Appendix A: Effective (Isotropic) Radiated Power Output Data

Test Result

Band	Channel	PCL	Conducted Power (dBm)	ERP/EIRP (dBm)	ERP/EIRP Limit (dBm)	Verdict
GSM850	128	5	33.60	26.45	38.45	PASS
GSM850	190	5	33.77	26.62	38.45	PASS
GSM850	251	5	33.52	26.37	38.45	PASS
GSM1900	512	0	30.43	29.13	33.00	PASS
GSM1900	661	0	30.25	28.95	33.00	PASS
GSM1900	810	0	30.09	28.79	33.00	PASS

Band	Channel	PCL	Slot	Conducted Power (dBm)	ERP/EIRP (dBm)	ERP/EIRP Limit (dBm)	Verdict
GPRS850	128	5	1	33.61	26.46	38.45	PASS
GPRS850	128	5	2	31.52	24.37	38.45	PASS
GPRS850	128	5	3	29.70	22.55	38.45	PASS
GPRS850	128	5	4	27.65	20.5	38.45	PASS
GPRS850	190	5	1	33.72	26.57	38.45	PASS
GPRS850	190	5	2	31.67	24.52	38.45	PASS
GPRS850	190	5	3	29.85	22.7	38.45	PASS
GPRS850	190	5	4	27.81	20.66	38.45	PASS
GPRS850	251	5	1	33.47	26.32	38.45	PASS
GPRS850	251	5	2	31.58	24.43	38.45	PASS
GPRS850	251	5	3	29.80	22.65	38.45	PASS
GPRS850	251	5	4	27.81	20.66	38.45	PASS
GPRS1900	512	0	1	30.42	29.12	33.00	PASS
GPRS1900	512	0	2	28.29	26.99	33.00	PASS
GPRS1900	512	0	3	26.70	25.4	33.00	PASS
GPRS1900	512	0	4	24.56	23.26	33.00	PASS
GPRS1900	661	0	1	30.23	28.93	33.00	PASS
GPRS1900	661	0	2	28.13	26.83	33.00	PASS
GPRS1900	661	0	3	26.58	25.28	33.00	PASS
GPRS1900	661	0	4	24.52	23.22	33.00	PASS
GPRS1900	810	0	1	30.08	28.78	33.00	PASS
GPRS1900	810	0	2	27.70	26.4	33.00	PASS
GPRS1900	810	0	3	26.22	24.92	33.00	PASS
GPRS1900	810	0	4	24.23	22.93	33.00	PASS

Band	Channel	PCL	Slot	Conducted Power (dBm)	ERP/EIRP (dBm)	ERP/EIRP Limit (dBm)	Verdict
EGPRS850	128	8	1	26.78	19.63	38.45	PASS
EGPRS850	128	8	2	25.84	18.69	38.45	PASS
EGPRS850	128	8	3	23.25	16.1	38.45	PASS
EGPRS850	128	8	4	20.85	13.7	38.45	PASS
EGPRS850	190	8	1	26.51	19.36	38.45	PASS
EGPRS850	190	8	2	25.55	18.4	38.45	PASS
EGPRS850	190	8	3	23.07	15.92	38.45	PASS
EGPRS850	190	8	4	20.56	13.41	38.45	PASS
EGPRS850	251	8	1	26.23	19.08	38.45	PASS
EGPRS850	251	8	2	25.30	18.15	38.45	PASS
EGPRS850	251	8	3	22.60	15.45	38.45	PASS
EGPRS850	251	8	4	20.16	13.01	38.45	PASS
EGPRS1900	512	2	1	26.45	25.15	33.00	PASS
EGPRS1900	512	2	2	24.68	23.38	33.00	PASS
EGPRS1900	512	2	3	21.81	20.51	33.00	PASS
EGPRS1900	512	2	4	20.16	18.86	33.00	PASS
EGPRS1900	661	2	1	26.50	25.2	33.00	PASS
EGPRS1900	661	2	2	24.88	23.58	33.00	PASS
EGPRS1900	661	2	3	22.15	20.85	33.00	PASS
EGPRS1900	661	2	4	20.40	19.1	33.00	PASS
EGPRS1900	810	2	1	26.52	25.22	33.00	PASS
EGPRS1900	810	2	2	24.88	23.58	33.00	PASS
EGPRS1900	810	2	3	22.07	20.77	33.00	PASS
EGPRS1900	810	2	4	20.36	19.06	33.00	PASS

Remark: EIRP (dBm) = Conducted power (dBm) + Antenna Gain (dBi). (For GSM1900)
ERP (dBm) = EIRP (dBm) - 2.15 (dB). (For GSM850)

Appendix B: Peak-to-Average Ratio(CCDF)

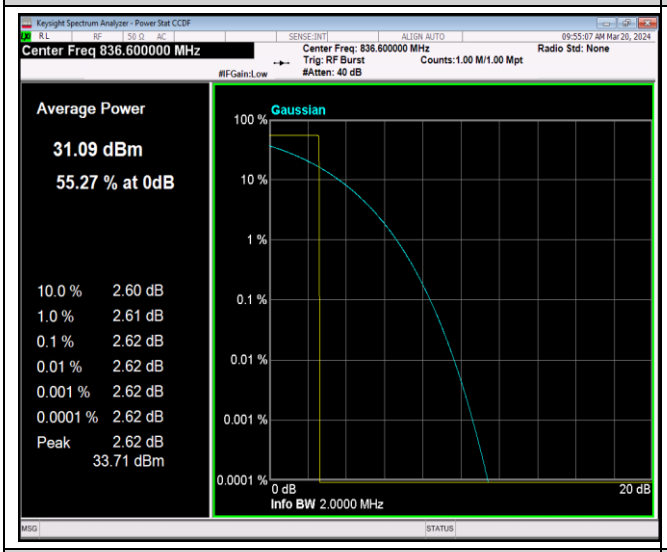
Test Result

Band	Channel	PCL	Result(dB)	Limit(dB)	Verdict
GSM850	190	5	2.62	13	PASS
EGPRS850	190	8	5.57	13	PASS
GSM1900	661	0	2.63	13	PASS
EGPRS1900	661	2	5.25	13	PASS

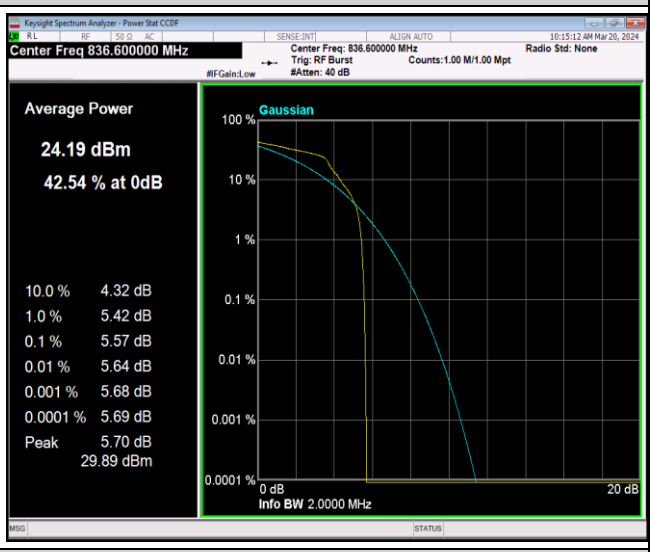
Remark: All channel and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

GSM850-190



EGPRS850-190



GSM1900-661

EGPRS1900-661

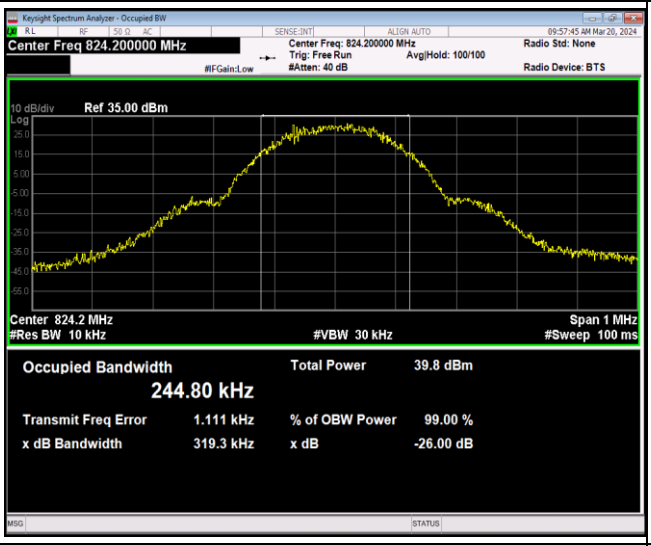
Appendix C: 26dB Bandwidth and Occupied Bandwidth

