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Appendix B

GSM850&1900



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1. Effective (Isotropic) Radiated Power Output Data

1.1.Test Result

Band	Test Mode	Channel	Power(dBm)	ERP[dBm]	Limit(dBm)	Verdict
	GSM/TM1	128	33.20	27.75	38.45	PASS
		190	33.16	27.71	38.45	PASS
CCMOEO		251	33.08	27.63	38.45	PASS
GSM850	GSM/TM2	128	27.45	22	38.45	PASS
		190	27.42	21.97	38.45	PASS
		251	27.34	21.89	38.45	PASS

Band	Test Mode	Channel	Power(dBm)	EIRP[dBm]	Limit(dBm)	Verdict
	GSM/TM1	512	29.59	27.39	33	PASS
		661	30.01	27.81	33	PASS
CCM1000		810	30.18	27.98	33	PASS
GSM1900	GSM/TM2	512	26.20	24	33	PASS
		661	26.66	24.46	33	PASS
		810	26.86	24.66	33	PASS

Note:

a: For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level



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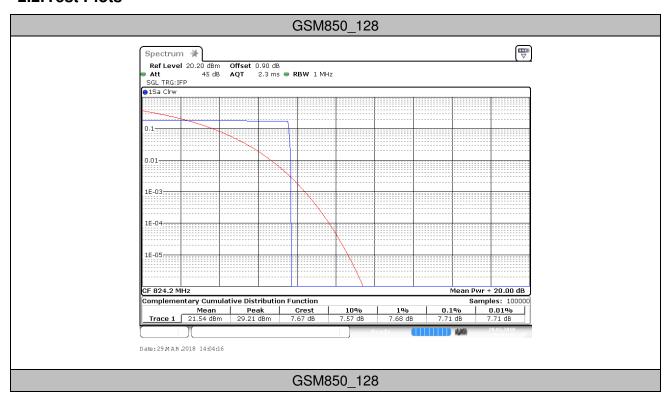
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2. Peak-to-Average Ratio

2.1.Test Result

Band	Test Mode	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
		128	7.71	13	PASS
	GSM/TM1	190	7.71	13	PASS
CCMSEO		251	7.71	13	PASS
GSM850		128	7.68	13	PASS
	GSM/TM2	190	7.68	13	PASS
		251	7.74	13	PASS
	GSM/TM1	512	7.71	13	PASS
		661	7.68	13	PASS
GSM1000		810	7.65	13	PASS
GSM1900		512	7.74	13	PASS
	GSM/TM2	661	7.71	13	PASS
		810	7.65	13	PASS

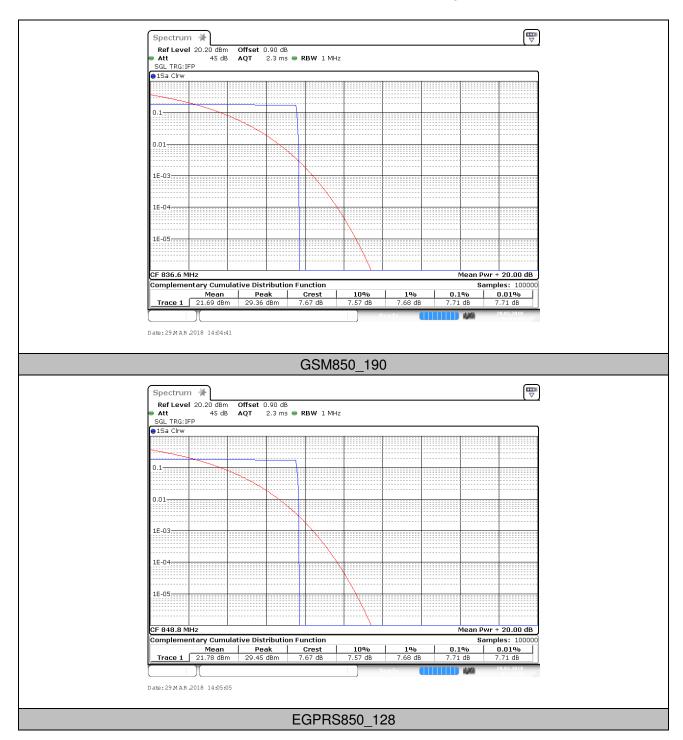
2.2.Test Plots





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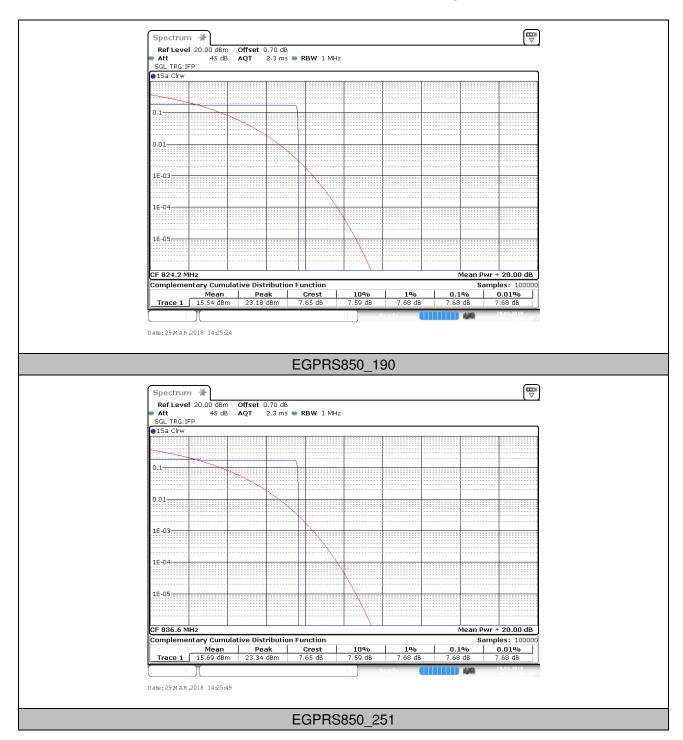
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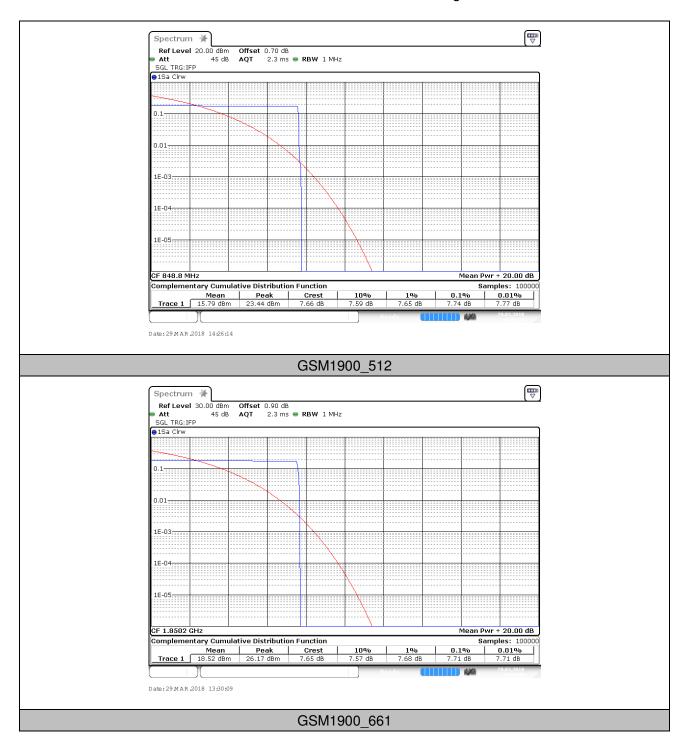
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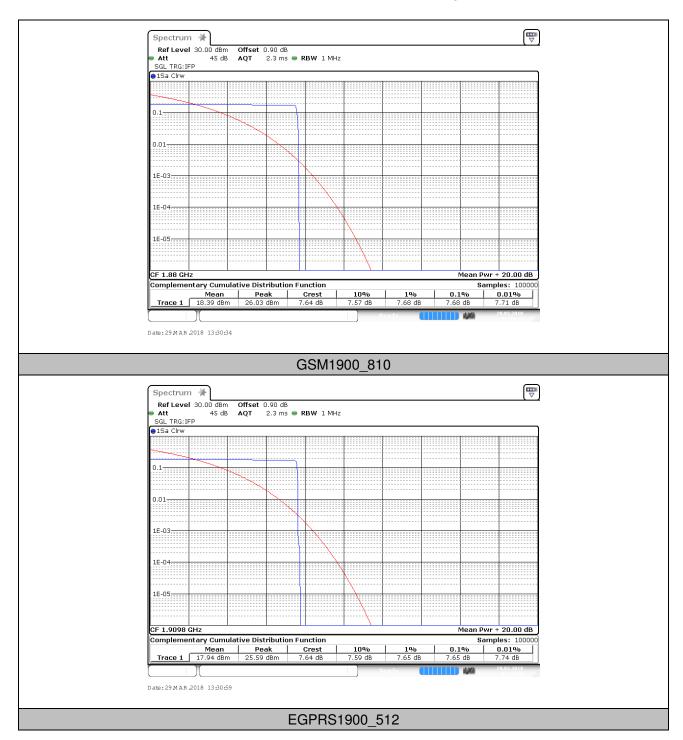
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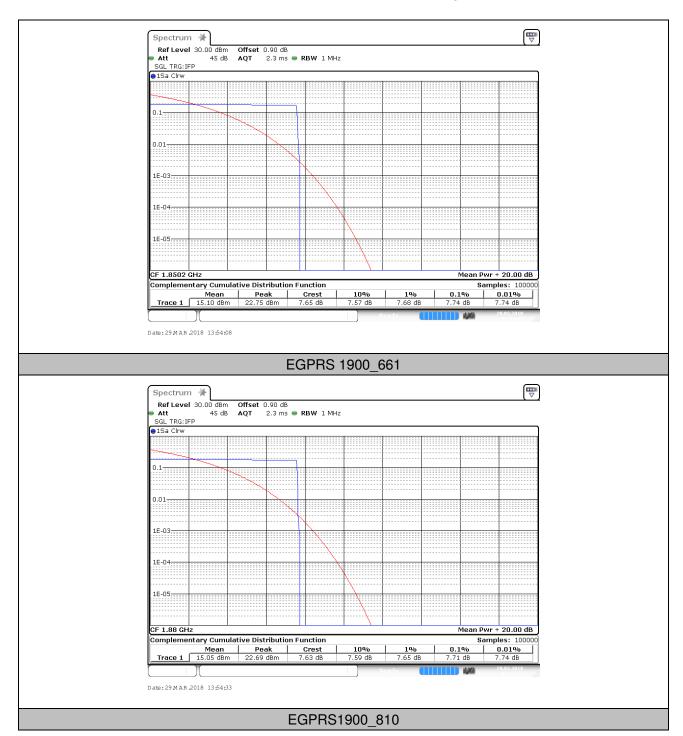
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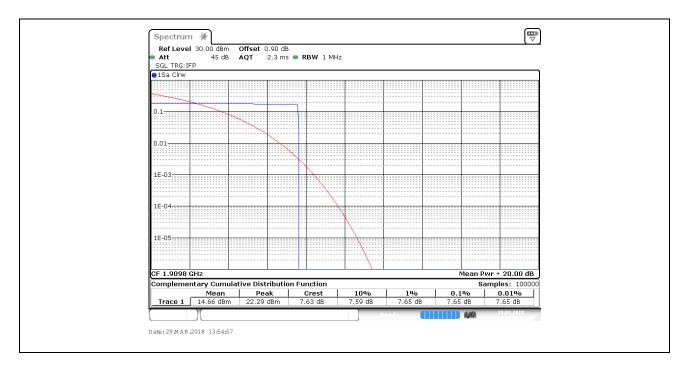
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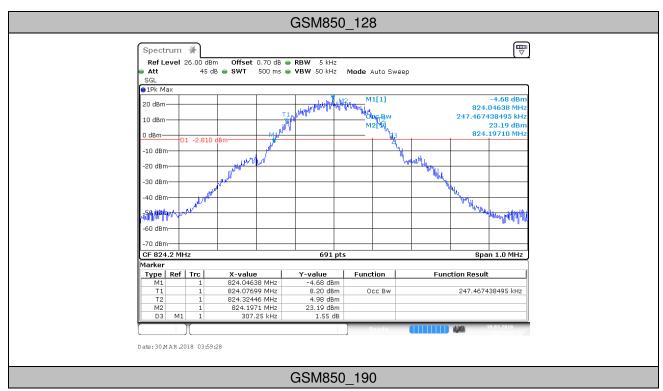
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3. 26dB Bandwidth and Occupied Bandwidth

3.1.Test Result

Band	Test Mode	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
		128	247.48	307.25		PASS
	OOM/TN44					
	GSM/TM1	190	246.02	310.14		PASS
GSM850		251	248.91	298.55		PASS
GSIVIOSU	GSM/TM2	128	244.57	304.35		PASS
		190	246.02	305.80		PASS
		251	244.57	305.80		PASS
	GSM/TM1	512	246.02	310.14		PASS
		661	244.57	310.14		PASS
CSM1000		810	246.02	314.49		PASS
GSM1900		512	244.57	307.25		PASS
	GSM/TM2	661	246.02	313.04		PASS
		810	247.47	308.70		PASS

