



REPORT No.: SZ19070119W08

LTE Band 5

Channel Bandwidth: 1.4MHz

Channel 20407 1RB

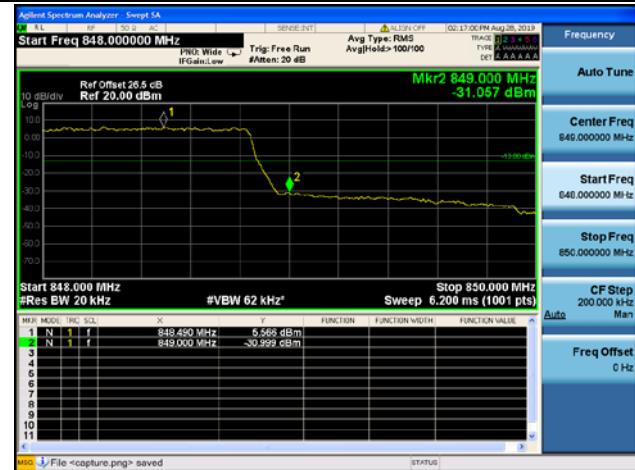
Channel 20407 FULL RB



Channel Bandwidth: 1.4MHz

Channel 20643 1RB

Channel 20643 FULL RB



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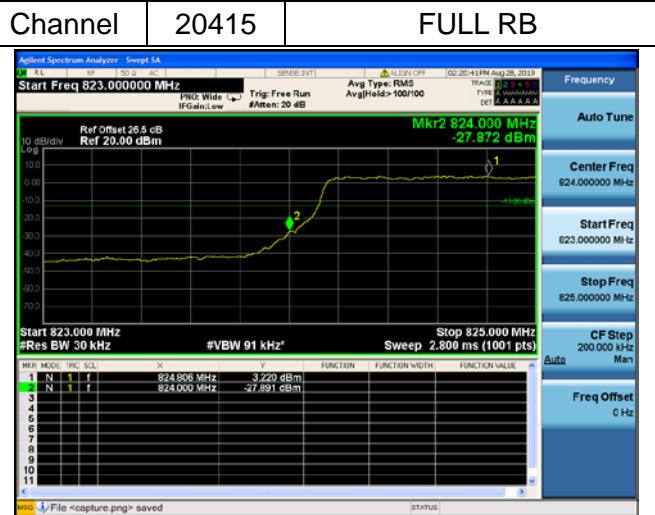
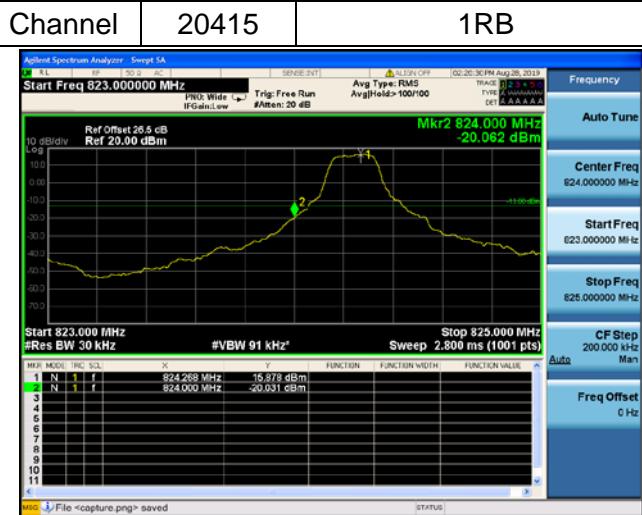
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Http://www.morlab.cn E-mail: service@morlab.cn



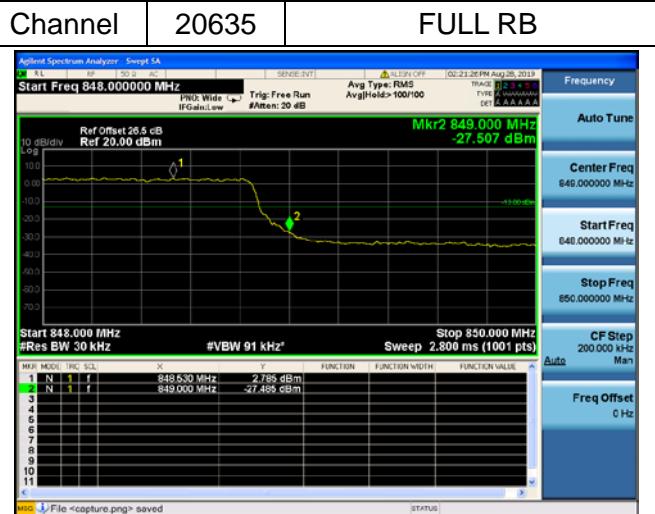
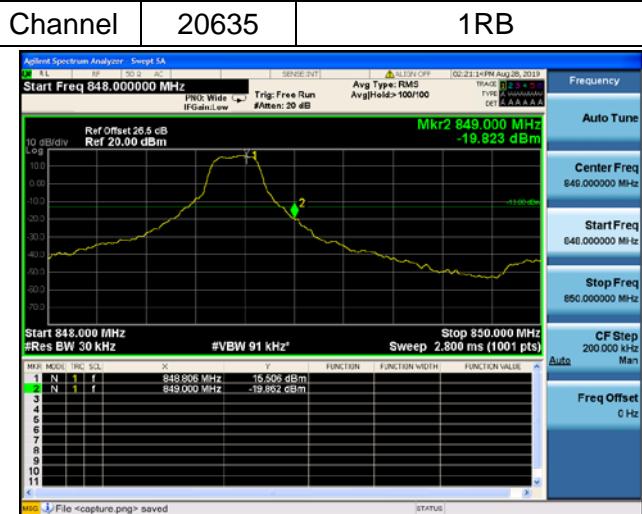
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LTE Band 5

Channel Bandwidth: 3MHz



Channel Bandwidth: 3MHz



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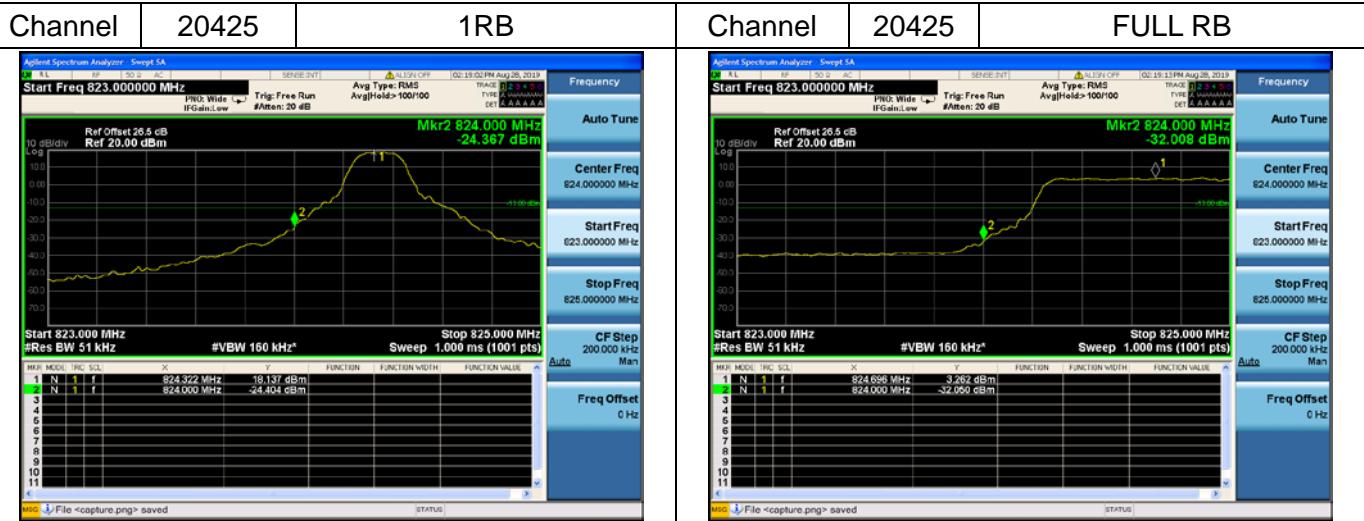
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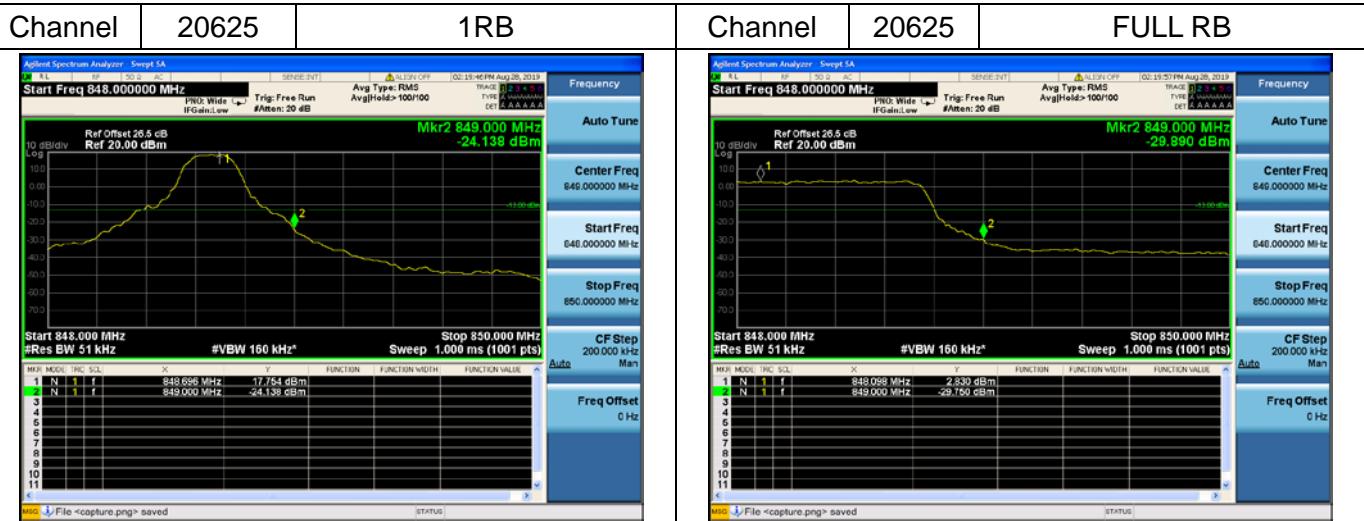
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LTE Band 5

