

Appendix Test Data for GSM (Conducted Measurement)

Product Name: Voter Identification Unit

Trade Mark: SMARTMATIC

Test Model: VIU-500 Model 700

FCC ID: 2AGVK-VIU-500A70-R2

Environmental Conditions

Temperature:	23.5℃
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Max Zhang
NOTE	N/A

Appendix A: RF output power

Test Result

Band	UL Frequency (MHz)	Mode	Peak Power(dBm)	Average Power(dBm)	PAR(dB)	PAR Limit(dB)	AntGain (dBi)	ERP (dBm)	Power Limit(dBm)	Conclus ion
850	824.2	Voice	33.82	33.59	0.23	13	-1.12	30.32	38.45	Pass
850	836.6	Voice	33.71	33.54	0.17	13	-1.12	30.27	38.45	Pass
850	848.8	Voice	33.68	33.47	0.21	13	-1.12	30.20	38.45	Pass
850	824.2	GPRS 1Slot	33.52	33.41	0.11	13	-1.12	30.14	38.45	Pass
850	836.6	GPRS 1Slot	33.47	33.36	0.11	13	-1.12	30.09	38.45	Pass
850	848.8	GPRS 1Slot	33.53	33.42	0.11	13	-1.12	30.15	38.45	Pass
850	824.2	GPRS 2Slots	33.26	32.98	0.28	13	-1.12	29.71	38.45	Pass
850	836.6	GPRS 2Slots	33.18	32.99	0.19	13	-1.12	29.72	38.45	Pass
850	848.8	GPRS 2Slots	33.21	32.95	0.26	13	-1.12	29.68	38.45	Pass
850	824.2	GPRS 3Slots	32.12	31.88	0.24	13	-1.12	28.61	38.45	Pass
850	836.6	GPRS 3Slots	32.21	31.96	0.25	13	-1.12	28.69	38.45	Pass
850	848.8	GPRS 3Slots	31.98	31.79	0.19	13	-1.12	28.52	38.45	Pass
850	824.2	GPRS 4Slots	30.89	30.67	0.22	13	-1.12	27.40	38.45	Pass
850	836.6	GPRS 4Slots	31.02	30.81	0.21	13	-1.12	27.54	38.45	Pass
850	848.8	GPRS 4Slots	30.96	30.78	0.18	13	-1.12	27.51	38.45	Pass

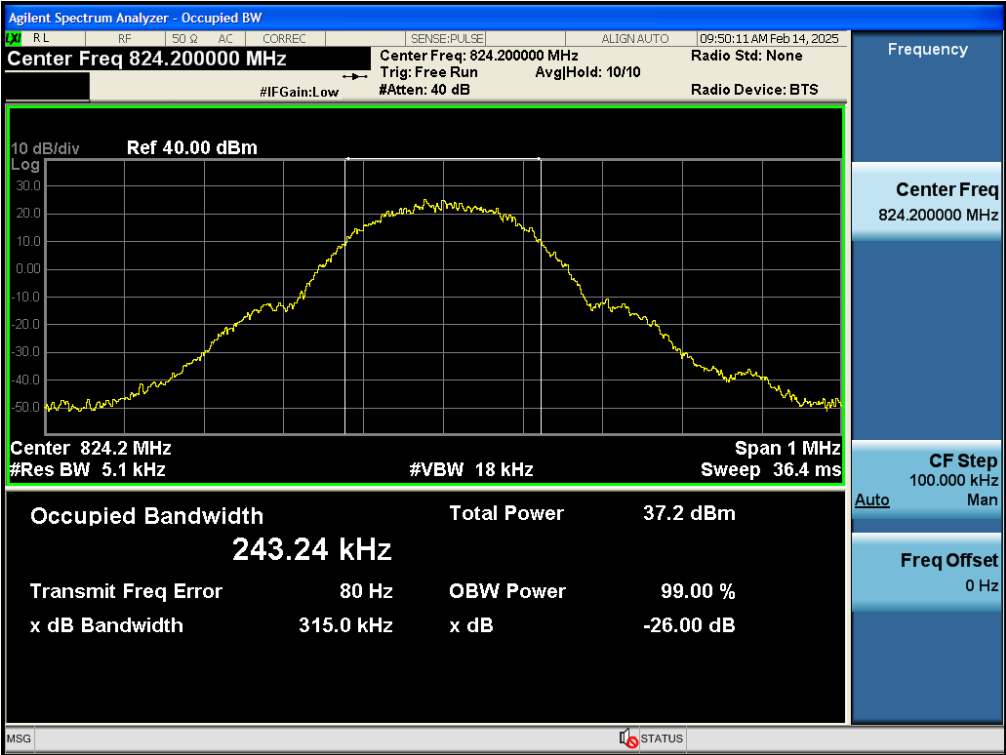
Band	UL Frequency (MHz)	Mode	Peak Power(dBm)	Average Power(dBm)	PAR(dB)	PAR Limit(dB)	AntGain (dBi)	EIRP (dBm)	Power Limit(dBm)	Conclus ion
1900	1850.2	Voice	31.25	31.04	0.21	13	1.69	32.73	33	Pass
1900	1880	Voice	31.33	31.13	0.20	13	1.69	32.82	33	Pass
1900	1909.8	Voice	31.26	30.04	1.22	13	1.69	31.73	33	Pass
1900	1850.2	GPRS 1Slot	31.14	30.98	0.16	13	1.69	32.67	33	Pass
1900	1880	GPRS 1Slot	31.08	30.84	0.24	13	1.69	32.53	33	Pass
1900	1909.8	GPRS 1Slot	31.24	30.99	0.25	13	1.69	32.68	33	Pass
1900	1850.2	GPRS 2Slots	30.87	30.65	0.22	13	1.69	32.34	33	Pass
1900	1880	GPRS 2Slots	30.69	30.47	0.22	13	1.69	32.16	33	Pass
1900	1909.8	GPRS 2Slots	30.75	30.58	0.17	13	1.69	32.27	33	Pass
1900	1850.2	GPRS 3Slots	29.84	29.67	0.17	13	1.69	31.36	33	Pass
1900	1880	GPRS 3Slots	29.51	29.32	0.19	13	1.69	31.01	33	Pass
1900	1909.8	GPRS 3Slots	29.37	29.16	0.21	13	1.69	30.85	33	Pass
1900	1850.2	GPRS 4Slots	28.47	28.31	0.16	13	1.69	30.00	33	Pass
1900	1880	GPRS 4Slots	28.52	28.34	0.18	13	1.69	30.03	33	Pass
1900	1909.8	GPRS 4Slots	28.67	28.39	0.28	13	1.69	30.08	33	Pass

Appendix B: Occupied bandwidth

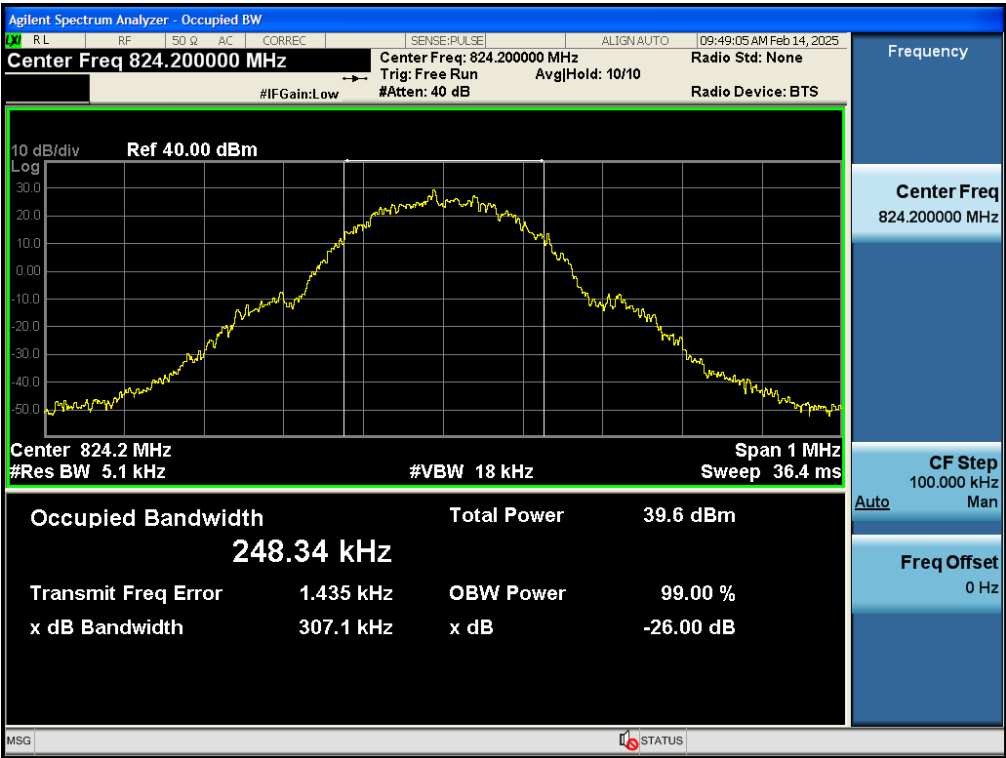
Test Result

Band	UL Frequency (MHz)	Mode	Occupied Bandwidth (MHz)	Emission Bandwidth (MHz)	Limit
GSM850	824.2	Voice	0.248	0.307	No limit
GSM850	836.6	Voice	0.242	0.312	No limit
GSM850	848.8	Voice	0.247	0.317	No limit
GSM850	824.2	GPRS 1Slot	0.243	0.315	No limit
GSM850	836.6	GPRS 1Slot	0.245	0.317	No limit
GSM850	848.8	GPRS 1Slot	0.245	0.316	No limit
GSM1900	1850.2	Voice	0.242	0.314	No limit
GSM1900	1880	Voice	0.247	0.320	No limit
GSM1900	1909.8	Voice	0.249	0.314	No limit
GSM1900	1850.2	GPRS 1Slot	0.243	0.319	No limit
GSM1900	1880	GPRS 1Slot	0.247	0.311	No limit
GSM1900	1909.8	GPRS 1Slot	0.246	0.318	No limit

