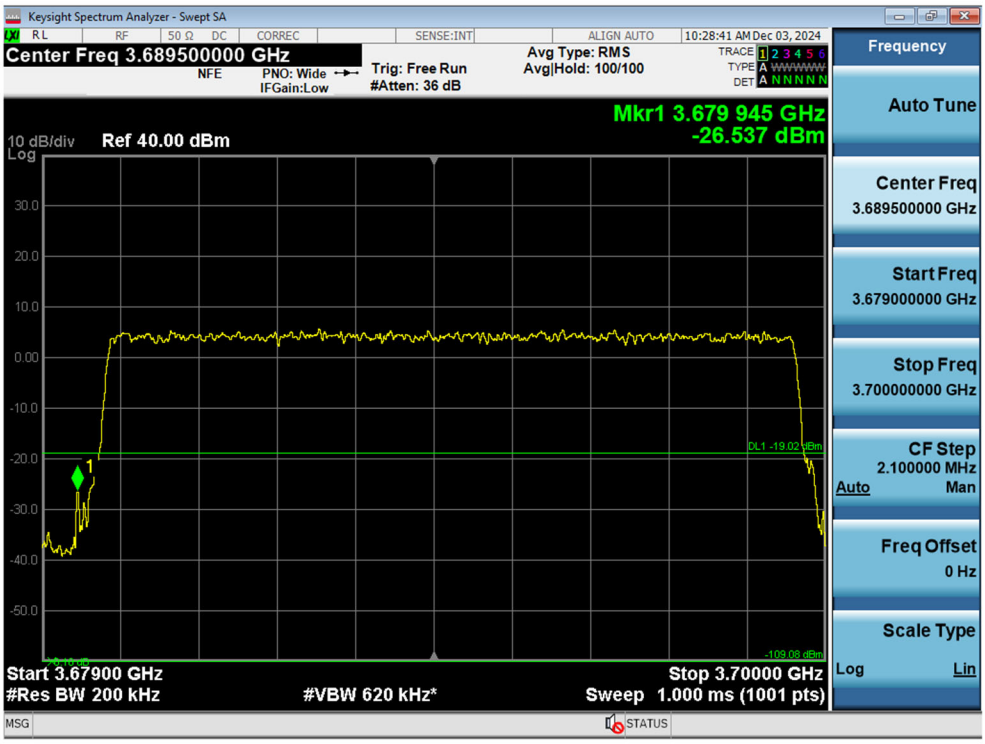
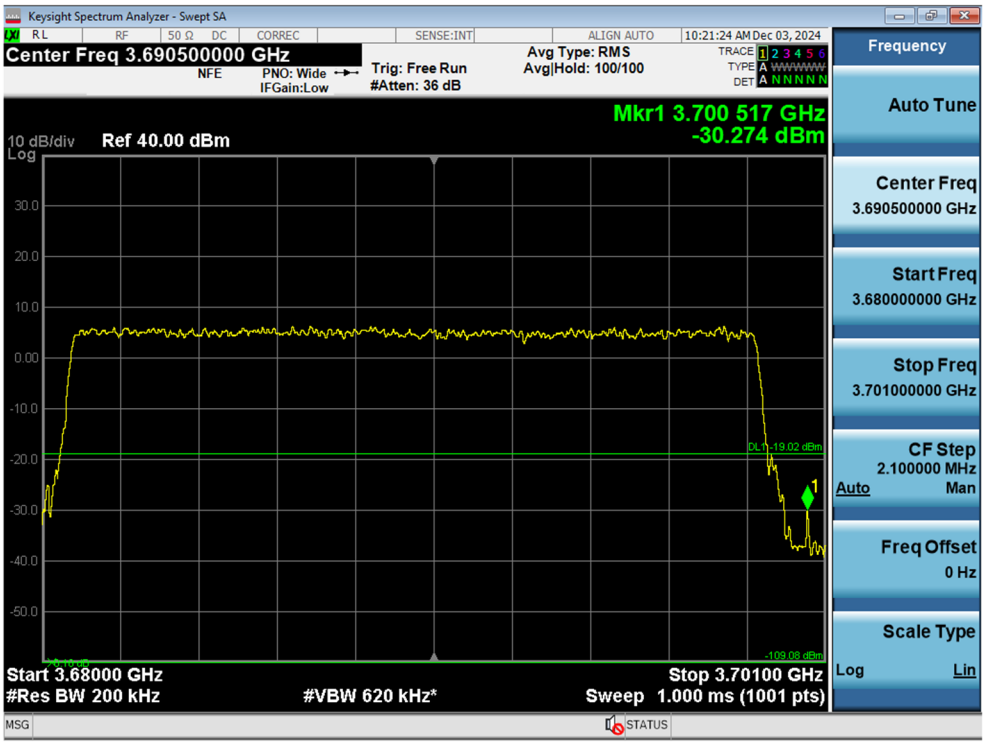
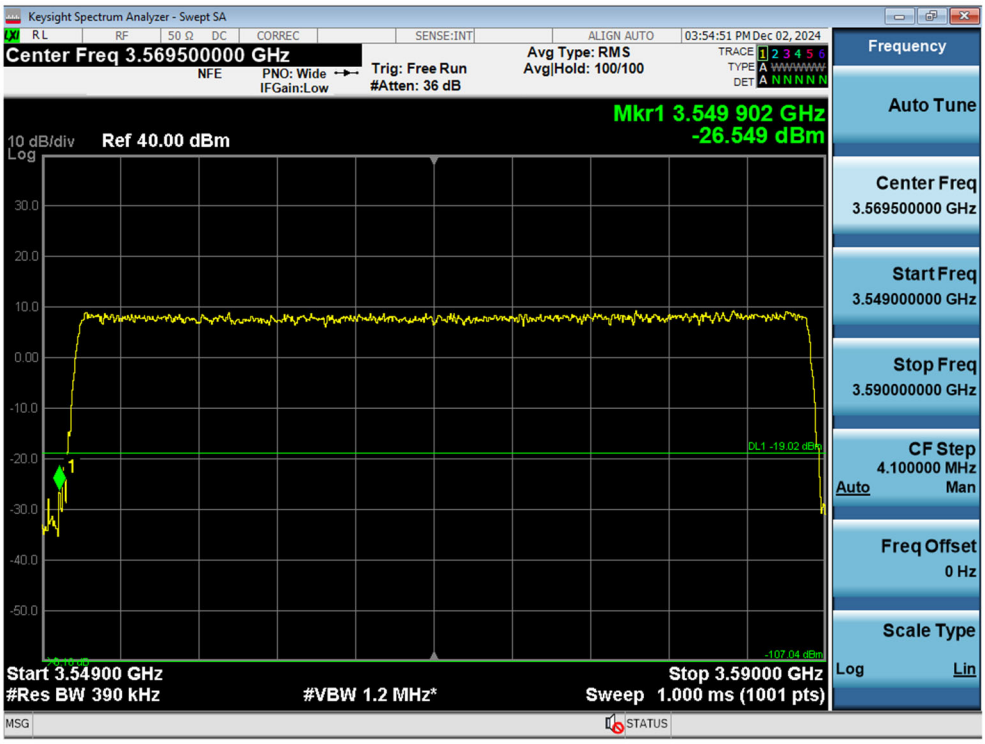
Antenna 1 / (4 Port) 5G NR n48 20 MHz 1 Carrier / 256QAM / High / Left



