Testing and Certification

TEST REPORT

FCC LTE Test for GCM6201NA
Certification

APPLICANT

REPORT NO.
HCT-RF-2409-FC014

DATE OF ISSUE
September 30, 2024

Tested by Jae Ryang Do	
Technical Manager Jong Seok Lee	

HCT CO., LTD.
BongJai Huh / CEO

HCT CO., LTD. 2-6, 73, 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea Tel. +82 31 645 6300 Fax. +82 31 645 6401

HCT CO.,LTD.
2-6, 73, 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea
Tel. +82 31 645 6300 Fax. +82 31 645 6401

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Applicant	**GCT SEMICONDUCTOR, INC** 11F Construction Financial Building 15, Boramae-ro 5-gil, Dongjak-gu, Seoul, 07071, South Korea
Product Name Model Name	LTE Module GCM6201NA
Date of Test	August 19, 2024 ~ September 27, 2024
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 ID	2ALIY-GCM6201NA
FCC Classification	Licensed Non-Broadcast Station Transmitter (TNB)
Test Standard Used	FCC Rule Part(s) : § 25
Test Results	PASS

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	September 30, 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:	GCT SEMICONDUCTOR, INC
Address:	11F Construction Financial Building 15, Boramae-ro 5-gil, Dongjak-gu, Seoul, 07071, South Korea
FCC ID:	2ALIY-GCM6201NA
Application Type:	Certification
FCC Classification:	Licensed Non-Broadcast Station Transmitter (TNB)
FCC Rule Part(s):	§ 25
EUT Type:	LTE Module
Model(s):	GCM6201NA
Additional Model(s):	-
Peak Antenna gain:	4.0 dBi
Power Supply:	3.3 V
Modulation:	QPSK, 16QAM
Bandwidth:	5MHz, 10MHz
Frequency Range:	1. Lower: 1627.5 MHz – 1637.5 MHz 2. Upper: 1646.5 MHz – 1656.5 MHz
Test Frequency:	1. Lower: LTE Band 24 (5 MHz): 1630.0 MHz, 1632.5 MHz, 1635.0 MHz LTE Band 24 (10 MHz): 1632.5 MHz 2. Upper: LTE Band 24 (5 MHz): 1649.0 MHz, 1651.5 MHz, 1654.0 MHz LTE Band 24 (10 MHz): 1651.5 MHz
Date(s) of Tests:	August 19, 2024 ~ September 27, 2024
Serial number:	351951100003507
Note:	This device belongs to the category of Mobile Earth Stations (MES) and does not support voice communication.

PMN (Product Marketing Number)	GCM6201NA
HVIN (Hardware Version Identification Number)	V1.0
FVIN (Firmware Version Identification Number)	V1.0

1.1. MAXIMUM OUTPUT POWER

Lower

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted Output Power	
				Max. Power (W)	Max. Power (dBm)
LTE – Band24 (5)	1630.0 – 1635.0	4M51G7D	QPSK	0.224	23.51
		4M49W7D	16QAM	0.194	22.87
LTE – Band24 (10)	1632.5	8M94G7D	QPSK	0.185	22.67
		8M90W7D	16QAM	0.156	21.92

Upper

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted Output Power	
				Max. Power (W)	Max. Power (dBm)
LTE – Band24 (5)	1649.0 – 1654.0	4M50G7D	QPSK	0.255	24.06
		4M51W7D	16QAM	0.217	23.36
LTE – Band24 (10)	1651.5	8M97G7D	QPSK	0.233	23.68
		8M89W7D	16QAM	0.198	22.97

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a LTE module.

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

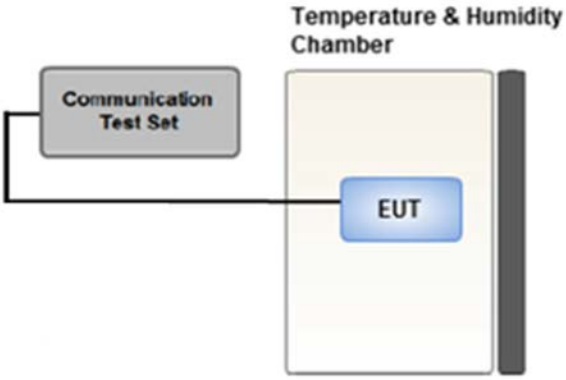
The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea**

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
Conducted Emission Mask	- 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
Emission limits for protection of aeronautical service	- 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
Frequency stability	- ANSI C63.26-2015 – Section 5.6
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 RF OUTPUT POWER



Test setup

Test Overview

According to ANSI C63.26-2015 Section 5.2.1 when measuring the maximum RF output power from such devices, control over the EUT must be provided either through special test software (provided by manufacturer specifically for compliance testing, but not accessible by an end user) or through use of a base station emulator, communications test set, call box, or similar instrumentation that is capable of establishing a communications link with the EUT to enable control over variable parameters (e.g., output power, OBW, etc.).

In some cases, these instruments also include basic digital spectrum analyzer and/or power meter capabilities that can be utilized to measure the RF output power if the specified detectors and requirements can be realized and the measurement functions have been calibrated.

Test Procedure

1. The RF port of the EUT was connected to the Communication Tester via an RF cable.
2. Conducted average power was measured using a calibrated Radio Communication Tester.
3. EIRP $_{(dBm)}$ = Conducted Power $_{(dBm)}$ + antenna gain $_{(dBi)}$

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

Test Settings

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

Test Note

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

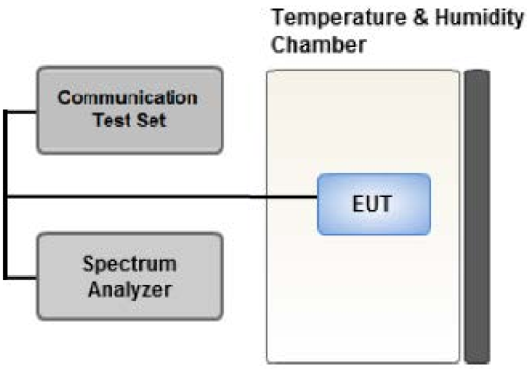
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

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

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

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

3.4 CONDUCTED EMISSION MASK



Test setup

Test Procedure

The conducted emission mask was connected to a calibrated Splitter and Communication Test equipment, the other end of which was connected to a spectrum analyzer.

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

The mean power of the emissions shall be attenuated below the mean output power.

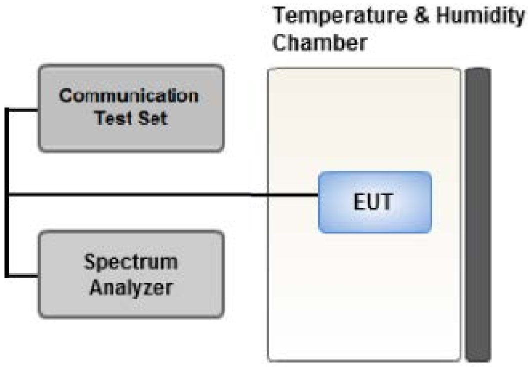
Test Settings

1. RBW ≥ 4 kHz
2. VBW ≥ 3 x RBW
3. Detector = Peak
4. Trace mode = Max hold
5. Sweep = auto couple
6. The trace was allowed to stabilize

Test Note

Worst case of mean output power = 23.0 - 2.7 = 20.3 dBm

3.5 OCCUPIED BANDWIDTH.



Test setup

Test Overview

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.

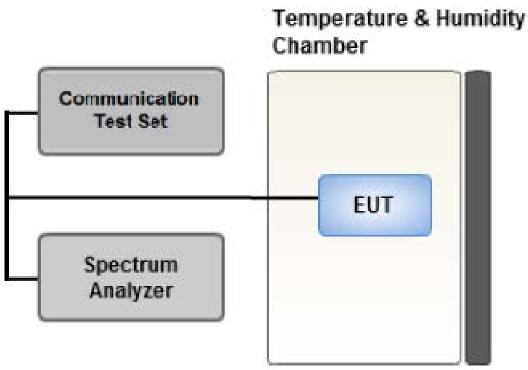
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

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

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

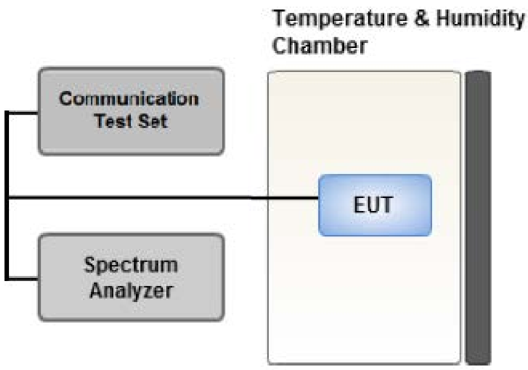
Test Overview

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 couple
6. Number of points in sweep ≥ 2 x Span / RBW

3.7 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.

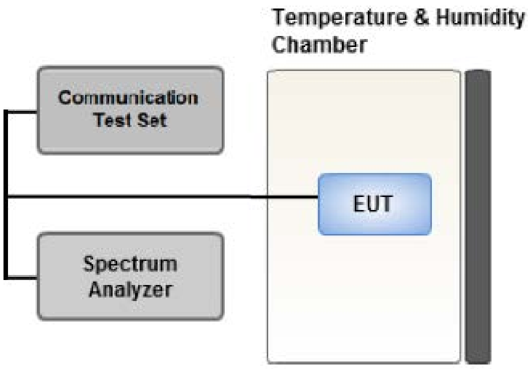
The frequency stability of the transmitter is measured by:

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.

3.8 EMISSION LIMITS FOR PROTECTION OF AERONAUTICAL SERVICE



Test setup

Test Overview

Additional Limits on emissions from mobile earth stations for protection of aeronautical radionavigation-satellite service and Special requirements for ancillary terrestrial components operating in the 1626.5-1660.5 MHz band.

Test Procedure

The testing follows ANSI C63.26 section 5.7

The conducted emission mask was connected to a calibrated Splitter and Communication Test equipment, the other end of which was connected to a spectrum analyzer.

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

Test Settings

1. RBW = 1MHz (Narrow Band: 10kHz)
2. VBW $\geq$ 3 MHz
3. Detector = RMS
4. Trace Mode = Trace average

Test Note

1. Narrow Band should be measured with an RBW=700Hz, but for testing convenience, it was measured with 10kHz.
2. Carrier-off state = Idle mode (0 RB)
3. Ref. offset of spectrum analyzer $_{(dB)}$ = Path loss $_{(dB)}$ + Peak.antenna gain $_{(dBi)}$
4. Result $_{(dBm)}$ = Ref. Offset $_{(dB)}$ + Measured value $_{(dBm)}$

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.
- JIG was used to test the EUT. (EUT + JIG)
- 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	Bandwidth	RB size	RB offset	Axis
Radiated Spurious and Harmonic Emissions	QPSK	5MHz	1	0	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	5, 10	Mid	Full RB	0
Emission Mask	QPSK	5	Low	1	0
			High	1	24
		10	Low	1	0
			High	1	49
		5, 10	Low, High	Full RB	0
Emission limits for protection of aeronautical service (1559 MHz – 1610 MHz)	QPSK	5, 10	Low, High	1	0
		5, 10	Low, High	Full RB	0
Emission limits for protection of aeronautical service (Carrier-off state)	QPSK	5, 10	Low, Mid, High	0	-
Spurious and Harmonic Emissions at Antenna Terminal	QPSK	5, 10	Low, Mid, High	1	0
Frequency stability	QPSK	5, 10	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	08/21/2025	Annual
RF Switching System	Switch box(3.3 G HPF+LNA)	HCT CO., LTD.,	F1L2	08/21/2025	Annual
RF Switching System	Switch box(LNA)	HCT CO., LTD.,	F1L4	08/21/2025	Annual
RF Switching System	Switch box(6 G HPF+LNA)	HCT CO., LTD.,	F1L7	08/21/2025	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	09/29/2024	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/19/2025	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	11/17/2024	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	12/11/2024	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	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
Emissions Mask	§ 25.202(f)	Note 1	PASS
Conducted Output Power	§ 2.1046	N/A	PASS
Emission limits for protection of aeronautical service (1559 MHz – 1610 MHz)	§ 25.216(c)(h)	Note 2, 3	PASS
Emission limits for protection of aeronautical service (Carrier-off state)	§ 25.216(i)	e.i.r.p. density < −80 dBW/MHz(= -50 dBm)	PASS
Conducted Spurious Emissions	§ 25.202(f)(3)	< 43 + 10 log (P) dB (= -13dBm)	PASS
Frequency stability / variation of ambient temperature	§ 25.202(d)	0.001 % or 10 ppm	PASS

Note

1. (1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB
   (2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;
   (3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;
2. Wide Band(e.i.r.p. density): Linear interpolation from −70 dBW/MHz(= -40dBm/MHz) at 1605 MHz to −46dBW/MHz(= -16 dBm/MHz) at 1610 MHz.
3. NarrowBand(e.i.r.p.): Linear interpolation from −80 dBW(= -50dBm) at 1605 MHz to −56 dBW(= -26 dBm) at 1610 MHz.

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§ 25.204 (a)	Note 1	PASS
Radiated Spurious and Harmonic Emissions	§ 25.202(f)(3)	< 43 + 10 log (P) dB (= -13dBm)	PASS

Note

1. + 40 dBW in any 4 kHz band for $\theta \leq 0°$

   + 40 + 3θ dBW in any 4 kHz band for $0° < \theta \leq 5°$

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(Lower)

8.1 CONDUCTED OUTPUT POWER

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				25735 1630.0 MHz	25760 1632.5 MHz	25785 1635.0 MHz		
5 MHz	QPSK	1	0	21.23	21.89	*23.16*	0	23
		1	12	21.27	22.56	23.16	0	23
		1	24	*22.68*	*23.51*	22.99	0	23
		12	0	20.43	21.16	22.55	1	22
		12	6	20.79	21.79	22.58	1	22
		12	11	21.28	22.58	22.33	1	22
		25	0	21.16	22.20	22.70	1	22
	16QAM	1	0	20.62	21.16	*22.28*	1	22
		1	12	20.57	21.60	22.27	1	22
		1	24	*21.78*	*22.87*	22.13	1	22
		12	0	19.40	20.18	21.34	2	21
		12	6	19.63	20.80	21.42	2	21
		12	11	20.14	21.34	21.18	2	21
		25	0	20.02	21.15	21.58	2	21

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Target Power
				25760		
				1632.5 MHz		
10 MHz	QPSK	1	0	21.21	0	23
		1	24	22.30	0	23
		1	49	*22.67*	0	23
		25	0	21.05	1	22
		25	12	21.69	1	22
		25	24	22.54	1	22
		50	0	21.83	1	22
	16QAM	1	0	20.31	1	22
		1	24	21.47	1	22
		1	49	*21.92*	1	22
		25	0	19.75	2	21
		25	12	20.69	2	21
		25	24	21.33	2	21
		50	0	20.74	2	21

8.2 Effective Isotropic Radiated Power

Bandwidth	Modulation	Max.Average Power (dBm)			ANT Gain (dBi)	E.I.R.P (dBm)		
		25735	25760	25785		25735	25760	25785
		1630.0 MHz	1632.5 MHz	1635.0 MHz		1630.0 MHz	1632.5 MHz	1635.0 MHz
5 MHz	QPSK	22.68	23.51	23.16	4.00	26.68	27.51	27.16
	16QAM	21.78	22.87	22.28		25.78	26.87	26.28

Bandwidth	Modulation	Max.Average Power (dBm)	ANT Gain (dBi)	E.I.R.P (dBm)
		25760		25760
		1632.5 MHz		1632.5 MHz
10 MHz	QPSK	22.67	4.00	26.67
	16QAM	21.92		25.92

Test Note

EIRP $_{(dBm)}$ = Max. Conducted Power $_{(dBm)}$ + antenna gain $_{(dBi)}$

8.3 RADIATED SPURIOUS EMISSIONS

▣ MODE: LTE B24

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: -13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)
25735 (1630.0)	3 260.00	-30.98	11.86	-44.25	2.96	H	-35.35
	4 890.00	-29.57	12.70	-35.79	3.67	V	-26.76
	6 520.00	-48.05	11.80	-48.94	4.26	V	-41.40
25760 (1632.5)	3 265.00	-29.85	11.89	-43.22	2.96	V	-34.28
	4 897.50	-34.18	12.70	-6.85	3.65	H	-31.98
	6 530.00	-45.42	11.80	-0.68	4.24	H	-38.54
25785 (1635.0)	3 270.00	-30.96	11.92	-44.43	2.95	V	-35.46
	4 905.00	-27.89	12.70	-34.60	3.64	H	-25.53
	6 540.00	-44.03	11.80	-44.35	4.21	V	-36.76

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
24	5 MHz	1632.5	QPSK	6	0	4.5111
			16-QAM			4.4845
	10 MHz		QPSK	15		8.9443
			16-QAM			8.8961

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 48 ~ 51.

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)
25	5	1630.0	3.2563	27.976	-77.100	-49.124	-13.00
		1632.5	3.2613	27.976	-77.161	-49.185	
		1635.0	3.2752	27.976	-75.044	-47.068	
	10	1632.5	3.1656	27.976	-77.091	-49.115	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 52 ~ 59.
2. Duty Cycle factor already applied on the factor.

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

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20	30.131

8.6 Emission Mask

- Plots of the EUT's Emission Mask are shown Page 60 ~ 71.

8.7 Emission limits for protection of aeronautical service

Wide Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm/MHz)
5	1630.000	QPSK	1	0	1559 – 1605	-50.440	-40
					1605 – 1610	-50.460	-40 ~ -16
			25	0	1559 – 1605	-50.462	-40
					1605 – 1610	-50.483	-40 ~ -16
10	1632.500	QPSK	1	0	1559 – 1605	-50.464	-40
					1605 – 1610	-50.474	-40 ~ -16
			25	0	1559 – 1605	-50.401	-40
					1605 – 1610	-50.452	-40 ~ -16

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Wide Band) are shown Page 72 ~ 79.

Narrow Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)
5	1630.000	QPSK	1	0	1559 – 1605	-69.818	-50
					1605 – 1610	-69.830	-50 ~ -26
			25	0	1559 – 1605	-69.683	-50
					1605 – 1610	-69.745	-50 ~ -26
10	1632.500	QPSK	1	0	1559 – 1605	-69.887	-50
					1605 – 1610	-69.664	-50 ~ -26
			25	0	1559 – 1605	-69.680	-50
					1605 – 1610	-69.791	-50 ~ -26

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Narrow Band) are shown Page 80 ~ 87.

8.8 Emission limits for protection of aeronautical service - Carrier-off state

BW (MHz)	Modulation	Mea. Frequency (MHz)	Test. Frequncy (MHz)	Result (dBm)	Limit (dBm/MHz)
5	Carrier-off	1559 – 1610	1630.0	-58.596	-50
			1632.5	-59.306	-50
			1635.0	-58.686	-50
10	Carrier-off	1559 – 1610	1632.5	-59.454	-50

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service - Carrier-off state are shown Page 88 ~ 91.

