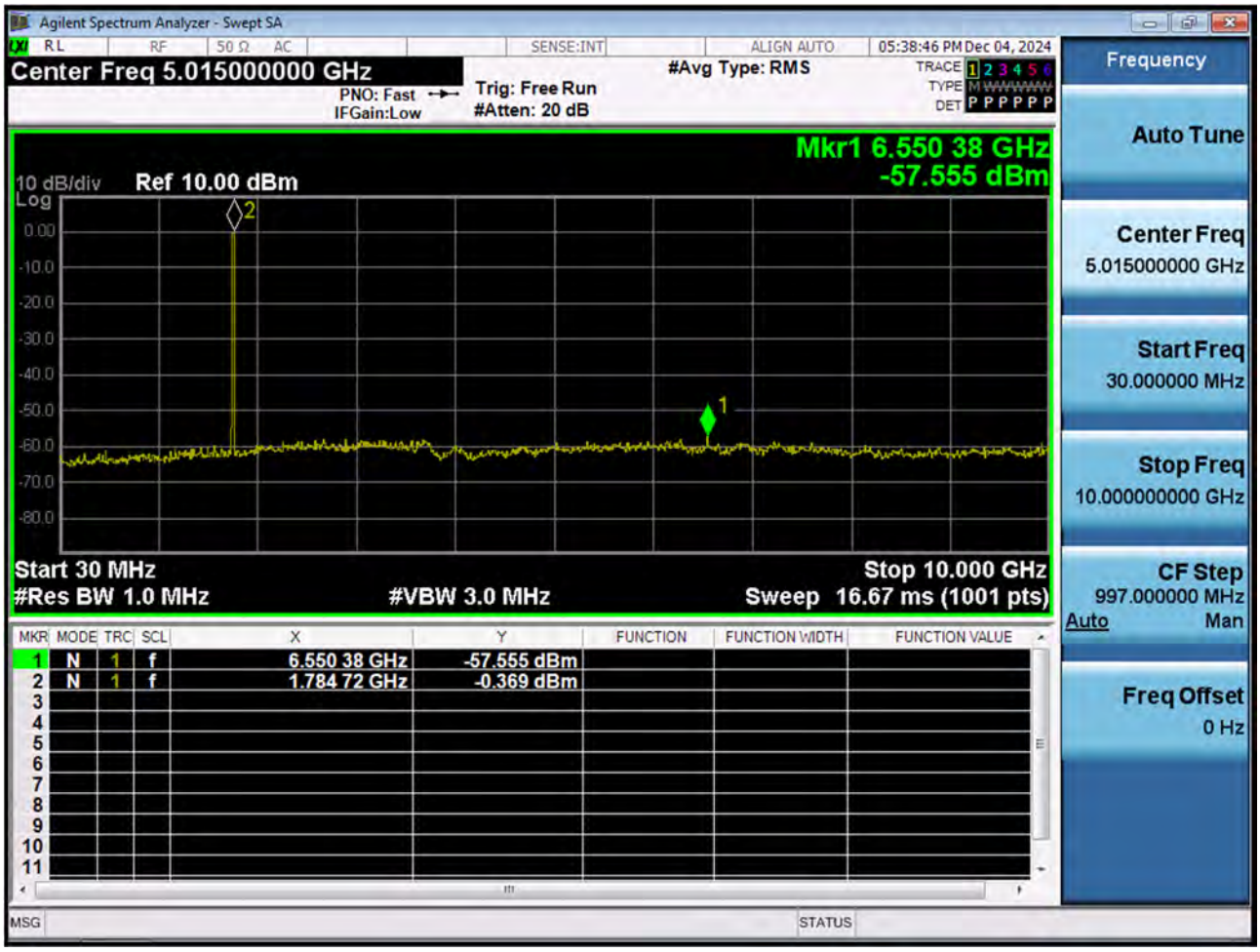
LTE B66_15 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



