

APPENDIX REPORT

Project No.	SHT2011064601EW	Radio Specification	GSM
Test sample No.	YPHT20110646003	Model No.	LS140L
Start test date	2020/12/7	Finish date	2020/12/7
Temperature	24.4°C	Humidity	50%
Test Engineer	Jiongsheng.Feng	Auditor	Xiaodong Zhu

Appendix clause	Test item	Result
A	Conducted Output Power	PASS
B	Peak-to-Average Ratio	PASS
C	26 dB Bandwidth and Occupied Bandwidth	PASS
D	Band edge	PASS
E	Conducted Spurious Emission	PASS
F	Frequency Stability	PASS

8.1 Appendix A: Conducted Output Power

Test Result

Band	Channel	PCL	Power(dBm)	Limit(dBm)	Verdict
GSM850	128	5	32.10	38.5	PASS
GSM850	190	5	31.78	38.5	PASS
GSM850	251	5	31.80	38.5	PASS
GSM1900	512	0	27.51	33	PASS
GSM1900	661	0	27.40	33	PASS
GSM1900	810	0	27.14	33	PASS

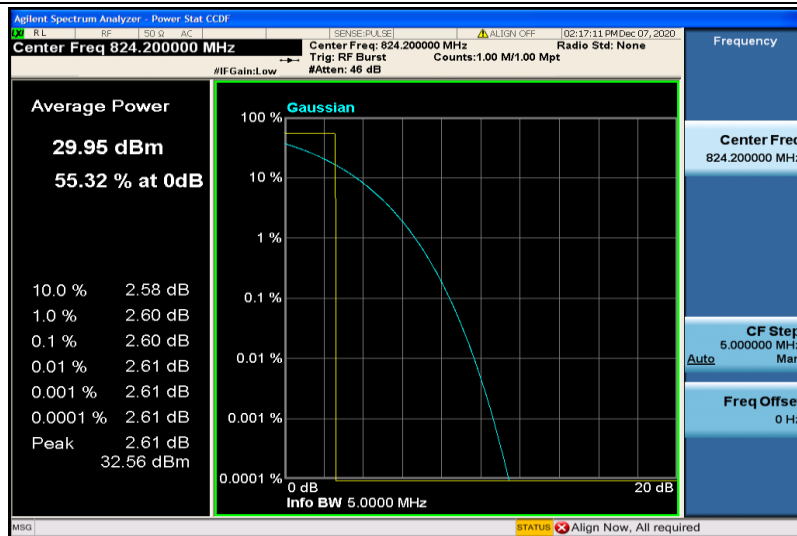
Band	Channel	PCL	Slot	Power(dBm)	Limit(dBm)	Verdict
GPRS850	128	5	1	32.14	38.5	PASS
GPRS850	128	5	2	30.45	38.5	PASS
GPRS850	128	5	3	28.76	38.5	PASS
GPRS850	128	5	4	26.34	38.5	PASS
GPRS850	190	5	1	31.83	38.5	PASS
GPRS850	190	5	2	30.20	38.5	PASS
GPRS850	190	5	3	28.32	38.5	PASS
GPRS850	190	5	4	26.20	38.5	PASS
GPRS850	251	5	1	31.75	38.5	PASS
GPRS850	251	5	2	30.14	38.5	PASS
GPRS850	251	5	3	28.08	38.5	PASS
GPRS850	251	5	4	26.23	38.5	PASS
GPRS1900	512	0	1	27.46	33	PASS
GPRS1900	512	0	2	25.82	33	PASS
GPRS1900	512	0	3	24.17	33	PASS
GPRS1900	512	0	4	21.78	33	PASS
GPRS1900	661	0	1	27.32	33	PASS
GPRS1900	661	0	2	25.82	33	PASS
GPRS1900	661	0	3	24.21	33	PASS
GPRS1900	661	0	4	21.82	33	PASS
GPRS1900	810	0	1	27.05	33	PASS
GPRS1900	810	0	2	25.60	33	PASS
GPRS1900	810	0	3	23.66	33	PASS
GPRS1900	810	0	4	21.59	33	PASS

8.2 Appendix B: Peak-to-Average Ratio

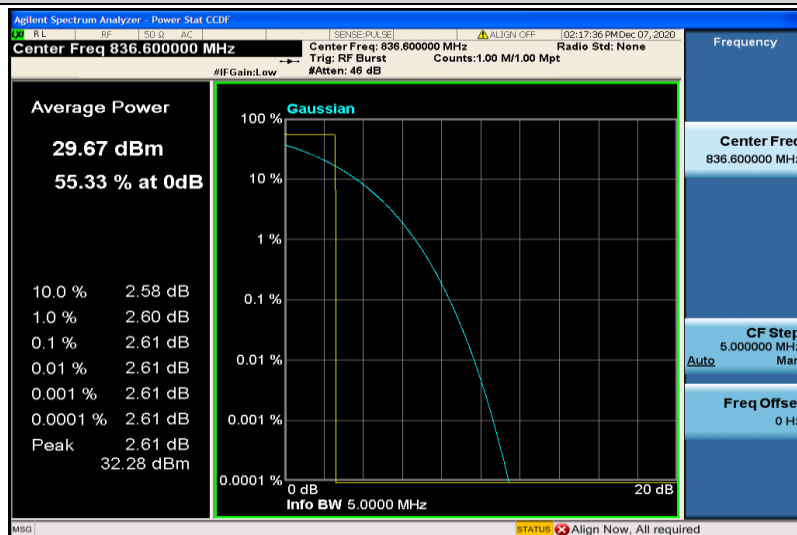
Test Result

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
GSM850	128	2.60	13	PASS
GSM850	190	2.61	13	PASS
GSM850	251	2.60	13	PASS
GPRS850	128	2.61	13	PASS
GPRS850	190	2.61	13	PASS
GPRS850	251	2.61	13	PASS
GSM1900	512	2.62	13	PASS
GSM1900	661	2.62	13	PASS
GSM1900	810	2.62	13	PASS
GPRS1900	512	2.62	13	PASS
GPRS1900	661	2.62	13	PASS
GPRS1900	810	2.62	13	PASS

