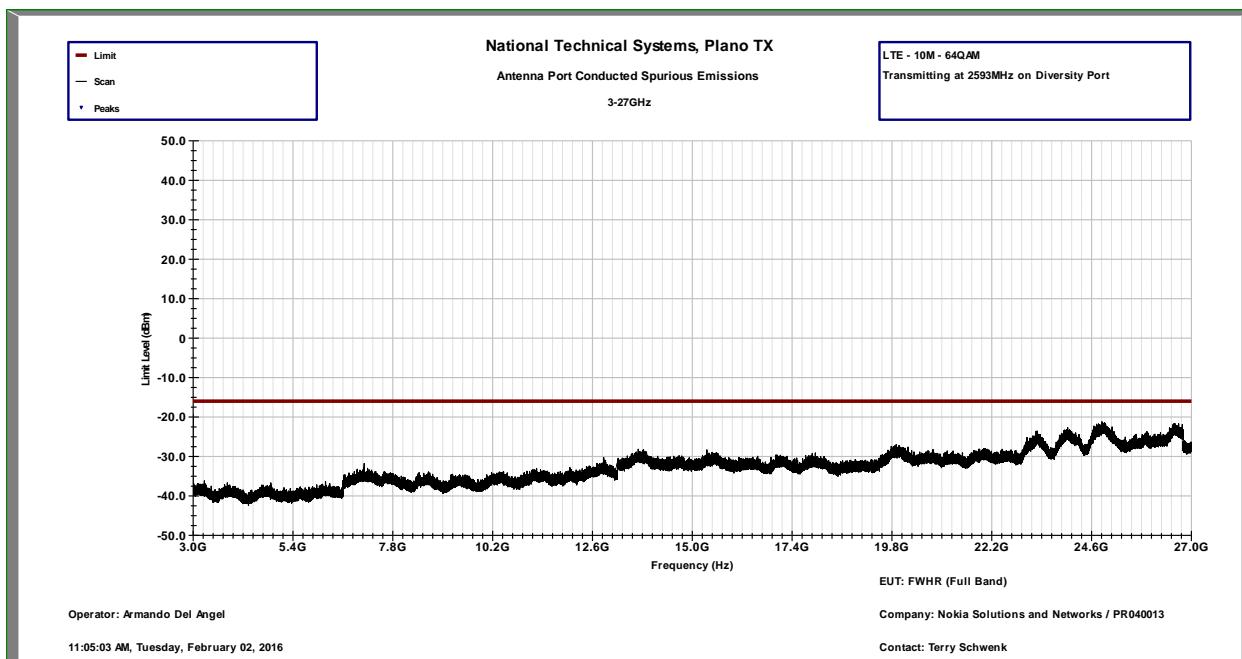
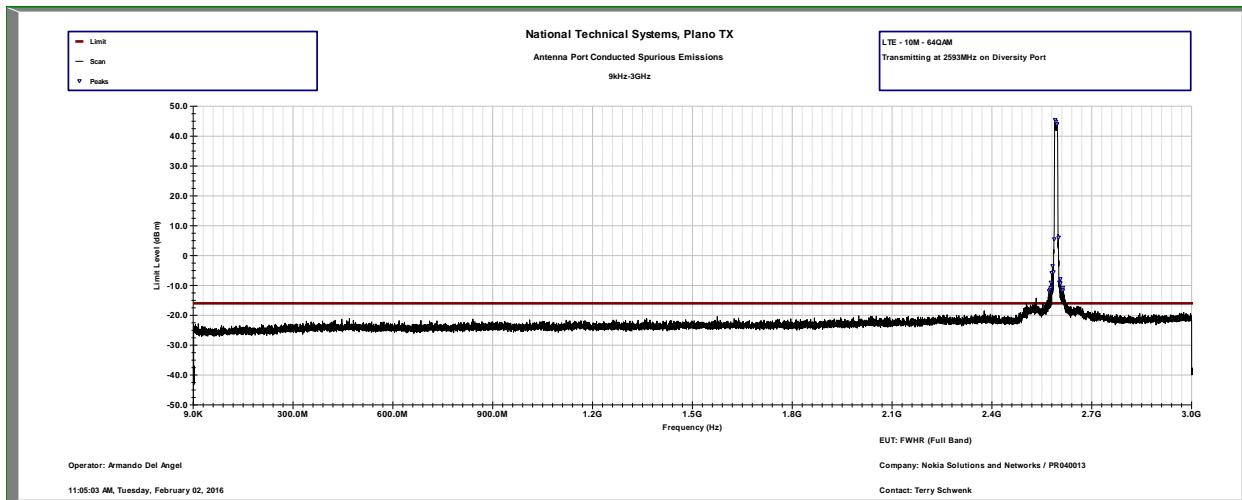
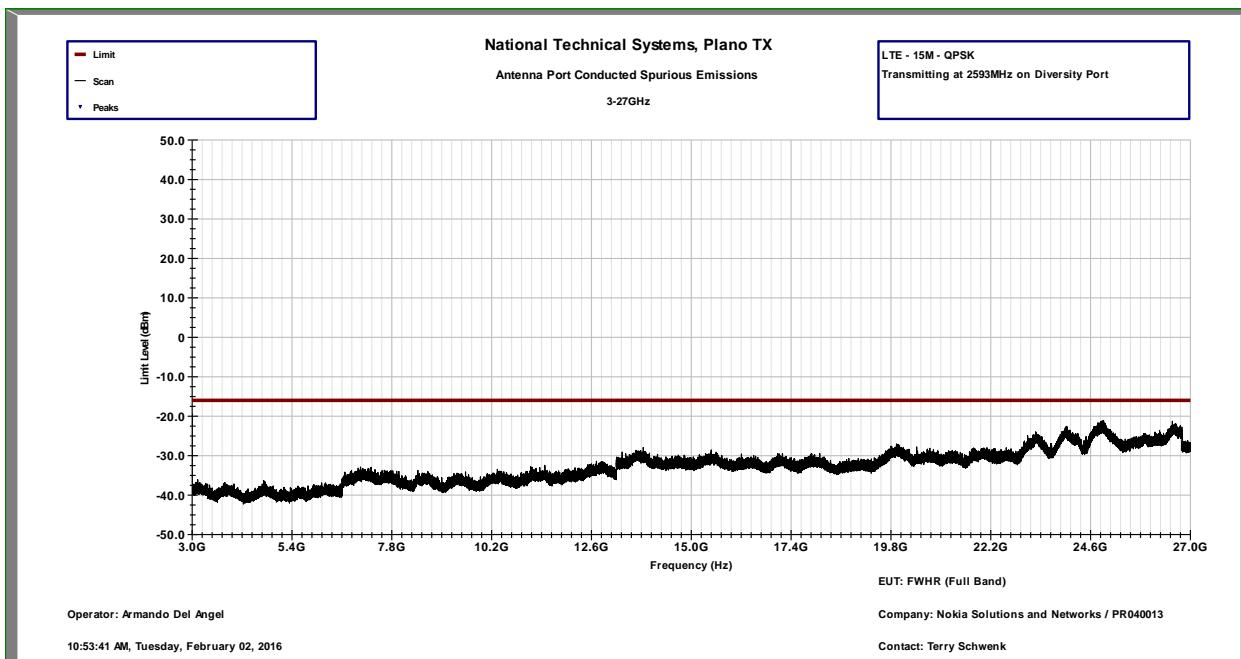
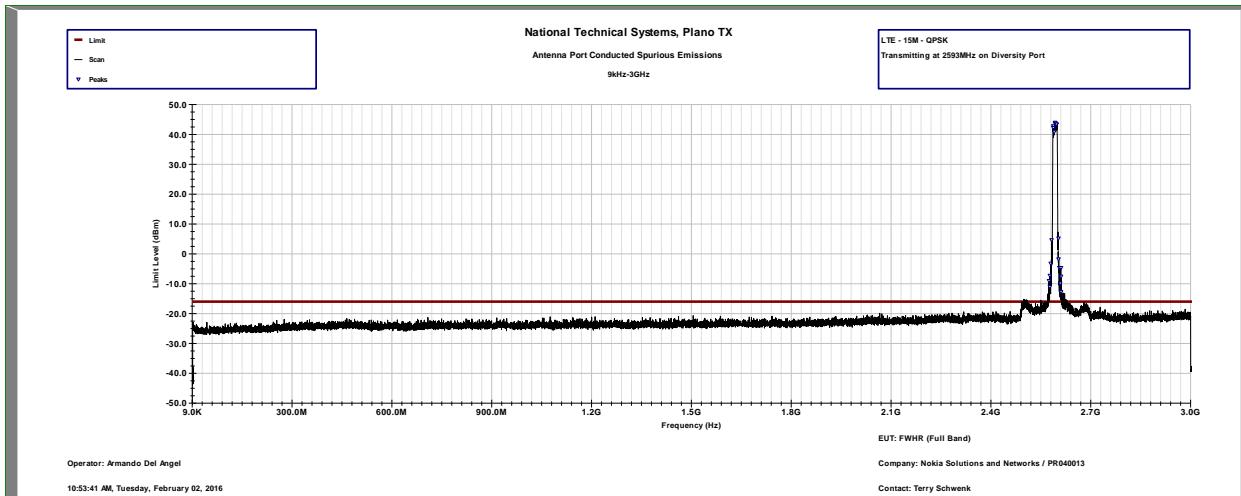