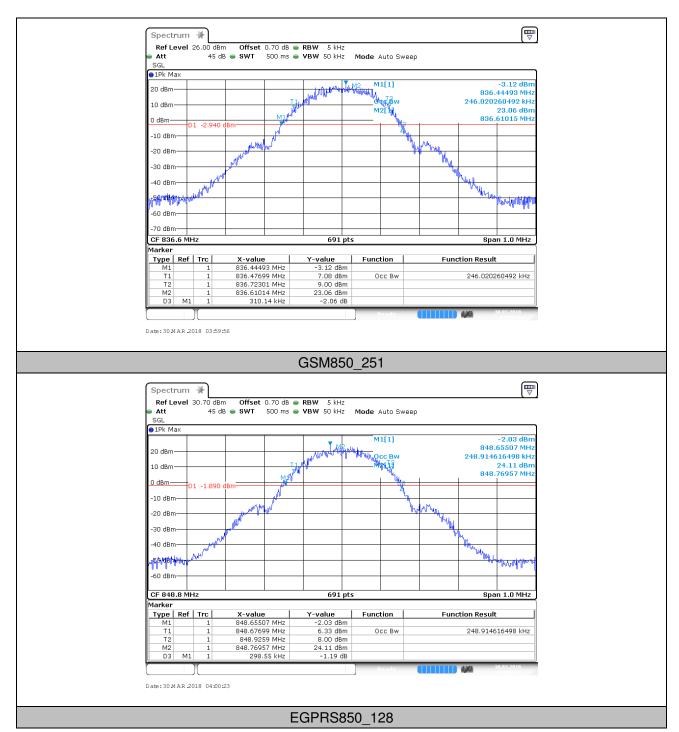
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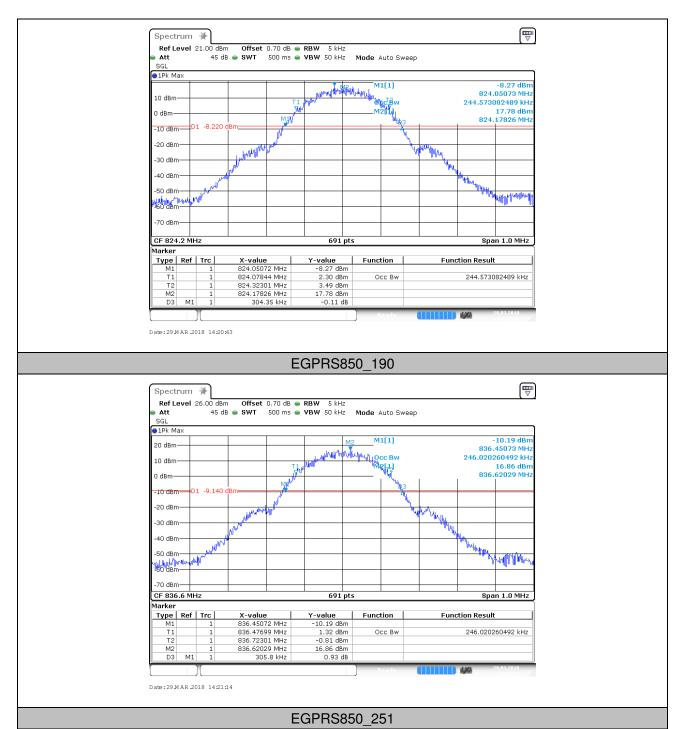
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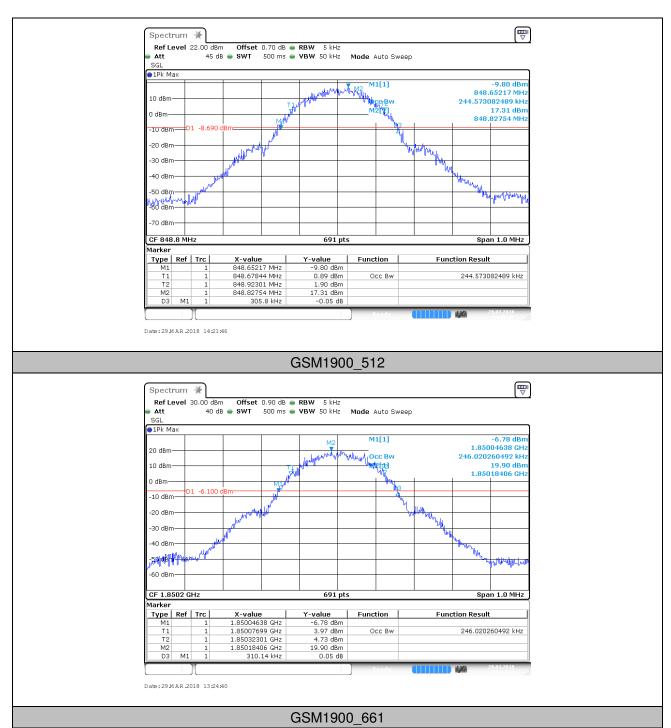
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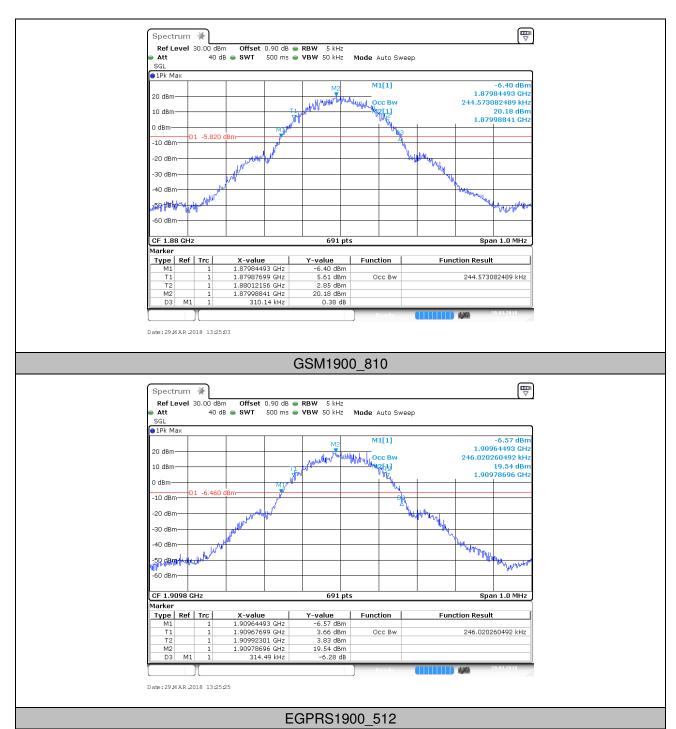
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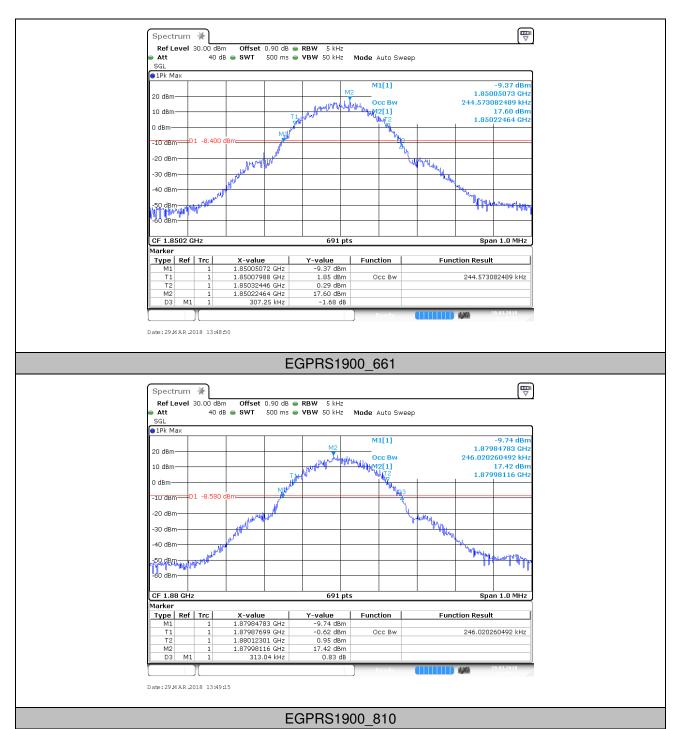
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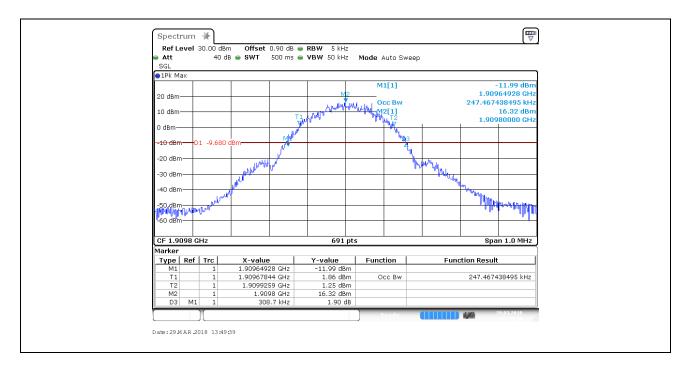
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4. Modulation Characteristics

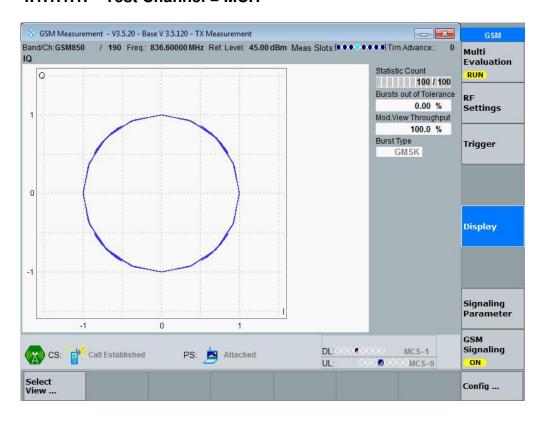
Part I - Test Plots

4.1.For GSM

4.1.1. Test Band = GSM 850

4.1.1.1. Test Mode = GSM/TM1

4.1.1.1.1. Test Channel = MCH



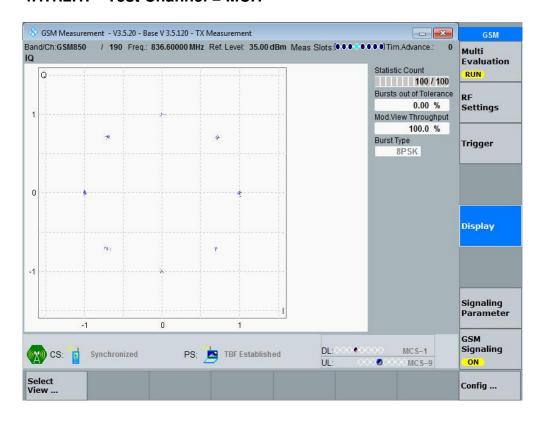


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4.1.1.2. Test Mode = GSM/TM2

4.1.1.2.1. Test Channel = MCH





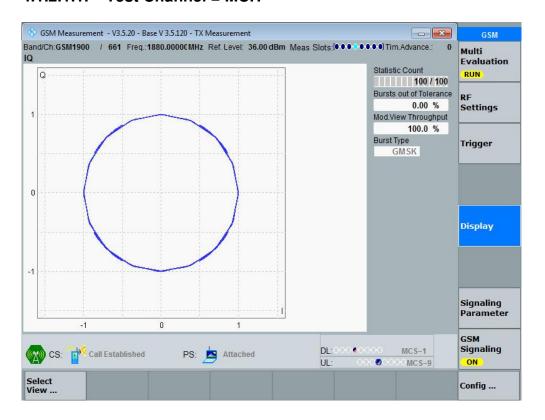
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4.1.2. Test Band = GSM 1900

4.1.2.1. Test Mode = GSM/TM1

4.1.2.1.1. Test Channel = MCH



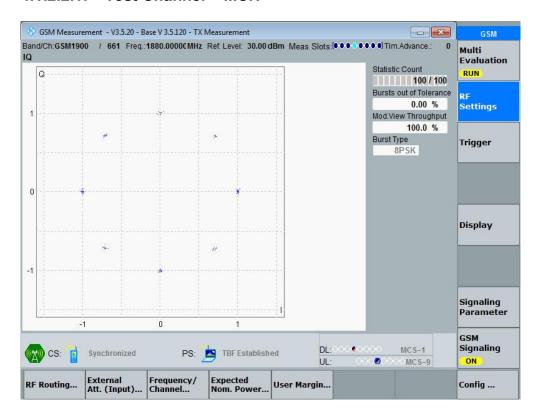


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4.1.2.2. Test Mode = GSM/TM2

4.1.2.2.1. Test Channel = MCH





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5. Band Edge

5.1. Test Result

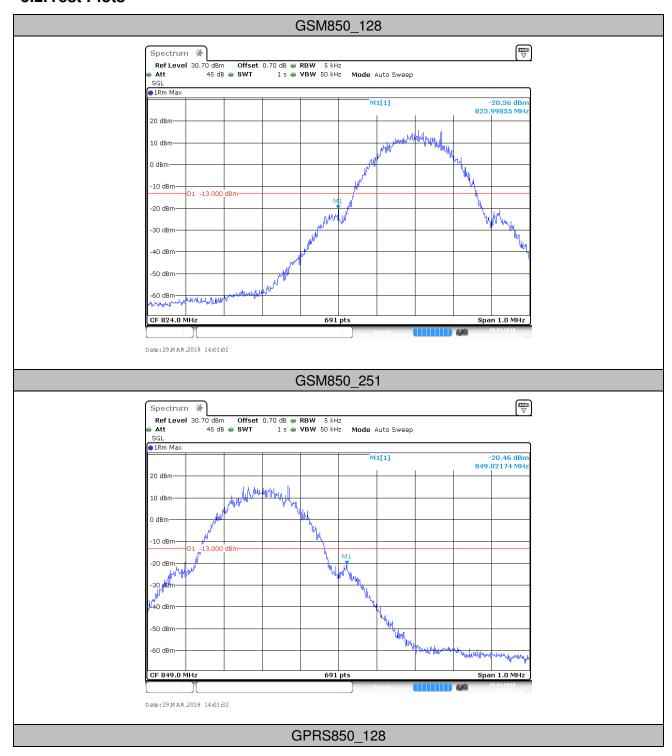
Band	Channel	Value(dBm)	Limit(dBm)	Verdict
GSM850	128	-20.36	-13	PASS
GSM850	251	-20.46	-13	PASS
GPRS850	128	-21.83	-13	PASS
GPRS850	251	-22.08	-13	PASS
EGPRS850	128	-27.63	-13	PASS
EGPRS850	251	-27.57	-13	PASS
GSM1900	512	-23.18	-13	PASS
GSM1900	810	-24.79	-13	PASS
GPRS1900	512	-24.47	-13	PASS
GPRS1900	810	-24.54	-13	PASS
EGPRS1900	512	-27.39	-13	PASS
EGPRS1900	810	-28.25	-13	PASS



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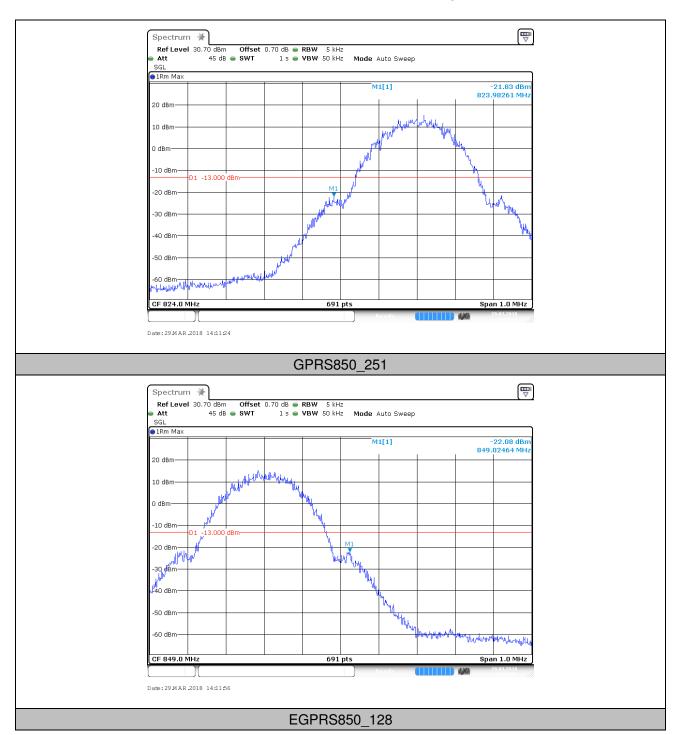
5.2. Test Plots





