HCT Testing and Certification

TEST REPORT

FCC LTE B42 Test for WW23B
Certification

APPLICANT
Panasonic Corporation of North America

REPORT NO.
HCT-RF-2407-FC084

DATE OF ISSUE
July 31, 2024

Tested by Jae Ryang Do	
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TEST REPORT

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Applicant	**Panasonic Corporation of North America** Two Riverfront Plaza, 9th Floor, Newark, NJ 07102-5490, USA
Product Name Model Name	Wirelss Module WW23B
Date of Test	June 12, 2024 ~ July 26, 2024
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 ID	ACJ9TGWW23B
FCC Classification	PCS Licensed Transmitter (PCB)
Test Standard Used	FCC Rule Part(s) : § 27
Test Results	PASS

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	July 31, 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:	Panasonic Corporation of North America
Address:	Two Riverfront Plaza, 9th Floor, Newark, NJ 07102-5490, USA
FCC ID:	ACJ9TGWW23B
Application Type:	Certification
FCC Classification	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§ 27
EUT Type:	Wirelss Module
Model(s):	WW23B
Additional Model(s)	-
Tx Frequency:	3452.5 MHz – 3547.5 MHz (LTE – Band42 (5 MHz)) 3455.0 MHz – 3545.0 MHz (LTE – Band42 (10 MHz)) 3457.5 MHz – 3542.5 MHz (LTE – Band42 (15 MHz)) 3460.0 MHz – 3540.0 MHz (LTE – Band42 (20 MHz))
Date(s) of Tests:	June 12, 2024 ~ July 26, 2024
Serial number:	Radiated: S0P-021-03645 Conducted: S0P-021-03579

1.1. MAXIMUM OUTPUT POWER

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band42 (5 MHz)	3452.5 – 3547.5	4M51G7D	QPSK	0.162	22.09
		4M50W7D	16QAM	0.131	21.17
		4M51W7D	64QAM	0.103	20.13
LTE – Band42 (10 MHz)	3455.0 – 3545.0	8M95G7D	QPSK	0.165	22.18
		8M99W7D	16QAM	0.134	21.27
		8M97W7D	64QAM	0.104	20.18
LTE – Band42 (15 MHz)	3457.5 – 3542.5	13M4G7D	QPSK	0.165	22.17
		13M5W7D	16QAM	0.133	21.25
		13M5W7D	64QAM	0.104	20.19
LTE – Band42 (20 MHz)	3460.0 – 3540.0	17M9G7D	QPSK	0.170	22.31
		17M8W7D	16QAM	0.137	21.36
		17M9W7D	64QAM	0.100	19.98

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Wirelss Module with LTE.

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
Block Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- KDB 971168 D01 v03r01 - Section 5.2.4 - ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
Frequency stability	- ANSI C63.26-2015 – Section 5.6
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 CONDUCTED OUTPUT POWER

Test Overview

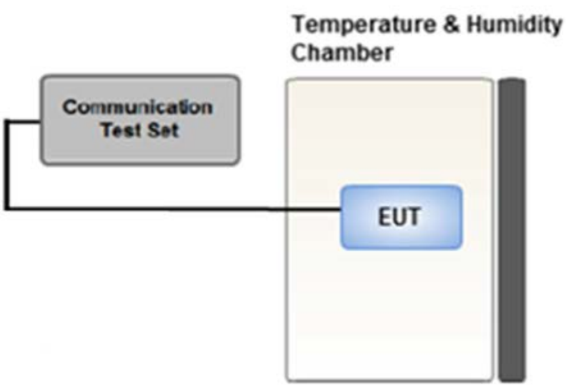
According to ANSI C63.26-2015 Section 5.2.1 when measuring the maximum RF output power from such devices, control over the EUT must be provided either through special test software (provided by manufacturer specifically for compliance testing, but not accessible by an end user) or through use of a base 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.

Test setup



3.3 RADIATED POWER

Test Overview

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

3.4 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method 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;

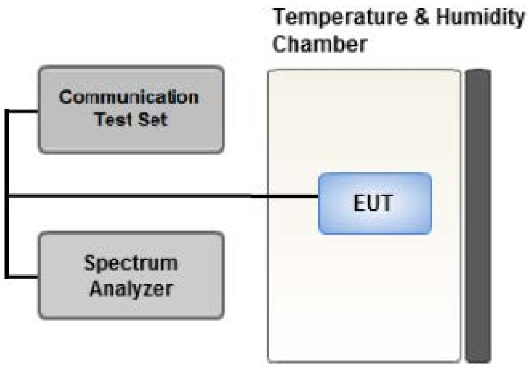
$$Result_{(dBm)} = Pg_{(dBm)} - cable\ loss_{(dB)} + antenna\ gain_{(dBi)}$$

   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.

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

3.5 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

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

② Alternate Procedure for PAPR

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

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

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

Test Settings(Peak Power)

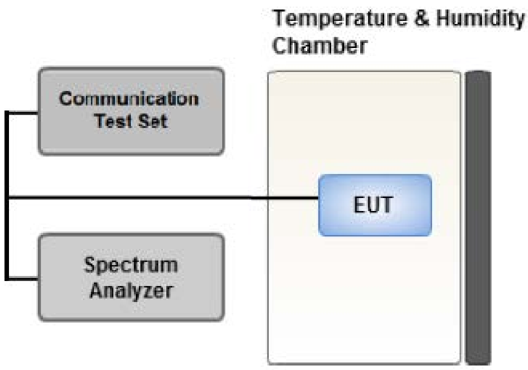
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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

Test Settings(Average Power)

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

3.6 OCCUPIED BANDWIDTH.



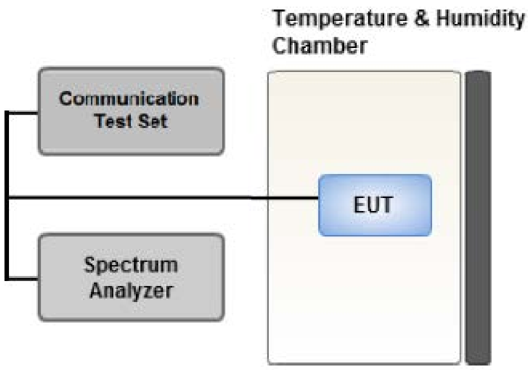
Test setup

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

Test Settings

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

3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

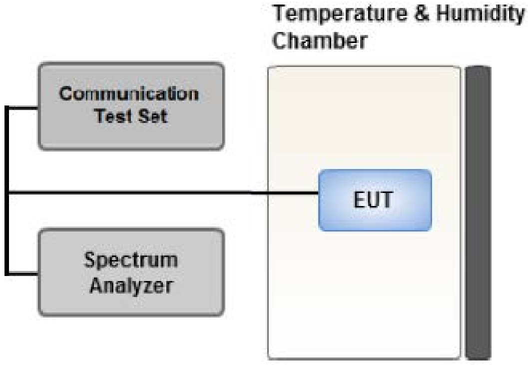
Test Overview

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

Test Settings

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

3.8 BAND EDGE



Test setup

Test Overview

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

Test Settings

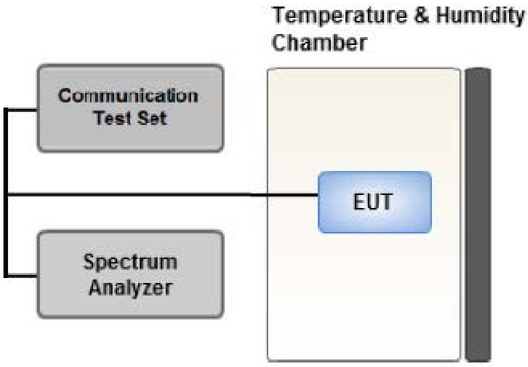
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW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

Test Notes

According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In
the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.
All measurements were done at 2 channels(low and high operational frequency range.)
The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

3.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

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

The frequency stability of the transmitter is measured by:

1. Temperature:

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

2. Primary Supply Voltage:

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

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

Test Settings

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

3.10 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
  Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
  Worst case : Stand alone
- All simultaneous transmission scenarios of operation were investigated, and the test results showed no additional significant emissions relative to the least restrictive limit were observed.
  Therefore, only the worst case(stand-alone) results were reported.
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported. (Worst case : 20 MHz)
- The worst case is reported with the EUT positioning, modulations, and paging service 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	See Section 8.1		X
Radiated Spurious and Harmonic Emissions	QPSK	See Section 8.2		X

3.11 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	5, 10, 15, 20	Mid	Full RB	0
Peak-To-Average Ratio	QPSK, 16QAM, 64QAM	5, 10, 15, 20	Mid	Full RB	0
Band 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
HIGHPASS FILTER	WHNX6.0/26.5G-6SS	WAINWRIGHT INSTRUMENT	1	12/11/2024	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/17/2025	Annual
DC Power Supply	E3632A	Agilent	KR01009150	04/18/2025	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	04/19/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/17/2024	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	09/16/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	09/16/2024	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 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

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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(n)(2)	< -13 dBm	PASS
Conducted Output Power	§ 2.1046	N/A	PASS
Peak- to- Average Ratio	§ 27.50(k)(4)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§ 2.1055, § 27.54	Emission must remain in band	PASS

Note:
1. All conducted tests were tested using 5G Wireless Tester.

6.2 Test Condition : Radiated Test

-. FCC

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§ 27.50(k)(3)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 27.50(n)(2)	< -13 dBm	PASS

Note:

1. Radiated tests were tested using 5G Wireless Tester.

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

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

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

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

7.2 EIRP Sample Calculation

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

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

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

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				42115	42590	43065		
				3452.5 MHz	3500 MHz	3547.5 MHz		
5 MHz	QPSK	1	0	17.61	18.10	18.14	0	18
		1	12	17.60	18.04	18.14	0	18
		1	24	17.63	18.03	18.19	0	18
		12	0	16.63	17.06	17.13	1	17
		12	6	16.59	17.06	17.14	1	17
		12	11	16.59	17.00	17.14	1	17
		25	0	16.60	17.03	17.16	1	17
	16QAM	1	0	16.79	17.29	17.35	1	17
		1	12	16.80	17.22	17.35	1	17
		1	24	16.80	17.24	17.35	1	17
		12	0	15.66	16.09	16.14	2	16
		12	6	15.62	16.09	16.21	2	16
		12	11	15.59	16.06	16.16	2	16
		25	0	15.60	16.06	16.16	2	16
	64QAM	1	0	15.54	16.04	16.08	2	16
		1	12	15.53	15.97	16.09	2	16
		1	24	15.54	15.99	16.12	2	16
		12	0	14.69	15.15	15.20	3	15
		12	6	14.65	15.12	15.22	3	15
		12	11	14.65	15.09	15.17	3	15
		25	0	14.65	15.10	15.18	3	15

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				42140	42590	43040		
				3455 MHz	3500 MHz	3545 MHz		
10 MHz	QPSK	1	0	17.55	18.03	18.04	0	18
		1	24	17.57	18.03	18.08	0	18
		1	49	17.66	17.95	18.13	0	18
		25	0	16.67	17.08	17.15	1	17
		25	12	16.75	17.13	17.15	1	17
		25	24	16.75	17.01	17.17	1	17
		50	0	16.72	17.09	17.13	1	17
	16QAM	1	0	16.81	17.34	17.28	1	17
		1	24	16.81	17.28	17.37	1	17
		1	49	16.92	17.23	17.44	1	17
		25	0	15.68	16.12	16.16	2	16
		25	12	15.76	16.13	16.16	2	16
		25	24	15.78	16.07	16.16	2	16
		50	0	15.75	16.12	16.18	2	16
	64QAM	1	0	15.55	16.05	16.03	2	16
		1	24	15.55	16.00	16.07	2	16
		1	49	15.66	15.96	16.17	2	16
		25	0	14.72	15.14	15.19	3	15
		25	12	14.80	15.17	15.24	3	15
		25	24	14.82	15.11	15.21	3	15
		50	0	14.73	15.09	15.19	3	15
		1	0	17.55	18.03	18.04	0	18

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				42165	42590	43015		
				3457.5 MHz	3500 MHz	3542.5 MHz		
15 MHz	QPSK	1	0	17.68	18.14	18.05	0	18
		1	36	17.82	18.06	18.13	0	18
		1	74	17.97	18.08	18.29	0	18
		36	0	16.77	17.10	17.06	1	17
		36	18	16.84	17.13	17.13	1	17
		36	39	16.86	17.04	17.20	1	17
		75	0	16.84	17.08	17.13	1	17
	16QAM	1	0	16.86	17.32	17.23	1	17
		1	36	17.00	17.23	17.30	1	17
		1	74	17.15	17.26	17.47	1	17
		36	0	15.76	16.06	16.02	2	16
		36	18	15.81	16.09	16.10	2	16
		36	39	15.89	16.02	16.17	2	16
		75	0	15.85	16.08	16.14	2	16
	64QAM	1	0	15.58	16.04	15.97	2	16
		1	36	15.73	15.98	16.03	2	16
		1	74	15.88	16.02	16.19	2	16
		36	0	14.77	15.07	15.04	3	15
		36	18	14.82	15.11	15.11	3	15
		36	39	14.89	15.03	15.17	3	15
		75	0	14.85	15.09	15.13	3	15

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			Target MPR (dB)	Target Power
				42190	42590	42990		
				3460 MHz	3500 MHz	3540 MHz		
20 MHz	QPSK	1	0	17.66	18.02	18.02	0	18
		1	49	17.79	17.99	18.12	0	18
		1	99	17.91	17.98	18.26	0	18
		50	0	16.82	17.12	17.06	1	17
		50	25	16.89	17.10	17.13	1	17
		50	49	16.92	17.08	17.18	1	17
		100	0	16.90	17.08	17.15	1	17
	16QAM	1	0	16.90	17.26	17.21	1	17
		1	49	17.05	17.24	17.29	1	17
		1	99	17.17	17.23	17.43	1	17
		50	0	15.89	16.15	16.10	2	16
		50	25	15.91	16.14	16.16	2	16
		50	49	15.96	16.11	16.22	2	16
		100	0	15.91	16.11	16.17	2	16
	64QAM	1	0	15.62	15.98	15.96	2	16
		1	49	15.78	16.02	16.02	2	16
		1	99	15.91	15.95	16.18	2	16
		50	0	14.83	15.12	15.06	3	15
		50	25	14.89	15.12	15.14	3	15
		50	49	14.93	15.07	15.22	3	15
		100	0	14.89	15.11	15.14	3	15

8.2 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3452.5	LTE B42 (5 MHz)	QPSK	-26.38	11.10	12.37	3.16	H	< 1.00	0.107	20.31	1	24
		16-QAM	-27.30	10.18	12.37	3.16	H		0.087	19.39		
		64-QAM	-28.34	9.14	12.37	3.16	H		0.068	18.35		
3500.0		QPSK	-25.30	12.85	12.34	3.10	H		0.162	22.09	1	24
		16-QAM	-26.22	11.93	12.34	3.10	H		0.131	21.17		
		64-QAM	-27.26	10.89	12.34	3.10	H		0.103	20.13		
3547.5		QPSK	-26.28	12.42	12.34	3.23	H		0.142	21.53	1	0
		16-QAM	-27.20	11.50	12.34	3.23	H		0.115	20.61		
		64-QAM	-28.34	10.36	12.34	3.23	H		0.089	19.47		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3455.0	LTE B42 (10 MHz)	QPSK	-26.47	11.01	12.36	3.14	H	< 1.00	0.105	20.23	1	49
		16-QAM	-27.42	10.06	12.36	3.14	H		0.085	19.28		
		64-QAM	-28.31	9.17	12.36	3.14	H		0.069	18.39		
3500.0		QPSK	-25.21	12.94	12.34	3.10	H		0.165	22.18	1	49
		16-QAM	-26.12	12.03	12.34	3.10	H		0.134	21.27		
		64-QAM	-27.21	10.94	12.34	3.10	H		0.104	20.18		
3545.0		QPSK	-26.25	12.38	12.34	3.21	H		0.142	21.51	1	0
		16-QAM	-27.15	11.48	12.34	3.21	H		0.115	20.61		
		64-QAM	-28.42	10.21	12.34	3.21	H		0.086	19.34		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3457.5	LTE B42 (15 MHz)	QPSK	-26.08	11.40	12.35	3.12	H	< 1.00	0.116	20.63	1	74
		16-QAM	-27.00	10.48	12.35	3.12	H		0.094	19.71		
		64-QAM	-28.09	9.39	12.35	3.12	H		0.073	18.62		
3500.0		QPSK	-25.22	12.93	12.34	3.10	H		0.165	22.17	1	74
		16-QAM	-26.14	12.01	12.34	3.10	H		0.133	21.25		
		64-QAM	-27.20	10.95	12.34	3.10	H		0.104	20.19		
3542.5		QPSK	-25.98	12.58	12.34	3.18	H		0.149	21.74	1	0
		16-QAM	-26.92	11.64	12.34	3.18	H		0.120	20.80		
		64-QAM	-28.12	10.44	12.34	3.18	H		0.091	19.60		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3460.0	LTE B42 (20 MHz)	QPSK	-25.97	11.51	12.35	3.12	H	< 1.00	0.119	20.74	1	99
		16-QAM	-26.89	10.59	12.35	3.12	H		0.096	19.82		
		64-QAM	-28.03	9.45	12.35	3.12	H		0.074	18.68		
3500.0		QPSK	-25.08	13.07	12.34	3.10	H		0.170	22.31	1	99
		16-QAM	-26.03	12.12	12.34	3.10	H		0.137	21.36		
		64-QAM	-27.41	10.74	12.34	3.10	H		0.100	19.98		
3540.0		QPSK	-25.75	12.81	12.34	3.18	H		0.157	21.97	1	0
		16-QAM	-26.64	11.92	12.34	3.18	H		0.128	21.08		
		64-QAM	-27.77	10.79	12.34	3.18	H		0.099	19.95		

8.3 RADIATED SPURIOUS EMISSIONS

-.FCC

▣ MODE: LTE B42

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 1 meters

Freq (MHz)	Measured Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
42590 (3500.0)	6 920.00	-57.06	10.90	-51.27	4.33	V	-44.70	-13.00
	10 380.00	-58.23	11.20	-47.38	5.40	V	-41.58	
	13 840.00	-61.84	12.40	-50.86	6.35	V	-44.81	
42590 (3500.0)	7 000.00	-56.74	10.70	-50.01	4.32	V	-43.63	
	10 500.00	-58.56	11.20	-47.74	5.47	H	-42.00	
	14 000.00	-60.22	12.30	-51.07	6.39	H	-45.16	
42990 (3540)	7 080.00	-55.88	10.20	-48.03	4.38	H	-42.21	
	10 620.00	-58.09	11.10	-45.83	5.53	H	-40.26	
	14 160.00	-61.23	12.70	-52.90	6.48	V	-46.68	

8.4 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
42	5MHz	3500.0	QPSK	Full RB	0	5.58
			16-QAM			6.36
			64-QAM			6.39
	10MHz		QPSK			5.68
			16-QAM			6.36
			64-QAM			6.51
	15MHz		QPSK			5.49
			16-QAM			6.31
			64-QAM			6.50
	20MHz		QPSK			5.50
			16-QAM			6.23
			64-QAM			6.48

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 42 ~ 53.

