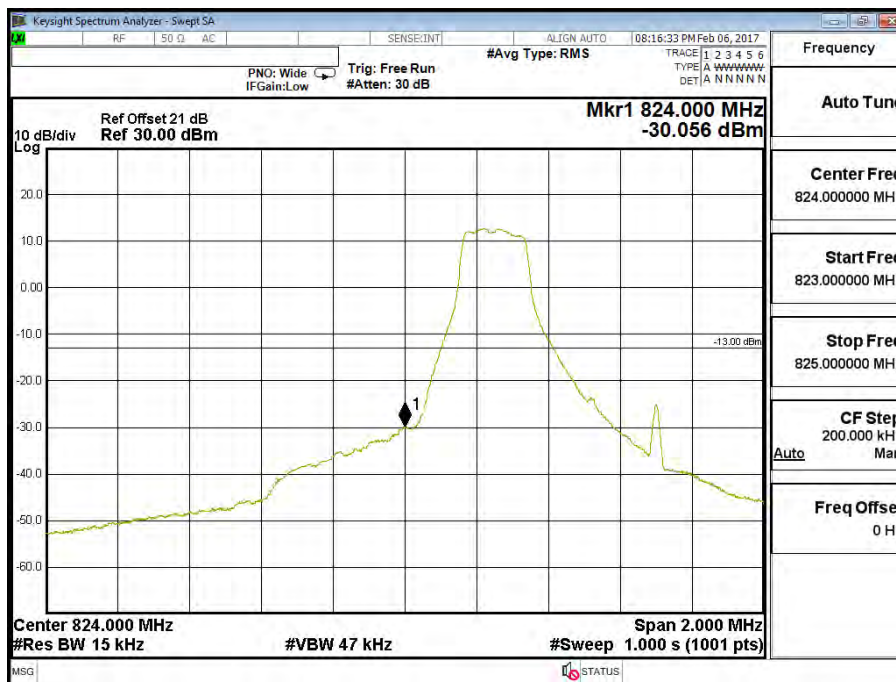
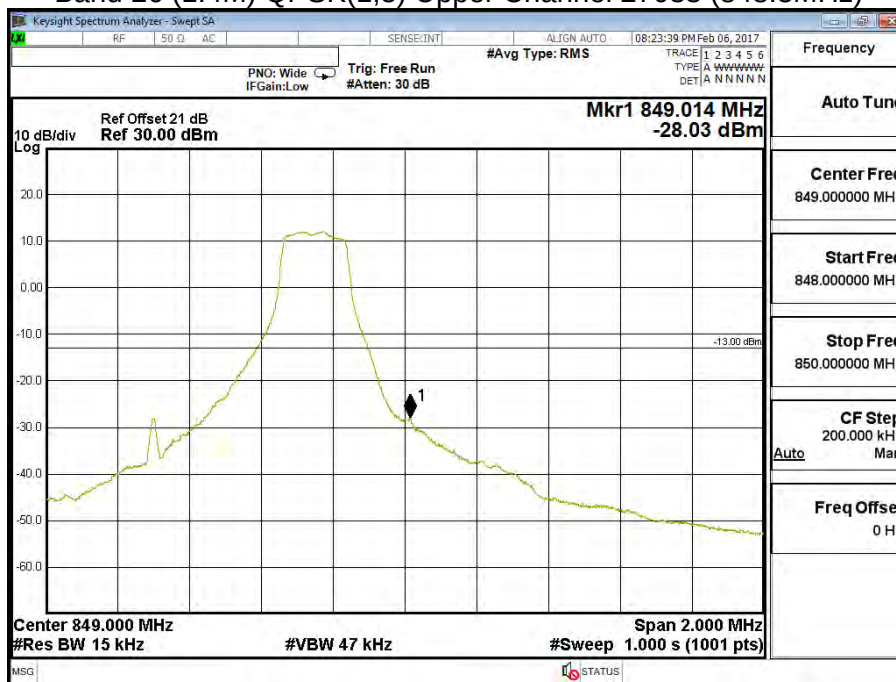


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	Block Edge Test (Band 26 (1.4M))		

Band 26 (1.4M) QPSK(1,0) Lower Channel 26797 (824.7MHz)



Band 26 (1.4M) QPSK(1,5) Upper Channel 27033 (848.3MHz)



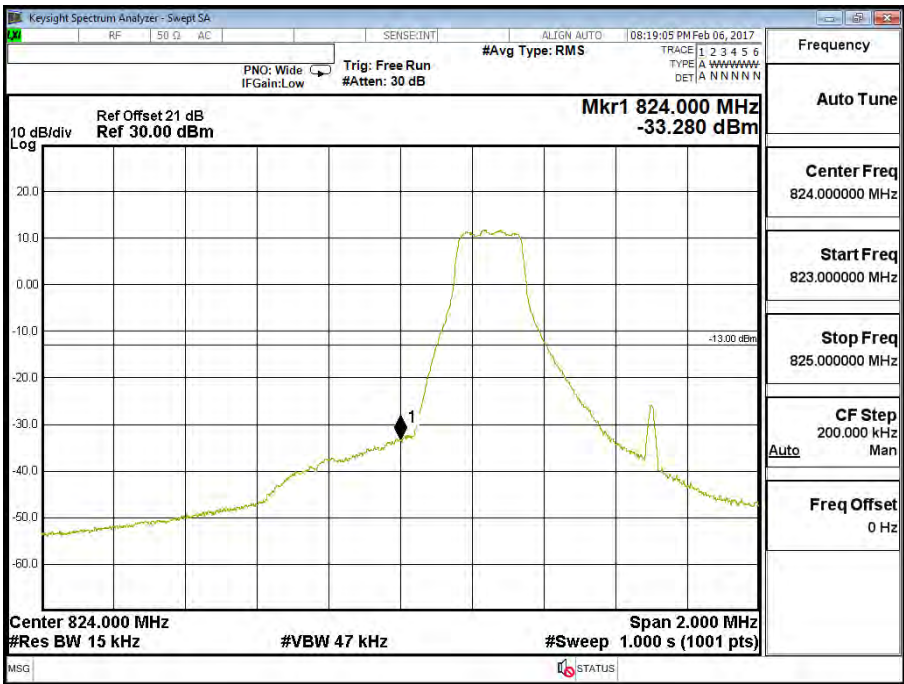
Band 26 (1.4M) QPSK(6,0) Lower Channel 26797 (824.7MHz)



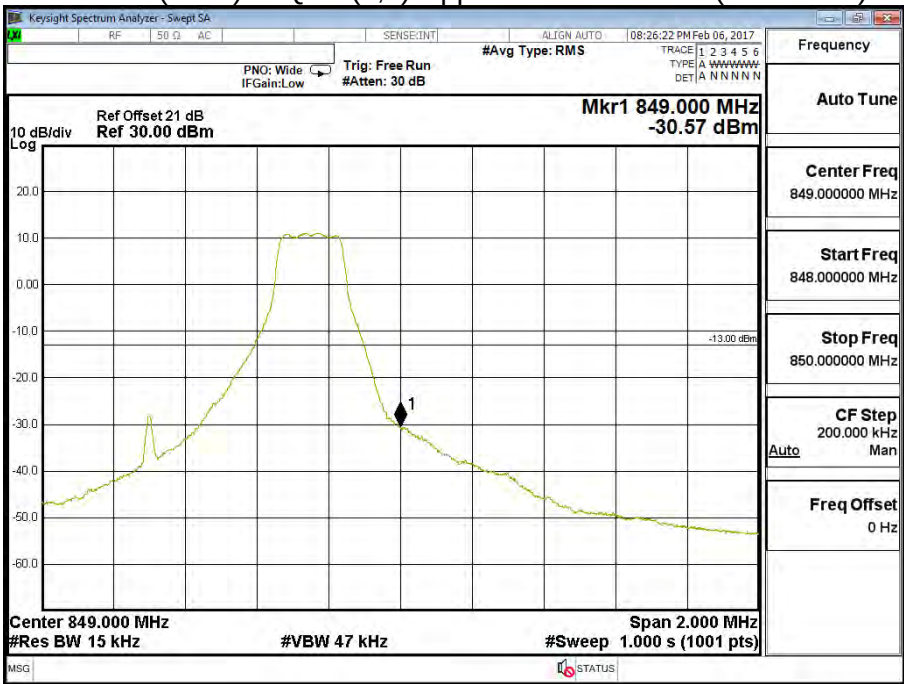
Band 26 (1.4M) QPSK(6,0) Upper Channel 27033 (848.3MHz)



Band 26 (1.4M) 16QAM(1,0) Lower Channel 26797 (824.7MHz)



Band 26 (1.4M) 16QAM(1,5) Upper Channel 27033 (848.3MHz)



Band 26 (1.4M) 16QAM(6,0) Lower Channel 26797 (824.7MHz)

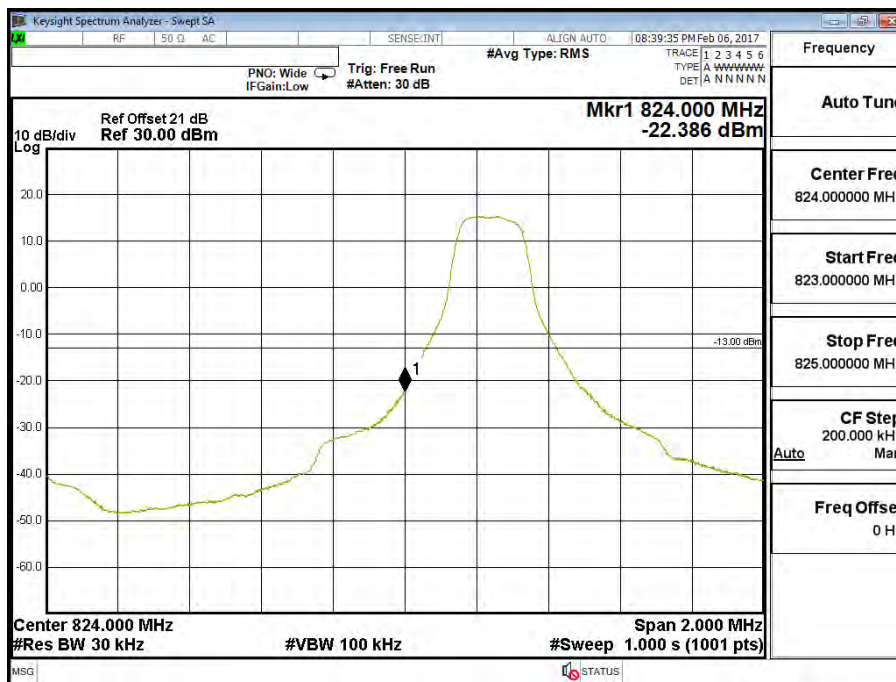


Band 26 (1.4M) 16QAM(6,0) Upper Channel 27033 (848.3MHz)

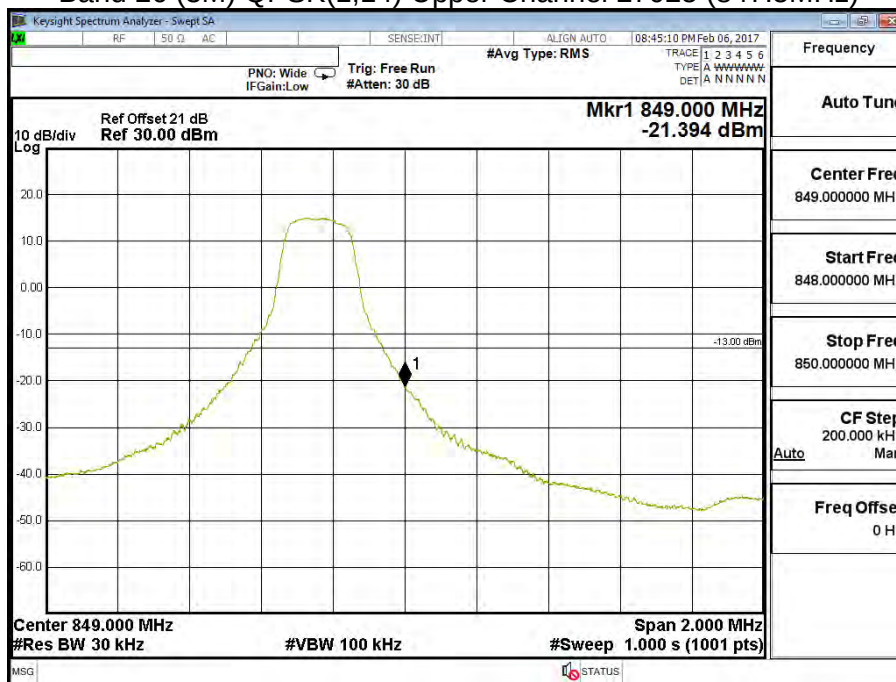


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	Block Edge Test (Band 26 (3M))		

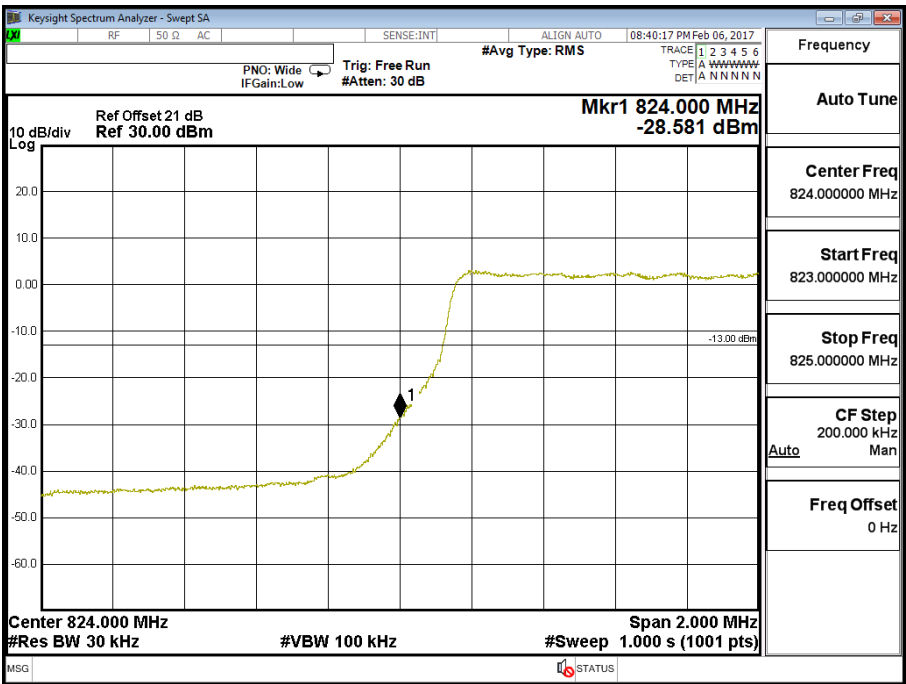
Band 26 (3M) QPSK(1,0) Lower Channel 26805 (825.5MHz)



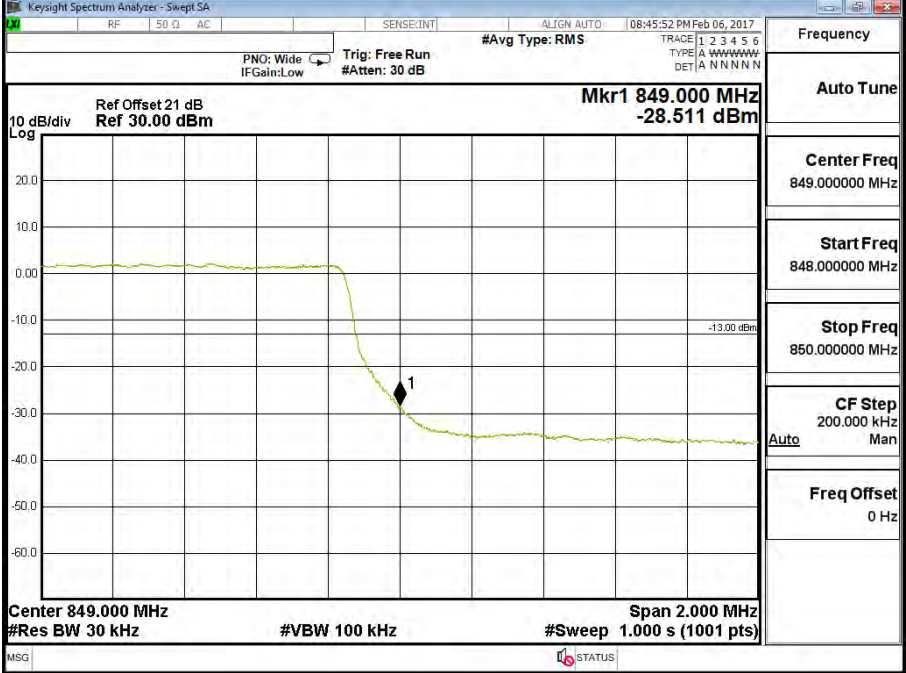
Band 26 (3M) QPSK(1,14) Upper Channel 27025 (847.5MHz)



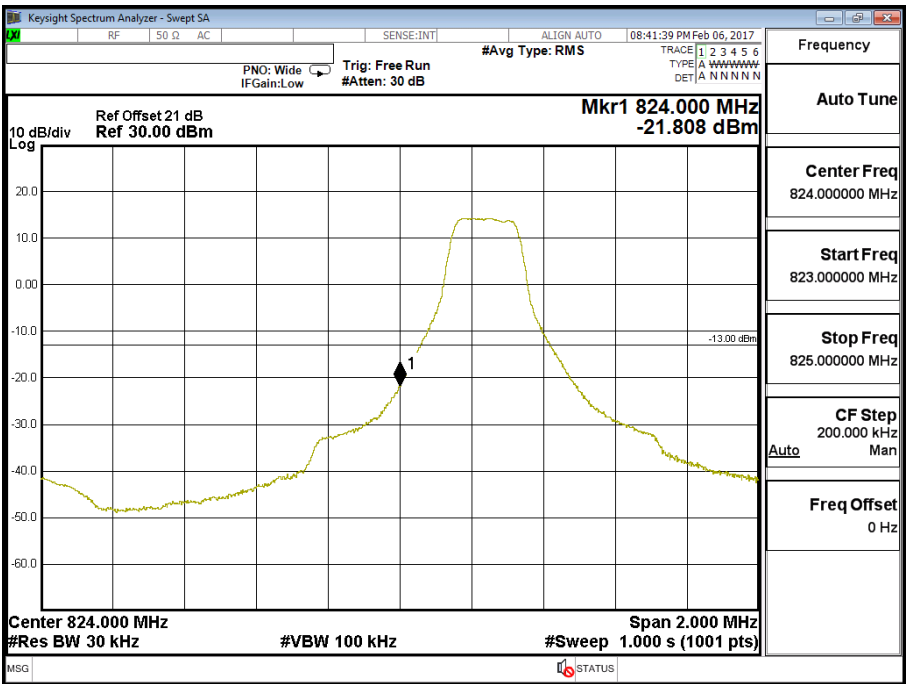
Band 26 (3M) QPSK(15,0) Lower Channel 26805 (825.5MHz)



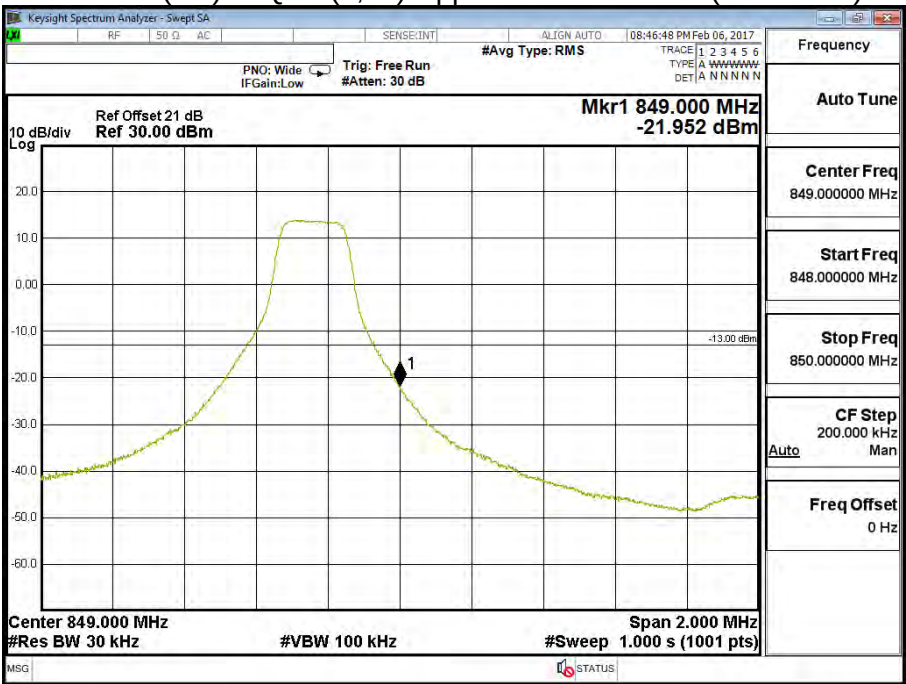
Band 26 (3M) QPSK(15,0) Upper Channel 27025 (847.5MHz)



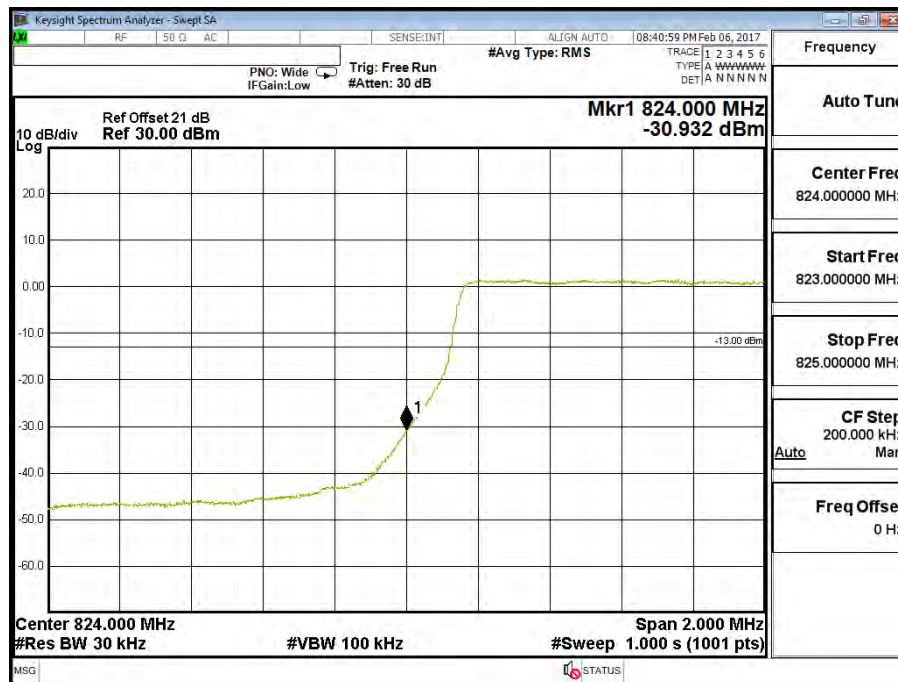
Band 26 (3M) 16QAM(1,0) Lower Channel 26805 (825.5MHz)



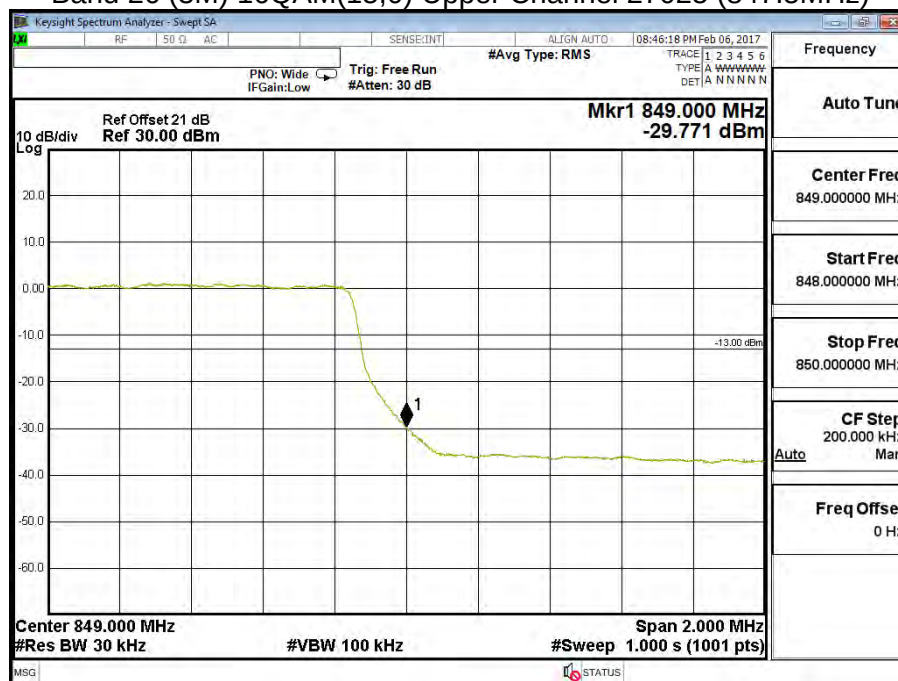
Band 26 (3M) 16QAM(1,14) Upper Channel 27025 (847.5MHz)



Band 26 (3M) 16QAM(15,0) Lower Channel 26805 (825.5MHz)

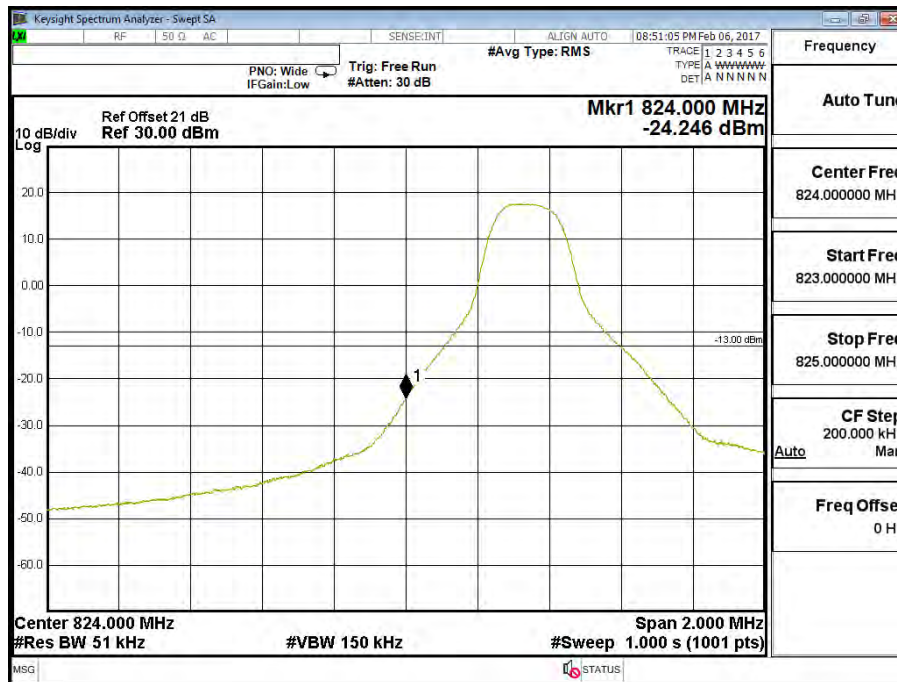


Band 26 (3M) 16QAM(15,0) Upper Channel 27025 (847.5MHz)