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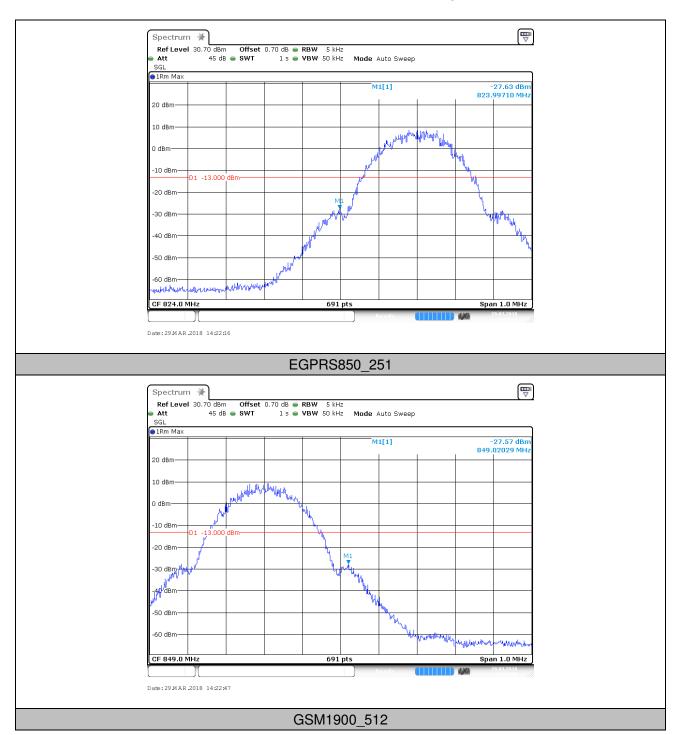
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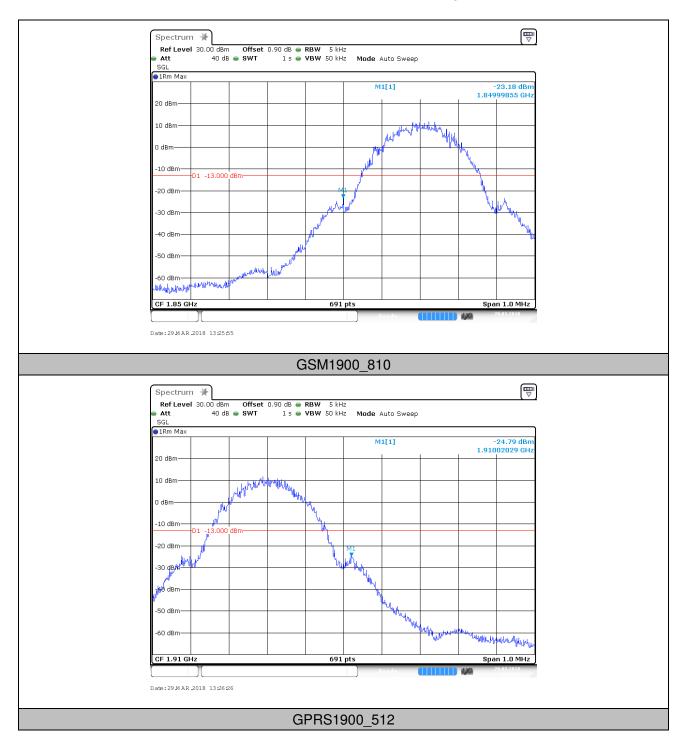
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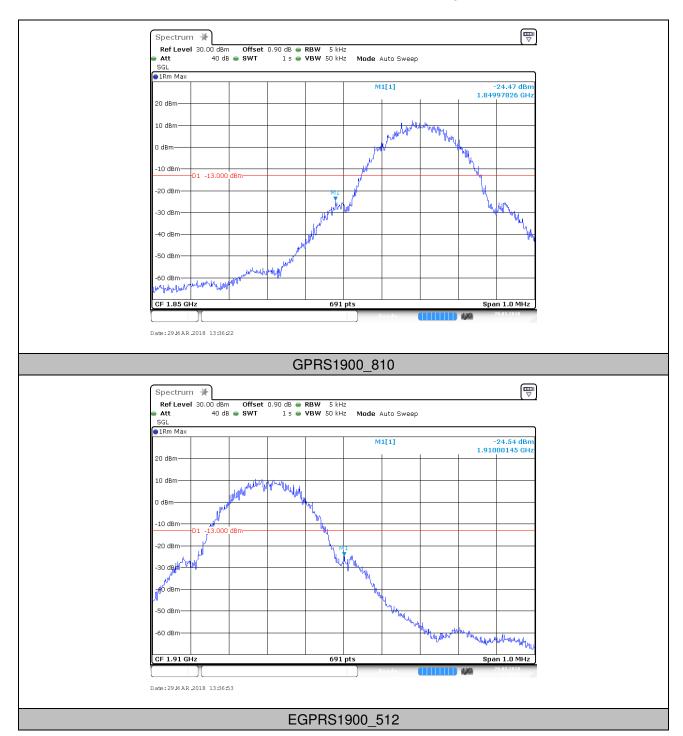
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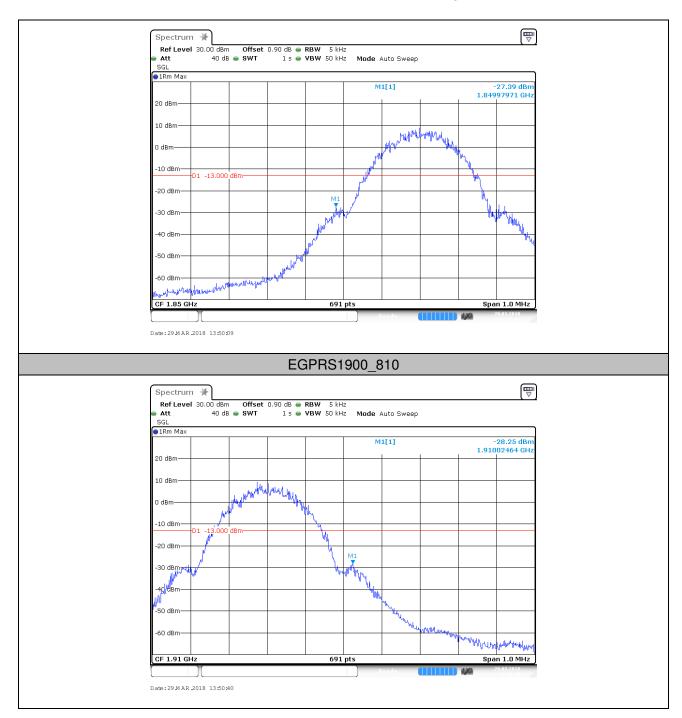
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6. Conducted Spurious Emission

6.1. Test Result

Band	Channel	Frequency Rang(Mhz)	Value(dBm)	Limit(dBm)	Verdict
GSM850	128	0.009~0.15	-58.30	-33	PASS
GSM850	128	0.15~30	-69.77	-23	PASS
GSM850	128	30~1000	-40.33	-13	PASS
GSM850	128	1000~9000	-38.16	-13	PASS
GSM850	190	0.009~0.15	-58.20	-33	PASS
GSM850	190	0.15~30	-69.89	-23	PASS
GSM850	190	30~1000	-40.13	-13	PASS
GSM850	190	1000~9000	-36.98	-13	PASS
GSM850	251	0.009~0.15	-57.73	-33	PASS
GSM850	251	0.15~30	-70.34	-23	PASS
GSM850	251	30~1000	-40.19	-13	PASS
GSM850	251	1000~9000	-35.88	-13	PASS
GPRS850	128	0.009~0.15	-58.09	-43	PASS
GPRS850	128	0.15~30	-70.45	-33	PASS
GPRS850	128	30~1000	-39.48	-13	PASS
GPRS850	128	1000~9000	-37.33	-13	PASS
GPRS850	190	0.009~0.15	-58.10	-43	PASS
GPRS850	190	0.15~30	-71.45	-33	PASS
GPRS850	190	30~1000	-40.60	-13	PASS
GPRS850	190	1000~9000	-38.29	-13	PASS
GPRS850	251	0.009~0.15	-57.48	-43	PASS
GPRS850	251	0.15~30	-69.41	-33	PASS
GPRS850	251	30~1000	-40.52	-13	PASS
GPRS850	251	1000~9000	-35.56	-13	PASS
EGPRS850	128	0.009~0.15	-67.57	-43	PASS
EGPRS850	128	0.15~30	-70.44	-33	PASS
EGPRS850	128	30~1000	-39.92	-13	PASS
EGPRS850	128	1000~9000	-37.99	-13	PASS
EGPRS850	190	0.009~0.15	-66.99	-43	PASS
EGPRS850	190	0.15~30	-69.85	-33	PASS
EGPRS850	190	30~1000	-40.95	-13	PASS
EGPRS850	190	1000~9000	-38.79	-13	PASS
EGPRS850	251	0.009~0.15	-67.00	-43	PASS
EGPRS850	251	0.15~30	-70.74	-33	PASS



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EGPRS850	251	30~1000	-40.47	-13	PASS
EGPRS850	251	1000~9000	-38.52	-13	PASS
GSM1900	512	0.009~0.15	-60.47	-43	PASS
GSM1900	512	0.15~30	-59.44	-33	PASS
GSM1900	512	30~1000	-40.60	-13	PASS
GSM1900	512	1000~7000	-35.14	-13	PASS
GSM1900	512	7000~13600	-39.25	-13	PASS
GSM1900	512	13600~20000	-36.74	-13	PASS
GSM1900	661	0.009~0.15	-60.35	-43	PASS
GSM1900	661	0.15~30	-60.20	-33	PASS
GSM1900	661	30~1000	-40.93	-13	PASS
GSM1900	661	1000~7000	-35.60	-13	PASS
GSM1900	661	7000~13600	-39.49	-13	PASS
GSM1900	661	13600~20000	-36.23	-13	PASS
GSM1900	810	0.009~0.15	-60.23	-43	PASS
GSM1900	810	0.15~30	-60.77	-33	PASS
GSM1900	810	30~1000	-40.19	-13	PASS
GSM1900	810	1000~7000	-35.53	-13	PASS
GSM1900	810	7000~13600	-39.54	-13	PASS
GSM1900	810	13600~20000	-36.99	-13	PASS
GPRS1900	512	0.009~0.15	-60.76	-43	PASS
GPRS1900	512	0.15~30	-60.14	-33	PASS
GPRS1900	512	30~1000	-39.83	-13	PASS
GPRS1900	512	1000~7000	-35.52	-13	PASS
GPRS1900	512	7000~13600	-39.40	-13	PASS
GPRS1900	512	13600~20000	-36.96	-13	PASS
GPRS1900	661	0.009~0.15	-60.67	-43	PASS
GPRS1900	661	0.15~30	-60.89	-33	PASS
GPRS1900	661	30~1000	-39.37	-13	PASS
GPRS1900	661	1000~7000	-35.68	-13	PASS
GPRS1900	661	7000~13600	-39.78	-13	PASS
GPRS1900	661	13600~20000	-37.22	-13	PASS
GPRS1900	810	0.009~0.15	-60.55	-43	PASS
GPRS1900	810	0.15~30	-59.57	-33	PASS
GPRS1900	810	30~1000	-40.73	-13	PASS
GPRS1900	810	1000~7000	-34.70	-13	PASS
GPRS1900	810	7000~13600	-39.65	-13	PASS
GPRS1900	810	13600~20000	-36.89	-13	PASS
EGPRS1900	512	0.009~0.15	-60.61	-43	PASS
EGPRS1900	512	0.15~30	-60.56	-33	PASS

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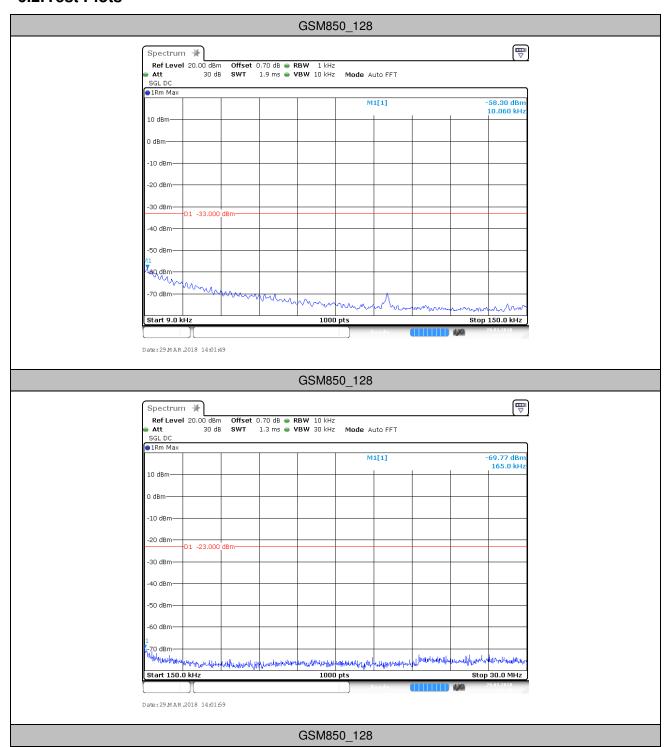
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EGPRS1900	512	1000~7000	-35.56	-13	PASS
EGPRS1900	512	7000~13600	-39.46	-13	PASS
EGPRS1900	512	13600~20000	-37.44	-13	PASS
EGPRS1900	661	0.009~0.15	-60.06	-43	PASS
EGPRS1900	661	0.15~30	-60.61	-33	PASS
EGPRS1900	661	30~1000	-40.98	-13	PASS
EGPRS1900	661	1000~7000	-35.02	-13	PASS
EGPRS1900	661	7000~13600	-39.55	-13	PASS
EGPRS1900	661	13600~20000	-35.61	-13	PASS
EGPRS1900	810	0.009~0.15	-59.76	-43	PASS
EGPRS1900	810	0.15~30	-59.91	-33	PASS
EGPRS1900	810	30~1000	-40.51	-13	PASS
EGPRS1900	810	1000~7000	-35.51	-13	PASS
EGPRS1900	810	7000~13600	-39.61	-13	PASS
EGPRS1900	810	13600~20000	-37.11	-13	PASS



