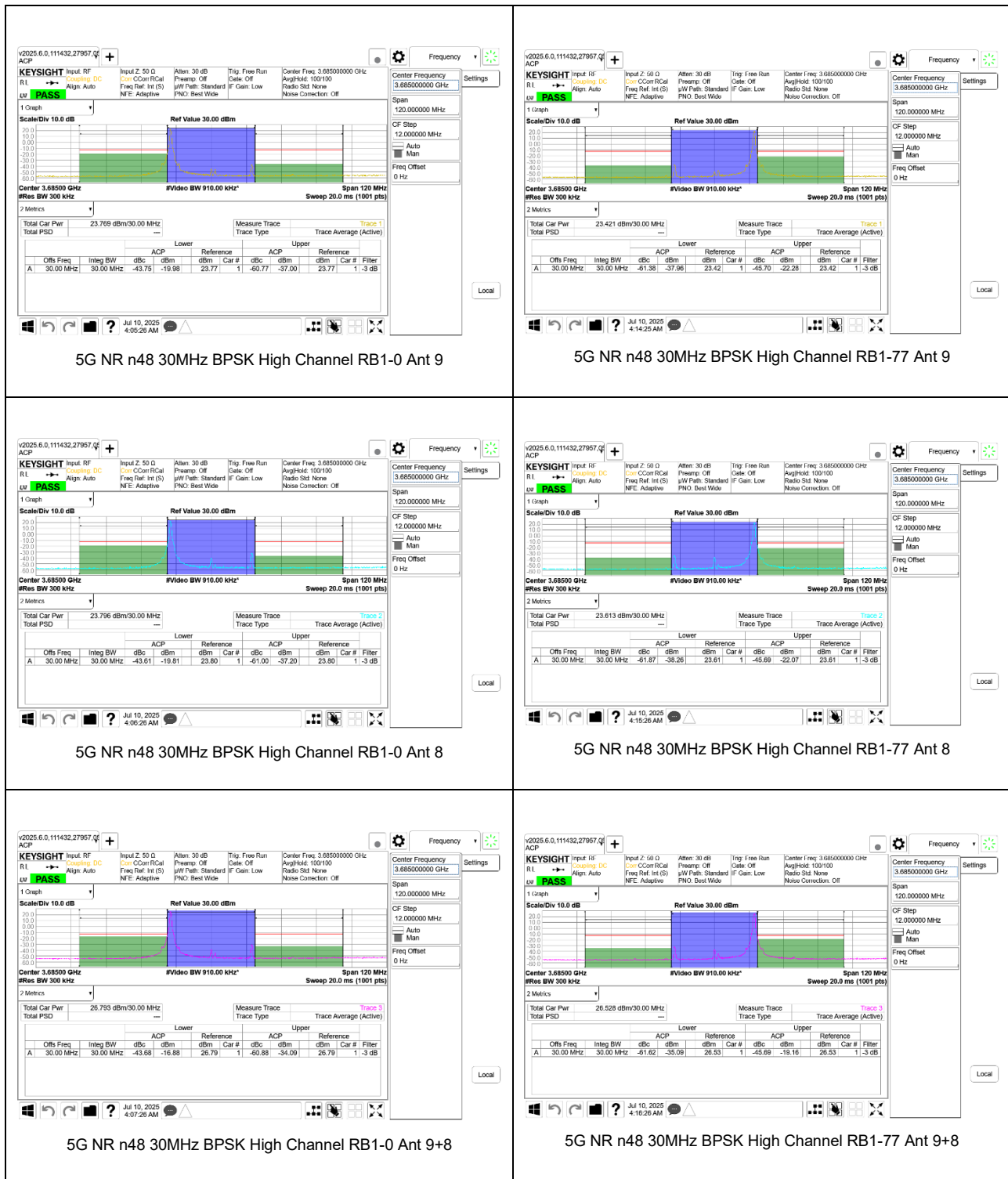
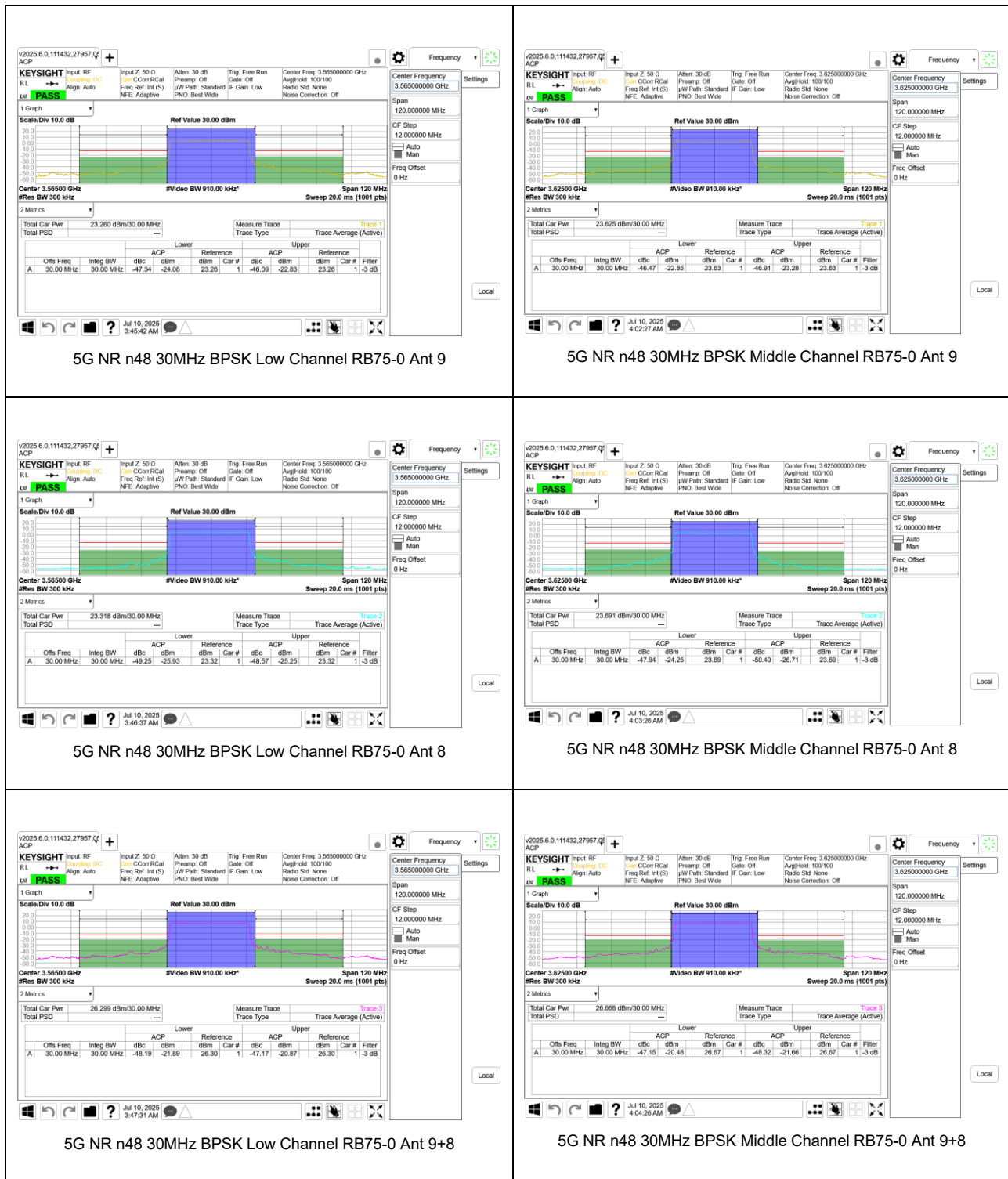
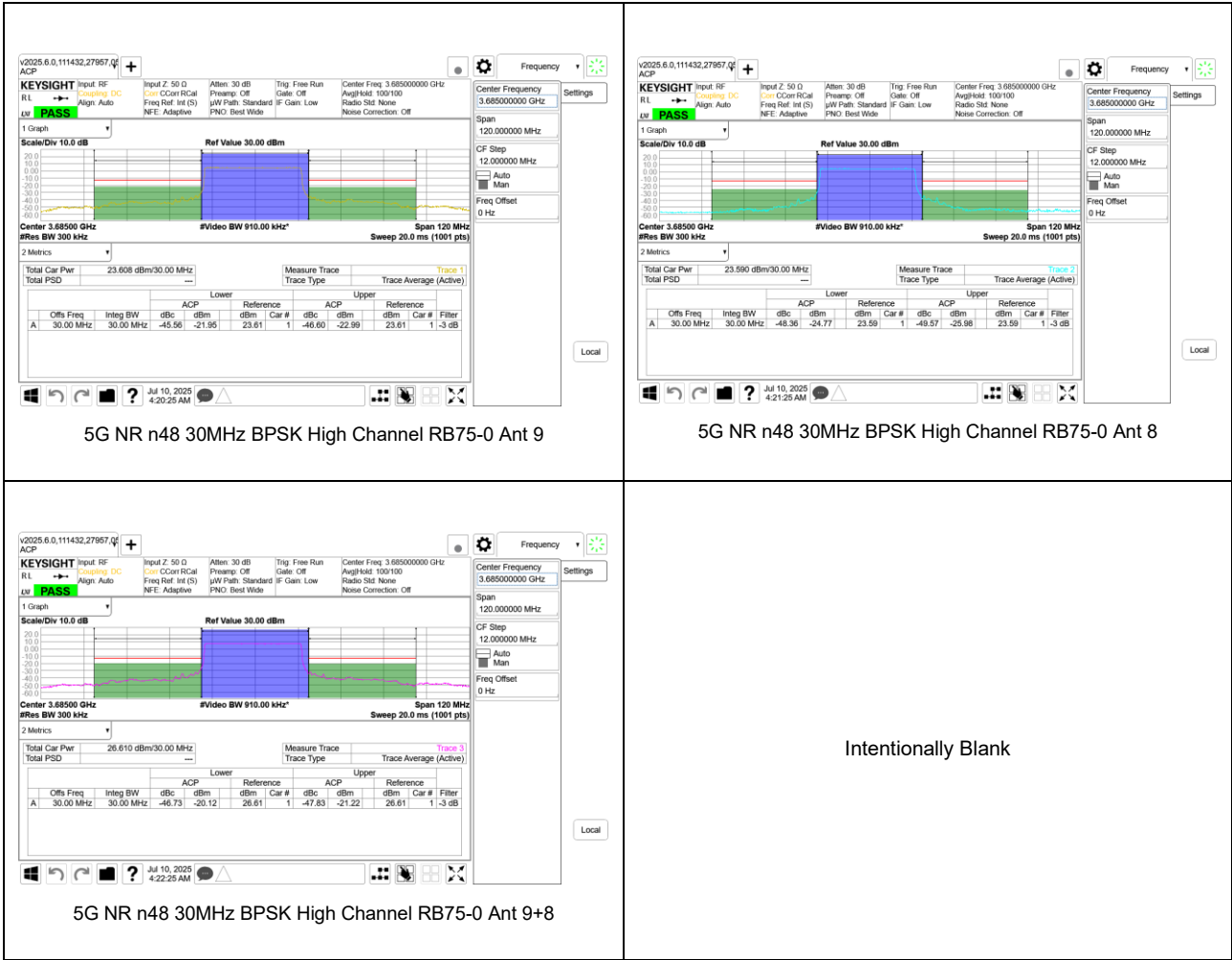
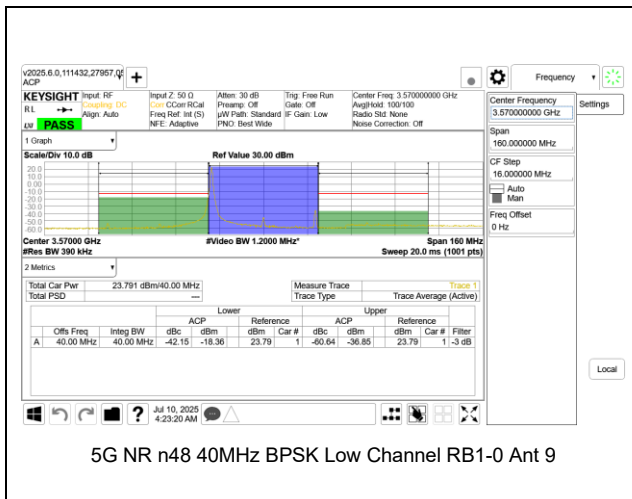


