

## **Appendix for GSM850/1900 test report**

## Appendix A: Effective (Isotropic) Radiated Power Output Data

### Test Results

Test Band	Test Mode	Test Channel	Conducted Power[dBm]	ERP/EIRP dBm	Limit[dBm]	Verdict
GSM850	GSM/TM1	LCH	33.09	31.09	38.5	PASS
		MCH	33.10	31.10	38.5	PASS
		HCH	33.54	31.54	38.5	PASS
	GSM/TM2	LCH	26.53	24.53	38.5	PASS
		MCH	26.69	24.69	38.5	PASS
		HCH	26.42	24.42	38.5	PASS
GSM1900	GSM/TM1	LCH	29.60	29.10	33	PASS
		MCH	30.26	29.76	33	PASS
		HCH	29.87	29.37	33	PASS
	GSM/TM2	LCH	26.02	25.52	33	PASS
		MCH	26.55	26.05	33	PASS
		HCH	25.95	25.45	33	PASS

Note 1:

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

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

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

b, SGP=Signal Generator Level

c, Antenna gain of GSM 850 is -2.0dBi; Antenna gain of GSM 1900 is -0.5dBi;

Note 2:

$$SET Span=1.5*OBW$$

SET RBW=1% of the OBW, not to exceed 1MHz

$$SET VBW \geq 3*RBW$$

SET SWEEP time=auto couple

Detector: RMS

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

Test Band	Test Mode	Test Channel	Measured[dBm]	Limit[dBm]	Verdict
GSM850	GSM/TM1	LCH	9.74	13	PASS
		MCH	9.42	13	PASS
		HCH	9.77	13	PASS
	GSM/TM2	LCH	9.8	13	PASS
		MCH	9.74	13	PASS
		HCH	8.96	13	PASS
GSM1900	GSM/TM1	LCH	8.96	13	PASS
		MCH	8.96	13	PASS
		HCH	9.77	13	PASS
	GSM/TM2	LCH	9.74	13	PASS
		MCH	8.87	13	PASS
		HCH	9.42	13	PASS

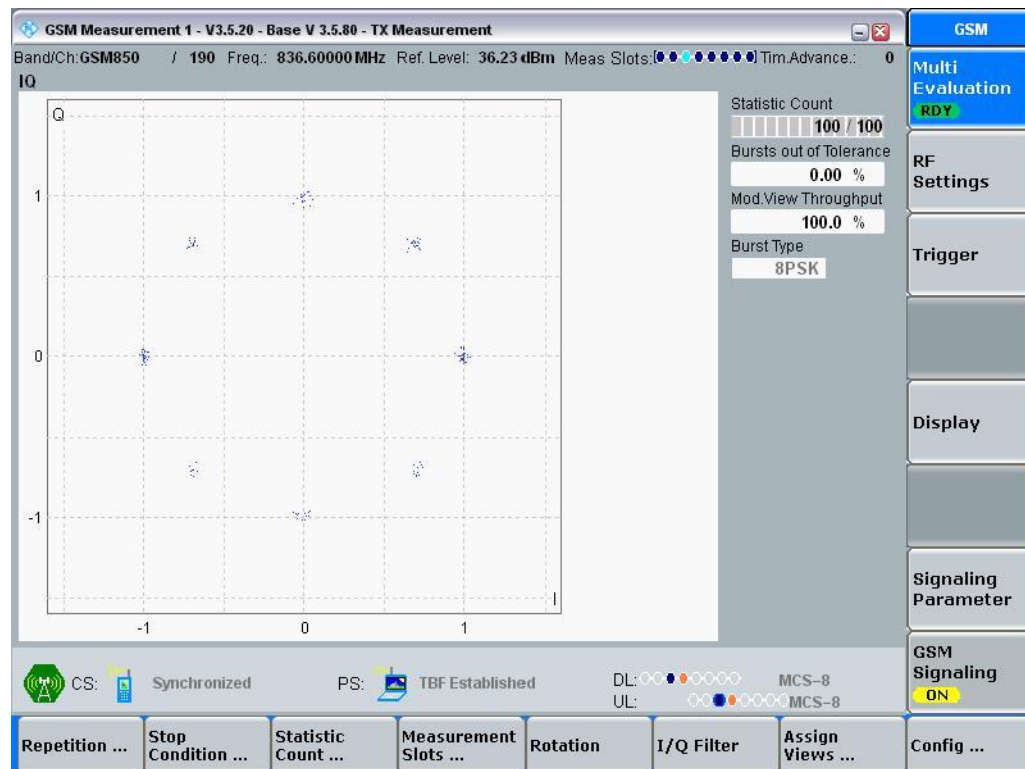
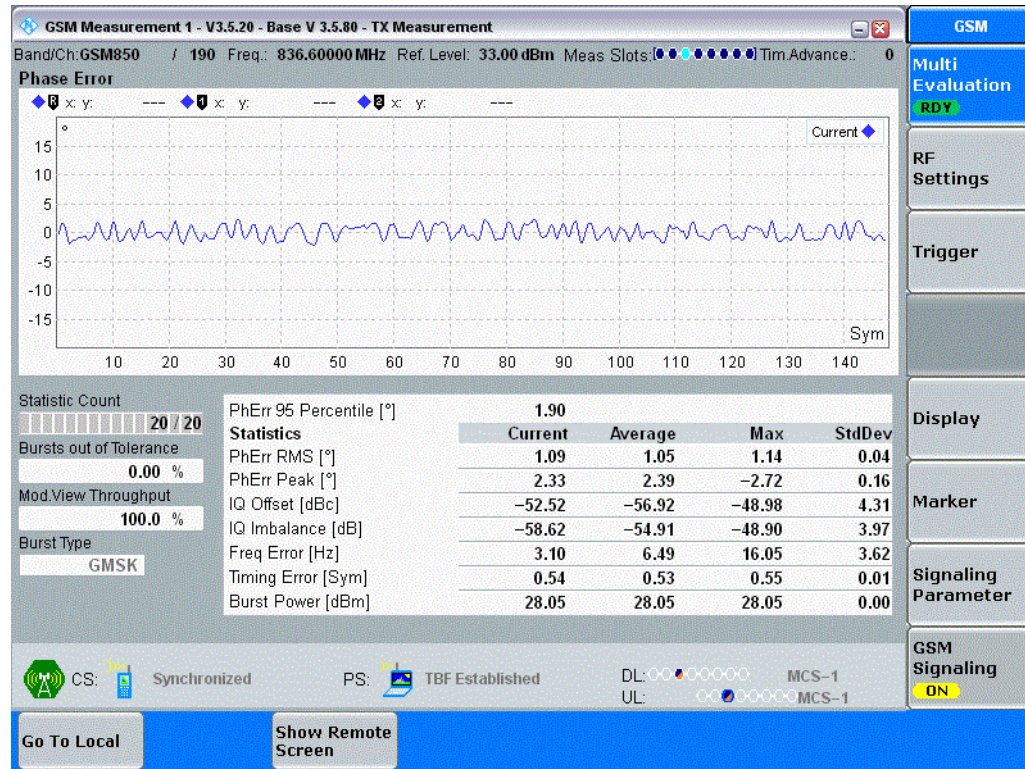
## Appendix C: Modulation Characteristics

### Test Plots

Test Band = GSM850

Test Mode = GSM/TM1

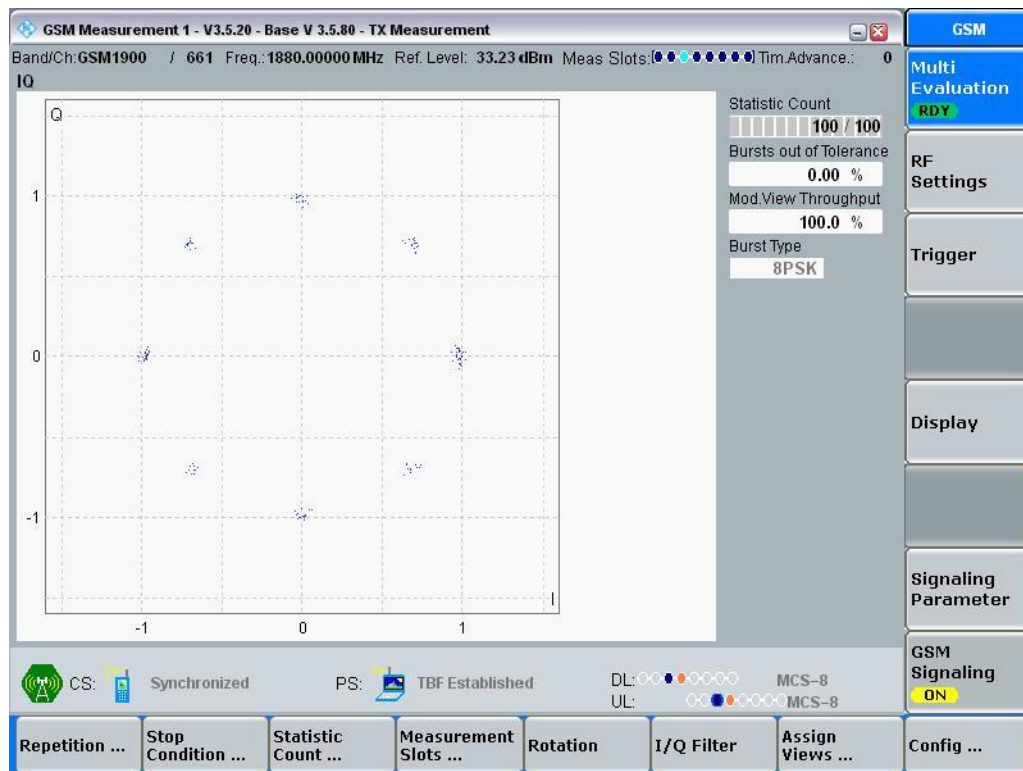
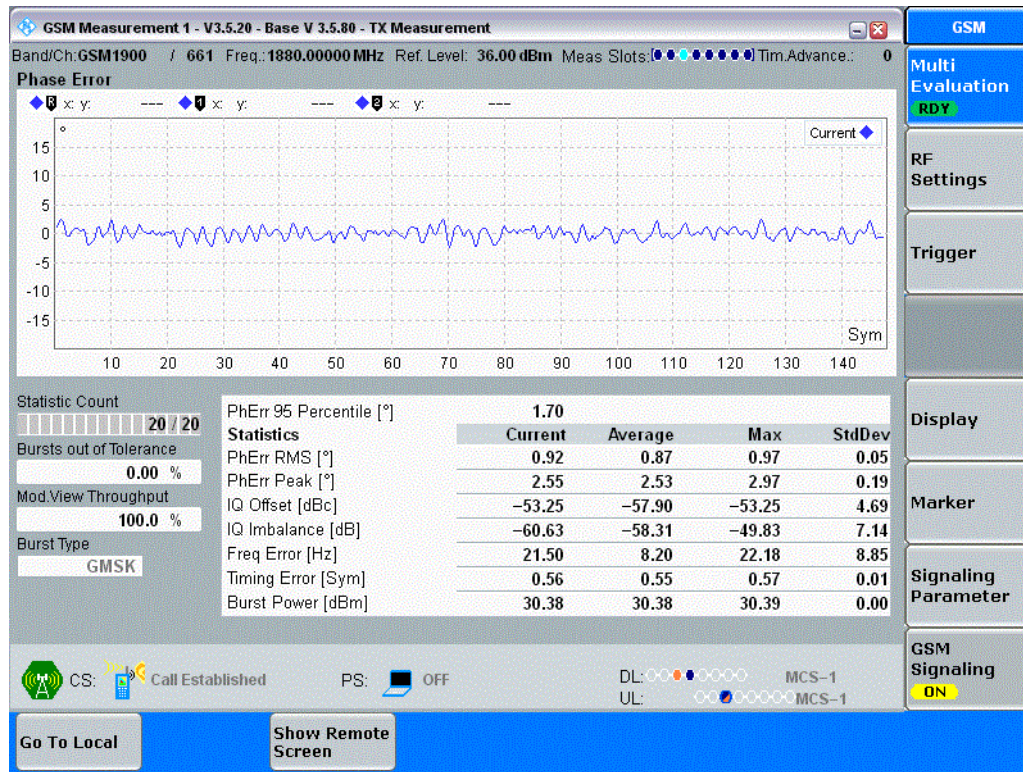
Test Channel = MCH



Test Band = GSM1900

Test Mode = GSM/TM1

Test Channel = MCH



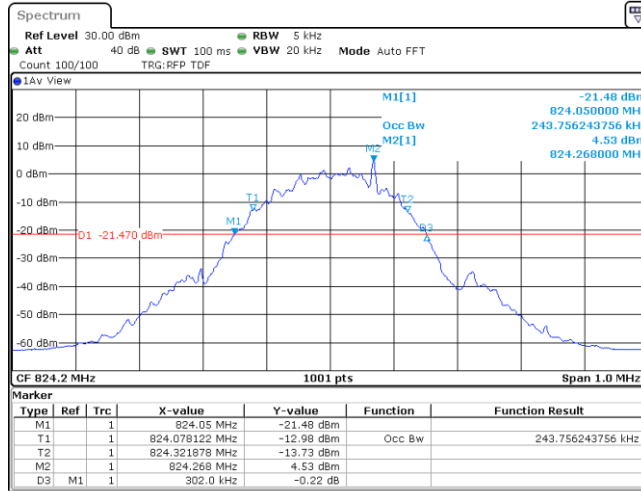
## Appendix D: Bandwidth

### Test Result

Test Band	Test Mode	Test Channel	Occupied Bandwidth[MHz]	Emission Bandwidth[MHz]	Verdict
GSM850	GSM/TM1	LCH	0.244	0.302	PASS
		MCH	0.243	0.308	PASS
		HCH	0.243	0.306	PASS
	GSM/TM2	LCH	0.246	0.321	PASS
		MCH	0.246	0.321	PASS
		HCH	0.245	0.321	PASS
GSM1900	GSM/TM1	LCH	0.244	0.307	PASS
		MCH	0.244	0.308	PASS
		HCH	0.244	0.307	PASS
	GSM/TM2	LCH	0.245	0.320	PASS
		MCH	0.245	0.322	PASS
		HCH	0.245	0.320	PASS

