

### LTE15 Band Edge Plots for Antenna Port 2 and QPSK Modulation:

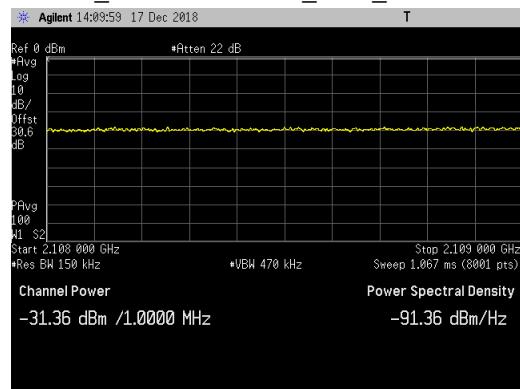
LTE15\_Bottom Channel\_LBE\_2109 to 2111MHz



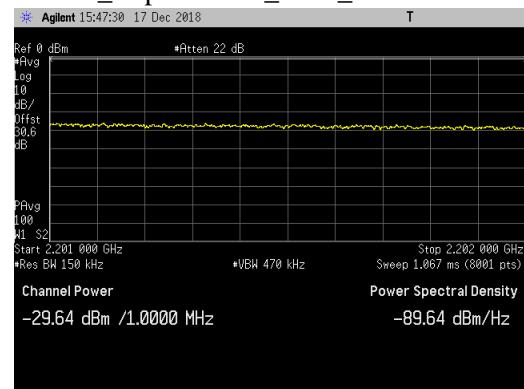
LTE15\_Top Channel\_UBE\_2199 to 2201MHz



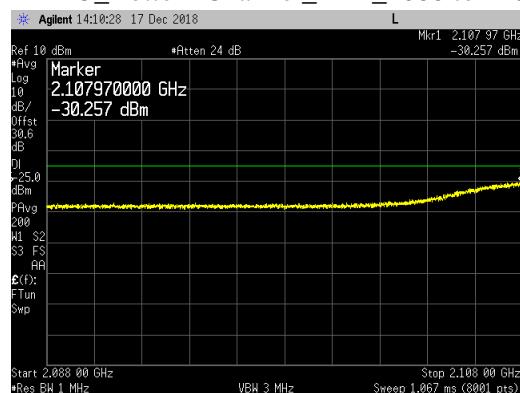
LTE15\_Bottom Channel\_LBE\_2108 to 2109MHz



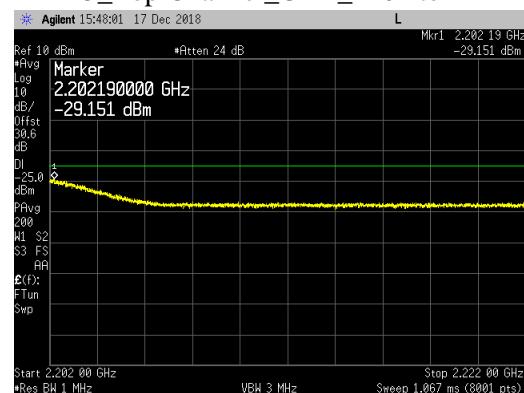
LTE15\_Top Channel\_UBE\_2201 to 2202MHz



LTE15\_Bottom Channel\_LBE\_2088 to 2108MHz

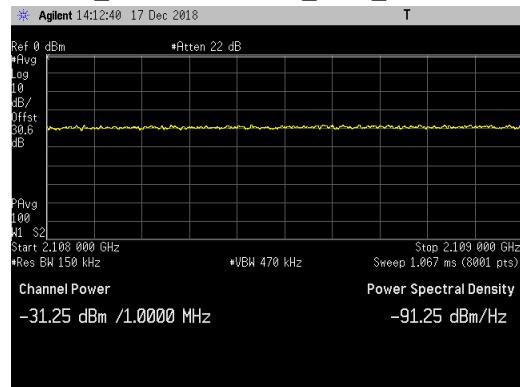
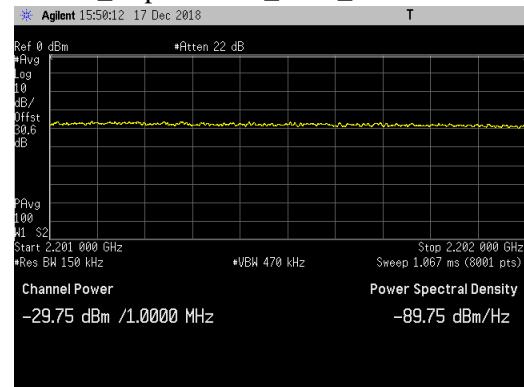
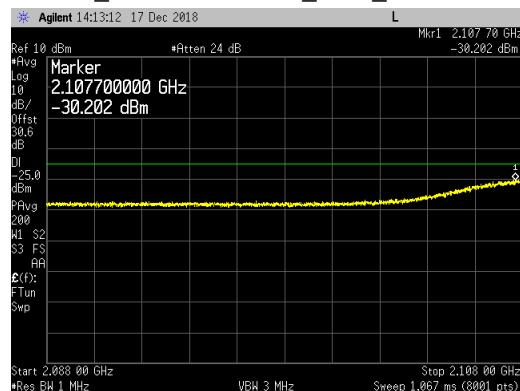
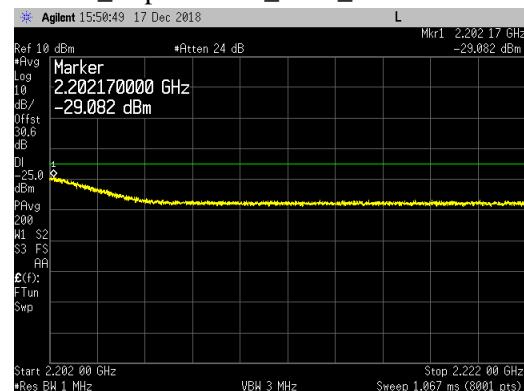


LTE15\_Top Channel\_UBE\_2202 to 2222MHz



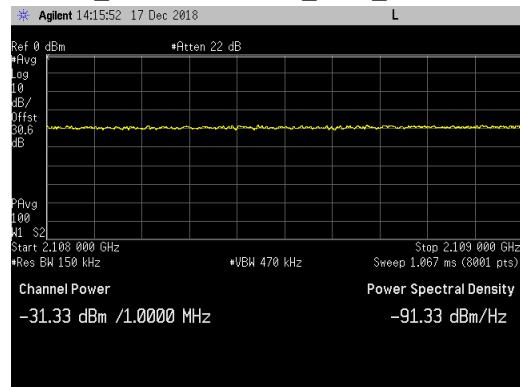
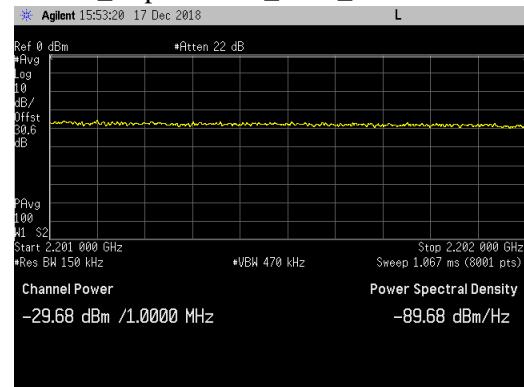
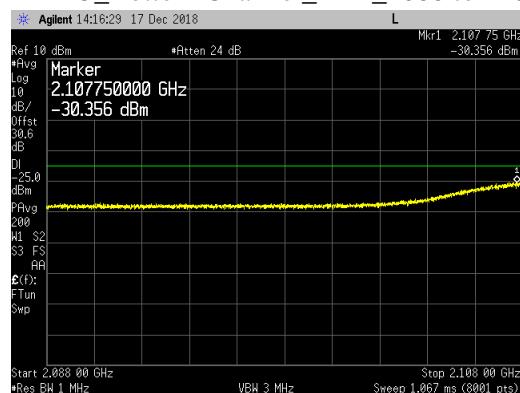
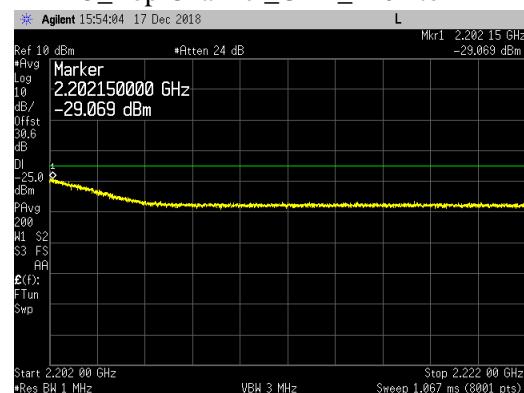
**LTE15 Band Edge Plots for Antenna Port 2 and 16QAM Modulation:**
**LTE15\_Bottom Channel\_LBE\_2109 to 2111MHz**

**LTE15\_Top Channel\_UBE\_2199 to 2201MHz**

**LTE15\_Bottom Channel\_LBE\_2108 to 2109MHz**

**LTE15\_Top Channel\_UBE\_2201 to 2202MHz**

**LTE15\_Bottom Channel\_LBE\_2088 to 2108MHz**

**LTE15\_Top Channel\_UBE\_2202 to 2222MHz**


**LTE15 Band Edge Plots for Antenna Port 2 and 64QAM Modulation:**
**LTE15\_Bottom Channel\_LBE\_2109 to 2111MHz**

**LTE15\_Top Channel\_UBE\_2199 to 2201MHz**

**LTE15\_Bottom Channel\_LBE\_2108 to 2109MHz**

**LTE15\_Top Channel\_UBE\_2201 to 2202MHz**

**LTE15\_Bottom Channel\_LBE\_2088 to 2108MHz**

**LTE15\_Top Channel\_UBE\_2202 to 2222MHz**


### LTE15 Band Edge Plots for Antenna Port 2 and 256QAM Modulation:

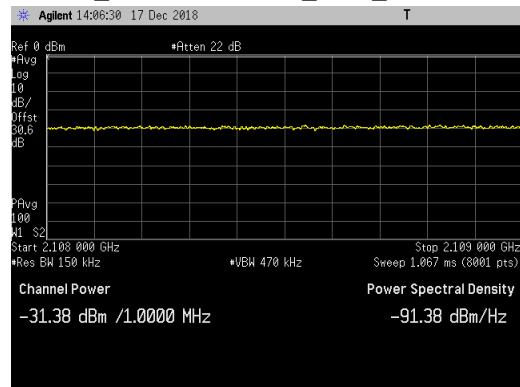
LTE15\_Bottom Channel\_LBE\_2109 to 2111MHz



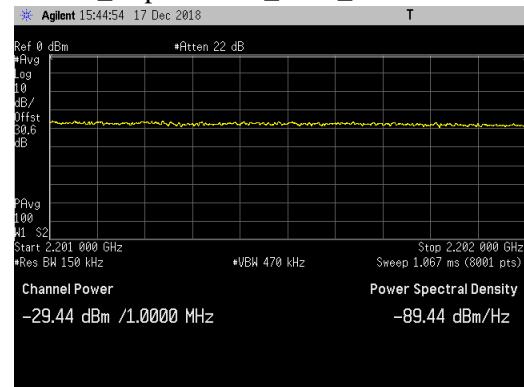
LTE15\_Top Channel\_UBE\_2199 to 2201MHz



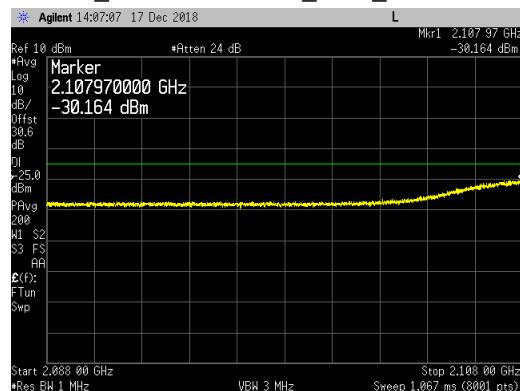
LTE15\_Bottom Channel\_LBE\_2108 to 2109MHz



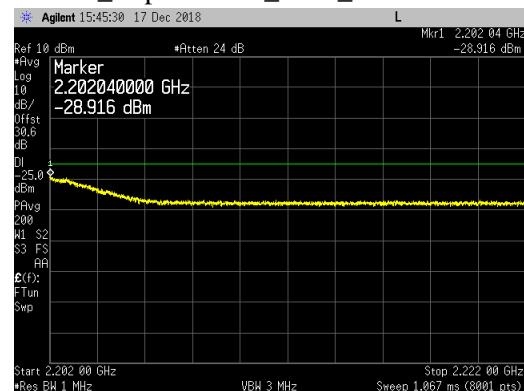
LTE15\_Top Channel\_UBE\_2201 to 2202MHz



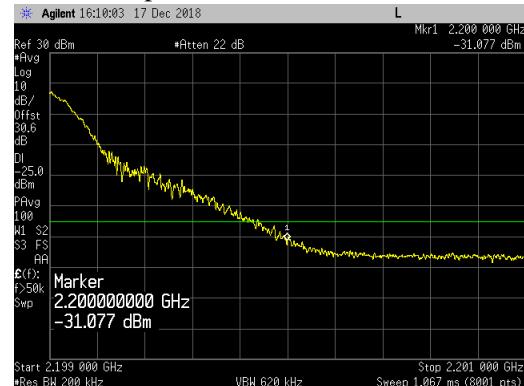
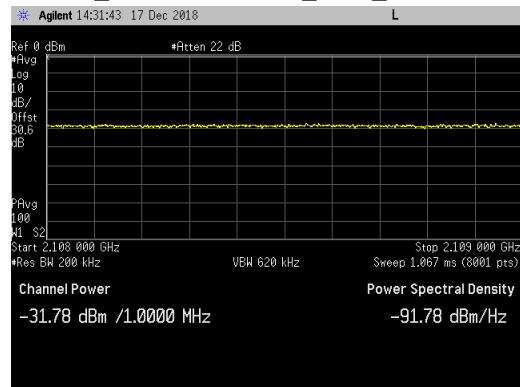
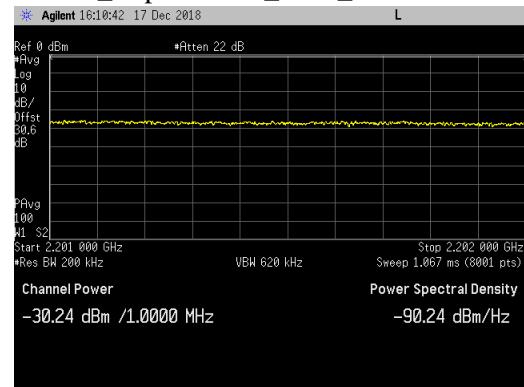
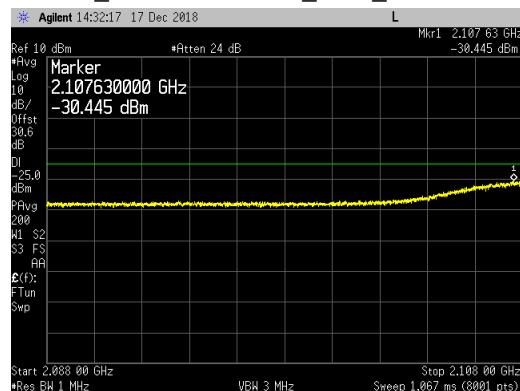
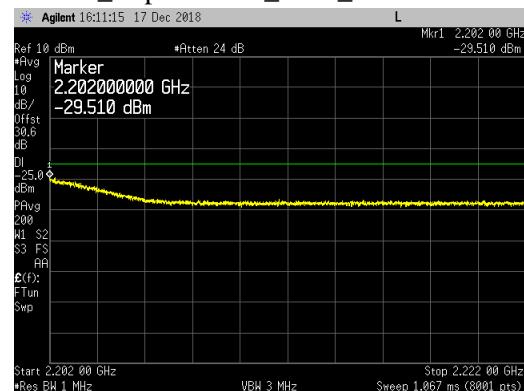
LTE15\_Bottom Channel\_LBE\_2088 to 2108MHz



LTE15\_Top Channel\_UBE\_2202 to 2222MHz



**LTE20 Band Edge Plots for Antenna Port 2 and QPSK Modulation:**
**LTE20\_Bottom Channel\_LBE\_2109 to 2111MHz**

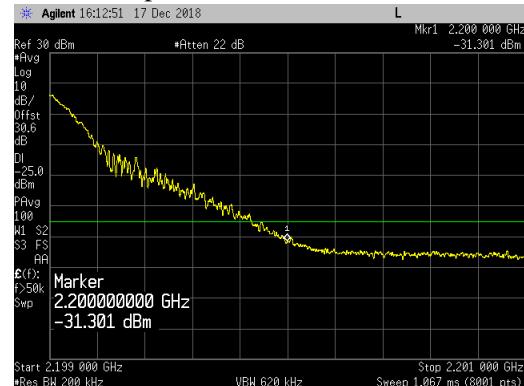
**LTE20\_Top Channel\_UBE\_2199 to 2201MHz**

**LTE20\_Bottom Channel\_LBE\_2108 to 2109MHz**

**LTE20\_Top Channel\_UBE\_2201 to 2202MHz**

**LTE20\_Bottom Channel\_LBE\_2088 to 2108MHz**

**LTE20\_Top Channel\_UBE\_2202 to 2222MHz**


### LTE20 Band Edge Plots for Antenna Port 2 and 16QAM Modulation:

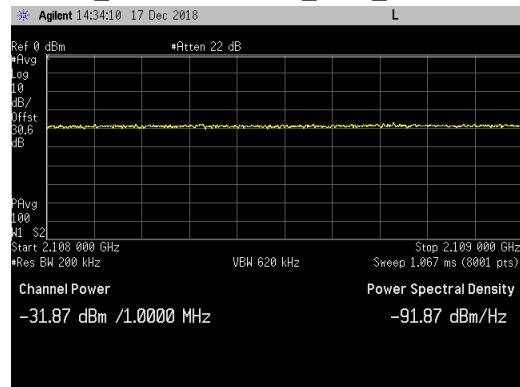
LTE20\_Bottom Channel\_LBE\_2109 to 2111MHz



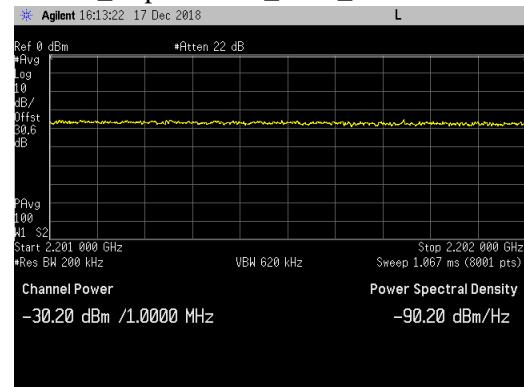
LTE20\_Top Channel\_UBE\_2199 to 2201MHz



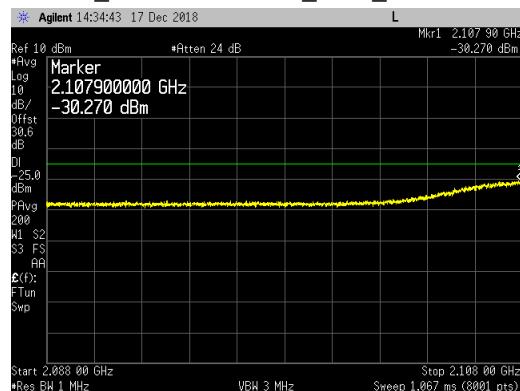
LTE20\_Bottom Channel\_LBE\_2108 to 2109MHz



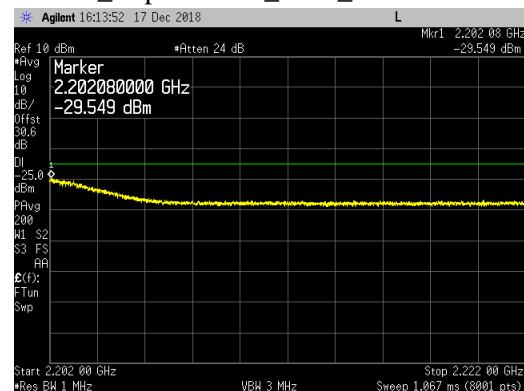
LTE20\_Top Channel\_UBE\_2201 to 2202MHz



LTE20\_Bottom Channel\_LBE\_2088 to 2108MHz



LTE20\_Top Channel\_UBE\_2202 to 2222MHz

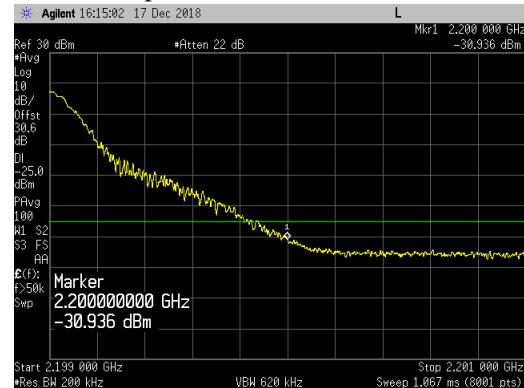


### LTE20 Band Edge Plots for Antenna Port 2 and 64QAM Modulation:

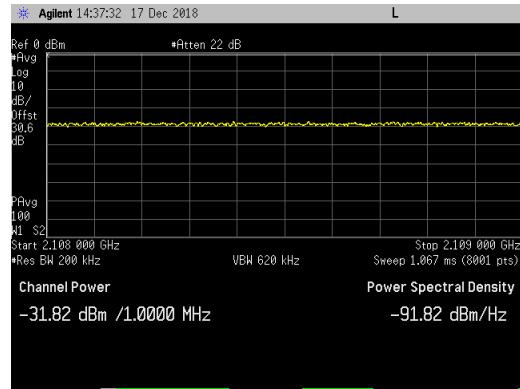
LTE20\_Bottom Channel\_LBE\_2109 to 2111MHz



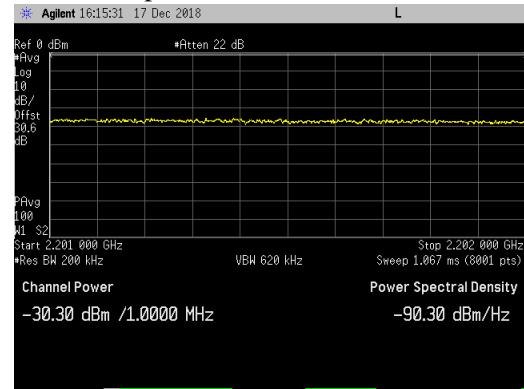
LTE20\_Top Channel\_UBE\_2199 to 2201MHz



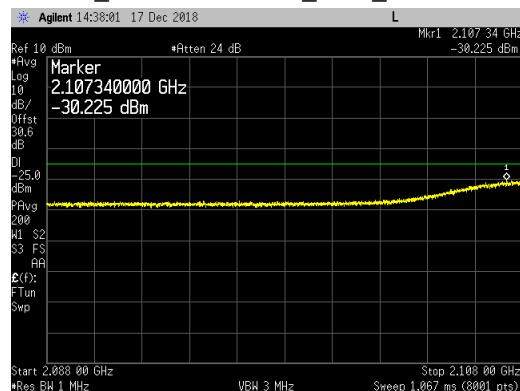
LTE20\_Bottom Channel\_LBE\_2108 to 2109MHz



