

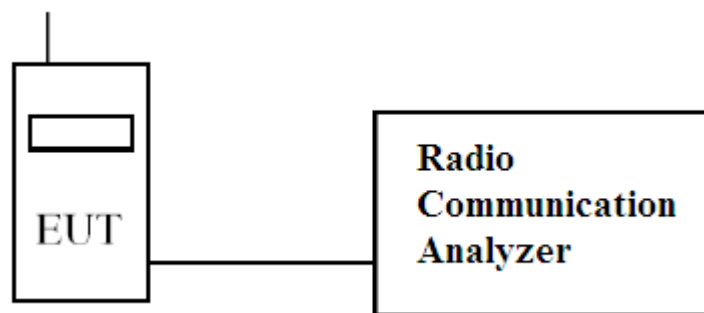
6. Spurious Emission

6.1. Test Specification

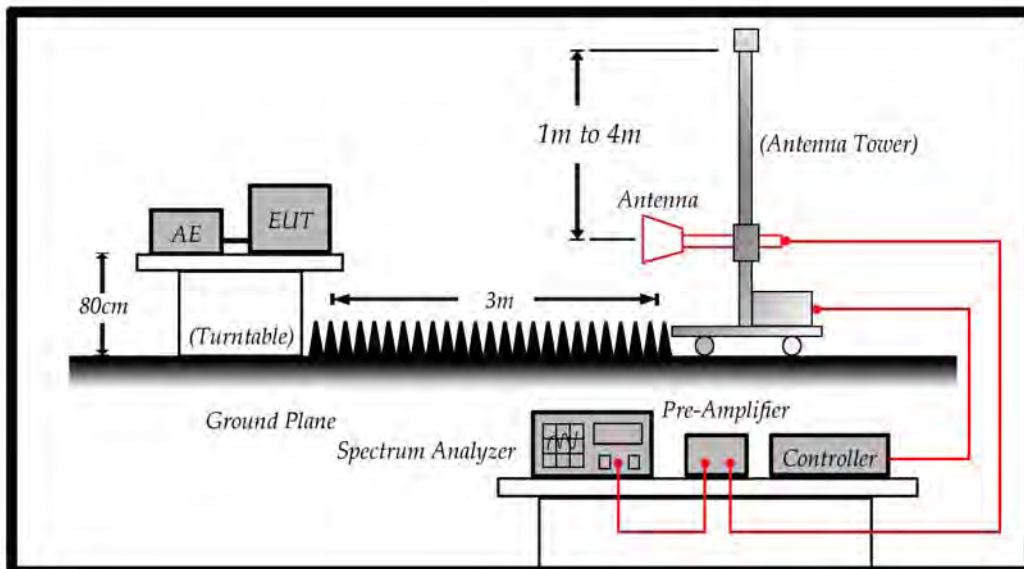
According to Part 2.1051, 2.1053, 27.53
 RSS GEN, RSS 130, RSS 139

6.2. Test Setup

6.2.1 Spurious emissions at antenna terminals.



6.2.2 Field strength of spurious radiation.



6.3. Limits

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

6.4. Test Procedure

In accordance with Part 2.1051, 2.1053, 27.53, RSS GEN, RSS 130, RSS 139., 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, 27.53, RSS GEN, RSS 130, RSS 139. 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.

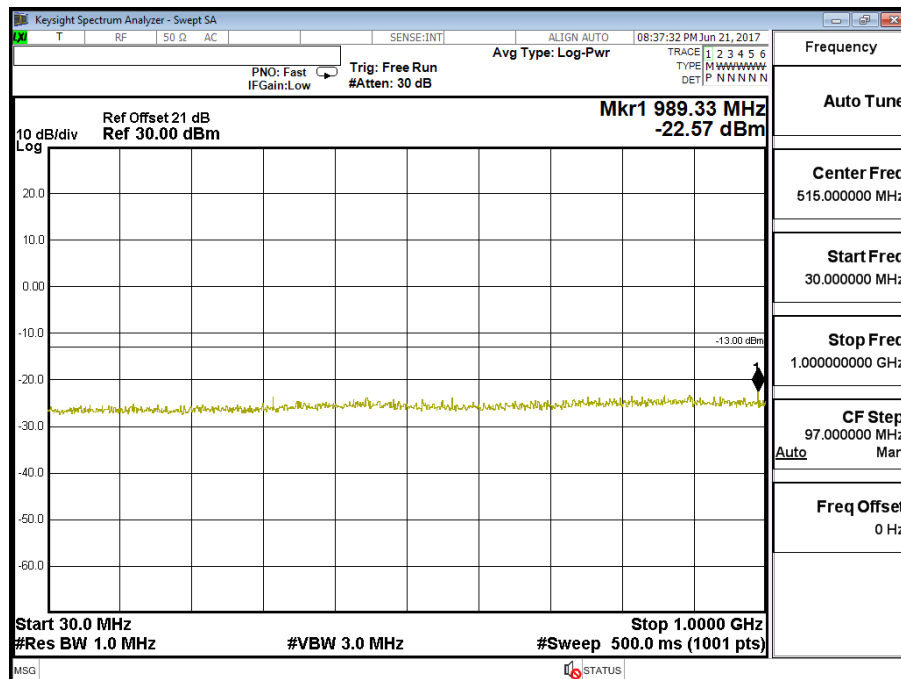
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to TIA/EIA 603-D on radiated measurement.

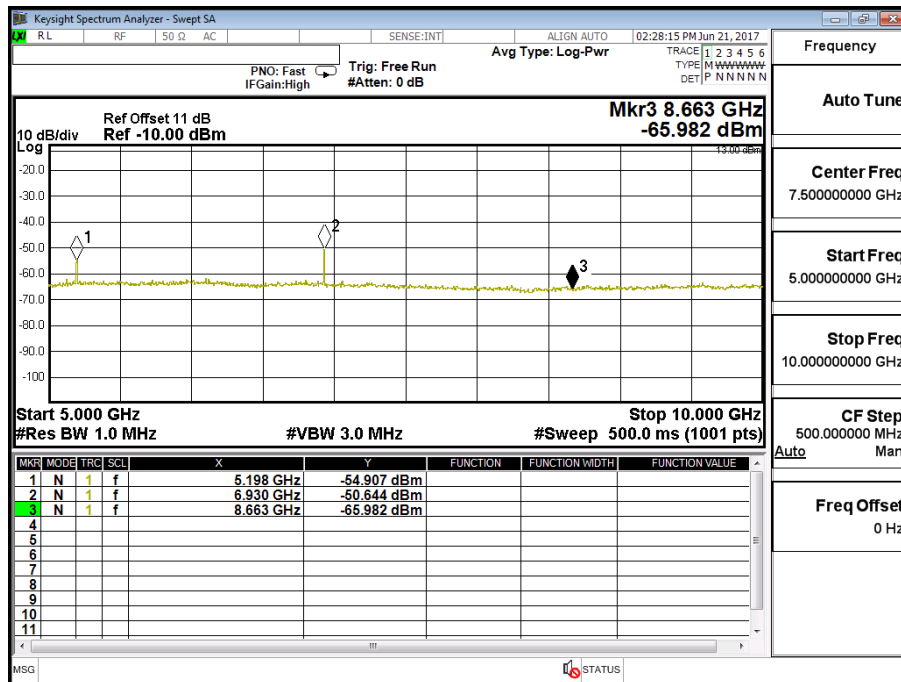
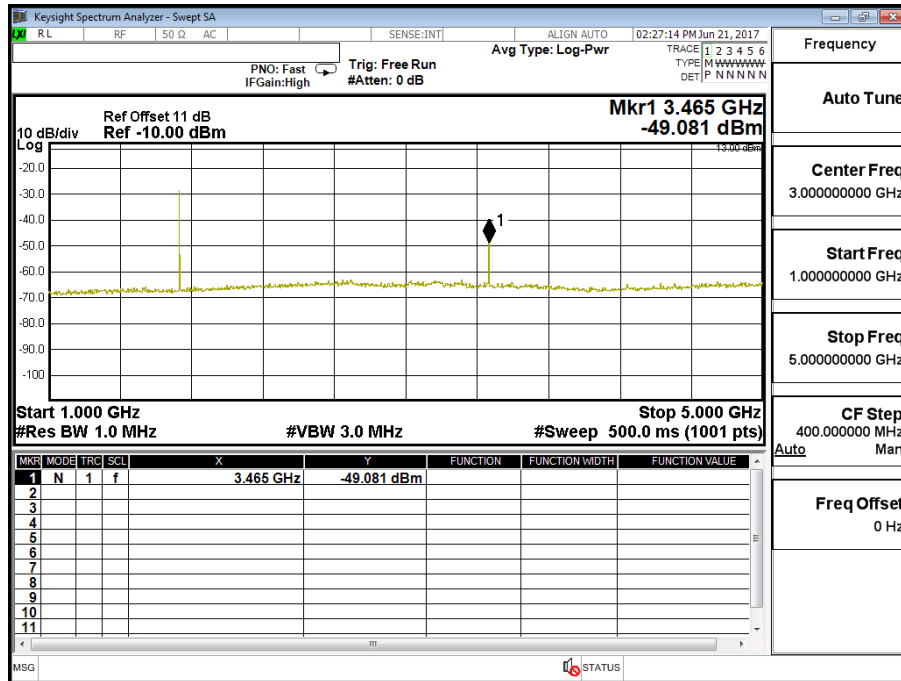
6.5. Test Result of Spurious Emission

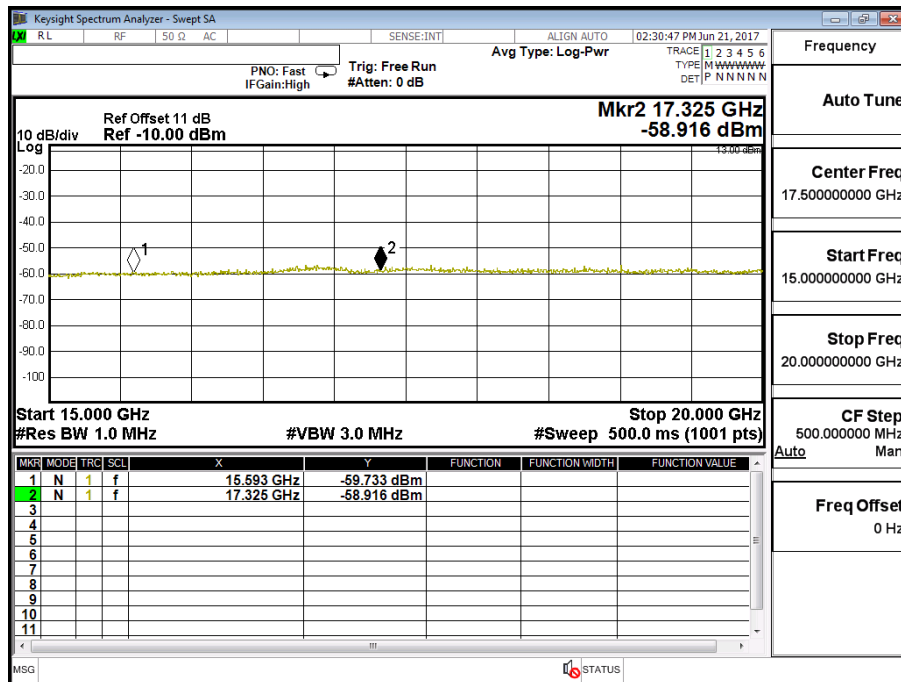
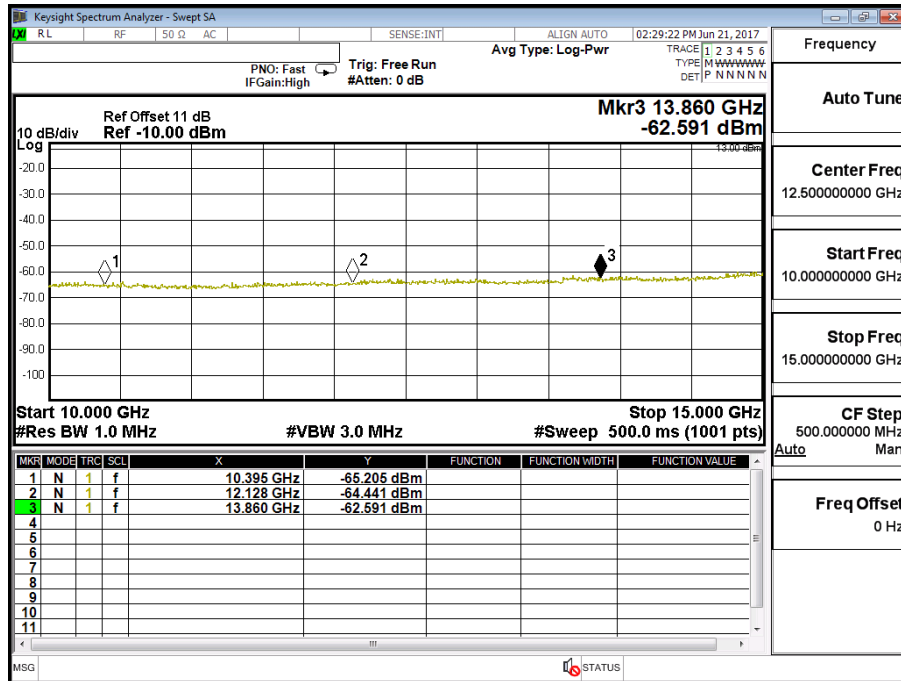
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (1.4M)	Test Range	30MHz~20GHz

LTE-Band 4 (1.4M) QPSK(1,3) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3465	-49.081	1.1	-47.981	-13
5198	-54.907	1.23	-53.677	-13
6930	-50.644	1.59	-49.054	-13
8663	-65.982	1.89	-64.092	-13
10395	-65.205	2.07	-63.135	-13
12128	-64.441	2.26	-62.181	-13
13860	-62.591	2.64	-59.951	-13
15593	-59.733	3.5	-56.233	-13
17325	-58.916	3.7	-55.216	-13



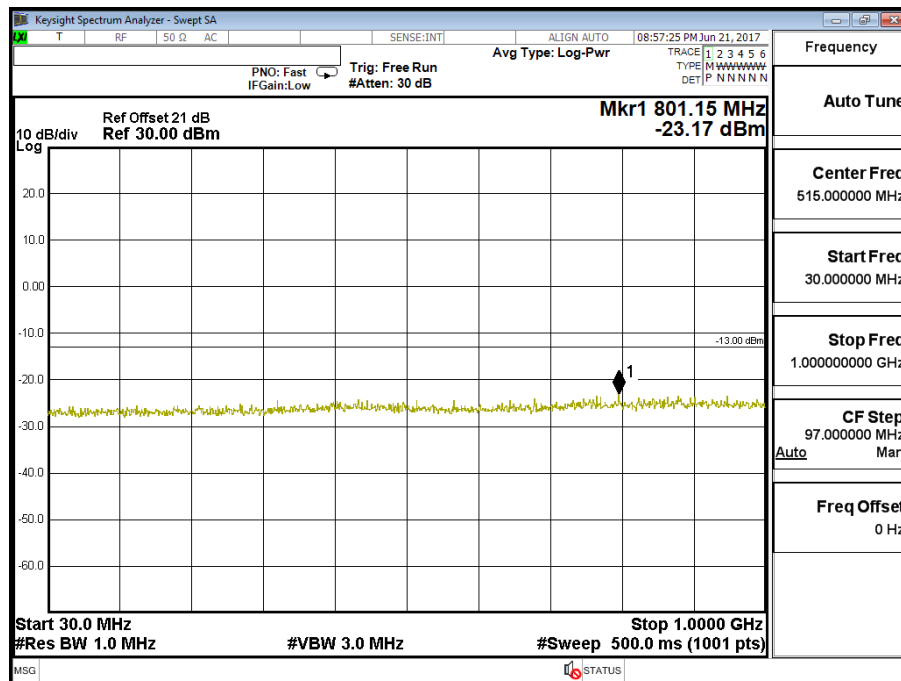


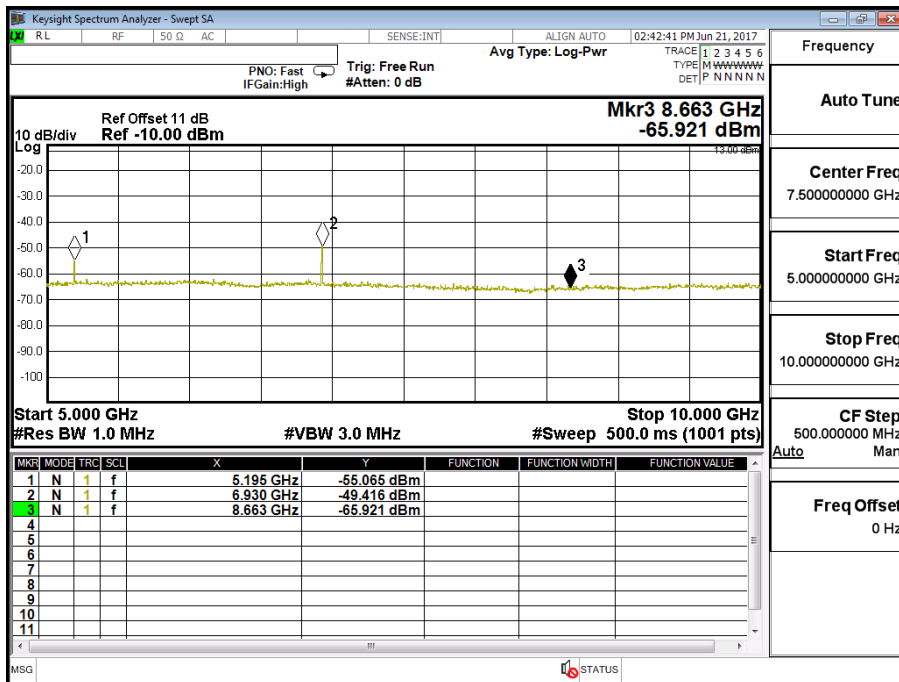
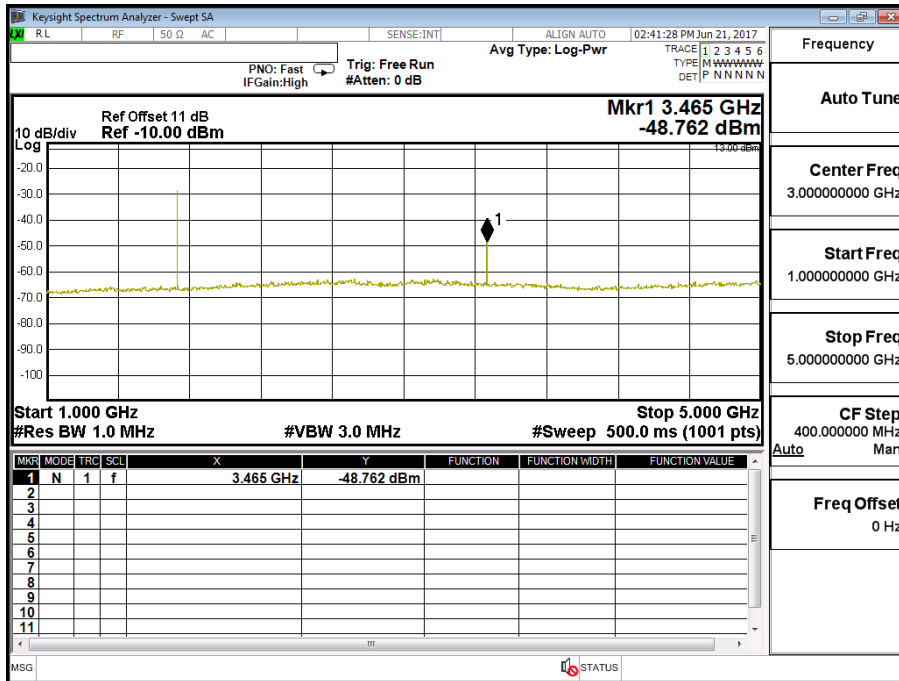


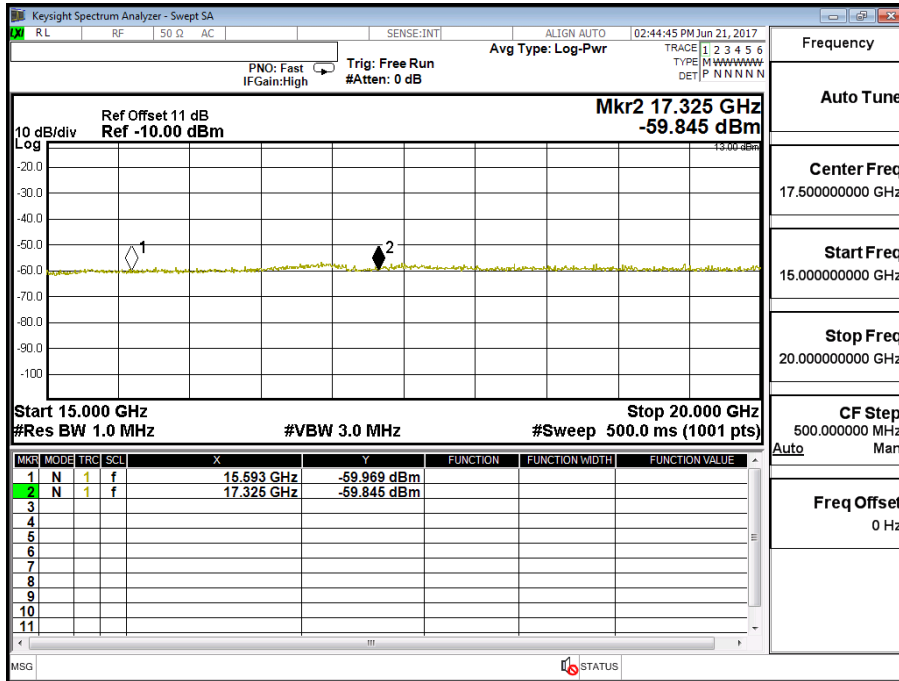
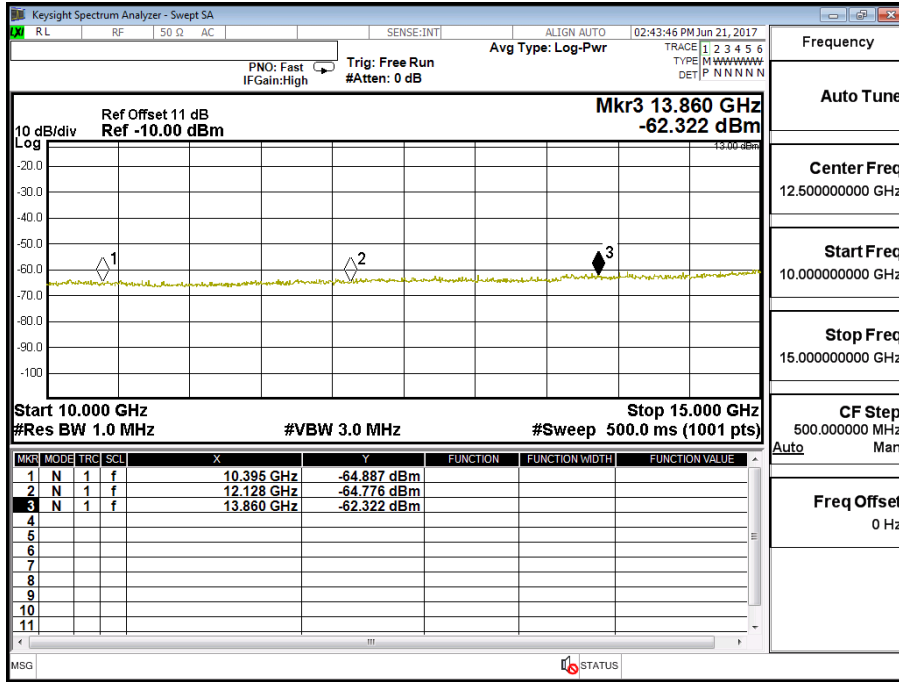
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (1.4M)	Test Range	30MHz~20GHz

LTE-Band 4 (1.4M) 16QAM(1,0) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3465	-48.762	1.1	-47.662	-13
5195	-55.065	1.23	-53.835	-13
6930	-49.416	1.59	-47.826	-13
8663	-65.921	1.89	-64.031	-13
10395	-64.887	2.07	-62.817	-13
12128	-64.776	2.26	-62.516	-13
13860	-62.322	2.64	-59.682	-13
15593	-59.969	3.5	-56.469	-13
17325	-59.845	3.7	-56.145	-13



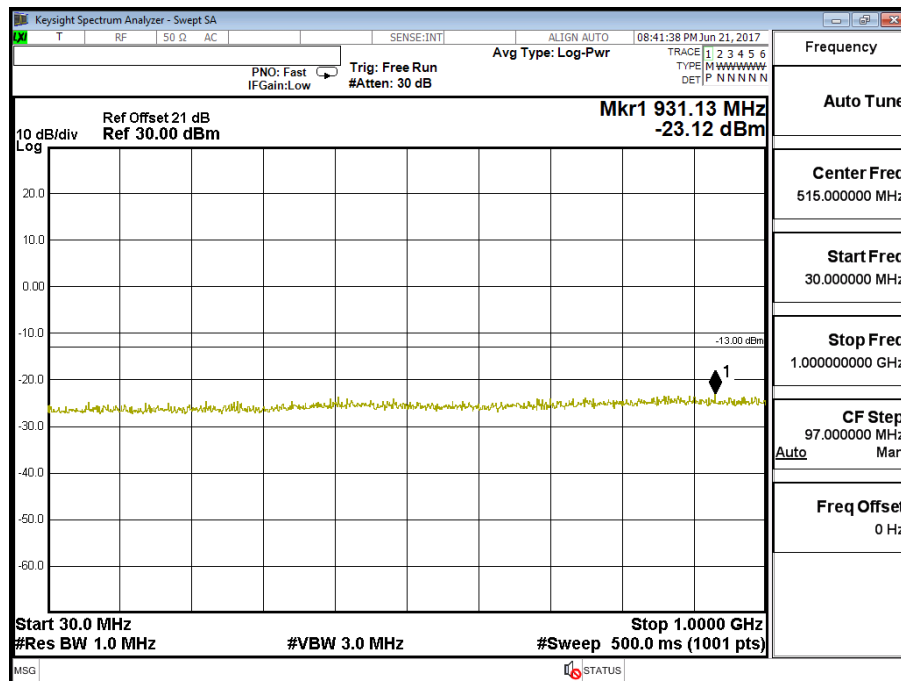


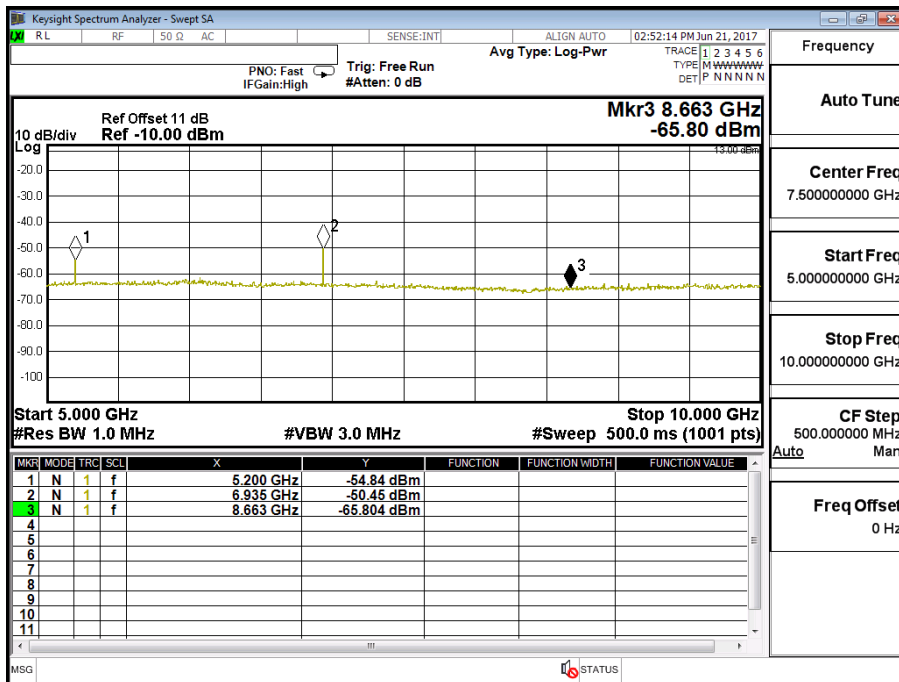
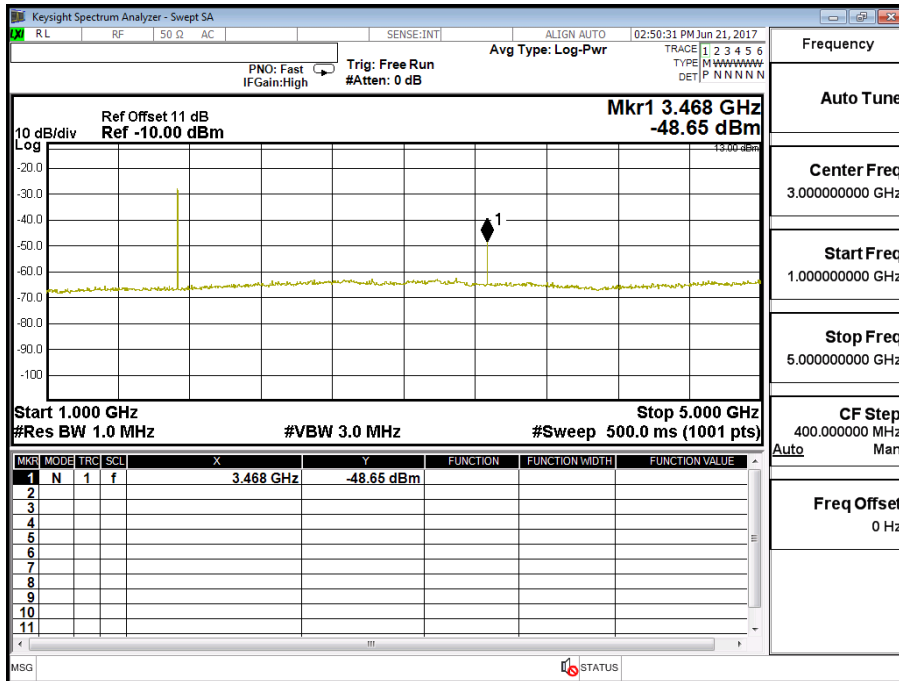


