



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	32.13	31.48	38.5	PASS
		MCH	32.13	31.48	38.5	PASS
		HCH	32.08	31.43	38.5	PASS
	GSM/TM2	LCH	26.06	25.41	38.5	PASS
		MCH	26.02	25.37	38.5	PASS
		HCH	25.94	25.29	38.5	PASS
WCDMA850	UMTS/TM1	LCH	21.78	21.13	38.5	PASS
		MCH	21.75	21.1	38.5	PASS
		HCH	21.67	21.02	38.5	PASS
GSM1900	GSM/TM1	LCH	29.02	32.42	33	PASS
		MCH	28.98	32.38	33	PASS
		HCH	28.99	32.39	33	PASS
	GSM/TM2	LCH	25.54	28.94	33	PASS

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA1900		MCH	24.88	28.28	33	PASS
		HCH	24.9	28.30	33	PASS
	UMTS/TM1	LCH	21.79	25.19	33	PASS
		MCH	21.95	25.35	33	PASS
		HCH	21.82	25.22	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
GSM850	GSM/TM1	LCH	0.12	13	PASS
		MCH	0.13	13	PASS
		HCH	0.12	13	PASS
	GSM/TM2	LCH	3.39	13	PASS
		MCH	3.49	13	PASS
		HCH	3.55	13	PASS
GSM1900	GSM/TM1	LCH	0.13	13	PASS
		MCH	0.14	13	PASS
		HCH	0.12	13	PASS
	GSM/TM2	LCH	3.12	13	PASS
		MCH	3.1	13	PASS
		HCH	3.16	13	PASS

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA850	UMTS/TM1	LCH	2.63	13	PASS
		MCH	2.63	13	PASS
		HCH	2.34	13	PASS
	UMTS/TM2	LCH	2.65	13	PASS
		MCH	2.75	13	PASS
		HCH	2.39	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.93	13	PASS
		MCH	2.99	13	PASS
		HCH	2.84	13	PASS
	UMTS/TM2	LCH	2.95	13	PASS
		MCH	2.97	13	PASS
		HCH	2.88	13	PASS

3Appendix_C: Modulation Characteristics

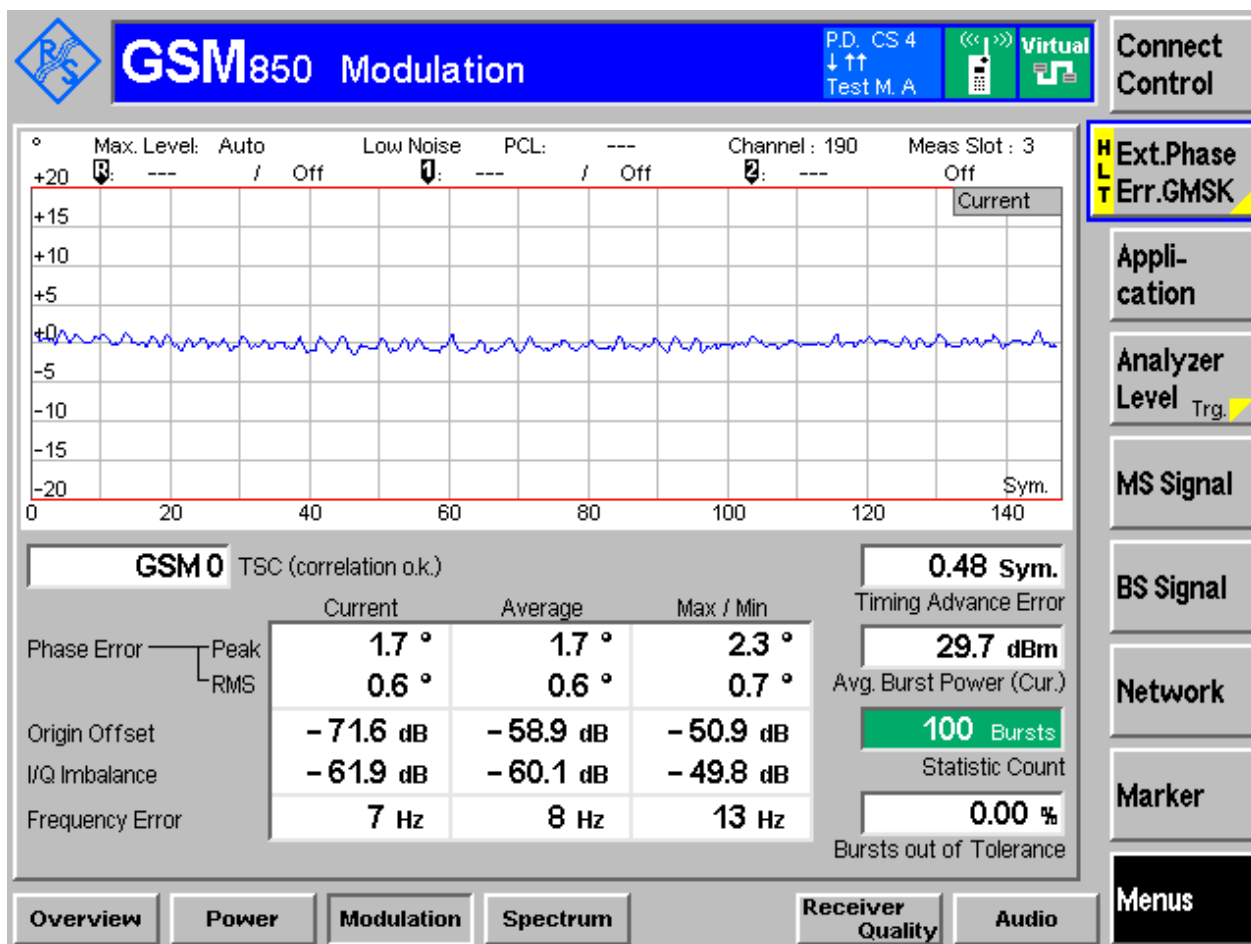
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

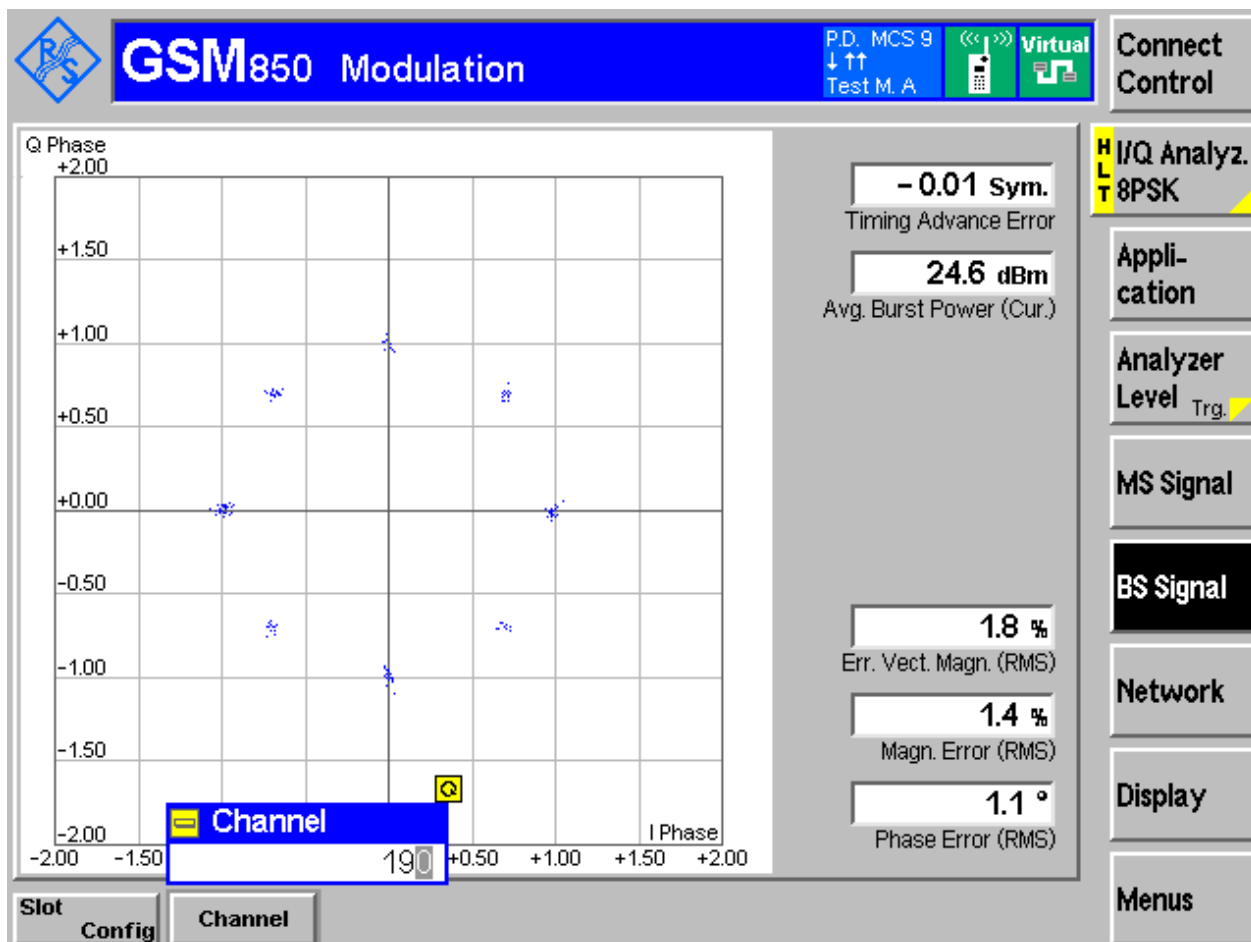
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

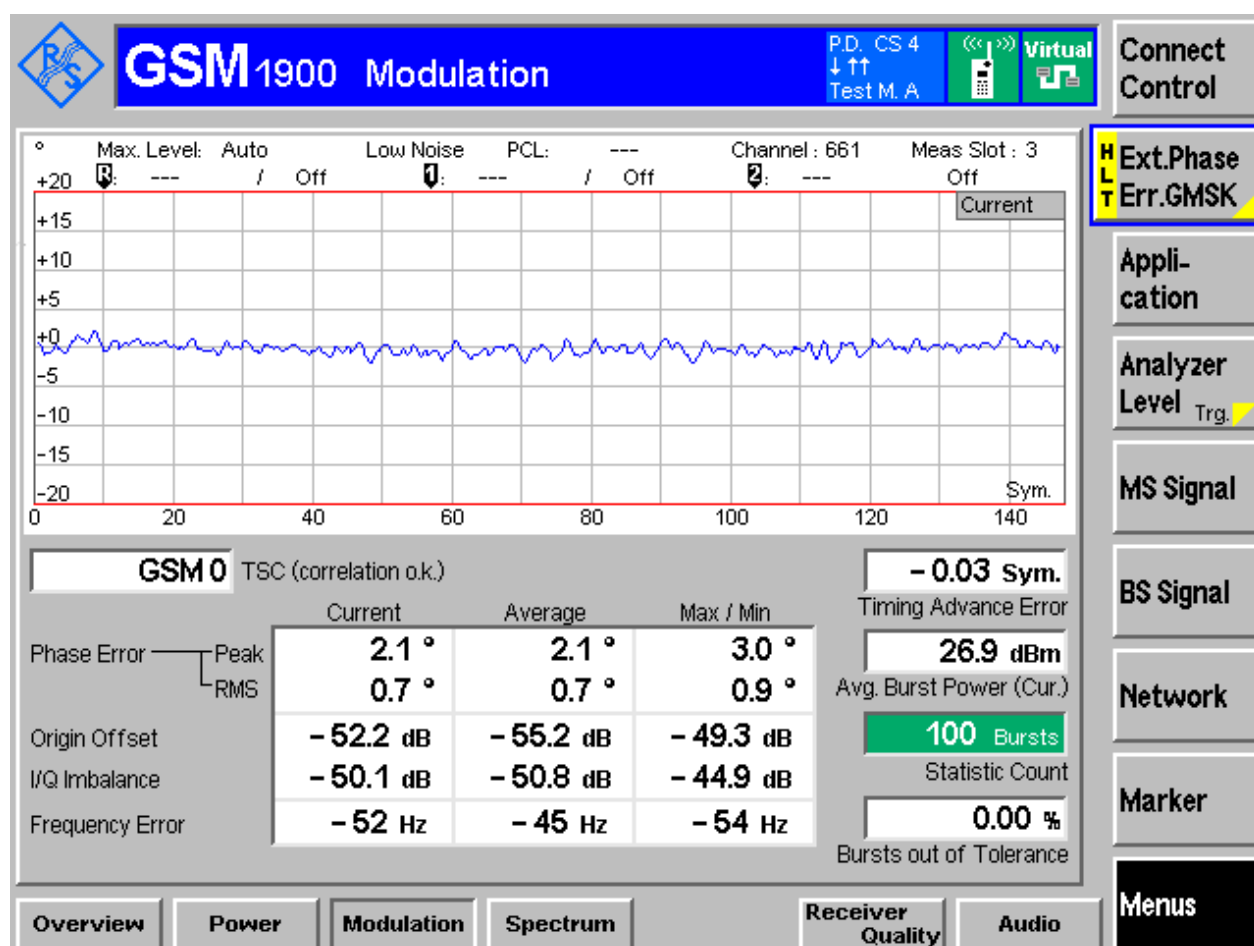
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

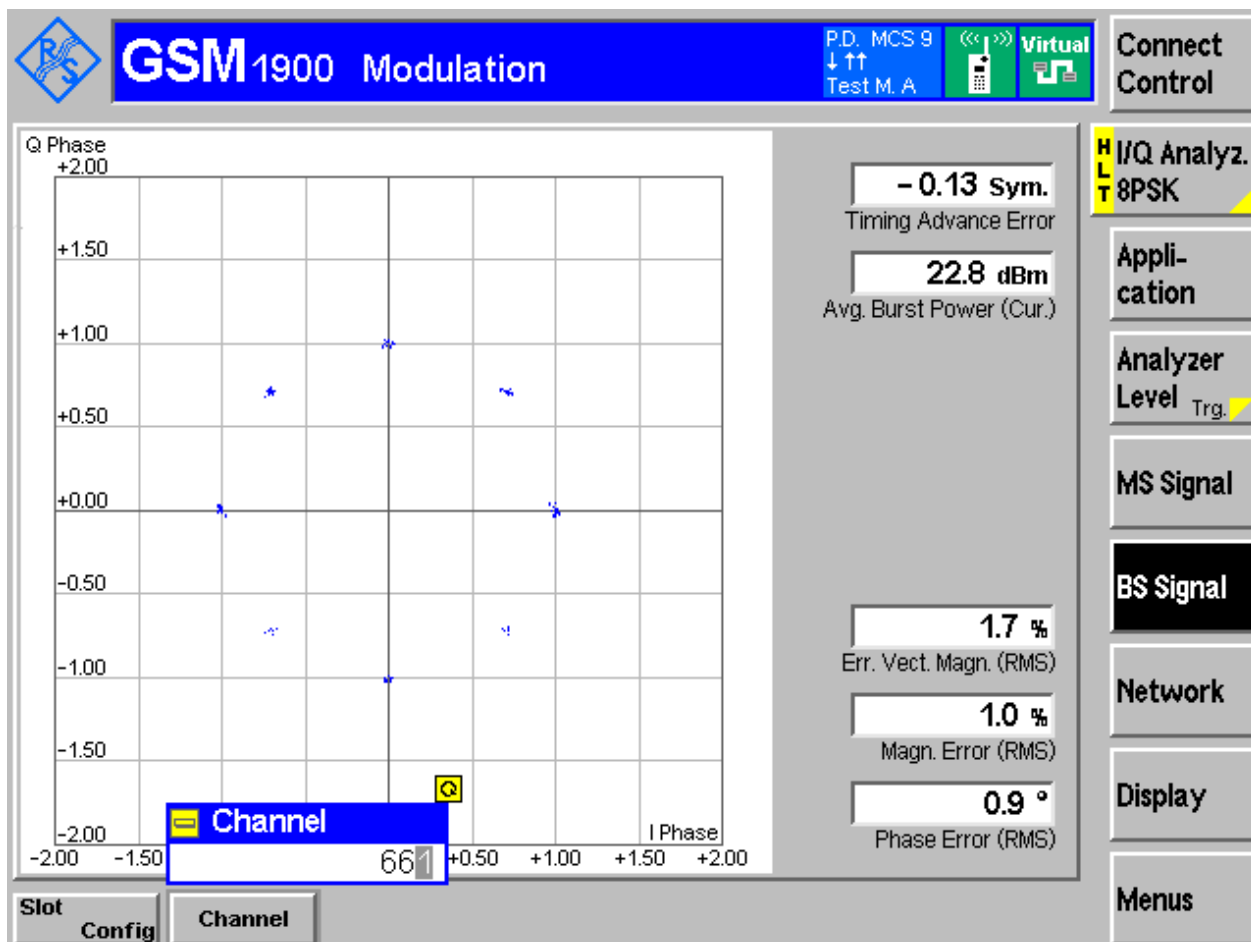
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH

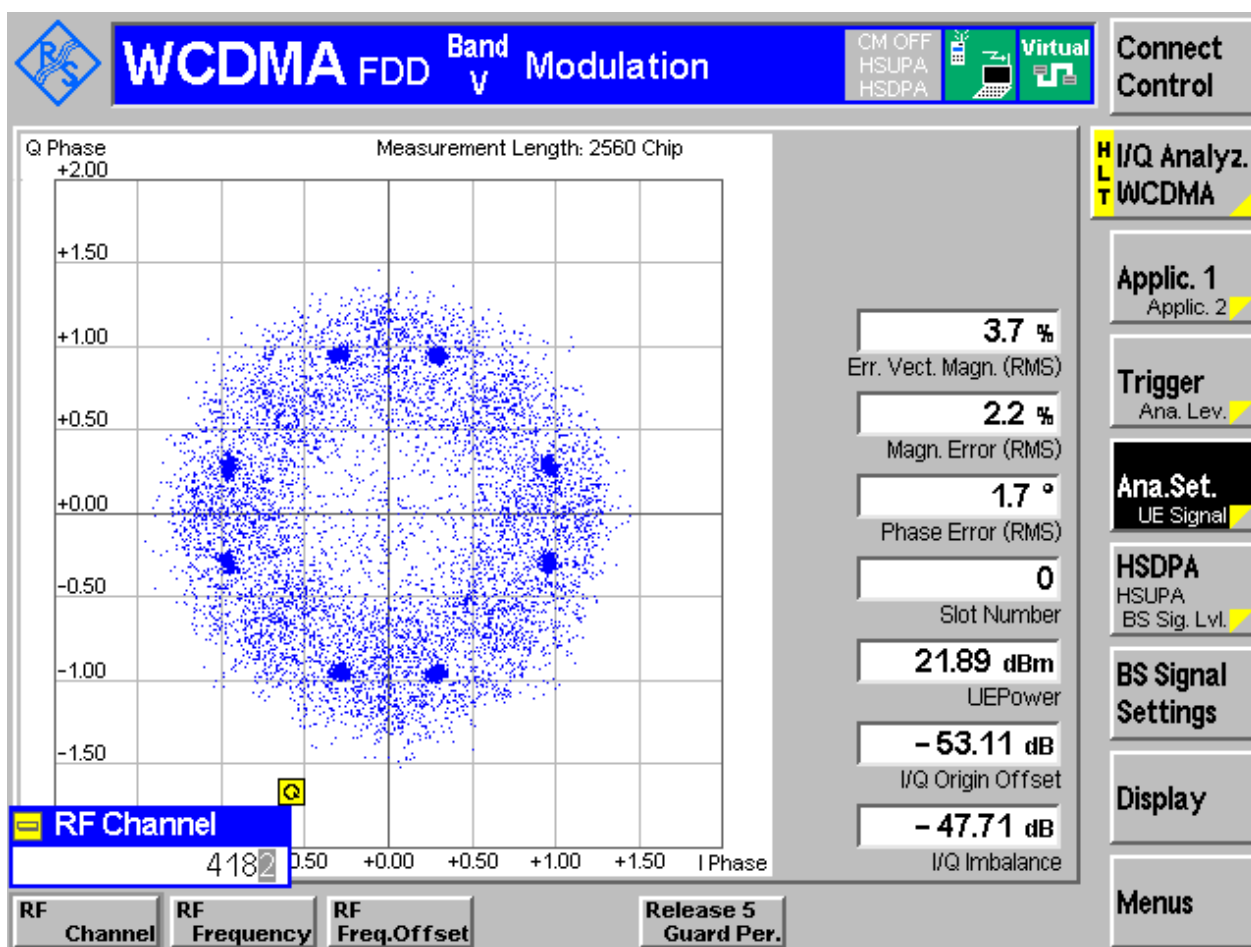


3.2 For UMTS

3.2.1 Test Band = WCDMA850

3.2.1.1 Test Mode = UMTS/TM1

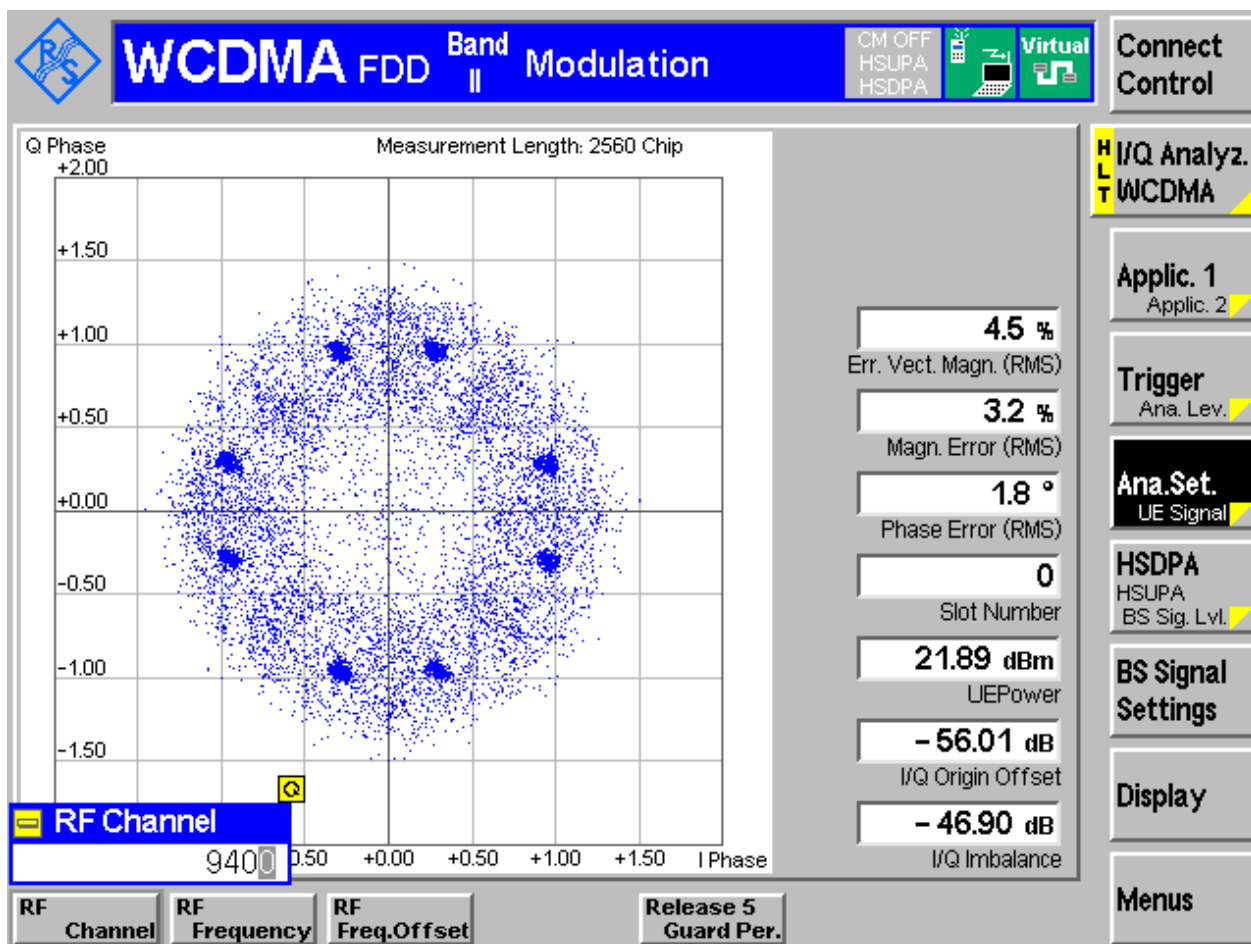
3.2.1.1.1 Test Channel = MCH



3.2.2 Test Band = WCDMA1900

3.2.2.1 Test Mode = UMTS/TM1

3.2.2.1.1 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	243.73	308.69	Pass
		MCH	243.79	312.51	Pass
		HCH	246.72	311.64	Pass
	GSM/TM2	LCH	240.69	311.4	Pass
		MCH	244.8	313.84	Pass
		HCH	241.7	308.64	Pass
GSM1900	GSM/TM1	LCH	244.95	313.88	Pass
		MCH	242.46	314.57	Pass
		HCH	242.06	315.59	Pass
	GSM/TM2	LCH	247.94	321.93	Pass
		MCH	245.30	314.61	Pass
		HCH	246.24	311.34	Pass

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.16	4.71	Pass
		MCH	4.17	4.71	Pass
		HCH	4.17	4.71	Pass
WCDMA1900	UMTS/TM1	LCH	4.15	4.72	Pass
		MCH	4.16	4.73	Pass
		HCH	4.15	4.69	Pass

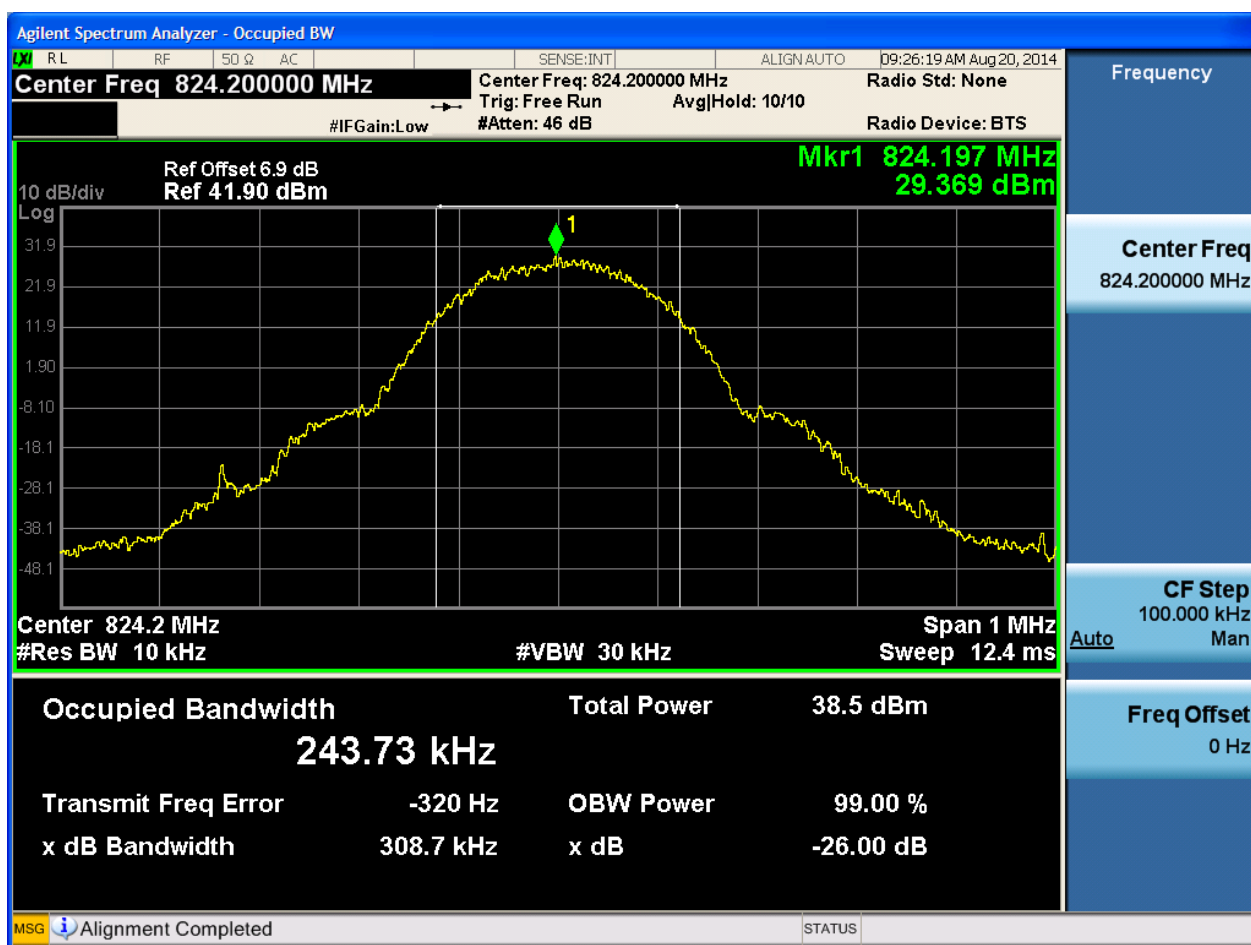
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

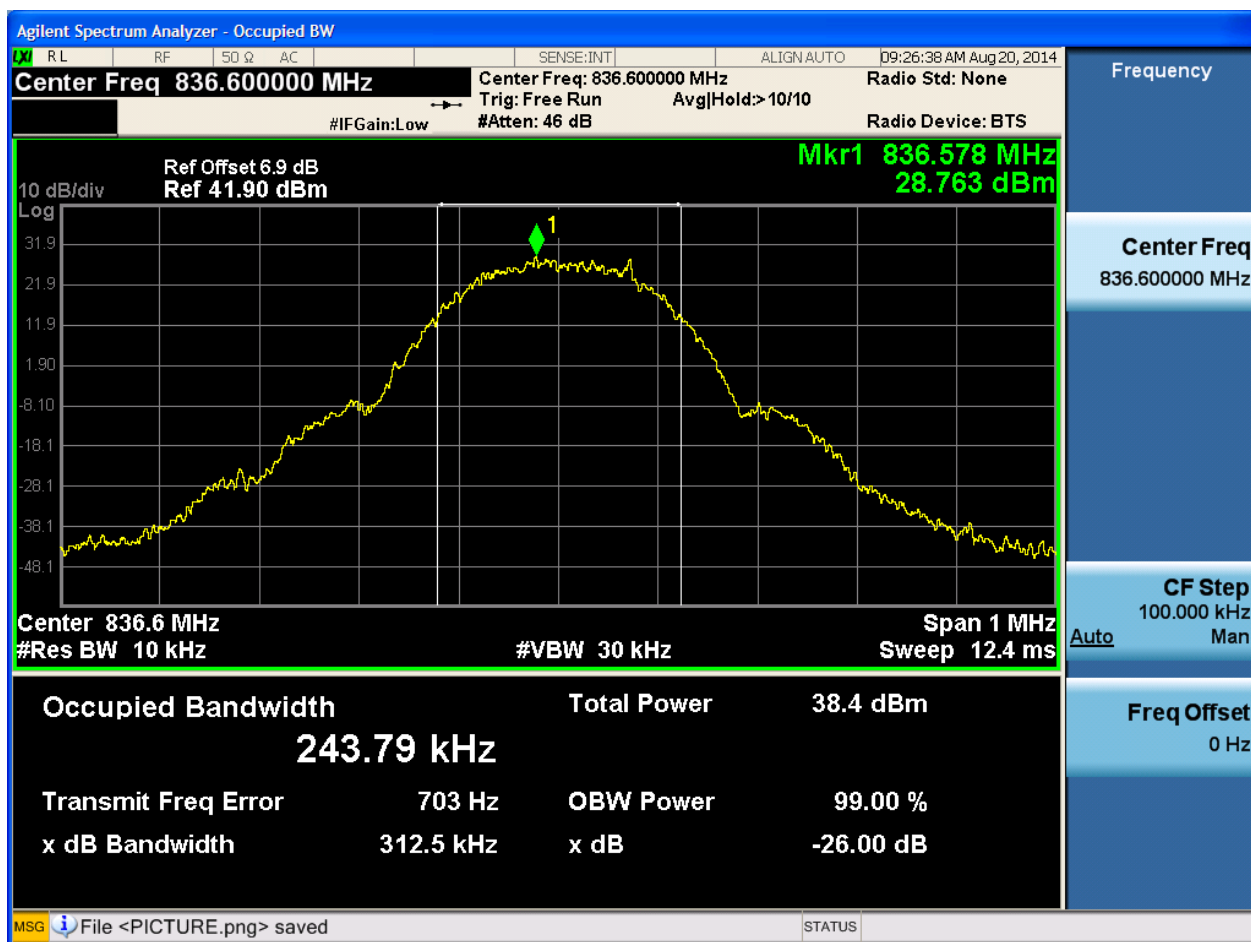
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



