Appendix for test report

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1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.05	28.35	38.5	PASS
		MCH	32.15	28.42	38.5	PASS
		HCH	32.16	28.47	38.5	PASS
Test Band	**Test Mode**	**Test Channel**	**Conducted Power [dBm]**	**EIRP [dBm]**	**Limit [dBm]**	**Verdict**
GSM1900	GSM/TM1	LCH	29.08	29.65	33	PASS
		MCH	29.26	29.71	33	PASS
		HCH	29.51	29.95	33	PASS
WCDMA1900	UMTS/TM1	LCH	21.88	22.28	33	PASS
		MCH	21.68	22.15	33	PASS
		HCH	21.70	22.21	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: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMS

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2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM1900	GSM/TM1	LCH	0.13	13	PASS
		MCH	0.12	13	PASS
		HCH	0.12	13	PASS
Test Band	**Test Mode**	**Test Channel**	**Measured[dB]**	**Limit [dB]**	**Verdict**
WCDMA1900	UMTS/TM1	LCH	3.33	13	PASS
		MCH	3.34	13	PASS
		HCH	3.29	13	PASS

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3Appendix_C: Modulation Characteristics

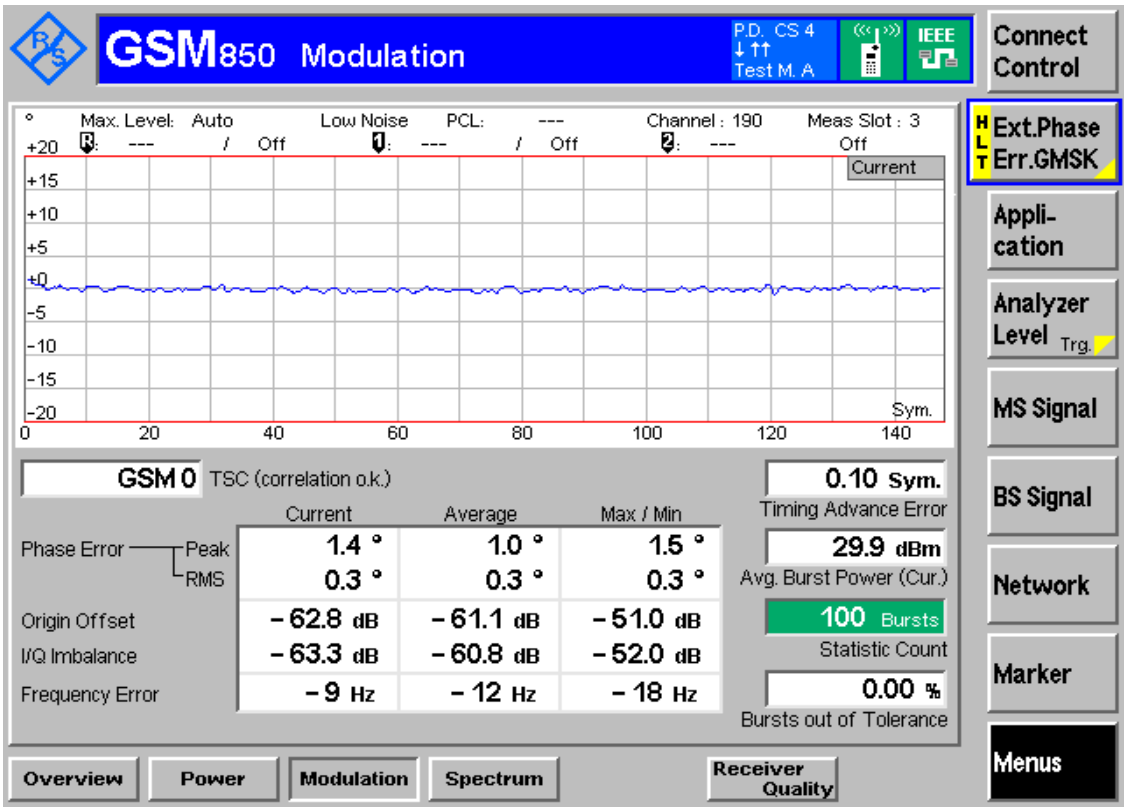
Part I - Test Plots

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



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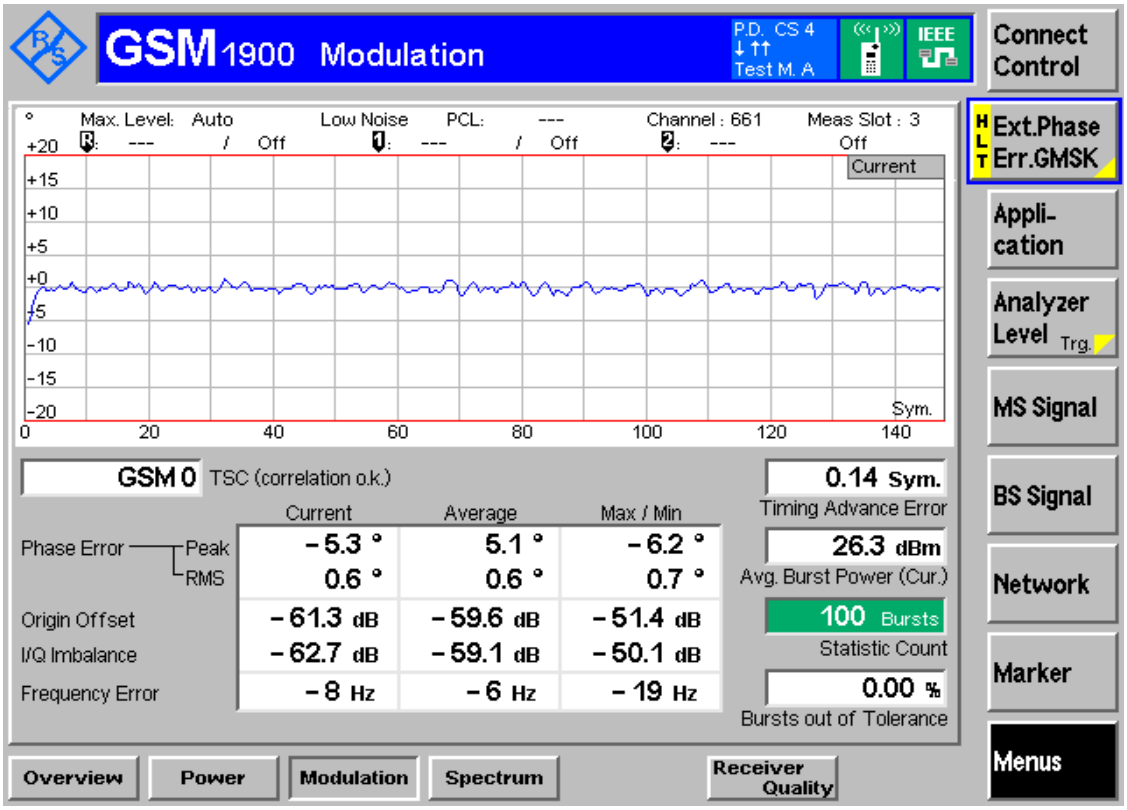
3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



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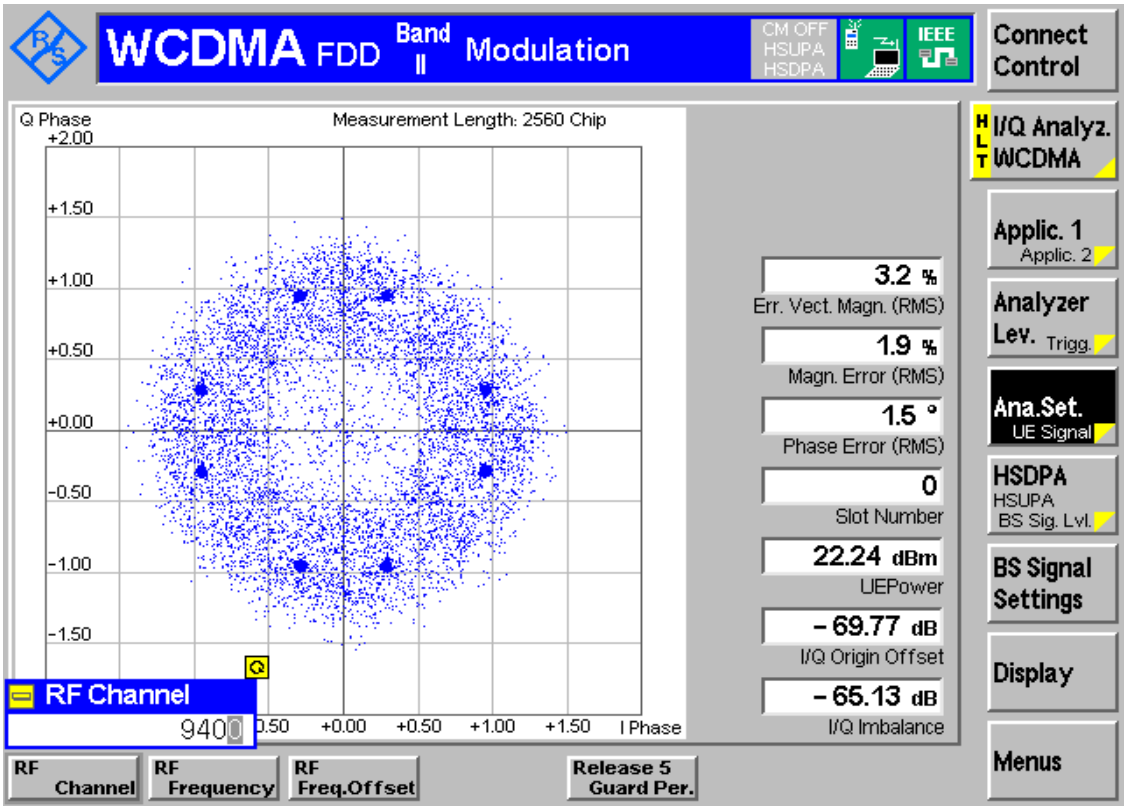
3.2 For UMTS

3.2.1 Test Band = WCDMA1900

3.2.1.1 Test Mode = UMTS/TM1

3.2.1.1.1 Test Channel = MCH



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4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	243.34	312.98	Pass
		MCH	244.21	321.21	Pass
		HCH	244.91	314.89	Pass
GSM1900	GSM/TM1	LCH	246.56	316.22	Pass
		MCH	245.94	313.96	Pass
		HCH	242.92	316.28	Pass
Test Band	**Test Mode**	**Test Channel**	**Occupied Bandwidth [MHz]**	**Emission Bandwidth [MHz]**	**Verdict**
WCDMA1900	UMTS/TM1	LCH	4.16	4.69	Pass
		MCH	4.16	4.67	Pass
		HCH	4.17	4.69	Pass

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Part II - Test Plots

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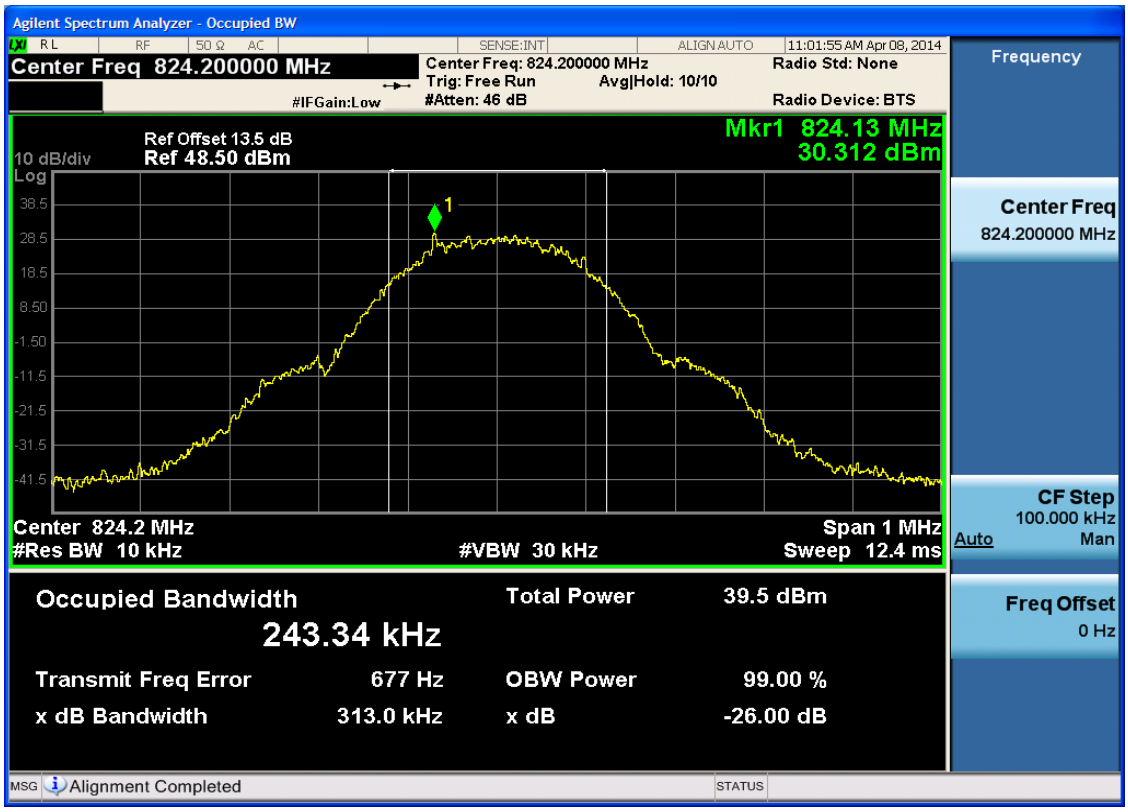
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



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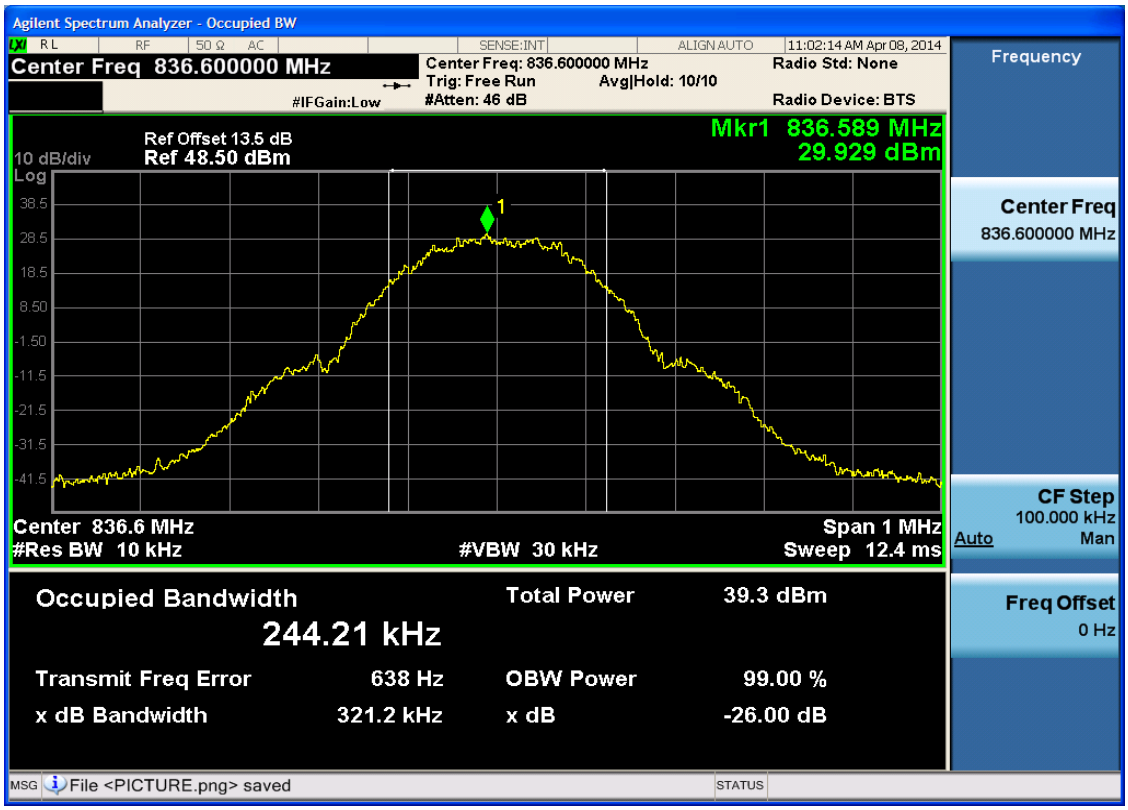
4.1.1.1.2 Test Channel = MCH



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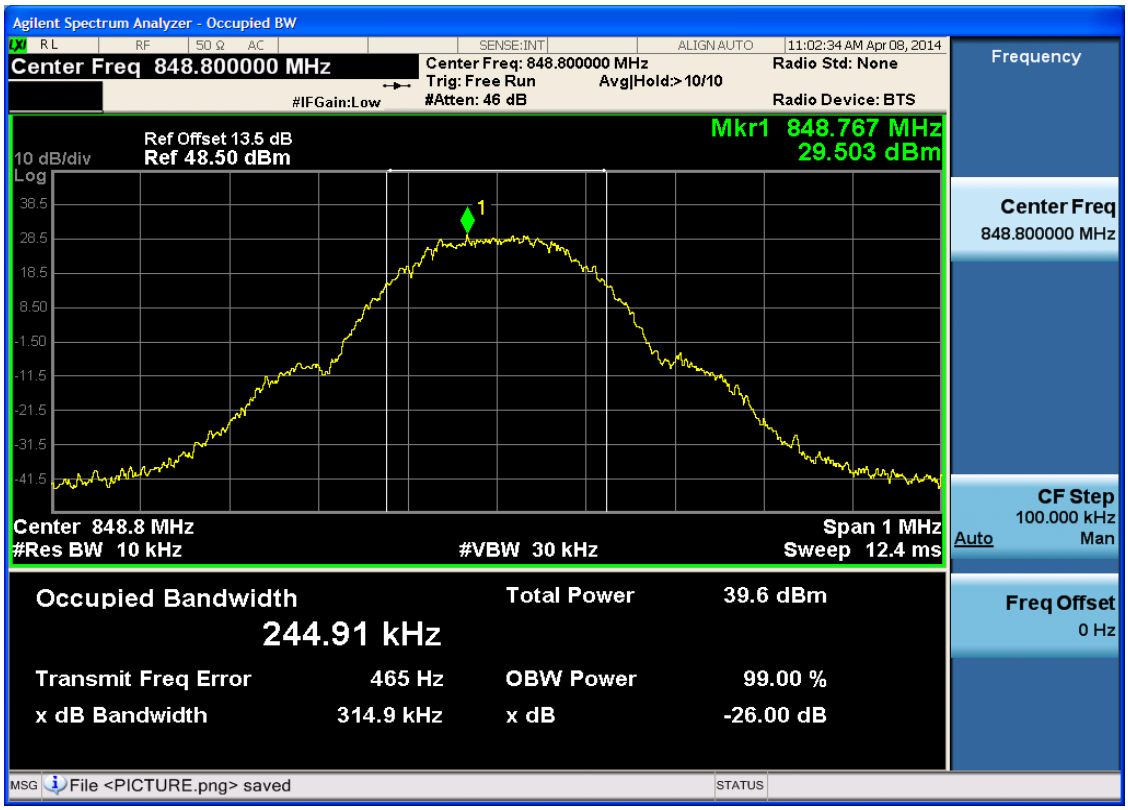
4.1.1.1.3 Test Channel = HCH



