Appendix for test report

1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.04	29.19	38.5	PASS
		MCH	32.12	29.27	38.5	PASS
		HCH	32.17	29.32	38.5	PASS
	GSM/TM2	LCH	25.78	22.93	38.5	PASS
		MCH	25.82	22.97	38.5	PASS
		HCH	25.72	22.87	38.5	PASS
Test Band	**Test Mode**	**Test Channel**	**Measured[dBm]**	**EIRP [dBm]**	**Limit [dBm]**	**Verdict**
PCS1900	GSM/TM1	LCH	28.68	27.48	33	PASS
		MCH	28.77	27.57	33	PASS
		HCH	28.72	27.52	33	PASS
	GSM/TM2	LCH	24.55	23.35	33	PASS
		MCH	24.74	23.54	33	PASS
		HCH	24.60	23.40	33	PASS

Note1:

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 [dBi]

b, SGP = Signal Generator Level

Note2:

SET Span = 1.5 * OBW

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

SET VBW >= 3 * RBW

SET Sweep time = auto - couple.

Detector: RMS

2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM850	GSM/TM1	LCH	1.77	13	PASS
		MCH	1.82	13	PASS
		HCH	1.80	13	PASS
	GSM/TM2	LCH	4.74	13	PASS
		MCH	4.84	13	PASS
		HCH	5.07	13	PASS
PCS1900	GSM/TM1	LCH	1.97	13	PASS
		MCH	1.74	13	PASS
		HCH	1.84	13	PASS
	GSM/TM2	LCH	4.60	13	PASS
		MCH	4.74	13	PASS
		HCH	5.01	13	PASS

3Appendix_C: Modulation Characteristics

Part I - Test Plots

3.1 For GSM

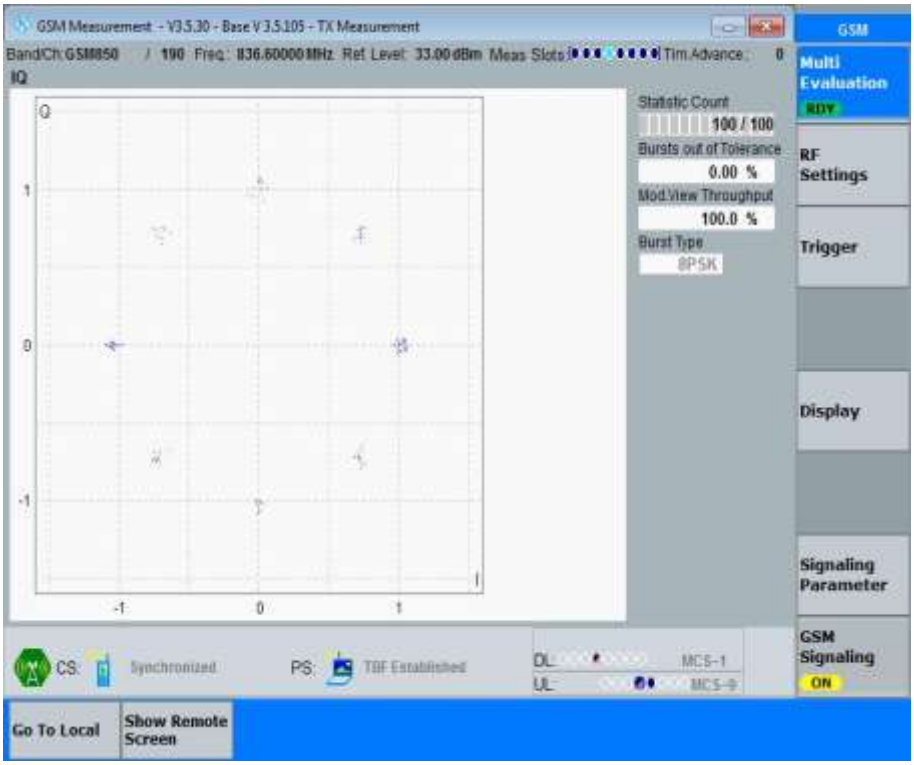
3.1.1 Test Band = GSM850

3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH

3.1.1.2 Test Mode = GSM/TM2

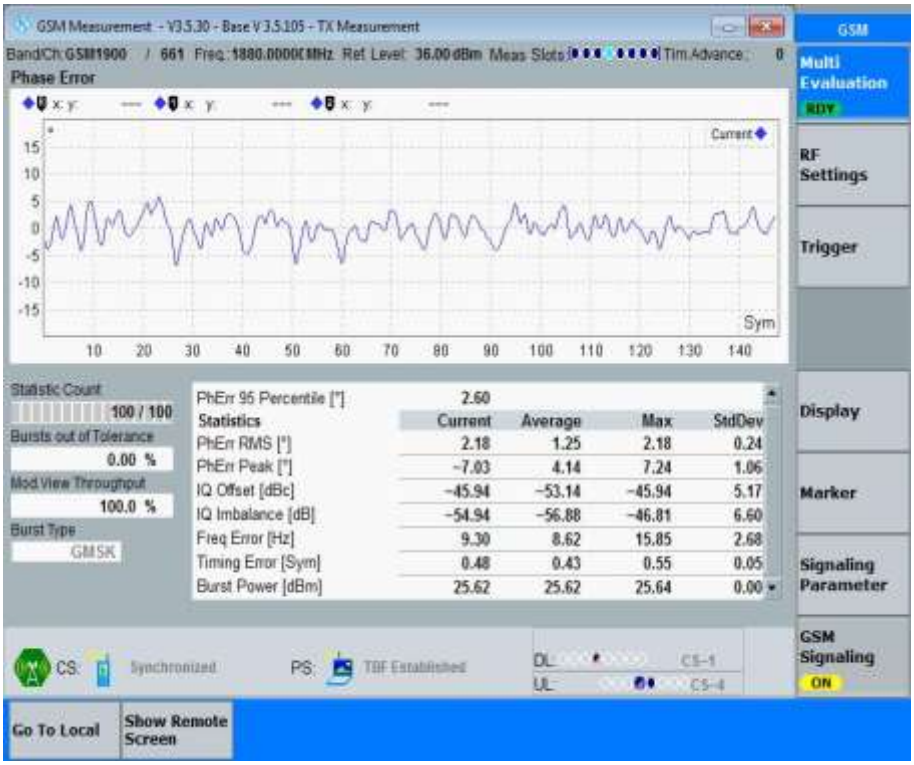
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = PCS1900

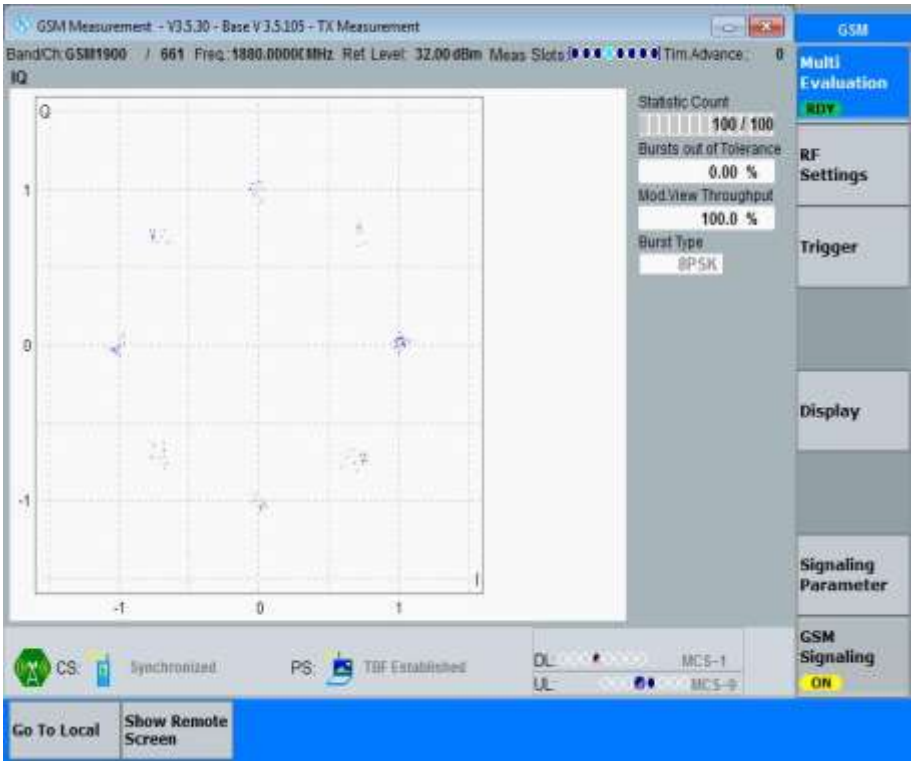
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH



4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	245.31	317.69	Pass
		MCH	244.62	312.41	Pass
		HCH	244.98	319.19	Pass
	GSM/TM2	LCH	251.48	317.47	Pass
		MCH	253.02	320.58	Pass
		HCH	247.12	319.60	Pass
PCS1900	GSM/TM1	LCH	249.36	323.01	Pass
		MCH	248.59	323.89	Pass
		HCH	249.02	320.81	Pass
	GSM/TM2	LCH	253.07	317.58	Pass
		MCH	256.26	332.65	Pass
		HCH	251.39	319.26	Pass

Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH

4.1.1.1.2 Test Channel = MCH

4.1.1.1.3 Test Channel = HCH

4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH

4.1.1.2.2 Test Channel = MCH

4.1.1.2.3 Test Channel = HCH

4.1.2 Test Band = PCS1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH

4.1.2.1.2 Test Channel = MCH

4.1.2.1.3 Test Channel = HCH

4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH

4.1.2.2.2 Test Channel = MCH

4.1.2.2.3 Test Channel = HCH

5Appendix_E: Band Edges Compliance

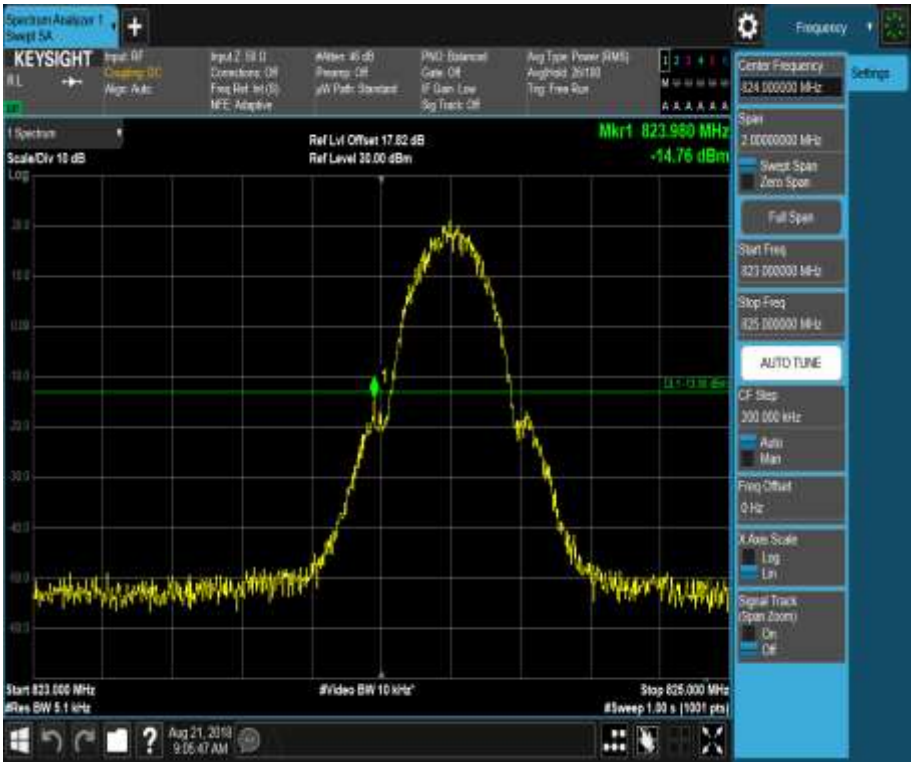
Part I - Test Plots

5.1 For GSM

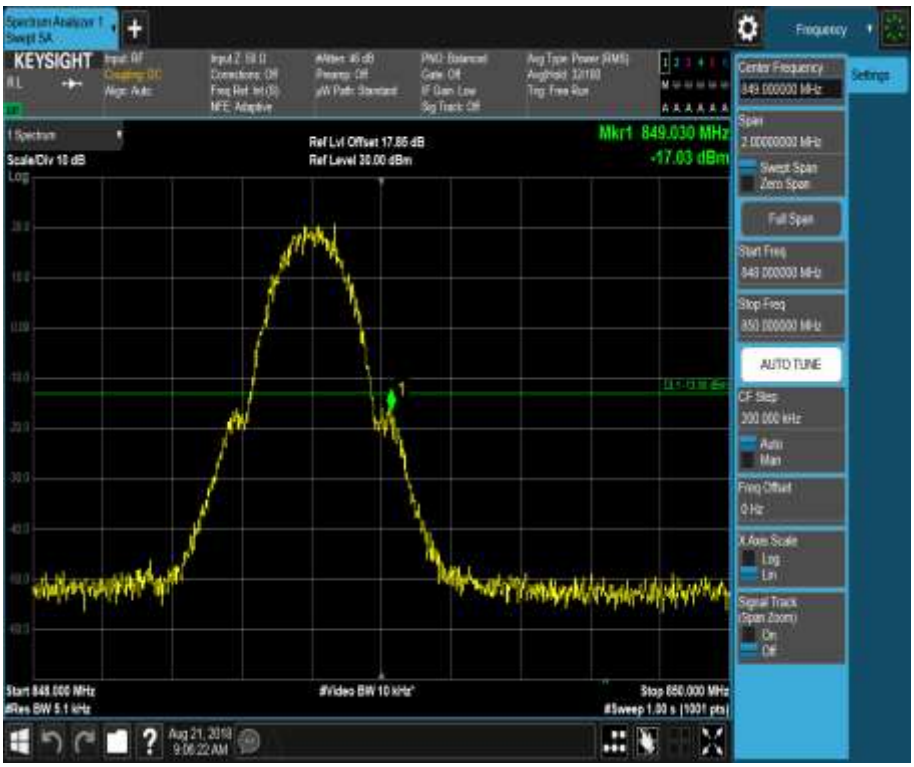
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

