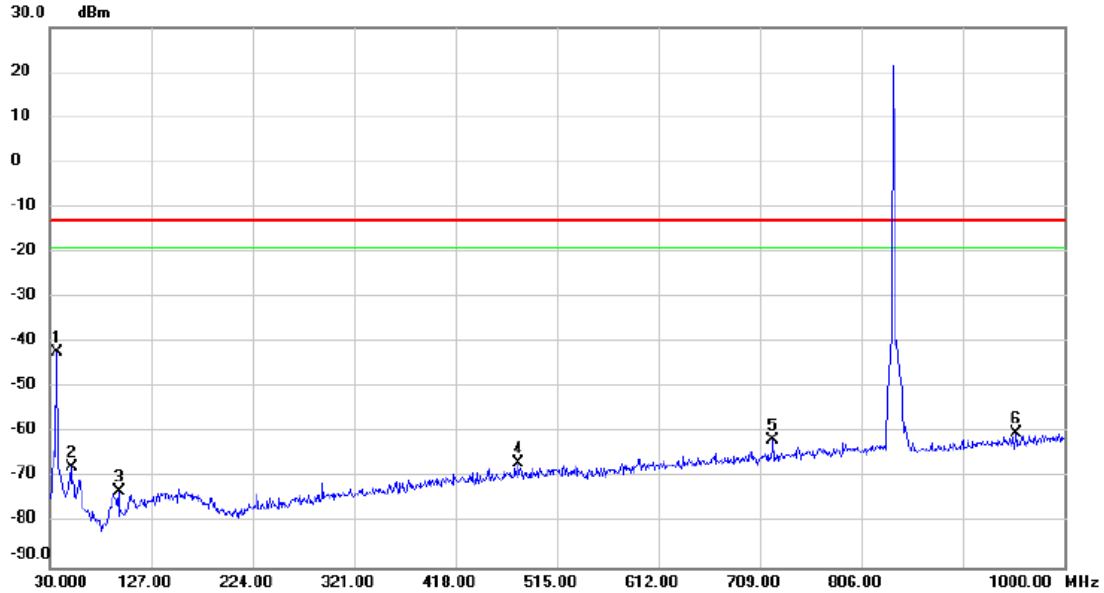
APPENDIX E - RADIATED EMISSION (30MHZ TO 1GHZ)

Test Mode:	GSM850_TX CH190_GSM

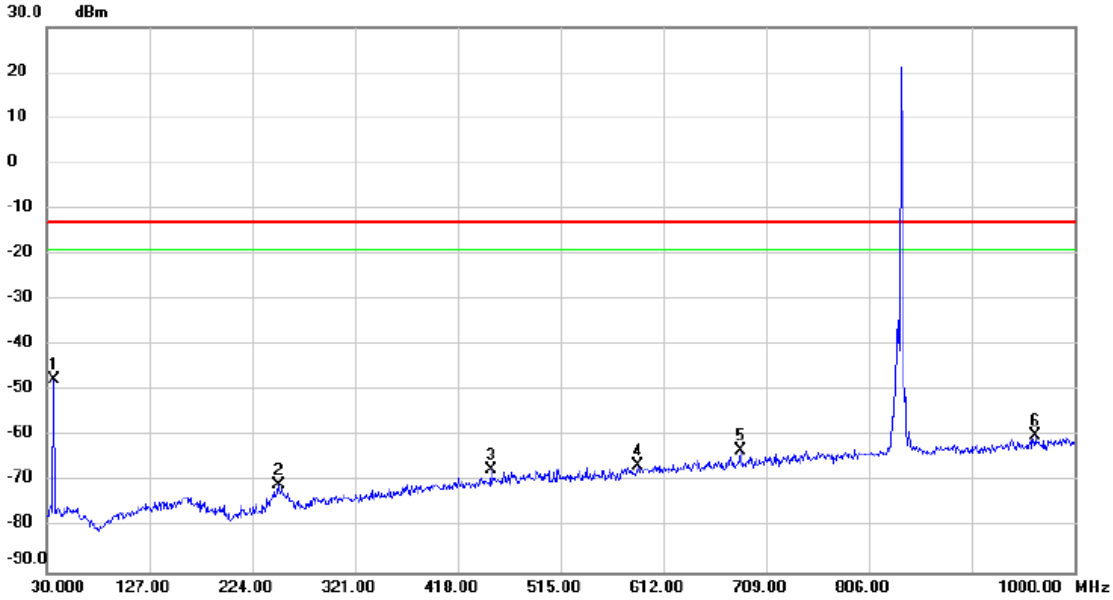
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	36.790	-37.65	-4.61	-42.26	-13.00	-29.26	peak	
2		50.855	-63.67	-3.92	-67.59	-13.00	-54.59	peak	
3		95.960	-67.66	-5.49	-73.15	-13.00	-60.15	peak	
4		478.625	-68.92	2.15	-66.77	-13.00	-53.77	peak	
5		721.610	-67.92	6.15	-61.77	-13.00	-48.77	peak	
6		954.410	-69.37	9.29	-60.08	-13.00	-47.08	peak	

Test Mode:	GSM850_ TX CH190_GSM

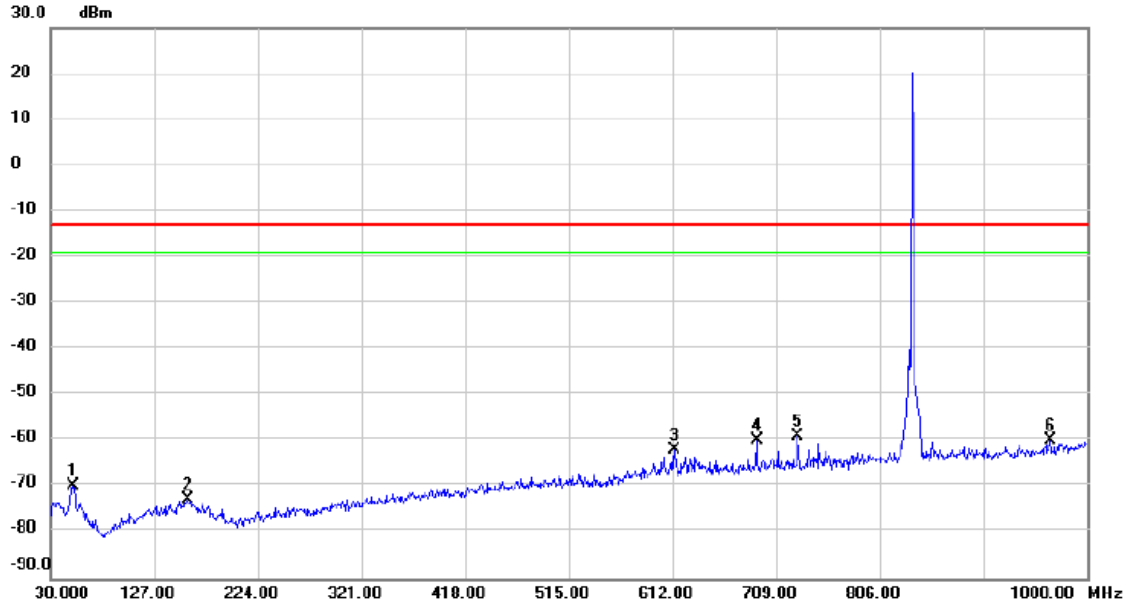
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	36.790	-42.87	-4.61	-47.48	-13.00	-34.48	peak	
2		248.735	-66.96	-3.77	-70.73	-13.00	-57.73	peak	
3		449.040	-69.11	1.89	-67.22	-13.00	-54.22	peak	
4		587.750	-70.31	3.90	-66.41	-13.00	-53.41	peak	
5		684.750	-69.06	5.79	-63.27	-13.00	-50.27	peak	
6		963.140	-69.28	9.44	-59.84	-13.00	-46.84	peak	

Test Mode:	GSM850_ TX CH190_EDGE

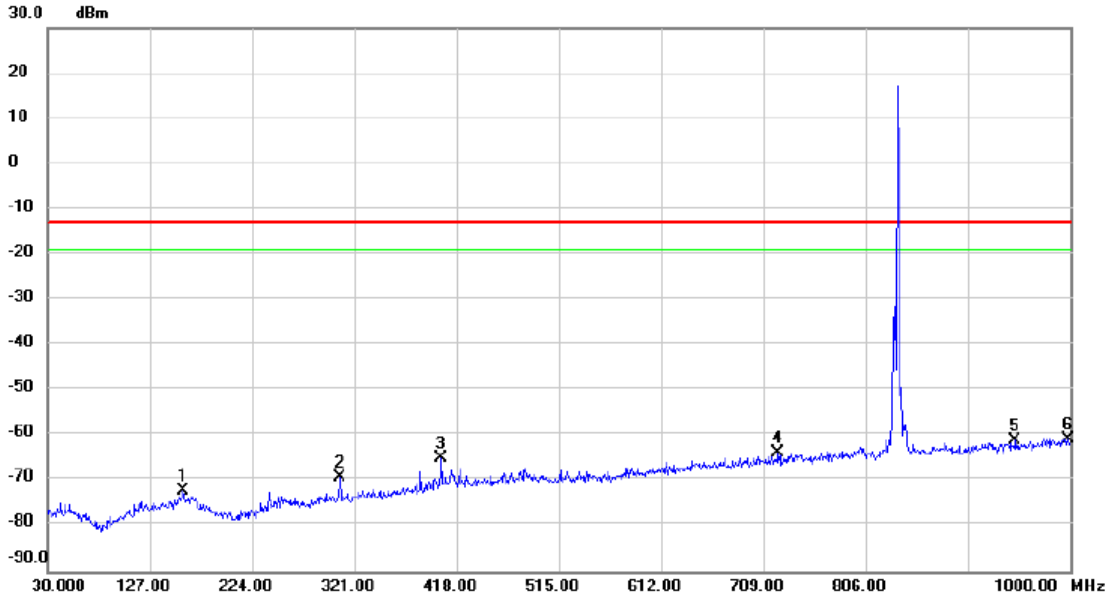
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		50.855	-65.86	-3.92	-69.78	-13.00	-56.78	peak	
2		158.040	-71.56	-1.25	-72.81	-13.00	-59.81	peak	
3		614.425	-66.52	4.56	-61.96	-13.00	-48.96	peak	
4		691.055	-65.73	5.87	-59.86	-13.00	-46.86	peak	
5	*	729.370	-65.07	6.21	-58.86	-13.00	-45.86	peak	
6		965.080	-69.22	9.48	-59.74	-13.00	-46.74	peak	

Test Mode:	GSM850_ TX CH190_EDGE

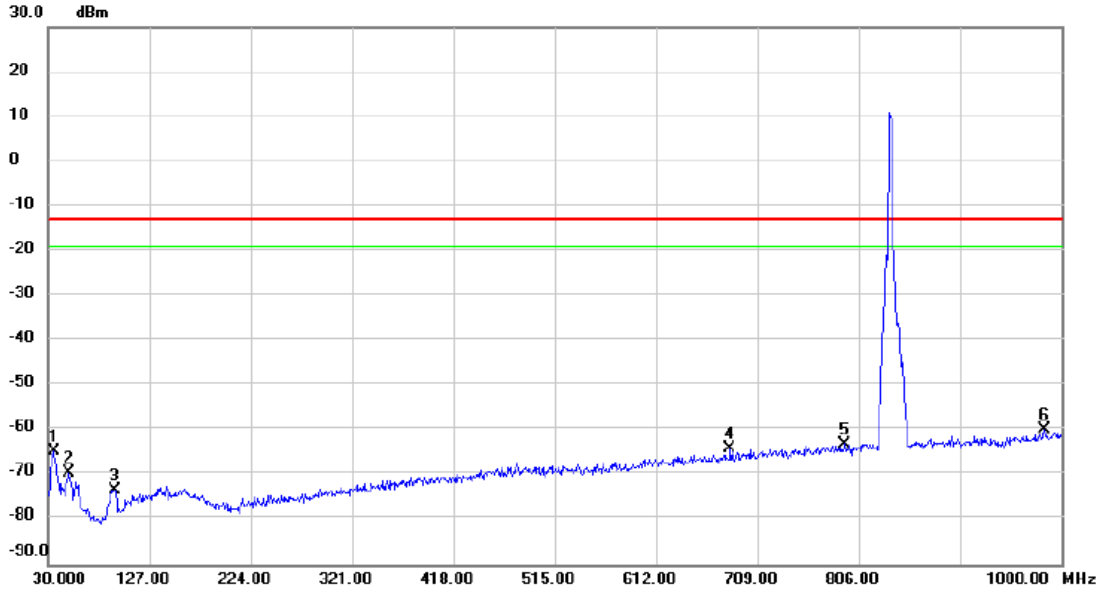
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		158.040	-70.83	-1.25	-72.08	-13.00	-59.08	peak	
2		307.420	-67.65	-1.36	-69.01	-13.00	-56.01	peak	
3		403.450	-65.58	0.64	-64.94	-13.00	-51.94	peak	
4		722.580	-70.03	6.15	-63.88	-13.00	-50.88	peak	
5		947.620	-70.17	9.17	-61.00	-13.00	-48.00	peak	
6	*	998.545	-70.75	10.05	-60.70	-13.00	-47.70	peak	

Test Mode:	WCDMA Band V_TX CH4182

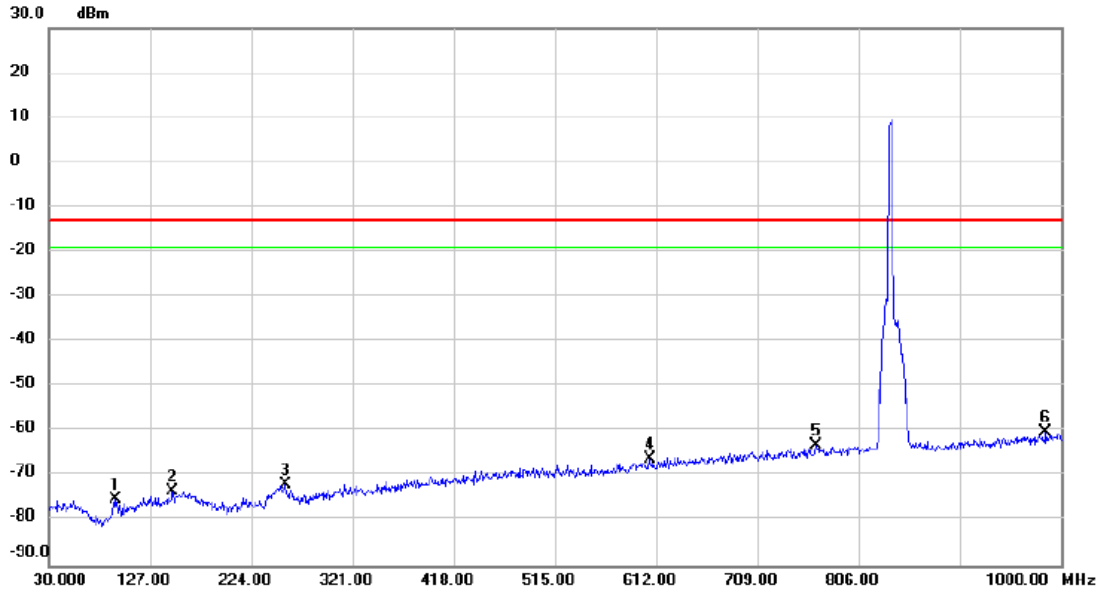
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		35.335	-59.97	-4.80	-64.77	-13.00	-51.77	peak	
2		50.370	-65.42	-3.89	-69.31	-13.00	-56.31	peak	
3		94.020	-67.57	-5.66	-73.23	-13.00	-60.23	peak	
4		682.810	-69.92	5.76	-64.16	-13.00	-51.16	peak	
5		792.905	-69.90	6.90	-63.00	-13.00	-50.00	peak	
6	*	983.995	-69.70	9.81	-59.89	-13.00	-46.89	peak	