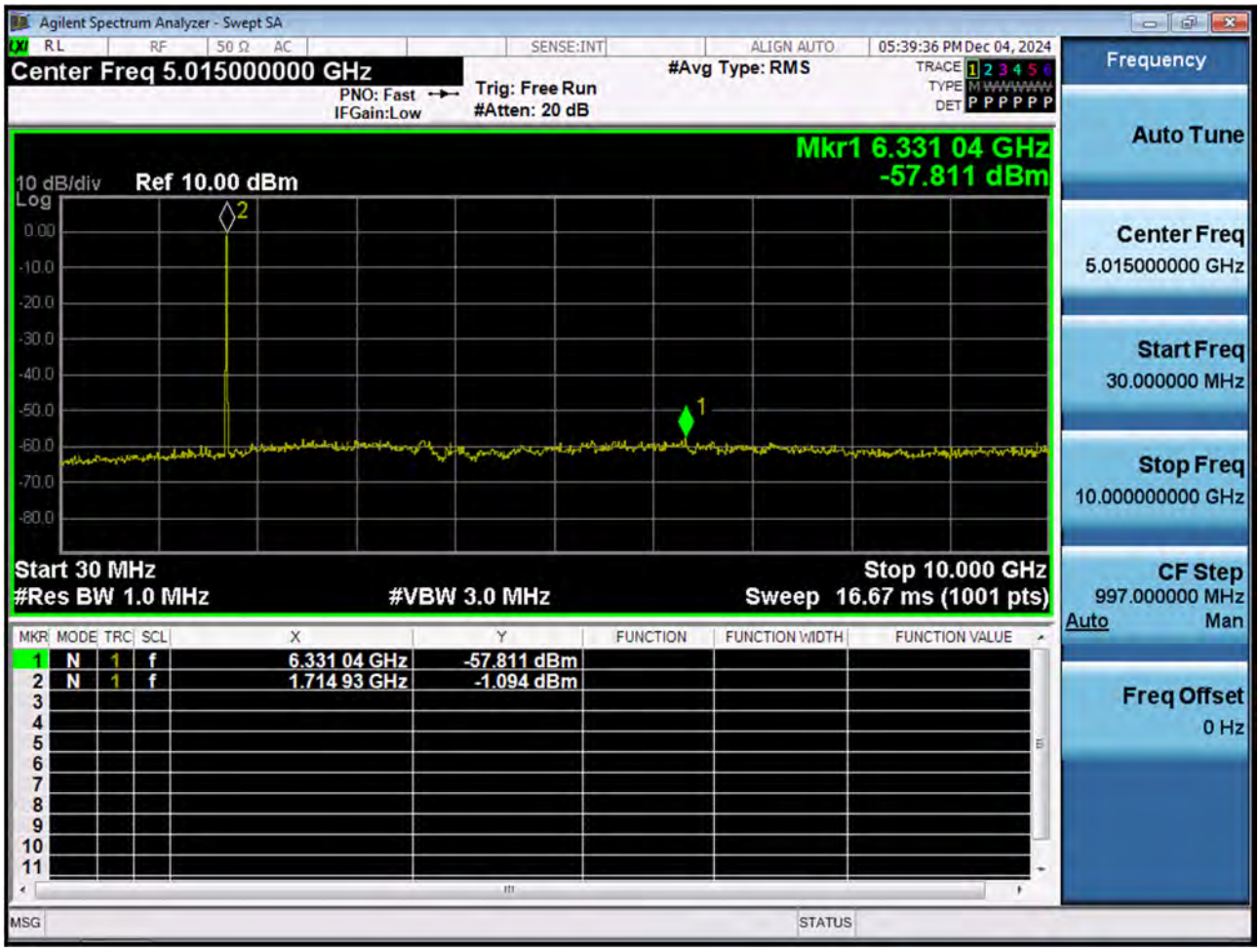
LTE B66_15 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