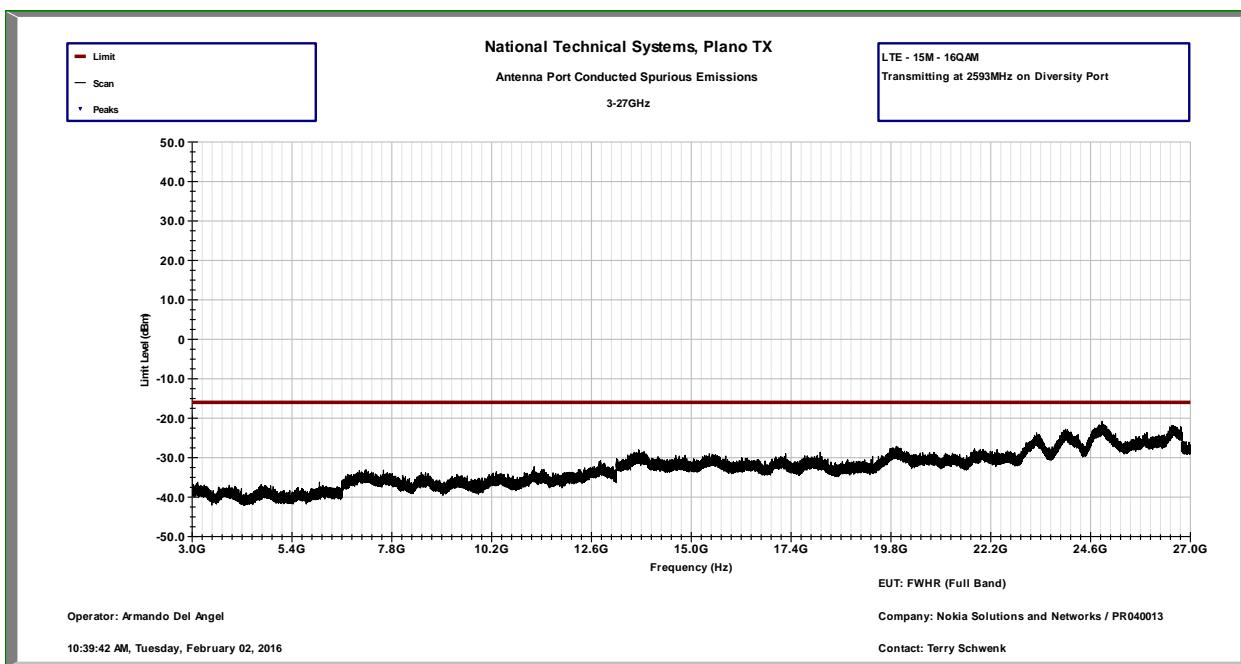
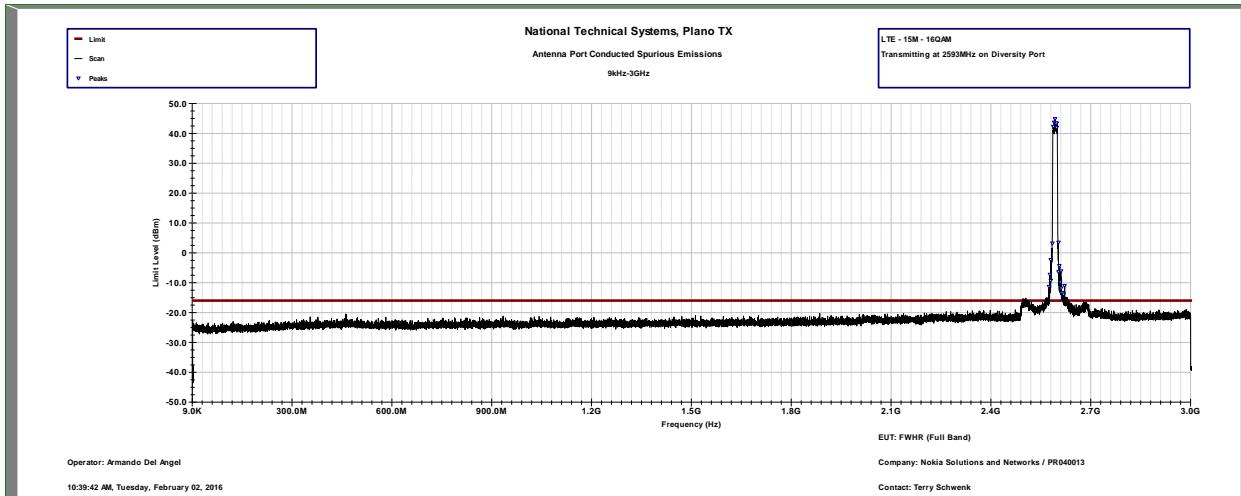
10M – LTE – 64QAM – Center Channel Full Band (2593MHz)



