



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/EIRP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.89	28.14	38.5	PASS
		MCH	33.08	28.33	38.5	PASS
		HCH	33.09	28.34	38.5	PASS
	GSM/TM2	LCH	26.44	21.69	38.5	PASS
		MCH	26.3	21.55	38.5	PASS
		HCH	26.45	21.7	38.5	PASS
GSM1900	GSM/TM1	LCH	30.08	28.88	33	PASS
		MCH	29.85	28.65	33	PASS
		HCH	29.81	28.61	33	PASS
	GSM/TM2	LCH	25.91	24.71	33	PASS
		MCH	25.9	24.7	33	PASS
		HCH	25.89	24.69	33	PASS

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.1	19.35	38.5	PASS
		MCH	24.14	19.39	38.5	PASS
		HCH	24.04	19.29	38.5	PASS
WCDMA1900	UMTS/TM1	LCH	23.6	22.4	33	PASS
		MCH	23.62	22.42	33	PASS
		HCH	23.64	22.44	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.58	22.18	30	PASS
		MCH	23.62	22.22	30	PASS
		HCH	23.6	22.2	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:

SET Span=1.5*OBW

SET RBW=1%of the OBW,not to exceed 1MHz

SET VBW>= 3*RBW

SET Sweep time=auto-couple.

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	0.27	13	PASS
		MCH	0.3	13	PASS
		HCH	0.26	13	PASS
	GSM/TM2	LCH	2.68	13	PASS
		MCH	2.83	13	PASS
		HCH	2.85	13	PASS
Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA1900	UMTS/TM1	LCH	3.2	13	PASS
		MCH	3.36	13	PASS
		HCH	3.21	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.96	13	PASS
		MCH	3	13	PASS
		HCH	3.08	13	PASS

3Appendix_C: Modulation Characteristics

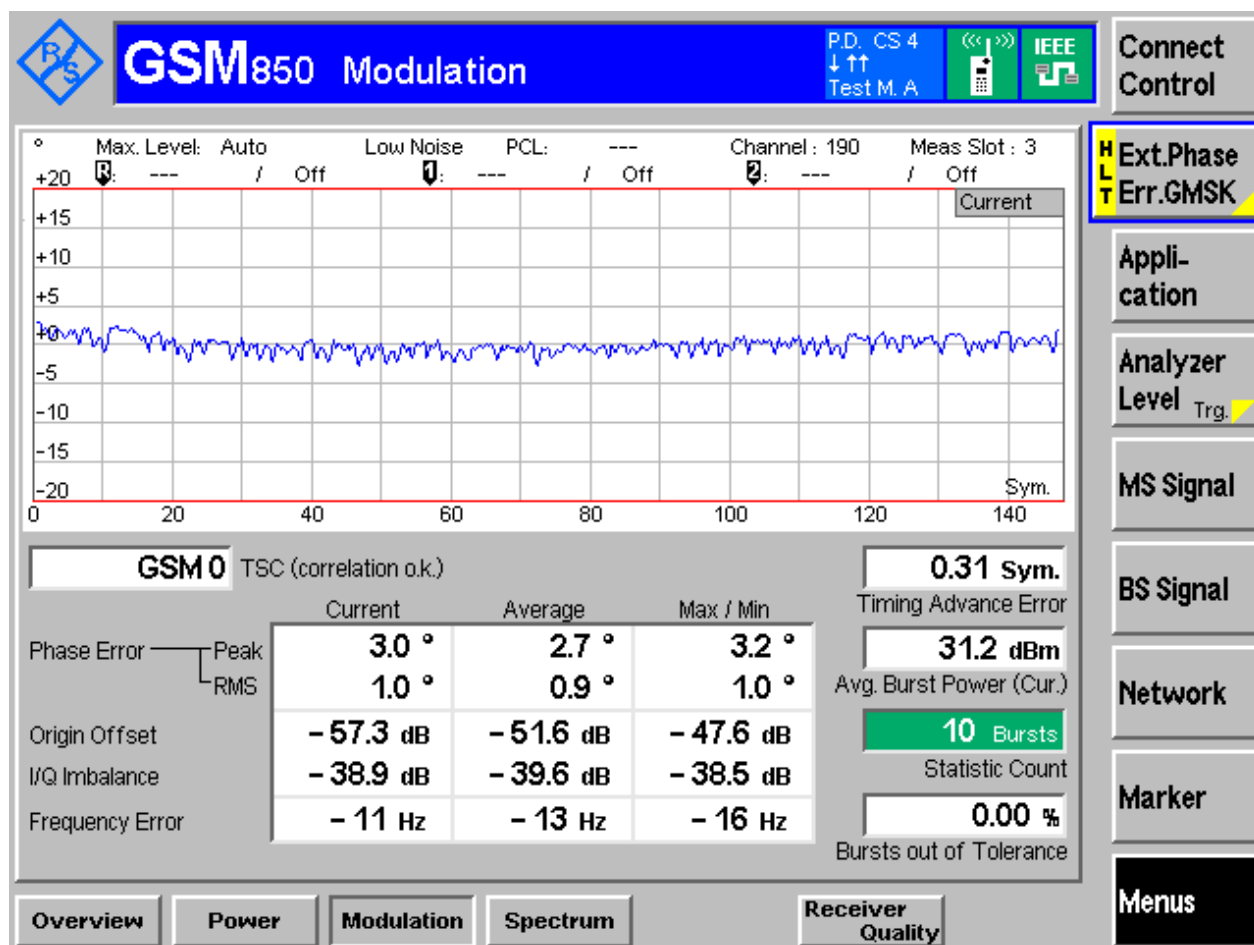
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

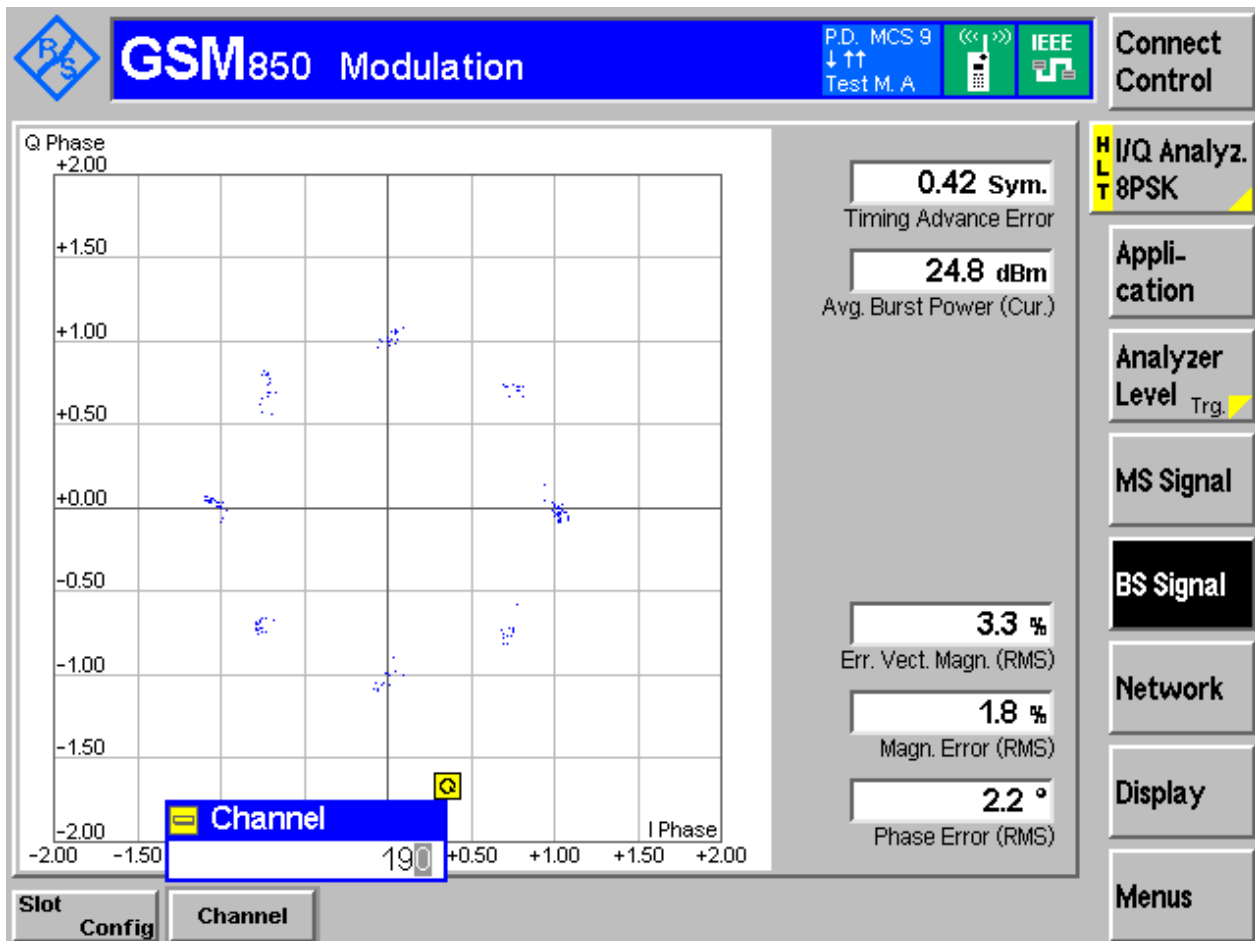
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