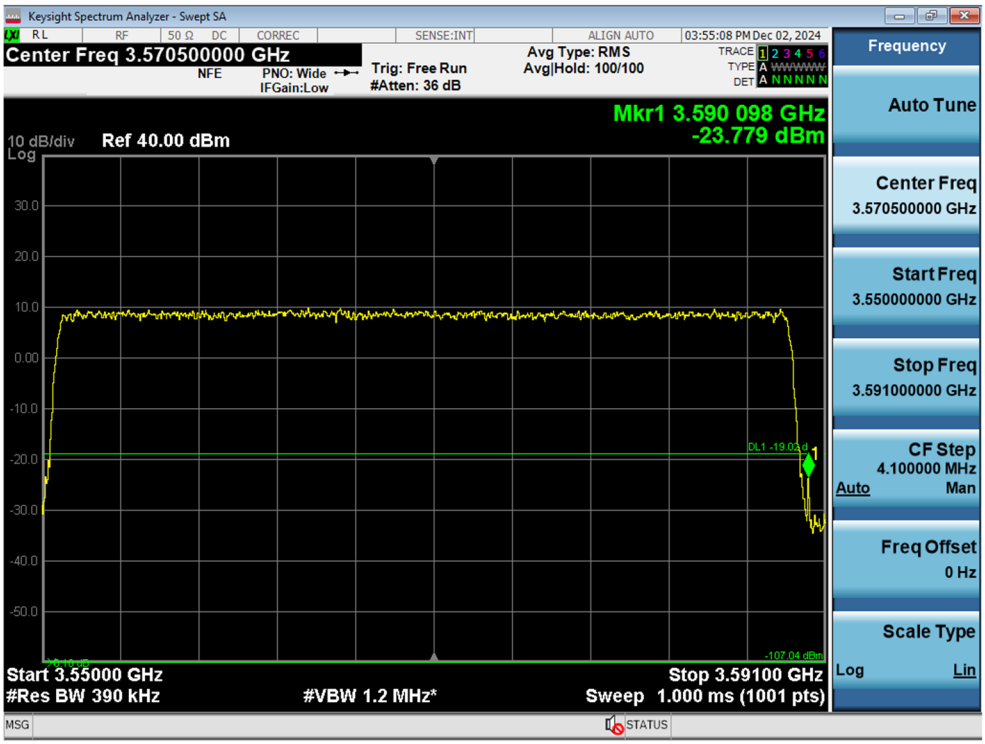
Antenna 2 / (4 Port) 5G NR n48 20 MHz 1 Carrier / 64QAM / High / Right



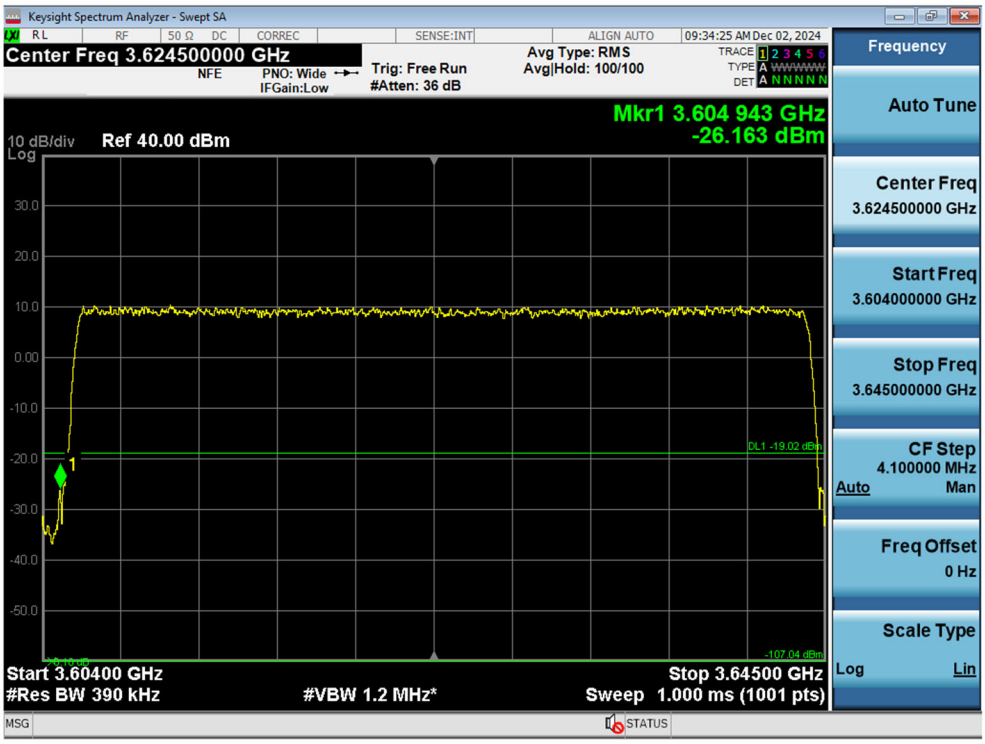
Antenna 3 / (4 Port) 5G NR n48 40 MHz 1 Carrier / 256QAM / Low / Left



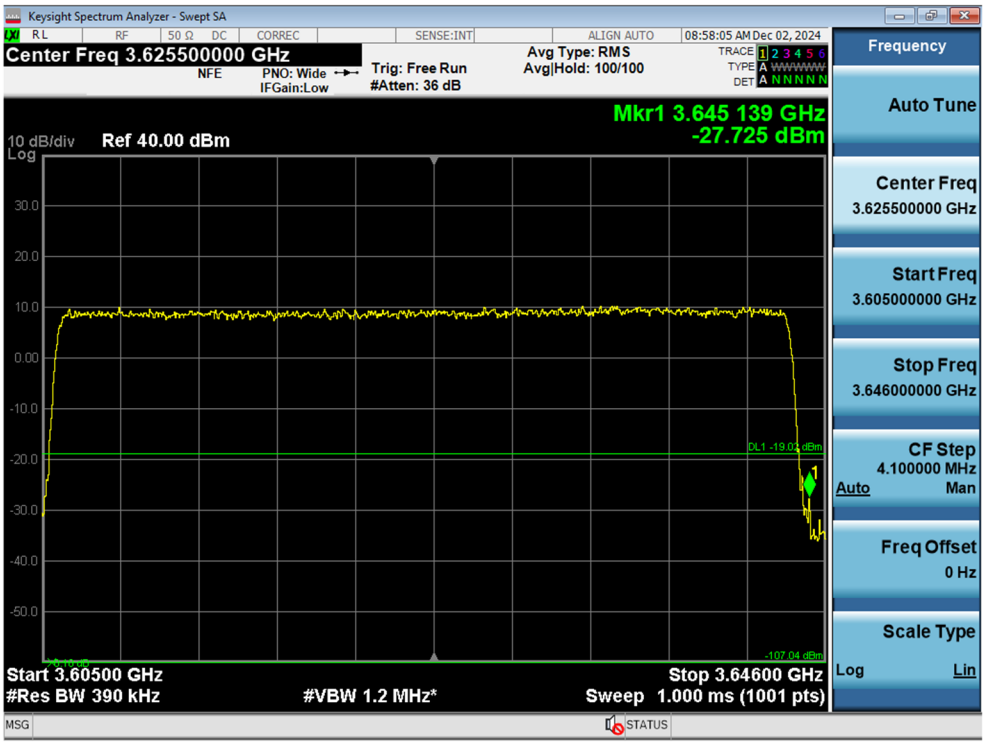
Antenna 3 / (4 Port) 5G NR n48 40 MHz 1 Carrier / 256QAM / Low / Right



