Testing and Certification

TEST REPORT

FCC LTE B41 Test for SM-M356B/DS
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2403-FC008

DATE OF ISSUE
March 21, 2024

Tested by
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Additional Model
-

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-M356B/DS
Date of Test	February 07, 2024 ~ March 20, 2024
FCC ID	A3LSMM356B
Location of Test	■ Permanent Testing Lab ☐ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 Republic of Korea)
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 27

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	March 21, 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:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMM356B
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 27
EUT Type:	Mobile phone
Model(s):	SM-M356B/DS
Additional Model(s)	-
Tx Frequency:	2498.5 – 2687.5 : 5 MHz 2501.0 – 2685.0 : 10 MHz 2503.5 – 2682.5 : 15 MHz 2506.0 – 2680.0 : 20 MHz
Date(s) of Tests:	February 07, 2024 ~ March 20, 2024
Serial number:	Radiated : R3CX20423XJ Conducted : R3CX2042JMR

1.1. MAXIMUM OUTPUT POWER

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band 41 (5)	2498.5 – 2687.5	4M51G7D	QPSK	0.138	21.41
		4M54W7D	16QAM	0.115	20.59
		4M54W7D	64QAM	0.089	19.49
		4M49W7D	256QAM	0.045	16.51
LTE – Band 41 (10)	2501.0 – 2685.0	9M00G7D	QPSK	0.132	21.22
		9M02W7D	16QAM	0.106	20.24
		9M01W7D	64QAM	0.083	19.18
		8M98W7D	256QAM	0.043	16.37
LTE – Band 41 (15)	2503.5 – 2682.5	13M5G7D	QPSK	0.146	21.65
		13M4W7D	16QAM	0.115	20.62
		13M5W7D	64QAM	0.093	19.69
		13M5W7D	256QAM	0.045	16.50
LTE – Band 41 (20)	2506.0 – 2680.0	18M0G7D	QPSK	0.139	21.42
		17M9W7D	16QAM	0.114	20.58
		17M9W7D	64QAM	0.088	19.44
		17M9W7D	256QAM	0.044	16.41

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE, Sub 6.
It also supports IEEE 802.11 a/b/g/n/ac/ax (20/40/80 MHz), Bluetooth, BT LE, NFC.

2.2. MEASURING INSTRUMENT CALIBRATION

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

2.3. TEST FACILITY

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

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

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

3.2 RADIATED POWER

Test Overview

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

Test Settings

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

Test Note

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

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

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

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

Test Settings

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

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.

   The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data
3. For spurious emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

   The spurious emissions is calculated by the following formula;

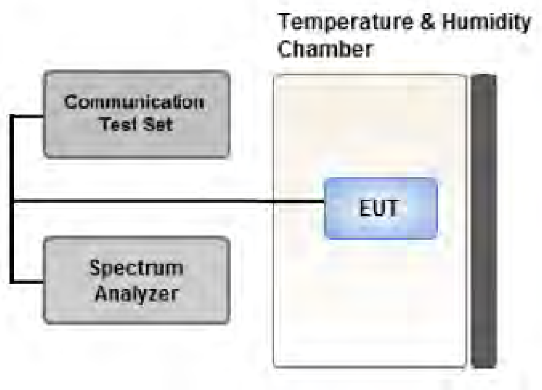
   $$Result_{(dBm)} = Pg_{(dBm)} - cable\ loss_{(dB)} + antenna\ gain_{(dBi)}$$

   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.

   $$EIRP_{(dBm)} = ERP_{(dBm)} + 2.15$$

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)

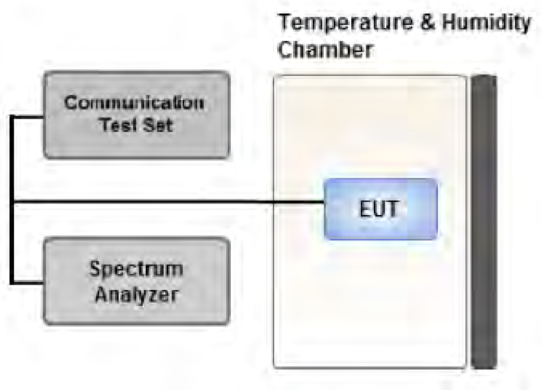
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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.

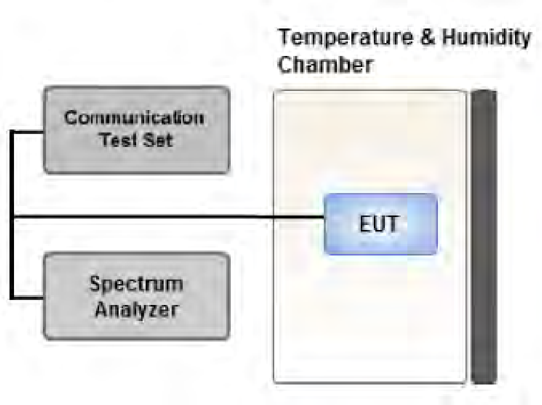
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

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

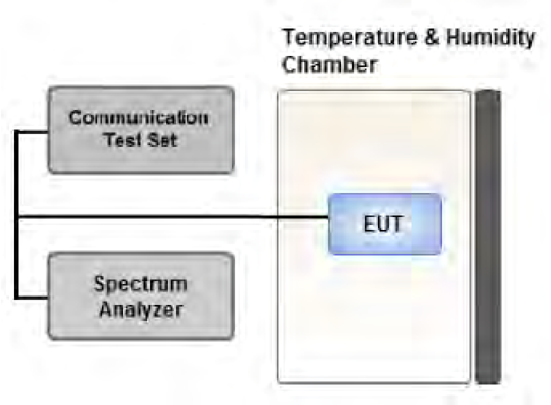
Test Overview

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

3.7 CHANNEL 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

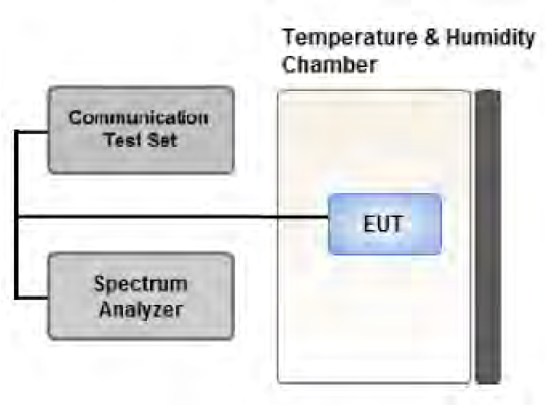
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. Within 1MHz of the channel edge the RBW should be 2 % of EBW, then 1 MHz after that.
4. VBW > 3 x RBW
5. 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

1. The attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge,
2. 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge.
3. 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge.
4. The attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz.
5. 55 + 10 log (P) dB at or below 2490.5 MHz.
6. X is the greater of 6MHz or the actual emission bandwidth
7. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer

Where Margin < 1 dB the emission level is either corrected by 10 log(1 MHz/ RB) or the emission is integrated over a 1 MHz bandwidth to determine the final result. When using the integration method the integration window is either centered on the emission or, for emissions at the band edge, centered by an offset of 500 kHz from the block edge so that the integration window is the 1 MHz adjacent to the block edge.

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

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

The frequency stability of the transmitter is measured by:

1. Temperature:

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

2. Primary Supply Voltage:

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

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

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter.
   Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

3.9 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
  Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
  Worst case : Stand alone
- We were performed the RSE test in condition of co-location.
  Mode : Stand alone, Simultaneous transmission scenarios
  Worst case : Stand alone
- 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.

[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		Z

3.10 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth	QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Peak-To-Average Radio	QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Channel Edge	QPSK	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
		5, 10, 15, 20	Low, Mid, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	QPSK	5, 10, 15, 20	Low, Mid, High	1	0

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
RF Switching System	FBSR-02B(1.2G HPF+LNA)	T&M SYSTEM	F1L1	12/11/2024	Annual
RF Switching System	FBSR-02B(3.3G HPF+LNA)	T&M SYSTEM	F1L2	12/11/2024	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/19/2024	Annual
DC Power Supply	E3632A	Agilent	MY40010147	06/23/2024	Annual
Dipole Antenna	UHAP	Schwarzbeck	557	03/09/2025	Biennial
Dipole Antenna	UHAP	Schwarzbeck	558	03/09/2025	Biennial
Chamber	SU-642	ESPEC	93008124	02/19/2025	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	09/29/2024	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/20/2024	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/19/2024	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/17/2024	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/10/2024	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/16/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	03/21/2024	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	11/17/2024	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	12/11/2024	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	06/22/2024	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/24/2024	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

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

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

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

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (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(m)(4)	■ < 40 + 10log10 (P[Watts]) at Channel edges ■ < 43 + 10log10 (P[Watts]) between 5 and X MHz from Channel edges ■ < 55 + 10log10 (P[Watts]) beyond X MHz beyond from Channel edges ■ < 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz	PASS
Conducted Output Power	§ 2.1046	N/A	See Note1
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(h)(2)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 27.53(m)(4)	< 55 + 10log10 (P[Watts])	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
2498.5	LTE B41/ 5 MHz	QPSK	-25.23	11.59	10.51	2.57	H	< 2.00	0.090	19.53	1	24
		16-QAM	-26.04	10.78	10.51	2.57	H		0.074	18.72		
		64-QAM	-26.92	9.90	10.51	2.57	H		0.061	17.84		
		256-QAM	-29.31	7.51	10.51	2.57	H		0.035	15.45		
2593.0		QPSK	-23.74	13.48	10.64	2.71	H		0.138	21.41	1	0
		16-QAM	-24.56	12.66	10.64	2.71	H		0.115	20.59		
		64-QAM	-25.66	11.56	10.64	2.71	H		0.089	19.49		
		256-QAM	-28.64	8.58	10.64	2.71	H		0.045	16.51		
2687.5		QPSK	-25.27	11.78	10.74	2.75	H		0.095	19.77	1	0
		16-QAM	-26.32	10.73	10.74	2.75	H		0.074	18.72		
		64-QAM	-27.31	9.74	10.74	2.75	H		0.059	17.73		
		256-QAM	-30.14	6.91	10.74	2.75	H		0.031	14.90		

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
2501.0	LTE B41/ 10 MHz	QPSK	-24.92	11.90	10.51	2.57	H	< 2.00	0.096	19.84	1	49
		16-QAM	-25.81	11.01	10.51	2.57	H		0.079	18.95		
		64-QAM	-26.65	10.17	10.51	2.57	H		0.065	18.11		
		256-QAM	-29.13	7.69	10.51	2.57	H		0.037	15.63		
2593.0		QPSK	-23.93	13.29	10.64	2.71	H		0.132	21.22	1	0
		16-QAM	-24.91	12.31	10.64	2.71	H		0.106	20.24		
		64-QAM	-25.97	11.25	10.64	2.71	H		0.083	19.18		
		256-QAM	-28.78	8.44	10.64	2.71	H		0.043	16.37		
2685.0		QPSK	-25.33	11.91	10.73	2.75	H		0.097	19.89	1	0
		16-QAM	-26.35	10.89	10.73	2.75	H		0.077	18.87		
		64-QAM	-27.33	9.91	10.73	2.75	H		0.062	17.89		
		256-QAM	-30.22	7.02	10.73	2.75	H		0.032	15.00		

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
2503.5	LTE B41/ 15 MHz	QPSK	-24.33	12.50	10.58	2.57	H	< 2.00	0.112	20.51	1	74
		16-QAM	-25.10	11.73	10.58	2.57	H		0.094	19.74		
		64-QAM	-25.86	10.97	10.58	2.57	H		0.079	18.98		
		256-QAM	-28.82	8.01	10.58	2.57	H		0.040	16.02		
2593.0		QPSK	-23.50	13.72	10.64	2.71	H		0.146	21.65	1	0
		16-QAM	-24.53	12.69	10.64	2.71	H		0.115	20.62		
		64-QAM	-25.46	11.76	10.64	2.71	H		0.093	19.69		
		256-QAM	-28.65	8.57	10.64	2.71	H		0.045	16.50		
2682.5		QPSK	-24.97	12.46	10.72	2.75	H		0.110	20.43	1	0
		16-QAM	-25.77	11.66	10.72	2.75	H		0.092	19.63		
		64-QAM	-26.98	10.45	10.72	2.75	H		0.070	18.42		
		256-QAM	-29.91	7.52	10.72	2.75	H		0.035	15.49		

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
2506.0	LTE B41/ 20 MHz	QPSK	-23.95	12.88	10.58	2.57	H	< 2.00	0.123	20.89	1	99
		16-QAM	-25.00	11.83	10.58	2.57	H		0.096	19.84		
		64-QAM	-25.95	10.88	10.58	2.57	H		0.077	18.89		
		256-QAM	-29.06	7.77	10.58	2.57	H		0.038	15.78		
2593.0		QPSK	-23.73	13.49	10.64	2.71	H		0.139	21.42	1	0
		16-QAM	-24.57	12.65	10.64	2.71	H		0.114	20.58		
		64-QAM	-25.71	11.51	10.64	2.71	H		0.088	19.44		
		256-QAM	-28.74	8.48	10.64	2.71	H		0.044	16.41		
2680.0		QPSK	-25.10	12.33	10.72	2.75	H		0.107	20.30	1	0
		16-QAM	-25.97	11.46	10.72	2.75	H		0.088	19.43		
		64-QAM	-27.21	10.22	10.72	2.75	H		0.066	18.19		
		256-QAM	-30.15	7.28	10.72	2.75	H		0.033	15.25		

8.2 RADIATED SPURIOUS EMISSIONS

- OPERATING FREQUENCY : 2593.0 MHz
- MEASURED OUTPUT POWER: 21.41 dBm = 0.138 W
- MODE: LTE B41
- MODULATION SIGNAL: 5 MHz QPSK
- DISTANCE: 1 meter
- LIMIT: 55 + 10 log10 (W) = 46.41 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc	RB	
									Size	Offset
39675 (2498.5)	4 997.00	-49.40	12.56	-59.21	3.81	H	-50.46	71.87	1	24
	7 495.50	-54.39	10.78	-54.00	4.71	H	-47.93	69.34		
	9 994.00	-59.25	11.18	-54.83	5.52	V	-49.17	70.58		
40620 (2593.0)	5 186.00	-47.14	12.55	-55.91	3.82	V	-47.19	68.60	1	0
	7 779.00	-49.51	11.41	-49.68	4.79	H	-43.06	64.47		
	10 372.00	-56.77	11.43	-51.32	5.59	V	-45.48	66.89		
41565 (2687.5)	5 375.00	-53.11	13.06	-62.29	3.85	V	-53.07	74.48	1	0
	8 062.50	-52.45	10.74	-50.64	4.86	V	-44.76	66.17		
	10 750.00	-55.90	11.31	-50.89	5.65	V	-45.23	66.64		

- OPERATING FREQUENCY : 2593.0 MHz
- MEASURED OUTPUT POWER: 21.22 dBm = 0.132 W
- MODE: LTE B41
- MODULATION SIGNAL: 10 MHz QPSK
- DISTANCE: 1 meter
- LIMIT: 55 + 10 log10 (W) = 46.22 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc	RB	
									Size	Offset
39700 (2501.0)	5 002.00	-45.05	12.56	-54.86	3.81	H	-46.11	67.33	1	49
	7 503.00	-52.27	10.78	-52.19	4.71	H	-46.12	67.34		
	10 004.00	-57.50	11.22	-53.31	5.52	V	-47.62	68.84		
40620 (2593.0)	5 186.00	-48.35	12.55	-57.12	3.82	V	-48.40	69.62	1	0
	7 779.00	-49.38	11.41	-49.55	4.79	H	-42.93	64.15		
	10 372.00	-54.54	11.43	-49.09	5.59	V	-43.25	64.47		
41540 (2685.0)	5 370.00	-52.02	13.07	-61.12	3.85	V	-51.90	73.12	1	0
	8 055.00	-52.77	10.74	-50.95	4.87	V	-45.08	66.30		
	10 740.00	-54.89	11.32	-50.18	5.71	H	-44.57	65.79		

- OPERATING FREQUENCY : 2593.0 MHz
- MEASURED OUTPUT POWER: 21.65 dBm = 0.146 W
- MODE: LTE B41
- MODULATION SIGNAL: 15 MHz QPSK
- DISTANCE: 1 meter
- LIMIT: 55 + 10 log10 (W) = 46.65 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc	RB	
									Size	Offset
39725 (2503.5)	5 007.00	-45.98	12.55	-56.00	3.88	H	-47.33	68.98	1	74
	7 510.50	-50.56	10.78	-50.97	4.71	V	-44.90	66.55		
	10 014.00	-57.25	11.25	-53.01	5.53	H	-47.29	68.94		
40620 (2593.0)	5 186.00	-43.54	12.55	-52.31	3.82	V	-43.59	65.24	1	0
	7 779.00	-48.07	11.41	-48.24	4.79	H	-41.62	63.27		
	10 372.00	-54.82	11.43	-49.37	5.59	V	-43.53	65.18		
41515 (2682.5)	5 365.00	-47.30	13.08	-56.29	3.86	V	-47.06	68.71	1	0
	8 047.50	-50.90	10.73	-49.07	4.87	V	-43.21	64.86		
	10 730.00	-54.27	11.33	-49.82	5.78	V	-44.27	65.92		

- OPERATING FREQUENCY : 2593.0 MHz
- MEASURED OUTPUT POWER: 21.42 dBm = 0.139 W
- MODE: LTE B41
- MODULATION SIGNAL: 20 MHz QPSK
- DISTANCE: 1 meter
- LIMIT: 55 + 10 log10 (W) = 46.42 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc	RB	
									Size	Offset
39750 (2506.0)	5 012.00	-50.43	12.55	-60.45	3.88	H	-51.78	73.20	1	99
	7 518.00	-50.79	10.82	-51.49	4.71	H	-45.38	66.80		
	10 024.00	-56.61	11.29	-52.39	5.54	H	-46.63	68.05		
40620 (2593.0)	5 186.00	-46.02	12.55	-54.79	3.82	V	-46.07	67.49	1	0
	7 779.00	-47.31	11.41	-47.48	4.79	H	-40.86	62.28		
	10 372.00	-56.50	11.43	-51.05	5.59	V	-45.21	66.63		
41490 (2680.0)	5 360.00	-51.57	13.09	-60.44	3.86	V	-51.21	72.63	1	0
	8 040.00	-50.89	10.73	-49.10	4.86	H	-43.23	64.65		
	10 720.00	-54.64	11.33	-50.27	5.81	H	-44.75	66.17		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
41	5 MHz	2593.0	QPSK	25	0	5.69
			16-QAM			6.62
			64-QAM			7.03
			256-QAM			6.94
	10 MHz		QPSK	50		5.74
			16-QAM			6.30
			64-QAM			6.89
			256-QAM			6.93
	15 MHz		QPSK	75		5.56
			16-QAM			6.30
			64-QAM			6.97
			256-QAM			7.02
	20 MHz		QPSK	100		5.66
			16-QAM			6.38
			64-QAM			6.56
			256-QAM			6.80

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 92 ~ 107.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
41	5 MHz	2593.0	QPSK	25	0	4.5089
			16-QAM			4.5406
			64-QAM			4.5372
			256-QAM			4.4904
	10 MHz		QPSK	50		8.9952
			16-QAM			9.0153
			64-QAM			9.0080
			256-QAM			8.9759
	15 MHz		QPSK	75		13.472
			16-QAM			13.442
			64-QAM			13.445
			256-QAM			13.458
	20 MHz		QPSK	100		17.946
			16-QAM			17.908
			64-QAM			17.933
			256-QAM			17.923

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 76 ~ 91.

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)
41	5	2498.5	3.7029	31.955	-66.956	-35.001	-25.00
		2593.0	3.7104	31.955	-67.048	-35.093	
		2687.5	3.7054	31.955	-66.968	-35.013	
	10	2501.0	3.7049	31.955	-67.343	-35.388	
		2593.0	3.7059	31.955	-66.620	-34.665	
		2685.0	3.7064	31.955	-67.236	-35.281	
	15	2503.5	3.7134	31.955	-67.244	-35.289	
		2593.0	3.6845	31.955	-67.163	-35.208	
		2682.5	3.7049	31.955	-67.440	-35.485	
	20	2506.0	3.6910	31.955	-67.259	-35.304	
		2593.0	3.7169	31.955	-67.266	-35.311	
		2680.0	3.6925	31.955	-67.275	-35.320	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 108 ~ 131.

2. Conducted Spurious Emissions was tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0

3. Duty Cycle factor already applied on the factor.

- Duty Cycle factor(dB) = 3.979
- Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
- Result(dBm) = Reading + Factor

Frequency Range (GHz)	Factor [dB]
0.03 – 1	29.249
1 – 5	31.955
5 – 10	32.570
10 – 15	33.095
15 – 20	33.468
Above 20	34.110

8.6 CHANNEL EDGE

Band Width	Frequency (MHz)	Modulation	RB (Size/ Offset)	2 495 MHz ~ 2 496 MHz	C.E ~ (C.E +1MHz)	2 490.5 MHz ~ 2 495 MHz	(C.E + 1 MHz) ~ (C.E + 5 MHz)	Below 2 490.5 MHz	(C.E + 5 MHz) ~ (C.E + X MHz)	Above (C.E + X MHz)
				Lower	Upper	Lower	Upper	Lower	Upper	Upper
5 MHz	2498.5	QPSK	25/0	-24.94	-23.76	-30.26	-29.22	-35.71	-34.56	-34.40
10 MHz	2501.0	QPSK	50/0	-28.39	-28.02	-31.72	-30.56	-35.56	-33.53	-36.56
15 MHz	2503.5	QPSK	75/0	-32.84	-30.52	-34.64	-32.71	-36.89	-35.16	-37.27
20 MHz	2506.0	QPSK	100/0	-34.77	-32.39	-35.66	-33.64	-37.17	-35.31	-37.48
Limit(dBm)				-13.0	-10.0	-13.0	-10.0	-25.0	-13.0	-25.0

Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	C.E ~ (C.E ± 1 MHz)		(C.E ± 1 MHz) ~ (C.E ± 5 MHz)	
					Lower	Upper	Lower	Upper
5 MHz	2593.0	QPSK	25	0	-23.15	-22.67	-25.71	-25.87
	2687.5	QPSK	25	0	-22.54	-23.22	-21.52	-21.87
10 MHz	2593.0	QPSK	50	0	-26.62	-27.47	-27.31	-27.92
	2685.0	QPSK	50	0	-25.26	-27.12	-22.93	-24.29
15 MHz	2593.0	QPSK	75	0	-28.25	-28.20	-29.10	-28.87
	2682.5	QPSK	75	0	-26.09	-28.25	-24.13	-25.68
20 MHz	2593.0	QPSK	100	0	-30.47	-30.11	-30.05	-30.26
	2680.0	QPSK	100	0	-26.96	-29.29	-25.02	-27.37
Limit(dBm)					-10.0		-10.0	

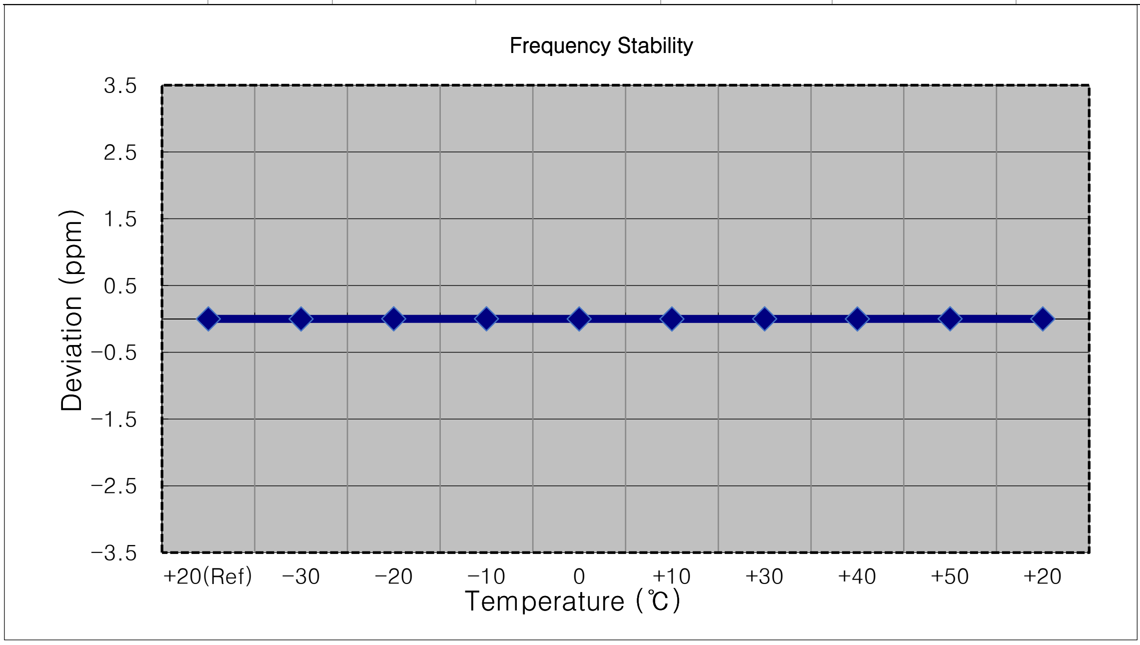
Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	(C.E ± 5 MHz) ~ (C.E ± X MHz)		Above (C.E ± X MHz)	
					Lower	Upper	Lower	Upper
5 MHz	2593.0	QPSK	25	0	-32.85	-32.84	-32.54	-32.93
	2687.5	QPSK	25	0	-29.68	-30.32	-29.73	-30.46
10 MHz	2593.0	QPSK	50	0	-30.67	-30.98	-35.27	-35.35
	2685.0	QPSK	50	0	-25.70	-26.15	-31.44	-32.86
15 MHz	2593.0	QPSK	75	0	-31.63	-31.89	-35.84	-36.10
	2682.5	QPSK	75	0	-26.32	-28.56	-33.14	-34.26
20 MHz	2593.0	QPSK	100	0	-32.10	-32.31	-36.61	-36.70
	2680.0	QPSK	100	0	-26.54	-29.37	-34.23	-34.80
Limit(dBm)					-13.0		-25.0	

Note:
1. C.E = Channel Edge
2. X = X is the greater of 6 MHz or the actual emission bandwidth.
3. X = 6 MHz(5 MHz Bandwidth), 10 MHz(10 MHz Bandwidth), 15 MHz(15 MHz Bandwidth), 20 MHz(20 MHz Bandwidth)
4. RB = Resource Block
5. Duty Cycle factor already applied on the factor.
   - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
   - Result(dBm) = Reading + Factor
   - Duty Cycle Factor(dB) = 3.979
6. Plots of the EUT's Channel Edge are shown Page 48 ~ 75. (1RB & Full RB)

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

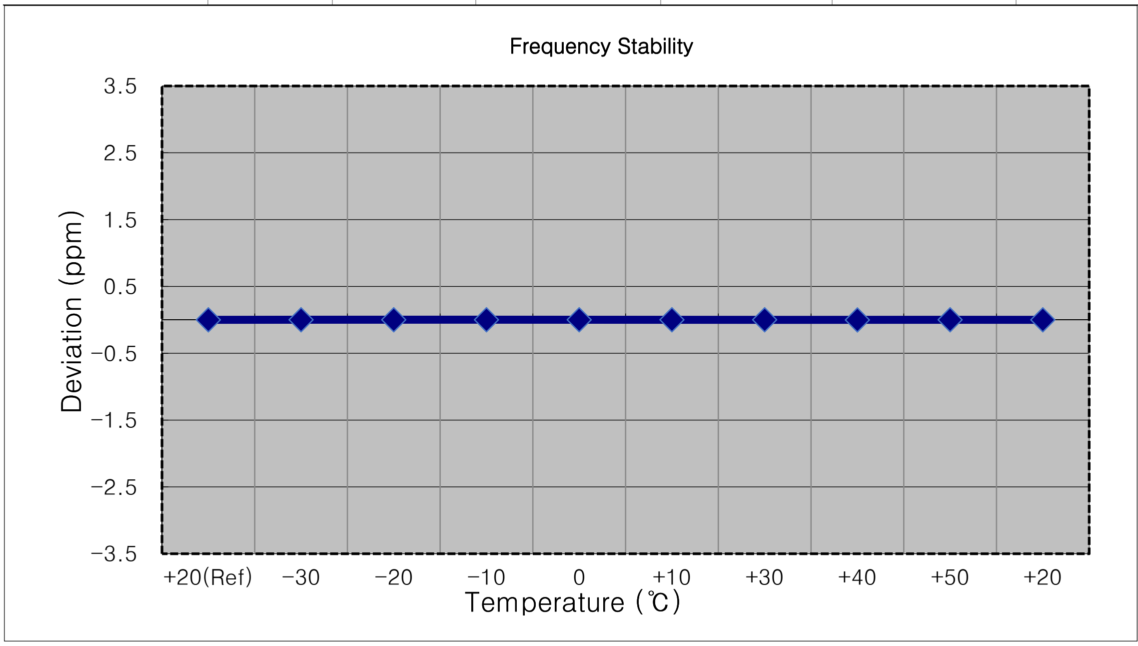
- MODE: LTE 41
- OPERATING FREQUENCY: 2498,500,000 Hz
- BANDWIDTH: 39675 (5 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2498 500 002	0.0	0.000 000	0.000
100 %		-30	2498 500 000	-2.1	0.000 000	-0.001
100 %		-20	2498 500 005	2.8	0.000 000	0.001
100 %		-10	2498 500 006	3.8	0.000 000	0.002
100 %		0	2498 499 999	-3.2	0.000 000	-0.001
100 %		+10	2498 499 999	-3.0	0.000 000	-0.001
100 %		+30	2498 500 004	2.0	0.000 000	0.001
100 %		+40	2498 500 000	-2.4	0.000 000	-0.001
100 %		+50	2498 500 005	2.7	0.000 000	0.001
Batt. Endpoint	3.400	+20	2498 500 000	-1.8	0.000 000	-0.001



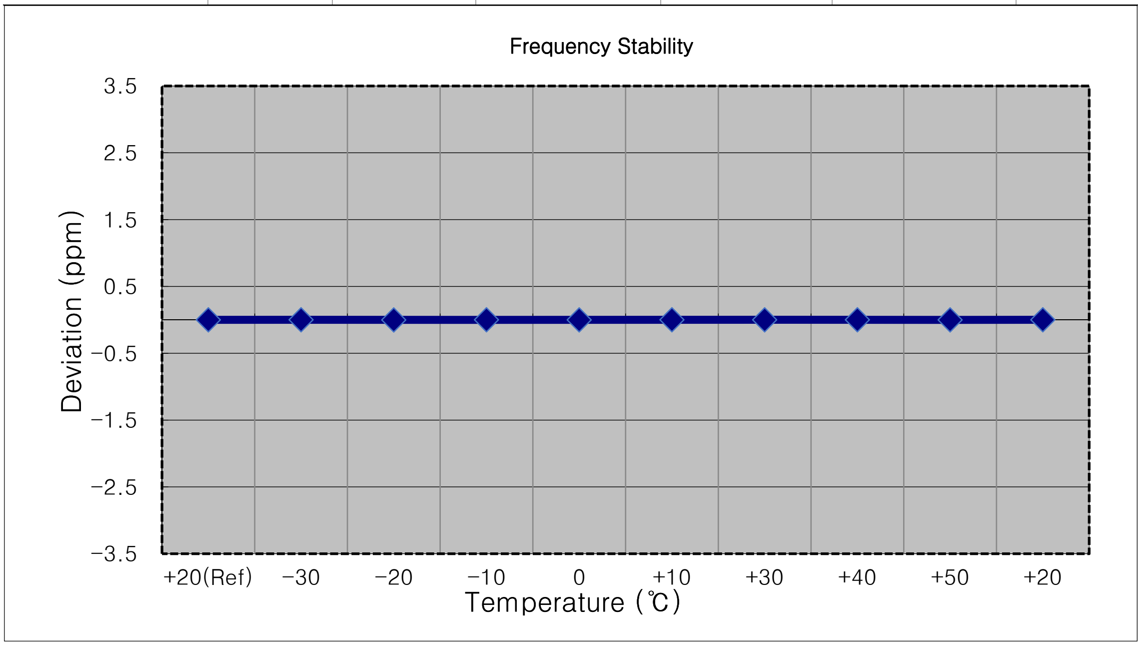
- MODE: LTE 41
- OPERATING FREQUENCY: 2501,000,000 Hz
- BANDWIDTH: 39700 (10 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2501 000 003	0.0	0.000 000	0.000
100 %		-30	2501 000 006	3.1	0.000 000	0.001
100 %		-20	2501 000 006	3.1	0.000 000	0.001
100 %		-10	2501 000 006	2.9	0.000 000	0.001
100 %		0	2501 000 006	3.0	0.000 000	0.001
100 %		+10	2501 000 007	3.3	0.000 000	0.001
100 %		+30	2501 000 006	2.3	0.000 000	0.001
100 %		+40	2501 000 000	-3.2	0.000 000	-0.001
100 %		+50	2501 000 005	2.2	0.000 000	0.001
Batt. Endpoint	3.400	+20	2501 000 005	1.3	0.000 000	0.001



- MODE: LTE 41
- OPERATING FREQUENCY: 2503,500,000 Hz
- BANDWIDTH: 39725 (15 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2503 499 998	0.0	0.000 000	0.000
100 %		-30	2503 500 001	3.1	0.000 000	0.001
100 %		-20	2503 499 996	-2.4	0.000 000	-0.001
100 %		-10	2503 500 001	2.4	0.000 000	0.001
100 %		0	2503 499 996	-2.1	0.000 000	-0.001
100 %		+10	2503 500 000	2.0	0.000 000	0.001
100 %		+30	2503 500 000	1.6	0.000 000	0.001
100 %		+40	2503 500 000	2.0	0.000 000	0.001
100 %		+50	2503 499 997	-1.7	0.000 000	-0.001
Batt. Endpoint	3.400	+20	2503 500 000	2.2	0.000 000	0.001



▣ MODE: LTE 41

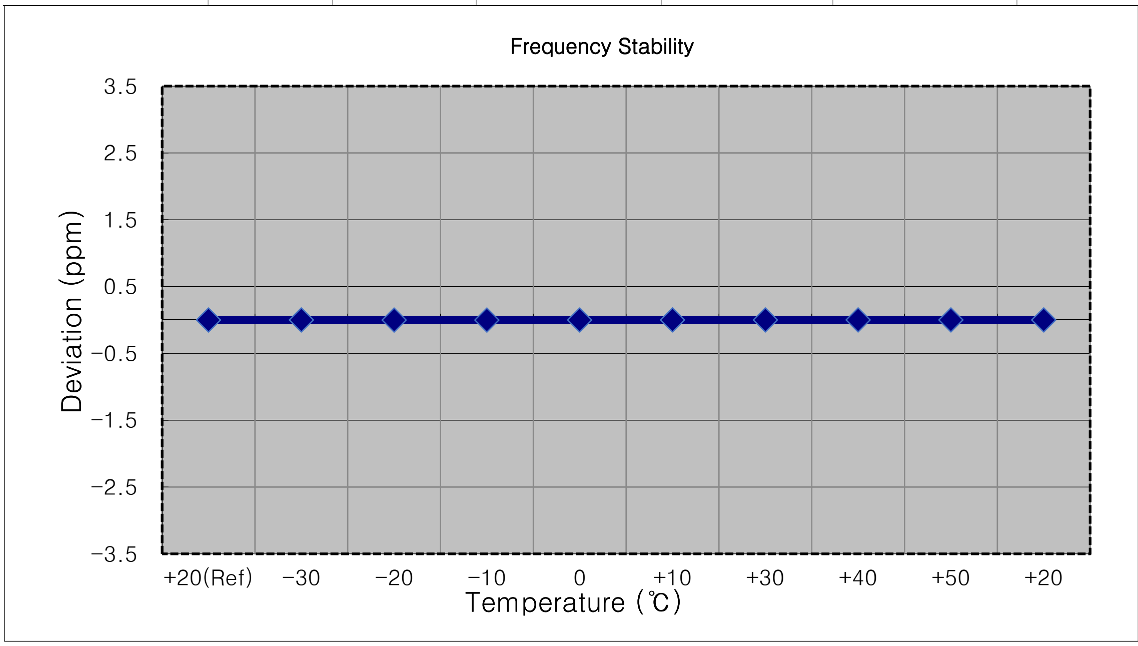
▣ OPERATING FREQUENCY: 2506,000,000 Hz

▣ BANDWIDTH: 39750 (20 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

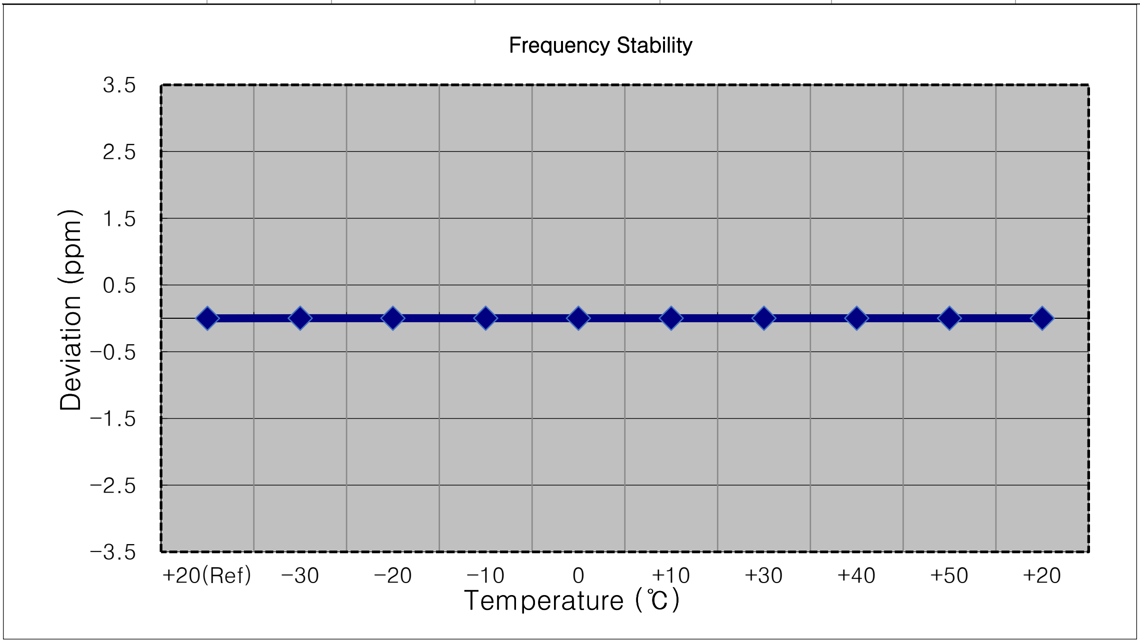
▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2506 000 003	0.0	0.000 000	0.000
100 %		-30	2506 000 004	1.9	0.000 000	0.001
100 %		-20	2506 000 001	-2.0	0.000 000	-0.001
100 %		-10	2506 000 001	-1.5	0.000 000	-0.001
100 %		0	2506 000 003	0.6	0.000 000	0.000
100 %		+10	2506 000 006	3.1	0.000 000	0.001
100 %		+30	2506 000 003	0.8	0.000 000	0.000
100 %		+40	2506 000 004	1.9	0.000 000	0.001
100 %		+50	2506 000 005	2.4	0.000 000	0.001
Batt. Endpoint	3.400	+20	2506 000 005	2.0	0.000 000	0.001