Test Result

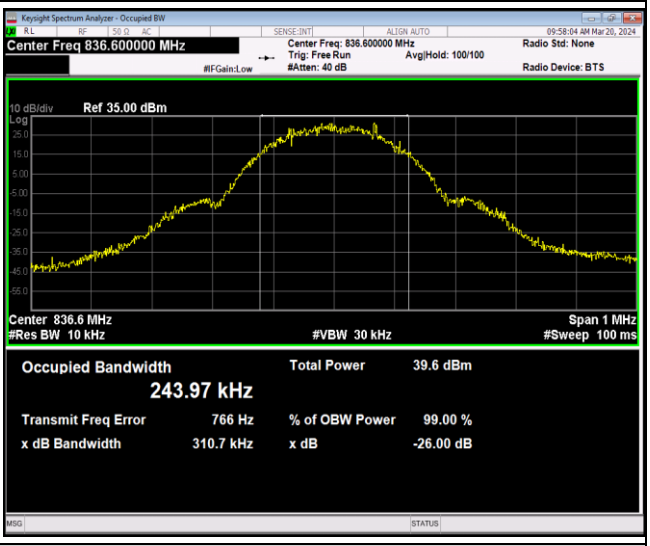
Band	Channel	PCL	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GSM850	128	5	0.24480	0.3193	---	PASS
GSM850	190	5	0.24397	0.3107	---	PASS
GSM850	251	5	0.24221	0.3152	---	PASS
EGPRS850	128	8	0.24400	0.3104	---	PASS
EGPRS850	190	8	0.24764	0.3078	---	PASS
EGPRS850	251	8	0.24050	0.3049	---	PASS
GSM1900	512	0	0.24357	0.3094	---	PASS
GSM1900	661	0	0.24453	0.3166	---	PASS
GSM1900	810	0	0.24437	0.3164	---	PASS
EGPRS1900	512	2	0.24833	0.3168	---	PASS
EGPRS1900	661	2	0.24723	0.3156	---	PASS
EGPRS1900	810	2	0.24618	0.3165	---	PASS