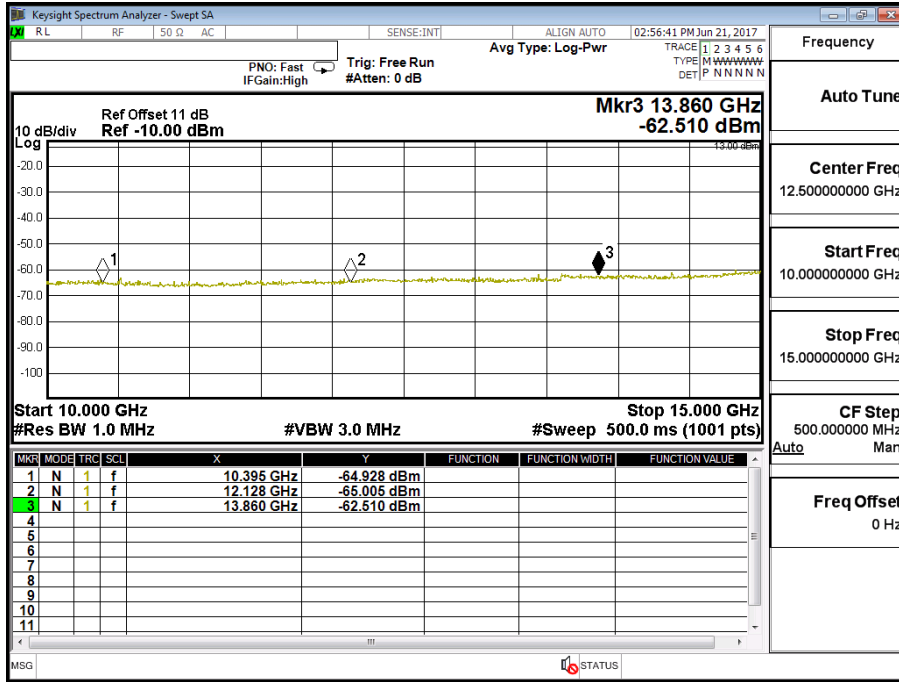
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (3M)	Test Range	30MHz~20GHz

LTE-Band 4 (3M) QPSK(1,14) CH20175

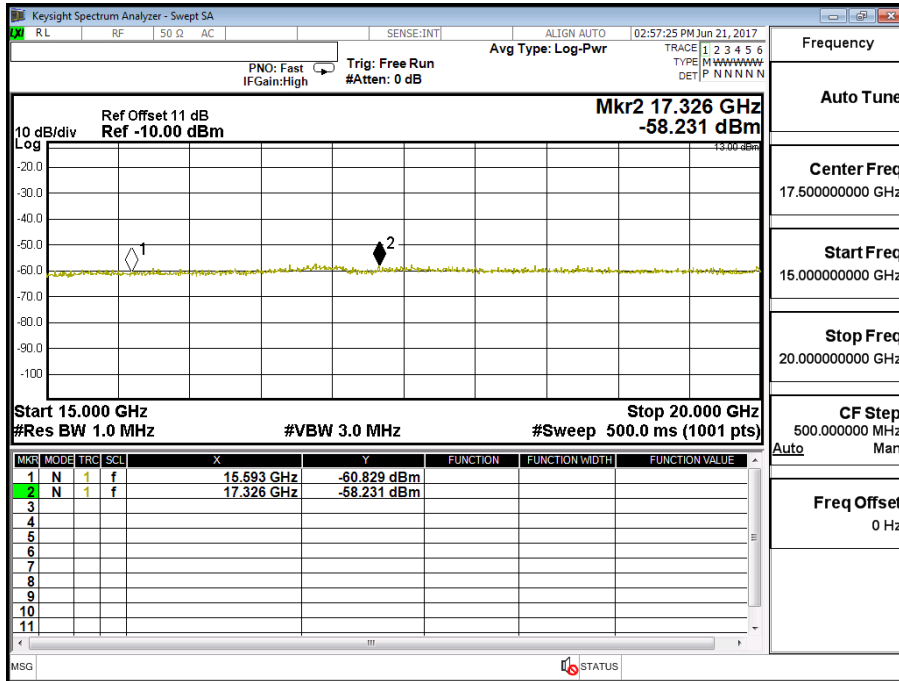
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3468	-48.650	1.1	-47.550	-13
5200	-54.840	1.23	-53.610	-13
6935	-50.450	1.59	-48.860	-13
8663	-65.804	1.89	-63.914	-13
10395	-64.928	2.07	-62.858	-13
12128	-65.005	2.26	-62.745	-13
13860	-62.510	2.64	-59.870	-13
15593	-60.829	3.5	-57.329	-13
17326	-58.231	3.7	-54.531	-13







Frequency	Auto Tune
Center Freq	12.500000000 GHz
Start Freq	10.000000000 GHz
Stop Freq	15.000000000 GHz
CF Step	500.000000 MHz
	Auto Man
Freq Offset	0 Hz

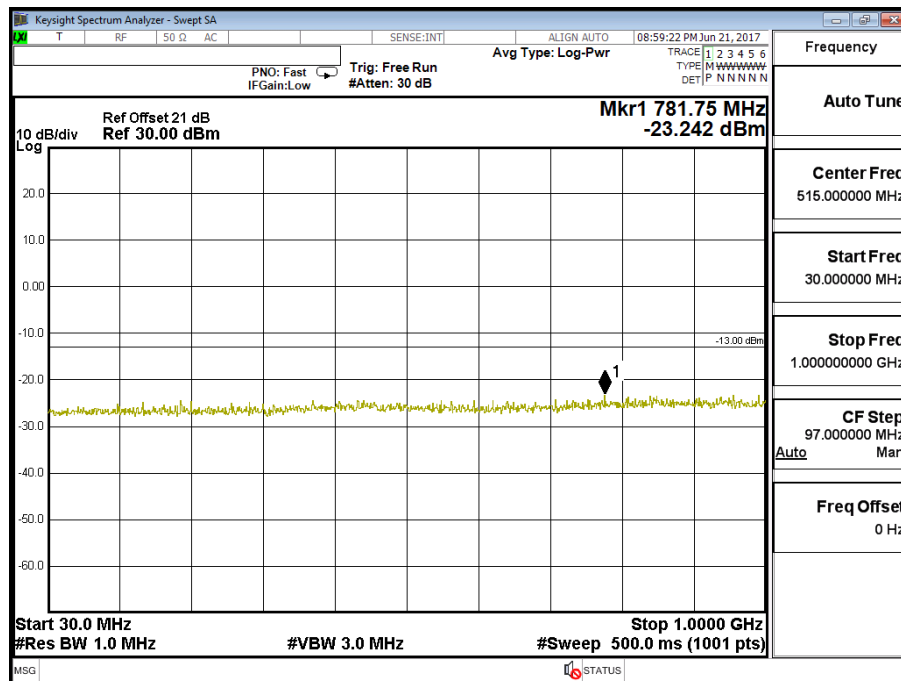


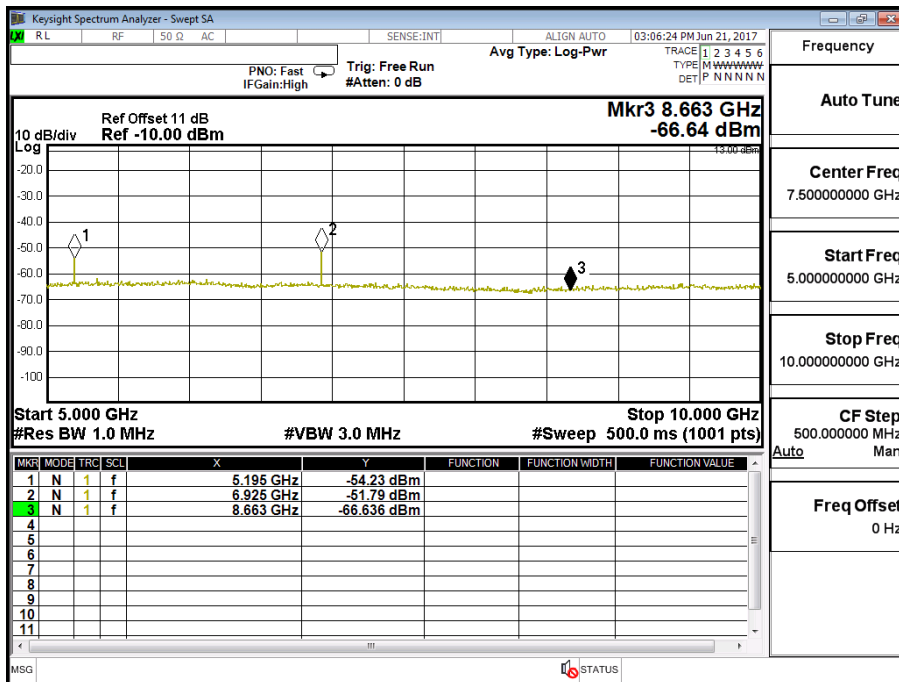
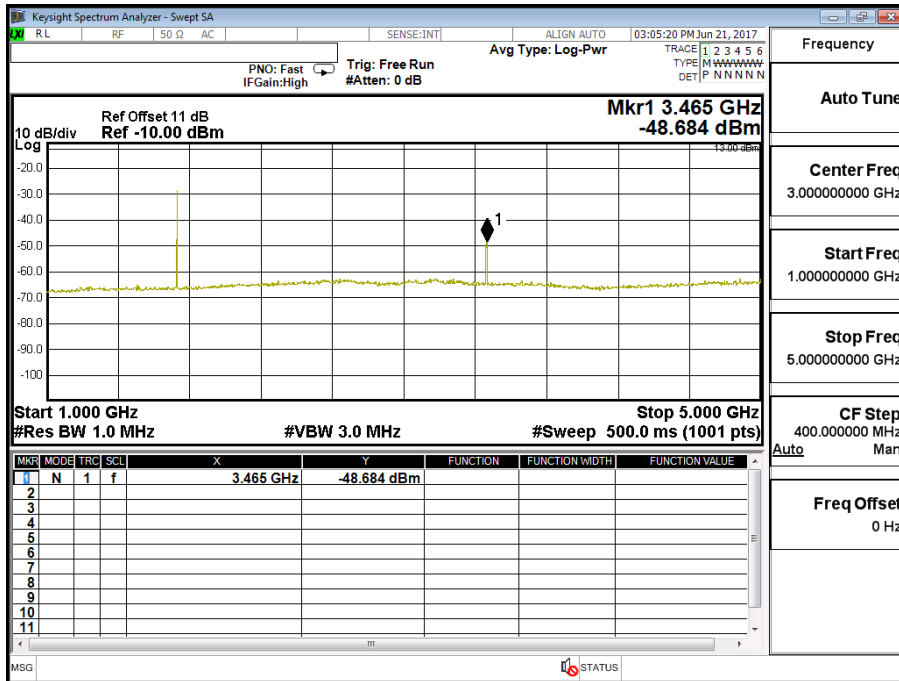
Frequency	Auto Tune
Center Freq	17.500000000 GHz
Start Freq	15.000000000 GHz
Stop Freq	20.000000000 GHz
CF Step	500.000000 MHz
	Auto Man
Freq Offset	0 Hz

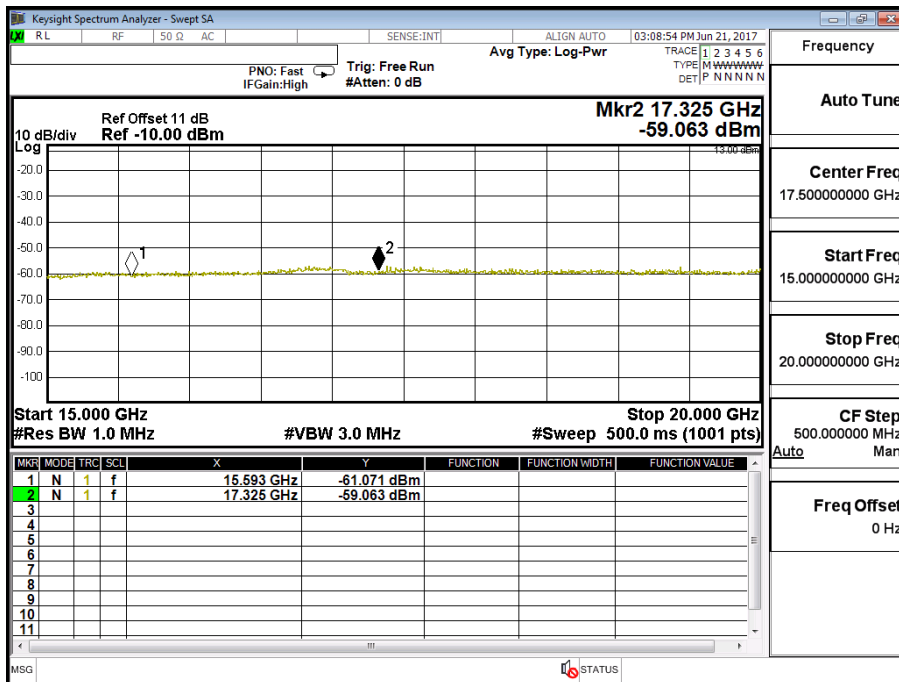
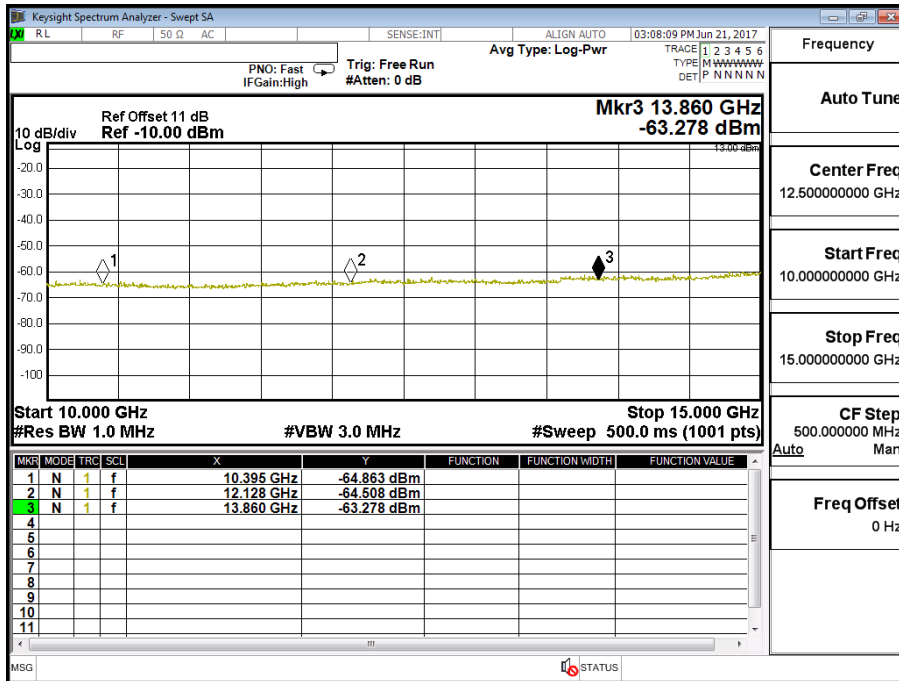
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (3M)	Test Range	30MHz~20GHz

LTE-Band 4 (3M) 16QAM(1,0) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3465	-48.684	1.1	-47.584	-13
5195	-54.230	1.23	-53.000	-13
6925	-51.790	1.59	-50.200	-13
8663	-66.636	1.89	-64.746	-13
10395	-64.863	2.07	-62.793	-13
12128	-64.508	2.26	-62.248	-13
13860	-63.278	2.64	-60.638	-13
15593	-61.071	3.5	-57.571	-13
17325	-59.063	3.7	-55.363	-13



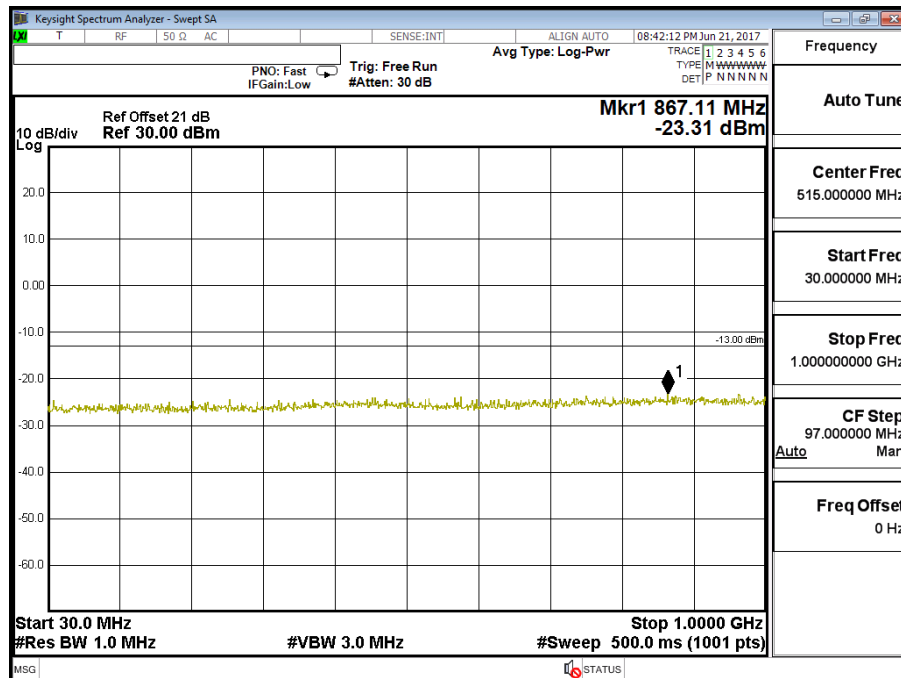


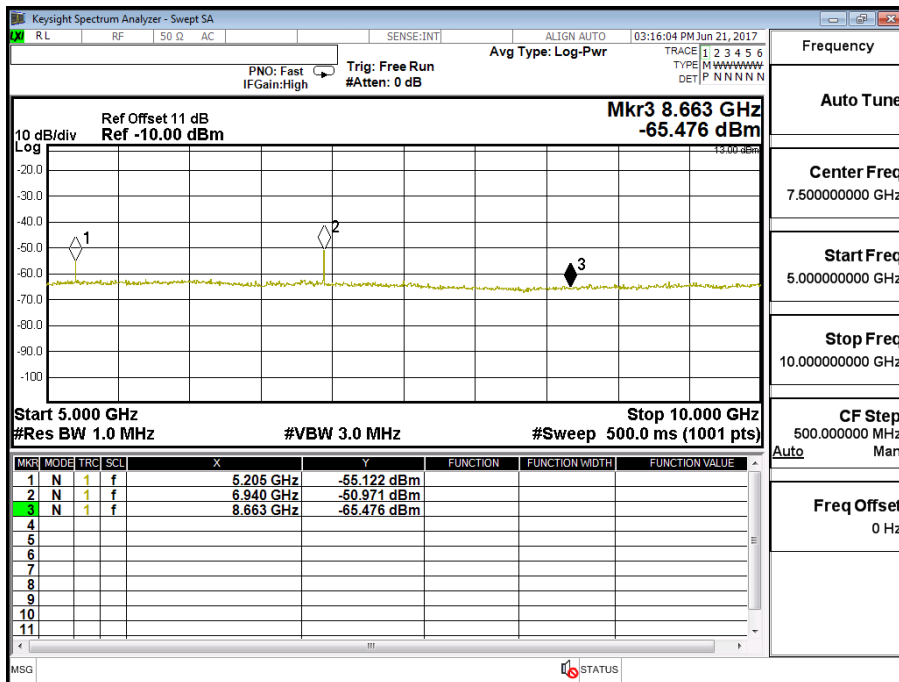
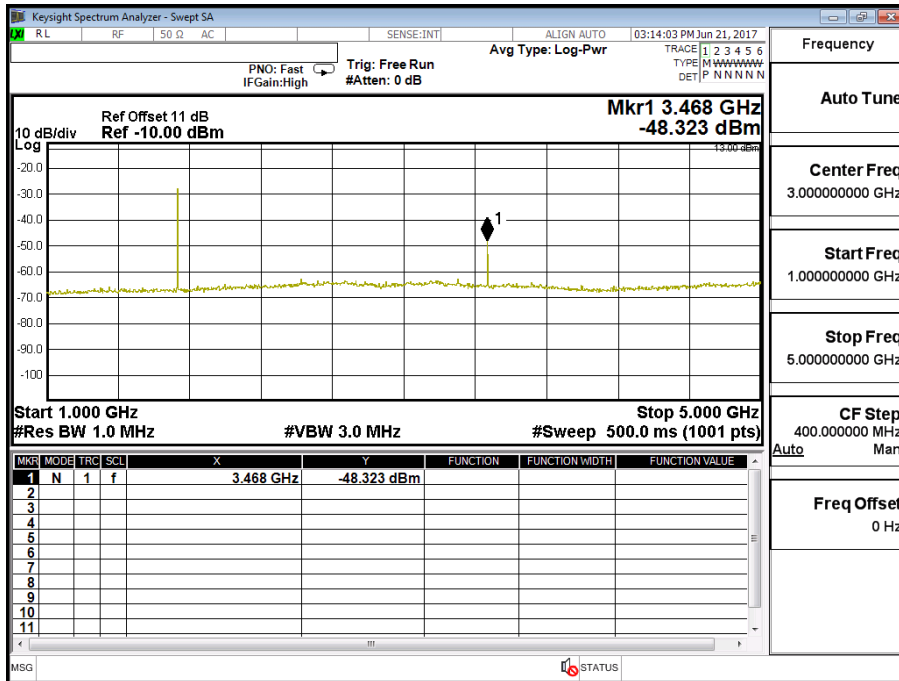


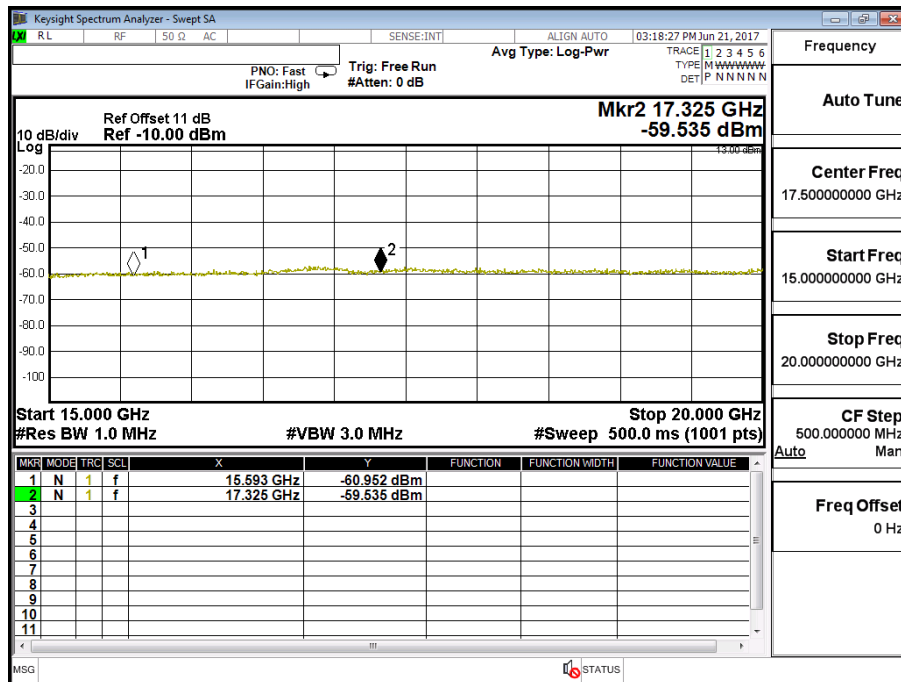
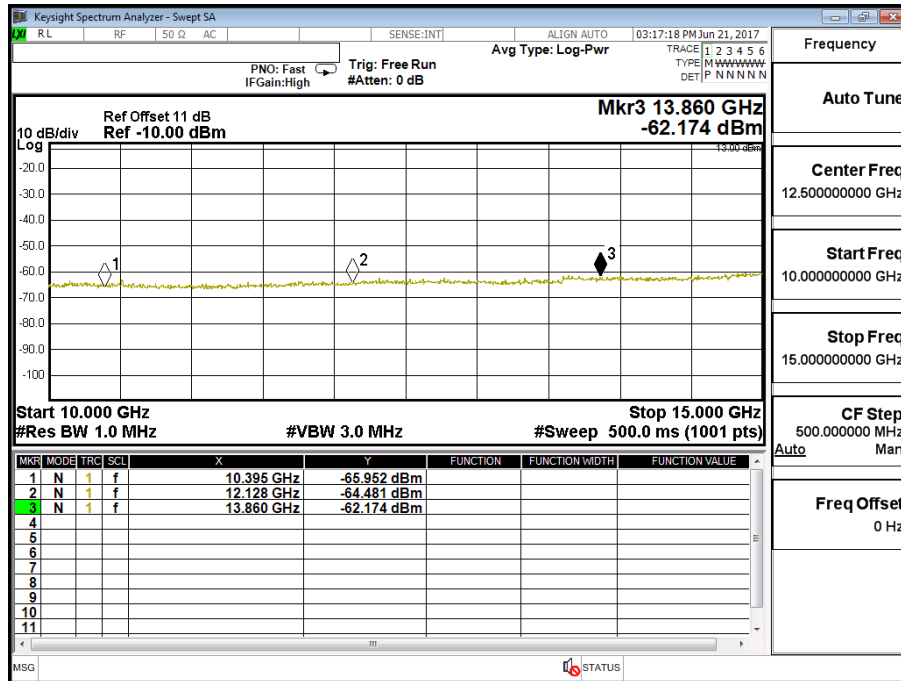
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (5M)	Test Range	30MHz~20GHz