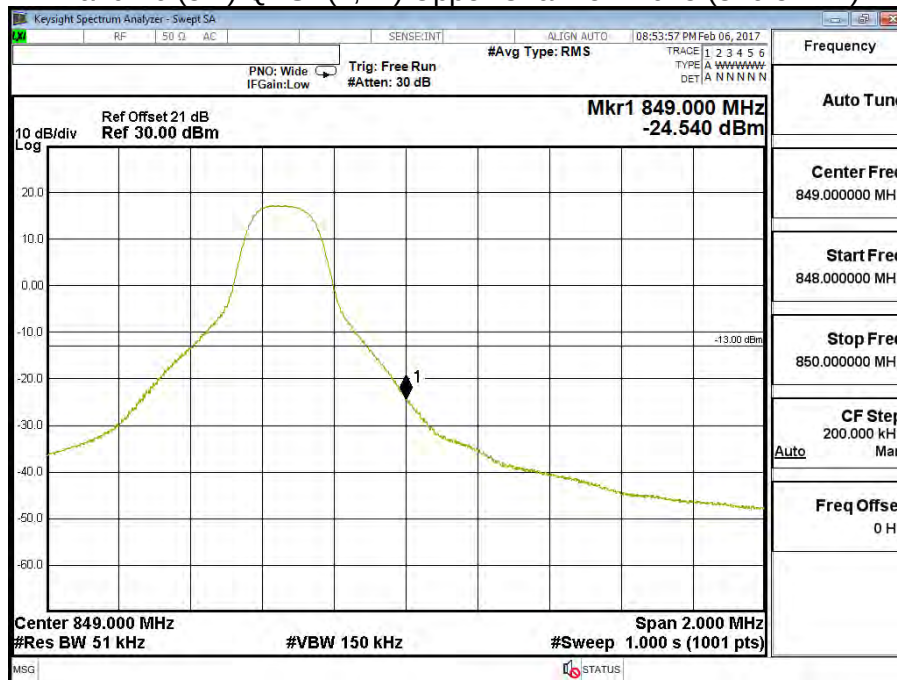


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	Block Edge Test (Band 26 (5M))		

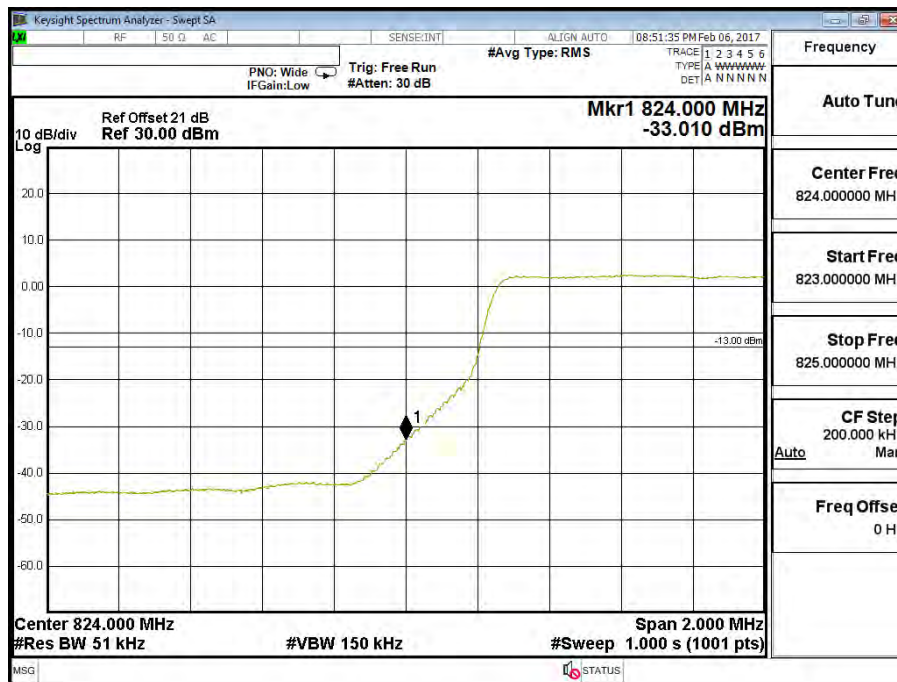
Band 26 (5M) QPSK(1,0) Lower Channel 26815 (826.5MHz)



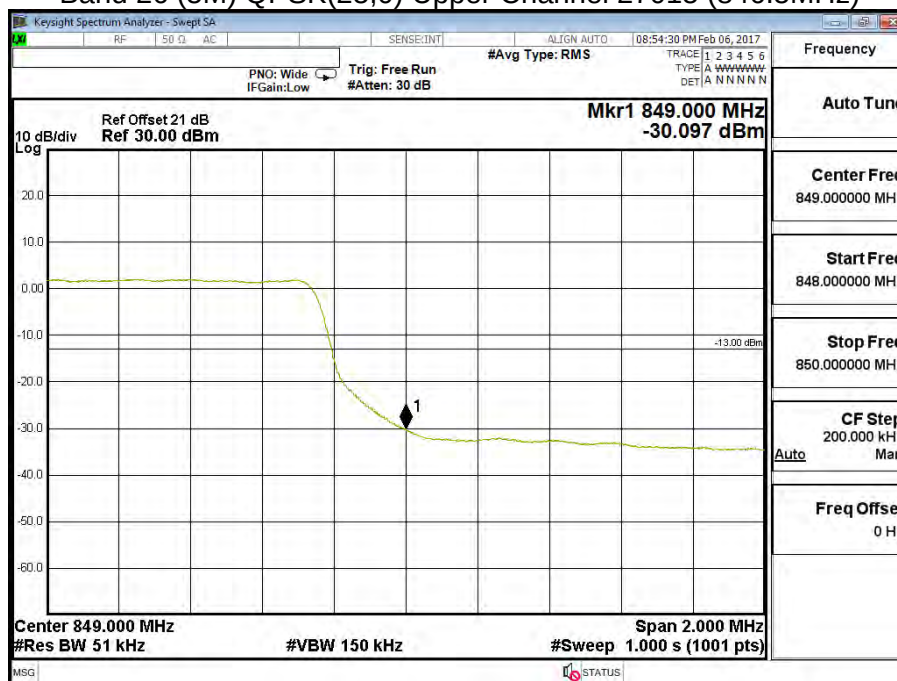
Band 26 (5M) QPSK(1,24) Upper Channel 27015 (846.5MHz)



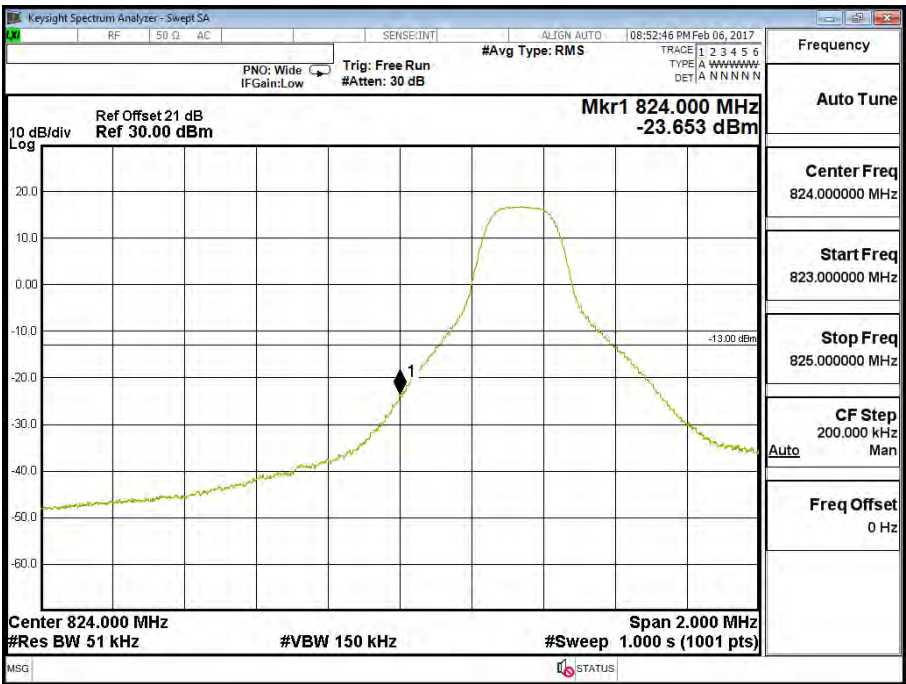
Band 26 (5M) QPSK(25,0) Lower Channel 26815 (826.5MHz)



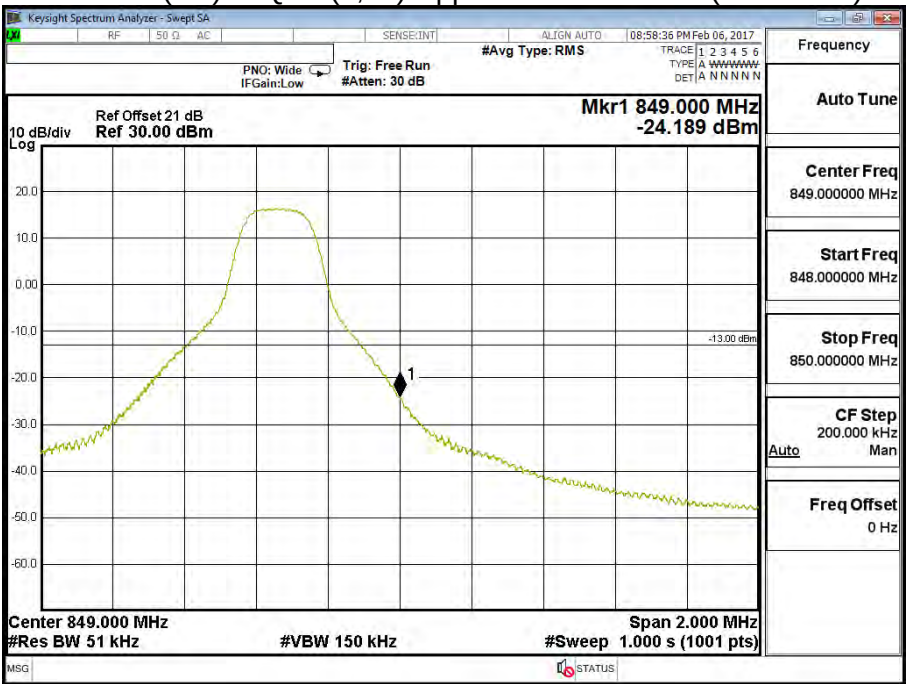
Band 26 (5M) QPSK(25,0) Upper Channel 27015 (846.5MHz)



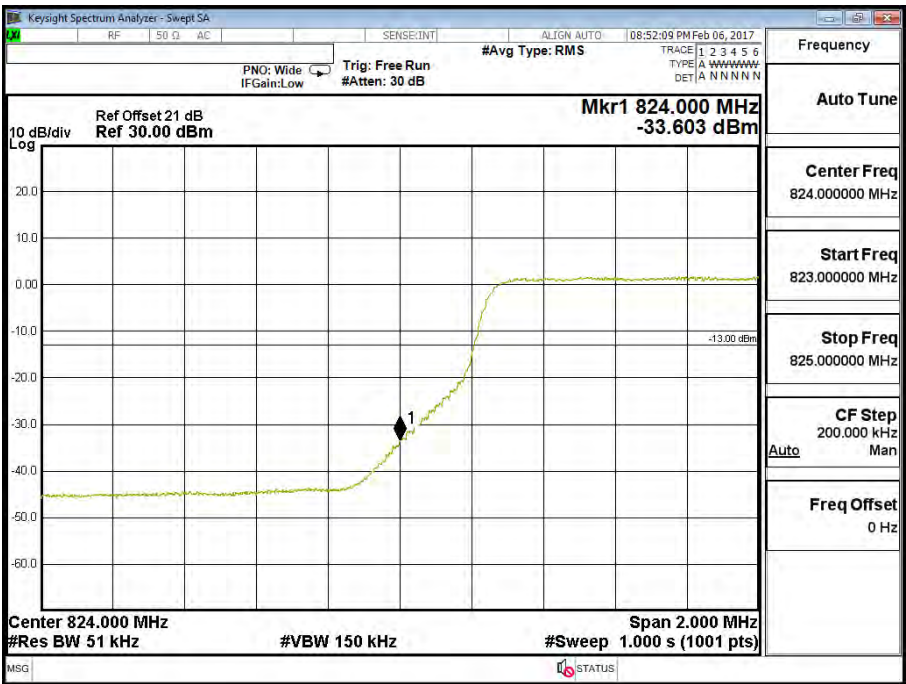
Band 26 (5M) 16QAM(1,0) Lower Channel 26815 (826.5MHz)



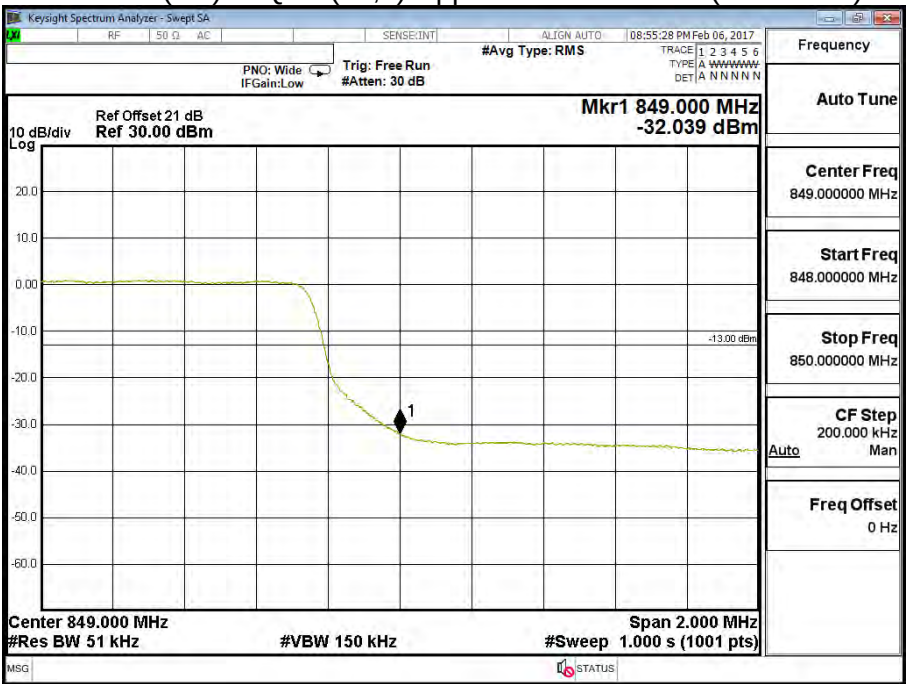
Band 26 (5M) 16QAM(1,24) Upper Channel 27015 (846.5MHz)



Band 26 (5M) 16QAM(25,0) Lower Channel 26815 (826.5MHz)

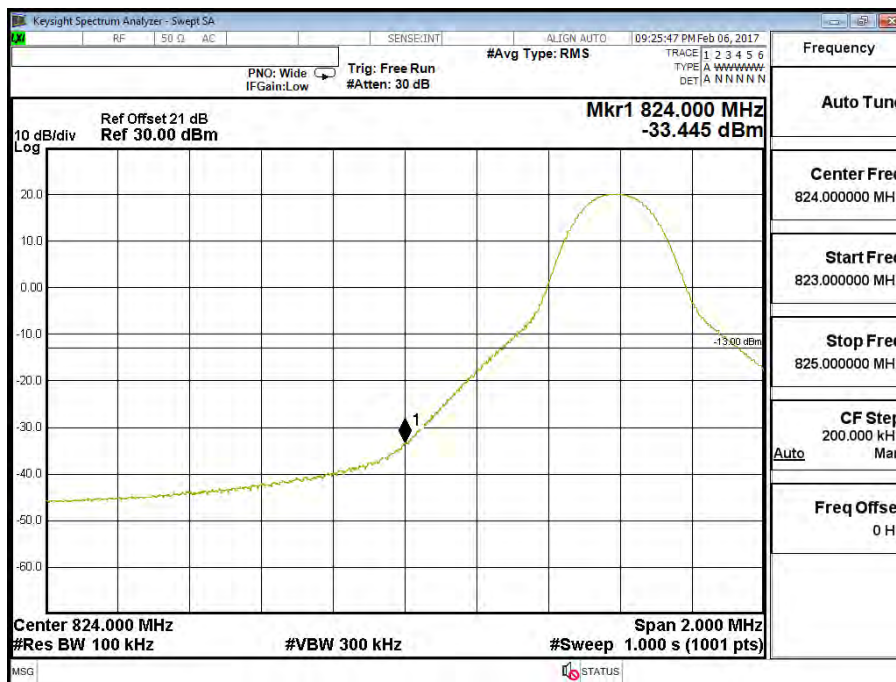


Band 26 (5M) 16QAM(25,0) Upper Channel 27015 (846.5MHz)

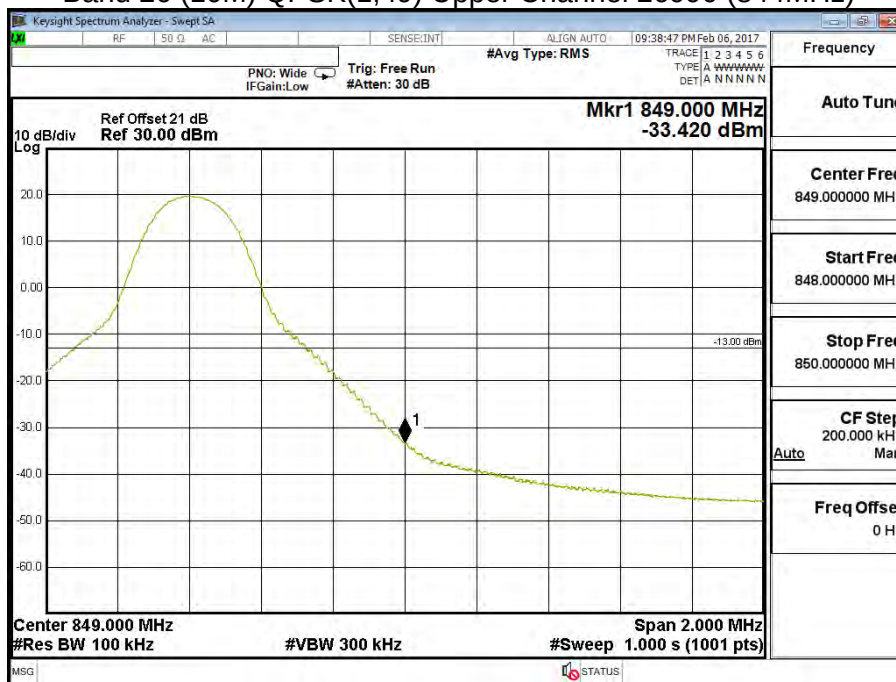


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	Block Edge Test (Band 26 (10M))		

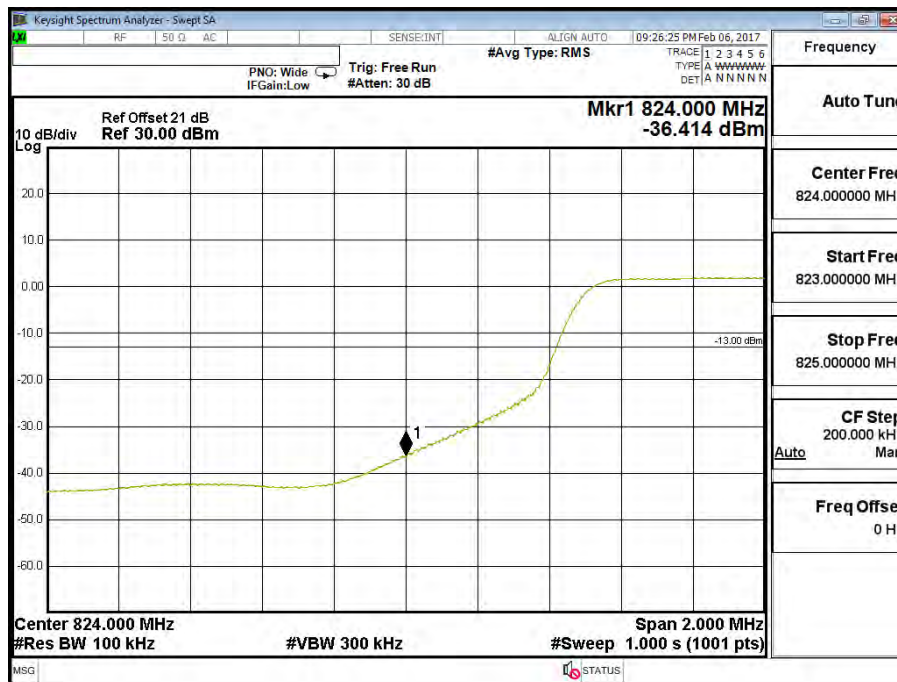
Band 26 (10M) QPSK(1,0) Lower Channel 26840 (829MHz)



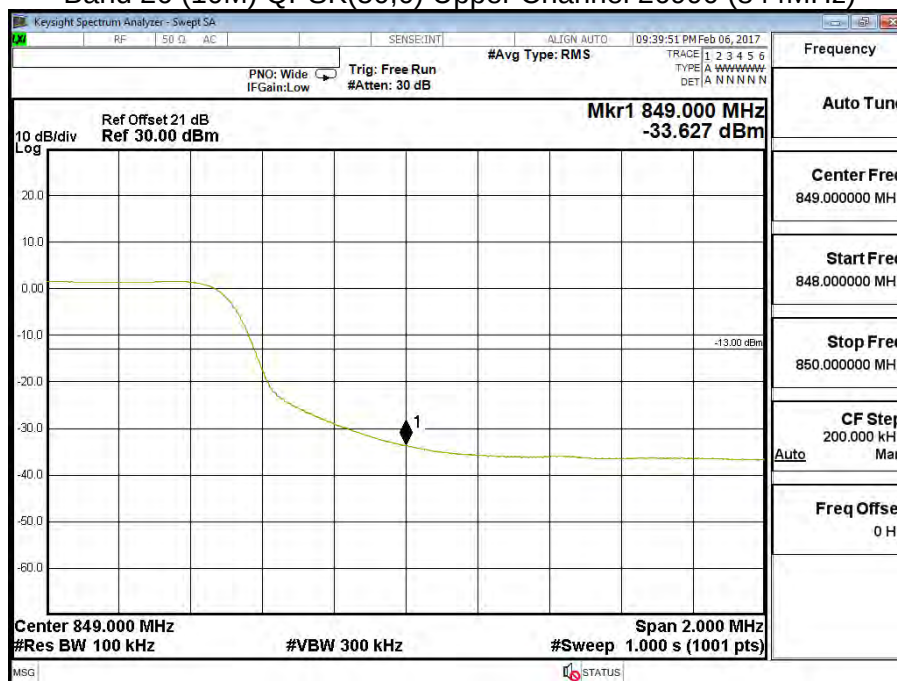
Band 26 (10M) QPSK(1,49) Upper Channel 26990 (844MHz)



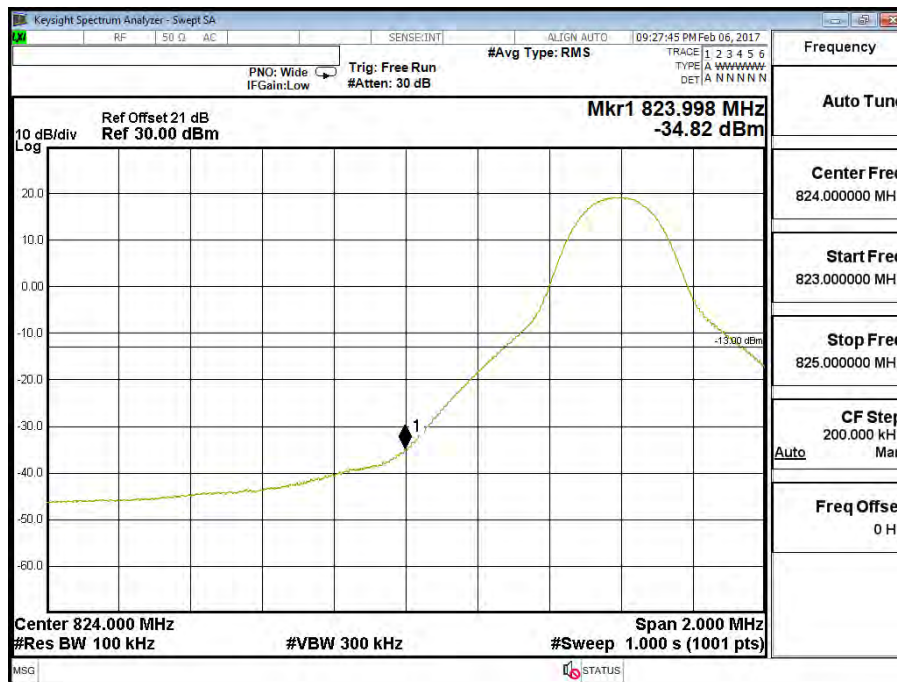
Band 26 (10M) QPSK(50,0) Lower Channel 26840 (829MHz)



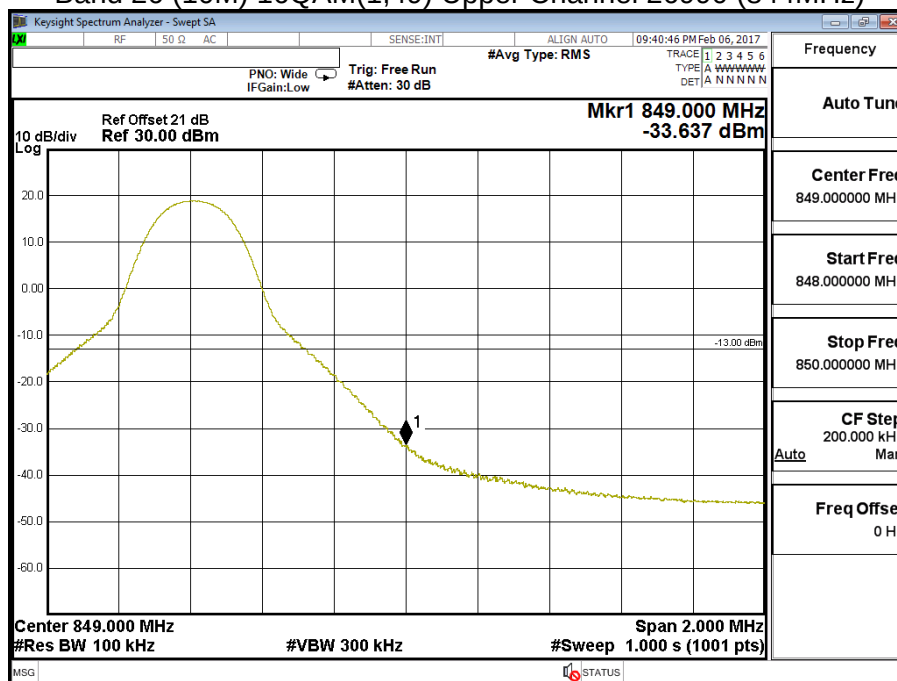
Band 26 (10M) QPSK(50,0) Upper Channel 26990 (844MHz)



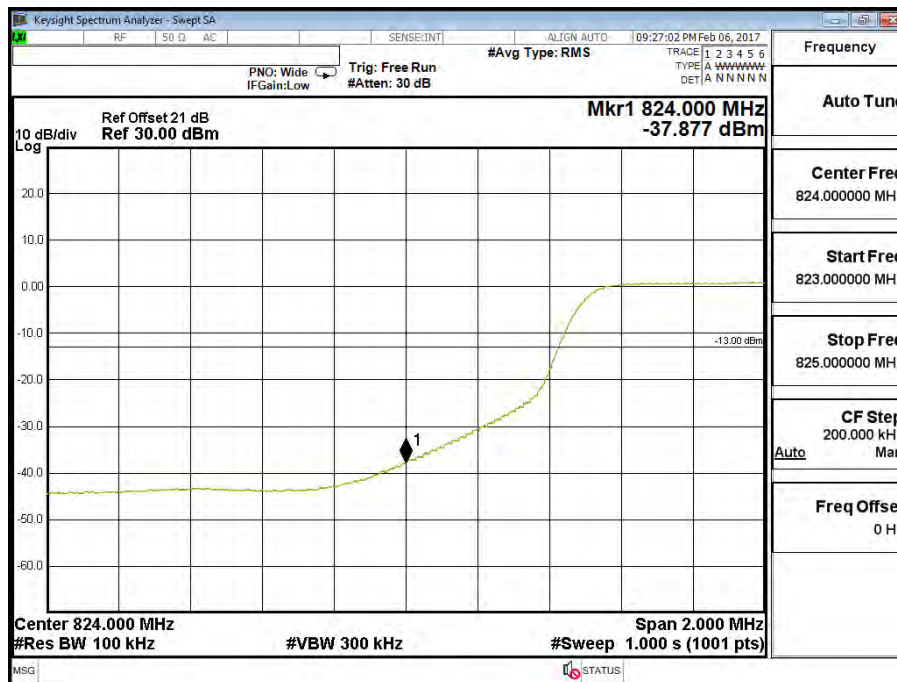
Band 26 (10M) 16QAM(1,0) Lower Channel 26840 (829MHz)



