TEST REPORT

FCC LTE B42 Test for TM18FNNABM0
Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-RF-2506-FC060

DATE OF ISSUE
June 17, 2025

Tested by
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Technical Manager
Jong Seok Lee

Accredited by KOLAS, Republic of KOREA

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Applicant	LG Electronics Inc. 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
Product Name Model Name	Telematics TM18FNNABM0
Date of Test	February 08, 2025 ~ June 17, 2025
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	2BO3LTM18FNNABM0
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	June 17, 2025	Initial Release

Notice

Content
The measurements shown in this report were made in accordance with the procedures specified in CFR47 section § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)
The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated. The test results have only been applied with the test methods required by the standard(s).
The laboratory is not accredited for the test results marked *. Information provided by the applicant is marked **. Test results provided by external providers are marked ***.
When confirmation of authenticity of this test report is required, please contact www.hct.co.kr
This test report provides test result(s) under the scope accredited by the Korea Laboratory Accreditation Scheme (KOLAS), which signed the ILAC-MRA. (KOLAS (KS Q ISO/IEC 17025) Accreditation No. KT197)

CONTENTS

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics Inc.
Address:	128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
FCC ID:	2BO3LTM18FNNABM0
Application Type:	Certification
FCC Classification	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§ 27
EUT Type:	Telematics
Model(s):	TM18FNNABM0
Voltage:	4.2V
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:	February 08, 2025 ~ June 17, 2025
EUT Serial number:	Radiated : BMW ICON-25SF Radiated #1 Conducted : BMW ICON-25SF Conducted #3
Antenna Information	Please refer to the Antenna Specification document.

1.1. SUPPORTED BANDS PER ANTENNA PORT

Antenna Port	Supported bands
MIMO 1	- WCDMA: B2, 5 - LTE: B2, 4, 5, 7, 12, 13, 17, 25, 66, 26, 38, 42, 48, 71 - NR: n2, 5, 7, 12, 25, 41, 48, 66, 71, 77, 78
MIMO 2	- LTE: B42, 48 - NR: n48, 77, 78
MIMO 3	Only RX
MIMO 4	Only RX
Int. BUA (Back Up Antenna)	- WCDMA: B2, 5 - LTE: B2, 4, 5, 7, 25, 26, 38, 66 - NR: n2, 5, 7, 25, 41, 66

Note:

1. Since the Int. BUA uses the same antenna port as MIMO1, only radiated testing was performed.

1.2 MAXIMUM OUTPUT POWER

MIMO1

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted output power	
				Max. Power (W)	Max. Power (dBm)
LTE – Band42 (5)	3452.5 – 3547.5	4M49G7D	QPSK	0.165	22.17
		4M49W7D	16QAM	0.131	21.16
		4M50W7D	64QAM	0.102	20.08
		4M50W7D	256QAM	0.056	17.45
LTE – Band42 (10)	3455.0 – 3545.0	8M98G7D	QPSK	0.167	22.24
		8M99W7D	16QAM	0.133	21.24
		8M98W7D	64QAM	0.103	20.11
		8M95W7D	256QAM	0.055	17.44
LTE – Band42 (15)	3457.5 – 3542.5	13M5G7D	QPSK	0.166	22.20
		13M5W7D	16QAM	0.132	21.21
		13M5W7D	64QAM	0.104	20.18
		13M5W7D	256QAM	0.055	17.40
LTE – Band42 (20)	3460.0 – 3540.0	18M0G7D	QPSK	0.168	22.26
		17M9W7D	16QAM	0.134	21.27
		18M0W7D	64QAM	0.104	20.18
		17M9W7D	256QAM	0.057	17.55

MIMO2

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted output power	
				Max. Power (W)	Max. Power (dBm)
LTE – Band42 (5)	3452.5 – 3547.5	4M50G7D	QPSK	0.235	23.71
		4M49W7D	16QAM	0.187	22.71
		4M50W7D	64QAM	0.144	21.59
		4M50W7D	256QAM	0.079	18.99
LTE – Band42 (10)	3455.0 – 3545.0	8M97G7D	QPSK	0.240	23.81
		8M99W7D	16QAM	0.191	22.82
		8M98W7D	64QAM	0.147	21.68
		8M96W7D	256QAM	0.079	18.97
LTE – Band42 (15)	3457.5 – 3542.5	13M4G7D	QPSK	0.234	23.69
		13M5W7D	16QAM	0.185	22.68
		13M5W7D	64QAM	0.144	21.59
		13M5W7D	256QAM	0.077	18.86
LTE – Band42 (20)	3460.0 – 3540.0	18M0G7D	QPSK	0.234	23.69
		17M9W7D	16QAM	0.184	22.65
		17M9W7D	64QAM	0.141	21.50
		18M0W7D	256QAM	0.077	18.87

2. INTRODUCTION

2.1 DESCRIPTION OF EUT

Please refer to the [3G] Test Report.

2.2 MEASURING INSTRUMENT CALIBRATION

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

2.3 TEST FACILITY

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

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- N/A (See SAR Report)
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Radiated Power	- ANSI C63.26-2015 – Section 5.2.4.4 - KDB 971168 D01 v03r01 – Section 5.8
Radiated Spurious and Harmonic Emissions	- ANSI C63.26-2015 – Section 5.5.3 - KDB 971168 D01 v03r01 – Section 5.8

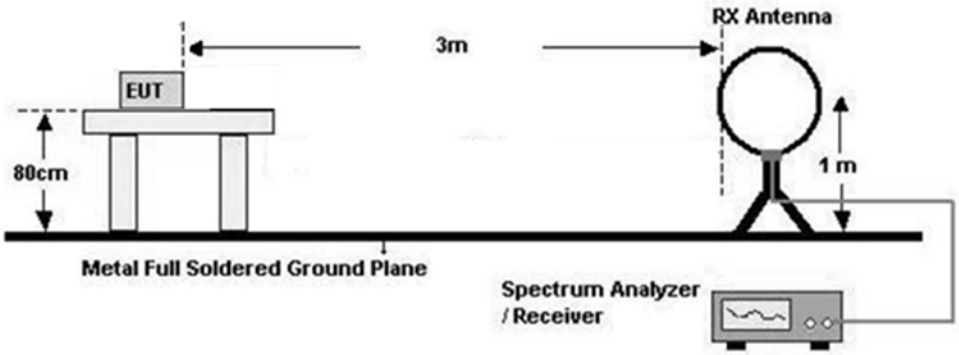
3.2 RADIATED POWER

Test Overview

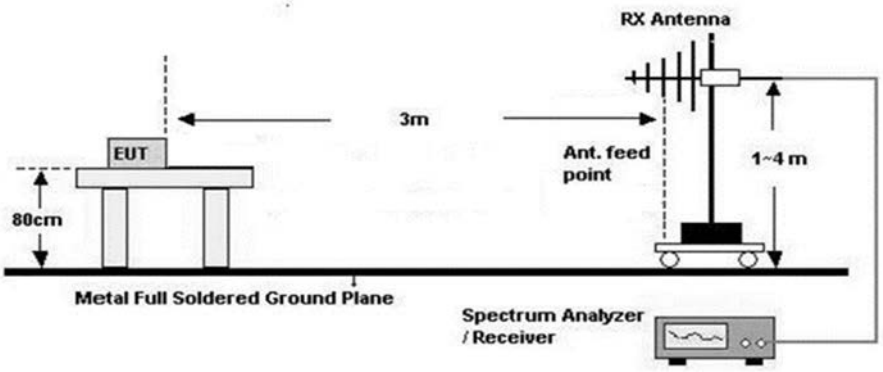
Radiated tests are performed in the semi-anechoic chamber. The equipment under test is placed on a non-conductive table on semi-anechoic chamber.

Test Configuration

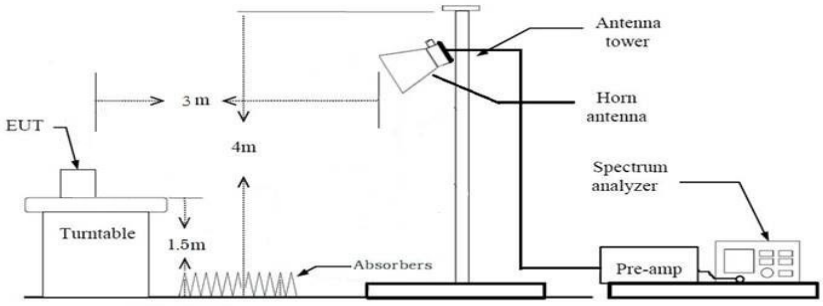
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



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 EUT is placed on a turntable, which is 0.8 m above ground plane. (Below 1 GHz)
2. The EUT is placed on a turntable, which is 1.5 m above ground plane. (Above 1 GHz)
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
5. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
6. 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.
7. Total(dBμV/m) = Measured Value(dBμV) + Cable Loss(dB) + Antenna Factor(dB/m) + Distance Factor(D.F)
8. EIRP (dBm)
   = Total (dBμV/m) + 20 log D − 104.8 (where D is the measurement distance in meters. D=3)
   = Total (dBμV/m) - 95.2(dB)
9. ERP(dBm) = EIRP(dBm) - 2.15(dB)

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method.

Test Settings

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

Test Note

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

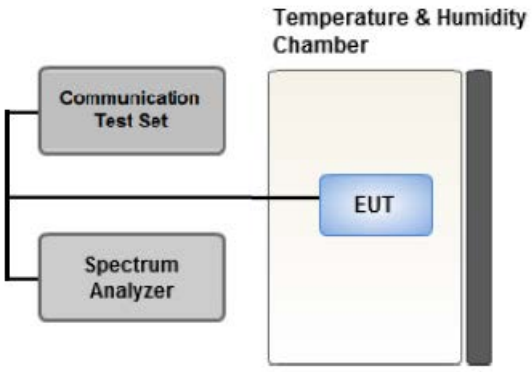
$$\text{Result}_{(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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.

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

3.4 PEAK- TO- AVERAGE RATIO



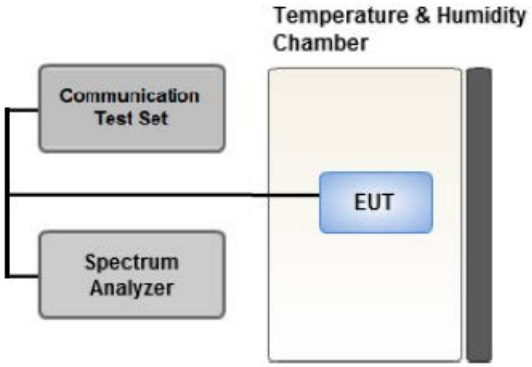
Test setup

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 %.

3.5 OCCUPIED BANDWIDTH.



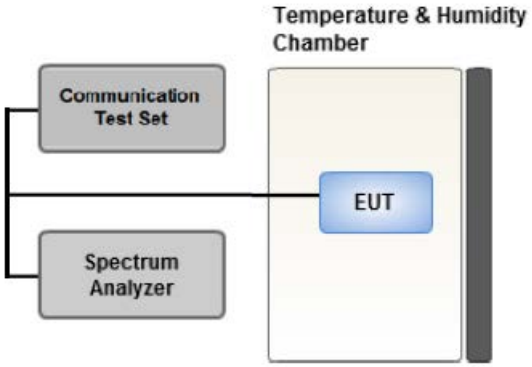
Test setup

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

Test Settings

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

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

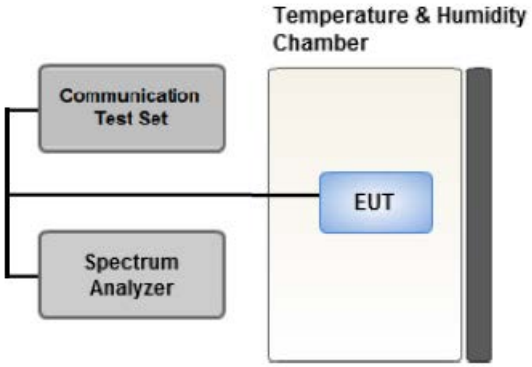
Test Overview

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

Test Settings

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

3.7 BAND EDGE



Test setup

Test Overview

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

Test Settings

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

Test Notes

According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

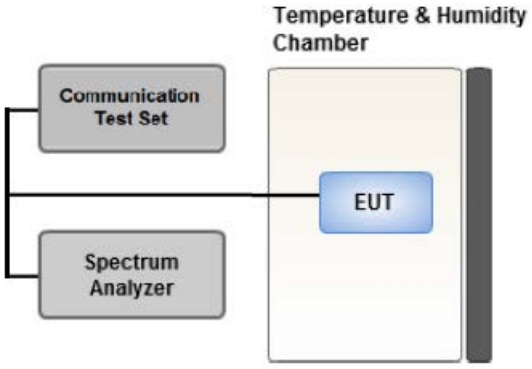
In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

All measurements were done at 2 channels(low and high operational frequency range.)

The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.
The frequency stability of the transmitter is measured by:

1. Temperature:
   The temperature is varied from -30 °C to +50 °C in 10 °C increments using an environmental chamber.
2. Primary Supply Voltage:
   .- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.
   .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

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

3.9 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
- 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(External(MIMO1)), 10 MHz(External(MIMO2)))
- 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.
- MIMO3 and MIMO4 have three types of Rx antennas. Operating modes were investigated for all Rx antennas, and the worst-case configuration results were reported.
  (Worst-case: HKL antenna(Maximum gain: 5dBi))

[External(MIMO1) Worst case]

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

[External(MIMO2) Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	See Section 9.1		Y
Radiated Spurious and Harmonic Emissions	QPSK	See Section 9.2		Z

3.10 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.
- Both 85% and 115% conditions were measured for the Frequency Stability test, and results for the worst-case configuration (85%) were reported.
- In accordance with the customer's specification of 3.7V as the lowest operating voltage, testing was performed at 3.7V instead of 85% (3.57V).

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth	QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Peak-To-Average Ratio	QPSK, 16QAM, 64QAM, 256QAM	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, 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

[Radiated]

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
RF Switch System	FBSR-04C(3G HPF+LNA)	TNM System	S4L1	03/12/2026	Annual
RF Switch System	FBSR-04C(7G HPF+LNA)	TNM System	S4L5	03/12/2026	Annual
RF Switch System	FBSR-04C(LNA)	TNM System	S4L4	03/12/2026	Annual
RF Switch System	FBSR-04C(Thru)	TNM System	S4L6	03/12/2026	Annual
Antenna Position Tower	MA4640	Innco systems	S4AM	08/07/2025	Annual
Turn Table	DS2000-S	Innco systems	N/A	N/A	-
Controller (Antenna mast & Turn Table)	CO3000	Innco systems	CO3000/1251/48920320/P	N/A	-
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	TM20090002	N/A	-
RF Switching System	Switch box(1 G HPF+LNA)	HCT CO., LTD.,	F2L2	12/12/2025	Annual
RF Switching System	Switch box(3 G HPF+LNA)	HCT CO., LTD.,	F2L3	12/12/2025	Annual
RF Switching System	Switch box(LNA)	HCT CO., LTD.,	F2L5	12/12/2025	Annual
RF Switching System	Switch box(6 G HPF+LNA)	HCT CO., LTD.,	F2L14	12/12/2025	Annual
HIGHPASS FILTER	WHKX10-900-1000-15000-40SS	WAINWRIGHT INSTRUMENTS	16	07/24/2025	Annual
LOW NOISE AMPLIFIER	310N	SONOMA Instrument	186169	02/05/2026	Annual
LOW NOISE AMPLIFIER	TK-PA1840H	TESTEK	170011-L	10/11/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/07/2025	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/19/2026	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/10/2026	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
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	03197	11/28/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	03201	11/28/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120	Schwarzbeck	937	02/07/2027	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/23/2027	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	ROHDE & SCHWARZ	101733	09/19/2025	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	101436	02/04/2026	Annual
Signal & Spectrum Analyzer (2 Hz~67 GHz)	FSW67	REOHDE & SCHWARZ	101736	05/27/2026	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	VULB 9168	Schwarzbeck	9168-0895	08/28/2026	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.	6262287701	05/14/2026	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6272613402	08/28/2025	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/26/2025	Annual
Automation Software	FCC LTE Radiated	HCT CO., LTD	-	-	-
Automation Software	FCC NR Radiated	HCT CO., LTD	-	-	-

[Conducted]

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Power Splitter (DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/10/2026	Annual
DC Power Supply	E3632A	Agilent	MY40010147	08/06/2025	Annual
Chamber	SU-642	ESPEC	93008124	02/11/2026	Annual
ATTENUATOR (20 dB)	8493C	Hewlett Packard	17280	04/10/2026	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	11/13/2025	Annual
UXM 5G Wireless Test Platform	E7515B	KEYSIGHT	MY60101126	02/10/2026	Annual
Signal Analyzer (2 Hz ~ 50.0 GHz)	N9030B	KEYSIGHT	MY56320554	02/03/2026	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.	-	-	-
Automation Software	FCC 2G/3G/4G Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC NR Conducted	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 (±kHz)**
Occupied Bandwidth	95 (Confidence level about 95 %, k=2)
Frequency stability	28 (Confidence level about 95 %, k=2)

Parameter	**Expanded Uncertainty (±dB)**
Block Edge	0.70 (Confidence level about 95 %, k=2)
Conducted Spurious Emissions	1.18 (Confidence level about 95 %, k=2)
Peak- to- Average Ratio	0.68 (Confidence level about 95 %, k=2)
Radiated Power	4.74 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.68 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.75 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.82 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, k=2)

6. SUMMARY OF TEST RESULTS

-. The decision rule applies 'simple acceptance'

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 27.53(n)(2)	< -13 dBm	PASS
Conducted Output Power	§ 2.1046	N/A	Note[1]
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. Refer to the SAR report.