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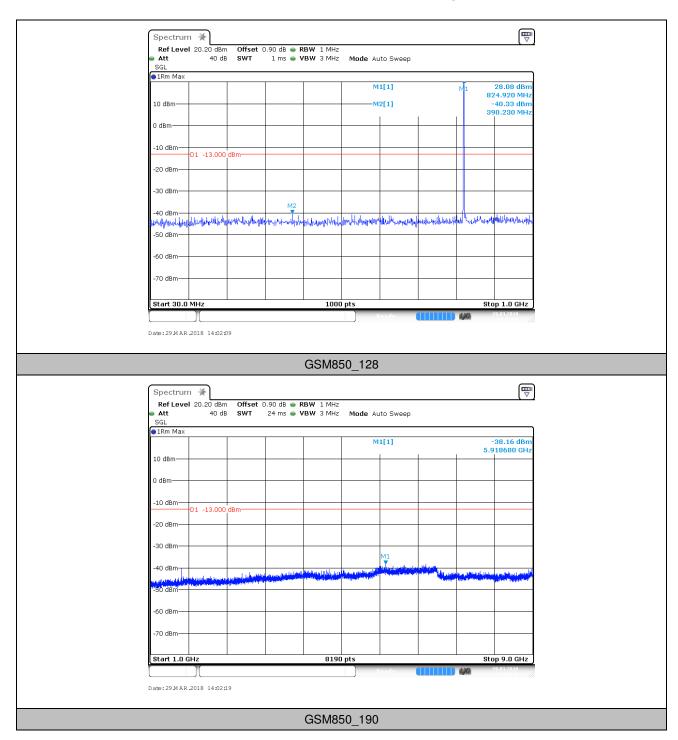
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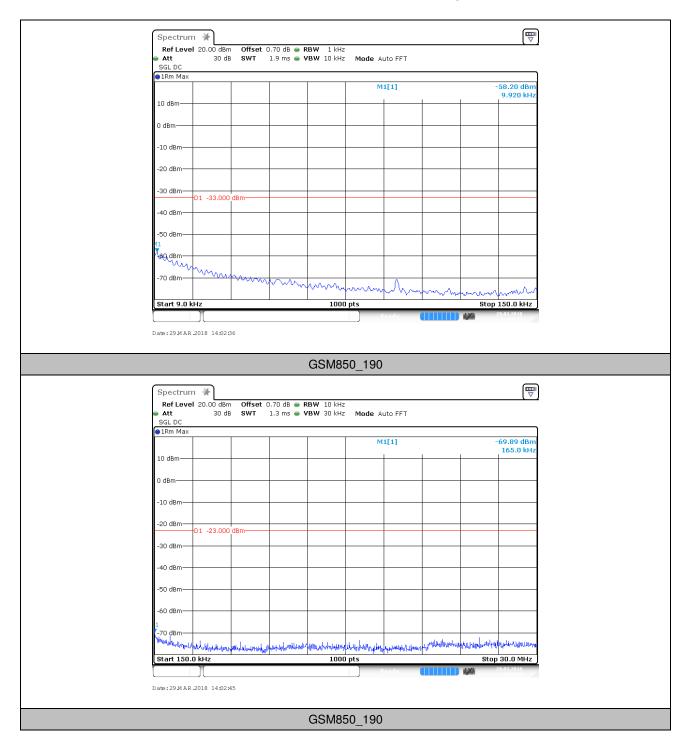
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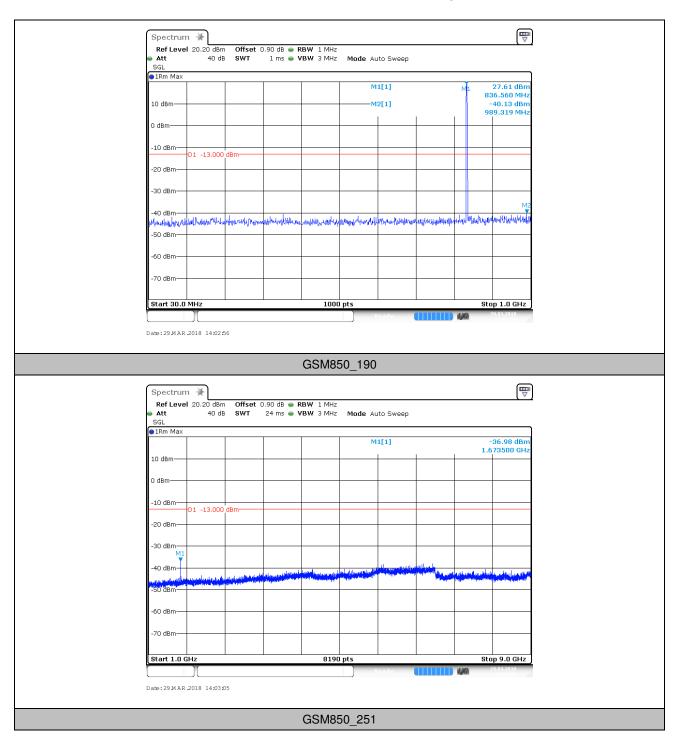
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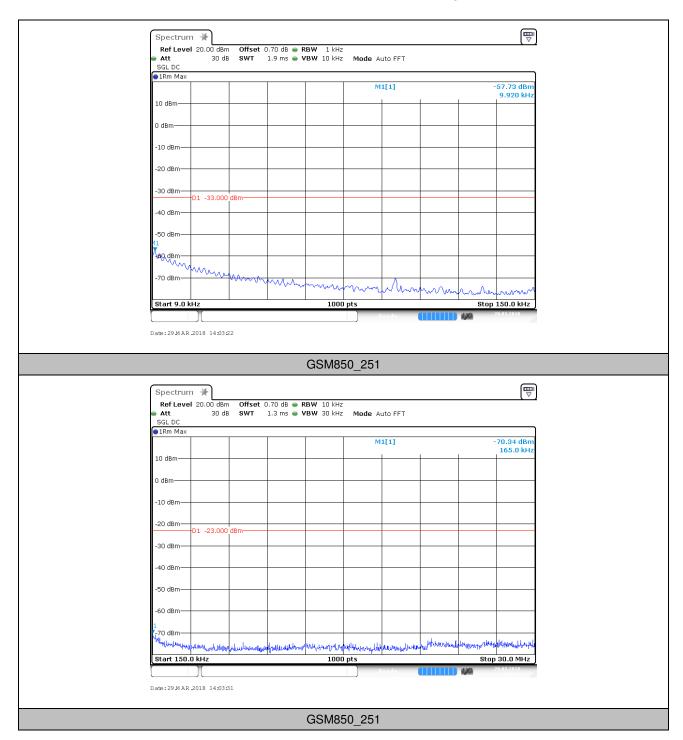
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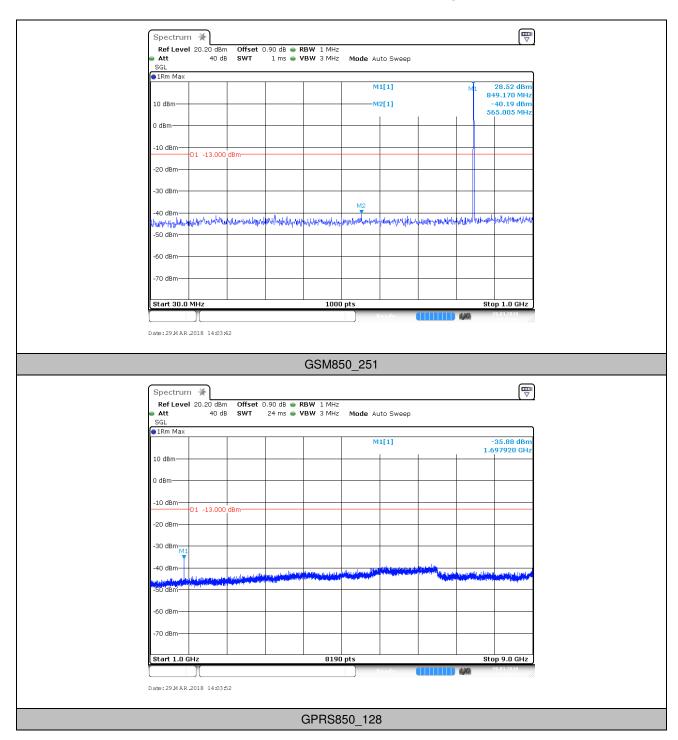
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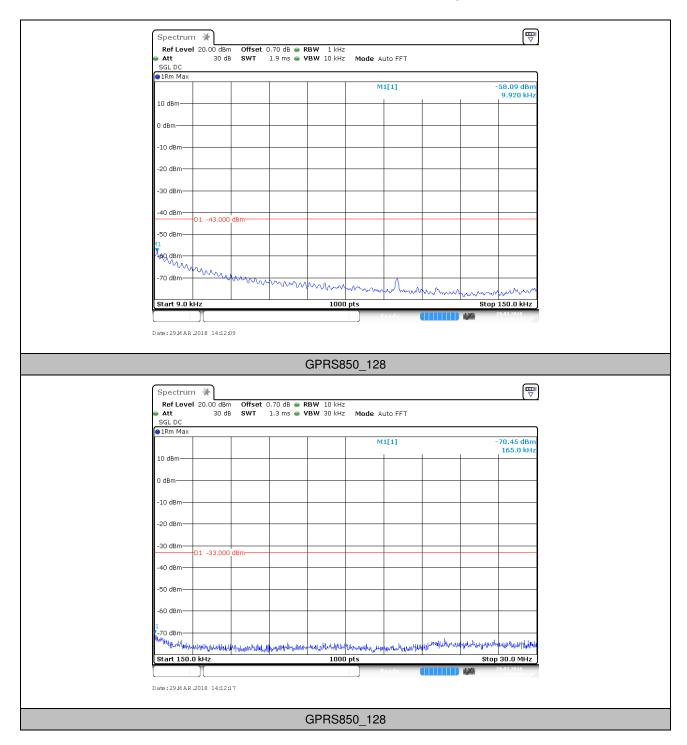
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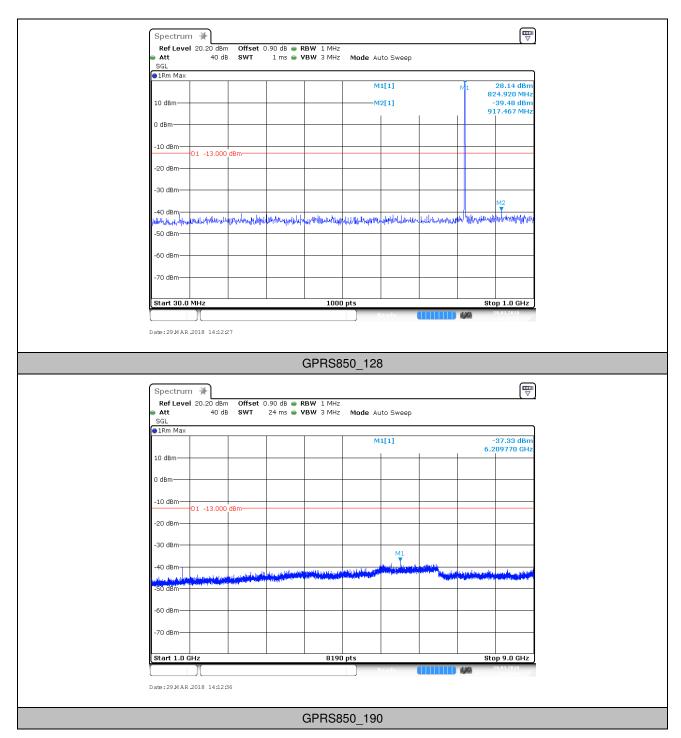
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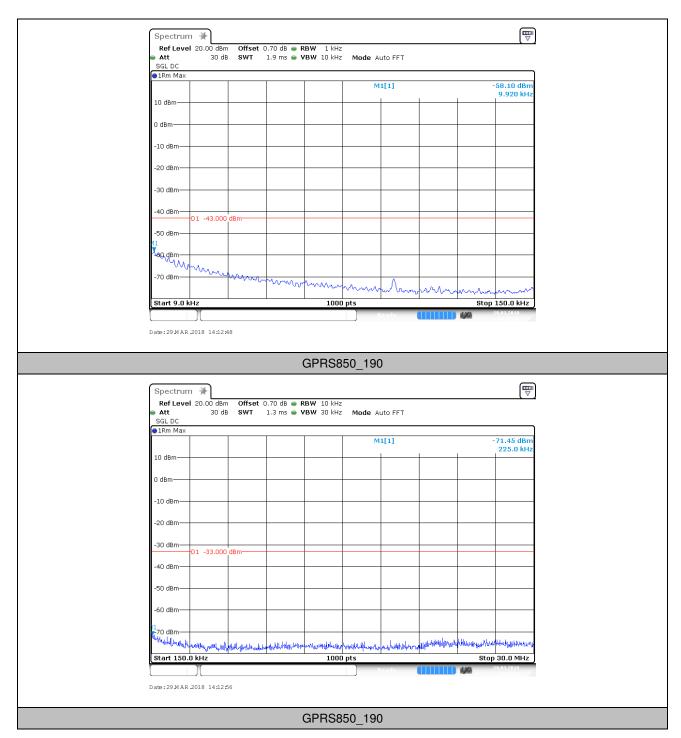
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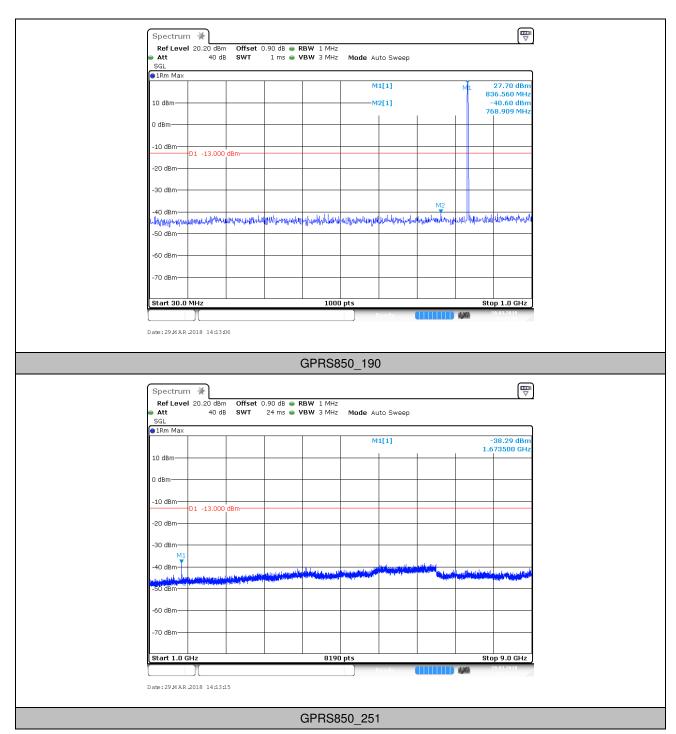
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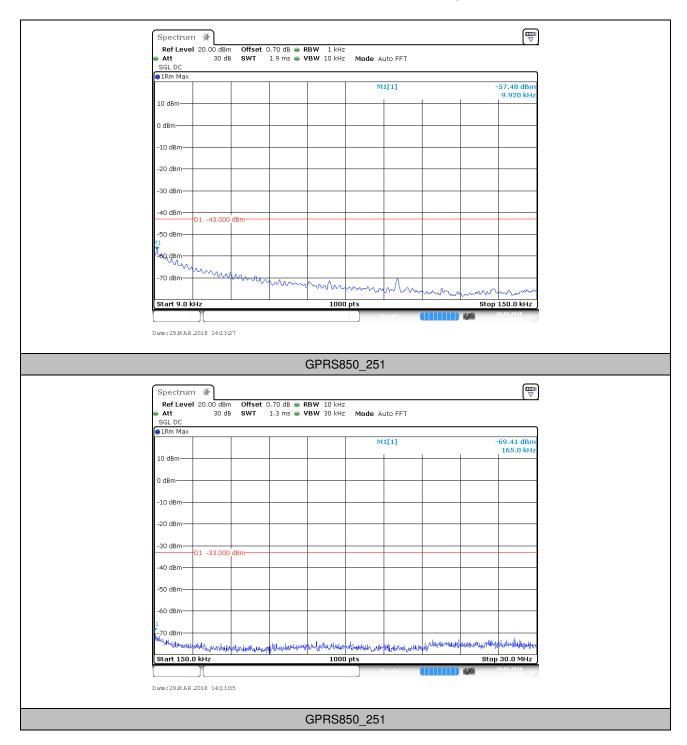
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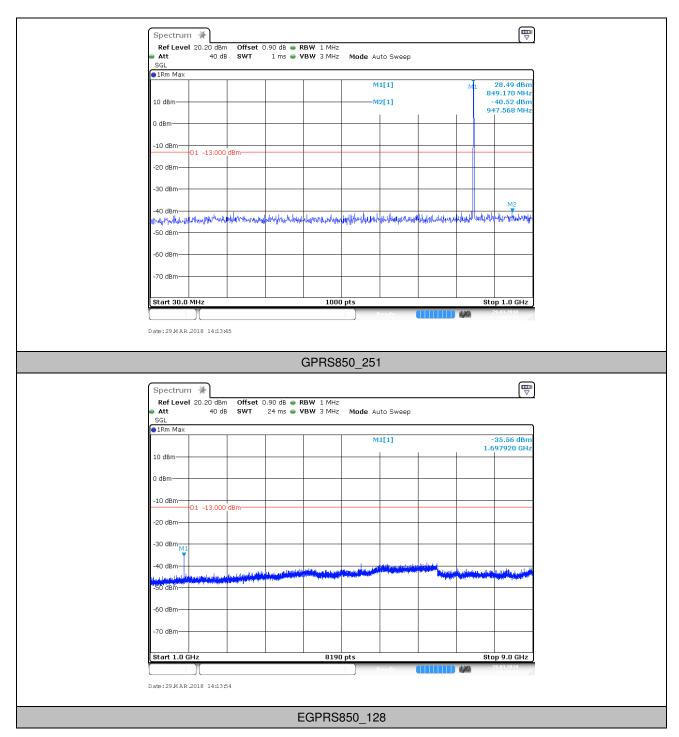