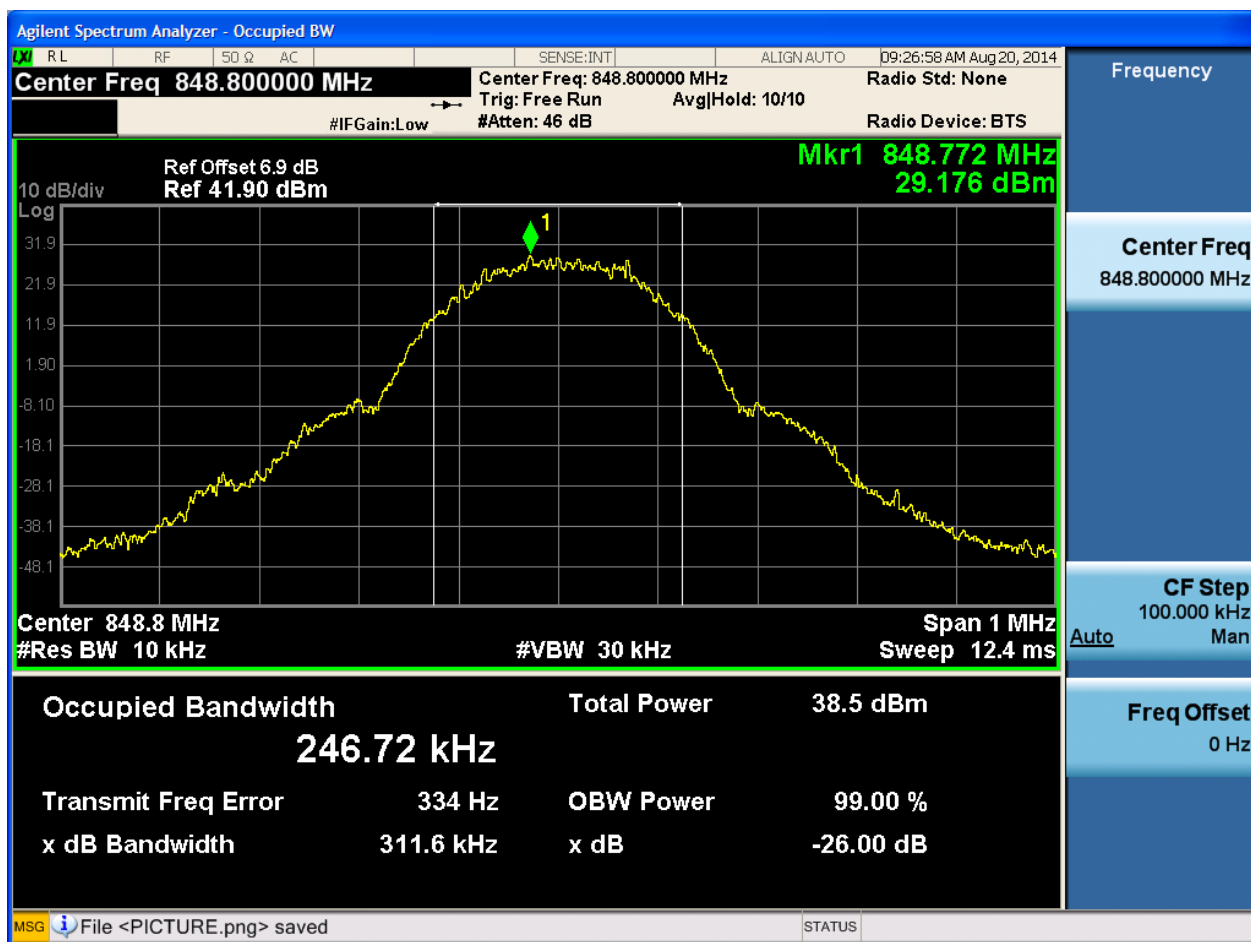


4.1.1.1.2 Test Channel = MCH





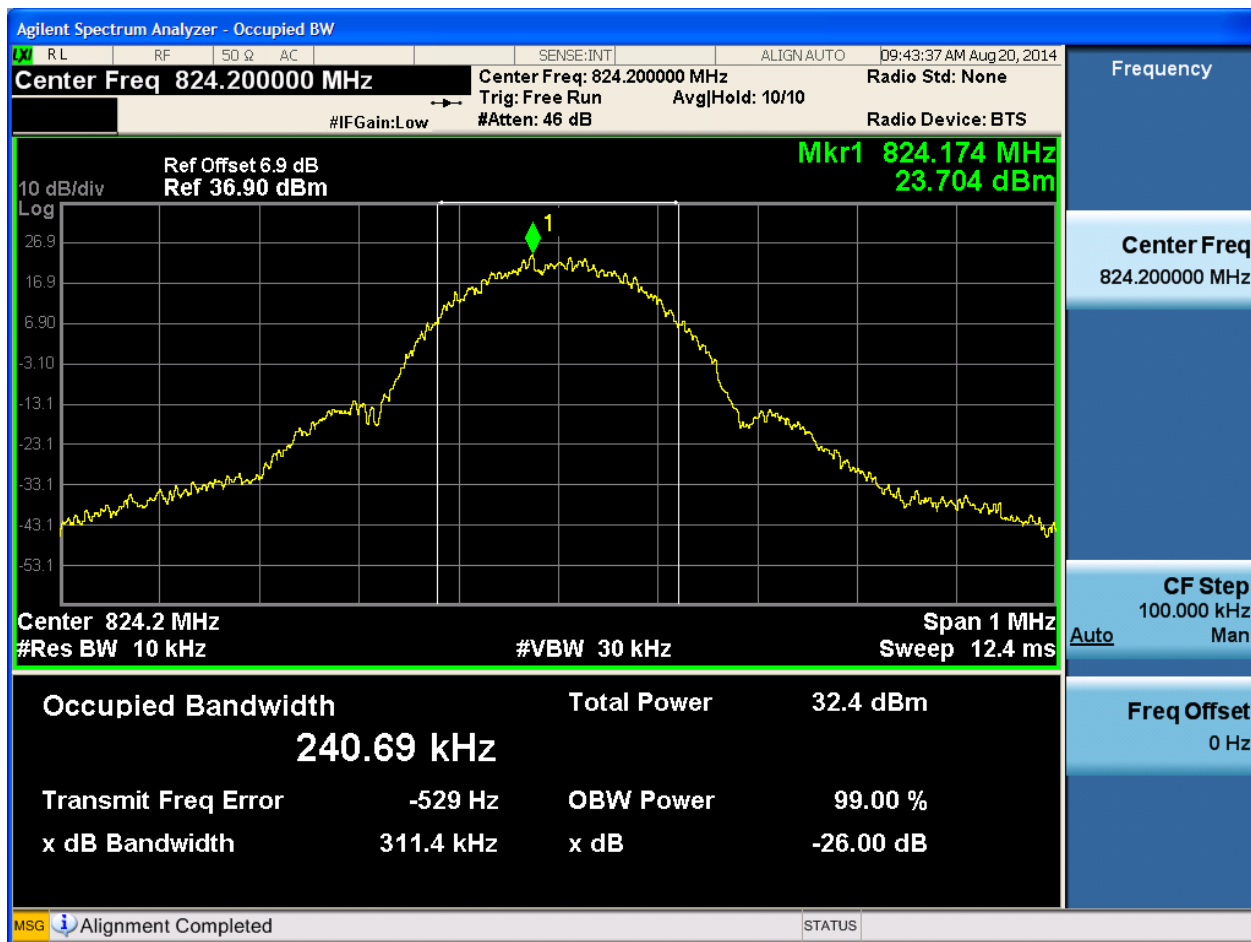
4.1.1.1.3 Test Channel = HCH





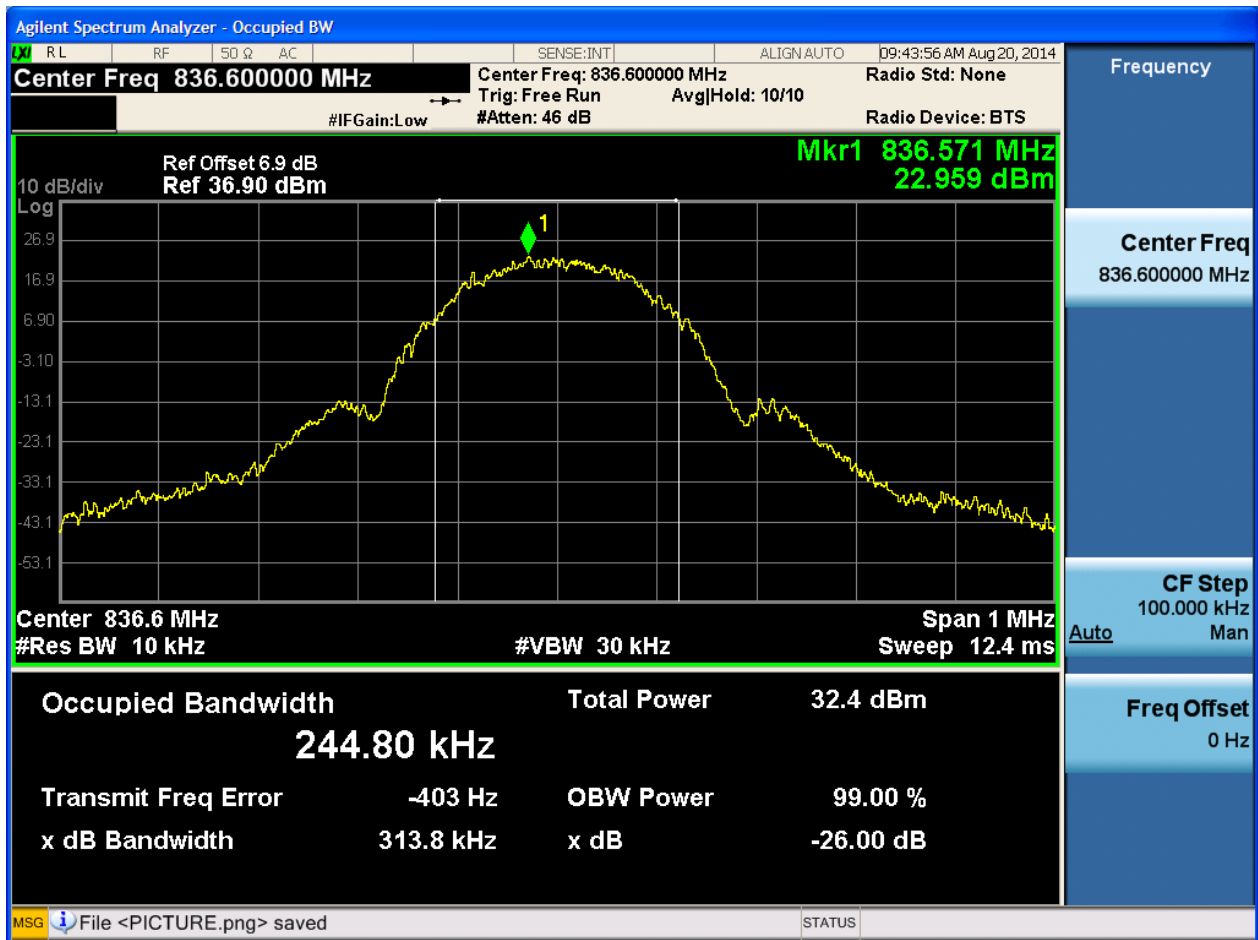
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



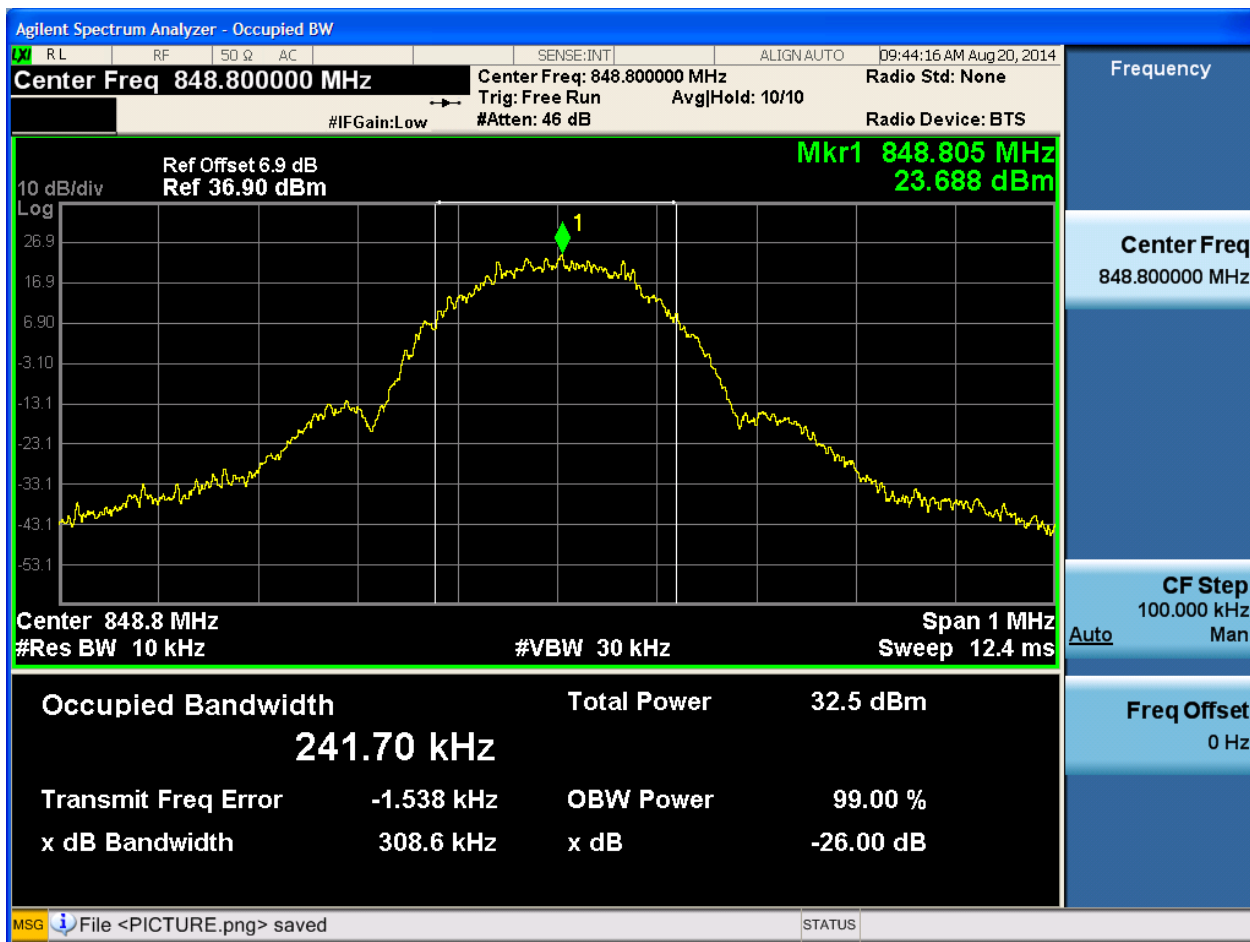


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

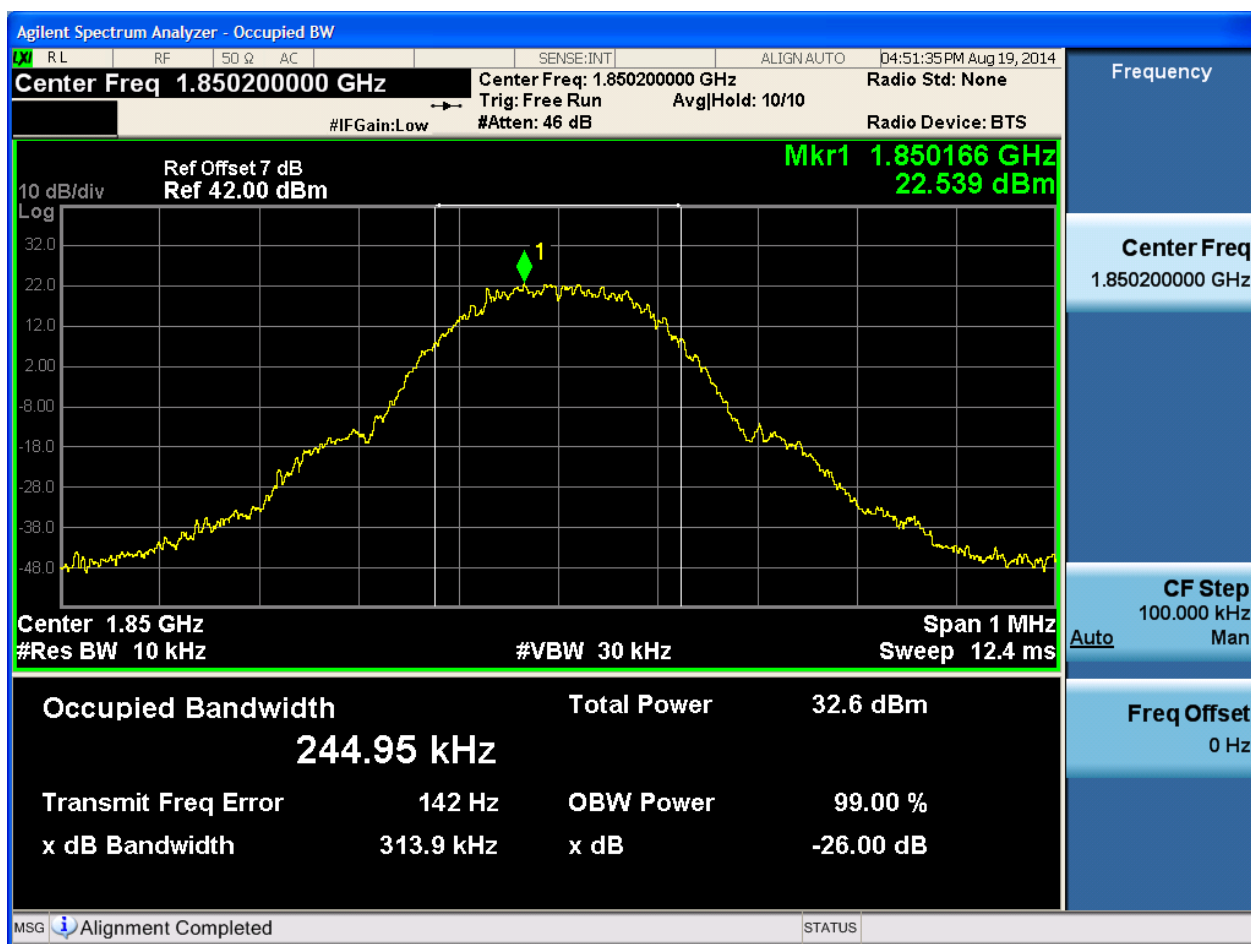




4.1.2 Test Band = GSM1900

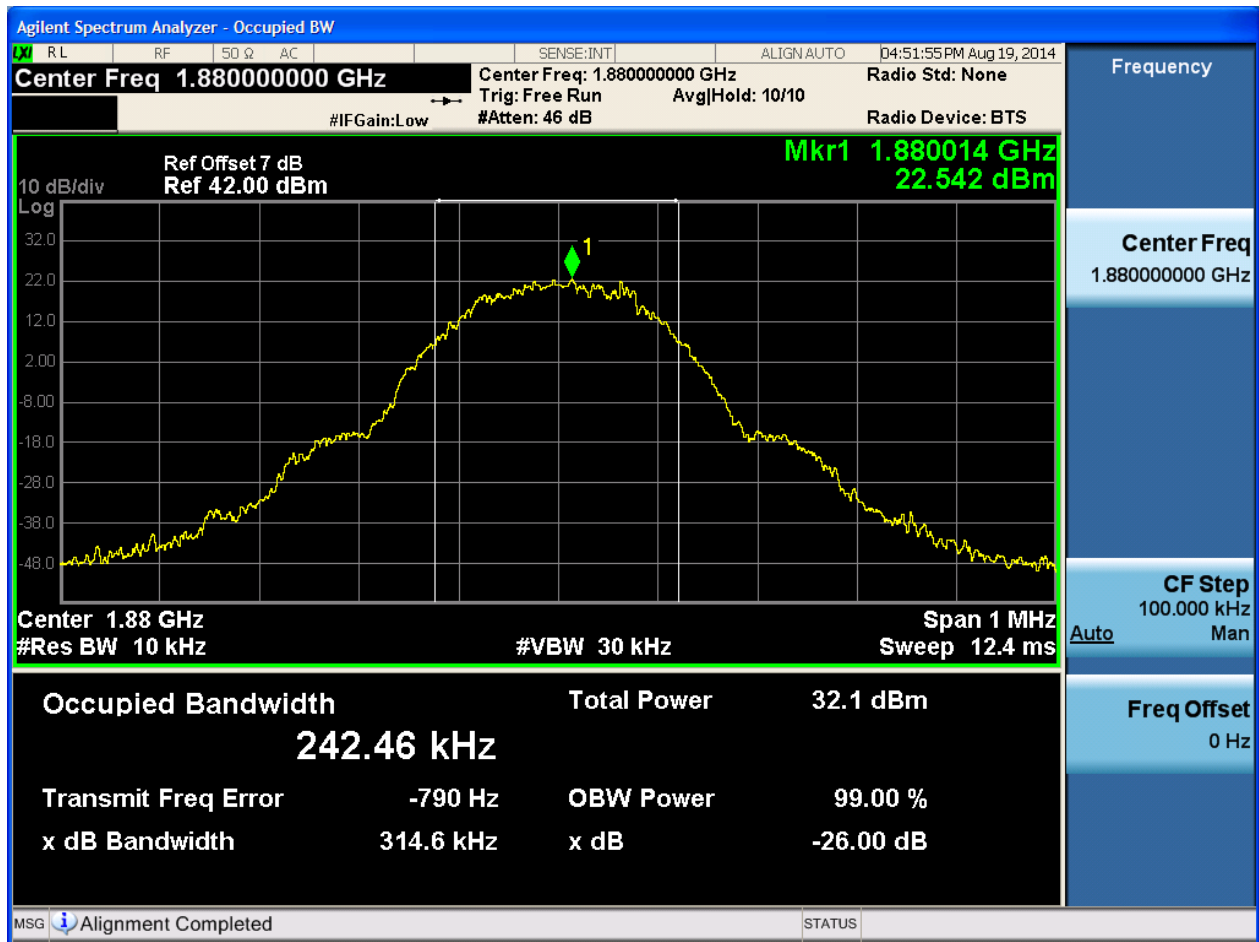
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



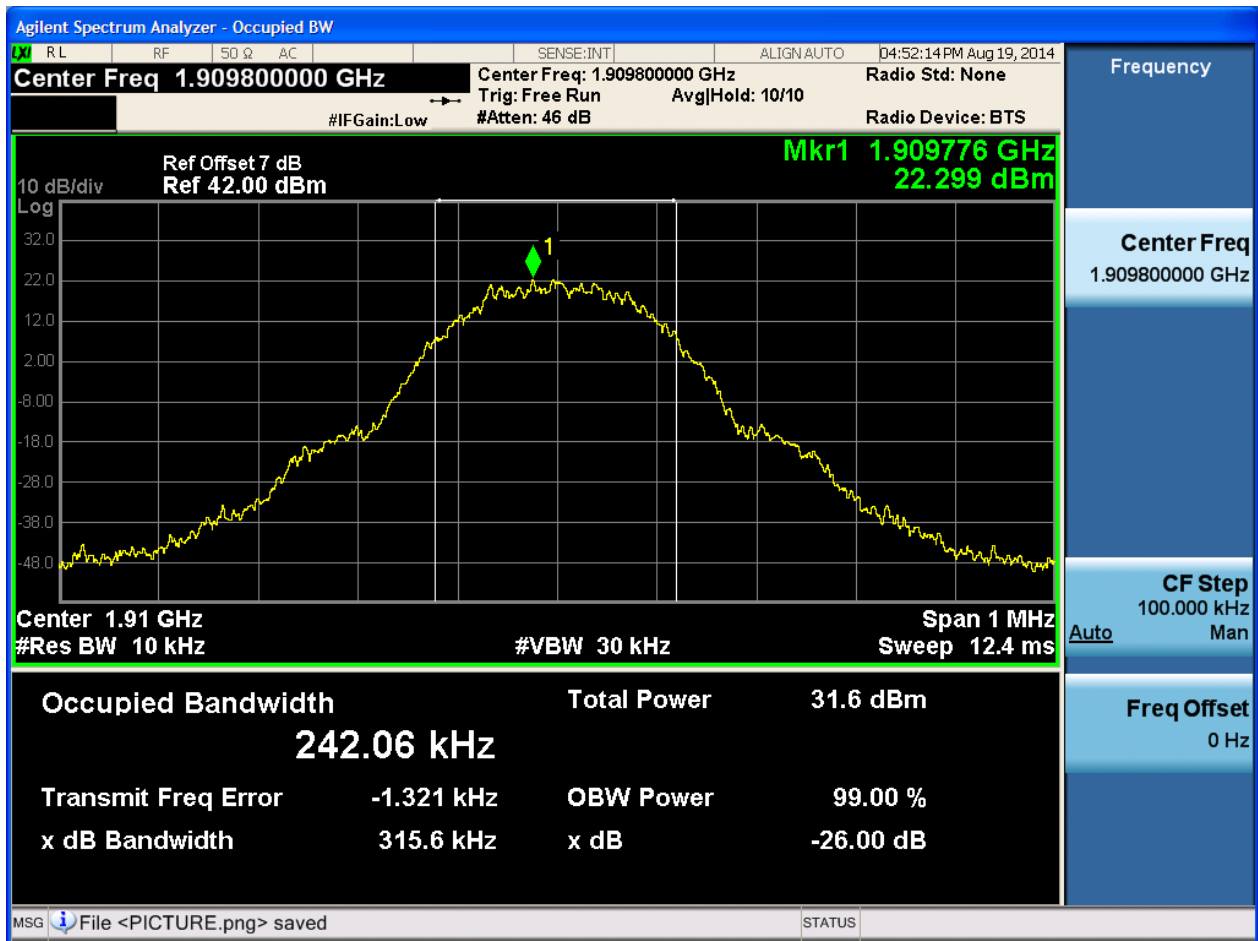


4.1.1.1.2 Test Channel = MCH



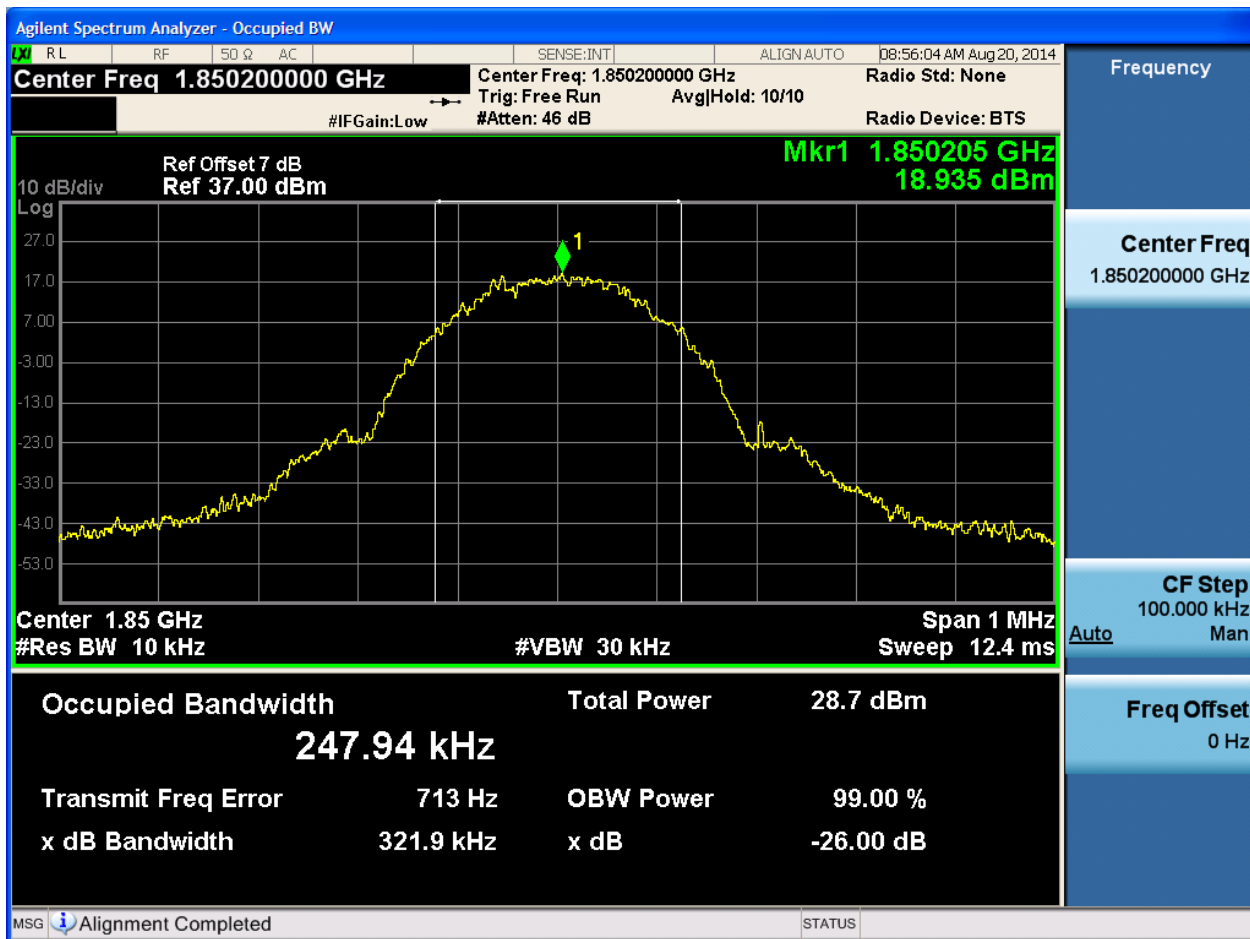


4.1.1.1.3 Test Channel = HCH



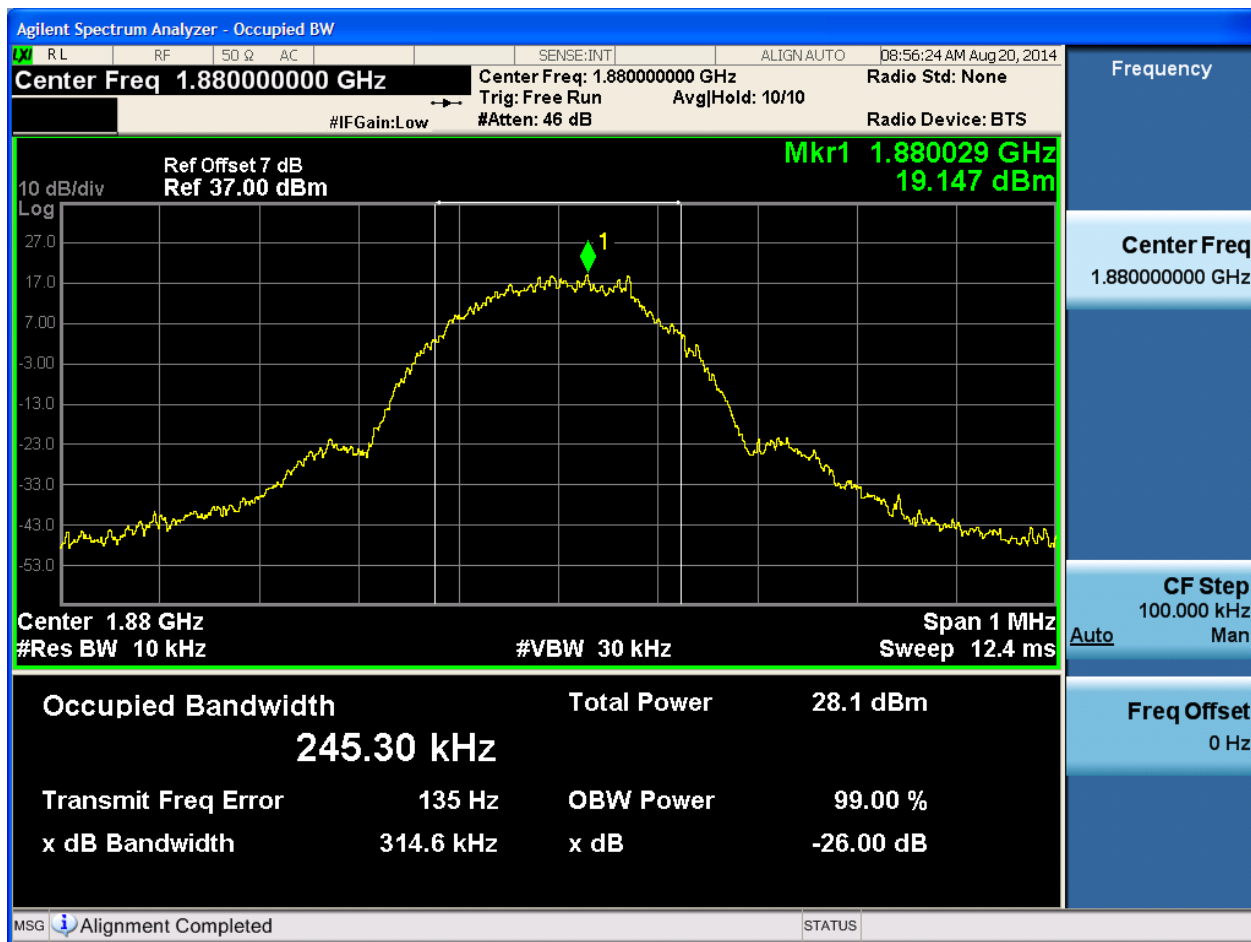
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH

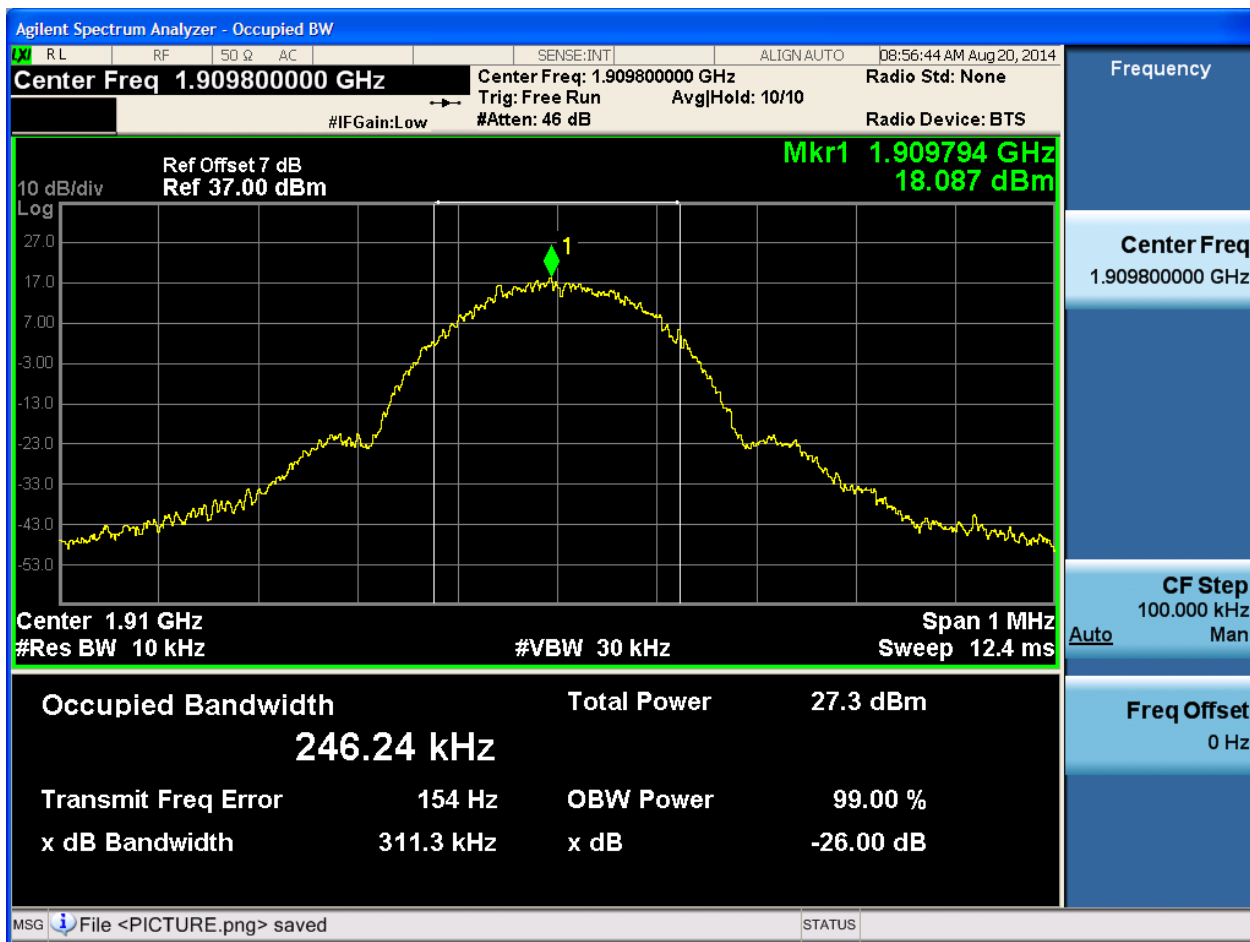




4.1.1.1.2 Test Channel = MCH



4.1.1.1.3 Test Channel = HCH



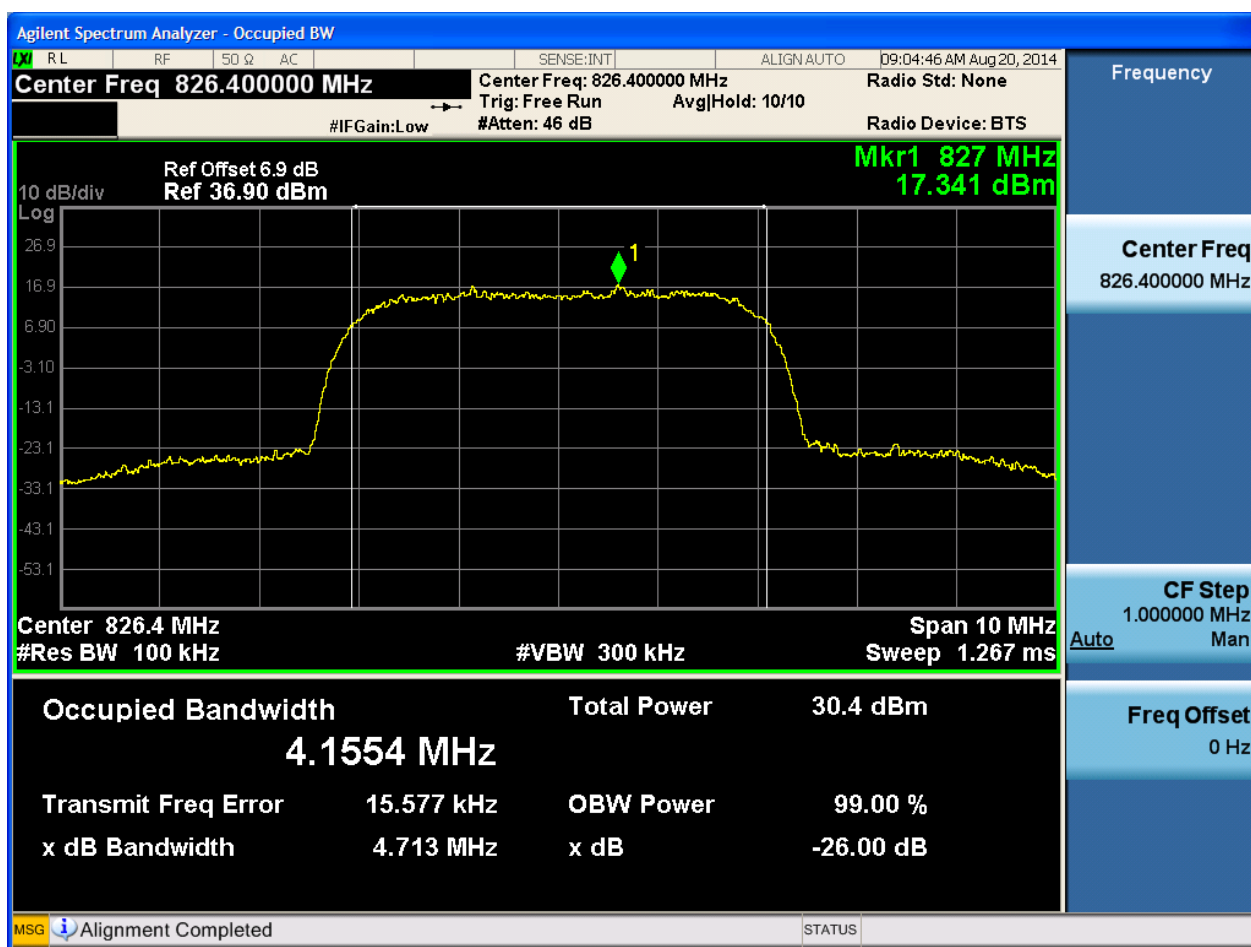


4.2 For UMTS

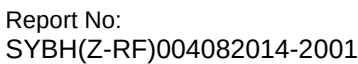
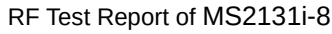
4.2.1 Test Band = WCDMA850