8.5 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
42	5MHz	3500.0	QPSK	Full RB	0	4.505
			16-QAM			4.500
			64-QAM			4.511
	10MHz		QPSK			8.950
			16-QAM			8.994
			64-QAM			8.969
	15MHz		QPSK			13.433
			16-QAM			13.446
			64-QAM			13.466
	20MHz		QPSK			17.916
			16-QAM			17.843
			64-QAM			17.886

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 54 ~ 65.

8.6 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
42	5	3452.500	4.0564	31.955	-80.429	-48.474	-13.00
		3500.000	35.9148	34.110	-79.937	-45.827	
		3547.500	35.7000	34.110	-80.378	-46.268	
	10	3455.000	6.0140	32.570	-79.238	-46.668	
		3500.000	35.9788	34.110	-78.428	-44.318	
		3545.000	35.9591	34.110	-79.573	-45.463	
	15	3457.500	35.7992	34.110	-79.913	-45.803	
		3500.000	35.8320	34.110	-79.922	-45.812	
		3542.500	35.9880	34.110	-79.095	-44.985	
	20	3460.000	35.9321	34.110	-79.471	-45.361	
		3500.000	35.4511	34.110	-80.257	-46.147	
		3540.000	35.8772	34.110	-78.593	-44.483	

Note:
1. Plots of the EUT's Conducted Spurious Emissions are shown Page 66 ~ 89
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(26.5)	34.110

8.7 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 90~ 137.

8.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- BandWidth: 5 MHz
- Voltage(100 %): 10.800 VDC
- Batt. Endpoint: 9.180 VDC
- LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3452.500	100 %	+20(Ref)	3452 500 009	0.0	0.000 000	0.000
	100 %	-30	3452 499 996	-13.3	0.000 000	-0.004
	100 %	-20	3452 499 998	-11.9	0.000 000	-0.003
	100 %	-10	3452 500 019	9.3	0.000 000	0.003
	100 %	0	3452 500 022	12.8	0.000 000	0.004
	100 %	+10	3452 500 022	12.8	0.000 000	0.004
	100 %	+30	3452 500 015	5.3	0.000 000	0.002
	100 %	+40	3452 499 999	-10.5	0.000 000	-0.003
	100 %	+50	3452 500 018	8.5	0.000 000	0.002
	Batt. Endpoint	+20	3452 500 023	13.2	0.000 000	0.004
3547.500	100 %	+20(Ref)	3547 500 020	0.0	0.000 000	0.000
	100 %	-30	3547 500 013	-7.1	0.000 000	-0.002
	100 %	-20	3547 500 024	4.1	0.000 000	0.001
	100 %	-10	3547 500 010	-10.5	0.000 000	-0.003
	100 %	0	3547 500 033	13.1	0.000 000	0.004
	100 %	+10	3547 500 037	16.6	0.000 000	0.005
	100 %	+30	3547 500 030	9.3	0.000 000	0.003
	100 %	+40	3547 500 015	-5.1	0.000 000	-0.001
	100 %	+50	3547 500 030	9.5	0.000 000	0.003
	Batt. Endpoint	+20	3547 500 013	-7.5	0.000 000	-0.002

- BandWidth: 10 MHz
- Voltage(100 %): 10.800 VDC
- Batt. Endpoint: 9.180 VDC
- LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3455.000	100 %	+20(Ref)	3455 000 007	0.0	0.000 000	0.000
	100 %	-30	3455 000 016	8.5	0.000 000	0.002
	100 %	-20	3455 000 013	6.0	0.000 000	0.002
	100 %	-10	3455 000 013	5.4	0.000 000	0.002
	100 %	0	3455 000 003	-4.5	0.000 000	-0.001
	100 %	+10	3454 999 993	-14.3	0.000 000	-0.004
	100 %	+30	3455 000 003	-4.0	0.000 000	-0.001
	100 %	+40	3455 000 001	-6.4	0.000 000	-0.002
	100 %	+50	3454 999 999	-8.5	0.000 000	-0.002
	Batt. Endpoint	+20	3455 000 018	10.1	0.000 000	0.003
3545.000	100 %	+20(Ref)	3545 000 010	0.0	0.000 000	0.000
	100 %	-30	3545 000 002	-7.9	0.000 000	-0.002
	100 %	-20	3545 000 018	8.2	0.000 000	0.002
	100 %	-10	3545 000 018	8.1	0.000 000	0.002
	100 %	0	3545 000 005	-5.6	0.000 000	-0.002
	100 %	+10	3545 000 022	11.7	0.000 000	0.003
	100 %	+30	3545 000 018	8.0	0.000 000	0.002
	100 %	+40	3544 999 992	-17.8	-0.000 001	-0.005
	100 %	+50	3545 000 023	12.6	0.000 000	0.004
	Batt. Endpoint	+20	3545 000 025	14.3	0.000 000	0.004

- BandWidth: 15 MHz
- Voltage(100 %): 10.800 VDC
- Batt. Endpoint: 9.180 VDC
- LIMIT: Emission must remain in band

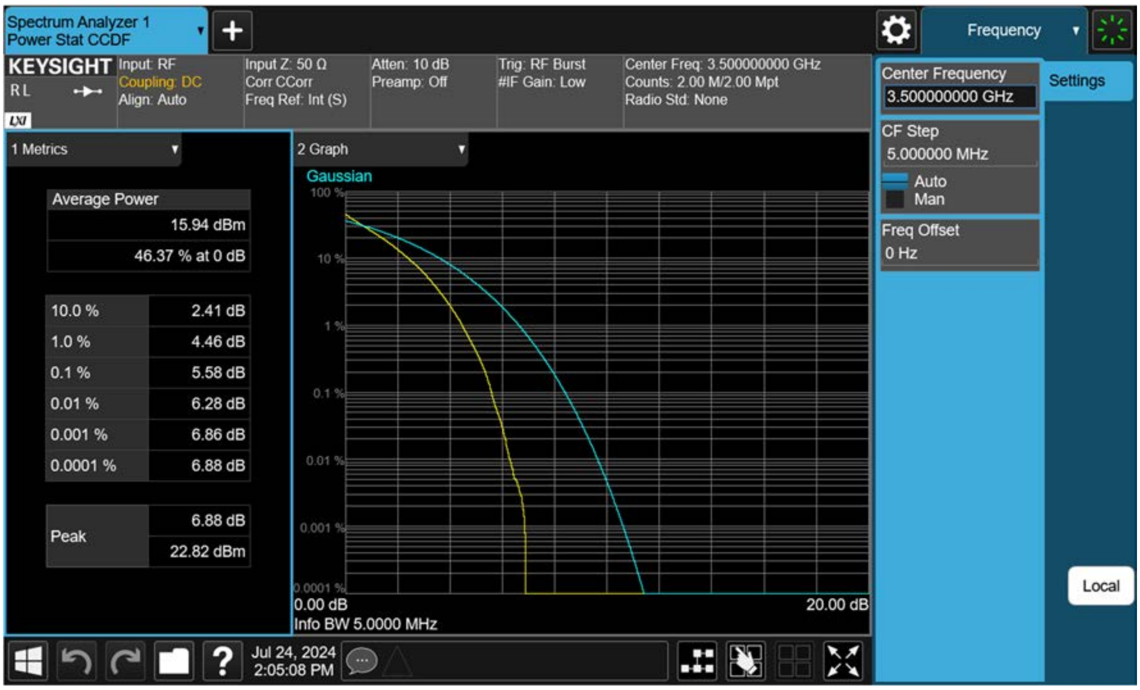
Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3457.500	100 %	+20(Ref)	3457 500 022	0.0	0.000 000	0.000
	100 %	-30	3457 500 013	-8.7	0.000 000	-0.003
	100 %	-20	3457 500 032	10.5	0.000 000	0.003
	100 %	-10	3457 500 027	4.6	0.000 000	0.001
	100 %	0	3457 500 027	4.6	0.000 000	0.001
	100 %	+10	3457 500 027	5.0	0.000 000	0.001
	100 %	+30	3457 500 029	7.1	0.000 000	0.002
	100 %	+40	3457 500 031	9.1	0.000 000	0.003
	100 %	+50	3457 500 034	12.4	0.000 000	0.004
	Batt. Endpoint	+20	3457 500 029	6.8	0.000 000	0.002
3542.500	100 %	+20(Ref)	3542 499 990	0.0	0.000 000	0.000
	100 %	-30	3542 499 999	8.8	0.000 000	0.002
	100 %	-20	3542 500 000	9.4	0.000 000	0.003
	100 %	-10	3542 499 974	-16.3	0.000 000	-0.005
	100 %	0	3542 499 984	-5.8	0.000 000	-0.002
	100 %	+10	3542 499 977	-13.4	0.000 000	-0.004
	100 %	+30	3542 499 980	-9.9	0.000 000	-0.003
	100 %	+40	3542 499 984	-6.1	0.000 000	-0.002
	100 %	+50	3542 499 982	-7.8	0.000 000	-0.002
	Batt. Endpoint	+20	3542 499 995	4.4	0.000 000	0.001

- BandWidth: 20 MHz
- Voltage(100 %): 10.800 VDC
- Batt. Endpoint: 9.180 VDC
- LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
3460.000	100 %	+20(Ref)	3459 999 989	0.0	0.000 000	0.000
	100 %	-30	3459 999 980	-9.3	0.000 000	-0.003
	100 %	-20	3459 999 979	-9.8	0.000 000	-0.003
	100 %	-10	3460 000 000	11.4	0.000 000	0.003
	100 %	0	3460 000 000	11.3	0.000 000	0.003
	100 %	+10	3459 999 993	4.5	0.000 000	0.001
	100 %	+30	3460 000 004	15.2	0.000 000	0.004
	100 %	+40	3459 999 971	-18.2	-0.000 001	-0.005
	100 %	+50	3459 999 974	-14.6	0.000 000	-0.004
	Batt. Endpoint	+20	3459 999 992	2.9	0.000 000	0.001
3540.000	100 %	+20(Ref)	3539 999 986	0.0	0.000 000	0.000
	100 %	-30	3539 999 991	4.4	0.000 000	0.001
	100 %	-20	3539 999 977	-9.4	0.000 000	-0.003
	100 %	-10	3539 999 995	8.3	0.000 000	0.002
	100 %	0	3539 999 978	-8.6	0.000 000	-0.002
	100 %	+10	3539 999 998	11.6	0.000 000	0.003
	100 %	+30	3539 999 993	6.5	0.000 000	0.002
	100 %	+40	3539 999 975	-11.8	0.000 000	-0.003
	100 %	+50	3539 999 997	10.9	0.000 000	0.003
	Batt. Endpoint	+20	3539 999 997	10.2	0.000 000	0.003