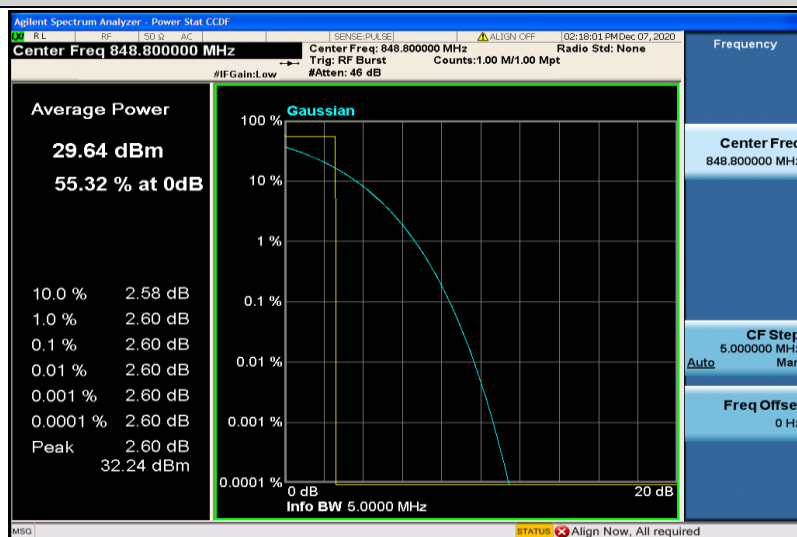
Test Graphs



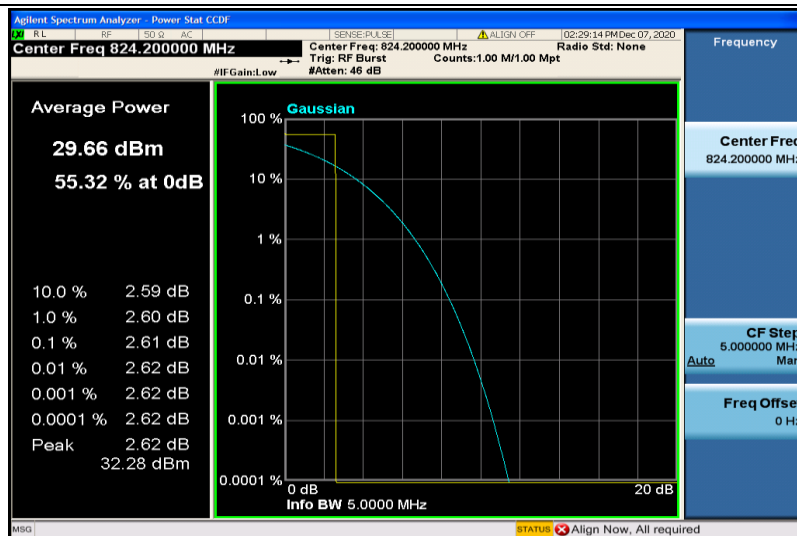
GSM850-128



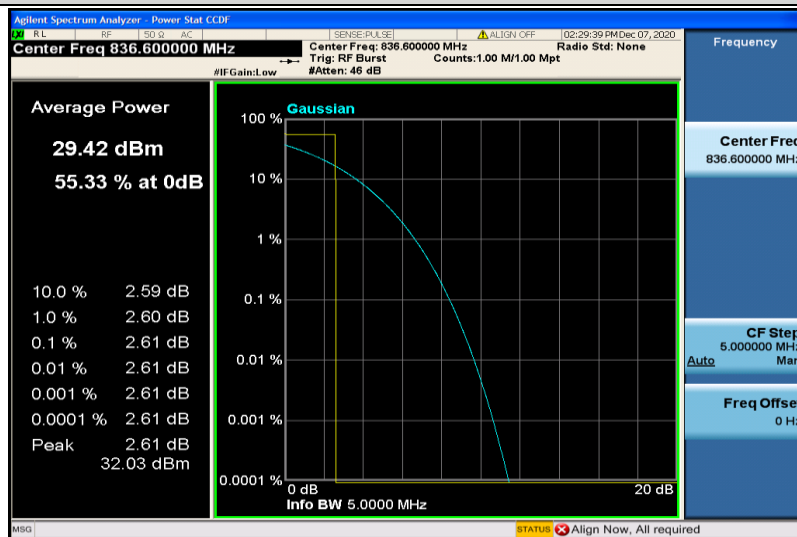
GSM850-190



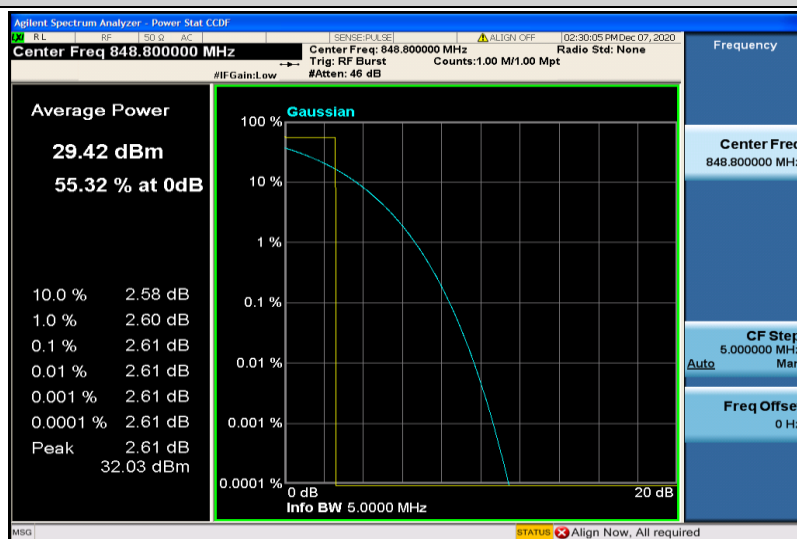
GSM850-251



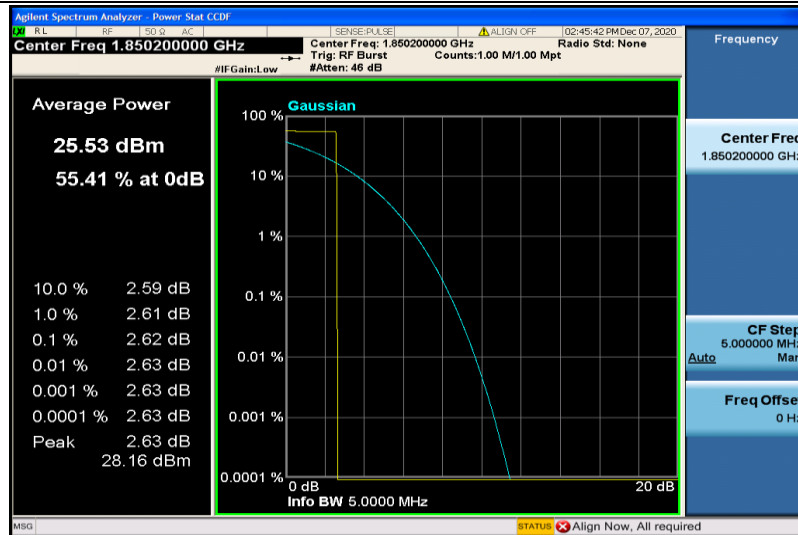
GPRS850-128



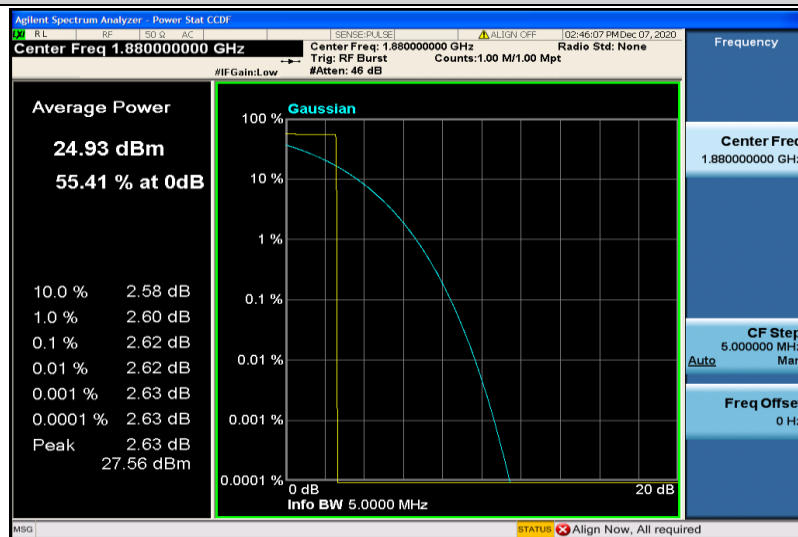
GPRS850-190



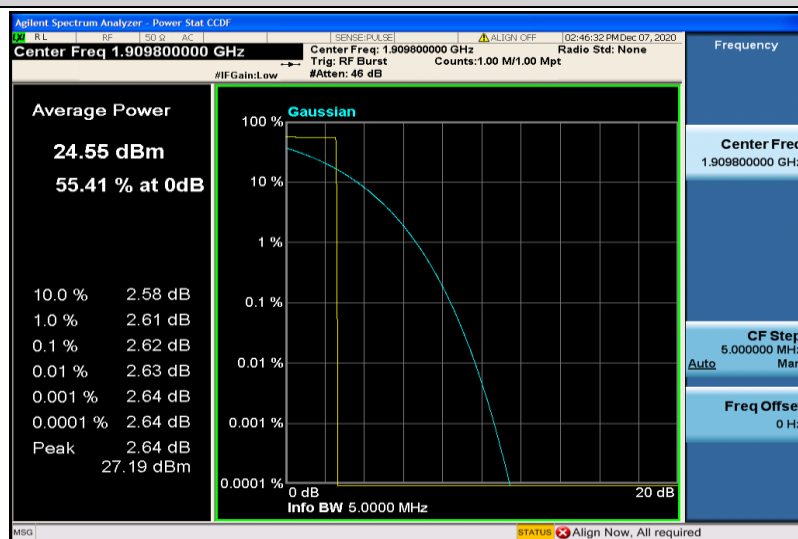
GPRS850-251



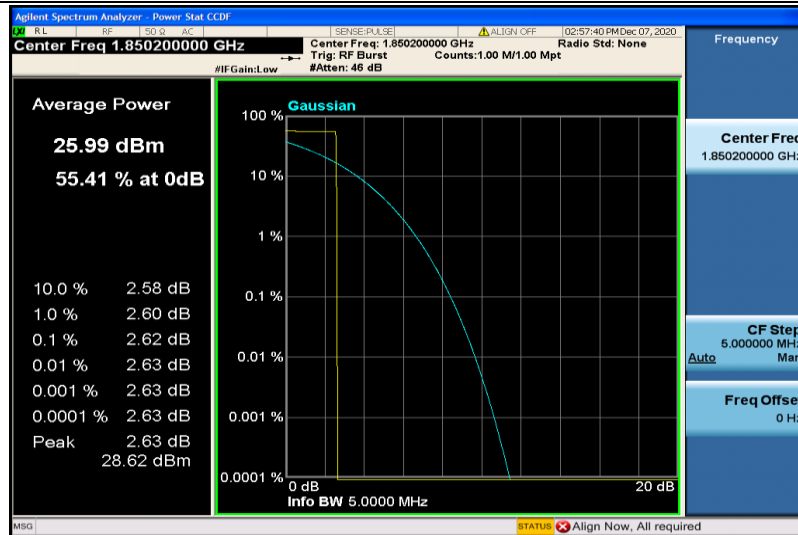
GSM1900-512



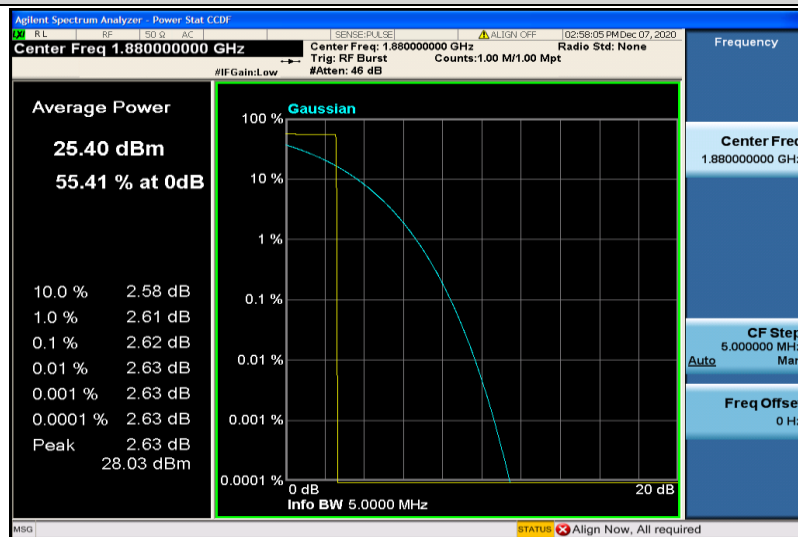
GSM1900-661



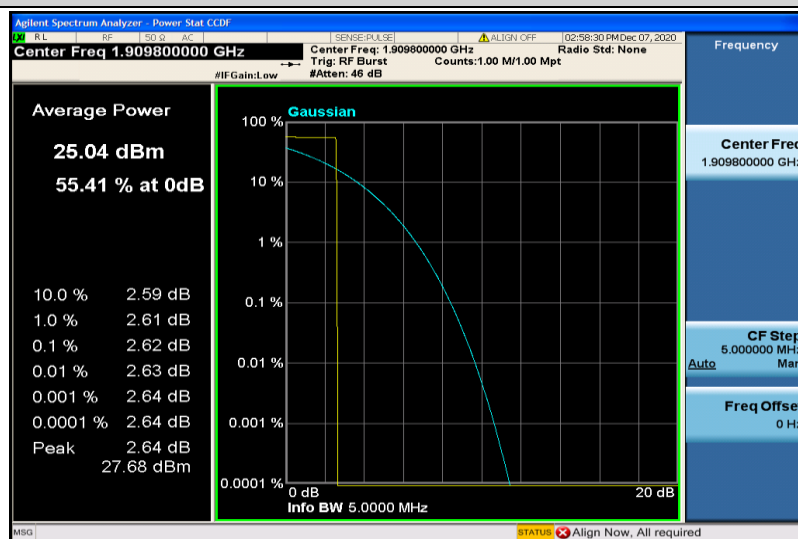
GSM1900-810



GPRS1900-512



GPRS1900-661



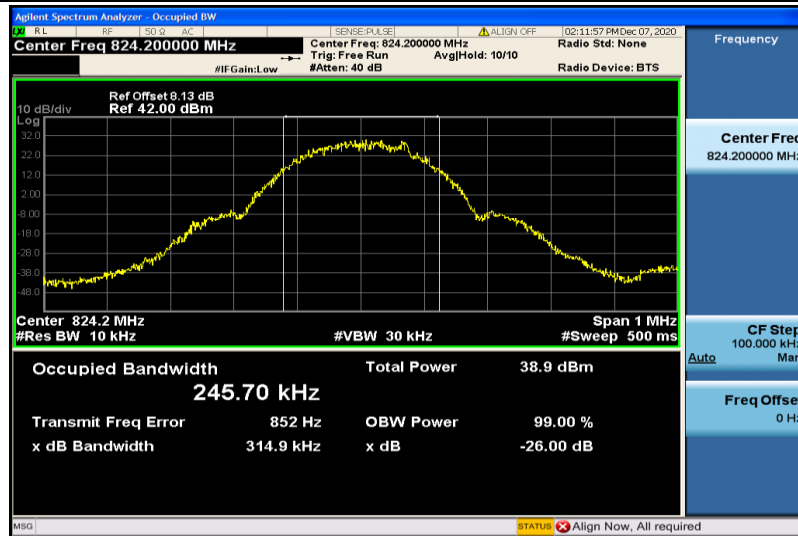
GPRS1900-810

8.3 Appendix C: 26dB Bandwidth and Occupied Bandwidth

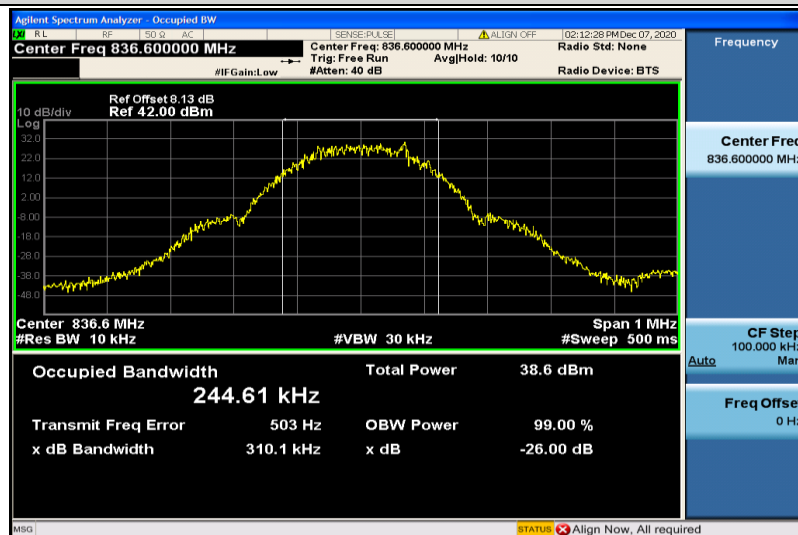
Test Result

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
GSM850	128	245.70	314.9	---	PASS
GSM850	190	244.61	310.1	---	PASS
GSM850	251	246.16	313.3	---	PASS
GPRS850	128	245.37	311.8	---	PASS
GPRS850	190	243.41	320.7	---	PASS
GPRS850	251	246.75	318.3	---	PASS
GSM1900	512	244.45	312.8	---	PASS
GSM1900	661	243.30	308.9	---	PASS
GSM1900	810	244.63	310.6	---	PASS
GPRS1900	512	247.08	321.1	---	PASS
GPRS1900	661	247.16	316.0	---	PASS
GPRS1900	810	245.75	317.4	---	PASS