6.2 Test Condition : Radiated Test

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

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 (MIMO1)

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Bandwidth	Modulation	Measured (dBµV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBµV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3452.5	LTE B42 (5 MHz)	QPSK	75.24	30.80	5.47	111.51	H	< 1.00	0.107	20.29	1	0
		16-QAM	74.19	30.80	5.47	110.46	H		0.084	19.24		
		64-QAM	73.16	30.80	5.47	109.43	H		0.066	18.21		
		256-QAM	70.44	30.80	5.47	106.71	H		0.035	15.49		
3500.0		QPSK	76.65	31.10	5.43	113.18	H		0.157	21.96	1	0
		16-QAM	75.63	31.10	5.43	112.16	H		0.124	20.94		
		64-QAM	74.67	31.10	5.43	111.20	H		0.100	19.98		
		256-QAM	72.10	31.10	5.43	108.63	H		0.055	17.41		
3547.5		QPSK	77.34	31.50	5.51	114.35	H		0.206	23.13	1	12
		16-QAM	76.30	31.50	5.51	113.31	H		0.162	22.09		
		64-QAM	75.22	31.50	5.51	112.23	H		0.126	21.01		
		256-QAM	72.08	31.50	5.51	109.09	H		0.061	17.87		

Freq (MHz)	Bandwidth	Modulation	Measured (dBµV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBµV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3455.0	LTE B42 (10 MHz)	QPSK	75.33	30.80	5.47	111.60	H	< 1.00	0.109	20.38	1	49
		16-QAM	74.27	30.80	5.47	110.54	H		0.086	19.32		
		64-QAM	73.03	30.80	5.47	109.30	H		0.064	18.08		
		256-QAM	70.39	30.80	5.47	106.66	H		0.035	15.44		
3500.0		QPSK	76.38	31.10	5.43	112.91	H		0.148	21.69	1	24
		16-QAM	75.42	31.10	5.43	111.95	H		0.118	20.73		
		64-QAM	74.40	31.10	5.43	110.93	H		0.094	19.71		
		256-QAM	71.17	31.10	5.43	107.70	H		0.044	16.48		
3545.0		QPSK	77.28	31.50	5.51	114.29	H		0.203	23.07	1	49
		16-QAM	76.36	31.50	5.51	113.37	H		0.164	22.15		
		64-QAM	75.12	31.50	5.51	112.13	H		0.123	20.91		
		256-QAM	72.49	31.50	5.51	109.50	H		0.067	18.28		

Freq (MHz)	Bandwidth	Modulation	Measured (dBμV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBμV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3457.5	LTE B42 (15 MHz)	QPSK	75.12	30.80	5.47	111.39	H	< 1.00	0.104	20.17	1	37
		16-QAM	73.97	30.80	5.47	110.24	H		0.080	19.02		
		64-QAM	73.00	30.80	5.47	109.27	H		0.064	18.05		
		256-QAM	70.39	30.80	5.47	106.66	H		0.035	15.44		
3500.0		QPSK	76.32	31.10	5.43	112.85	H		0.146	21.63	1	0
		16-QAM	75.32	31.10	5.43	111.85	H		0.116	20.63		
		64-QAM	74.12	31.10	5.43	110.65	H		0.088	19.43		
		256-QAM	71.46	31.10	5.43	107.99	H		0.048	16.77		
3542.5		QPSK	77.32	31.50	5.51	114.33	H		0.205	23.11	1	74
		16-QAM	76.33	31.50	5.51	113.34	H		0.163	22.12		
		64-QAM	75.32	31.50	5.51	112.33	H		0.129	21.11		
		256-QAM	72.40	31.50	5.51	109.41	H		0.066	18.19		

Freq (MHz)	Bandwidth	Modulation	Measured (dBμV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBμV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3460.0	LTE B42 (20 MHz)	QPSK	75.07	30.80	5.47	111.34	H	< 1.00	0.103	20.12	1	49
		16-QAM	73.94	30.80	5.47	110.21	H		0.079	18.99		
		64-QAM	73.17	30.80	5.47	109.44	H		0.066	18.22		
		256-QAM	70.13	30.80	5.47	106.40	H		0.033	15.18		
3500.0		QPSK	76.12	31.10	5.43	112.65	H		0.139	21.43	1	49
		16-QAM	75.17	31.10	5.43	111.70	H		0.112	20.48		
		64-QAM	73.82	31.10	5.43	110.35	H		0.082	19.13		
		256-QAM	71.44	31.10	5.43	107.97	H		0.047	16.75		
3540.0		QPSK	77.45	31.50	5.51	114.46	H		0.211	23.24	1	99
		16-QAM	76.41	31.50	5.51	113.42	H		0.166	22.20		
		64-QAM	75.55	31.50	5.51	112.56	H		0.136	21.34		
		256-QAM	72.26	31.50	5.51	109.27	H		0.064	18.05		

8.2 RADIATED SPURIOUS EMISSIONS

▣ MODE: LTE B42

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 1 meters

Ch	Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	**Result (dBm)**	Limit (dBm)	RB	
									Size	Offset
42115 (3460)	6 920.00	-54.30	11.19	-56.81	4.39	V	-50.01	-13.00	1	49
	10 380.00	-55.27	11.68	-54.79	5.56	V	-48.67	-13.00		
	13 840.00	-63.07	13.35	-51.71	6.53	V	-44.89	-13.00		
	17 300.00	-70.35	17.76	-49.53	7.42	H	-39.19	-13.00		
42590 (3500)	7 000.00	-53.43	10.98	-55.84	4.48	H	-49.34	-13.00	1	49
	10 500.00	-55.34	11.65	-55.69	5.64	V	-49.68	-13.00		
	14 000.00	-63.67	12.98	-51.59	6.60	V	-45.21	-13.00		
	17 500.00	-72.12	17.00	-46.68	7.45	V	-37.13	-13.00		
43065 (3540)	7 080.00	-55.30	10.71	-57.23	4.54	V	-51.06	-13.00	1	99
	10 620.00	-55.18	11.62	-55.81	5.68	V	-49.87	-13.00		
	14 160.00	-63.78	13.35	-50.44	6.58	V	-43.67	-13.00		
	17 700.00	-71.67	15.19	-42.10	7.66	H	-34.57	-13.00		

8.3 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	5.60
			16-QAM			6.41
			64-QAM			6.93
			256-QAM			6.53
	10MHz		QPSK			5.96
			16-QAM			6.51
			64-QAM			6.73
			256-QAM			6.66
	15MHz		QPSK			5.82
			16-QAM			6.41
			64-QAM			6.72
			256-QAM			6.57
	20MHz		QPSK			5.78
			16-QAM			6.42
			64-QAM			6.73
			256-QAM			6.75

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 48 ~ 63.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
42	5MHz	3500.0	QPSK	Full RB	0	4.4931
			16-QAM			4.4881
			64-QAM			4.4973
			256-QAM			4.4978
	10MHz		QPSK			8.9832
			16-QAM			8.9934
			64-QAM			8.9836
			256-QAM			8.9521
	15MHz		QPSK			13.460
			16-QAM			13.475
			64-QAM			13.493
			256-QAM			13.493
	20MHz		QPSK			17.962
			16-QAM			17.917
			64-QAM			17.966
			256-QAM			17.928

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 64 ~ 79.

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)
42	5	3452.500	5.9721	28.980	-66.243	-37.263	-13.00
		3500.000	5.7029	28.980	-67.185	-38.205	
		3547.500	5.2044	28.980	-65.552	-36.572	
	10	3455.000	4.0479	28.370	-66.205	-37.835	
		3500.000	6.9592	28.980	-66.351	-37.371	
		3545.000	4.9053	28.370	-64.395	-36.025	
	15	3457.500	9.4417	28.980	-66.720	-37.740	
		3500.000	4.9153	28.370	-66.820	-38.450	
		3542.500	4.9552	28.370	-66.353	-37.983	
	20	3460.000	4.7658	28.370	-67.235	-38.865	
		3500.000	3.9183	28.370	-66.117	-37.747	
		3540.000	9.8106	28.980	-65.566	-36.586	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 80 ~ 103.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter
4. Result(dBm) = Reading + Factor

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.670
1 – 5	28.370
5 – 10	28.980
10 – 15	29.520
15 – 20	29.890
Above 20	30.530

8.6 BAND EDGE

1. Plots of the EUT's Band Edge are shown Page 104 ~ 151.
2. Duty Cycle factor already applied on the factor.
   - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
   - Result(dBm) = Reading + Factor
   - Duty Cycle Factor(dB) = 3.979

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100 %): 4.200 VDC
- ▣ Lowest voltage: 3.700 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3452.500	100 %	+20(Ref)	3452 500 010	0.0	0.000 000	0.000
	100 %	-30	3452 500 006	-3.9	0.000 000	-0.001
	100 %	-20	3452 500 005	-5.6	0.000 000	-0.002
	100 %	-10	3452 500 015	4.6	0.000 000	0.001
	100 %	0	3452 500 017	7.1	0.000 000	0.002
	100 %	+10	3452 500 014	4.2	0.000 000	0.001
	100 %	+30	3452 500 018	7.5	0.000 000	0.002
	100 %	+40	3452 500 004	-5.9	0.000 000	-0.002
	100 %	+50	3452 500 007	-3.7	0.000 000	-0.001
	Lowest voltage	+20	3452 500 015	4.3	0.000 000	0.001
3547.500	100 %	+20(Ref)	3547 499 991	0.0	0.000 000	0.000
	100 %	-30	3547 499 983	-7.7	0.000 000	-0.002
	100 %	-20	3547 499 986	-5.4	0.000 000	-0.002
	100 %	-10	3547 500 000	9.4	0.000 000	0.003
	100 %	0	3547 500 002	11.0	0.000 000	0.003
	100 %	+10	3547 500 000	8.8	0.000 000	0.002
	100 %	+30	3547 499 981	-10.4	0.000 000	-0.003
	100 %	+40	3547 499 998	6.8	0.000 000	0.002
	100 %	+50	3547 500 001	9.7	0.000 000	0.003
	Lowest voltage	+20	3547 500 001	10.0	0.000 000	0.003

▣ BandWidth: 10 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Lowest voltage: 3.700 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3455.000	100 %	+20(Ref)	3455 000 007	0.0	0.000 000	0.000
	100 %	-30	3455 000 013	5.2	0.000 000	0.002
	100 %	-20	3455 000 003	-4.5	0.000 000	-0.001
	100 %	-10	3455 000 017	9.8	0.000 000	0.003
	100 %	0	3455 000 012	4.8	0.000 000	0.001
	100 %	+10	3455 000 014	6.2	0.000 000	0.002
	100 %	+30	3455 000 003	-4.1	0.000 000	-0.001
	100 %	+40	3455 000 014	6.2	0.000 000	0.002
	100 %	+50	3455 000 015	8.0	0.000 000	0.002
	Lowest voltage	+20	3455 000 002	-5.6	0.000 000	-0.002
3545.000	100 %	+20(Ref)	3545 000 006	0.0	0.000 000	0.000
	100 %	-30	3545 000 014	8.5	0.000 000	0.002
	100 %	-20	3545 000 011	5.7	0.000 000	0.002
	100 %	-10	3544 999 998	-7.6	0.000 000	-0.002
	100 %	0	3544 999 998	-7.2	0.000 000	-0.002
	100 %	+10	3545 000 012	6.8	0.000 000	0.002
	100 %	+30	3545 000 001	-4.7	0.000 000	-0.001
	100 %	+40	3544 999 999	-7.1	0.000 000	-0.002
	100 %	+50	3545 000 013	7.8	0.000 000	0.002
	Lowest voltage	+20	3545 000 001	-4.2	0.000 000	-0.001

▣ BandWidth: 15 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Lowest voltage: 3.700 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3457.500	100 %	+20(Ref)	3457 499 995	0.0	0.000 000	0.000
	100 %	-30	3457 500 002	7.0	0.000 000	0.002
	100 %	-20	3457 500 005	9.6	0.000 000	0.003
	100 %	-10	3457 500 001	6.2	0.000 000	0.002
	100 %	0	3457 500 008	13.0	0.000 000	0.004
	100 %	+10	3457 500 001	6.1	0.000 000	0.002
	100 %	+30	3457 500 004	8.6	0.000 000	0.002
	100 %	+40	3457 499 990	-5.4	0.000 000	-0.002
	100 %	+50	3457 499 989	-5.9	0.000 000	-0.002
	Lowest voltage	+20	3457 500 006	11.0	0.000 000	0.003
3542.500	100 %	+20(Ref)	3542 500 009	0.0	0.000 000	0.000
	100 %	-30	3542 500 005	-4.1	0.000 000	-0.001
	100 %	-20	3542 500 015	6.6	0.000 000	0.002
	100 %	-10	3542 500 005	-3.7	0.000 000	-0.001
	100 %	0	3542 500 018	9.6	0.000 000	0.003
	100 %	+10	3542 500 018	9.5	0.000 000	0.003
	100 %	+30	3542 500 017	7.9	0.000 000	0.002
	100 %	+40	3542 500 002	-6.2	0.000 000	-0.002
	100 %	+50	3542 500 016	7.2	0.000 000	0.002
	Lowest voltage	+20	3542 500 003	-5.6	0.000 000	-0.002

▣ BandWidth: 20 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Lowest voltage: 3.700 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3460.000	100 %	+20(Ref)	3460 000 009	0.0	0.000 000	0.000
	100 %	-30	3460 000 018	9.4	0.000 000	0.003
	100 %	-20	3460 000 013	4.8	0.000 000	0.001
	100 %	-10	3460 000 002	-6.6	0.000 000	-0.002
	100 %	0	3460 000 017	8.1	0.000 000	0.002
	100 %	+10	3460 000 016	7.7	0.000 000	0.002
	100 %	+30	3460 000 013	4.2	0.000 000	0.001
	100 %	+40	3460 000 017	8.5	0.000 000	0.002
	100 %	+50	3460 000 013	4.3	0.000 000	0.001
	Lowest voltage	+20	3460 000 017	8.3	0.000 000	0.002
3540.000	100 %	+20(Ref)	3540 000 004	0.0	0.000 000	0.000
	100 %	-30	3540 000 016	12.2	0.000 000	0.003
	100 %	-20	3540 000 010	6.1	0.000 000	0.002
	100 %	-10	3539 999 999	-4.2	0.000 000	-0.001
	100 %	0	3539 999 999	-4.8	0.000 000	-0.001
	100 %	+10	3540 000 010	6.8	0.000 000	0.002
	100 %	+30	3540 000 008	4.3	0.000 000	0.001
	100 %	+40	3539 999 996	-7.4	0.000 000	-0.002
	100 %	+50	3540 000 009	5.9	0.000 000	0.002
	Lowest voltage	+20	3540 000 011	7.1	0.000 000	0.002

9. TEST DATA (MIMO2)

9.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Bandwidth	Modulation	Measured (dBµV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBµV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3452.5	LTE B42 (5 MHz)	QPSK	77.16	30.80	5.47	113.43	V	< 1.00	0.166	22.21	1	12
		16-QAM	76.95	30.80	5.47	113.22	V		0.158	22.00		
		64-QAM	75.81	30.80	5.47	112.08	V		0.122	20.86		
		256-QAM	72.59	30.80	5.47	108.86	V		0.058	17.64		
3500.0		QPSK	77.21	31.10	5.43	113.74	V		0.179	22.52	1	12
		16-QAM	77.05	31.10	5.43	113.58	V		0.172	22.36		
		64-QAM	75.95	31.10	5.43	112.48	V		0.134	21.26		
		256-QAM	72.72	31.10	5.43	109.25	V		0.064	18.03		
3547.5		QPSK	75.78	31.50	5.51	112.79	V		0.144	21.57	1	12
		16-QAM	75.51	31.50	5.51	112.52	V		0.135	21.30		
		64-QAM	74.73	31.50	5.51	111.74	V		0.113	20.52		
		256-QAM	71.67	31.50	5.51	108.68	V		0.056	17.46		

Freq (MHz)	Bandwidth	Modulation	Measured (dBµV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBµV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3455.0	LTE B42 (10 MHz)	QPSK	77.86	30.80	5.47	114.13	V	< 1.00	0.195	22.91	1	49
		16-QAM	77.18	30.80	5.47	113.45	V		0.167	22.23		
		64-QAM	76.00	30.80	5.47	112.27	V		0.127	21.05		
		256-QAM	73.14	30.80	5.47	109.41	V		0.066	18.19		
3500.0		QPSK	77.03	31.10	5.43	113.56	V		0.171	22.34	1	24
		16-QAM	76.96	31.10	5.43	113.49	V		0.169	22.27		
		64-QAM	76.06	31.10	5.43	112.59	V		0.137	21.37		
		256-QAM	73.22	31.10	5.43	109.75	V		0.071	18.53		
3545.0		QPSK	76.26	31.50	5.51	113.27	V		0.160	22.05	1	0
		16-QAM	76.13	31.50	5.51	113.14	V		0.156	21.92		
		64-QAM	75.14	31.50	5.51	112.15	V		0.124	20.93		
		256-QAM	72.38	31.50	5.51	109.39	V		0.066	18.17		

Freq (MHz)	Bandwidth	Modulation	Measured (dBμV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBμV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3457.5	LTE B42 (15 MHz)	QPSK	77.46	30.80	5.47	113.73	V	< 1.00	0.178	22.51	1	37
		16-QAM	77.25	30.80	5.47	113.52	V		0.170	22.30		
		64-QAM	76.58	30.80	5.47	112.85	V		0.146	21.63		
		256-QAM	73.19	30.80	5.47	109.46	V		0.067	18.24		
3500.0		QPSK	77.22	31.10	5.43	113.75	V		0.179	22.53	1	0
		16-QAM	77.18	31.10	5.43	113.71	V		0.177	22.49		
		64-QAM	76.05	31.10	5.43	112.58	V		0.137	21.36		
		256-QAM	73.16	31.10	5.43	109.69	V		0.070	18.47		
3542.5		QPSK	76.16	31.50	5.51	113.17	V		0.157	21.95	1	74
		16-QAM	76.12	31.50	5.51	113.13	V		0.155	21.91		
		64-QAM	75.10	31.50	5.51	112.11	V		0.123	20.89		
		256-QAM	72.32	31.50	5.51	109.33	V		0.065	18.11		

Freq (MHz)	Bandwidth	Modulation	Measured (dBμV/m)	Ant. Factor + Distance Factor (dB)	C.L + Thru(dB)	Total (dBμV/m)	Pol.	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
3460.0	LTE B42 (20 MHz)	QPSK	77.38	30.80	5.47	113.65	V	< 1.00	0.175	22.43	1	99
		16-QAM	77.37	30.80	5.47	113.64	V		0.175	22.42		
		64-QAM	76.38	30.80	5.47	112.65	V		0.139	21.43		
		256-QAM	73.68	30.80	5.47	109.95	V		0.075	18.73		
3500.0		QPSK	77.32	31.10	5.43	113.85	V		0.183	22.63	1	0
		16-QAM	77.14	31.10	5.43	113.67	V		0.176	22.45		
		64-QAM	76.39	31.10	5.43	112.92	V		0.148	21.70		
		256-QAM	73.43	31.10	5.43	109.96	V		0.075	18.74		
3540.0		QPSK	76.40	31.50	5.51	113.41	V		0.166	22.19	1	99
		16-QAM	76.16	31.50	5.51	113.17	V		0.157	21.95		
		64-QAM	75.55	31.50	5.51	112.56	V		0.136	21.34		
		256-QAM	72.57	31.50	5.51	109.58	V		0.069	18.36		

9.2 RADIATED SPURIOUS EMISSIONS

▣ MODE: LTE B42

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 1 meters

Ch	Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	**Result (dBm)**	Limit (dBm)	RB	
									Size	Offset
42140 (3455)	6 910.00	-55.59	11.19	-58.03	4.39	V	-51.23	-13.00	1	49
	10 365.00	-56.18	11.66	-55.49	5.55	V	-49.38	-13.00		
	13 820.00	-62.35	13.35	-50.89	6.55	V	-44.09	-13.00		
	17 275.00	-71.73	17.79	-51.27	7.44	H	-40.92	-13.00		
42590 (3500)	7 000.00	-54.67	10.98	-57.08	4.48	V	-50.58	-13.00	1	24
	10 500.00	-55.87	11.65	-56.22	5.64	H	-50.21	-13.00		
	14 000.00	-63.24	12.98	-51.16	6.60	H	-44.78	-13.00		
	17 500.00	-71.44	17.00	-46.00	7.45	H	-36.45	-13.00		
43040 (3545)	7 090.00	-55.10	10.69	-57.06	4.51	V	-50.88	-13.00	1	0
	10 635.00	-52.34	11.63	-52.79	5.75	H	-46.91	-13.00		
	14 180.00	-64.17	13.37	-50.85	6.64	H	-44.12	-13.00		
	17 725.00	-70.82	15.07	-40.40	7.59	V	-32.92	-13.00		

9.3 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	5.64
			16-QAM			6.48
			64-QAM			6.89
			256-QAM			6.51
	10MHz		QPSK			5.83
			16-QAM			6.52
			64-QAM			6.67
			256-QAM			6.54
	15MHz		QPSK			5.83
			16-QAM			6.40
			64-QAM			6.65
			256-QAM			6.67
	20MHz		QPSK			5.74
			16-QAM			6.38
			64-QAM			6.70
			256-QAM			6.65

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 153 ~ 168.