9. TEST PLOTS

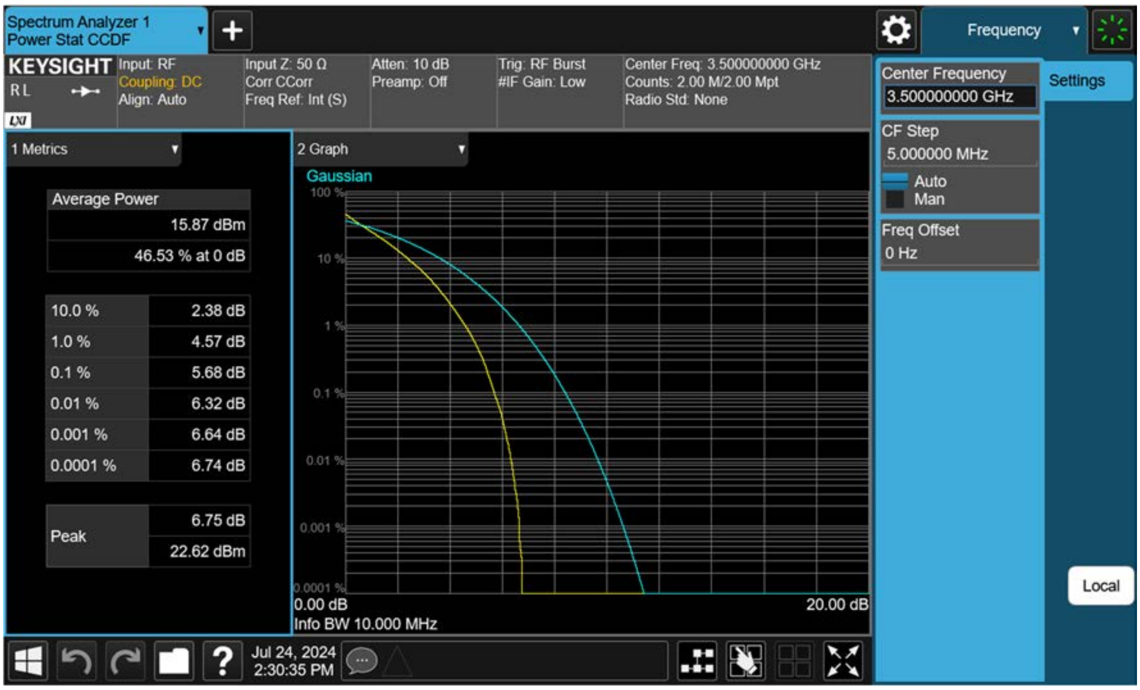
LTE B42_5 M_PAR_Mid_QPSK_FullRB



LTE B42_5 M_PAR_Mid_16QAM_FullRB

LTE B42_5 M_PAR_Mid_64QAM_FullRB

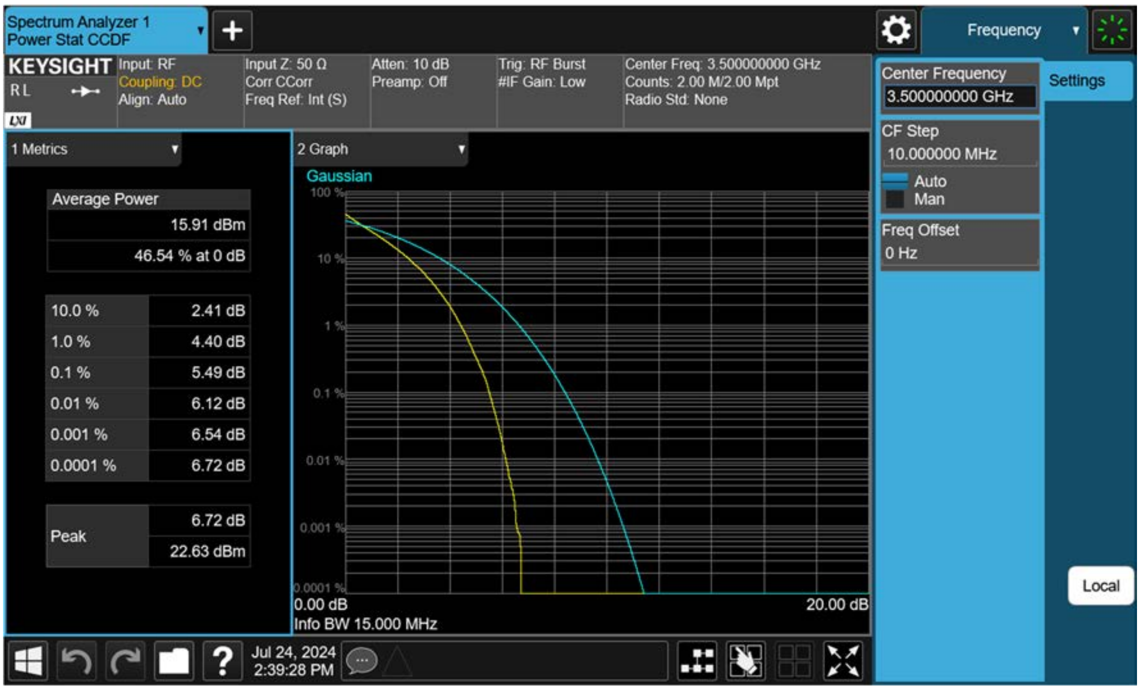
LTE B42_10 M_PAR_Mid_QPSK_FullRB



LTE B42_10 M_PAR_Mid_16QAM_FullRB

LTE B42_10 M_PAR_Mid_64QAM_FullRB

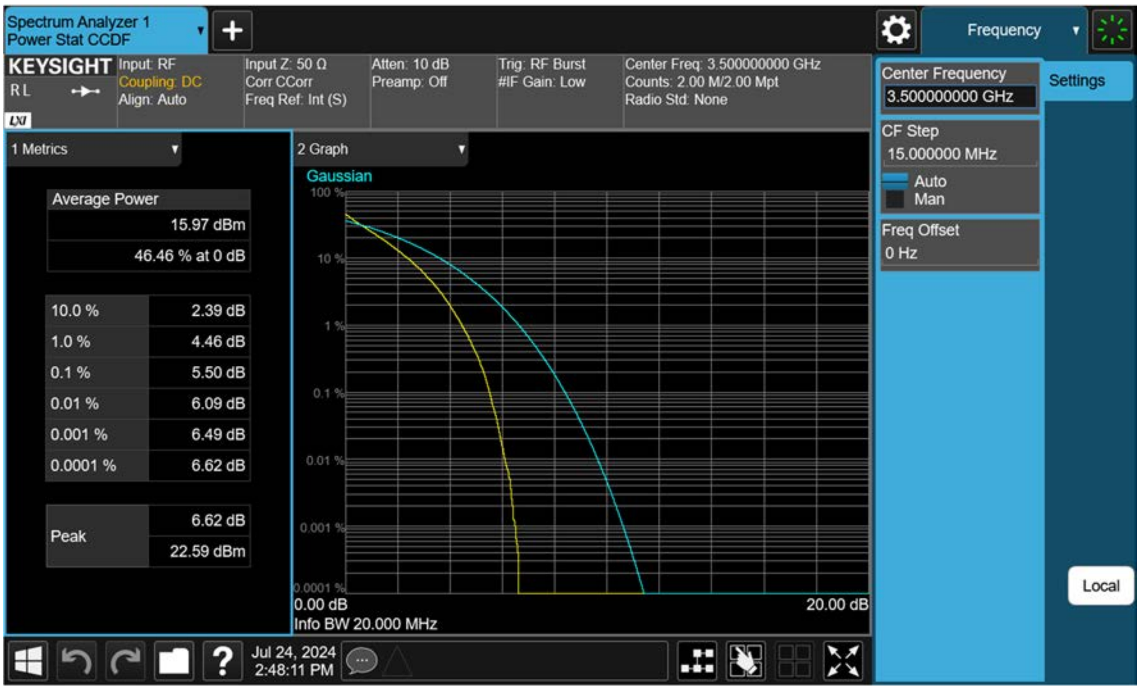
LTE B42_15 M_PAR_Mid_QPSK_FullRB



LTE B42_15 M_PAR_Mid_16QAM_FullRB

LTE B42_15 M_PAR_Mid_64QAM_FullRB

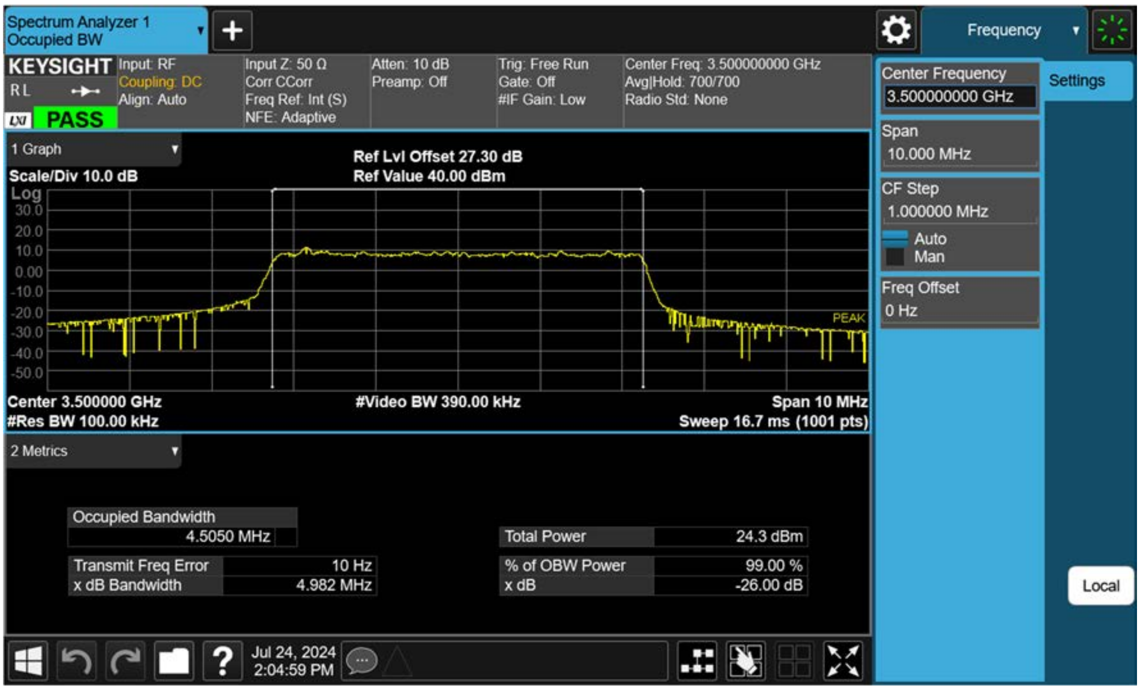
LTE B42_20 M_PAR_Mid_QPSK_FullRB



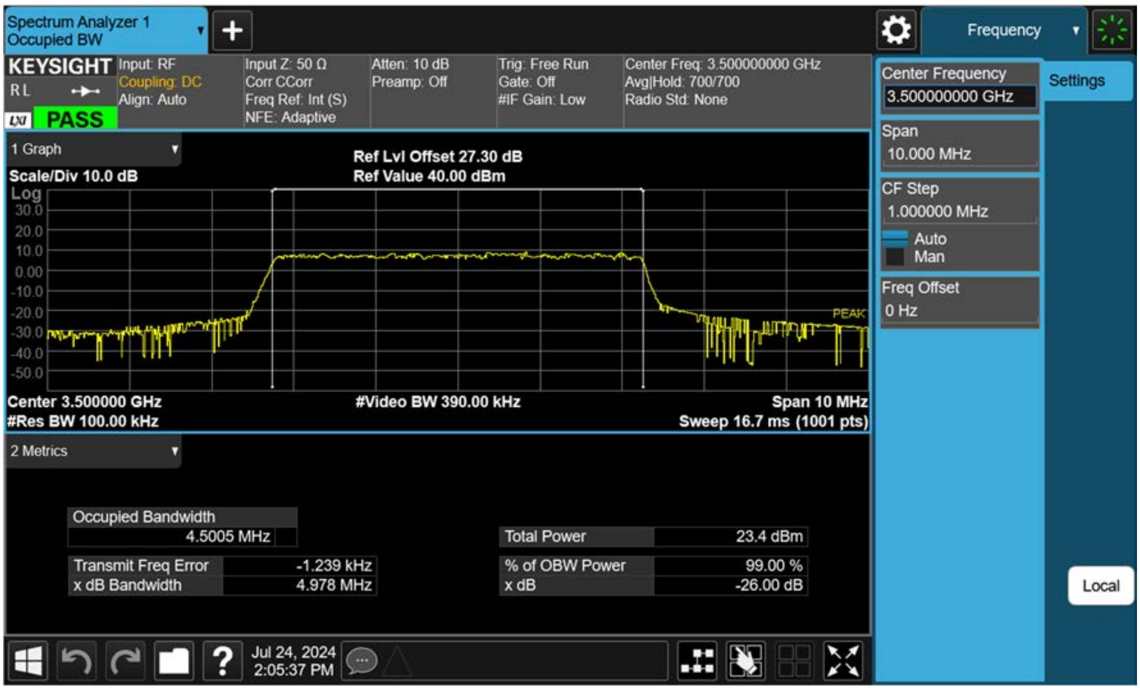
LTE B42_20 M_PAR_Mid_16QAM_FullRB

LTE B42_20 M_PAR_Mid_64QAM_FullRB

LTE B42_5 M_OBW_Mid_QPSK_FullRB



LTE B42_5 M_OBW_Mid_16QAM_FullRB



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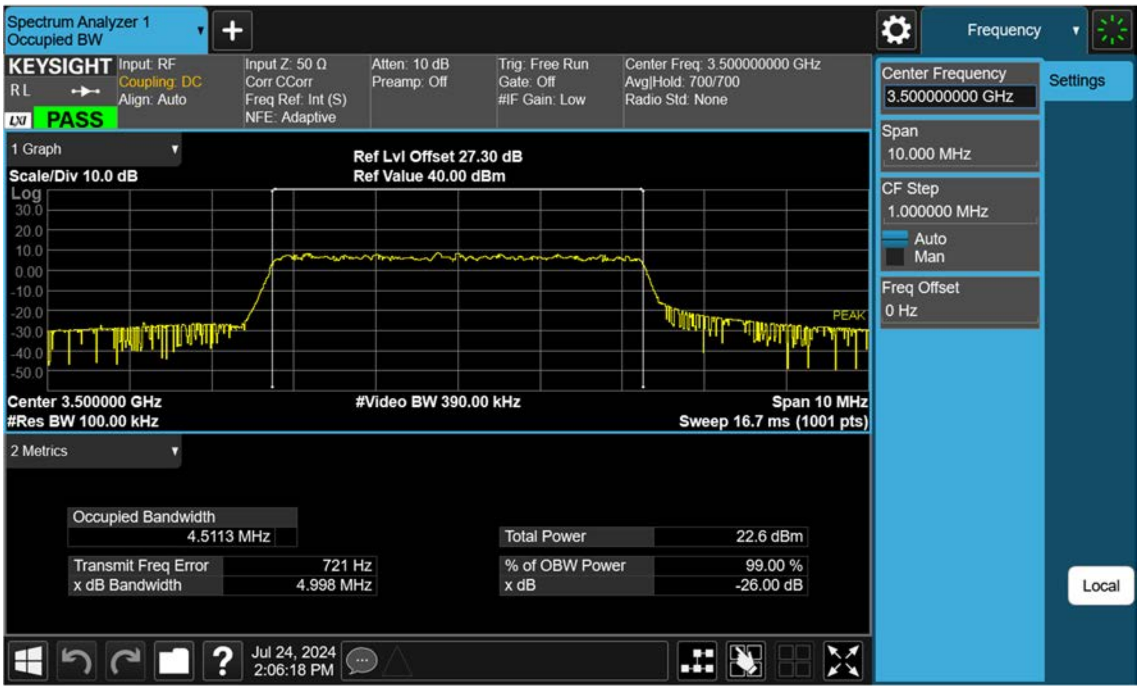

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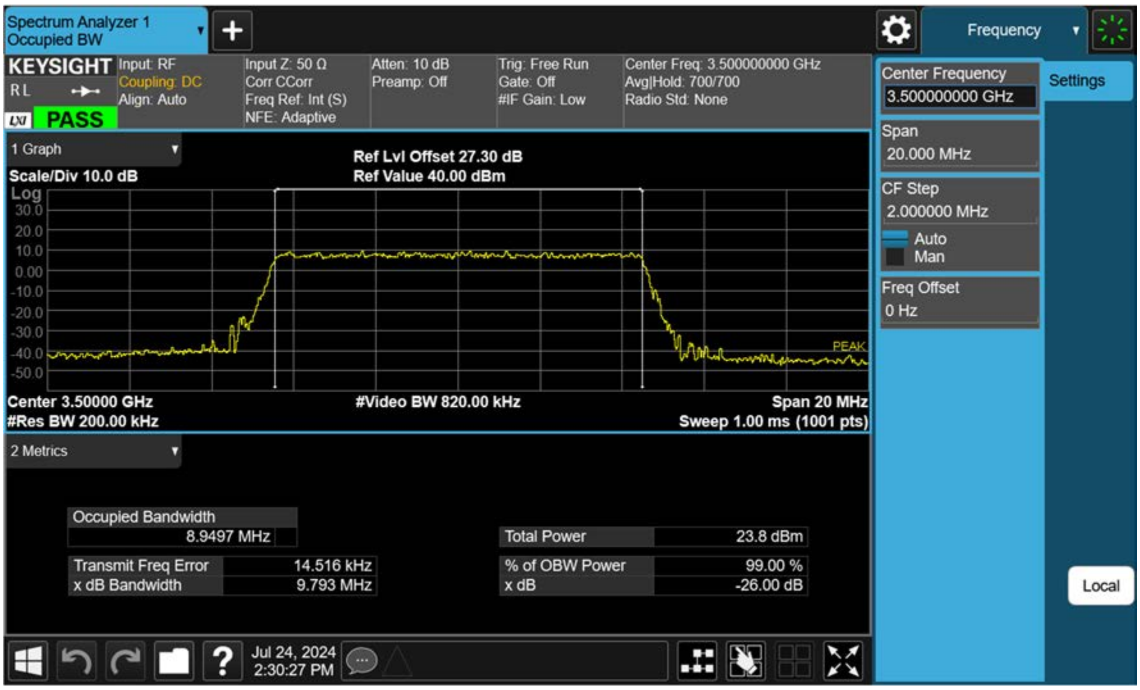