Test Mode:	WCDMA Band V_TX CH4182

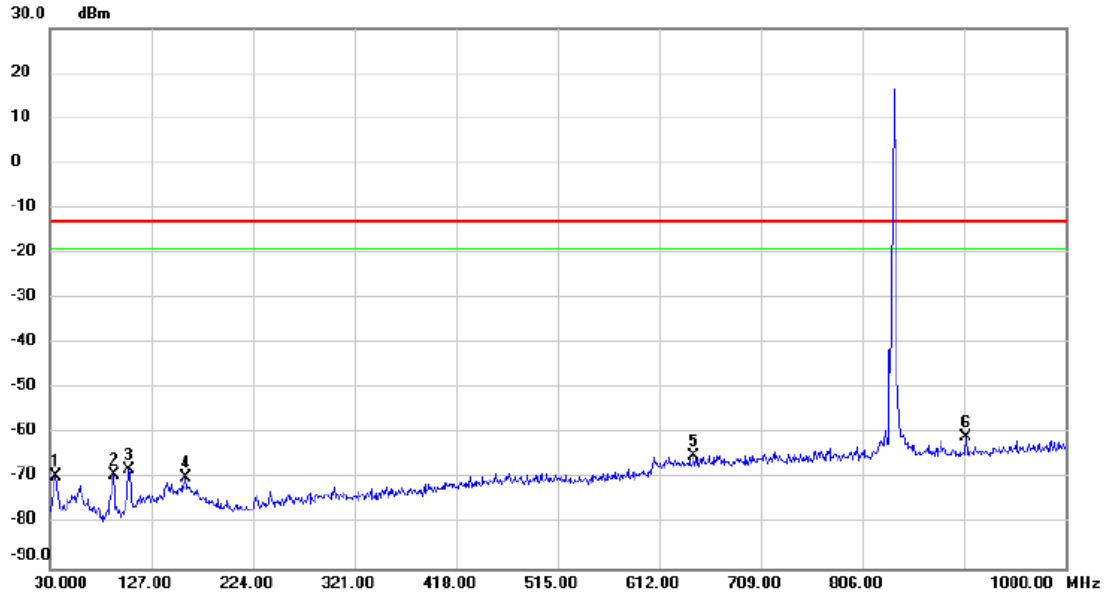
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		94.505	-69.48	-5.61	-75.09	-13.00	-62.09	peak	
2		148.825	-71.03	-2.36	-73.39	-13.00	-60.39	peak	
3		256.980	-68.85	-2.97	-71.82	-13.00	-58.82	peak	
4		605.695	-70.63	4.38	-66.25	-13.00	-53.25	peak	
5		765.745	-69.81	6.56	-63.25	-13.00	-50.25	peak	
6	*	985.450	-70.01	9.83	-60.18	-13.00	-47.18	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

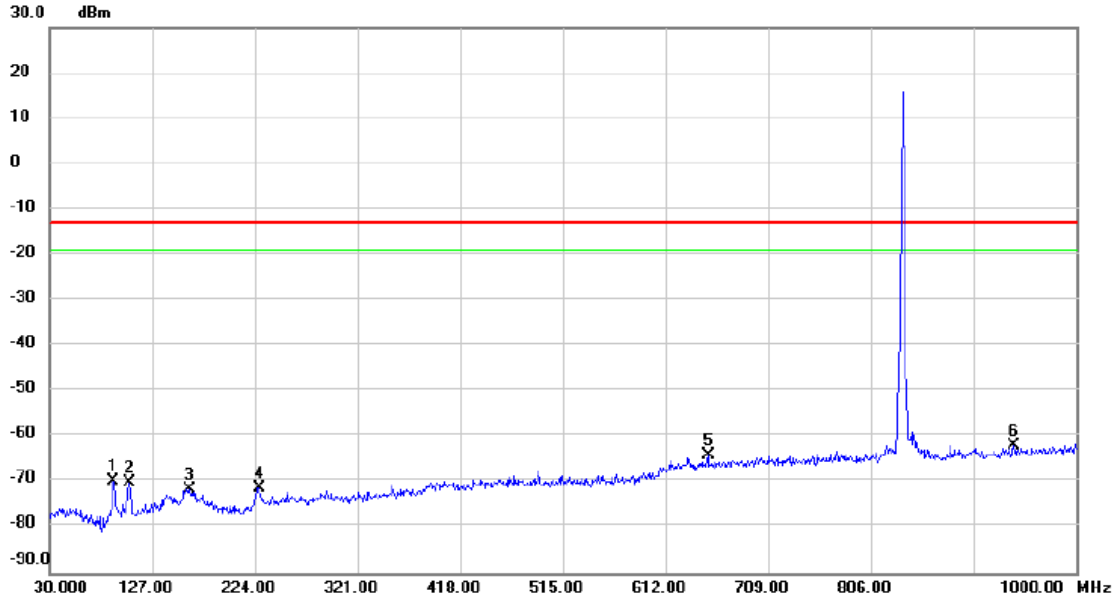
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		35.820	-64.68	-4.67	-69.35	-13.00	-56.35	peak	
2		91.110	-63.34	-5.92	-69.26	-13.00	-56.26	peak	
3		105.660	-63.21	-4.82	-68.03	-13.00	-55.03	peak	
4		159.980	-68.80	-1.00	-69.80	-13.00	-56.80	peak	
5		644.980	-70.03	5.22	-64.81	-13.00	-51.81	peak	
6	*	904.940	-69.06	8.20	-60.86	-13.00	-47.86	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

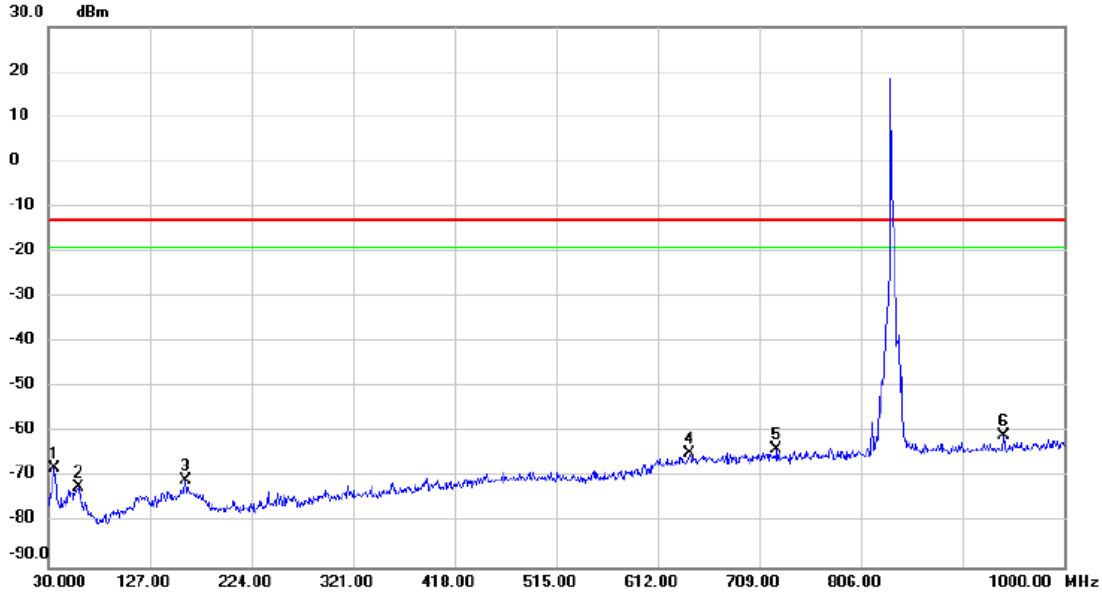
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		90.625	-63.82	-5.96	-69.78	-13.00	-56.78	peak	
2		105.660	-65.24	-4.82	-70.06	-13.00	-57.06	peak	
3		162.405	-70.32	-1.34	-71.66	-13.00	-58.66	peak	
4		228.365	-66.94	-4.33	-71.27	-13.00	-58.27	peak	
5		652.255	-69.38	5.35	-64.03	-13.00	-51.03	peak	
6	*	940.830	-70.94	9.02	-61.92	-13.00	-48.92	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

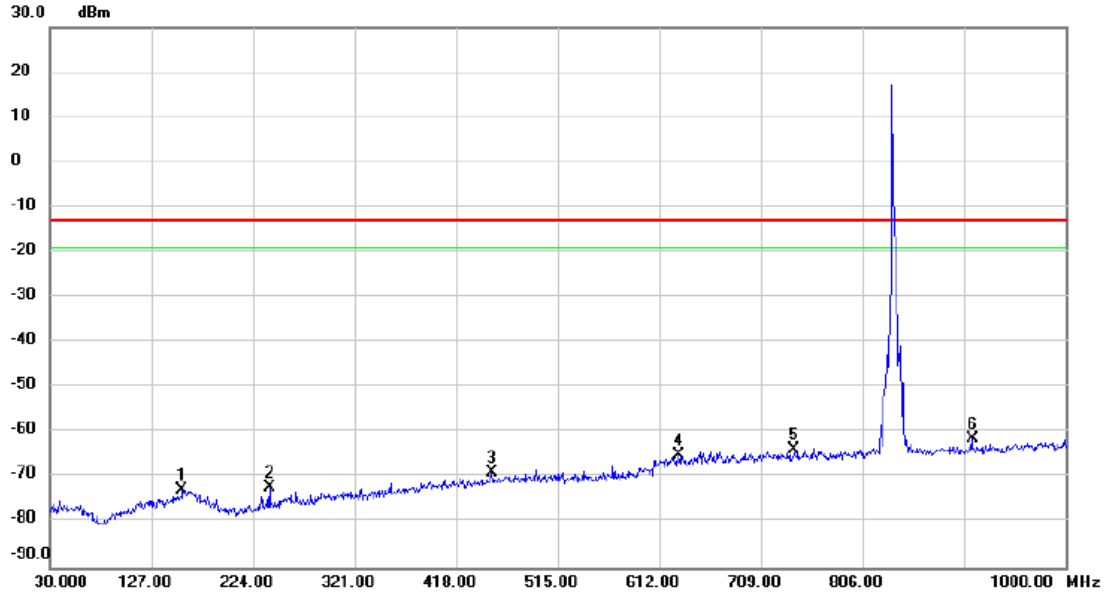
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		35.820	-63.33	-4.67	-68.00	-13.00	-55.00	peak	
2		59.585	-67.44	-4.79	-72.23	-13.00	-59.23	peak	
3		160.950	-69.52	-1.13	-70.65	-13.00	-57.65	peak	
4		642.555	-69.97	5.17	-64.80	-13.00	-51.80	peak	
5		725.490	-69.85	6.17	-63.68	-13.00	-50.68	peak	
6	*	942.285	-69.86	9.05	-60.81	-13.00	-47.81	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

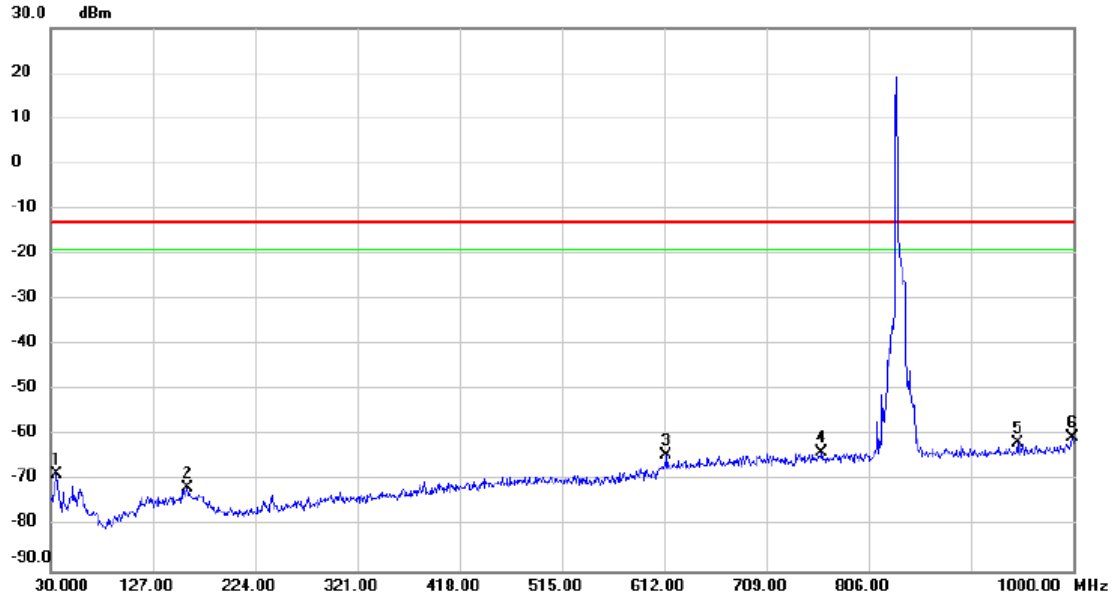
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		156.585	-71.23	-1.44	-72.67	-13.00	-59.67	peak	
2		240.005	-68.26	-4.00	-72.26	-13.00	-59.26	peak	
3		451.950	-70.80	1.94	-68.86	-13.00	-55.86	peak	
4		630.915	-69.75	4.92	-64.83	-13.00	-51.83	peak	
5		741.010	-70.06	6.28	-63.78	-13.00	-50.78	peak	
6	*	911.245	-69.70	8.33	-61.37	-13.00	-48.37	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

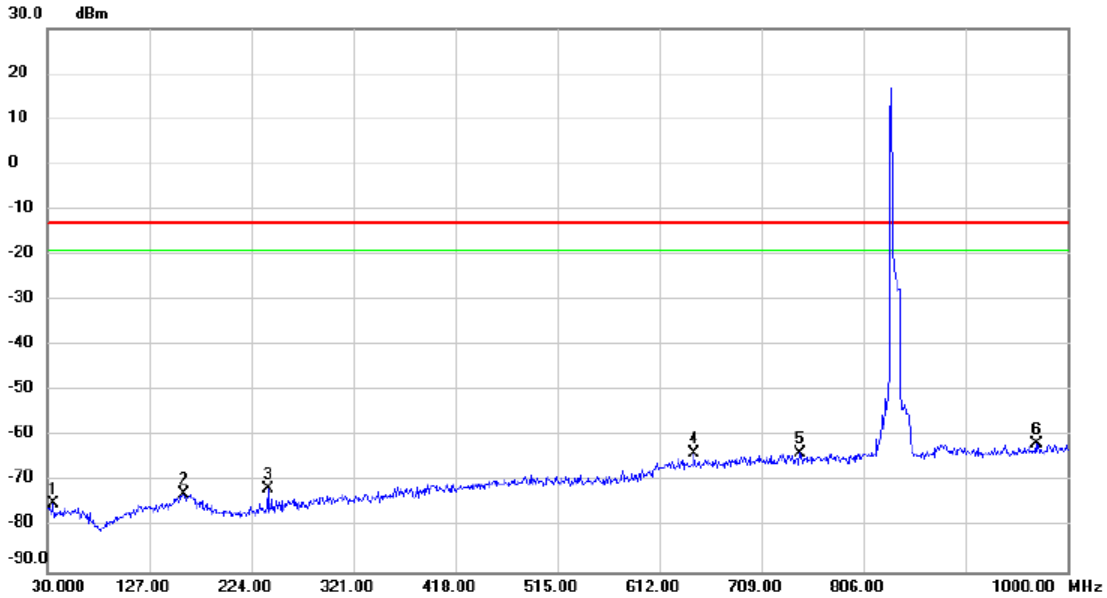
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		36.305	-63.81	-4.61	-68.42	-13.00	-55.42	peak	
2		159.980	-70.57	-1.00	-71.57	-13.00	-58.57	peak	
3		613.940	-68.99	4.55	-64.44	-13.00	-51.44	peak	
4		761.865	-70.24	6.50	-63.74	-13.00	-50.74	peak	
5		947.135	-70.94	9.16	-61.78	-13.00	-48.78	peak	
6	*	999.515	-70.48	10.06	-60.42	-13.00	-47.42	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