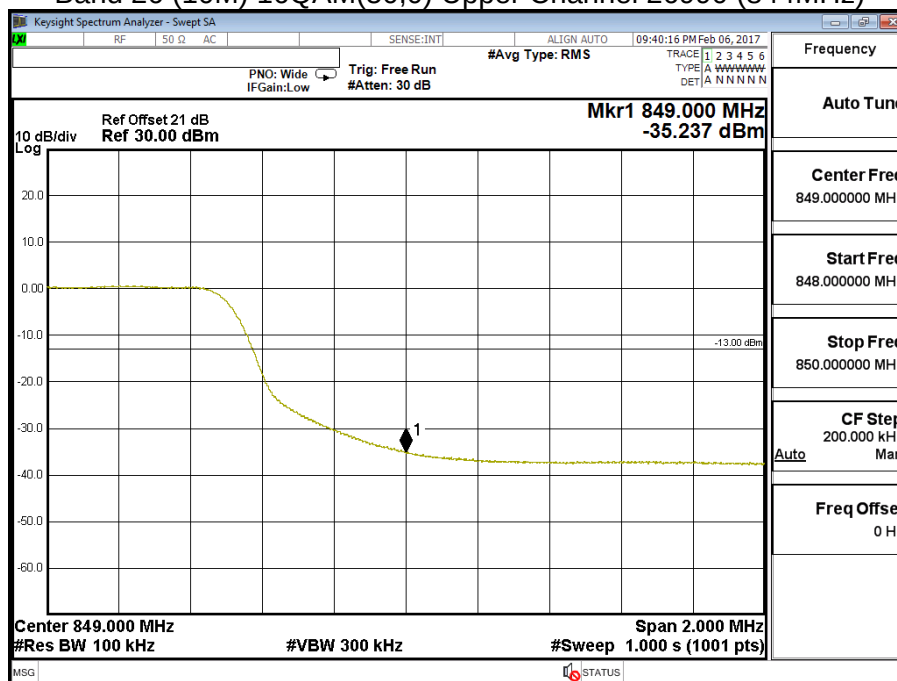
Band 26 (10M) 16QAM(1,49) Upper Channel 26990 (844MHz)



Band 26 (10M) 16QAM(50,0) Lower Channel 26840 (829MHz)



Band 26 (10M) 16QAM(50,0) Upper Channel 26990 (844MHz)

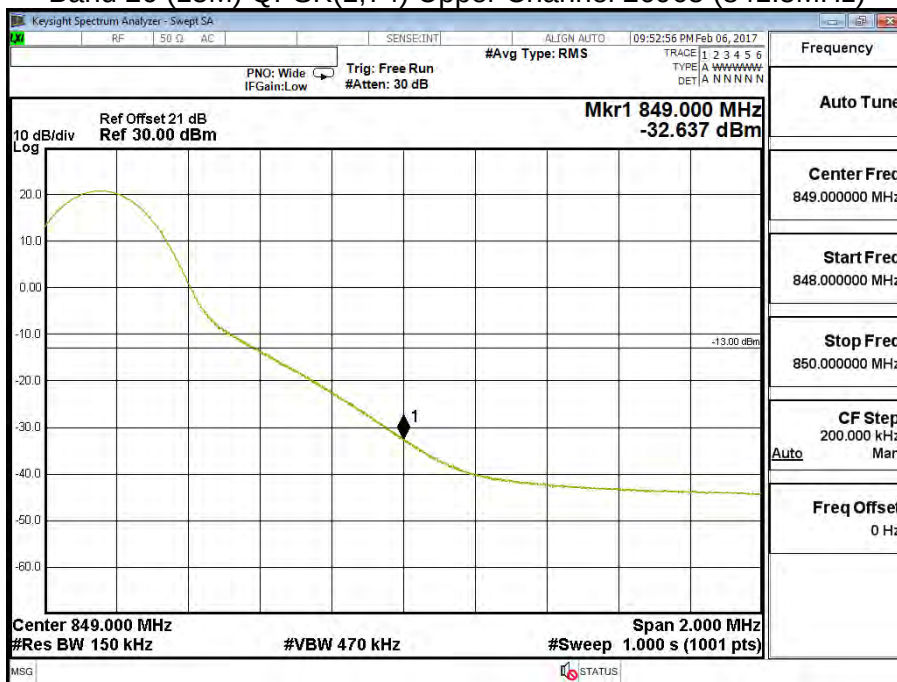


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	Block Edge Test (Band 26 (15M))		

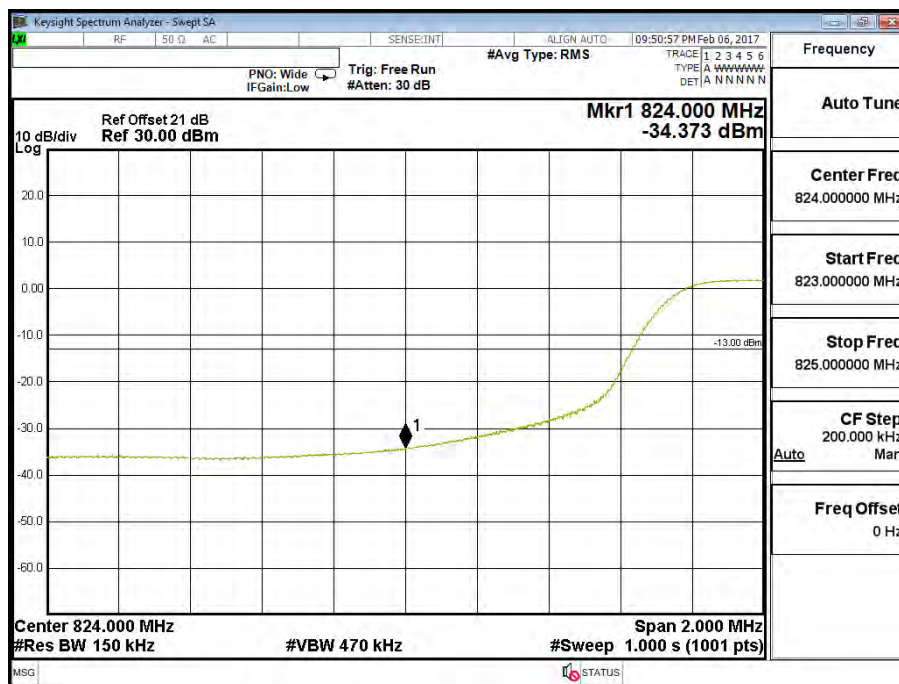
Band 26 (15M) QPSK(1,0) Lower Channel 26865 (831.5MHz)



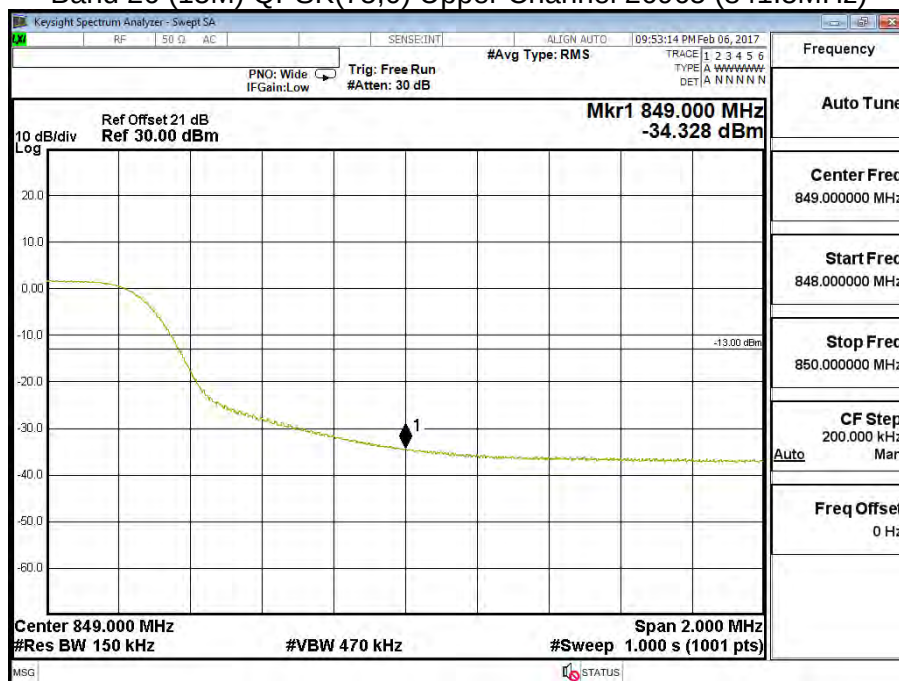
Band 26 (15M) QPSK(1,74) Upper Channel 26965 (841.5MHz)



Band 26 (15M) QPSK(75,0) Lower Channel 26865 (831.5MHz)



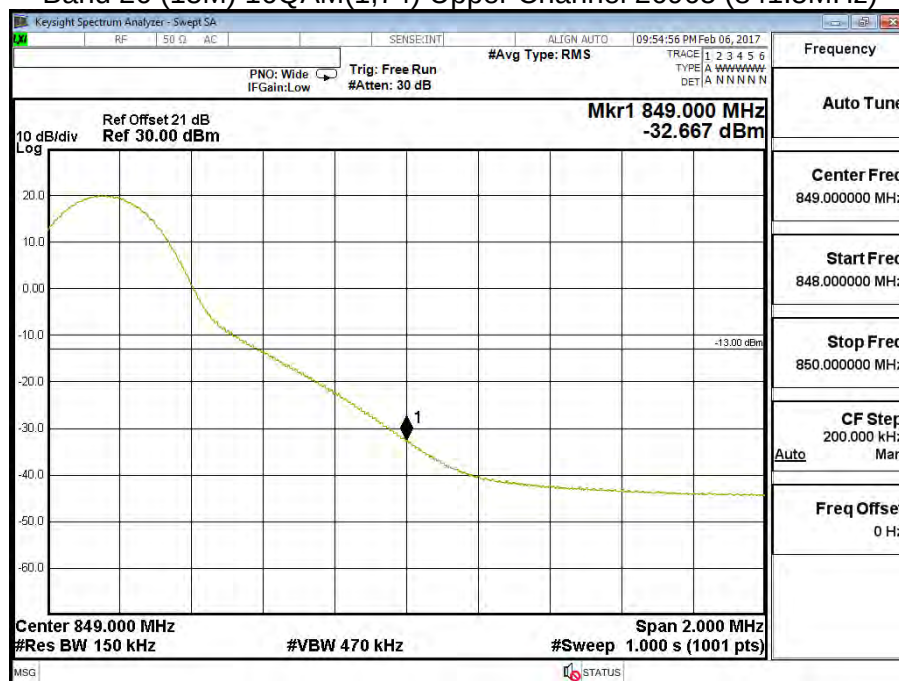
Band 26 (15M) QPSK(75,0) Upper Channel 26965 (841.5MHz)



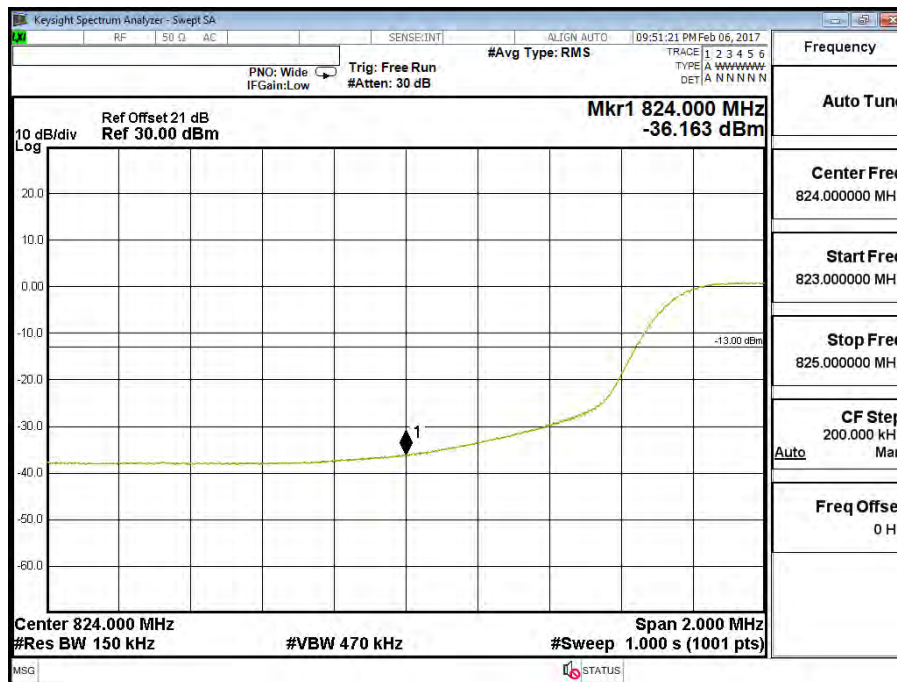
Band 26 (15M) 16QAM(1,0) Lower Channel 26865 (831.5MHz)



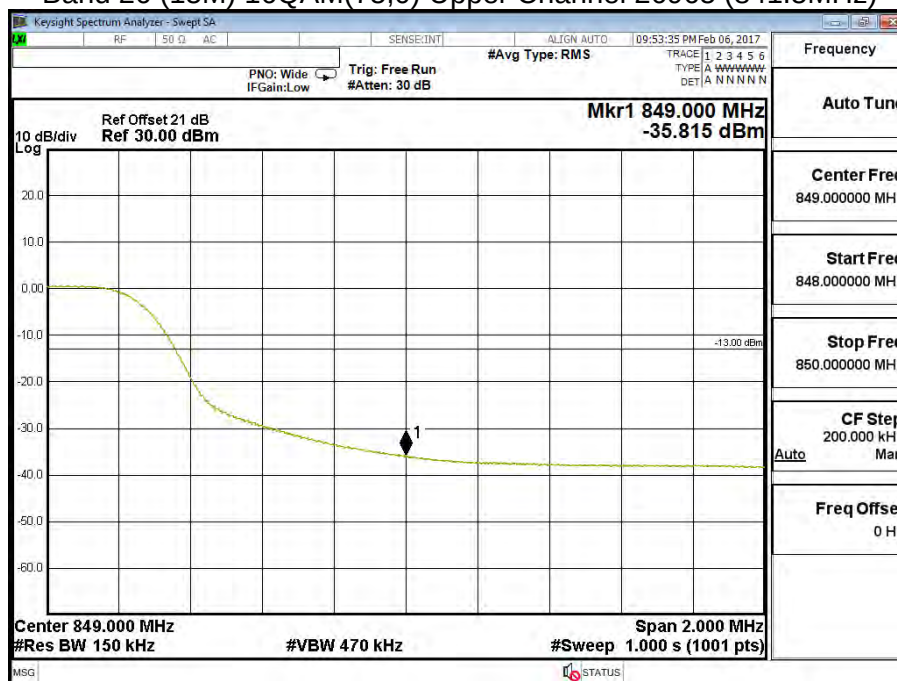
Band 26 (15M) 16QAM(1,74) Upper Channel 26965 (841.5MHz)



Band 26 (15M) 16QAM(75,0) Lower Channel 26865 (831.5MHz)

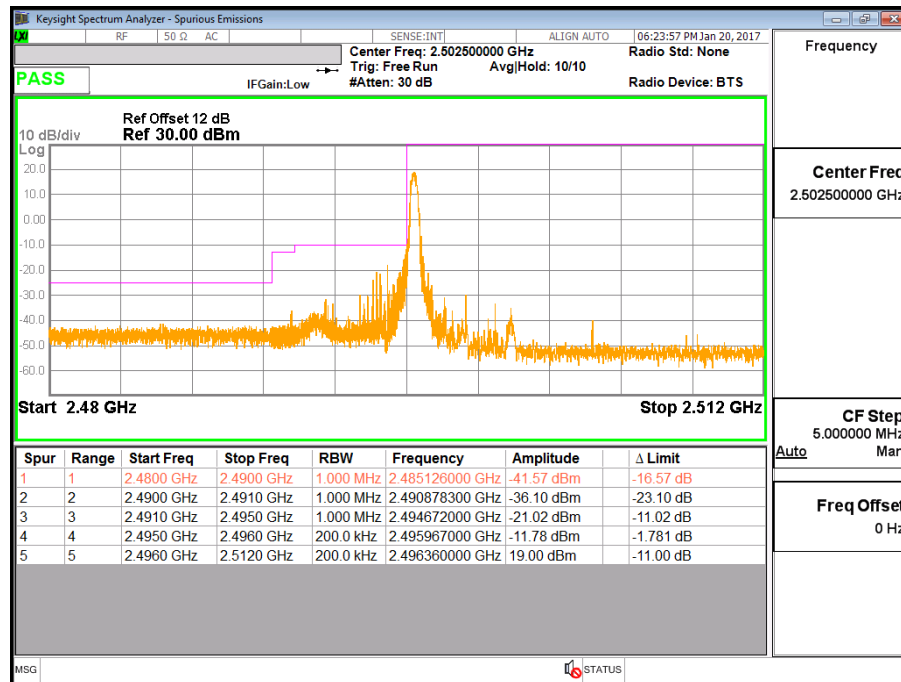


Band 26 (15M) 16QAM(75,0) Upper Channel 26965 (841.5MHz)

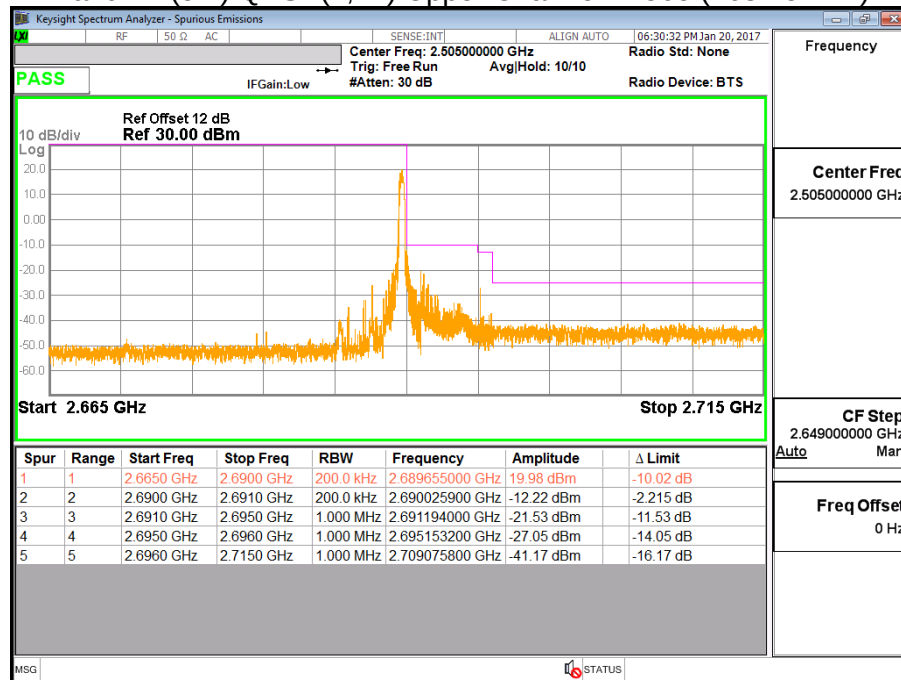


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/01/20	Test Site	CTR
Test Condition	Block Edge Test (Band 41 (5M))		

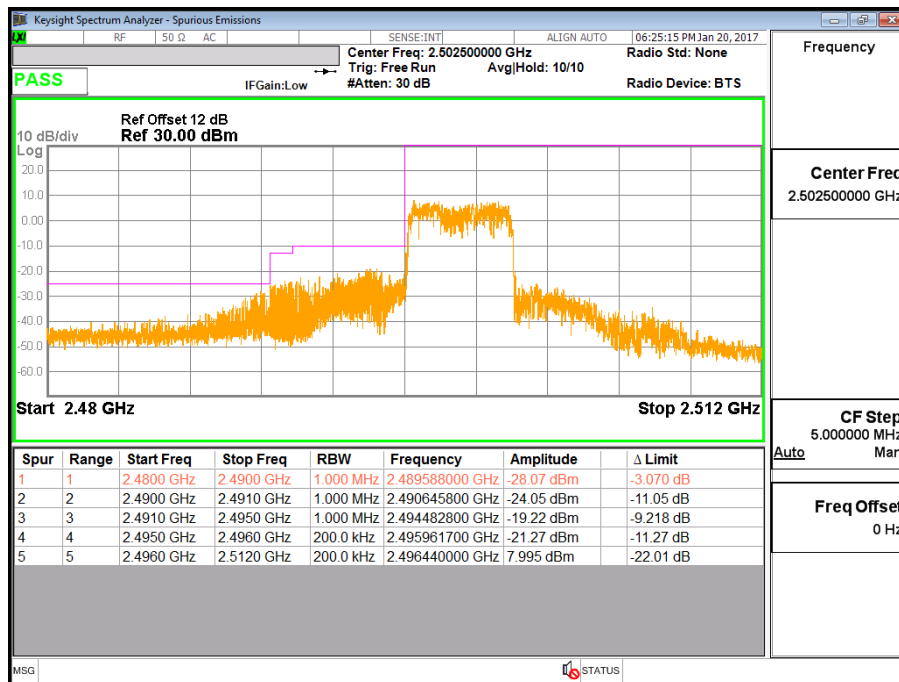
Band 41 (5M) QPSK(1,0) Lower Channel 39675 (2498.5MHz)



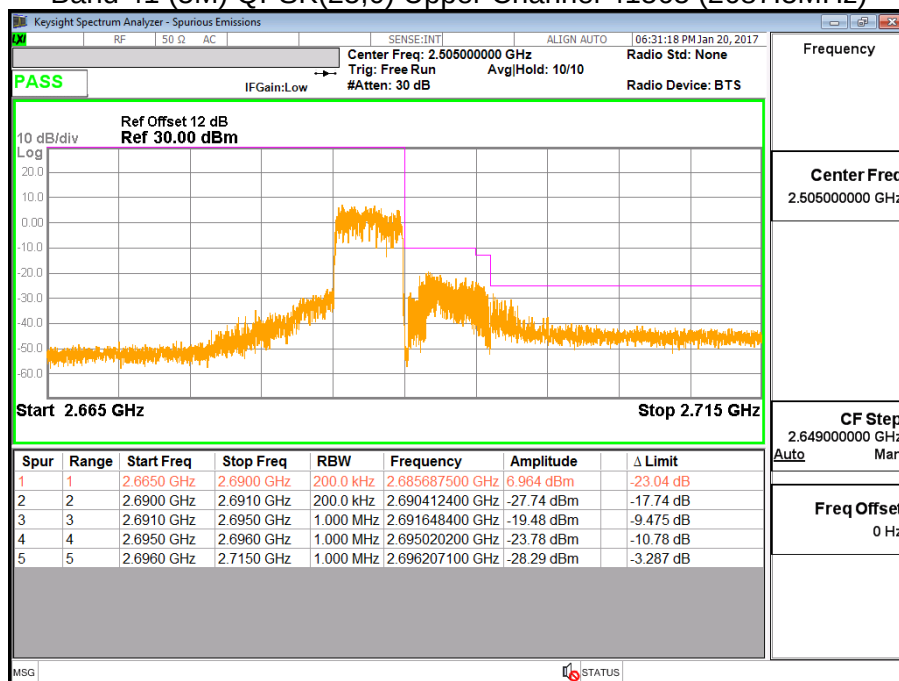
Band 41 (5M) QPSK(1,24) Upper Channel 41565 (2687.5MHz)



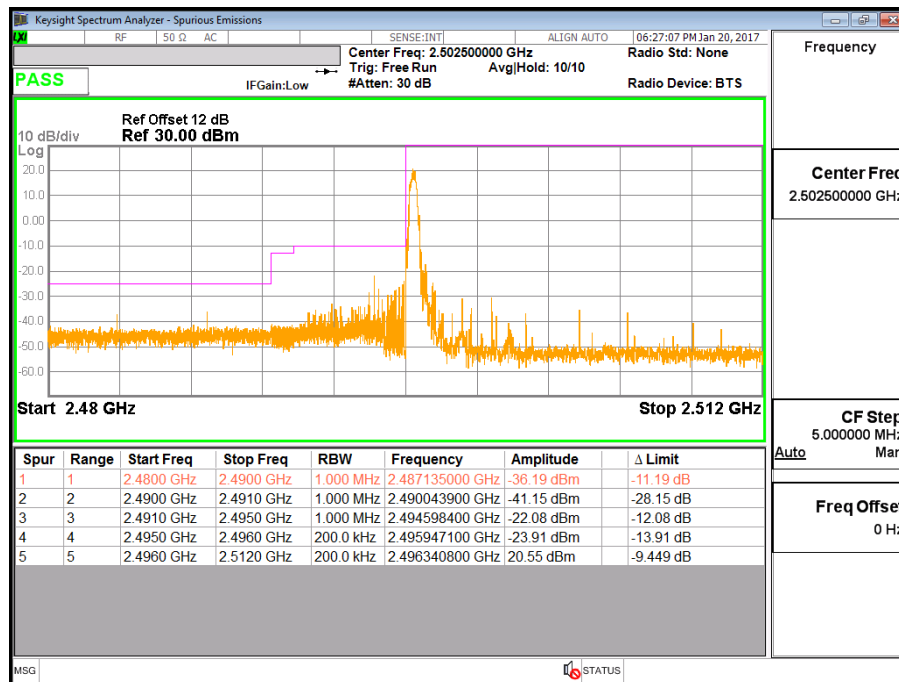
Band 41 (5M) QPSK(25,0) Lower Channel 39675 (2498.5MHz)



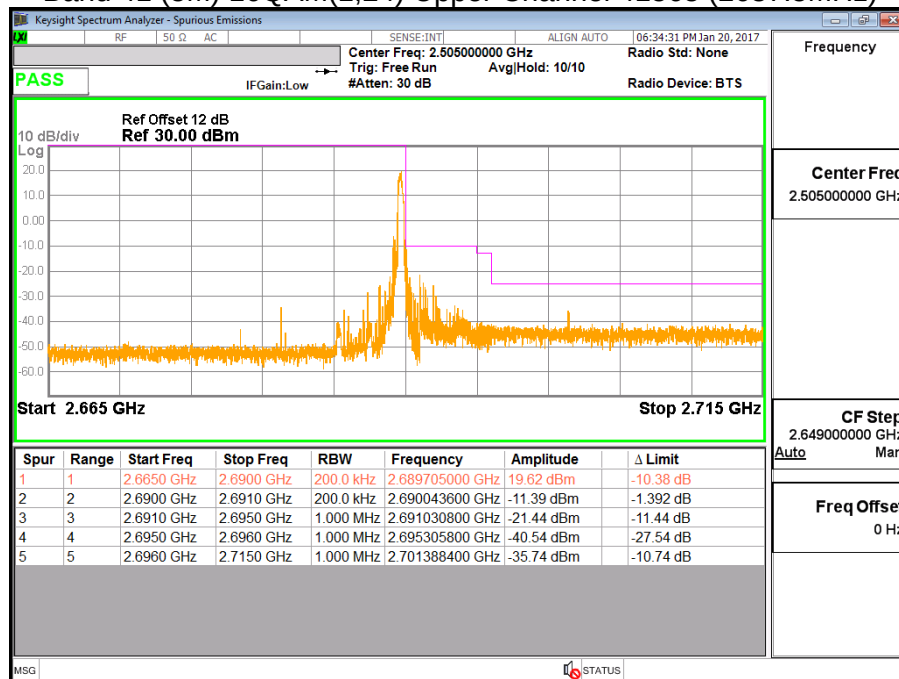
Band 41 (5M) QPSK(25,0) Upper Channel 41565 (2687.5MHz)