8.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- MODE: LTE 24
- BandWidth: 5 MHz
- Voltage(100%): 3.300 VDC
- Batt. Endpoint: 2.800 VDC
- Limit: ± 0.001 % or 10 ppm

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1630.000	100%	+20(Ref)	1629 999 997	0.0	0.000 000	0.000
	100%	-30	1629 999 994	-3.0	0.000 000	-0.002
	100%	-20	1630 000 000	3.0	0.000 000	0.002
	100%	-10	1630 000 002	4.6	0.000 000	0.003
	100%	0	1630 000 003	6.3	0.000 000	0.004
	100%	+10	1630 000 002	5.1	0.000 000	0.003
	100%	+30	1629 999 992	-4.6	0.000 000	-0.003
	100%	+40	1629 999 994	-3.4	0.000 000	-0.002
	100%	+50	1629 999 993	-4.3	0.000 000	-0.003
	Batt. Endpoint	+20	1630 000 001	4.5	0.000 000	0.003
1632.500	100%	+20(Ref)	1632 500 003	0.0	0.000 000	0.000
	100%	-30	1632 499 998	-4.8	0.000 000	-0.003
	100%	-20	1632 500 000	-2.8	0.000 000	-0.002
	100%	-10	1632 500 006	3.2	0.000 000	0.002
	100%	0	1632 499 999	-4.4	0.000 000	-0.003
	100%	+10	1632 499 999	-4.0	0.000 000	-0.002
	100%	+30	1632 499 999	-4.3	0.000 000	-0.003
	100%	+40	1632 499 998	-5.5	0.000 000	-0.003
	100%	+50	1632 500 006	2.7	0.000 000	0.002
	Batt. Endpoint	+20	1632 499 999	-4.7	0.000 000	-0.003
1635.000	100%	+20(Ref)	1635 000 006	0.0	0.000 000	0.000
	100%	-30	1635 000 012	6.3	0.000 000	0.004
	100%	-20	1635 000 001	-4.2	0.000 000	-0.003
	100%	-10	1634 999 998	-7.3	0.000 000	-0.004
	100%	0	1635 000 001	-4.2	0.000 000	-0.003
	100%	+10	1635 000 001	-4.9	0.000 000	-0.003
	100%	+30	1635 000 011	5.3	0.000 000	0.003
	100%	+40	1635 000 011	5.7	0.000 000	0.003
	100%	+50	1635 000 012	6.2	0.000 000	0.004
	Batt. Endpoint	+20	1635 000 011	5.3	0.000 000	0.003

▣ MODE: LTE 24

▣ BandWidth: 10 MHz

▣ Voltage(100%): 3.300 VDC

▣ Batt. Endpoint: 2.800 VDC

▣ Limit: ± 0.001 % or 10 ppm

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1632.500	100%	+20(Ref)	1632 499 998	0.0	0.000 000	0.000
	100%	-30	1632 499 994	-3.3	0.000 000	-0.002
	100%	-20	1632 499 992	-5.3	0.000 000	-0.003
	100%	-10	1632 499 995	-2.9	0.000 000	-0.002
	100%	0	1632 499 992	-5.9	0.000 000	-0.004
	100%	+10	1632 500 002	4.4	0.000 000	0.003
	100%	+30	1632 499 995	-3.2	0.000 000	-0.002
	100%	+40	1632 499 993	-4.4	0.000 000	-0.003
	100%	+50	1632 499 994	-3.3	0.000 000	-0.002
	Batt. Endpoint	+20	1632 499 995	-2.6	0.000 000	-0.002

9. TEST DATA(Upper)

9.1 CONDUCTED OUTPUT POWER

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				25925 1649.0 MHz	25950 1651.5 MHz	25975 1654.0 MHz		
5 MHz	QPSK	1	0	22.98	23.27	***24.06***	0	23
		1	12	22.98	***23.72***	22.99	0	23
		1	24	***24.04***	23.43	22.83	0	23
		12	0	22.14	22.78	22.88	1	22
		12	6	22.53	23.20	22.47	1	22
		12	11	22.80	23.09	22.02	1	22
		25	0	22.82	23.29	22.67	1	22
	16QAM	1	0	22.14	22.51	***23.36***	1	22
		1	12	22.15	***23.02***	22.35	1	22
		1	24	***23.27***	22.78	22.16	1	22
		12	0	21.13	21.79	21.92	2	21
		12	6	21.44	22.19	21.51	2	21
		12	11	21.79	22.19	21.08	2	21
		25	0	21.70	22.30	21.64	2	21

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Target Power
				25950		
				1651.5 MHz		
10 MHz	QPSK	1	0	22.50	0	23
		1	24	*23.68*	0	23
		1	49	22.60	0	23
		25	0	22.55	1	22
		25	12	23.04	1	22
		25	24	22.71	1	22
		50	0	22.88	1	22
	16QAM	1	0	21.75	1	22
		1	24	*22.97*	1	22
		1	49	21.88	1	22
		25	0	21.47	2	21
		25	12	22.00	2	21
		25	24	21.77	2	21
		50	0	21.97	2	21

9.2 Effective Isotropic Radiated Power

Bandwidth	Modulation	Max.Average Power (dBm)			ANT Gain (dBi)	E.I.R.P (dBm)		
		25925	25950	25975		25925	25950	25975
		1649.0 MHz	1651.5 MHz	1654.0 MHz		1649.0 MHz	1651.5 MHz	1654.0 MHz
5 MHz	QPSK	24.04	23.72	24.06	4.00	28.04	27.72	28.06
	16QAM	23.27	23.02	23.36		27.27	27.02	27.36

Bandwidth	Modulation	Max.Average Power (dBm)	ANT Gain (dBi)	E.I.R.P (dBm)
		25950		25950
		1651.5 MHz		1651.5 MHz
10 MHz	QPSK	23.68	4.00	27.68
	16QAM	22.97		26.97

Test Note

EIRP $_{(dBm)}$ = Max. Conducted Power $_{(dBm)}$ + antenna gain $_{(dBi)}$

9.3 RADIATED SPURIOUS EMISSIONS

- MODE: LTE B24
- MODULATION SIGNAL: 5 MHz QPSK
- DISTANCE: 3 meters
- LIMIT: -13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)
25925 (1649.0)	3 298.00	-27.22	12.10	-41.06	2.96	V	-31.92
	4 947.00	-31.69	12.70	-39.39	3.69	H	-30.38
	6 596.00	-43.23	11.70	-43.39	4.30	H	-35.99
25950 (1651.5)	3 303.00	-43.23	12.10	-57.07	2.96	V	-47.93
	4 954.50	-24.56	12.69	-31.57	3.69	V	-22.57
	6 606.00	-32.29	11.71	-32.69	4.29	V	-25.26
25975 (1654.0)	3 308.00	-28.82	12.16	-42.46	2.98	H	-33.28
	4 962.00	-25.83	12.68	-33.25	3.69	H	-24.26
	6 616.00	-45.23	11.73	-45.48	4.28	V	-38.03

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
24	5 MHz	1651.5	QPSK	6	0	4.4966
			16-QAM			4.5057
	10 MHz		QPSK	15		8.9683
			16-QAM			8.8914

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 93 ~ 96.

9.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
25	5	1649.000	3.2897	27.976	-75.794	-47.818	-13.00
		1651.500	3.2947	27.976	-76.464	-48.488	
		1654.000	3.3176	27.976	-76.547	-48.571	
	10	1651.500	3.2947	27.976	-77.152	-49.176	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 97 ~ 104.
2. Duty Cycle factor already applied on the factor.

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

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20	30.131

9.6 Emission Mask

- Plots of the Emission Mask are shown Page 105 ~ 116.

9.7 Emission limits for protection of aeronautical service

Wide Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm/MHz)
5	1649.000	QPSK	1	0	1559 – 1605	-50.366	-40
					1605 – 1610	-50.453	-40 ~ -16
			25	0	1559 – 1605	-50.387	-40
					1605 – 1610	-50.443	-40 ~ -16
10	1651.500	QPSK	1	0	1559 – 1605	-50.380	-40
					1605 – 1610	-50.430	-40 ~ -16
			25	0	1559 – 1605	-50.367	-40
					1605 – 1610	-50.419	-40 ~ -16

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Wide Band) are shown Page 117 ~ 124.

Narrow Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)
5	1649.000	QPSK	1	0	1559 – 1605	-69.644	-50
					1605 – 1610	-69.667	-50 ~ -26
			25	0	1559 – 1605	-69.724	-50
					1605 – 1610	-69.722	-50 ~ -26
10	1651.500	QPSK	1	0	1559 – 1605	-69.698	-50
					1605 – 1610	-69.717	-50 ~ -26
			25	0	1559 – 1605	-69.702	-50
					1605 – 1610	-69.738	-50 ~ -26

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Narrow Band) are shown Page 125 ~ 132.

9.8 Emission limits for protection of aeronautical service - Carrier-off state

BW (MHz)	Modulation	Mea. Frequency (MHz)	Test. Frequncy (MHz)	Result (dBm)	Limit (dBm/MHz)
5	Carrier-off	1559 – 1610	1649.0	-58.780	-50
			1651.5	-58.494	-50
			1654.0	-58.120	-50
10	Carrier-off	1559 – 1610	1651.5	-58.958	-50

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service - Carrier-off state are shown Page 133 ~ 136.

9.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- MODE: LTE 24
- BandWidth: 5 MHz
- Voltage(100%): 3.300 VDC
- Batt. Endpoint: 2.800 VDC
- Limit: ± 0.001 % or 10 ppm

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1649.000	100%	+20(Ref)	1648 999 996	0.0	0.000 000	0.000
	100%	-30	1649 000 001	4.6	0.000 000	0.003
	100%	-20	1649 000 001	5.5	0.000 000	0.003
	100%	-10	1648 999 991	-4.5	0.000 000	-0.003
	100%	0	1649 000 002	6.0	0.000 000	0.004
	100%	+10	1649 000 002	5.9	0.000 000	0.004
	100%	+30	1648 999 991	-5.1	0.000 000	-0.003
	100%	+40	1648 999 989	-6.8	0.000 000	-0.004
	100%	+50	1649 000 005	8.7	0.000 001	0.005
	Batt. Endpoint	+20	1648 999 999	3.3	0.000 000	0.002
1651.500	100%	+20(Ref)	1651 500 004	0.0	0.000 000	0.000
	100%	-30	1651 500 000	-4.2	0.000 000	-0.003
	100%	-20	1651 500 000	-4.6	0.000 000	-0.003
	100%	-10	1651 500 008	3.9	0.000 000	0.002
	100%	0	1651 500 010	5.8	0.000 000	0.004
	100%	+10	1651 500 007	2.4	0.000 000	0.001
	100%	+30	1651 500 010	6.0	0.000 000	0.004
	100%	+40	1651 500 009	5.1	0.000 000	0.003
	100%	+50	1651 500 008	4.0	0.000 000	0.002
	Batt. Endpoint	+20	1651 499 999	-5.2	0.000 000	-0.003
1654.000	100%	+20(Ref)	1653 999 996	0.0	0.000 000	0.000
	100%	-30	1653 999 992	-4.0	0.000 000	-0.002
	100%	-20	1653 999 992	-3.9	0.000 000	-0.002
	100%	-10	1653 999 993	-3.4	0.000 000	-0.002
	100%	0	1653 999 993	-3.2	0.000 000	-0.002
	100%	+10	1654 000 000	3.2	0.000 000	0.002
	100%	+30	1653 999 990	-5.9	0.000 000	-0.004
	100%	+40	1654 000 000	4.1	0.000 000	0.002
	100%	+50	1653 999 999	3.1	0.000 000	0.002
	Batt. Endpoint	+20	1653 999 991	-5.4	0.000 000	-0.003

▣ MODE: LTE 24

▣ BandWidth: 10 MHz

▣ Voltage(100%): 3.300 VDC

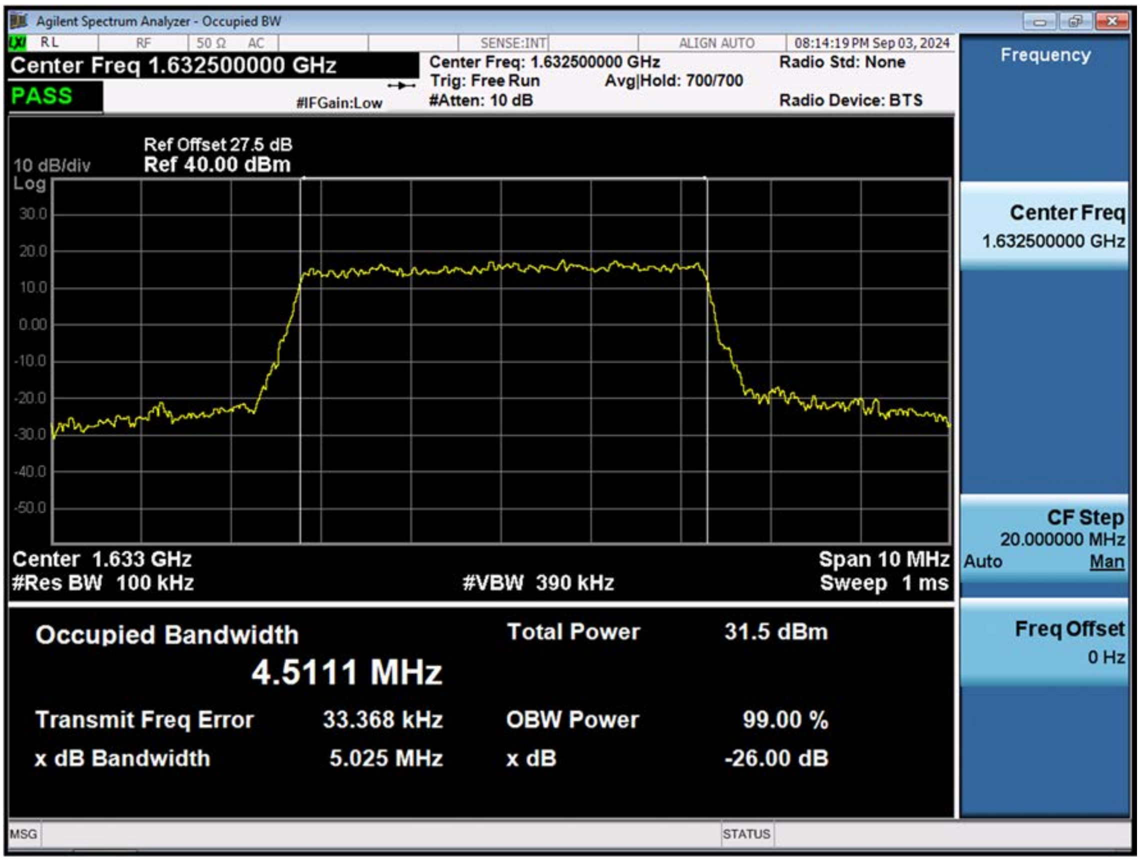
▣ Batt. Endpoint: 2.800 VDC

▣ Limit: ± 0.001 % or 10 ppm

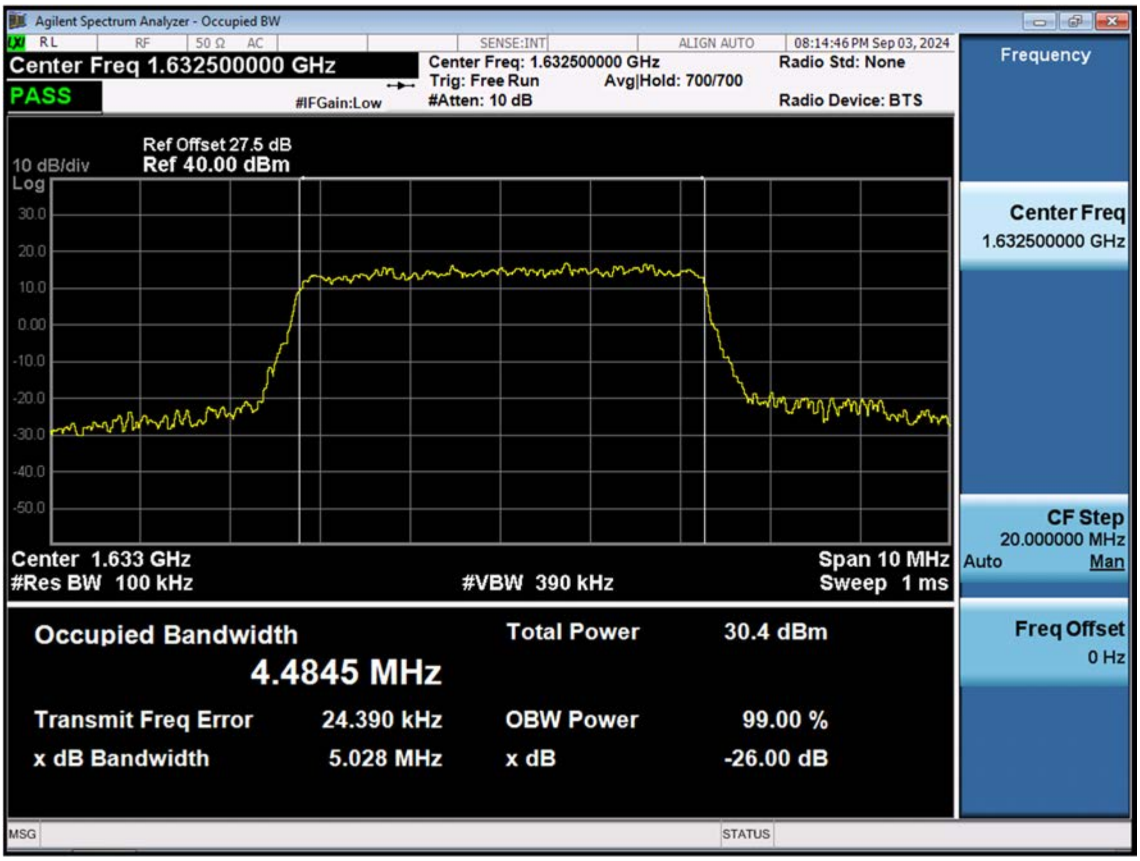
Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1651.500	100%	+20(Ref)	1651 500 006	0.0	0.000 000	0.000
	100%	-30	1651 500 010	3.8	0.000 000	0.002
	100%	-20	1651 500 011	4.6	0.000 000	0.003
	100%	-10	1651 500 012	5.7	0.000 000	0.003
	100%	0	1651 500 012	6.3	0.000 000	0.004
	100%	+10	1651 500 014	7.5	0.000 000	0.005
	100%	+30	1651 500 010	4.2	0.000 000	0.003
	100%	+40	1651 500 012	6.3	0.000 000	0.004
	100%	+50	1651 500 009	2.6	0.000 000	0.002
	Batt. Endpoint	+20	1651 500 010	4.4	0.000 000	0.003