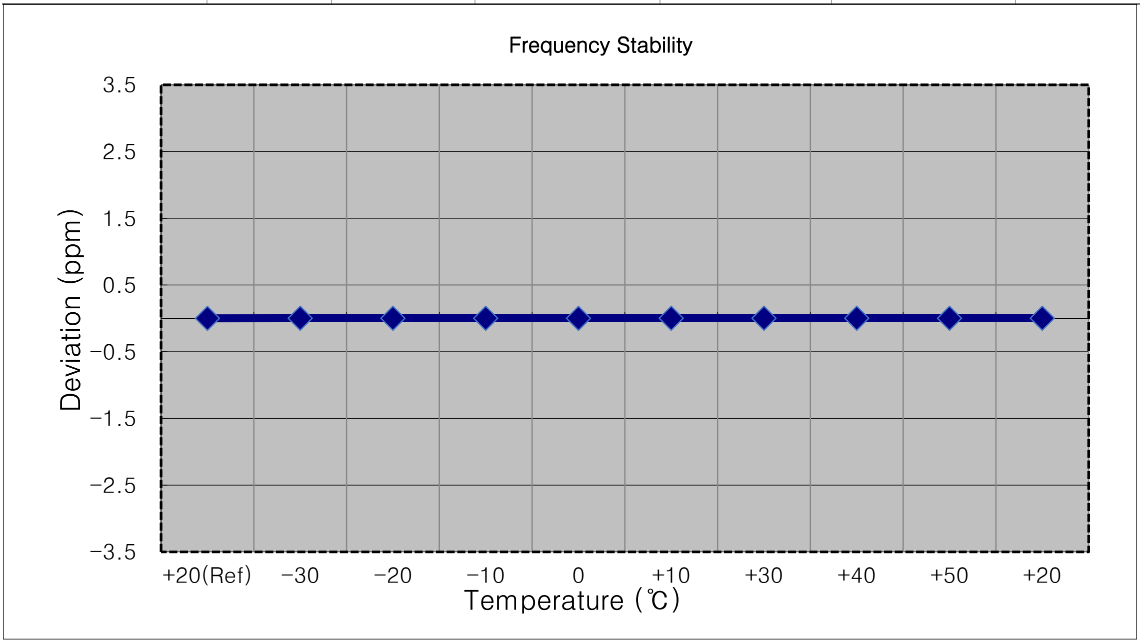
- MODE: LTE 41
- OPERATING FREQUENCY: 2593,000,000 Hz
- BANDWIDTH: 40620 (5 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2593 000 005	0.0	0.000 000	0.000
100 %		-30	2593 000 011	5.8	0.000 000	0.002
100 %		-20	2593 000 009	4.5	0.000 000	0.002
100 %		-10	2593 000 011	6.5	0.000 000	0.003
100 %		0	2593 000 010	5.0	0.000 000	0.002
100 %		+10	2593 000 010	4.6	0.000 000	0.002
100 %		+30	2593 000 010	4.6	0.000 000	0.002
100 %		+40	2593 000 010	4.8	0.000 000	0.002
100 %		+50	2593 000 010	4.8	0.000 000	0.002
Batt. Endpoint	3.400	+20	2593 000 008	3.1	0.000 000	0.001



- MODE: LTE 41
- OPERATING FREQUENCY: 2593,000,000 Hz
- BANDWIDTH: 40620 (10 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2593 000 004	0.0	0.000 000	0.000
100 %		-30	2593 000 009	4.6	0.000 000	0.002
100 %		-20	2593 000 007	2.9	0.000 000	0.001
100 %		-10	2593 000 007	3.2	0.000 000	0.001
100 %		0	2593 000 006	1.6	0.000 000	0.001
100 %		+10	2593 000 008	3.8	0.000 000	0.001
100 %		+30	2593 000 008	4.1	0.000 000	0.002
100 %		+40	2593 000 009	4.7	0.000 000	0.002
100 %		+50	2593 000 007	3.1	0.000 000	0.001
Batt. Endpoint	3.400	+20	2593 000 009	4.8	0.000 000	0.002



▣ MODE: LTE 41

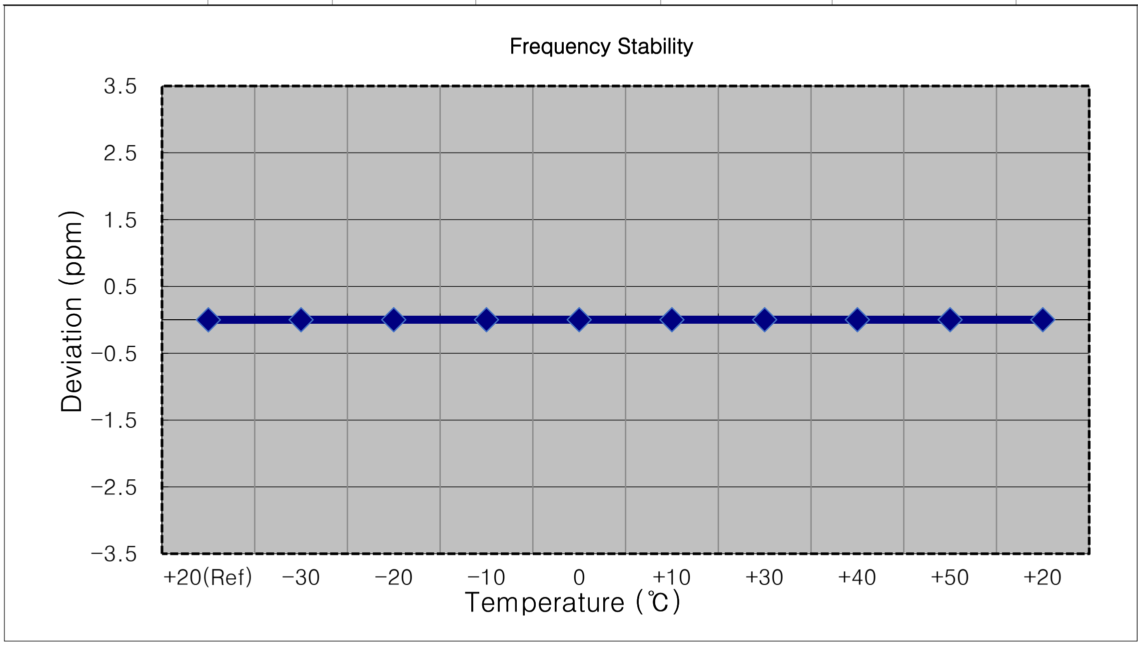
▣ OPERATING FREQUENCY: 2593,000,000 Hz

▣ BANDWIDTH: 40620 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

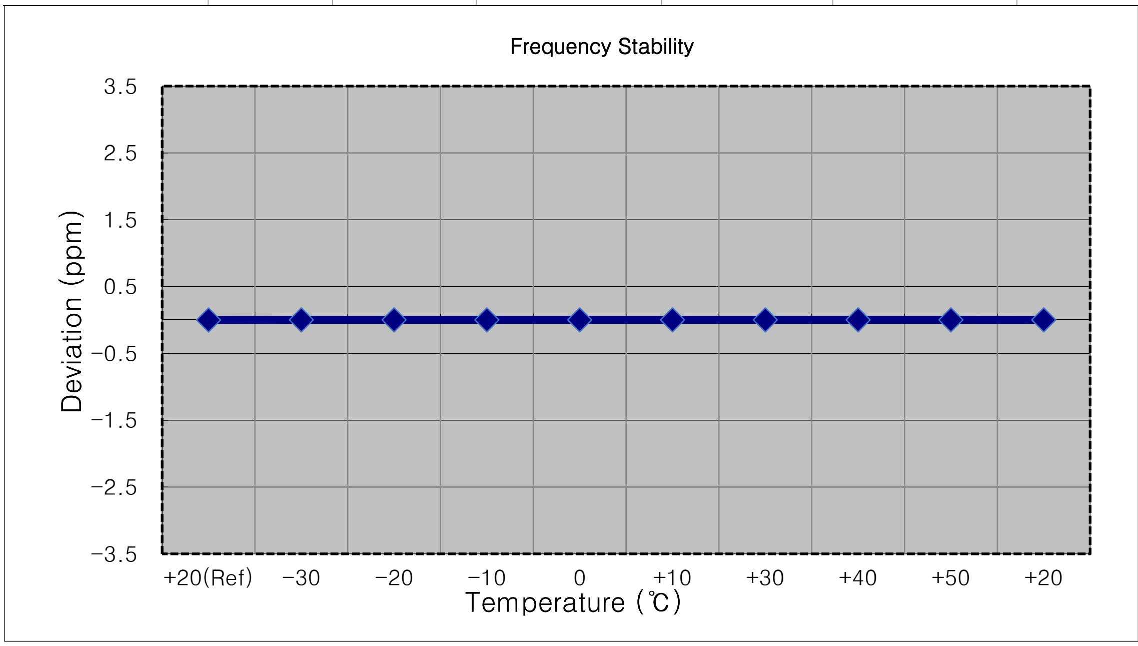
▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2593 000 003	0.0	0.000 000	0.000
100 %		-30	2593 000 007	3.3	0.000 000	0.001
100 %		-20	2593 000 007	3.9	0.000 000	0.002
100 %		-10	2593 000 009	5.1	0.000 000	0.002
100 %		0	2593 000 009	5.3	0.000 000	0.002
100 %		+10	2593 000 008	5.0	0.000 000	0.002
100 %		+30	2593 000 008	4.4	0.000 000	0.002
100 %		+40	2593 000 009	5.2	0.000 000	0.002
100 %		+50	2593 000 008	4.2	0.000 000	0.002
Batt. Endpoint	3.400	+20	2593 000 008	4.4	0.000 000	0.002



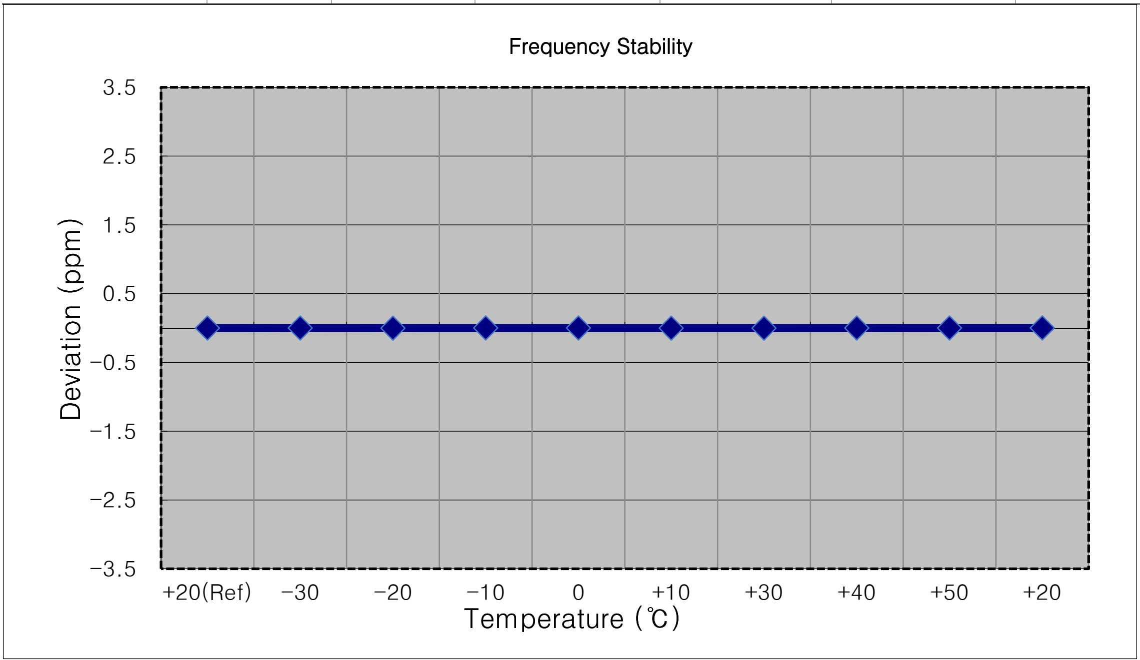
- MODE: LTE 41
- OPERATING FREQUENCY: 2593,000,000 Hz
- BANDWIDTH: 40620 (20 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2593 000 004	0.0	0.000 000	0.000
100 %		-30	2593 000 008	3.8	0.000 000	0.001
100 %		-20	2593 000 008	4.0	0.000 000	0.002
100 %		-10	2593 000 008	3.9	0.000 000	0.002
100 %		0	2593 000 009	4.7	0.000 000	0.002
100 %		+10	2593 000 009	4.8	0.000 000	0.002
100 %		+30	2593 000 009	4.6	0.000 000	0.002
100 %		+40	2593 000 008	3.5	0.000 000	0.001
100 %		+50	2593 000 009	4.6	0.000 000	0.002
Batt. Endpoint	3.400	+20	2593 000 008	3.5	0.000 000	0.001



- MODE: LTE 41
- OPERATING FREQUENCY: 2687,500,000 Hz
- BANDWIDTH: 41565 (5 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2687 499 997	0.0	0.000 000	0.000
100 %		-30	2687 500 000	3.1	0.000 000	0.001
100 %		-20	2687 499 994	-3.3	0.000 000	-0.001
100 %		-10	2687 500 001	3.7	0.000 000	0.001
100 %		0	2687 500 000	2.9	0.000 000	0.001
100 %		+10	2687 499 994	-2.7	0.000 000	-0.001
100 %		+30	2687 499 994	-3.2	0.000 000	-0.001
100 %		+40	2687 500 000	2.9	0.000 000	0.001
100 %		+50	2687 500 000	2.5	0.000 000	0.001
Batt. Endpoint	3.400	+20	2687 500 001	4.1	0.000 000	0.002



▣ MODE: LTE 41

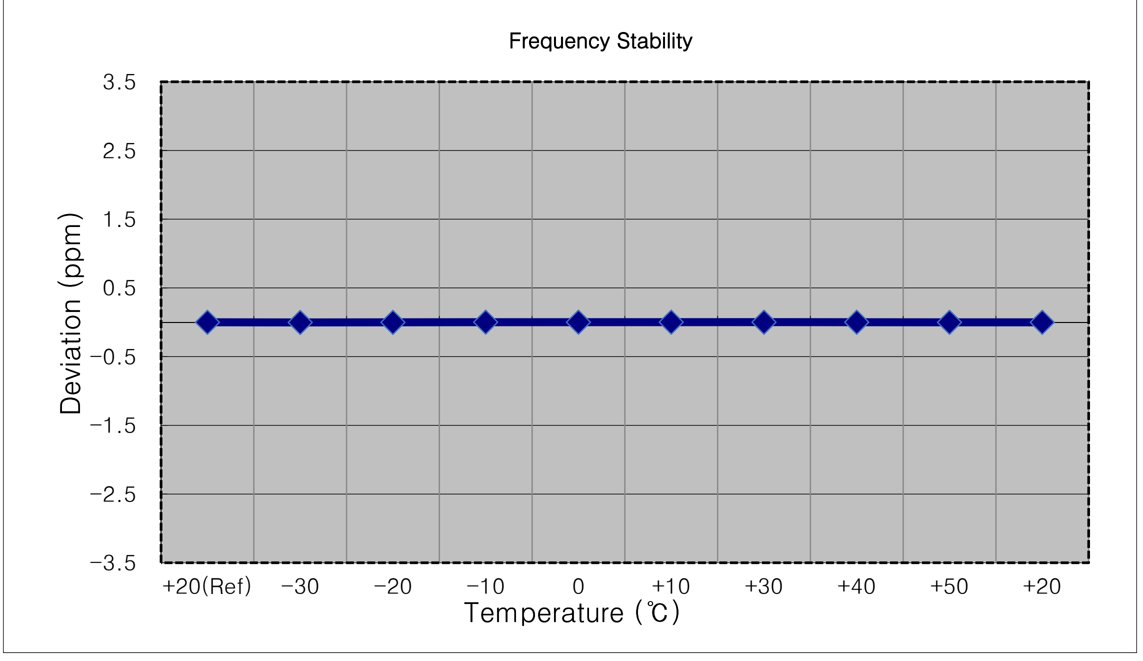
▣ OPERATING FREQUENCY: 2685,000,000 Hz

▣ BANDWIDTH: 41540 (10 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2684 999 996	0.0	0.000 000	0.000
100 %		-30	2684 999 989	-6.4	0.000 000	-0.002
100 %		-20	2684 999 993	-3.2	0.000 000	-0.001
100 %		-10	2685 000 000	4.6	0.000 000	0.002
100 %		0	2684 999 999	3.2	0.000 000	0.001
100 %		+10	2685 000 000	4.3	0.000 000	0.002
100 %		+30	2684 999 999	3.0	0.000 000	0.001
100 %		+40	2684 999 999	2.9	0.000 000	0.001
100 %		+50	2684 999 994	-2.1	0.000 000	-0.001
Batt. Endpoint	3.400	+20	2684 999 993	-2.5	0.000 000	-0.001



▣ MODE: LTE 41

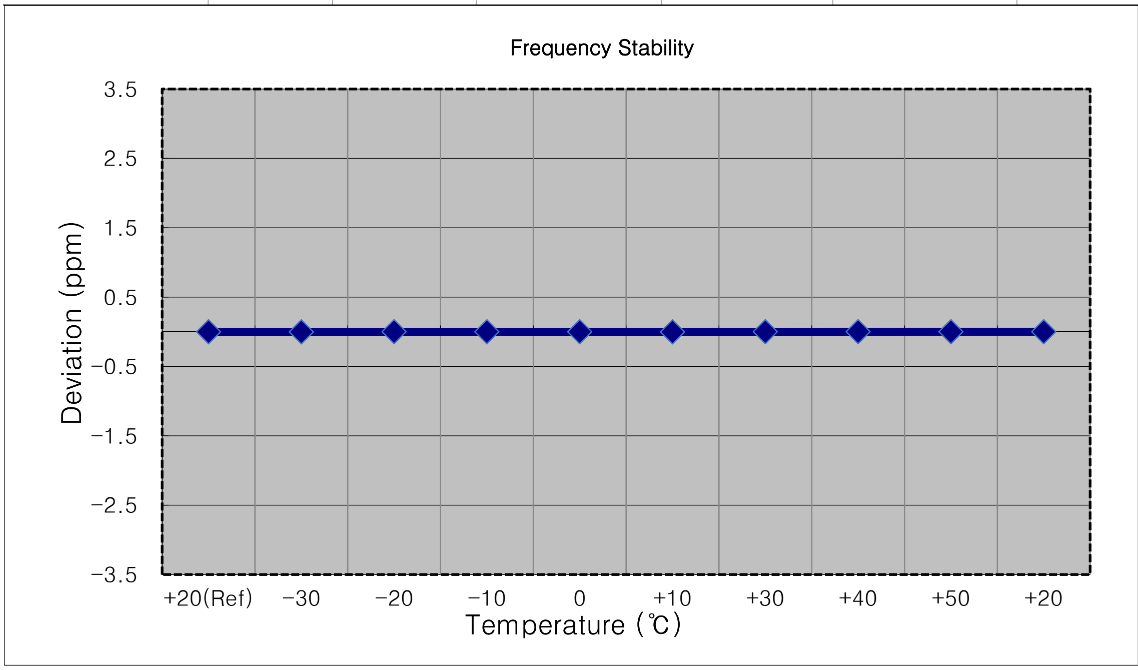
▣ OPERATING FREQUENCY: 2682,500,000 Hz

▣ BANDWIDTH: 41515 (15 MHz)

▣ REFERENCE VOLTAGE: 3.850 VDC

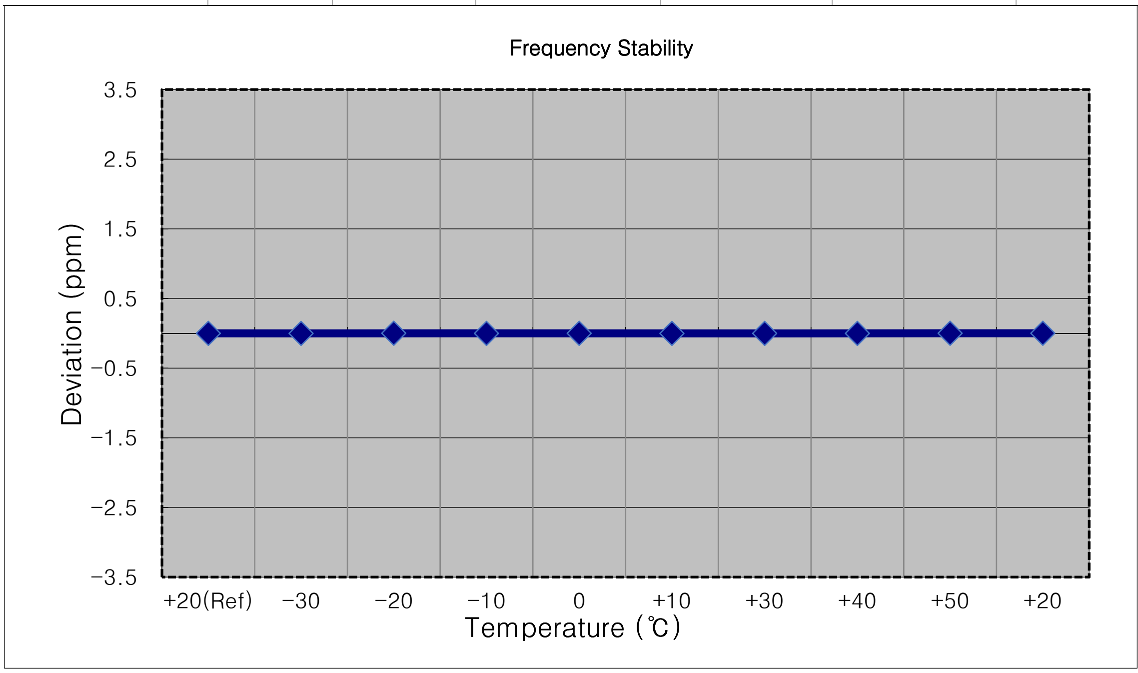
▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2682 499 998	0.0	0.000 000	0.000
100 %		-30	2682 499 996	-2.1	0.000 000	-0.001
100 %		-20	2682 500 000	2.1	0.000 000	0.001
100 %		-10	2682 499 996	-2.0	0.000 000	-0.001
100 %		0	2682 500 000	1.9	0.000 000	0.001
100 %		+10	2682 499 995	-2.3	0.000 000	-0.001
100 %		+30	2682 500 000	2.2	0.000 000	0.001
100 %		+40	2682 500 000	1.9	0.000 000	0.001
100 %		+50	2682 500 000	2.2	0.000 000	0.001
Batt. Endpoint	3.400	+20	2682 499 999	1.6	0.000 000	0.001



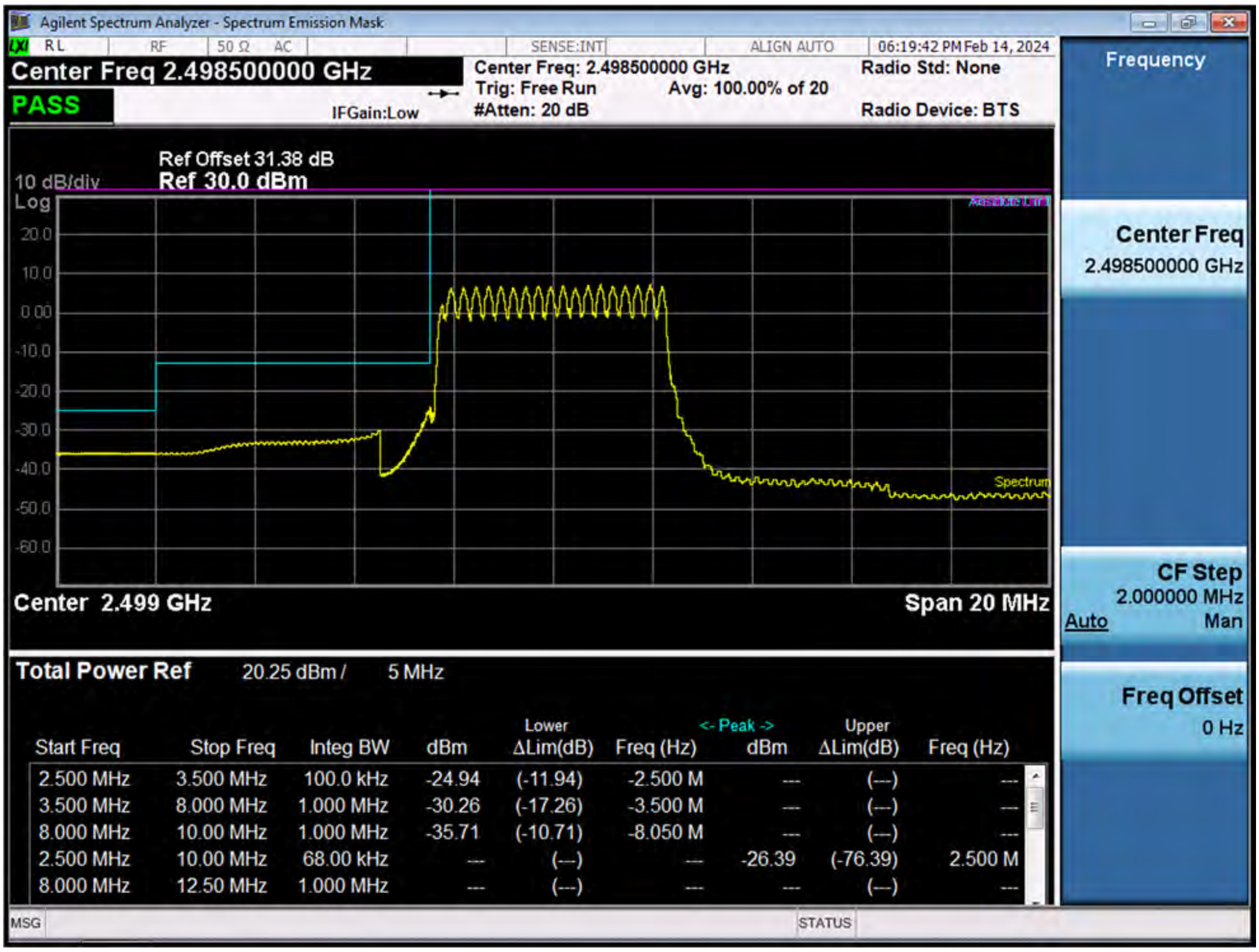
- MODE: LTE 41
- OPERATING FREQUENCY: 2680,000,000 Hz
- BANDWIDTH: 41490 (20 MHz)
- REFERENCE VOLTAGE: 3.850 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.850	+20(Ref)	2679 999 997	0.0	0.000 000	0.000
100 %		-30	2679 999 995	-2.0	0.000 000	-0.001
100 %		-20	2680 000 000	2.8	0.000 000	0.001
100 %		-10	2679 999 994	-3.4	0.000 000	-0.001
100 %		0	2679 999 999	1.9	0.000 000	0.001
100 %		+10	2679 999 995	-2.5	0.000 000	-0.001
100 %		+30	2679 999 994	-2.9	0.000 000	-0.001
100 %		+40	2679 999 994	-3.0	0.000 000	-0.001
100 %		+50	2680 000 000	2.5	0.000 000	0.001
Batt. Endpoint	3.400	+20	2680 000 001	3.4	0.000 000	0.001



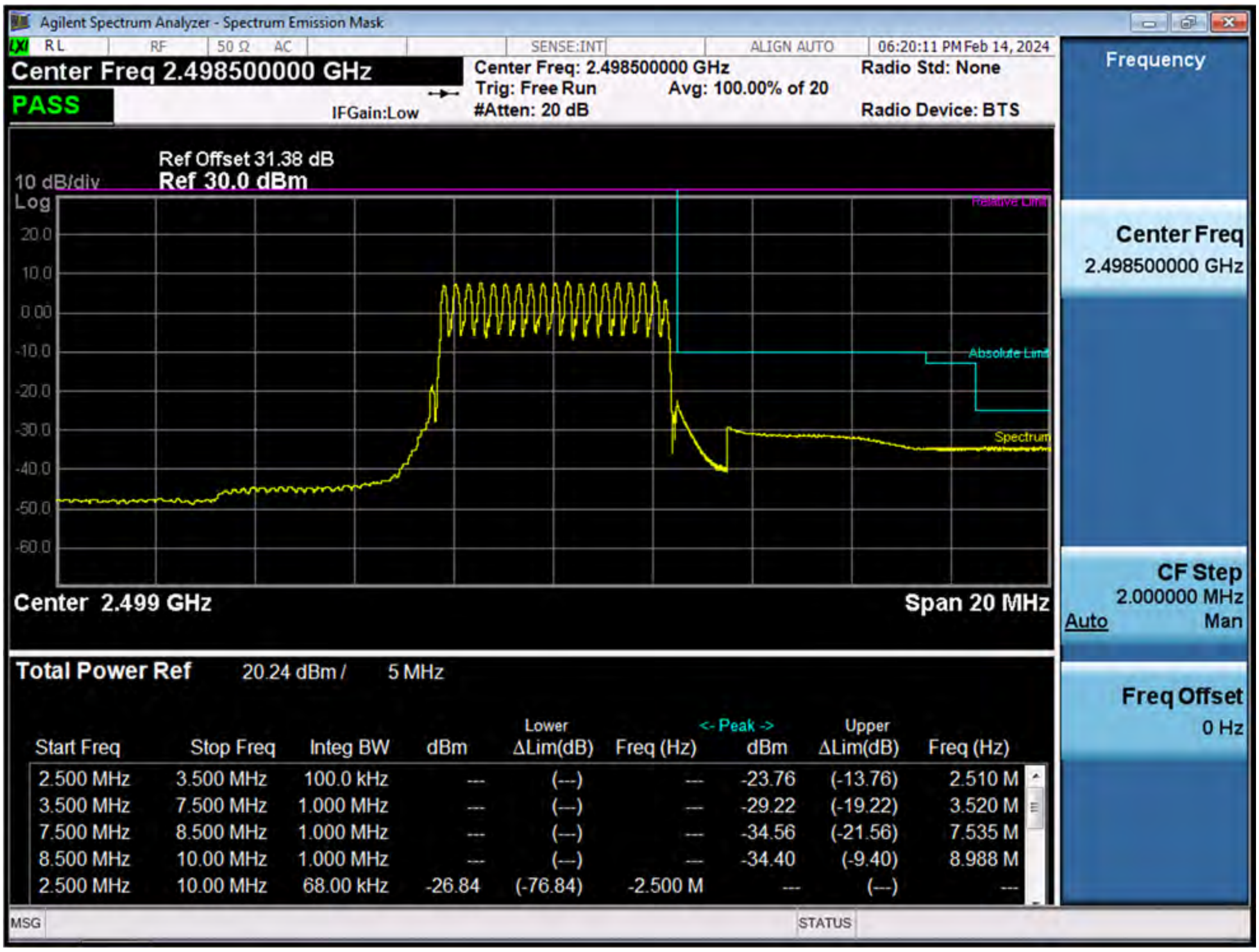
9. TEST PLOTS

LTE41_5 M_BandEdge_Lower_Low_2498.5 MHz_QPSK_FullRB

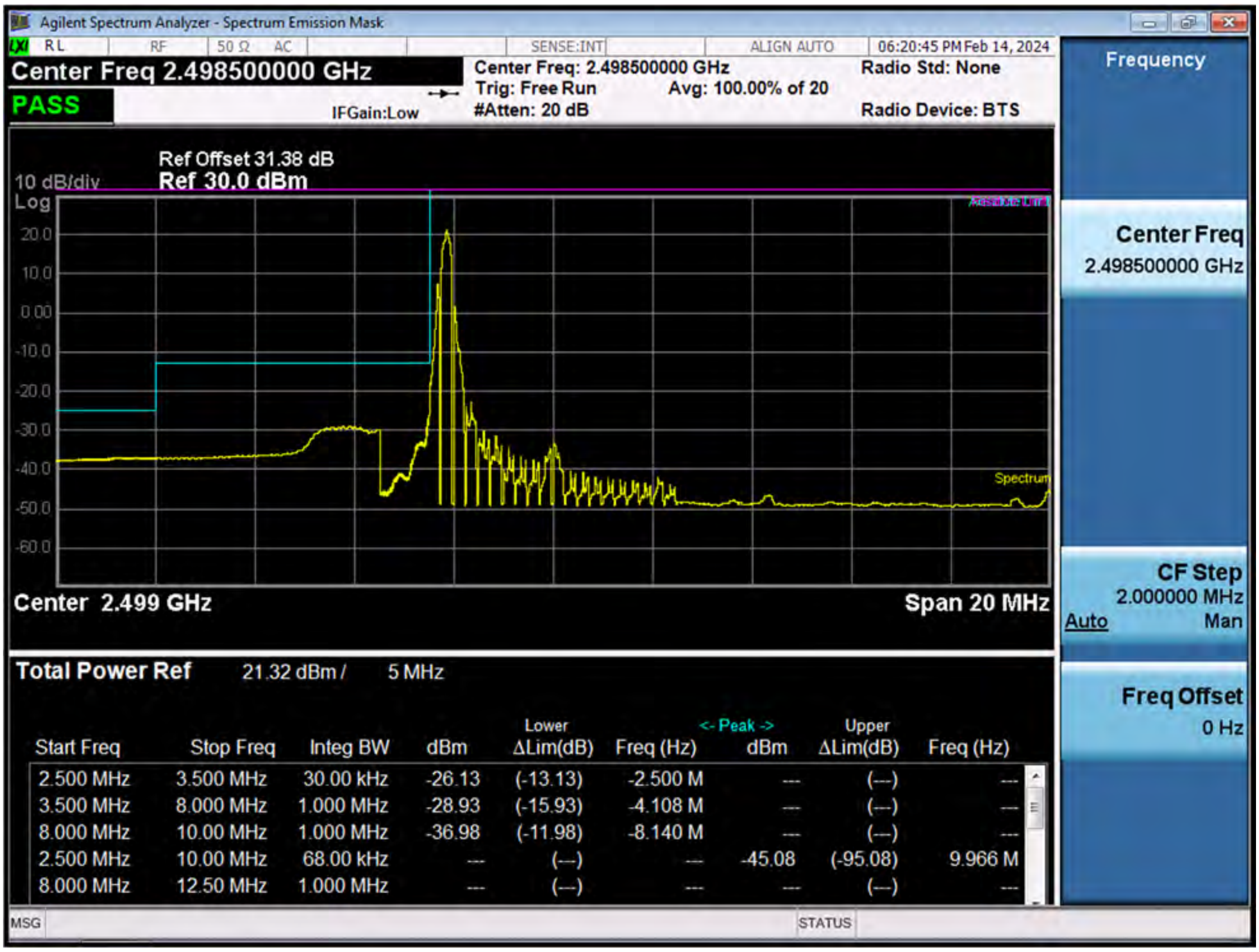


Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
2.500 MHz	3.500 MHz	100.0 kHz	-24.94	(-11.94)	-2.500 M	---	(---)	---
3.500 MHz	8.000 MHz	1.000 MHz	-30.26	(-17.26)	-3.500 M	---	(---)	---
8.000 MHz	10.00 MHz	1.000 MHz	-35.71	(-10.71)	-8.050 M	---	(---)	---
2.500 MHz	10.00 MHz	68.00 kHz	---	(---)	---	-26.39	(-76.39)	2.500 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

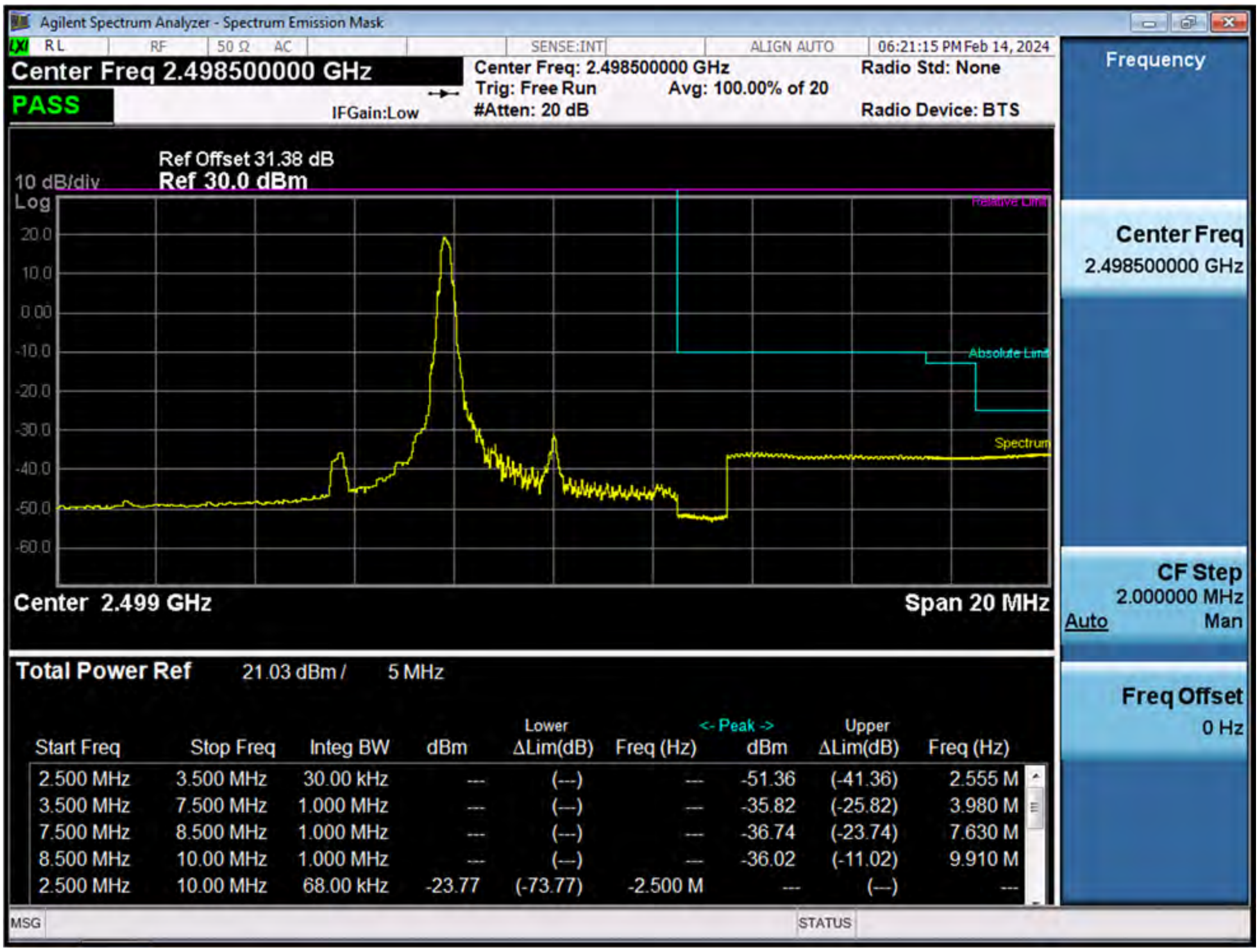
LTE41_5 M_BandEdge_Upper_Low_2498.5 MHz_QPSK_FullRB