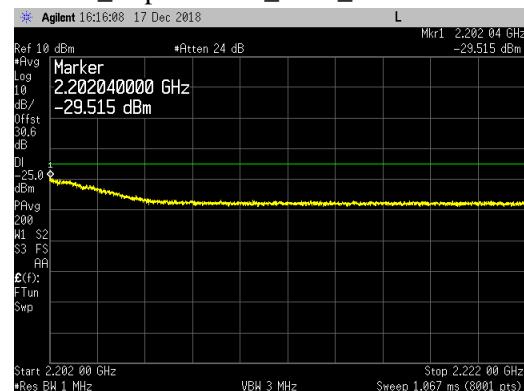
LTE20\_Top Channel\_UBE\_2201 to 2202MHz



LTE20\_Bottom Channel\_LBE\_2088 to 2108MHz

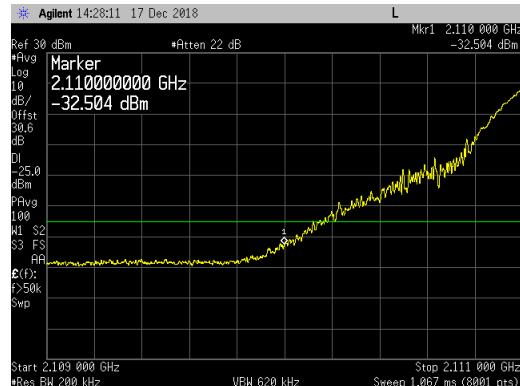


LTE20\_Top Channel\_UBE\_2202 to 2222MHz

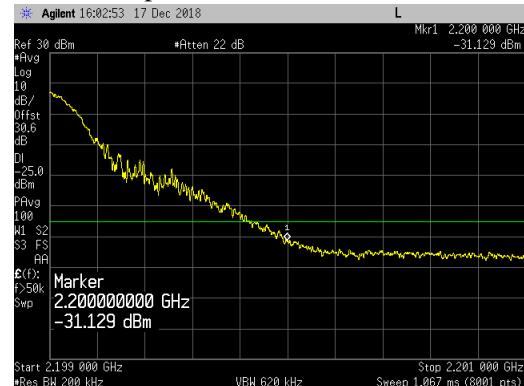


### LTE20 Band Edge Plots for Antenna Port 2 and 256QAM Modulation:

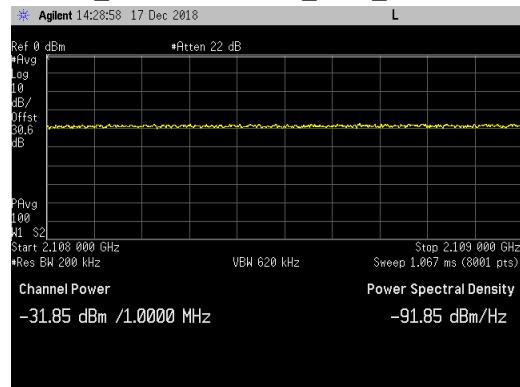
LTE20\_Bottom Channel\_LBE\_2109 to 2111MHz



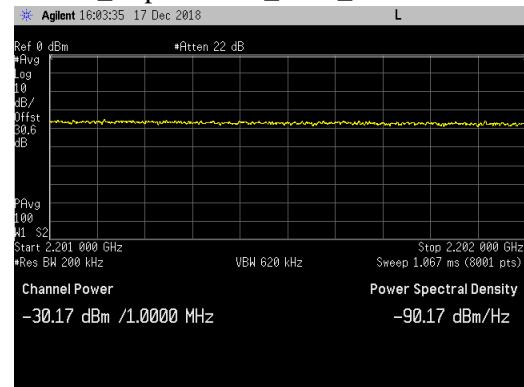
LTE20\_Top Channel\_UBE\_2199 to 2201MHz



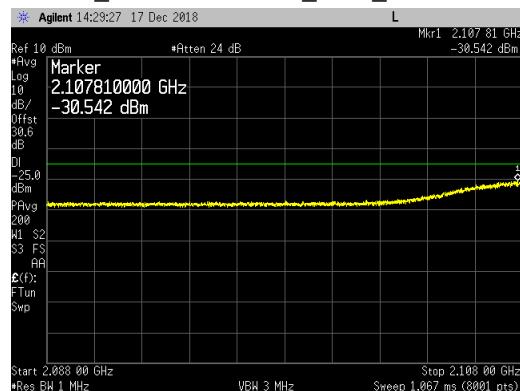
LTE20\_Bottom Channel\_LBE\_2108 to 2109MHz



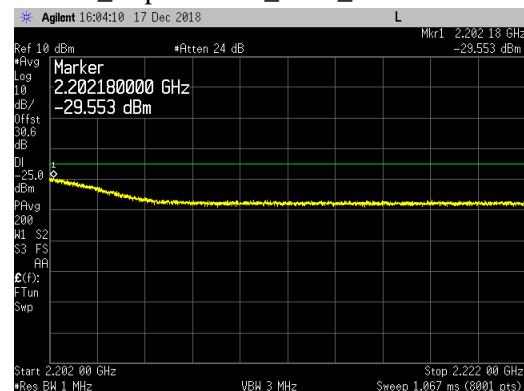
LTE20\_Top Channel\_UBE\_2201 to 2202MHz



LTE20\_Bottom Channel\_LBE\_2088 to 2108MHz



LTE20\_Top Channel\_UBE\_2202 to 2222MHz



### Transmitter Antenna Port Conducted Emissions

Transmitter conducted emission measurements were made at radio module antenna port 2. Measurements were performed over the 9kHz to 22GHz frequency range. The radio module was operated on the AWS middle channel (2155MHz) with all LTE modulation types (QPSK, 16QAM, 64QAM and 256QAM) for LTE bandwidths of 5MHz, 10MHz, 15MHz and 20MHz.

The limit of -25dBm was used in the certification testing. The limit is adjusted to -25dBm [-13dBm -10 log (16)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 16 port MIMO transmitter. The required measurement parameters include a 1MHz bandwidth with power measured in average value (since transmitter power was measured in average value).

Measurements were performed with a spectrum analyzer using a peak detector with max hold over 50 sweeps (except for the 9k to 150kHz and the 20MHz to 3GHz frequency ranges). Measurements for the 9k to 150kHz and the 20MHz to 3GHz frequency range were performed with the spectrum analyzer in the RMS average mode over 100 traces.

The limit for the 9kHz to 150kHz frequency range was adjusted to -55dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 1MHz [i.e.: -55dBm = -25dBm -10log(1MHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to -45dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 1MHz [i.e.: -45dBm = -25dBm -10log(1MHz/10kHz)]. The required limit of -25dBm with a RBW of  $\geq$ 1MHz was used for all other frequency ranges.

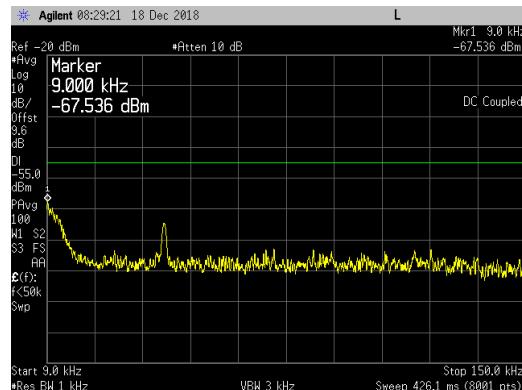
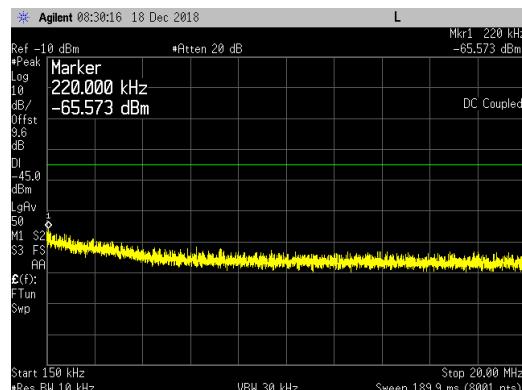
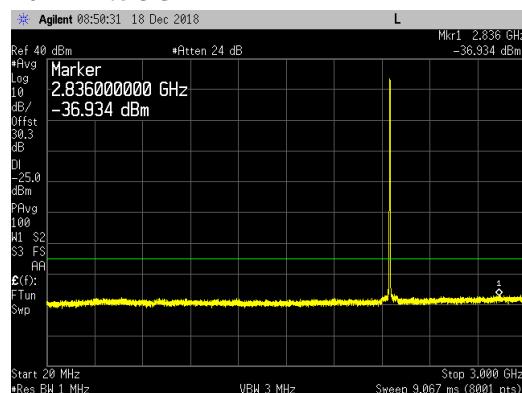
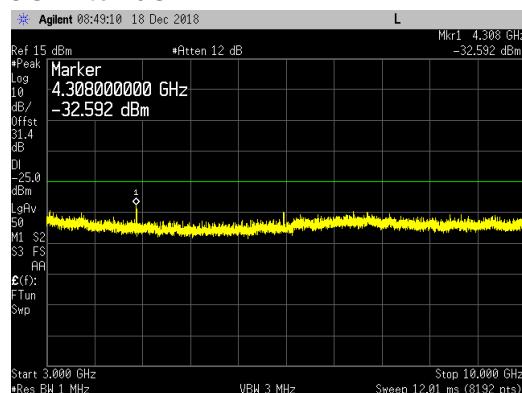
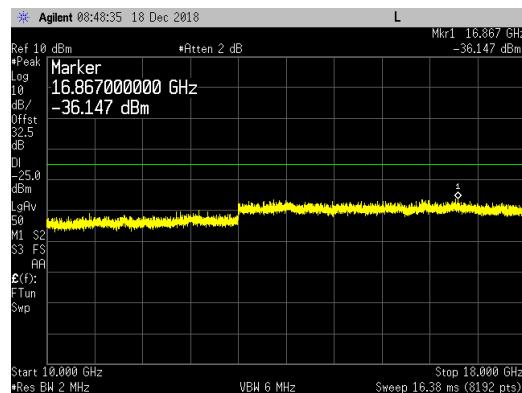
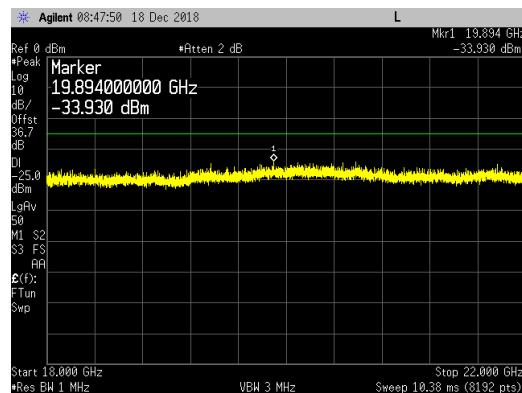
The spectrum analyzer settings that were used for this test are summarized in the following table.

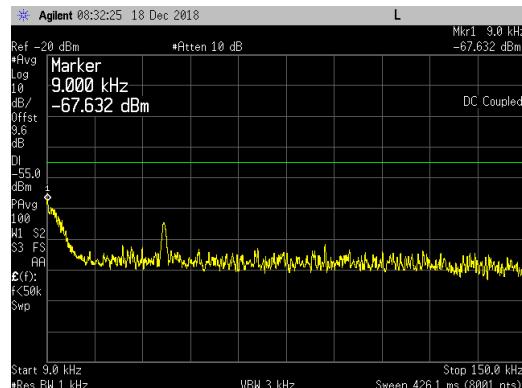
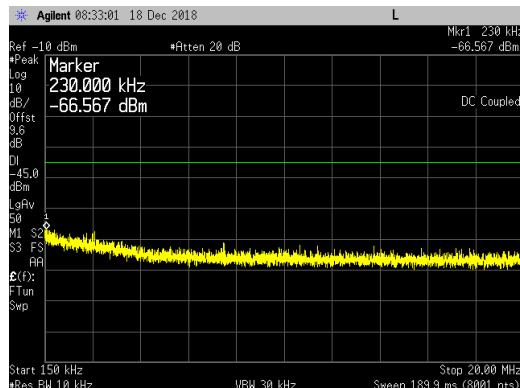
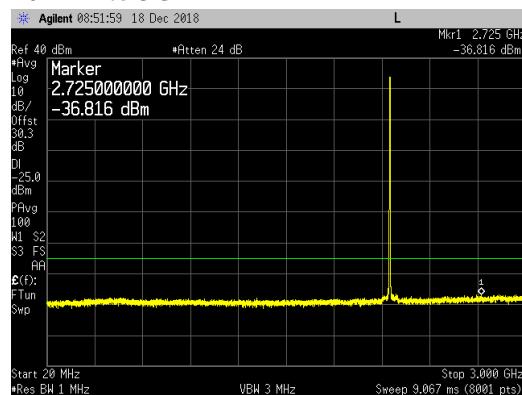
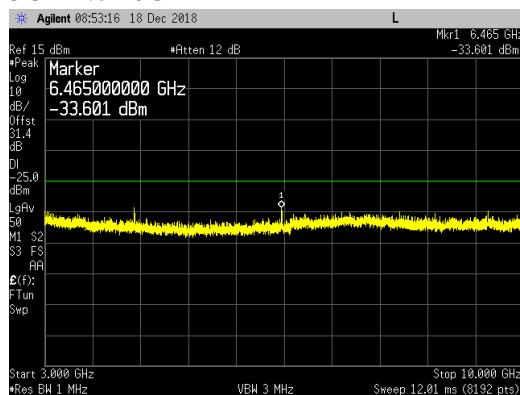
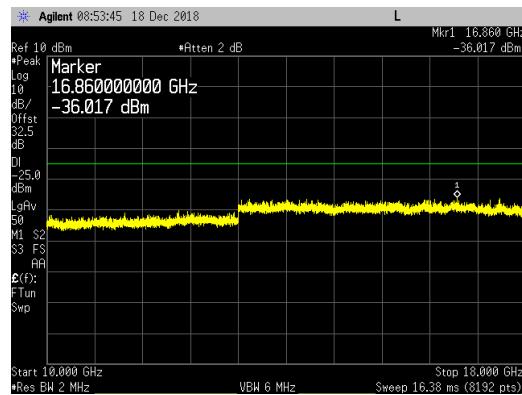
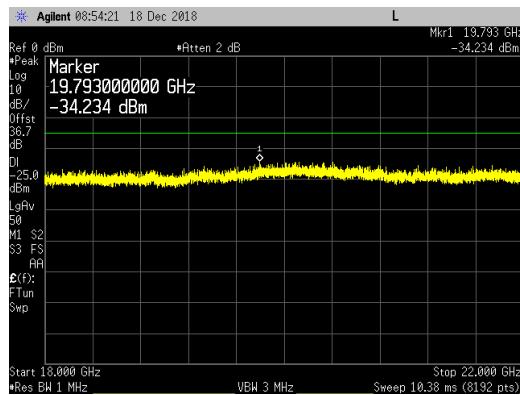
Frequency Range	RBW	VBW	Number of Data Points	Detector	Sweep Time	Max Hold over	Offset Note (1)
9kHz to 150kHz	1kHz	3kHz	8001	Average	Auto	Note (2)	9.6dB
150kHz to 20MHz	10kHz	30kHz	8001	Peak	Auto	50 Sweeps	9.6dB
20MHz to 3GHz	1MHz	3MHz	8001	Average	Auto	Note (2)	30.3dB
3GHz to 10GHz	2MHz	6MHz	8192	Peak	Auto	50 Sweeps	31.4dB
10GHz to 18GHz	2MHz	6MHz	8192	Peak	Auto	50 Sweeps	32.5dB
18GHz to 22GHz	1MHz	3MHz	8192	Peak	Auto	50 Sweeps	36.7dB

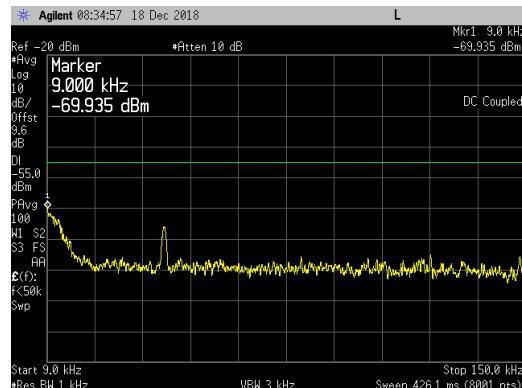
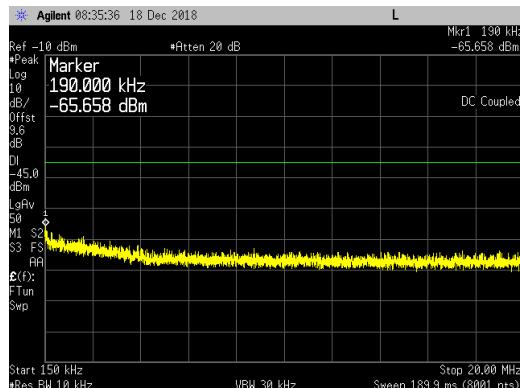
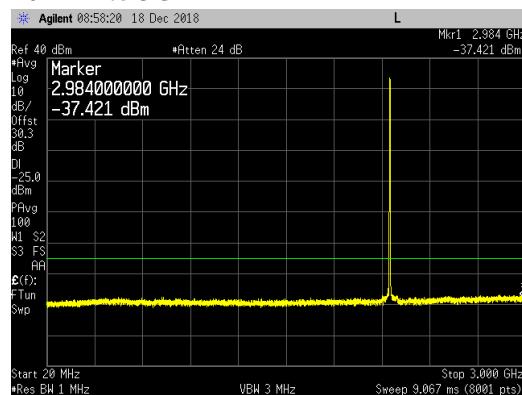
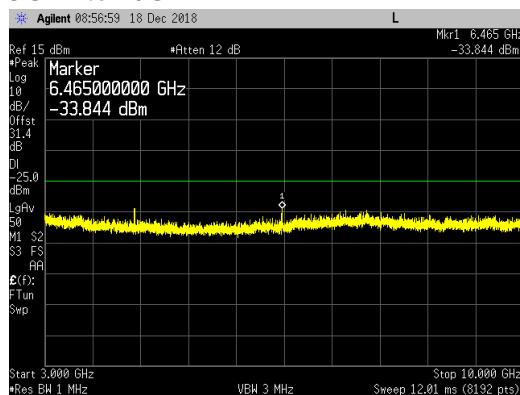
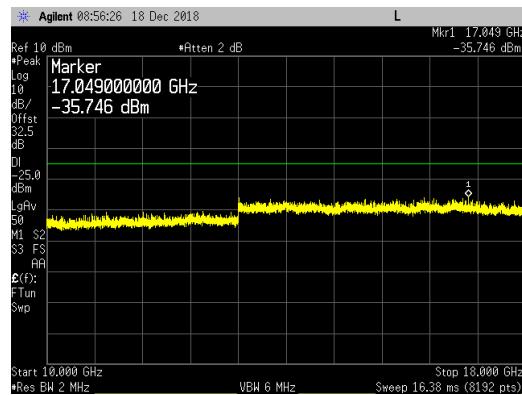
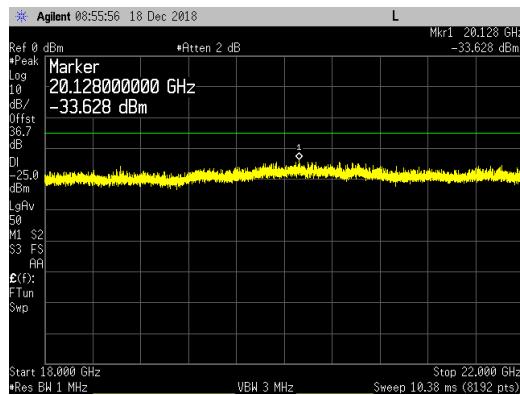
Note 1: The total measurement RF path loss of the test setup (attenuators, test cables and filters) is accounted for by the spectrum analyser reference level offset.

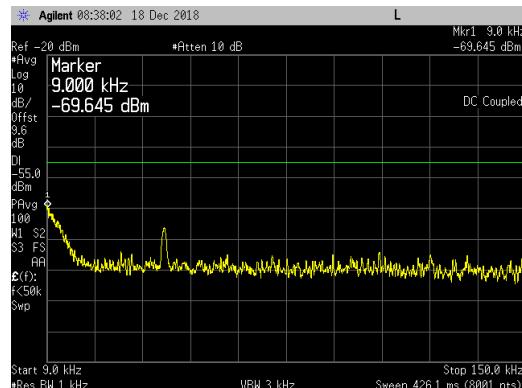
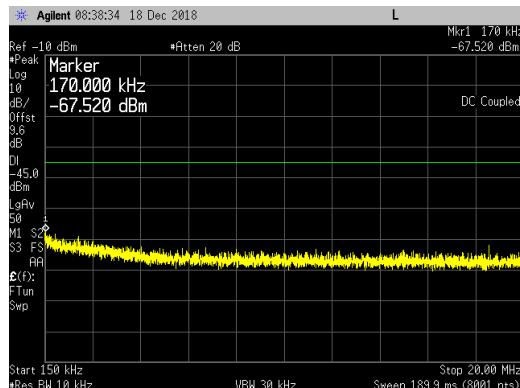
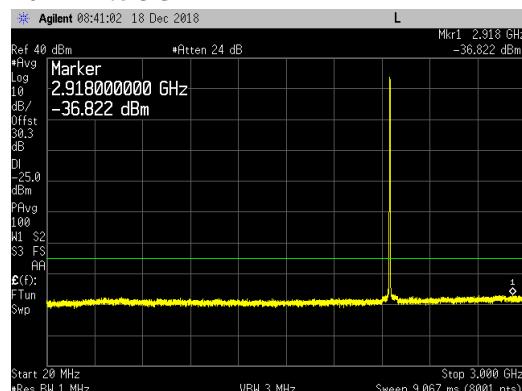
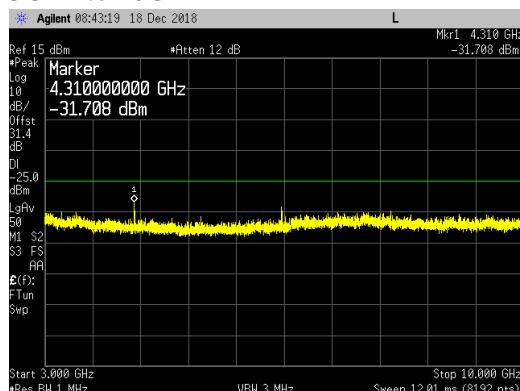
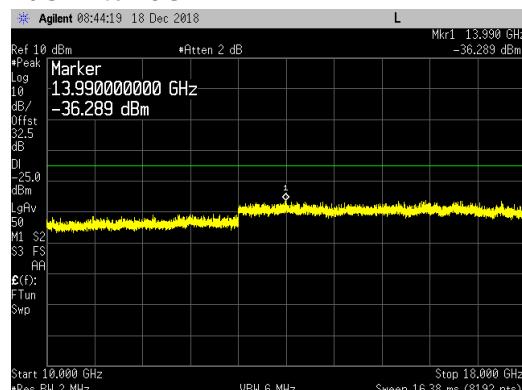
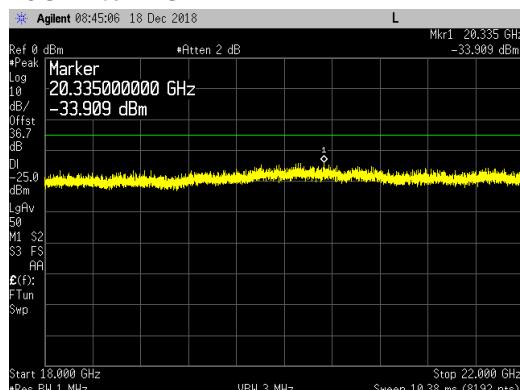
Note 2: Max Hold not used and instead measurements were performed with the spectrum analyser in the RMS average mode over 100 traces.