Horizontal

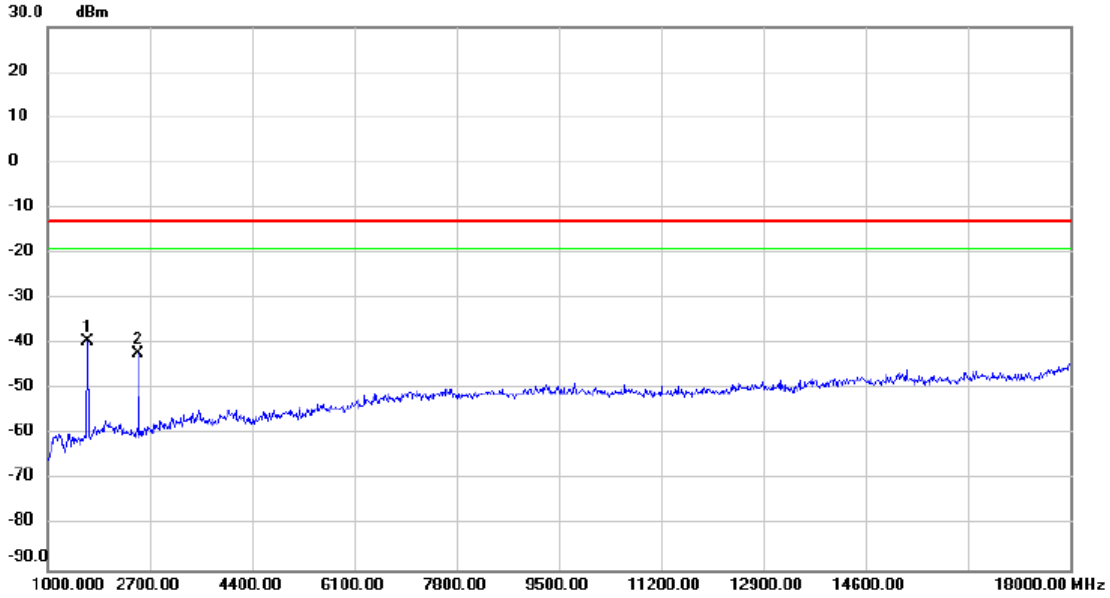


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		35.820	-70.24	-4.67	-74.91	-13.00	-61.91	peak	
2		159.980	-71.65	-1.00	-72.65	-13.00	-59.65	peak	
3		240.005	-67.66	-4.00	-71.66	-13.00	-58.66	peak	
4		645.465	-68.84	5.23	-63.61	-13.00	-50.61	peak	
5		745.860	-69.92	6.32	-63.60	-13.00	-50.60	peak	
6	*	970.415	-71.35	9.57	-61.78	-13.00	-48.78	peak	

APPENDIX F - RADIATED EMISSION (ABOVE 1GHZ)

Test Mode:	GSM850_ TX CH190_GSM

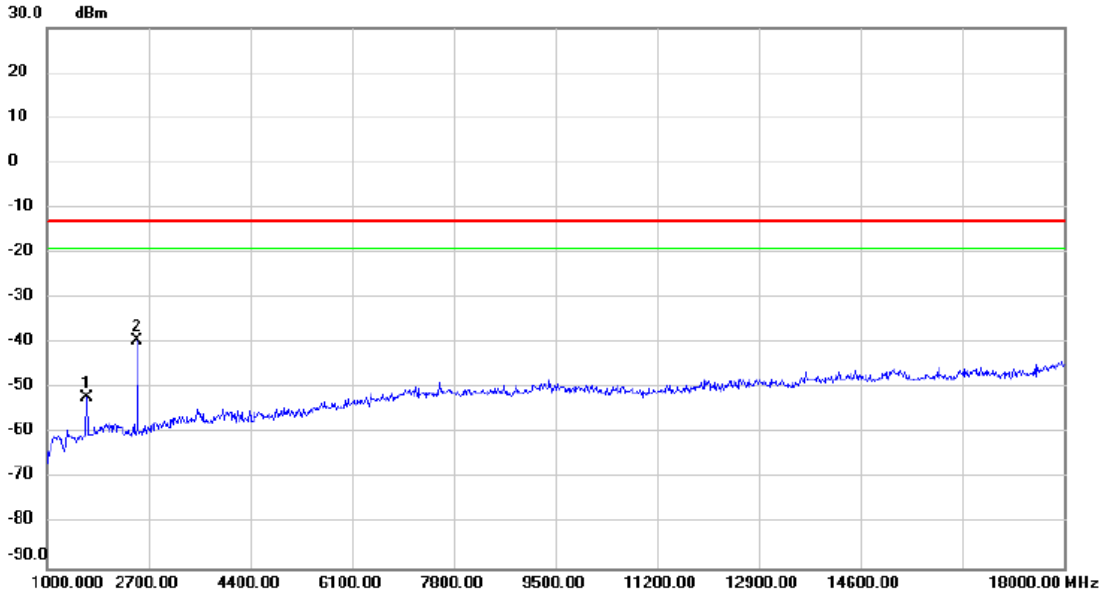
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1671.500	-34.29	-5.08	-39.37	-13.00	-26.37	peak	
2		2513.000	-38.66	-3.53	-42.19	-13.00	-29.19	peak	

Test Mode:	GSM850_ TX CH190_GSM

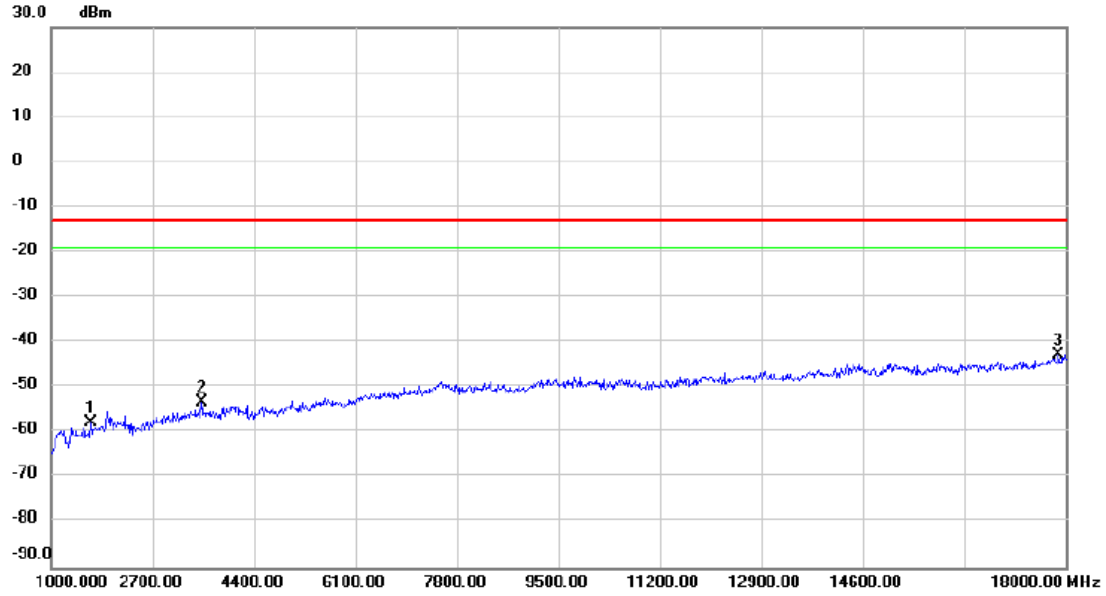
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1671.500	-46.96	-5.08	-52.04	-13.00	-39.04	peak	
2	*	2513.000	-35.88	-3.53	-39.41	-13.00	-26.41	peak	

Test Mode:	GSM850_ TX CH190_EDGE

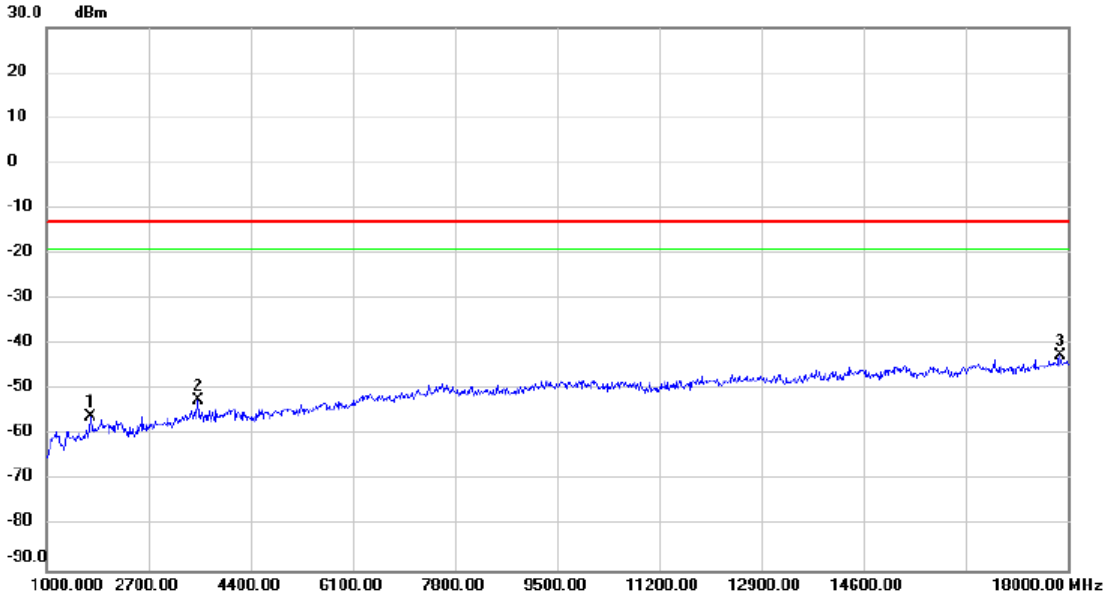
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1671.500	-52.65	-5.08	-57.73	-13.00	-44.73	peak	
2		3524.500	-54.27	1.15	-53.12	-13.00	-40.12	peak	
3	*	17864.000	-61.66	19.03	-42.63	-13.00	-29.63	peak	

Test Mode:	GSM850_ TX CH190_EDGE

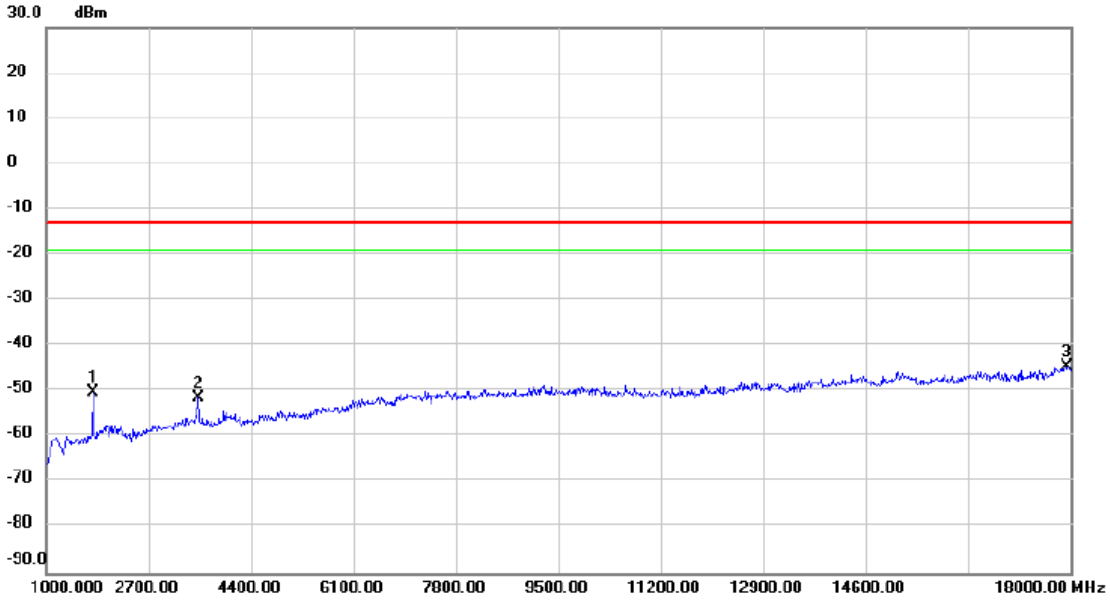
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1731.000	-51.14	-4.70	-55.84	-13.00	-42.84	peak	
2		3524.500	-53.57	1.15	-52.42	-13.00	-39.42	peak	
3	*	17864.000	-61.43	19.03	-42.40	-13.00	-29.40	peak	

Test Mode:	WCDMA Band V_TX CH4182

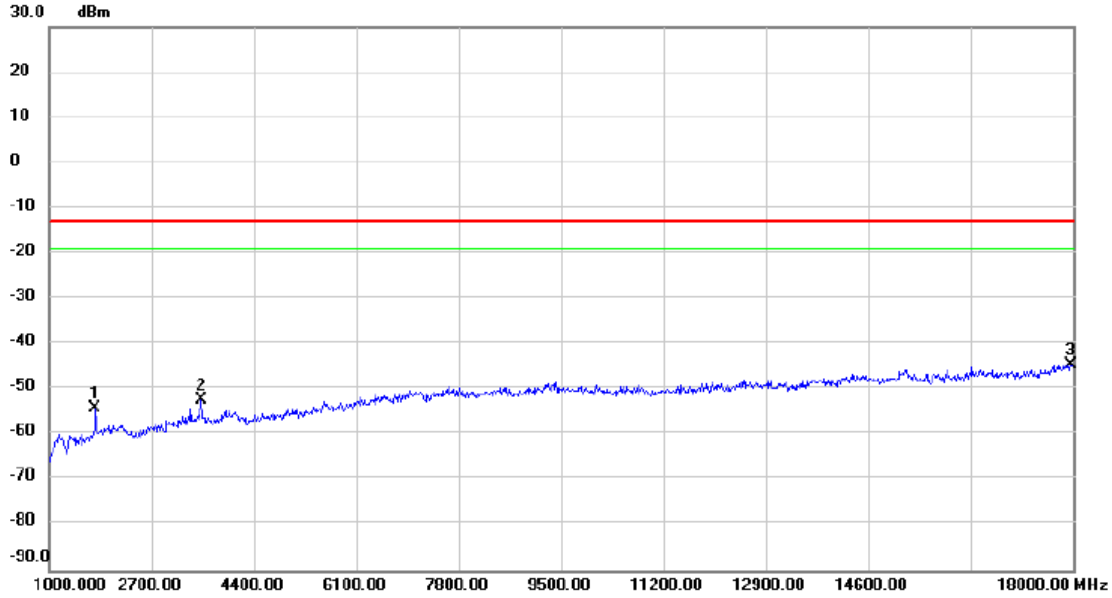
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1773.500	-45.77	-4.43	-50.20	-13.00	-37.20	peak	
2		3524.500	-52.50	1.15	-51.35	-13.00	-38.35	peak	
3	*	17949.000	-63.74	19.24	-44.50	-13.00	-31.50	peak	