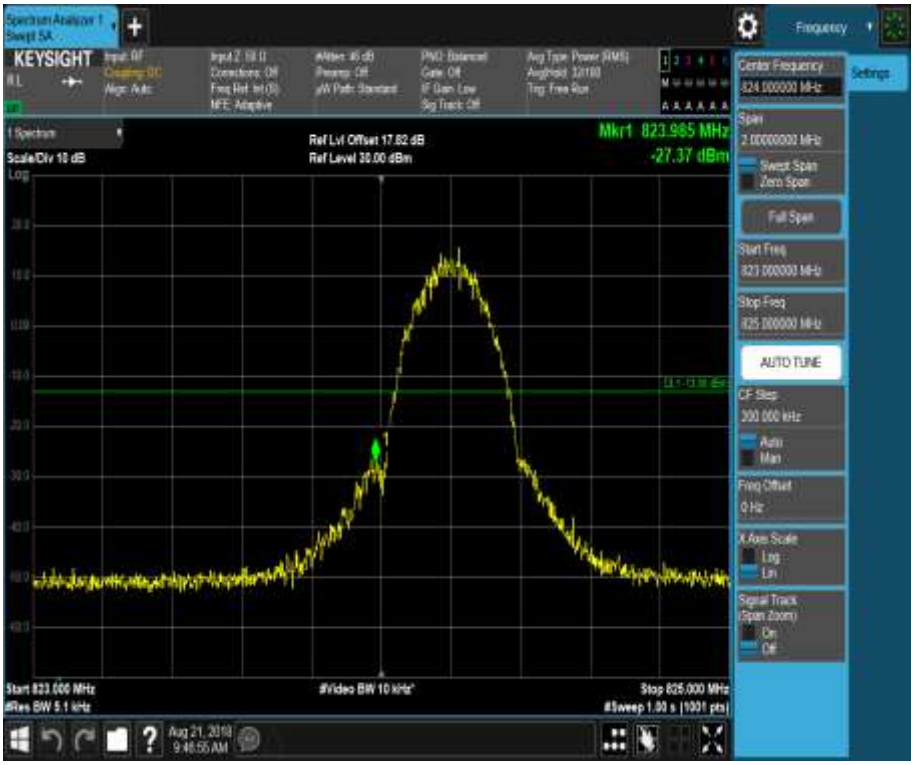


5.1.1.1.2 Test Channel = HCH

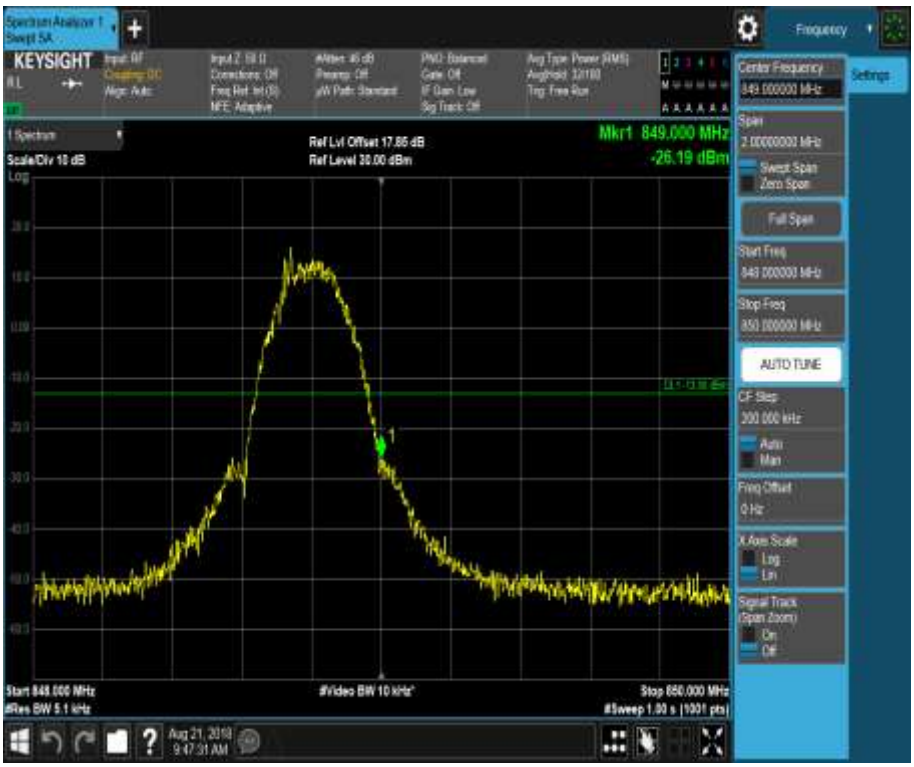


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



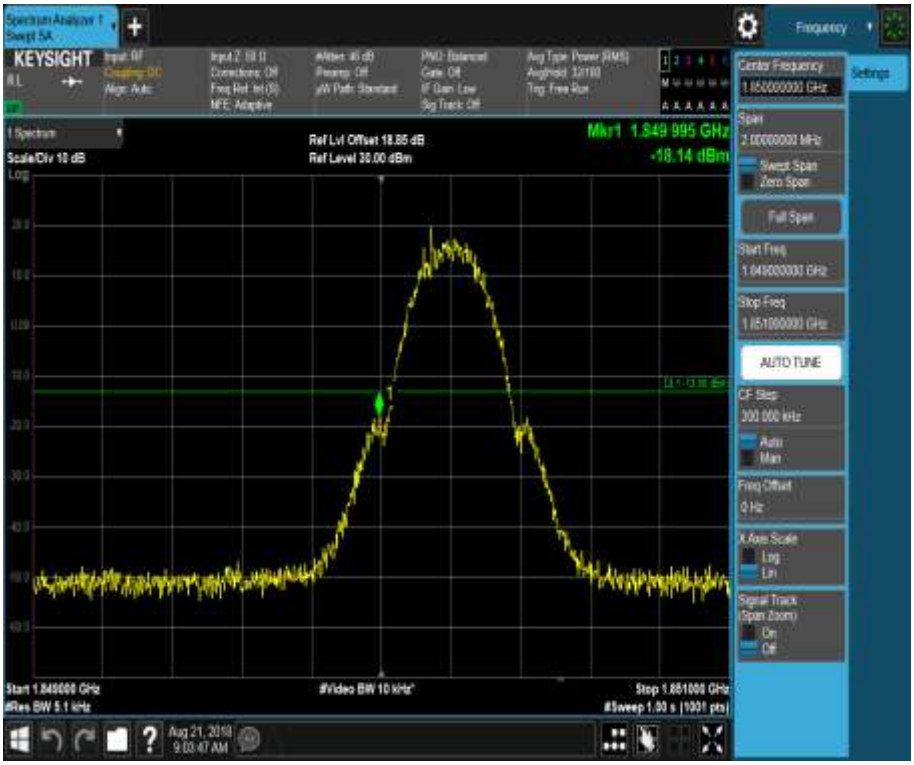
5.1.1.2.2 Test Channel = HCH



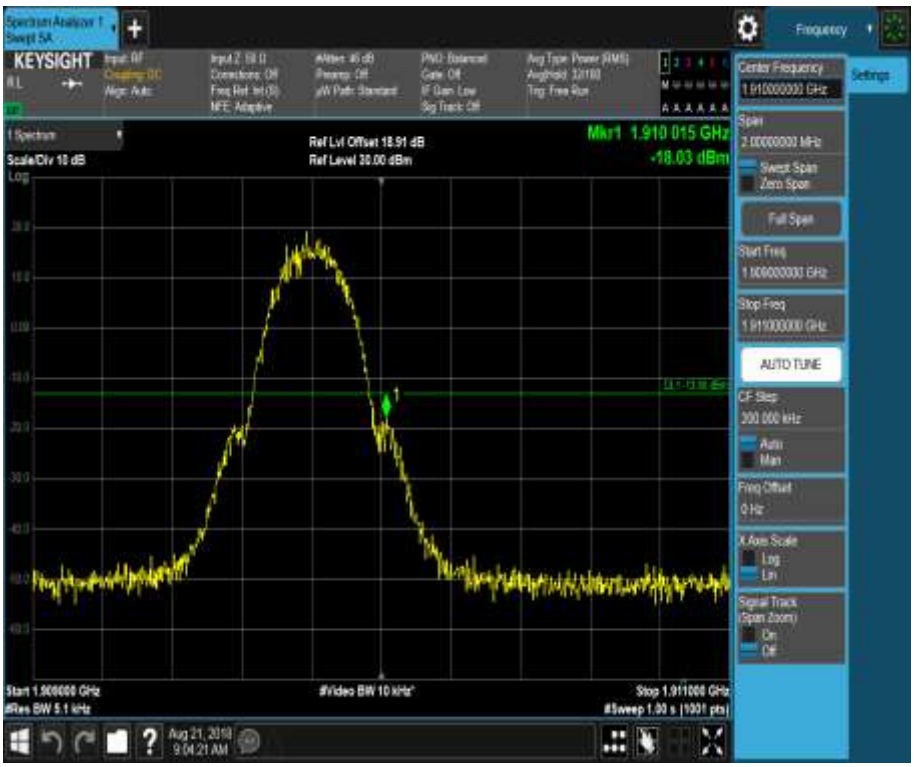
5.1.2 Test Band = PCS1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

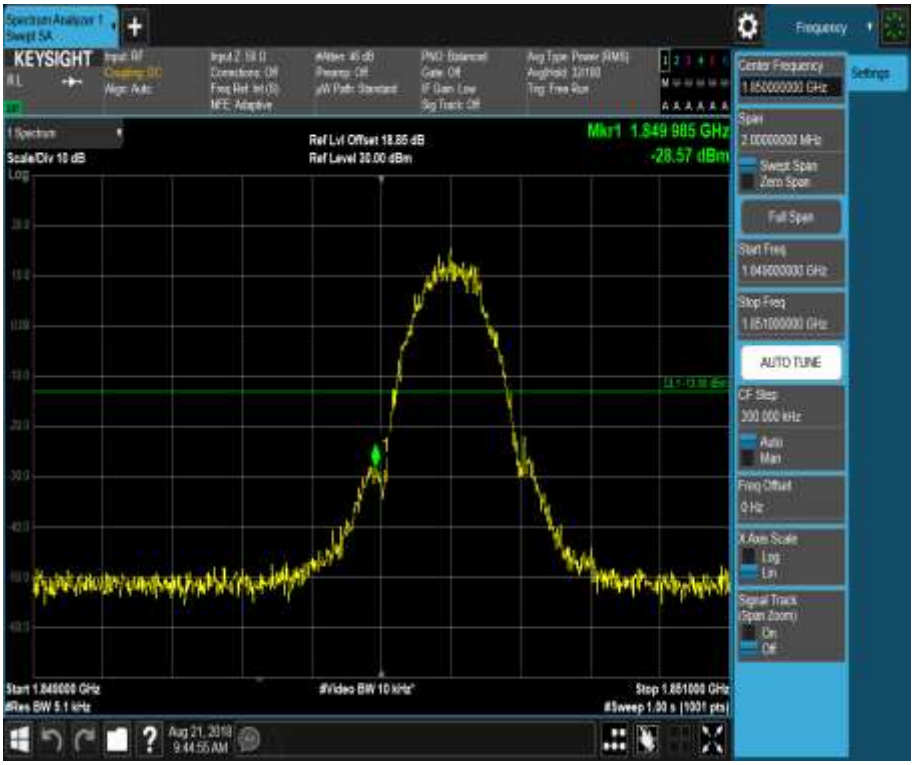


5.1.2.1.2 Test Channel = HCH

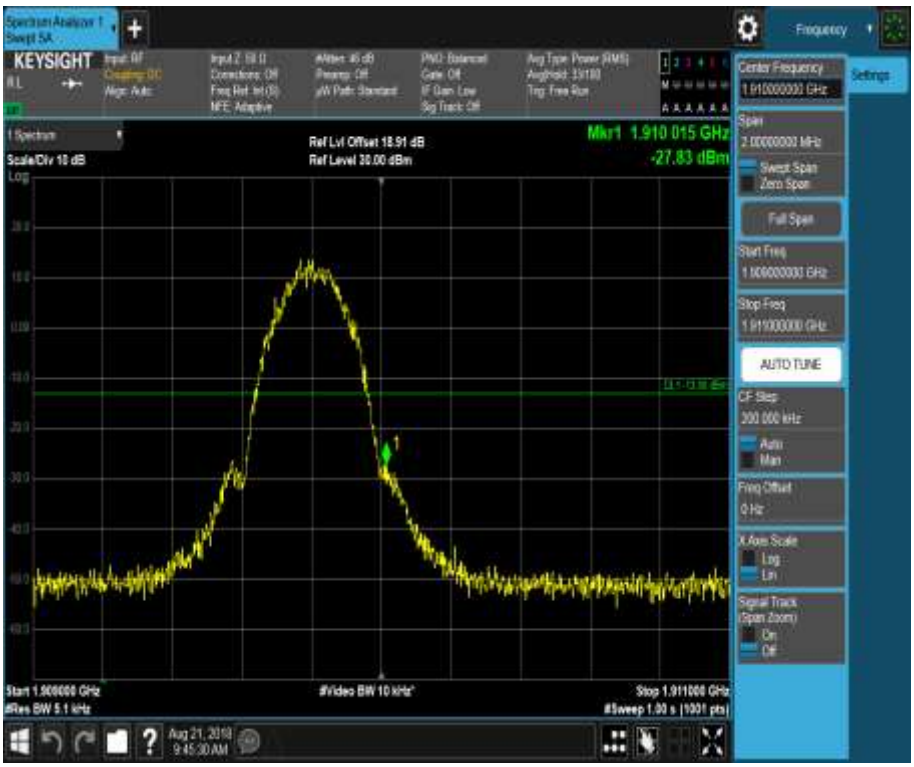


5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



5.1.2.2.2 Test Channel = HCH



6Appendix_F: Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of < RBW/2 so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = k * (Span / RBW)" with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