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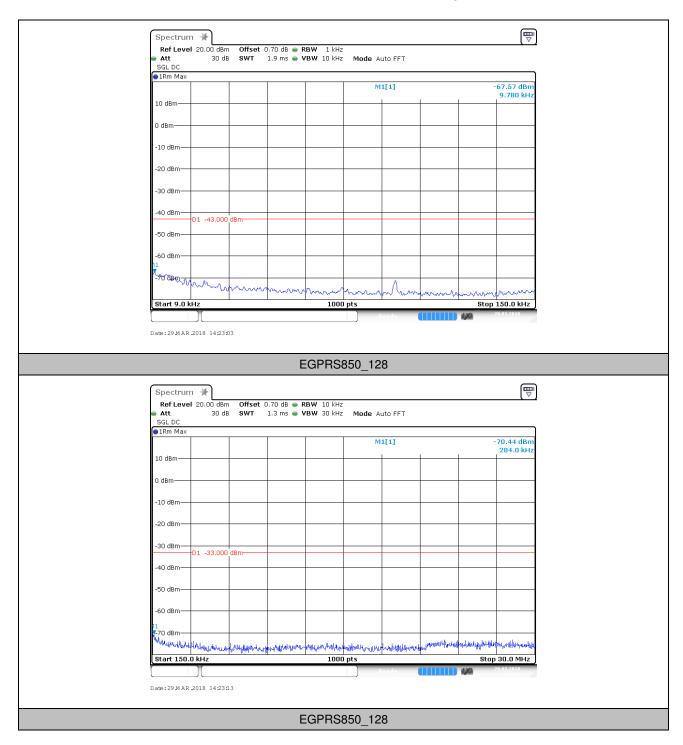
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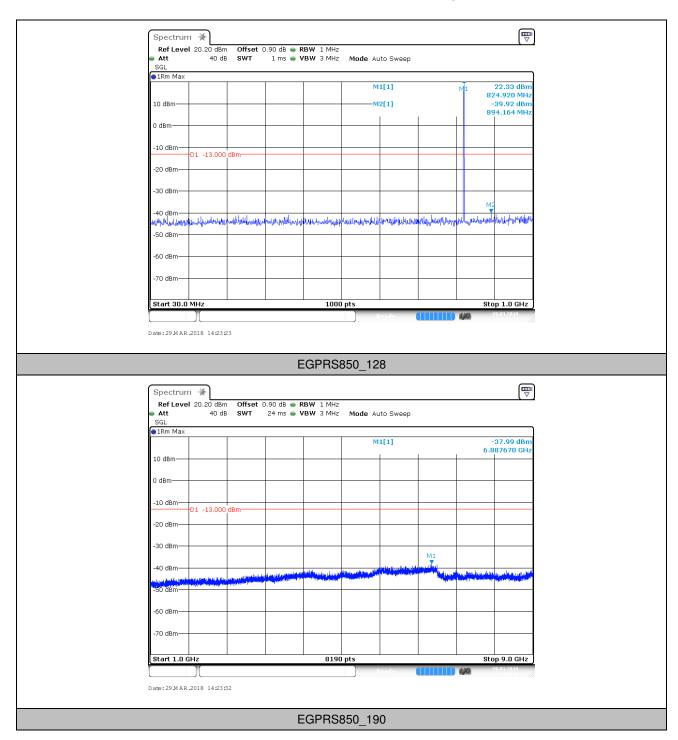
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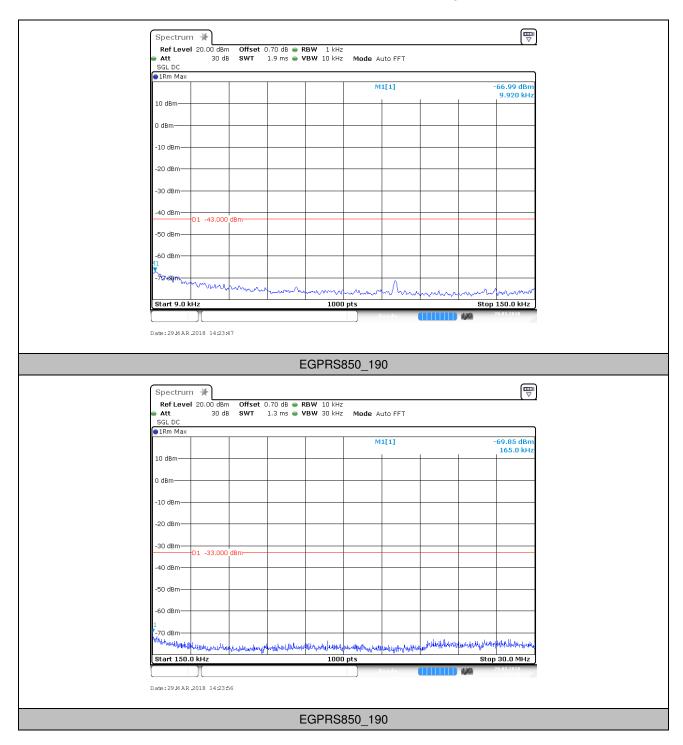
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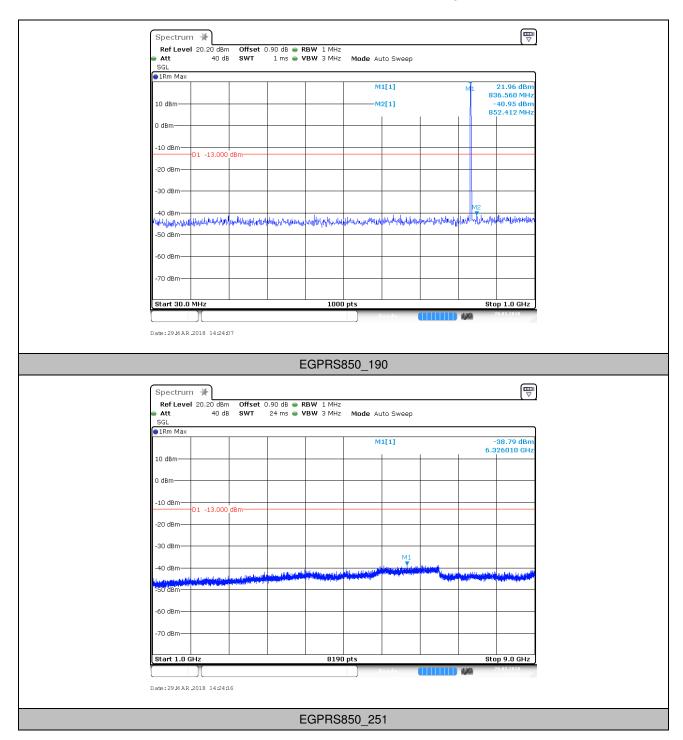
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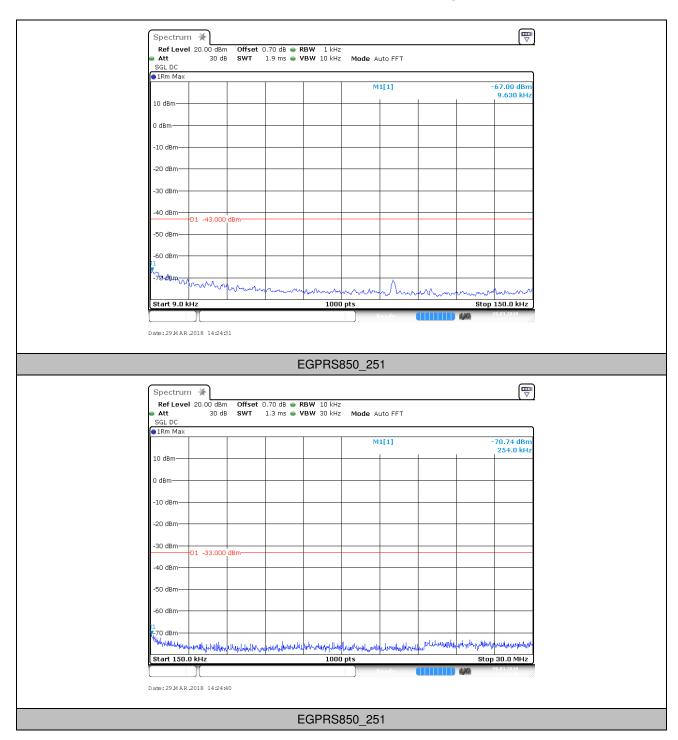
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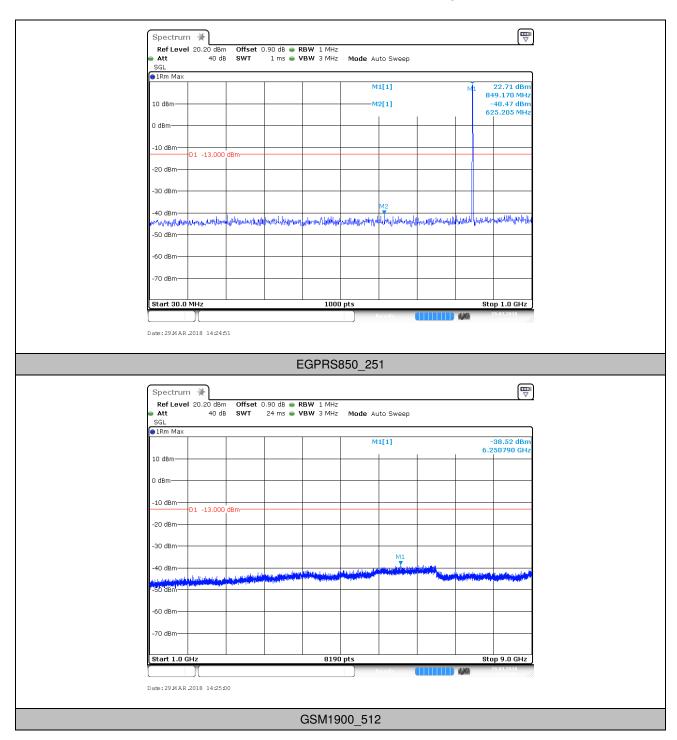
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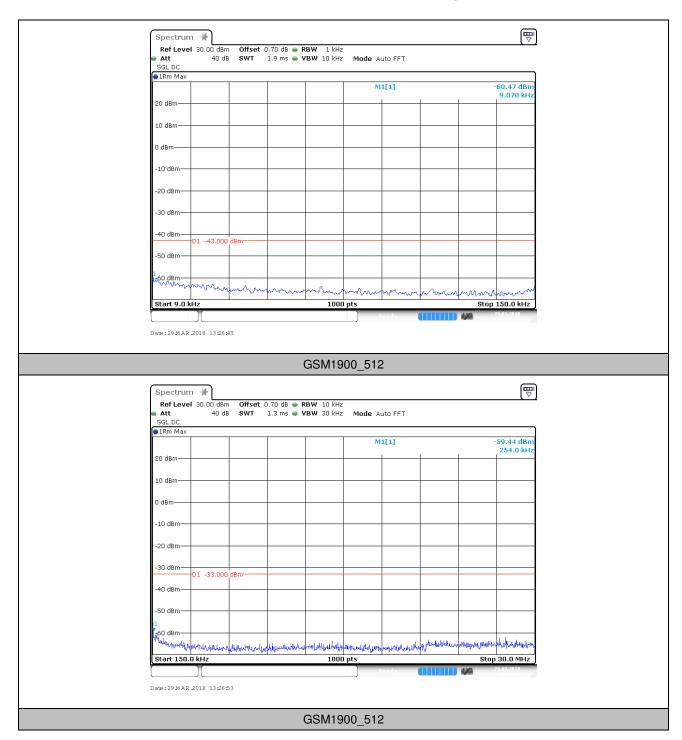
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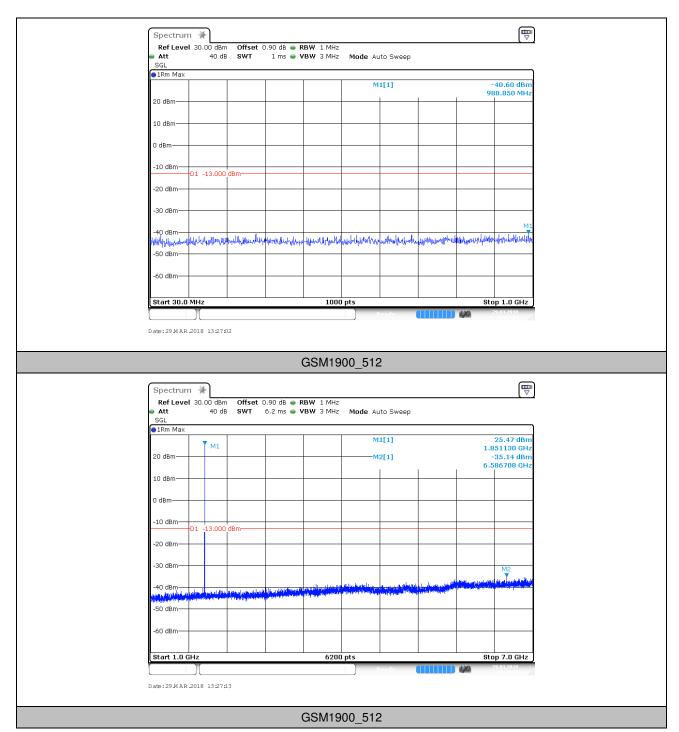
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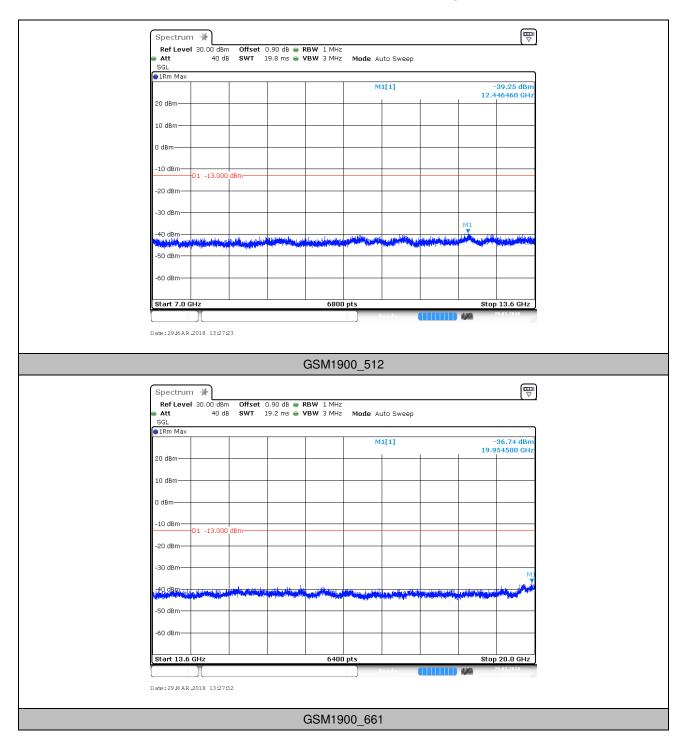
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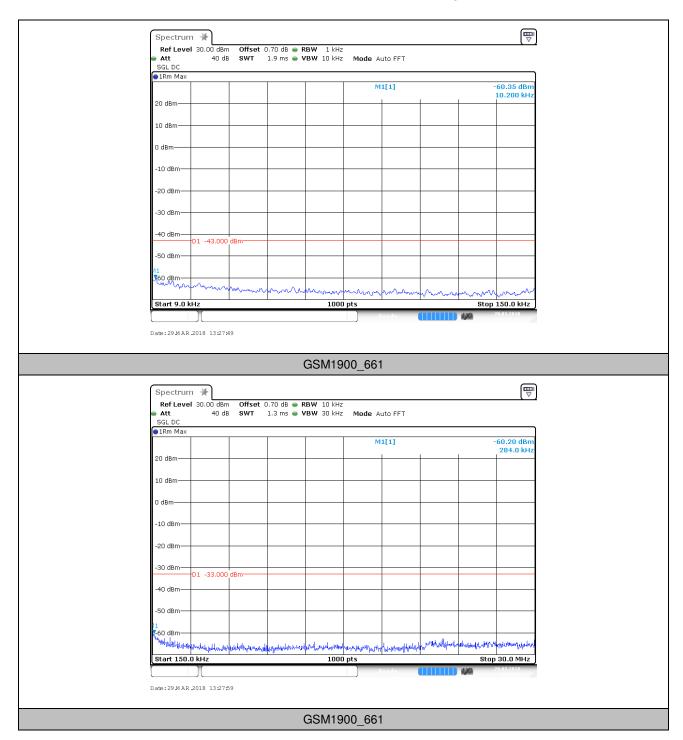
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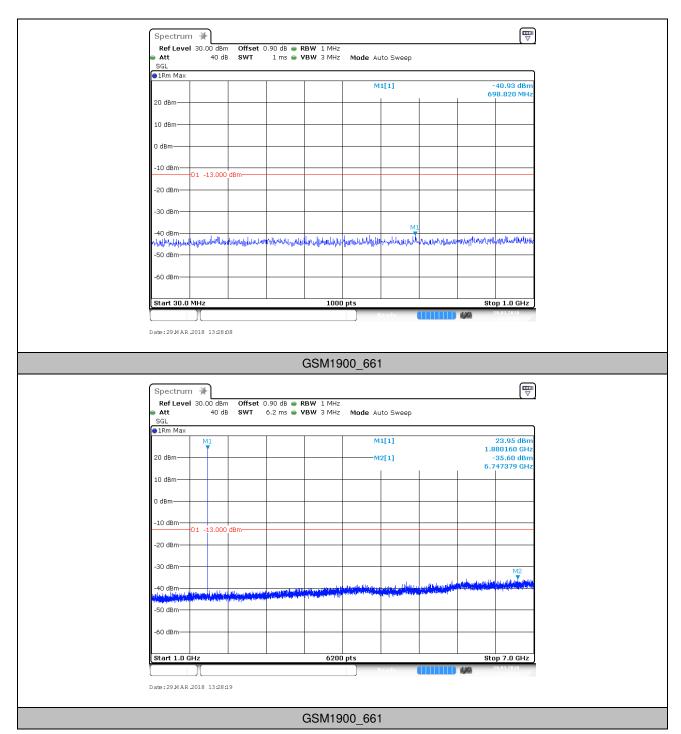