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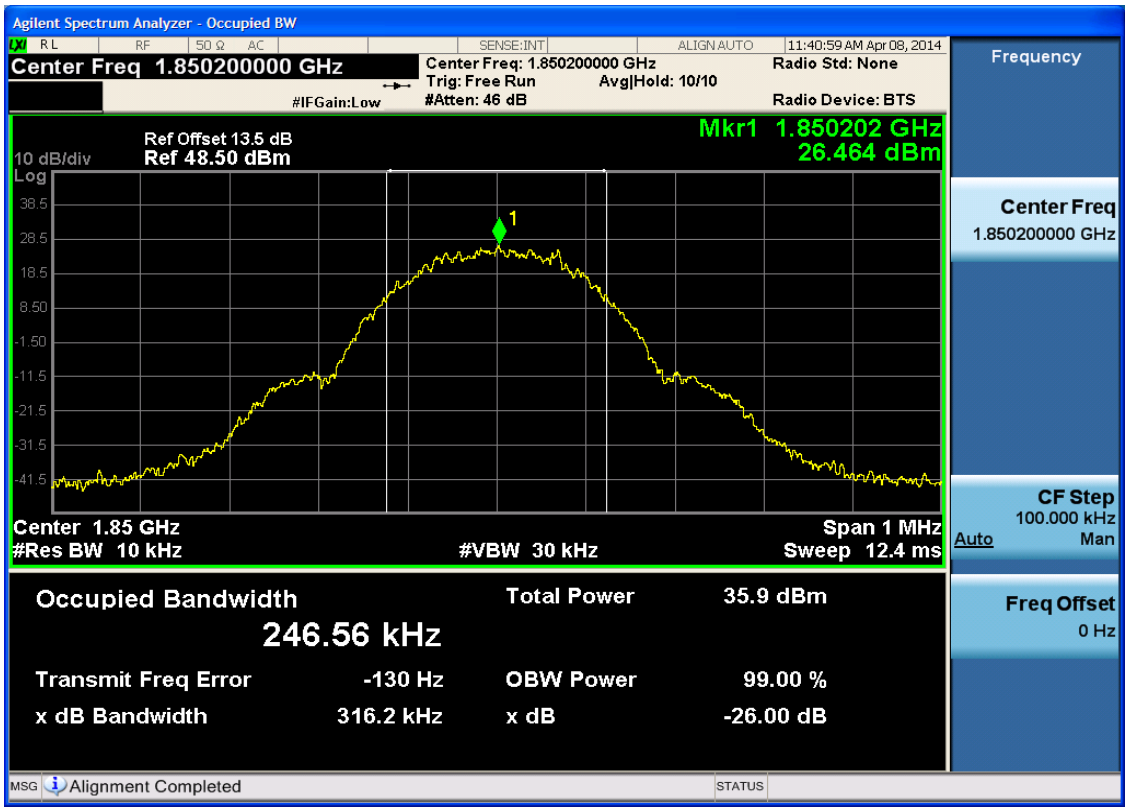
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



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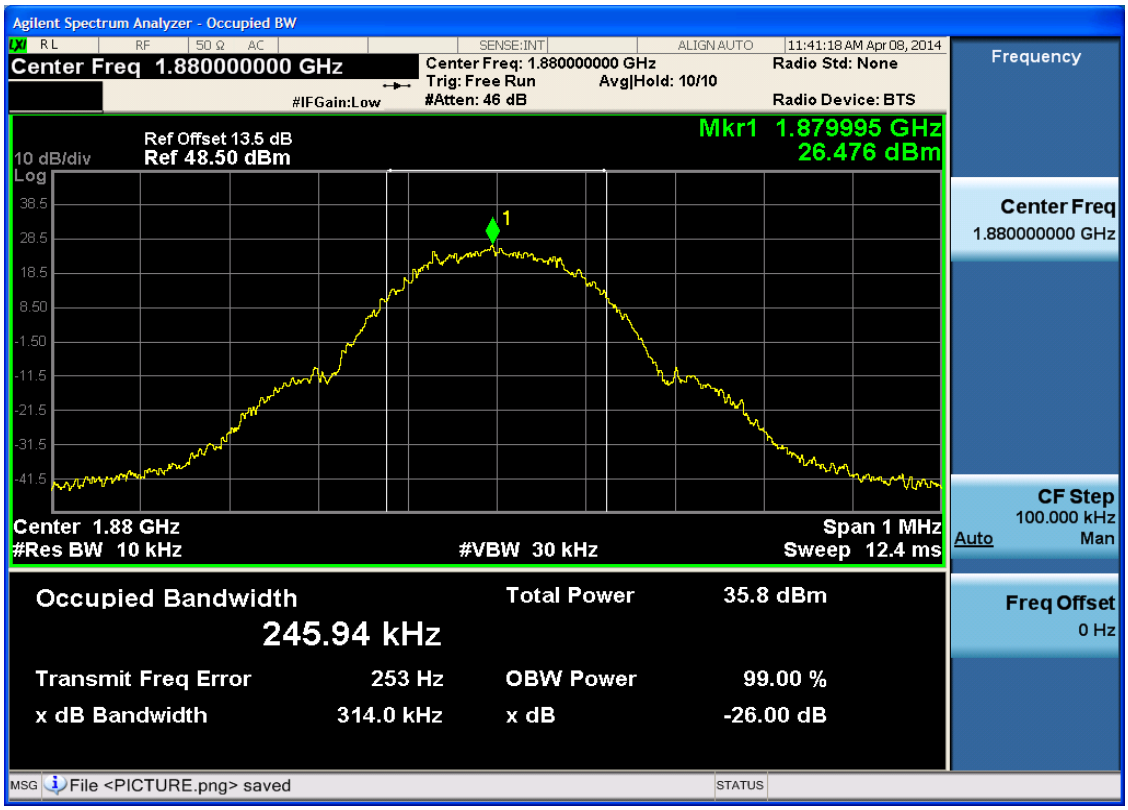
4.1.2.1.2 Test Channel = MCH



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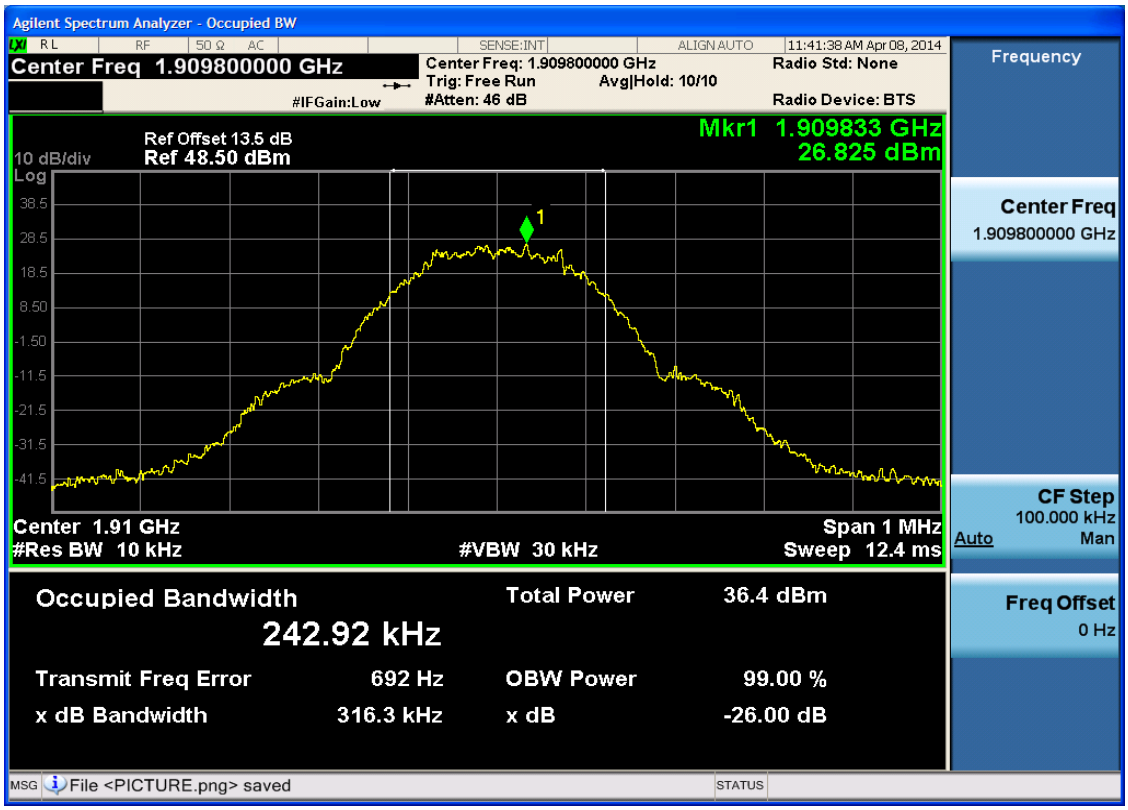
4.1.2.1.3 Test Channel = HCH



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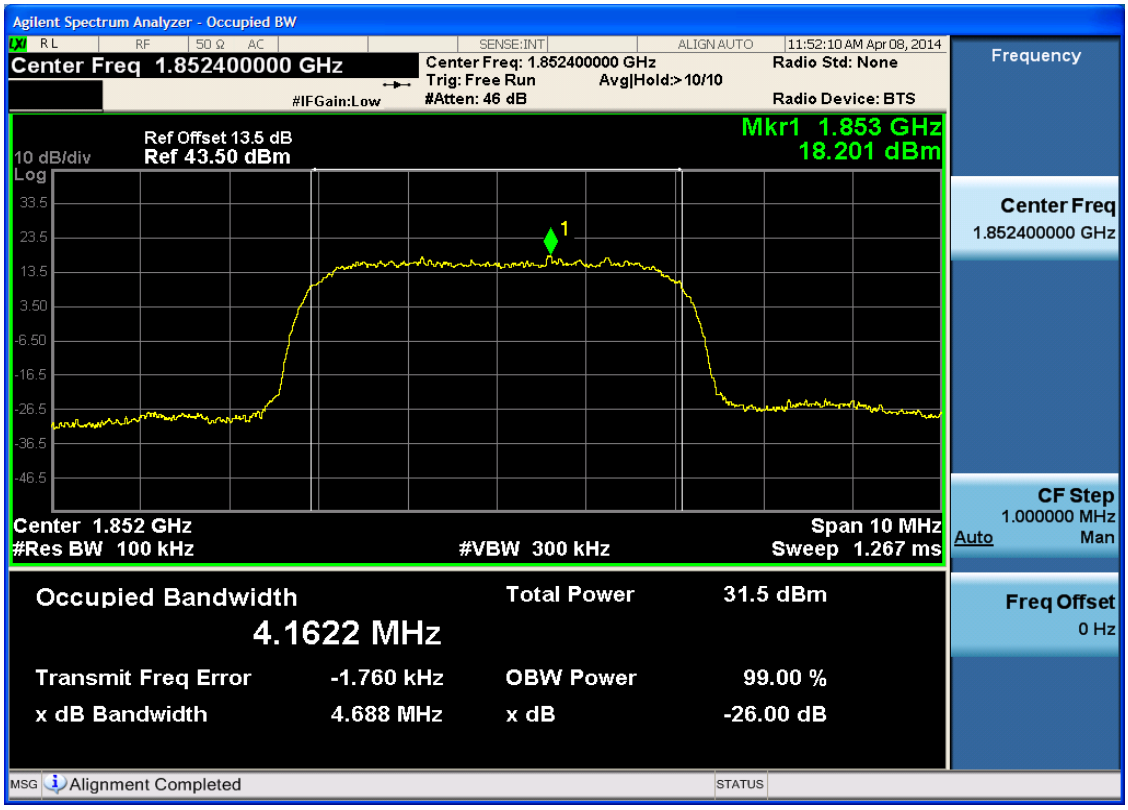
4.2 For UMTS

4.2.1 Test Band = WCDMA1900

4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



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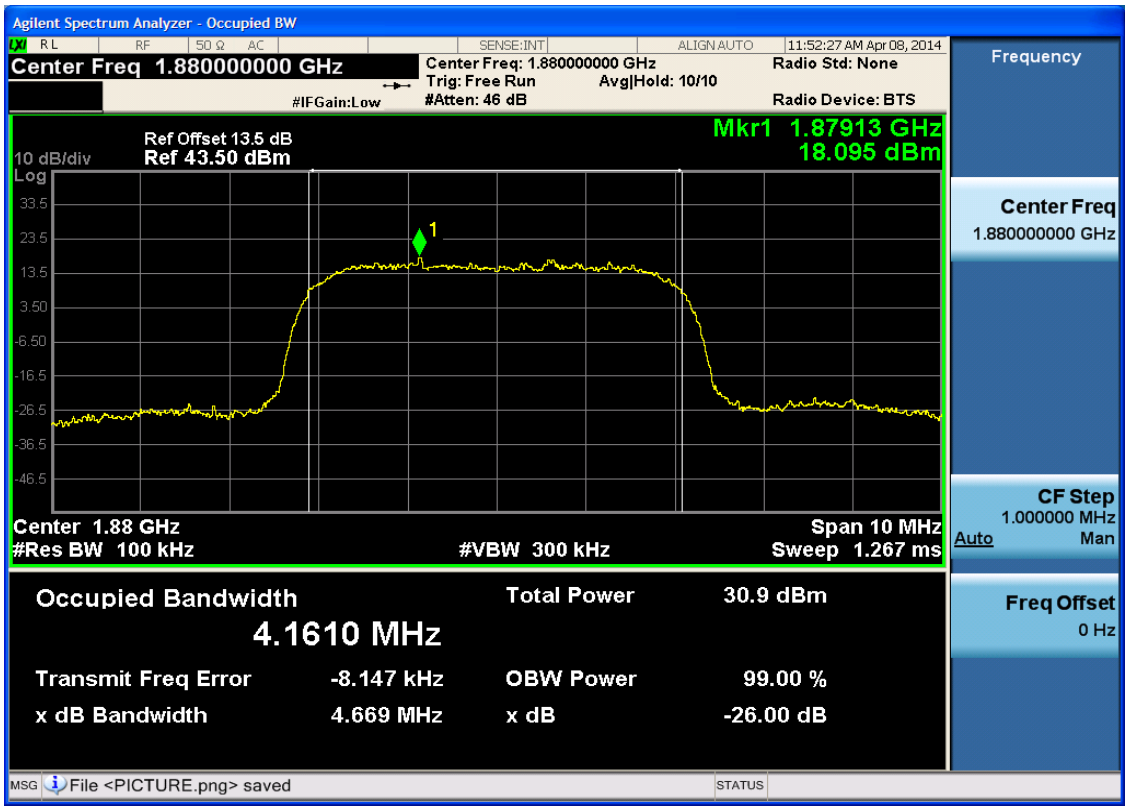
4.2.1.1.2 Test Channel = MCH



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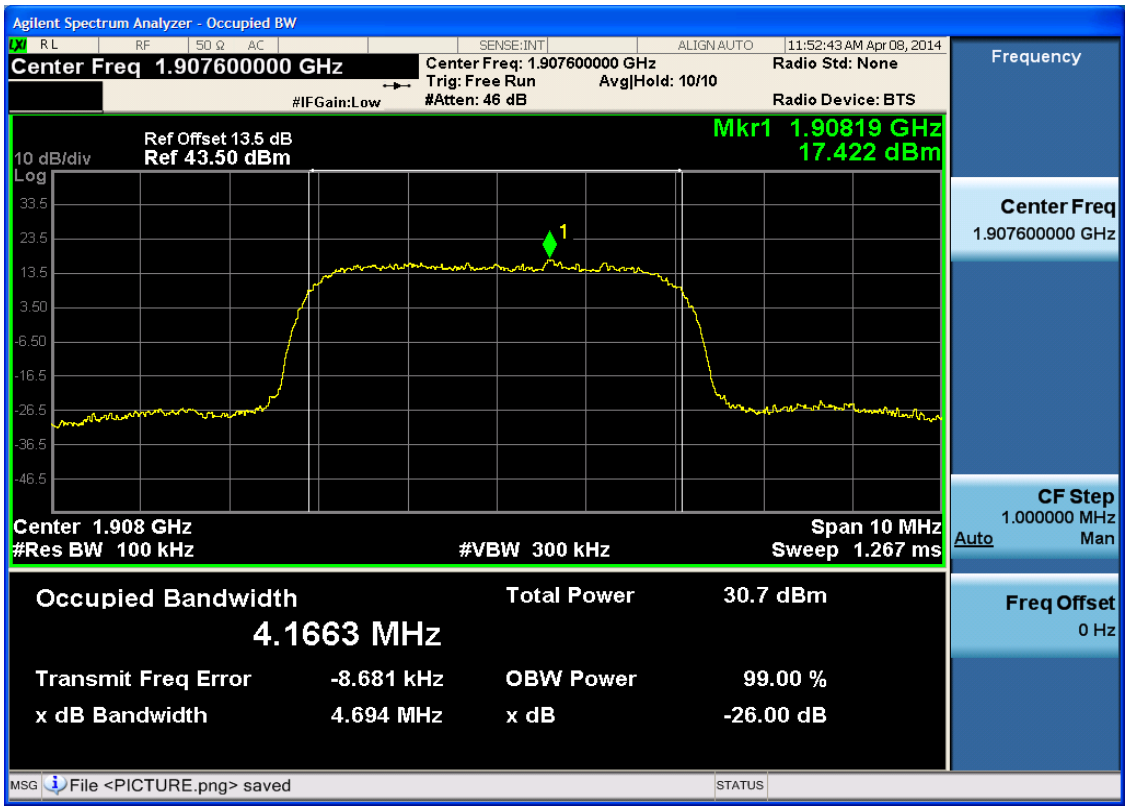
4.2.1.1.3 Test Channel = HCH



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5Appendix_E: Band Edges Compliance