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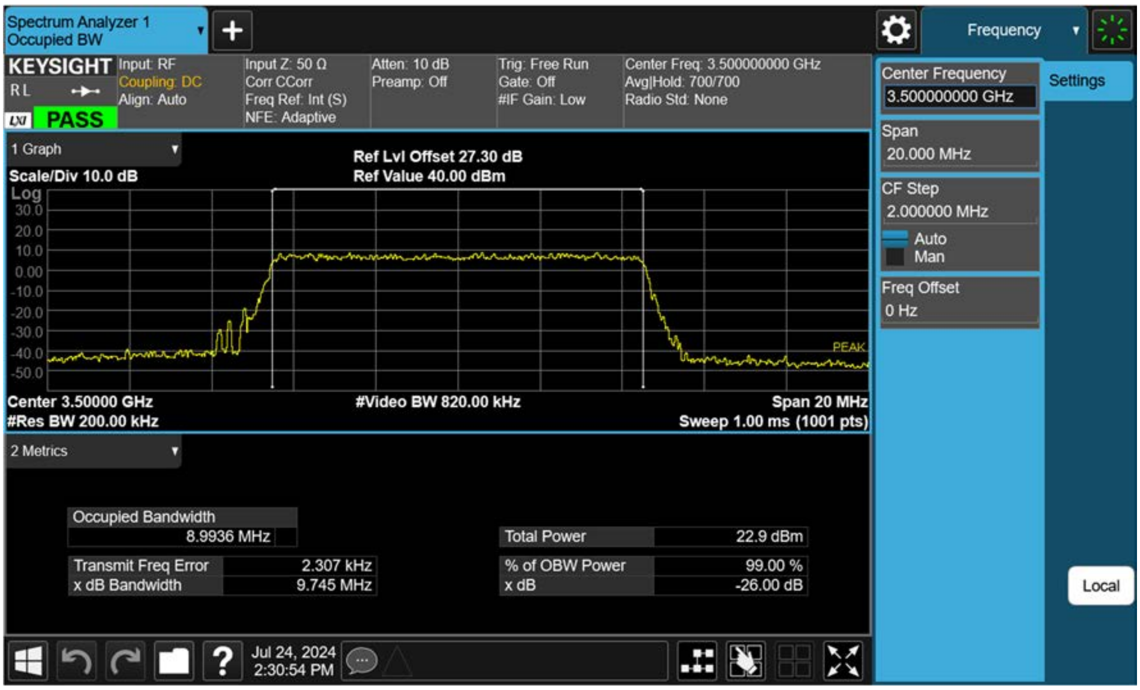
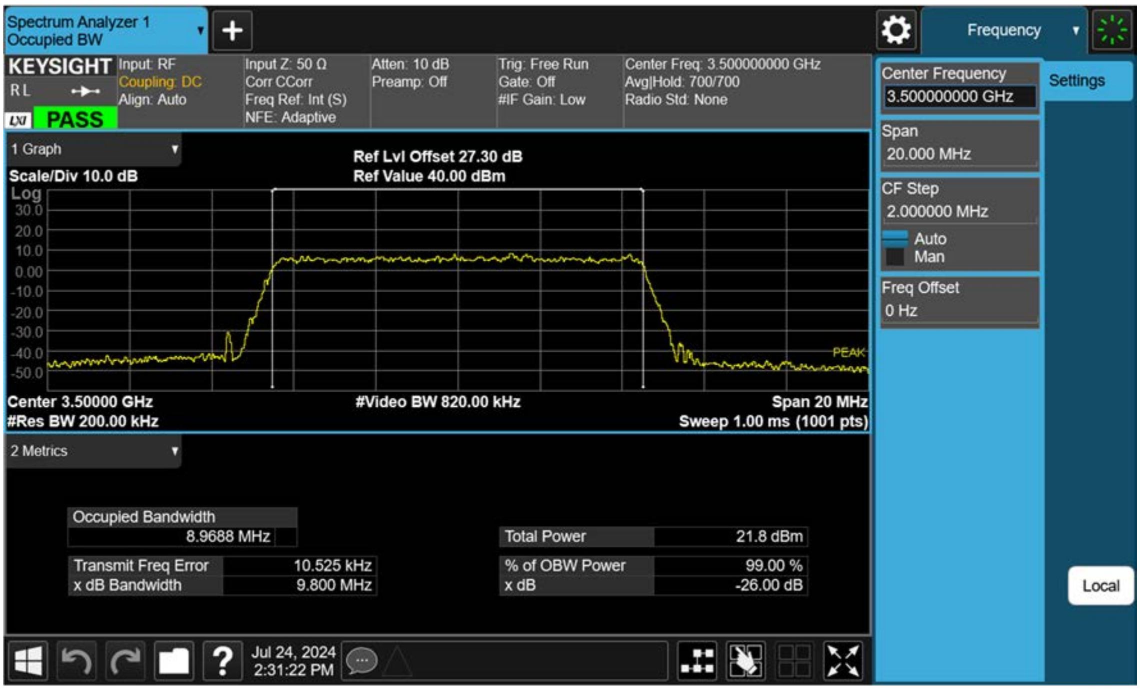
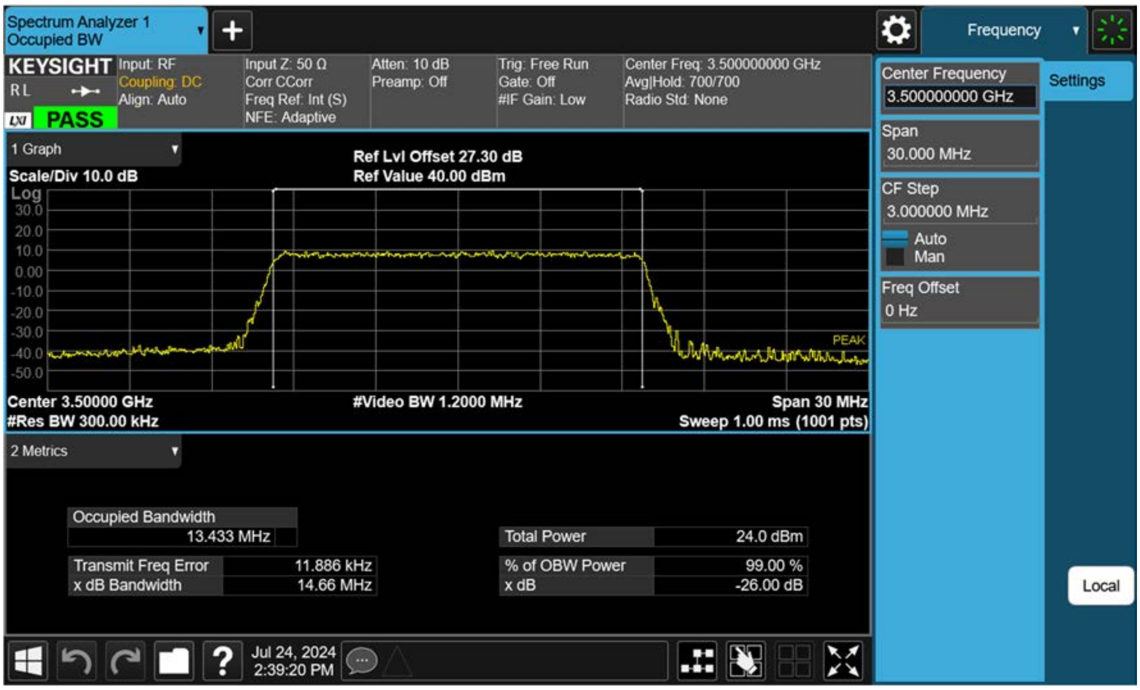


LTE B42_10 M_OBW_Mid_64QAM_FullRB



LTE B42_15 M_OBW_Mid_QPSK_FullRB



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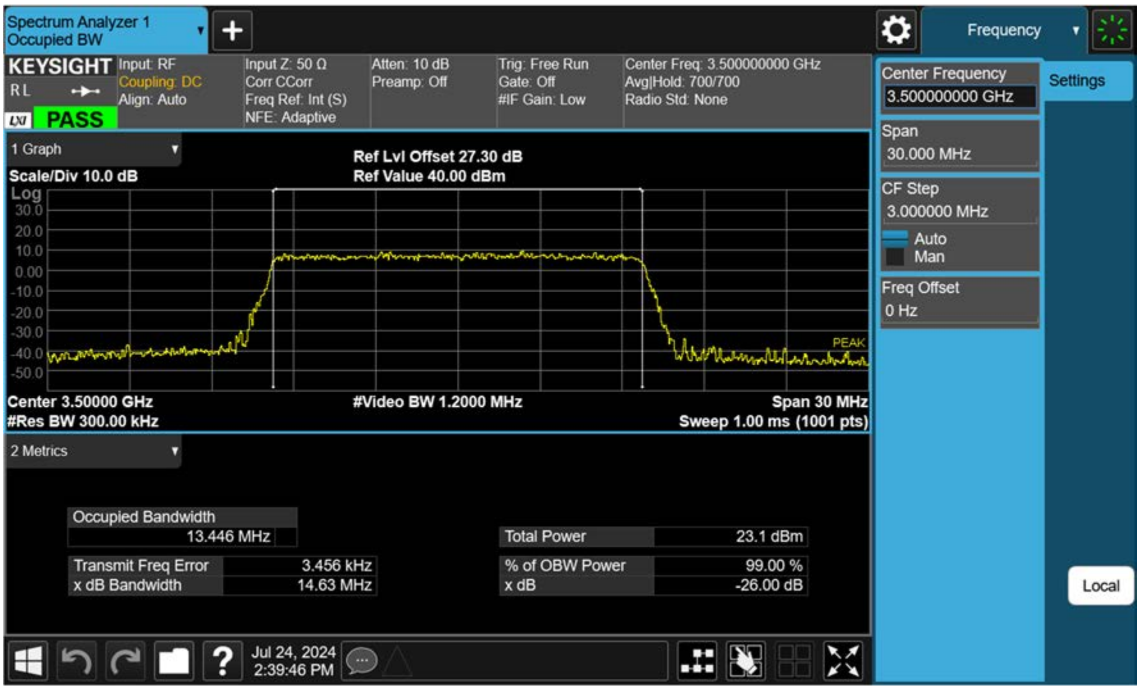
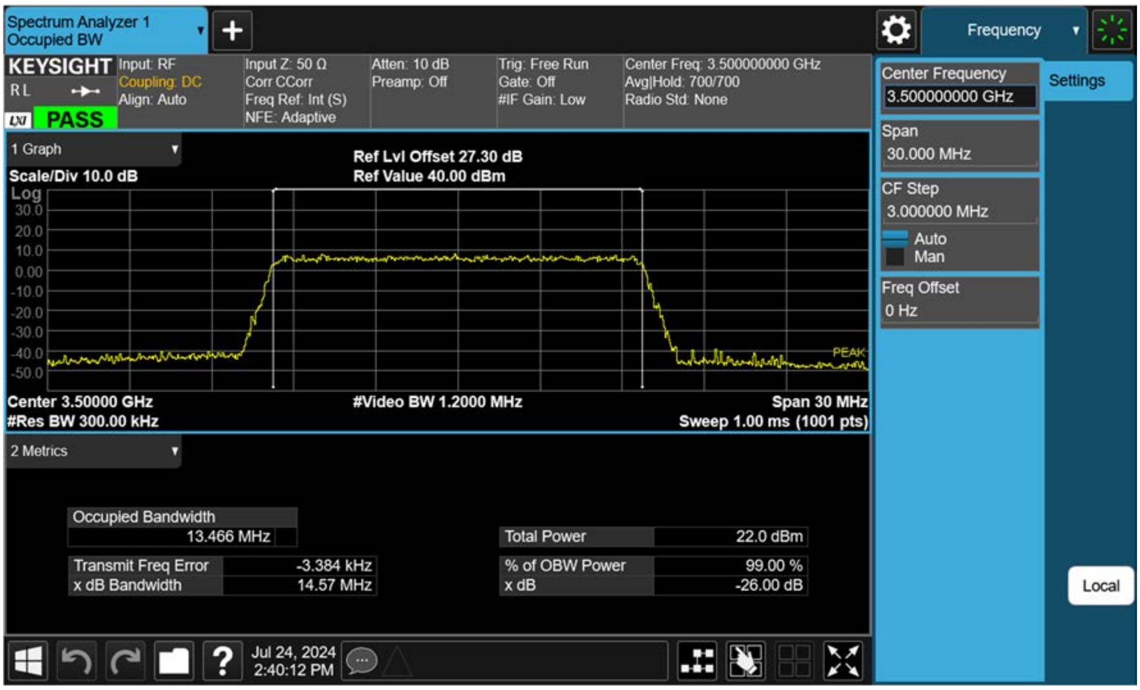


LTE B42_15 M_OBW_Mid_64QAM_FullRB



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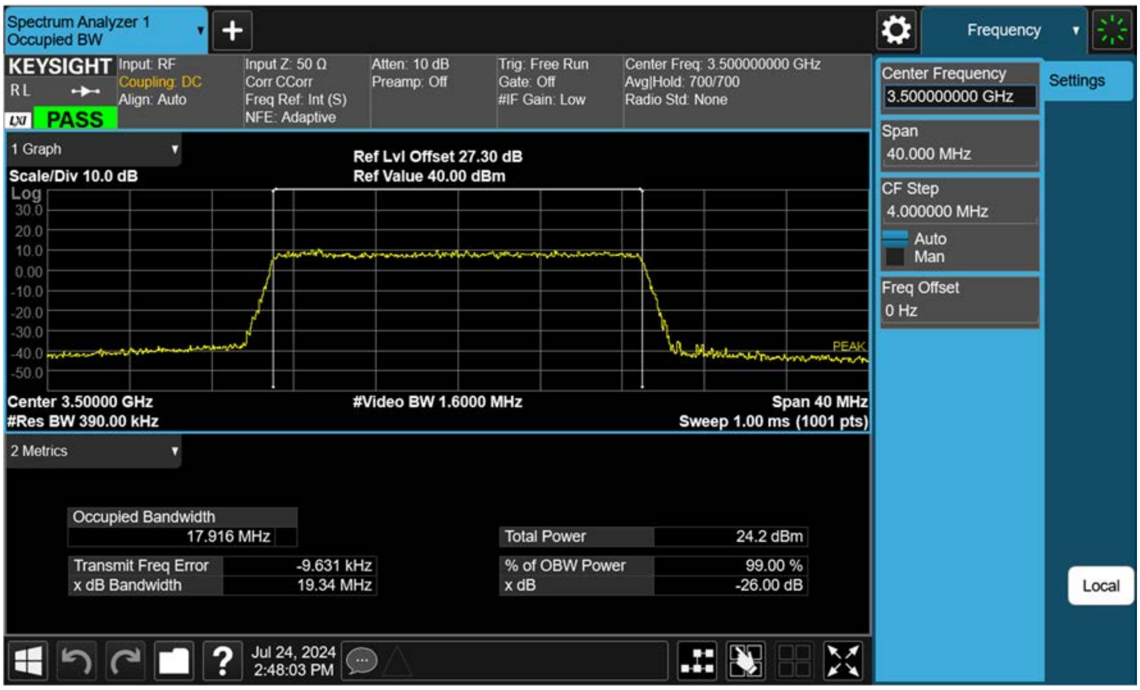

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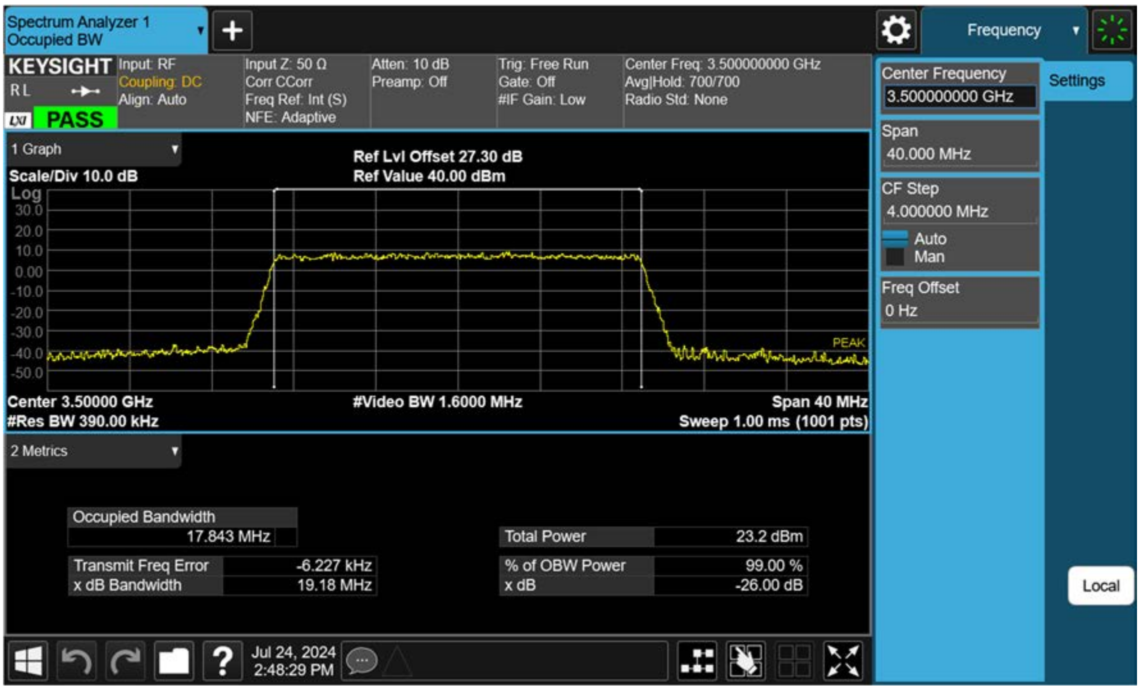

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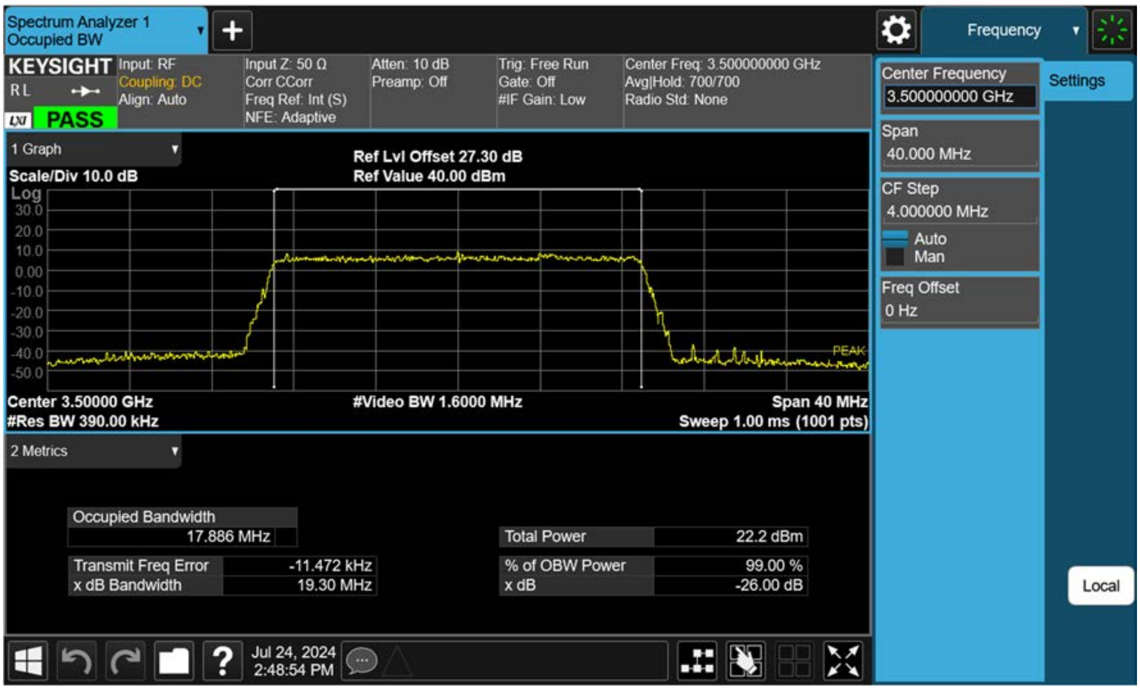
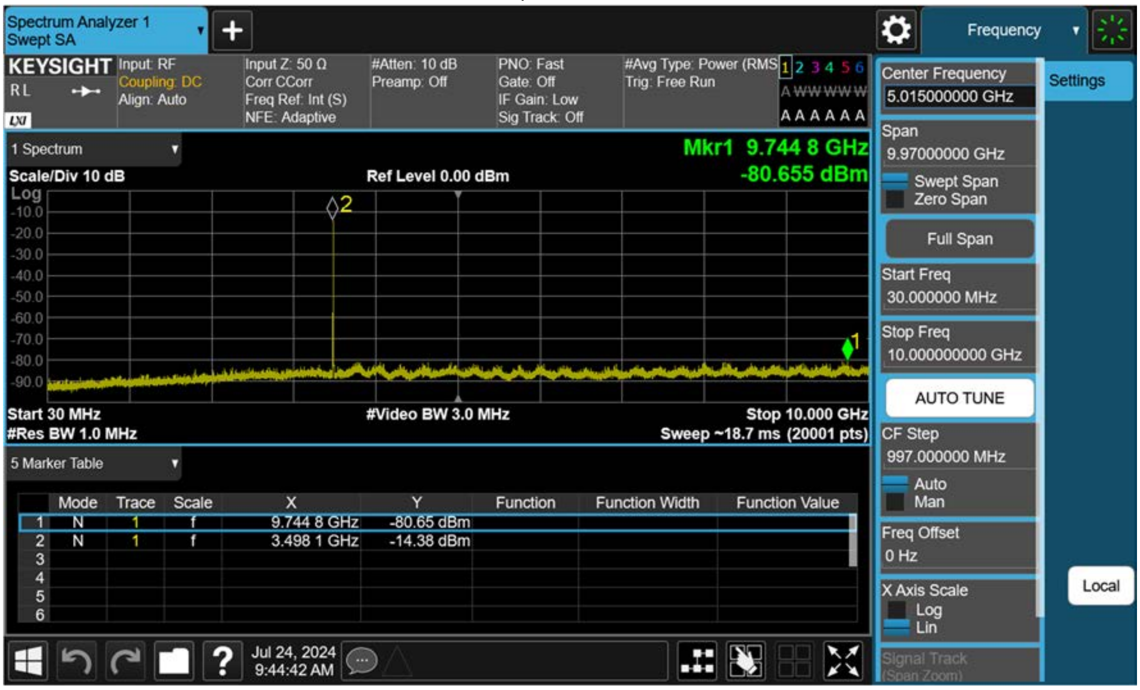