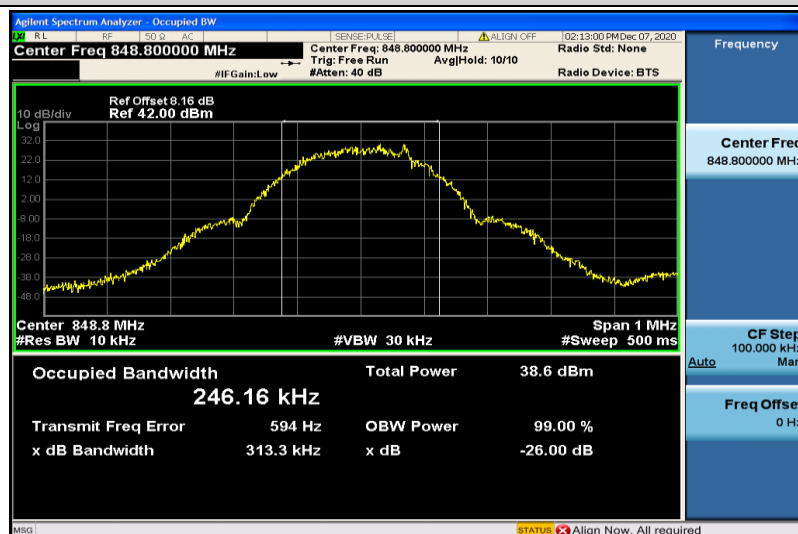
Test Graphs



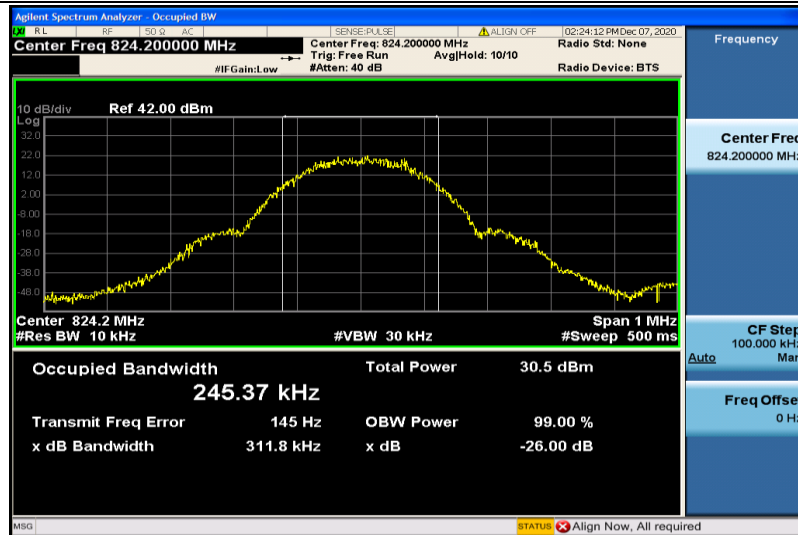
GSM850-128



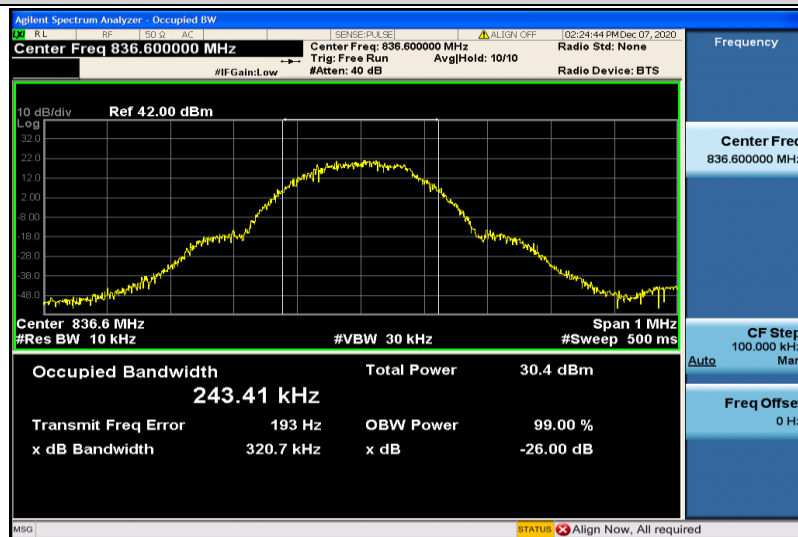
GSM850-190



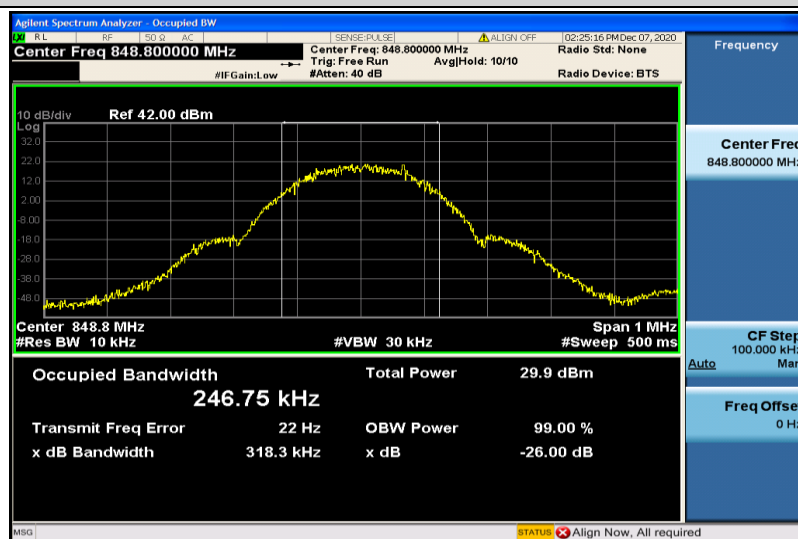
GSM850-251



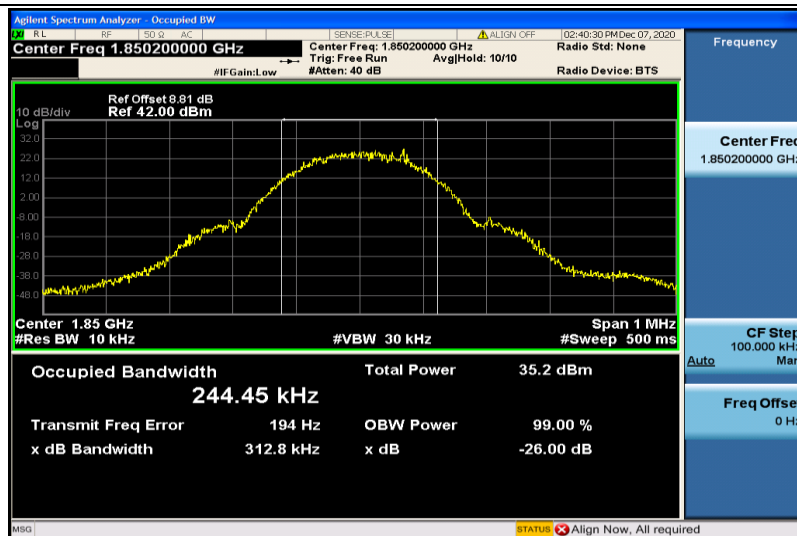
GPRS850-128



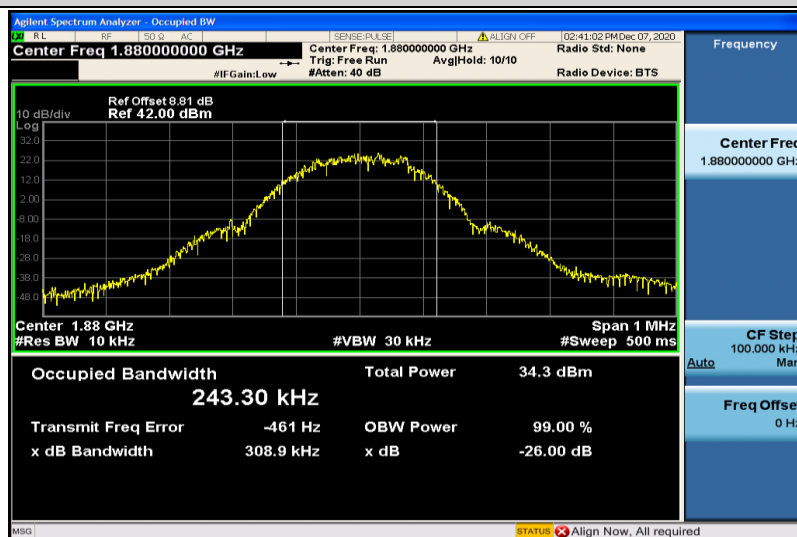
GPRS850-190



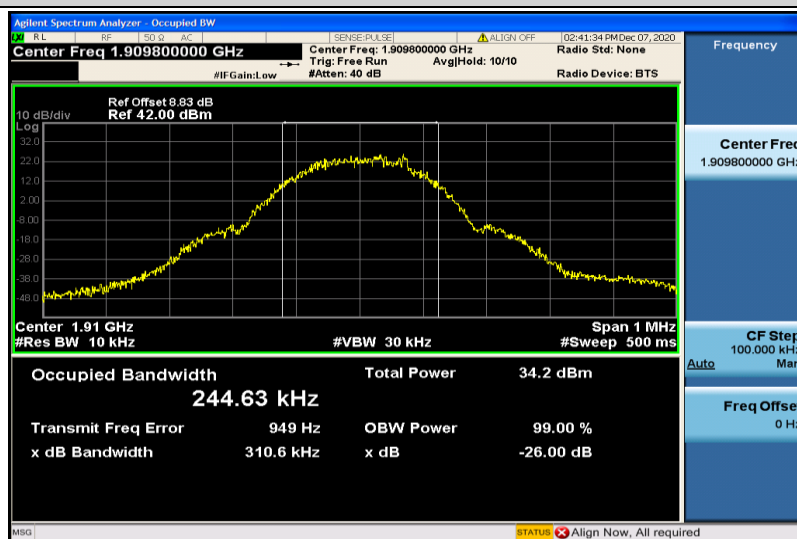
GPRS850-251



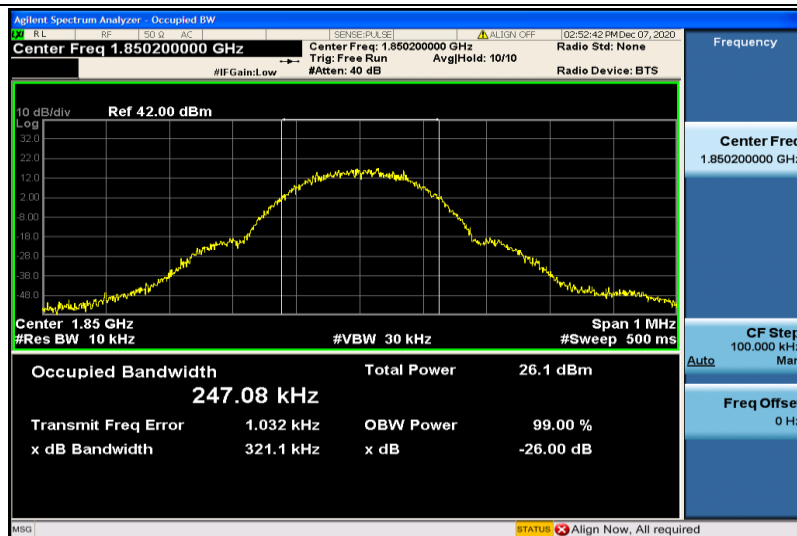
GSM1900-512



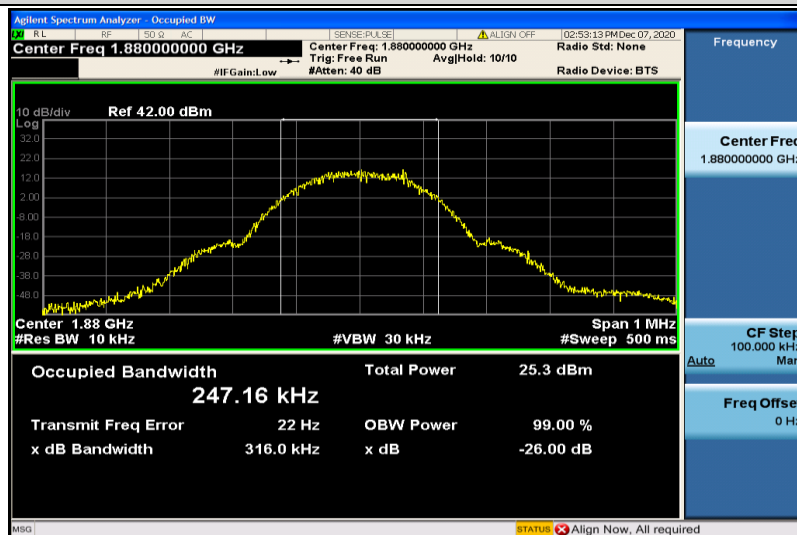
GSM1900-661



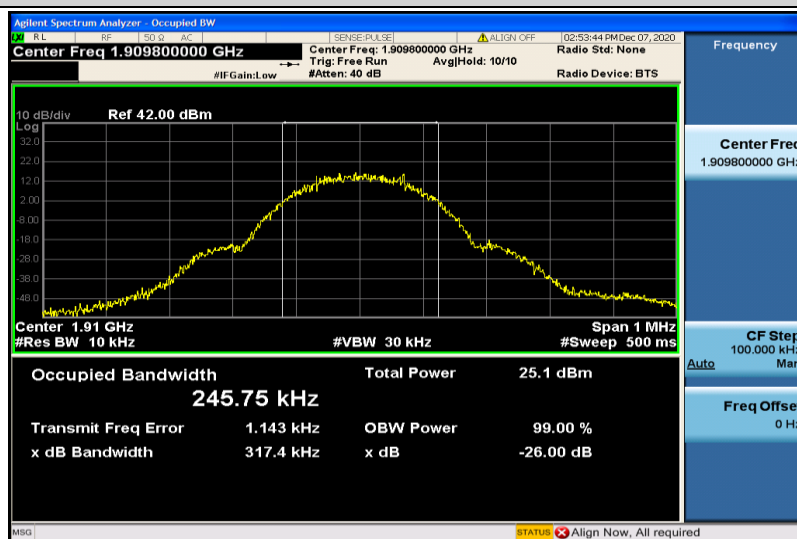
GSM1900-810



GPRS1900-512



GPRS1900-661



GPRS1900-810

8.4 Appendix D: Band Edge

Test Result

Band	Channel	Value(dBm)	Limit(dBm)	Verdict
GSM850	128	-25.68	-13	PASS
GSM850	251	-26.34	-13	PASS
GPRS850	128	-28.19	-13	PASS
GPRS850	251	-27.96	-13	PASS
GSM1900	512	-30.87	-13	PASS
GSM1900	810	-31.11	-13	PASS
GPRS1900	512	-30.38	-13	PASS
GPRS1900	810	-30.20	-13	PASS

Agilent Spectrum Analyzer - Swept SA

Center Freq 824.000000 MHz

Trig: Free Run #Atten: 40 dB

Ref Offset 8.13 dB Ref 30.00 dBm

Mkr1 823.997 MHz -25.68 dBm

10 dB/div Log

Center 824.0000 MHz #Res BW 3.0 kHz #VBW 10 kHz Span 1,000 MHz #Sweep 100.0 ms (1001 pts)

STATUS Align Now, All required

Frequency

Auto Tune

Center Freq 824.000000 MHz

Start Freq 823.500000 MHz

Stop Freq 824.500000 MHz

CF Step 100.000 kHz Man

Freq Offset 0 Hz

Agilent Spectrum Analyzer - Swept SA

Center Freq 849.000000 MHz

Trig: Free Run #Atten: 40 dB

Ref Offset 8.16 dB Ref 30.00 dBm

Mkr1 849.021 MHz -26.34 dBm

10 dB/div Log

Center 849.0000 MHz #Res BW 3.0 kHz #VBW 10 kHz Span 1,000 MHz #Sweep 100.0 ms (1001 pts)

STATUS Align Now, All required

Frequency

Auto Tune

Center Freq 849.000000 MHz

Start Freq 848.500000 MHz

Stop Freq 849.500000 MHz

CF Step 100.000 kHz Man

Freq Offset 0 Hz

Agilent Spectrum Analyzer - Swept SA

Center Freq 824.000000 MHz

Trig: Free Run #Atten: 40 dB

Ref Offset 8.13 dB Ref 30.00 dBm

Mkr1 823.982 MHz -28.19 dBm

10 dB/div Log

Center 824.0000 MHz #Res BW 3.0 kHz #VBW 10 kHz Span 1,000 MHz #Sweep 100.0 ms (1001 pts)