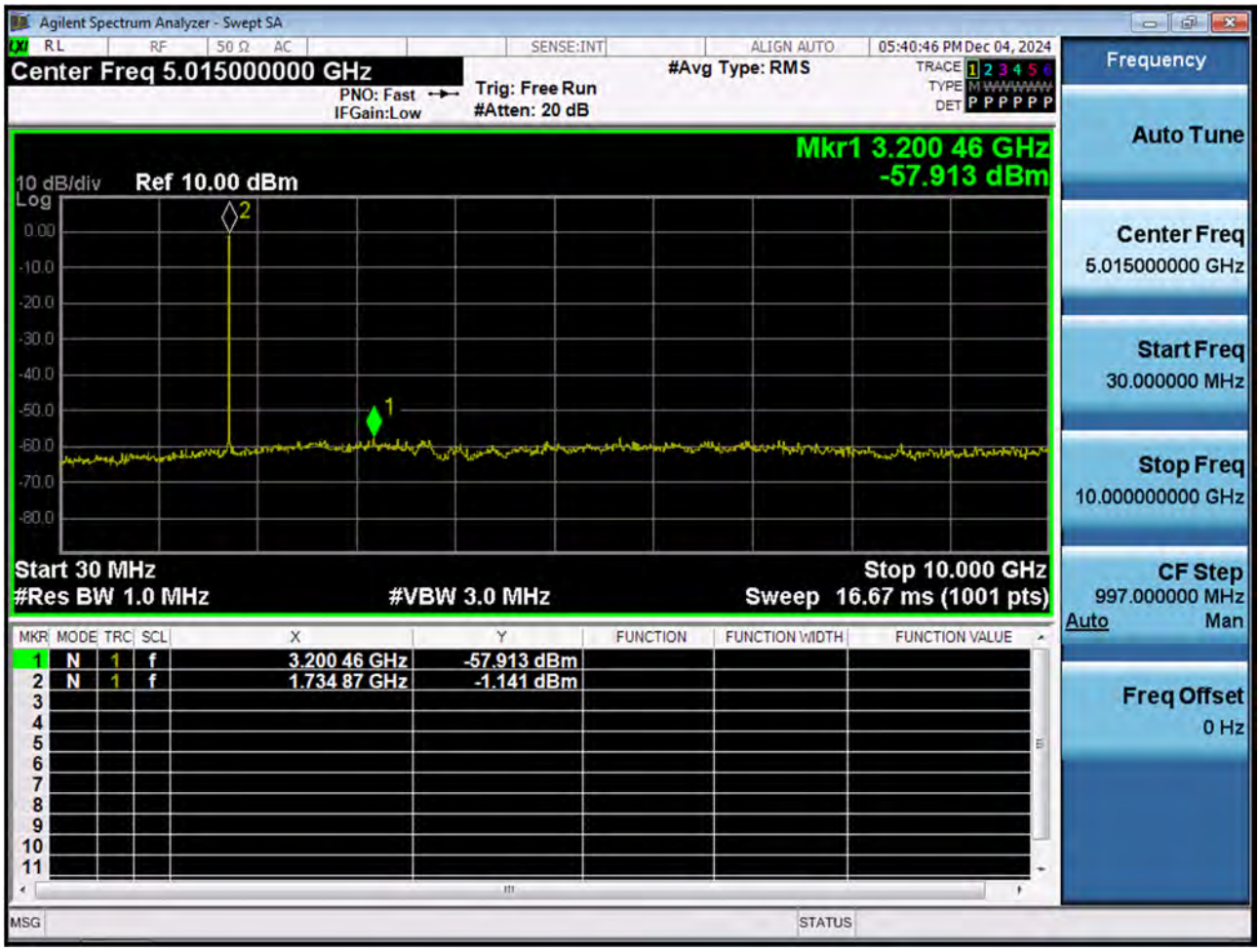
LTE B66_15 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



