



Appendix for test report

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	33.65	30.69	38.5	PASS
		MCH	33.72	30.76	38.5	PASS
		HCH	33.61	30.75	38.5	PASS
	GSM/TM2	LCH	26.35	23.48	38.5	PASS
		MCH	26.34	23.41	38.5	PASS
		HCH	26.33	23.45	38.5	PASS
WCDMA850	UMTS/TM1	LCH	23.77	20.83	38.5	PASS
		MCH	23.85	20.97	38.5	PASS
		HCH	23.88	20.93	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.92	29.22	33	PASS
		MCH	29.74	29.03	33	PASS
		HCH	30.4	29.71	33	PASS
	GSM/TM2	LCH	25.04	24.35	33	PASS
		MCH	25.05	24.44	33	PASS
		HCH	25.07	24.47	33	PASS
WCDMA1900	UMTS/TM1	LCH	23.57	22.84	33	PASS
		MCH	23.55	22.97	33	PASS
		HCH	23.71	23.01	33	PASS
WCDMA1700	UMTS/TM1	LCH	24.05	23.14	33	PASS
		MCH	23.66	22.91	33	PASS
		HCH	23.55	22.87	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	0.25	13	PASS
		MCH	0.2	13	PASS
		HCH	0.19	13	PASS
	GSM/TM2	LCH	3.26	13	PASS
		MCH	3.25	13	PASS
		HCH	3.12	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.13	13	PASS
		MCH	3	13	PASS
		HCH	3.24	13	PASS
WCDMA1900	UMTS/TM1	LCH	3.16	13	PASS
		MCH	3.27	13	PASS
		HCH	3.11	13	PASS

3Appendix_C: Modulation Characteristics

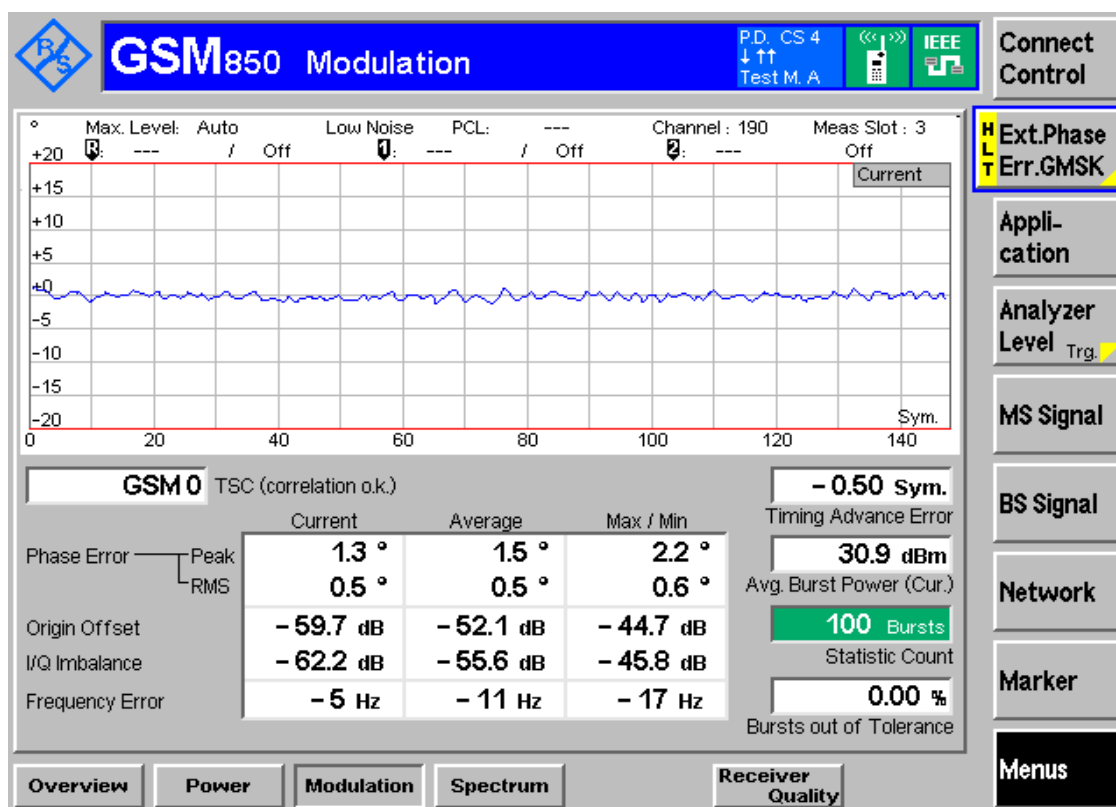
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

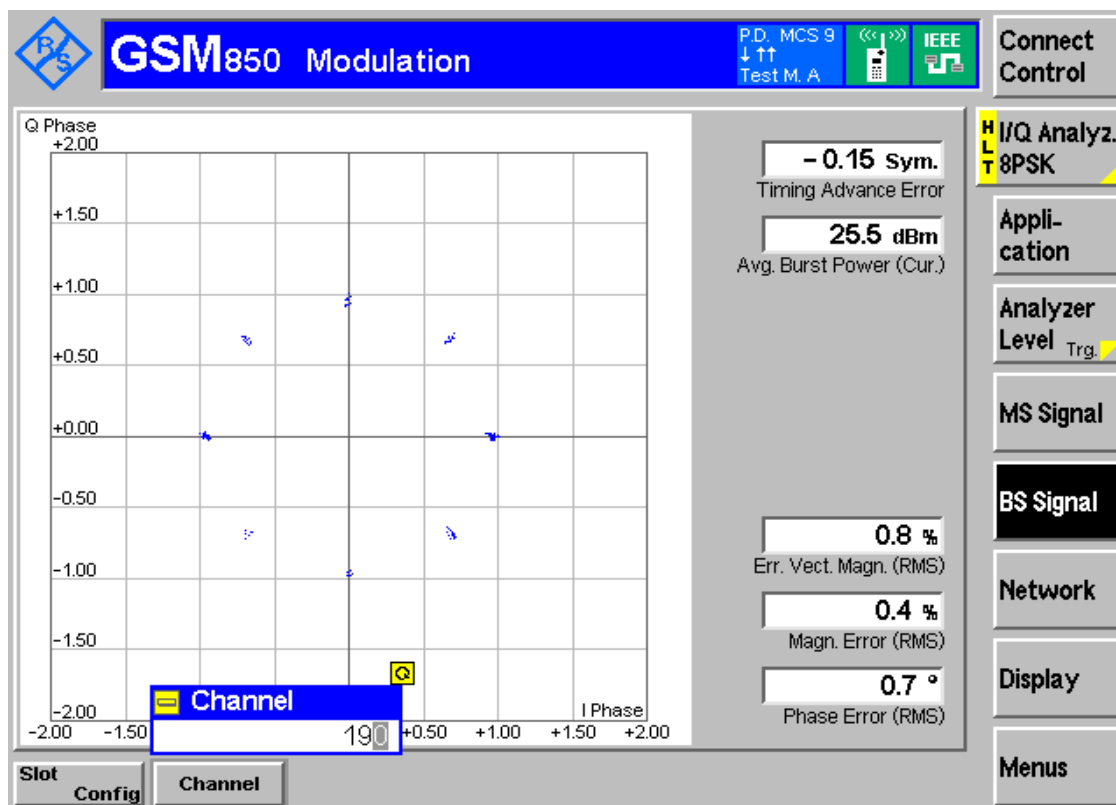
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

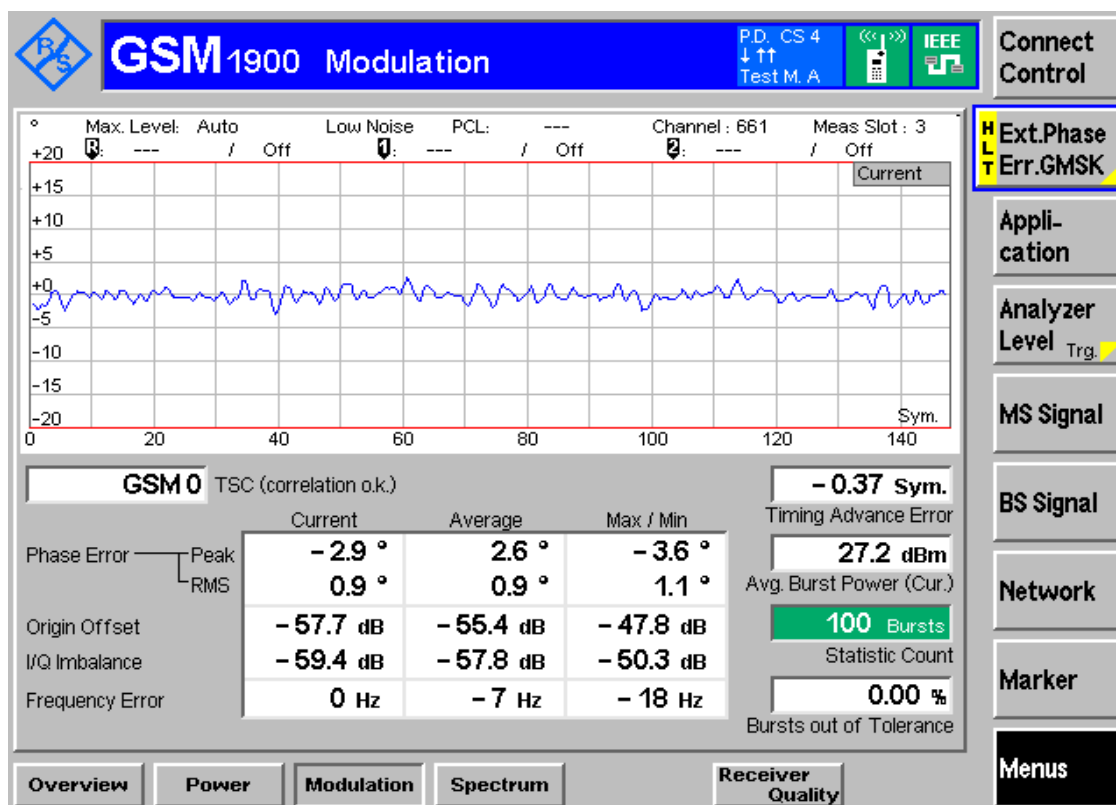
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

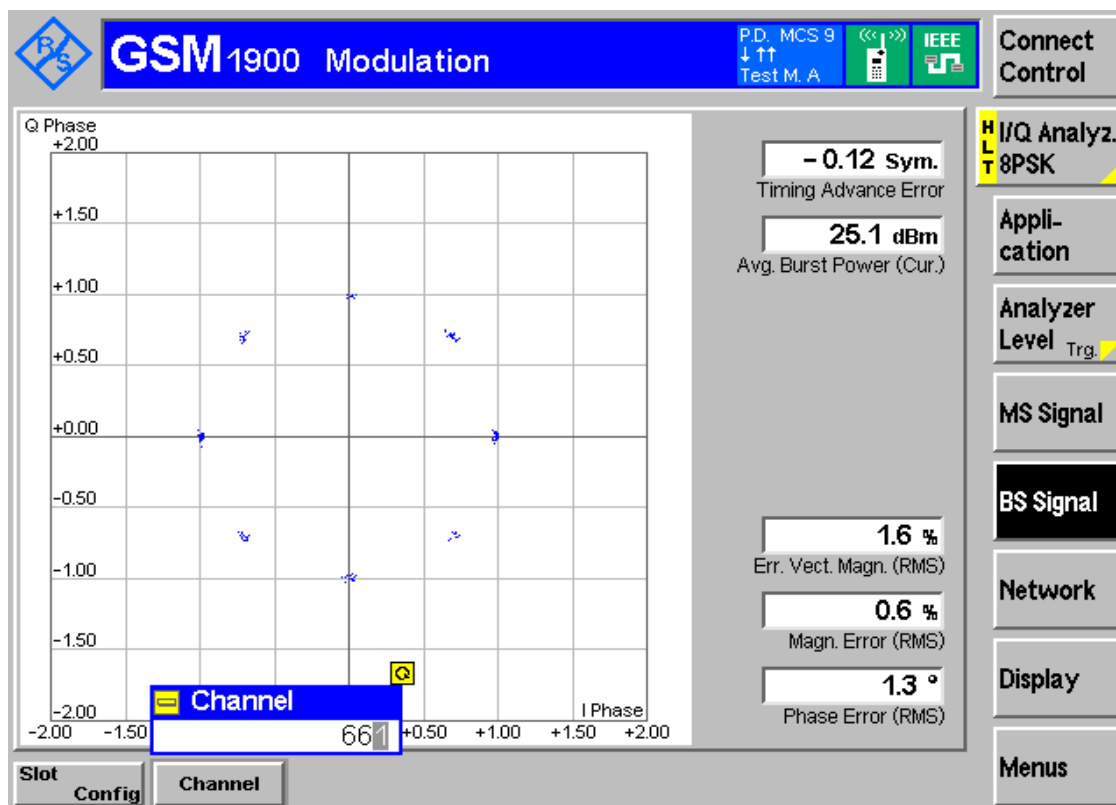
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH

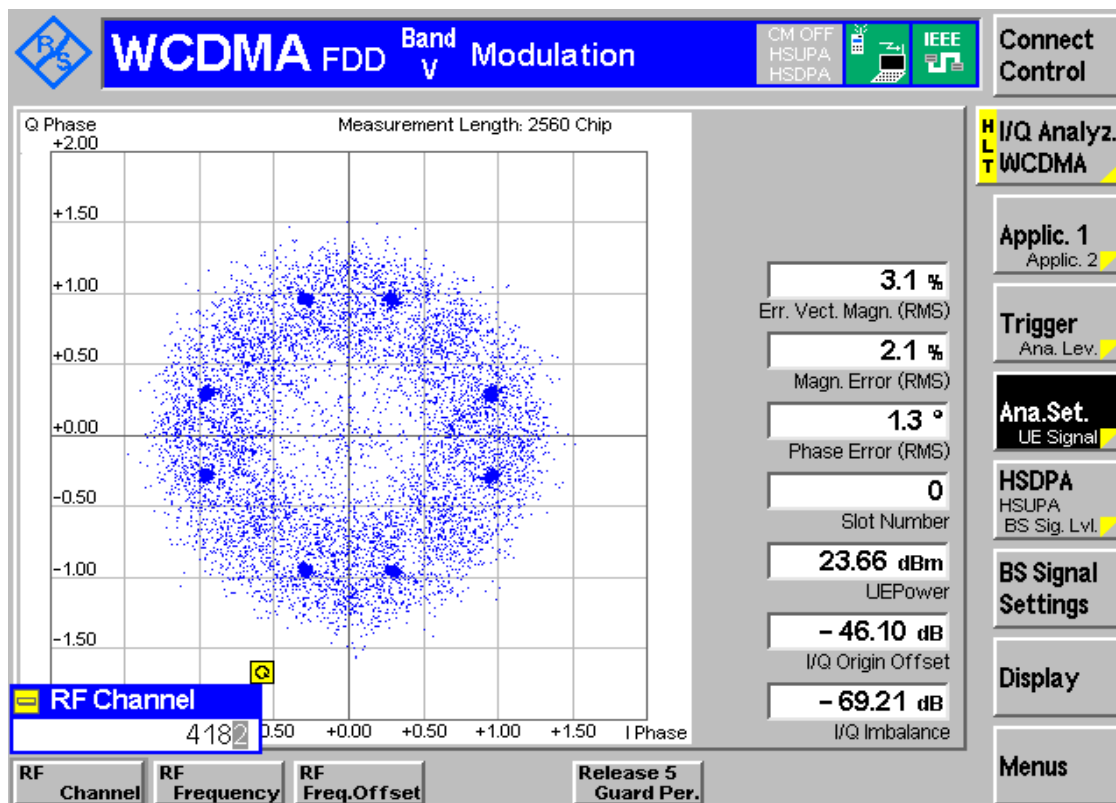


3.2 For UMTS

3.2.1 Test Band = WCDMA850

3.2.1.1 Test Mode = UMTS/TM1

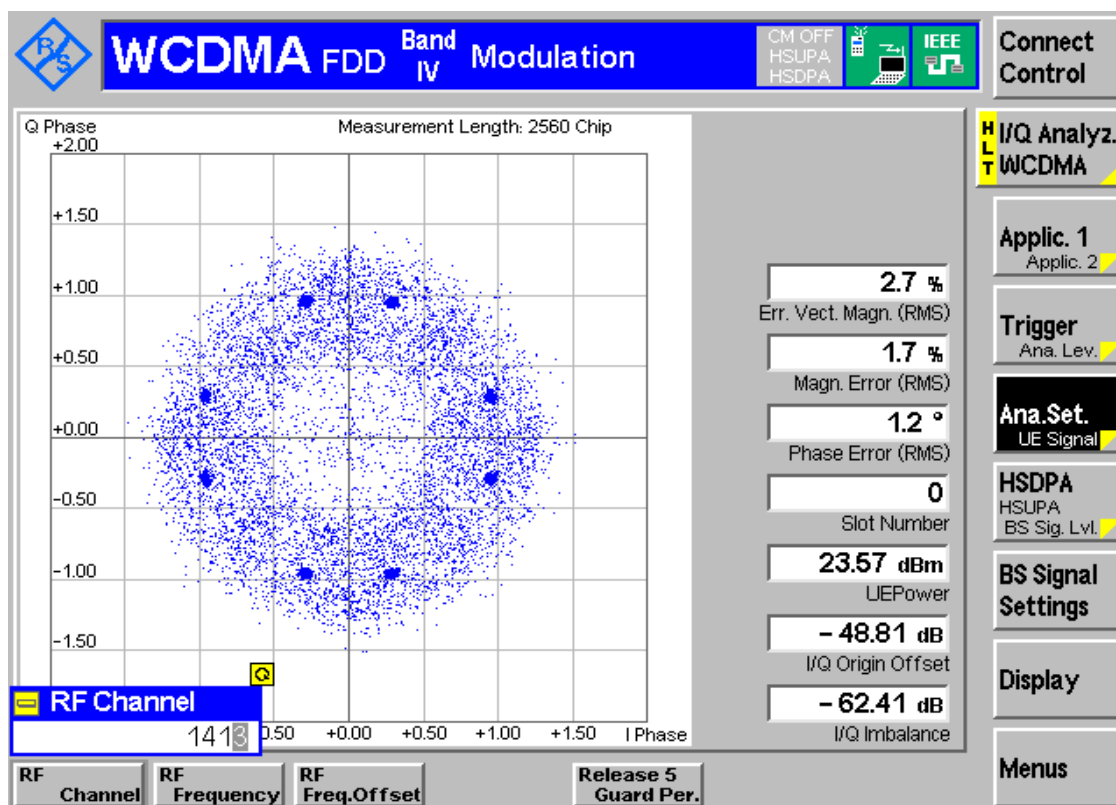
3.2.1.1.1 Test Channel = MCH



3.2.2 Test Band = WCDMA1700

3.2.2.1 Test Mode = UMTS/TM1

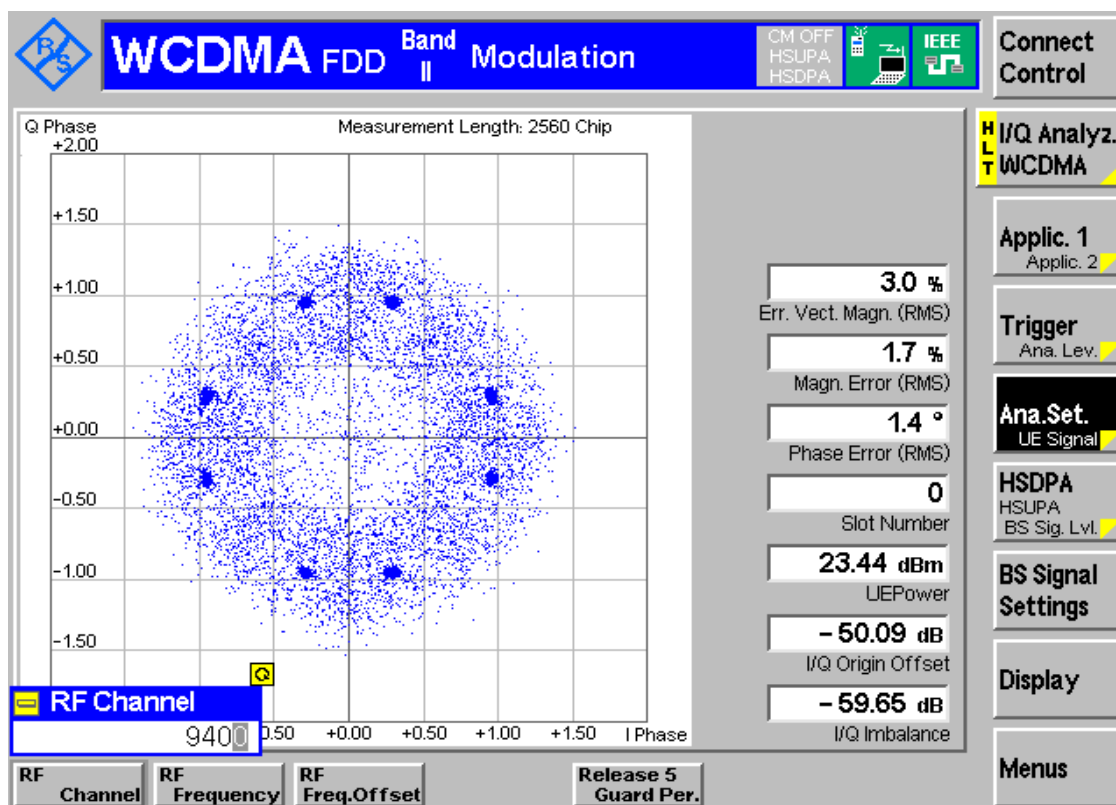
3.2.2.1.1 Test Channel = MCH



3.2.3 Test Band = WCDMA1900

3.2.3.1 Test Mode = UMTS/TM1

3.2.3.1.1 Test Channel = MCH



4Appendix_D: Bandwidth

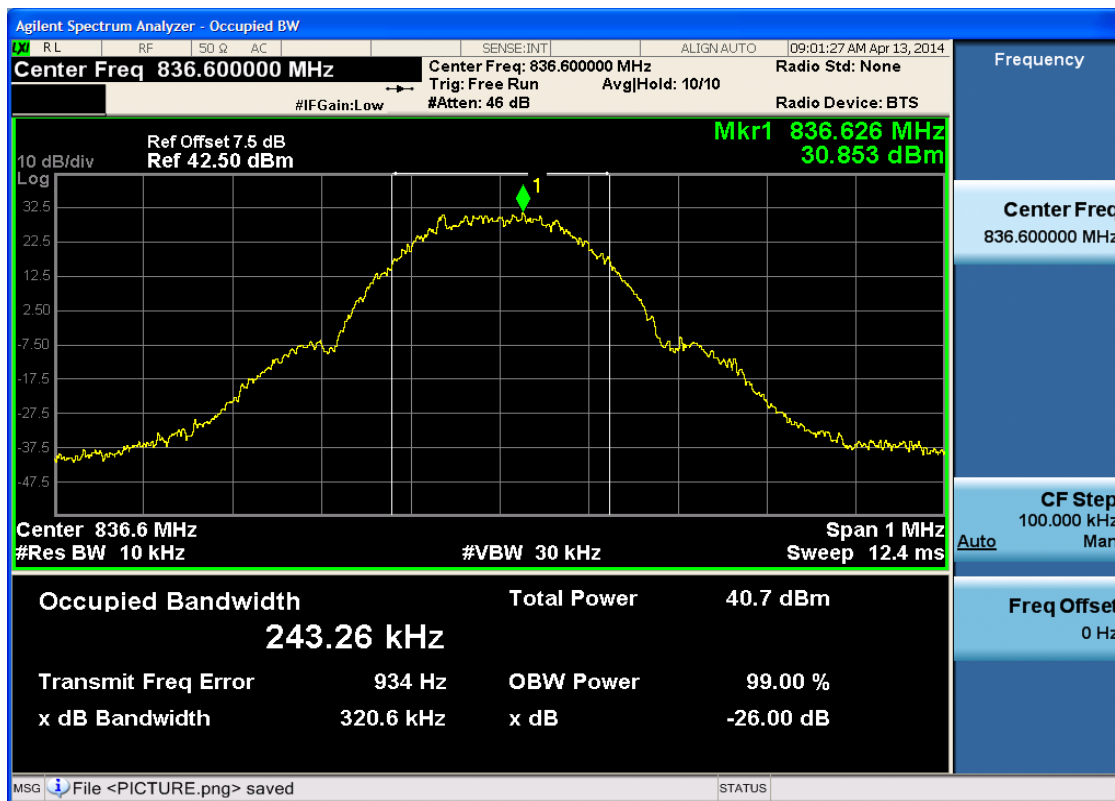
Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	246.47	315.69	Pass
		MCH	243.26	320.61	Pass
		HCH	245.75	316.28	Pass
	GSM/TM2	LCH	228.91	295.28	Pass
		MCH	234.56	289.32	Pass
		HCH	242.93	311.72	Pass
GSM1900	GSM/TM1	LCH	243.30	318.30	Pass
		MCH	242.66	314.00	Pass
		HCH	244.12	314.47	Pass
	GSM/TM2	LCH	241.31	303.89	Pass
		MCH	242.12	308.06	Pass
		HCH	238.14	315.66	Pass
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.17	4.73	Pass
		MCH	4.16	4.72	Pass
		HCH	4.17	4.72	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.74	Pass
		MCH	4.17	4.75	Pass
		HCH	4.17	4.74	Pass
WCDMA1900	UMTS/TM1	LCH	4.15	4.72	Pass
		MCH	4.16	4.72	Pass
		HCH	4.17	4.74	Pass