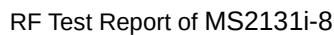
4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH





Agilent Spectrum Analyzer - Occupied BW

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 09:05:17 AM Aug 20, 2014

Center Freq 846.600000 MHz Center Freq: 846.600000 MHz Radio Std: None
 Trig: Free Run Avg|Hold: 10/10
 #IFGain: Low #Atten: 46 dB Radio Device: BTS

Ref Offset 6.9 dB Mkr1 845.73 MHz
 Ref 36.90 dBm 17.590 dBm

10 dB/div Log

Center 846.6 MHz Span 10 MHz
 #Res BW 100 kHz #VBW 300 kHz Sweep 1.267 ms

Occupied Bandwidth		Total Power	
4.1662 MHz		30.4 dBm	
Transmit Freq Error	1.451 kHz	OBW Power	99.00 %
x dB Bandwidth	4.708 MHz	x dB	-26.00 dB

MSG File <PICTURE.png> saved STATUS

Frequency
 Center Freq
 846.600000 MHz

CF Step
 1.000000 MHz
 Auto Man

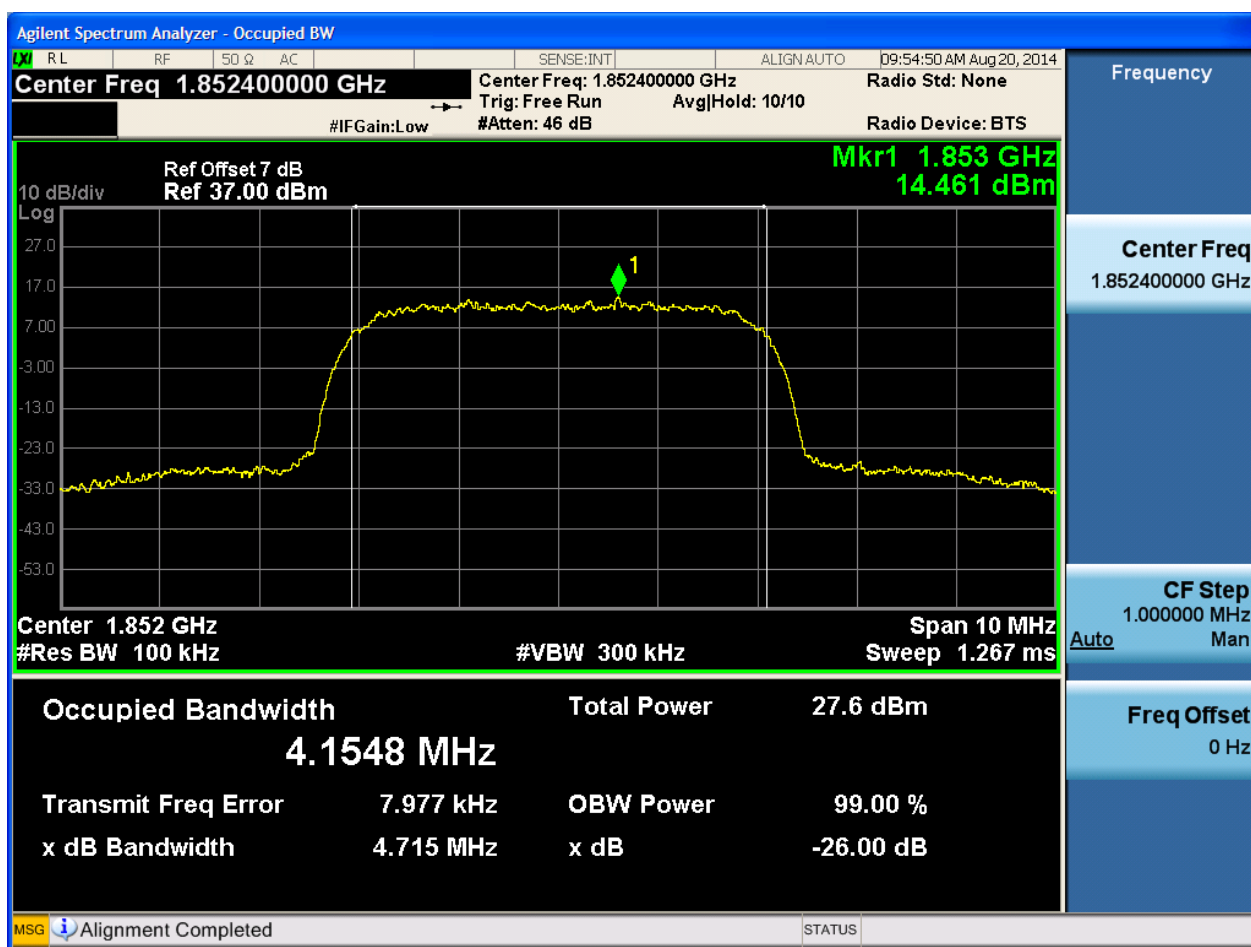
Freq Offset
 0 Hz



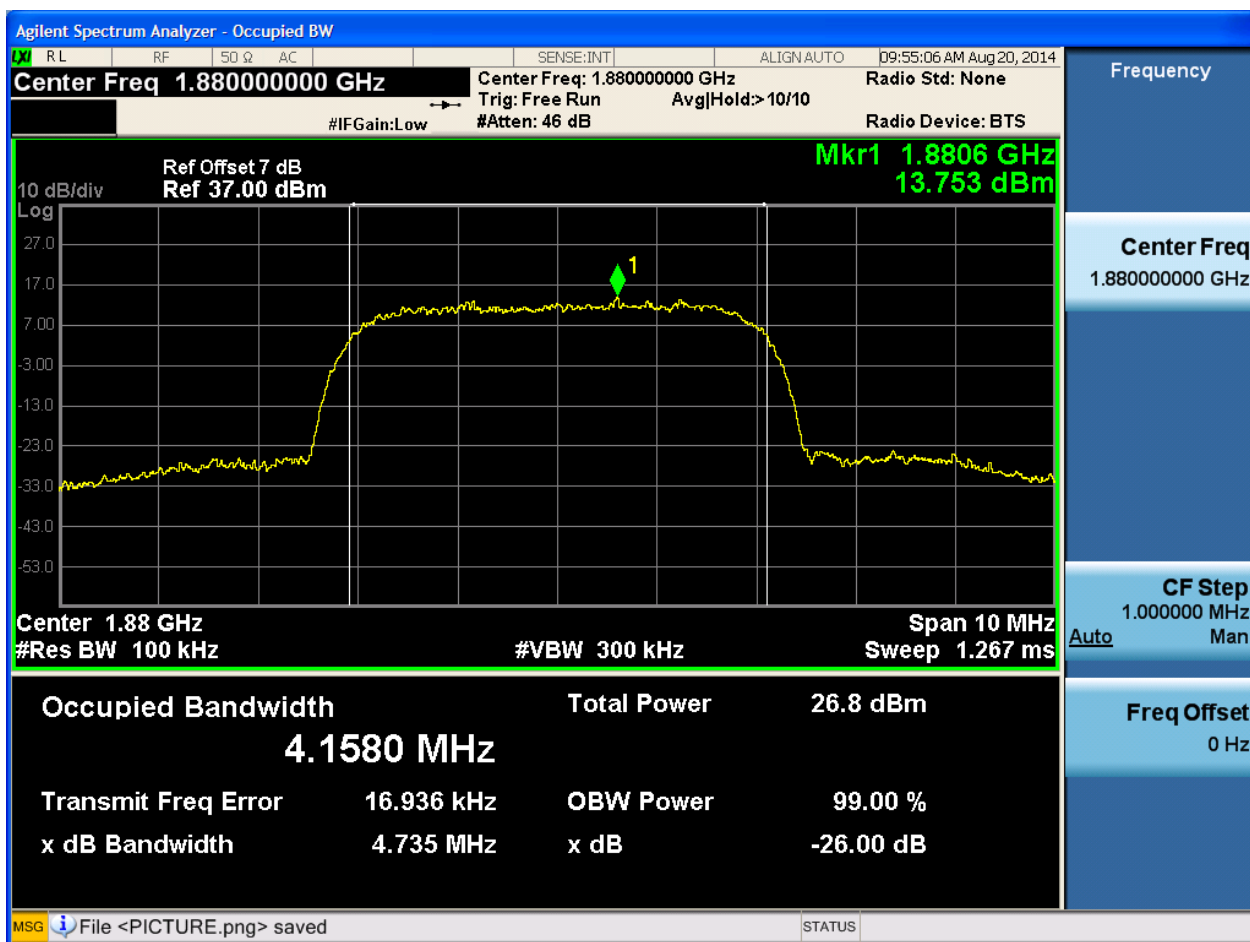
4.2.2 Test Band = WCDMA1900

4.2.2.1 Test Mode = UMTS/TM1

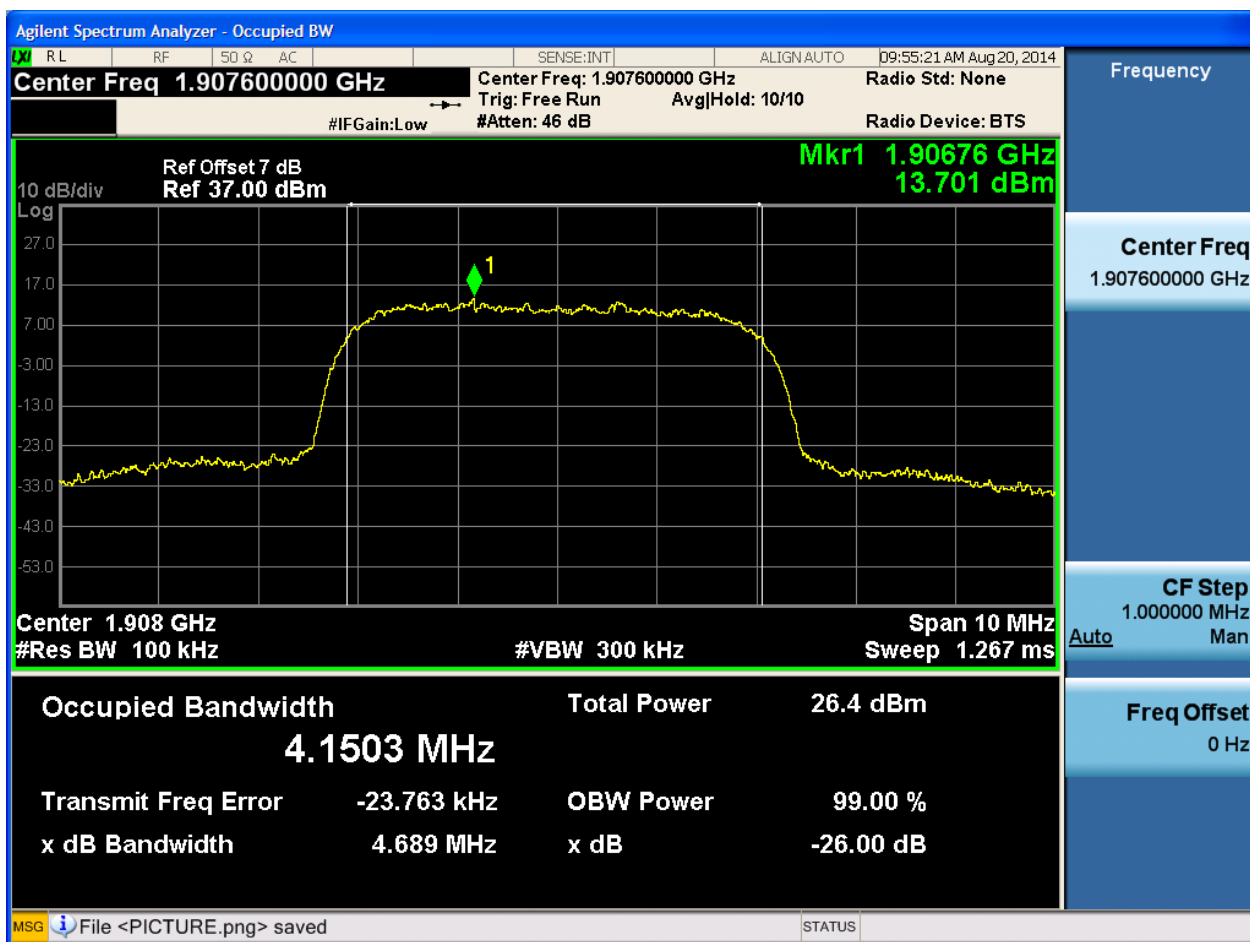
4.2.2.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

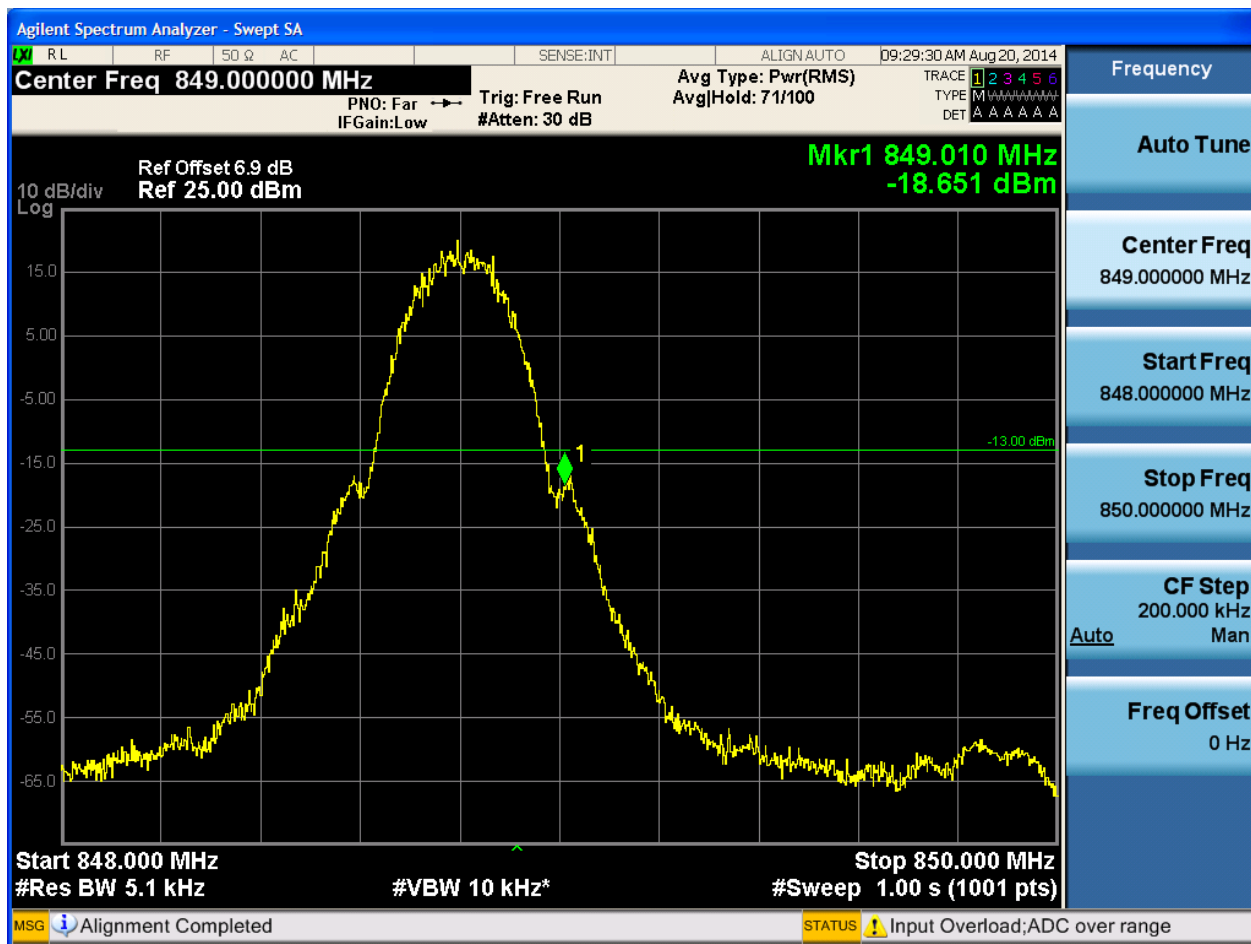


4.1.1.1.3 Test Channel = HCH



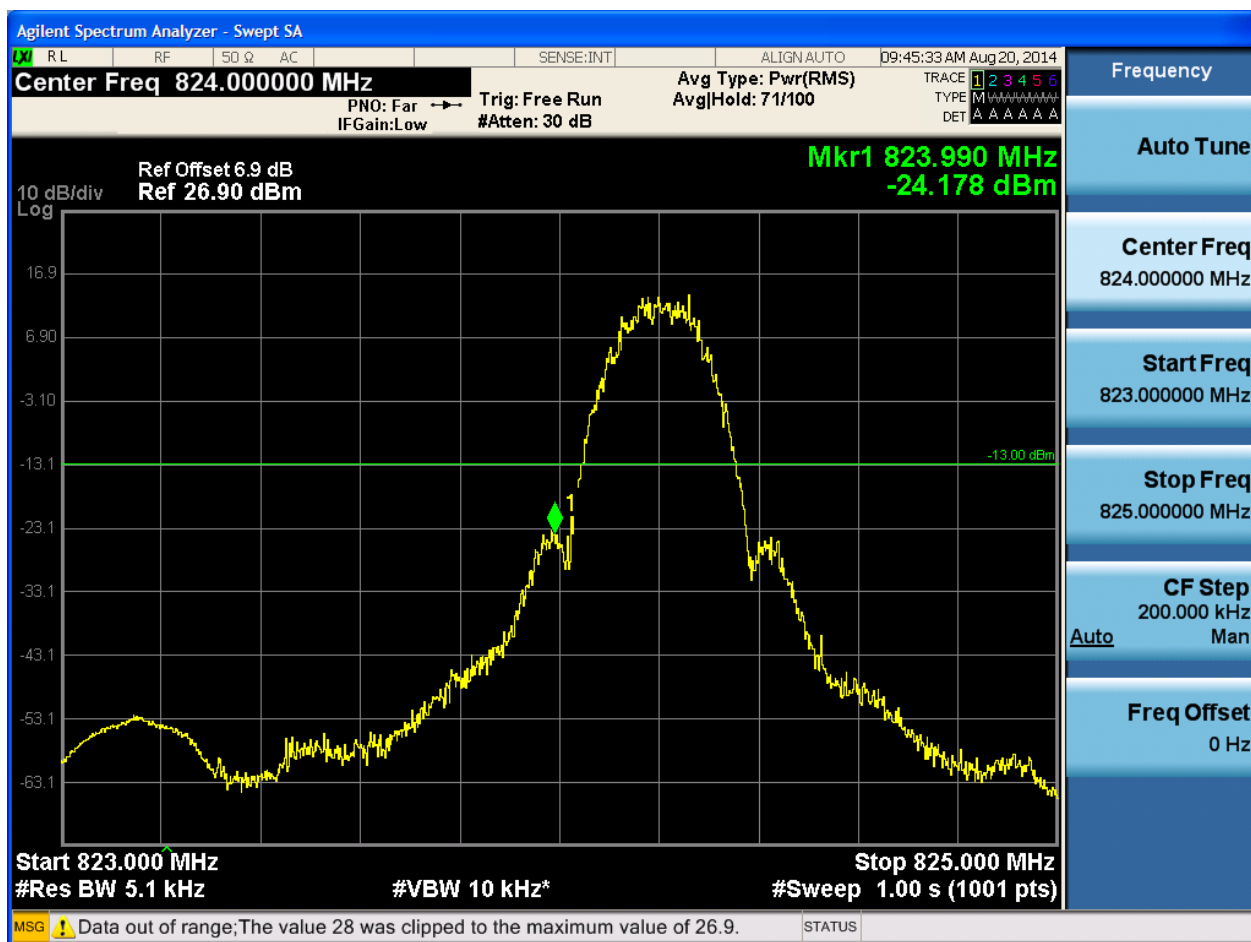


5.1.1.1.2 Test Channel = HCH

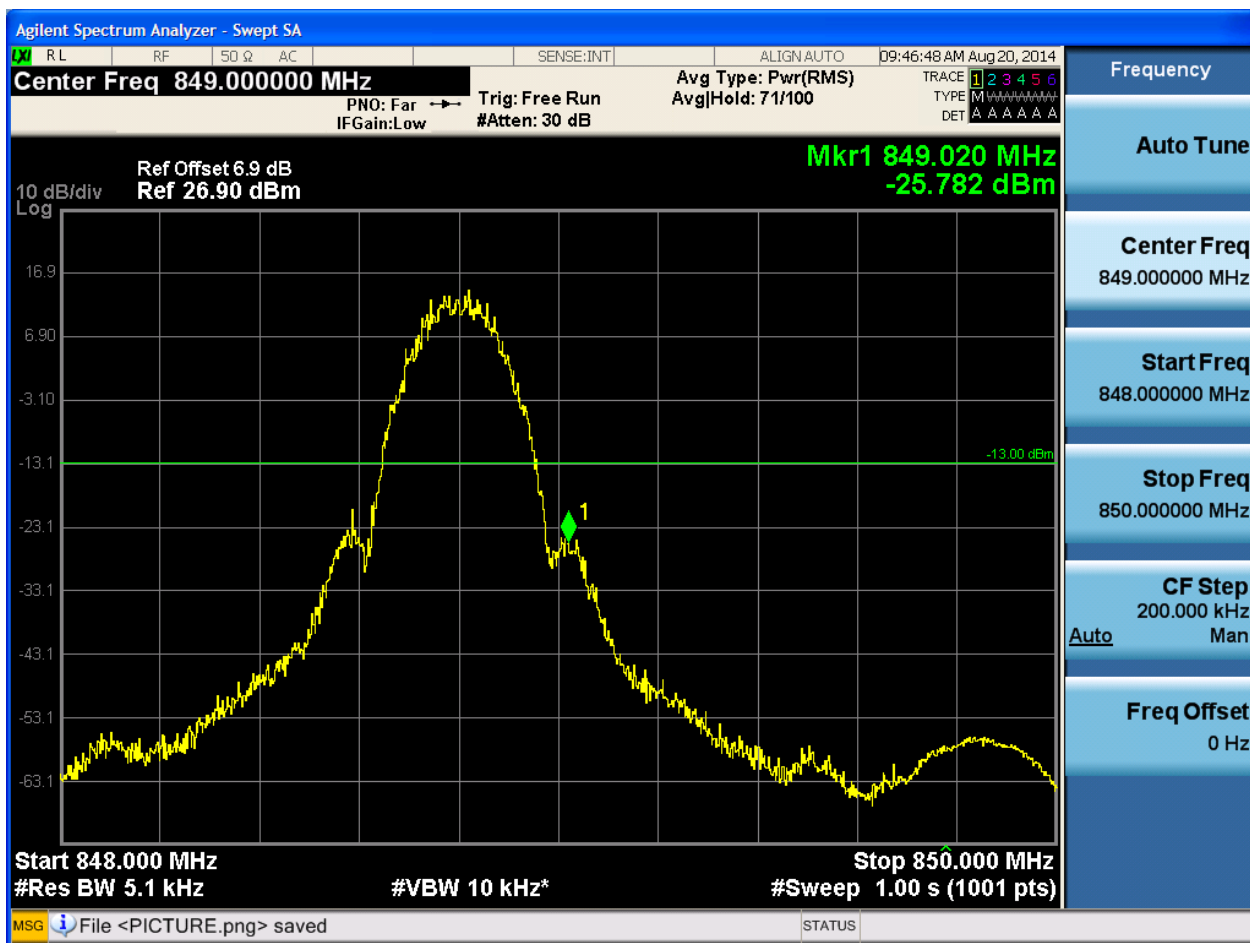


5.1.1.1 Test Mode = GSM/TM2

5.1.1.1.1 Test Channel = LCH



5.1.1.1.2 Test Channel = HCH

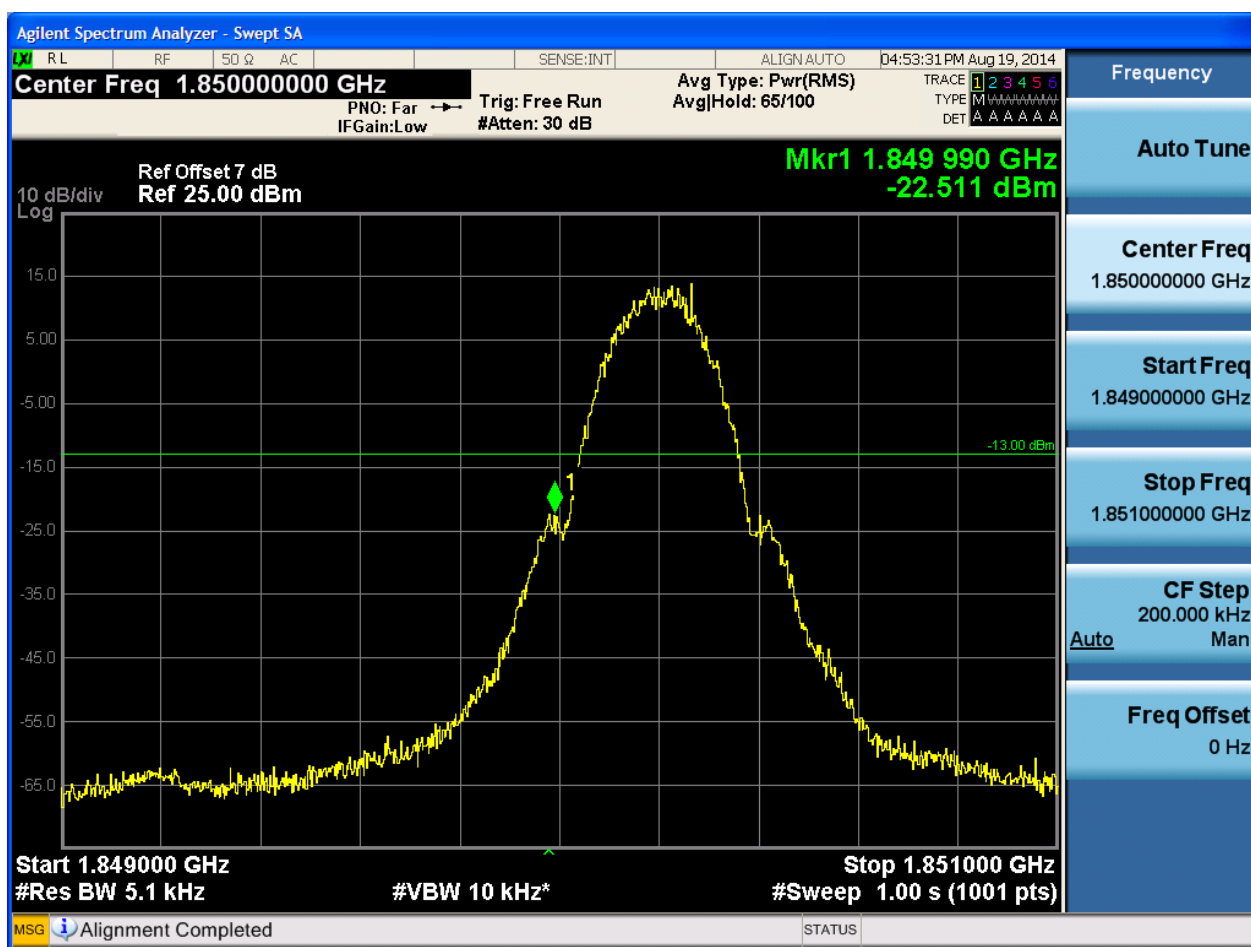




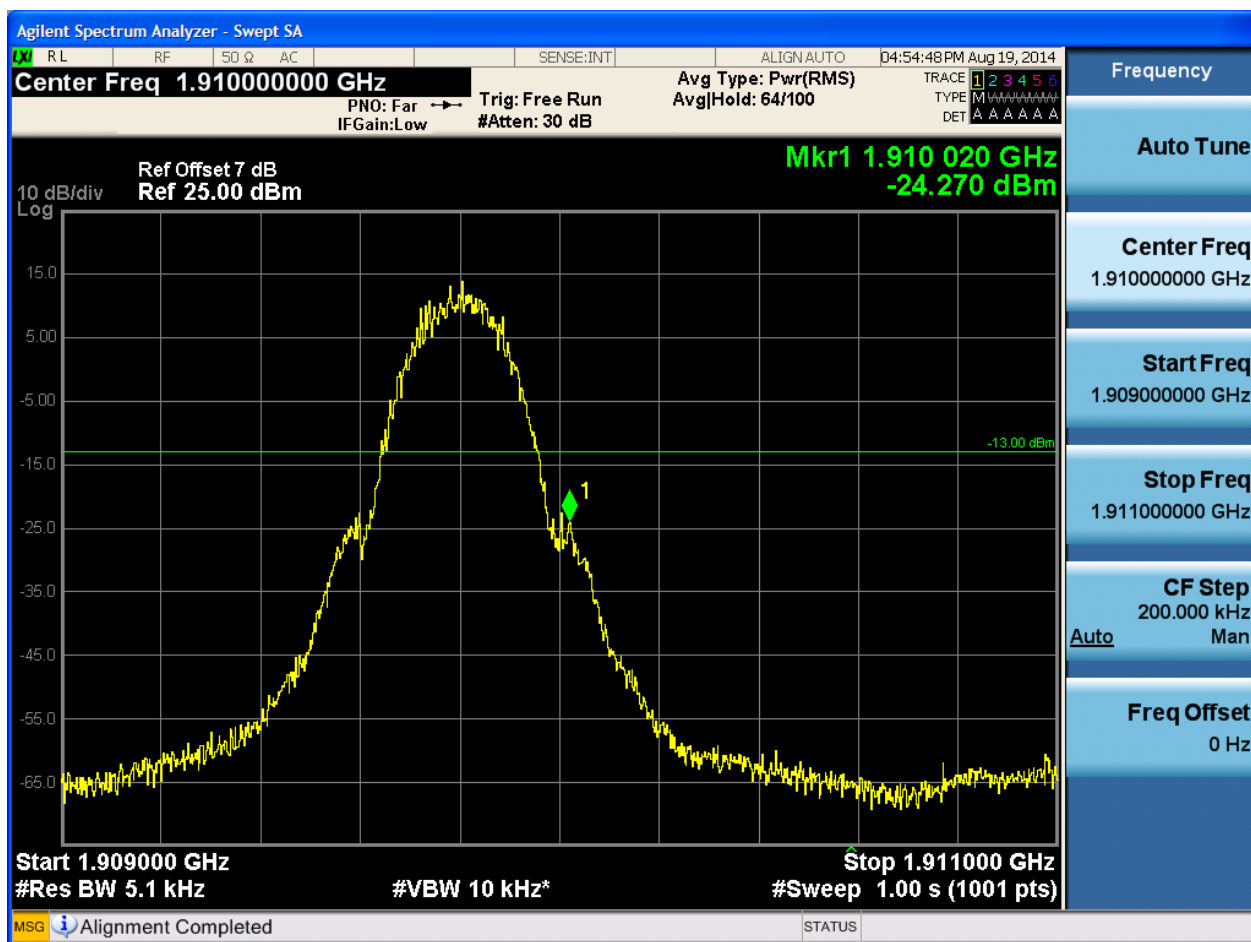
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