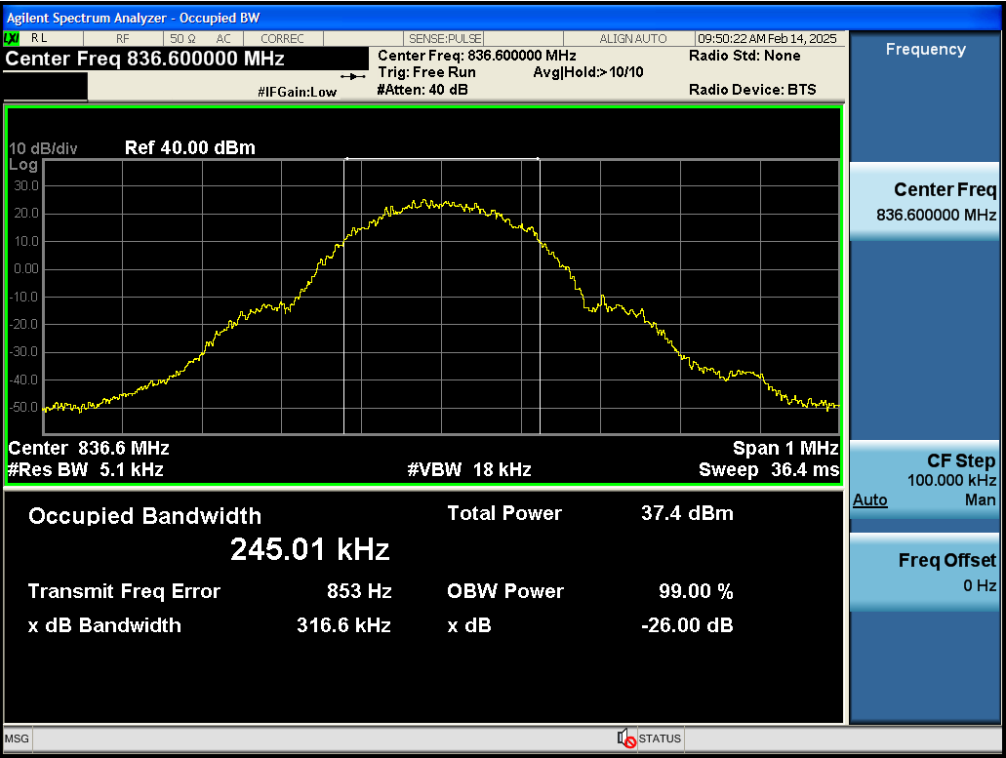
Test Graphs



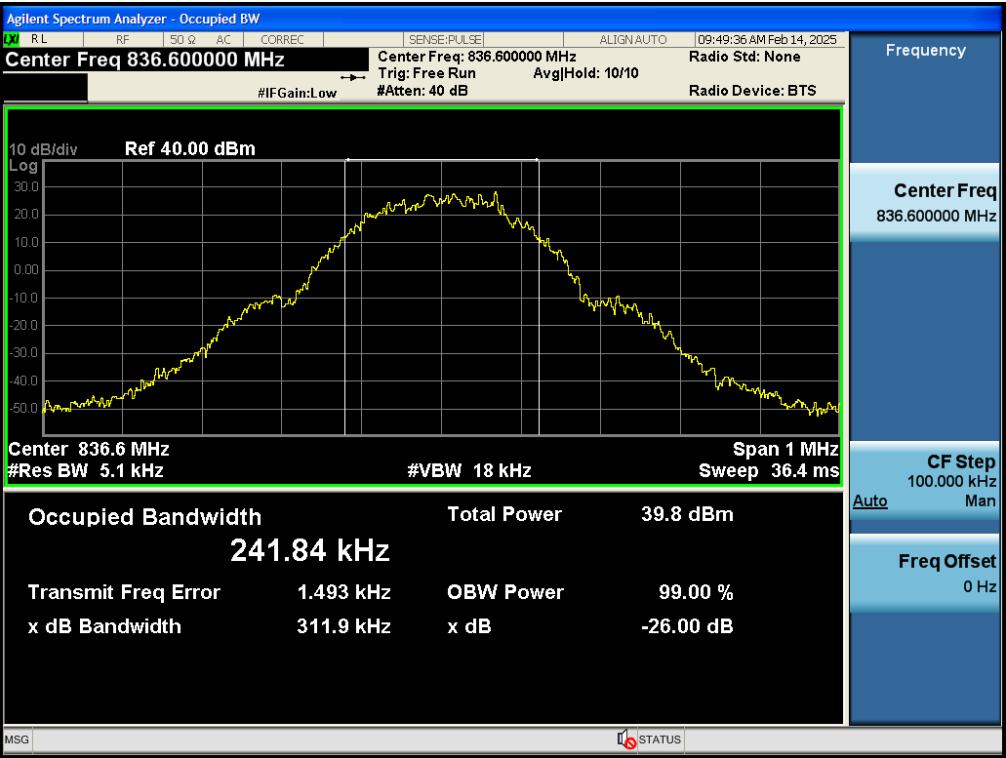
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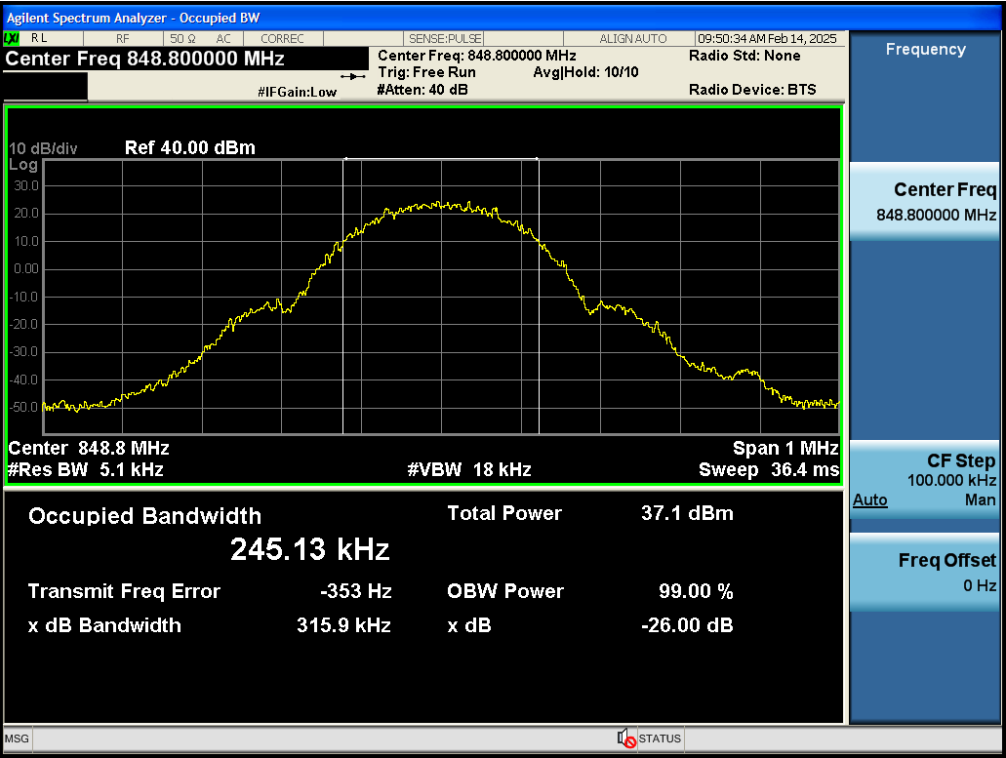
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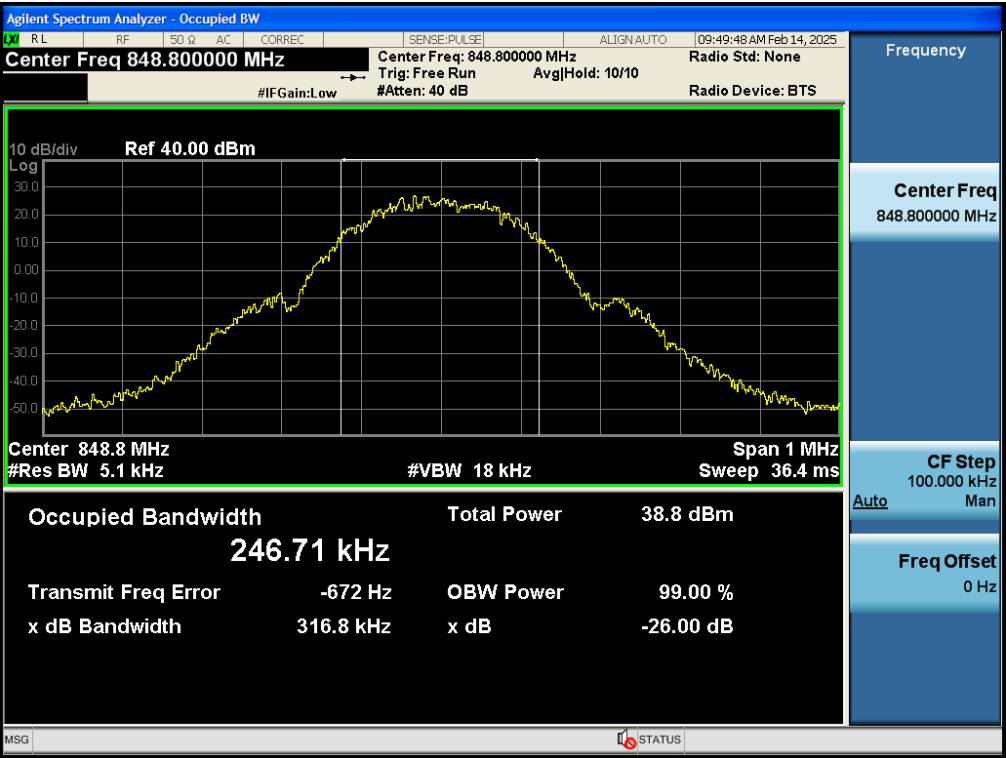
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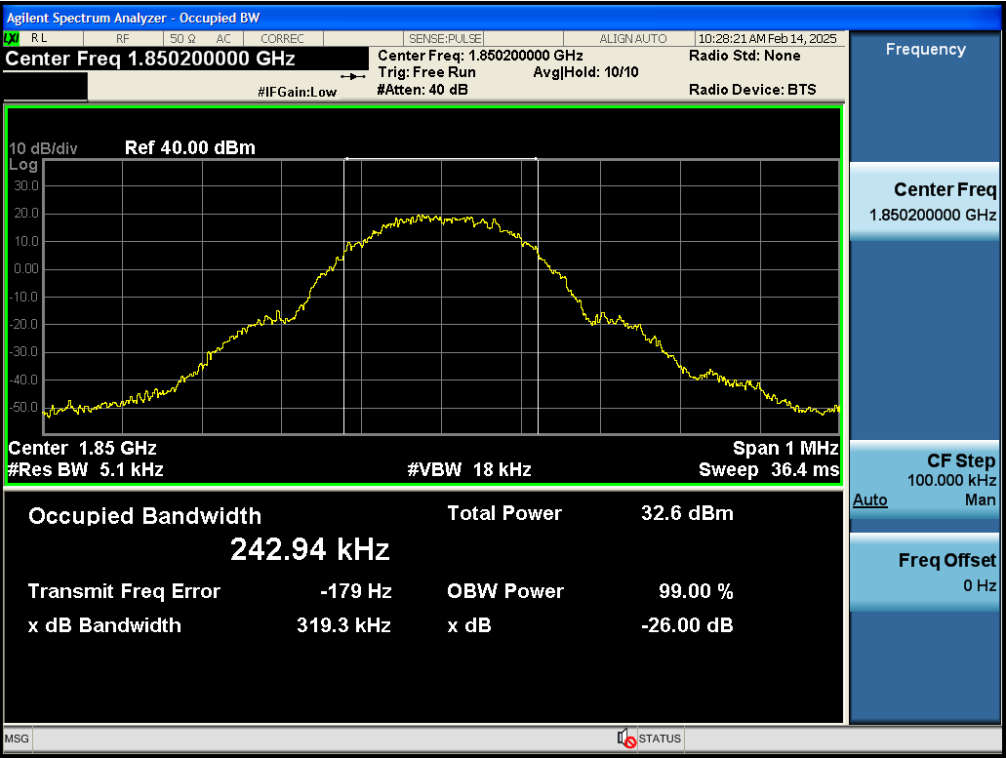
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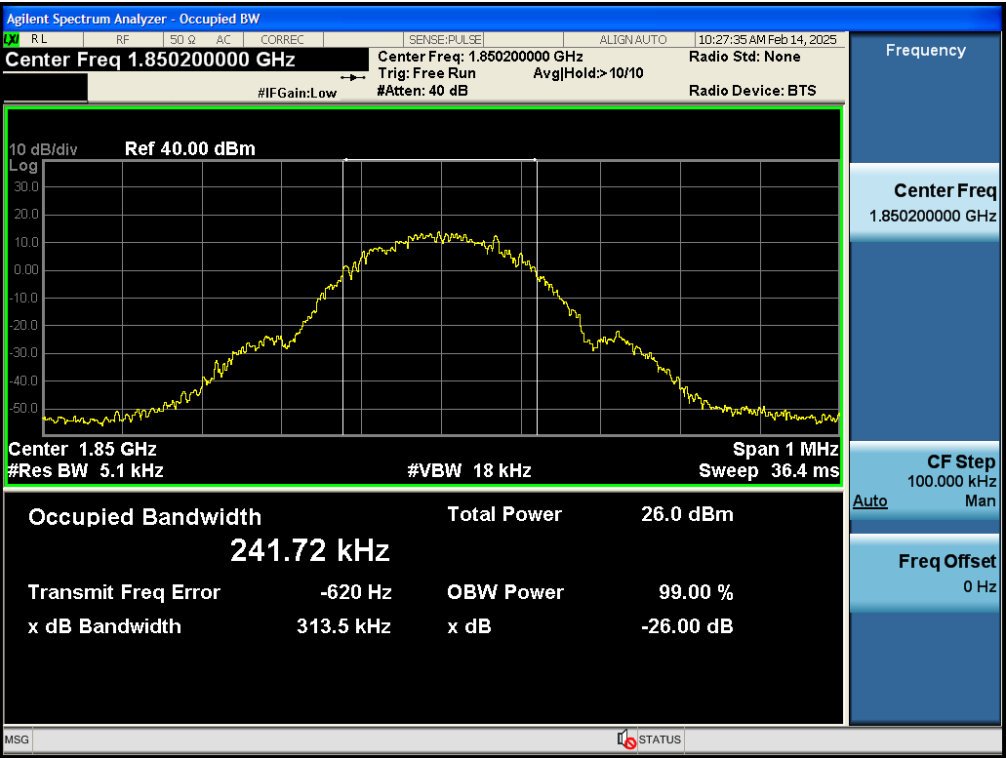
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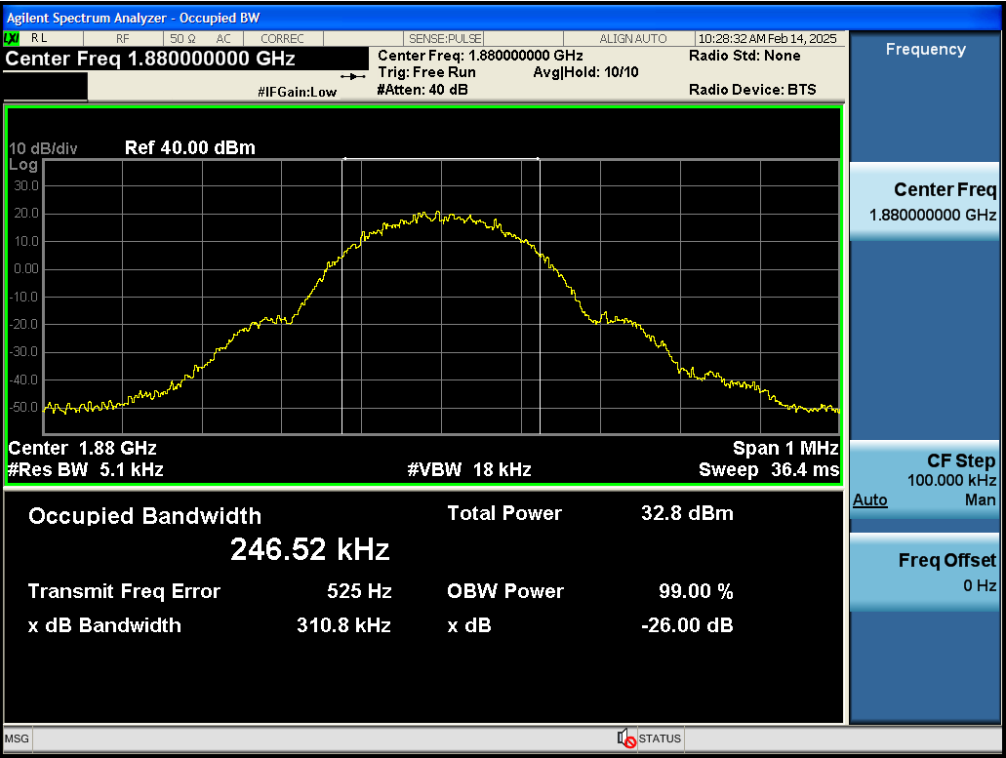
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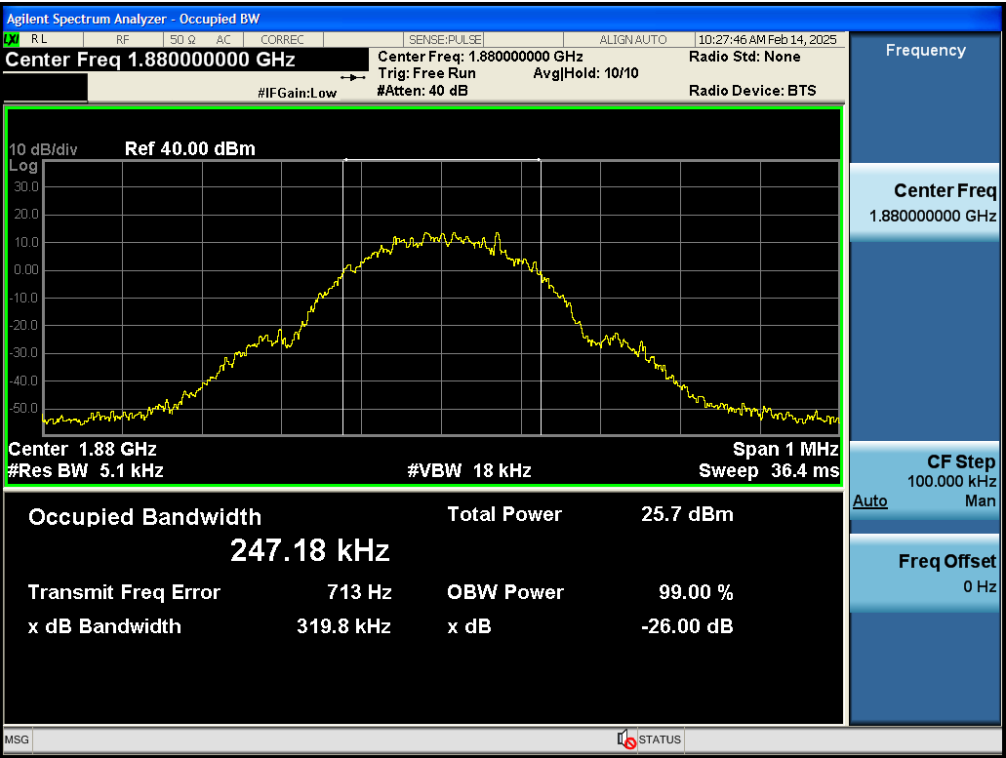
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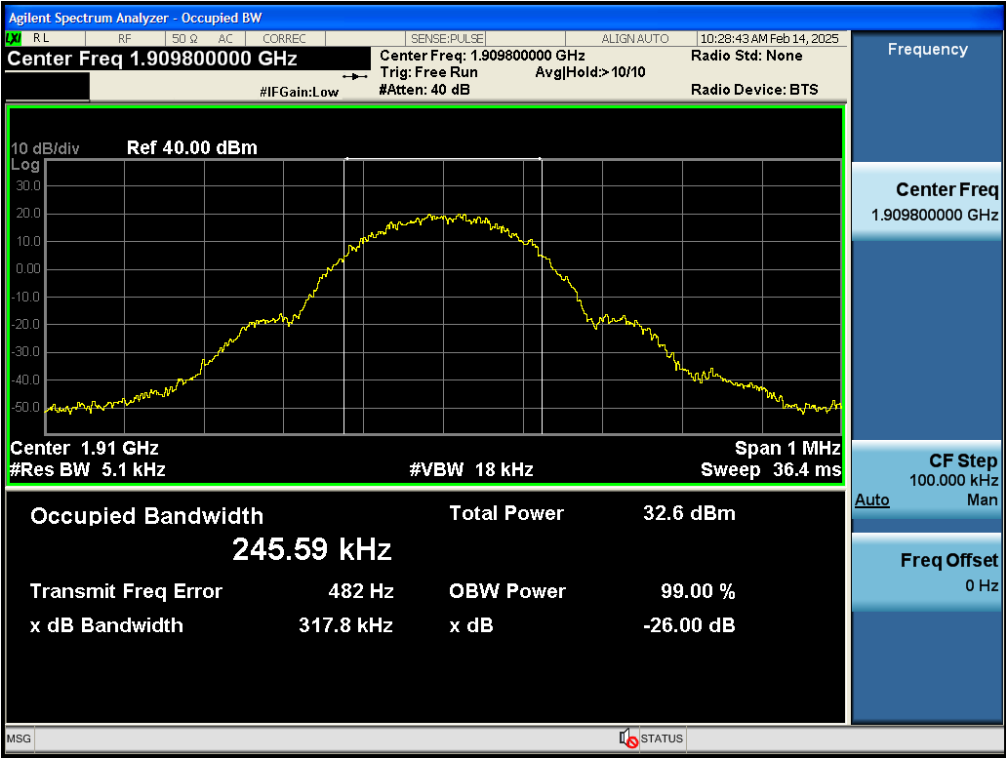
Test_Graph_bandGSM1900_1850.2MHz_Voice_OBW&EBW