10. TEST PLOTS(LOWER)

LTE B24_5 M_OBW_Mid_QPSK_FullRB

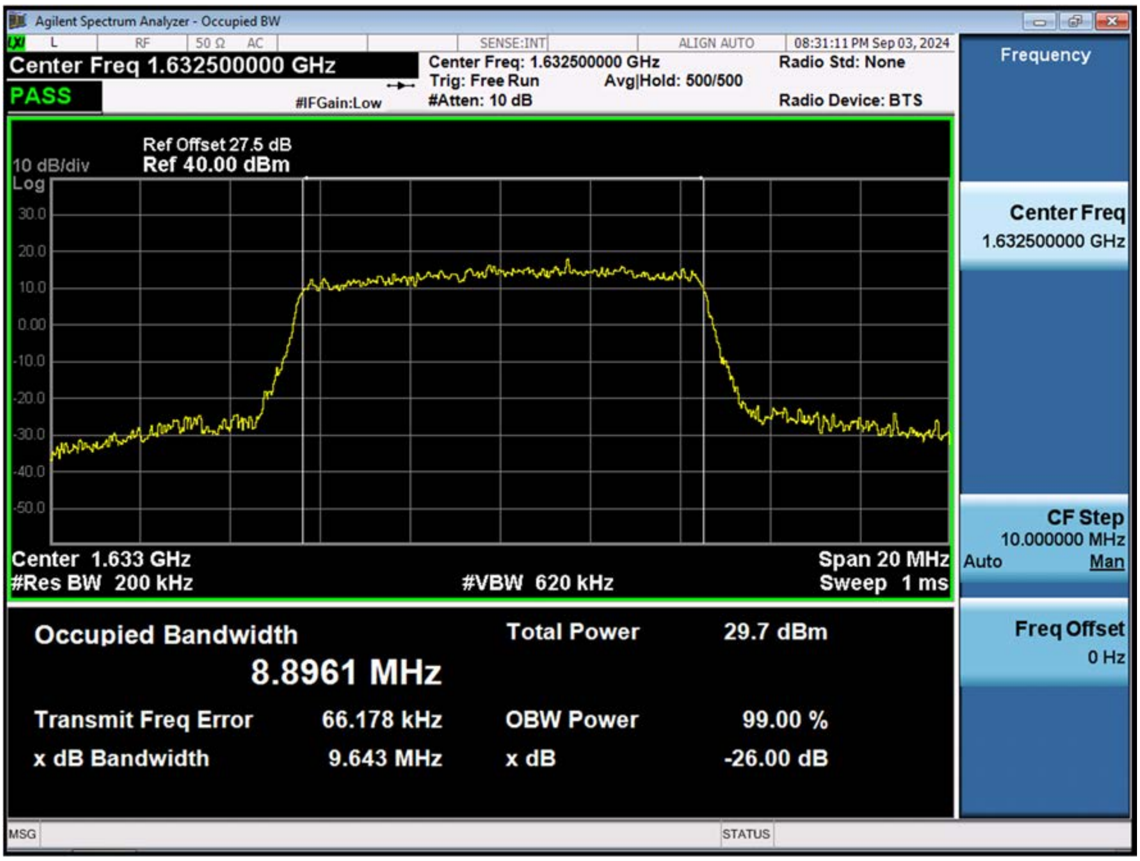


LTE B24_5 M_OBW_Mid_16QAM_FullRB

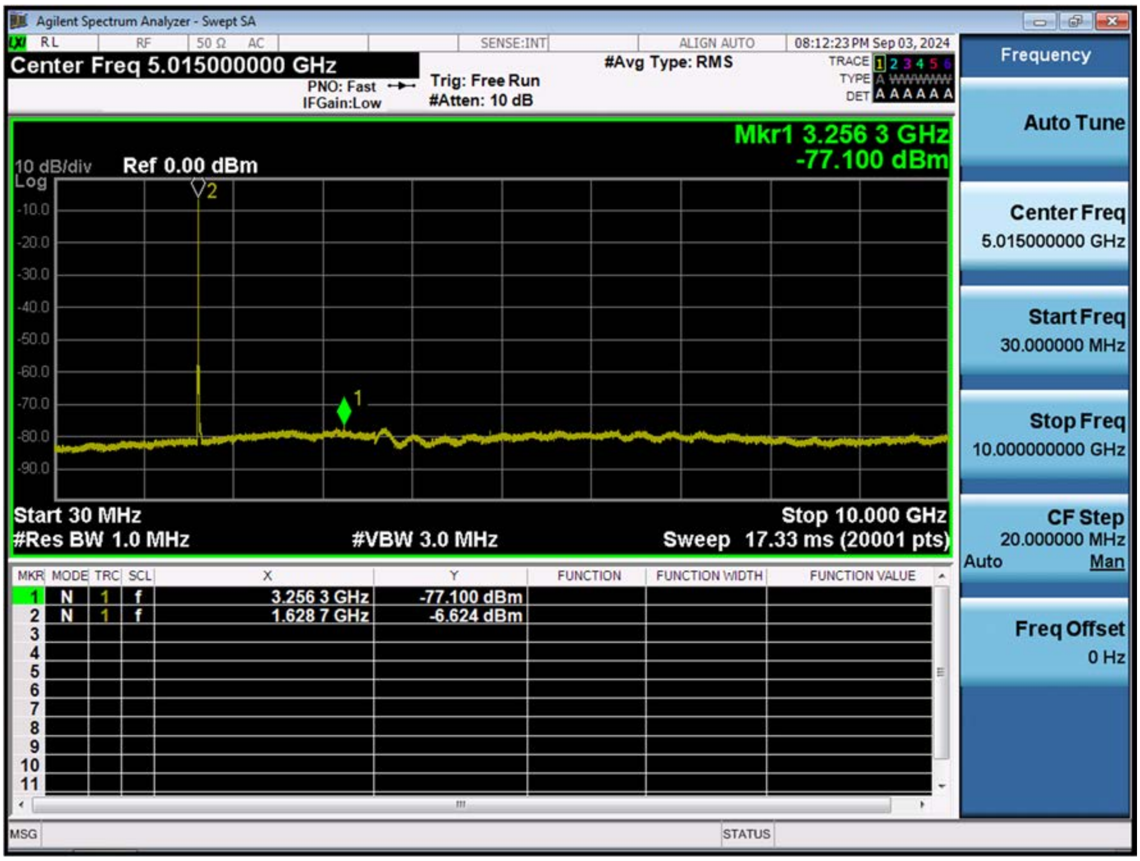


LTE B24_10 M_OBW_Mid_QPSK_FullRB

LTE B24_10 M_OBW_Mid_16QAM_FullRB



LTE B24_5 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



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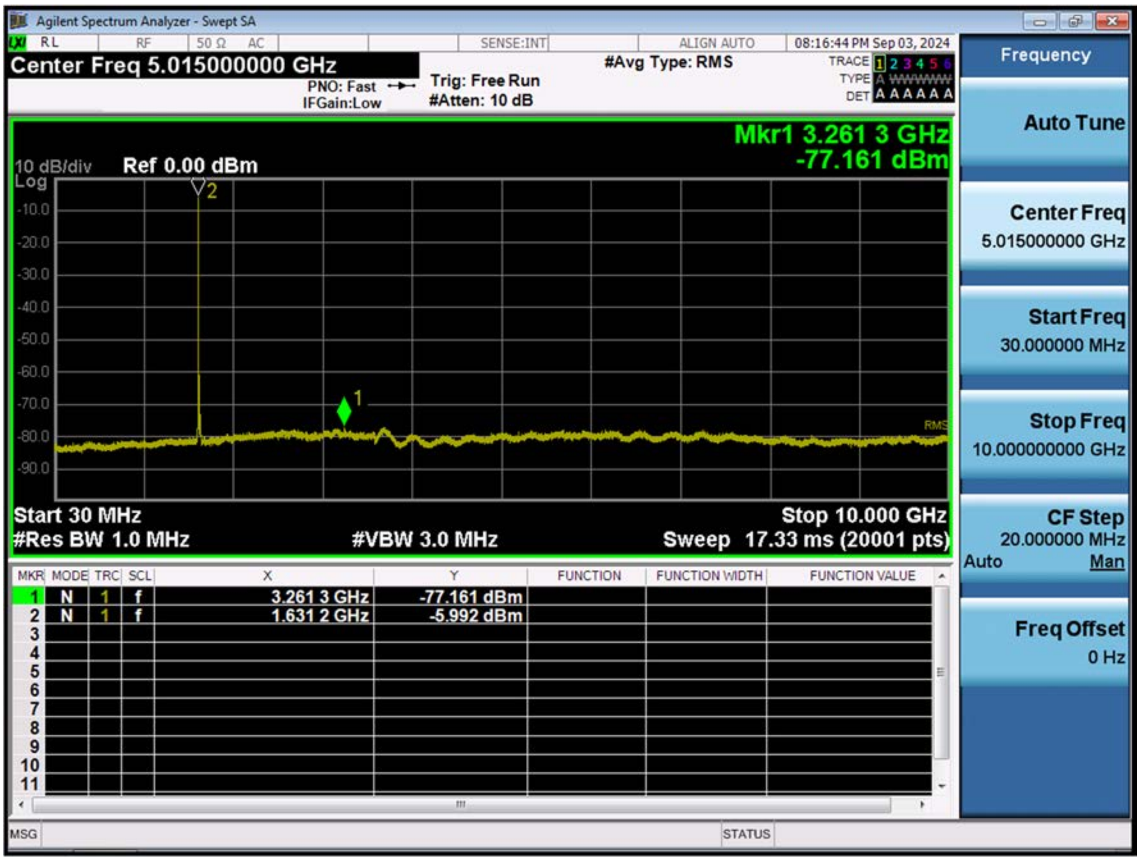

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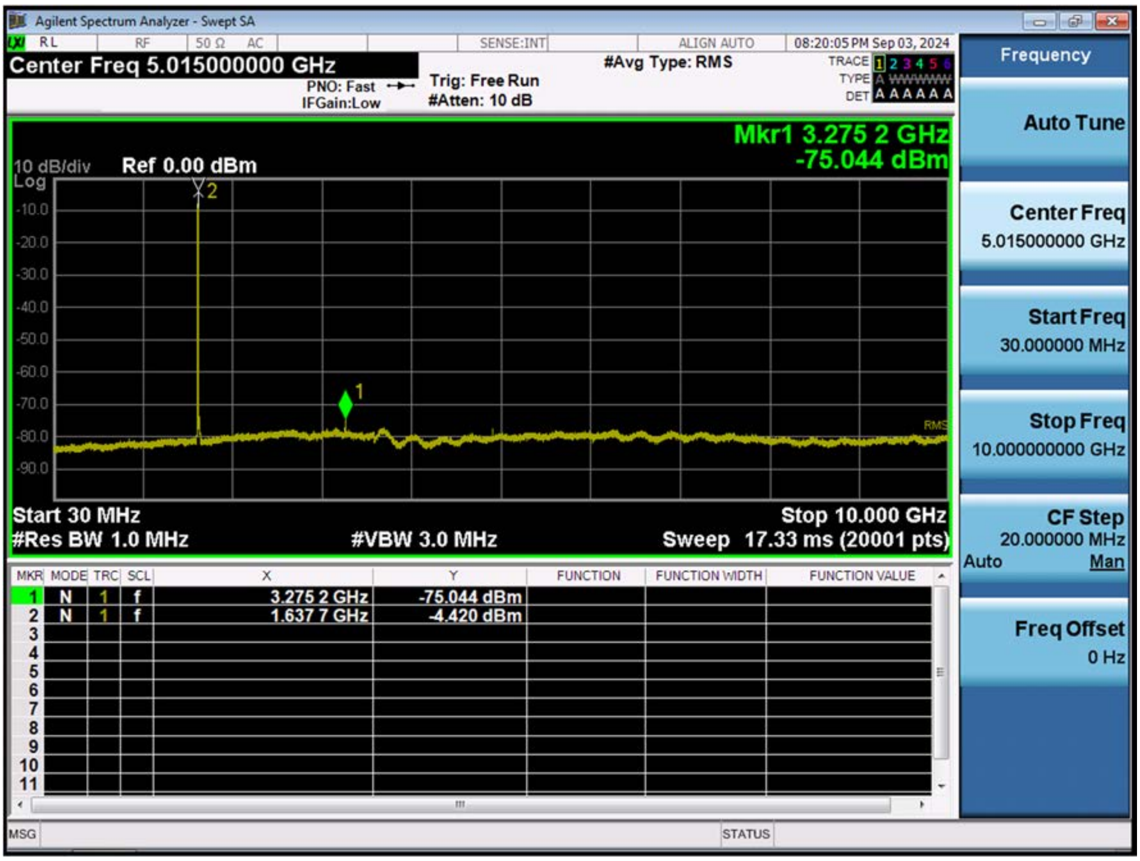

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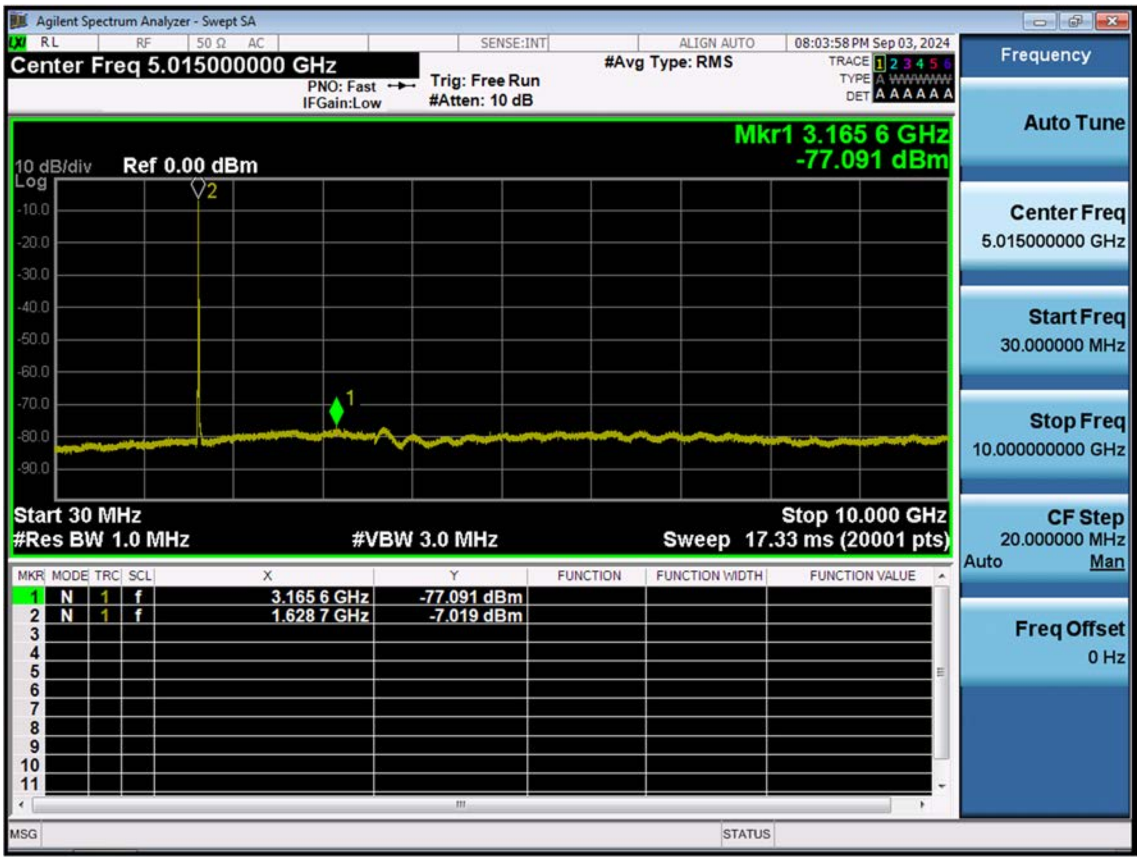


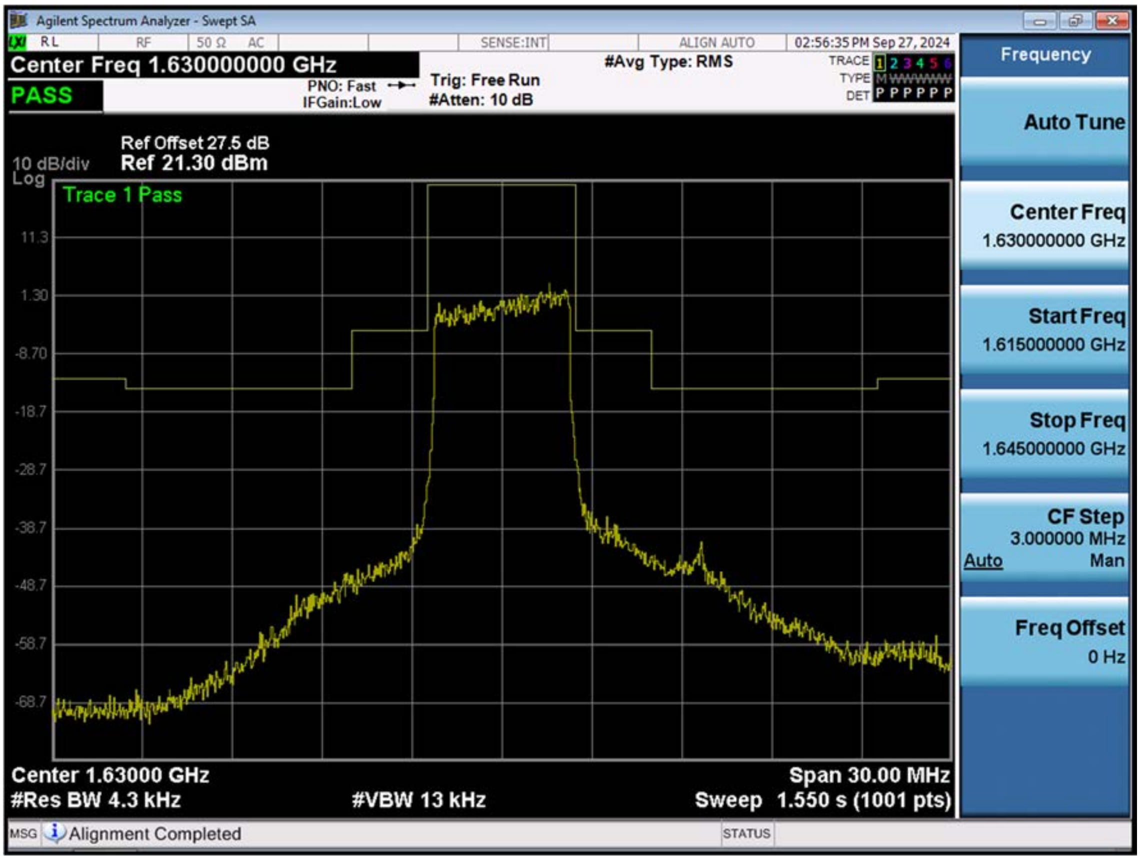
LTE B24_5 M_Conducted Spurious(Above 10 G)_Low_QPSK_1RB

LTE B24_5 M_Conducted Spurious(Above 10 G)_Mid_QPSK_1RB

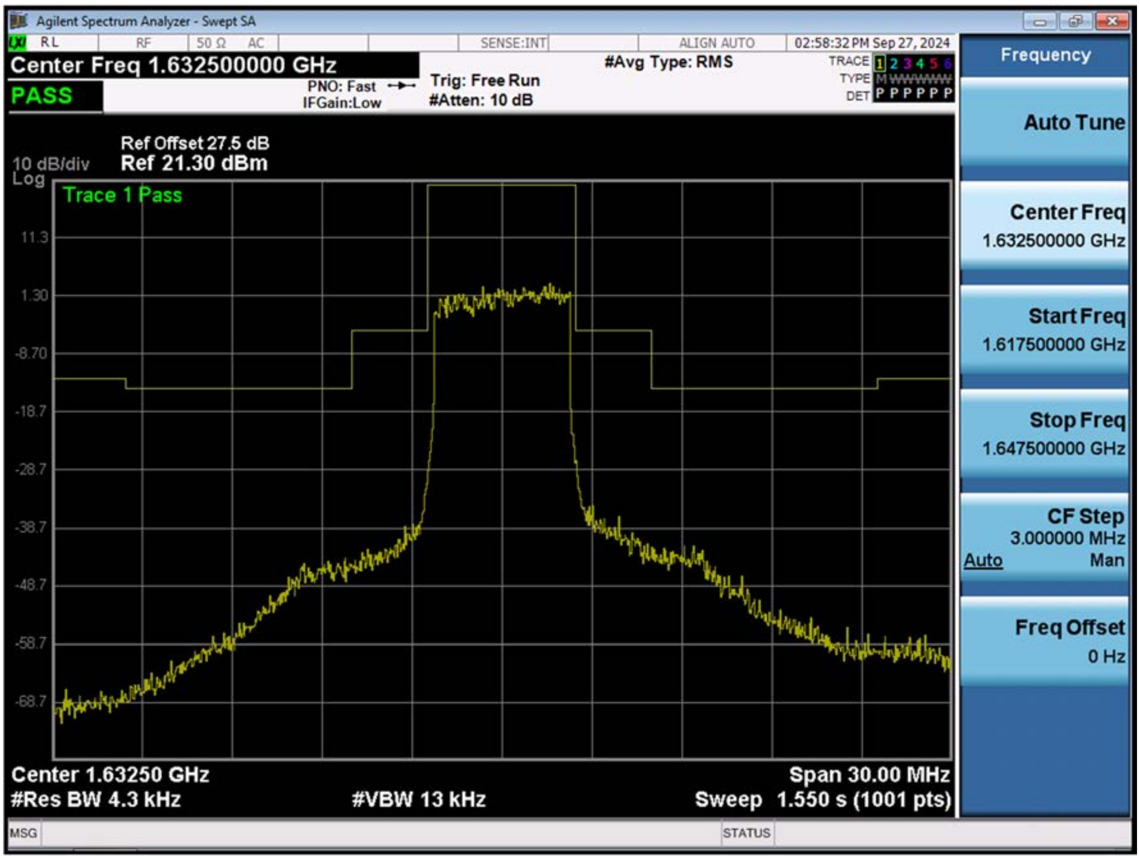
LTE B24_5 M_Conducted Spurious(Above 10 G)_High_QPSK_1RB