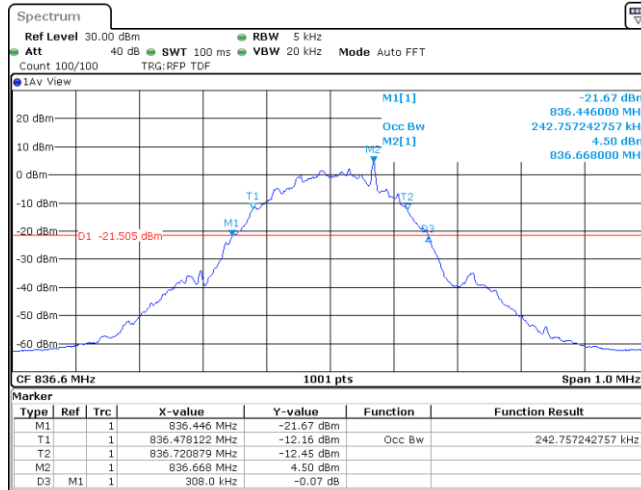
**Test Graphs**

**GSM850-TM1-LCH**



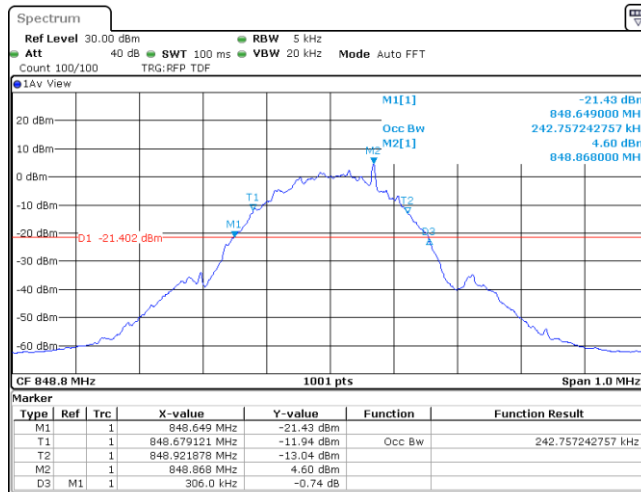
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**GSM850-TM1-MCH**



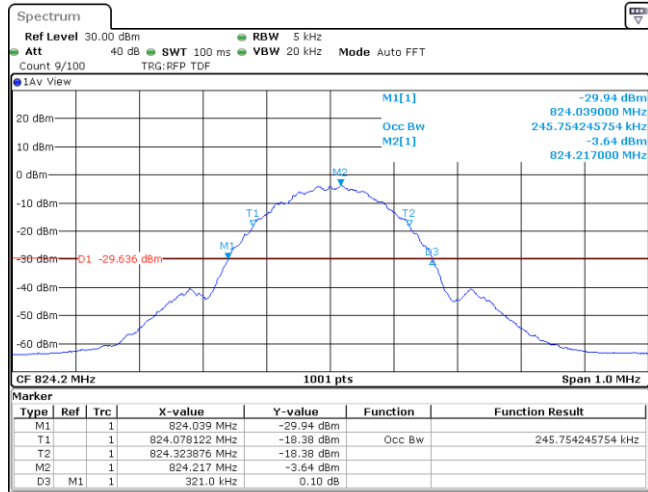
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**GSM850-TM1-HCH**



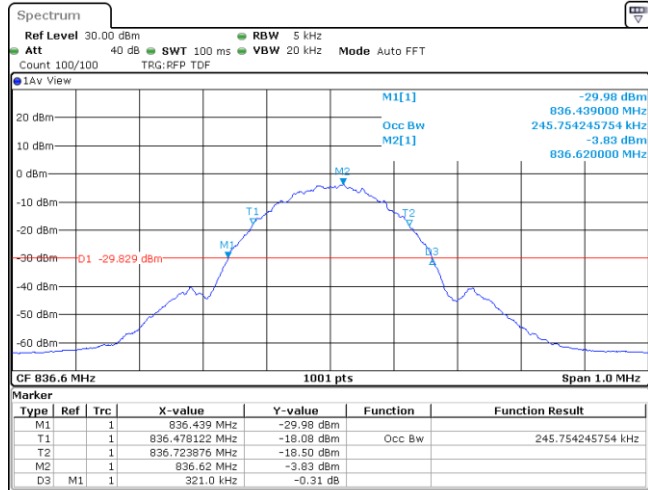
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**GSM850-TM2-LCH**



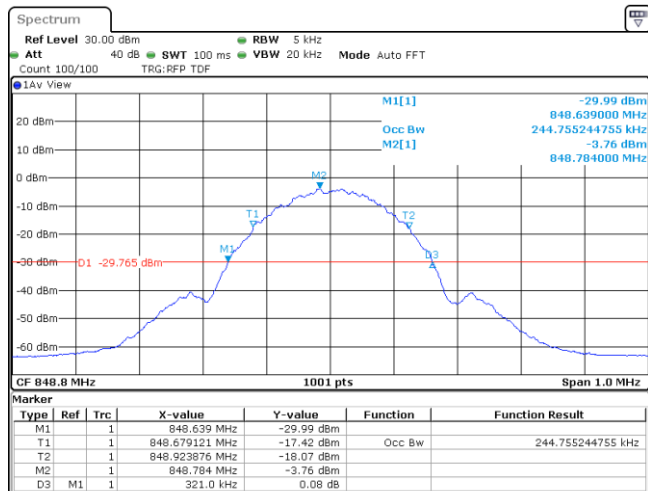
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**GSM850-TM2-MCH**



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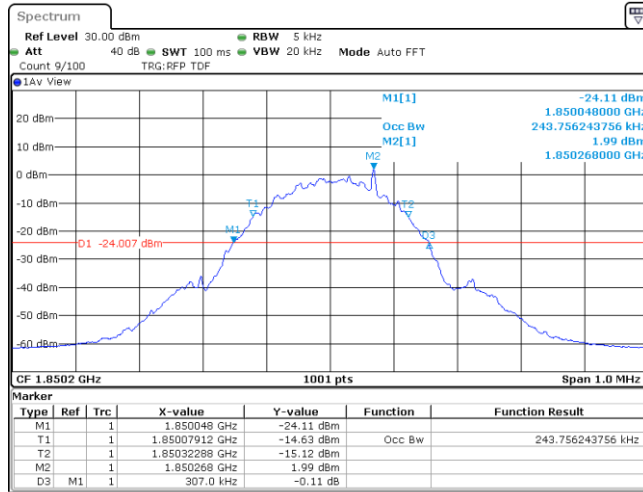
**GSM850-TM2-HCH**



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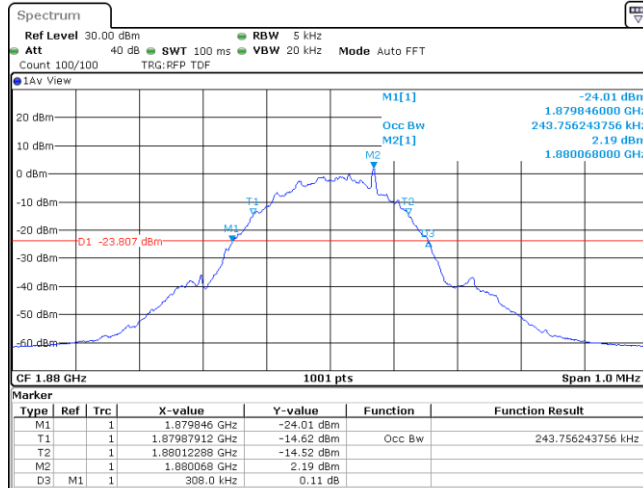


## GSM1900-TM1-LCH



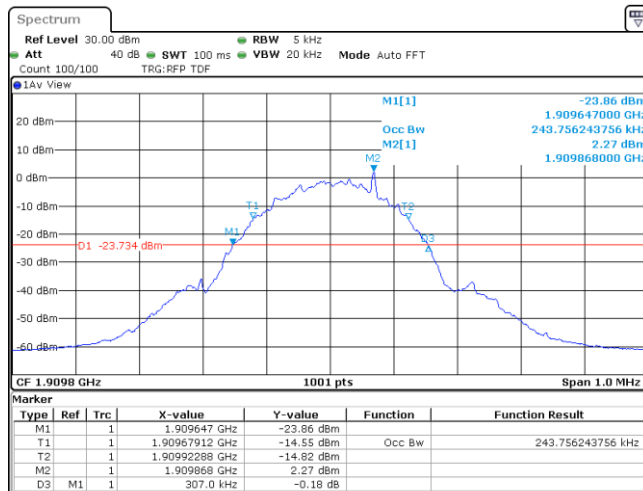
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## GSM1900- TM1-MCH

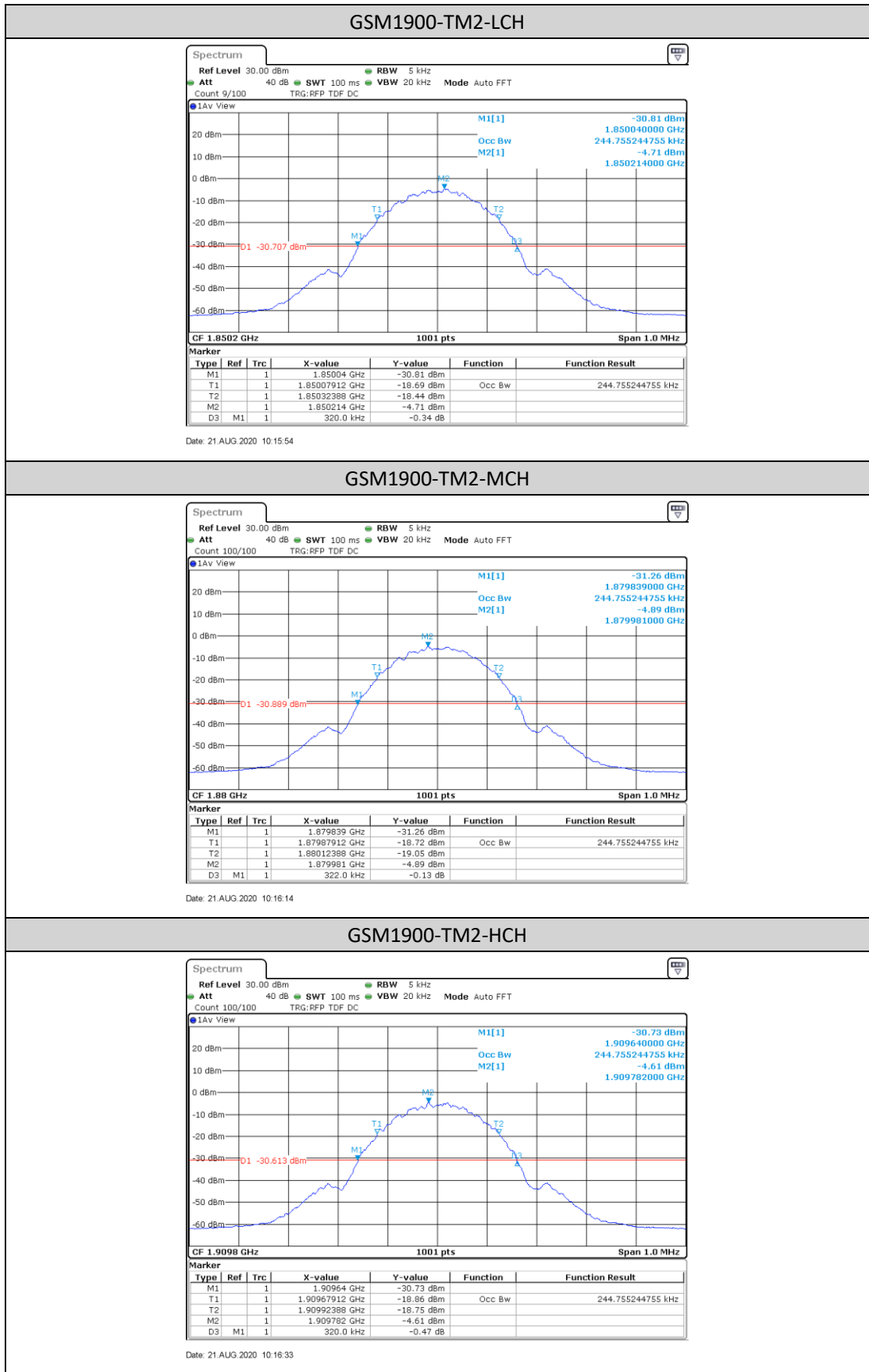


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## GSM1900- TM1-HCH



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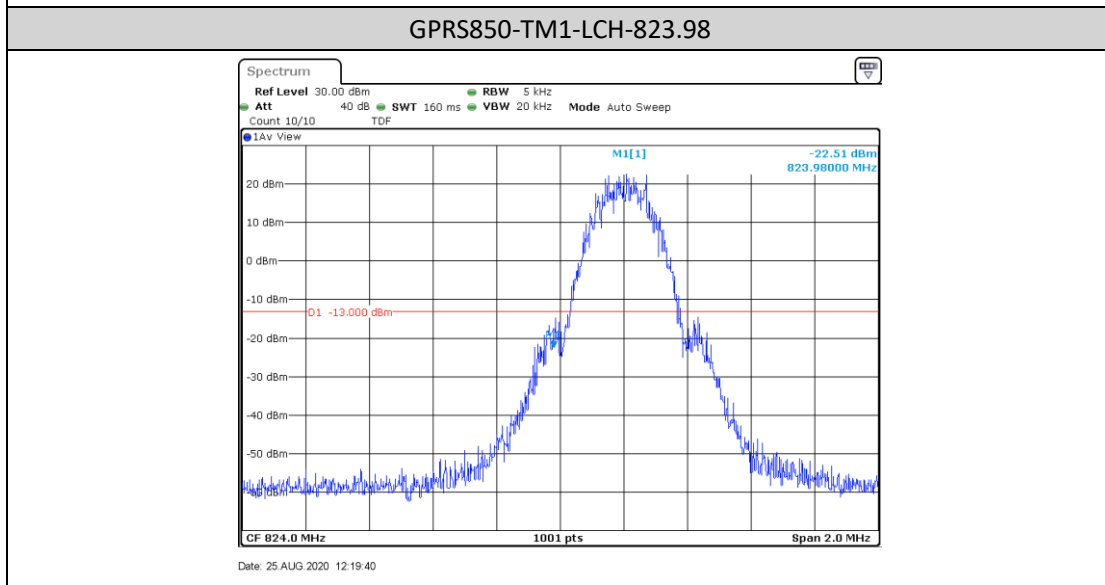
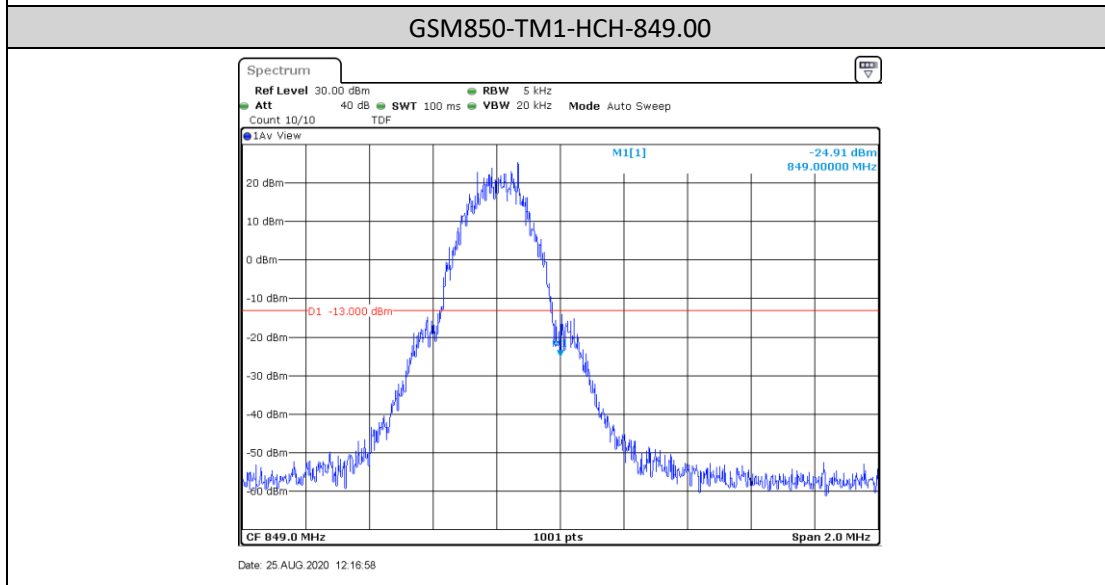
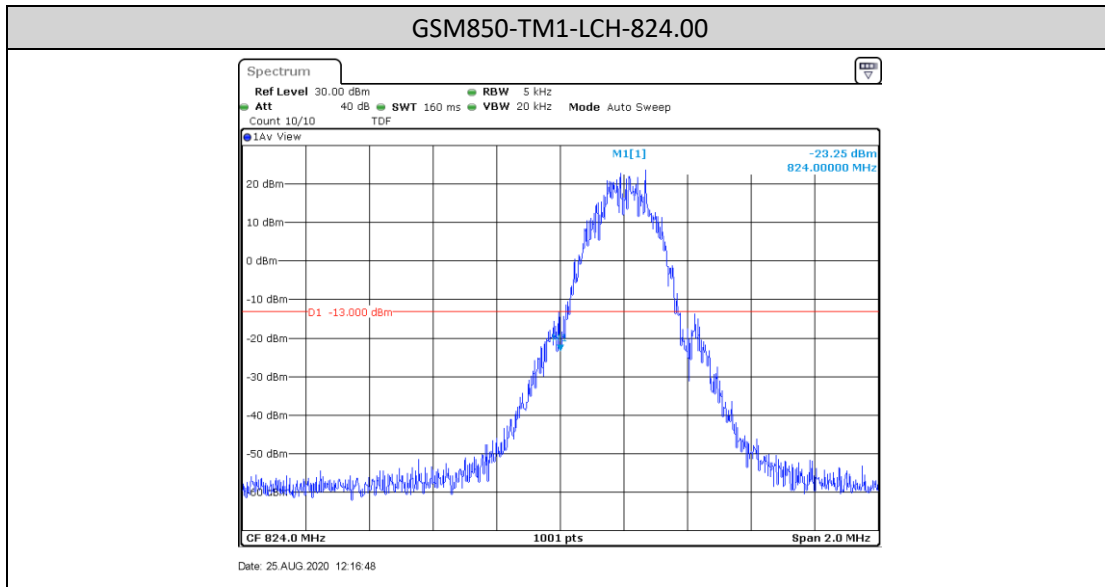