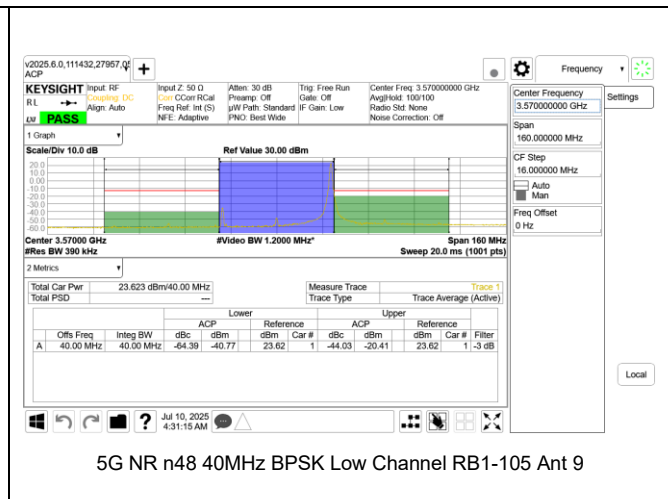




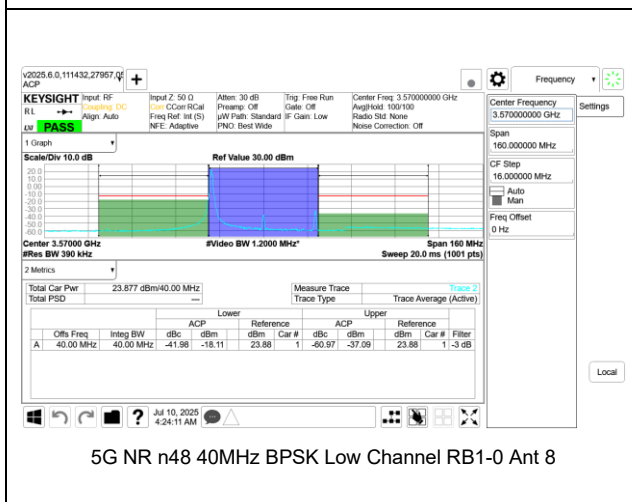




5G NR n48 40MHz BPSK Low Channel RB1-0 Ant 9



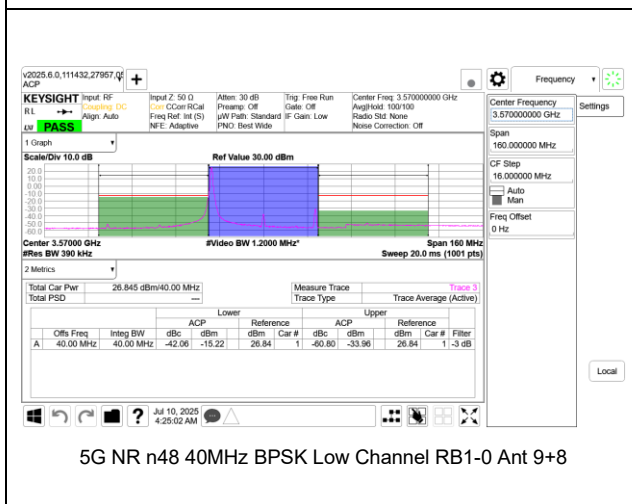
5G NR n48 40MHz BPSK Low Channel RB1-105 Ant 9



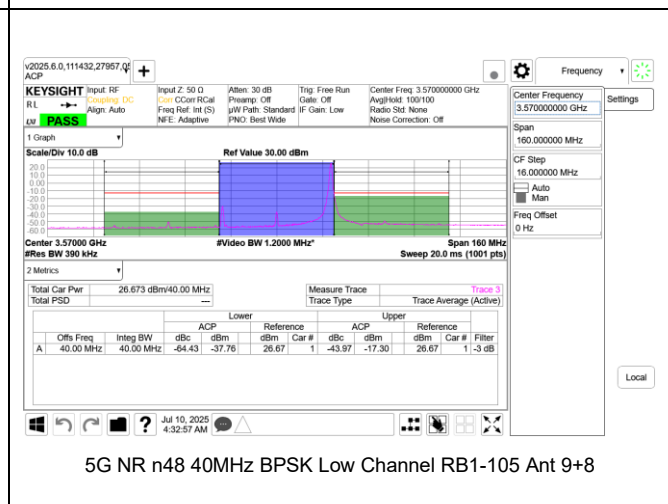
5G NR n48 40MHz BPSK Low Channel RB1-0 Ant 8



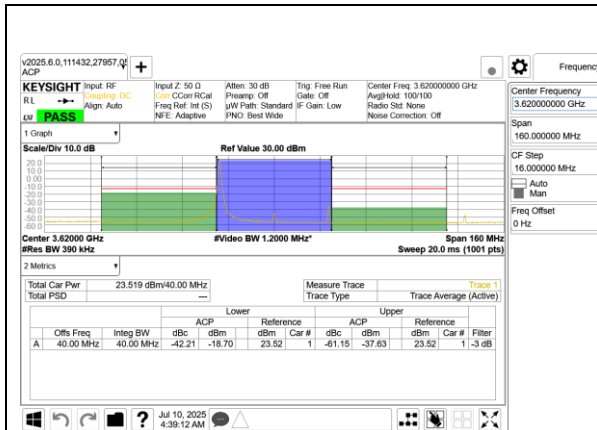
5G NR n48 40MHz BPSK Low Channel RB1-105 Ant 8



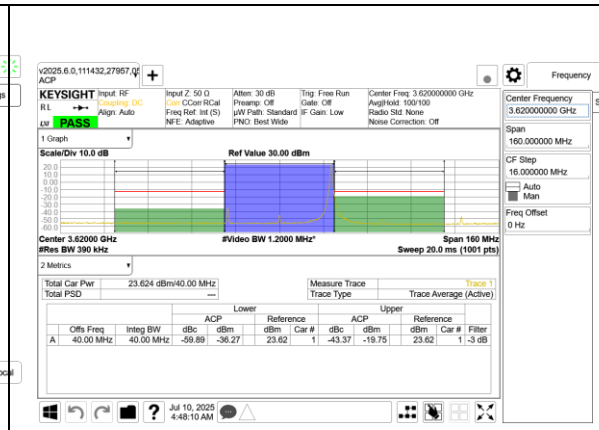
5G NR n48 40MHz BPSK Low Channel RB1-0 Ant 9+8