Channel Bandwidth: 5MHz



Channel Bandwidth: 5MHz



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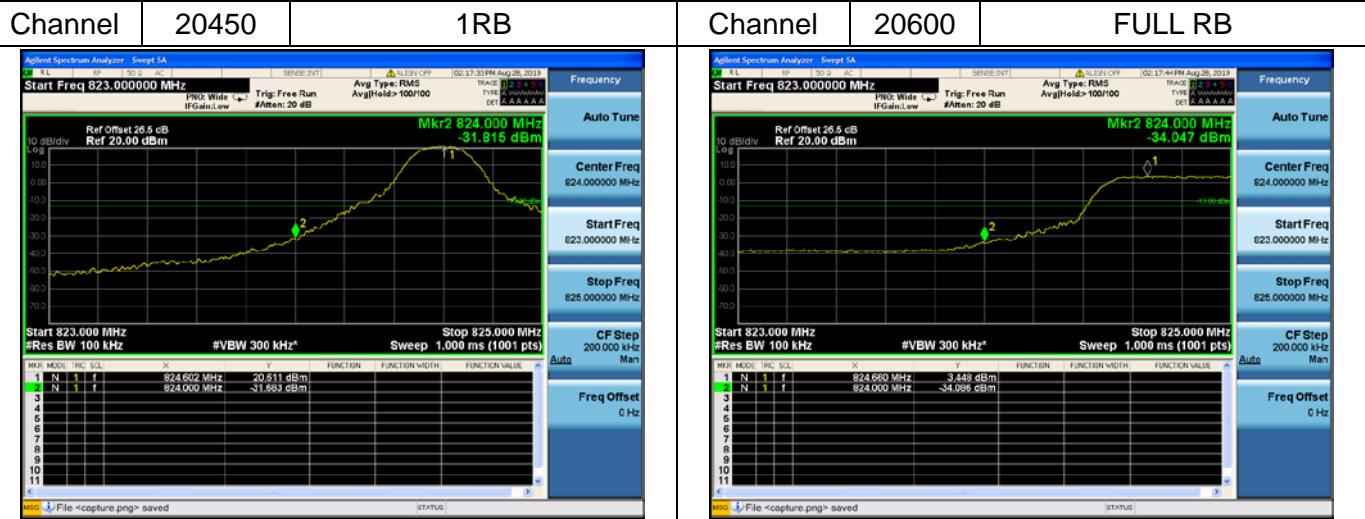
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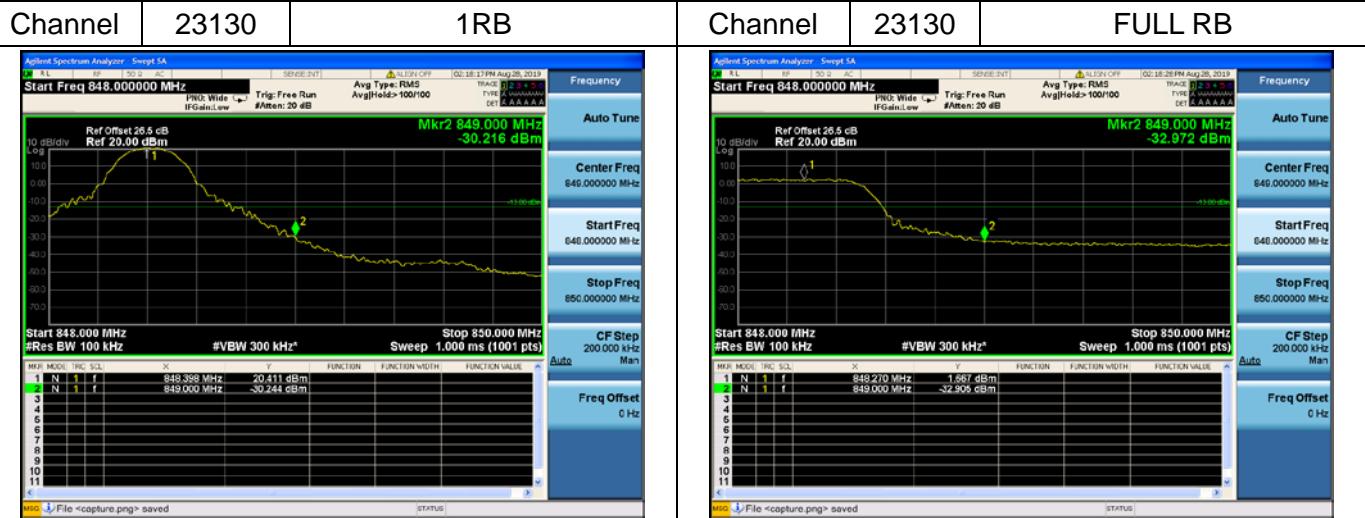
REPORT No.: SZ19070119W08

LTE Band 5

Channel Bandwidth: 10MHz



Channel Bandwidth: 10MHz



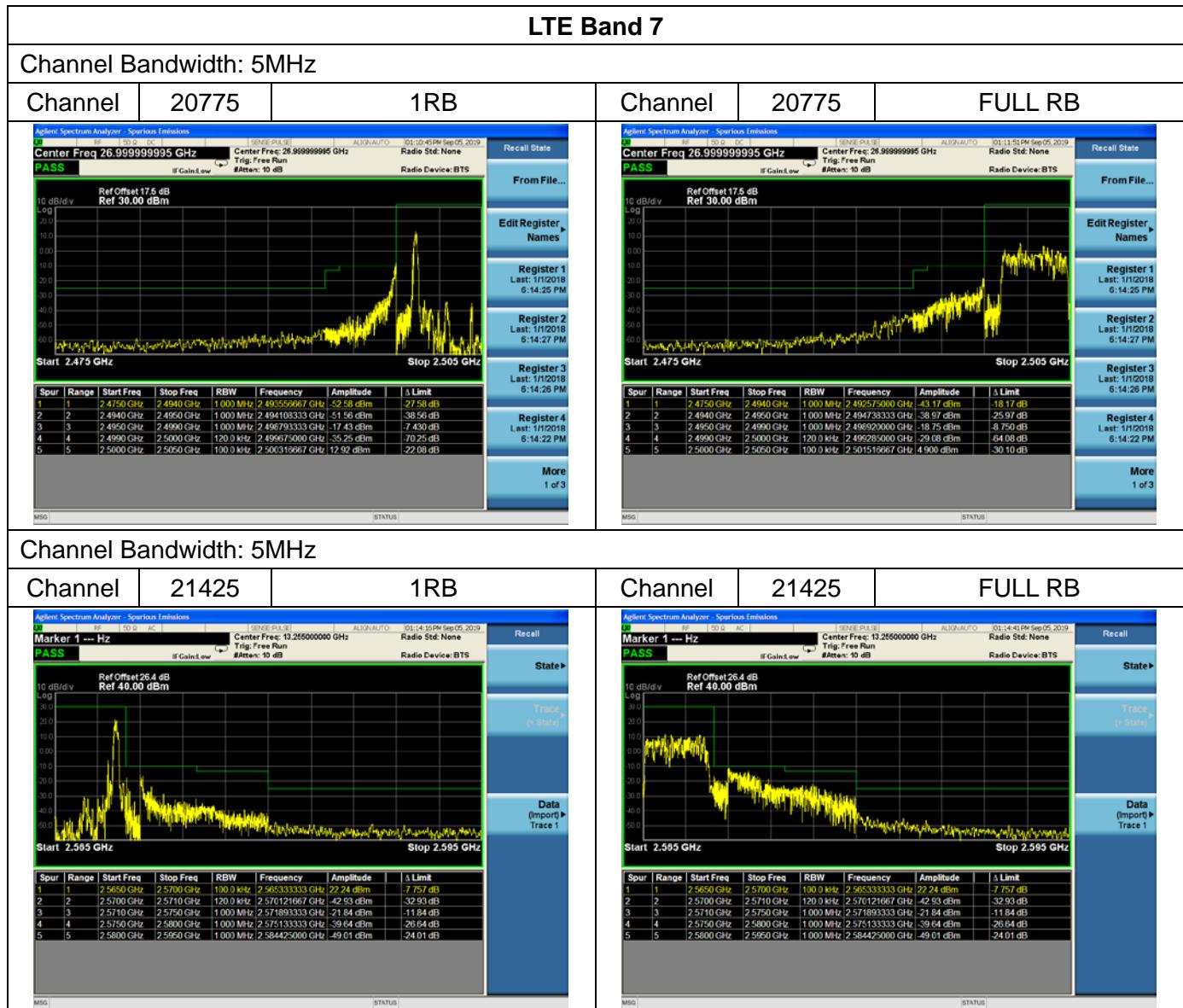
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Tel: 86-755-36698555 Fax: 86-755-36698525
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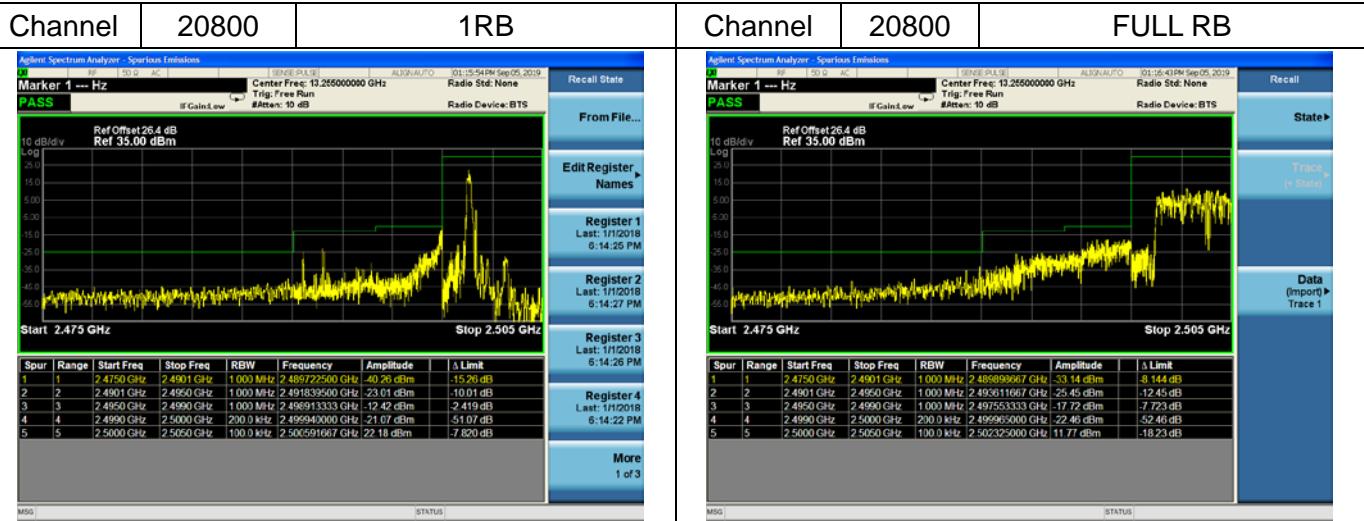
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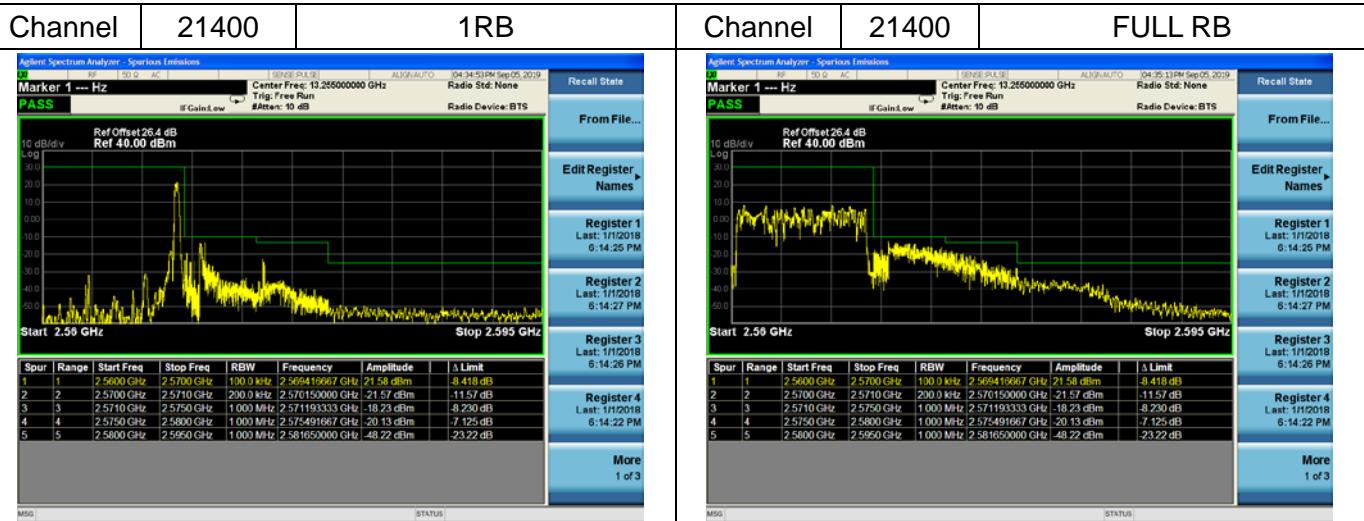
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LTE Band 7