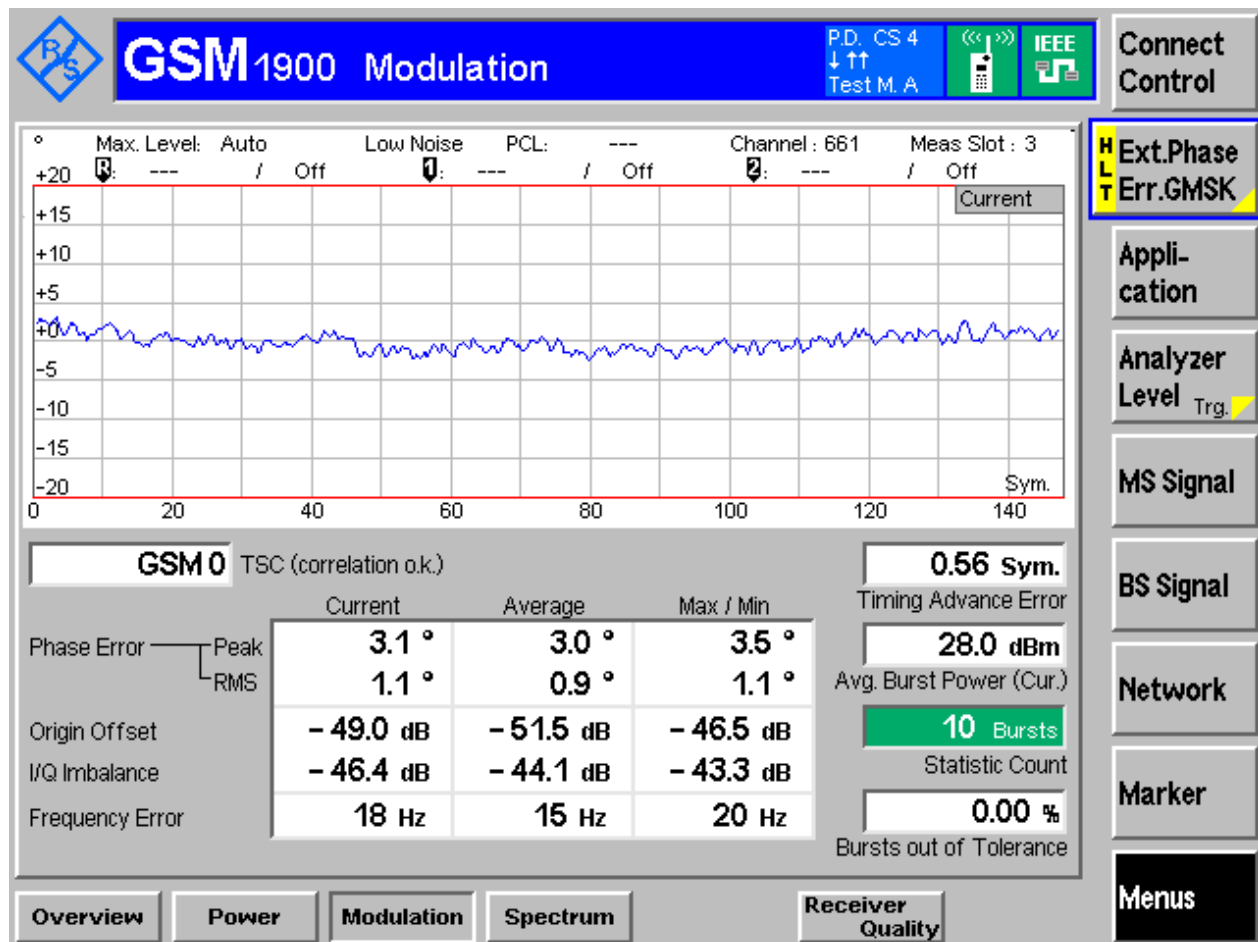
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

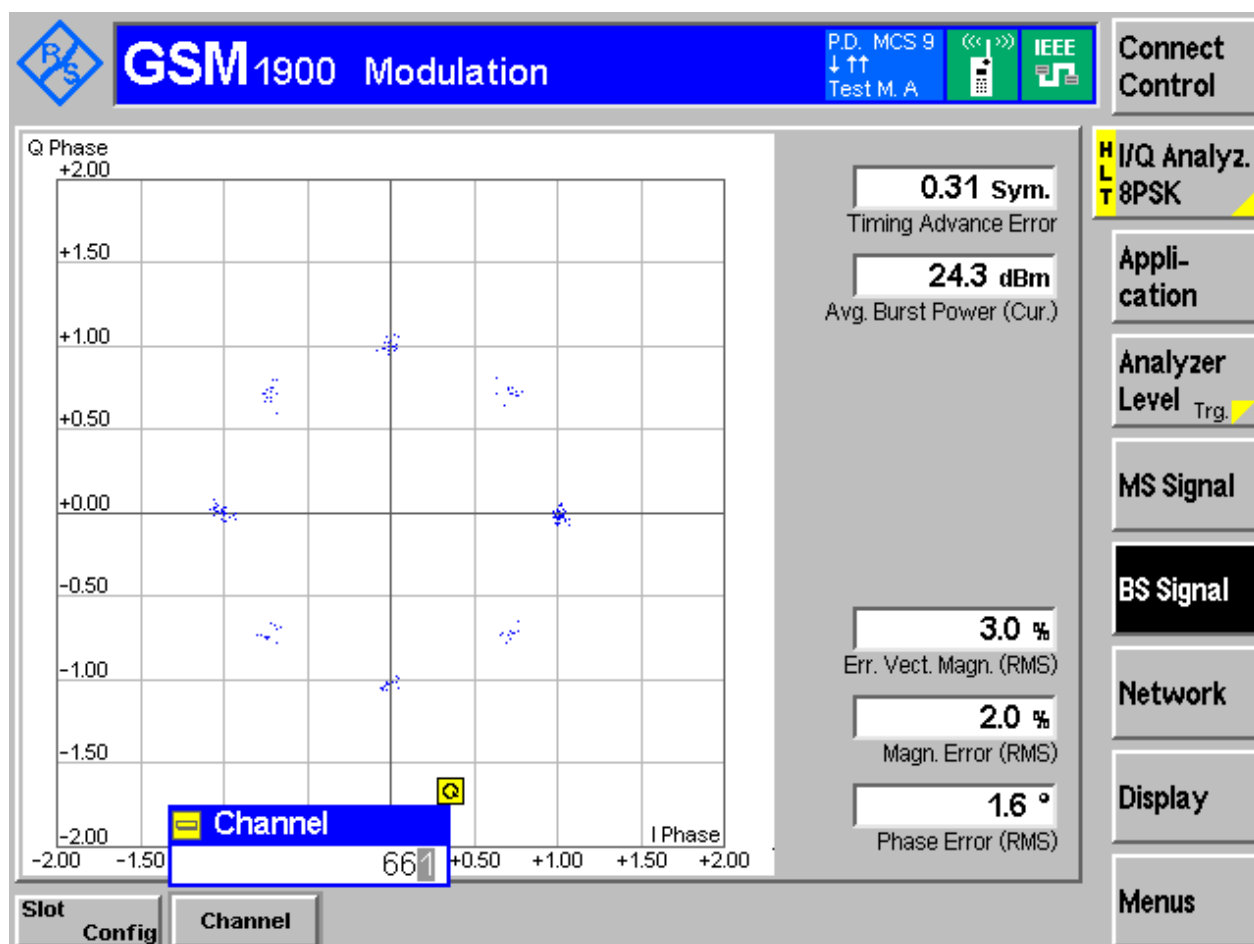
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH

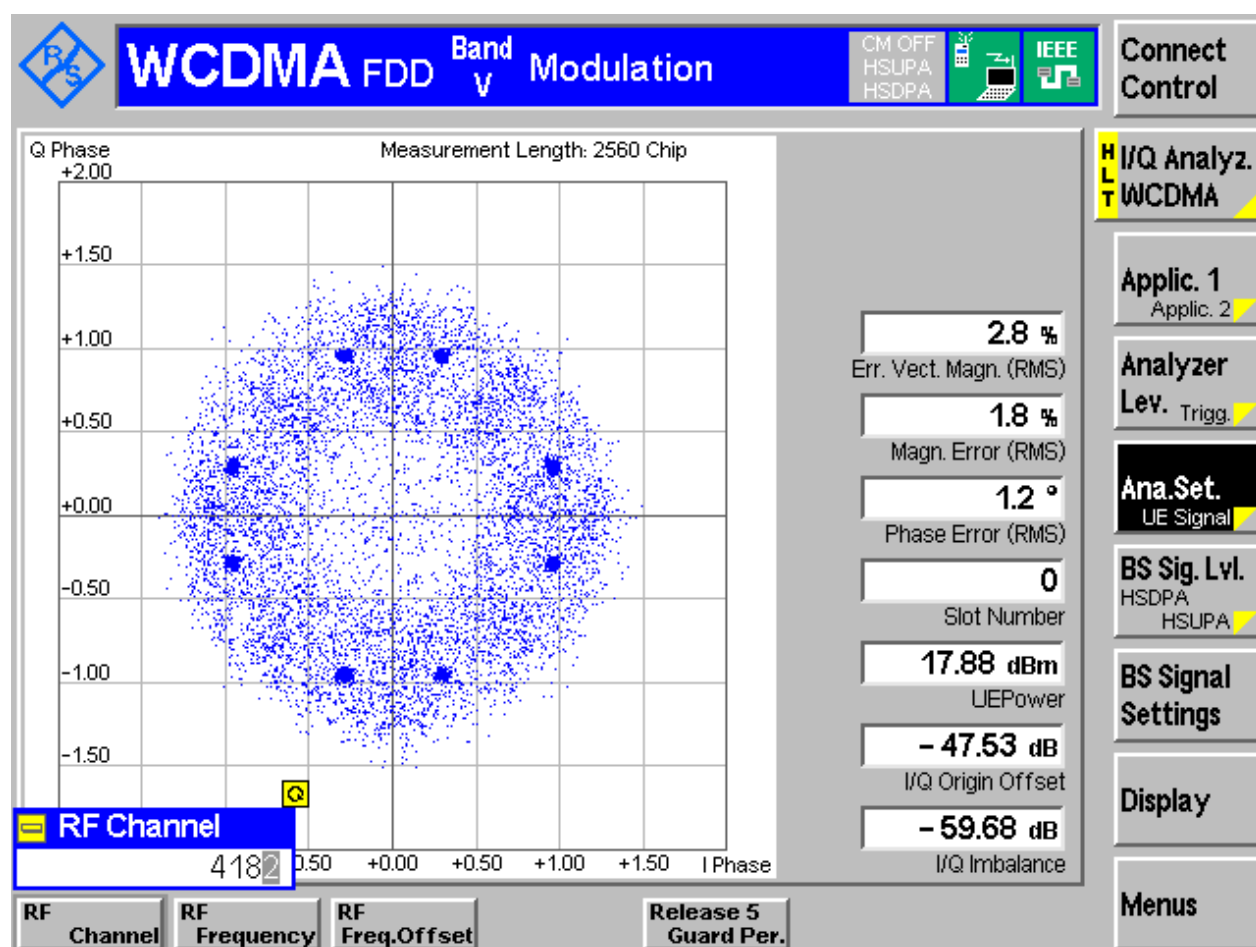


3.2 For UMTS

3.2.1 Test Band = WCDMA850

3.2.1.1 Test Mode = UMTS/TM1

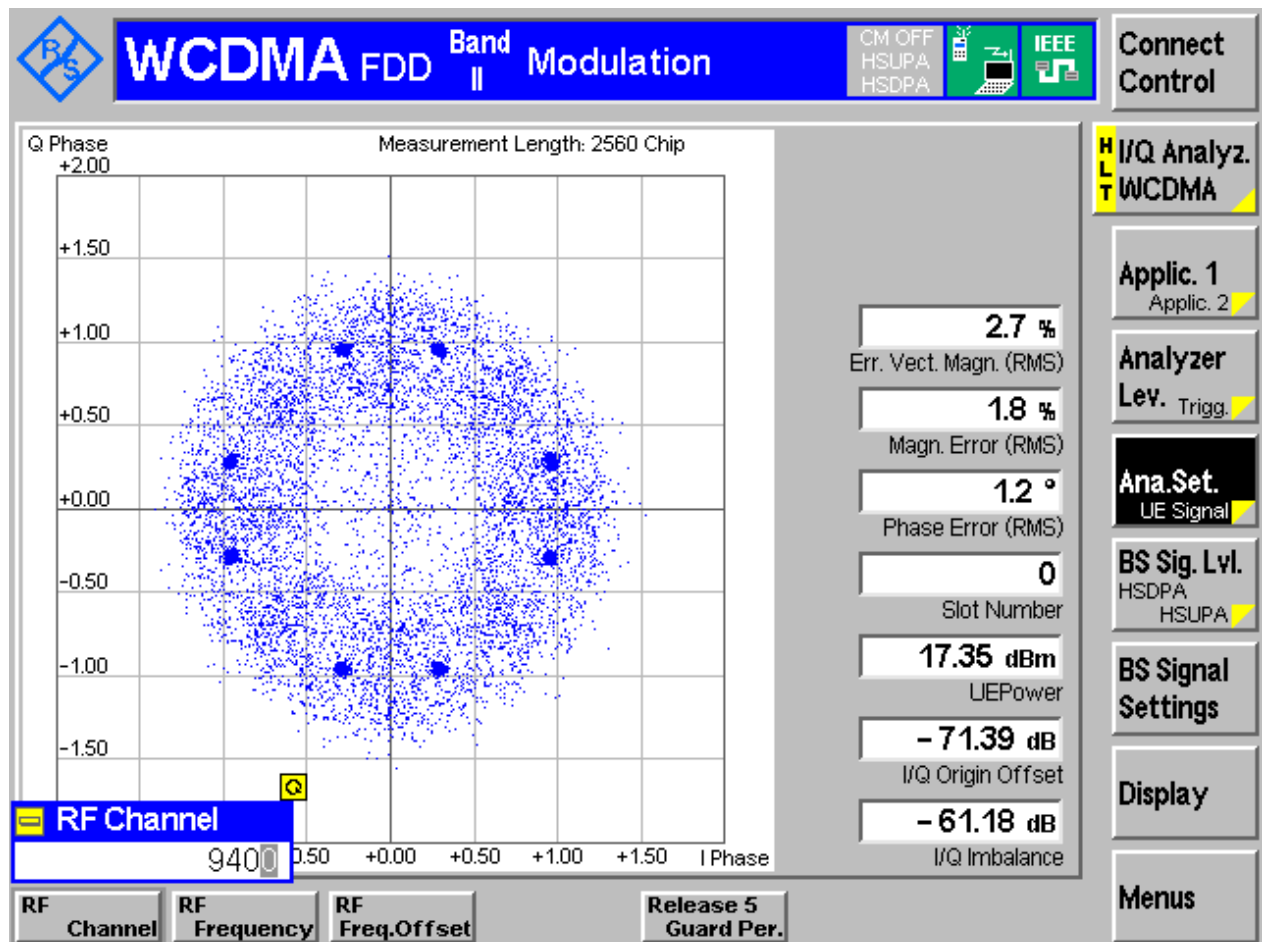
3.2.1.1.1 Test Channel = MCH



3.2.2 Test Band = WCDMA1900

3.2.2.1 Test Mode = UMTS/TM1

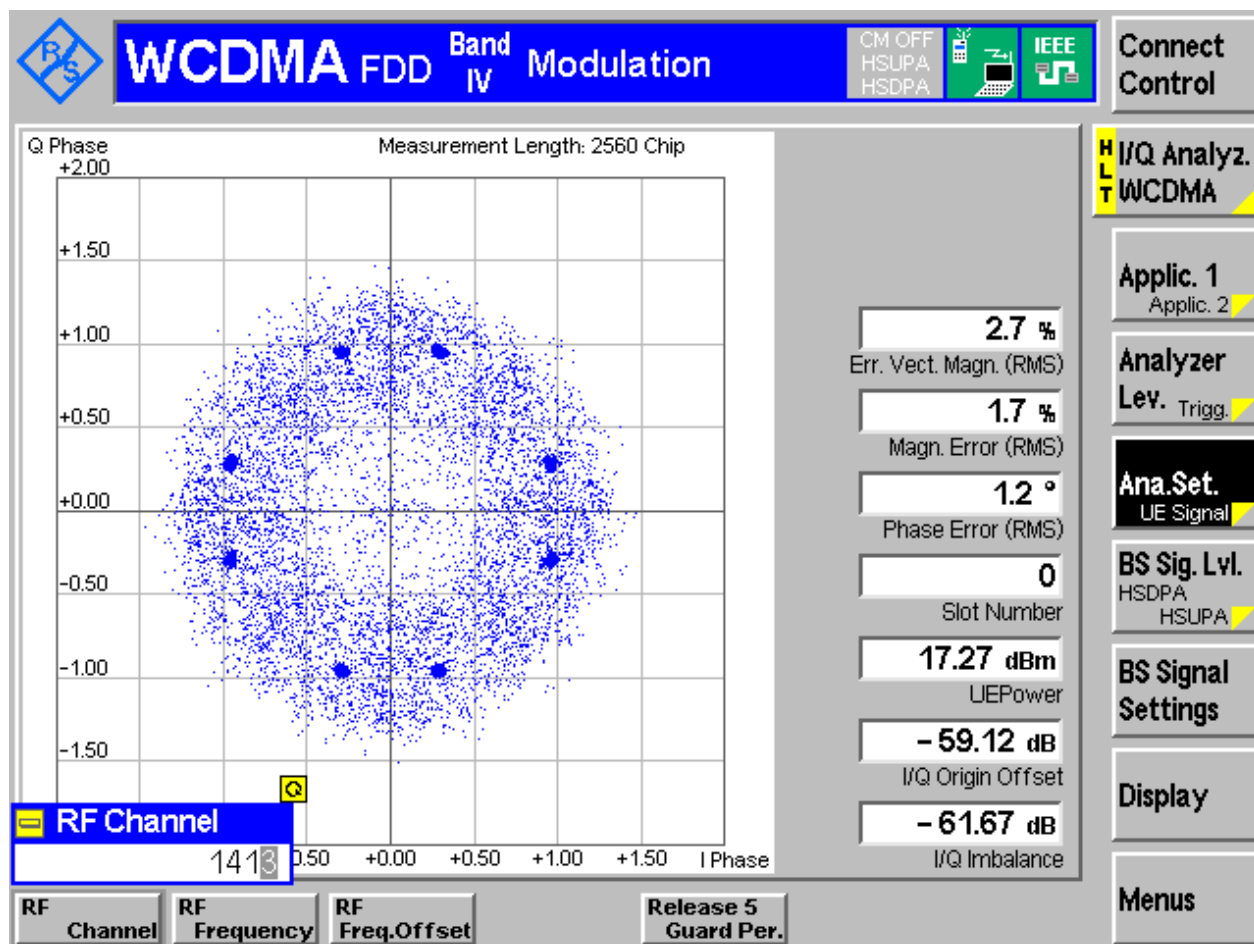
3.2.2.1.1 Test Channel = MCH



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	240.78	313.31	Pass
		MCH	242.76	321.10	Pass
		HCH	241.55	311.38	Pass
	GSM/TM2	LCH	250.43	327.22	Pass
		MCH	248.53	316.89	Pass
		HCH	250.23	321.92	Pass
GSM1900	GSM/TM1	LCH	241.45	318.68	Pass
		MCH	247.97	317.40	Pass
		HCH	244.18	315.08	Pass
	GSM/TM2	LCH	249.34	318.92	Pass
		MCH	254.13	327.55	Pass
		HCH	246.40	317.32	Pass
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.15	4.73	Pass
		MCH	4.17	4.73	Pass
		HCH	4.16	4.75	Pass
WCDMA1900	UMTS/TM1	LCH	4.15	4.72	Pass
		MCH	4.14	4.71	Pass
		HCH	4.15	4.71	Pass
WCDMA1700	UMTS/TM1	LCH	4.14	4.72	Pass
		MCH	4.14	4.71	Pass
		HCH	4.15	4.72	Pass