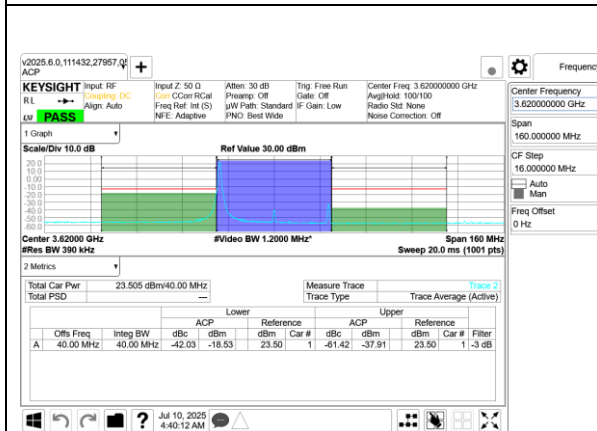
5G NR n48 40MHz BPSK Low Channel RB1-105 Ant 9+8



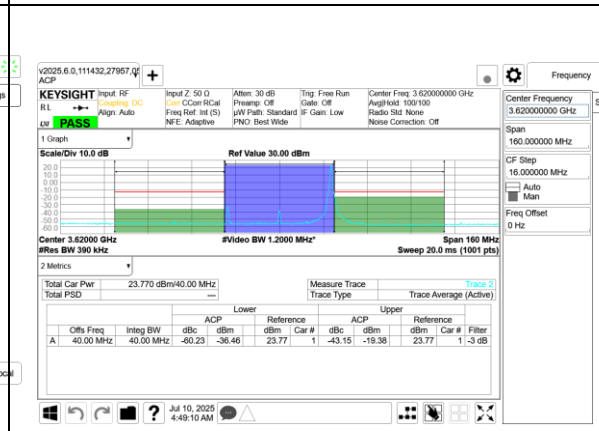
5G NR n48 40MHz BPSK Middle Channel RB1-0 Ant 9



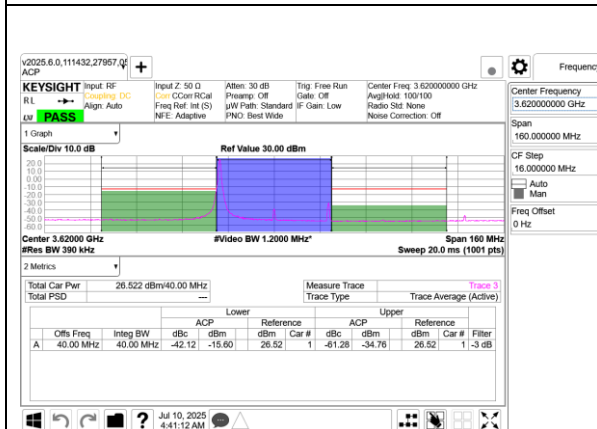
5G NR n48 40MHz BPSK Middle Channel RB1-105 Ant 9



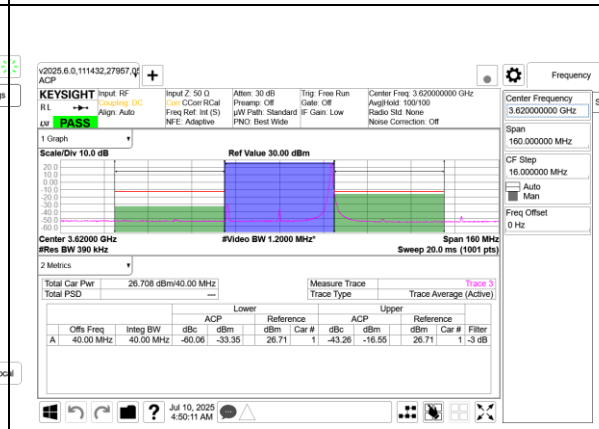
5G NR n48 40MHz BPSK Middle Channel RB1-0 Ant 8



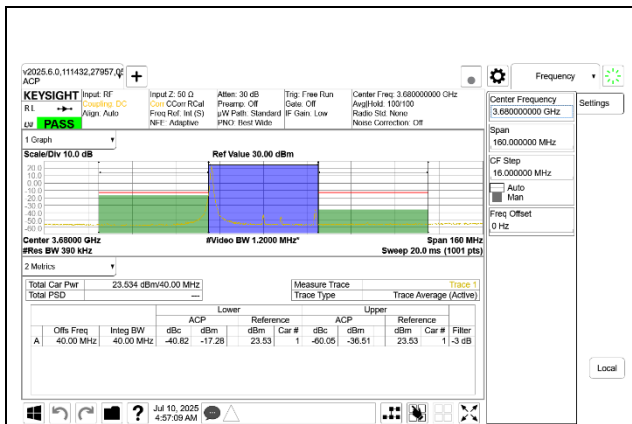
5G NR n48 40MHz BPSK Middle Channel RB1-105 Ant 8



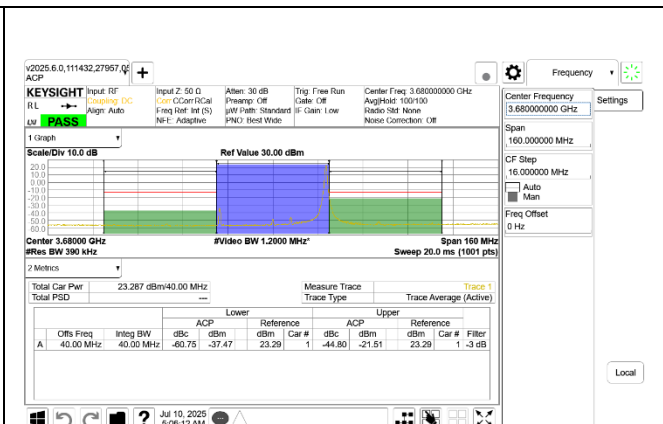
5G NR n48 40MHz BPSK Middle Channel RB1-0 Ant 9+8



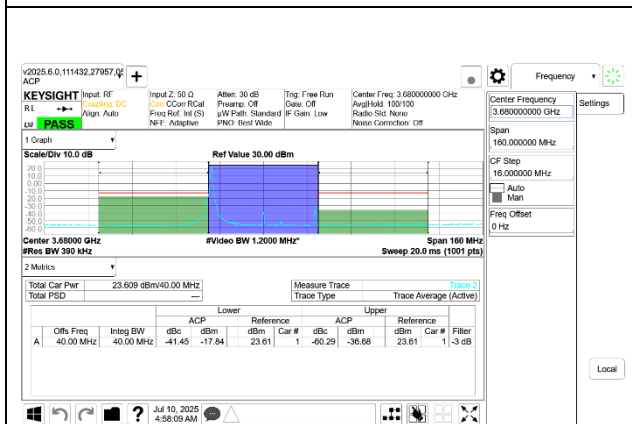
5G NR n48 40MHz BPSK Middle Channel RB1-105 Ant 9+8



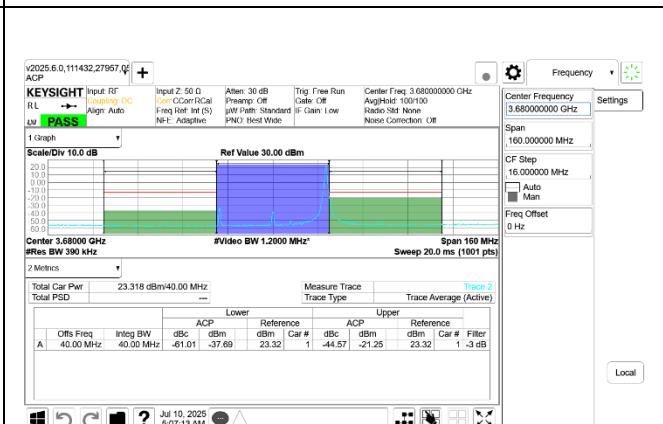
5G NR n48 40MHz BPSK High Channel RB1-0 Ant 9



5G NR n48 40MHz BPSK High Channel RB1-105 Ant 9



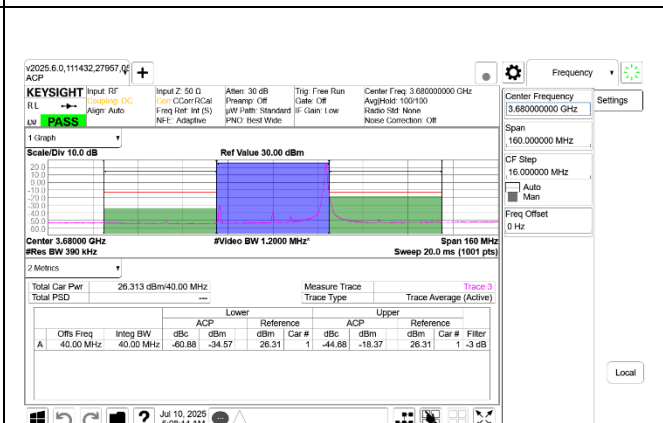
5G NR n48 40MHz BPSK High Channel RB1-0 Ant 8