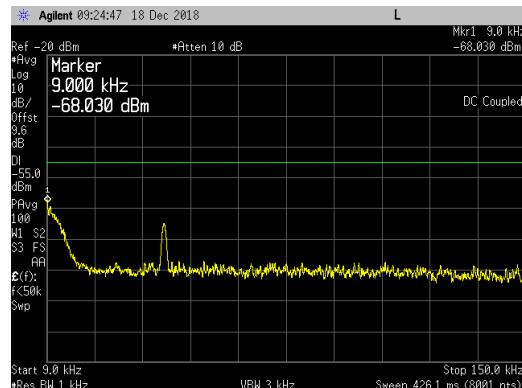
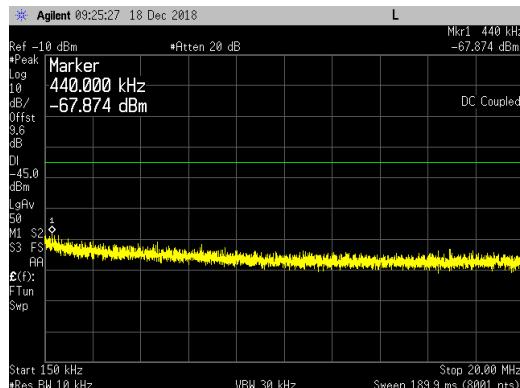
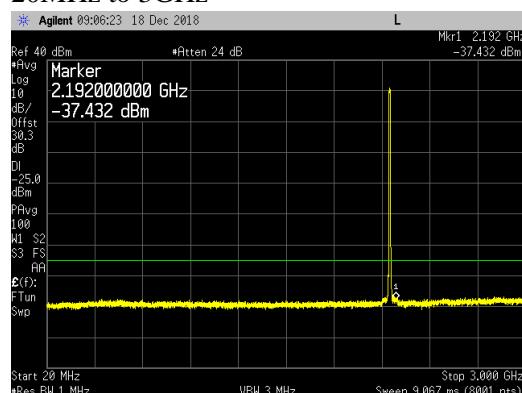
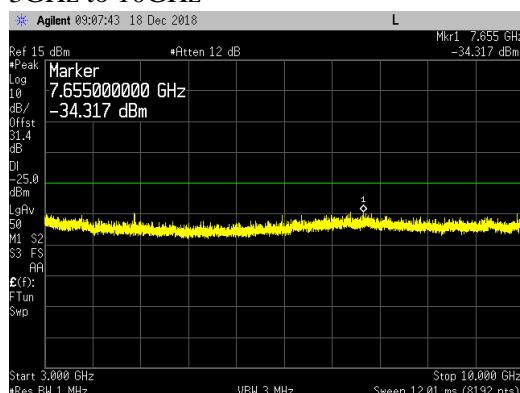
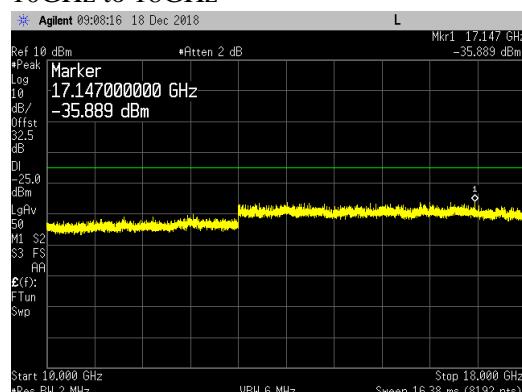
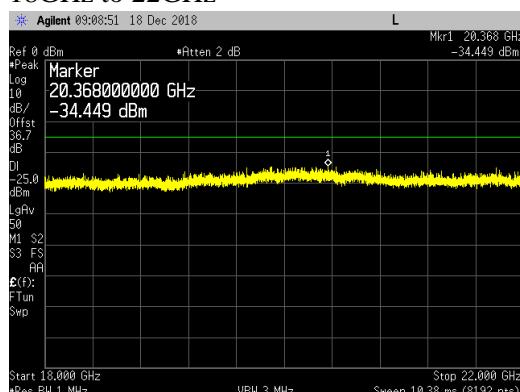
A low pass filter was used to reduce measurement instrumentation noise floor for the frequency ranges less than 20MHz. A high pass filter was used to reduce measurement instrumentation noise floor for the frequency ranges above 3GHz. The total measurement RF path loss of the test setup (attenuators, low pass filter, high pass filter and test cables) as shown in the table is accounted for by the spectrum analyzer reference level offset. The display line on the plots reflects the required limit. Conducted spurious emission plots/measurements are provided in the following pages.

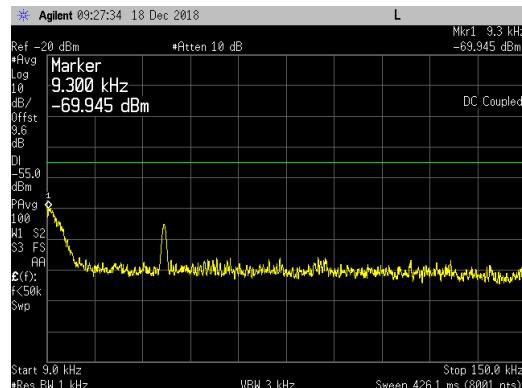
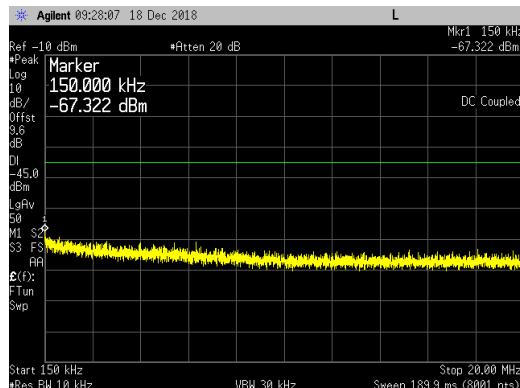
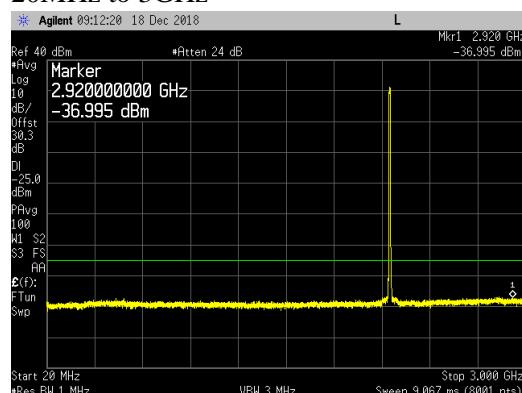
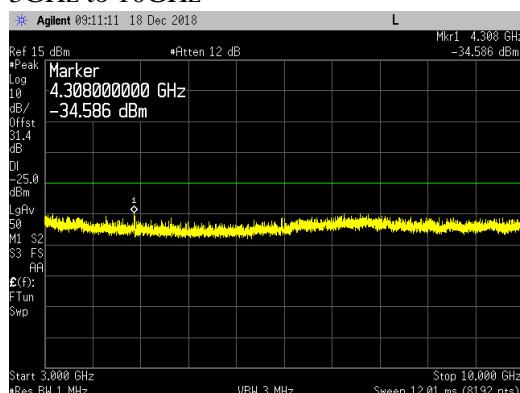
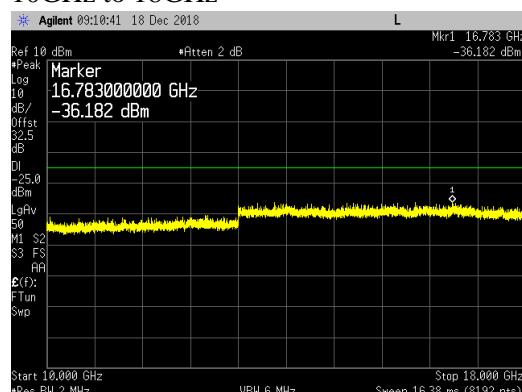
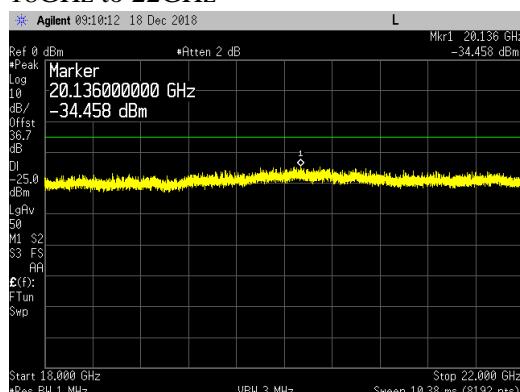
**LTE5 Channel Bandwidth \_ QPSK \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


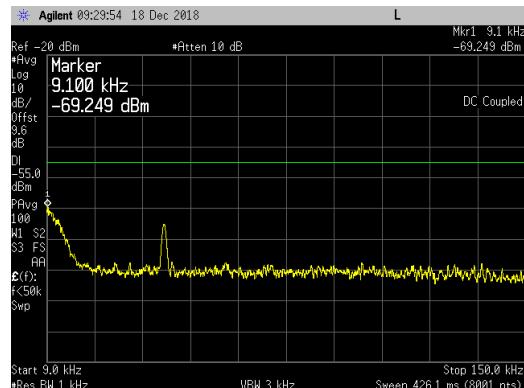
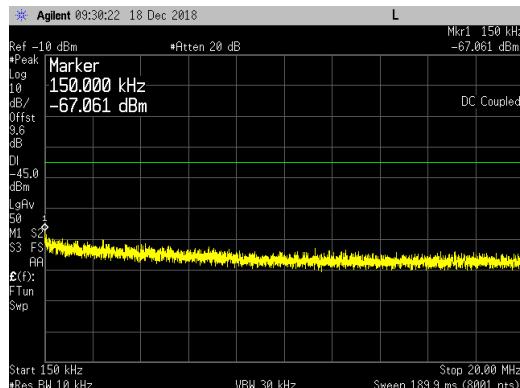
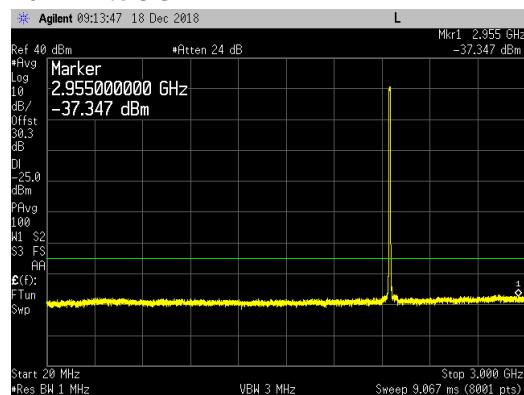
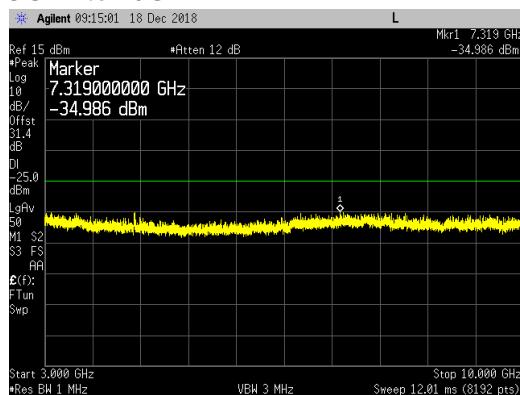
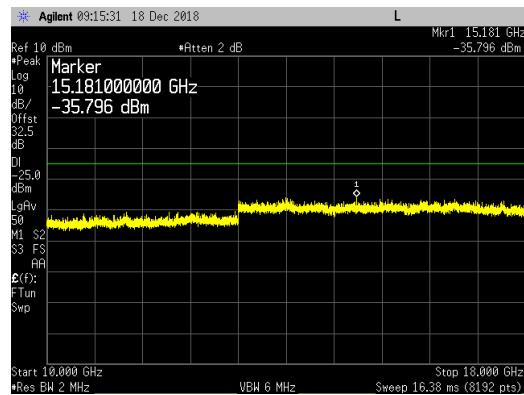
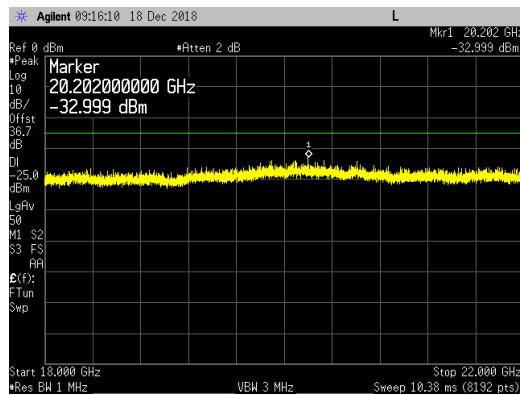
**LTE5 Channel Bandwidth \_ 16QAM \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


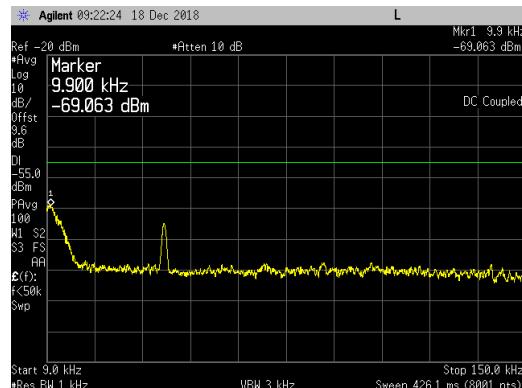
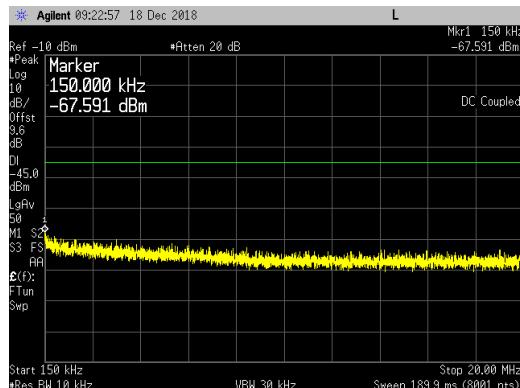
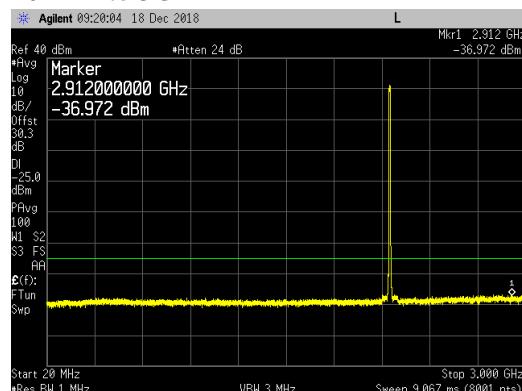
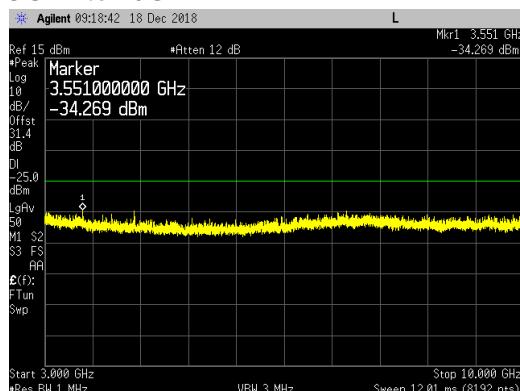
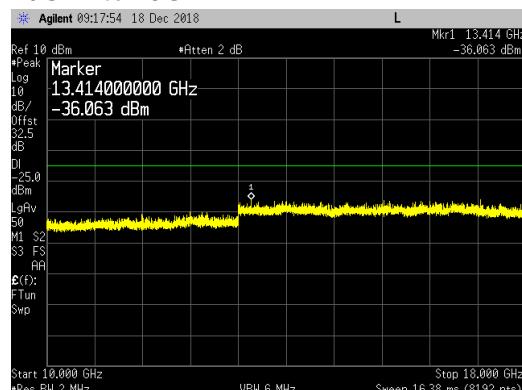
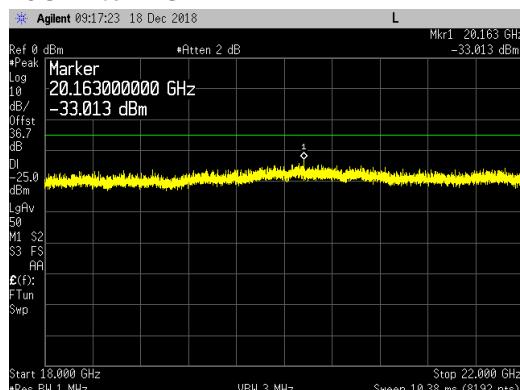
**LTE5 Channel Bandwidth \_64QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


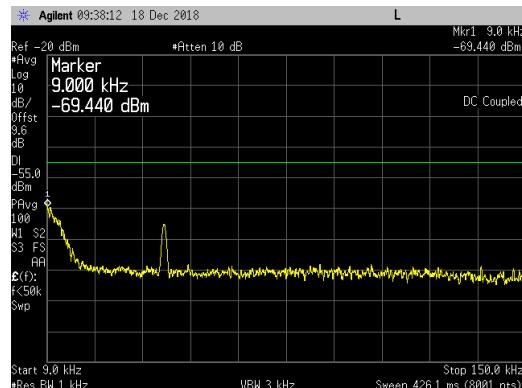
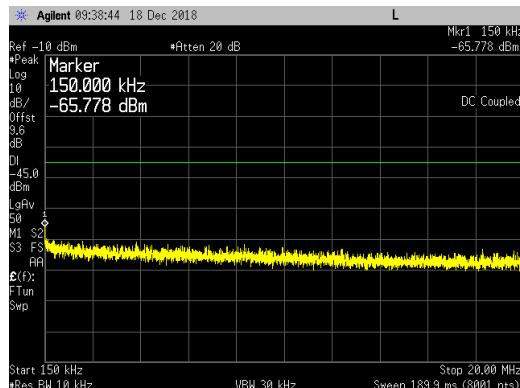
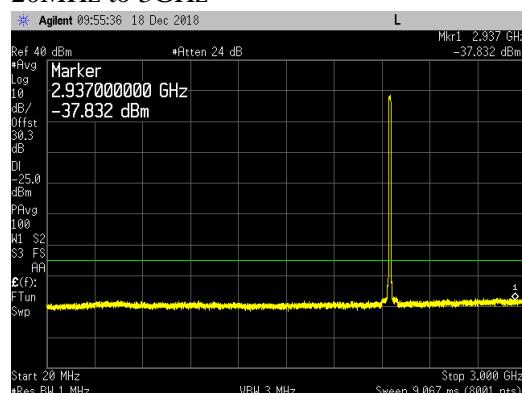
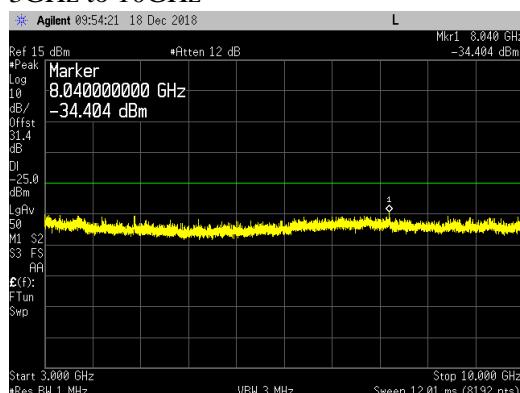
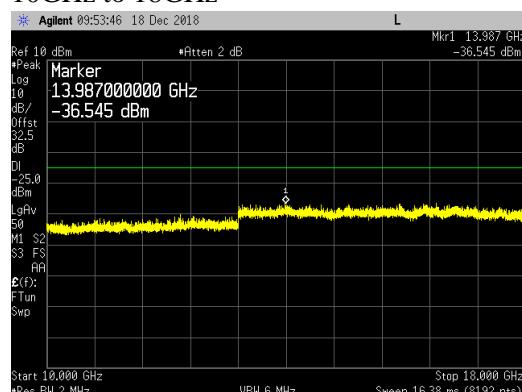
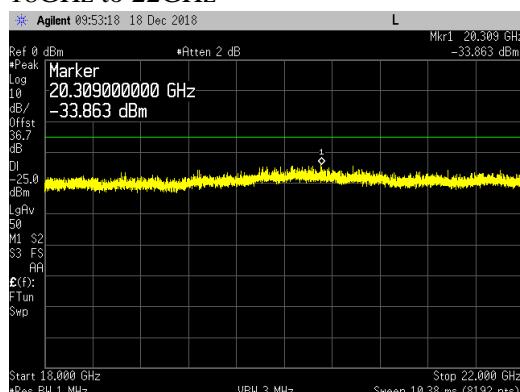
**LTE5 Channel Bandwidth \_256QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