## Appendix E: Band Edge

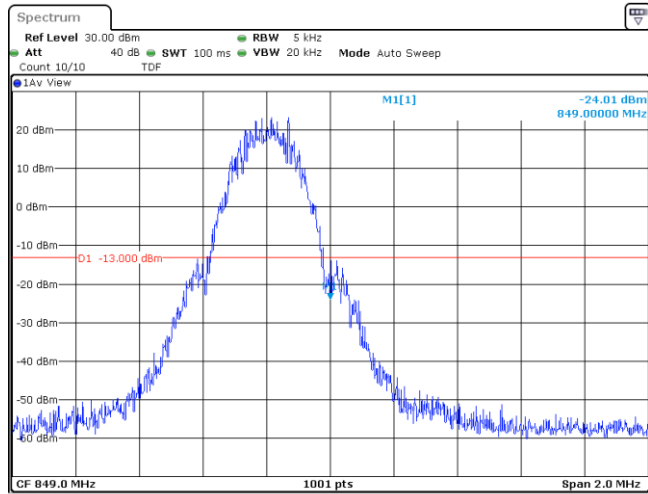
### Test Result

Test Band	Test Mode	Test Channel	Result (dBm)	Limit(dBm)	Verdict
GSM850	GSM/TM1	LCH	-13.21	-13	PASS
		HCH	-14.07	-13	PASS
	GSM/TM2	LCH	-20.29	-13	PASS
		HCH	-20.16	-13	PASS
GSM1900	GSM/TM1	LCH	-17.73	-13	PASS
		HCH	-14.09	-13	PASS
	GSM/TM2	LCH	-19.84	-13	PASS
		HCH	-20.51	-13	PASS

Test Graphs

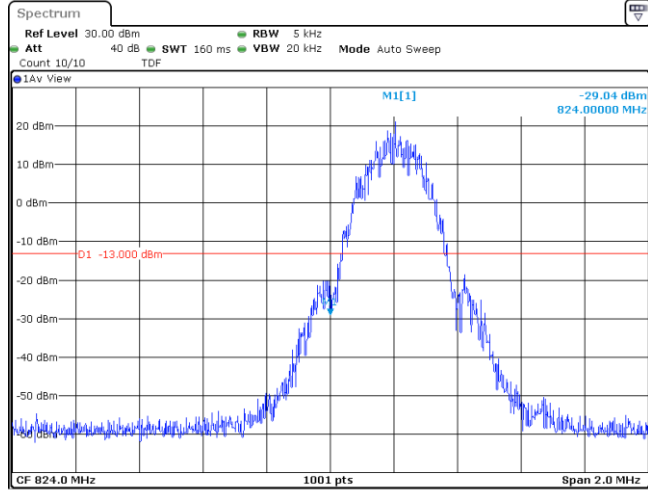


GPRS850- TM1-LCH-849.00



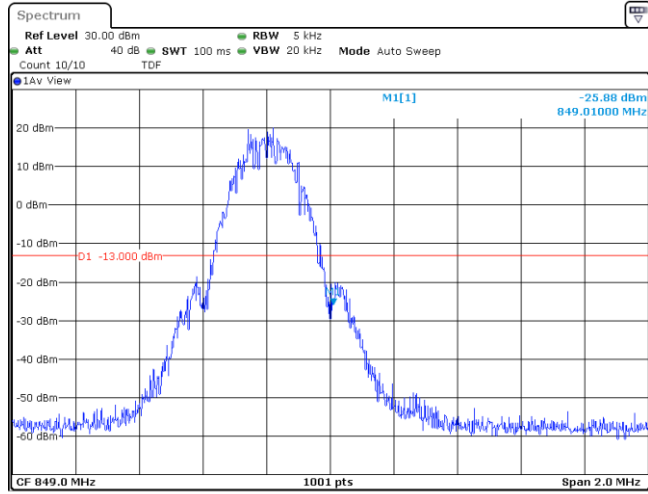
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EDGE850-TM2-LCH-824.00



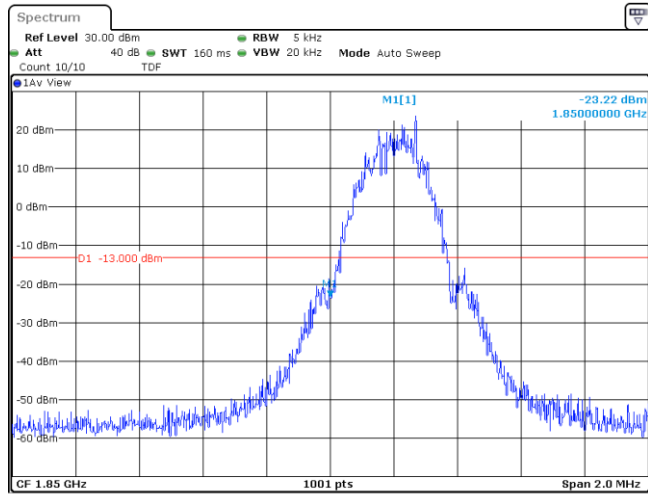
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EDGE850-TM2-HCH-849.01



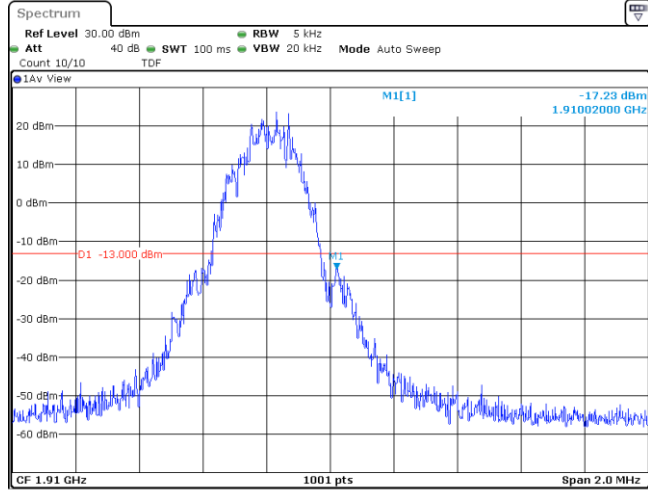
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GSM1900-TM1-LCH-1850.00



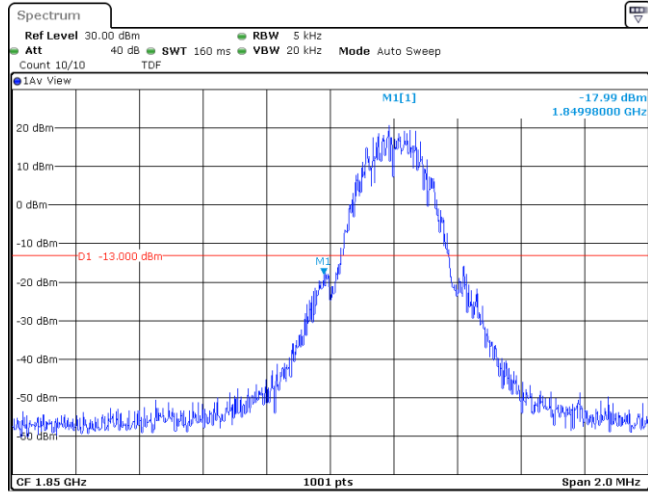
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GSM1900-TM1-HCH-1910.02



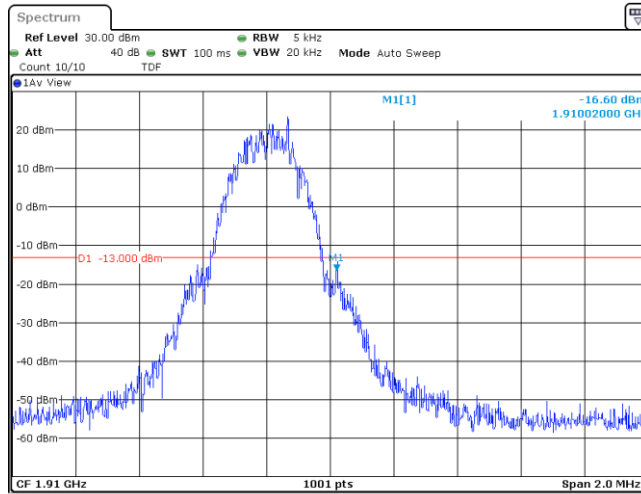
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GPRS1900-TM1-LCH-1849.98



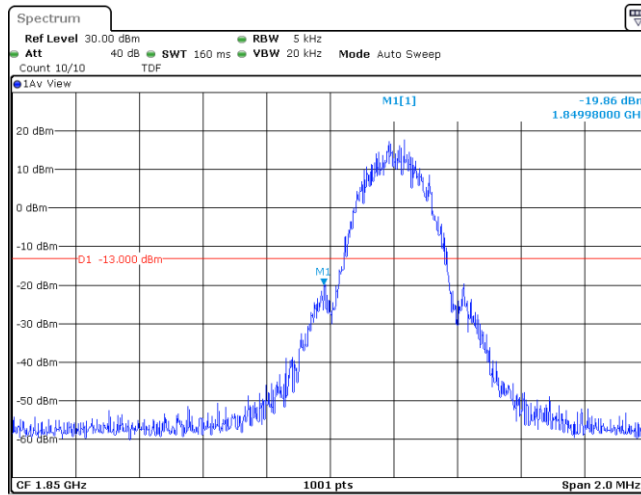
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GPRS1900-TM1-HCH-1910.02



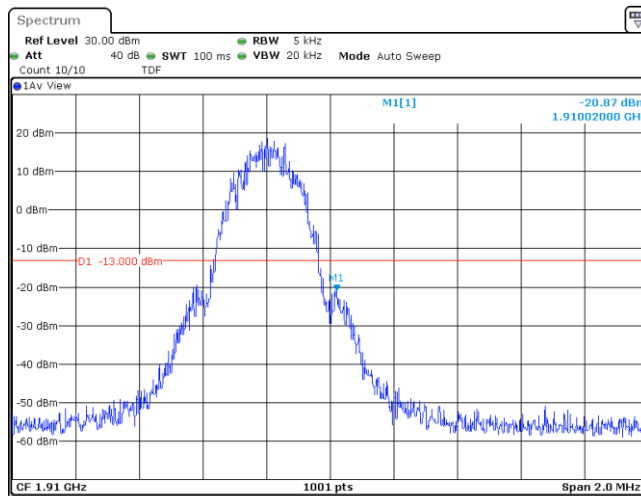
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EGPRS1900-TM2-LCH-1849.98