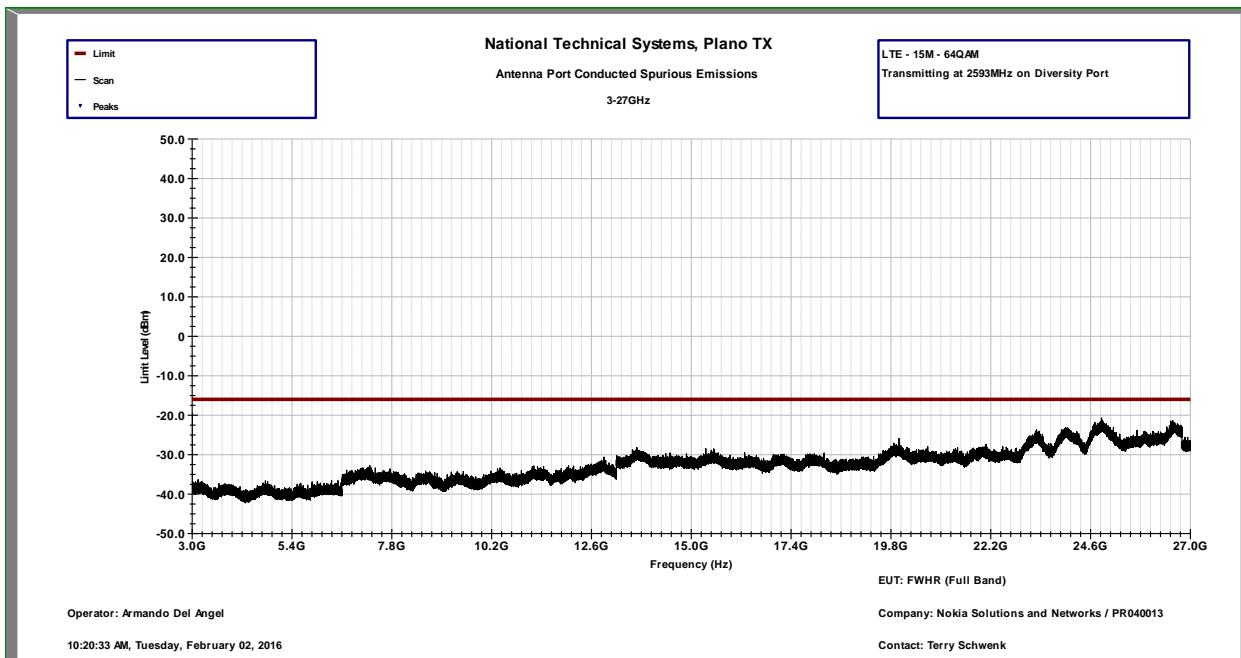
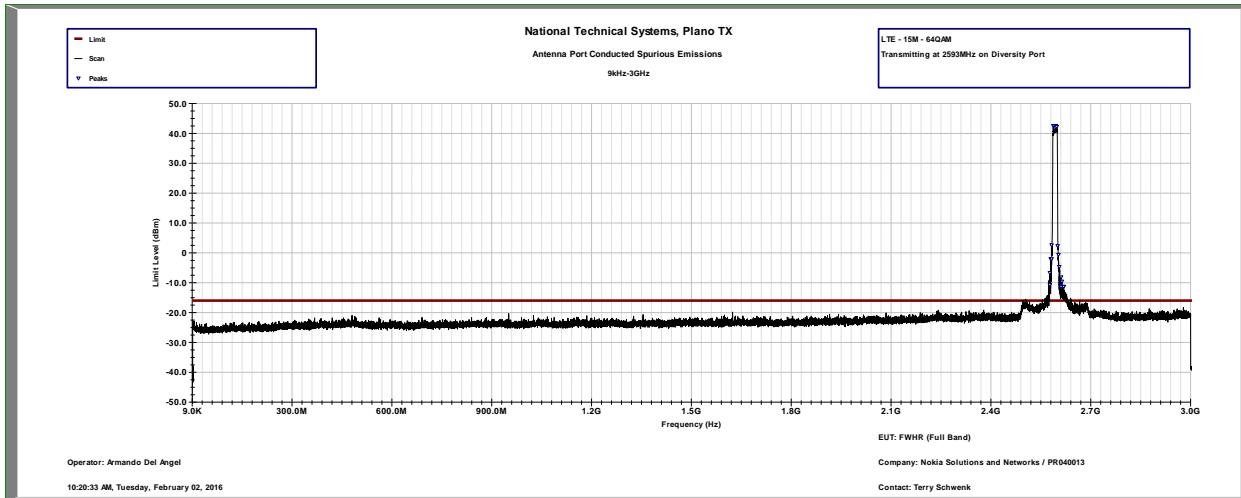
15M – LTE – QPSK – Center Channel Full Band (2593MHz)



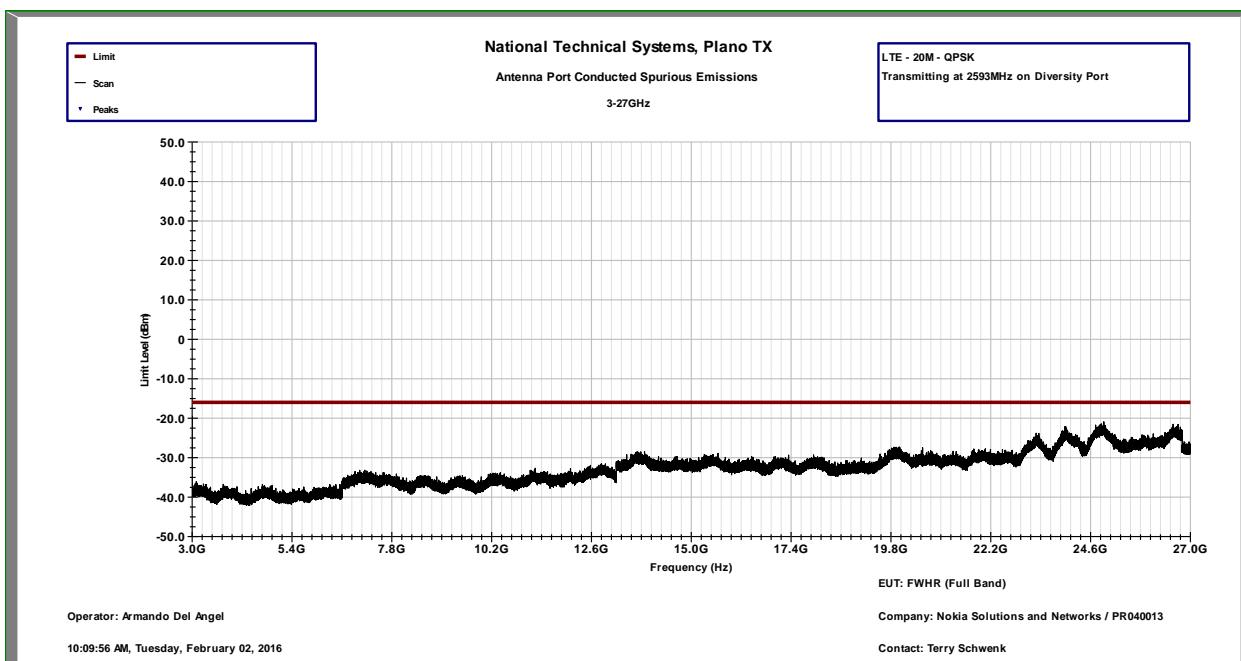
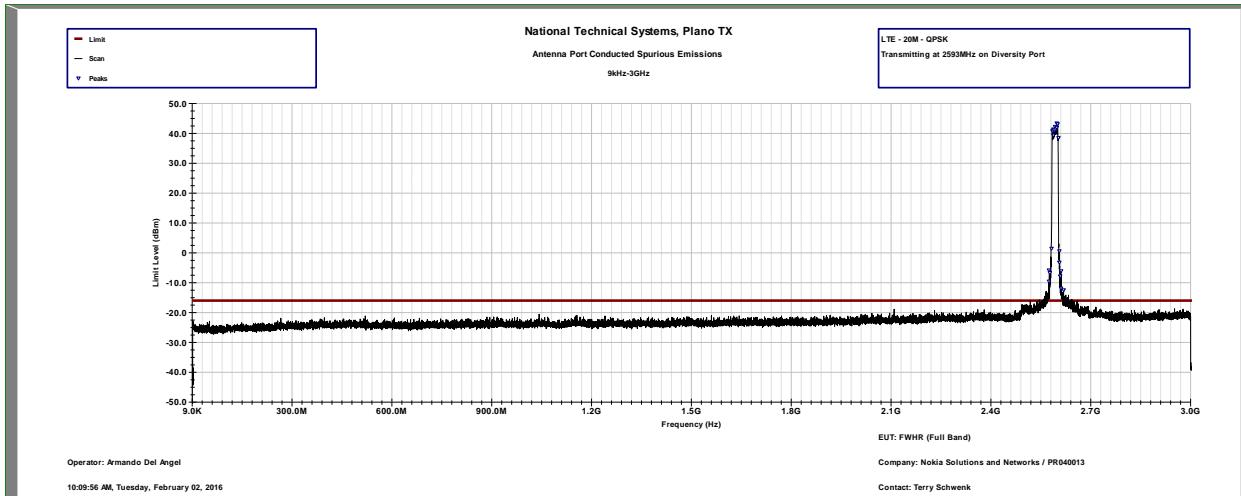
15M – LTE – 16QAM – Center Channel Full Band (2593MHz)