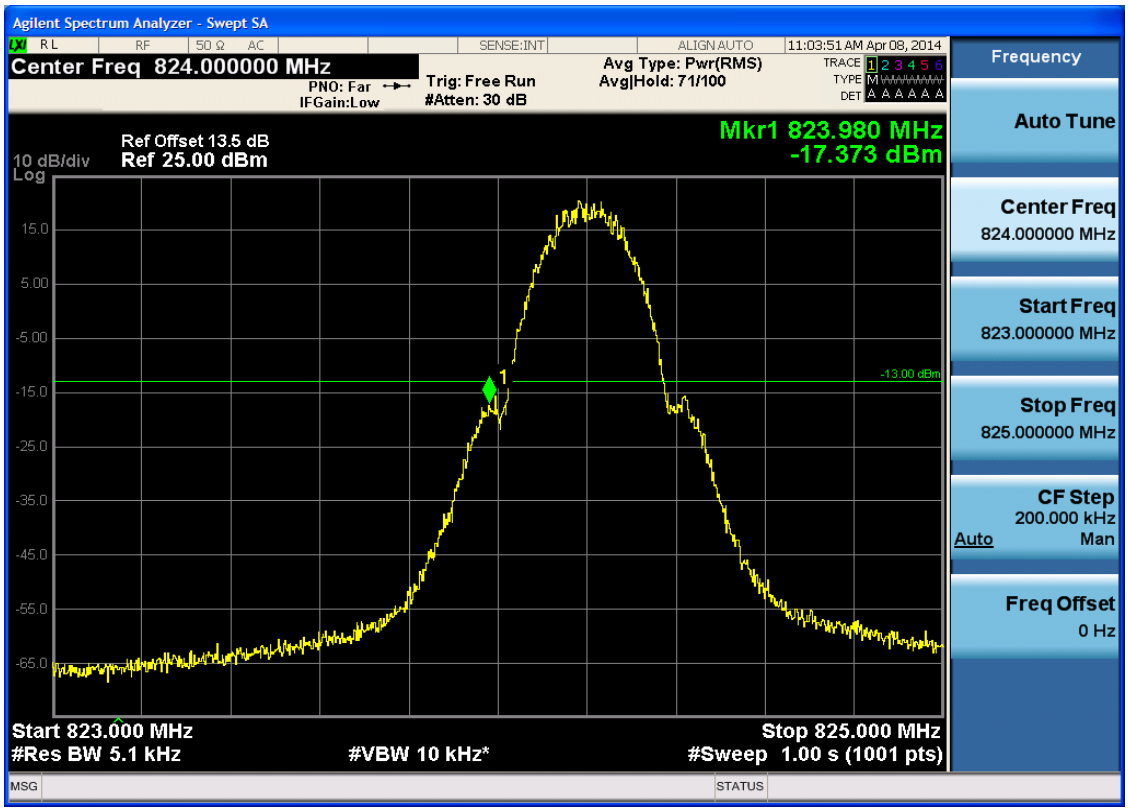
Part I - Test Plots

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



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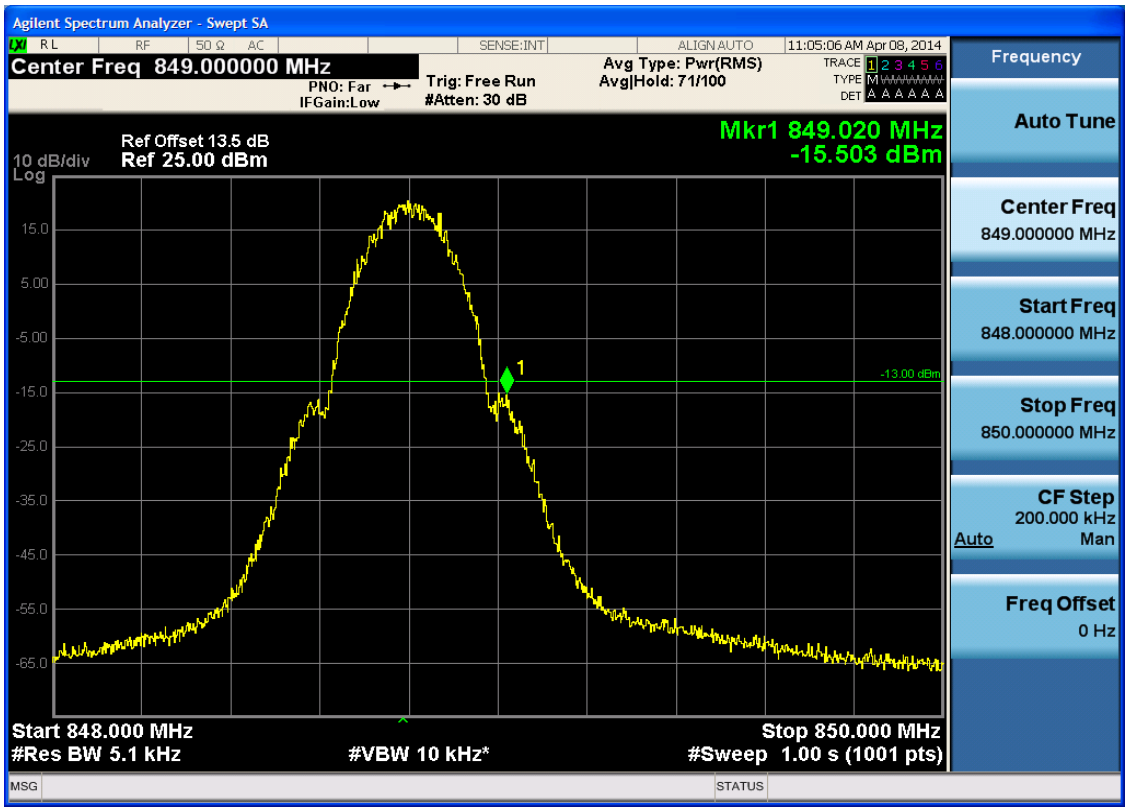
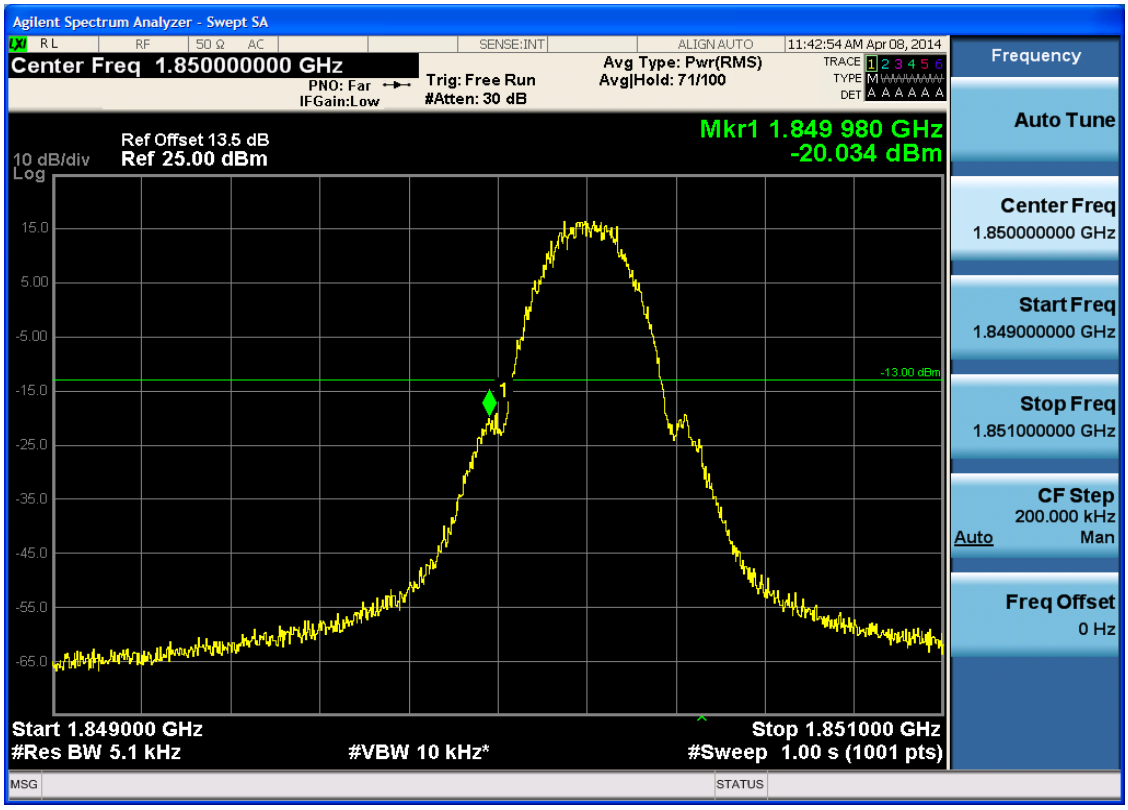
5.1.1.1.2 Test Channel = HCH



5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



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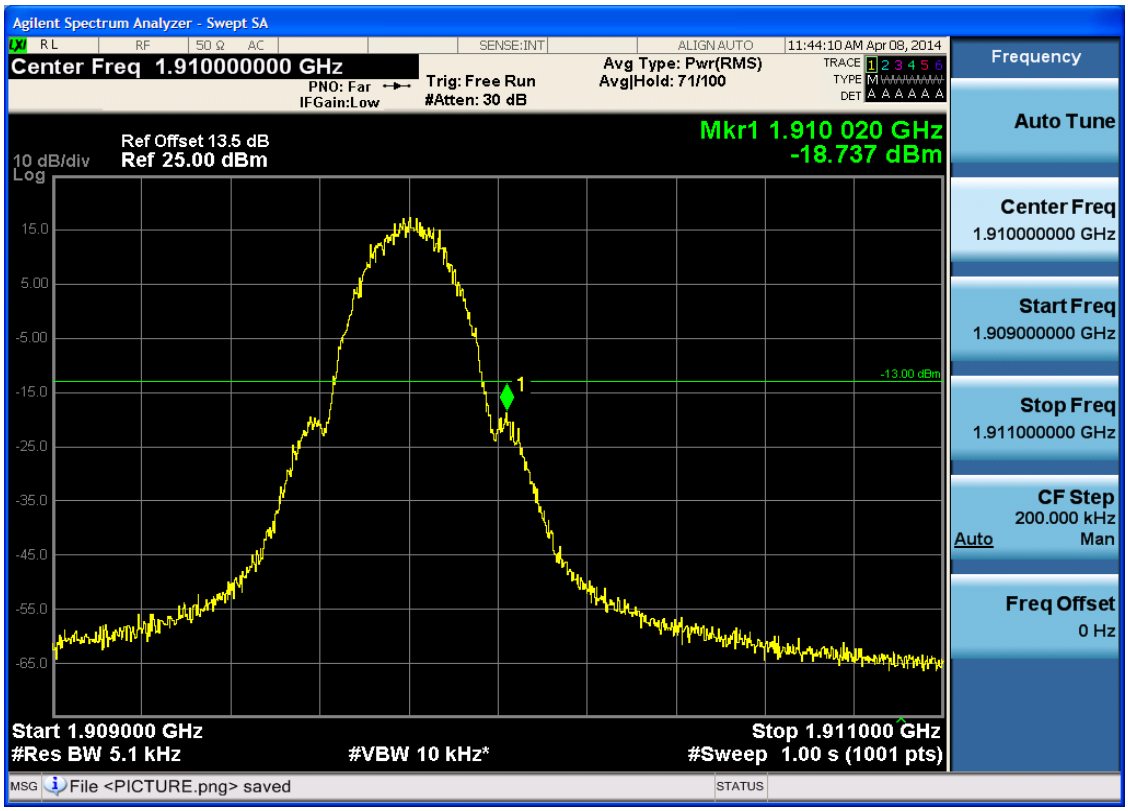
5.1.2.1.2 Test Channel = HCH



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5.2 For UMTS

5.2.1 Test Band = WCDMA1900

5.2.1.1 Test Mode = UMTS/TM1

5.2.1.1.1 Test Channel = LCH

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5.2.1.1.2 Test Channel = HCH

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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.

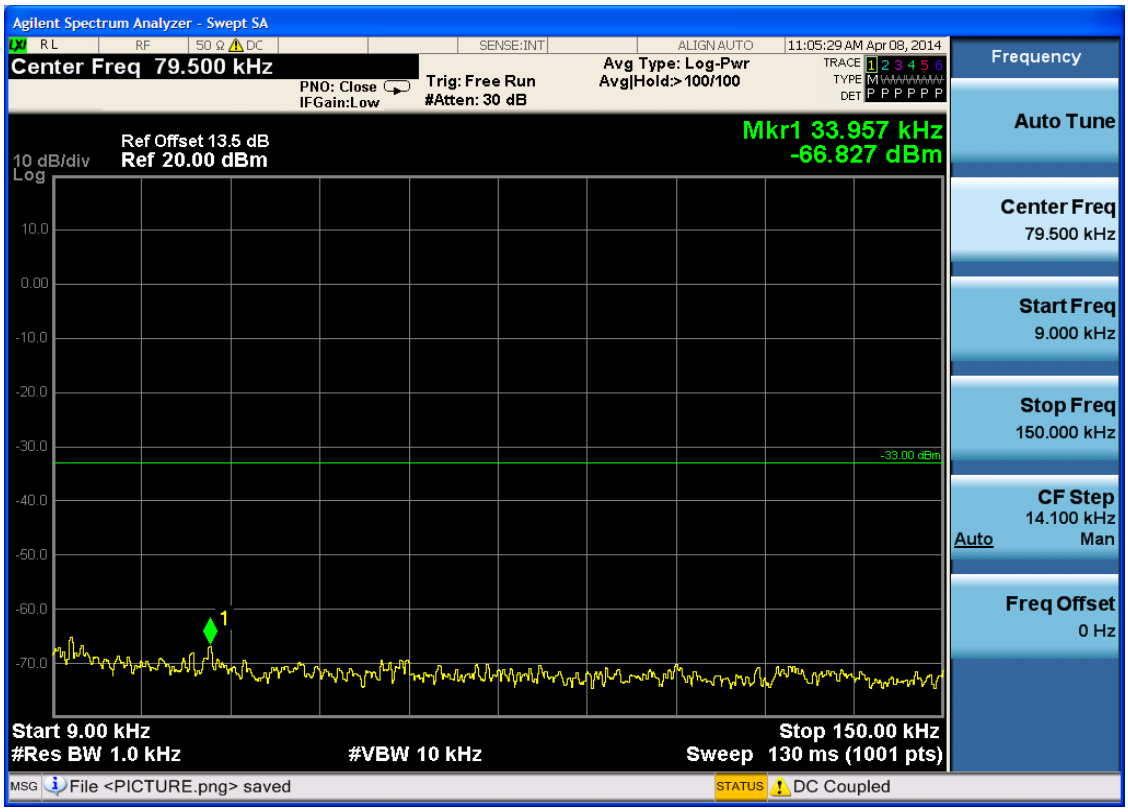
Part I - Test Plots

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



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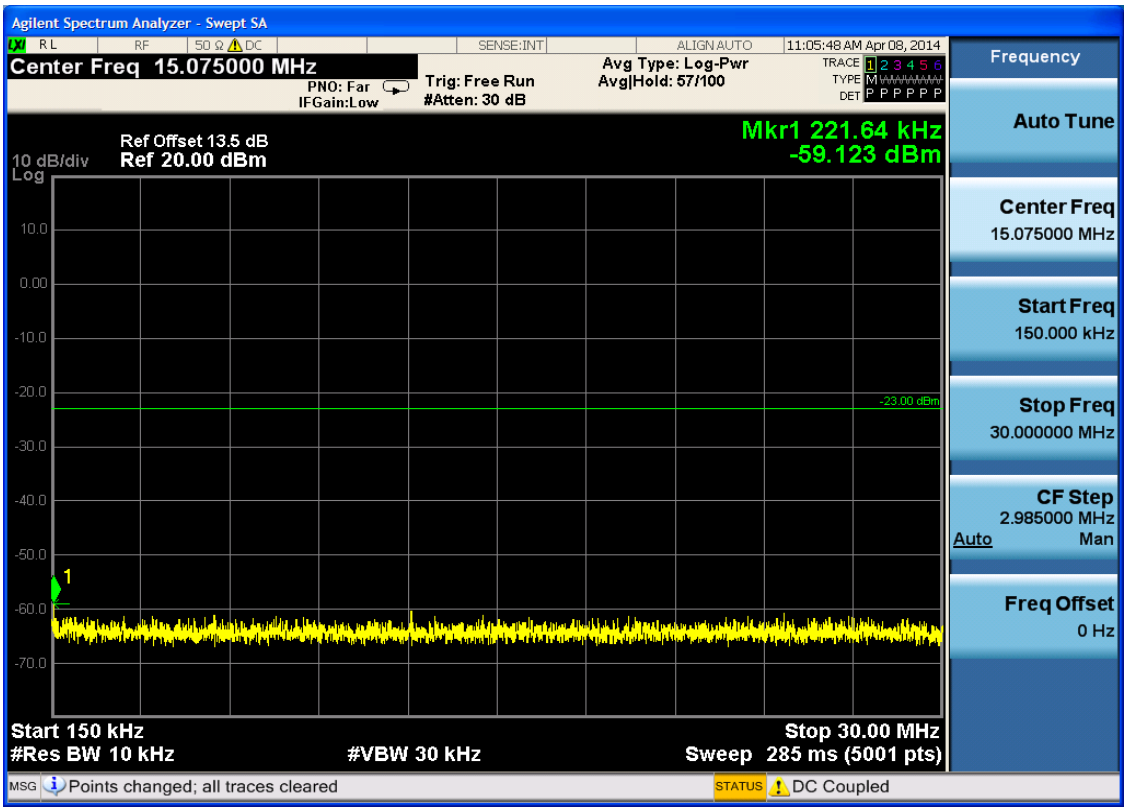

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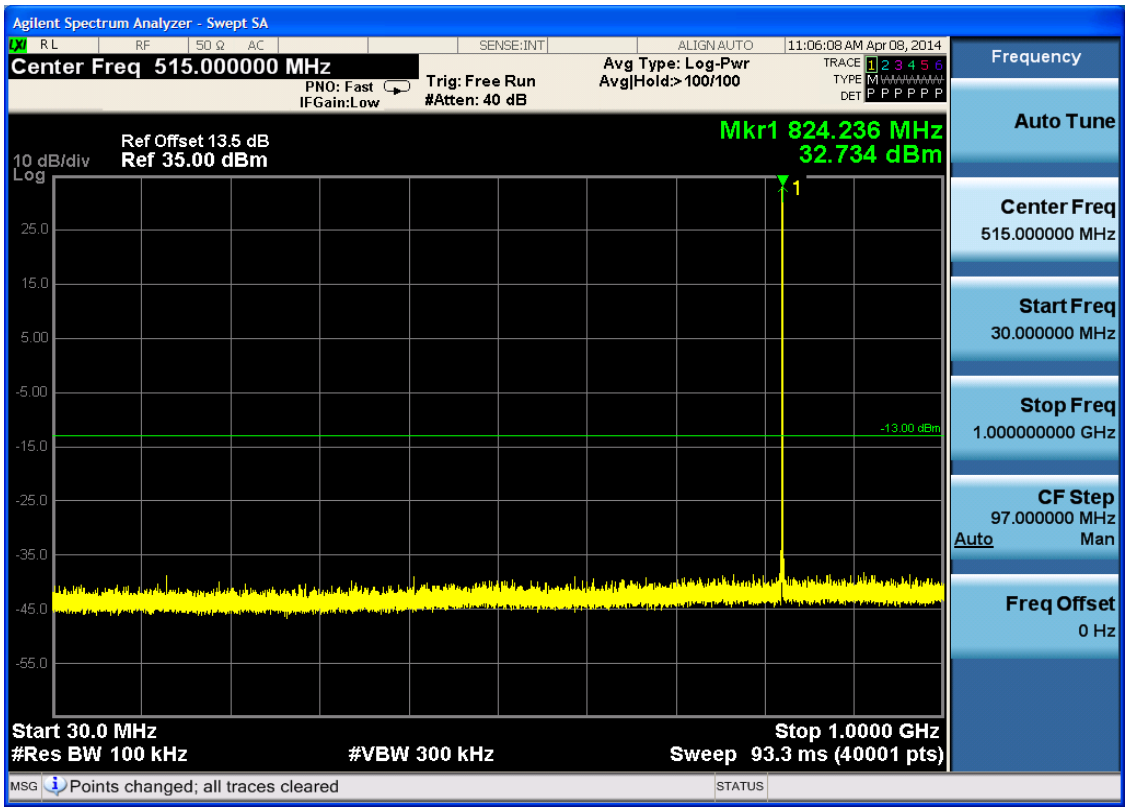

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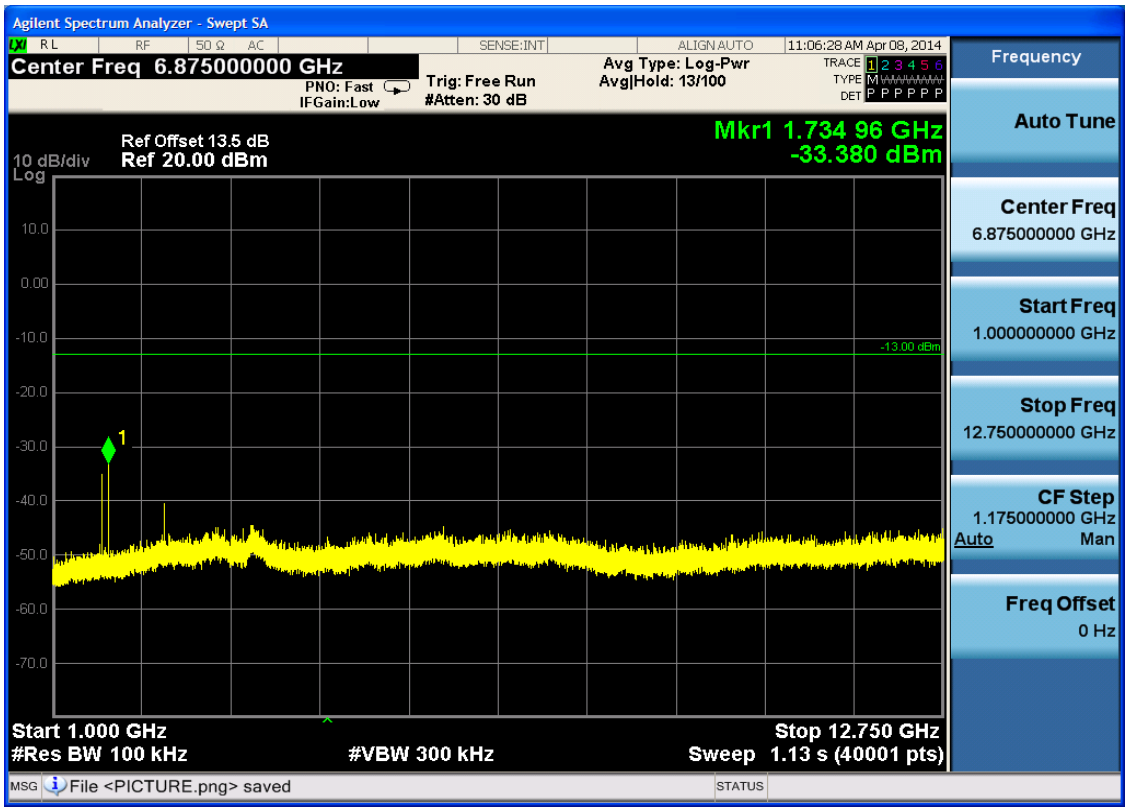