Date: 21 AUG 2020 10:16:45

EGPRS1900-TM2-HCH-1910.02



Date: 21 AUG 2020 10:16:56

## Appendix F: Spurious Emission at Antenna Terminals

### Test Result

Band	Channel	Frequency Range (MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM850	LCH	0.009~0.15MHz	0.01	-44.93	-33	PASS
GSM850	LCH	0.15~30MHz	25.07	-50.14	-13	PASS
GSM850	LCH	30~1000MHz	992.18	-34.75	-13	PASS
GSM850	LCH	1000~3000MHz	1697.81	-29.7	-13	PASS
GSM850	LCH	3000~10000MHz	4243.98	-43.63	-13	PASS
GSM850	MCH	0.009~0.15MHz	0.01	-45	-33	PASS
GSM850	MCH	0.15~30MHz	22.85	-48.93	-13	PASS
GSM850	MCH	30~1000MHz	972.55	-35.21	-13	PASS
GSM850	MCH	1000~3000MHz	1697.41	-29.69	-13	PASS
GSM850	MCH	3000~10000MHz	3395.6	-40.05	-13	PASS
GSM850	HCH	0.009~0.15MHz	0.01	-45.04	-33	PASS
GSM850	HCH	0.15~30MHz	23.43	-50.07	-13	PASS
GSM850	HCH	30~1000MHz	967.83	-34.89	-13	PASS
GSM850	HCH	1000~3000MHz	1697.68	-29.27	-13	PASS
GSM850	HCH	3000~10000MHz	3395.14	-38.83	-13	PASS
GPRS850	LCH	0.009~0.15MHz	0.01	-44.91	-33	PASS
GPRS850	LCH	0.15~30MHz	24.05	-50.94	-13	PASS
GPRS850	LCH	30~1000MHz	982.8	-34.97	-13	PASS
GPRS850	LCH	1000~3000MHz	1697.68	-29.53	-13	PASS
GPRS850	LCH	3000~10000MHz	3395.14	-38.46	-13	PASS
GPRS850	MCH	0.009~0.15MHz	0.01	-45.04	-33	PASS
GPRS850	MCH	0.15~30MHz	23.23	-51	-13	PASS
GPRS850	MCH	30~1000MHz	976.98	-34.86	-13	PASS
GPRS850	MCH	1000~3000MHz	1697.41	-29.75	-13	PASS
GPRS850	MCH	3000~10000MHz	3395.14	-38.71	-13	PASS
GPRS850	HCH	0.009~0.15MHz	0.01	-44.94	-33	PASS
GPRS850	HCH	0.15~30MHz	28.9	-51.32	-13	PASS
GPRS850	HCH	30~1000MHz	968.83	-34.98	-13	PASS
GPRS850	HCH	1000~3000MHz	1697.28	-30.26	-13	PASS
GPRS850	HCH	3000~10000MHz	3395.37	-38.86	-13	PASS
EGPRS850	LCH	0.009~0.15MHz	0.01	-58.27	-33	PASS
EGPRS850	LCH	0.15~30MHz	23.64	-50.68	-13	PASS
EGPRS850	LCH	30~1000MHz	978.47	-34.19	-13	PASS
EGPRS850	LCH	1000~3000MHz	1697.81	-38.83	-13	PASS
EGPRS850	LCH	3000~10000MHz	4244.44	-44.17	-13	PASS
EGPRS850	MCH	0.009~0.15MHz	0.01	-58.34	-33	PASS

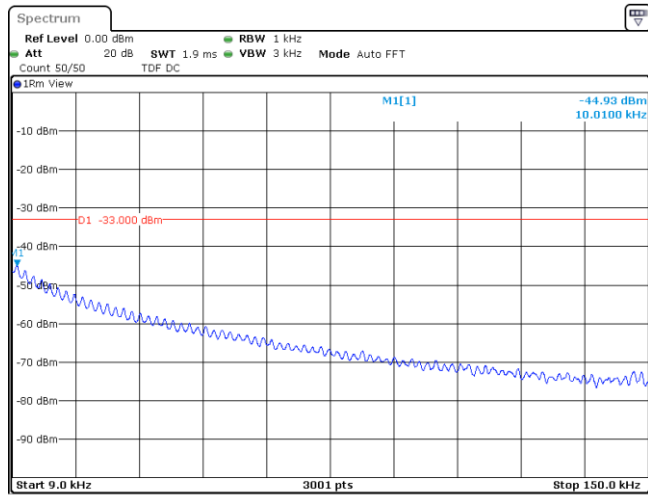


EGPRS850	MCH	0.15~30MHz	23.47	-51.26	-13	PASS
EGPRS850	MCH	30~1000MHz	966.6	-34.96	-13	PASS
EGPRS850	MCH	1000~3000MHz	1697.61	-38.19	-13	PASS
EGPRS850	MCH	3000~10000MHz	4243.74	-44.51	-13	PASS
EGPRS850	HCH	0.009~0.15MHz	0.01	-58.01	-33	PASS
EGPRS850	HCH	0.15~30MHz	26.69	-50.48	-13	PASS
EGPRS850	HCH	30~1000MHz	989.2	-34.27	-13	PASS
EGPRS850	HCH	1000~3000MHz	1697.61	-38.44	-13	PASS
EGPRS850	HCH	3000~10000MHz	3394.9	-46.12	-13	PASS
GSM1900	LCH	0.009~0.15MHz	0.01	-71.77	-43	PASS
GSM1900	LCH	0.15~30MHz	22.82	-50.92	-23	PASS
GSM1900	LCH	30~1000MHz	942.82	-34.53	-13	PASS
GSM1900	LCH	1000~3000MHz	2990.6	-41.3	-13	PASS
GSM1900	LCH	3000~10000MHz	3760.06	-24.83	-13	PASS
GSM1900	LCH	10000~18000MHz	15156.49	-63.41	-13	PASS
GSM1900	MCH	0.009~0.15MHz	0.01	-71.94	-43	PASS
GSM1900	MCH	0.15~30MHz	24.87	-50.54	-23	PASS
GSM1900	MCH	30~1000MHz	995.43	-34.86	-13	PASS
GSM1900	MCH	1000~3000MHz	2978.13	-41.23	-13	PASS
GSM1900	MCH	3000~10000MHz	5639.26	-42.55	-13	PASS
GSM1900	MCH	10000~18000MHz	15148.23	-63.46	-13	PASS
GSM1900	HCH	0.009~0.15MHz	0.01	-70.95	-43	PASS
GSM1900	HCH	0.15~30MHz	22.91	-51.28	-23	PASS
GSM1900	HCH	30~1000MHz	976.67	-34.89	-13	PASS
GSM1900	HCH	1000~3000MHz	2976.67	-41.4	-13	PASS
GSM1900	HCH	3000~10000MHz	3759.12	-33.14	-13	PASS
GSM1900	HCH	10000~18000MHz	15136.5	-63.56	-13	PASS
GPRS1900	LCH	0.009~0.15MHz	0.01	-71.12	-43	PASS
GPRS1900	LCH	0.15~30MHz	23.12	-49.77	-23	PASS
GPRS1900	LCH	30~1000MHz	965.07	-34.42	-13	PASS
GPRS1900	LCH	1000~3000MHz	2980.6	-41.4	-13	PASS
GPRS1900	LCH	3000~10000MHz	3759.82	-25.06	-13	PASS
GPRS1900	LCH	10000~18000MHz	15142.9	-63.35	-13	PASS
GPRS1900	MCH	0.009~0.15MHz	0.01	-71.38	-43	PASS
GPRS1900	MCH	0.15~30MHz	23.02	-50.09	-23	PASS
GPRS1900	MCH	30~1000MHz	885.59	-33.83	-13	PASS
GPRS1900	MCH	1000~3000MHz	2983.33	-41.51	-13	PASS
GPRS1900	MCH	3000~10000MHz	3760.06	-24.72	-13	PASS
GPRS1900	MCH	10000~18000MHz	15145.83	-63.34	-13	PASS
GPRS1900	HCH	0.009~0.15MHz	0.01	-70.87	-43	PASS
GPRS1900	HCH	0.15~30MHz	23.15	-50.39	-23	PASS
GPRS1900	HCH	30~1000MHz	932.15	-34.76	-13	PASS
GPRS1900	HCH	1000~3000MHz	2981.93	-41.39	-13	PASS

GPRS1900	HCH	3000~10000MHz	5640.2	-33.78	-13	PASS
GPRS1900	HCH	10000~18000MHz	15146.9	-63.46	-13	PASS
EGPRS1900	LCH	0.009~0.15MHz	0.01	-66.75	-43	PASS
EGPRS1900	LCH	0.15~30MHz	23.88	-50.86	-23	PASS
EGPRS1900	LCH	30~1000MHz	864.71	-34.85	-13	PASS
EGPRS1900	LCH	1000~3000MHz	2990.47	-41.47	-13	PASS
EGPRS1900	LCH	3000~10000MHz	5639.96	-42.81	-13	PASS
EGPRS1900	LCH	10000~18000MHz	15143.7	-63.35	-13	PASS
EGPRS1900	MCH	0.009~0.15MHz	0.01	-65.96	-43	PASS
EGPRS1900	MCH	0.15~30MHz	25.69	-50.75	-23	PASS
EGPRS1900	MCH	30~1000MHz	956.98	-34.79	-13	PASS
EGPRS1900	MCH	1000~3000MHz	2987	-41.48	-13	PASS
EGPRS1900	MCH	3000~10000MHz	5639.03	-50.82	-13	PASS
EGPRS1900	MCH	10000~18000MHz	15143.43	-63.35	-13	PASS
EGPRS1900	HCH	0.009~0.15MHz	0.01	-66.56	-43	PASS
EGPRS1900	HCH	0.15~30MHz	25.14	-50.37	-23	PASS
EGPRS1900	HCH	30~1000MHz	944.28	-35.11	-13	PASS
EGPRS1900	HCH	1000~3000MHz	2989.33	-41.22	-13	PASS
EGPRS1900	HCH	3000~10000MHz	5989.02	-52.12	-13	PASS
EGPRS1900	HCH	10000~18000MHz	15132.76	-63.38	-13	PASS

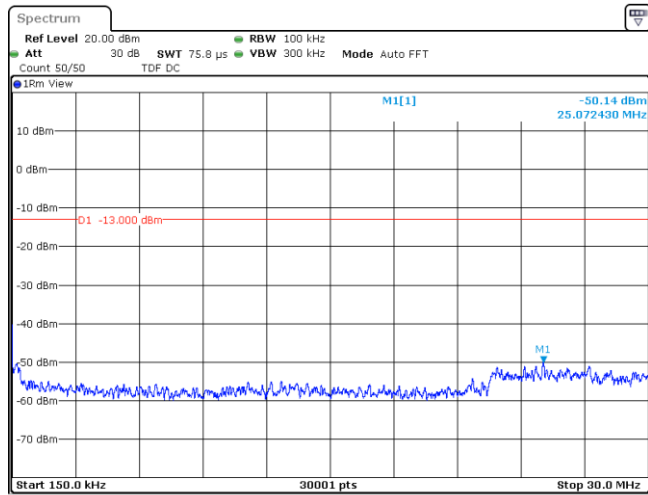
Test Graphs

GSM850-TM1-LCH-0.009~0.15MHz-0.01



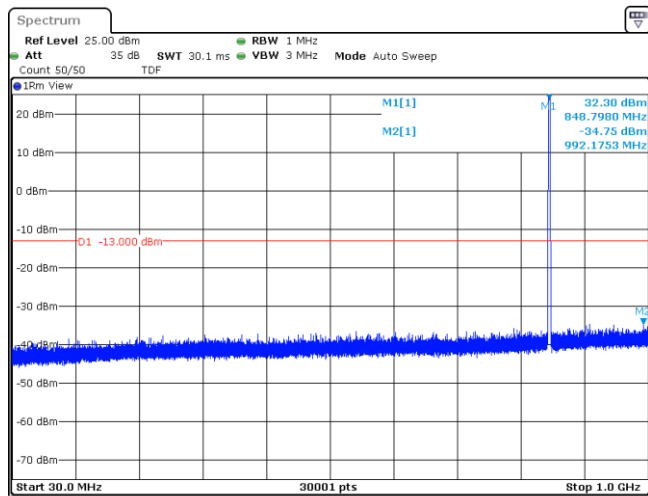
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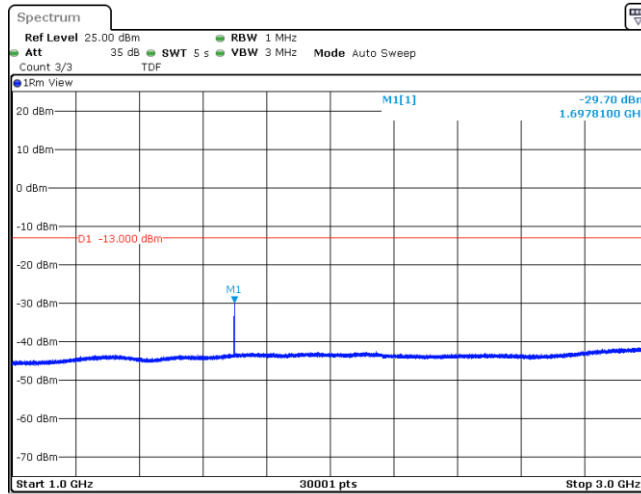
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GSM850-TM1-LCH-30~1000MHz-992.18