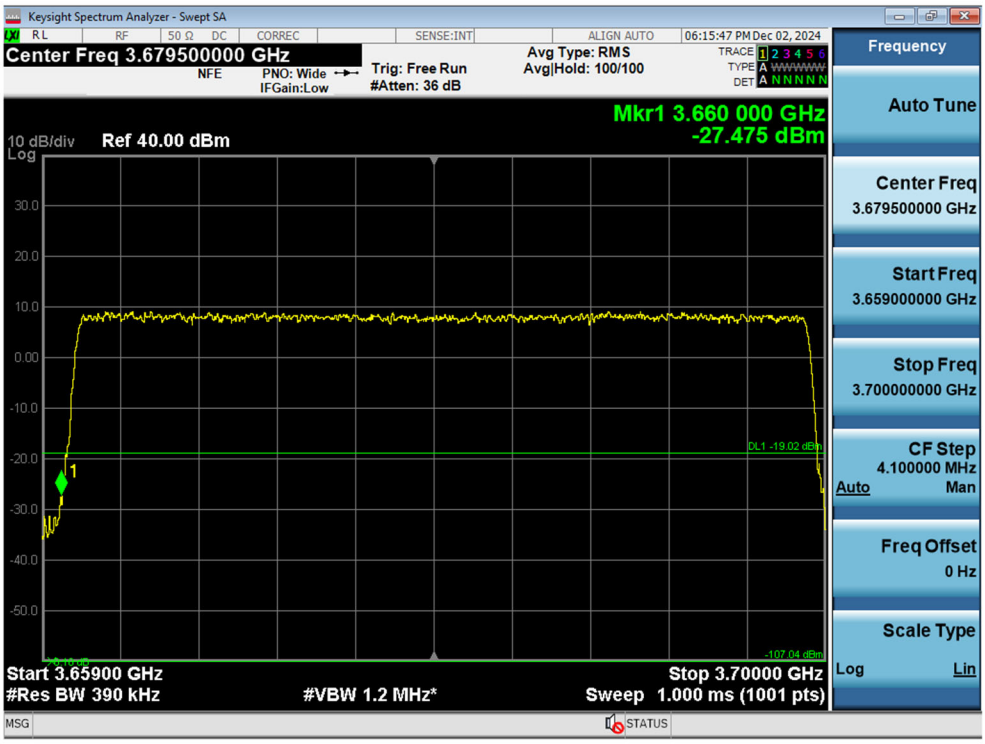
Antenna 0 / (4 Port) 5G NR n48 40 MHz 1 Carrier / 64QAM / Middle / Left



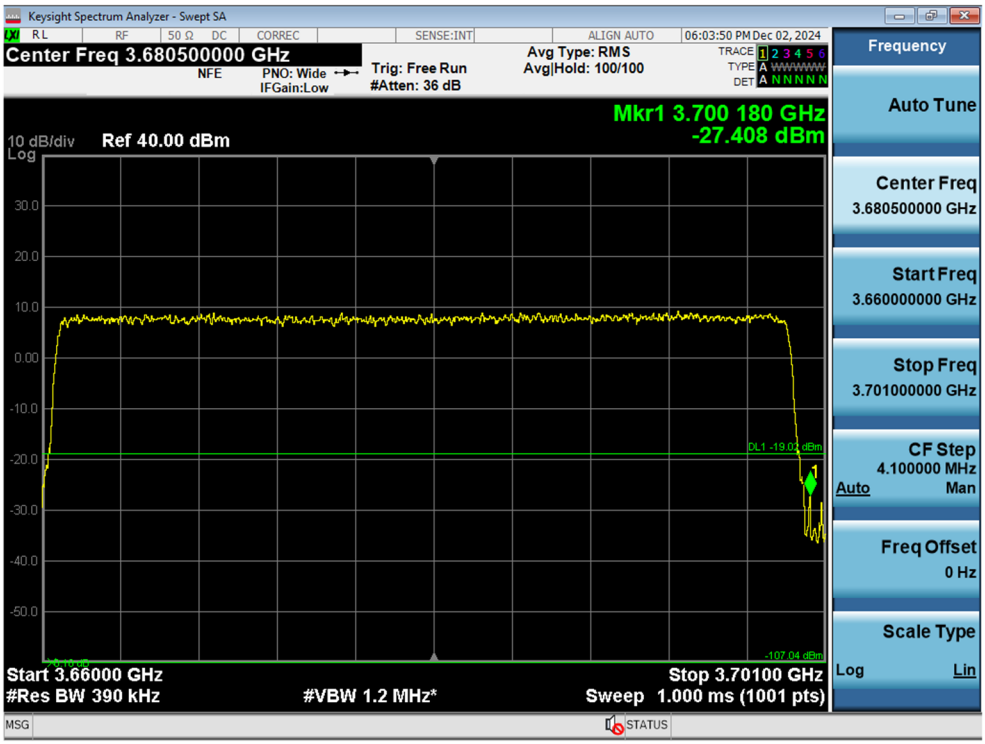
Antenna 0 / (4 Port) 5G NR n48 40 MHz 1 Carrier / 16QAM / Middle / Right



Antenna 2 / (4 Port) 5G NR n48 40 MHz 1 Carrier / 64QAM / High / Left



Antenna 0 / (4 Port) 5G NR n48 40 MHz 1 Carrier / 256QAM / High / Right



5.5. SPURIOUS UNWANTED EMISSIONS

Test Requirements:

§ 2.1051 Measurements required: Spurious emissions at antenna terminals.

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in § 2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

96.41(e) General radio requirement: 3.5 GHz Emissions and Interference Limits.

(1) General protection levels.

(i) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

(ii) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed −13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed −25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

(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.

(3) Measurement procedure.

(i) Compliance with this provision is based on the use of measurement instrumentation employing a

resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full reference bandwidth (i.e., 1 MHz or 1 percent of emission bandwidth, as specified). The fundamental emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(ii) When measuring unwanted emissions to demonstrate compliance with the limits, the CBSD and End User Device nominal carrier frequency/channel shall be adjusted as close to the licensee's authorized frequency block edges, both upper and lower, as the design permits.