LTE B24_10 M_Conducted Spurious(Above 10 G)_Low_QPSK_1RB

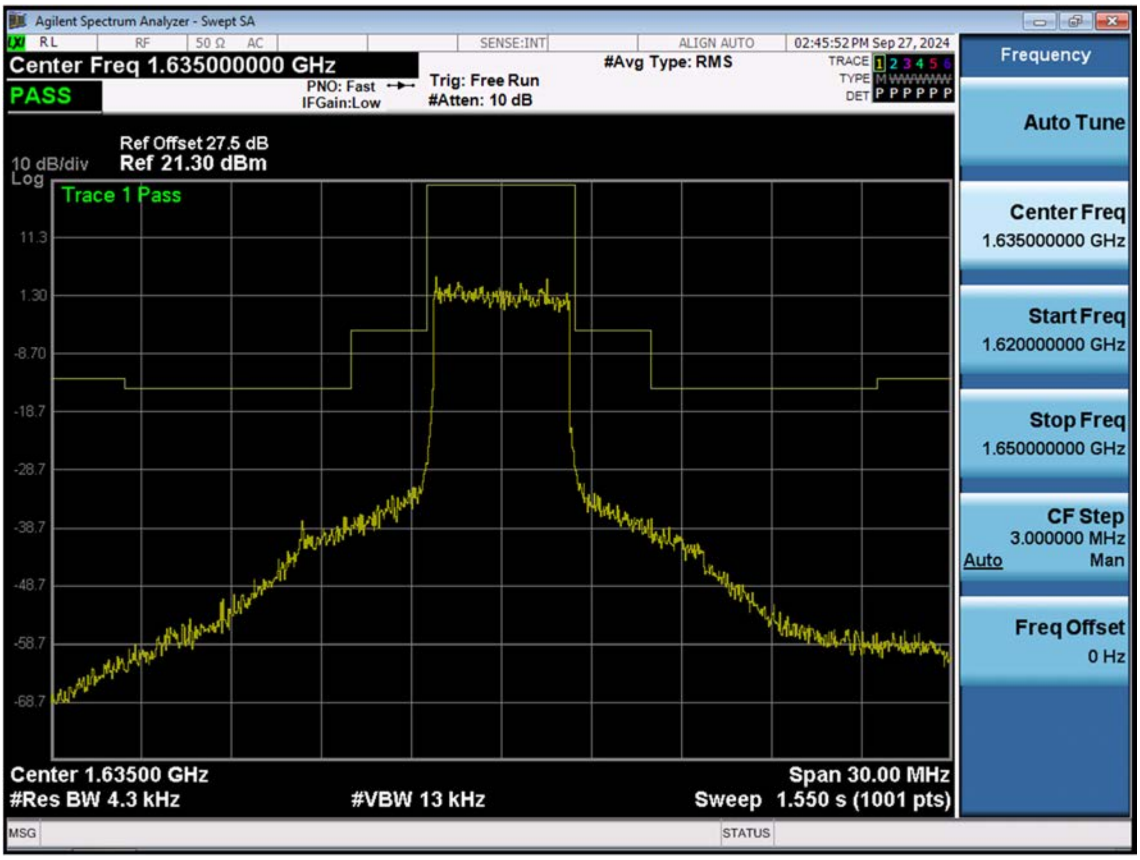
LTE24_5 M_Mask_Low_QPSK_FullRB



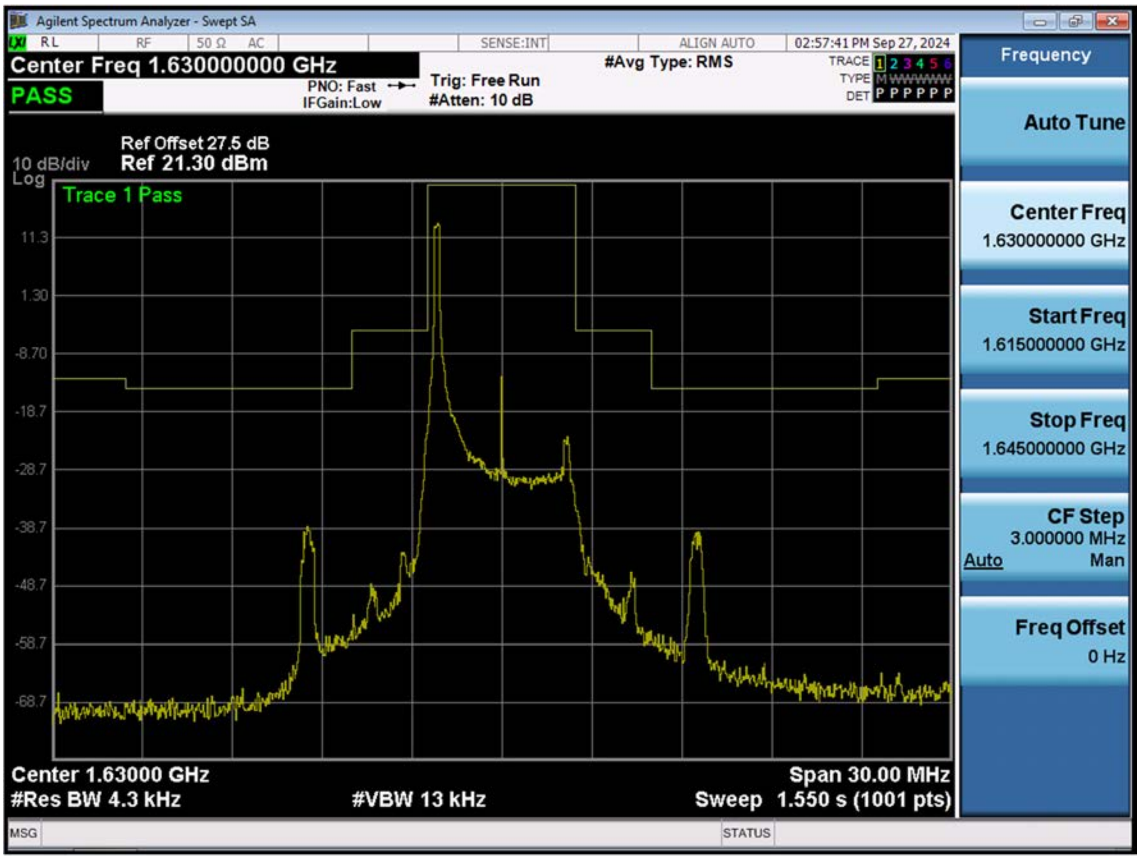
LTE24_5 M_Mask_Mid_QPSK_FullRB



LTE24_5 M_Mask_High_QPSK_FullRB



LTE24_5 M_Mask(1)_Low_QPSK_1RB



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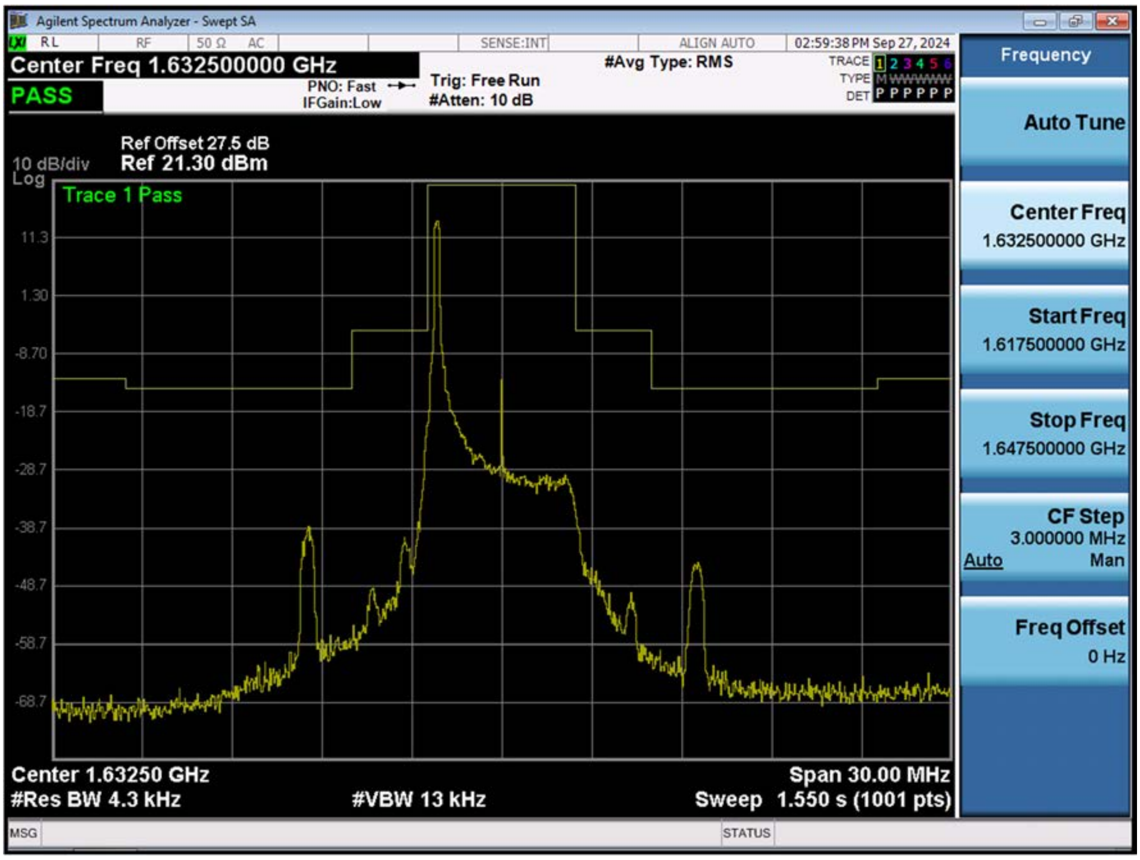
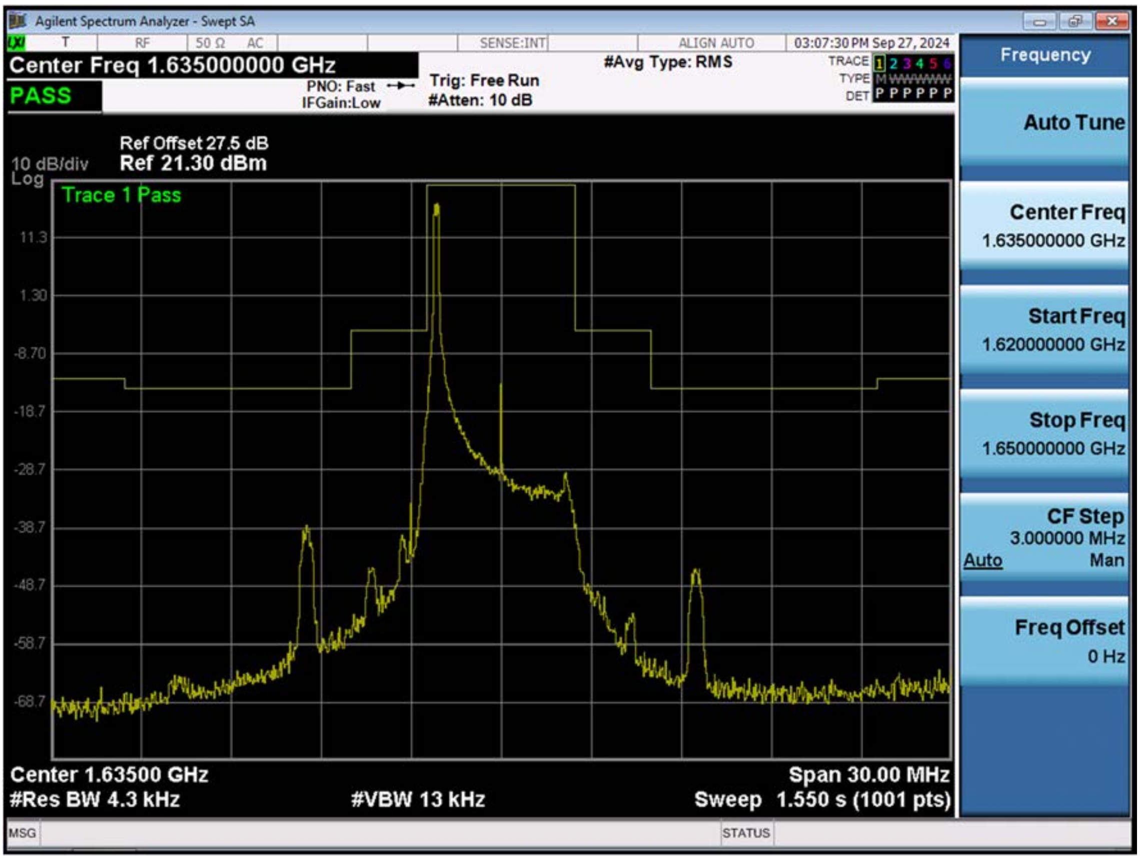


LTE24_5 M_Mask(1)_High_QPSK_1RB



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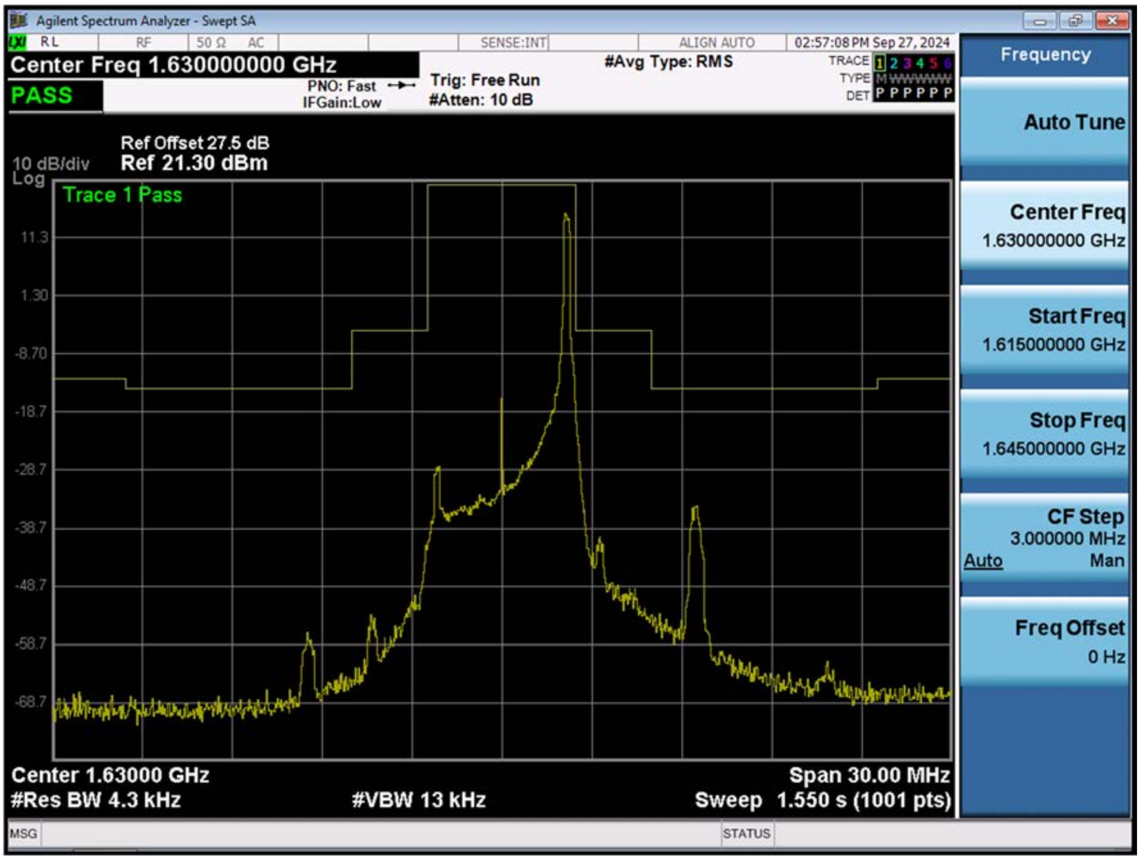
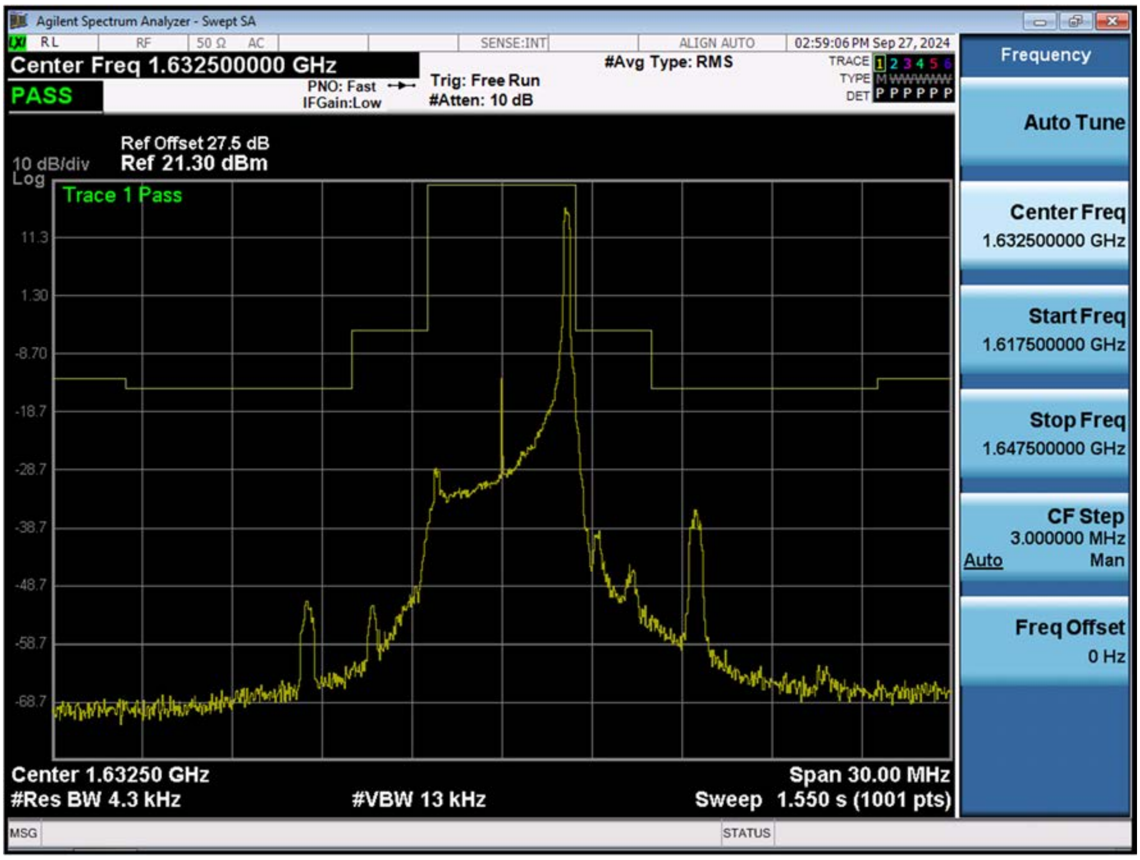
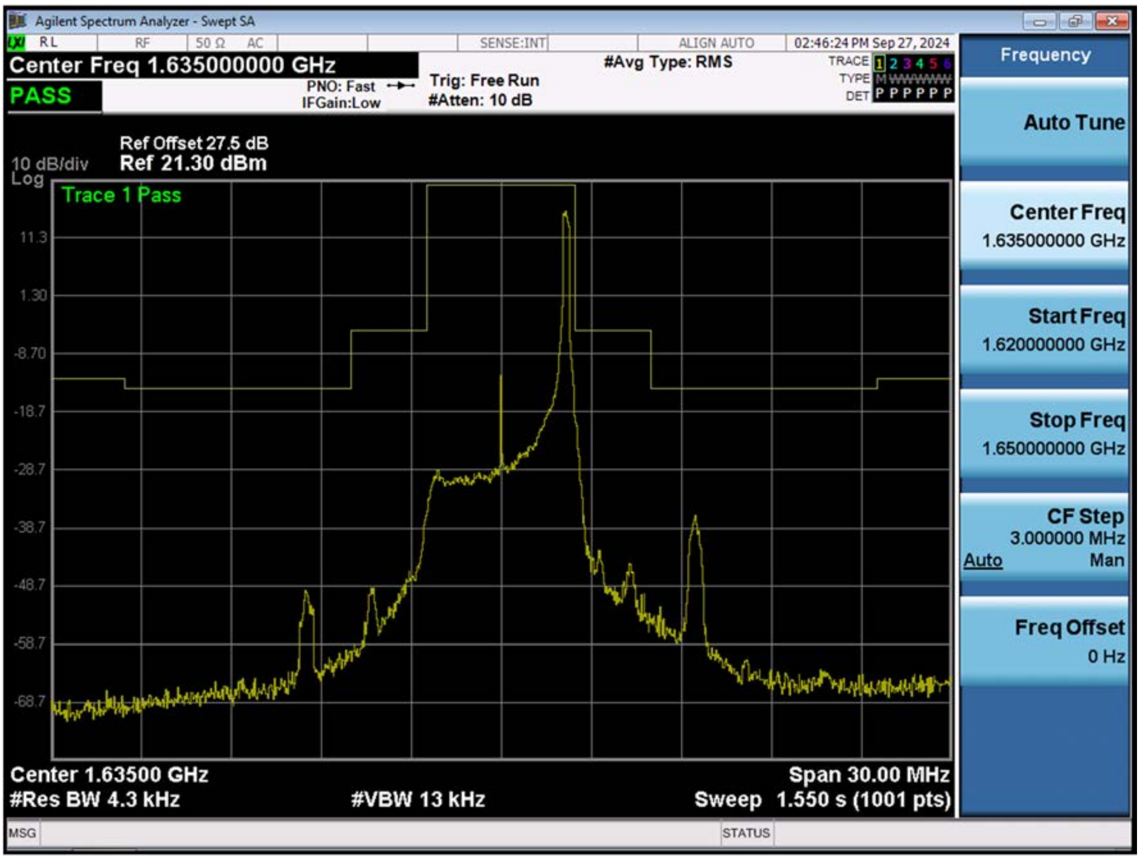