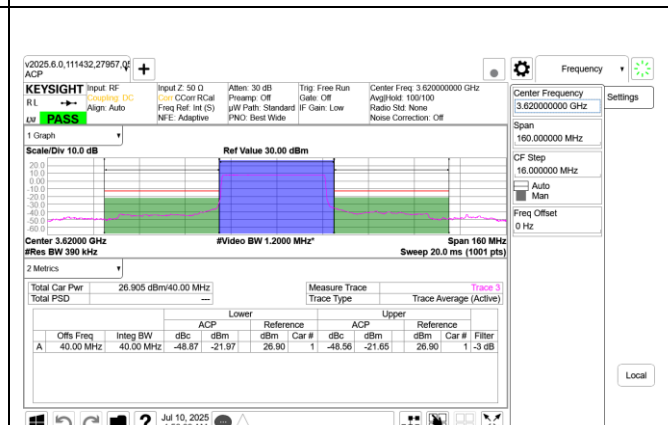
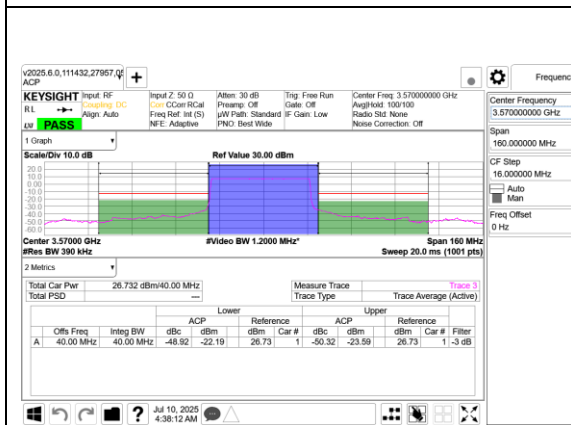
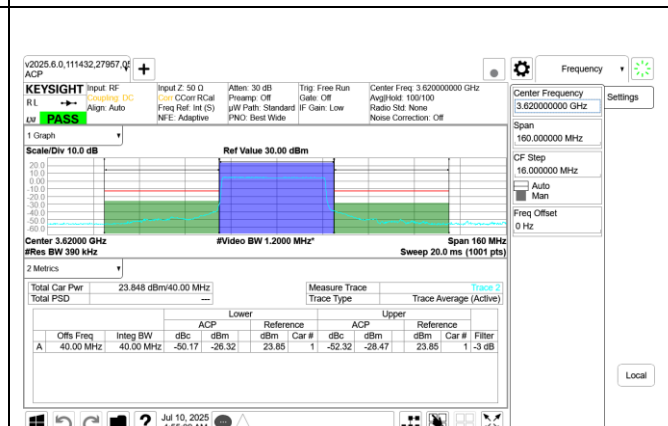
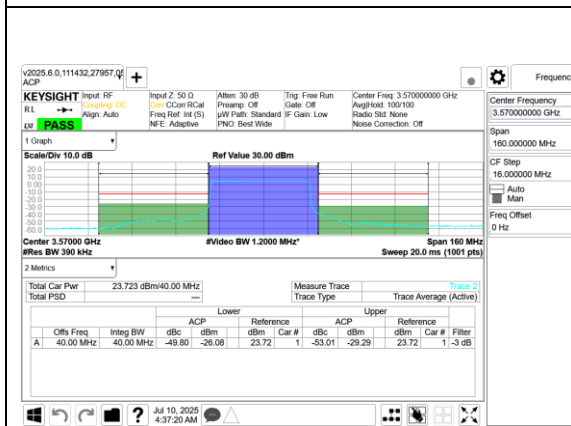
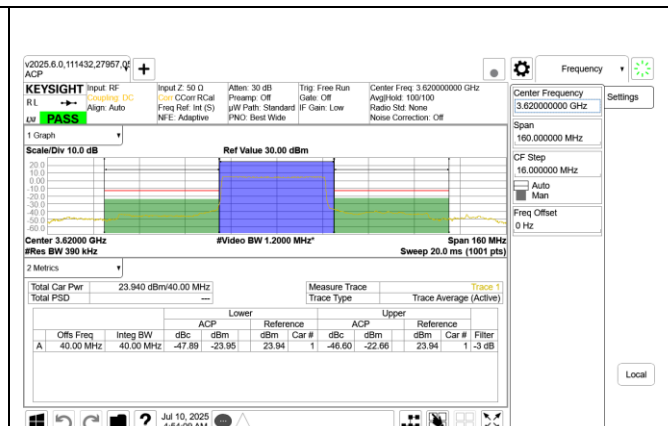
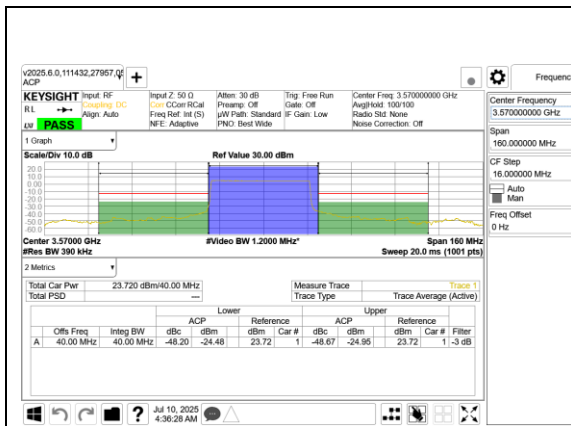
5G NR n48 40MHz BPSK High Channel RB1-105 Ant 8