Test Mode:	WCDMA Band V_TX CH4182

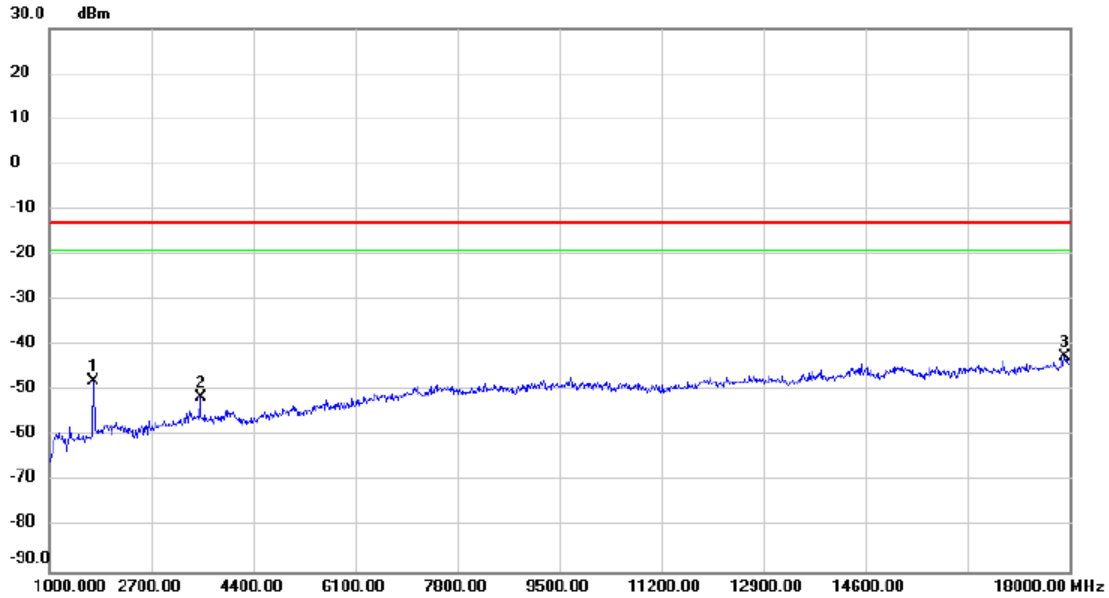
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1765.000	-49.65	-4.49	-54.14	-13.00	-41.14	peak	
2		3524.500	-53.55	1.15	-52.40	-13.00	-39.40	peak	
3	*	17974.500	-63.72	19.30	-44.42	-13.00	-31.42	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

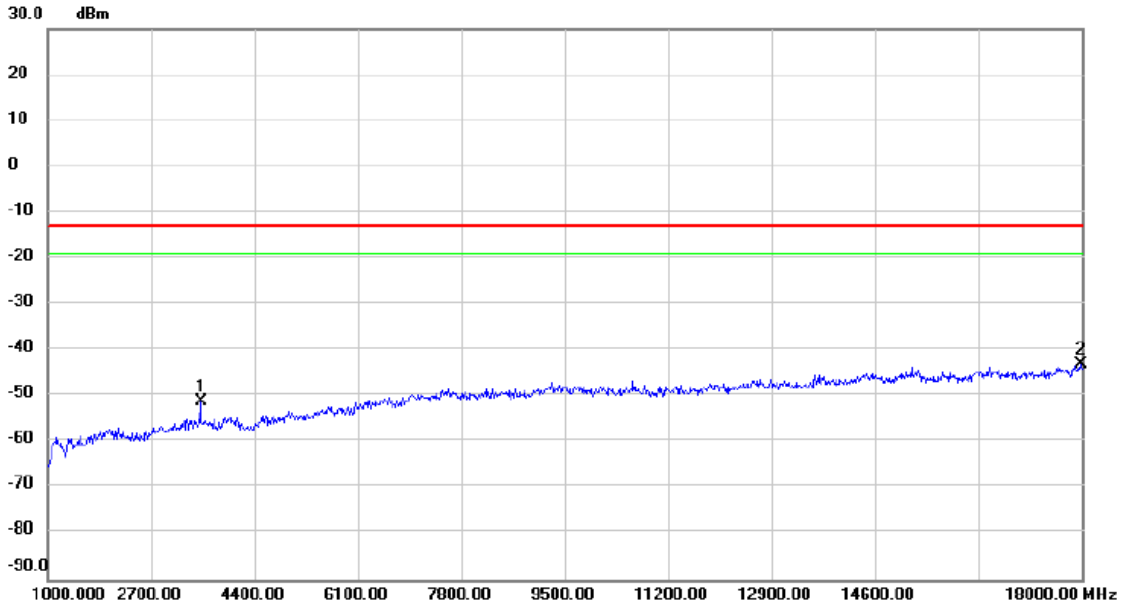
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1731.000	-43.06	-4.70	-47.76	-13.00	-34.76	peak	
2		3524.500	-52.66	1.15	-51.51	-13.00	-38.51	peak	
3	*	17915.000	-61.56	19.15	-42.41	-13.00	-29.41	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

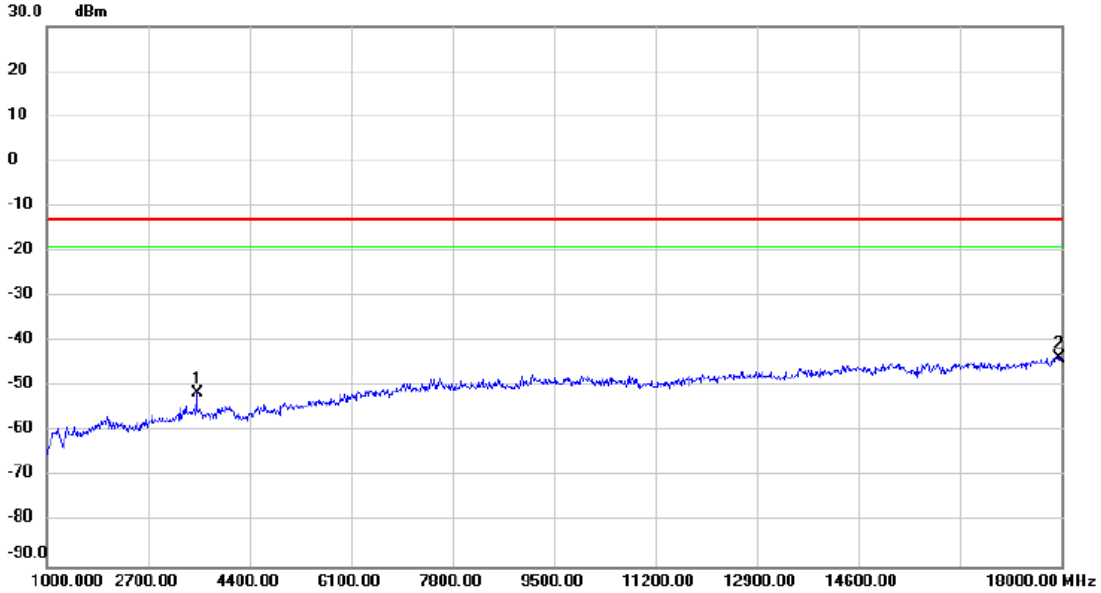
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		3524.500	-52.43	1.15	-51.28	-13.00	-38.28	peak	
2	*	17991.500	-62.30	19.34	-42.96	-13.00	-29.96	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

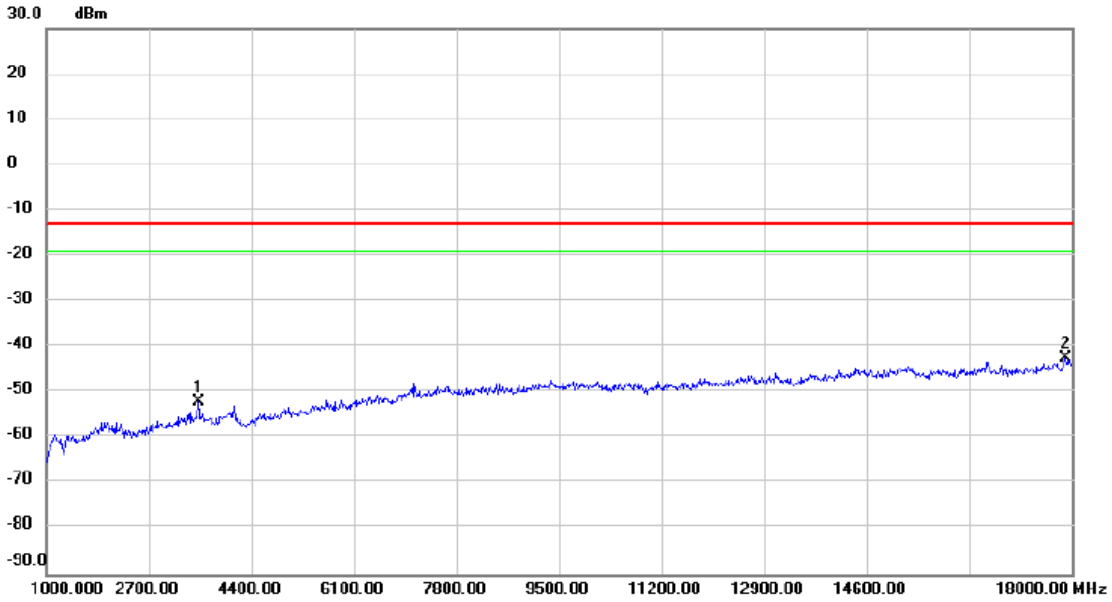
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		3524.500	-52.63	1.15	-51.48	-13.00	-38.48	peak	
2	*	17966.000	-62.82	19.29	-43.53	-13.00	-30.53	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

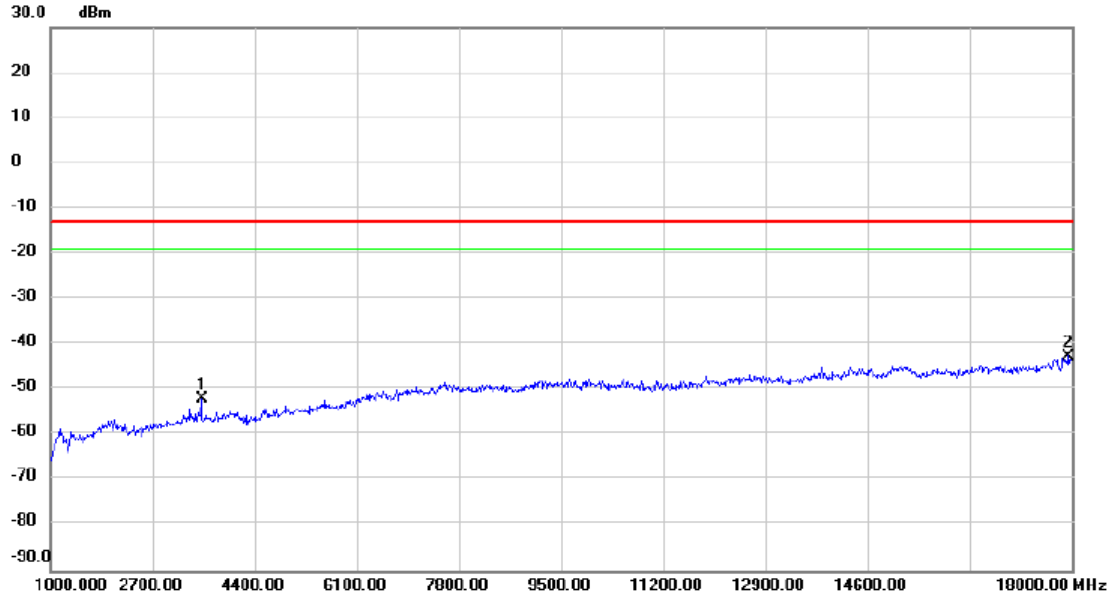
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		3524.500	-53.33	1.15	-52.18	-13.00	-39.18	peak	
2	*	17898.000	-61.65	19.11	-42.54	-13.00	-29.54	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

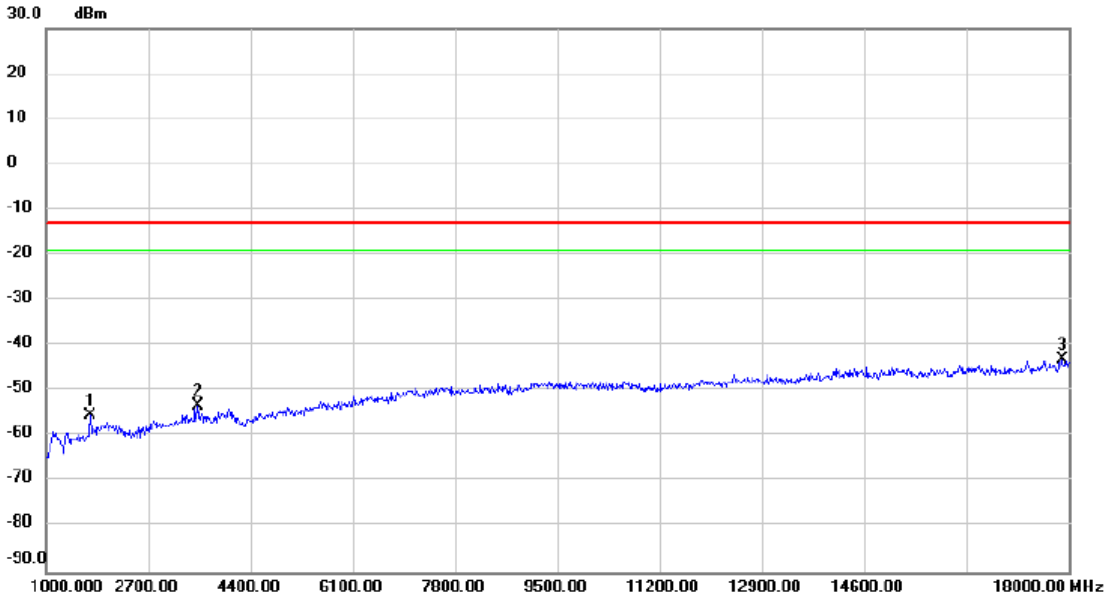
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		3524.500	-53.28	1.15	-52.13	-13.00	-39.13	peak	
2	*	17949.000	-61.84	19.24	-42.60	-13.00	-29.60	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1731.000	-50.62	-4.70	-55.32	-13.00	-42.32	peak	
2		3524.500	-54.28	1.15	-53.13	-13.00	-40.13	peak	
3	*	17889.500	-62.16	19.08	-43.08	-13.00	-30.08	peak	