Test Graphs

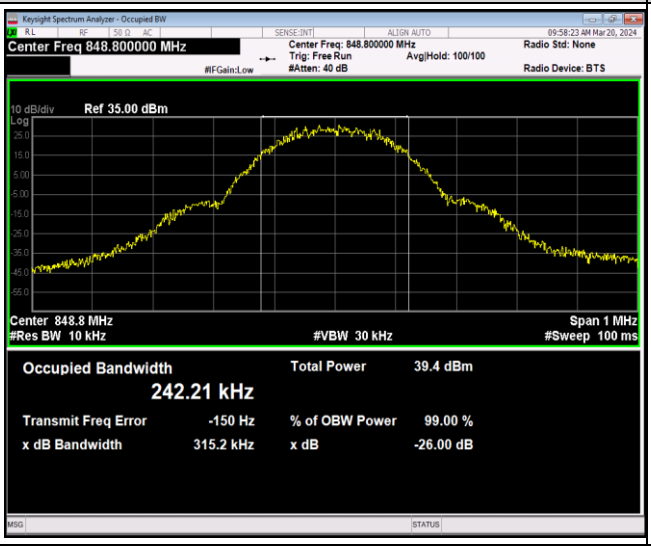
GSM850-128



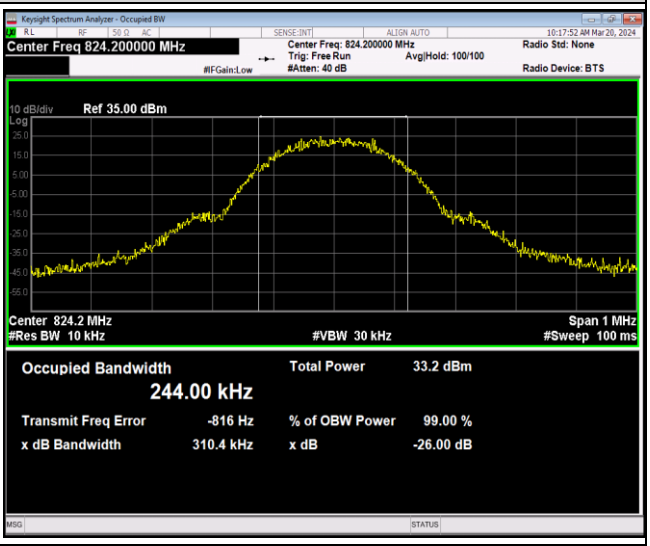
GSM850-190



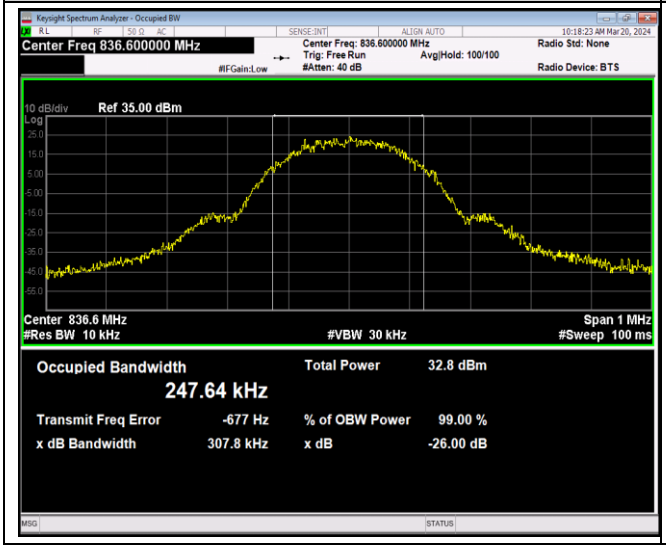
GSM850-251



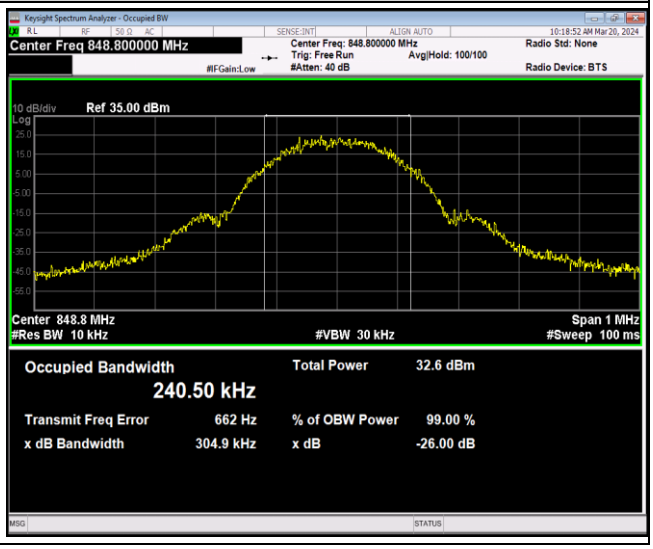
EGPRS850-128



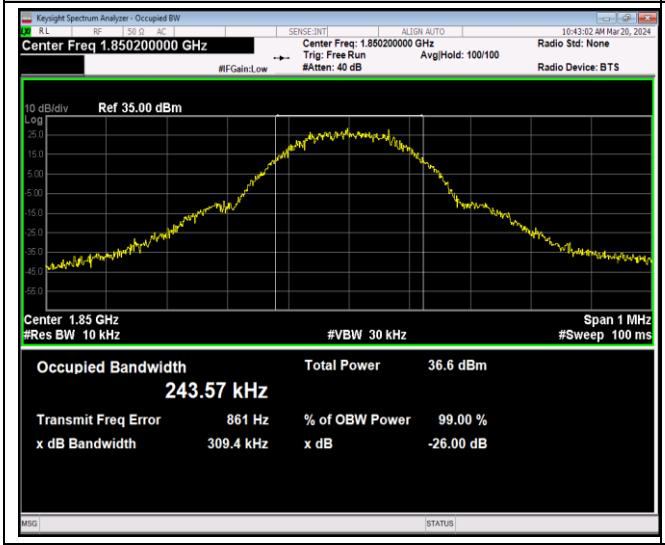
EGPRS850-190



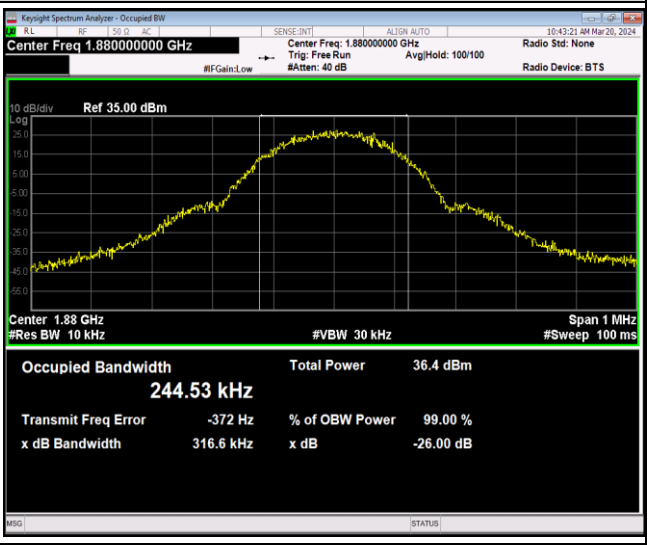
EGPRS850-251



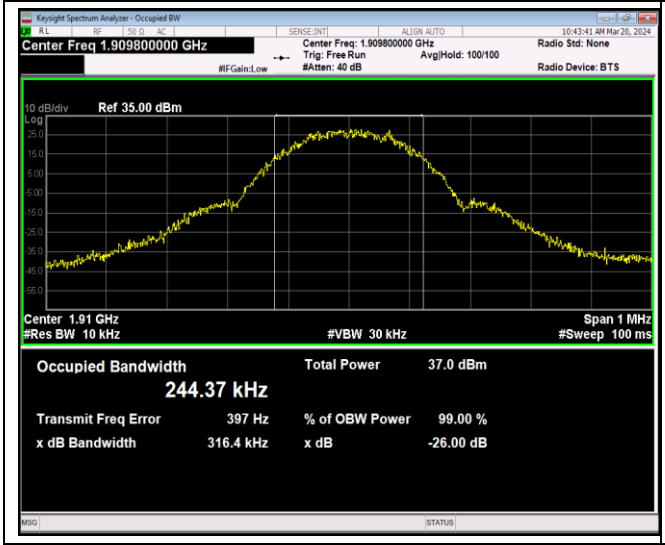
GSM1900-512



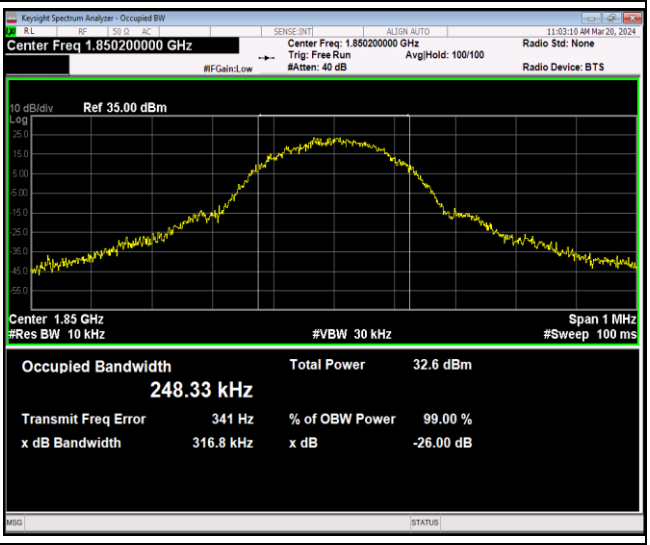
GSM1900-661



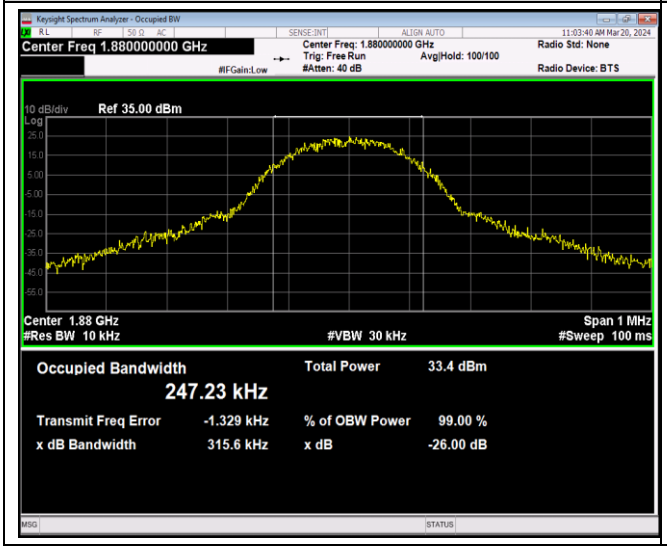
GSM1900-810



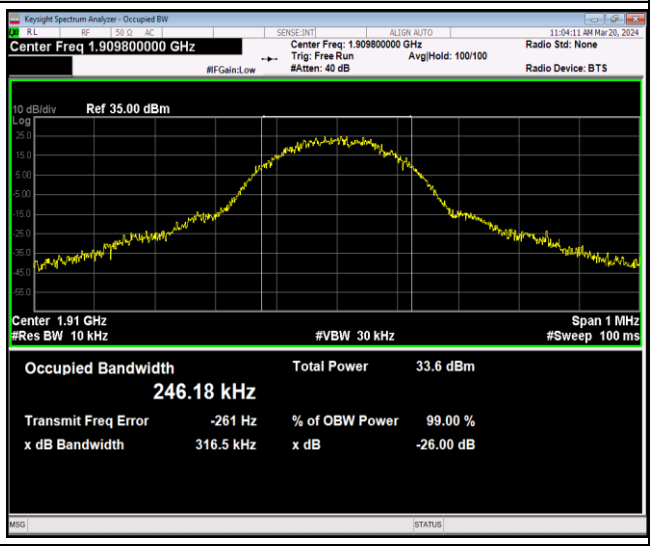
EGPRS1900-512



EGPRS1900-661



EGPRS1900-810



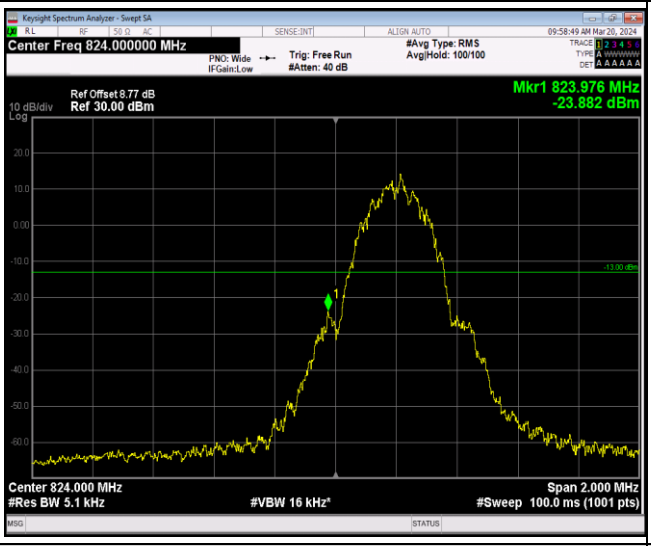
Appendix D: Band Edge

Test Result

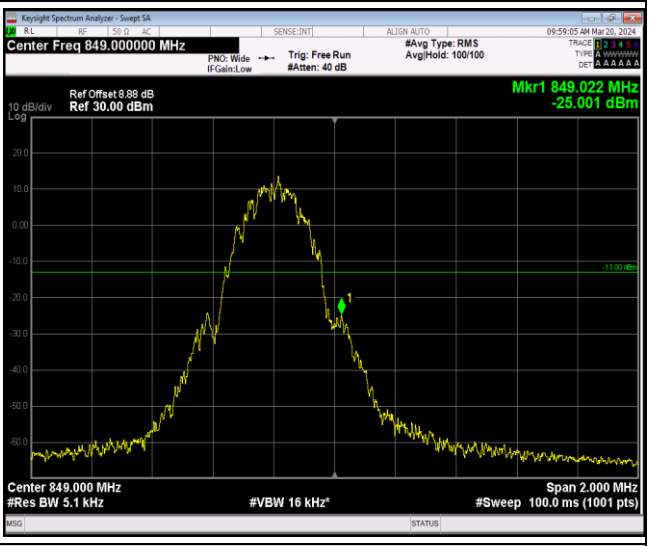
Band	Channel	PCL	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM850	128	5	823.98	-23.88	-13	PASS
GSM850	251	5	849.02	-25.00	-13	PASS
EGPRS850	128	8	823.99	-33.38	-13	PASS
EGPRS850	251	8	849.01	-32.47	-13	PASS
GSM1900	512	0	1849.98	-15.30	-13	PASS
GSM1900	810	0	1910.02	-13.63	-13	PASS
EGPRS1900	512	2	1849.99	-20.35	-13	PASS
EGPRS1900	810	2	1910.00	-20.36	-13	PASS