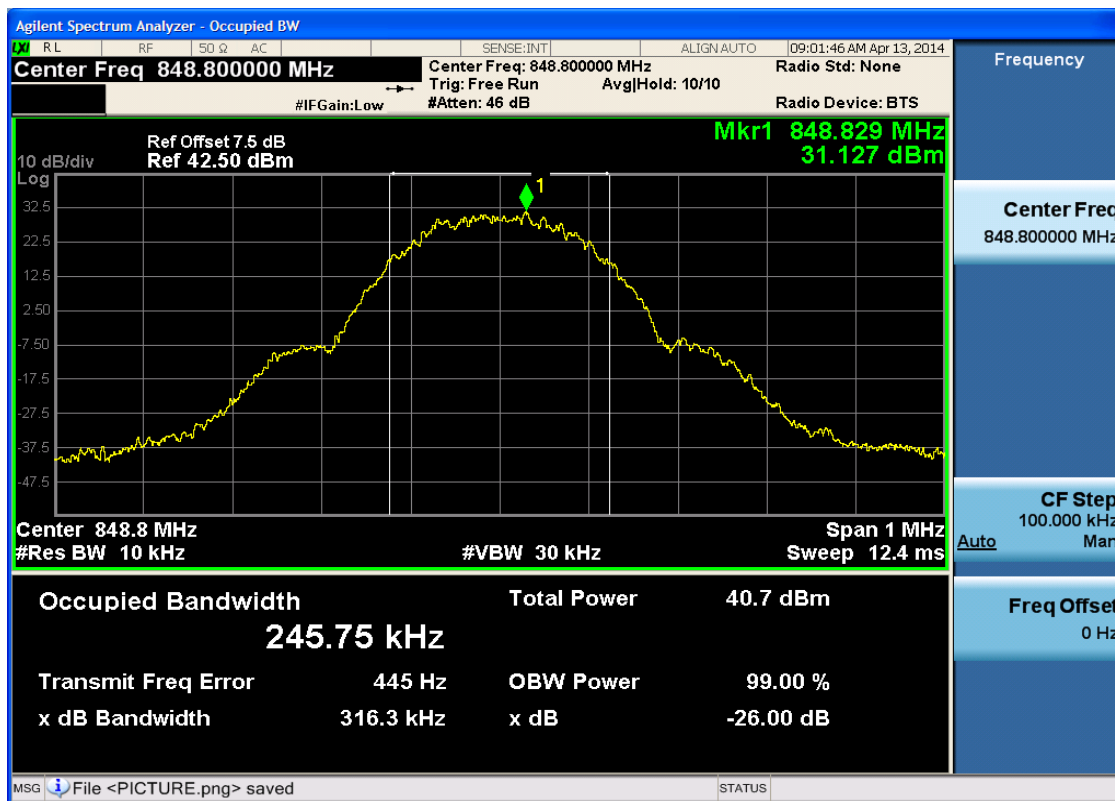


4.1.1.1.2 Test Channel = MCH





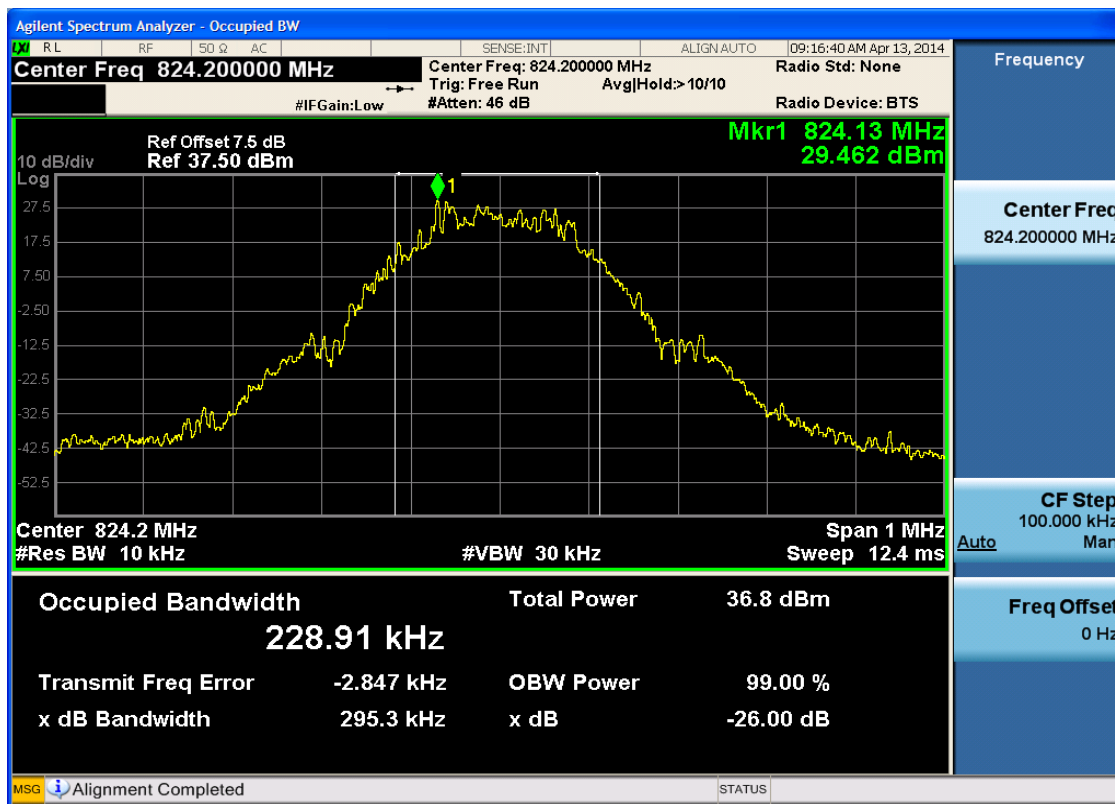
4.1.1.1.3 Test Channel = HCH





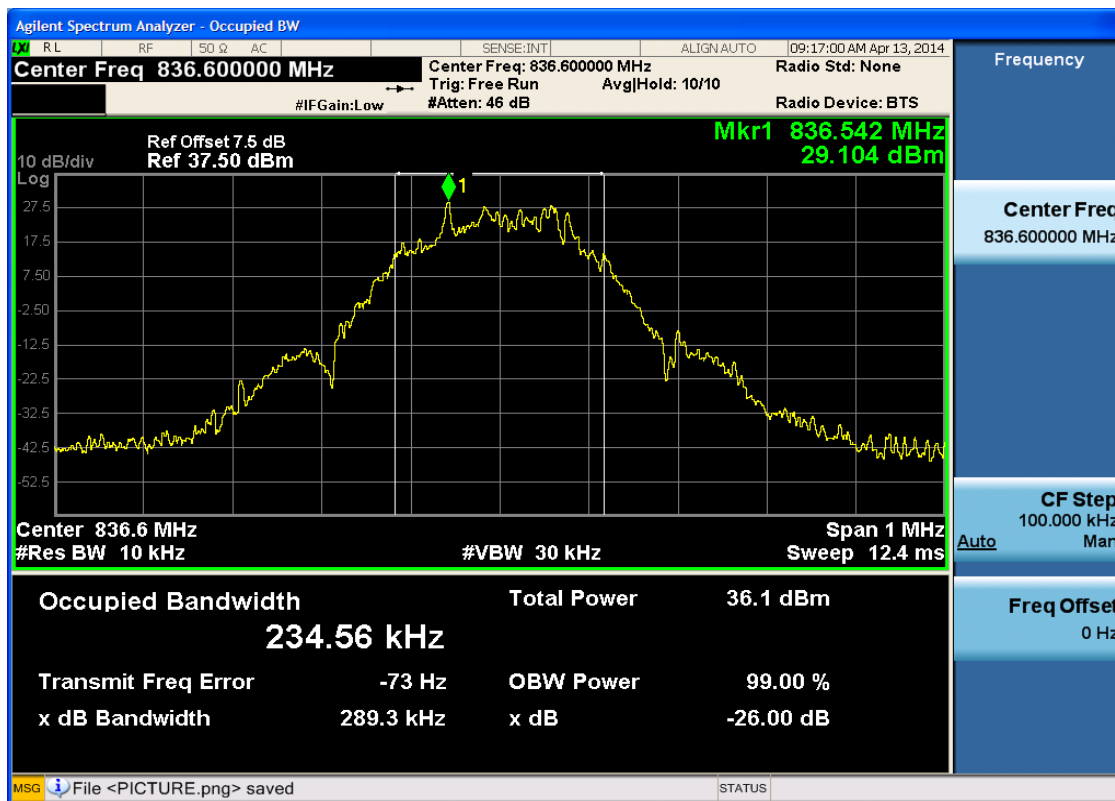
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



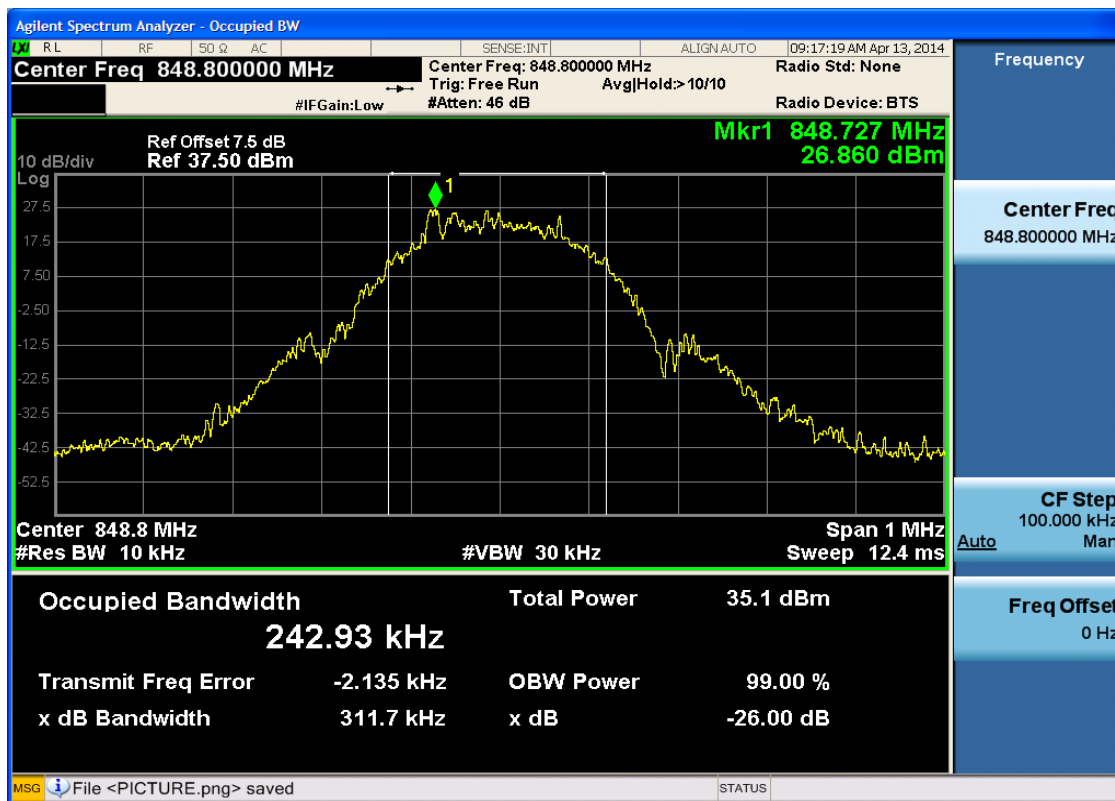


4.1.1.2.2 Test Channel = MCH





4.1.1.2.3 Test Channel = HCH

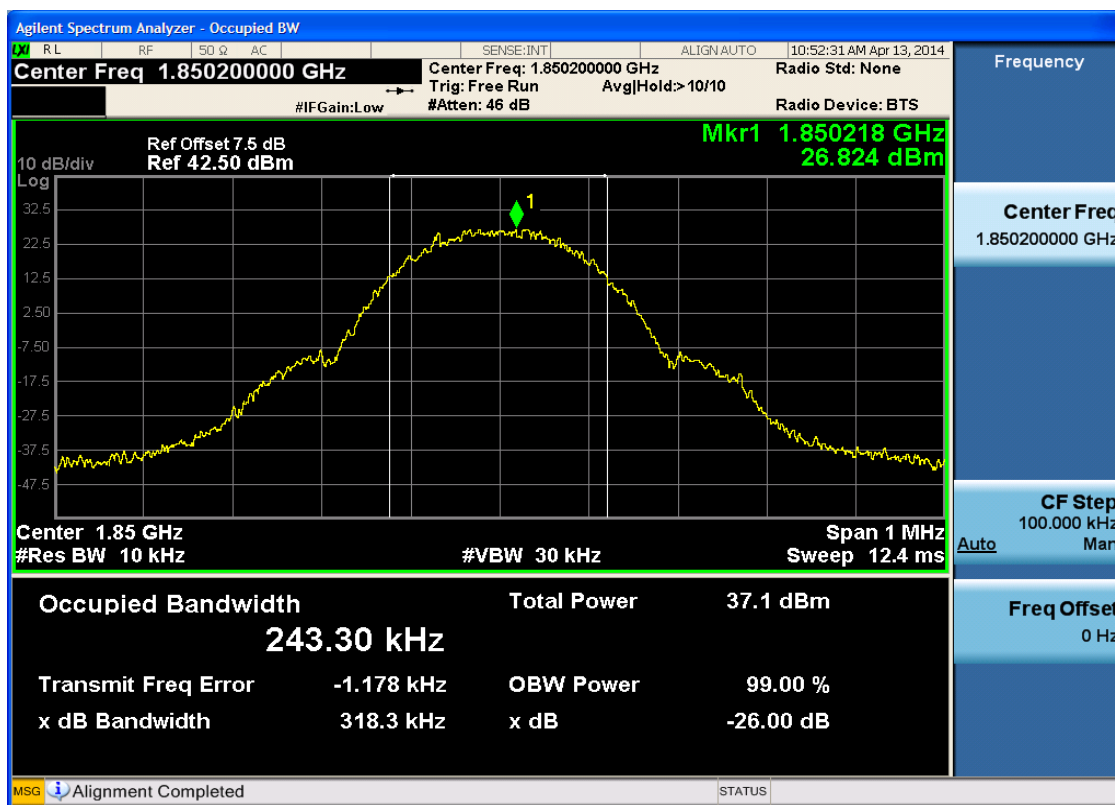




4.1.2 Test Band = GSM1900

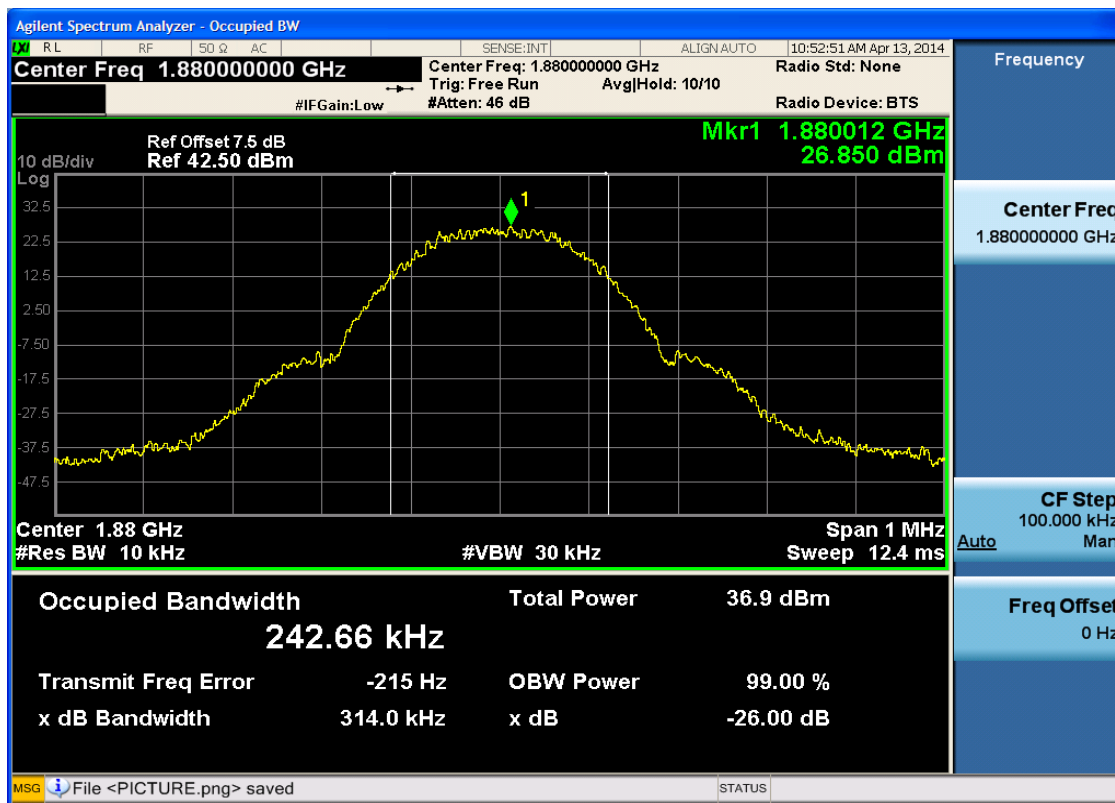
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



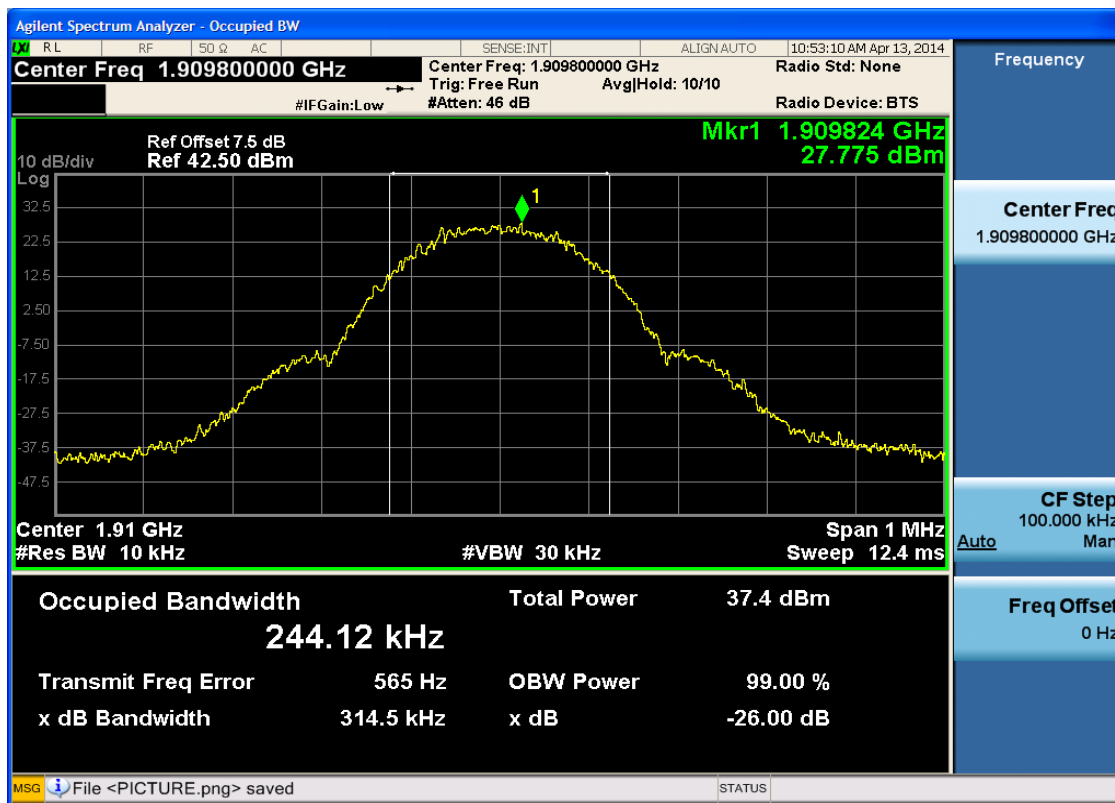


4.1.2.1.2 Test Channel = MCH





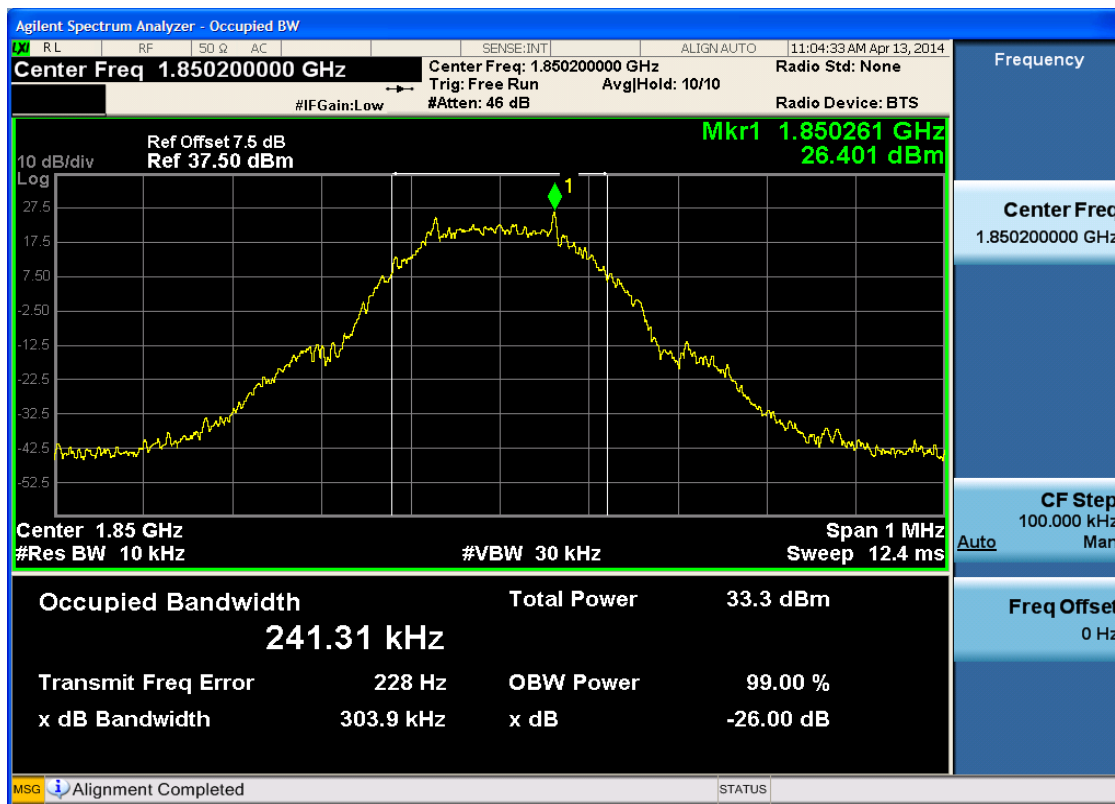
4.1.2.1.3 Test Channel = HCH





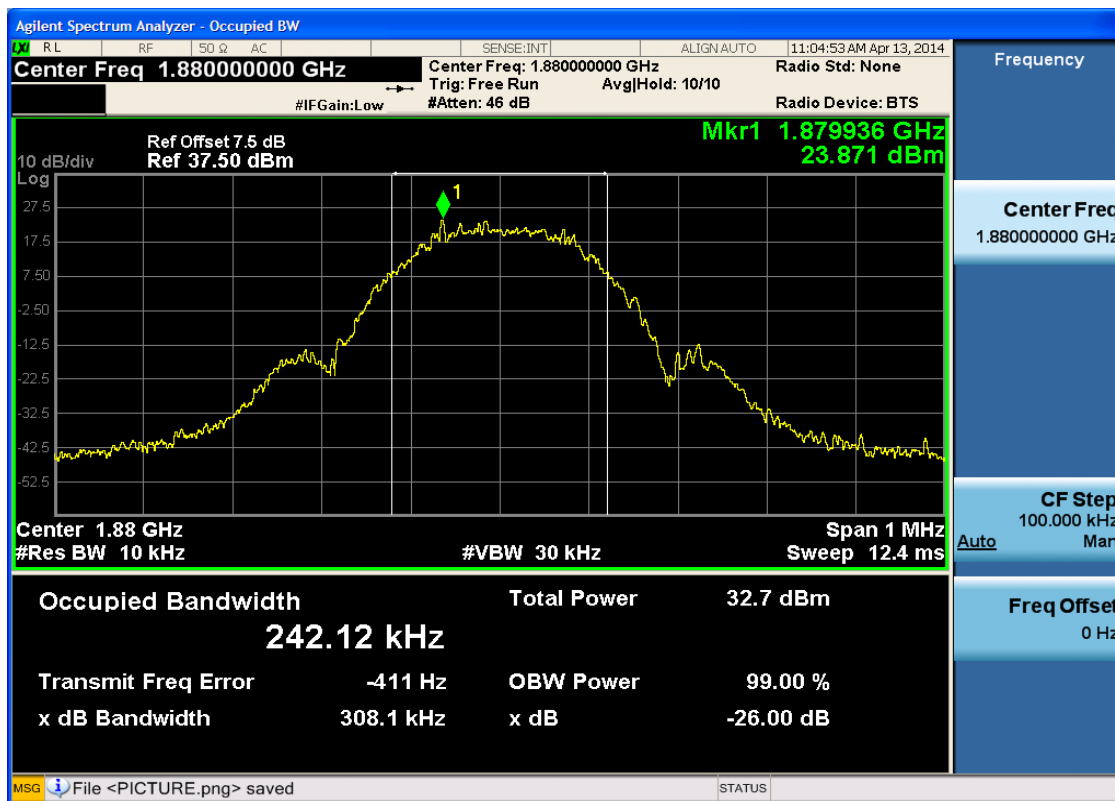
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



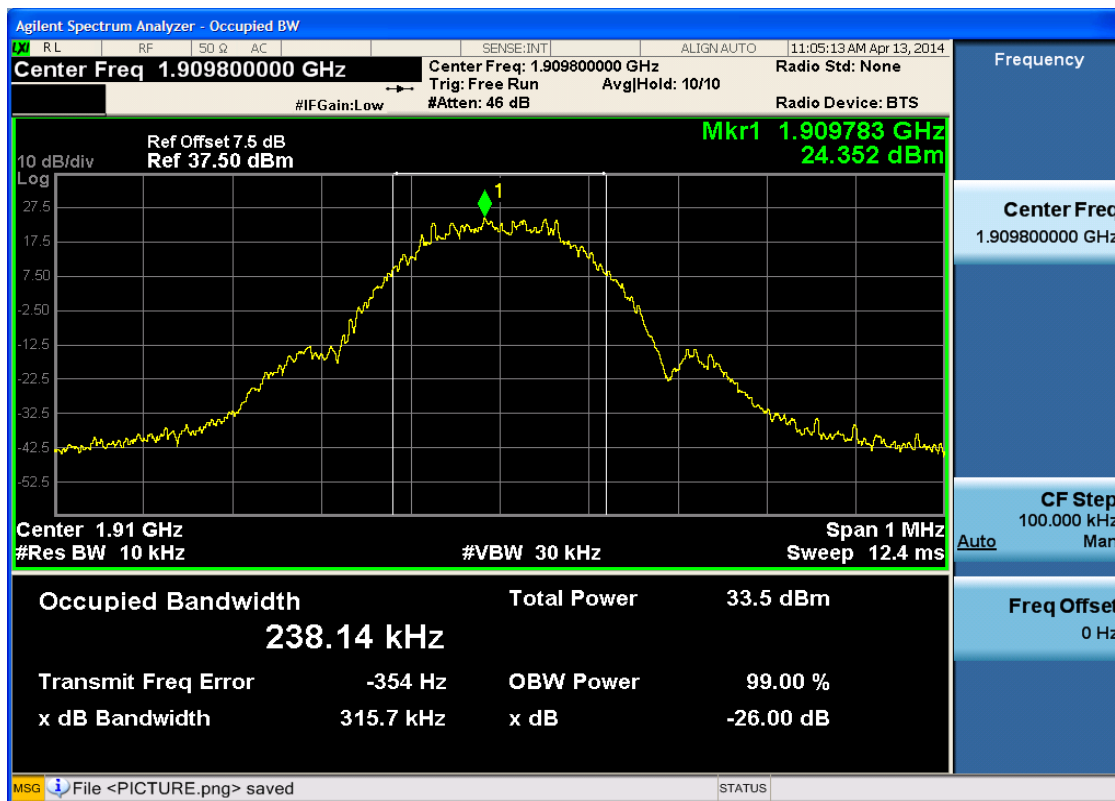


4.1.2.2.2 Test Channel = MCH





4.1.2.2.3 Test Channel = HCH

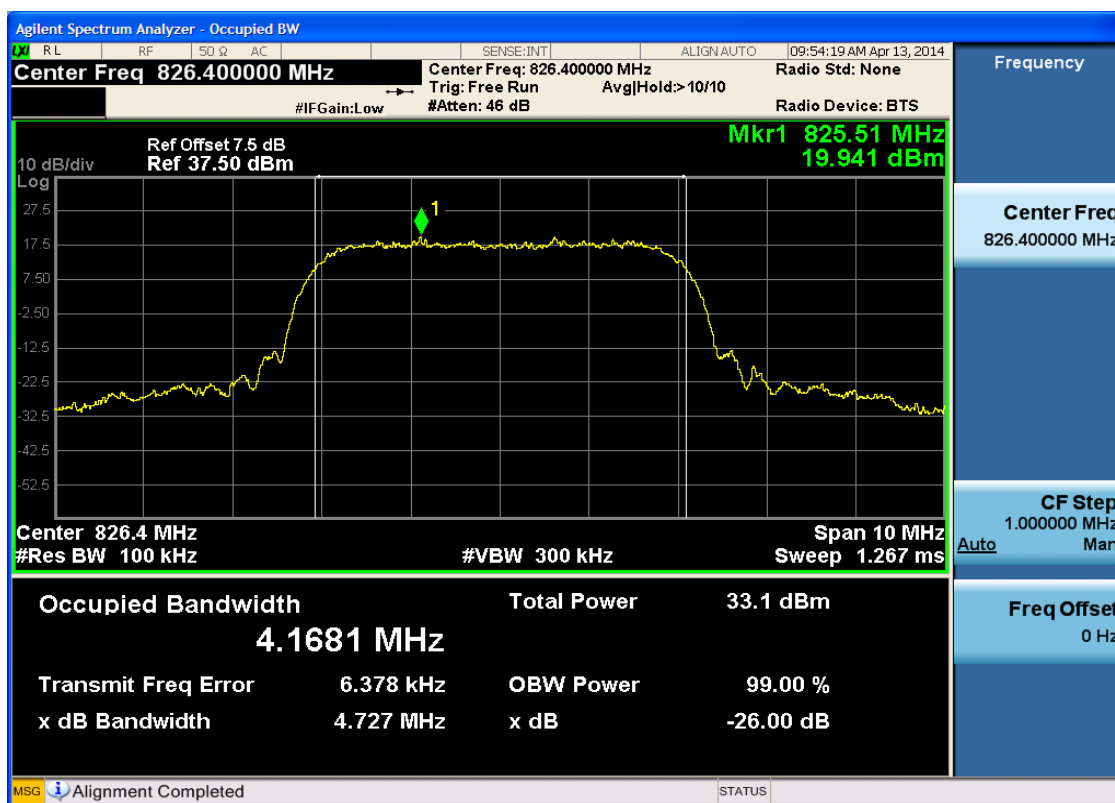


4.2 For UMTS

4.2.1 Test Band = WCDMA850

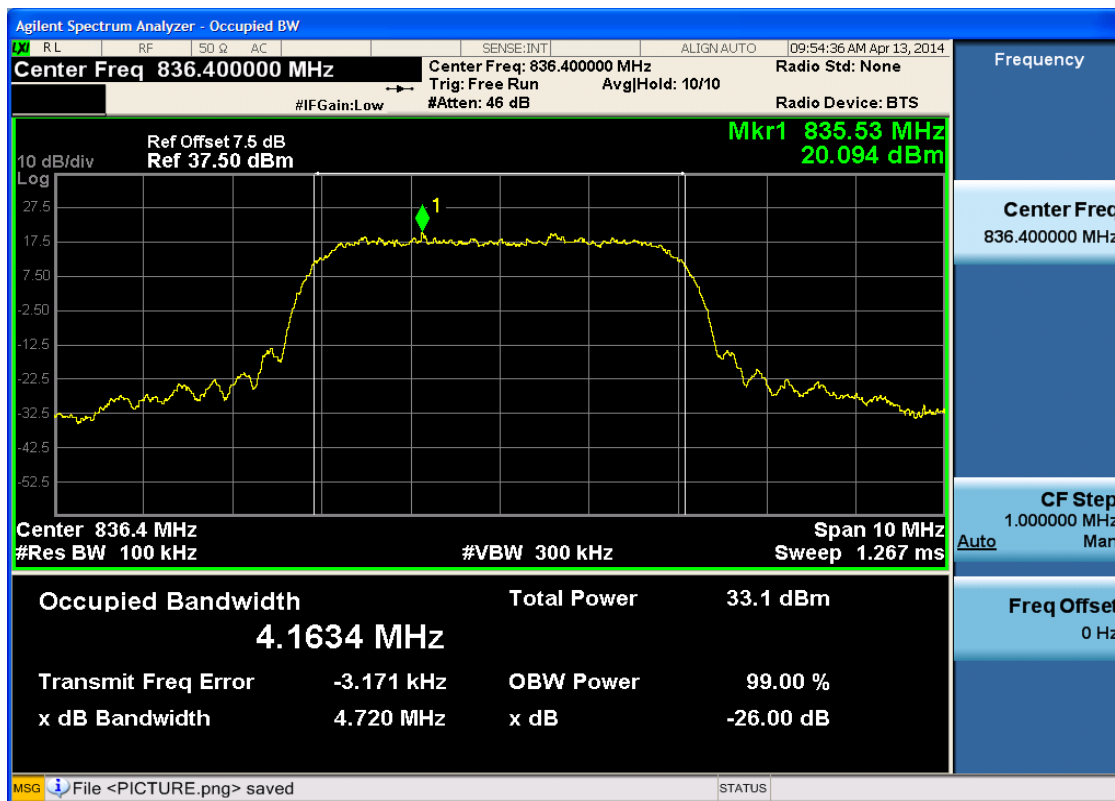
4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