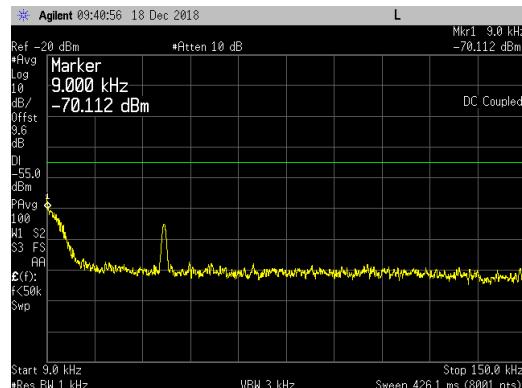
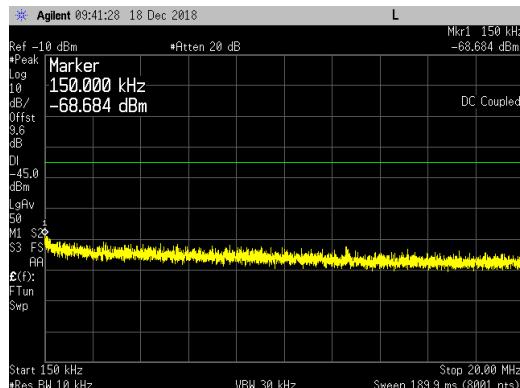
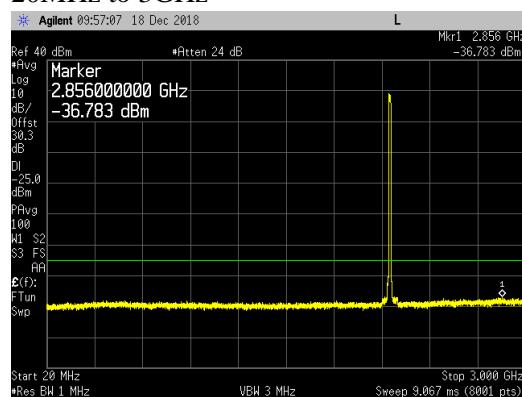
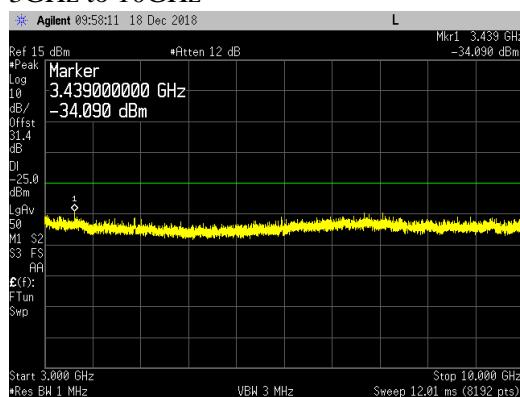
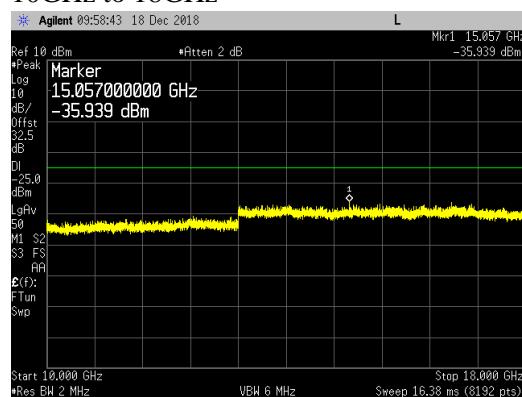
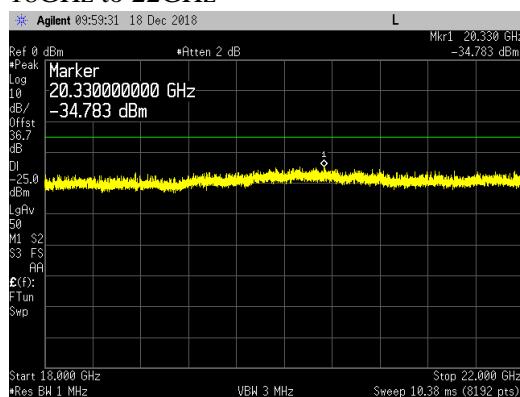
**LTE10 Channel Bandwidth \_ QPSK \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


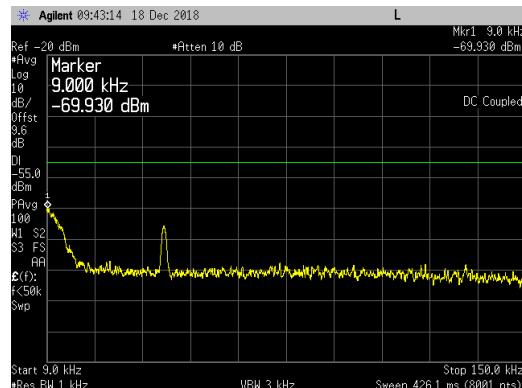
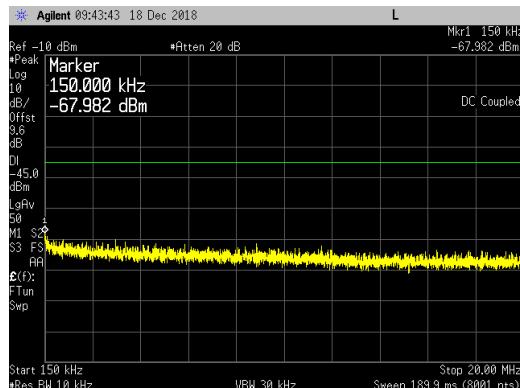
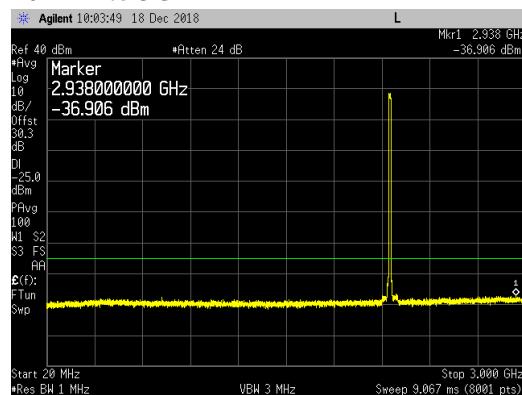
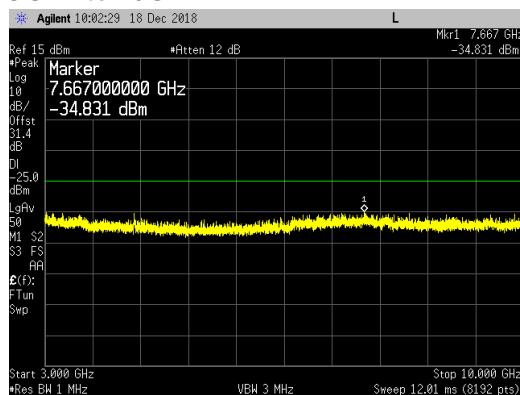
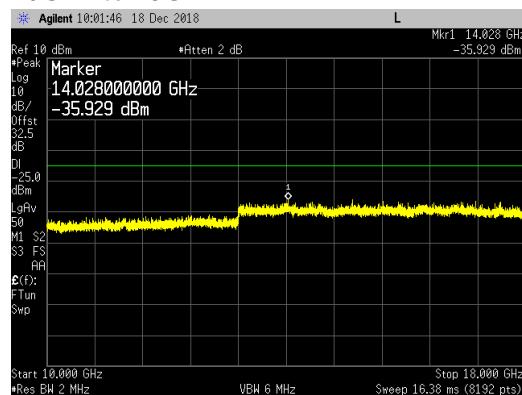
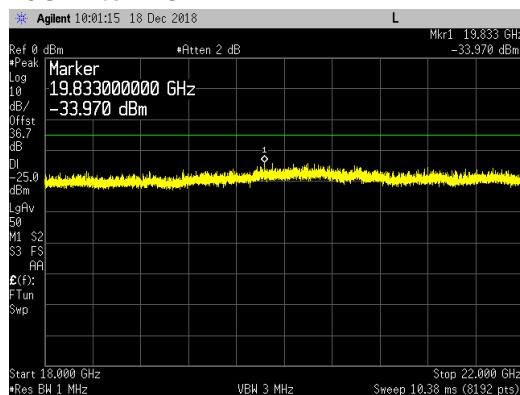
**LTE10 Channel Bandwidth \_ 16QAM \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


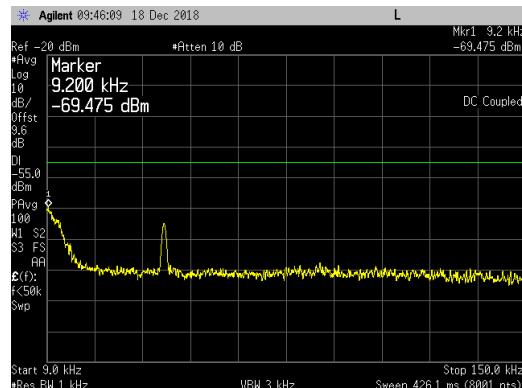
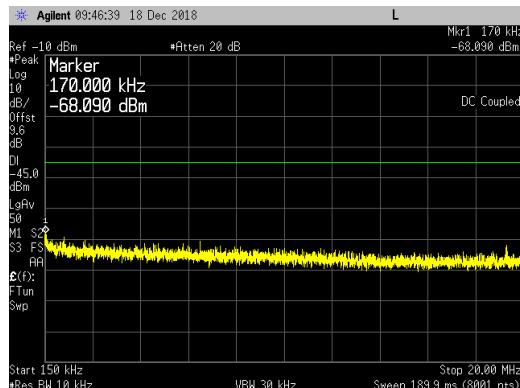
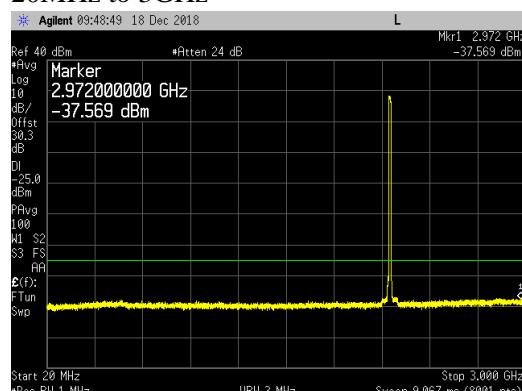
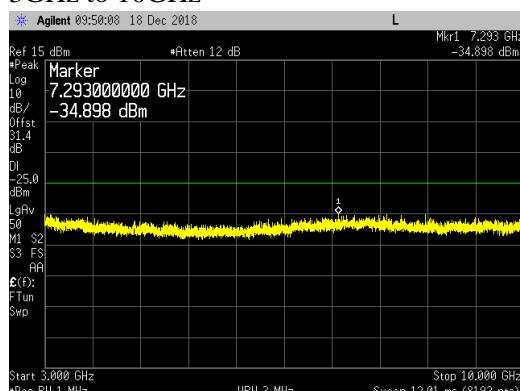
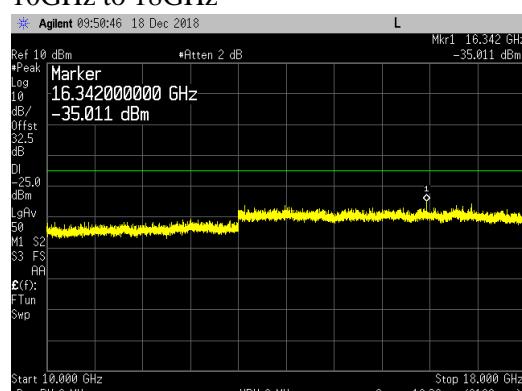
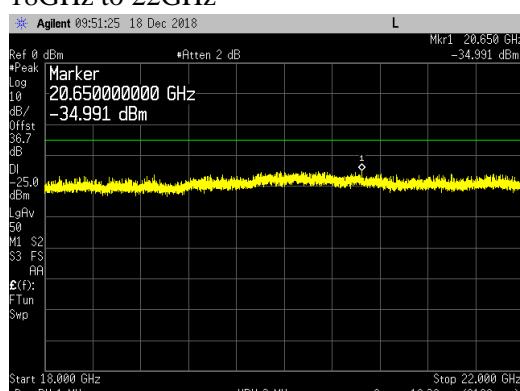
**LTE10 Channel Bandwidth \_64QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


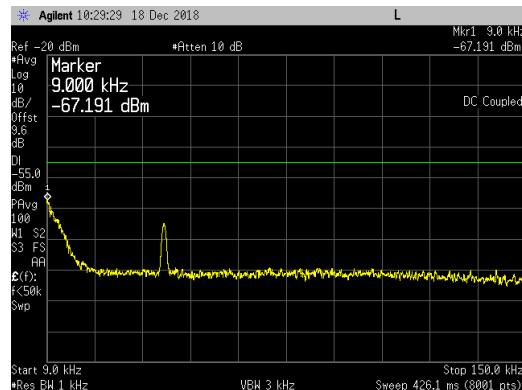
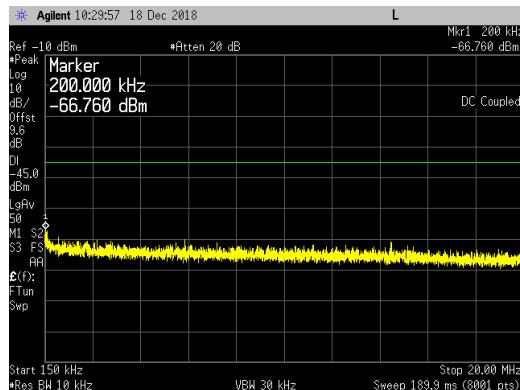
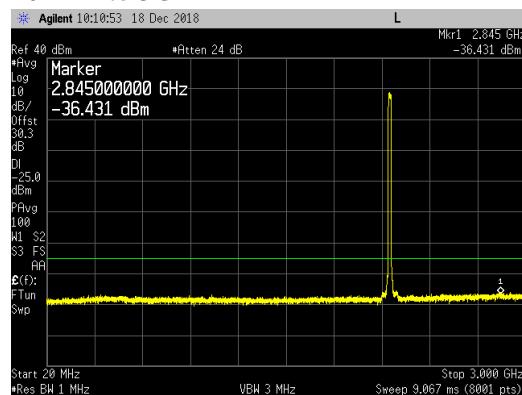
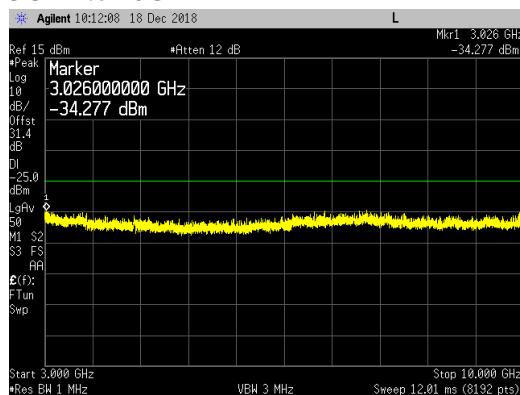
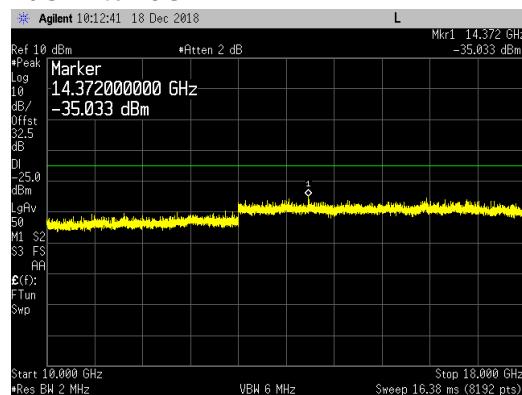
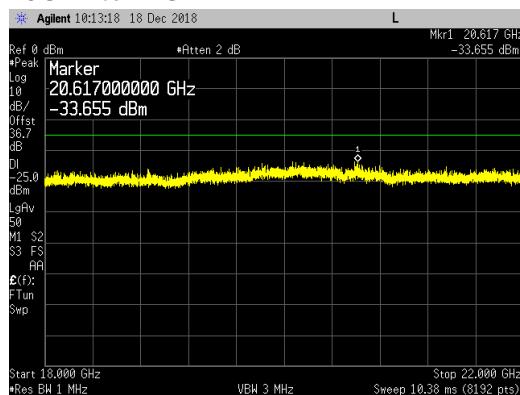
**LTE10 Channel Bandwidth \_256QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


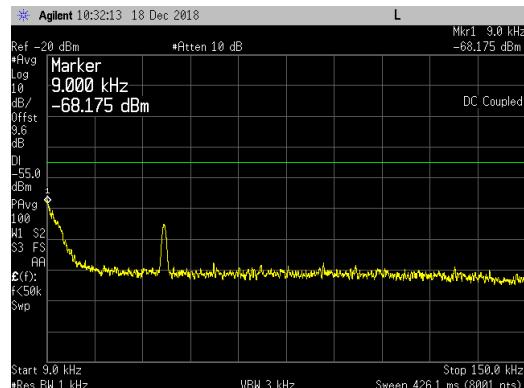
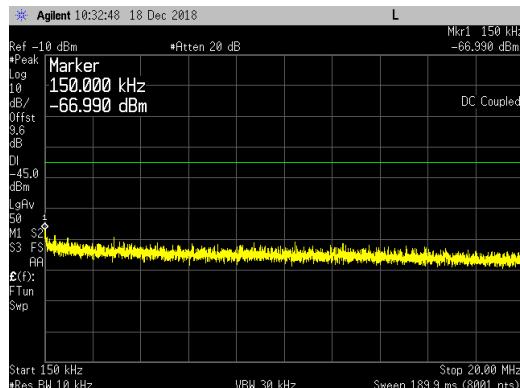
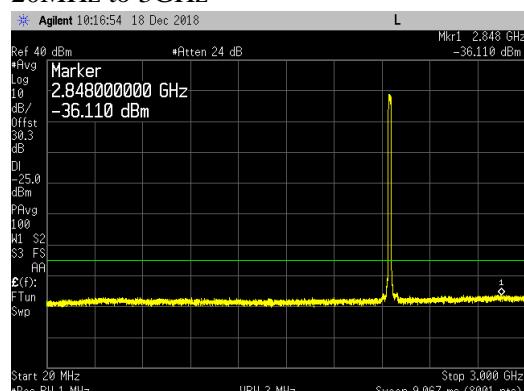
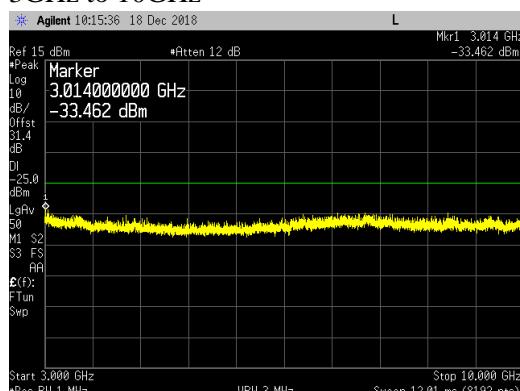
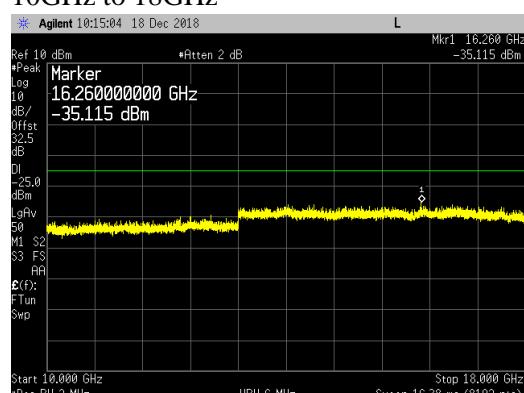
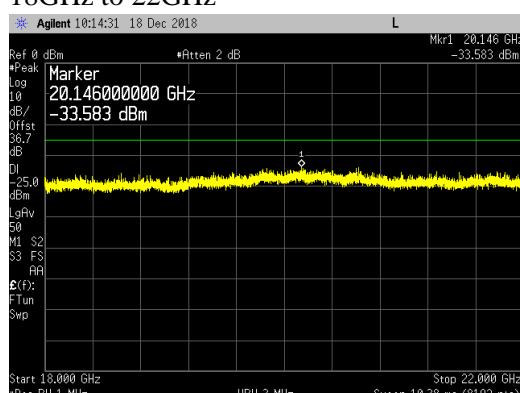
**LTE15 Channel Bandwidth \_ QPSK \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


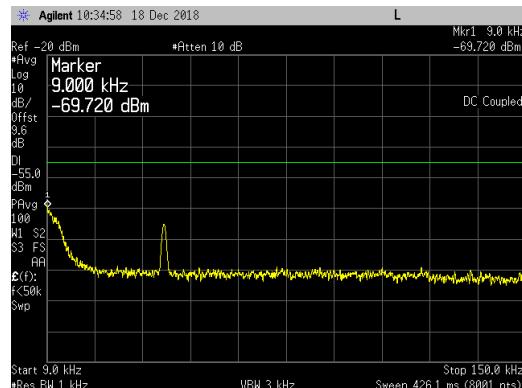
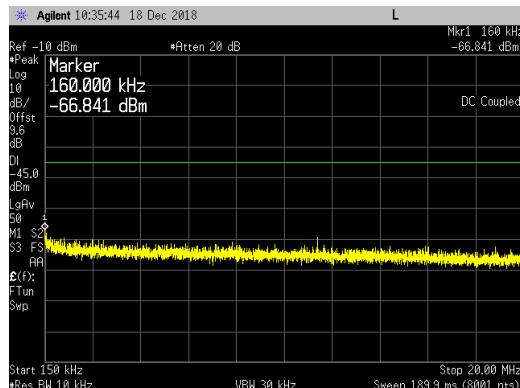
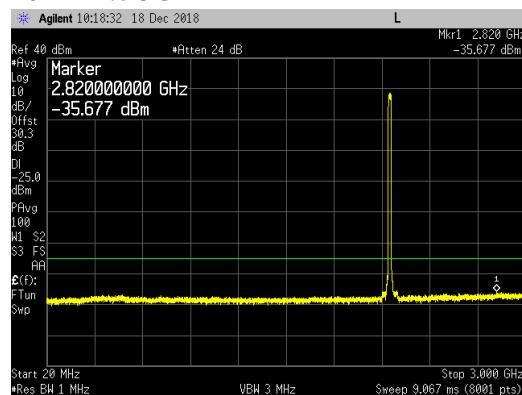
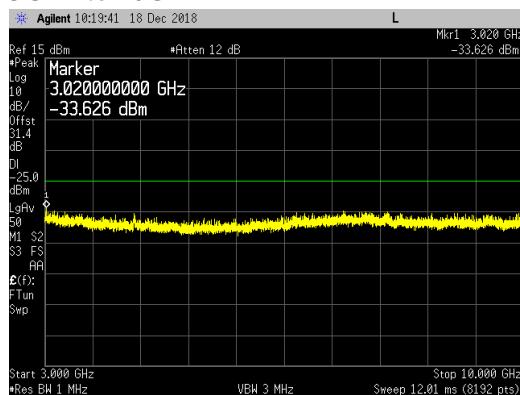
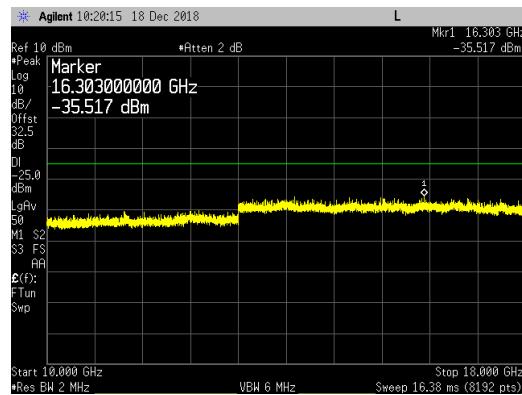
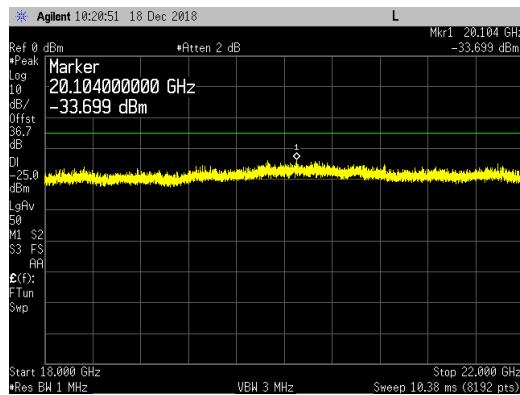
**LTE15 Channel Bandwidth \_ 16QAM \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