APPENDIX G - BAND EDGE

GSM850			
GSM			
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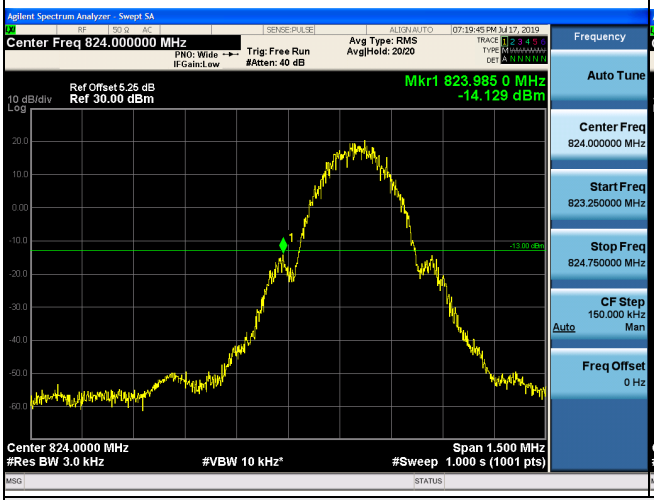
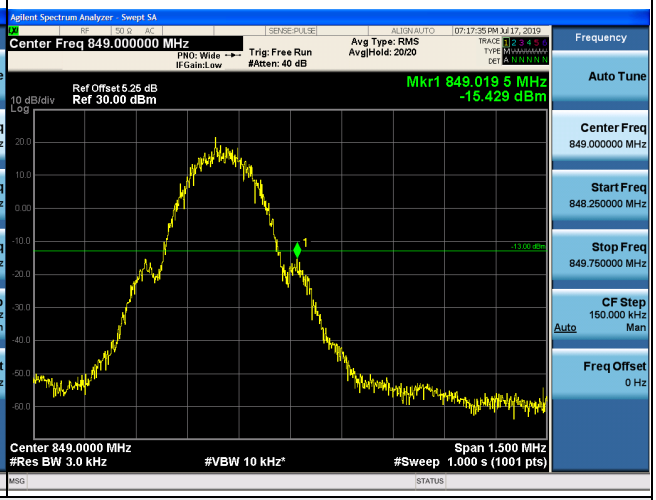
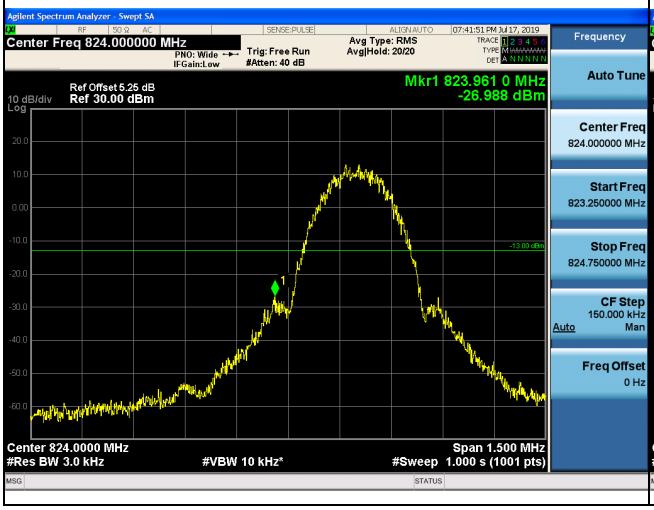
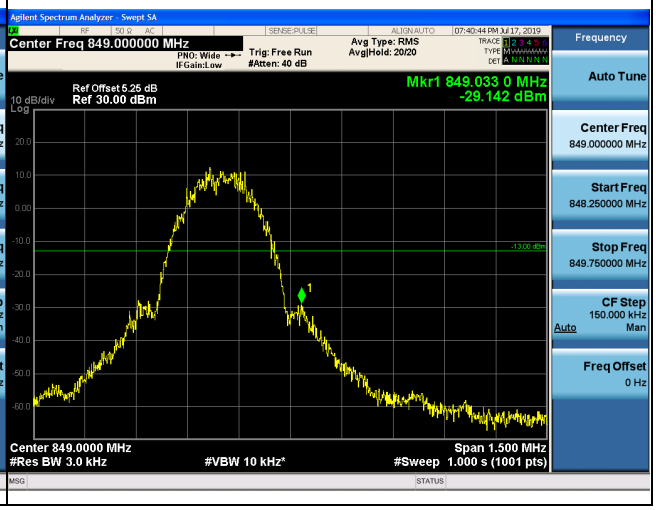
			
EDGE			
Channel	128	Channel	251
			

WCDMA Band V			
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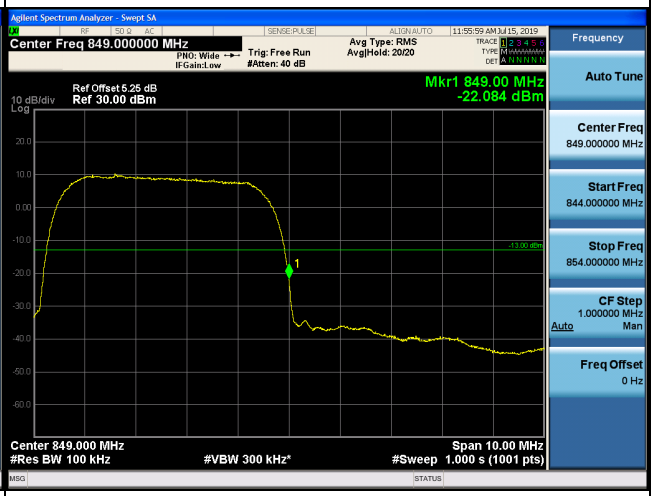
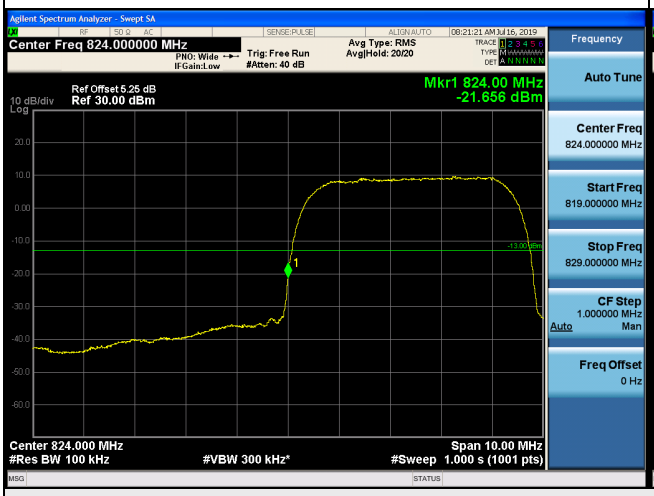
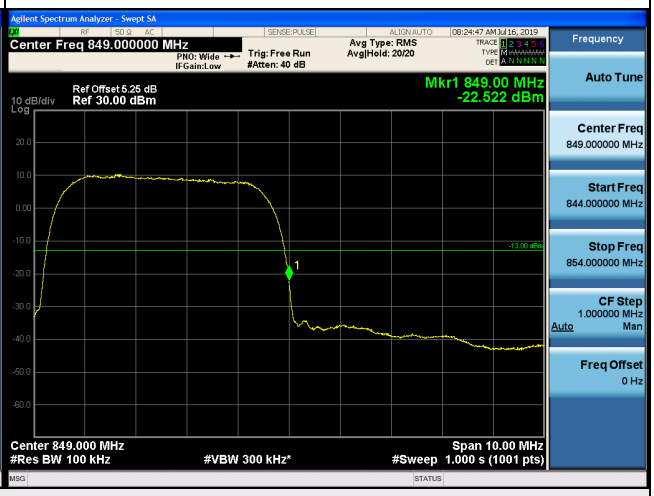
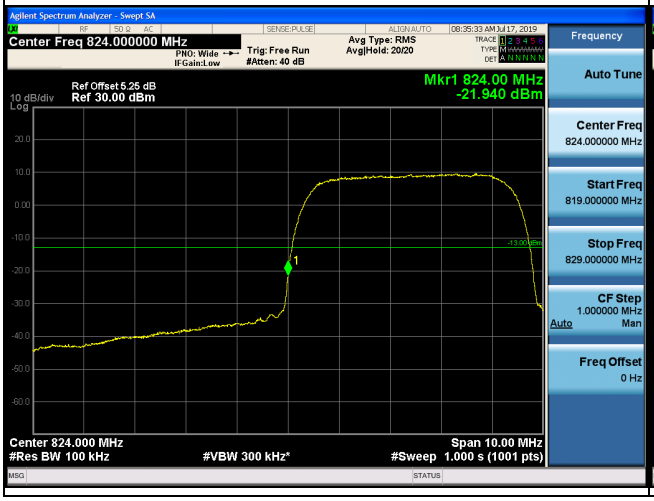
		
WCDMA_HSDPA Band V			
Channel	4132	Channel	4233
		
WCDMA_HSUPA Band V			
Channel	4132	Channel	4233
		

LTE Band 5_1.4M			
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		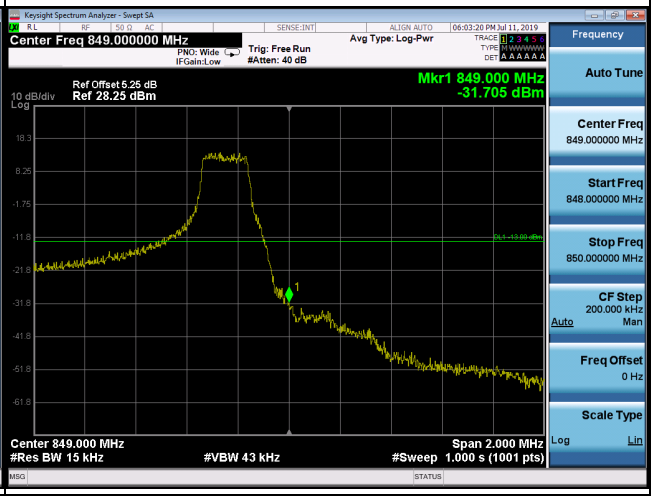	
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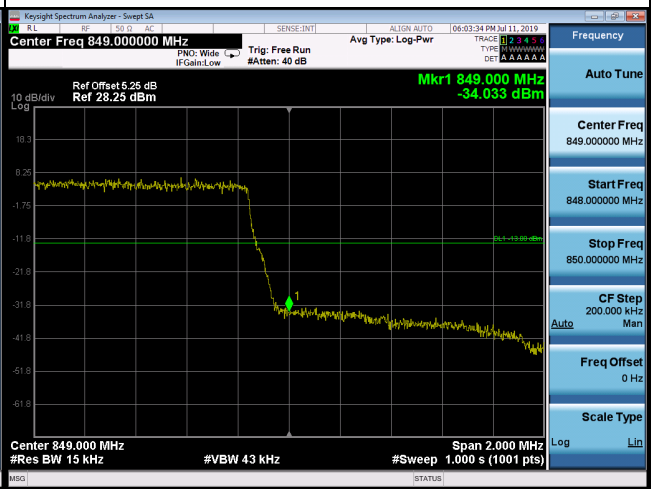
Channel	20407	Channel	20643
			

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1RB#0		1RB#14	
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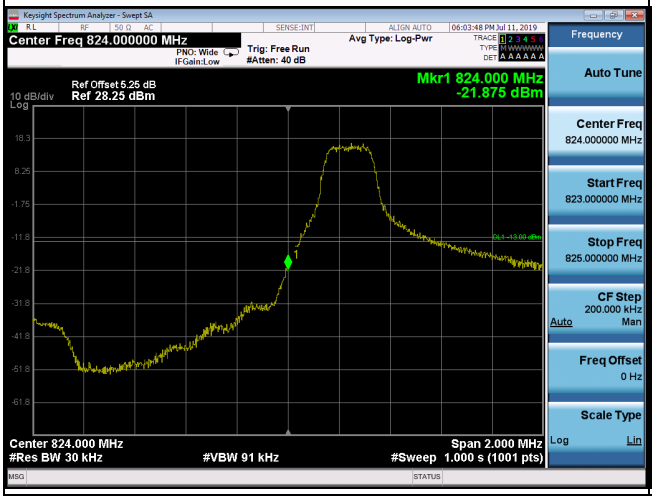			
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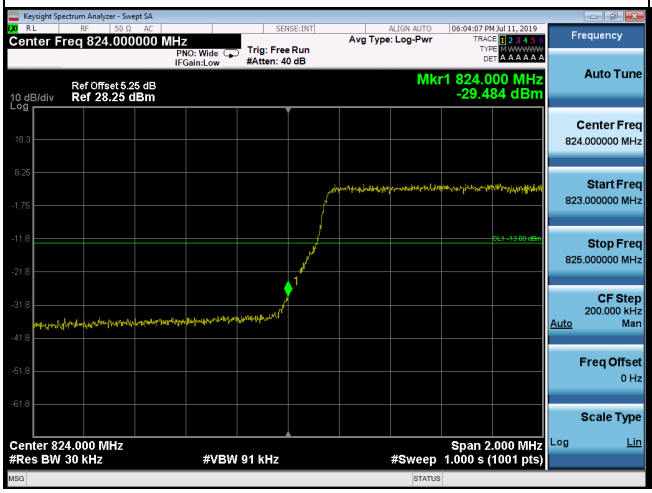
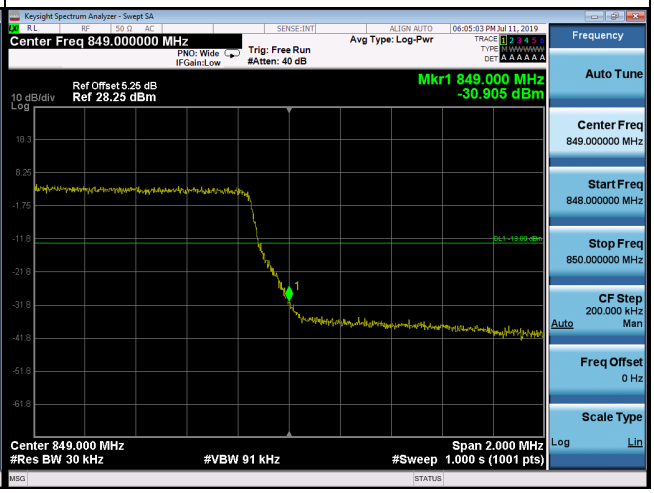
Channel	20415	Channel	20635
			

LTE Band 5_5M			
1RB#0		1RB#24	
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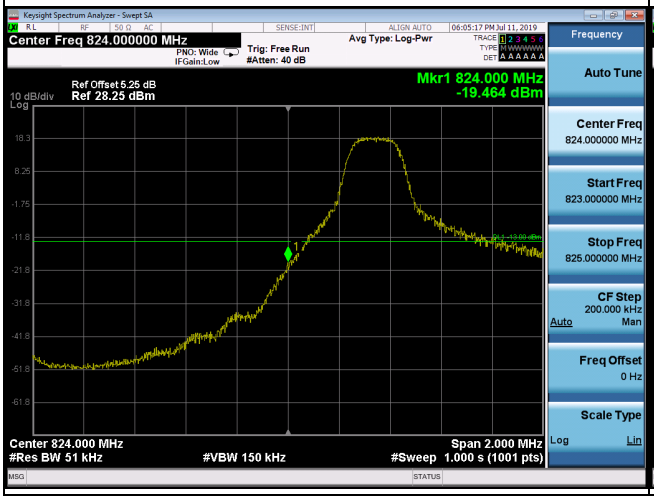
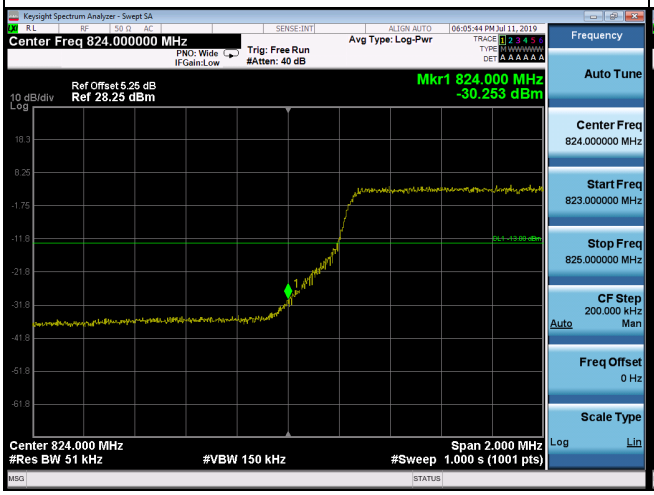
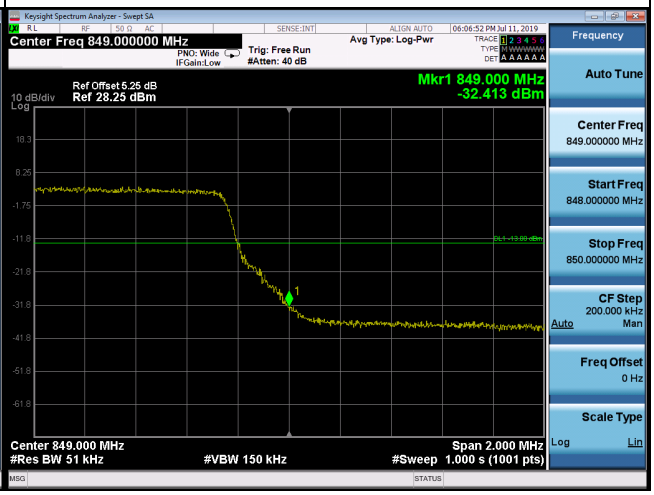
			