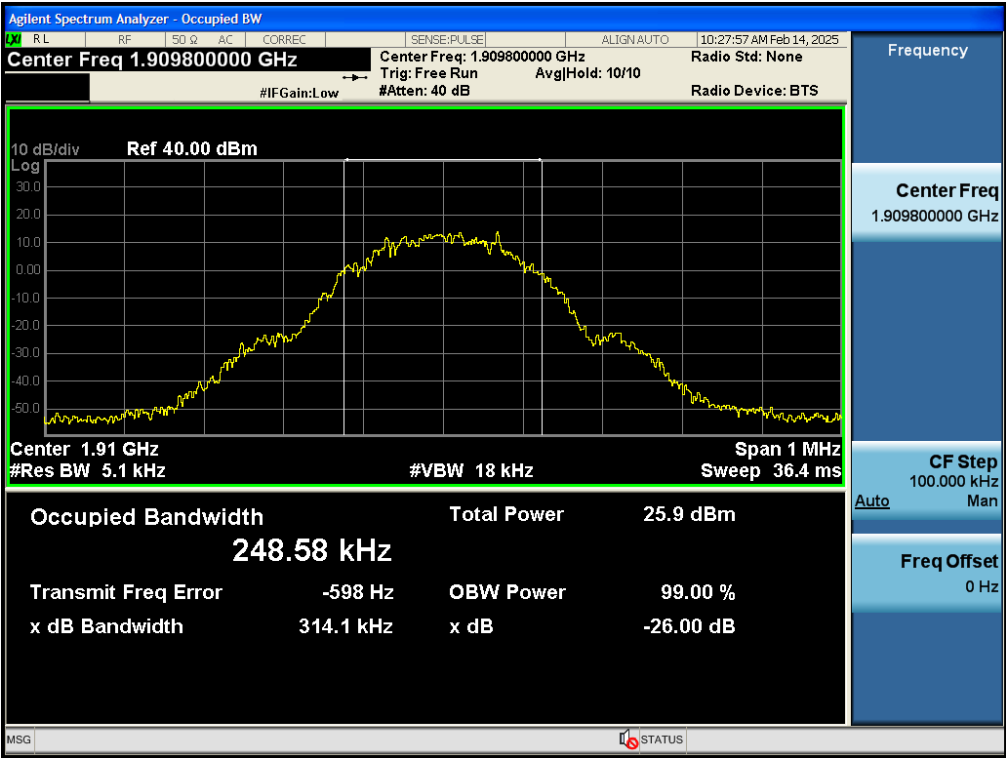
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Test_Graph_bandGSM1900_1880MHz_Voice_OBW&EBW



Test_Graph_bandGSM1900_1909.8MHz_GPRS 1Slot_OBW&EBW



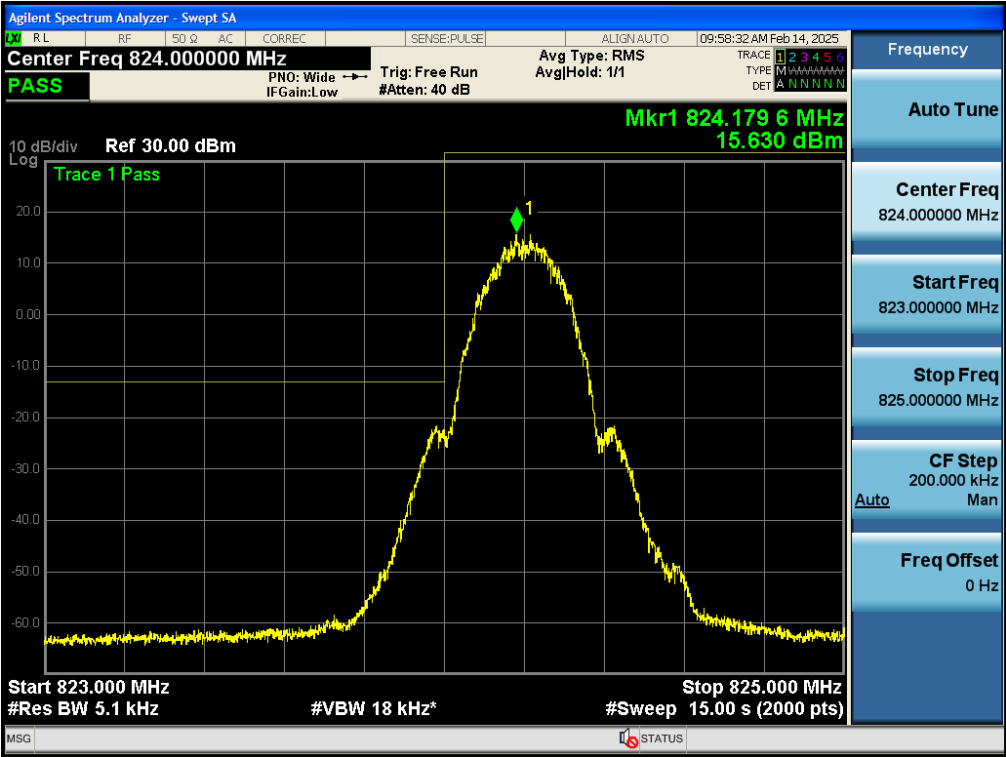
Test_Graph_bandGSM1900_1909.8MHz_Voice_OBW&EBW

Appendix C: Band edge emissions

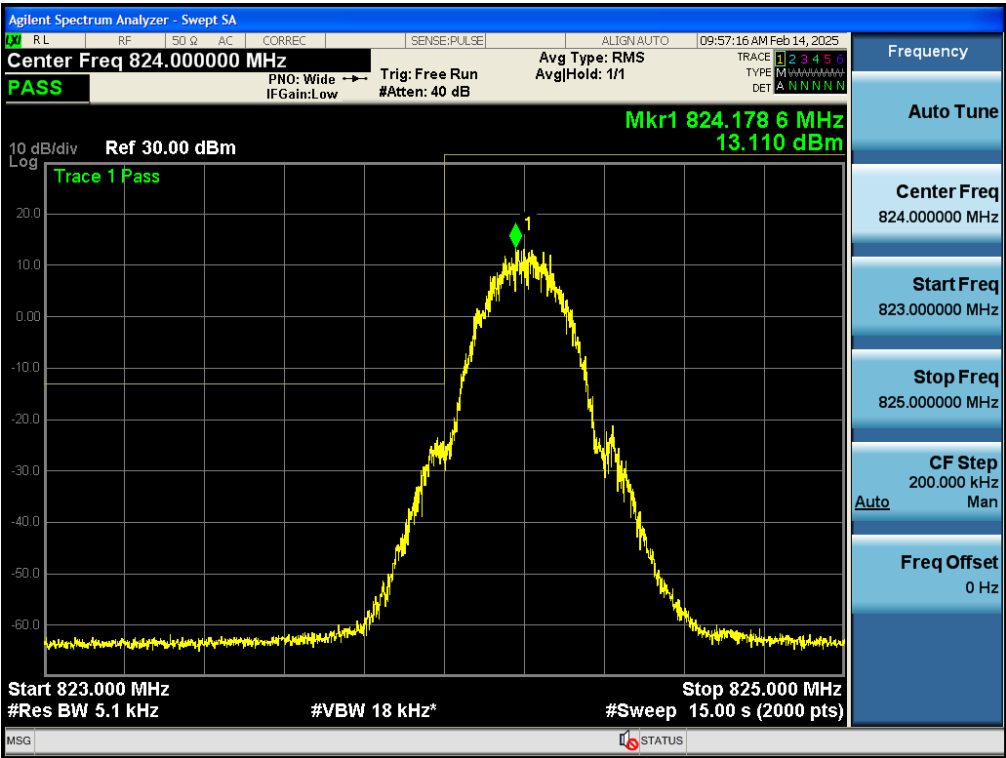
Test Result

Band	UL Frequency (MHz)	Mode	Conclusion
GSM850	824.2	Voice	Pass
GSM850	848.8	Voice	Pass
GSM850	824.2	GPRS 1Slot	Pass
GSM850	848.8	GPRS 1Slot	Pass
GSM1900	1850.2	Voice	Pass
GSM1900	1909.8	Voice	Pass
GSM1900	1850.2	GPRS 1Slot	Pass
GSM1900	1909.8	GPRS 1Slot	Pass