Channel Bandwidth: 10MHz



Channel Bandwidth: 10MHz



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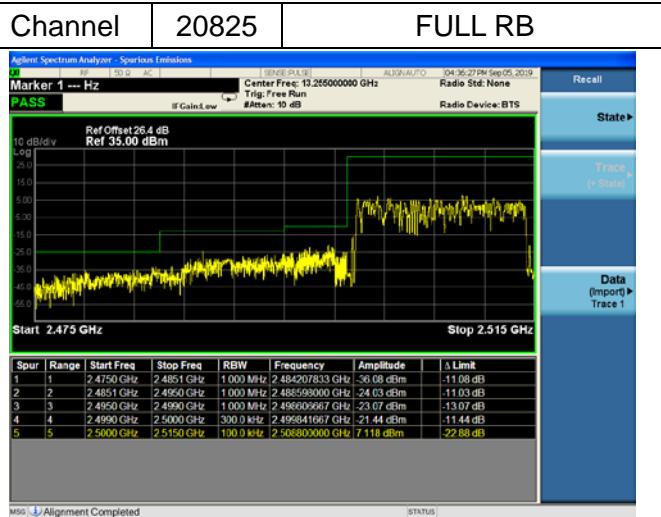
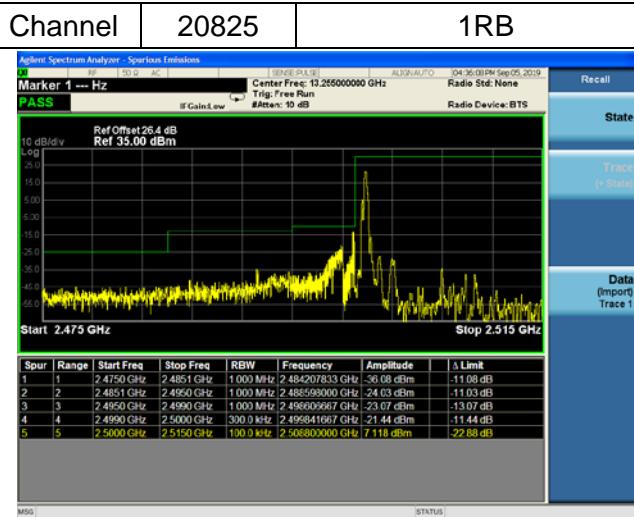
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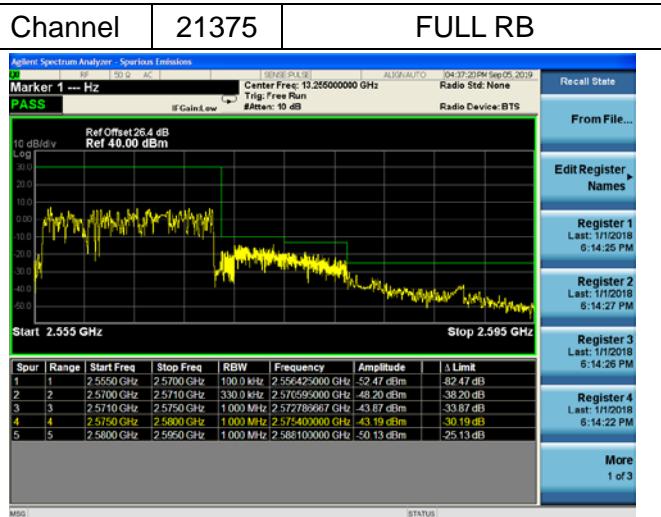
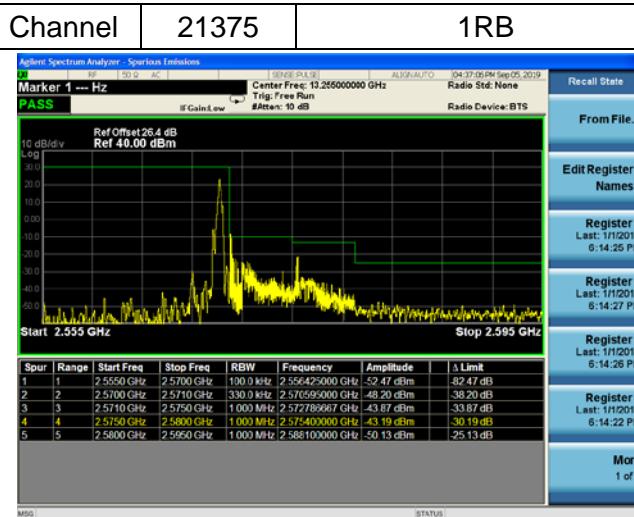
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LTE Band 7

Channel Bandwidth: 15MHz



Channel Bandwidth: 15MHz



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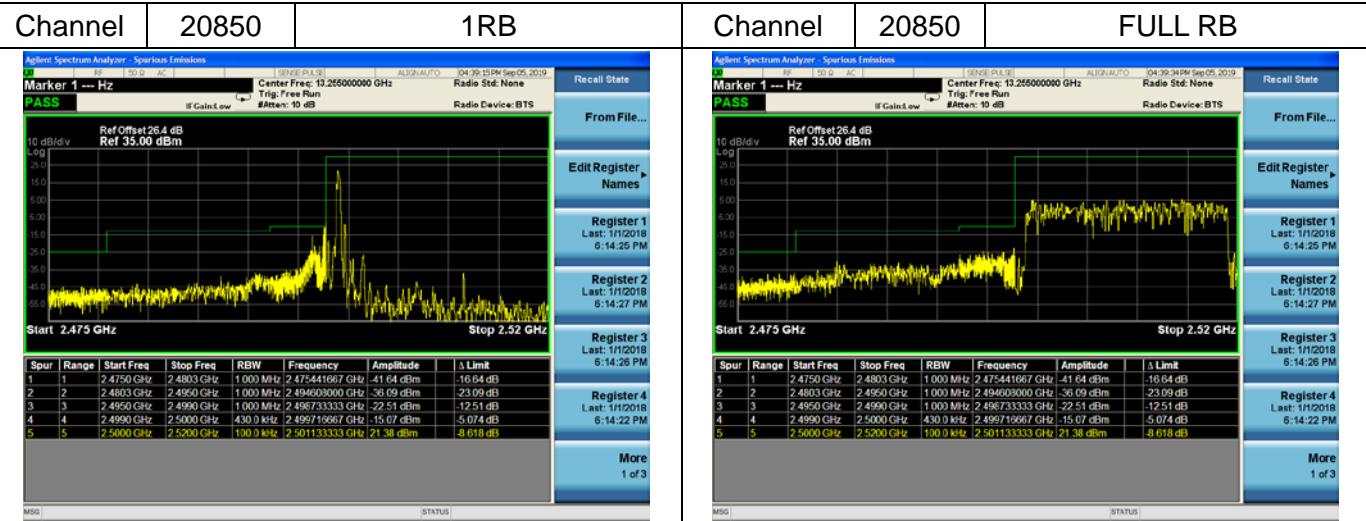
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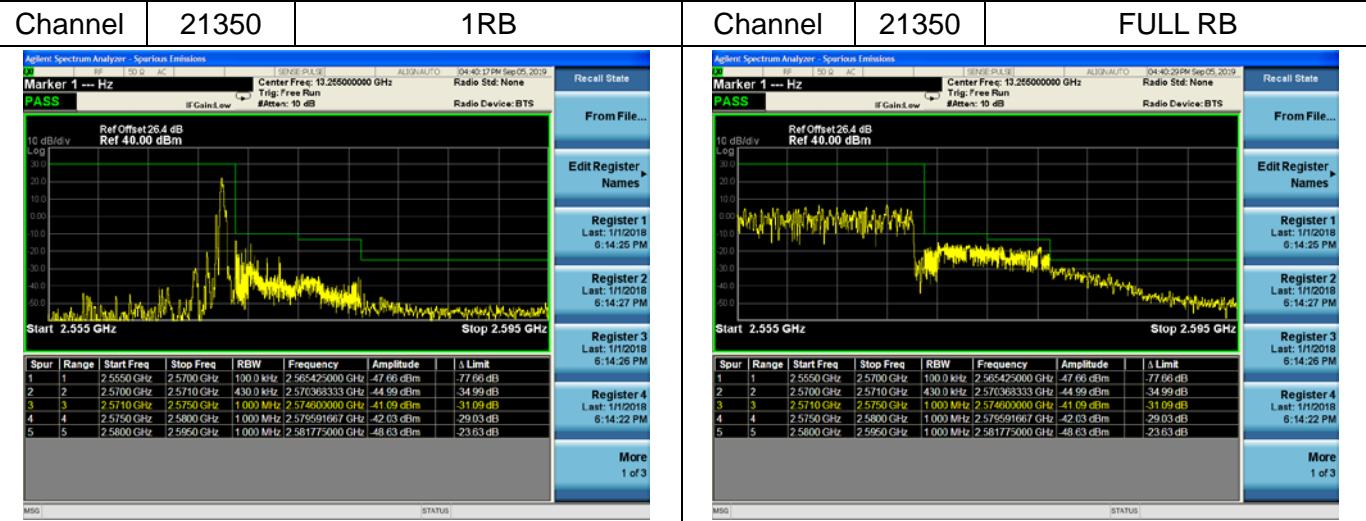
REPORT No.: SZ19070119W08