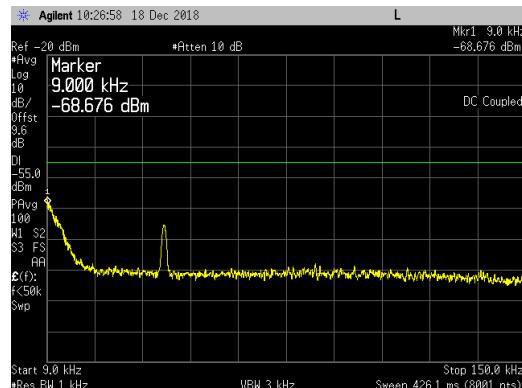
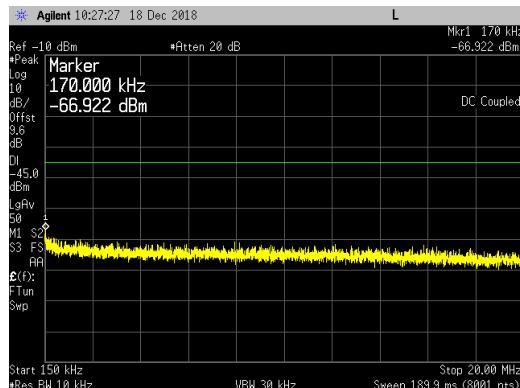
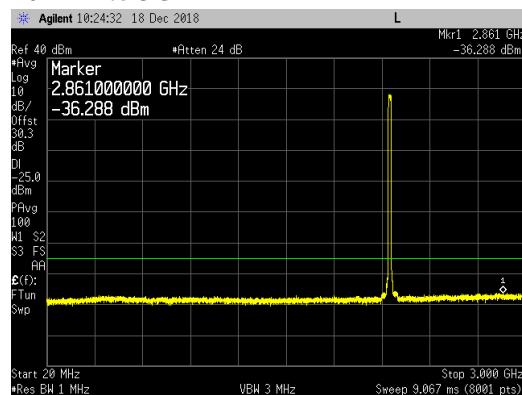
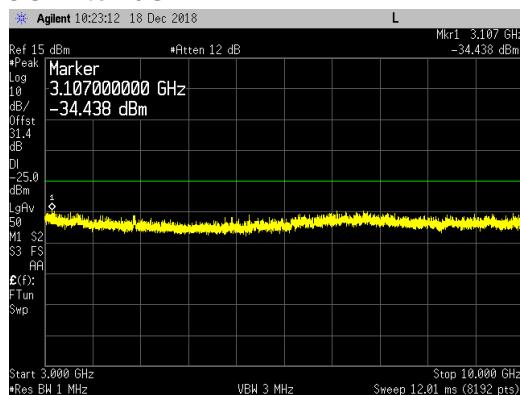
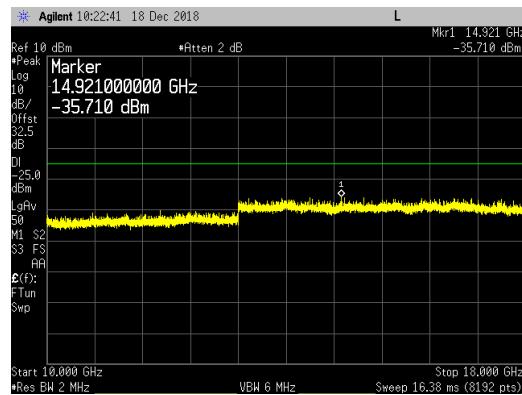
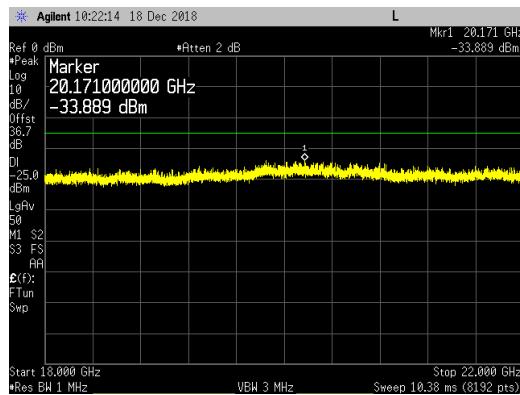
**LTE15 Channel Bandwidth \_64QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


**LTE15 Channel Bandwidth \_256QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


**LTE20 Channel Bandwidth \_ QPSK \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


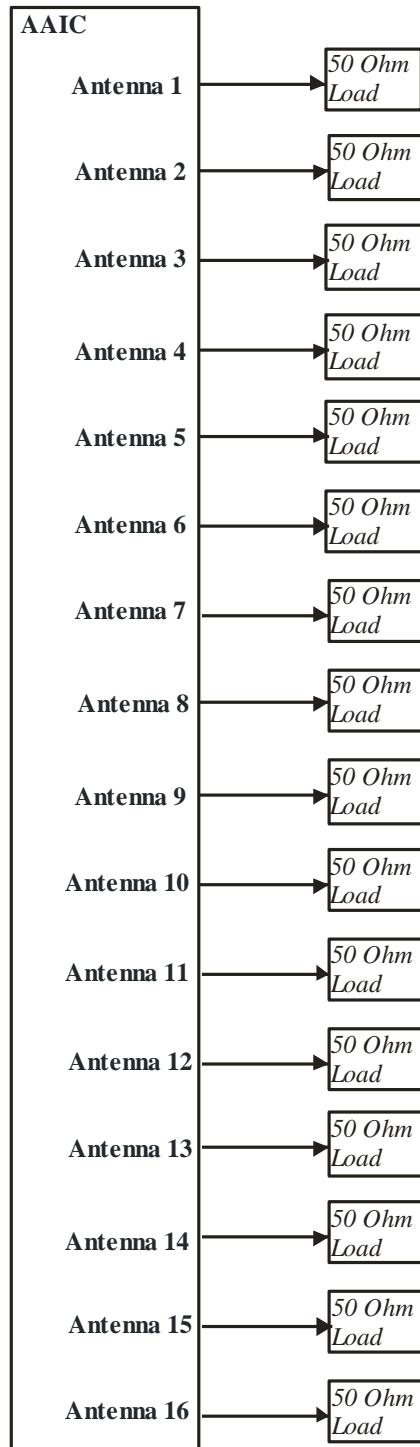
**LTE20 Channel Bandwidth \_ 16QAM \_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


**LTE20 Channel Bandwidth \_64QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


**LTE20 Channel Bandwidth \_256QAM\_ Middle Channel (2155MHz):**
**9kHz to 150kHz**

**150kHz to 20MHz**

**20MHz to 3GHz**

**3GHz to 10GHz**

**10GHz to 18GHz**

**18GHz to 22GHz**


### Transmitter Radiated Spurious Emissions

During radiated emission testing all antenna ports of the base station were terminated with 50ohm termination blocks as shown in the diagram below.



Test Setup Used for Radiated Emission Measurements on AAIC

See ANSI C63.26-2015 paragraph 5.1 for details of test setup requirements. Based on antenna port conducted spurious emissions tests results, preliminary scans for radiated spurious emissions were performed in 30MHz – 22GHz frequency range. Three radiated emission test configurations were used to prove compliance. The transmitters were enabled simultaneously at maximum power using QPSK modulation on all sixteen ports for this test. The test includes channel bandwidth with the highest spectral density (LTE5). The bottom, middle and top frequency channels were enabled. The carrier configurations for the radiated emission testing is provided below. Final maximized peak radiated emissions were measured in these modes.

<b>Test Configuration</b>	<b>Antenna Ports</b>	<b>RF Bandwidth</b>	<b>EARFCN</b>	<b>Transmit Frequency</b>
1	1-16	5 MHz	66461 (Bottom Channel)	2112.5 MHz
2	1-16	5 MHz	66886 (Middle Channel)	2155.0 MHz
3	1-16	5 MHz	67311 (Top Channel)	2197.5 MHz

Radiated Spurious Emissions Testing Transmit Characteristics

**RE Data LTE5-QPSK-High Channel**

Frequency	Peaks Raw	Antenna	Pre Amp	Cables	Peaks	Limit	Margin	Tower	Turntable	Polarity
MHz	dBuV/m	dB	dB	dB	dBuV/m	dBuV/m	dB	cm	Degrees	H/V
17998.00	32.370	48.782	-36.506	9.109	53.755	91.7	-37.945	100	359	H
17758.70	33.862	47.400	-37.272	8.04	52.030	91.7	-39.670	100	1	H
21225.30	24.29	45.165	-30.047	12.476	51.883	91.7	-39.817	230	0	H
17870.50	30.342	48.052	-36.913	8.532	50.013	91.7	-41.687	100	1	V
2.13E+04	19.8	45.14	-29.553	12.449	47.837	91.7	-43.863	230.1	0.1	V
17920.70	27.112	48.250	-36.753	8.759	47.368	91.7	-44.332	100	307	H
17988.90	25.448	48.72	-36.535	9.068	46.701	91.7	-44.999	100	1	V
17839.10	26.571	47.863	-37.014	8.389	45.809	91.7	-45.891	100	1	H
2199.31	51.131	27.628	-37.839	4.462	45.381	82.2	-36.819	100	334	H
13393.10	29.146	40.922	-34.255	8.806	44.619	91.7	-47.081	100	1	V
12717.70	32.830	39.722	-35.851	7.506	44.207	91.7	-47.493	100	1	V
17799.90	24.584	47.523	-37.139	8.212	43.180	91.7	-48.520	100	1	H
18383.50	20.427	44.784	-35.079	11.095	41.228	91.7	-50.472	230.1	0	H
17677.30	21.724	46.761	-37.271	7.723	38.937	91.7	-52.763	100	1	H
14977.50	24.101	39.292	-32.55	3.396	34.239	91.7	-57.461	100	1	V
3726.45	32.388	32.210	-37.146	5.014	32.465	82.2	-49.735	100	359	V
8542.83	28.359	37.355	-38.239	4.859	32.336	82.2	-49.864	100	359	V
9428.05	29.237	37.739	-38.8	3.38	31.556	82.2	-50.644	100	359	V
14185.10	19.467	42.101	-34.303	3.017	30.282	91.7	-61.418	100	1	V
1879.69	30.749	27.479	-38.046	9.186	29.368	82.2	-52.832	100	359	V
7749.11	23.064	36.359	-37.701	6.282	28.004	82.2	-54.196	100	359	H
929.68	33.309	25.700	-34.3	2.968	27.677	82.2	-54.523	128	359	V
7839.68	22.532	36.460	-38.026	6.134	27.102	82.2	-55.098	100	359	V
7734.00	21.610	36.356	-37.713	6.307	26.560	82.2	-55.640	100	359	H
867.17	33.585	24.383	-34.41	2.949	26.506	82.2	-55.694	100	359	V
4061.56	24.925	32.401	-36.824	5.045	25.544	82.2	-56.656	100	359	V
749.86	32.802	23.286	-34.487	2.464	24.065	82.2	-58.135	350	359	H
2169.86	25.388	27.733	-37.862	4.484	19.743	82.2	-62.457	100	359	H
2078.41	24.087	27.565	-37.935	4.742	18.458	82.2	-63.742	100	359	H
528.00	31.224	19.500	-34.6	1.866	17.989	82.2	-64.211	241	359	H
2259.51	23.354	27.592	-37.788	4.426	17.584	82.2	-64.616	100	359	H
747.89	25.651	23.189	-34.484	2.456	16.812	82.2	-65.388	328	359	H
865.15	22.369	24.400	-34.415	2.941	15.294	82.2	-66.906	350	54	H
749.76	22.010	23.275	-34.487	2.464	13.263	82.2	-68.937	100	1	V
390.19	28.635	16.781	-35.022	1.704	12.098	82.2	-70.102	100	93	V
863.19	17.998	24.481	-34.42	2.933	10.991	82.2	-71.209	117	1	V
469.79	24.865	18.179	-34.906	1.895	10.031	82.2	-72.169	100	359	H
929.67	14.024	25.700	-34.3	2.968	8.392	82.2	-73.808	284	176	H
753.85	9.898	23.400	-34.493	2.482	1.287	82.2	-80.913	256	81	V

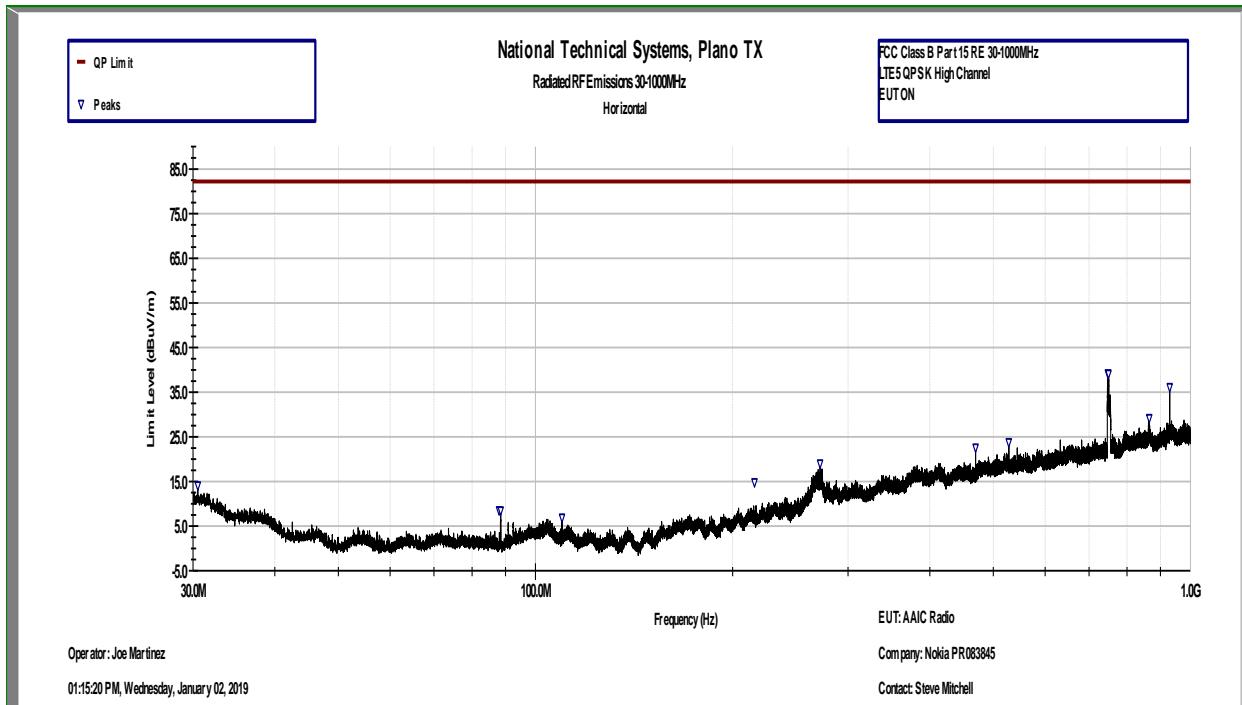
**RE Data LTE5-QPSK-Mid Channel**

Frequency	Peaks Raw	Antenna	Pre Amp	Cables	Peaks	Limit	Margin	Tower	Turntable	Polarity
MHz	dBuV/m	dB	dB	dB	dBuV/m	dBuV/m	dB	cm	Degrees	H/V
17988.00	33.160	47.765	-36.538	9.063	53.593	91.7	-38.107	100	359	V
21250.70	25.244	45.147	-29.317	12.456	53.531	91.7	-38.169	229	0	H
17995.50	31.758	47.786	-36.514	9.097	52.282	91.7	-39.418	100	359	H
21290.30	23.974	45.120	-30.240	12.426	51.284	91.7	-40.416	229.2	0	V
17931.30	28.823	47.608	-36.719	8.807	48.568	91.7	-43.132	100	359	H
17838.80	29.195	47.008	-37.014	8.388	47.689	91.7	-44.011	100	288	H
18370.40	24.674	44.798	-35.110	11.1	45.461	91.7	-46.239	229.9	0.1	V
17759.80	28.059	46.418	-37.268	8.044	45.252	91.7	-46.448	100	359	H
17680.40	28.159	45.780	-37.272	7.735	44.663	91.7	-47.037	100	262	H
12859.40	30.959	39.250	-35.800	7.91	42.356	91.7	-49.344	100	359	V
14924.60	29.396	40.665	-33.140	3.379	40.430	91.7	-51.270	100	359	V
17922.30	20.402	47.582	-36.748	8.766	40.037	91.7	-51.663	100	359	H
7940.65	33.892	36.699	-38.389	5.969	38.171	82.2	-44.029	100	359	V
12734.50	27.209	38.935	-35.825	7.554	37.873	91.7	-53.827	100	359	V
14169.30	24.562	42.080	-34.328	3.01	35.323	91.7	-56.377	100	359	V
9436.29	32.929	37.741	-38.800	3.377	35.247	82.2	-46.953	100	359	V
18379.90	14.174	44.788	-35.087	11.096	34.971	91.7	-56.729	229	0.1	H
2426.44	37.080	28.536	-37.585	4.379	32.409	82.2	-49.791	100	359	V
2350.89	35.389	28.279	-37.675	4.399	30.391	82.2	-51.809	100	359	H
6740.81	24.901	35.040	-37.186	6.454	29.209	82.2	-52.991	100	359	V
2529.96	32.526	28.770	-37.487	4.372	28.179	82.2	-54.021	100	359	H
13343.20	11.454	40.097	-34.375	9.203	26.378	91.7	-65.322	100	359	V
2620.02	28.611	29.216	-37.451	4.439	24.815	82.2	-57.385	100	359	H
940.96	30.569	25.600	-34.300	2.945	24.814	82.2	-57.386	100	145	V
527.99	36.641	19.500	-34.600	1.866	23.407	82.2	-58.793	164	359	V
754.29	31.802	23.371	-34.493	2.484	23.163	82.2	-59.037	192	1	H
2171.31	26.640	27.729	-37.860	4.483	20.991	82.2	-61.209	100	359	H
1798.82	25.205	26.823	-38.079	6.388	20.336	82.2	-61.864	100	359	V
8537.17	14.895	37.347	-38.220	4.88	18.902	82.2	-63.298	100	359	V
528.00	31.564	19.500	-34.600	1.866	18.329	82.2	-63.871	100	1	H
929.62	23.938	25.700	-34.300	2.968	18.306	82.2	-63.894	100	148	H
863.46	24.254	24.454	-34.419	2.934	17.221	82.2	-64.979	157	1	V
2259.59	21.743	27.592	-37.788	4.426	15.973	82.2	-66.227	100	316	H
2440.99	19.876	28.522	-37.568	4.376	15.205	82.2	-66.995	100	359	H
929.78	20.361	25.700	-34.300	2.968	14.729	82.2	-67.471	100	234	V
749.77	21.991	23.277	-34.487	2.464	13.246	82.2	-68.954	100	54	V
753.89	21.197	23.400	-34.493	2.482	12.586	82.2	-69.614	100	1	V
747.66	17.113	23.166	-34.484	2.455	8.250	82.2	-73.950	100	179	H
209.04	30.361	11.400	-37.800	1.231	5.192	82.2	-77.008	100	1	H
216.01	19.385	11.401	-37.800	1.238	-5.776	82.2	-87.976	100	1	H

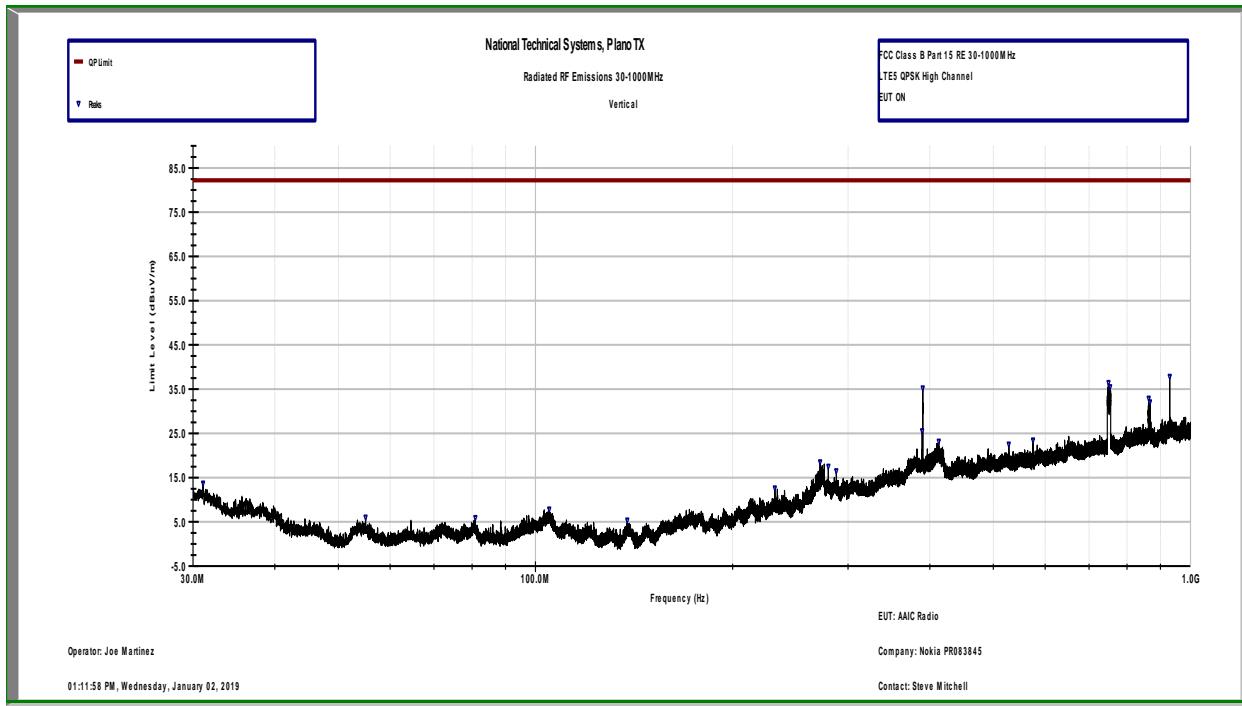
**RE Data LTE5-QPSK-Low Channel**

Frequency	Peaks Raw	Antenna	Pre Amp	Cables	Peaks	Limit	Margin	Tower	Turntable	Polarity
MHz	dBuV/m	dB	dB	dB	dBuV/m	dBuV/m	dB	cm	Degrees	H/V
17989.50	32.201	47.770	-36.533	9.07	52.508	91.7	-39.192	350	1	H
17840.00	29.815	47.012	-37.011	8.393	48.209	91.7	-43.491	350	1	H
17920.60	28.277	47.578	-36.753	8.758	47.860	91.7	-43.840	350	1	H
21278.50	19.659	45.128	-29.964	12.435	47.258	91.7	-44.442	229	0.1	H
17997.70	25.807	47.792	-36.507	9.107	46.199	91.7	-45.501	100	1	V
18440.60	25.171	44.790	-34.942	11.077	46.096	91.7	-45.604	229	0	V
17813.20	27.648	46.916	-37.097	8.272	45.739	91.7	-45.961	350	1	H
21265.60	15.982	45.137	-29.664	12.445	43.900	91.7	-47.800	229	0.1	V
17679.40	27.619	45.775	-37.272	7.731	43.853	91.7	-47.847	100	1	H
14900.80	30.217	40.740	-33.406	3.368	40.919	91.7	-50.781	100	1	V
14197.00	29.973	42.121	-34.284	3.023	40.833	91.7	-50.867	100	1	V
12664.90	29.068	38.734	-35.935	7.356	39.223	91.7	-52.477	100	1	V
17762.00	20.400	46.425	-37.261	8.053	37.617	91.7	-54.083	292	1	H
929.60	4.32E+01	25.7	-34.3	2.968	37.574	82.2	-44.626	185	359	V
8504.33	3.31E+01	37.297	-38.114	4.998	37.285	82.2	-44.915	335	288	V
929.61	4.25E+01	25.7	-34.3	2.968	36.854	82.2	-45.346	290	234	H
13370.60	21.901	40.121	-34.309	8.985	36.698	91.7	-55.002	100	1	V
9991.66	3.33E+01	38.036	-38.133	2.839	36.067	82.2	-46.133	350	359	V
12043.40	28.823	39.087	-36.865	4.497	35.542	91.7	-56.158	100	1	V
9412.22	3.05E+01	37.736	-38.8	3.384	32.841	82.2	-49.359	350	359	V
6938.39	2.81E+01	35.225	-37.578	6.502	32.294	82.2	-49.906	350	359	H
18420.80	11.269	44.779	-34.989	11.083	32.142	91.7	-59.558	229.1	0	H
1870.34	31.82	27.399	-38.05	8.862	30.031	82.2	-52.169	100	359	V
7638.64	24.912	36.339	-37.788	6.463	29.926	82.2	-52.274	100	218	V
2347.71	3.41E+01	28.246	-37.679	4.4	29.046	82.2	-53.154	350	359	H
1989.71	33.503	27.524	-38.004	5.454	28.477	82.2	-53.723	350	359	H
748.07	37.25	23.2	-34.484	2.456	28.422	82.2	-53.778	100	359	V
2167.92	3.29E+01	27.738	-37.863	4.486	27.217	82.2	-54.983	350	359	H
1863.23	29.193	27.315	-38.053	8.616	27.071	82.2	-55.129	100	359	V
527.99	34.546	19.5	-34.6	1.866	21.312	82.2	-60.888	163	237	H
748.82	29.382	23.2	-34.485	2.46	20.557	82.2	-61.643	206	359	H
2261.87	2.63E+01	27.6	-37.785	4.425	20.556	82.2	-61.644	350	359	H
2080.53	23.949	27.579	-37.933	4.729	18.324	82.2	-63.876	350	359	H
754.96	2.26E+01	23.304	-34.494	2.487	13.932	82.2	-68.268	214	137	V
867.44	1.57E+01	24.356	-34.409	2.95	8.554	82.2	-73.646	100	245	V
863.17	1.50E+01	24.483	-34.42	2.933	8.012	82.2	-74.188	100	1	H
960.06	1.31E+01	25.6	-34.3	2.907	7.260	82.2	-74.940	350	359	H
380.65	16.139	17.065	-35.048	1.679	-0.165	82.2	-82.365	100	332	V
992.56	3.24E+00	25.7	-34.3	2.842	-2.521	82.2	-84.721	350	359	H
39.75	12.447	12.851	-37.5	0.549	-11.653	82.2	-93.853	100	237	V