LTE41_5 M_BandEdge_Lower_Low_2498.5 MHz_QPSK_1RB

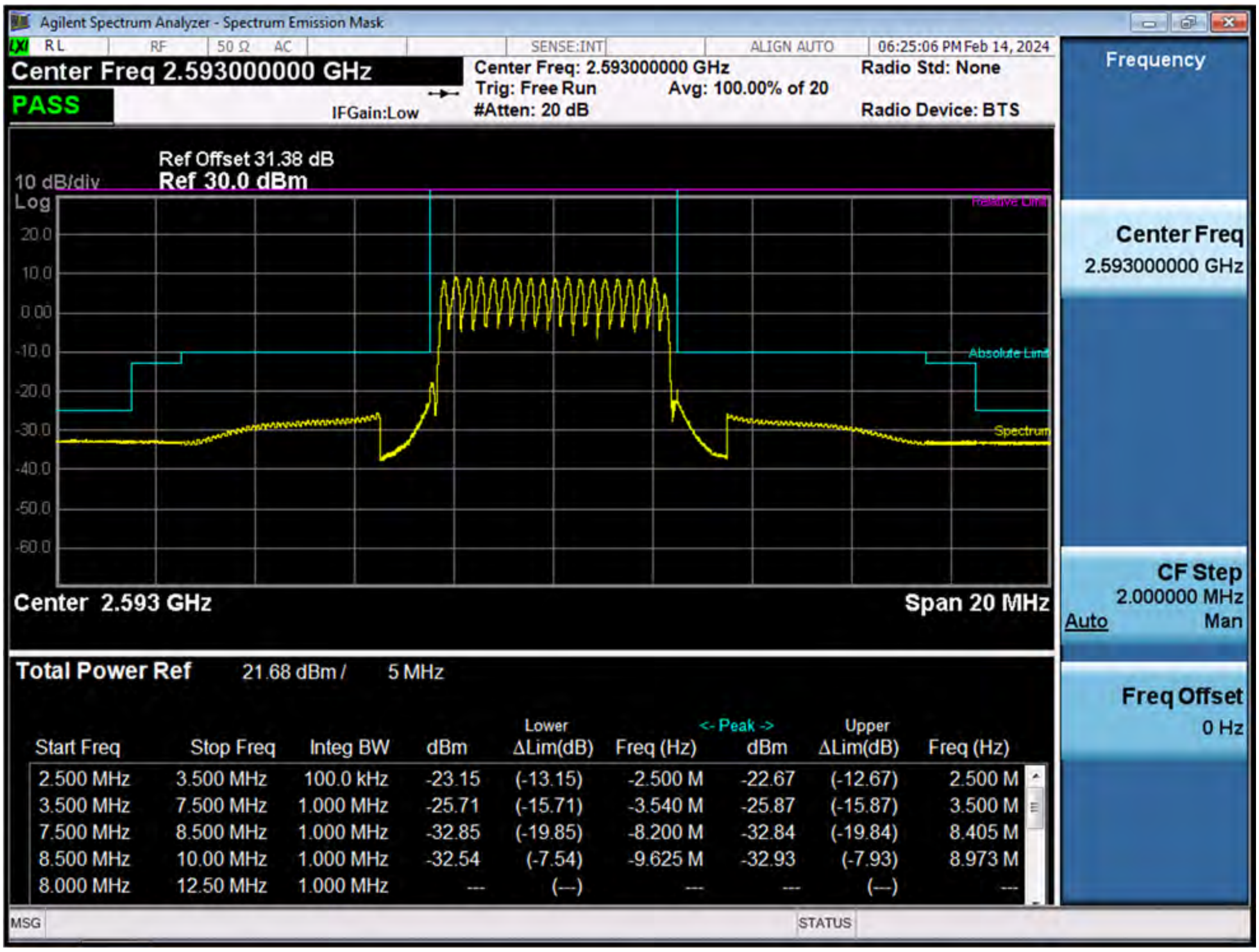


LTE41_5 M_BandEdge_Upper_Low_2498.5 MHz_QPSK_1RB

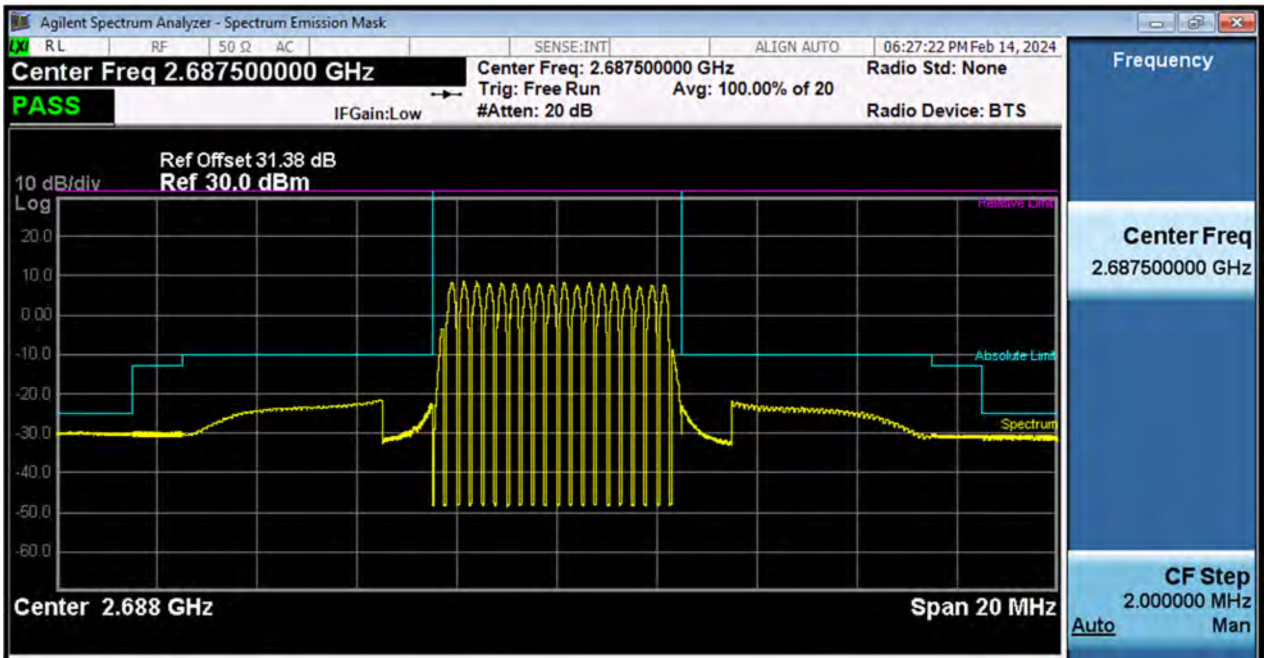


Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	Peak dBm	Upper ΔLim(dB)	Freq (Hz)
2.500 MHz	3.500 MHz	30.00 kHz	---	(---)	---	-51.36	(-41.36)	2.555 M
3.500 MHz	7.500 MHz	1.000 MHz	---	(---)	---	-35.82	(-25.82)	3.980 M
7.500 MHz	8.500 MHz	1.000 MHz	---	(---)	---	-36.74	(-23.74)	7.630 M
8.500 MHz	10.00 MHz	1.000 MHz	---	(---)	---	-36.02	(-11.02)	9.910 M
2.500 MHz	10.00 MHz	68.00 kHz	-23.77	(-73.77)	-2.500 M	---	(---)	---

LTE41_5 M_BandEdge_Mid_2593MHz_QPSK_FullRB

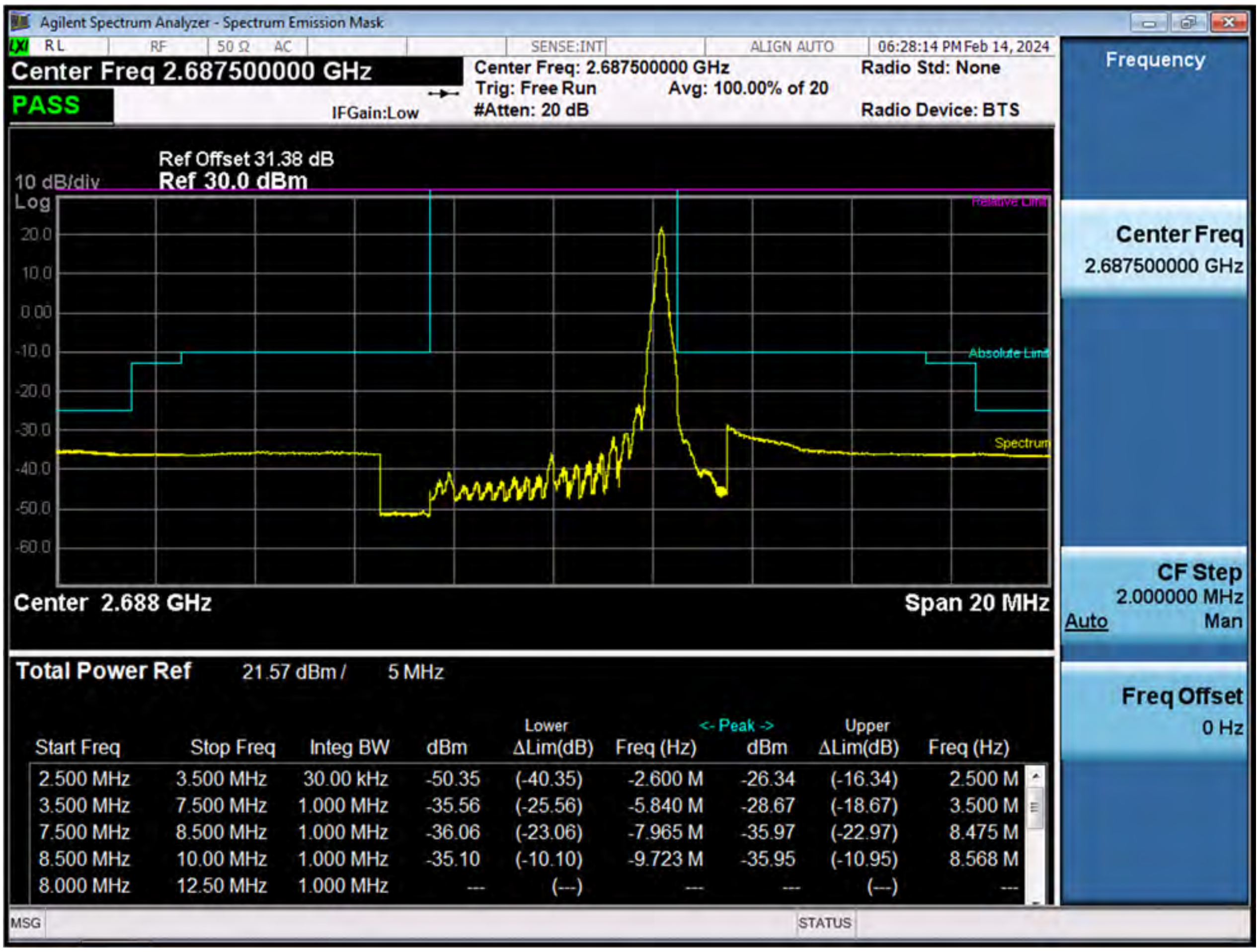


LTE41_5 M_BandEdge_High_2687.5 MHz_QPSK_FullRB



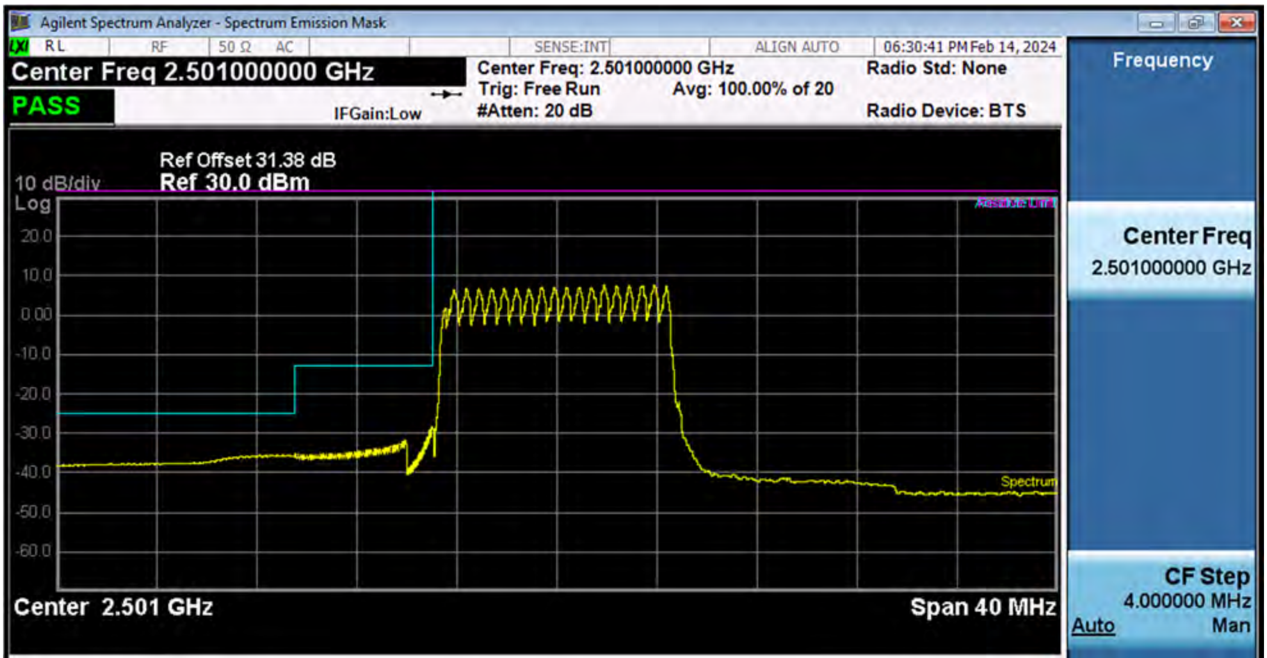
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	Peak dBm	Upper ΔLim(dB)	Freq (Hz)
2.500 MHz	3.500 MHz	100.0 kHz	-22.54	(-12.54)	-2.505 M	-23.22	(-13.22)	2.500 M
3.500 MHz	7.500 MHz	1.000 MHz	-21.52	(-11.52)	-3.540 M	-21.87	(-11.87)	3.500 M
7.500 MHz	8.500 MHz	1.000 MHz	-29.68	(-16.68)	-8.485 M	-30.32	(-17.32)	7.500 M
8.500 MHz	10.00 MHz	1.000 MHz	-29.73	(-4.73)	-9.475 M	-30.46	(-5.46)	9.235 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_5 M_BandEdge_High_2687.5 MHz_QPSK_1RB



Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Peak Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Peak Freq (Hz)
2.500 MHz	3.500 MHz	30.00 kHz	-50.35	(-40.35)	-2.600 M	-26.34	(-16.34)	2.500 M
3.500 MHz	7.500 MHz	1.000 MHz	-35.56	(-25.56)	-5.840 M	-28.67	(-18.67)	3.500 M
7.500 MHz	8.500 MHz	1.000 MHz	-36.06	(-23.06)	-7.965 M	-35.97	(-22.97)	8.475 M
8.500 MHz	10.00 MHz	1.000 MHz	-35.10	(-10.10)	-9.723 M	-35.95	(-10.95)	8.568 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

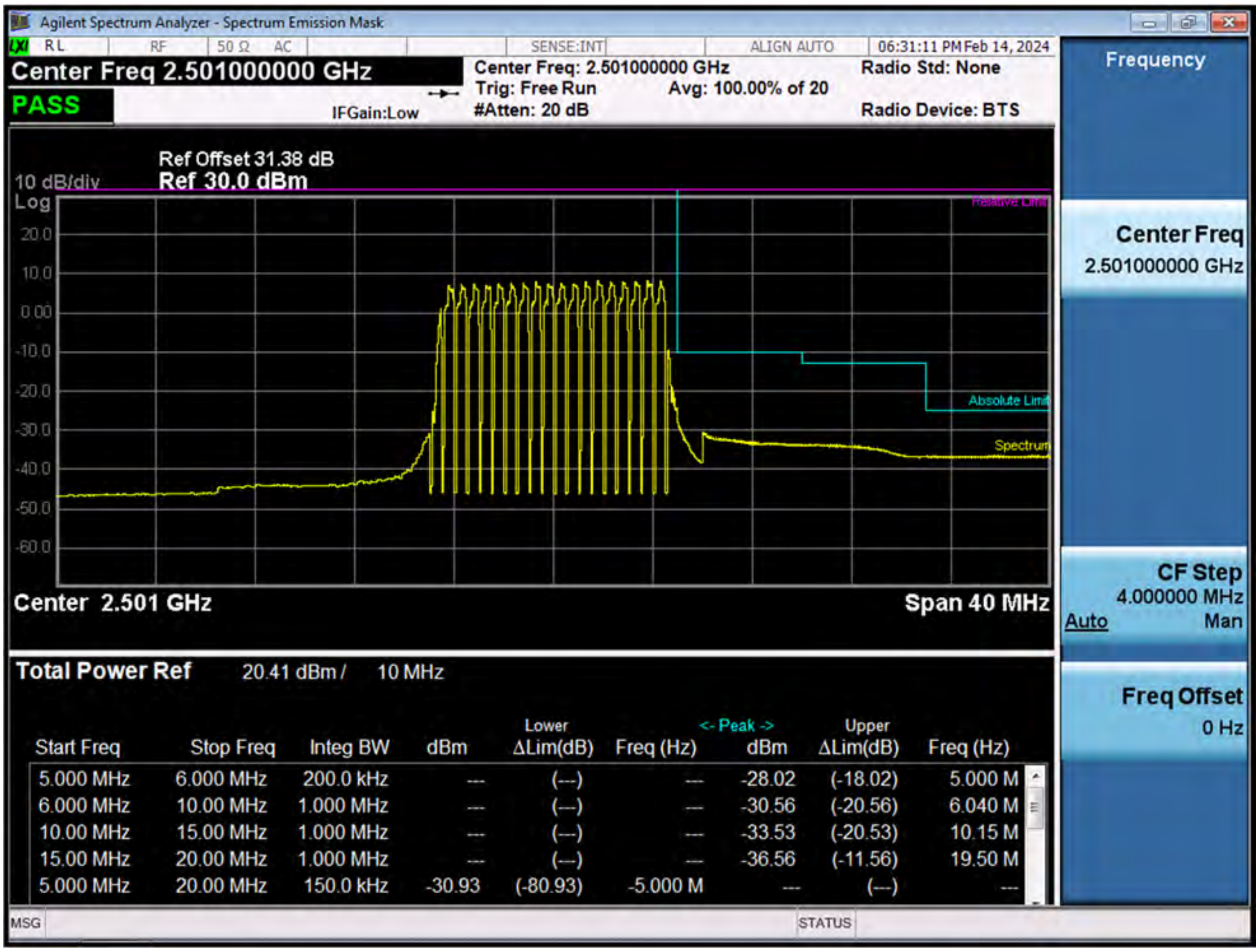
LTE41_10 M_BandEdge_Lower_Low_2501MHz_QPSK_FullRB



Total Power Ref 20.40 dBm / 10 MHz

Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
5.000 MHz	6.000 MHz	200.0 kHz	-28.39	(-15.39)	-5.000 M	---	(---)	---
6.000 MHz	10.50 MHz	1.000 MHz	-31.72	(-18.72)	-6.045 M	---	(---)	---
10.50 MHz	20.00 MHz	1.000 MHz	-35.56	(-10.56)	-11.17 M	---	(---)	---
5.000 MHz	20.00 MHz	150.0 kHz	---	(---)	---	-29.72	(-79.72)	5.000 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_10 M_BandEdge_Upper_Low_2501MHz_QPSK_FullRB

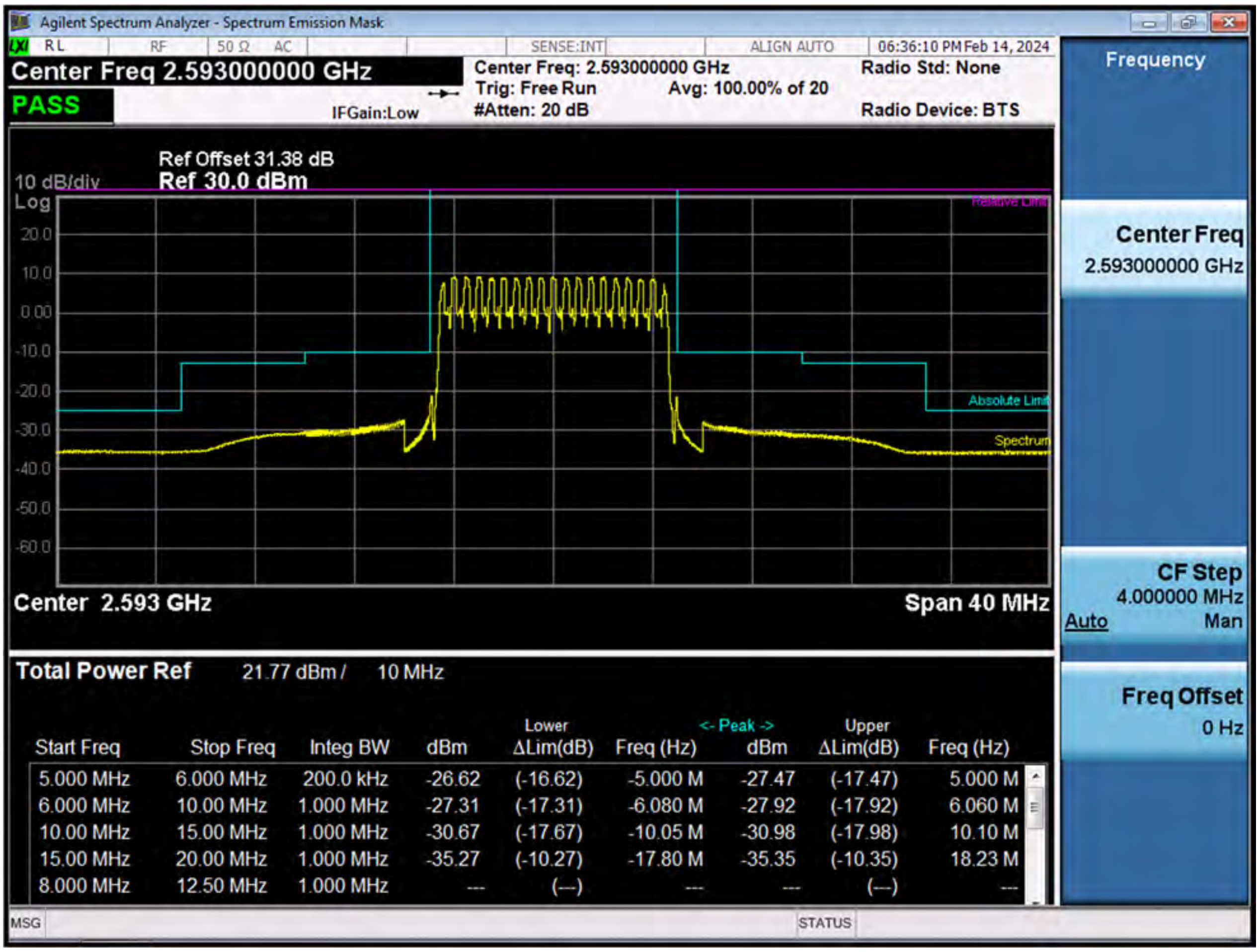


LTE41_10 M_BandEdge_Lower_Low_2501MHz_QPSK_1RB

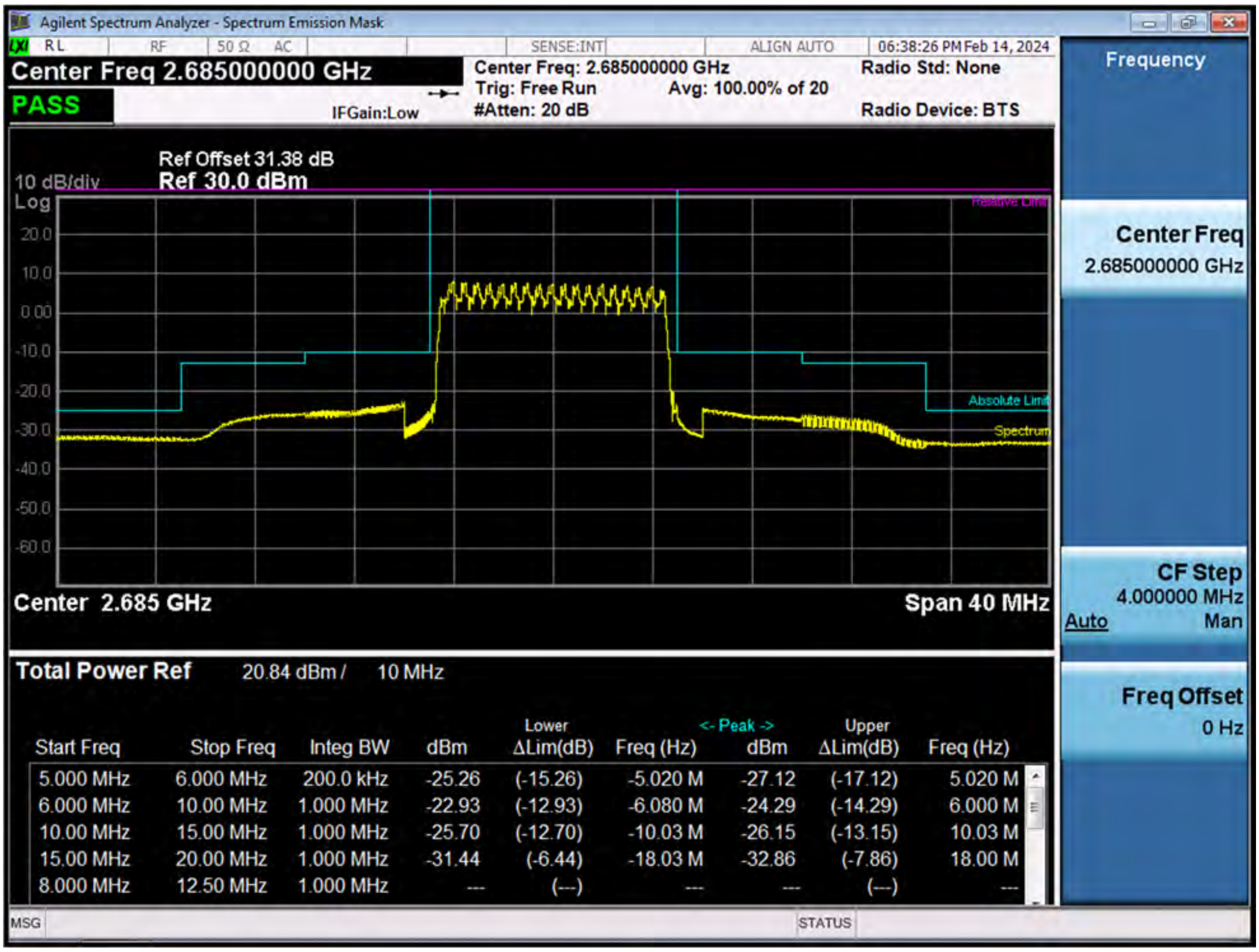
Total Power Ref	21.25 dBm /	10 MHz						
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Freq (Hz)
5.000 MHz	6.000 MHz	30.00 kHz	-35.70	(-22.70)	-5.010 M	---	(---)	---
6.000 MHz	10.50 MHz	1.000 MHz	-30.39	(-17.39)	-8.723 M	---	(---)	---
10.50 MHz	20.00 MHz	1.000 MHz	-37.53	(-12.53)	-10.74 M	---	(---)	---
5.000 MHz	20.00 MHz	150.0 kHz	---	(---)	---	-42.84	(-92.84)	7.700 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_10 M_BandEdge_Upper_Low_2501MHz_QPSK_1RB

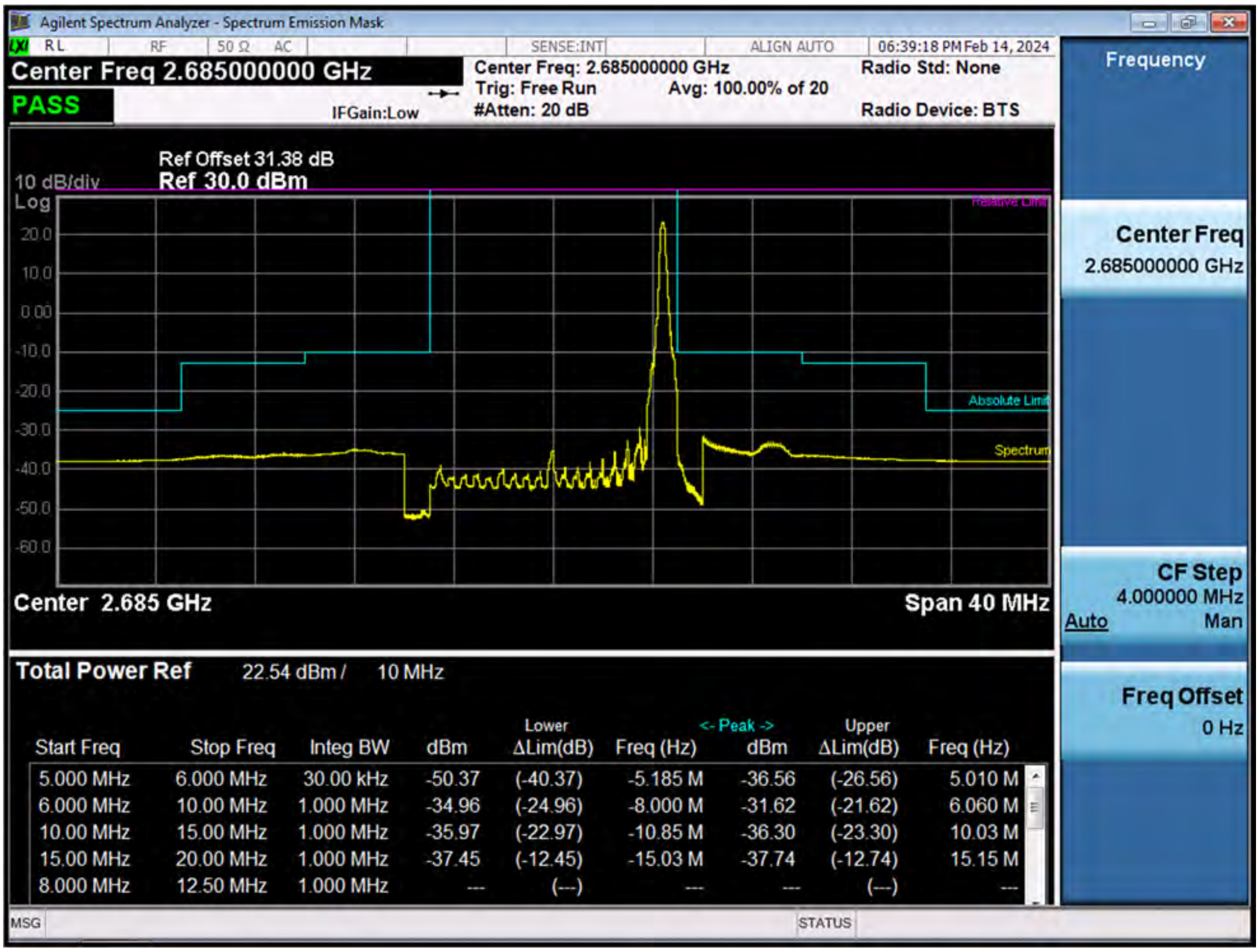
LTE41_10 M_BandEdge_Mid_2593MHz_QPSK_FullRB



LTE41_10 M_BandEdge_High_2685 MHz_QPSK_FullRB

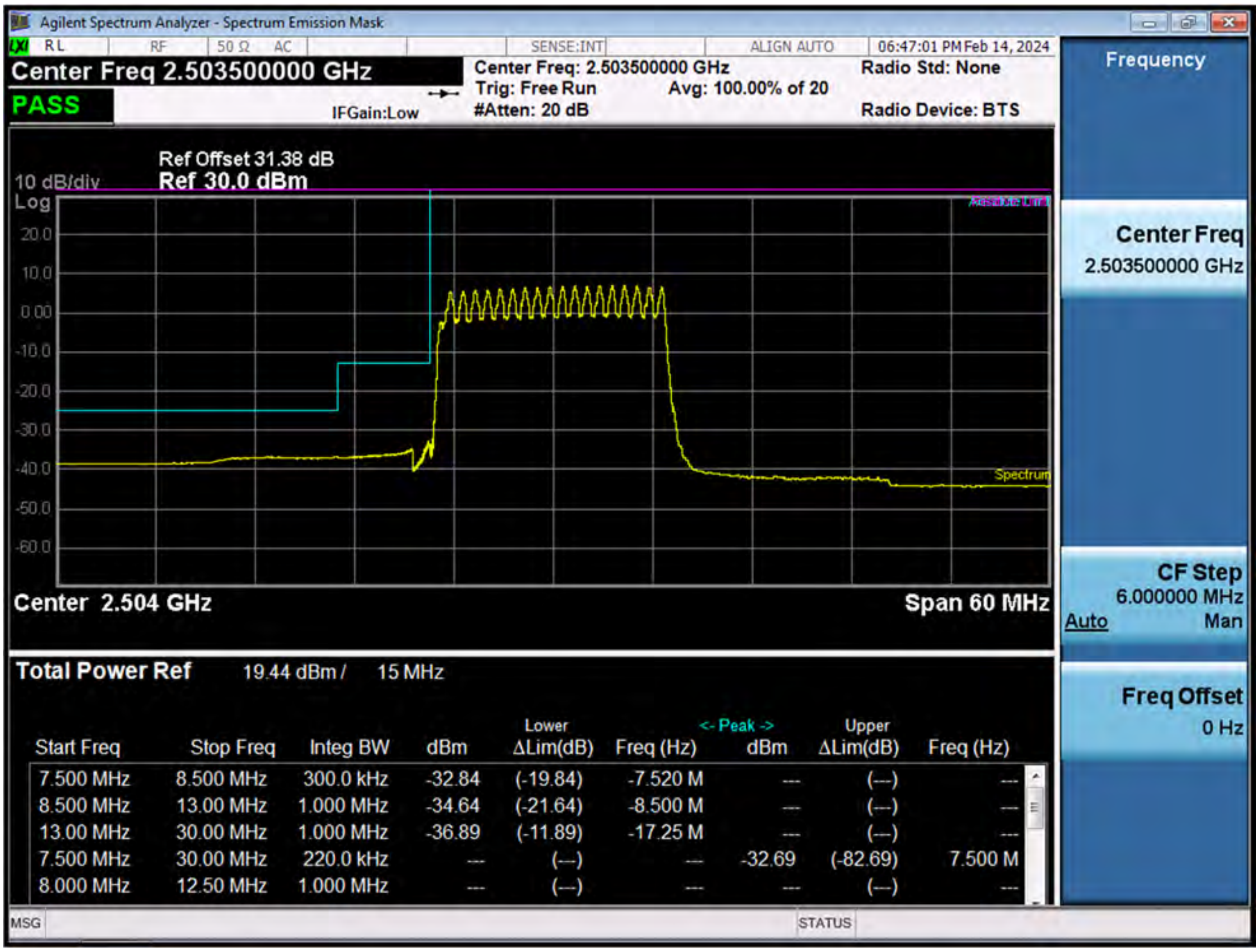


LTE41_10 M_BandEdge_High_2685 MHz_QPSK_1RB



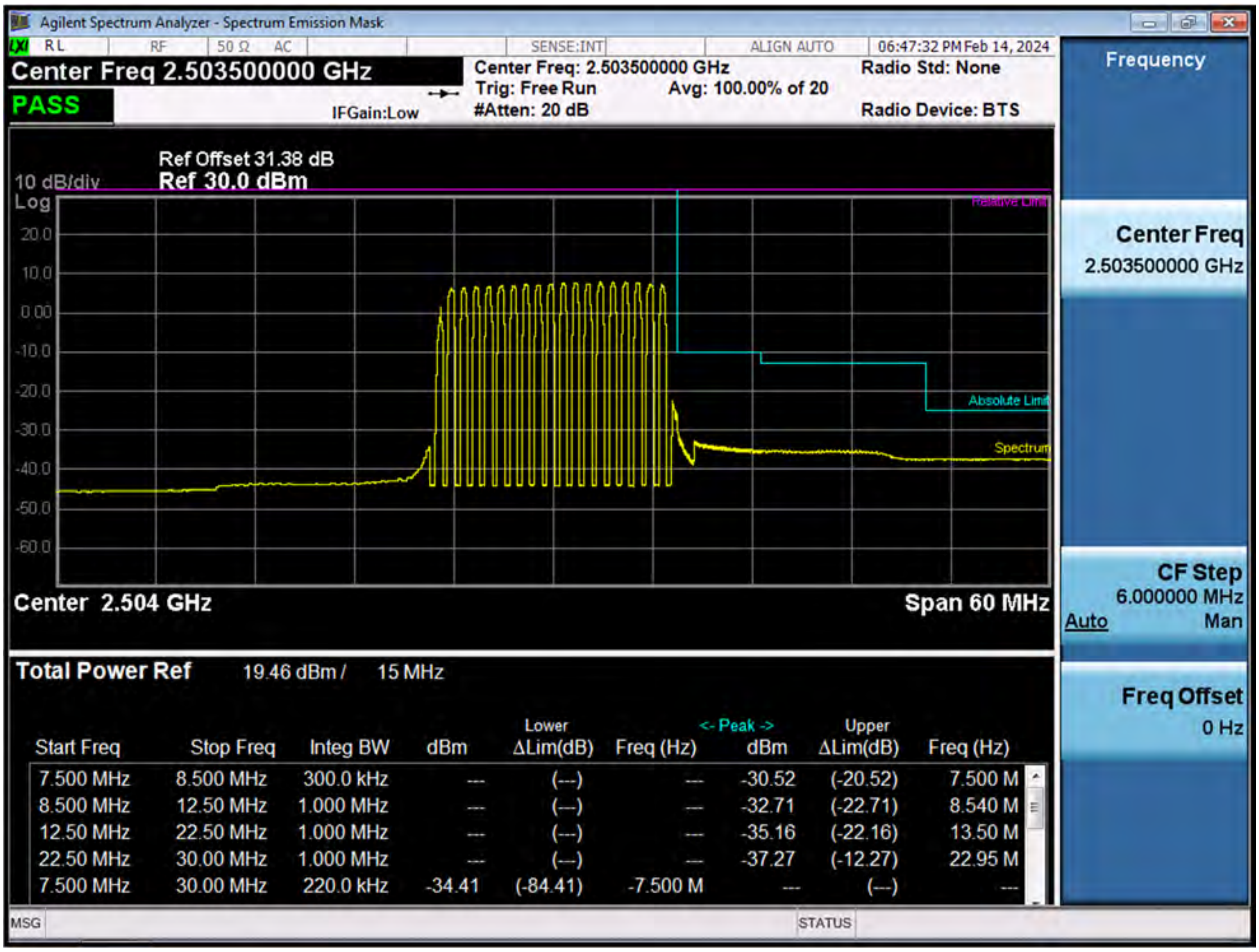
Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
5.000 MHz	6.000 MHz	30.00 kHz	-50.37	(-40.37)	-5.185 M	-36.56	(-26.56)	5.010 M
6.000 MHz	10.00 MHz	1.000 MHz	-34.96	(-24.96)	-8.000 M	-31.62	(-21.62)	6.060 M
10.00 MHz	15.00 MHz	1.000 MHz	-35.97	(-22.97)	-10.85 M	-36.30	(-23.30)	10.03 M
15.00 MHz	20.00 MHz	1.000 MHz	-37.45	(-12.45)	-15.03 M	-37.74	(-12.74)	15.15 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_15 M_BandEdge_Lower_Low_2503.5 MHz_QPSK_FullRB



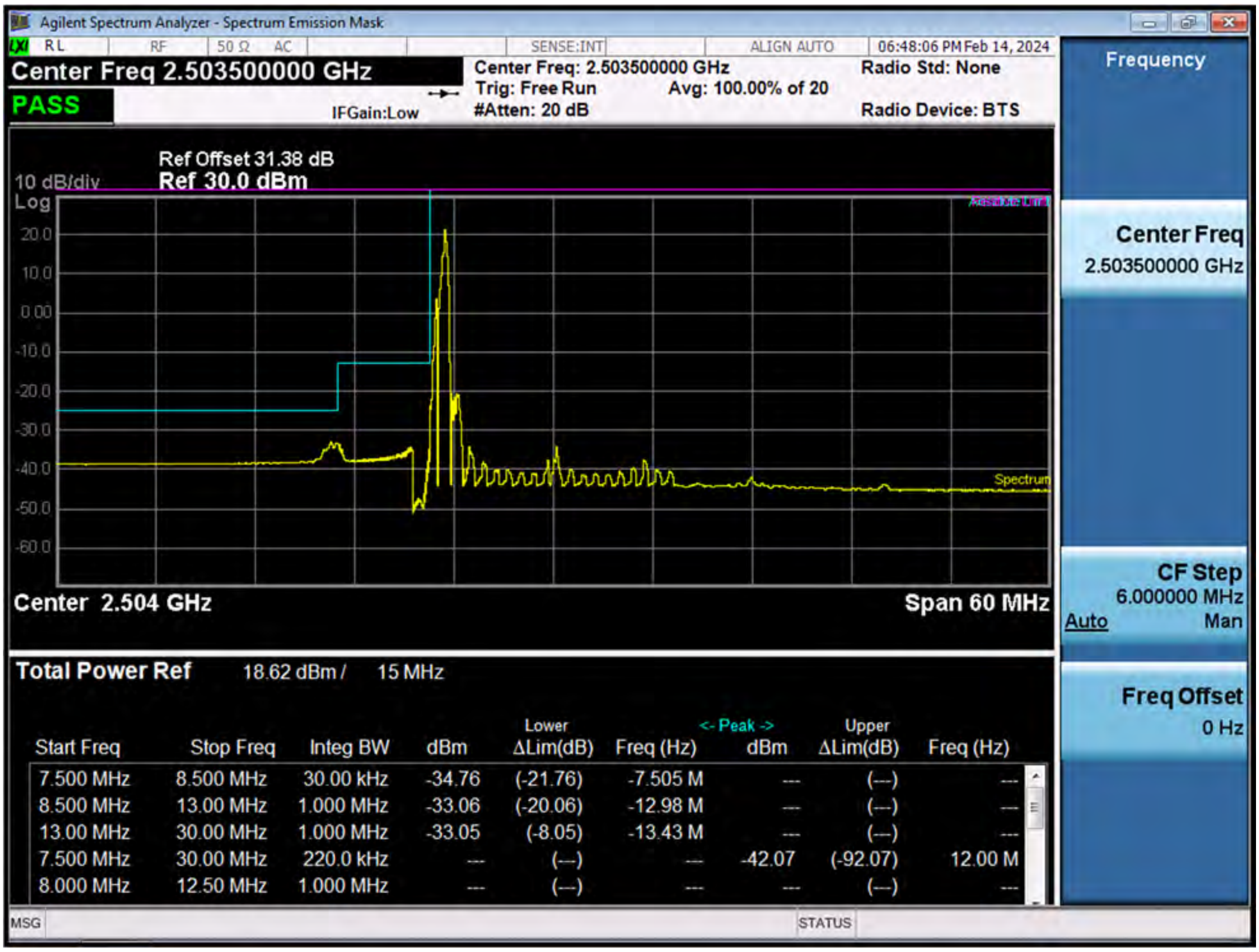
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Freq (Hz)
7.500 MHz	8.500 MHz	300.0 kHz	-32.84	(-19.84)	-7.520 M	---	(---)	---
8.500 MHz	13.00 MHz	1.000 MHz	-34.64	(-21.64)	-8.500 M	---	(---)	---
13.00 MHz	30.00 MHz	1.000 MHz	-36.89	(-11.89)	-17.25 M	---	(---)	---
7.500 MHz	30.00 MHz	220.0 kHz	---	(---)	---	-32.69	(-82.69)	7.500 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_15 M_BandEdge_Upper_Low_2503.5 MHz_QPSK_FullRB