LTE B42_5 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB

LTE B42_5 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



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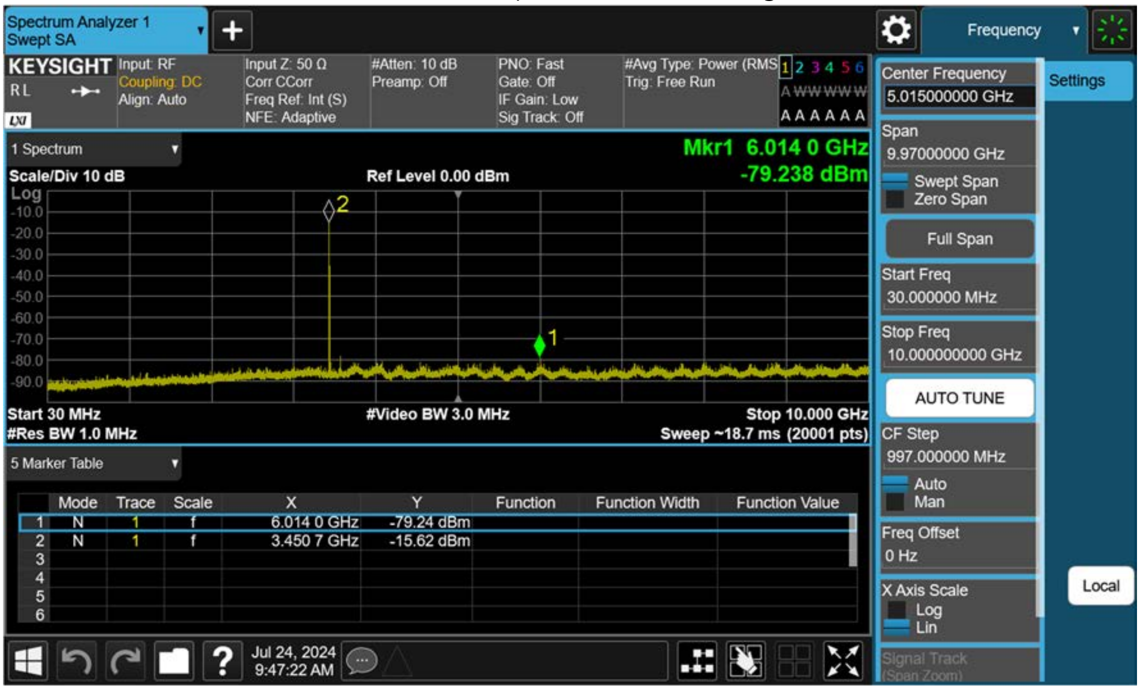

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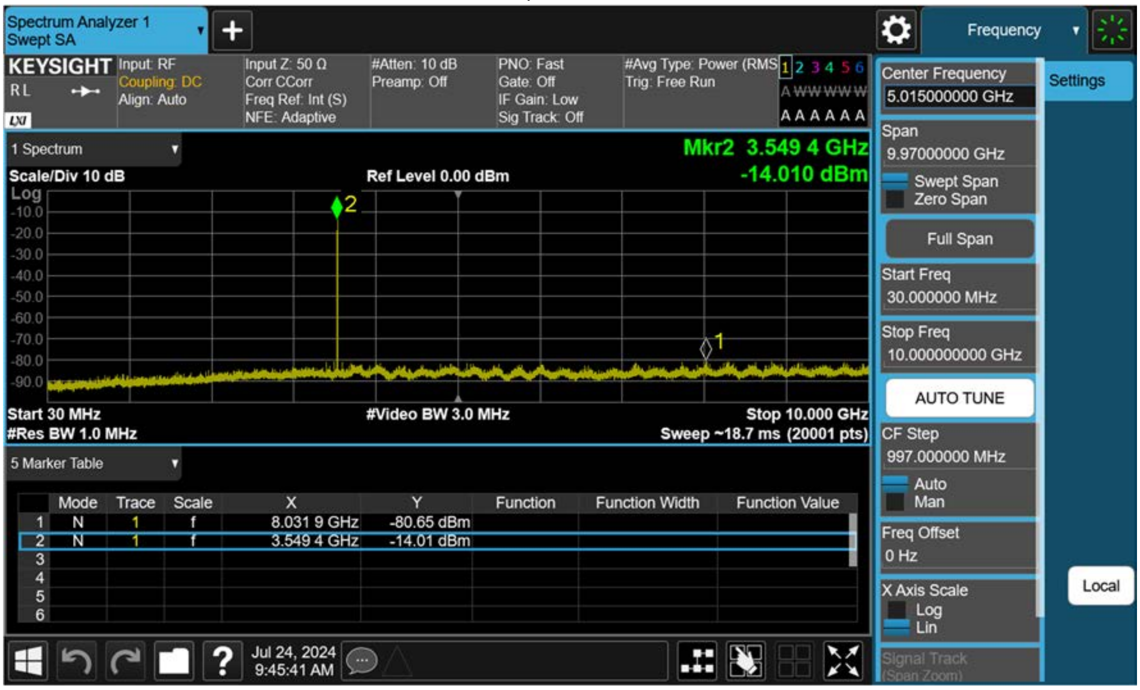
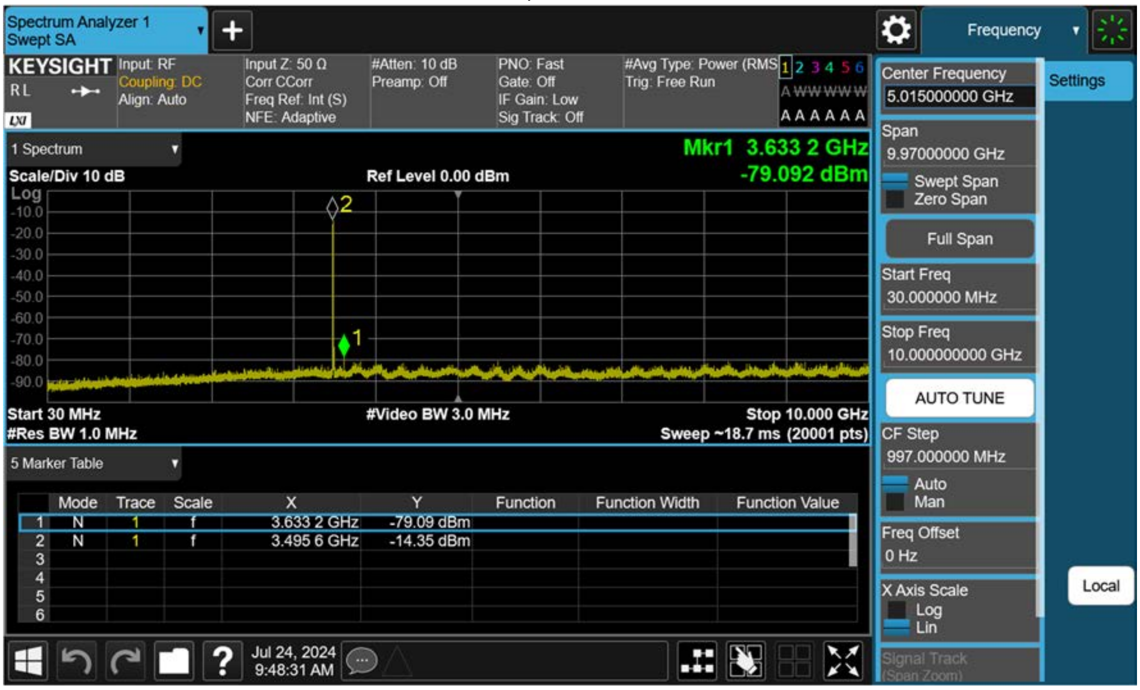
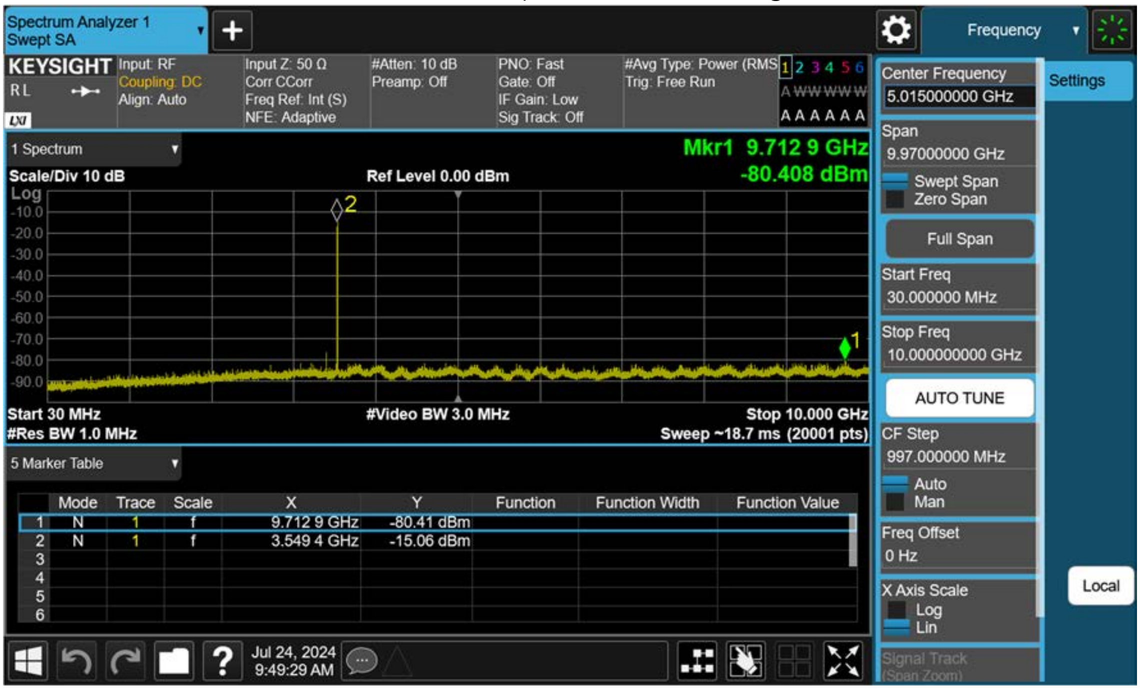


LTE B42_10 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



LTE B42_10 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



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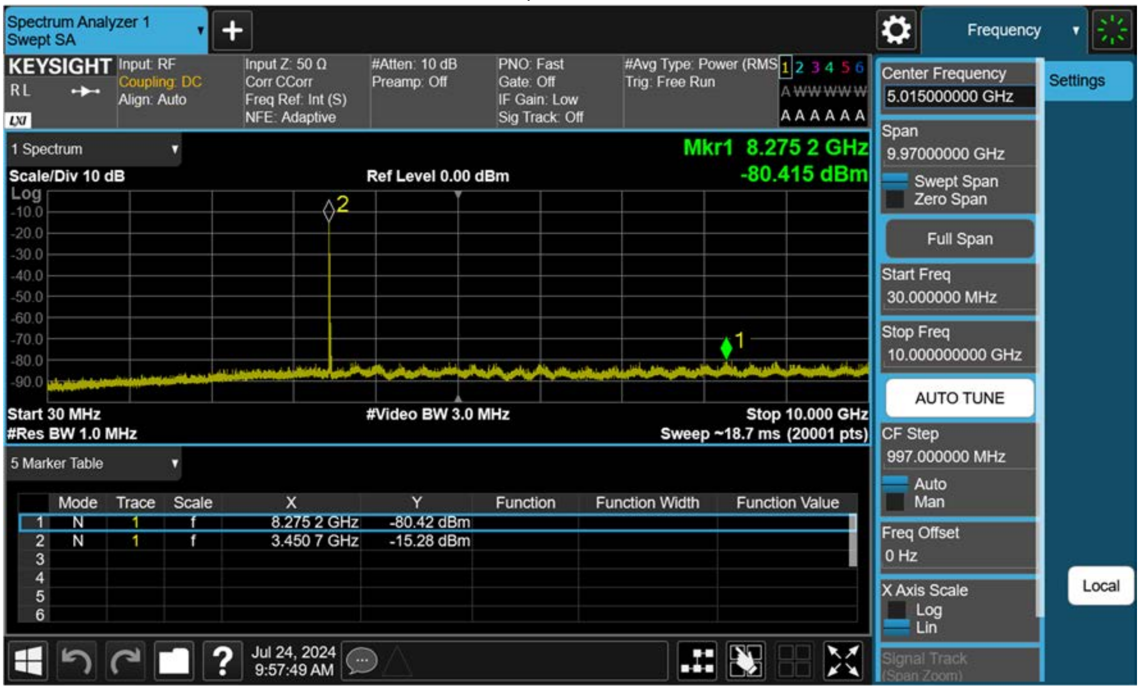
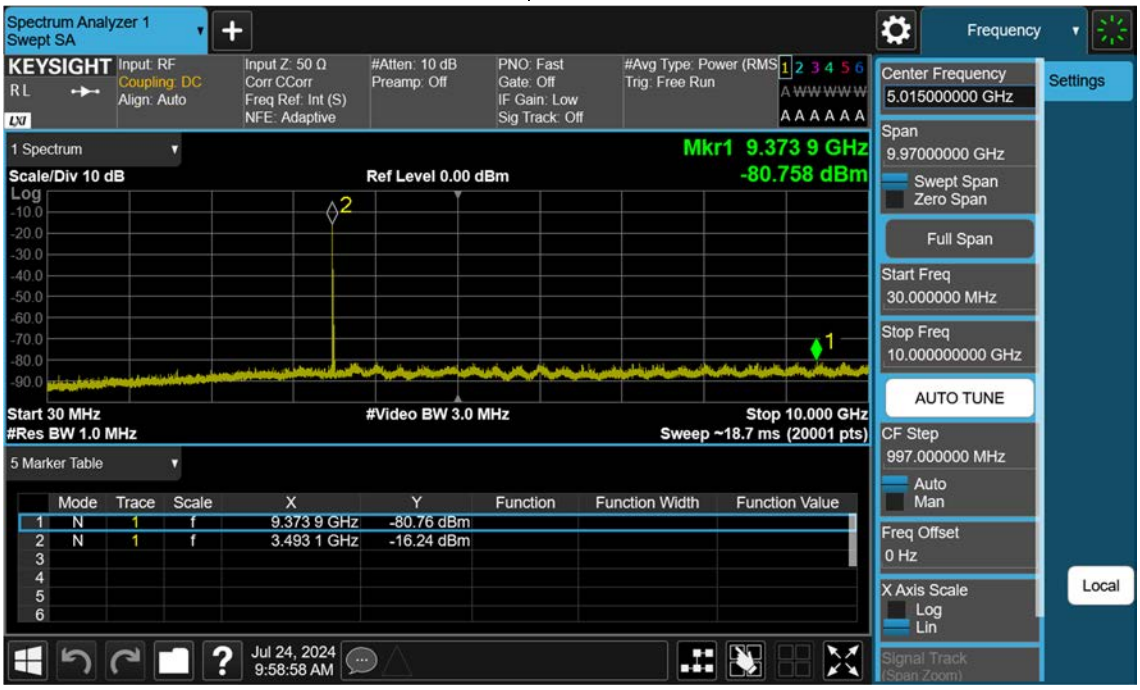
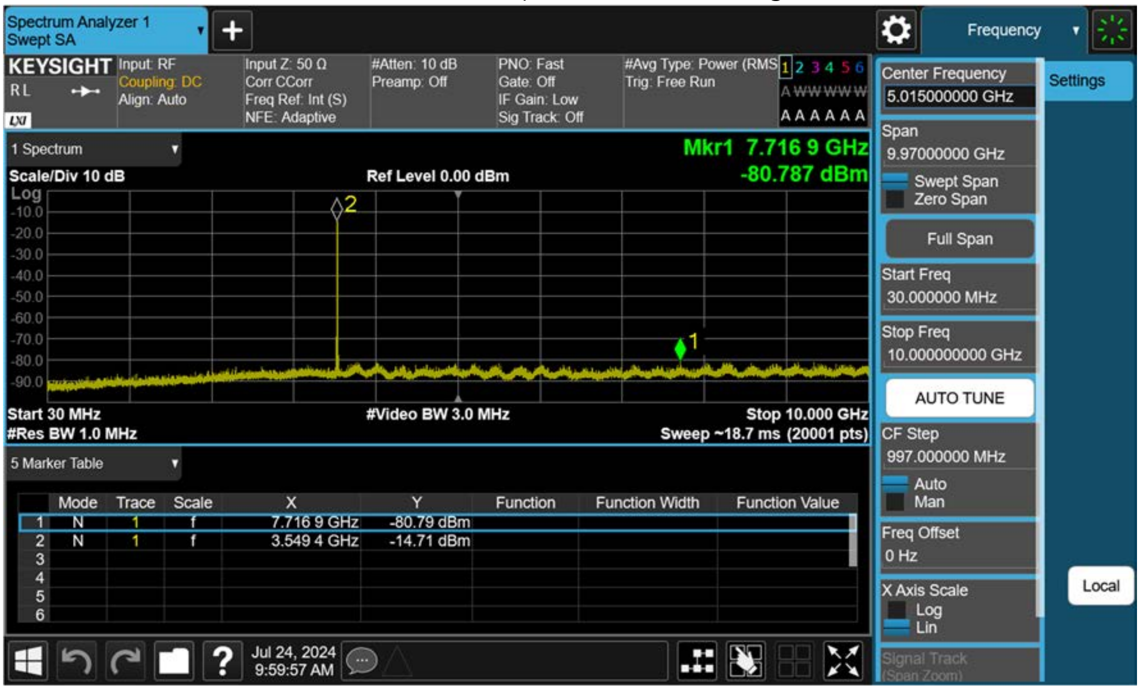