Band 41 (5M) 16QAM(1,0) Lower Channel 39675 (2498.5MHz)



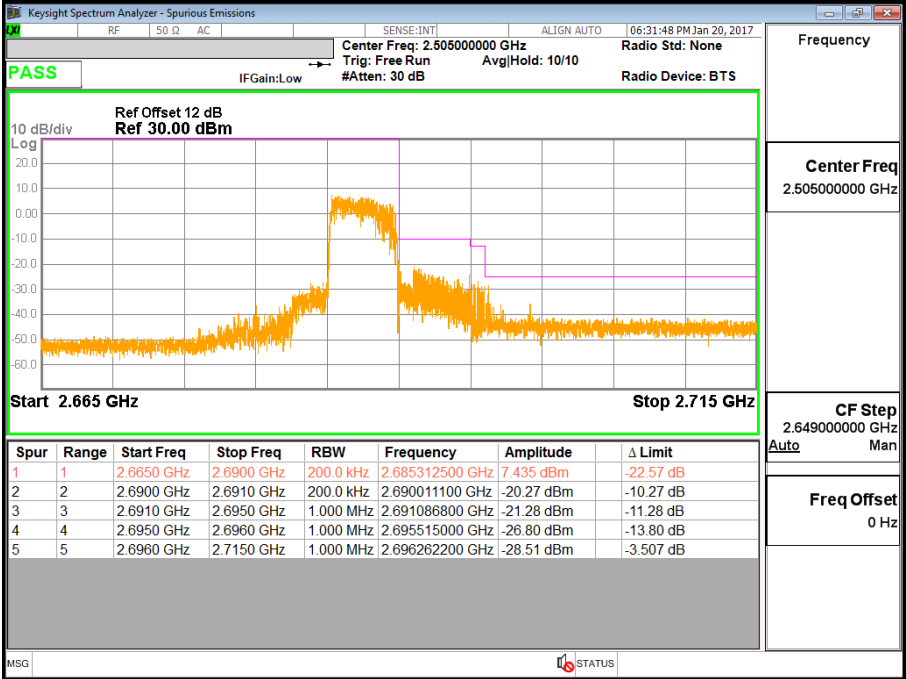
Band 41 (5M) 16QAM(1,24) Upper Channel 41565 (2687.5MHz)



Band 41 (5M) 16QAM(25,0) Lower Channel 39675 (2498.5MHz)

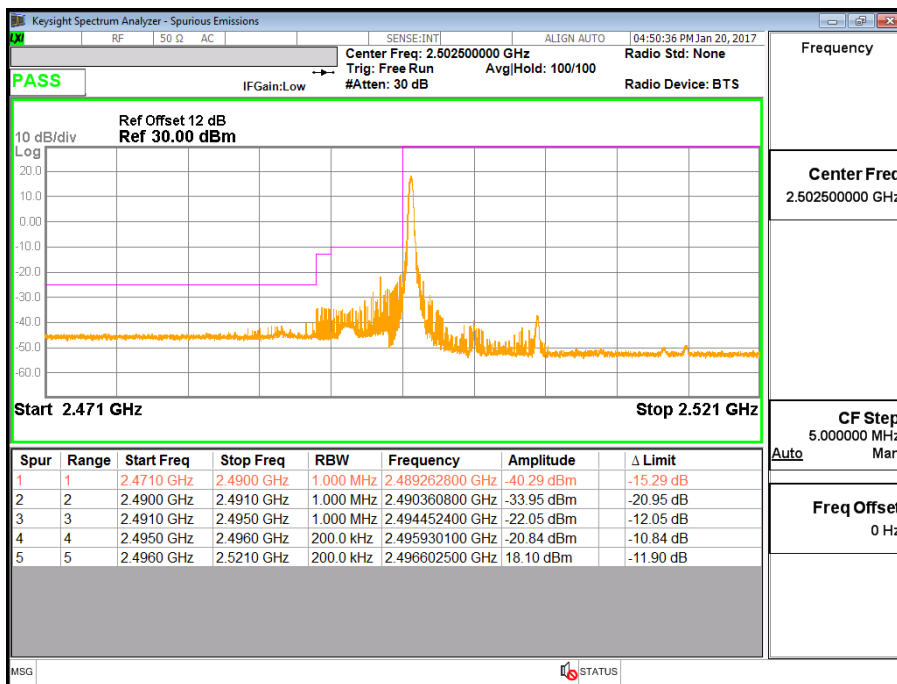


Band 41 (5M) 16QAM(25,0) Upper Channel 41565 (2687.5MHz)

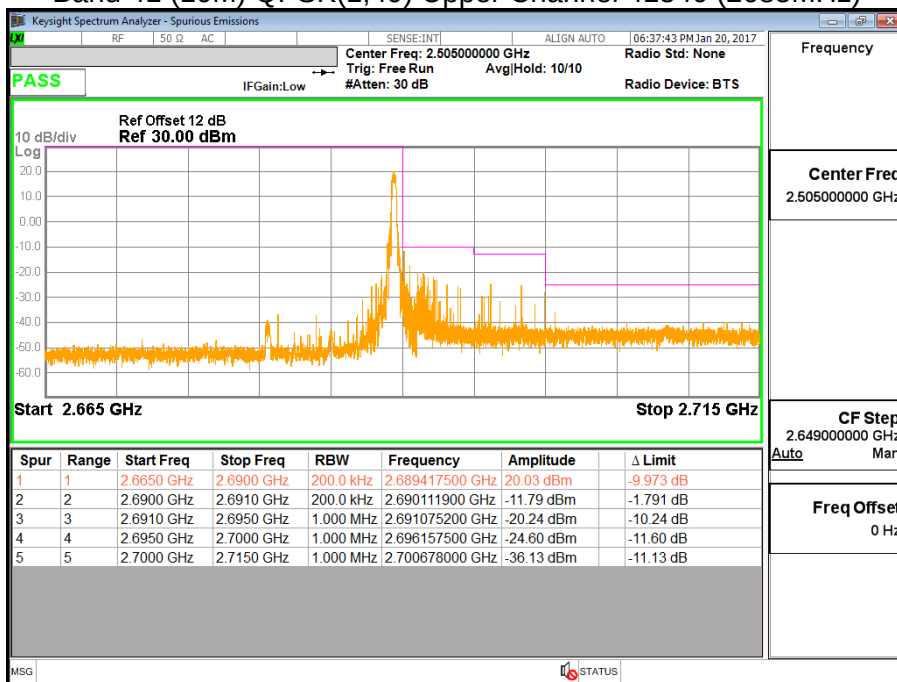


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/01/20	Test Site	CTR
Test Condition	Block Edge Test (Band 41 (10M))		

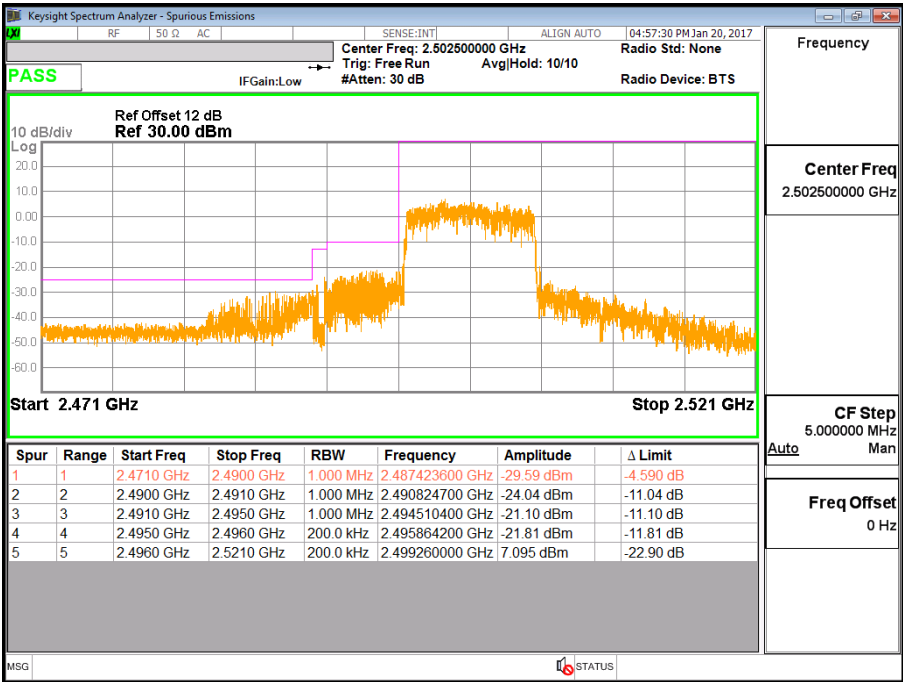
Band 41 (10M) QPSK(1,0) Lower Channel 39700 (2501MHz)



Band 41 (10M) QPSK(1,49) Upper Channel 41540 (2685MHz)



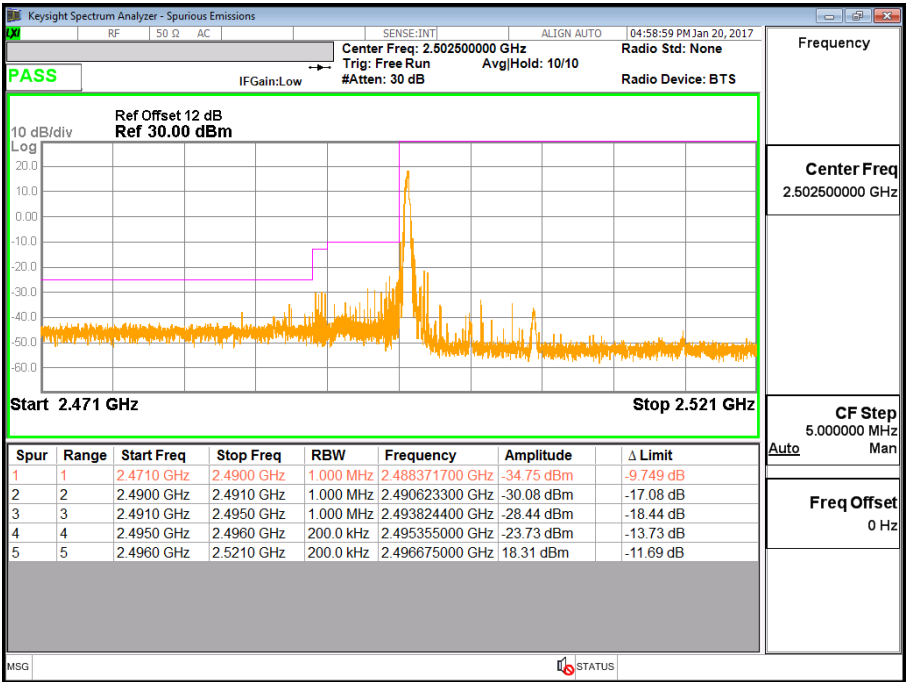
Band 41 (10M) QPSK(50,0) Lower Channel 39700 (2501MHz)



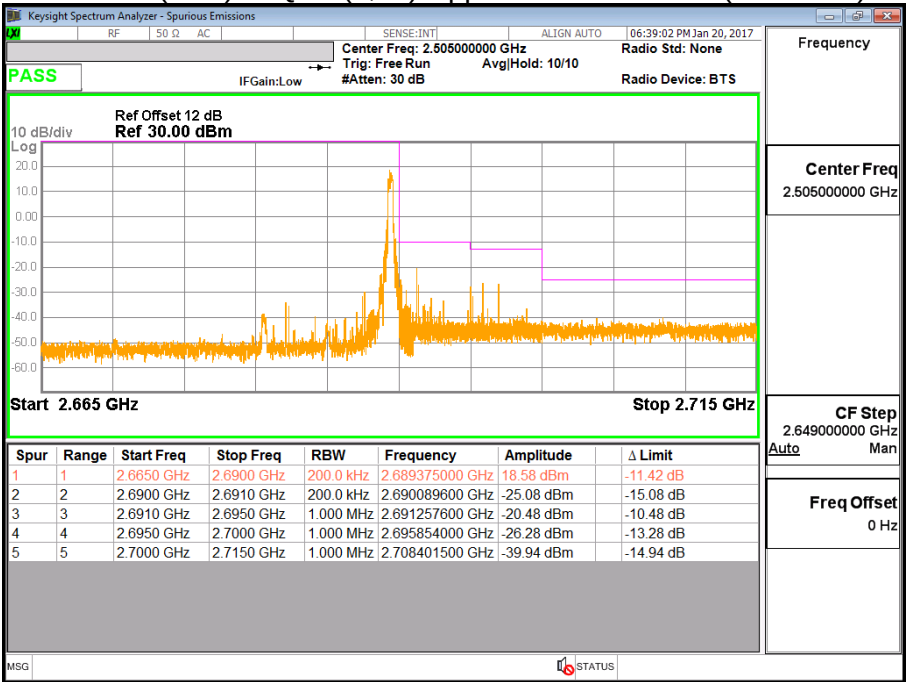
Band 41 (10M) QPSK(50,0) Upper Channel 41540 (2685MHz)



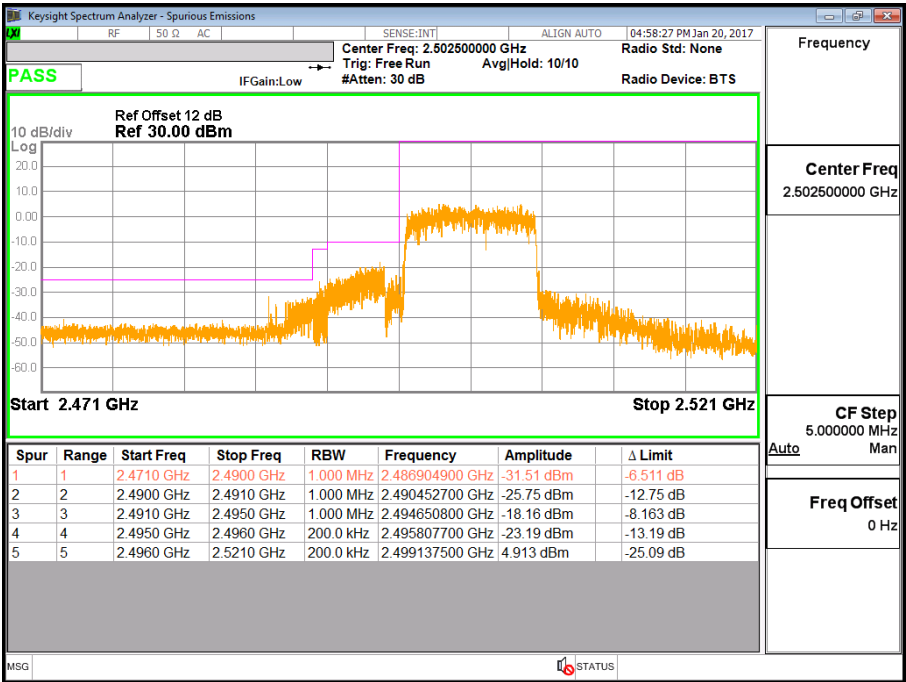
Band 41 (10M) 16QAM(1,0) Lower Channel 39700 (2501MHz)



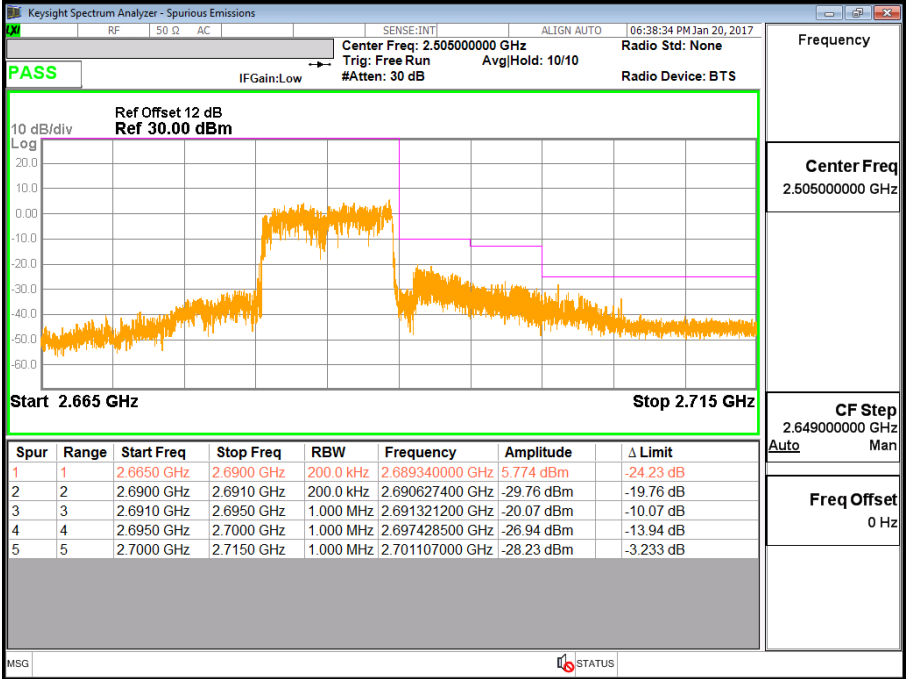
Band 41 (10M) 16QAM(1,49) Upper Channel 41540 (2685MHz)



Band 41 (10M) 16QAM(50,0) Lower Channel 39700 (2501MHz)

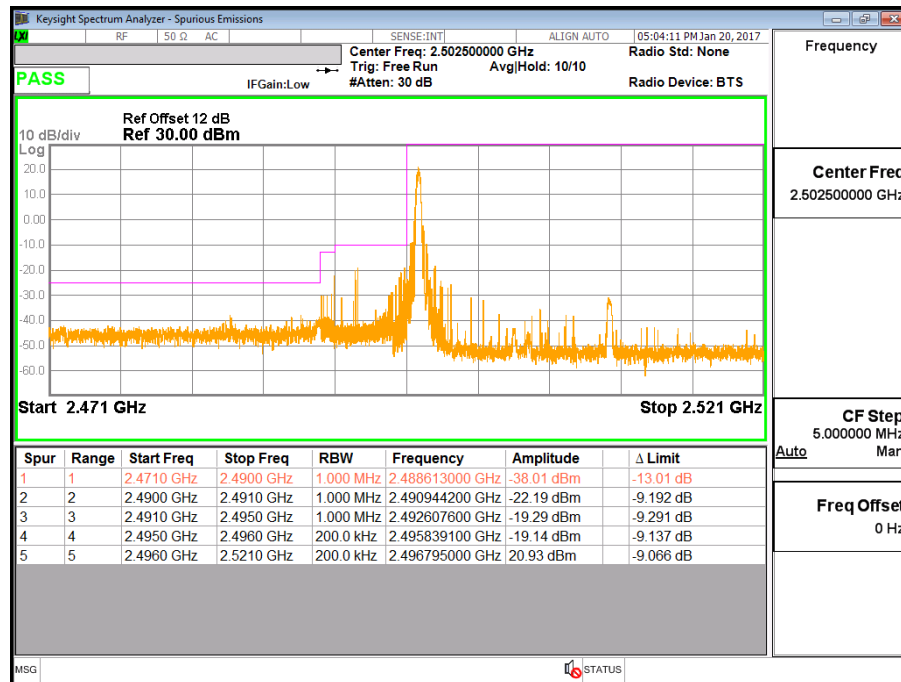


Band 41 (10M) 16QAM(50,0) Upper Channel 41540 (2685MHz)

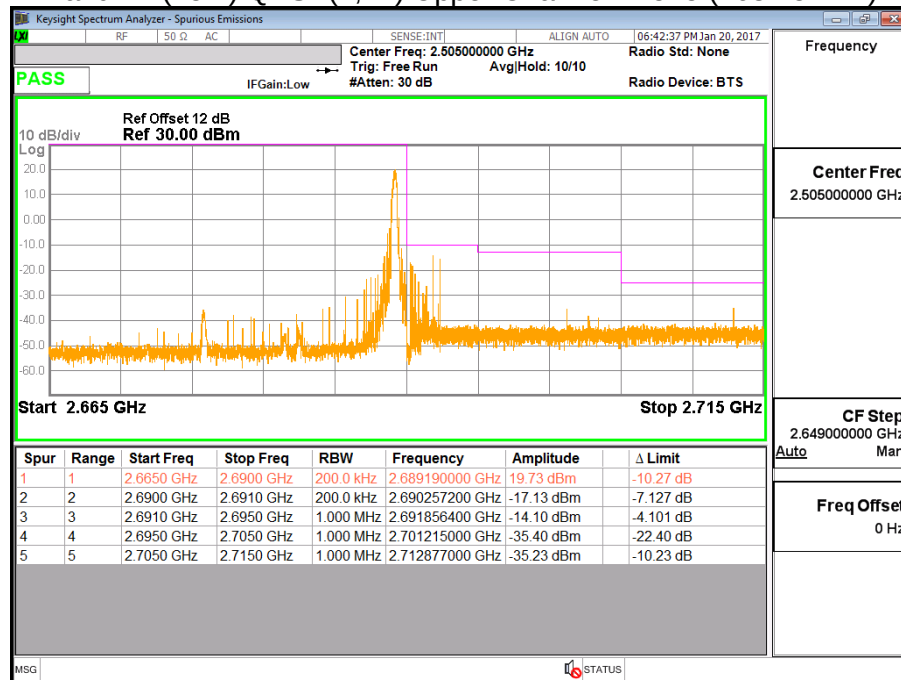


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/01/20	Test Site	CTR
Test Condition	Block Edge Test (Band 41 (15M))		

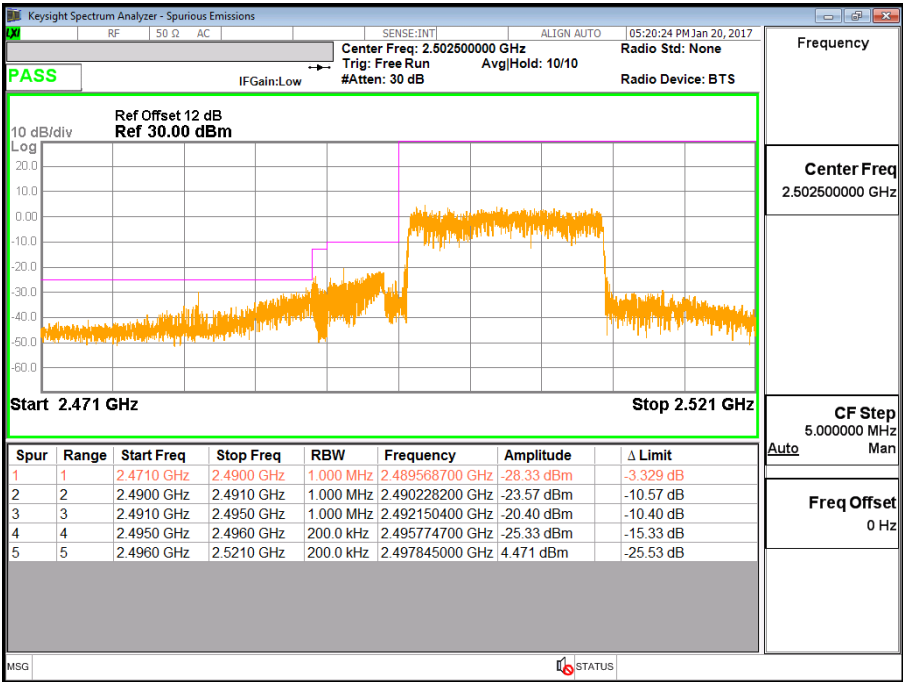
Band 41 (15M)QPSK(1,0) Lower Channel 39725 (2503.5MHz)



Band 41 (15M) QPSK(1,74) Upper Channel 41515 (2682.5MHz)



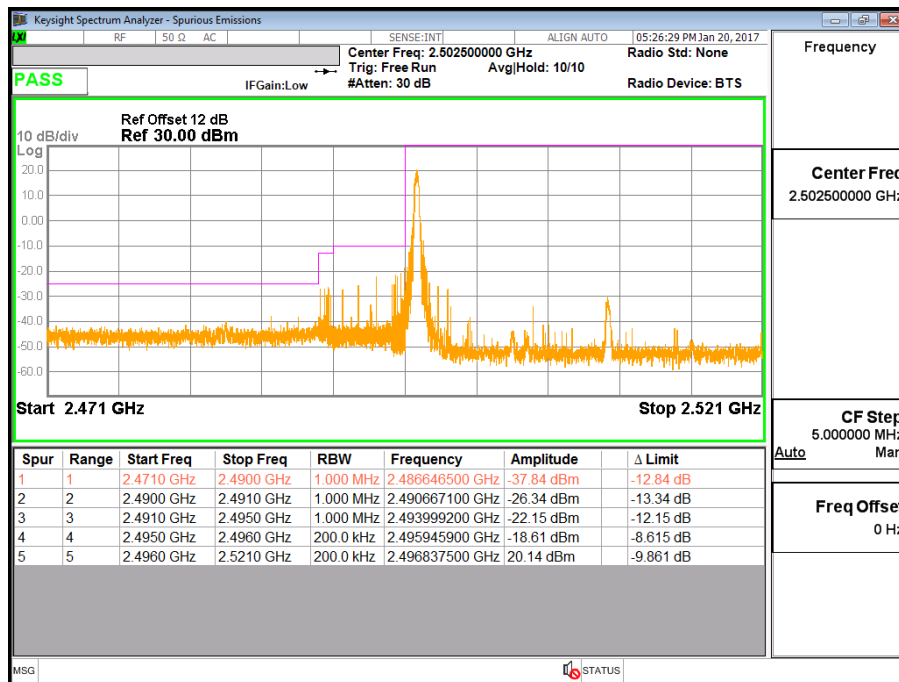
Band 41 (15M) QPSK(75,0) Lower Channel 39725 (2503.5MHz)



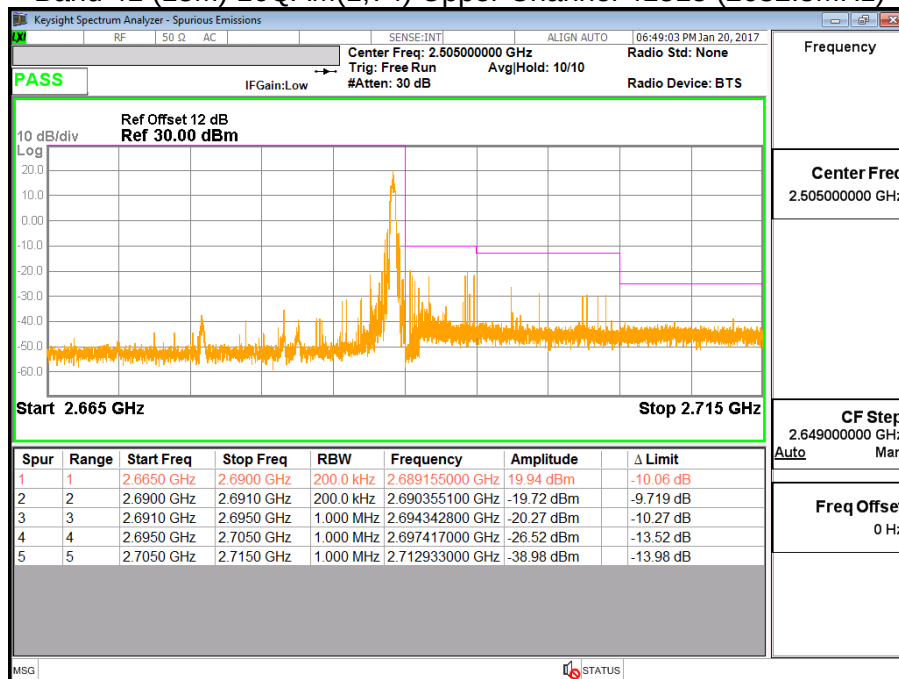
Band 41 (15M) QPSK(75,0) Upper Channel 41515 (2682.5MHz)