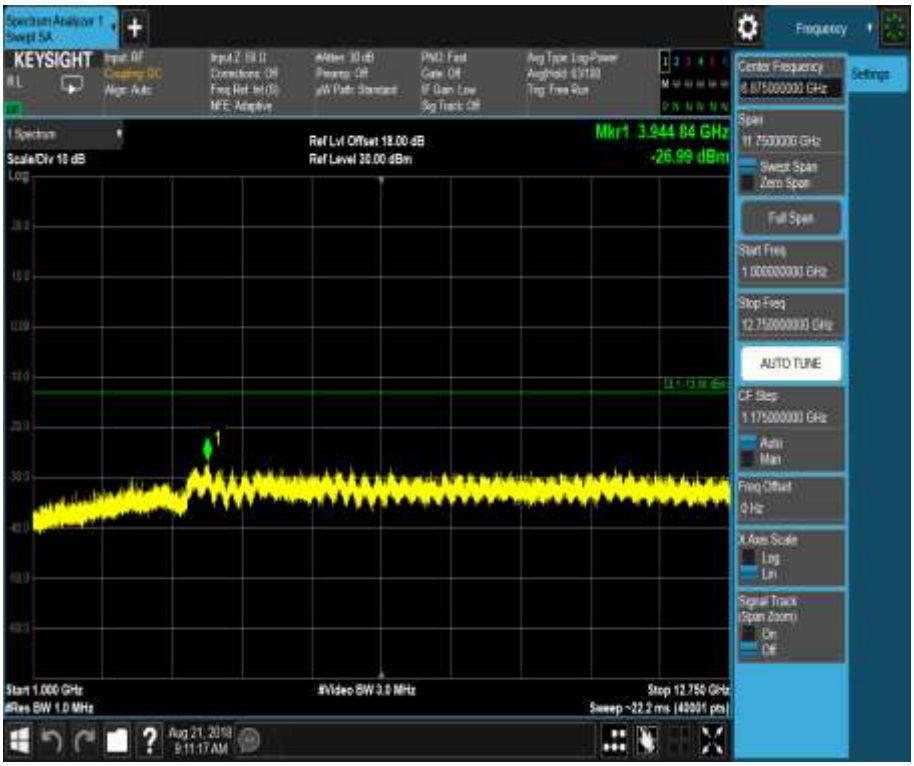
Part I - Test Plots

6.1 For GSM

6.1.1 Test Band = GSM850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

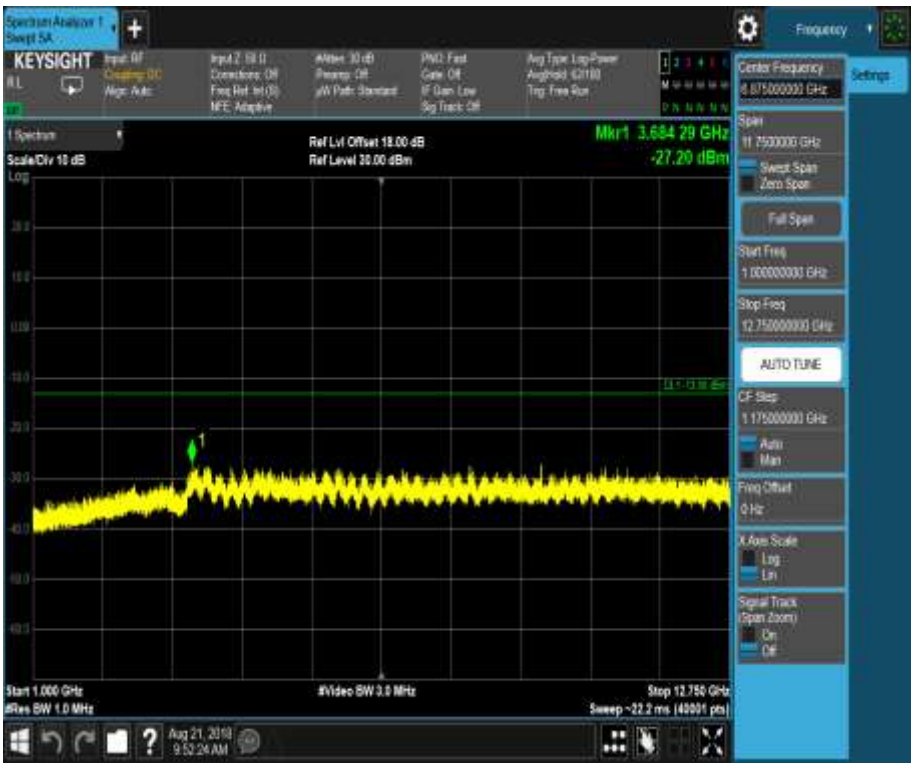


6.1.1.1.2 Test Channel = MCH

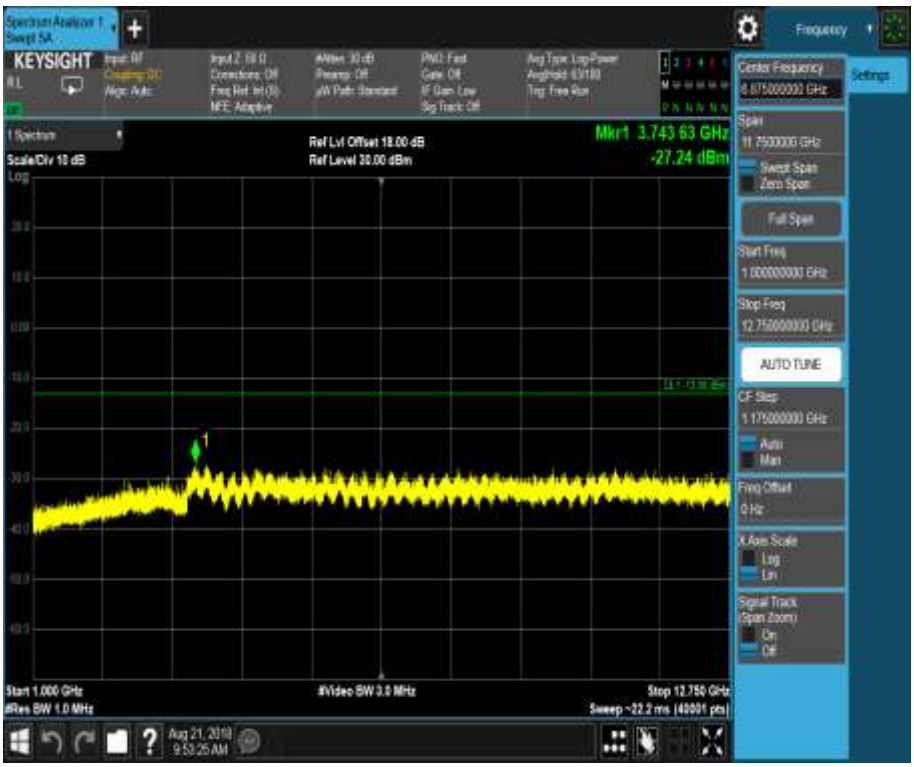
6.1.1.1.3 Test Channel = HCH

6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



6.1.1.2.2 Test Channel = MCH



6.1.1.2.3 Test Channel = HCH

6.1.2 Test Band = PCS1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH

6.1.2.1.2 Test Channel = MCH

6.1.2.1.3 Test Channel = HCH

6.1.2.2 Test Mode = GSM/TM2

6.1.2.2.1 Test Channel = LCH

6.1.2.2.2 Test Channel = MCH

6.1.2.2.3 Test Channel = HCH

7Appendix_G: Field Strength of Spurious Radiation

Note: We tested all modes, but the data presented below is the worst case.

9kHz~150kHz, RBW = 200Hz, VBW = 600 Hz, Detector: PK

150kHz~30MHz, RBW = 9kHz, VBW = 30k Hz, Detector: PK

30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

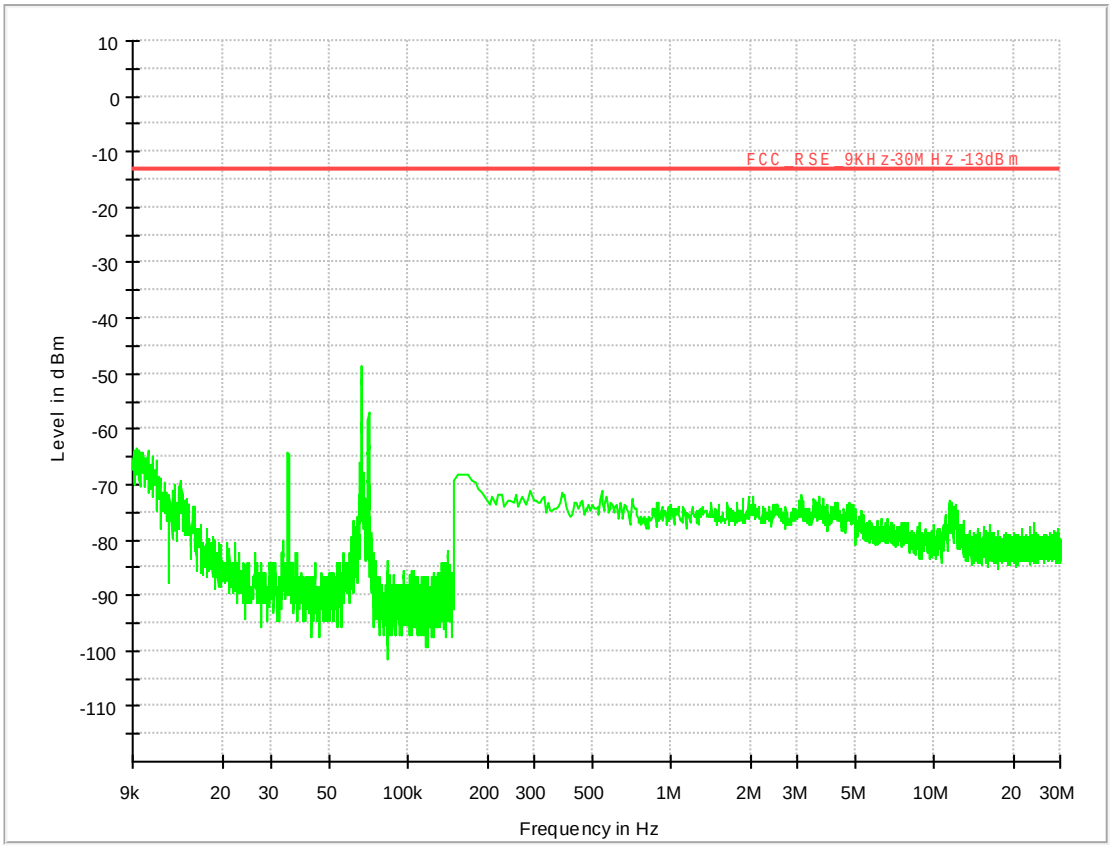
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