LTE-Band 4 (5M) QPSK(1,24) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3468	-48.323	1.1	-47.223	-13
5205	-55.122	1.23	-53.892	-13
6940	-50.971	1.59	-49.381	-13
8663	-65.476	1.89	-63.586	-13
10395	-65.952	2.07	-63.882	-13
12128	-64.481	2.26	-62.221	-13
13860	-62.174	2.64	-59.534	-13
15593	-60.952	3.5	-57.452	-13
17325	-59.535	3.7	-55.835	-13



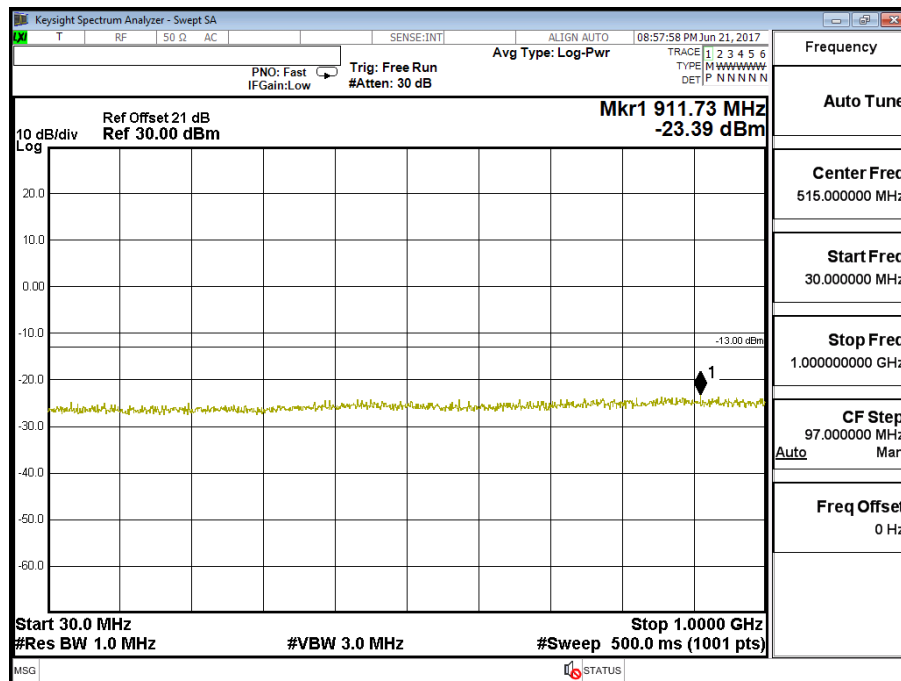


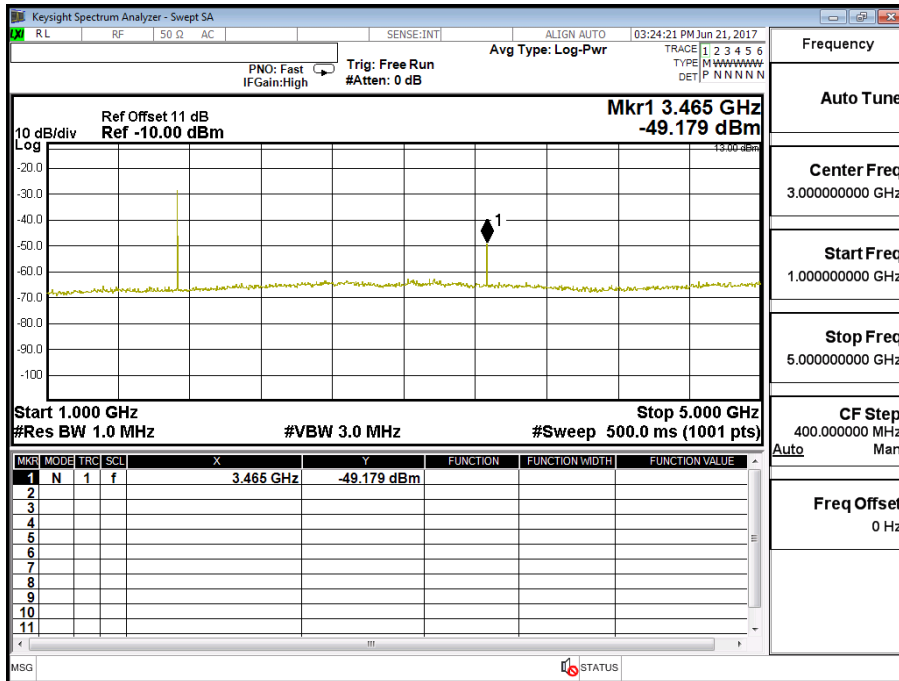


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (5M)	Test Range	30MHz~20GHz

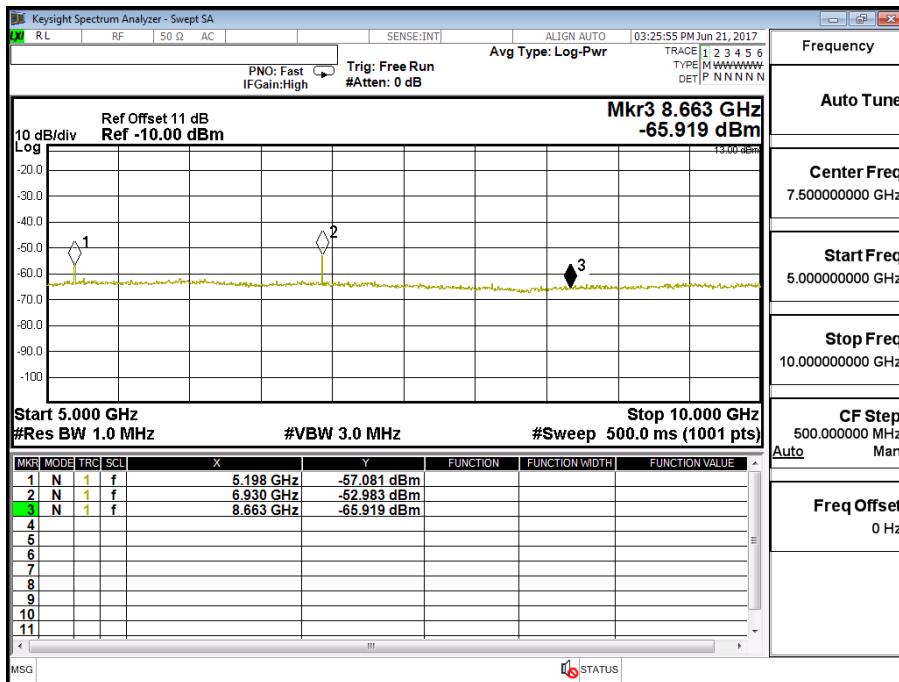
LTE- Band 4 (5M) 16QAM(1,12) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3465	-49.179	1.1	-48.079	-13
5198	-57.081	1.23	-55.851	-13
6930	-52.983	1.59	-51.393	-13
8663	-65.919	1.89	-64.029	-13
10395	-65.024	2.07	-62.954	-13
12128	-64.809	2.26	-62.549	-13
13860	-62.820	2.64	-60.180	-13
15593	-61.132	3.5	-57.632	-13
17325	-59.484	3.7	-55.784	-13

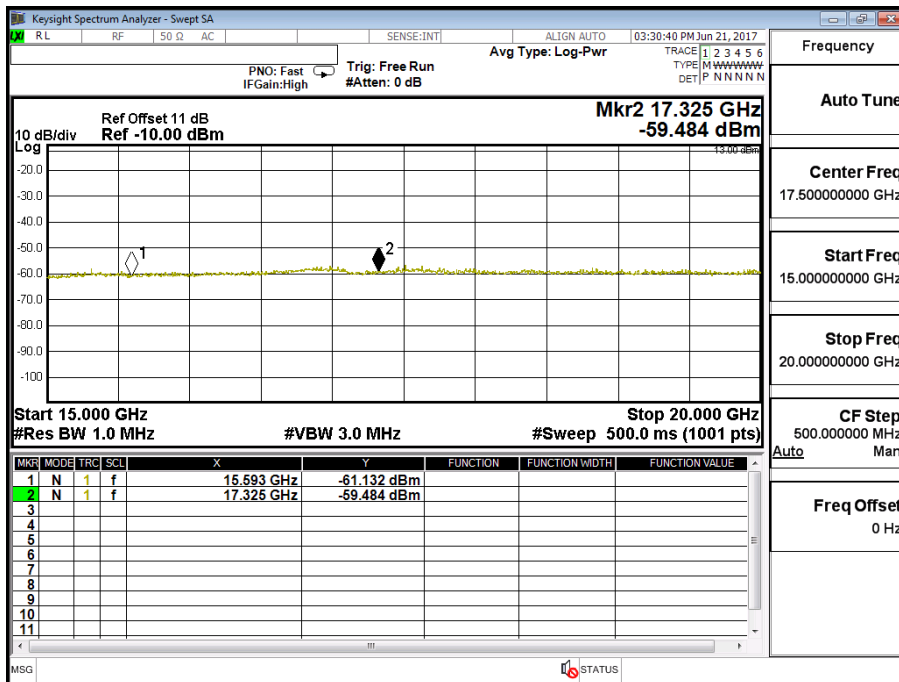
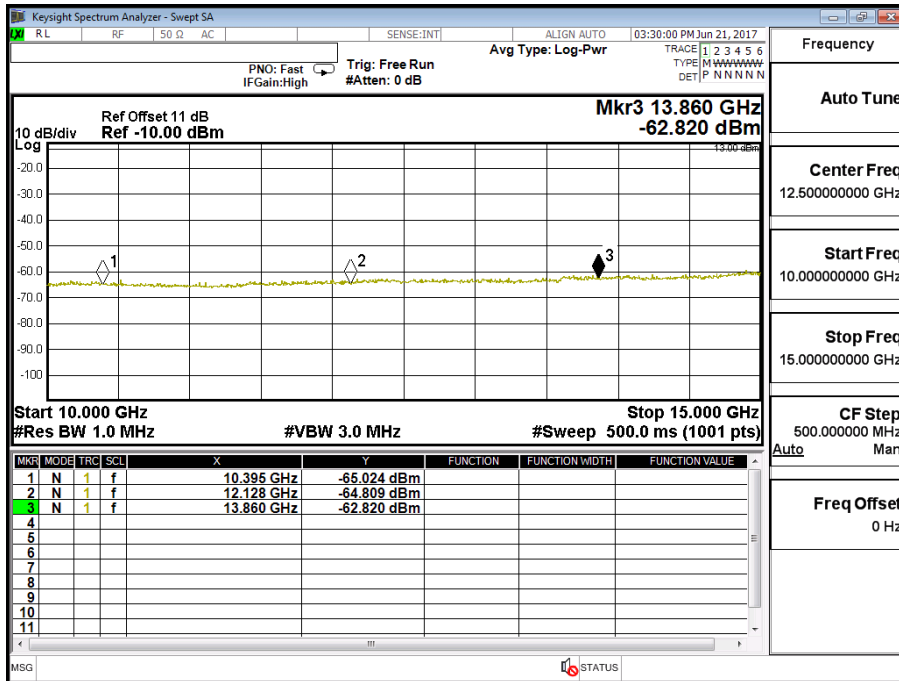




Frequency	
Auto Tune	
Center Freq	3.000000000 GHz
Start Freq	1.000000000 GHz
Stop Freq	5.000000000 GHz
CF Step	400.0000000 MHz
	Auto Man
Freq Offset	0 Hz



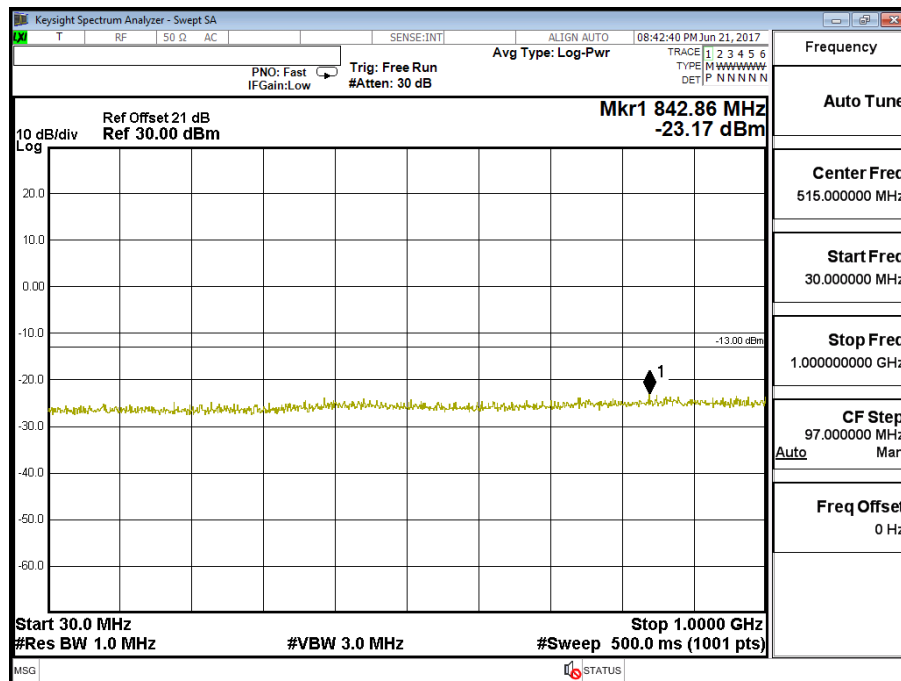
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Stop Freq	10.000000000 GHz
CF Step	500.0000000 MHz
	Auto Man
Freq Offset	0 Hz

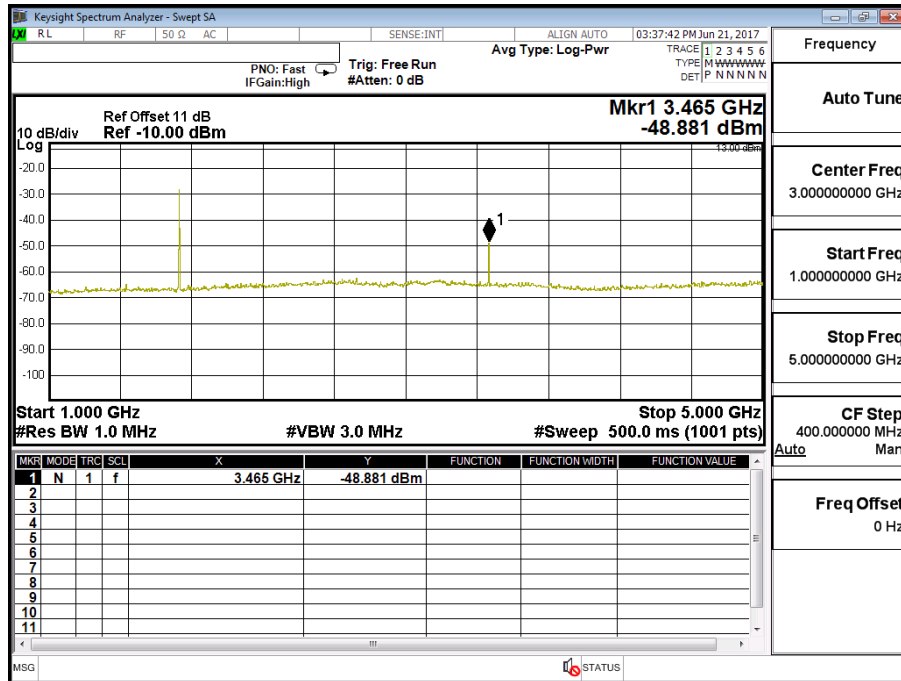


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (10M)	Test Range	30MHz~20GHz

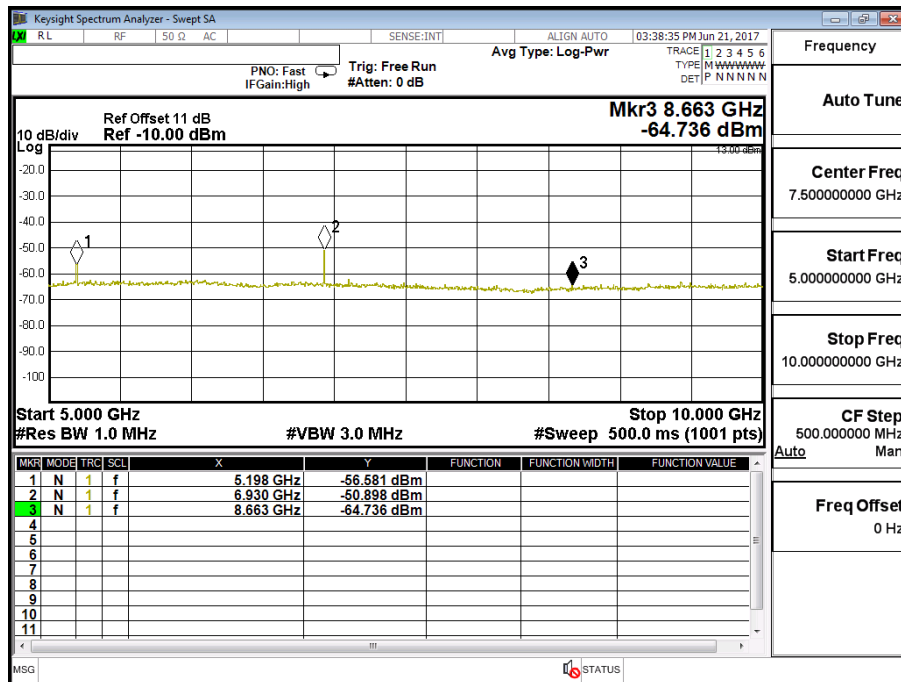
LTE- Band 4 (10M) QPSK(1,24) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3465	-48.881	1.1	-47.781	-13
5198	-56.581	1.23	-55.351	-13
6930	-50.898	1.59	-49.308	-13
8663	-64.736	1.89	-62.846	-13
10395	-65.847	2.07	-63.777	-13
12128	-65.128	2.26	-62.868	-13
13860	-63.108	2.64	-60.468	-13
15593	-60.924	3.5	-57.424	-13
17325	-59.075	3.7	-55.375	-13

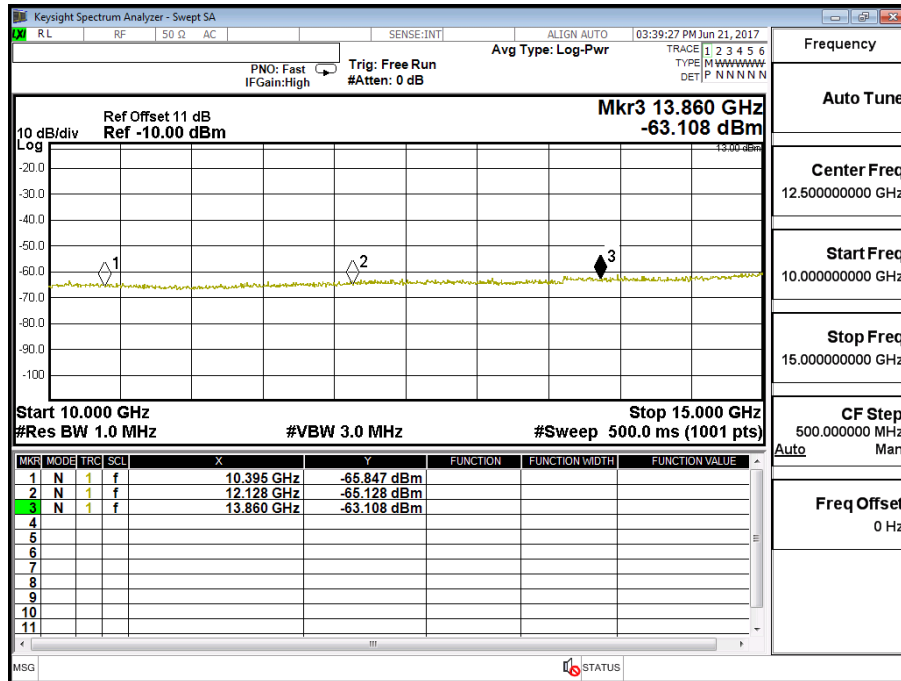




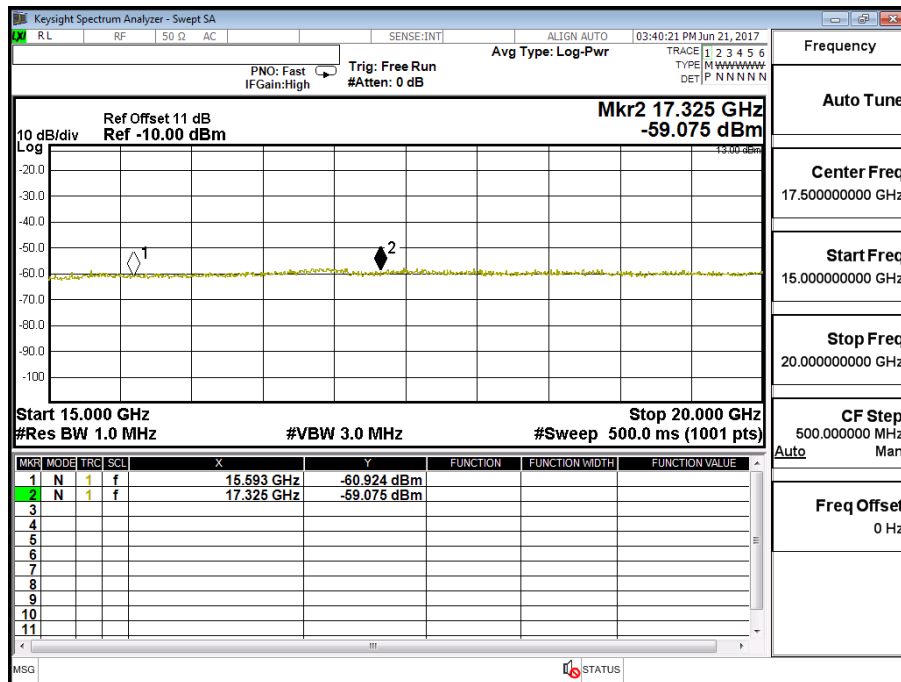
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Auto Tune	
Center Freq	3.000000000 GHz
Start Freq	1.000000000 GHz
Stop Freq	5.000000000 GHz
CF Step	400.0000000 MHz
	Auto Man
Freq Offset	0 Hz



Frequency	
Auto Tune	
Center Freq	7.500000000 GHz
Start Freq	5.000000000 GHz
Stop Freq	10.000000000 GHz
CF Step	500.0000000 MHz
	Auto Man
Freq Offset	0 Hz



Frequency	
Auto Tune	
Center Freq	12.500000000 GHz
Start Freq	10.000000000 GHz
Stop Freq	15.000000000 GHz
CF Step	500.000000 MHz
	Auto Man
Freq Offset	0 Hz

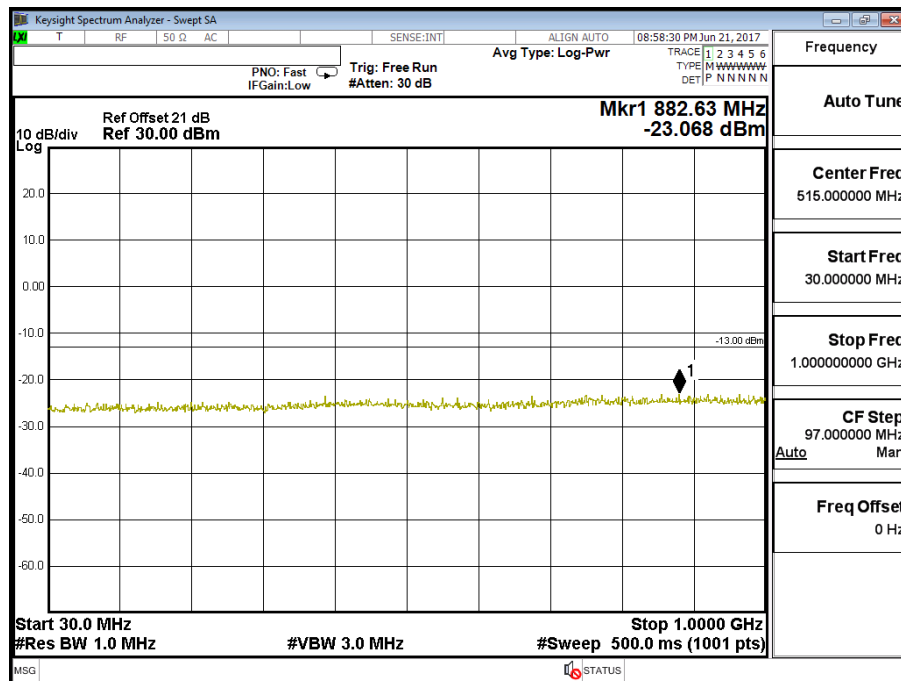


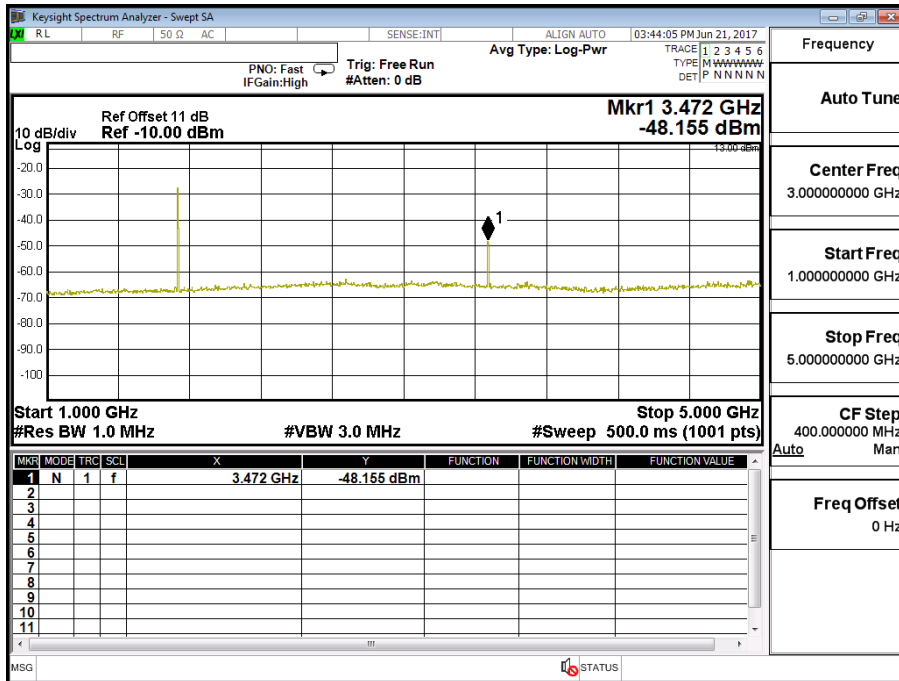
Frequency	
Auto Tune	
Center Freq	17.500000000 GHz
Start Freq	15.000000000 GHz
Stop Freq	20.000000000 GHz
CF Step	500.000000 MHz
	Auto Man
Freq Offset	0 Hz

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (10M)	Test Range	30MHz~20GHz