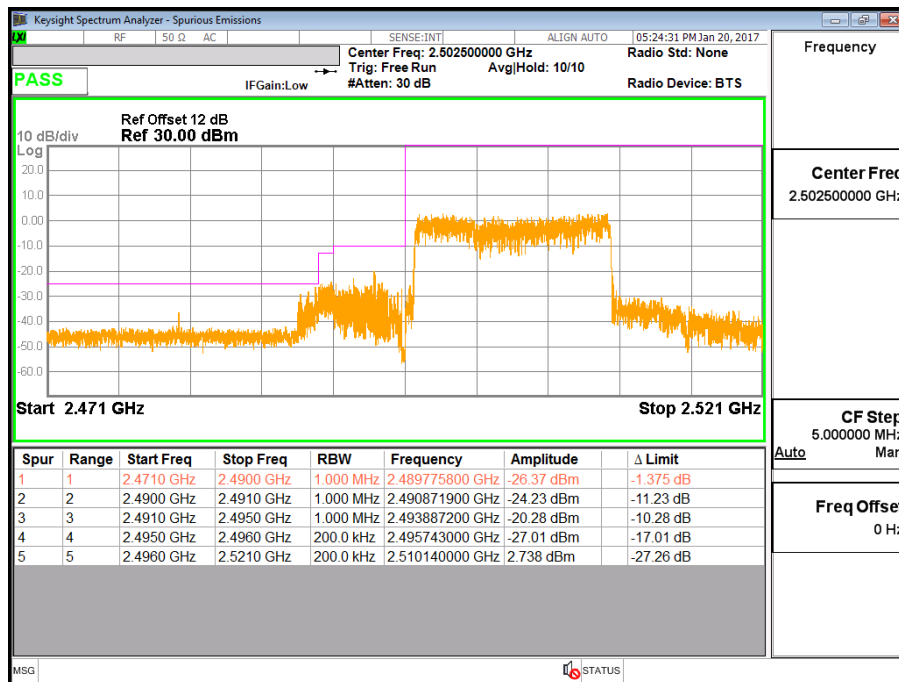
Band 41 (15M) 16QAM(1,0) Lower Channel 39725 (2503.5MHz)



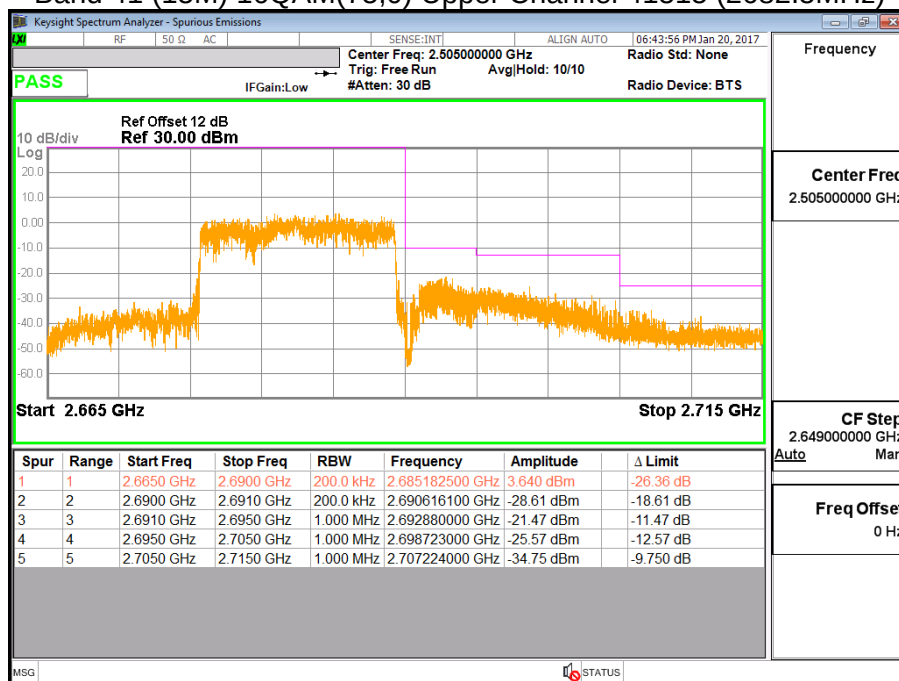
Band 41 (15M) 16QAM(1,74) Upper Channel 41515 (2682.5MHz)



Band 41 (15M) 16QAM(75,0) Lower Channel 39725 (2503.5MHz)

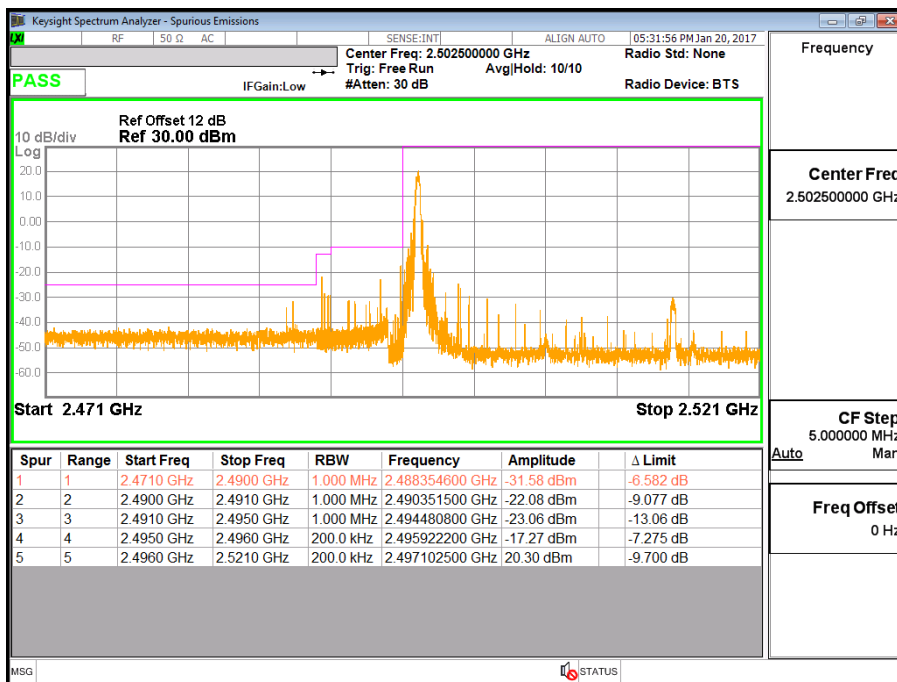


Band 41 (15M) 16QAM(75,0) Upper Channel 41515 (2682.5MHz)

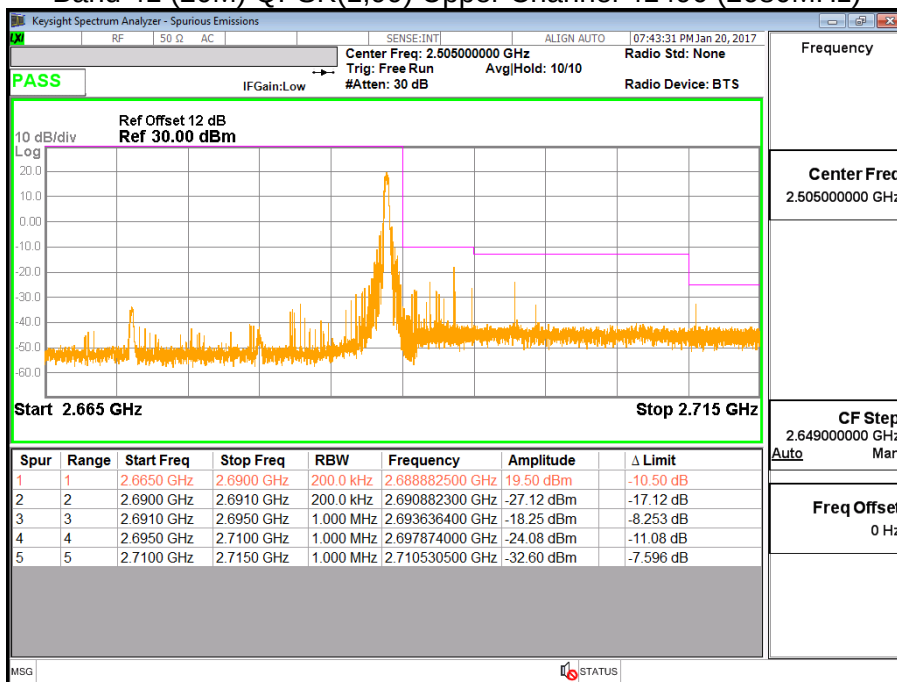


Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/01/20	Test Site	CTR
Test Condition	Block Edge Test (Band 41 (20M))		

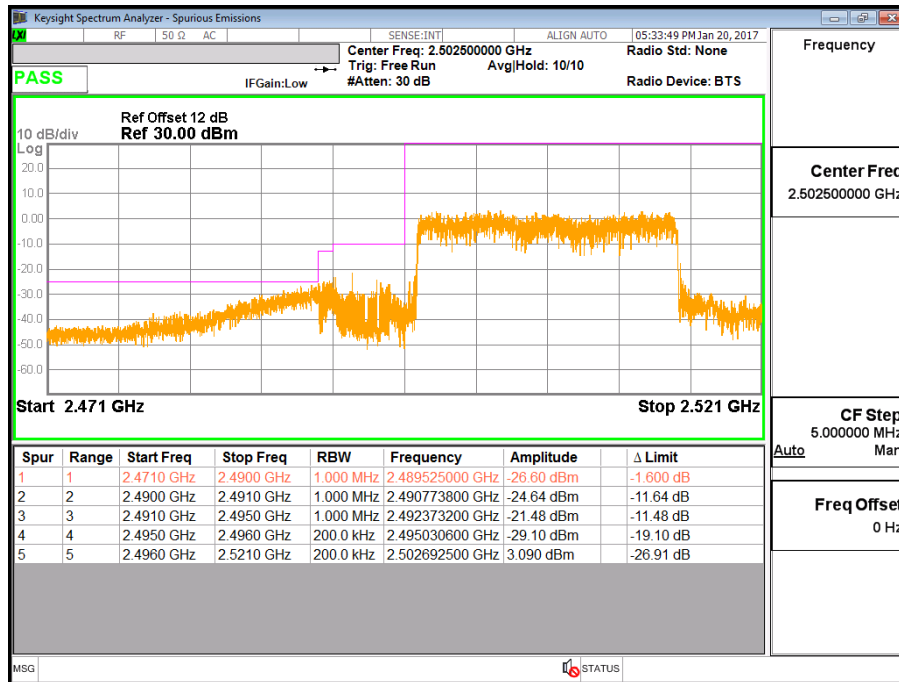
Band 41 (20M)QPSK(1,0) Lower Channel 39750 (2506MHz)



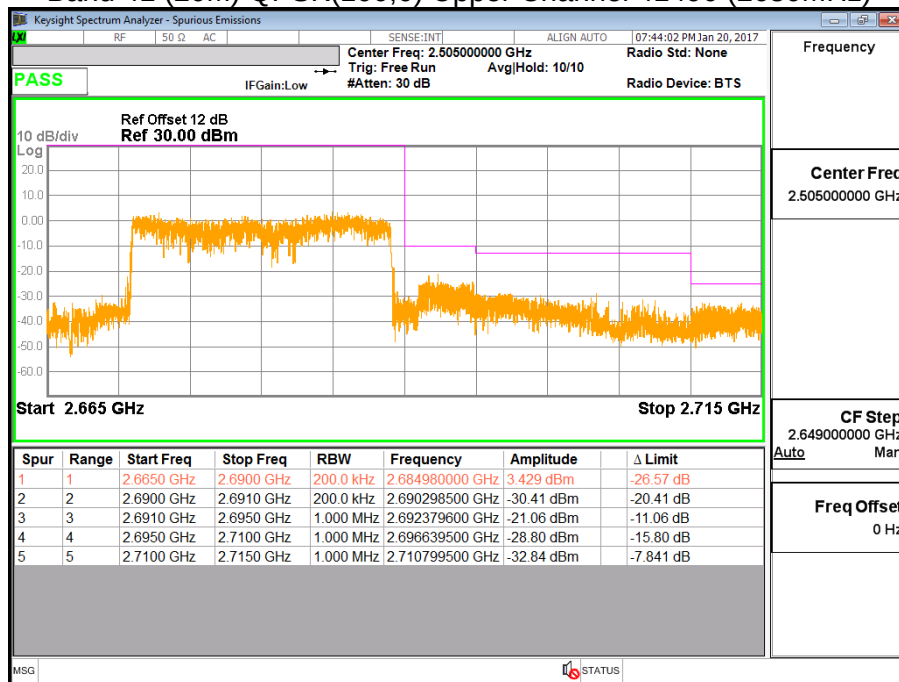
Band 41 (20M) QPSK(1,99) Upper Channel 41490 (2680MHz)



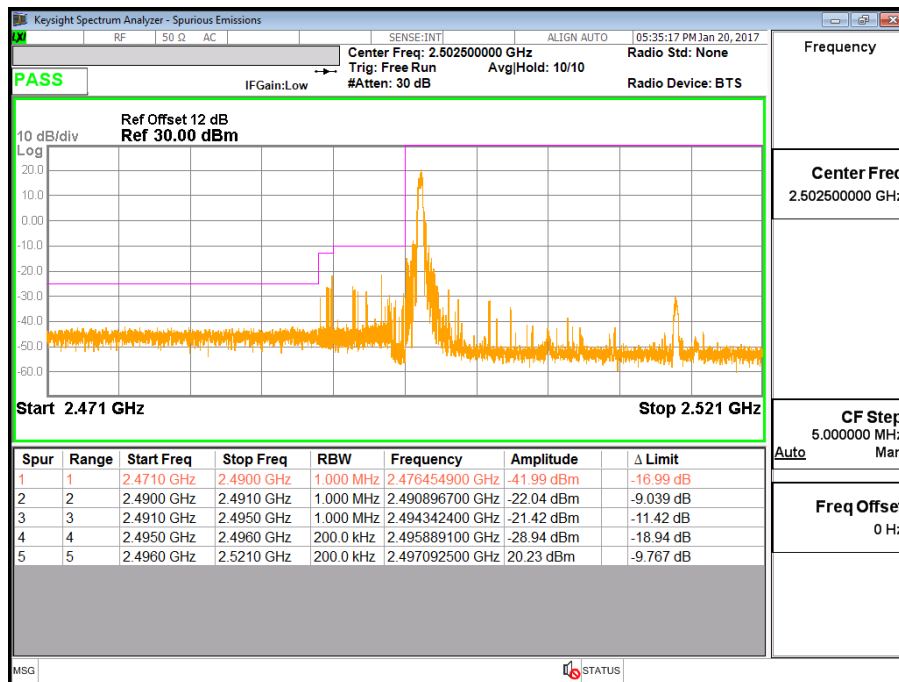
Band 41 (20M) QPSK(100,0) Lower Channel 39750 (2506MHz)



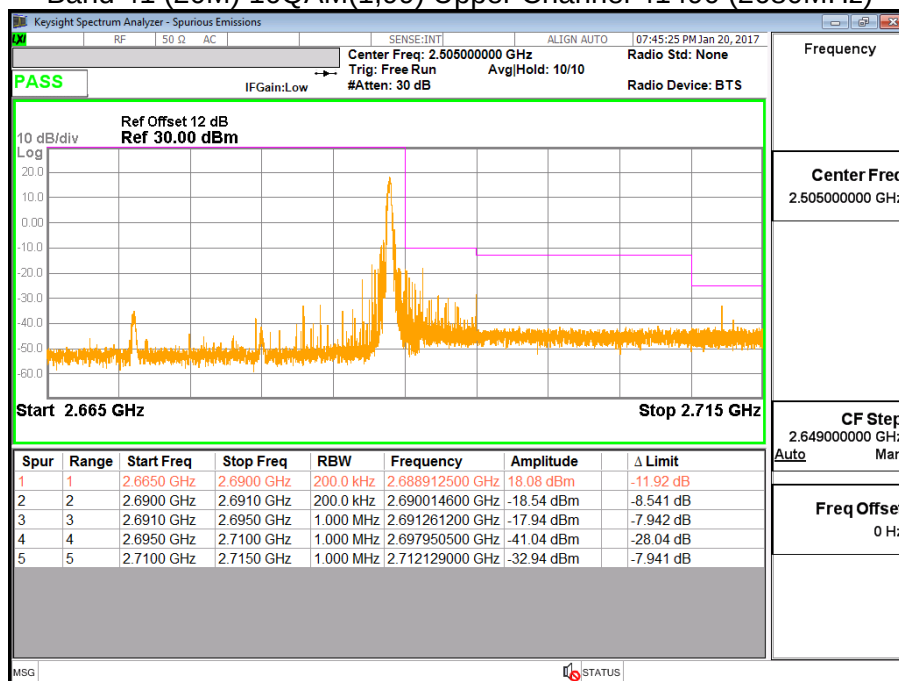
Band 41 (20M) QPSK(100,0) Upper Channel 41490 (2680MHz)



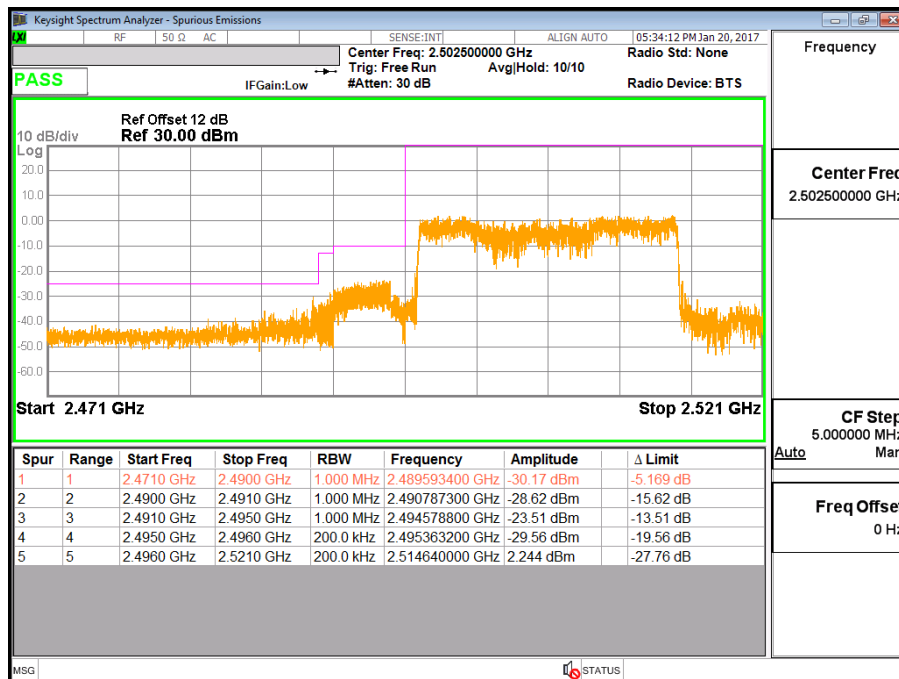
Band 41 (20M) 16QAM(1,0) Lower Channel 39750 (2506MHz)



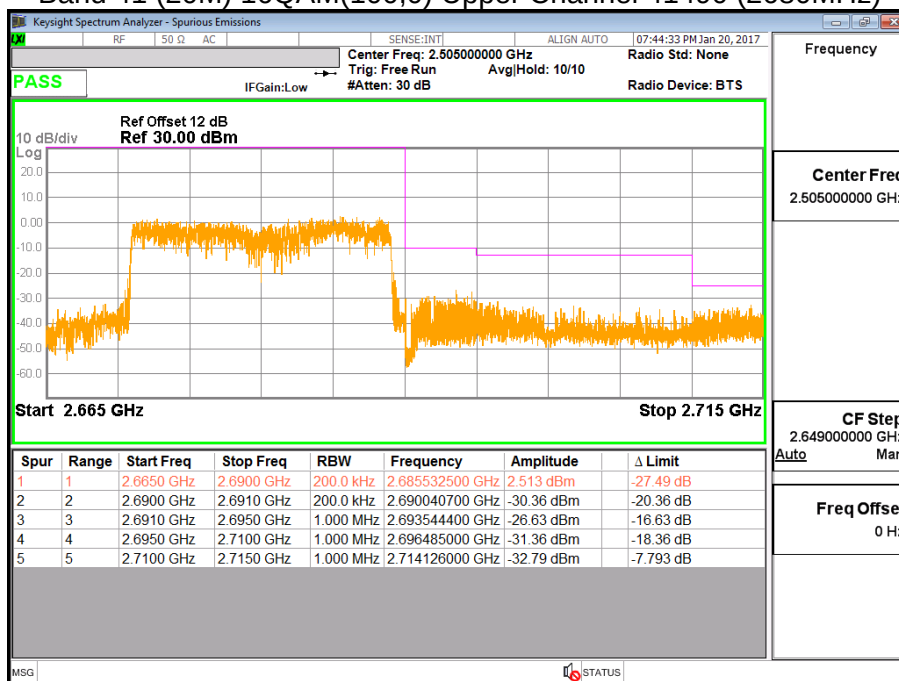
Band 41 (20M) 16QAM(1,99) Upper Channel 41490 (2680MHz)



Band 41 (20M) 16QAM(100,0) Lower Channel 39750 (2506MHz)



Band 41 (20M) 16QAM(100,0) Upper Channel 41490 (2680MHz)



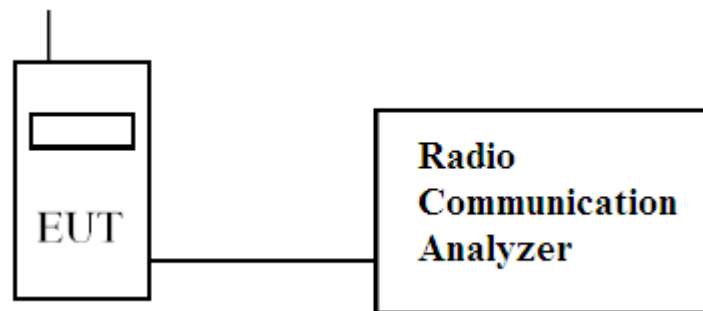
6. Spurious Emission

6.1. Test Specification

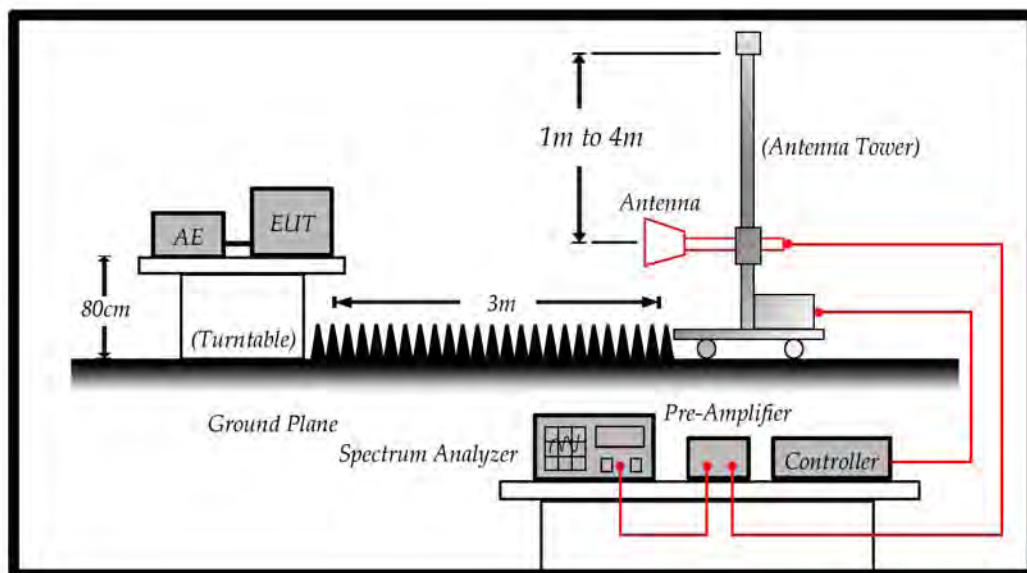
According to Part 2.1051, 2.1053, 22.917, 24.238, 27.53

6.2. Test Setup

6.2.1 Spurious emissions at antenna terminals.



6.2.2 Field strength of spurious radiation.



Note: The Worst case Mode is QPSK Mode for Radiated spurious emissions.

6.3. Limits

Limit	$<-13\text{dBm}$
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$43 + 10\text{Log}(P)$ down on the carrier where P is the power in Watts.

For LTE Band 41:

Limit	$<-25\text{dBm}$
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$55 + 10\text{Log}(P)$ down on the carrier where P is the power in Watts.

6.4. Test Procedure

In accordance with Part 2.1051, 2.1053, 22.917, 24.238, 27.53, the spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using a combination of filters and attenuators and the frequency spectrum investigated from 30MHz to 20GHz. The EUT was set to transmit on full power. The EUT was tested on Low, middle and High channels for both power levels. The resolution and video bandwidth was set to 1MHz/3MHz in accordance with Part 2.1051, 2.1053, 22.917, 24.238, 27.53. The spectrum analyzer detector was set to Max Hold. In addition, measurements were made up to the 10th harmonic of the fundamental. The device was then replaced with a substitution antenna, which input signal was adjusted until the received level matched that of the previously detected emission.

- (1) The EUT is tested with maximum rated TX power via the Base Station simulator.
- (2) The EUT is tested in three orthogonal planes, The worst case was showing in this report.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

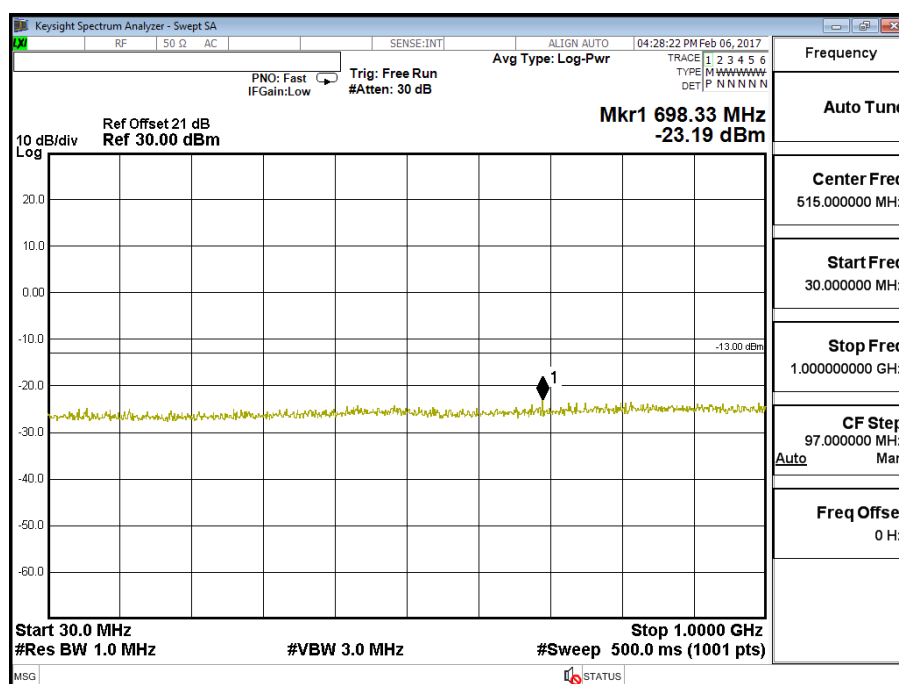
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to TIA/EIA 603-D on radiated measurement.