STATUS Align Now, All required

Frequency

Auto Tune

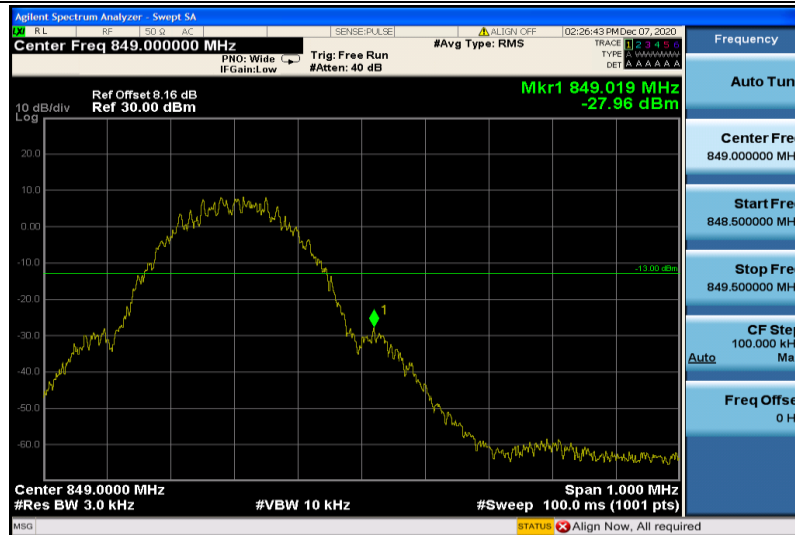
Center Freq 824.000000 MHz

Start Freq 823.500000 MHz

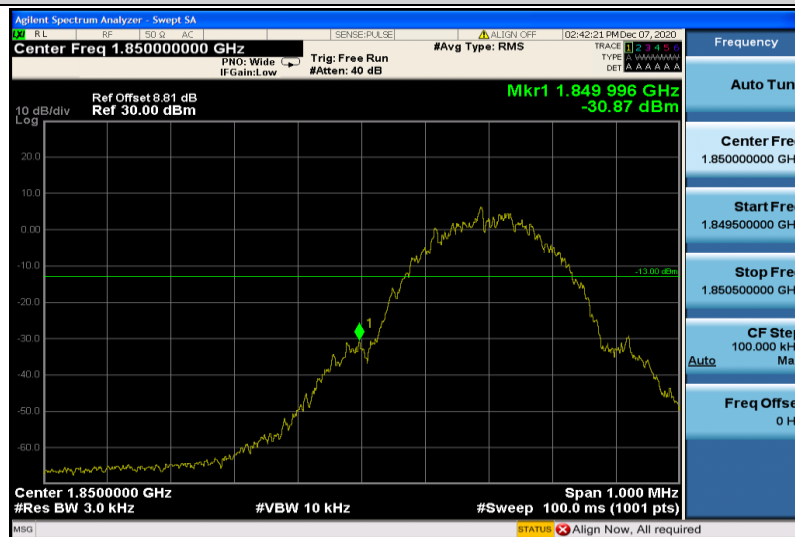
Stop Freq 824.500000 MHz

CF Step 100.000 kHz Man

Freq Offset 0 Hz



GPRS850-251



GSM1900-512



GSM1900-810



GPRS1900-512



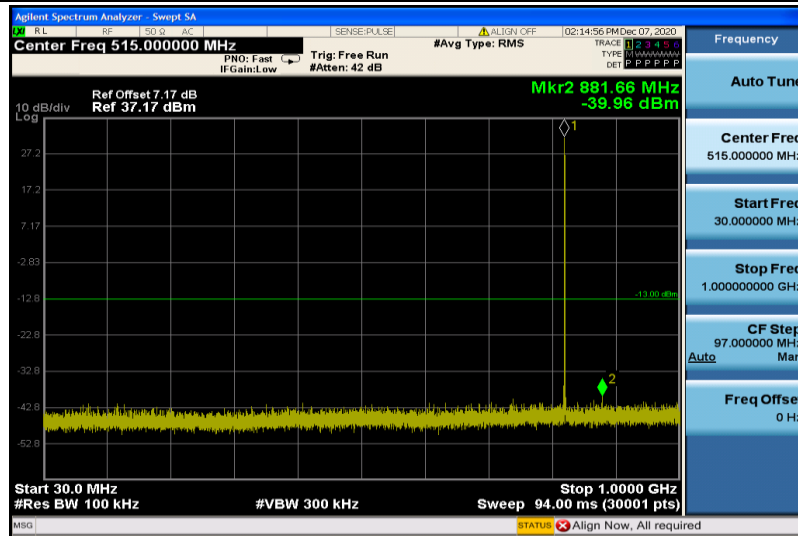
GPRS1900-810

8.5 Appendix E: Conducted Spurious Emission

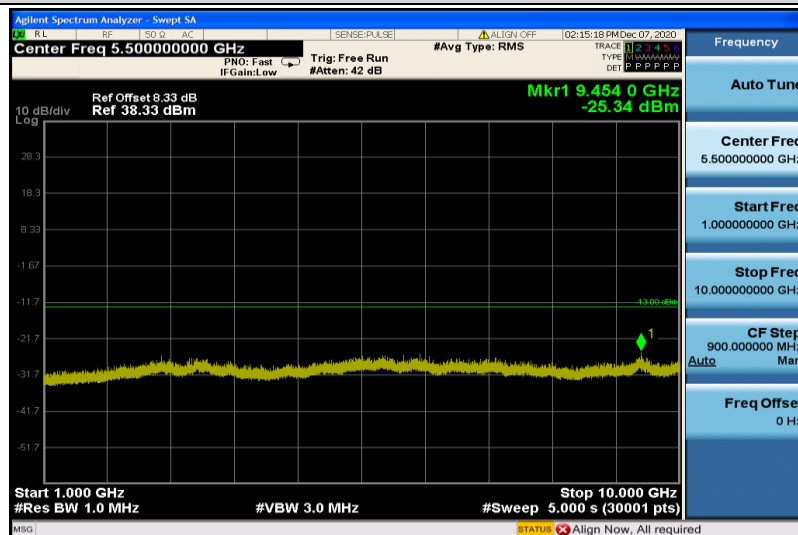
Test Result

Band	Channel	Frequency Range(Mhz)	Value(dBm)	Limit(dBm)	Verdict
GSM850	128	30~1000	-39.96	-13	PASS
GSM850	128	1000~10000	-25.34	-13	PASS
GSM850	190	30~1000	-39.93	-13	PASS
GSM850	190	1000~10000	-25.86	-13	PASS
GSM850	251	30~1000	-39.35	-13	PASS
GSM850	251	1000~10000	-26.05	-13	PASS
GPRS850	128	30~1000	-39.87	-13	PASS
GPRS850	128	1000~10000	-25.96	-13	PASS
GPRS850	190	30~1000	-39.90	-13	PASS
GPRS850	190	1000~10000	-25.95	-13	PASS
GPRS850	251	30~1000	-40.19	-13	PASS
GPRS850	251	1000~10000	-26.25	-13	PASS
GSM1900	512	30~1000	-27.88	-13	PASS
GSM1900	512	1000~20000	-20.10	-13	PASS
GSM1900	661	30~1000	-40.45	-13	PASS
GSM1900	661	1000~20000	-19.40	-13	PASS
GSM1900	810	30~1000	-40.07	-13	PASS
GSM1900	810	1000~20000	-19.86	-13	PASS
GPRS1900	512	30~1000	-30.66	-13	PASS
GPRS1900	512	1000~20000	-19.32	-13	PASS
GPRS1900	661	30~1000	-40.72	-13	PASS
GPRS1900	661	1000~20000	-20.26	-13	PASS
GPRS1900	810	30~1000	-27.29	-13	PASS
GPRS1900	810	1000~20000	-19.51	-13	PASS