Test Graphs

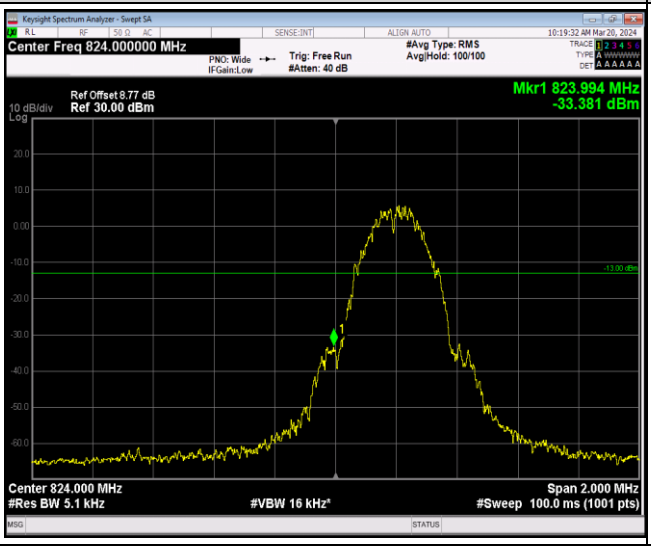
GSM850-128



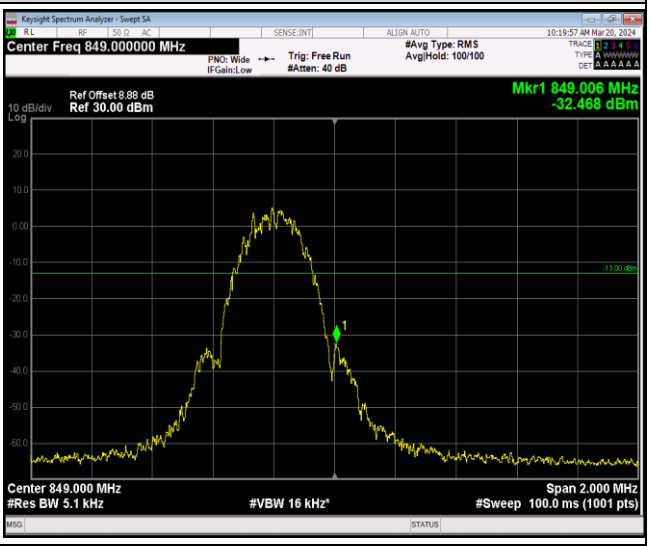
GSM850-251



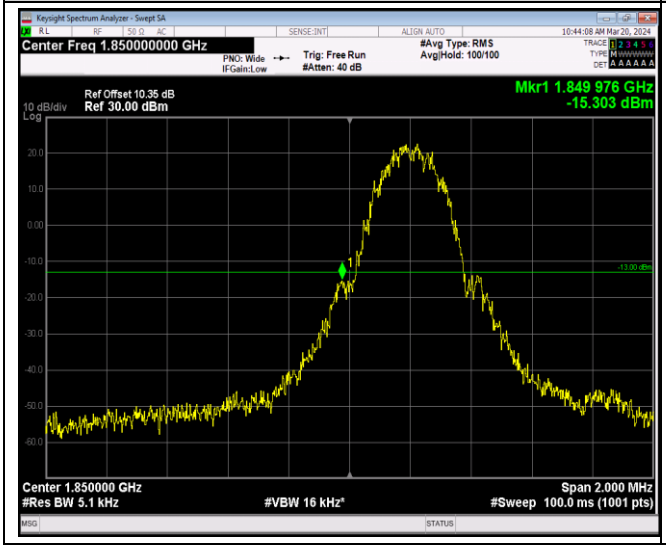
EGPRS850-128



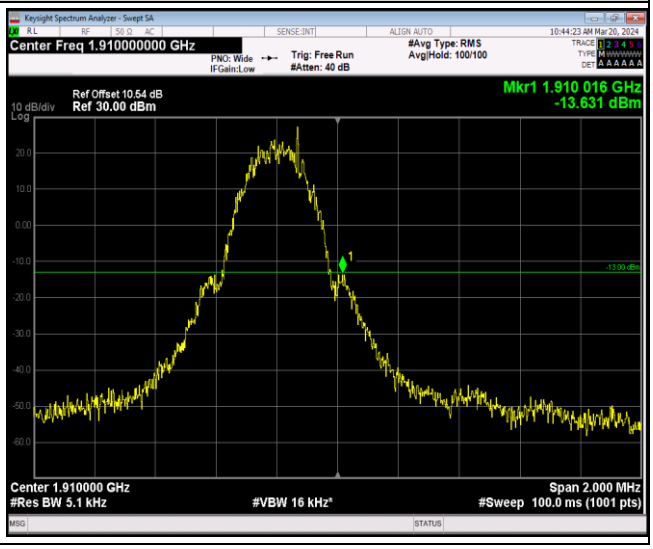
EGPRS850-251

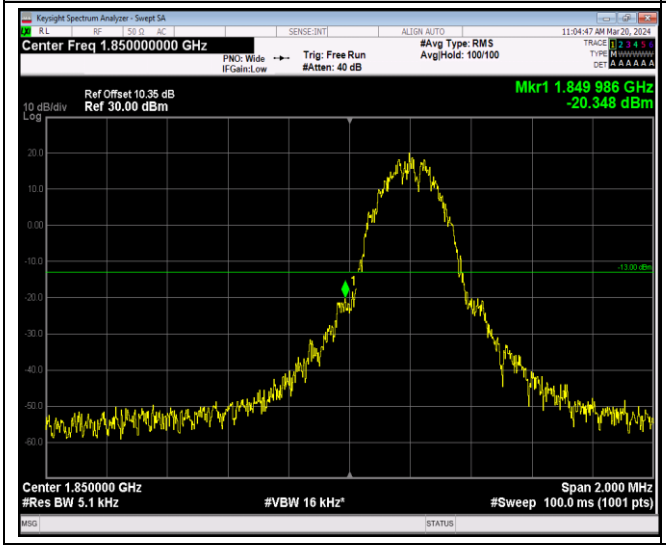
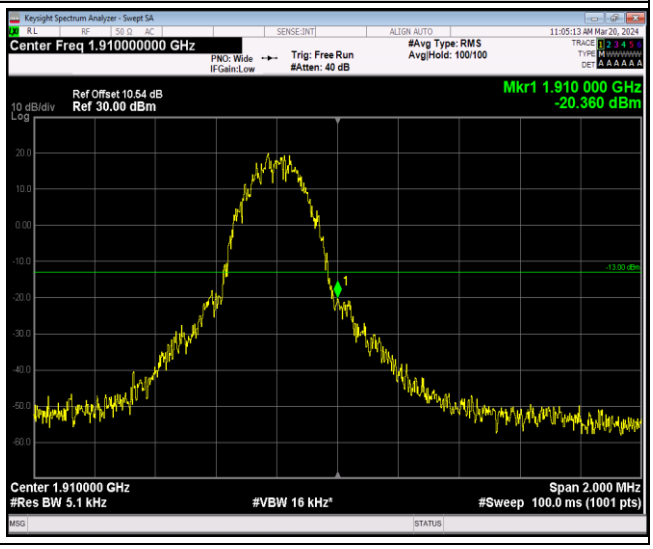


GSM1900-512



GSM1900-810



EGPRS1900-512	EGPRS1900-810
	

Appendix E: Conducted Spurious Emission

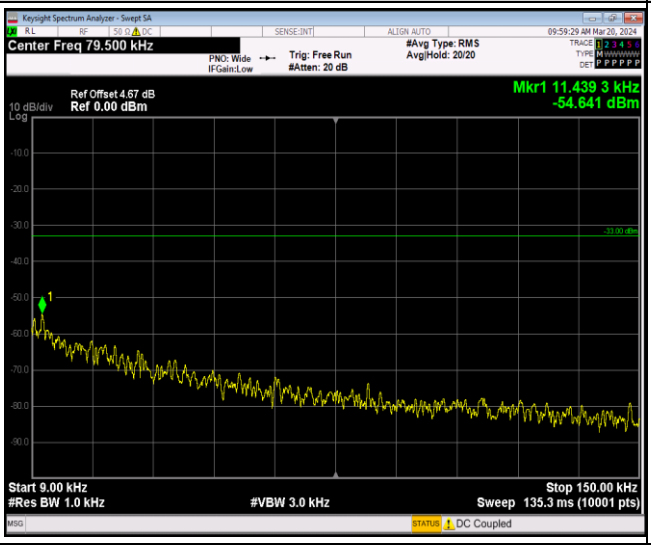
Test Result

Band	Channel	PCL	Frequency Range(MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM850	128	5	0.009~0.15MHz	0.01	-54.64	-33	PASS
GSM850	128	5	0.15~30MHz	0.15	-42.79	-13	PASS
GSM850	128	5	30~1000MHz	286.18	-44.98	-13	PASS
GSM850	128	5	1000~10000MHz	1648.3	-27.54	-13	PASS
GSM850	190	5	0.009~0.15MHz	0.01	-56.1	-33	PASS
GSM850	190	5	0.15~30MHz	0.15	-44.95	-13	PASS
GSM850	190	5	30~1000MHz	938.57	-43.96	-13	PASS
GSM850	190	5	1000~10000MHz	1673.5	-29.26	-13	PASS
GSM850	251	5	0.009~0.15MHz	0.01	-53.8	-33	PASS
GSM850	251	5	0.15~30MHz	0.15	-44.6	-13	PASS
GSM850	251	5	30~1000MHz	727.33	-44.12	-13	PASS
GSM850	251	5	1000~10000MHz	2546.2	-30.49	-13	PASS
GSM1900	512	0	0.009~0.15MHz	0.01	-56.52	-43	PASS
GSM1900	512	0	0.15~30MHz	0.15	-44.47	-23	PASS
GSM1900	512	0	30~1000MHz	865.36	-45.88	-13	PASS
GSM1900	512	0	1000~18000MHz	16998.7	-21.99	-13	PASS
GSM1900	661	0	0.009~0.15MHz	0.01	-56.1	-43	PASS
GSM1900	661	0	0.15~30MHz	0.15	-41.78	-23	PASS
GSM1900	661	0	30~1000MHz	542.77	-44.56	-13	PASS
GSM1900	661	0	1000~18000MHz	16249.57	-22.22	-13	PASS
GSM1900	810	0	0.009~0.15MHz	0.01	-57.14	-43	PASS
GSM1900	810	0	0.15~30MHz	0.18	-43.75	-23	PASS
GSM1900	810	0	30~1000MHz	496.44	-44.86	-13	PASS
GSM1900	810	0	1000~18000MHz	16374.23	-22.15	-13	PASS