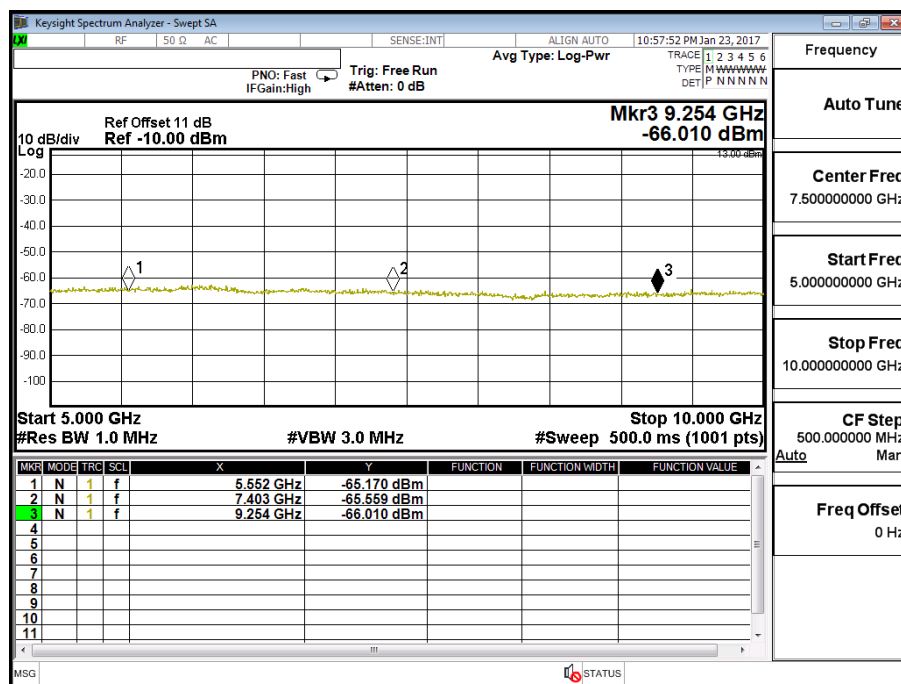
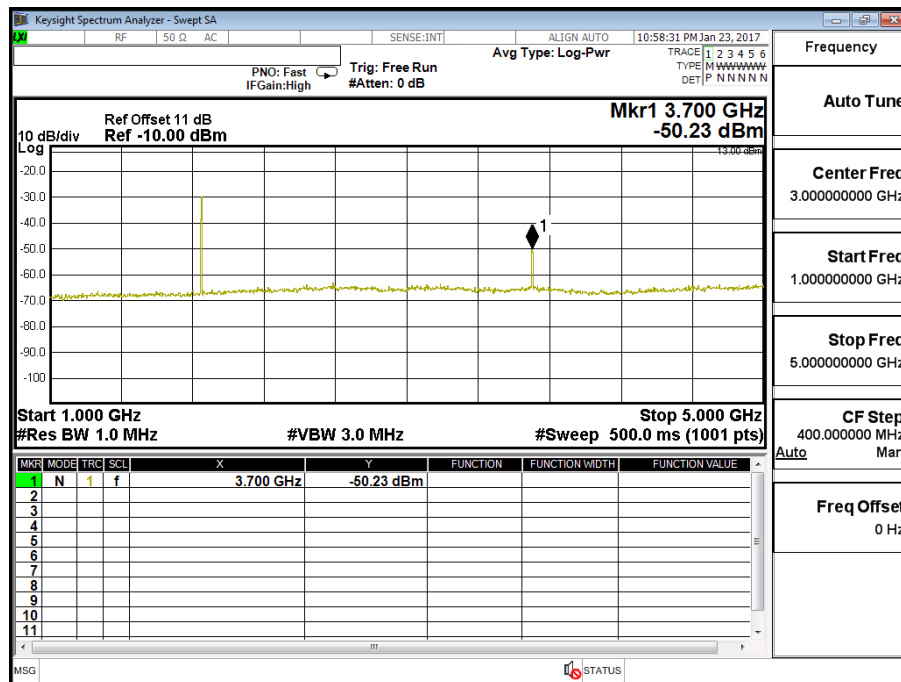
6.5. Test Result of Spurious Emission

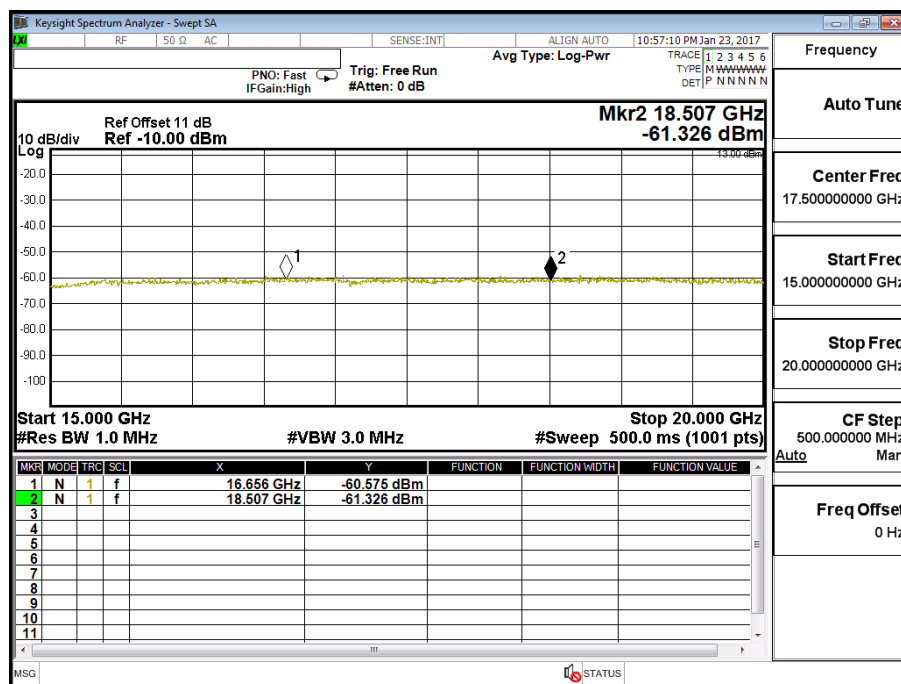
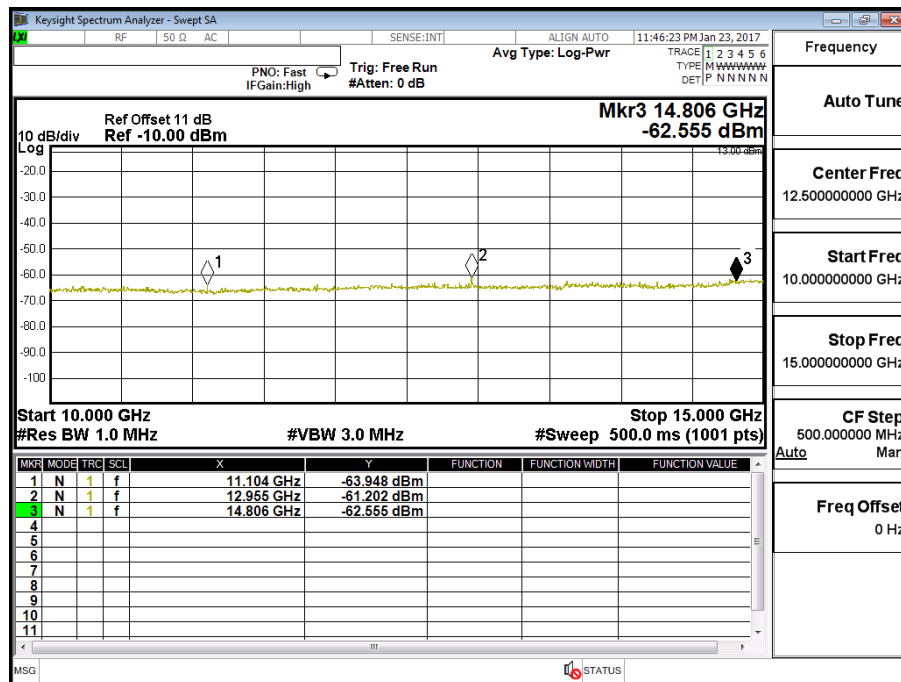
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (1.4M)	Test Range	30MHz~20GHz

LTE-Band 25 (1.4M) QPSK(1,3) CH26047 (1850.7MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3700	-50.230	1.1	-49.130	-13
5552	-65.170	1.23	-63.940	-13
7403	-65.559	1.59	-63.969	-13
9254	-66.010	1.89	-64.120	-13
11104	-63.948	2.07	-61.878	-13
12955	-61.202	2.26	-58.942	-13
14806	-62.555	2.64	-59.915	-13
16656	-60.575	3.5	-57.075	-13
18507	-61.326	3.7	-57.626	-13



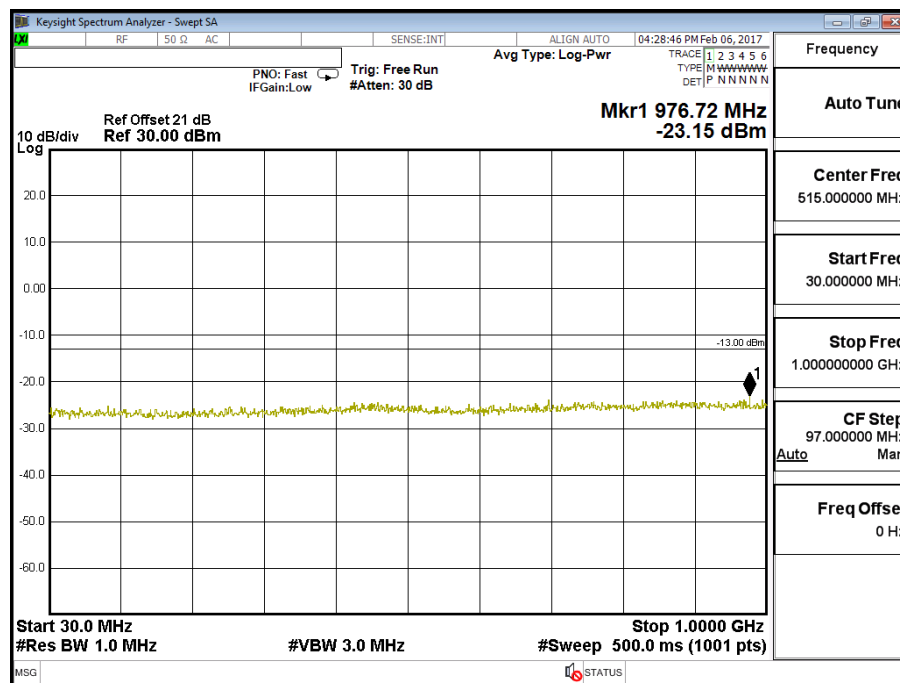


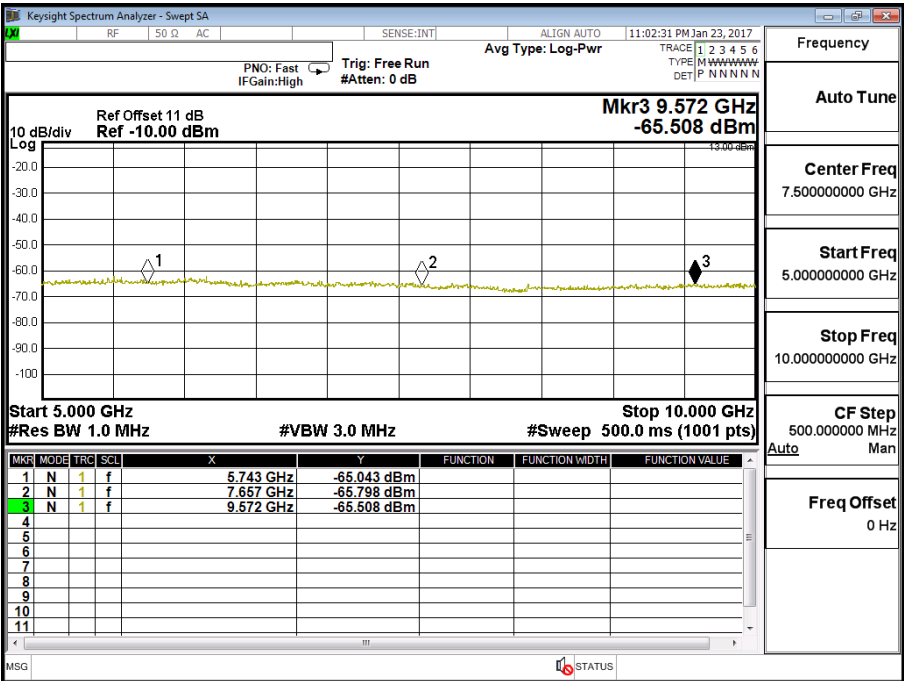
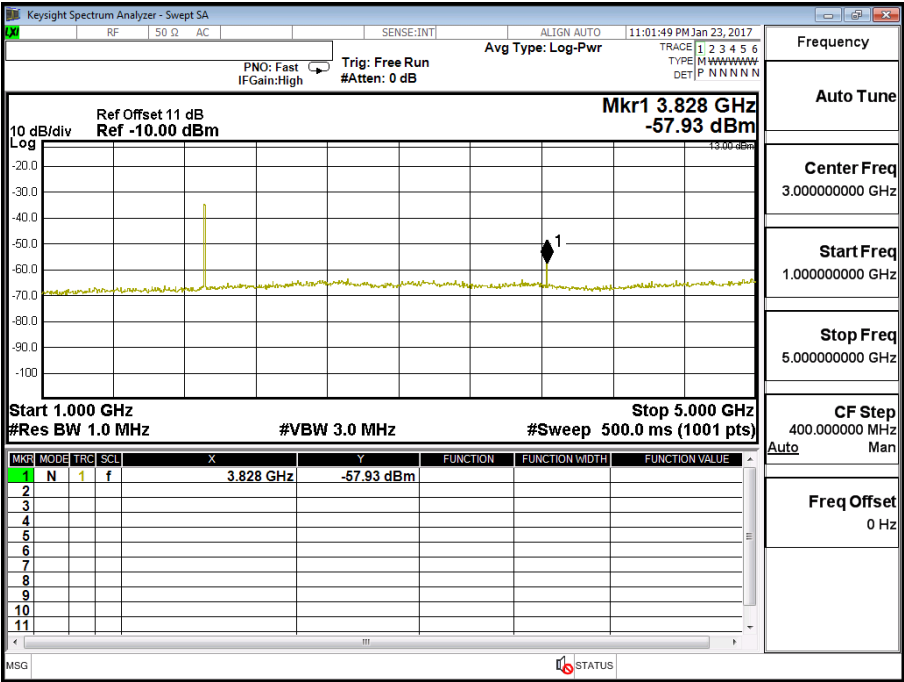


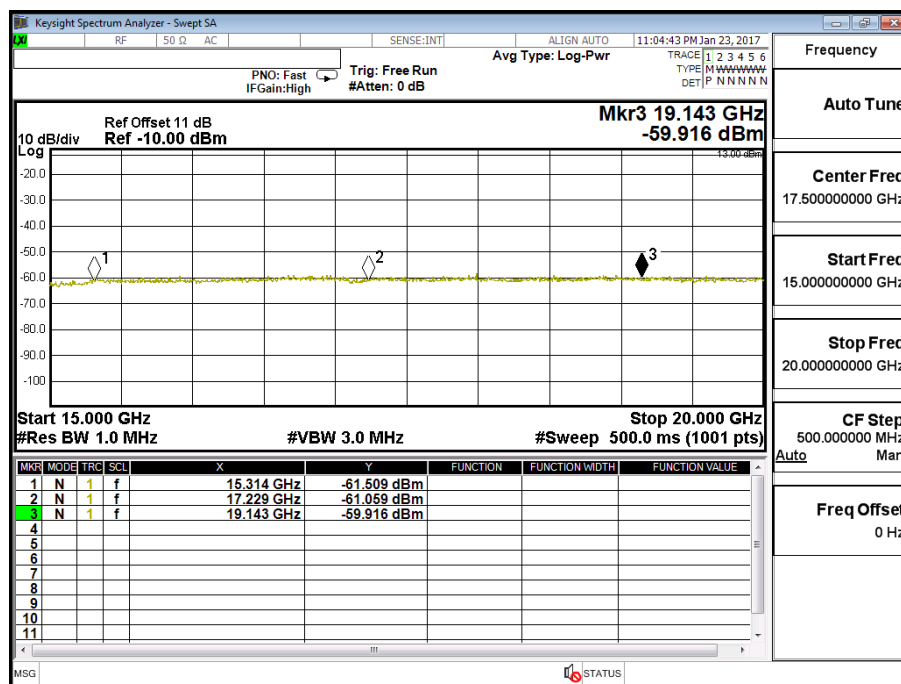
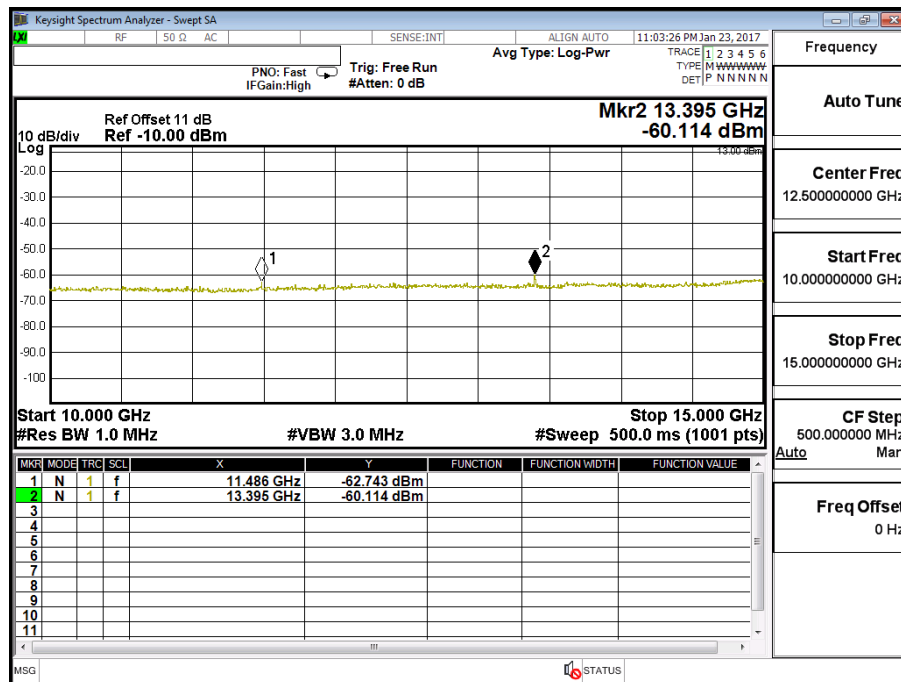
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (1.4M)	Test Range	30MHz~20GHz

LTE-Band 25 (1.4M) 16QAM(1,0) CH26683 (1914.3MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3828	-57.930	1.1	-56.830	-13
5743	-65.043	1.23	-63.813	-13
7657	-65.798	1.59	-64.208	-13
9572	-65.508	1.89	-63.618	-13
11486	-62.743	2.07	-60.673	-13
13395	-60.114	2.26	-57.854	-13
15314	-61.509	2.64	-58.869	-13
17229	-61.059	3.5	-57.559	-13
19143	-59.916	3.7	-56.216	-13



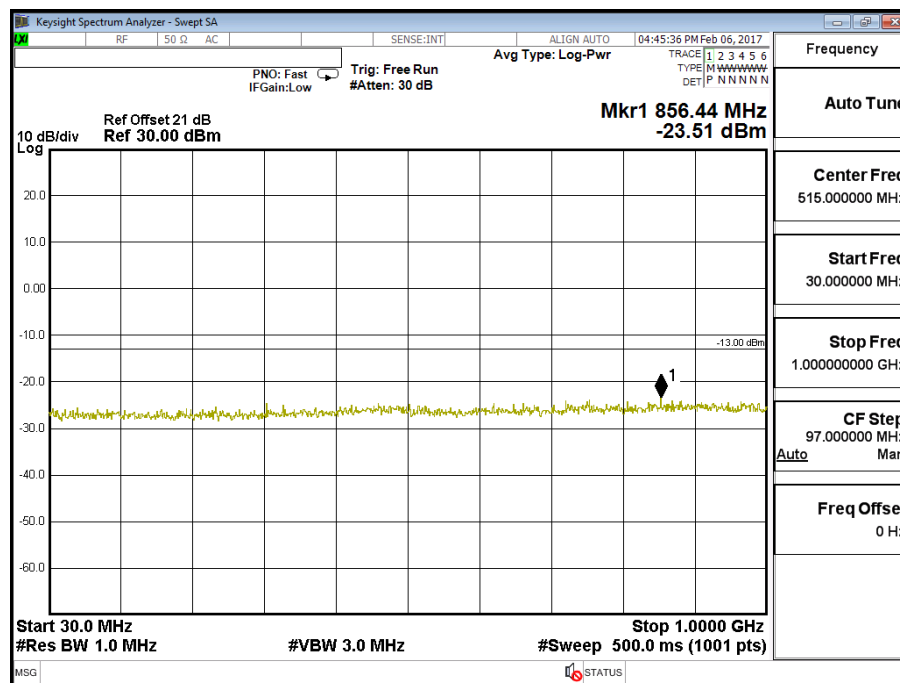


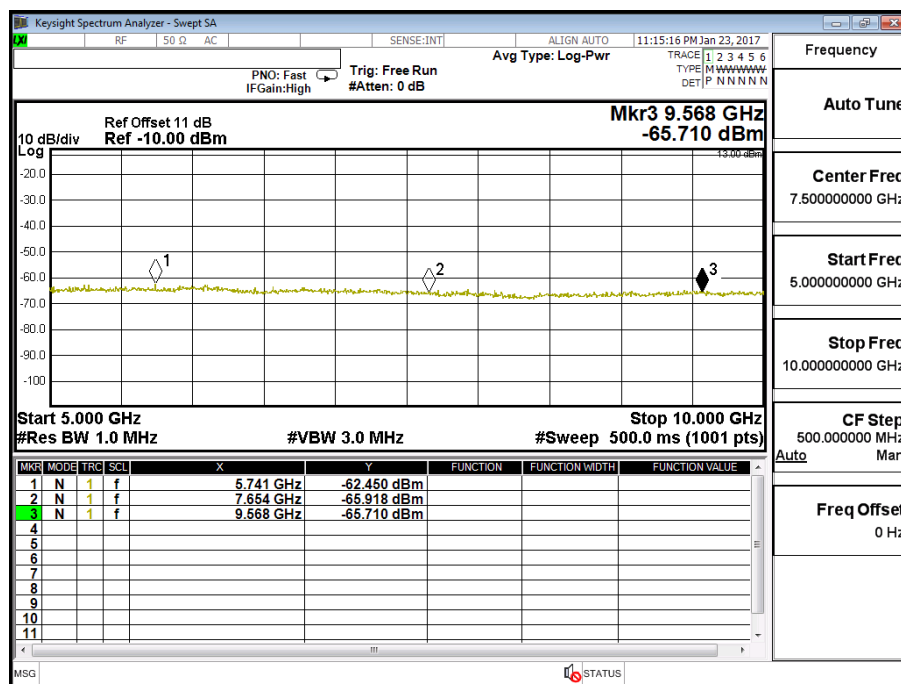
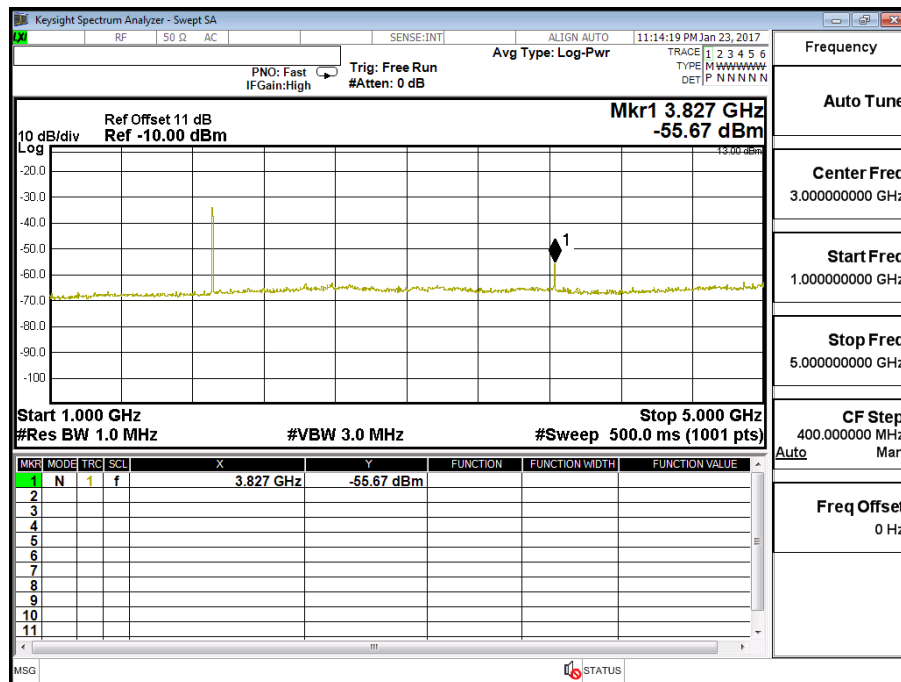


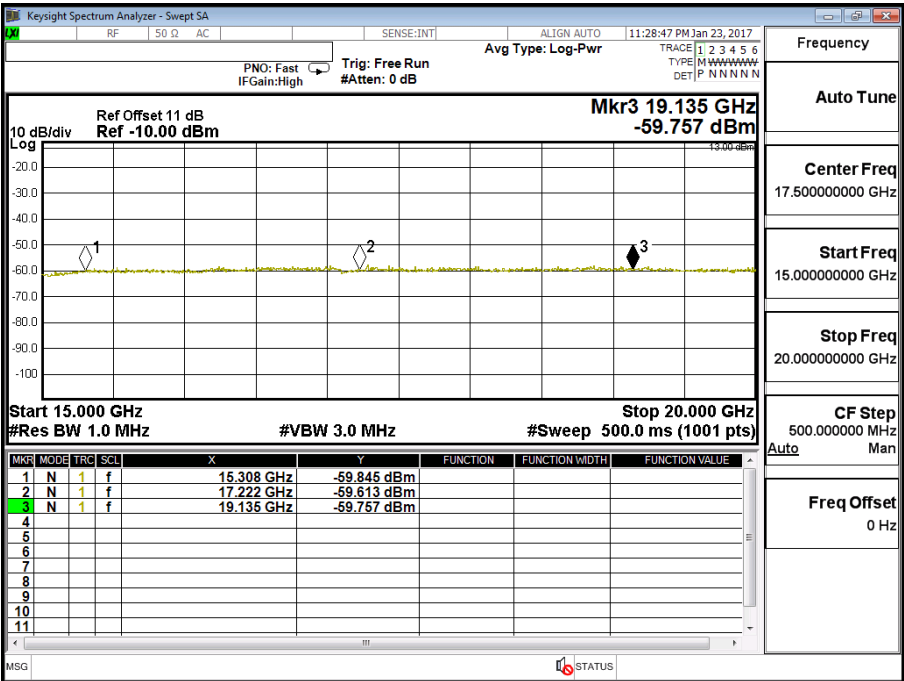
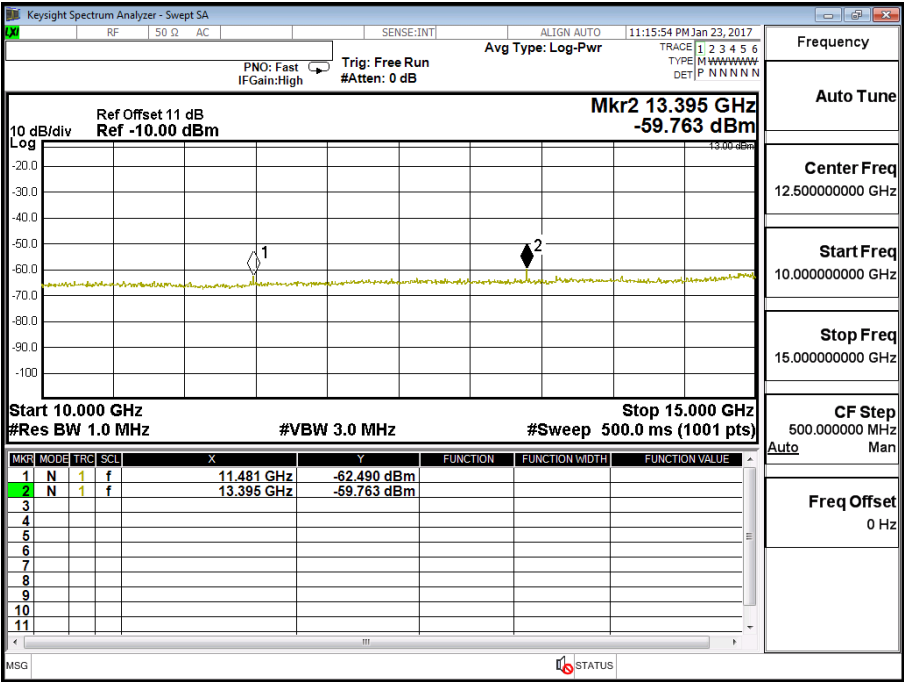
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (3M)	Test Range	30MHz~20GHz