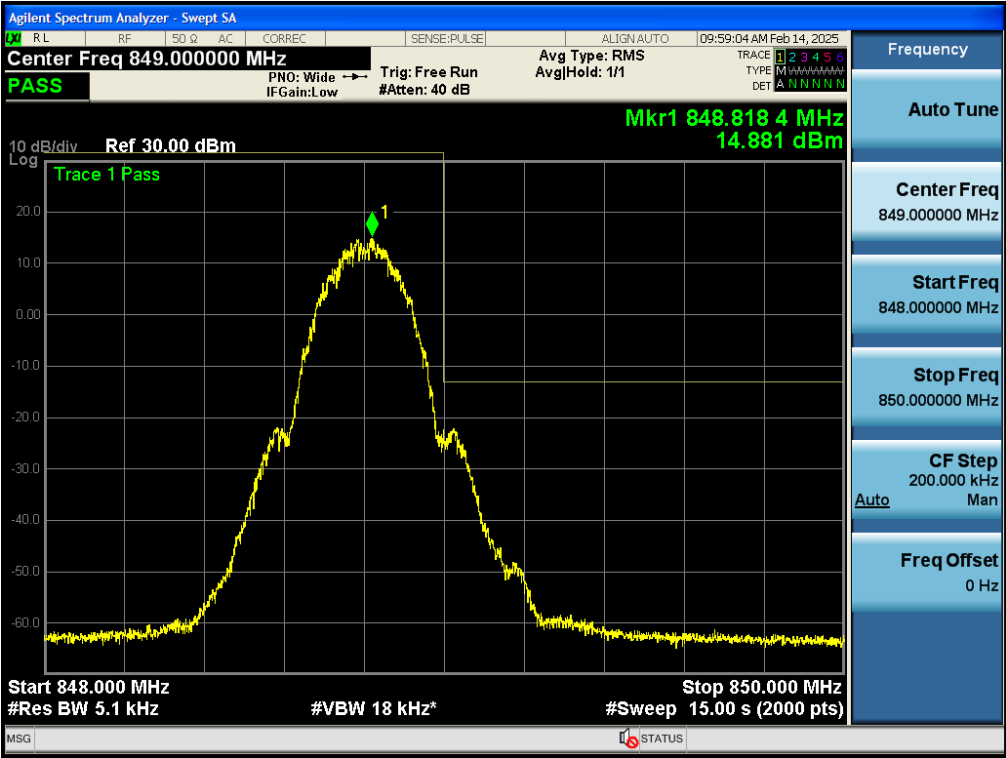
Test Graphs



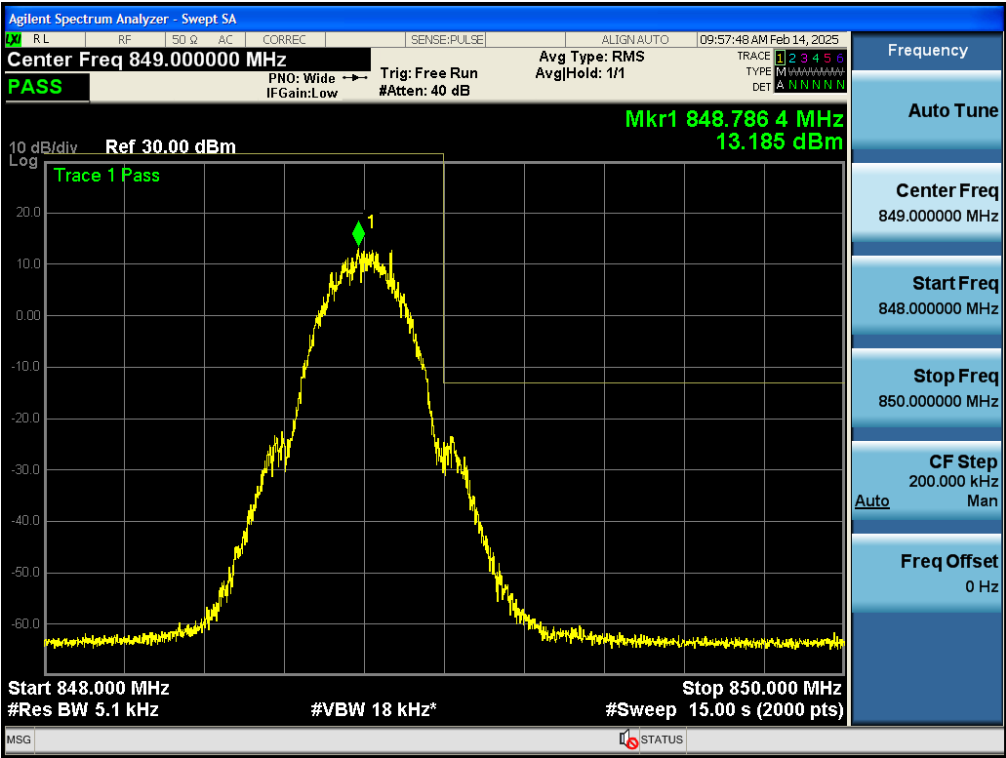
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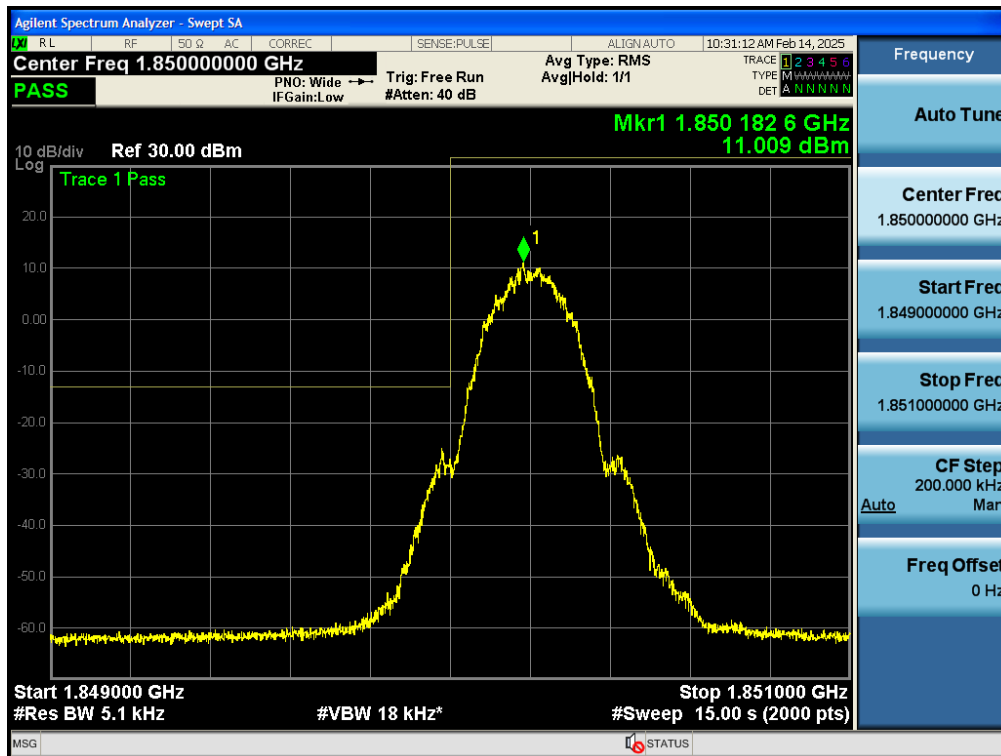
Test_Graph_bandGSM850_824.2MHz_Voice_Band edge



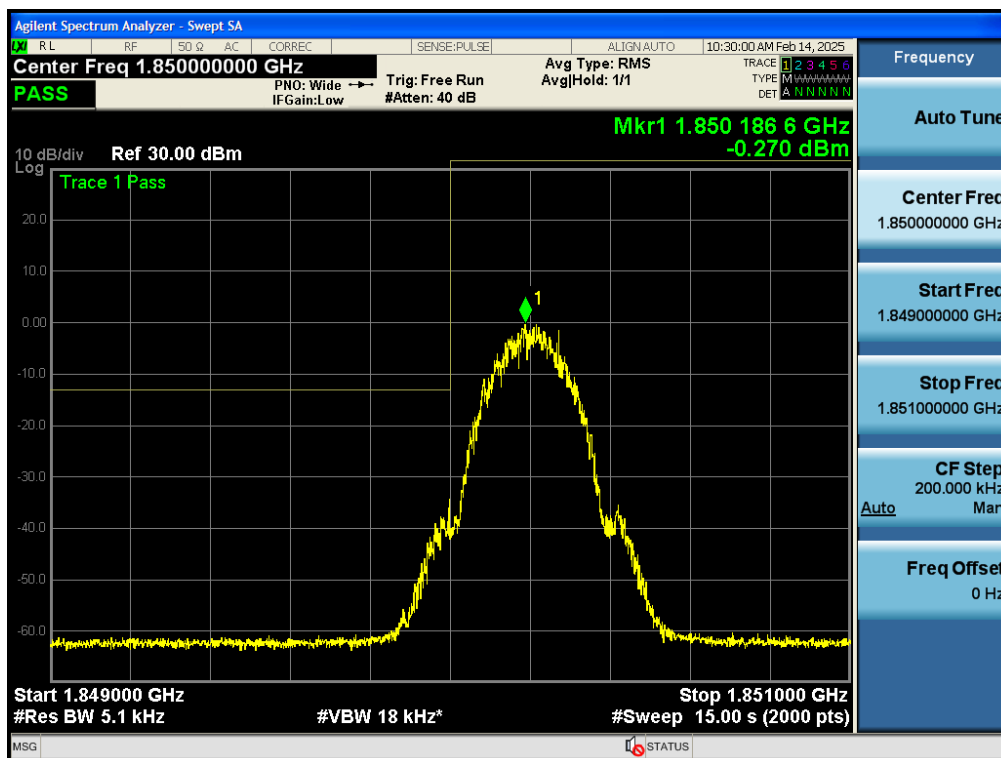
Test_Graph_bandGSM850_848.8MHz_GPRS 1Slot_Band edge



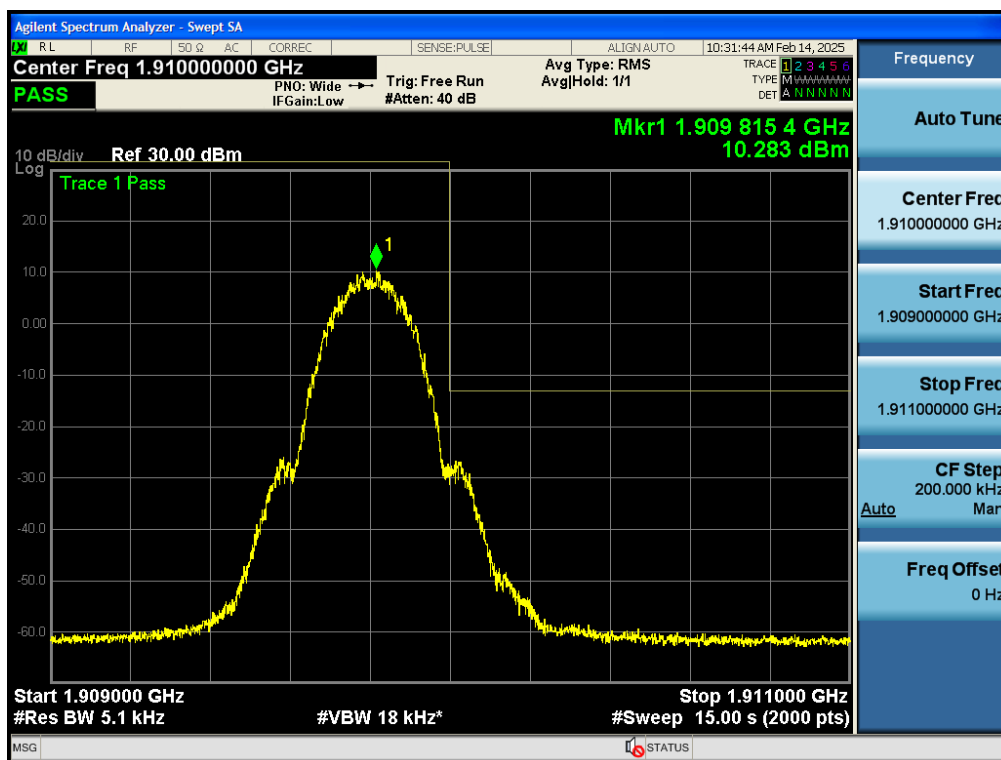
Test_Graph_bandGSM850_848.8MHz_Voice_Band edge



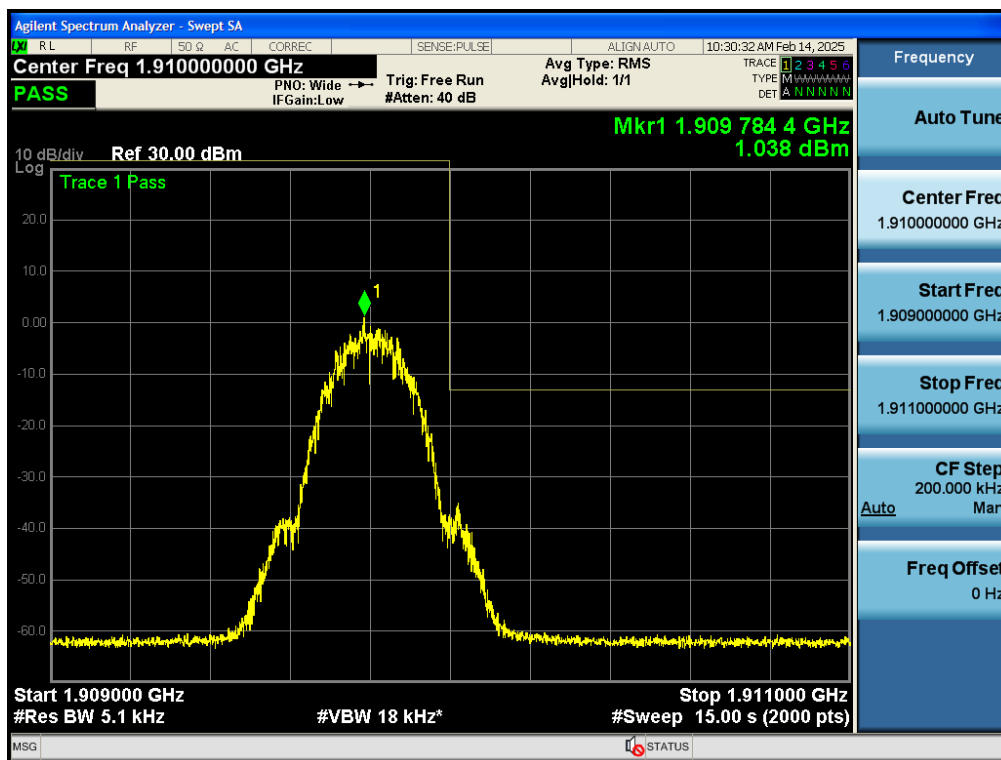
Test_Graph_bandGSM1900_1850.2MHz_GPRS 1Slot_Band edge



Test_Graph_bandGSM1900_1850.2MHz_Voice_Band edge



Test_Graph_bandGSM1900_1909.8MHz_GPRS 1Slot_Band edge



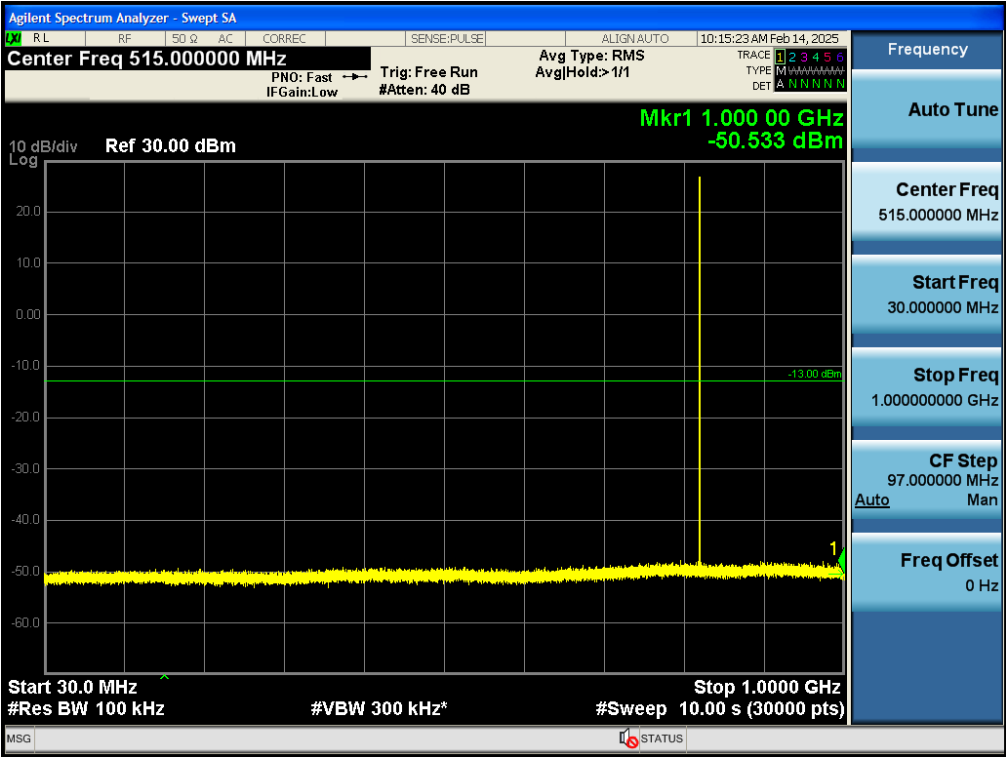
Test_Graph_bandGSM1900_1909.8MHz_Voice_Band edge

Appendix D: Unwanted spurious emissions at antenna terminals

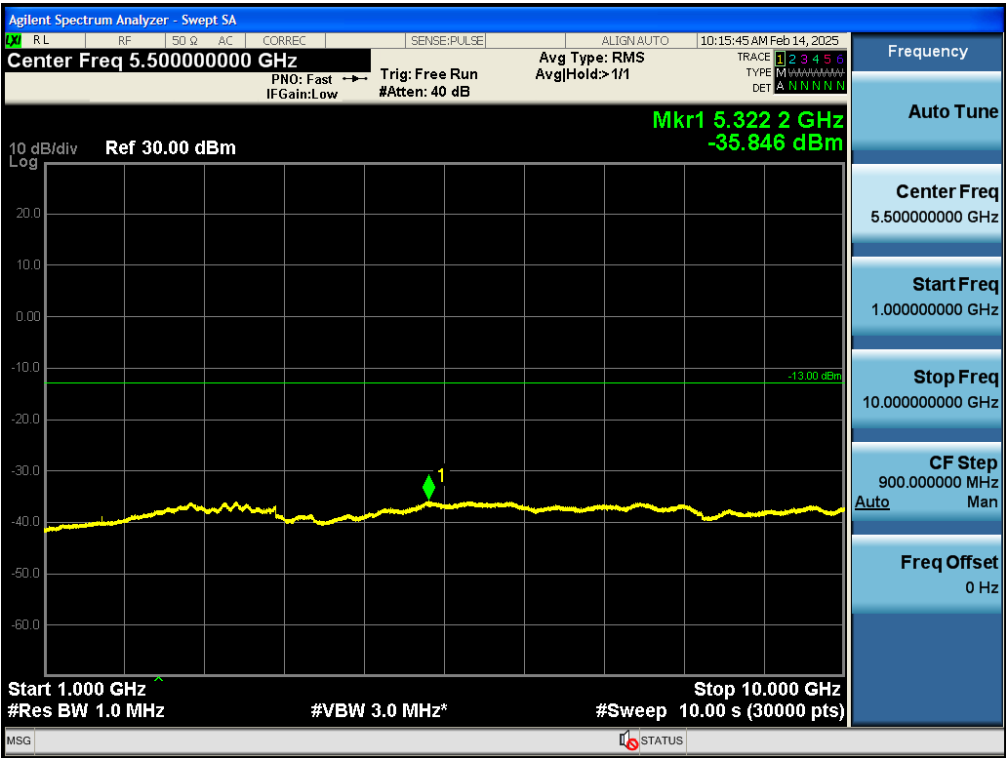
Test Result

Band	UL Frequency (MHz)	Mode	Conclusion
GSM850	824.2	Voice	Pass
GSM850	836.6	Voice	Pass
GSM850	848.8	Voice	Pass
GSM850	824.2	GPRS 1Slot	Pass
GSM850	836.6	GPRS 1Slot	Pass
GSM850	848.8	GPRS 1Slot	Pass
GSM1900	1850.2	Voice	Pass
GSM1900	1880	Voice	Pass
GSM1900	1909.8	Voice	Pass
GSM1900	1850.2	GPRS 1Slot	Pass
GSM1900	1880	GPRS 1Slot	Pass
GSM1900	1909.8	GPRS 1Slot	Pass