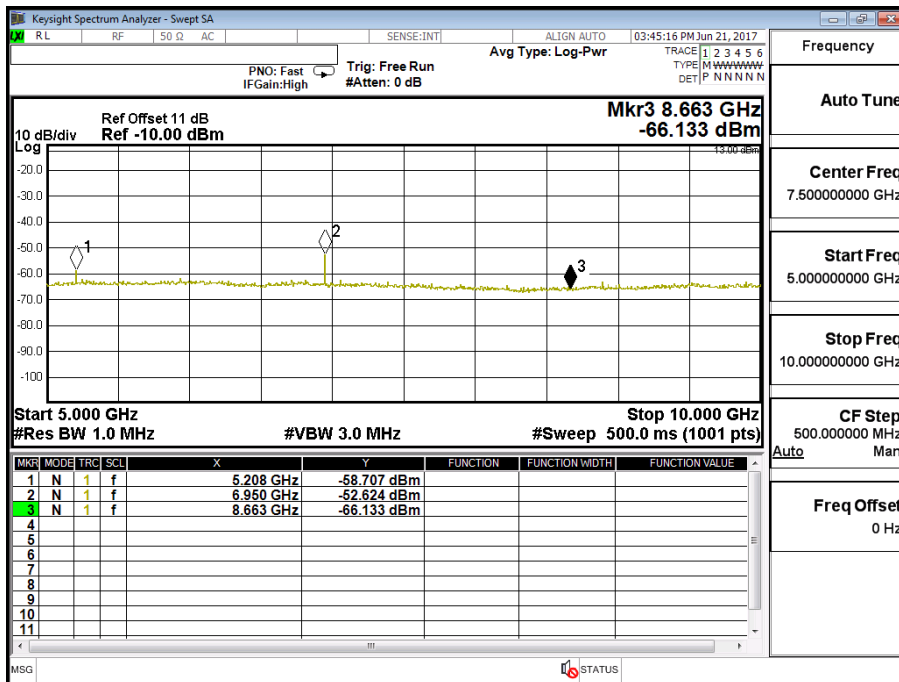
LTE- Band 4 10M 16QAM(1,49) CH20350

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3472	-48.155	1.1	-47.055	-13
5208	-58.707	1.23	-57.477	-13
6950	-52.624	1.59	-51.034	-13
8663	-66.133	1.89	-64.243	-13
10395	-65.828	2.07	-63.758	-13
12128	-64.677	2.26	-62.417	-13
13860	-63.549	2.64	-60.909	-13
15593	-59.997	3.5	-56.497	-13
17325	-59.883	3.7	-56.183	-13

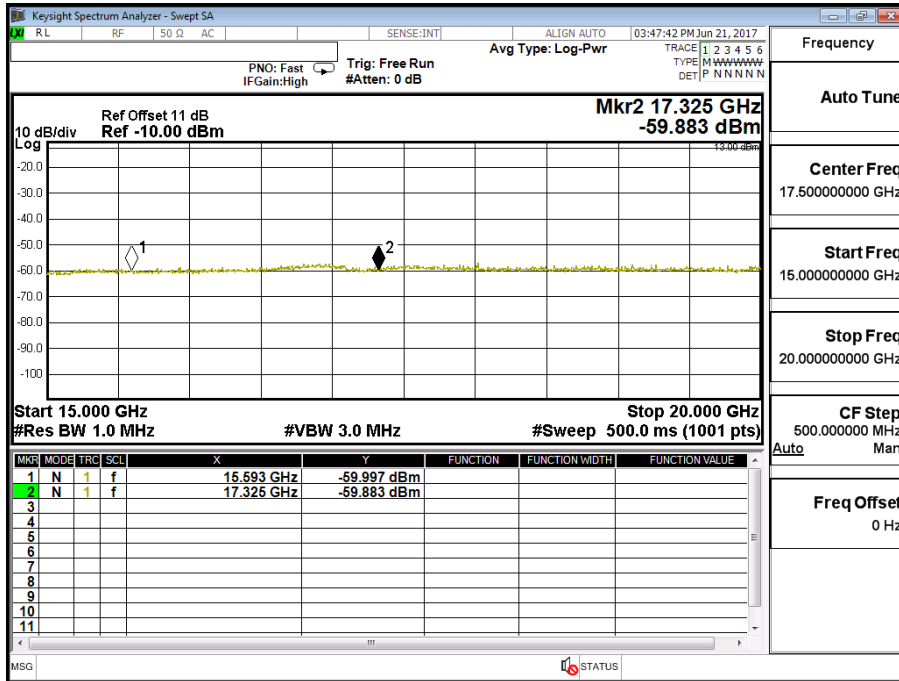
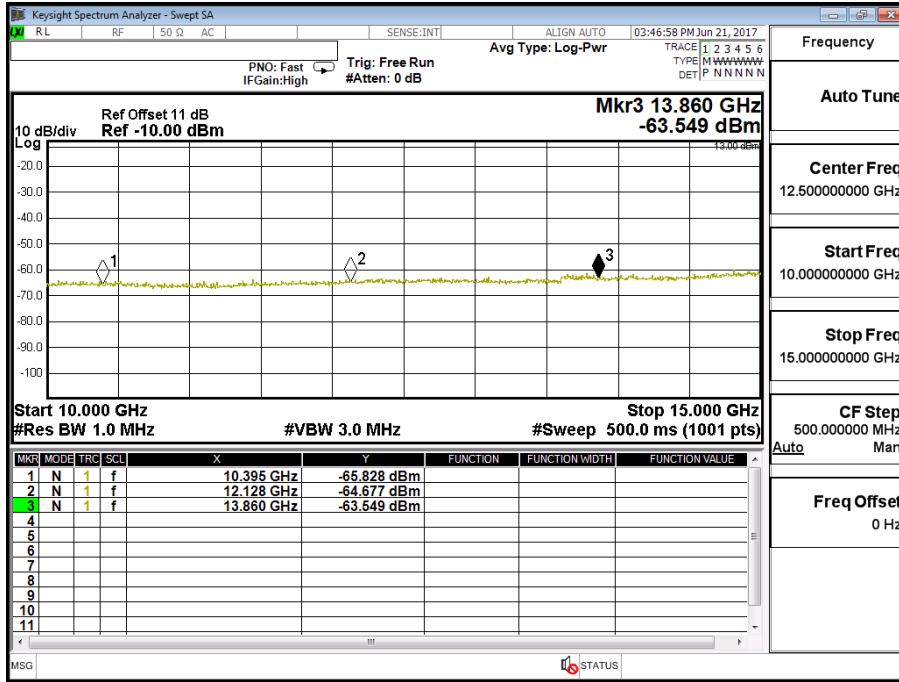




Frequency	Auto Tune
Center Freq	3.000000000 GHz
Start Freq	1.000000000 GHz
Stop Freq	5.000000000 GHz
CF Step	400.000000 MHz
Auto Man	Auto Man
Freq Offset	0 Hz



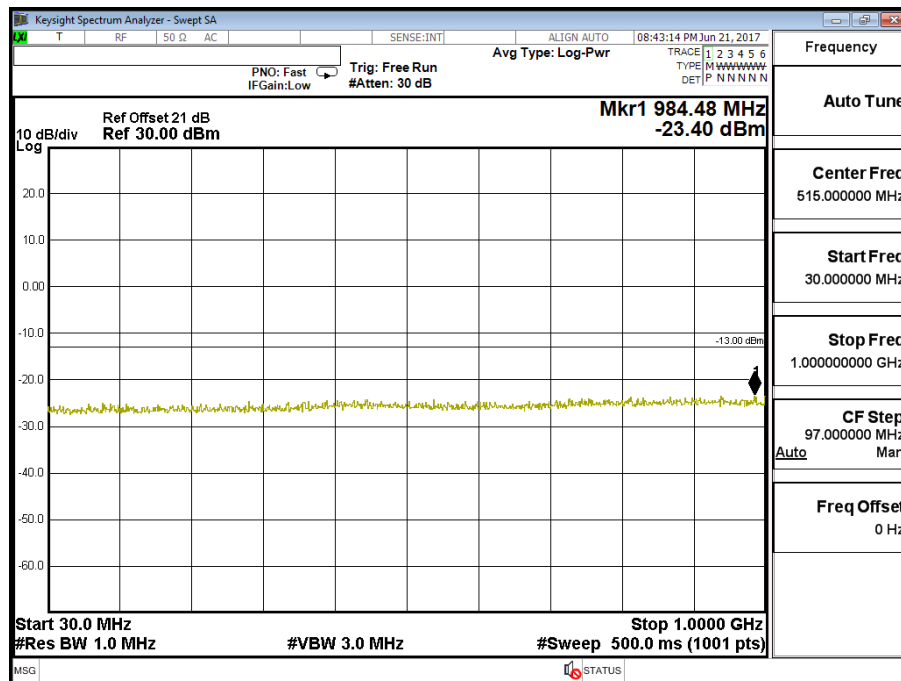
Frequency	Auto Tune
Center Freq	7.500000000 GHz
Start Freq	5.000000000 GHz
Stop Freq	10.000000000 GHz
CF Step	500.000000 MHz
Auto Man	Auto Man
Freq Offset	0 Hz

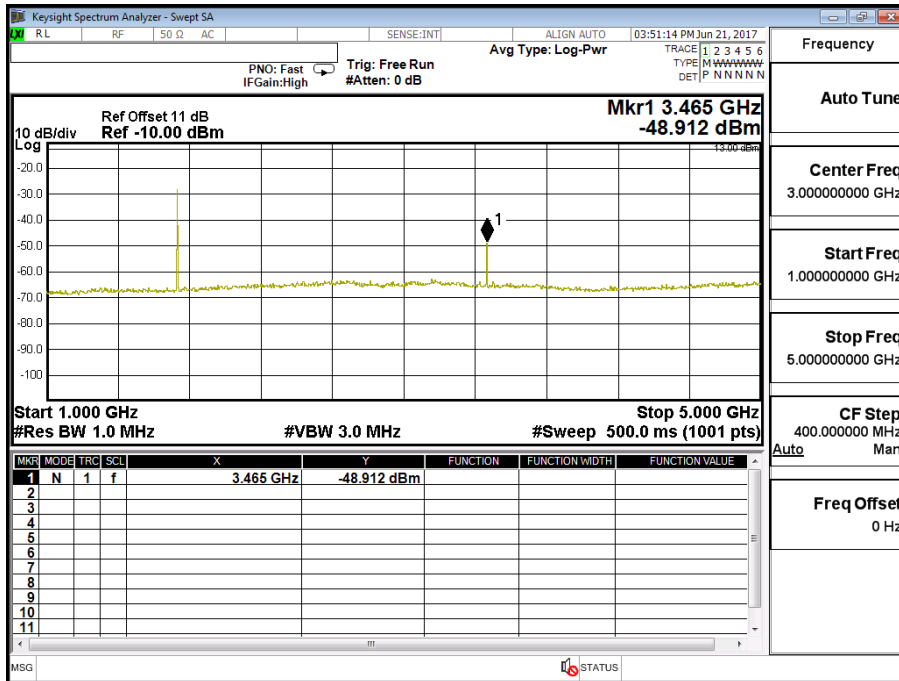


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 15M	Test Range	30MHz~20GHz

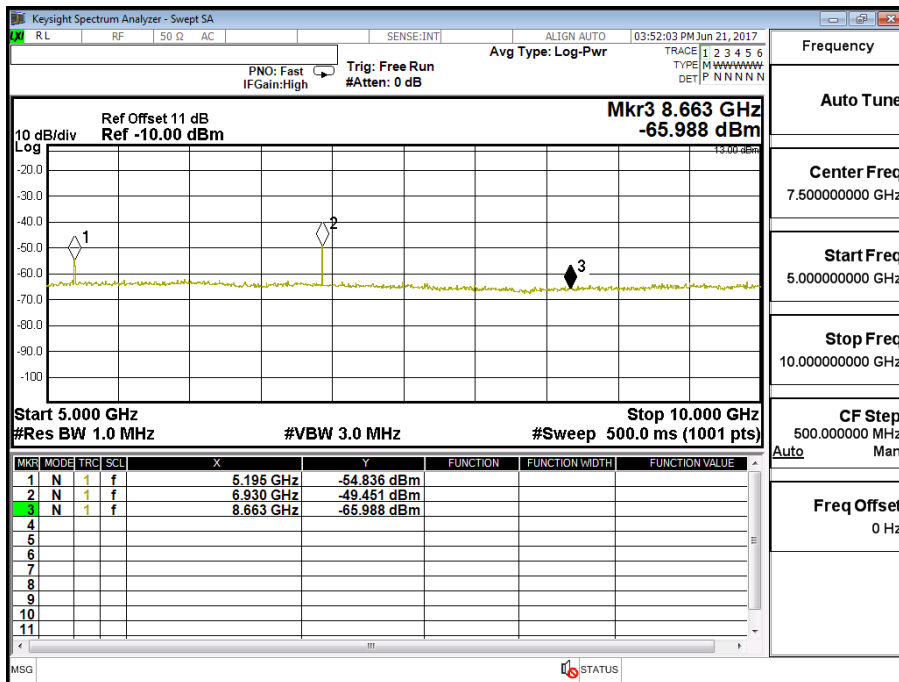
LTE-Band 4 15M QPSK(1,37) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3465	-48.912	1.1	-47.812	-13
5195	-54.836	1.23	-53.606	-13
6930	-49.451	1.59	-47.861	-13
8663	-65.988	1.89	-64.098	-13
10395	-65.007	2.07	-62.937	-13
12128	-64.465	2.26	-62.205	-13
13860	-63.202	2.64	-60.562	-13
15593	-59.923	3.5	-56.423	-13
17325	-59.814	3.7	-56.114	-13

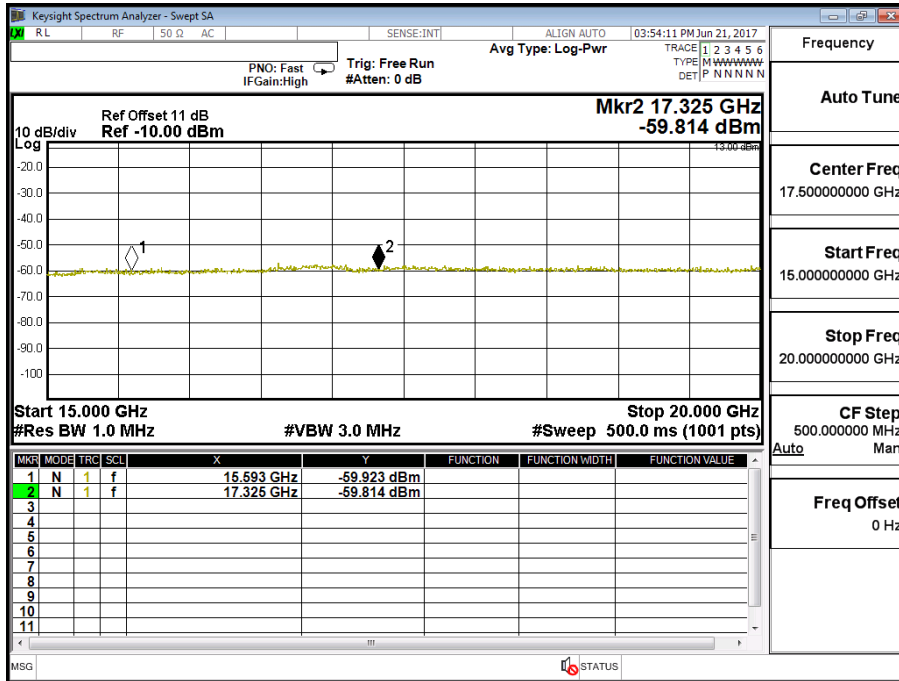
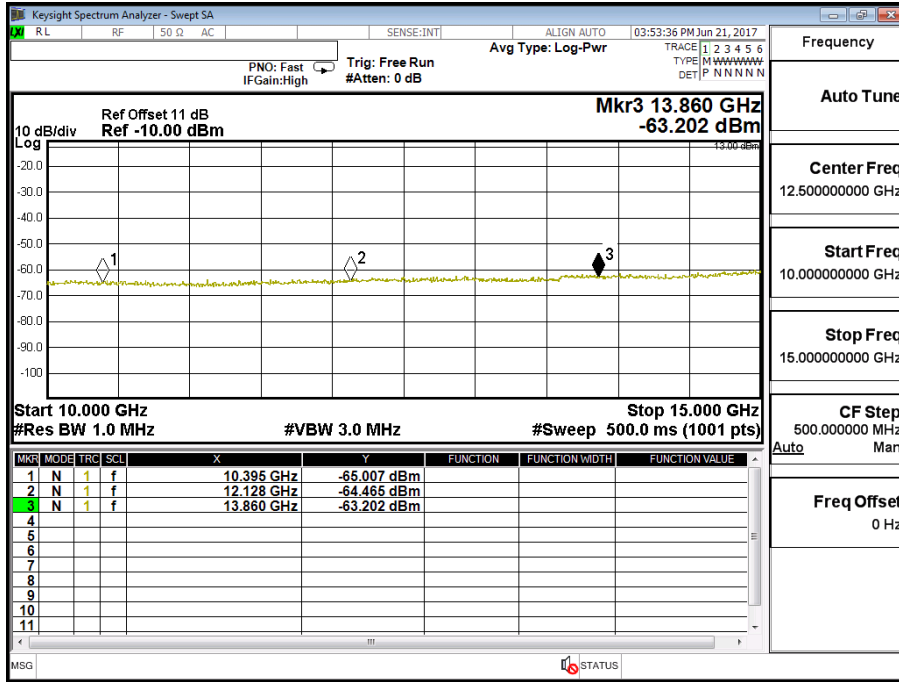




Frequency	Auto Tune
Center Freq	3.000000000 GHz
Start Freq	1.000000000 GHz
Stop Freq	5.000000000 GHz
CF Step	400.000000 MHz Auto Man
Freq Offset	0 Hz



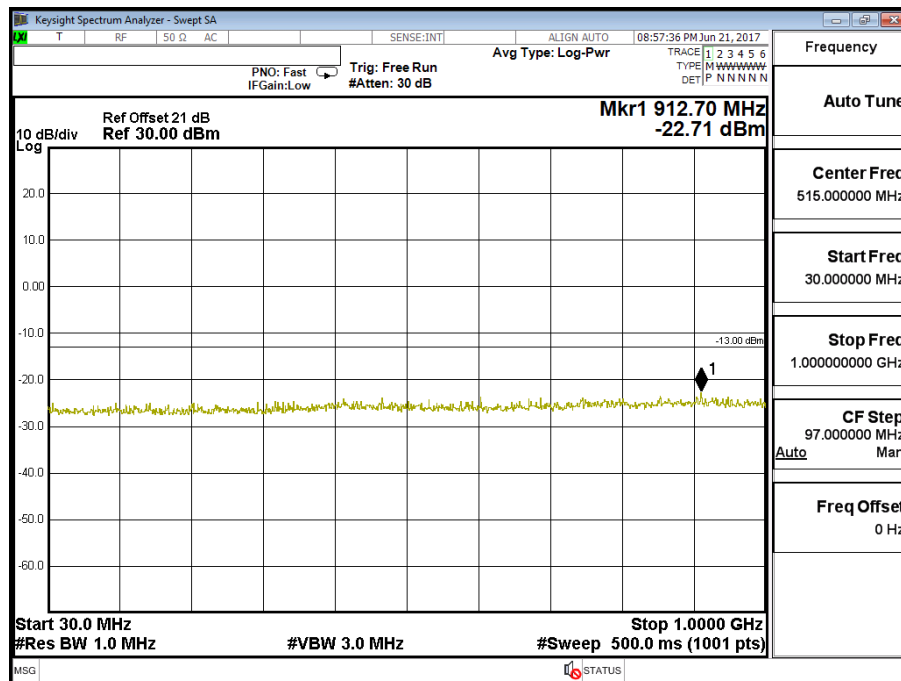
Frequency	Auto Tune
Center Freq	7.500000000 GHz
Start Freq	5.000000000 GHz
Stop Freq	10.000000000 GHz
CF Step	500.000000 MHz Auto Man
Freq Offset	0 Hz

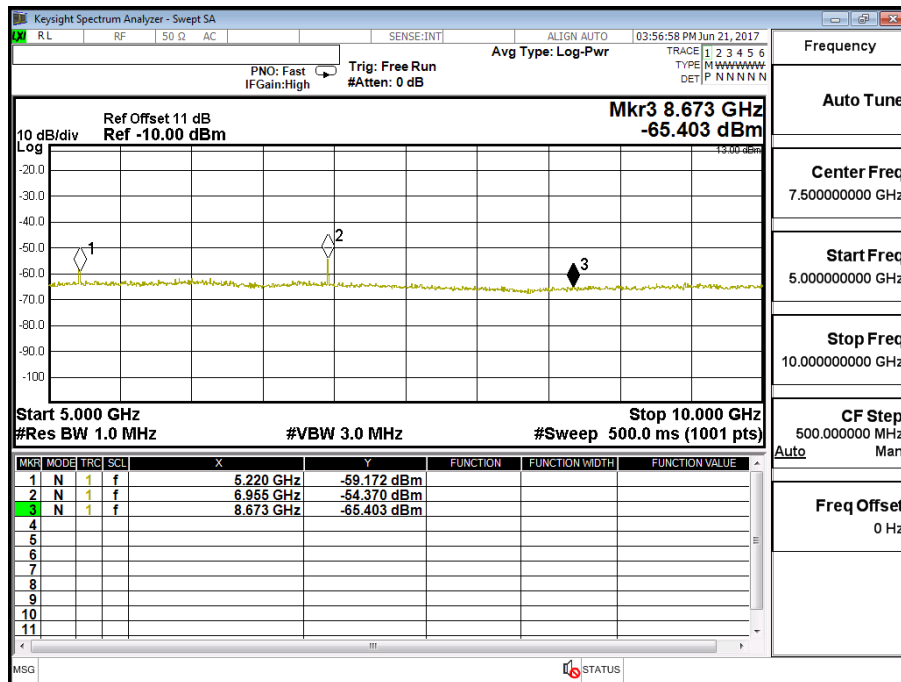
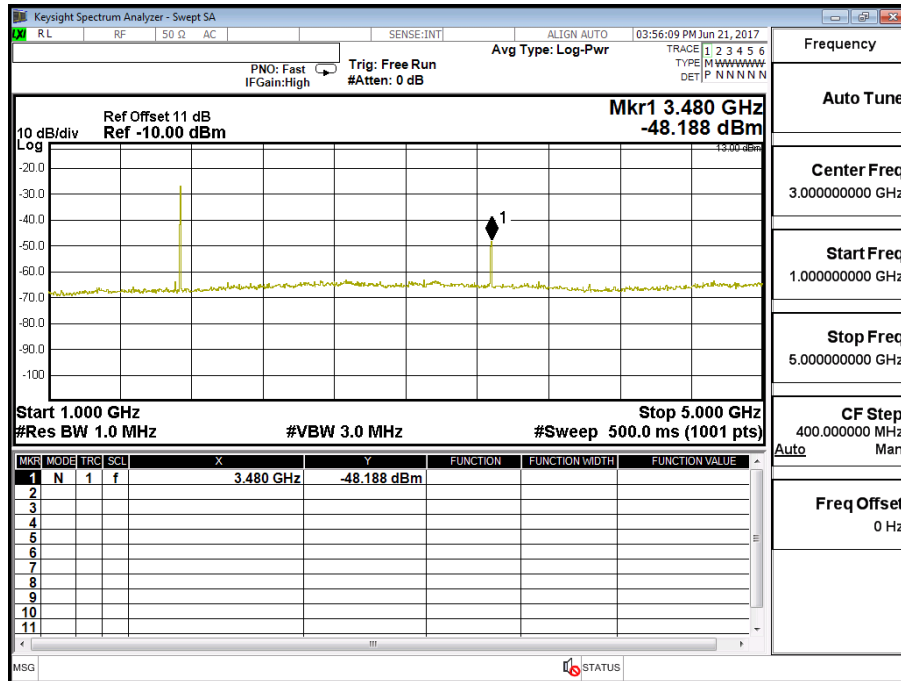


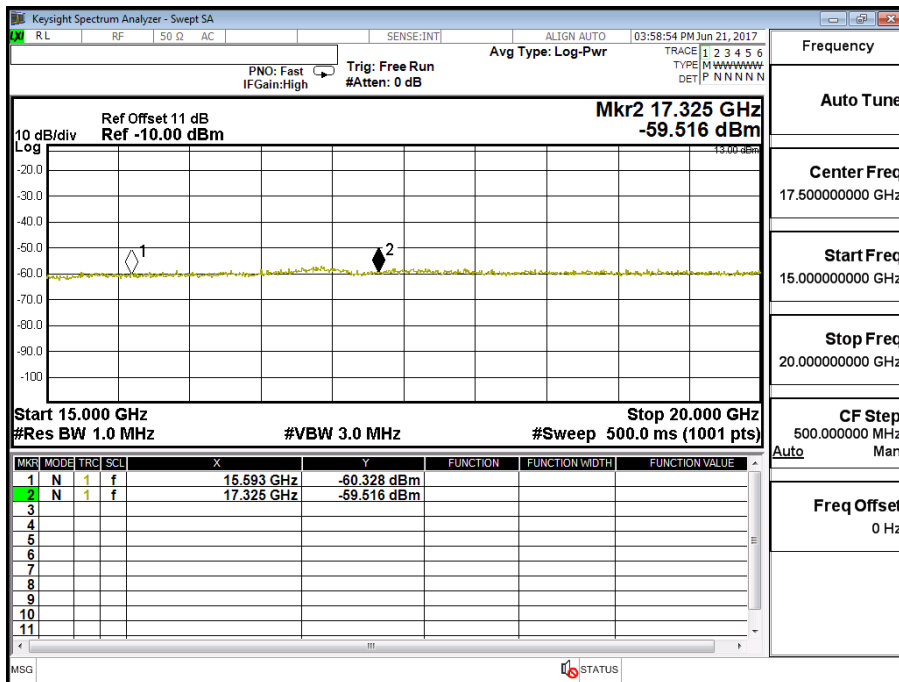
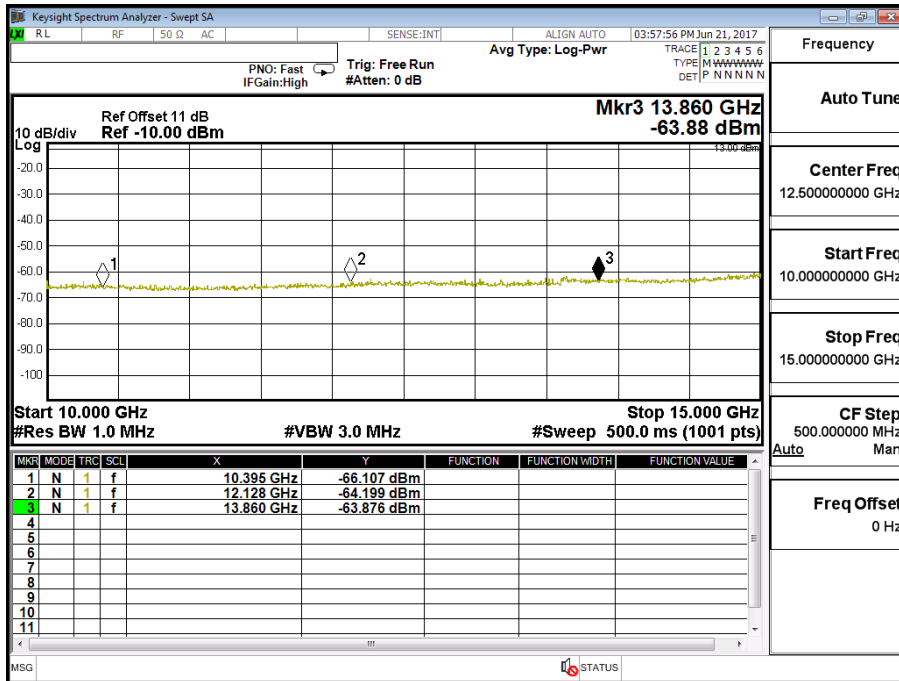
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (15M)	Test Range	30MHz~20GHz