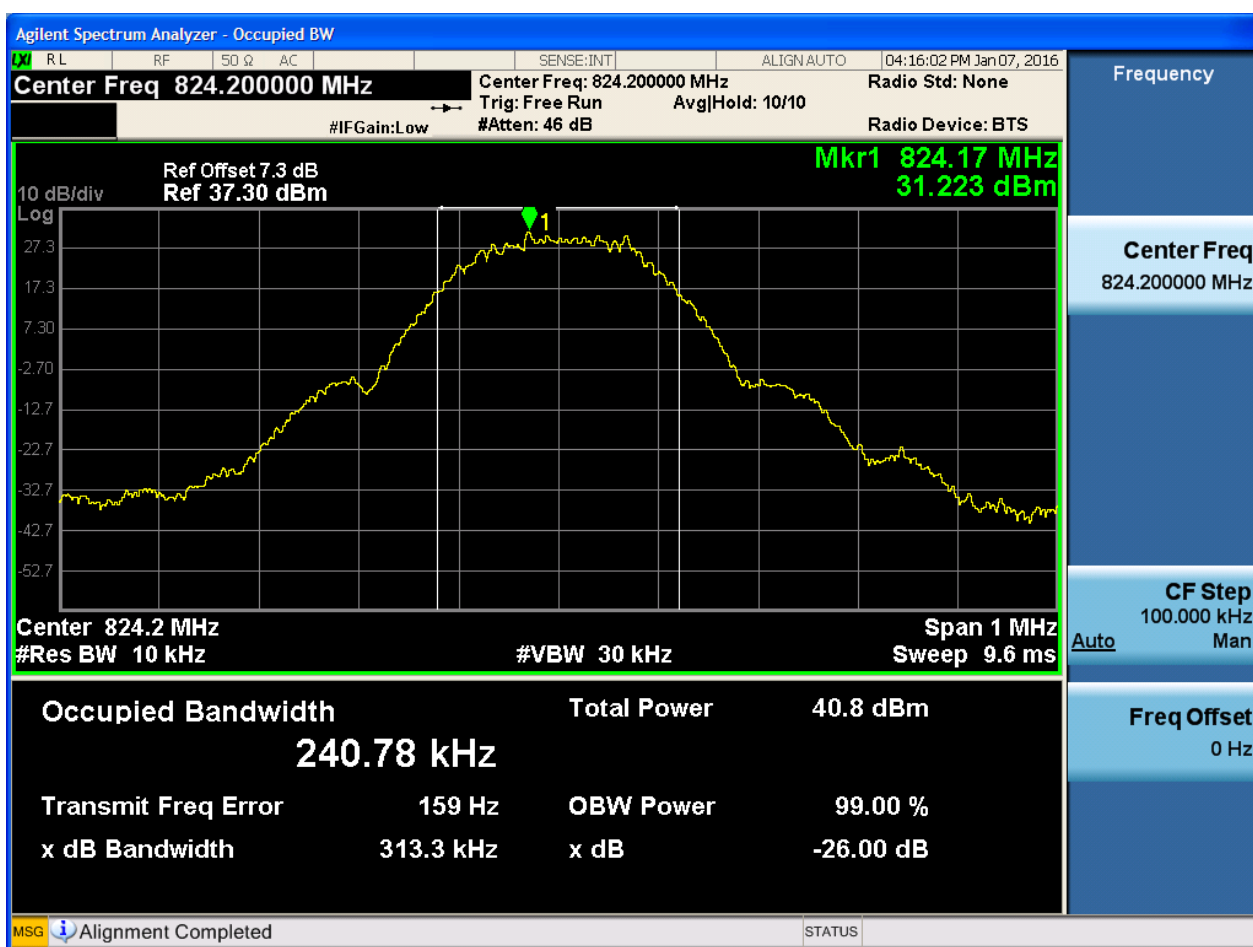
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

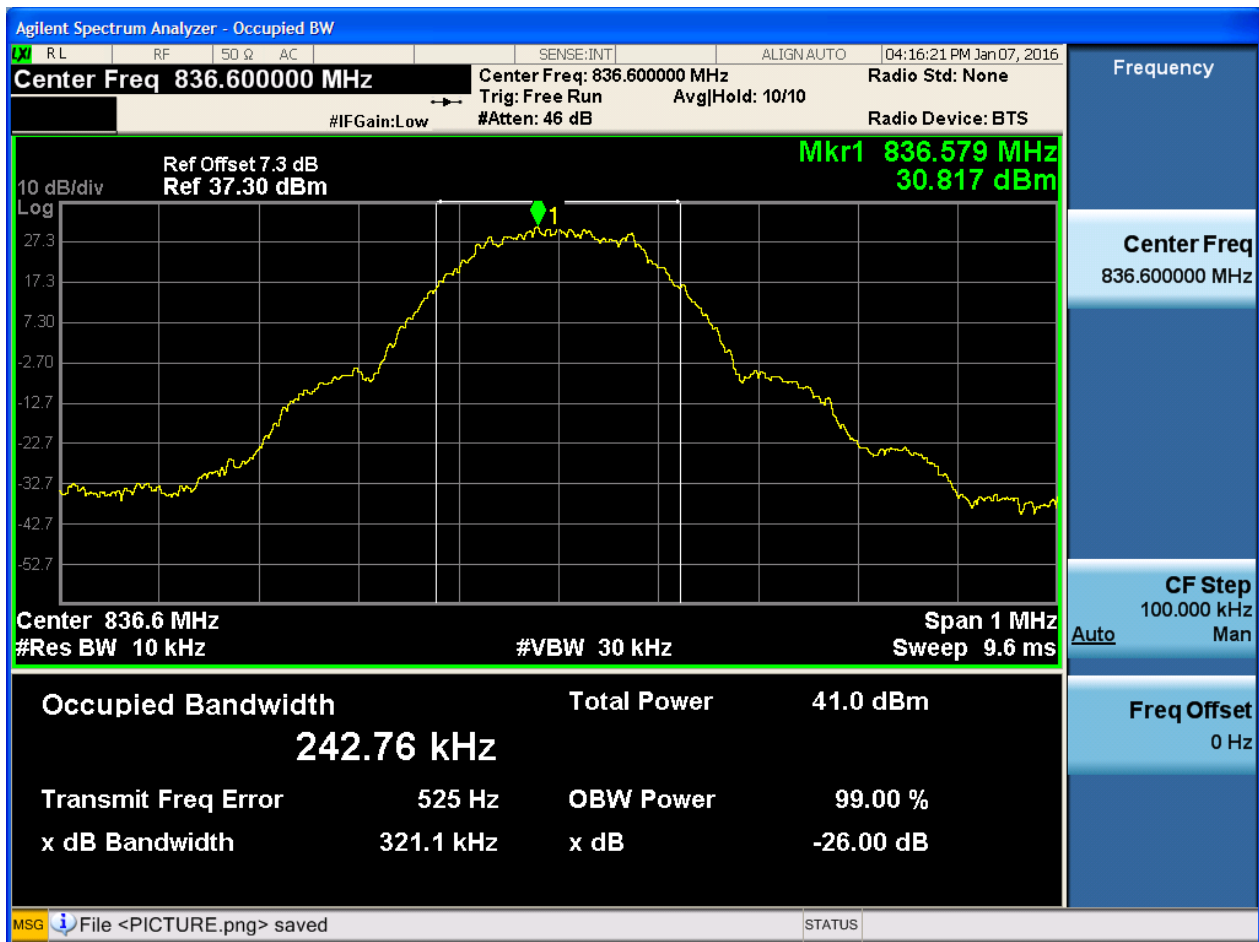
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