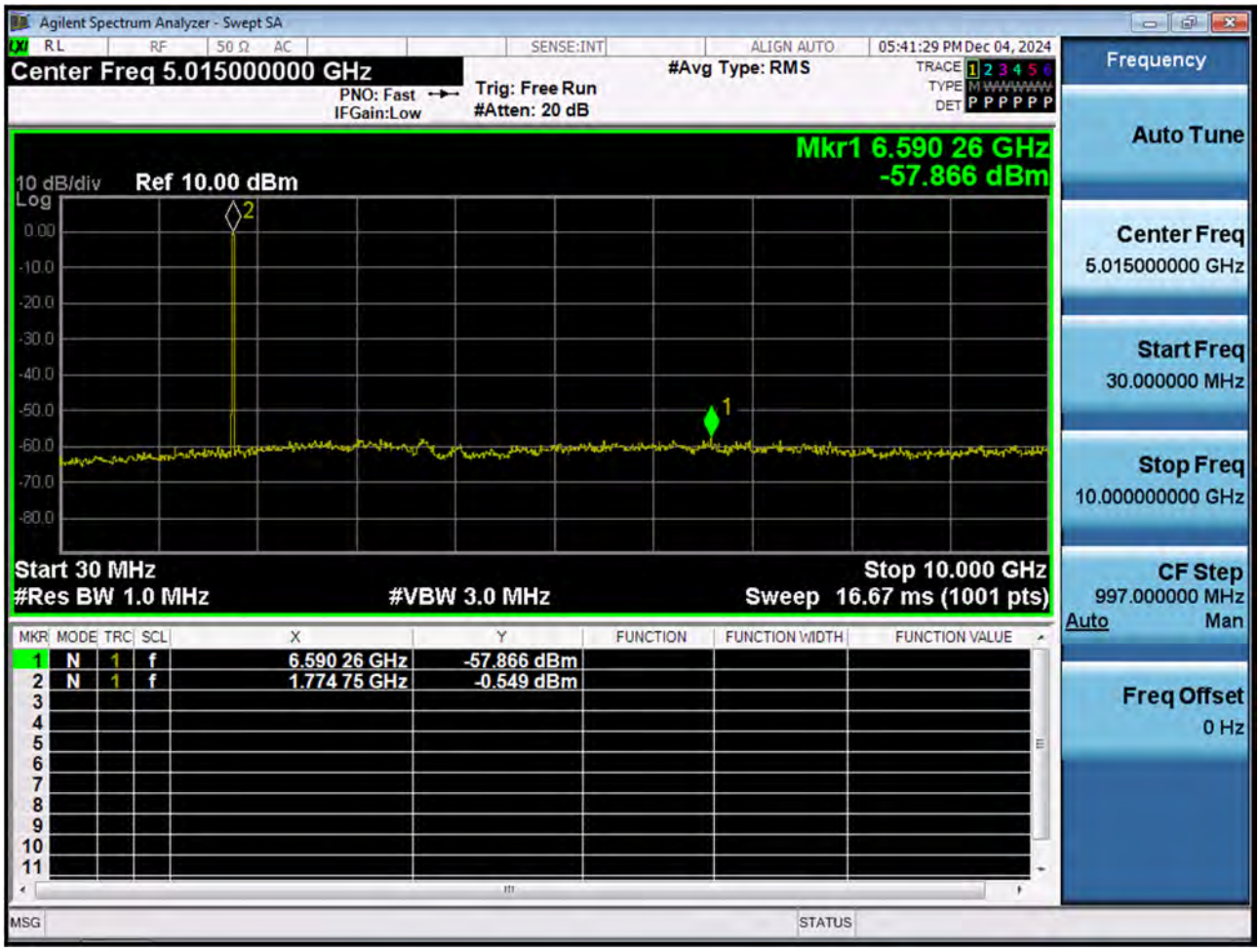
LTE B66_20 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