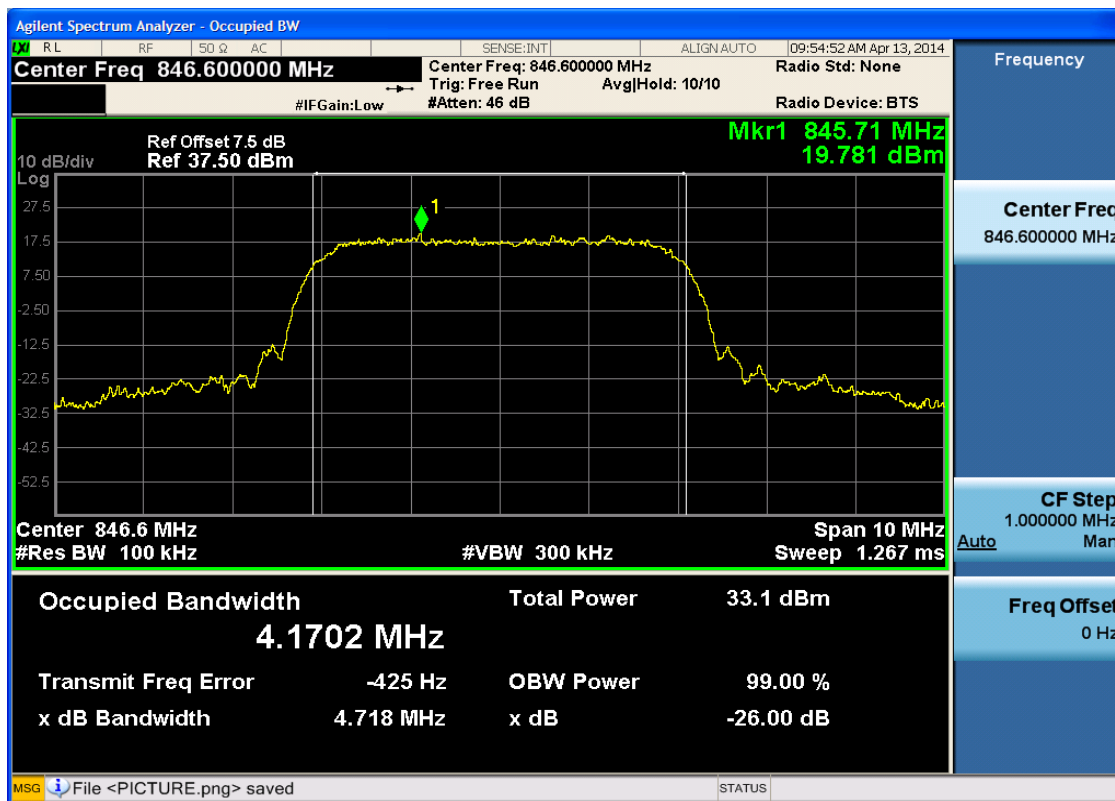


4.2.1.1.2 Test Channel = MCH





4.2.1.1.3 Test Channel = HCH

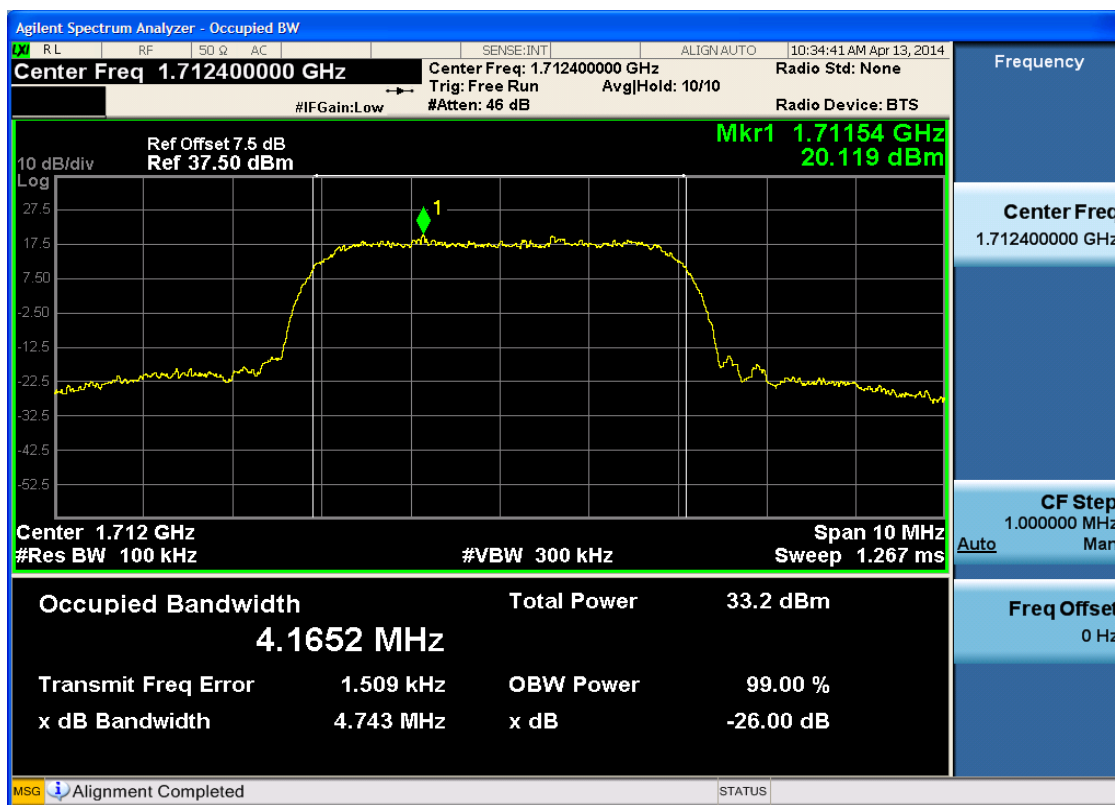




4.2.2 Test Band = WCDMA1700

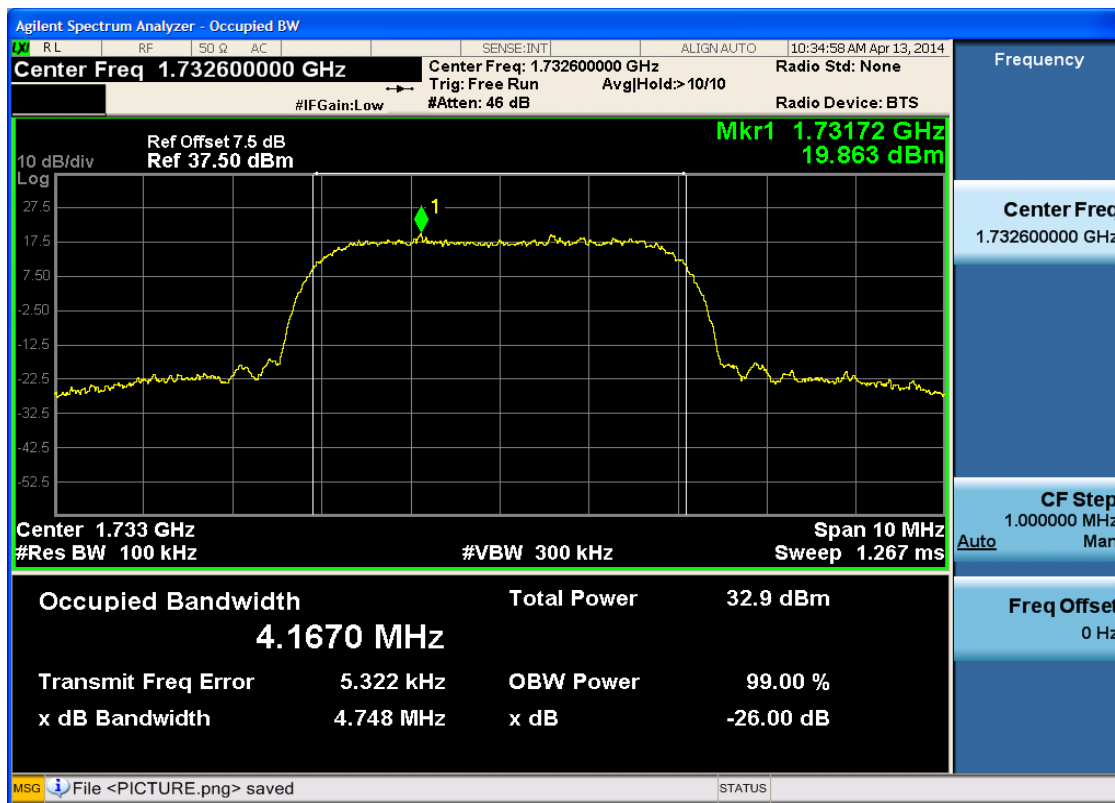
4.2.2.1 Test Mode = UMTS/TM1

4.2.2.1.1 Test Channel = LCH



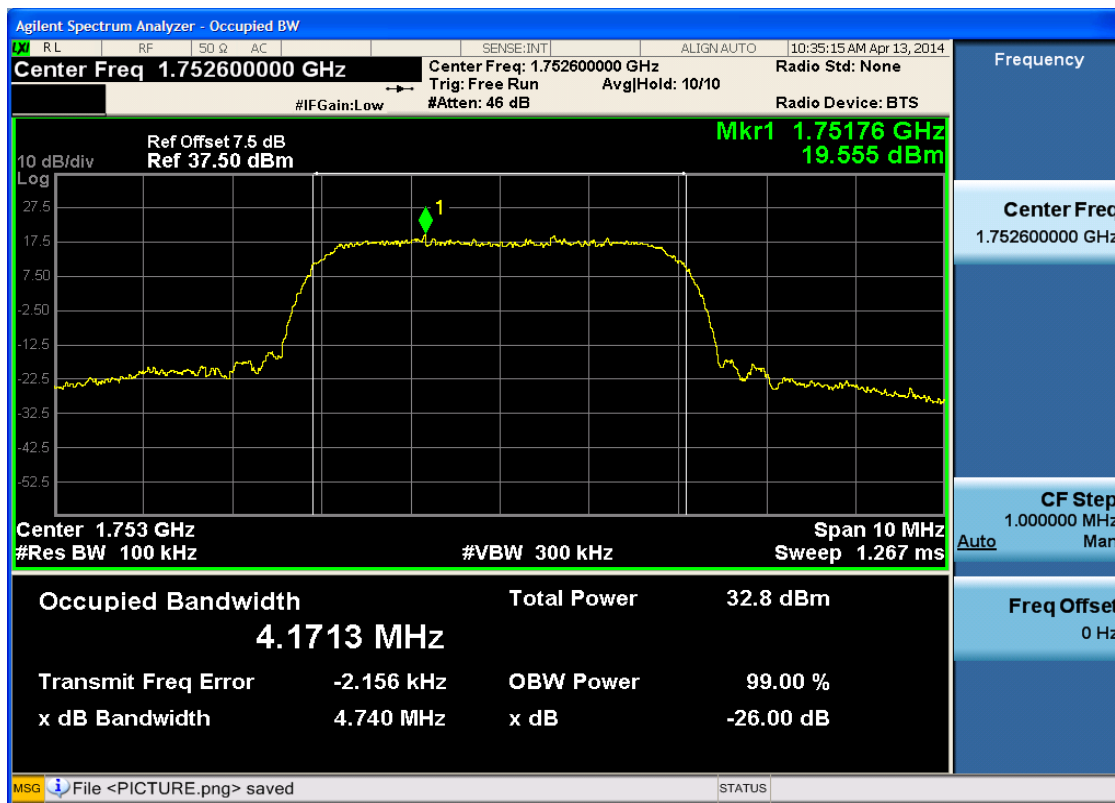


4.2.2.1.2 Test Channel = MCH





4.2.2.1.3 Test Channel = HCH

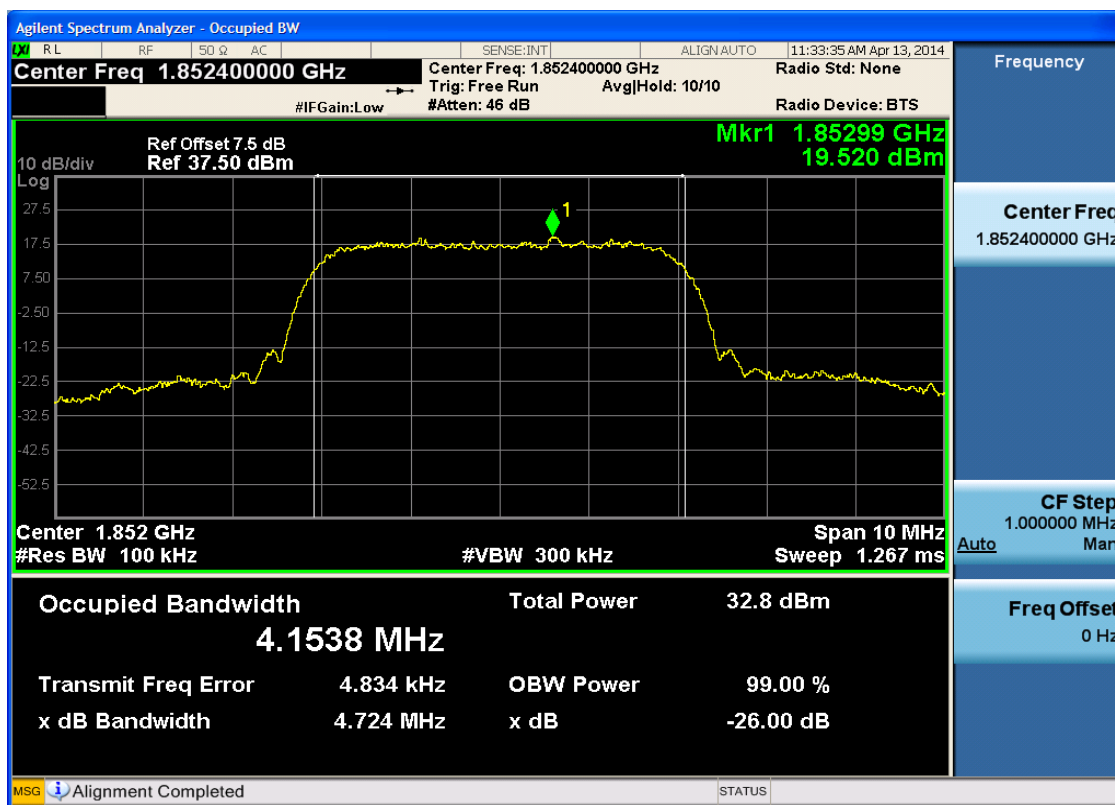




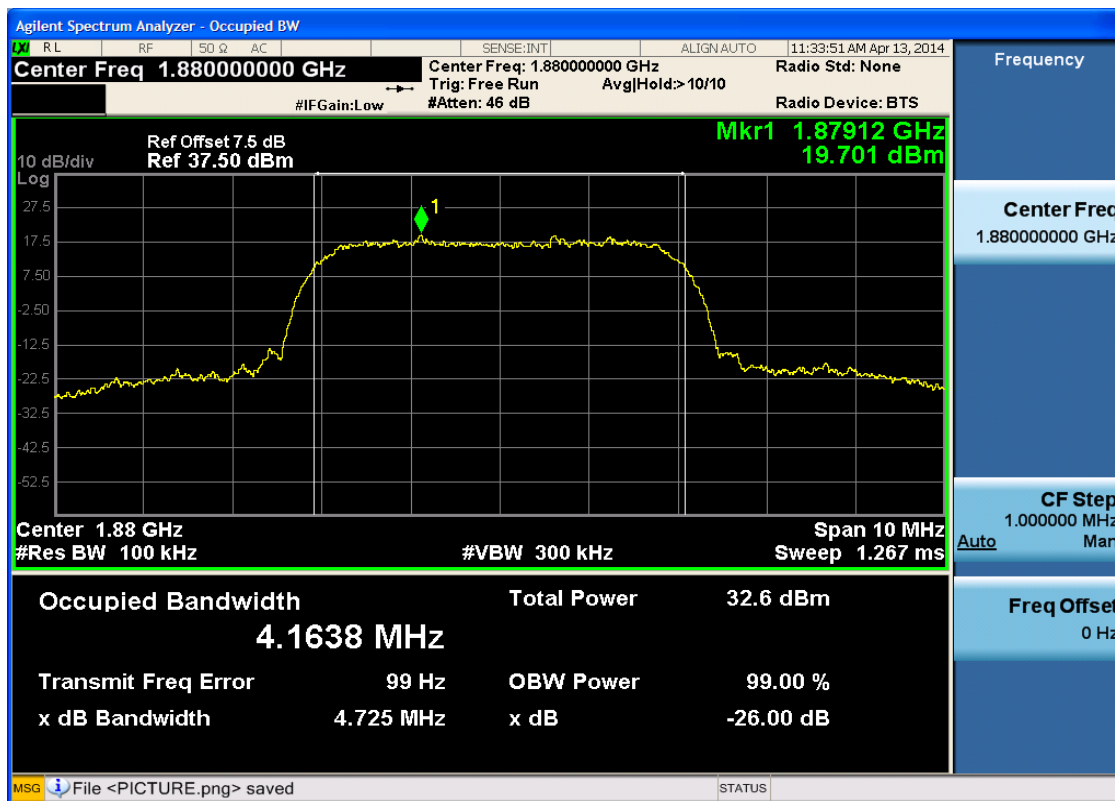
4.2.3 Test Band = WCDMA1900

4.2.3.1 Test Mode = UMTS/TM1

4.2.3.1.1 Test Channel = LCH

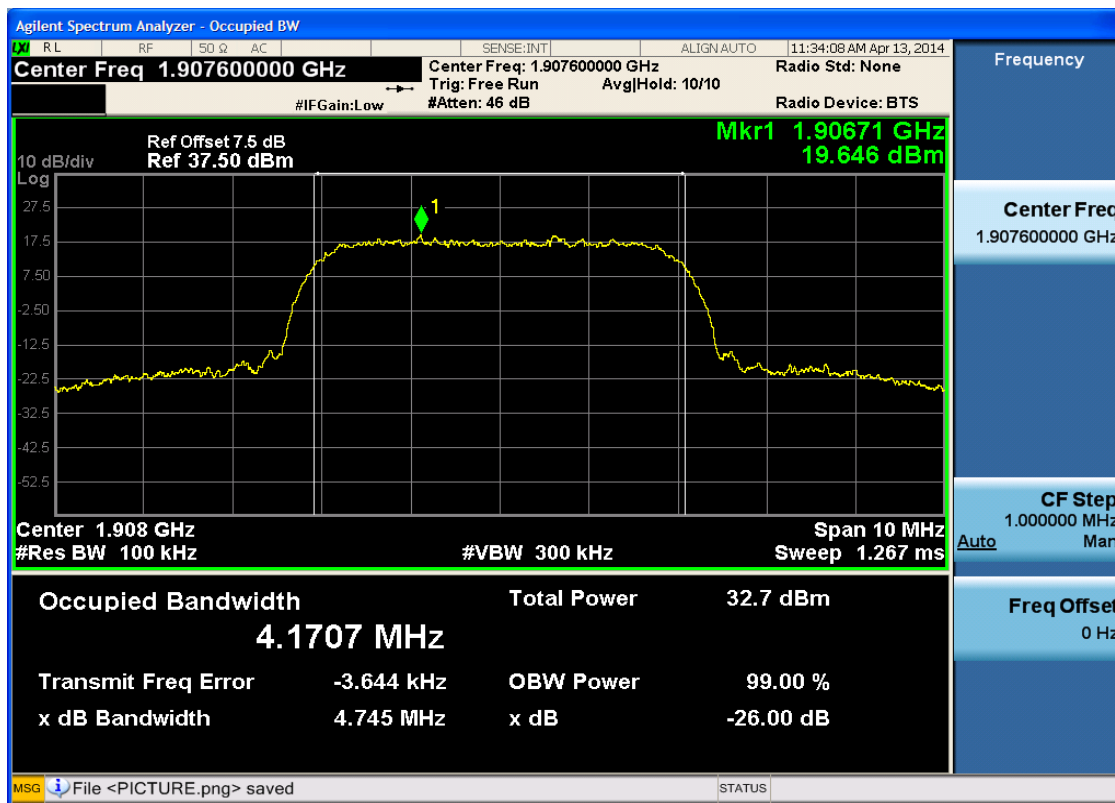


4.2.3.1.2 Test Channel = MCH





4.2.3.1.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

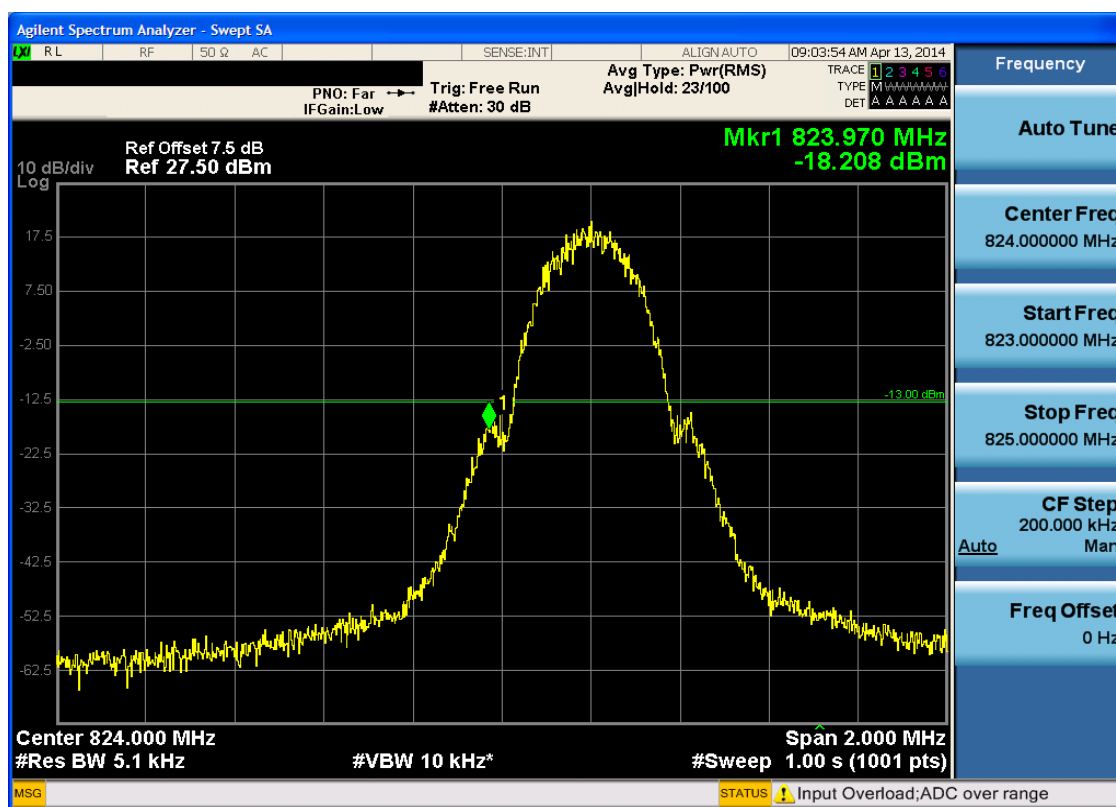
Part I - Test Plots

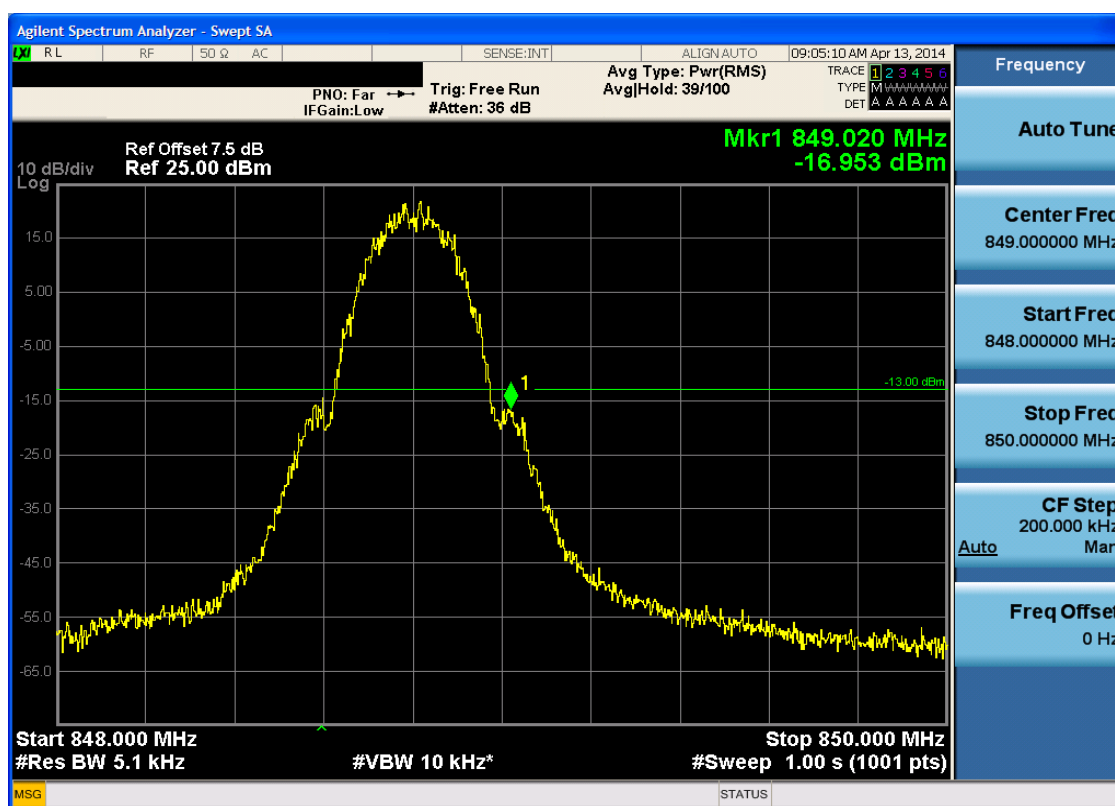
5.1 For GSM

5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

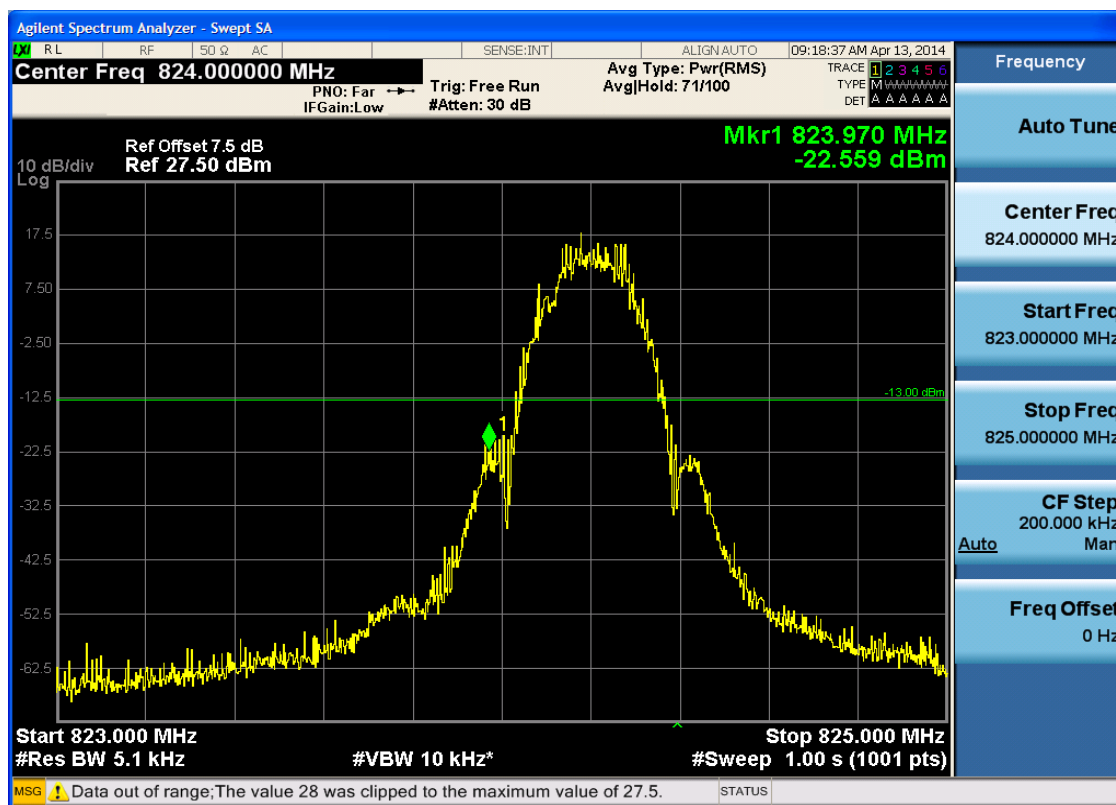
5.1.1.1.1 Test Channel = LCH



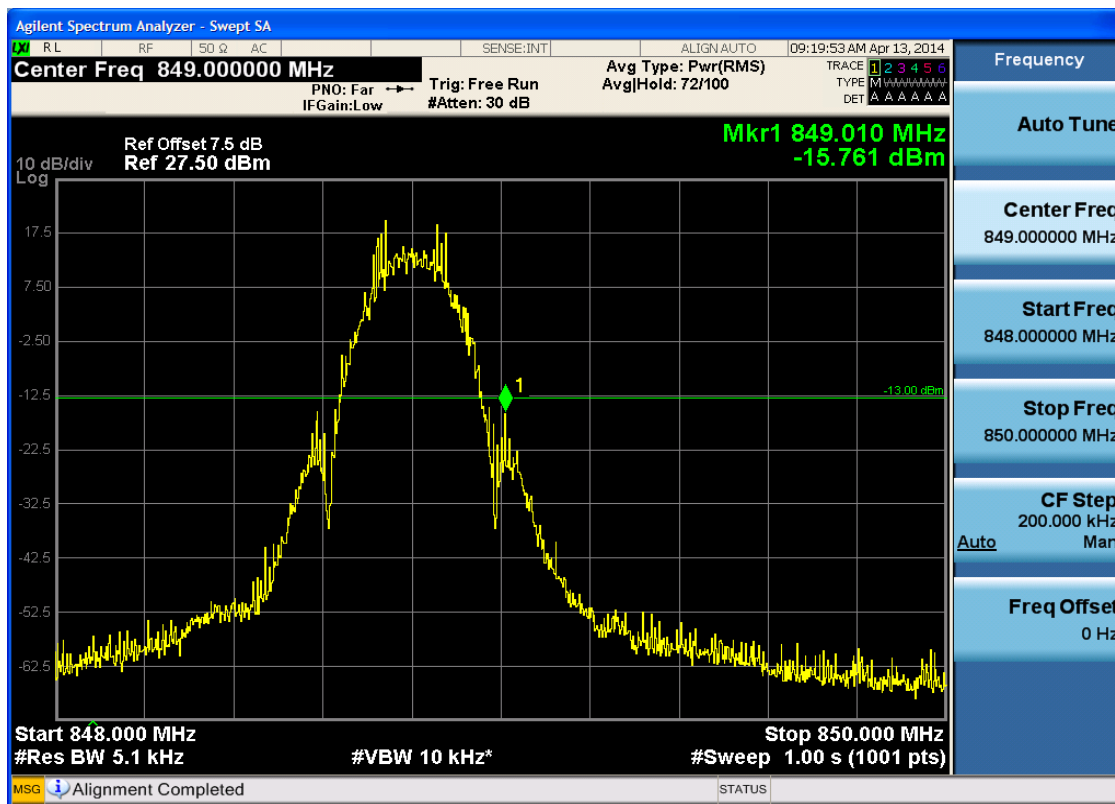