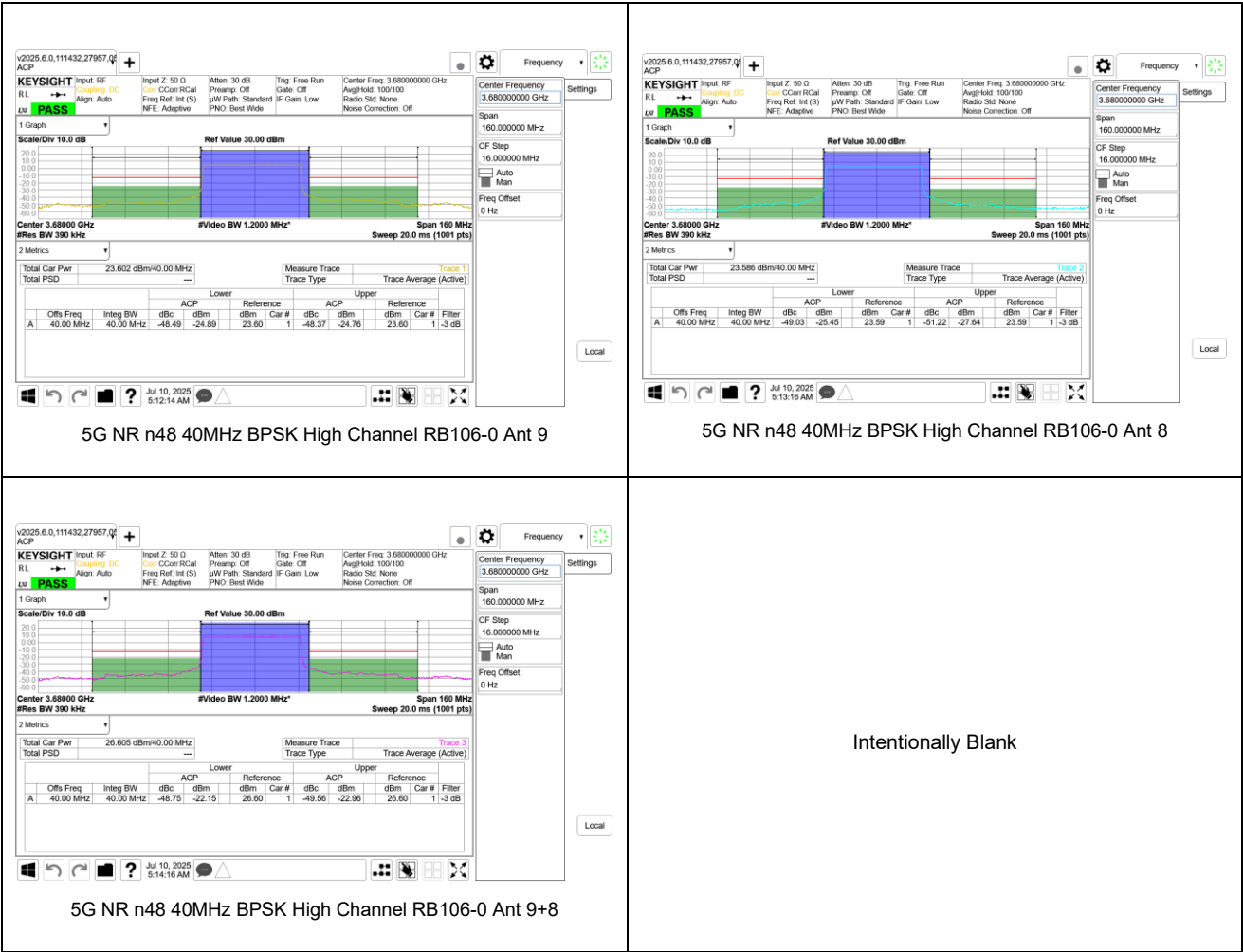


5G NR n48 40MHz BPSK High Channel RB1-0 Ant 9+8



5G NR n48 40MHz BPSK High Channel RB1-105 Ant 9+8





9.3. OUT OF BAND EMISSIONS

LIMITS

FCC: §96.41

(e) 3.5 GHz Emissions and Interference Limits—

(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

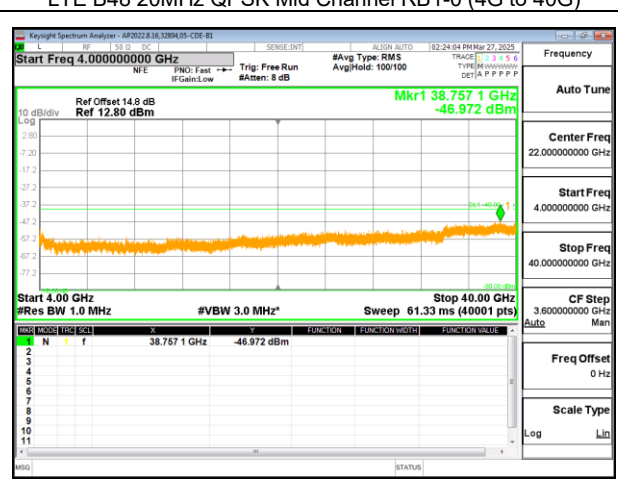
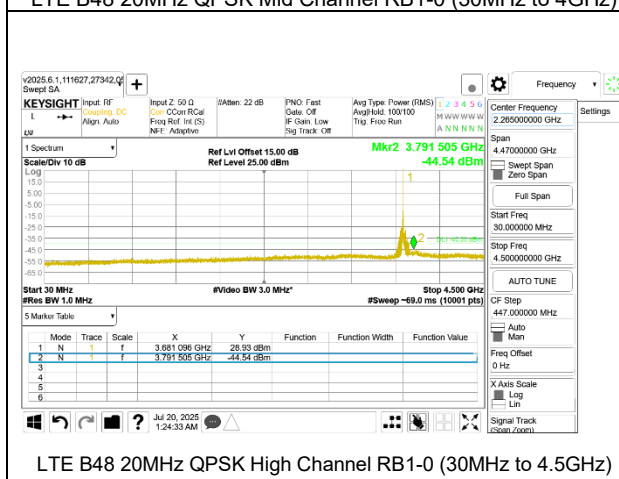
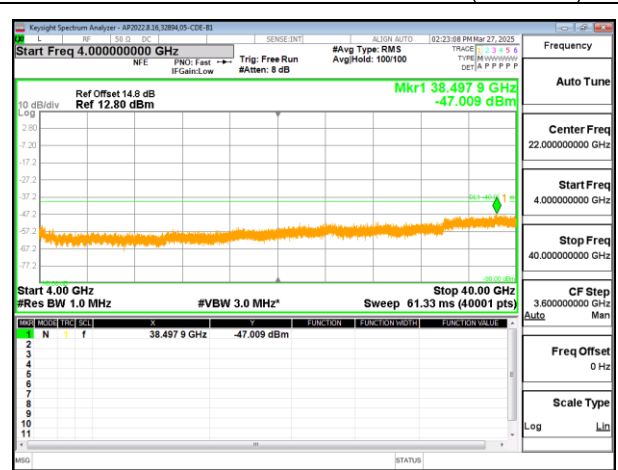
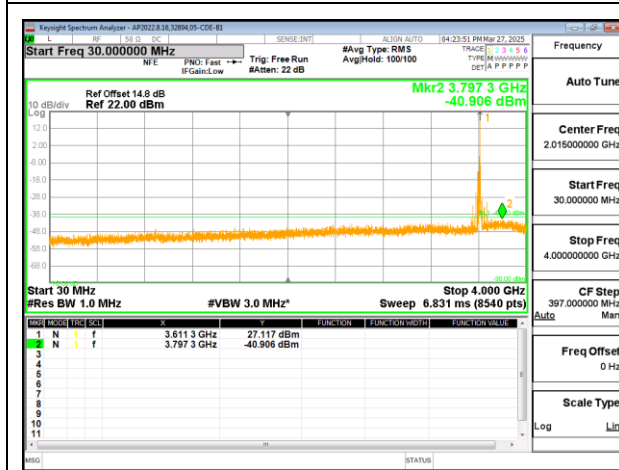
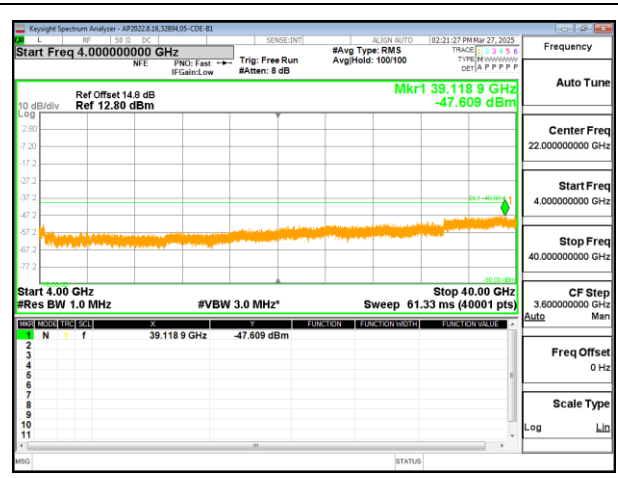
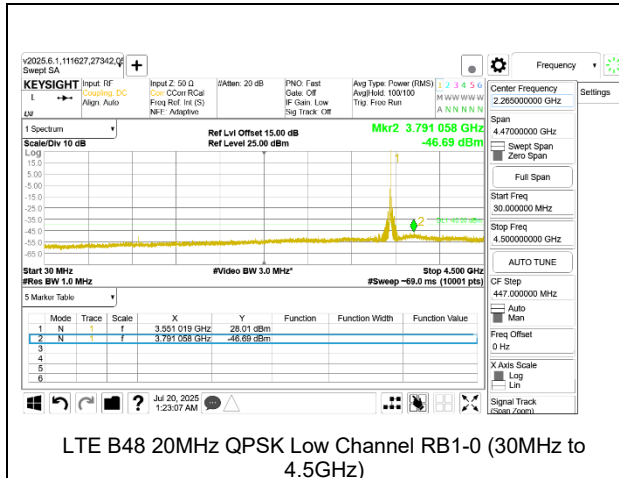
For each out of band emissions measurement:

- Set display line at -13 dBm, -25dBm and -40dBm according to the band Limit
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.
(NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

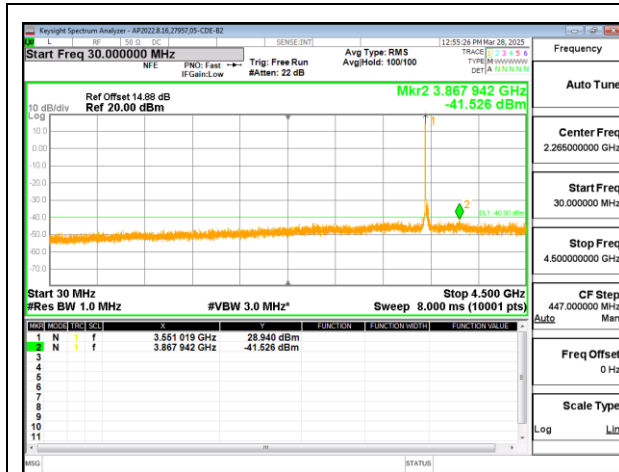
For MIMO modes are made using the measure and sum the spectra method E3)a)ii) / E)2)a) from KDB 662911 D01. The measurements for each antenna are stored in separate traces (i.e. trace 1 and trace 2). The spectrum analyzer's math function is used to perform a linear sum of powers of the two traces and store the result in trace 3. Trace 3 is compared to the in-band or out of band limit as applicable.

RESULTS

9.3.1. LTE BAND 48



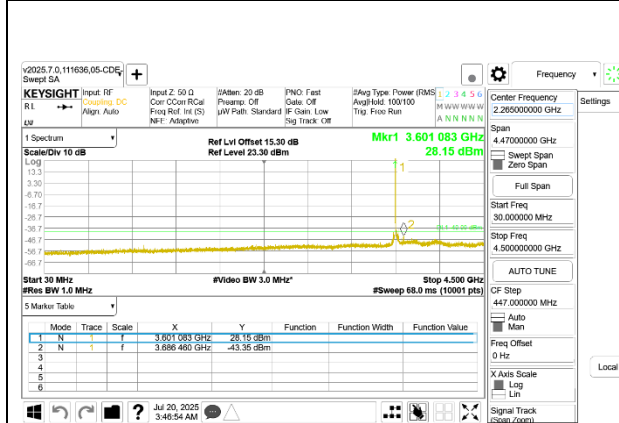
9.3.2. 5G NR n48



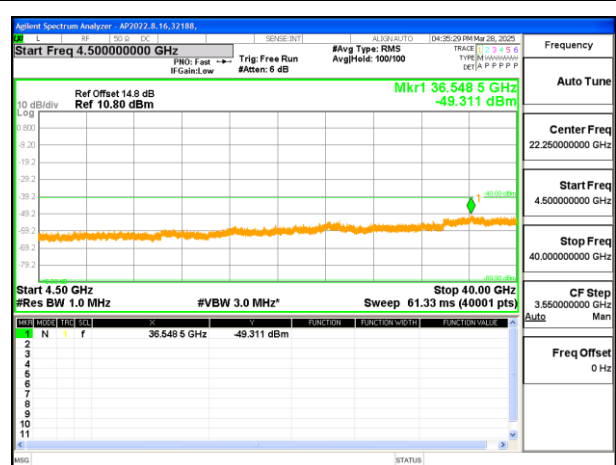
5G NR n48 40MHz BPSK Low Channel RB1-0 (30MHz to 4.5GHz)



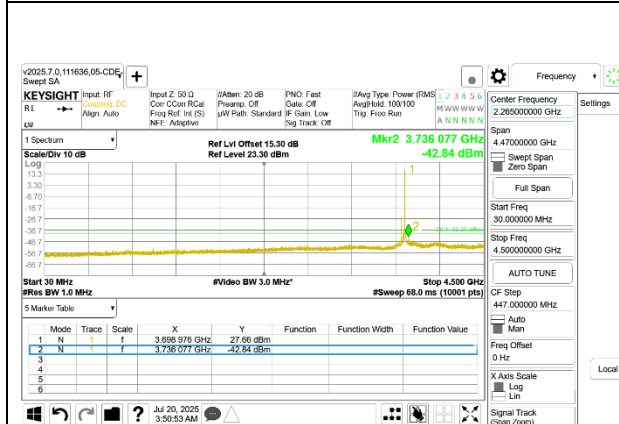
5G NR n48 40MHz BPSK Low Channel RB1-0 (4.5G to 40G)