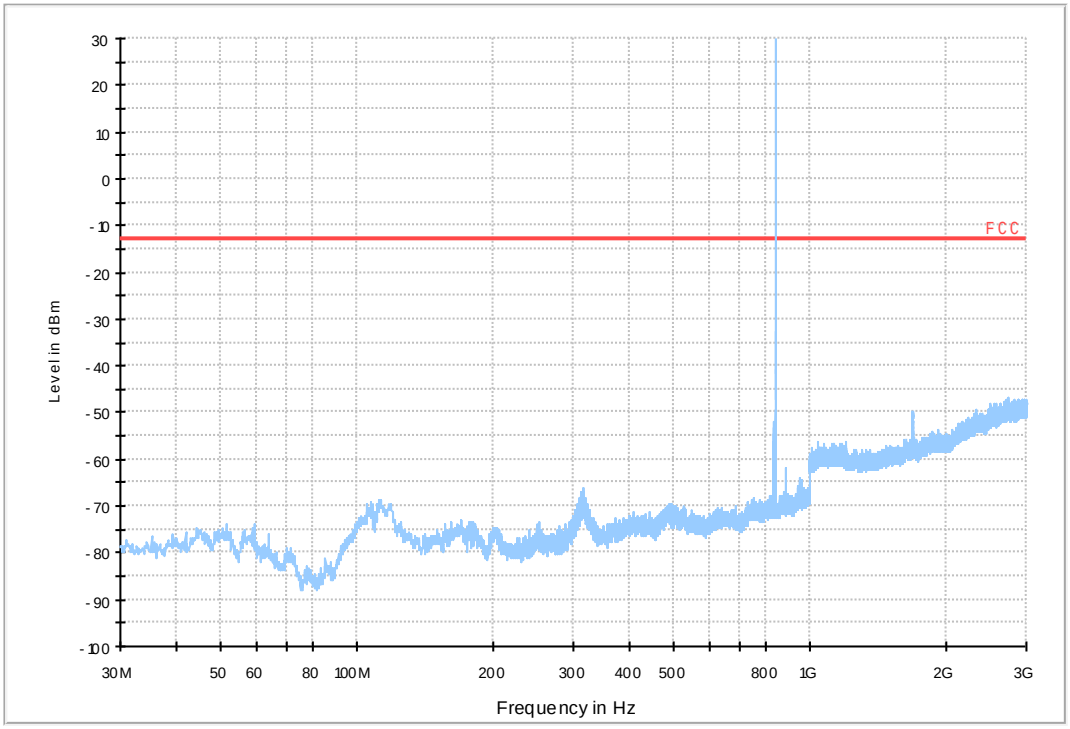
7.1 For GSM_ANT1

7.1.1 Test Band = GSM850

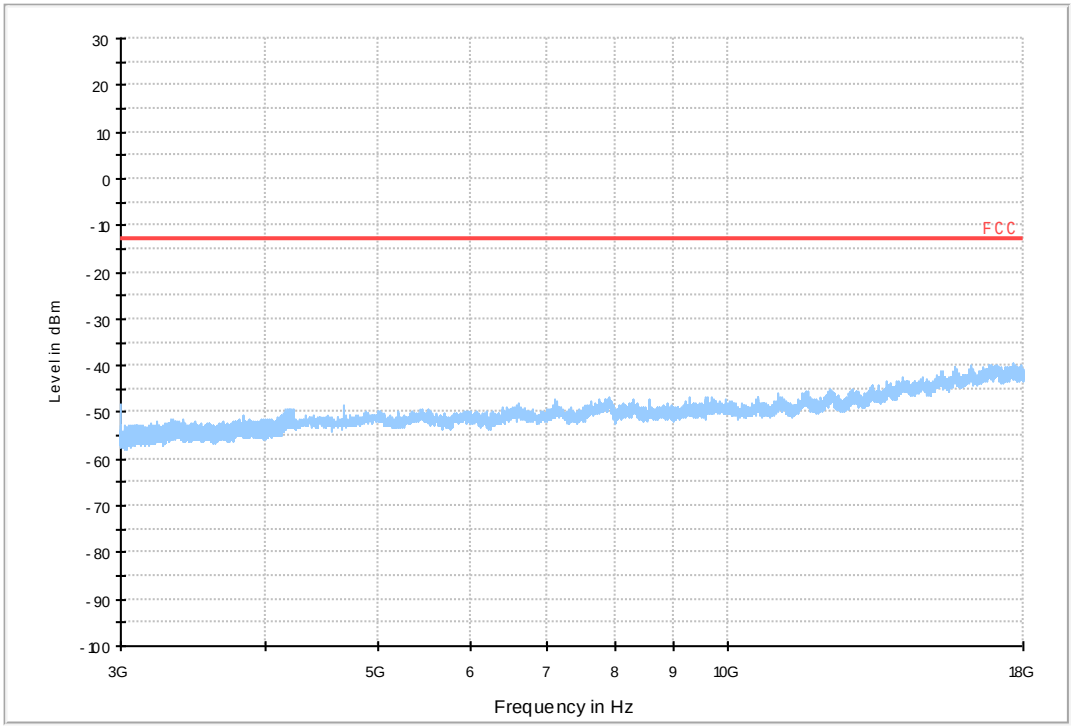
7.1.1.1 Test Mode = GSM/TM1



04 FCC PART 22 GSM850_L

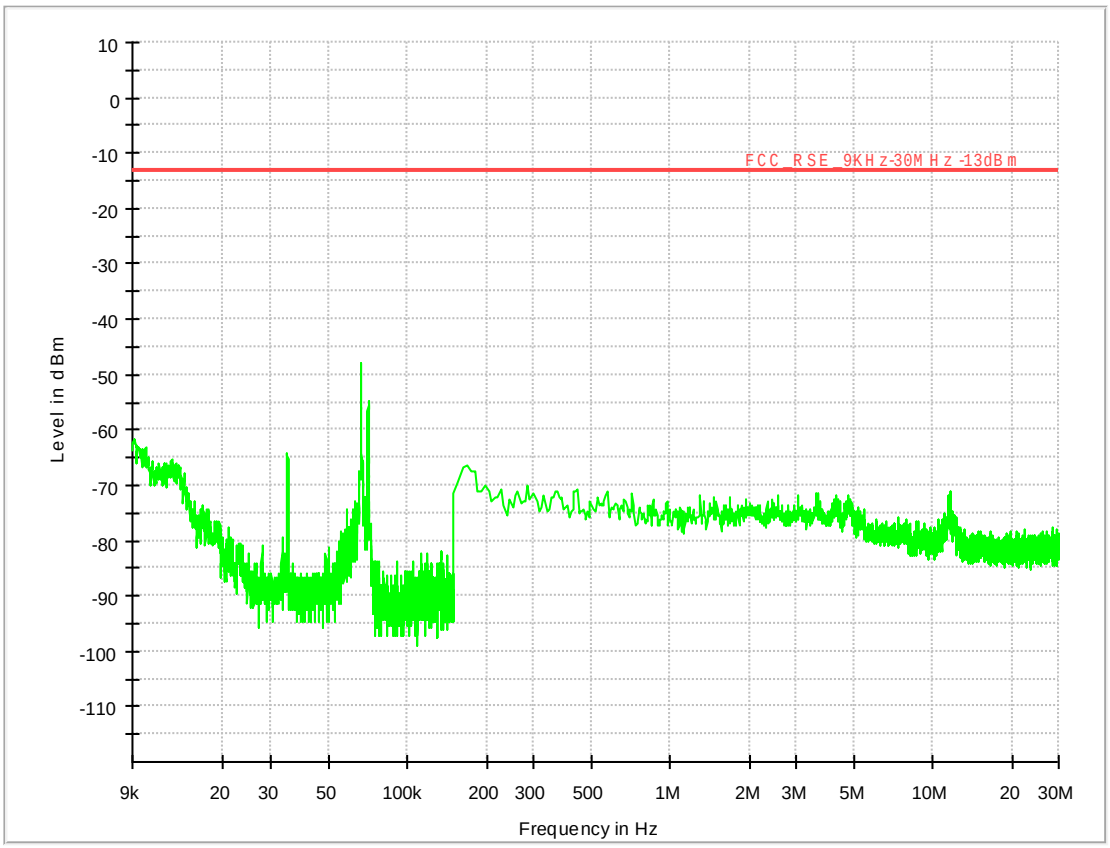


03 FCC PART 22 GSM850_H

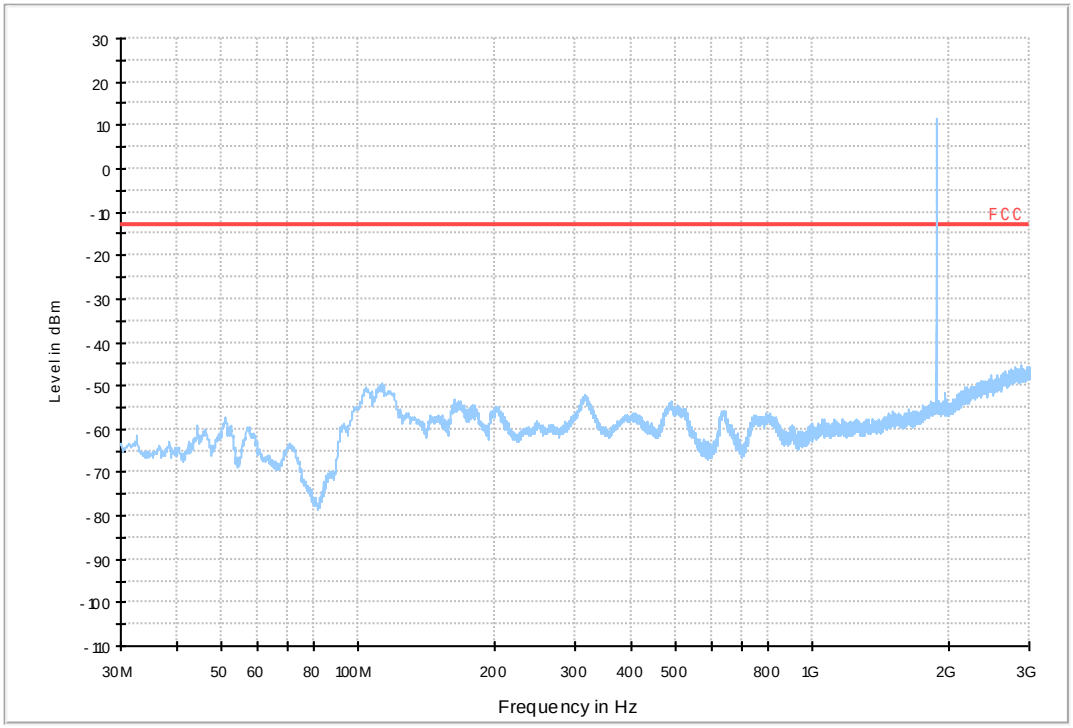


7.1.2 Test Band = PCS1900

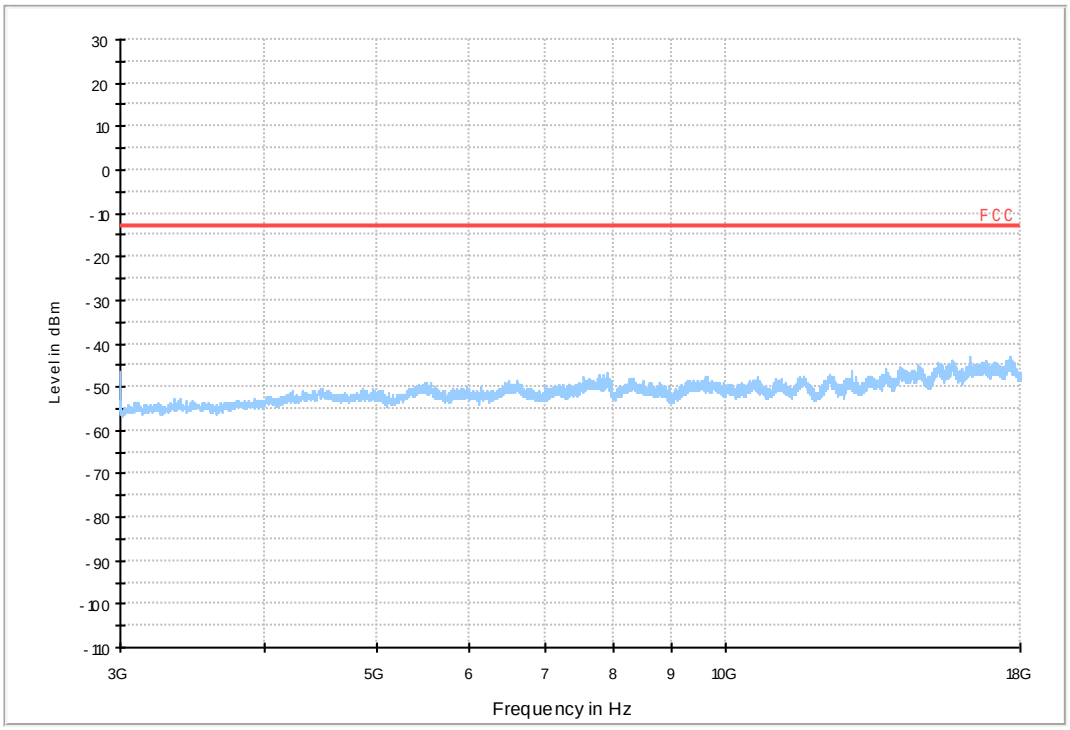
7.1.2.1 Test Mode = GSM/TM1



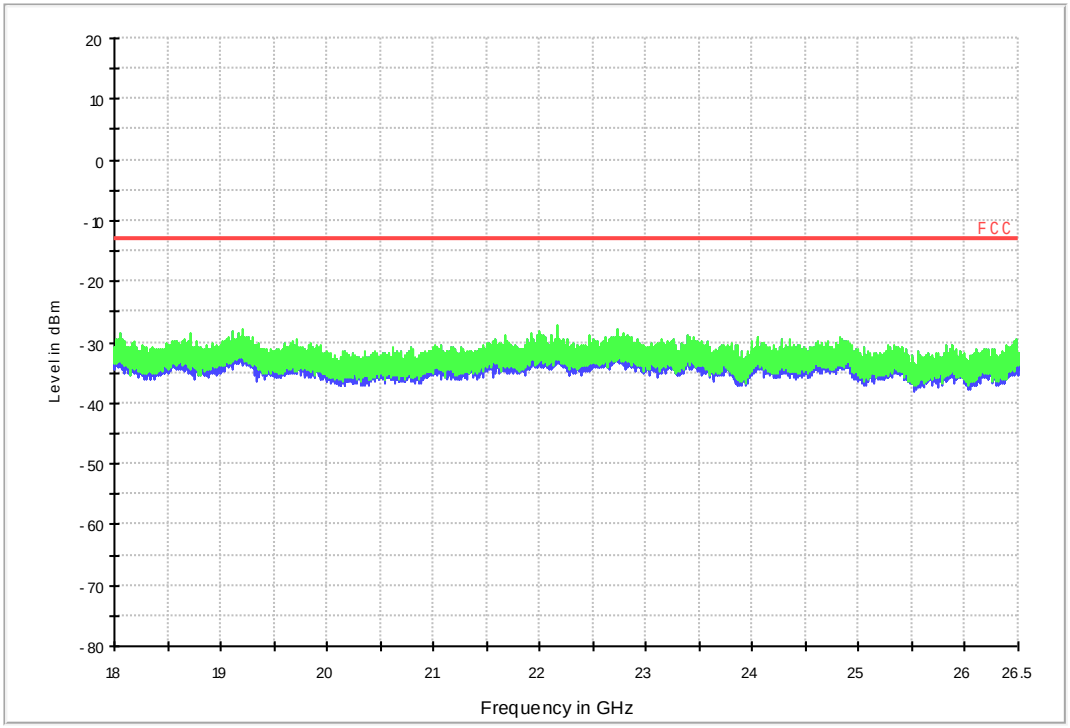
10 FCC PART 24 GSM1900_L



09 FCC PART 24 GSM1900_H



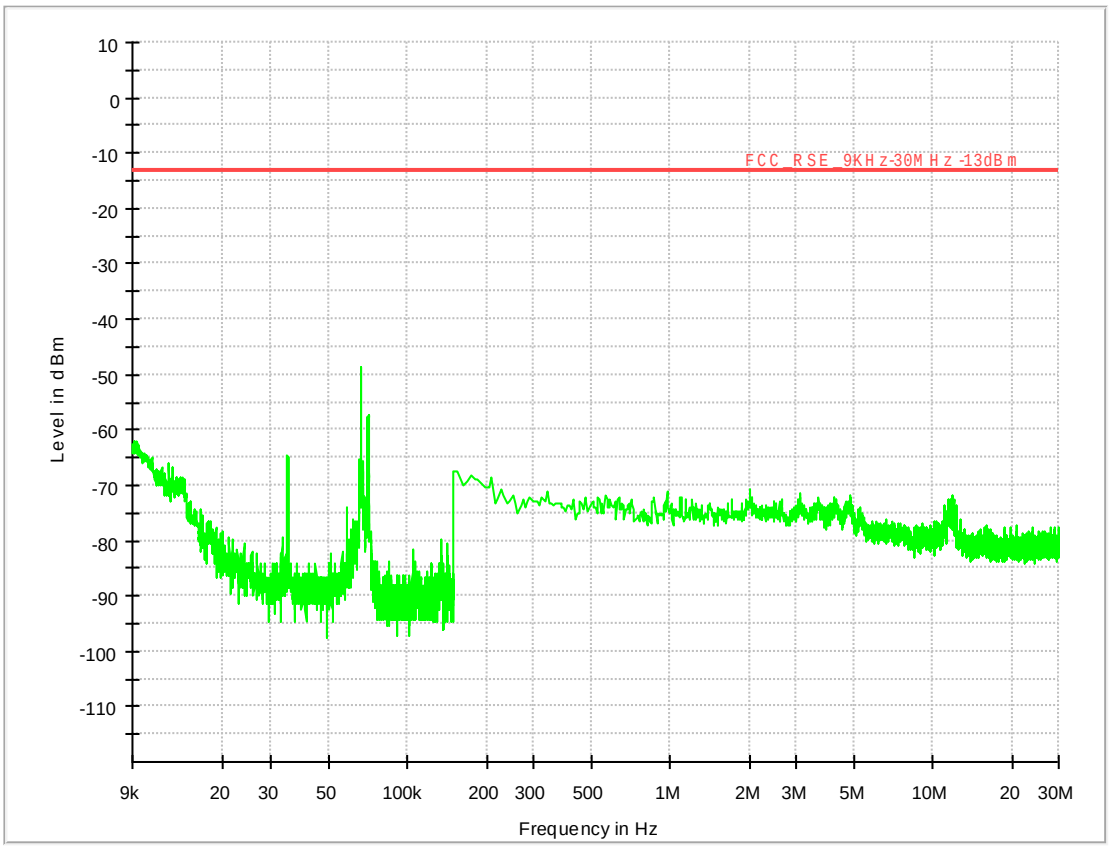
18G~26.5G RSE-TX-DIRECTOR ABOVE 1.5G PK



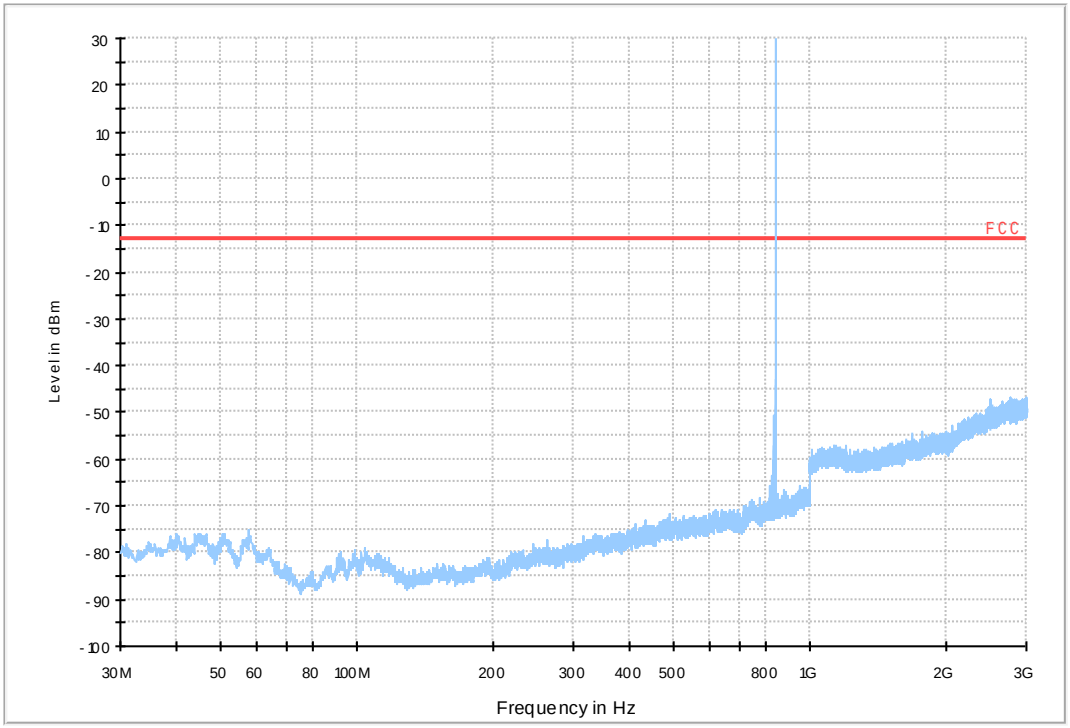
7.2 For GSM_ANT2

7.2.1 Test Band = GSM850

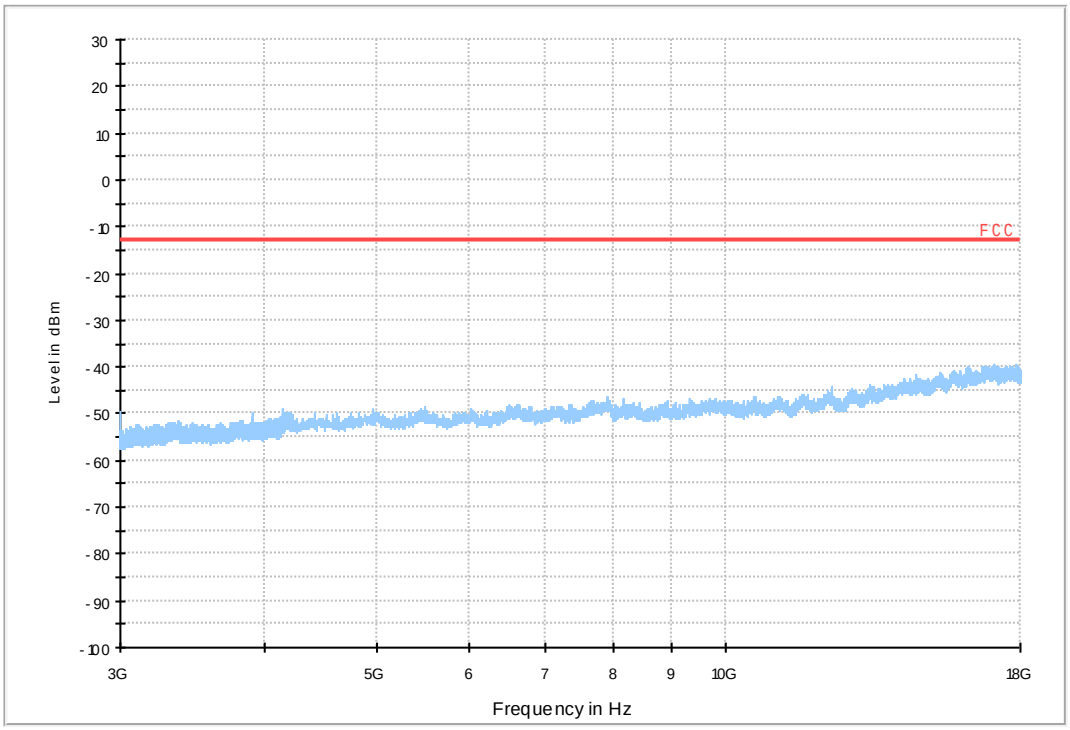
7.2.1.1 Test Mode = GSM/TM1



04 FCC PART 22 GSM850_L

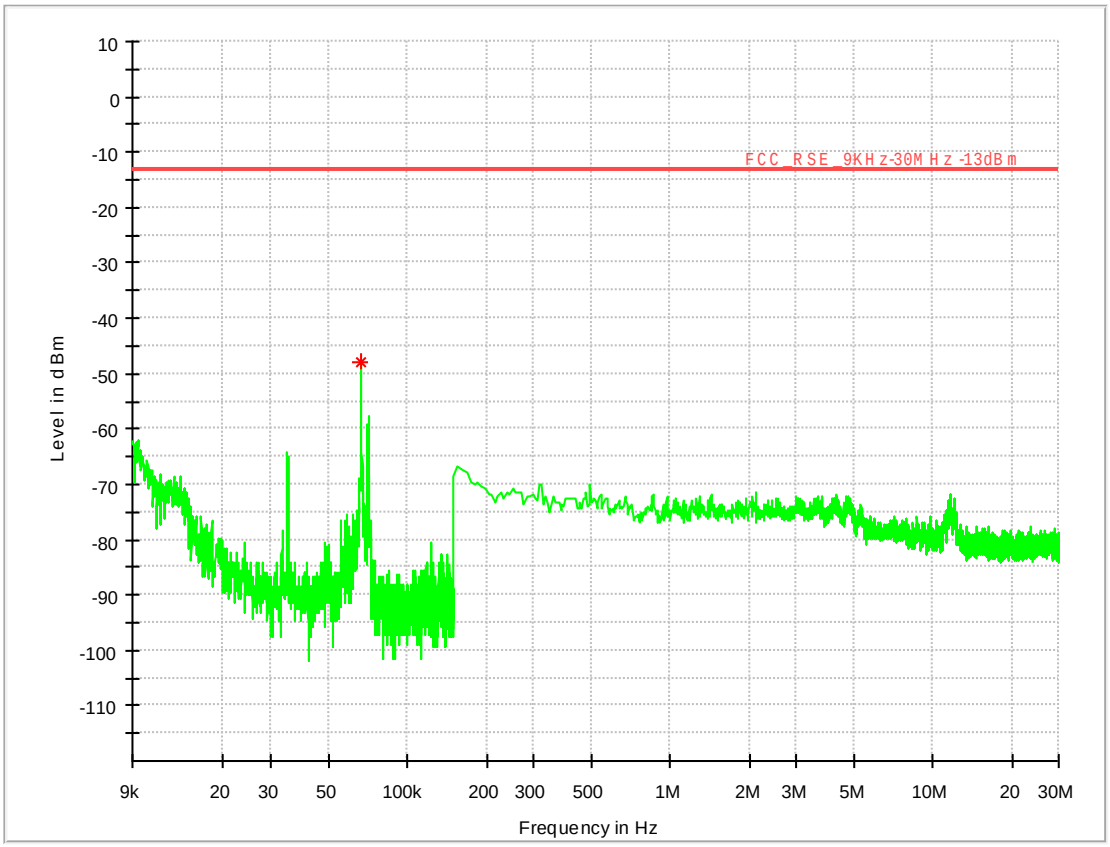


03 FCC PART 22 GSM850_H

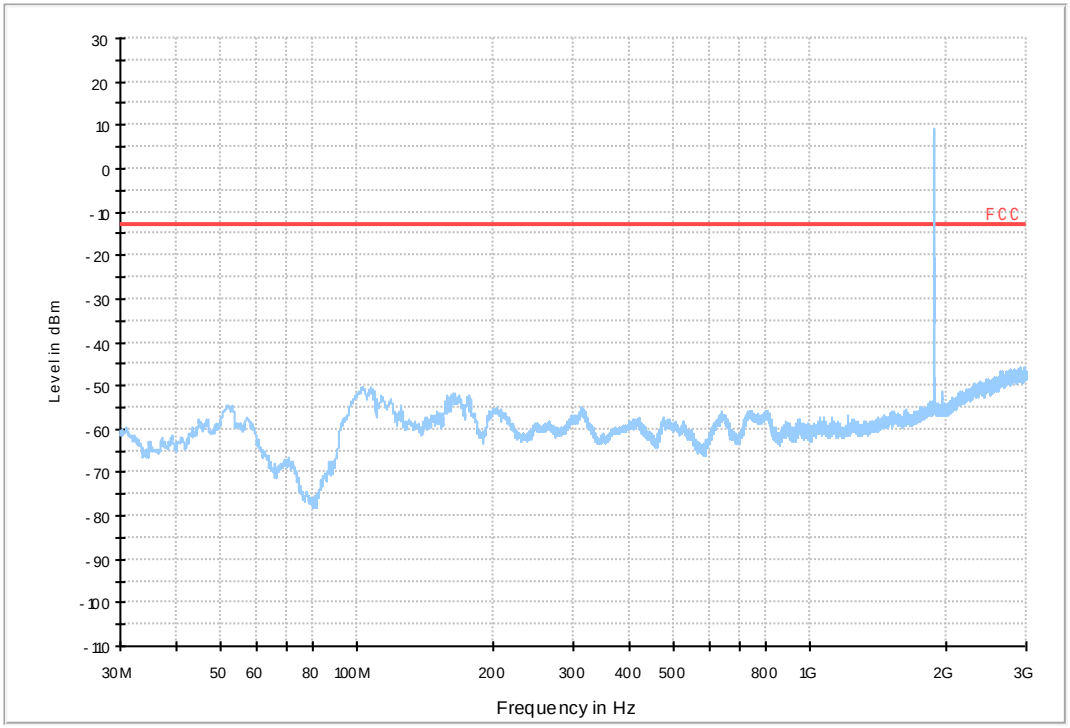


7.2.2 Test Band = PCS1900

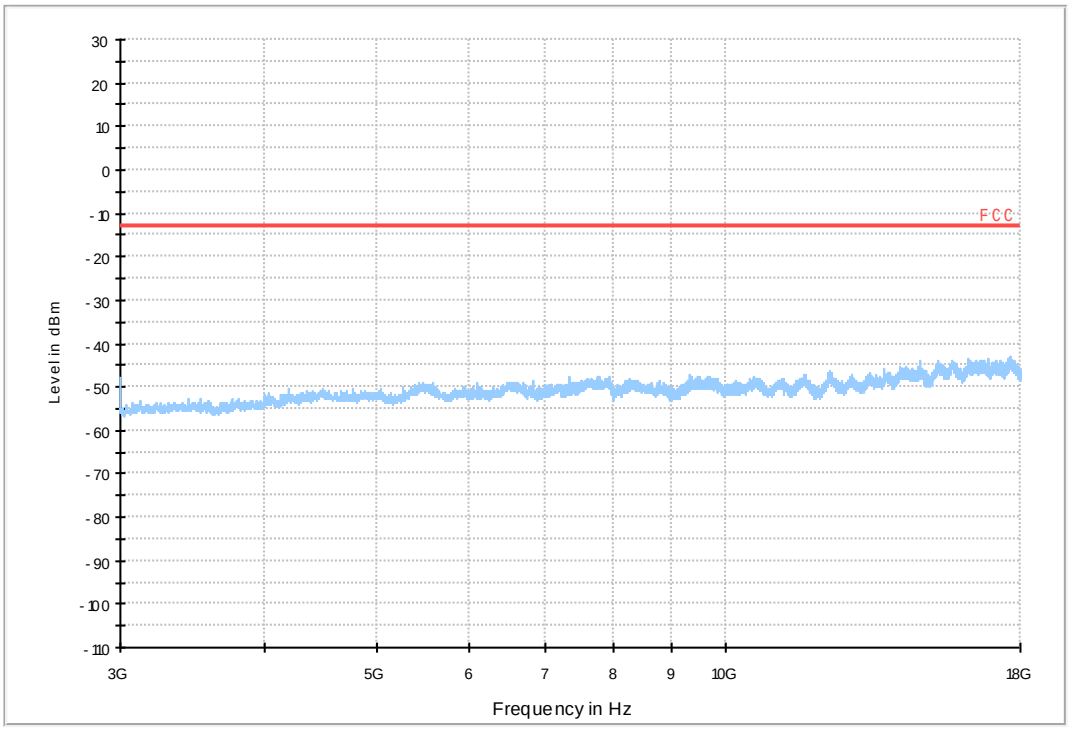
7.2.2.1 Test Mode = GSM/TM1



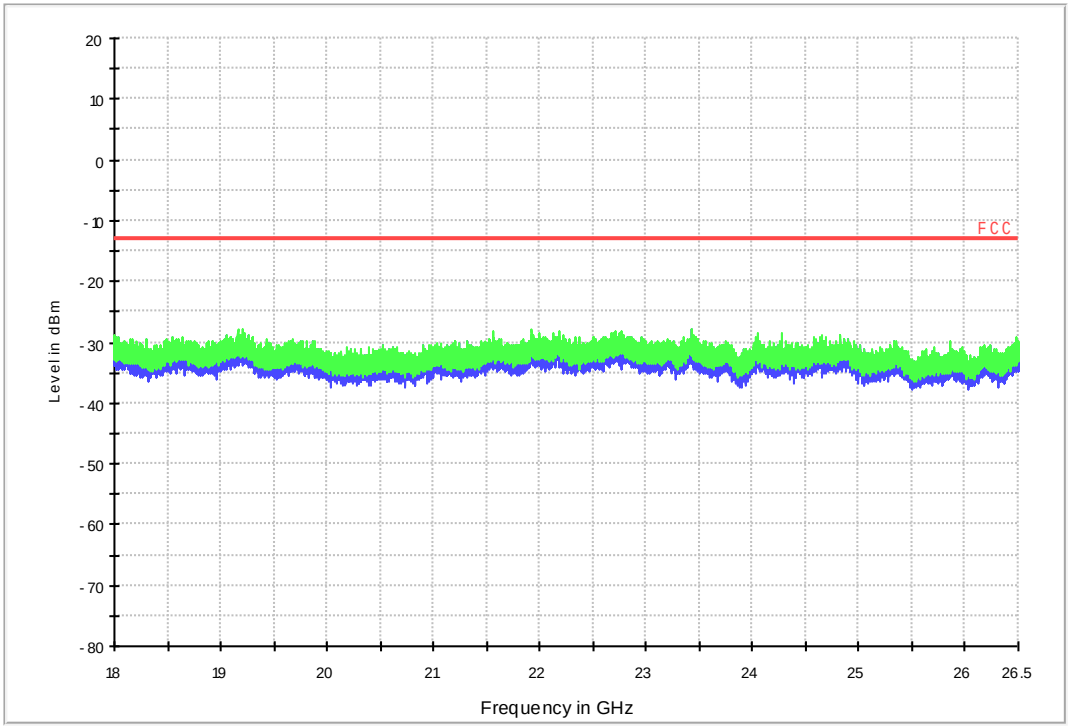
10 FCC PART 24 GSM1900_L



09 FCC PART 24 GSM1900_H



18G~26.5G RSE-TX-DIRECTOR ABOVE 1.5G PK



8Appendix_H: Frequency Stability

8.1 For GSM

8.1.1Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM850	GSM/TM1	LCH	TN	VL	3.68059	0.00447	PASS
				VN	2.26001	0.00274	PASS
				VH	2.74430	0.00333	PASS
		MCH	TN	VL	2.84116	0.00340	PASS
				VN	5.10116	0.00610	PASS
				VH	3.00258	0.00359	PASS