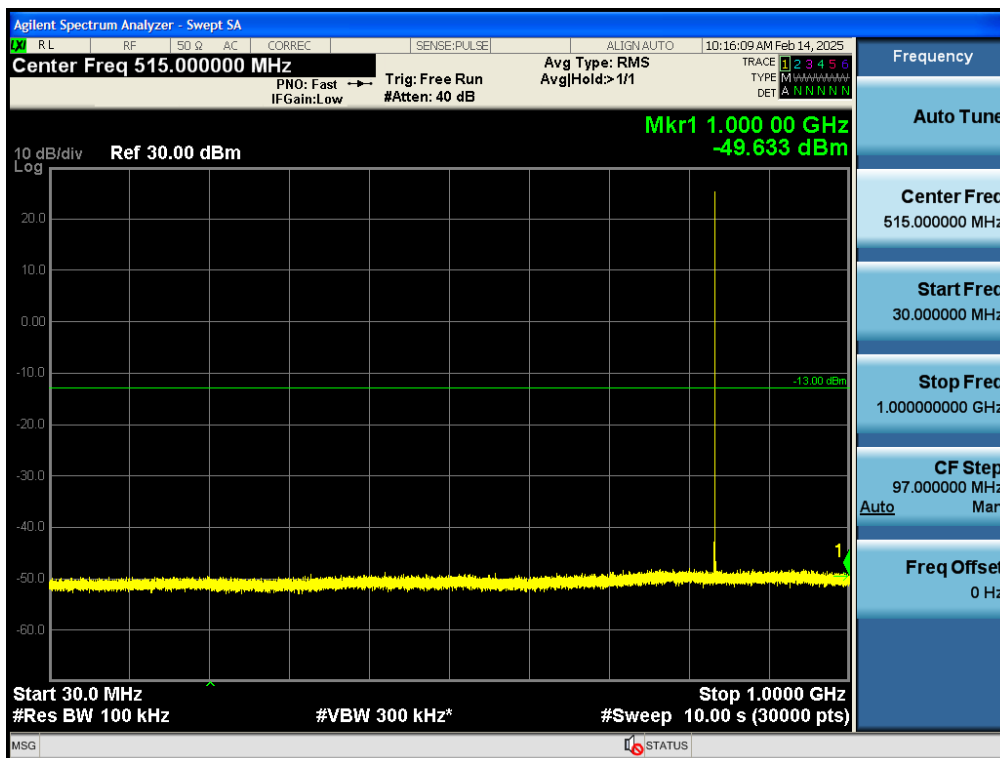
Test Graphs



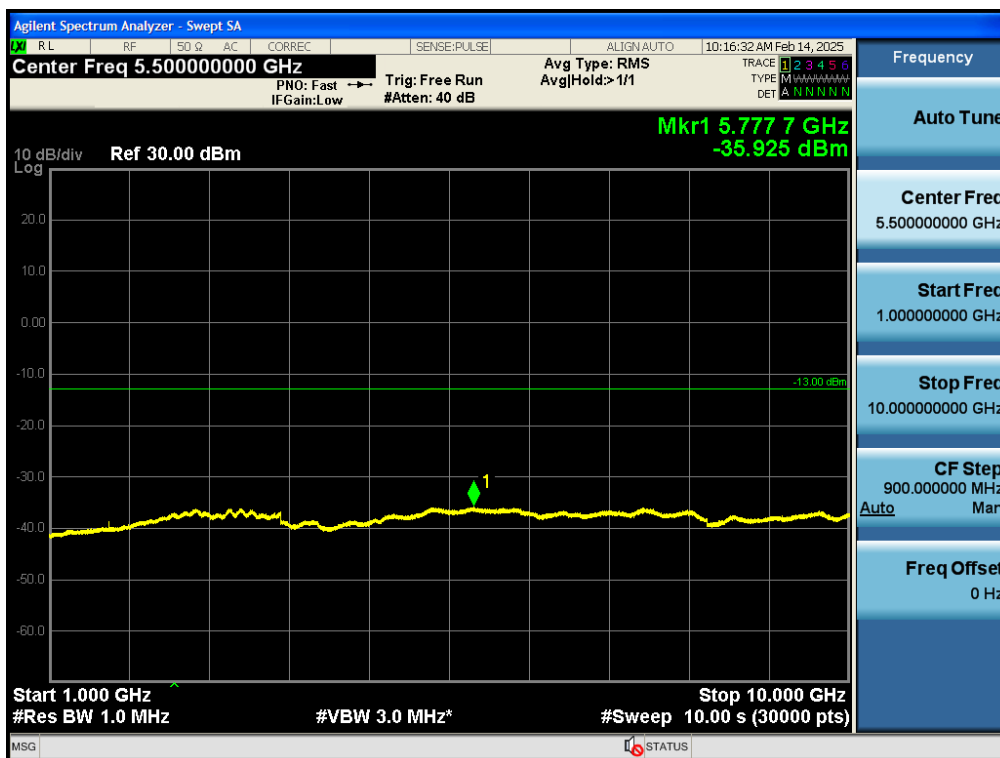
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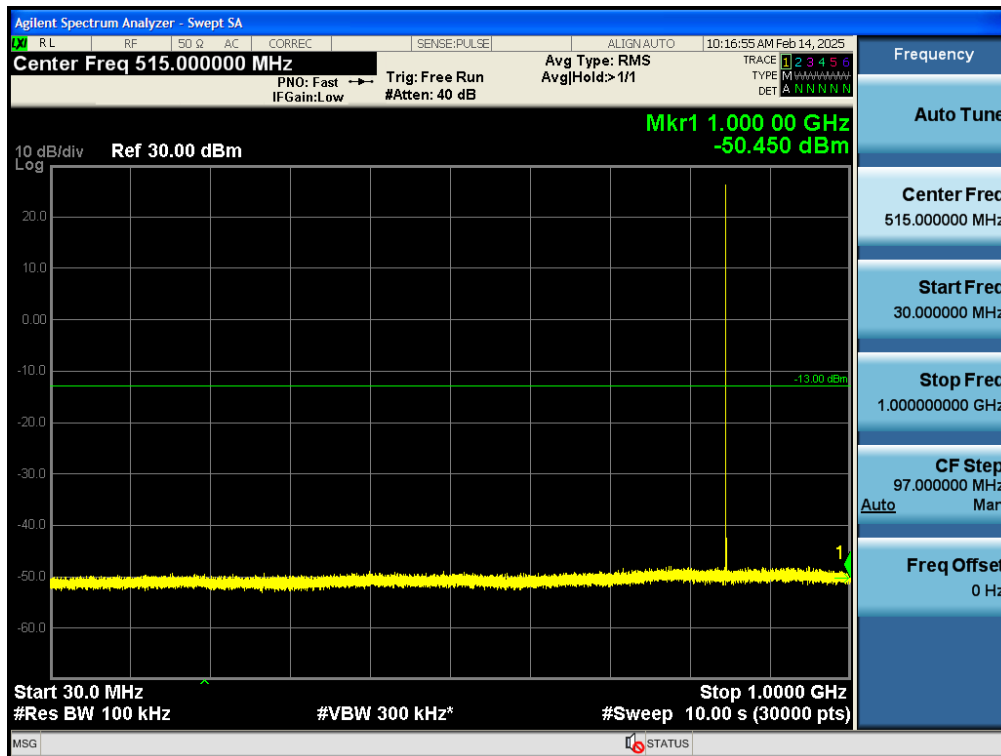
Test_Graph_bandGSM850_824.2MHz_Voice_1G_10G_TX



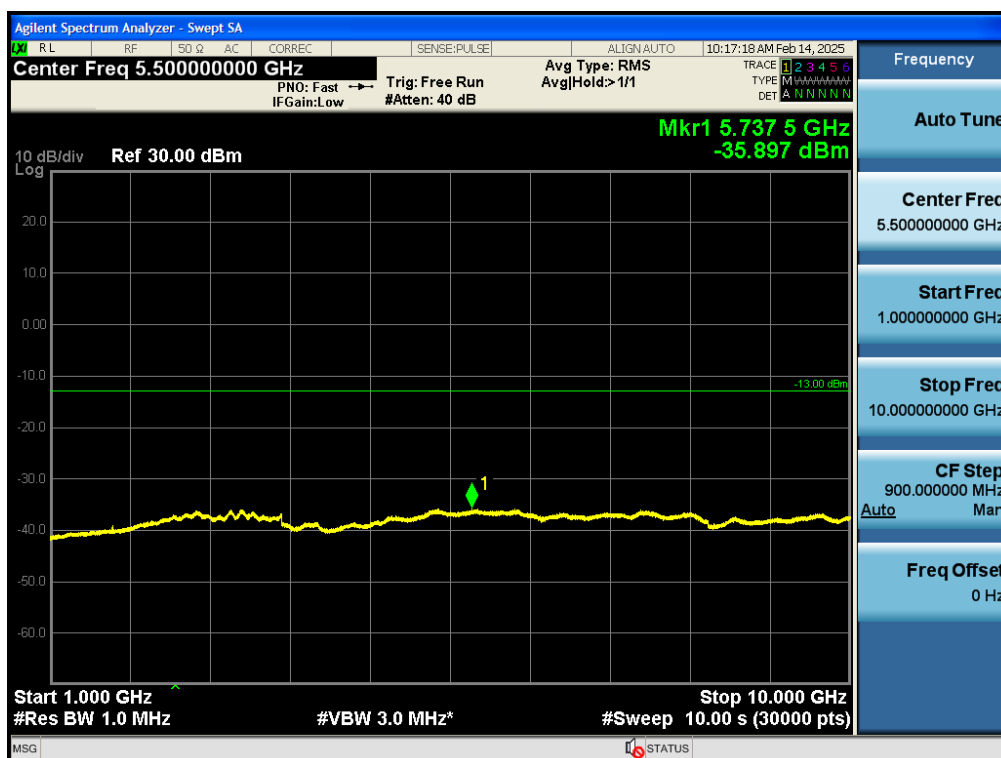
Test_Graph_bandGSM850_836.6MHz_Voice_30M_1G_TX



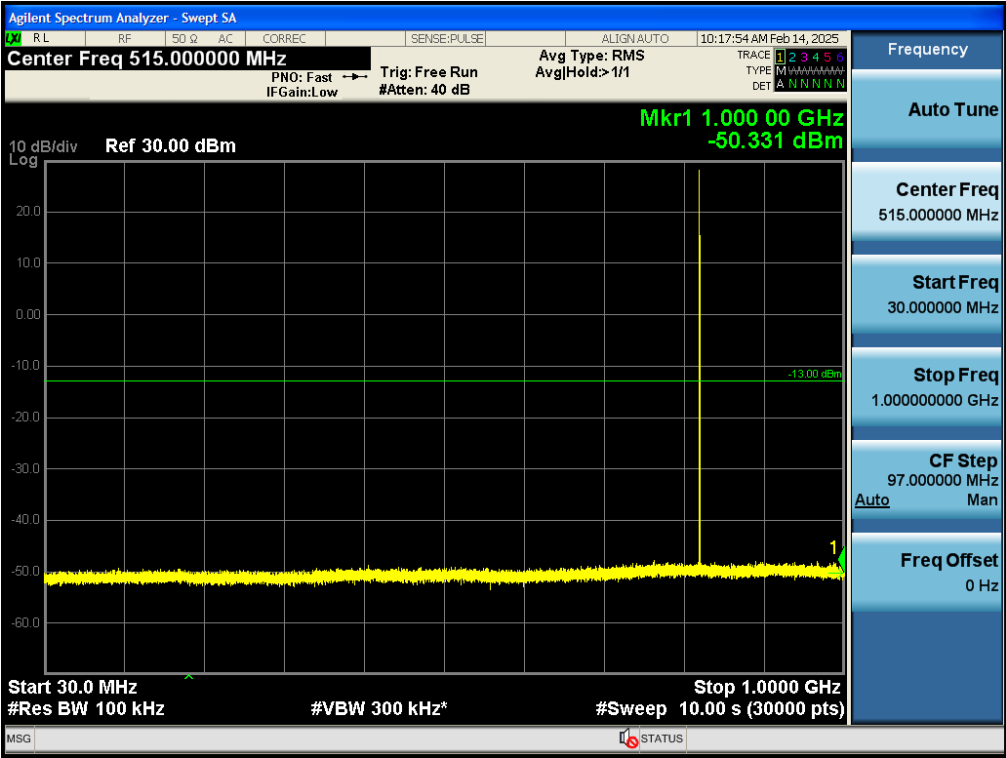
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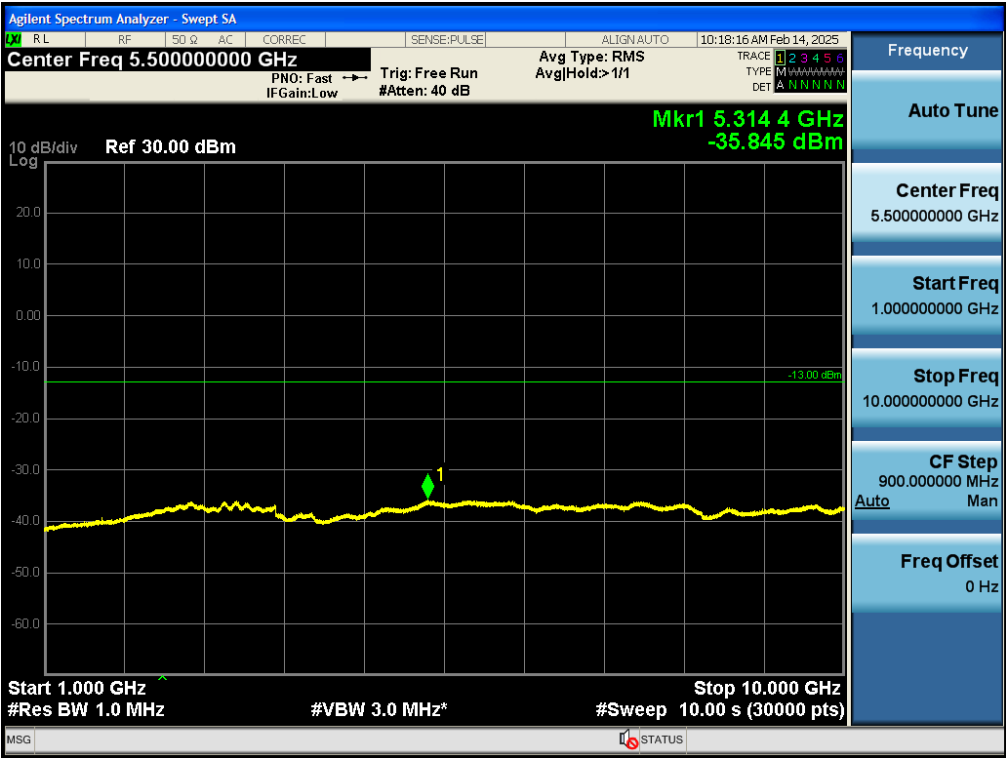
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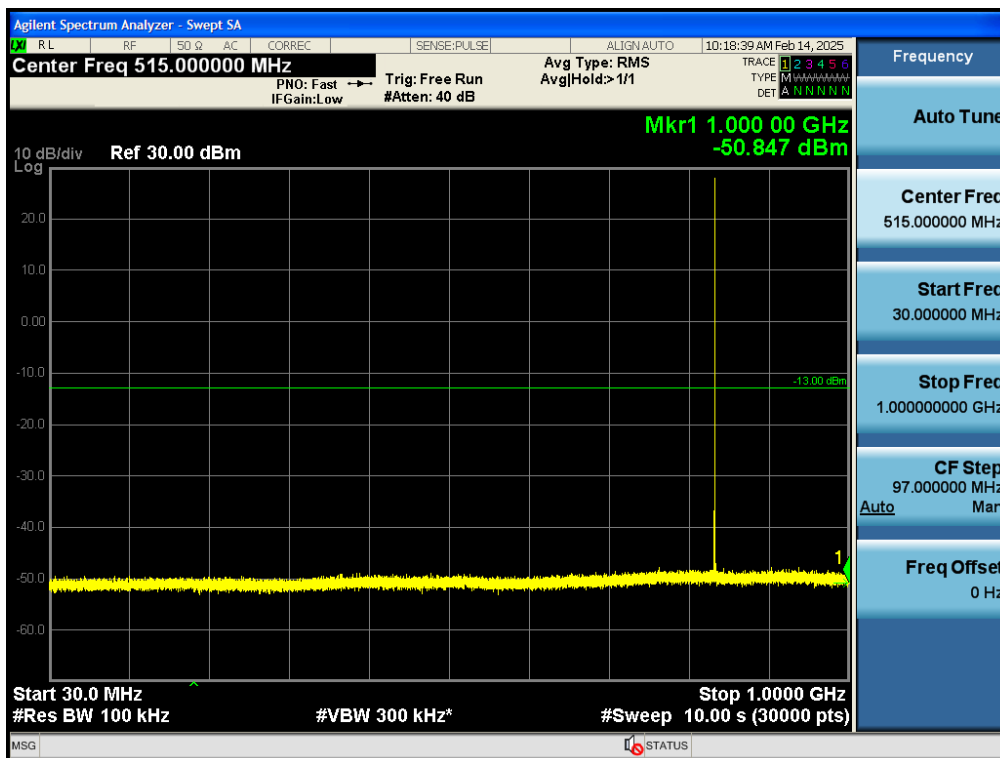
Test_Graph_bandGSM850_848.8MHz_Voice_1G_10G_TX