(iii) Compliance with emission limits shall be demonstrated using either average (RMS)-detected or peak-detected power measurement techniques.

(4) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

Test Procedures:

The measurement is performed in accordance with Section 5.7.4 of ANSI C63.26.

5.7.4 Spurious unwanted emission measurements

a) Set the spectrum analyzer start frequency to the lowest frequency generated by the EUT, without going below 9 kHz, and the stop frequency to the lower frequency covered by the measurements previously performed in 5.7.3. As an alternative, the stop frequency can be set to the value specified in 5.1.1, depending on the EUT operating range, if the resulting plot can clearly demonstrate compliance for all frequencies not addressed by the out-of-band emissions measurements performed as per 5.7.3.

b) When using an average power (rms) detector, ensure that the number of points in the sweep $\geq 2 \times$ (span / RBW). This may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the spectrum analyzer capabilities. This requirement does not apply to peak-detected power measurements. When average power is specified by the applicable regulation, a peak-detector can be utilized for preliminary measurements to accommodate wider frequency spans. Any emissions found in the preliminary measurement to exceed the applicable limit(s) shall be further examined using a power averaging (rms) detector with the minimum number of measurement points as defined above.

c) The sweep time should be set to auto-couple for performing peak-detector measurements. For measurements that use a power averaging (rms) detector, the sweep time shall be set as described for out-of-band emissions measurements in item d) of 5.7.3.

d) Identify and measure the Highest spurious emission levels in each frequency range. It is not necessary to re-measure the out-of-band emissions as a part of this test. Record the frequencies and amplitudes corresponding to the measured emissions and capture the data plots.

e) Repeat step b) through step d) for the upper spurious emission frequency range if not already captured

by a wide span measurement performed as per the alternative provided in step a). The upper frequency for this measurement is defined in 5.1.1 as a function of the EUT operating range.

f) Compare the results with the corresponding limit in the applicable regulation.

g) The test report shall include the data plots of the measuring instrument display and the measured data.

Note:

1. In some frequency ranges, the RBW was reduced to 0.1%, 1%, and 10% of the reference bandwidth for measuring out-of-band and unwanted spurious emissions levels. Therefore, the limit lines were compensated according to section 5.7.2 of ANSI C63.26-2015.

Reduced RBW	0.1 %	1 %	10 %
Limit line compensation	-30 dB	-20 dB	-10 dB

2. Due to MIMO operations, a correction has been added to the limit according to KDB 662911 D01 v02r01.
   - 4Tx MIMO correction: 10 log(N_{ANT}) = 10 log(4) = 6.02 dB
     From Channel Edge to Channel Edge ± 10 MHz -13 dBm/MHz – 10xlog (4) = -19.02 dBm/MHz
     From Channel Edge ± 10 MHz to 3 530 or 3 720 MHz -25 dBm/MHz – 10xlog (4) = -31.02 dBm/MHz
     For the rest, -40 dBm/MHz – 10xlog (4) = -46.02 dBm/MHz
3. The duty correction value is not included in the plot data but is included in the measured values of the tabular data.
4. The results of the Spurious Unwanted Emissions shown below the frequency measured values are very small and similar trend for each port, so we are attached only the worst case plot.

Test Results:

Tabular Data of RF Spurious Unwanted Emissions

(4 Port) 5G NR n48 10 MHz 1 Carrier

Test Result for Output Port 0

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-52.149	-62.961	-50.071	-50.347	-33.450	-33.269	-49.300	-50.147	-49.172
	Middle	-51.132	-63.869	-50.810	-50.192	-33.575	-33.385	-54.163	-49.991	-49.200
	High	-51.205	-63.348	-51.714	-41.690	-32.751	-32.593	-51.708	-50.098	-49.058
16QAM	Low	-52.103	-61.949	-52.329	-50.837	-33.419	-33.381	-49.747	-50.278	-50.008
	Middle	-53.453	-63.155	-52.854	-49.756	-34.241	-34.298	-60.233	-51.488	-52.190
	High	-52.226	-63.755	-51.651	-41.675	-33.296	-32.622	-52.958	-49.240	-48.434
64QAM	Low	-52.314	-62.547	-51.595	-48.889	-33.071	-32.797	-48.286	-49.598	-49.403
	Middle	-52.871	-64.282	-52.214	-45.154	-33.133	-32.867	-55.094	-51.265	-53.813
	High	-51.633	-64.018	-50.389	-41.320	-32.766	-32.586	-50.914	-49.994	-48.616
256QAM	Low	-52.936	-61.653	-51.084	-50.758	-33.480	-32.927	-49.039	-50.364	-48.553
	Middle	-52.503	-63.455	-51.875	-42.540	-34.010	-33.680	-58.190	-48.974	-49.106
	High	-50.850	-64.779	-51.875	-41.422	-33.451	-32.876	-51.784	-49.709	-49.430
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 1

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-55.553	-63.577	-50.906	-51.129	-32.444	-32.308	-50.029	-49.878	-48.895
	Middle	-54.557	-62.197	-50.664	-42.341	-32.033	-32.311	-54.567	-50.012	-48.943
	High	-55.374	-65.020	-51.845	-42.251	-32.387	-32.389	-55.104	-49.765	-49.168
16QAM	Low	-54.121	-64.057	-50.323	-50.983	-32.174	-32.104	-50.381	-50.155	-48.418
	Middle	-53.850	-62.232	-51.933	-42.259	-32.047	-32.368	-57.412	-50.248	-48.769
	High	-55.272	-65.402	-51.955	-42.180	-32.494	-32.751	-56.130	-49.737	-49.373
64QAM	Low	-55.090	-63.040	-51.599	-50.025	-31.875	-31.727	-48.613	-50.642	-48.784
	Middle	-55.182	-63.272	-51.579	-42.110	-31.640	-31.977	-52.073	-49.372	-49.033
	High	-54.402	-64.180	-51.480	-42.384	-31.889	-31.863	-52.090	-49.752	-49.328
256QAM	Low	-54.879	-63.040	-51.997	-50.760	-32.433	-31.996	-49.630	-50.049	-48.362
	Middle	-53.396	-62.412	-51.506	-42.301	-32.313	-32.077	-55.069	-49.486	-48.805
	High	-53.408	-63.699	-51.648	-42.370	-32.281	-32.077	-54.272	-49.837	-49.041
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 2

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-52.455	-62.931	-51.851	-51.560	-31.308	-30.965	-49.287	-50.402	-48.596
	Middle	-53.155	-64.164	-51.808	-42.774	-31.361	-31.446	-54.615	-49.837	-48.992
	High	-52.801	-64.711	-50.696	-42.290	-31.673	-31.382	-50.934	-50.263	-49.122
16QAM	Low	-51.435	-61.917	-51.891	-51.658	-31.242	-31.120	-49.660	-50.549	-48.379
	Middle	-54.380	-62.527	-50.879	-42.809	-31.479	-31.643	-56.866	-50.712	-50.180
	High	-54.387	-64.243	-51.393	-42.349	-31.650	-31.492	-51.822	-50.445	-49.510
64QAM	Low	-49.374	-62.757	-51.714	-50.540	-31.186	-30.801	-47.935	-50.413	-48.407
	Middle	-54.639	-64.154	-51.508	-42.998	-31.080	-31.380	-52.698	-49.262	-49.563
	High	-54.149	-63.581	-51.225	-41.989	-31.595	-31.218	-49.538	-50.428	-48.030
256QAM	Low	-53.841	-63.749	-51.575	-50.951	-31.446	-30.997	-48.698	-50.260	-48.369
	Middle	-54.883	-63.374	-51.850	-42.916	-31.846	-31.595	-54.630	-49.777	-49.315
	High	-51.115	-64.105	-51.717	-41.964	-31.952	-31.349	-50.228	-50.529	-49.616
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 3