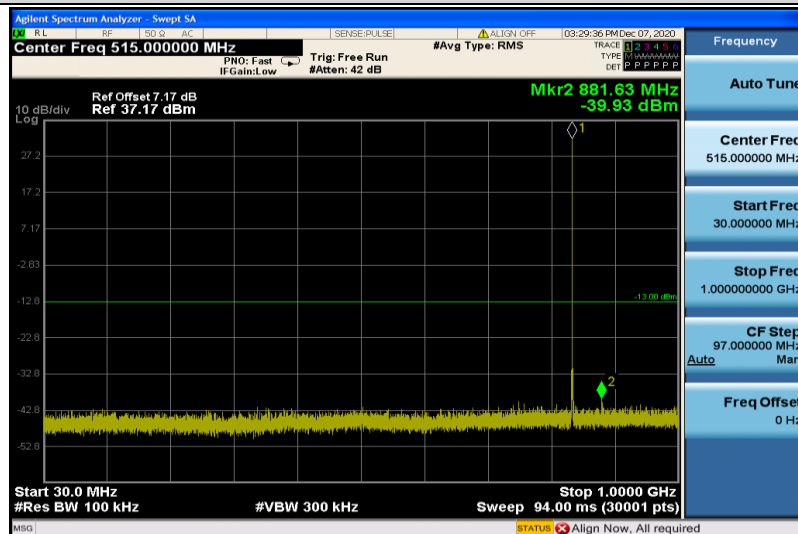
Test Graphs



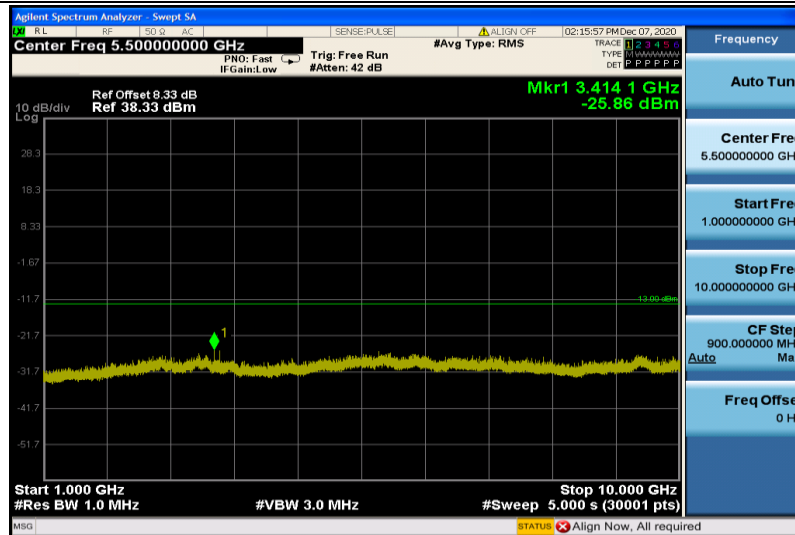
GSM850-128-30~1000



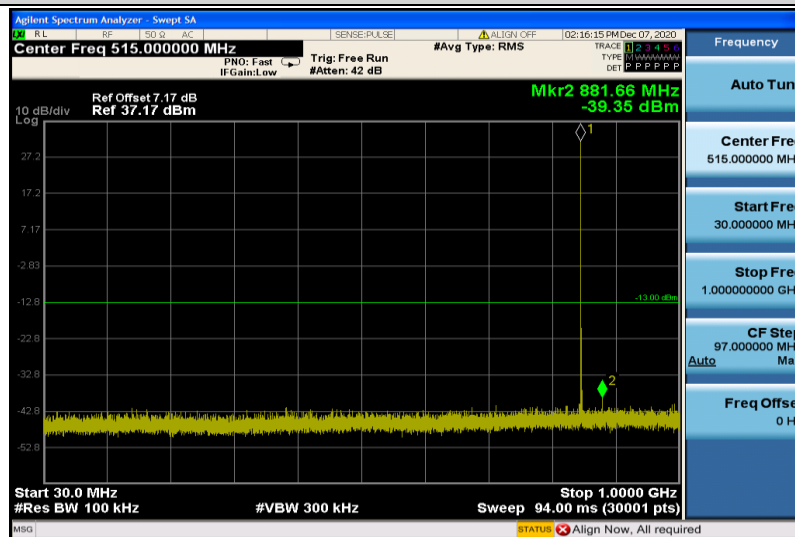
GSM850-128-1000~10000



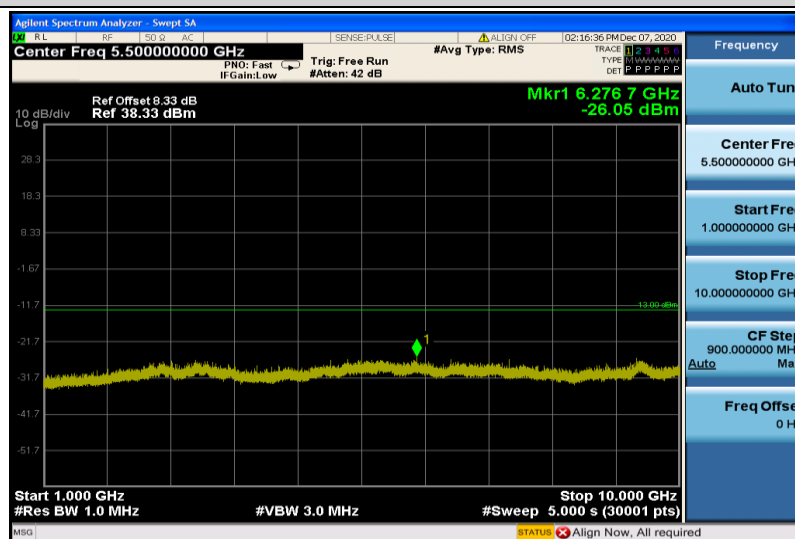
GSM850-190-30~1000



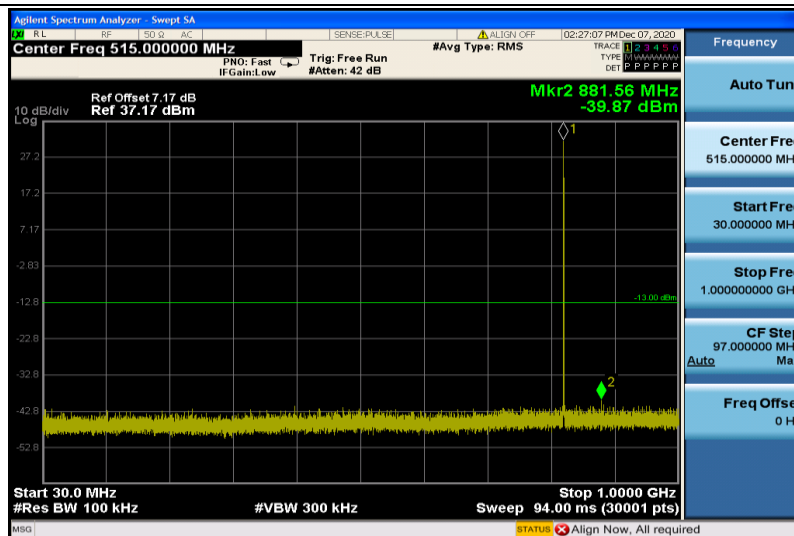
GSM850-190-1000~10000



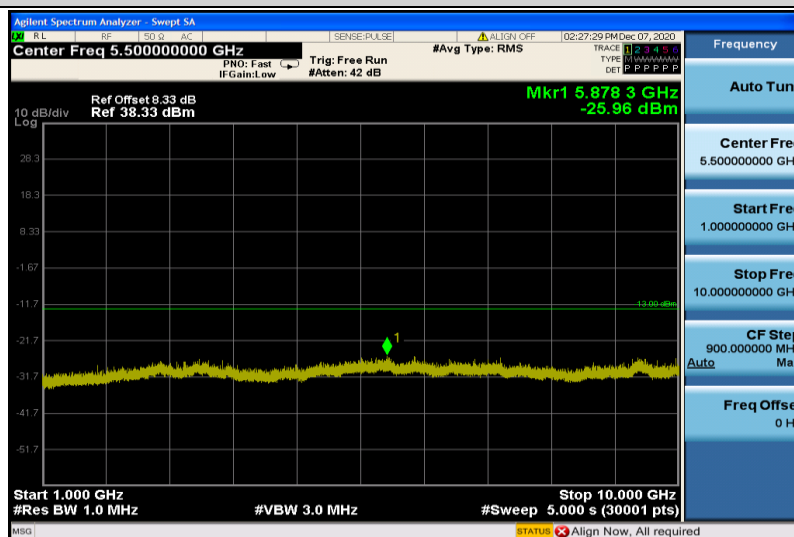
GSM850-251-30~1000



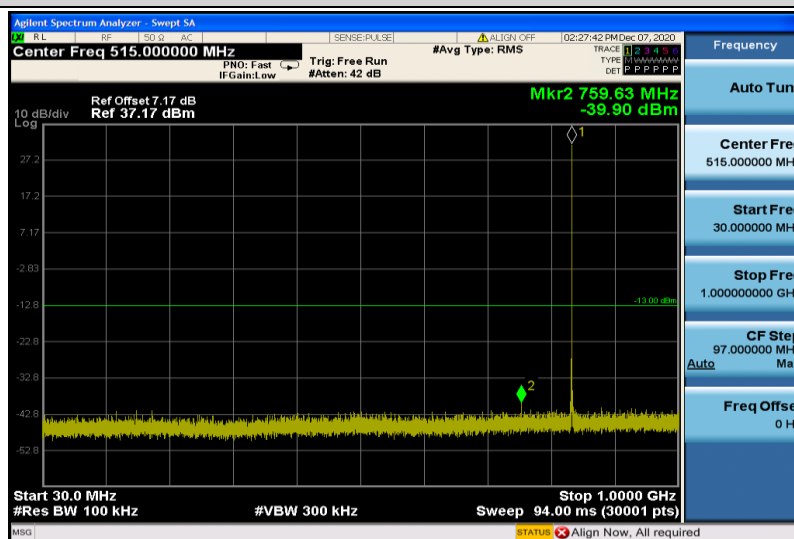
GSM850-251-1000~10000



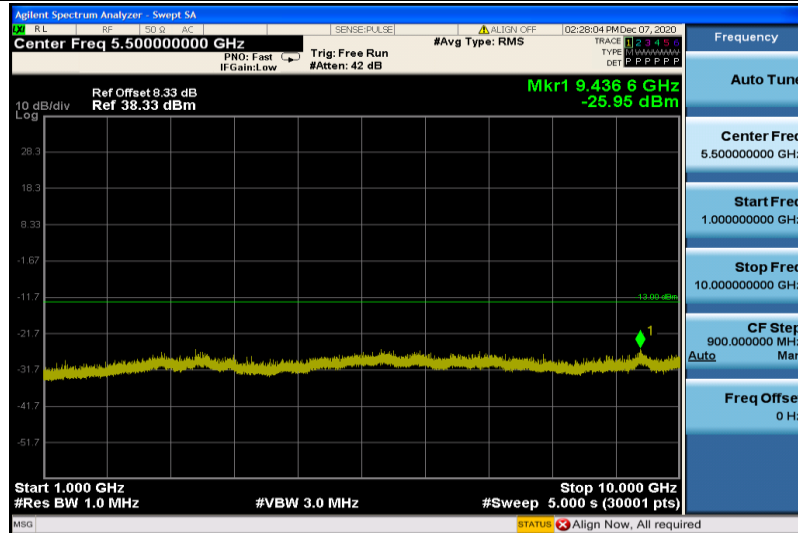
GPRS850-128-30~1000



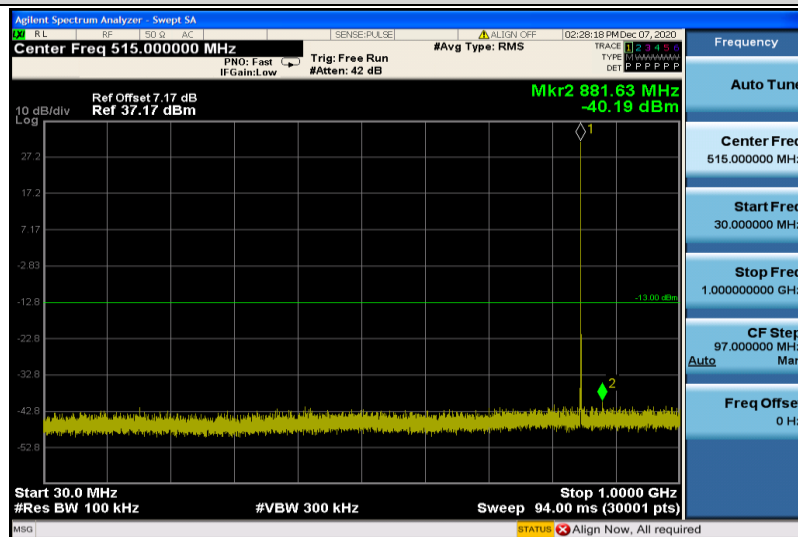
GPRS850-128-1000~10000



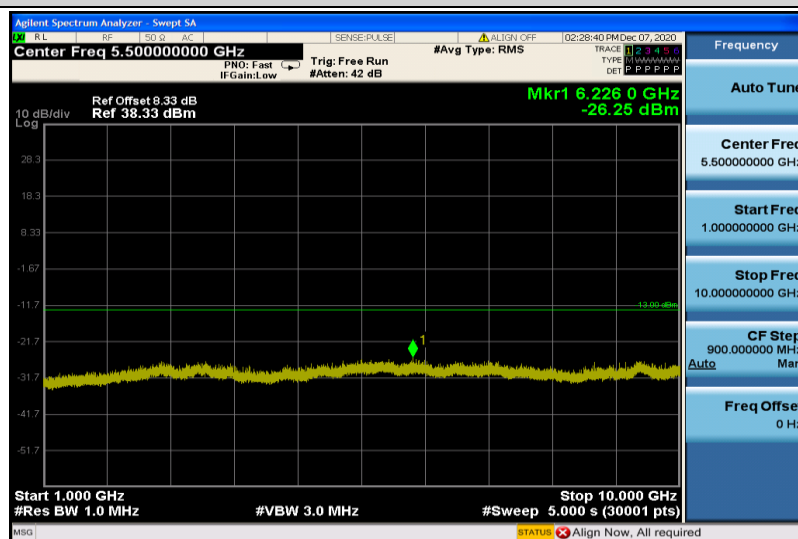
GPRS850-190-30~1000



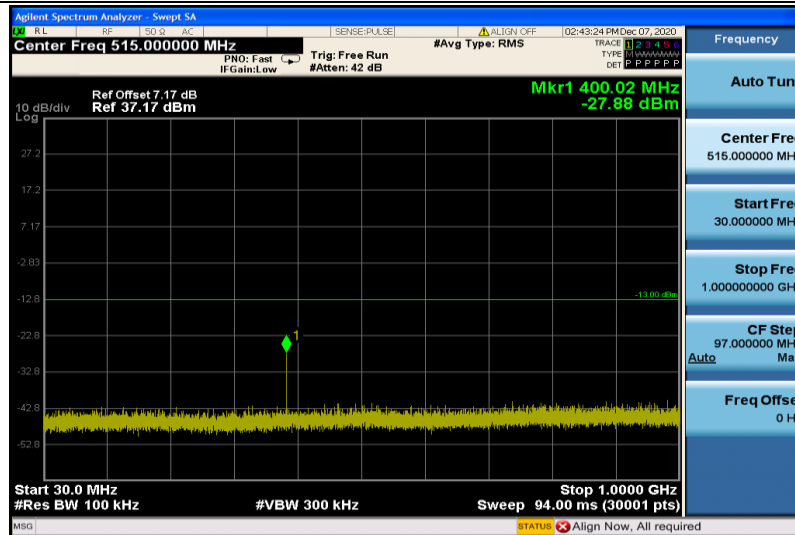
GPRS850-190-1000~10000



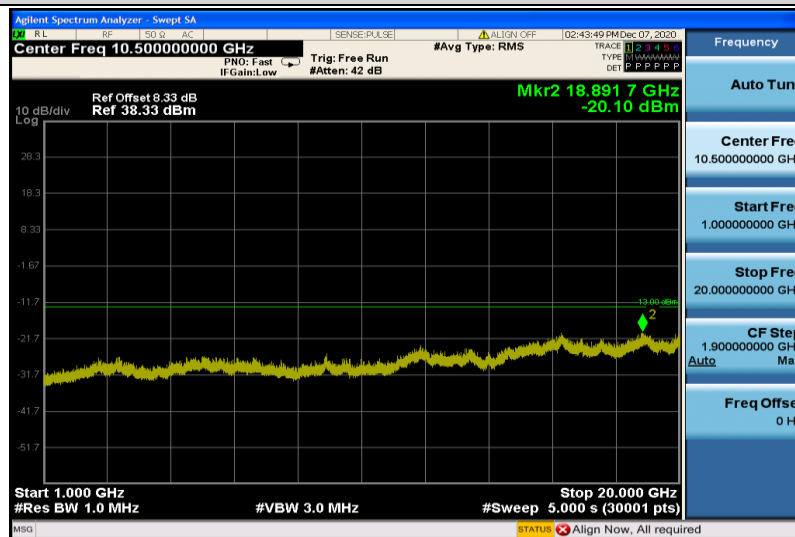
GPRS850-251-30~1000



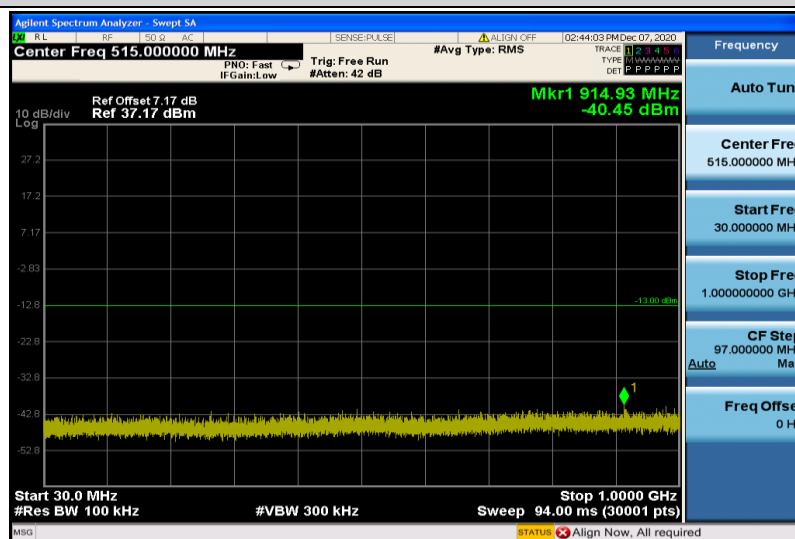
GPRS850-251-1000~10000



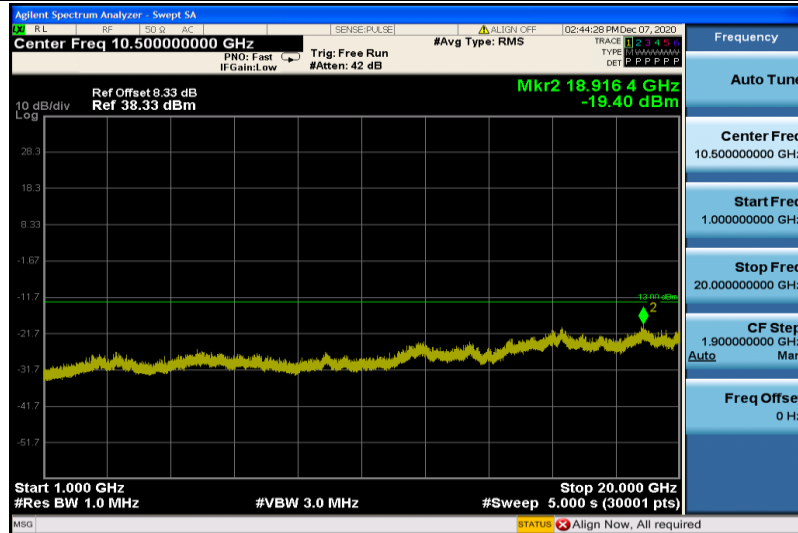
GSM1900-512-30~1000



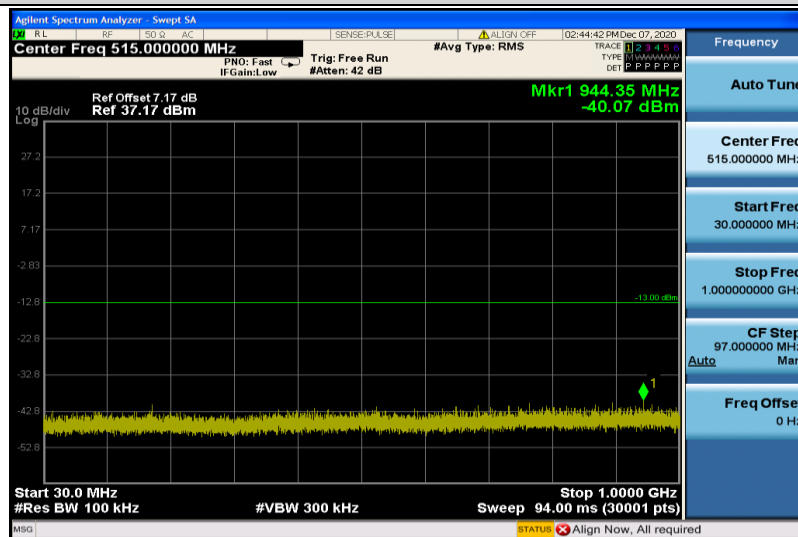
GSM1900-512-1000~20000



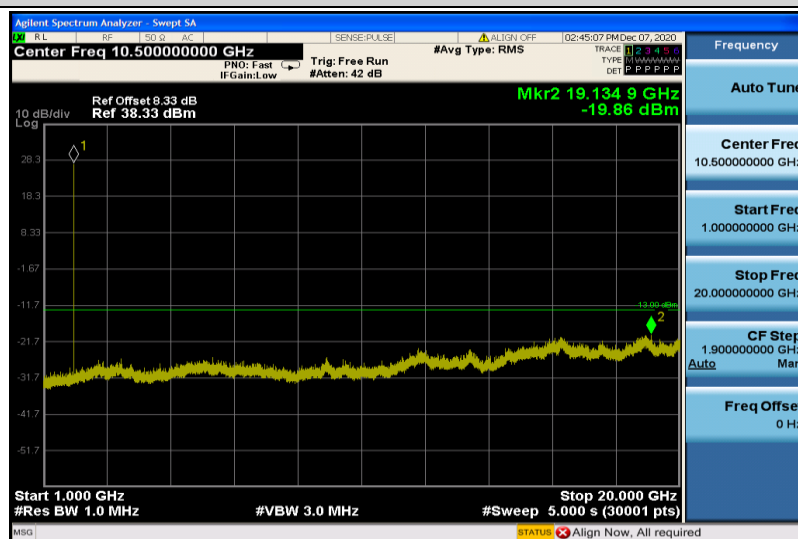
GSM1900-661-30~1000



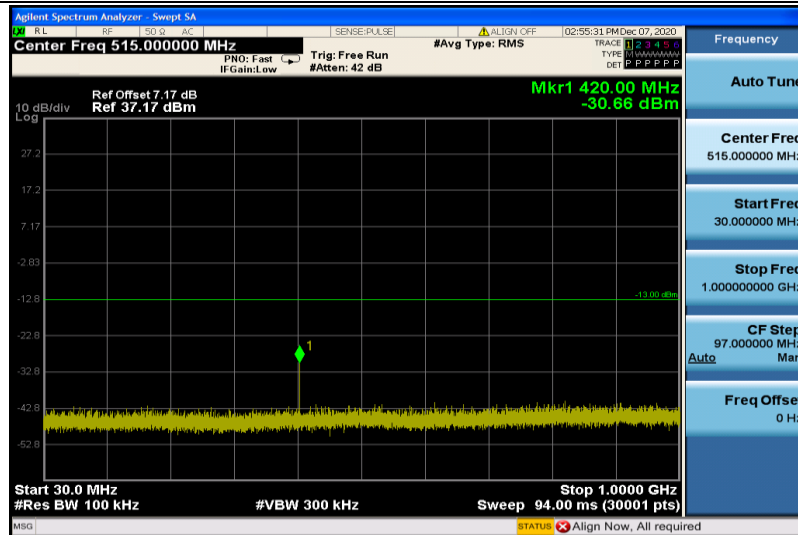
GSM1900-661-1000~20000



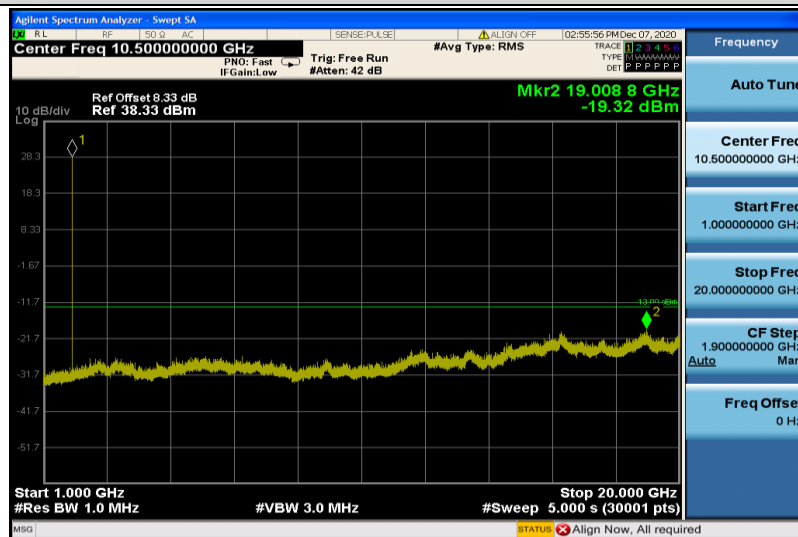
GSM1900-810-30~1000



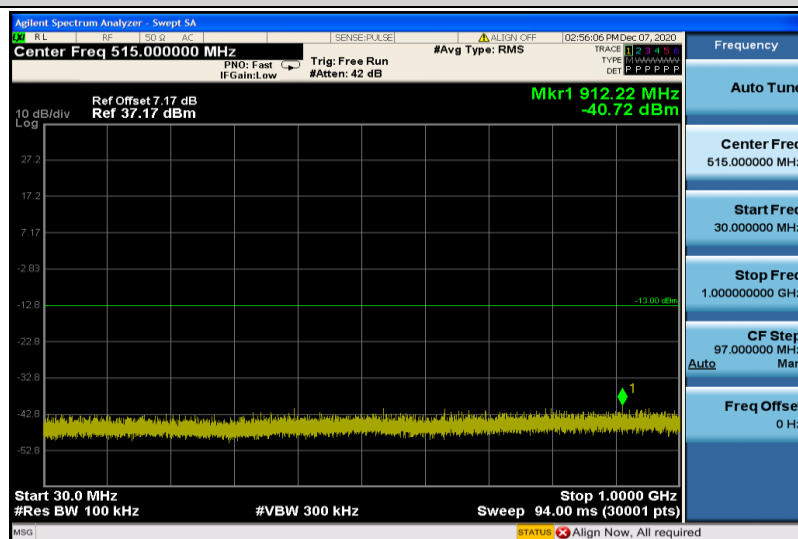
GSM1900-810-1000~20000



GPRS1900-512-30~1000



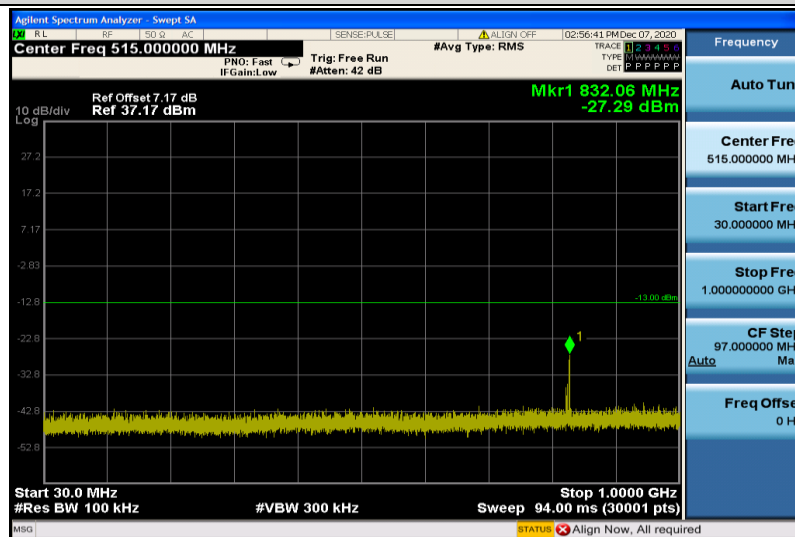
GPRS1900-512-1000~20000



GPRS1900-661-30~1000



GPRS1900-661-1000~20000



GPRS1900-810-30~1000



GPRS1900-810-1000~20000

8.6 Appendix F: Frequency Stability

Test Result

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	VL	TN	-10.27	-0.012461	2.5	PASS
GSM850	128	VN	TN	-9.01	-0.010932	2.5	PASS
GSM850	128	VH	TN	-8.81	-0.010689	2.5	PASS
GSM850	190	VL	TN	-5.68	-0.006789	2.5	PASS
GSM850	190	VN	TN	-10.11	-0.012085	2.5	PASS
GSM850	190	VH	TN	-9.14	-0.010925	2.5	PASS
GSM850	251	VL	TN	-7.72	-0.009095	2.5	PASS
GSM850	251	VN	TN	-6.52	-0.007681	2.5	PASS
GSM850	251	VH	TN	-5.26	-0.006197	2.5	PASS
GPRS850	128	VL	TN	-7.75	-0.009403	2.5	PASS
GPRS850	128	VN	TN	-1.42	-0.001723	2.5	PASS