LTE-Band 4 (15M) 16QAM(1,74) CH20175

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3480	-48.188	1.1	-47.088	-13
5220	-59.172	1.23	-57.942	-13
6955	-54.370	1.59	-52.780	-13
8673	-65.403	1.89	-63.513	-13
10395	-66.107	2.07	-64.037	-13
12128	-64.199	2.26	-61.939	-13
13860	-63.876	2.64	-61.236	-13
15593	-60.328	3.5	-56.828	-13
17325	-59.516	3.7	-55.816	-13



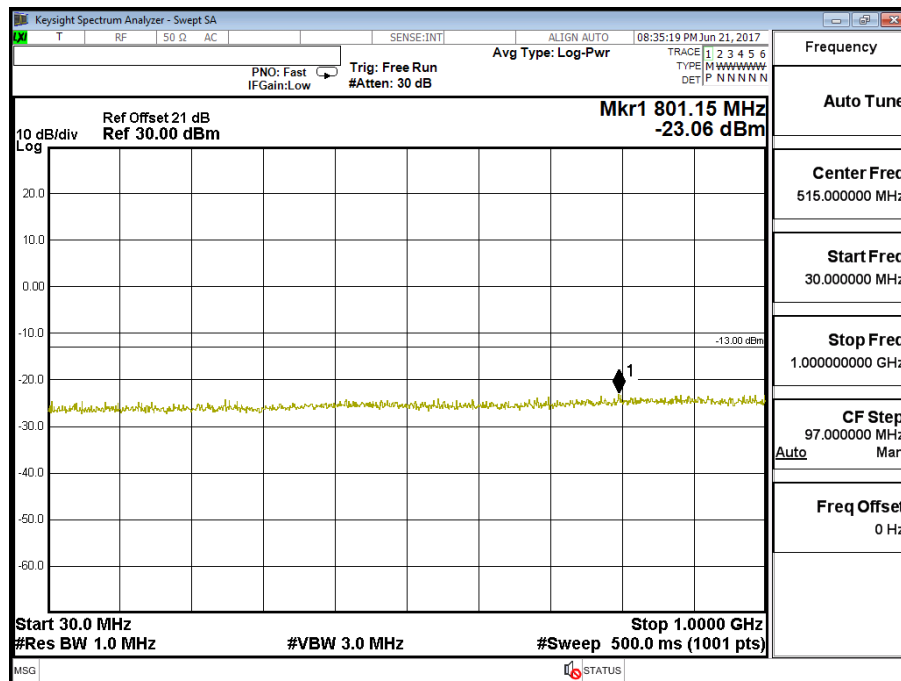


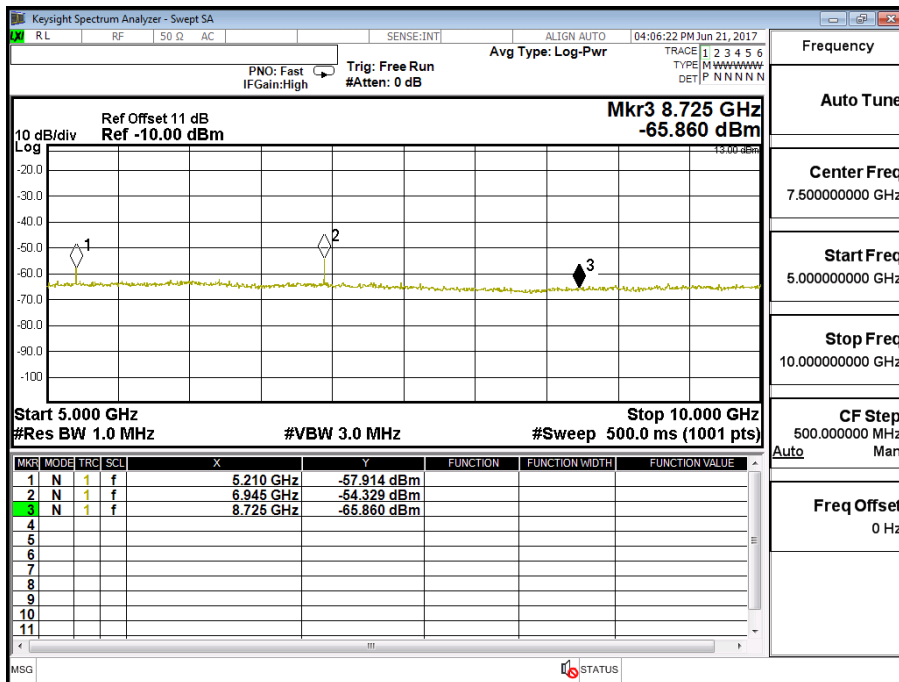
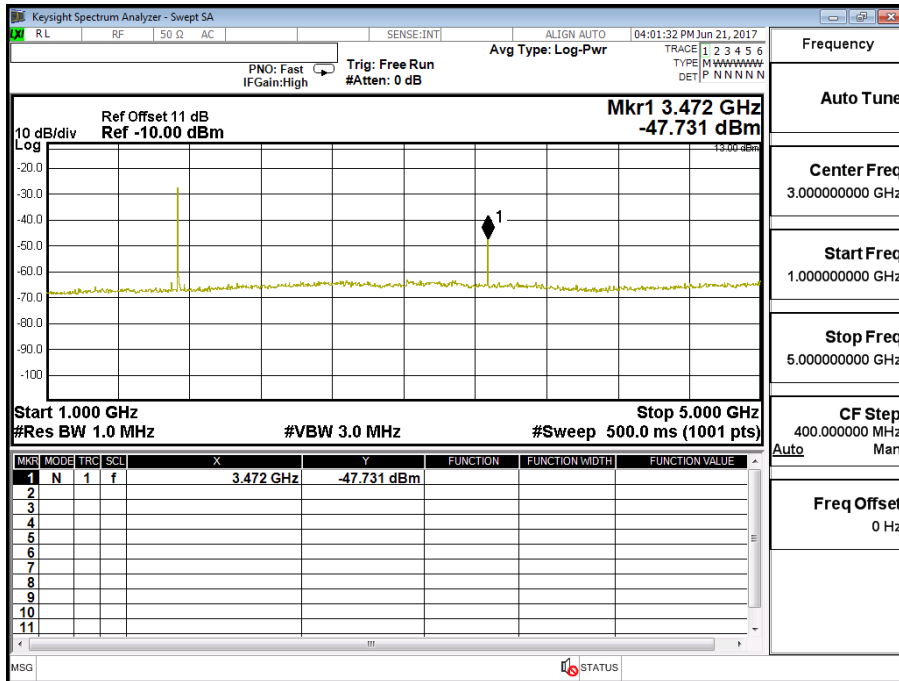


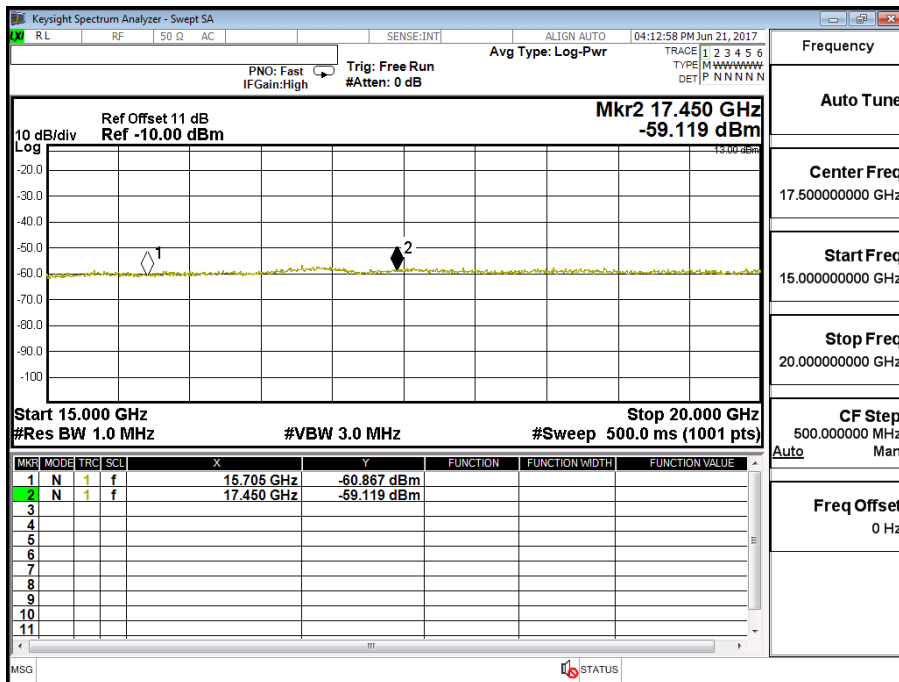
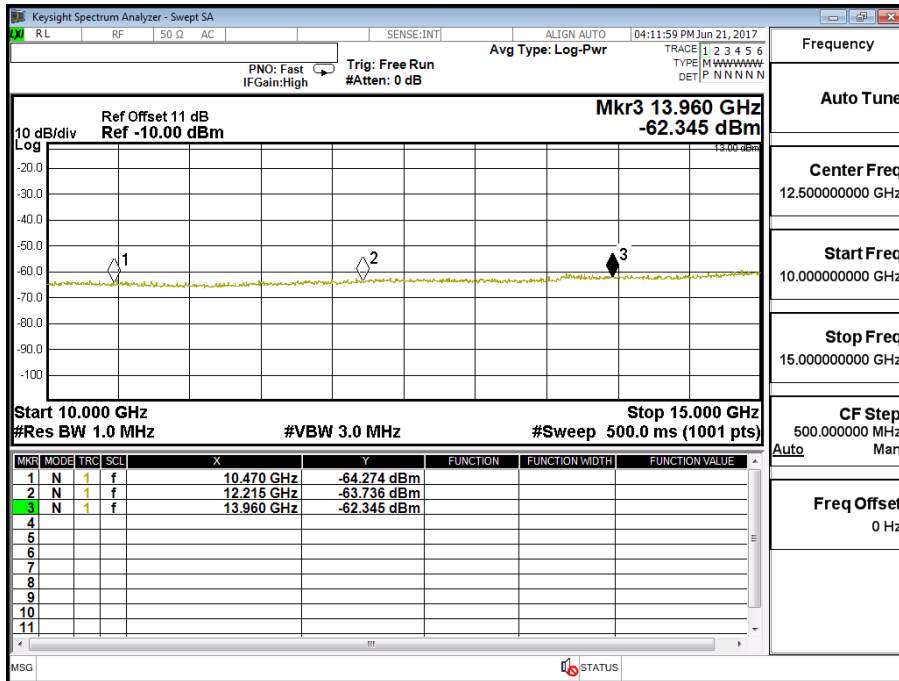
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (20M)	Test Range	30MHz~20GHz

LTE-Band 4 (20M) QPSK(1,0) CH20300

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3472	-47.731	1.1	-46.631	-13
5210	-57.914	1.23	-56.684	-13
6945	-54.329	1.59	-52.739	-13
8725	-65.860	1.89	-63.970	-13
10470	-64.274	2.07	-62.204	-13
12215	-63.736	2.26	-61.476	-13
13960	-62.345	2.64	-59.705	-13
15705	-60.867	3.5	-57.367	-13
17450	-59.119	3.7	-55.419	-13



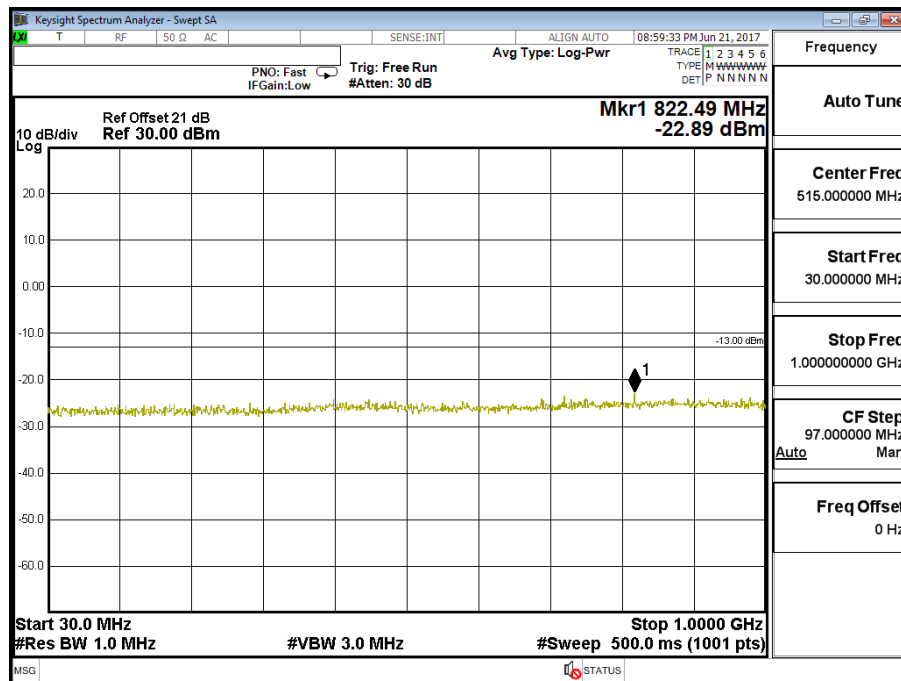


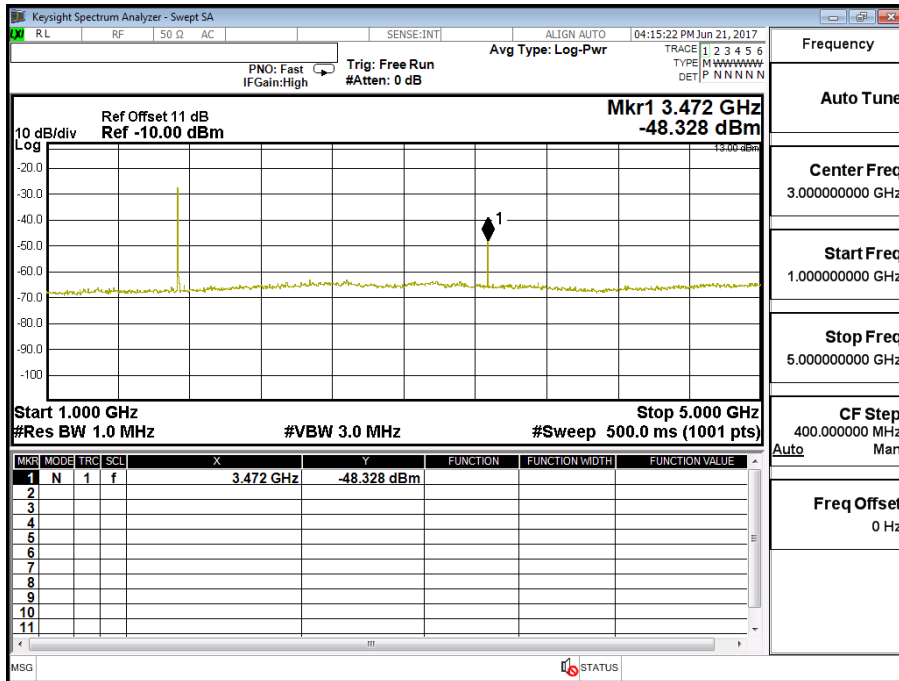


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 4 (20M)	Test Range	30MHz~20GHz

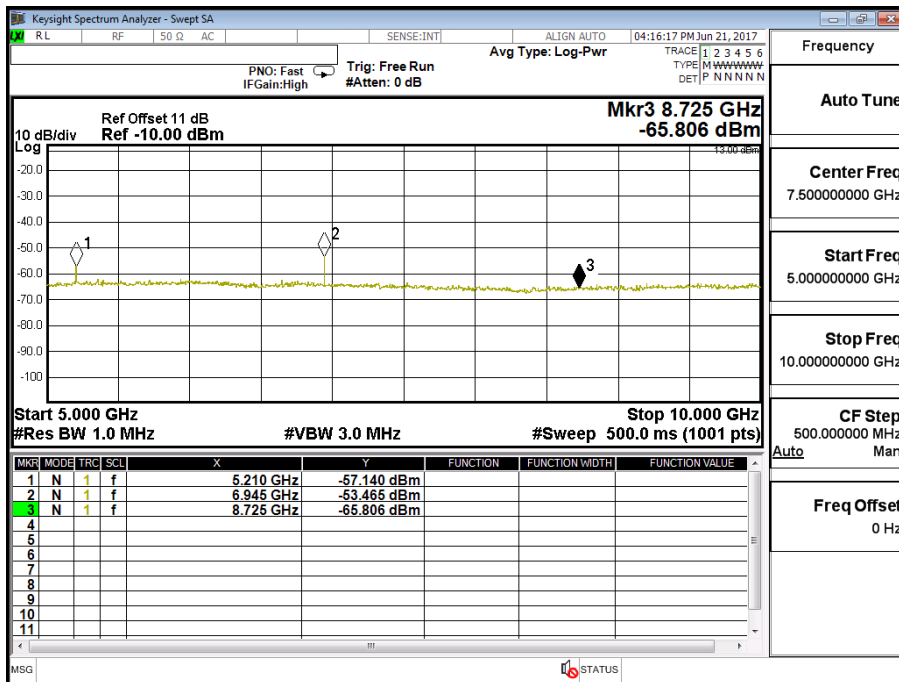
LTE-Band 4 (20M) 16QAM(1,0) CH20300

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3472	-48.328	1.1	-47.228	-13
5210	-57.140	1.23	-55.910	-13
6945	-53.465	1.59	-51.875	-13
8725	-65.806	1.89	-63.916	-13
10470	-66.482	2.07	-64.412	-13
12215	-63.707	2.26	-61.447	-13
13960	-63.709	2.64	-61.069	-13
15705	-60.399	3.5	-56.899	-13
17450	-57.842	3.7	-54.142	-13

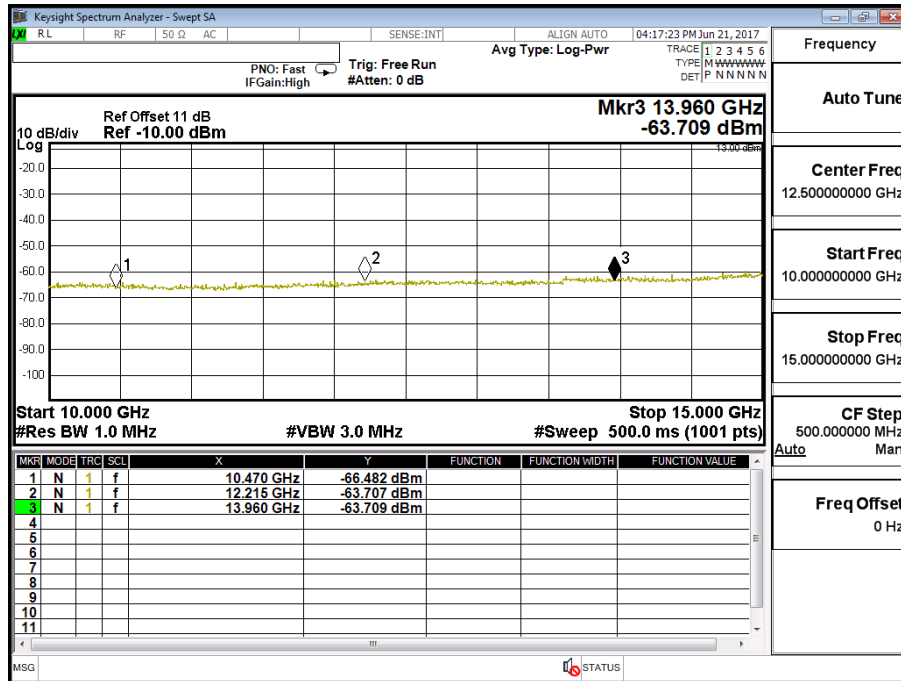




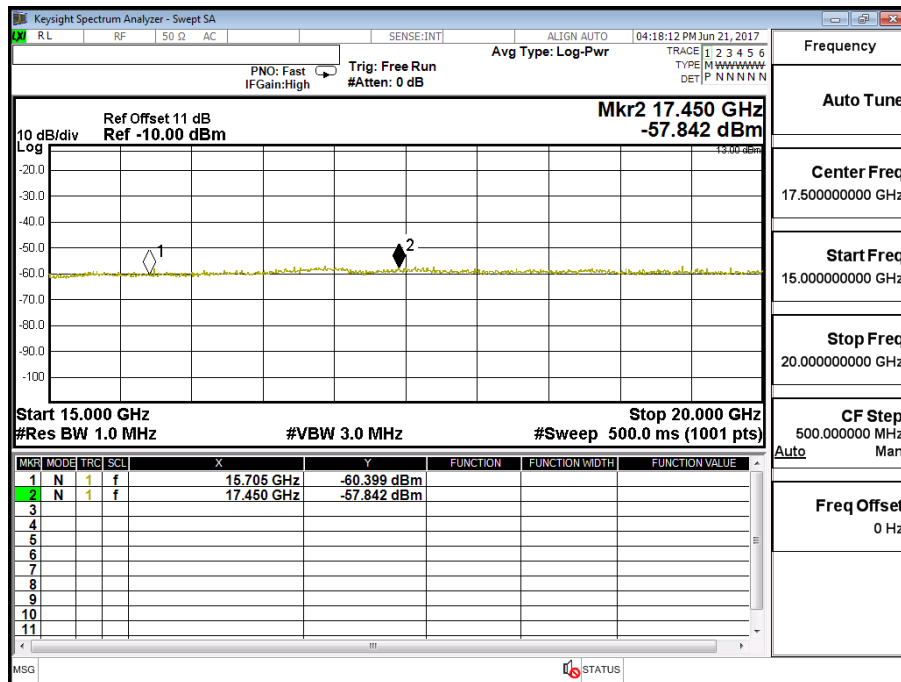
Frequency	Auto Tune
Center Freq	3.000000000 GHz
Start Freq	1.000000000 GHz
Stop Freq	5.000000000 GHz
CF Step	400.000000 MHz Auto Man
Freq Offset	0 Hz



Frequency	Auto Tune
Center Freq	7.500000000 GHz
Start Freq	5.000000000 GHz
Stop Freq	10.000000000 GHz
CF Step	500.000000 MHz Auto Man
Freq Offset	0 Hz



Frequency	Auto Tune
Center Freq	12.500000000 GHz
Start Freq	10.000000000 GHz
Stop Freq	15.000000000 GHz
CF Step	500.000000 MHz Auto Man
Freq Offset	0 Hz

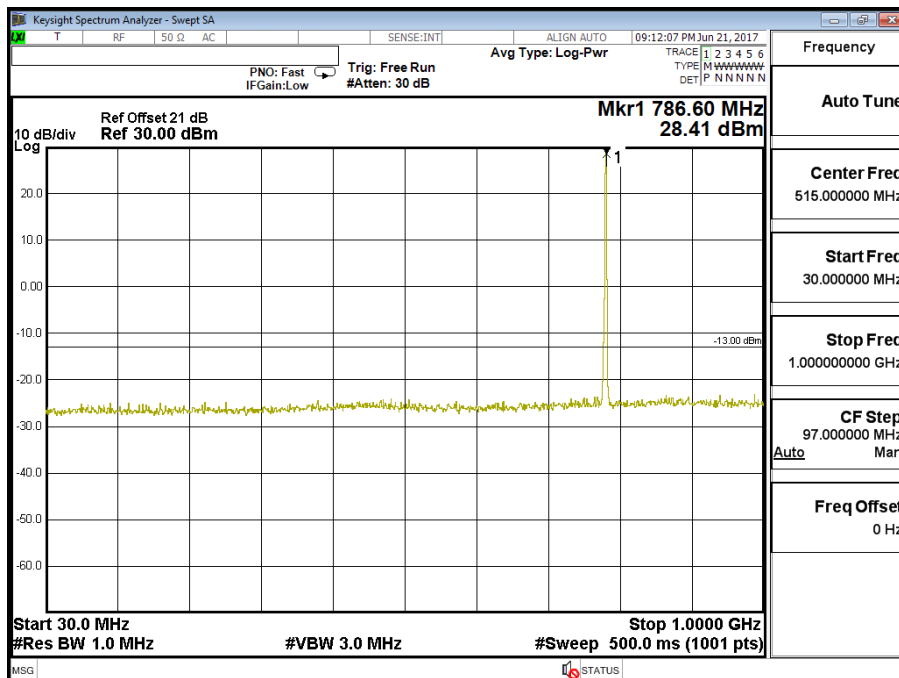


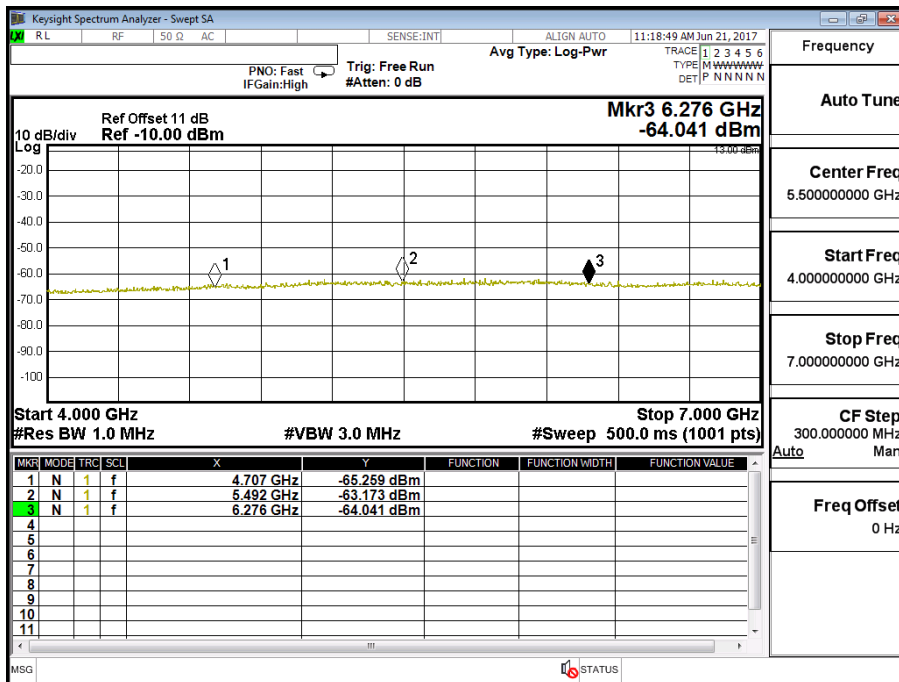
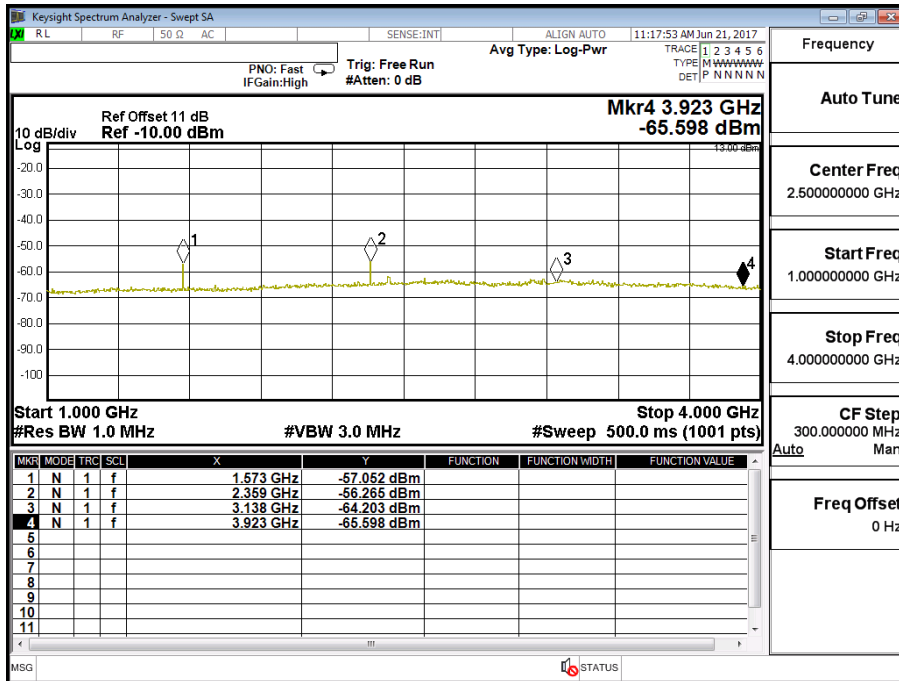
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Center Freq	17.500000000 GHz
Start Freq	15.000000000 GHz
Stop Freq	20.000000000 GHz
CF Step	500.000000 MHz Auto Man
Freq Offset	0 Hz