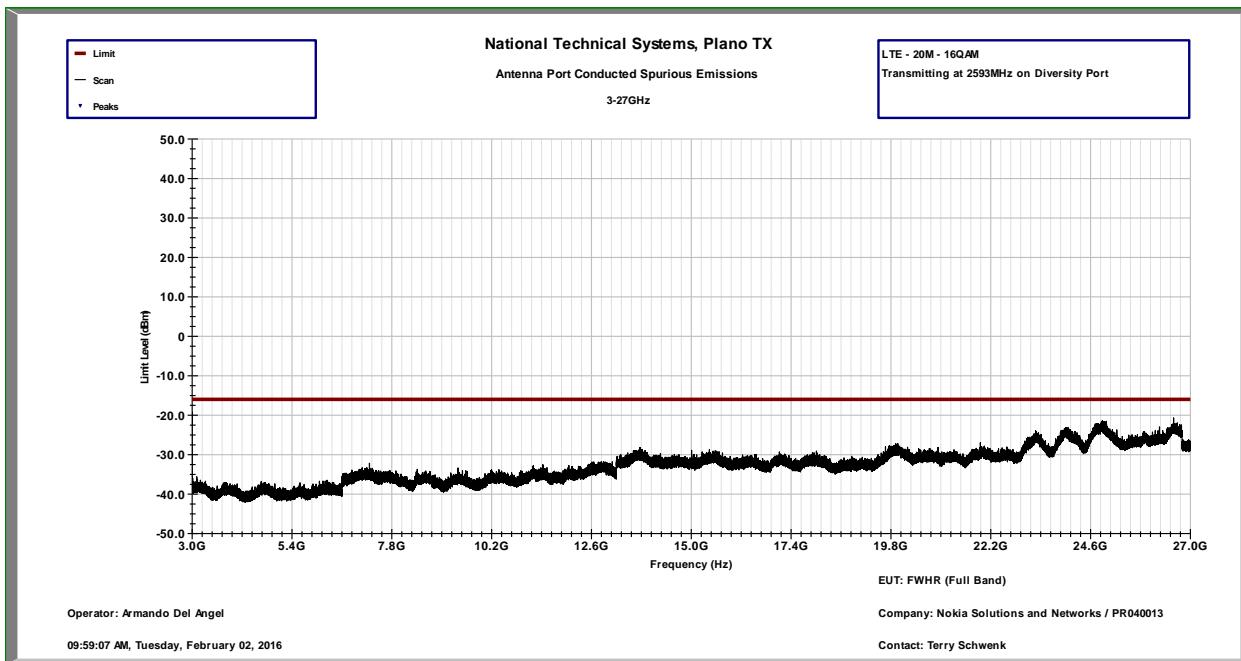
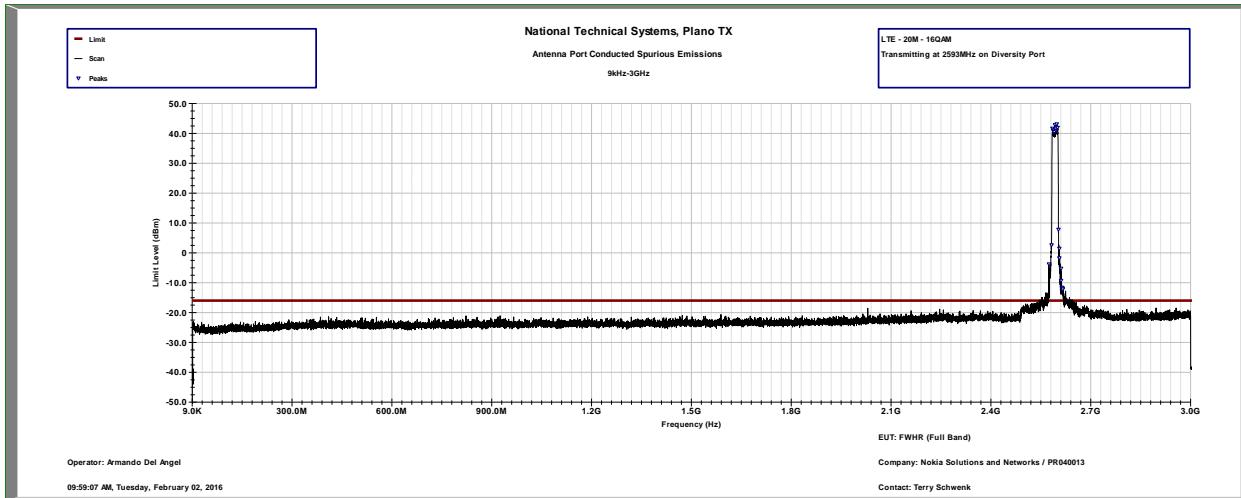
15M – LTE – 64QAM – Center Channel Full Band (2593MHz)



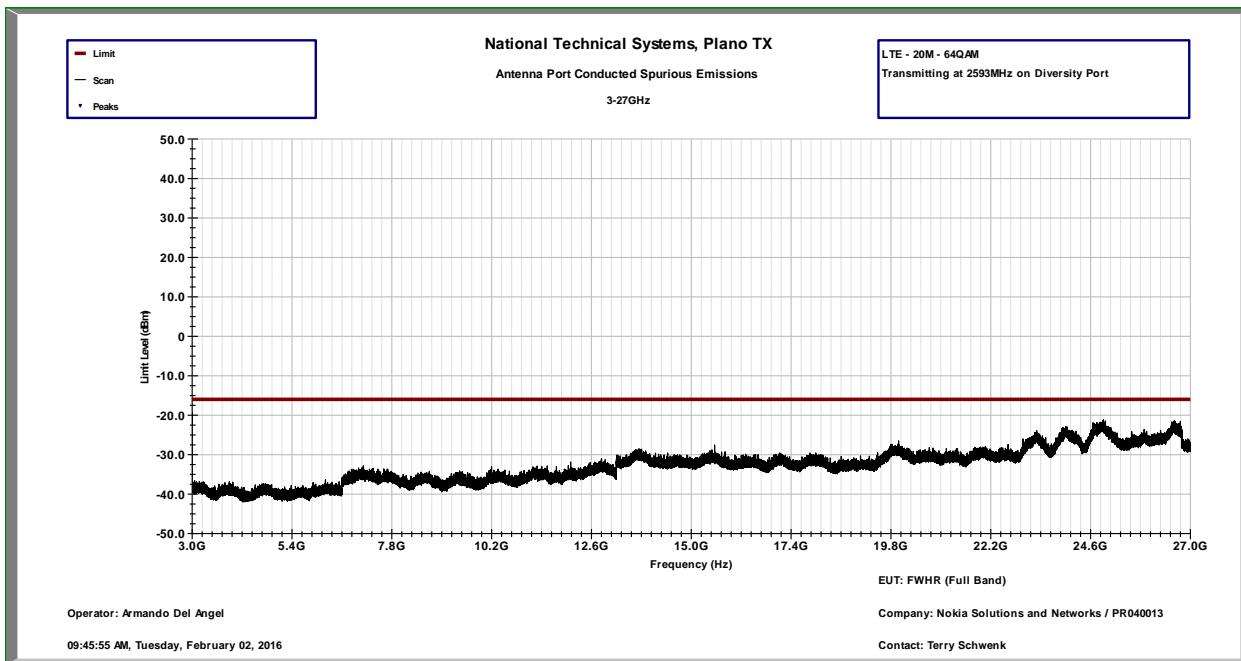
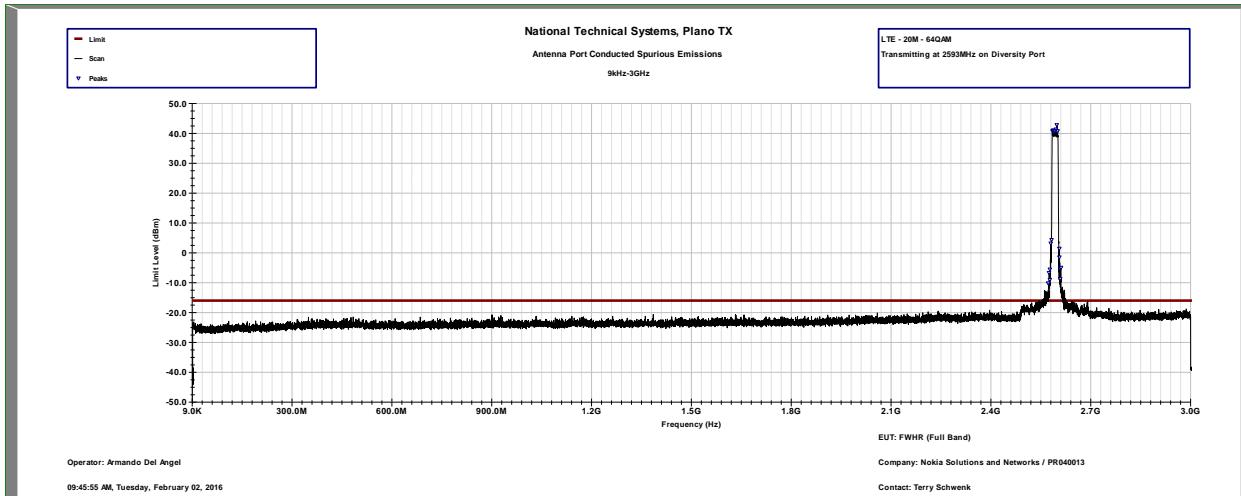
20M – LTE – QPSK – Center Channel Full Band (2593MHz)