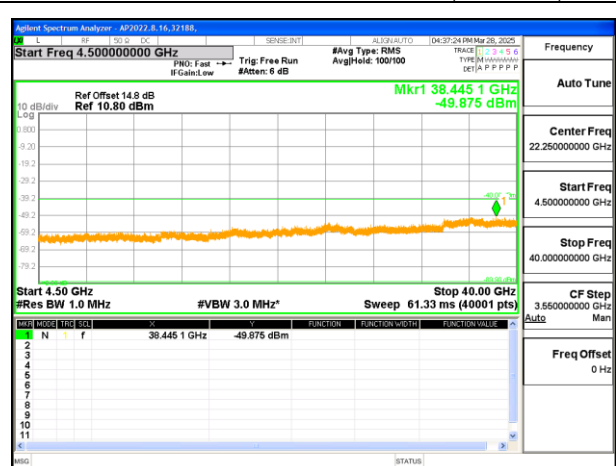
5G NR n48 40MHz BPSK Mid Channel RB1-1 (30MHz to 4.5GHz)



5G NR n48 40MHz BPSK Mid Channel RB1-1 (4.5G to 40G)

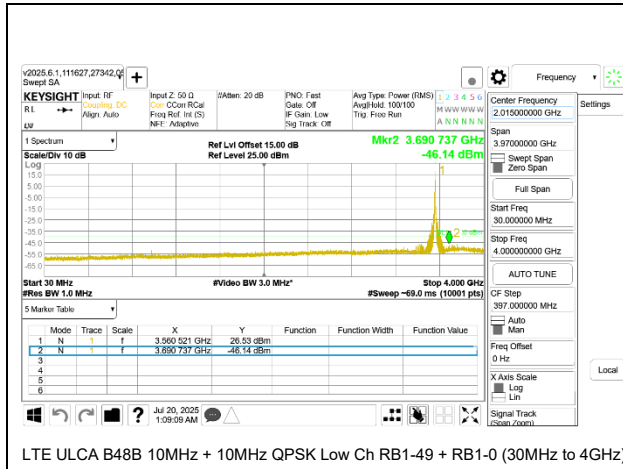


5G NR n48 40MHz BPSK High Channel RB1-105 (30MHz to 4.5GHz)

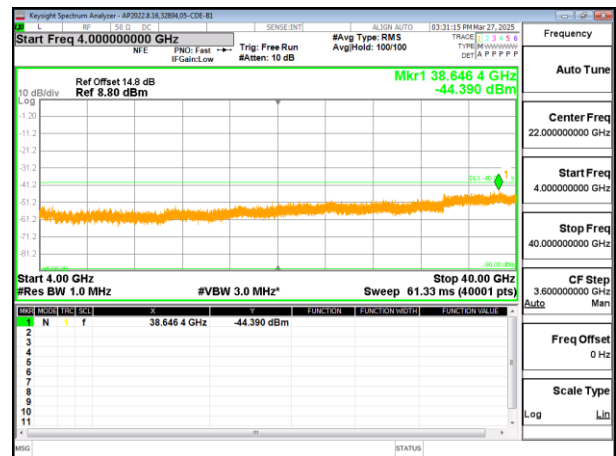


5G NR n48 40MHz BPSK High Channel RB1-105 (4.5G to 40G)

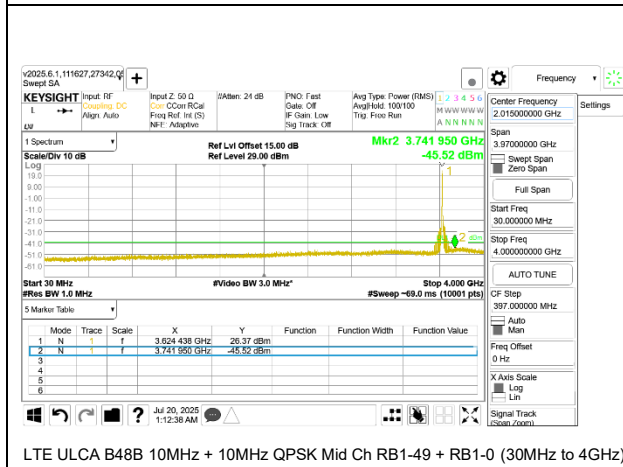
9.3.3. LTE ULCA BAND 48B SISO



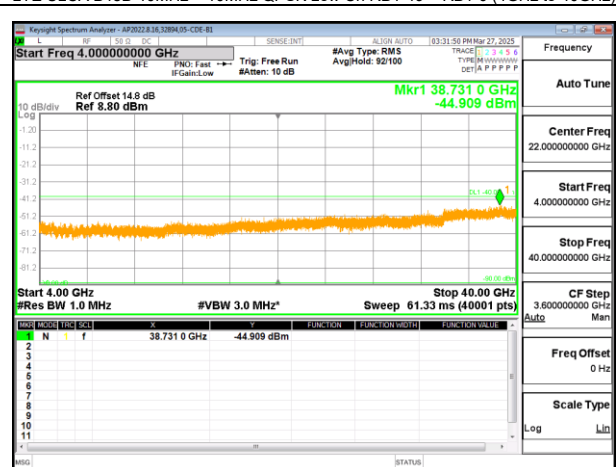
LTE ULCA B48B 10MHz + 10MHz QPSK Low Ch RB1-49 + RB1-0 (30MHz to 4GHz)



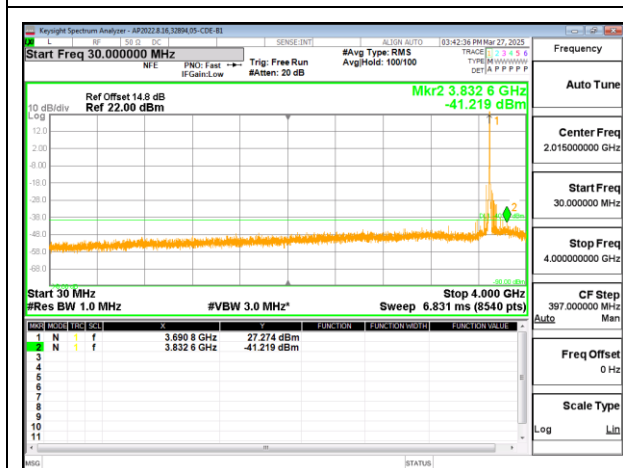
LTE ULCA B48B 10MHz + 10MHz QPSK Low Ch RB1-49 + RB1-0 (4GHz to 40GHz)



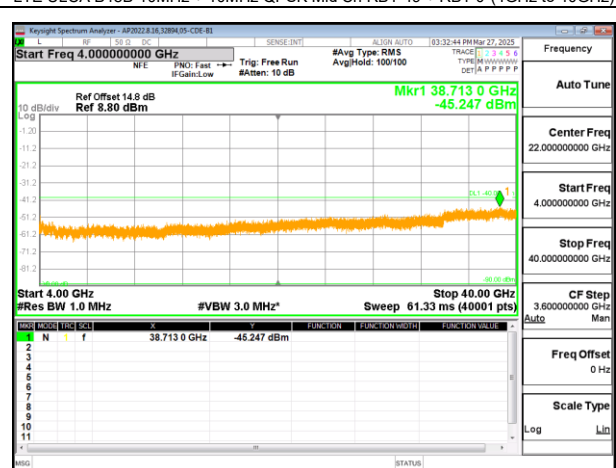
LTE ULCA B48B 10MHz + 10MHz QPSK Mid Ch RB1-49 + RB1-0 (30MHz to 4GHz)



LTE ULCA B48B 10MHz + 10MHz QPSK Mid Ch RB1-49 + RB1-0 (4GHz to 40GHz)

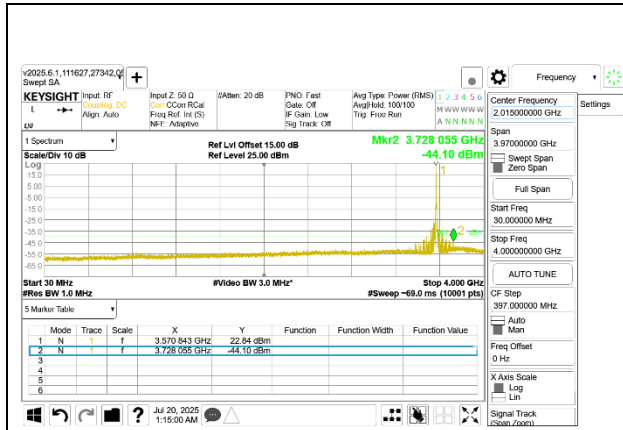


LTE ULCA B48B 10MHz+10MHz QPSK High Ch RB1-49 + RB1-0 (30MHz to 4GHz)

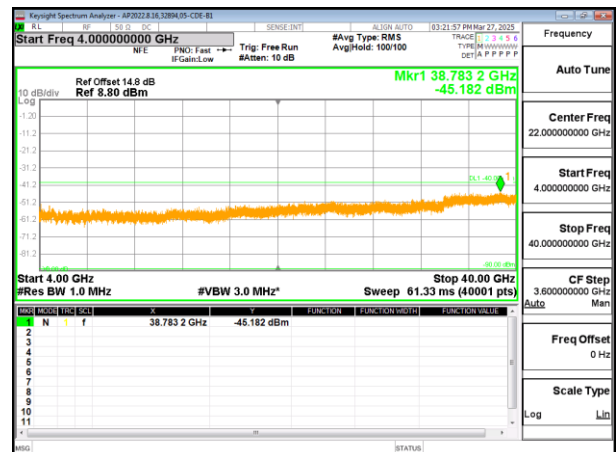


LTE ULCA B48B 10MHz+10MHz QPSK High Ch RB1-49 + RB1-0 (4GHz to 40GHz)