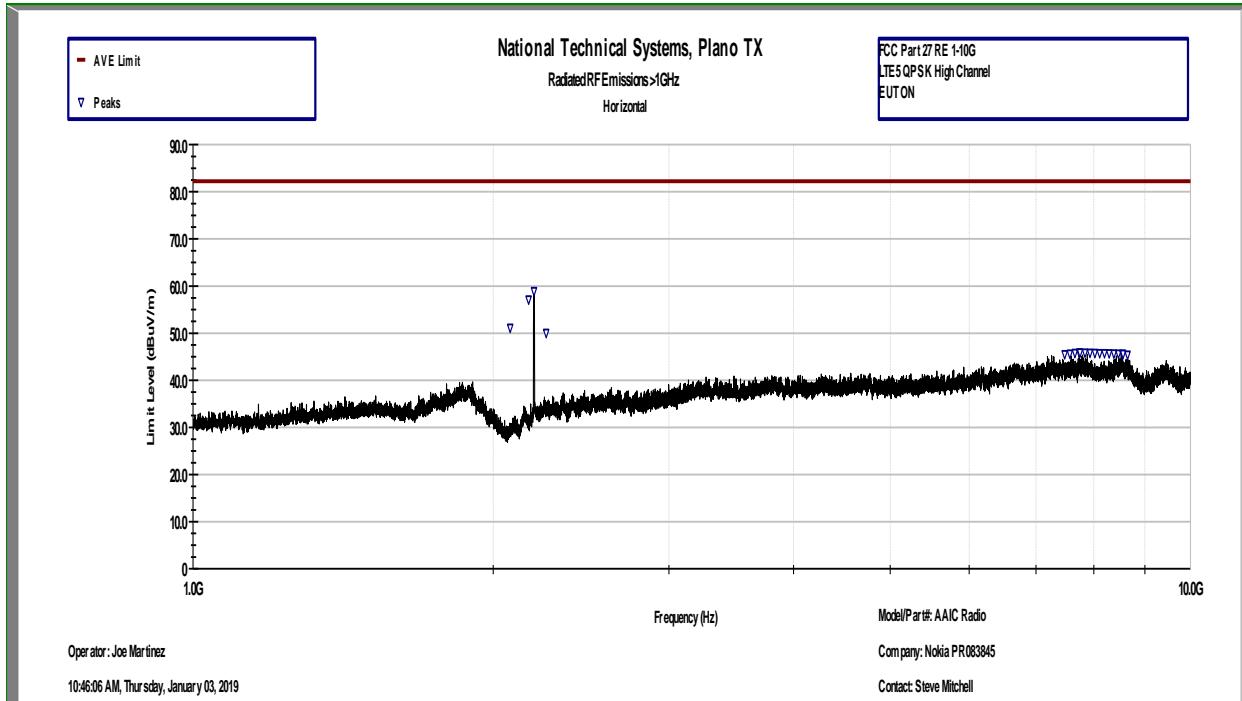
A three meter measurement distance was used for radiated emission less than 10GHz. A one meter measurement distance was used for radiated emission greater than 10GHz. The highest radiated emissions detected were more than 20dB below the three meter limit of 82.2dB<sub>UV</sub>/m and the one meter limit of 91.7dB<sub>UV</sub>/m (equivalent to -13dBm EIRP). Since all maximized measurements were more than 20dB below these levels, substitution measurements were not performed. TILE software was used for all preliminary scans and plots that are included on the following pages.



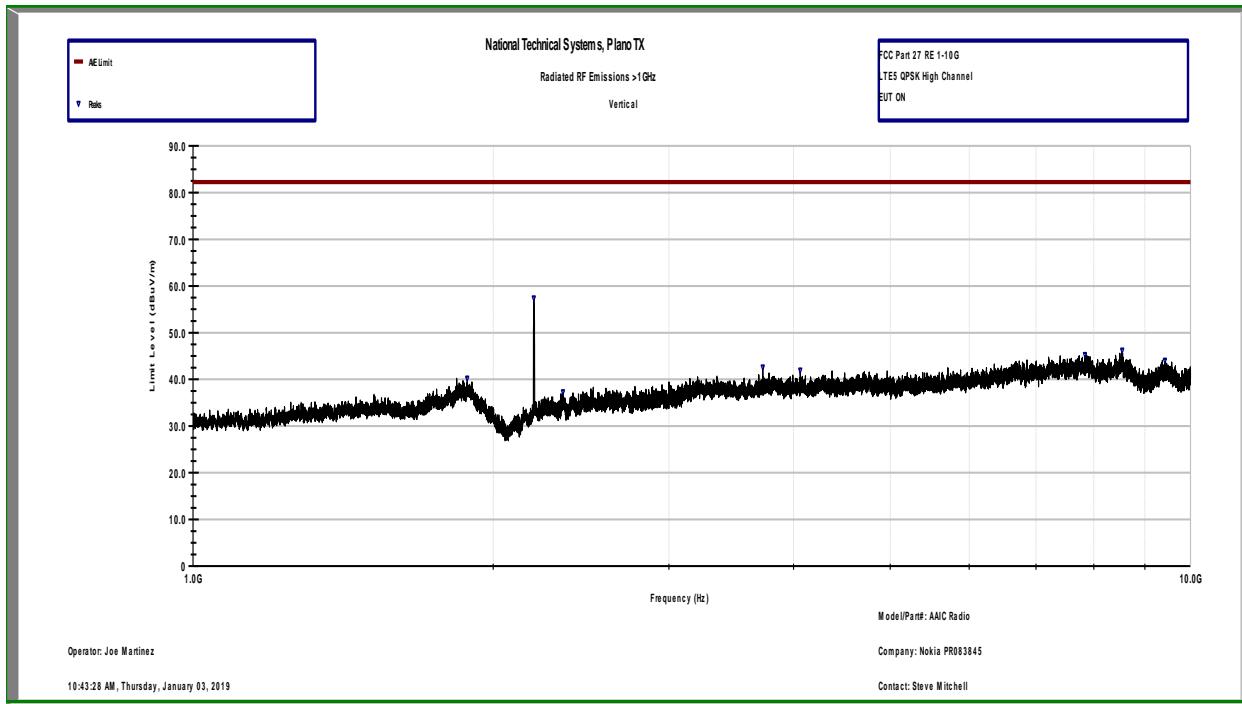
LTE5-QPSK-High Channel 30-1000MHz – Horizontal at 3m



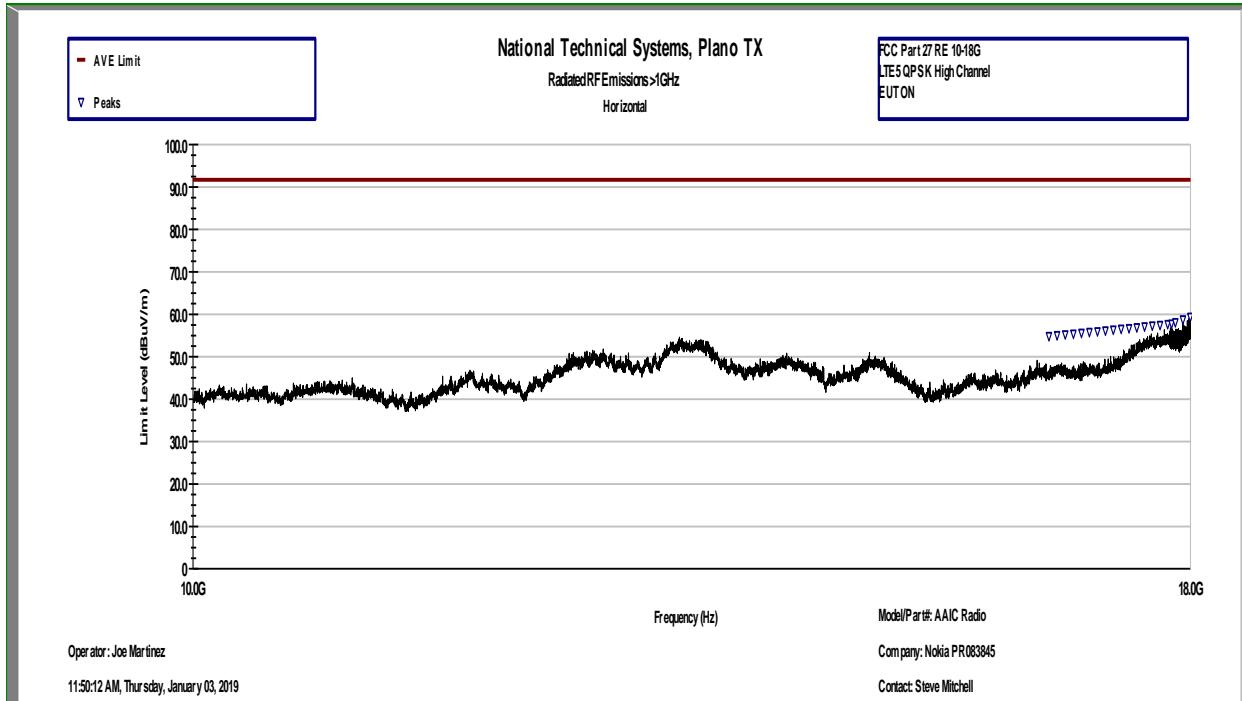
LTE5-QPSK-High Channel 30-1000MHz – Vertical at 3m



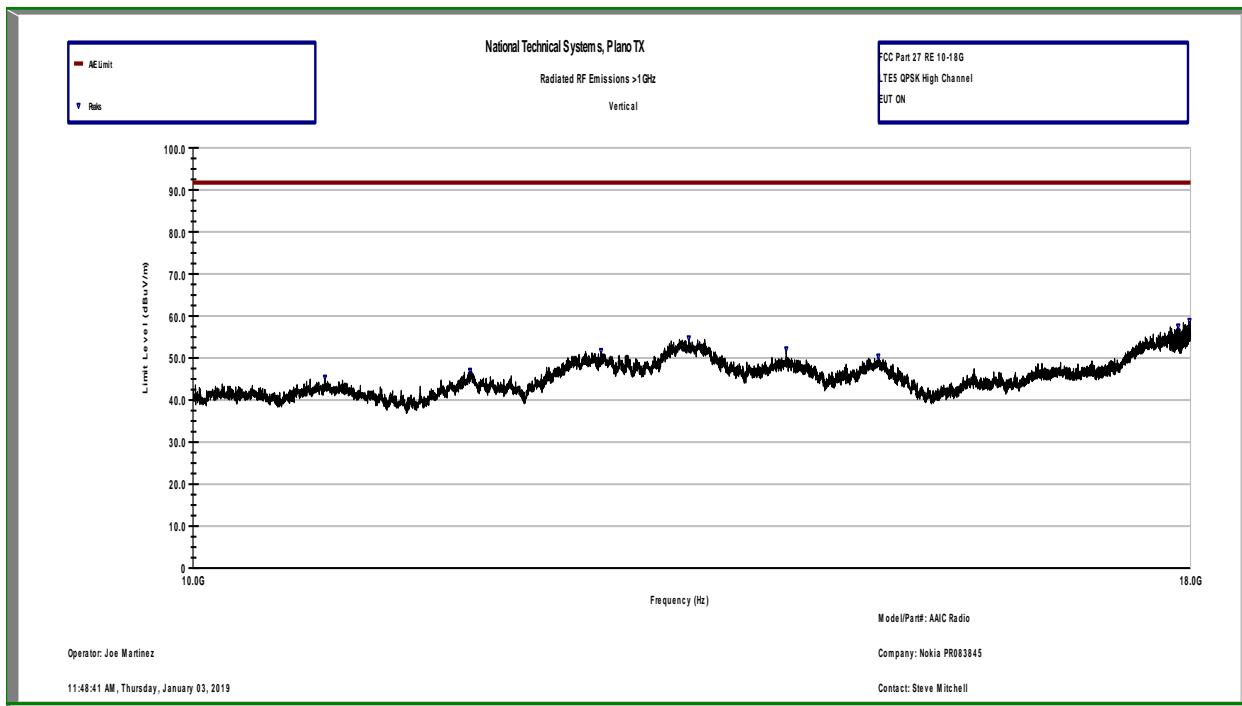
LTE5-QPSK-High Channel 1-10GHz – Horizontal at 3m



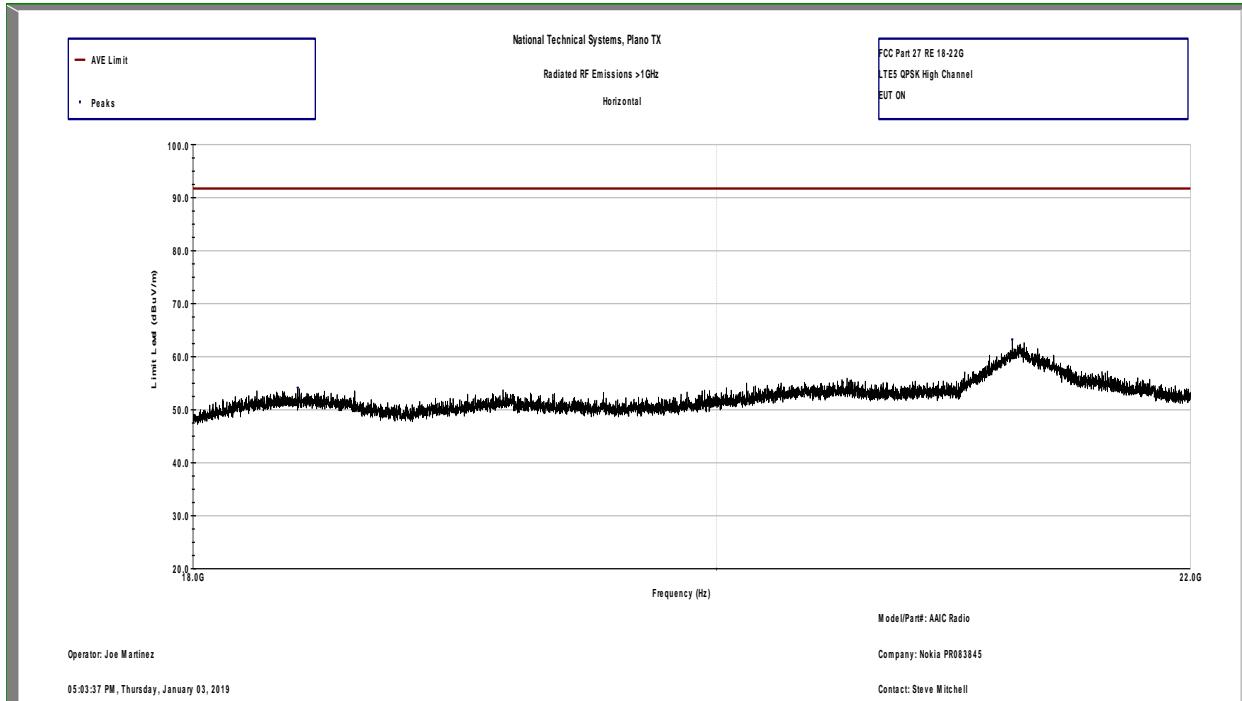
LTE5-QPSK-High Channel 1-10GHz – Vertical at 3m



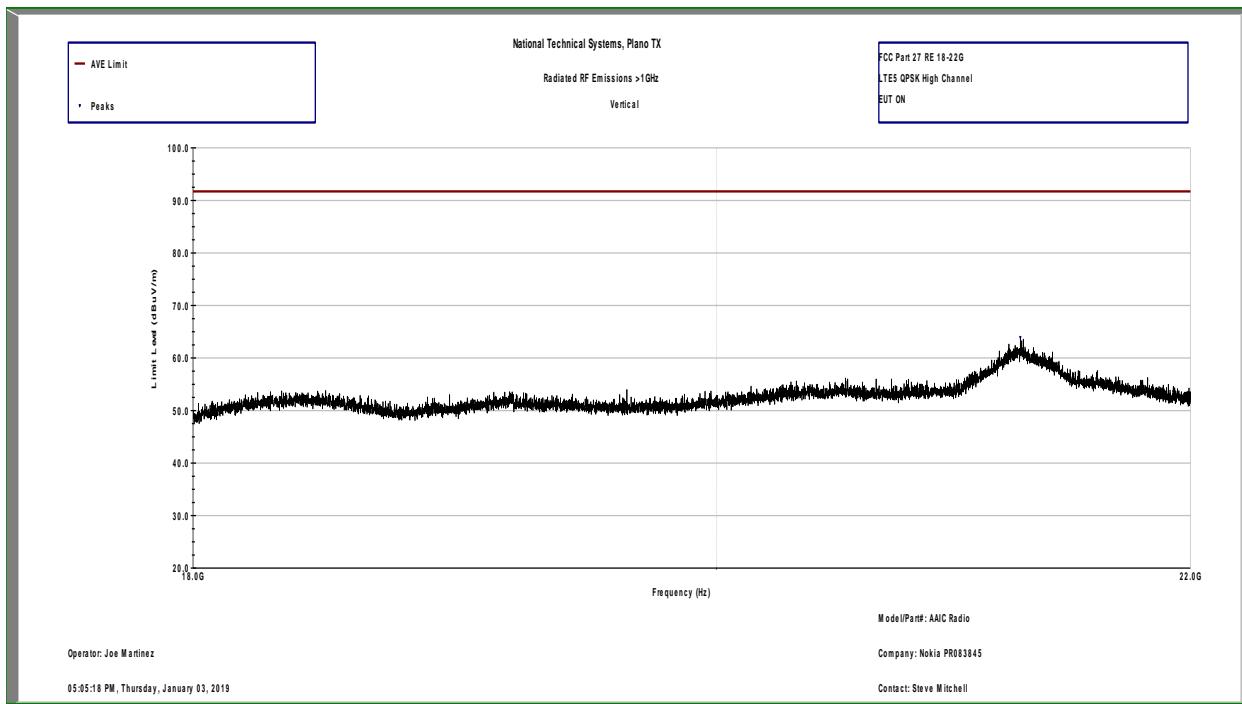
LTE5-QPSK-High Channel 10-18GHz – Horizontal at 1m



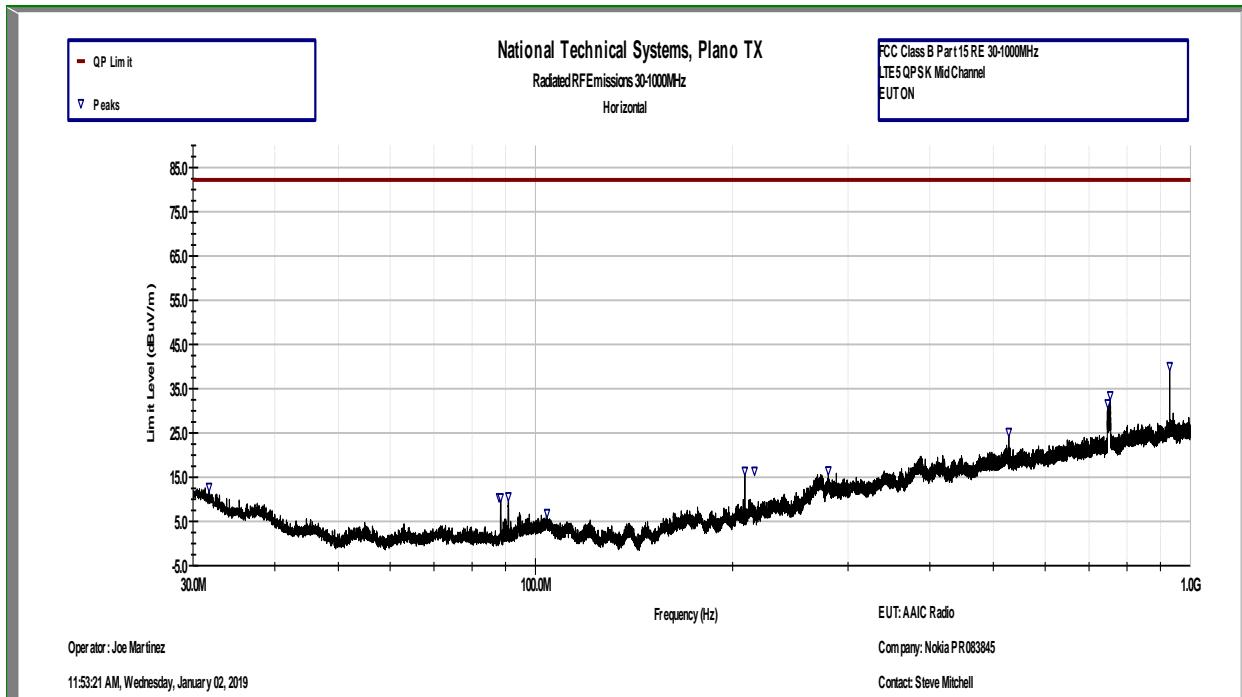
LTE5-QPSK-High Channel 10-18GHz – Vertical at 1m