LTE B66_20 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



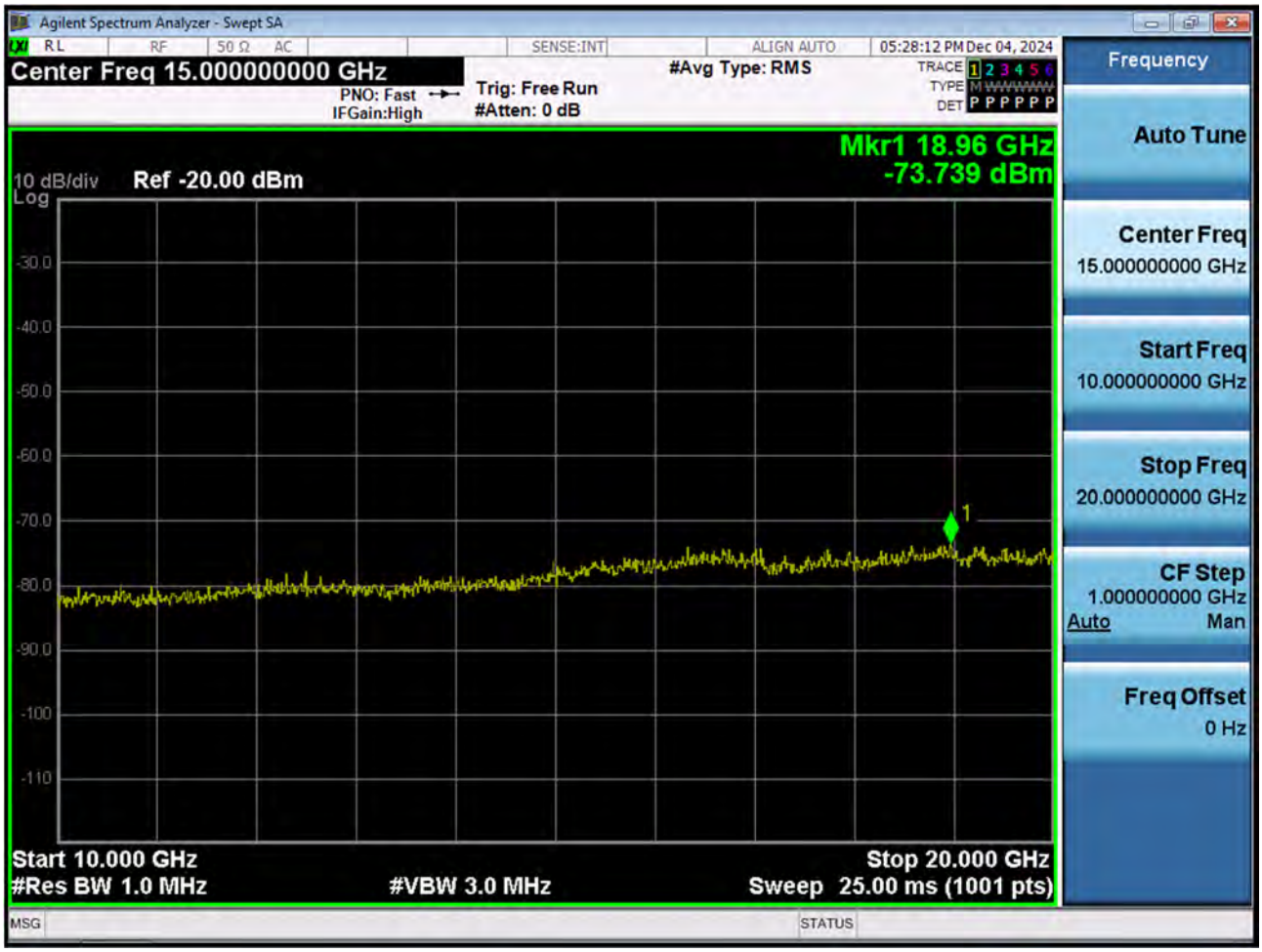
LTE B66_20 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