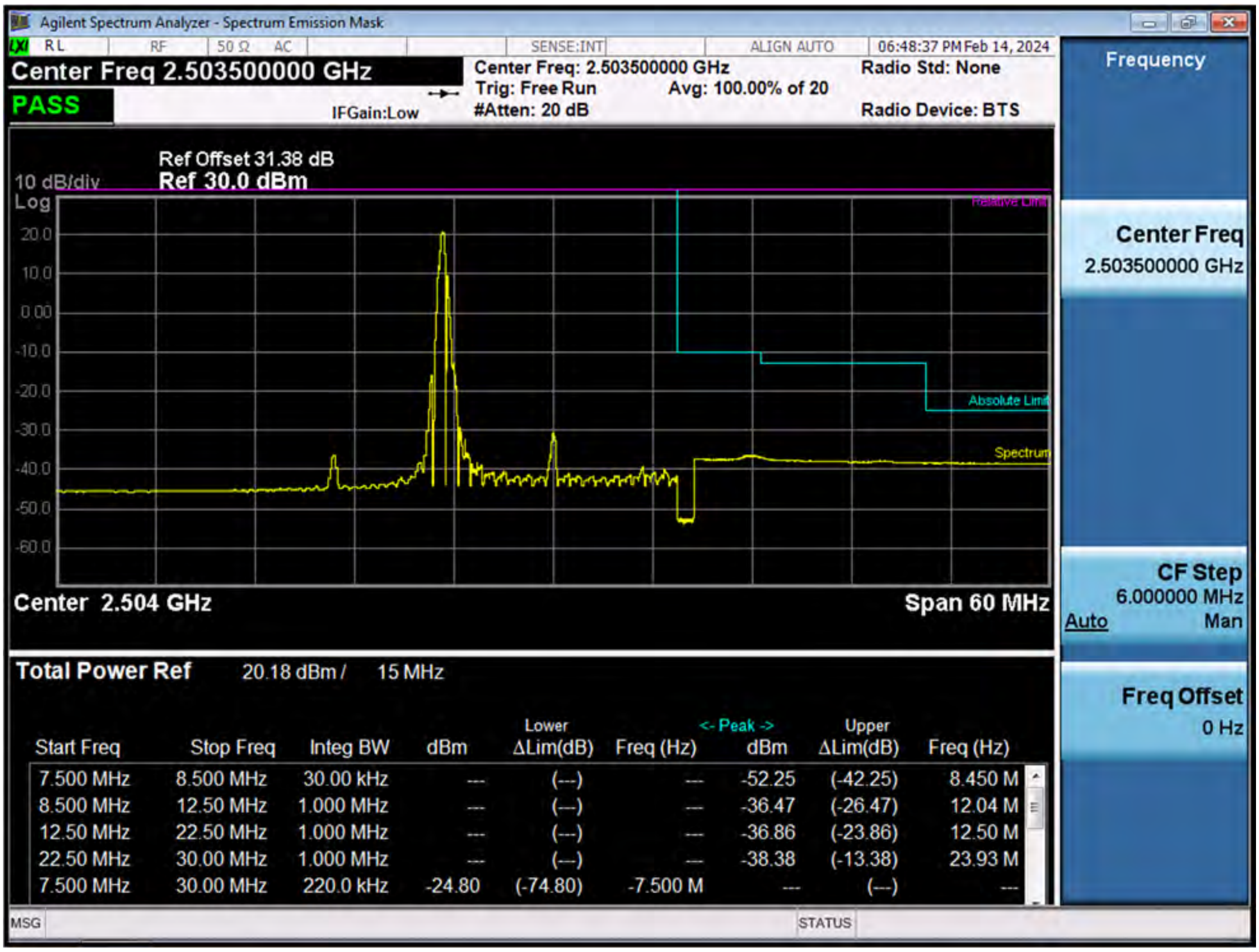


Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
7.500 MHz	8.500 MHz	300.0 kHz	---	(---)	---	-30.52	(-20.52)	7.500 M
8.500 MHz	12.50 MHz	1.000 MHz	---	(---)	---	-32.71	(-22.71)	8.540 M
12.50 MHz	22.50 MHz	1.000 MHz	---	(---)	---	-35.16	(-22.16)	13.50 M
22.50 MHz	30.00 MHz	1.000 MHz	---	(---)	---	-37.27	(-12.27)	22.95 M
7.500 MHz	30.00 MHz	220.0 kHz	-34.41	(-84.41)	-7.500 M	---	(---)	---

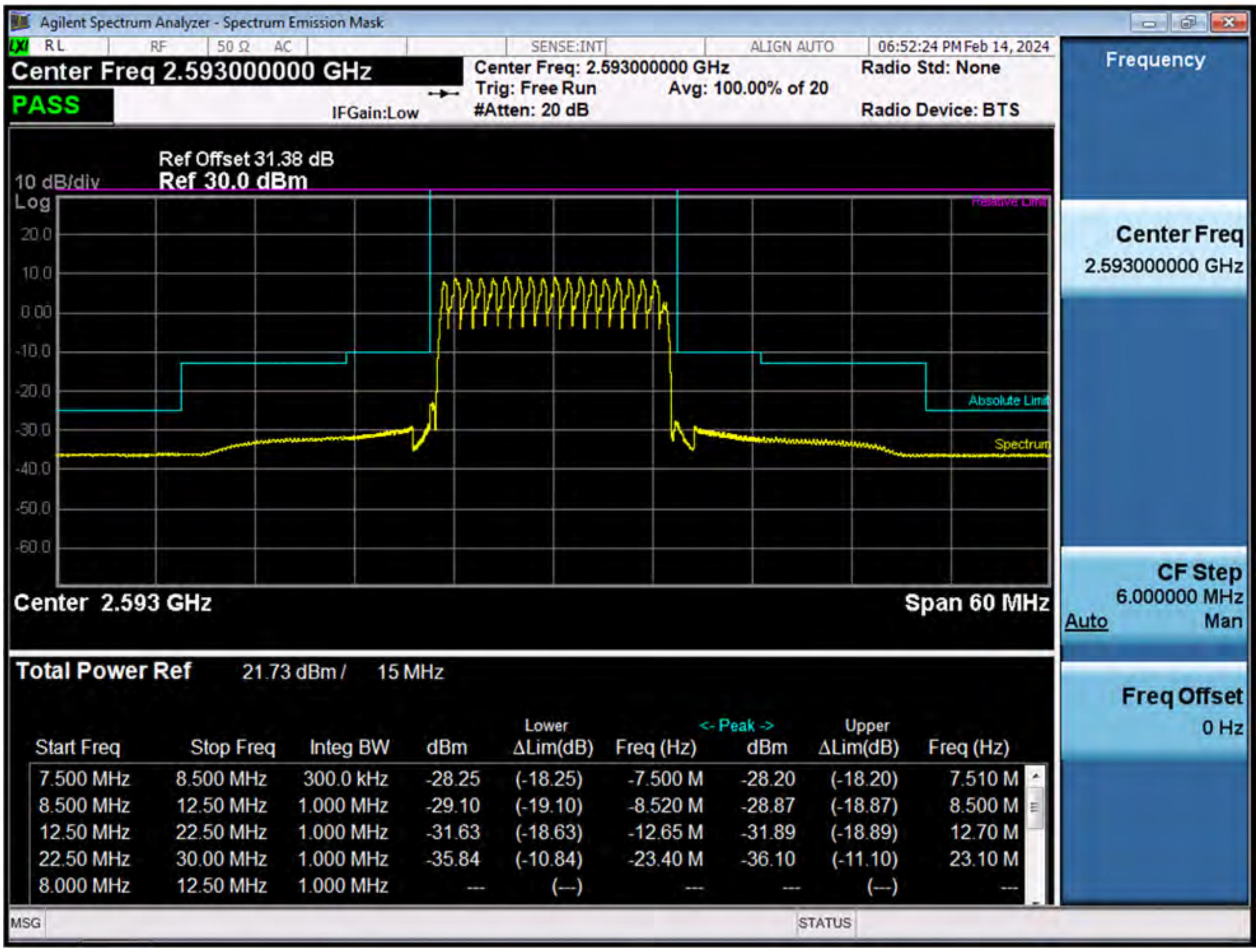
LTE41_15 M_BandEdge_Lower_Low_2503.5 MHz_QPSK_1RB



LTE41_15 M_BandEdge_Upper_Low_2503.5 MHz_QPSK_1RB

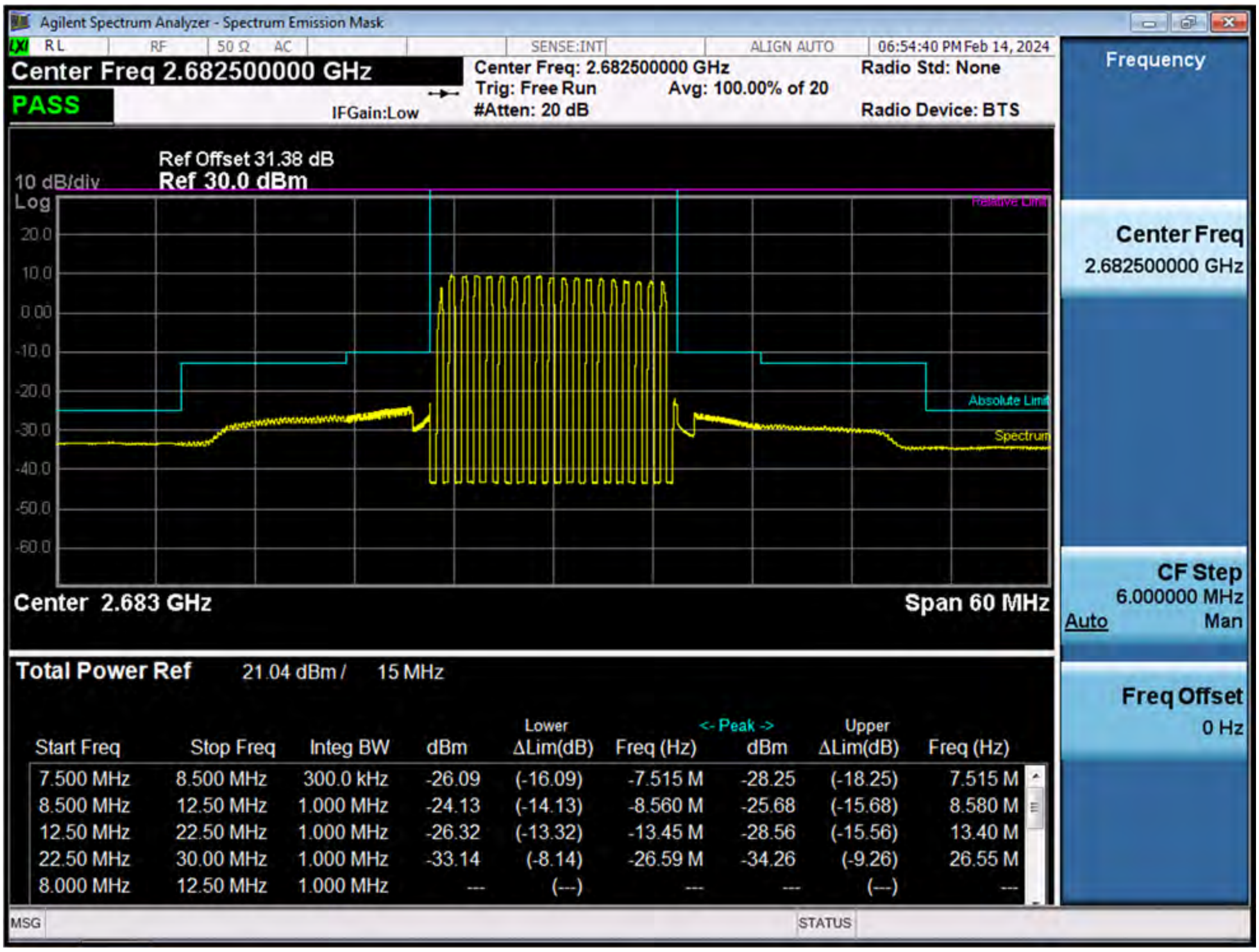


LTE41_15 M_BandEdge_Mid_2593MHz_QPSK_FullRB

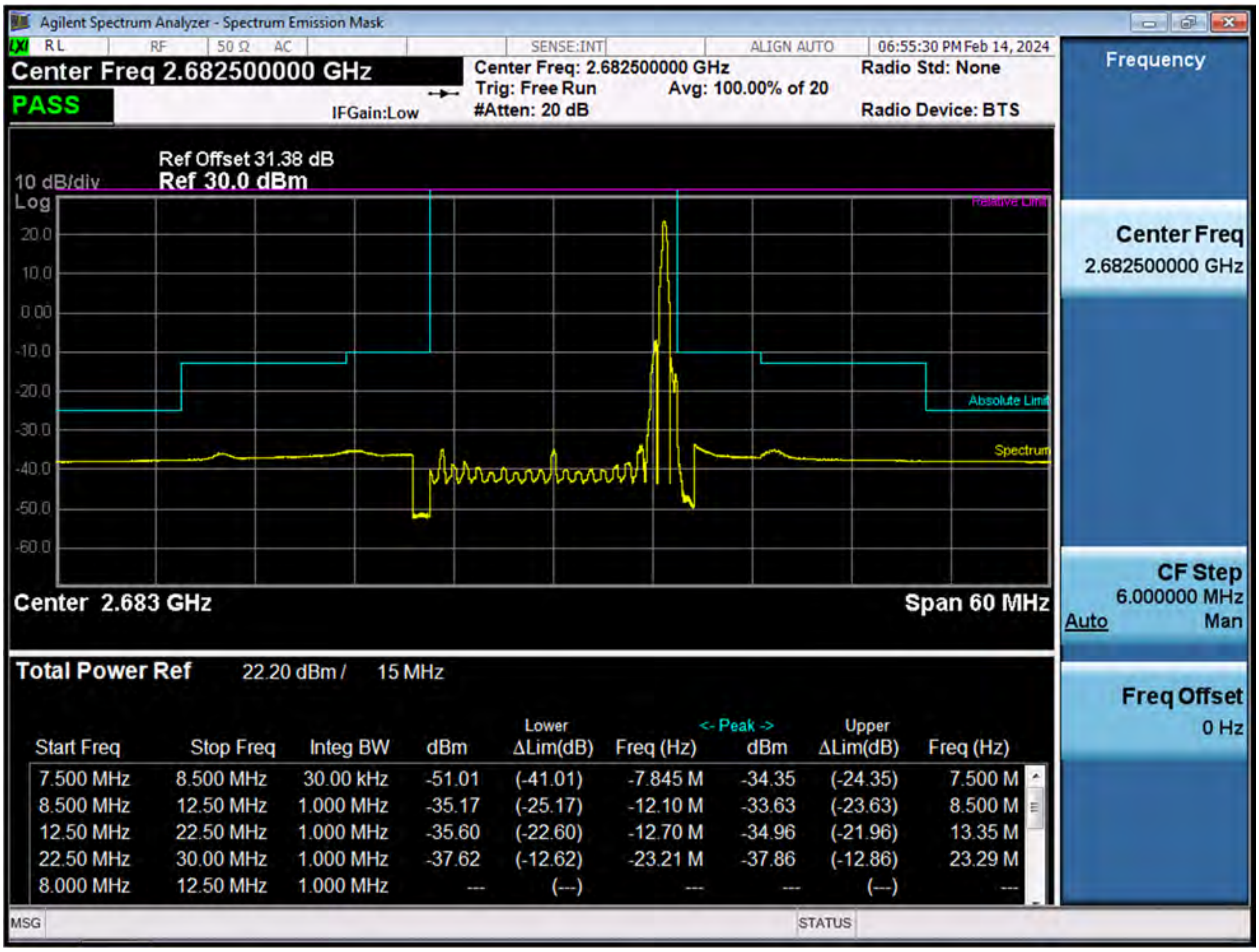


Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Peak Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Peak Freq (Hz)
7.500 MHz	8.500 MHz	300.0 kHz	-28.25	(-18.25)	-7.500 M	-28.20	(-18.20)	7.510 M
8.500 MHz	12.50 MHz	1.000 MHz	-29.10	(-19.10)	-8.520 M	-28.87	(-18.87)	8.500 M
12.50 MHz	22.50 MHz	1.000 MHz	-31.63	(-18.63)	-12.65 M	-31.89	(-18.89)	12.70 M
22.50 MHz	30.00 MHz	1.000 MHz	-35.84	(-10.84)	-23.40 M	-36.10	(-11.10)	23.10 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_15 M_BandEdge_High_2682.5 MHz_QPSK_FullRB

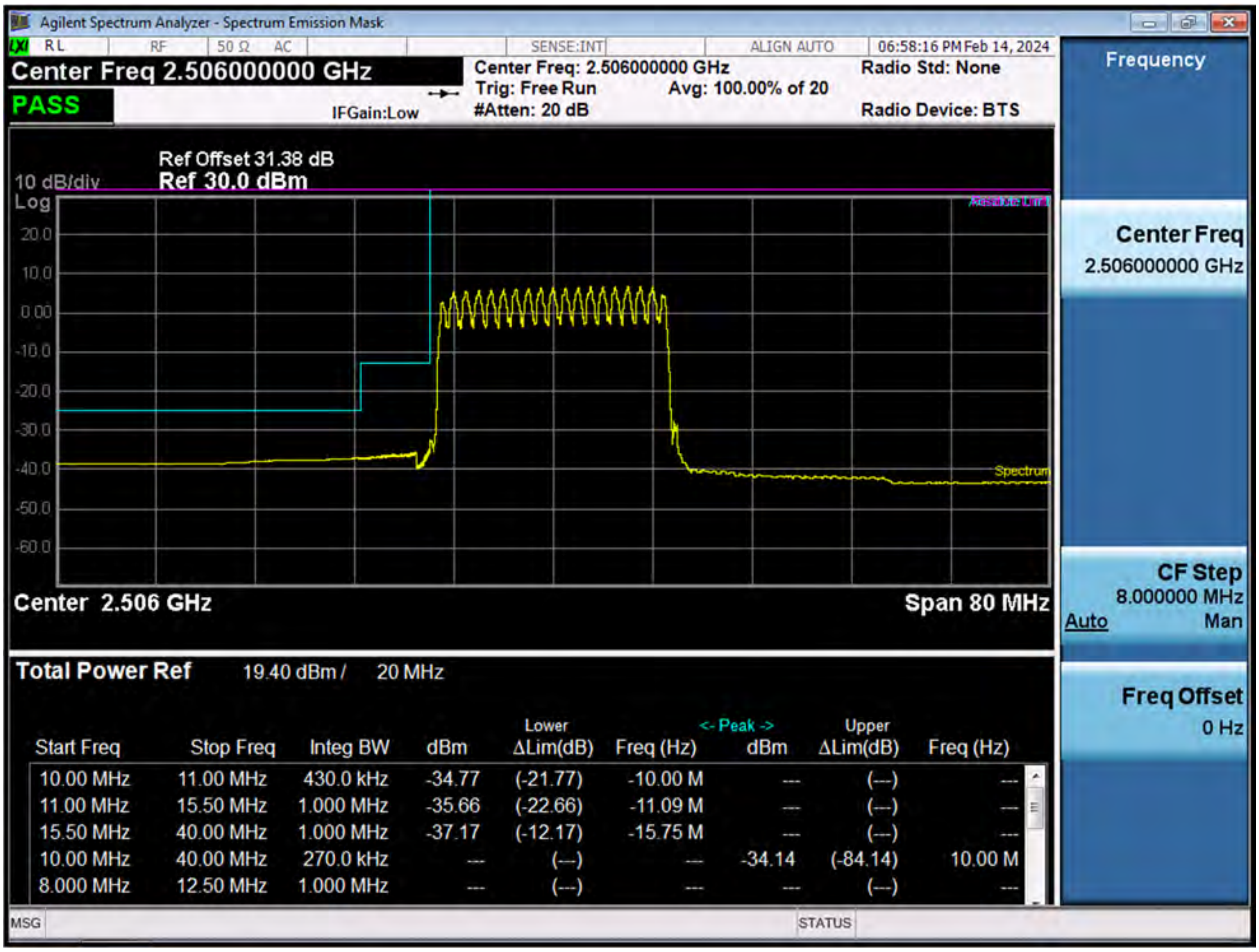


LTE41_15 M_BandEdge_High_2682.5 MHz_QPSK_1RB

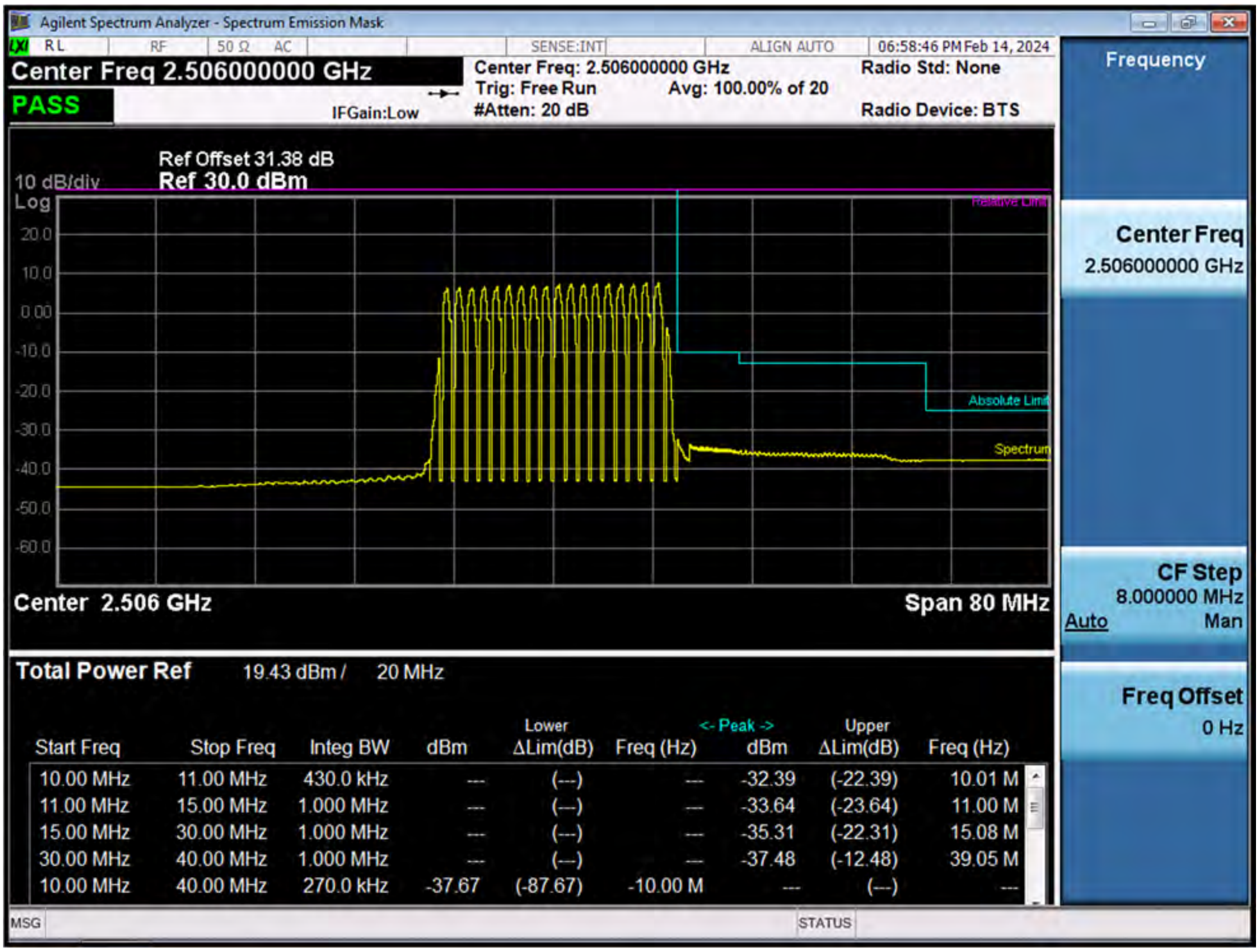


Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
7.500 MHz	8.500 MHz	30.00 kHz	-51.01	(-41.01)	-7.845 M	-34.35	(-24.35)	7.500 M
8.500 MHz	12.50 MHz	1.000 MHz	-35.17	(-25.17)	-12.10 M	-33.63	(-23.63)	8.500 M
12.50 MHz	22.50 MHz	1.000 MHz	-35.60	(-22.60)	-12.70 M	-34.96	(-21.96)	13.35 M
22.50 MHz	30.00 MHz	1.000 MHz	-37.62	(-12.62)	-23.21 M	-37.86	(-12.86)	23.29 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_20 M_BandEdge_Lower_Low_2506MHz_QPSK_FullRB



LTE41_20 M_BandEdge_Upper_Low_2506MHz_QPSK_FullRB



Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
10.00 MHz	11.00 MHz	430.0 kHz	---	(---)	---	-32.39	(-22.39)	10.01 M
11.00 MHz	15.00 MHz	1.000 MHz	---	(---)	---	-33.64	(-23.64)	11.00 M
15.00 MHz	30.00 MHz	1.000 MHz	---	(---)	---	-35.31	(-22.31)	15.08 M
30.00 MHz	40.00 MHz	1.000 MHz	---	(---)	---	-37.48	(-12.48)	39.05 M
10.00 MHz	40.00 MHz	270.0 kHz	-37.67	(-87.67)	-10.00 M	---	(---)	---

LTE41_20 M_BandEdge_Lower_Low_2506MHz_QPSK_1RB

Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
10.00 MHz	11.00 MHz	30.00 kHz	-41.08	(-28.08)	-10.01 M	---	(---)	---
11.00 MHz	15.50 MHz	1.000 MHz	-34.28	(-21.28)	-11.07 M	---	(---)	---
15.50 MHz	40.00 MHz	1.000 MHz	-33.53	(-8.53)	-17.58 M	---	(---)	---
10.00 MHz	40.00 MHz	270.0 kHz	---	(---)	---	-41.59	(-91.59)	10.41 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

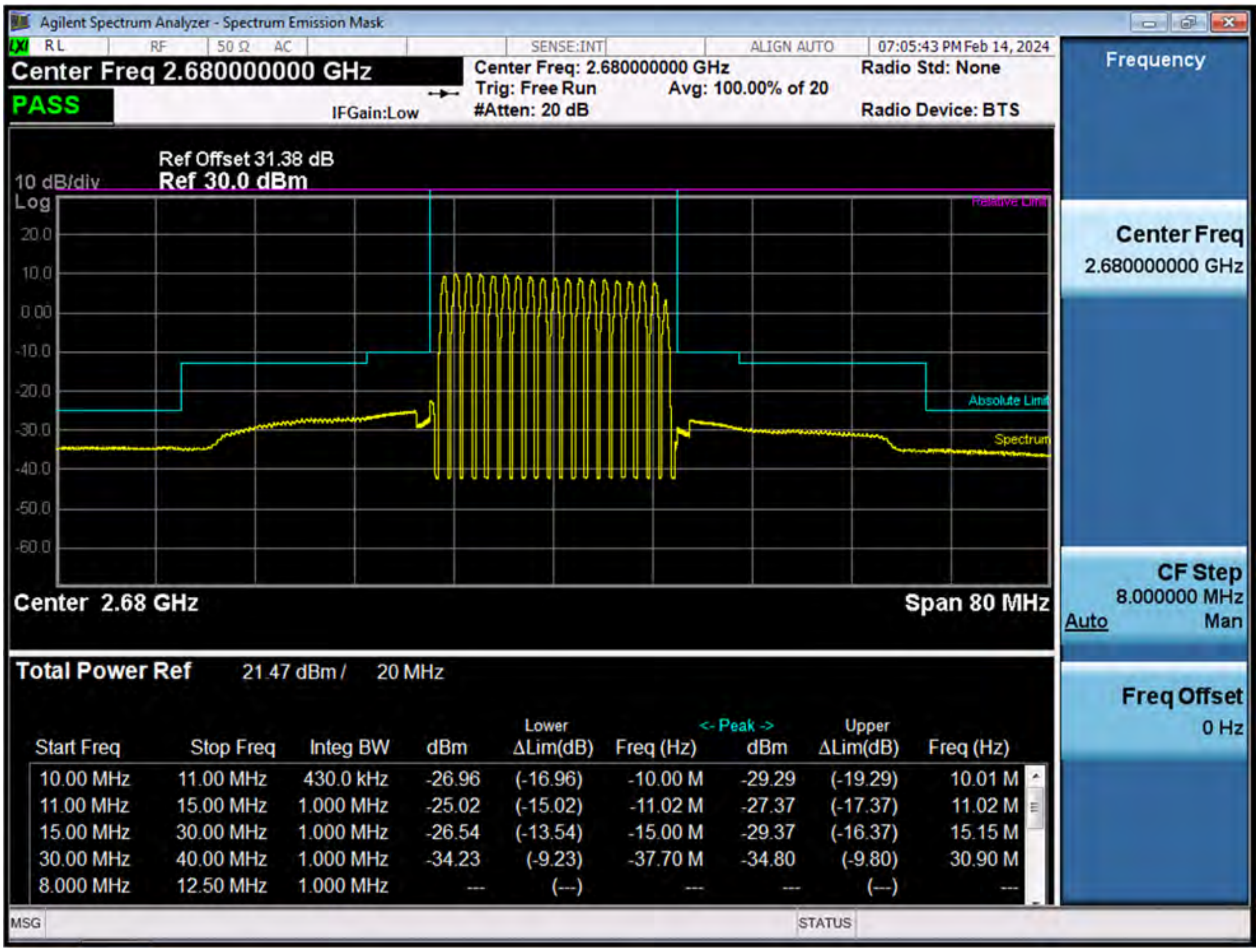
LTE41_20 M_BandEdge_Upper_Low_2506MHz_QPSK_1RB

Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	Peak dBm	Upper ΔLim(dB)	Freq (Hz)
10.00 MHz	11.00 MHz	30.00 kHz	---	(---)	---	-49.94	(-39.94)	10.32 M
11.00 MHz	15.00 MHz	1.000 MHz	---	(---)	---	-36.88	(-26.88)	12.18 M
15.00 MHz	30.00 MHz	1.000 MHz	---	(---)	---	-37.36	(-24.36)	15.15 M
30.00 MHz	40.00 MHz	1.000 MHz	---	(---)	---	-38.42	(-13.42)	30.30 M
10.00 MHz	40.00 MHz	270.0 kHz	-32.50	(-82.50)	-10.00 M	---	(---)	---

LTE41_20 M_BandEdge_Mid_2593MHz_QPSK_FullRB

Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
10.00 MHz	11.00 MHz	430.0 kHz	-30.47	(-20.47)	-10.01 M	-30.11	(-20.11)	10.00 M
11.00 MHz	15.00 MHz	1.000 MHz	-30.05	(-20.05)	-11.06 M	-30.26	(-20.26)	11.00 M
15.00 MHz	30.00 MHz	1.000 MHz	-32.10	(-19.10)	-15.23 M	-32.31	(-19.31)	15.00 M
30.00 MHz	40.00 MHz	1.000 MHz	-36.61	(-11.61)	-30.60 M	-36.70	(-11.70)	39.45 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

LTE41_20 M_BandEdge_High_2680 MHz_QPSK_FullRB

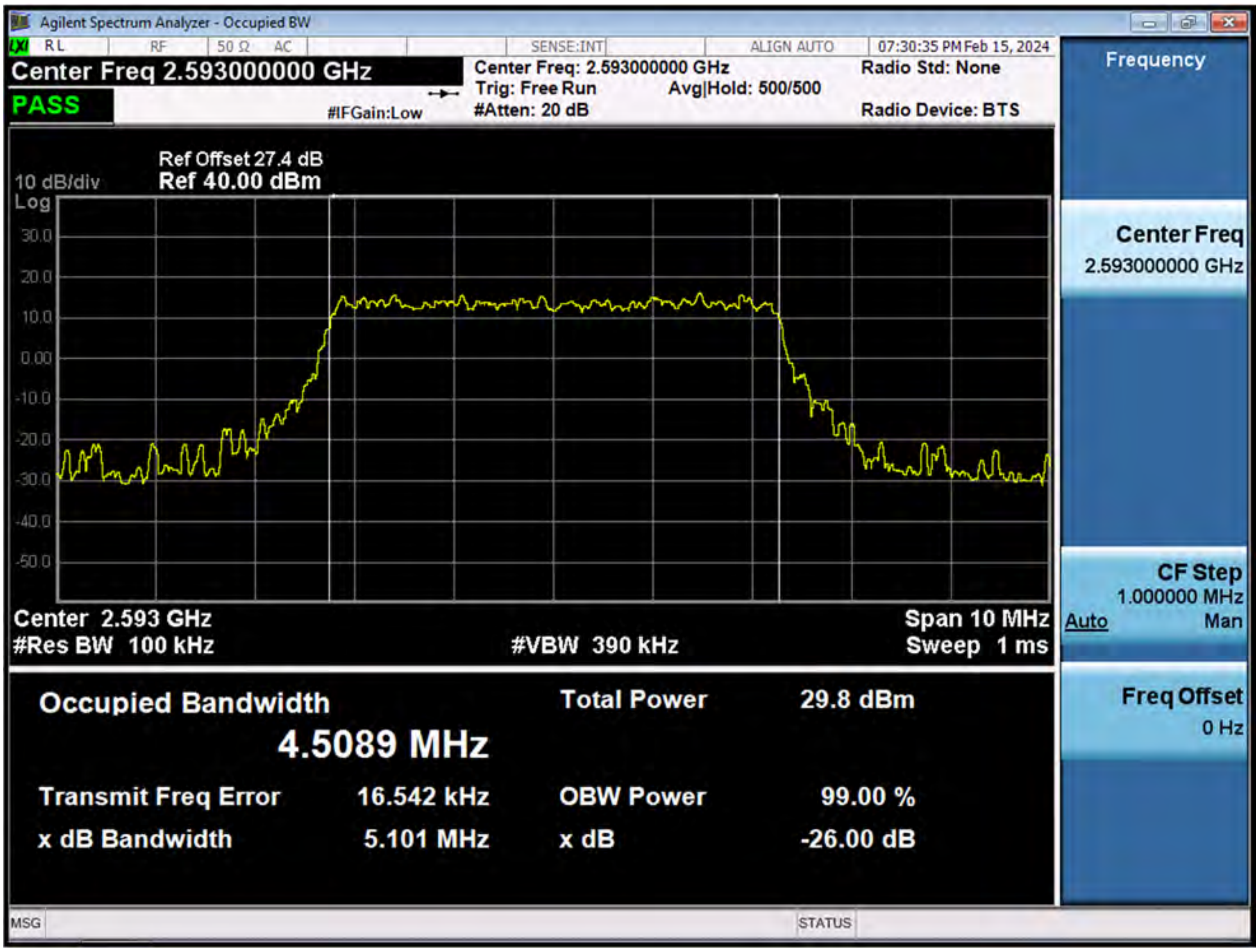


Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Peak Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Peak Freq (Hz)
10.00 MHz	11.00 MHz	430.0 kHz	-26.96	(-16.96)	-10.00 M	-29.29	(-19.29)	10.01 M
11.00 MHz	15.00 MHz	1.000 MHz	-25.02	(-15.02)	-11.02 M	-27.37	(-17.37)	11.02 M
15.00 MHz	30.00 MHz	1.000 MHz	-26.54	(-13.54)	-15.00 M	-29.37	(-16.37)	15.15 M
30.00 MHz	40.00 MHz	1.000 MHz	-34.23	(-9.23)	-37.70 M	-34.80	(-9.80)	30.90 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

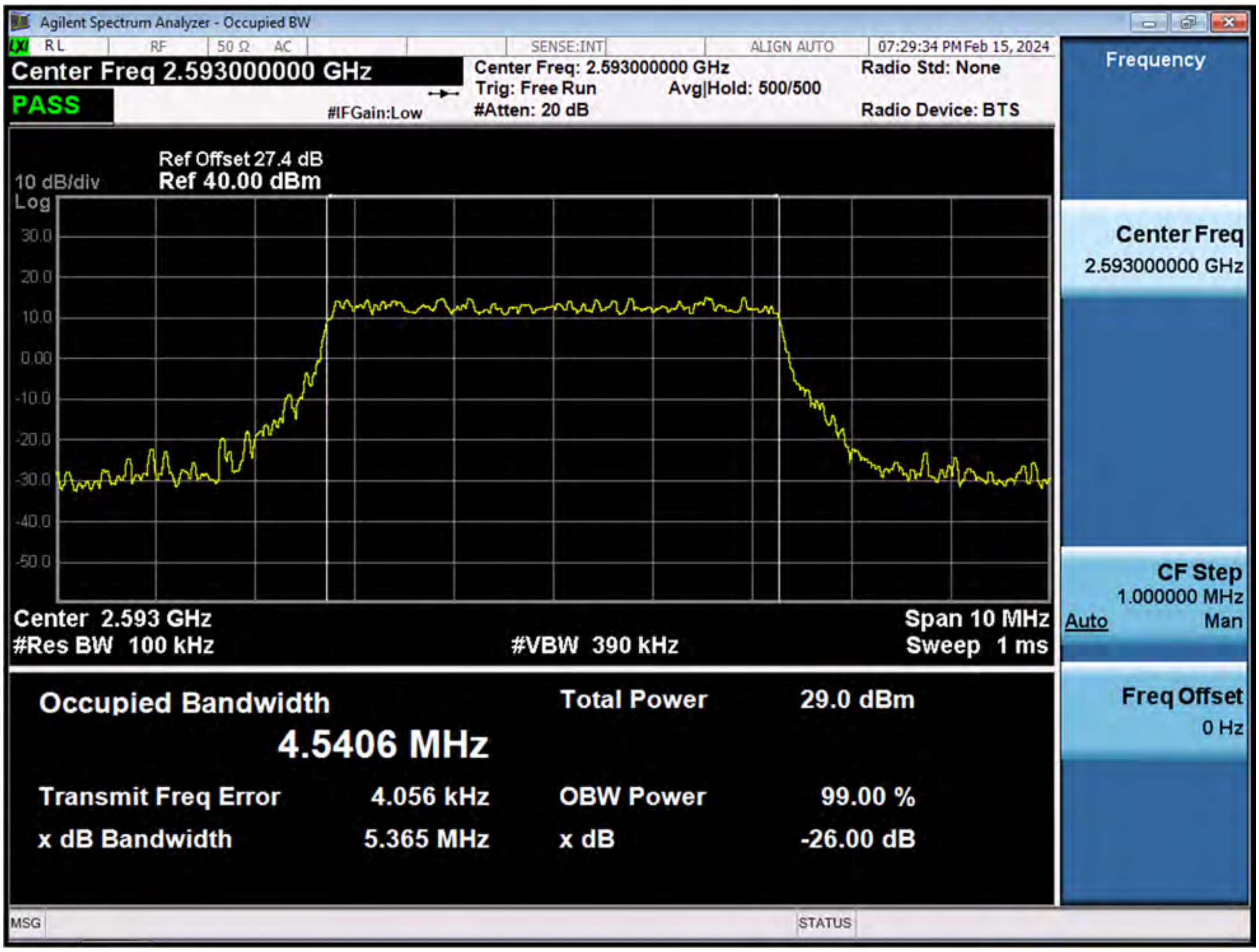
LTE41_20 M_BandEdge_High_2680 MHz_QPSK_1RB