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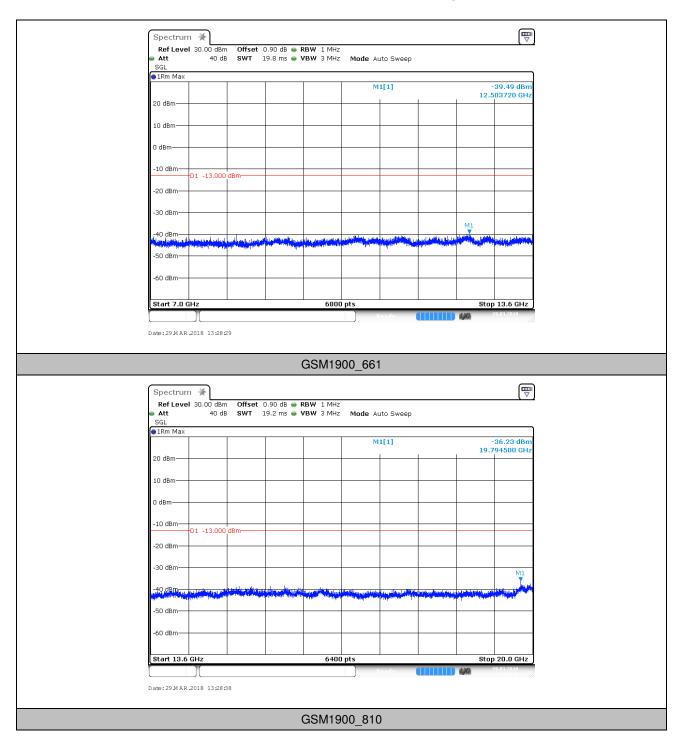
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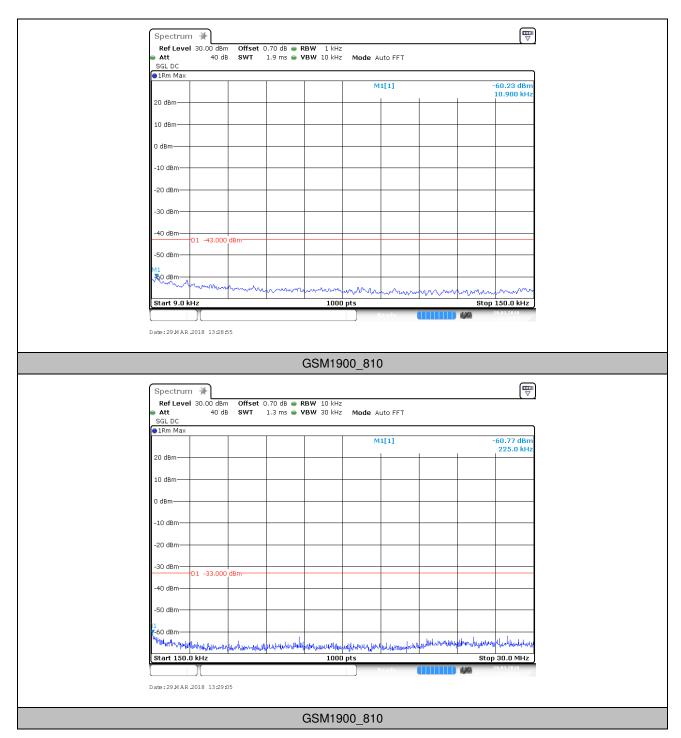
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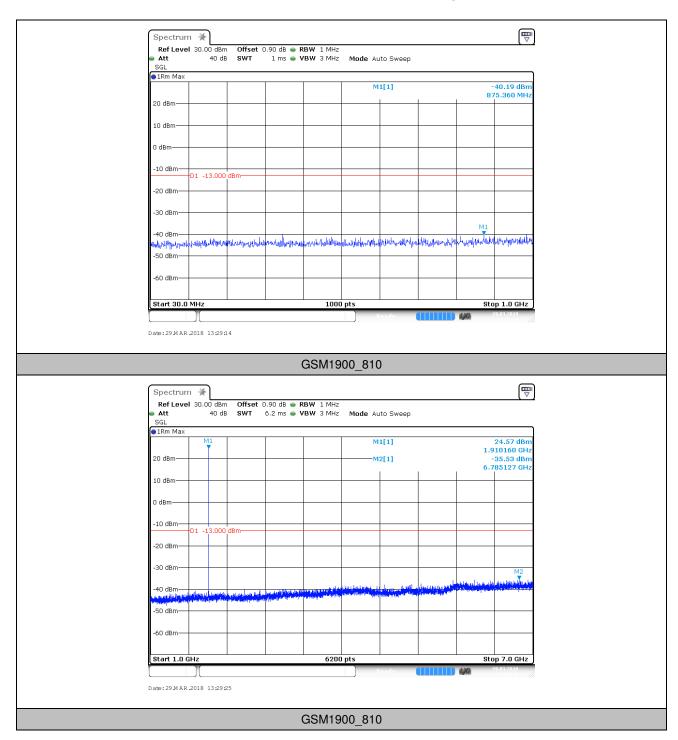
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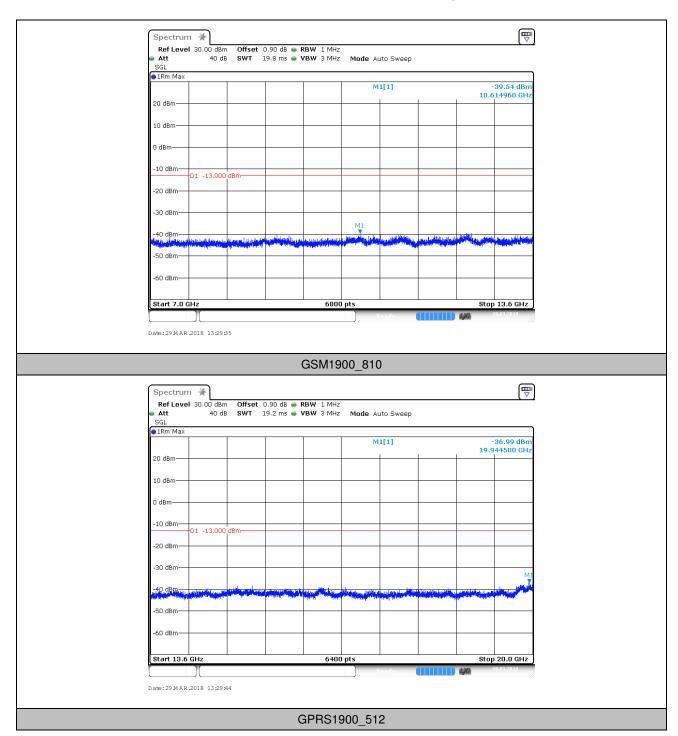
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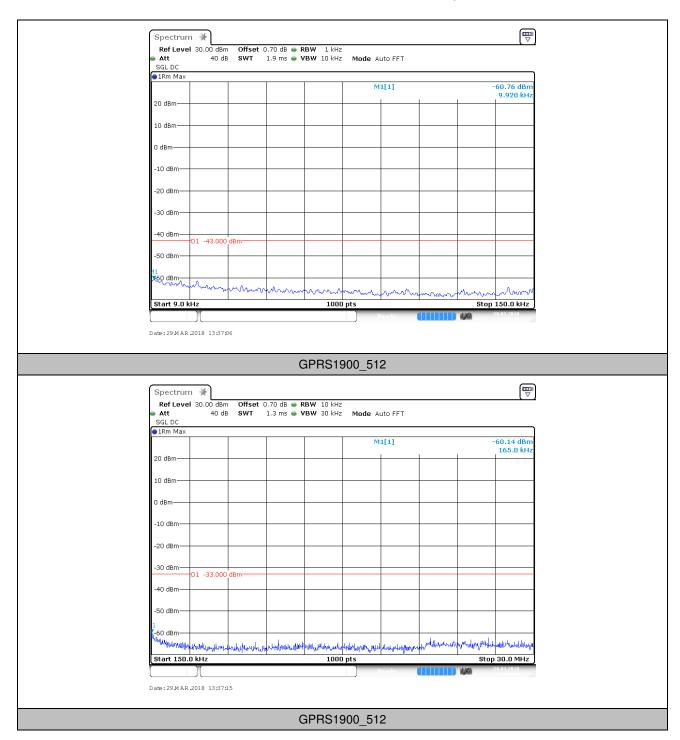
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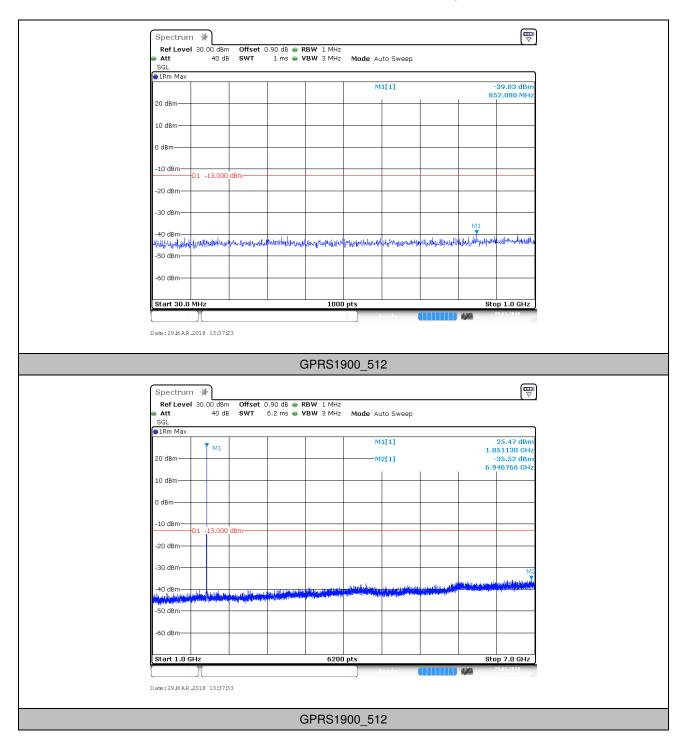
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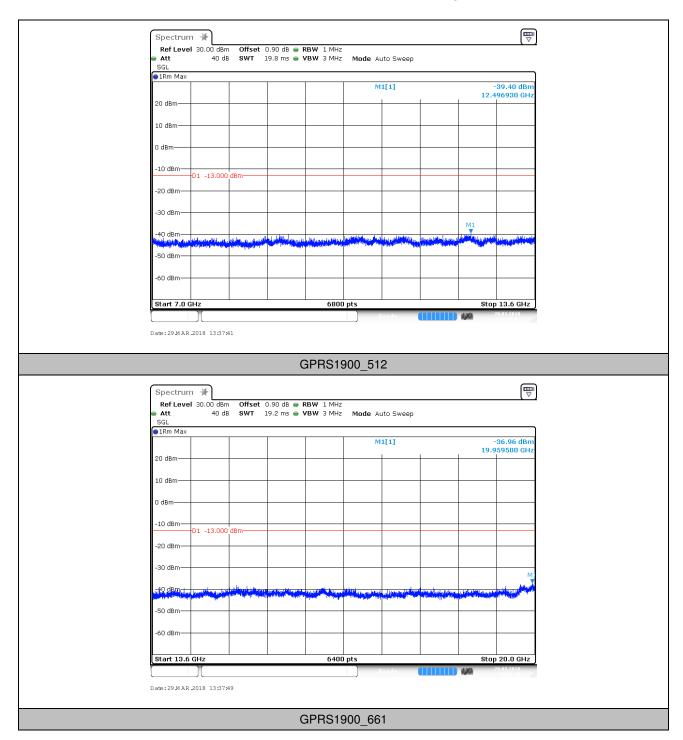
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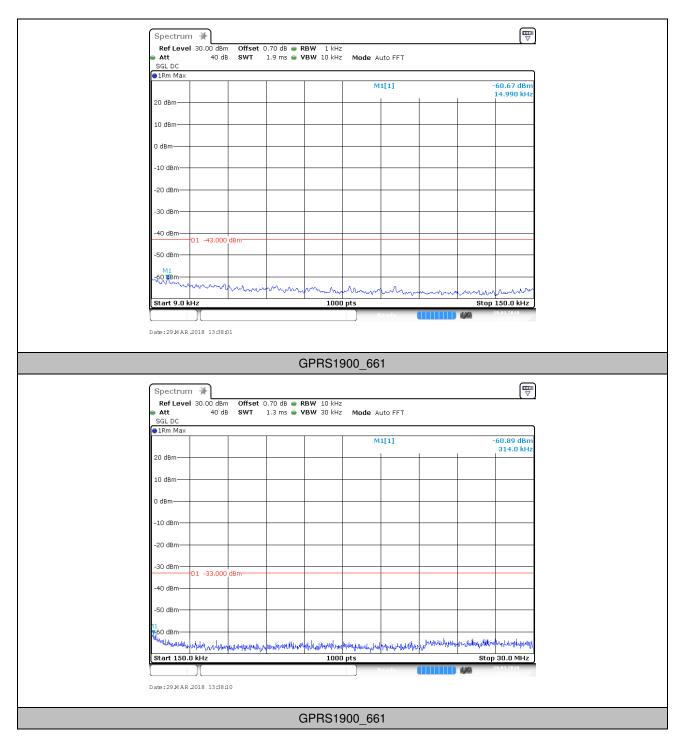
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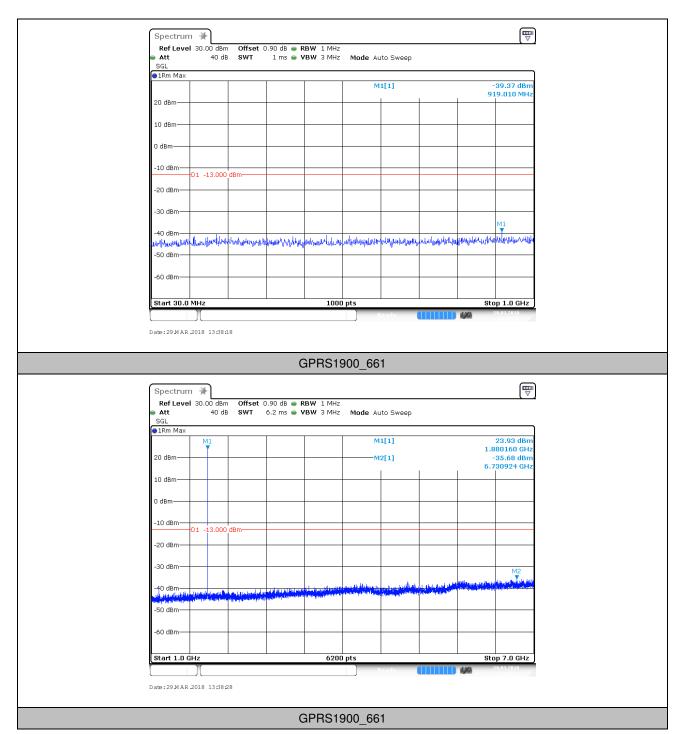
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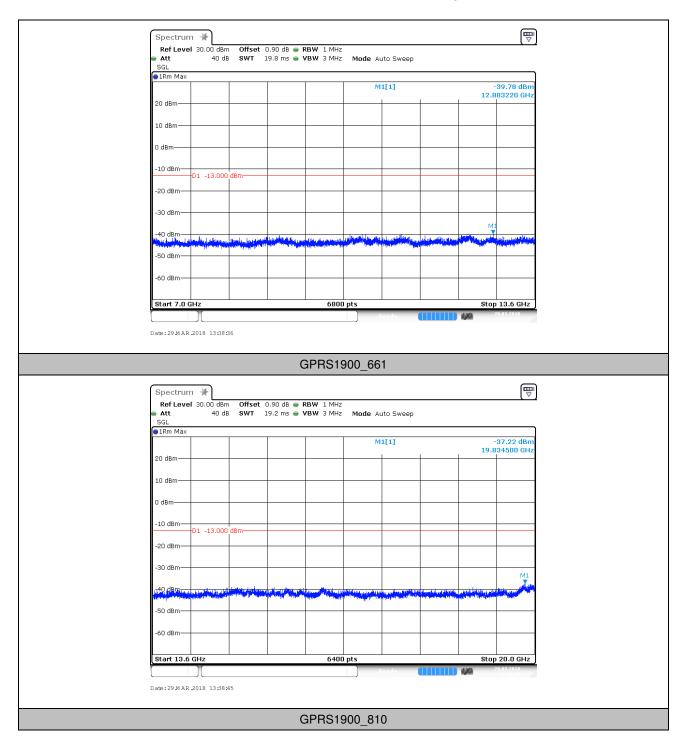
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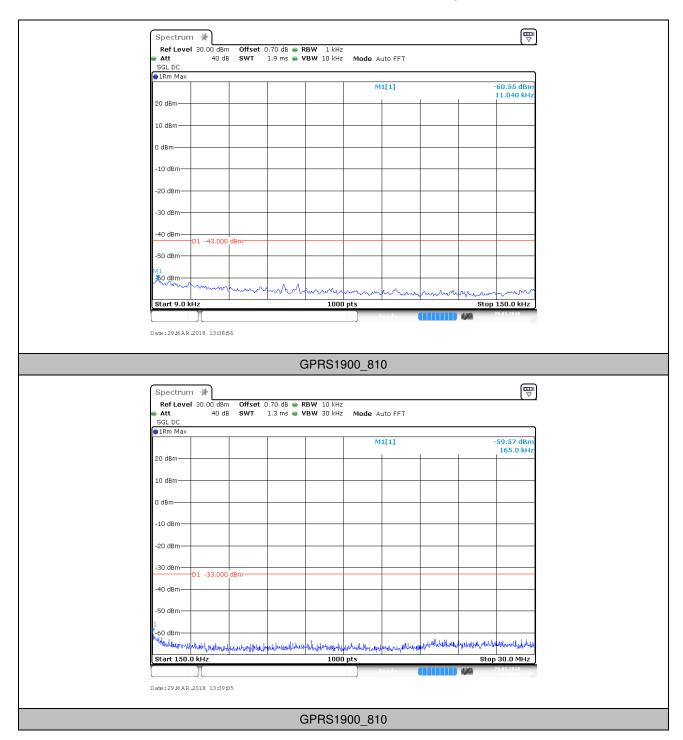
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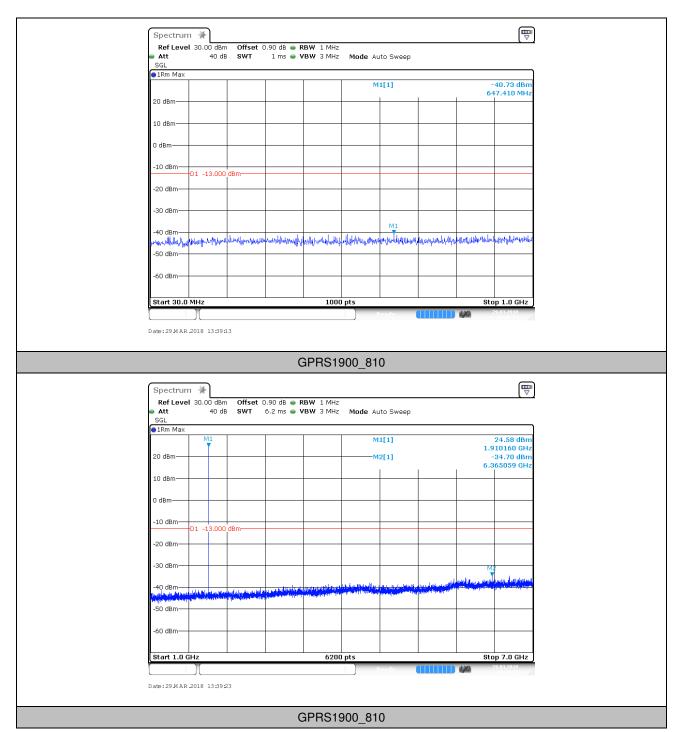