LTE B66_1.4M_Conducted Spurious(10 G-26.5 G)_Low_QPSK_1RB

LTE B66_1.4M_Conducted Spurious(10 G-26.5 G)_Mid_QPSK_1RB

LTE B66_1.4M_Conducted Spurious(10 G-26.5 G)_High_QPSK_1RB



LTE B66_3 M_Conducted Spurious(10 G-26.5 G)_Low_QPSK_1RB

LTE B66_3 M_Conducted Spurious(10 G-26.5 G)_Mid_QPSK_1RB

LTE B66_3 M_Conducted Spurious(10 G-26.5 G)_High_QPSK_1RB

LTE B66_5 M_Conducted Spurious(10 G-26.5 G)_Low_QPSK_1RB

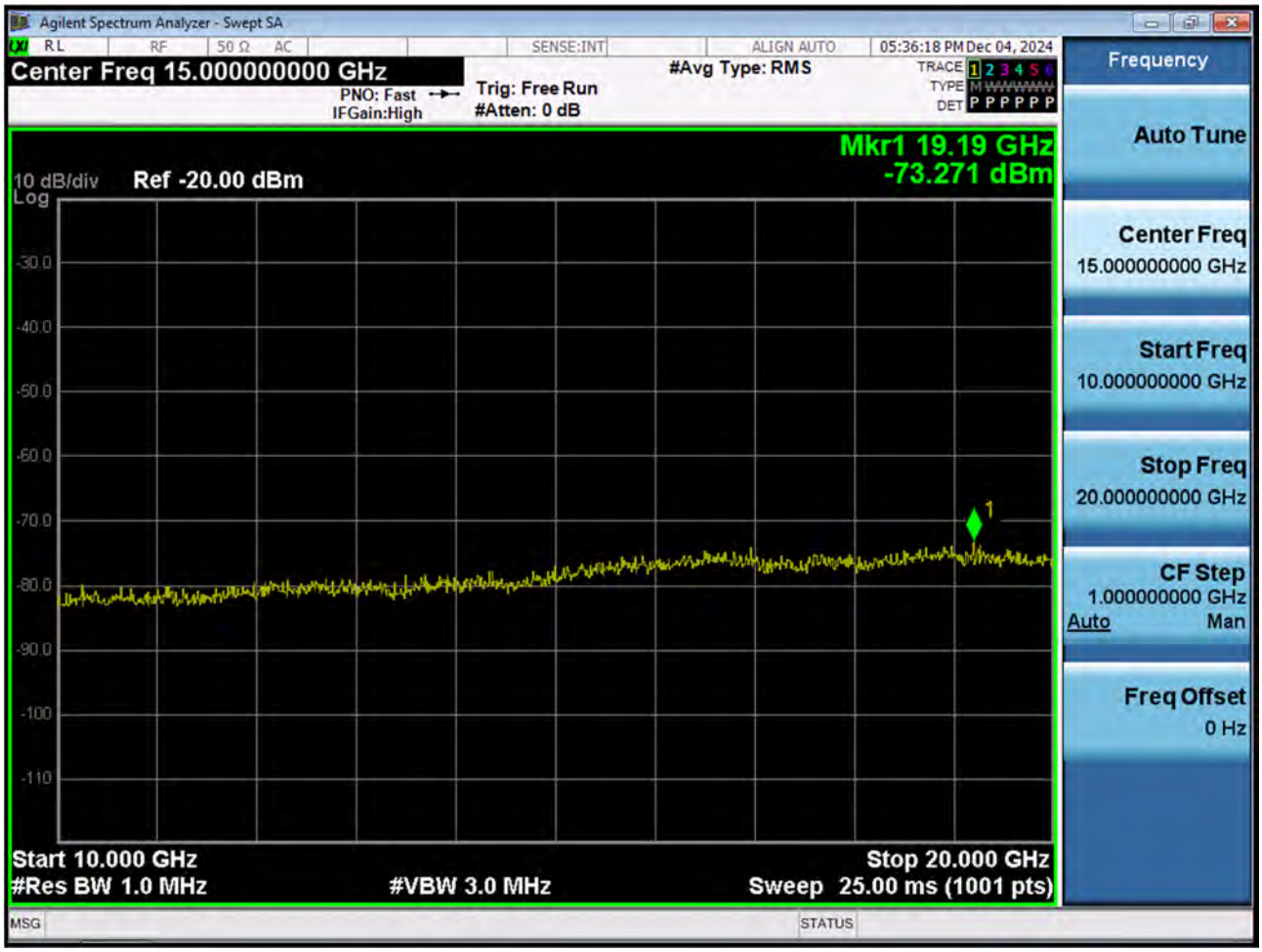
LTE B66_5 M_Conducted Spurious(10 G-26.5 G)_Mid_QPSK_1RB