		HCH	TN	VL	3.55144	0.00418	PASS
				VN	3.84202	0.00453	PASS
				VH	2.06629	0.00243	PASS
	GSM/TM2	LCH	TN	VL	1.51744	0.00184	PASS
				VN	0.93629	0.00114	PASS
				VH	3.09944	0.00376	PASS
		MCH	TN	VL	2.29230	0.00274	PASS
				VN	3.74516	0.00448	PASS
				VH	3.97116	0.00475	PASS
		HCH	TN	VL	2.00172	0.00236	PASS
				VN	2.22772	0.00262	PASS
				VH	2.09858	0.00247	PASS
PCS1900	GSM/TM1	LCH	TN	VL	5.48859	0.00297	PASS
				VN	3.35773	0.00181	PASS
				VH	7.26432	0.00393	PASS
		MCH	TN	VL	5.90831	0.00314	PASS
				VN	3.55144	0.00189	PASS
				VH	6.03745	0.00321	PASS
		HCH	TN	VL	5.55317	0.00297	PASS
				VN	2.03401	0.00181	PASS
				VH	4.64916	0.00393	PASS
	GSM/TM2	LCH	TN	VL	6.58631	0.00356	PASS
				VN	4.58459	0.00248	PASS
				VH	10.23461	0.00553	PASS
		MCH	TN	VL	7.45803	0.00397	PASS
				VN	7.07060	0.00376	PASS
				VH	9.75033	0.00519	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		HCH	TN	VL	7.65175	0.00356	PASS
				VN	5.61774	0.00248	PASS
				VH	6.81231	0.00553	PASS

8.1.2Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM850	GSM/TM1	LCH	VN	-30	4.32630	0.00525	PASS
				-20	3.06716	0.00372	PASS
				-10	4.90745	0.00595	PASS
				0	2.74430	0.00333	PASS
				10	2.93801	0.00356	PASS
				20	2.26001	0.00274	PASS
				30	1.87258	0.00227	PASS
				40	1.51744	0.00184	PASS
				50	3.90659	0.00474	PASS
		MCH	VN	-30	3.74516	0.00448	PASS
				-20	5.35945	0.00641	PASS
				-10	5.06888	0.00606	PASS
				0	1.54972	0.00185	PASS
				10	1.74344	0.00208	PASS