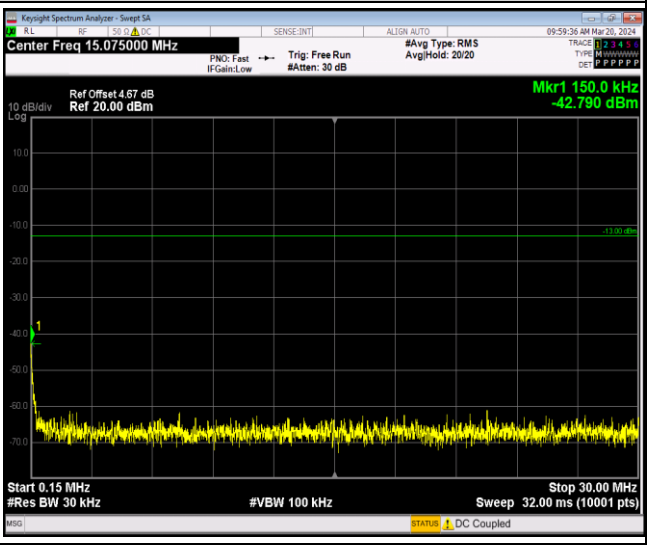
Remark: All channel and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

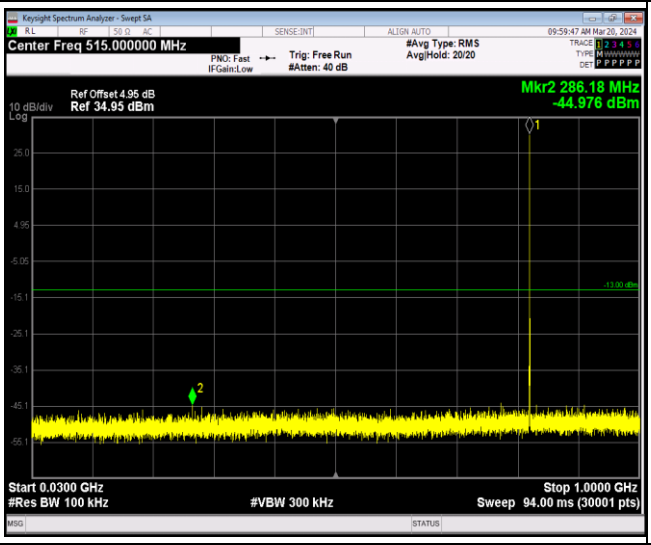
GSM850-128-0.009~0.15MHz



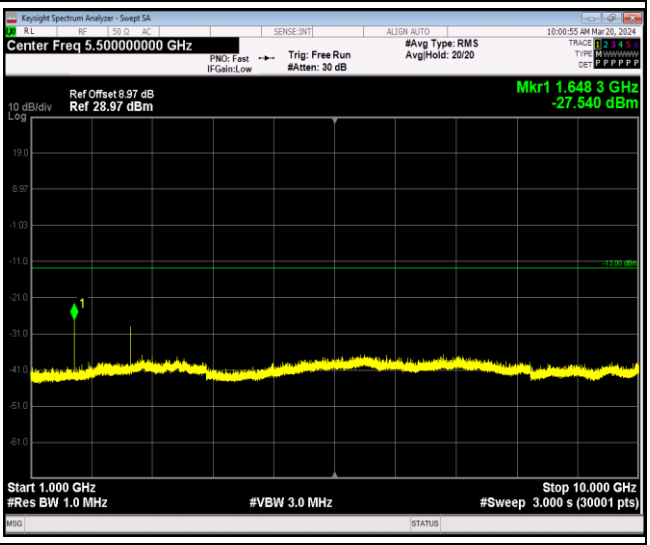
GSM850-128-0.15~30MHz



GSM850-128-30~1000MHz

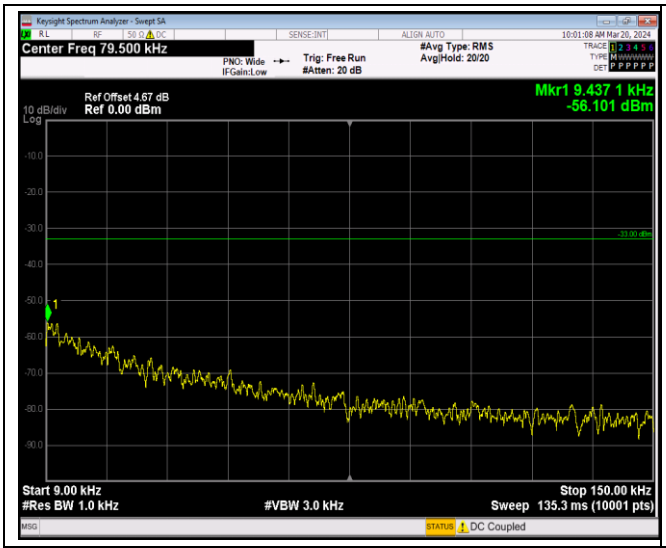


GSM850-128-1000~10000MHz

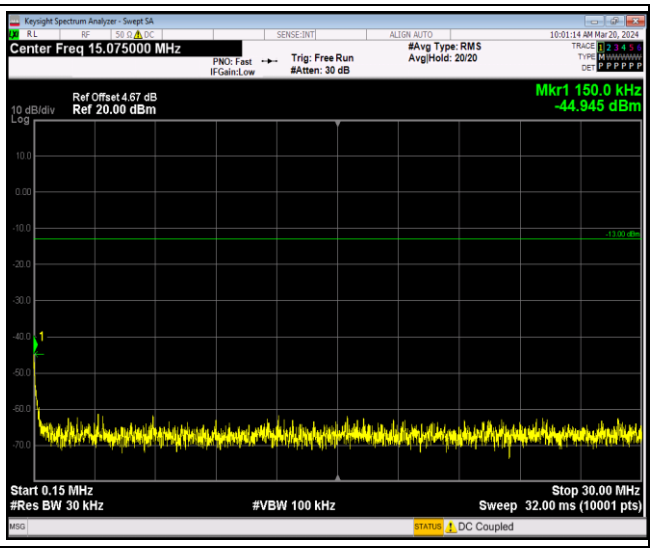


GSM850-190-0.009~0.15MHz

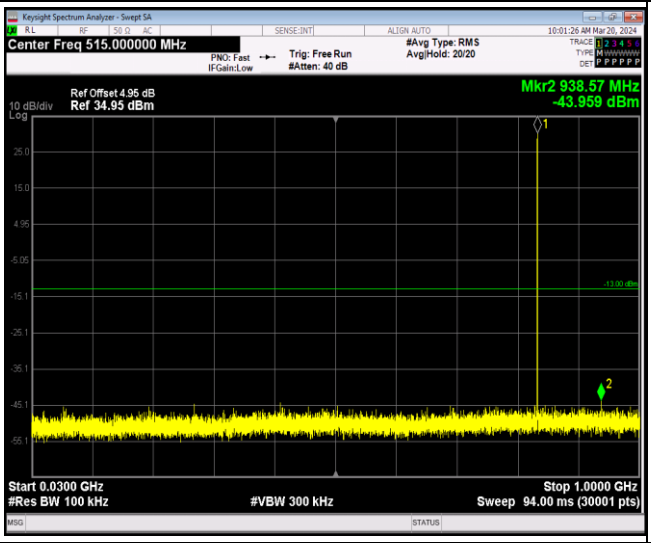
GSM850-190-0.15~30MHz



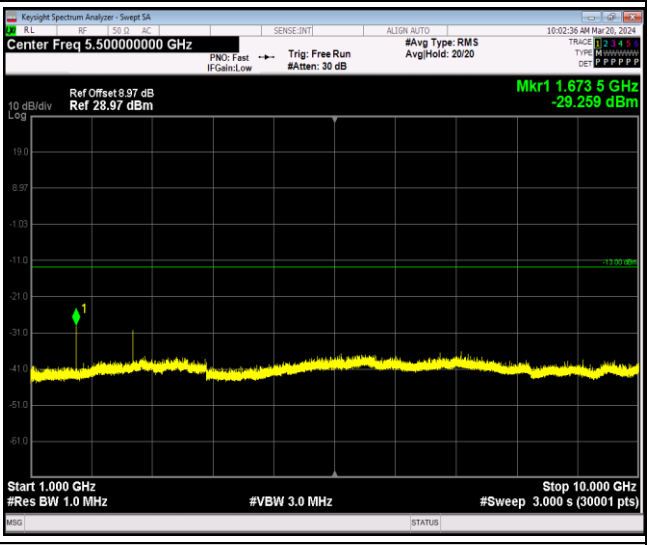
GSM850-190-30~1000MHz



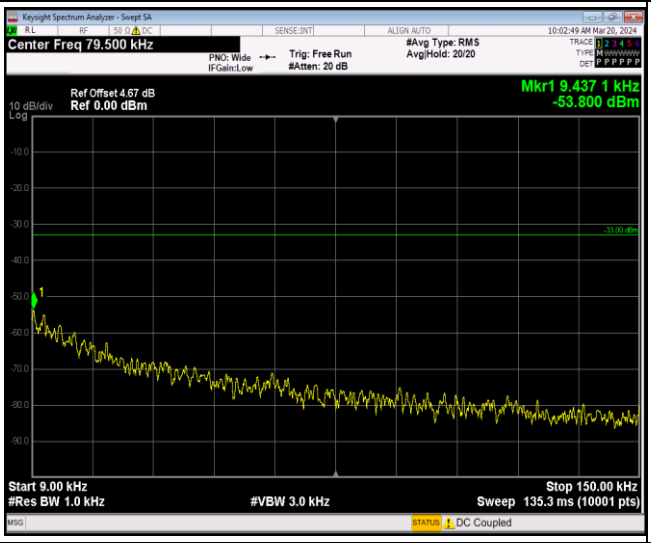
GSM850-190-1000~10000MHz



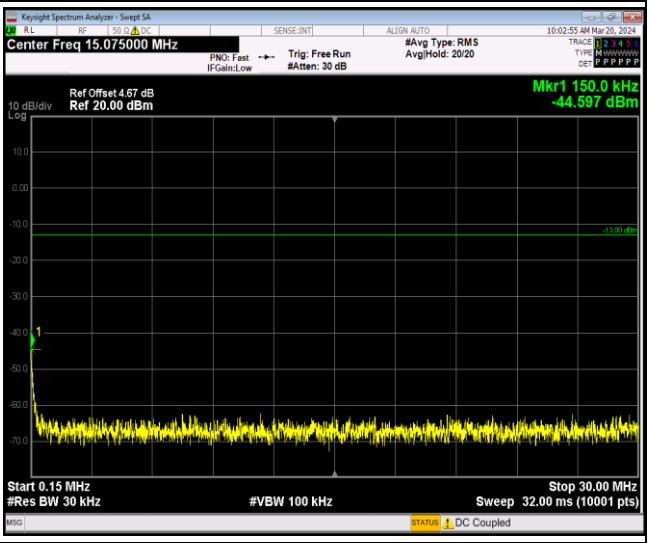