LTE B66_5 M_Conducted Spurious(10 G-26.5 G)_High_QPSK_1RB

LTE B66_10 M_Conducted Spurious(10 G-26.5 G)_Low_QPSK_1RB

LTE B66_10 M_Conducted Spurious(10 G-26.5 G)_Mid_QPSK_1RB

LTE B66_10 M_Conducted Spurious(10 G-26.5 G)_High_QPSK_1RB



LTE B66_15 M_Conducted Spurious(10 G-26.5 G)_Low_QPSK_1RB

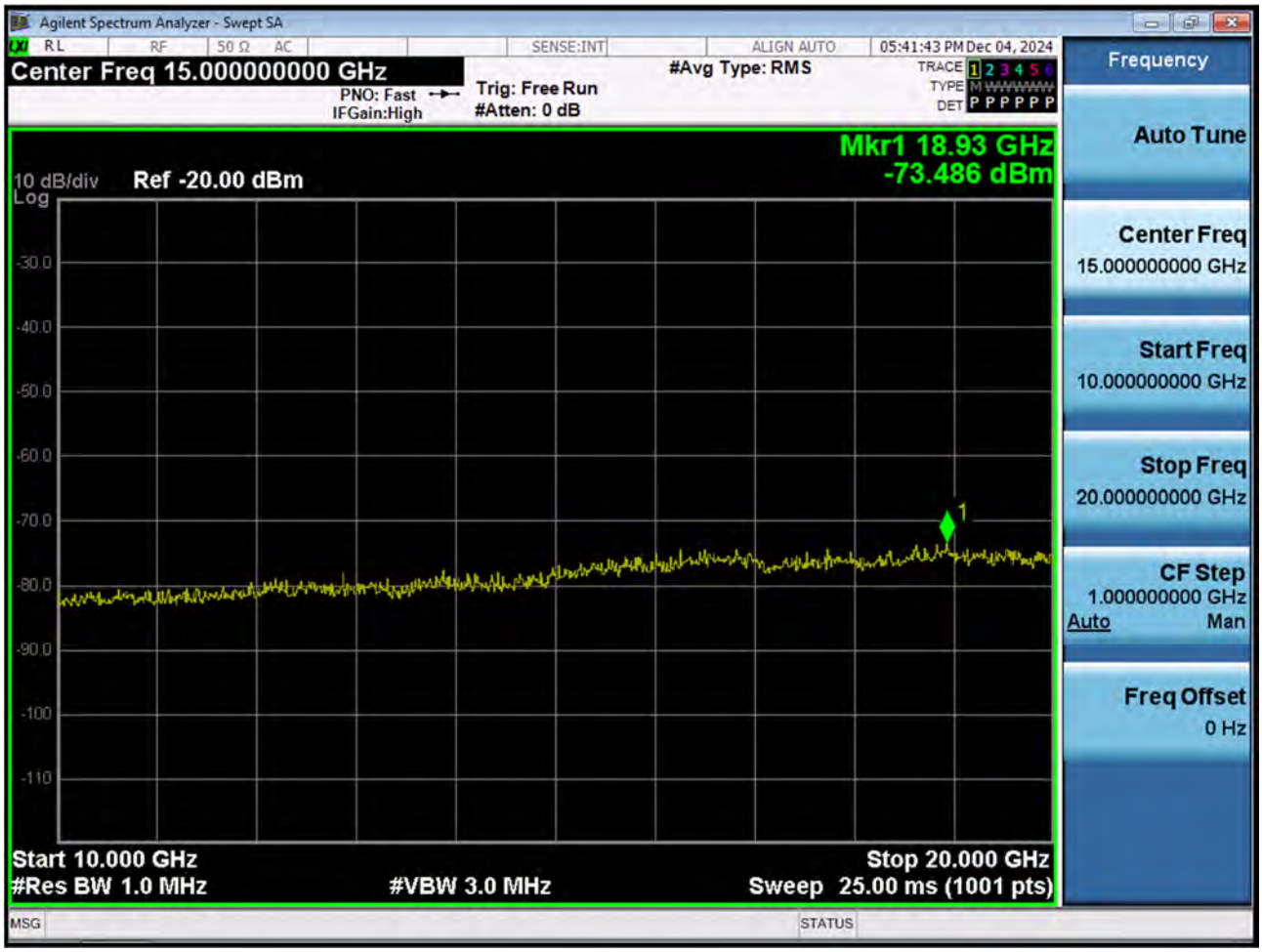
LTE B66_15 M_Conducted Spurious(10 G-26.5 G)_Mid_QPSK_1RB