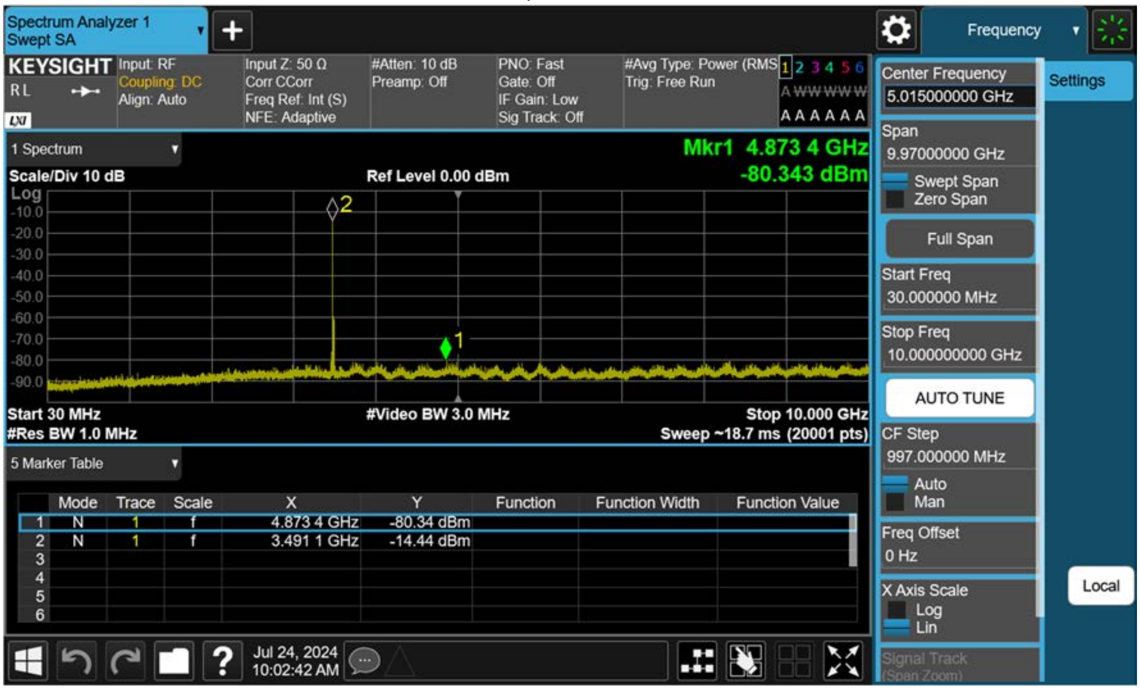
LTE B42_15 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



LTE B42_15 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



LTE B42_20 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



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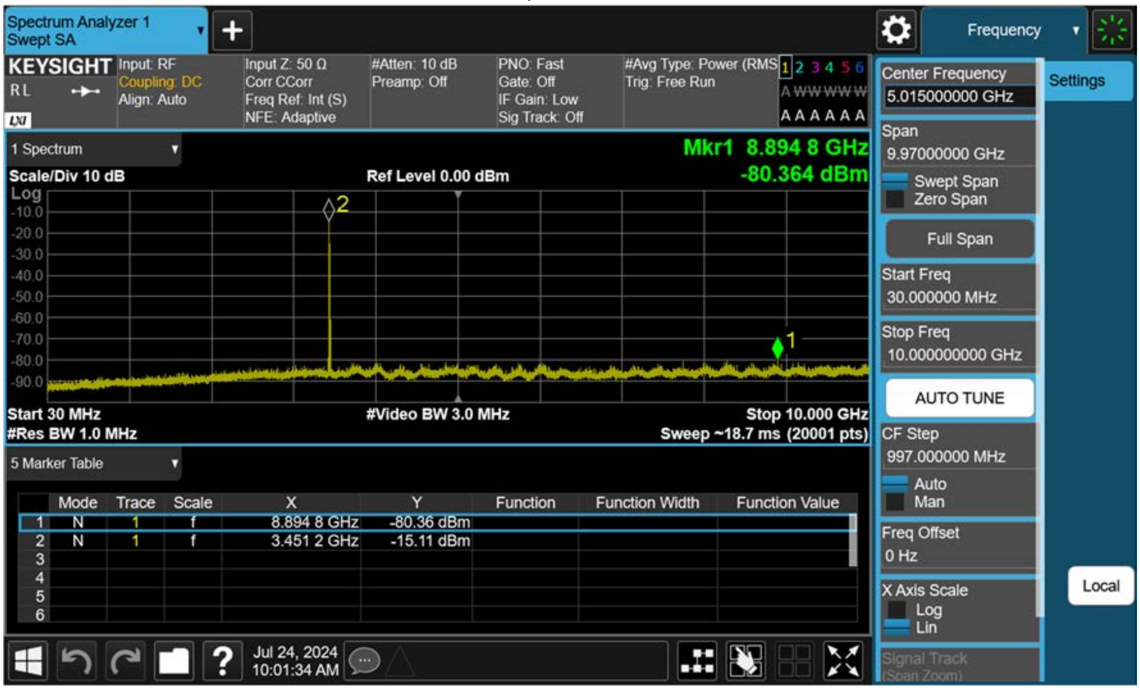
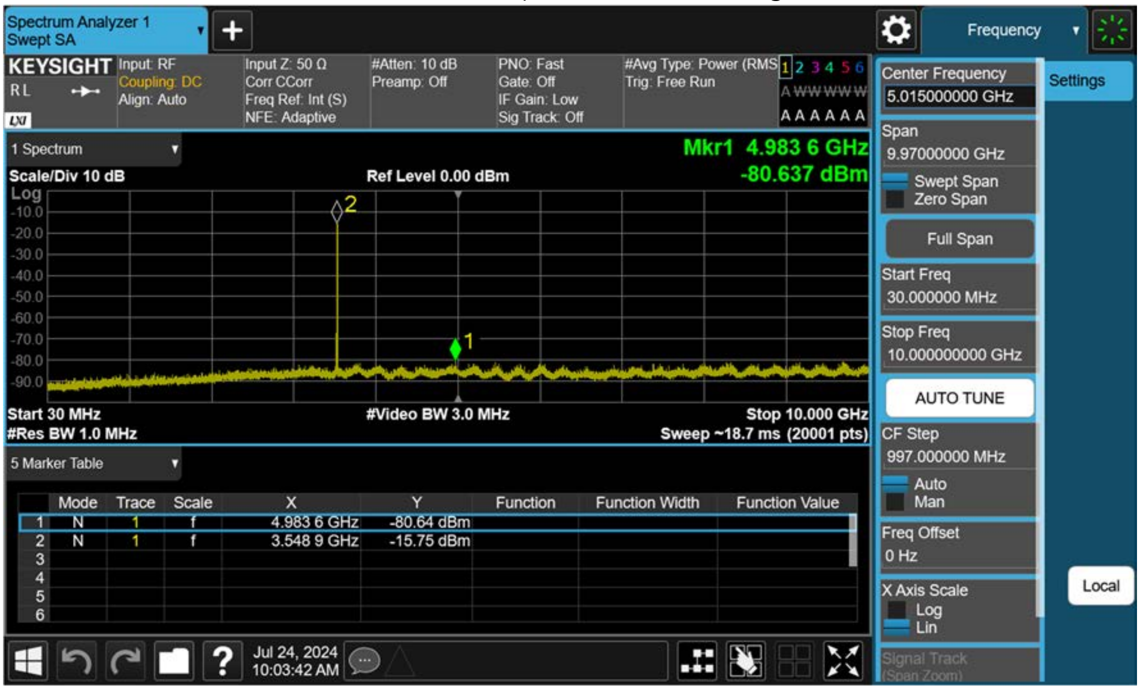
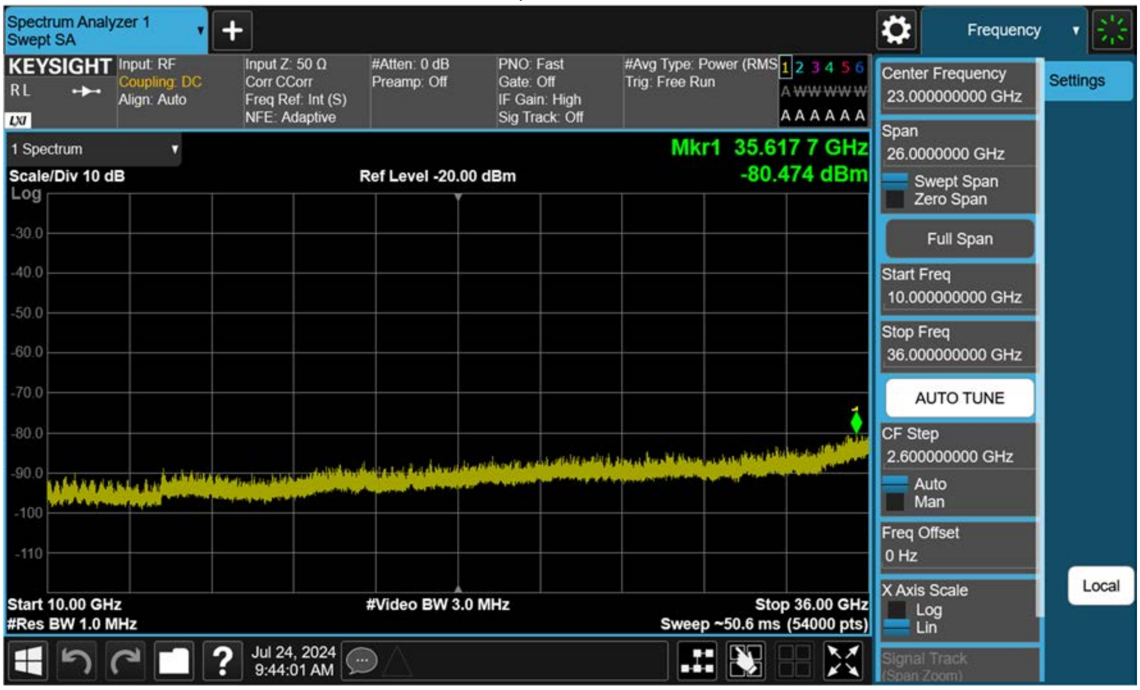


LTE B42_20 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



LTE B42_5 M_Conducted Spurious(Above10 G)_Low_QPSK_1RB



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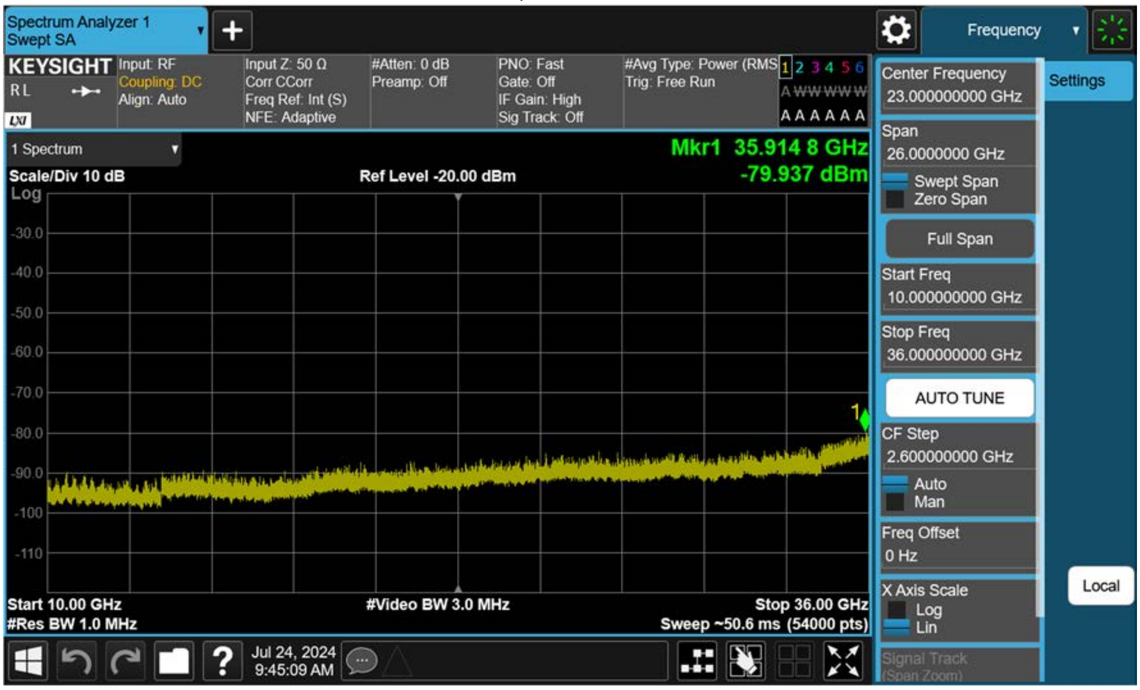
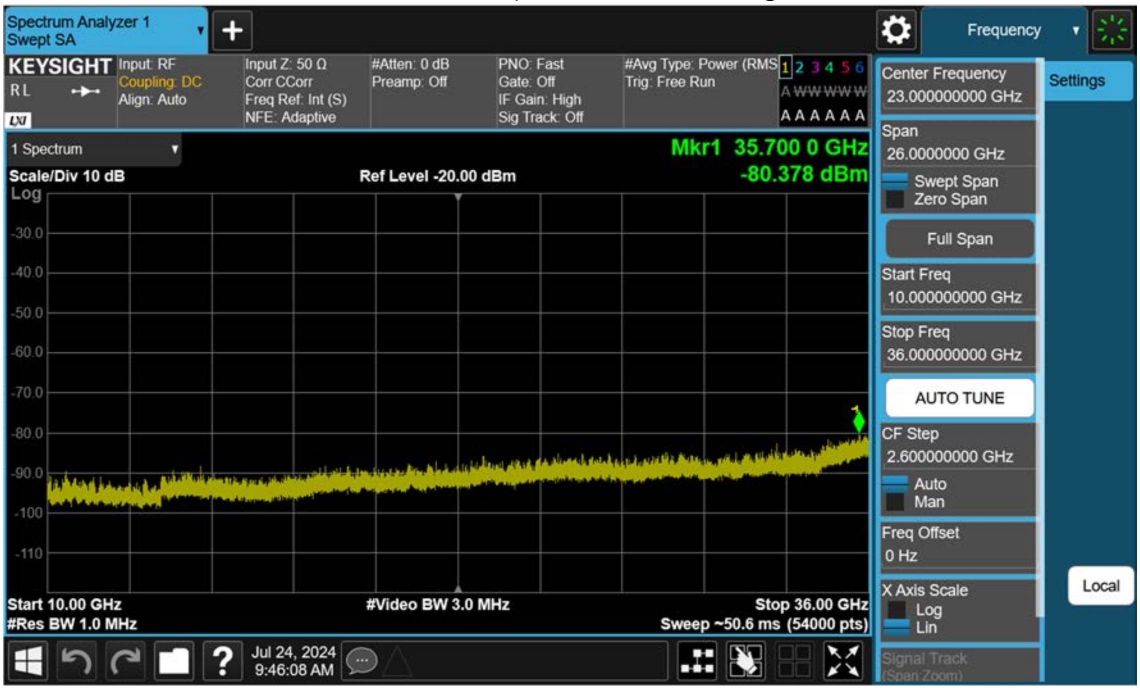