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-51.412	-62.927	-48.779	-51.710	-33.092	-32.810	-49.403	-50.626	-49.446
	Middle	-51.696	-64.546	-51.744	-42.697	-32.757	-32.950	-56.342	-50.774	-48.753
	High	-51.123	-64.345	-51.750	-42.654	-33.470	-32.877	-52.766	-50.055	-48.683
16QAM	Low	-53.798	-62.475	-50.876	-51.701	-33.026	-32.724	-50.211	-50.119	-48.543
	Middle	-53.183	-64.171	-52.240	-43.066	-32.958	-32.832	-57.597	-50.513	-48.990
	High	-49.979	-67.143	-51.964	-42.986	-33.373	-33.046	-54.305	-50.178	-50.291
64QAM	Low	-53.852	-63.271	-51.936	-51.249	-32.732	-32.471	-48.431	-49.842	-49.114
	Middle	-53.926	-63.524	-51.538	-42.670	-32.529	-32.281	-52.767	-50.015	-48.900
	High	-50.848	-66.118	-51.673	-42.950	-33.211	-32.523	-51.126	-50.014	-50.663
256QAM	Low	-53.610	-62.260	-51.806	-51.723	-33.285	-32.743	-49.519	-50.629	-49.015
	Middle	-53.482	-63.936	-51.690	-42.646	-33.325	-32.852	-55.309	-50.308	-48.277
	High	-49.398	-62.264	-51.465	-42.988	-33.880	-33.052	-53.062	-50.367	-50.513
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

(4 Port) 5G NR n48 20 MHz 1 Carrier

Test Result for Output Port 0

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-50.246	-59.943	-52.070	-48.533	-34.098	-33.902	-48.279	-51.280	-51.471
	Middle	-52.717	-61.314	-50.975	-48.499	-34.411	-34.586	-49.942	-50.392	-48.982
	High	-49.181	-61.993	-51.019	-48.950	-37.903	-31.423	-49.475	-49.841	-48.918
16QAM	Low	-50.992	-59.036	-50.971	-46.713	-33.596	-32.876	-45.671	-48.854	-48.329
	Middle	-54.093	-61.217	-51.252	-46.645	-33.078	-33.463	-46.861	-50.080	-49.038
	High	-48.640	-61.967	-50.413	-45.121	-37.713	-31.815	-46.820	-49.611	-48.751
64QAM	Low	-49.654	-59.230	-51.077	-48.561	-34.012	-33.721	-48.297	-49.845	-48.381
	Middle	-52.708	-60.044	-51.765	-48.373	-33.950	-34.481	-51.302	-49.949	-48.622
	High	-48.887	-61.393	-51.084	-48.544	-37.955	-31.056	-50.163	-49.550	-48.770
256QAM	Low	-49.600	-60.326	-51.594	-47.101	-32.922	-33.814	-47.004	-51.096	-50.972
	Middle	-52.208	-60.530	-50.580	-46.366	-32.604	-34.229	-48.213	-50.520	-48.270
	High	-49.284	-61.928	-49.204	-45.293	-37.390	-31.690	-48.062	-50.201	-48.785
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 1

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-48.509	-60.665	-50.784	-48.846	-32.878	-32.809	-47.271	-49.879	-48.903
	Middle	-49.422	-60.822	-51.071	-49.088	-32.593	-33.010	-50.240	-49.738	-48.978
	High	-49.330	-61.904	-51.797	-48.854	-32.955	-31.213	-49.468	-50.143	-48.691
16QAM	Low	-49.603	-58.911	-50.851	-46.613	-32.357	-31.899	-46.019	-50.089	-48.226
	Middle	-48.240	-60.277	-49.786	-45.901	-32.023	-31.923	-46.958	-49.315	-48.258
	High	-49.881	-61.670	-51.323	-46.214	-32.342	-31.072	-47.348	-49.407	-48.517
64QAM	Low	-48.581	-61.212	-51.773	-49.199	-32.886	-32.407	-48.149	-49.862	-50.746
	Middle	-49.492	-60.721	-51.768	-48.734	-32.632	-32.831	-50.945	-49.996	-48.870
	High	-50.672	-62.275	-51.374	-48.926	-32.587	-31.246	-49.914	-50.213	-49.001
256QAM	Low	-48.553	-59.534	-51.360	-46.712	-32.257	-32.825	-46.711	-50.159	-50.898
	Middle	-49.769	-60.439	-51.743	-45.564	-31.288	-32.999	-48.178	-50.153	-49.549
	High	-48.602	-62.281	-51.037	-46.269	-31.694	-31.114	-48.393	-49.957	-49.126
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 2

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-49.750	-59.582	-50.804	-49.694	-32.035	-31.786	-47.401	-50.270	-48.786
	Middle	-51.041	-60.597	-51.898	-47.431	-32.109	-31.559	-48.662	-50.369	-48.073
	High	-50.920	-60.708	-51.485	-48.380	-32.289	-32.195	-47.607	-49.769	-48.541
16QAM	Low	-49.283	-60.452	-51.258	-47.369	-31.650	-31.213	-45.349	-48.929	-48.856
	Middle	-51.164	-60.050	-51.426	-46.029	-31.194	-31.440	-46.393	-49.980	-48.162
	High	-49.913	-61.598	-51.479	-46.010	-31.552	-31.312	-46.011	-50.195	-48.748
64QAM	Low	-48.911	-60.485	-51.411	-49.710	-31.965	-31.659	-47.628	-49.955	-48.332
	Middle	-49.616	-60.271	-51.399	-47.657	-31.945	-32.146	-49.720	-49.767	-48.397
	High	-50.946	-60.957	-50.923	-47.372	-31.913	-32.101	-47.356	-50.075	-48.427
256QAM	Low	-49.654	-60.254	-51.514	-48.058	-31.351	-31.789	-46.080	-49.576	-48.746
	Middle	-49.024	-59.836	-51.210	-45.308	-30.988	-32.146	-47.988	-49.759	-48.774
	High	-51.050	-61.161	-51.269	-45.580	-31.525	-32.235	-46.368	-49.788	-48.337
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 3

