



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	32.87	32.80	38.5	PASS
		MCH	33.2	32.97	38.5	PASS
		HCH	32.85	32.76	38.5	PASS
	GSM/TM2	LCH	27.03	26.74	38.5	PASS
		MCH	27.05	26.78	38.5	PASS
		HCH	26.93	26.73	38.5	PASS
WCDMA850	UMTS/TM1	LCH	23.31	23.02	38.5	PASS
		MCH	23.28	23.07	38.5	PASS
		HCH	23.32	23.04	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	30.5	32.29	33	PASS
		MCH	30.47	32.32	33	PASS
		HCH	30.68	32.40	33	PASS
	GSM/TM2	LCH	25.38	27.14	33	PASS
		MCH	25.44	27.23	33	PASS
		HCH	25.45	27.05	33	PASS
WCDMA1900	UMTS/TM1	LCH	22.83	24.67	33	PASS
		MCH	23.21	24.92	33	PASS
		HCH	23.18	24.86	33	PASS
WCDMA1700	UMTS/TM1	LCH	22.8	24.39	30	PASS
		MCH	23.05	24.66	30	PASS
		HCH	22.98	24.72	30	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	0.14	13	PASS
		MCH	0.13	13	PASS
		HCH	0.17	13	PASS
	GSM/TM2	LCH	3.2	13	PASS
		MCH	3.18	13	PASS
		HCH	3.2	13	PASS
WCDMA1900	UMTS/TM1	LCH	3.45	13	PASS
		MCH	3.58	13	PASS
		HCH	3.55	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.57	13	PASS
		MCH	3.66	13	PASS
		HCH	3.59	13	PASS

3Appendix_C: Modulation Characteristics

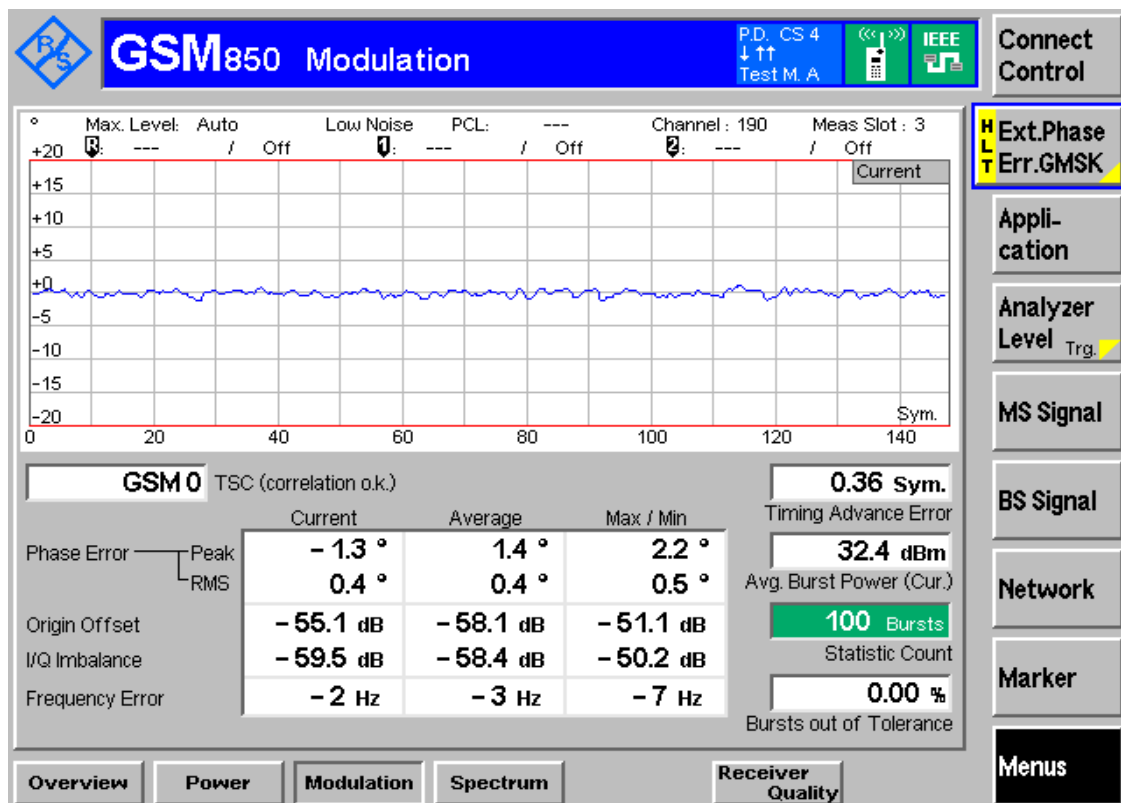
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

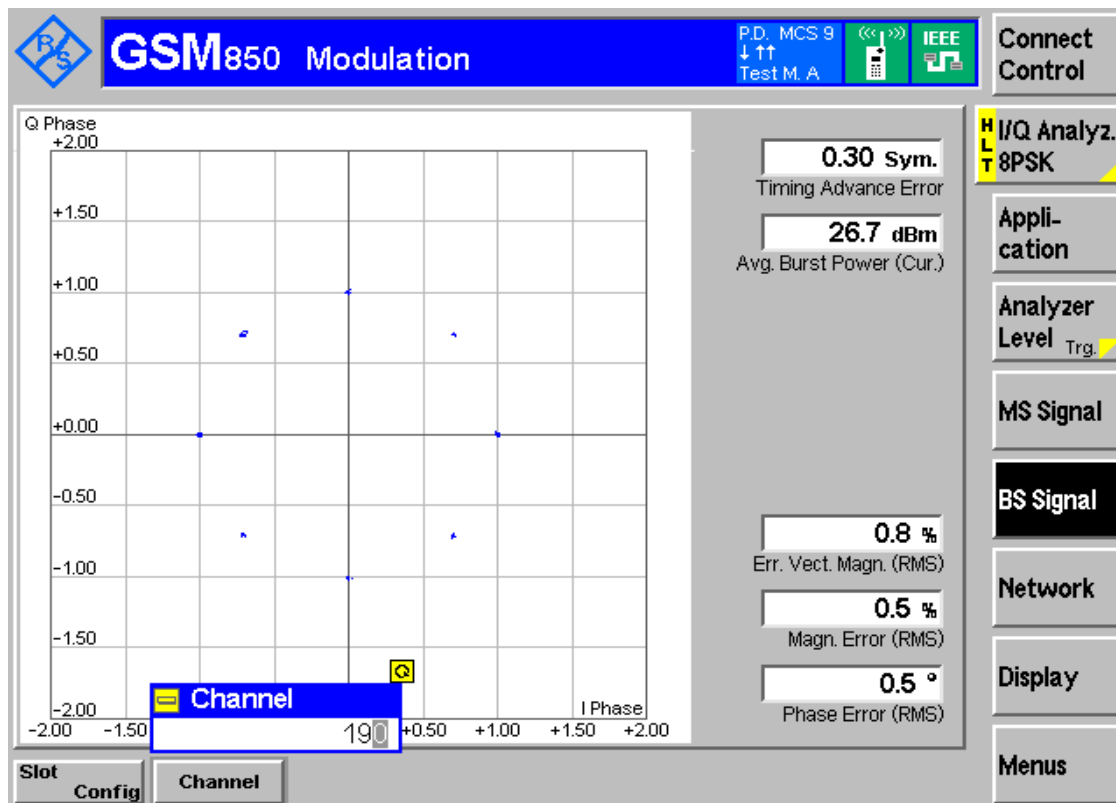
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

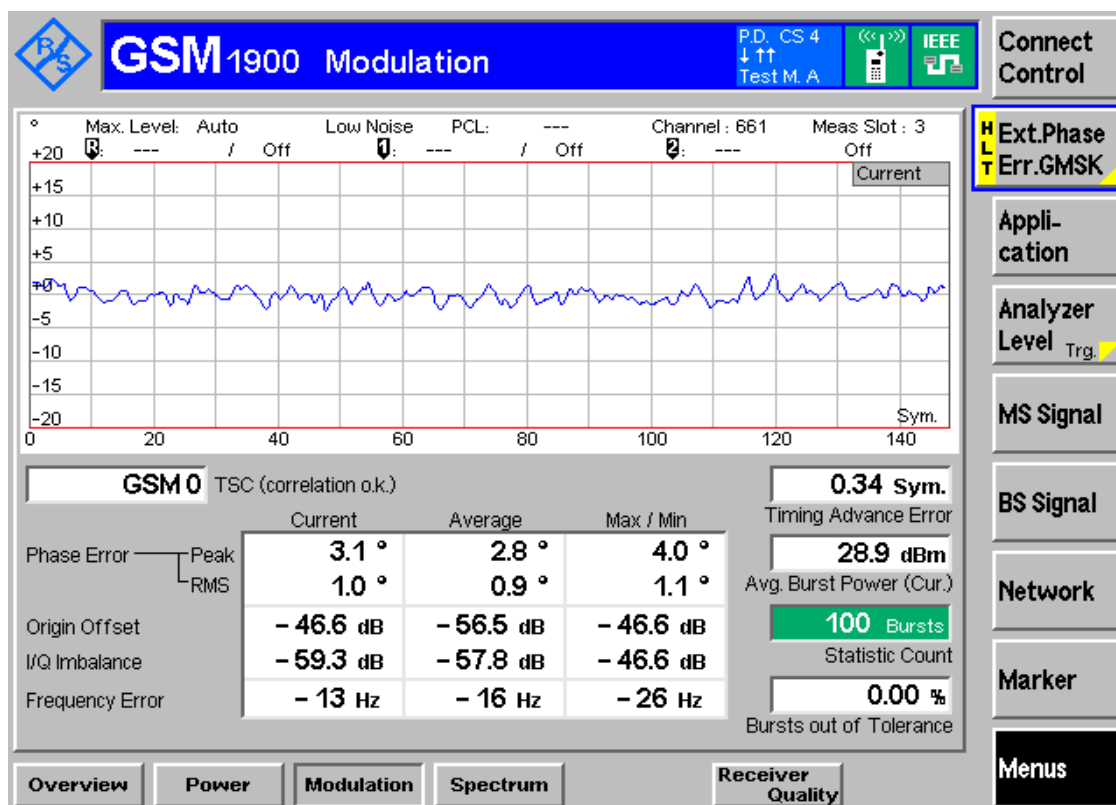
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

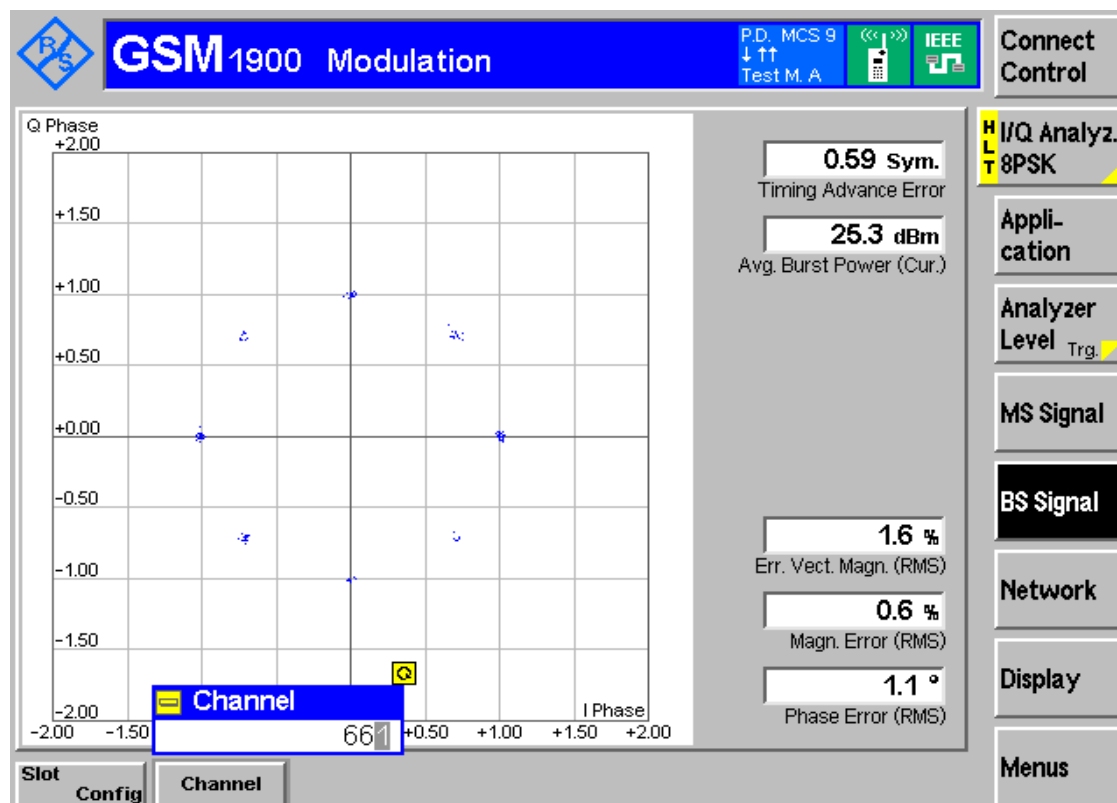
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH

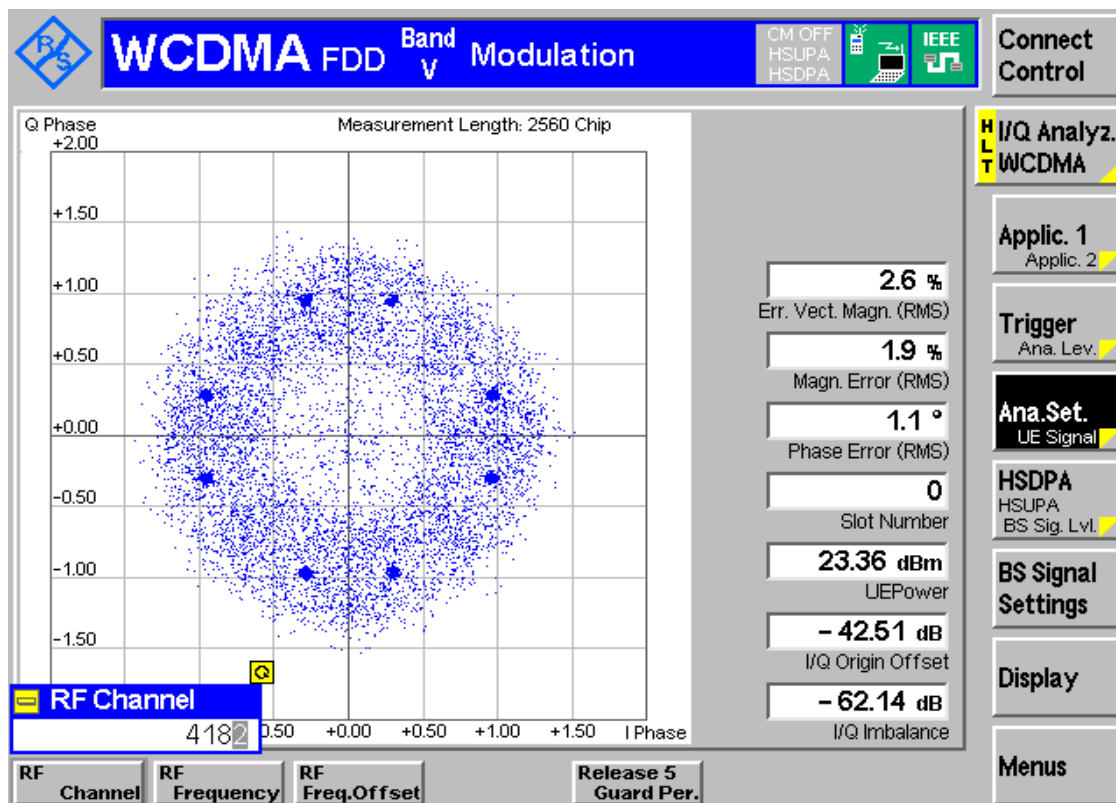


3.2 For UMTS

3.2.1 Test Band = WCDMA850

3.2.1.1 Test Mode = UMTS/TM1

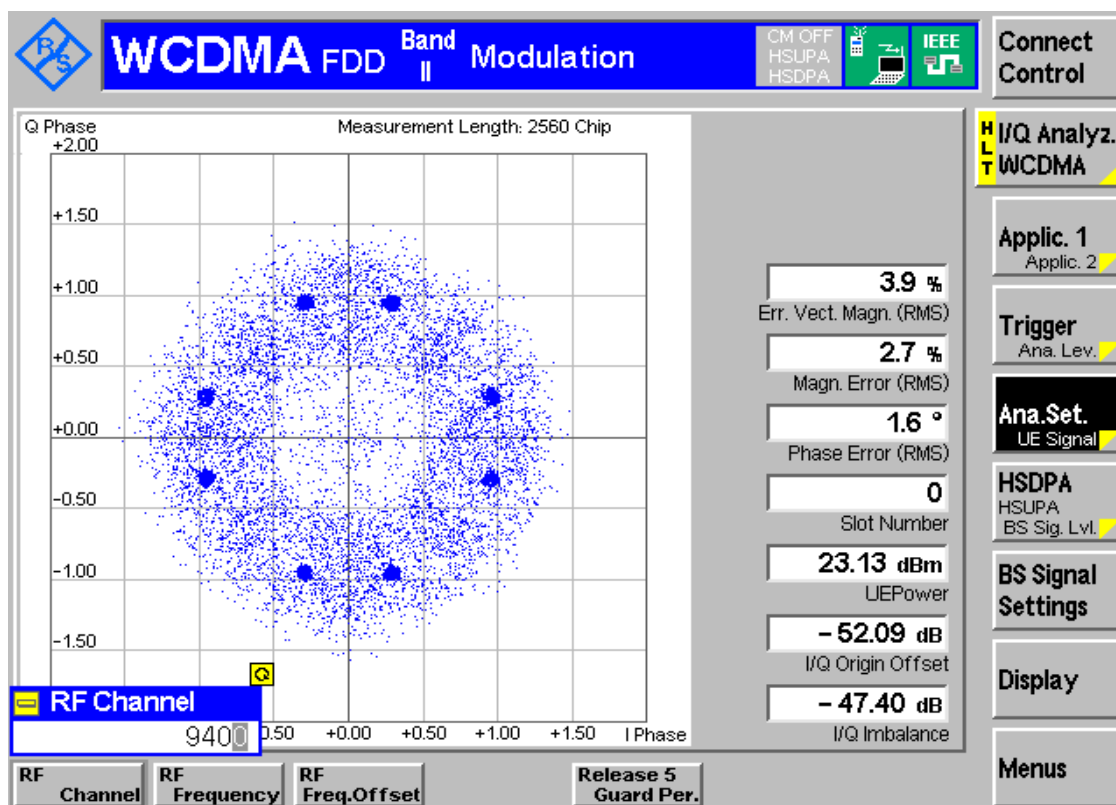
3.2.1.1.1 Test Channel = MCH



3.2.2 Test Band = WCDMA1900

3.2.2.1 Test Mode = UMTS/TM1

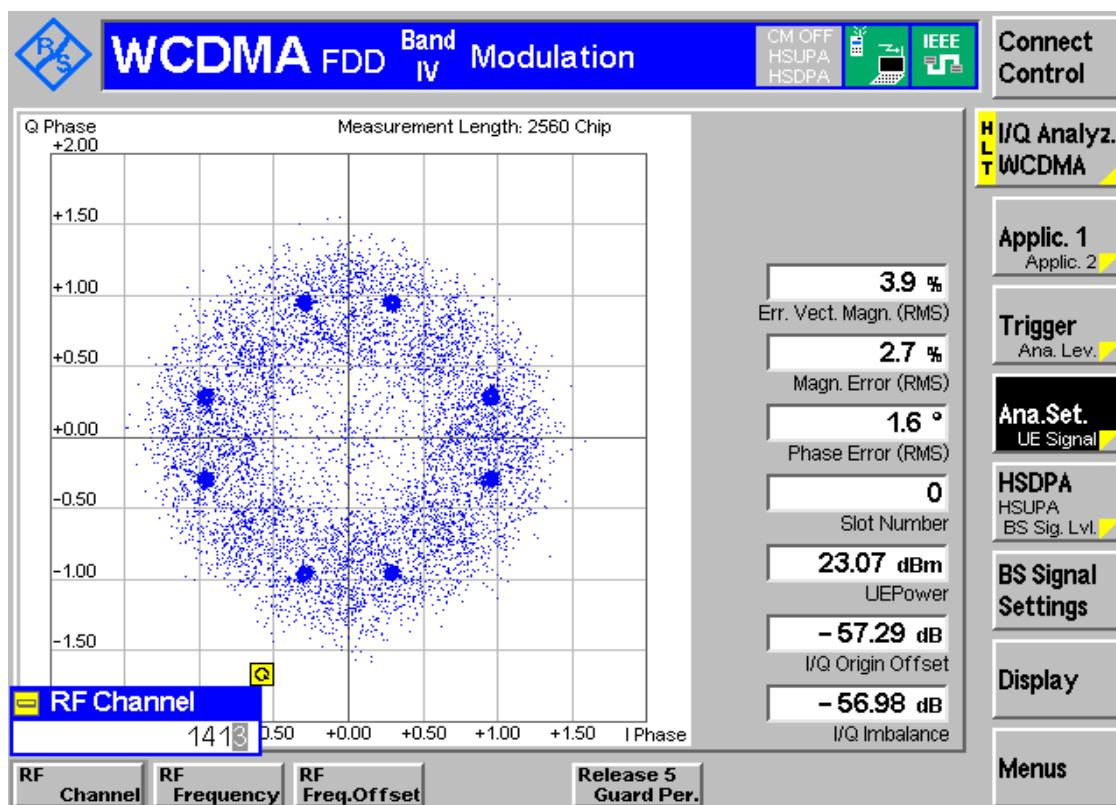
3.2.2.1.1 Test Channel = MCH



3.2.3 Test Band = WCDMA1700

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	243.30	312.48	Pass
		MCH	247.55	319.54	Pass
		HCH	245.76	312.81	Pass
	GSM/TM2	LCH	238.39	318.89	Pass
		MCH	239.20	311.14	Pass
		HCH	237.41	305.56	Pass
GSM1900	GSM/TM1	LCH	246.90	318.19	Pass
		MCH	243.86	318.08	Pass
		HCH	243.01	318.24	Pass
	GSM/TM2	LCH	243.01	312.27	Pass
		MCH	239.05	305.74	Pass
		HCH	243.51	303.44	Pass
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.16	4.67	Pass
		MCH	4.16	4.67	Pass
		HCH	4.17	4.66	Pass
WCDMA1900	UMTS/TM1	LCH	4.15	4.66	Pass
		MCH	4.16	4.66	Pass
		HCH	4.16	4.66	Pass
WCDMA1700	UMTS/TM1	LCH	4.14	4.67	Pass
		MCH	4.16	4.66	Pass
		HCH	4.15	4.66	Pass

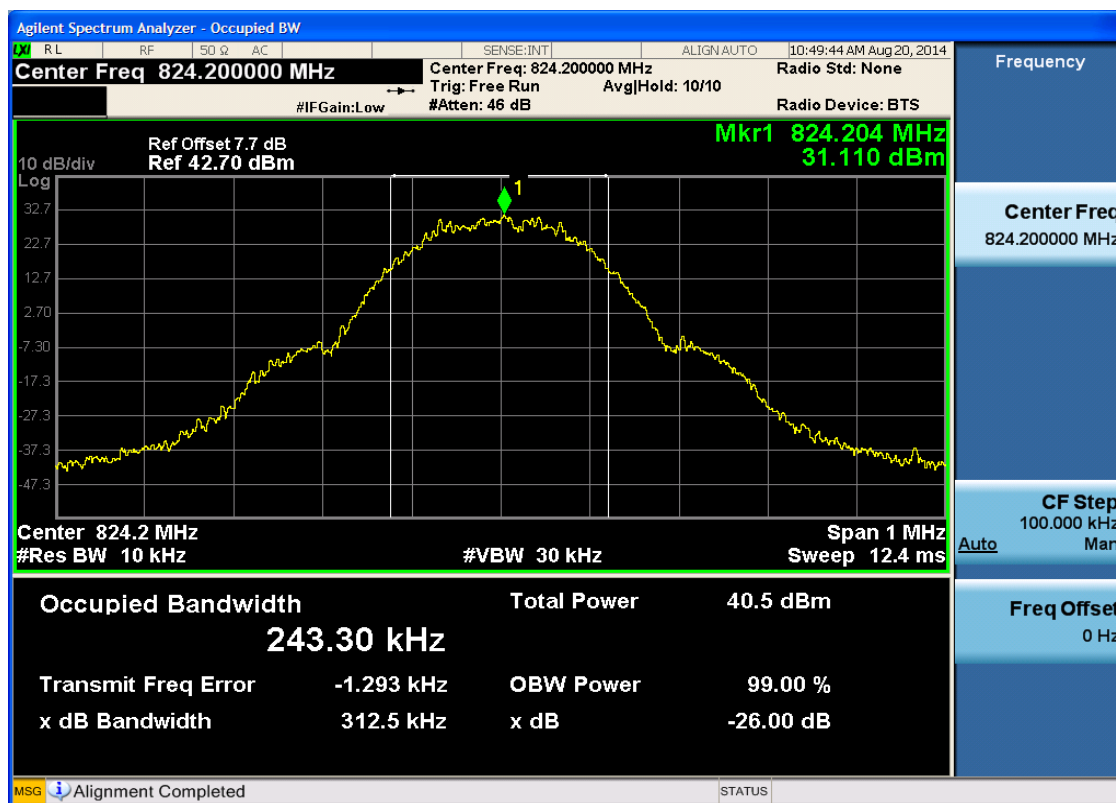
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