20M – LTE – 16QAM – Center Channel Full Band (2593MHz)



20M – LTE – 64QAM – Center Channel Full Band (2593MHz)



Transmitter Radiated Spurious Emissions

Antenna port conducted spurious emissions tests produced similar results for all modulations and channel bandwidth modes. Preliminary scans for radiated spurious emissions were performed in 30MHz – 1GHz frequency range in all Modulations, Bandwidths, and channels. The following configuration was determined to be the worst case and used to perform all final Measurements:

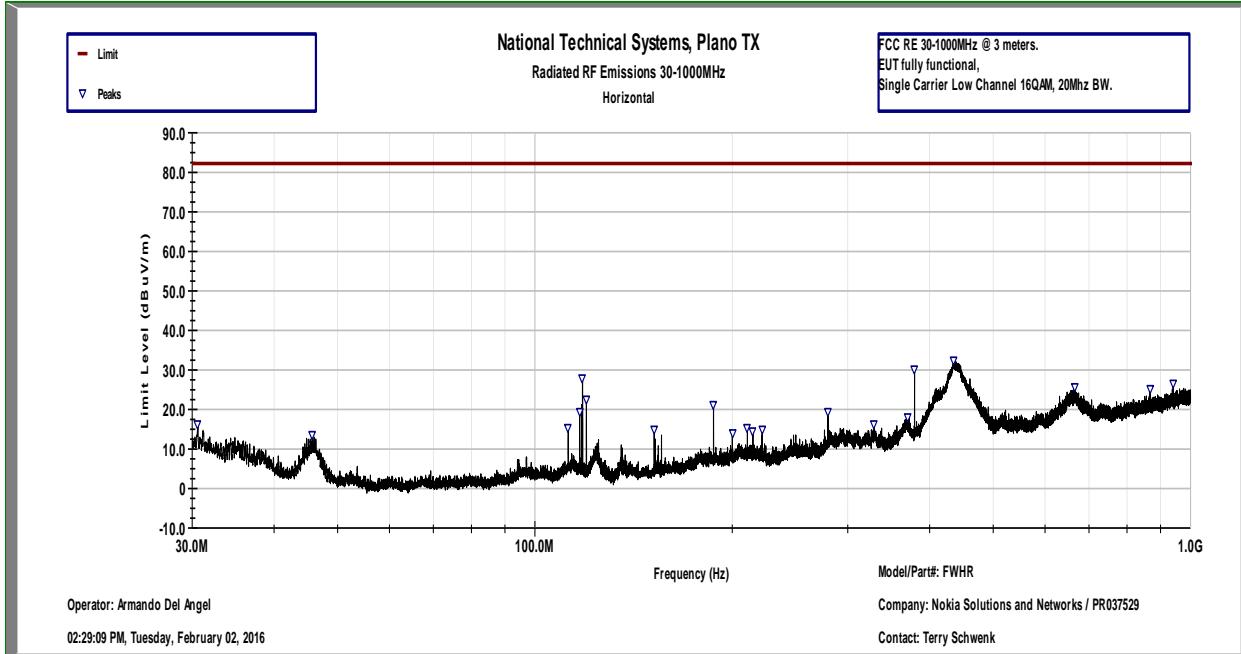
Transmitting in 20MHz-16QAM-LTE mode at Low Channel Full Band (2506MHz) on all 2 ports.

Final maximized peak radiated emissions were measured in this mode. Measurement distance was 3m from 30MHz-10GHz, and 1m from 10GHz – 27GHz. During testing all 2 antenna ports of the base station were terminated with 50ohm termination blocks and unit was transmitting on all of its ports at full power as described above.