LTE Band 7

Channel Bandwidth: 20MHz



Channel Bandwidth: 20MHz

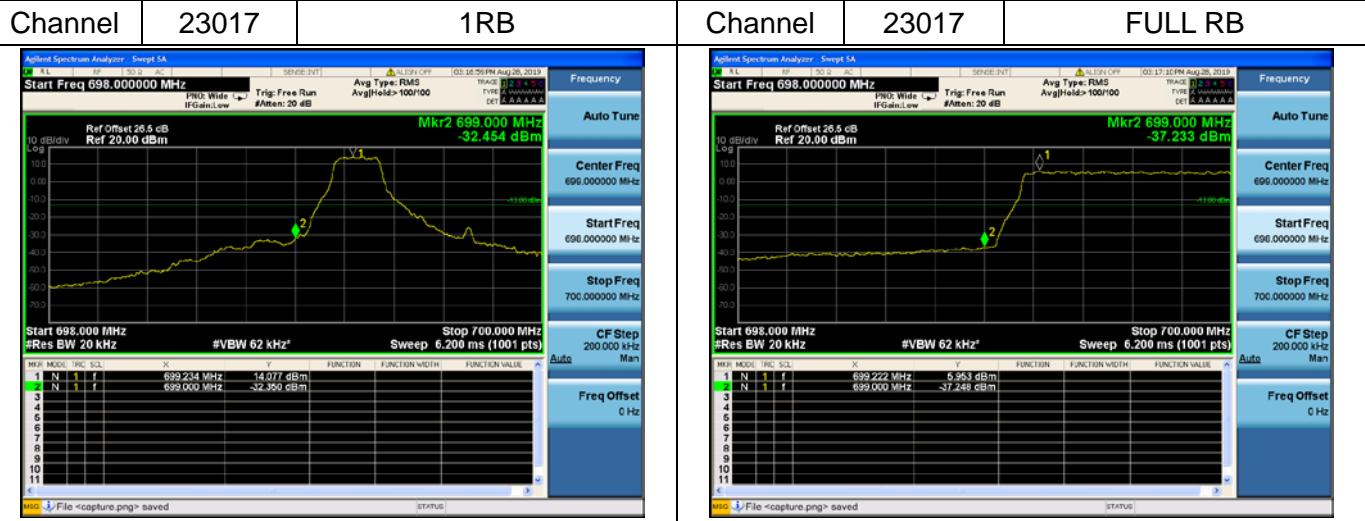




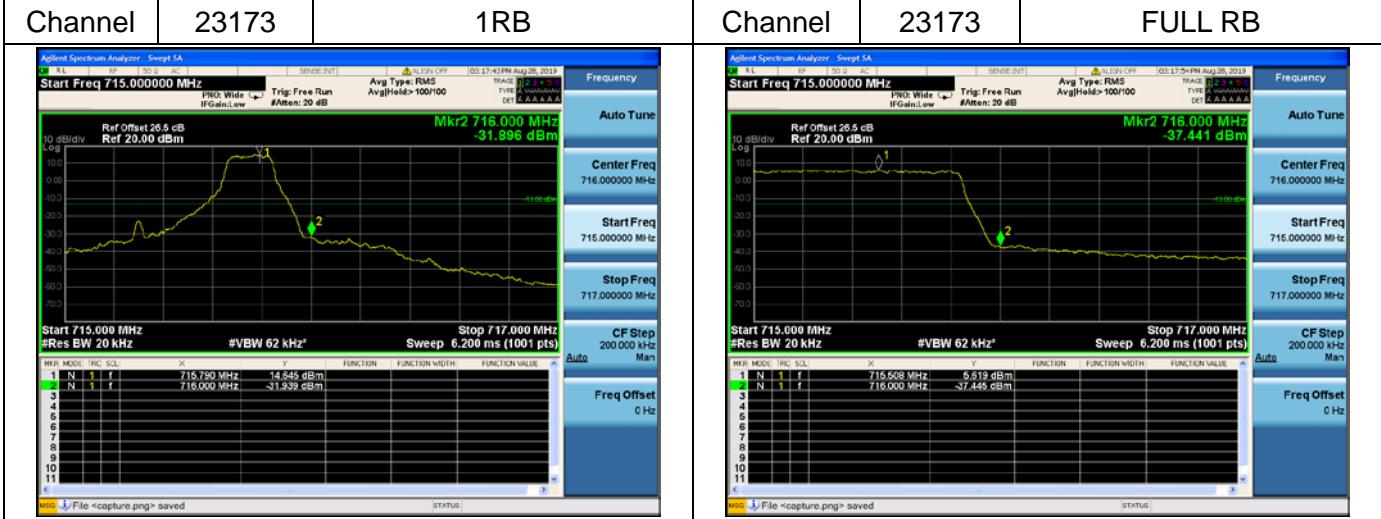
REPORT No.: SZ19070119W08

LTE Band 12

Channel Bandwidth: 1.4MHz



Channel Bandwidth: 1.4MHz



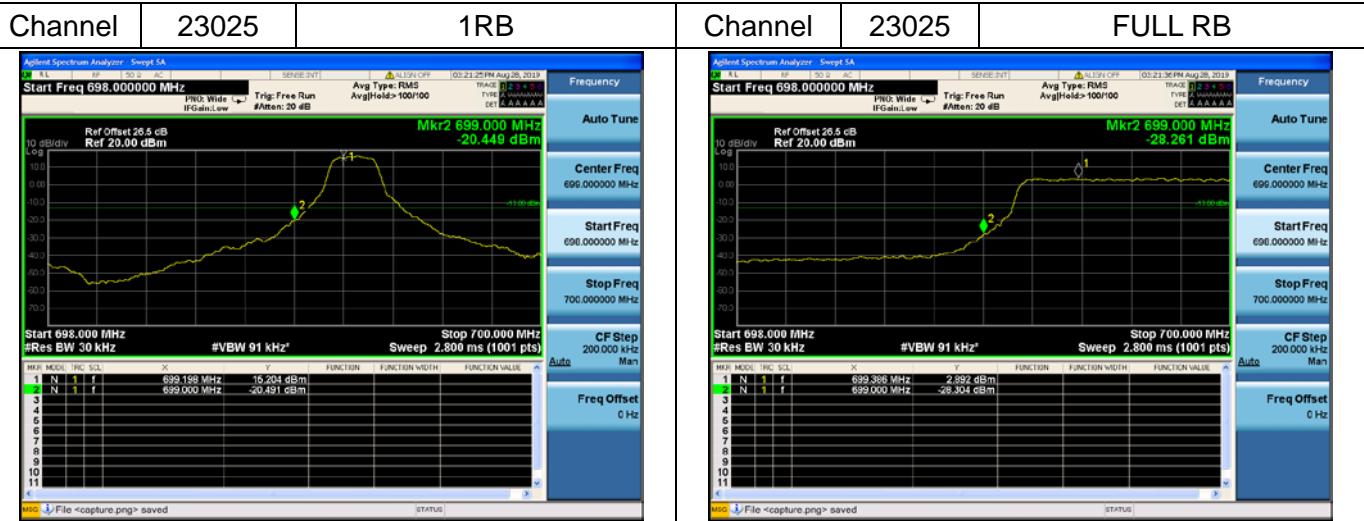
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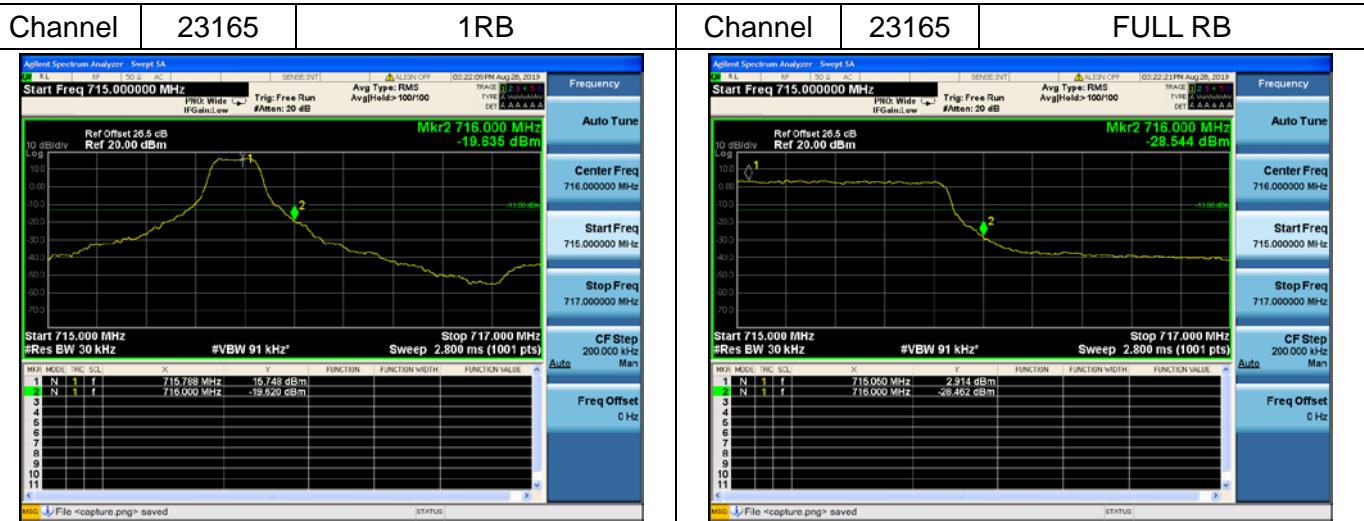
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LTE Band 12