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
42	5MHz	3500.0	QPSK	Full RB	0	4.4957
			16-QAM			4.4859
			64-QAM			4.4971
			256-QAM			4.4992
	10MHz		QPSK			8.9674
			16-QAM			8.9934
			64-QAM			8.9775
			256-QAM			8.9633
	15MHz		QPSK			13.424
			16-QAM			13.468
			64-QAM			13.474
			256-QAM			13.459
	20MHz		QPSK			18.014
			16-QAM			17.927
			64-QAM			17.932
			256-QAM			17.945

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 169 ~ 184.

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)
42	5	3452.500	8.9731	28.980	-67.220	-38.240	-13.00
		3500.000	4.1077	28.370	-66.510	-38.140	
		3547.500	3.9981	28.370	-65.602	-37.232	
	10	3455.000	4.0379	28.370	-66.475	-38.105	
		3500.000	4.8555	28.370	-66.117	-37.747	
		3545.000	4.0479	28.370	-66.192	-37.822	
	15	3457.500	4.2872	28.370	-65.976	-37.606	
		3500.000	6.0120	28.980	-66.545	-37.565	
		3542.500	4.0080	28.370	-66.860	-38.490	
	20	3460.000	5.1546	28.980	-66.834	-37.854	
		3500.000	4.0379	28.370	-65.251	-36.881	
		3540.000	4.6860	28.370	-67.054	-38.684	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 185 ~ 208.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter
4. Result(dBm) = Reading + Factor

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.670
1 – 5	28.370
5 – 10	28.980
10 – 15	29.520
15 – 20	29.890
Above 20	30.530

9.6 BAND EDGE

1. Plots of the EUT's Band Edge are shown Page 209 ~ 256.
2. Duty Cycle factor already applied on the factor.
   - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
   - Result(dBm) = Reading + Factor
   - Duty Cycle Factor(dB) = 3.979

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100 %): 4.200 VDC
- ▣ Lowest voltage: 3.700 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3452.500	100 %	+20(Ref)	3452 499 995	0.0	0.000 000	0.000
	100 %	-30	3452 500 002	7.1	0.000 000	0.002
	100 %	-20	3452 499 990	-5.0	0.000 000	-0.001
	100 %	-10	3452 500 009	13.5	0.000 000	0.004
	100 %	0	3452 500 003	7.2	0.000 000	0.002
	100 %	+10	3452 500 002	6.3	0.000 000	0.002
	100 %	+30	3452 500 005	9.9	0.000 000	0.003
	100 %	+40	3452 500 004	8.4	0.000 000	0.002
	100 %	+50	3452 500 000	4.9	0.000 000	0.001
	Lowest voltage	+20	3452 499 986	-8.9	0.000 000	-0.003
3547.500	100 %	+20(Ref)	3547 500 010	0.0	0.000 000	0.000
	100 %	-30	3547 500 002	-8.8	0.000 000	-0.002
	100 %	-20	3547 500 006	-4.4	0.000 000	-0.001
	100 %	-10	3547 500 021	10.5	0.000 000	0.003
	100 %	0	3547 500 006	-4.8	0.000 000	-0.001
	100 %	+10	3547 500 014	4.1	0.000 000	0.001
	100 %	+30	3547 500 018	7.5	0.000 000	0.002
	100 %	+40	3547 500 018	7.3	0.000 000	0.002
	100 %	+50	3547 500 016	5.9	0.000 000	0.002
	Lowest voltage	+20	3547 500 016	6.0	0.000 000	0.002

▣ BandWidth: 10 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Lowest voltage: 3.700 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3455.000	100 %	+20(Ref)	3455 000 008	0.0	0.000 000	0.000
	100 %	-30	3455 000 018	10.1	0.000 000	0.003
	100 %	-20	3455 000 002	-6.0	0.000 000	-0.002
	100 %	-10	3455 000 017	8.5	0.000 000	0.002
	100 %	0	3455 000 014	5.5	0.000 000	0.002
	100 %	+10	3455 000 013	4.3	0.000 000	0.001
	100 %	+30	3455 000 014	5.4	0.000 000	0.002
	100 %	+40	3455 000 013	4.4	0.000 000	0.001
	100 %	+50	3455 000 020	11.8	0.000 000	0.003
	Lowest voltage	+20	3455 000 013	4.2	0.000 000	0.001
3545.000	100 %	+20(Ref)	3545 000 010	0.0	0.000 000	0.000
	100 %	-30	3545 000 017	7.1	0.000 000	0.002
	100 %	-20	3545 000 004	-6.6	0.000 000	-0.002
	100 %	-10	3545 000 005	-5.3	0.000 000	-0.001
	100 %	0	3545 000 017	6.5	0.000 000	0.002
	100 %	+10	3545 000 005	-5.3	0.000 000	-0.001
	100 %	+30	3545 000 018	8.2	0.000 000	0.002
	100 %	+40	3545 000 005	-4.7	0.000 000	-0.001
	100 %	+50	3545 000 016	5.4	0.000 000	0.002
	Lowest voltage	+20	3545 000 018	7.8	0.000 000	0.002

▣ BandWidth: 15 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Lowest voltage: 3.700 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3457.500	100 %	+20(Ref)	3457 500 008	0.0	0.000 000	0.000
	100 %	-30	3457 500 013	5.3	0.000 000	0.002
	100 %	-20	3457 500 018	9.8	0.000 000	0.003
	100 %	-10	3457 499 999	-8.5	0.000 000	-0.002
	100 %	0	3457 500 001	-7.2	0.000 000	-0.002
	100 %	+10	3457 500 013	4.9	0.000 000	0.001
	100 %	+30	3457 500 013	5.1	0.000 000	0.001
	100 %	+40	3457 500 014	5.8	0.000 000	0.002
	100 %	+50	3457 500 015	7.6	0.000 000	0.002
	Lowest voltage	+20	3457 500 013	4.8	0.000 000	0.001
3542.500	100 %	+20(Ref)	3542 500 005	0.0	0.000 000	0.000
	100 %	-30	3542 499 998	-7.5	0.000 000	-0.002
	100 %	-20	3542 500 000	-5.2	0.000 000	-0.001
	100 %	-10	3542 500 000	-5.6	0.000 000	-0.002
	100 %	0	3542 500 013	7.4	0.000 000	0.002
	100 %	+10	3542 500 001	-4.4	0.000 000	-0.001
	100 %	+30	3542 499 998	-7.5	0.000 000	-0.002
	100 %	+40	3542 500 000	-5.0	0.000 000	-0.001
	100 %	+50	3542 500 001	-4.4	0.000 000	-0.001
	Lowest voltage	+20	3542 500 012	6.8	0.000 000	0.002

▣ BandWidth: 20 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Lowest voltage: 3.700 VDC

▣ LIMIT: Emission must remain in band

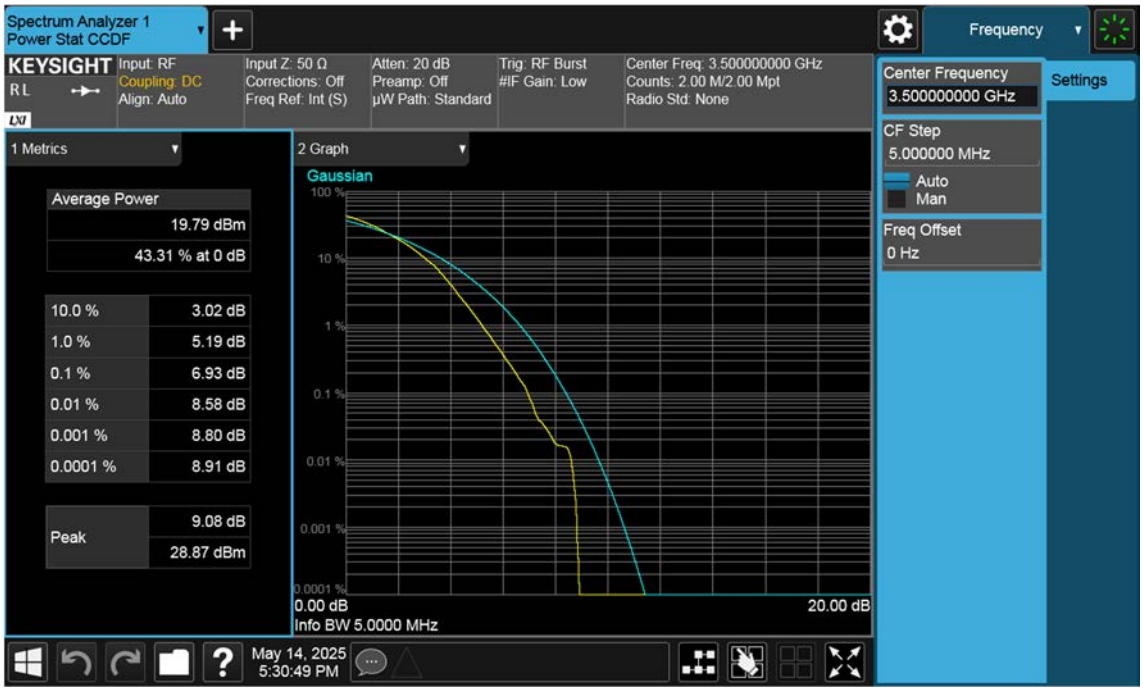
Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
3460.000	100 %	+20(Ref)	3460 000 005	0.0	0.000 000	0.000
	100 %	-30	3460 000 000	-4.7	0.000 000	-0.001
	100 %	-20	3460 000 014	9.5	0.000 000	0.003
	100 %	-10	3460 000 009	4.0	0.000 000	0.001
	100 %	0	3460 000 014	9.0	0.000 000	0.003
	100 %	+10	3460 000 016	11.7	0.000 000	0.003
	100 %	+30	3459 999 998	-6.3	0.000 000	-0.002
	100 %	+40	3460 000 011	6.5	0.000 000	0.002
	100 %	+50	3460 000 015	9.8	0.000 000	0.003
	Lowest voltage	+20	3460 000 011	6.4	0.000 000	0.002
3540.000	100 %	+20(Ref)	3540 000 005	0.0	0.000 000	0.000
	100 %	-30	3539 999 999	-6.3	0.000 000	-0.002
	100 %	-20	3540 000 010	5.3	0.000 000	0.001
	100 %	-10	3539 999 999	-6.1	0.000 000	-0.002
	100 %	0	3540 000 017	11.6	0.000 000	0.003
	100 %	+10	3540 000 000	-5.4	0.000 000	-0.002
	100 %	+30	3540 000 014	8.8	0.000 000	0.002
	100 %	+40	3540 000 001	-4.2	0.000 000	-0.001
	100 %	+50	3540 000 000	-4.8	0.000 000	-0.001
	Lowest voltage	+20	3540 000 012	6.7	0.000 000	0.002