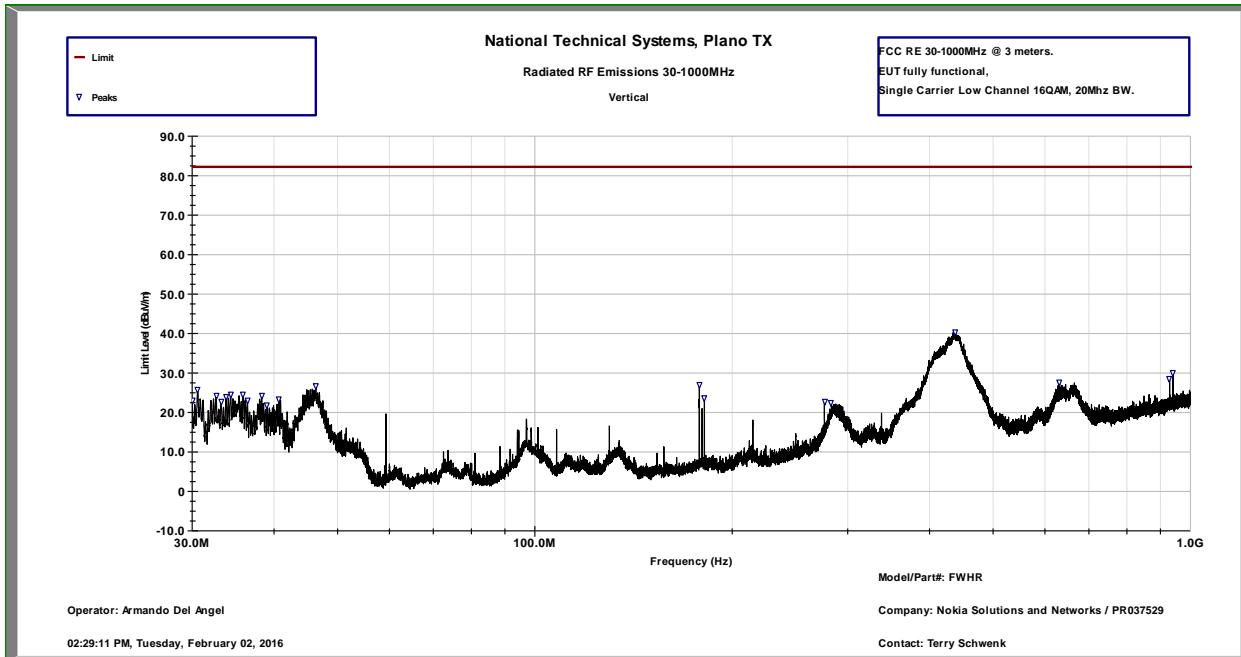
Frequency (MHz)	Polarity (H/V)	Raw Reading at 3m (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Field Strength at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
5012.29	H	27.705	-31.449	33.438	3.161	32.854	82.2	-49.346
5015.55	V	37.042	-31.44	33.452	3.158	42.212	82.2	-39.988
6811.04	V	27.791	-30.895	35	3.226	35.122	82.2	-47.078
7253.65	H	27.644	-31.3	36.104	3.775	36.223	82.2	-45.977
7673.32	H	27.979	-31.555	36.329	3.626	36.379	82.2	-45.821
7770.78	V	27.327	-31.389	36.349	3.522	35.808	82.2	-46.392
8914.72	H	27.654	-31.544	37.722	4.04	37.872	82.2	-44.328
9845.85	V	29.103	-31.766	37.939	4.557	39.833	82.2	-42.367
9948.66	H	28.712	-31.828	38.097	4.729	39.71	82.2	-42.49
10024.23	H	28.444	-31.622	38.156	4.807	39.793	82.2	-42.407
10025.76	V	28.473	-31.621	38.157	4.805	39.821	82.2	-42.379
12528.55	H	27.058	-28.718	38.599	4.875	41.814	82.2	-40.386
12529.52	V	27.102	-28.718	38.599	4.876	41.859	82.2	-40.341
15035.62	V	26.589	-27.198	40.267	6.588	46.353	82.2	-35.847
15037.49	H	26.5	-27.191	40.262	6.583	46.258	82.2	-35.942
17541.67	V	27.454	-27.972	44.364	6.866	50.433	82.2	-31.767
17542.87	H	27.43	-27.957	44.369	6.867	50.435	82.2	-31.765
20048.15	V	31.036	-39.094	46.133	15.141	53.216	82.2	-28.984
20050	H	30.854	-39.101	46.139	15.142	53.034	82.2	-29.166
22550	H	29.9	-39.249	45.728	16.195	52.574	82.2	-29.626
22553.82	V	30.06	-39.241	45.732	16.198	52.749	82.2	-29.451
25059.12	V	29.796	-38.194	46.35	18.036	55.989	82.2	-26.211
25060	H	29.746	-38.197	46.351	18.04	55.94	82.2	-26.26
26900	H	27.709	-38.402	46.877	18.825	55.009	82.2	-27.191
26900.96	V	27.794	-38.402	46.877	18.822	55.091	82.2	-27.109

Highest noise floor of the measurement instrumentation was more than 20dB below the 82.2dBuV/m at 3m limit (equivalent to -13dBm EIRP). Since all maximized readings were more than 20dB below these levels as well, substitution measurements were not performed. TILE software was used for all preliminary scans and plots included on the following pages.