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



5.1.1.2.2 Test Channel = HCH

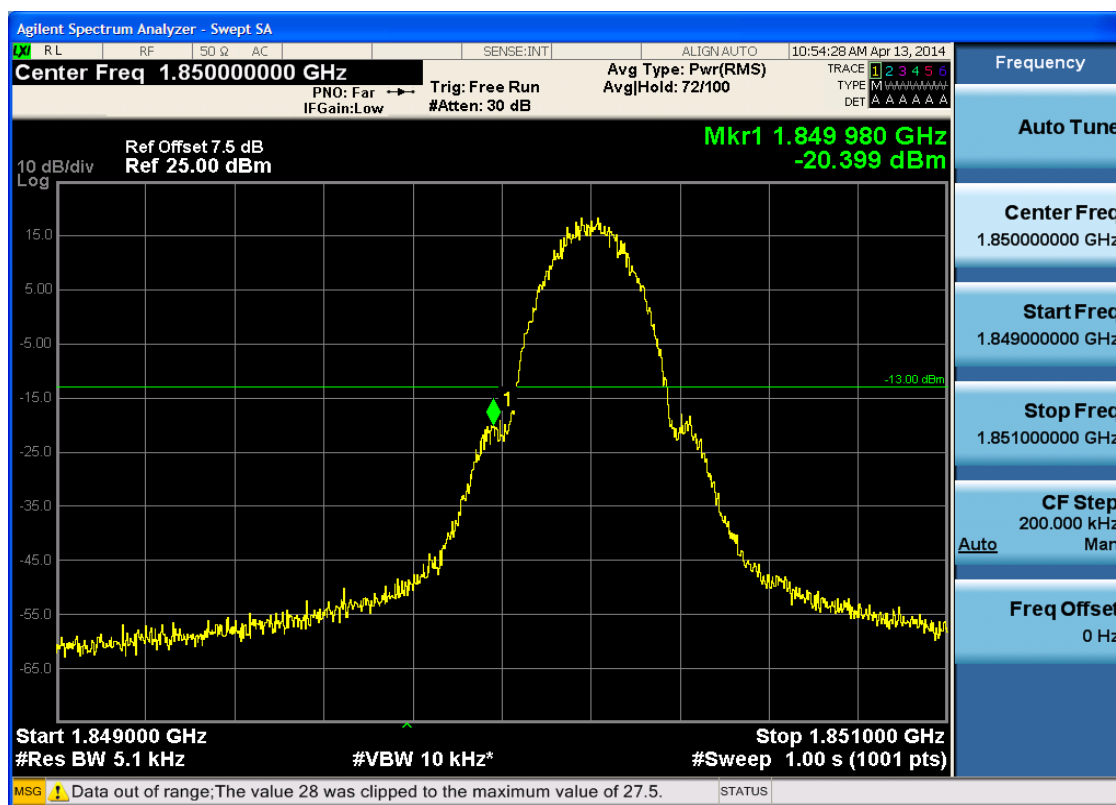


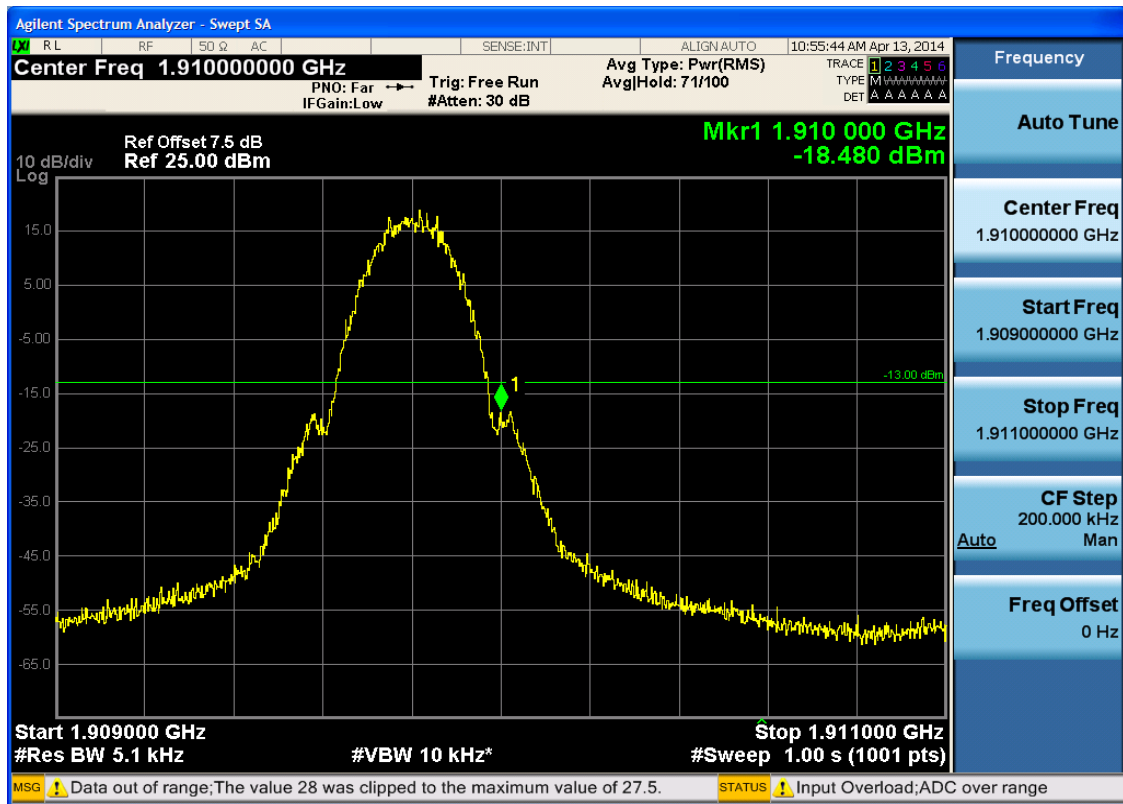


5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

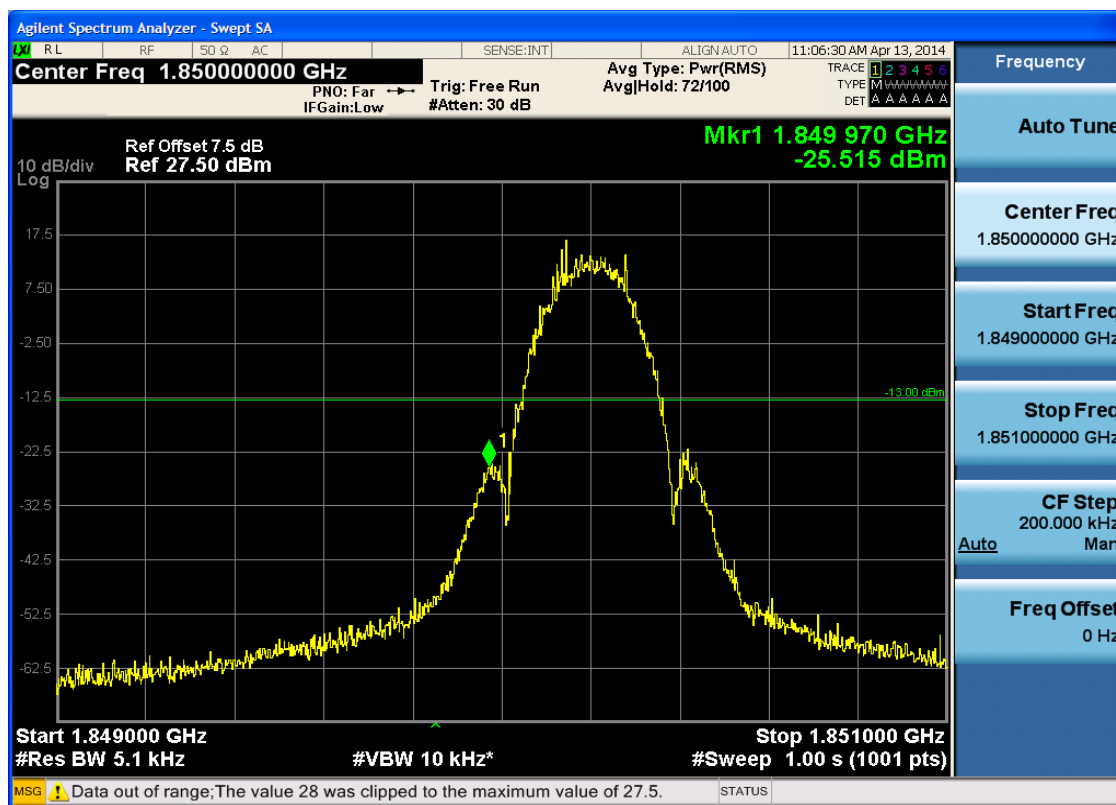
5.1.2.1.1 Test Channel = LCH



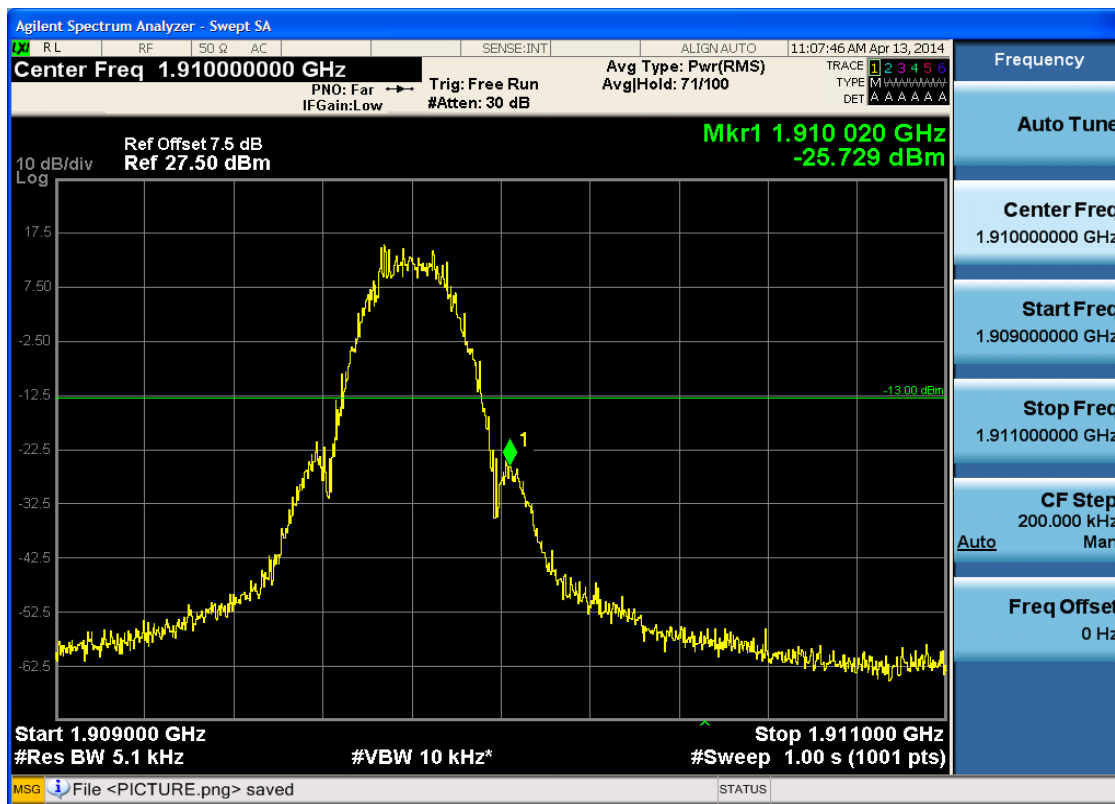


5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



5.1.2.2.2 Test Channel = HCH

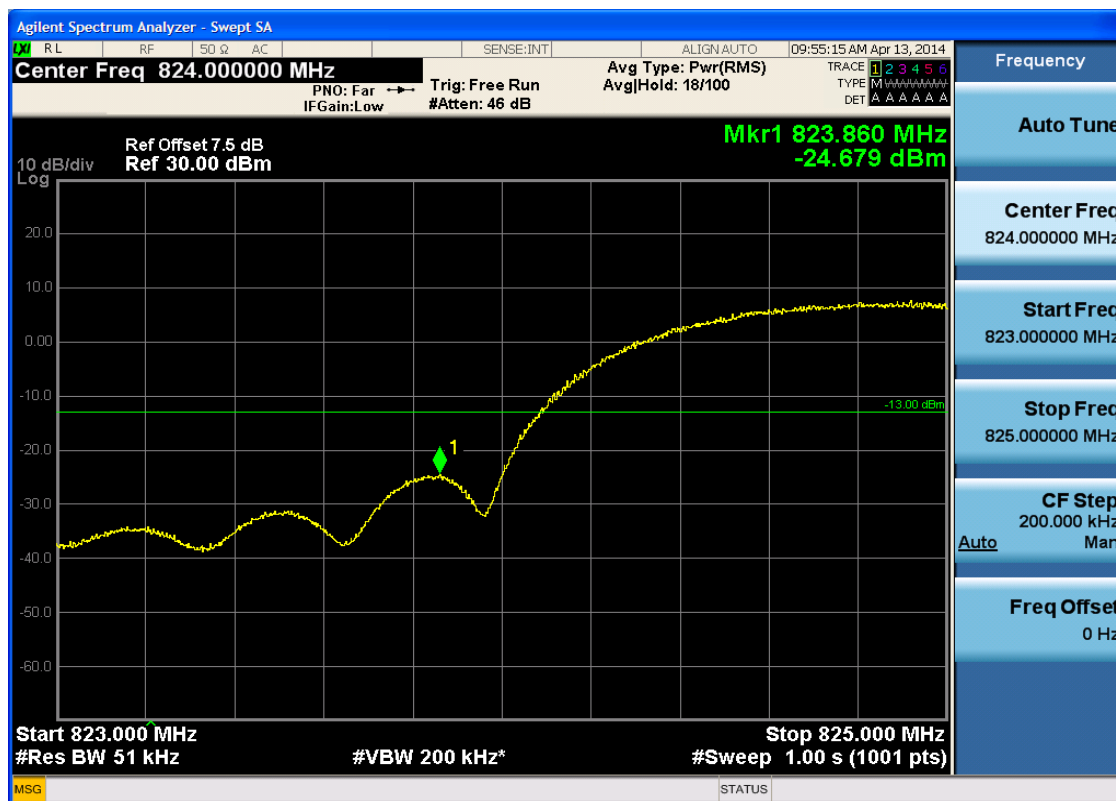


5.2 For UMTS

5.2.1 Test Band = WCDMA850

5.2.1.1 Test Mode = UMTS/TM1

5.2.1.1.1 Test Channel = LCH



5.2.1.1.2 Test Channel = HCH

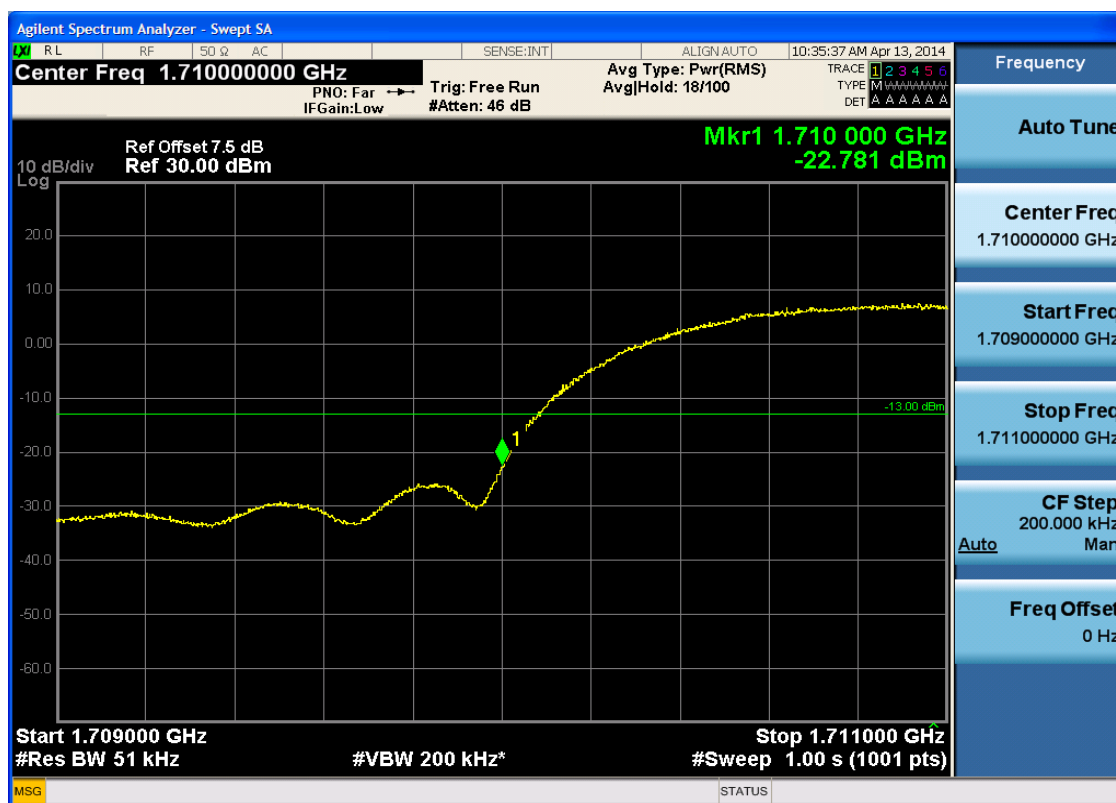




5.2.2 Test Band = WCDMA1700

5.2.2.1 Test Mode = UMTS/TM1

5.2.2.1.1 Test Channel = LCH



5.2.2.1.2 Test Channel = HCH

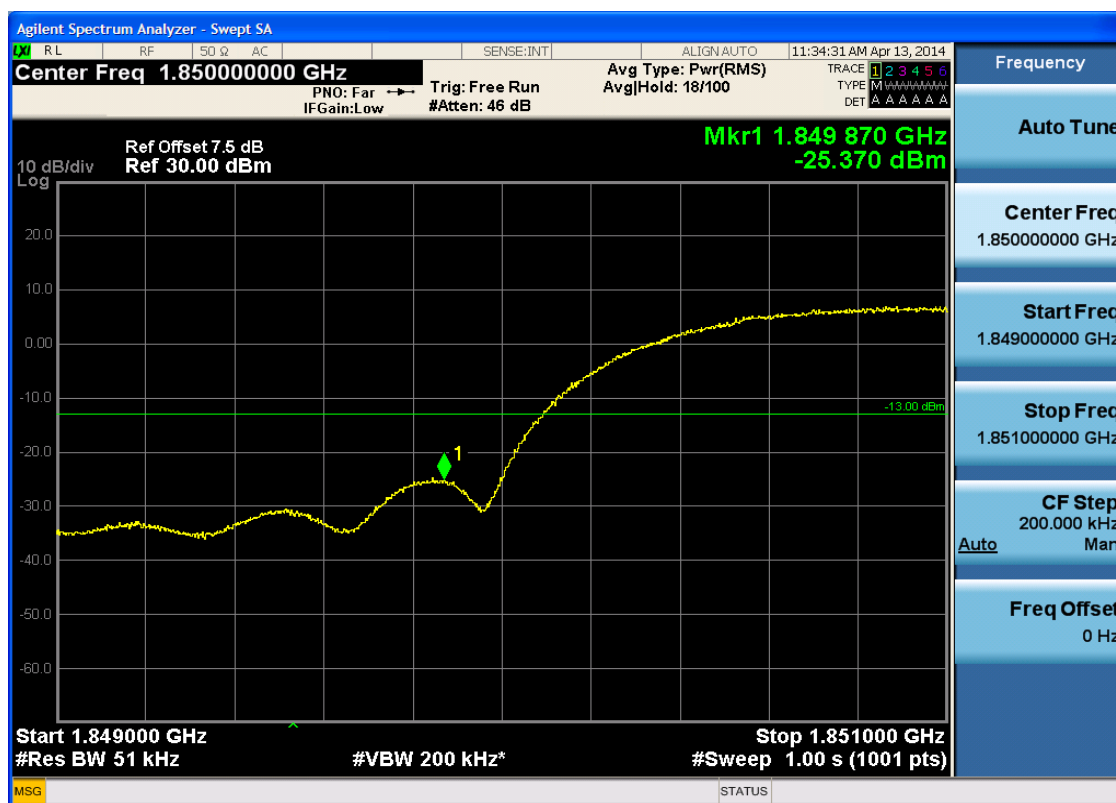




5.2.3 Test Band = WCDMA1900

5.2.3.1 Test Mode = UMTS/TM1

5.2.3.1.1 Test Channel = LCH



5.2.3.1.2 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.