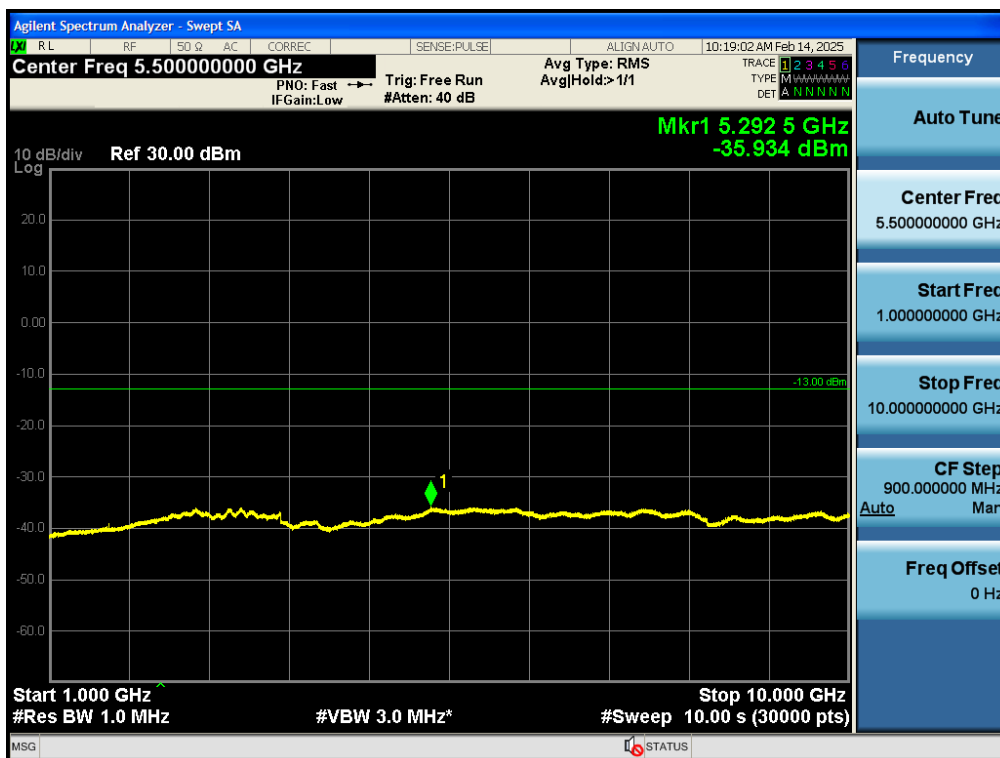
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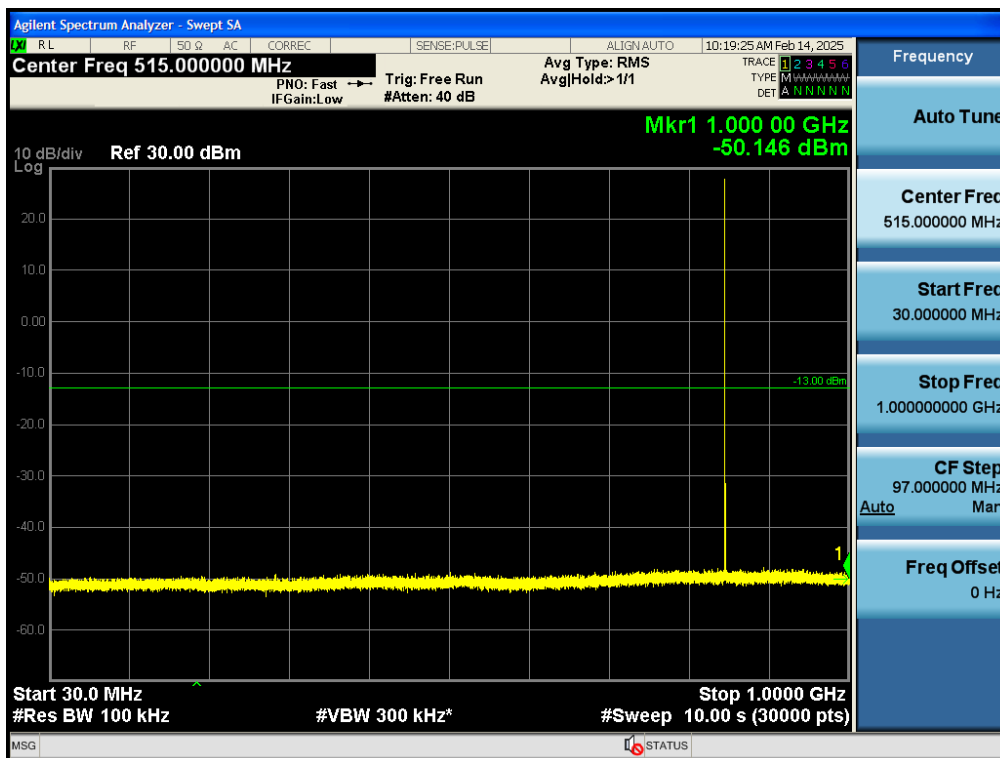
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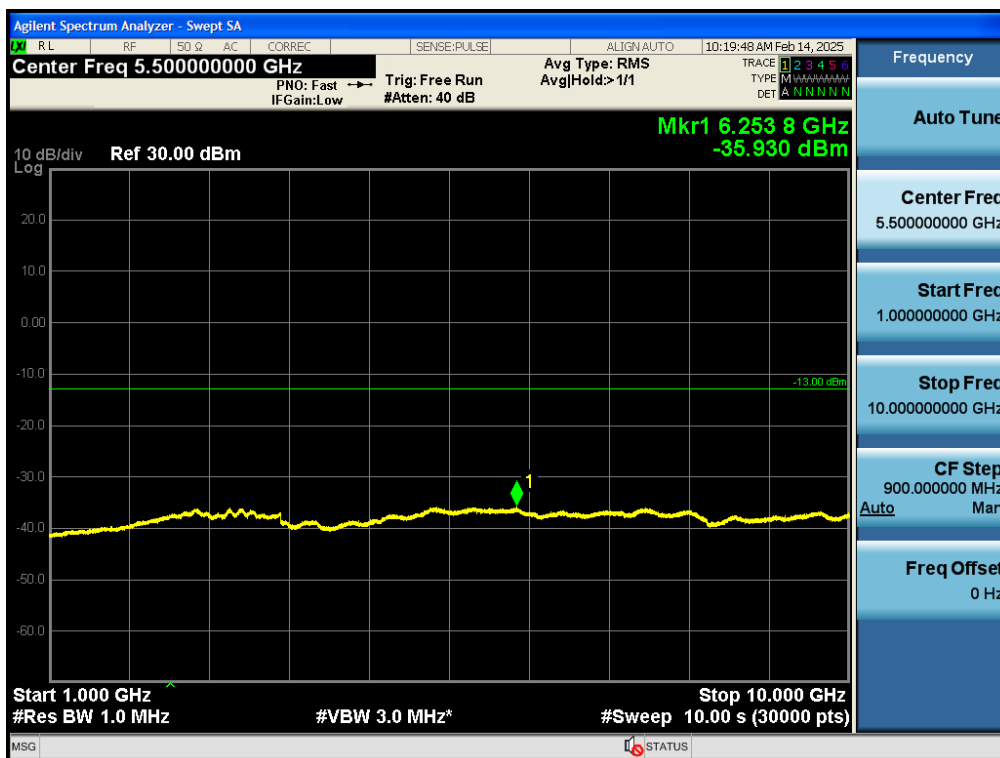
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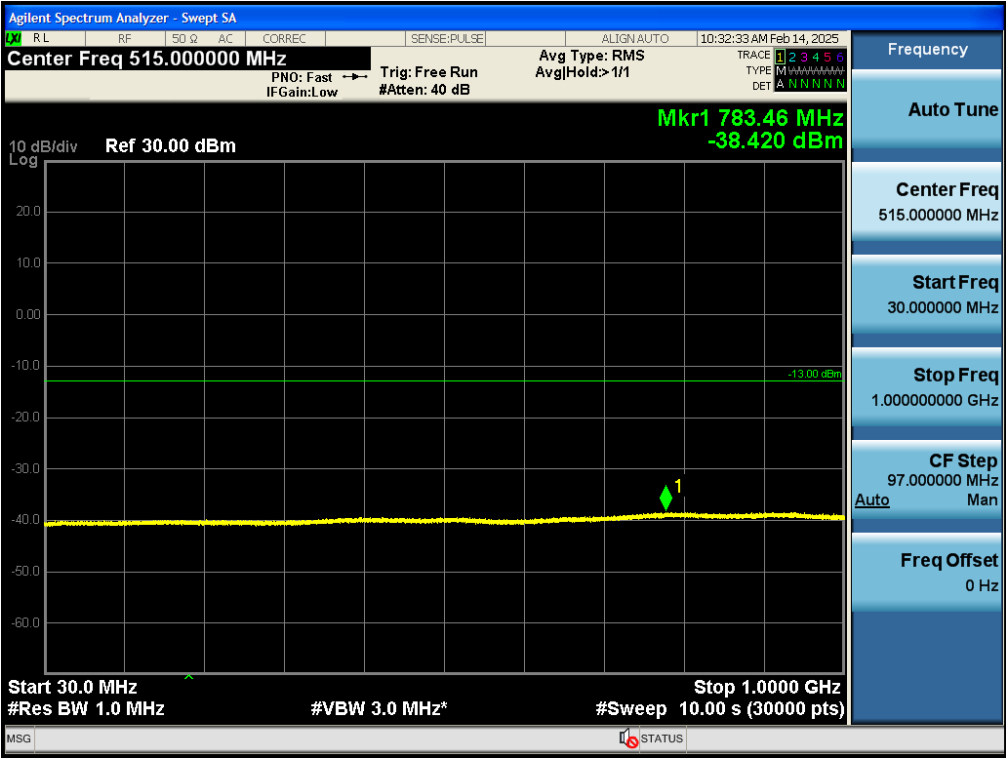
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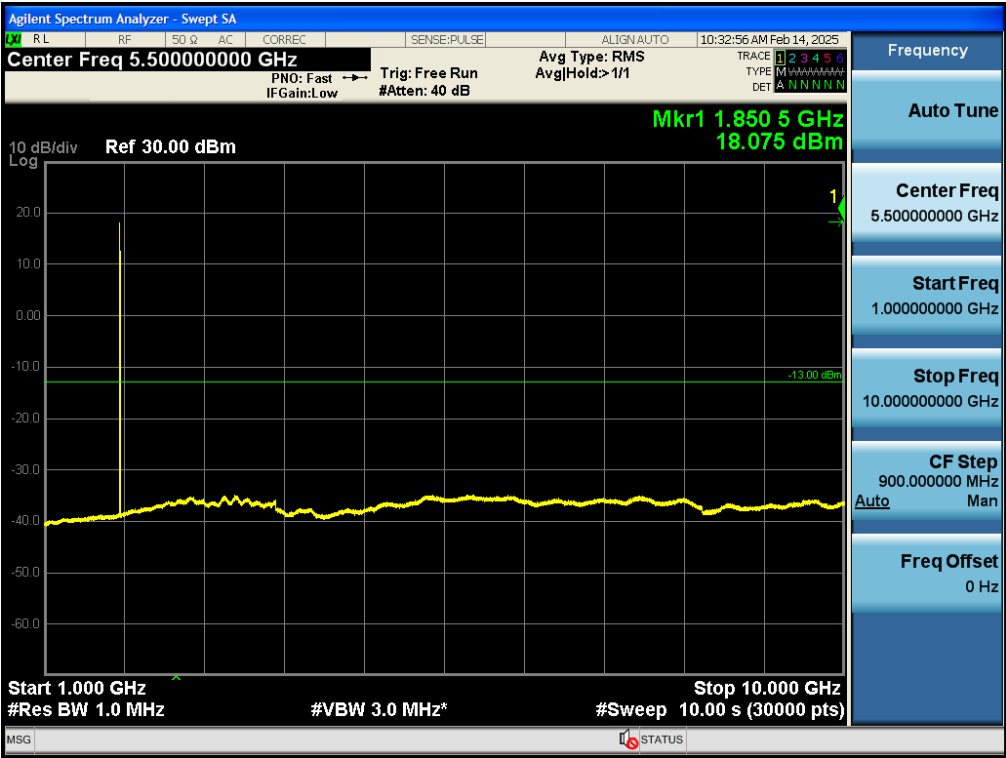
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Test_Graph_bandGSM850_848.8MHz_GPRS 1Slot_1G_10G_TX