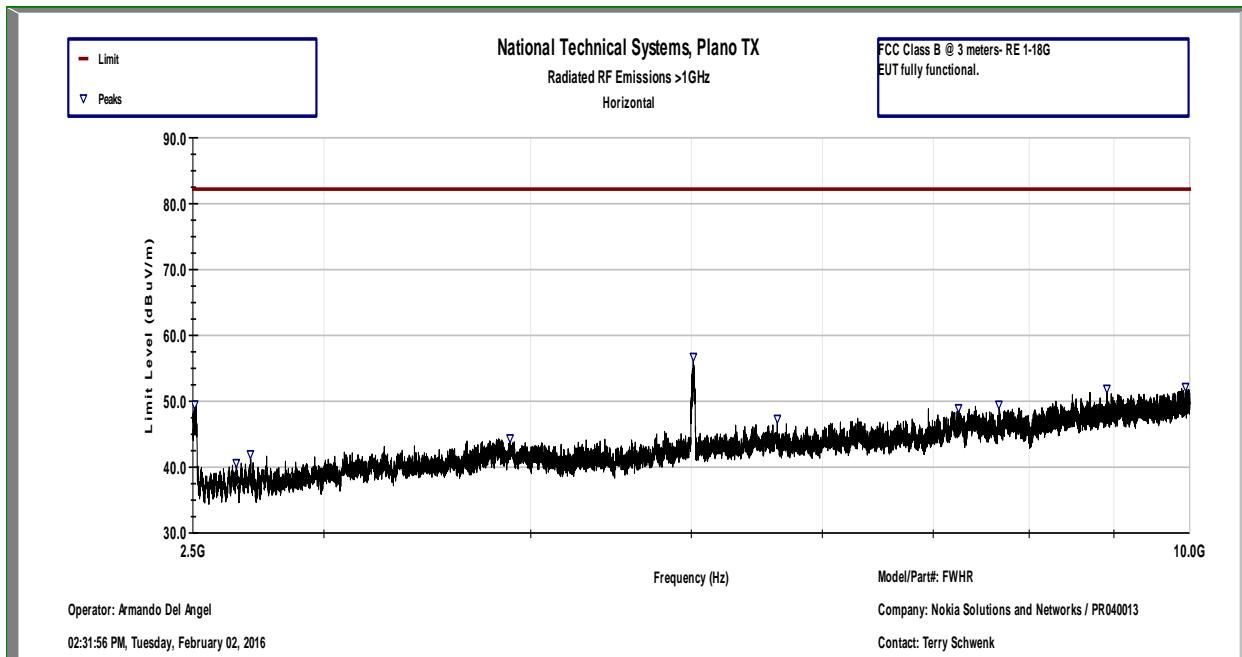
30MHz – 1GHz Peak Prescan at 3m - H



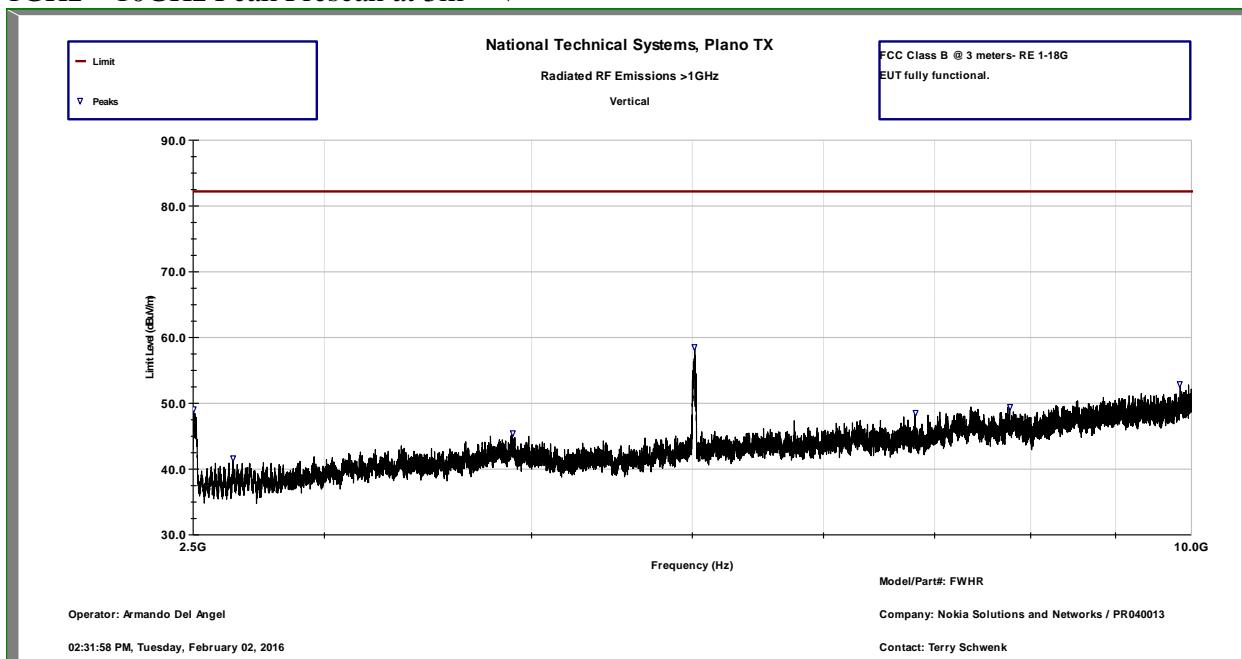
30MHz – 1GHz Peak Prescan at 3m - V



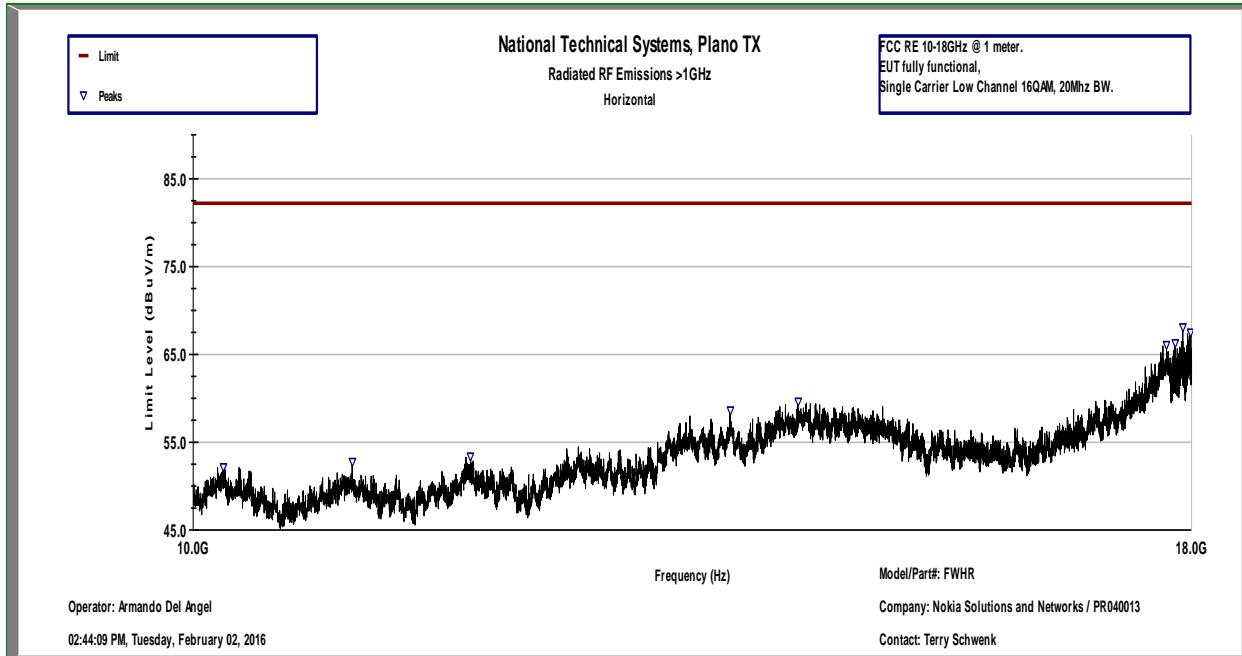
1GHz – 10GHz Peak Prescan at 3m – H



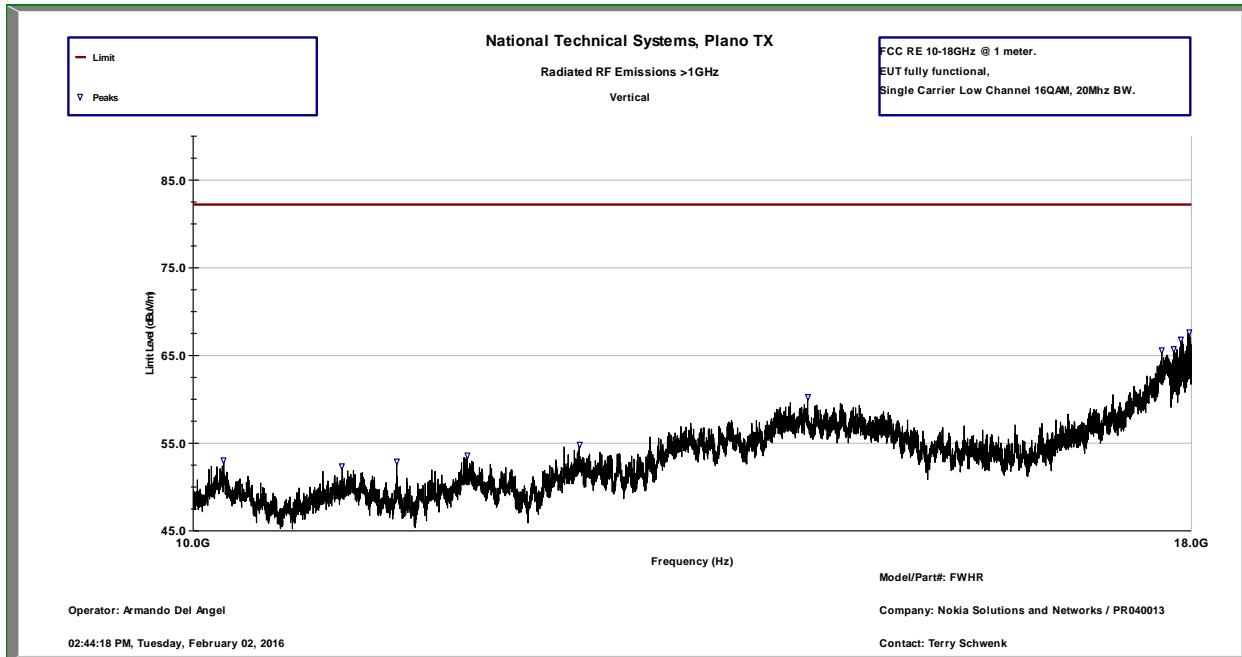
1GHz – 10GHz Peak Prescan at 3m – V



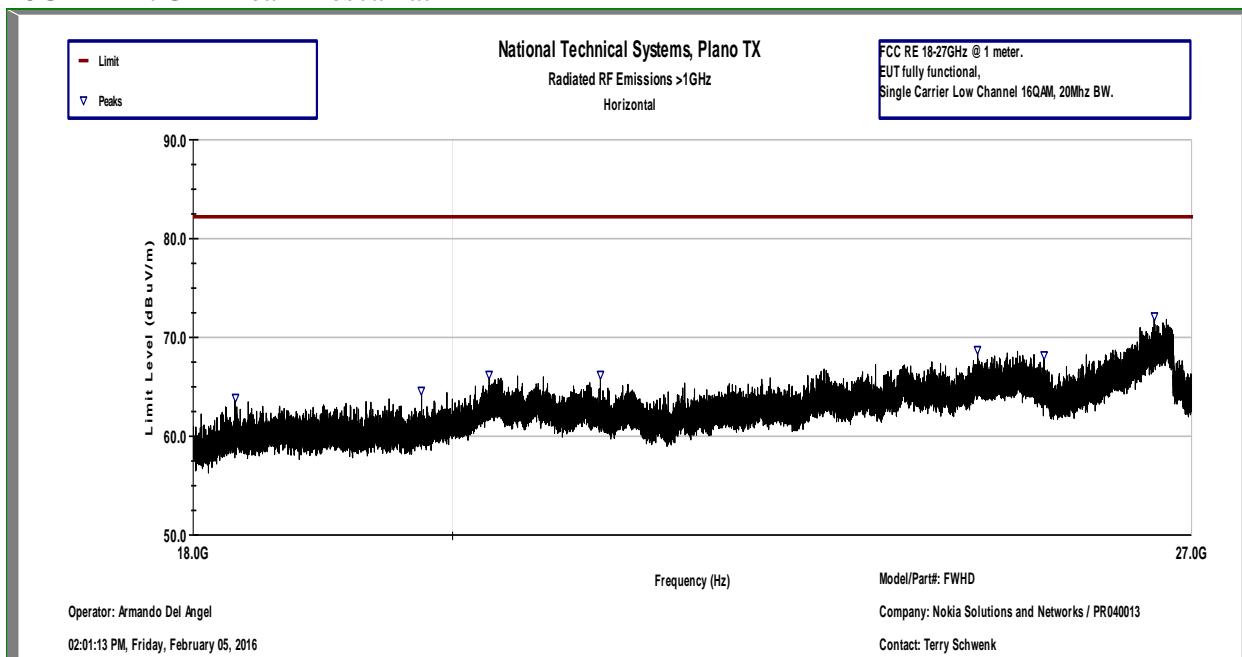
10GHz – 18GHz Peak Prescan at 1m – H



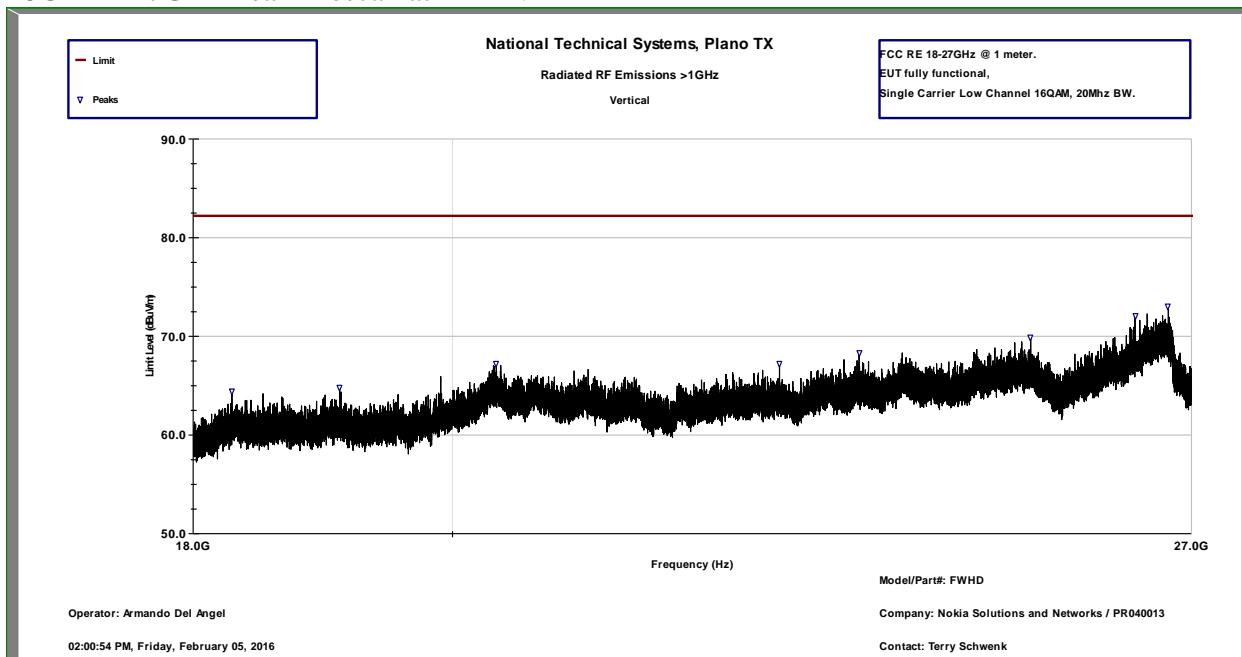
10GHz – 18GHz Peak Prescan at 1m – V



18GHz – 27GHz Peak Prescan at 1m – H



18GHz – 27GHz Peak Prescan at 1m – V



Frequency Stability

In order to demonstrate carrier frequency stability at extreme temperatures and voltages, frequency Bandedge was measured in the following configuration (Worst case from conducted Port Bandedge measurement):

Transmitting in 10MHz-64QAM-LTE mode at Low channel (2501MHz) and High Channel (2685MHz) on port 2.

Nominal operating voltage of the product is declared as 115VAC.

Amplitude at the bandedges are compared with the limit used during the bandedge measurement (-16.01dBm).

Extreme Voltages

	2496MHz	2690MHz	Limit
20C	Amplitude (dBm)	Amplitude (dBm)	dBm
97.7V	-16.80dBm	-16.98dBm	-16.01dBm
132.25V	-16.16dBm	-16.39dBm	-16.01dBm

Extreme Temperatures

	2496MHz	2690MHz	Limit
115VAC	Amplitude (dBm)	Amplitude (dBm)	dBm
-30	-17.22dBm	-18.56dBm	-16.01dBm
-20	-17.23dBm	-17.14dBm	-16.01dBm
-10	-16.6dBm	-17dBm	-16.01dBm
0	-17.5dBm	-16.39dBm	-16.01dBm
10	-17.41dBm	-16.07dBm	-16.01dBm
20	-17.05dBm	-16.37dBm	-16.01dBm
30	-16.46dBm	-16.13dBm	-16.01dBm
40	-16.23dBm	-16.85dBm	-16.01dBm
50	-18.01dBm	-16.13dBm	-16.01dBm

Based on the results above, highest amplitude at any bandedge was -16.07dBm, which ensures that the transmitted signal remains in its authorized frequency block at extreme voltages and temperatures.