				20	5.10116	0.00610	PASS
				30	3.03487	0.00363	PASS
				40	3.13173	0.00374	PASS
				50	3.35773	0.00401	PASS
		HCH	VN	-30	5.10116	0.00601	PASS
				-20	4.77831	0.00563	PASS
				-10	5.26259	0.00620	PASS
				0	2.29230	0.00270	PASS
				10	1.96944	0.00232	PASS
				20	3.84202	0.00453	PASS
				30	2.16315	0.00255	PASS
				40	2.42144	0.00285	PASS
				50	7.00603	0.00825	PASS
	GSM/TM2	LCH	VN	-30	4.10030	0.00497	PASS
				-20	8.16832	0.00991	PASS
				-10	6.23117	0.00756	PASS
				0	5.32716	0.00646	PASS
				10	2.32458	0.00282	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	0.93629	0.00114	PASS
				30	3.64830	0.00443	PASS
				40	1.13000	0.00137	PASS
				50	3.00258	0.00364	PASS
		MCH	VN	-30	3.93887	0.00471	PASS
				-20	4.16488	0.00498	PASS
				-10	4.00345	0.00479	PASS
				0	3.74516	0.00448	PASS
				10	2.38915	0.00286	PASS
				20	3.74516	0.00448	PASS
				30	2.48601	0.00297	PASS
				40	2.71201	0.00324	PASS
				50	1.51744	0.00181	PASS
		HCH	VN	-30	4.93973	0.00582	PASS
				-20	5.35945	0.00631	PASS
				-10	4.13259	0.00487	PASS
				0	2.42144	0.00285	PASS
				10	3.64830	0.00430	PASS
				20	2.22772	0.00262	PASS
				30	5.84374	0.00688	PASS
				40	4.84288	0.00571	PASS
				50	4.68145	0.00552	PASS
PCS1900	GSM/TM1	LCH	VN	-30	7.23203	0.00391	PASS
				-20	8.74947	0.00473	PASS
				-10	7.94232	0.00429	PASS
				0	6.71546	0.00363	PASS
				10	5.65002	0.00305	PASS
				20	3.35773	0.00181	PASS
				30	1.80801	0.00098	PASS