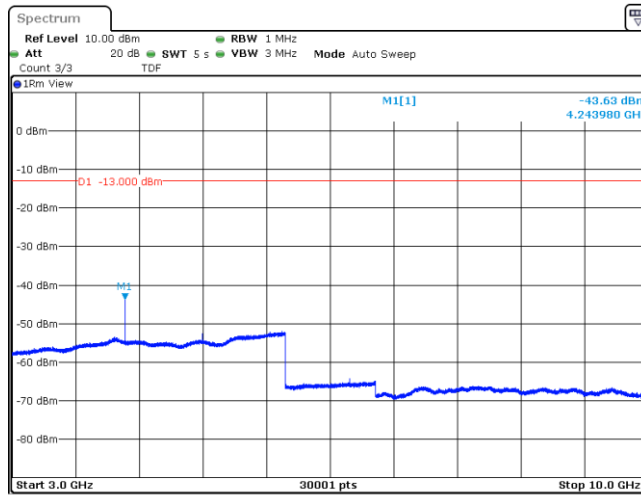
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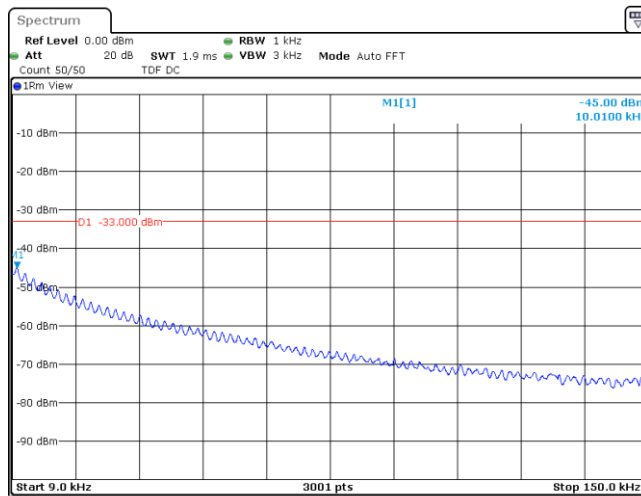
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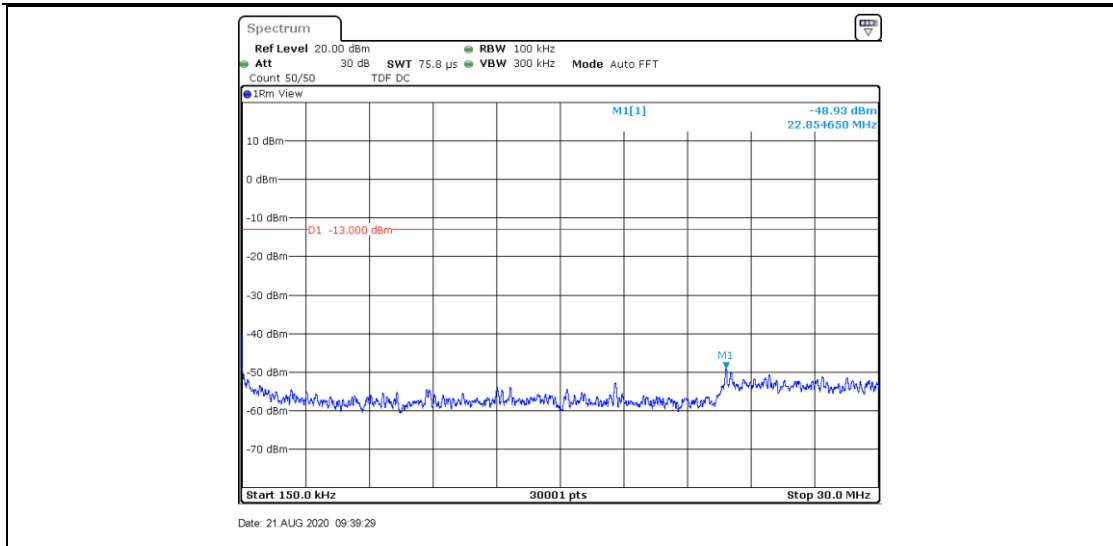
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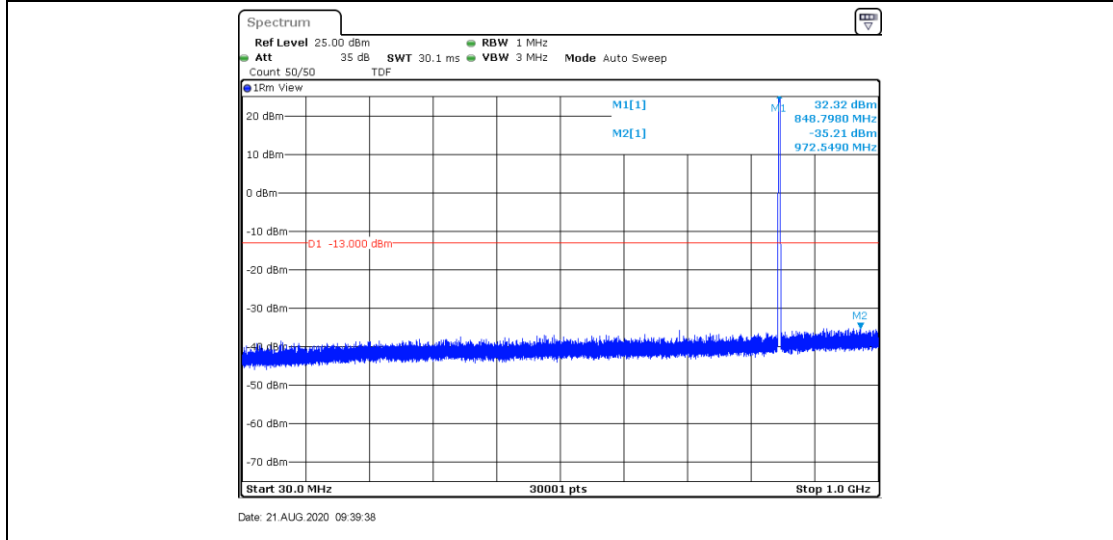


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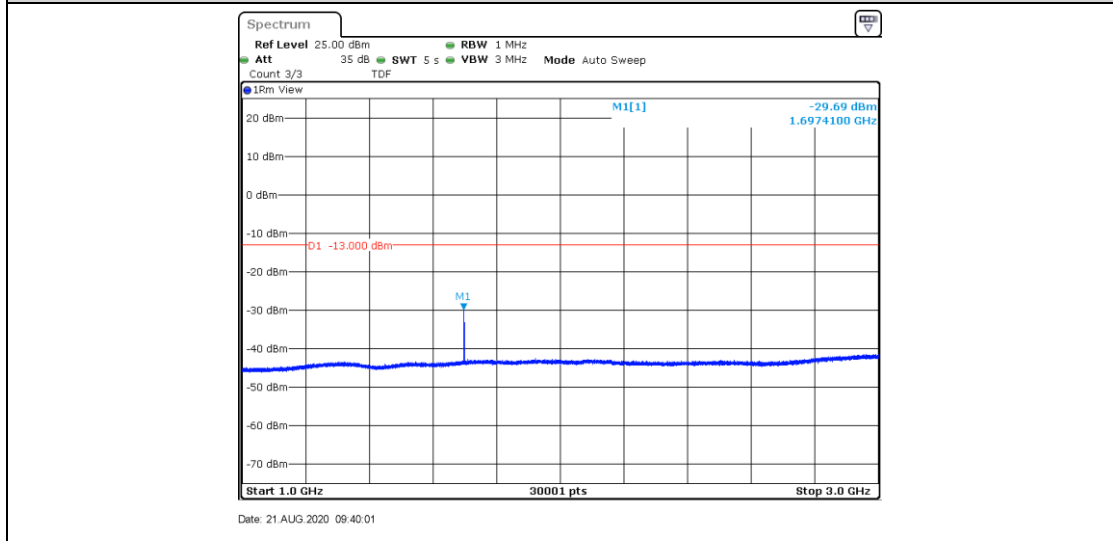
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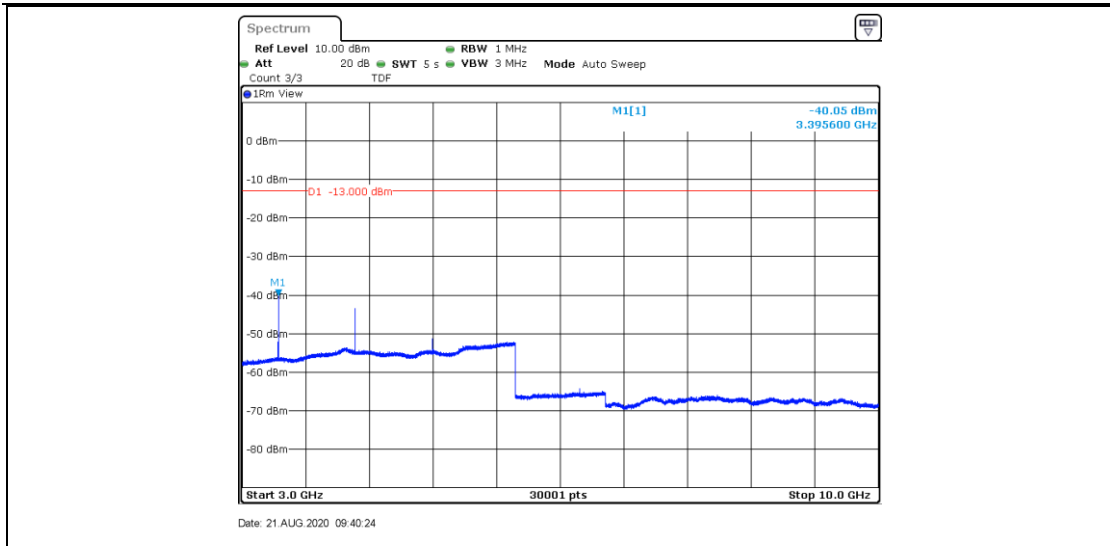
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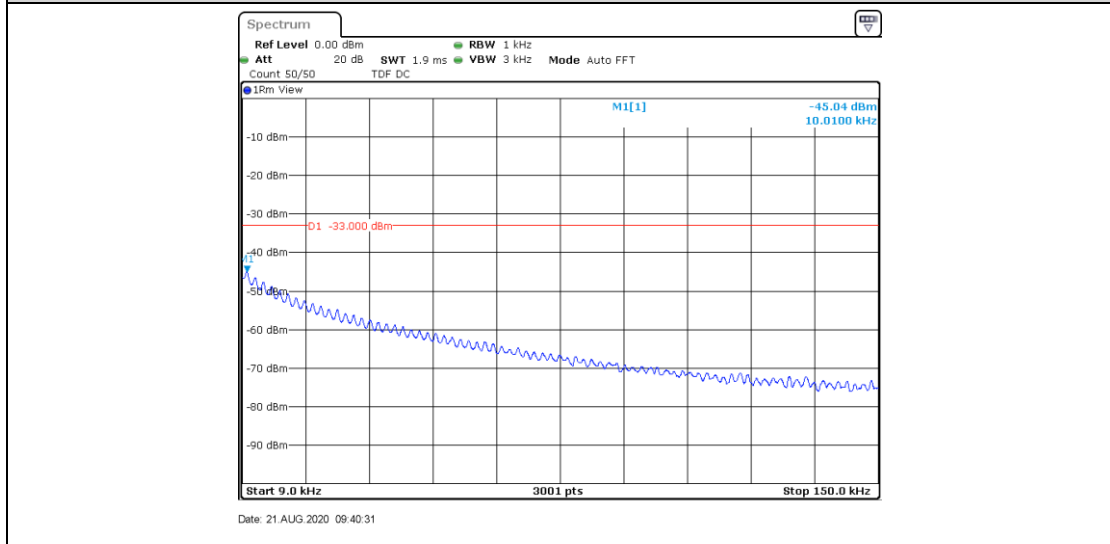
GSM850-190-3-1000~3000MHz-1697.41