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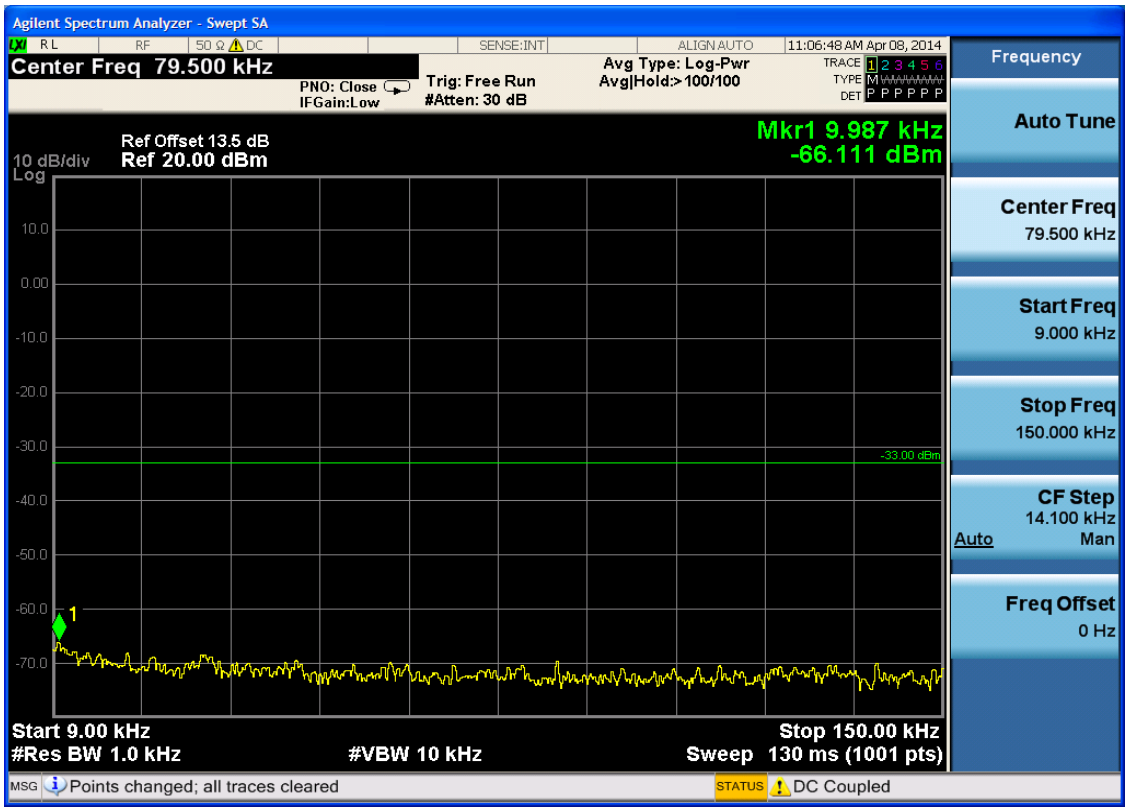
6.1.1.1.2 Test Channel = MCH



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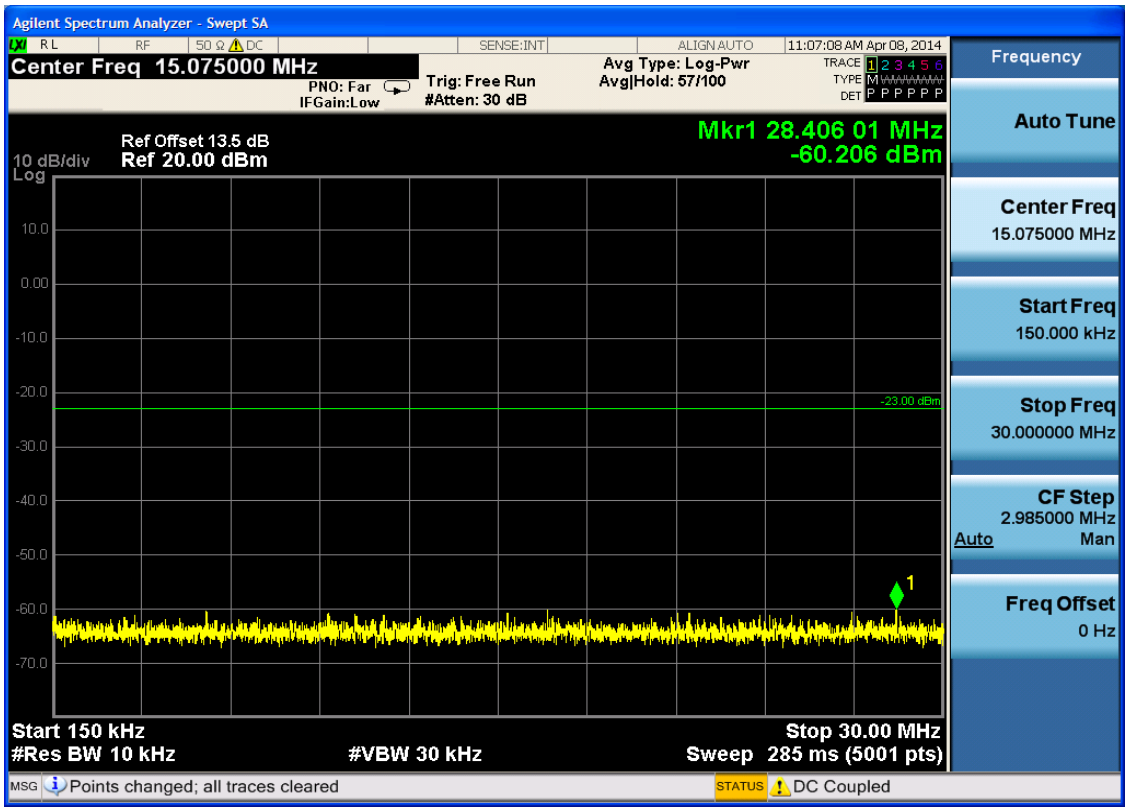

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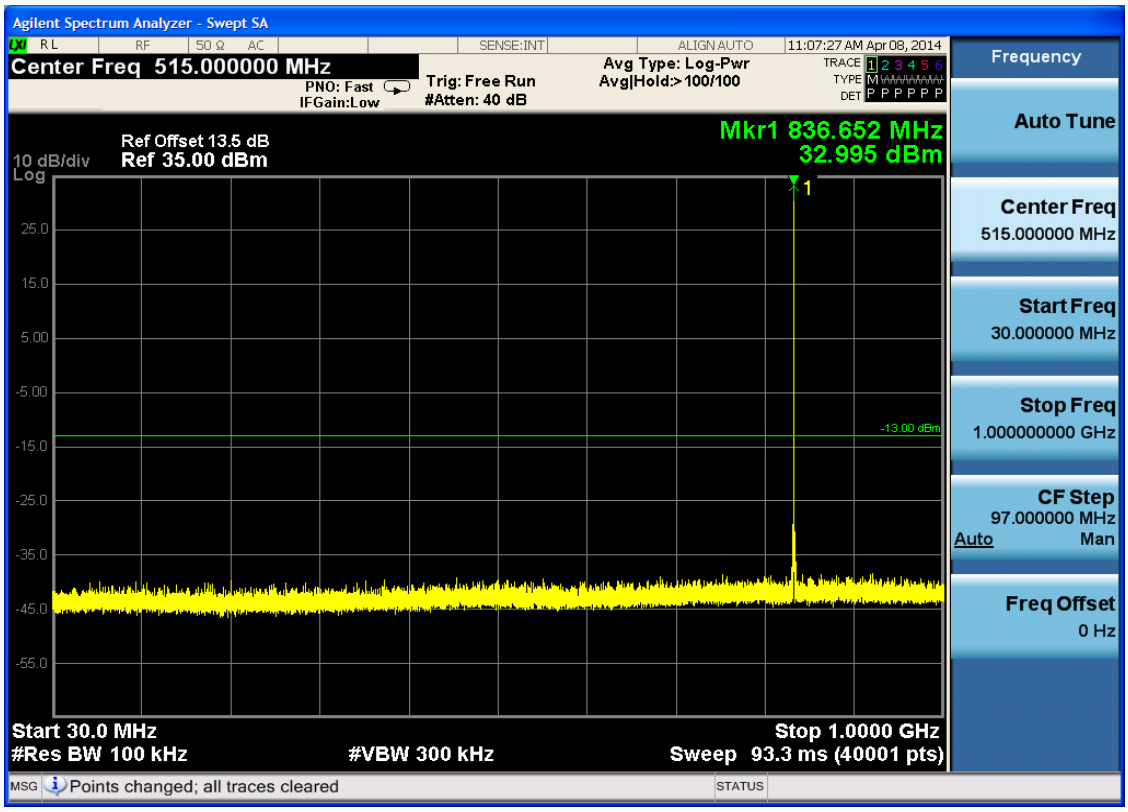

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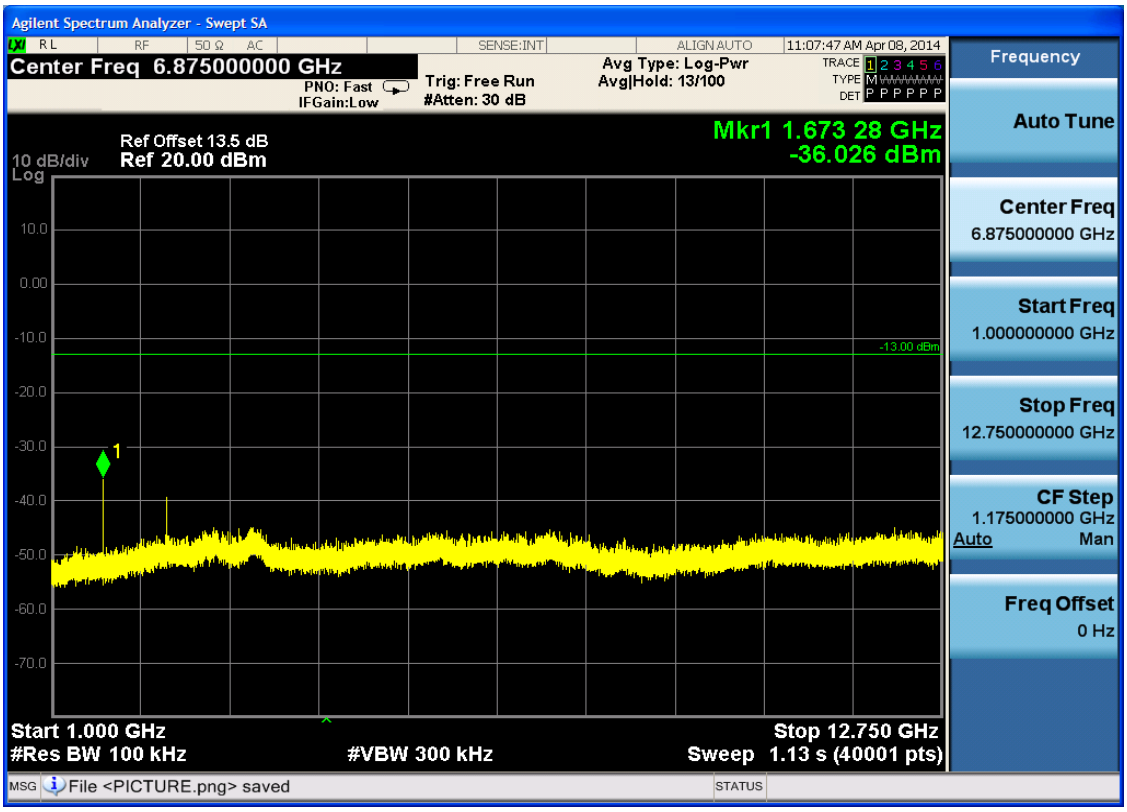

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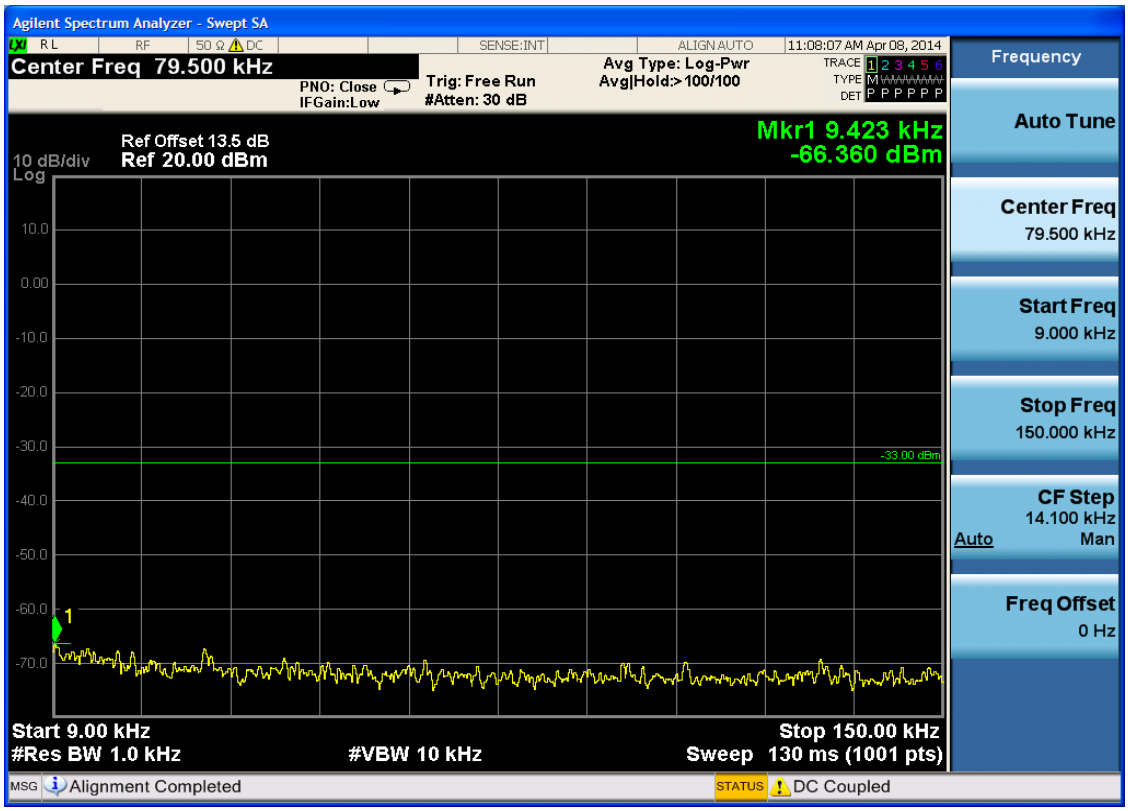
6.1.1.1.3 Test Channel = HCH



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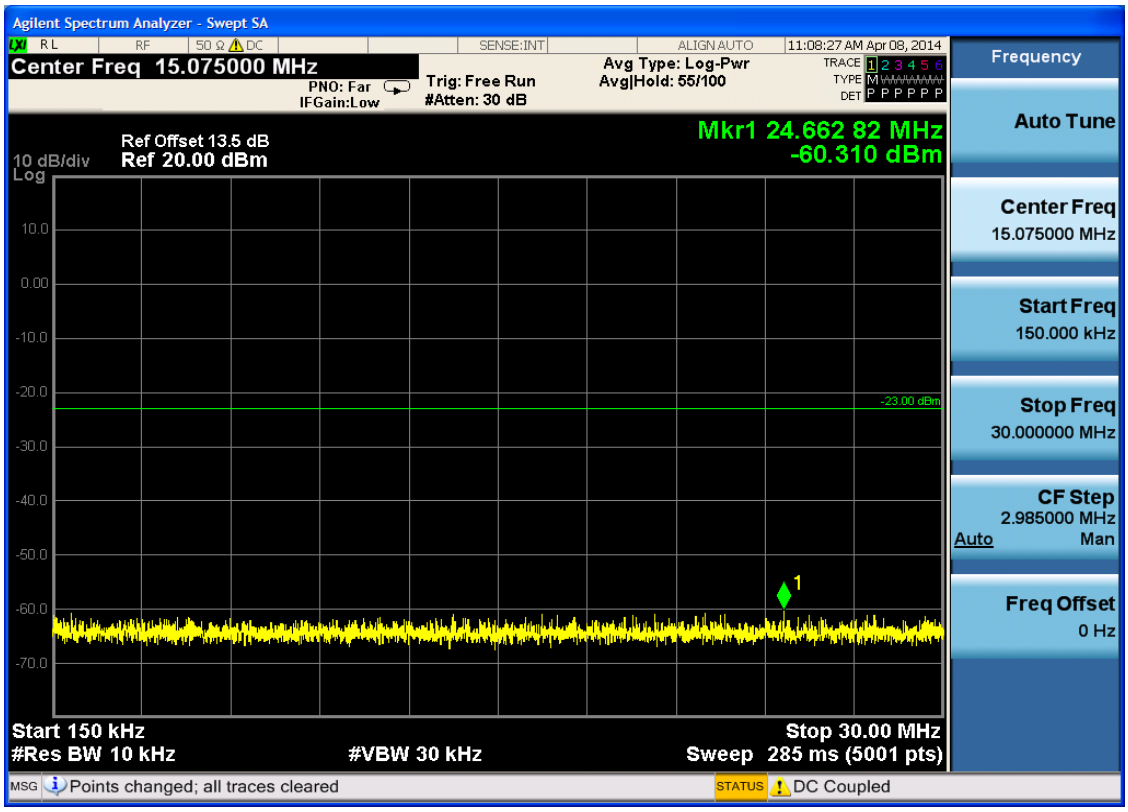

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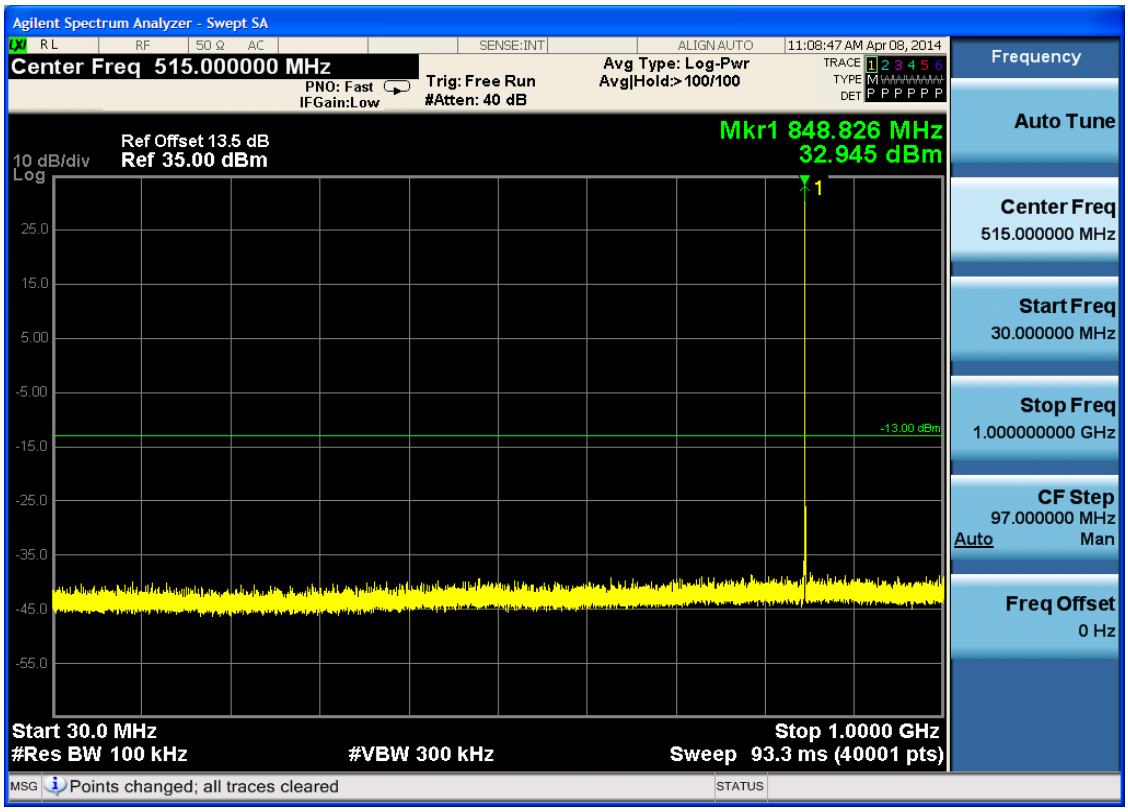

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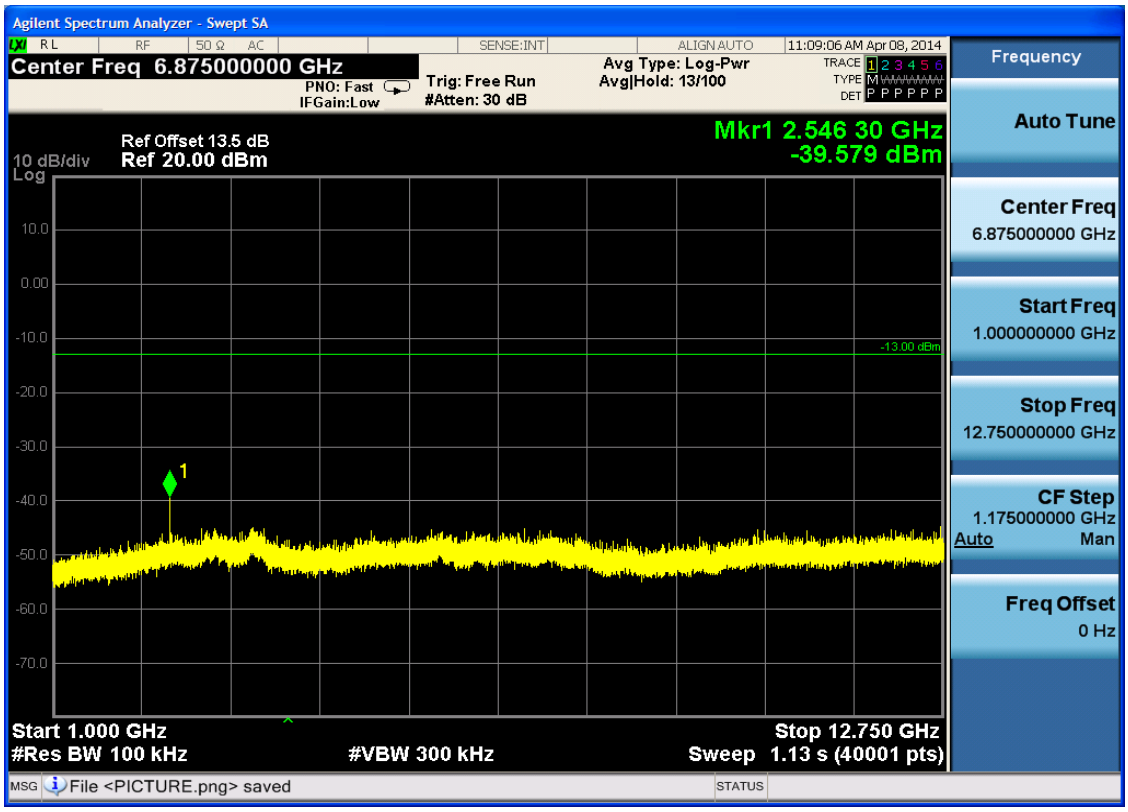

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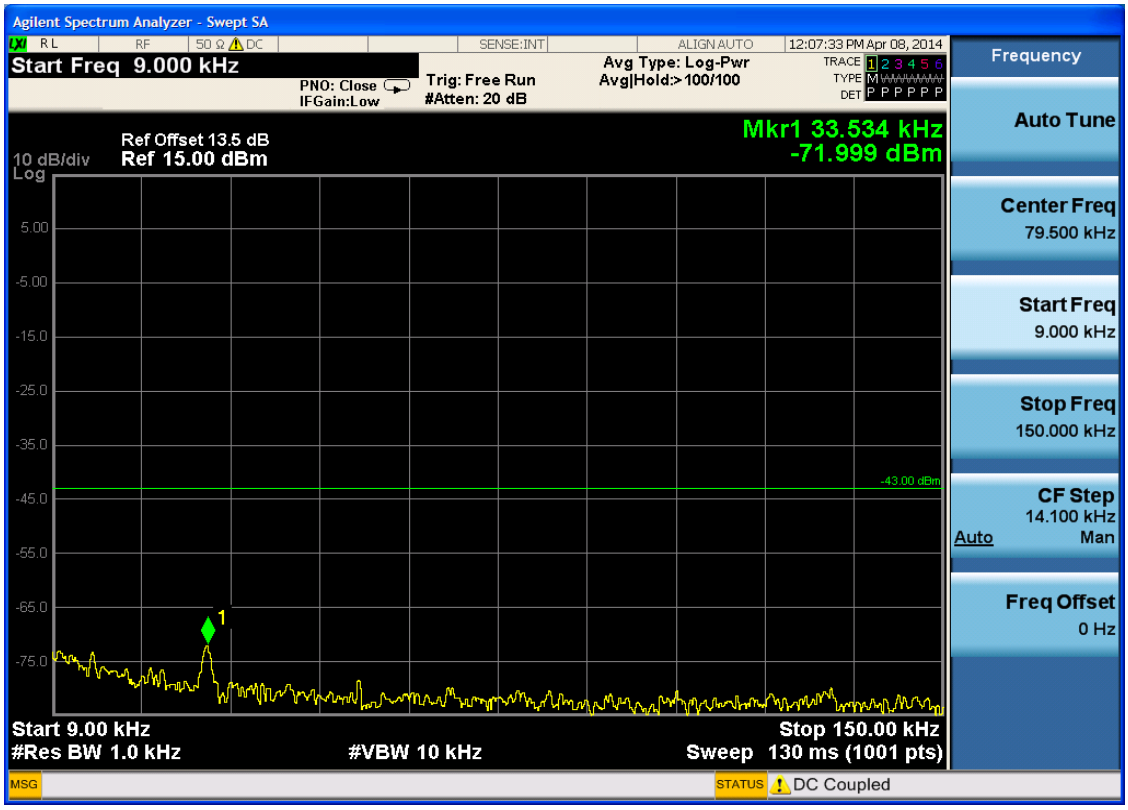
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH



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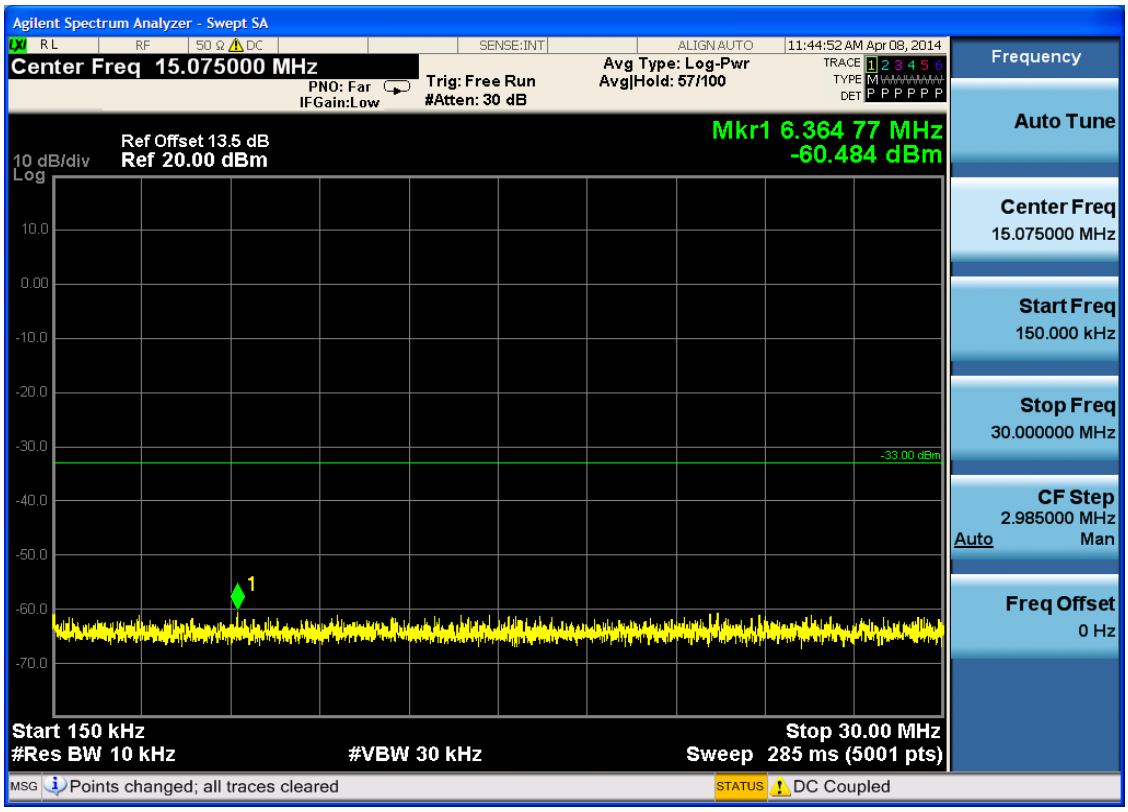

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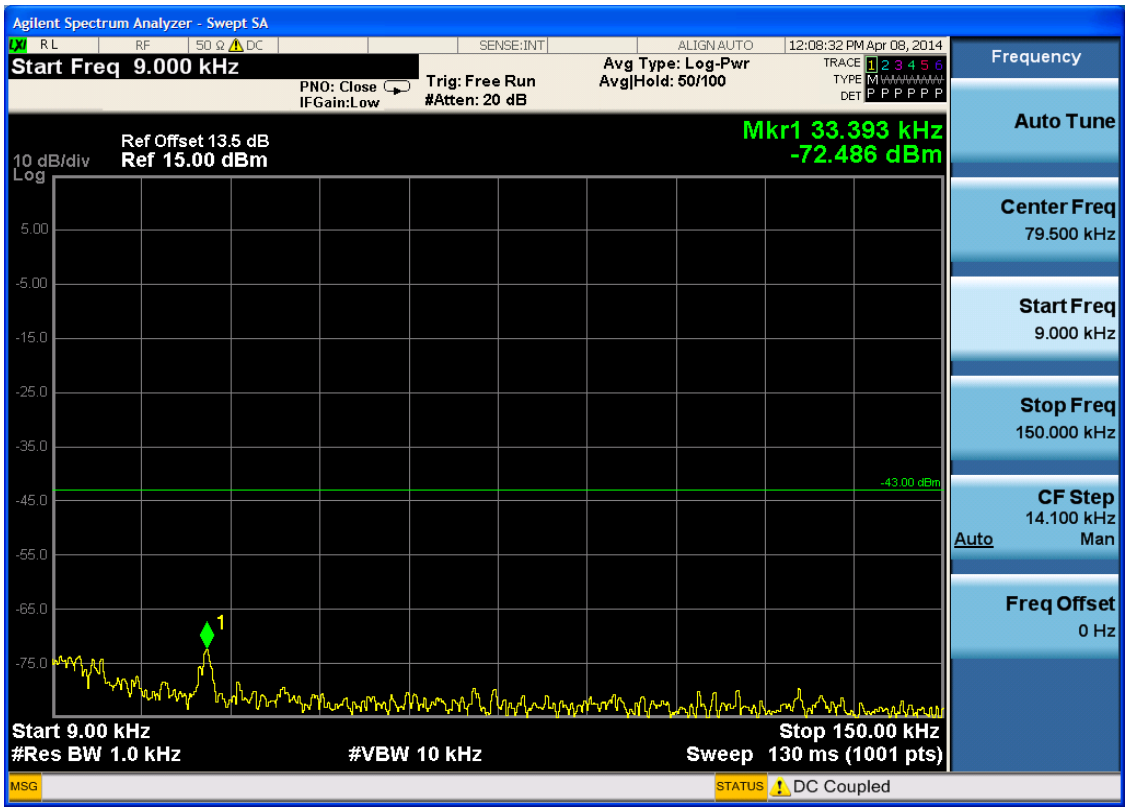
6.1.2.1.2 Test Channel = MCH



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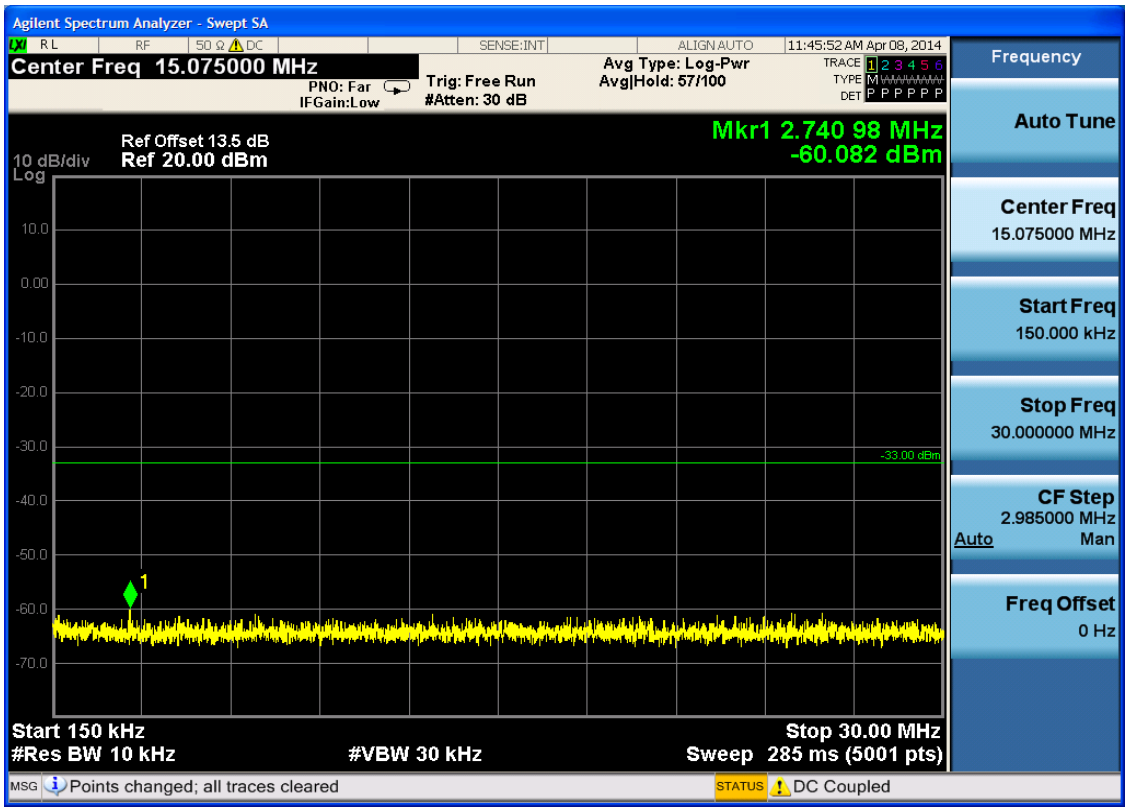

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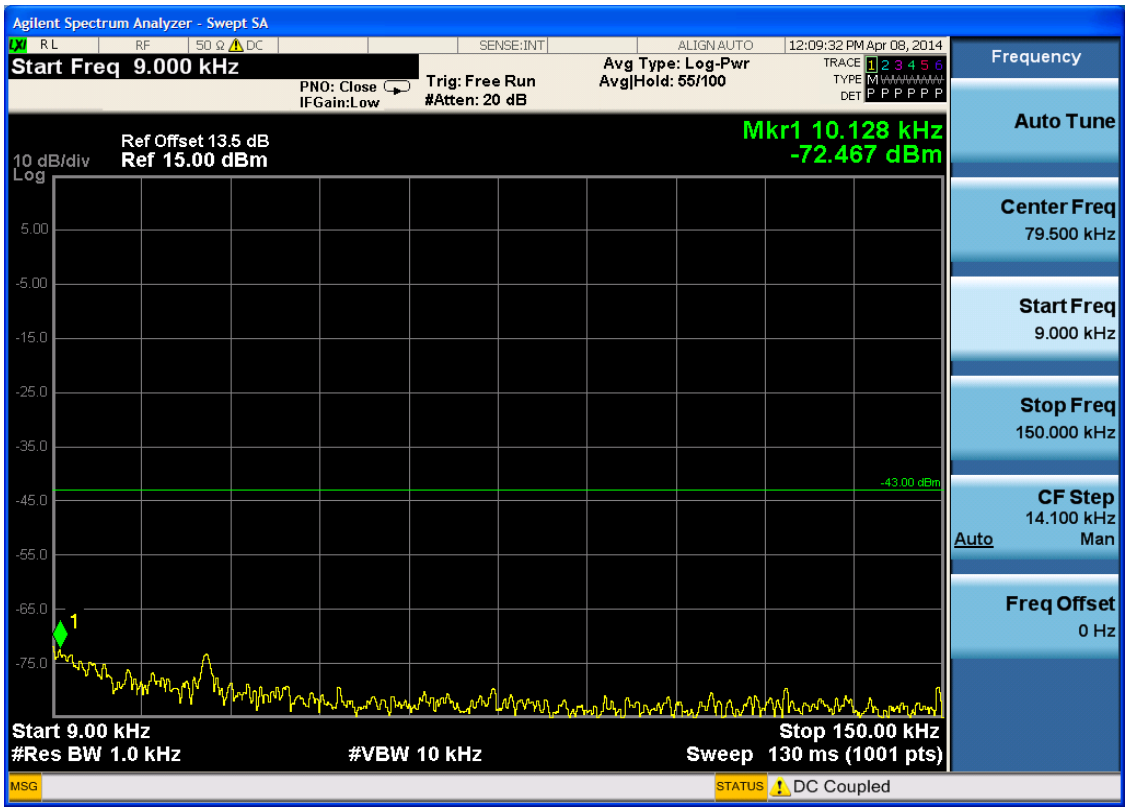
6.1.2.1.3 Test Channel = HCH



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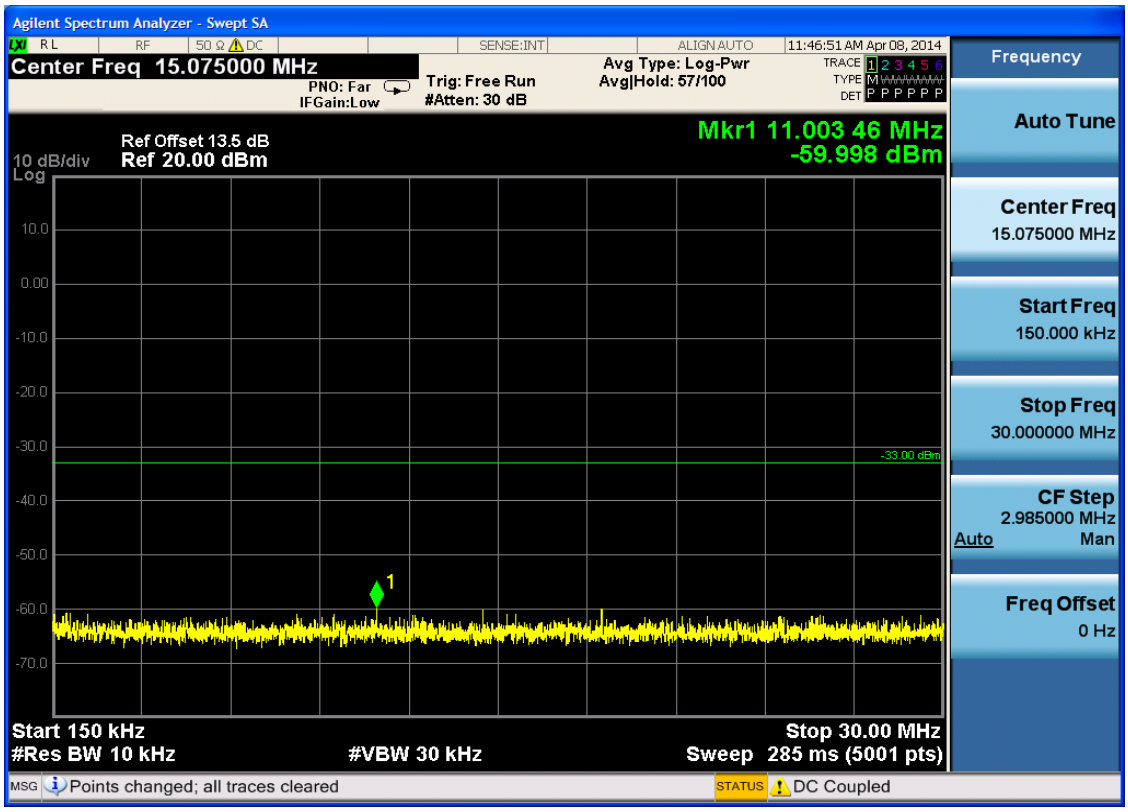

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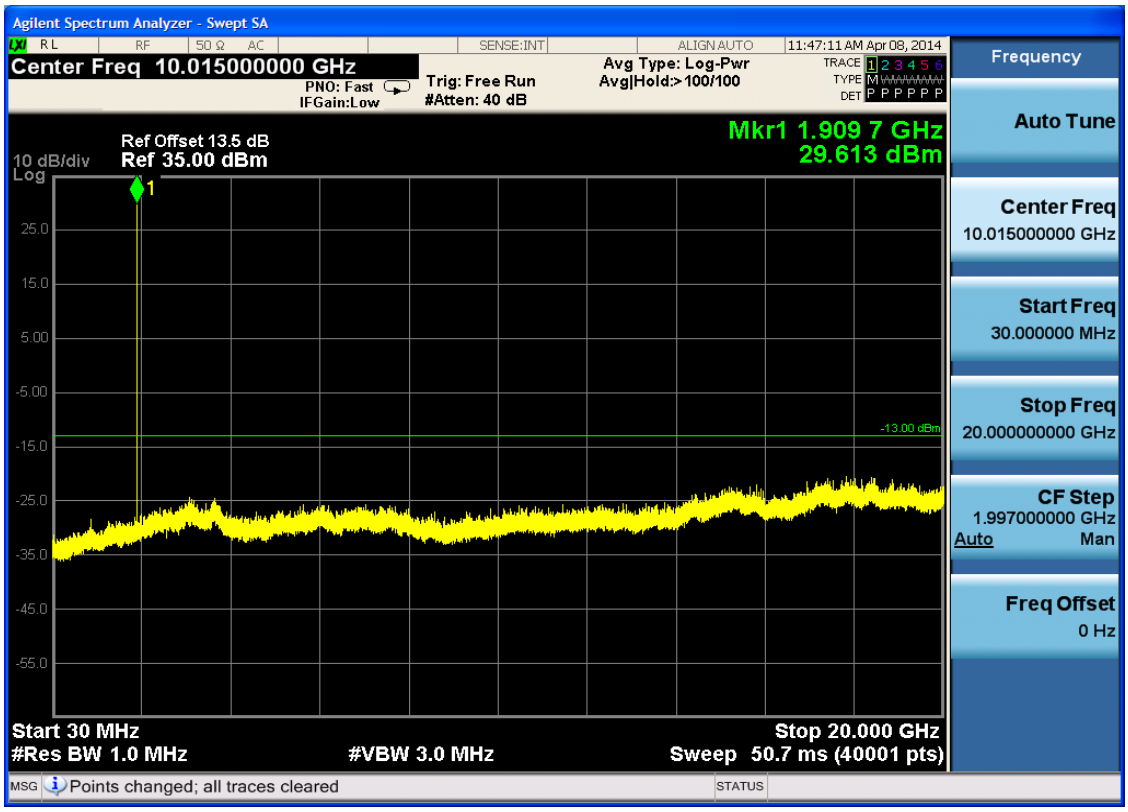

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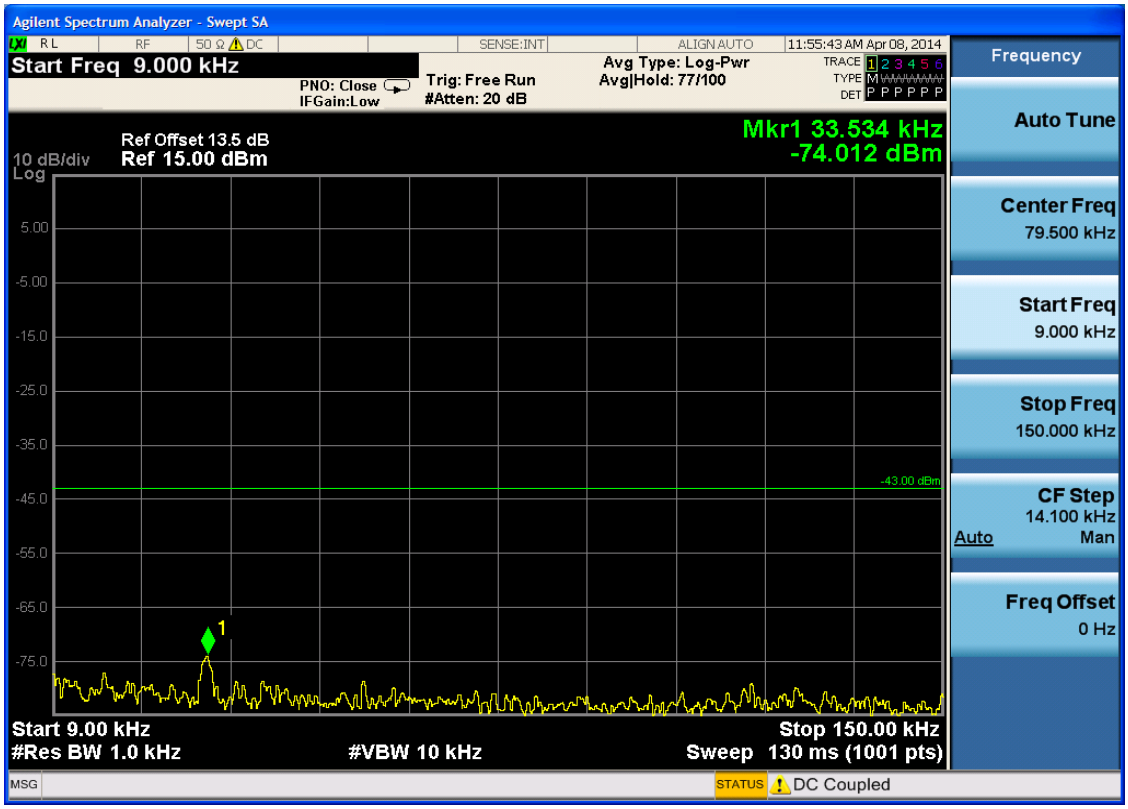
6.2 For UMTS

6.2.1 Test Band = WCDMA1900

6.2.1.1 Test Mode = UMTS/TM1

6.2.1.1.1 Test Channel = LCH



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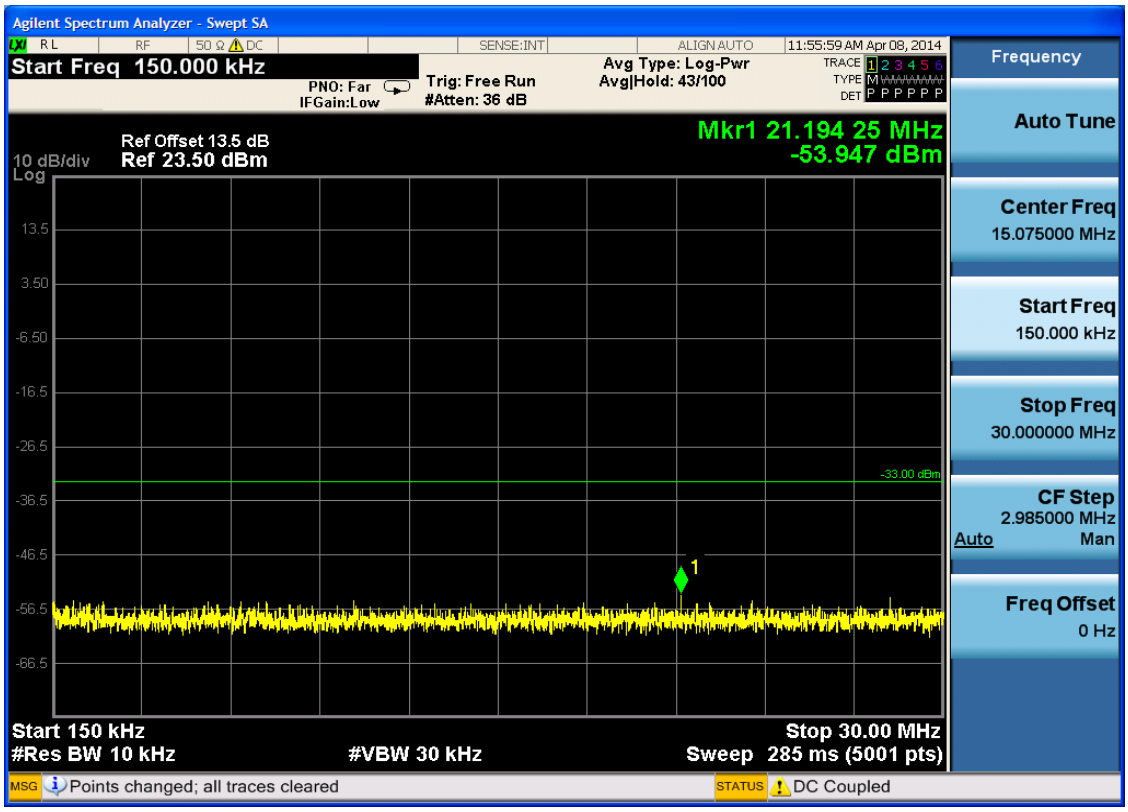

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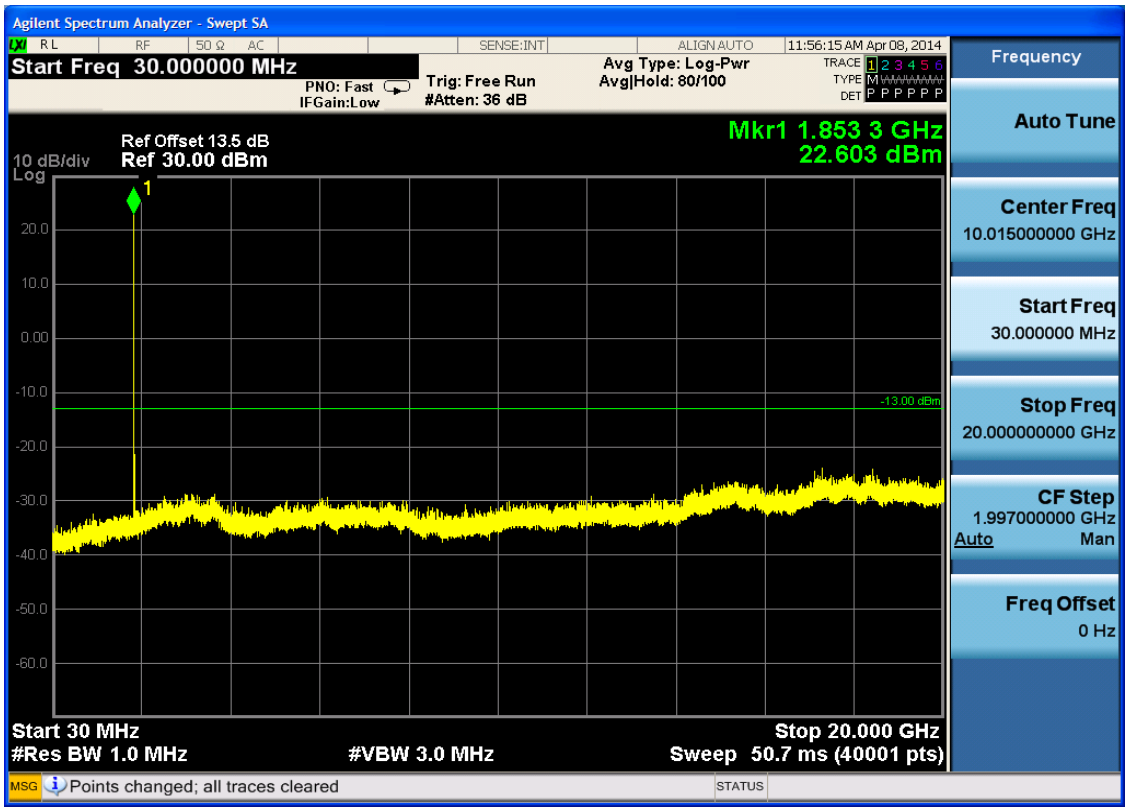

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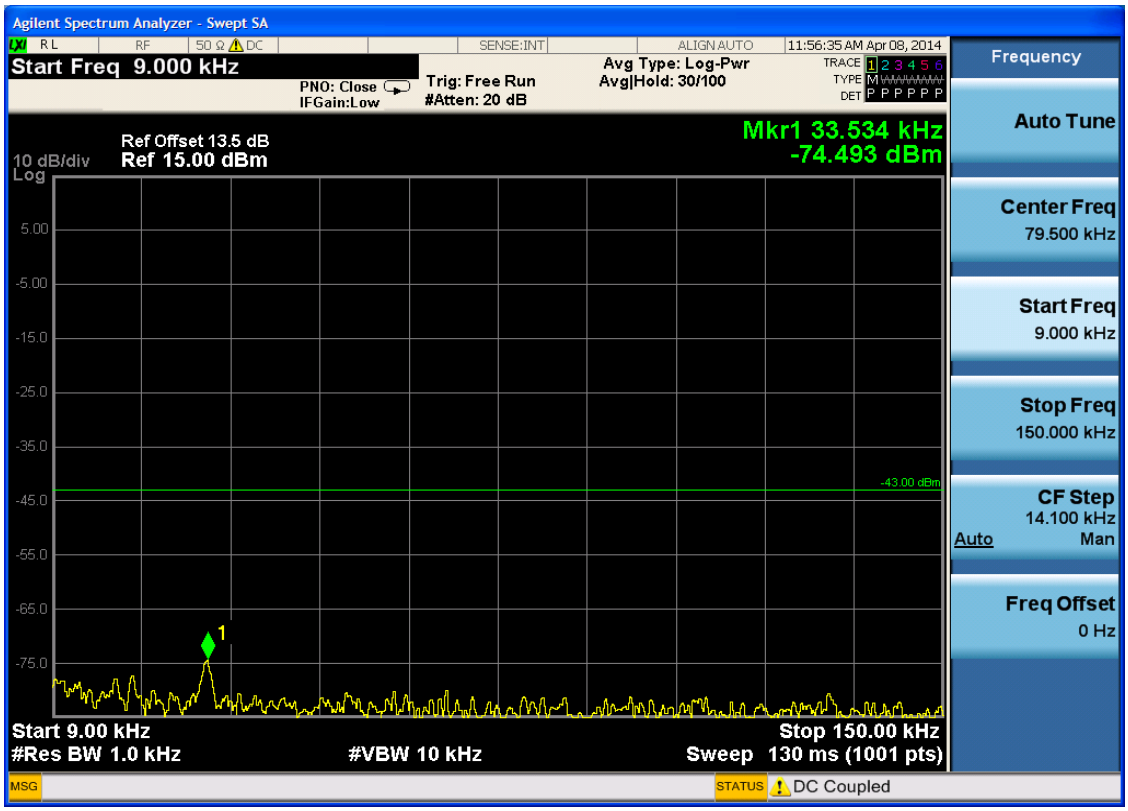
6.2.1.1.2 Test Channel = MCH



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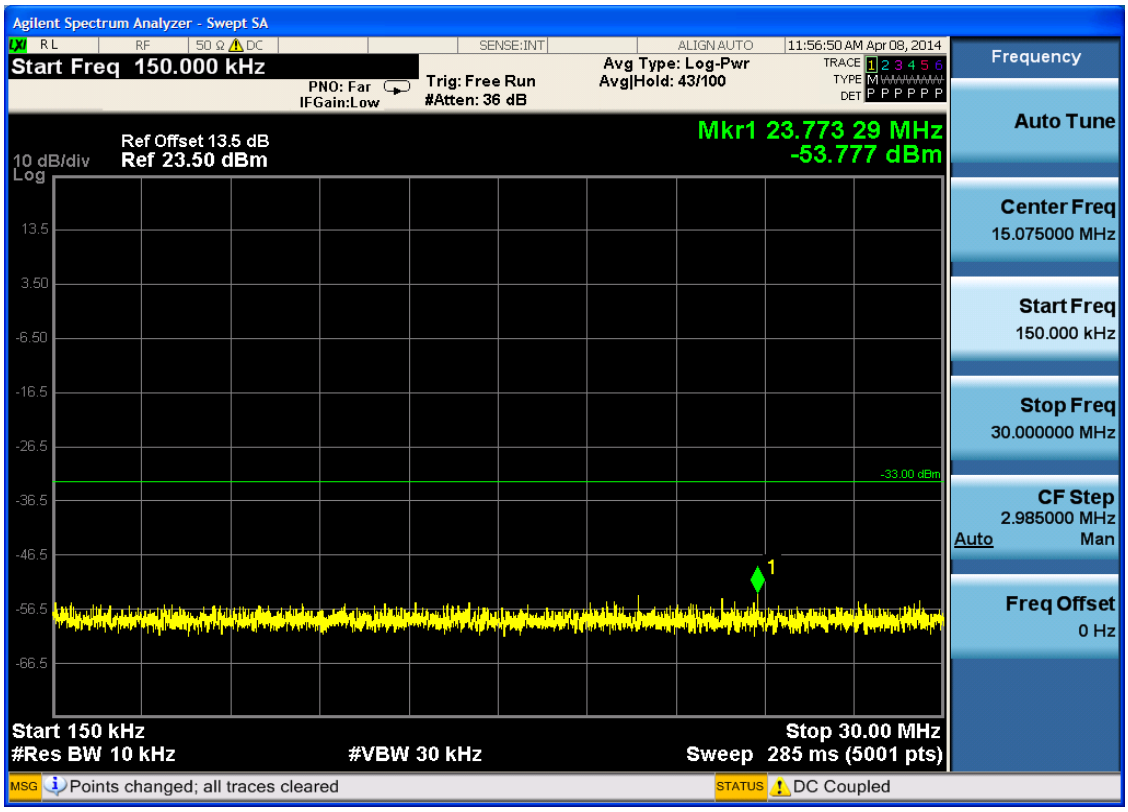

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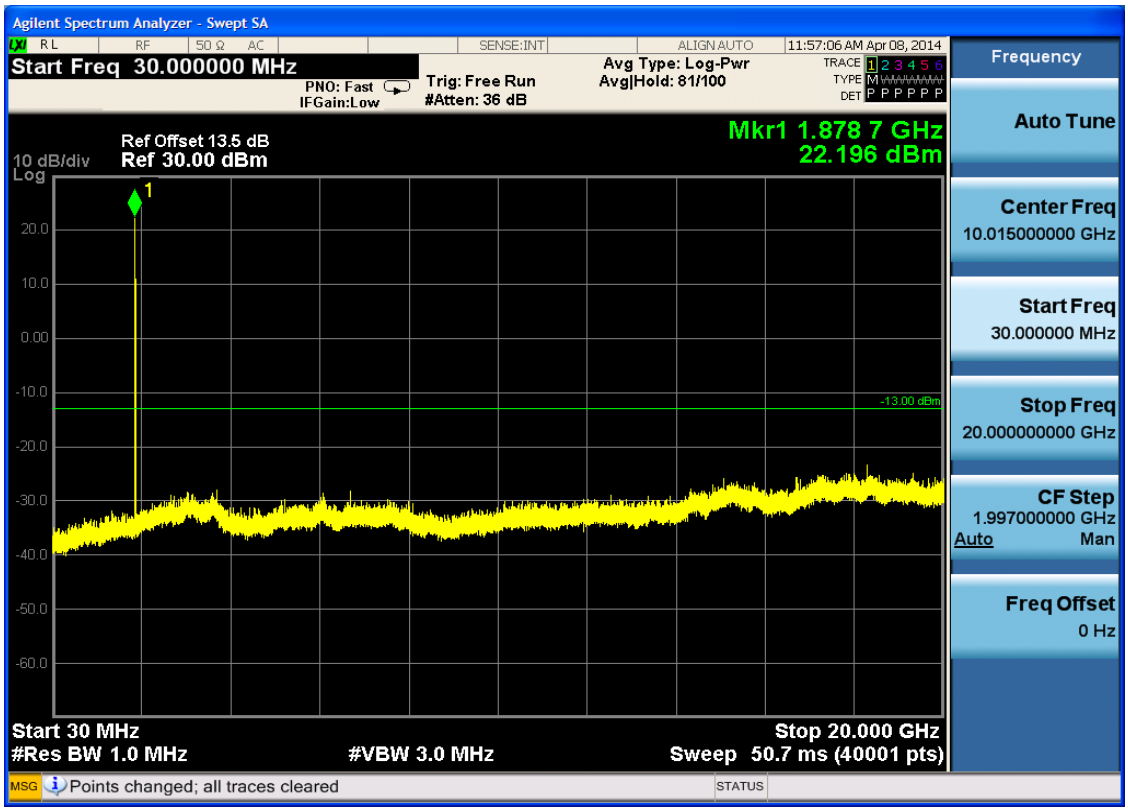

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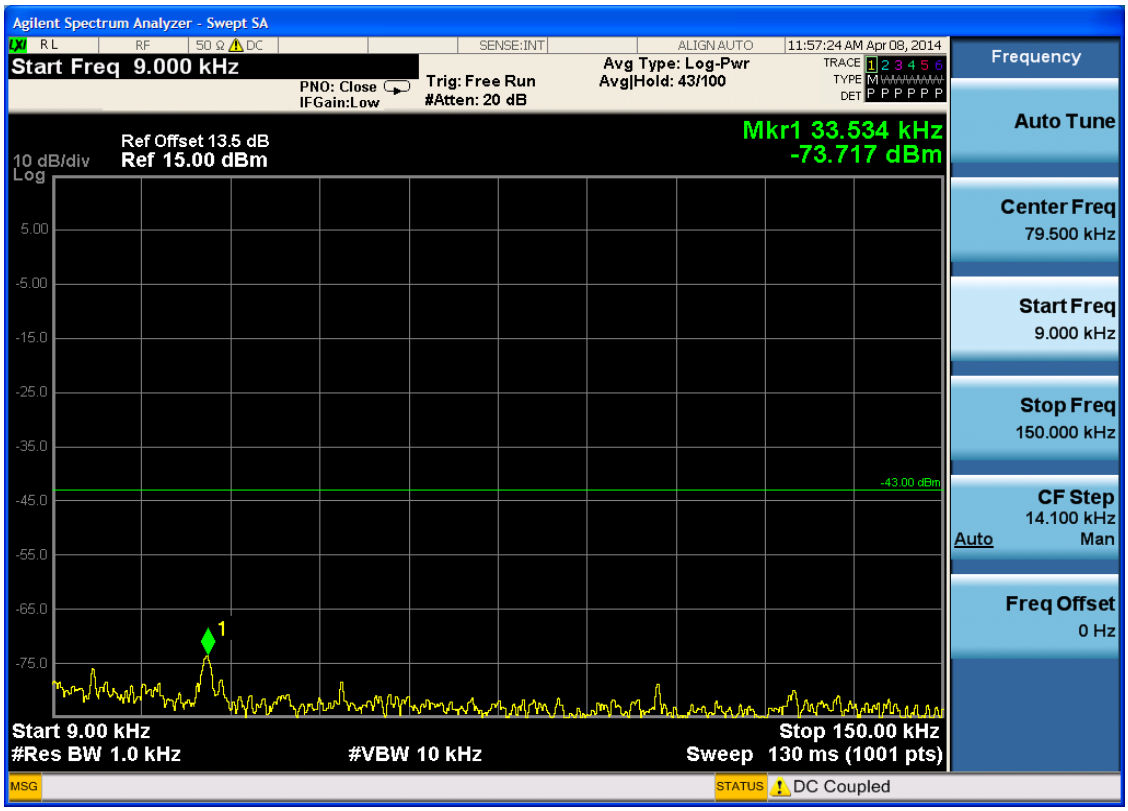
6.2.1.1.3 Test Channel = HCH



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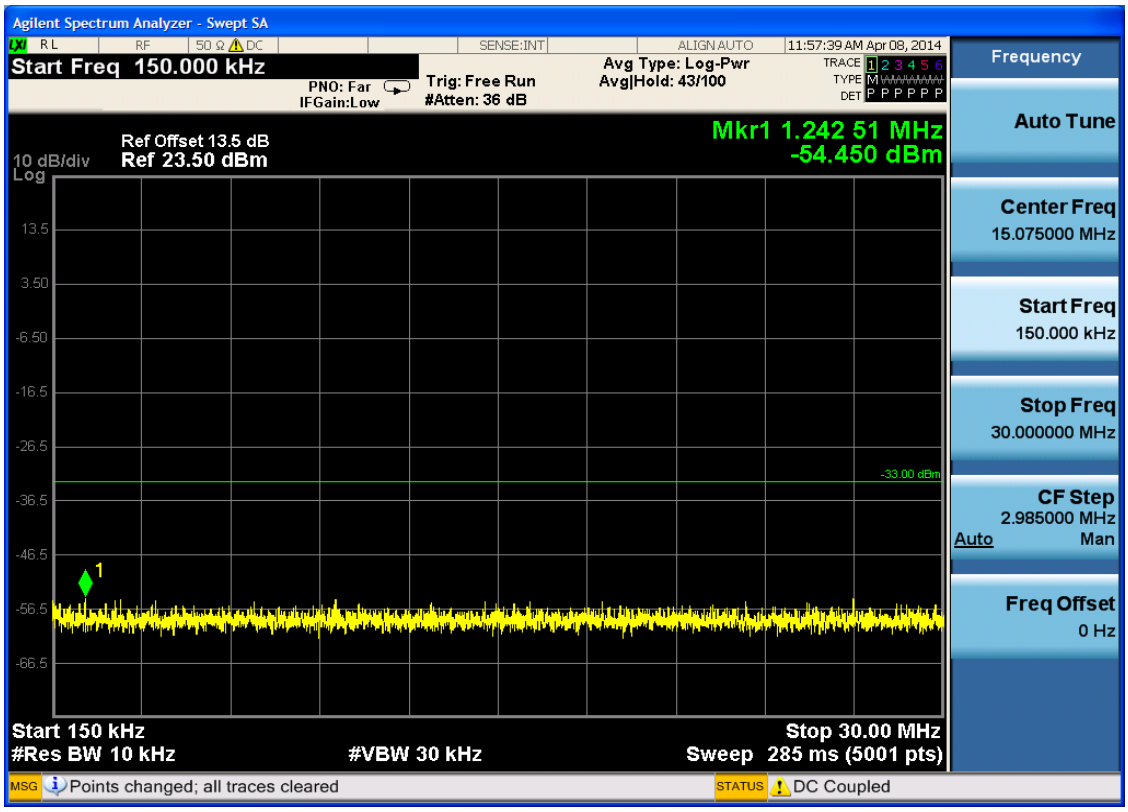

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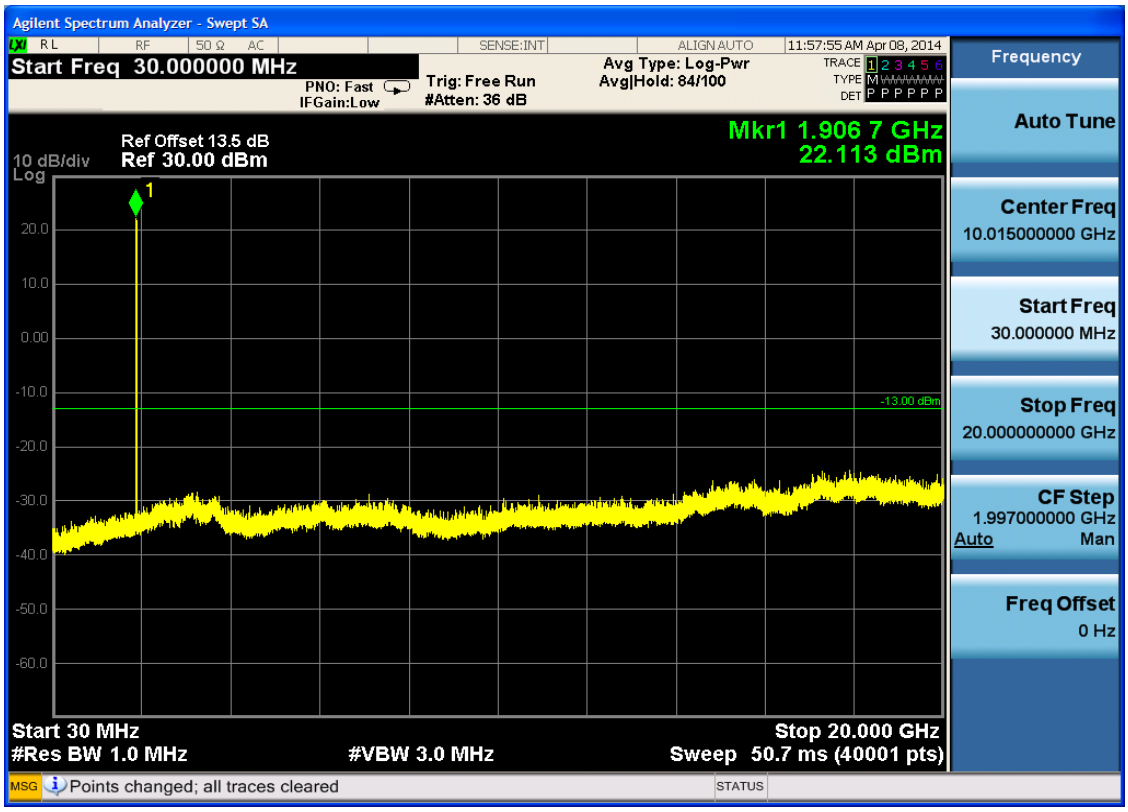

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7Appendix_G: Field Strength of Spurious Radiation

Note:

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

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

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

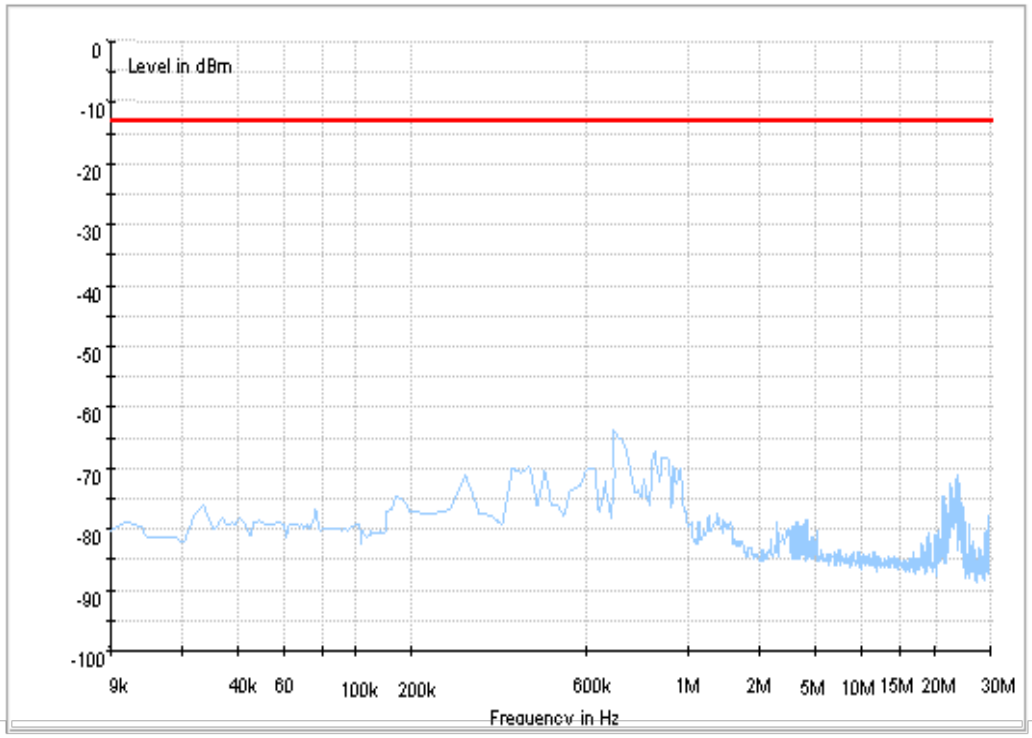
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

7.1 For GSM

7.1.1 Test Band = GSM850

7.1.1.1 Test Mode = GSM/TM1



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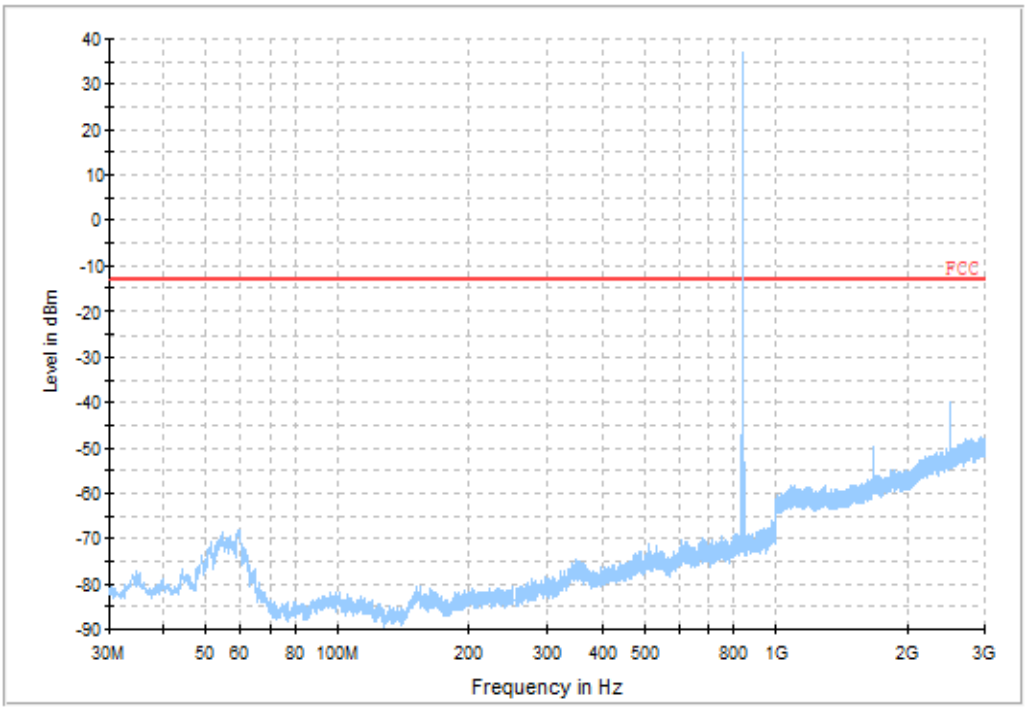
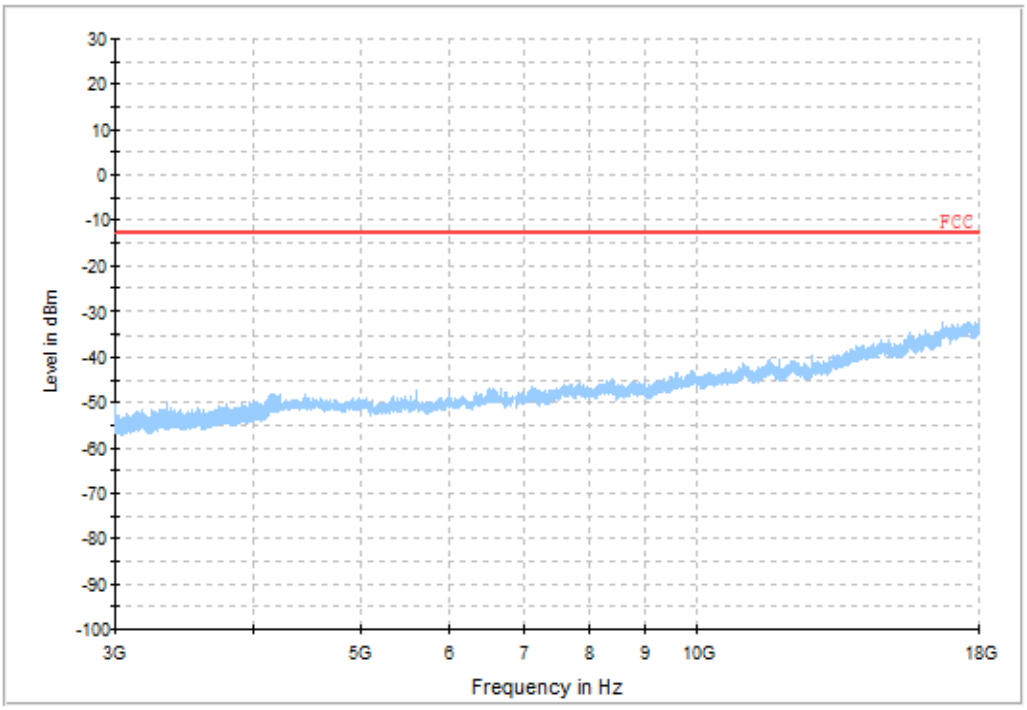
Copy of FCC PART22 GSM850_L



Copy of FCC PART22 GSM850_H



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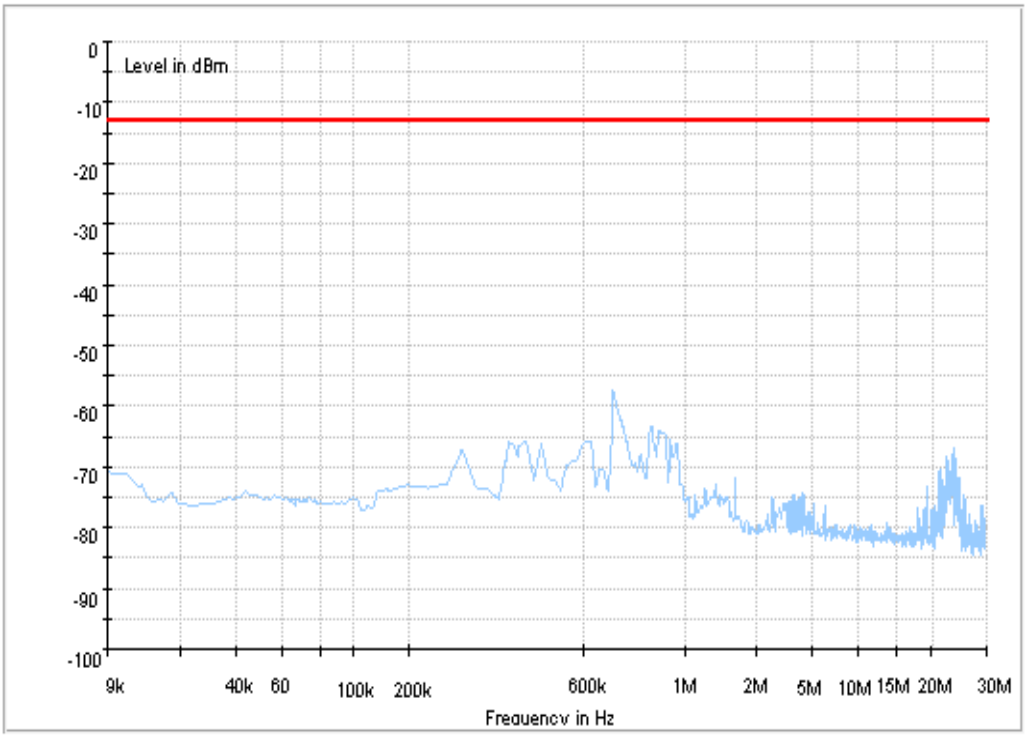
7.1.2 Test Band = GSM1900

7.1.2.1 Test Mode = GSM/TM1



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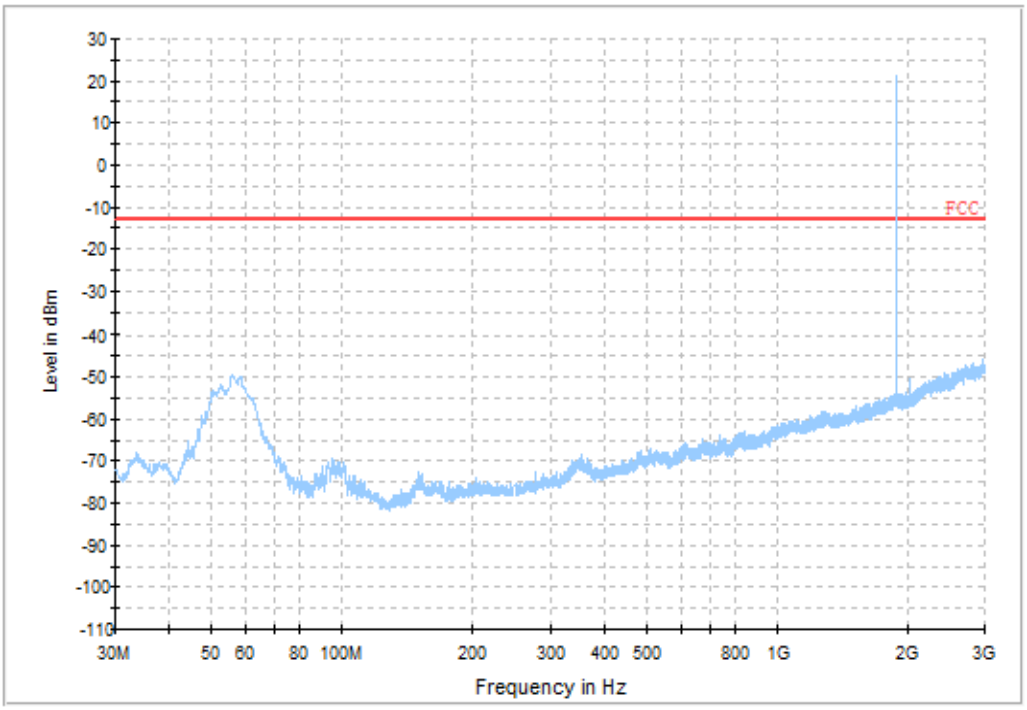
Copy of FCC PART24 GSM1900_L



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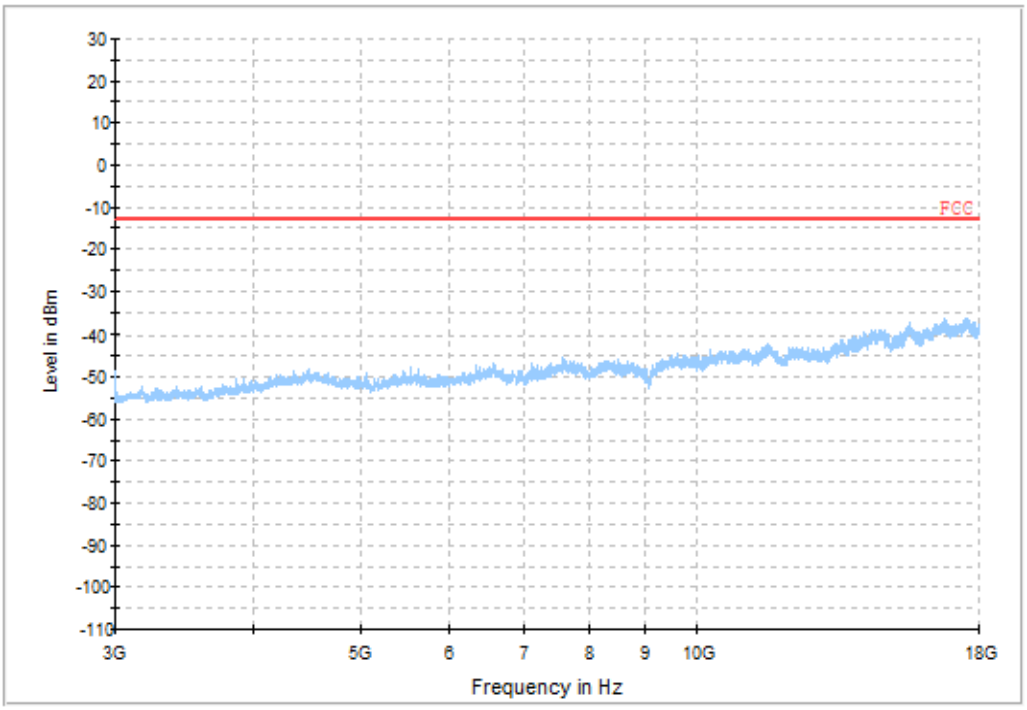

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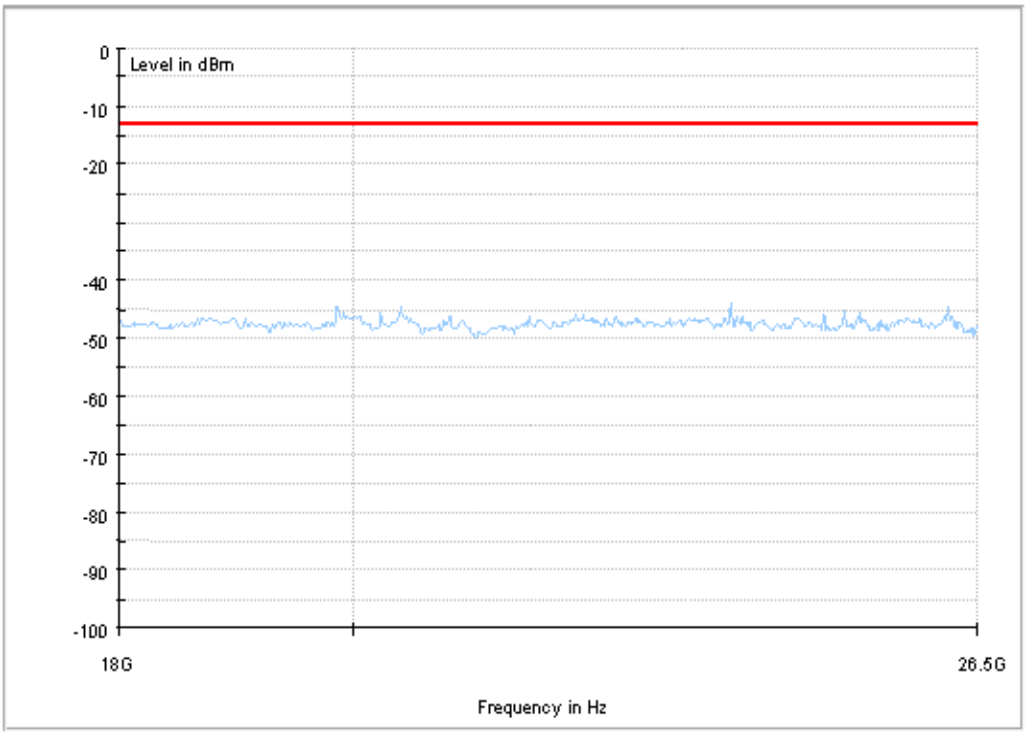

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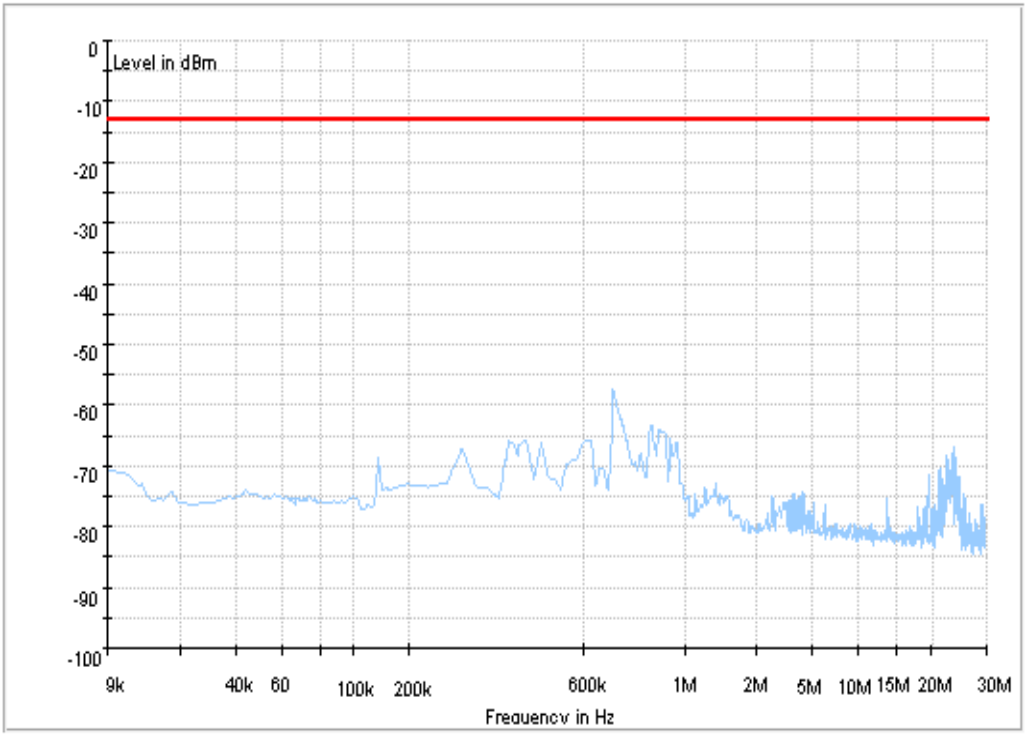
7.2 For UMTS

7.2.1 Test Band = WCDMA1900

7.2.1.1 Test Mode = UMTS/TM1



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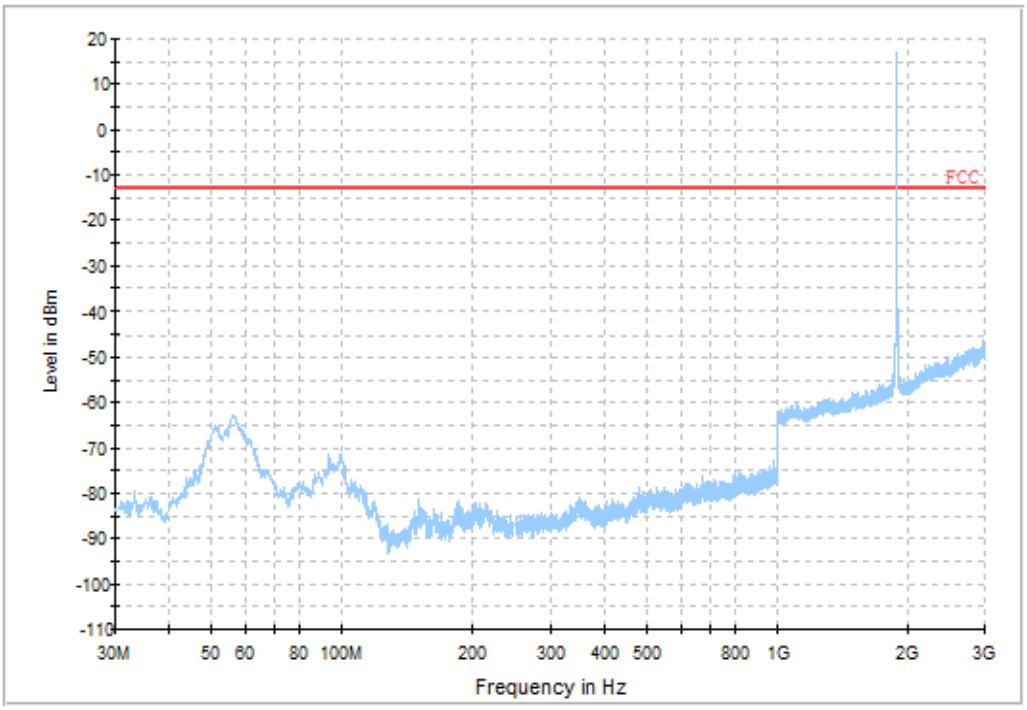
Copy of FCC PART24 WCDMA1900_L



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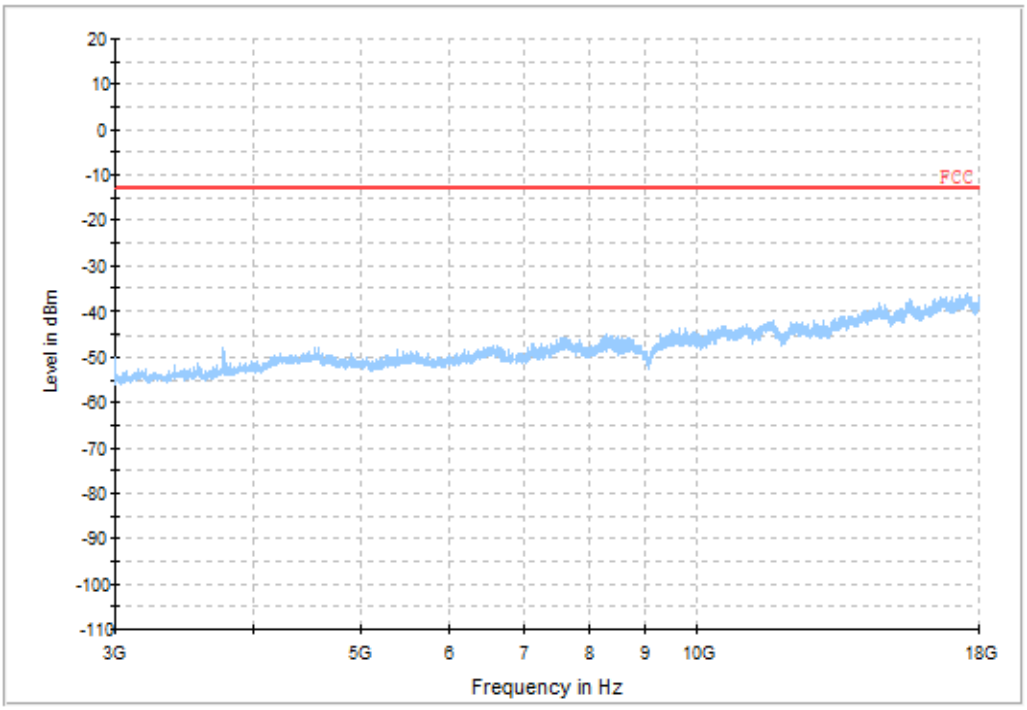

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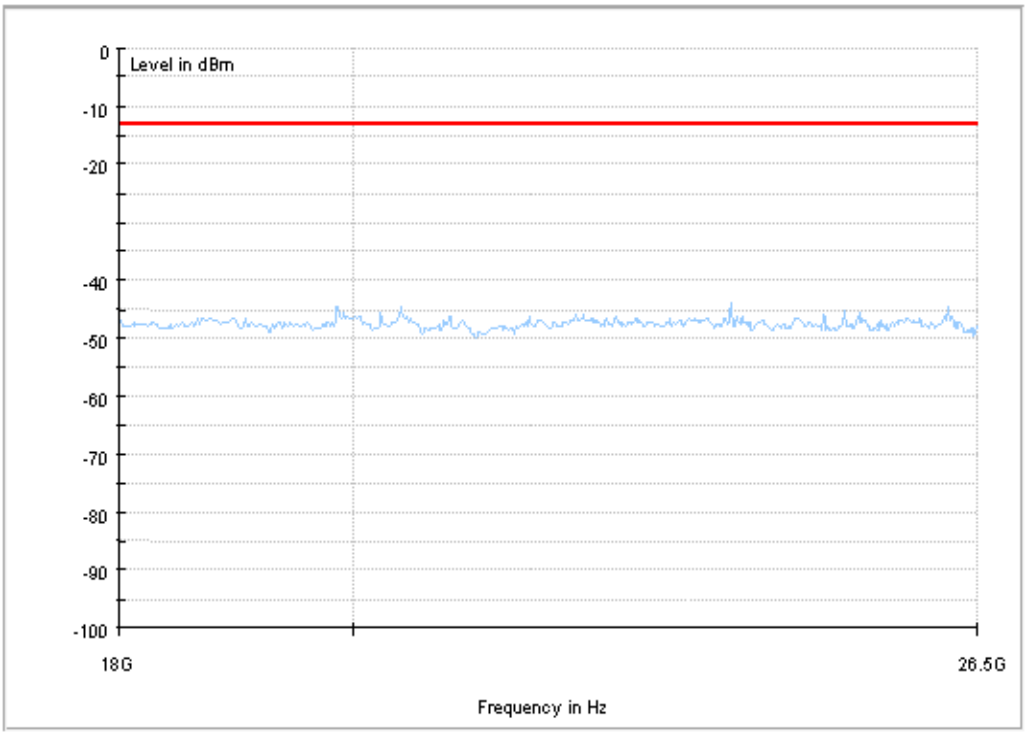

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8Appendix_H: Frequency Stability

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	3.29	0.00399	PASS
				VN	5.10	0.00619	PASS
				VH	2.39	0.0029	PASS
		MCH	TN	VL	8.72	0.01042	PASS
				VN	7.81	0.00934	PASS
				VH	0.32	0.00038	PASS
		HCH	TN	VL	8.78	0.01034	PASS
				VN	7.94	0.00935	PASS
				VH	9.04	0.01065	PASS
GSM1900	GSM/TM1	LCH	TN	VL	36.16	0.01954	PASS
				VN	37.84	0.02045	PASS
				VH	23.63	0.01277	PASS
		MCH	TN	VL	35.71	0.01899	PASS
				VN	30.48	0.01621	PASS
				VH	35.58	0.01893	PASS
		HCH	TN	VL	36.03	0.01887	PASS
				VN	29.90	0.01566	PASS
				VH	36.74	0.01924	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	7.55	0.00916	PASS
				-20	12.91	0.01566	PASS
				-10	6.20	0.00752	PASS
				0	3.16	0.00383	PASS
				10	-1.10	-0.00133	PASS
				20	7.04	0.00854	PASS
				30	13.04	0.01582	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				40	9.43	0.01144	PASS
				50	7.62	0.00925	PASS
		MCH	VN	-30	11.75	0.01404	PASS
				-20	10.01	0.01197	PASS
				-10	7.04	0.00842	PASS
				0	12.20	0.01458	PASS
				10	2.32	0.00277	PASS
				20	2.84	0.00339	PASS
				30	8.14	0.00973	PASS
				40	5.49	0.00656	PASS
				50	10.91	0.01304	PASS
		HCH	VN	-30	9.56	0.01126	PASS
				-20	9.43	0.01111	PASS
				-10	7.68	0.00905	PASS
				0	5.62	0.00662	PASS
				10	14.92	0.01758	PASS
				20	12.91	0.01521	PASS
				30	15.63	0.01841	PASS
				40	10.85	0.01278	PASS
				50	12.40	0.01461	PASS
GSM1900	GSM/TM1	LCH	VN	-30	31.70	0.01713	PASS
				-20	29.38	0.01588	PASS
				-10	19.89	0.01075	PASS
				0	27.89	0.01507	PASS
				10	42.17	0.02279	PASS
				20	47.07	0.02544	PASS
				30	24.09	0.01302	PASS
				40	29.25	0.01581	PASS
				50	34.68	0.01874	PASS
		MCH	VN	-30	28.93	0.01539	PASS
				-20	29.77	0.01584	PASS
				-10	16.59	0.00882	PASS
				0	19.82	0.01054	PASS
				10	23.31	0.0124	PASS
				20	43.52	0.02315	PASS
				30	28.35	0.01508	PASS
				40	35.84	0.01906	PASS
				50	39.20	0.02085	PASS
		HCH	VN	-30	43.52	0.02279	PASS
				-20	27.25	0.01427	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-10	46.56	0.02438	PASS
				0	30.03	0.01572	PASS
				10	29.12	0.01525	PASS
				20	34.03	0.01782	PASS
				30	17.24	0.00903	PASS
				40	37.19	0.01947	PASS
				50	19.95	0.01045	PASS

8.2 For UMTS

8.2.1Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1900	UMTS/TM1	LCH	TN	VL	6.84	0.00369	PASS
				VN	2.12	0.00114	PASS
				VH	1.65	0.00089	PASS
		MCH	TN	VL	1.51	0.0008	PASS
				VN	3.71	0.00197	PASS
				VH	6.50	0.00346	PASS
		HCH	TN	VL	1.77	0.00093	PASS
				VN	3.28	0.00172	PASS
				VH	2.41	0.00126	PASS

8.2.2Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1900	UMTS/TM1	LCH	VN	-30	3.91	0.00211	PASS
				-20	3.72	0.00201	PASS
				-10	0.24	0.00013	PASS
				0	6.30	0.0034	PASS
				10	4.32	0.00233	PASS
				20	3.77	0.00204	PASS
				30	1.21	0.00065	PASS
				40	2.93	0.00158	PASS
				50	5.66	0.00306	PASS
		MCH	VN	-30	4.46	0.00237	PASS
				-20	3.10	0.00165	PASS
				-10	2.04	0.00109	PASS
				0	4.93	0.00262	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	4.76	0.00253	PASS
				20	2.08	0.00111	PASS
				30	2.03	0.00108	PASS
				40	4.01	0.00213	PASS
				50	0.41	0.00022	PASS
		HCH	VN	-30	3.04	0.00159	PASS
				-20	5.39	0.00283	PASS
				-10	1.14	0.0006	PASS
				0	0.52	0.00027	PASS
				10	2.82	0.00148	PASS
				20	1.42	0.00074	PASS
				30	1.05	0.00055	PASS
				40	4.32	0.00226	PASS
				50	3.43	0.0018	PASS

END

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