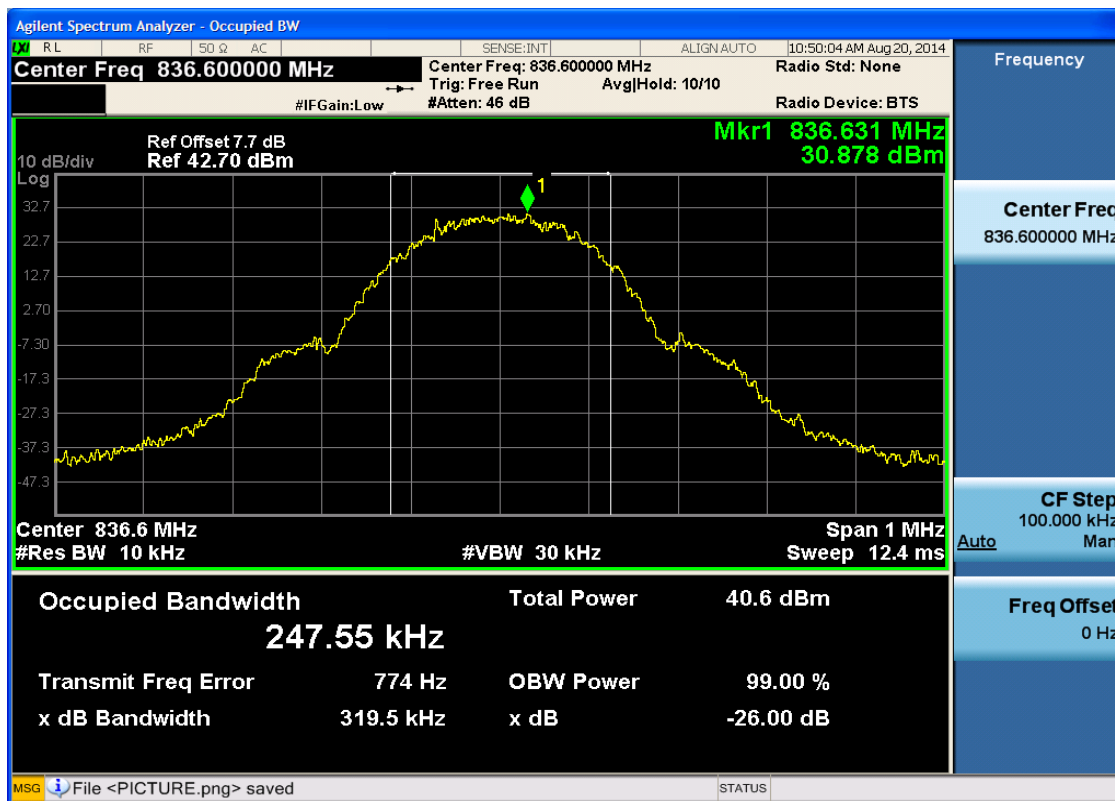
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



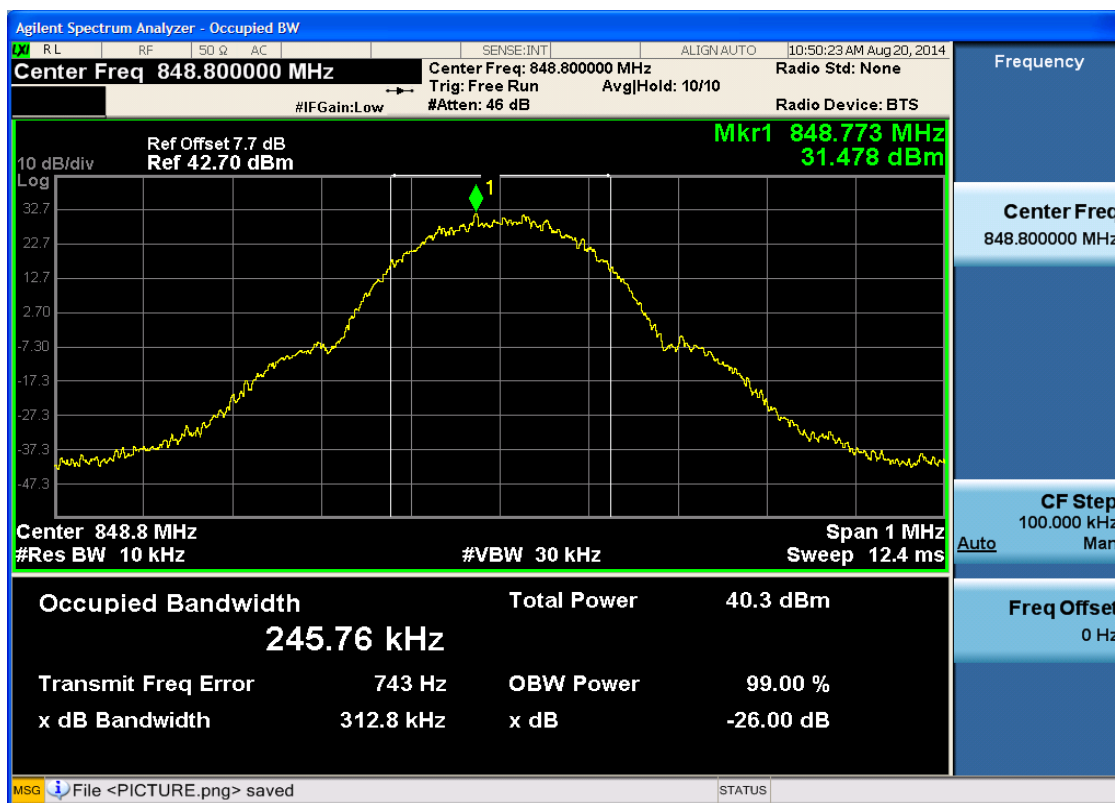


4.1.1.1.2 Test Channel = MCH





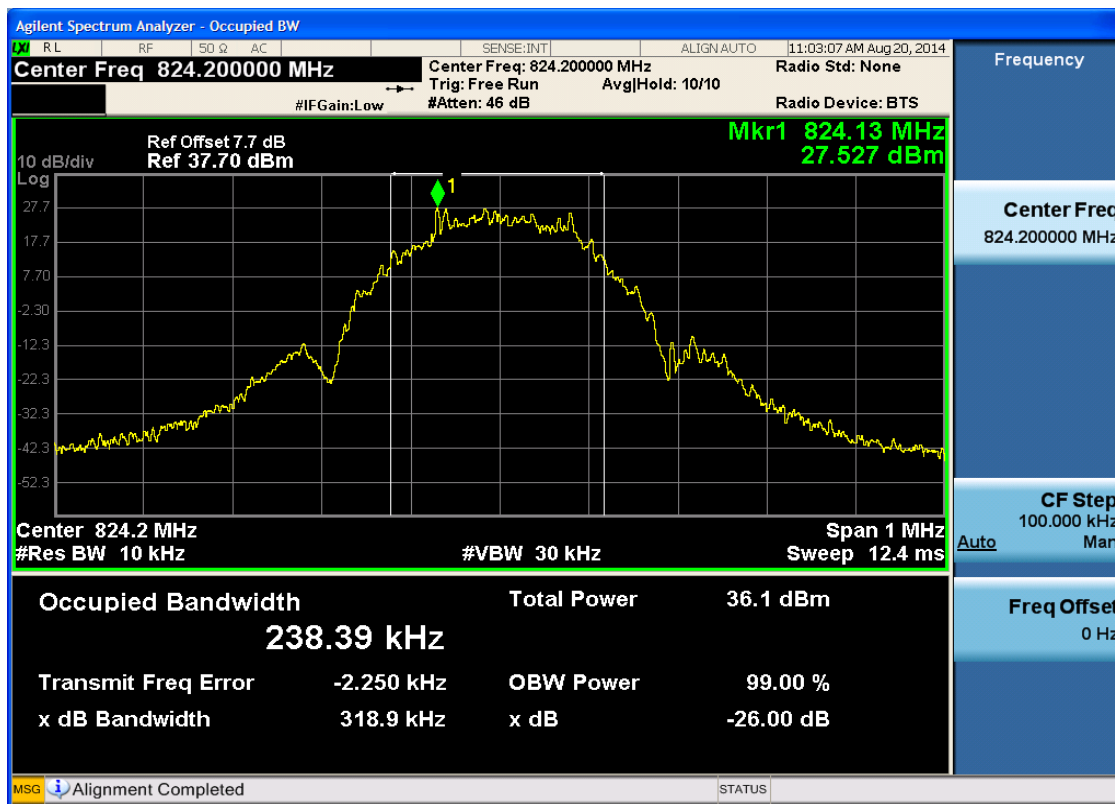
4.1.1.1.3 Test Channel = HCH





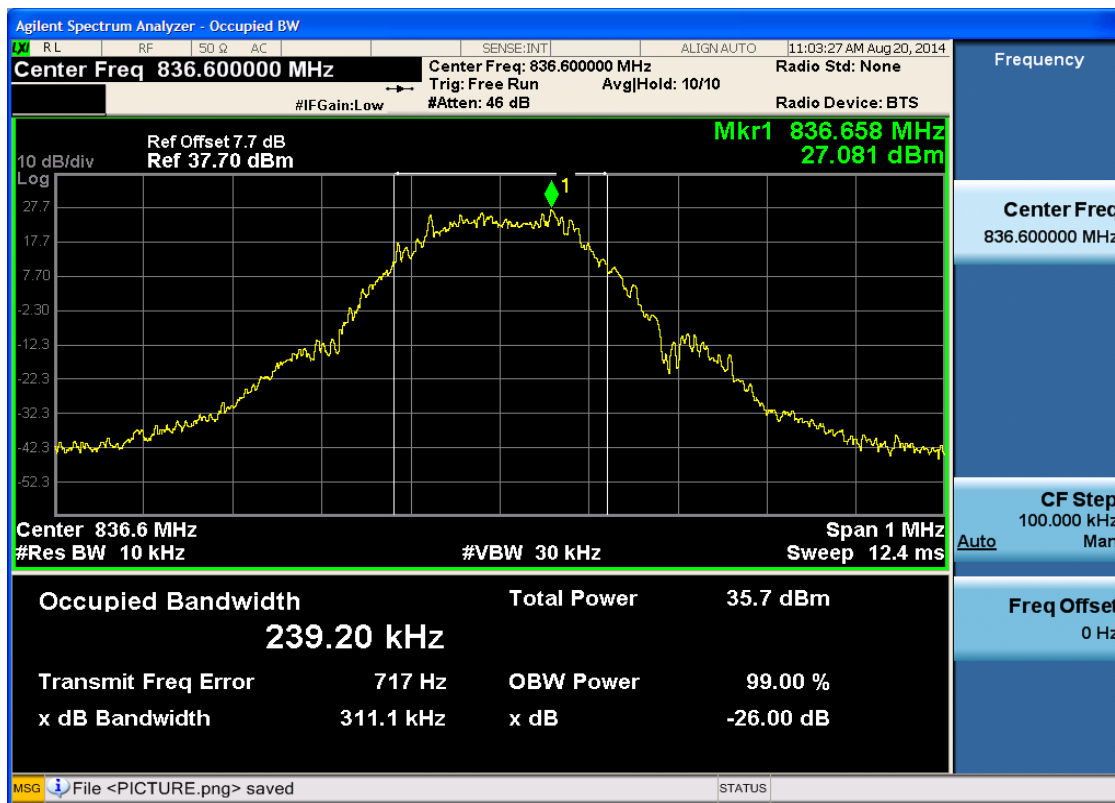
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



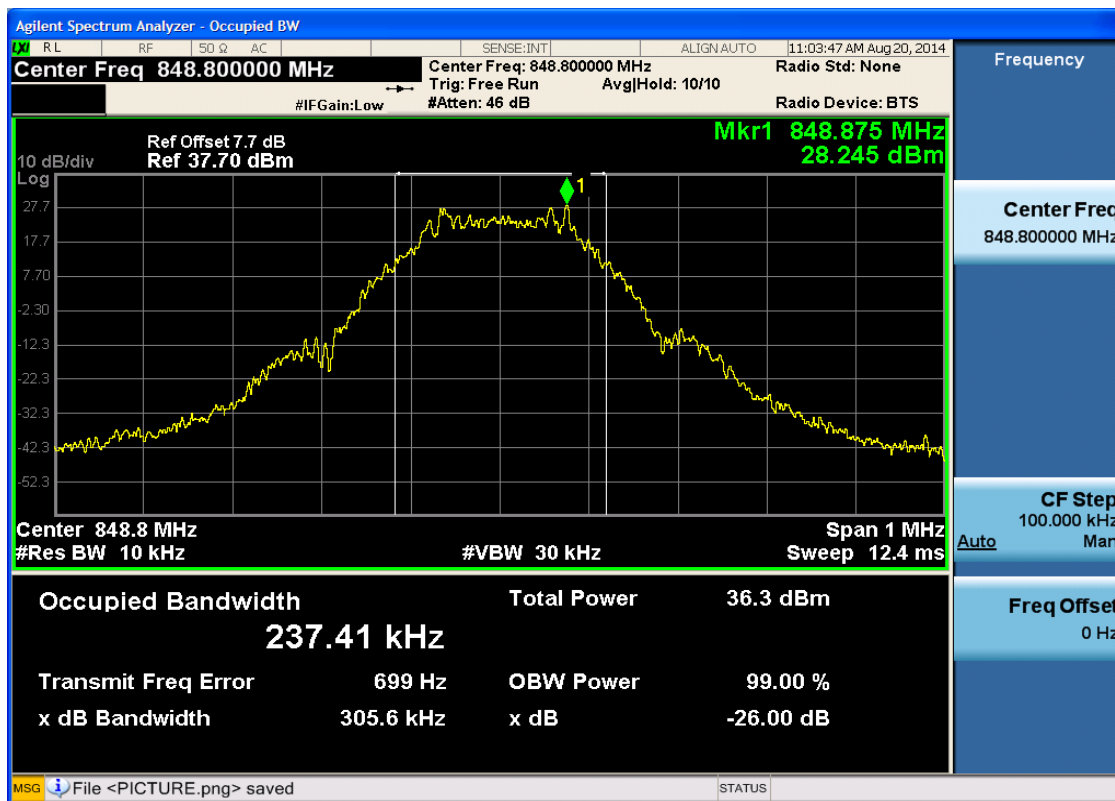


4.1.1.2.2 Test Channel = MCH





4.1.1.2.3 Test Channel = HCH

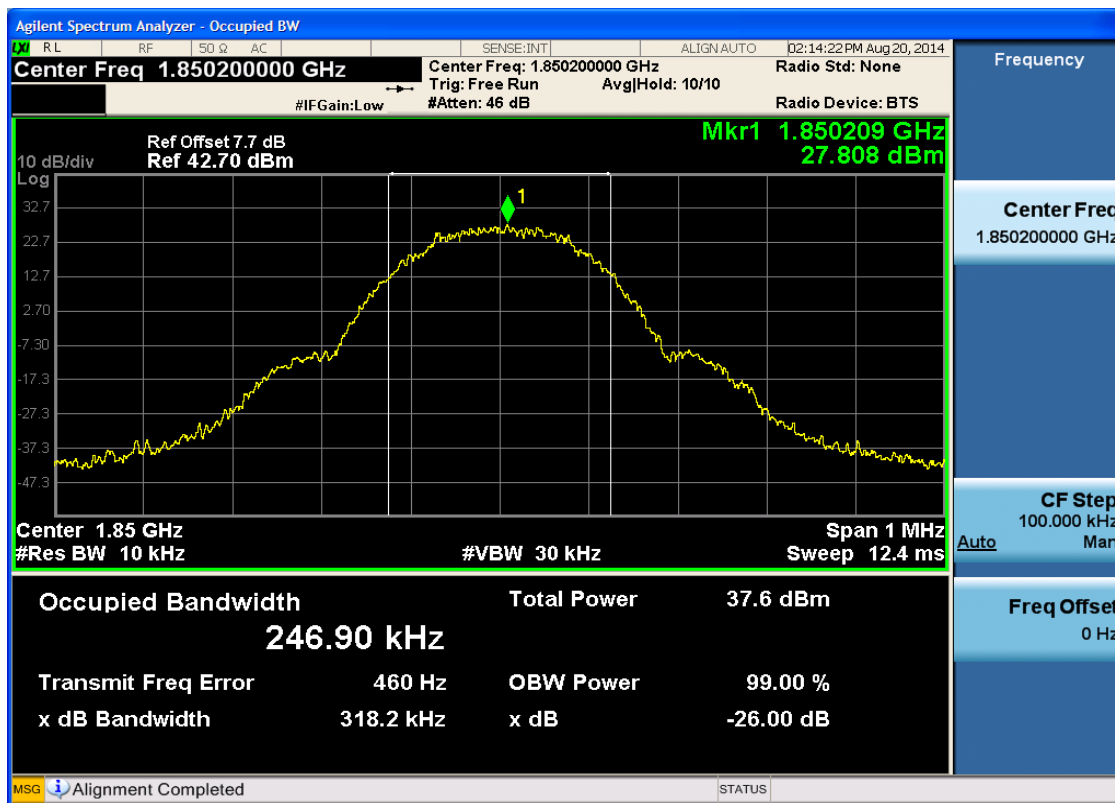




4.1.2 Test Band = GSM1900

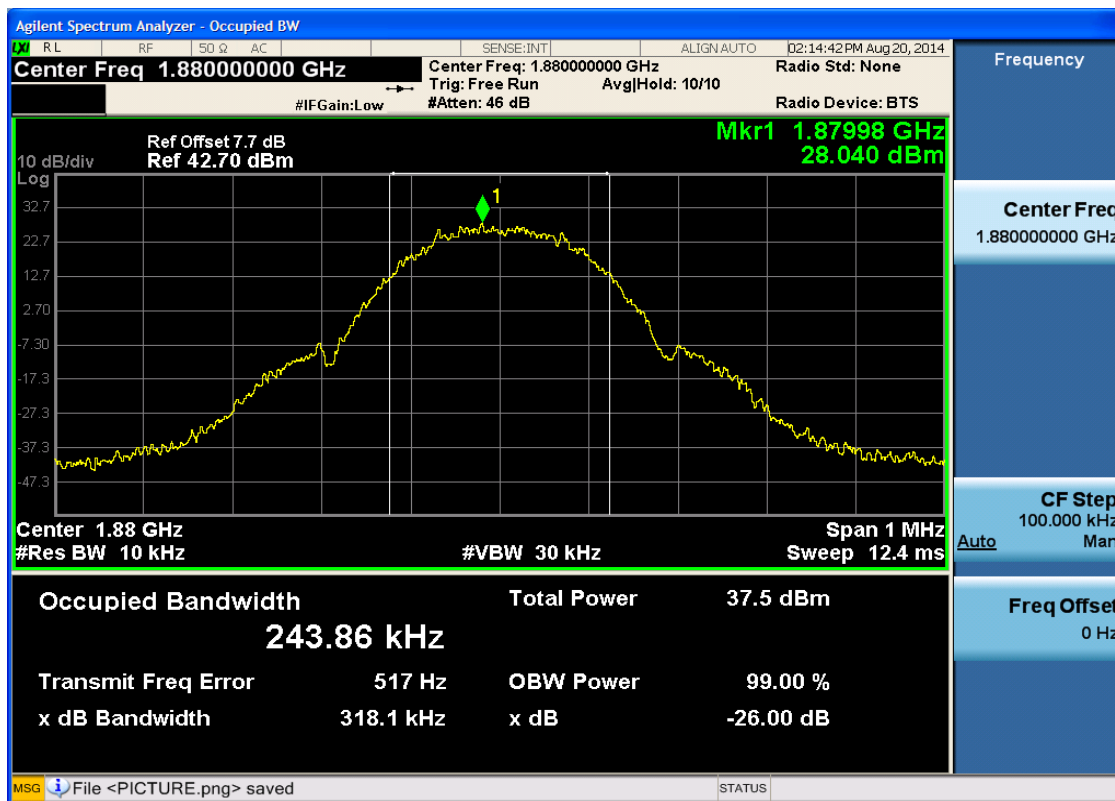
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