GSM850-251-0.009~0.15MHz



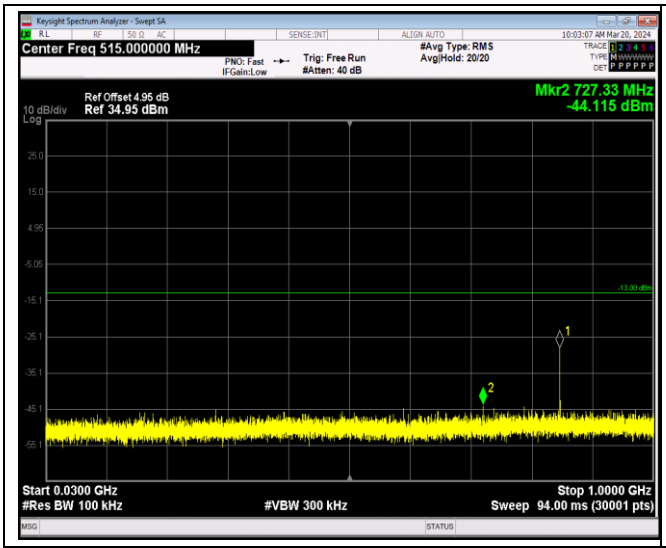
GSM850-251-0.15~30MHz



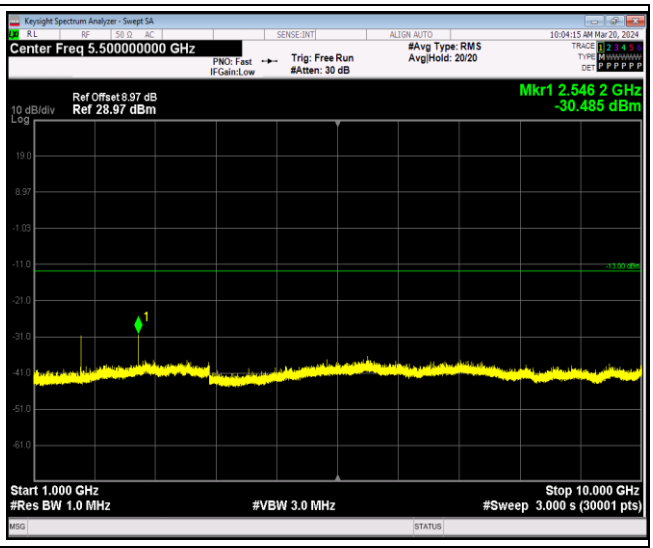
GSM850-251-30~1000MHz



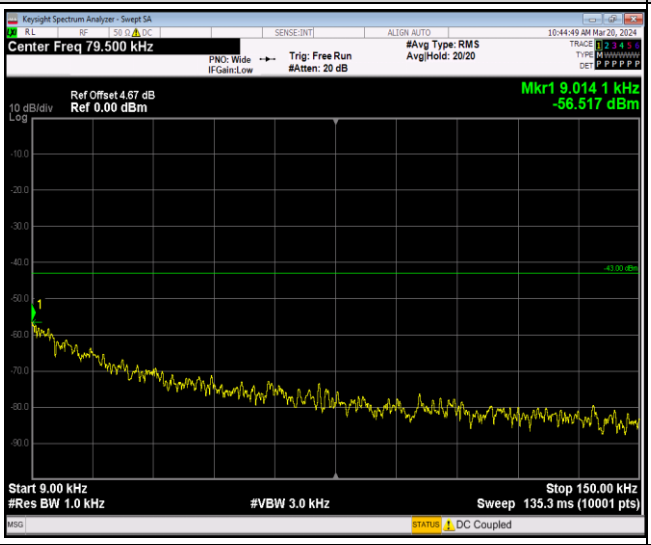
GSM850-251-1000~10000MHz



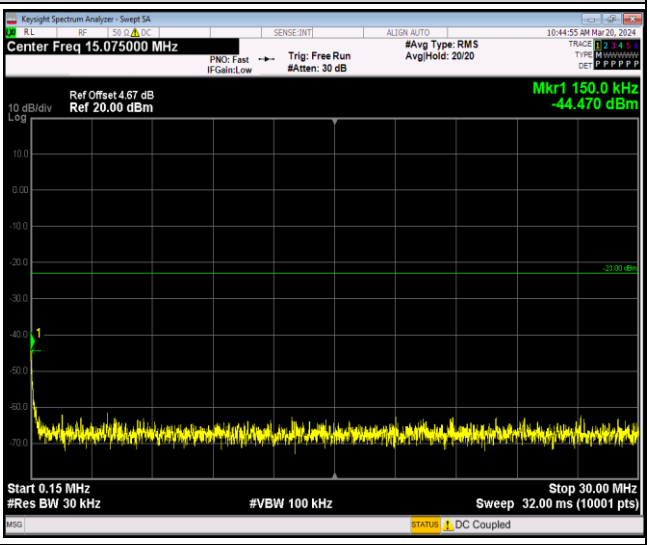
GSM1900-512-0.009~0.15MHz



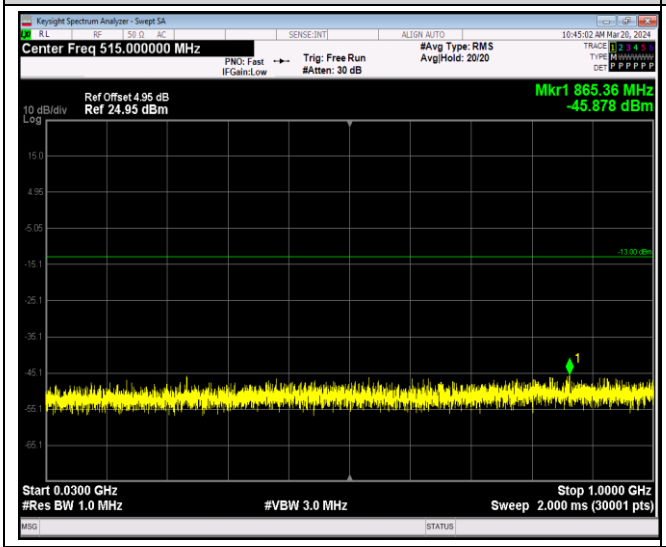
GSM1900-512-0.15~30MHz



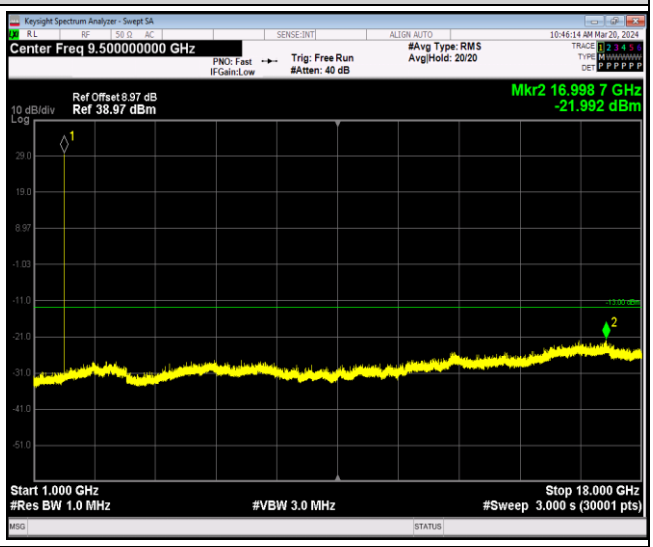
GSM1900-512-30~1000MHz



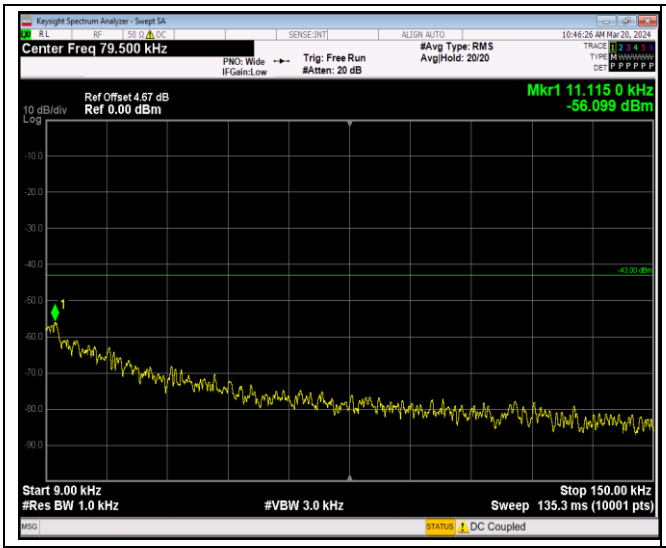
GSM1900-512-1000~18000MHz



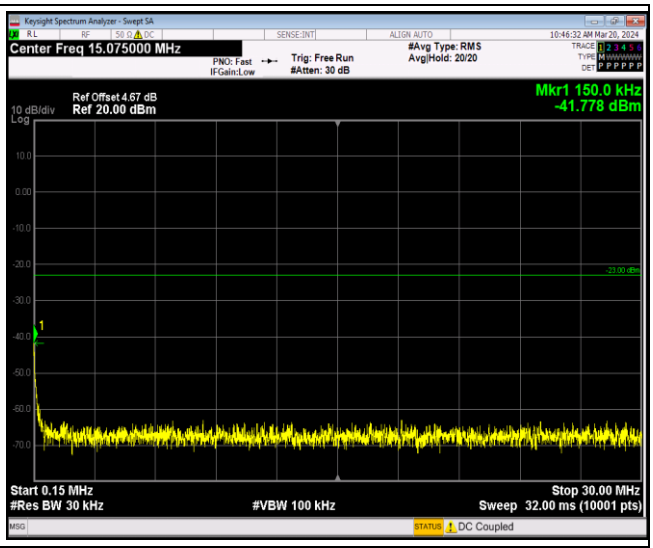
GSM1900-661-0.009~0.15MHz



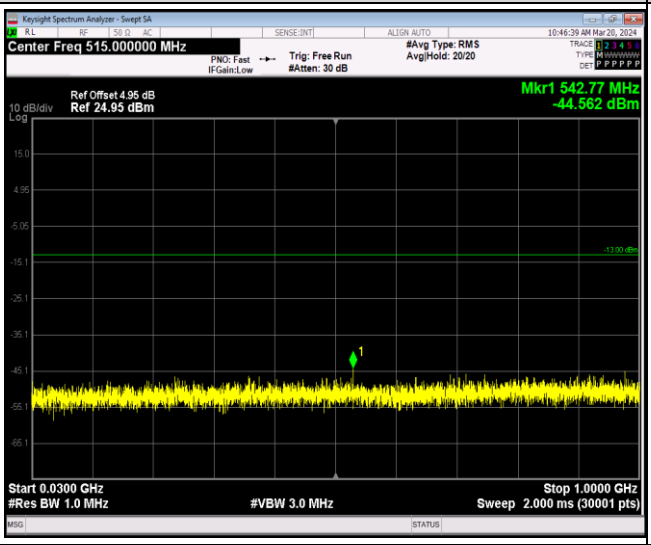