10. TEST PLOTS (MIMO1)

LTE B42_5 M_PAR_Mid_QPSK_FullRB

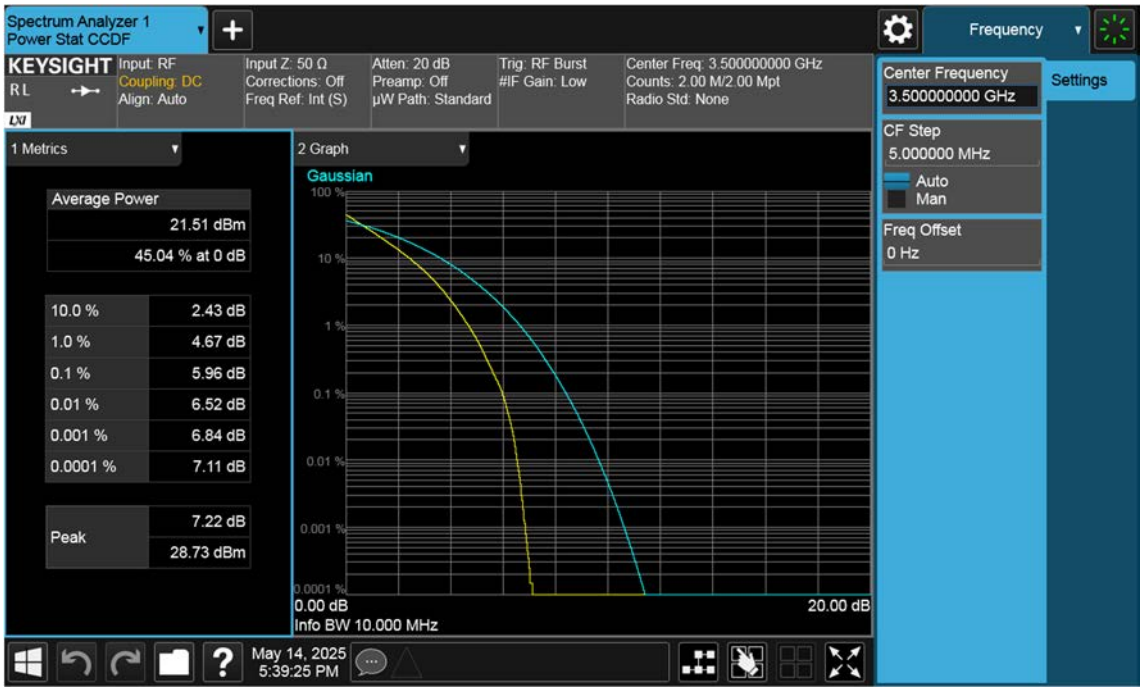
LTE B42_5 M_PAR_Mid_16QAM_FullRB

LTE B42_5 M_PAR_Mid_64QAM_FullRB



LTE B42_5 M_PAR_Mid_256QAM_FullRB

LTE B42_10 M_PAR_Mid_QPSK_FullRB

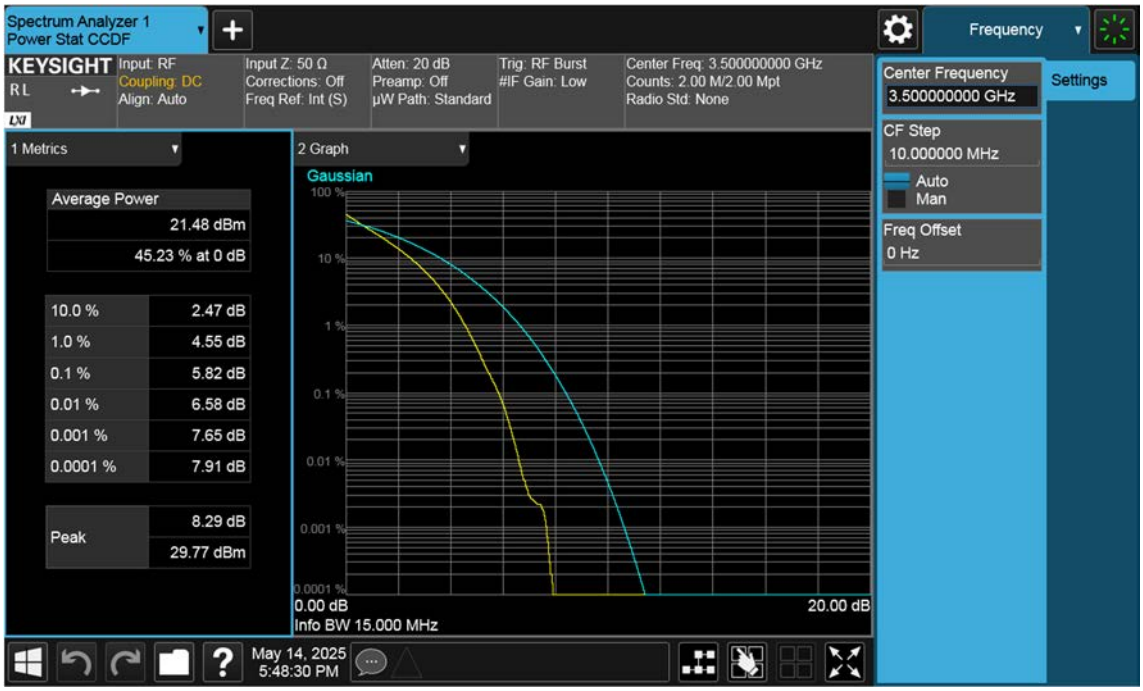


LTE B42_10 M_PAR_Mid_16QAM_FullRB

LTE B42_10 M_PAR_Mid_64QAM_FullRB

LTE B42_10 M_PAR_Mid_256QAM_FullRB

LTE B42_15 M_PAR_Mid_QPSK_FullRB

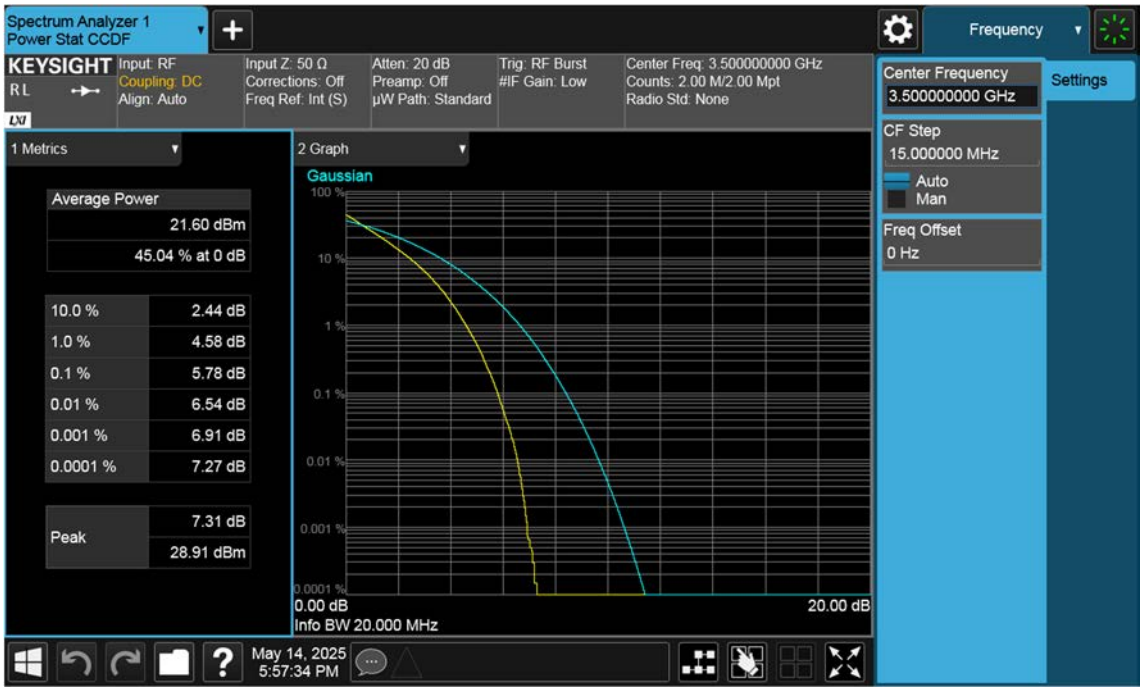


LTE B42_15 M_PAR_Mid_16QAM_FullRB

LTE B42_15 M_PAR_Mid_64QAM_FullRB

LTE B42_15 M_PAR_Mid_256QAM_FullRB

LTE B42_20 M_PAR_Mid_QPSK_FullRB

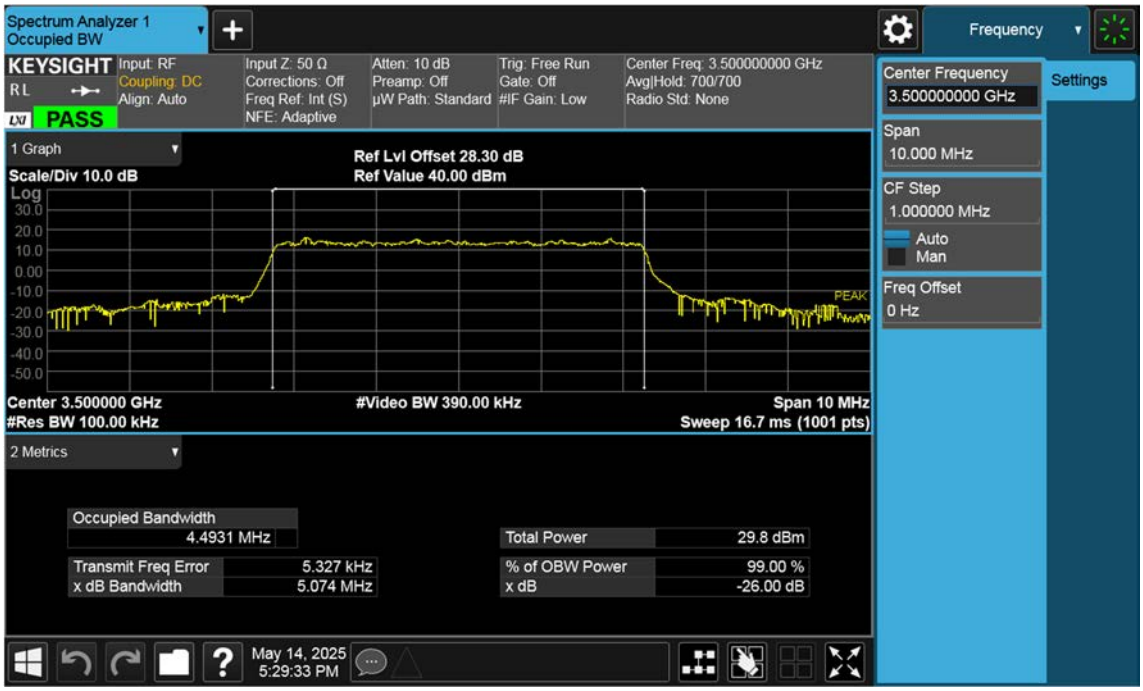


LTE B42_20 M_PAR_Mid_16QAM_FullRB

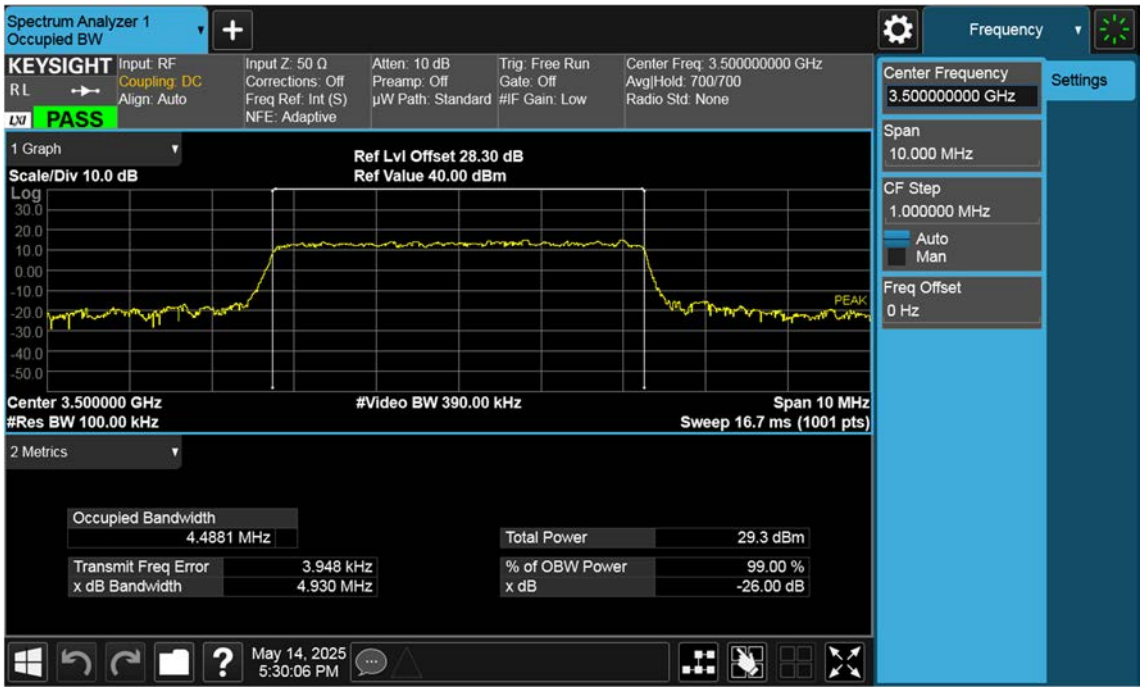
LTE B42_20 M_PAR_Mid_64QAM_FullRB

LTE B42_20 M_PAR_Mid_256QAM_FullRB

LTE B42_5 M_OBW_Mid_QPSK_FullRB



LTE B42_5 M_OBW_Mid_16QAM_FullRB



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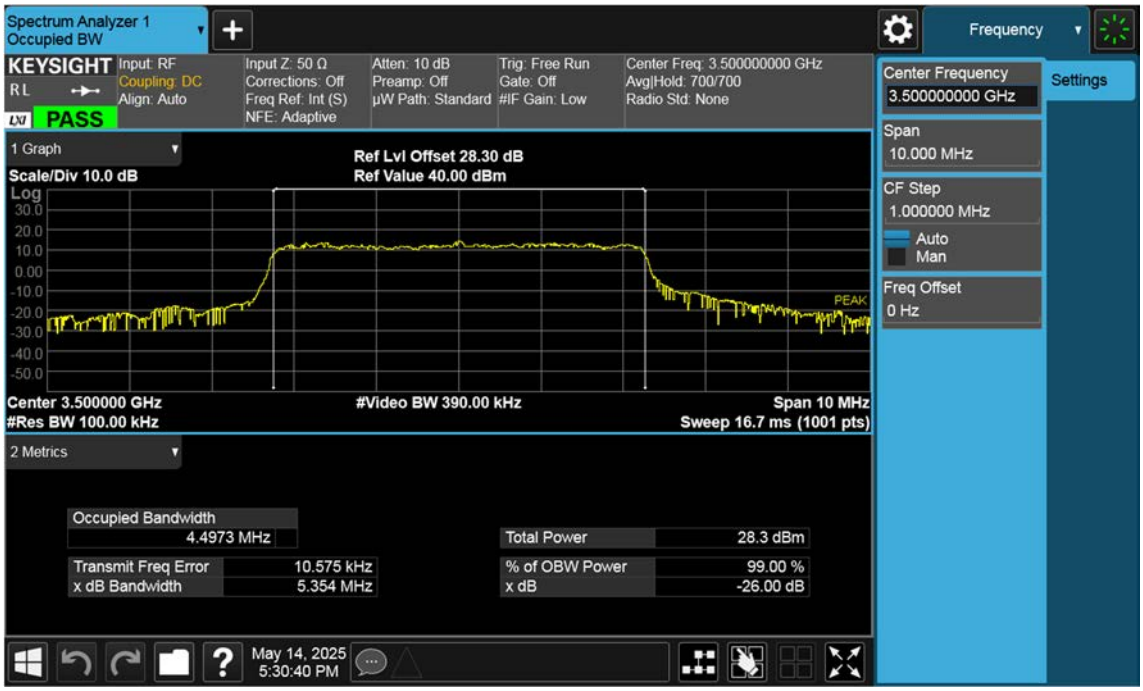
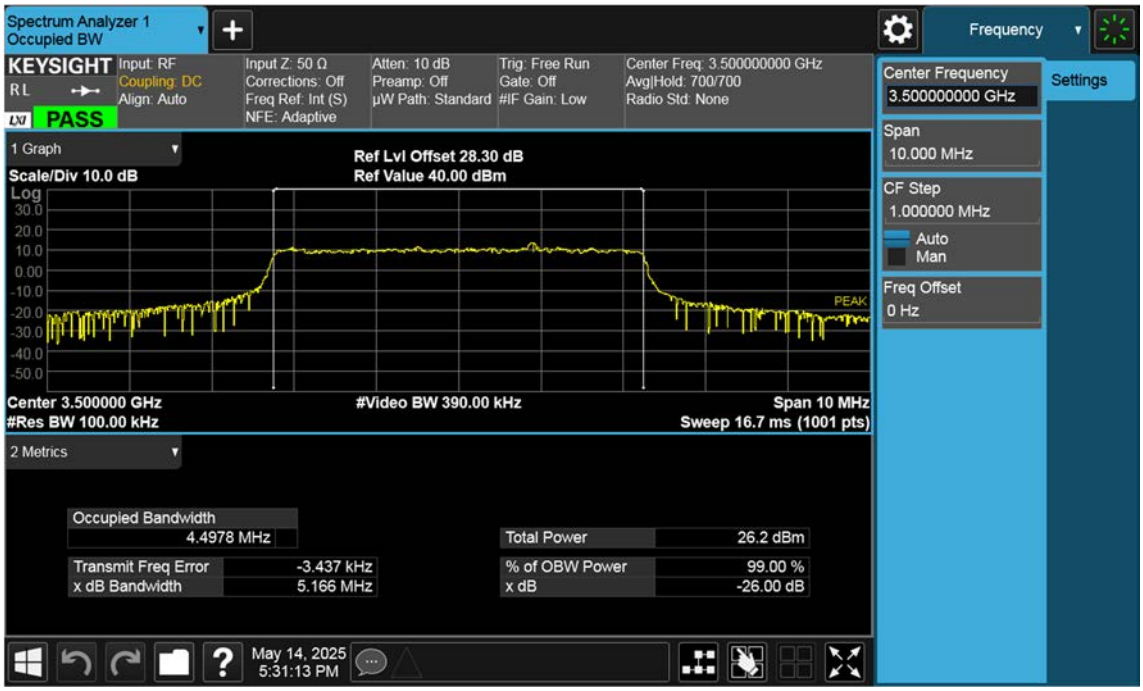
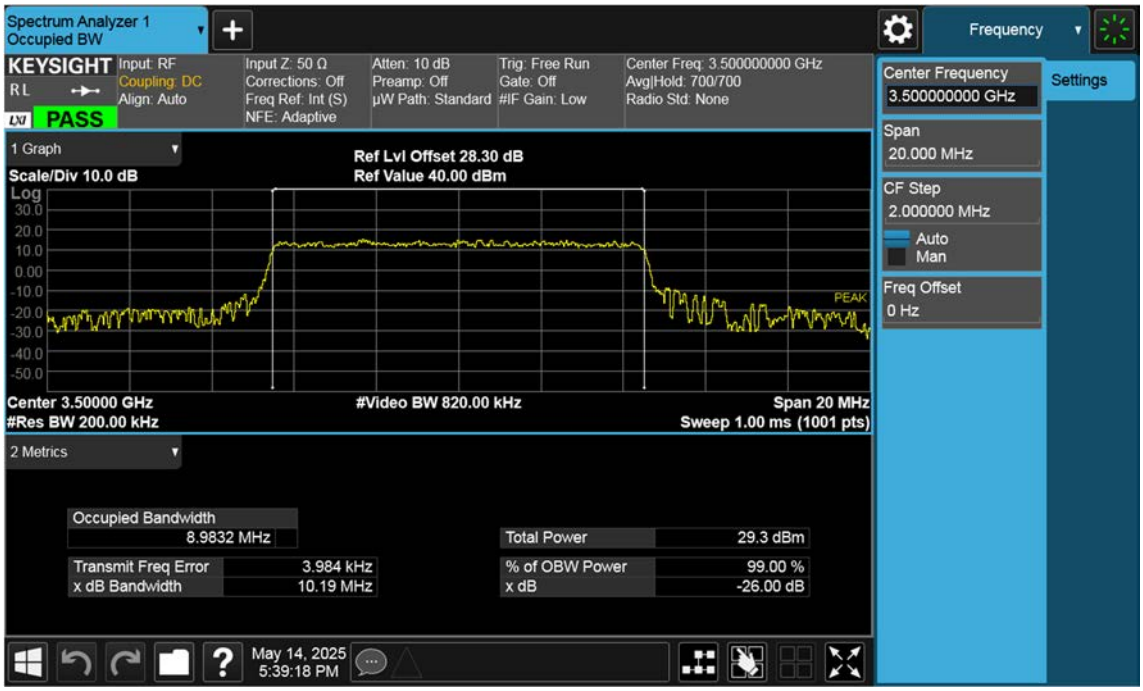


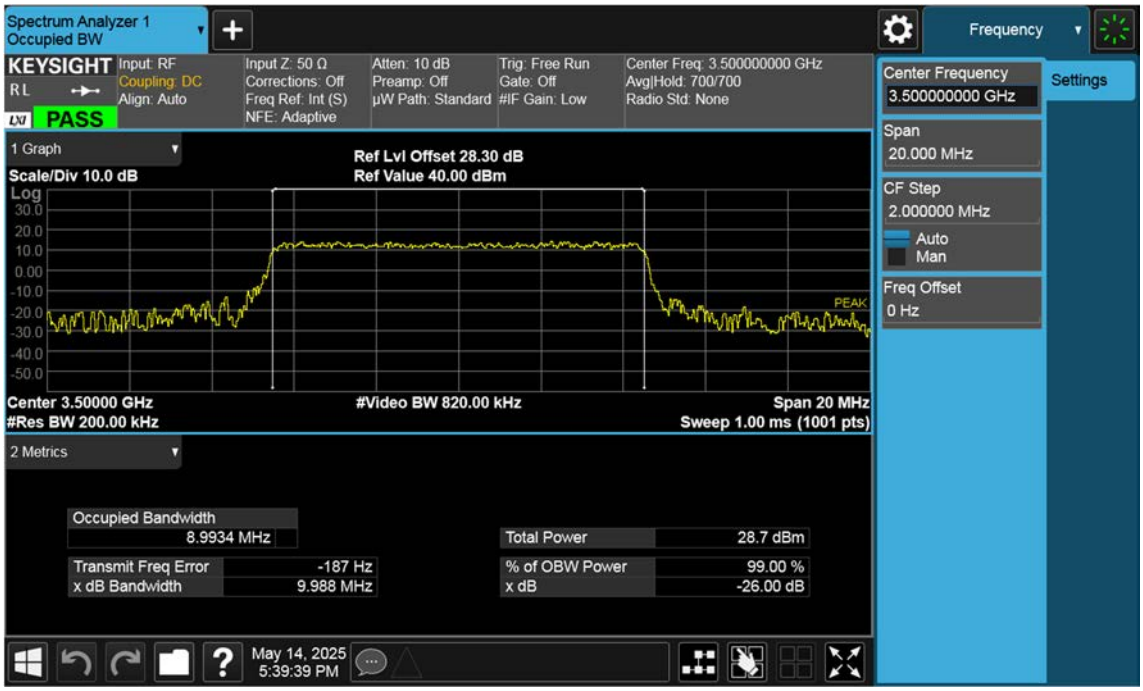
LTE B42_5 M_OBW_Mid_256QAM_FullRB



LTE B42_10 M_OBW_Mid_QPSK_FullRB



LTE B42_10 M_OBW_Mid_16QAM_FullRB



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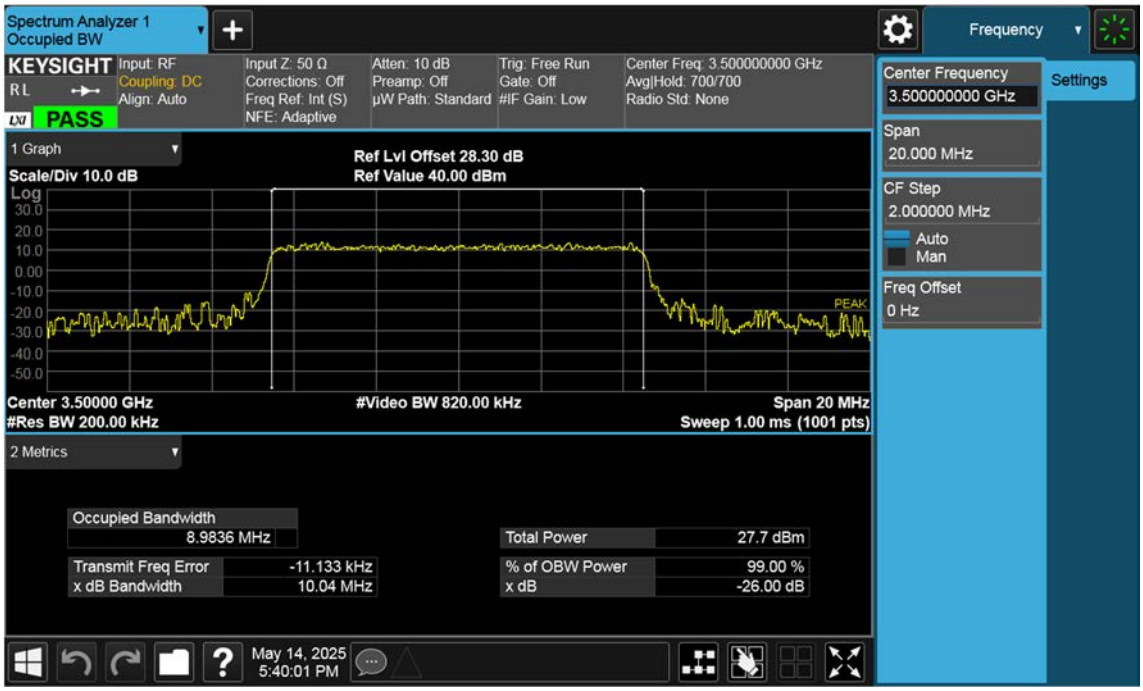