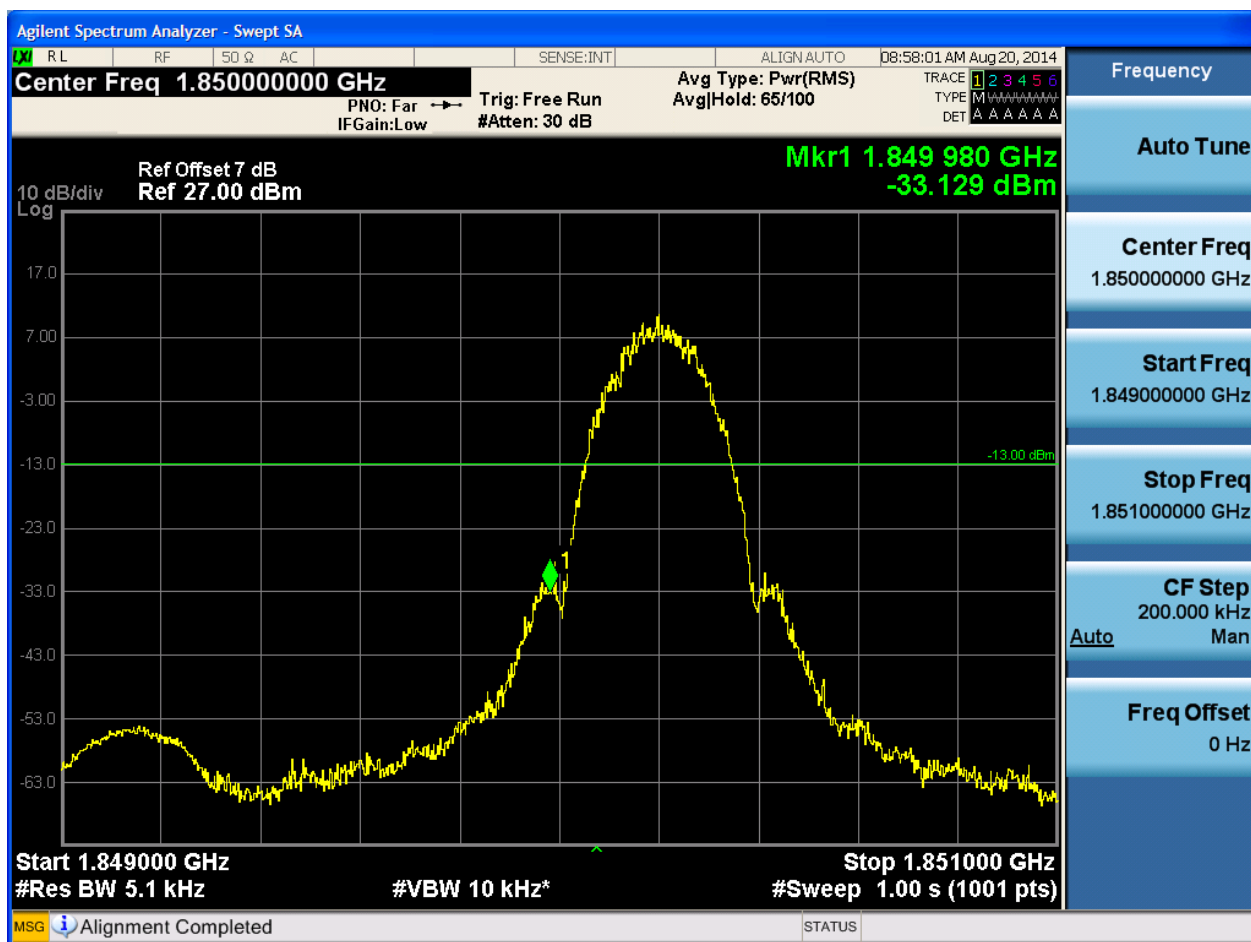


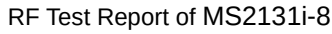
5.1.1.1.2 Test Channel = HCH



5.1.2.1 Test Mode = GSM/TM2

5.1.2.1.1 Test Channel = LCH





Agilent Spectrum Analyzer - Swept SA

Center Freq 1.91000000 GHz

Ref Offset 7 dB
Ref 27.00 dBm

10 dB/div
Log

Mkr1 1.910 030 GHz
-32.753 dBm

Start 1.909000 GHz
#Res BW 5.1 kHz

Stop 1.911000 GHz
#Sweep 1.00 s (1001 pts)

#VBW 10 kHz*

Trig: Free Run
#Atten: 30 dB

Avg Type: Pwr(RMS)
AvgHold: 40/100

Trace 1 2 3 4 5 6
Type M
Det A A A A A A

Auto Tune

Center Freq 1.91000000 GHz

Start Freq 1.909000000 GHz

Stop Freq 1.911000000 GHz

CF Step 200.000 kHz
Auto Man

Freq Offset 0 Hz

MSG Alignment Completed

STATUS

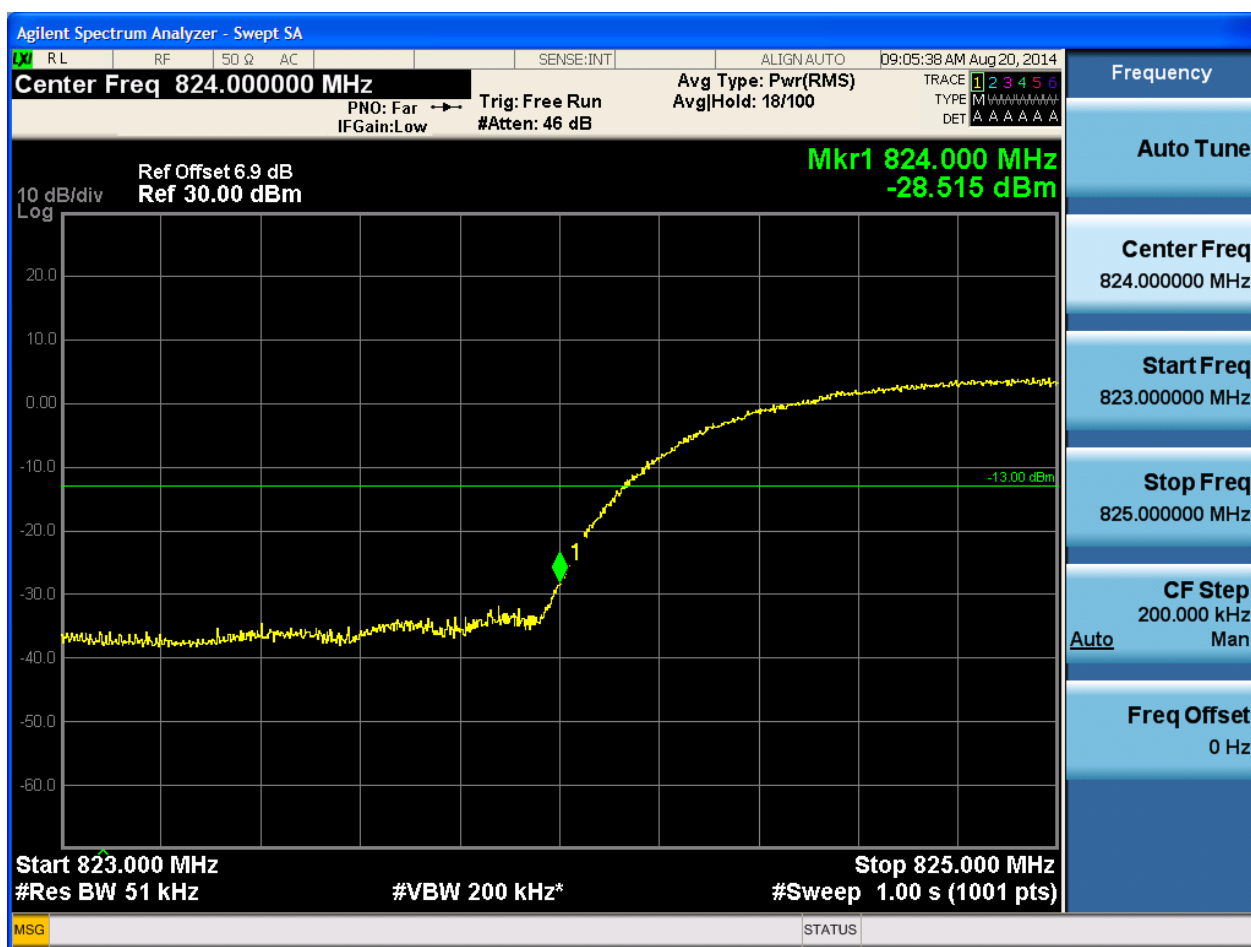


5.2 For UMTS

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

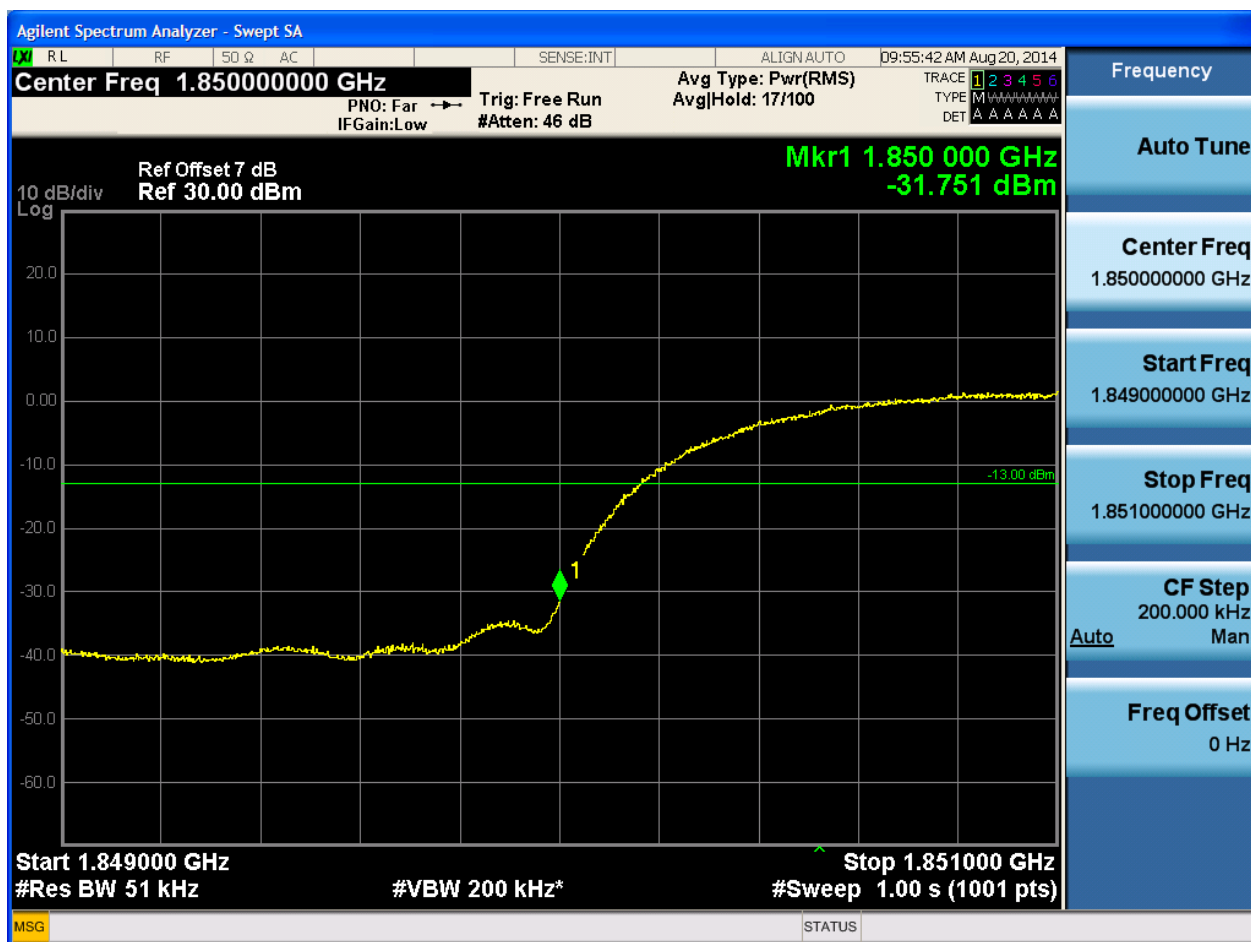




5.2.2 Test Band = WCDMA1900

5.2.2.1 Test Mode = UMTS/TM1

5.2.2.1.1 Test Channel = LCH



5.2.2.1.2 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.

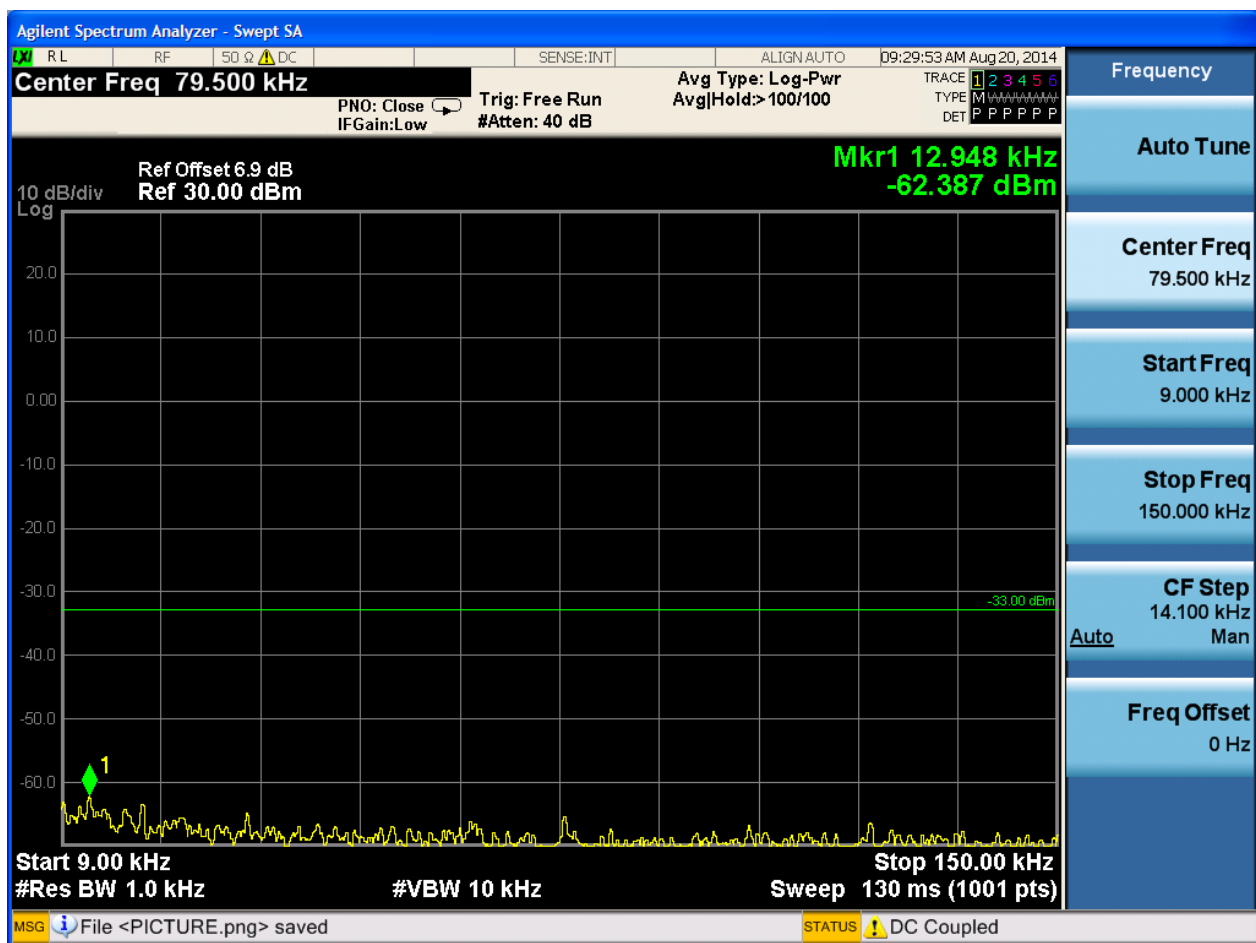
Part I - Test Plots

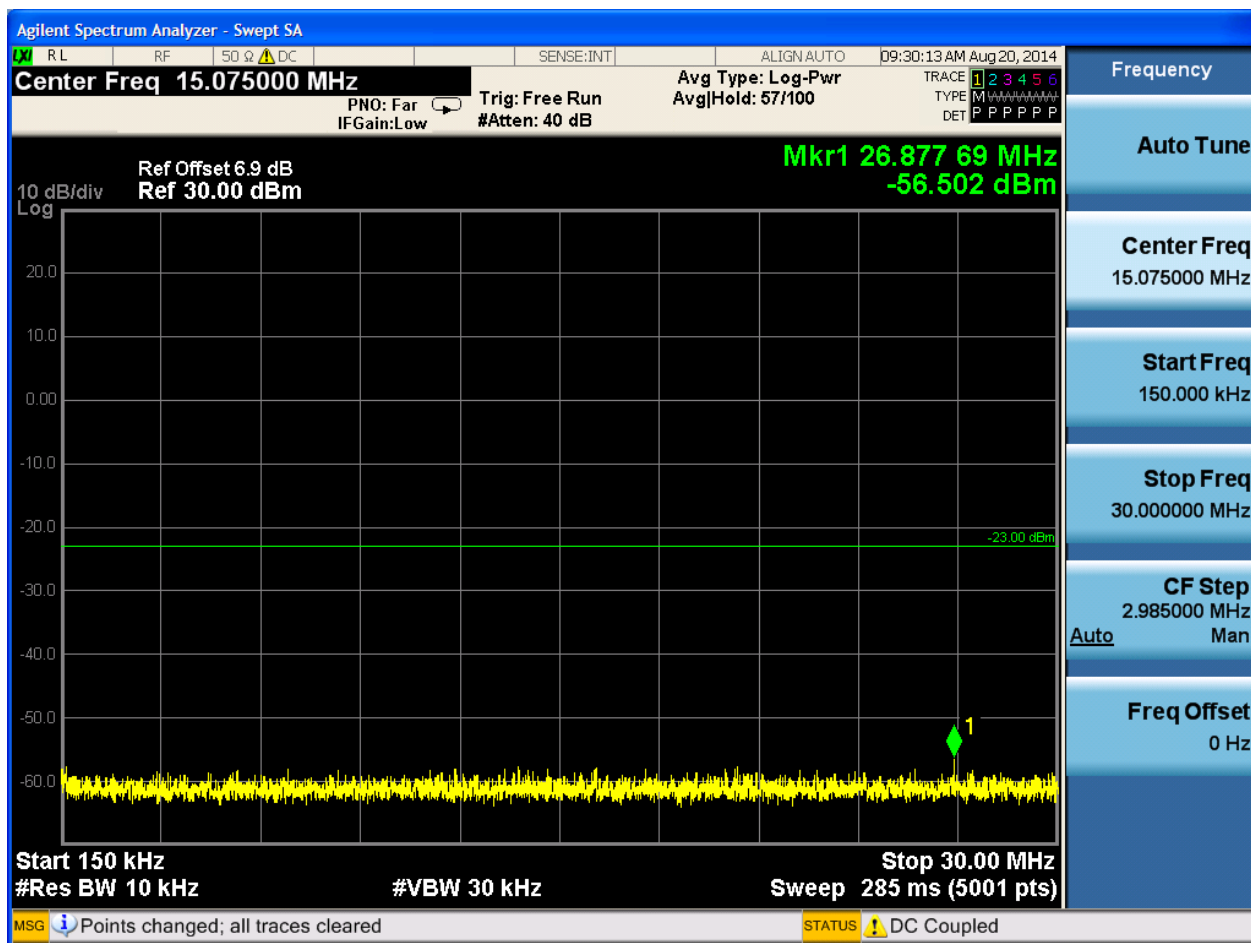
6.1 For GSM

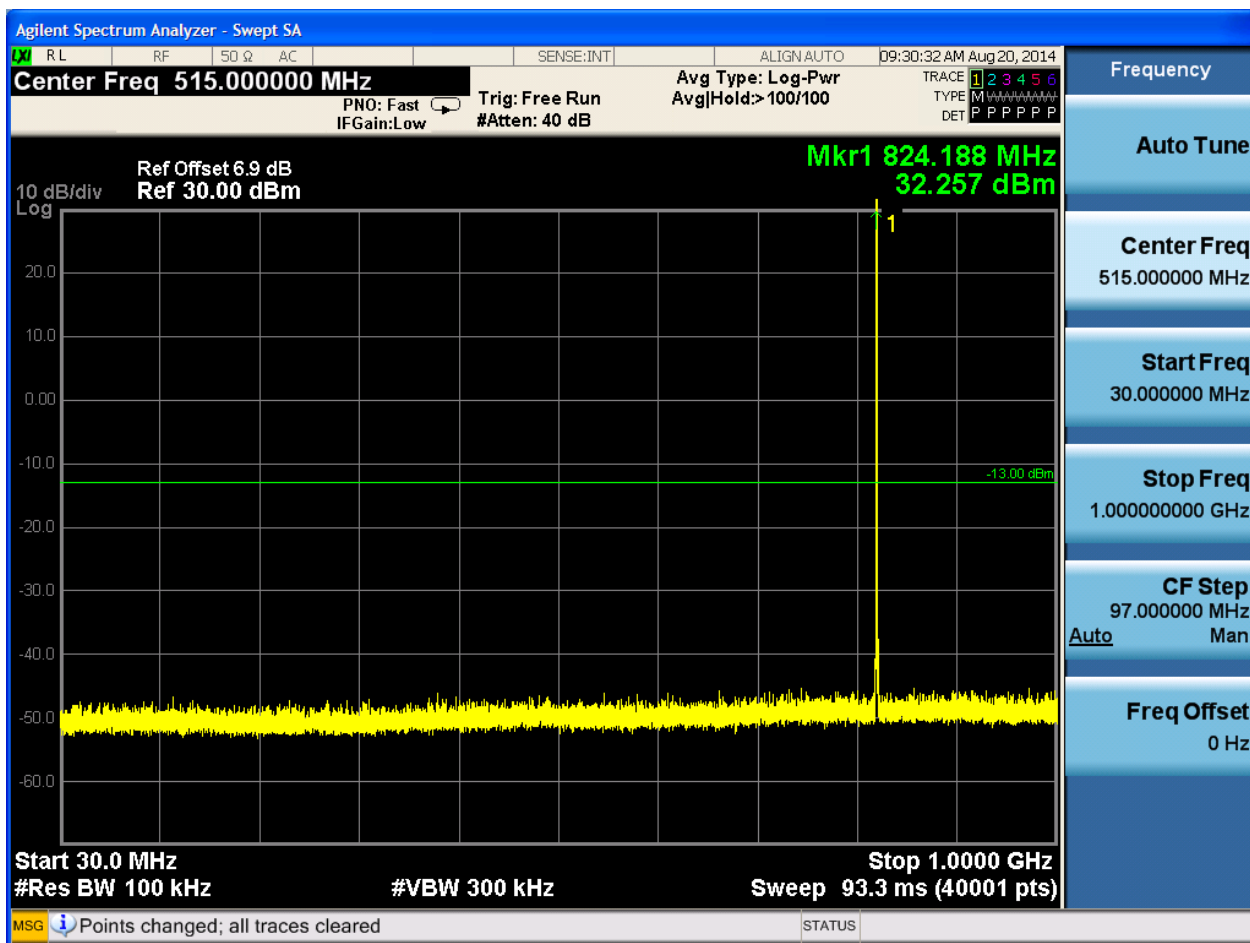
6.1.1 Test Band = GSM850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH



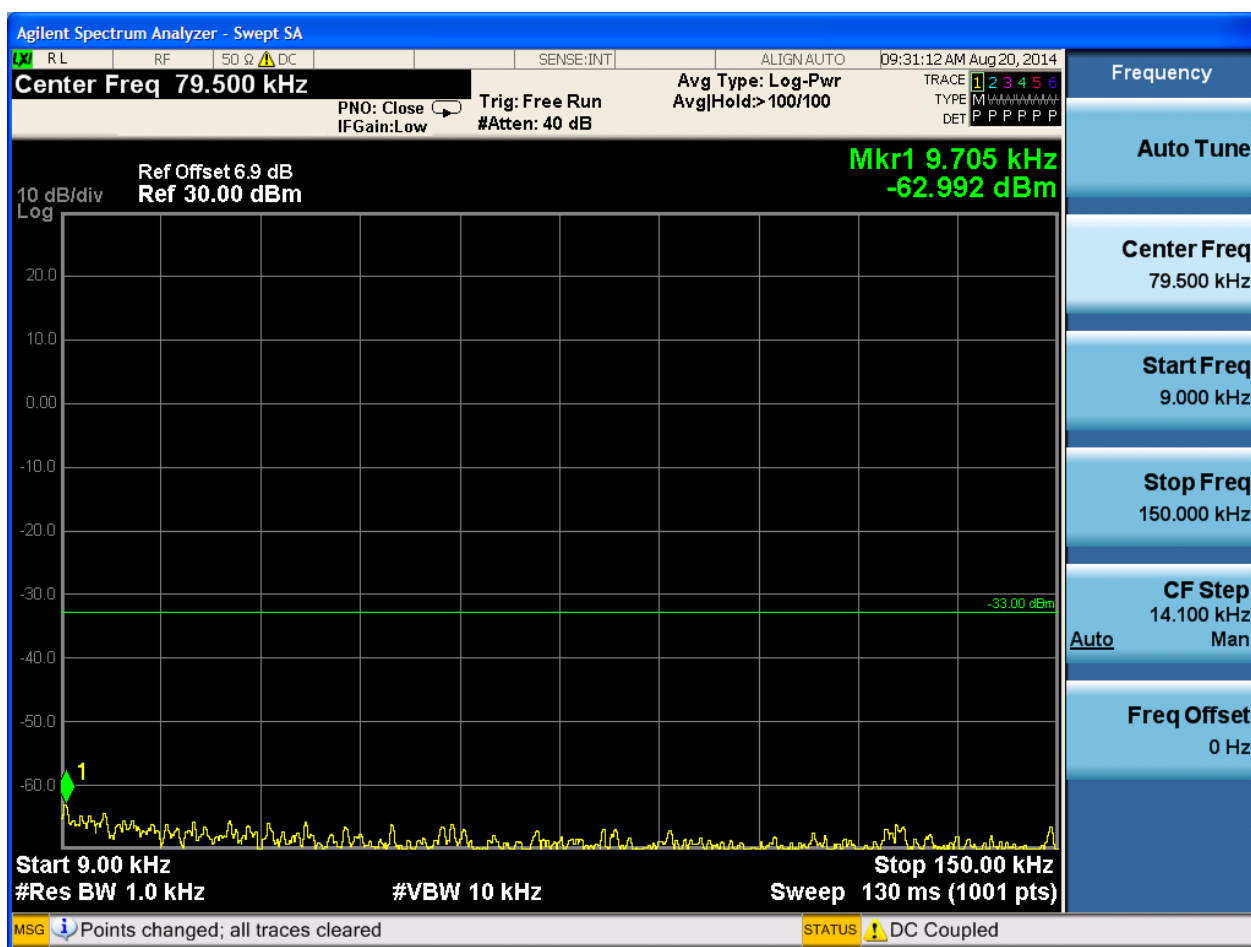


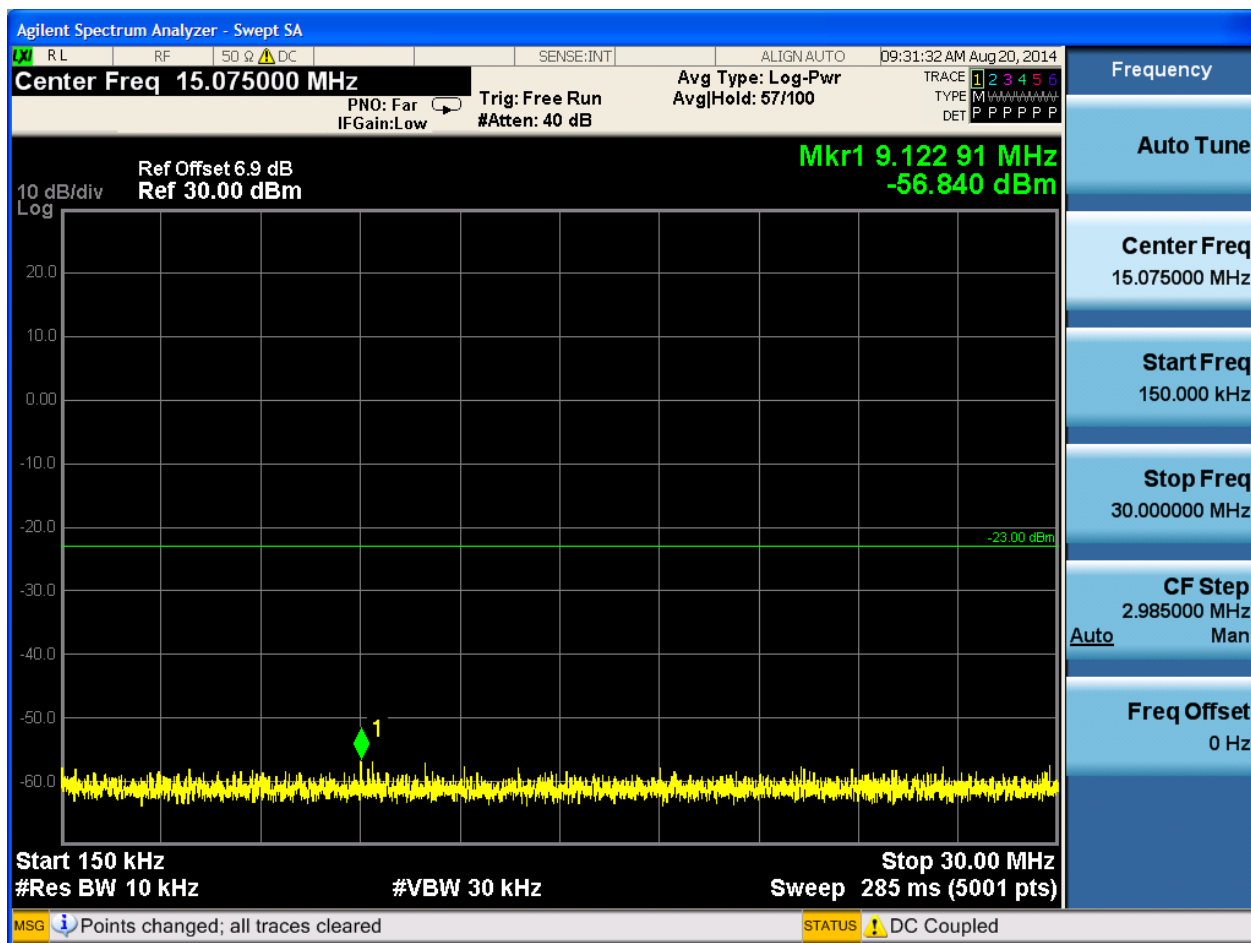


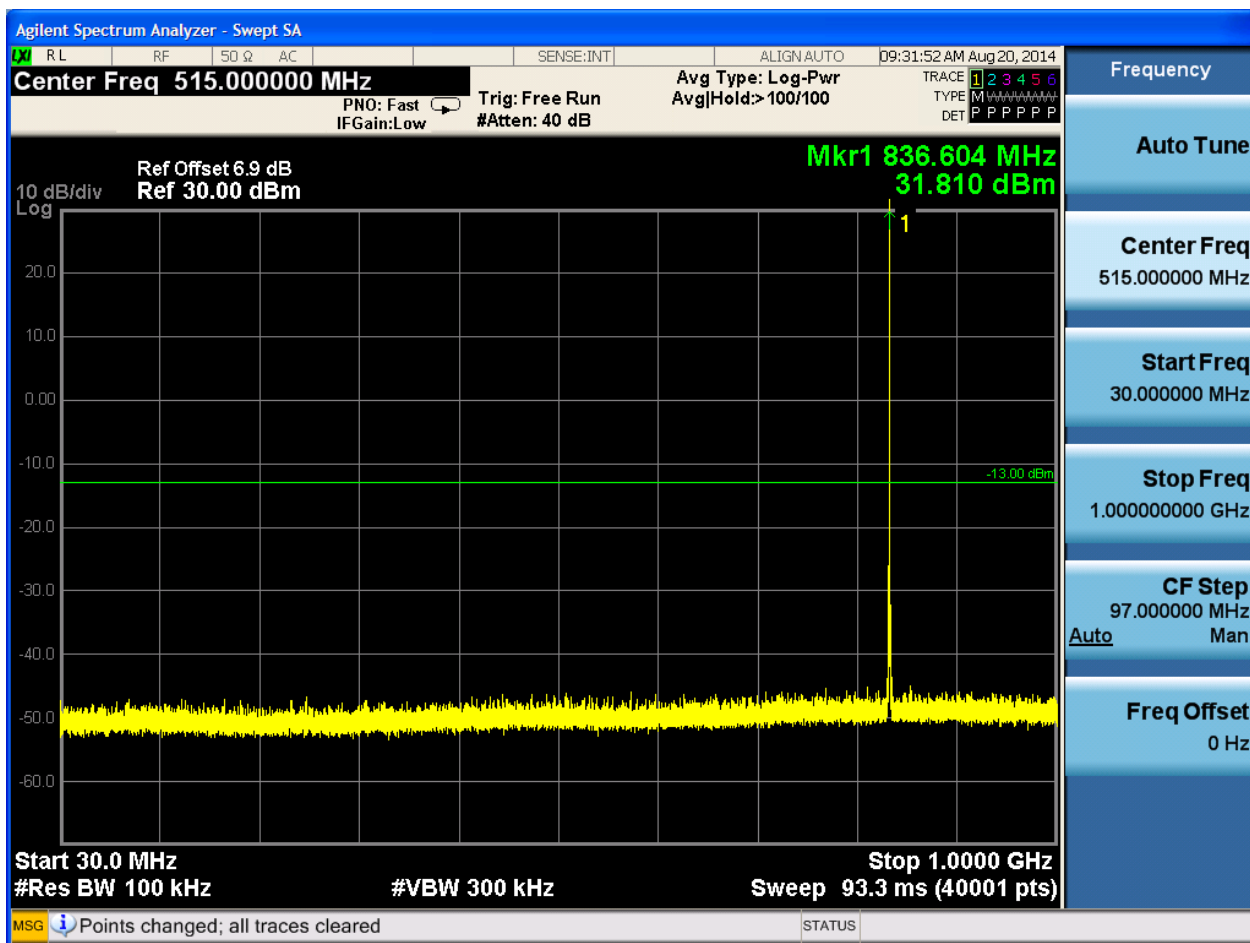


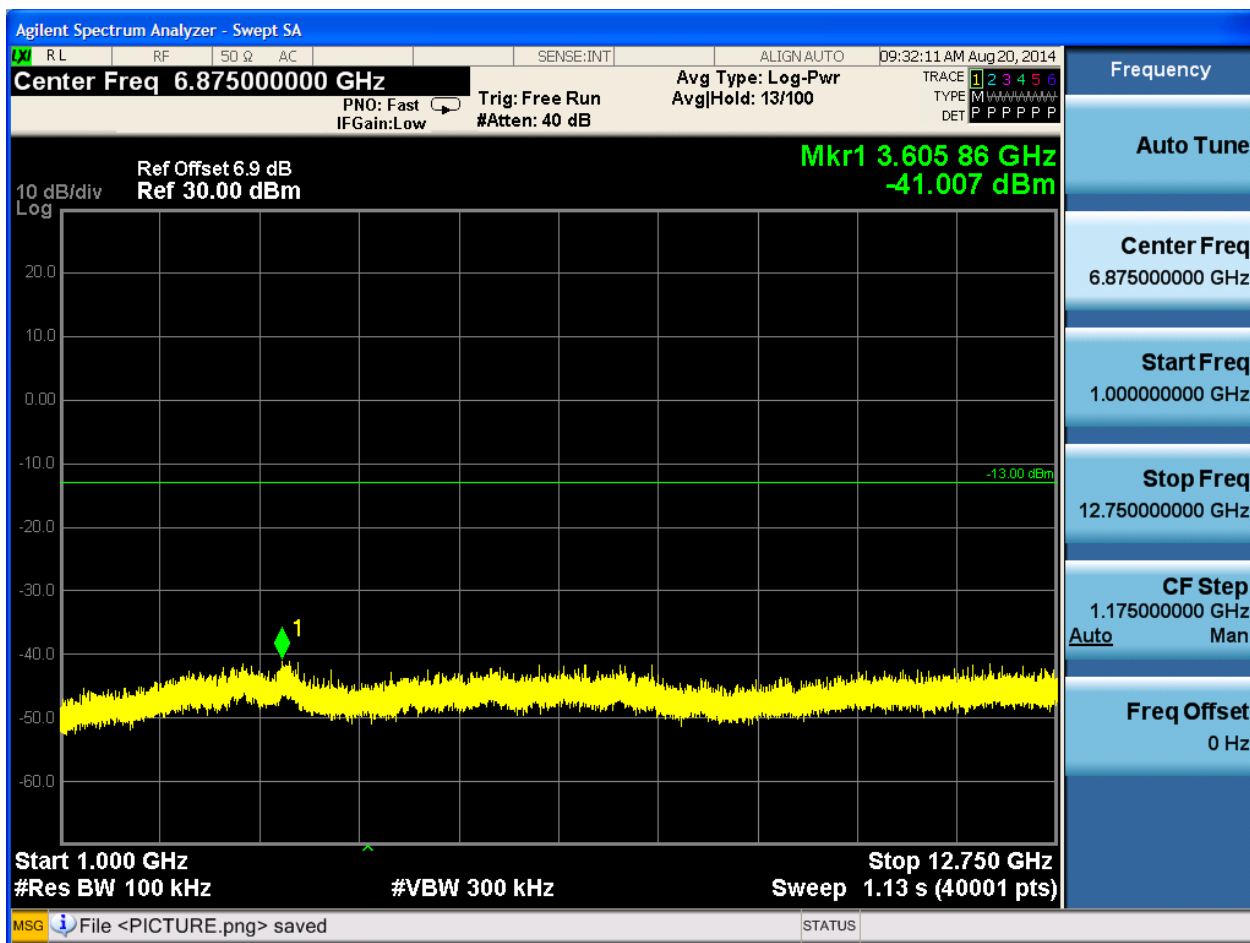


6.1.1.1.2 Test Channel = MCH



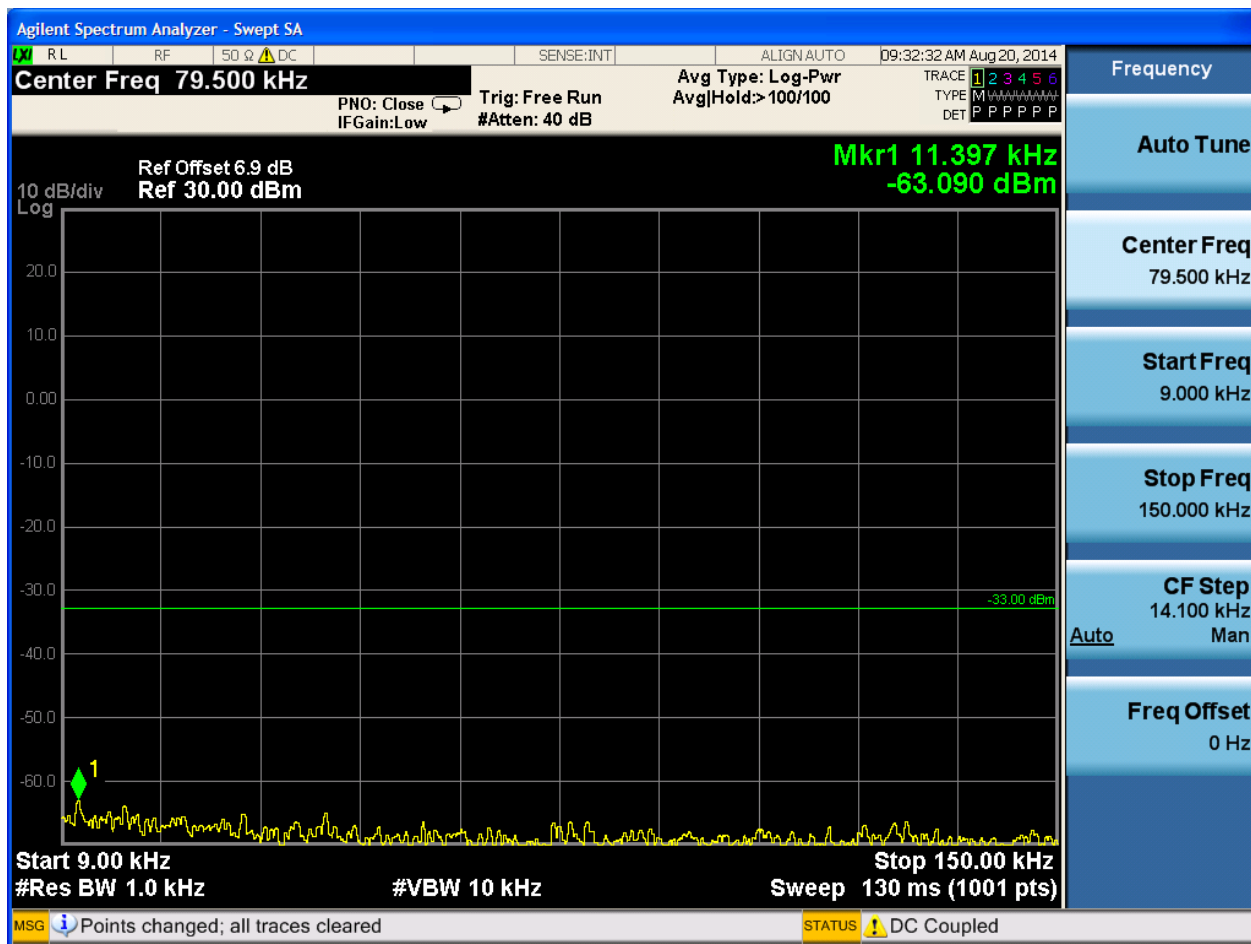


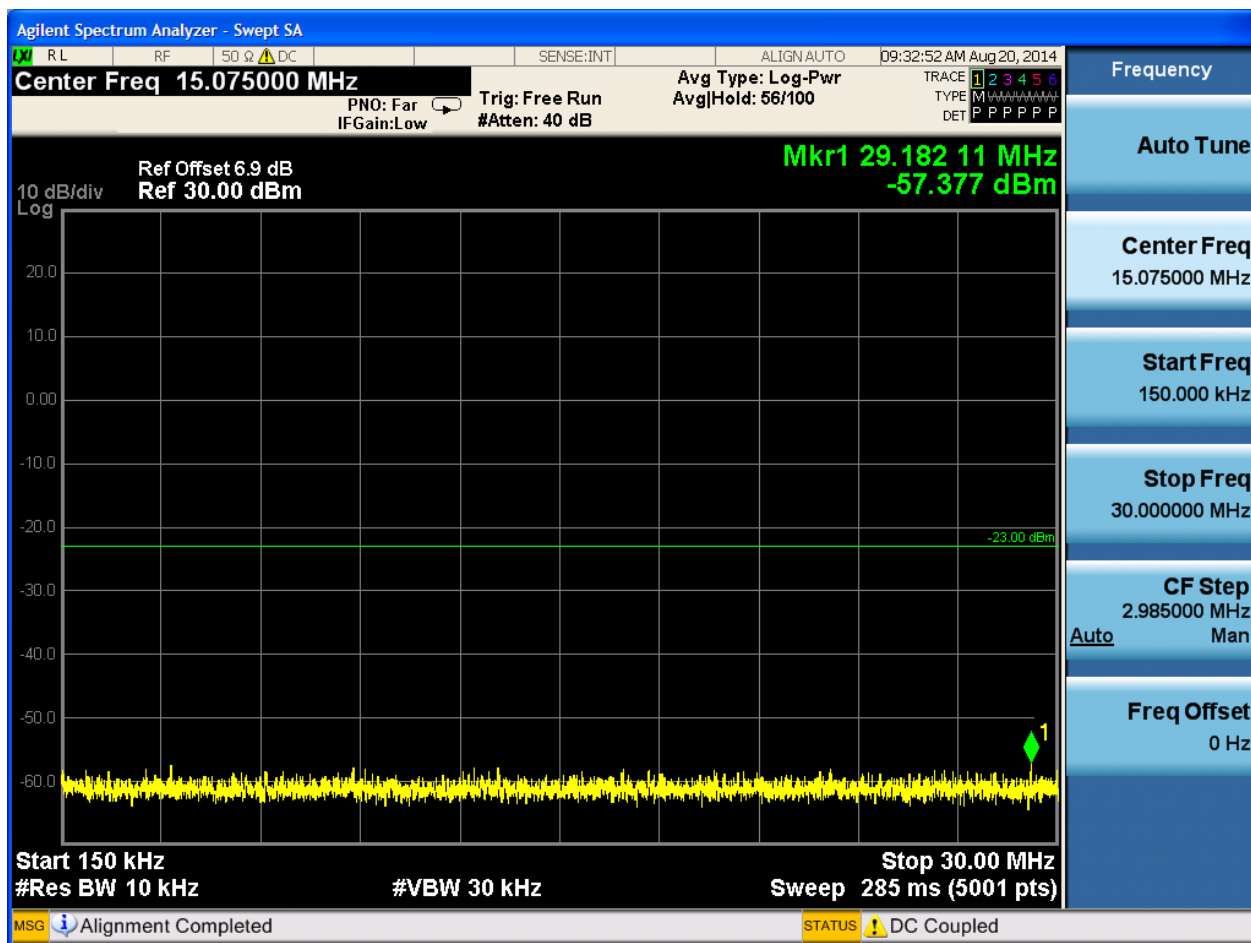


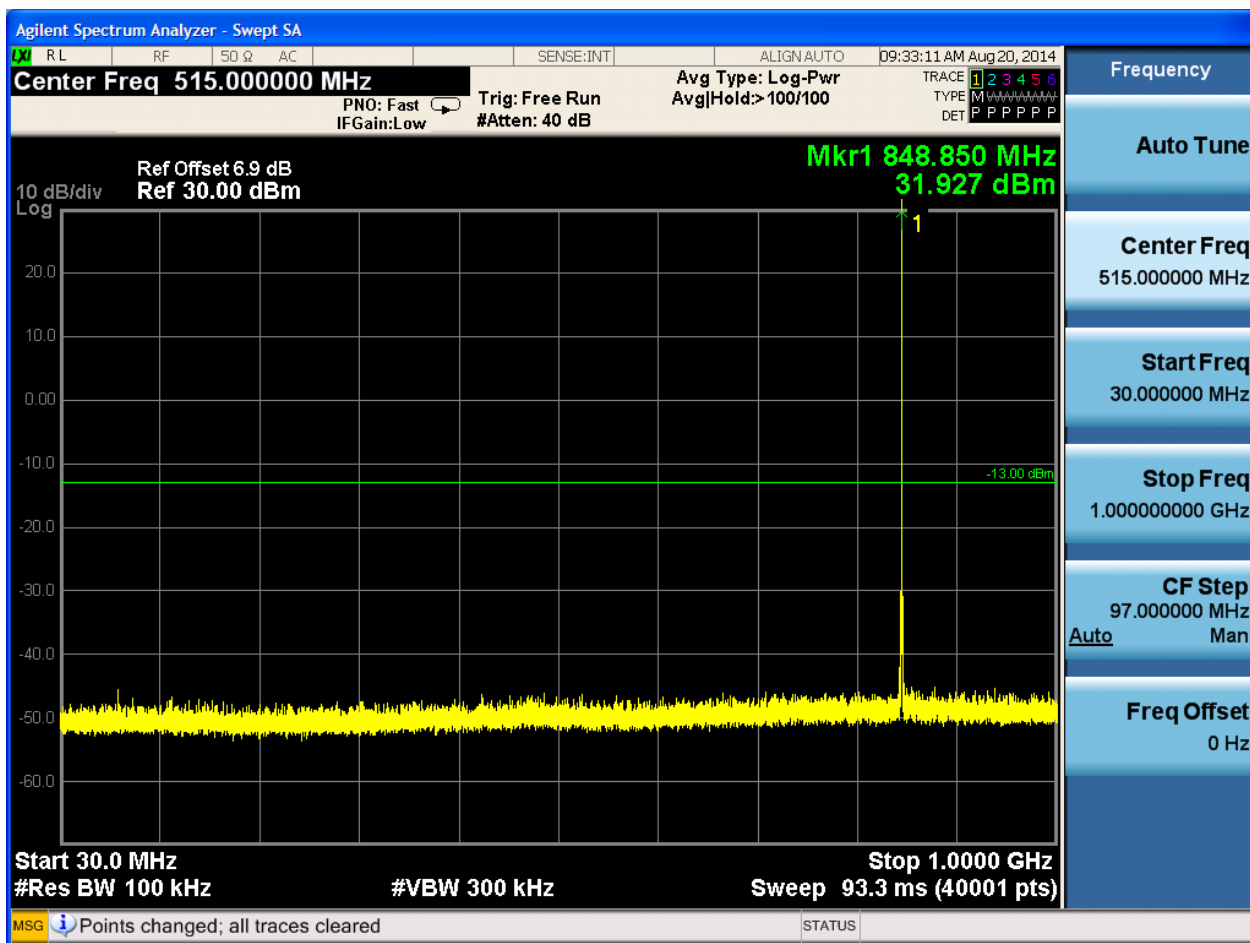




6.1.1.1.3 Test Channel = HCH



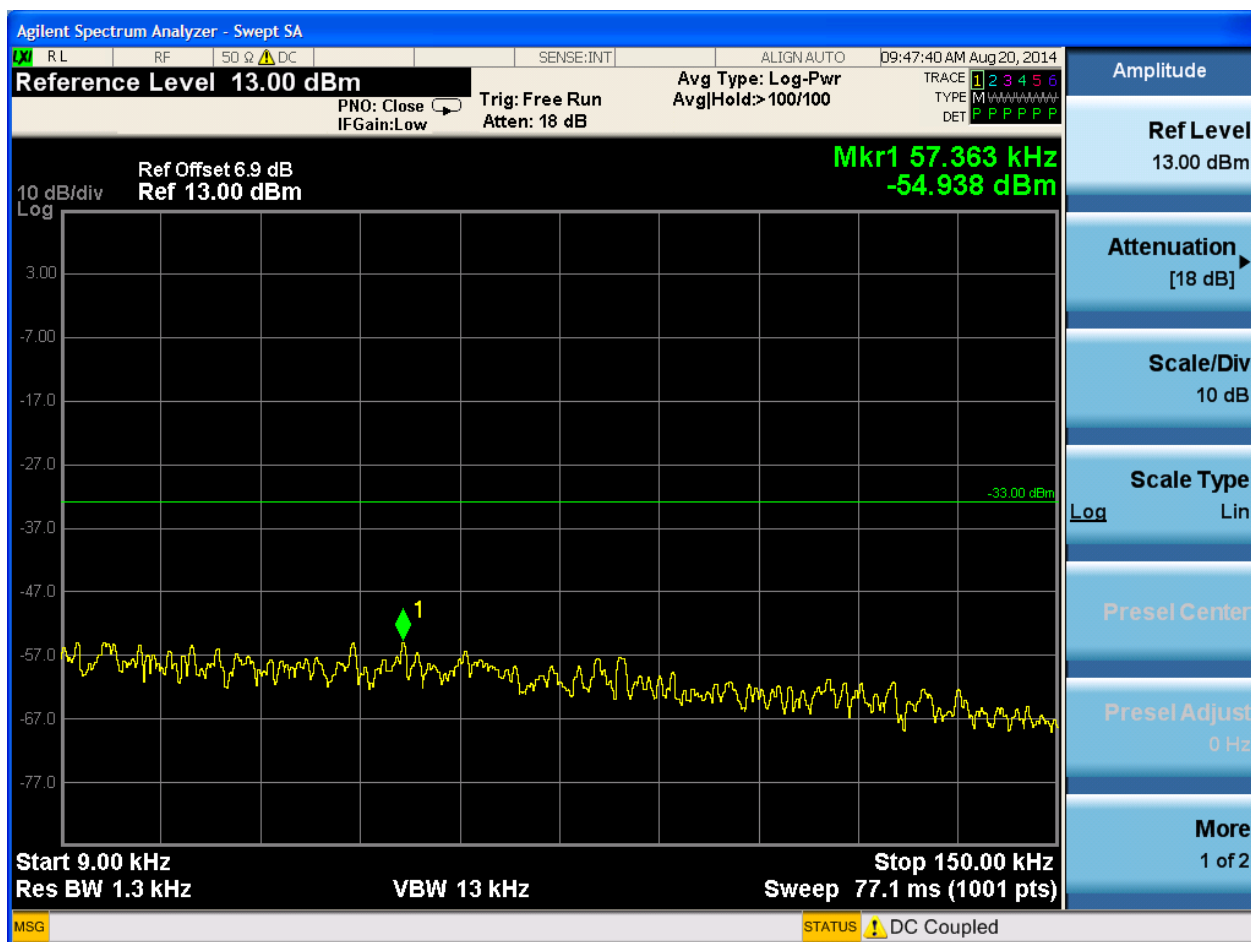


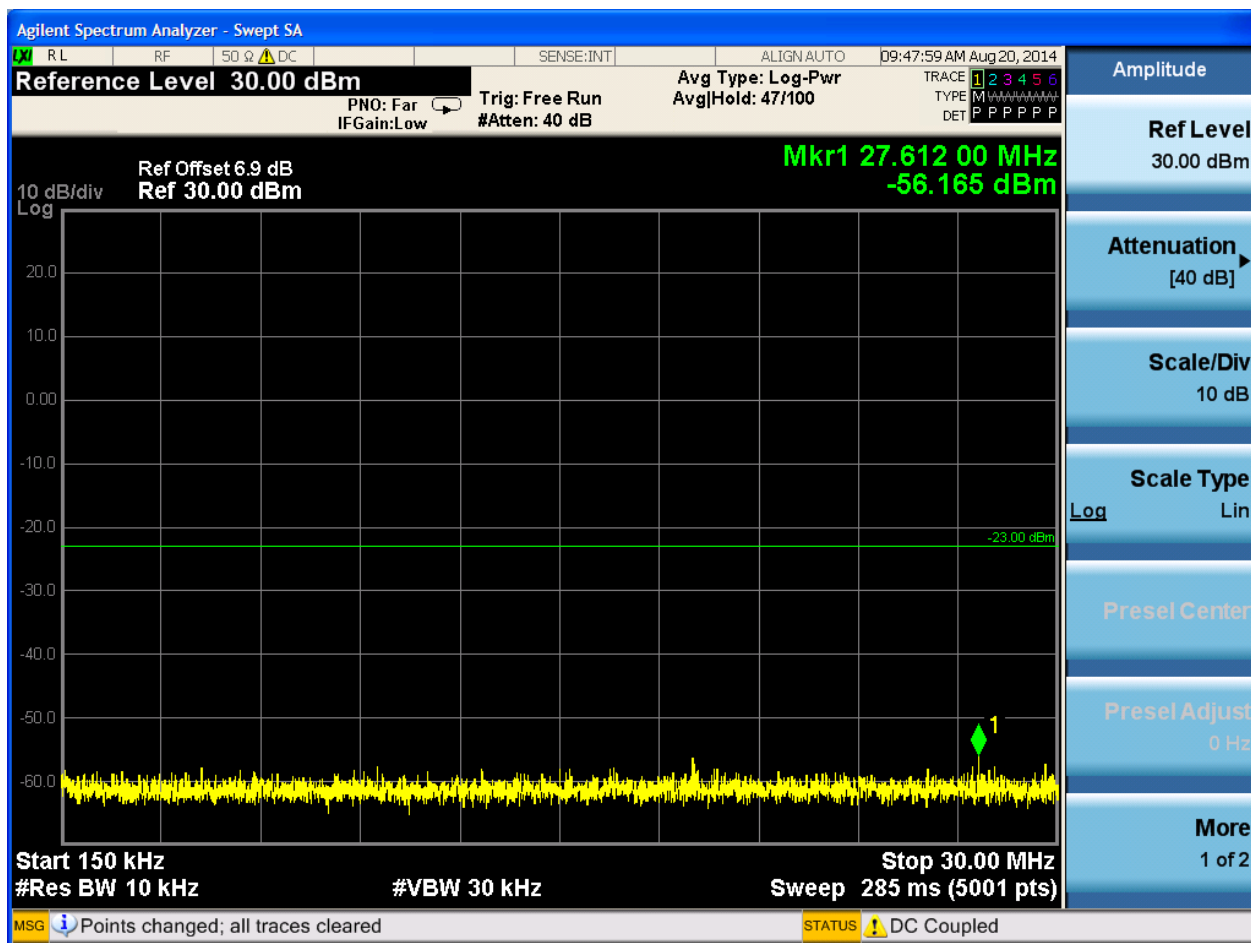


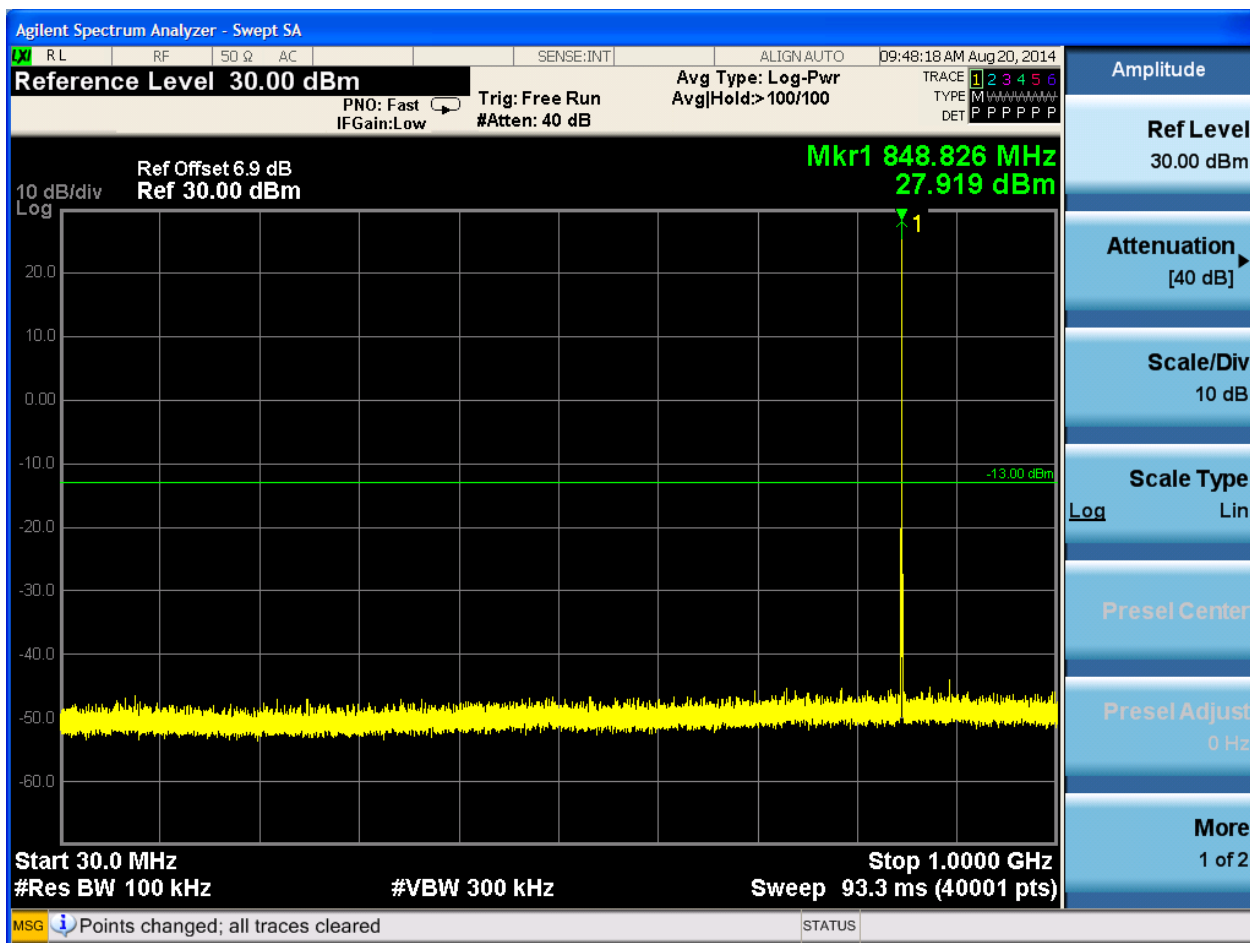


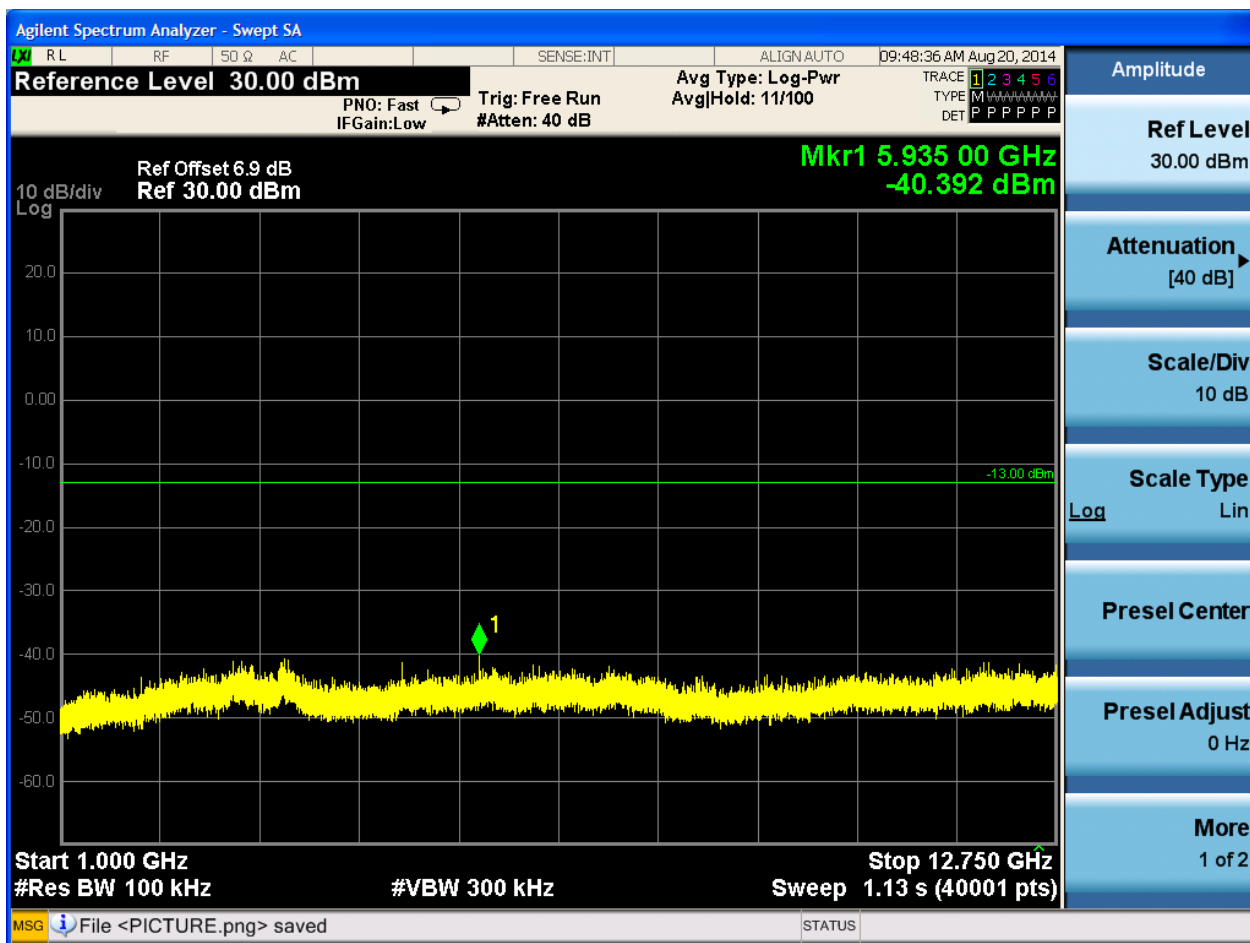
6.1.1.1 Test Mode = GSM/TM2

6.1.1.1.1 Test Channel = LCH