Channel Bandwidth: 3MHz

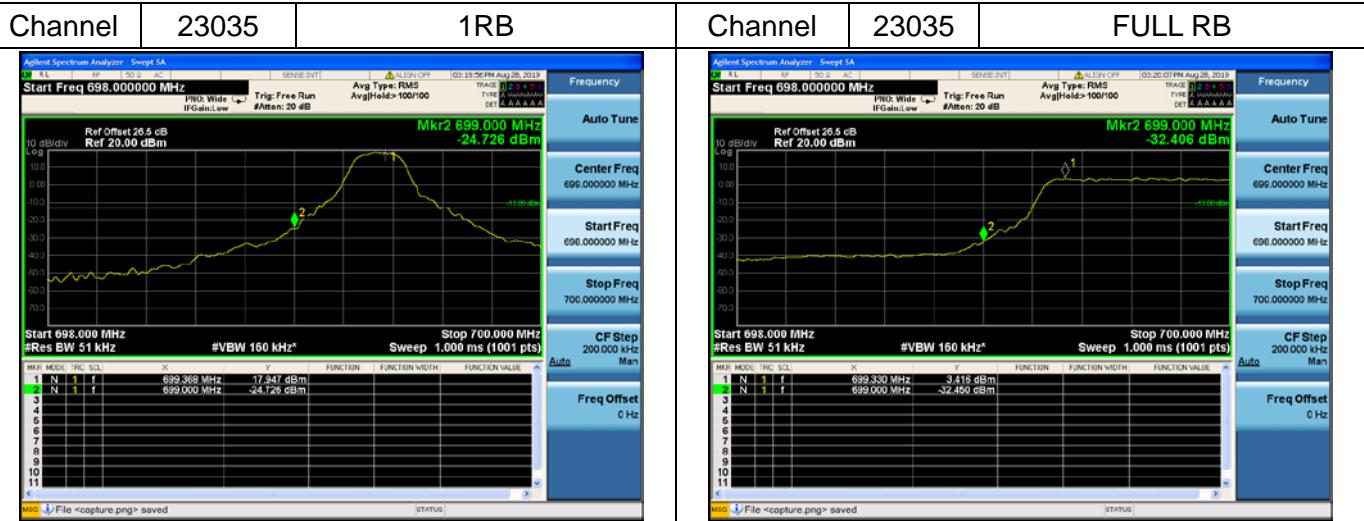


Channel Bandwidth: 3MHz

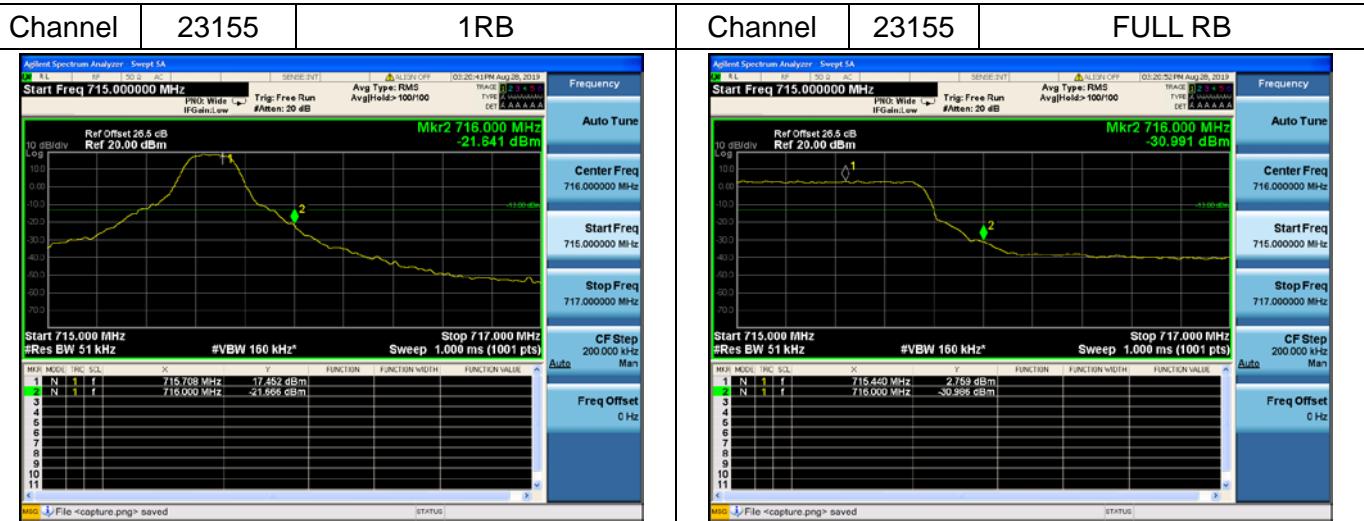


LTE Band 12

Channel Bandwidth: 5MHz

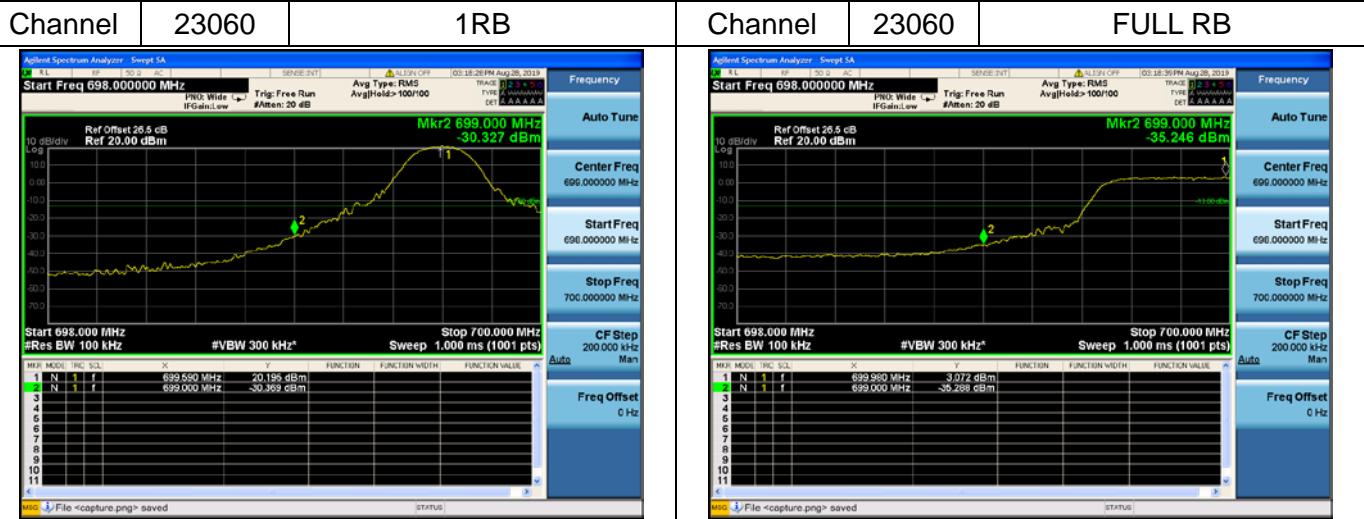


Channel Bandwidth: 5MHz

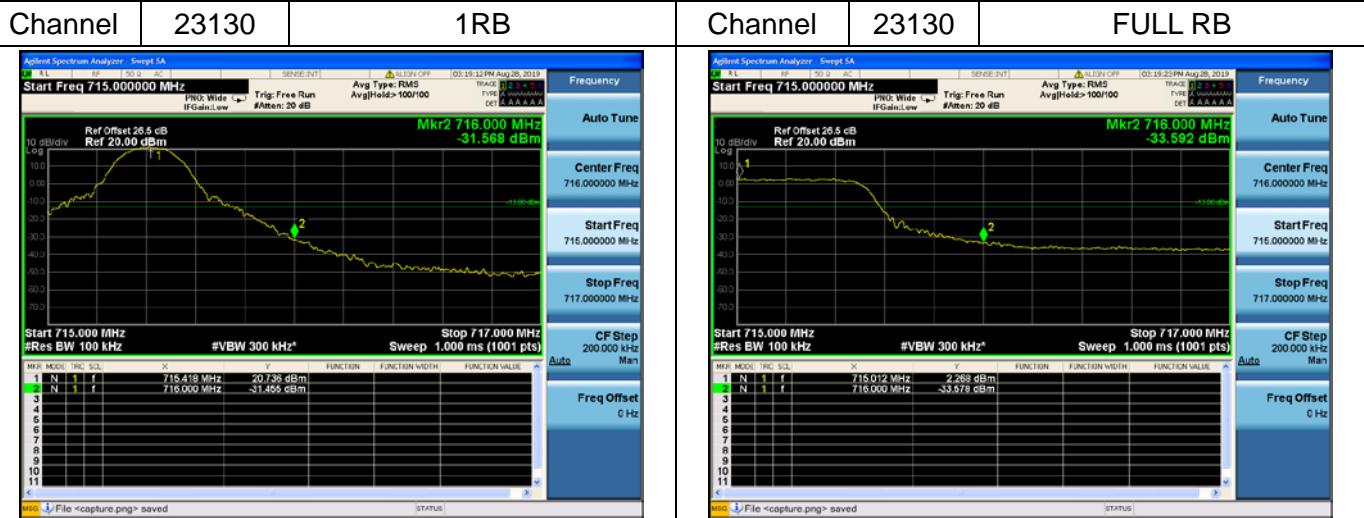


LTE Band 12

Channel Bandwidth: 10MHz



Channel Bandwidth: 10MHz

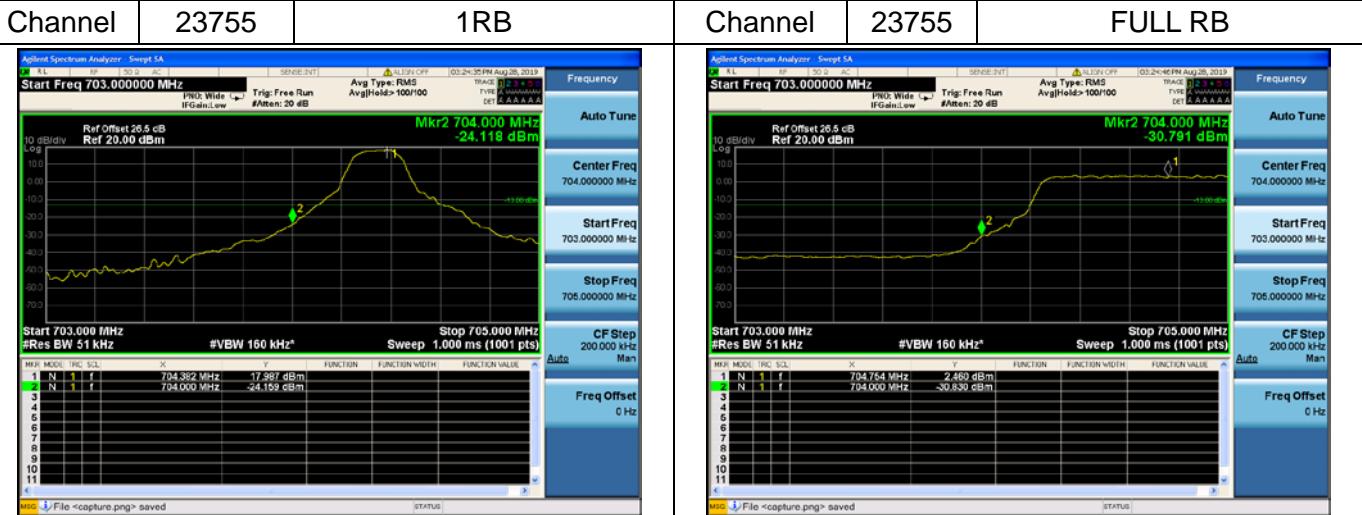




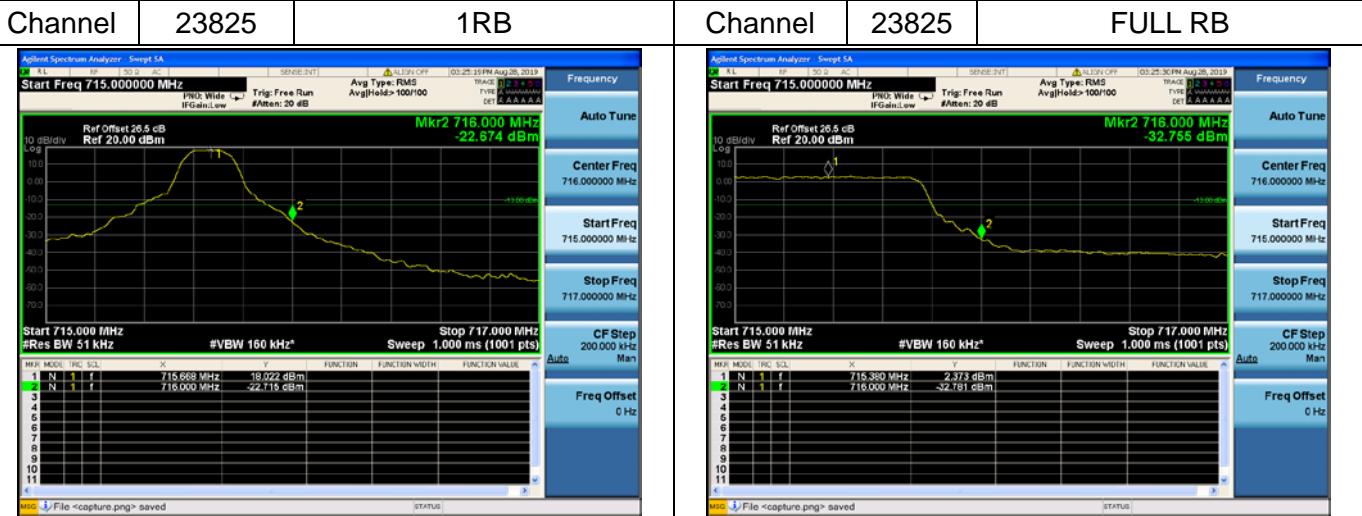
REPORT No.: SZ19070119W08

LTE Band 17

Channel Bandwidth: 5MHz



Channel Bandwidth: 5MHz



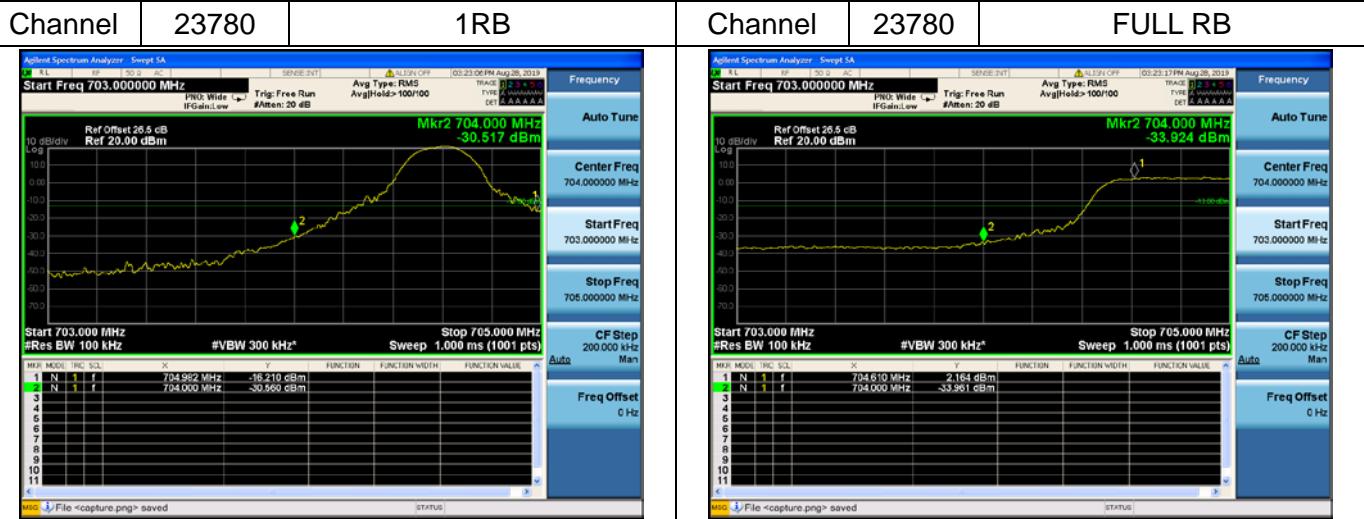
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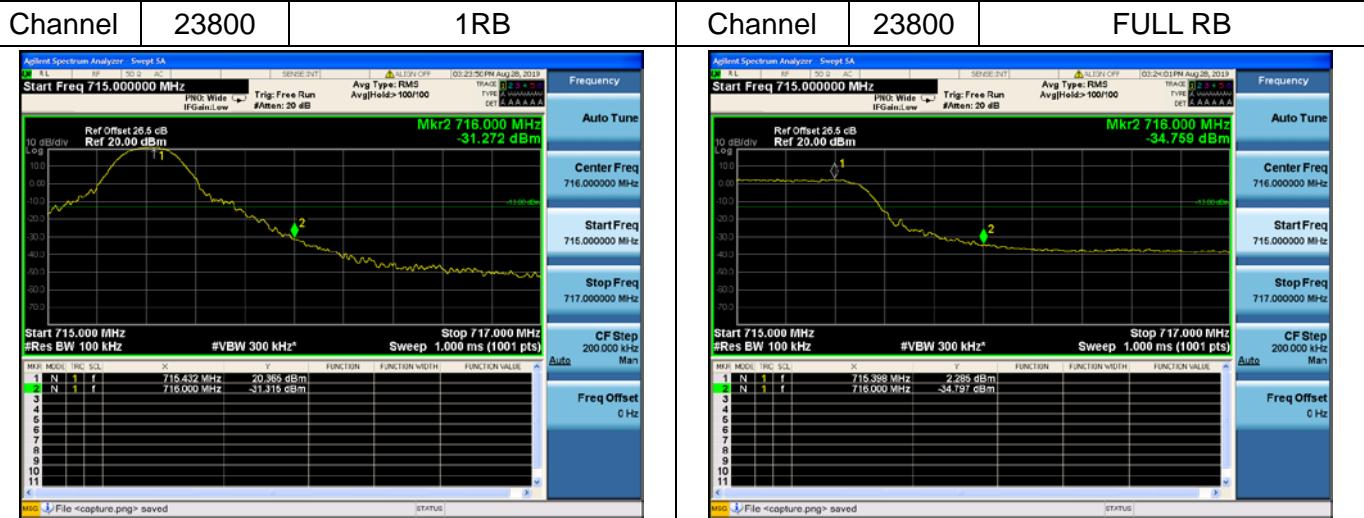
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LTE Band 17

Channel Bandwidth: 10MHz



Channel Bandwidth: 10MHz



2.7. Radiated Spurious Emissions

2.7.1. Requirement

According to FCC section 2.1051, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. This calculated to be -13dBm.