Test_Graph_bandGSM1900_1850.2MHz_Voice_30M_1G_TX



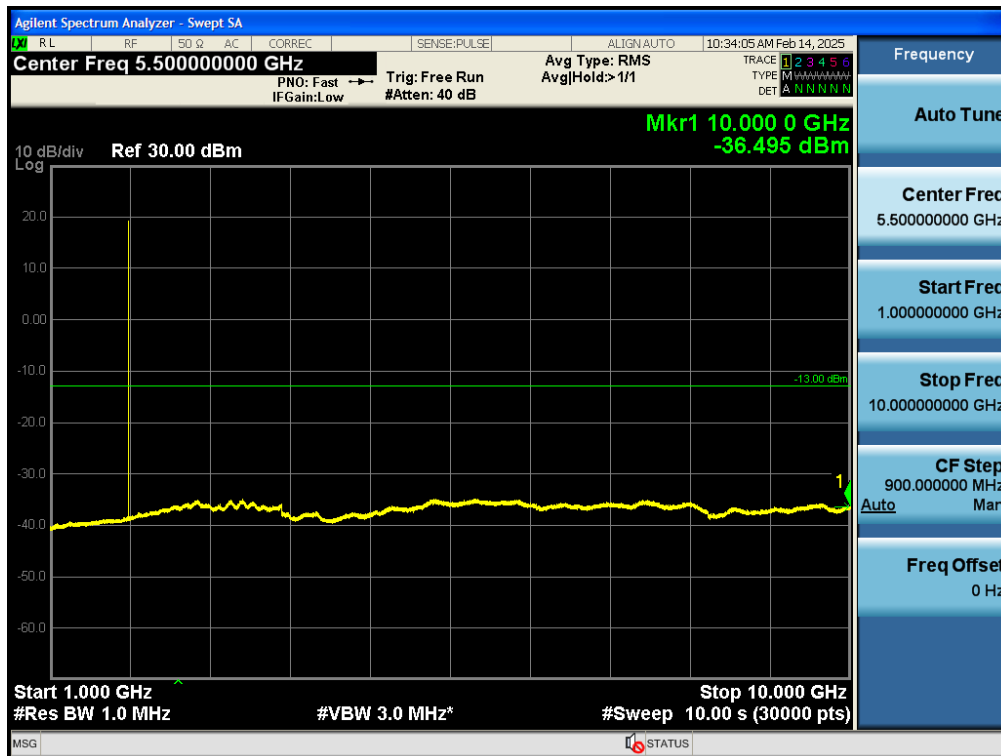
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Test_Graph_bandGSM1900_1850.2MHz_Voice_10G_20G_TX



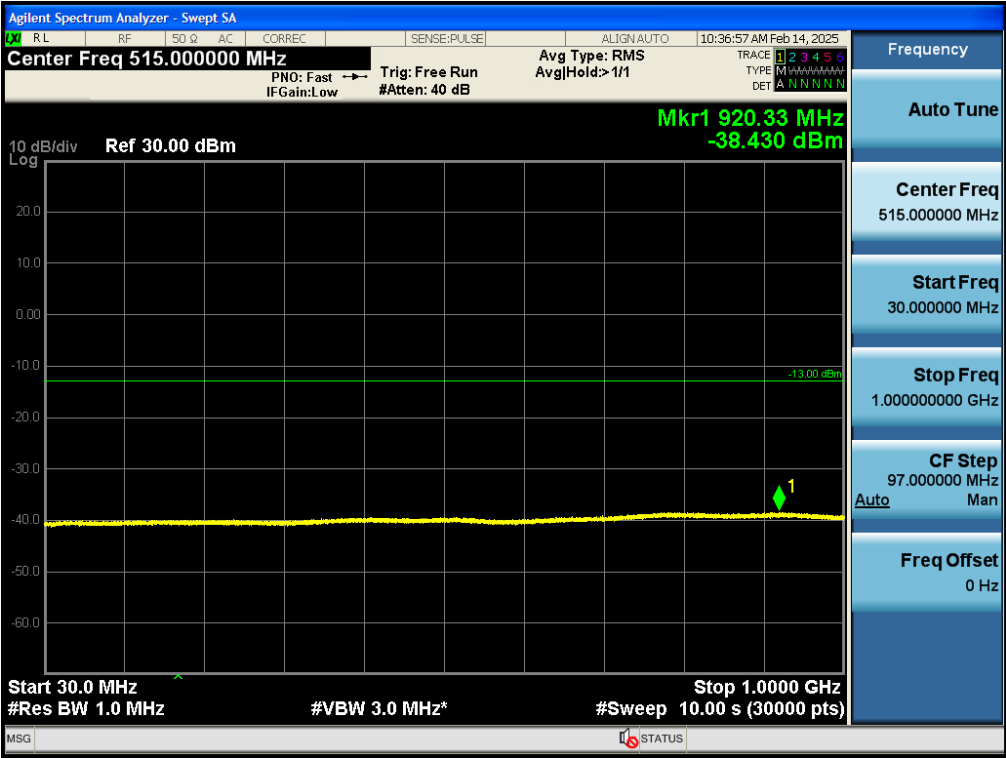
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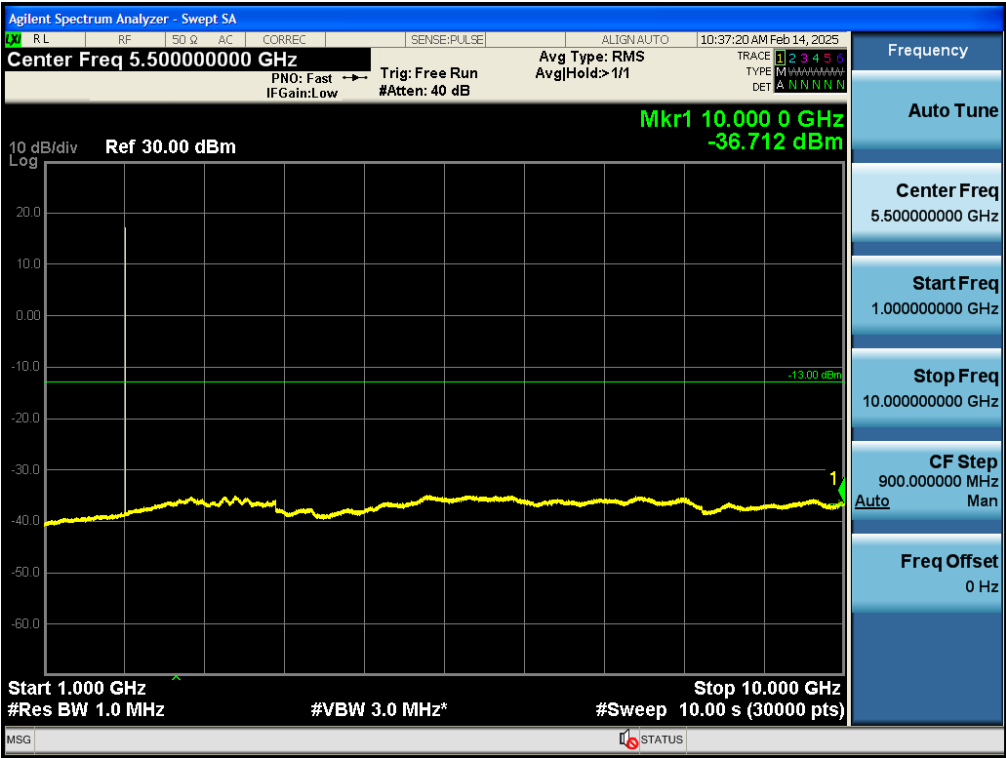
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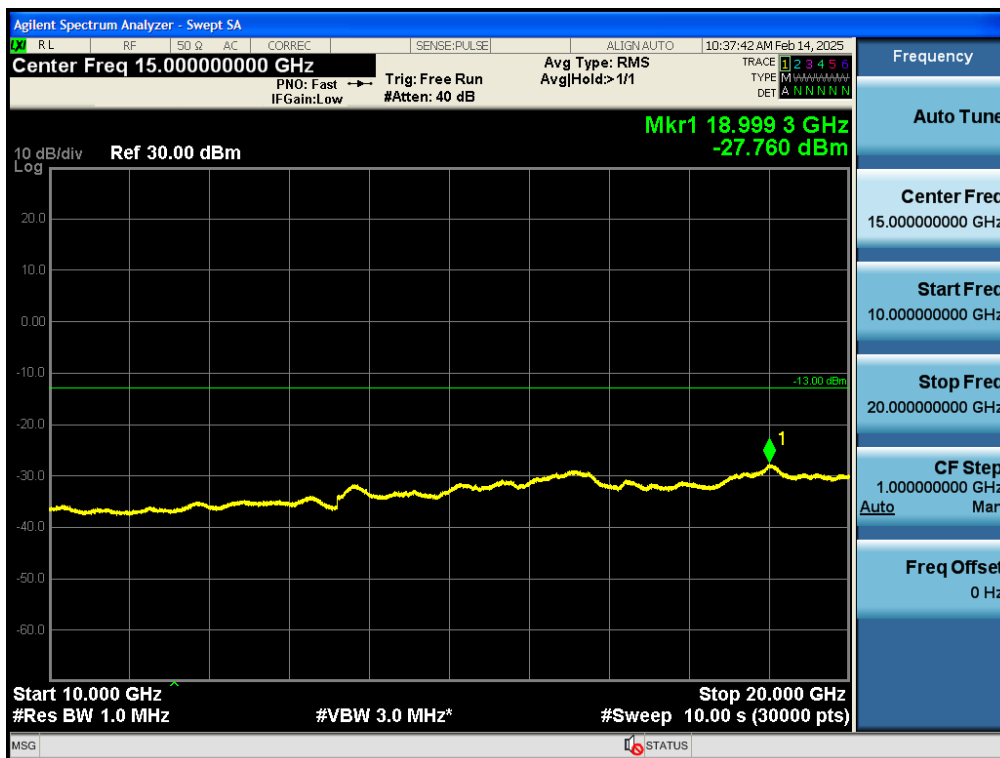
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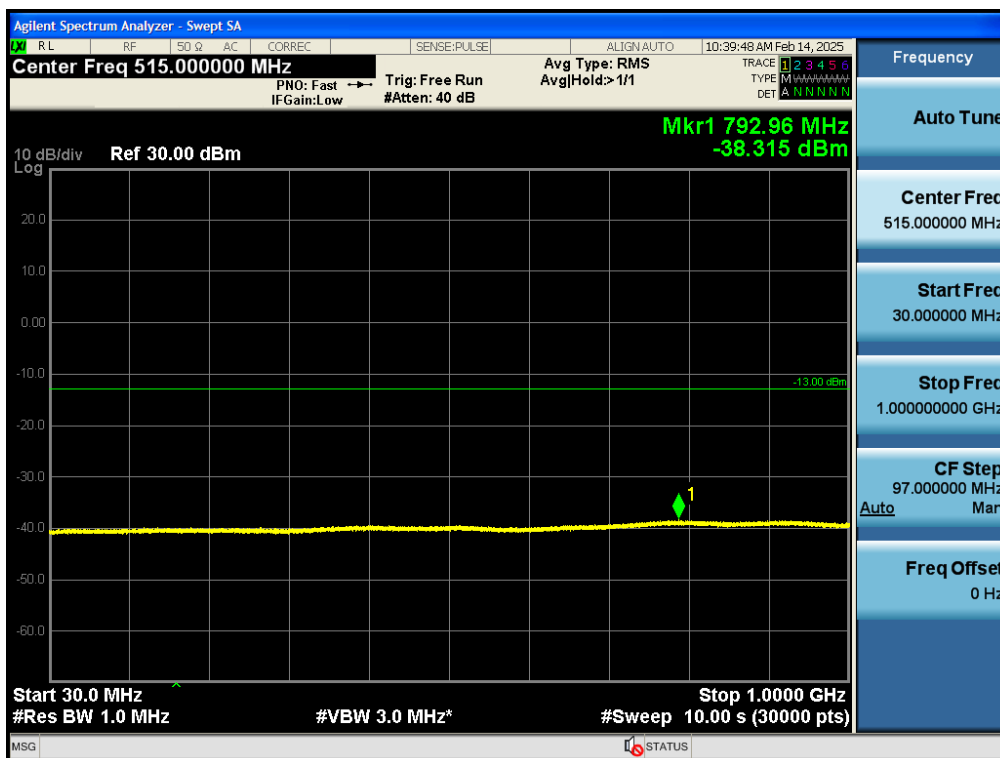
Test_Graph_bandGSM1900_1909.8MHz_Voice_30M_1G_TX



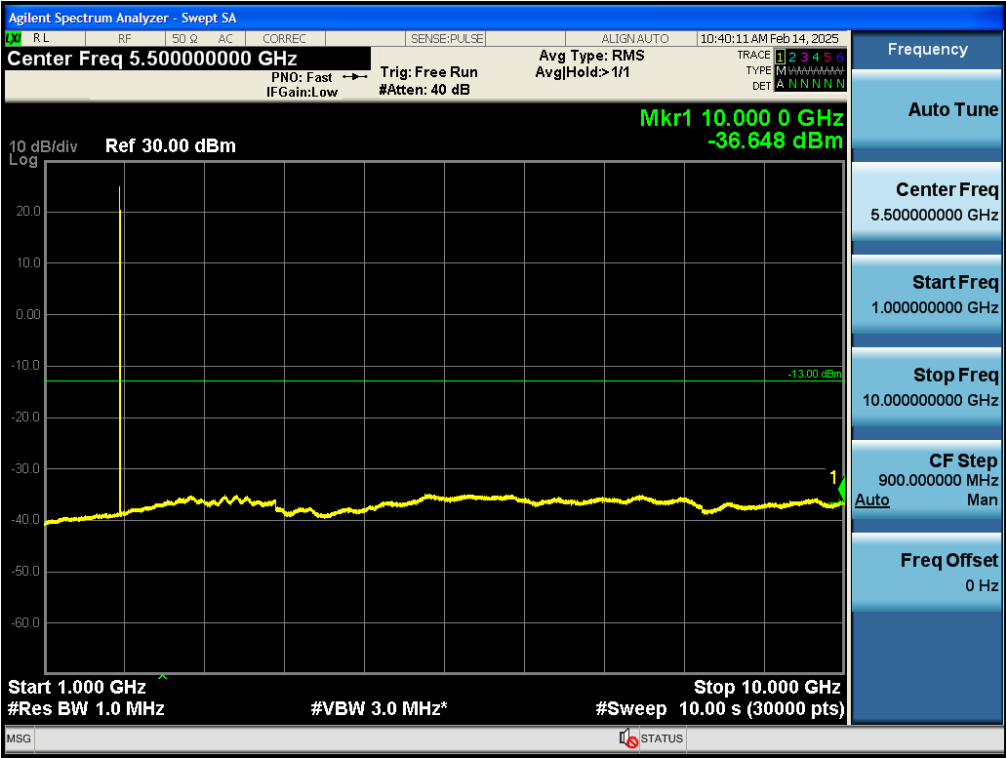
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Test_Graph_bandGSM1900_1909.8MHz_Voice_10G_20G_TX