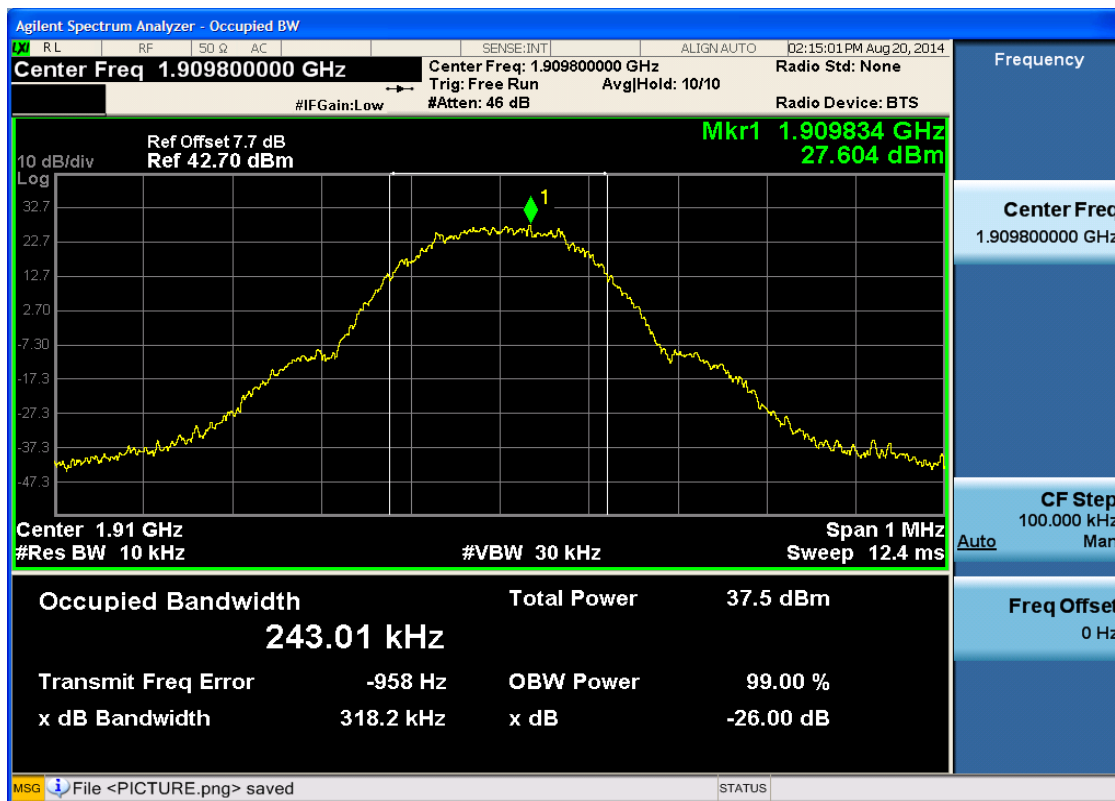


4.1.2.1.2 Test Channel = MCH





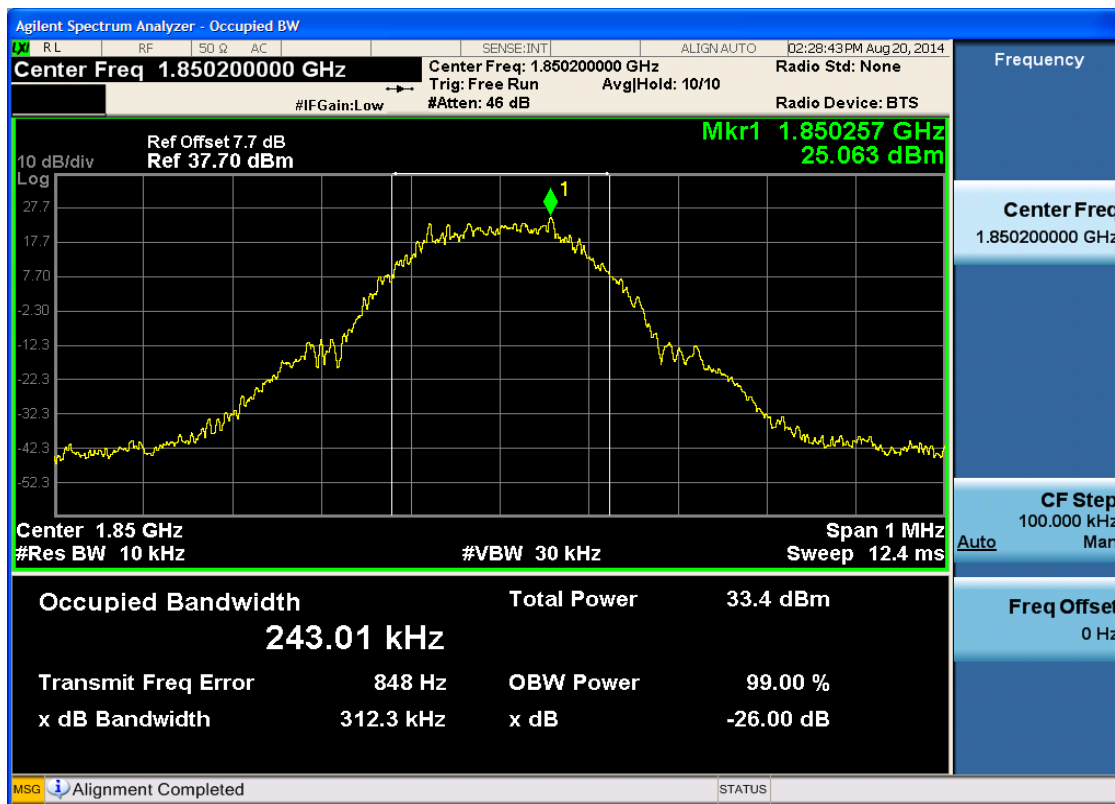
4.1.2.1.3 Test Channel = HCH





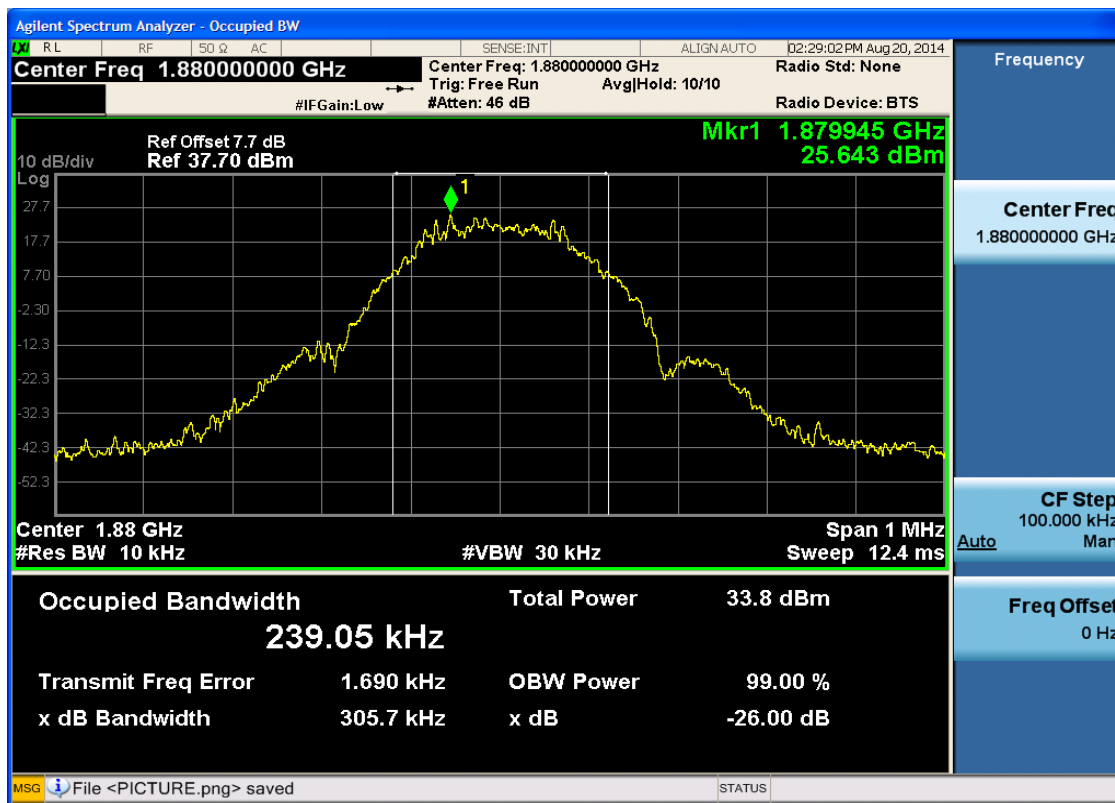
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