GPRS850	128	VH	TN	-8.20	-0.009949	2.5	PASS
GPRS850	190	VL	TN	-3.87	-0.004626	2.5	PASS
GPRS850	190	VN	TN	-6.94	-0.008295	2.5	PASS
GPRS850	190	VH	TN	-4.33	-0.005176	2.5	PASS
GPRS850	251	VL	TN	-5.42	-0.006385	2.5	PASS
GPRS850	251	VN	TN	-9.07	-0.010686	2.5	PASS
GPRS850	251	VH	TN	-10.40	-0.012253	2.5	PASS
GSM1900	512	VL	TN	2.58	0.001394	2.5	PASS
GSM1900	512	VN	TN	0.81	0.000438	2.5	PASS
GSM1900	512	VH	TN	-7.81	-0.004221	2.5	PASS
GSM1900	661	VL	TN	1.65	0.000878	2.5	PASS
GSM1900	661	VN	TN	-12.14	-0.006457	2.5	PASS
GSM1900	661	VH	TN	-1.81	-0.000963	2.5	PASS
GSM1900	810	VL	TN	-10.43	-0.005461	2.5	PASS
GSM1900	810	VN	TN	-4.10	-0.002147	2.5	PASS
GSM1900	810	VH	TN	-10.23	-0.005357	2.5	PASS
GPRS1900	512	VL	TN	-18.24	-0.009858	2.5	PASS
GPRS1900	512	VN	TN	7.72	0.004173	2.5	PASS
GPRS1900	512	VH	TN	-6.13	-0.003313	2.5	PASS
GPRS1900	661	VL	TN	2.36	0.001255	2.5	PASS
GPRS1900	661	VN	TN	-5.55	-0.002952	2.5	PASS
GPRS1900	661	VH	TN	6.26	0.003330	2.5	PASS
GPRS1900	810	VL	TN	-13.79	-0.007221	2.5	PASS
GPRS1900	810	VN	TN	-15.08	-0.007896	2.5	PASS

GPRS1900	810	VH	TN	-2.39	-0.001251	2.5	PASS
----------	-----	----	----	-------	-----------	-----	------

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	VN	-30	-4.88	-0.005921	2.5	PASS
GSM850	128	VN	-20	-9.88	-0.011987	2.5	PASS
GSM850	128	VN	-10	-9.59	-0.011636	2.5	PASS
GSM850	128	VN	0	-3.81	-0.004623	2.5	PASS
GSM850	128	VN	10	-8.33	-0.010107	2.5	PASS
GSM850	128	VN	20	-6.26	-0.007595	2.5	PASS
GSM850	128	VN	30	-8.46	-0.010264	2.5	PASS
GSM850	128	VN	40	-8.20	-0.009949	2.5	PASS
GSM850	128	VN	50	-8.46	-0.010264	2.5	PASS
GSM850	190	VN	-30	-3.13	-0.003741	2.5	PASS
GSM850	190	VN	-20	-2.42	-0.002893	2.5	PASS
GSM850	190	VN	-10	-6.10	-0.007291	2.5	PASS
GSM850	190	VN	0	-6.75	-0.008068	2.5	PASS
GSM850	190	VN	10	-2.32	-0.002773	2.5	PASS
GSM850	190	VN	20	-5.04	-0.006024	2.5	PASS
GSM850	190	VN	30	-5.94	-0.007100	2.5	PASS
GSM850	190	VN	40	-5.78	-0.006909	2.5	PASS
GSM850	190	VN	50	-6.52	-0.007793	2.5	PASS