LTE-Band 25 (3M) QPSK(1,7) CH26675 (1913.5MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3827	-55.670	1.1	-54.570	-13
5741	-62.450	1.23	-61.220	-13
7654	-65.918	1.59	-64.328	-13
9568	-65.710	1.89	-63.820	-13
11481	-62.490	2.07	-60.420	-13
13395	-59.763	2.26	-57.503	-13
15308	-59.845	2.64	-57.205	-13
17222	-59.613	3.5	-56.113	-13
19135	-59.757	3.7	-56.057	-13



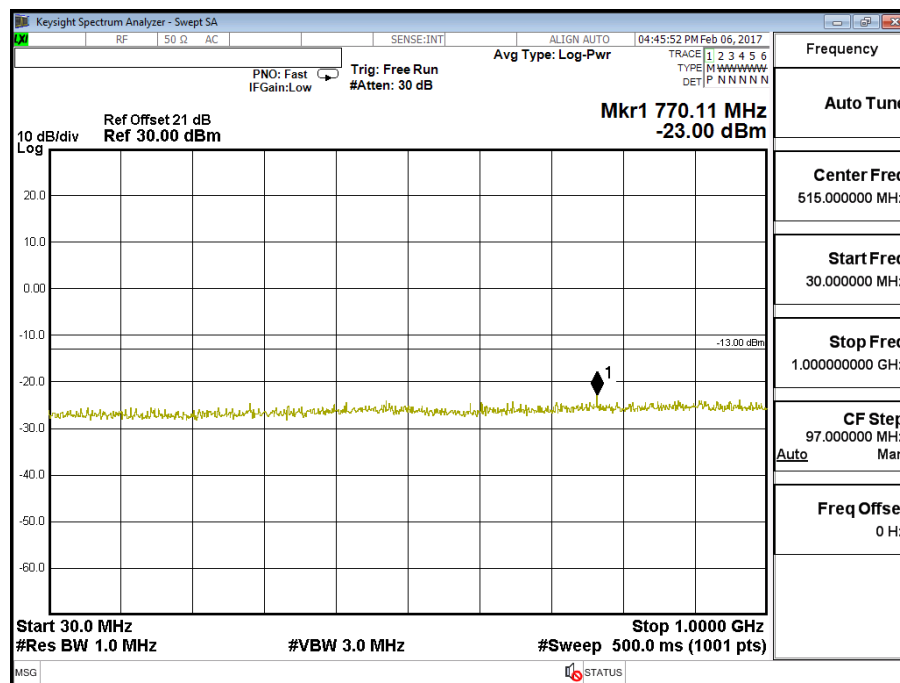


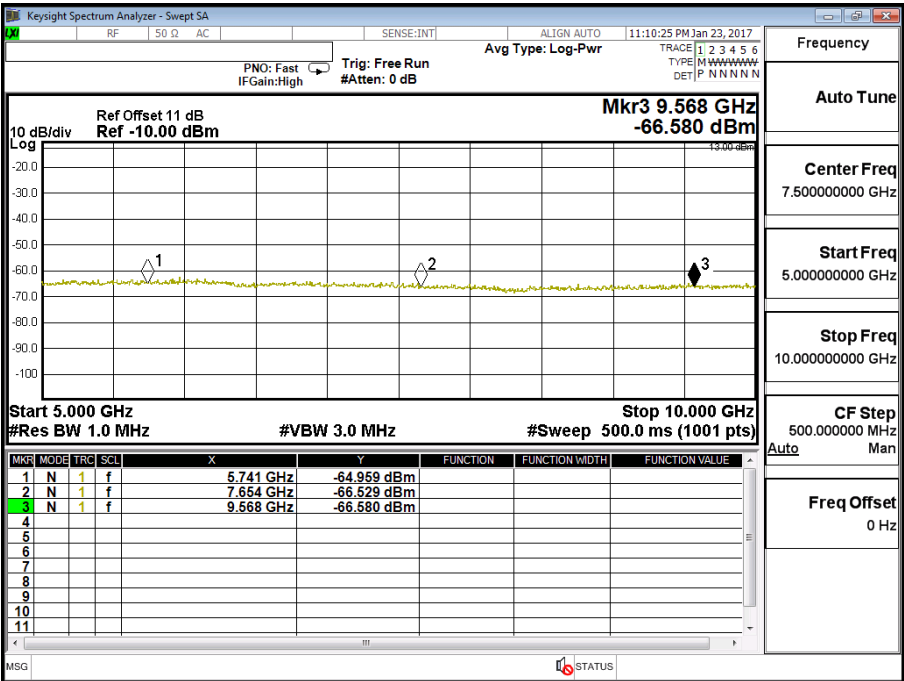
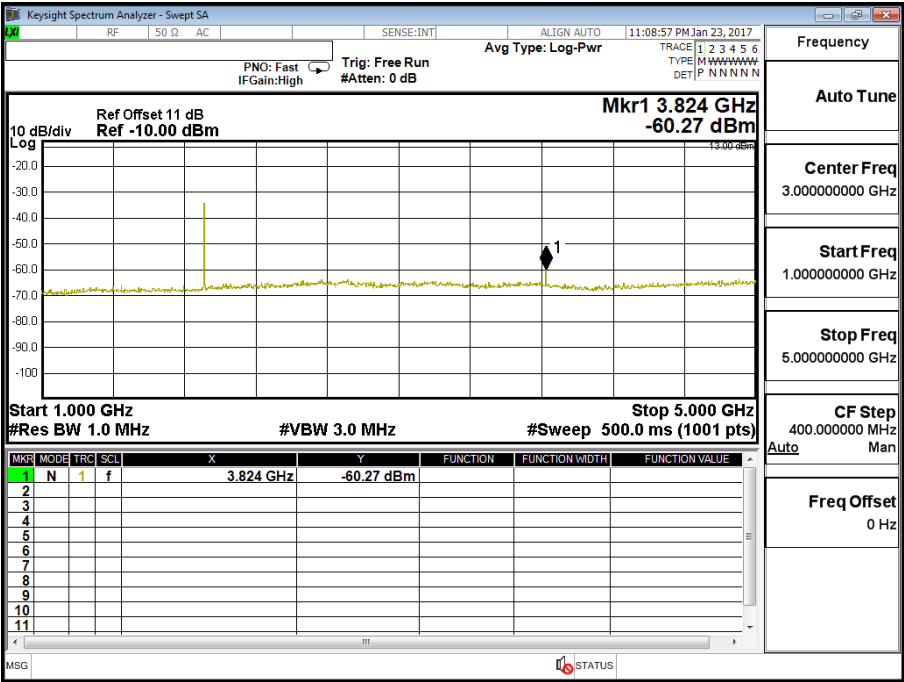


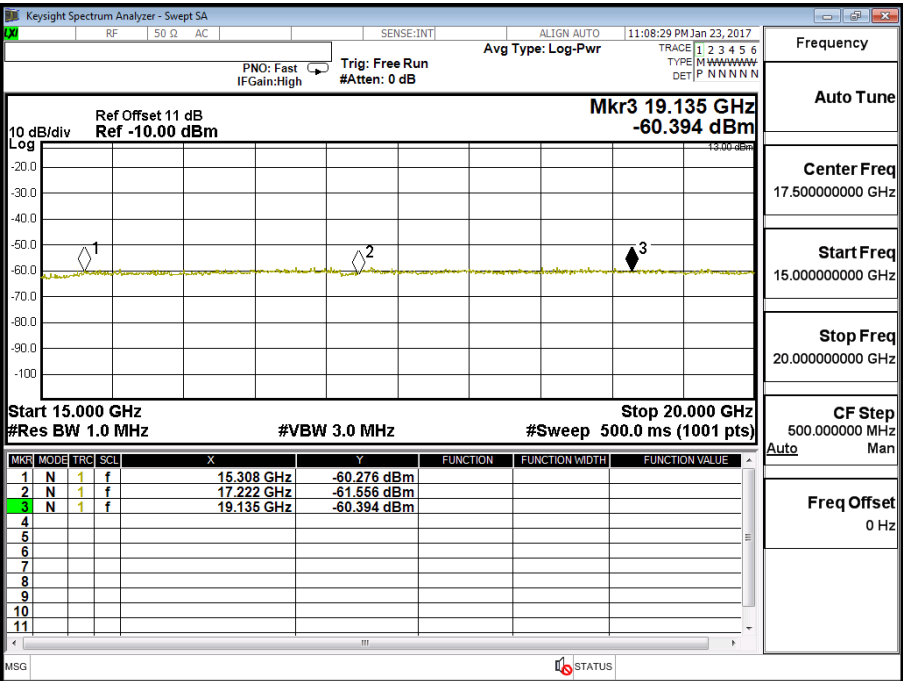
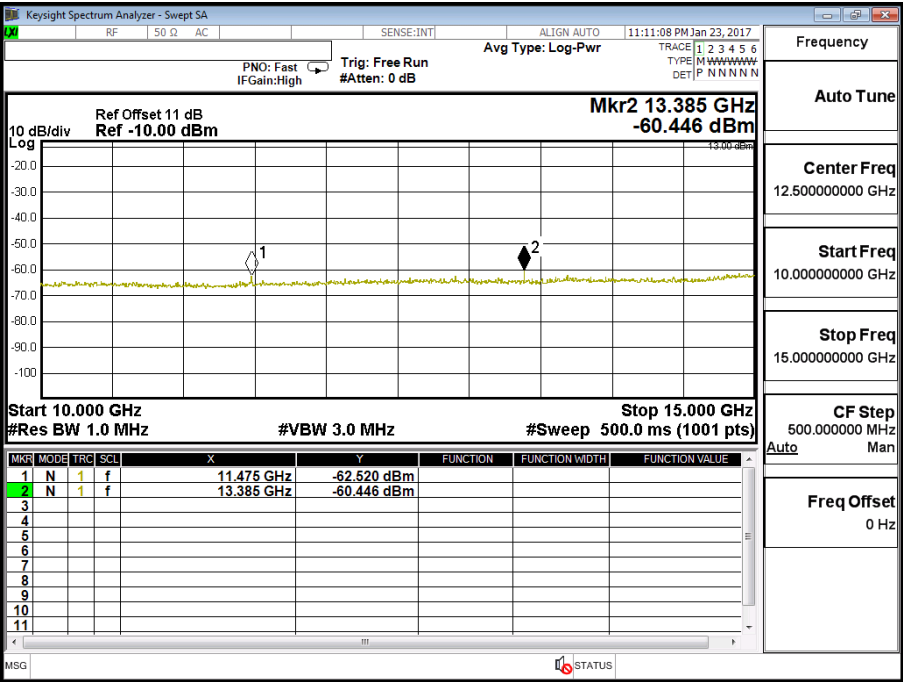
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (3M)	Test Range	30MHz~20GHz

LTE-Band 25 (3M) 16QAM(1,0) CH26675 (1913.5MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3824	-60.270	1.1	-59.170	-13
5741	-64.959	1.23	-63.729	-13
7654	-66.529	1.59	-64.939	-13
9568	-66.580	1.89	-64.690	-13
11475	-62.520	2.07	-60.450	-13
13385	-60.446	2.26	-58.186	-13
15308	-60.276	2.64	-57.636	-13
17222	-61.556	3.5	-58.056	-13
19135	-60.394	3.7	-56.694	-13



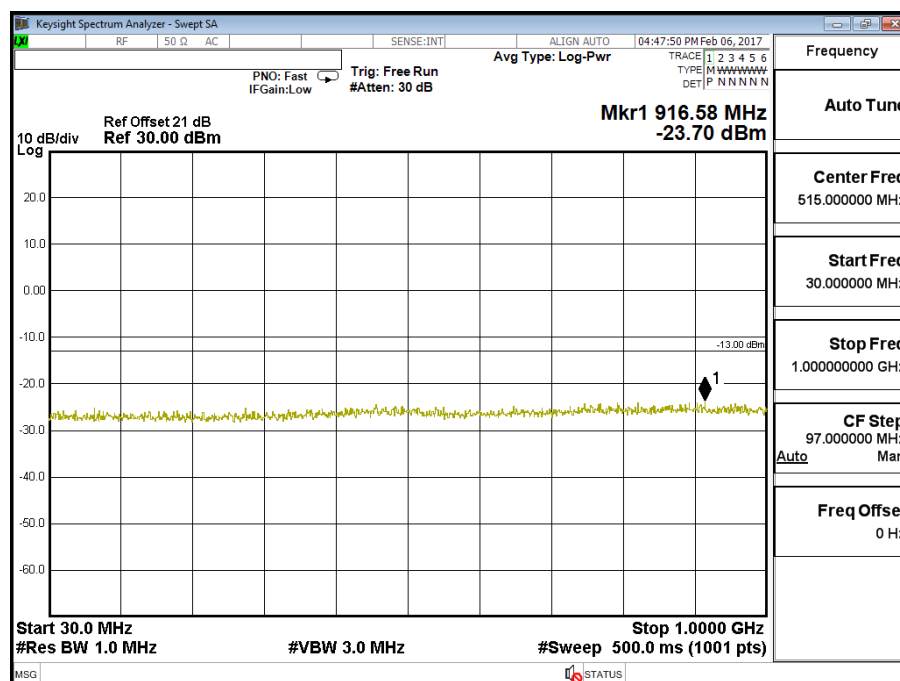


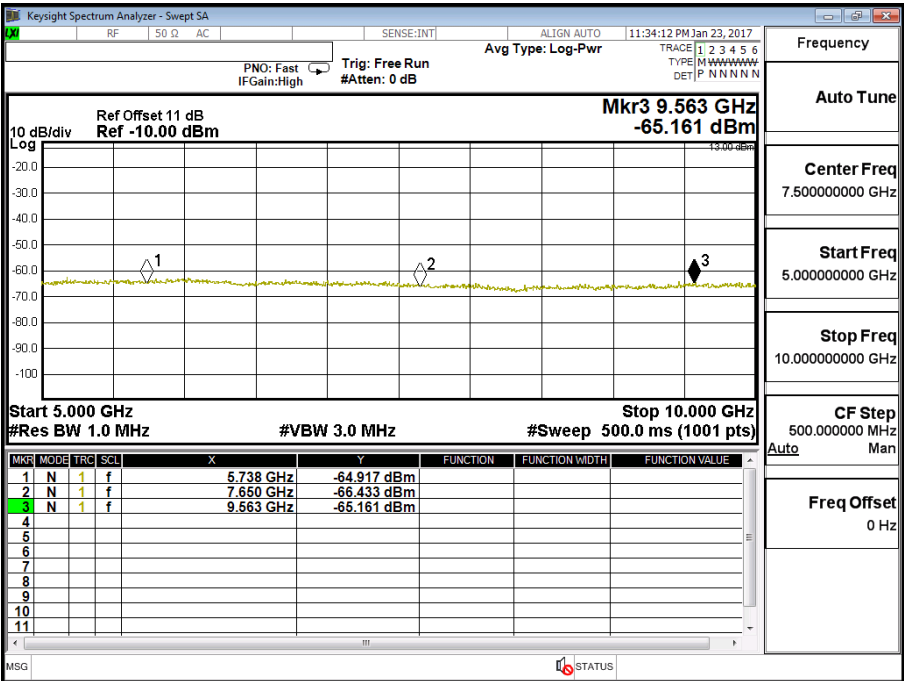
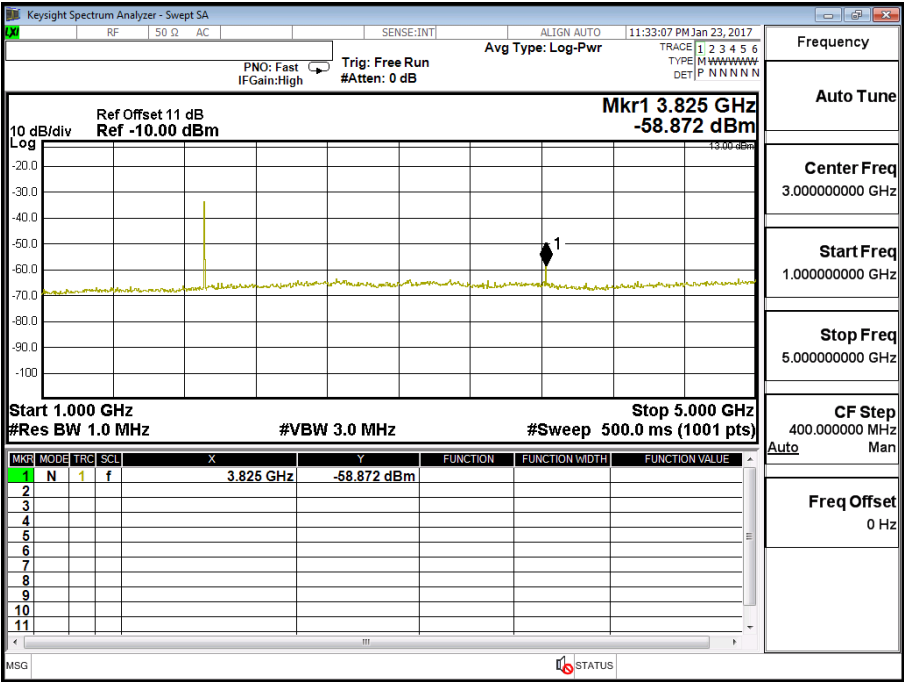


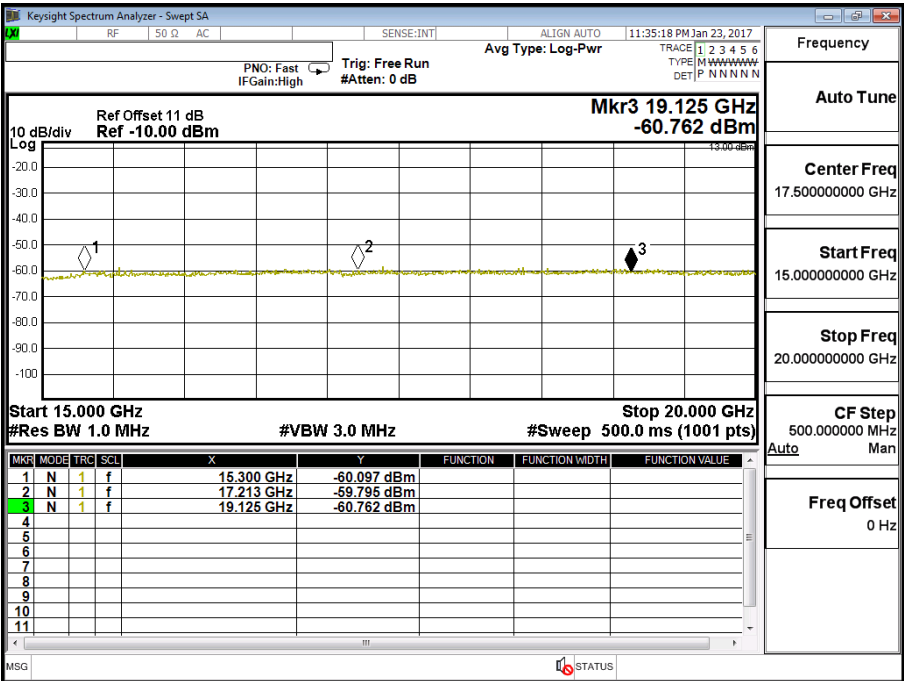
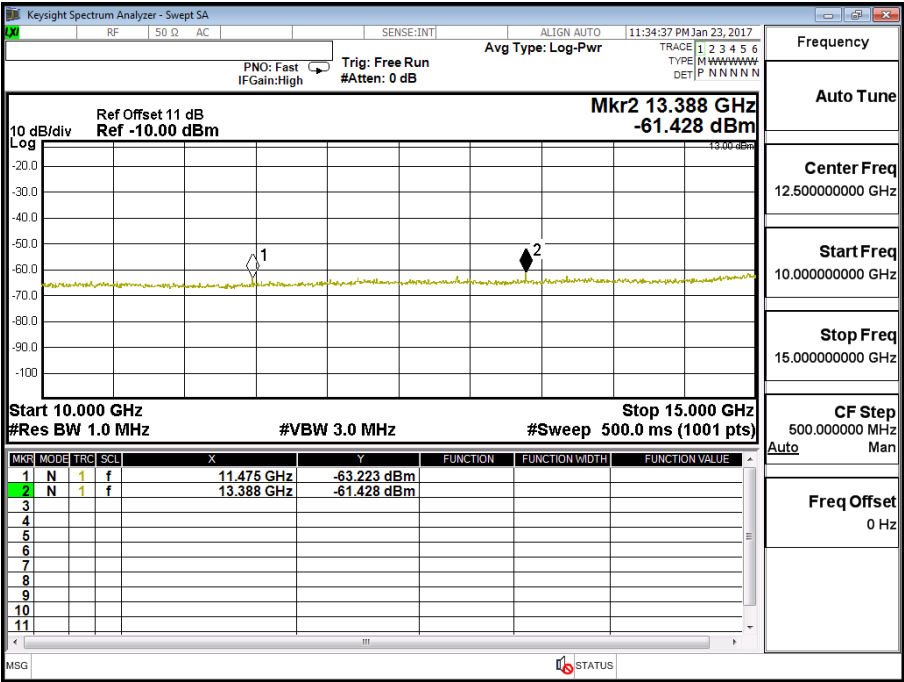
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (5M)	Test Range	30MHz~20GHz

LTE-Band 25 (5M) QPSK(1,12) CH26665 (1912.5MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3825	-58.872	1.1	-57.772	-13
5738	-64.917	1.23	-63.687	-13
7650	-66.433	1.59	-64.843	-13
9563	-65.161	1.89	-63.271	-13
11475	-63.223	2.07	-61.153	-13
13388	-61.428	2.26	-59.168	-13
15300	-60.097	2.64	-57.457	-13
17213	-59.795	3.5	-56.295	-13
19125	-60.762	3.7	-57.062	-13



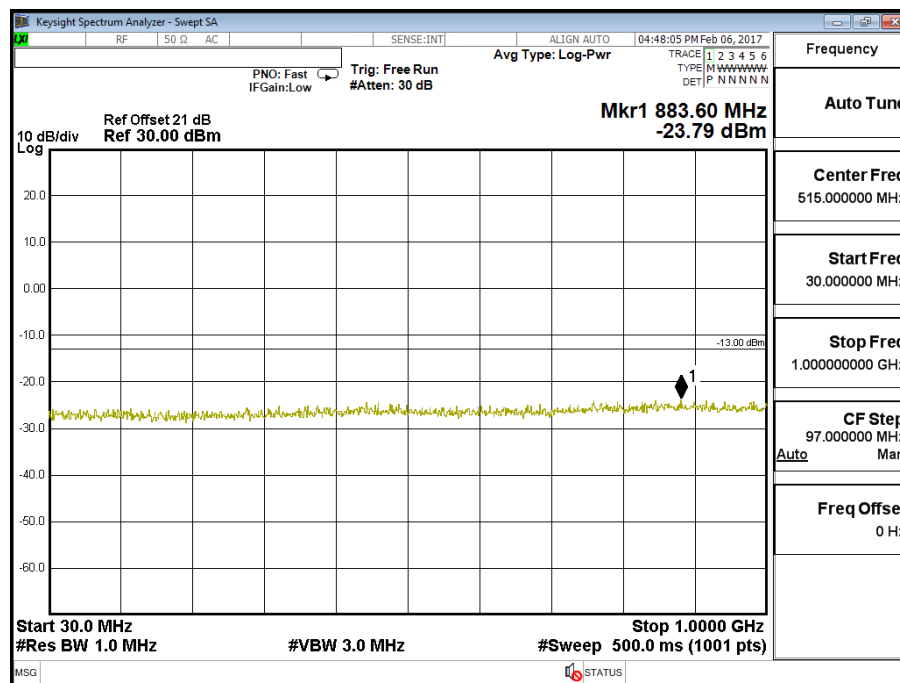


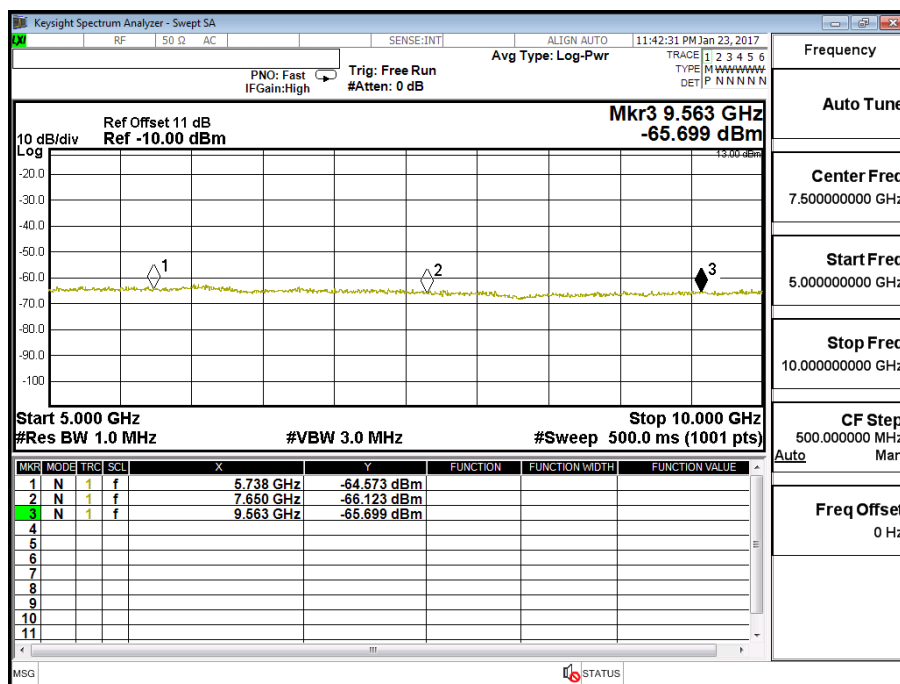
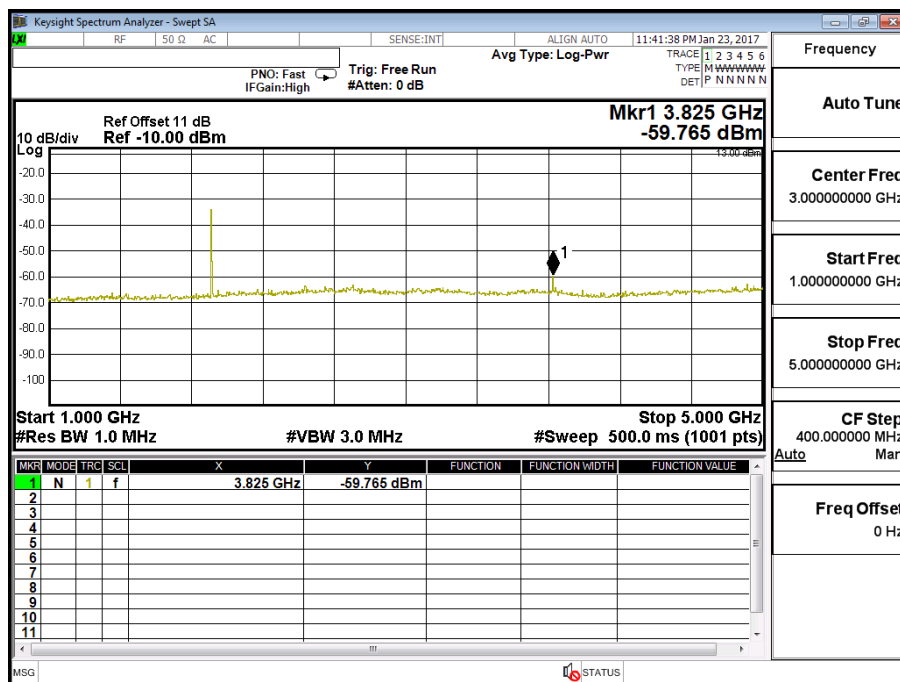