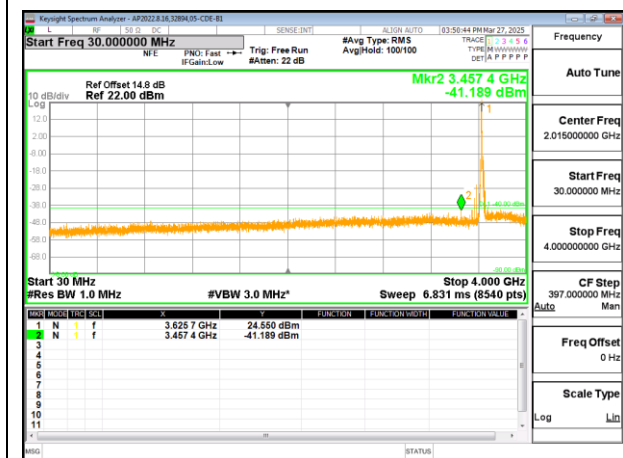
9.3.4. LTE ULCA BAND 48C SISO



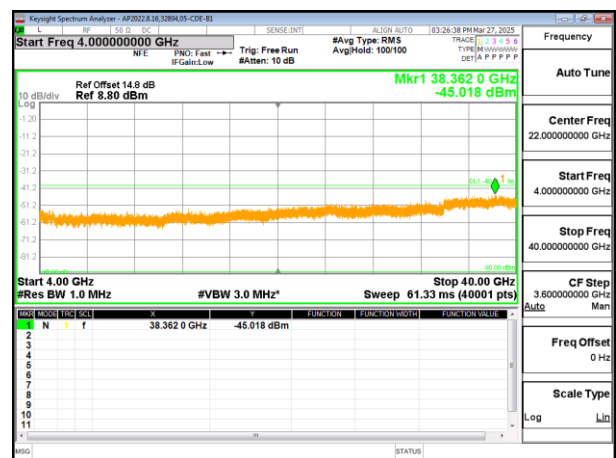
LTE ULCA B48C 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0 (30MHz to 4GHz)



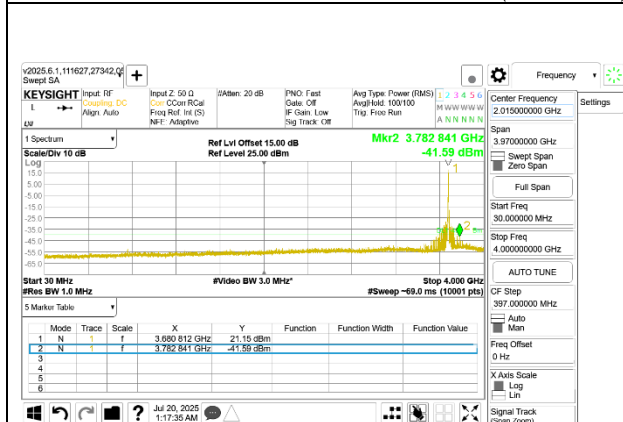
LTE ULCA B48C 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0 (4GHz to 40GHz)



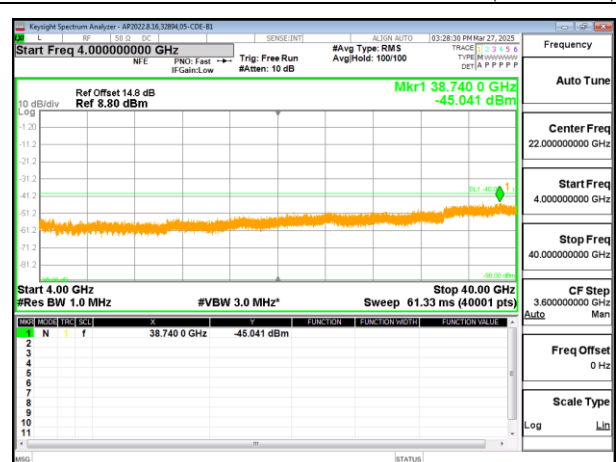
LTE ULCA B48C 20MHz + 20MHz QPSK Mid Ch RB1-99 + RB1-0 (30MHz to 4GHz)



LTE ULCA B48C 20MHz + 20MHz QPSK Mid Ch RB1-99 + RB1-0 (4GHz to 40GHz)