GSM850	251	VN	-30	-5.04	-0.005938	2.5	PASS
GSM850	251	VN	-20	-7.04	-0.008294	2.5	PASS
GSM850	251	VN	-10	-6.78	-0.007988	2.5	PASS
GSM850	251	VN	0	-6.84	-0.008058	2.5	PASS
GSM850	251	VN	10	-8.04	-0.009472	2.5	PASS
GSM850	251	VN	20	-7.36	-0.008671	2.5	PASS
GSM850	251	VN	30	-6.88	-0.008106	2.5	PASS
GSM850	251	VN	40	-8.46	-0.009967	2.5	PASS
GSM850	251	VN	50	-6.91	-0.008141	2.5	PASS
GPRS850	128	VN	-30	1.42	0.001723	2.5	PASS
GPRS850	128	VN	-20	-0.42	-0.000510	2.5	PASS
GPRS850	128	VN	-10	3.97	0.004817	2.5	PASS
GPRS850	128	VN	0	-4.13	-0.005011	2.5	PASS
GPRS850	128	VN	10	-0.71	-0.000861	2.5	PASS
GPRS850	128	VN	20	-0.74	-0.000898	2.5	PASS
GPRS850	128	VN	30	-1.84	-0.002232	2.5	PASS
GPRS850	128	VN	40	-6.78	-0.008226	2.5	PASS
GPRS850	128	VN	50	0.26	0.000315	2.5	PASS
GPRS850	190	VN	-30	-4.49	-0.005367	2.5	PASS
GPRS850	190	VN	-20	-9.33	-0.011152	2.5	PASS

GPRS850	190	VN	-10	-10.62	-0.012694	2.5	PASS
GPRS850	190	VN	0	-4.49	-0.005367	2.5	PASS
GPRS850	190	VN	10	-4.91	-0.005869	2.5	PASS
GPRS850	190	VN	20	-2.97	-0.003550	2.5	PASS
GPRS850	190	VN	30	-9.49	-0.011344	2.5	PASS
GPRS850	190	VN	40	-4.91	-0.005869	2.5	PASS
GPRS850	190	VN	50	-6.62	-0.007913	2.5	PASS
GPRS850	251	VN	-30	-6.91	-0.008141	2.5	PASS
GPRS850	251	VN	-20	-9.04	-0.010650	2.5	PASS
GPRS850	251	VN	-10	-6.20	-0.007304	2.5	PASS
GPRS850	251	VN	0	-11.82	-0.013926	2.5	PASS
GPRS850	251	VN	10	-8.68	-0.010226	2.5	PASS
GPRS850	251	VN	20	-7.91	-0.009319	2.5	PASS
GPRS850	251	VN	30	-8.36	-0.009849	2.5	PASS
GPRS850	251	VN	40	-7.01	-0.008259	2.5	PASS
GPRS850	251	VN	50	-6.91	-0.008141	2.5	PASS
GSM1900	512	VN	-30	-8.33	-0.004502	2.5	PASS
GSM1900	512	VN	-20	-3.49	-0.001886	2.5	PASS
GSM1900	512	VN	-10	-16.11	-0.008707	2.5	PASS
GSM1900	512	VN	0	-11.43	-0.006178	2.5	PASS
GSM1900	512	VN	10	-10.01	-0.005410	2.5	PASS
GSM1900	512	VN	20	-2.07	-0.001119	2.5	PASS
GSM1900	512	VN	30	-9.65	-0.005216	2.5	PASS
GSM1900	512	VN	40	-2.42	-0.001308	2.5	PASS
GSM1900	512	VN	50	-13.30	-0.007188	2.5	PASS
GSM1900	661	VN	-30	-0.32	-0.000170	2.5	PASS