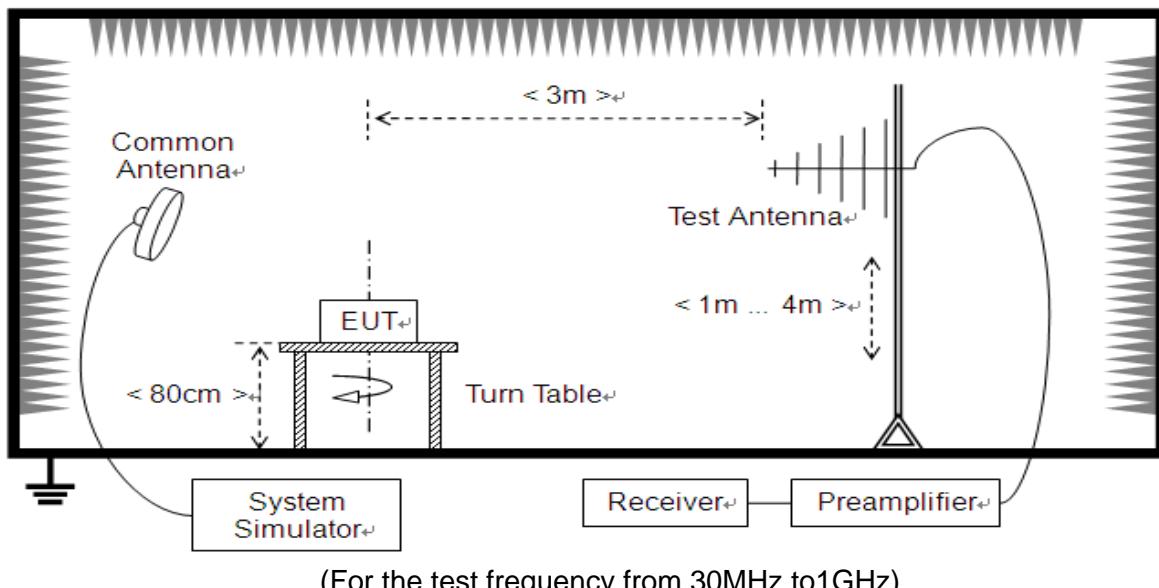
Additional requirement for LTE Band 7 / 38 / 41:

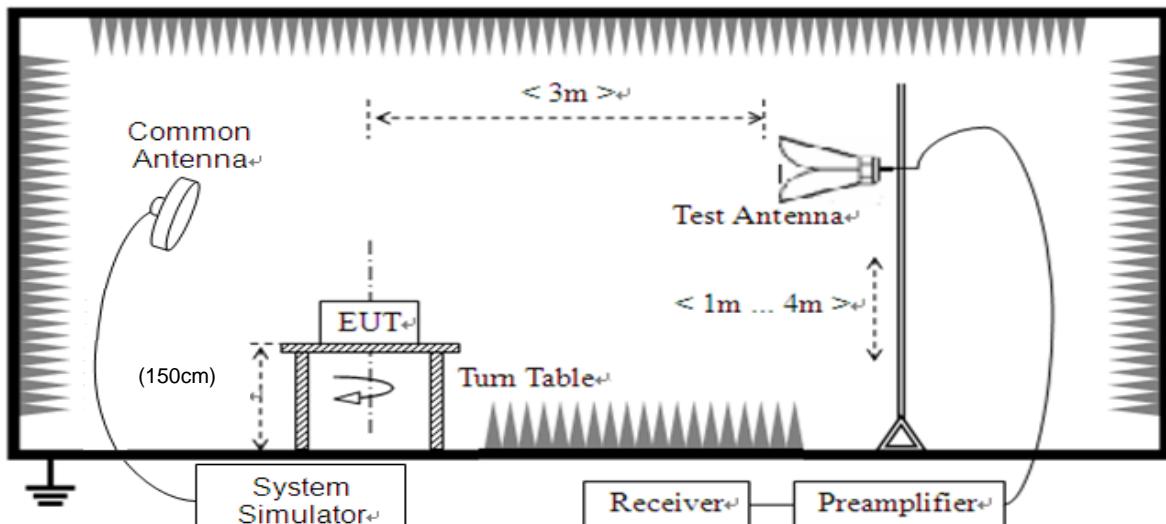
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log(P)$ dB. This calculated to be -25dBm.

Additional requirement for LTE Band 30 / 40:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $70 + 10 \log(P)$ dB. This calculated to be -40dBm.

2.7.2. Test Description





(For the test frequency above 1GHz)

The EUT is located in a 3m Full-Anechoic Chamber, the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading. A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power, and only the test result of the maximum output power was recorded.

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground and the Turn Table is actuated to turn from 0° to 360° to determine the maximum value of the radiated power. The emission levels at both horizontal and vertical polarizations should be tested. The Filters consists of Notch Filters and High Pass Filter.

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

2.7.3. Test procedure

KDB 971168 D01v03 Section 5.8 and ANSI/TIA-603-E-2016.



2.7.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. Test Antenna height is varied from 1m to 4m above the ground, and the Turn Table is actuated to turn from 0° to 360°, both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The substitution corrections are obtained as described below:

$$A_{SUBST} = P_{SUBST_TX} - P_{SUBST_RX} - L_{SUBST_CABLES} + G_{SUBST_TX_ANT}$$

$$A_{TOT} = L_{CABLES} + A_{SUBST}$$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST_TX_ANT}$ is substitution antenna gain.

A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of A_{TOT} .

Note1: The power of the EUT transmitting frequency should be ignored.

Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note3: All bandwidth and modulation were considered and evaluated respectively by performing full test for each band, only the worst cases (Max Bandwidth and QPSK mode) were recorded in this test report.

Top Antenna

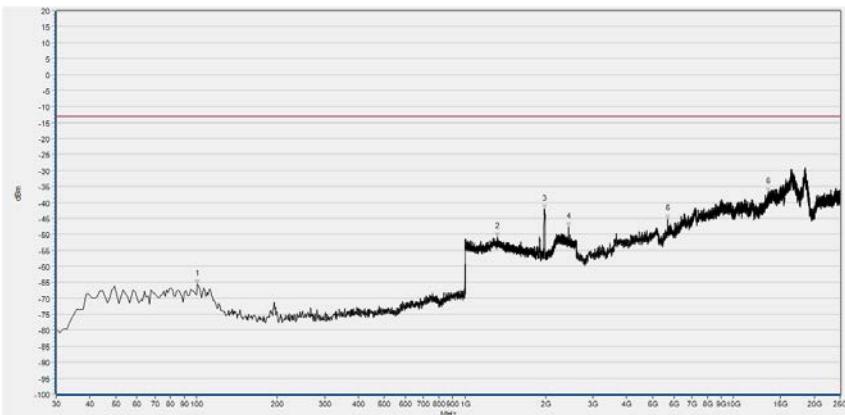
LTE Band 2 20MHz BW, Low Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	101.780	-65.42	-13.00	Horizontal	PASS
2	1852.181	-50.79	-13.00	Horizontal	N/A
3	1947.579	-38.41	-13.00	Horizontal	N/A
4	3638.734	-49.37	-13.00	Horizontal	PASS
5	7231.533	-41.69	-13.00	Horizontal	PASS
6	13964.975	-34.98	-13.00	Horizontal	PASS

LTE Band 2 20MHz BW, Low Channel, QPSK					
No.	Freq(MHz)	Peak	limit PK	Antenna	Verdict
1	71.710	-65.86	-13.00	Vertical	PASS
2	1288.115	-50.18	-13.00	Vertical	PASS
3	1939.256	-38.76	-13.00	Vertical	N/A
4	4184.579	-49.13	-13.00	Vertical	PASS
5	7068.594	-41.95	-13.00	Vertical	PASS
6	14087.179	-34.63	-13.00	Vertical	PASS

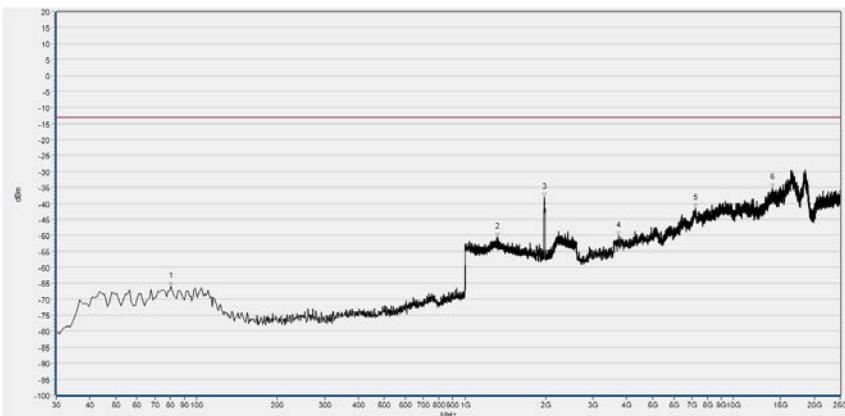
LTE Band 2 20MHz BW, Mid Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	106.630	-65.72	-13.00	Horizontal	PASS
2	1876.511	-48.86	-13.00	Horizontal	N/A
3	1951.421	-39.07	-13.00	Horizontal	N/A
4	3720.204	-48.84	-13.00	Horizontal	PASS
5	9072.740	-37.97	-13.00	Horizontal	PASS
6	15268.485	-32.72	-13.00	Horizontal	PASS

LTE Band 2 20MHz BW, Mid Channel, QPSK					
No.	Freq(MHz)	Peak	limit PK	Antenna	Verdict
1	80.440	-66.30	-13.00	Vertical	PASS
2	1297.719	-50.46	-13.00	Vertical	PASS
3	1967.427	-38.51	-13.00	Vertical	N/A
4	3911.657	-49.52	-13.00	Vertical	PASS
5	9093.108	-39.13	-13.00	Vertical	PASS
6	14958.902	-33.84	-13.00	Vertical	PASS