Start Freq	Stop Freq	Integ BW	Lower dBm	Lower ΔLim(dB)	Lower Freq (Hz)	Upper dBm	Upper ΔLim(dB)	Upper Freq (Hz)
10.00 MHz	11.00 MHz	30.00 kHz	-48.04	(-38.04)	-10.27 M	-42.49	(-32.49)	10.02 M
11.00 MHz	15.00 MHz	1.000 MHz	-35.64	(-25.64)	-14.46 M	-33.34	(-23.34)	11.08 M
15.00 MHz	30.00 MHz	1.000 MHz	-35.30	(-22.30)	-26.63 M	-35.06	(-22.06)	17.70 M
30.00 MHz	40.00 MHz	1.000 MHz	-38.06	(-13.06)	-30.00 M	-38.05	(-13.05)	30.55 M
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---

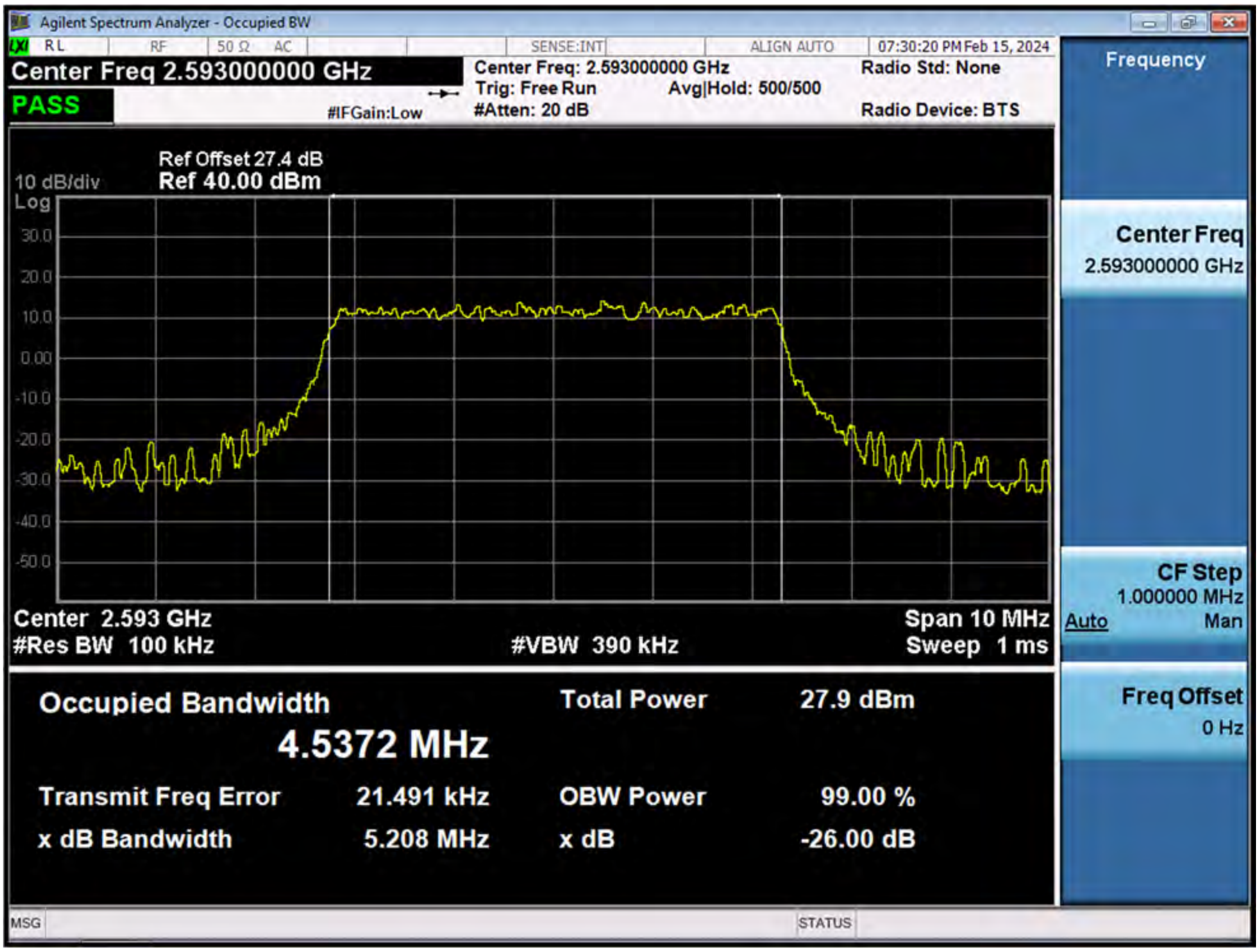
LTE41_5 M_OBW_Mid Channel_QPSK_FullRB



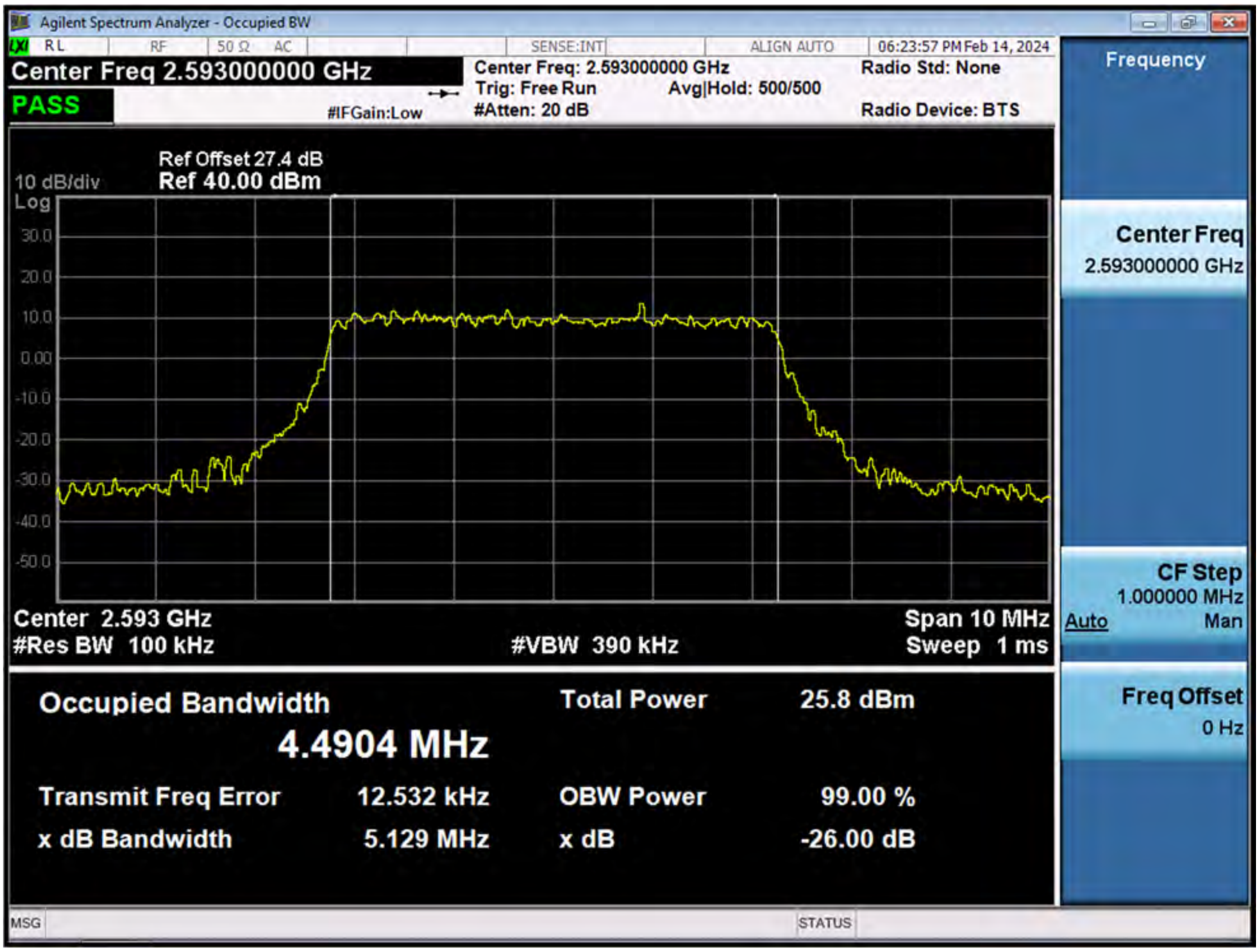
LTE41_5 M_OBW_Mid Channel_16QAM_FullRB



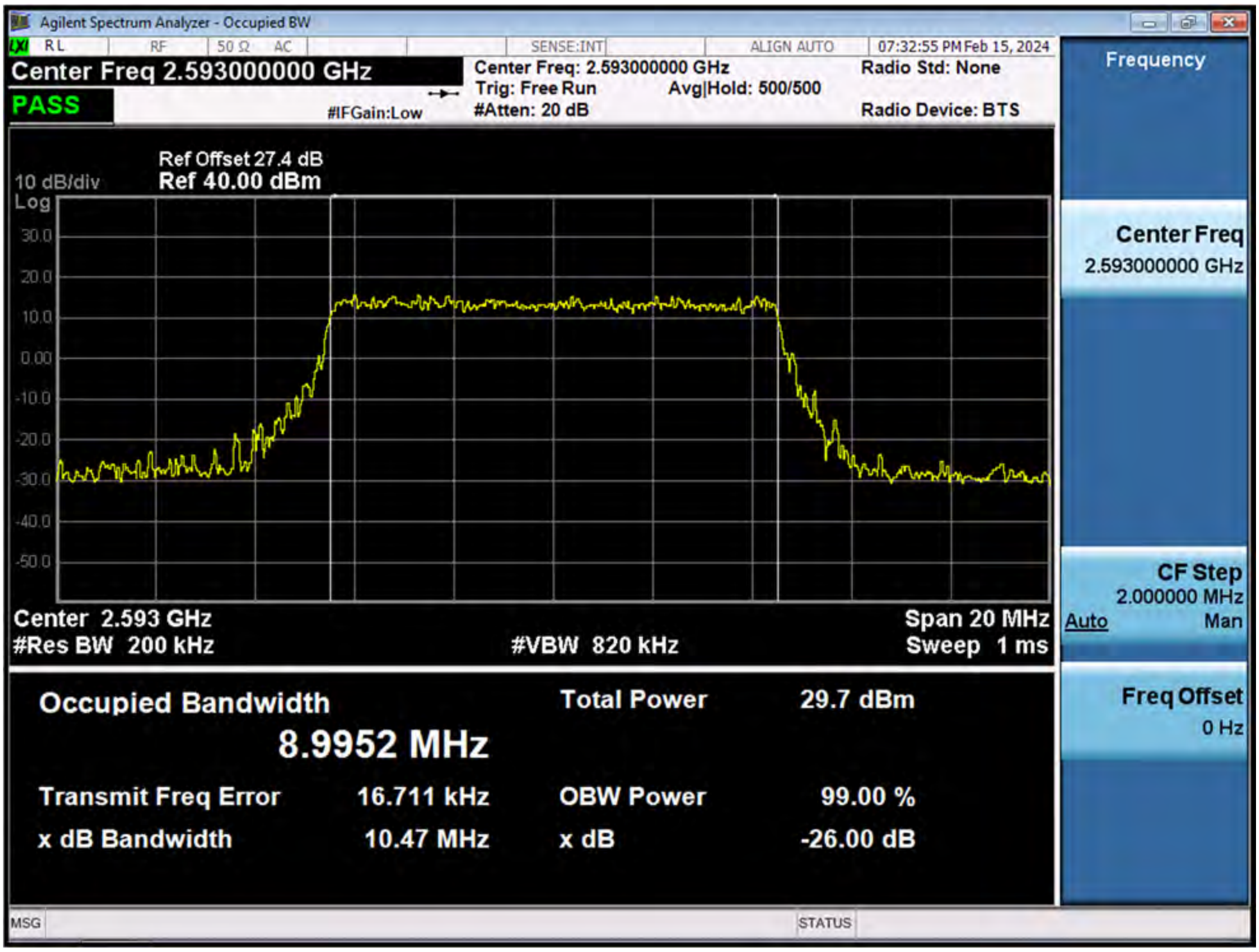
LTE41_5 M_OBW_Mid Channel_64QAM_FullRB



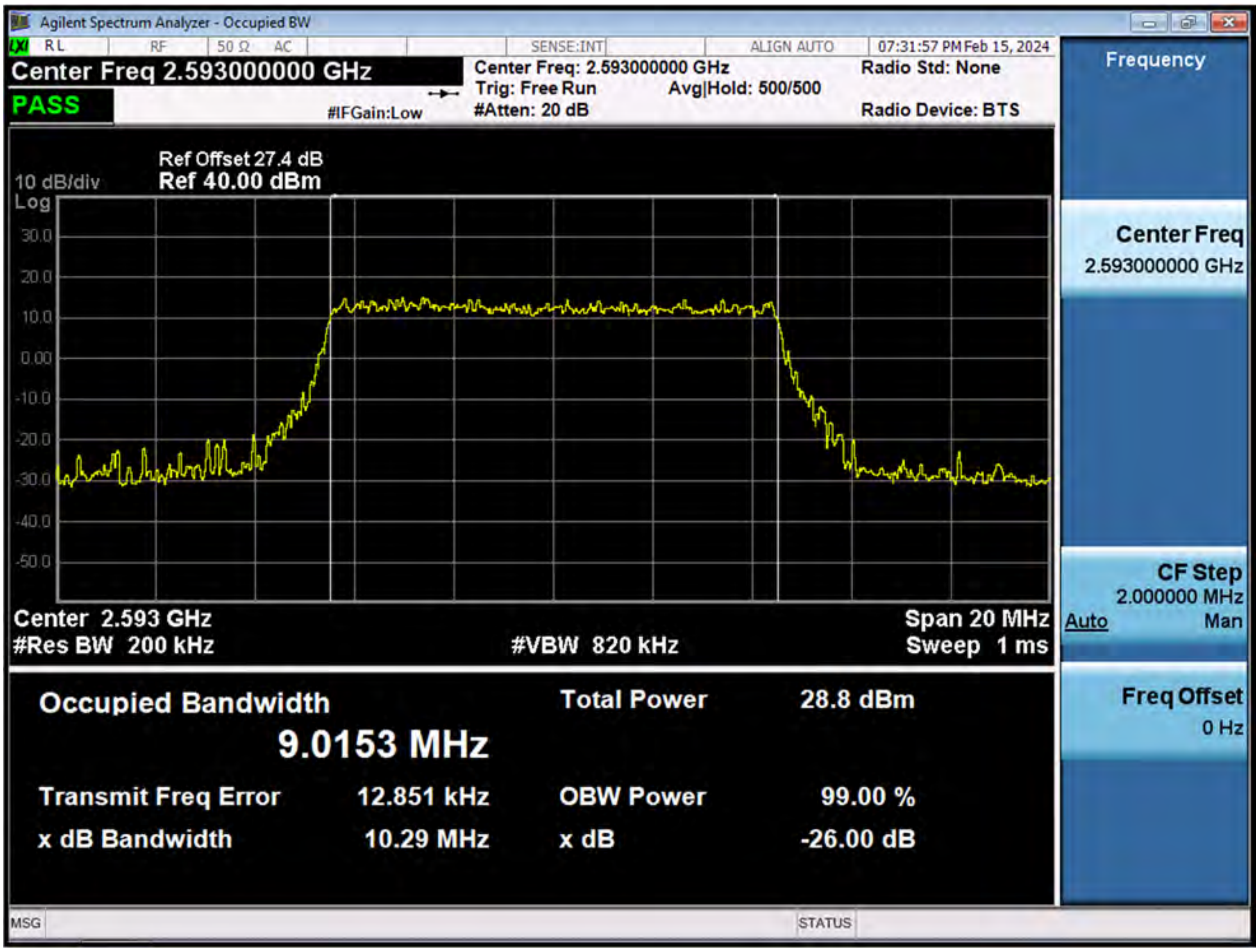
LTE41_5 M_OBW_Mid Channel_256QAM_FullRB



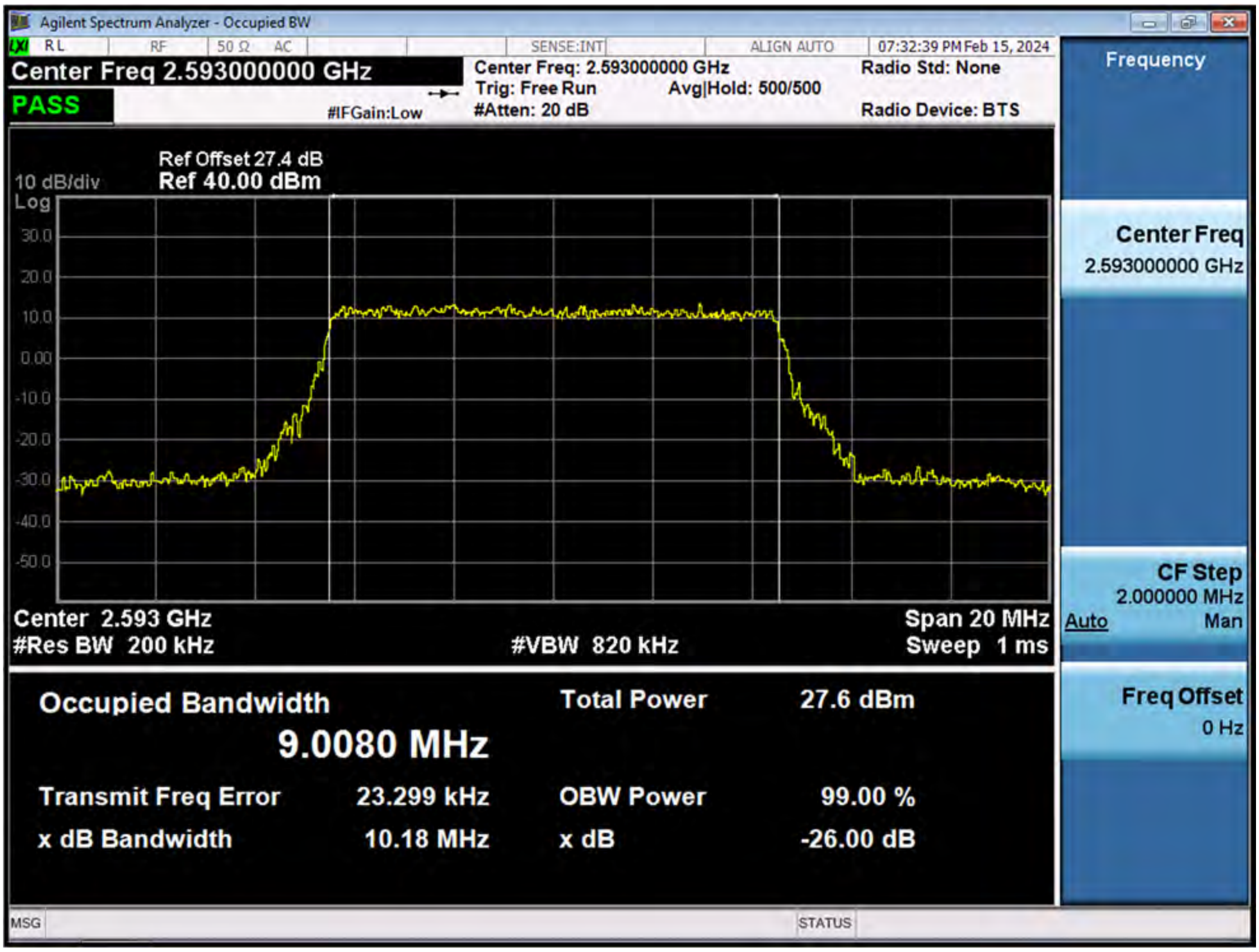
LTE41_10 M_OBW_Mid Channel_QPSK_FullRB



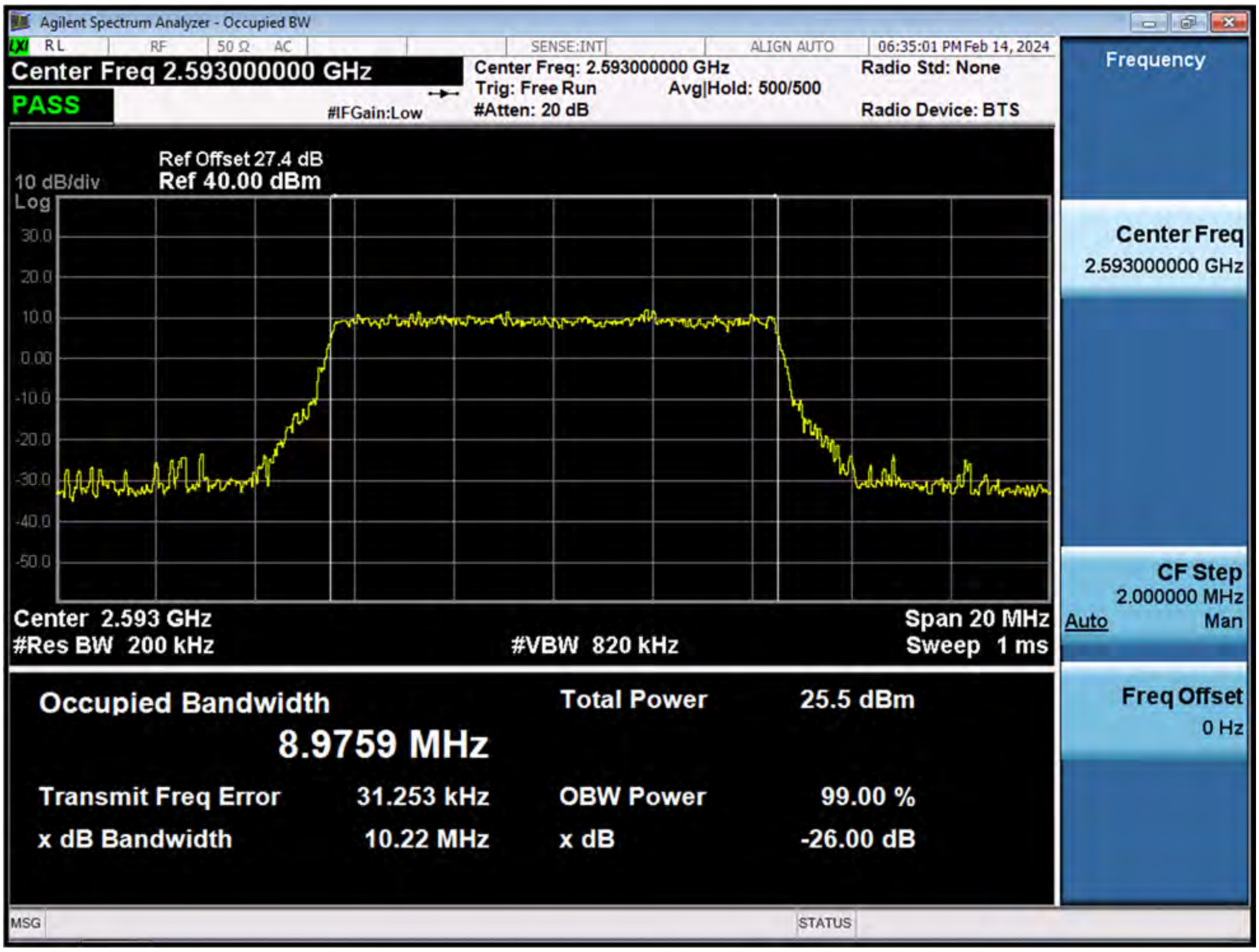
LTE41_10 M_OBW_Mid Channel_16QAM_FullRB



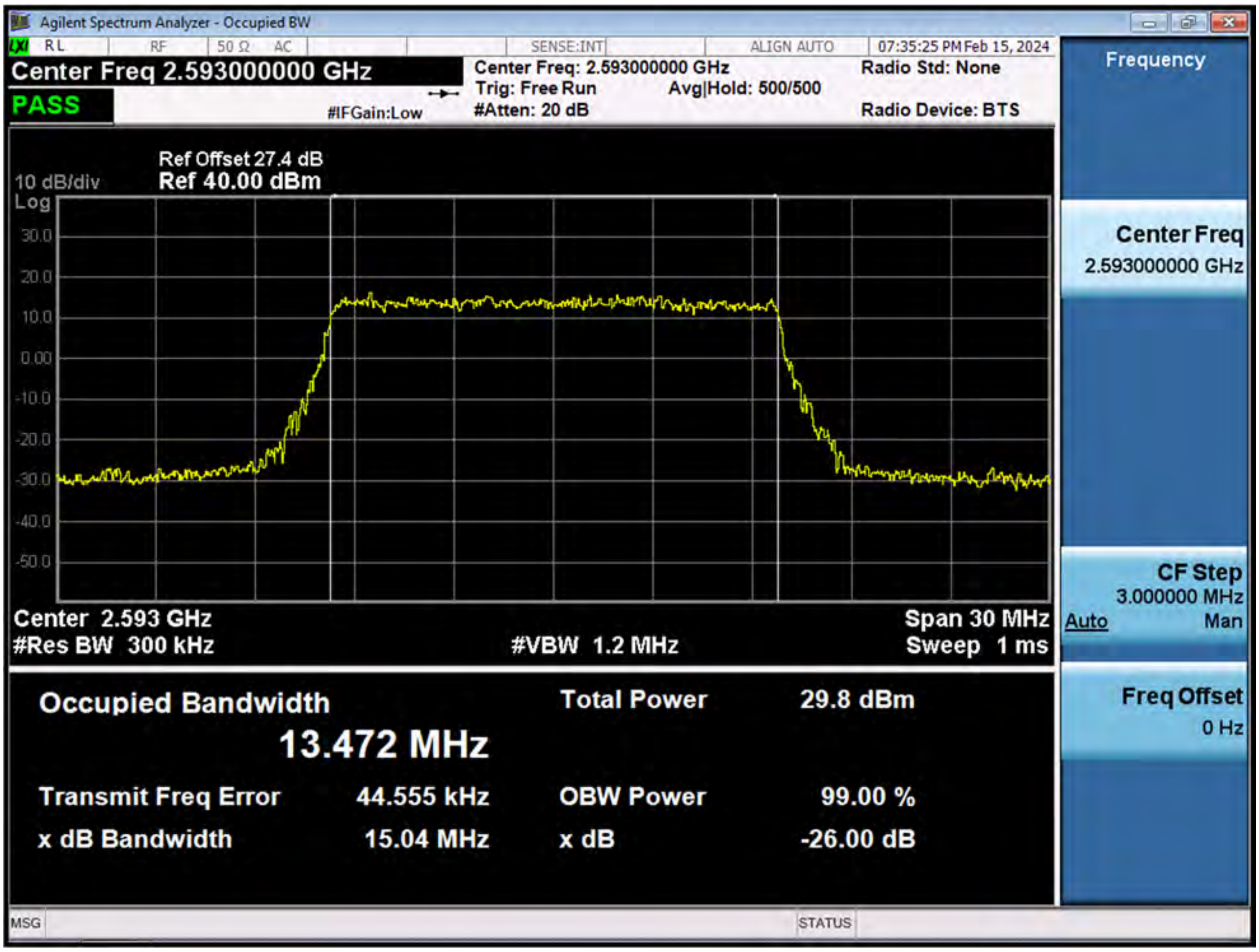
LTE41_10 M_OBW_Mid Channel_64QAM_FullRB



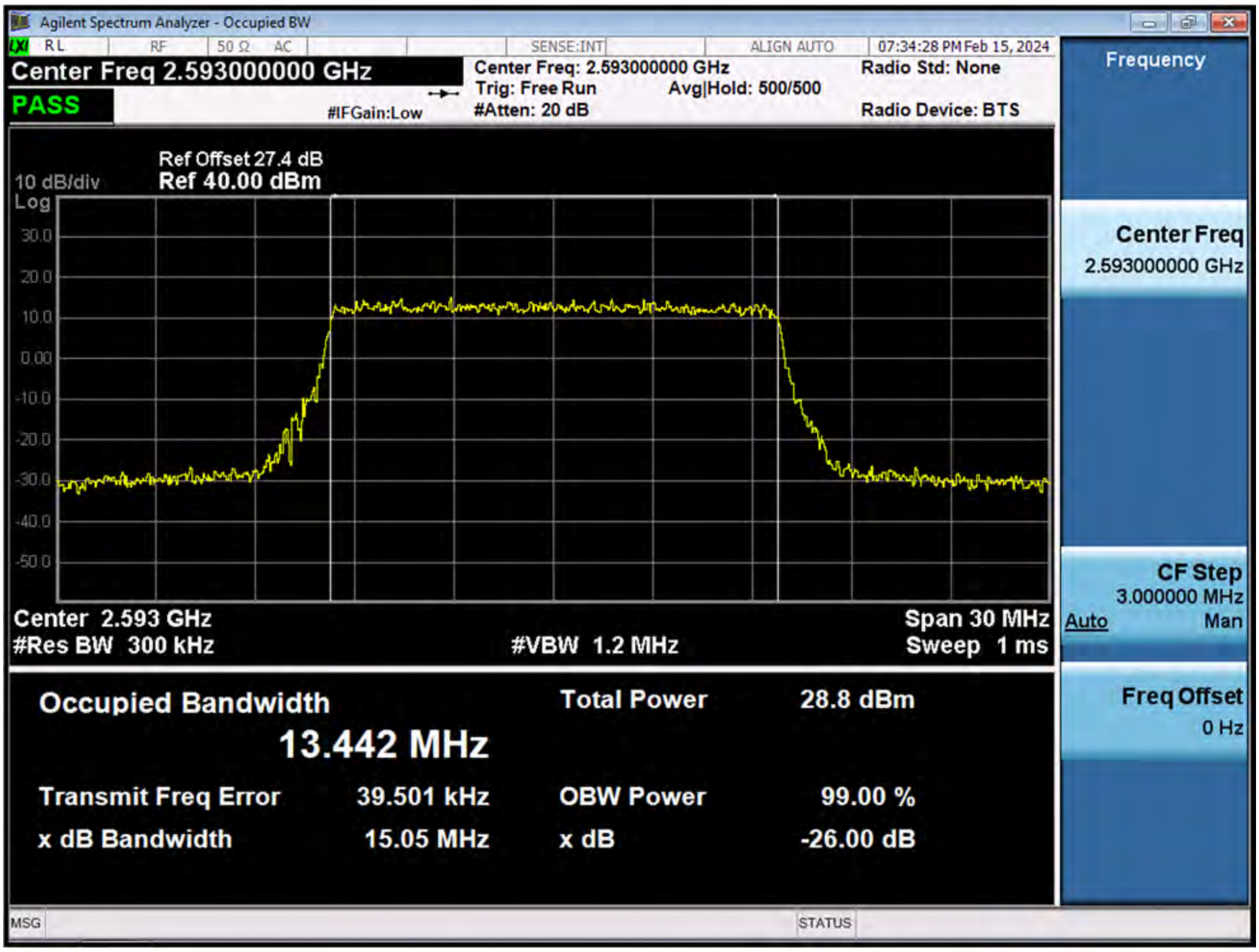
LTE41_10 M_OBW_Mid Channel_256QAM_FullRB