GSM1900	661	VN	-20	-8.81	-0.004686	2.5	PASS
GSM1900	661	VN	-10	-1.94	-0.001032	2.5	PASS
GSM1900	661	VN	0	-9.01	-0.004793	2.5	PASS
GSM1900	661	VN	10	-7.39	-0.003931	2.5	PASS
GSM1900	661	VN	20	-4.65	-0.002473	2.5	PASS
GSM1900	661	VN	30	-12.04	-0.006404	2.5	PASS
GSM1900	661	VN	40	-12.49	-0.006644	2.5	PASS
GSM1900	661	VN	50	-4.58	-0.002436	2.5	PASS
GSM1900	810	VN	-30	-7.55	-0.003953	2.5	PASS
GSM1900	810	VN	-20	-20.11	-0.010530	2.5	PASS
GSM1900	810	VN	-10	-9.10	-0.004765	2.5	PASS
GSM1900	810	VN	0	-2.29	-0.001199	2.5	PASS
GSM1900	810	VN	10	-14.33	-0.007503	2.5	PASS
GSM1900	810	VN	20	-2.32	-0.001215	2.5	PASS
GSM1900	810	VN	30	-11.11	-0.005817	2.5	PASS
GSM1900	810	VN	40	-10.30	-0.005393	2.5	PASS

GSM1900	810	VN	50	-4.94	-0.002587	2.5	PASS
GPRS1900	512	VN	-30	-2.16	-0.001167	2.5	PASS
GPRS1900	512	VN	-20	3.36	0.001816	2.5	PASS
GPRS1900	512	VN	-10	3.42	0.001848	2.5	PASS
GPRS1900	512	VN	0	-5.23	-0.002827	2.5	PASS
GPRS1900	512	VN	10	-1.97	-0.001065	2.5	PASS
GPRS1900	512	VN	20	-10.82	-0.005848	2.5	PASS
GPRS1900	512	VN	30	3.94	0.002129	2.5	PASS
GPRS1900	512	VN	40	-11.85	-0.006405	2.5	PASS
GPRS1900	512	VN	50	-20.73	-0.011204	2.5	PASS
GPRS1900	661	VN	-30	-6.62	-0.003521	2.5	PASS
GPRS1900	661	VN	-20	-1.13	-0.000601	2.5	PASS
GPRS1900	661	VN	-10	4.68	0.002489	2.5	PASS
GPRS1900	661	VN	0	-4.94	-0.002628	2.5	PASS
GPRS1900	661	VN	10	2.10	0.001117	2.5	PASS
GPRS1900	661	VN	20	-0.39	-0.000207	2.5	PASS
GPRS1900	661	VN	30	0.45	0.000239	2.5	PASS
GPRS1900	661	VN	40	-1.32	-0.000702	2.5	PASS
GPRS1900	661	VN	50	-5.75	-0.003059	2.5	PASS
GPRS1900	810	VN	-30	-23.28	-0.012190	2.5	PASS
GPRS1900	810	VN	-20	-16.40	-0.008587	2.5	PASS
GPRS1900	810	VN	-10	-8.43	-0.004414	2.5	PASS
GPRS1900	810	VN	0	-10.88	-0.005697	2.5	PASS
GPRS1900	810	VN	10	-16.72	-0.008755	2.5	PASS
GPRS1900	810	VN	20	5.59	0.002927	2.5	PASS
GPRS1900	810	VN	30	-0.45	-0.000236	2.5	PASS
GPRS1900	810	VN	40	-6.39	-0.003346	2.5	PASS
GPRS1900	810	VN	50	-4.39	-0.002299	2.5	PASS

-----End of the Report -----