25RB#0			
Channel	20425	Channel	20625
			

LTE Band 5_10M			
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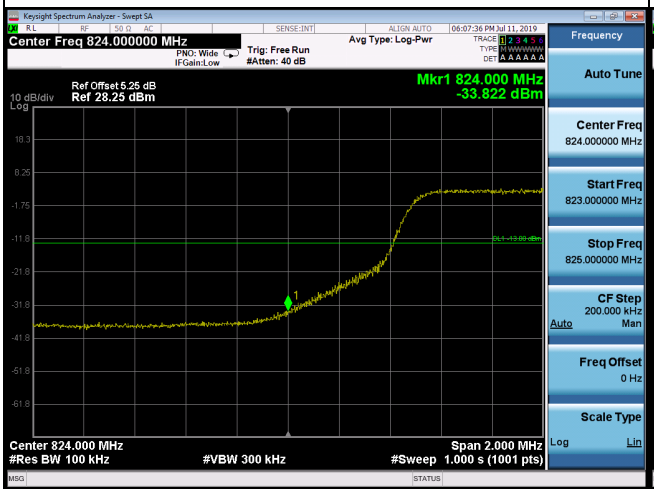
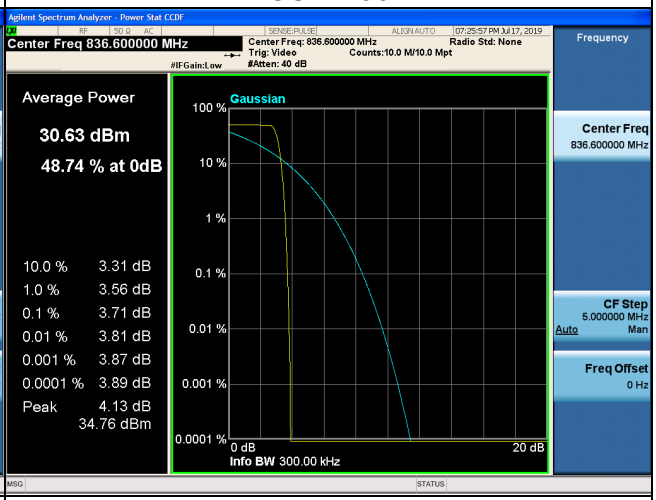
Channel	20450	Channel	20600
50RB#0			
Channel	20450	Channel	20600
			

APPENDIX H - PEAK TO AVERAGE RATIO

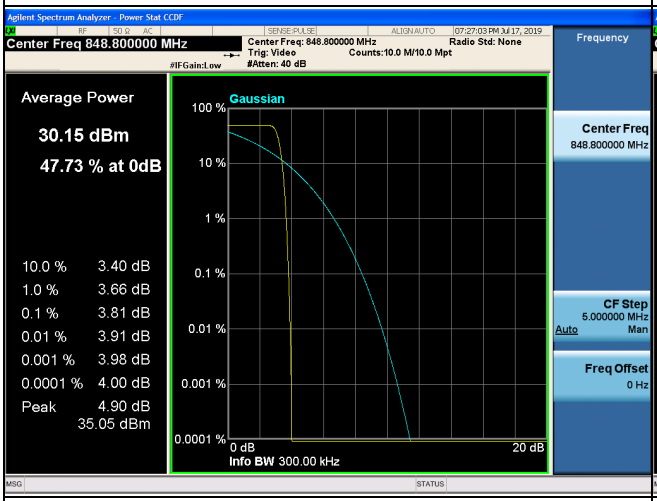
GSM 850 Spectrum Plot

GSM -128

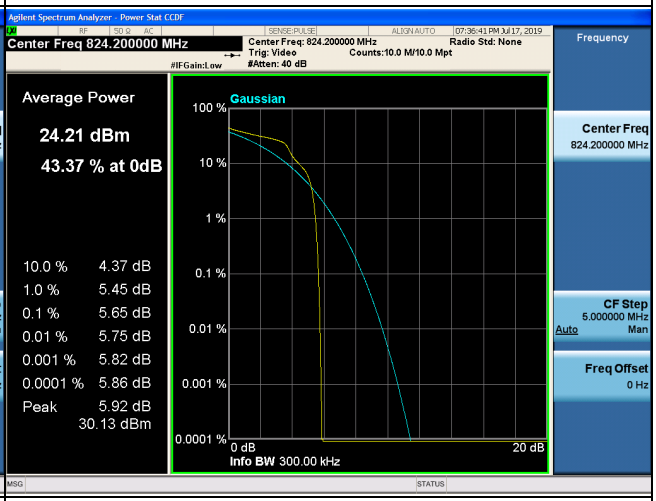
GSM-190



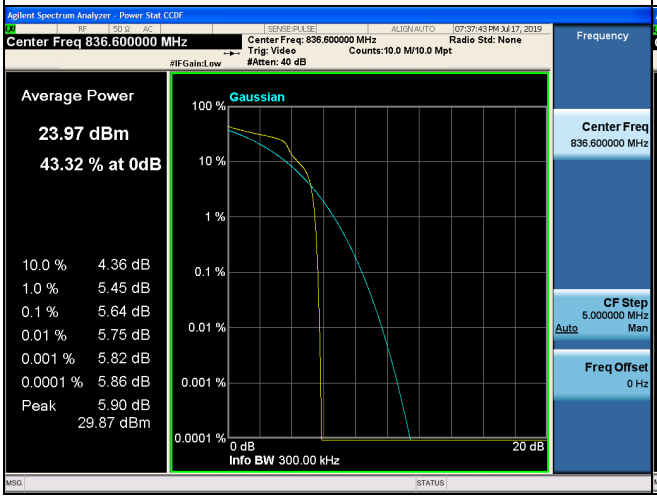
GSM-251



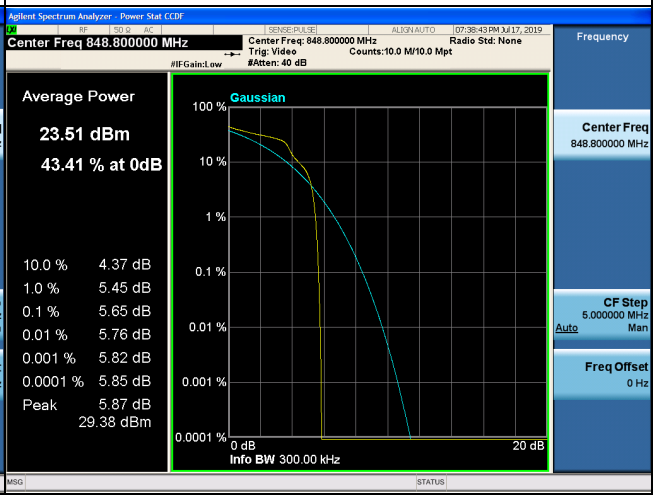
EDGE-128

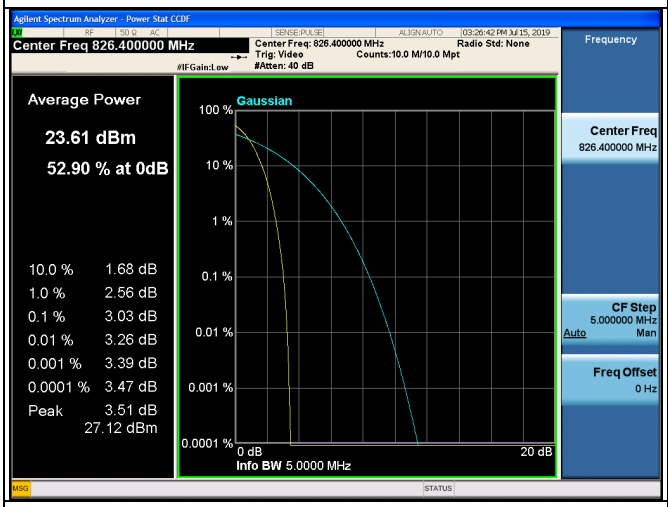
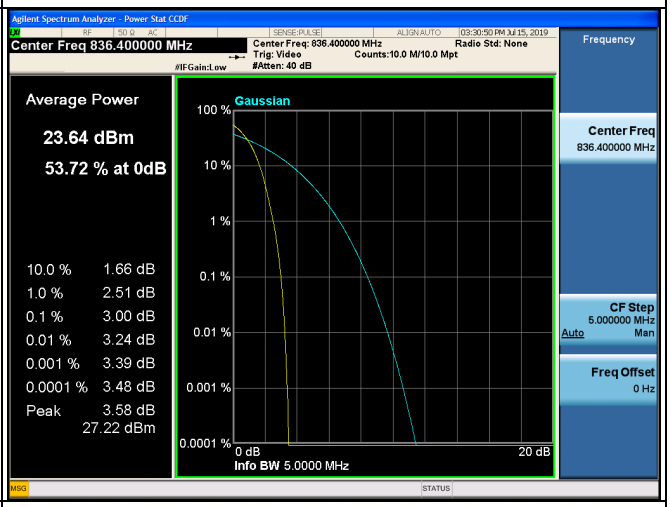
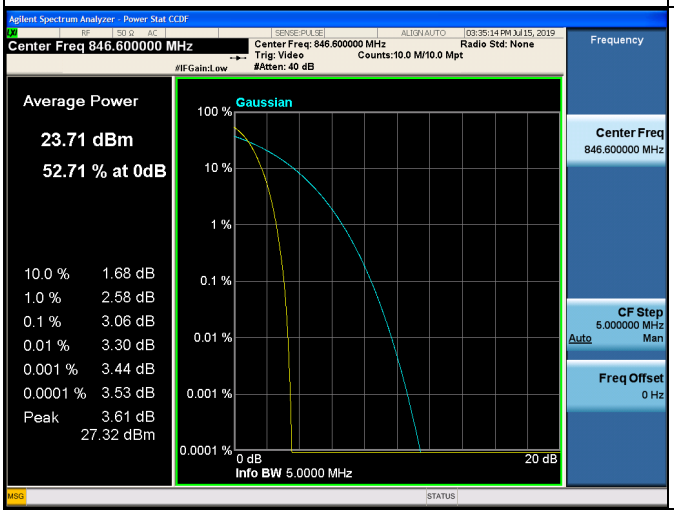


EDGE-190



EDGE-251



WCDMA Band V Spectrum Plot	
4132	4182
	
4233	-
	-

WCDMA_HSDPA Band V Spectrum Plot	
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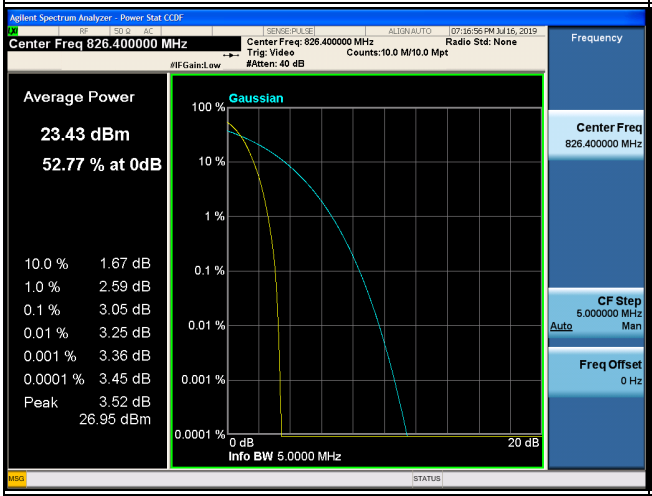	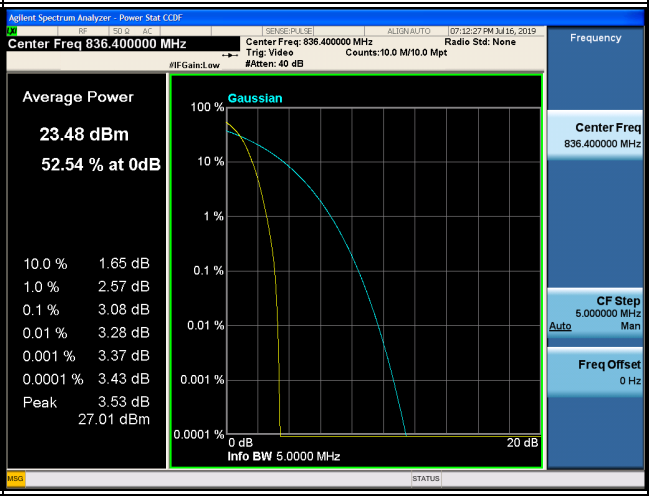
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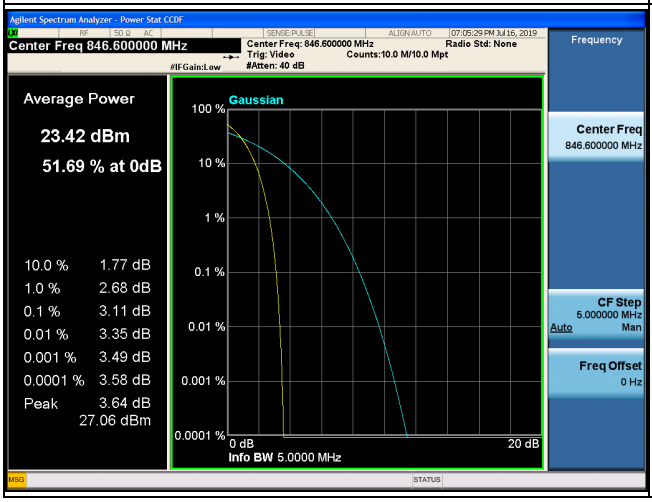
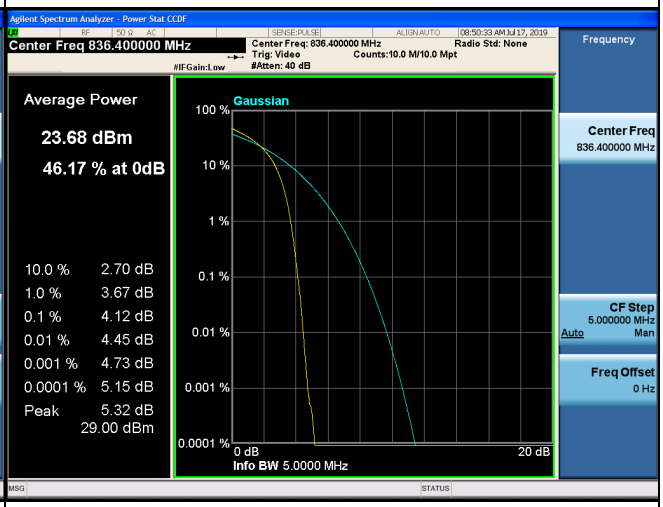
	-