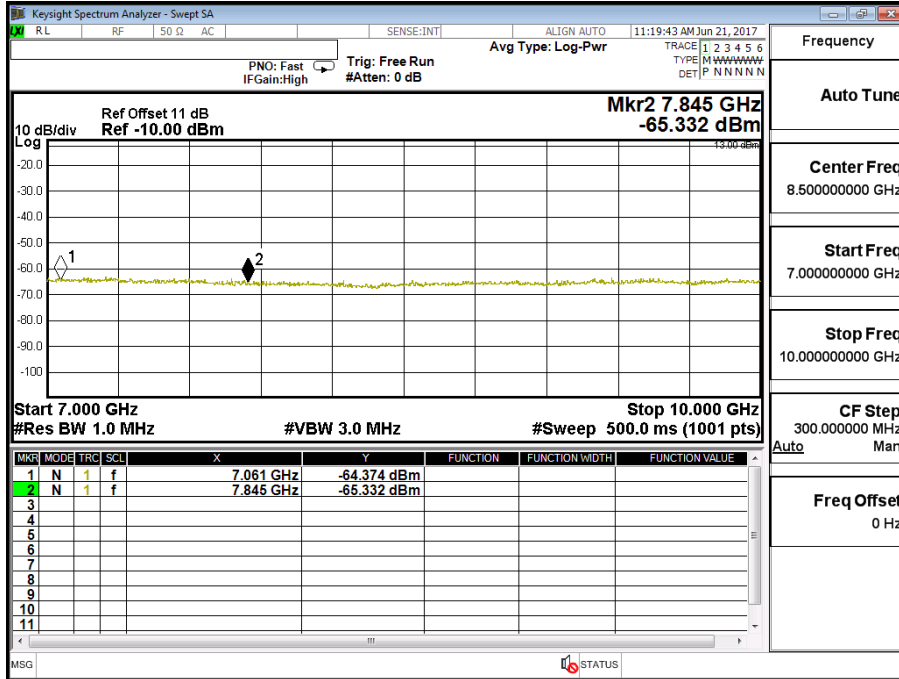
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 13 (5M)	Test Range	30MHz~10GHz

LTE-Band 13 (5M) QPSK(1,24) CH23255

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1573	-57.052	0.58	-56.472	-13
2359	-56.265	0.7	-55.565	-13
3138	-64.203	1.01	-63.193	-13
3923	-65.598	1.18	-64.418	-13
4707	-65.259	1.23	-64.029	-13
5492	-63.173	1.45	-61.723	-13
6276	-64.041	1.56	-62.481	-13
7061	-64.374	1.59	-62.784	-13
7845	-65.332	1.82	-63.512	-13





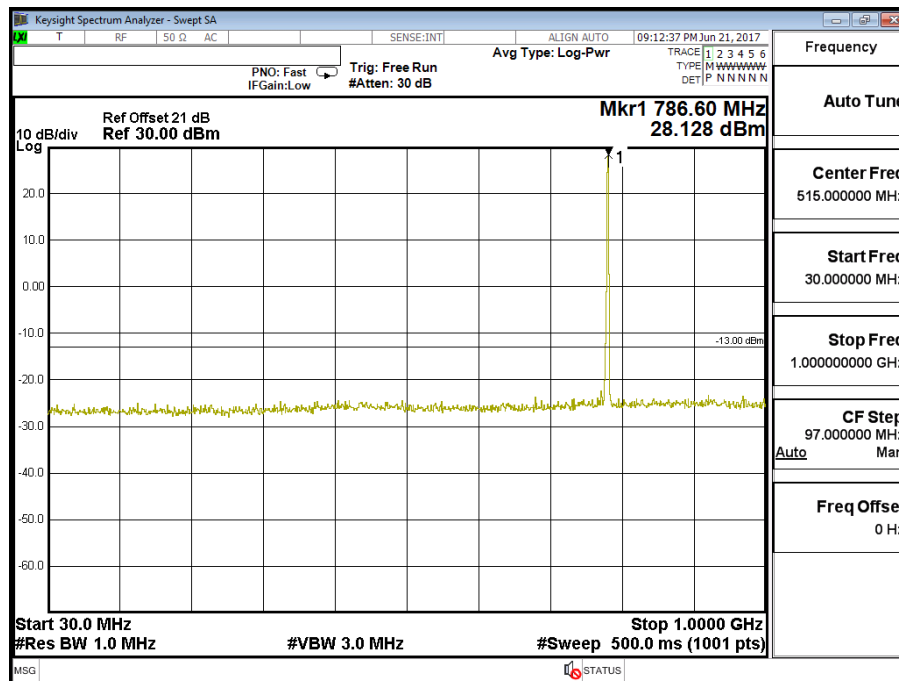


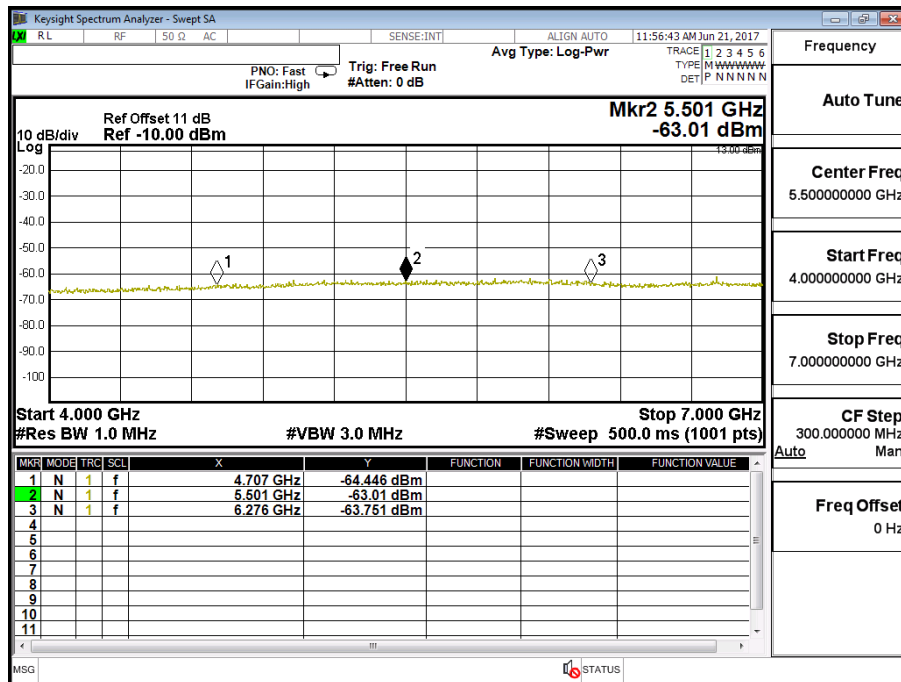
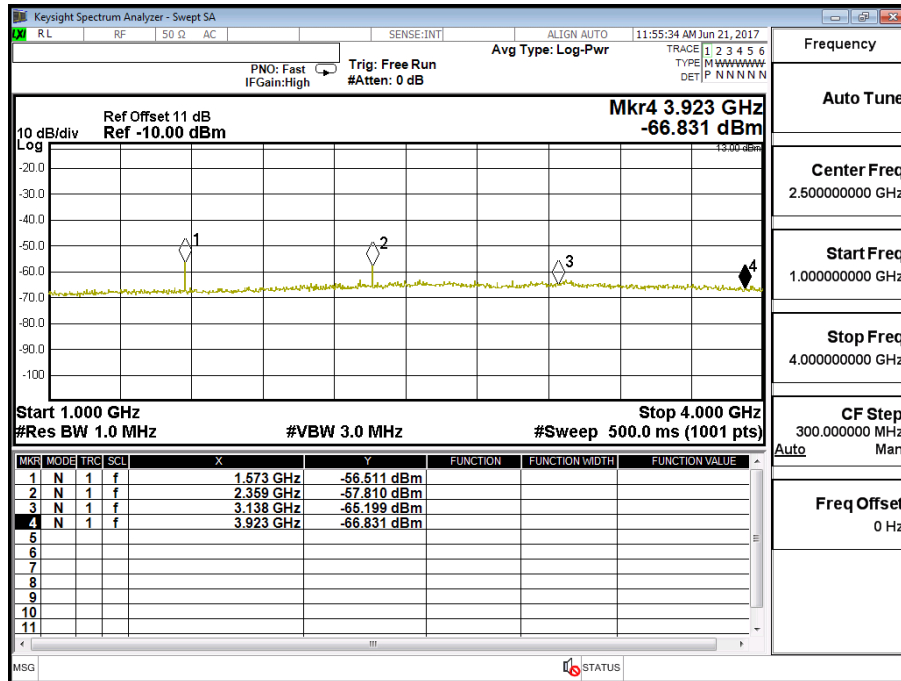
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Auto Tune
Center Freq 8.500000000 GHz
Start Freq 7.000000000 GHz
Stop Freq 10.000000000 GHz
CF Step 300.000000 MHz Auto Man
Freq Offset 0 Hz

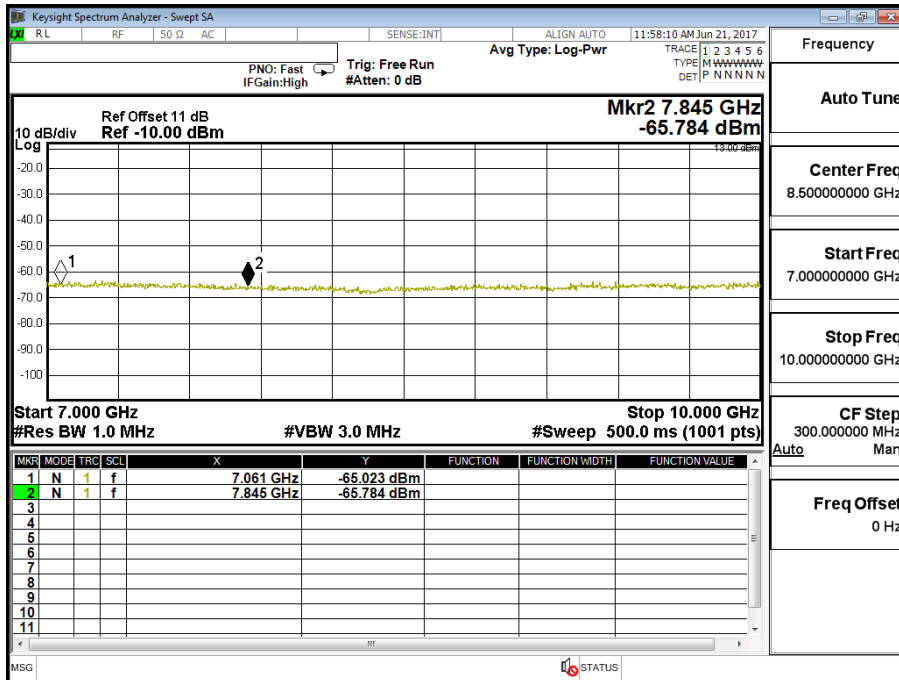
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 13 (5M)	Test Range	30MHz~10GHz

LTE-Band 13 (5M) 16QAM(1,24) CH23255

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1573	-56.511	0.58	-55.931	-13
2359	-57.810	0.7	-57.110	-13
3138	-65.199	1.01	-64.189	-13
3923	-66.831	1.18	-65.651	-13
4707	-64.446	1.23	-63.216	-13
5501	-63.010	1.45	-61.560	-13
6276	-63.751	1.56	-62.191	-13
7061	-65.023	1.59	-63.433	-13
7845	-65.784	1.82	-63.964	-13



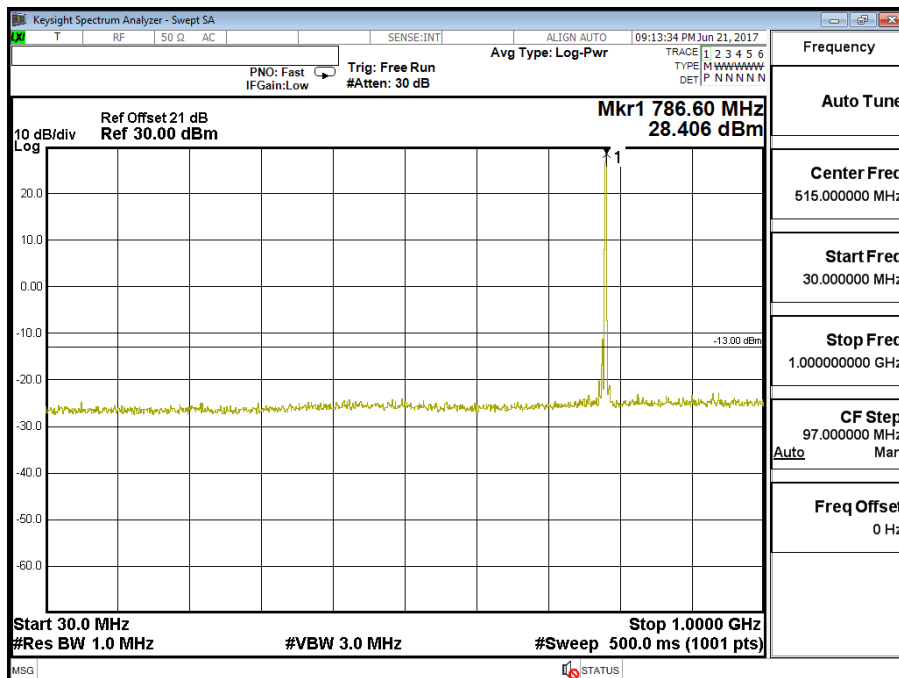


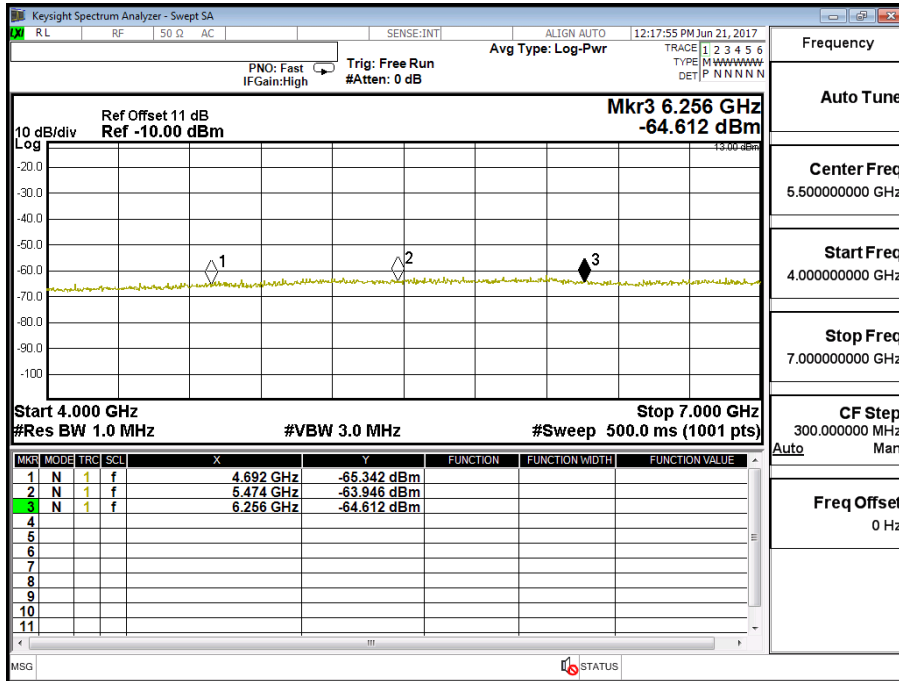
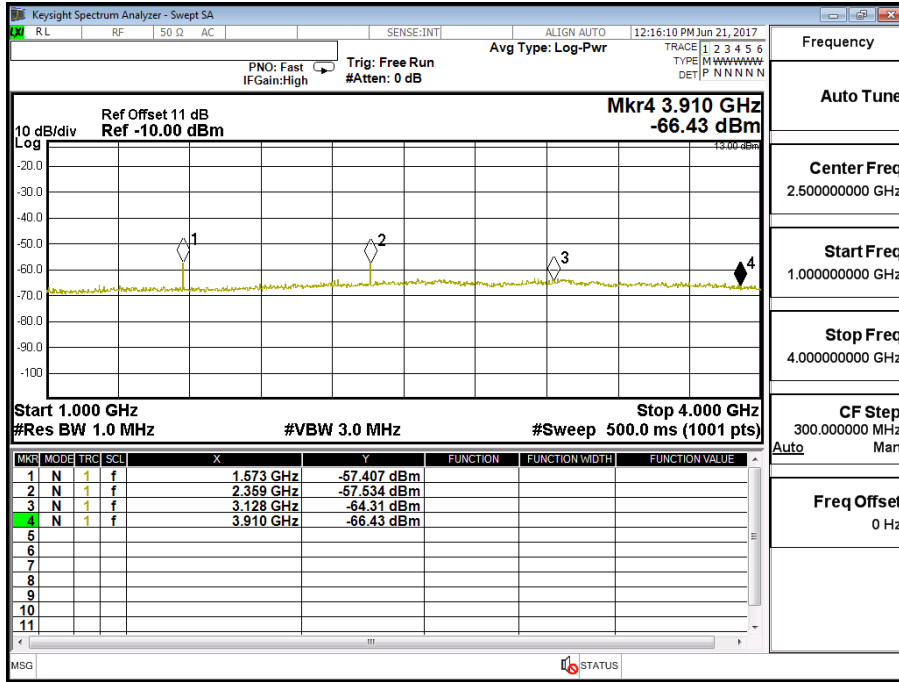


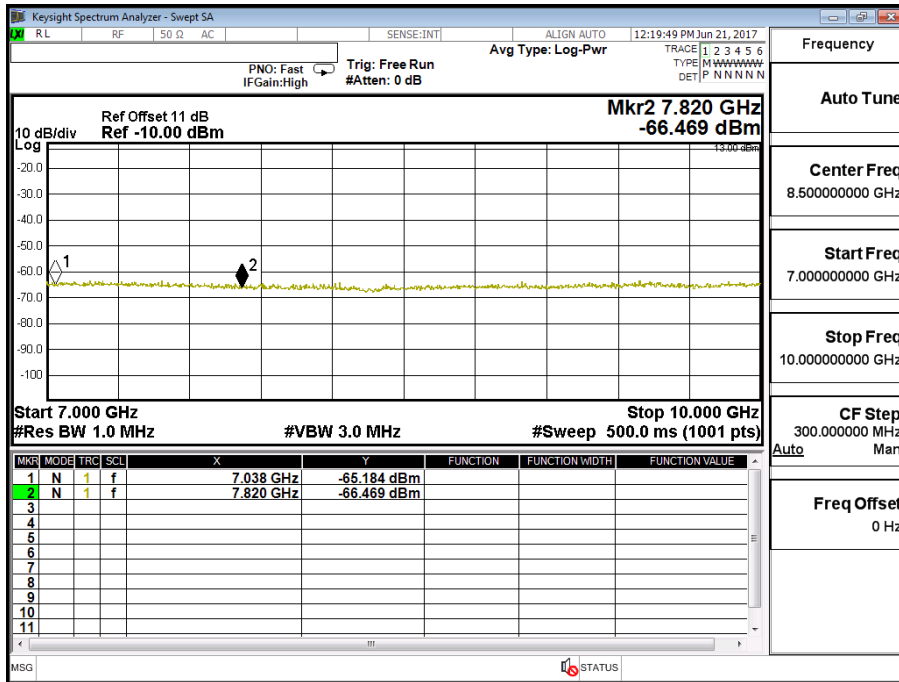
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 13 (10M)	Test Range	30MHz~10GHz

LTE-Band 13 (10M) QPSK(1,49) CH23230

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1573	-57.407	0.58	-56.827	-13
2359	-57.534	0.7	-56.834	-13
3128	-64.310	1.01	-63.300	-13
3910	-66.430	1.18	-65.250	-13
4692	-65.342	1.23	-64.112	-13
5474	-63.946	1.45	-62.496	-13
6256	-64.612	1.56	-63.052	-13
7038	-65.184	1.59	-63.594	-13
7820	-66.469	1.82	-64.649	-13



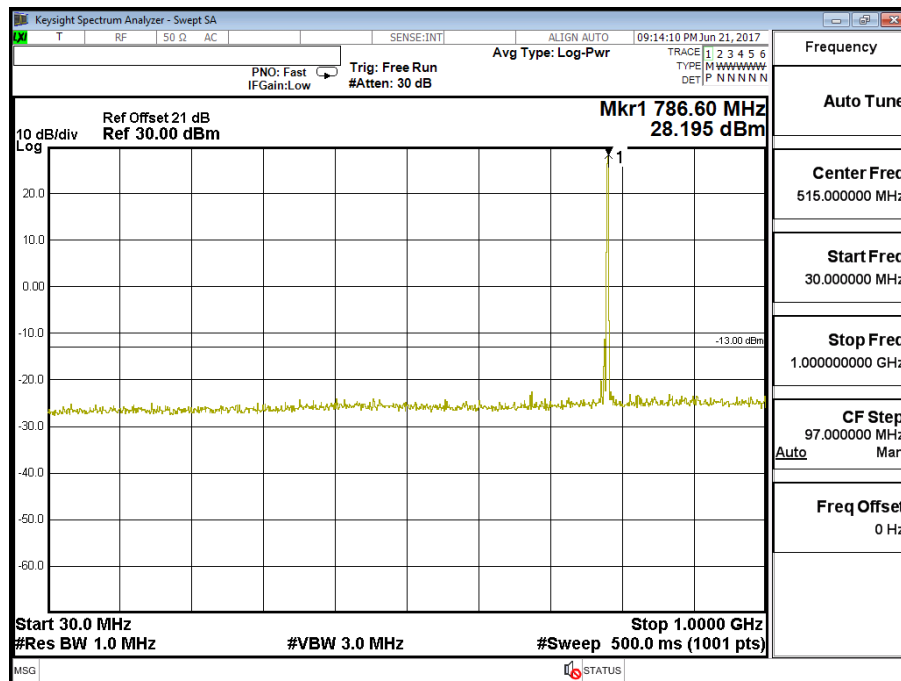


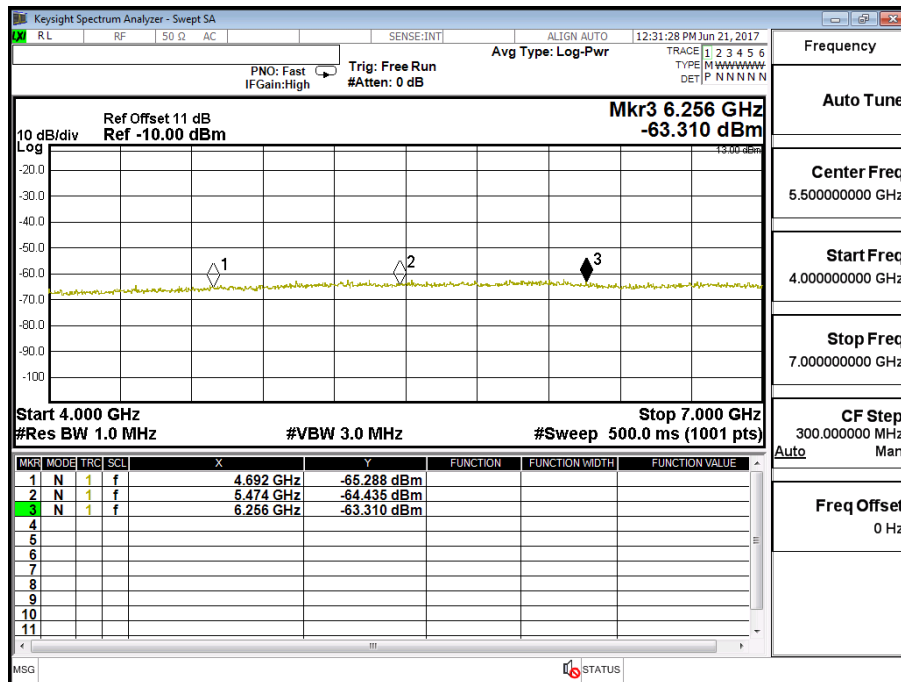
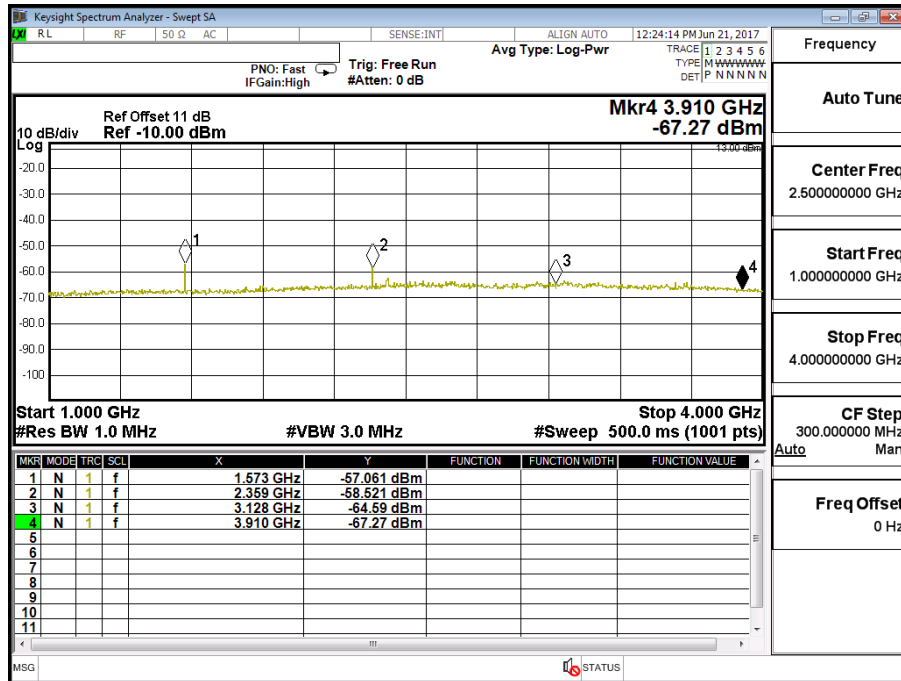


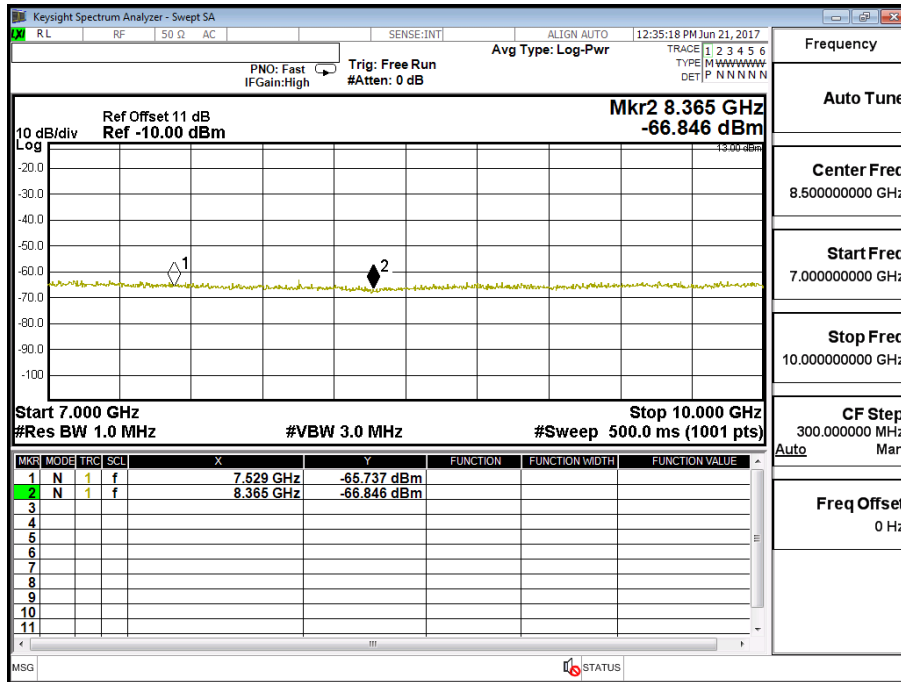
Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2017/06/21	Test Site	CTR
Test Condition	LTE-Band 13 (10M)	Test Range	30MHz~10GHz