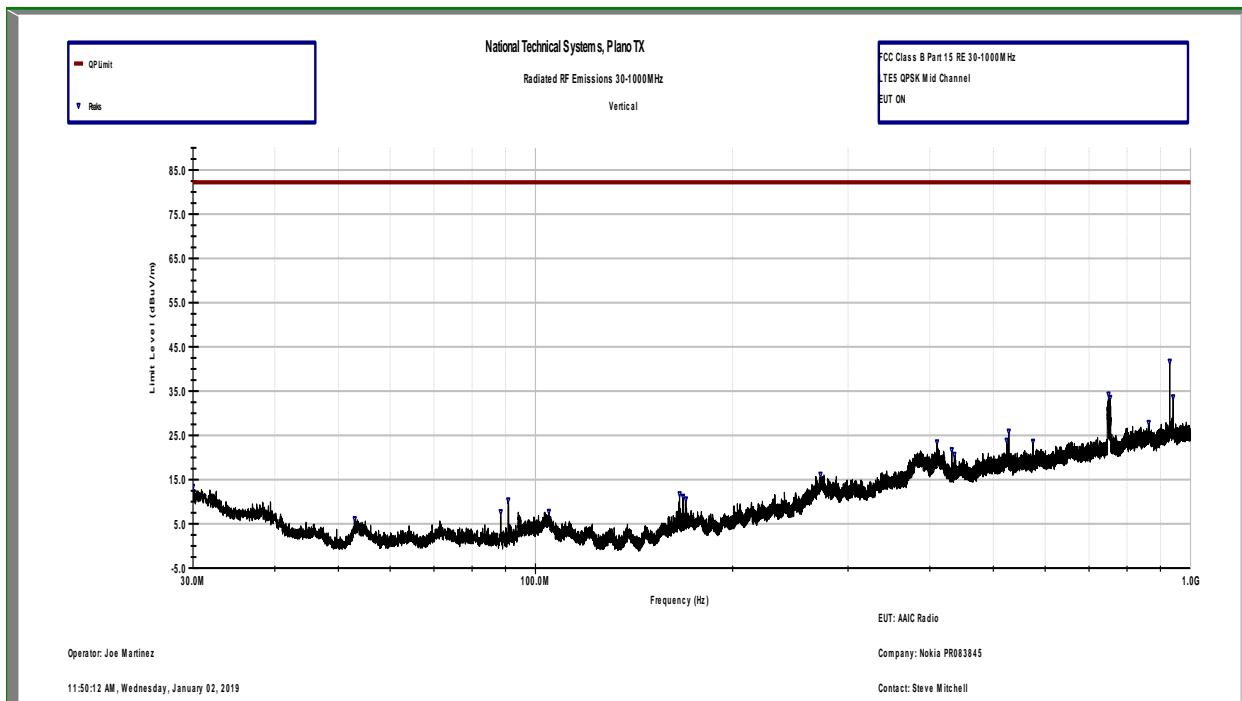
LTE5-QPSK-High Channel 18-22GHz – Horizontal at 1m



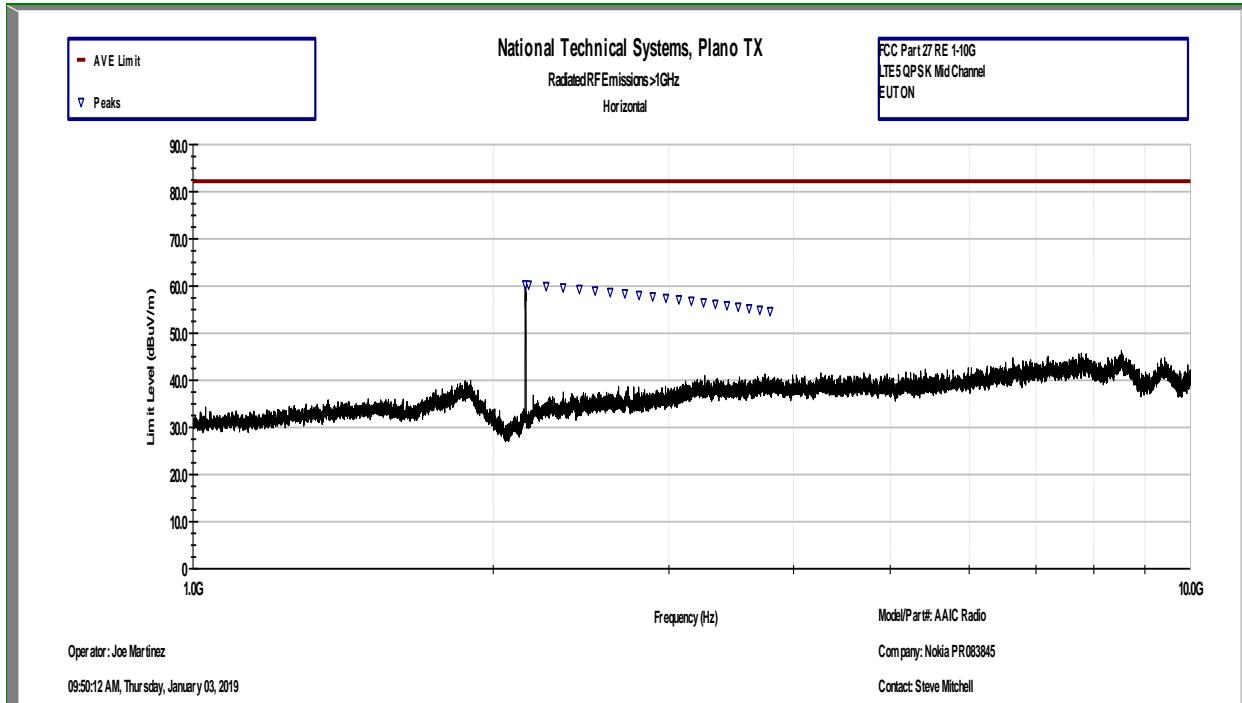
LTE5-QPSK-High Channel 18-22GHz – Horizontal at 1m



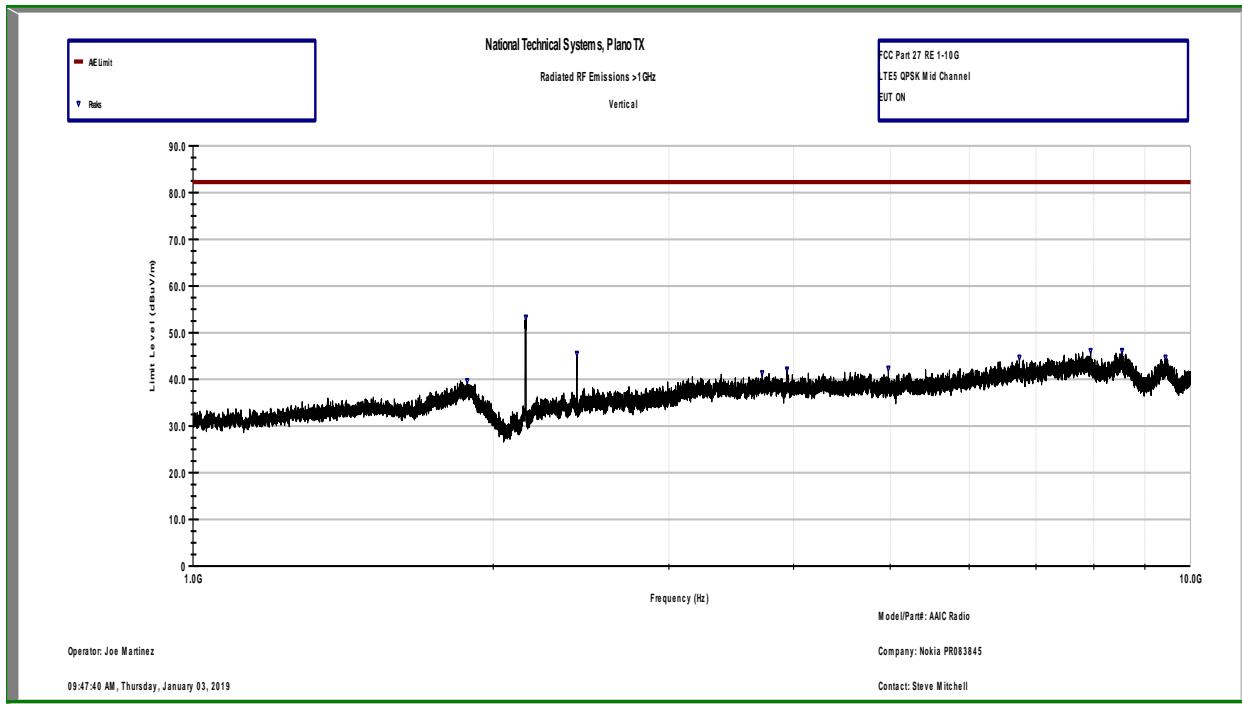
LTE5-QPSK-Mid Channel 30-1000MHz – Horizontal at 3m



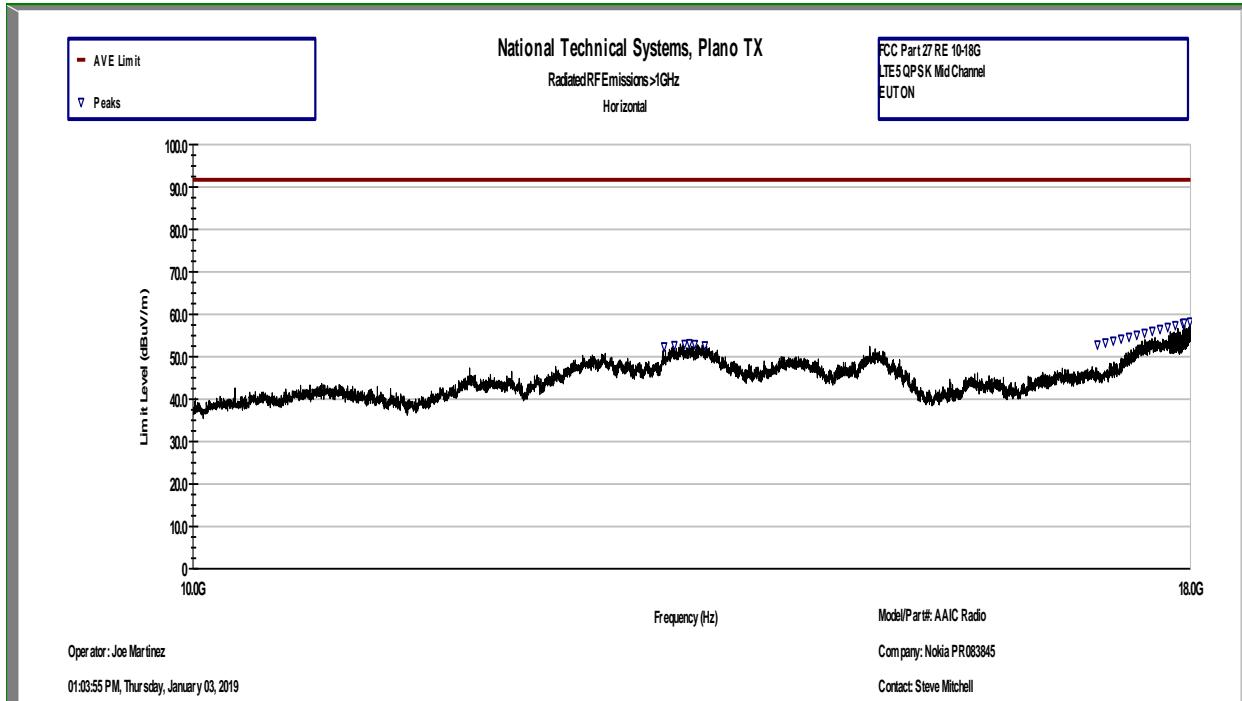
LTE5-QPSK-Mid Channel 30-1000MHz – Vertical at 3m



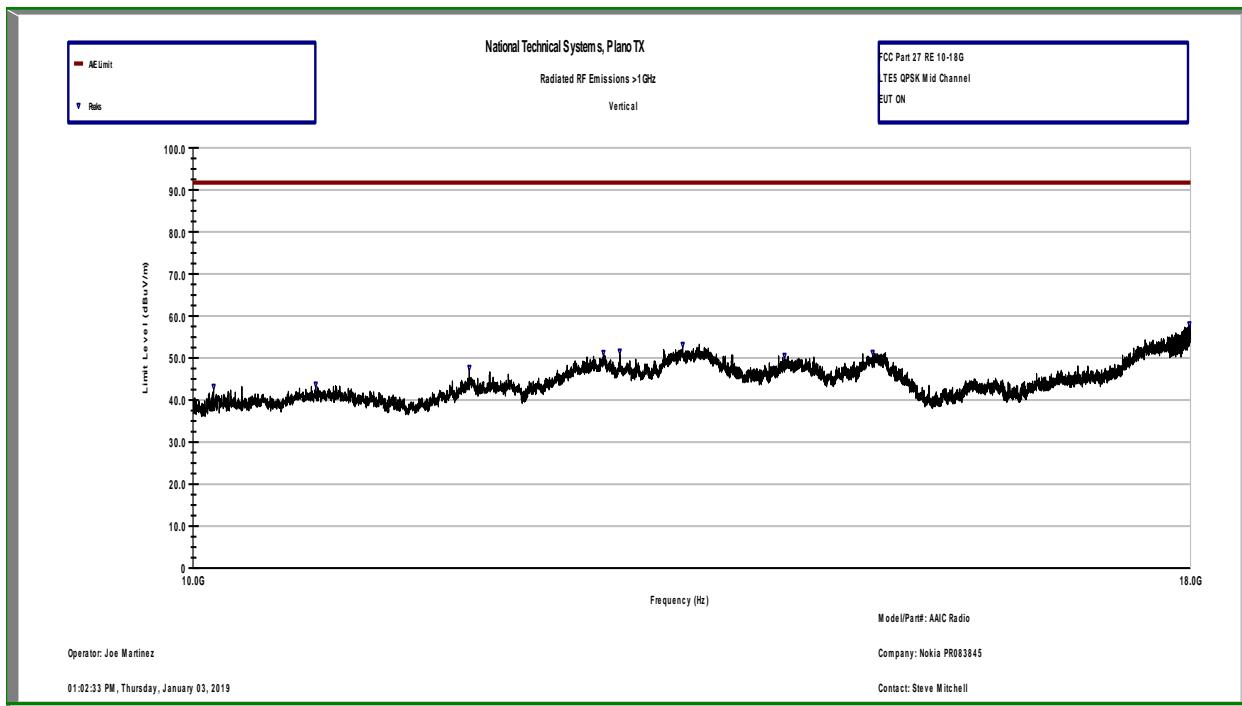
LTE5-QPSK-Mid Channel 1-10GHz – Horizontal at 3m



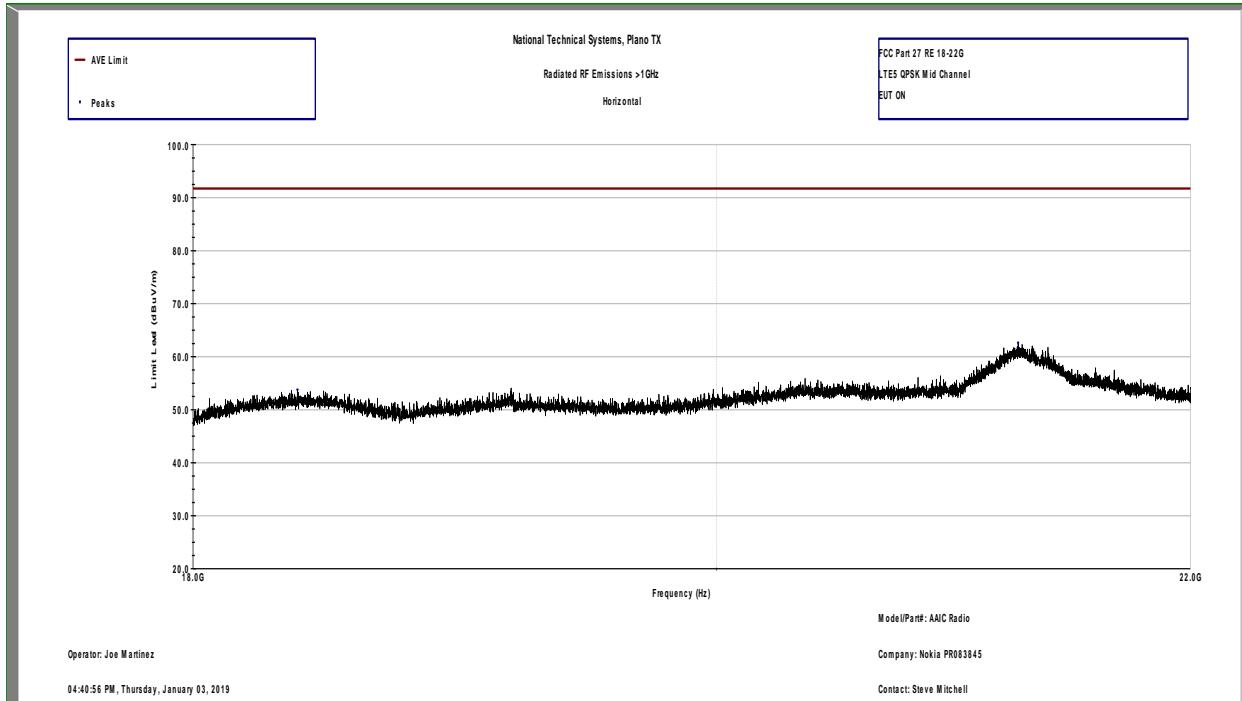
LTE5-QPSK-Mid Channel 1-10GHz – Vertical at 3m



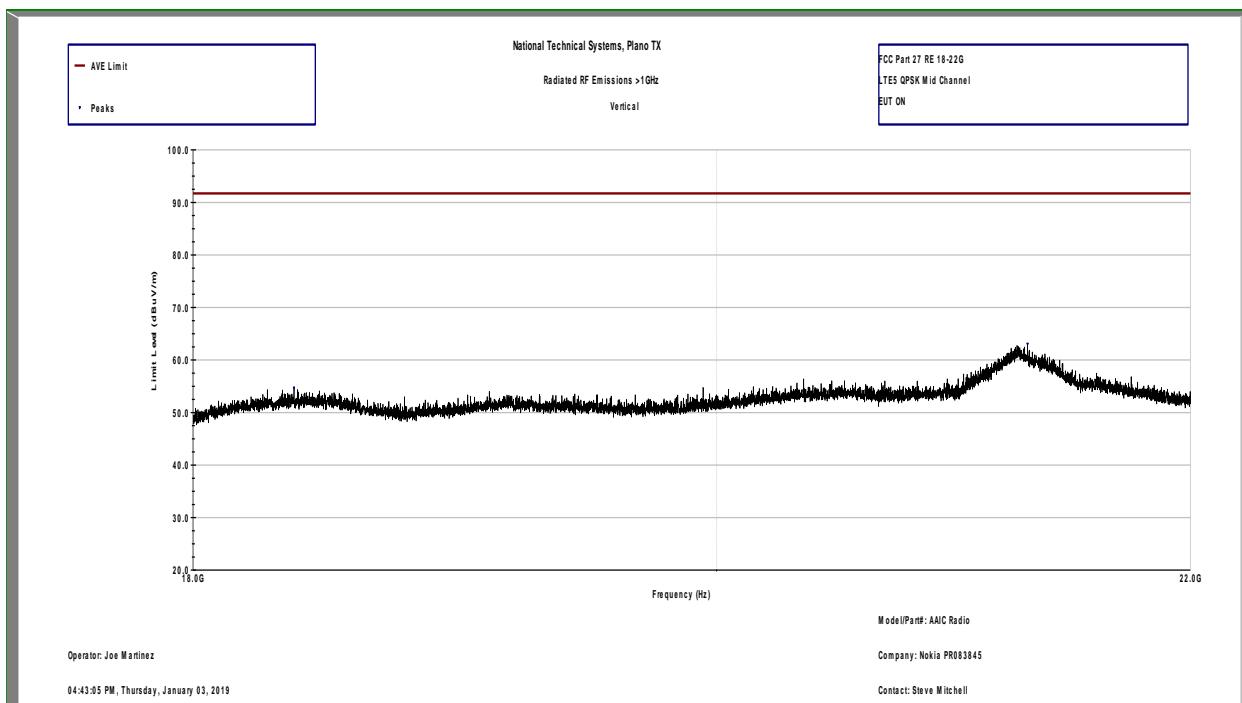
LTE5-QPSK-Mid Channel 10-18GHz – Horizontal at 1m



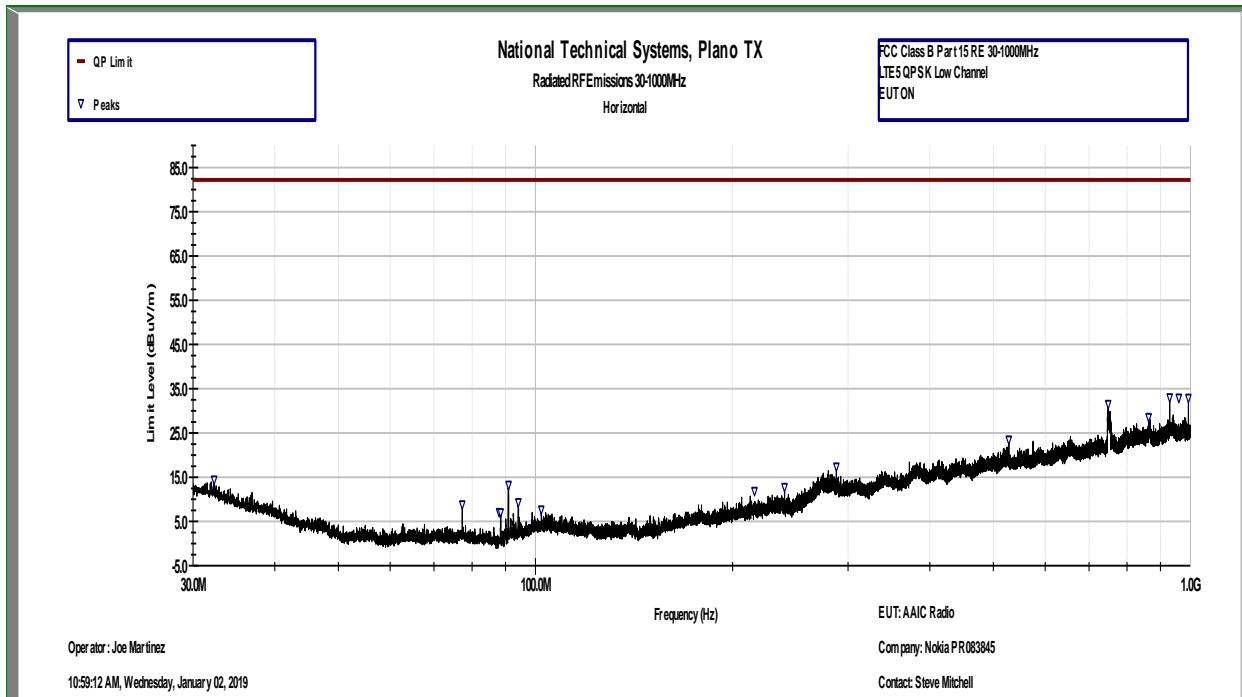
LTE5-QPSK-Mid Channel 10-18GHz – Vertical at 1m