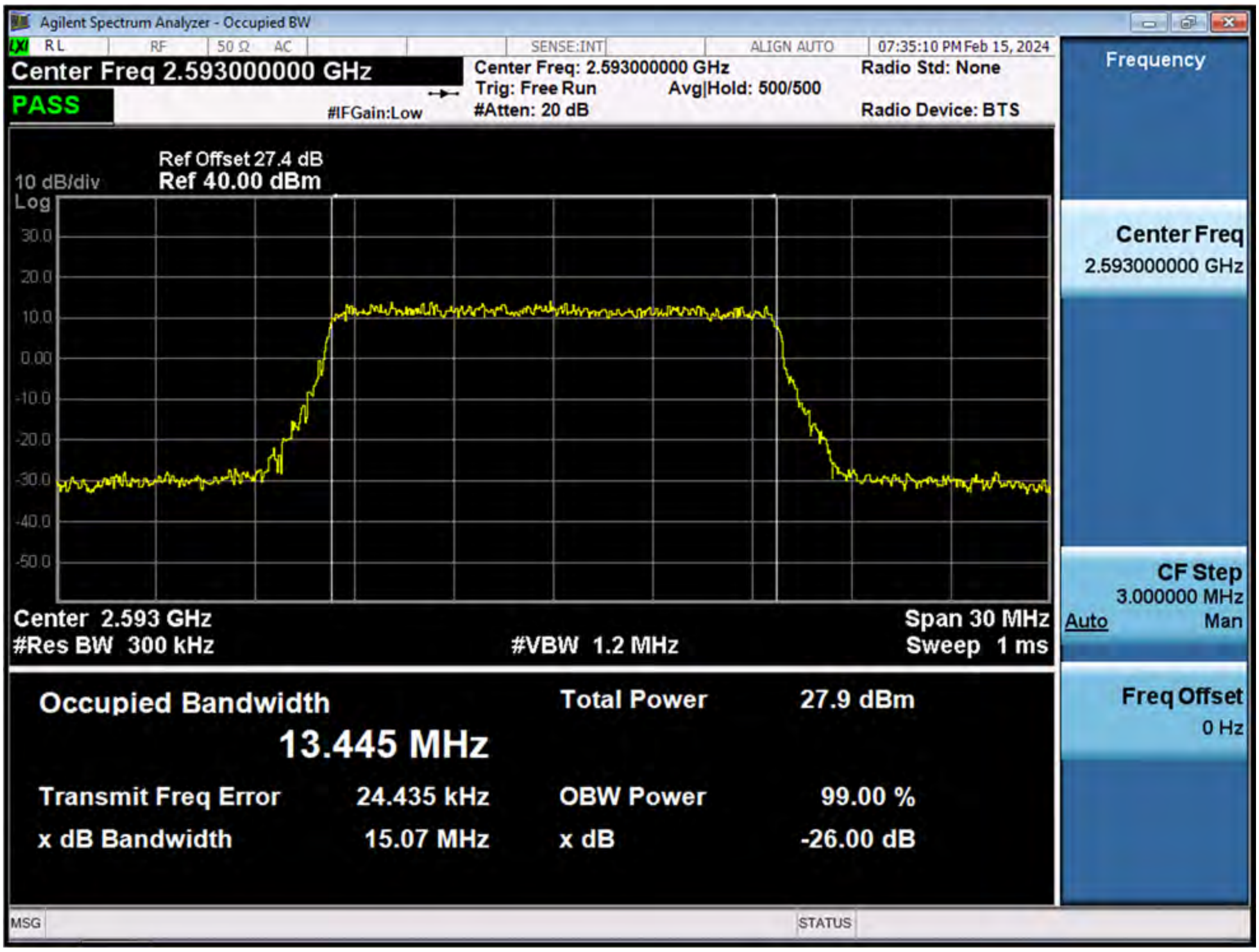
LTE41_15 M_OBW_Mid Channel_QPSK_FullRB



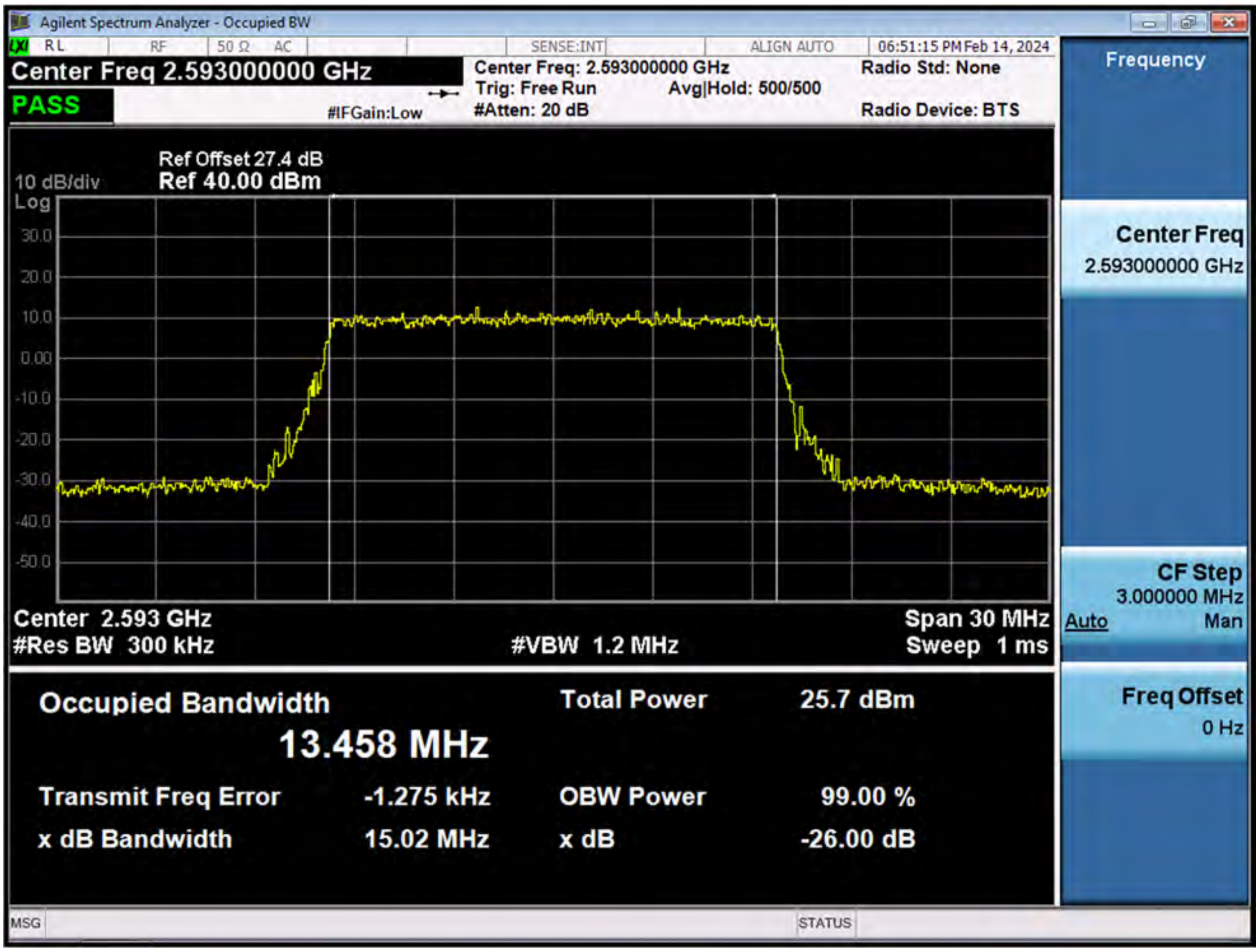
LTE41_15 M_OBW_Mid Channel_16QAM_FullRB



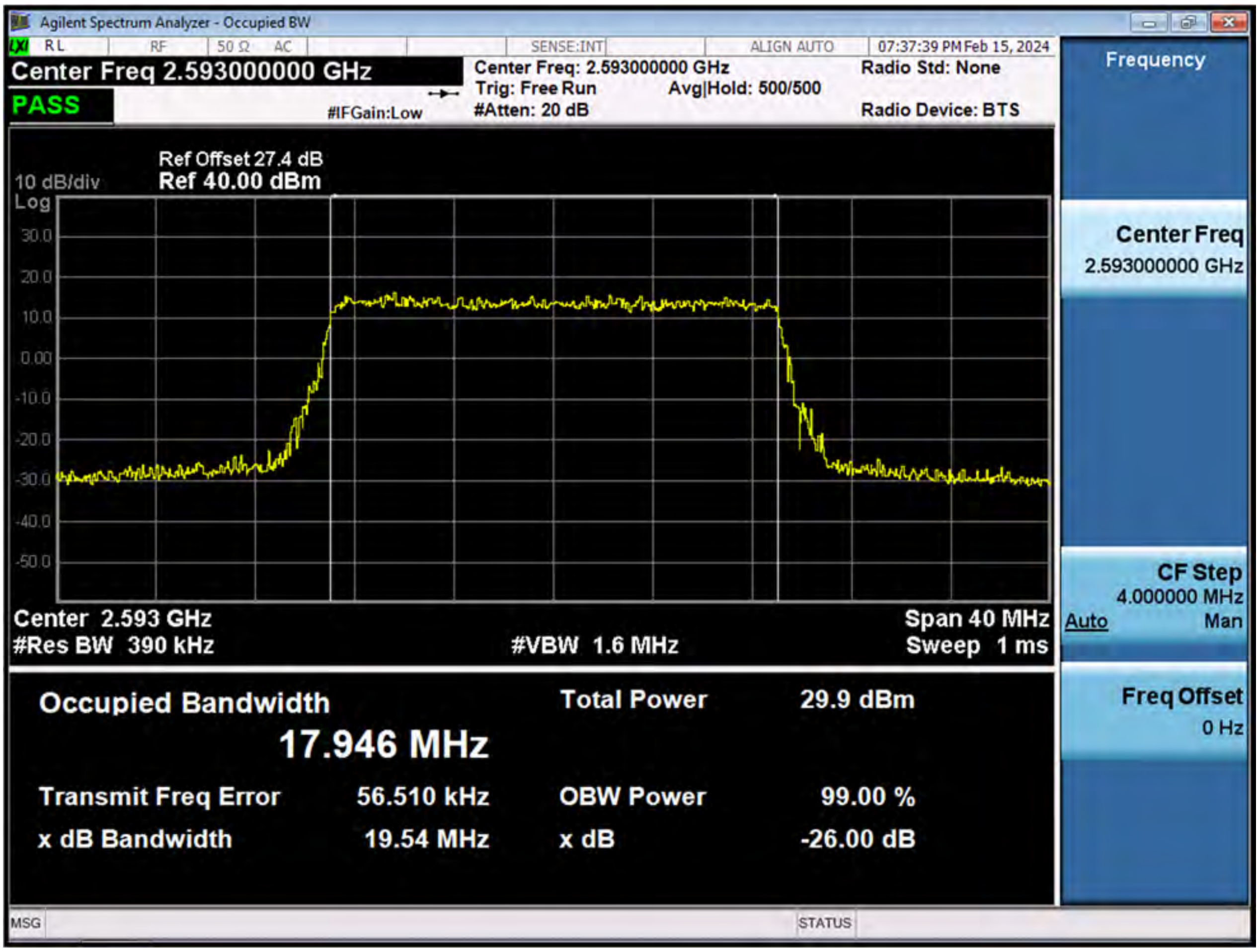
LTE41_15 M_OBW_Mid Channel_64QAM_FullRB



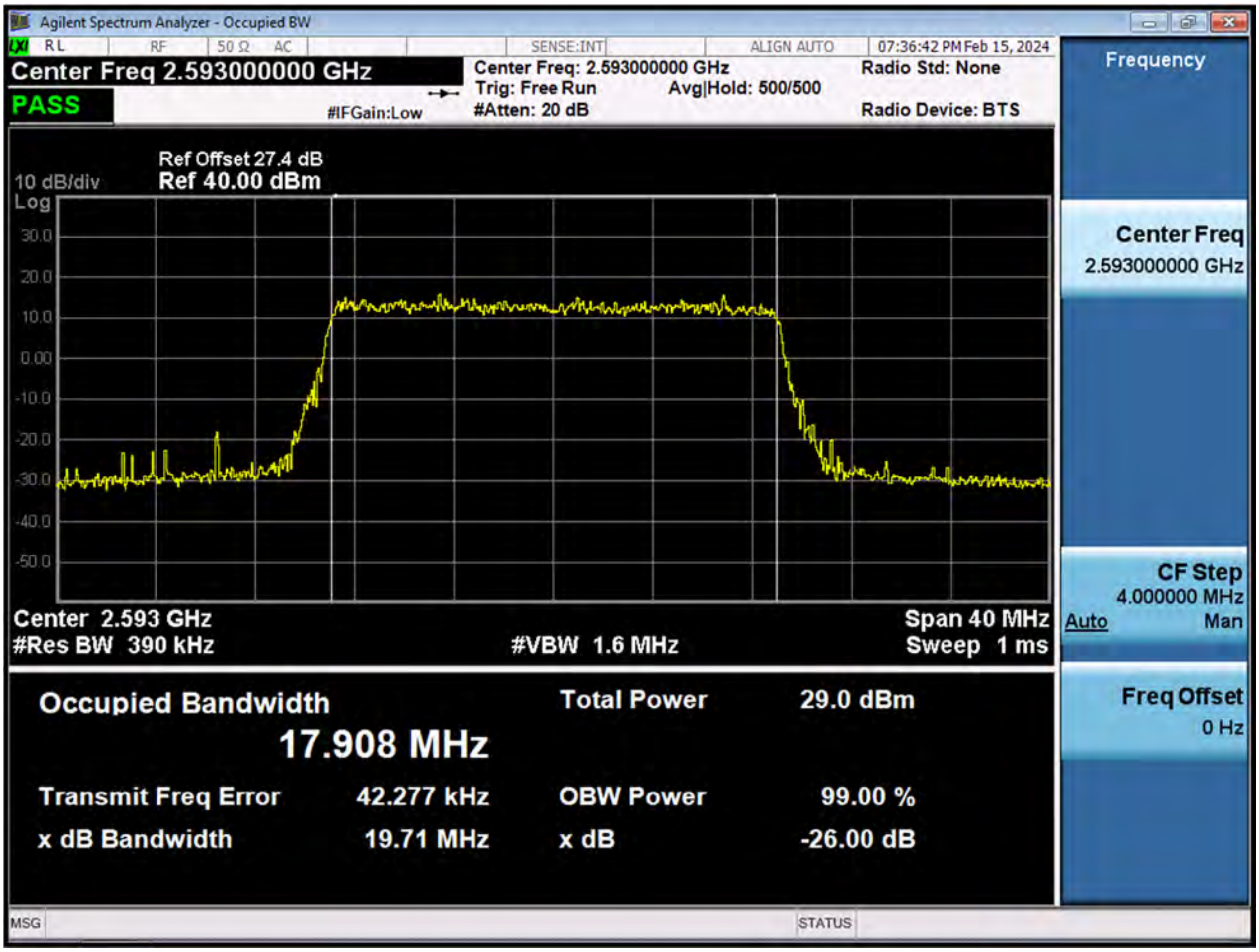
LTE41_15 M_OBW_Mid Channel_256QAM_FullRB



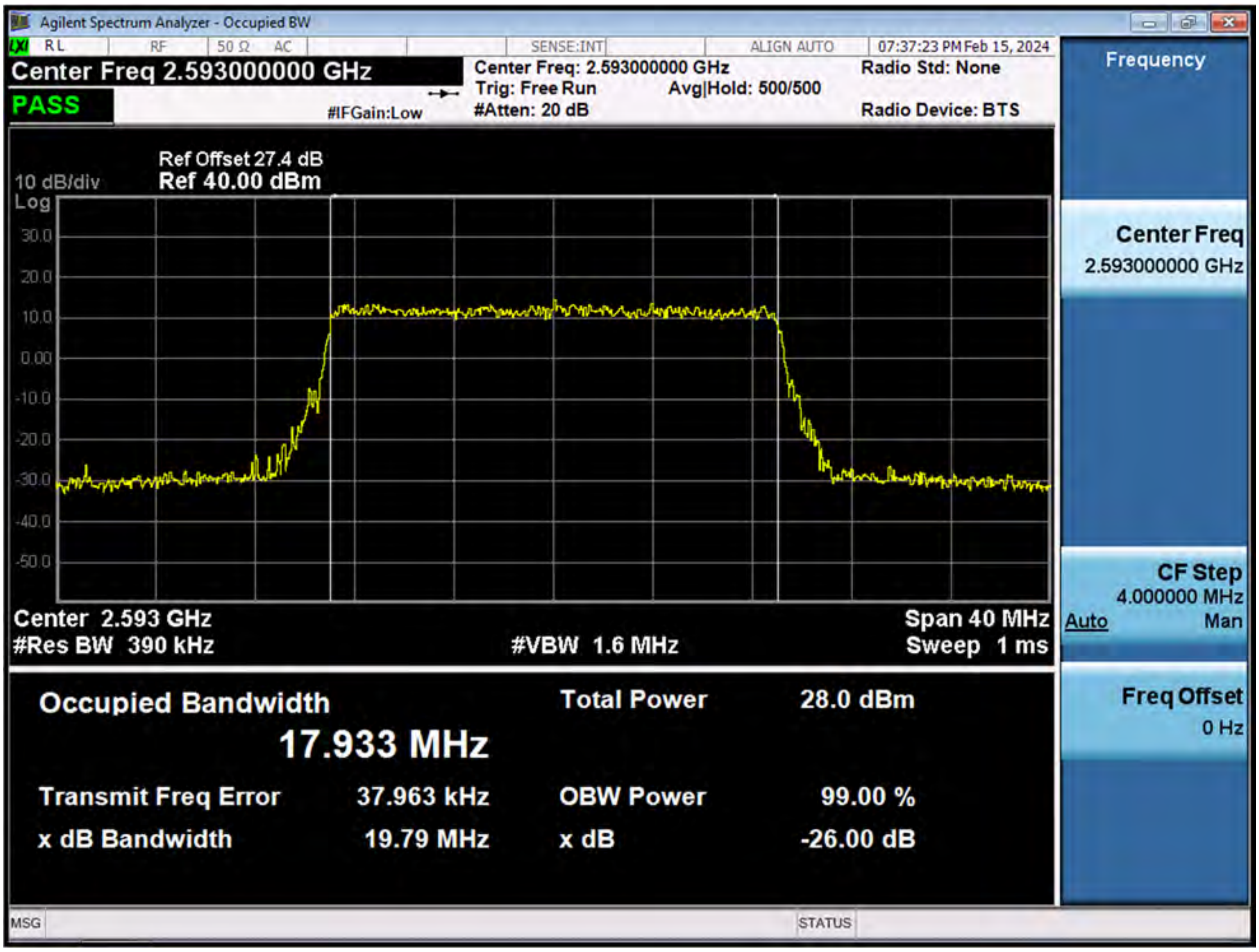
LTE41_20 M_OBW_Mid Channel_QPSK_FullRB



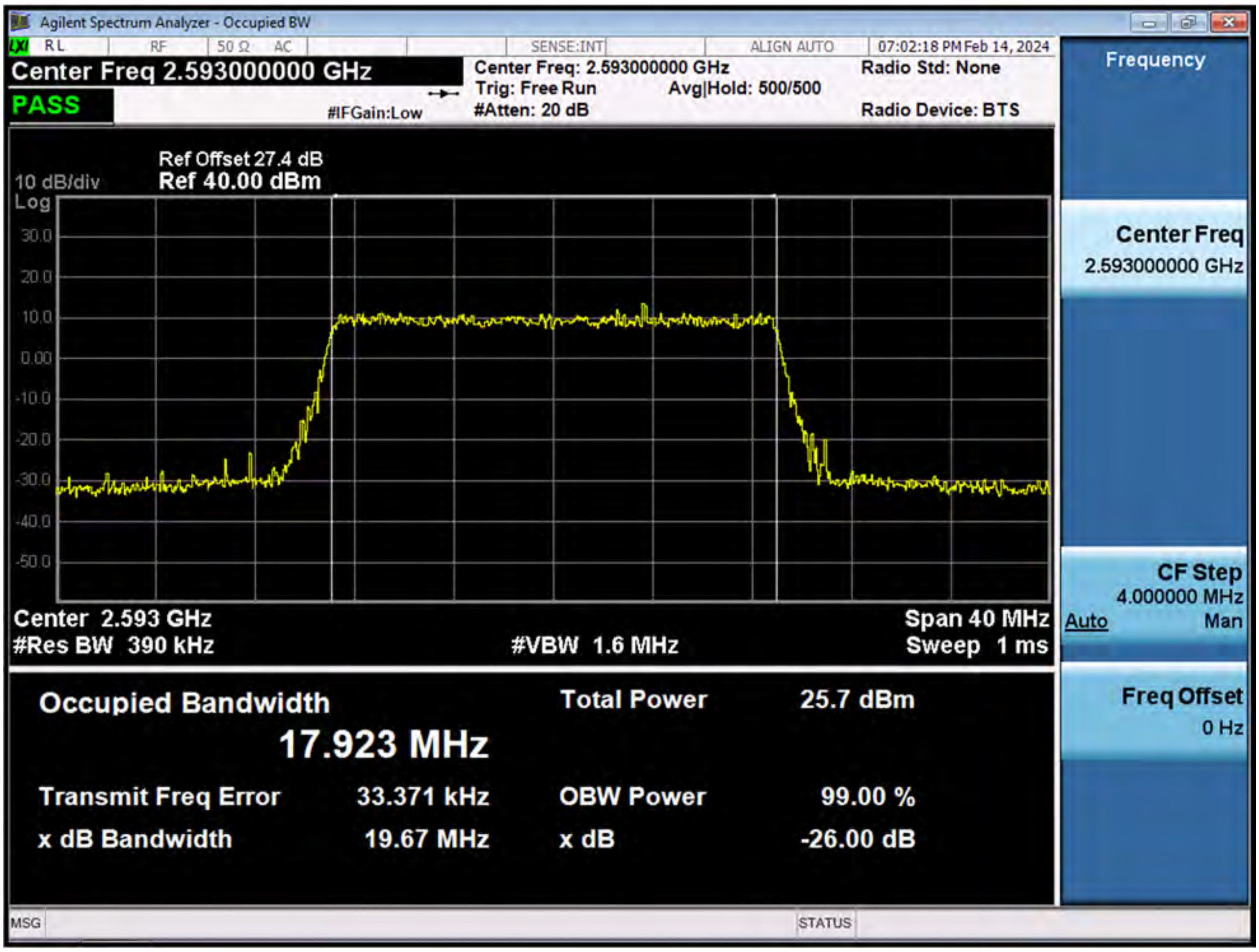
LTE41_20 M_OBW_Mid Channel_16QAM_FullRB



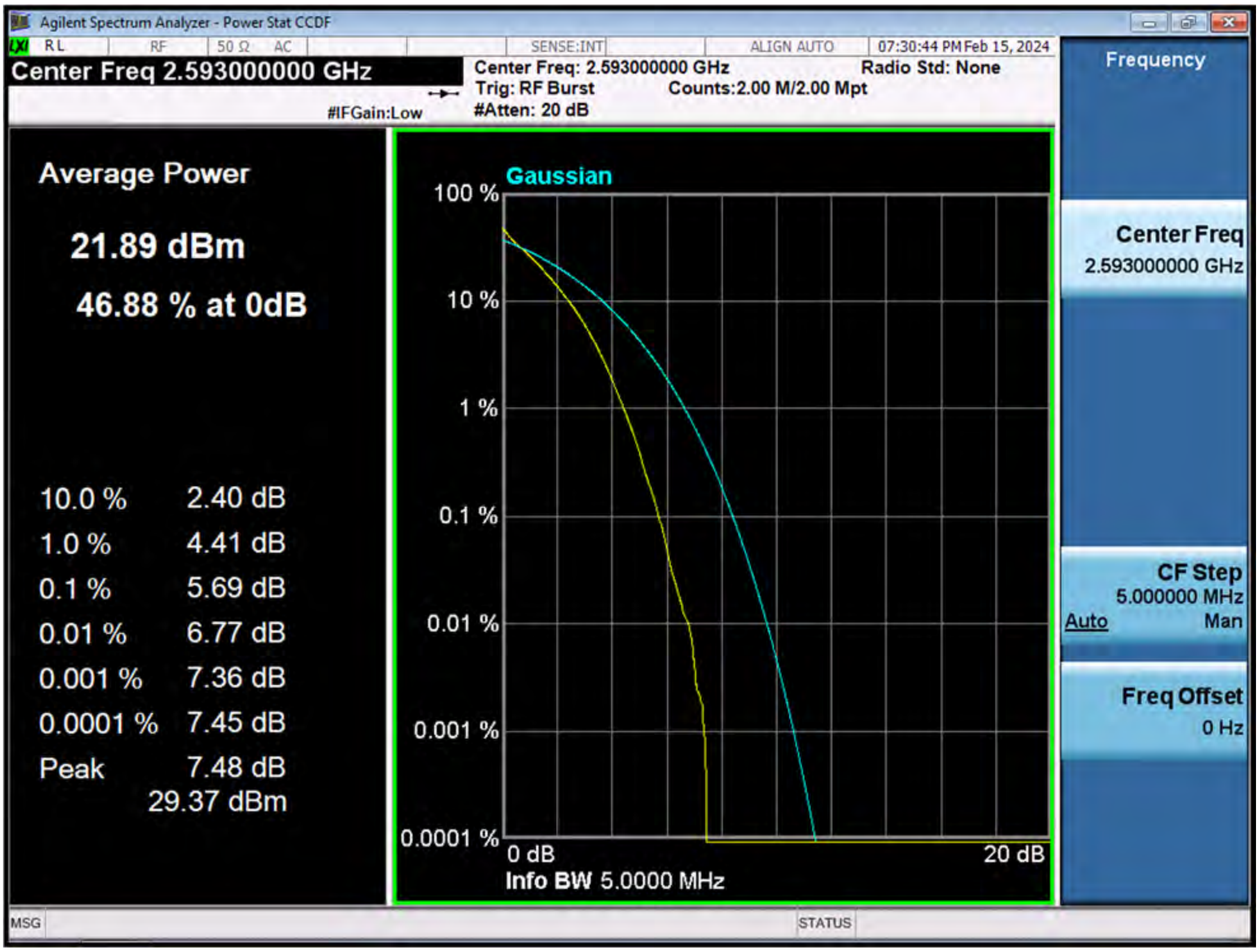
LTE41_20 M_OBW_Mid Channel_64QAM_FullRB



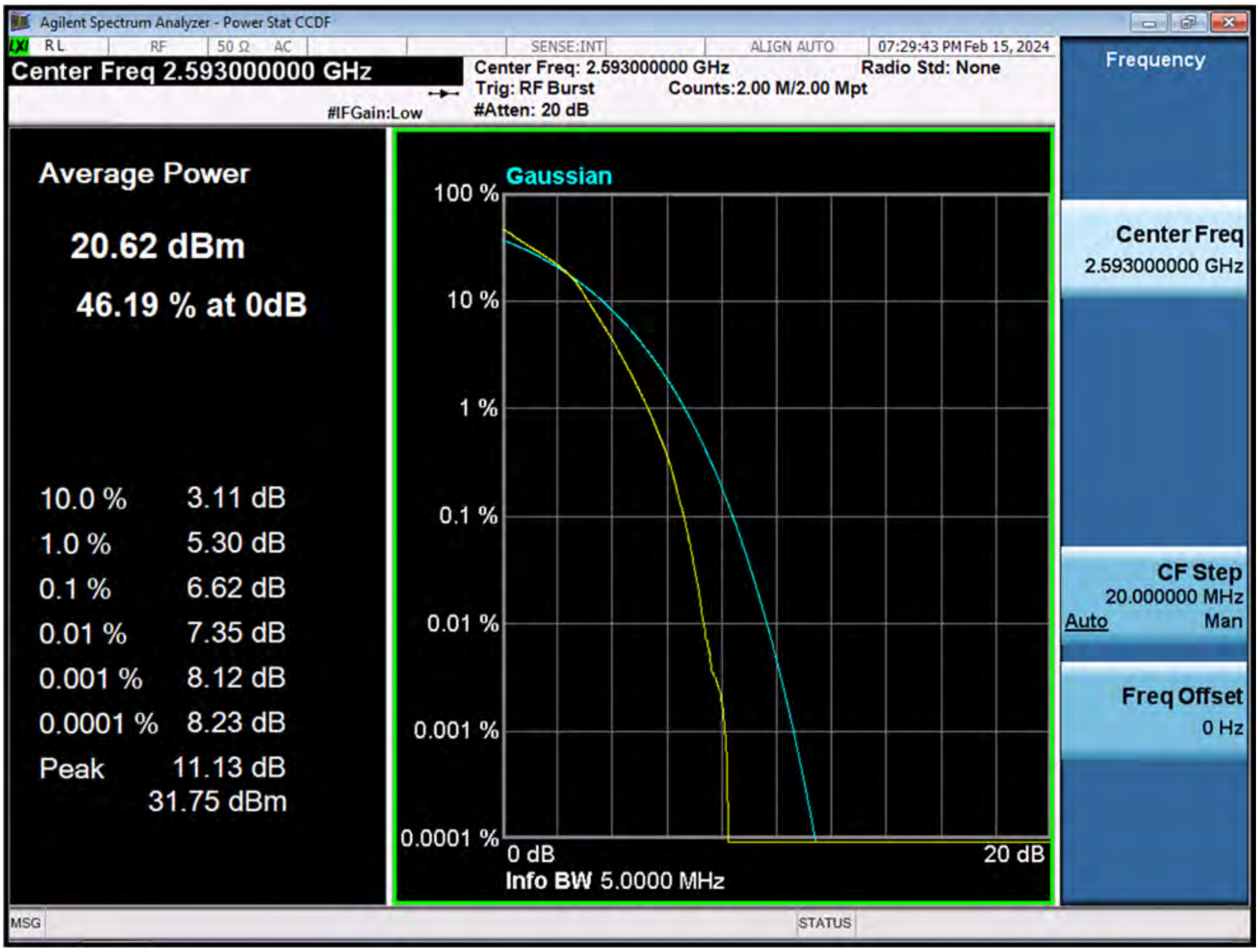
LTE41_20 M_OBW_Mid Channel_256QAM_FullRB