GSM1900-661-0.15~30MHz



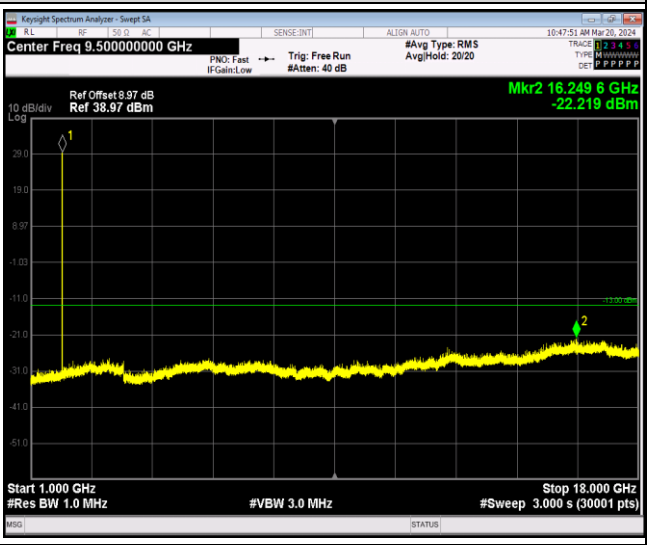
GSM1900-661-30~1000MHz



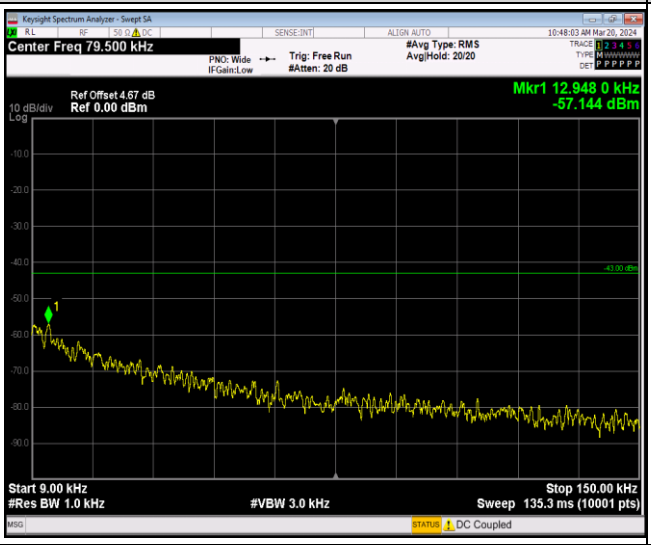
GSM1900-661-1000~18000MHz



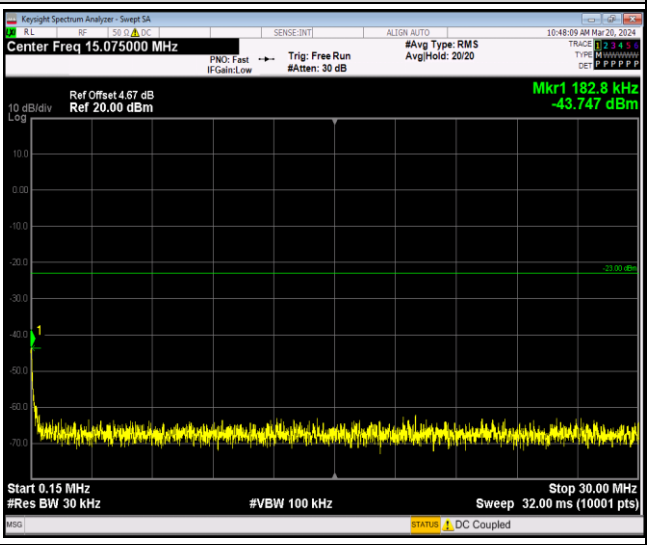
GSM1900-810-0.009~0.15MHz



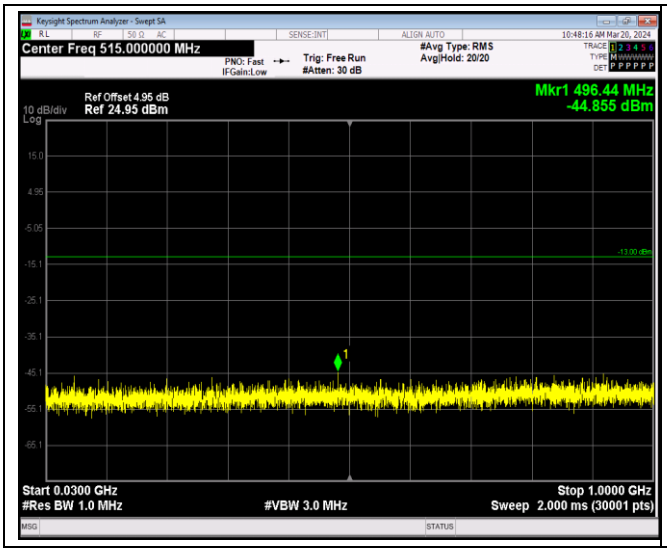
GSM1900-810-0.15~30MHz

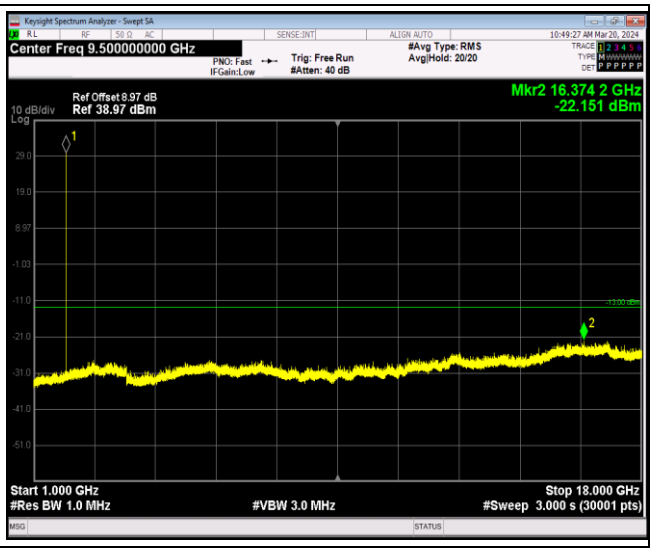


GSM1900-810-30~1000MHz



GSM1900-810-1000~18000MHz


Keysight Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 20/20
10:48:16 AM Mar 20, 2024
Ref Offset 4.95 dB
10 dB/div
Ref 24.95 dBm
Log
Mkr1 496.44 MHz
-44.855 dBm
Start 0.0300 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 2.000 ms (30001 pts)