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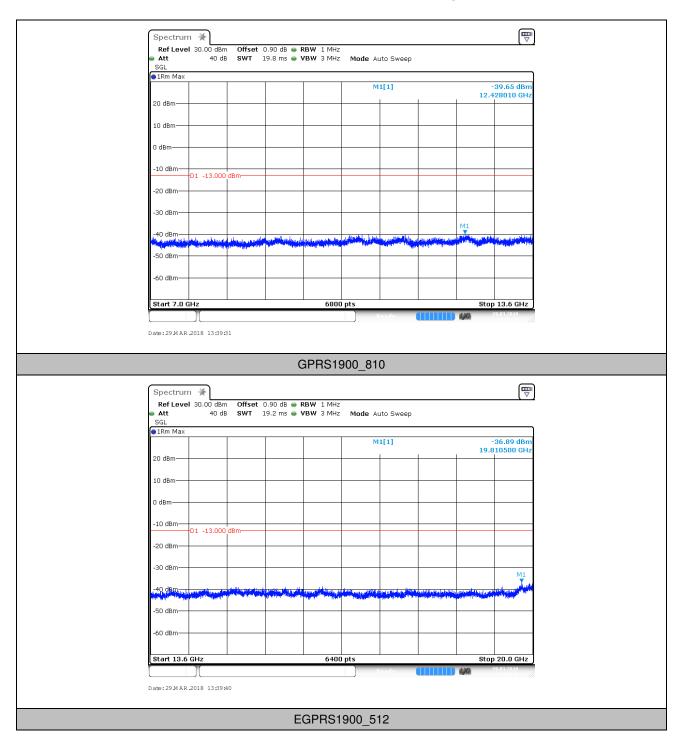
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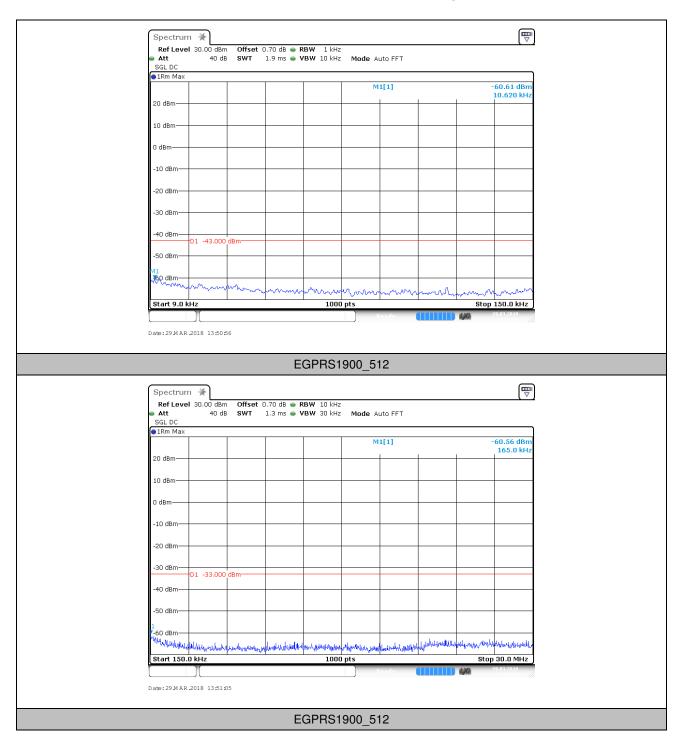
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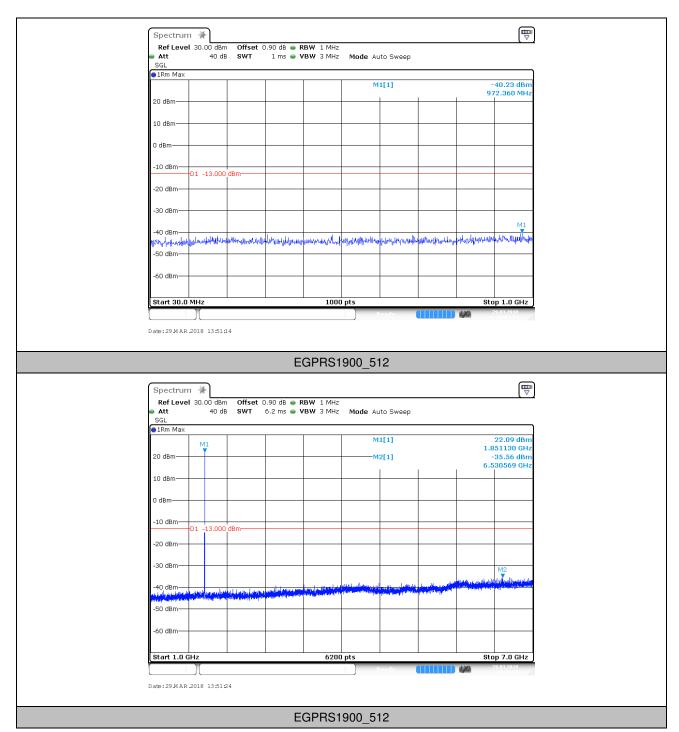
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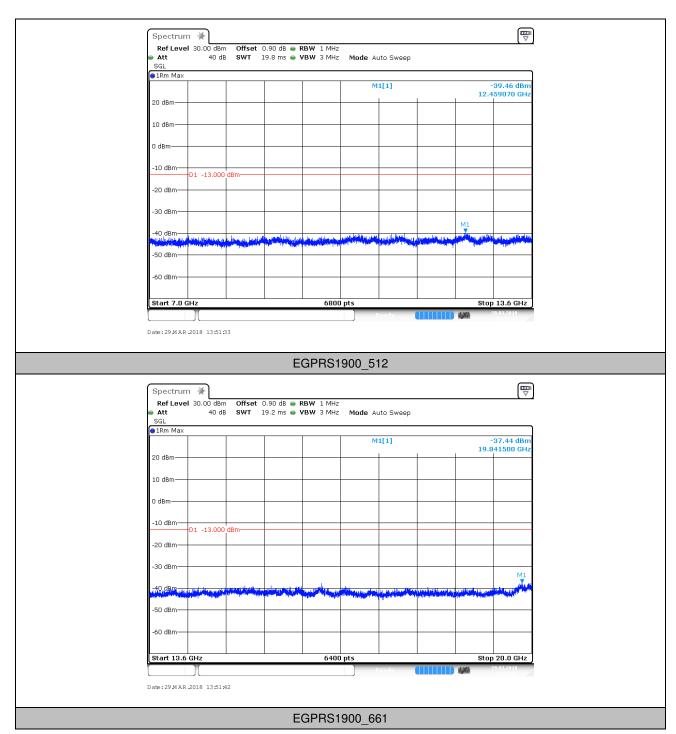
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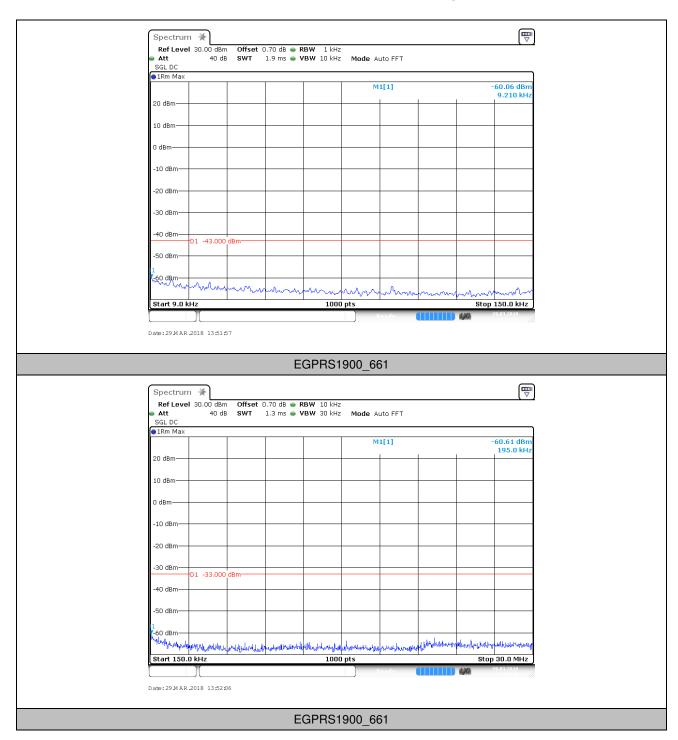
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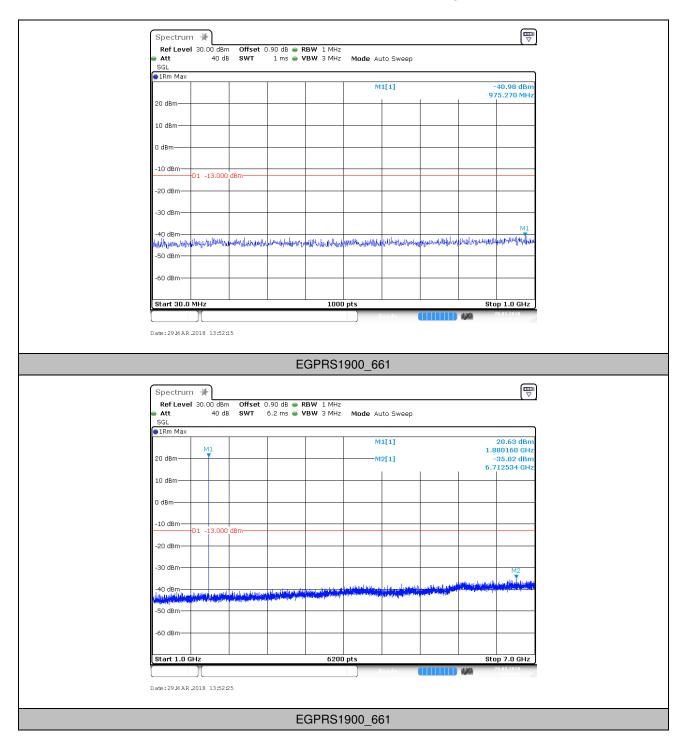
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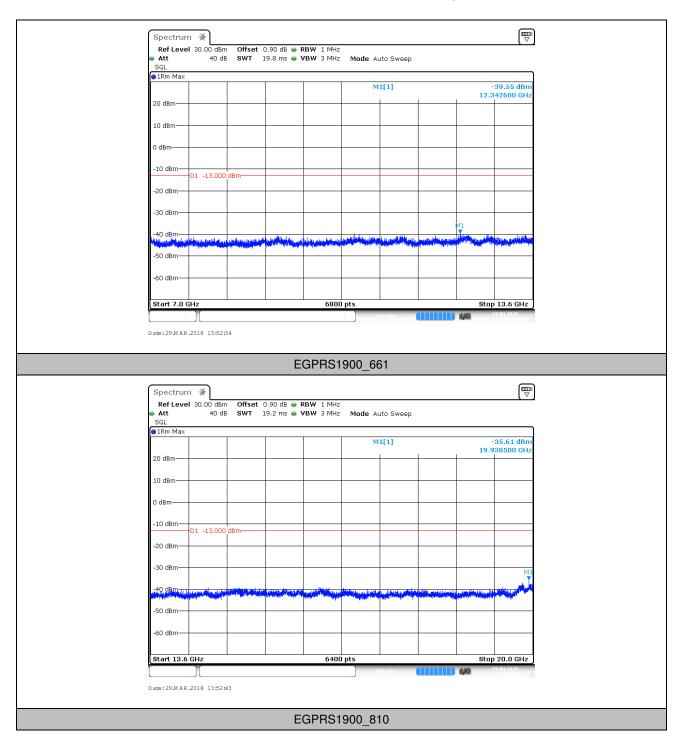
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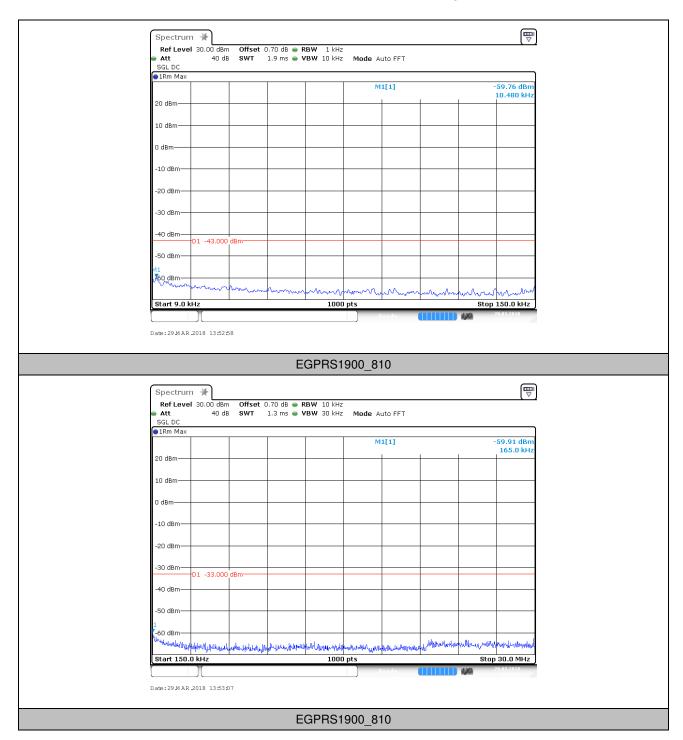
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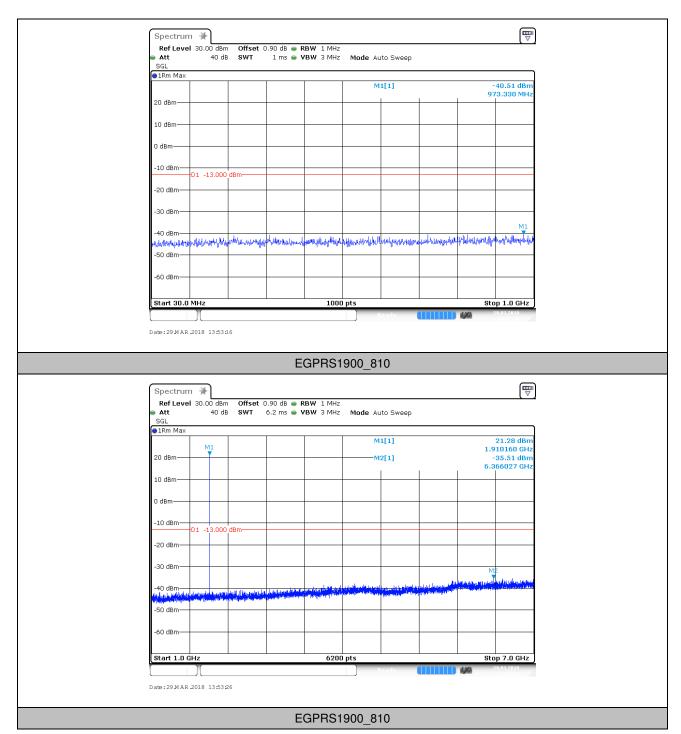
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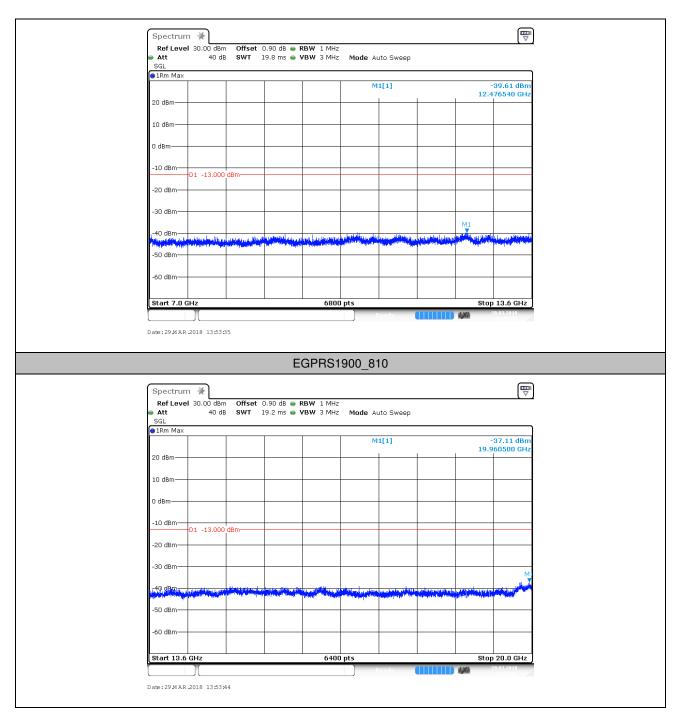
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7. Field Strength of Spurious Radiation