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-50.845	-60.739	-51.371	-50.283	-33.859	-33.641	-48.080	-50.167	-49.155
	Middle	-50.111	-60.484	-50.976	-47.870	-33.450	-33.778	-50.245	-49.869	-48.854
	High	-49.167	-61.643	-51.457	-49.734	-33.677	-32.302	-49.787	-49.637	-48.416
16QAM	Low	-51.051	-59.977	-51.322	-48.317	-33.201	-32.448	-46.230	-49.991	-49.122
	Middle	-52.245	-60.532	-51.418	-46.001	-32.446	-32.631	-47.399	-49.944	-48.665
	High	-49.136	-62.011	-51.778	-46.264	-32.897	-32.220	-46.785	-50.009	-49.335
64QAM	Low	-49.968	-60.199	-51.472	-50.169	-33.708	-33.092	-48.642	-49.826	-49.360
	Middle	-50.861	-61.047	-51.264	-48.790	-33.542	-33.869	-51.934	-49.707	-49.752
	High	-51.409	-61.719	-51.306	-49.904	-33.447	-33.031	-50.197	-49.797	-49.289
256QAM	Low	-49.427	-60.130	-51.536	-48.209	-32.797	-33.366	-47.415	-49.916	-49.349
	Middle	-50.439	-60.832	-50.997	-46.029	-32.068	-33.845	-48.989	-49.628	-48.901
	High	-49.408	-61.789	-51.628	-47.282	-32.219	-33.210	-48.188	-50.107	-49.445
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

(4 Port) 5G NR n48 40 MHz 1 Carrier

Test Result for Output Port 0

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-48.759	-56.015	-50.011	-49.144	-39.216	-38.220	-48.444	-50.180	-49.979
	Middle	-47.966	-57.970	-50.546	-48.119	-38.972	-38.855	-49.629	-50.436	-49.161
	High	-49.025	-57.518	-50.849	-48.330	-32.869	-37.446	-49.771	-50.123	-49.118
16QAM	Low	-48.994	-57.280	-50.703	-50.651	-38.315	-38.213	-50.848	-50.284	-49.812
	Middle	-49.613	-58.312	-50.725	-49.375	-38.975	-39.155	-52.445	-50.692	-49.729
	High	-48.402	-57.621	-51.290	-50.346	-32.772	-37.403	-51.674	-48.869	-50.092
64QAM	Low	-47.920	-57.841	-48.704	-51.453	-38.757	-38.366	-50.538	-49.590	-49.869
	Middle	-48.027	-57.168	-49.102	-50.087	-39.482	-38.960	-51.798	-49.938	-49.782
	High	-48.363	-58.401	-51.288	-51.033	-33.225	-37.887	-51.505	-50.363	-50.031
256QAM	Low	-47.722	-55.855	-51.145	-48.955	-37.027	-37.026	-49.722	-50.393	-49.316
	Middle	-48.691	-59.097	-50.979	-49.669	-38.800	-39.178	-53.616	-49.826	-49.593
	High	-49.004	-57.531	-51.004	-49.935	-33.207	-37.994	-52.160	-49.452	-49.331
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 1

Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-49.544	-56.946	-50.473	-48.561	-37.376	-36.859	-47.392	-49.868	-49.194
	Middle	-49.032	-57.720	-50.989	-46.752	-37.248	-37.092	-47.891	-50.013	-49.677
	High	-48.351	-58.848	-51.739	-40.871	-30.559	-33.005	-44.283	-49.284	-49.467
16QAM	Low	-48.203	-57.823	-50.398	-50.076	-37.493	-37.456	-50.760	-50.189	-48.395
	Middle	-48.563	-57.161	-50.738	-48.221	-37.476	-37.421	-48.801	-50.430	-49.059
	High	-48.185	-58.919	-51.720	-44.737	-30.887	-33.572	-44.992	-50.156	-49.345
64QAM	Low	-48.521	-57.428	-50.139	-51.453	-38.757	-38.366	-50.538	-50.003	-49.326
	Middle	-50.014	-57.099	-50.843	-49.348	-38.175	-37.865	-48.747	-49.968	-48.606
	High	-49.054	-58.432	-51.117	-47.869	-30.825	-33.848	-48.159	-49.896	-49.312
256QAM	Low	-48.207	-56.590	-50.183	-50.018	-37.432	-37.368	-49.428	-49.926	-48.506
	Middle	-49.206	-57.913	-51.118	-48.628	-37.672	-37.836	-52.158	-50.667	-49.349
	High	-48.345	-59.223	-50.809	-46.245	-31.031	-33.917	-48.213	-49.725	-49.291
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 2

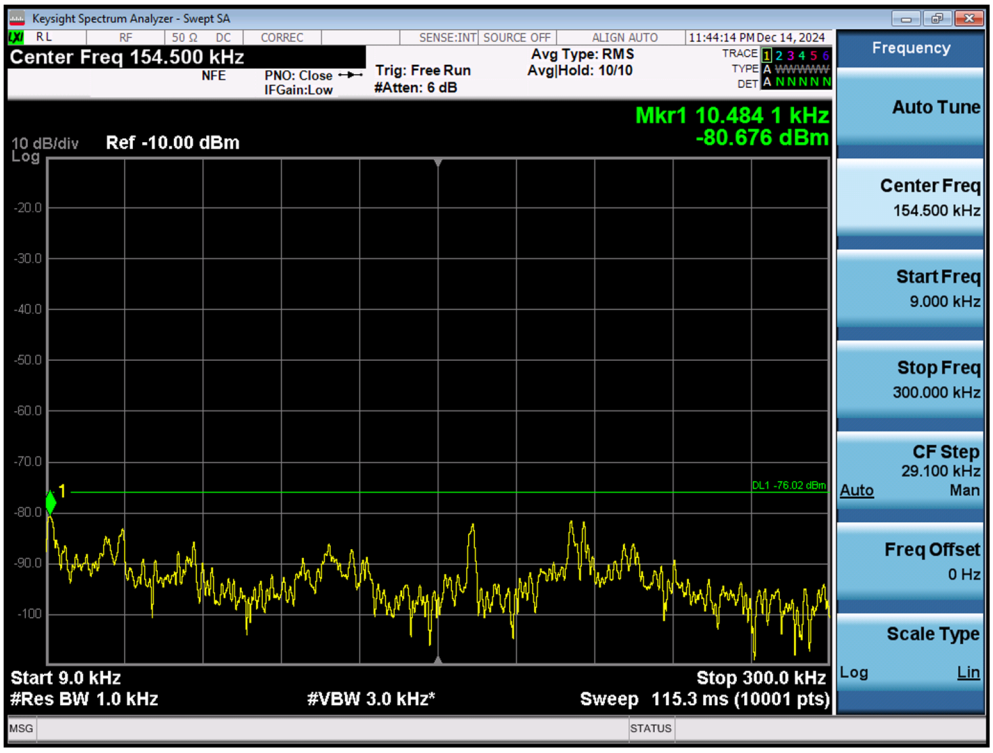
Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-48.639	-56.815	-49.156	-44.546	-32.989	-32.275	-42.018	-49.745	-49.970
	Middle	-49.845	-58.354	-44.805	-43.889	-33.297	-33.351	-45.079	-49.822	-49.723
	High	-48.474	-59.769	-51.530	-44.946	-32.995	-32.902	-44.493	-49.649	-50.079
16QAM	Low	-48.108	-57.280	-50.588	-45.845	-32.810	-32.726	-44.407	-48.150	-49.649
	Middle	-49.627	-61.256	-51.491	-46.401	-34.417	-35.453	-49.981	-50.053	-49.825
	High	-48.524	-58.840	-50.844	-47.174	-33.610	-34.081	-46.526	-49.914	-48.976
64QAM	Low	-49.395	-59.668	-50.823	-48.613	-34.547	-34.173	-46.273	-49.735	-49.660
	Middle	-48.573	-61.678	-51.300	-47.223	-35.058	-35.505	-50.352	-49.349	-49.182
	High	-49.901	-59.586	-51.213	-49.213	-33.880	-34.065	-46.940	-51.056	-49.690
256QAM	Low	-48.722	-56.640	-50.387	-46.333	-32.906	-32.186	-44.669	-50.436	-49.369
	Middle	-49.140	-57.794	-50.929	-44.729	-33.216	-33.334	-46.005	-50.368	-49.858
	High	-48.673	-59.921	-51.176	-45.728	-32.744	-32.970	-45.469	-49.680	-49.367
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Test Result for Output Port 3