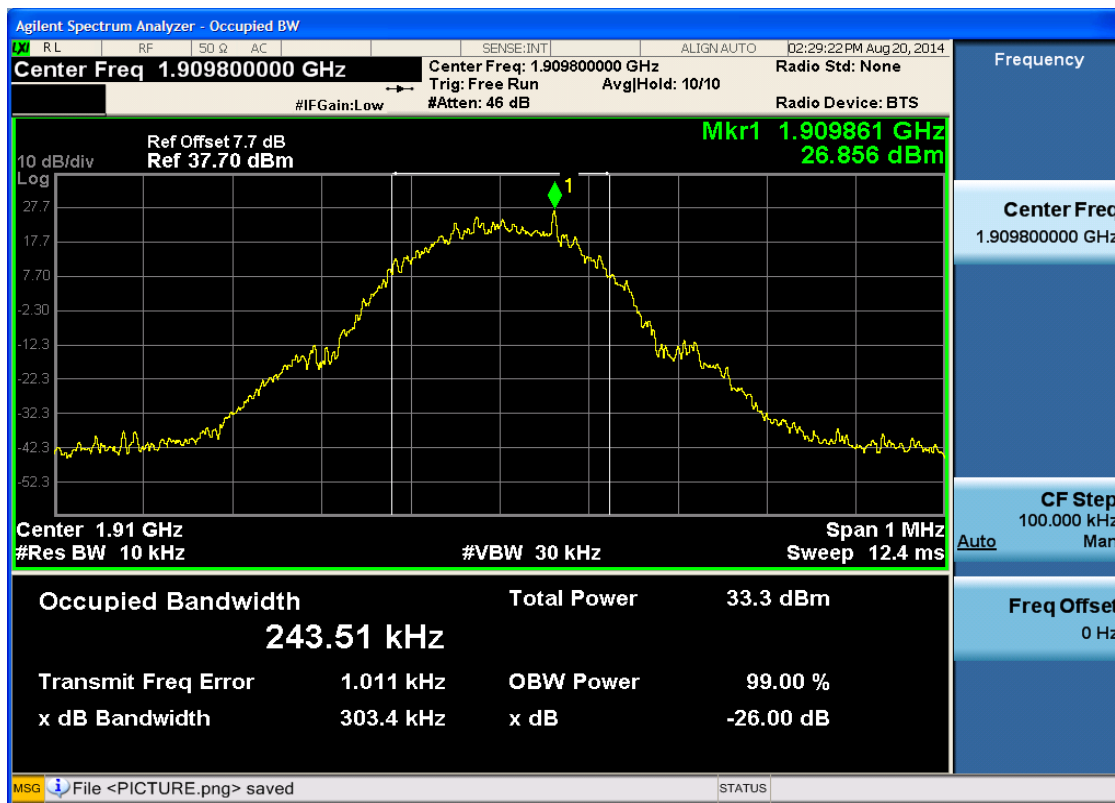


4.1.2.2.2 Test Channel = MCH





4.1.2.2.3 Test Channel = HCH

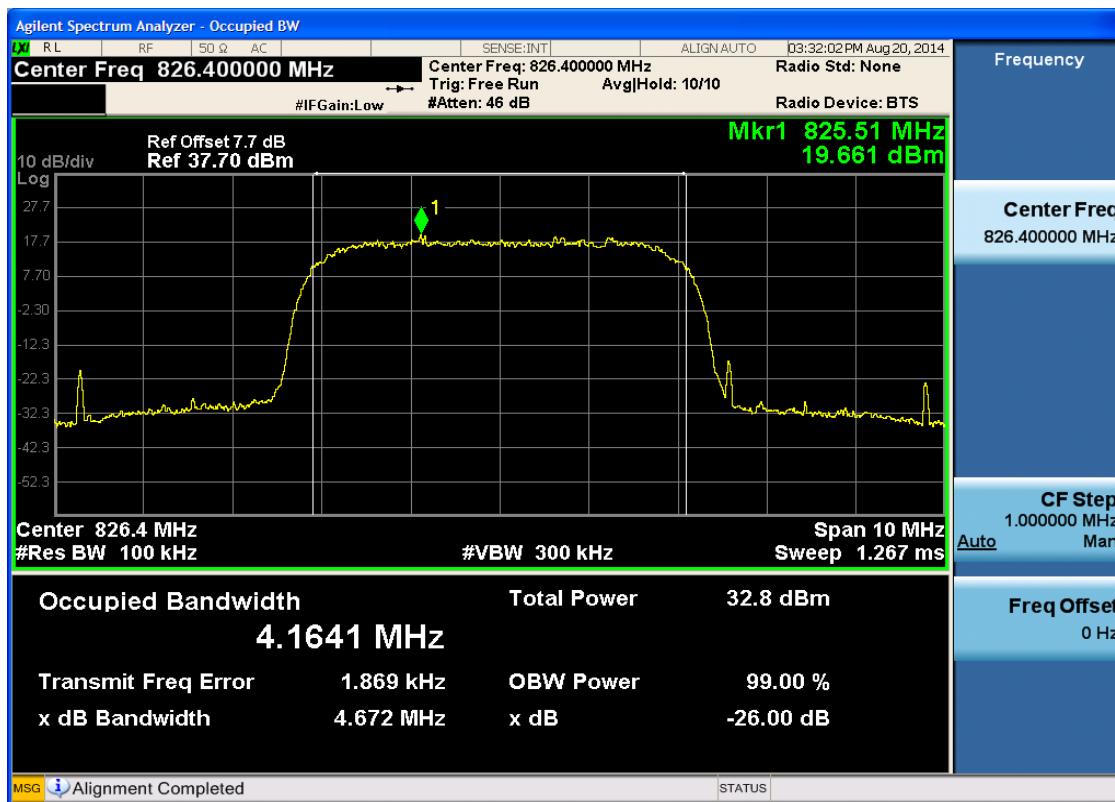


4.2 For UMTS

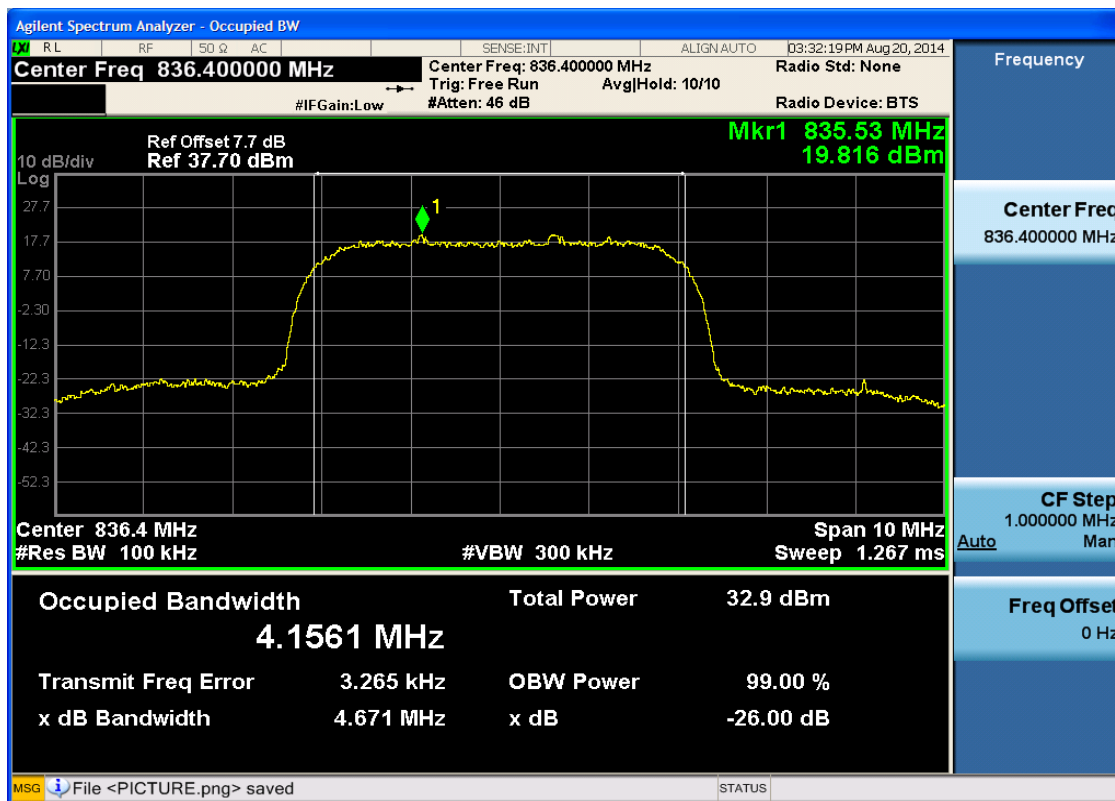
4.2.1 Test Band = WCDMA850

4.2.1.1 Test Mode = UMTS/TM1

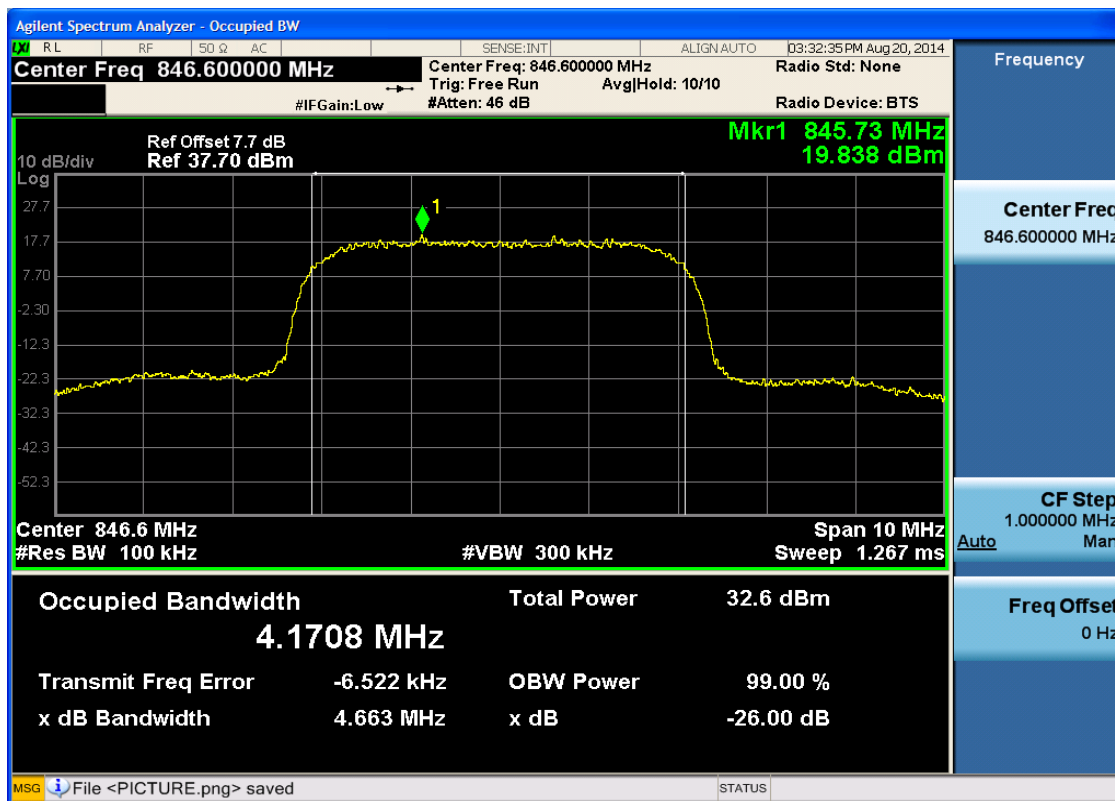
4.2.1.1.1 Test Channel = LCH



4.2.1.1.2 Test Channel = MCH



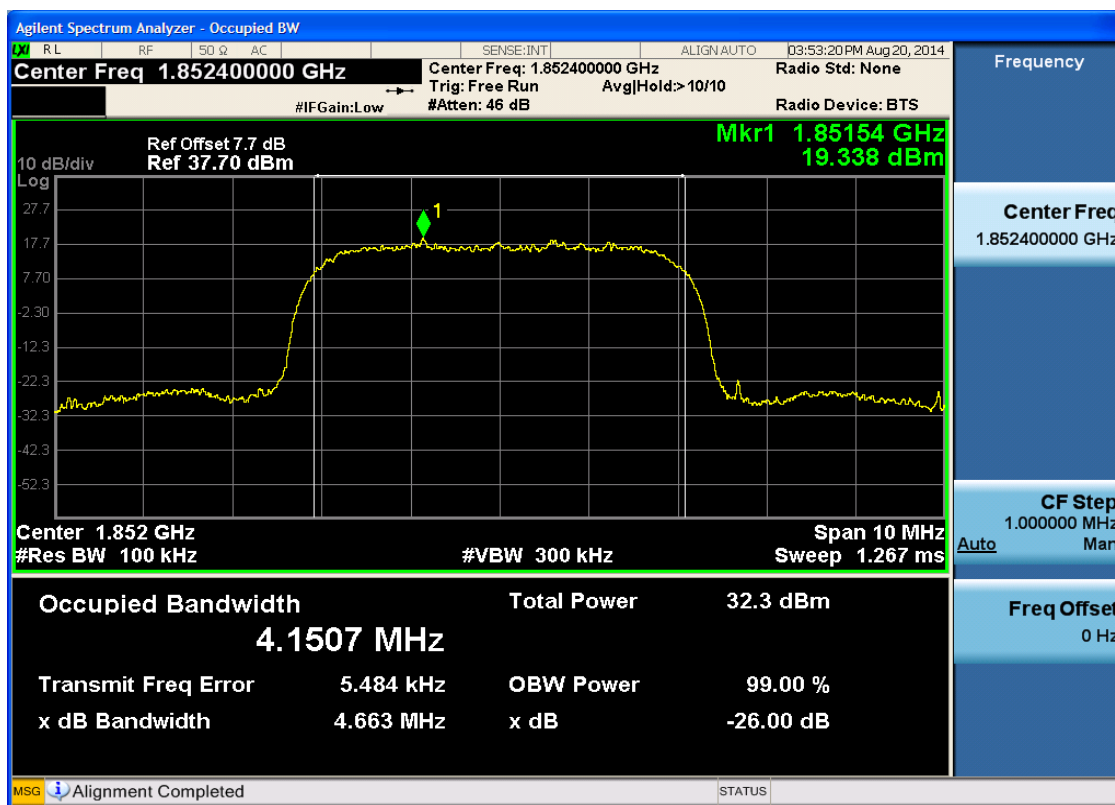
4.2.1.1.3 Test Channel = HCH



4.2.2 Test Band = WCDMA1900

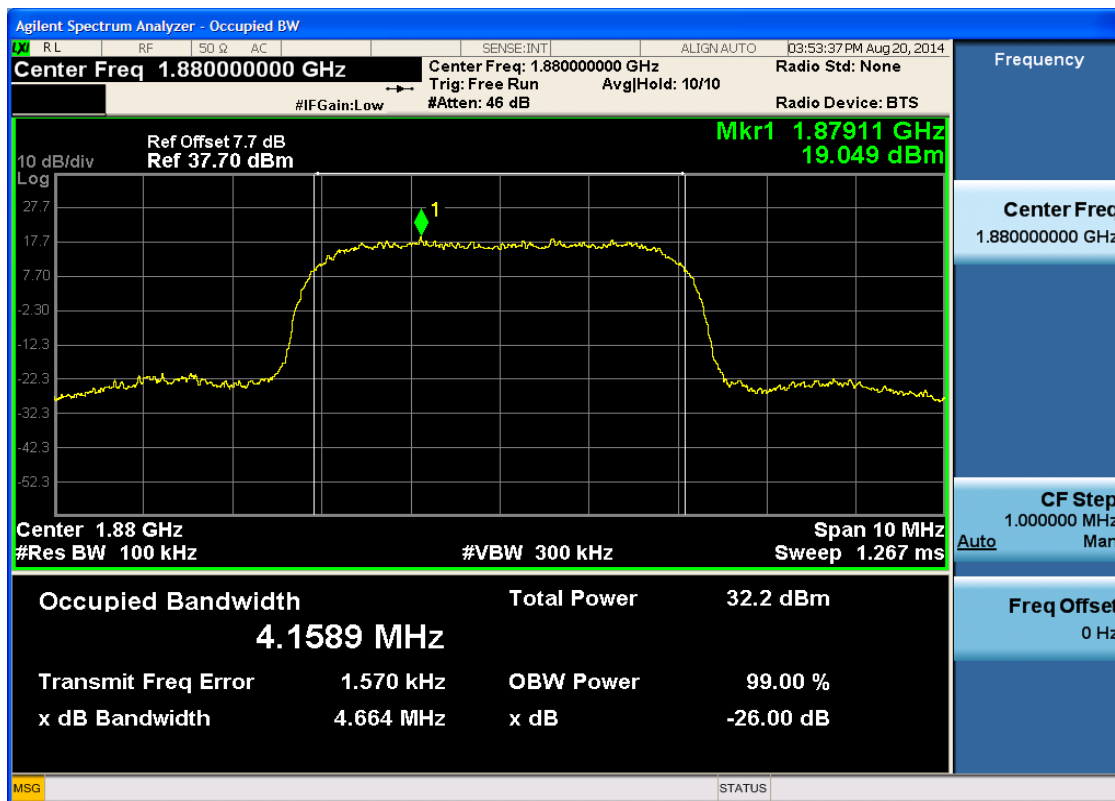
4.2.2.1 Test Mode = UMTS/TM1

4.2.2.1.1 Test Channel = LCH

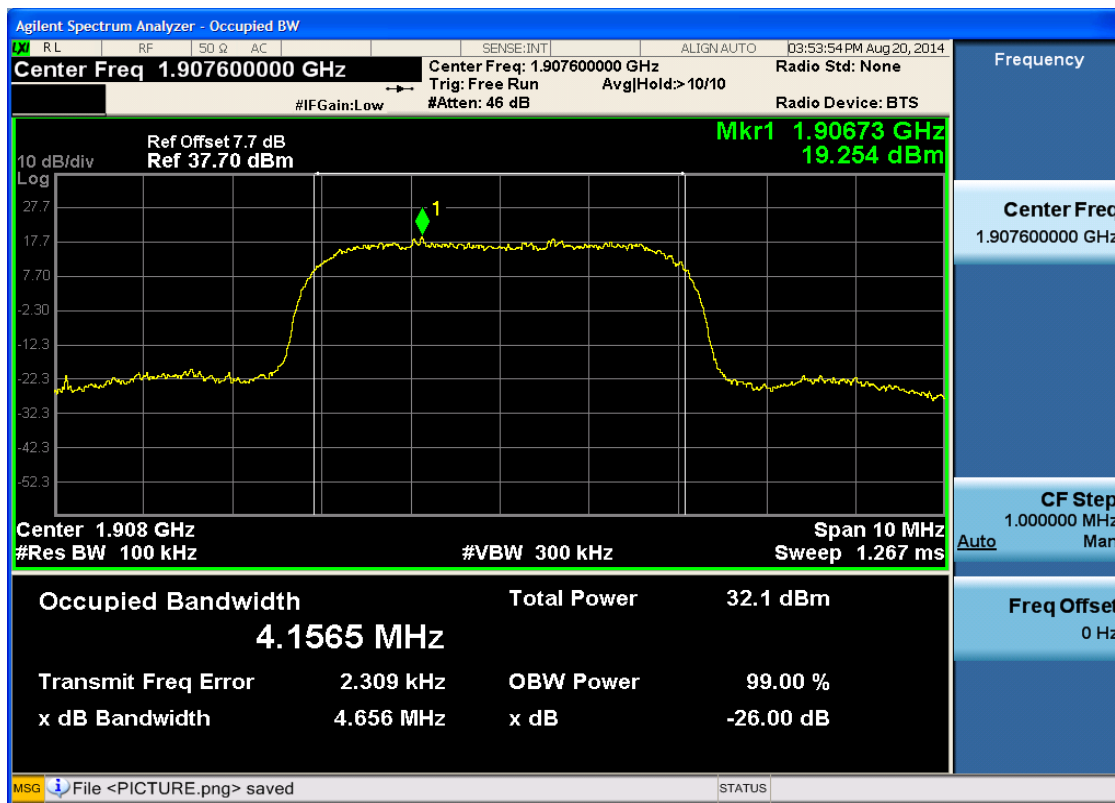




4.2.2.1.2 Test Channel = MCH



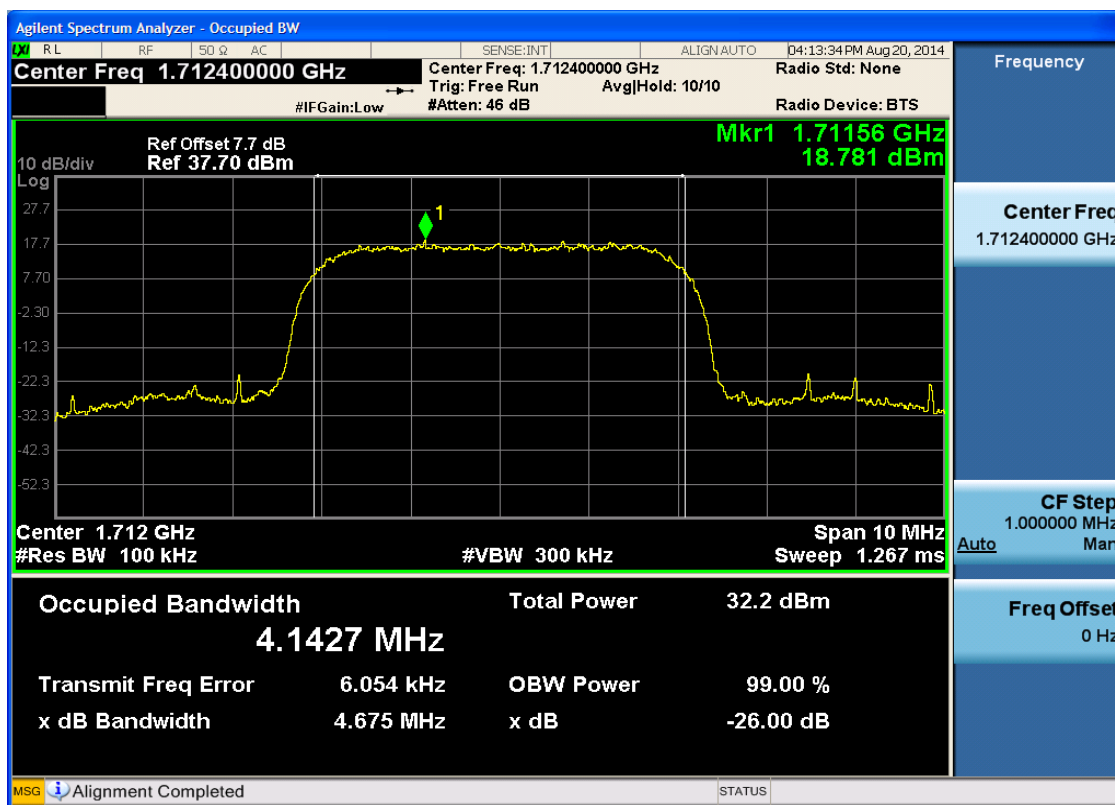
4.2.2.1.3 Test Channel = HCH



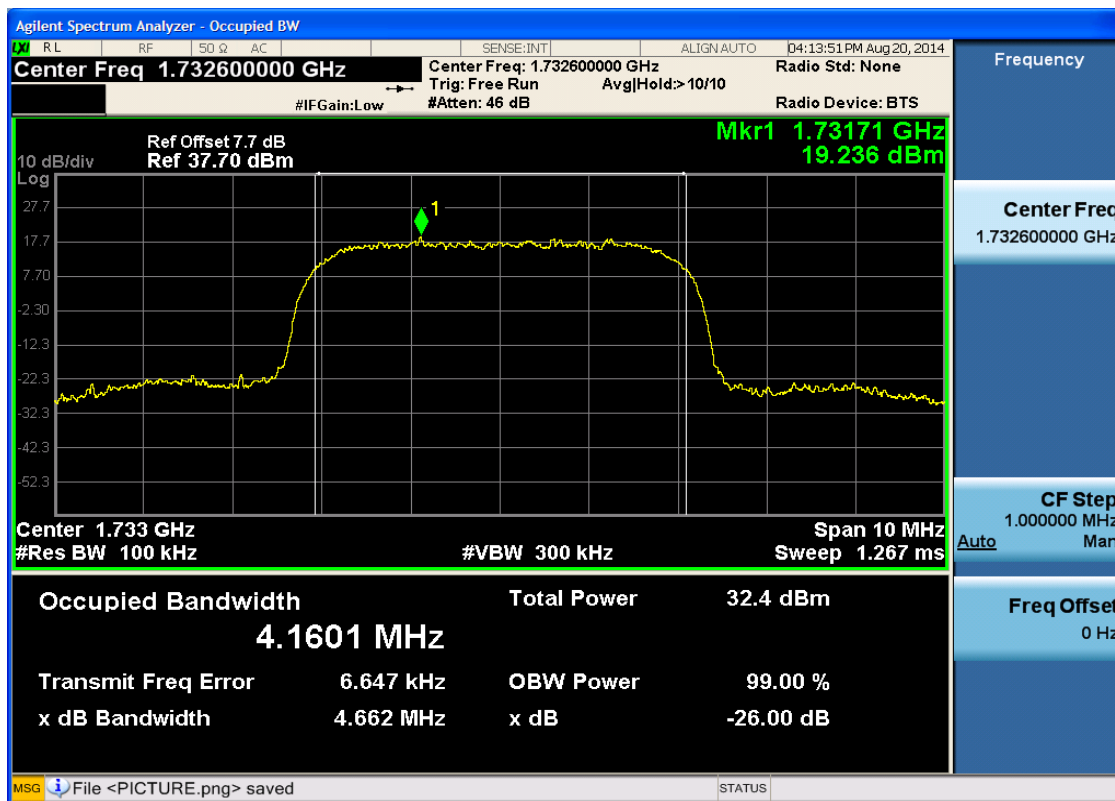
4.2.3 Test Band = WCDMA1700

4.2.3.1 Test Mode = UMTS/TM1

4.2.3.1.1 Test Channel = LCH

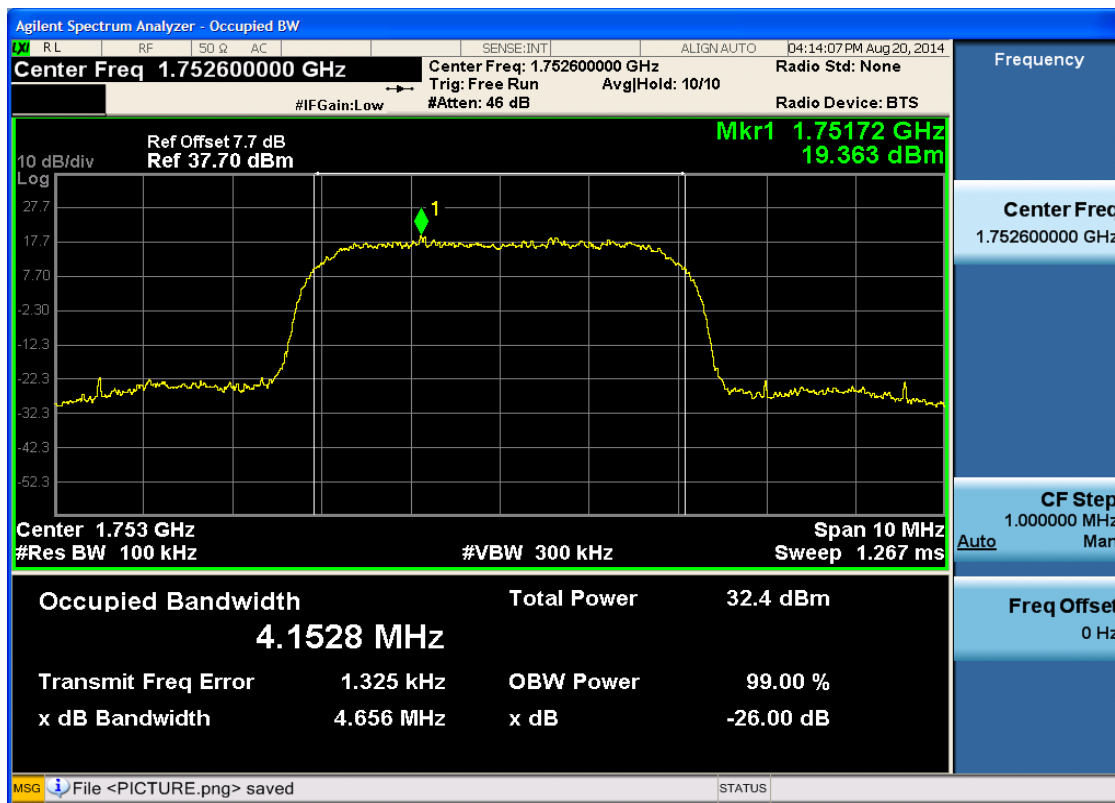


4.2.3.1.2 Test Channel = MCH





4.2.3.1.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

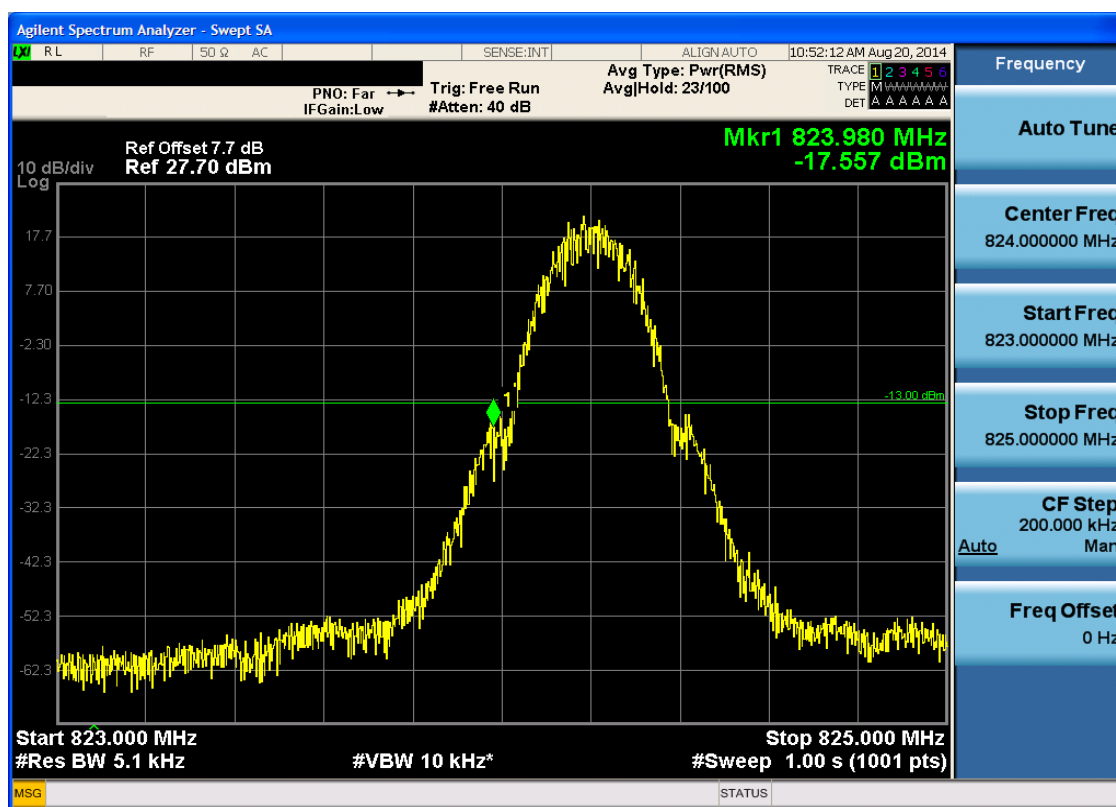
Part I - Test Plots

5.1 For GSM

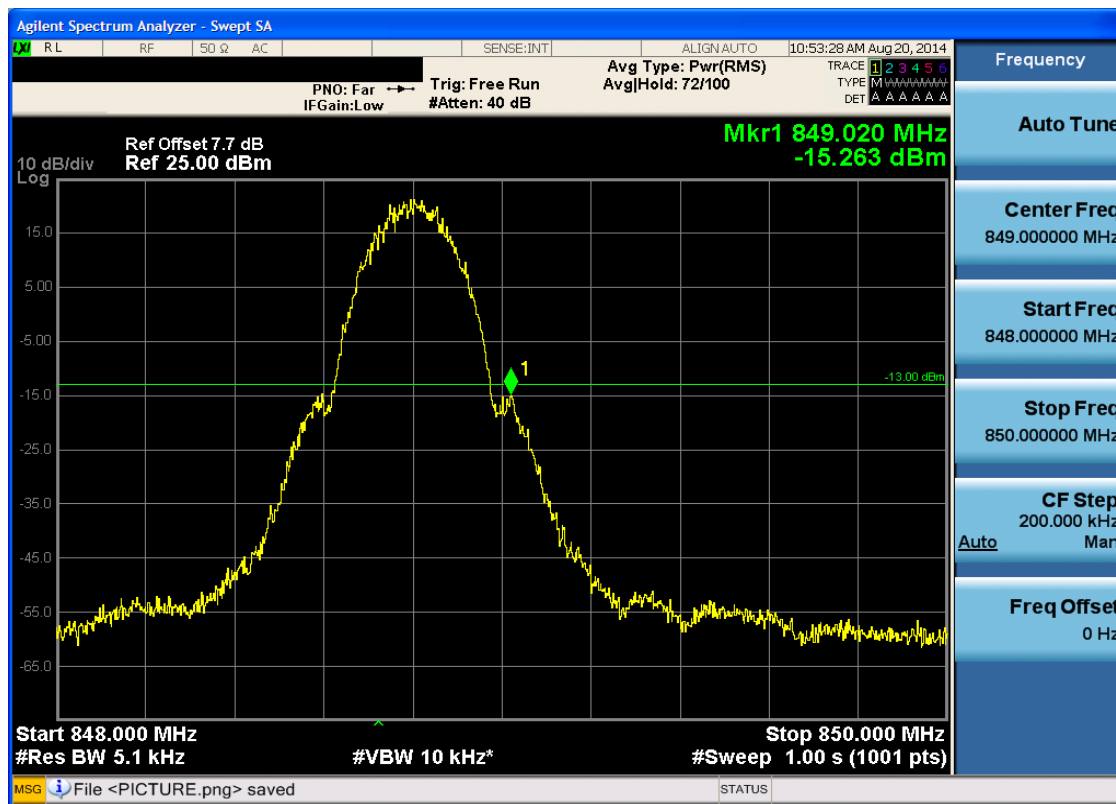
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

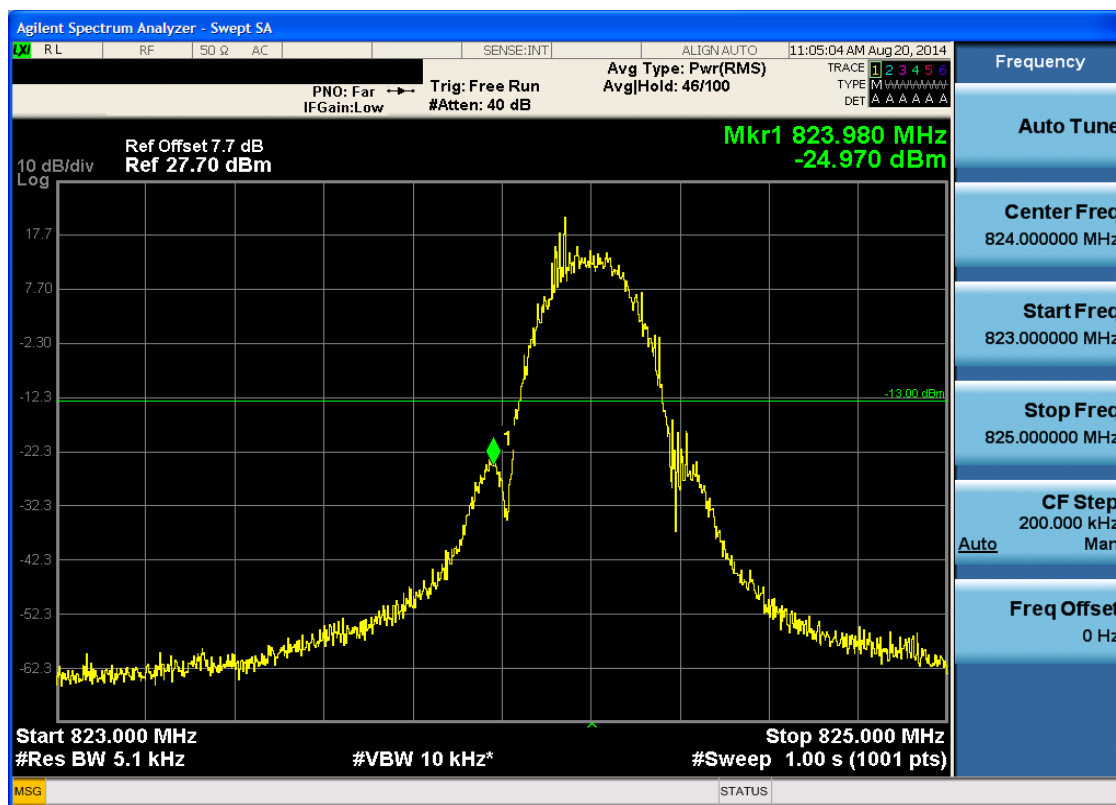


5.1.1.1.2 Test Channel = HCH

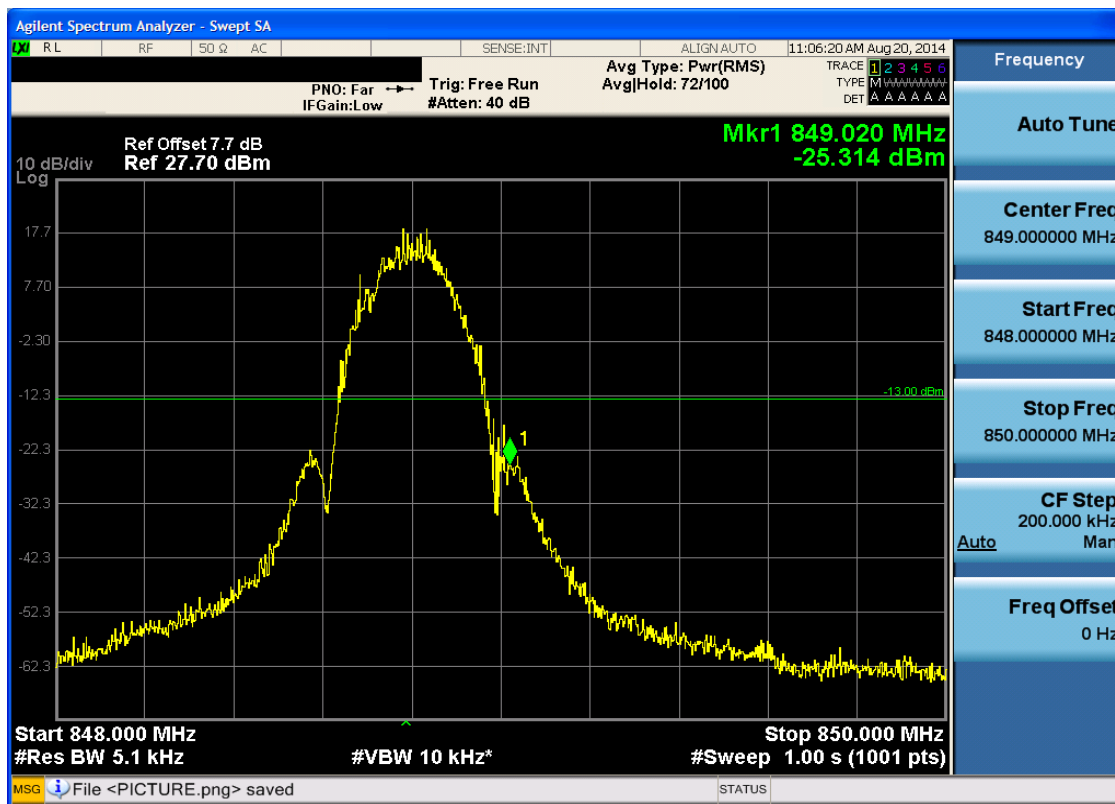


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



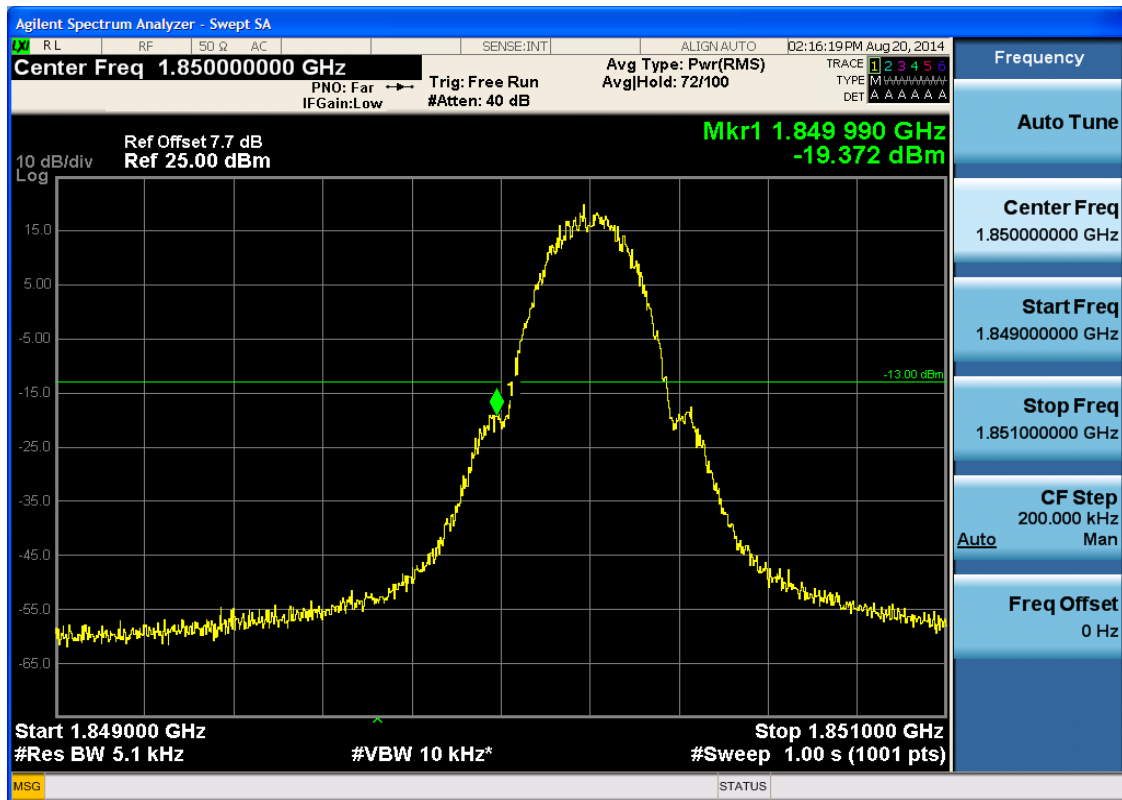
5.1.1.2.2 Test Channel = HCH



5.1.2 Test Band = GSM1900

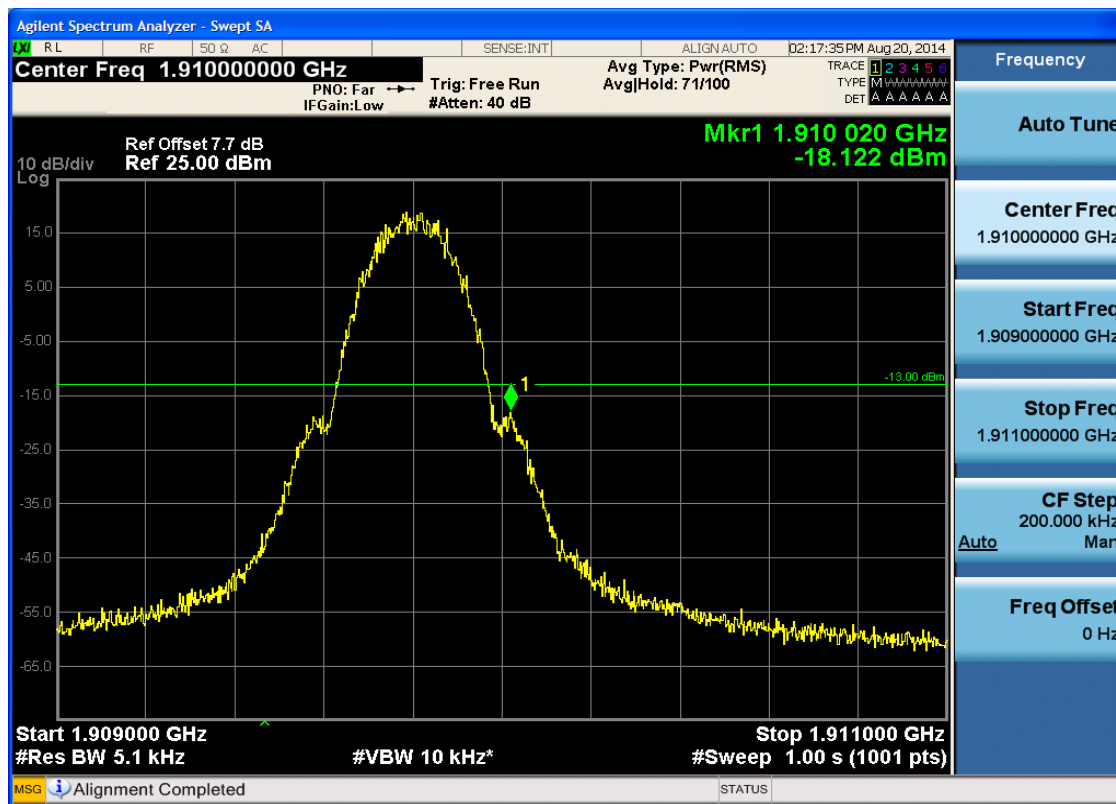
5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