WCDMA_HSUPA Band V Spectrum Plot	
4132	4182
	
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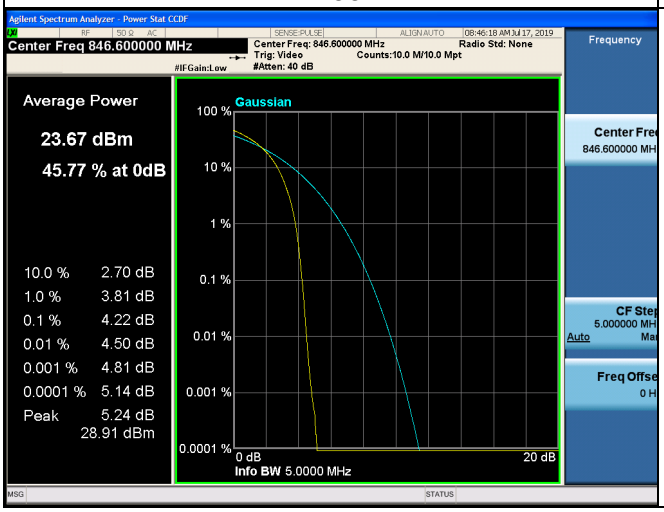
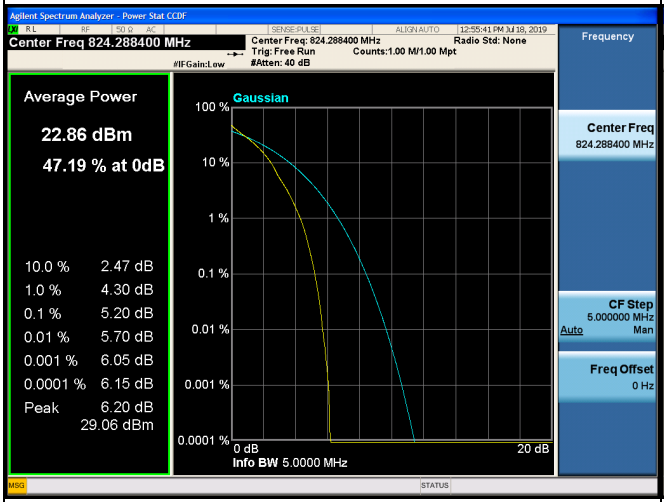
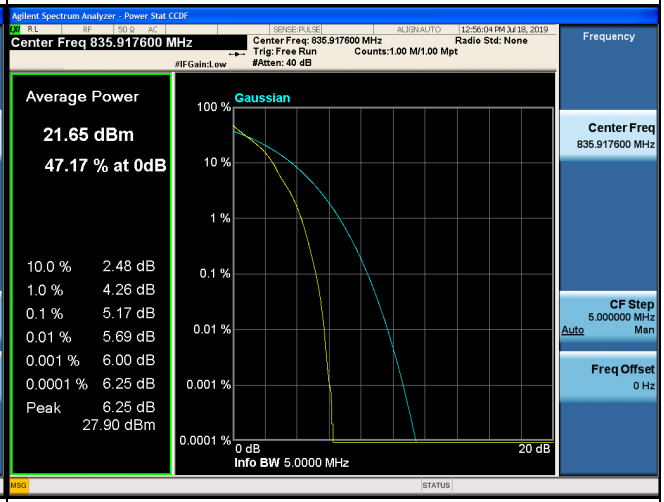
	-

LTE Band 5 Spectrum Plot_1.4M

QPSK-20407



QPSK-20525



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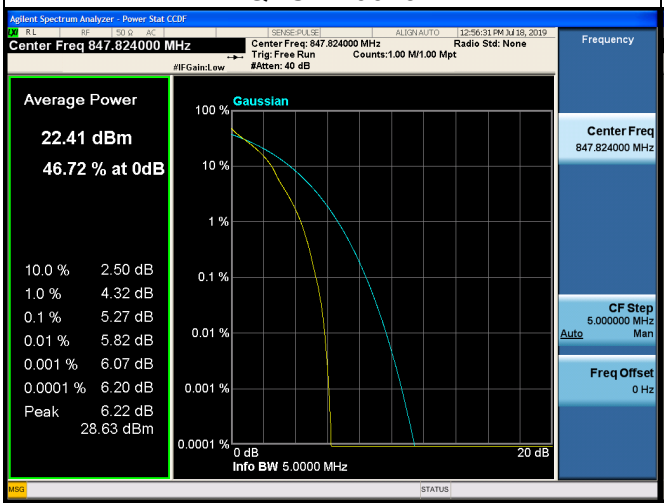

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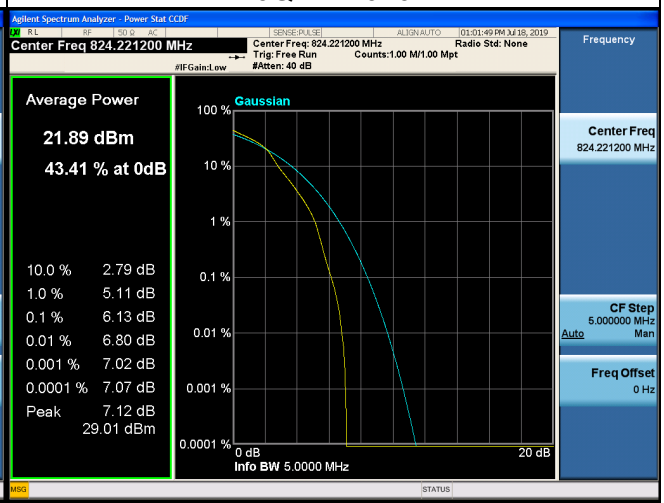
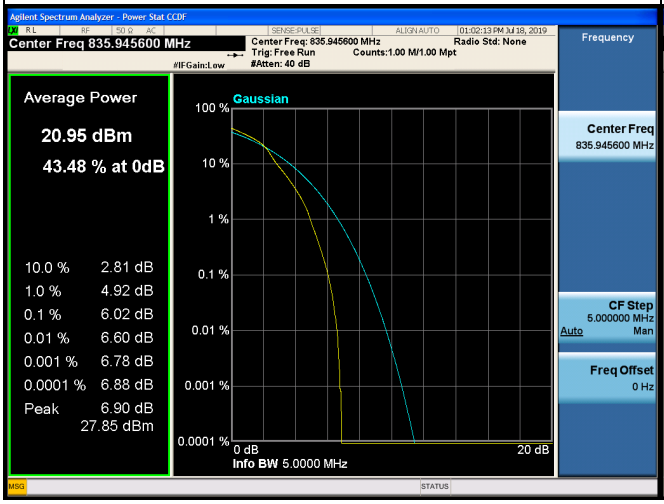
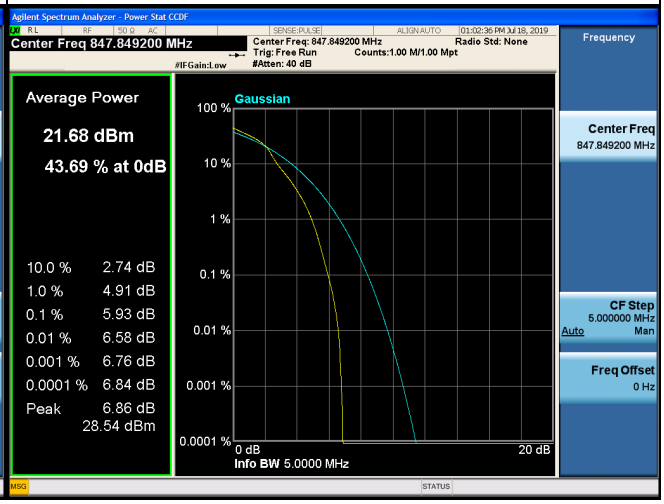


16QAM-20525

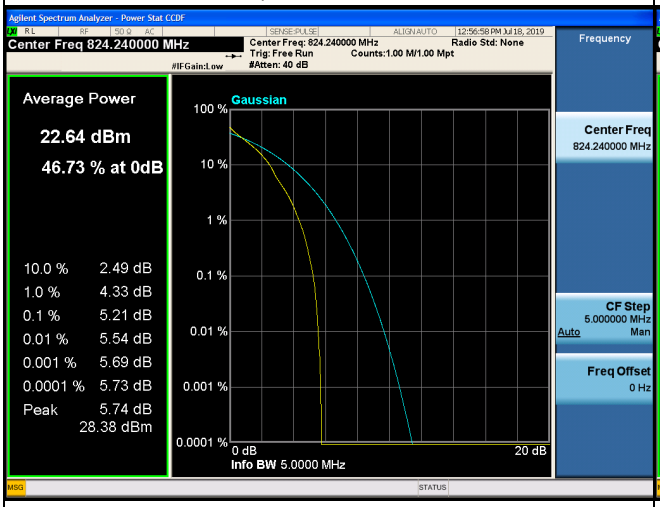


16QAM-20643

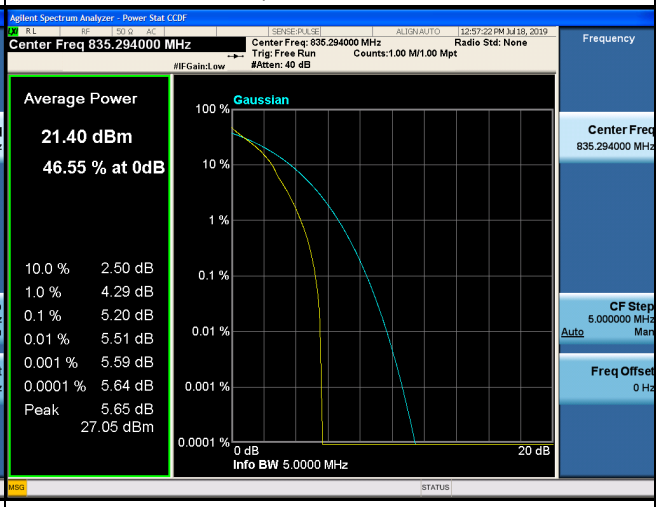


LTE Band 5 Spectrum Plot_3M

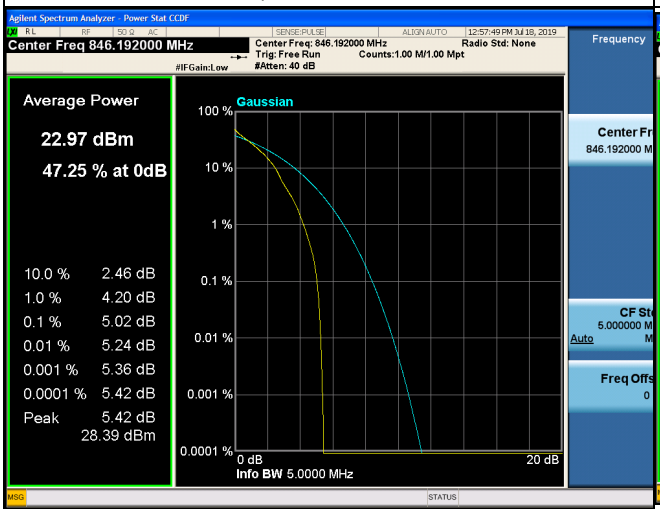
QPSK-20415



QPSK-20525



QPSK-20635



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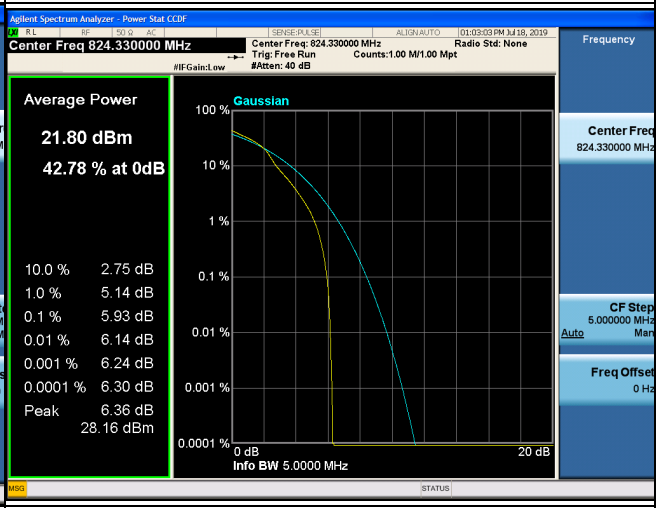

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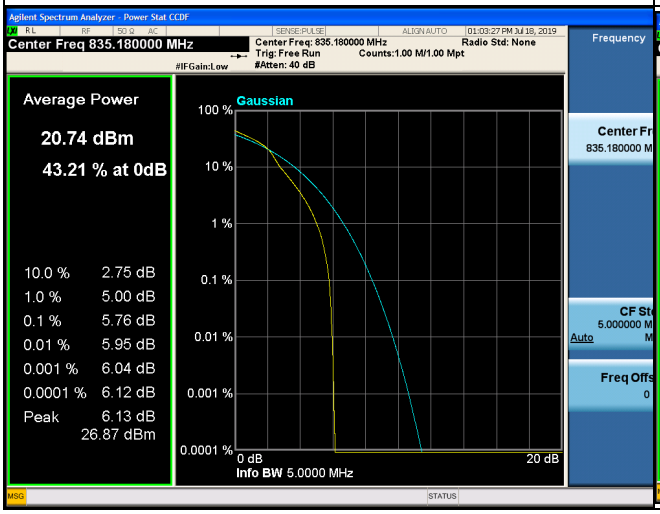

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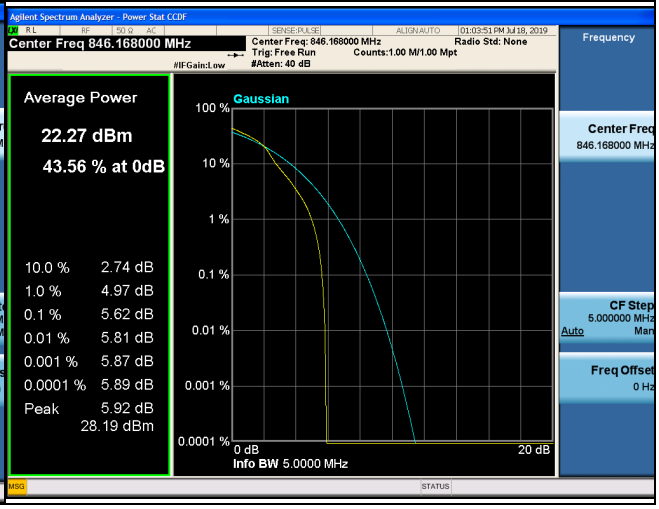
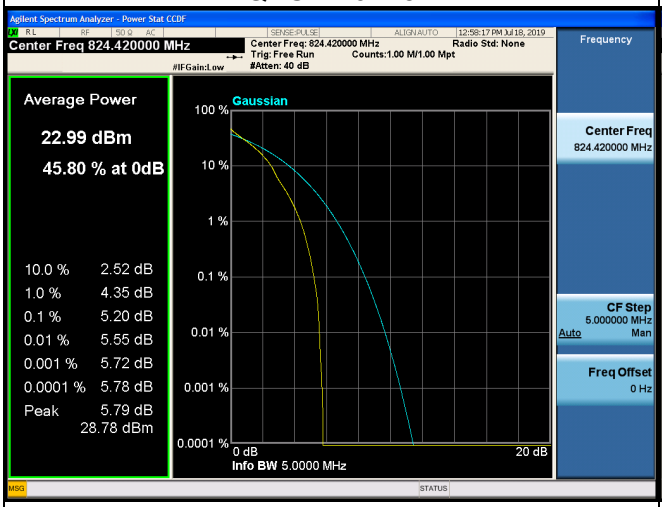
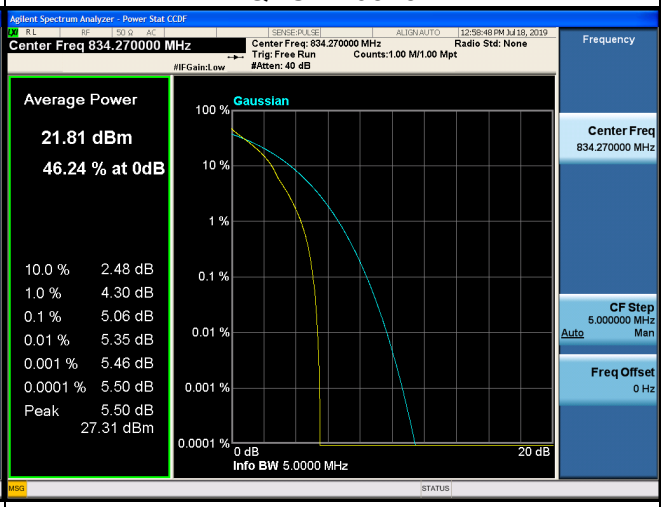