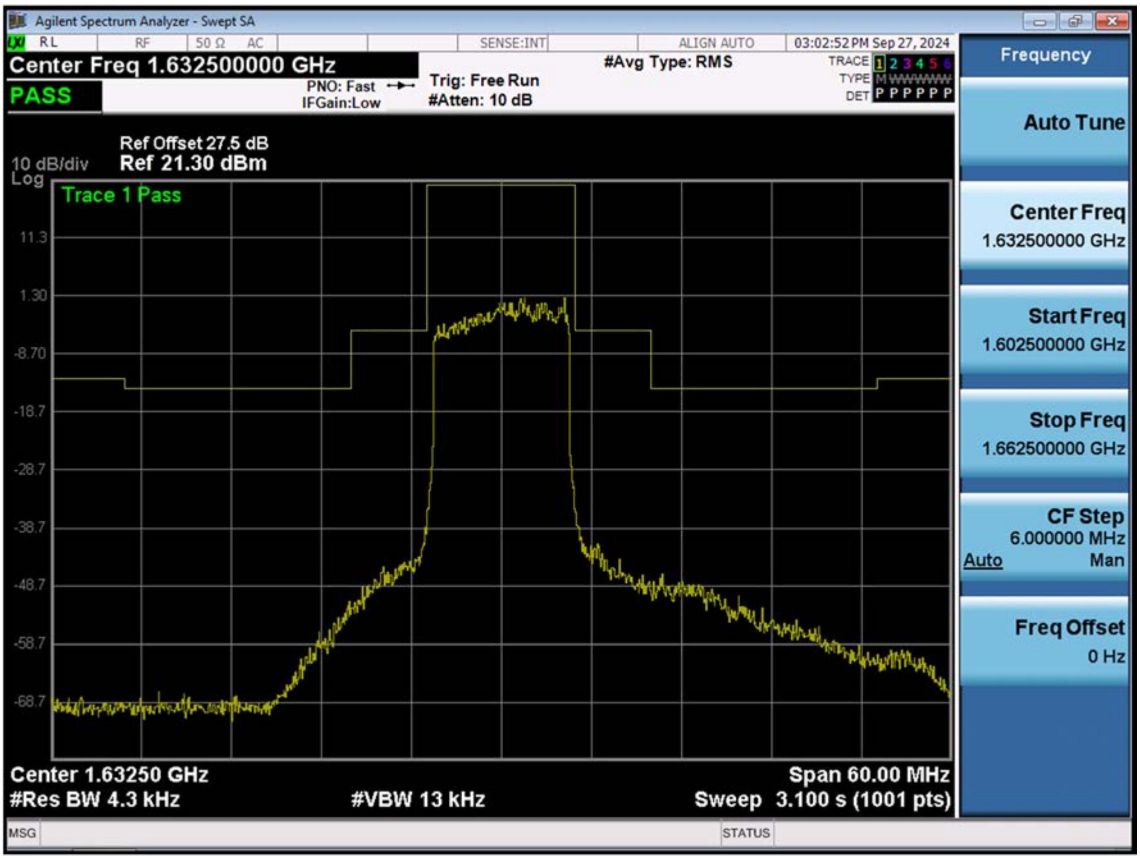
LTE24_5 M_Mask(2)_Mid_QPSK_1RB



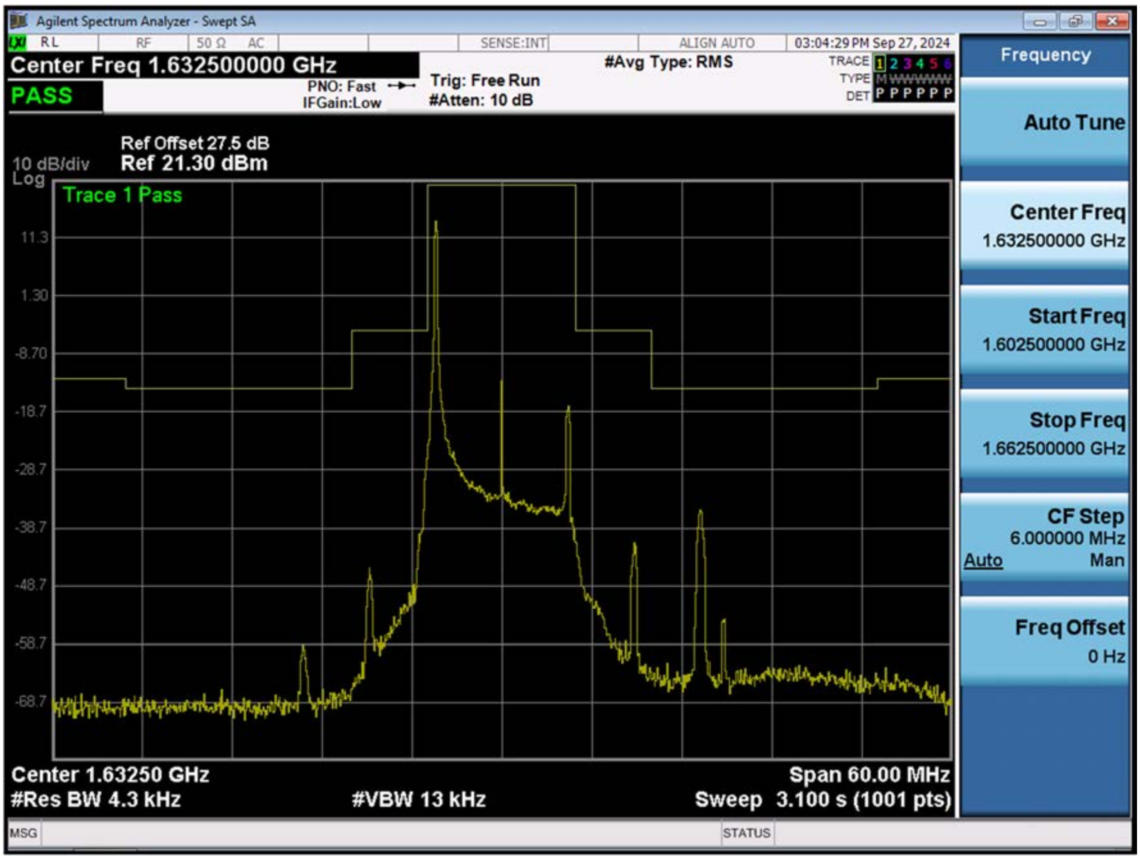
LTE24_5 M_Mask(2)_High_QPSK_1RB



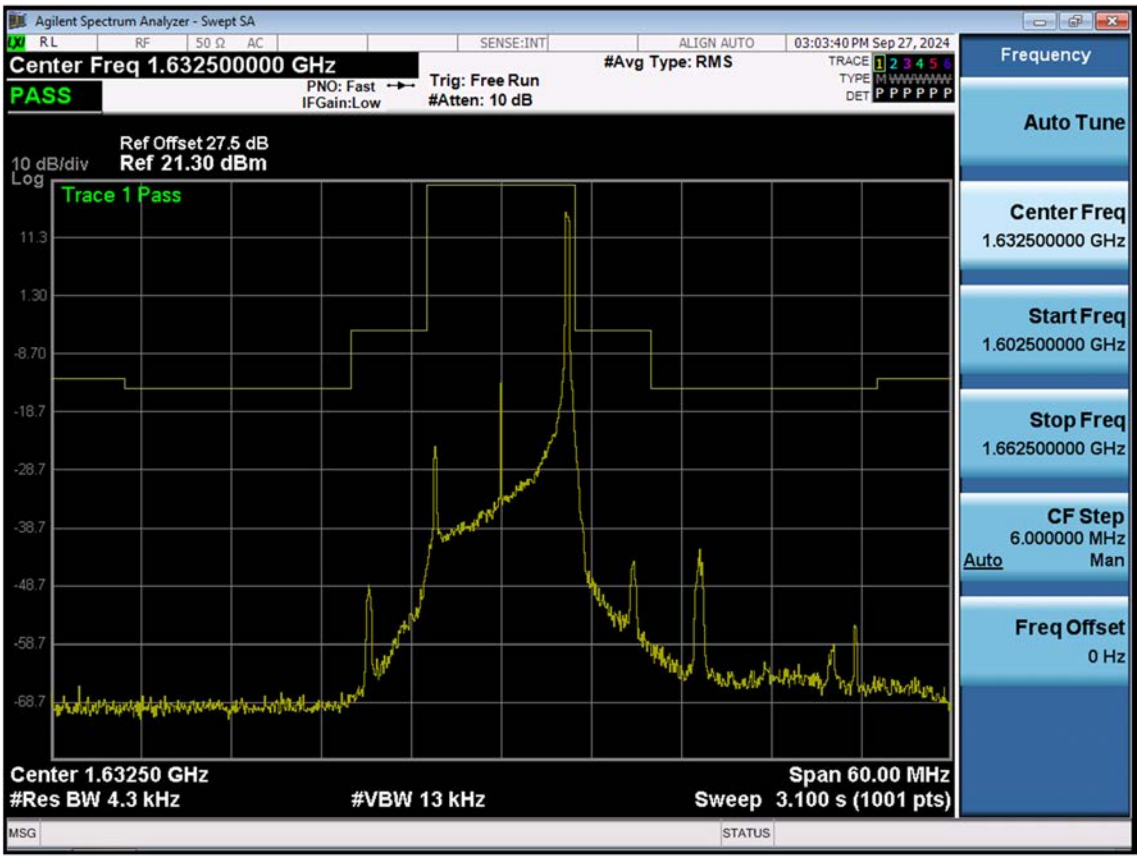
LTE24_10 M_Mask_Low_QPSK_FullRB



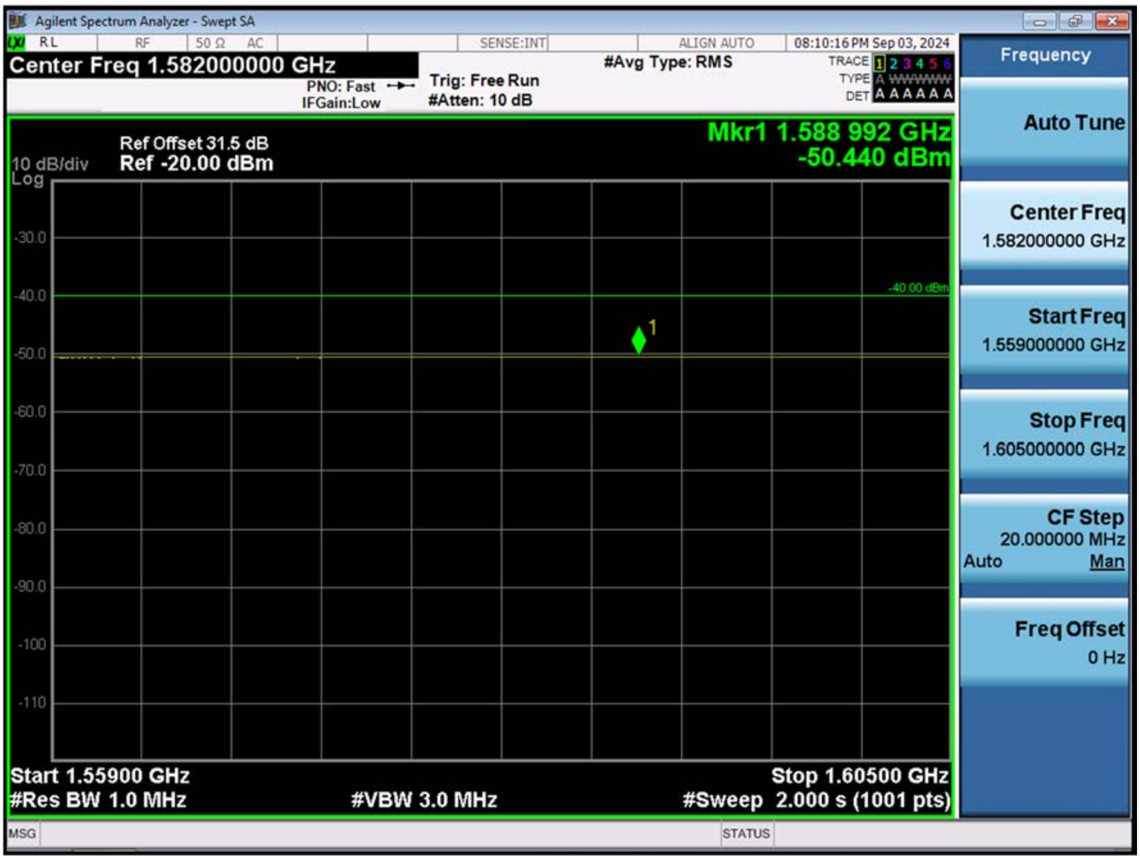
LTE24_10 M_Mask(1)_Low_QPSK_1RB



LTE24_10 M_Mask(2)_Low_QPSK_1RB

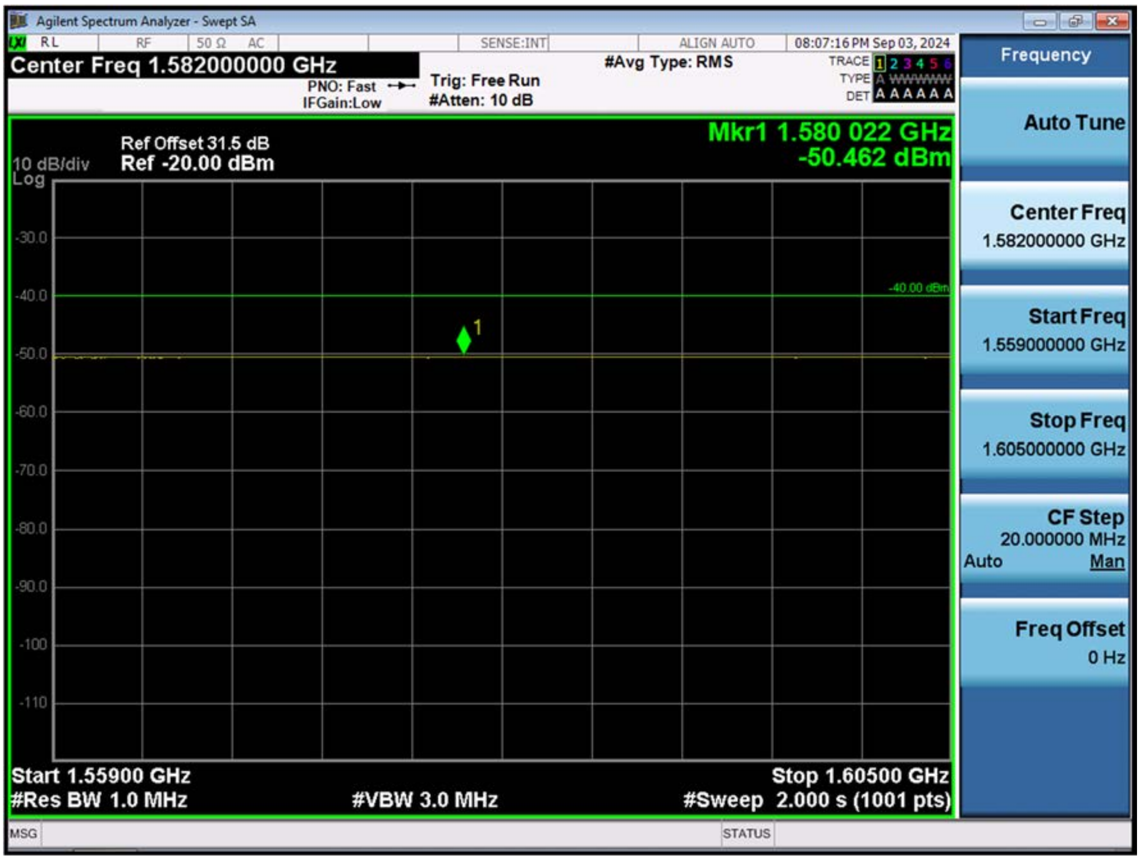


LTE24_5 M_Protection_Wide(1)_Low_QPSK_1RB



LTE24_5 M_Protection_Wide(2)_Low_QPSK_1RB

LTE24_5 M_Protection_Wide(1)_Low_QPSK_FullRB



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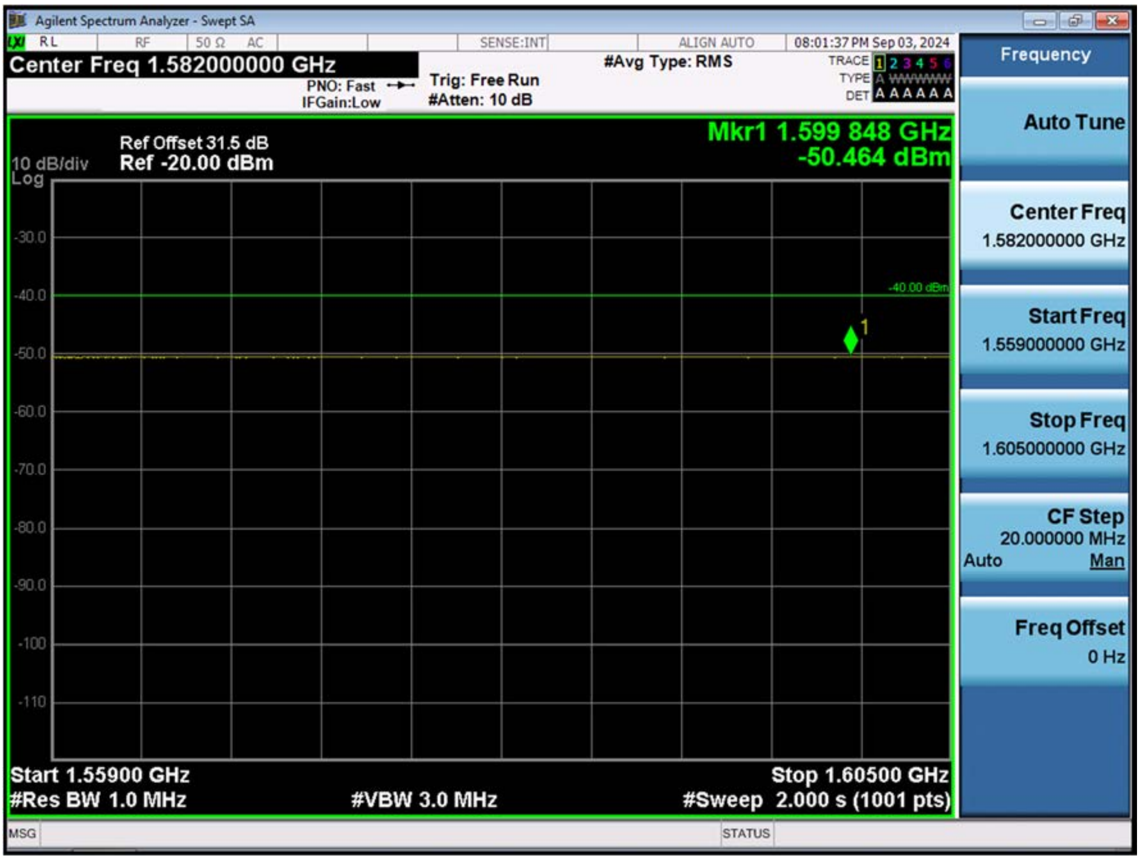
LTE24_10 M_Protection_Wide(1)_Low_QPSK_1RB