LTE B42_5 M_Conducted Spurious(Above10 G)_High_QPSK_1RB



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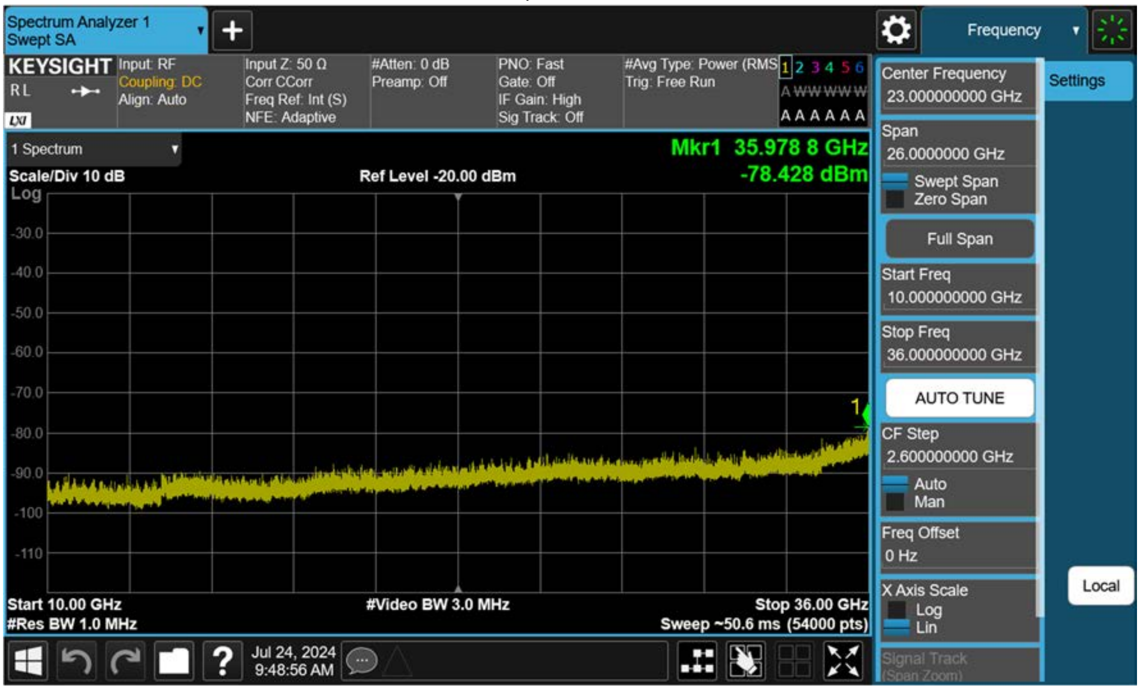
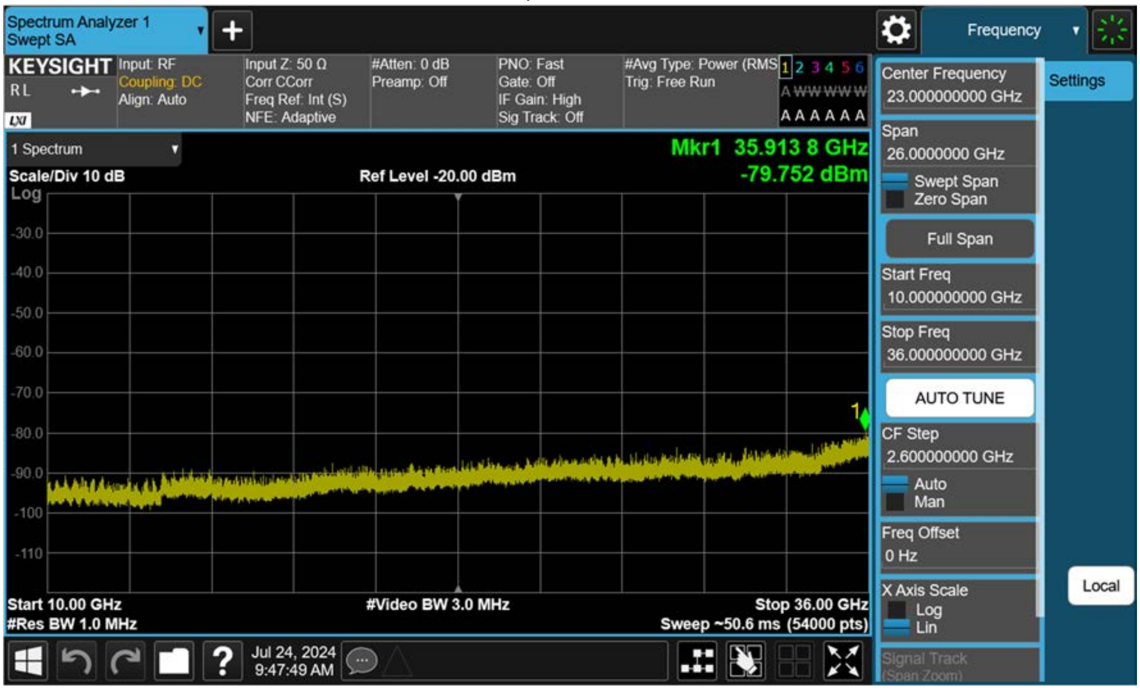
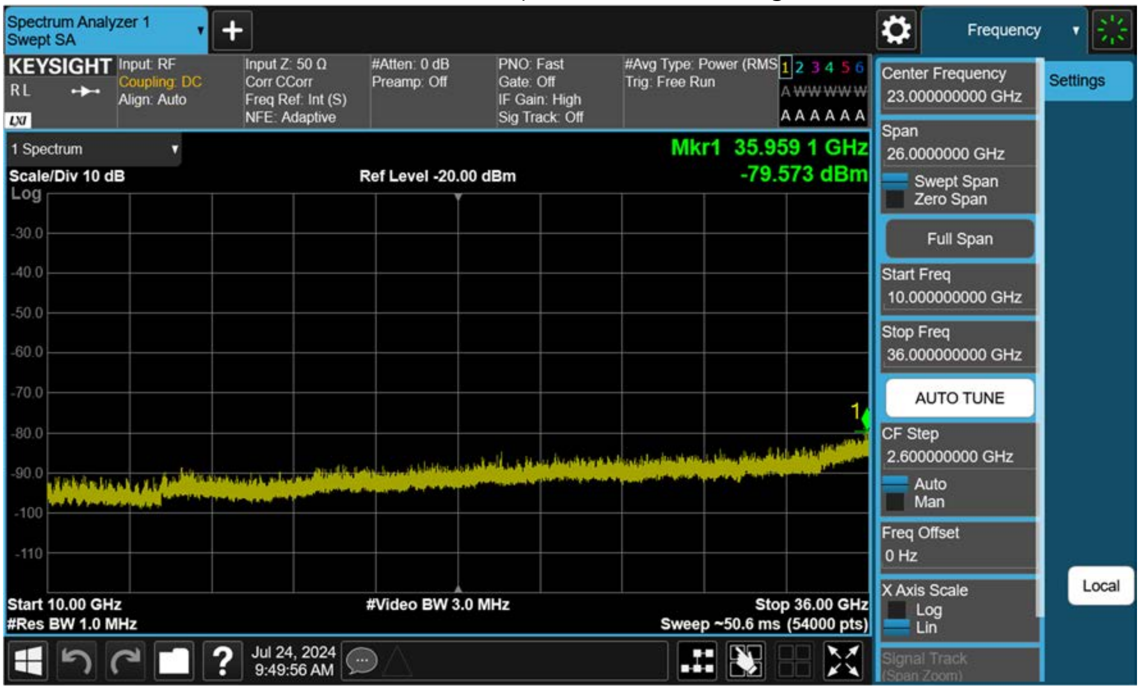


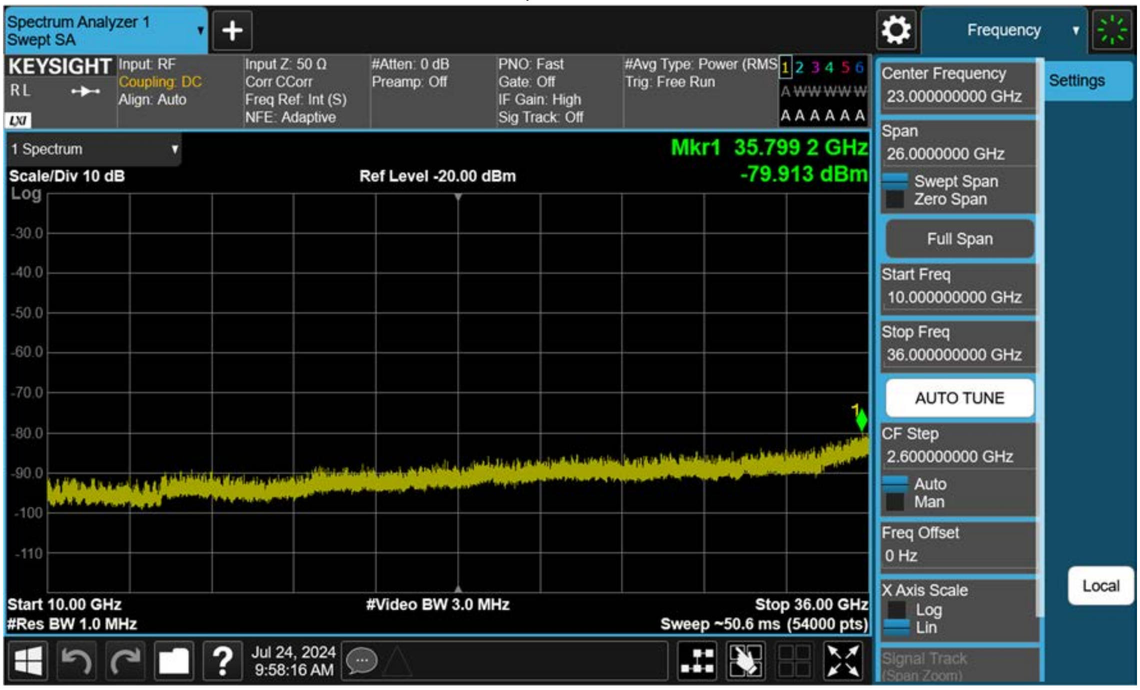
LTE B42_10 M_Conducted Spurious(Above10 G)_Mid_QPSK_1RB



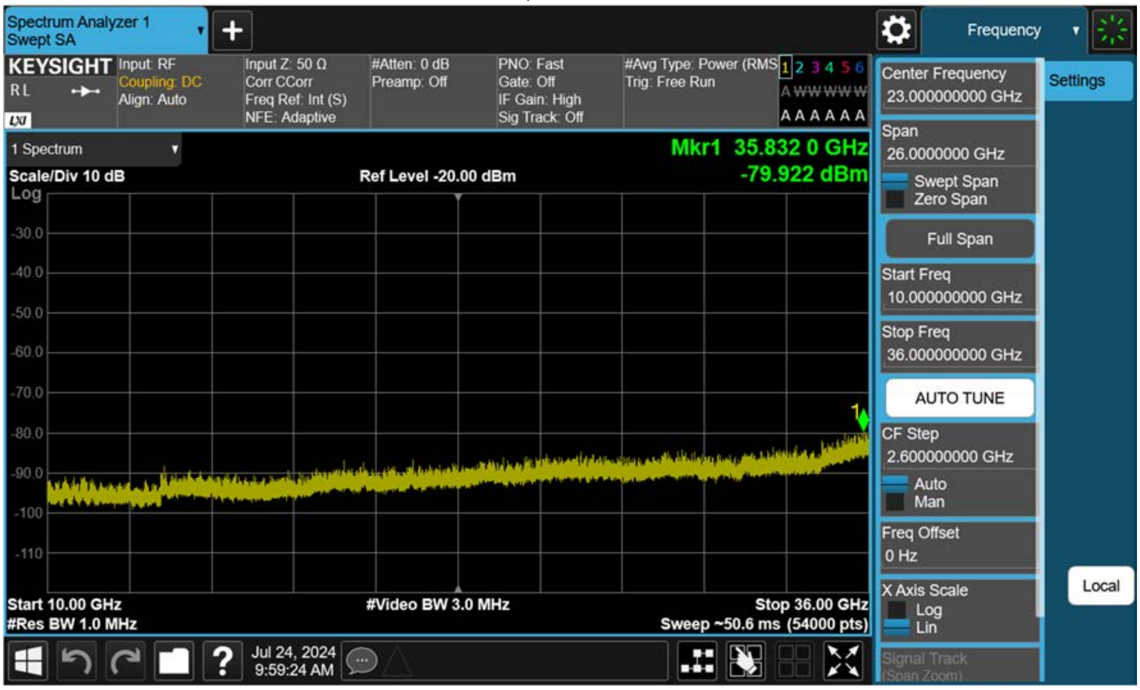
LTE B42_10 M_Conducted Spurious(Above10 G)_High_QPSK_1RB



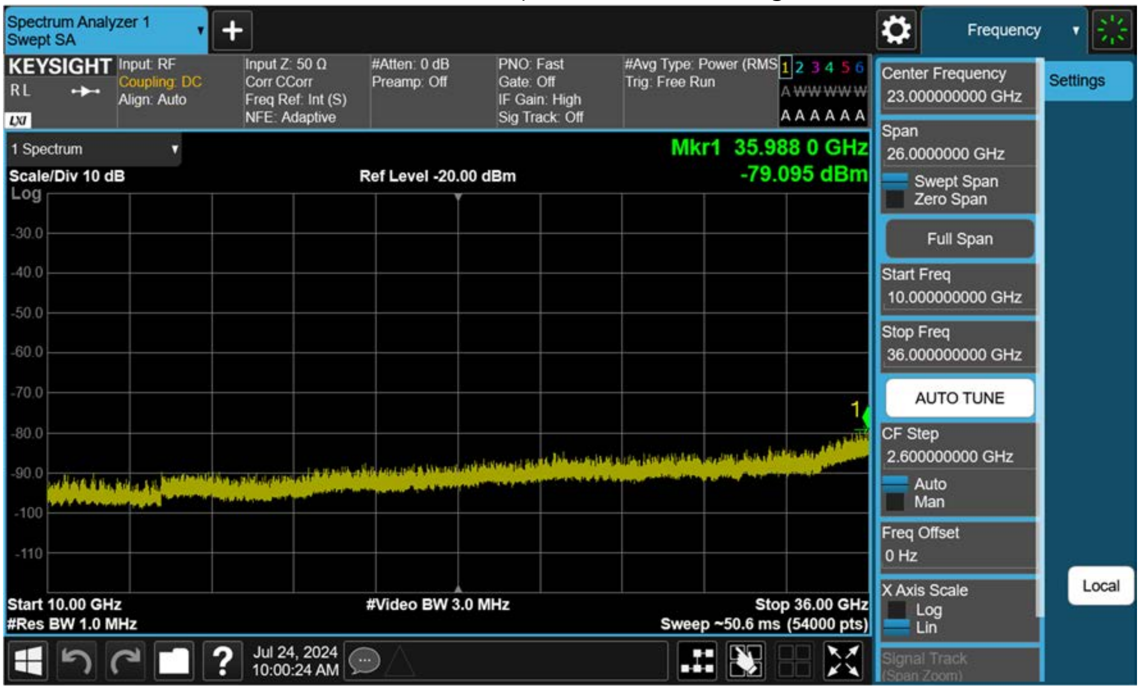
LTE B42_15 M_Conducted Spurious(Above10 G)_Low_QPSK_1RB



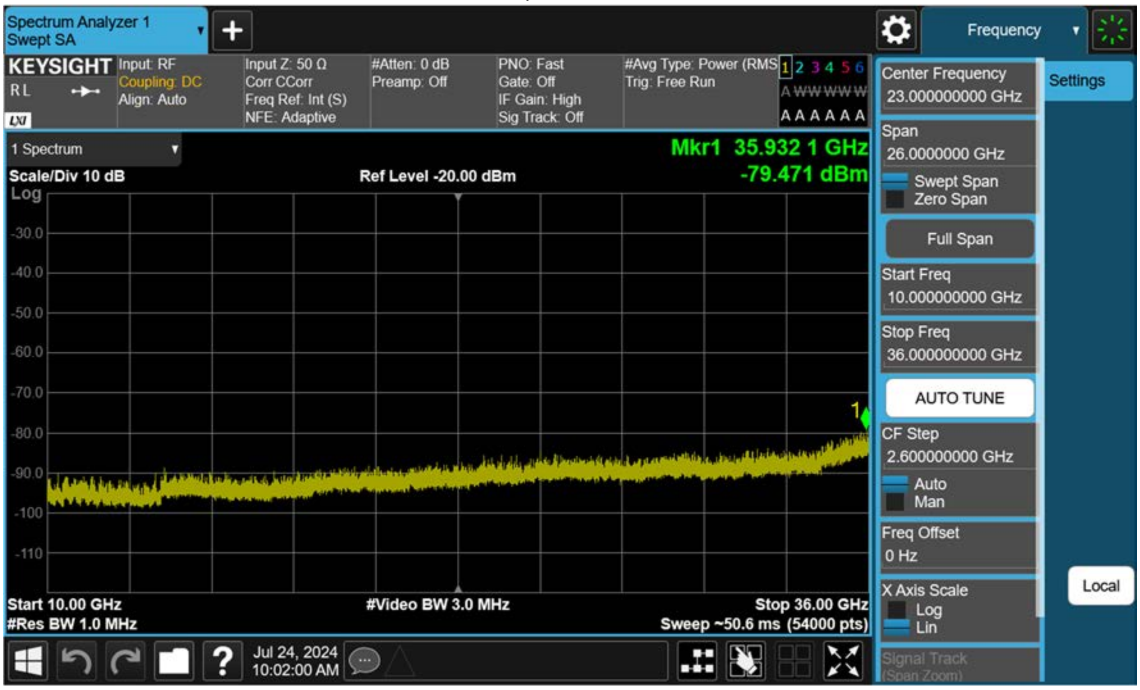
LTE B42_15 M_Conducted Spurious(Above10 G)_Mid_QPSK_1RB