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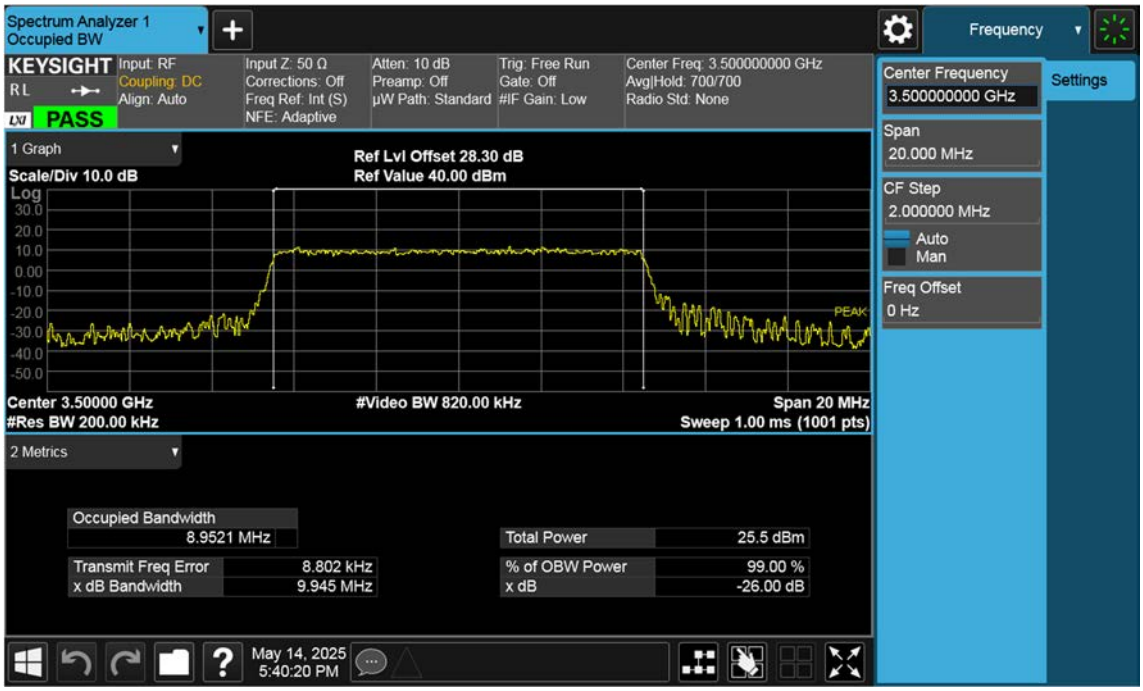
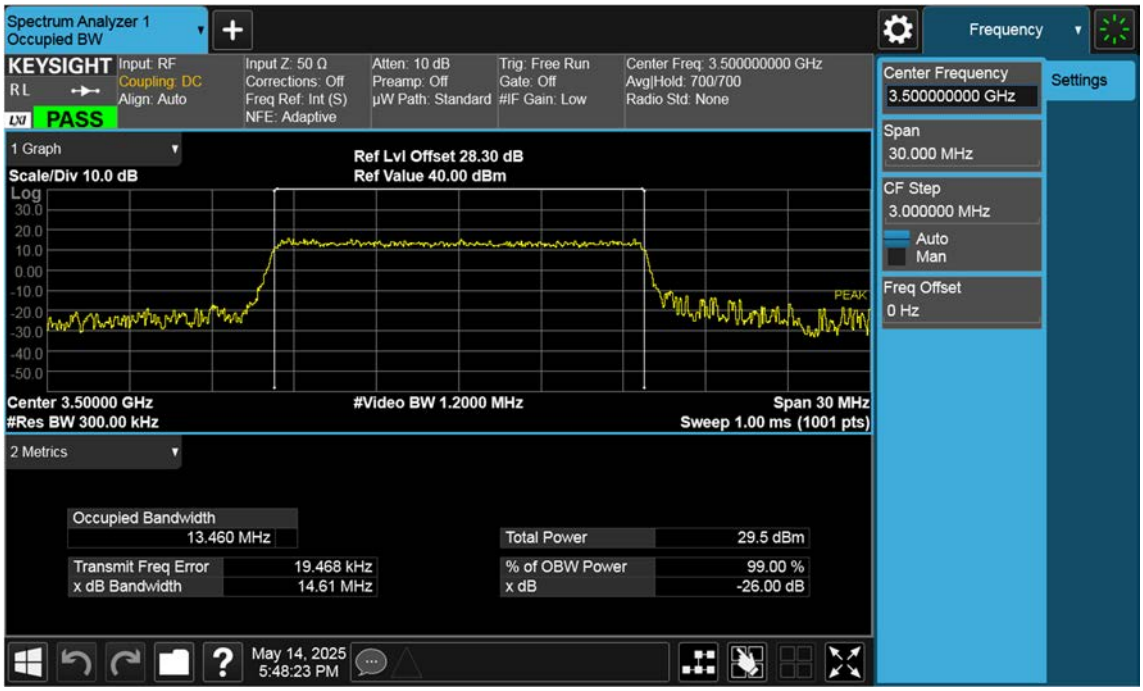
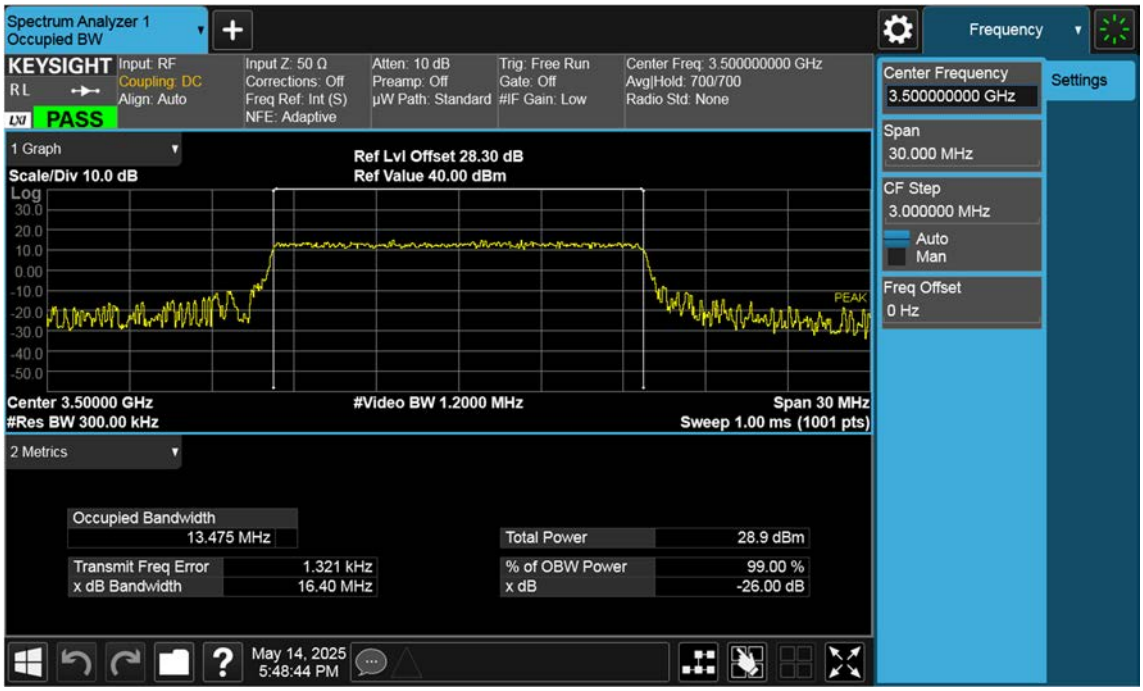