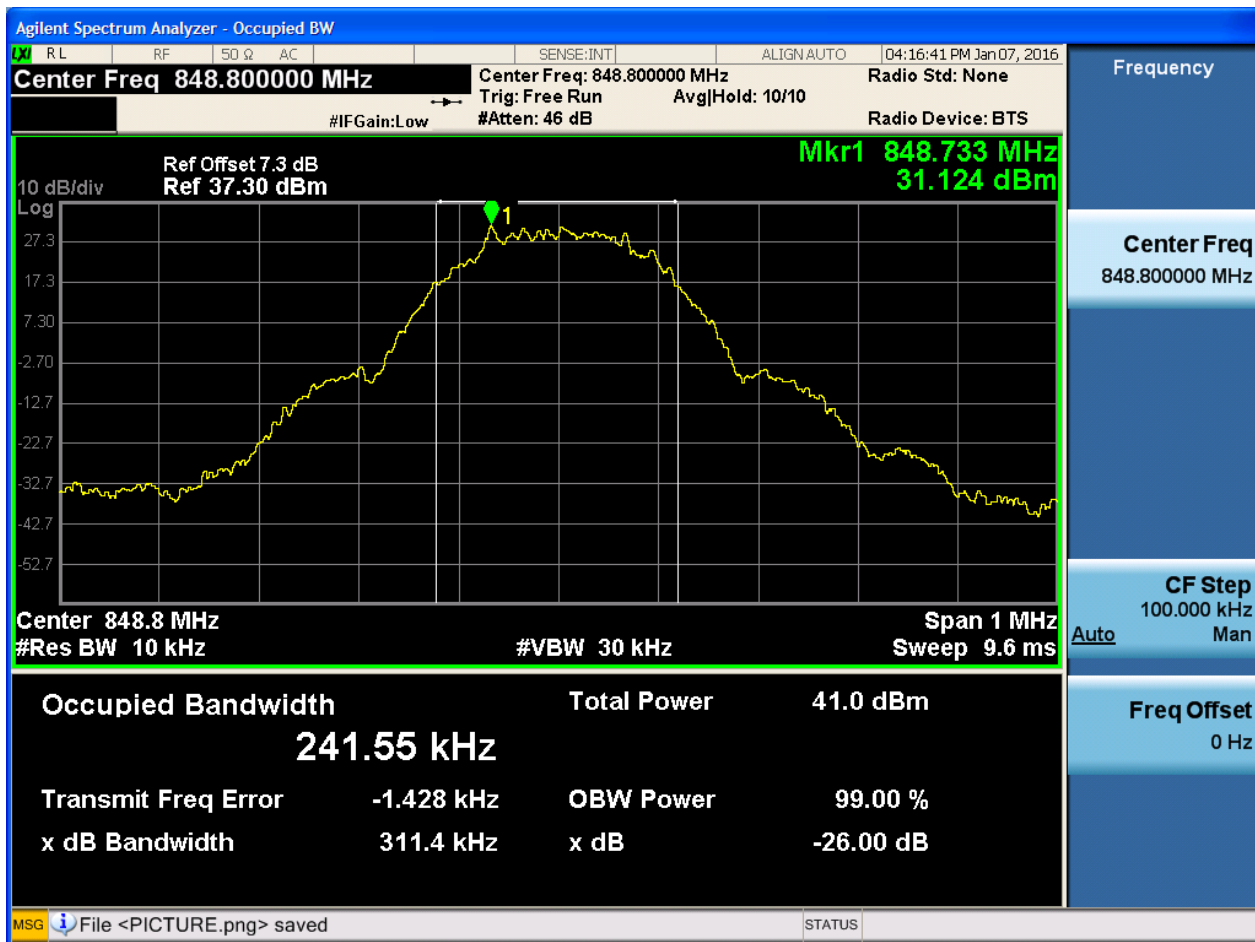


4.1.1.1.2 Test Channel = MCH



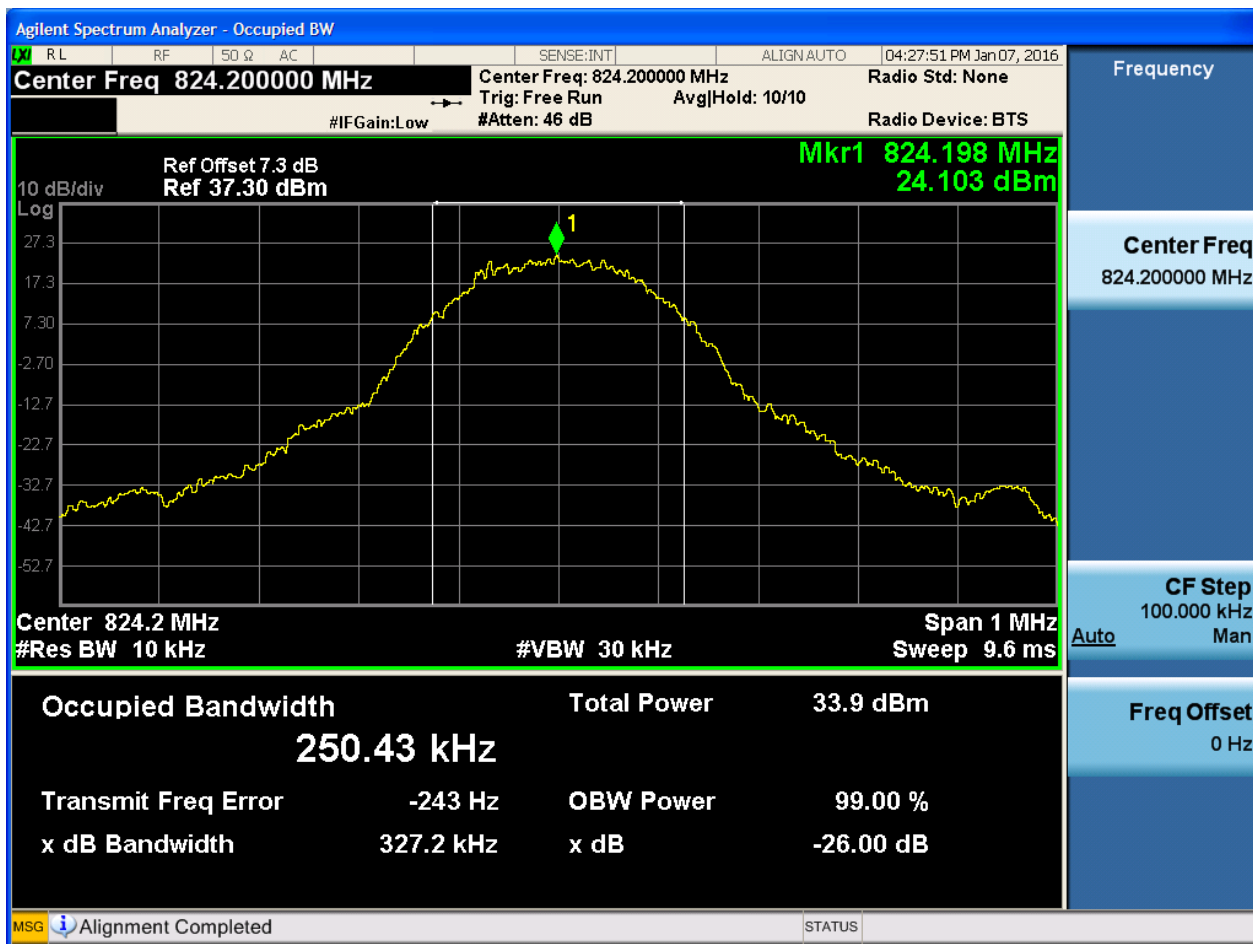


4.1.1.1.3 Test Channel = HCH



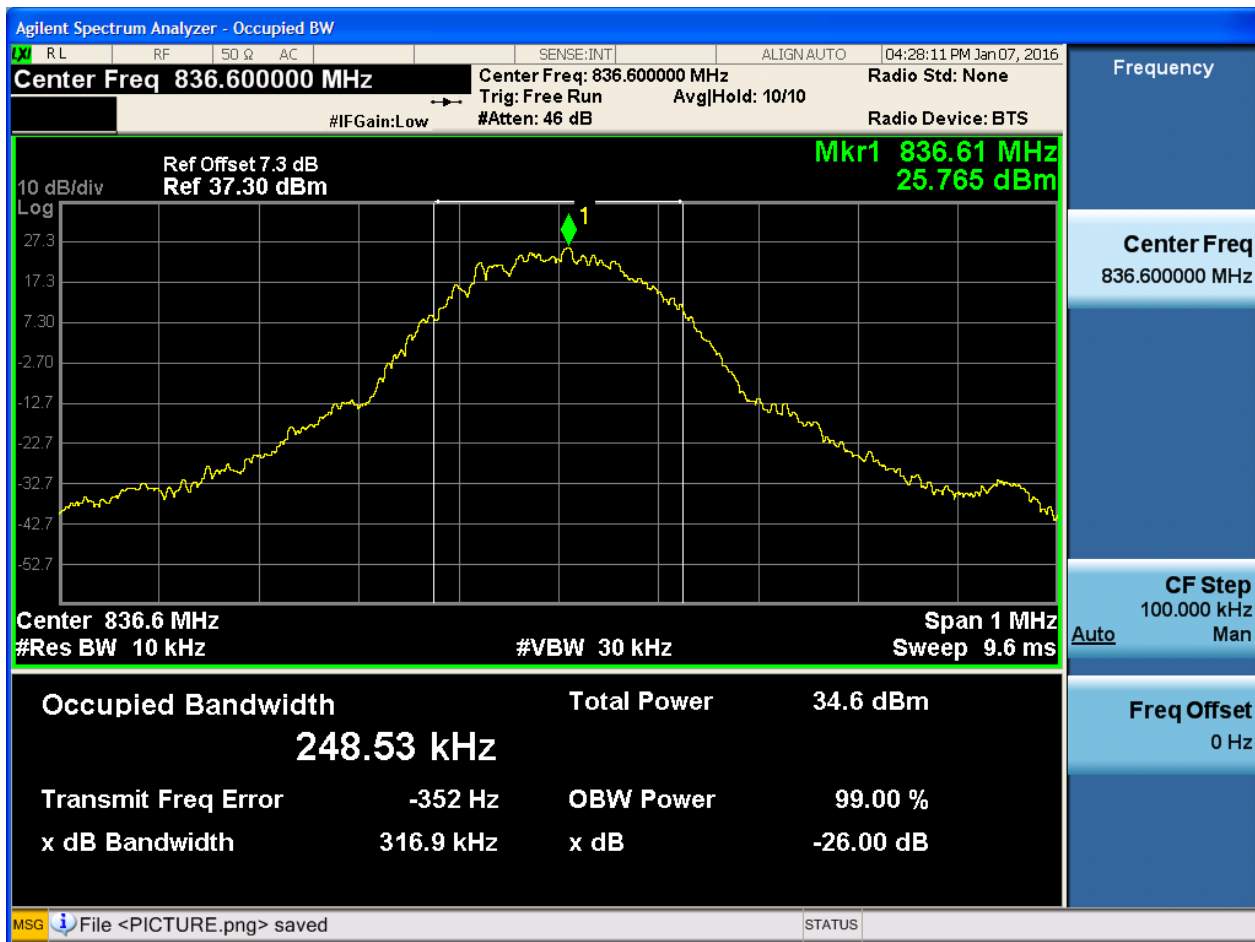
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH

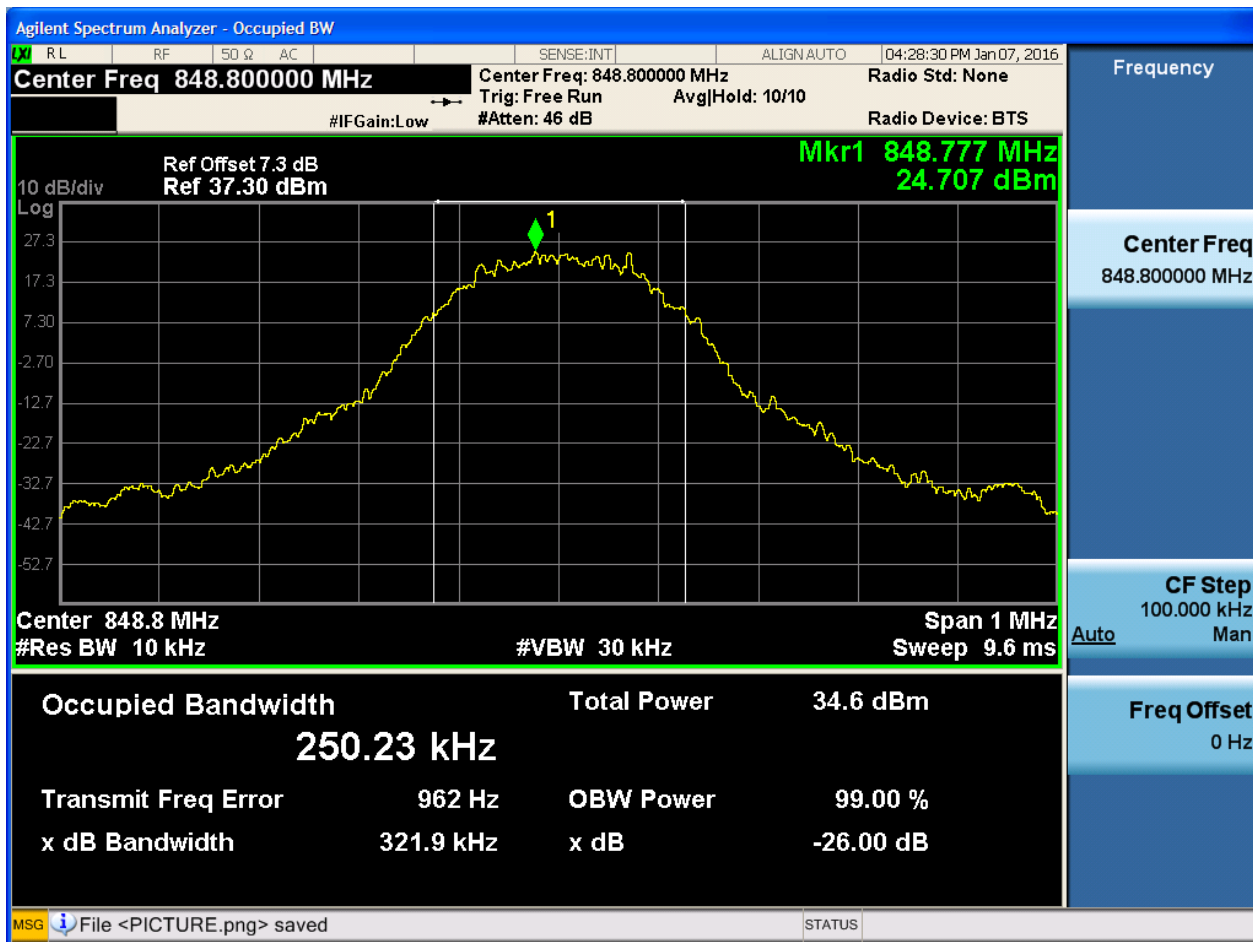




4.1.1.2.2 Test Channel = MCH



4.1.1.2.3 Test Channel = HCH

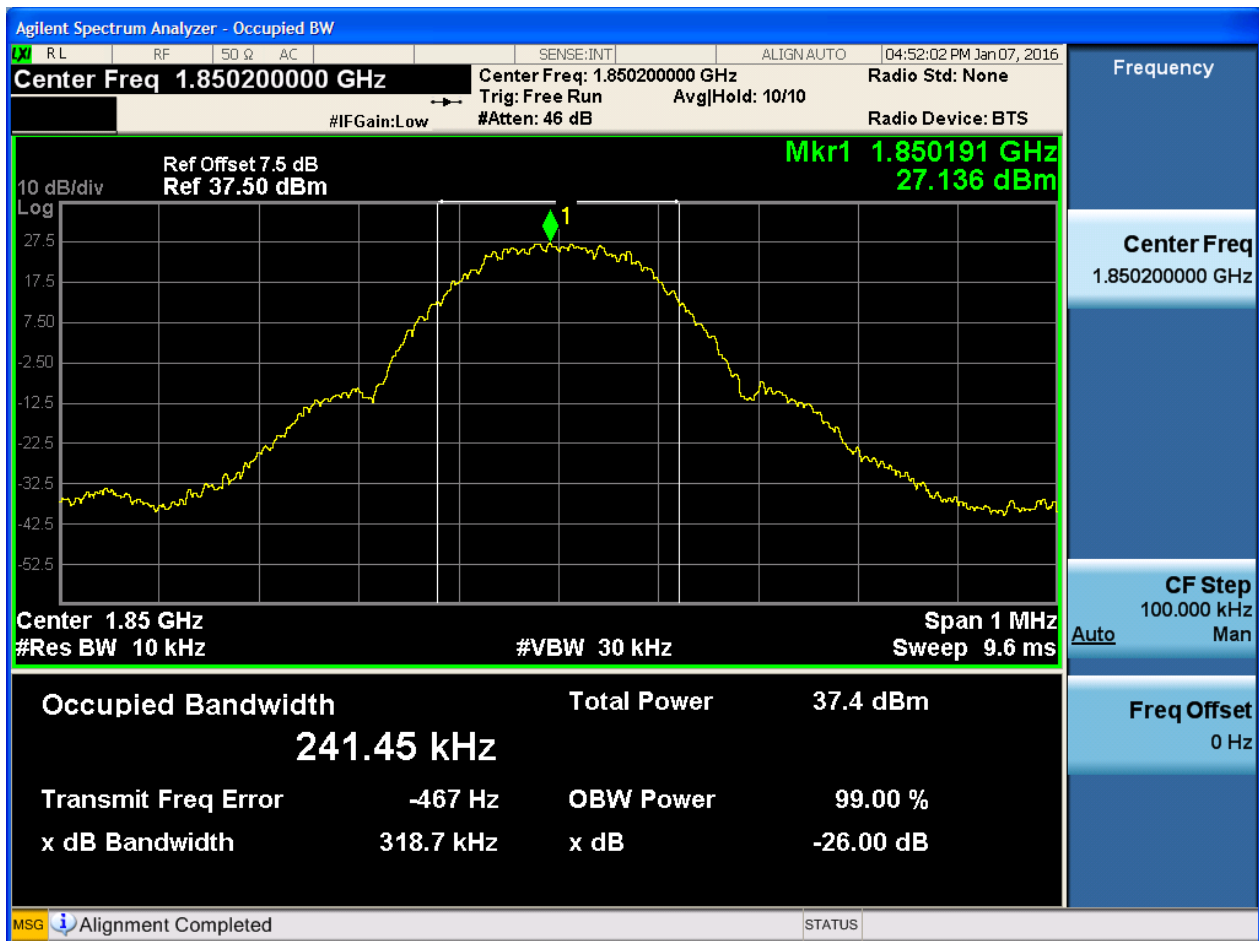




4.1.2 Test Band = GSM1900

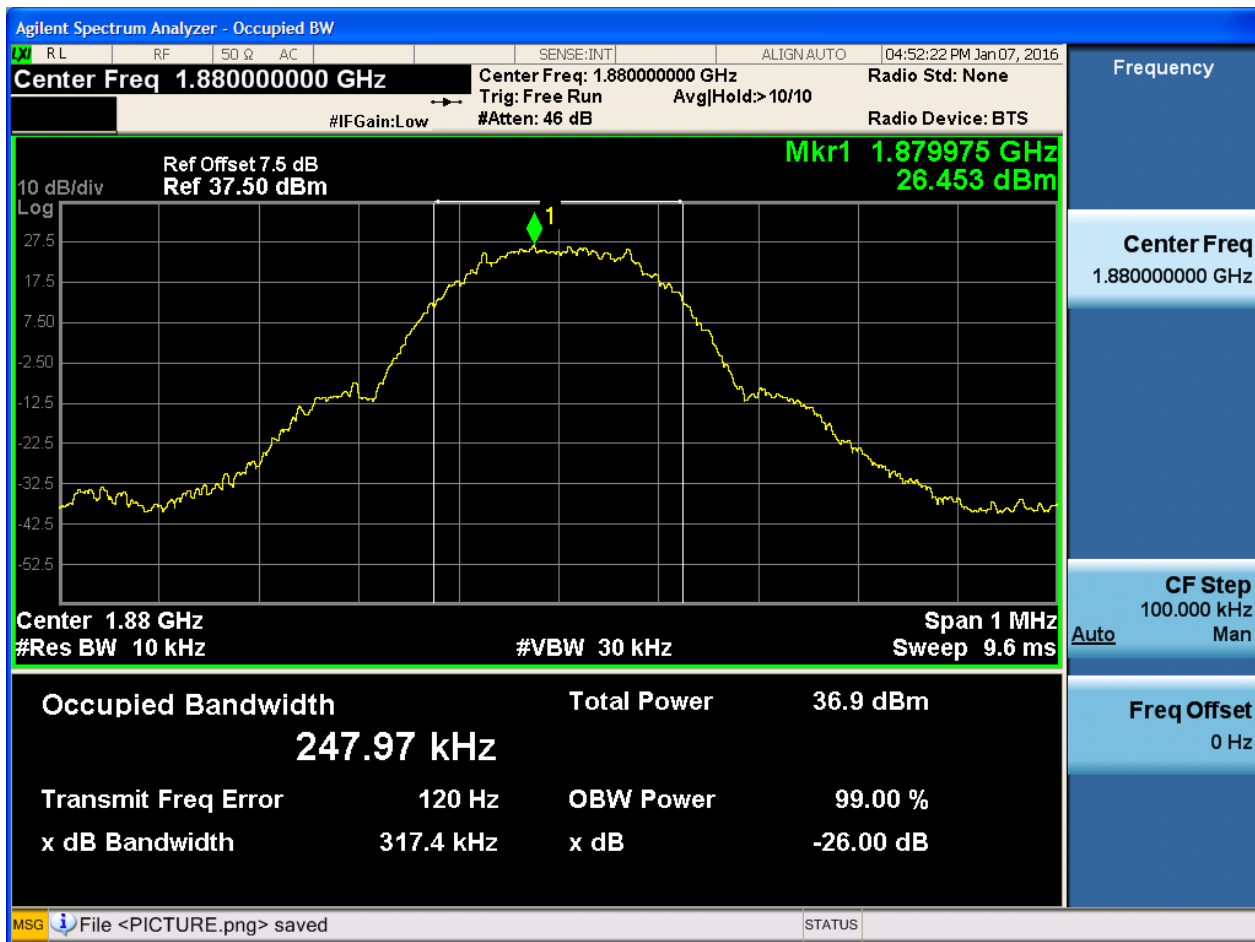
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