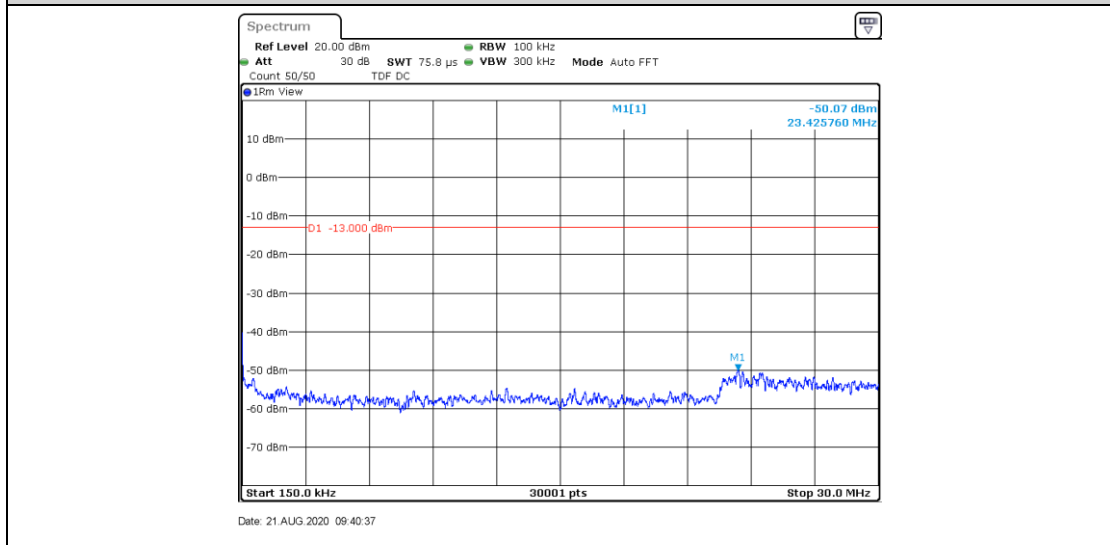
GSM850-190-3-3000~10000MHz-3395.6



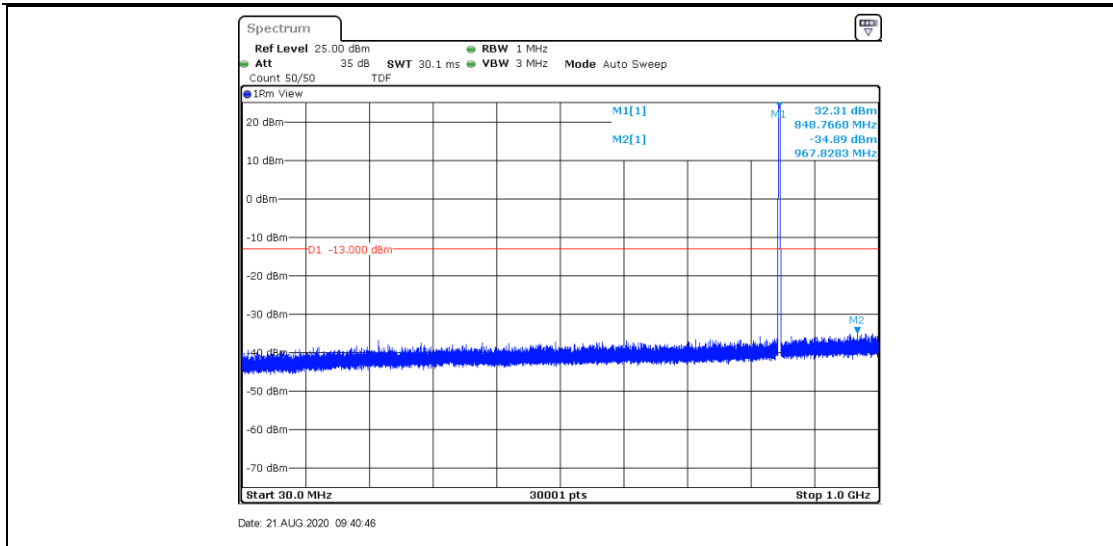
GSM850-251-3-0.009~0.15MHz-0.01



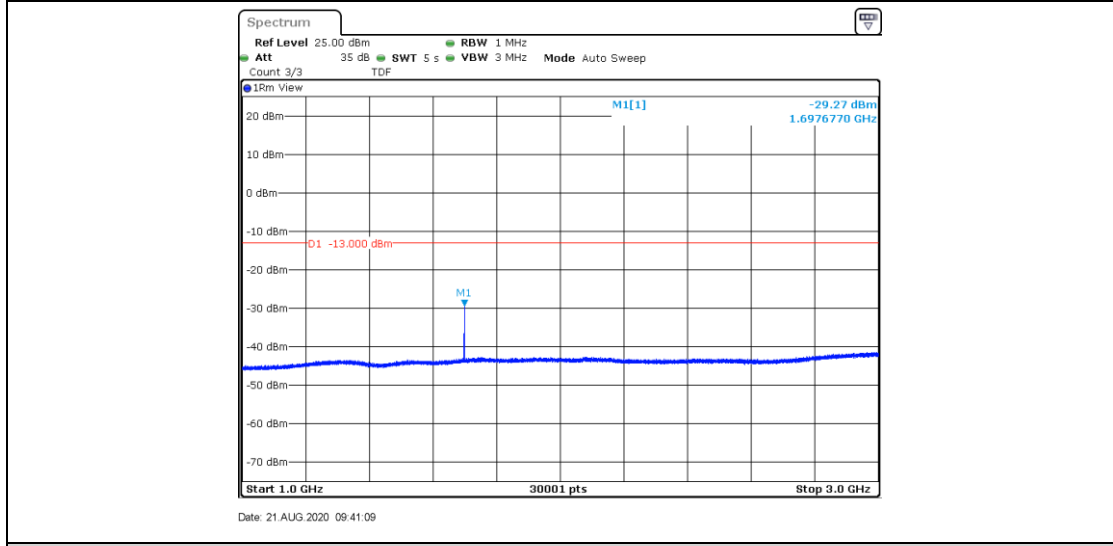
GSM850-251-3-0.15~30MHz-23.43



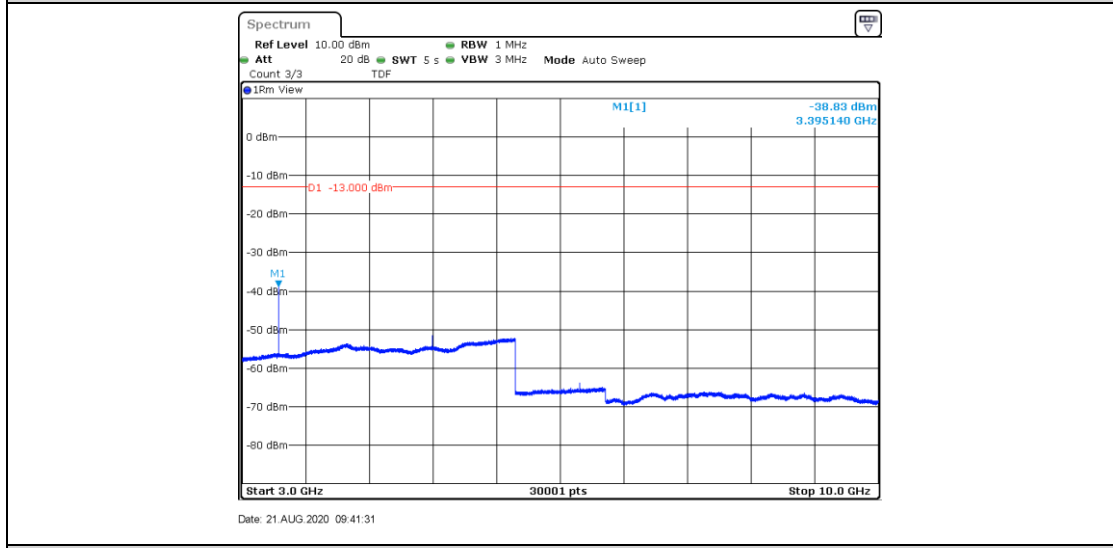
GSM850-251-3-30~100MHz-967.83



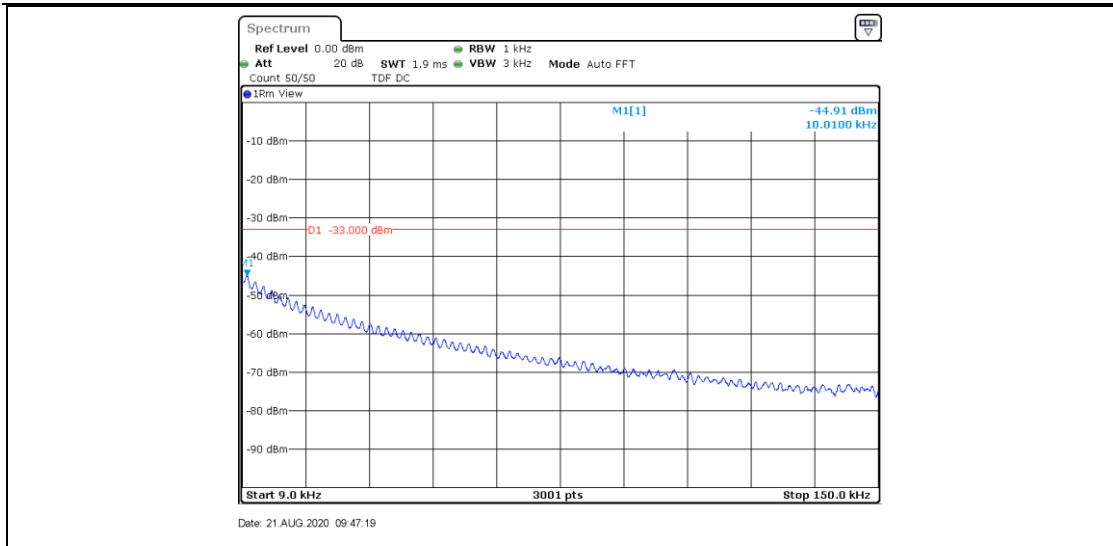
GSM850-251-3-1000~3000MHz-1697.68



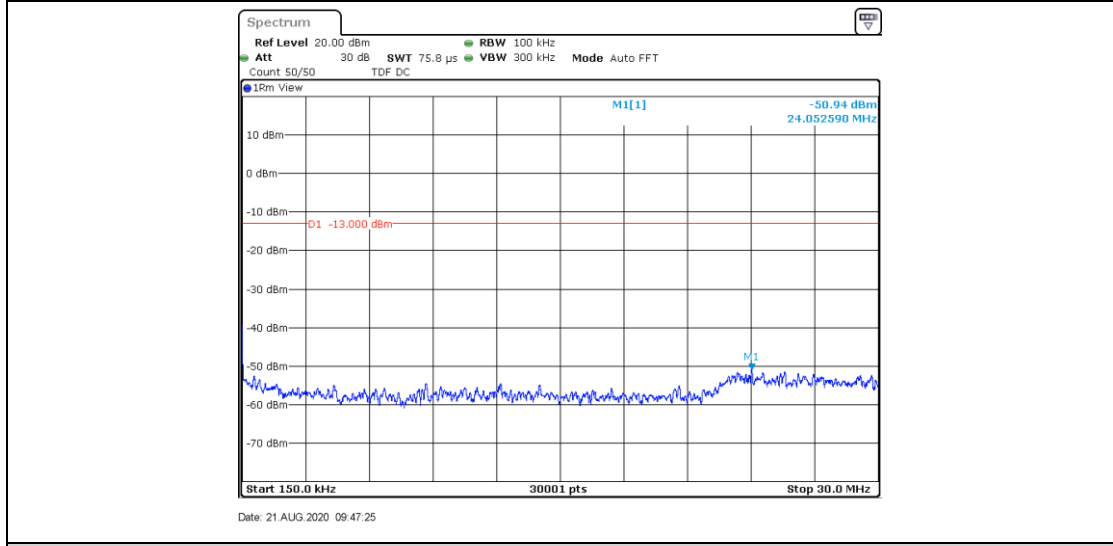
GSM850-251-3-3000~10000MHz-3395.14



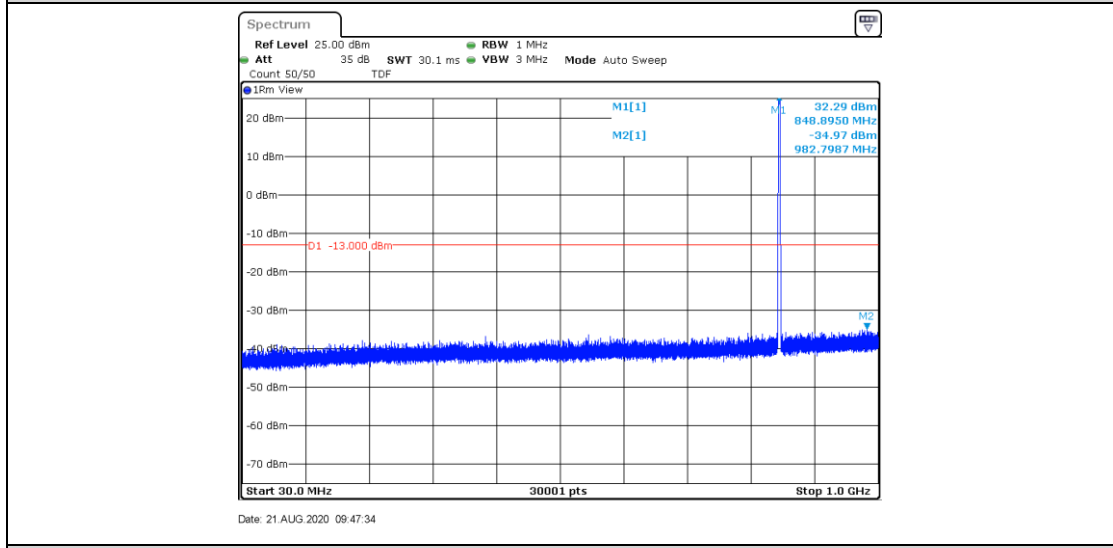
GPRS850-TM1-LCH-0.009~0.15MHz-0.01



GPRS850-128-3-0.15~30MHz-24.05

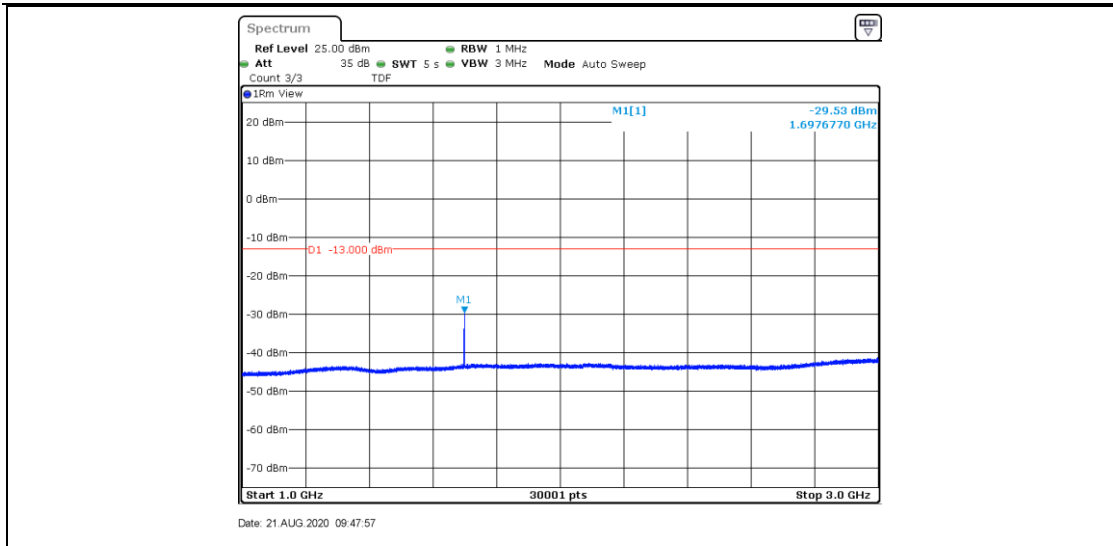


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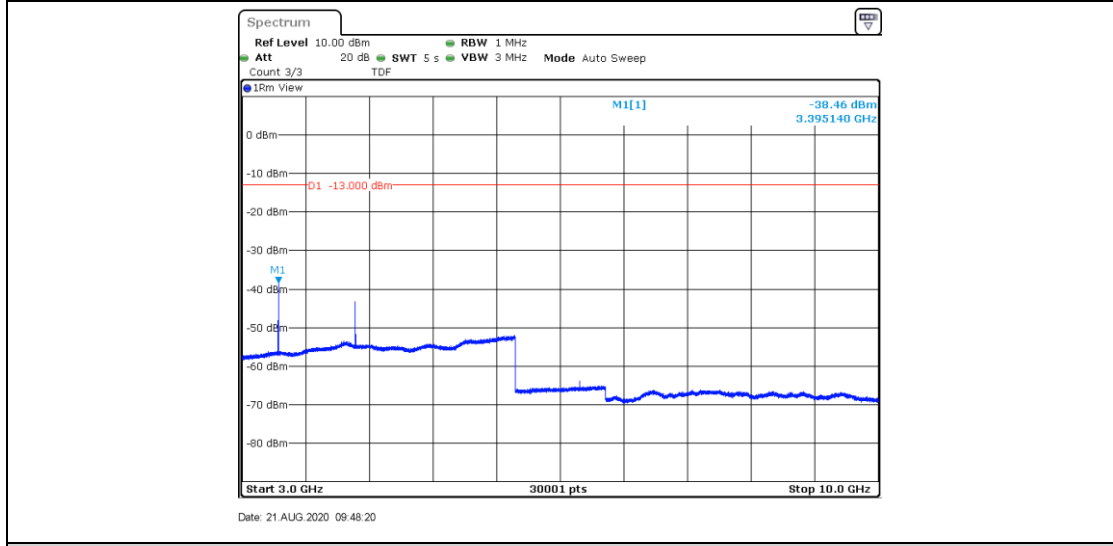