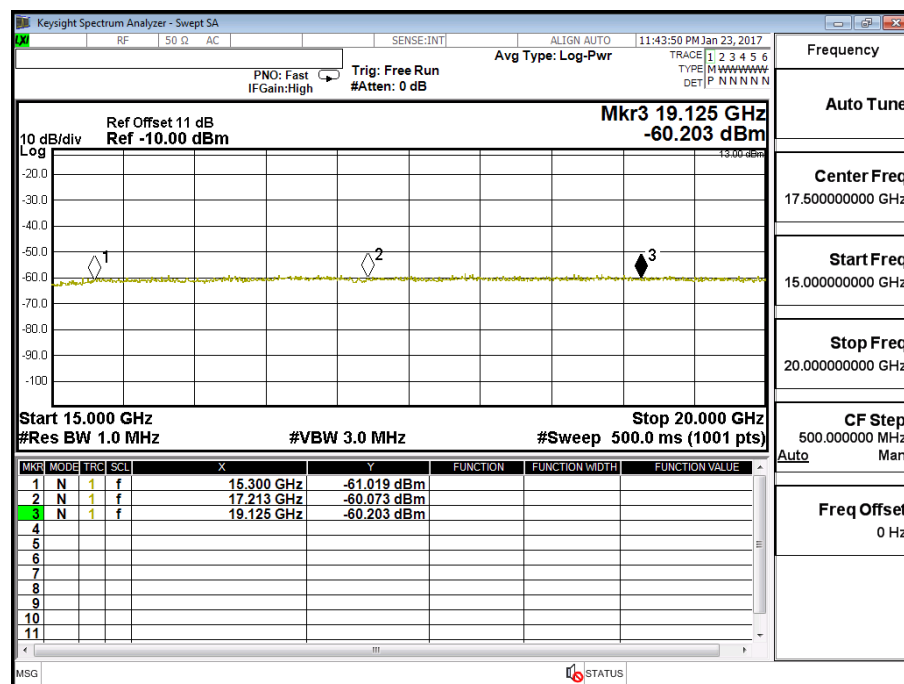
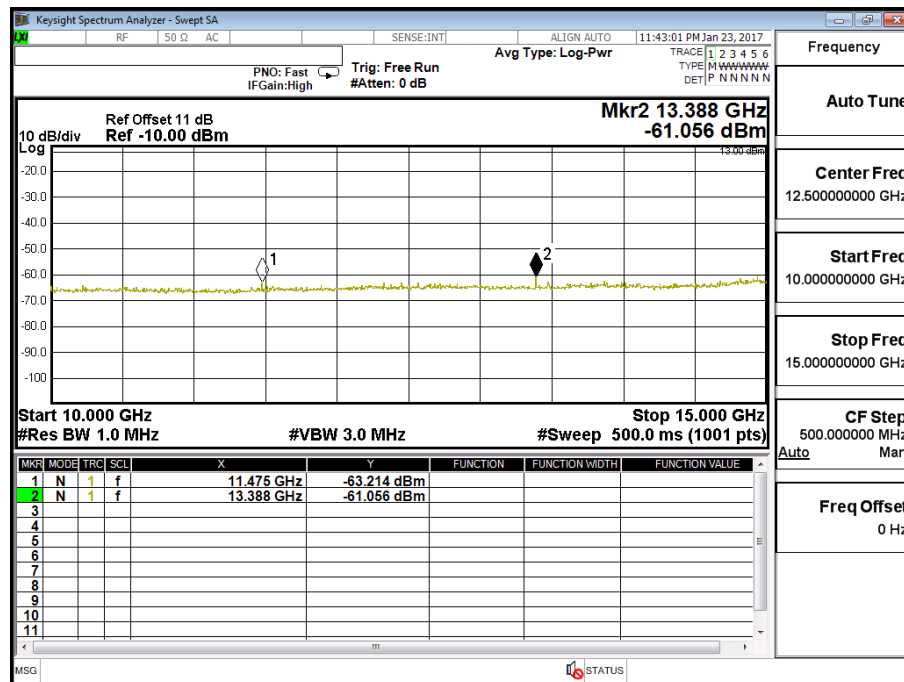
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (5M)	Test Range	30MHz~20GHz

LTE- Band 25 (5M) 16QAM(1,12) CH26665 (1912.5MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3825	-59.765	1.1	-58.665	-13
5738	-64.573	1.23	-63.343	-13
7650	-66.123	1.59	-64.533	-13
9563	-65.699	1.89	-63.809	-13
11475	-63.214	2.07	-61.144	-13
13388	-61.056	2.26	-58.796	-13
15300	-61.019	2.64	-58.379	-13
17213	-60.073	3.5	-56.573	-13
19125	-60.203	3.7	-56.503	-13



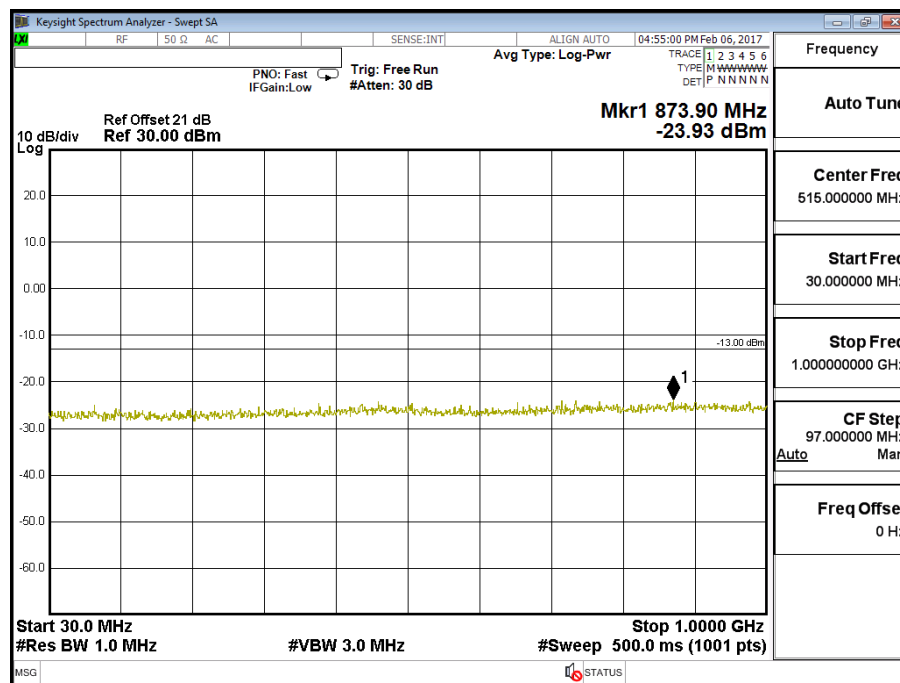


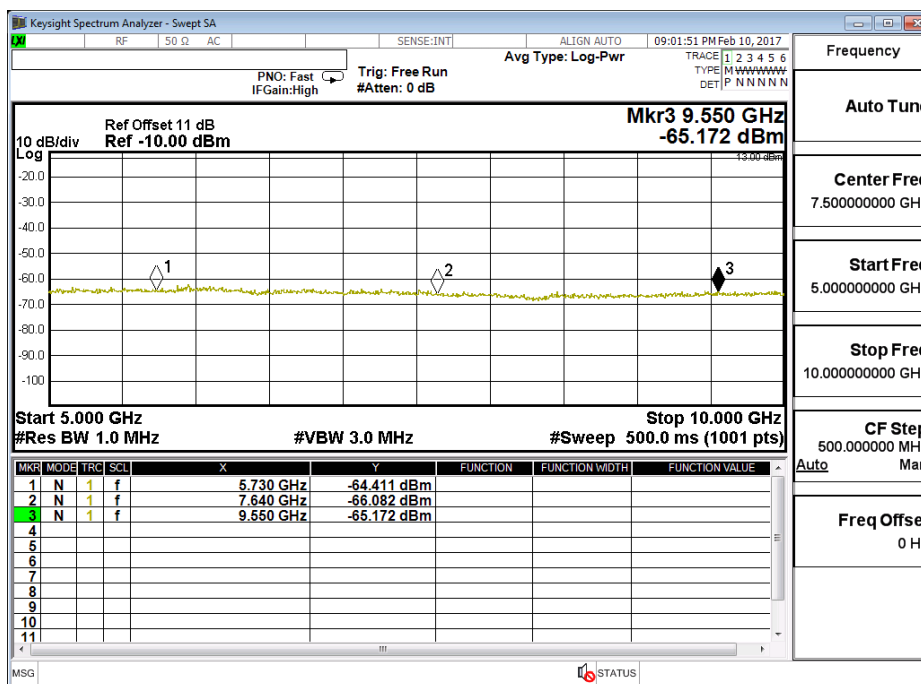
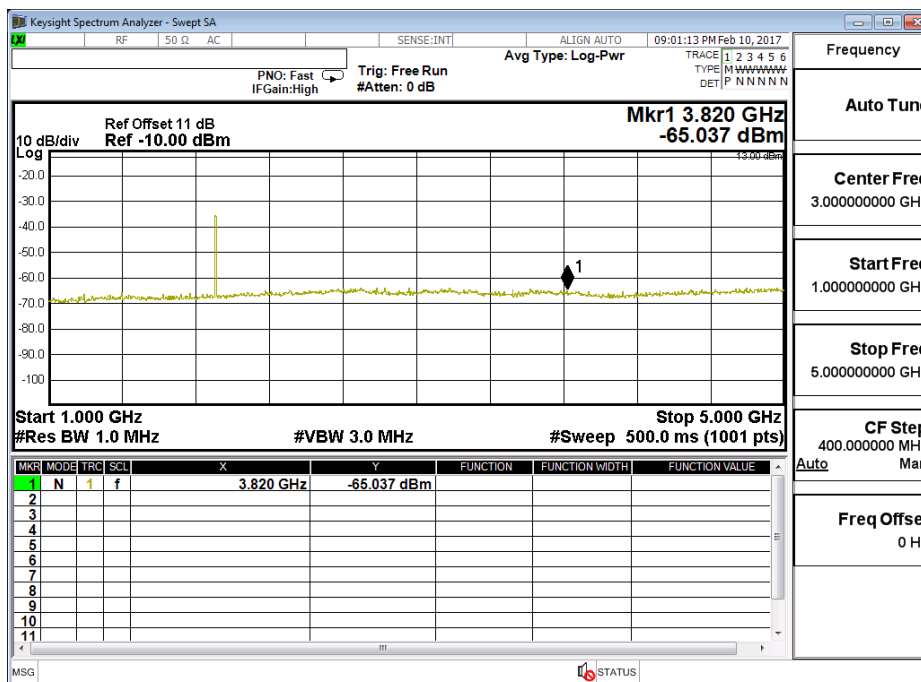


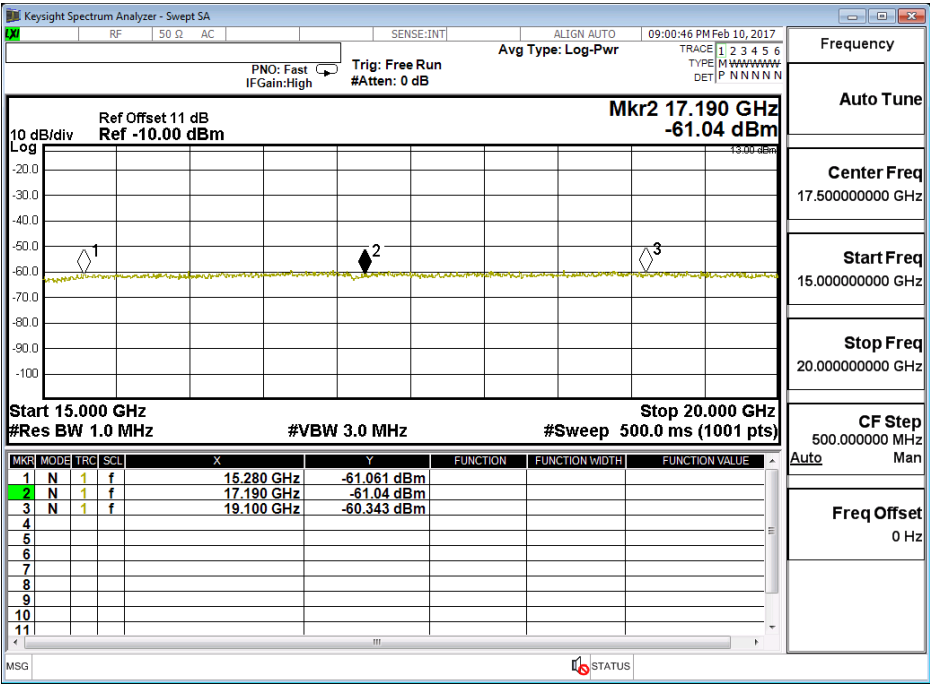
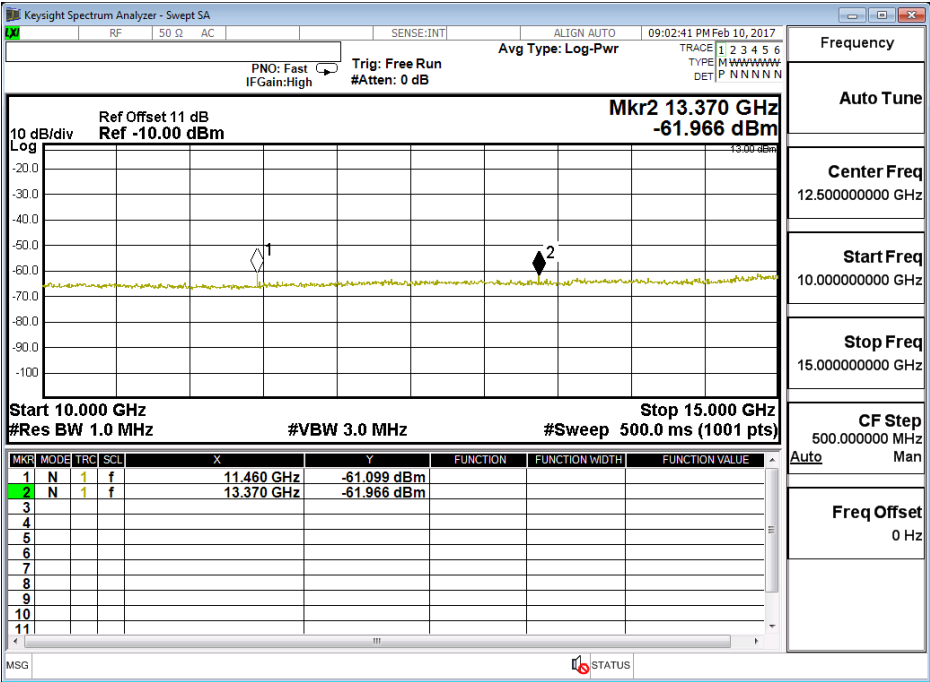
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (10M)	Test Range	30MHz~20GHz

LTE- Band 25 (10M) QPSK(1,24) CH26640 (1910MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3820	-65.037	1.1	-63.937	-13
5730	-64.411	1.23	-63.181	-13
7640	-66.082	1.59	-64.492	-13
9550	-65.172	1.89	-63.282	-13
11460	-61.099	2.07	-59.029	-13
13370	-61.966	2.26	-59.706	-13
15280	-61.061	2.64	-58.421	-13
17190	-61.040	3.5	-57.540	-13
19100	-60.343	3.7	-56.643	-13



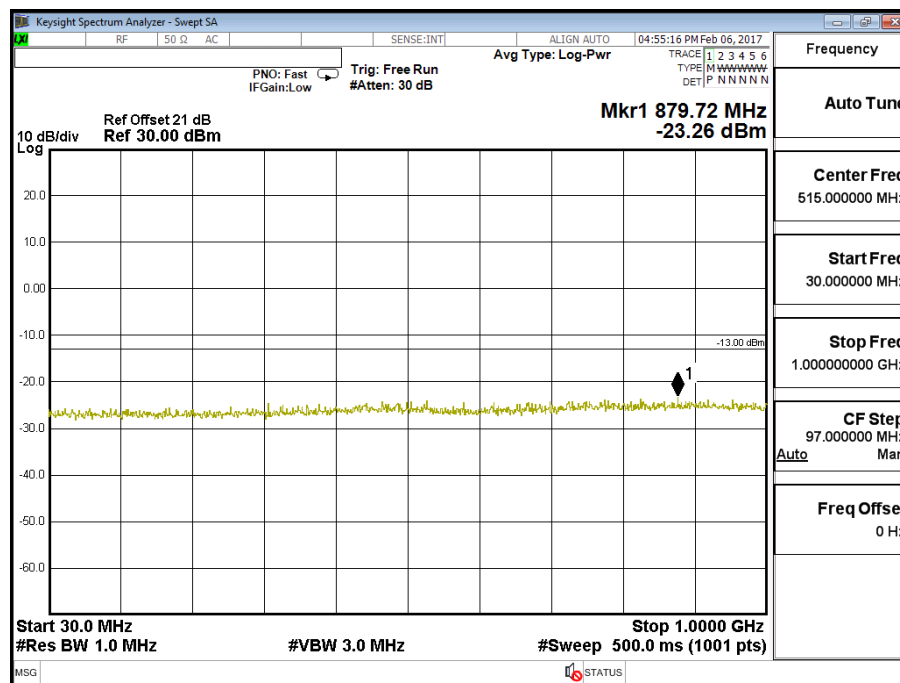


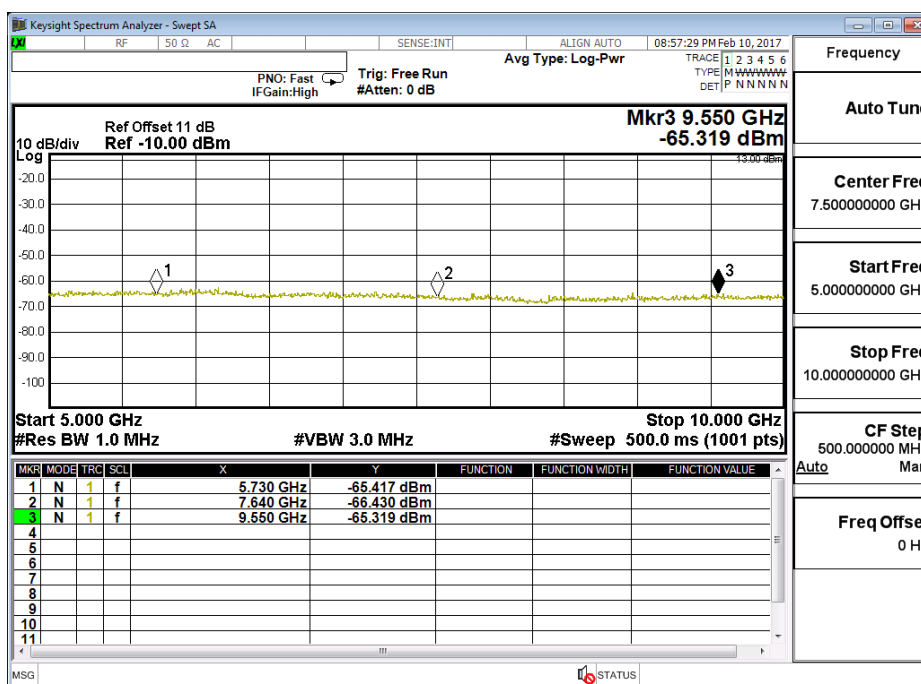
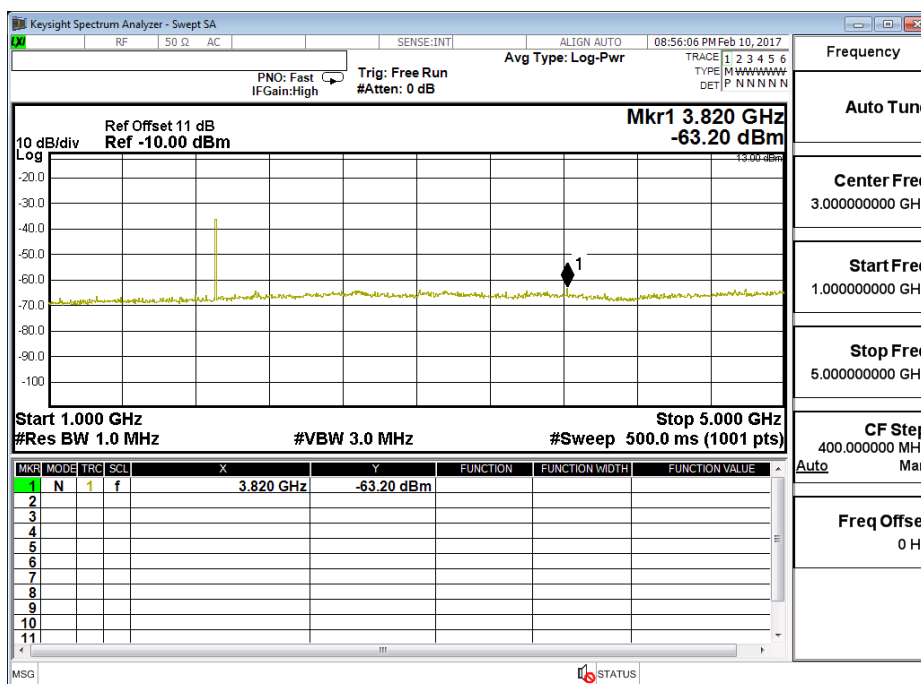


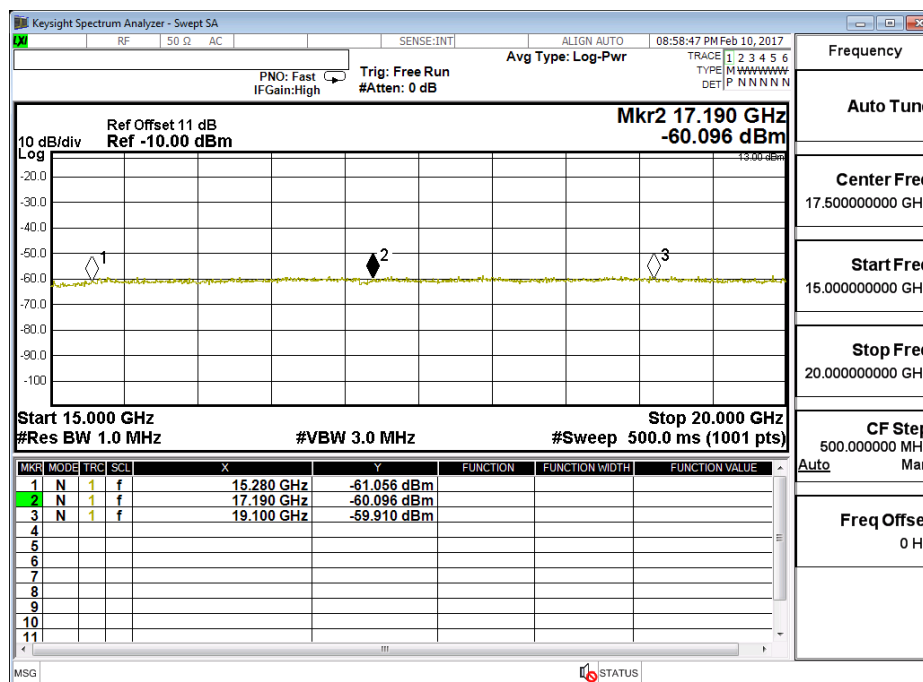
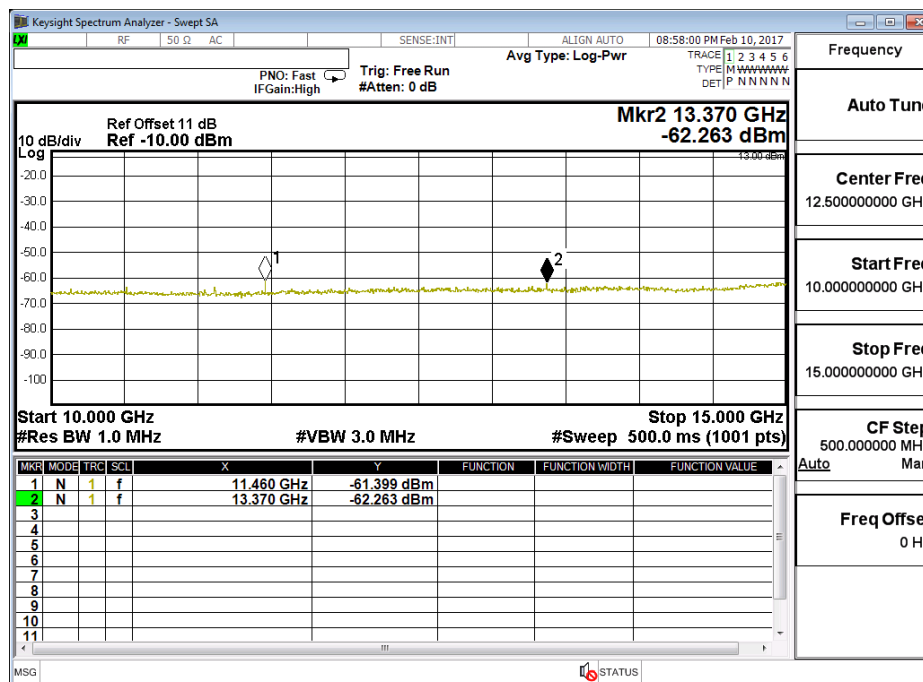
Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 (10M)	Test Range	30MHz~20GHz

LTE- Band 25 10M 16QAM(1,12) CH26640 (1910MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3820	-63.200	1.1	-62.100	-13
5730	-65.417	1.23	-64.187	-13
7640	-66.430	1.59	-64.840	-13
9550	-65.319	1.89	-63.429	-13
11460	-61.399	2.07	-59.329	-13
13370	-62.263	2.26	-60.003	-13
15280	-61.056	2.64	-58.416	-13
17190	-60.096	3.5	-56.596	-13
19100	-59.910	3.7	-56.210	-13







Product	Advanced Industrial 4G/LTE Router, WWAN Failover Manager		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/02/06	Test Site	CTR
Test Condition	LTE-Band 25 15M	Test Range	30MHz~20GHz

LTE-Band 25 15M QPSK(1,37) CH26615 (1907.5MHz)

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3815	-63.281	1.1	-62.181	-13
5723	-63.452	1.23	-62.222	-13
7630	-65.238	1.59	-63.648	-13
9538	-66.185	1.89	-64.295	-13
11445	-61.653	2.07	-59.583	-13
13353	-61.038	2.26	-58.778	-13
15260	-60.013	2.64	-57.373	-13
17168	-60.853	3.5	-57.353	-13
19075	-60.185	3.7	-56.485	-13