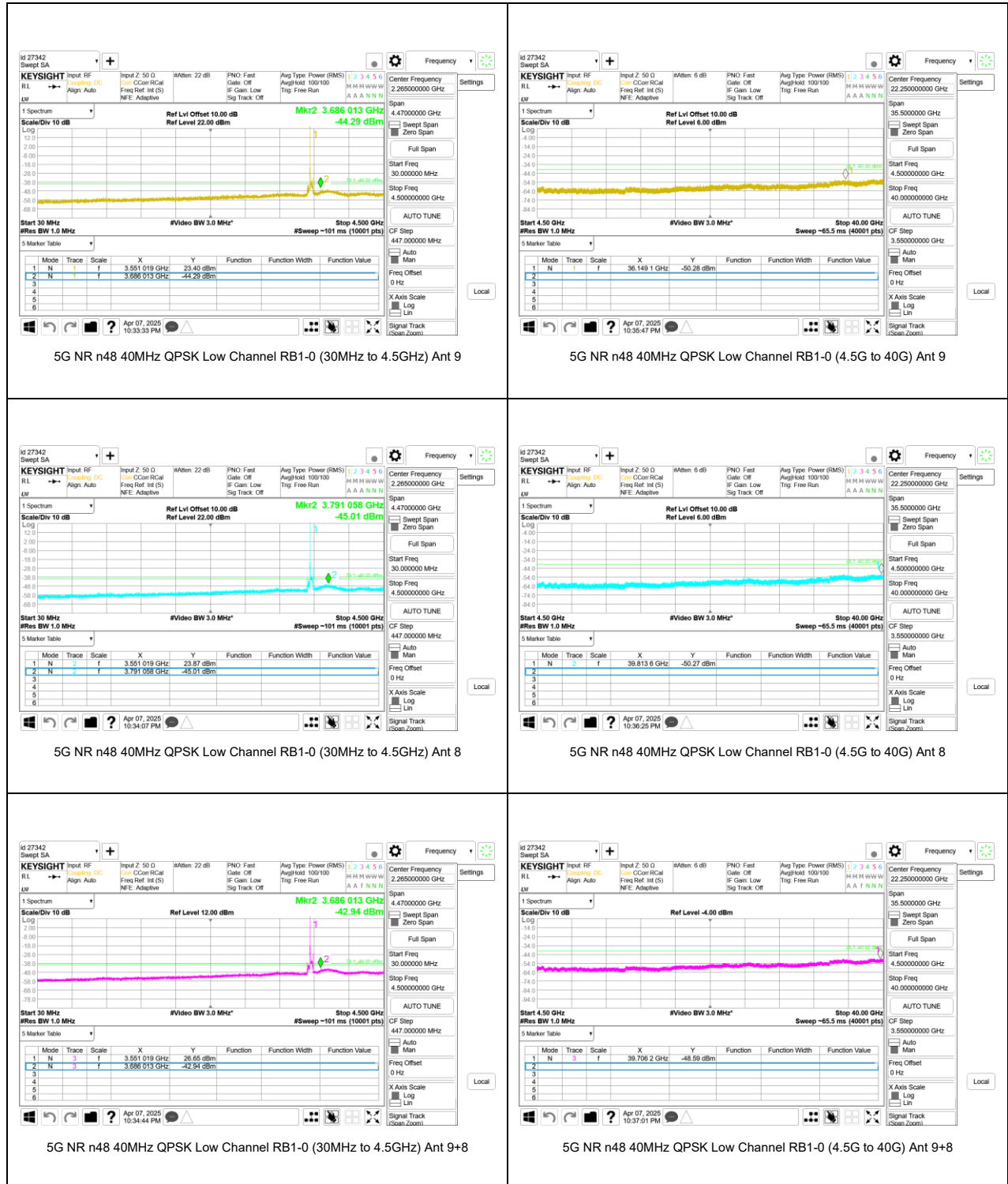


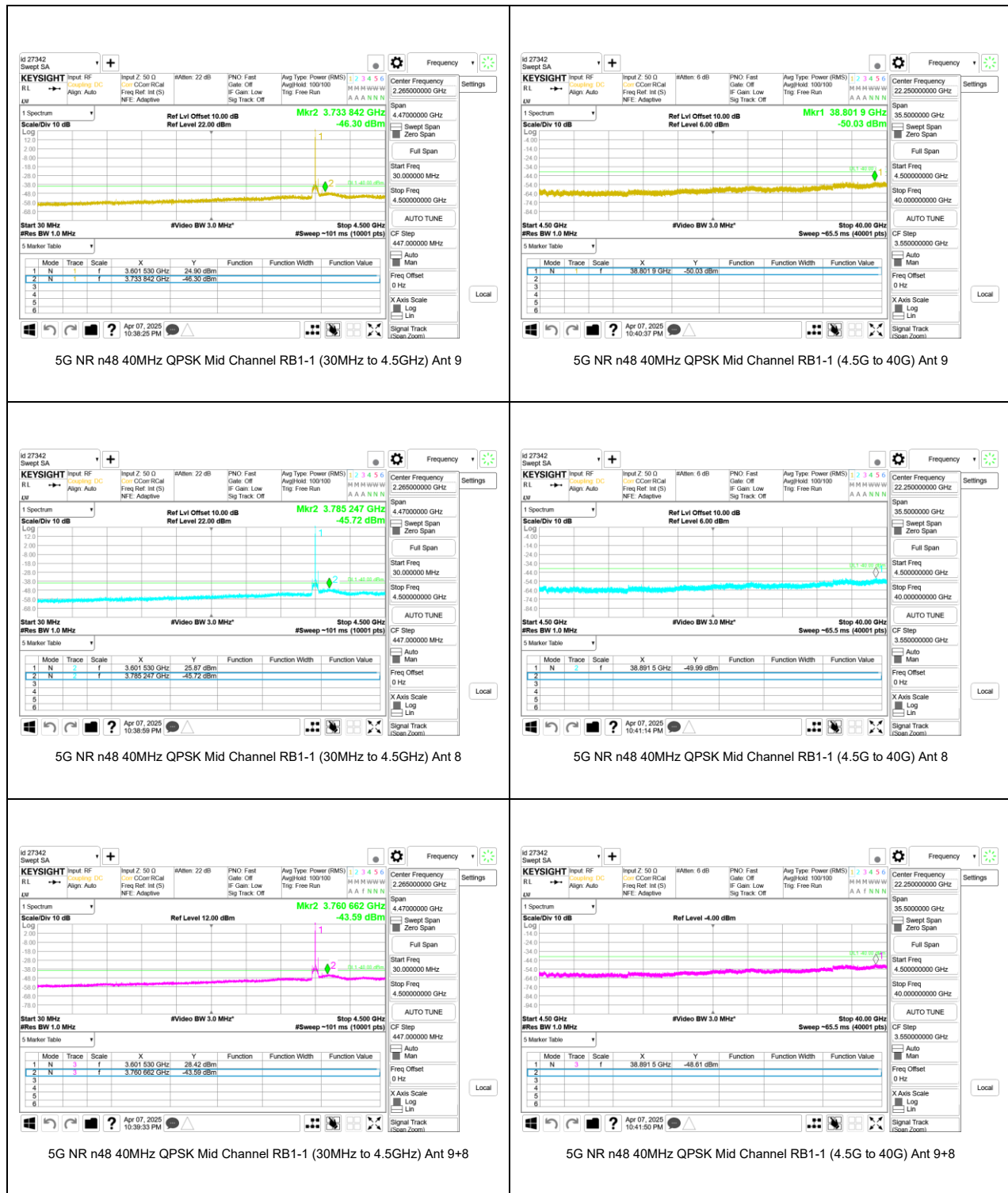
LTE ULCA B48C 20MHz+20MHz QPSK High Ch RB1-99 + RB1-0 (30MHz to 4GHz)

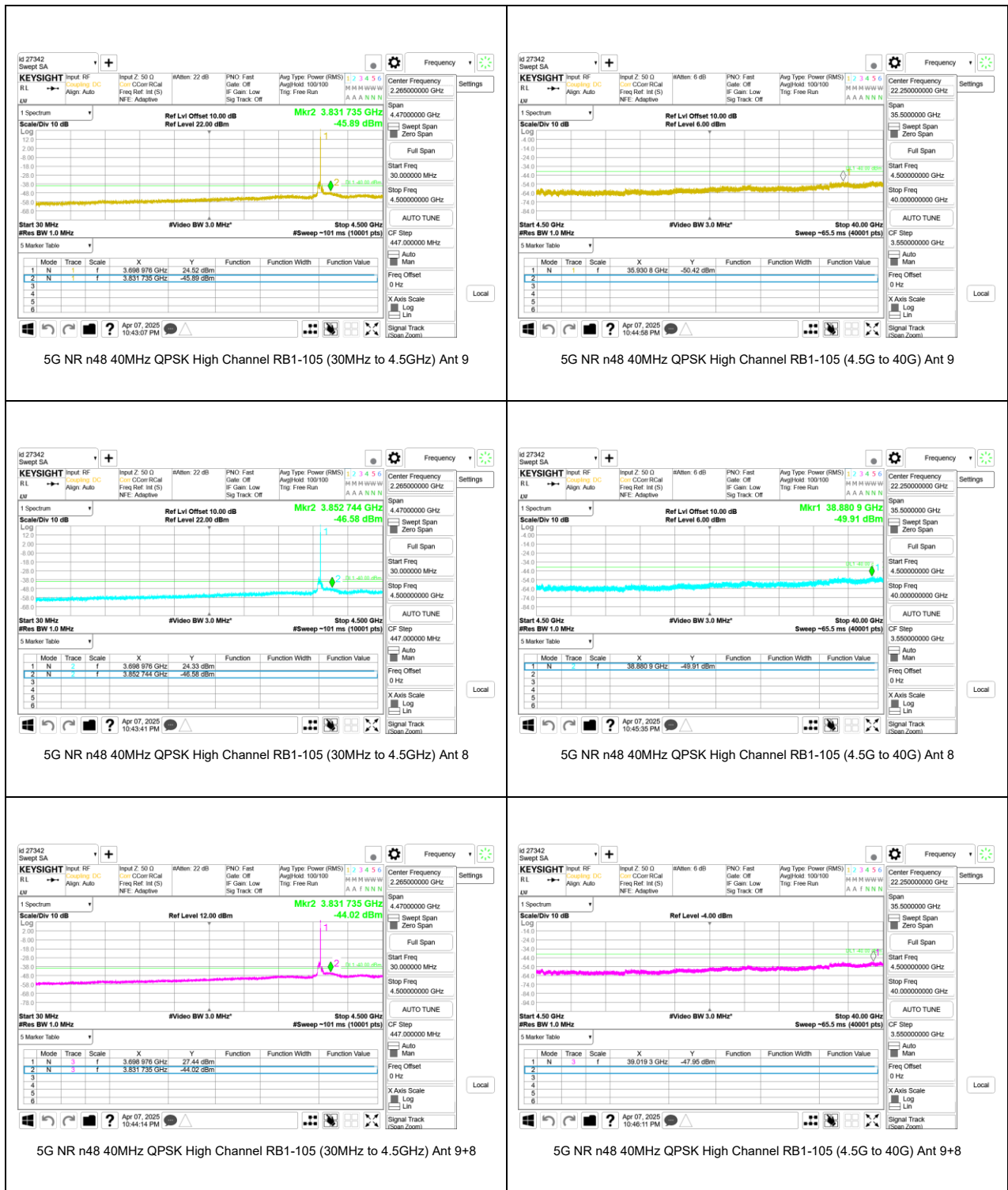


LTE ULCA B48C 20MHz+20MHz QPSK High Ch RB1-99 + RB1-0 (4GHz to 40GHz)

9.3.5. 5G NR n48 MIMO







9.4. FREQUENCY STABILITY

TEST PROCEDURE

Use base station simulator with Frequency Error measurement capability.

- Temp. = -30°C to $+50^{\circ}\text{C}$
- Voltage = (85% - 115%)

Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
End Voltage, 3.2VDC.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

RESULTS

See the following pages.

9.4.1. LTE BAND 48 QPSK (20MHz BANDWIDTH)

Test Engineer ID:	27700	Test Date:	4/8/2025
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LTE BAND 48 QPSK (20MHz BANDWIDTH)

Band	48	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3550	3700			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3551.0487	3699.1501			
Extreme (50°C)		3551.0487	3699.1501	-0.6	0.000	Yes
Extreme (40°C)		3551.0487	3699.1501	-2.6	-0.001	Yes
Extreme (30°C)		3551.0487	3699.1501	-2.4	-0.001	Yes
Extreme (10°C)		3551.0487	3699.1501	-3.3	-0.001	Yes
Extreme (0°C)		3551.0487	3699.1501	-1.7	0.000	Yes
Extreme (-10°C)		3551.0487	3699.1501	-2.3	-0.001	Yes
Extreme (-20°C)		3551.0487	3699.1501	-1.9	-0.001	Yes
Extreme (-30°C)		3551.0487	3699.1501	-3.2	-0.001	Yes
20°C	15%	3551.0487	3699.1501	2.2	0.001	Yes
	-15%	3551.0487	3699.1501	3.7	0.001	Yes
	End Point Voltage	3551.0487	3699.1501	-0.3	0.000	Yes

9.4.2. 5G NR n48 BPSK (40MHz BANDWIDTH)

Test Engineer ID:	27700	Test Date:	3/31/2025
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LTE BAND 48 QPSK (20MHz BANDWIDTH)

Band	48	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3550	3700			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3549.9920	3699.7720			
Extreme (50°C)		3549.9920	3699.7720	-14.32	-0.004	Yes
Extreme (40°C)		3549.9920	3699.7720	-10.64	-0.003	Yes
Extreme (30°C)		3549.9920	3699.7720	-10.39	-0.003	Yes
Extreme (10°C)		3549.9920	3699.7720	-13.45	-0.004	Yes
Extreme (0°C)		3549.9920	3699.7720	-17.43	-0.005	Yes
Extreme (-10°C)		3549.9920	3699.7720	-7.69	-0.002	Yes
Extreme (-20°C)		3549.9920	3699.7720	-11.69	-0.003	Yes
Extreme (-30°C)		3549.9920	3699.7720	-4.67	-0.001	Yes
20°C	15%	3549.9920	3699.7720	-8.85	-0.002	Yes
	-15%	3549.9920	3699.7720	-8.04	-0.002	Yes
	End Point Voltage	3549.9920	3699.7720	-3.32	-0.001	Yes