LTE B66_15 M_Conducted Spurious(10 G-26.5 G)_High_QPSK_1RB

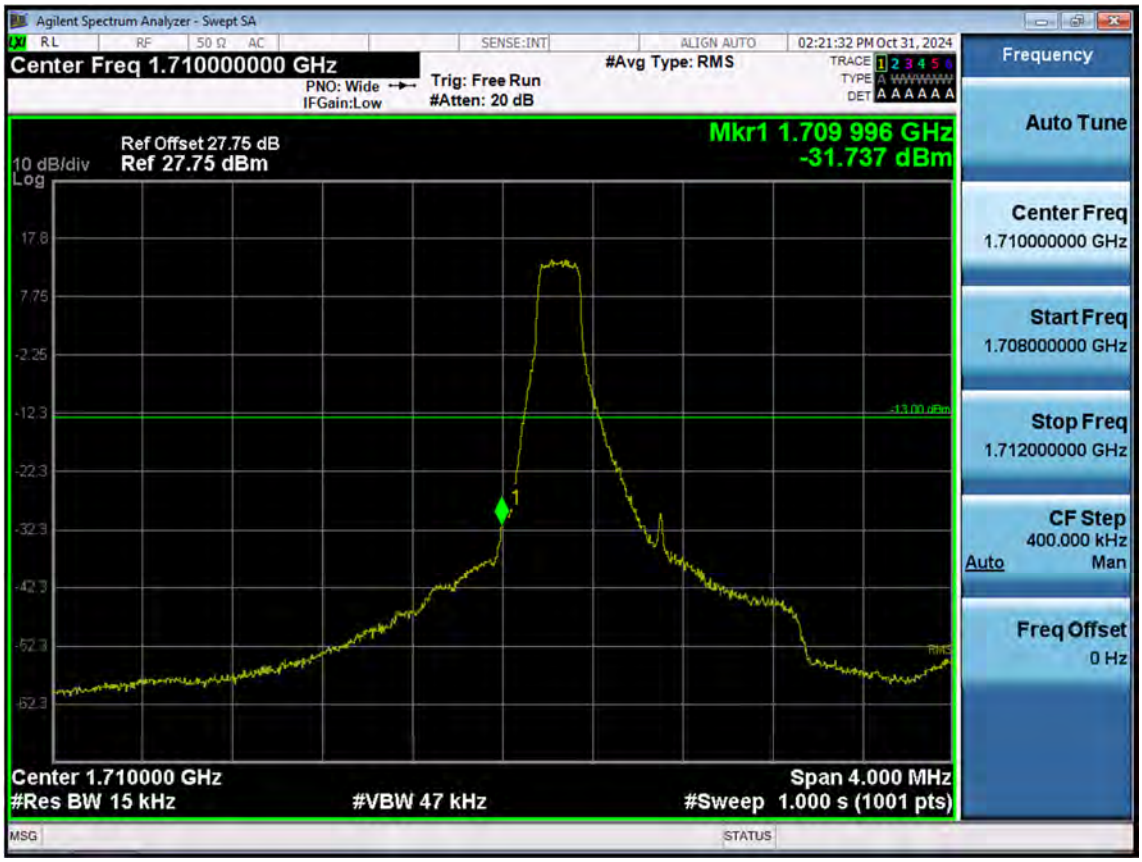
LTE B66_20 M_Conducted Spurious(10 G-26.5 G)_Low_QPSK_1RB

LTE B66_20 M_Conducted Spurious(10 G-26.5 G)_Mid_QPSK_1RB

LTE B66_20 M_Conducted Spurious(10 G-26.5 G)_High_QPSK_1RB



LTE B66_1.4M_Band Edge_Low_QPSK_1RB



LTE B66_1.4M_Band Edge_Low_QPSK_FullRB