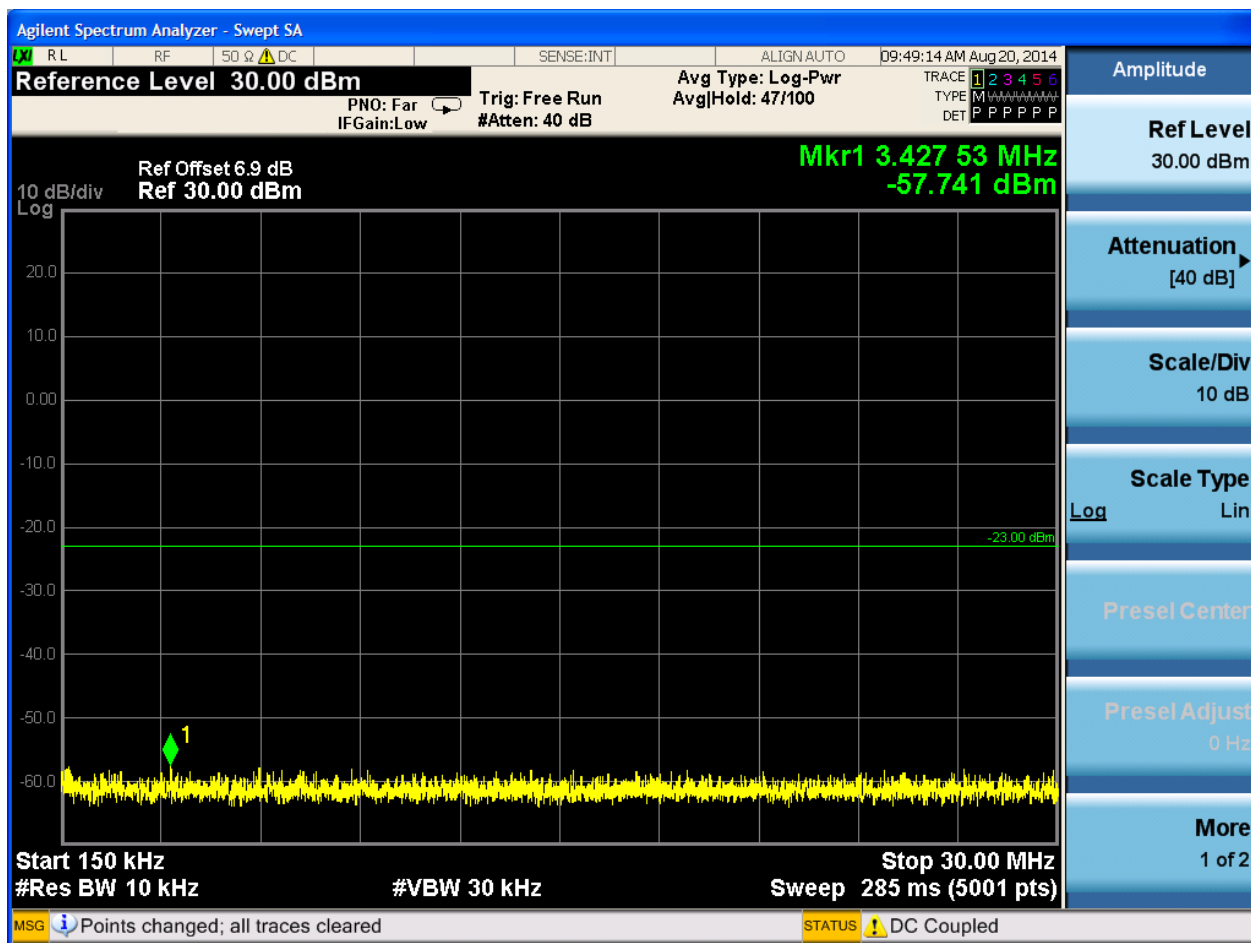


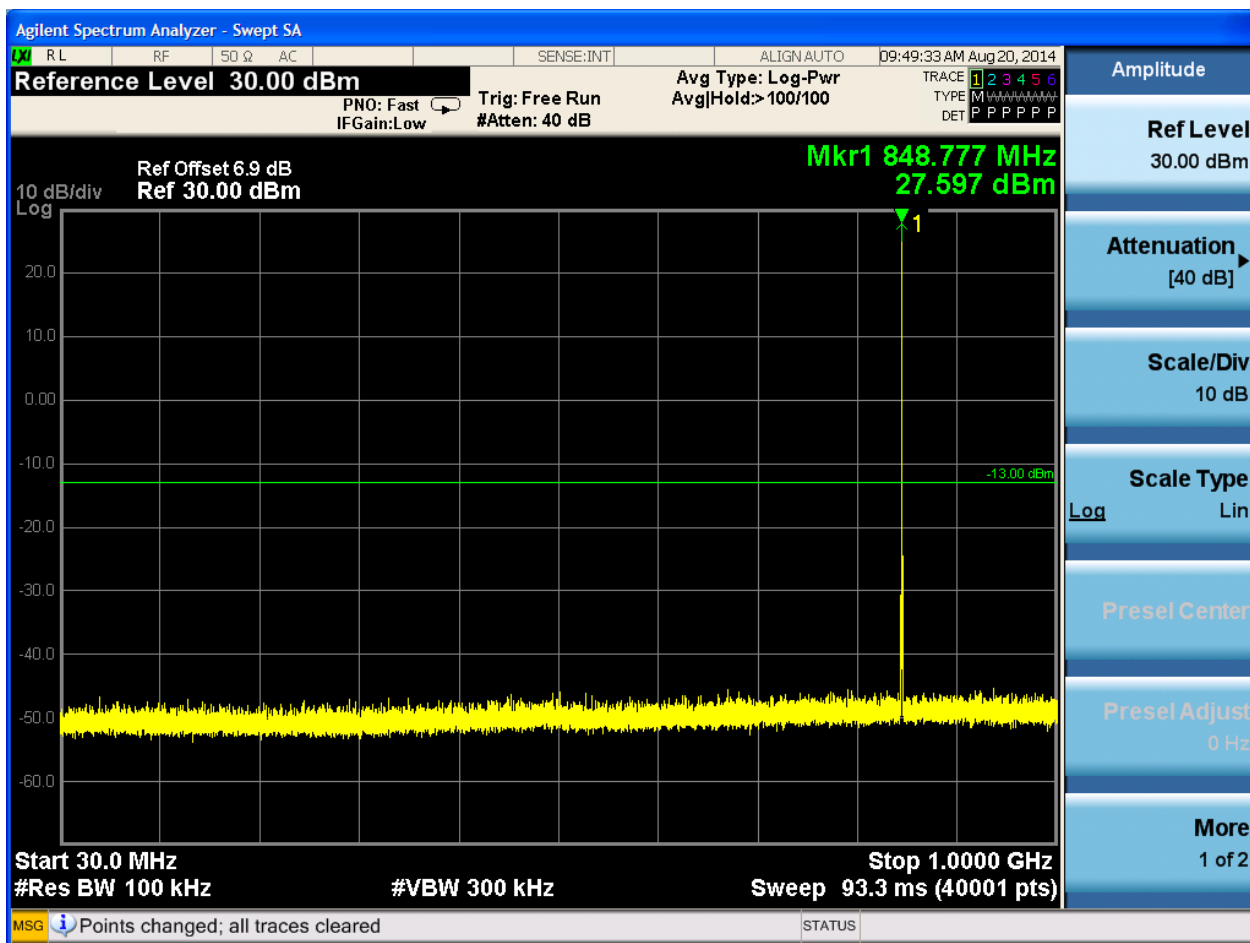


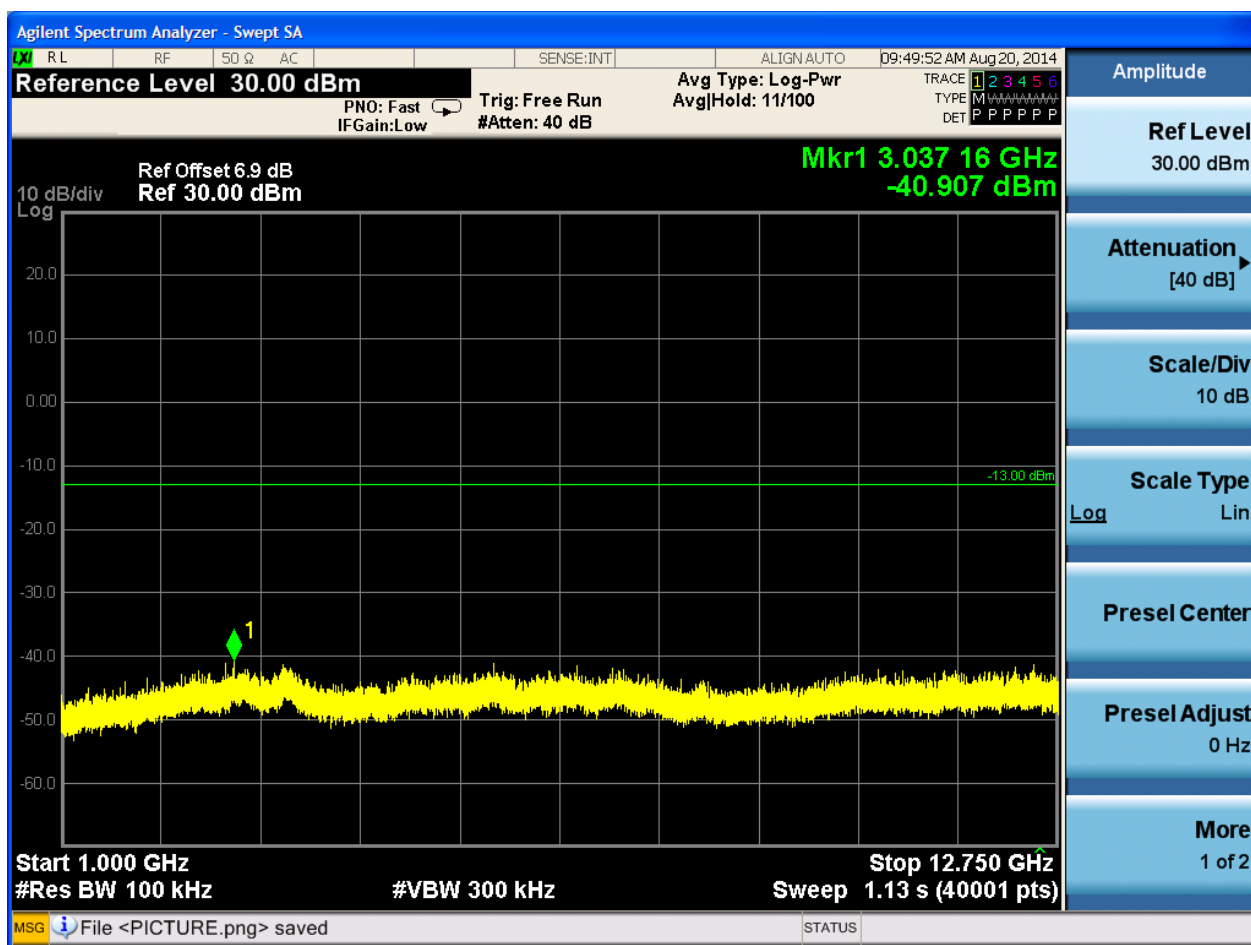


6.1.1.1.2 Test Channel = MCH



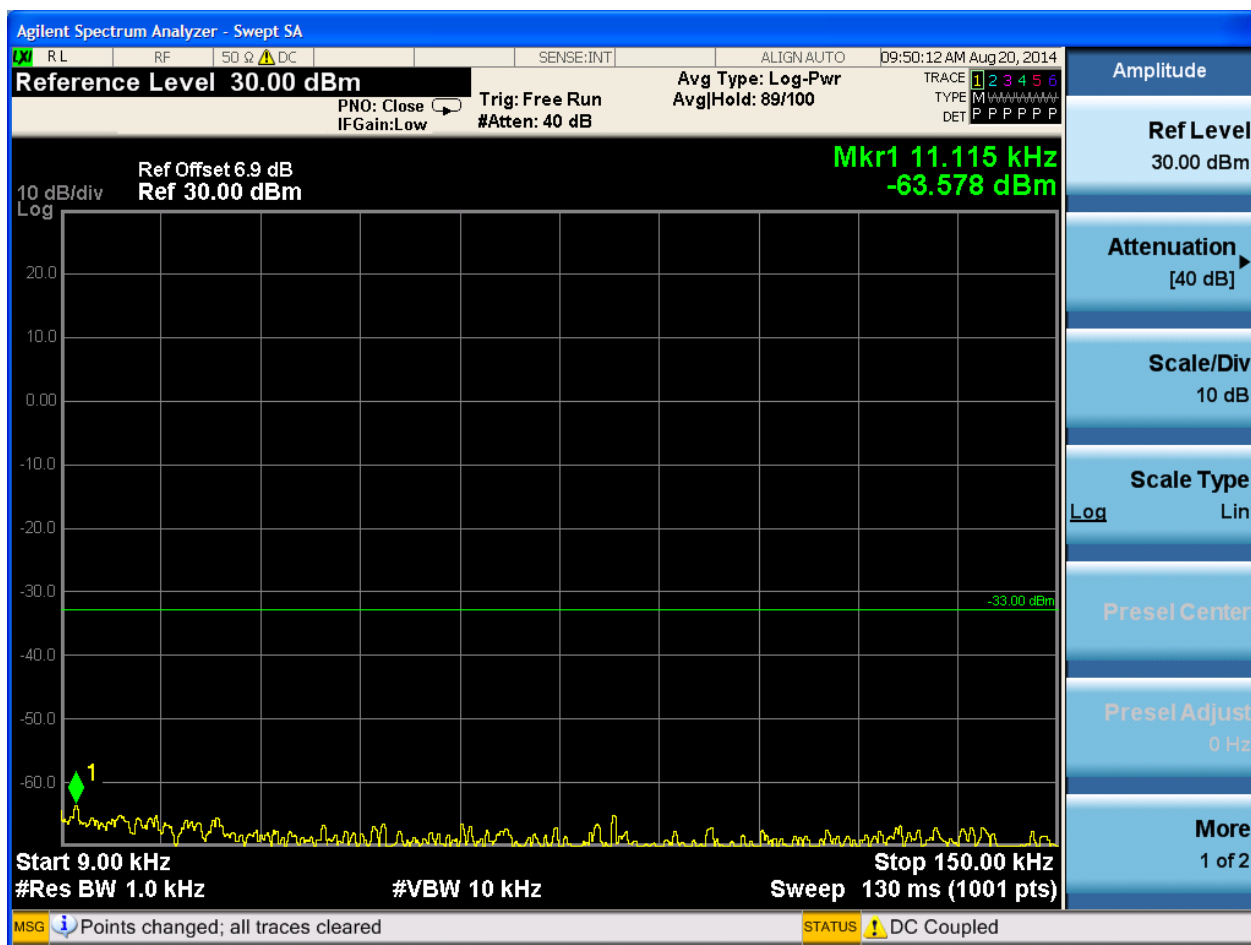


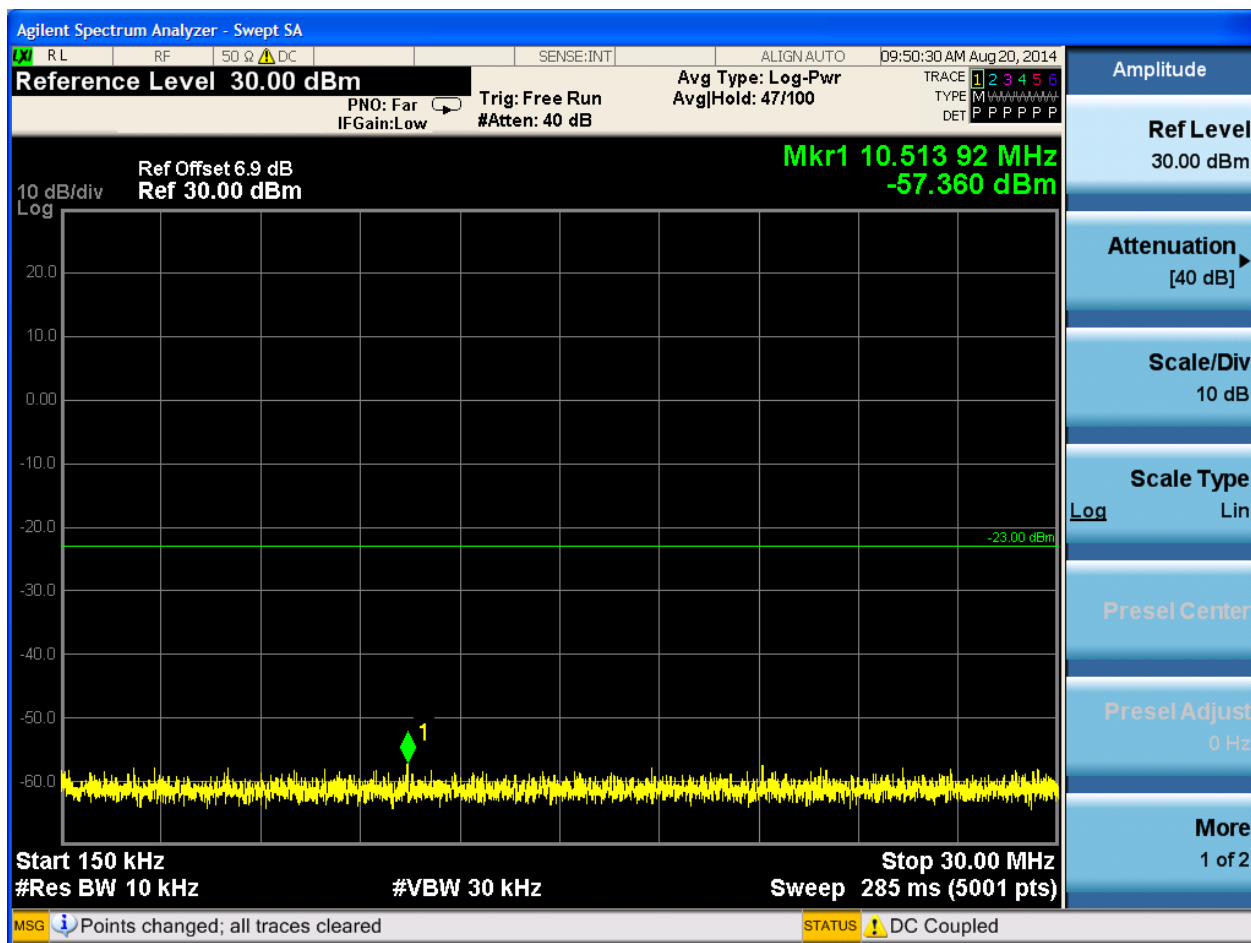


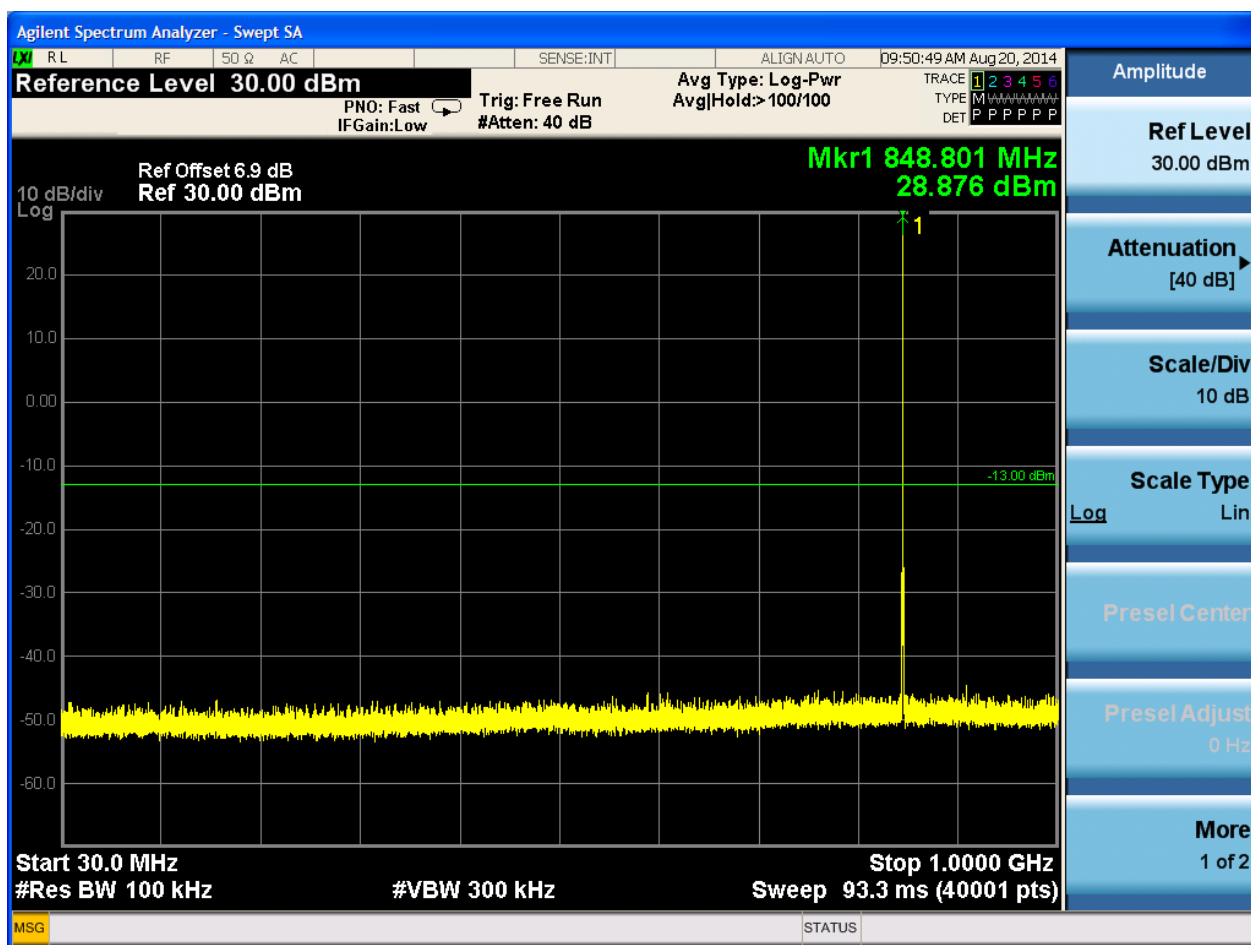


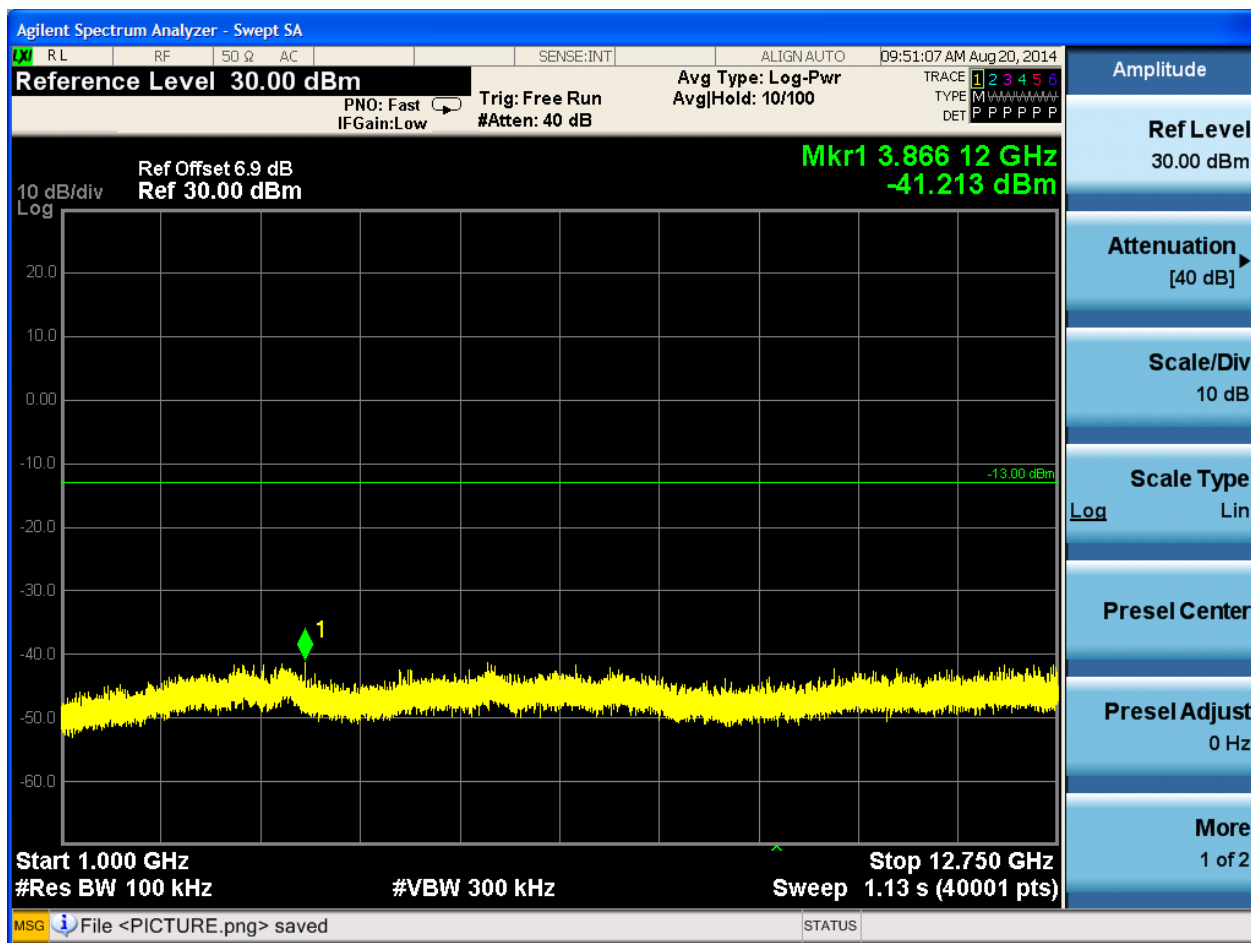


6.1.1.1.3 Test Channel = HCH







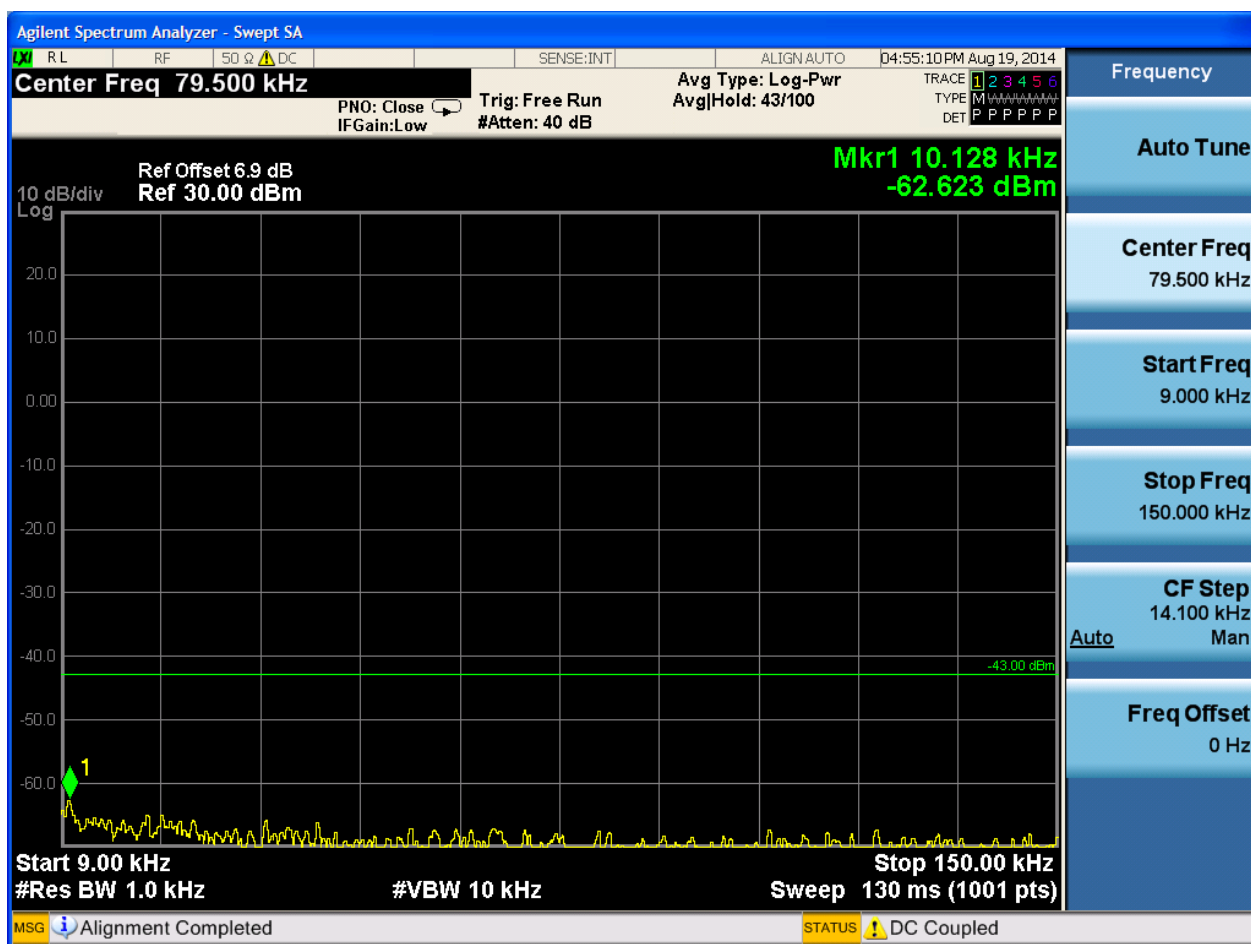


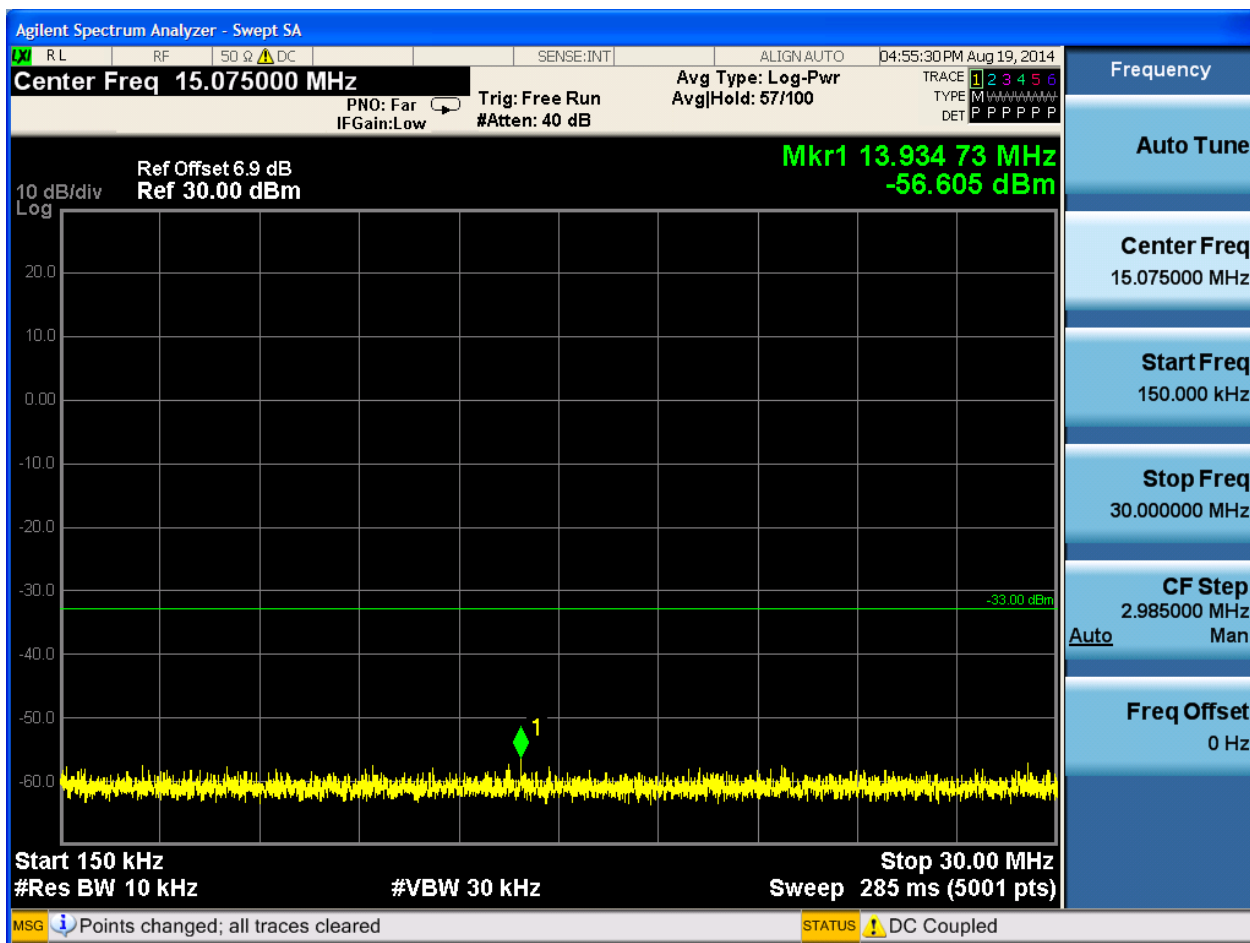


6.1.1 Test Band = GSM1900

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

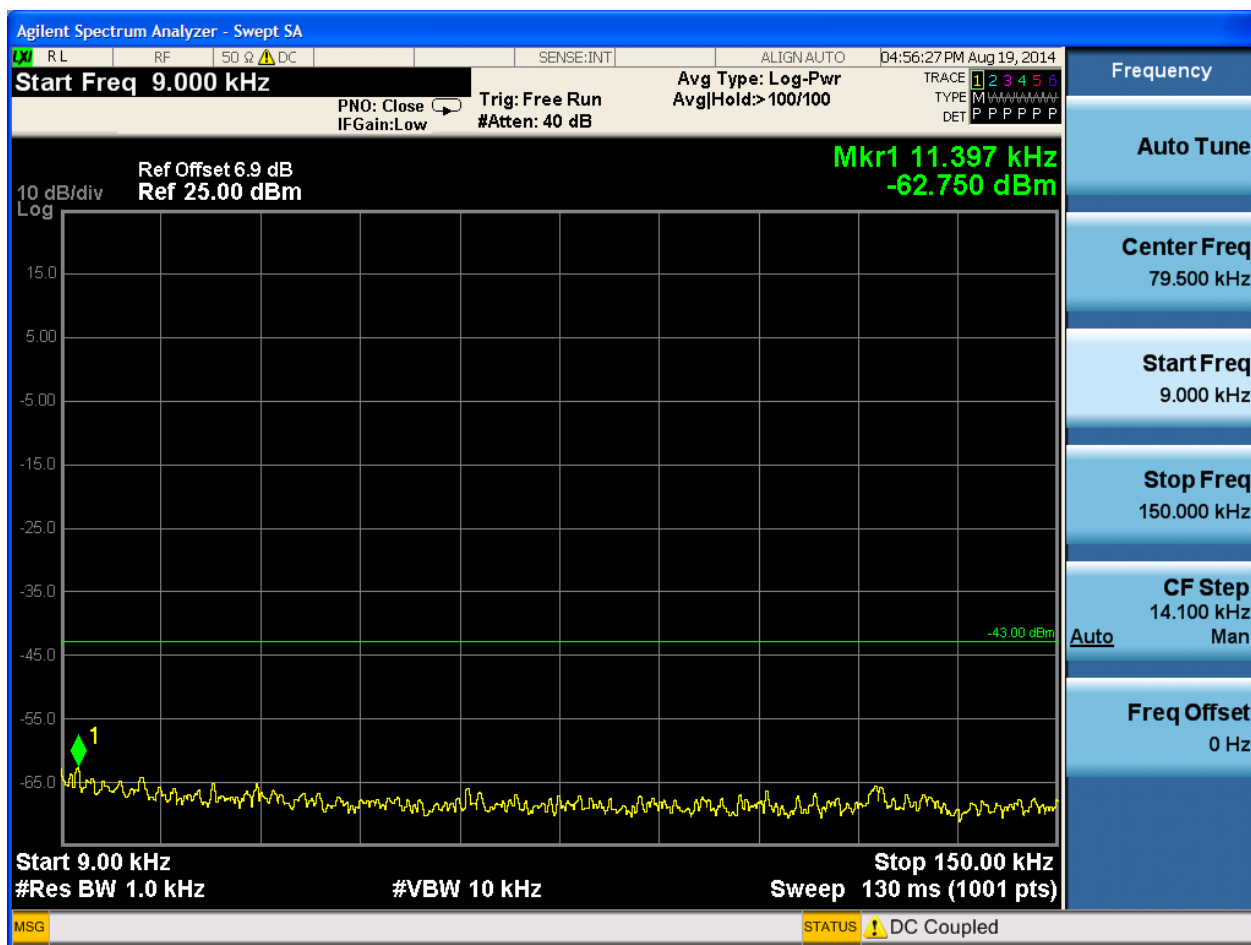


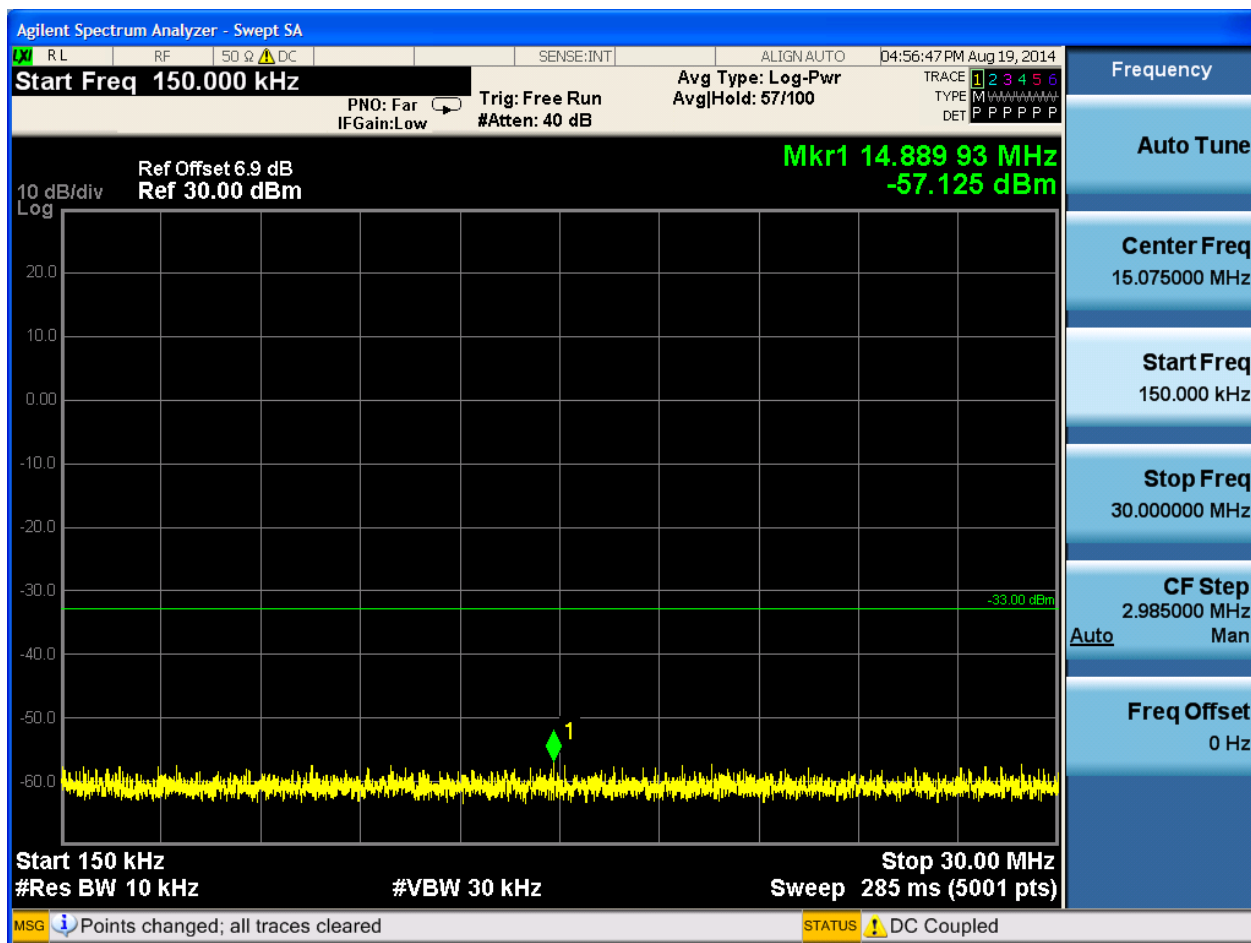