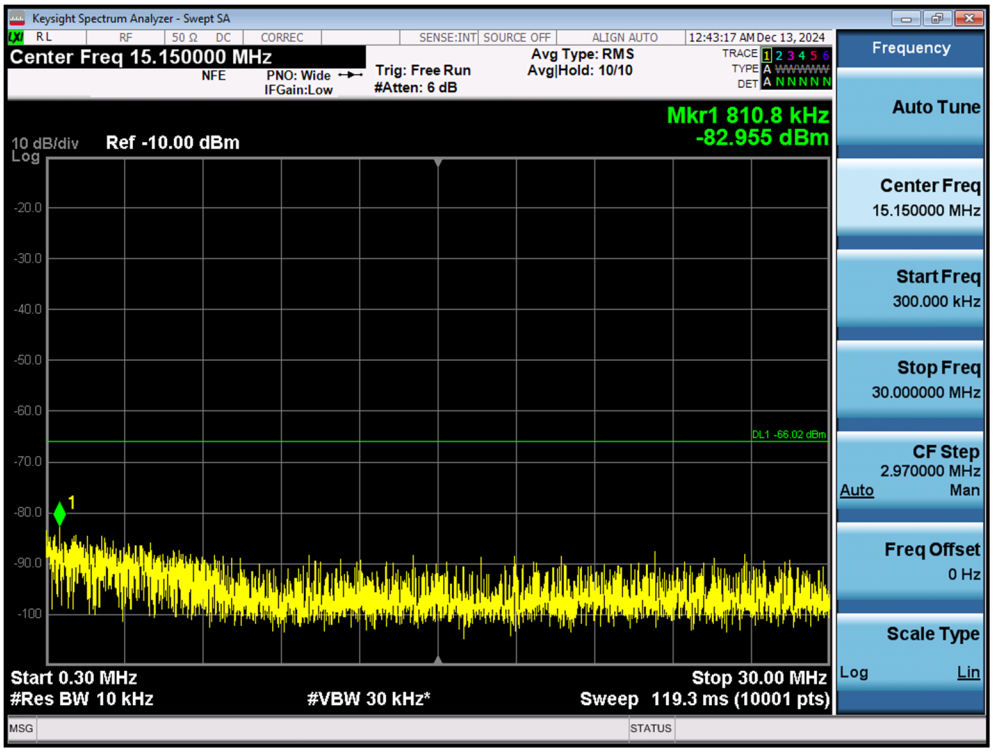
Modulation	Channel	Measured Level (dBm/MHz)								
		9 kHz ~ 300 kHz	300 kHz ~ 30 MHz	30 MHz ~ 3 530 MHz	3 530 MHz ~ LowEdge - 10 MHz	LowEdge - 10 MHz ~ LowEdge - 1 MHz	HighEdge + 1 MHz ~ HighEdge + 10 MHz	HighEdge + 10 MHz ~ 3 720 MHz	3 720 MHz ~ 18 GHz	18 GHz ~ 40 GHz
QPSK	Low	-48.797	-57.081	-51.003	-46.292	-34.720	-33.967	-43.872	-50.147	-49.650
	Middle	-48.311	-57.968	-51.269	-44.231	-34.004	-33.762	-45.124	-49.893	-48.970
	High	-50.034	-58.098	-51.658	-41.647	-32.376	-33.454	-41.609	-49.734	-48.805
16QAM	Low	-48.137	-60.348	-51.081	-50.196	-36.531	-36.570	-50.379	-50.682	-49.727
	Middle	-48.520	-58.142	-50.873	-43.127	-33.997	-34.516	-48.597	-49.928	-48.289
	High	-49.089	-58.096	-50.564	-41.560	-32.436	-33.825	-44.904	-50.340	-49.338
64QAM	Low	-49.142	-57.725	-50.034	-48.141	-34.689	-34.290	-46.365	-50.328	-50.013
	Middle	-49.657	-57.402	-50.712	-46.321	-34.831	-34.576	-47.312	-49.989	-49.591
	High	-49.367	-58.316	-50.983	-42.504	-32.999	-34.220	-44.010	-50.173	-48.409
256QAM	Low	-50.204	-57.108	-50.342	-48.728	-36.084	-35.985	-49.561	-49.761	-49.256
	Middle	-49.378	-57.832	-50.708	-44.447	-34.154	-34.498	-48.034	-50.333	-48.934
	High	-49.811	-58.485	-51.430	-44.288	-32.834	-34.110	-45.699	-50.153	-49.136
Limit		-46.02	-46.02	-46.02	-31.02	-19.02	-19.02	-31.02	-46.02	-46.02