LTE Band 2 20MHz BW, High Channel, QPSK

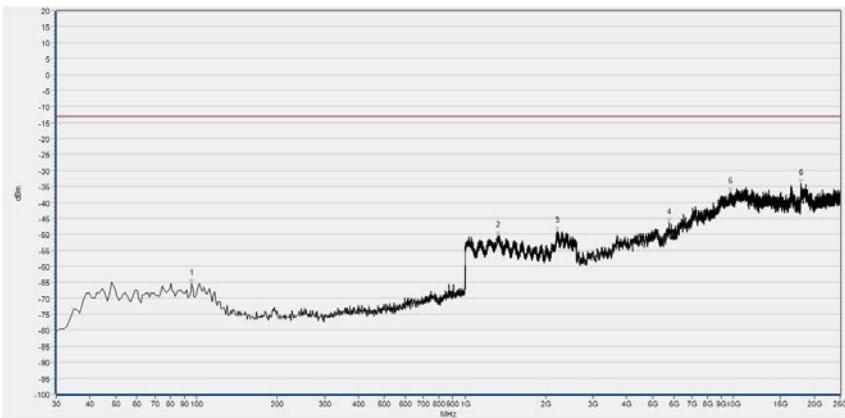


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	100.810	-65.59	-13.00	Horizontal	PASS
2	1318.848	-50.90	-13.00	Horizontal	PASS
3	1976.391	-42.08	-13.00	Horizontal	N/A
4	2428.411	-47.60	-13.00	Horizontal	PASS
5	5683.615	-45.30	-13.00	Horizontal	PASS
6	13443.572	-36.86	-13.00	Horizontal	PASS

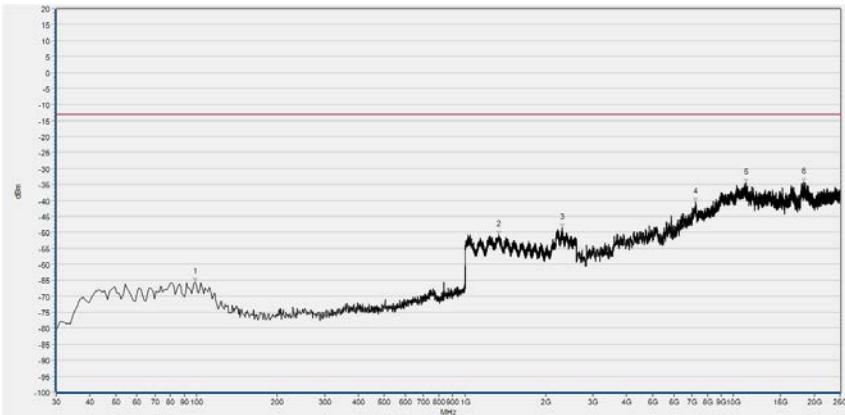


No.	Freq(MHz)	Peak	limit PK	Antenna	Verdict
1	80.440	-66.06	-13.00	Vertical	PASS
2	1318.207	-50.57	-13.00	Vertical	PASS
3	1971.909	-38.02	-13.00	Vertical	N/A
4	3740.571	-50.25	-13.00	Vertical	PASS
5	7247.827	-41.52	-13.00	Vertical	PASS
6	14017.931	-35.29	-13.00	Vertical	PASS

LTE Band 4 20MHz BW, Low Channel, QPSK

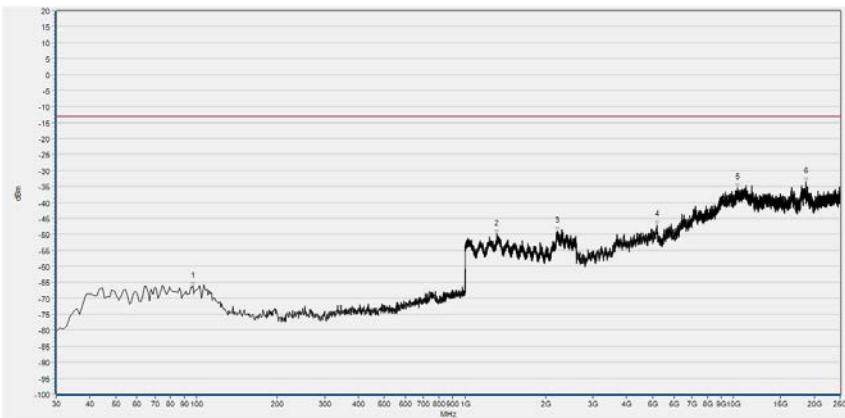


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	95.960	-65.39	-13.00	Horizontal	PASS
2	1327.811	-50.35	-13.00	Horizontal	PASS
3	2205.602	-48.97	-13.00	Horizontal	PASS
4	5765.085	-46.35	-13.00	Horizontal	PASS
5	9753.010	-36.66	-13.00	Horizontal	PASS
6	17887.725	-34.03	-13.00	Horizontal	PASS

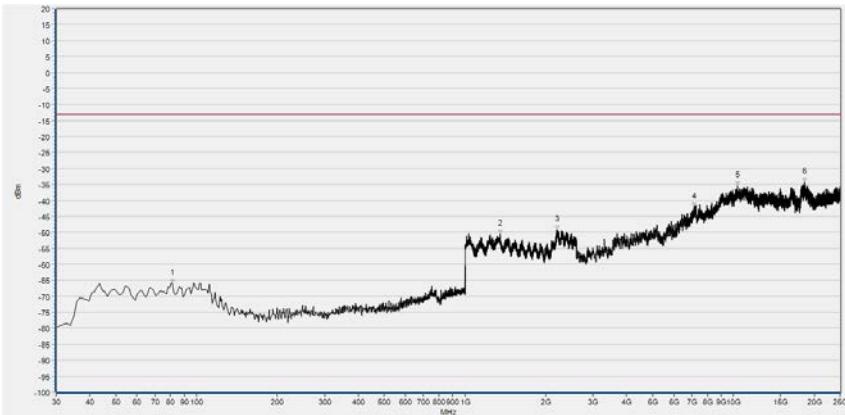


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	98.870	-65.51	-13.00	Vertical	PASS
2	1338.055	-50.83	-13.00	Vertical	PASS
3	2306.763	-48.53	-13.00	Vertical	PASS
4	7247.827	-40.65	-13.00	Vertical	PASS
5	11121.695	-34.59	-13.00	Vertical	PASS
6	18311.366	-34.25	-13.00	Vertical	PASS

LTE Band 4 20MHz BW, Mid Channel, QPSK



No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	96.930	-66.25	-13.00	Horizontal	PASS
2	1316.287	-49.99	-13.00	Horizontal	PASS
3	2208.804	-48.98	-13.00	Horizontal	PASS
4	5202.946	-47.04	-13.00	Horizontal	PASS
5	10359.956	-35.42	-13.00	Horizontal	PASS
6	18588.362	-33.56	-13.00	Horizontal	PASS

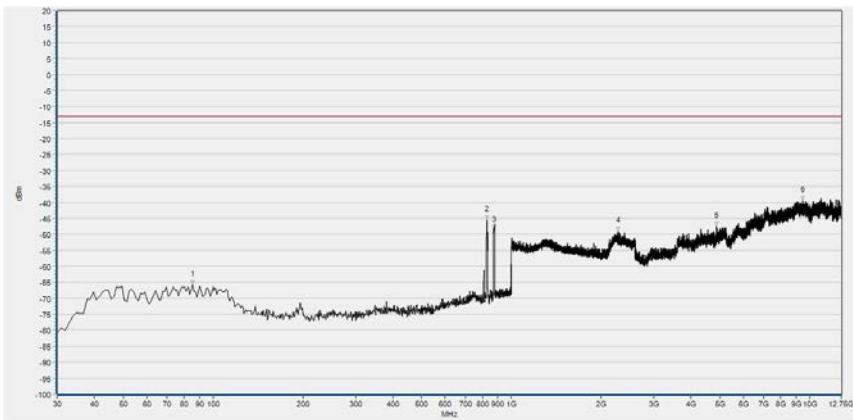


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	81.410	-65.95	-13.00	Vertical	PASS
2	1354.702	-50.61	-13.00	Vertical	PASS
3	2212.645	-49.31	-13.00	Vertical	PASS
4	7145.990	-42.07	-13.00	Vertical	PASS
5	10351.809	-35.41	-13.00	Vertical	PASS
6	18433.570	-34.32	-13.00	Vertical	PASS

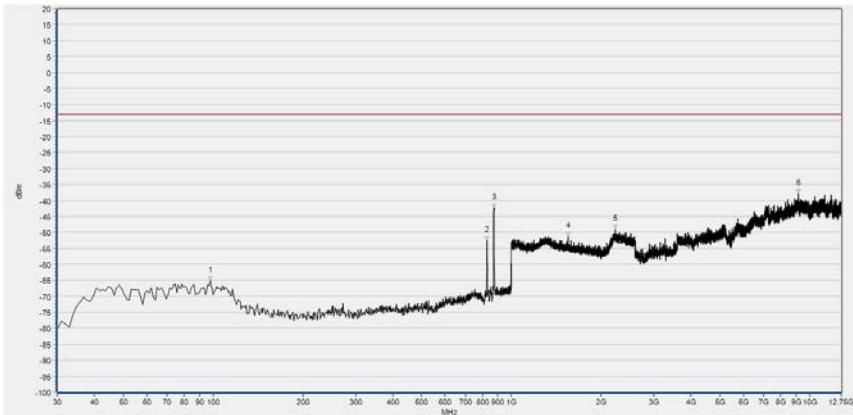
LTE Band 4 20MHz BW, High Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	86.260	-65.11	-13.00	Horizontal	PASS
2	1352.141	-49.98	-13.00	Horizontal	PASS
3	2317.007	-48.66	-13.00	Horizontal	PASS
4	5105.183	-47.01	-13.00	Horizontal	PASS
5	10315.148	-35.24	-13.00	Horizontal	PASS
6	18001.782	-34.22	-13.00	Horizontal	PASS

LTE Band 4 20MHz BW, High Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	81.410	-65.90	-13.00	Vertical	PASS
2	1128.691	-51.62	-13.00	Vertical	PASS
3	2212.645	-48.23	-13.00	Vertical	PASS
4	6530.897	-43.48	-13.00	Vertical	PASS
5	10649.173	-34.48	-13.00	Vertical	PASS
6	18307.292	-34.06	-13.00	Vertical	PASS

LTE Band 5 10MHz BW, Low Channel, QPSK



No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	85.290	-65.86	-13.00	Horizontal	PASS
2	827.340	-45.49	-13.00	Horizontal	N/A
3	872.930	-48.48	-13.00	Horizontal	N/A
4	2283.073	-49.10	-13.00	Horizontal	PASS
5	4864.785	-47.48	-13.00	Horizontal	PASS
6	9477.414	-39.45	-13.00	Horizontal	PASS



No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	97.900	-65.16	-13.00	Vertical	PASS
2	827.340	-52.70	-13.00	Vertical	N/A
3	875.840	-42.46	-13.00	Vertical	N/A
4	1549.340	-51.32	-13.00	Vertical	PASS
5	2233.774	-49.11	-13.00	Vertical	PASS
6	9148.863	-37.93	-13.00	Vertical	PASS

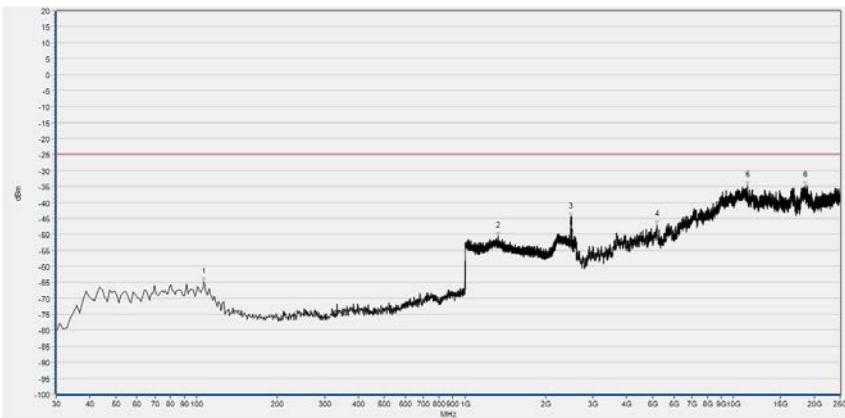
LTE Band 5 10MHz BW, Mid Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	100.810	-65.38	-13.00	Horizontal	PASS
2	839.950	-42.83	-13.00	Horizontal	N/A
3	882.630	-46.11	-13.00	Horizontal	N/A
4	2317.007	-49.36	-13.00	Horizontal	PASS
5	4541.771	-47.76	-13.00	Horizontal	PASS
6	9195.008	-39.15	-13.00	Horizontal	PASS