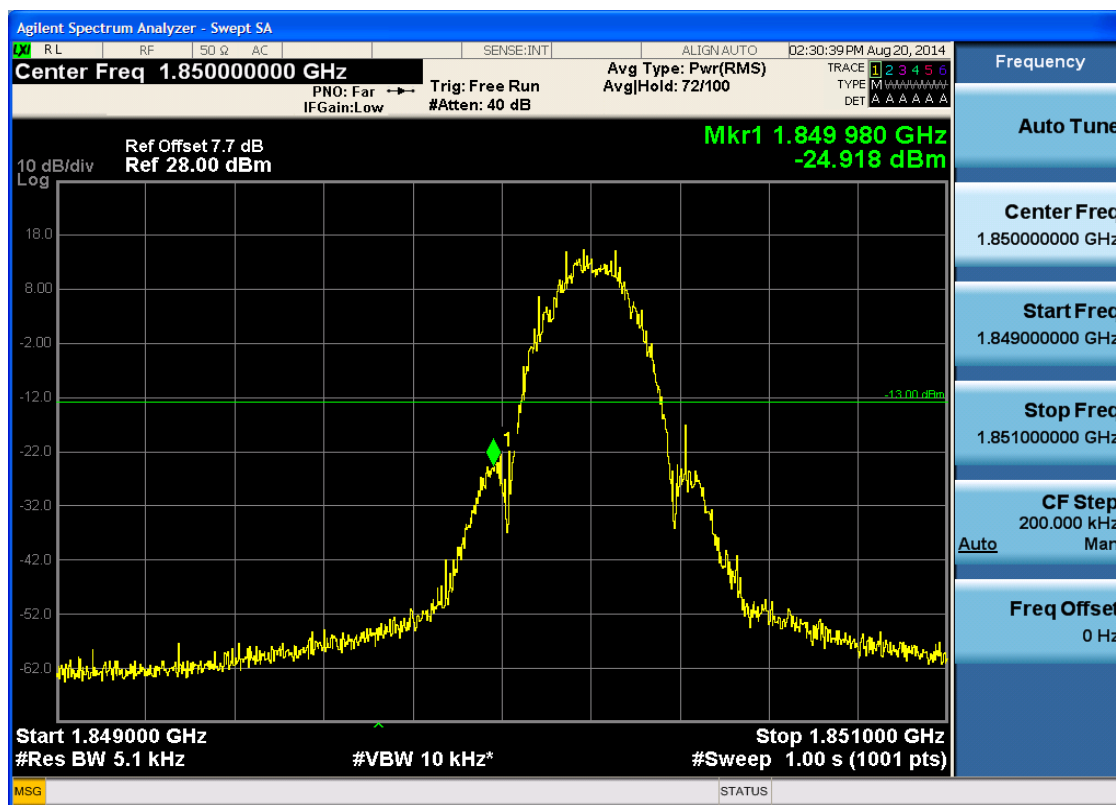


5.1.2.1.2 Test Channel = HCH

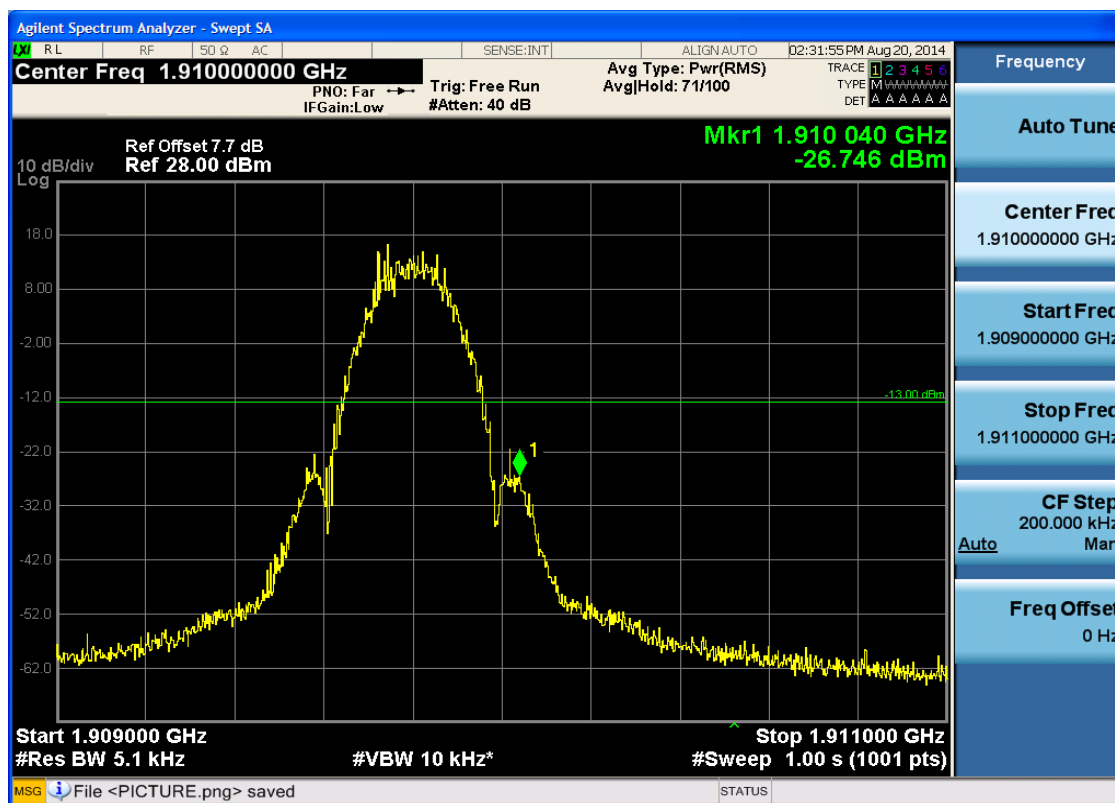


5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



5.1.2.2.2 Test Channel = HCH

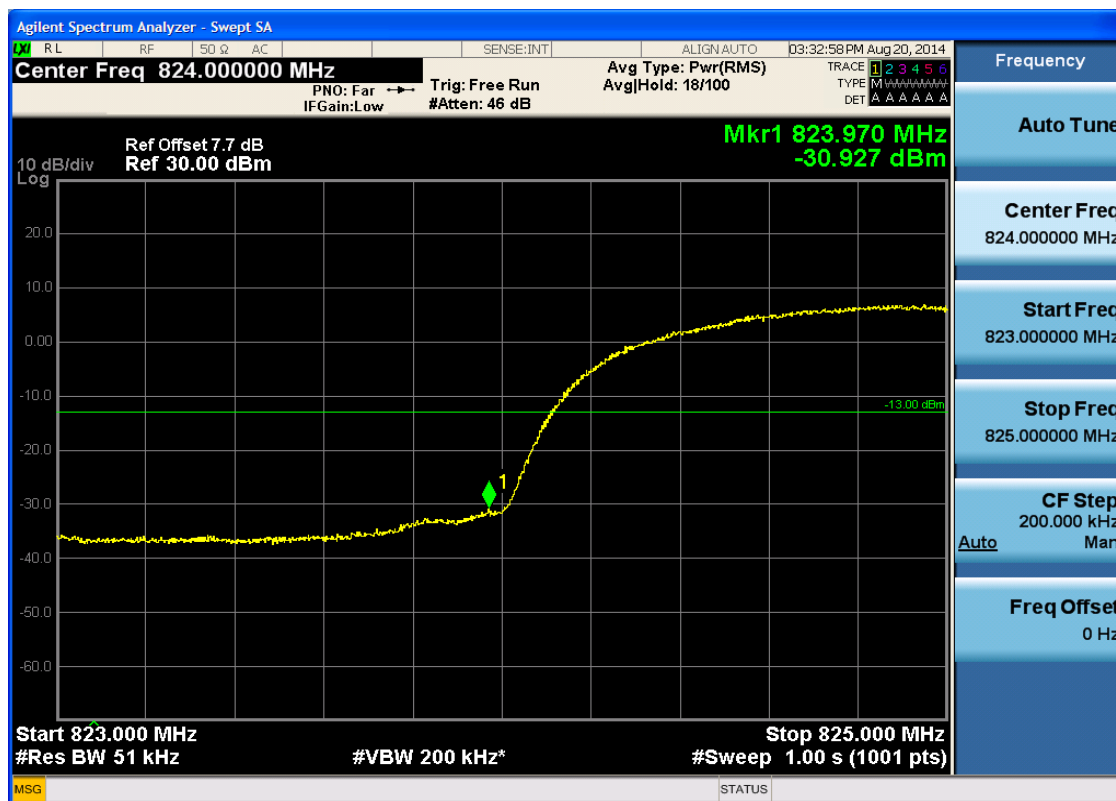


5.2 For UMTS

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

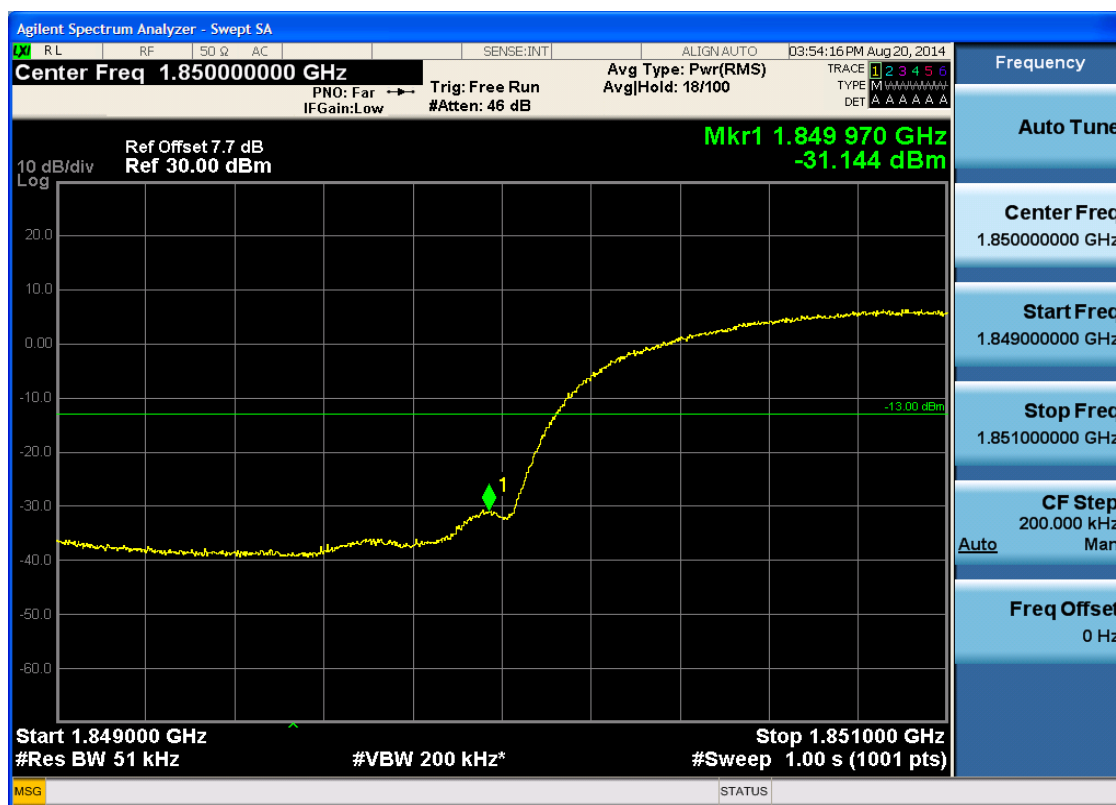




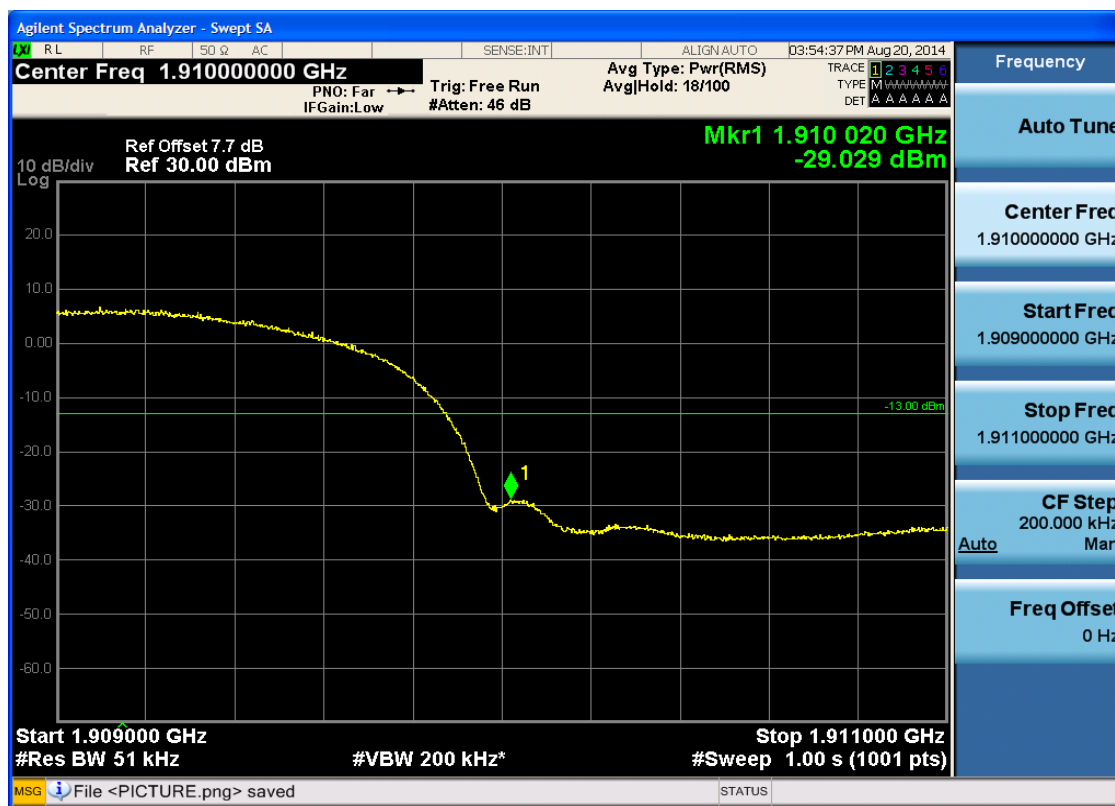
5.2.2 Test Band = WCDMA1900

5.2.2.1 Test Mode = UMTS/TM1

5.2.2.1.1 Test Channel = LCH



5.2.2.1.2 Test Channel = HCH

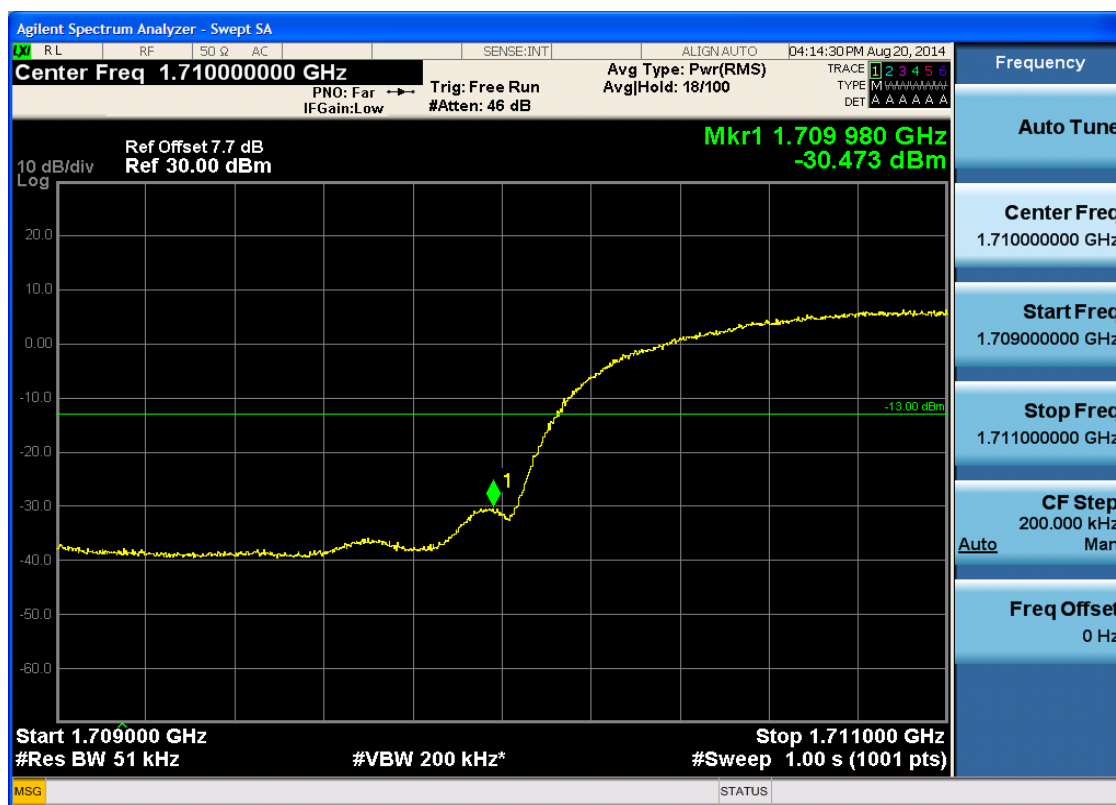




5.2.3 Test Band = WCDMA1700

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.