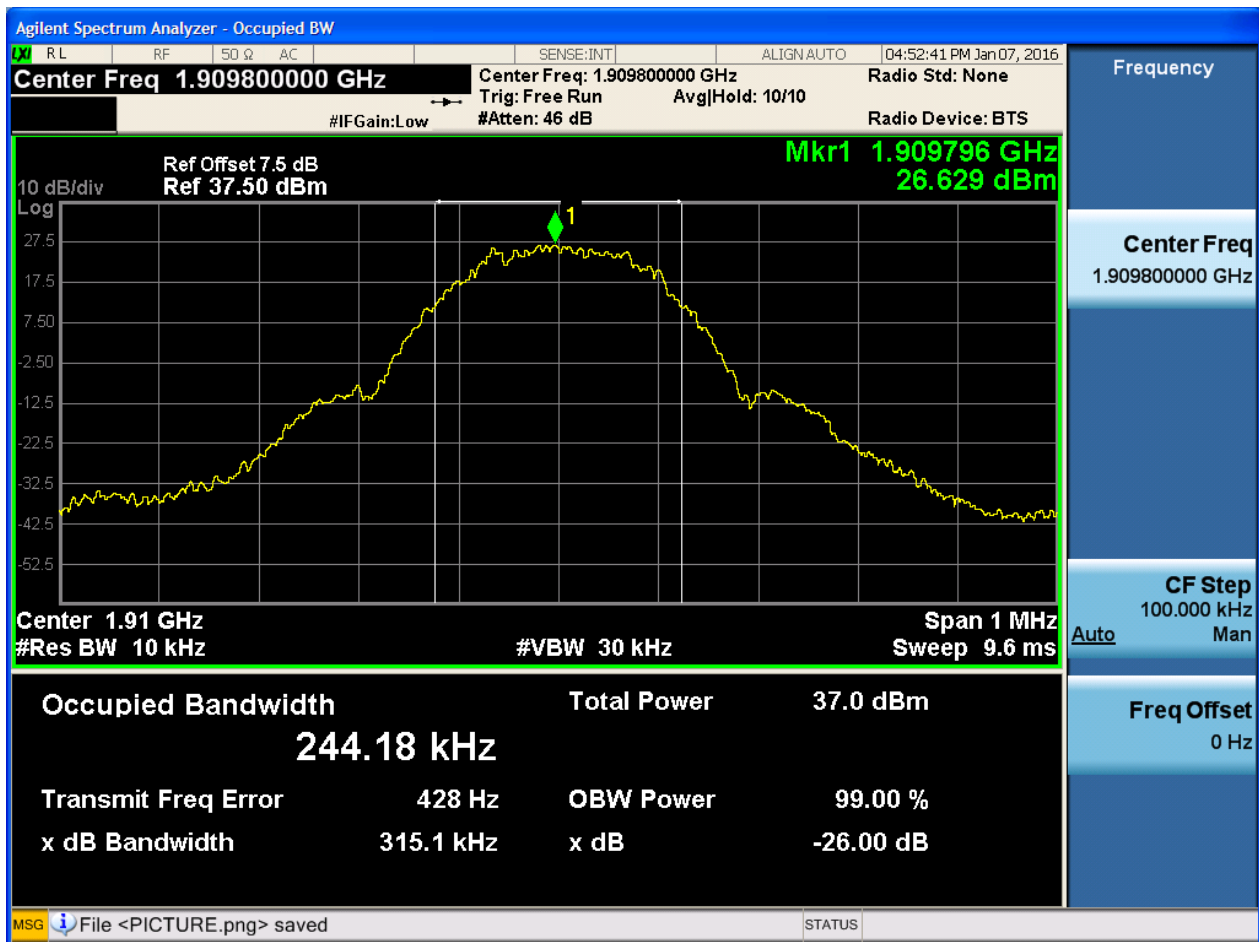


4.1.2.1.2 Test Channel = MCH



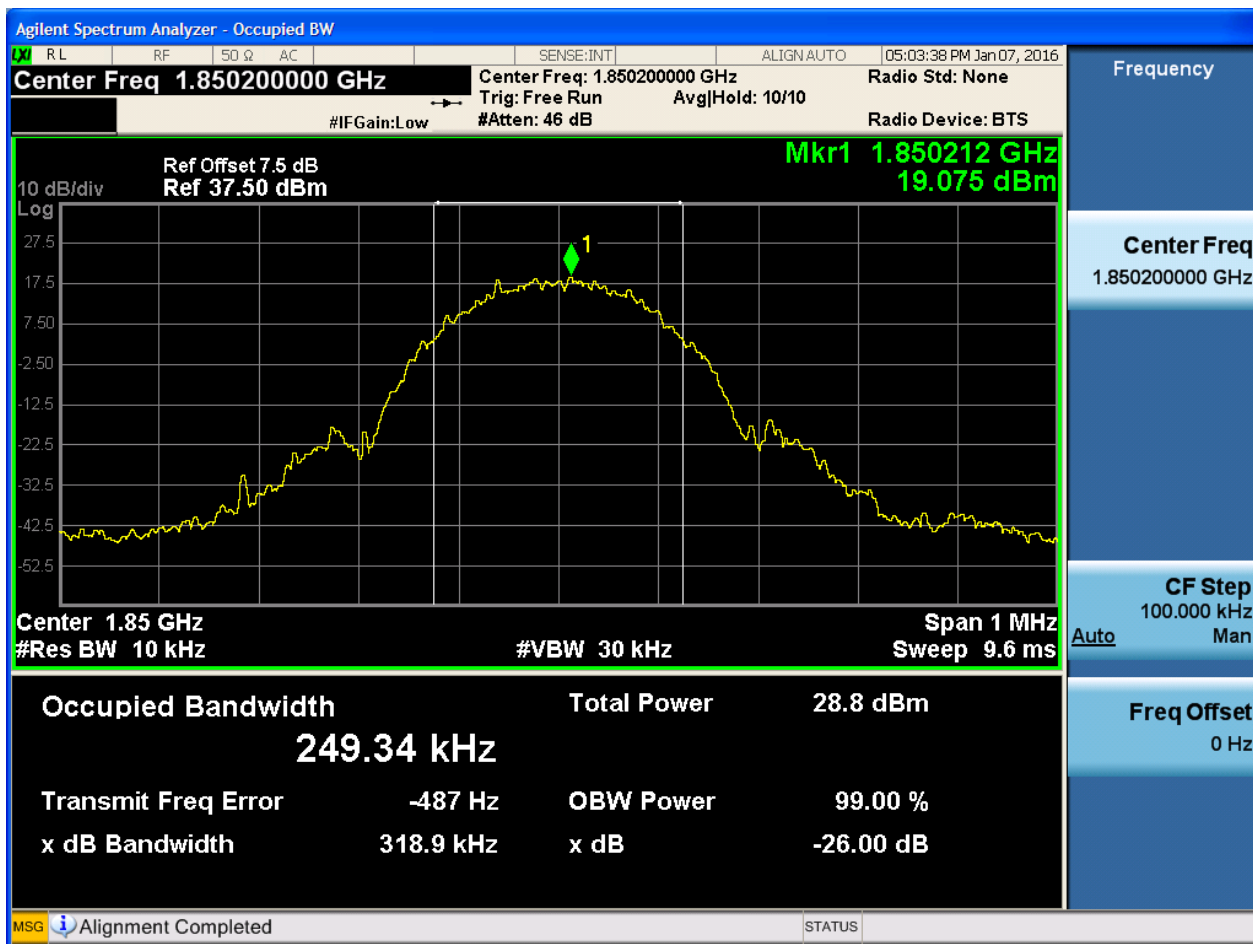


4.1.2.1.3 Test Channel = HCH



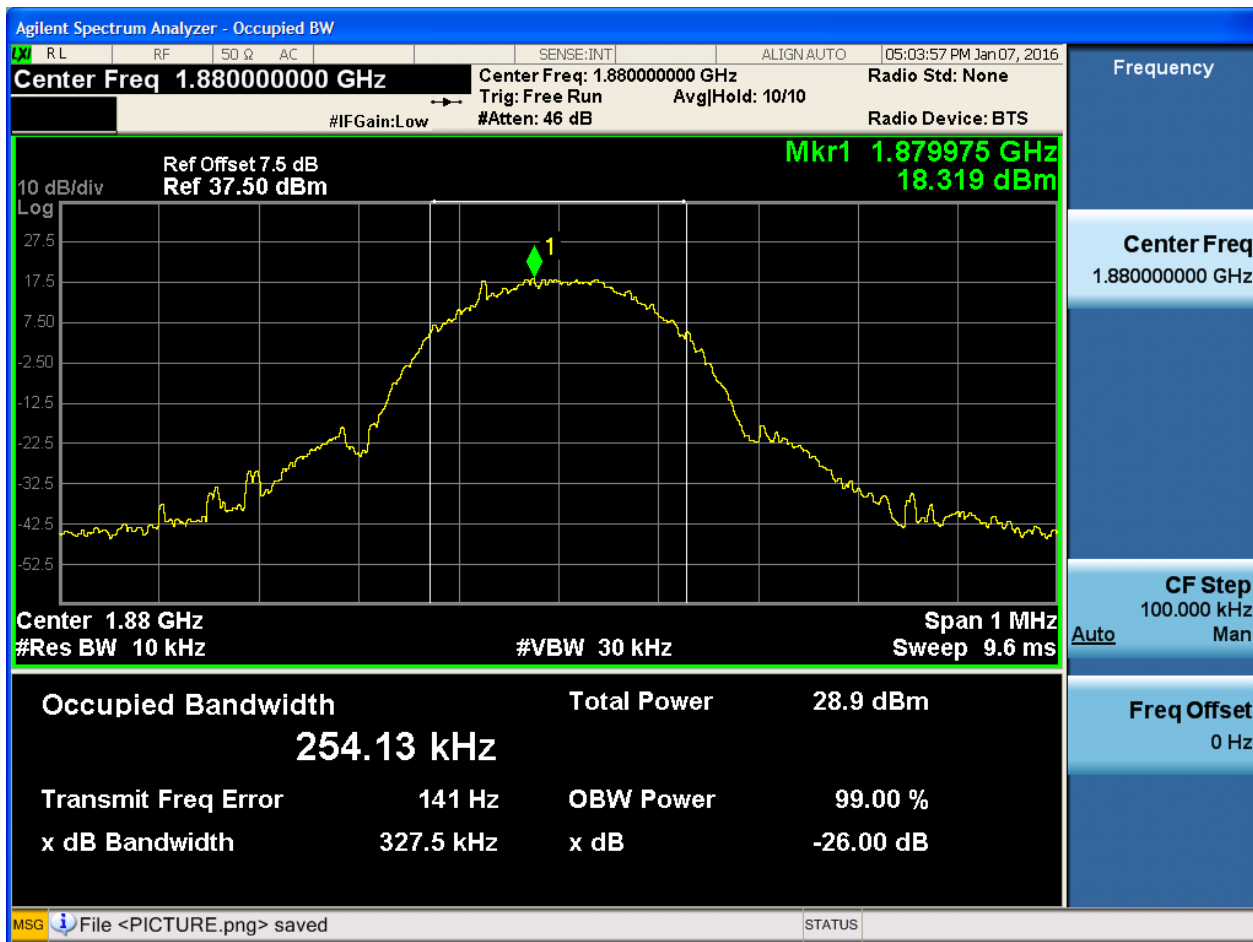
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