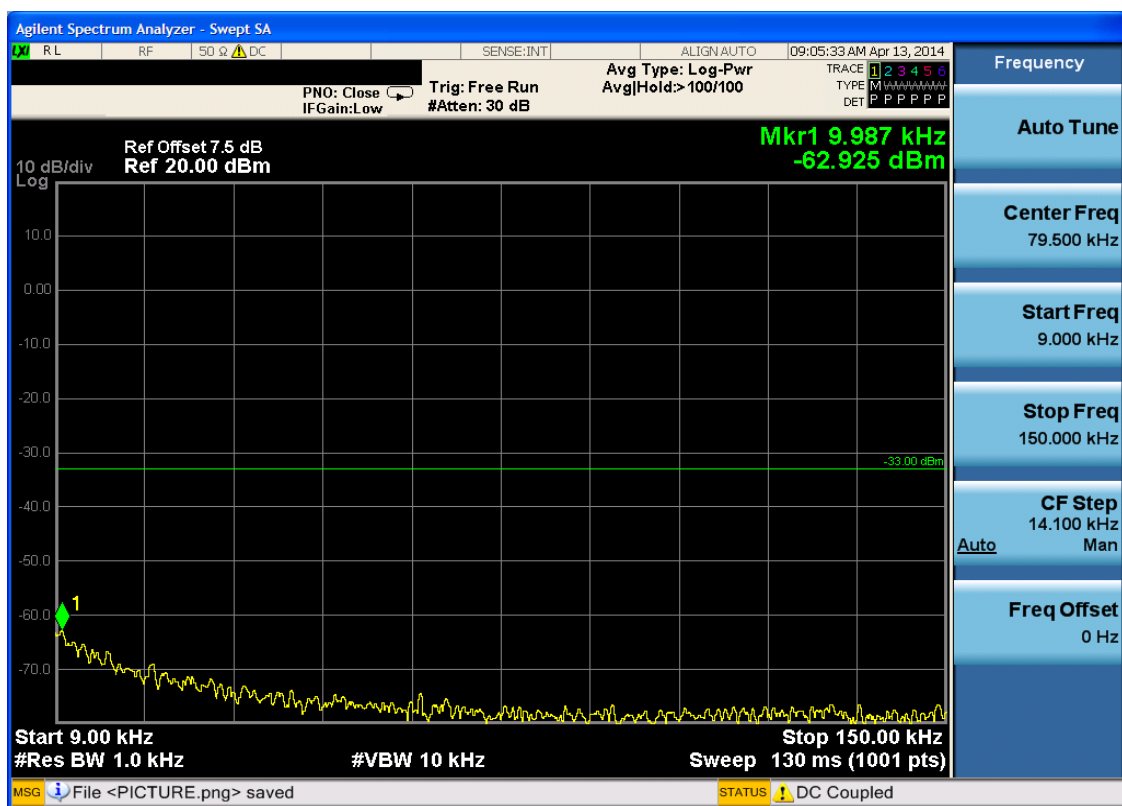
Part I - Test Plots

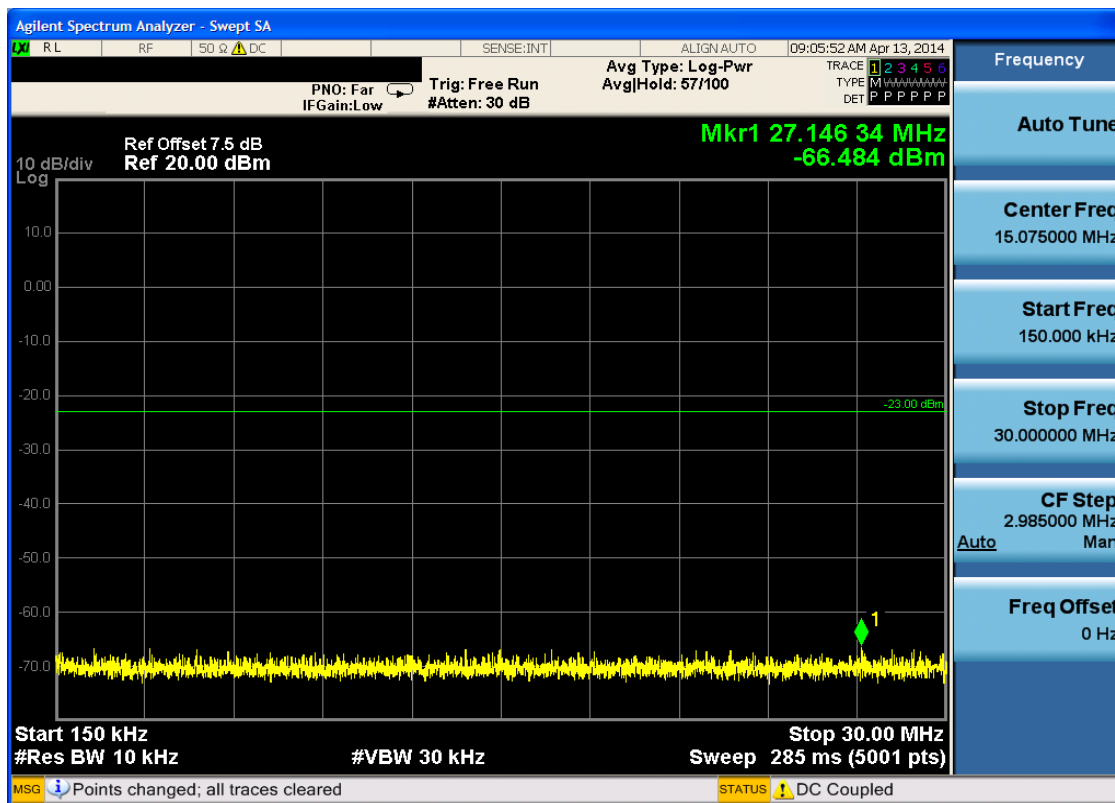
6.1 For GSM

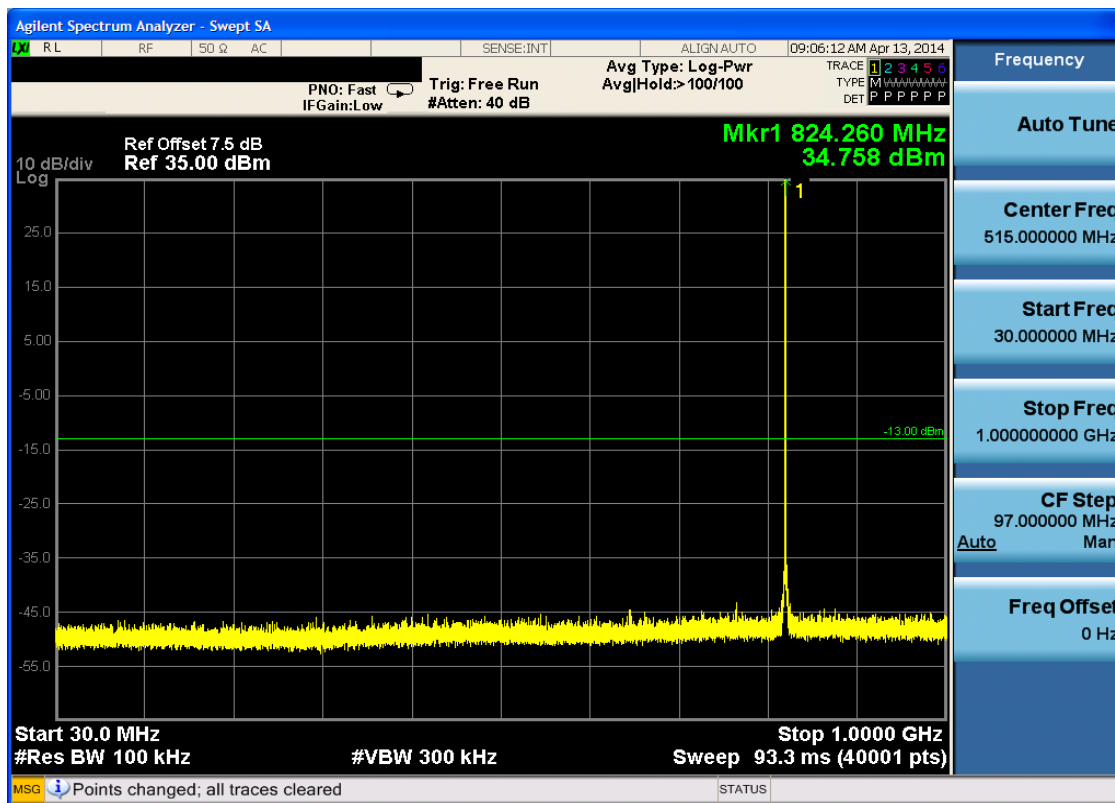
6.1.1 Test Band = GSM850

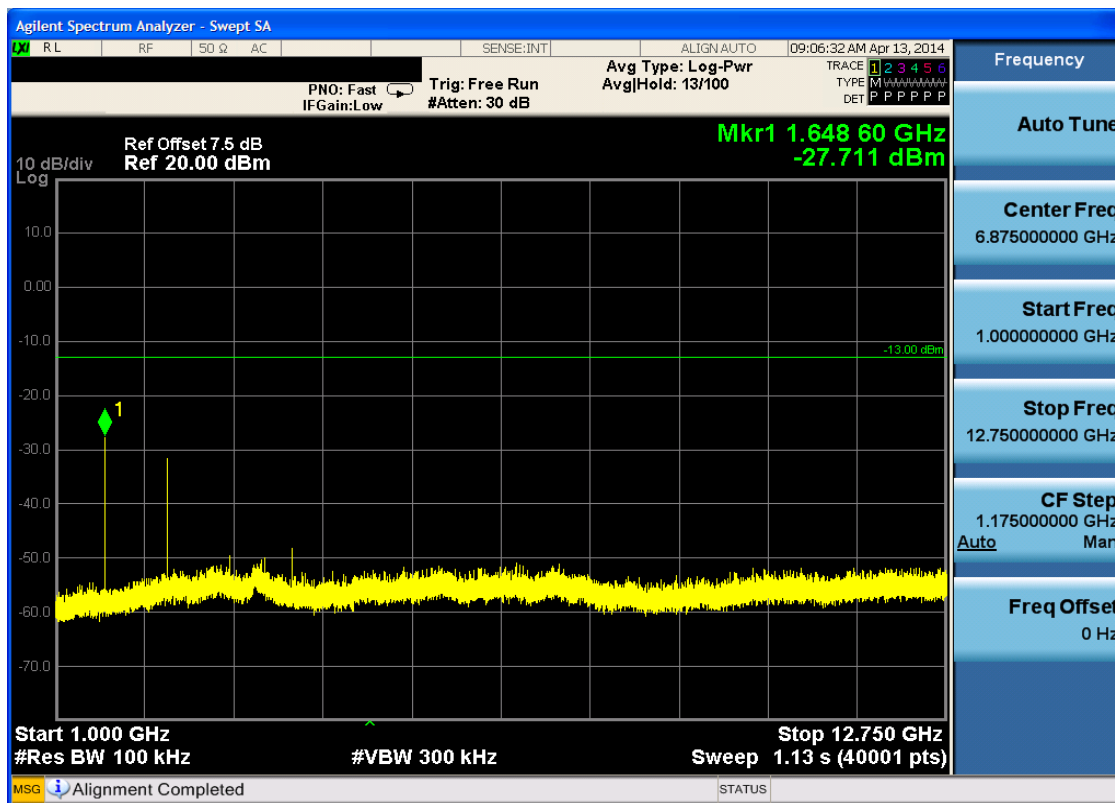
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH



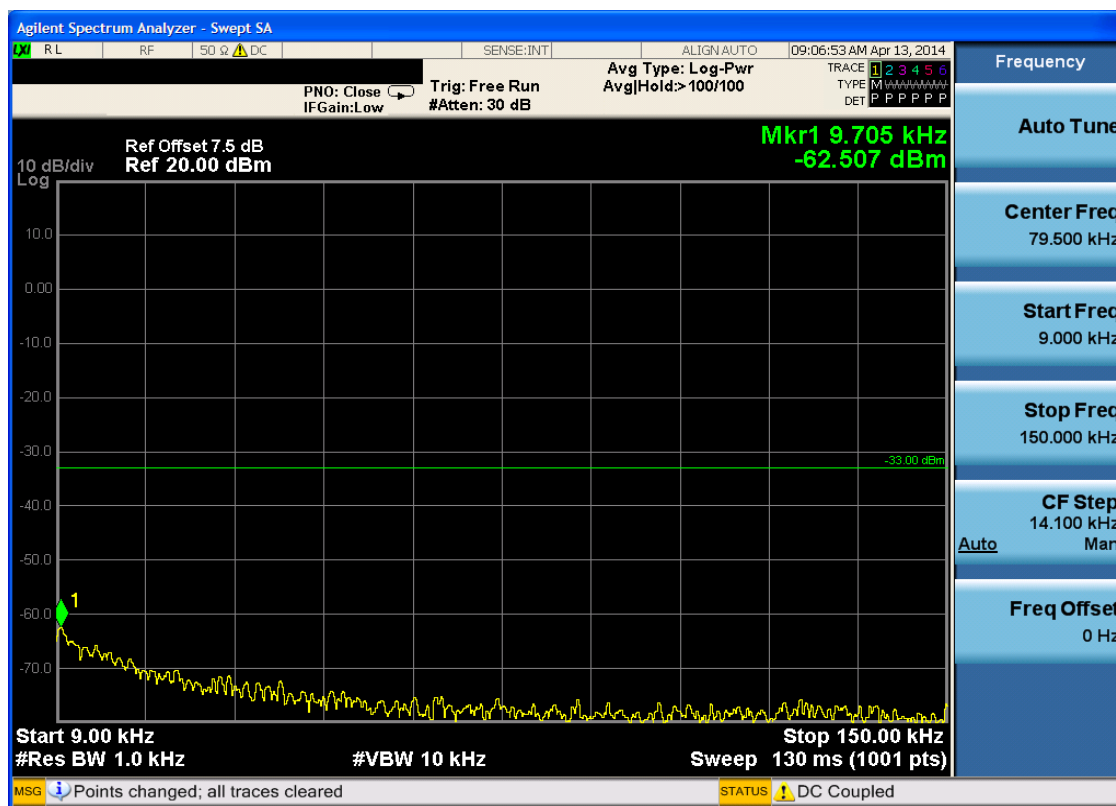


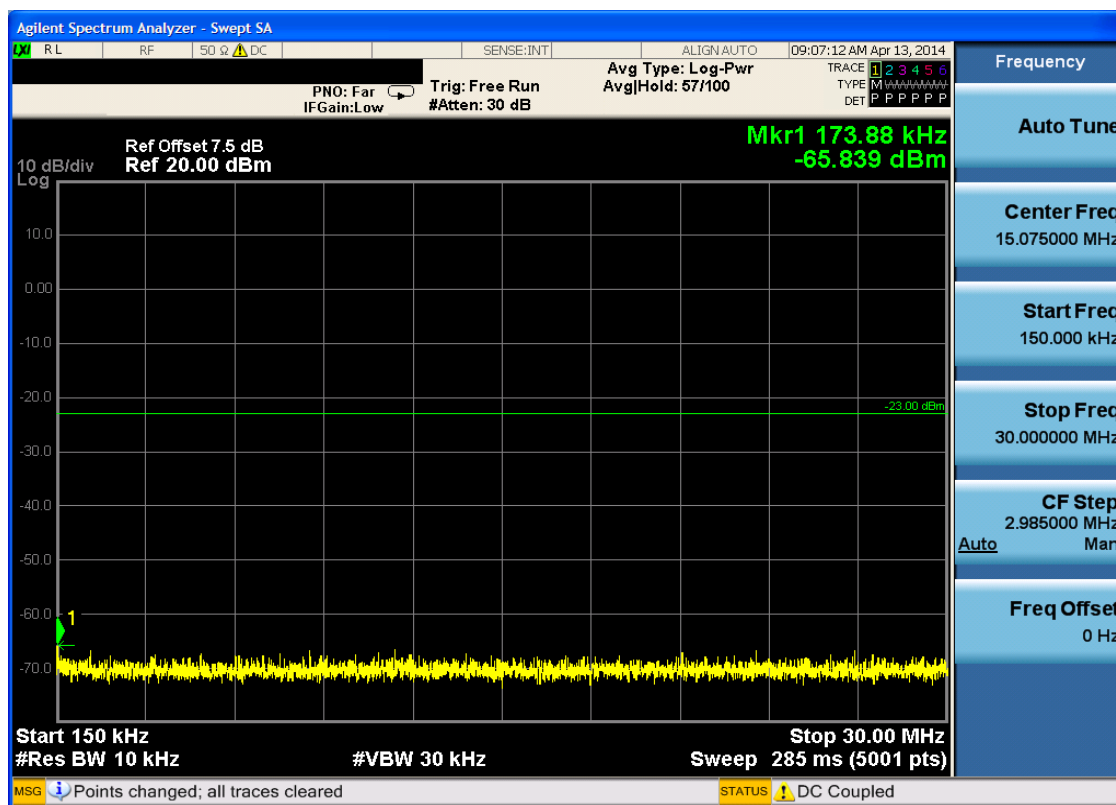


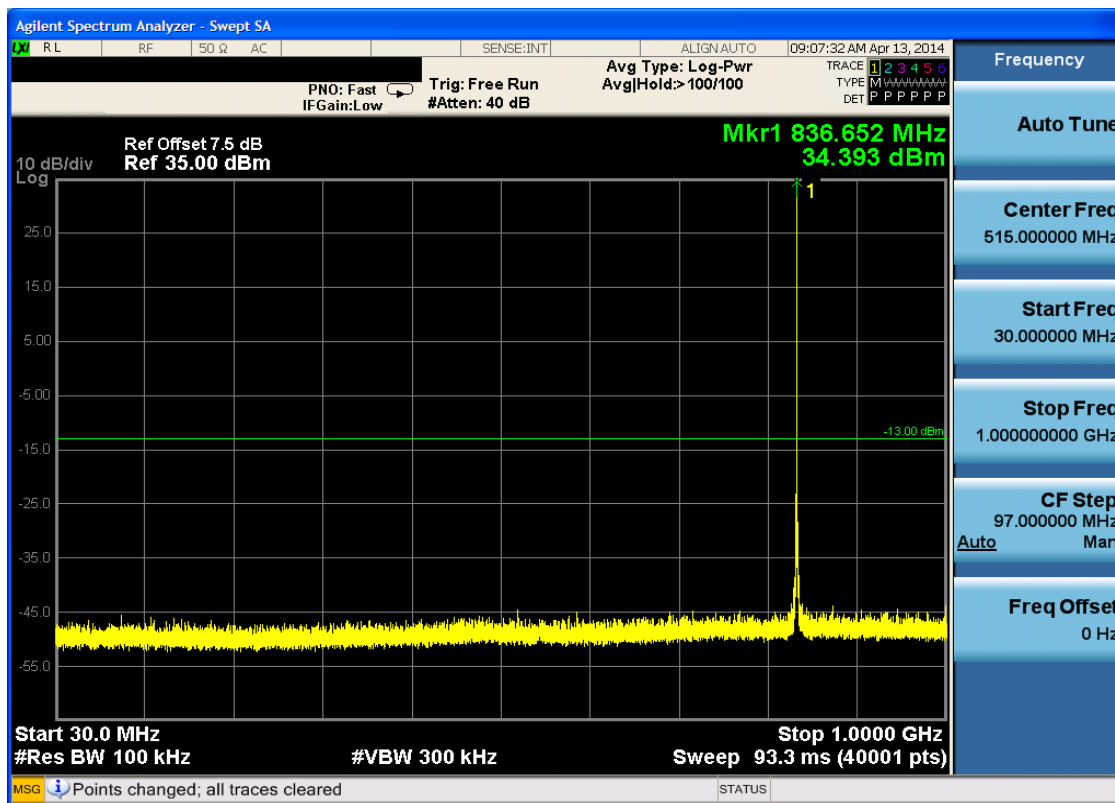


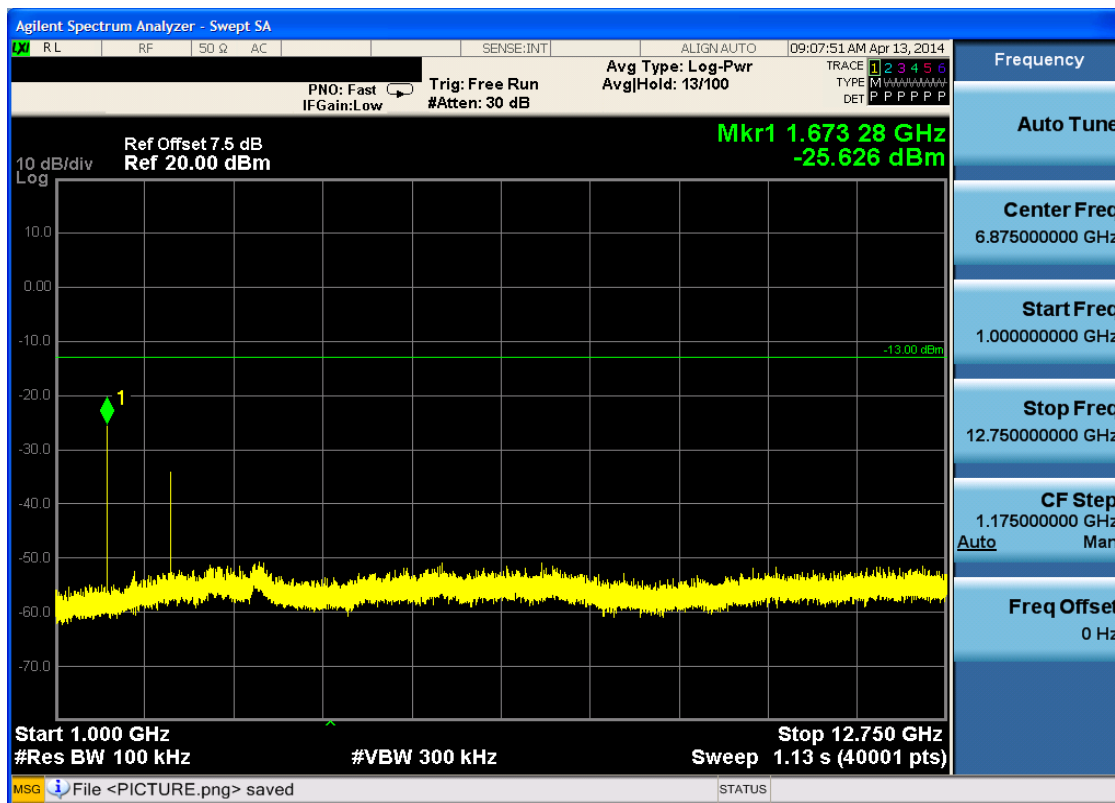


6.1.1.1.2 Test Channel = MCH



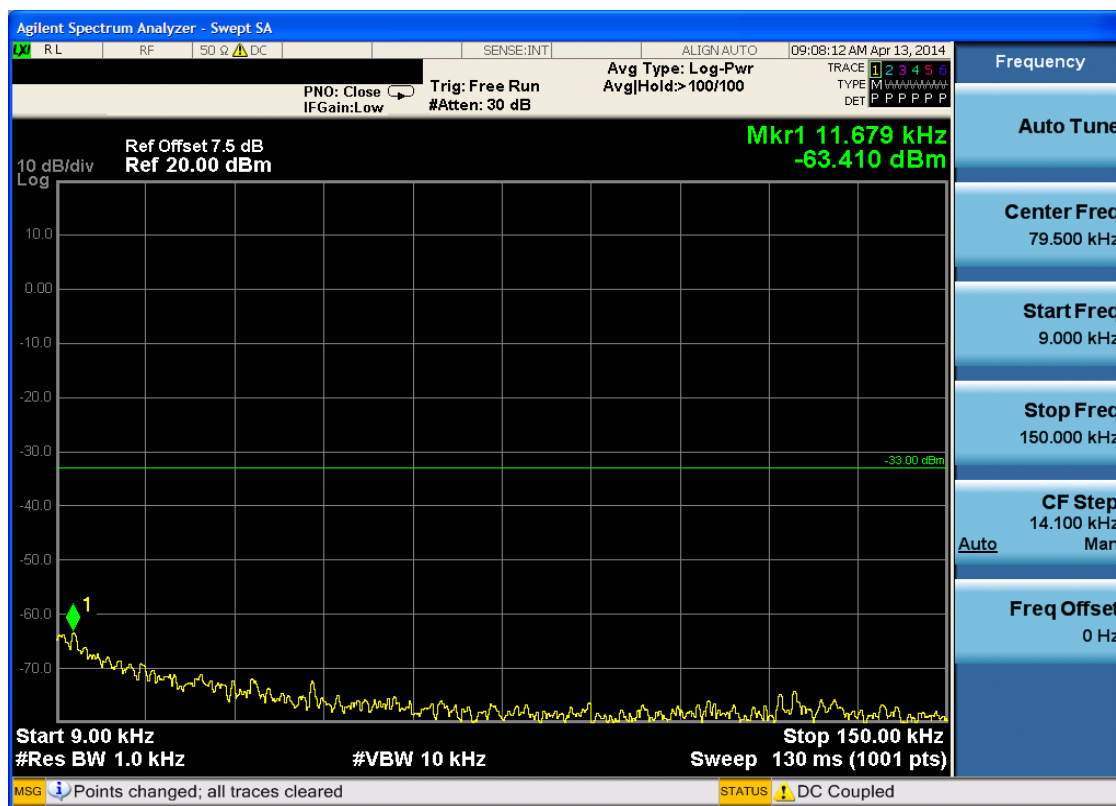


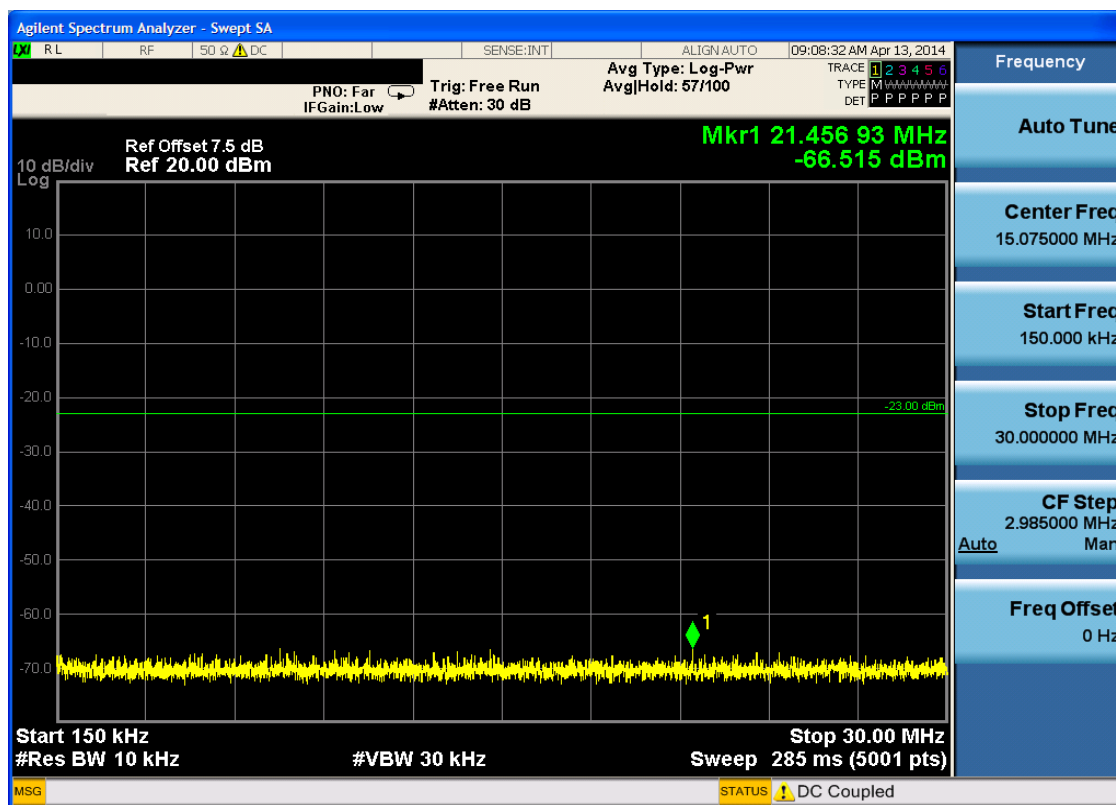


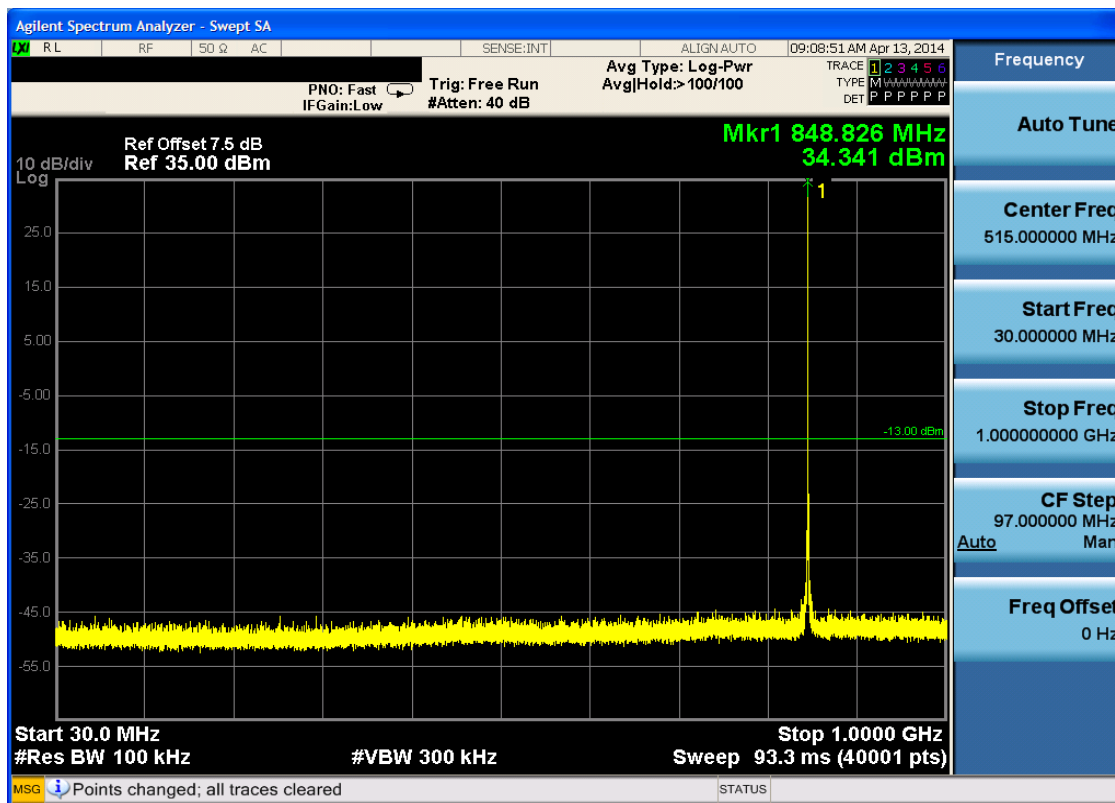


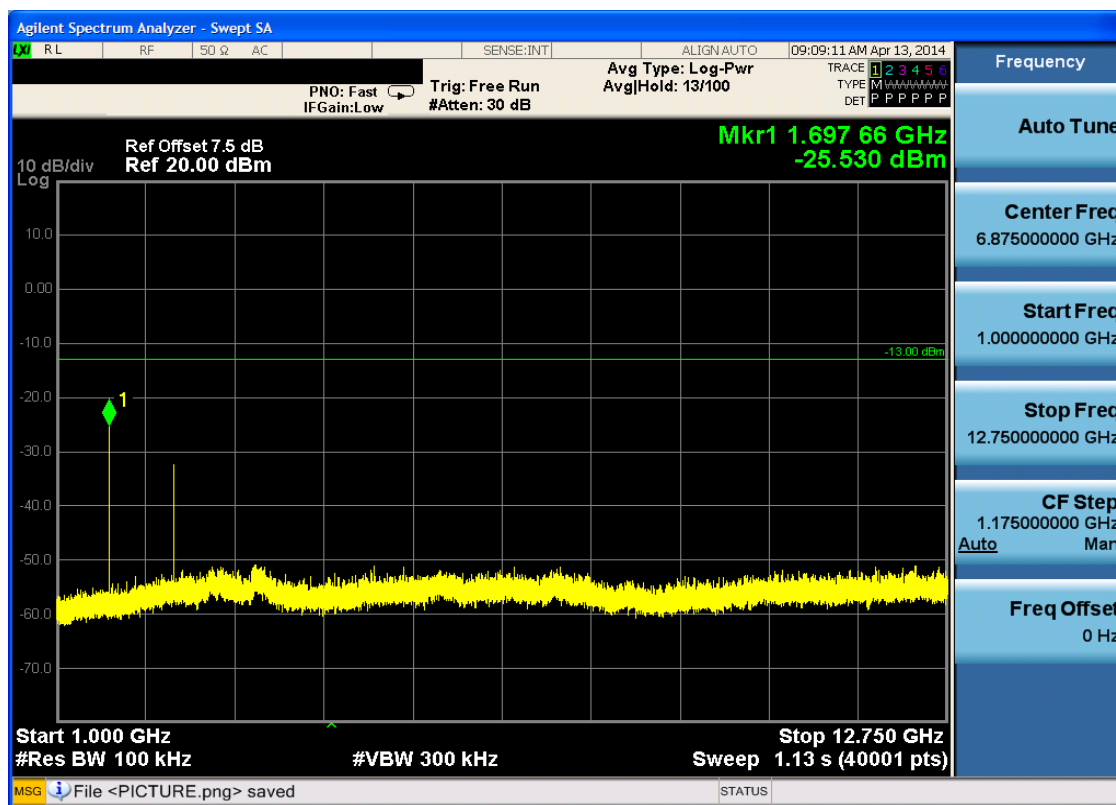


6.1.1.1.3 Test Channel = HCH



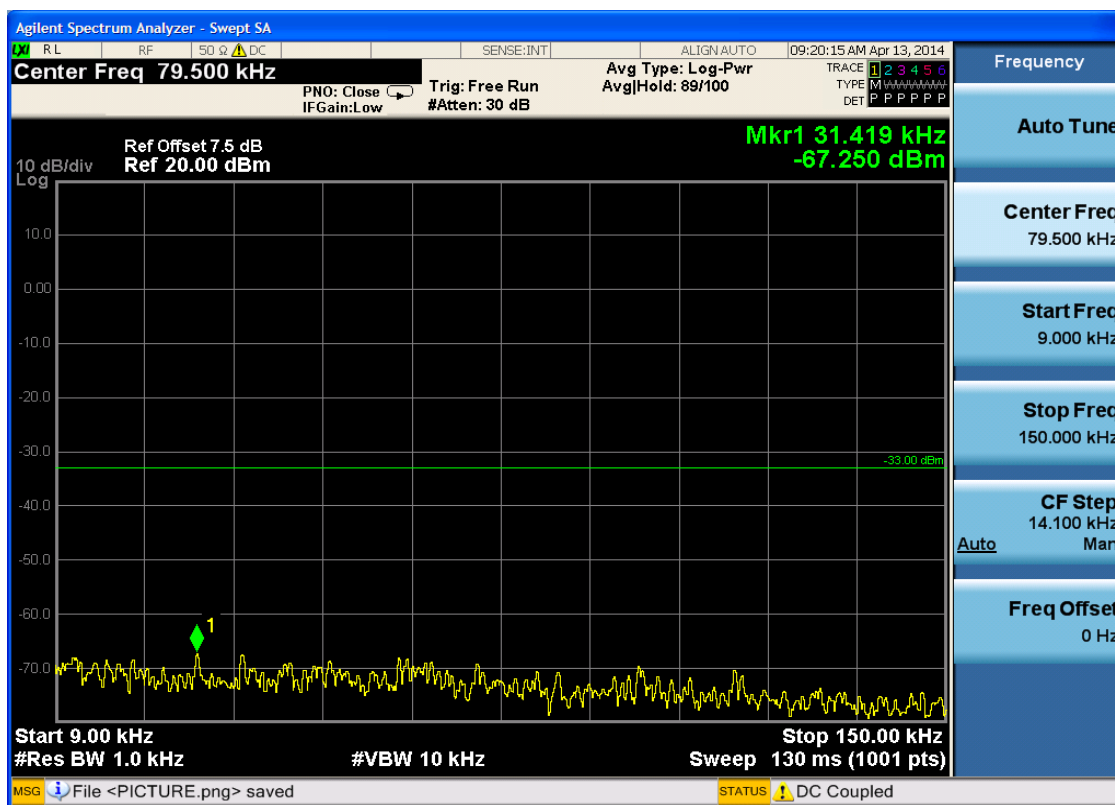


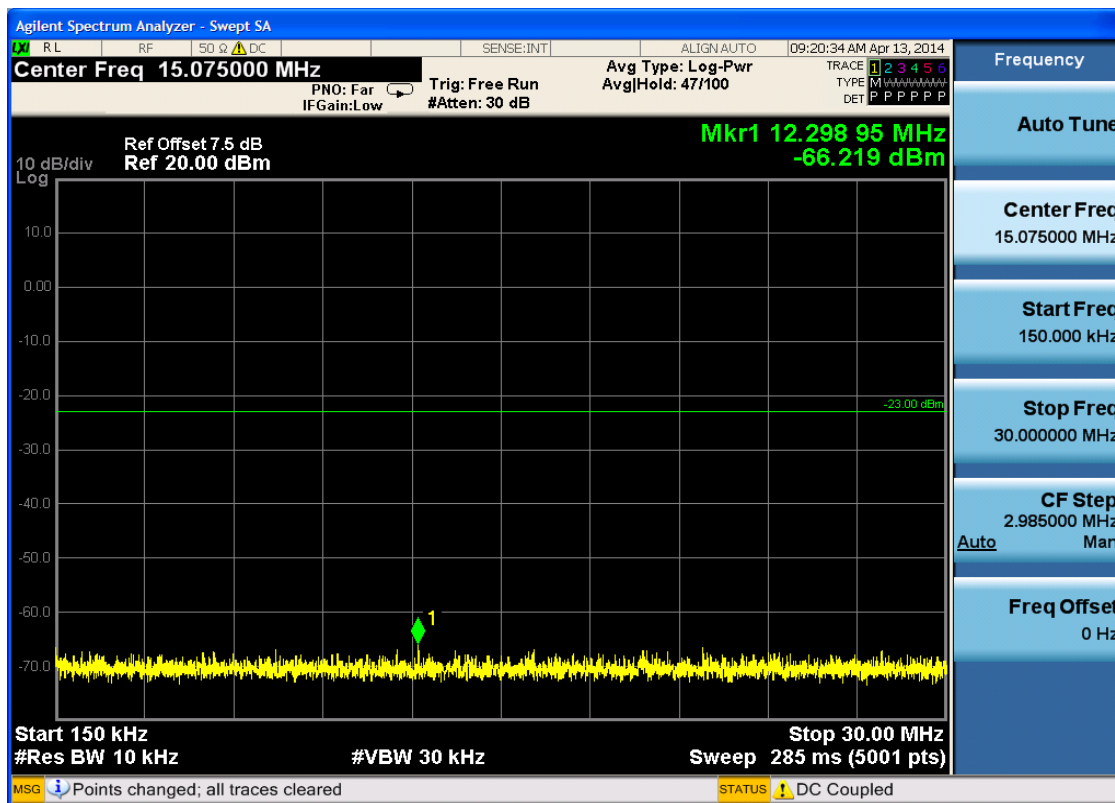


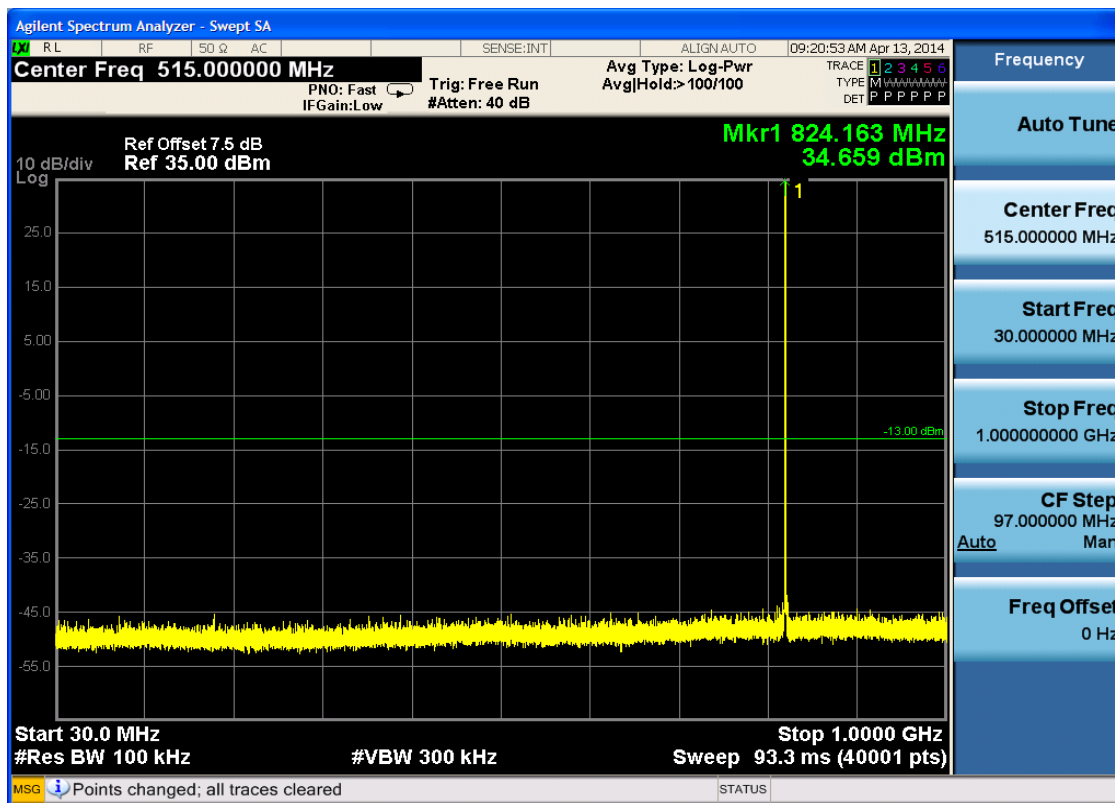


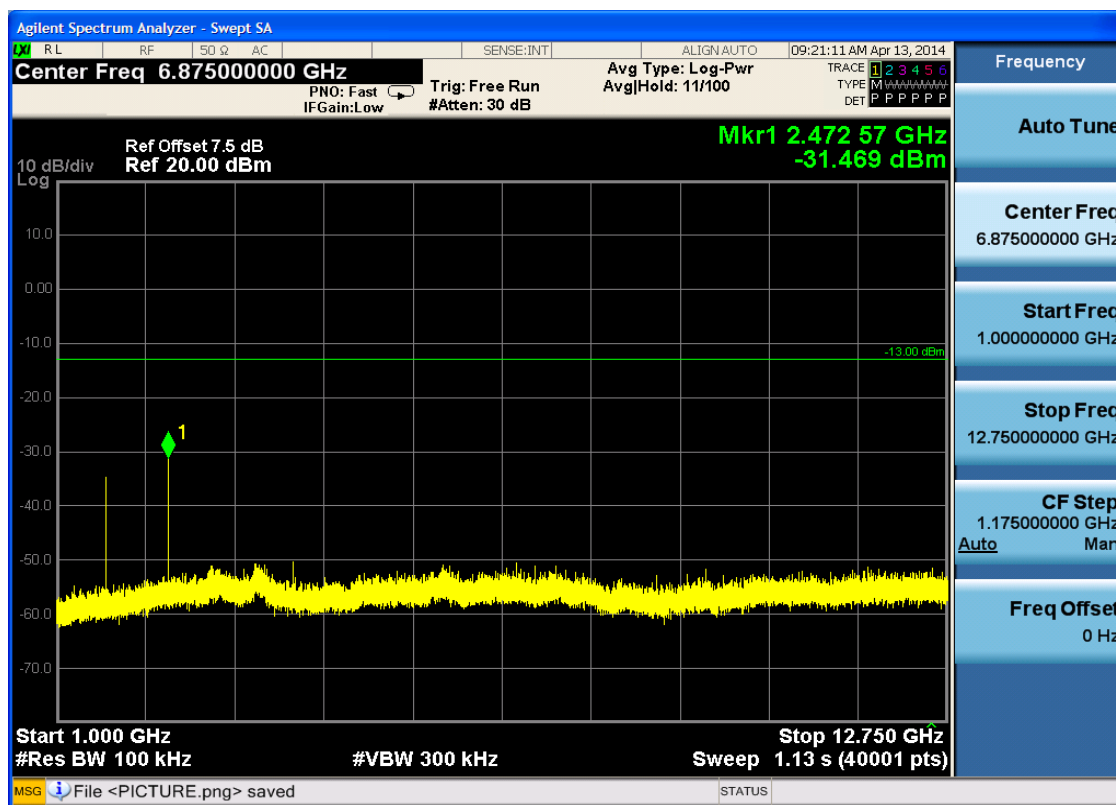
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH











Agilent Spectrum Analyzer - Swept SA

R/L	RF	50 Ω DC	SENSE:INT	ALIGN:AUTO	09:21:31 AM Apr 13, 2014
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Center Freq 79.500 kHz PNO: Close IFGain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 89/100 TRACE 1 2 3 4 5 6 TYPE M W H A M M M M DET P P P P P P

Ref Offset 7.5 dB
Ref 20.00 dBm

10 dB/div
Log

Mkr1 74.142 kHz
-66.903 dBm

-33.00 dBm

Start 9.00 kHz Stop 150.00 kHz
#Res BW 1.0 kHz #VBW 10 kHz Sweep 130 ms (1001 pts)

MSG ⓘ Points changed; all traces cleared STATUS ⚠ DC Coupled

Frequency

Auto Tune

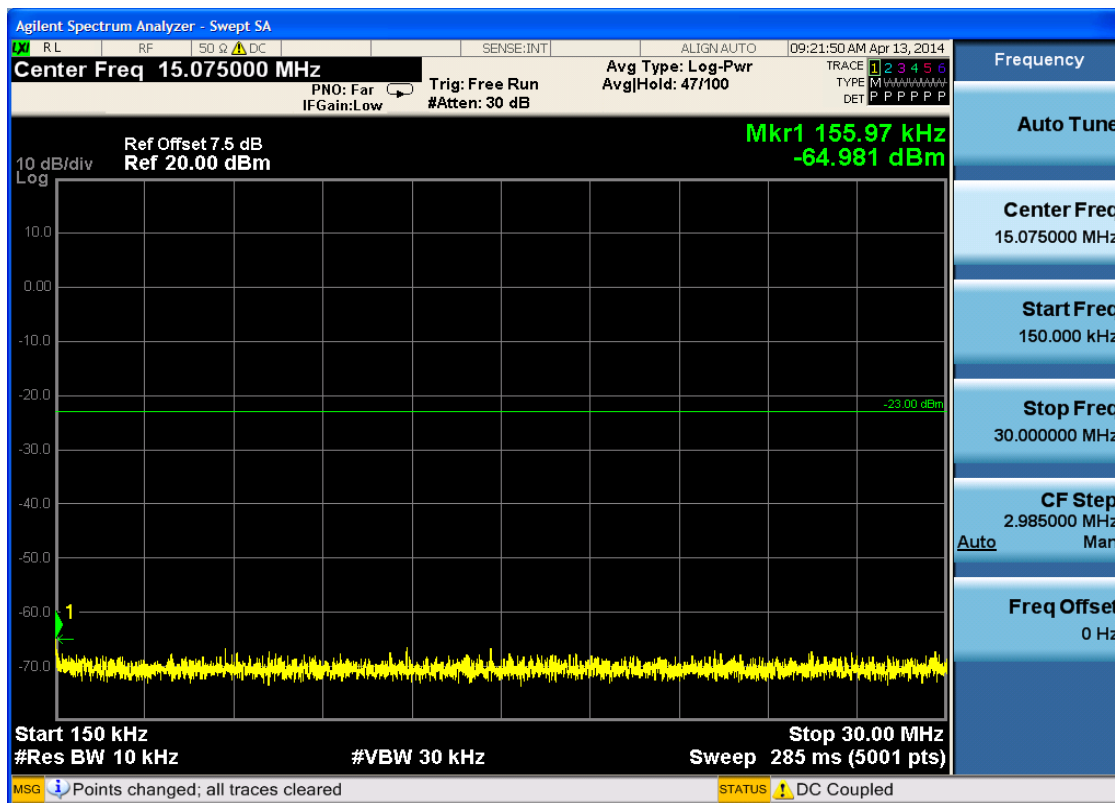
Center Freq
79.500 kHz

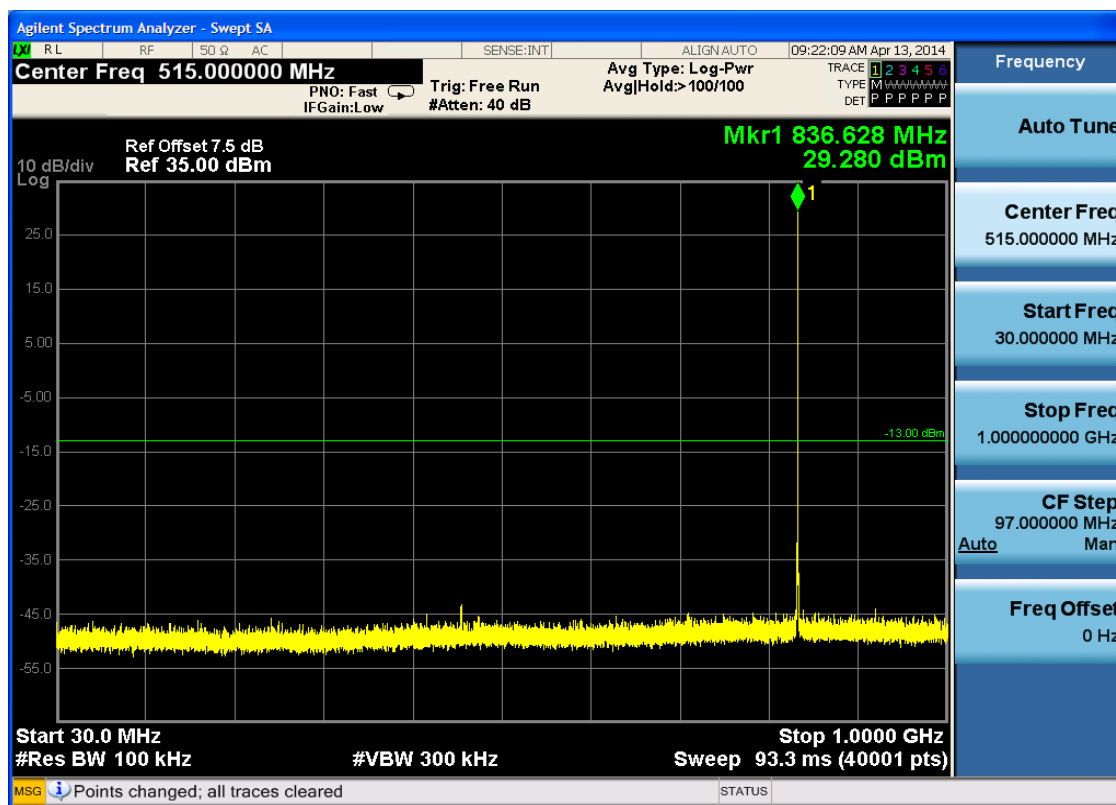
Start Freq
9.000 kHz

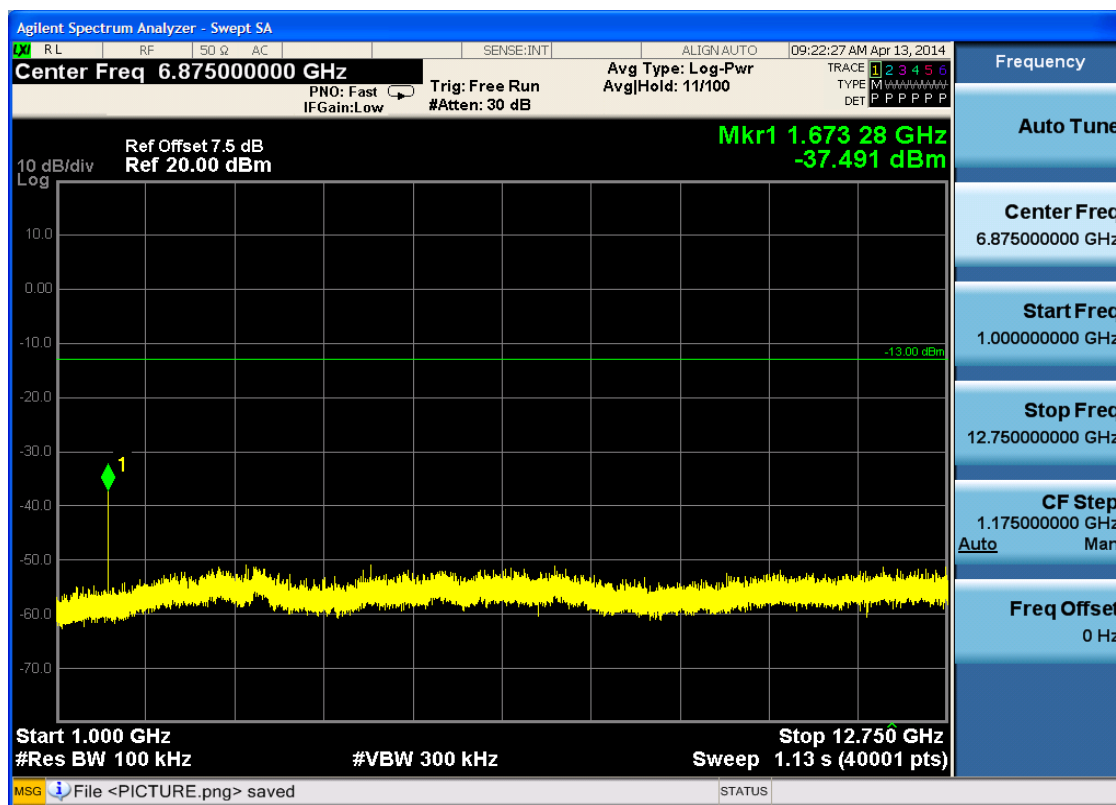
Stop Freq
150.000 kHz

CF Step
14.100 kHz
Auto Man

Freq Offset
0 Hz









Agilent Spectrum Analyzer - Swept SA

☒ R L RF 50 Ω ☒ DC SENSE:INT ALIGN:AUTO 09:22:47 AM Apr 13, 2014

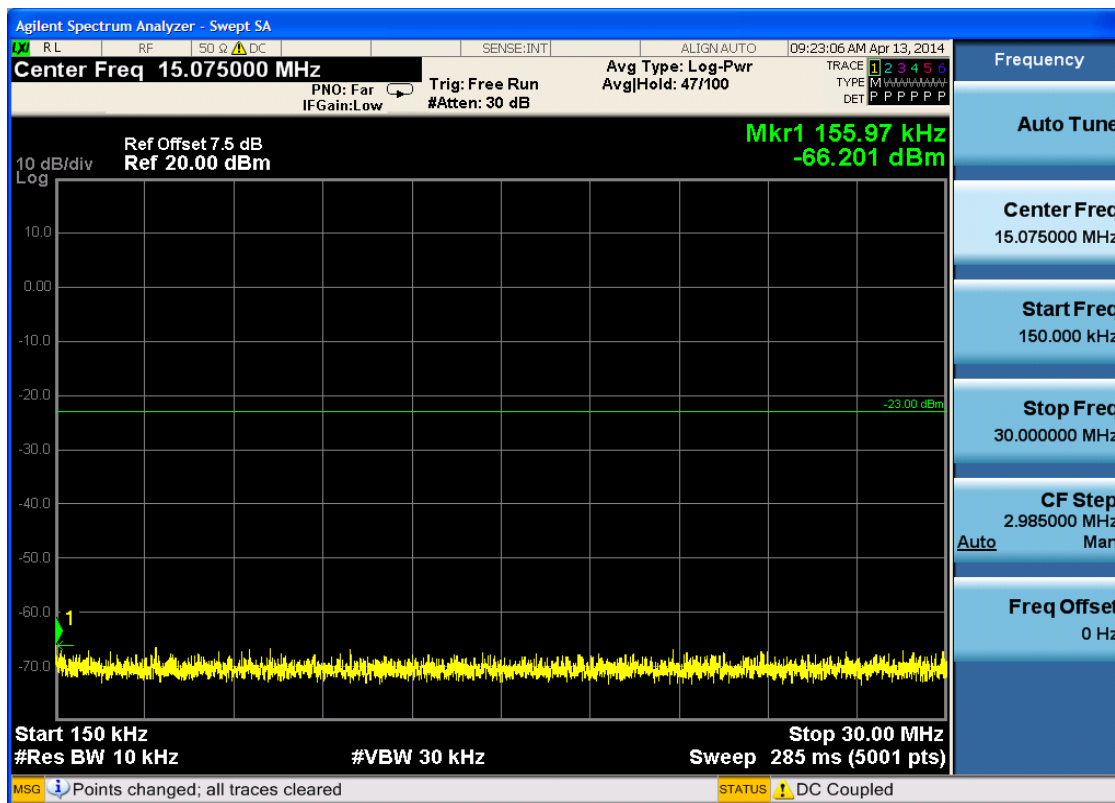
Center Freq 79.500 kHz PNO: Close ☐ Trig: Free Run Avg Type: Log-Pwr TRACE 1 2 3 4 5 6
 IF Gain: Low #Atten: 30 dB Avg/Hold: 90/100 TYPE M H M M M M M M M M
 DET P P P P P P P