7.1. Test Band = GSM 1900

7.1.1. Test Channel = LCH

Frequency (MHz)	Level (dBm) Limit Line (dBm) Over Limit (d		Over Limit (dB)	Polarization
64.850000	-74.33	-13.00	61.33	Vertical
104.350000	-57.87	-13.00	44.87	Vertical
200.000000	-67.39	-13.00	54.39	Vertical
1276.340000	-50.23	-13.00	37.23	Vertical
3494.250000	-52.28	-13.00	39.28	Vertical
5550.750000	-49.30	-13.00	36.30	Vertical
60.550000	-69.57	-13.00	56.57	Horizontal
104.300000	-57.61	-13.00	44.61	Horizontal
200.000000	-64.83	-13.00	51.83	Horizontal
2115.960000	-43.84	-13.00	30.84	Horizontal
4309.875000	-50.35	-13.00	37.35	Horizontal
5550.000000	-47.17	-13.00	34.17	Horizontal

7.1.2. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization	
59.900000	-74.59	-13.00	61.59	Vertical	
104.300000	-57.51	-13.00	44.51	Vertical	
200.000000	-66.31	-13.00	53.31	Vertical	
1262.400000	-51.23	-13.00	38.23	Vertical	
5726.250000	-42.04	-13.00	29.04	Vertical	
7888.000000	-47.71	-13.00	34.71	Vertical	
61.850000	-69.18	-13.00	56.18	Horizontal	
104.300000	-60.13	-13.00	47.13	Horizontal	
200.000000	-64.68	-13.00	51.68	Horizontal	
1622.380000	-49.54	-13.00	36.54	Horizontal	
3673.875000	-51.68	-13.00	38.68	Horizontal	

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5640.000000	-47.74	-13.00	34.74	Horizontal
00.0.00000		. 0.00	· · · · ·	

7.1.3. Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm) Over Limit (dB)		Polarization	
104.300000	-56.08	-13.00	43.08	Vertical	
200.000000	-67.02	-13.00	54.02	Vertical	
300.000000	-69.36	-13.00	56.36	Vertical	
2766.800000	-41.95	-13.00	28.95	Vertical	
3820.500000	-51.28	-13.00	38.28	Vertical	
5729.250000	-48.71	-13.00	35.71	Vertical	
61.200000	-69.07	-13.00	56.07	Horizontal	
104.300000	-61.36	-13.00	48.36	Horizontal	
200.000000	-65.17	-13.00	52.17	Horizontal	
2229.380000	-44.33	-13.00	31.33	Horizontal	
3575.250000	-51.74	-13.00	38.74	Horizontal	
5729.250000	-48.80	-13.00	35.80	Horizontal	

7.2. Test Band = GSM 850

7.2.1. Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
72.050000	-70.81	-13.00	57.81	Vertical
125.000000	-79.11	-13.00	66.11	Vertical
664.640000	-52.70	-13.00	39.70	Vertical
1648.125000	-44.67	-13.00	31.67	Vertical
2472.187500	-27.21	-13.00	14.21	Vertical
4121.250000	-40.98	-13.00	27.98	Vertical
60.200000	-67.53	-13.00	54.53	Horizontal
1202.500000	-52.13	-13.00	39.13	Horizontal
1647.750000	-38.62	-13.00	25.62	Horizontal
2473.125000	-39.04	-13.00	26.04	Horizontal
4121.250000	-38.23	-13.00	25.23	Horizontal
7987.500000	-47.27	-13.00	34.27	Horizontal



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7.2.2. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization	
65.150000	-75.29	-13.00	62.29	Vertical	
125.000000	-79.47	-13.00	66.47	Vertical	
1195.833333	-50.79	-13.00	37.79	Vertical	
3346.500000	-51.51	-13.00	38.51	Vertical	
3777.375000	-51.04	-13.00	38.04	Vertical	
5595.000000	-46.28	-13.00	33.28	Vertical	
60.900000	-70.74	-13.00	57.74	Horizontal	
1673.812500	-43.95	-13.00	30.95	Horizontal	
2509.125000	-41.42	-13.00	28.42	Horizontal	
4287.000000	-49.83	-13.00	36.83	Horizontal	
5418.000000	-50.14	-13.00	37.14	Horizontal	
7951.500000	-48.06	-13.00	35.06	Horizontal	

7.2.3. Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
62.500000	-73.45	-13.00	60.45	Vertical
125.000000	-79.12	-13.00	66.12	Vertical
262.500000	-77.17	-13.00	64.17	Vertical
1813.312500	-41.58	-13.00	28.58	Vertical
2546.062500	-39.41	-13.00	26.41	Vertical
3395.250000	-50.01	-13.00	37.01	Vertical
61.550000	-68.76	-13.00	55.76	Horizontal
104.300000	-83.25	-13.00	70.25	Horizontal
423.150000	-50.60	-13.00	37.60	Horizontal
1698.187500	-44.10	-13.00	31.10	Horizontal
2546.625000	-38.12	-13.00	25.12	Horizontal
3394.500000	-50.52	-13.00	37.52	Horizontal

NOTE:

- 1) All modes were tested, but the data presented above is the worst case.the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) We have tested all modulation, but only the worst case data presented in this report.



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8. Frequency Stability

8.1. Frequency Error Vs Voltage

			Voltage)			
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
		VL	TN	14.11	0.017118	2.5	PASS
	128	VN	TN	11.85	0.014376	2.5	PASS
		VH	TN	13.62	0.016531	2.5 PASS	
		VL	TN	14.66	0.017521	2.5	PASS
GSM850	190	VN	TN	12.24	0.014626	2.5	PASS
		VH	TN	13.59	0.016247	2.5	PASS
	251	VL	TN	16.01	0.018866	2.5	PASS
		VN	TN	15.17	0.017877	2.5	PASS
		VH	TN	14.01	0.016508	2.5	PASS
	512	VL	TN	35.51	0.019195	2.5	PASS
		VN	TN	37.94	0.020504	2.5	PASS
		VH	TN	38.42	0.020765	2.5	PASS
		VL	TN	37.10	0.019732	2.5	PASS
GSM1900	661	VN	TN	39.03	0.020763	2.5	PASS
		VH	TN	37.48	0.019938	2.5	PASS
		VL	TN	37.10	0.019424	2.5	PASS
	810	VN	TN	35.71	0.018697	2.5	PASS
		VH	TN	30.96	0.016212	2.5	PASS

8.2. Frequency Error Vs Temperature

			Tempe	erature			
Band	Channel	Voltage (Vdc)	Temperatur e (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
			-30	9.98	0.012104	2.5	PASS
			-20	12.01	0.014572	2.5	PASS
			-10	11.49	(ppm) (ppm) Verdict 0.012104 2.5 PASS 0.014572 2.5 PASS 0.013945 2.5 PASS 0.012339 2.5 PASS 0.012065 2.5 PASS 0.013162 2.5 PASS 0.012888 2.5 PASS 0.013279 2.5 PASS 0.013358 2.5 PASS 0.016556 2.5 PASS 0.015707 2.5 PASS 0.014356 2.5 PASS 0.019798 2.5 PASS 0.019991 2.5 PASS		
			0	10.17	0.012339	2.5	PASS
	128	VN	10	9.94	0.012065	2.5	PASS
		20 30 40 50	20	10.85	0.013162	2.5	PASS
			30	10.62	0.012888	2.5	PASS
GSM850			10.94	0.013279	2.5	PASS	
			50	11.01	0.013358	2.5	PASS
			-30	13.85	0.016556	2.5	PASS
			-20	13.14	0.015707	n) (ppm) Verdict 104 2.5 PASS 572 2.5 PASS 945 2.5 PASS 339 2.5 PASS 065 2.5 PASS 162 2.5 PASS 279 2.5 PASS 279 2.5 PASS 556 2.5 PASS 707 2.5 PASS 798 2.5 PASS 991 2.5 PASS	
	190	VN	-10	12.01	0.014356	2.5	PASS
	190	VIV	0 16.56 0.01979	0.019798	2.5	PASS	
			10	16.72	0.019991	2.5	PASS
			20	12.75	0.015244	2.5	PASS

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			30	13.37	0.015977	2.5	PASS
			40	12.72	0.015977	2.5	
			50	17.08	0.013203	2.5	
			-30	14.37	0.020415	2.5	
			-20	13.69	0.016128	2.5	
			-10	13.33	0.015709	2.5	
	054	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0	15.08	0.017763	2.5	
	251	VN	10	12.49	0.014720	2.5	
			20	16.24	0.019133	2.5	
			30	14.98	0.017649	2.5	
			40	13.82	0.016280	2.5	
			50	15.53	0.018296	2.5	
			-30	36.58	0.019771	2.5	
			-20	31.48	0.017014	2.5	
			-10	33.55	0.018130	2.5	PASS
			0	34.90	0.018863	2.5	PASS
	512	VN	10	37.06	0.020033	2.5	PASS
			20	38.78	0.020957	2.5	PASS PASS PASS PASS PASS PASS PASS PASS
			30	31.96	0.017275	2.5	PASS
			40	38.58	0.020853	2.5	PASS PASS PASS PASS PASS PASS PASS PASS
			50	33.45	0.018078	2.5	PASS
			-30	35.64	0.018959	2.5	PASS
			-20	37.71	0.020058	2.5	PASS
			-10	36.64	0.019492	2.5	PASS
	661	VN	0	35.58	0.018925	2.5	PASS
GSM1900			10	42.33	0.022514	2.5	PASS
			20	40.49	0.021535	2.5	PASS
			30	41.16	0.021896	2.5	PASS
			40	27.38	0.014563	2.5	PASS
			50	33.77	0.017963	2.5	PASS
			-30	35.42	0.018545	2.5	PASS
			-20	35.97	0.018833	2.5	PASS
			-10	37.68	0.019729	2.5	PASS
			0	33.64	0.017615	2.5	PASS
	810		10	34.45	0.018038	2.5	PASS
			20	33.38	0.017480	17275 2.5 PASS 20853 2.5 PASS 18078 2.5 PASS 18959 2.5 PASS 20058 2.5 PASS 19492 2.5 PASS 18925 2.5 PASS 22514 2.5 PASS 21535 2.5 PASS 21896 2.5 PASS 17963 2.5 PASS 18833 2.5 PASS 19729 2.5 PASS 17615 2.5 PASS 17480 2.5 PASS 22315 2.5 PASS	
			30	42.62	0.022315		
			40	30.83	0.016145	2.5	PASS
			50	29.86	0.015637	2.5	PASS

The End