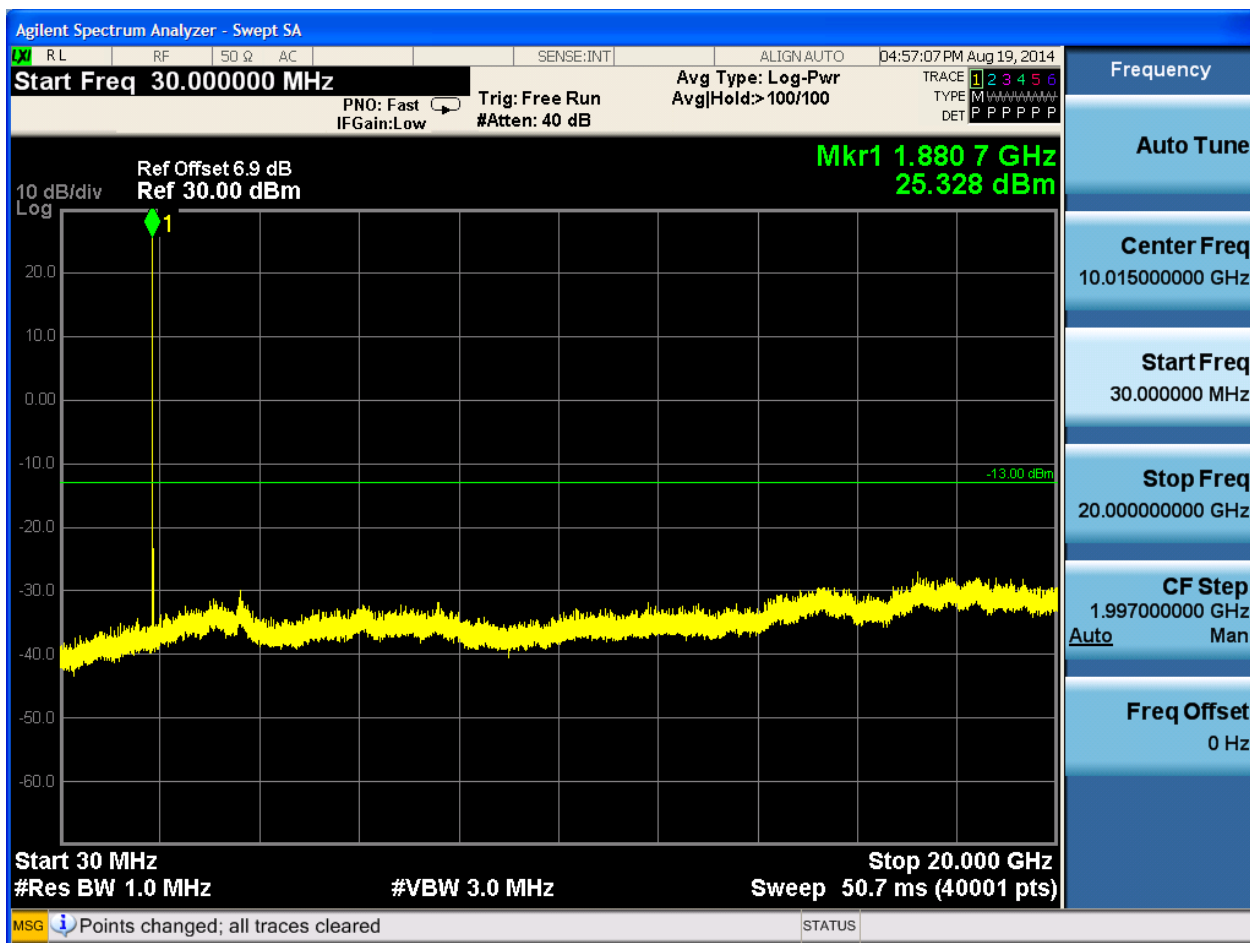




6.1.1.1.2 Test Channel = MCH

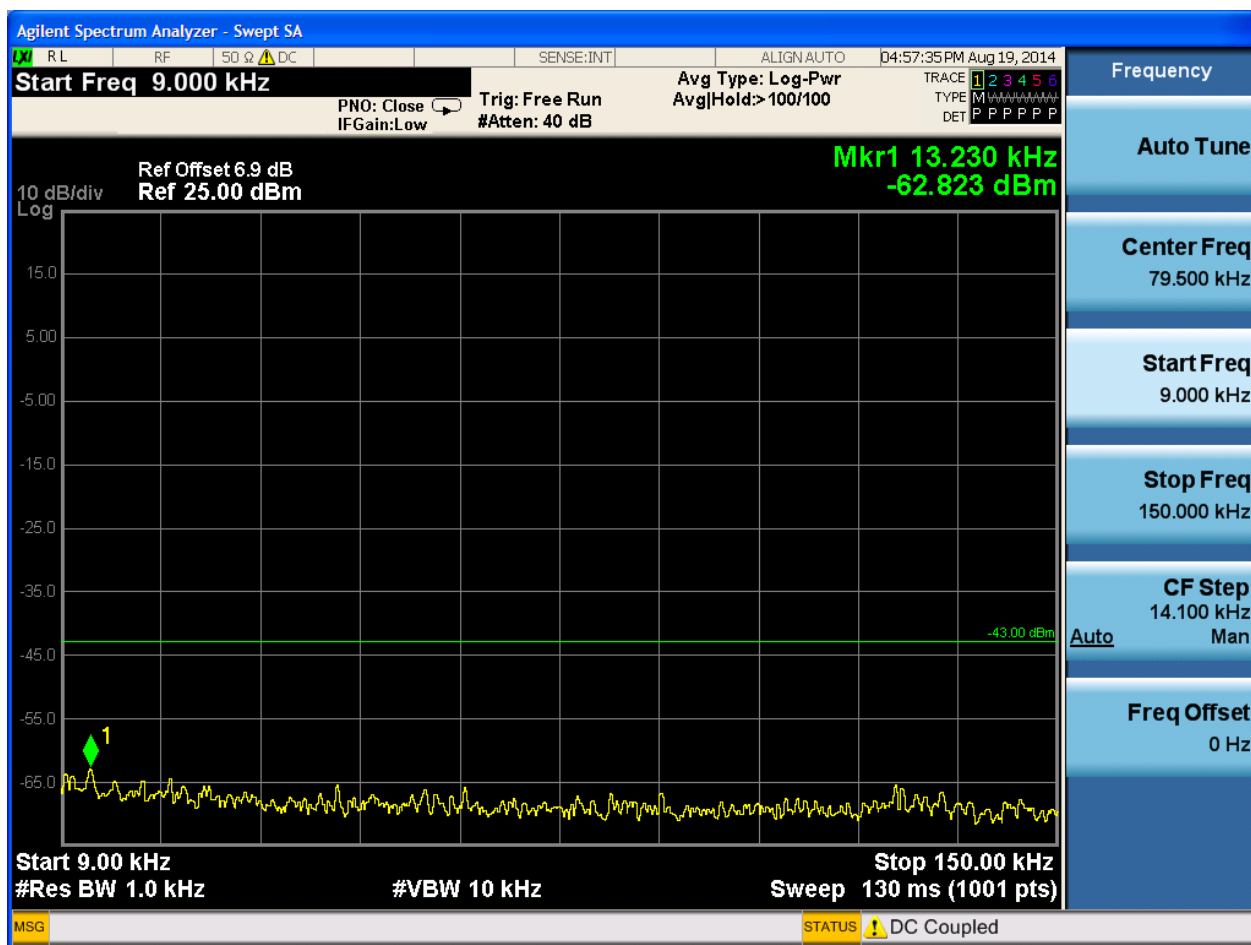


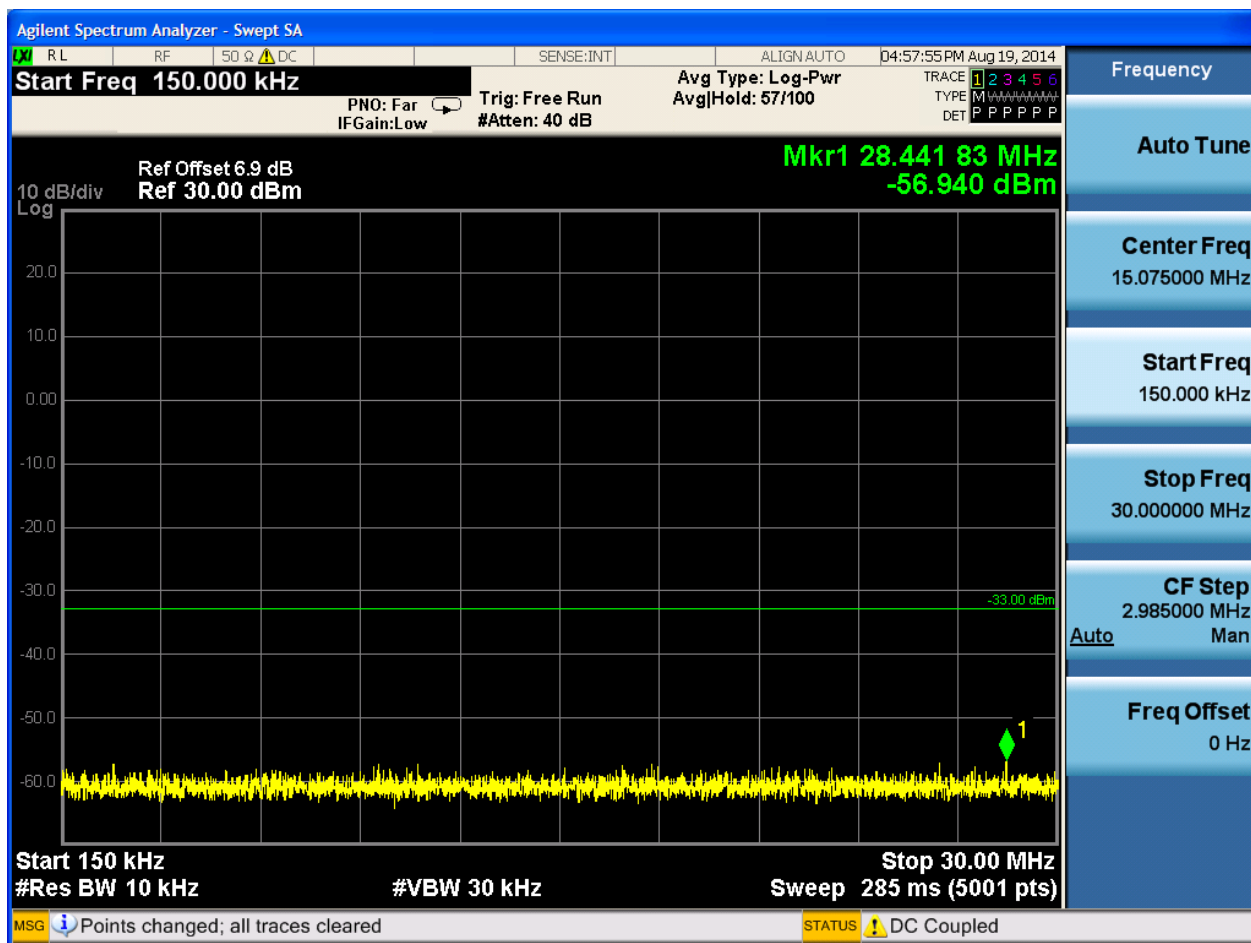


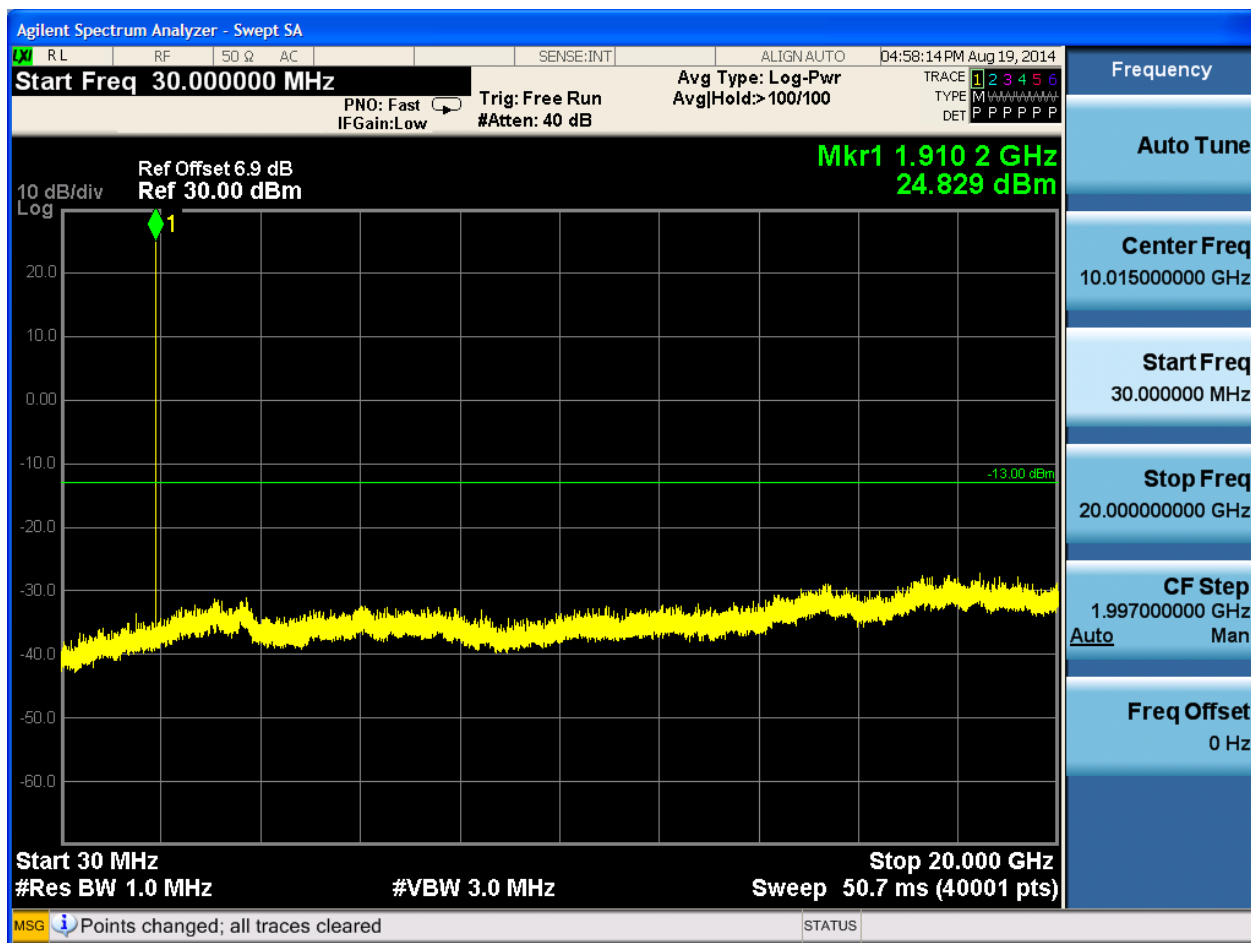




6.1.1.1.3 Test Channel = HCH



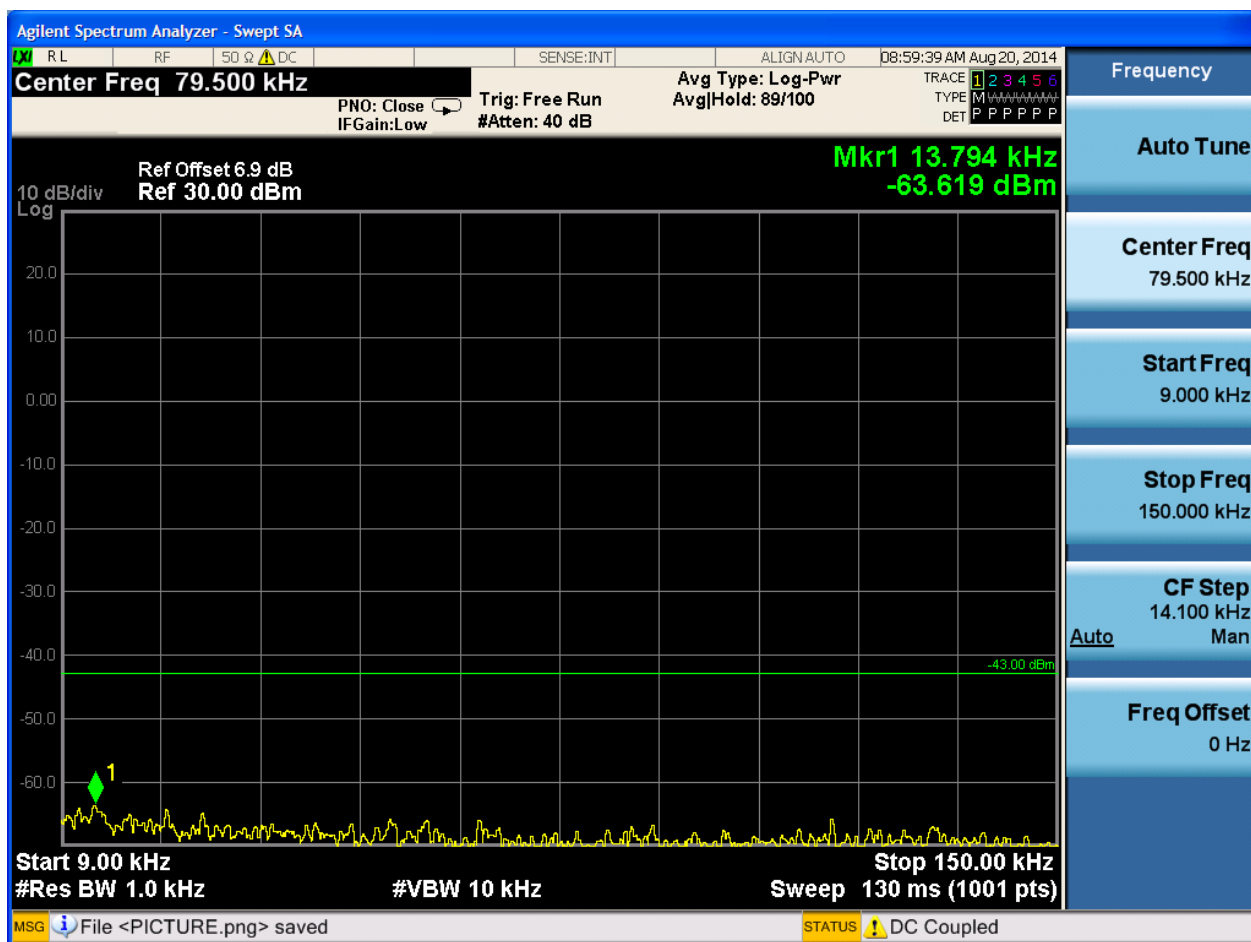


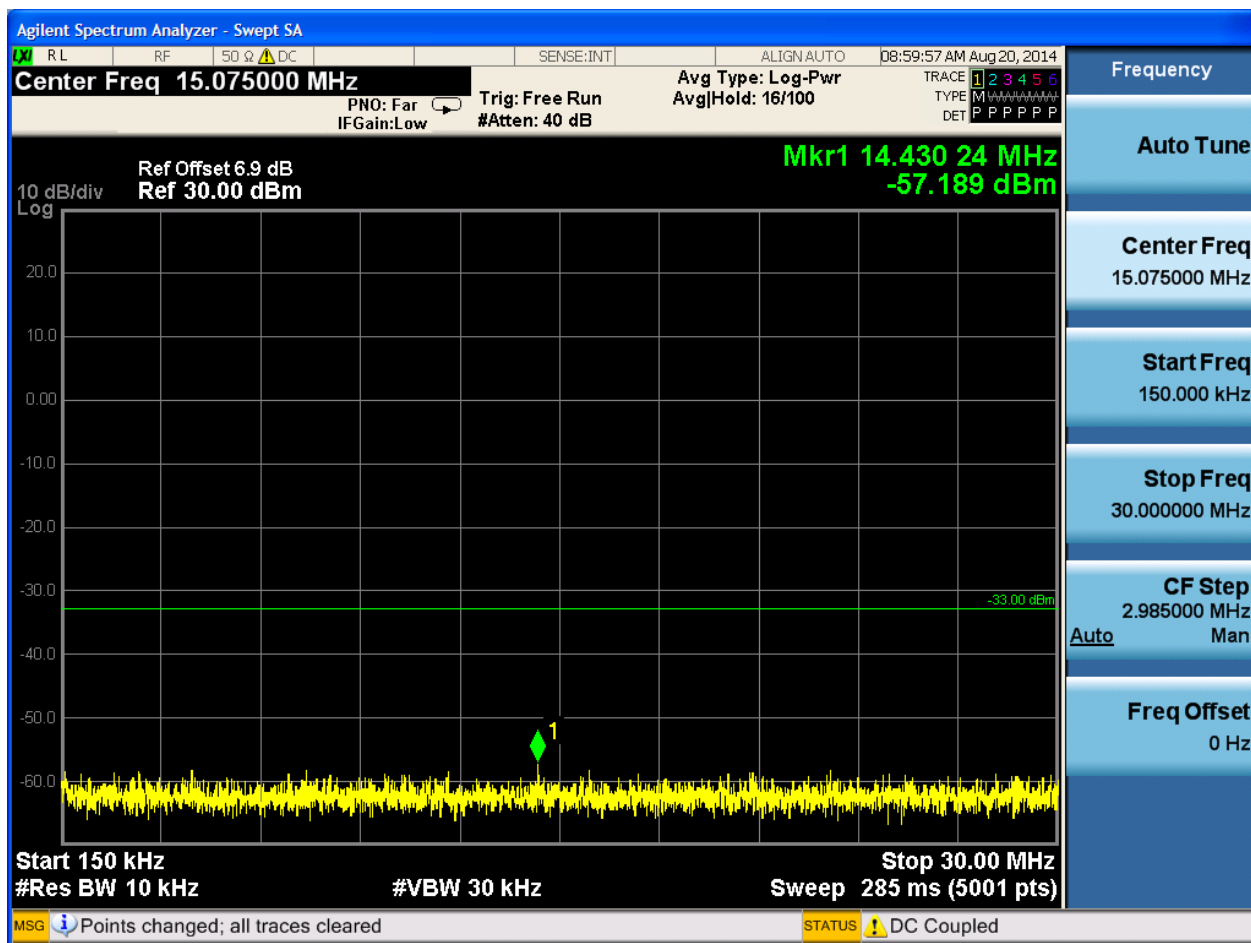


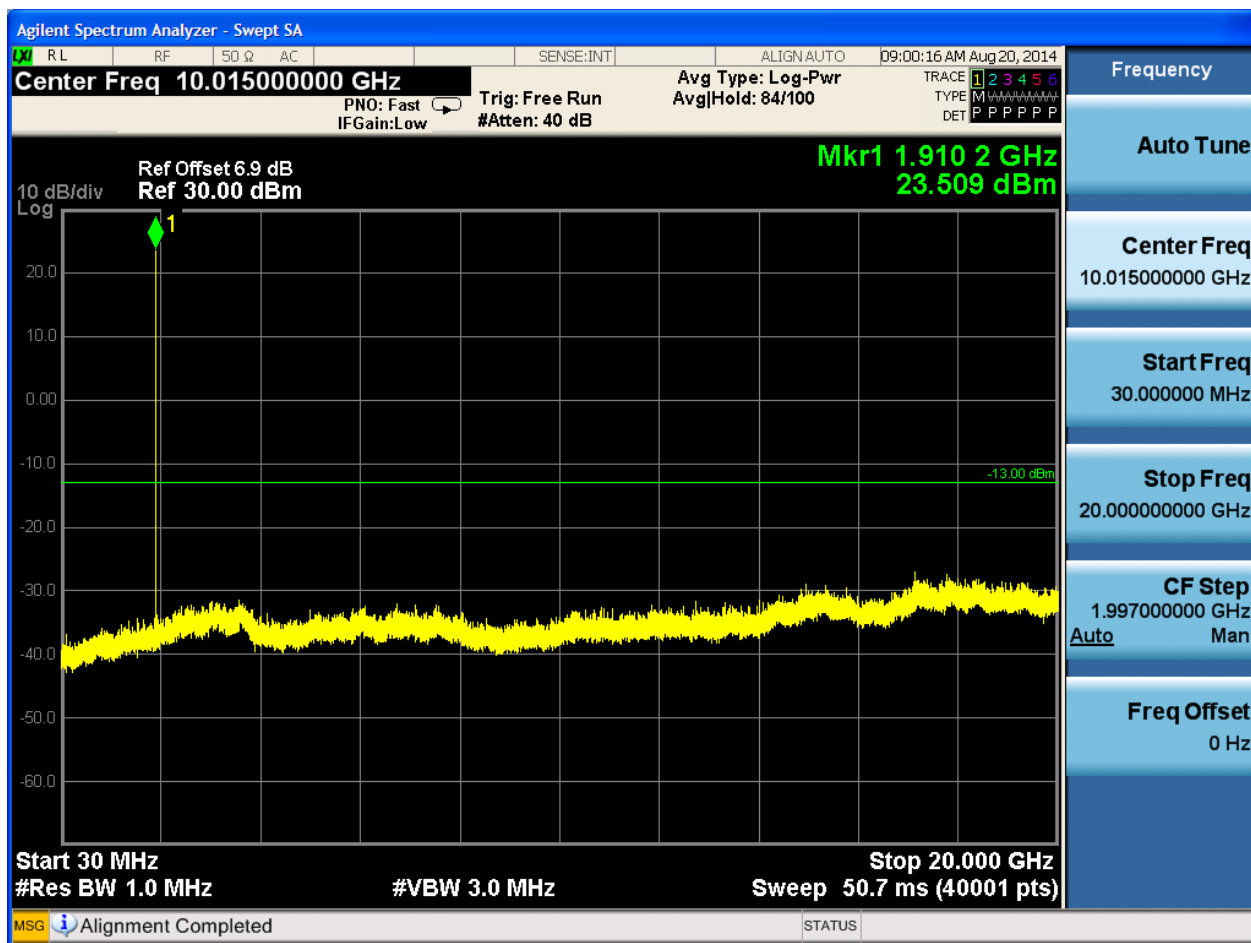


6.1.1.1 Test Mode = GSM/TM2

6.1.1.1.1 Test Channel = LCH

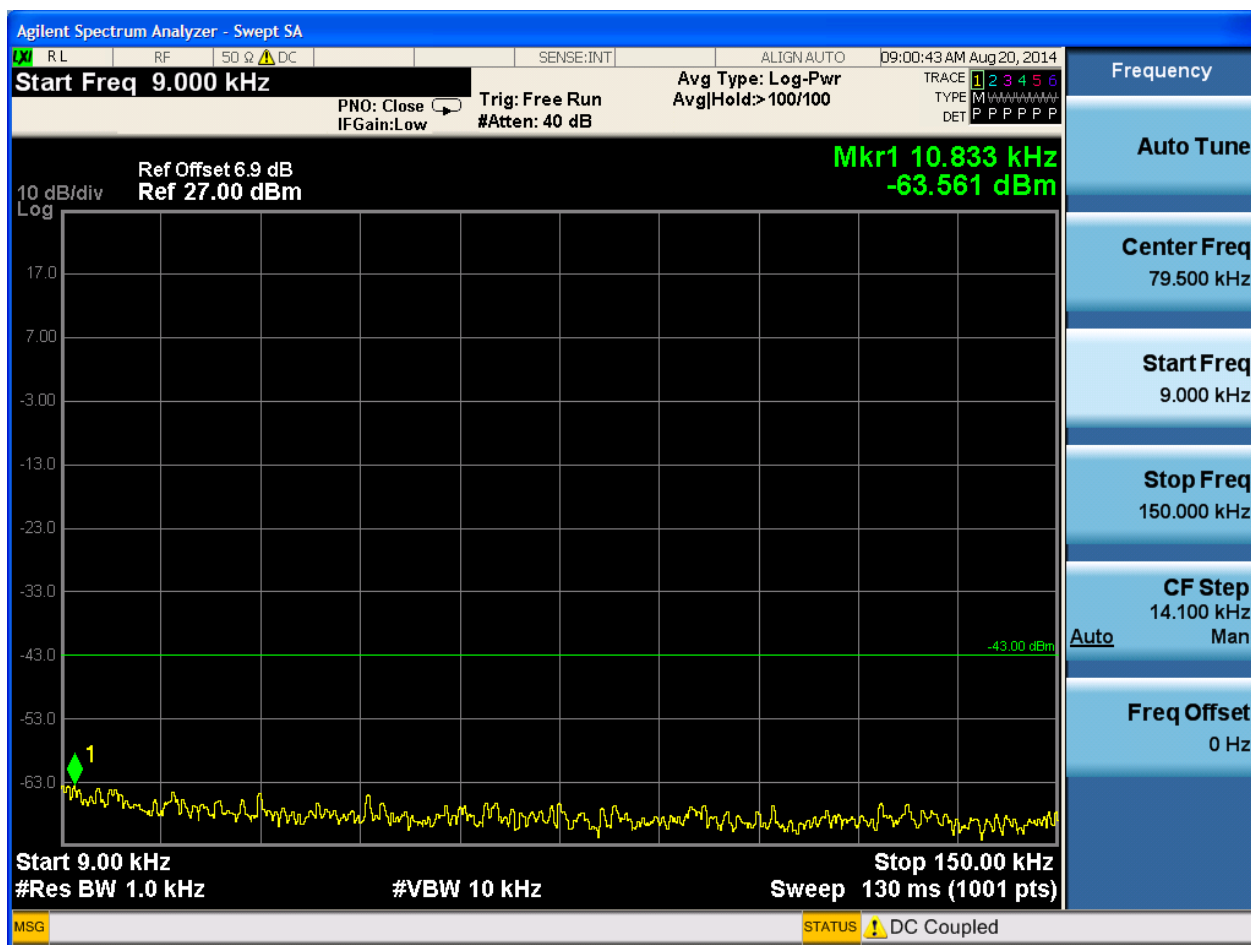


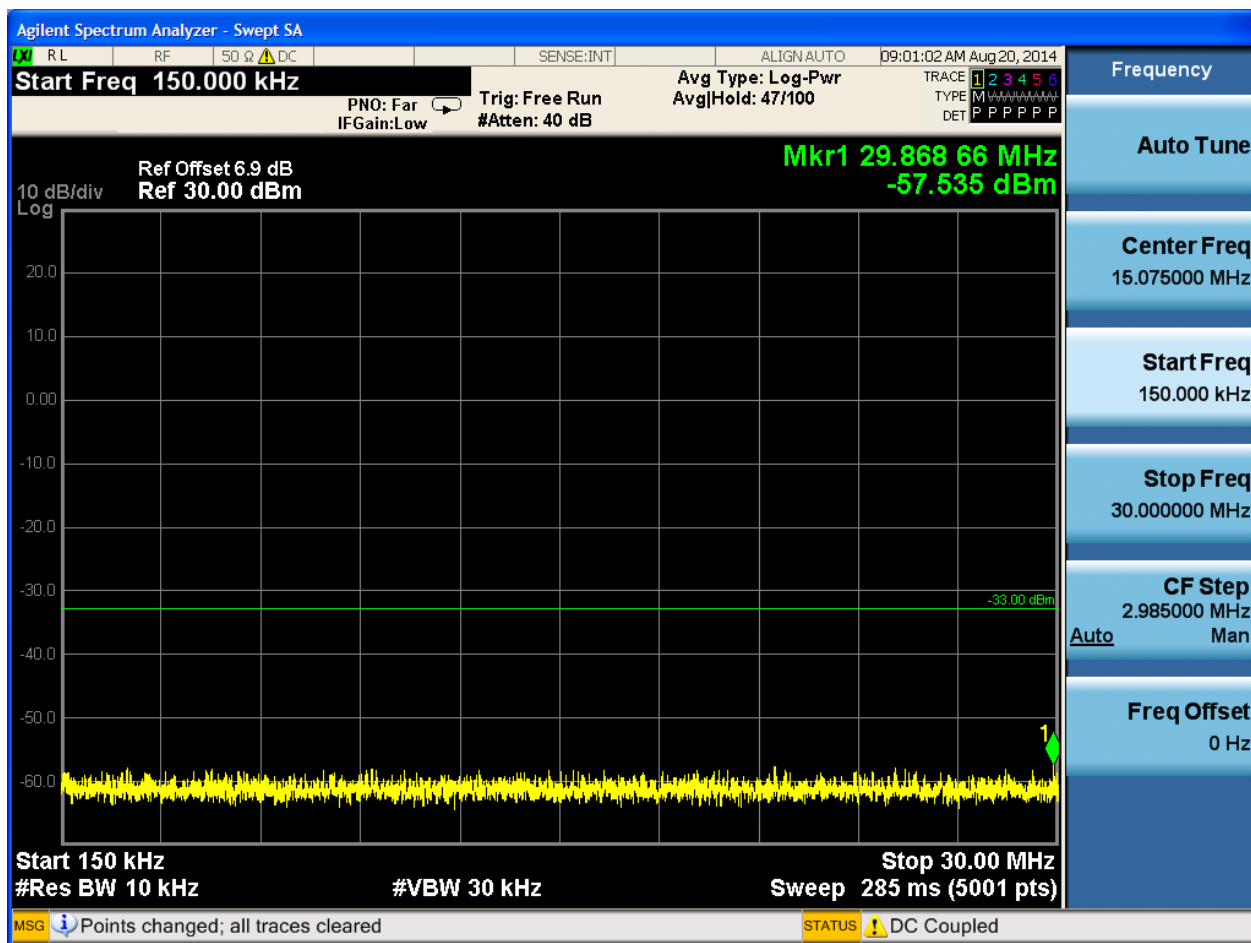


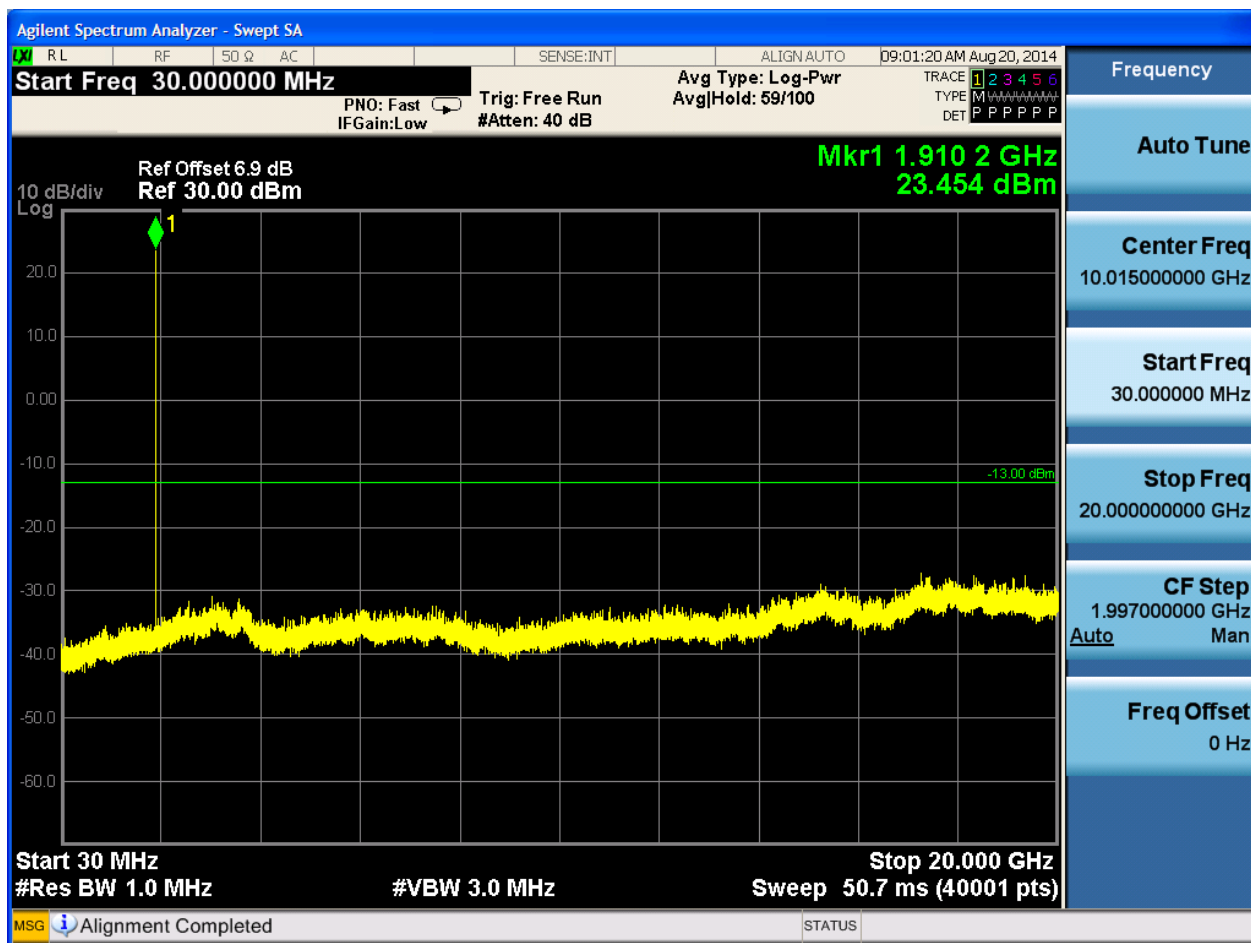




6.1.1.1.2 Test Channel = MCH