GPRS850-128-3-1000~3000MHz-1697.68

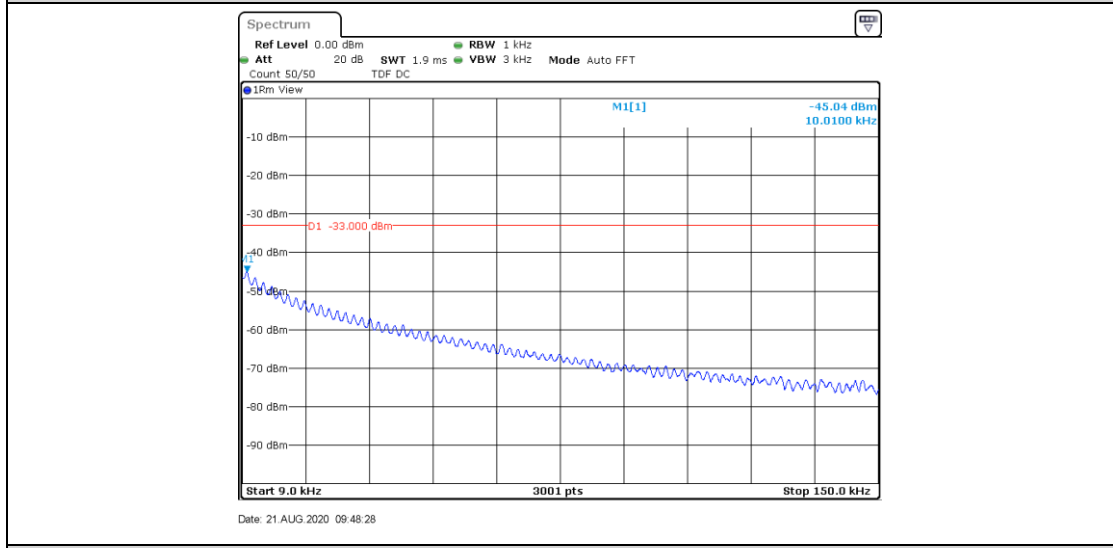




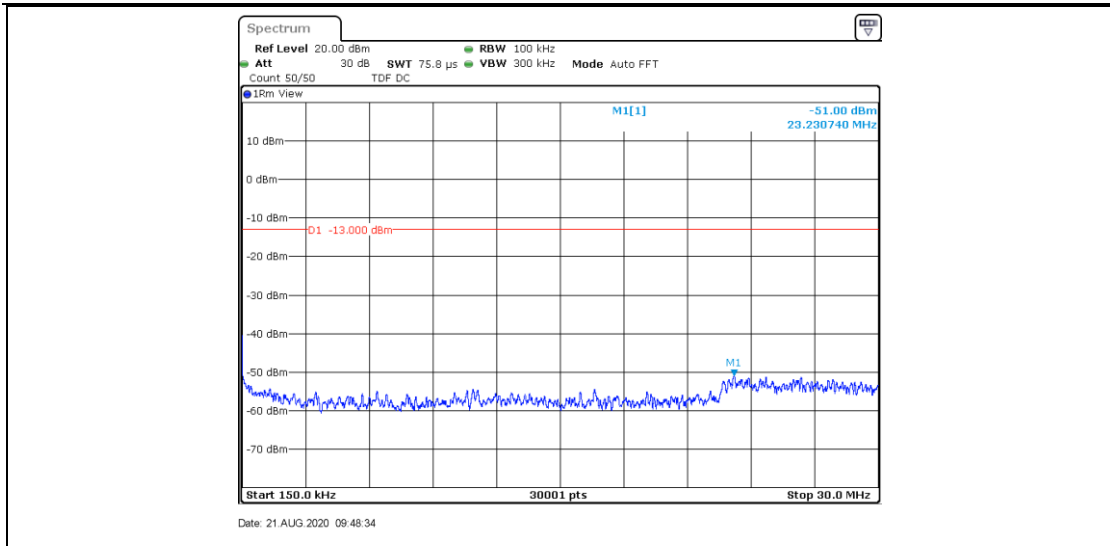
GPRS850-128-3-3000~10000MHz-3395.14



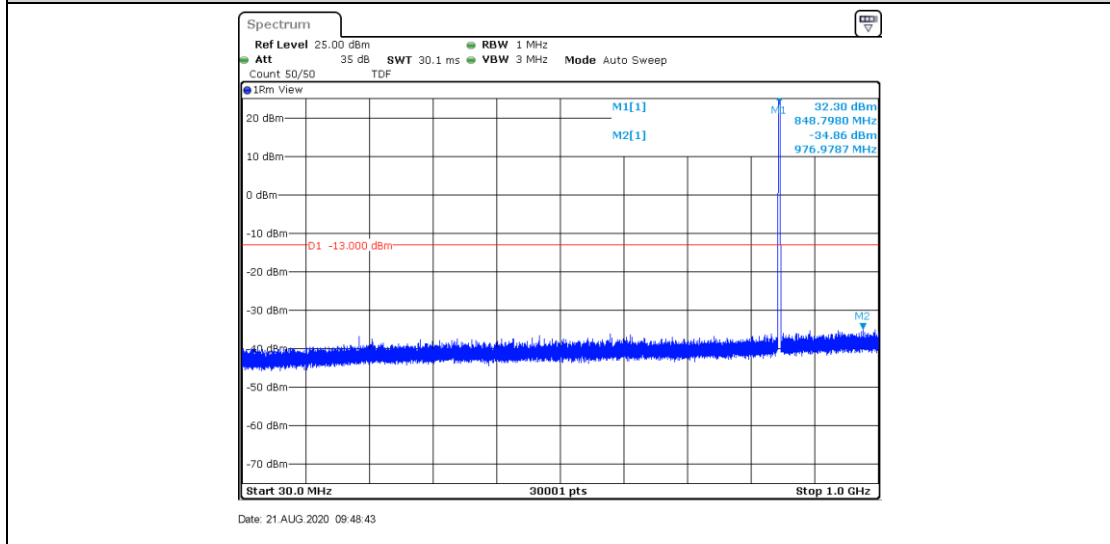
GPRS850-190-3-0.009~0.15MHz-0.01



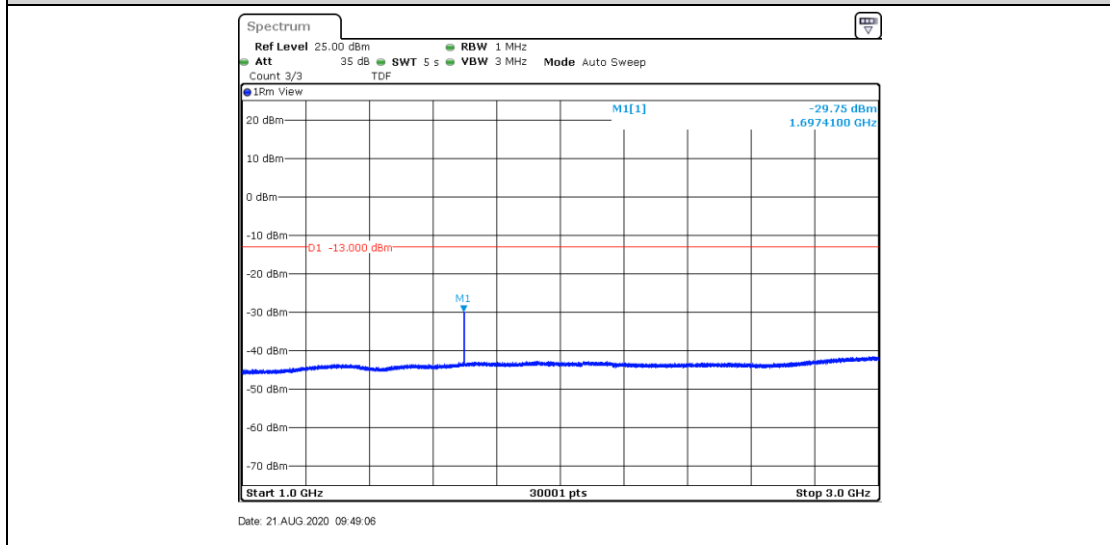
GPRS850-190-3-0.15~30MHz-23.23



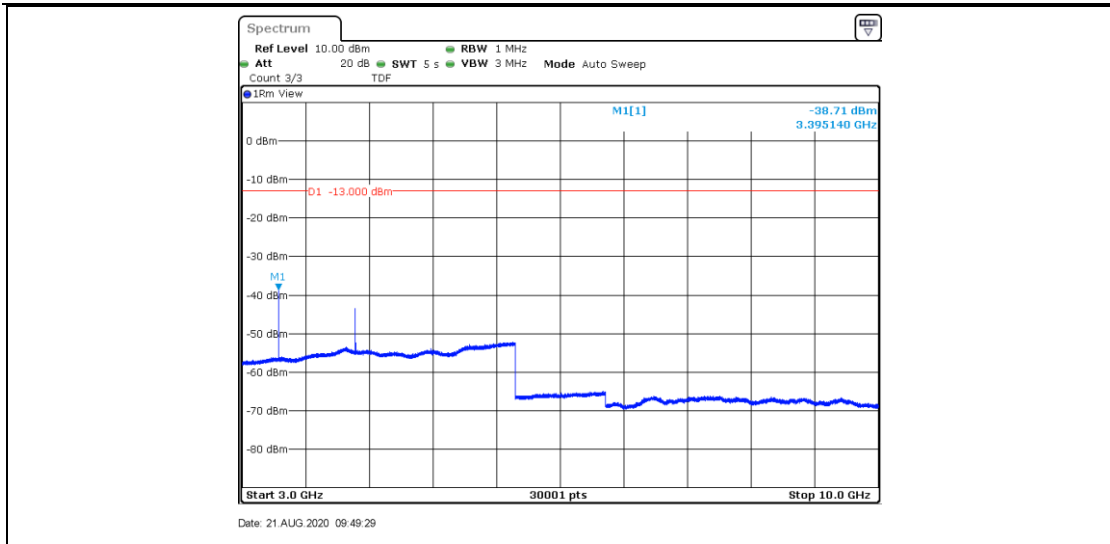
GPRS850-190-3-30~1000MHz-976.98



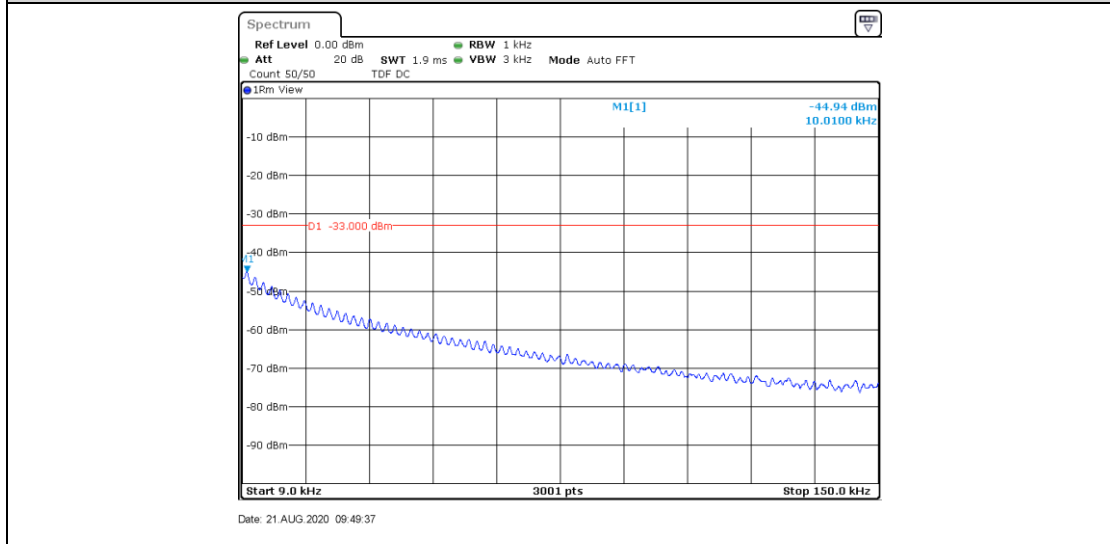
GPRS850-190-3-1000~3000MHz-1697.41



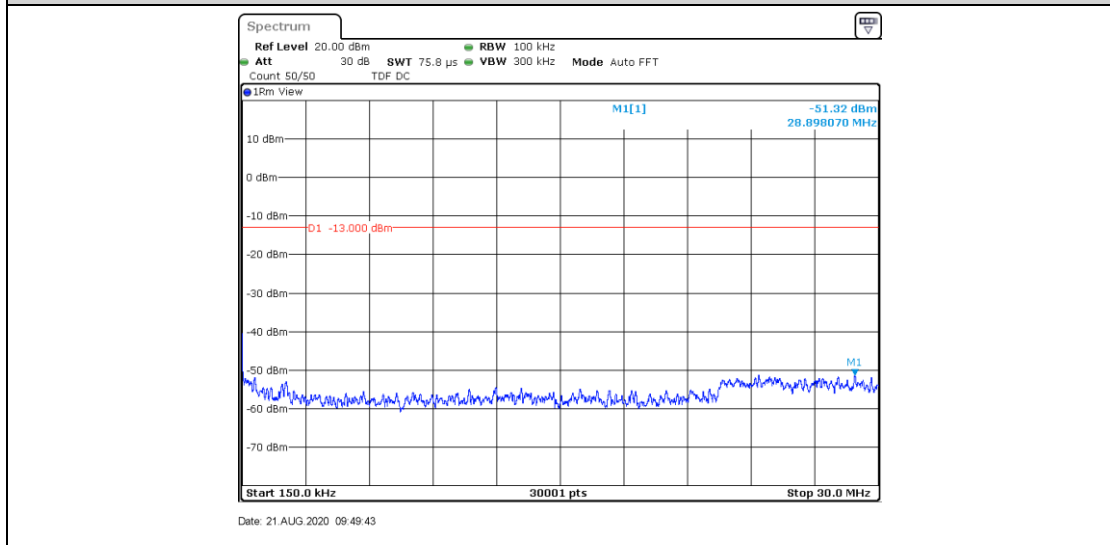
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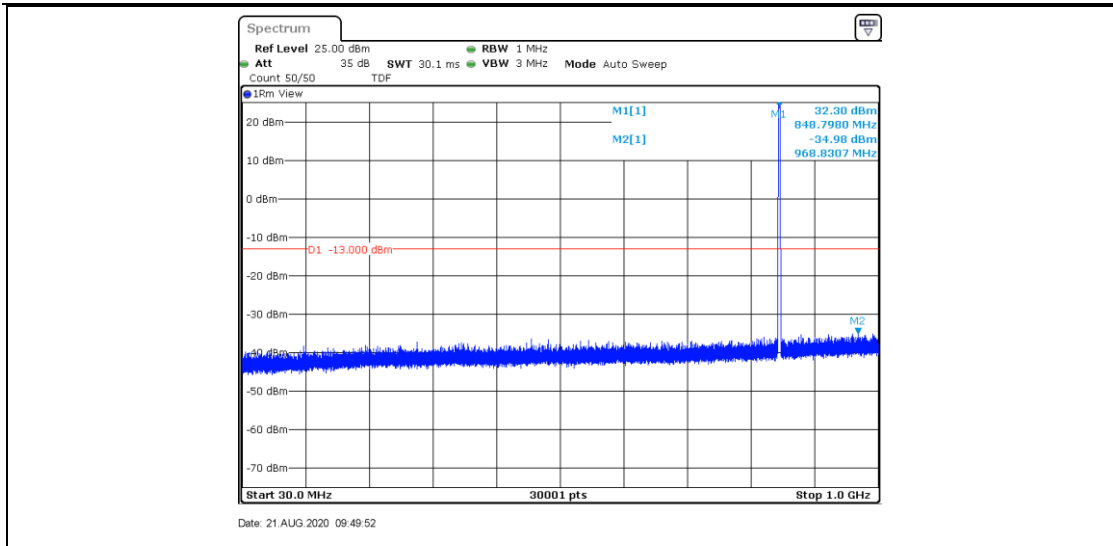
### GPRS850-251-3-0.009~0.15MHz-0.01