Keysight Spectrum Analyzer - Swept SA
Center Freq 9.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 20/20
10:49:27 AM Mar 20, 2024
Ref Offset 8.97 dB
10 dB/div
Ref 38.97 dBm
Log
Mkr2 16.374 2 GHz
-22.151 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 18.000 GHz
#Sweep 3.000 s (30001 pts)

Appendix F: Frequency Stability

Test Result

Reference Frequency: GSM850 Middle channel=190 Frequency=836.6MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	4.68	0.005594	±2.5	Pass
	-20	12.79	0.015288		
	-10	5.26	0.006287		
	0	0.84	0.001004		
	10	6.36	0.007602		
	20	7.23	0.008642		
	30	8.65	0.010339		
	40	13.53	0.016173		
	50	9.69	0.011583		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.45	5.00	0.005977	±2.5	Pass
	3.85	9.85	0.011774		
	4.40	6.59	0.007877		
Remark: All channel had been tested, but only the worst case data displayed in this report.					

Reference Frequency: EGPRS850 Middle channel=190 Frequency=836.6MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	2.45	0.002929	±2.5	Pass
	-20	7.14	0.008535		
	-10	-0.94	-0.001124		
	0	-1.49	-0.001781		
	10	0.48	0.000574		
	20	-1.32	-0.001578		
	30	1.74	0.002080		
	40	2.39	0.002857		
	50	1.81	0.002164		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.45	1.68	0.002008	±2.5	Pass
	3.85	2.52	0.003012		
	4.40	0.06	0.000072		
Remark: All channel had been tested, but only the worst case data displayed in this report.					

Reference Frequency: PCS1900 Middle channel=661 Frequency=1880MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	15.88	0.008447	Within authorized band for PCS 1900	Pass
	-20	14.53	0.007729		
	-10	18.89	0.010048		
	0	13.33	0.007090		
	10	17.37	0.009239		
	20	4.07	0.002165		
	30	16.37	0.008707		
	40	12.69	0.006750		
	50	15.46	0.008223		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.45	11.49	0.006112	Within authorized band for PCS 1900	Pass
	3.85	14.82	0.007883		
	4.40	7.88	0.004191		
Remark: All channel had been tested, but only the worst case data displayed in this report.					

Reference Frequency: EGPRS1900 Middle channel=661 Frequency=1880MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	13.40	0.007128	Within authorized band for PCS 1900	Pass
	-20	-13.62	-0.007245		
	-10	-0.87	-0.000463		
	0	10.27	0.005463		
	10	4.65	0.002473		
	20	-0.77	-0.000410		
	30	-4.62	-0.002457		
	40	-6.52	-0.003468		
	50	-9.94	-0.005287		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.45	8.68	0.004617	Within authorized band for PCS 1900	Pass
	3.85	-0.52	-0.000277		
	4.40	-4.65	-0.002473		
Remark: All channel had been tested, but only the worst case data displayed in this report.					

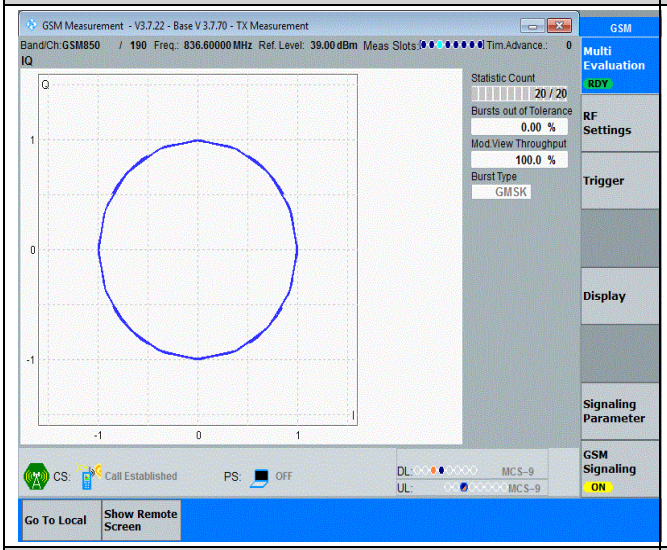
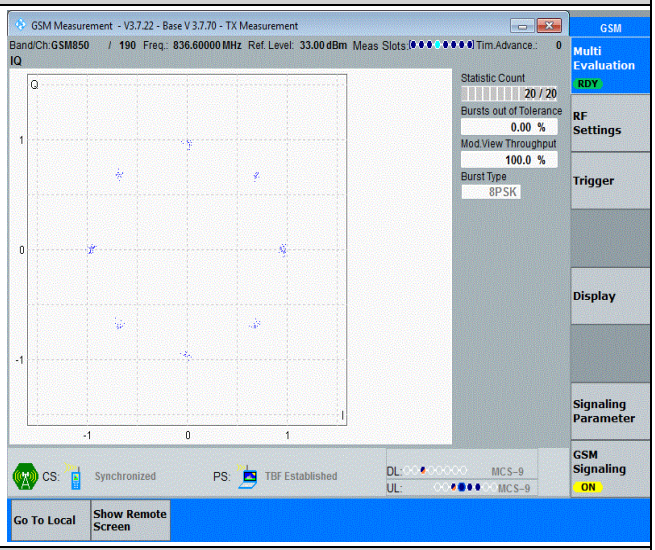
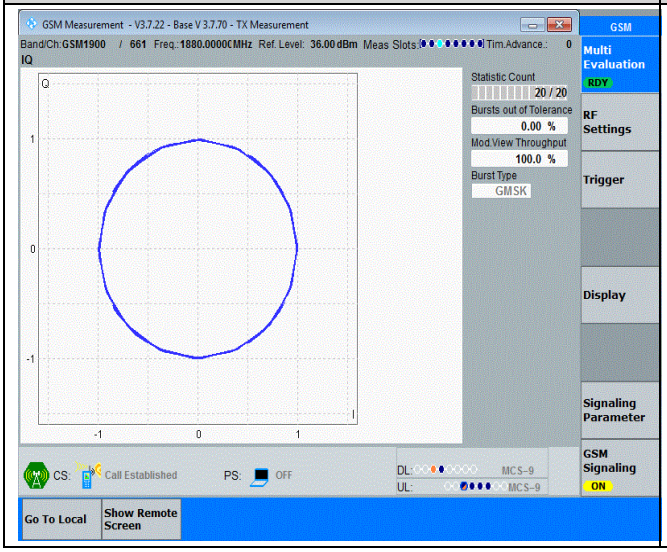
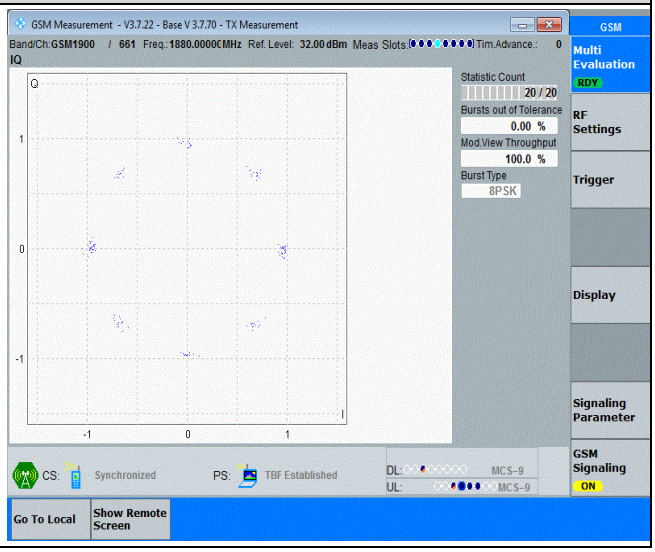
Appendix G: Modulation Characteristics

Test Result

Band	Channel	Result	Verdict
GSM850	190	PASS	PASS
EGPRS850	190	PASS	PASS
GSM1900	661	PASS	PASS
EGPRS1900	661	PASS	PASS

Remark: All channel had been tested, but only the worst case data displayed in this report.

Test Graphs

GSM850-190	EGPRS850-190
	
GSM1900-661	**EGPRS1900-661**