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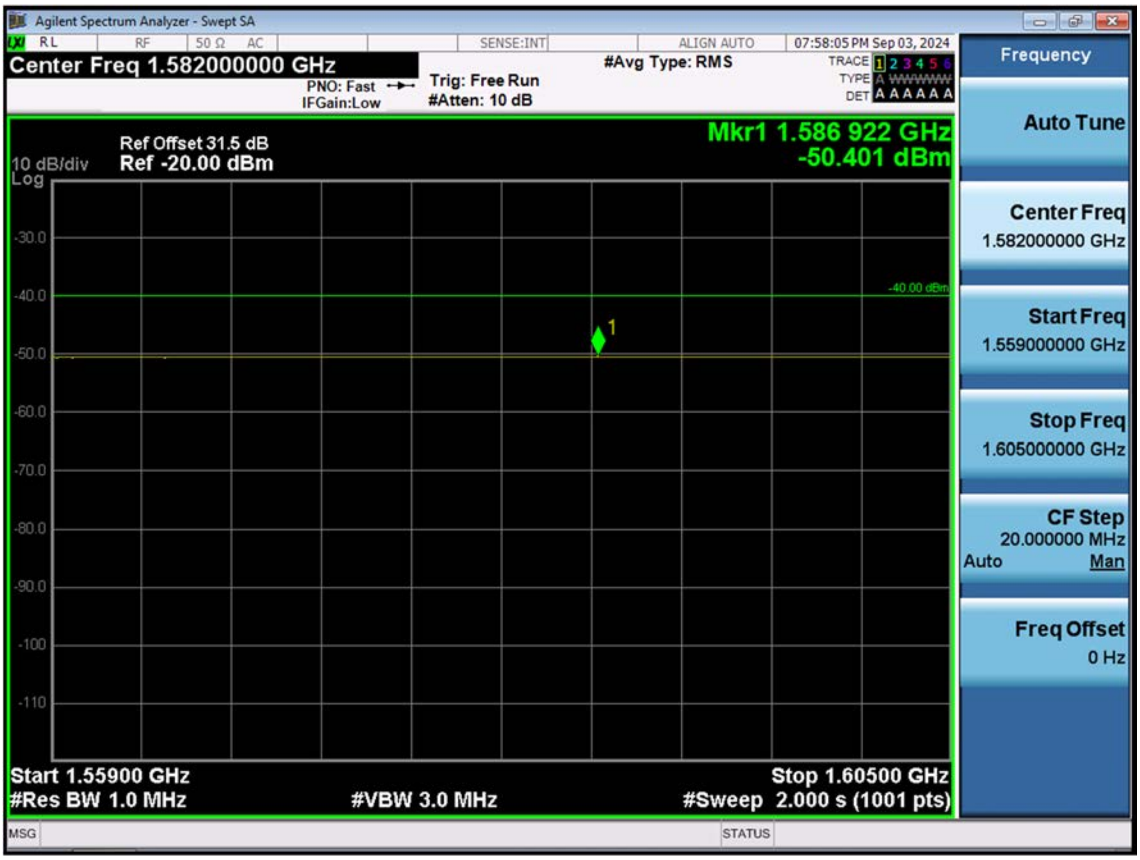
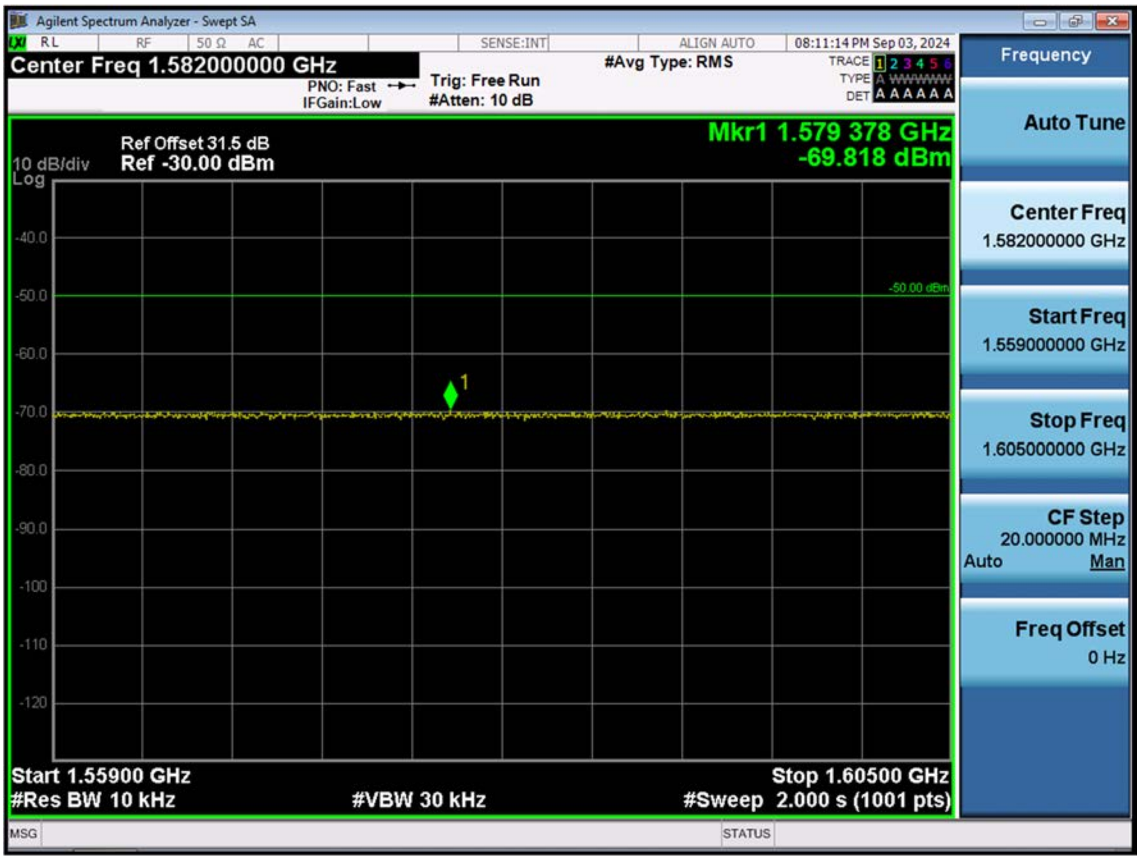
LTE24_10 M_Protection_Wide(1)_Low_QPSK_FullRB



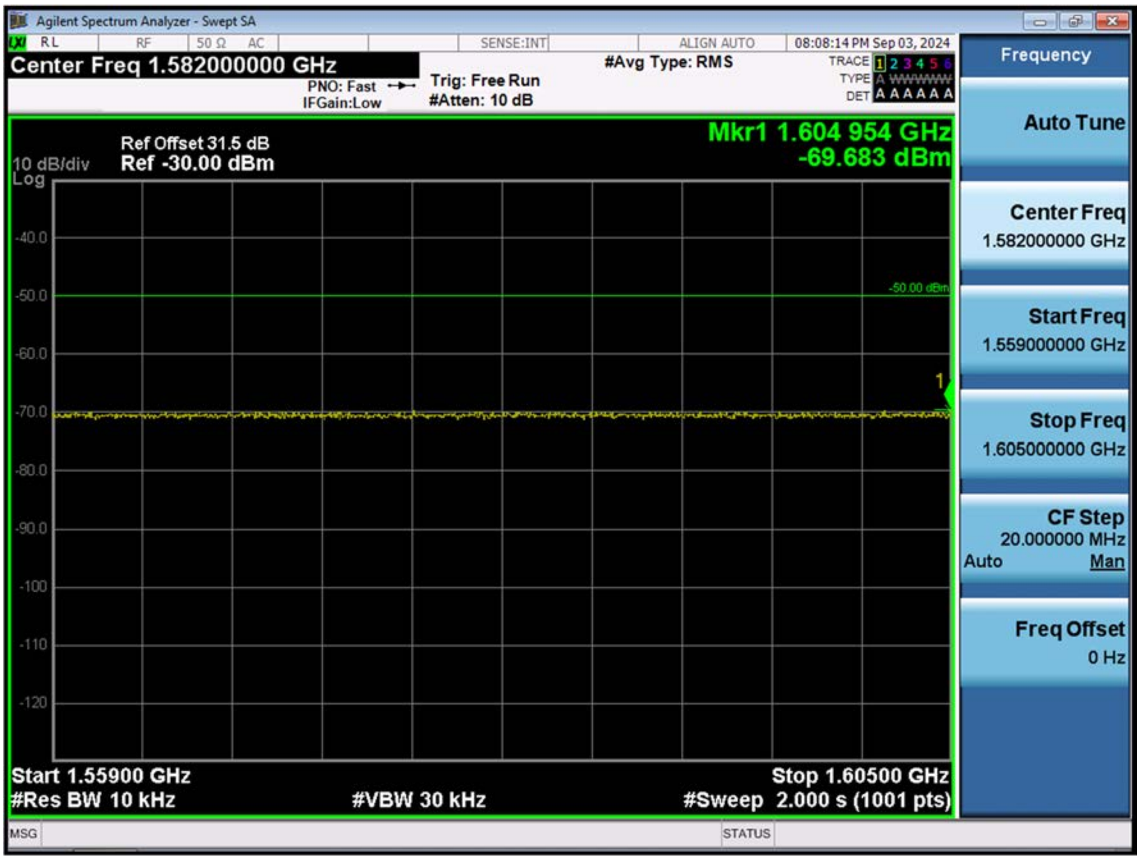
LTE24_10 M_Protection_Wide(2)_Low_QPSK_FullRB

LTE24_5 M_Protection_Narrow(1)_Low_QPSK_1RB



LTE24_5 M_Protection_Narrow(2)_Low_QPSK_1RB

LTE24_5 M_Protection_Narrow(1)_Low_QPSK_FullRB



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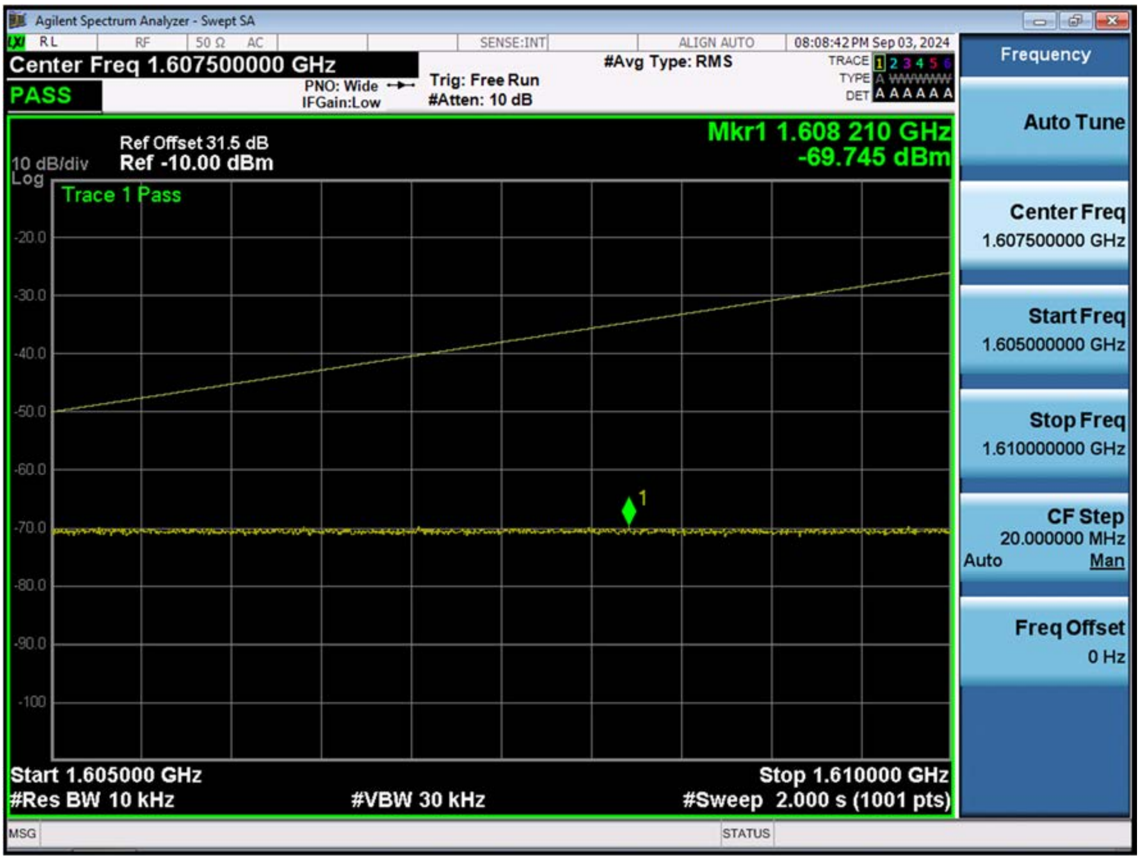

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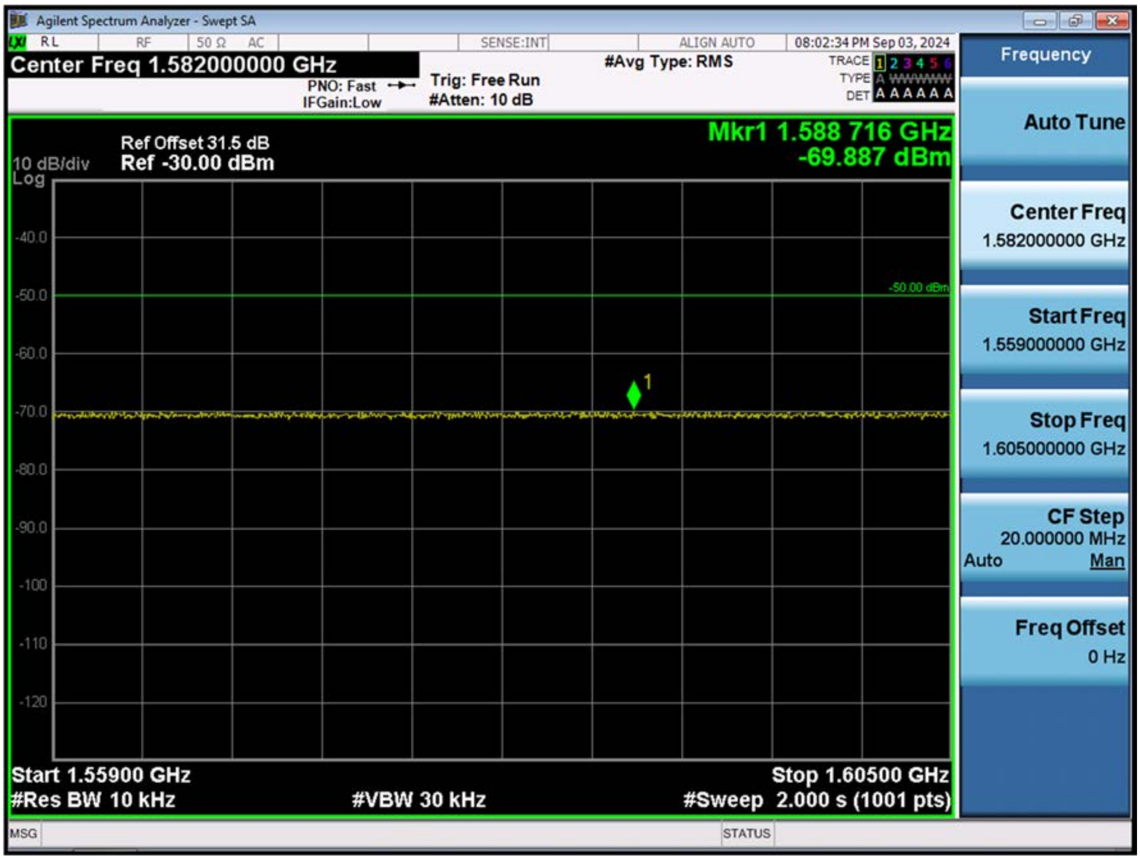
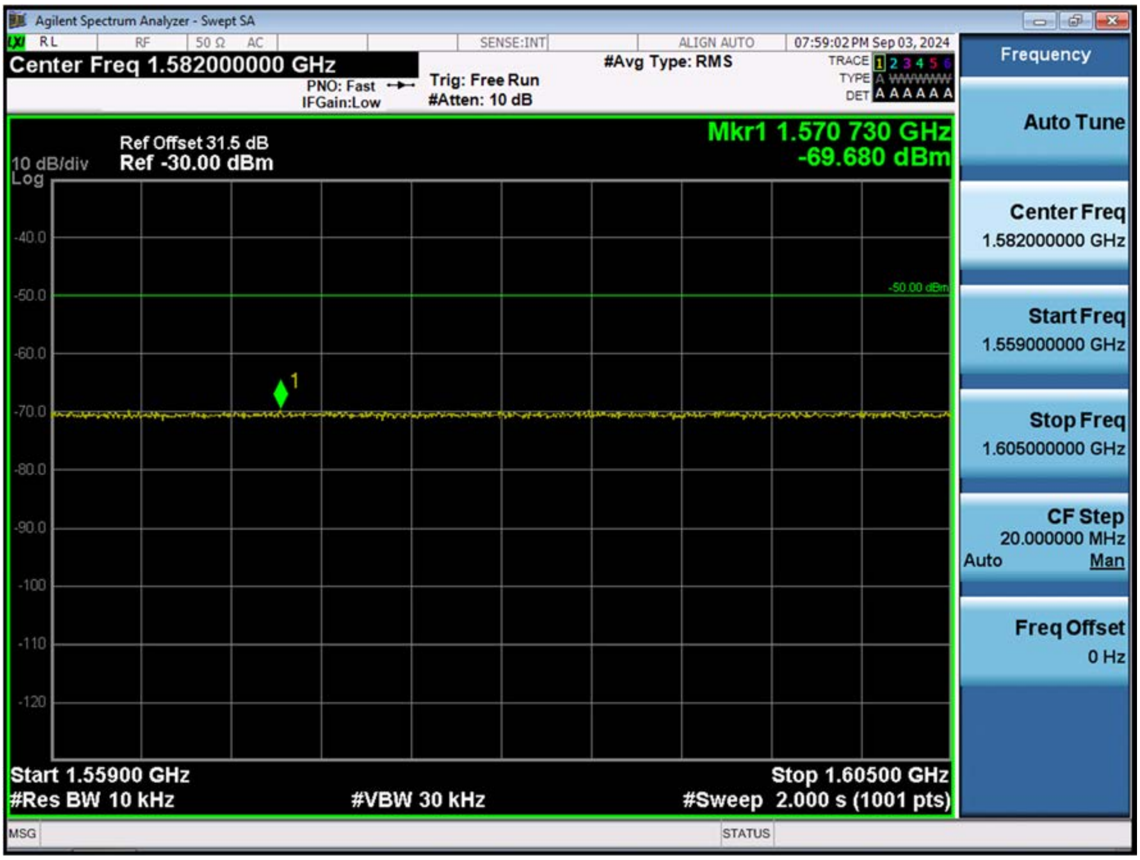