				40	2.51830	0.00136	PASS
				50	3.90659	0.00211	PASS
		MCH	VN	-30	6.65088	0.00354	PASS
				-20	4.58459	0.00244	PASS
				-10	5.58545	0.00297	PASS
				0	6.58631	0.00350	PASS
				10	5.52088	0.00294	PASS
				20	3.55144	0.00189	PASS
				30	2.90573	0.00155	PASS
				40	6.29574	0.00335	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	7.13517	0.00380	PASS
		HCH	VN	-30	3.19630	0.00167	PASS
				-20	6.65088	0.00348	PASS
				-10	3.13173	0.00164	PASS
				0	2.13087	0.00112	PASS
				10	5.29488	0.00277	PASS
				20	2.03401	0.00107	PASS
				30	1.09772	0.00057	PASS
				40	3.19630	0.00167	PASS
				50	-0.03229	-0.00002	PASS
	GSM/TM2	LCH	VN	-30	9.42747	0.00510	PASS
				-20	5.39174	0.00291	PASS
				-10	7.03831	0.00380	PASS
				0	4.71373	0.00255	PASS
				10	6.78003	0.00366	PASS
				20	4.58459	0.00248	PASS
				30	7.55489	0.00408	PASS
				40	8.32975	0.00450	PASS
				50	3.74516	0.00202	PASS
		MCH	VN	-30	6.84460	0.00364	PASS
				-20	7.49032	0.00398	PASS
				-10	5.23031	0.00278	PASS
				0	6.45717	0.00343	PASS
				10	5.13345	0.00273	PASS
				20	7.07060	0.00376	PASS
				30	7.13517	0.00380	PASS
				40	6.90917	0.00368	PASS
				50	3.74516	0.00199	PASS
		HCH	VN	-30	2.00172	0.00105	PASS
				-20	3.80973	0.00199	PASS
				-10	0.61343	0.00032	PASS
				0	2.22772	0.00117	PASS
				10	5.26259	0.00276	PASS
				20	5.61774	0.00294	PASS
				30	6.42488	0.00336	PASS
				40	4.52002	0.00237	PASS
				50	3.84202	0.00201	PASS

END