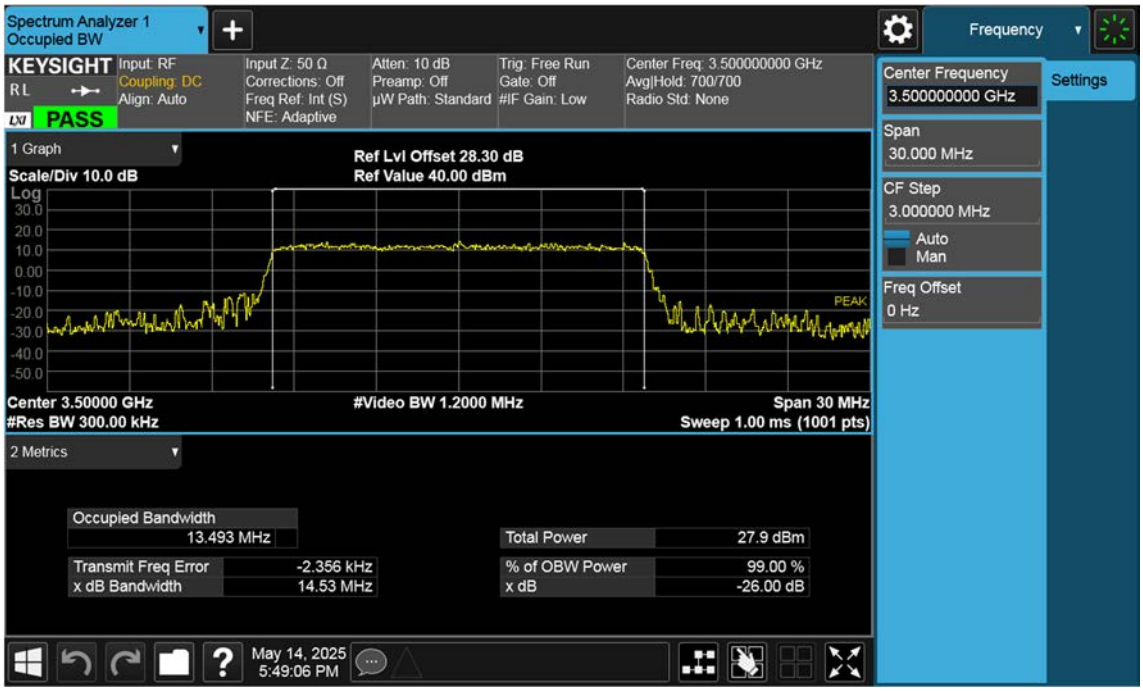
LTE B42_15 M_OBW_Mid_QPSK_FullRB



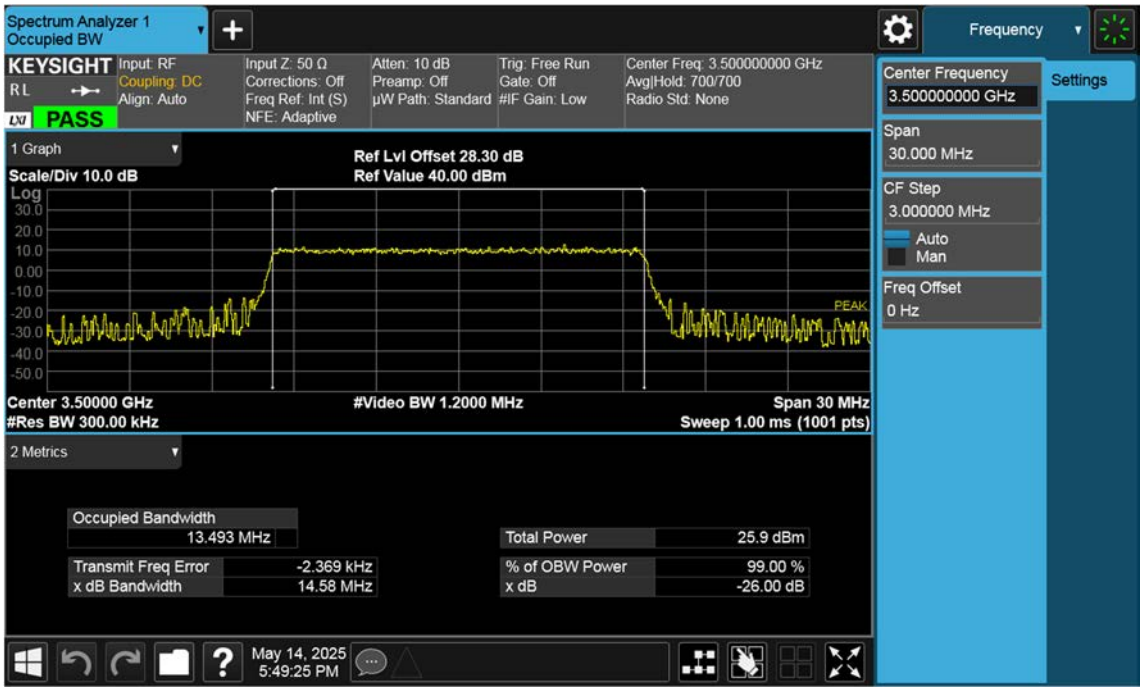
LTE B42_15 M_OBW_Mid_16QAM_FullRB



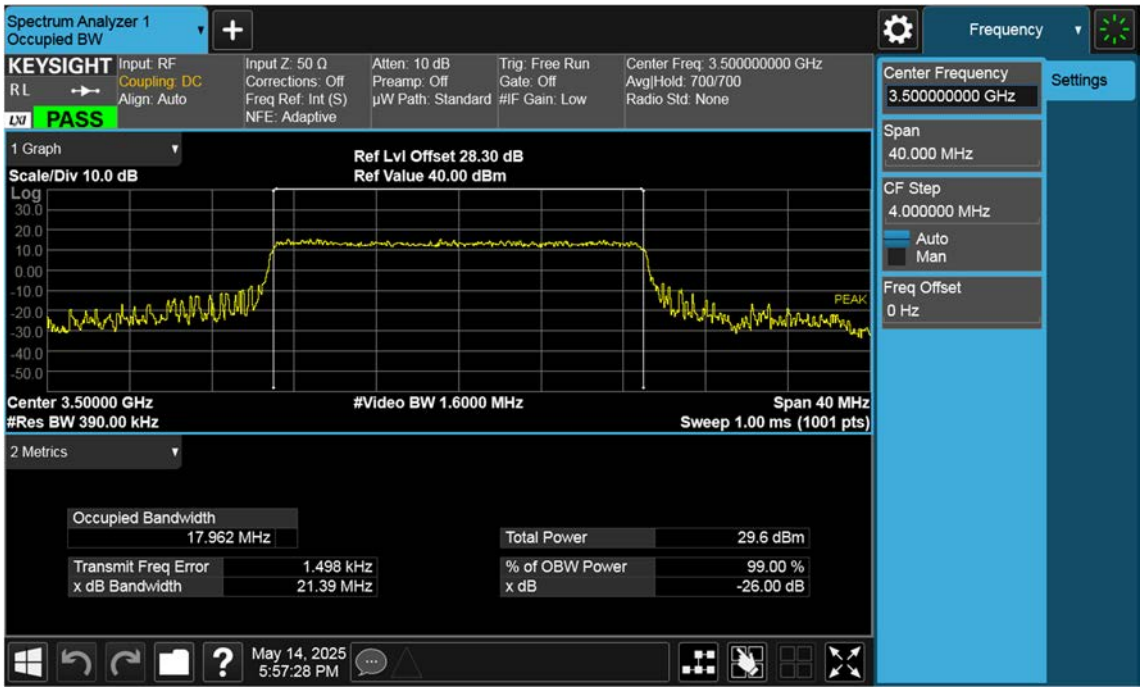
LTE B42_15 M_OBW_Mid_64QAM_FullRB



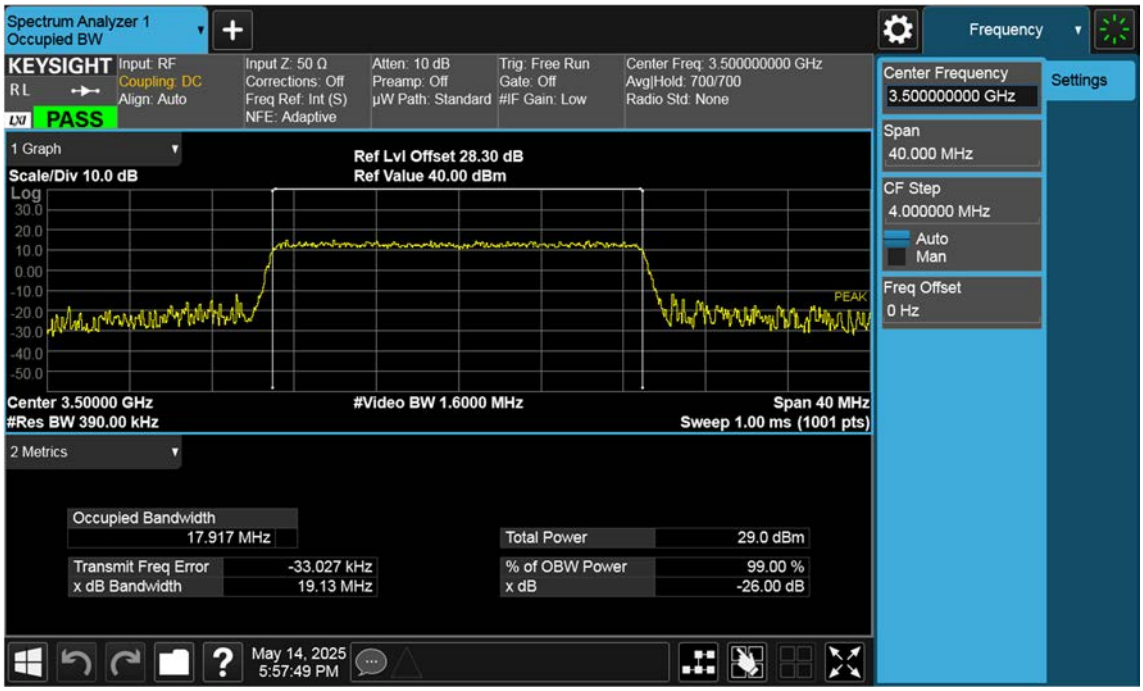
LTE B42_15 M_OBW_Mid_256QAM_FullRB



LTE B42_20 M_OBW_Mid_QPSK_FullRB

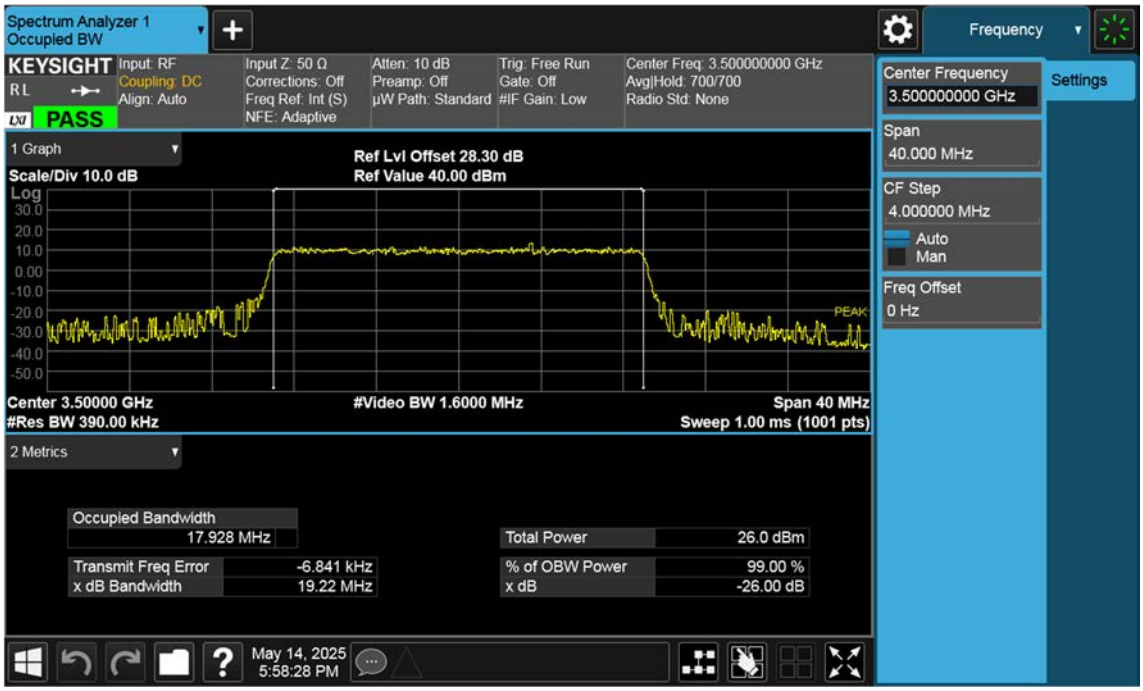


LTE B42_20 M_OBW_Mid_16QAM_FullRB

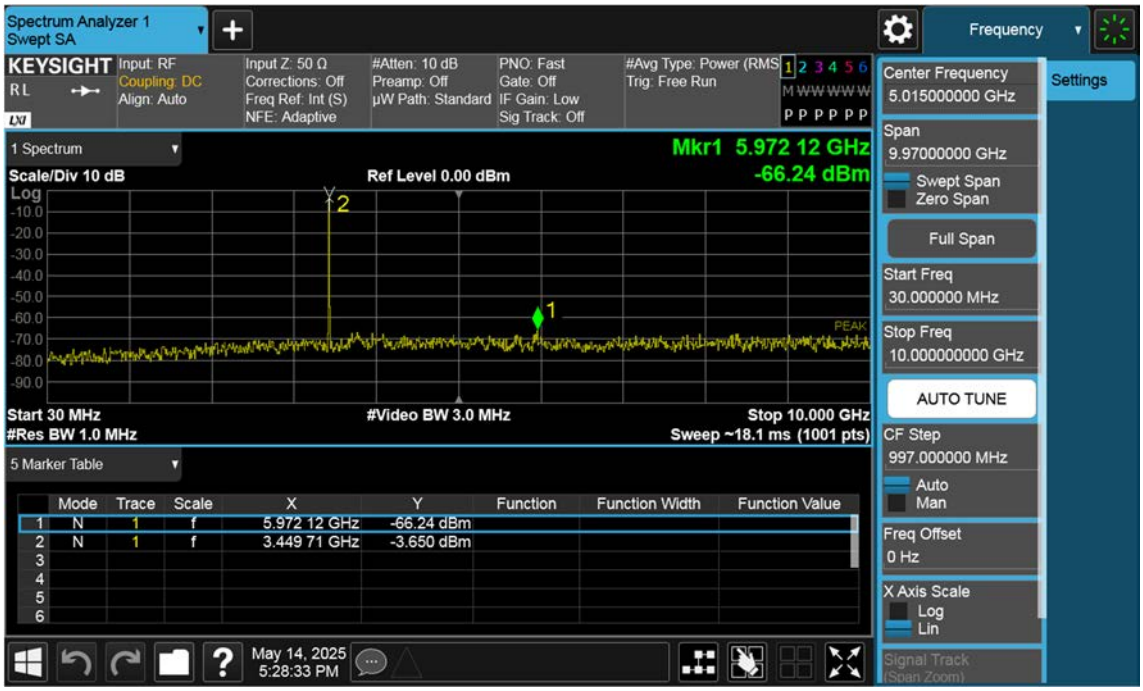


LTE B42_20 M_OBW_Mid_64QAM_FullRB

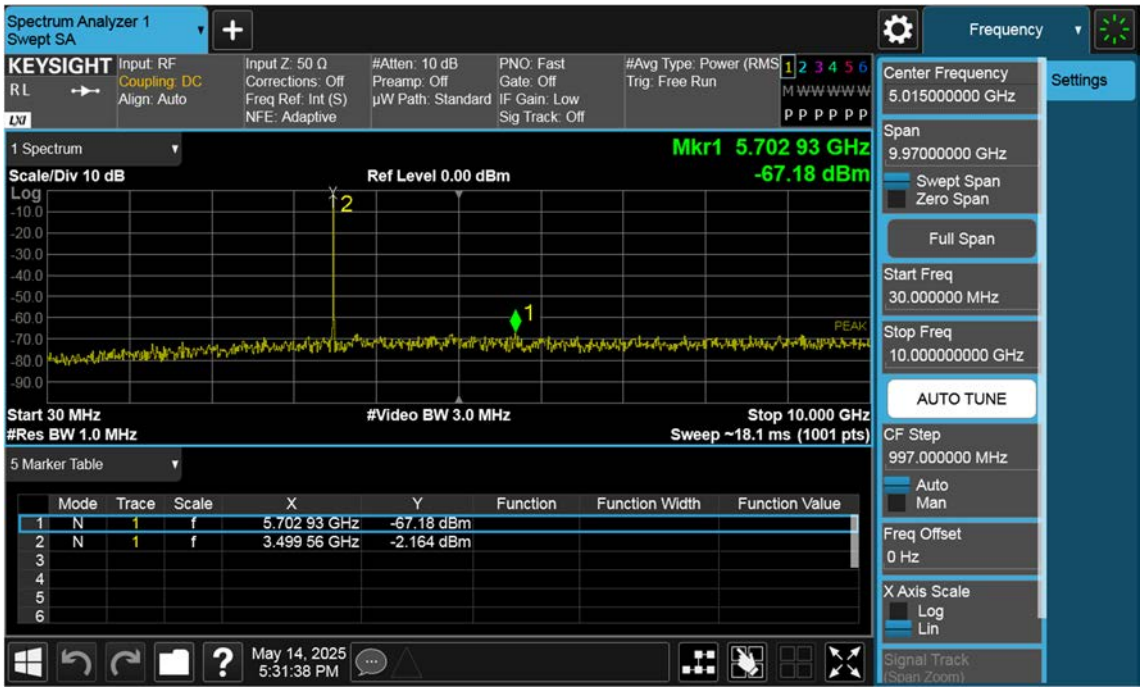
LTE B42_20 M_OBW_Mid_256QAM_FullRB



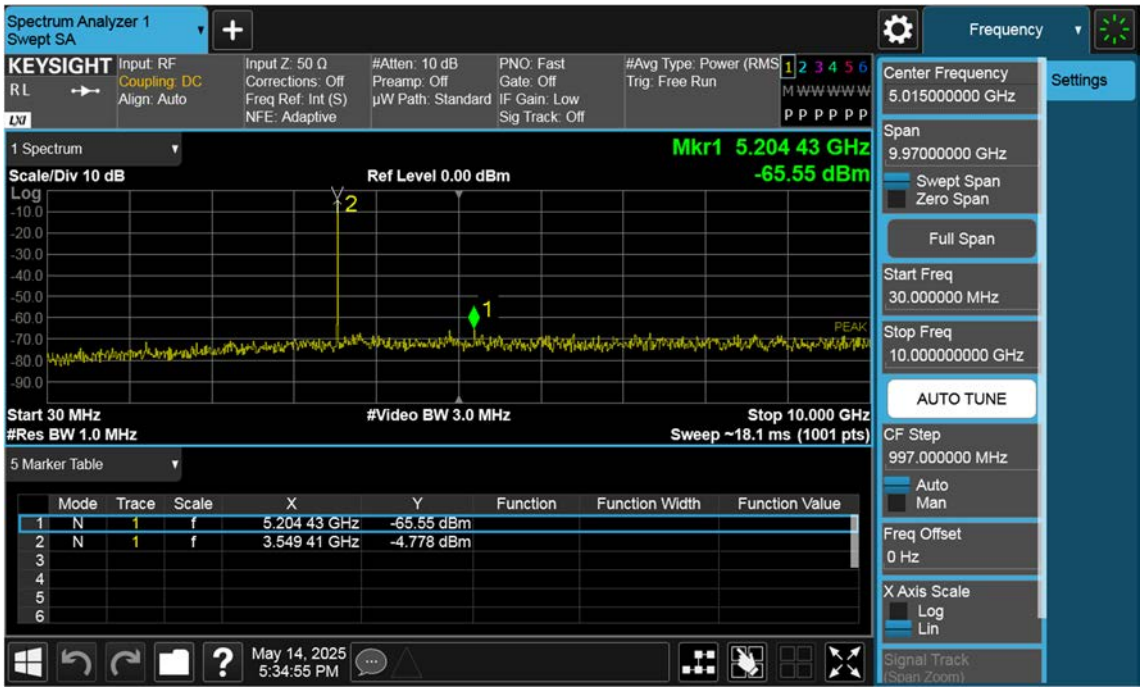
LTE B42_5 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



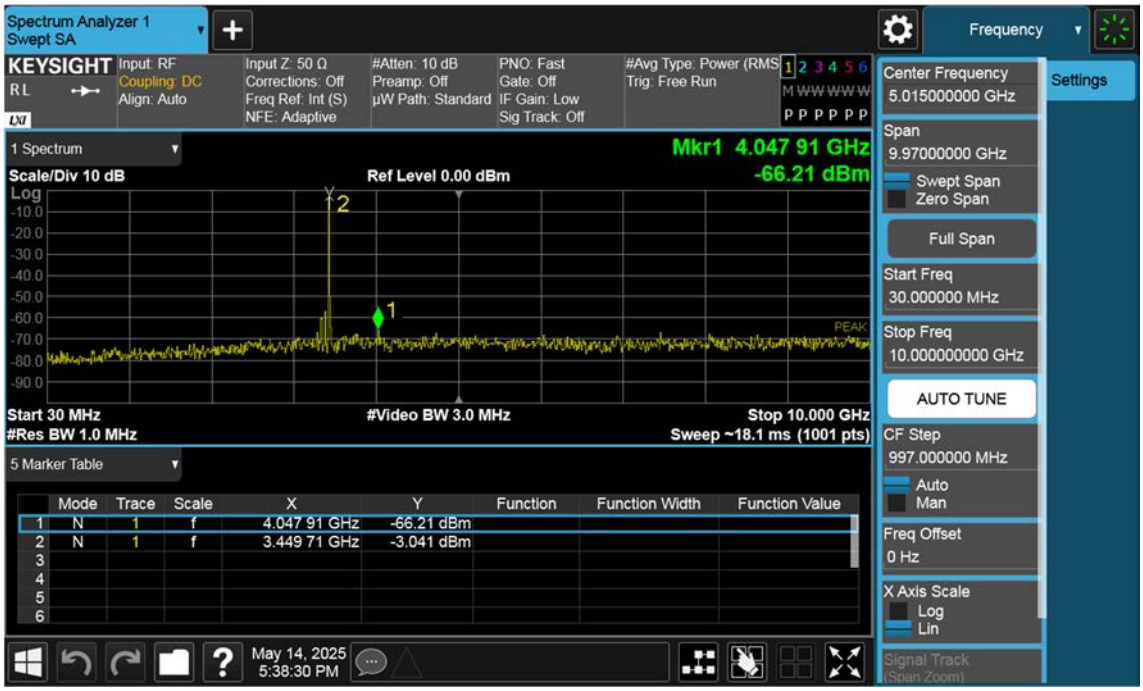
LTE B42_5 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



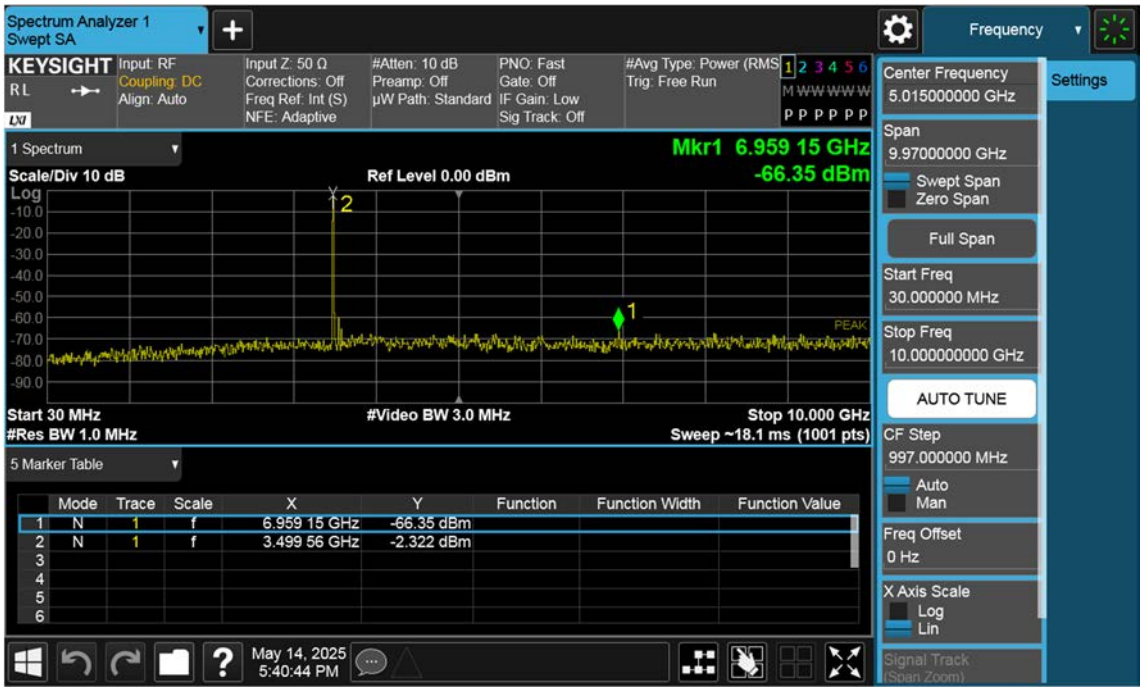
LTE B42_5 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



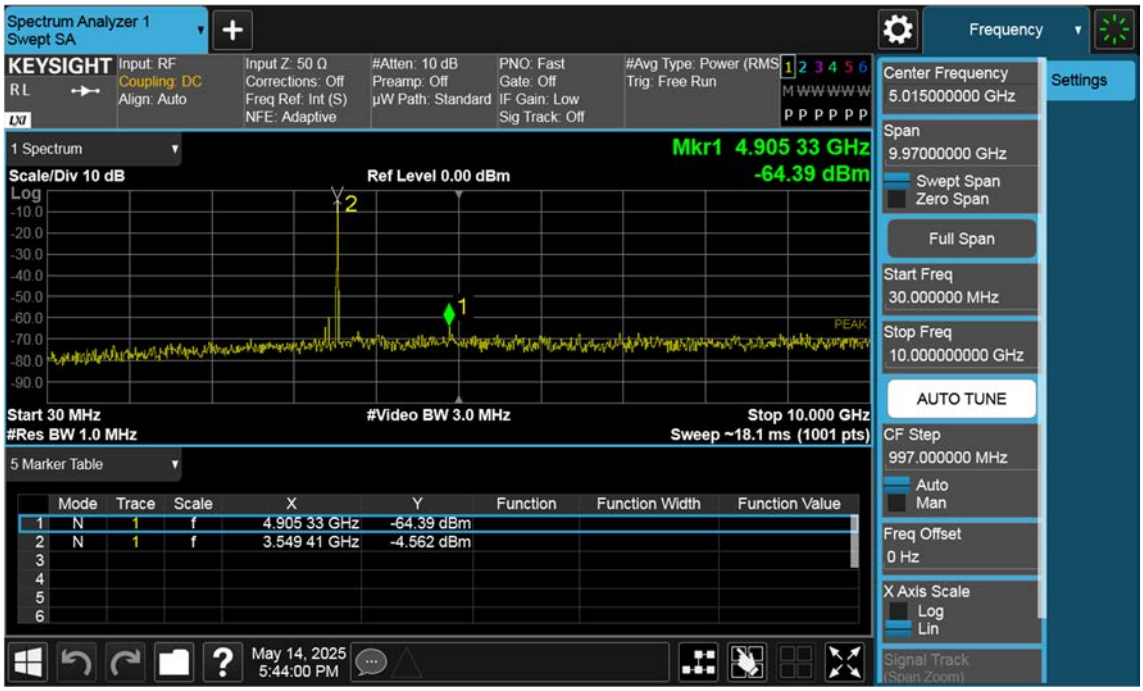
LTE B42_10 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



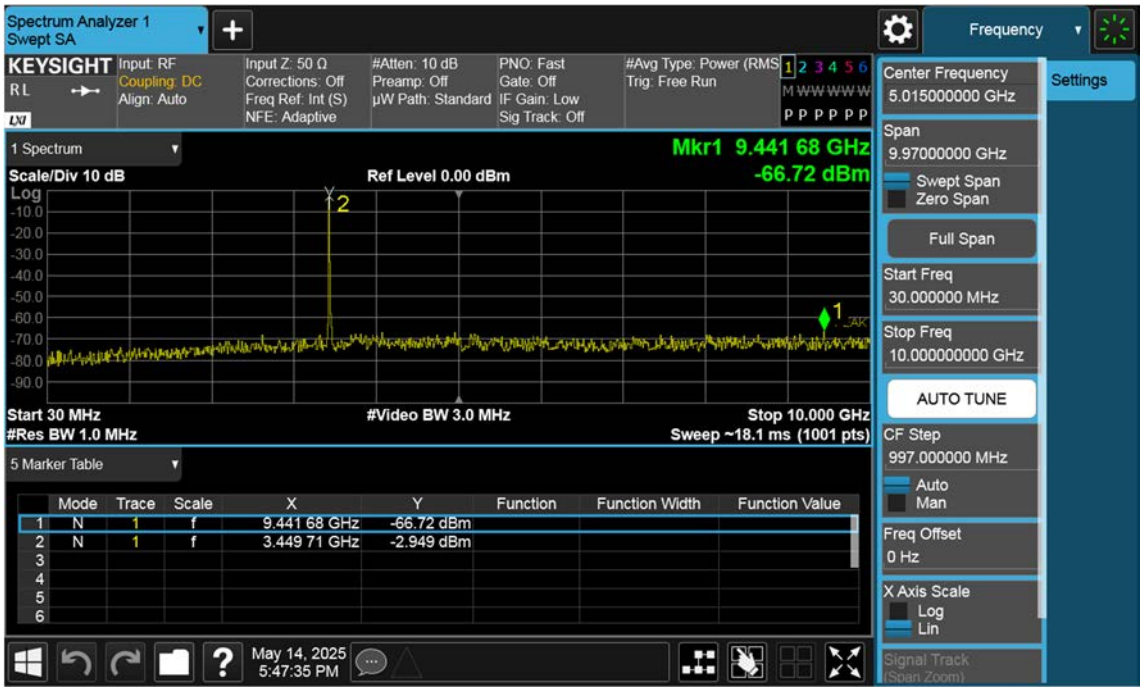
LTE B42_10 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



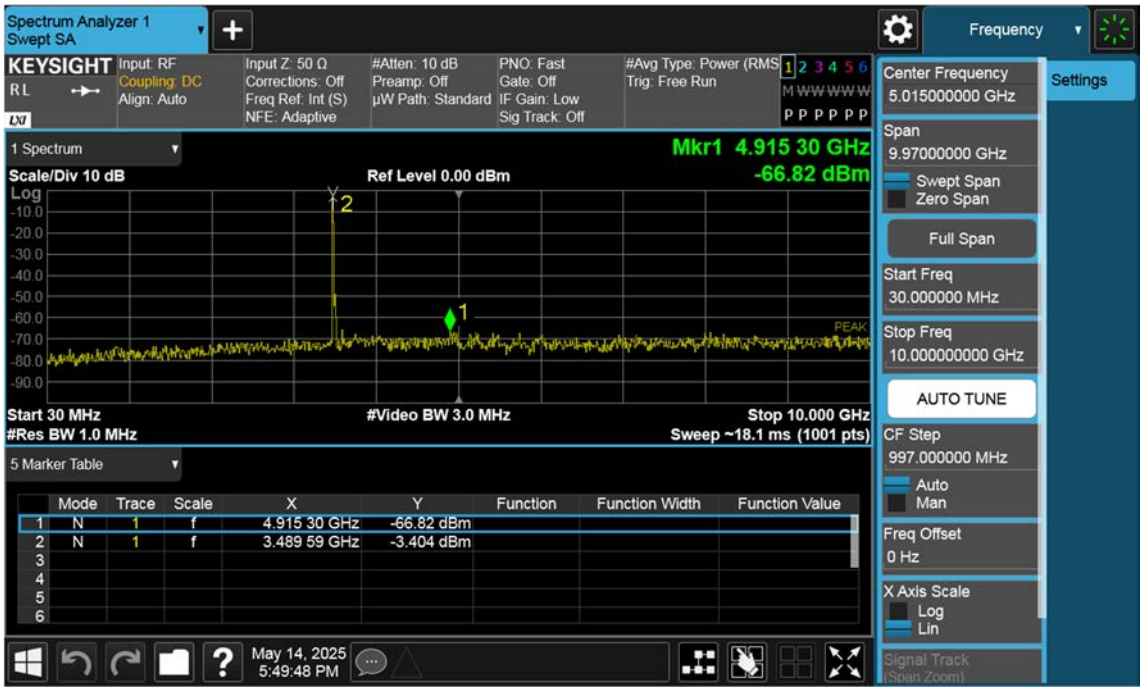
LTE B42_10 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