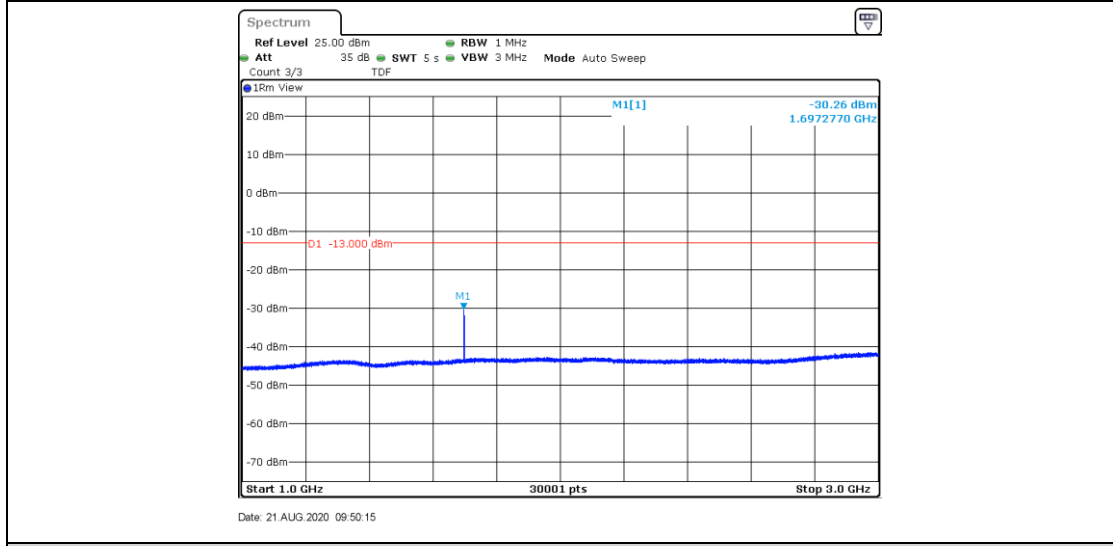
### GPRS850-251-3-0.15~30MHz-28.9



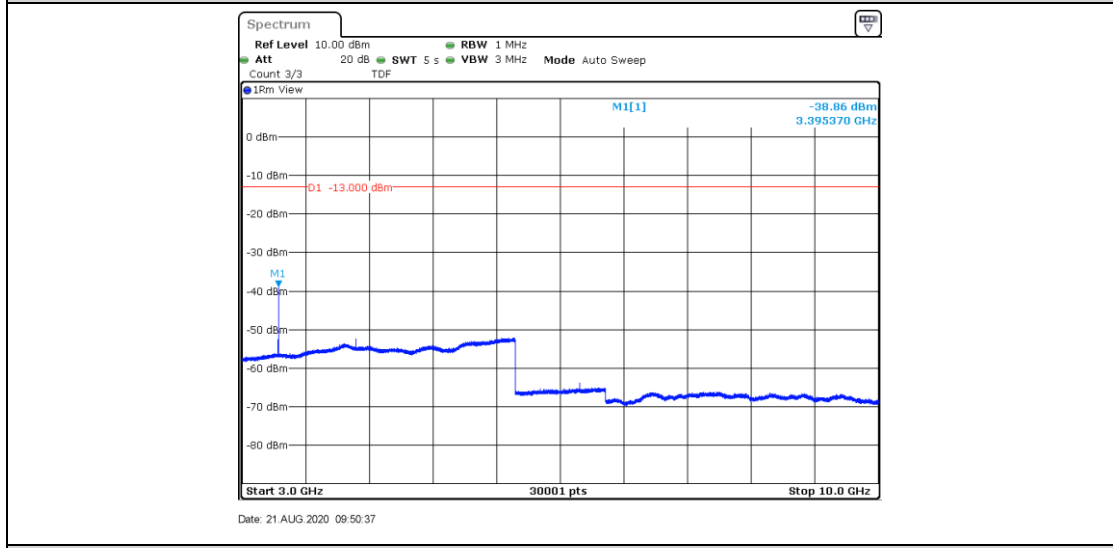
### GPRS850-251-3-30~100MHz-968.83



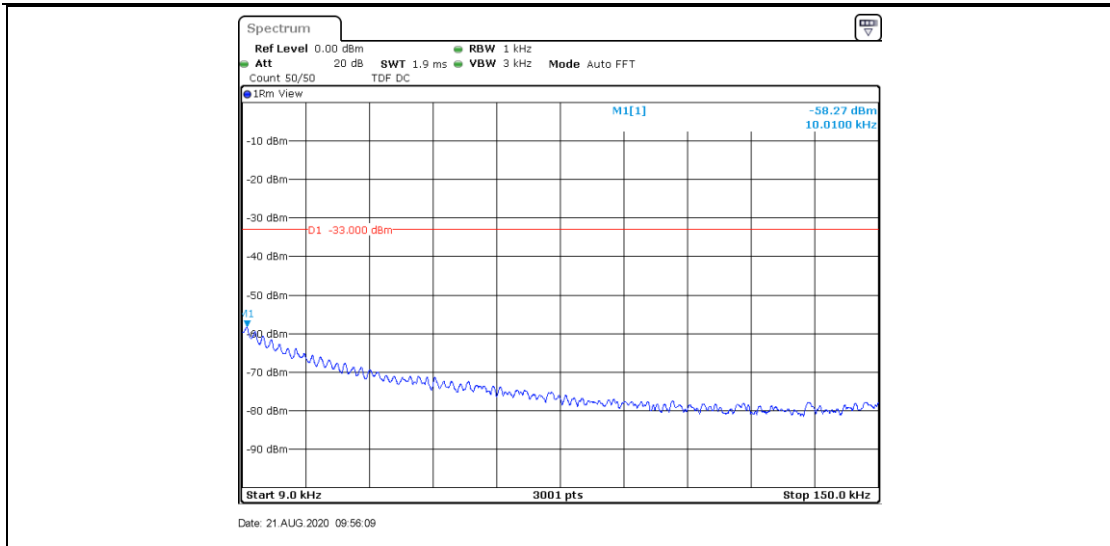
GPRS850-251-3-1000~3000MHz-1697.28



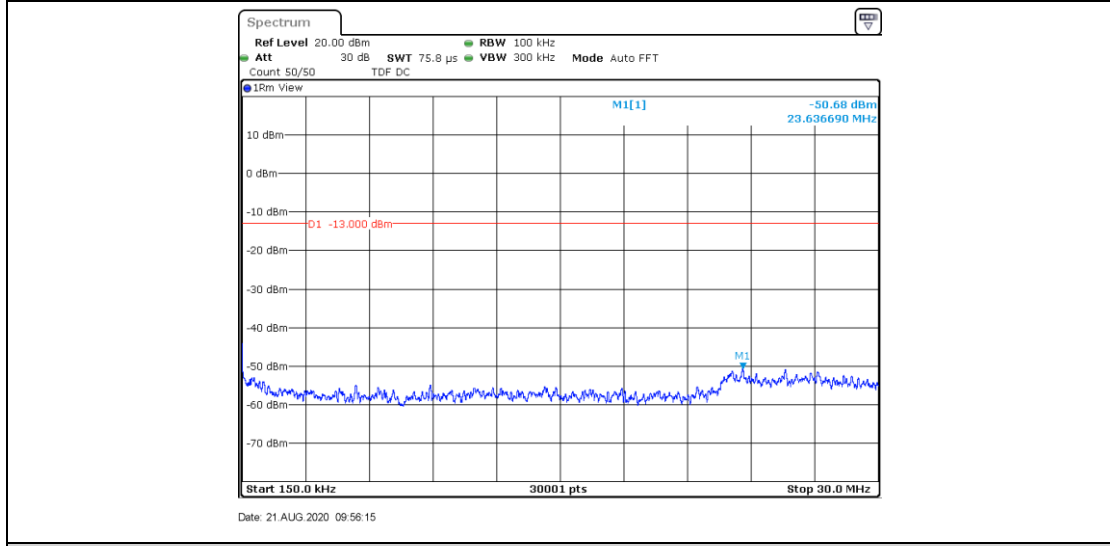
GPRS850-251-3-3000~10000MHz-3395.37



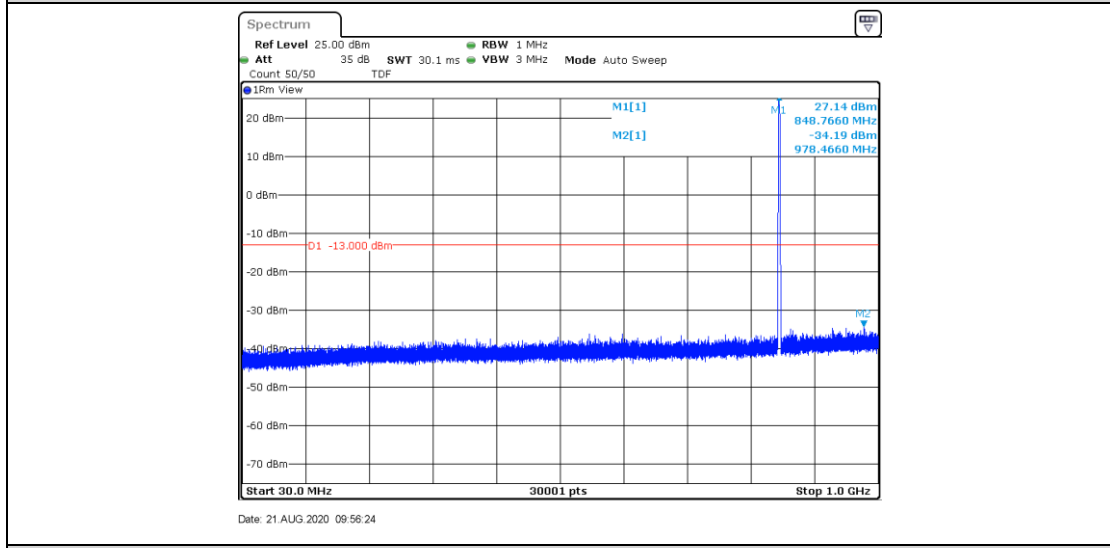
EGPRS850-TM1-LCH-0.009~0.15MHz-0.01



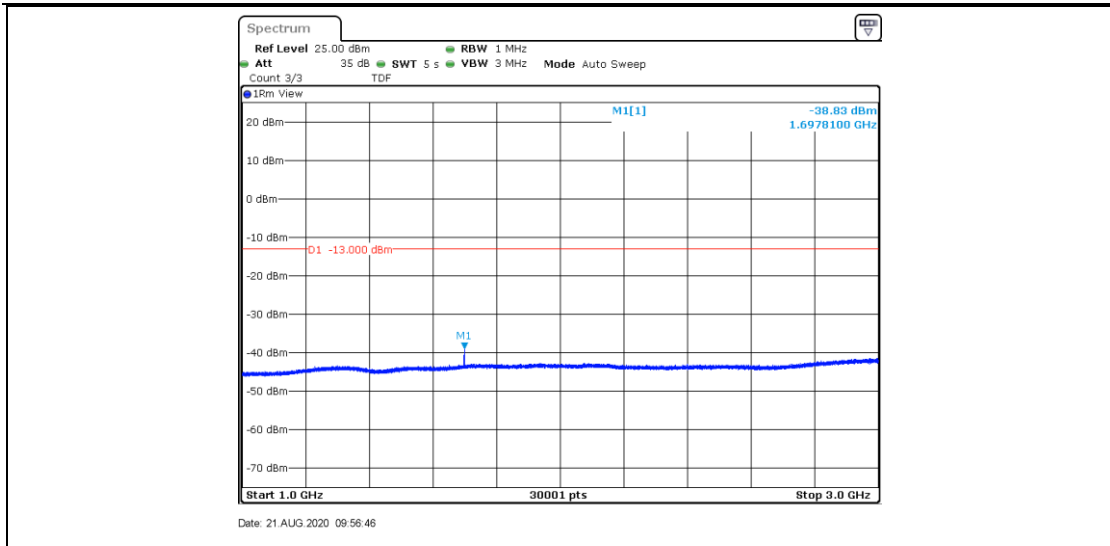
EGPRS850-TM1-LCH-0.15~30MHz-23.64



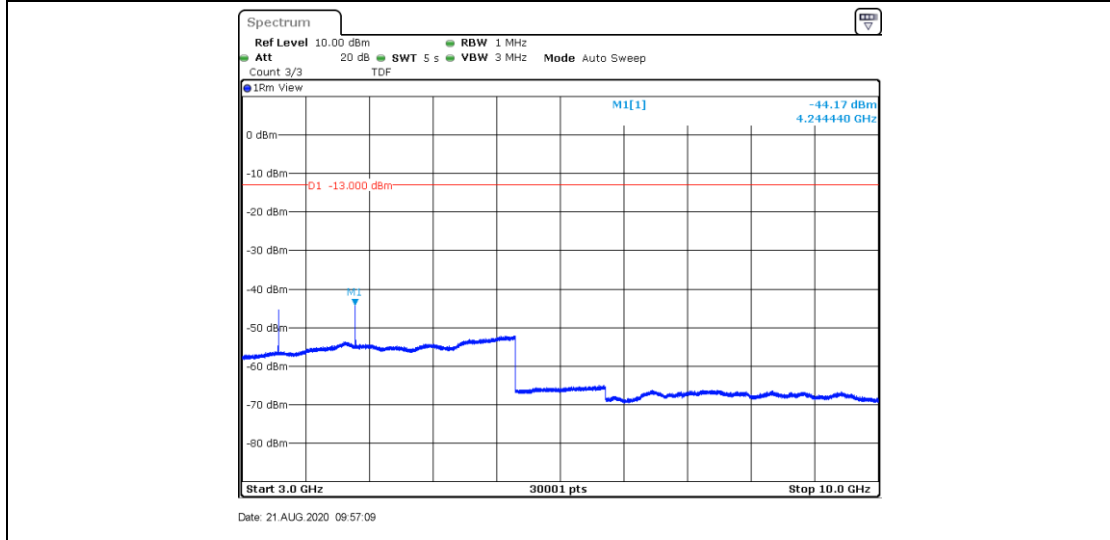
EGPRS850-TM1-LCH-30~1000MHz-978.47



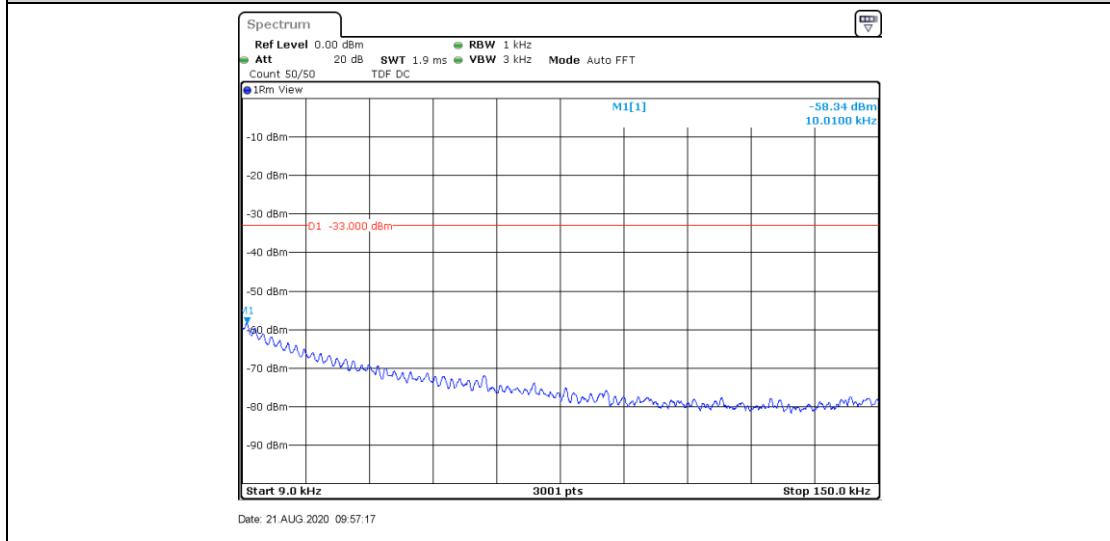
EGPRS850-TM1-LCH-1000~3000MHz-1697.81



EGPRS850-TM1-LCH-3000~10000MHz-4244.44



EGPRS850-190-8-0.009~0.15MHz-0.01



EGPRS850-190-8-0.15~30MHz-23.47