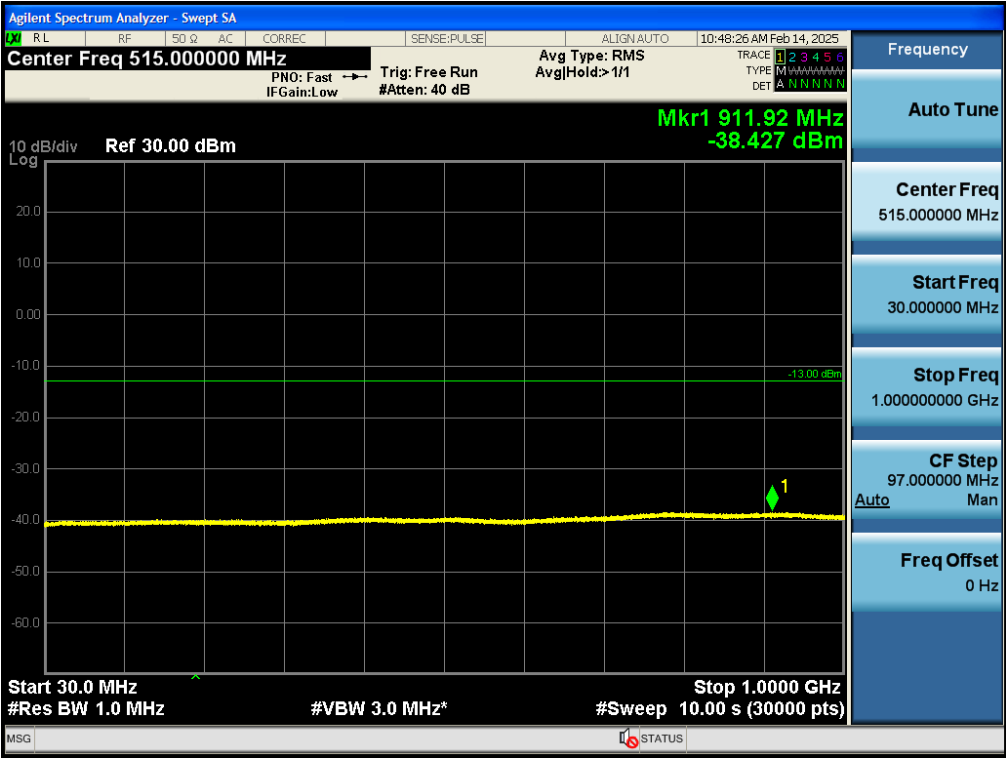
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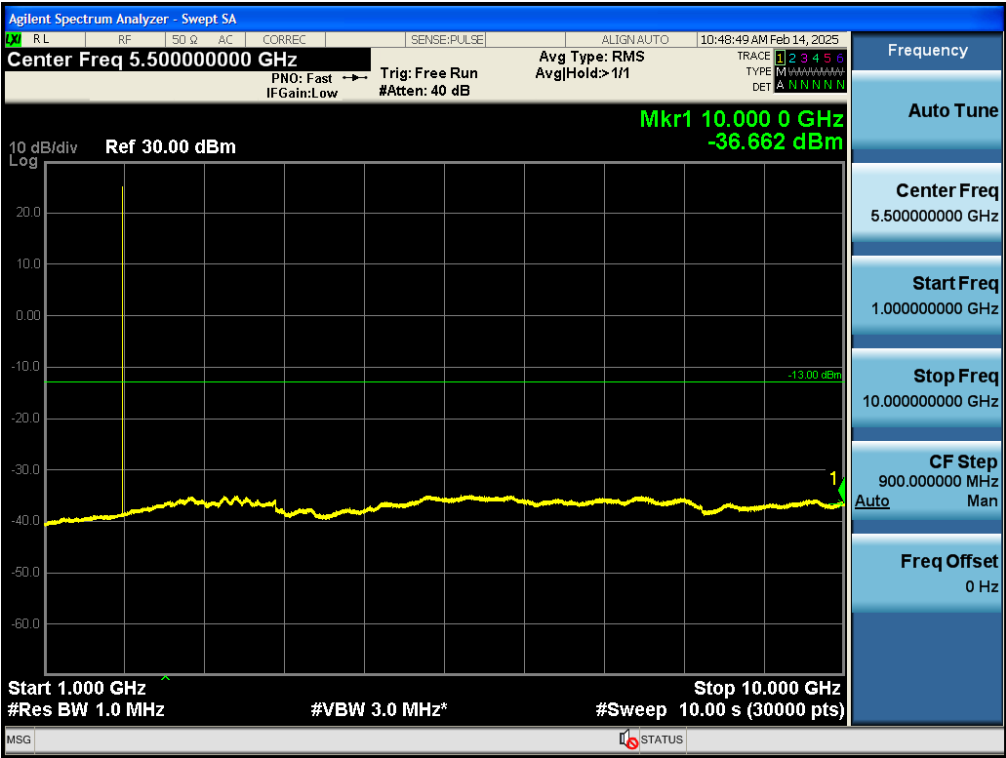
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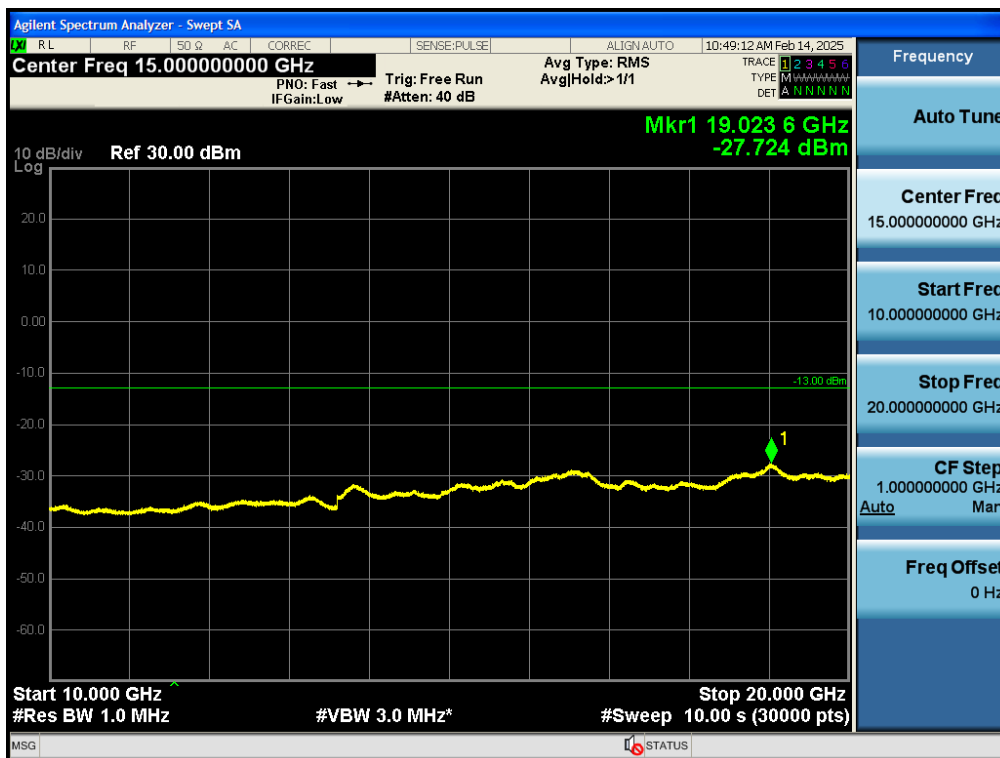
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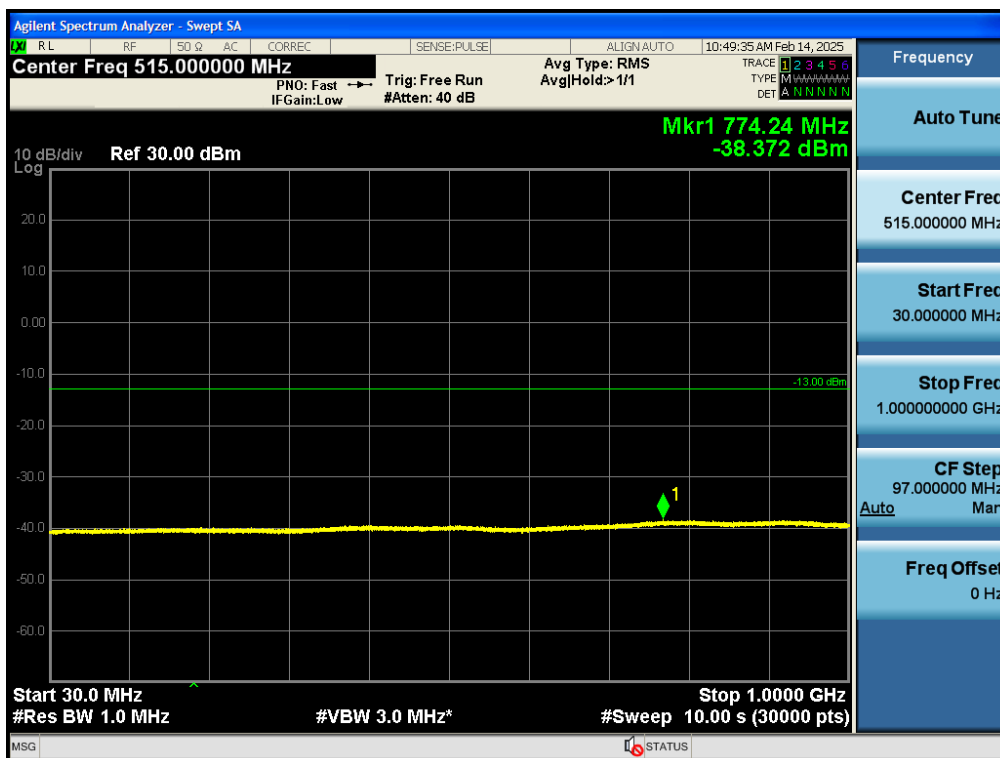
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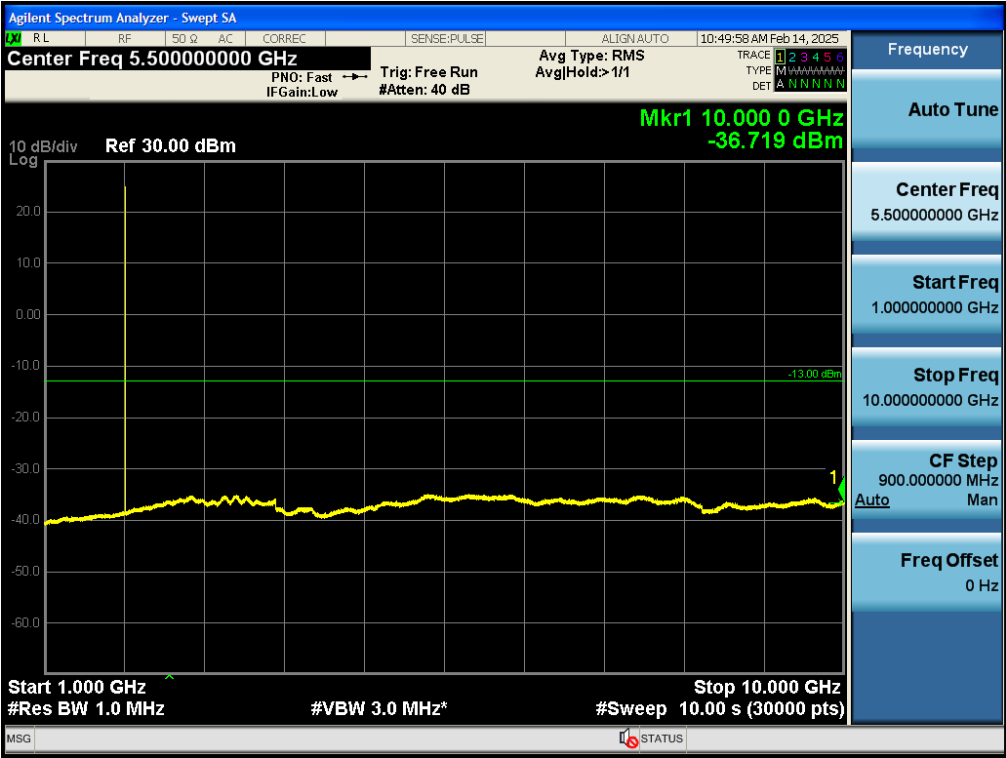
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Test_Graph_bandGSM1900_1880MHz_GPRS 1Slot_10G_20G_TX



Test_Graph_bandGSM1900_1909.8MHz_GPRS 1Slot_30M_1G_TX



Test_Graph_bandGSM1900_1909.8MHz_GPRS 1Slot_1G_10G_TX



Test_Graph_bandGSM1900_1909.8MHz_GPRS 1Slot_10G_20G_TX

Appendix E: Frequency stability

Test Result

Test Conditions		GSM Band 850/ Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	Voice	2.5ppm
		Deviation (ppm)	Result
50	Normal Voltage	0.0716	PASS
40	Normal Voltage	0.0452	
30	Normal Voltage	0.0268	
20(Ref.)	Normal Voltage	0.0366	
10	Normal Voltage	0.0697	
0	Normal Voltage	0.0222	
-10	Normal Voltage	0.0536	
-20	Normal Voltage	0.0481	
-30	Normal Voltage	0.0259	
20	Maximum Voltage	0.0271	
20	Normal Voltage	0.0413	
20	Battery End Point	0.0683	

Test Conditions		GSM Band 1900/ Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	Voice	2.5ppm
		Deviation (ppm)	Result
50	Normal Voltage	0.0748	PASS
40	Normal Voltage	0.0444	
30	Normal Voltage	0.0267	
20(Ref.)	Normal Voltage	0.0373	
10	Normal Voltage	0.0679	
0	Normal Voltage	0.0206	
-10	Normal Voltage	0.0511	
-20	Normal Voltage	0.0487	
-30	Normal Voltage	0.0243	
20	Maximum Voltage	0.0186	
20	Normal Voltage	0.0365	
20	Battery End Point	0.0645	