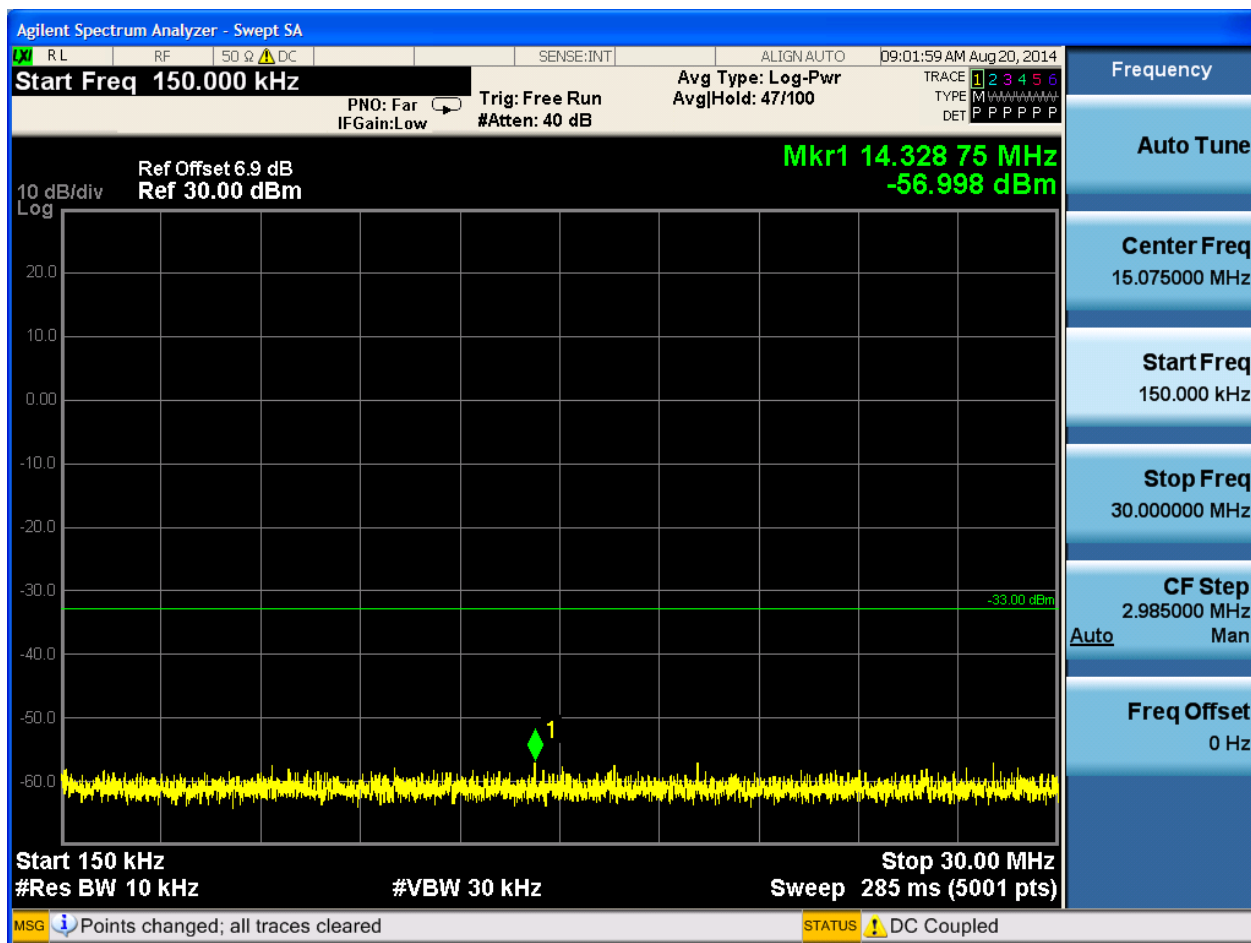


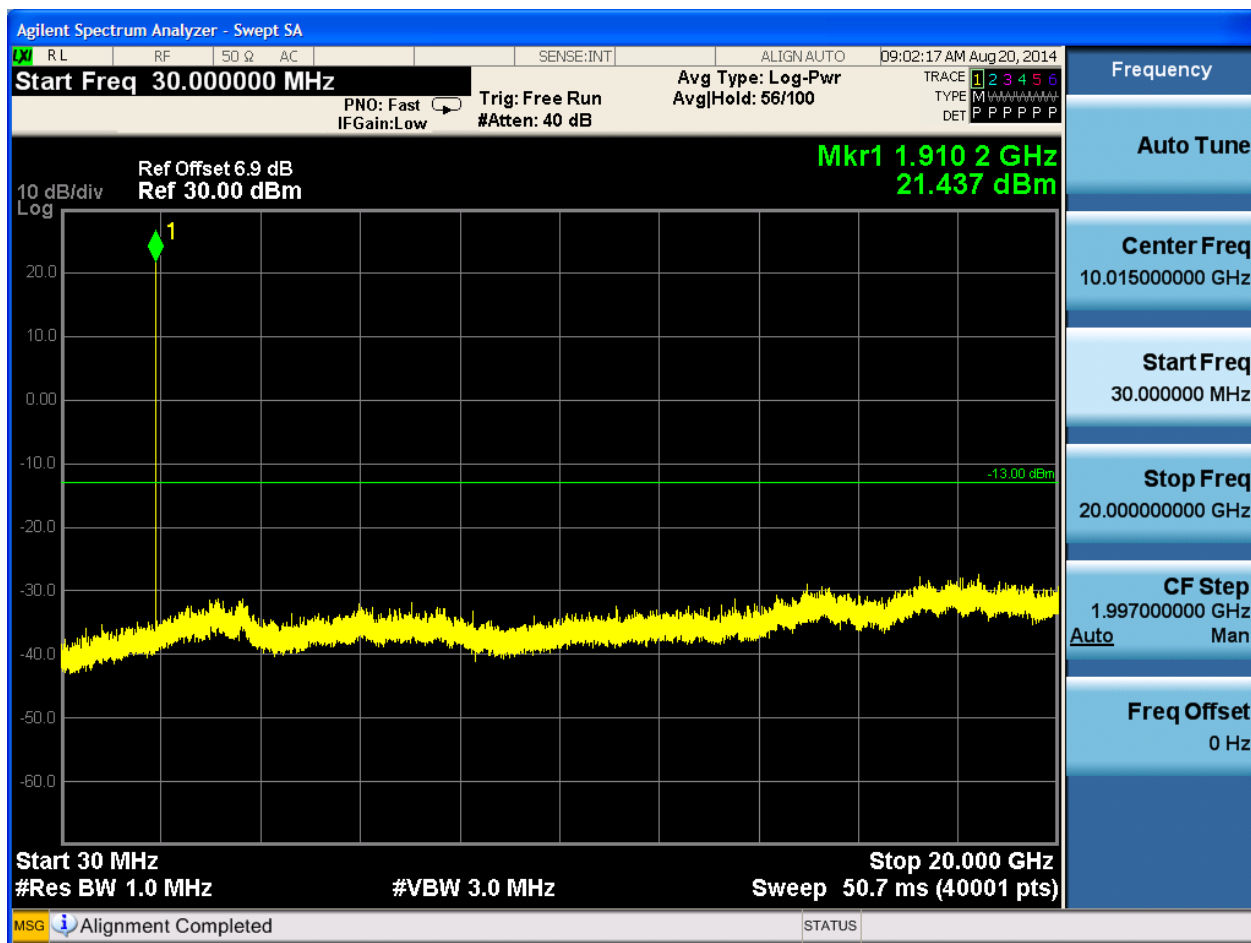




6.1.1.1.3 Test Channel = HCH







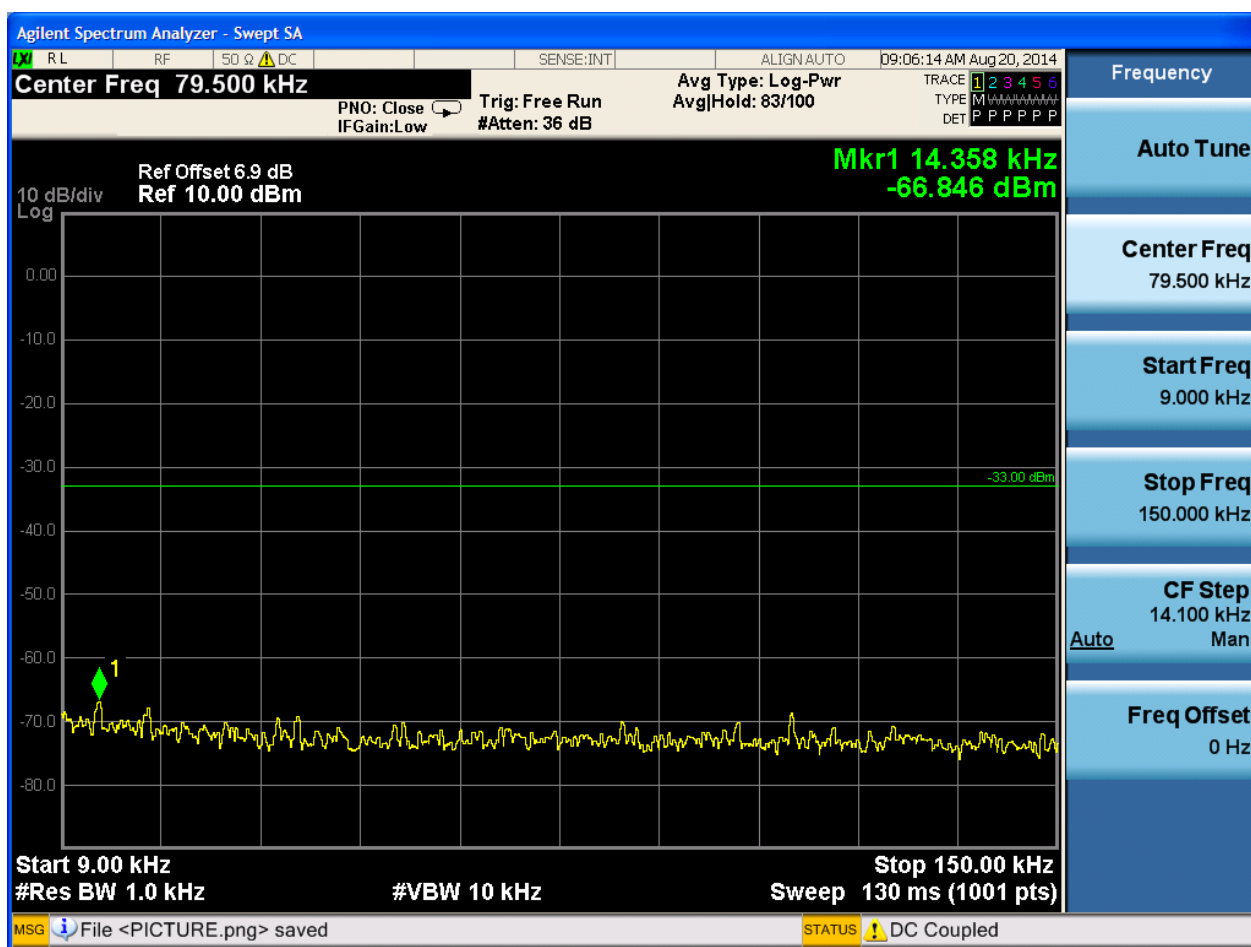


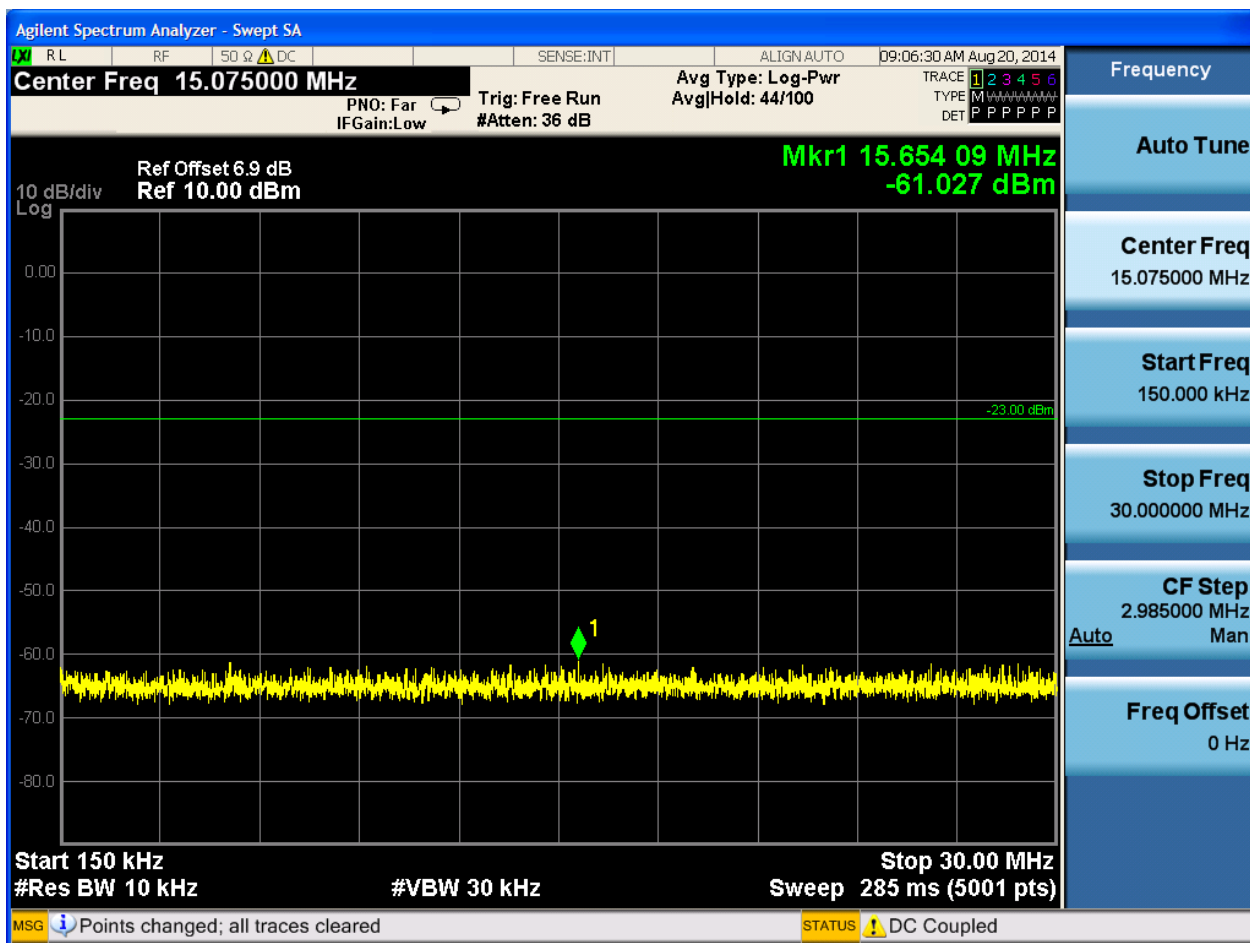
6.2 For UMTS

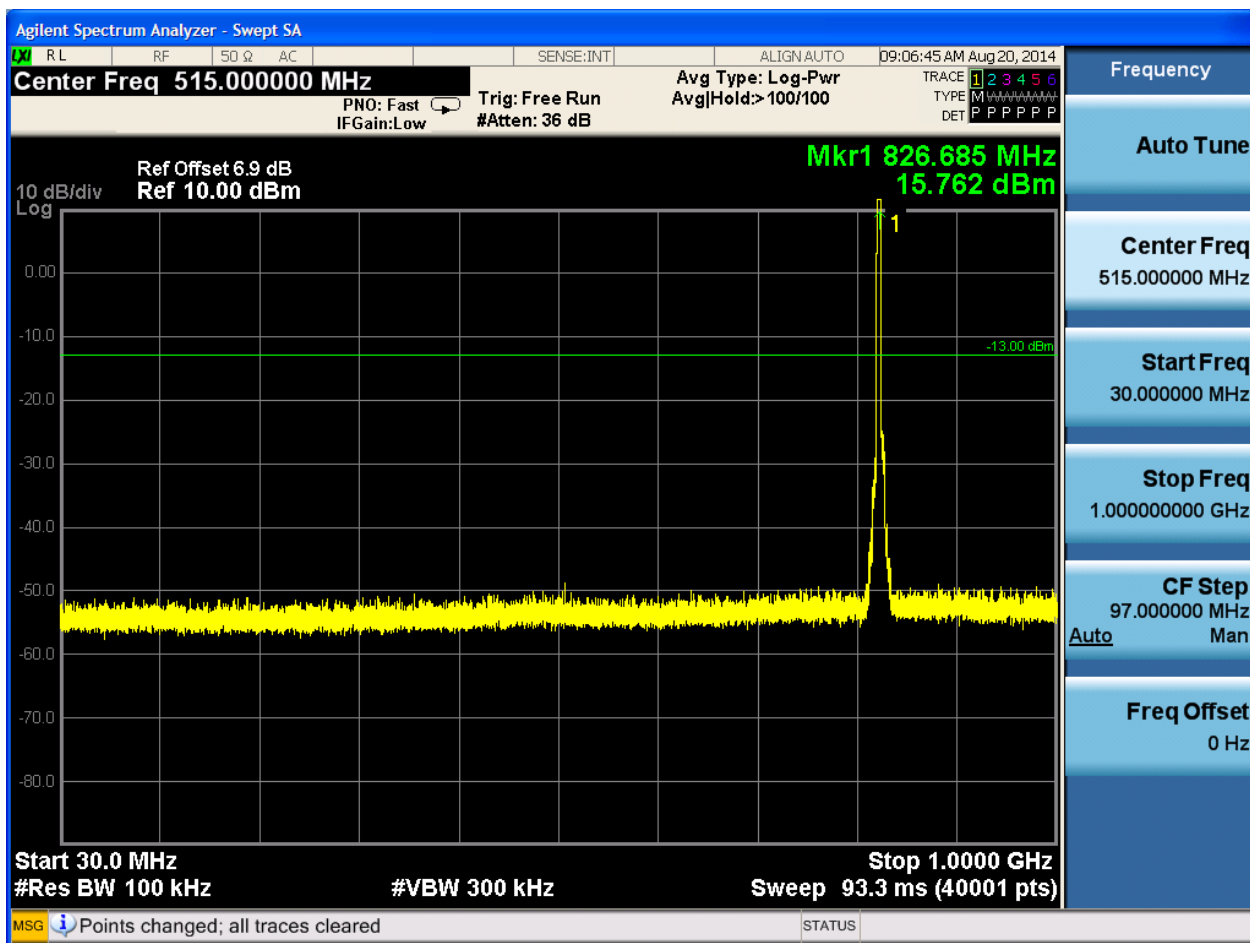
6.2.1 Test Band = WCDMA850

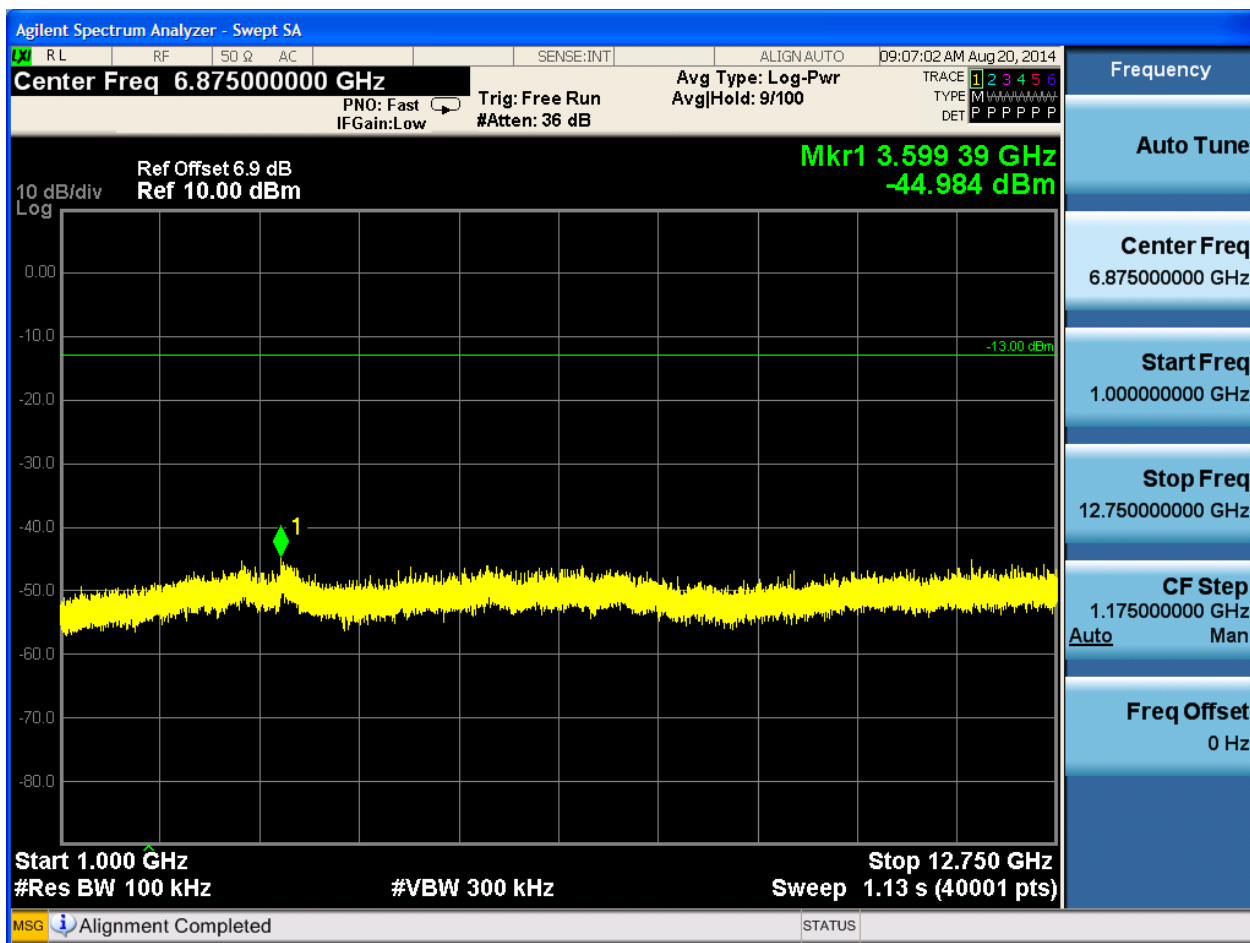
6.2.1.1 Test Mode = UMTS/TM1

6.2.1.1.1 Test Channel = LCH

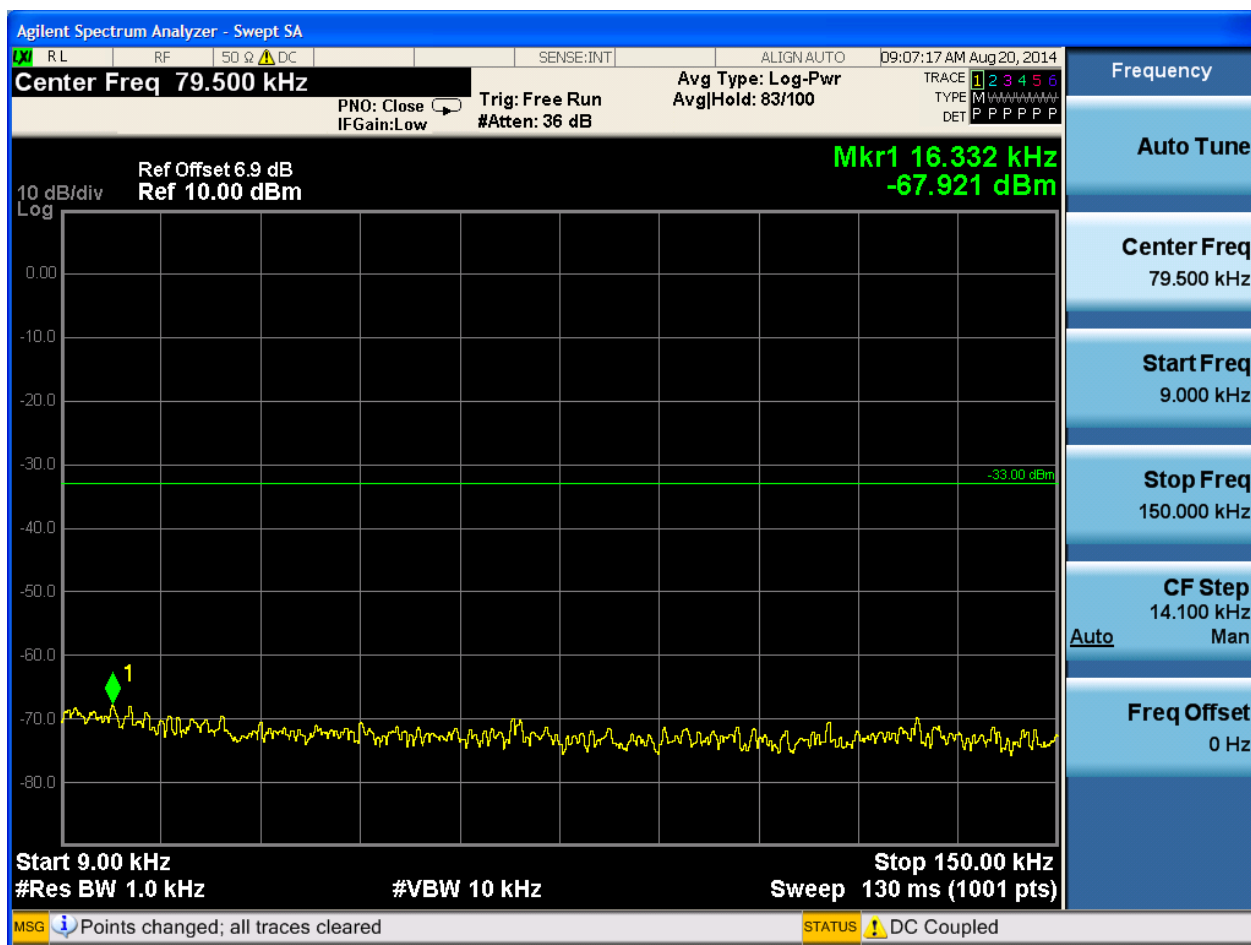


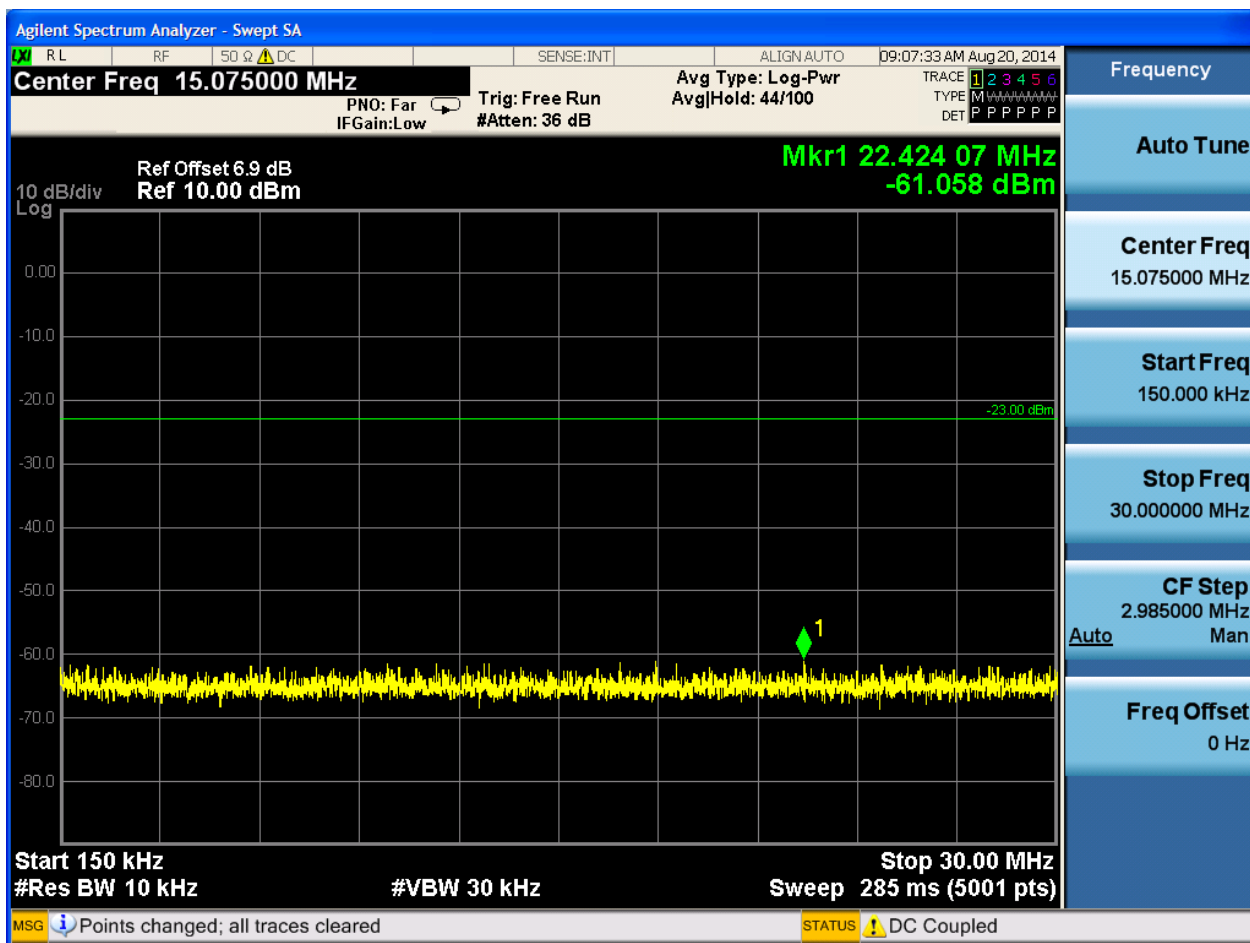


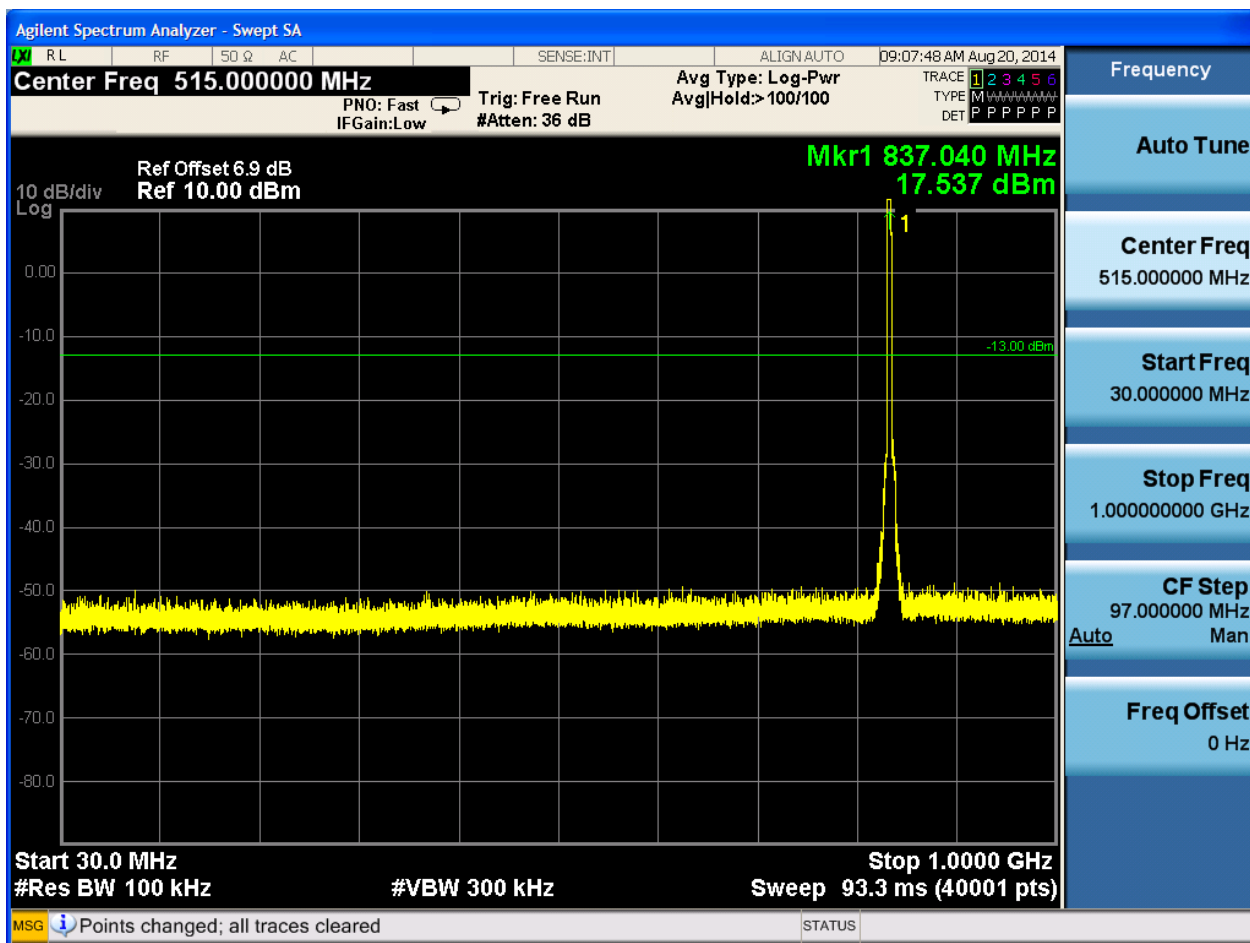


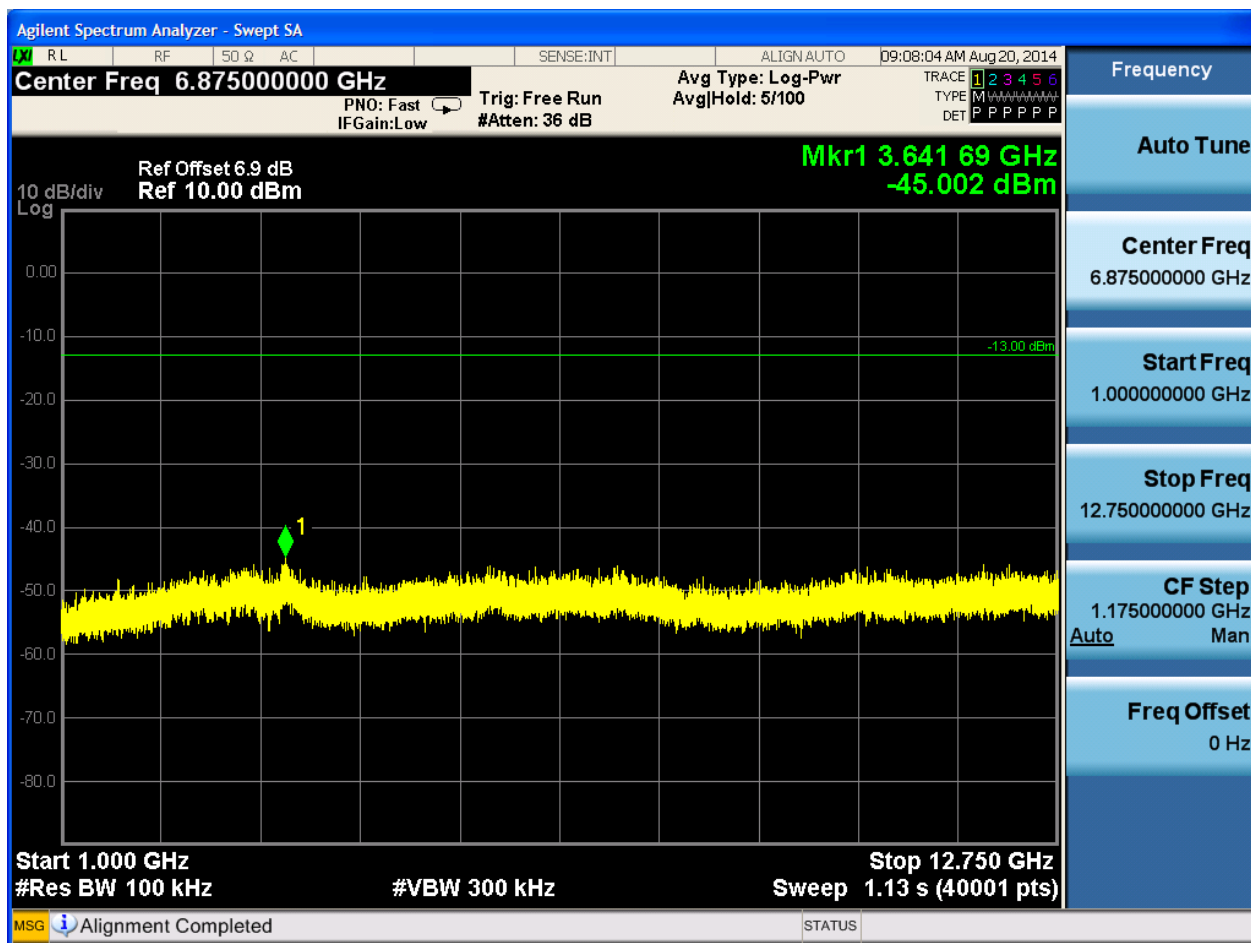


6.1.1.1.2 Test Channel = MCH









6.1.1.1.3 Test Channel = HCH