LTE Band 5 Spectrum Plot_5M

QPSK-20425



QPSK-20525



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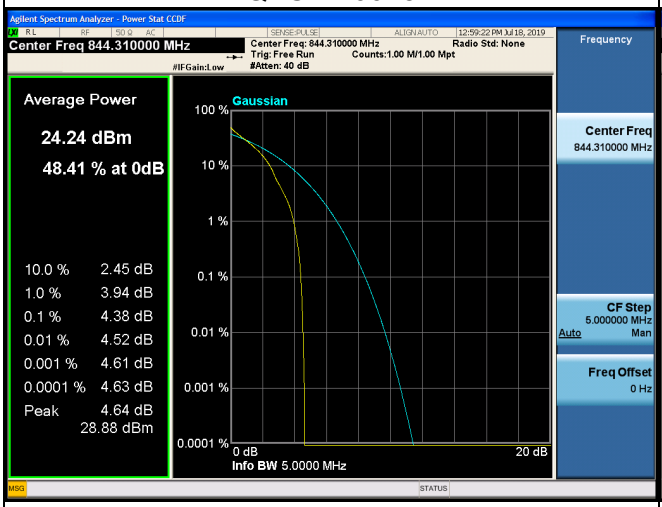
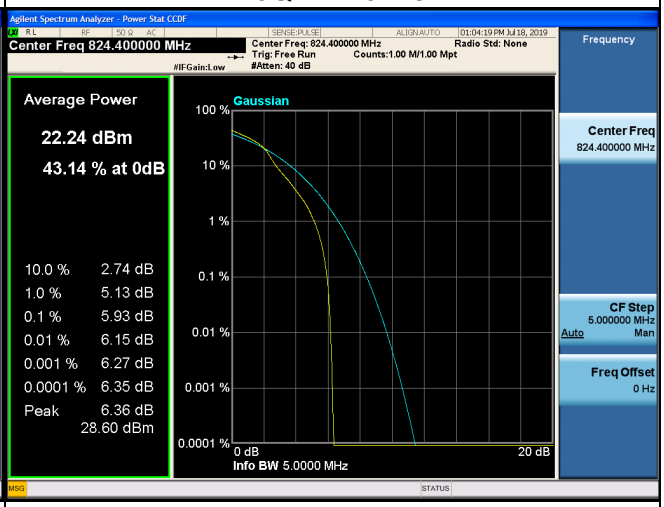
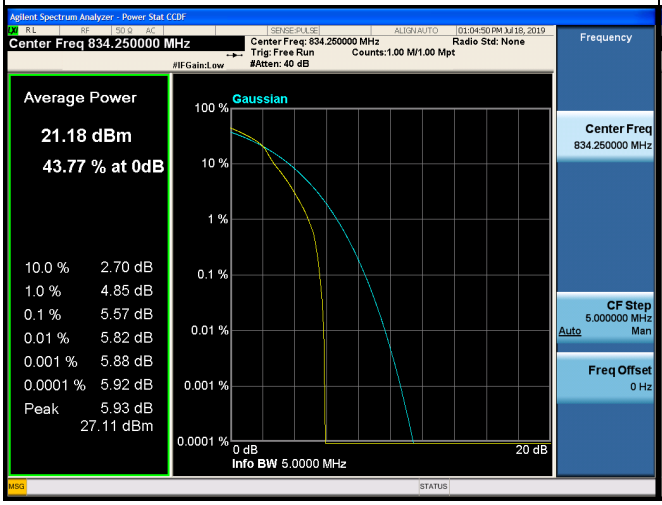


16QAM-20425



16QAM-20525



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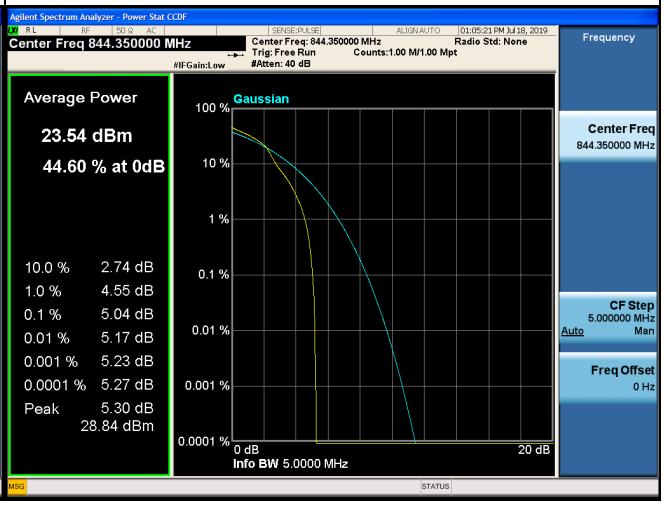
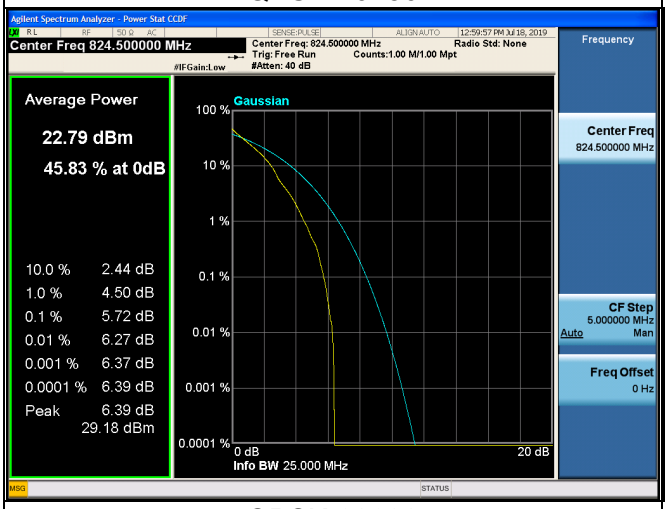


LTE Band 5 Spectrum Plot_10M

QPSK-20450



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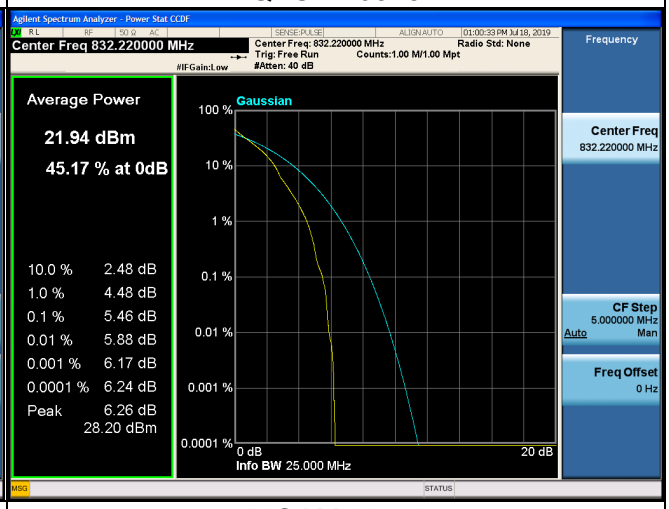

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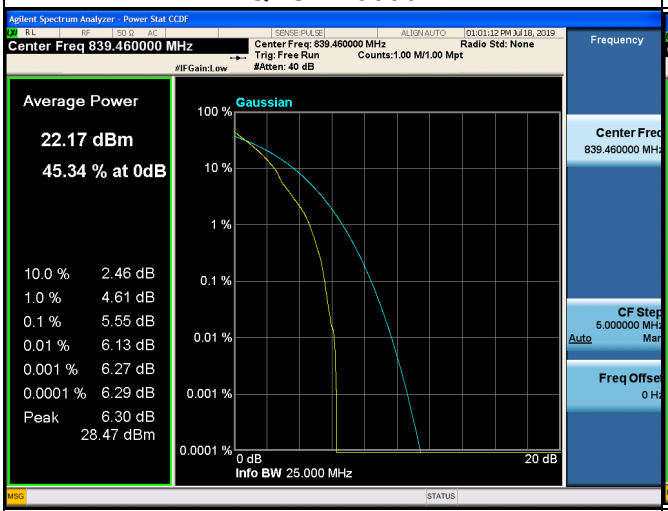

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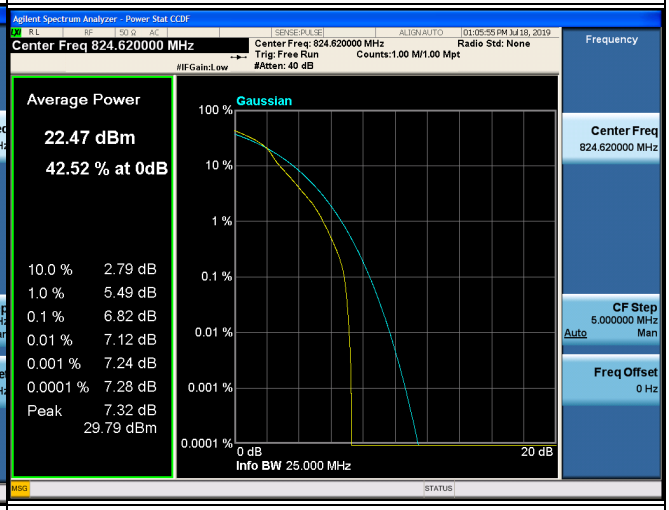

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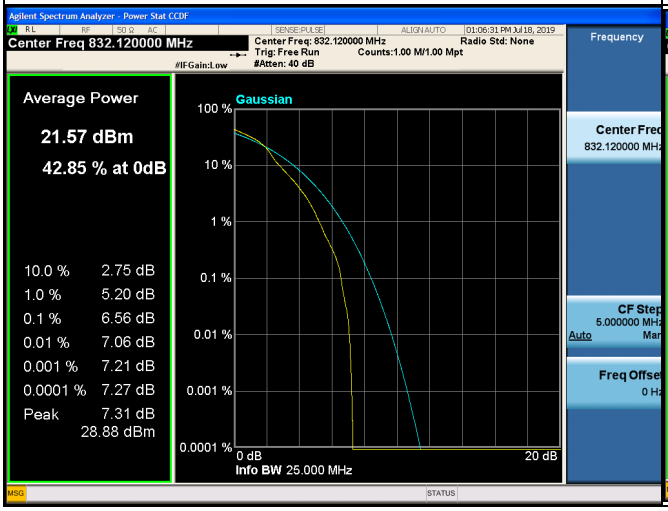

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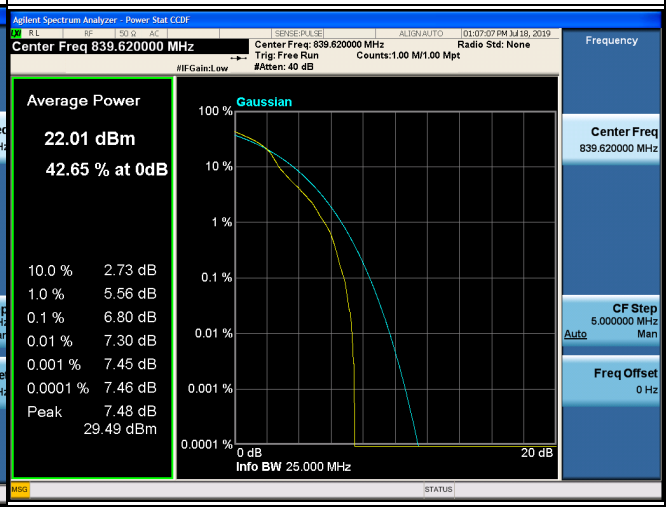

APPENDIX I - FREQUENCY STABILITY

Test Mode:	GSM850_CH190

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	6.75	0.008068372	±2.5
-20	6.96	0.008319388	
-10	5.64	0.006741573	
0	5.77	0.006896964	
10	5.15	0.006155869	
20	6.24	0.007458762	
30	6.66	0.007960794	
40	6.85	0.008187903	
50	5.41	0.006466651	
60	6.28	0.007506574	
75	4.54	0.005426727	
Max. Deviation (ppm)	6.96	0.008319388	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	3.56	0.004255319	±2.5
4.0	3.64	0.004350944	
4.2	3.39	0.004052116	
Max. Deviation (ppm)	3.64	0.004350944	

Test Mode:	WCDMA Band V_CH4182

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	2.55	0.00304878	±2.5
-20	6.71	0.008022477	
-10	3.21	0.003837877	
0	7.05	0.008428981	
10	5.39	0.006444285	
20	3.41	0.004076997	
30	6.89	0.008237685	
40	3.32	0.003969393	
50	2.66	0.003180297	
60	1.98	0.002367288	
75	7.68	0.009182209	
Max. Deviation (ppm)	7.68	0.009182209	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	3.69	0.004411765	±2.5
4.0	1.26	0.001506456	
4.2	2.02	0.002415112	
Max. Deviation (ppm)	3.69	0.004411765	

Test Mode:	LTE Band 5_CH20525_1.4M

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	-3.96	-0.004734011	±2.5
-20	4.94	0.005905559	
-10	-1.87	-0.002235505	
0	-3.87	-0.00462642	
10	1.80	0.002151823	
20	-1.74	-0.002080096	
30	-2.19	-0.002618051	
40	-4.53	-0.005415421	
50	5.69	0.006802152	
60	-2.79	-0.003335326	
75	3.70	0.004423192	
Max. Deviation (ppm)	5.69	0.006802152	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	6.58	0.007866109	±2.5
4.0	-4.06	-0.004853556	
4.2	-1.44	-0.001721458	
Max. Deviation (ppm)	6.58	0.007866109	

Test Mode:	LTE Band 5_CH20525_3M

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	1.33	0.001589958	±2.5
-20	-2.35	-0.002809325	
-10	-3.47	-0.004148237	
0	-1.03	-0.001231321	
10	-2.65	-0.003167962	
20	4.54	0.005427376	
30	-2.41	-0.002881052	
40	-4.93	-0.005893604	
50	2.18	0.002606097	
60	-5.02	-0.006001195	
75	-5.56	-0.006646742	
Max. Deviation (ppm)	-5.56	-0.006646742	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	-2.12	-0.002534369	±2.5
4.0	-2.76	-0.003299462	
4.2	0.18	0.000215182	
Max. Deviation (ppm)	-2.76	-0.003299462	

Test Mode:	LTE Band 5_CH20525_5M

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	5.61	0.006706515	±2.5
-20	-3.41	-0.004076509	
-10	-0.96	-0.001147639	
0	-2.30	-0.002749552	
10	2.80	0.00334728	
20	0.57	0.000681411	
30	-5.52	-0.006598924	
40	2.31	0.002761506	
50	3.97	0.004745965	
60	-5.42	-0.006479378	
75	5.95	0.007112971	
Max. Deviation (ppm)	5.95	0.007112971	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	4.29	0.005128512	±2.5
4.0	0.58	0.000693365	
4.2	0.53	0.000633592	
Max. Deviation (ppm)	4.29	0.005128512	

Test Mode:	LTE Band 5_CH20525_10M

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	-0.20	-0.000239091	±2.5
-20	-3.46	-0.004136282	
-10	-1.79	-0.002139868	
0	1.27	0.001518231	
10	3.27	0.003909145	
20	2.22	0.002653915	
30	6.24	0.007459653	
40	1.53	0.00182905	
50	3.79	0.004530783	
60	-5.16	-0.006168559	
75	-0.62	-0.000741184	
Max. Deviation (ppm)	6.24	0.007459653	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	-2.79	-0.003335326	±2.5
4.0	-5.52	-0.006598924	
4.2	5.61	0.006706515	
Max. Deviation (ppm)	5.61	0.006706515	

End of Test Report