LTE-Band 13 (10M) 16QAM(1,49) CH23230

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1573	-57.061	0.58	-56.481	-13
2359	-58.521	0.7	-57.821	-13
3128	-64.590	1.01	-63.580	-13
3910	-67.270	1.18	-66.090	-13
4692	-65.288	1.23	-64.058	-13
5474	-64.435	1.45	-62.985	-13
6256	-63.310	1.56	-61.750	-13
7529	-65.737	1.59	-64.147	-13
8365	-66.846	1.82	-65.026	-13







Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 4 (1.4M) QPSK(1,3)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 4 (1.4M) QPSK(1,3)

3465	-52.918	-53.712	2.530	12.600	-43.642	-13
5198	-63.347	-59.291	3.050	13.100	-49.241	-13
6930	-58.505	-46.647	3.650	11.500	-38.797	-13
8663	-62.610	-47.142	3.850	12.000	-38.992	-13
10395	-60.497	-43.838	4.580	12.000	-36.418	-13
12128	-64.248	-47.091	4.800	13.300	-38.591	-13

Vertical Emissions Band 4 (1.4M) QPSK(1,3)

3465	-59.103	-59.005	2.530	12.600	-48.935	-13
5198	-60.677	-56.315	3.050	13.100	-46.265	-13
6930	-62.574	-50.040	3.650	11.500	-42.190	-13
8663	-63.695	-47.691	3.850	12.000	-39.541	-13
10395	-61.679	-44.781	4.580	12.000	-37.361	-13
12128	-64.473	-47.457	4.800	13.300	-38.957	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 13 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 4 (3M) QPSK(1,14)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 4 (3M) QPSK(1,14)

3465	-51.668	-52.368	2.530	12.600	-42.298	-13
5198	-62.650	-58.594	3.050	13.100	-48.544	-13
6930	-58.545	-46.686	3.650	11.500	-38.836	-13
8663	-63.655	-48.162	3.850	12.000	-40.012	-13
10395	-60.084	-43.415	4.580	12.000	-35.995	-13
12128	-64.814	-47.712	4.800	13.300	-39.212	-13

Vertical Emissions Band 4 (3M) QPSK(1,14)

3465	-57.474	-57.302	2.530	12.600	-47.232	-13
5198	-61.824	-57.487	3.050	13.100	-47.437	-13
6930	-62.885	-50.522	3.650	11.500	-42.672	-13
8663	-62.808	-46.716	3.850	12.000	-38.566	-13
10395	-59.947	-42.971	4.580	12.000	-35.551	-13
12128	-64.439	-47.457	4.800	13.300	-38.957	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 13 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 4 (5M) QPSK(1,24)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 4 (5M) QPSK(1,24)

3472	-51.152	-51.852	2.530	12.600	-41.782	-13
5198	-62.861	-58.805	3.050	13.100	-48.755	-13
6930	-60.322	-48.308	3.650	11.500	-40.458	-13
8663	-63.346	-47.854	3.850	12.000	-39.704	-13
10395	-60.565	-43.824	4.580	12.000	-36.404	-13
12128	-65.061	-47.959	4.800	13.300	-39.459	-13

Vertical Emissions Band 4 (5M) QPSK(1,24)

3472	-56.624	-56.452	2.530	12.600	-46.382	-13
5198	-62.815	-58.478	3.050	13.100	-48.428	-13
6930	-61.613	-48.229	3.650	11.500	-40.379	-13
8663	-62.591	-46.453	3.850	12.000	-38.303	-13
10395	-60.566	-43.590	4.580	12.000	-36.170	-13
12128	-64.167	-47.185	4.800	13.300	-38.685	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 13 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 4 (10M) QPSK(1,24)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 4 (10M) QPSK(1,24)

3464	-52.733	-53.527	2.530	12.600	-43.457	-13
5198	-62.001	-57.963	3.050	13.100	-47.913	-13
6930	-59.534	-47.675	3.650	11.500	-39.825	-13
8663	-63.548	-48.055	3.850	12.000	-39.905	-13
10395	-61.164	-44.423	4.580	12.000	-37.003	-13
12128	-64.359	-47.257	4.800	13.300	-38.757	-13

Vertical Emissions Band 4 (10M) QPSK(1,24)

3464	-58.510	-58.411	2.530	12.600	-48.341	-13
5198	-60.851	-56.489	3.050	13.100	-46.439	-13
6930	-63.247	-50.884	3.650	11.500	-43.034	-13
8663	-63.052	-47.048	3.850	12.000	-38.898	-13
10395	-60.788	-43.890	4.580	12.000	-36.470	-13
12128	-64.526	-47.544	4.800	13.300	-39.044	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 13 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 4 (15M) QPSK(1,37)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 4 (15M) QPSK(1,37)

3465	-52.713	-53.507	2.530	12.600	-43.437	-13
5198	-63.526	-59.488	3.050	13.100	-49.438	-13
6930	-58.776	-46.918	3.650	11.500	-39.068	-13
8663	-62.391	-46.898	3.850	12.000	-38.748	-13
10395	-60.496	-43.837	4.580	12.000	-36.417	-13
12128	-65.008	-47.906	4.800	13.300	-39.406	-13

Vertical Emissions Band 4 (15M) QPSK(1,37)

3465	-58.456	-58.357	2.530	12.600	-48.287	-13
5198	-62.724	-58.362	3.050	13.100	-48.312	-13
6930	-60.827	-48.464	3.650	11.500	-40.614	-13
8663	-63.074	-47.070	3.850	12.000	-38.920	-13
10395	-60.229	-43.301	4.580	12.000	-35.881	-13
12128	-64.743	-47.761	4.800	13.300	-39.261	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 13 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 4 (20M) QPSK(1,0)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 4 (20M) QPSK(1,0)

3472	-53.384	-54.084	2.530	12.600	-44.014	-13
5235	-63.784	-59.665	3.050	13.100	-49.615	-13
6980	-63.128	-50.359	3.650	11.500	-42.509	-13
8725	-62.401	-46.510	3.850	12.000	-38.360	-13
10470	-61.765	-45.351	4.580	12.000	-37.931	-13
12215	-65.118	-47.693	4.800	13.300	-39.193	-13

Vertical Emissions Band 4 (20M) QPSK(1,0)

3472	-58.644	-58.472	2.530	12.600	-48.402	-13
5235	-63.063	-58.523	3.050	13.100	-48.473	-13
6980	-62.781	-49.563	3.650	11.500	-41.713	-13
8725	-63.617	-47.232	3.850	12.000	-39.082	-13
10470	-62.685	-46.129	4.580	12.000	-38.709	-13
12215	-64.263	-46.966	4.800	13.300	-38.466	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 13 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 13 (5M) QPSK(1,24)	Test Range	9kHz ~10GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 13 (5M) QPSK(1,24)

1569	-56.783	-61.181	1.630	9.800	-53.011	-40
2354	-64.255	-64.604	2.100	10.600	-56.104	-13
3138	-59.128	-60.209	2.350	12.300	-50.259	-13
3923	-60.679	-60.500	2.700	12.600	-50.600	-13
4707	-62.197	-58.835	2.830	12.700	-48.965	-13
5492	-62.365	-58.427	3.200	13.000	-48.627	-13

Vertical Emissions Band 13 (5M) QPSK(1,24)

1569	-63.397	-67.159	1.630	9.800	-58.989	-40
2354	-64.593	-64.314	2.100	10.600	-55.814	-13
3138	-58.231	-58.297	2.350	12.300	-48.347	-13
3923	-60.692	-58.765	2.700	12.600	-48.865	-13
4707	-63.170	-59.003	2.830	12.700	-49.133	-13
5492	-63.342	-58.824	3.200	13.000	-49.024	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 6 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2017/06/08	Test Site	Site3
Test Condition	Band 13 (10M) QPSK(1,12)	Test Range	9kHz ~10GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 13 (10M) QPSK(1,12)

1564	-56.992	-61.390	1.630	9.800	-53.220	-40
2346	-63.920	-63.912	2.100	10.600	-55.412	-13
3128	-59.556	-60.619	2.350	12.300	-50.669	-13
3910	-61.319	-61.469	2.700	12.600	-51.569	-13
4692	-62.713	-59.351	2.830	12.700	-49.481	-13
5474	-62.962	-58.811	3.200	13.000	-49.011	-13

Vertical Emissions Band 13 (10M) QPSK(1,12)

1564	-63.329	-67.028	1.630	9.800	-58.858	-40
2346	-64.314	-63.924	2.100	10.600	-55.424	-13
3128	-58.674	-58.745	2.350	12.300	-48.795	-13
3910	-60.916	-59.037	2.700	12.600	-49.137	-13
4692	-63.509	-59.450	2.830	12.700	-49.580	-13
5474	-63.158	-58.633	3.200	13.000	-48.833	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 6 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

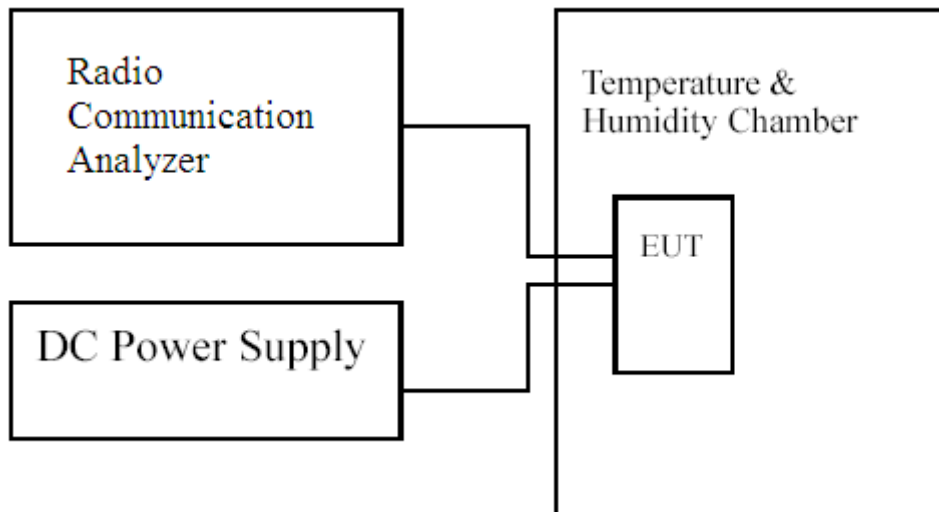
7. Frequency Stability Under Temperature & Voltage Variations

7.1. Test Specification

According to Part 2.1055, 27.54

RSS GEN, RSS 130

7.2. Test Setup



7.3. Limits

Limit	$<\pm 2.5\text{ppm}$
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7.4. Test Procedure

The frequency stability of transmitter is measured by:

- (a) Temperature: The temperature is varied from -30°C to 50°C in 10°C increment using a standard temperature & Humidity chamber.
- (b) Primary Supply Voltage: The primary supply voltage is varied 85% to 115% of the nominal value for non hand-carried equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating endpoint which shall be specified by the manufacturer.

The EUT was connected via the base station simulator. Universal Radio Communication Tester, (MT8820C), was used to measure The Frequency Error. The maximum result of measurements was recorded.

7.5. Test Result of Frequency Stability Under Temperature Variations

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (1.4M) CH20175(1732.5MHz) –QPSK	Test Range	-20°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0134	±4.33
-20	1.73	0.0101	±4.33
-10	1.73	0.0087	±4.33
0	1.73	-0.0077	±4.33
10	1.73	0.0113	±4.33
20	1.73	0.0071	±4.33
30	1.73	-0.0095	±4.33
40	1.73	0.0078	±4.33
50	1.73	-0.0102	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	0.0065	±4.33
24	1.73	0.0071	±4.33
20.4	1.73	0.0085	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (1.4M) CH20175(1732.5MHz) –16QAM	Test Range	-20°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0086	±4.33
-20	1.73	0.0130	±4.33
-10	1.73	0.0116	±4.33
0	1.73	0.0118	±4.33
10	1.73	0.0088	±4.33
20	1.73	0.0054	±4.33
30	1.73	0.0071	±4.33
40	1.73	-0.0076	±4.33
50	1.73	0.0068	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	-0.0096	±4.33
24	1.73	0.0054	±4.33
20.4	1.73	-0.0115	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (3M) CH20175(1732.5MHz) –QPSK	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	-0.0064	±4.33
-20	1.73	0.0086	±4.33
-10	1.73	-0.0054	±4.33
0	1.73	0.0074	±4.33
10	1.73	-0.0055	±4.33
20	1.73	0.0100	±4.33
30	1.73	0.0092	±4.33
40	1.73	-0.0076	±4.33
50	1.73	0.0074	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	-0.0096	±4.33
24	1.73	0.0100	±4.33
20.4	1.73	0.0055	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (3M) CH20175(1732.5MHz) –16QAM	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0108	±4.33
-20	1.73	0.0090	±4.33
-10	1.73	0.0064	±4.33
0	1.73	0.0124	±4.33
10	1.73	-0.0052	±4.33
20	1.73	0.0084	±4.33
30	1.73	-0.0074	±4.33
40	1.73	-0.0072	±4.33
50	1.73	0.0104	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	0.0092	±4.33
24	1.73	0.0084	±4.33
20.4	1.73	0.0120	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (5M) CH20175(1732.5MHz) –QPSK	Test Range	-20°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0084	±4.33
-20	1.73	-0.0129	±4.33
-10	1.73	-0.0086	±4.33
0	1.73	0.0074	±4.33
10	1.73	0.0093	±4.33
20	1.73	0.0117	±4.33
30	1.73	0.0076	±4.33
40	1.73	-0.0085	±4.33
50	1.73	0.0126	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	0.0093	±4.33
24	1.73	0.0117	±4.33
20.4	1.73	-0.0075	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (5M) CH20175(1732.5MHz) –16QAM	Test Range	-20°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	-0.0072	±4.33
-20	1.73	0.0074	±4.33
-10	1.73	0.0109	±4.33
0	1.73	0.0132	±4.33
10	1.73	0.0122	±4.33
20	1.73	0.0121	±4.33
30	1.73	0.0140	±4.33
40	1.73	-0.0079	±4.33
50	1.73	0.0075	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	-0.0085	±4.33
24	1.73	0.0121	±4.33
20.4	1.73	0.0087	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (10M) CH20175(1732.5MHz)-QPSK	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0112	±4.33
-20	1.73	0.0116	±4.33
-10	1.73	-0.0073	±4.33
0	1.73	0.0070	±4.33
10	1.73	0.0085	±4.33
20	1.73	0.0085	±4.33
30	1.73	0.0086	±4.33
40	1.73	-0.0083	±4.33
50	1.73	0.0088	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	-0.0084	±4.33
24	1.73	0.0085	±4.33
20.4	1.73	-0.0062	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (10M) CH20175(1732.5MHz)-16QAM	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0124	±4.33
-20	1.73	0.0131	±4.33
-10	1.73	0.0071	±4.33
0	1.73	0.0086	±4.33
10	1.73	0.0129	±4.33
20	1.73	0.0102	±4.33
30	1.73	-0.0088	±4.33
40	1.73	-0.0074	±4.33
50	1.73	-0.0093	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	-0.0103	±4.33
24	1.73	0.0102	±4.33
20.4	1.73	0.0074	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (15M) CH20175(1732.5MHz)-QPSK	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0079	±4.33
-20	1.73	0.0098	±4.33
-10	1.73	-0.0084	±4.33
0	1.73	0.0087	±4.33
10	1.73	0.0091	±4.33
20	1.73	0.0072	±4.33
30	1.73	-0.0080	±4.33
40	1.73	-0.0145	±4.33
50	1.73	-0.0062	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	0.0126	±4.33
24	1.73	0.0072	±4.33
20.4	1.73	0.0071	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (15M) CH20175(1732.5MHz)-16QAM	Test Range	-30°C~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0100	±4.33
-20	1.73	0.0113	±4.33
-10	1.73	0.0095	±4.33
0	1.73	0.0109	±4.33
10	1.73	0.0089	±4.33
20	1.73	-0.0075	±4.33
30	1.73	-0.0058	±4.33
40	1.73	-0.0078	±4.33
50	1.73	-0.0065	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	-0.0092	±4.33
24	1.73	-0.0075	±4.33
20.4	1.73	0.0080	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (20M) CH20175(1732.5MHz)-QPSK	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	-0.0071	±4.33
-20	1.73	0.0055	±4.33
-10	1.73	0.0090	±4.33
0	1.73	0.0071	±4.33
10	1.73	-0.0093	±4.33
20	1.73	-0.0095	±4.33
30	1.73	0.0088	±4.33
40	1.73	-0.0109	±4.33
50	1.73	-0.0114	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	0.0157	±4.33
24	1.73	-0.0095	±4.33
20.4	1.73	-0.0100	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 4 (20M) CH20175(1732.5MHz)-16QAM	Test Range	-30°C~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.73	0.0111	±4.33
-20	1.73	-0.0093	±4.33
-10	1.73	0.0084	±4.33
0	1.73	0.0083	±4.33
10	1.73	0.0091	±4.33
20	1.73	0.0101	±4.33
30	1.73	0.0079	±4.33
40	1.73	0.0072	±4.33
50	1.73	0.0125	±4.33

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	1.73	0.0135	±4.33
24	1.73	0.0101	±4.33
20.4	1.73	0.0084	±4.33

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 13 (5M) CH23230(782MHz)-QPSK	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	0.782	-0.0031	±1.96
-20	0.782	-0.0039	±1.96
-10	0.782	-0.0049	±1.96
0	0.782	0.0043	±1.96
10	0.782	-0.0058	±1.96
20	0.782	-0.0062	±1.96
30	0.782	-0.0053	±1.96
40	0.782	0.0330	±1.96
50	0.782	-0.0056	±1.96

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	0.782	-0.0067	±1.96
24	0.782	-0.0062	±1.96
20.4	0.782	0.0039	±1.96

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 13 (5M) CH23230(782MHz)-16QAM	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	0.782	0.0038	±1.96
-20	0.782	0.0044	±1.96
-10	0.782	0.0035	±1.96
0	0.782	-0.0040	±1.96
10	0.782	-0.0055	±1.96
20	0.782	-0.0060	±1.96
30	0.782	-0.0052	±1.96
40	0.782	0.0054	±1.96
50	0.782	0.0042	±1.96

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	0.782	-0.0064	±1.96
24	0.782	-0.0060	±1.96
20.4	0.782	-0.0076	±1.96

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 13 (10M) CH23230(782MHz)-QPSK	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	0.782	0.0040	±1.96
-20	0.782	0.0055	±1.96
-10	0.782	0.0047	±1.96
0	0.782	-0.0041	±1.96
10	0.782	-0.0055	±1.96
20	0.782	-0.0053	±1.96
30	0.782	-0.0051	±1.96
40	0.782	0.0056	±1.96
50	0.782	-0.0044	±1.96

Voltage Variations

DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	0.782	0.0044	±1.96
24	0.782	-0.0053	±1.96
20.4	0.782	0.0031	±1.96

Product	LTE Cellular Alarm Communicators		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	Band 13 (10M) CH23230(782MHz)-16QAM	Test Range	-30°C ~+50°C

Frequency Stability Under Temperature Variations

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	0.782	-0.0038	±1.96
-20	0.782	0.0033	±1.96
-10	0.782	-0.0053	±1.96
0	0.782	0.0058	±1.96
10	0.782	0.0041	±1.96
20	0.782	-0.0062	±1.96
30	0.782	-0.0053	±1.96
40	0.782	0.0039	±1.96
50	0.782	-0.0053	±1.96

Voltage Variations

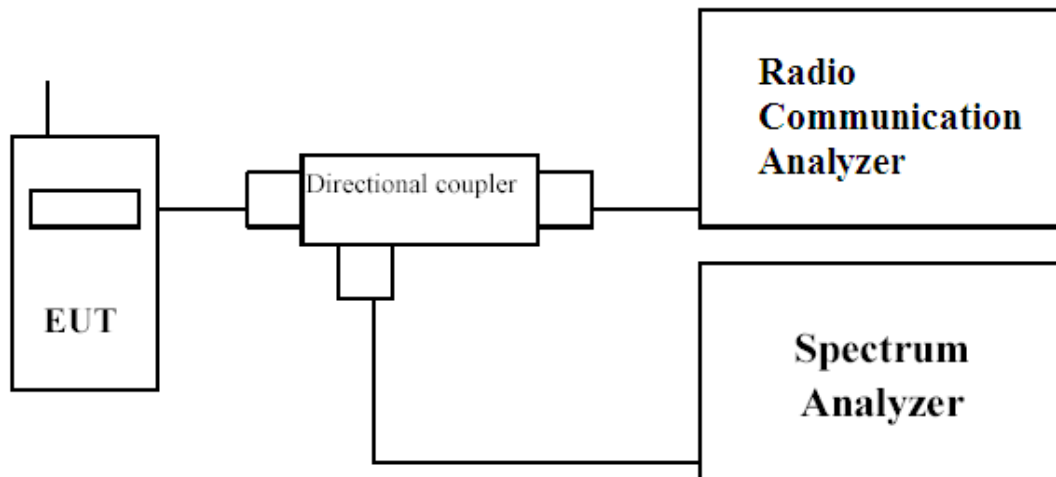
DC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
27.6	0.782	-0.0052	±1.96
24	0.782	-0.0062	±1.96
20.4	0.782	0.0033	±1.96

8. Peak to Average Ratio

8.1 Test Specification

According to Part 27.50(a), IC RSS 130, RSS 139

8.2 Test Setup



8.3 Limits

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure.

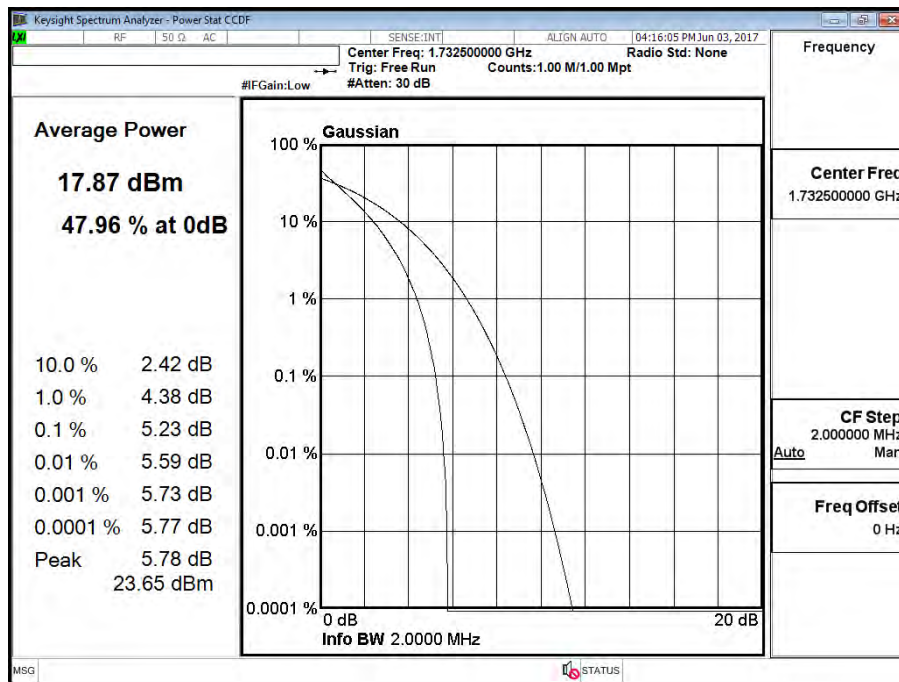
8.4 Test Procedure

- a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- b) Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- c) Set the number of counts to a value that stabilizes the measured CCDF curve;
- d) Set the measurement interval as follows:
 - 1) for continuous transmissions, set to 1 ms,
 - 2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
- e) Record the maximum PAPR level associated with a probability of 0.1%.