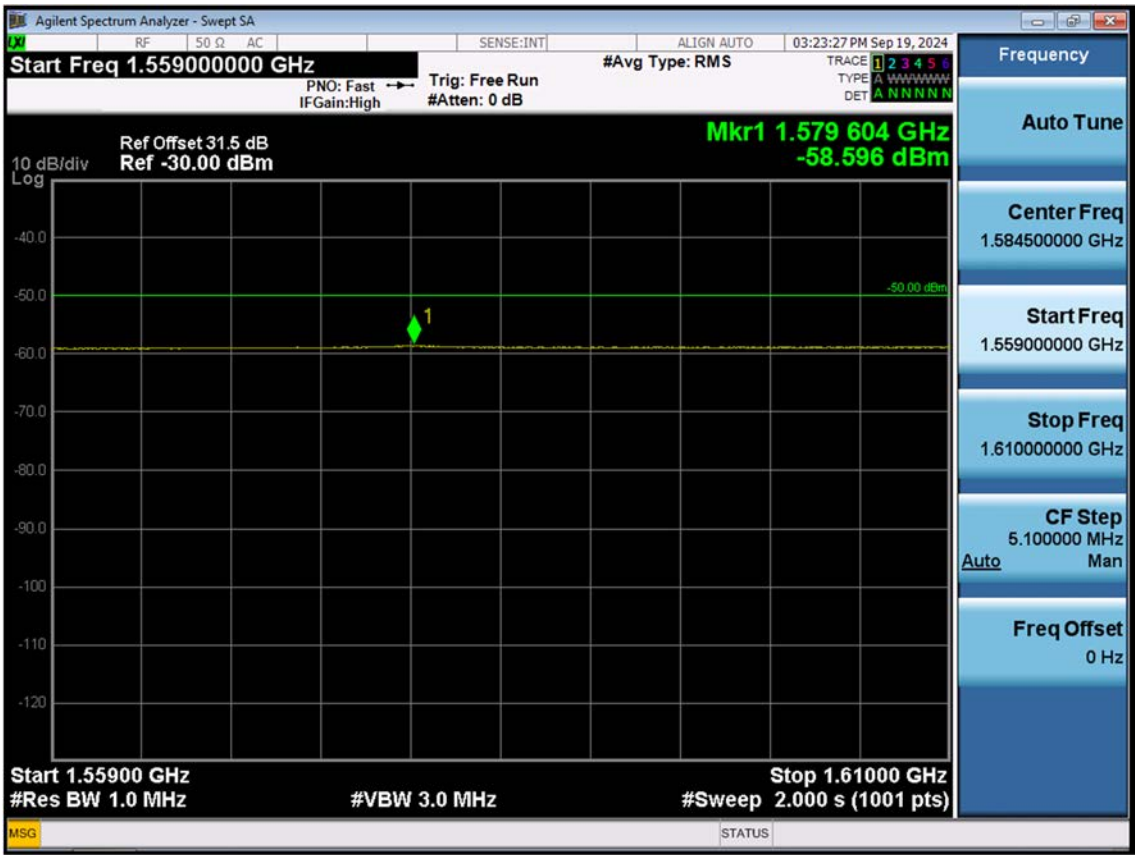
LTE24_10 M_Protection_Narrow(2)_Low_QPSK_1RB

LTE24_10 M_Protection_Narrow(1)_Low_QPSK_FullRB

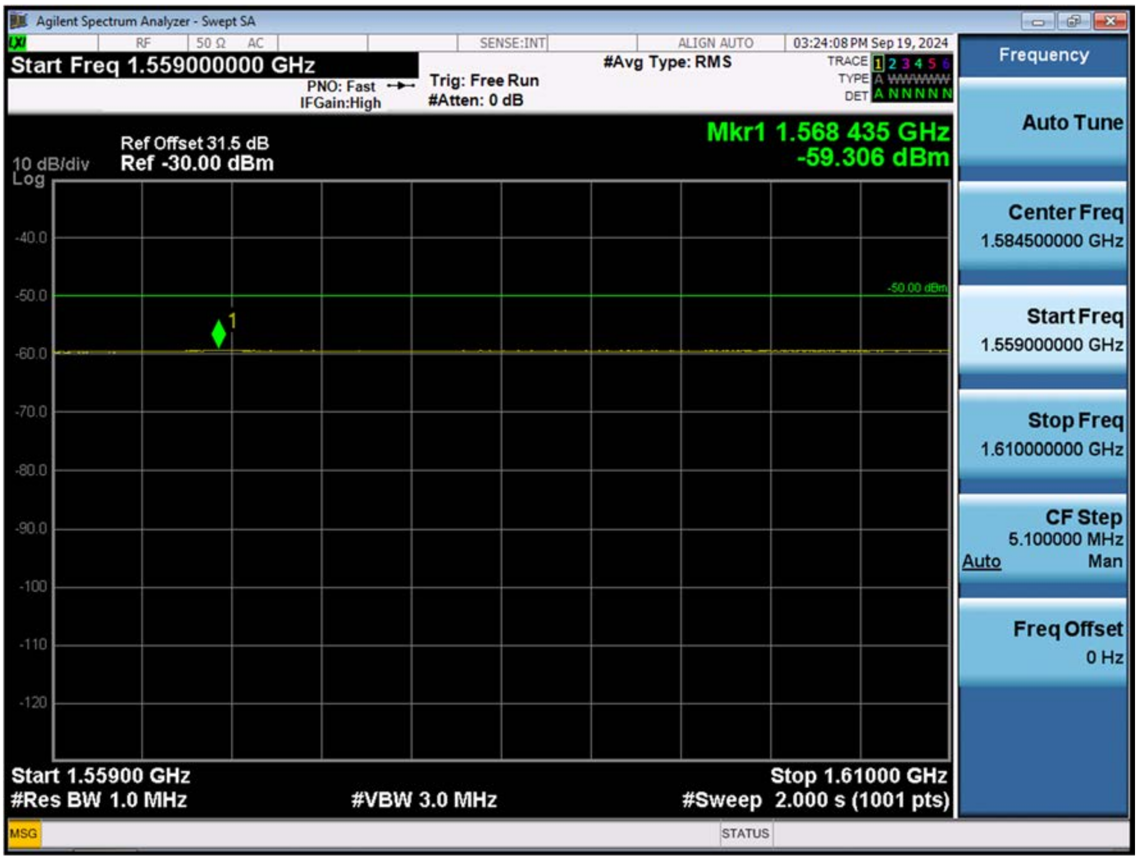


LTE24_10 M_Protection_Narrow(2)_Low_QPSK_FullRB

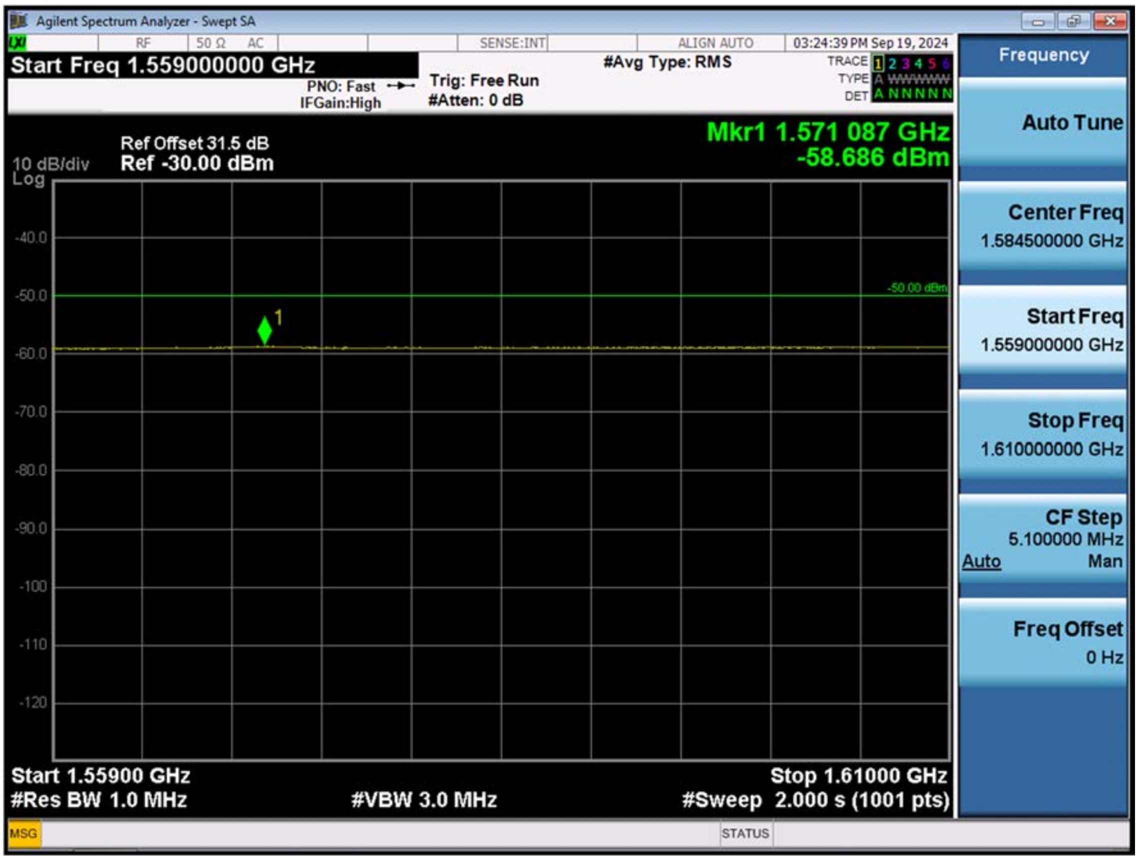
LTE24_5 M_Protection_CarrierOff_Low_QPSK_1RB



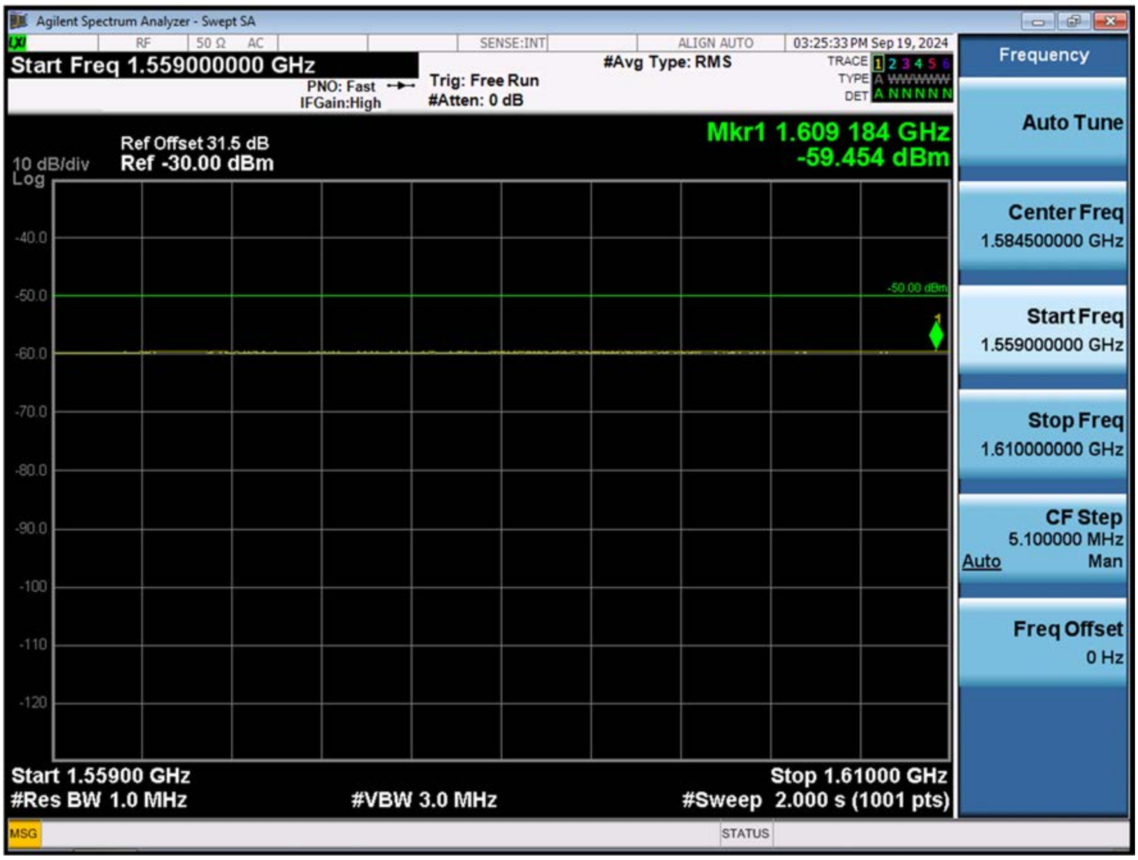
LTE24_5 M_Protection_CarrierOff_Mid_QPSK_1RB