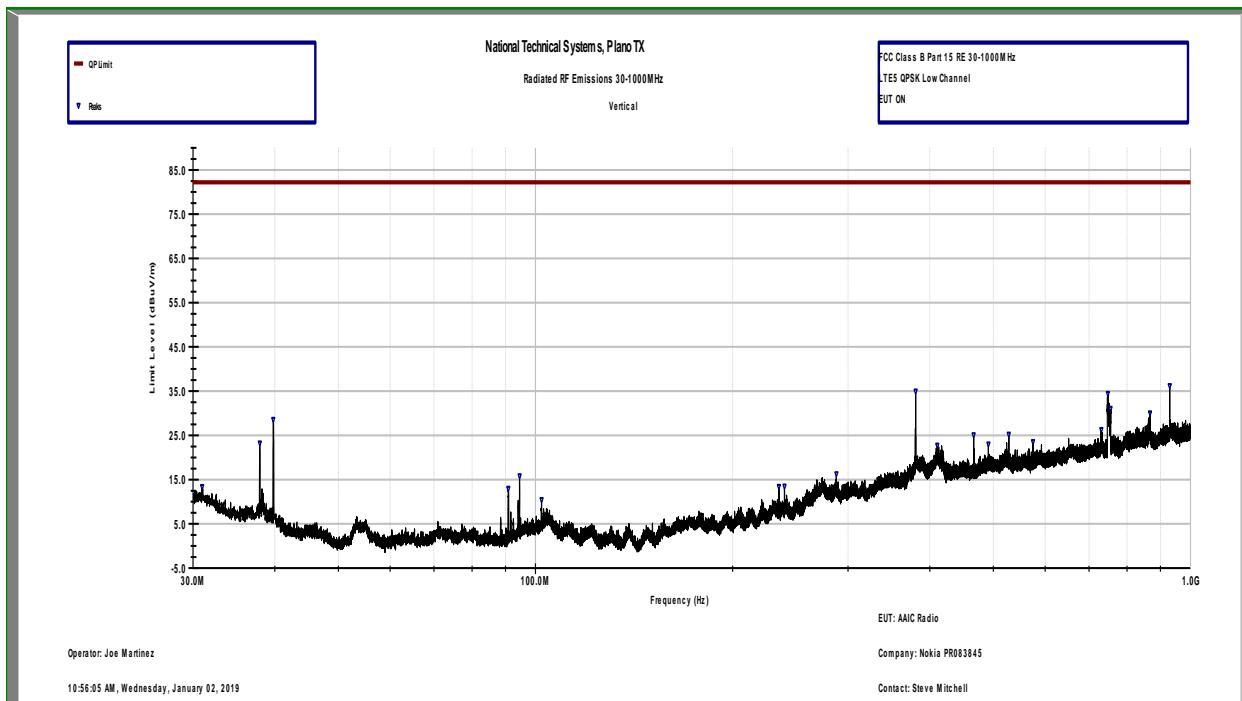
LTE5-QPSK-Mid Channel 18-22GHz – Horizontal at 1m



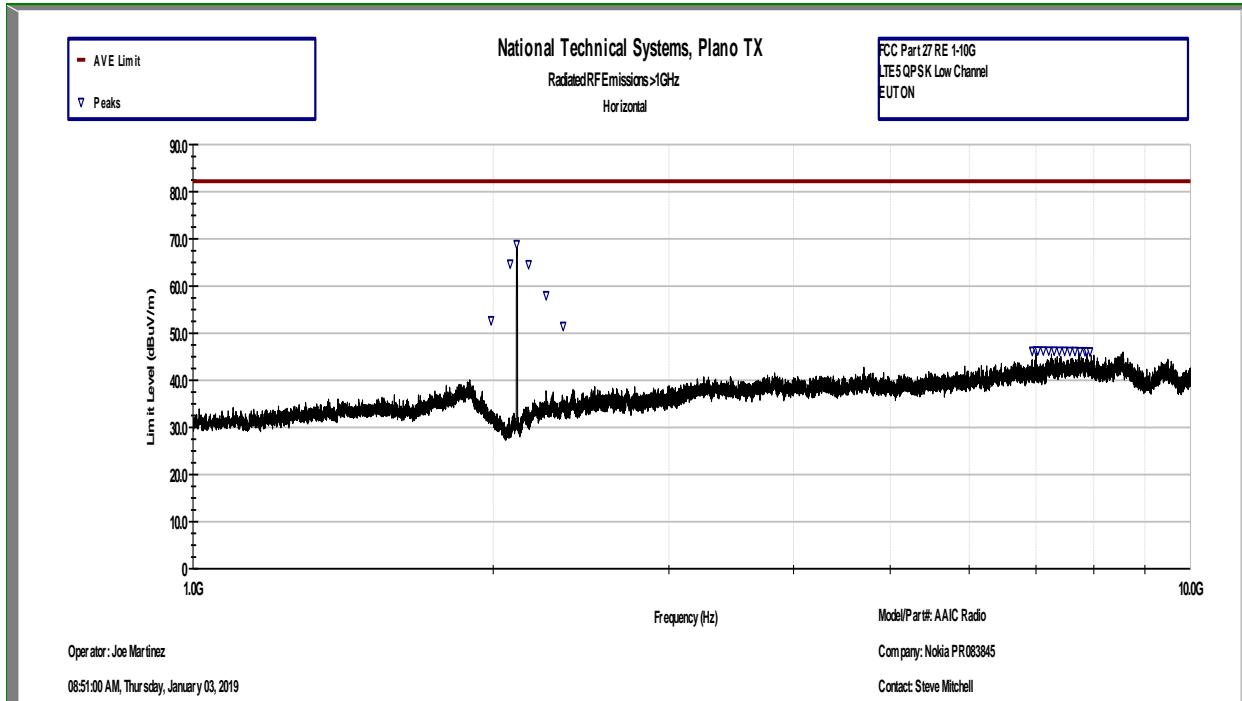
LTE5-QPSK-Mid Channel 18-22GHz – Vertical at 1m



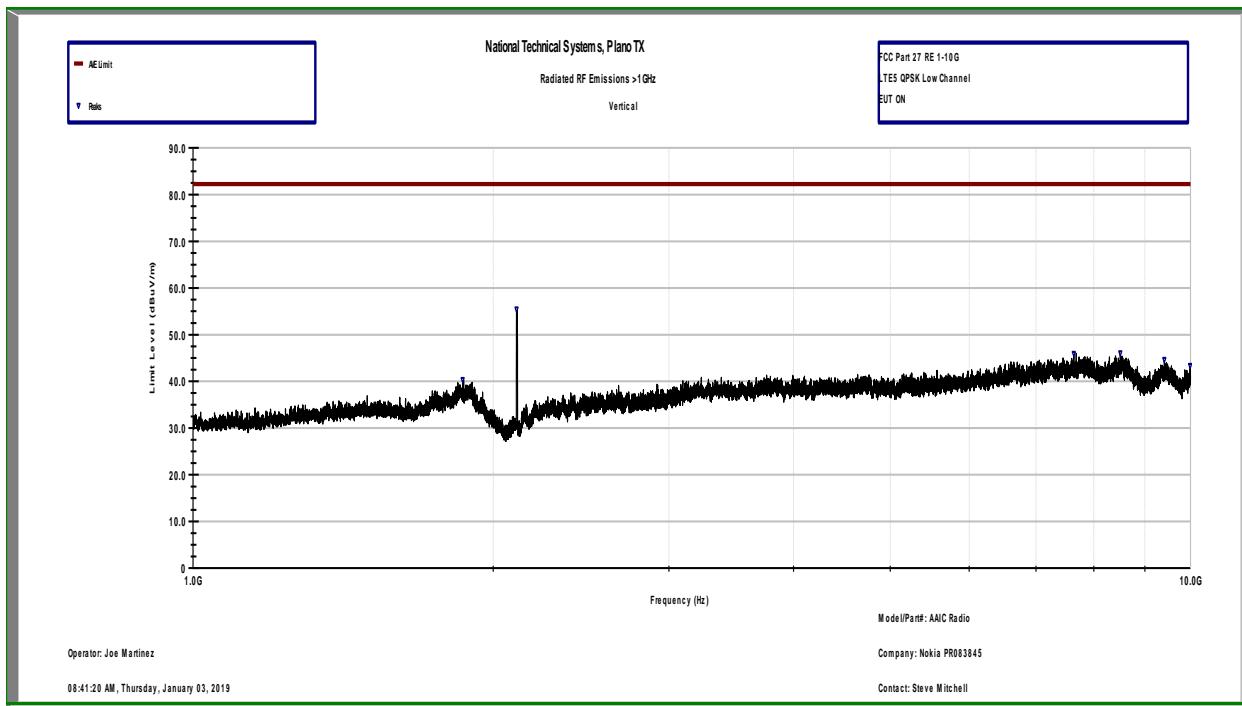
**LTE5-QPSK-Low Channel 30-1000MHz – Horizontal at 3m**



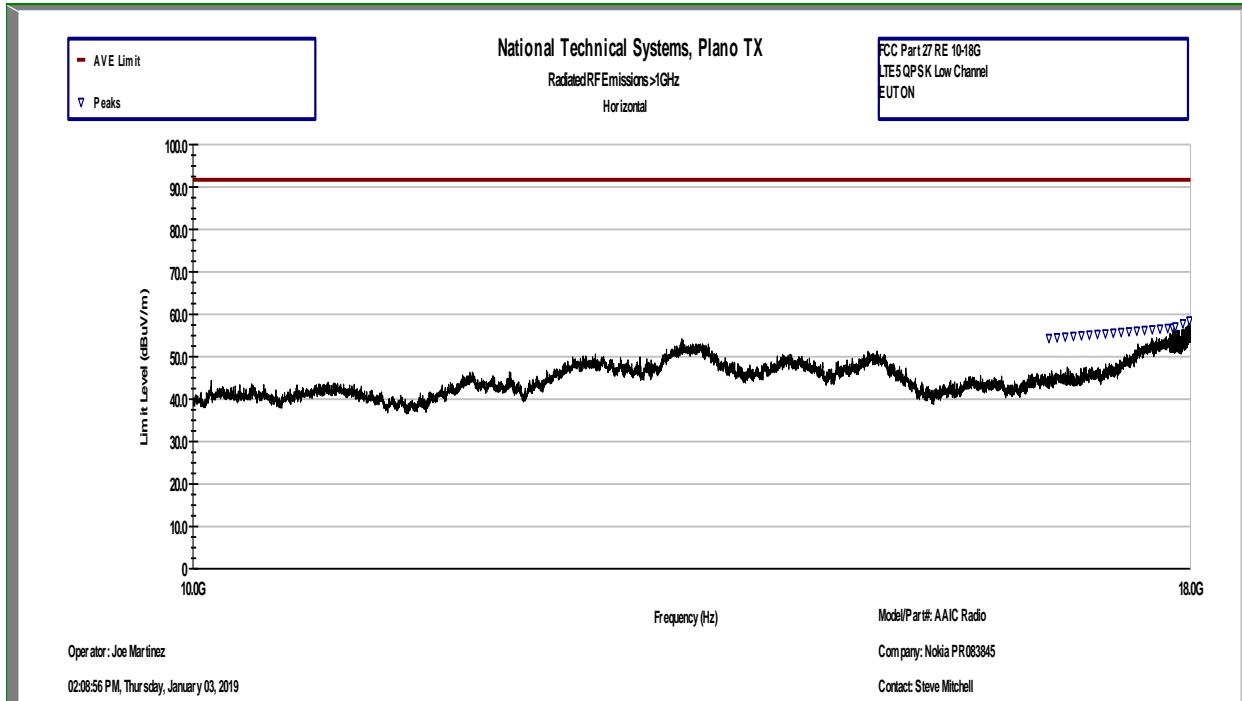
**LTE5-QPSK-Low Channel 30-1000MHz – Vertical at 3m**



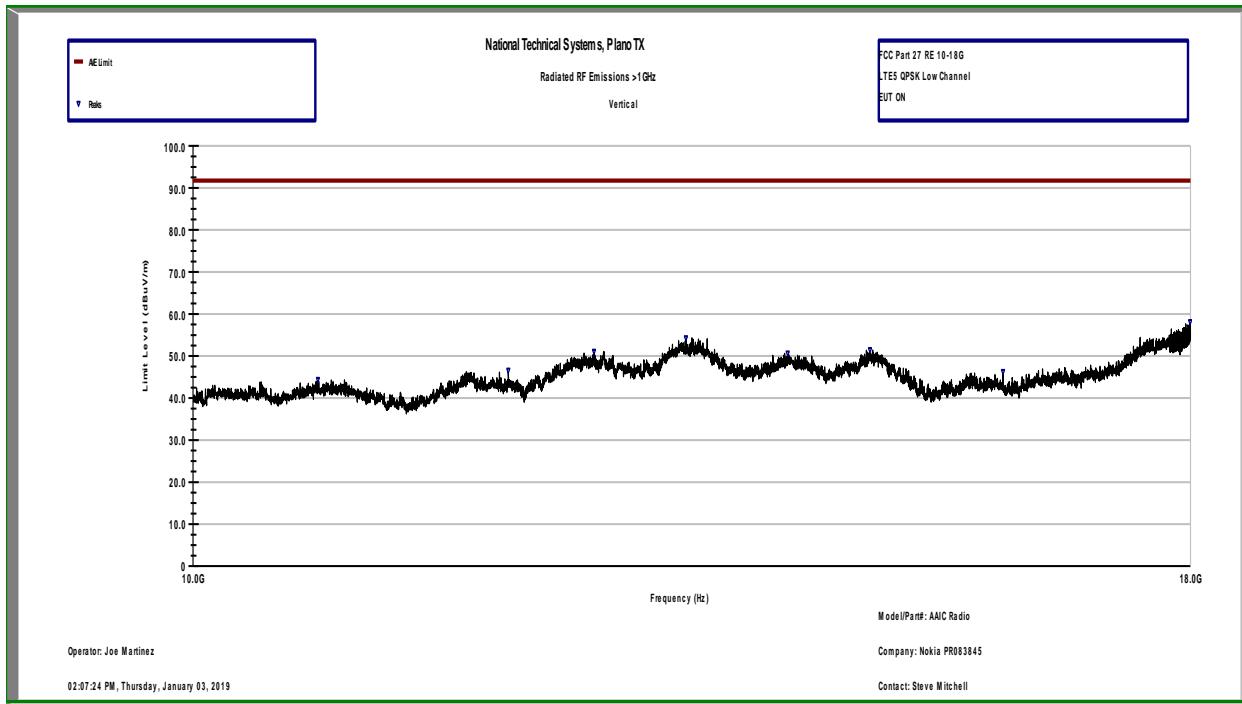
LTE5-QPSK-Low Channel 1-10GHz – Horizontal at 3m



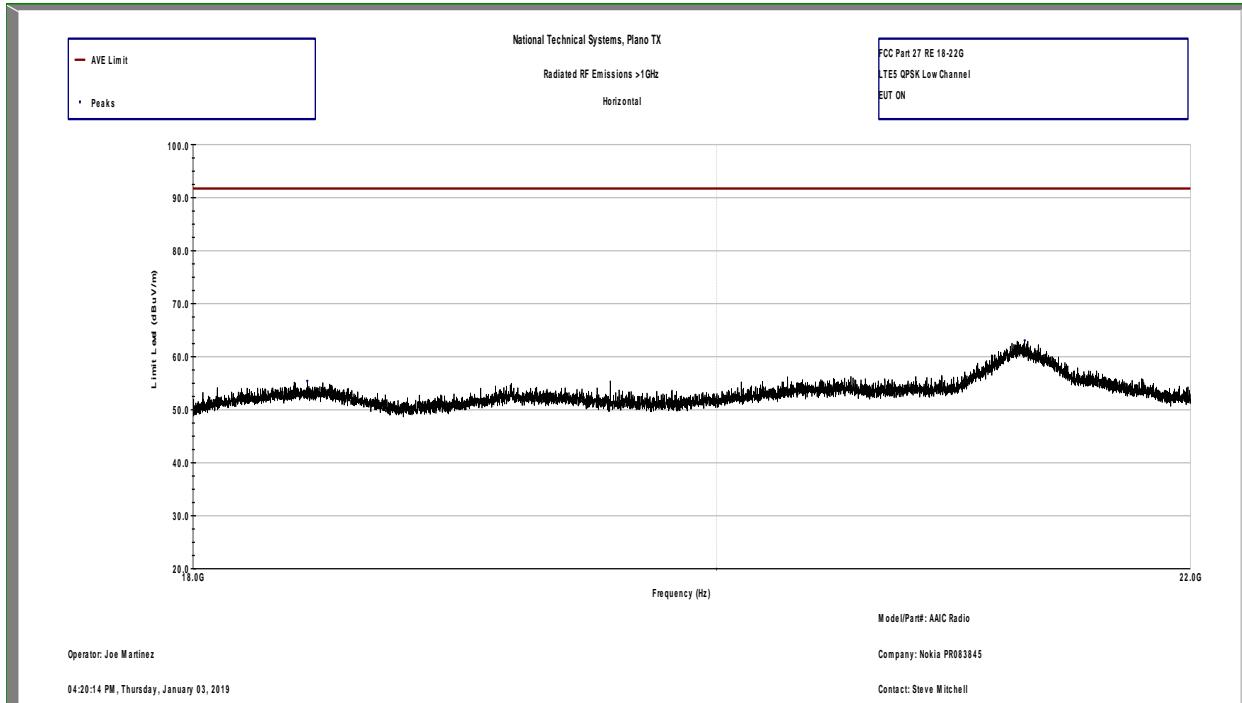
LTE5-QPSK-Low Channel 1-10GHz – Vertical at 3m



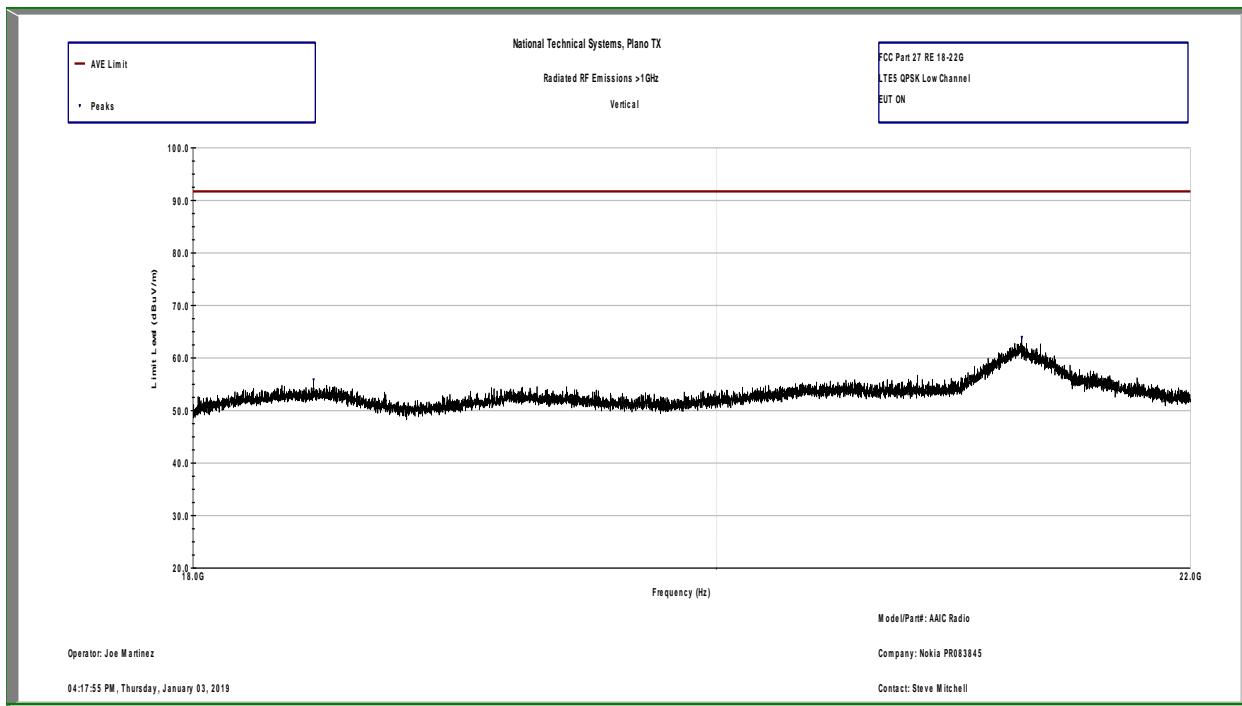
LTE5-QPSK-Low Channel 10-18GHz – Horizontal at 1m



LTE5-QPSK-Low Channel 10-18GHz – Vertical at 1m



LTE5-QPSK-Low Channel 18-22GHz – Horizontal at 1m



LTE5-QPSK-Low Channel 18-22GHz – Vertical at 1m

### Frequency Stability/Accuracy

Measurement methods are detailed in KDB 971168 D01v03r01 section 9 and ANSI C63.26-2015. Carrier frequency stability at extreme temperatures and voltages, frequency error was measured as follows:

- (1) Transmitting in 5MHz-QPSK-LTE mode at center channel (2155.0MHz) on port 2.
- (2) The EUT temperature was stabilized at each temperature step (for a minimum of 30 minutes) prior to frequency accuracy measurement.

Nominal operating voltage of the product is declared as 48VDC.

Frequency error results are listed below for extreme voltages and temperatures.

#### Extreme Voltages:

Percentage of Rated Supply	DC Voltage (VDC)	Frequency Error (Hz) at 20°C
85%	40.8	2.82
100%	48.0	3.62
115%	55.2	3.40

#### Extreme Temperatures:

Temperature	Frequency Error (Hz) at 48VDC
-30 °C	1.56
-20 °C	1.93
-10 °C	1.51
0 °C	1.55
10 °C	1.38
20 °C	<b>3.62</b>
30 °C	1.58
40 °C	1.93
50 °C	1.74

Based on the results above, highest recorded frequency error (3.62Hz or 0.0017ppm) ensures that the transmitted signal remains in its authorized frequency block at extreme voltages and temperatures.

The results above are deemed sufficient to demonstrate carrier frequency stability for all other channel bandwidth modes and modulations since all carriers are controlled by the same frequency stabilization circuitry that was subjected to the extreme conditions under this test.