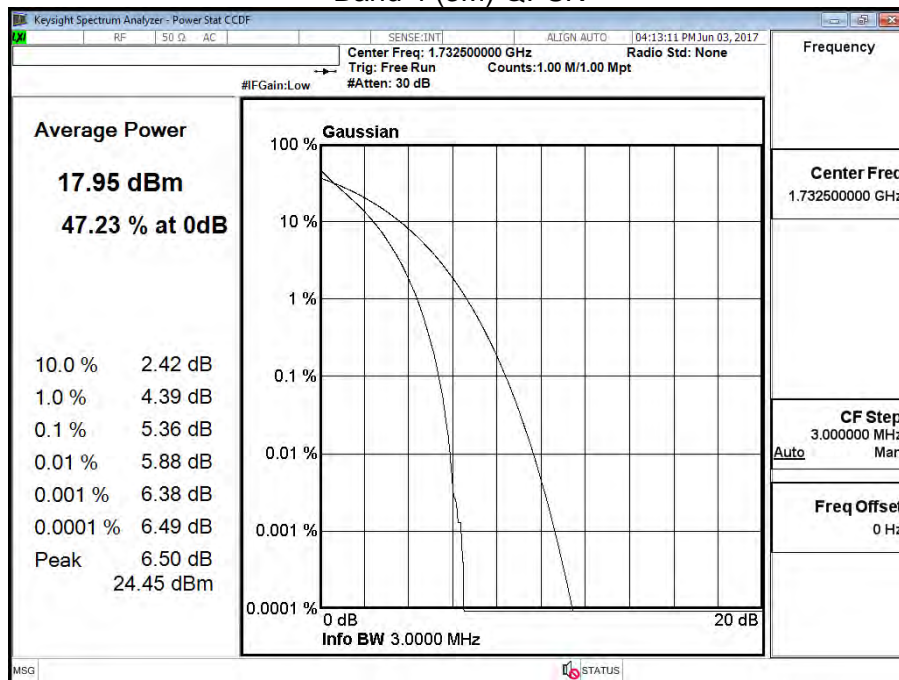
8.5 Test Result of Spurious Emission

Product	LTE Cellular Alarm Communicators		
Test Mode	Peak to Average Ratio		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	LTE-Band 4		

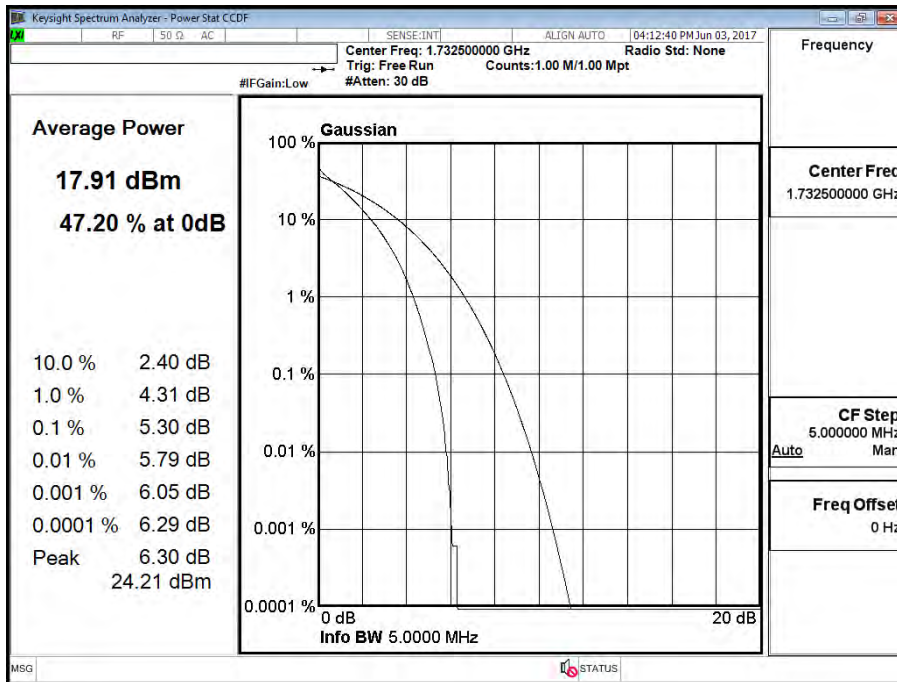
Band 4 (1.4M) QPSK



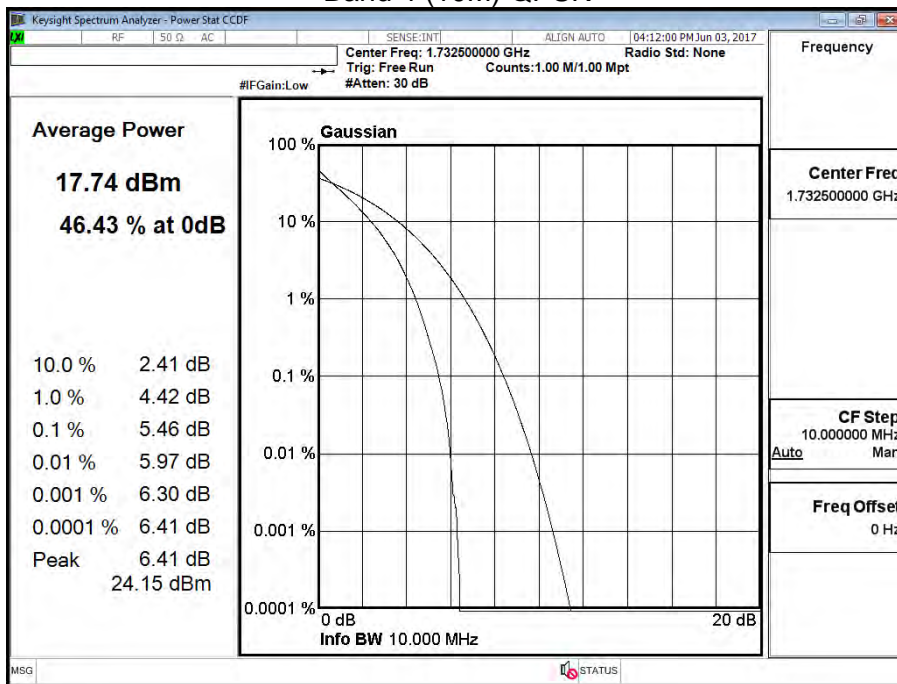
Band 4 (3M) QPSK



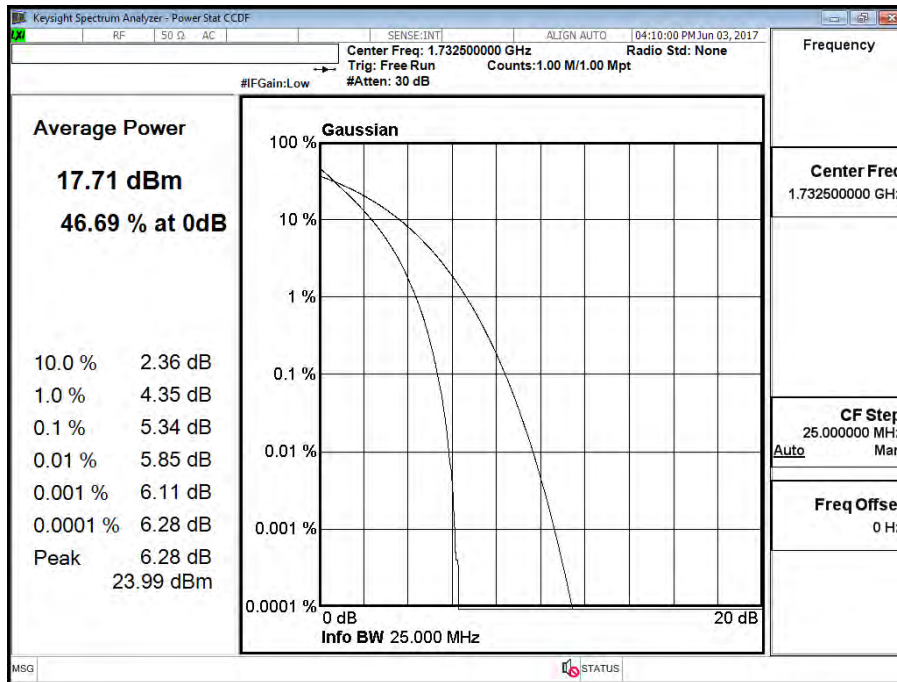
Band 4 (5M) QPSK



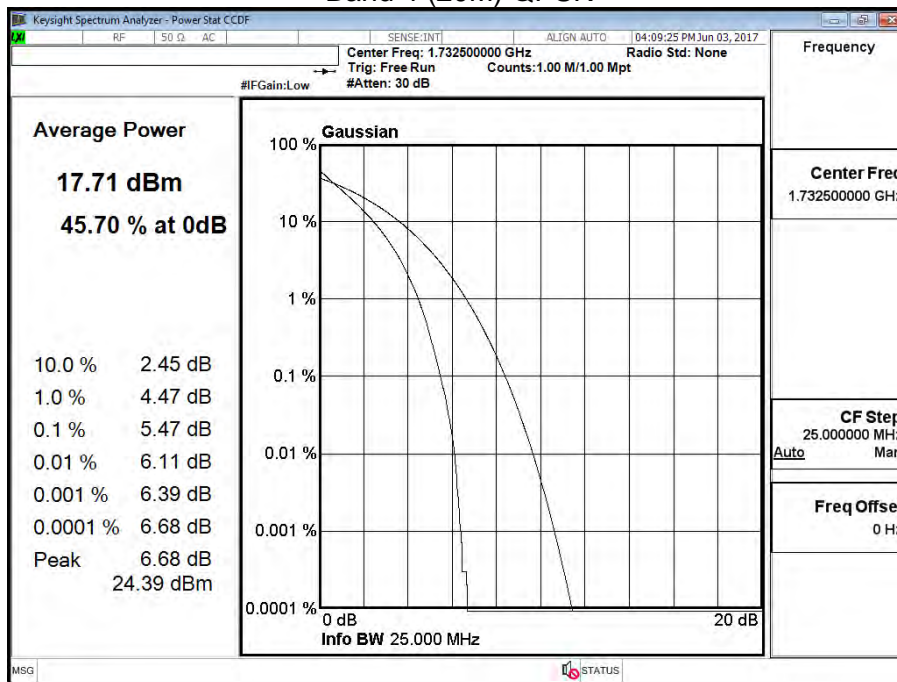
Band 4 (10M) QPSK



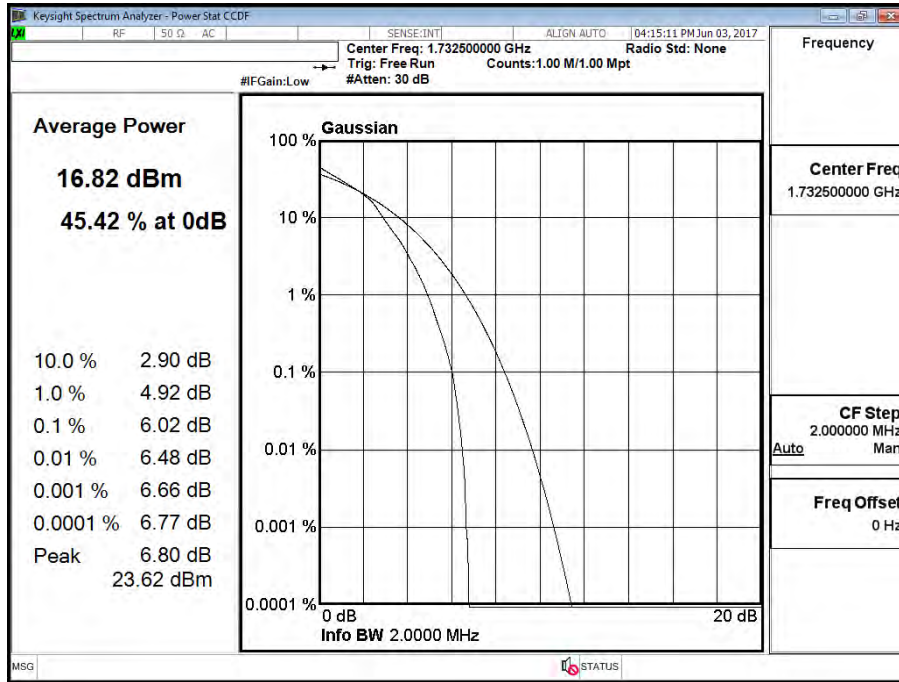
Band 4 (15M) QPSK



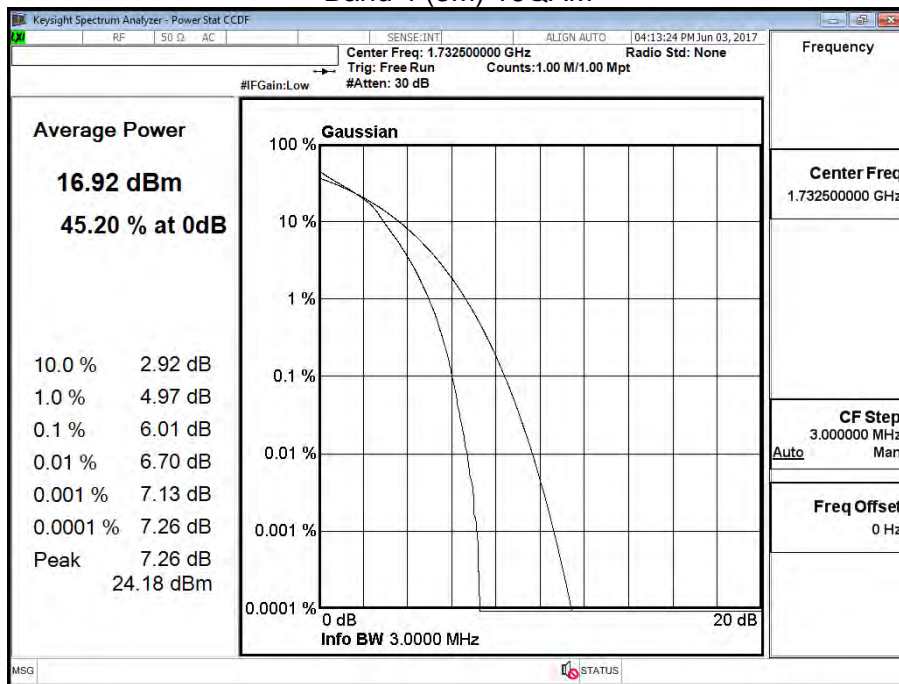
Band 4 (20M) QPSK



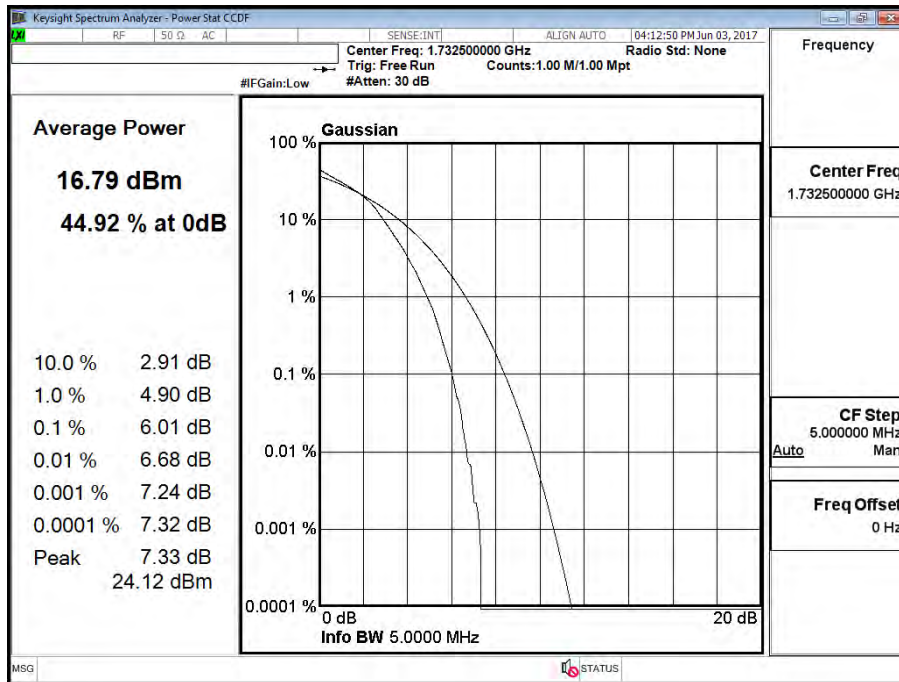
Band 4 (1.4M) 16QAM



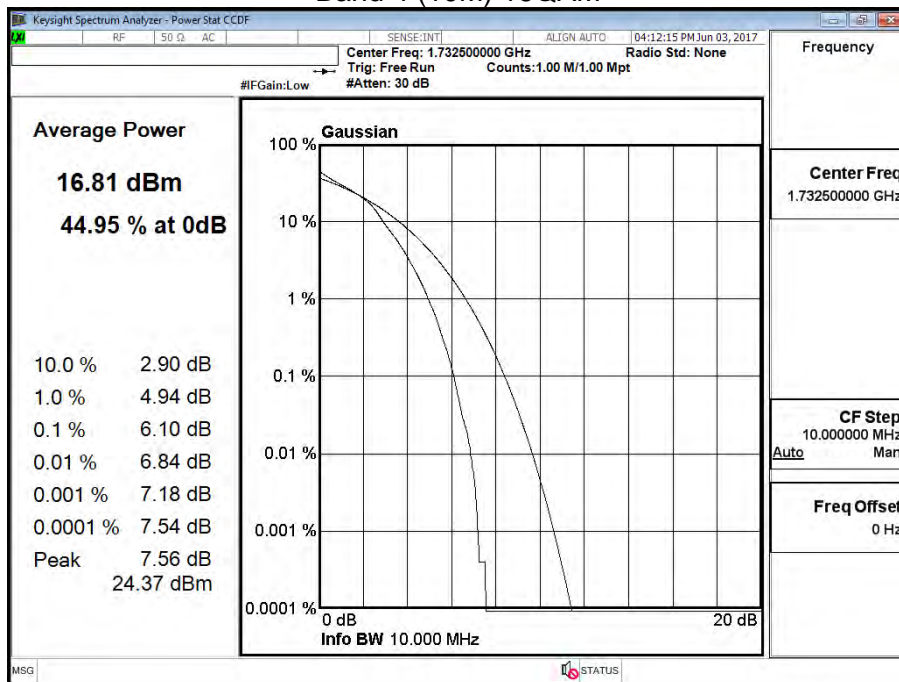
Band 4 (3M) 16QAM



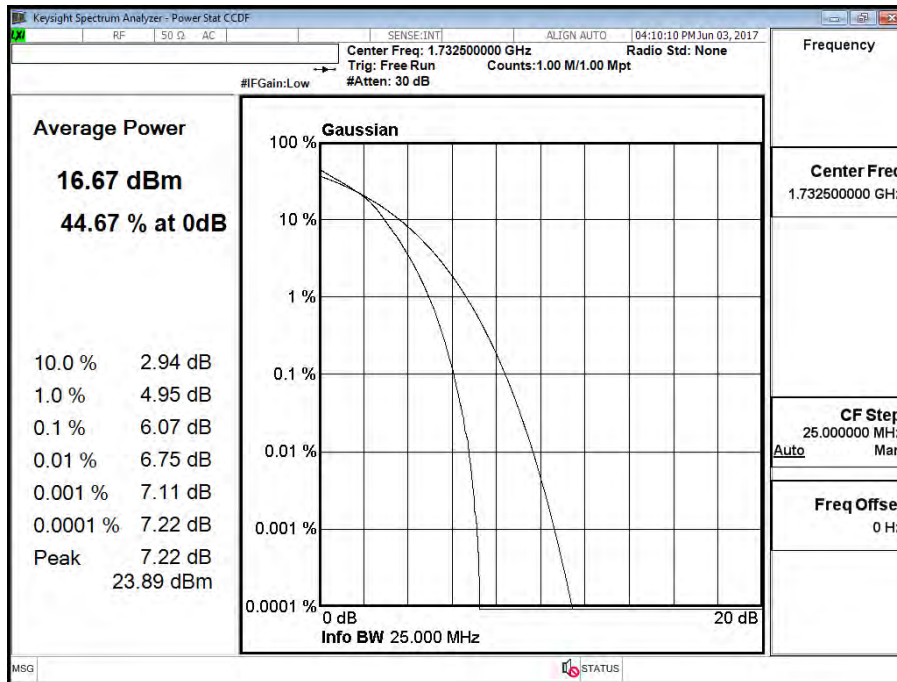
Band 4 (5M) 16QAM



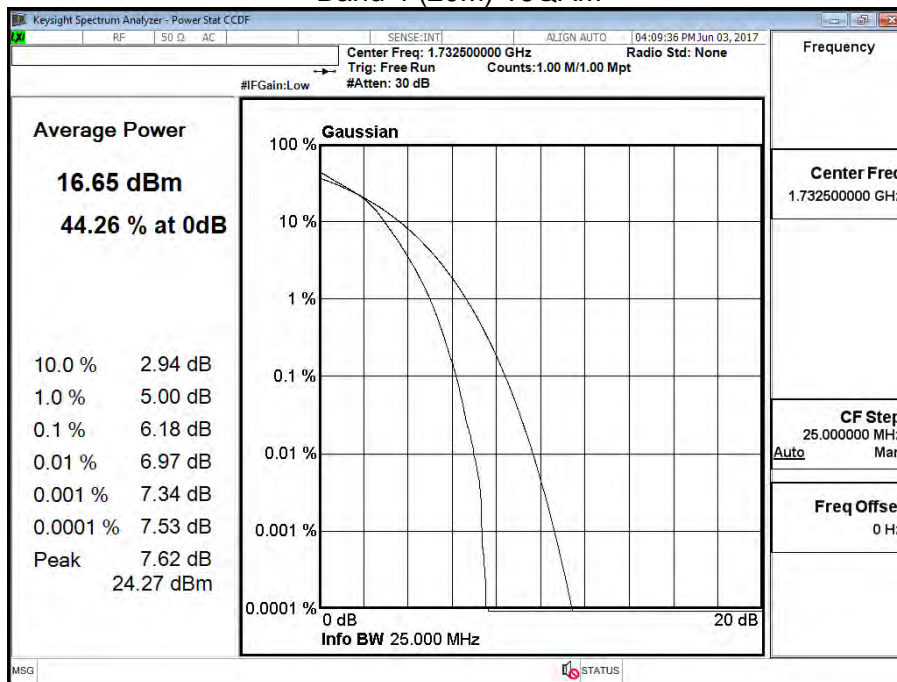
Band 4 (10M) 16QAM



Band 4 (15M) 16QAM

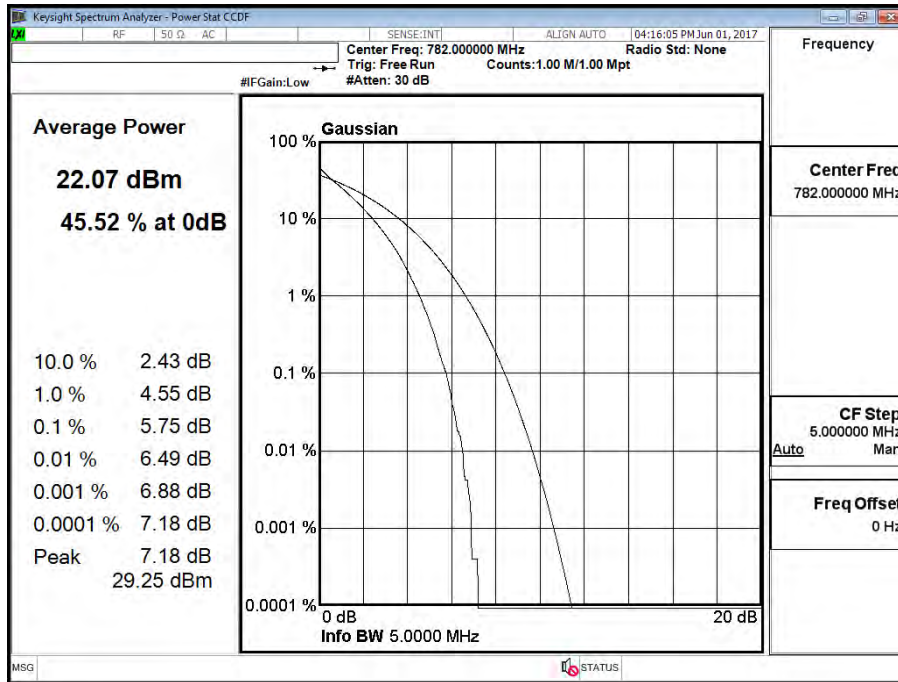


Band 4 (20M) 16QAM

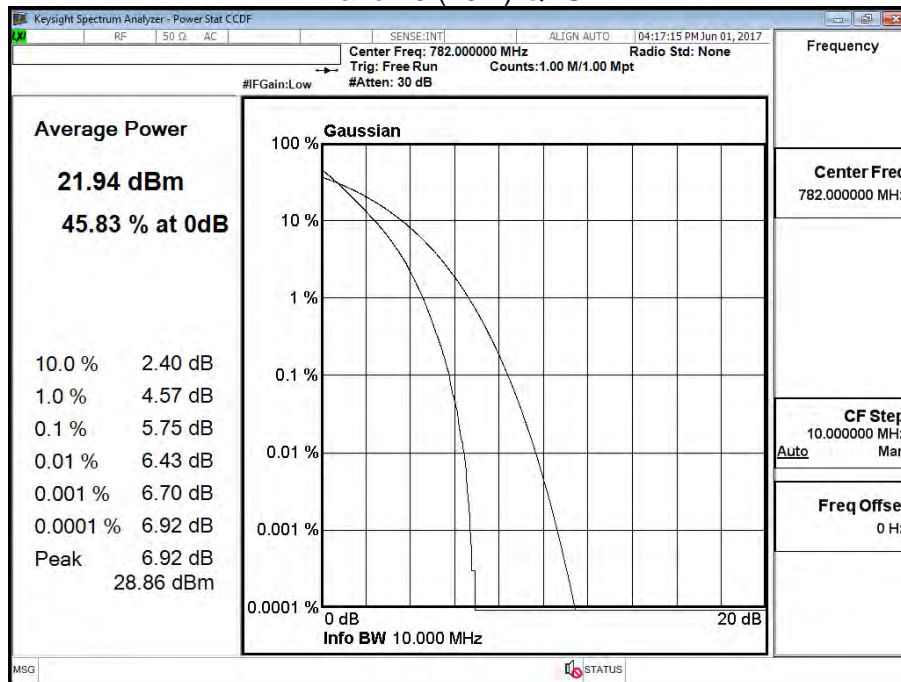


Product	LTE Cellular Alarm Communicators		
Test Mode	Peak to Average Ratio		
Date of Test	2017/06/22	Test Site	CTR
Test Condition	LTE-Band 13		

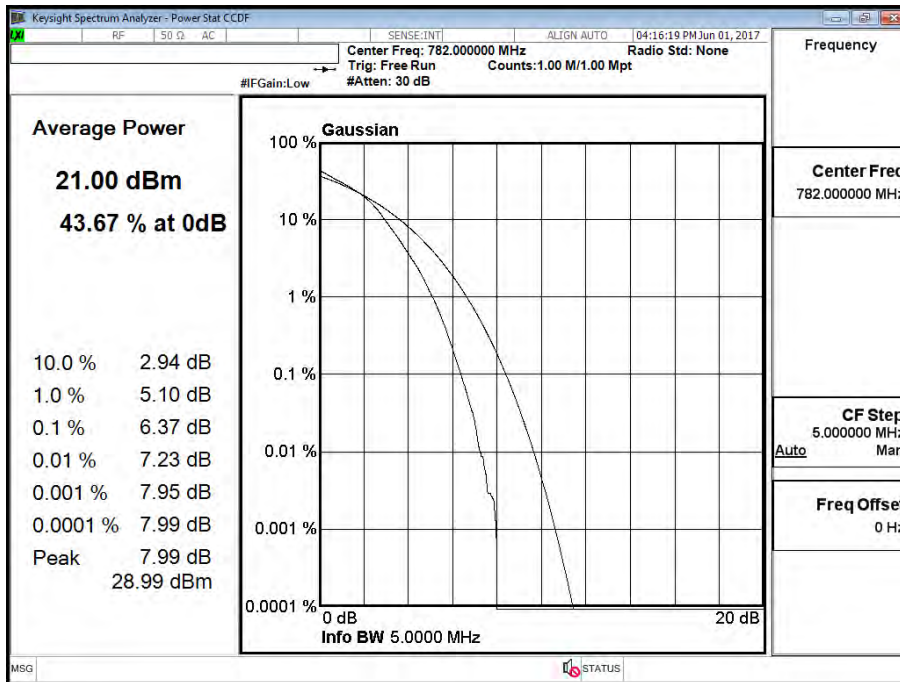
Band 13 (5M) QPSK



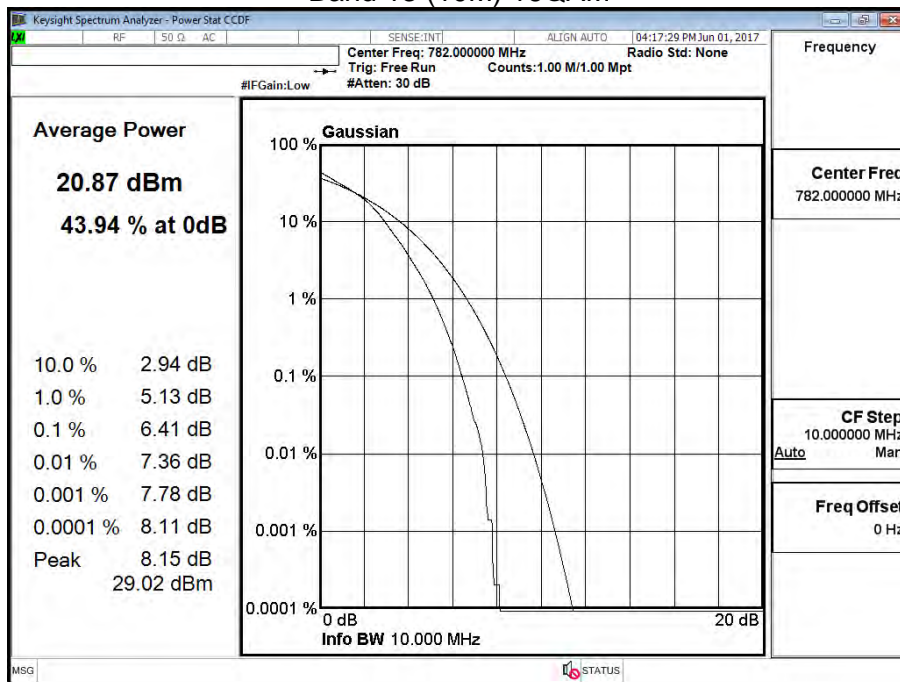
Band 13 (10M) QPSK



Band 13 (5M) 16QAM



Band 13 (10M) 16QAM



Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs