



# Appendix for test report

## 1 Appendix\_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	31.85	28.78	38.5	PASS
		MCH	32.11	28.52	38.5	PASS
		HCH	32.04	28.47	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.32	29.02	33	PASS
		MCH	29.07	28.77	33	PASS
		HCH	29.53	29.23	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,

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP=Signal Generator Level

Note2: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMS



## 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	0.15	13	PASS
		MCH	0.13	13	PASS
		HCH	0.15	13	PASS

### 3Appendix\_C: Modulation Characteristics

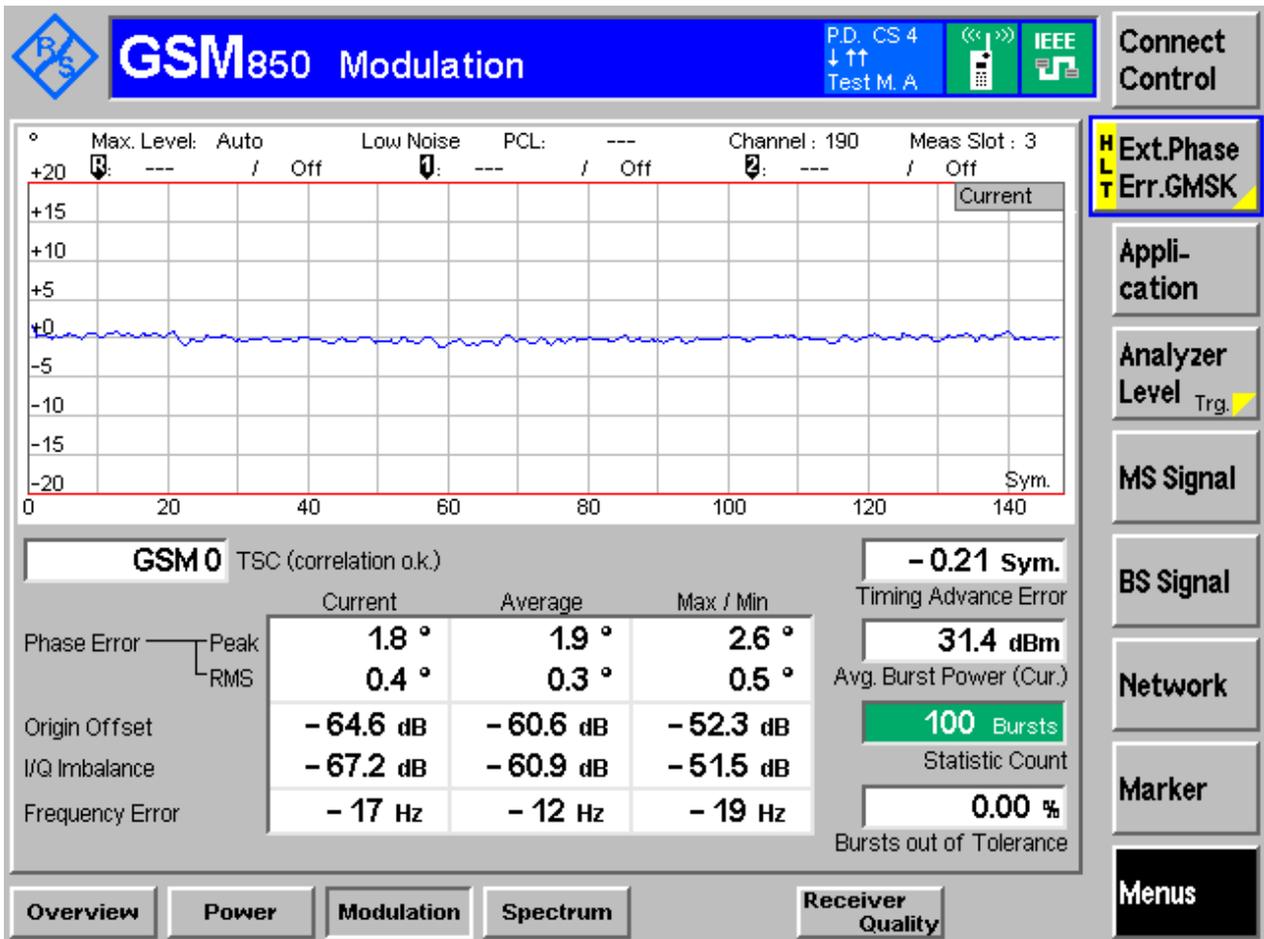
#### Part I - Test Plots

#### 3.1 For GSM

#### 3.1.1 Test Band = GSM850

#### 3.1.1.1 Test Mode = GSM/TM1

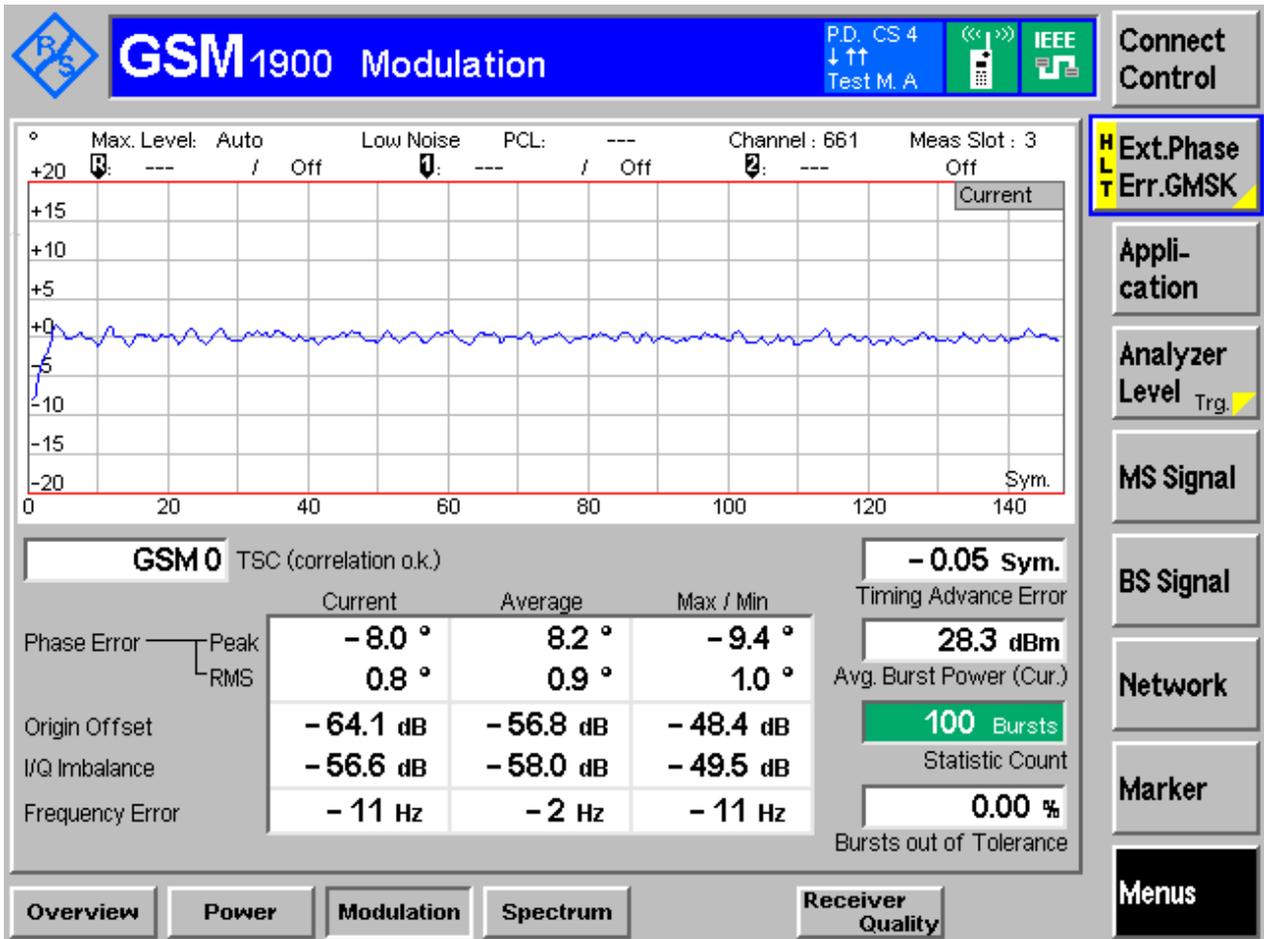
#### 3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 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	245.50	317.21	Pass
		MCH	248.77	314.85	Pass
		HCH	242.98	316.44	Pass
GSM1900	GSM/TM1	LCH	245.45	315.60	Pass
		MCH	244.40	316.05	Pass
		HCH	247.04	316.52	Pass



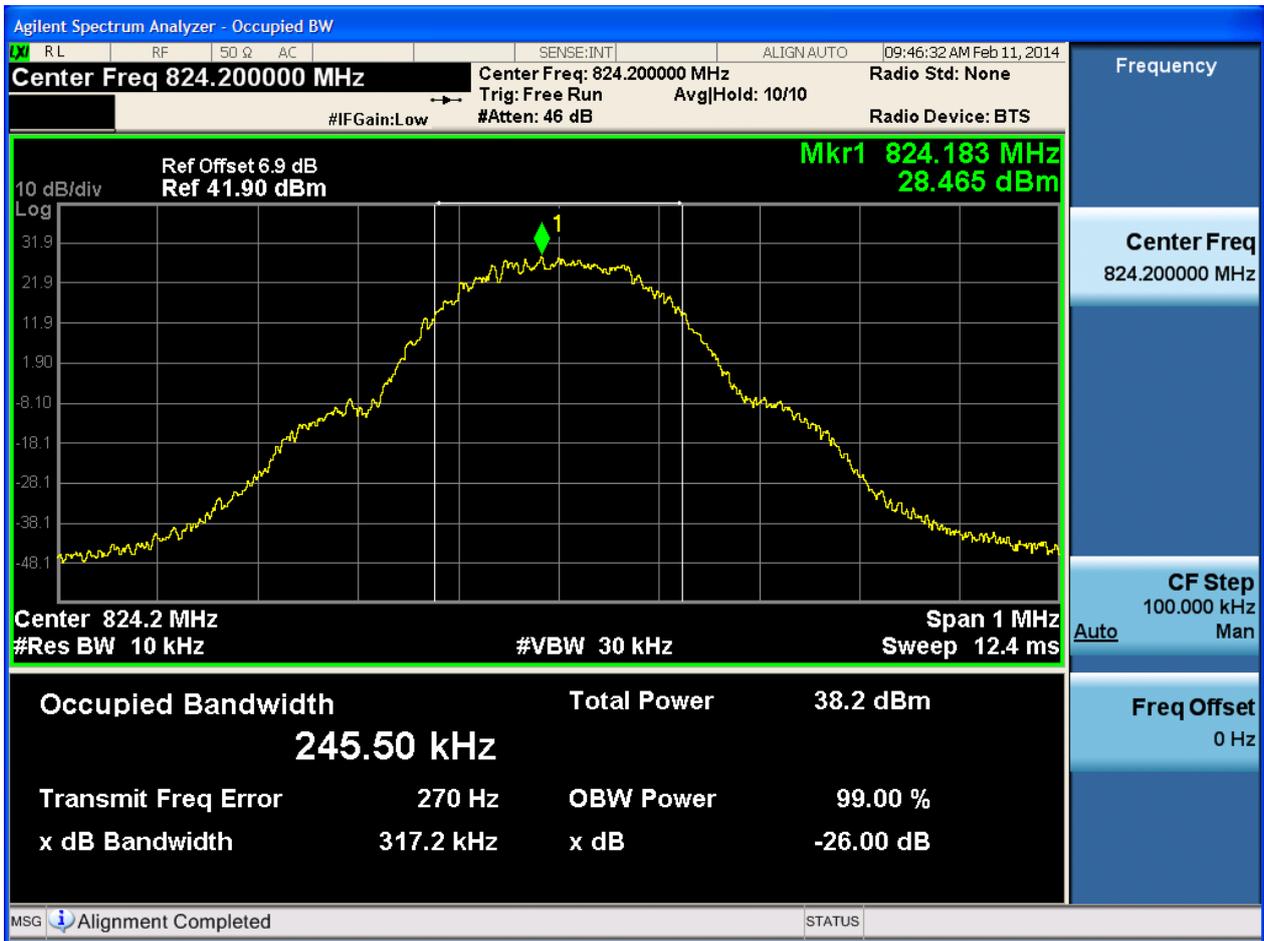
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

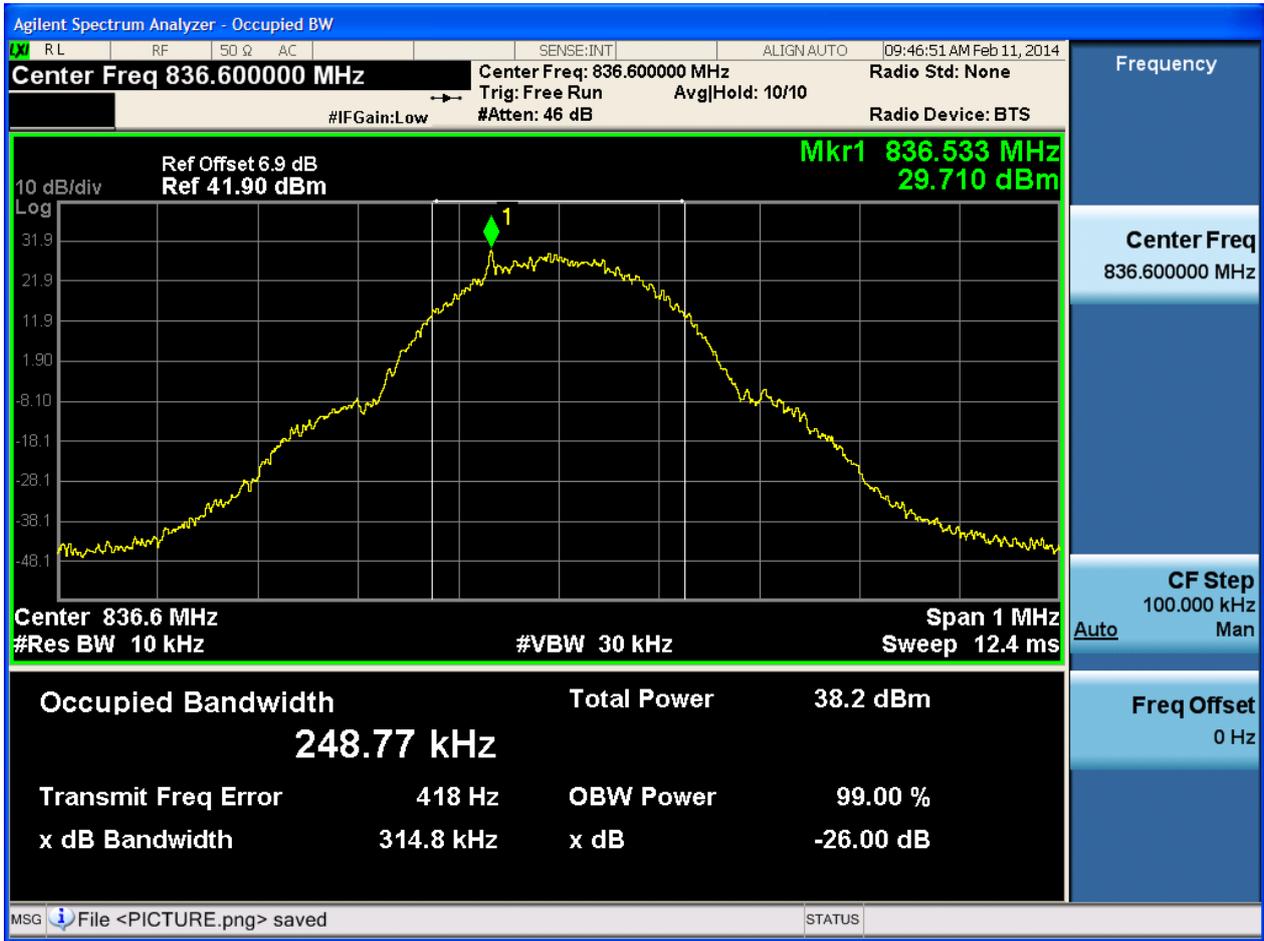
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



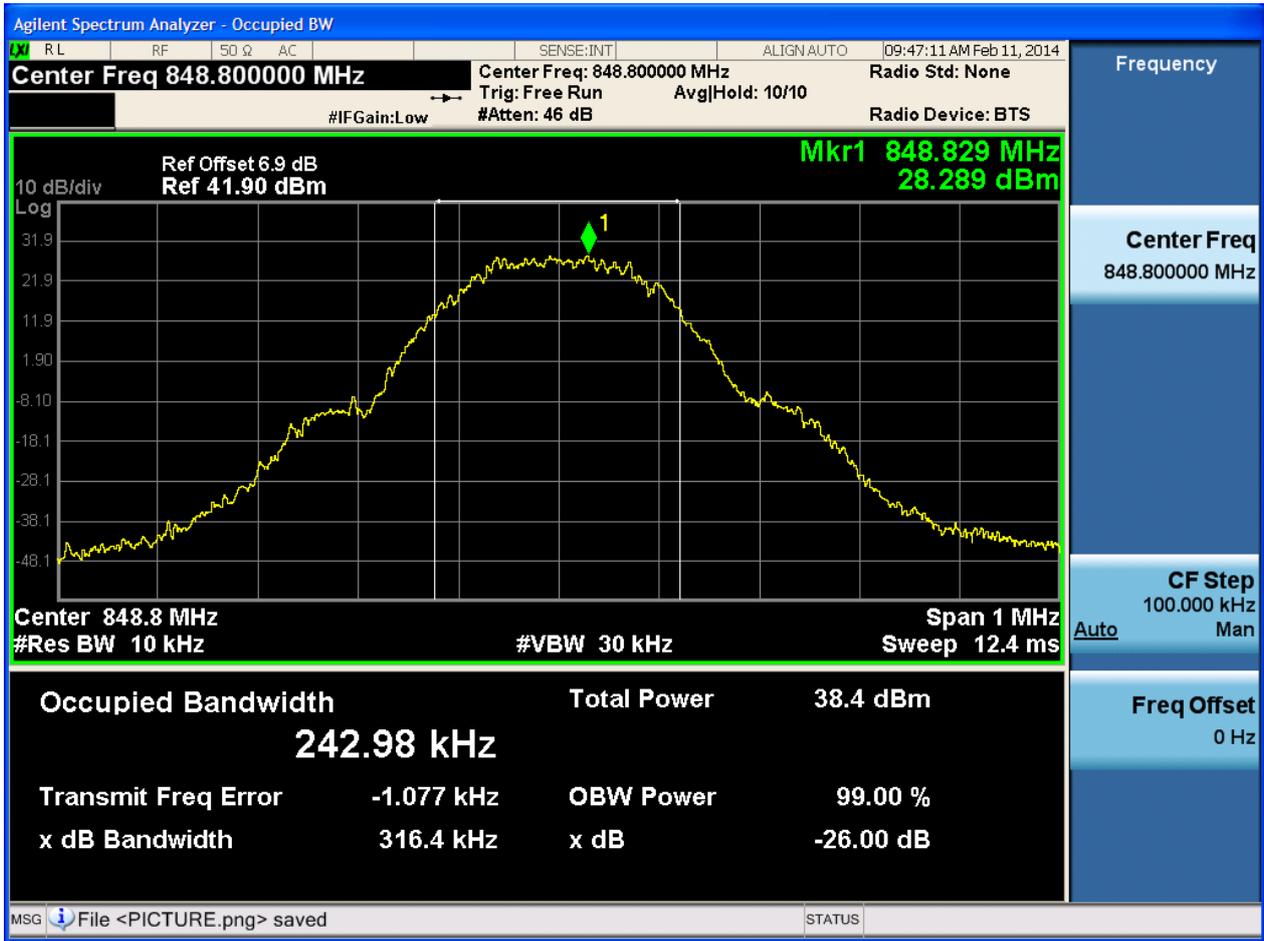


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

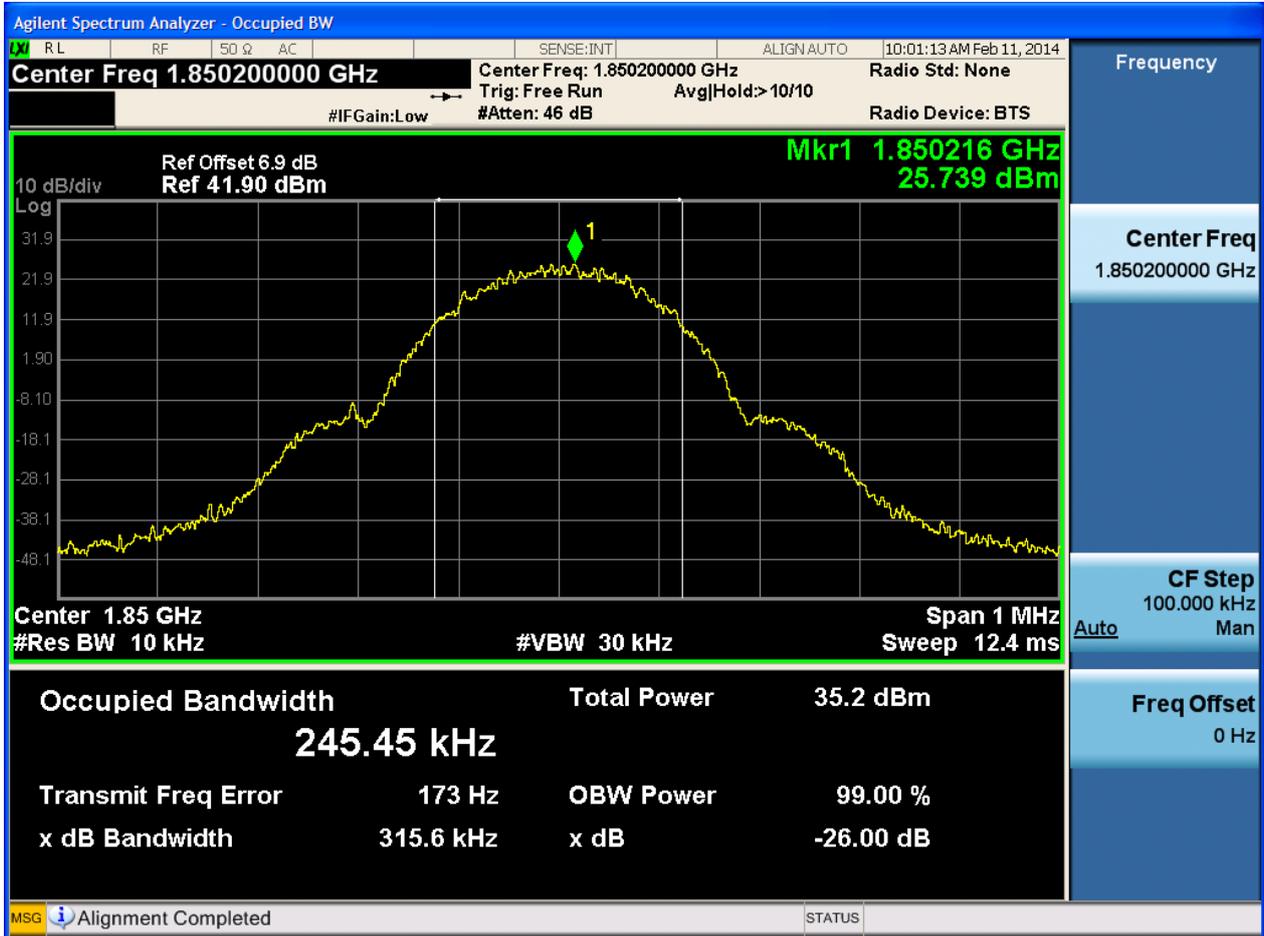




4.1.2 Test Band = GSM1900

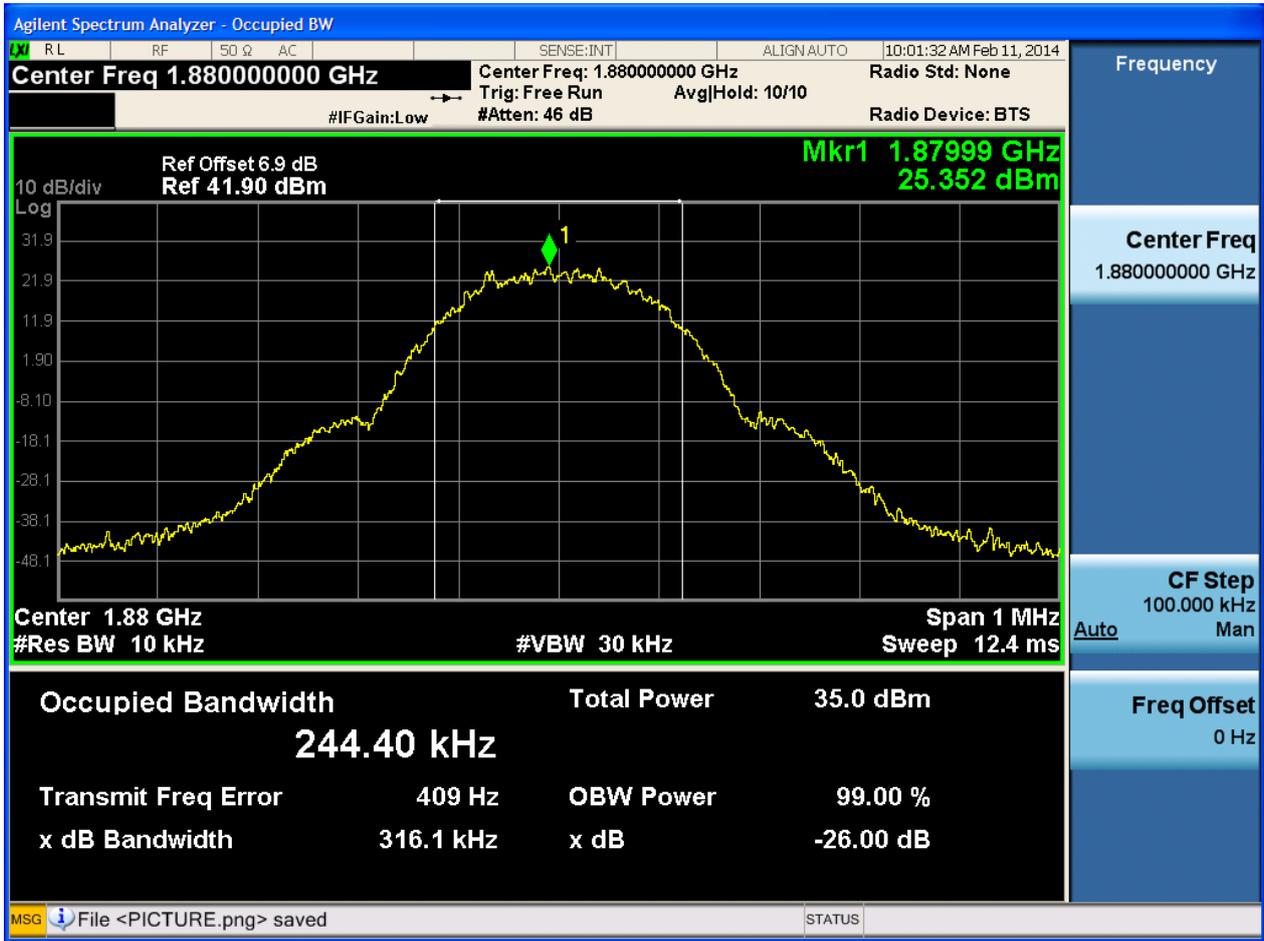
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



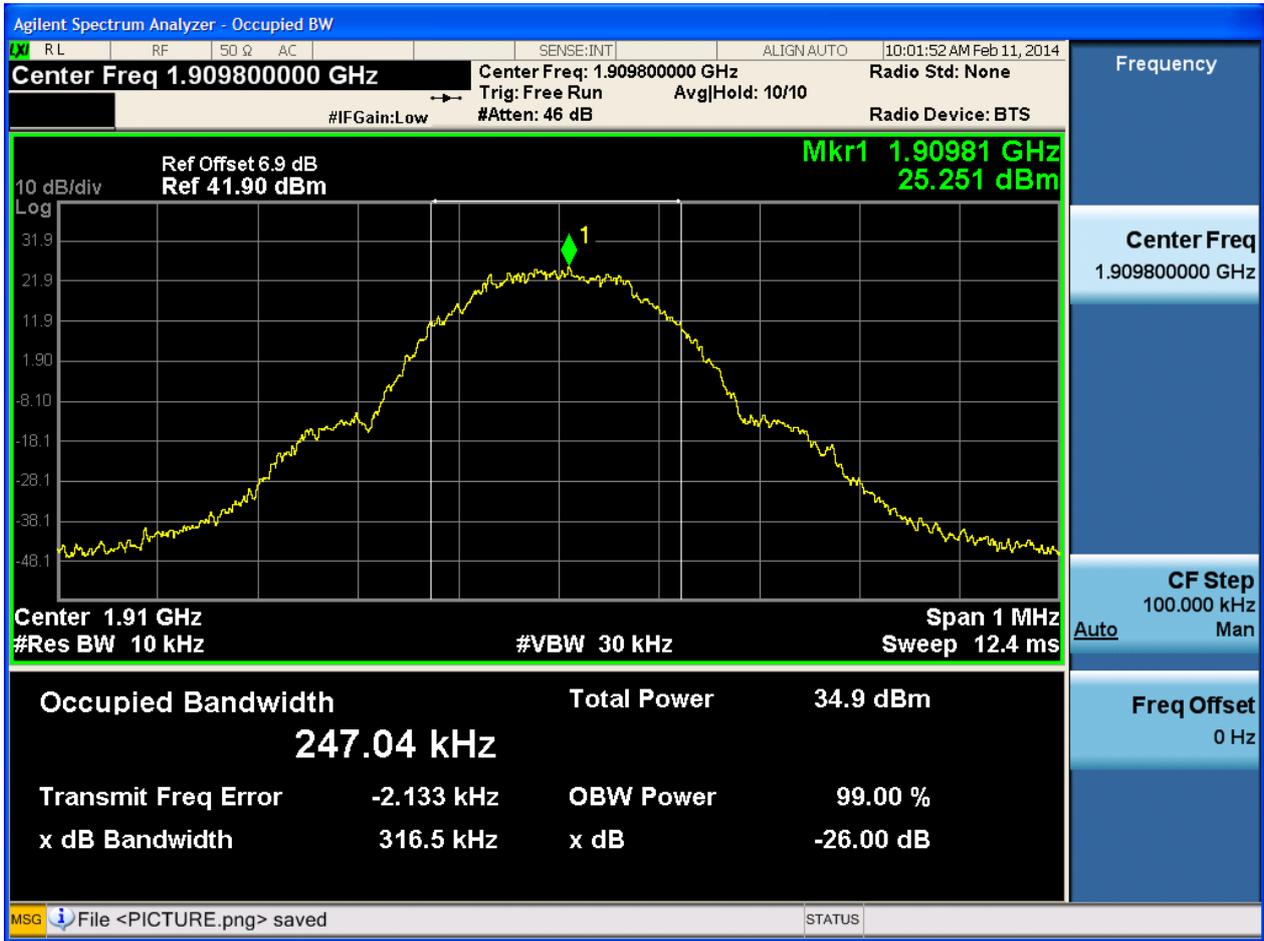


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH





## 5Appendix\_E: Band Edges Compliance

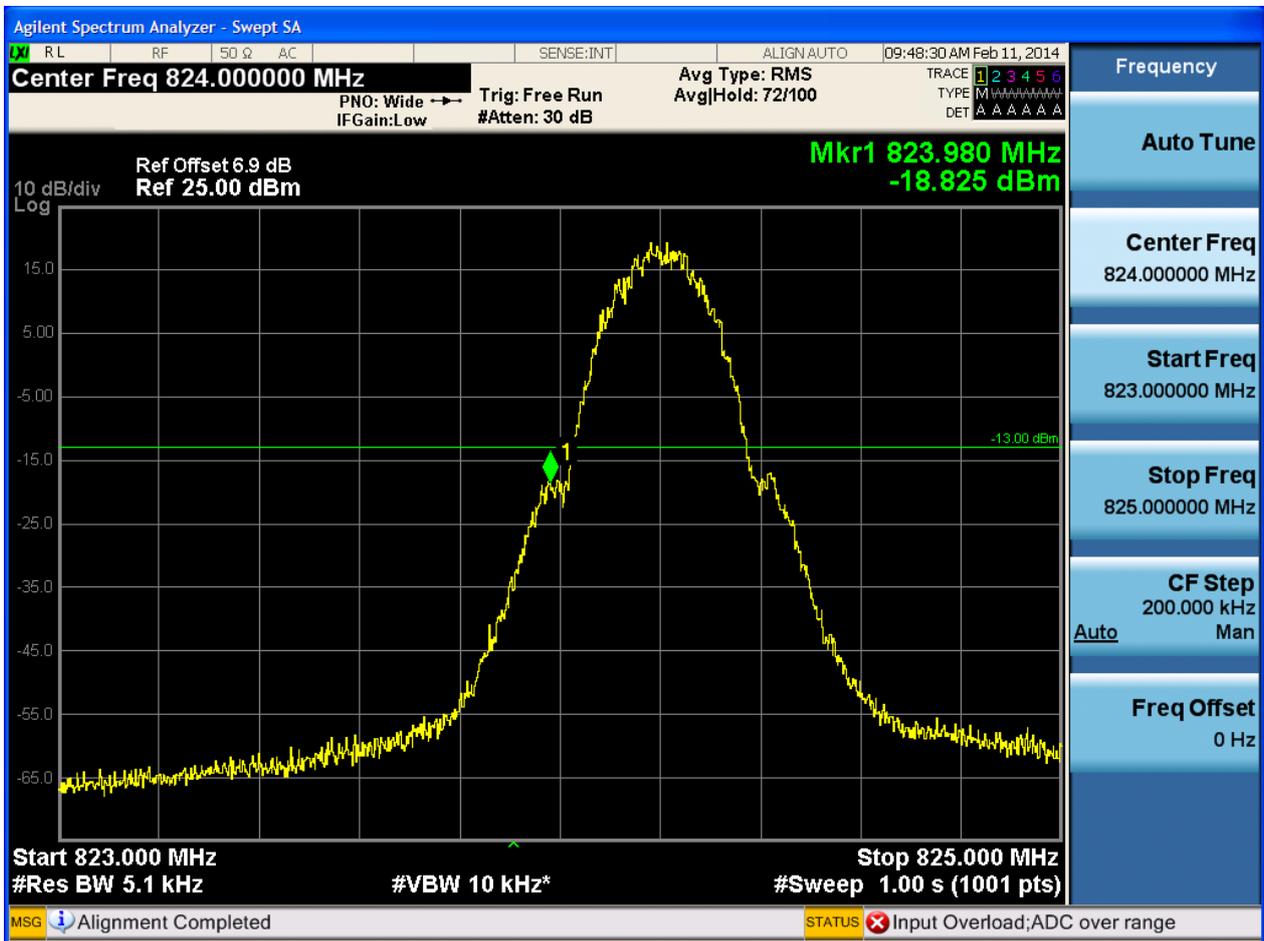
### Part I - Test Plots

#### 5.1 For GSM

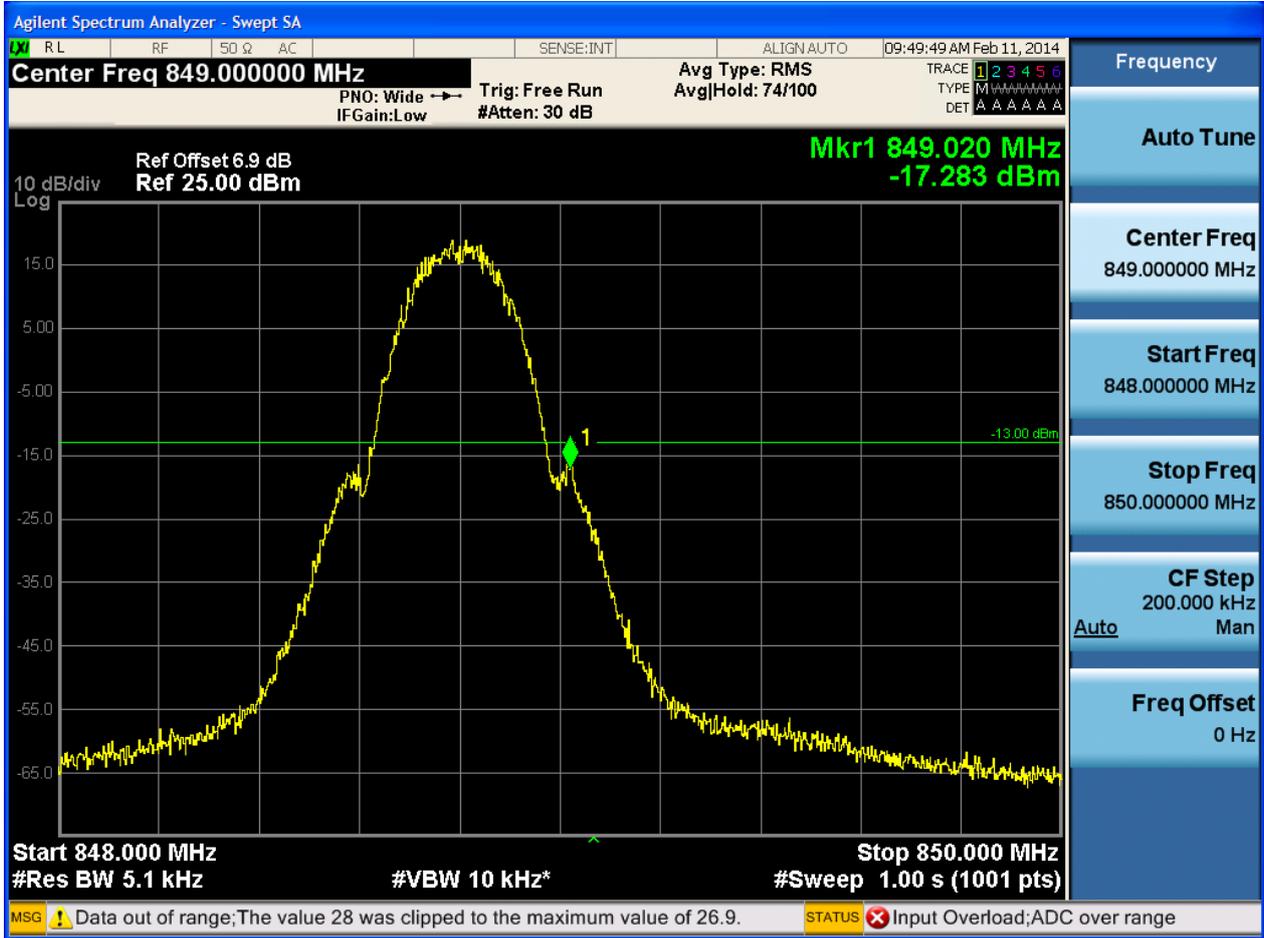
##### 5.1.1 Test Band = GSM850

##### 5.1.1.1 Test Mode = GSM/TM1

##### 5.1.1.1.1 Test Channel = LCH



5.1.1.1.2 Test Channel = HCH

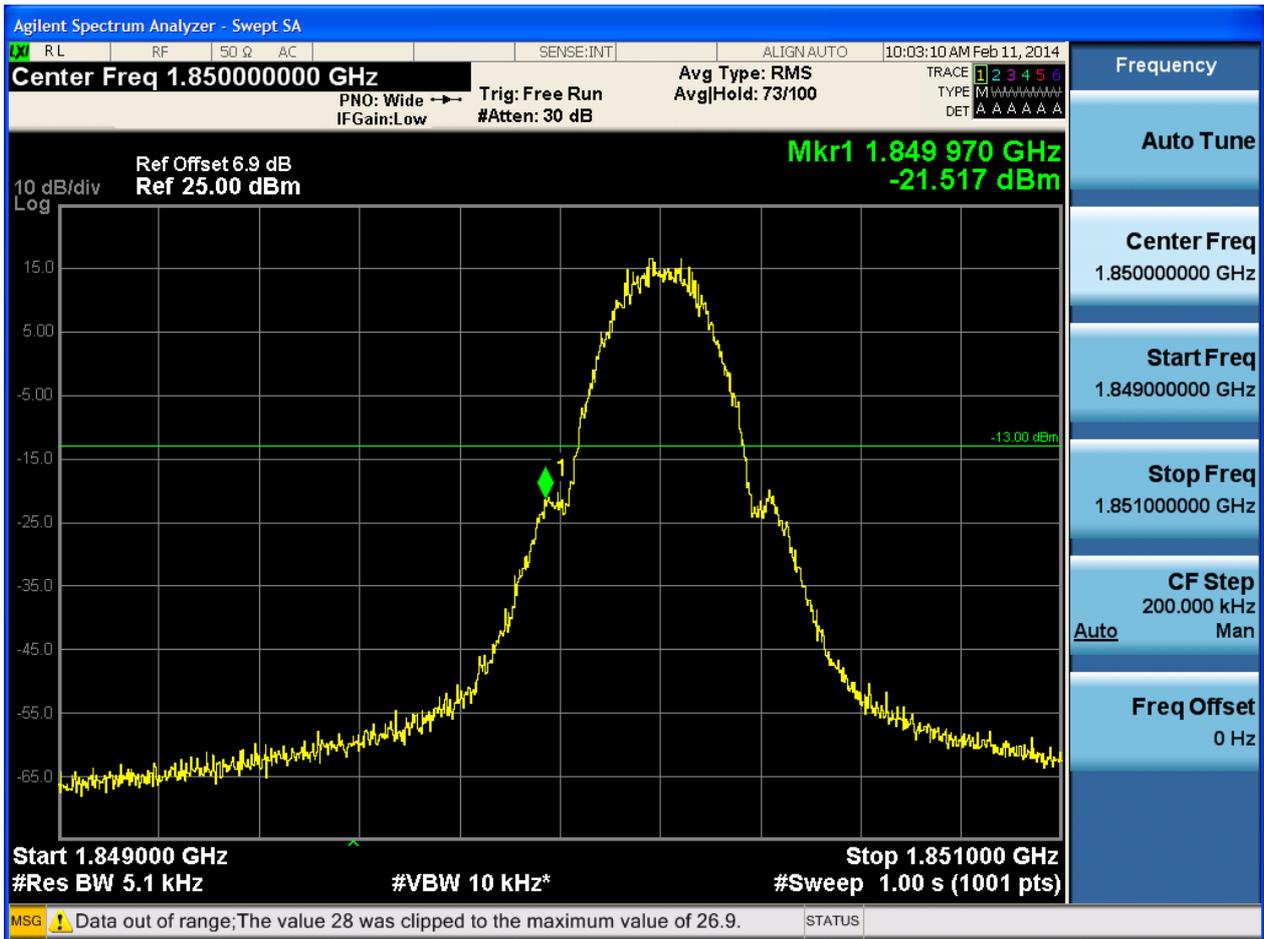




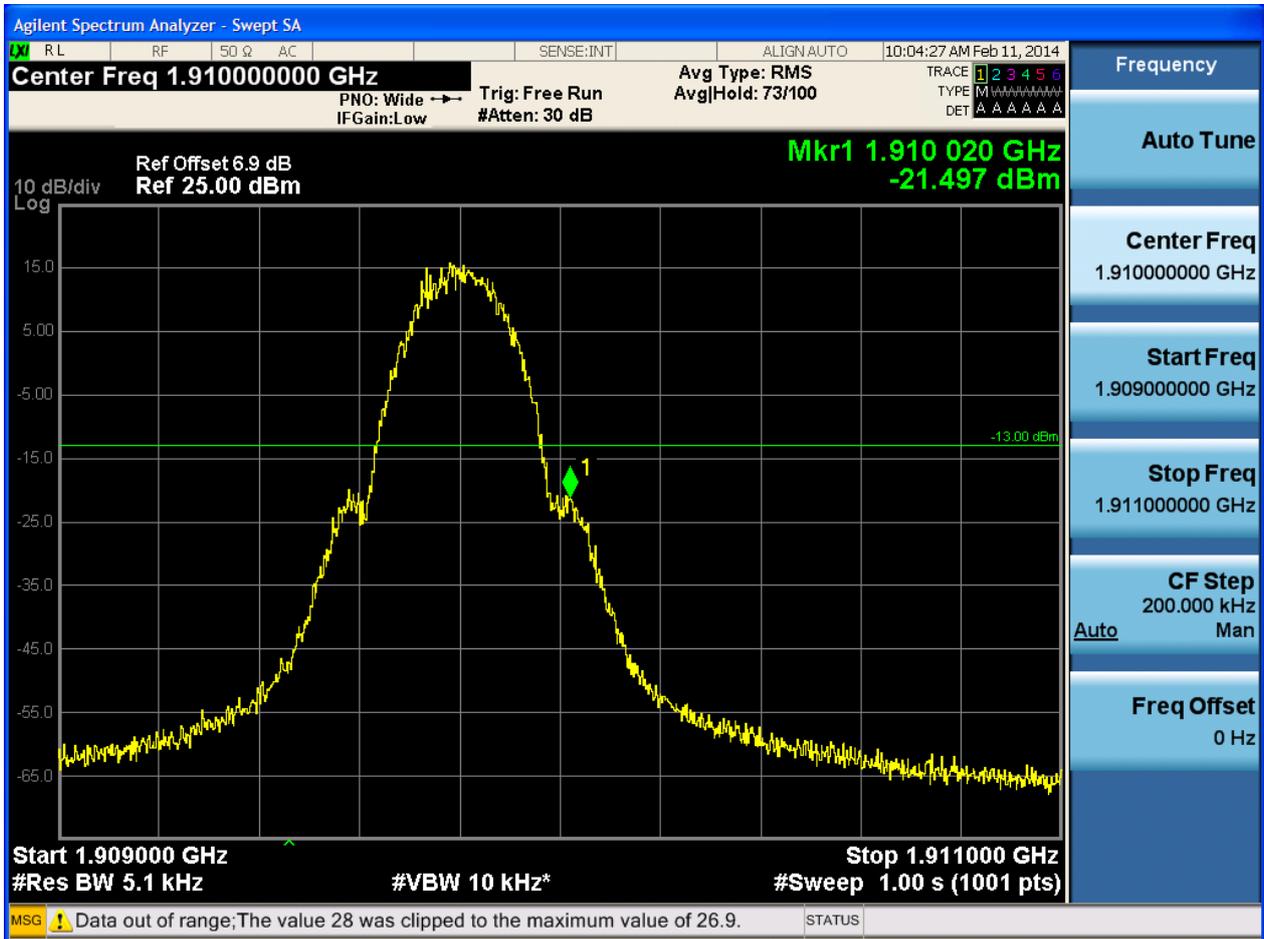
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 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

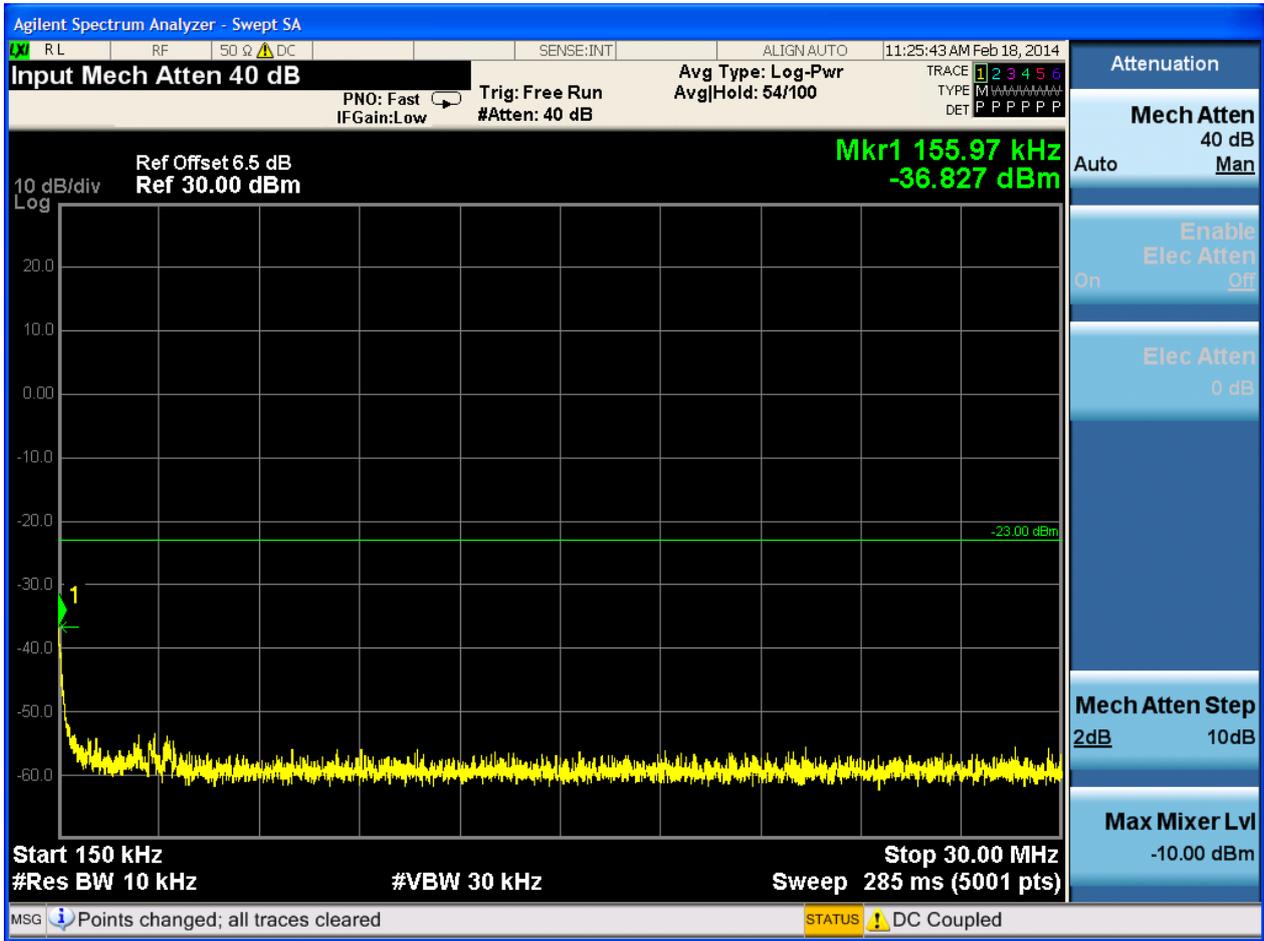
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##### 1.1.1 Test Band = GSM850

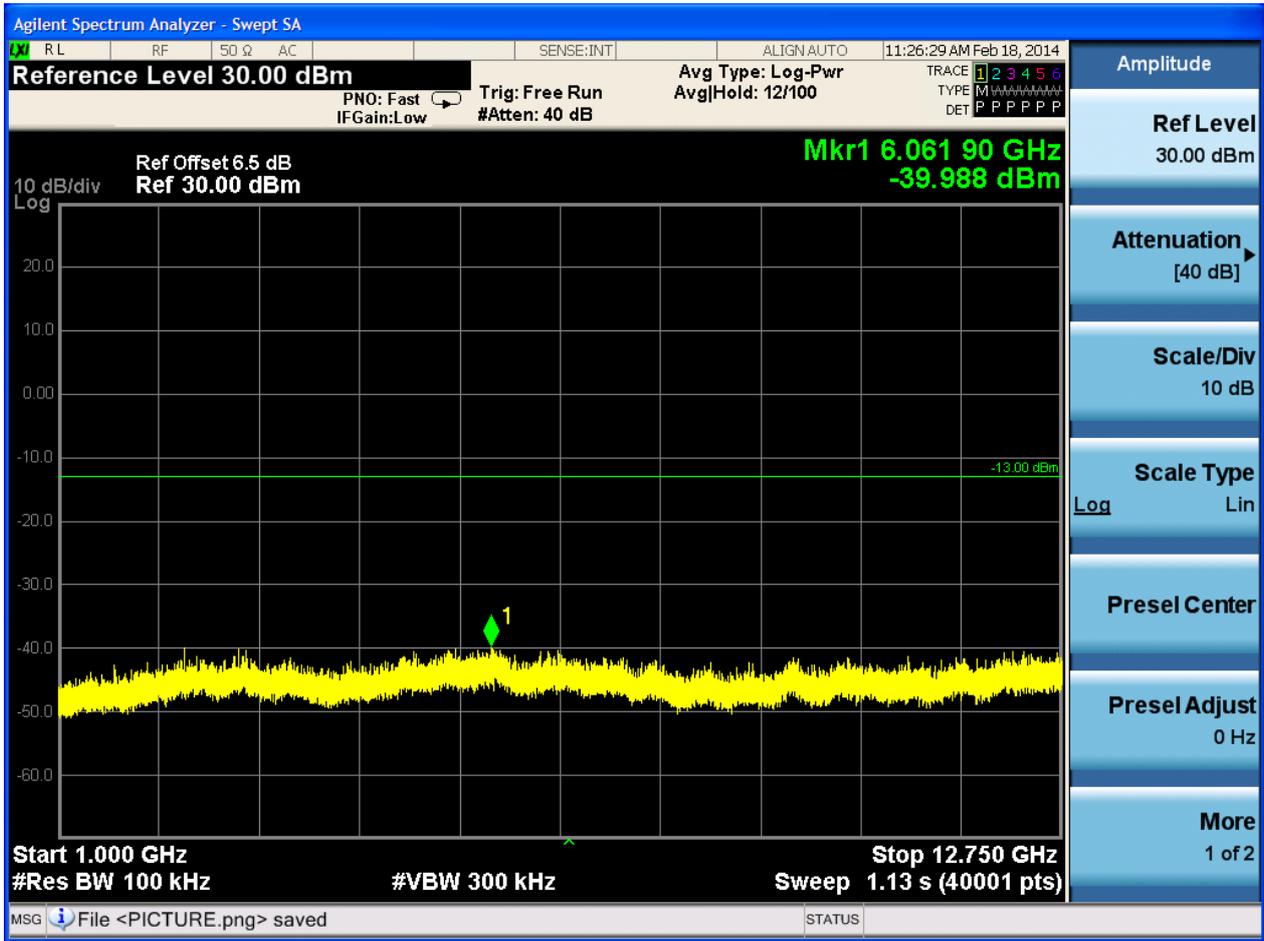
##### 1.1.1.1 Test Mode = GSM/TM1

##### 1.1.1.1.1 Test Channel = LCH



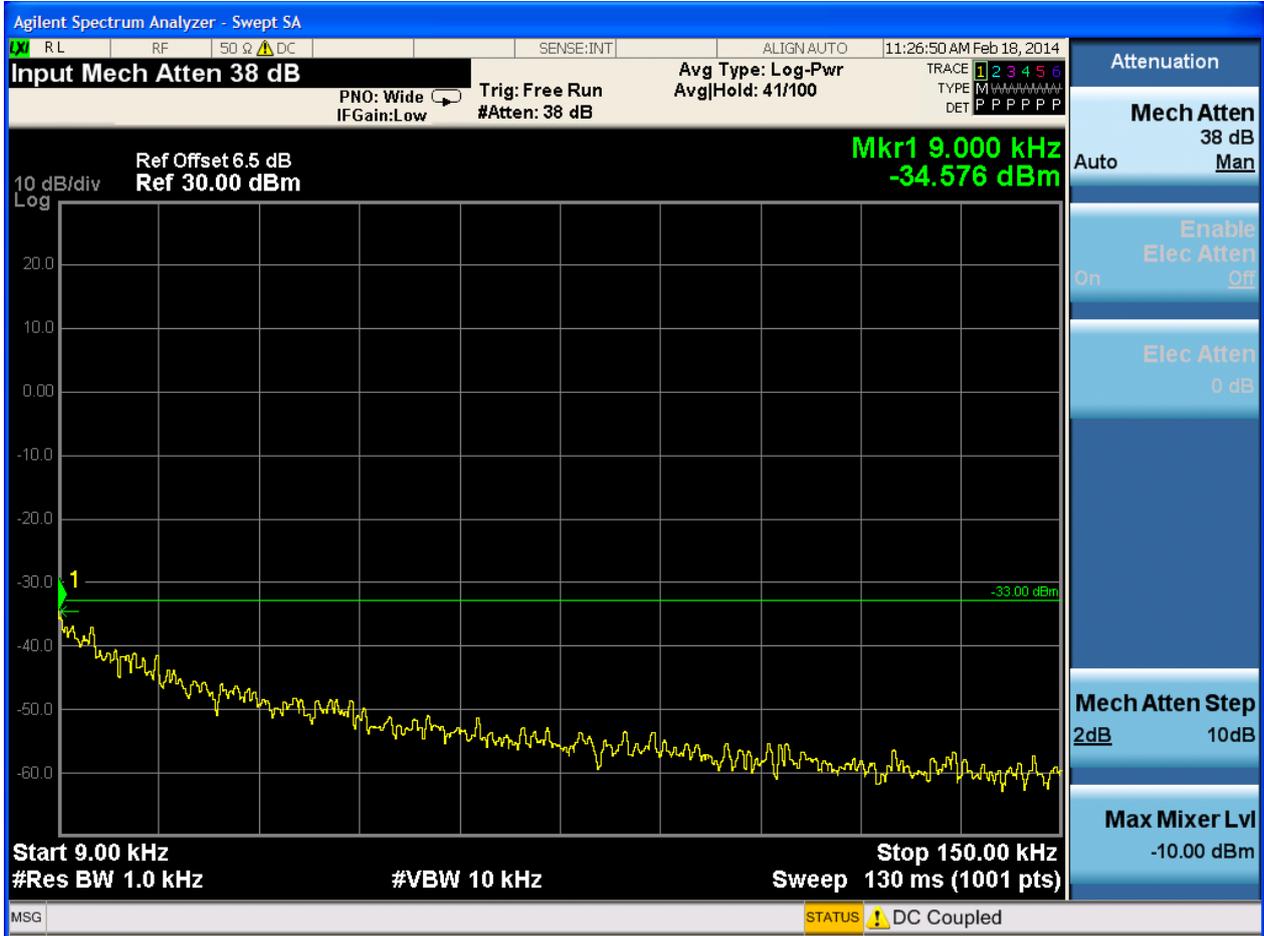


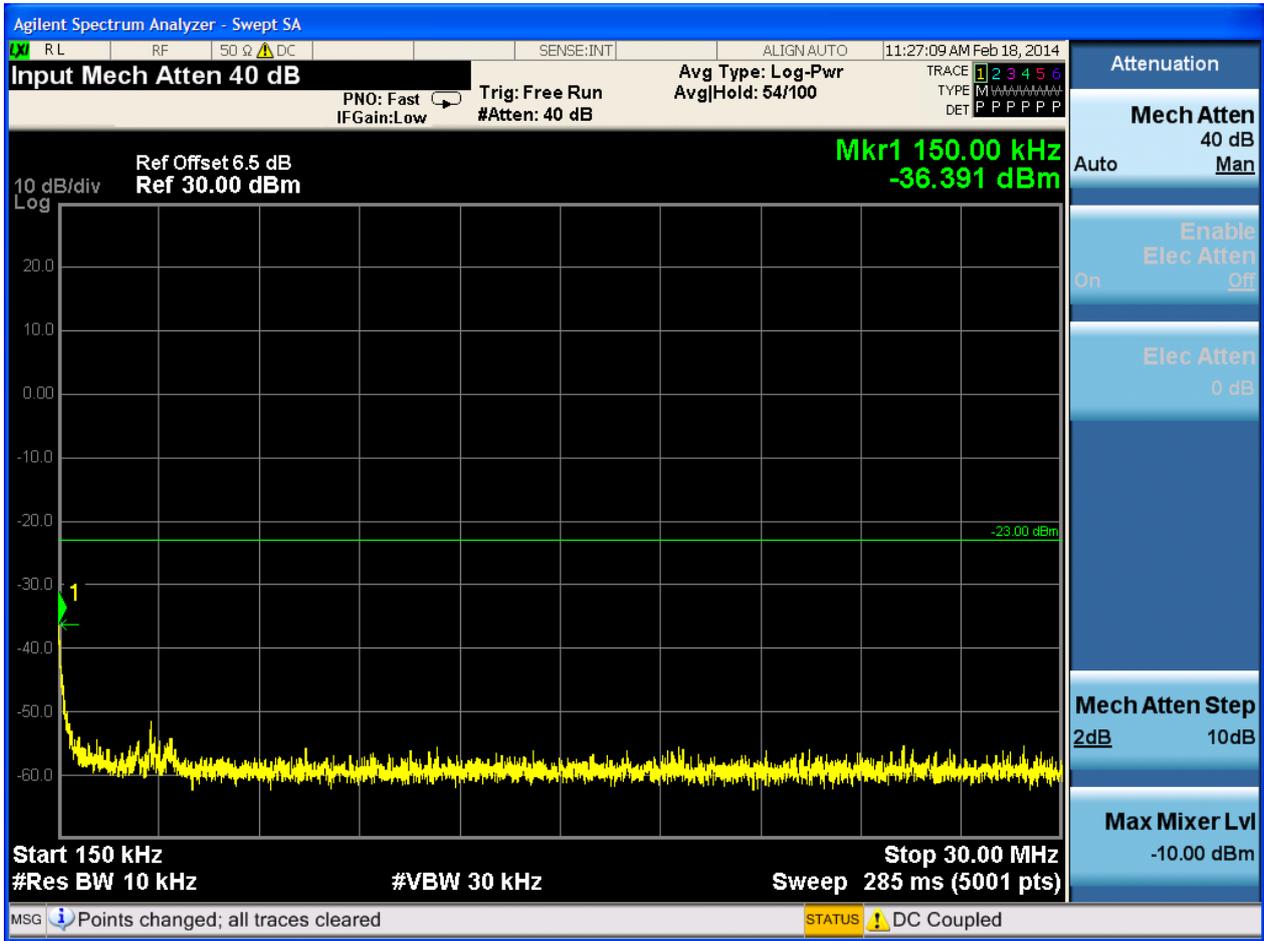


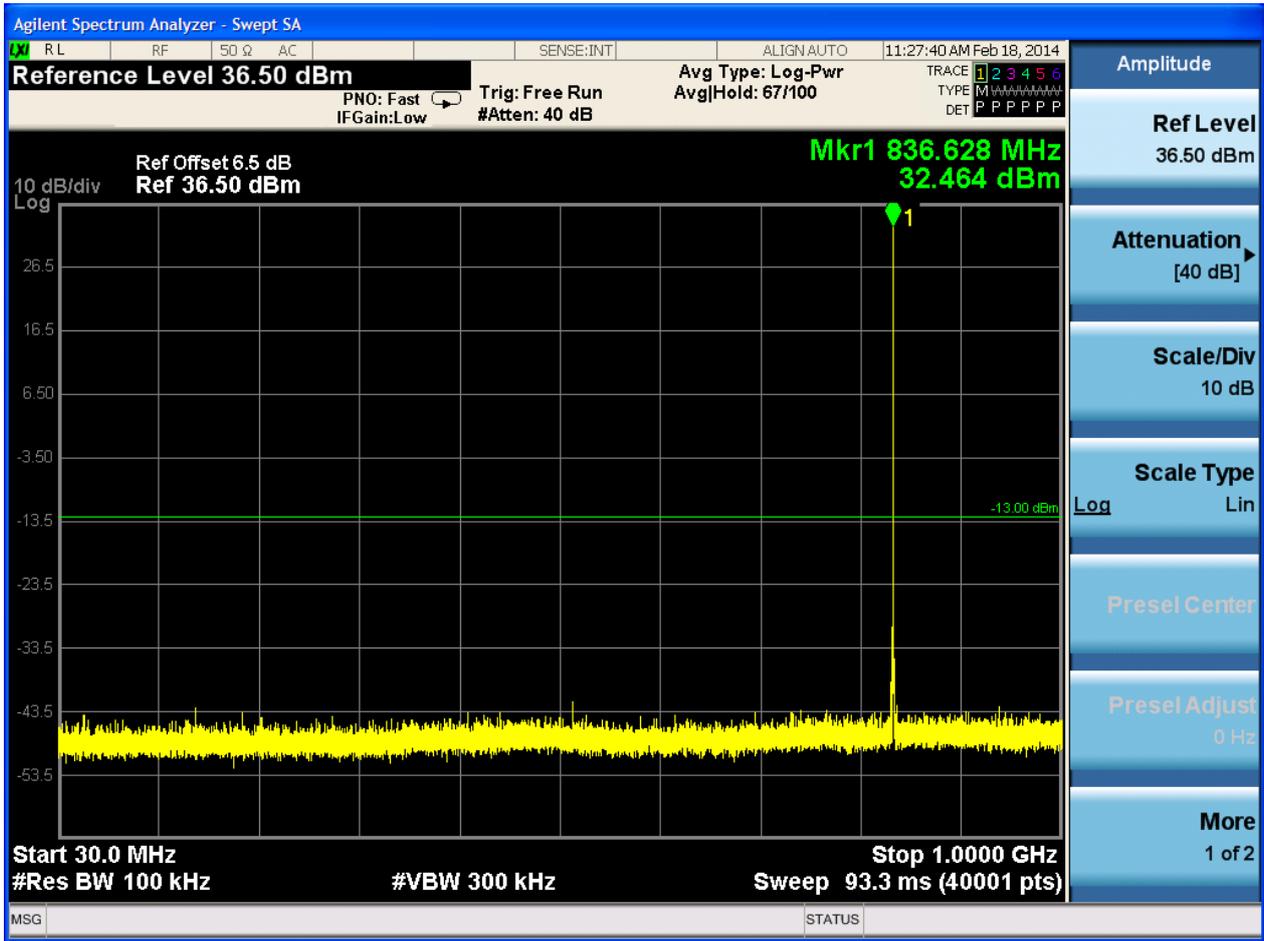


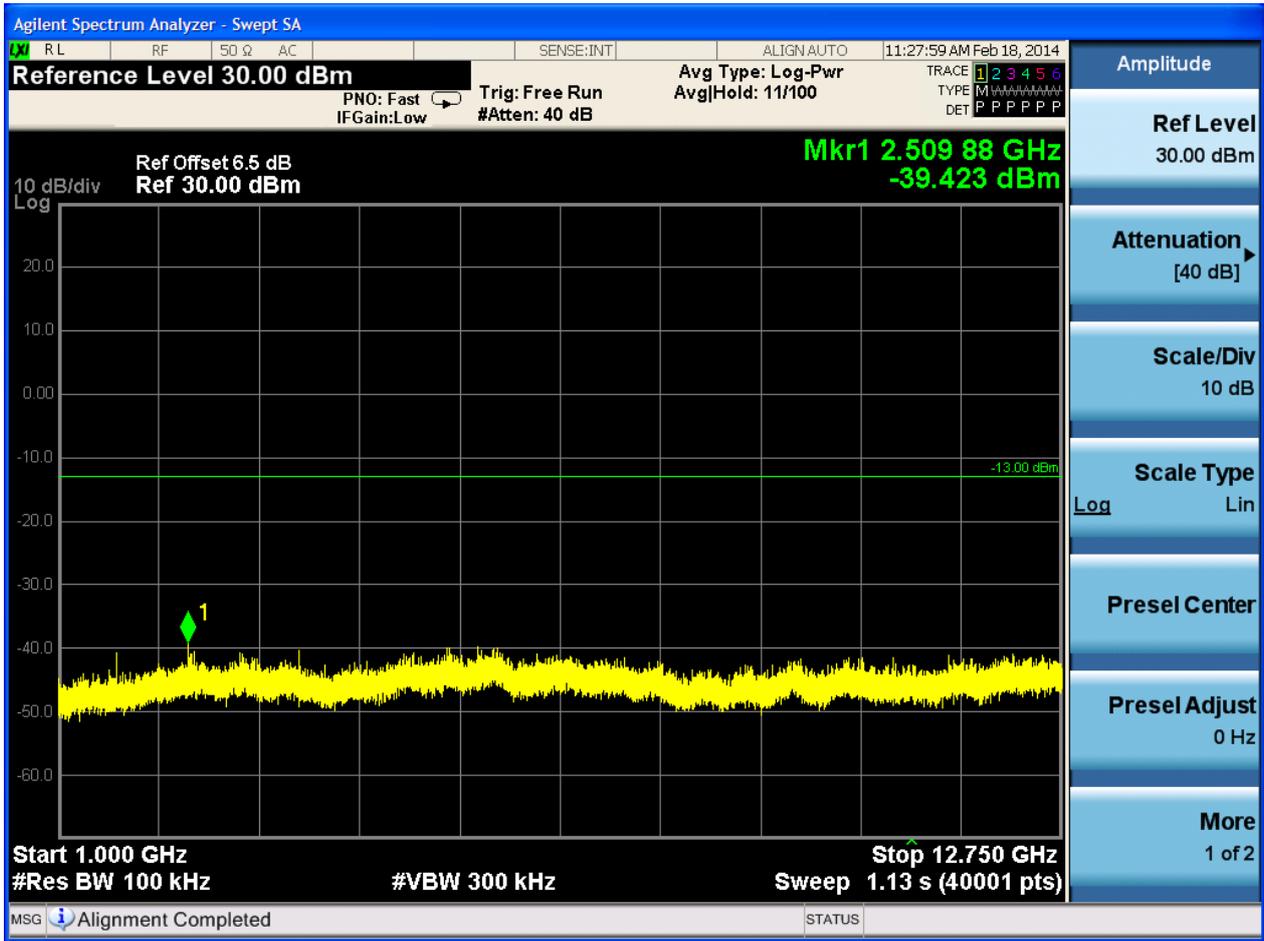


1.1.1.1.2 Test Channel = MCH



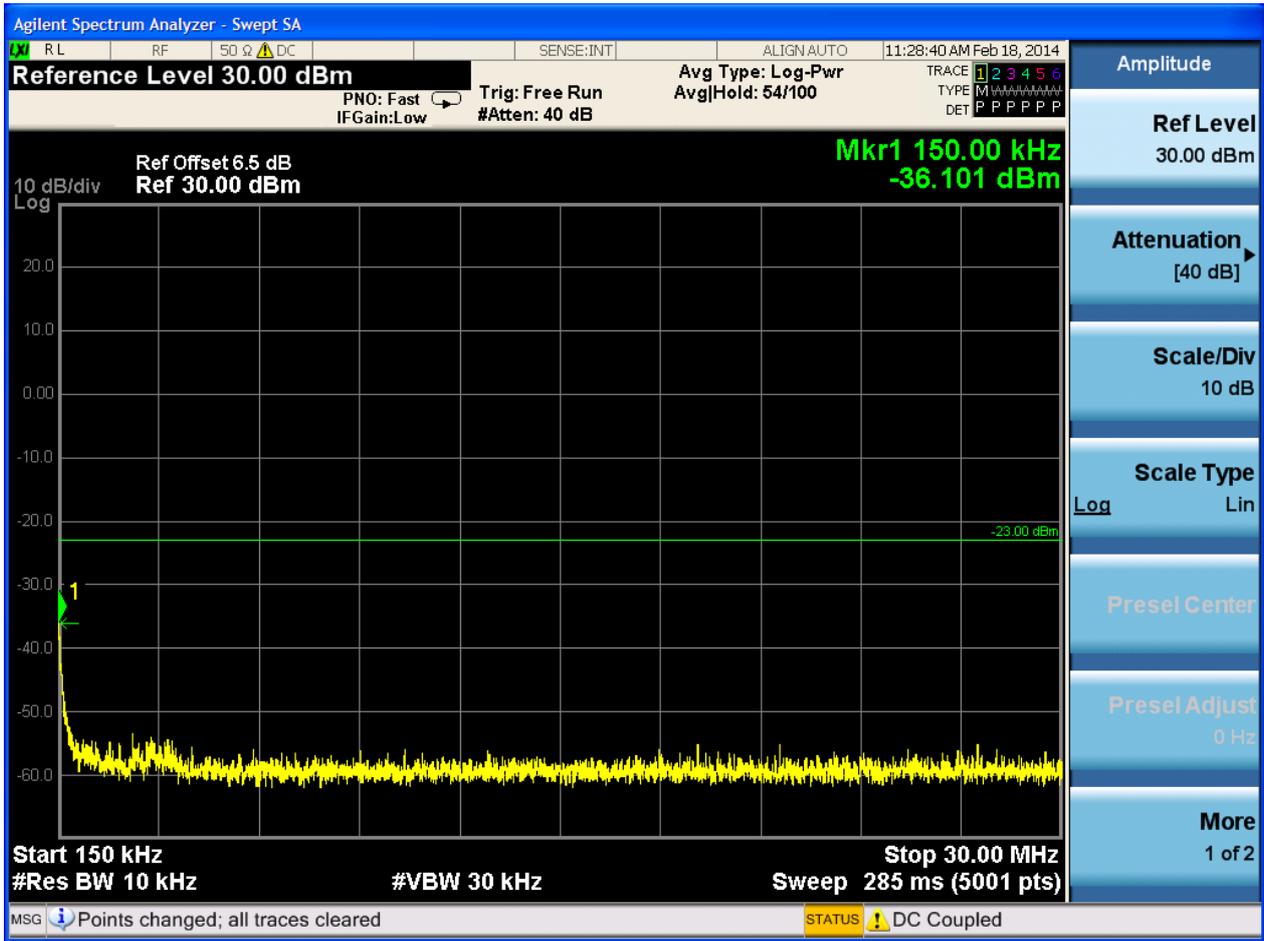


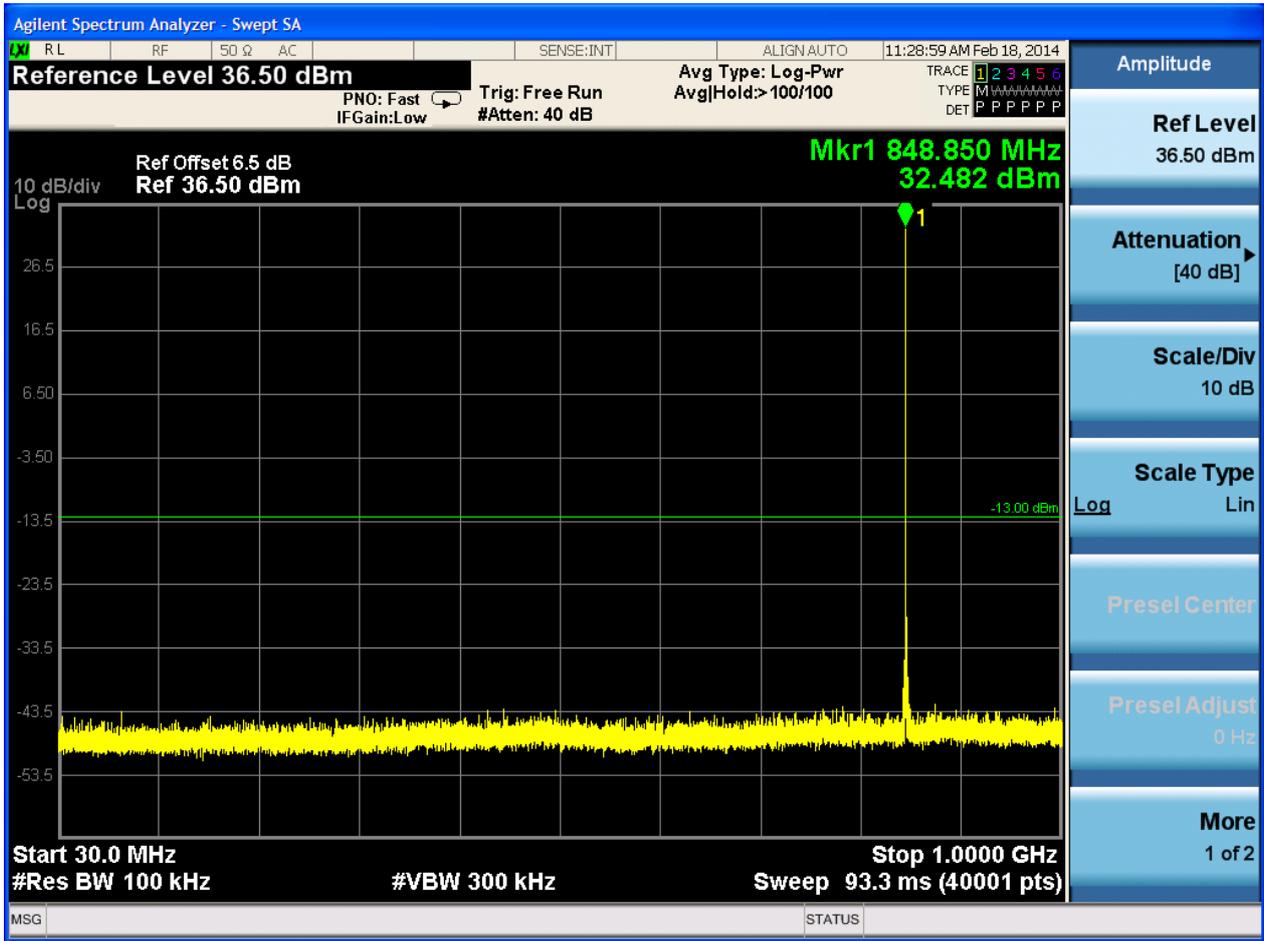




1.1.1.1.3 Test Channel = HCH









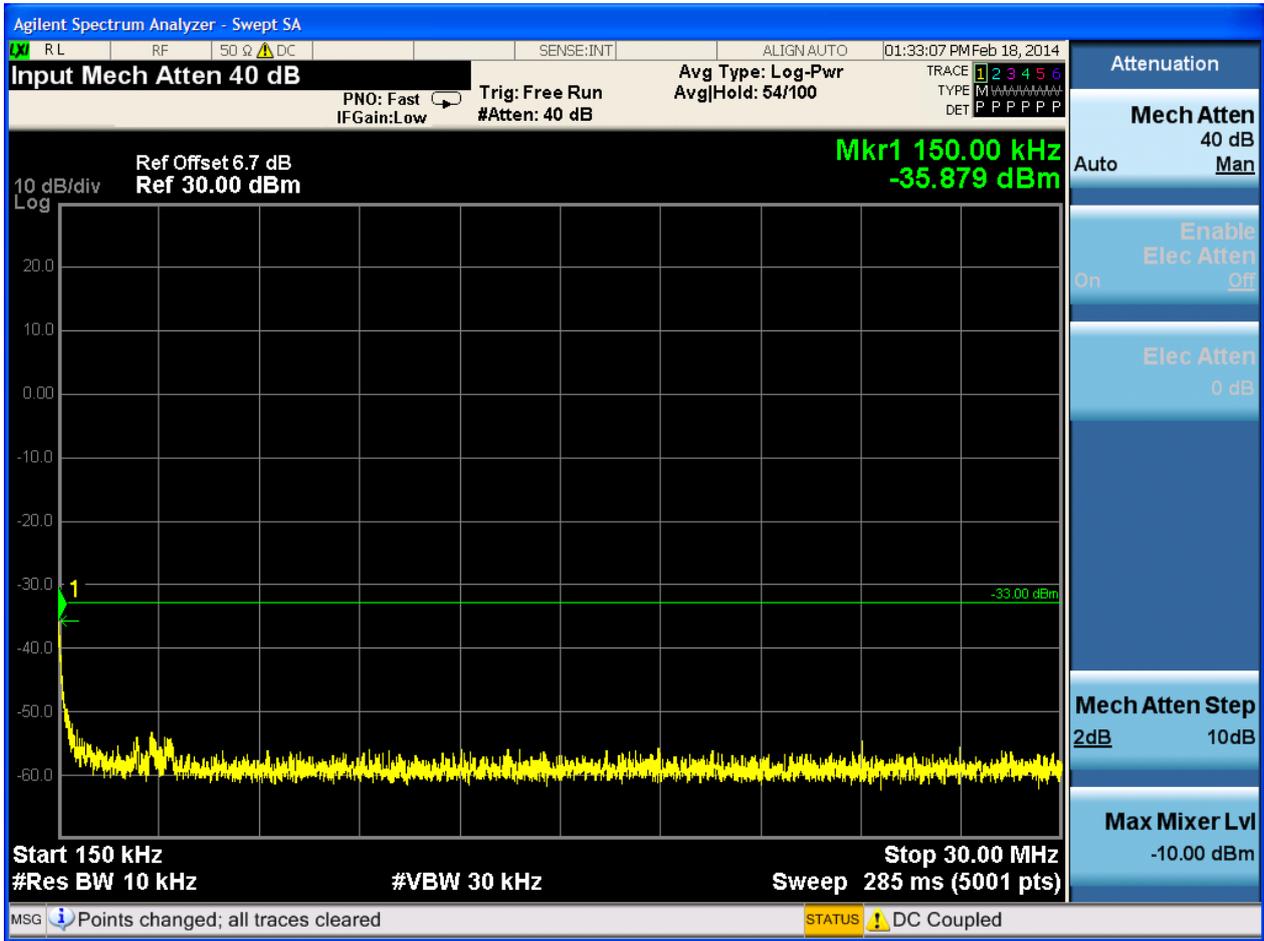


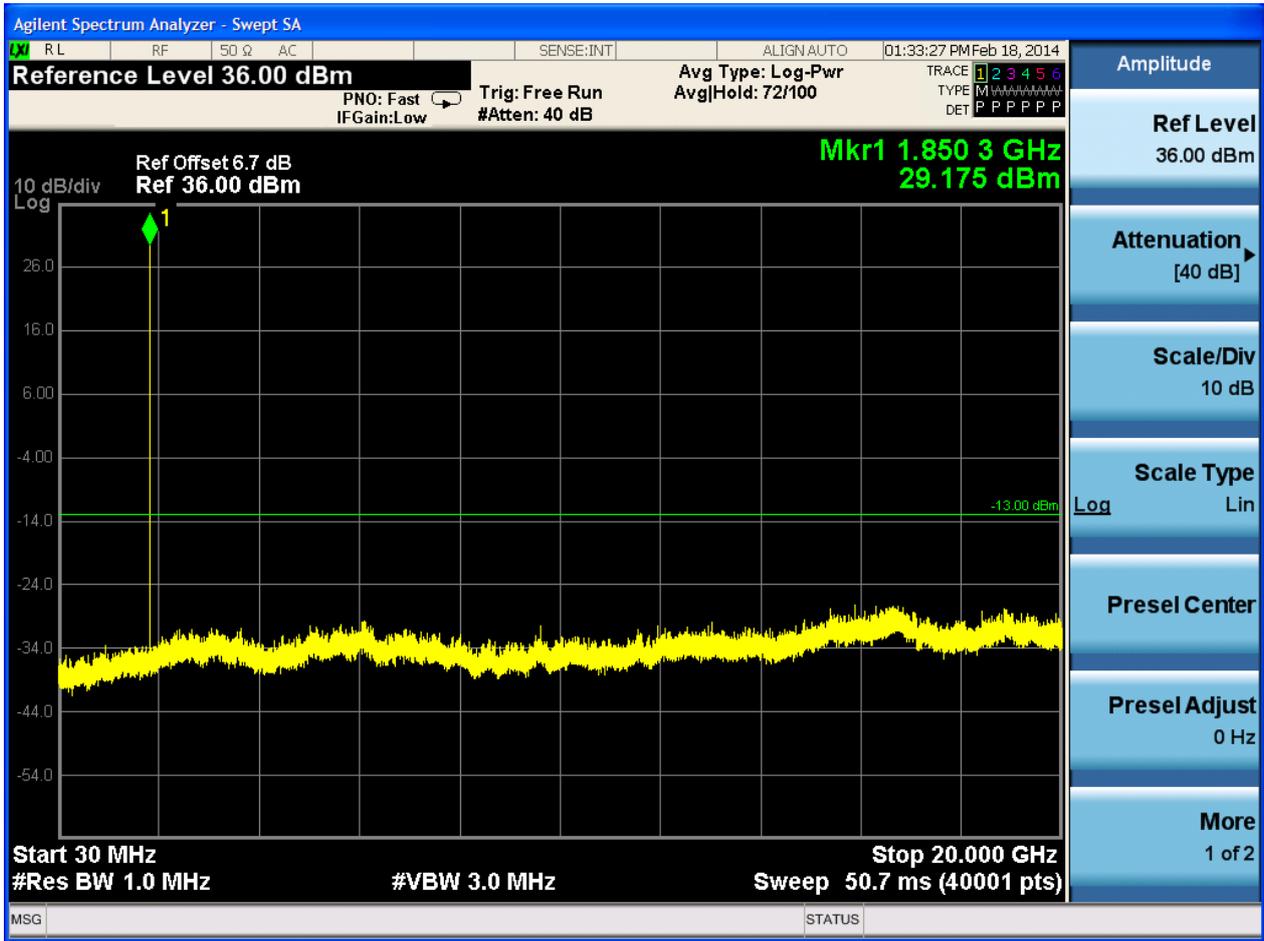
1.1.2 Test Band = GSM1900

1.1.2.1 Test Mode = GSM/TM1

1.1.1.2.1 Test Channel = LCH

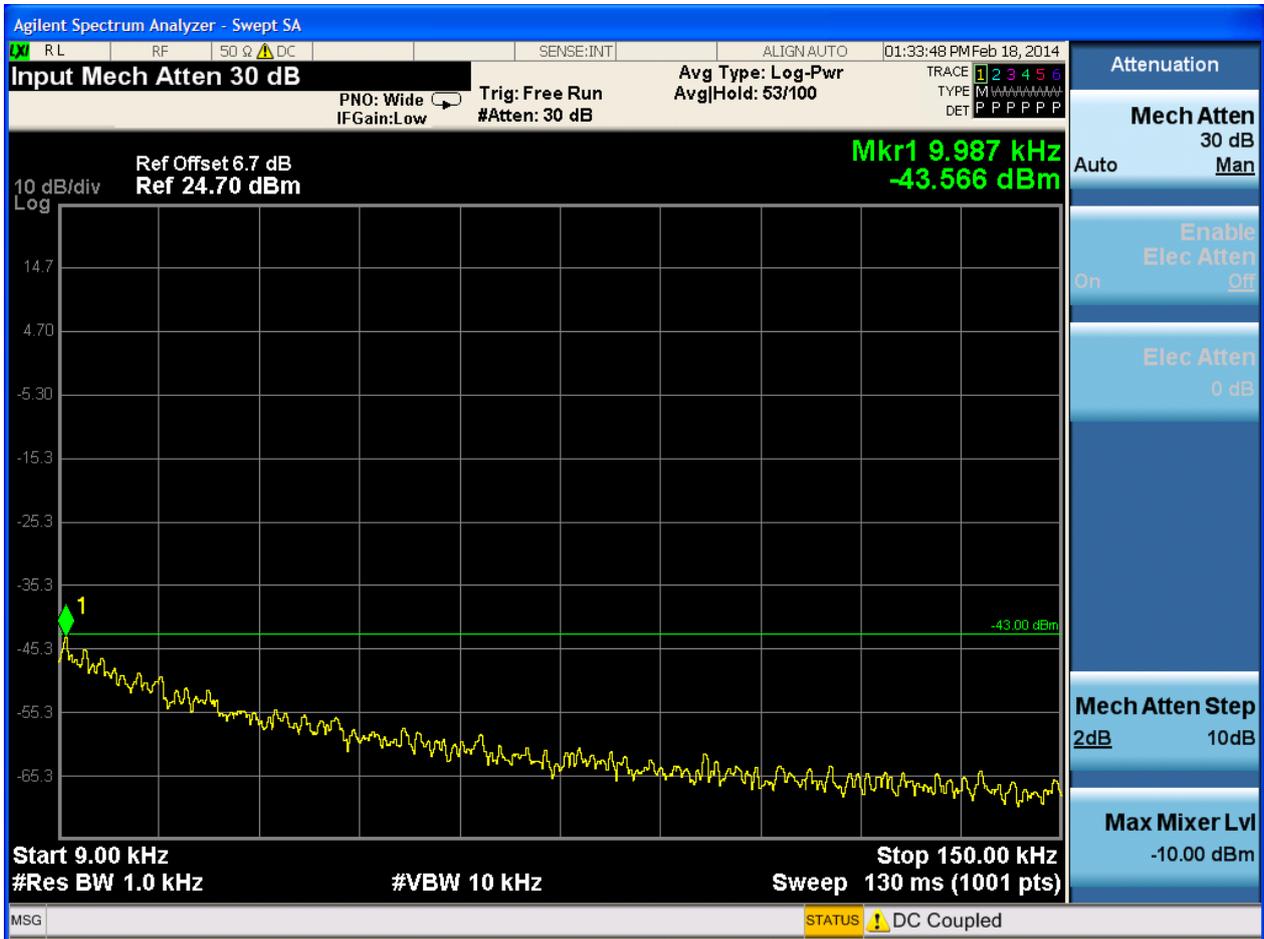


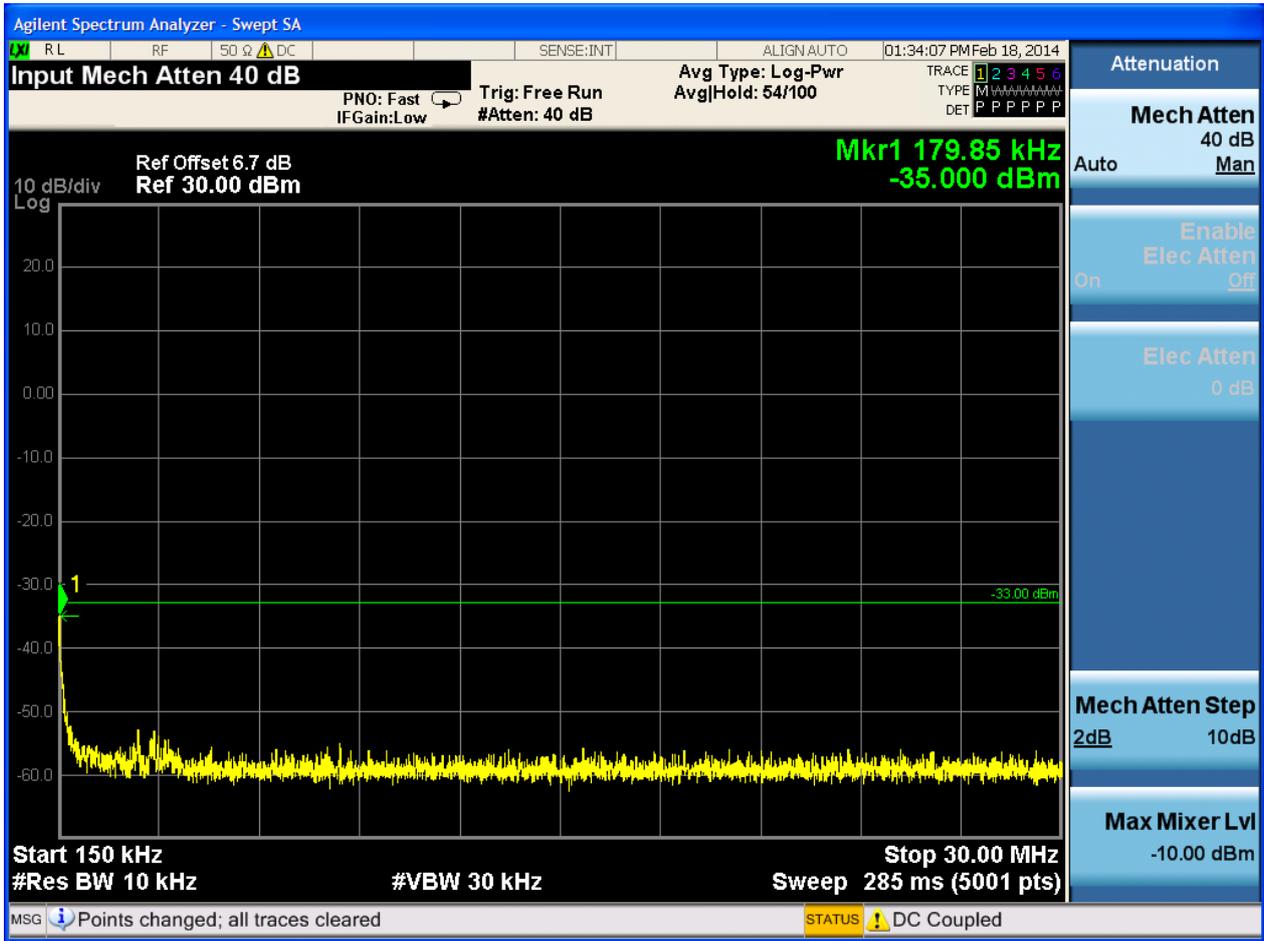


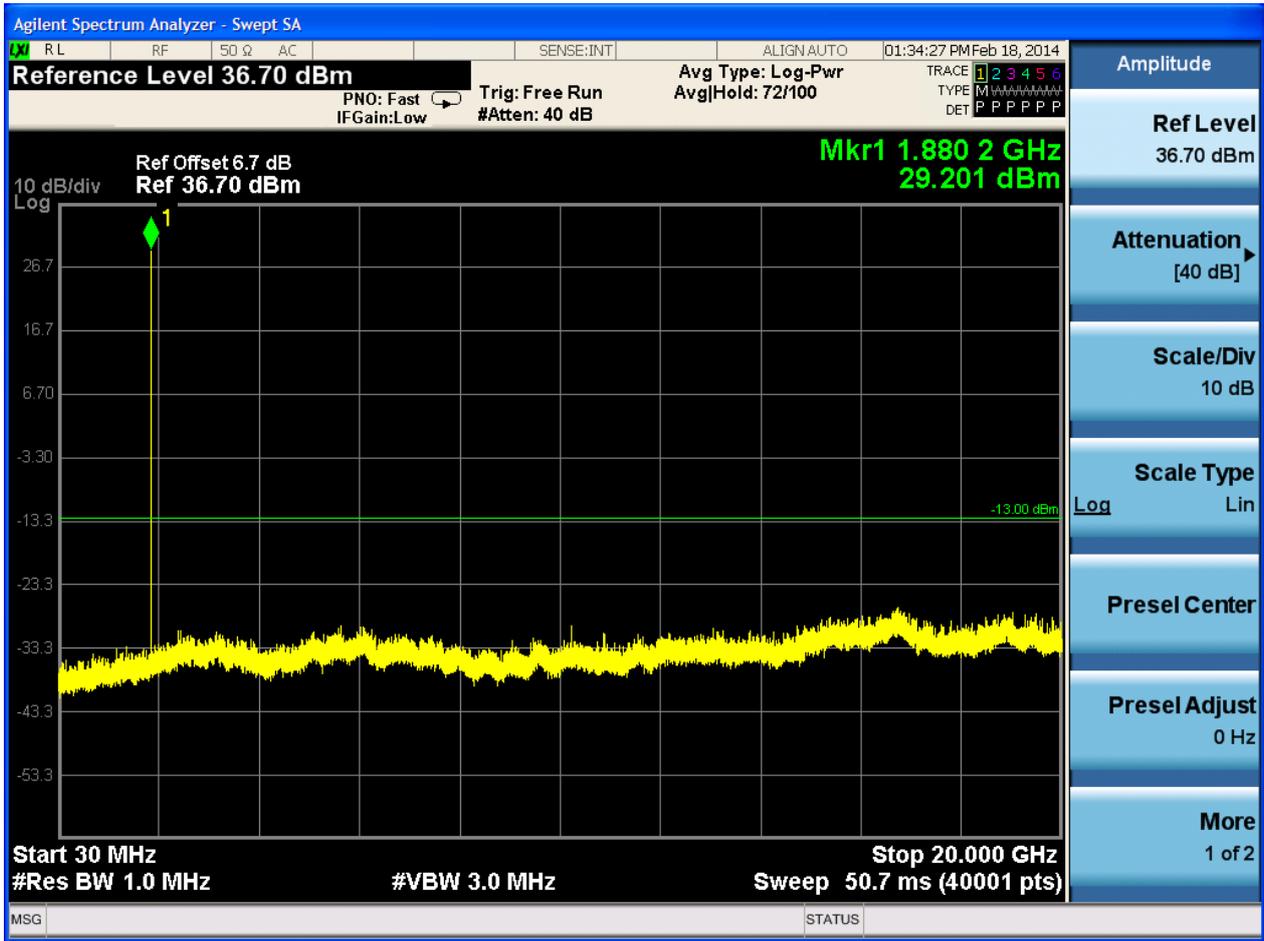




1.1.1.2.2 Test Channel = MCH



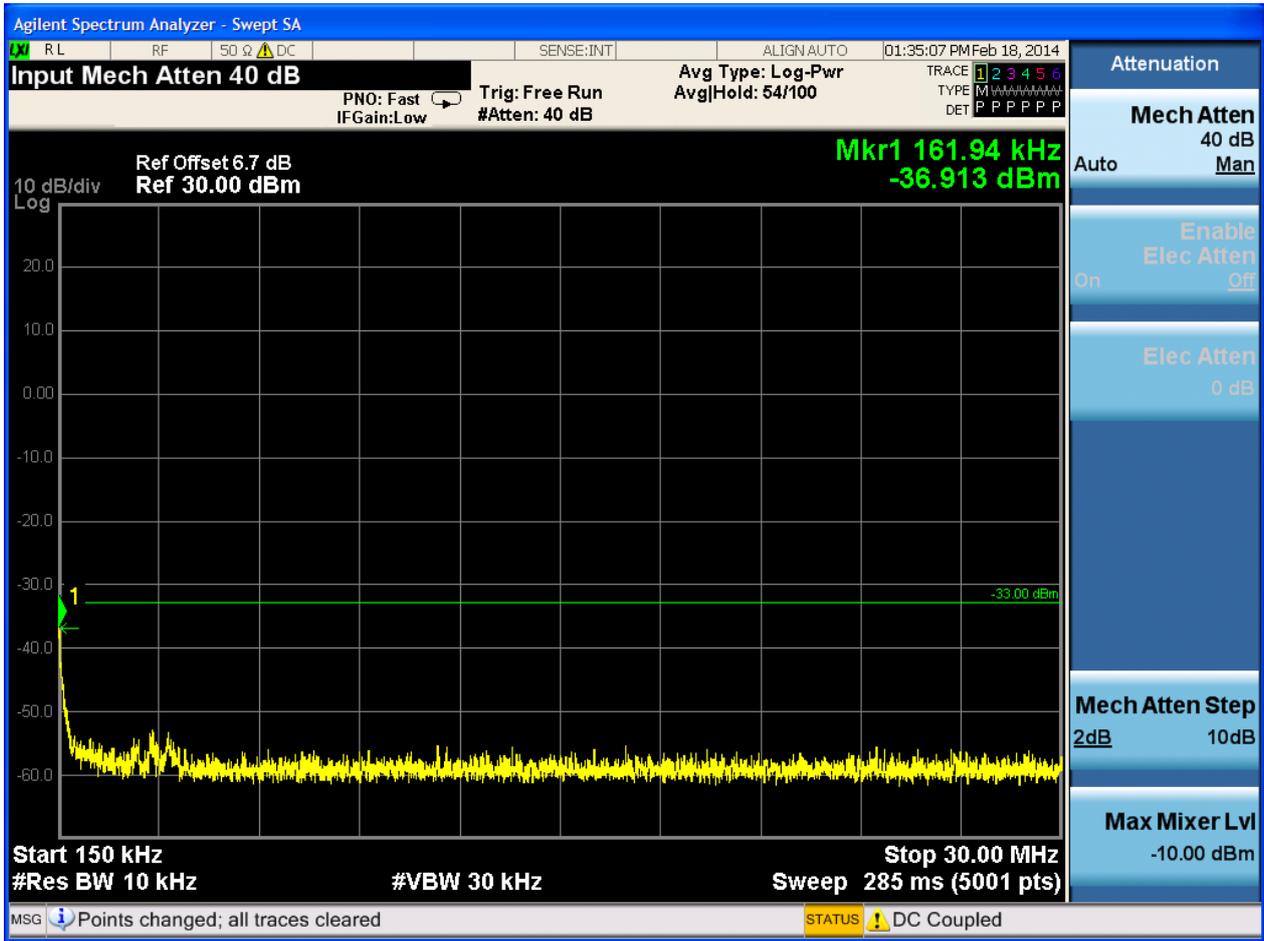


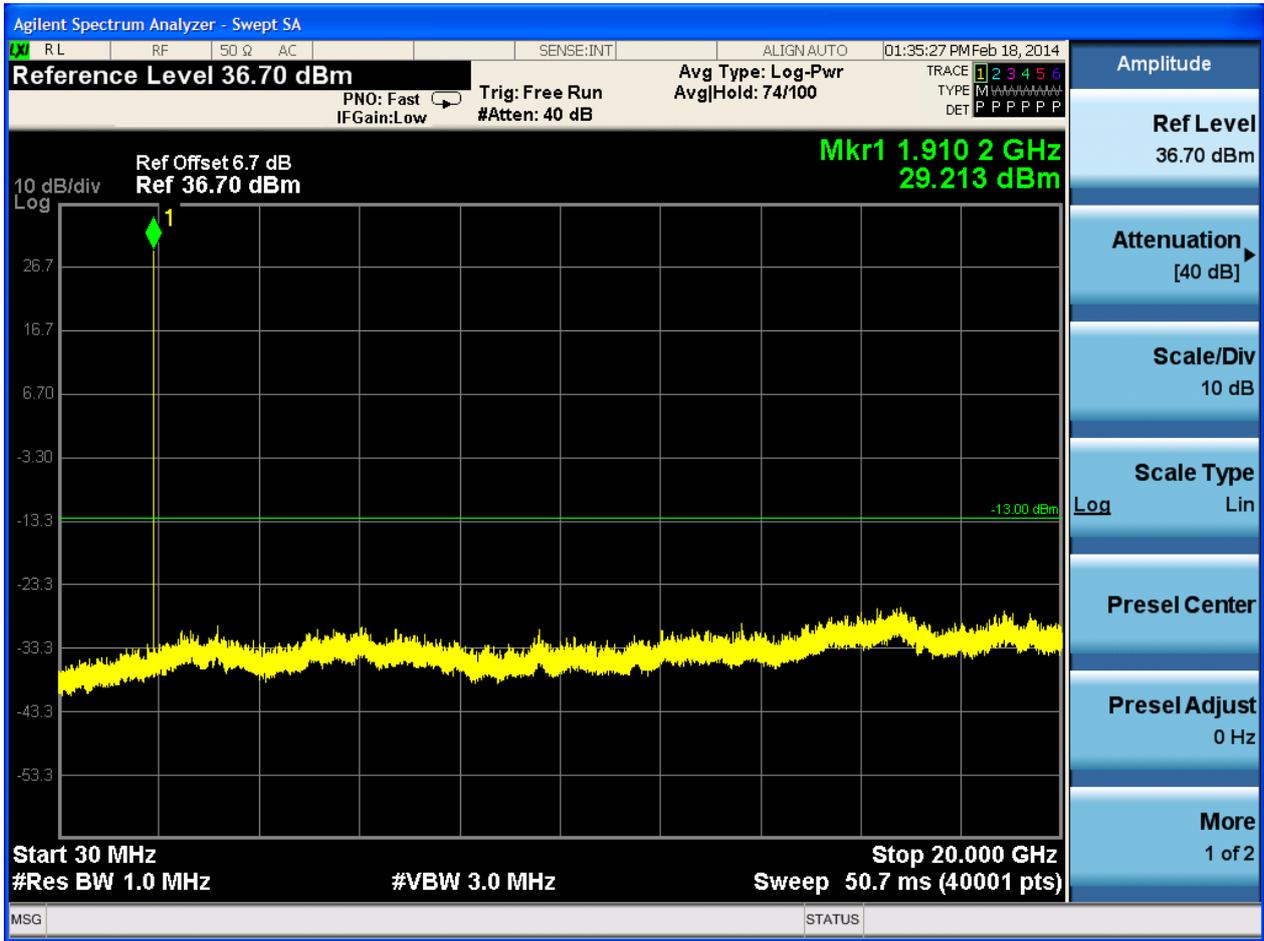




1.1.1.2.3 Test Channel = HCH







## 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

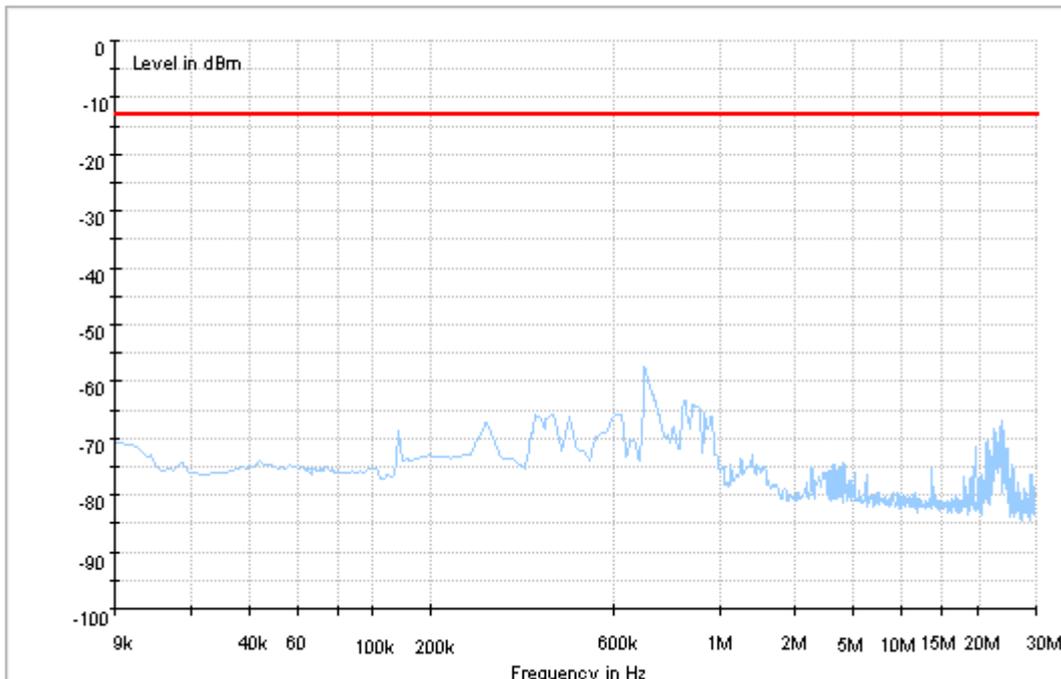
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

### Part I - Test Plots

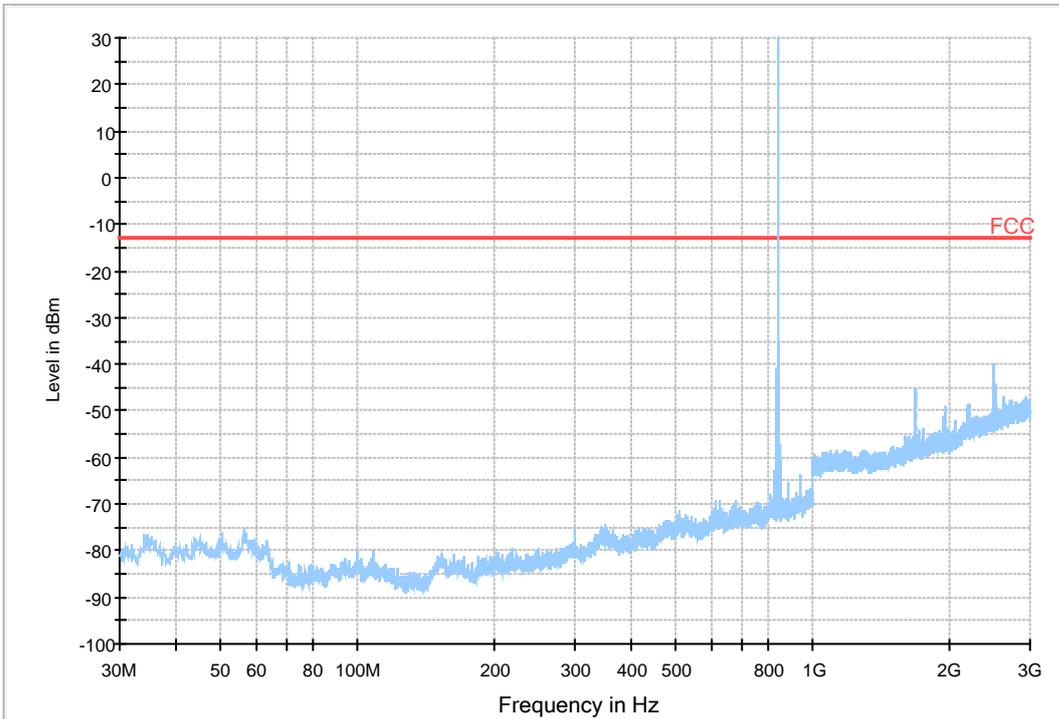
#### 7.1 For GSM

##### 7.1.1 Test Band = GSM850

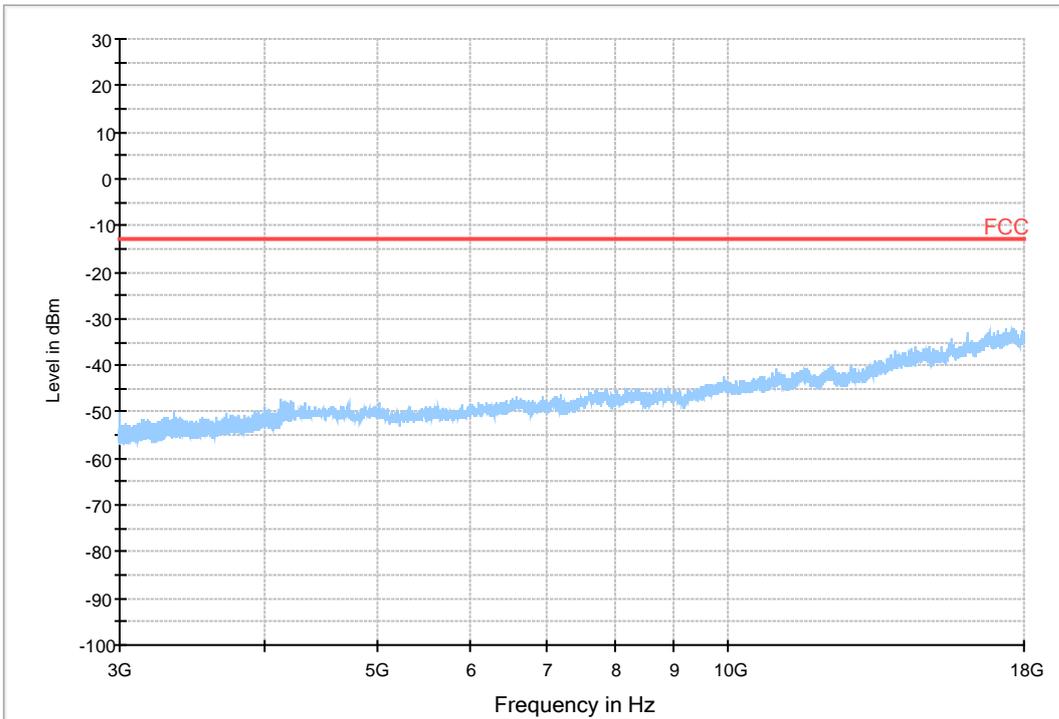
##### 7.1.1.1 Test Mode = GSM/TM1



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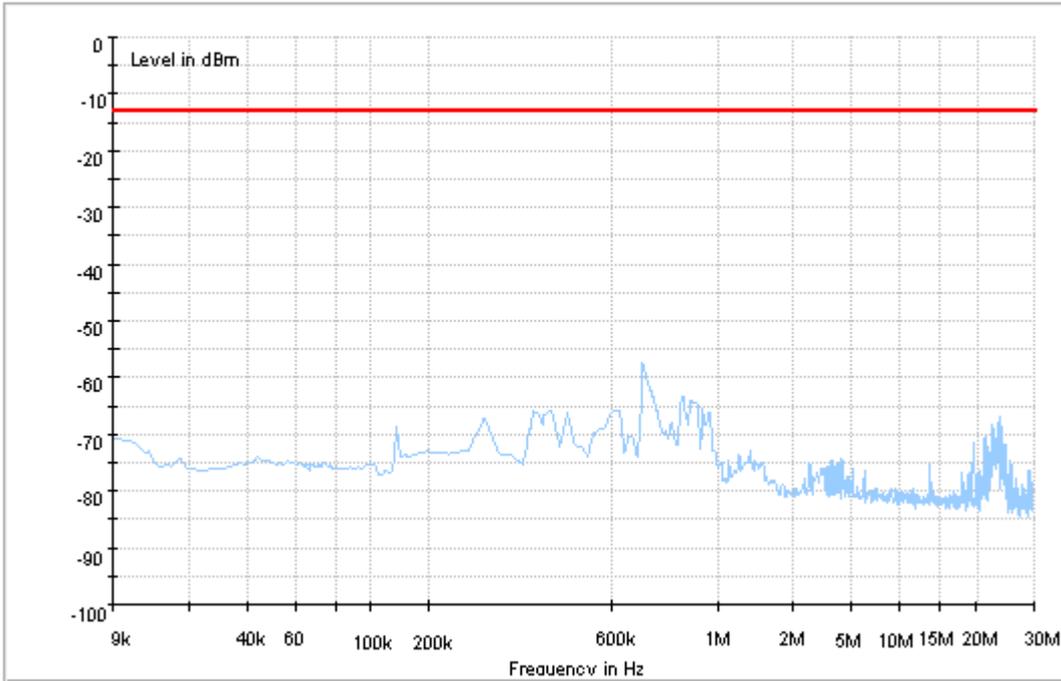


Copy of FCC PART22 GSM850\_H

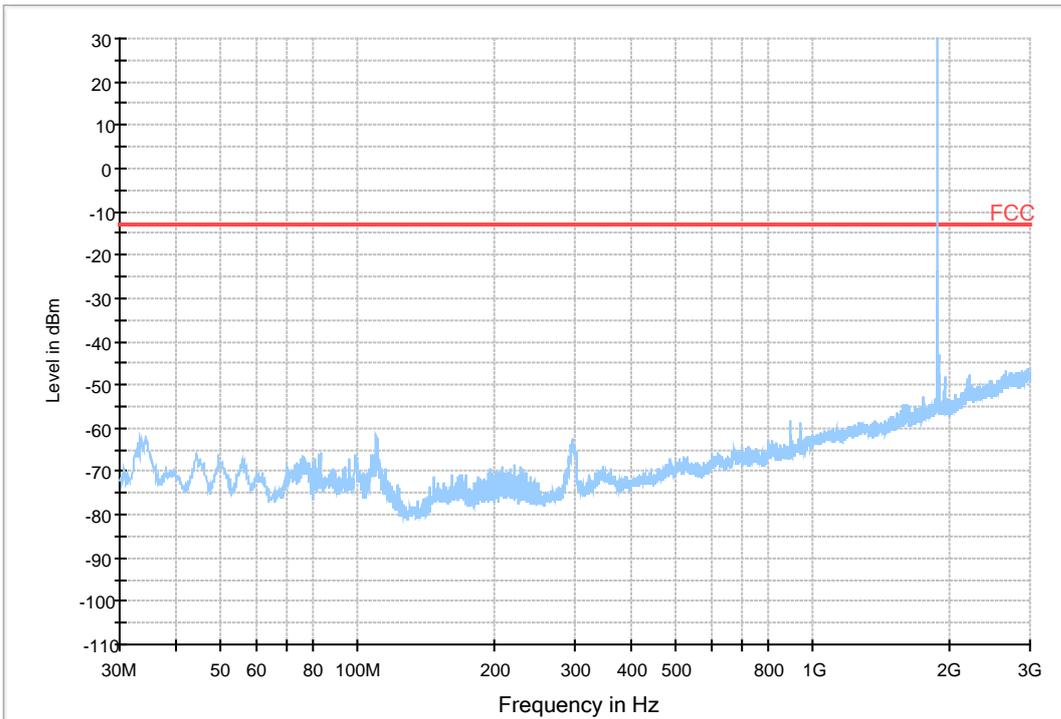


### 7.1.2 Test Band = GSM1900

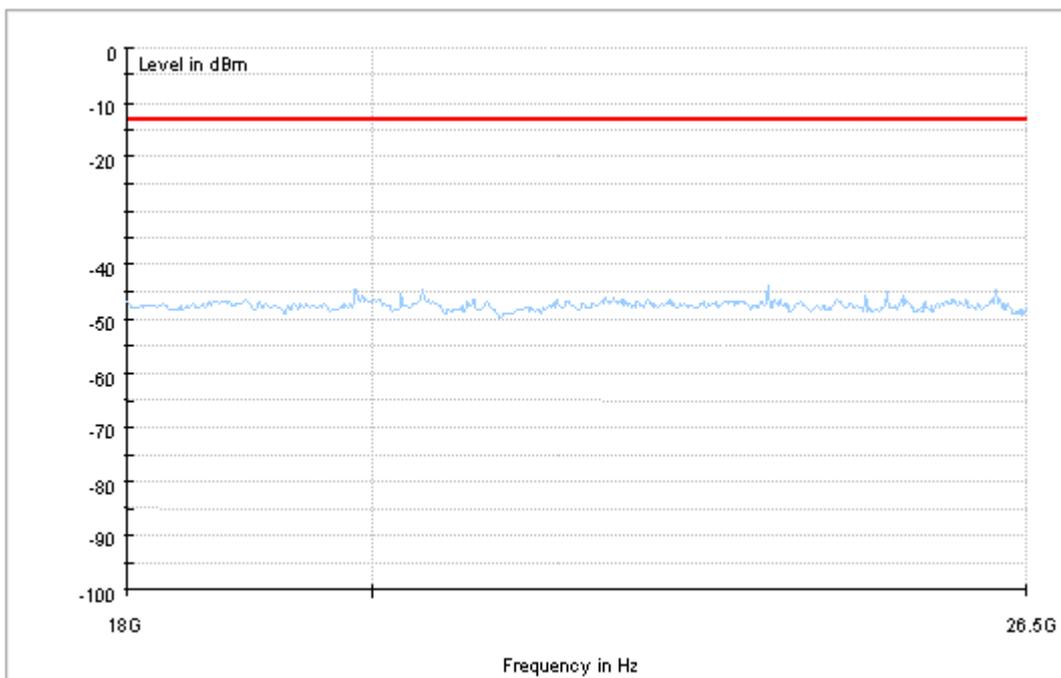
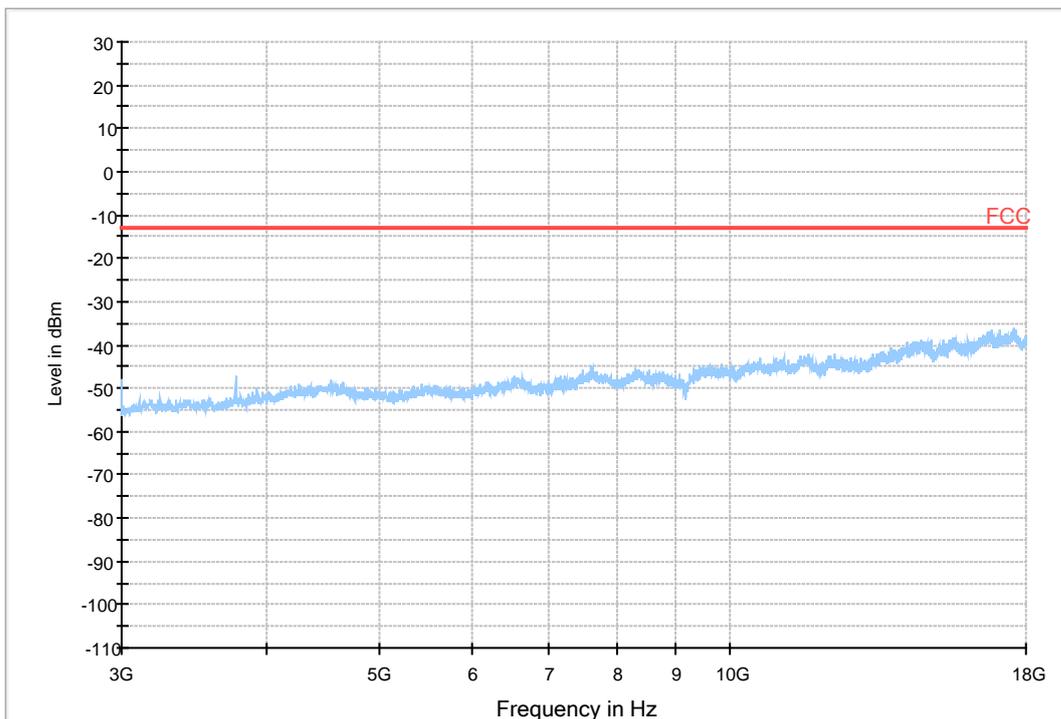
#### 7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART24 GSM1900\_L



Copy of FCC PART24 GSM1900\_H



## 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	-11.11	-0.01348	PASS
				VN	-4.39	-0.00533	PASS
				VH	-8.59	-0.01042	PASS
		MCH	TN	VL	-3.49	-0.00417	PASS
				VN	-5.55	-0.00663	PASS
				VH	-4.97	-0.00594	PASS
		HCH	TN	VL	-2.71	-0.00319	PASS
				VN	-10.46	-0.01232	PASS
				VH	-1.23	-0.00145	PASS
GSM1900	GSM/TM1	LCH	TN	VL	21.95	0.01186	PASS
				VN	16.53	0.00893	PASS
				VH	8.52	0.0046	PASS
		MCH	TN	VL	8.78	0.00467	PASS
				VN	8.52	0.00453	PASS
				VH	12.91	0.00687	PASS
		HCH	TN	VL	19.37	0.01014	PASS
				VN	12.27	0.00642	PASS
				VH	15.88	0.00832	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	-5.88	-0.00713	PASS
				-20	-3.23	-0.00392	PASS
				-10	-8.59	-0.01042	PASS
				0	-8.20	-0.00995	PASS
				10	-7.81	-0.00948	PASS
				20	-10.91	-0.01324	PASS
				30	-2.97	-0.0036	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				40	-5.42	-0.00658	PASS
				50	-9.81	-0.0119	PASS
		MCH	VN	-30	-5.55	-0.00663	PASS
				-20	-5.75	-0.00687	PASS
				-10	-2.97	-0.00355	PASS
				0	-8.65	-0.01034	PASS
				10	-9.10	-0.01088	PASS
				20	-6.01	-0.00718	PASS
				30	-9.88	-0.01181	PASS
				40	-9.62	-0.0115	PASS
				50	-5.94	-0.0071	PASS
				HCH	VN	-30	-9.75
		-20	-9.30			-0.01096	PASS
		-10	-1.03			-0.00121	PASS
		0	-7.04			-0.00829	PASS
		10	-0.58			-0.00068	PASS
		20	-7.94			-0.00935	PASS
		30	-6.97			-0.00821	PASS
		40	0.26			0.00031	PASS
		50	2.26	0.00266	PASS		
GSM1900	GSM/TM1	LCH	VN	-30	4.33	0.00234	PASS
				-20	14.33	0.00775	PASS
				-10	-0.06	-0.00003	PASS
				0	23.57	0.01274	PASS
				10	29.19	0.01578	PASS
				20	13.50	0.0073	PASS
				30	21.44	0.01159	PASS
				40	27.64	0.01494	PASS
				50	11.24	0.00608	PASS
		MCH	VN	-30	2.45	0.0013	PASS
				-20	7.36	0.00391	PASS
				-10	13.88	0.00738	PASS
				0	2.84	0.00151	PASS
				10	1.55	0.00082	PASS
				20	9.30	0.00495	PASS
				30	13.37	0.00711	PASS
				40	-2.07	-0.0011	PASS
		50	3.81	0.00203	PASS		
		HCH	VN	-30	4.00	0.00209	PASS
				-20	1.68	0.00088	PASS



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-10	4.65	0.00243	PASS
				0	7.43	0.00389	PASS
				10	6.46	0.00338	PASS
				20	8.59	0.0045	PASS
				30	12.20	0.00639	PASS
				40	2.84	0.00149	PASS
				50	13.43	0.00703	PASS

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END