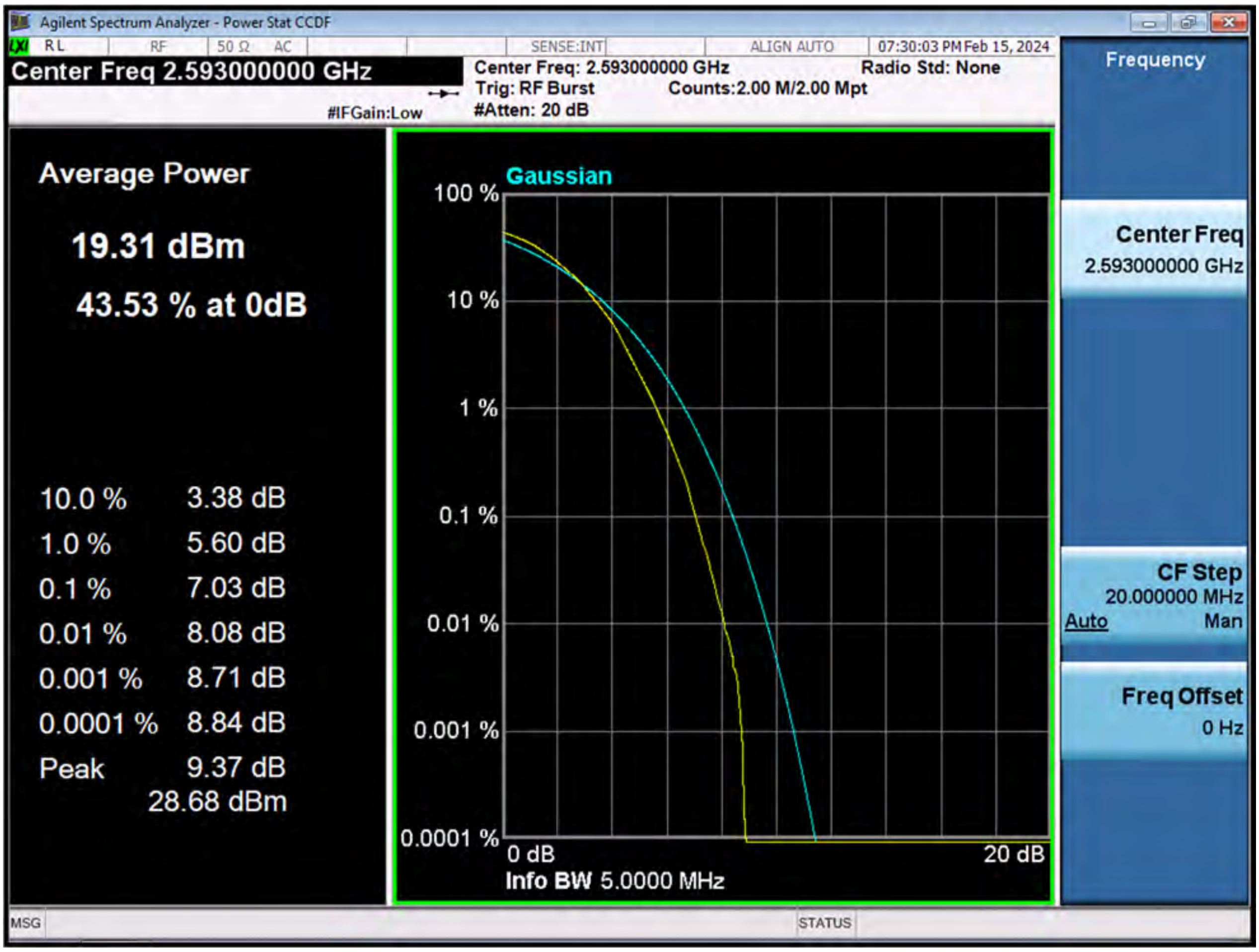
LTE41_5 M_PAR_Mid Channel_QPSK_FullRB



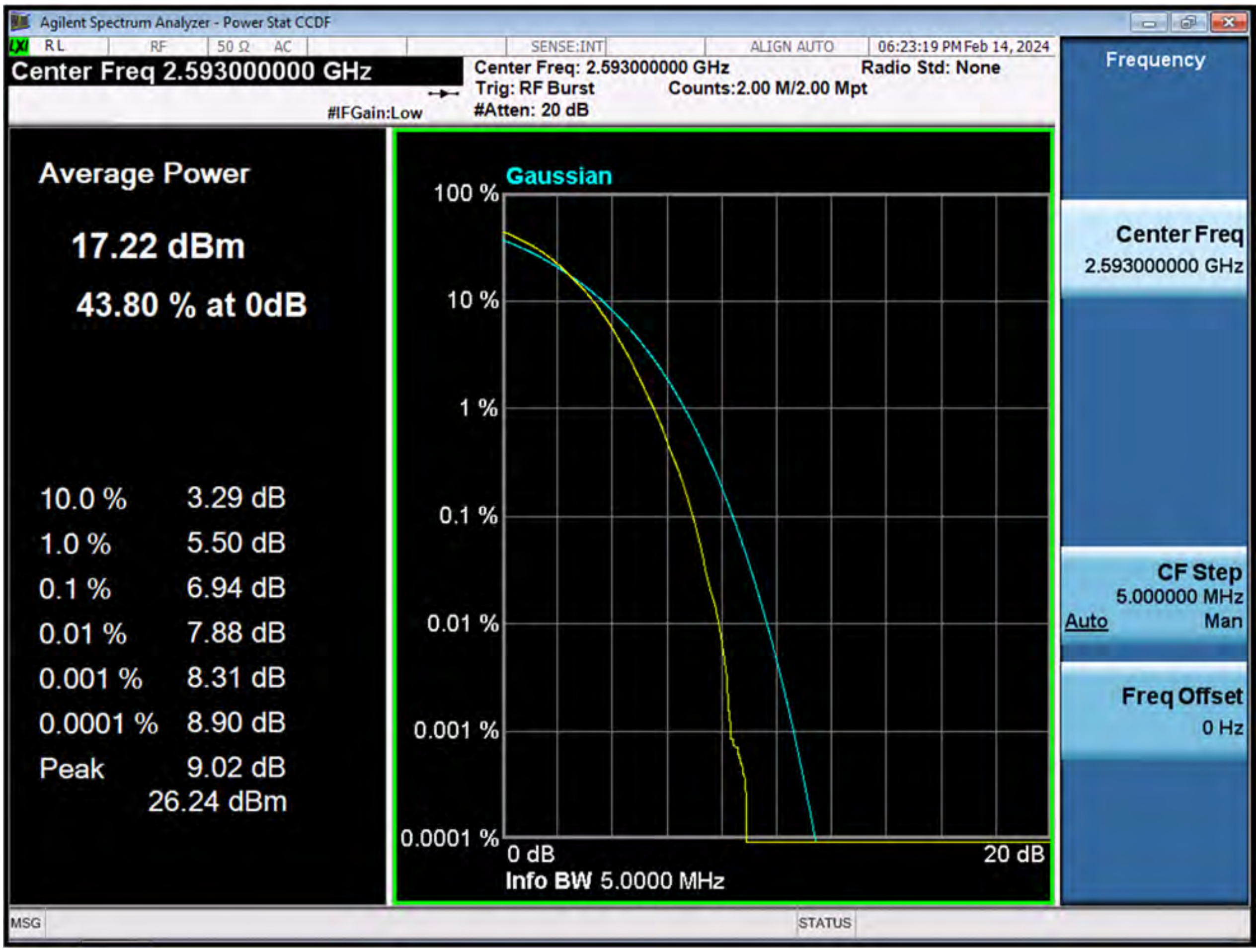
LTE41_5 M_PAR_Mid Channel_16QAM_FullRB



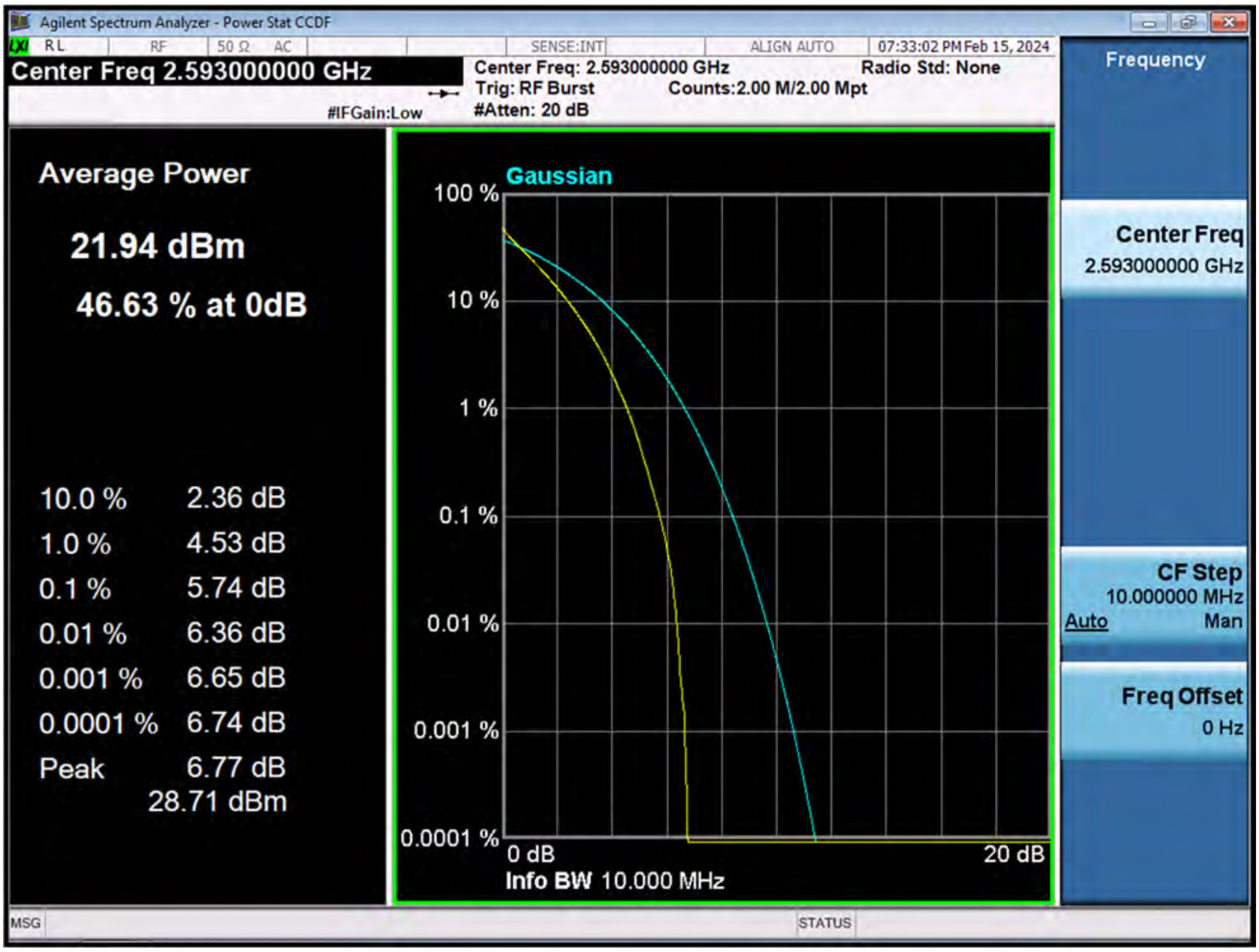
LTE41_5 M_PAR_Mid Channel_64QAM_FullRB



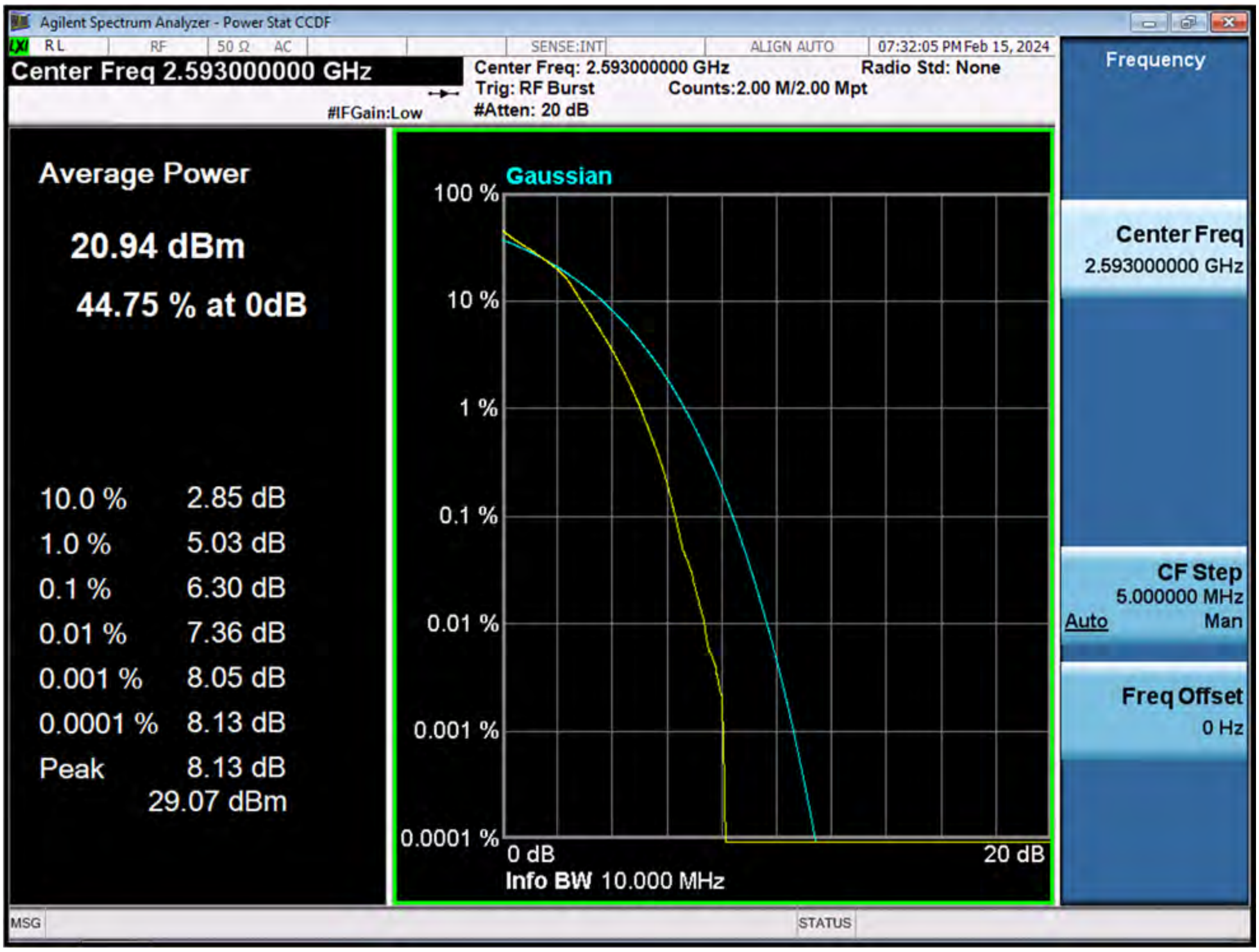
LTE41_5 M_PAR_Mid Channel_256QAM_FullRB



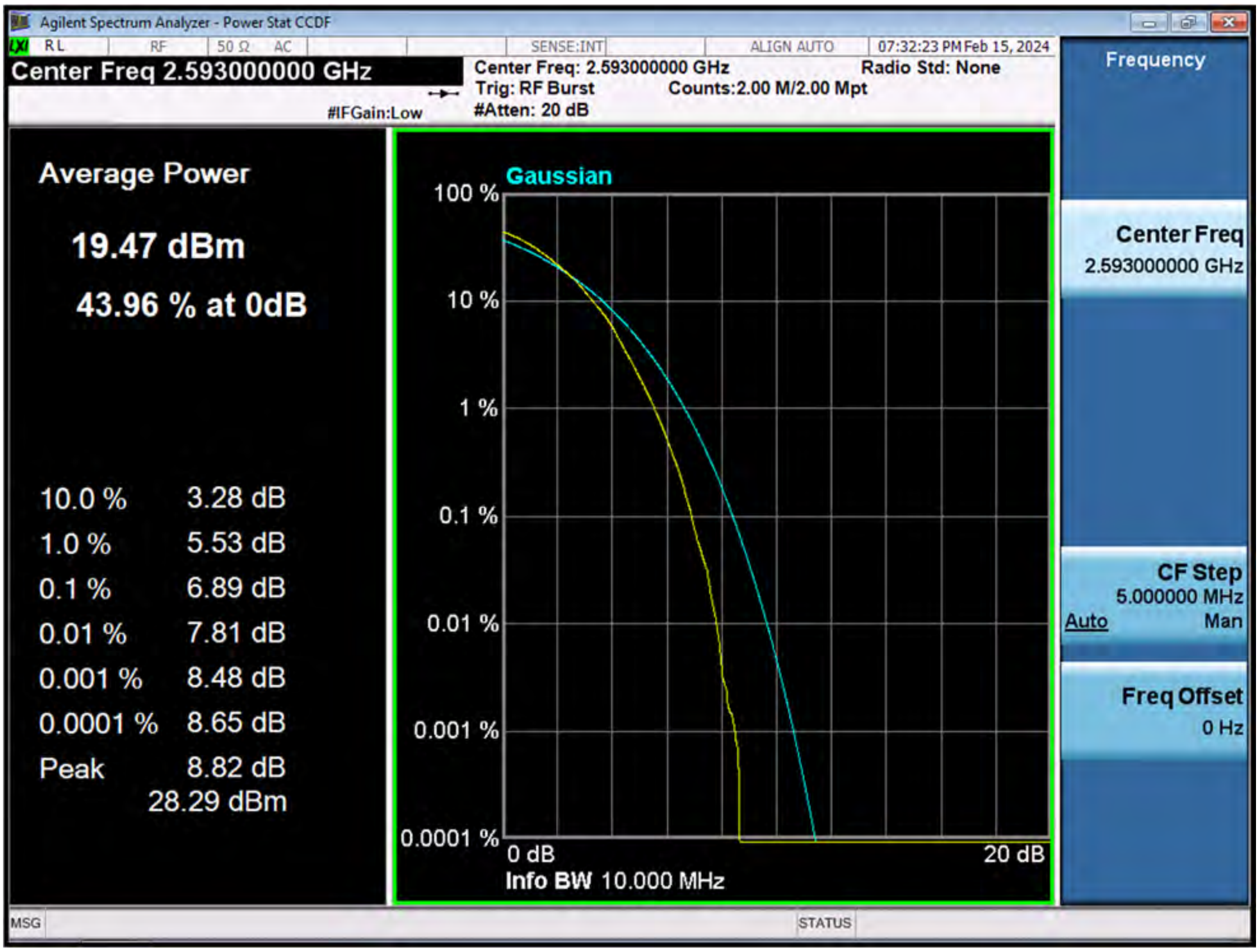
LTE41_10 M_PAR_Mid Channel_QPSK_FullRB



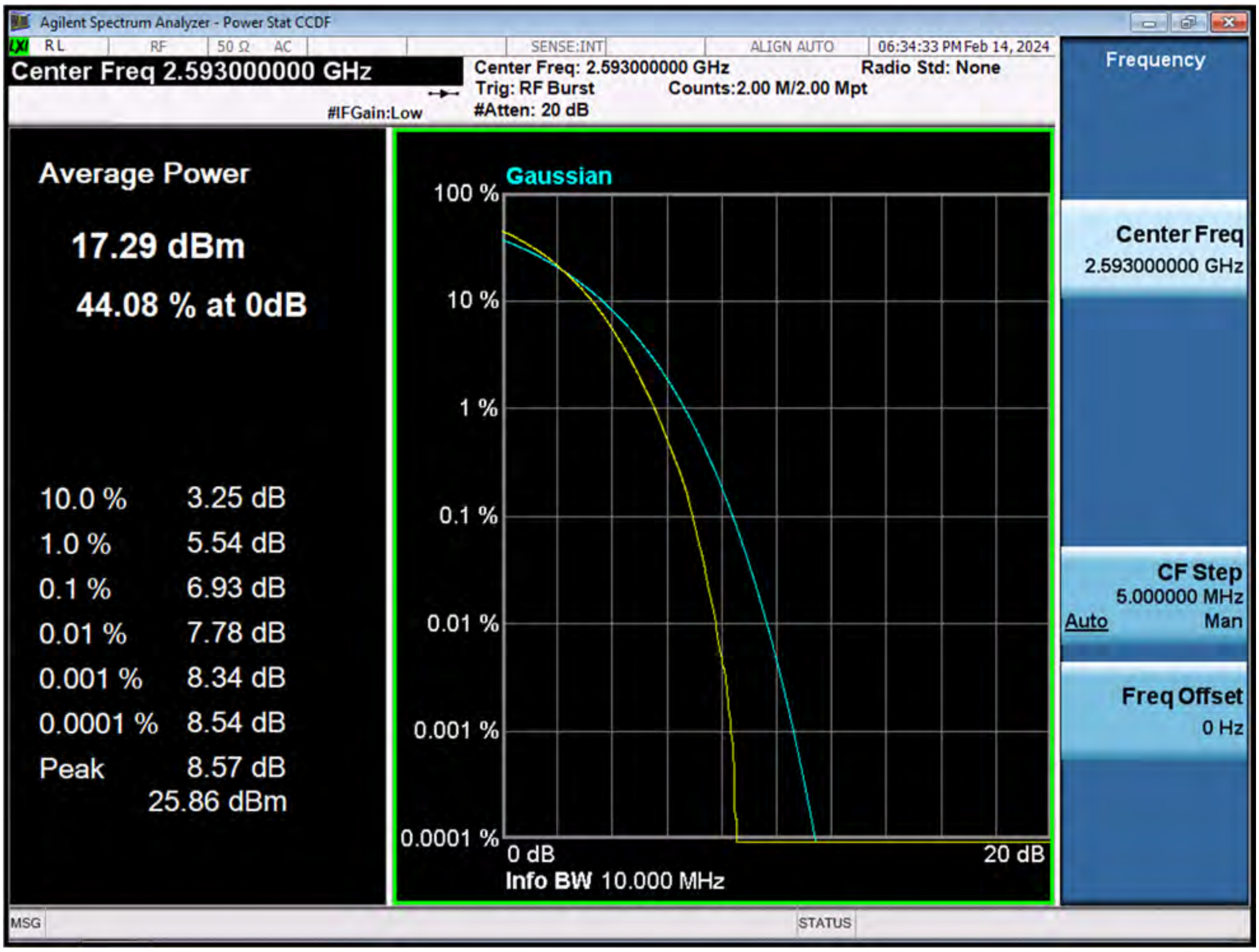
LTE41_10 M_PAR_Mid Channel_16QAM_FullRB



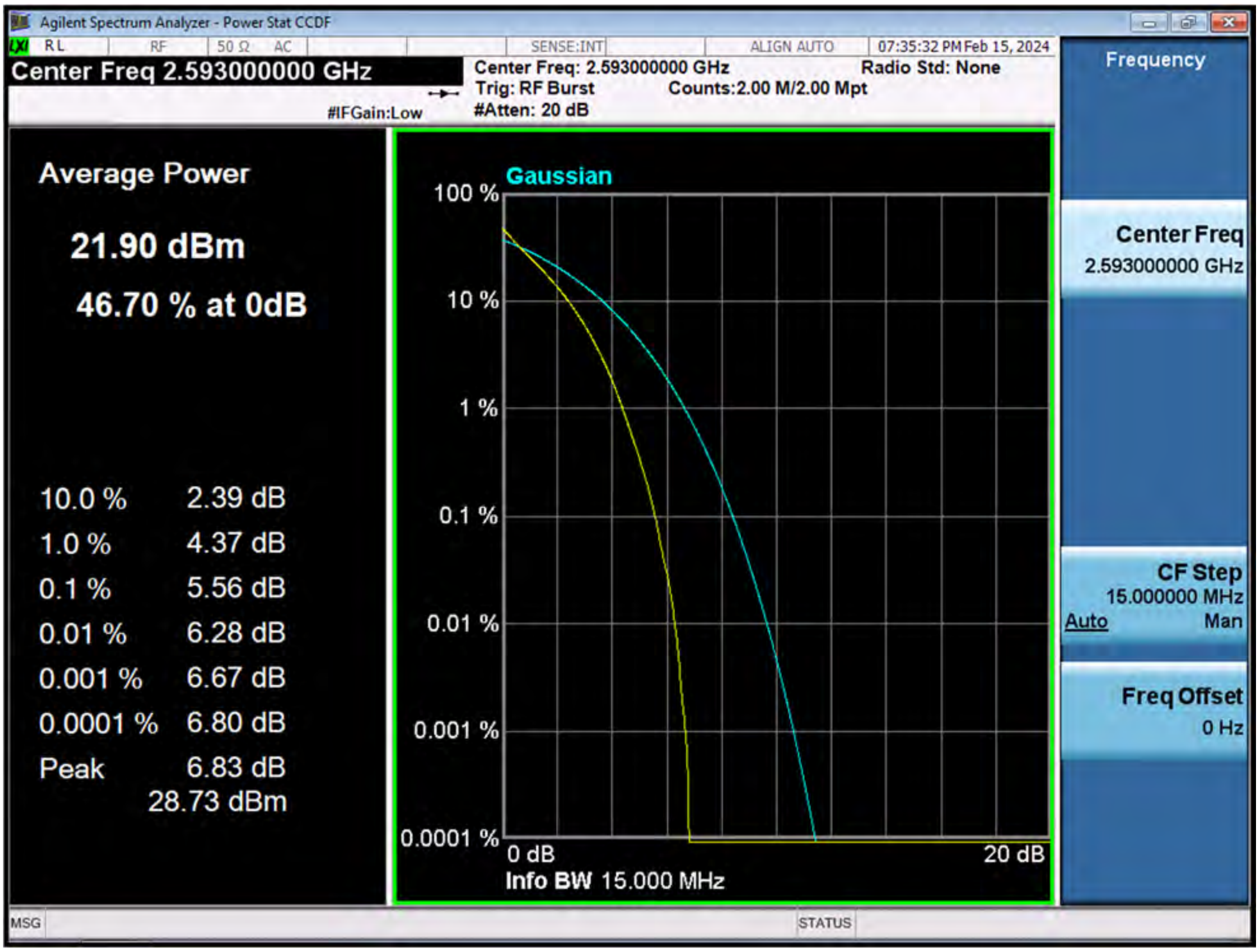
LTE41_10 M_PAR_Mid Channel_64QAM_FullRB



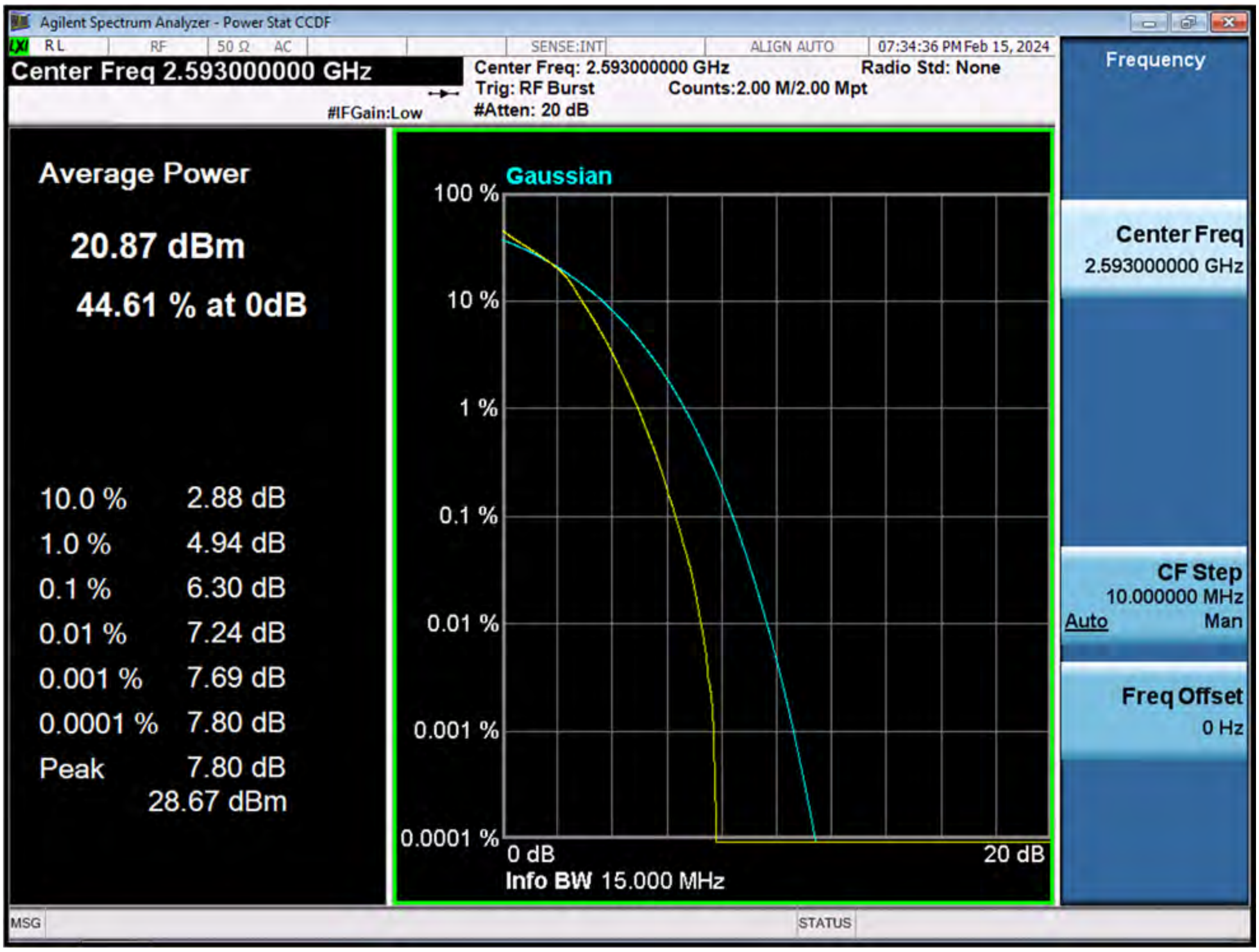
LTE41_10 M_PAR_Mid Channel_256QAM_FullRB



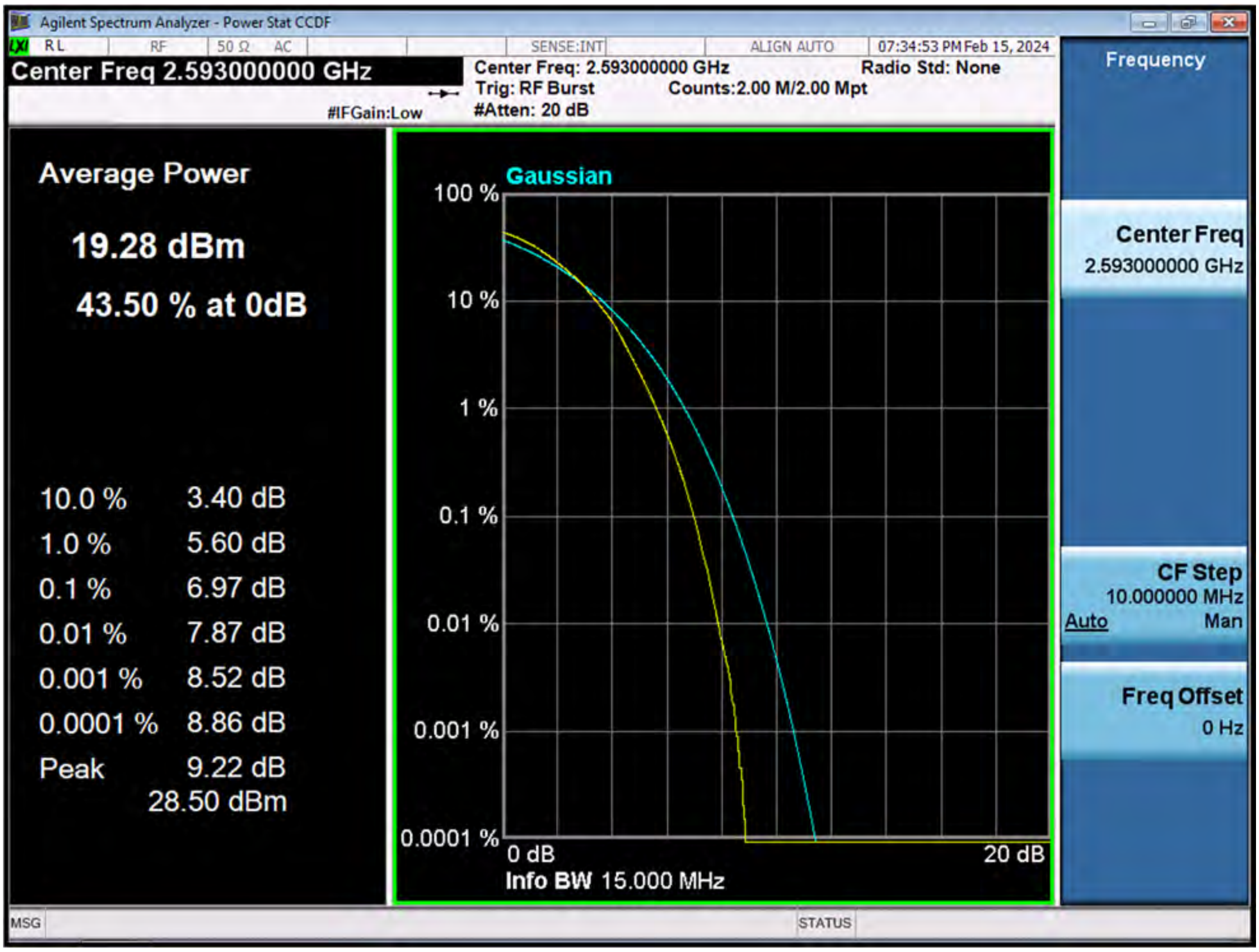
LTE41_15 M_PAR_Mid Channel_QPSK_FullRB



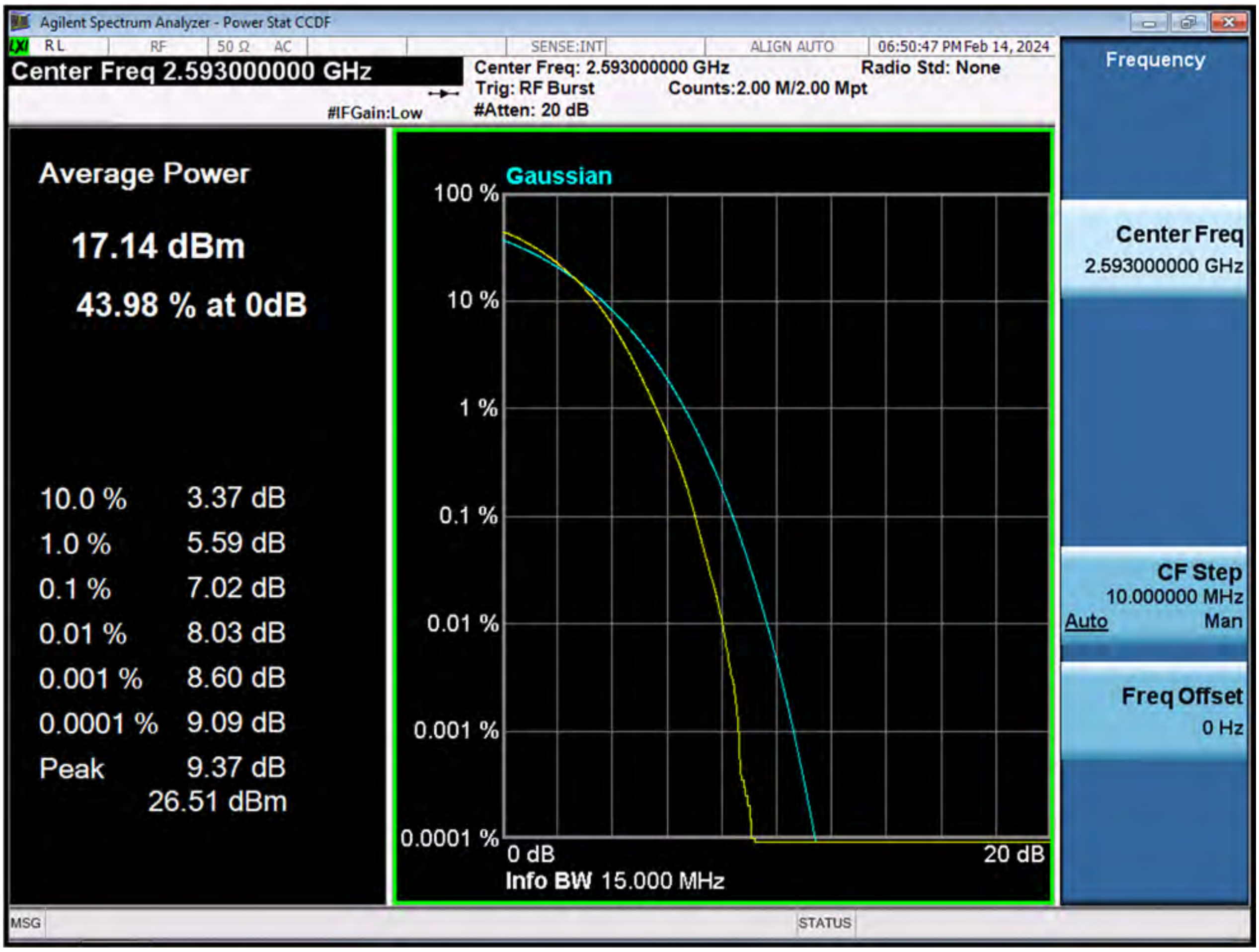
LTE41_15 M_PAR_Mid Channel_16QAM_FullRB



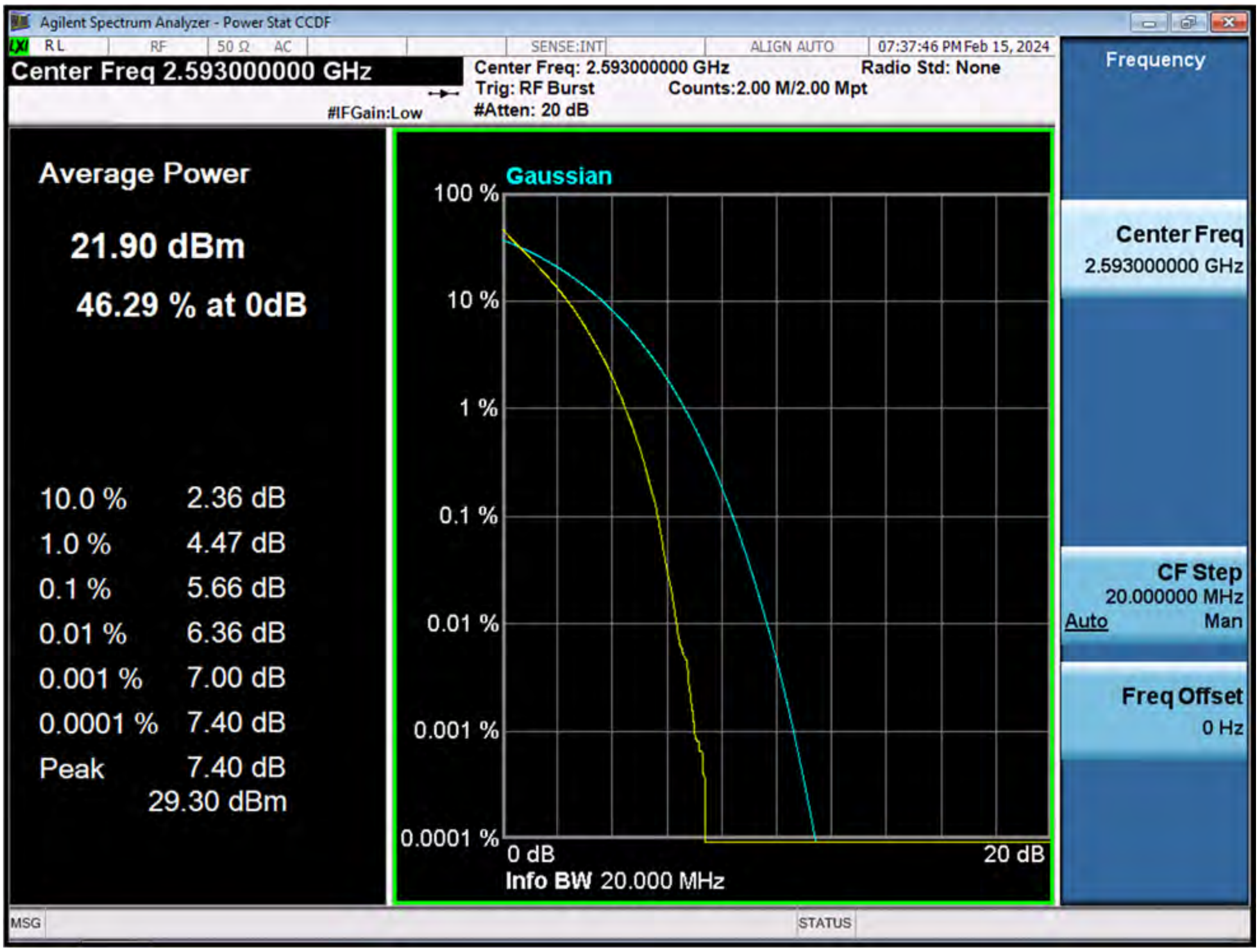
LTE41_15 M_PAR_Mid Channel_64QAM_FullRB



LTE41_15 M_PAR_Mid Channel_256QAM_FullRB



LTE41_20 M_PAR_Mid Channel_QPSK_FullRB



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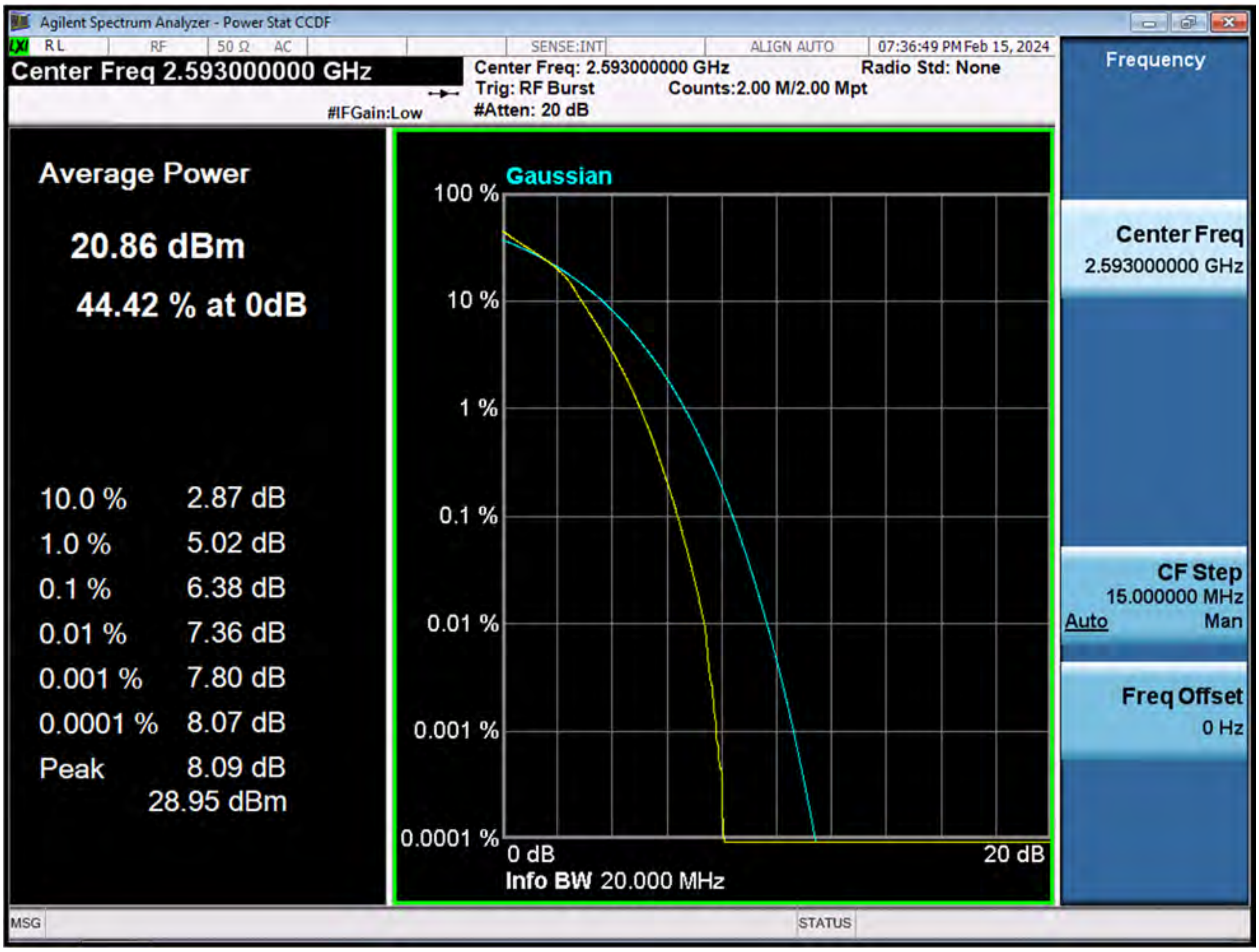
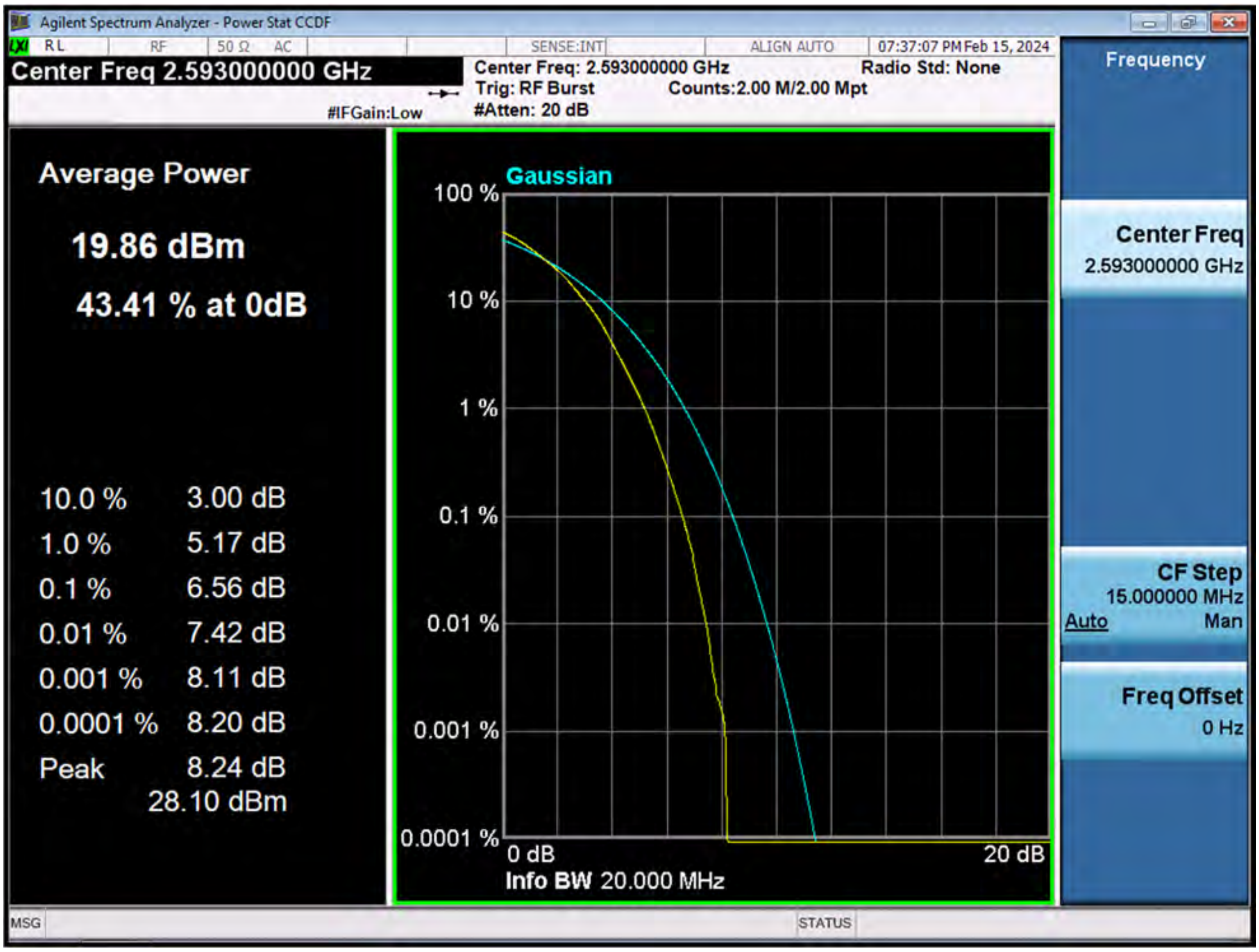
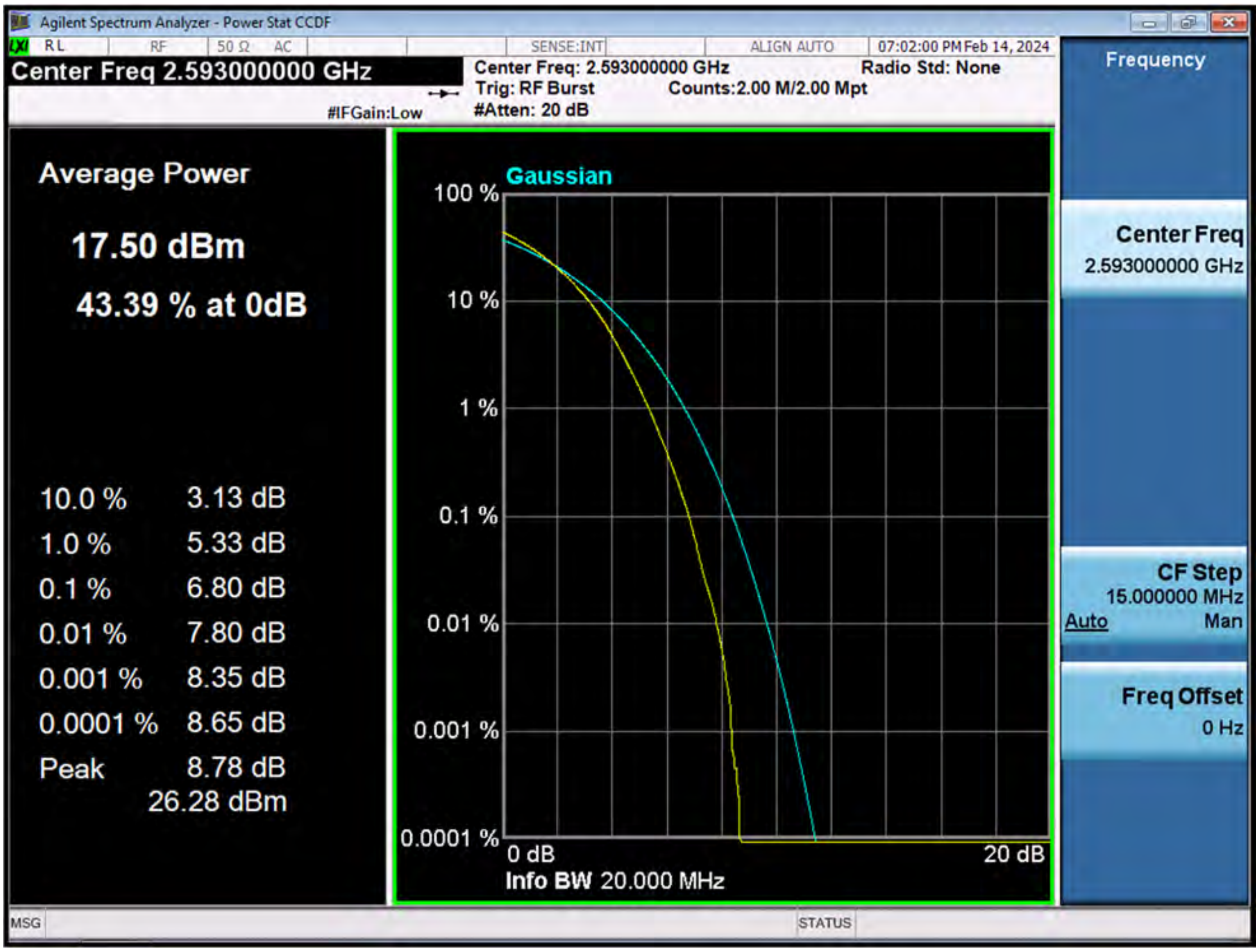


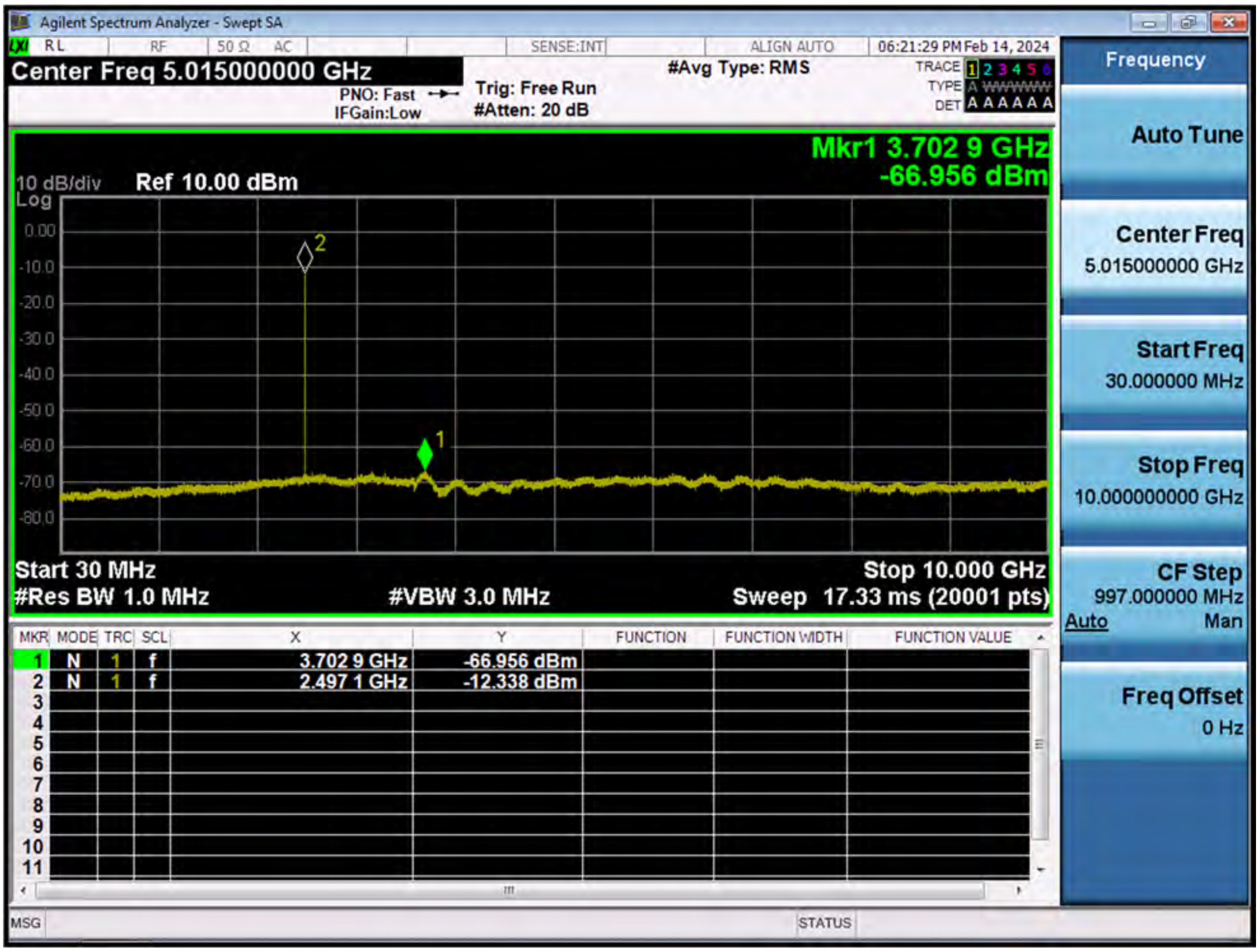
LTE41_20 M_PAR_Mid Channel_64QAM_FullRB



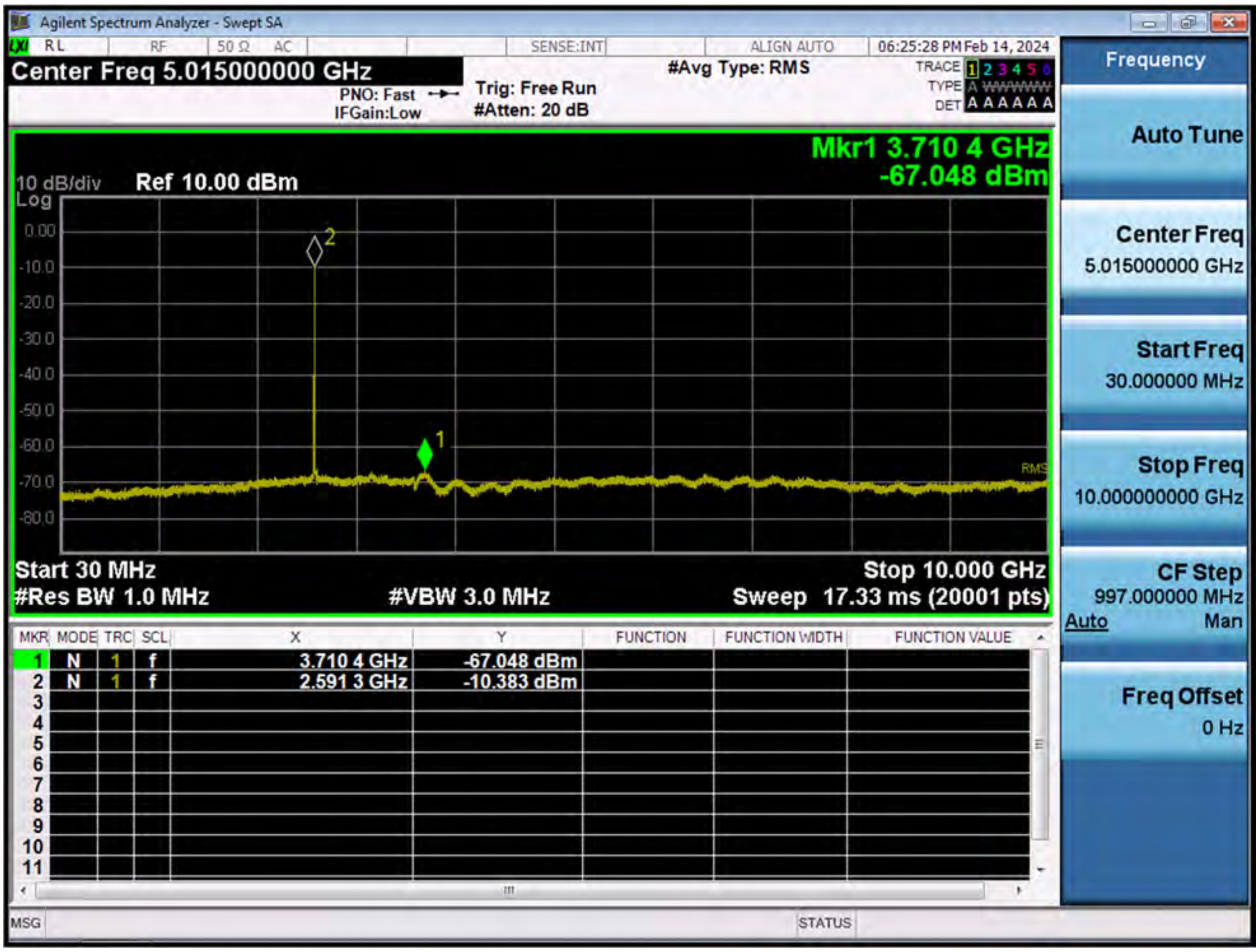
LTE41_20 M_PAR_Mid Channel_256QAM_FullRB



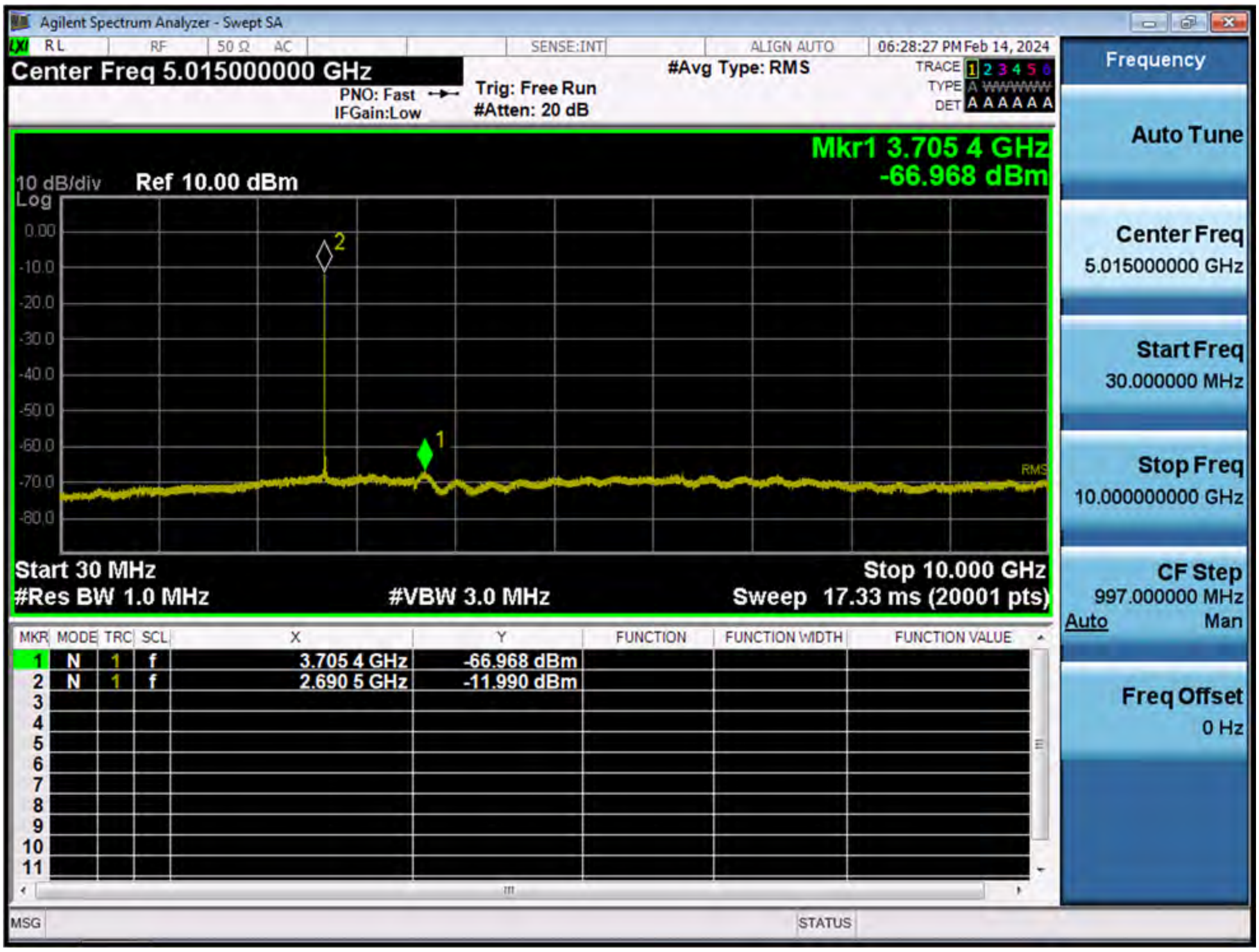
LTE41_5 M_CSE(30 M-10 G)_Lowest Channel



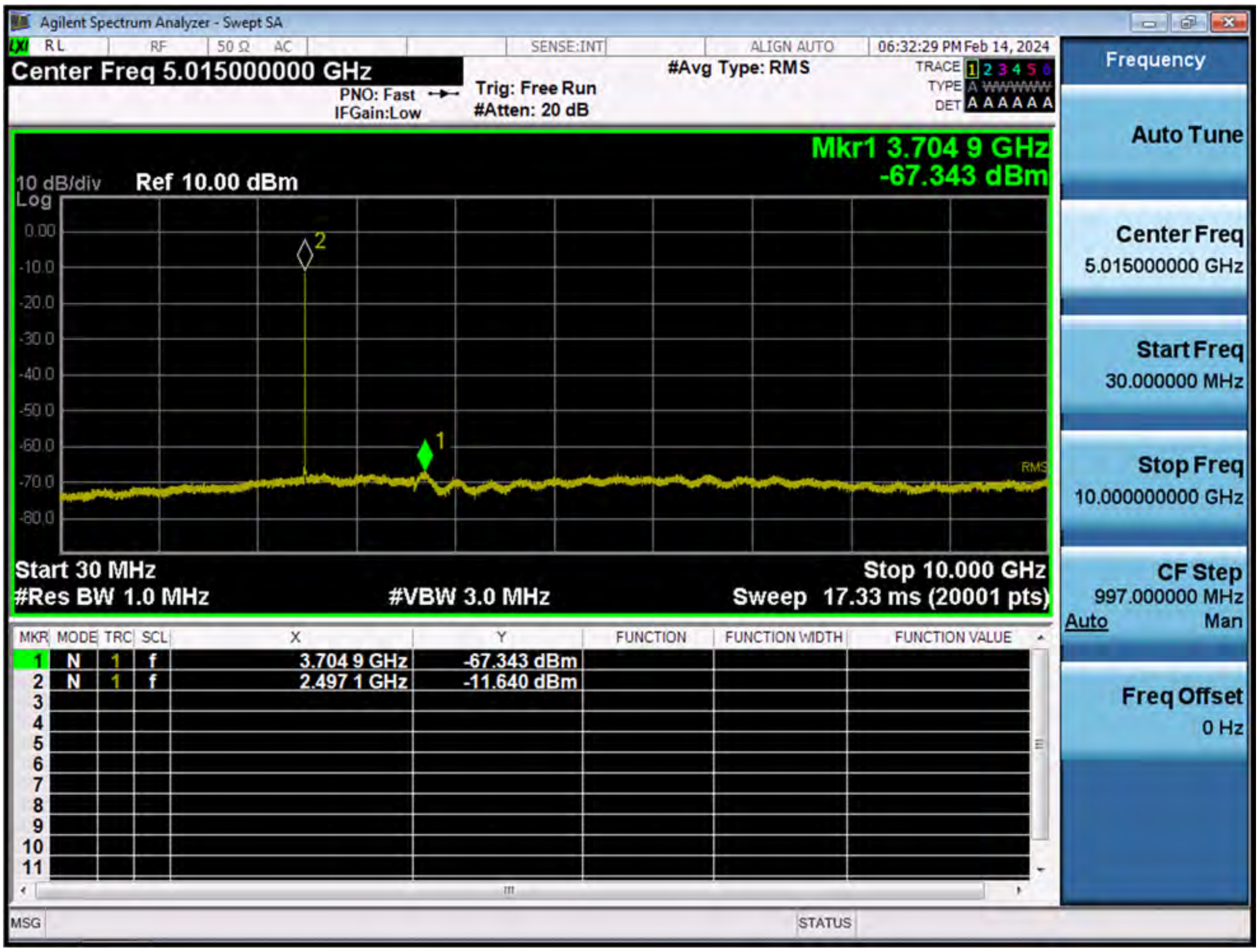
LTE41_5 M_CSE(30 M-10 G)_Mid Channel



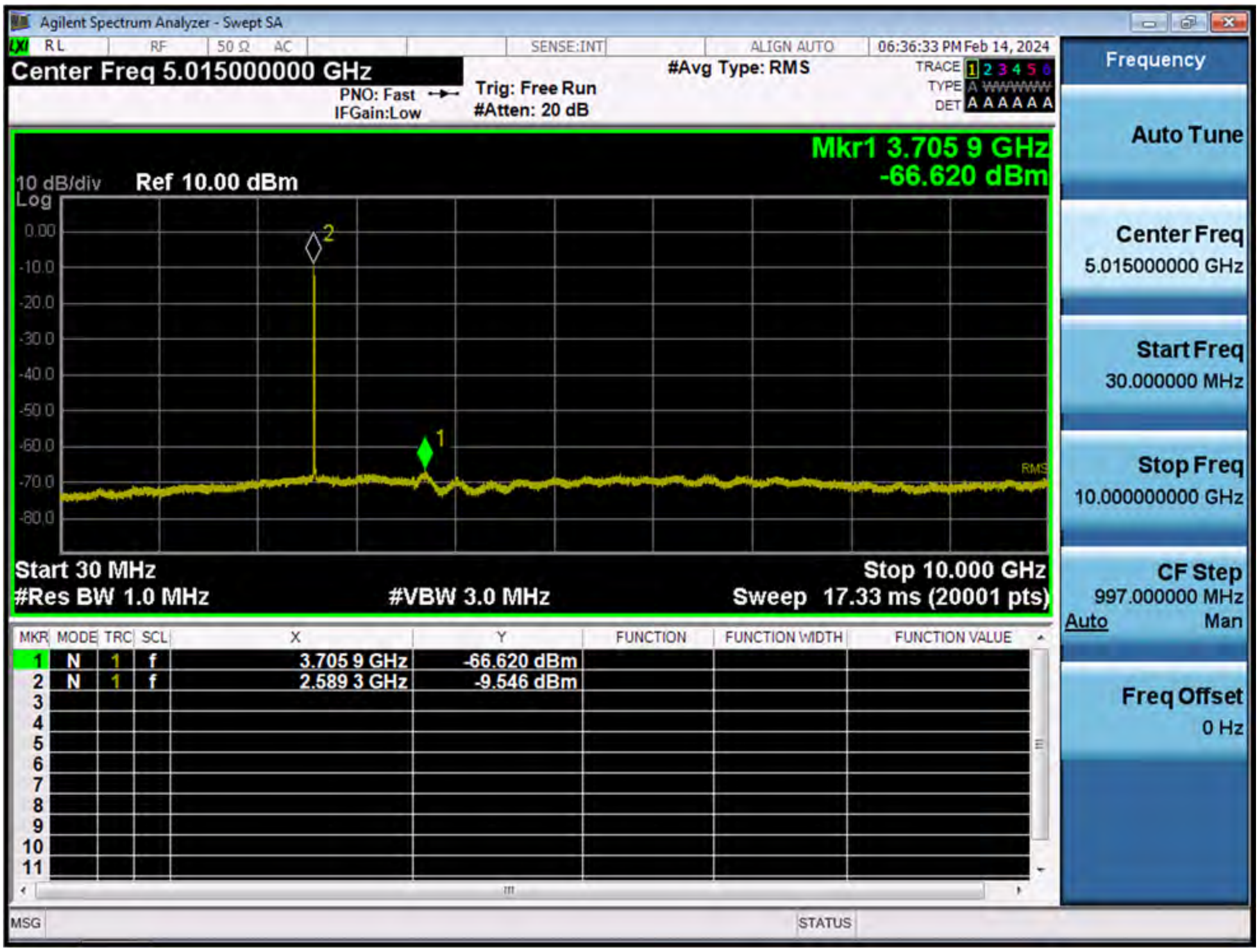
LTE41_5 M_CSE(30 M-10 G)_Highest Channel



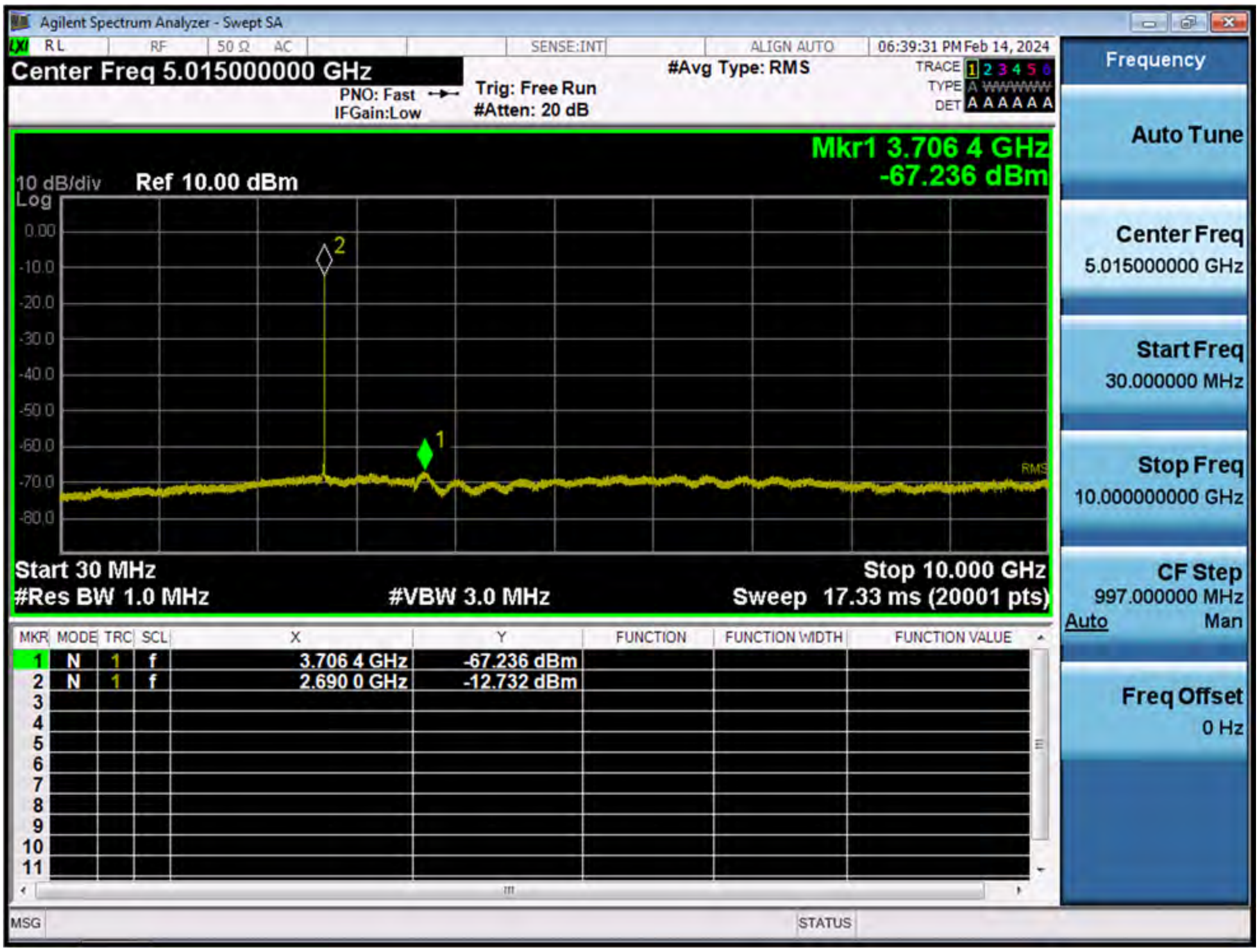
LTE41_10 M_CSE(30 M-10 G)_Lowest Channel



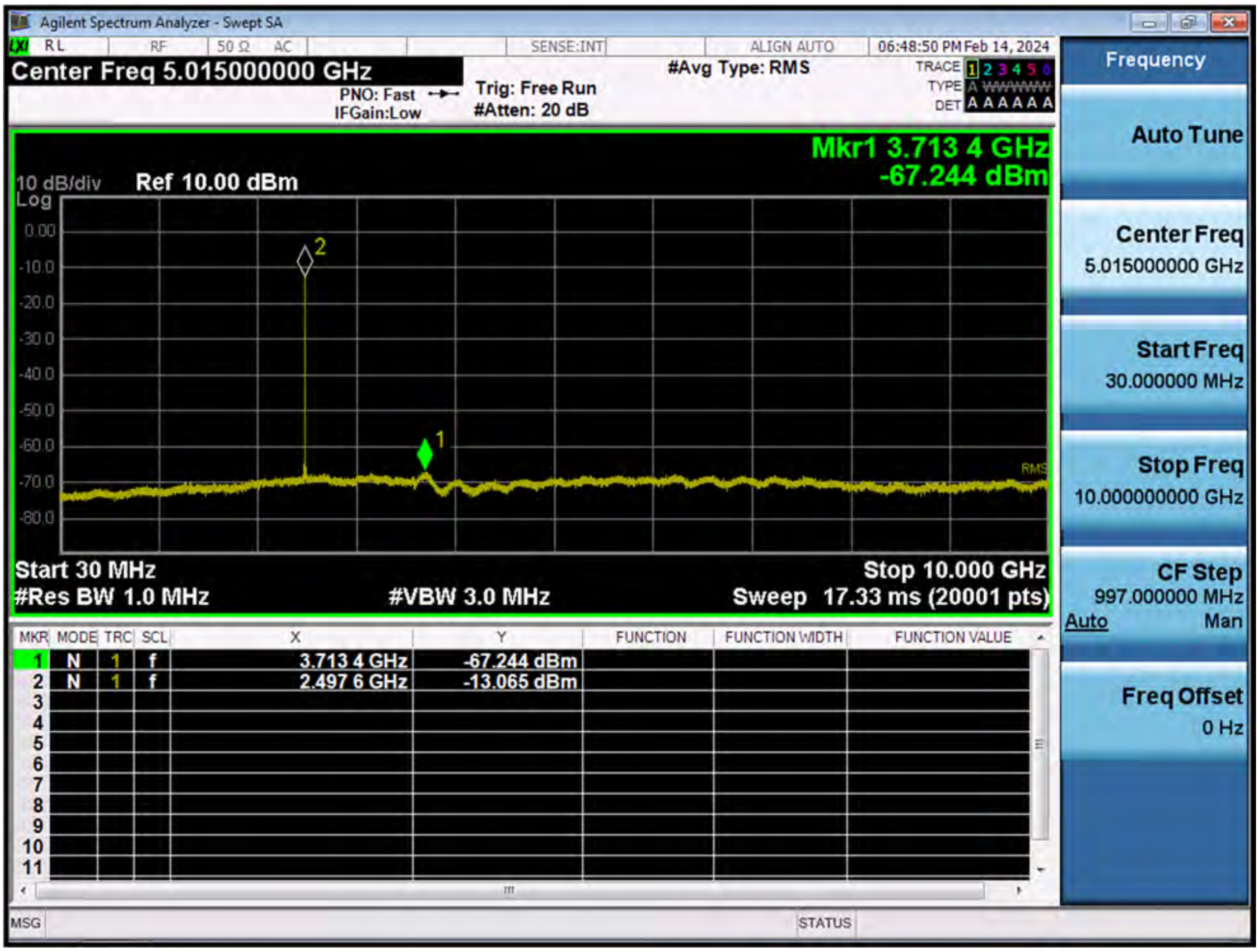
LTE41_10 M_CSE(30 M-10 G)_Mid Channel



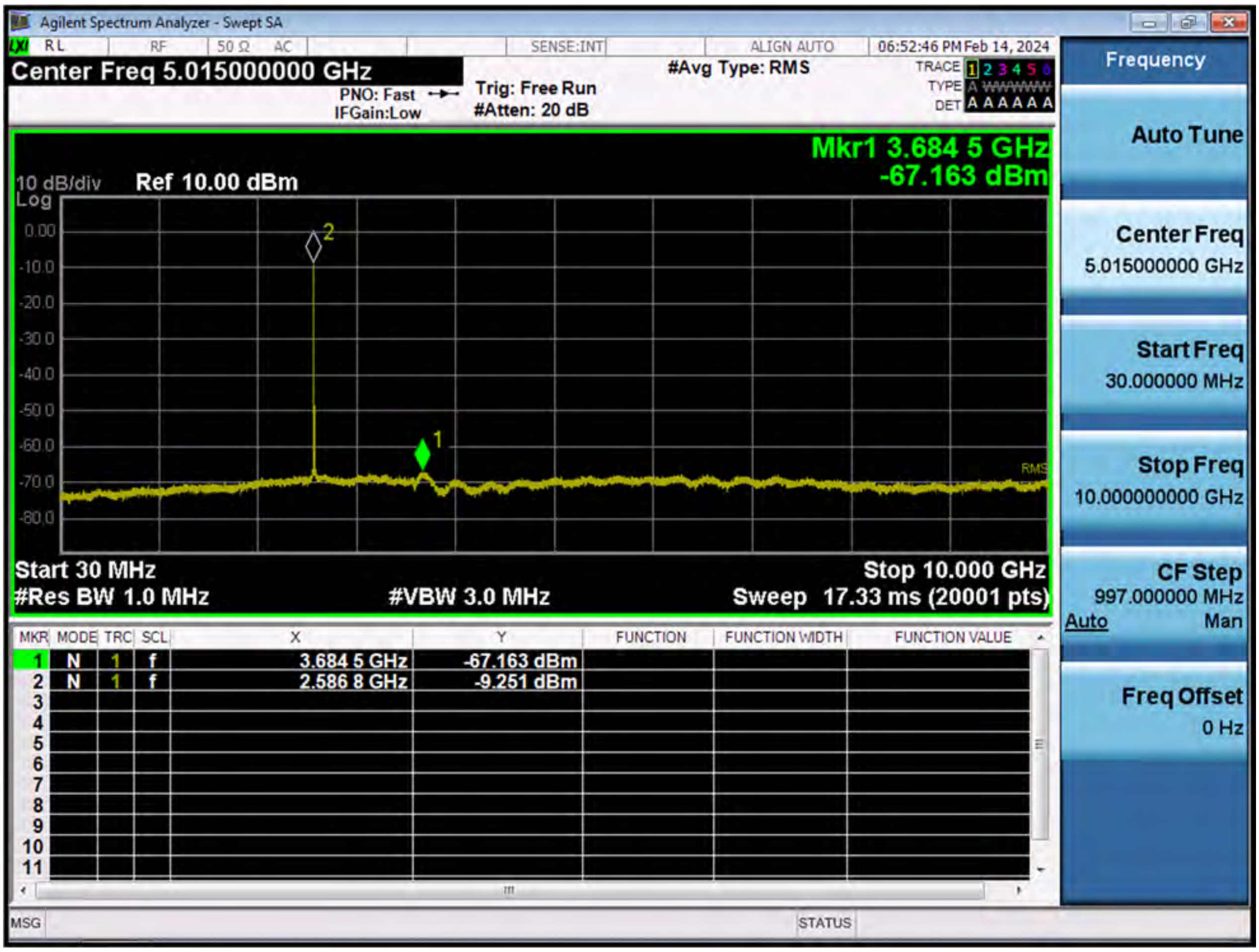
LTE41_10 M_CSE(30 M-10 G)_Highest Channel



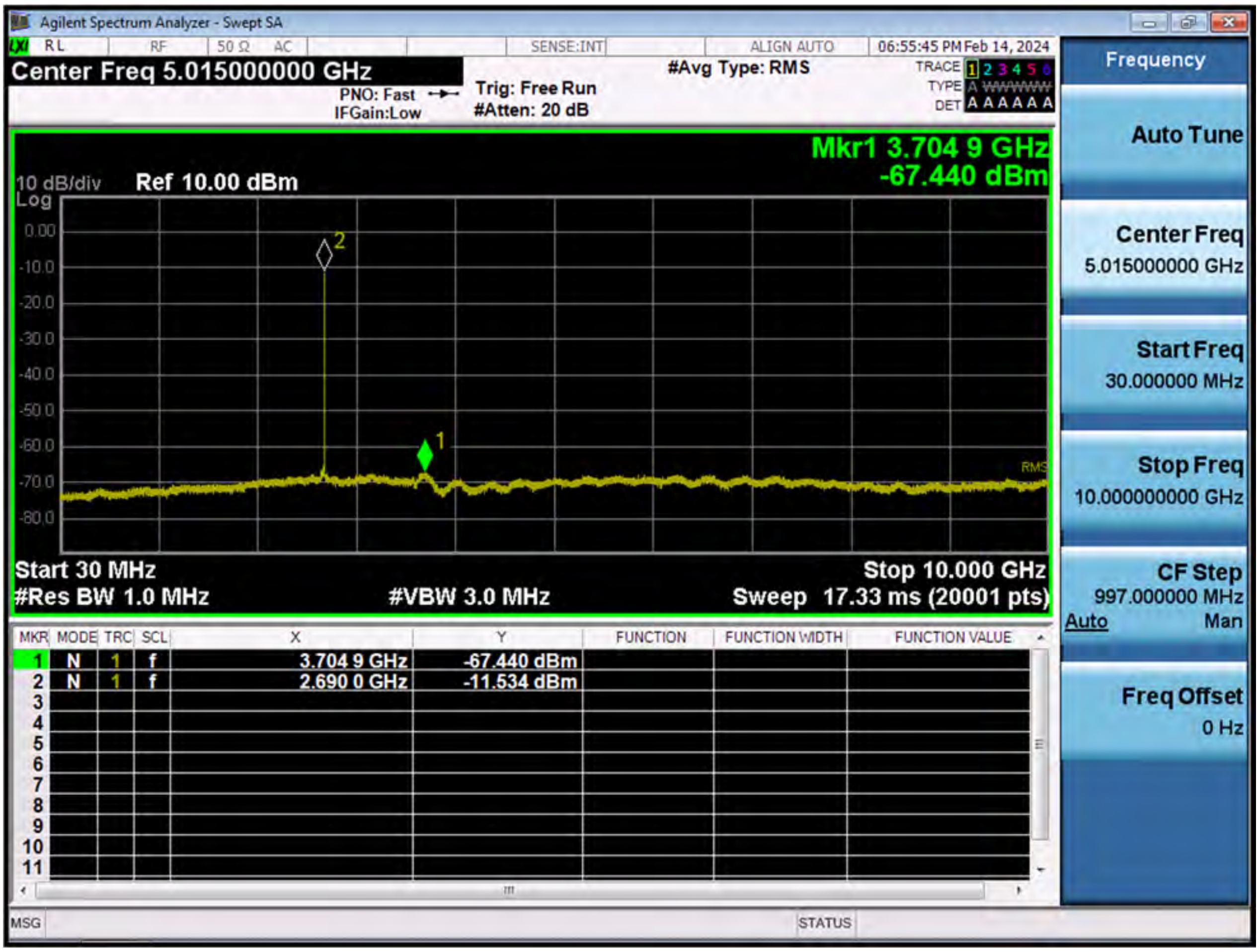
LTE41_15 M_CSE(30 M-10 G)_Lowest Channel



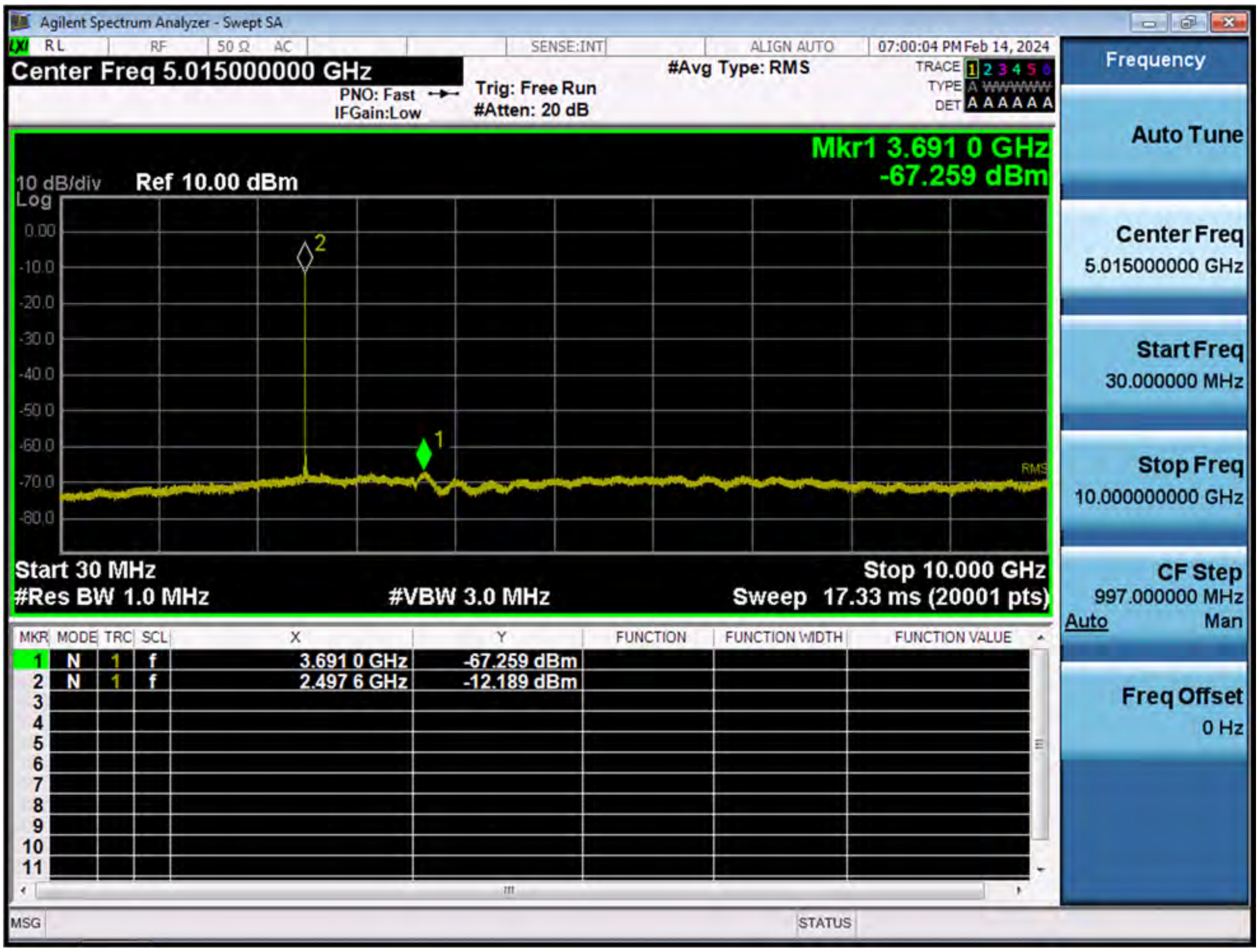
LTE41_15 M_CSE(30 M-10 G)_Mid Channel



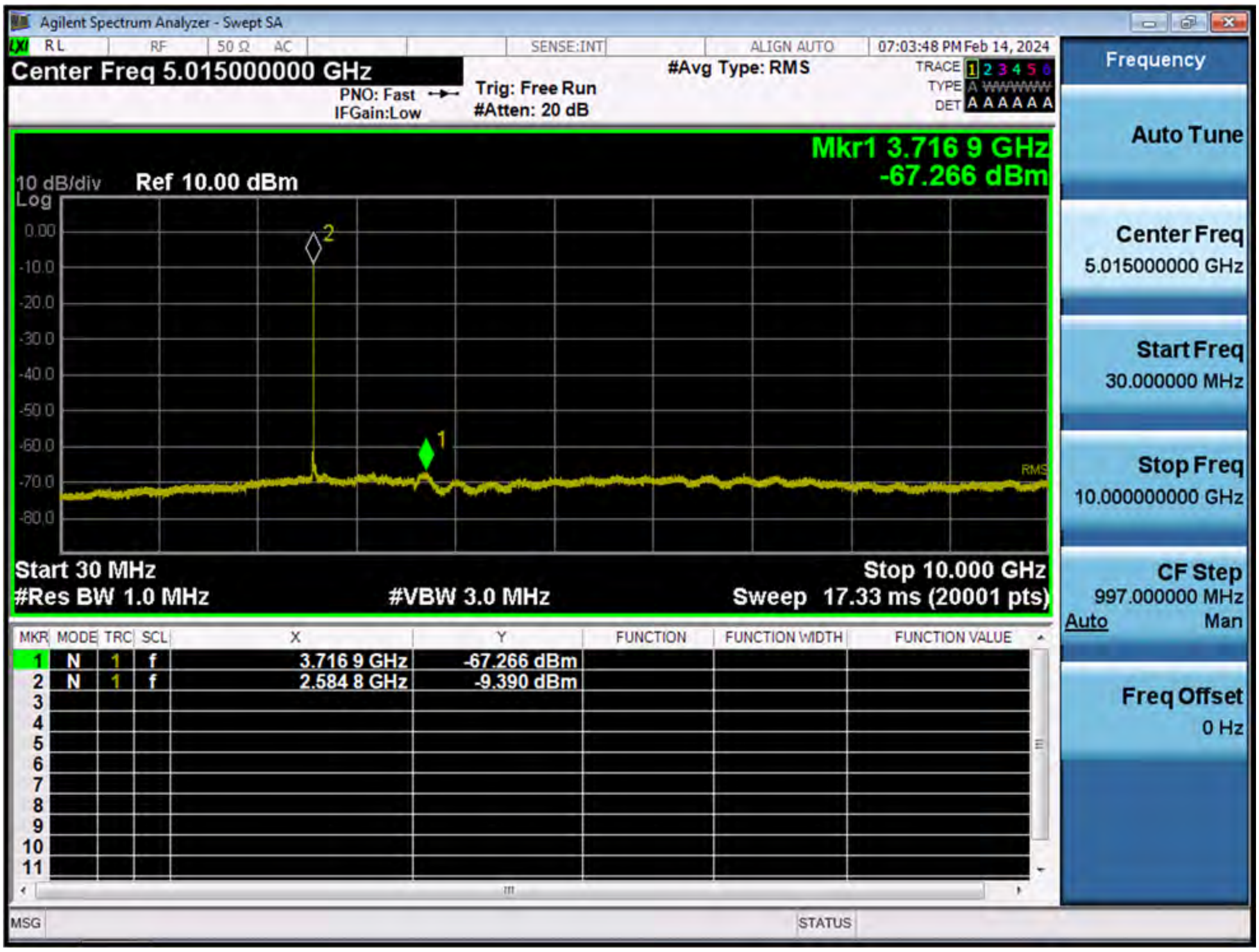
LTE41_15 M_CSE(30 M-10 G)_Highest Channel



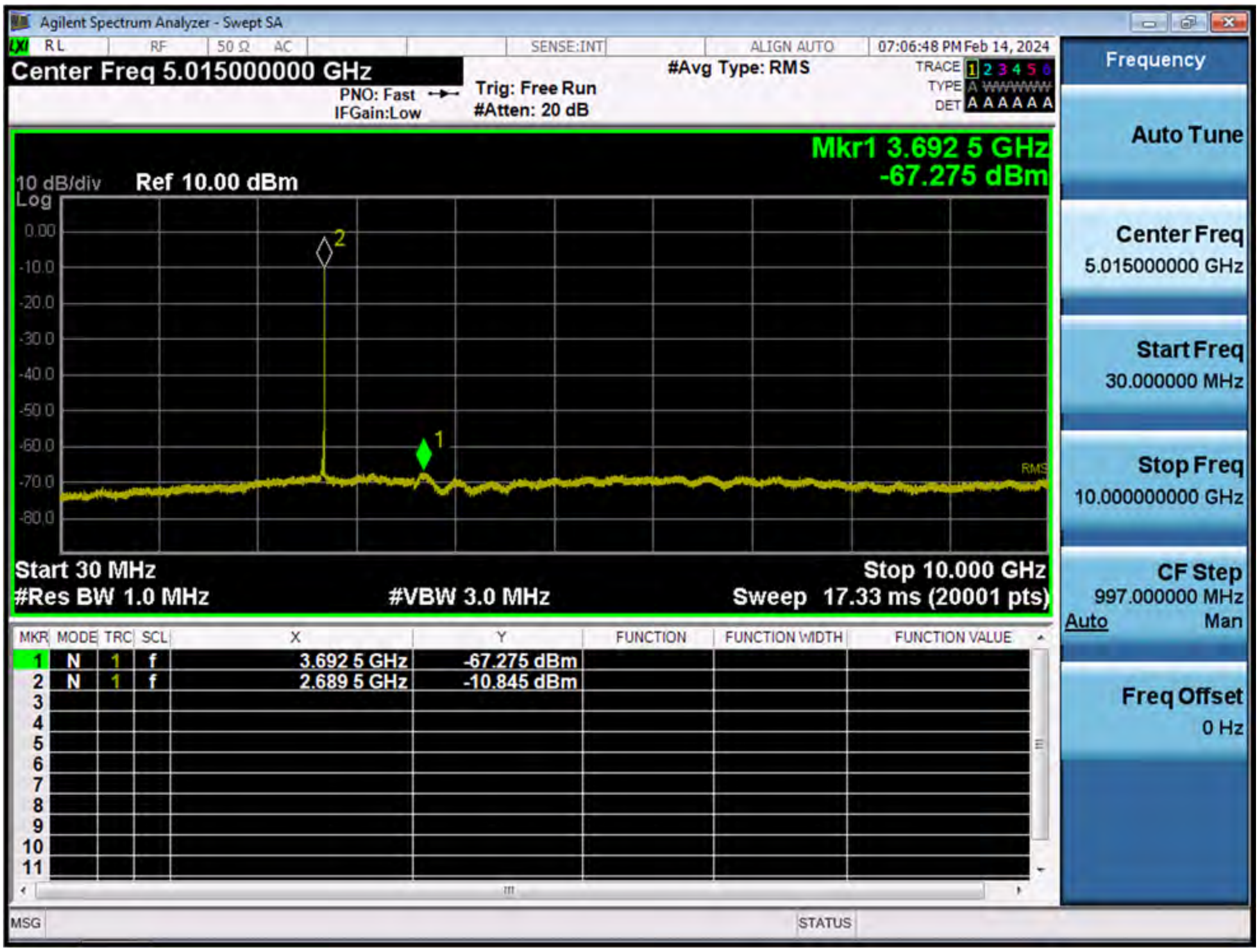
LTE41_20 M_CSE(30 M-10 G)_Lowest Channel



LTE41_20 M_CSE(30 M-10 G)_Mid Channel



LTE41_20 M_CSE(30 M-10 G)_Highest Channel



LTE41_5 M_CSE(Above10 G)_Lowest Channel

LTE41_5 M_CSE(Above10 G)_Mid Channel

LTE41_5 M_CSE(Above10 G)_Highest Channel

LTE41_10 M_CSE(Above10 G)_Lowest Channel

LTE41_10 M_CSE(Above10 G)_Mid Channel

LTE41_10 M_CSE(Above10 G)_Highest Channel

LTE41_15 M_CSE(Above10 G)_Lowest Channel

LTE41_15 M_CSE(Above10 G)_Mid Channel

LTE41_15 M_CSE(Above10 G)_Highest Channel

LTE41_20 M_CSE(Above10 G)_Lowest Channel

LTE41_20 M_CSE(Above10 G)_Mid Channel

LTE41_20 M_CSE(Above10 G)_Highest Channel

10. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2403-FC008-P