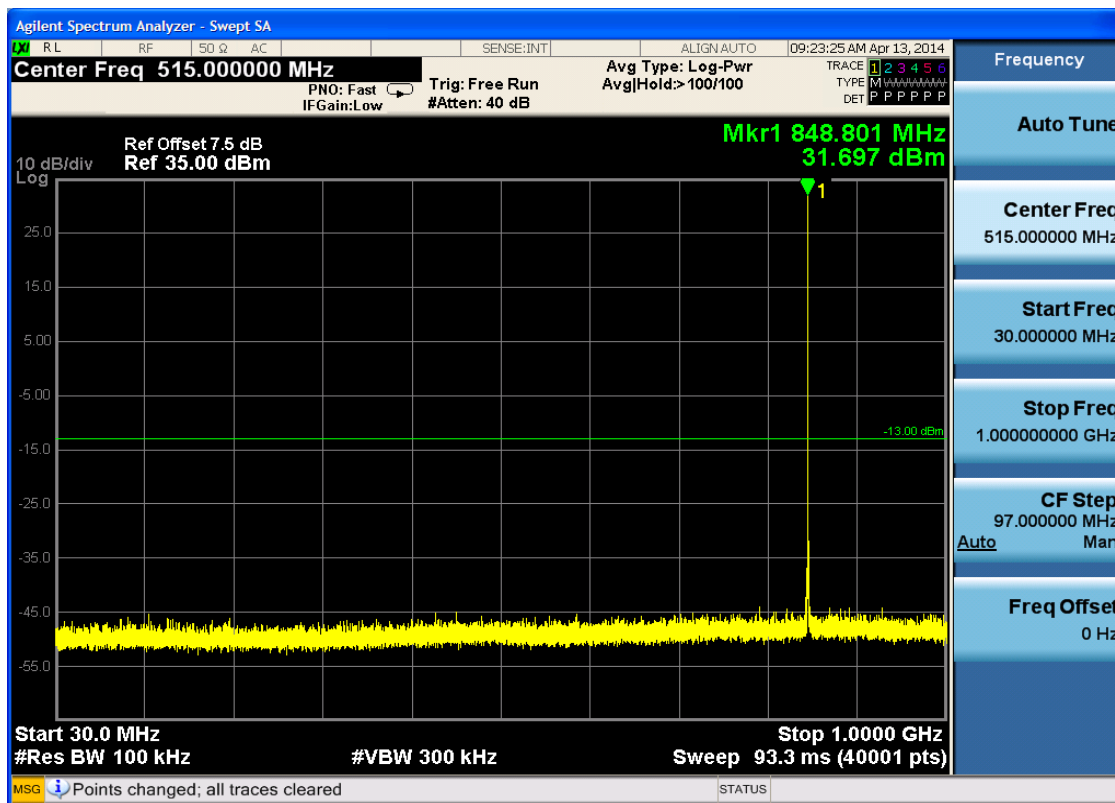
10 dB/div Ref Offset 7.5 dB **Mkr1 88.947 kHz**
 Log Ref 20.00 dBm **-67.618 dBm**

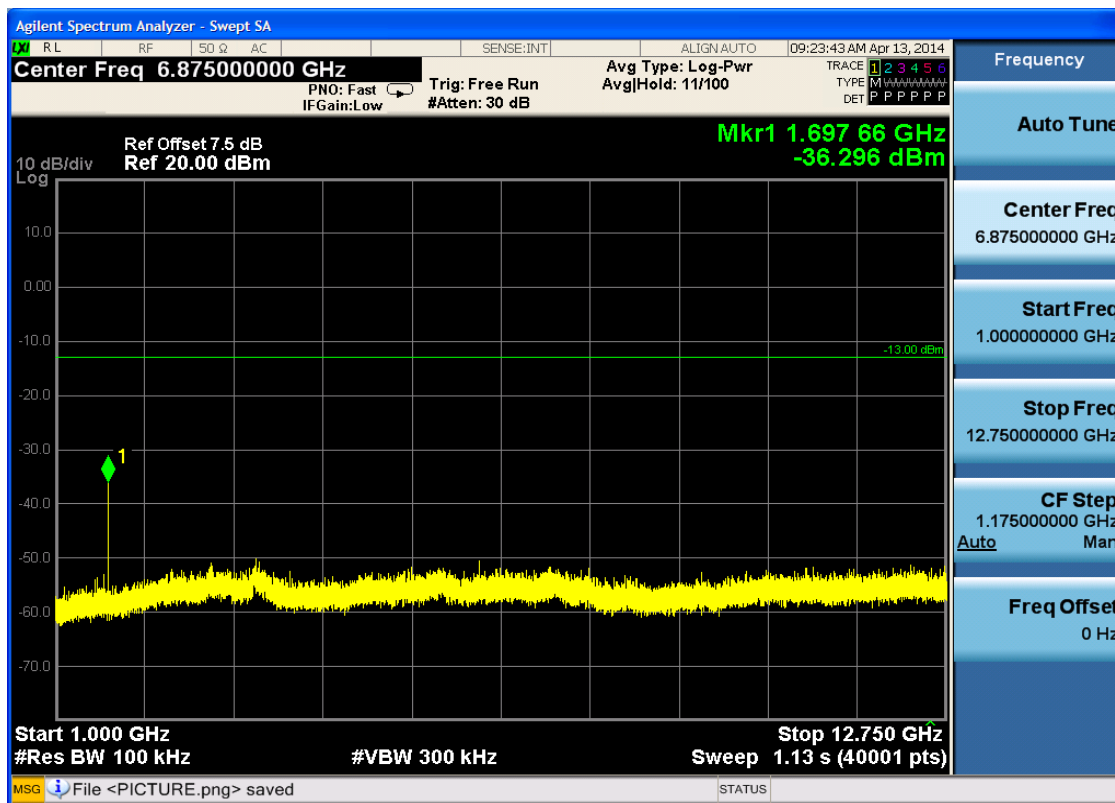
Start 9.00 kHz Stop 150.00 kHz
 #Res BW 1.0 kHz #VBW 10 kHz Sweep 130 ms (1001 pts)

MSG Points changed; all traces cleared STATUS DC Coupled

Frequency
 Auto Tune
 Center Freq 79.500 kHz
 Start Freq 9.000 kHz
 Stop Freq 150.000 kHz
 CF Step 14.100 kHz
 Auto Man
 Freq Offset 0 Hz





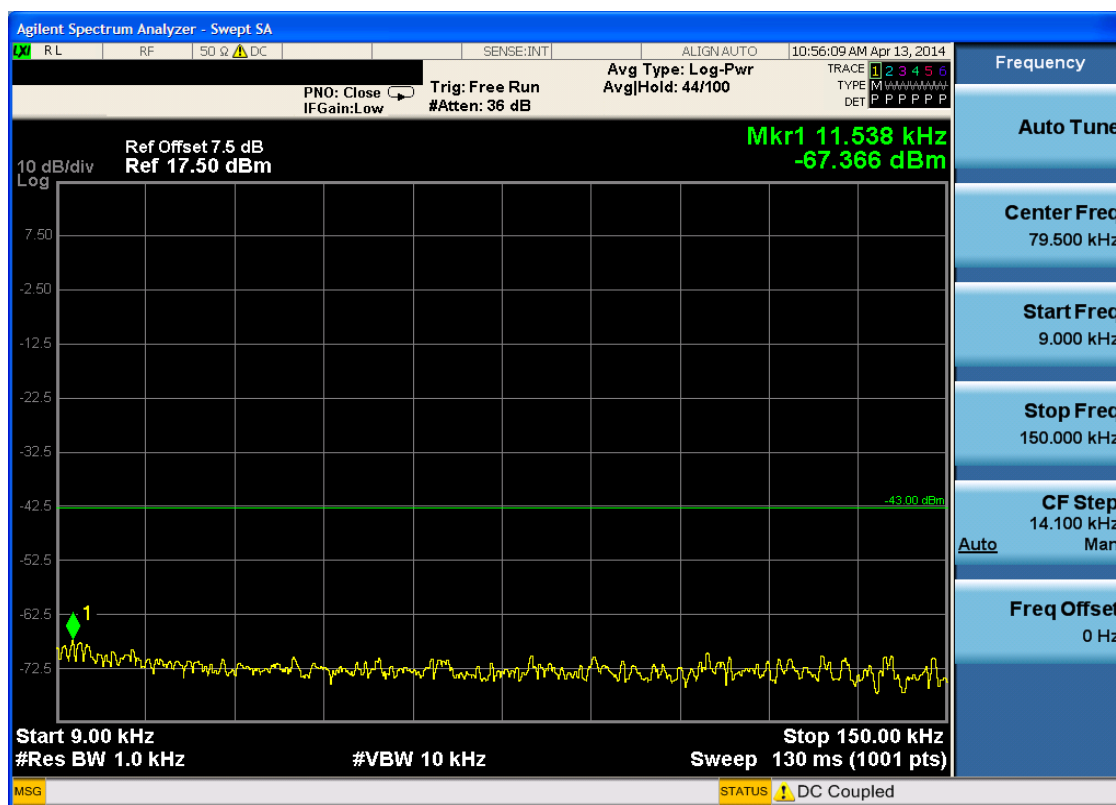


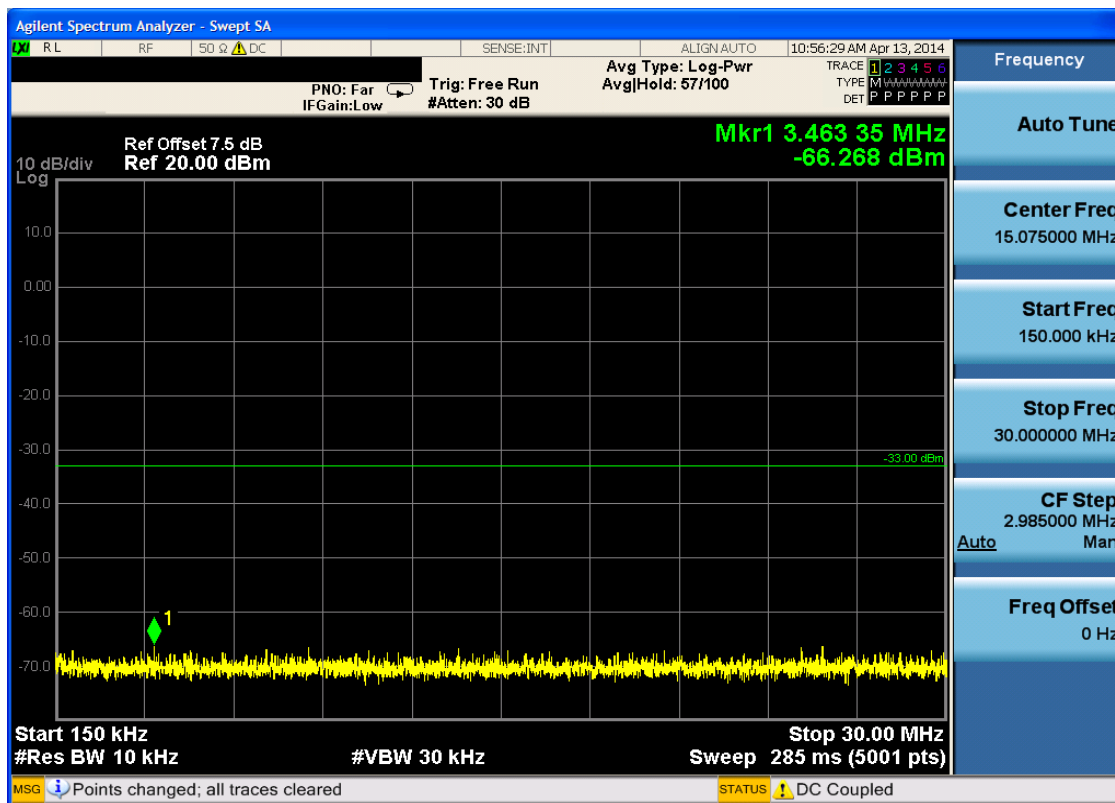


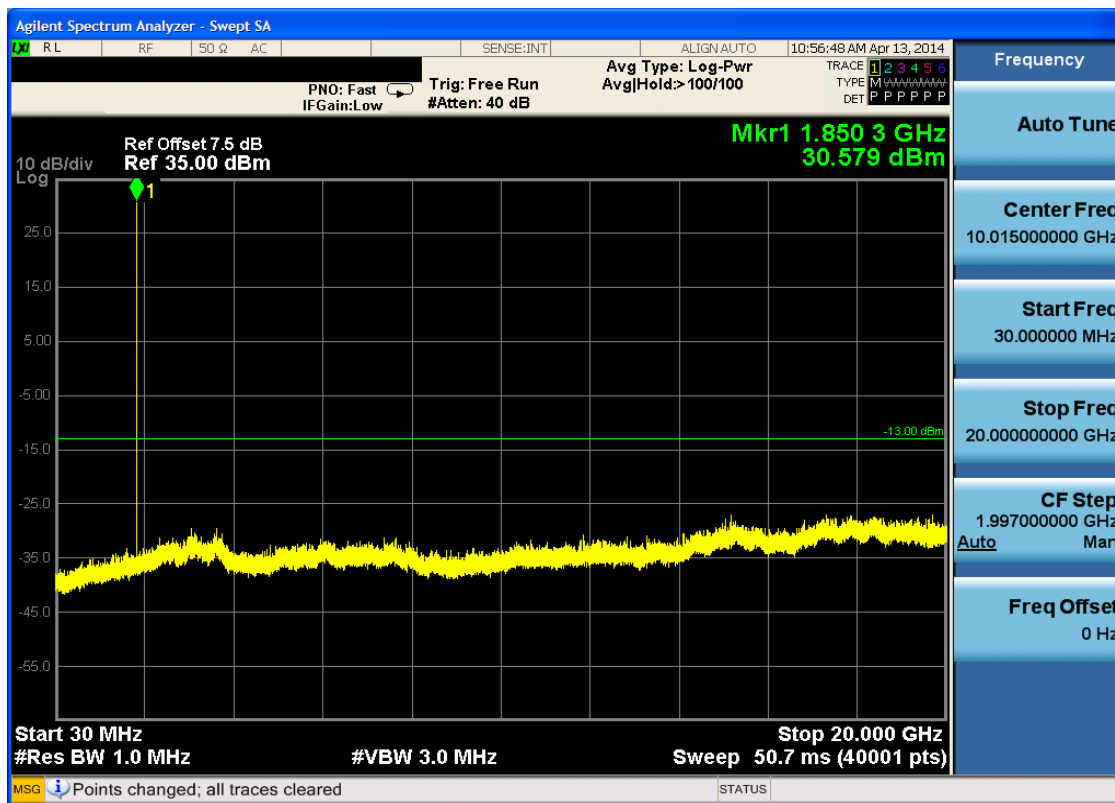
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH

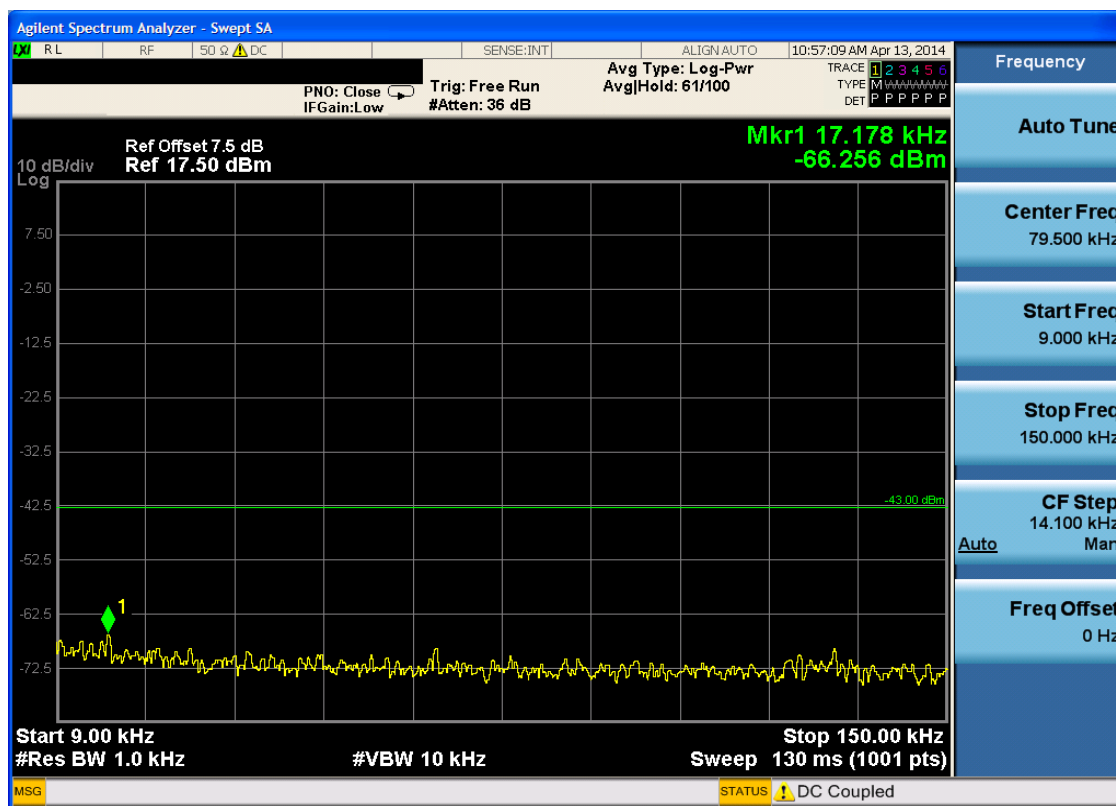


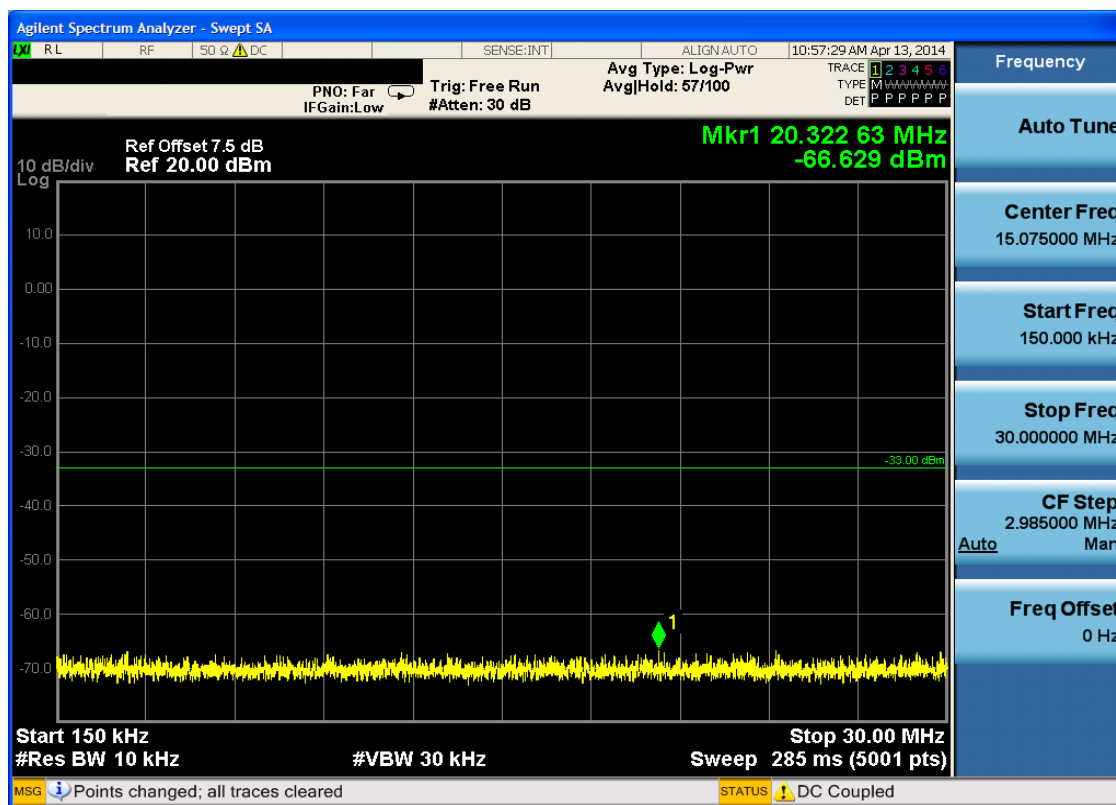


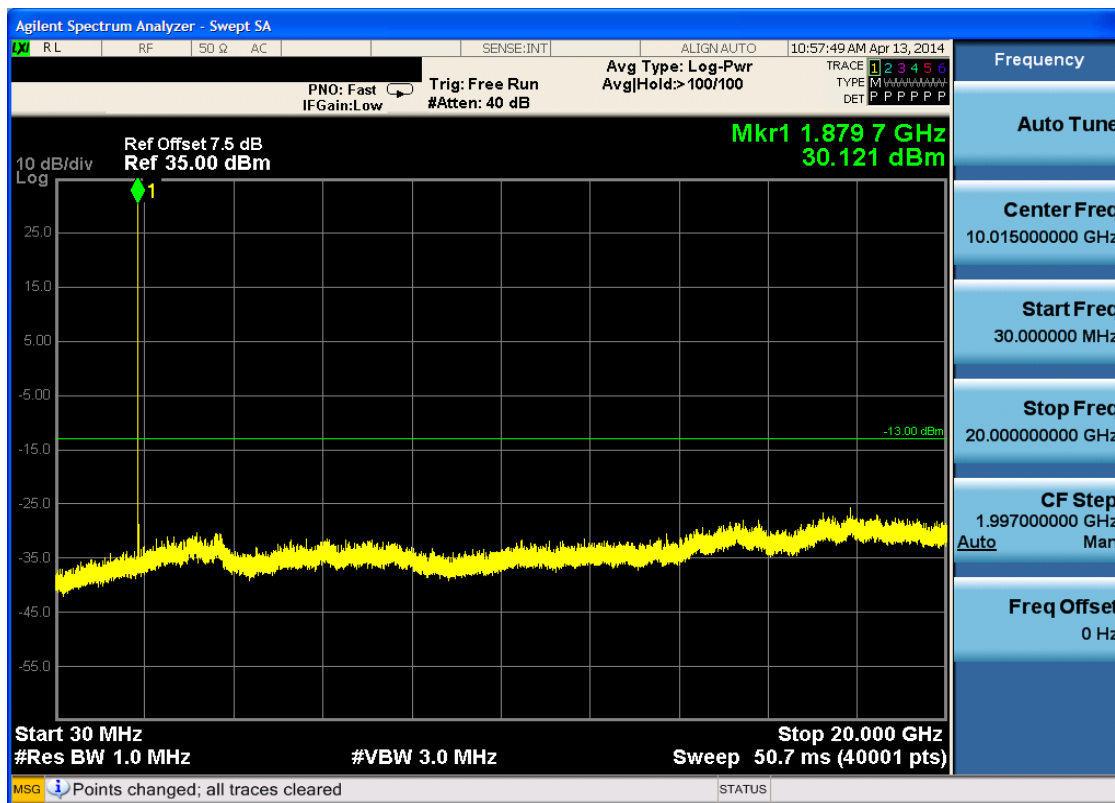




6.1.2.1.2 Test Channel = MCH

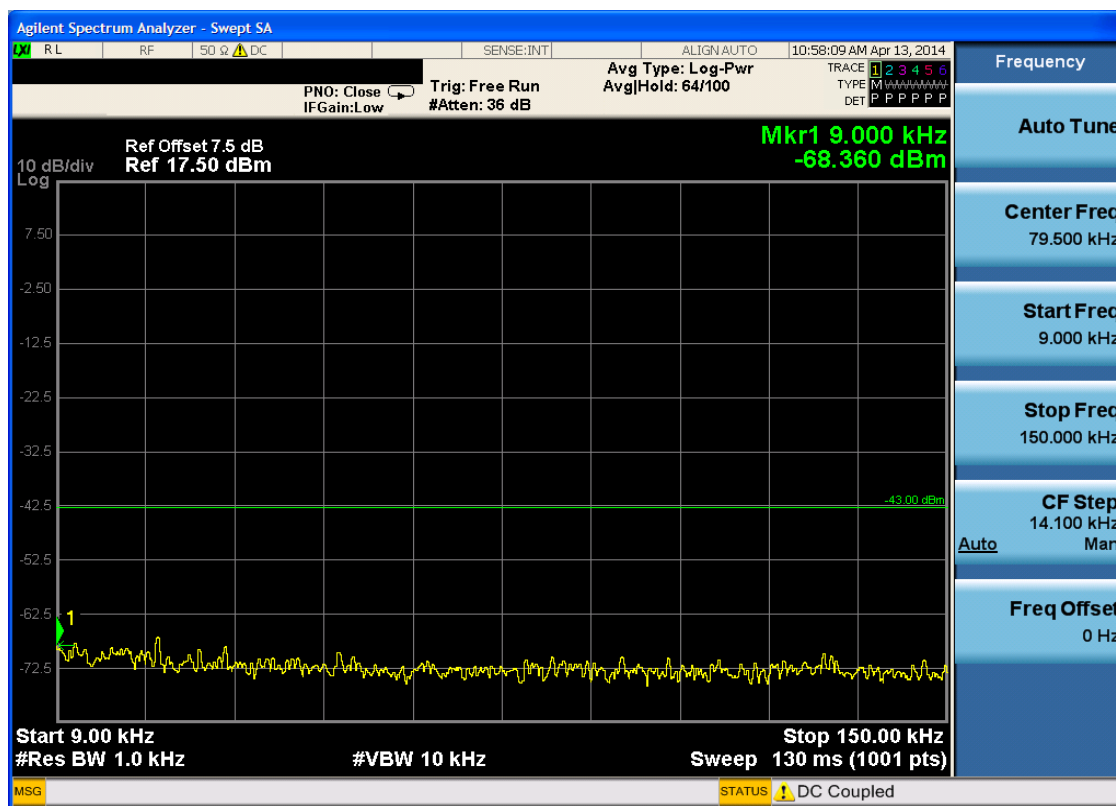


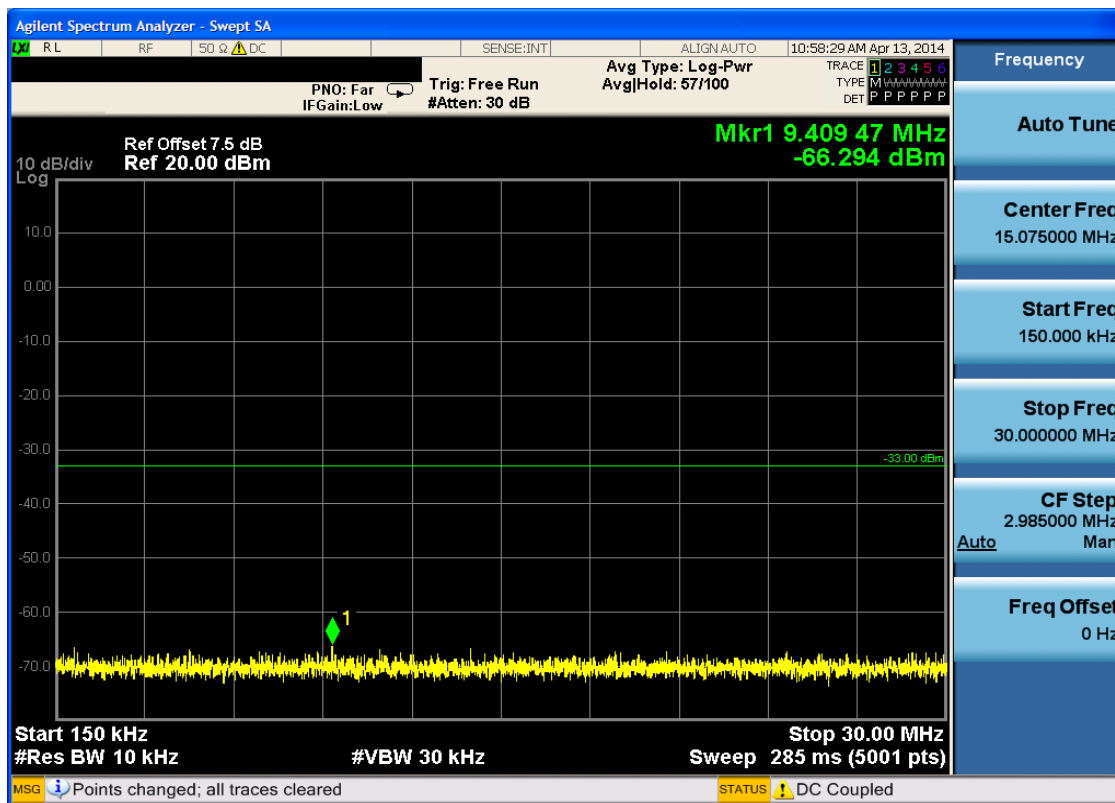


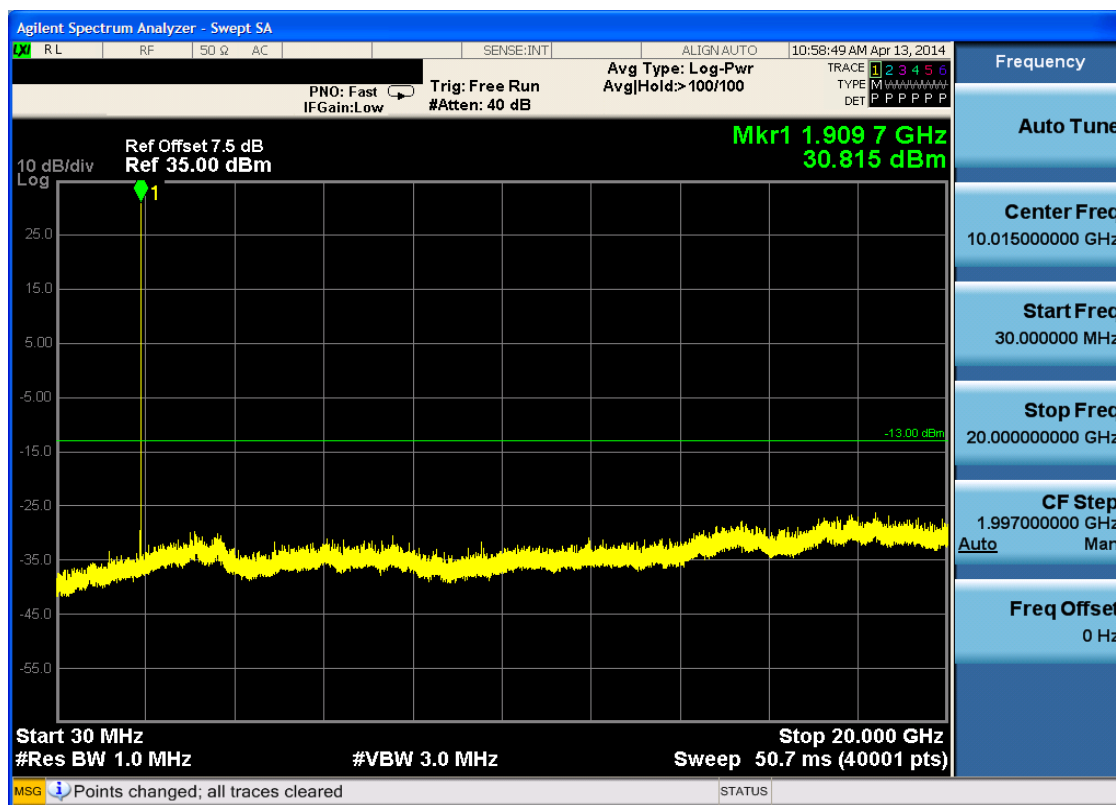




6.1.2.1.3 Test Channel = HCH



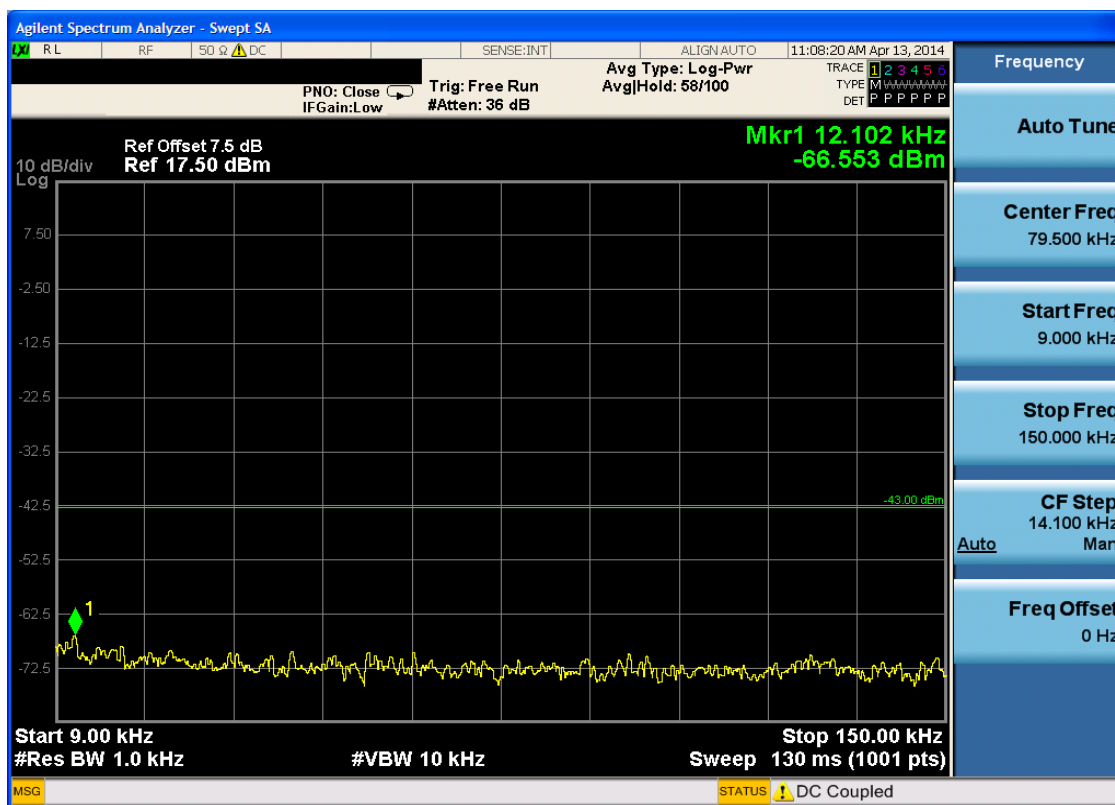


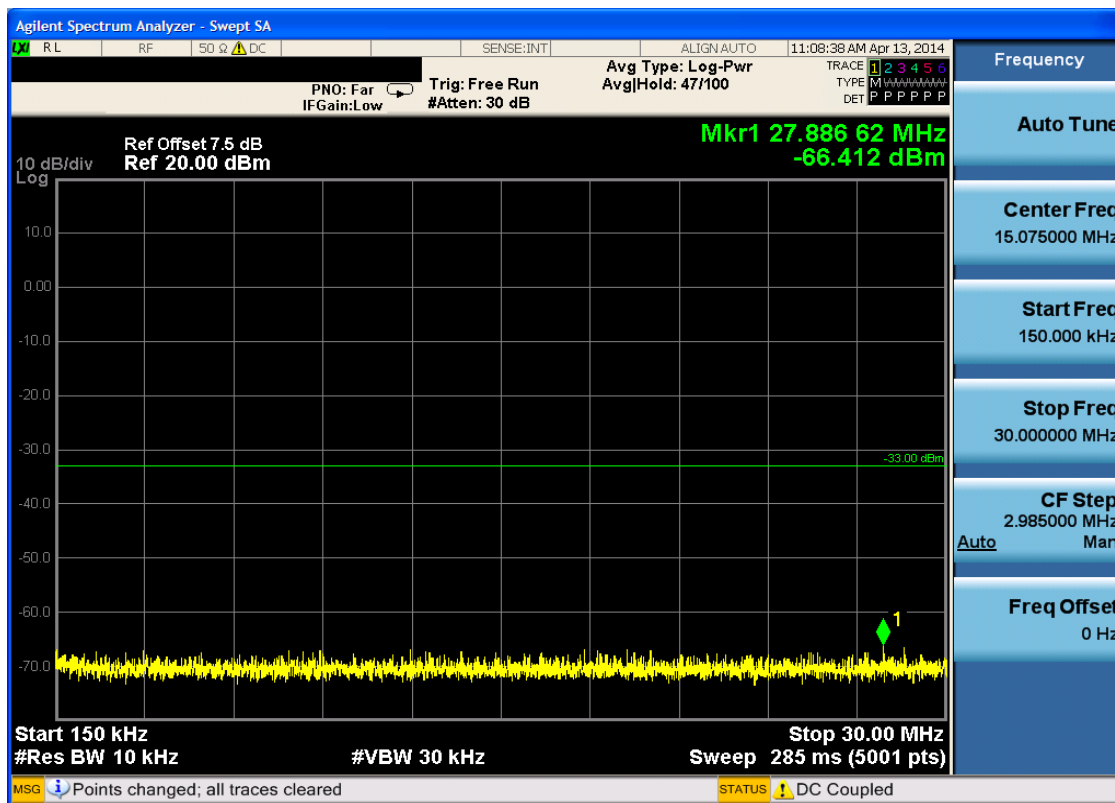


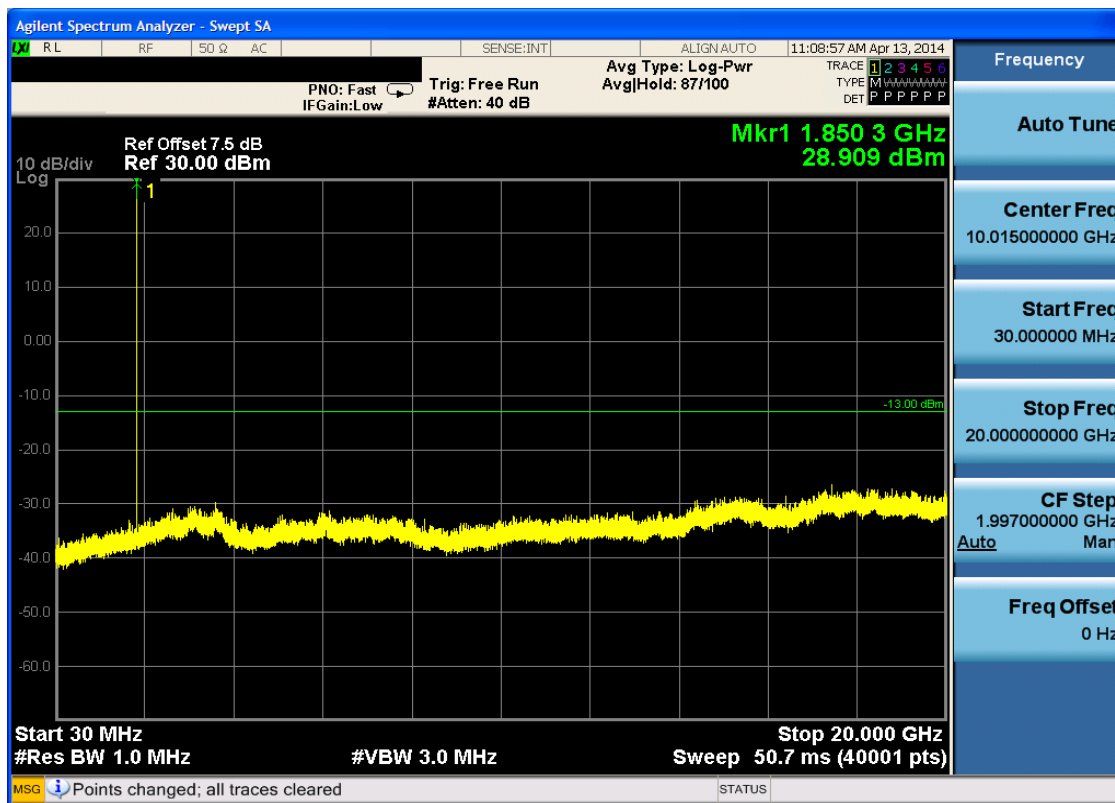


6.1.2.2 Test Mode = GSM/TM2

6.1.2.2.1 Test Channel = LCH

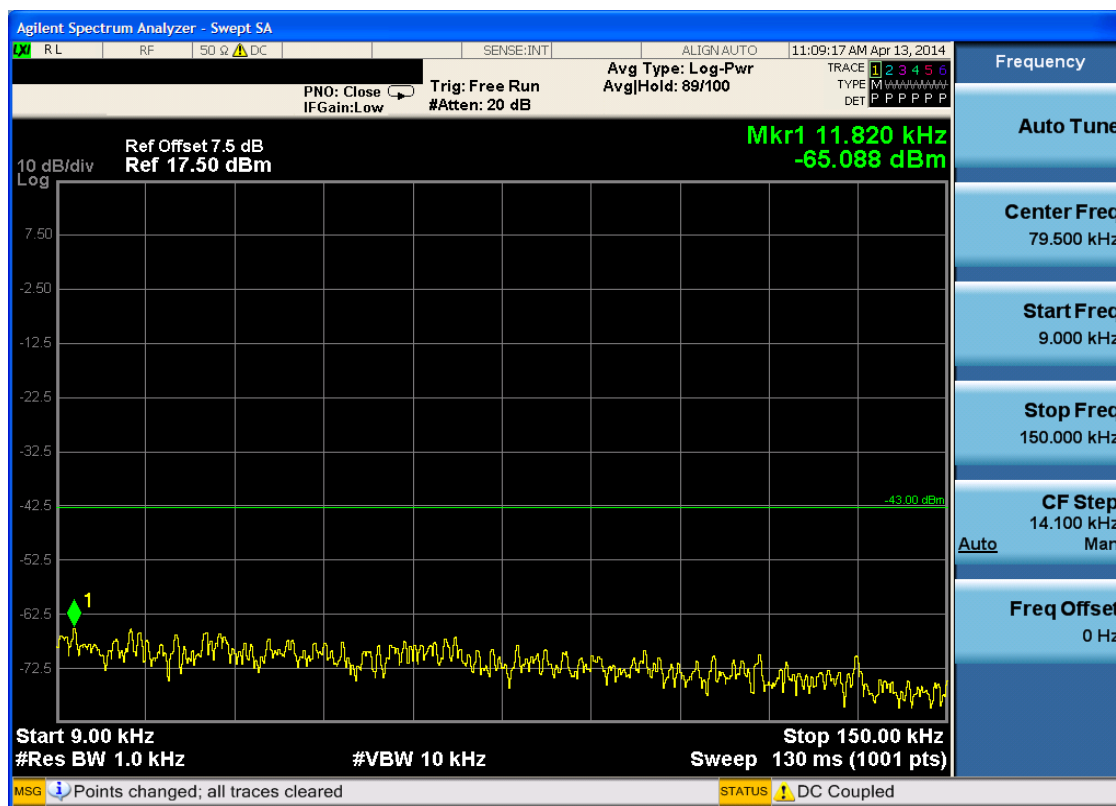


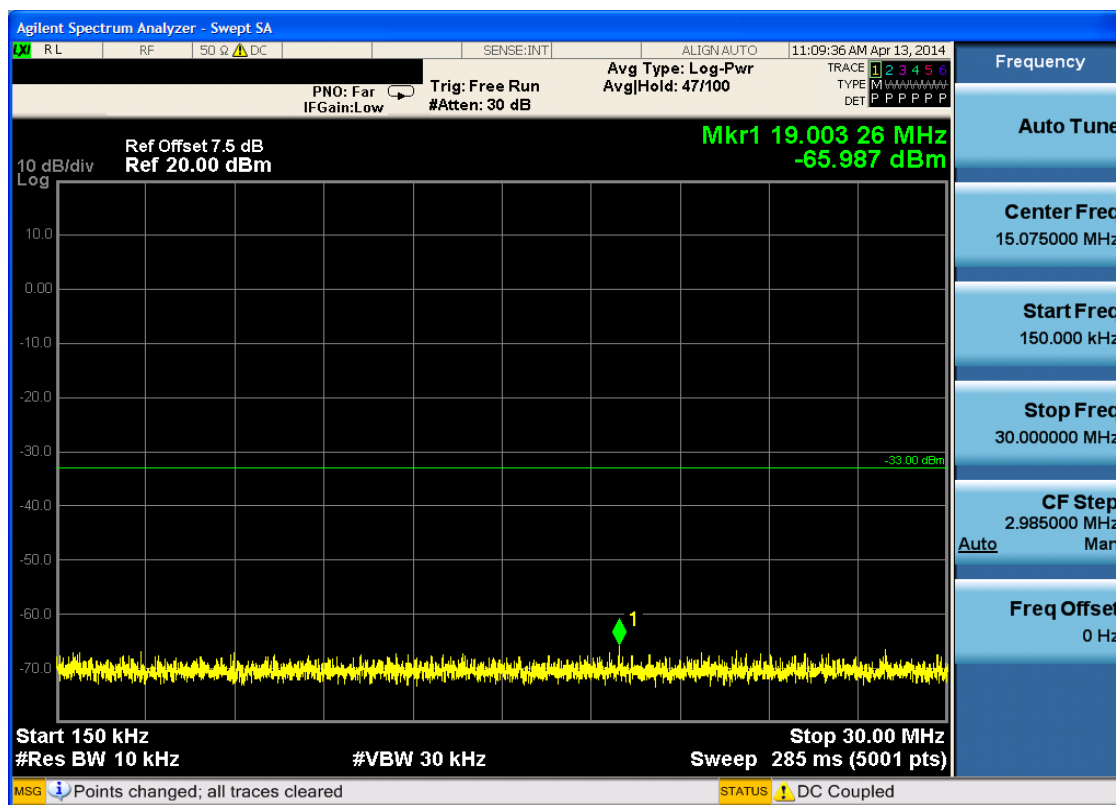


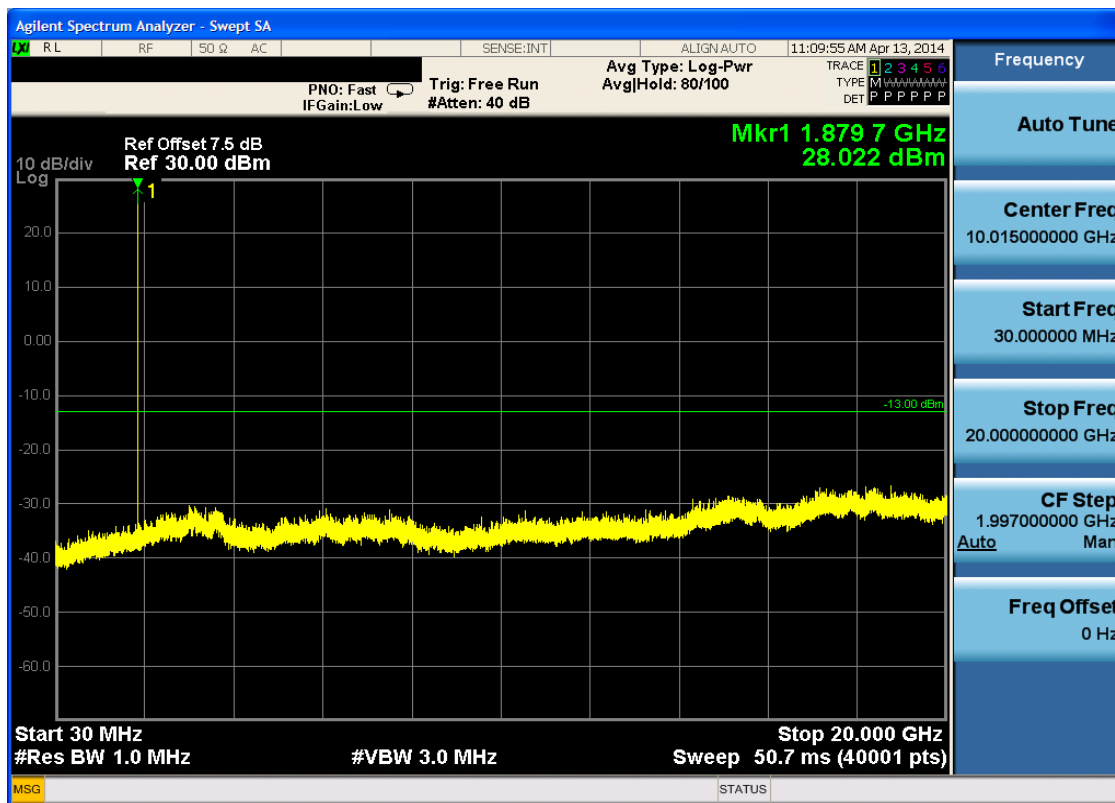




6.1.2.2.2 Test Channel = MCH

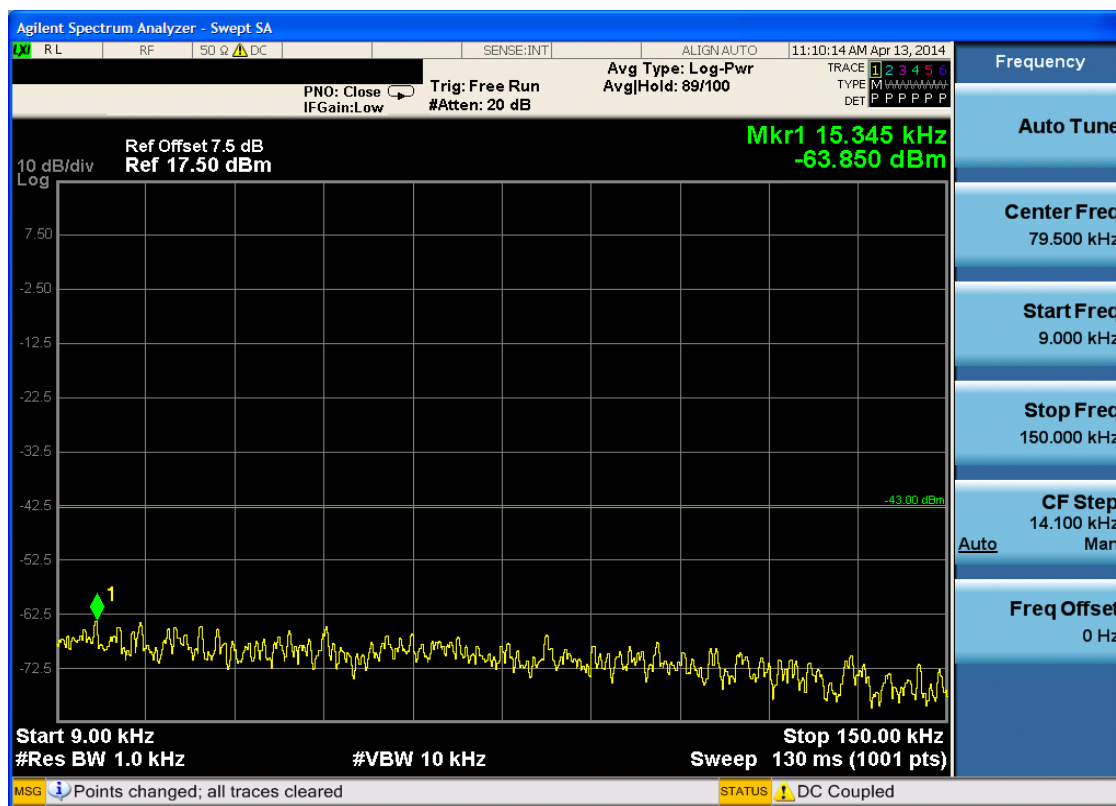


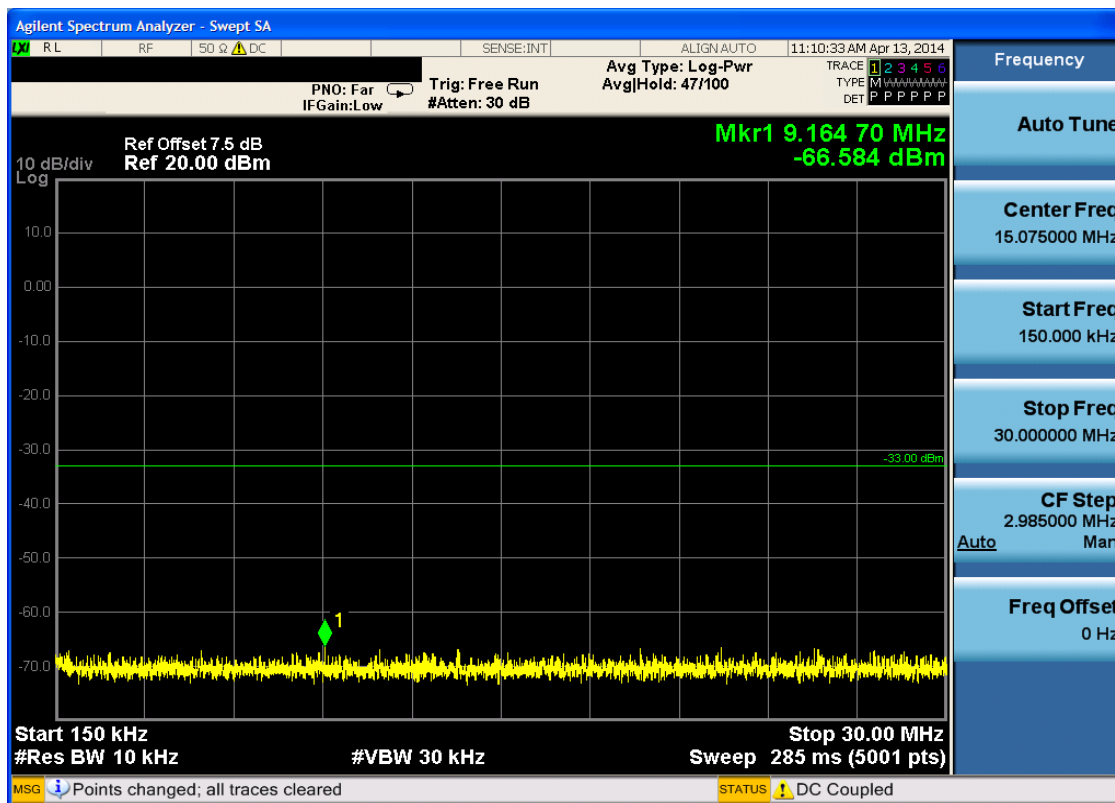


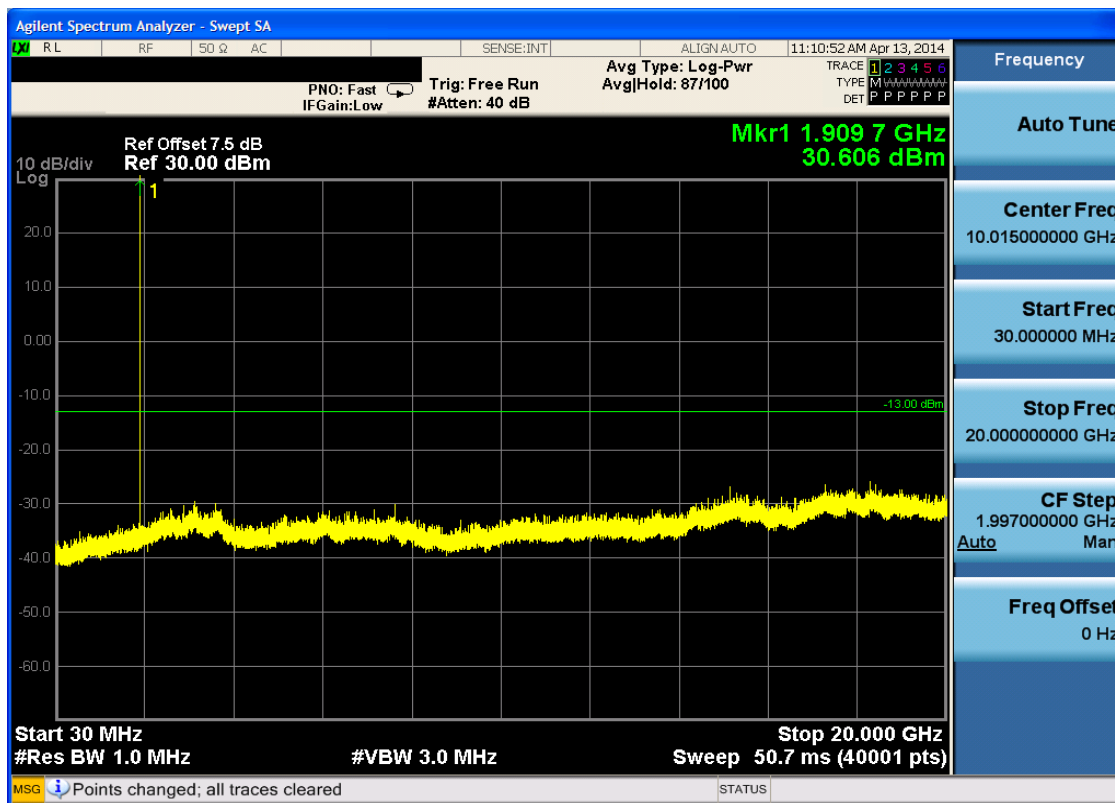




6.1.2.2.3 Test Channel = HCH







6.2 For UMTS

6.2.1 Test Band = WCDMA850

6.2.1.1 Test Mode = UMTS/TM1

6.2.1.1.1 Test Channel = LCH