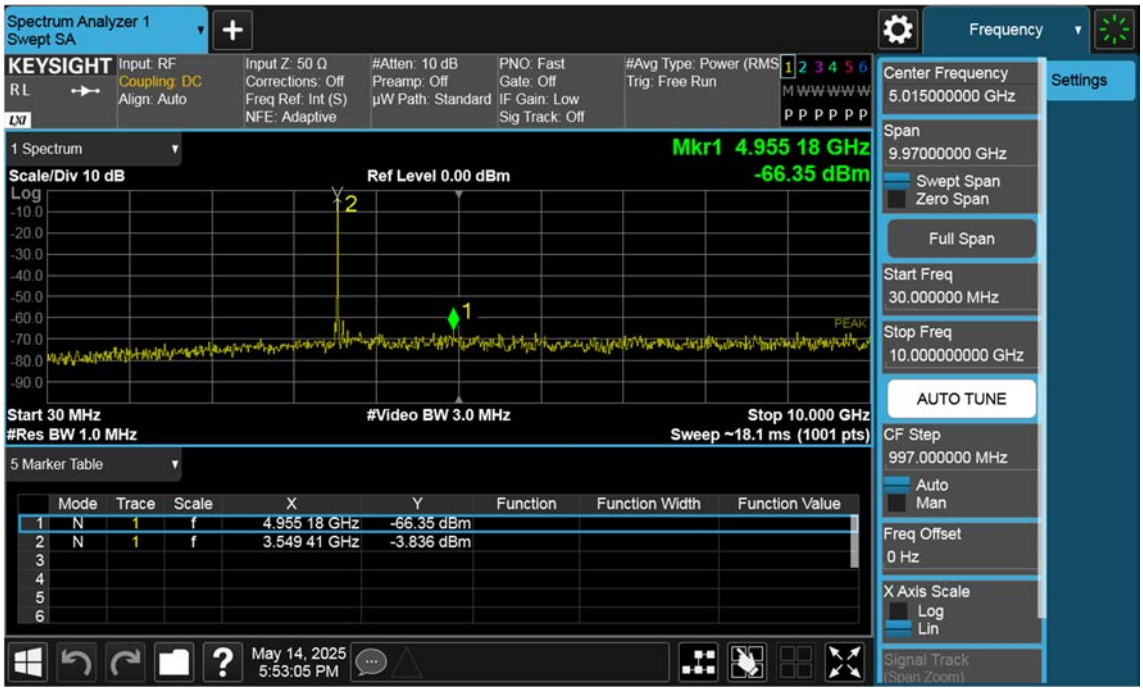
LTE B42_15 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



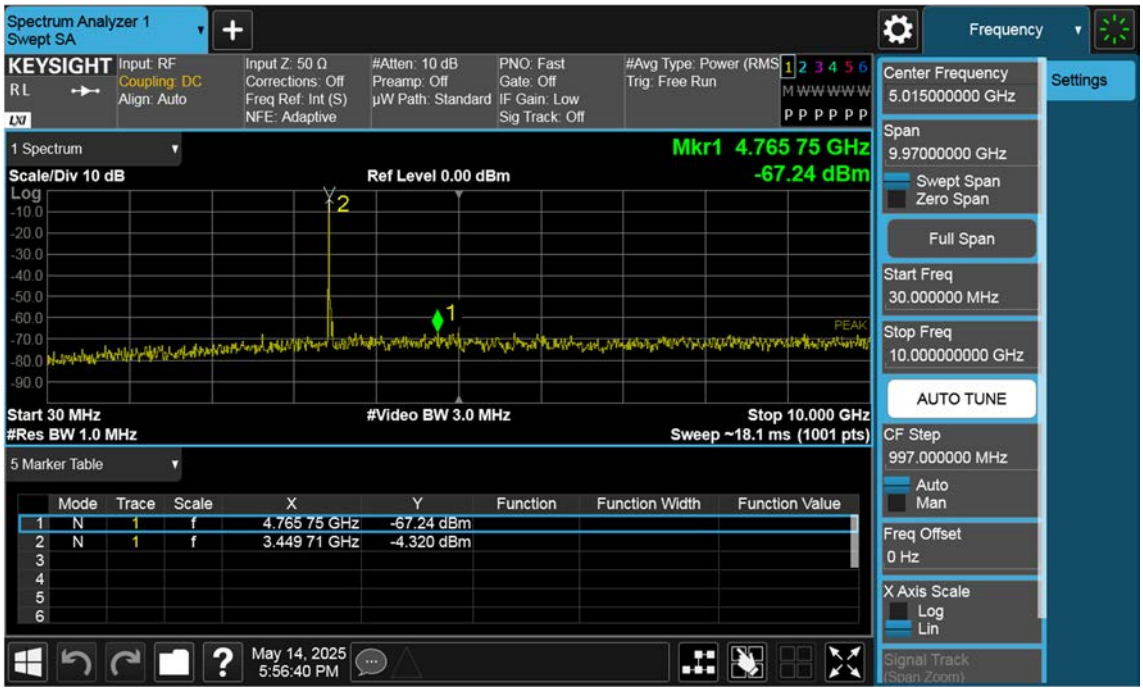
LTE B42_15 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



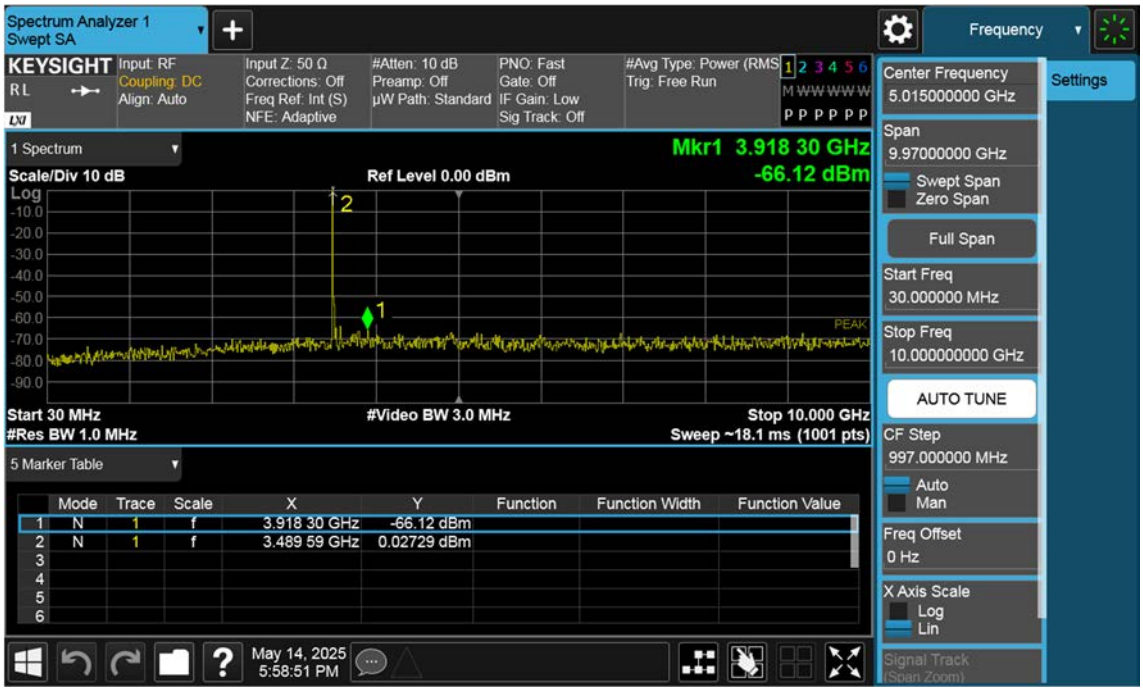
LTE B42_15 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



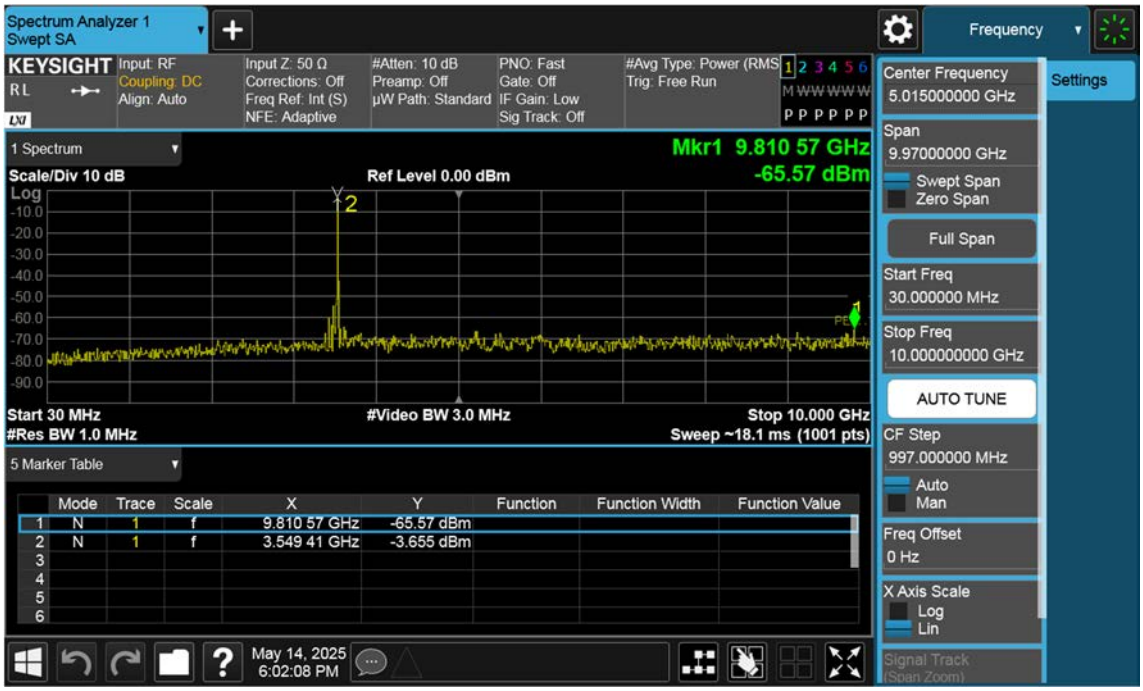
LTE B42_20 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



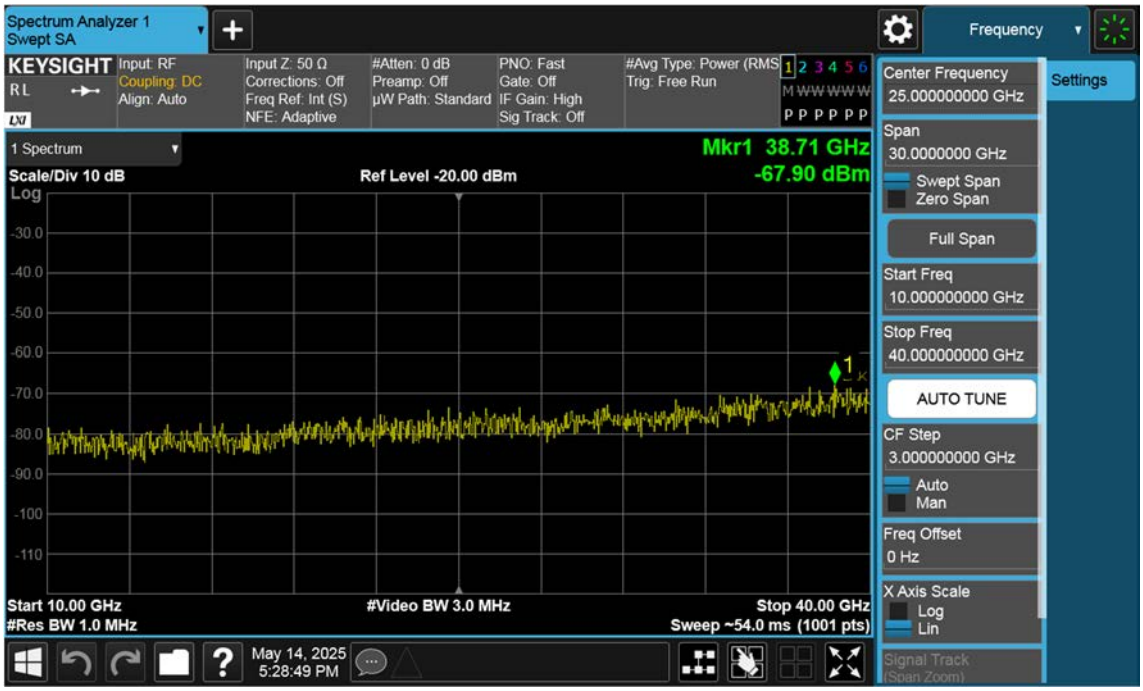
LTE B42_20 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



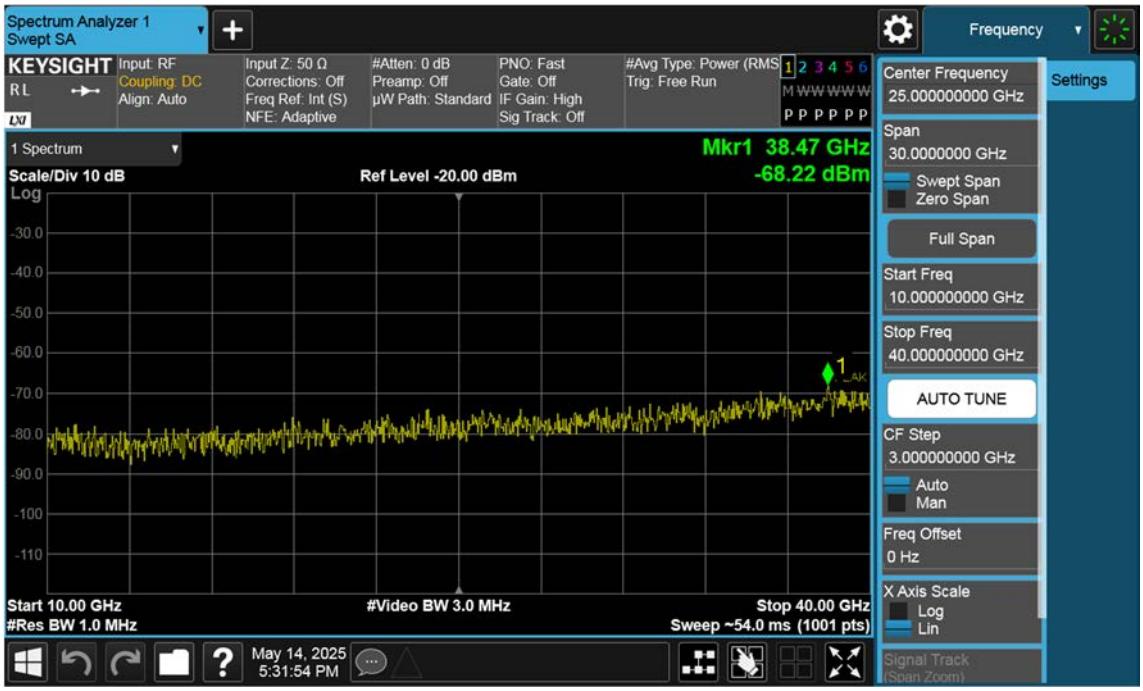
LTE B42_20 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



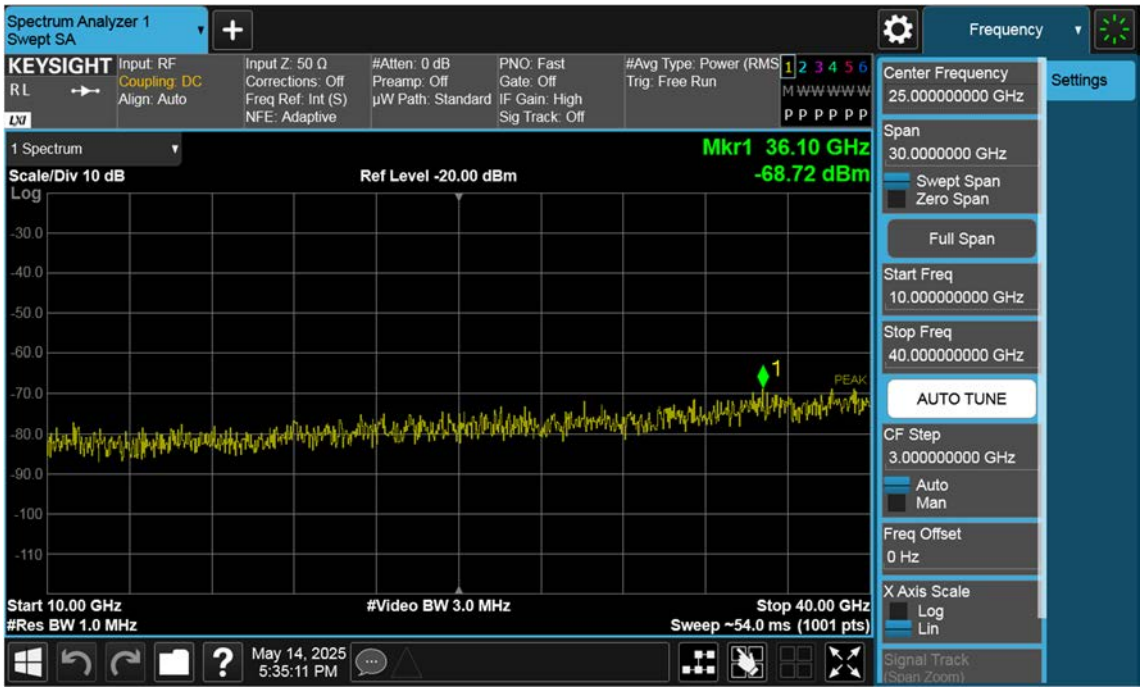
LTE B42_5 M_Conducted Spurious(Above10 G)_Low_QPSK_1RB



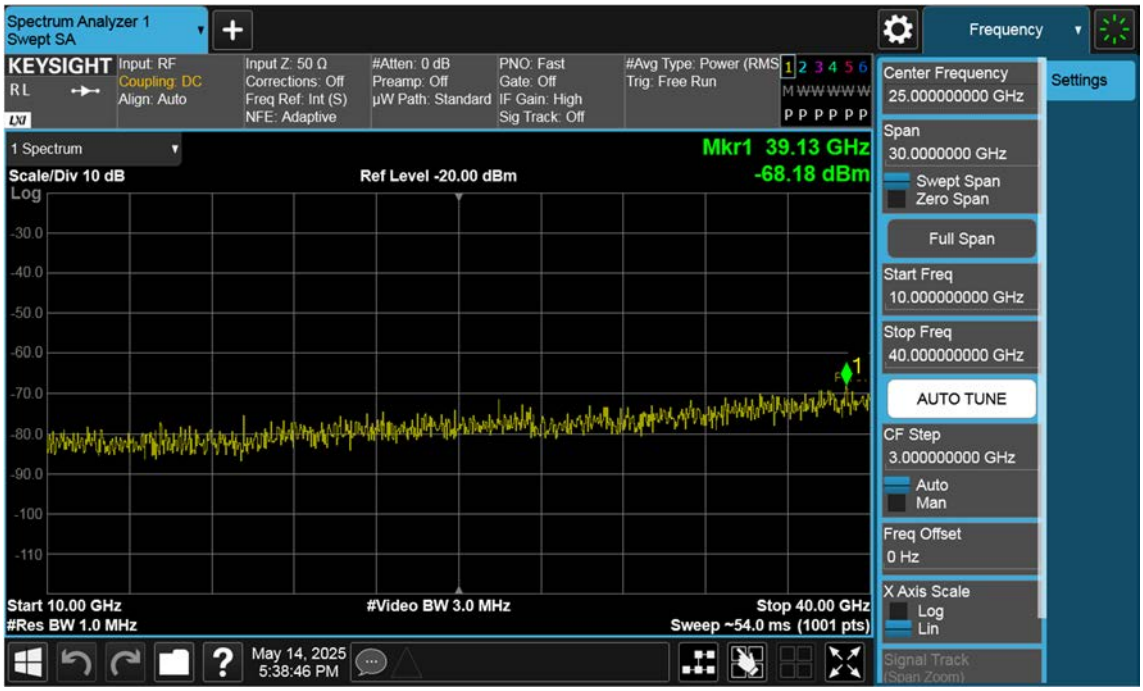
LTE B42_5 M_Conducted Spurious(Above10 G)_Mid_QPSK_1RB