LTE Band 5 10MHz BW, Mid Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	97.900	-65.47	-13.00	Vertical	PASS
2	834.130	-52.69	-13.00	Vertical	N/A
3	883.600	-41.41	-13.00	Vertical	N/A
4	2215.846	-49.98	-13.00	Vertical	PASS
5	5793.217	-45.67	-13.00	Vertical	PASS
6	9139.634	-39.01	-13.00	Vertical	PASS

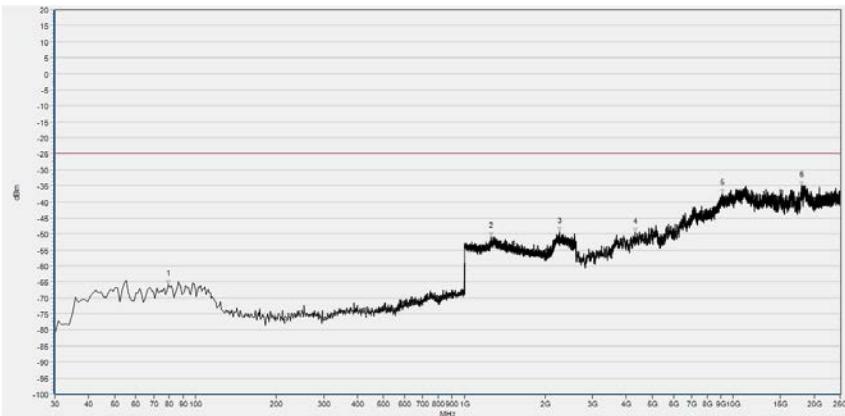
LTE Band 5 10MHz BW, High Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	105.660	-65.77	-13.00	Horizontal	PASS
2	842.860	-45.44	-13.00	Horizontal	N/A
3	893.300	-46.09	-13.00	Horizontal	N/A
4	2211.365	-49.38	-13.00	Horizontal	PASS
5	3618.876	-49.51	-13.00	Horizontal	PASS
6	9706.292	-38.09	-13.00	Horizontal	PASS

LTE Band 5 10MHz BW, High Channel, QPSK					
No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	80.440	-65.41	-13.00	Vertical	PASS
2	842.860	-53.24	-13.00	Vertical	N/A
3	889.420	-40.78	-13.00	Vertical	N/A
4	2250.420	-49.57	-13.00	Vertical	PASS
5	3674.250	-49.23	-13.00	Vertical	PASS
6	10992.808	-38.86	-13.00	Vertical	PASS

LTE Band 7 20MHz BW, Low Channel, QPSK



No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	106.630	-65.00	-25.00	Horizontal	PASS
2	1331.012	-50.67	-25.00	Horizontal	PASS
3	2486.034	-44.53	-25.00	Horizontal	N/A
4	5194.799	-46.94	-25.00	Horizontal	PASS
5	11284.634	-34.74	-25.00	Horizontal	PASS
6	18527.260	-34.72	-25.00	Horizontal	PASS

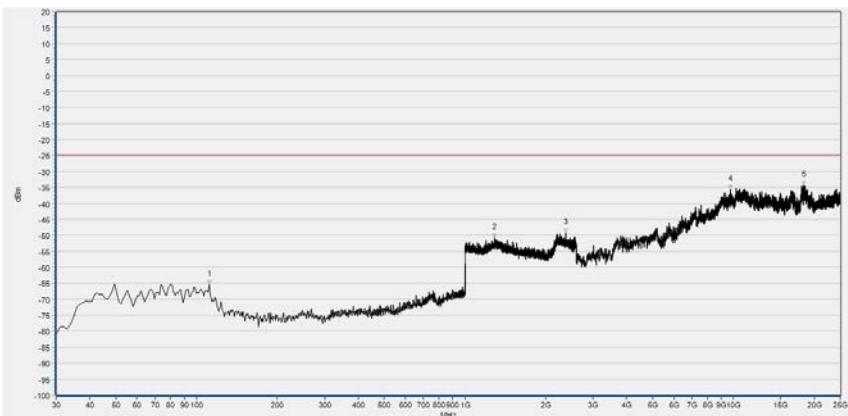


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	79.470	-65.81	-25.00	Vertical	PASS
2	1254.182	-50.81	-25.00	Vertical	PASS
3	2262.585	-49.25	-25.00	Vertical	PASS
4	4323.077	-49.42	-25.00	Vertical	PASS
5	9137.916	-37.39	-25.00	Vertical	PASS
6	17985.488	-35.05	-25.00	Vertical	PASS

LTE Band 7 20MHz BW, Mid Channel, QPSK

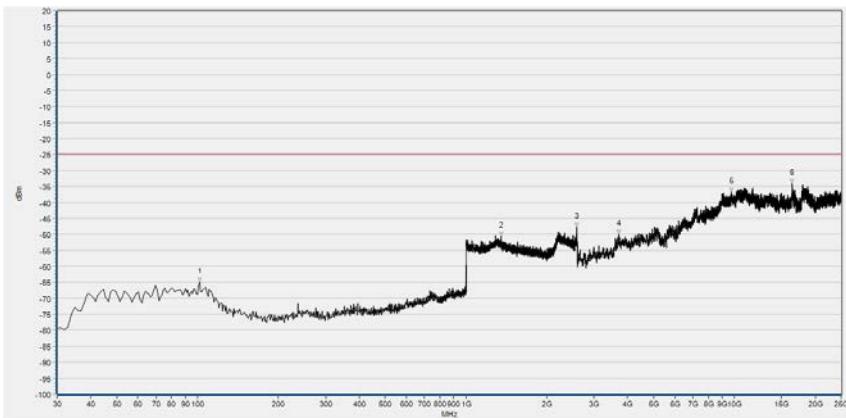


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	79.470	-65.81	-25.00	Horizontal	PASS
2	1254.182	-50.81	-25.00	Horizontal	PASS
3	2262.585	-49.25	-25.00	Horizontal	PASS
4	4323.077	-49.42	-25.00	Horizontal	PASS
5	9137.916	-37.39	-25.00	Horizontal	PASS
6	17985.488	-35.05	-25.00	Horizontal	PASS

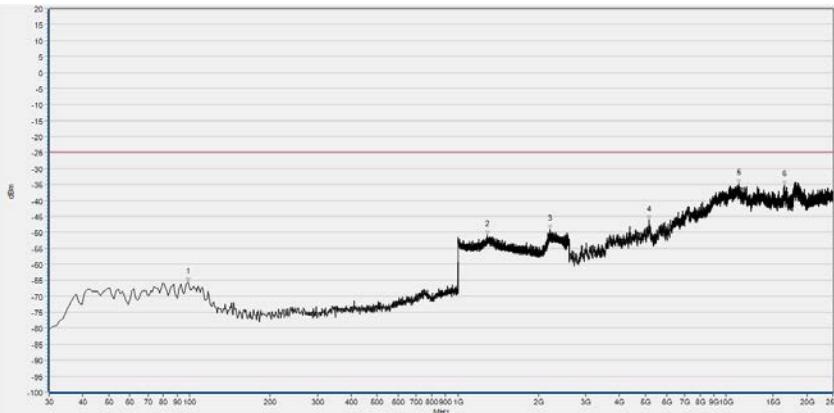


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	111.480	-65.46	-25.00	Vertical	PASS
2	1286.835	-50.88	-25.00	Vertical	PASS
3	2380.392	-49.37	-25.00	Vertical	PASS
4	9777.450	-35.75	-25.00	Vertical	PASS
5	18319.513	-34.38	-25.00	Vertical	PASS

LTE Band 7 20MHz BW, High Channel, QPSK

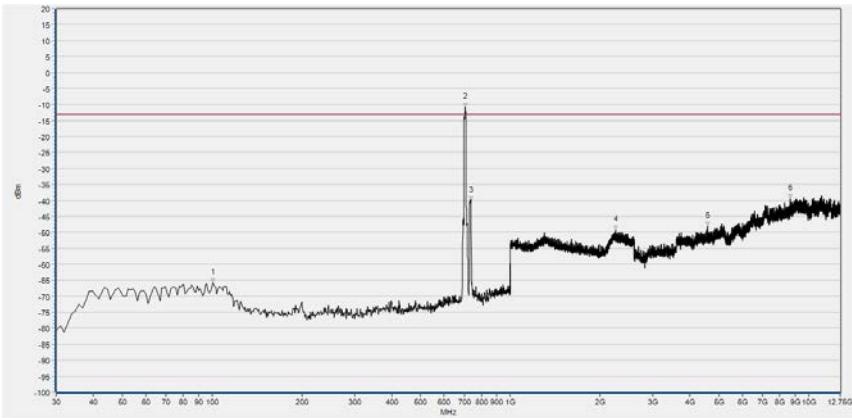


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	101.780	-64.99	-25.00	Horizontal	PASS
2	1355.342	-50.72	-25.00	Horizontal	PASS
3	2585.274	-47.76	-25.00	Horizontal	N/A
4	3703.910	-50.01	-25.00	Horizontal	PASS
5	9761.157	-36.73	-25.00	Horizontal	PASS
6	16441.644	-34.14	-25.00	Horizontal	PASS

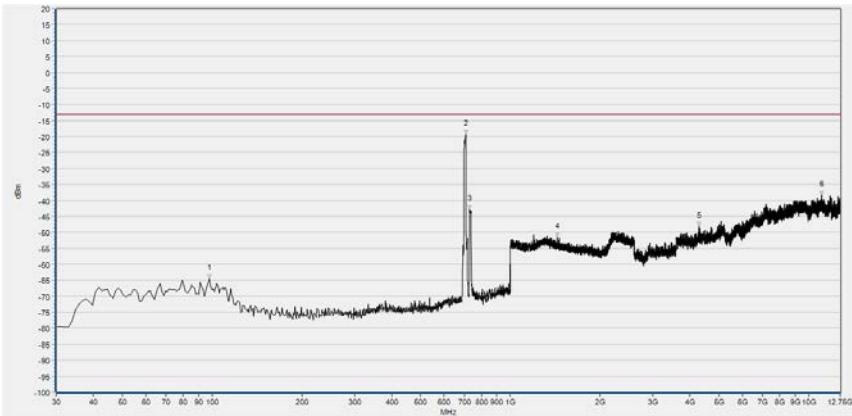


No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	44.550	-74.34	-25.00	Vertical	PASS
2	75.590	-71.45	-25.00	Vertical	PASS
3	299.660	-73.96	-25.00	Vertical	PASS
4	2537.255	-51.60	-25.00	Vertical	N/A
5	6434.043	-45.98	-25.00	Vertical	PASS
6	11136.170	-38.43	-25.00	Vertical	PASS

LTE Band 12 10MHz BW, Low Channel, QPSK



No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	100.810	-65.81	-13.00	Horizontal	PASS
2	704.150	-10.85	-13.00	Horizontal	N/A
3	738.100	-40.16	-13.00	Horizontal	N/A
4	2252.341	-49.37	-13.00	Horizontal	PASS
5	4571.304	-48.13	-13.00	Horizontal	PASS
6	8652.346	-39.34	-13.00	Horizontal	PASS



No.	Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
1	97.900	-64.41	-13.00	Vertical	PASS
2	708.030	-19.34	-13.00	Vertical	N/A
3	731.310	-42.86	-13.00	Vertical	N/A
4	1433.453	-51.52	-13.00	Vertical	PASS
5	4277.823	-48.25	-13.00	Vertical	PASS
6	11064.794	-38.31	-13.00	Vertical	PASS