Plot Data of Spurious Unwanted Emissions

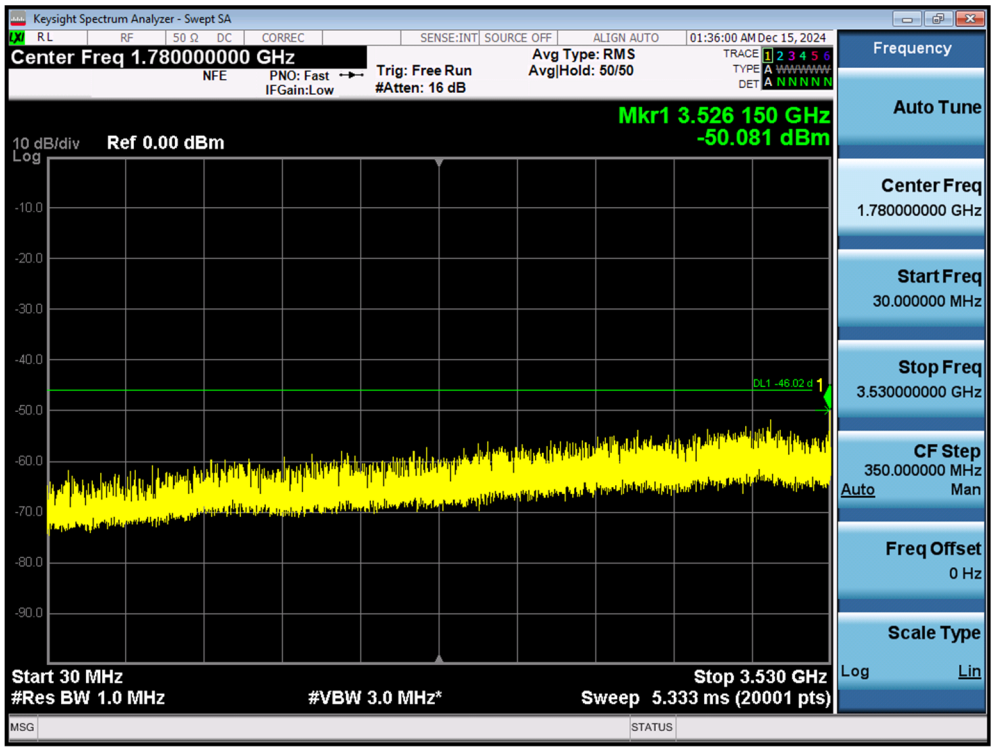
Antenna 2 / (4 Port) 5G NR n48 10 MHz 1 Carrier / 9 kHz ~ 300 kHz / 64QAM / Low



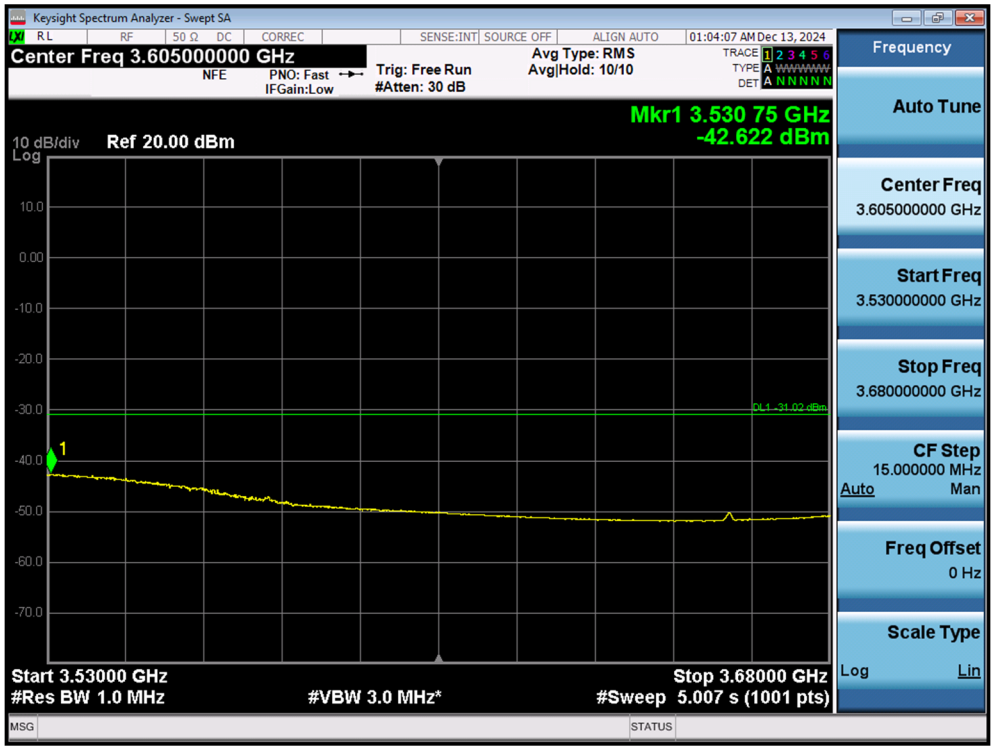
Antenna 0 / (4 Port) 5G NR n48 10 MHz 1 Carrier / 300 kHz ~ 30 MHz / 256QAM / Low



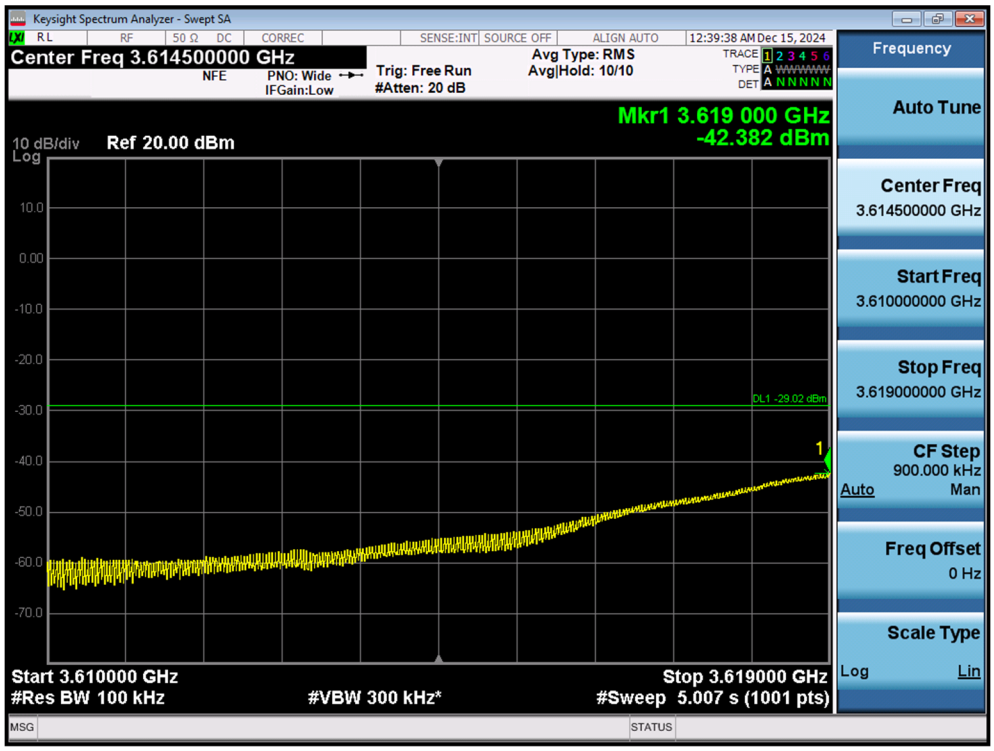
Antenna 3 / (4 Port) 5G NR n48 10 MHz 1 Carrier / 30 MHz ~ 3 530 MHz / QPSK / Low



Antenna 0 / (4 Port) 5G NR n48 10 MHz 1 Carrier / 3 530 MHz ~ LowEdge - 10 MHz / 64QAM / High



Antenna 2 / (4 Port) 5G NR n48 10 MHz 1 Carrier / LowEdge - 10 MHz ~ LowEdge - 1 MHz / 64QAM / Middle



Antenna 2 / (4 Port) 5G NR n48 10 MHz 1 Carrier / HighEdge + 1 MHz ~ HighEdge + 10 MHz / 64QAM / Low