LTE24_5 M_Protection_CarrierOff_High_QPSK_1RB

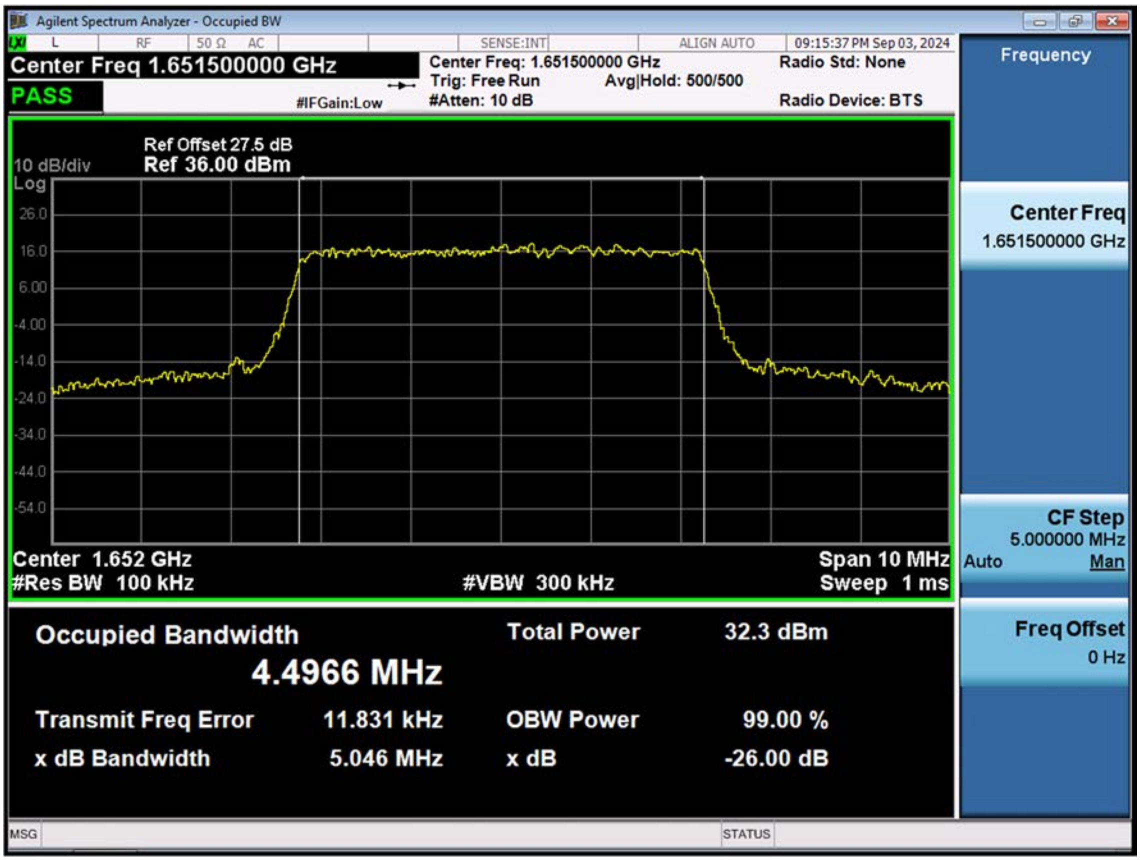


LTE24_10 M_Protection_CarrierOff_Low_QPSK_1RB

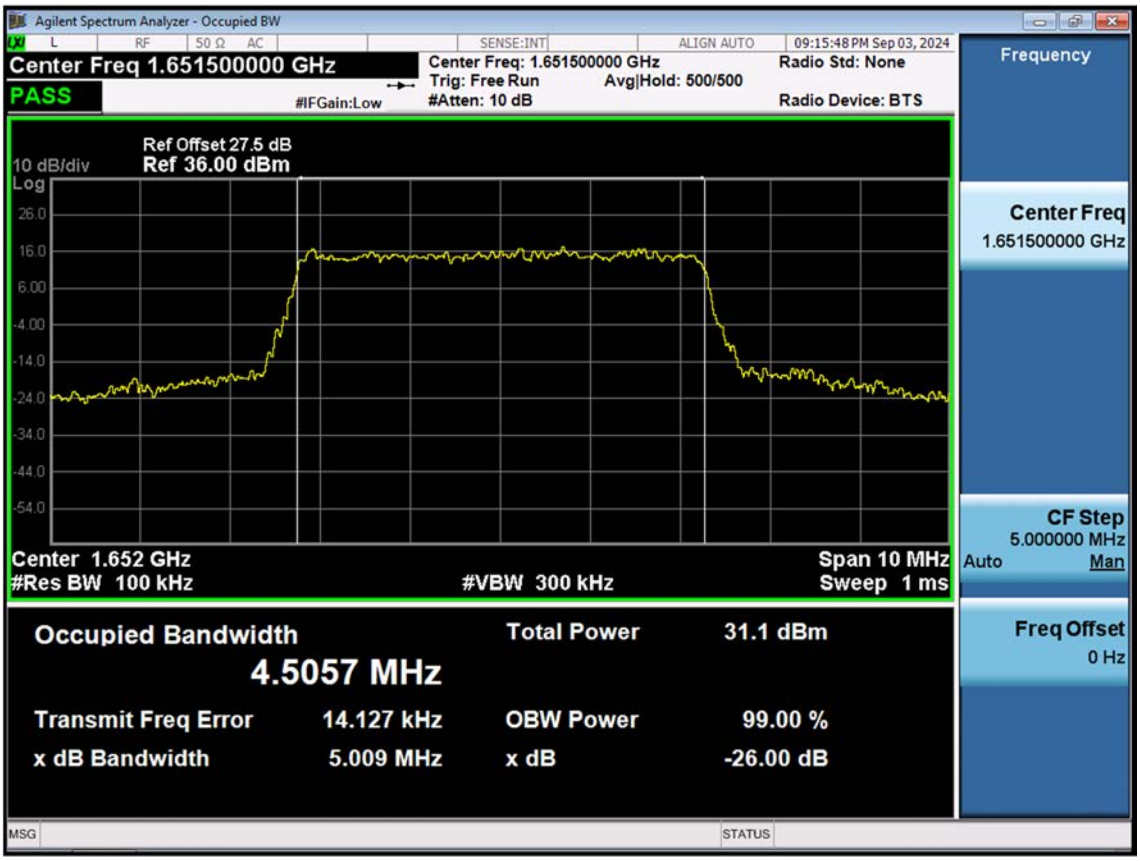


11. TEST PLOTS(UPPER)

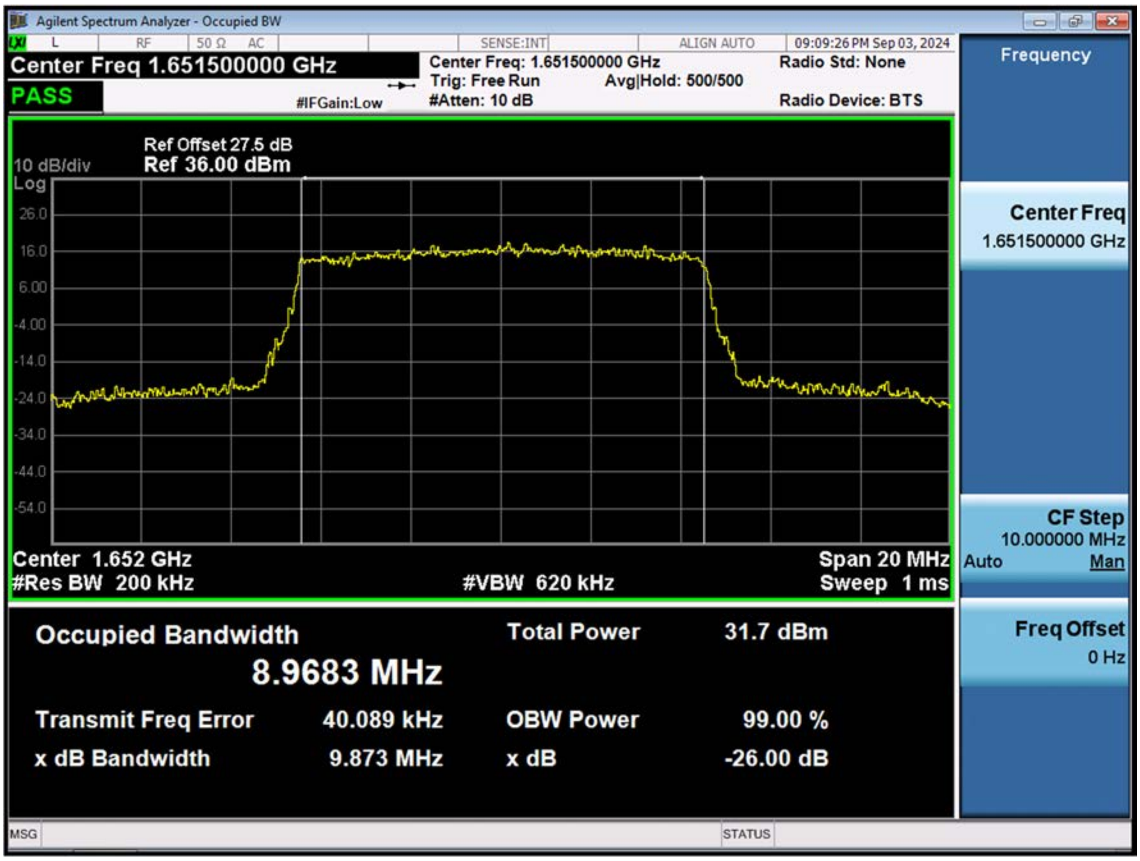
LTE B24_5 M_OBW_Mid_QPSK_FullRB



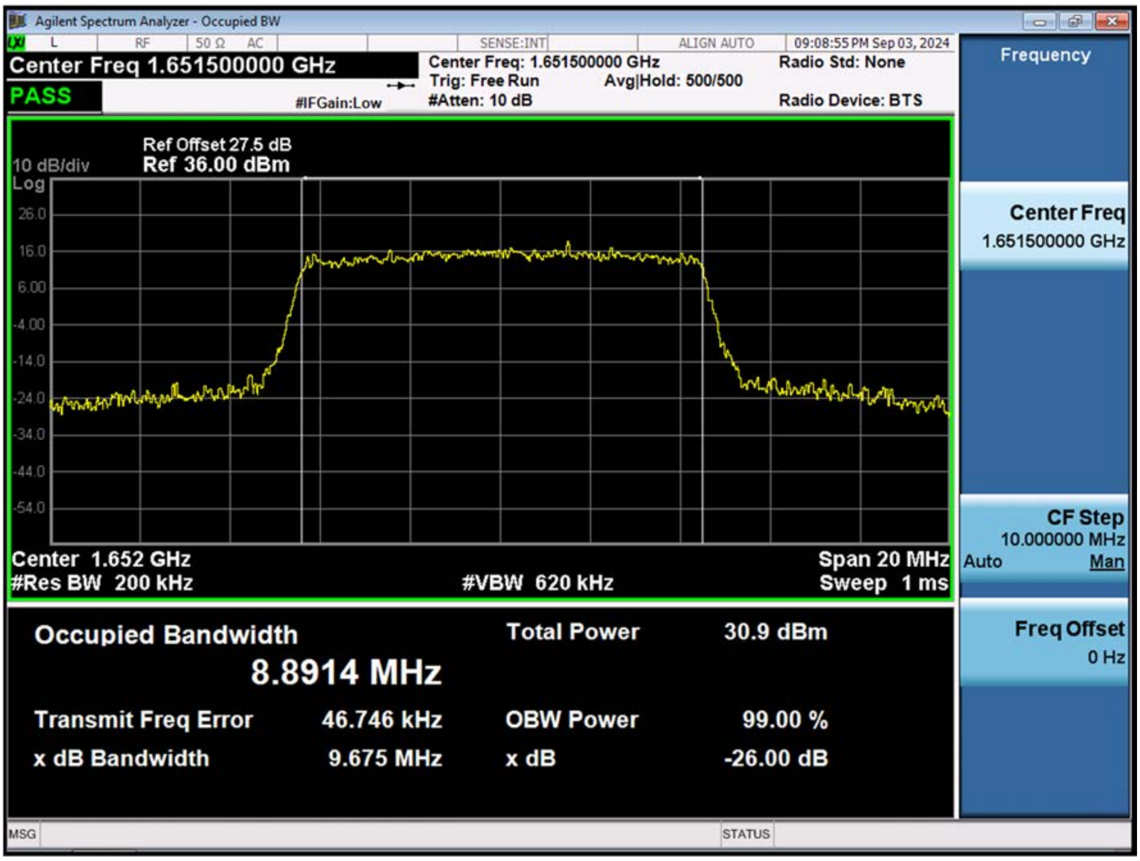
LTE B24_5 M_OBW_Mid_16QAM_FullRB



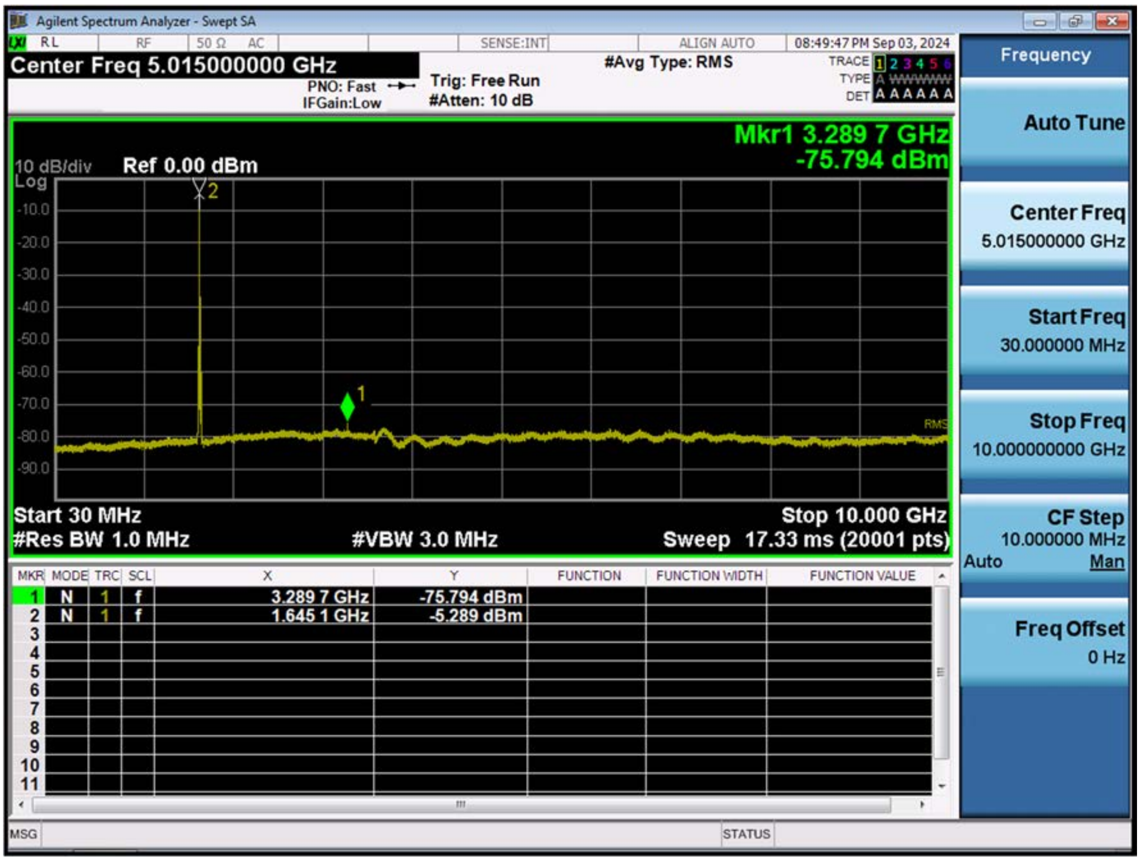
LTE B24_10 M_OBW_Mid_QPSK_FullRB



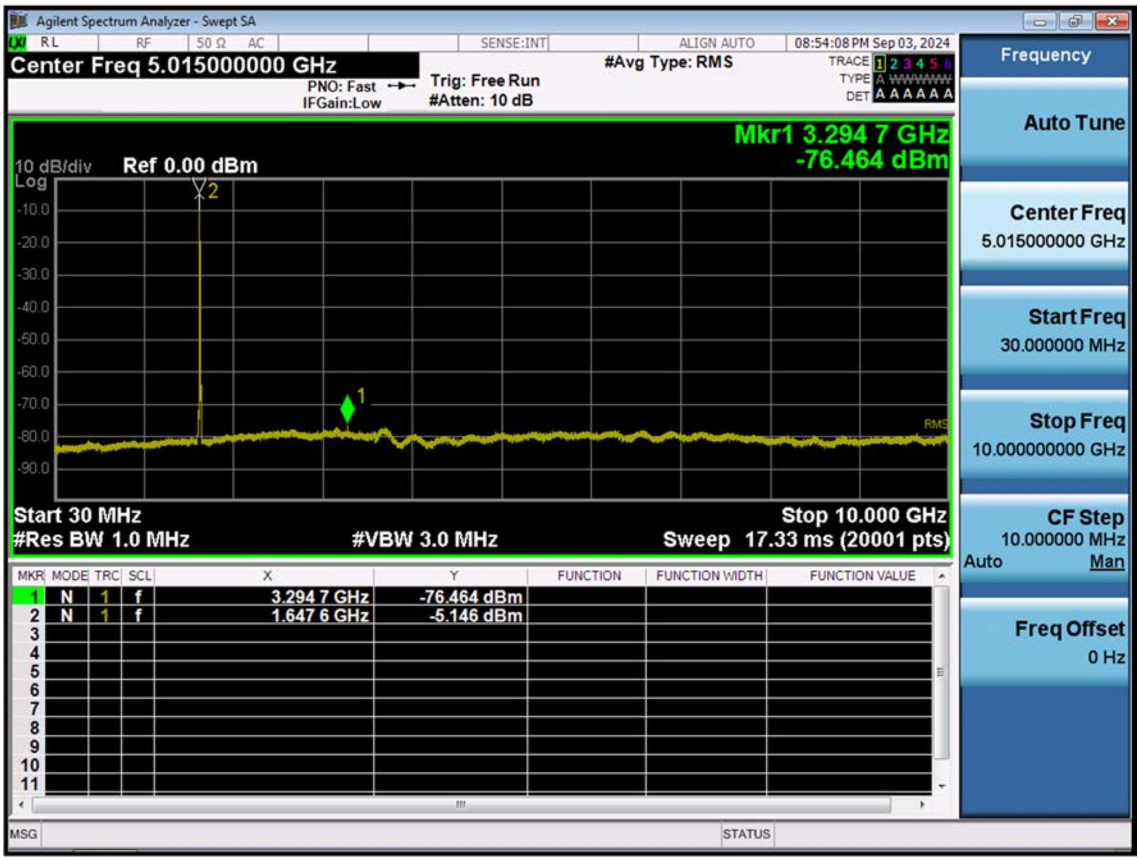
LTE B24_10 M_OBW_Mid_16QAM_FullRB



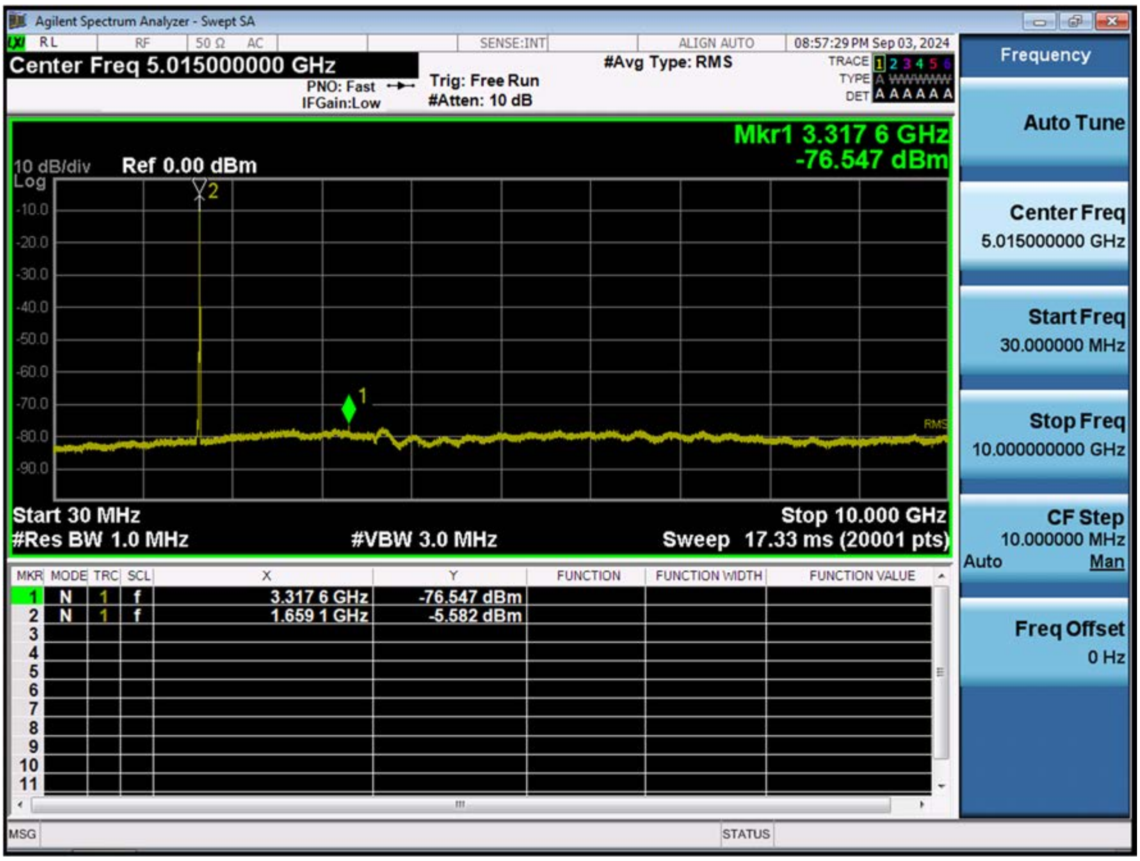
LTE B24_5 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



LTE B24_5 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



LTE B24_5 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



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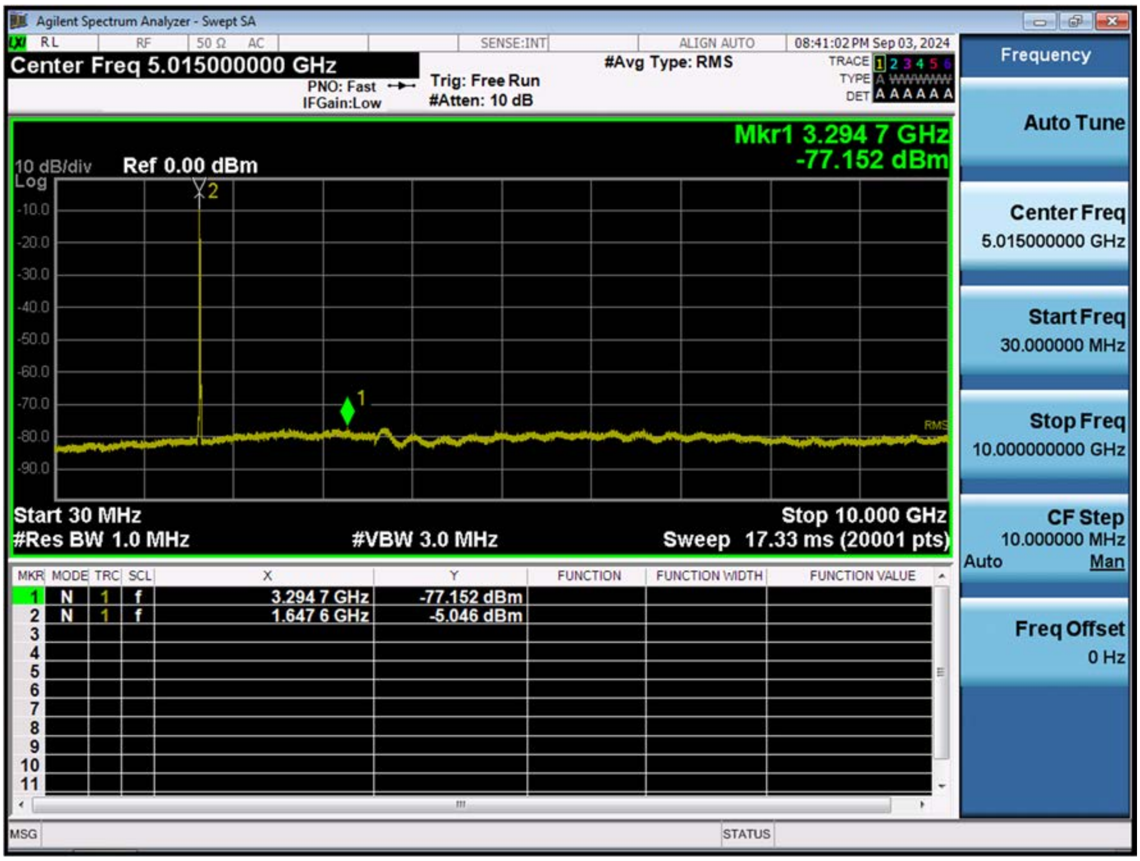

LTE B24_5 M_Conducted Spurious(Above 10 G)_Low_QPSK_1RB

LTE B24_5 M_Conducted Spurious(Above 10 G)_Mid_QPSK_1RB

LTE B24_5 M_Conducted Spurious(Above 10 G)_High_QPSK_1RB

LTE B24_10 M_Conducted Spurious(Above 10 G)_Low_QPSK_1RB