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.

Appendix B Test Data

Antenna Port Conducted Bandedge Sub-Bands

Limits below reflect reduction by $10 * \log(2)$ per FCC KDB 662911D01 v02r01 due to 2x2 MIMO operation.

Frequency (MHz)	Limit (dBm)
<2200	-16.0103
2200	-2285
2288	-2292
2292	-2296
2296	-2300
2300	-2305
2305	-2320
2320	-2324
2324	-2328
2328	-2337
2337	-2341
2341	-2345
2345	-2360
2360	-2365
2365	-2395
>2395	-16.0103

In 10MHz, 15MHz, and 20MHz channel bandwidth modes, low and high channels in dual and single carrier mode configurations were tested at the low and high channels.

Results summary:

	LTE - QPSK		LTE - 16QAM		LTE - 64QAM	
	Low	High	Low	High	Low	High
10M	-16.16dBm	-17.26dBm	-16.67dBm	-16.25dBm	-16.5dBm	-16.55dBm
15M	-16.86dBm	-18.78dBm	-17.19dBm	-17.27dBm	-17.81dBm	-17.15dBm
20M	-17.16dBm	-17.84dBm	-17.09dBm	-17.62dBm	-17.89dBm	-18.16dBm
10M Dual	-18.94dBm	-17.35dBm	-18.23dBm	-19.6dBm	-20.51dBm	-18.9dBm
15M Dual	-17.91dBm	-18.96dBm	-18.78dBm	-19.05dBm	-18.45dBm	-19.95dBm
20M Dual	-20.01dBm	-20.56dBm	-22.66dBm	-20.86dBm	-20.15dBm	-22.8dBm

Measurements were performed at the Diversity Port in RMS average mode over 100 traces. In 4MHz bands immediately outside and adjacent to the frequency blocks, RBW was reduced to 1% of the emission bandwidth. For all measurements insertion losses were factored in via reference level offset to the spectrum analyzer and settings are shown on corresponding plots on the following pages. This Test was performed on two variation of the FWHR model. One Variation covers the Low Sub-Band 2496-2593MHz and the other variation covers the Upper Sub-Band 2593-2690MHz. The only differences between these sub-band variants and the full-band unit are the Band Filters.