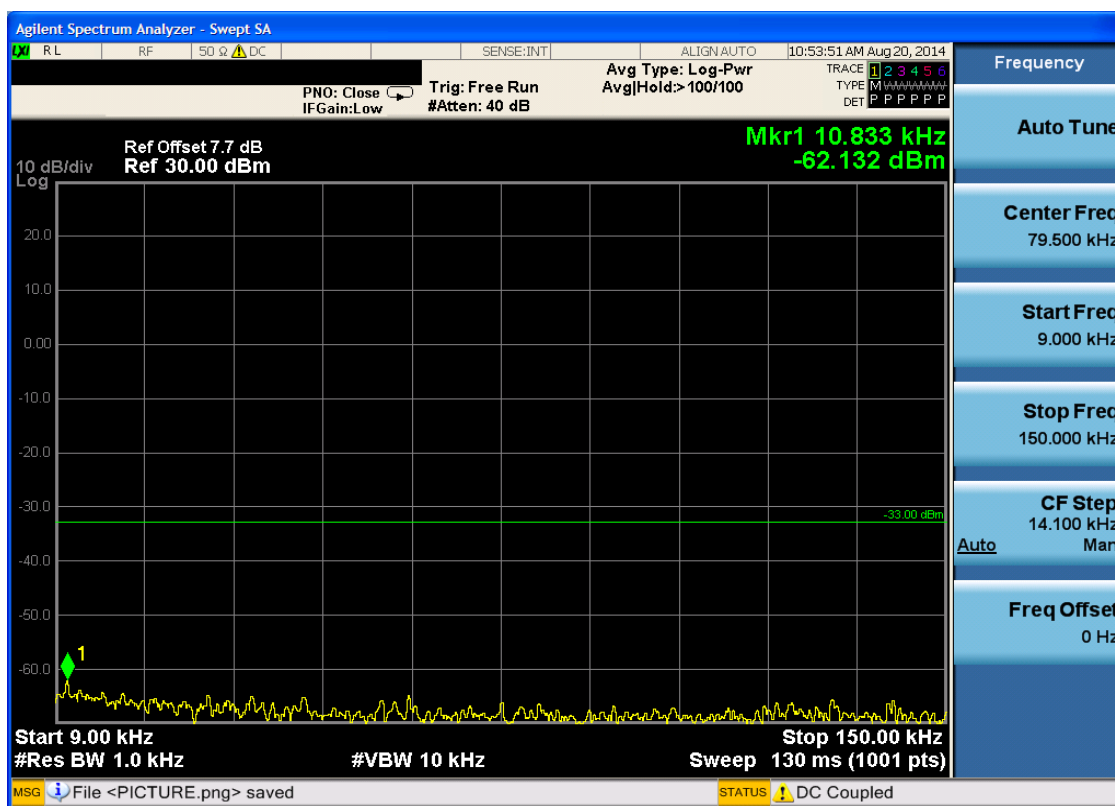
Part I - Test Plots

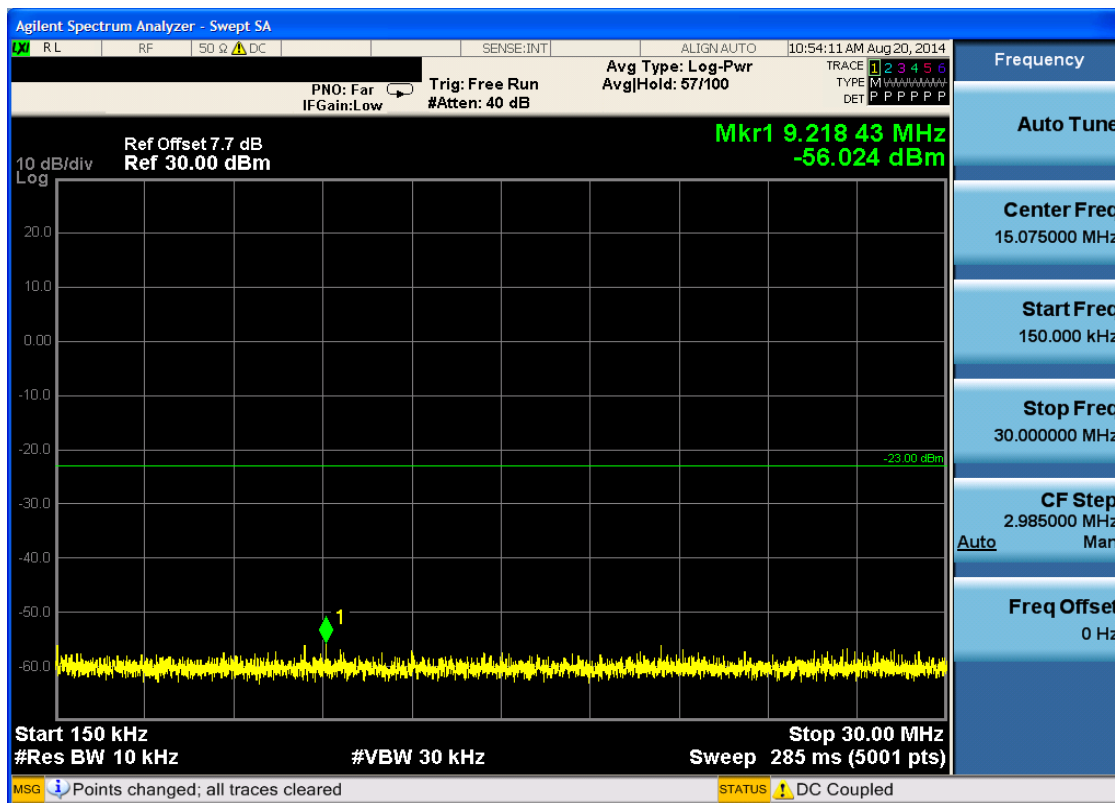
6.1 For GSM

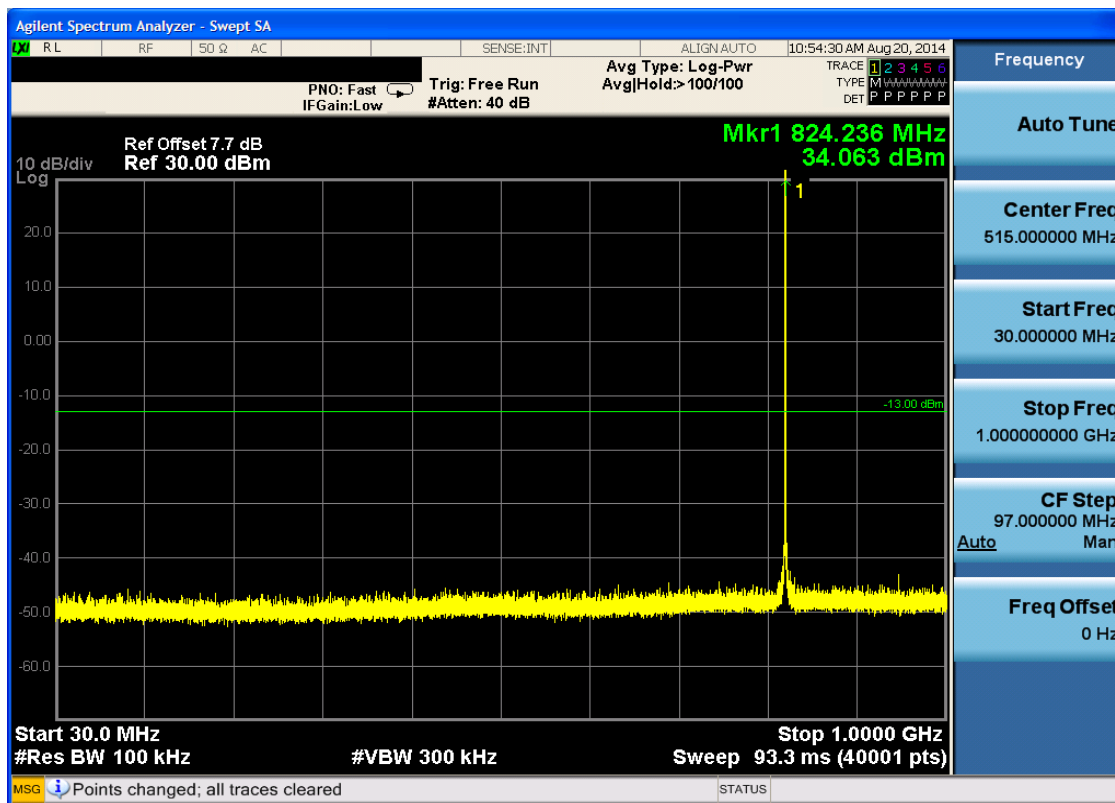
6.1.1 Test Band = GSM850

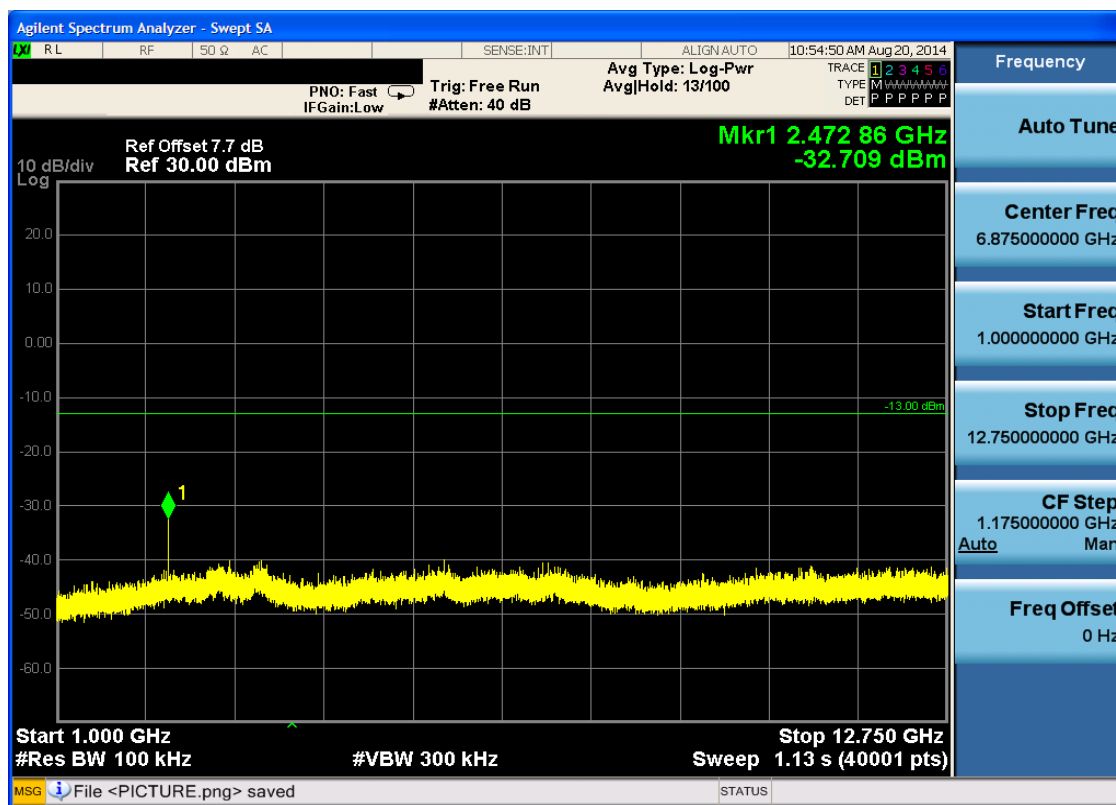
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH



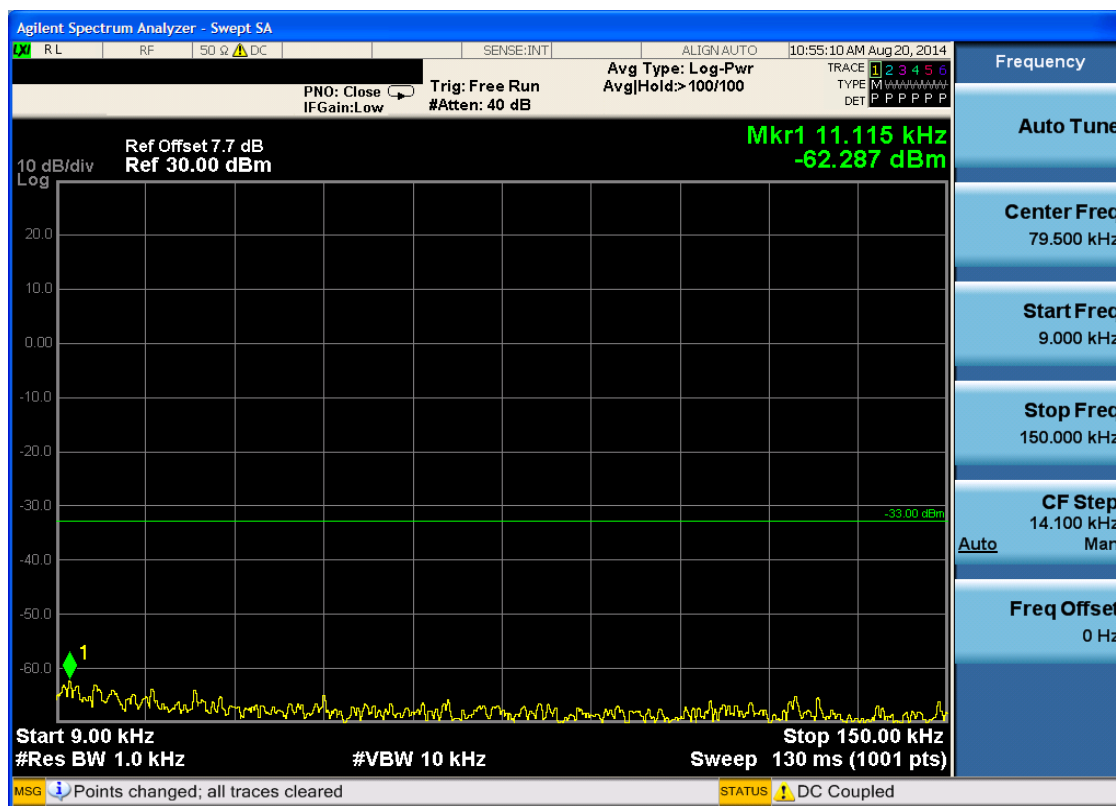


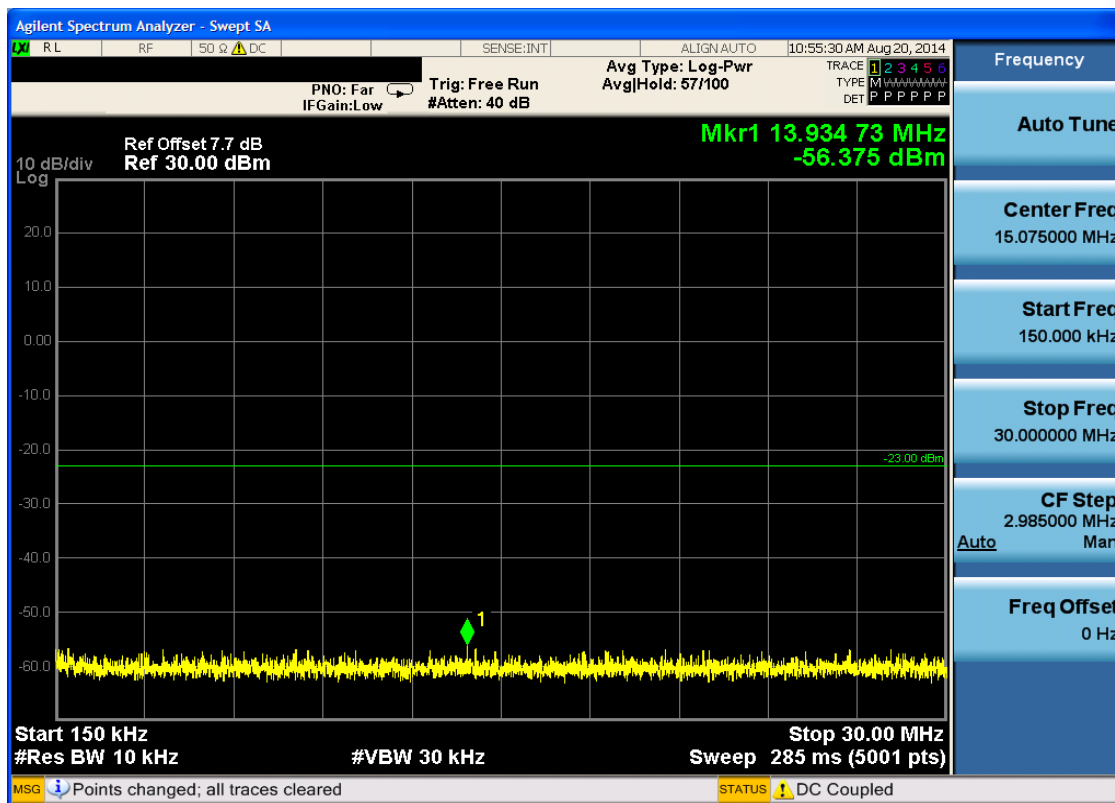


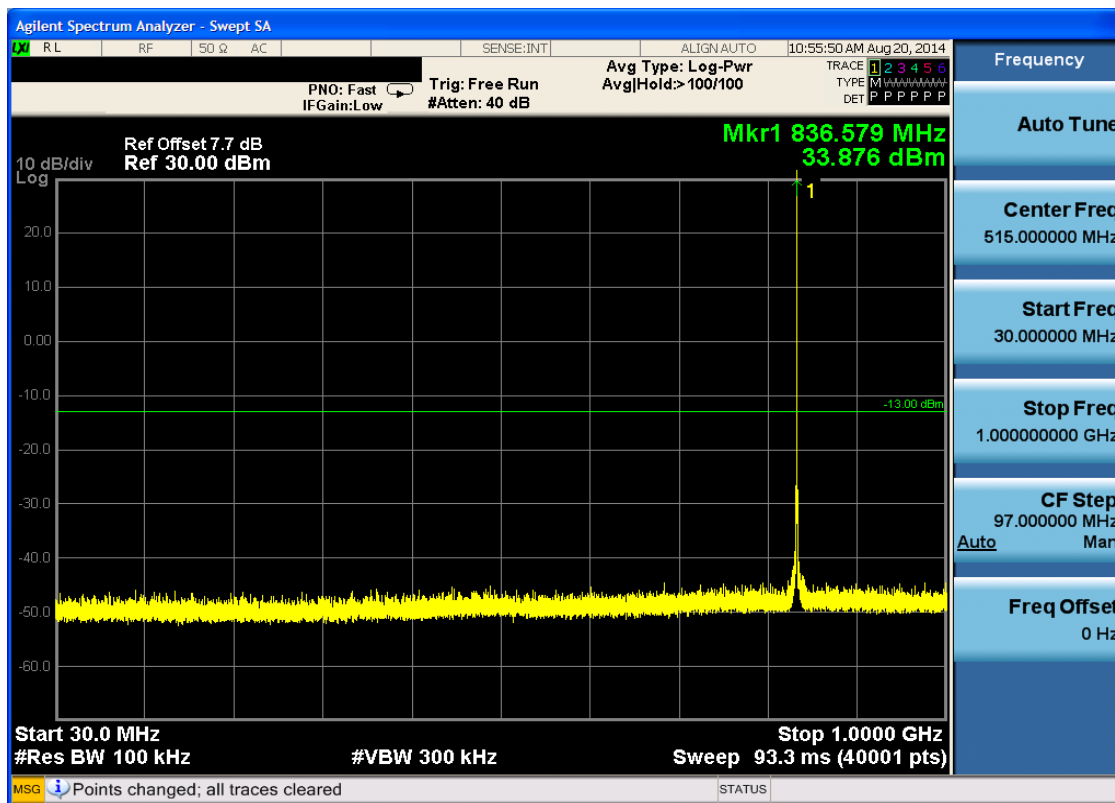


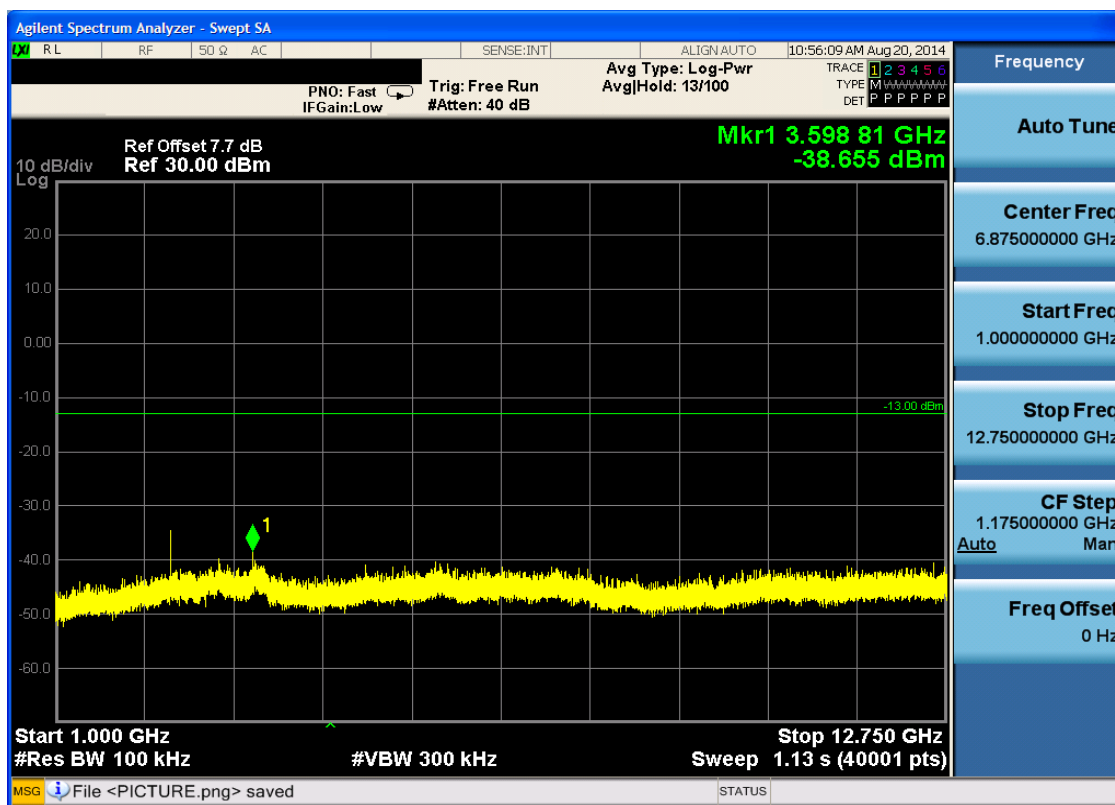


6.1.1.1.2 Test Channel = MCH

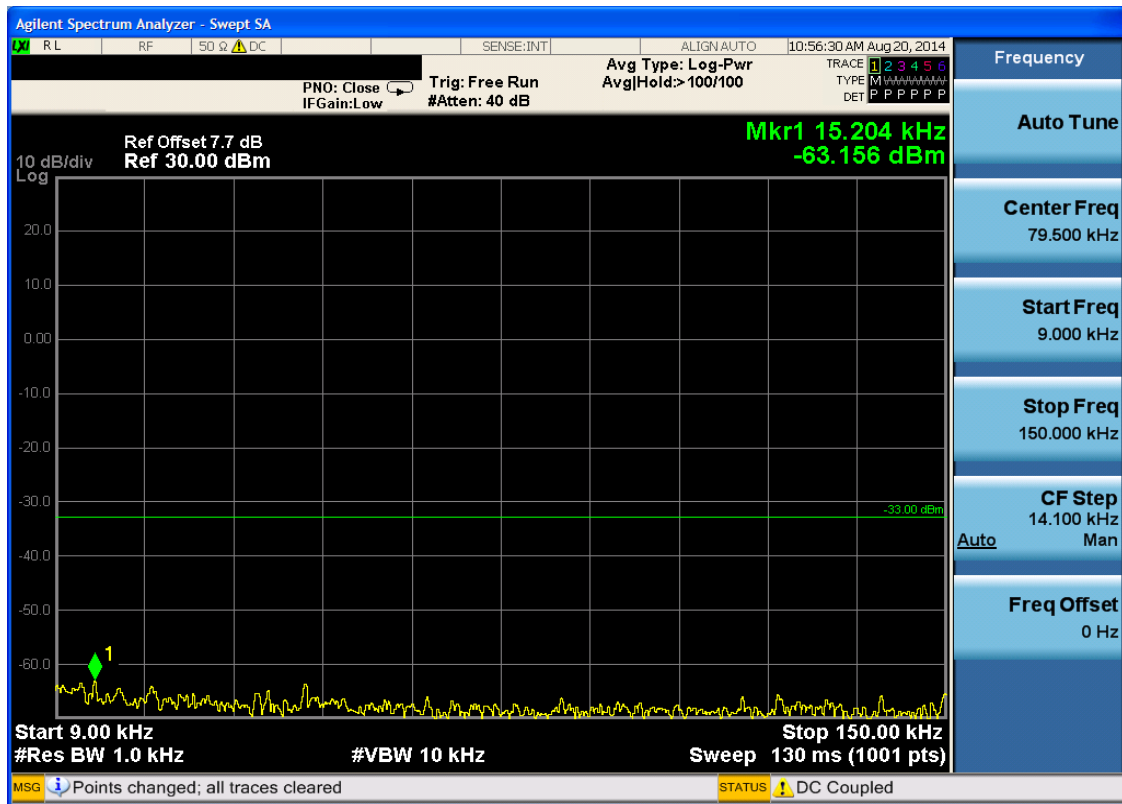


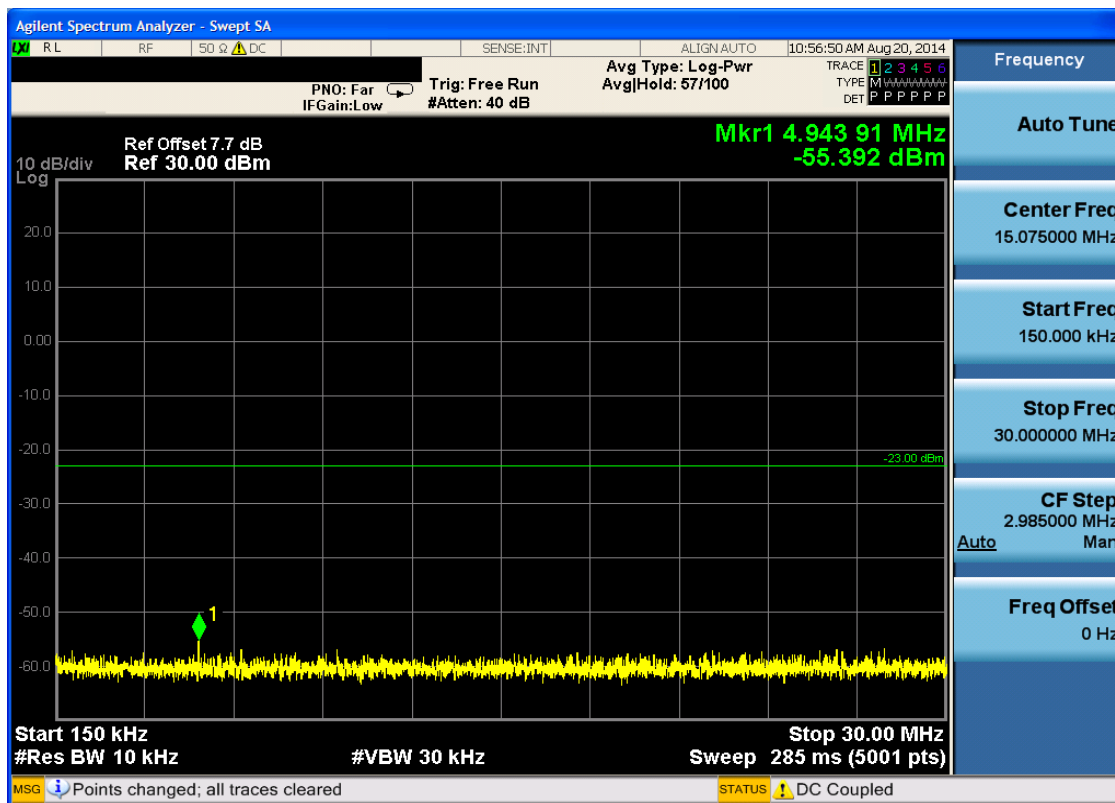


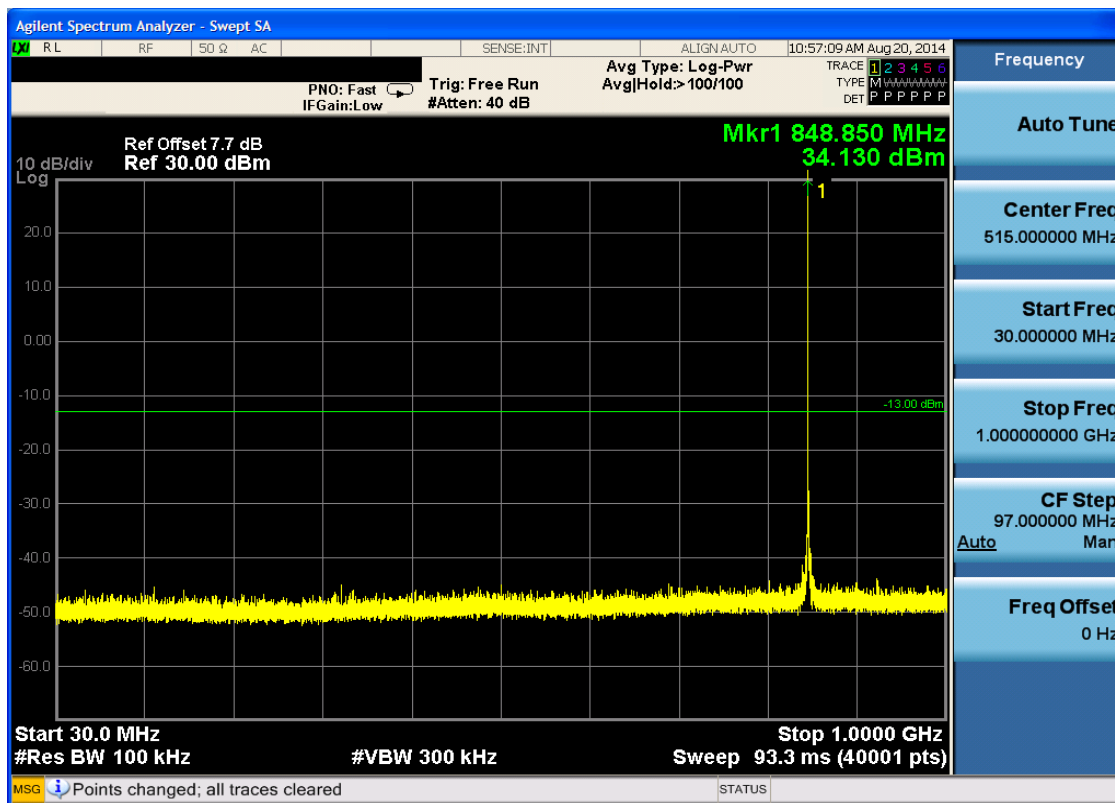


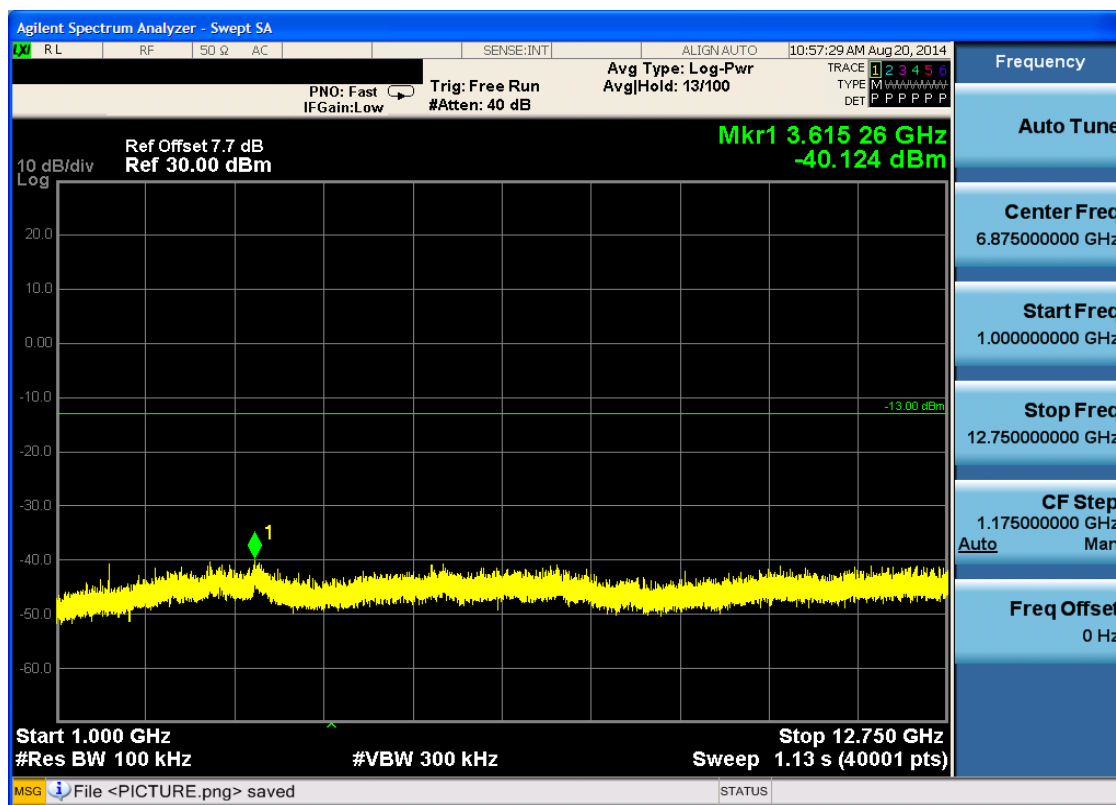


6.1.1.1.3 Test Channel = HCH



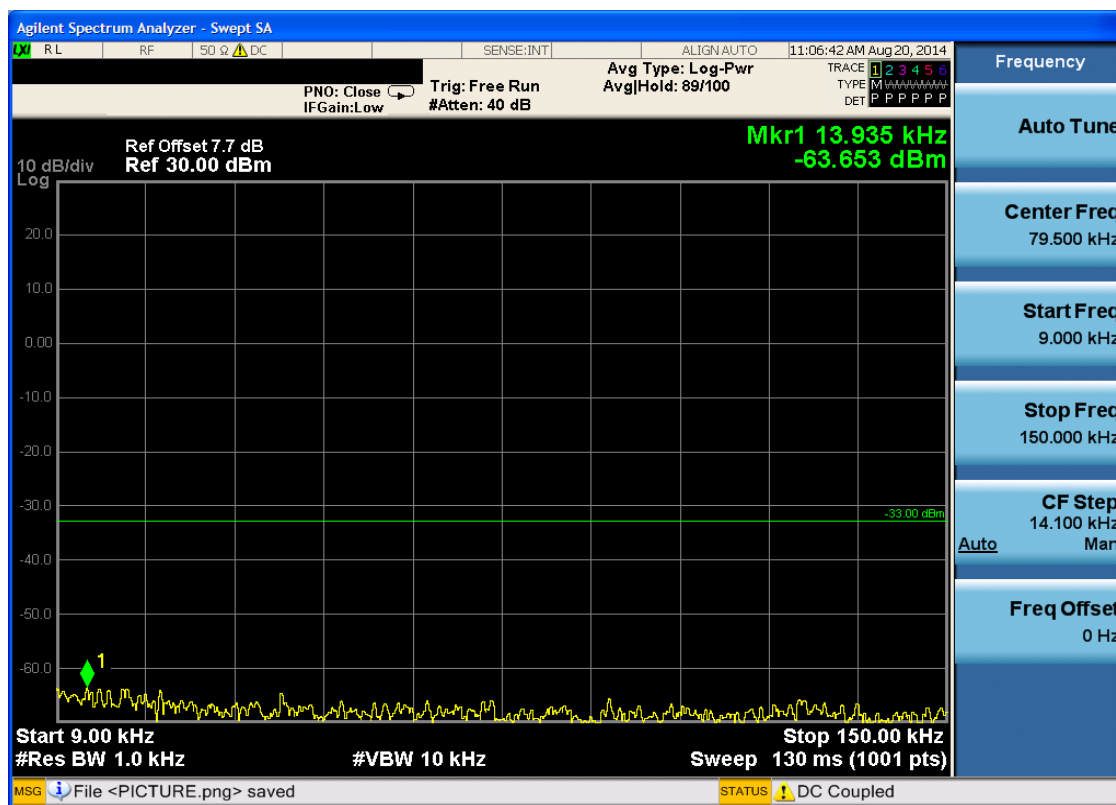


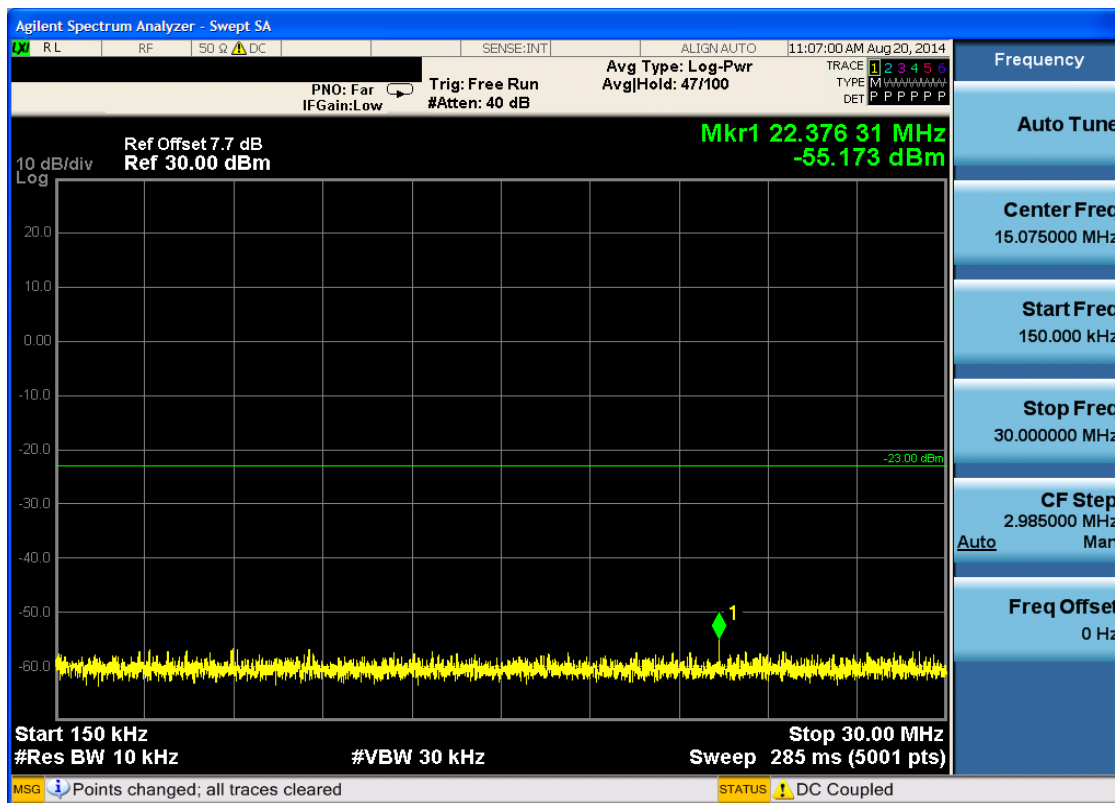


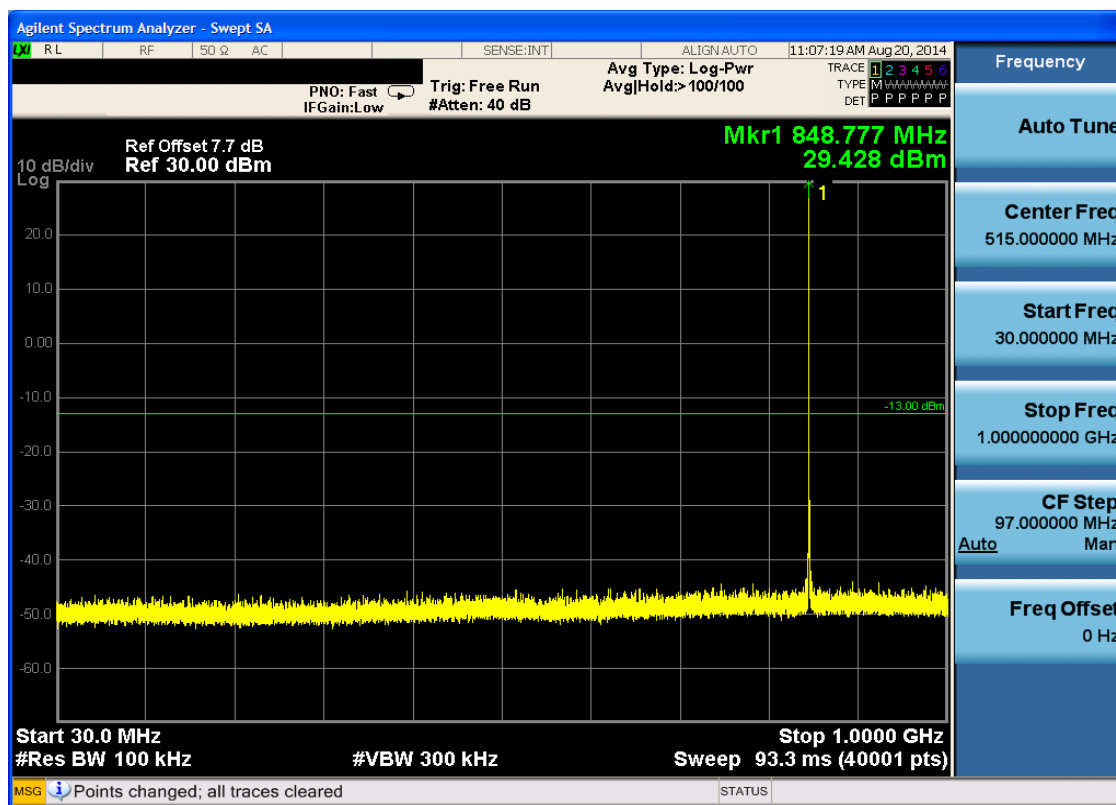


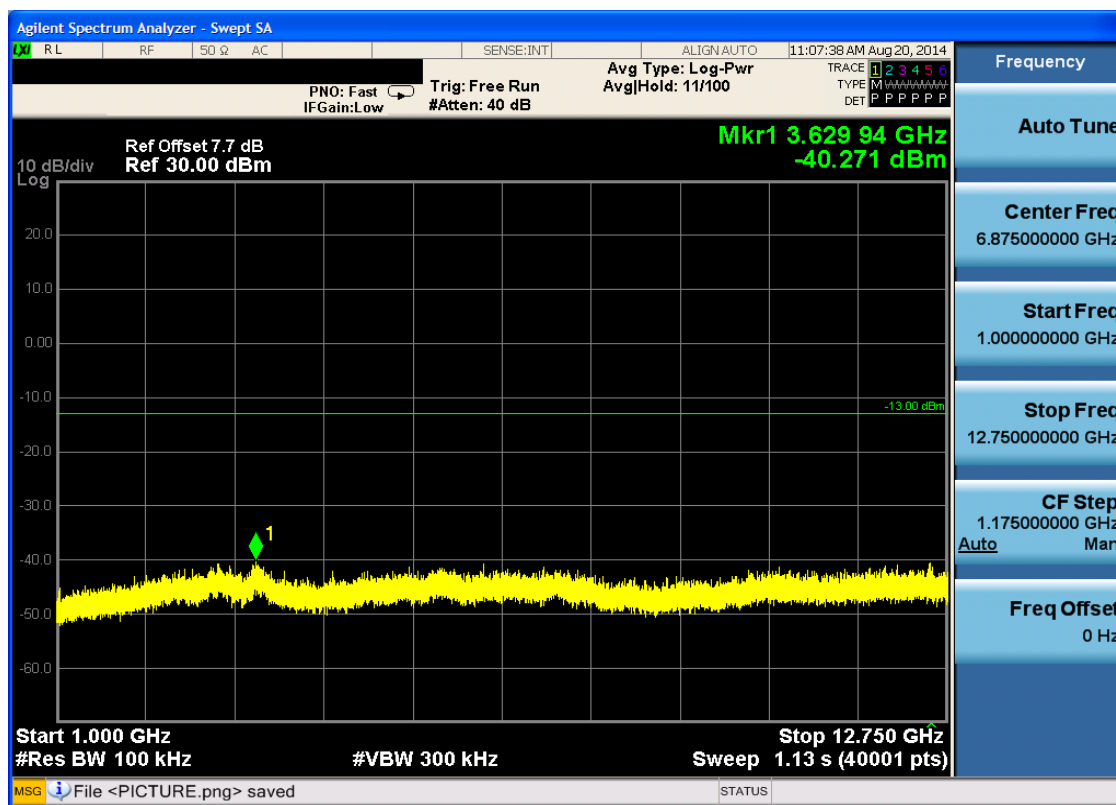
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