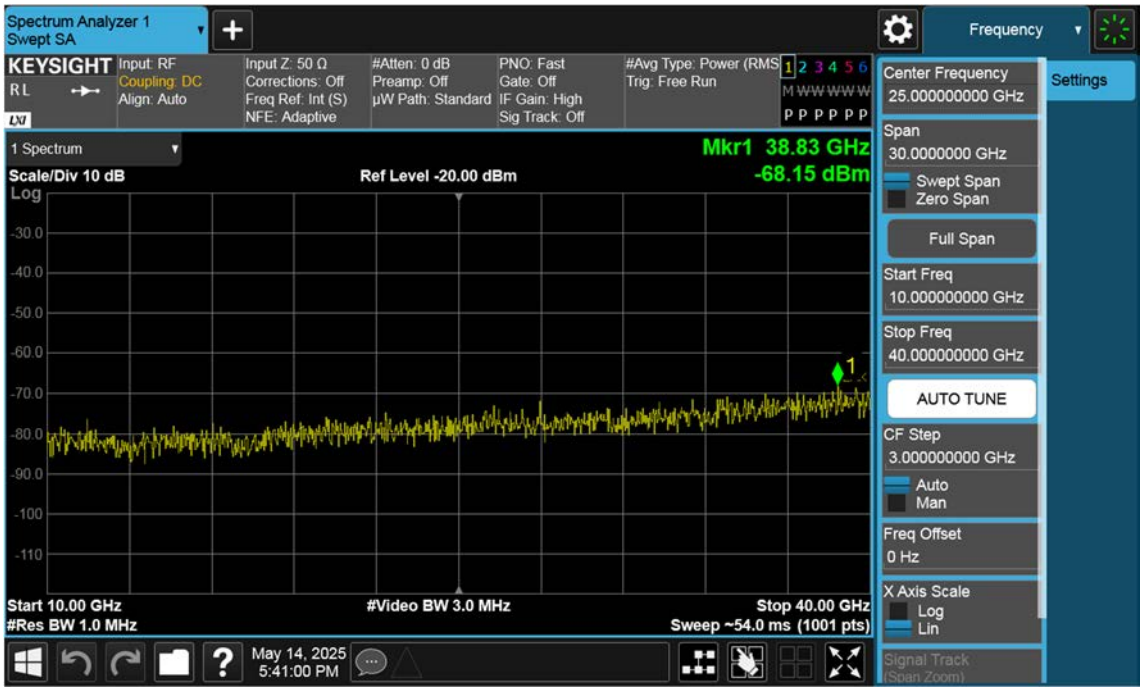
LTE B42_5 M_Conducted Spurious(Above10 G)_High_QPSK_1RB



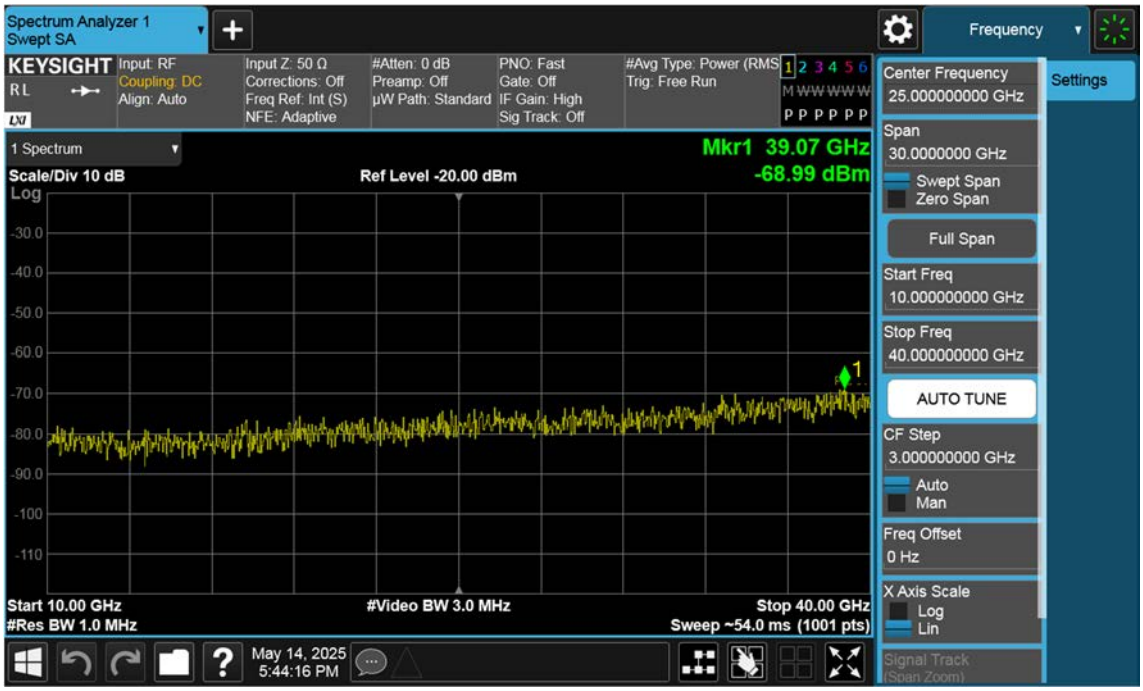
LTE B42_10 M_Conducted Spurious(Above10 G)_Low_QPSK_1RB



LTE B42_10 M_Conducted Spurious(Above10 G)_Mid_QPSK_1RB

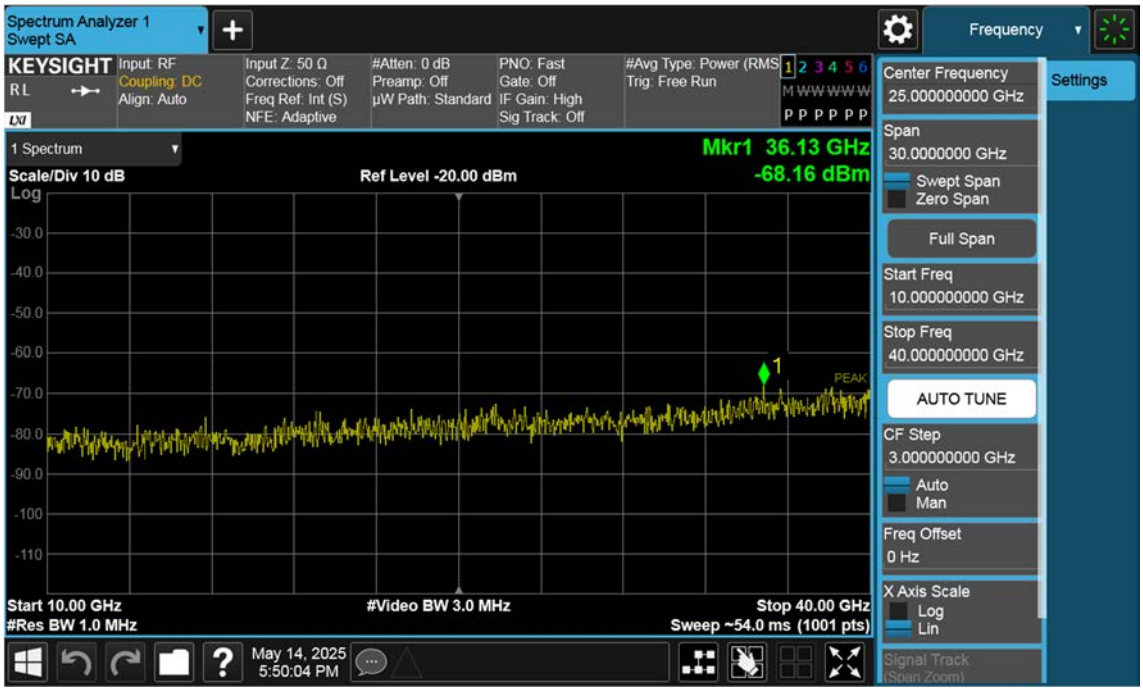


LTE B42_10 M_Conducted Spurious(Above10 G)_High_QPSK_1RB

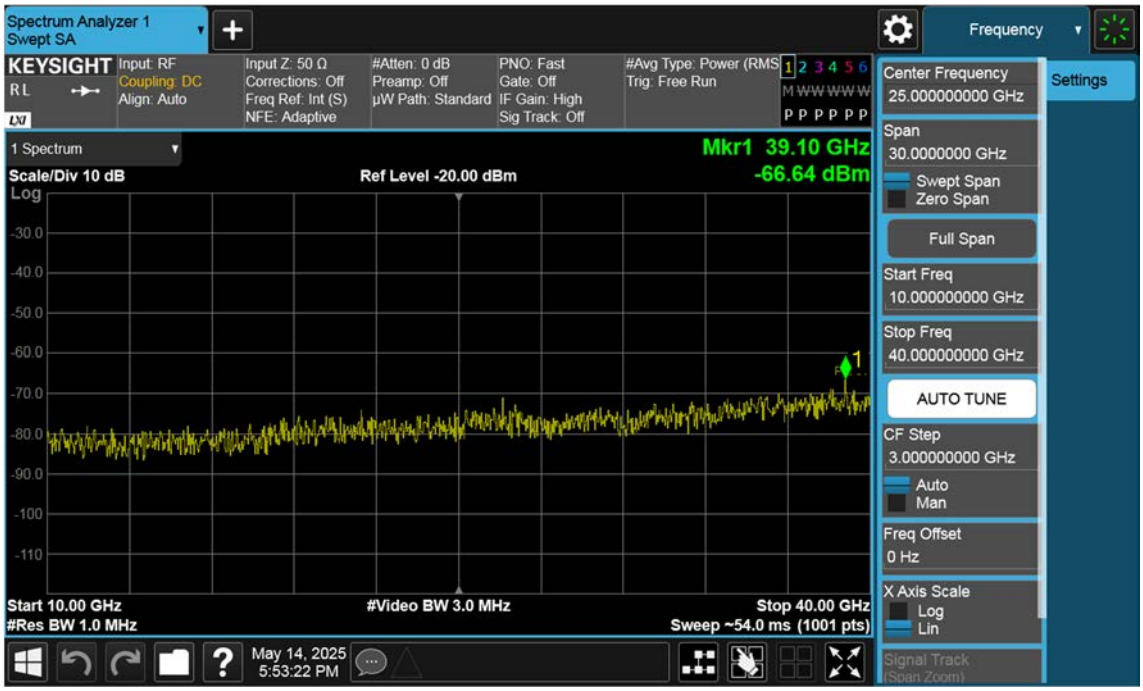


LTE B42_15 M_Conducted Spurious(Above10 G)_Low_QPSK_1RB

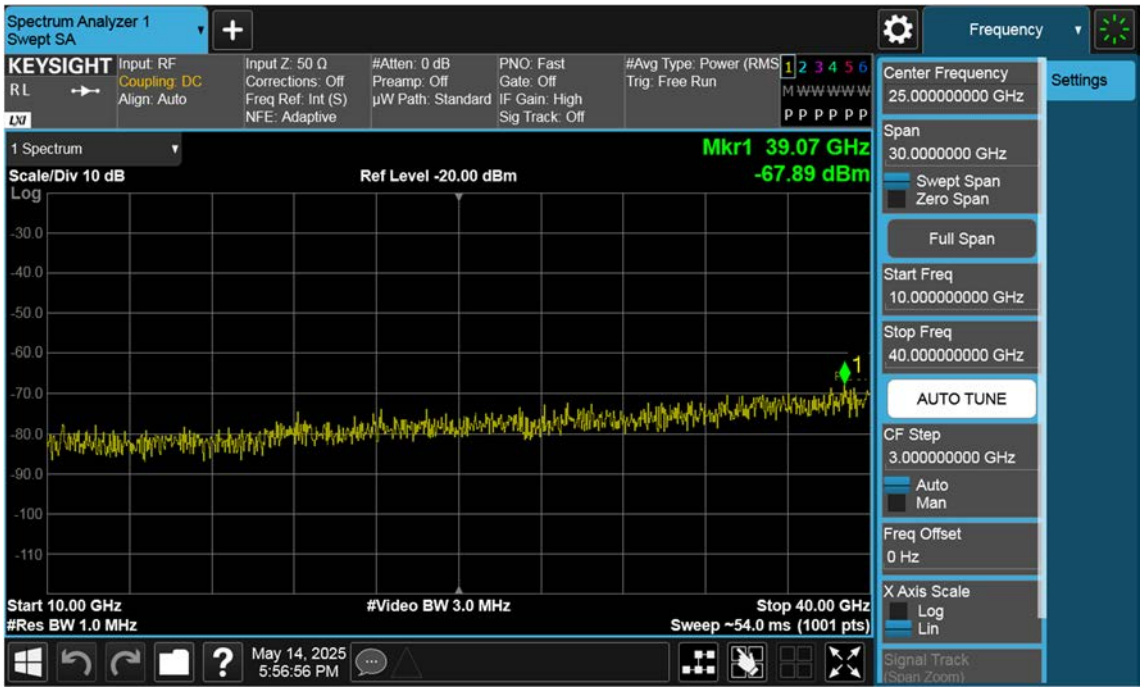
LTE B42_15 M_Conducted Spurious(Above10 G)_Mid_QPSK_1RB



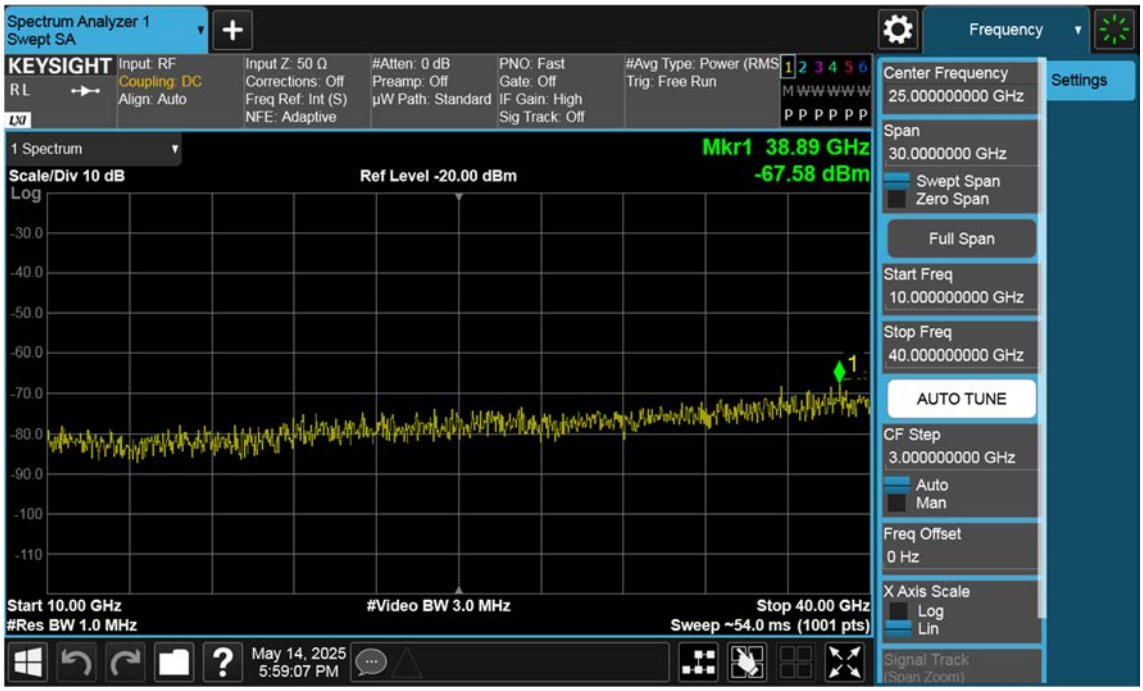
LTE B42_15 M_Conducted Spurious(Above10 G)_High_QPSK_1RB



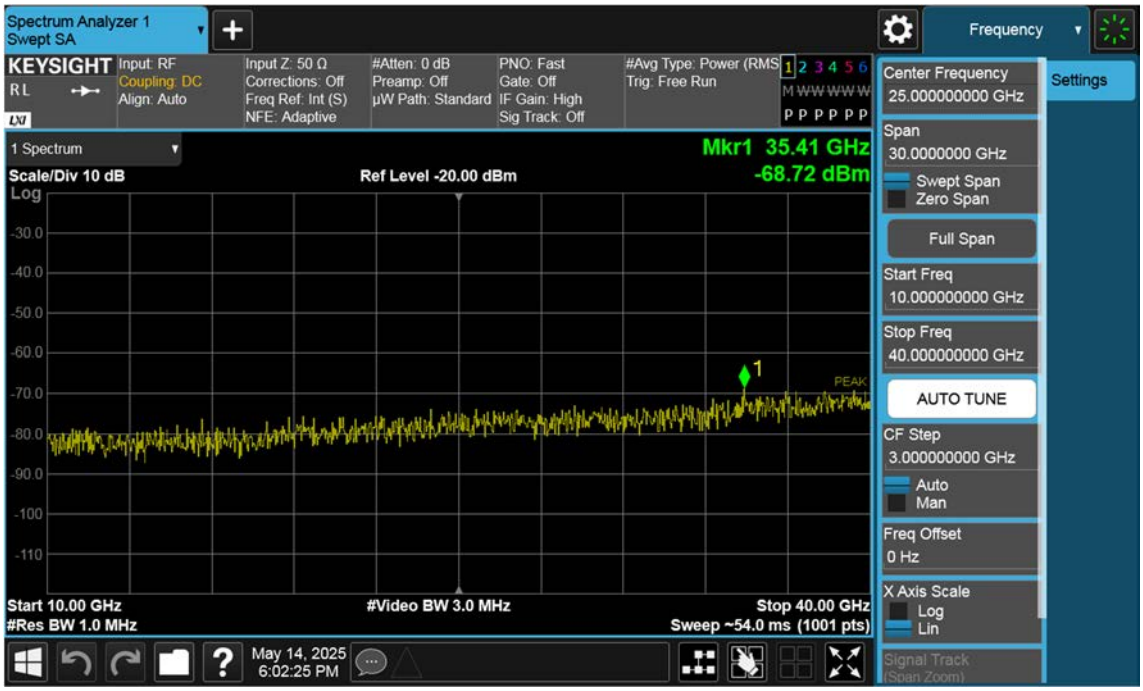
LTE B42_20 M_Conducted Spurious(Above10 G)_Low_QPSK_1RB



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)