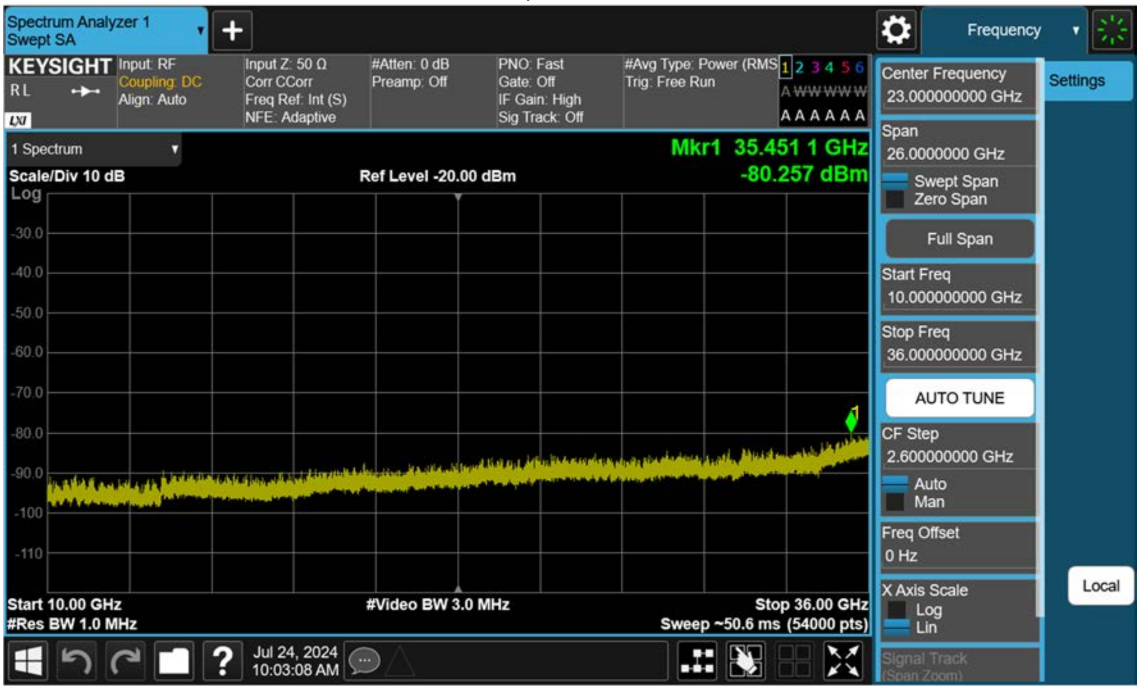
LTE B42_15 M_Conducted Spurious(Above10 G)_High_QPSK_1RB



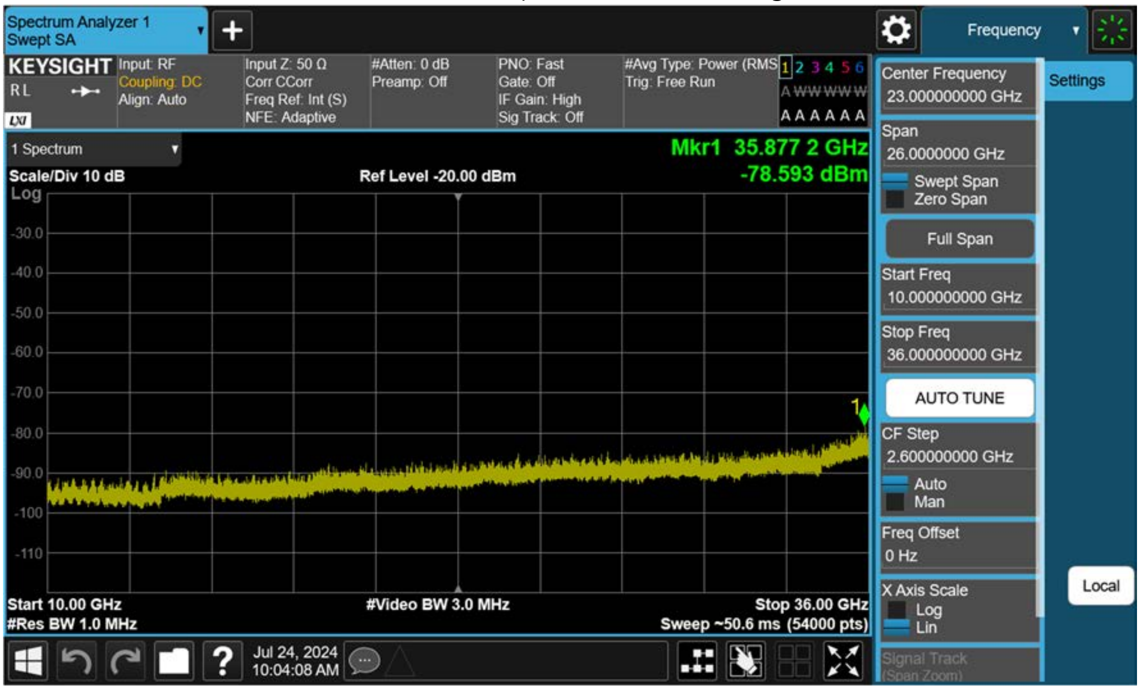
LTE B42_20 M_Conducted Spurious(Above10 G)_Low_QPSK_1RB



LTE B42_20 M_Conducted Spurious(Above10 G)_Mid_QPSK_1RB

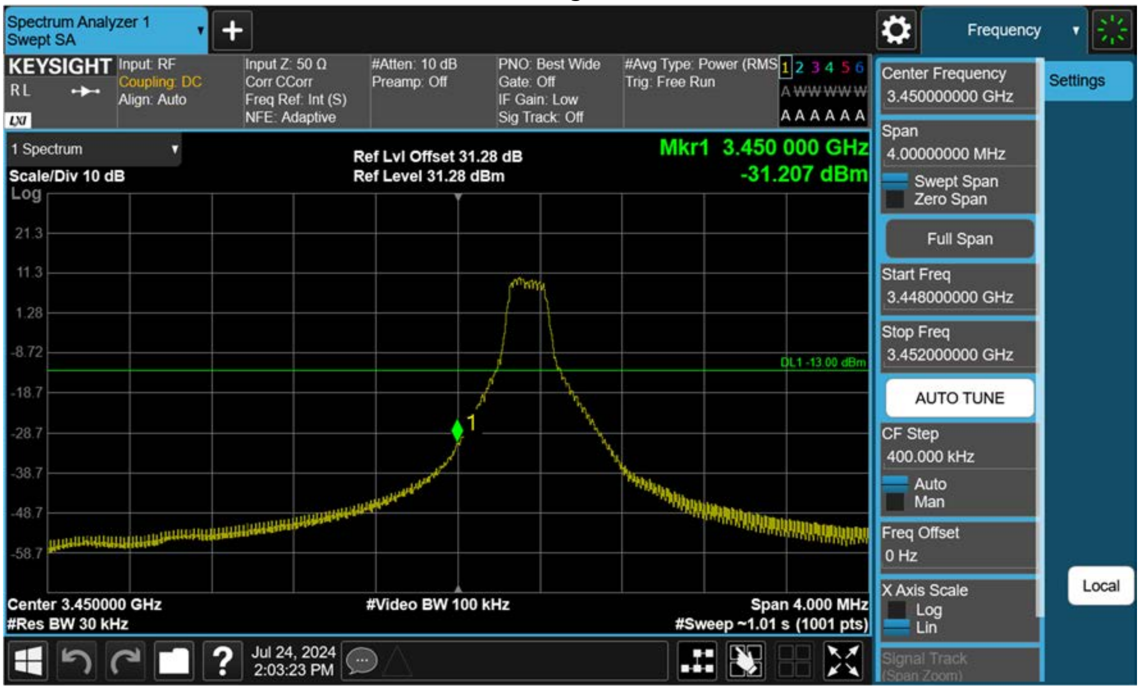


LTE B42_20 M_Conducted Spurious(Above10 G)_High_QPSK_1RB



LTE B42_5 M_Band Edge_Low_QPSK_Full RB (1)

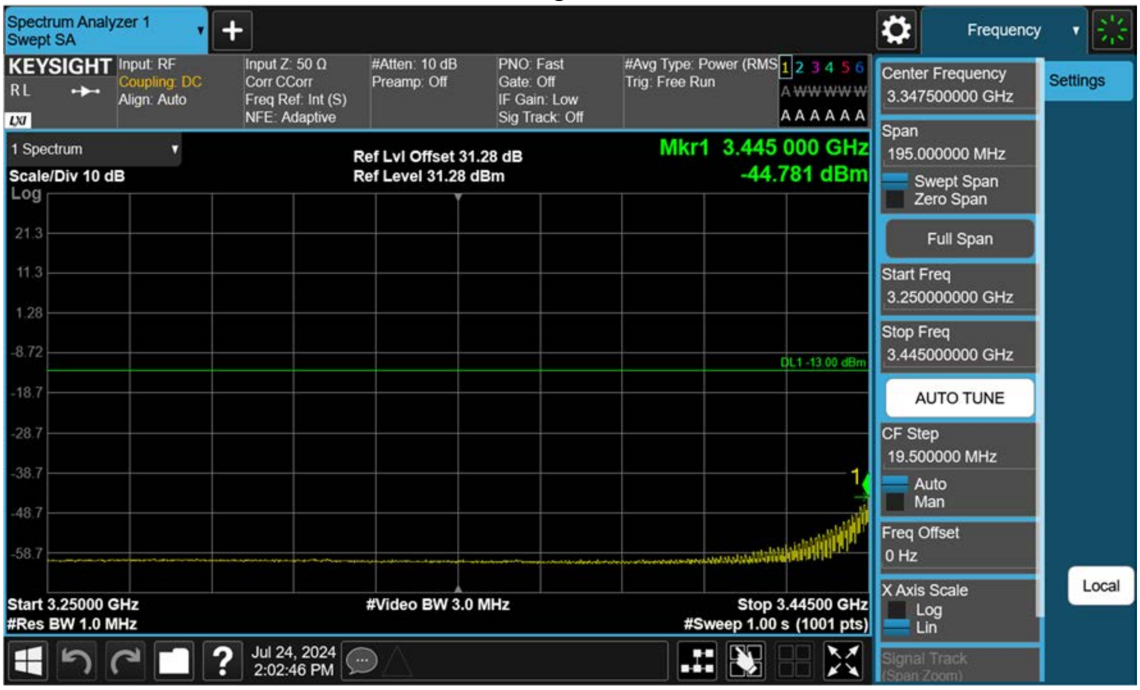
LTE B42_5 M_Band Edge_Low_QPSK_1RB (1)



LTE B42_5 M_Band Edge_Low_QPSK_Full RB (2)

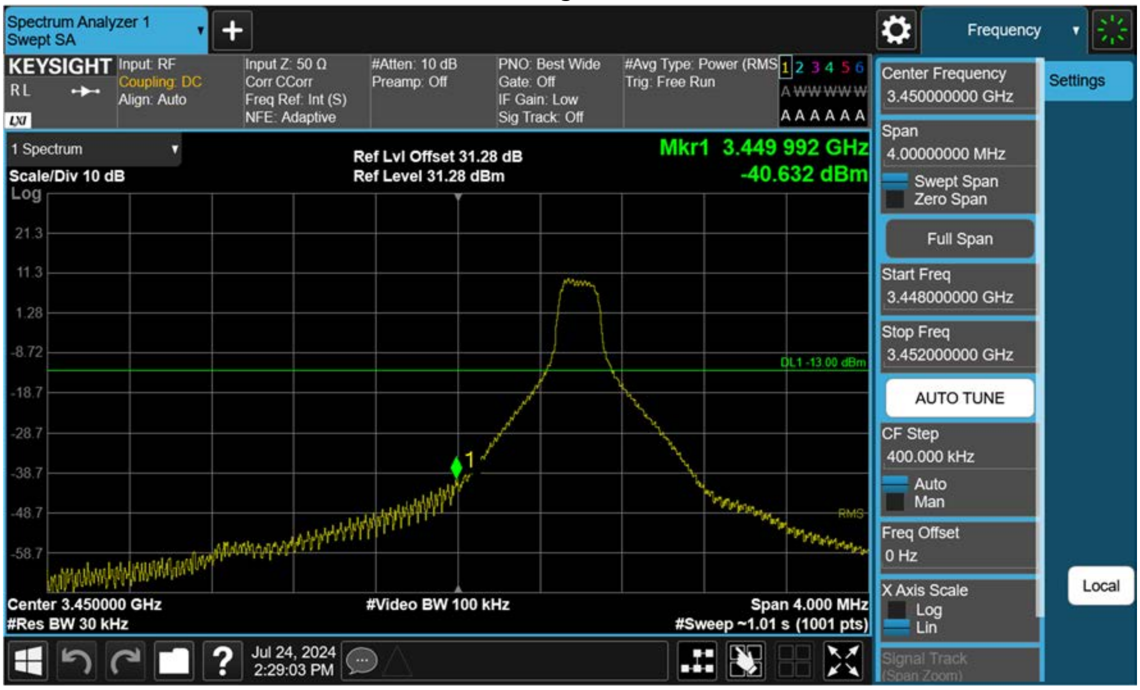
LTE B42_5 M_Band Edge_Low_QPSK_1RB (2)

LTE B42_5 M_Band Edge_Low_QPSK_Full RB (3)



LTE B42_5 M_Band Edge_Low_QPSK_1RB (3)

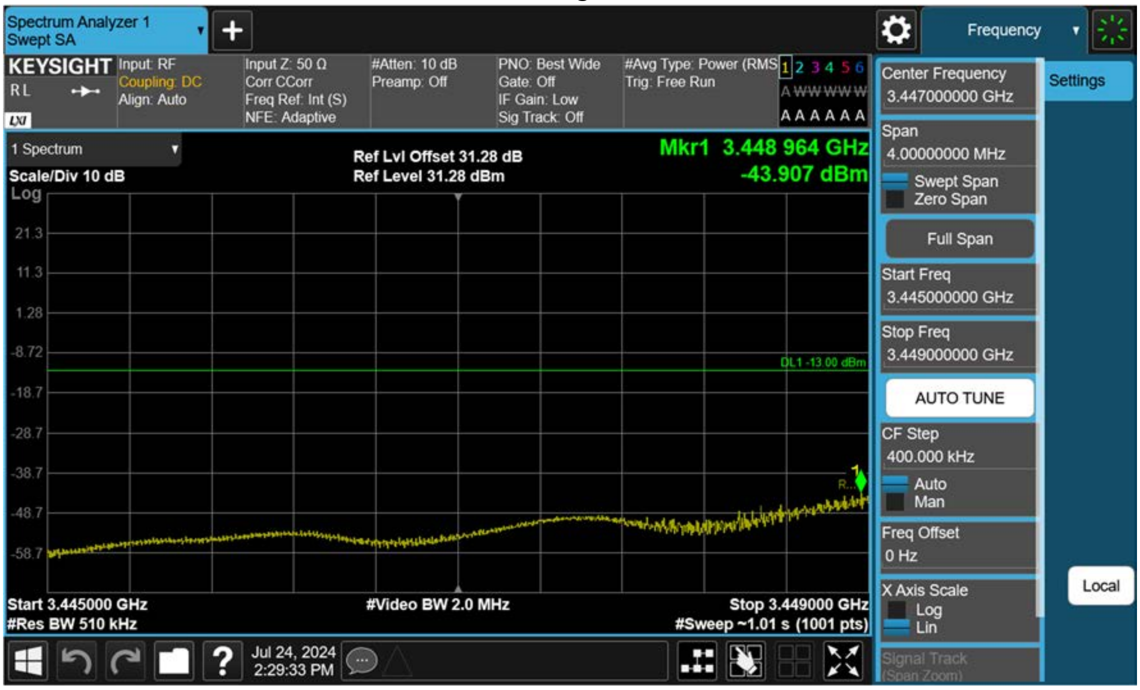
LTE B42_10 M_Band Edge_Low_QPSK_Full RB (1)



LTE B42_10 M_Band Edge_Low_QPSK_1RB (1)

LTE B42_10 M_Band Edge_Low_QPSK_Full RB (2)

LTE B42_10 M_Band Edge_Low_QPSK_1RB (2)



LTE B42_10 M_Band Edge_Low_QPSK_Full RB (3)

LTE B42_10 M_Band Edge_Low_QPSK_1RB (3)

LTE B42_15 M_Band Edge_Low_QPSK_Full RB (1)

LTE B42_15 M_Band Edge_Low_QPSK_1RB (1)