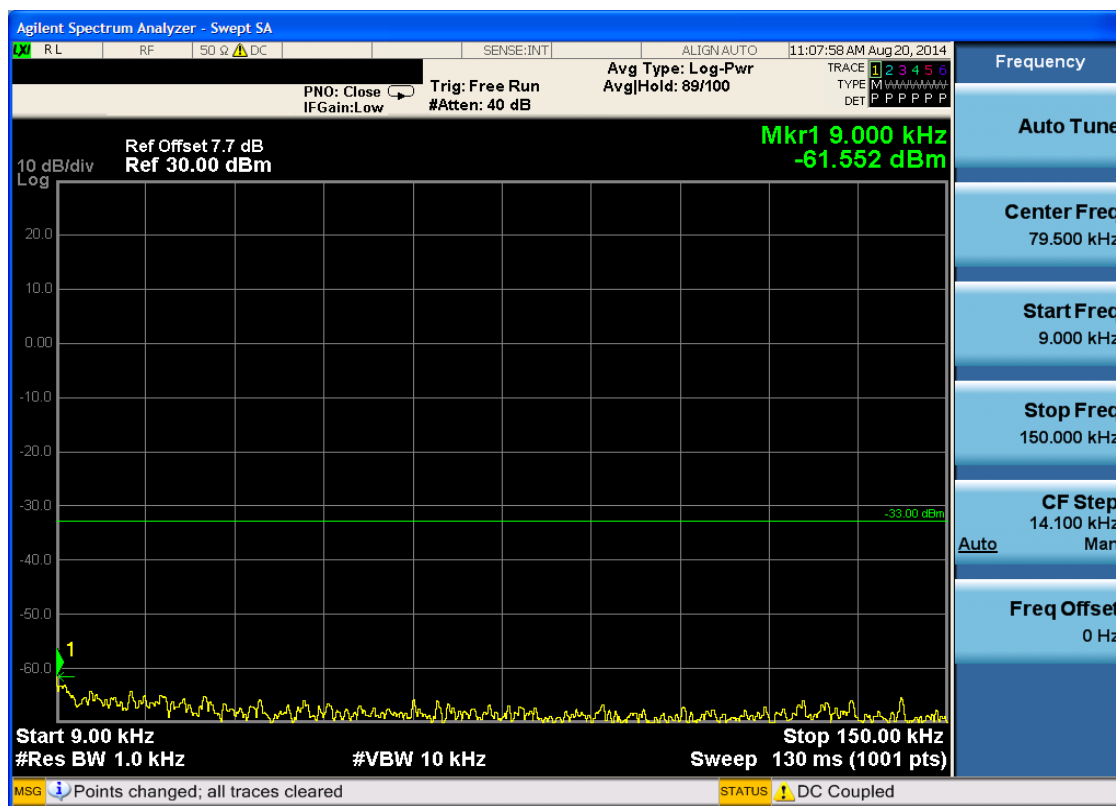


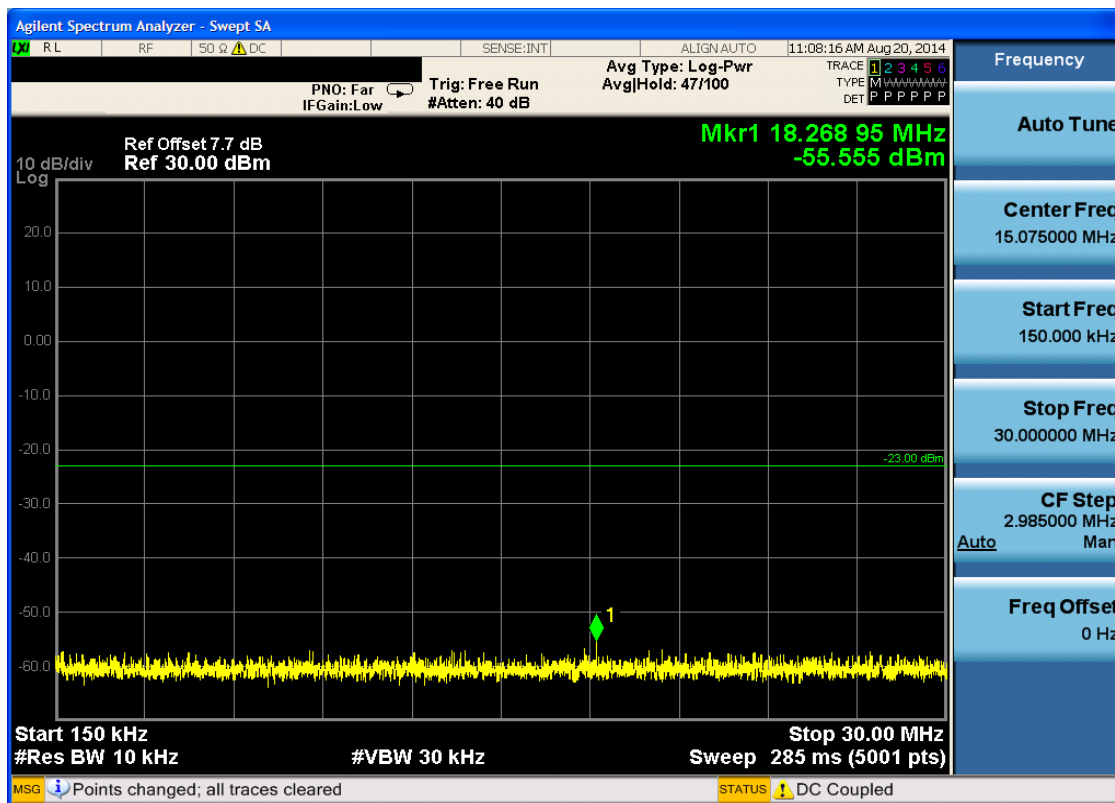


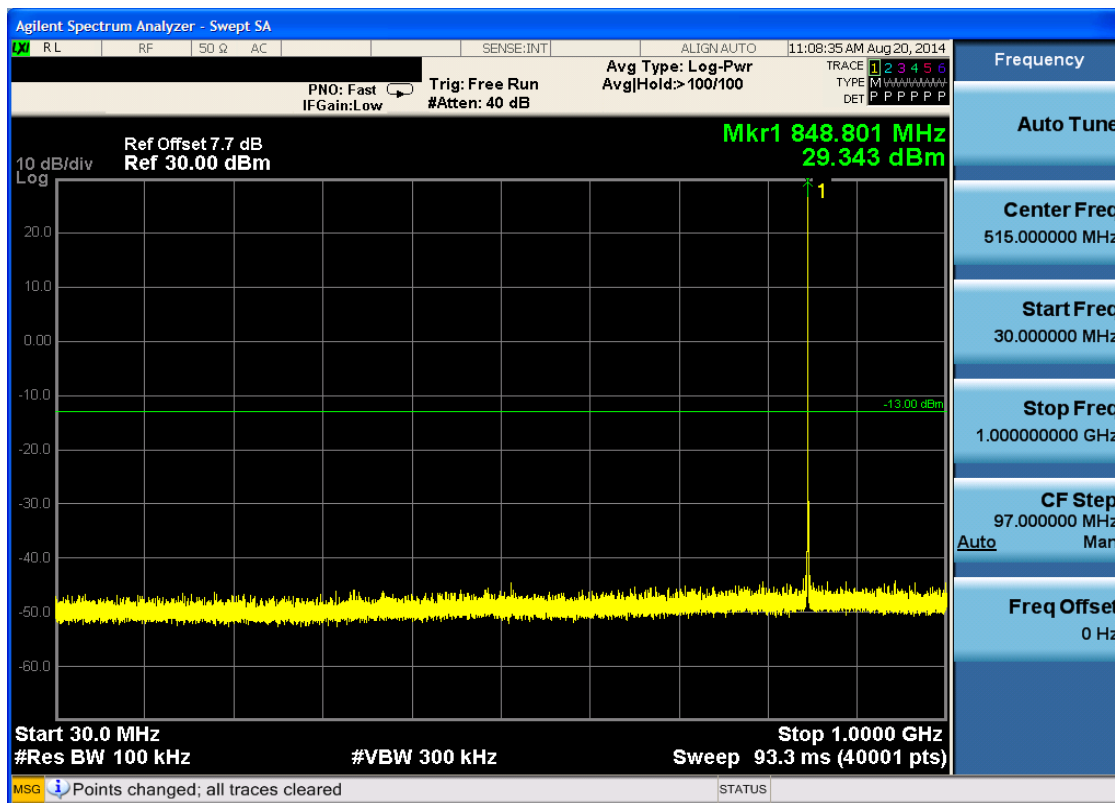


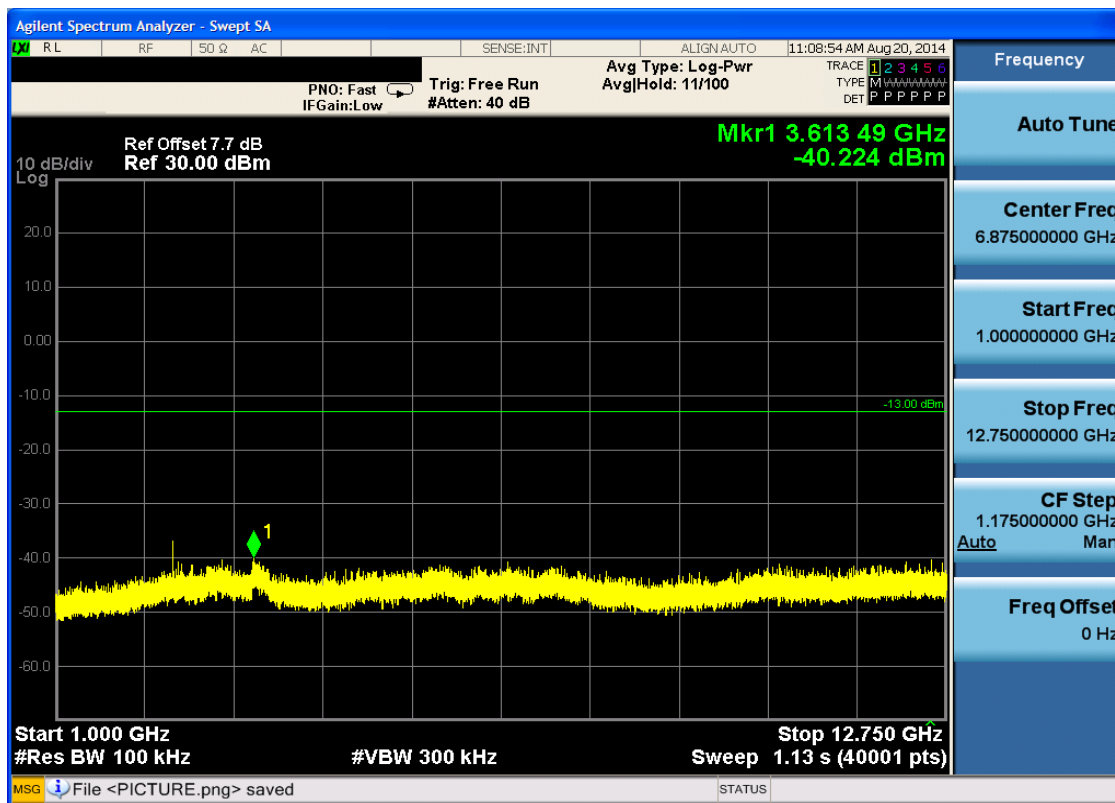


6.1.1.2.2 Test Channel = MCH



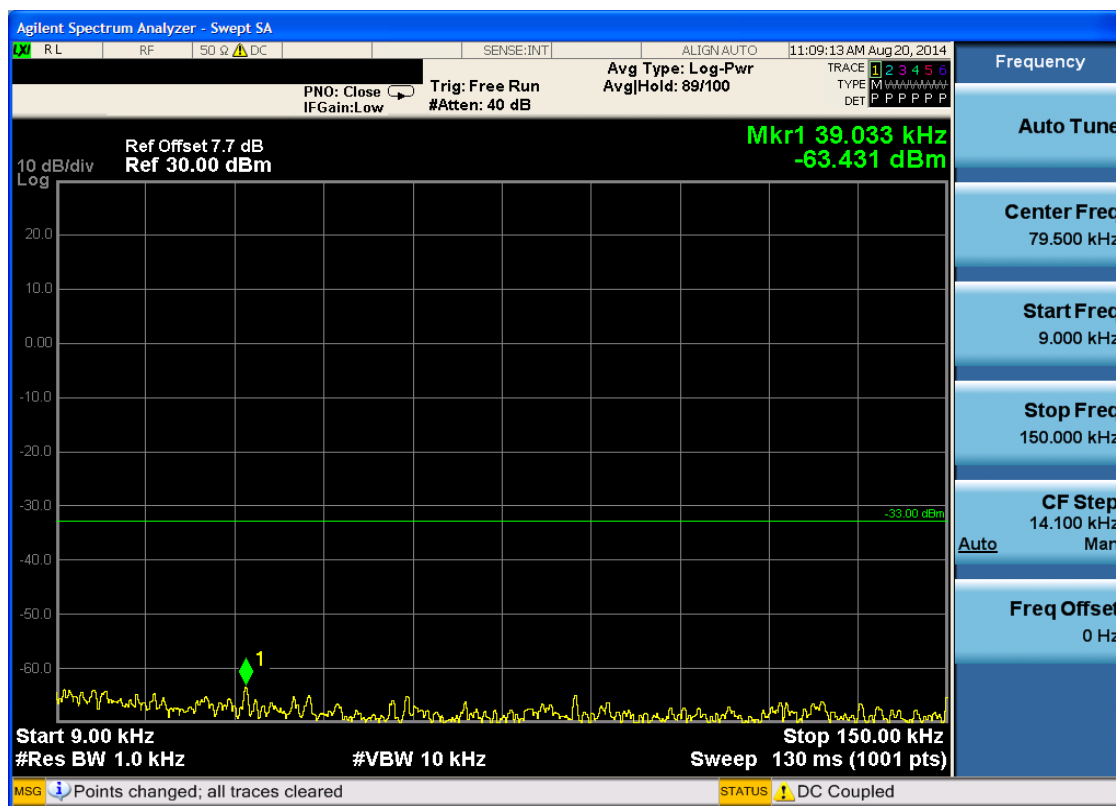


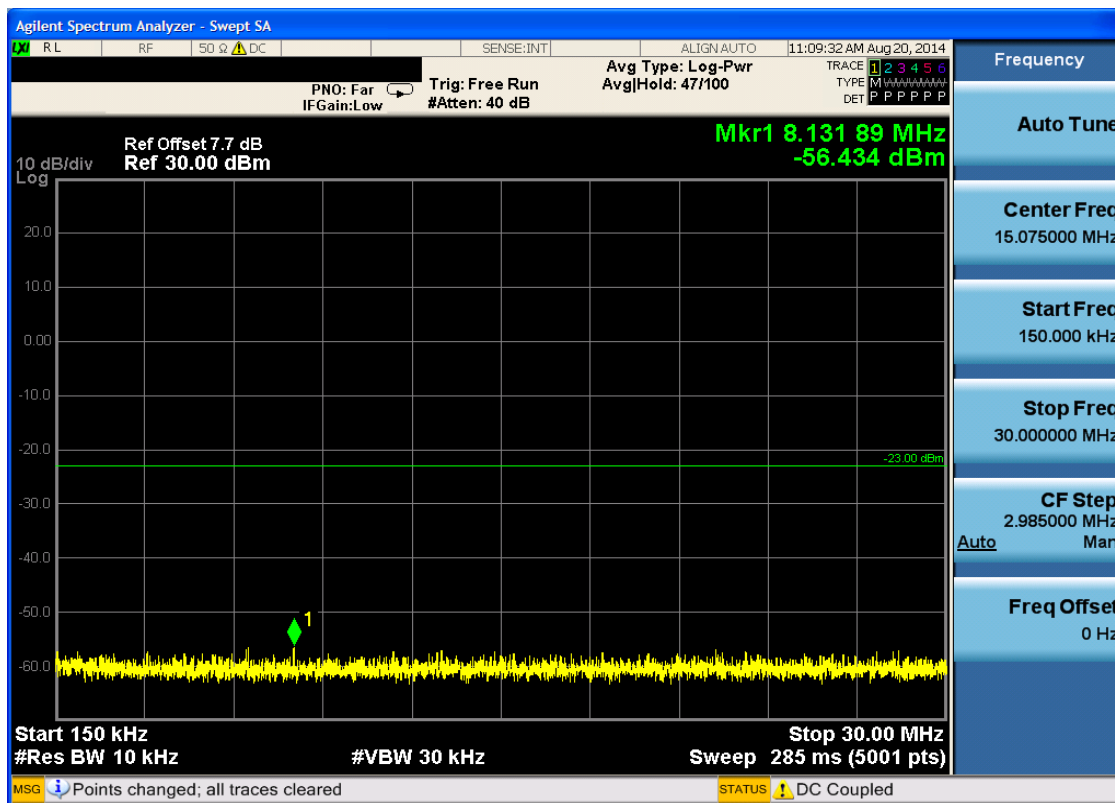


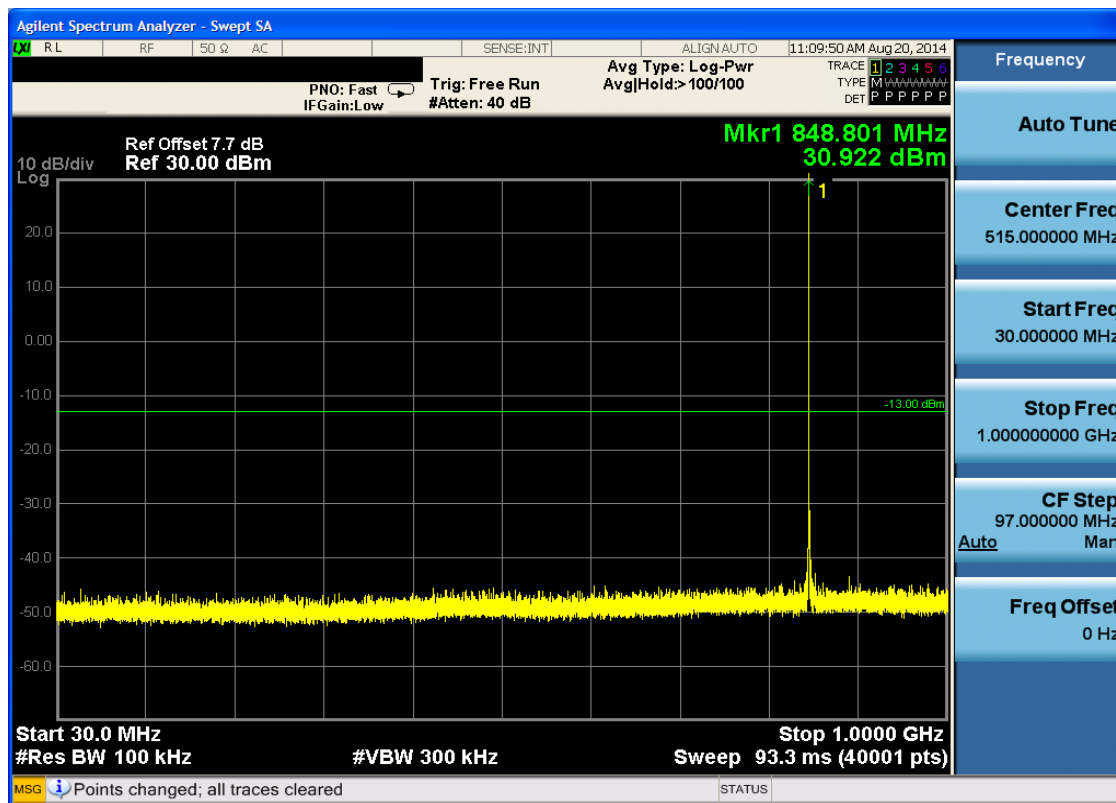


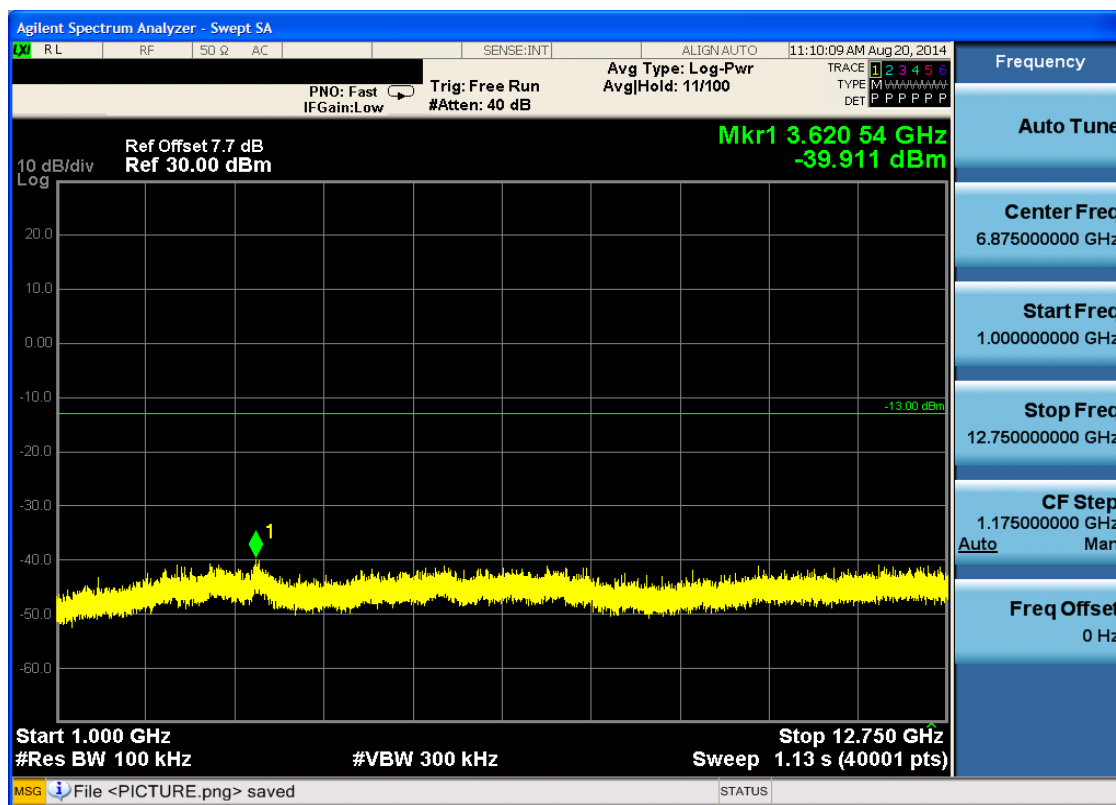


6.1.1.2.3 Test Channel = HCH





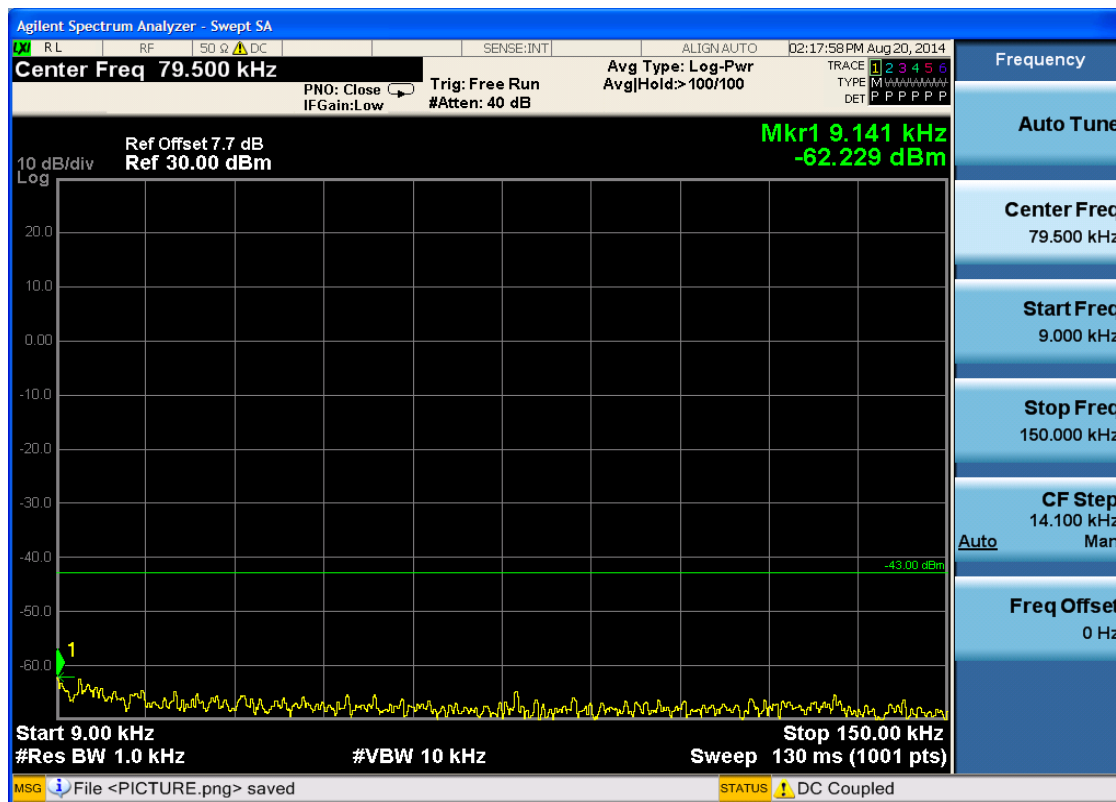


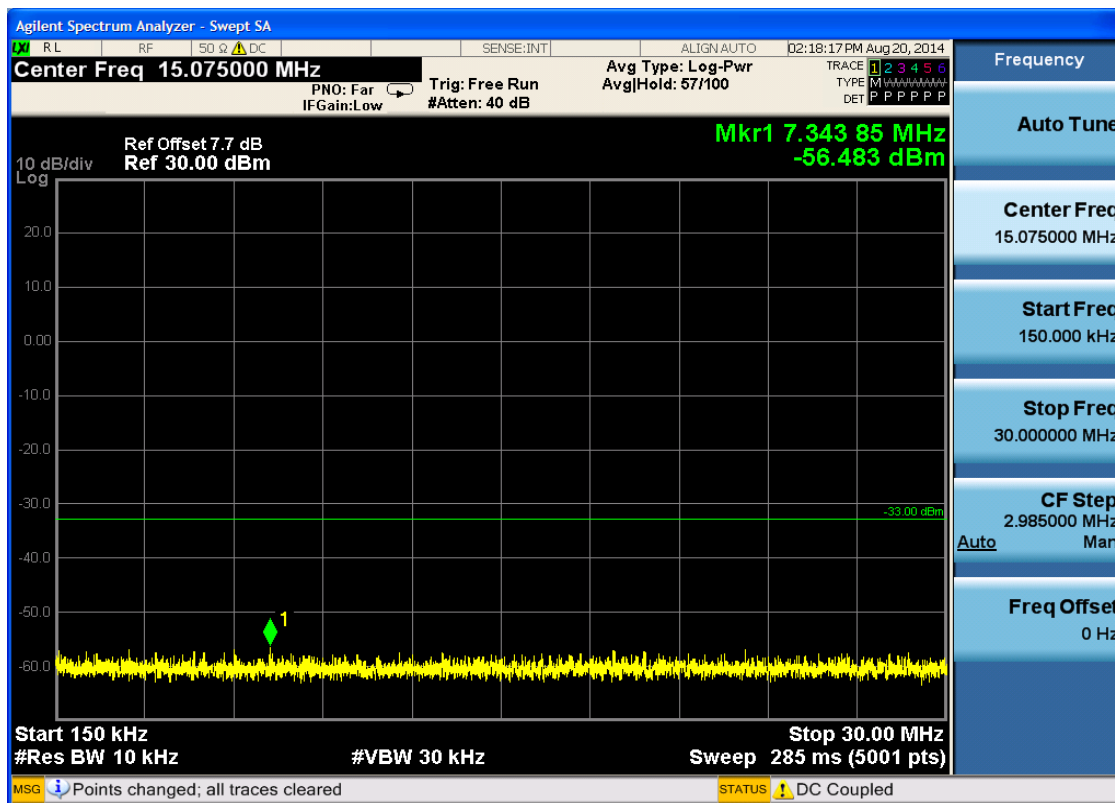


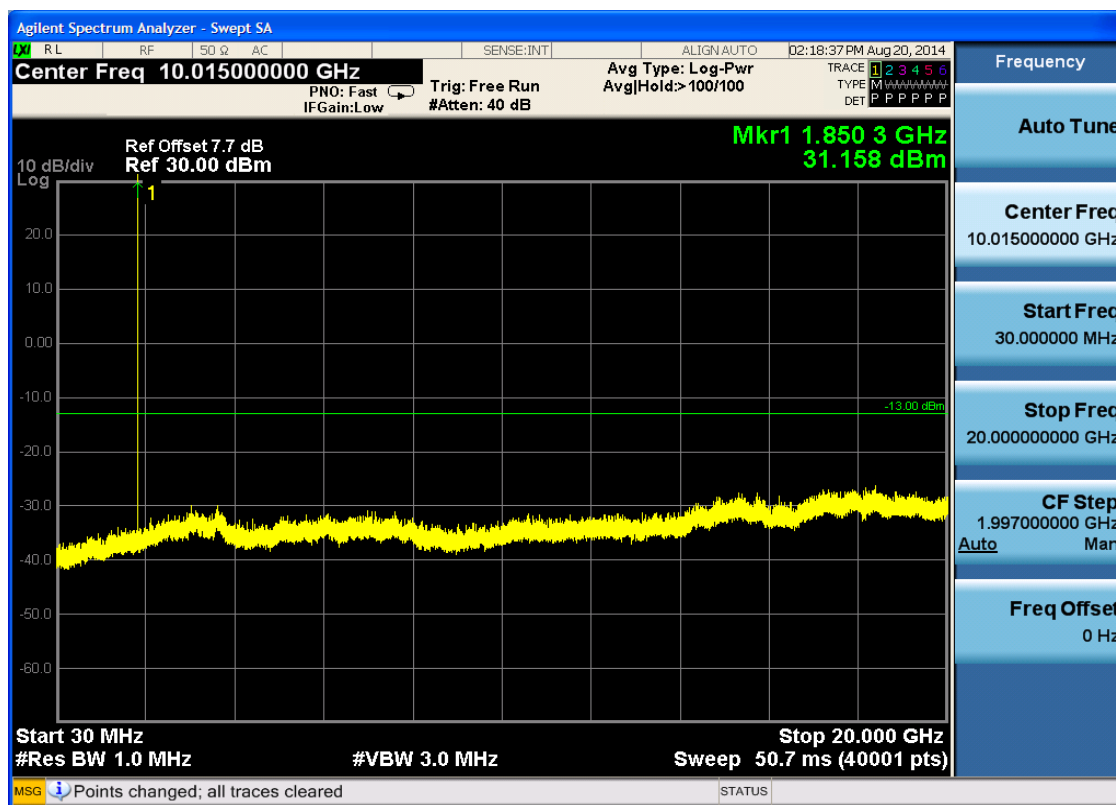
6.1.2 Test Band = GSM1900

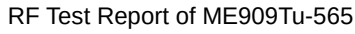
6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH









Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN:AUTO 02:18:58 PM Aug 20, 2014

Center Freq 79.500 kHz

PNO: Close IFGain:Low Trig: Free Run #Atten: 40 dB

Avg Type: Log-Pwr Avg/Hold: > 100/100

TRACE 1 2 3 4 5 6
TYPE M W W W W W W W
DET P P P P P P

Ref Offset 7.7 dB
Ref 30.00 dBm

10 dB/div
Log

Mkr1 10.551 kHz
-62.922 dBm

-43.00 dBm

Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 10 kHz

Stop 150.00 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
Man

Auto

Freq Offset
0 Hz