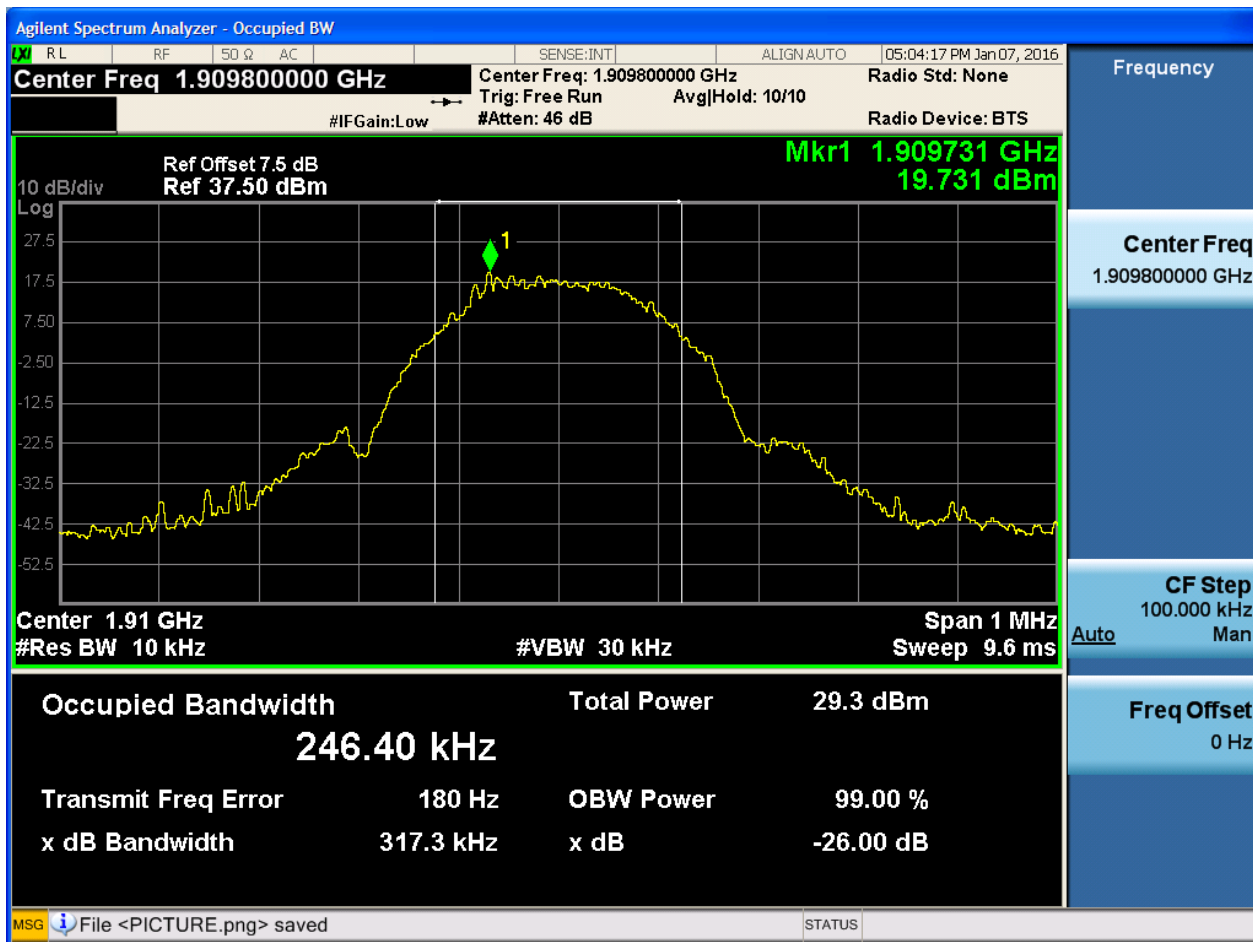


4.1.2.2.2 Test Channel = MCH





4.1.2.2.3 Test Channel = HCH

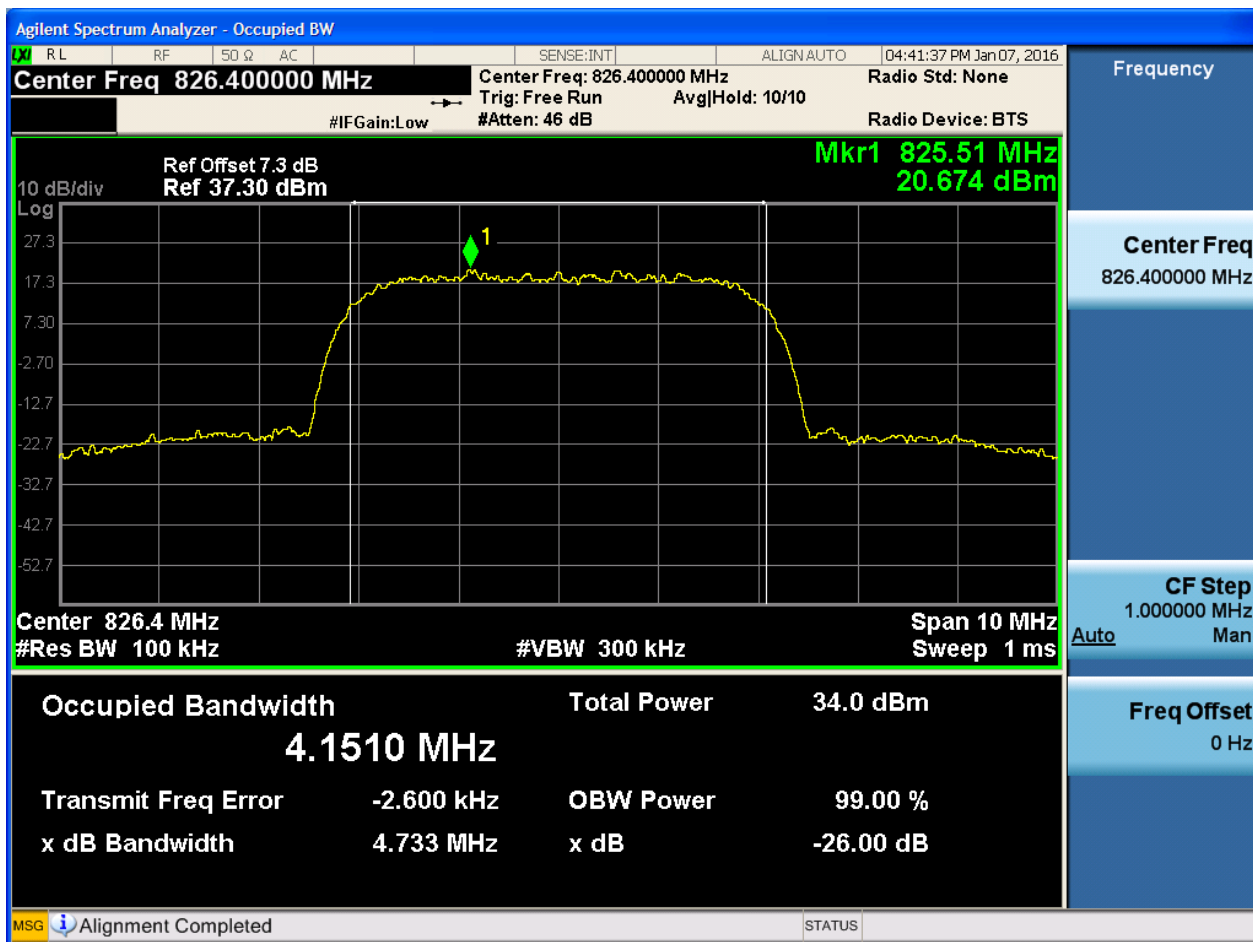


4.2 For UMTS

4.2.1 Test Band = WCDMA850

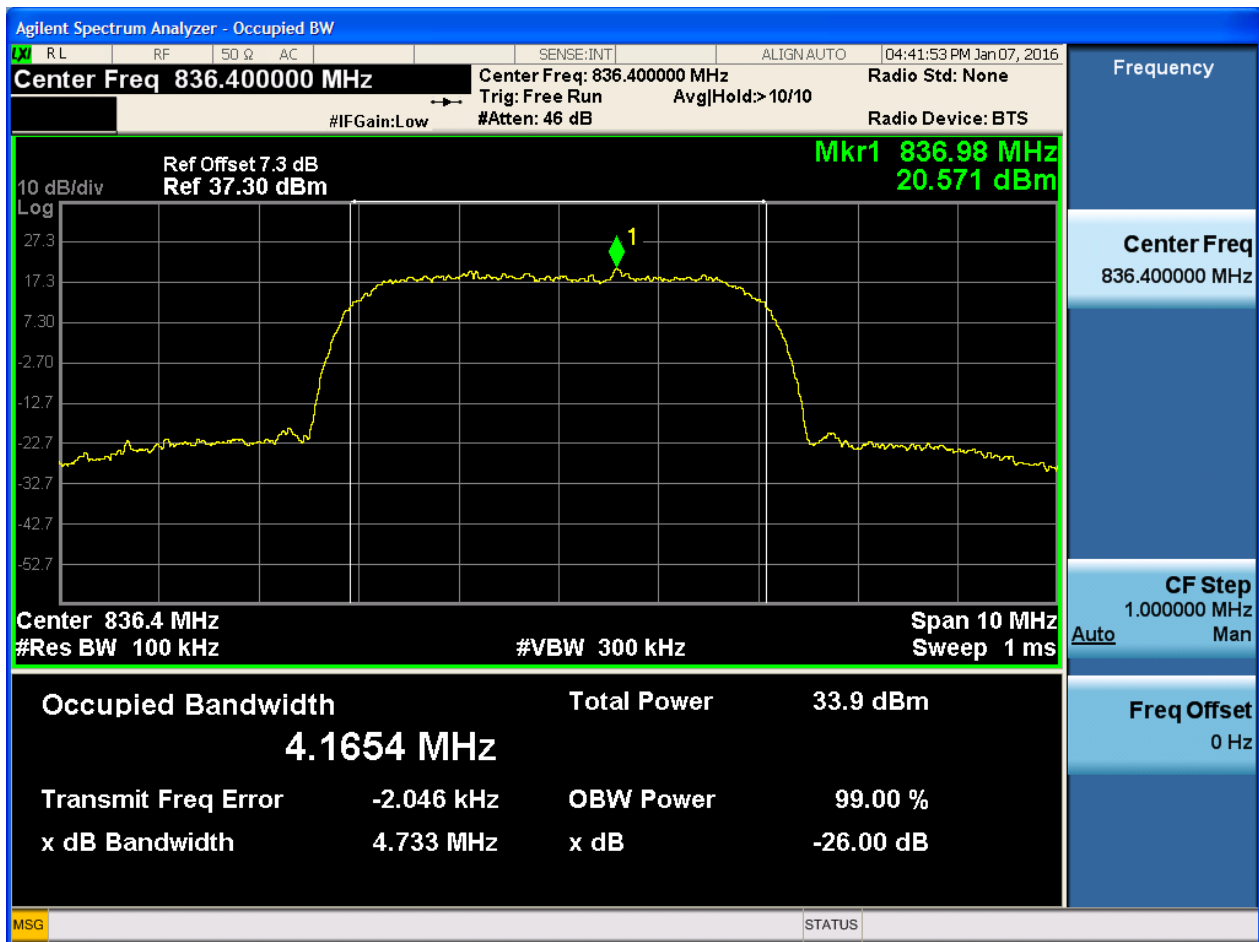
4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



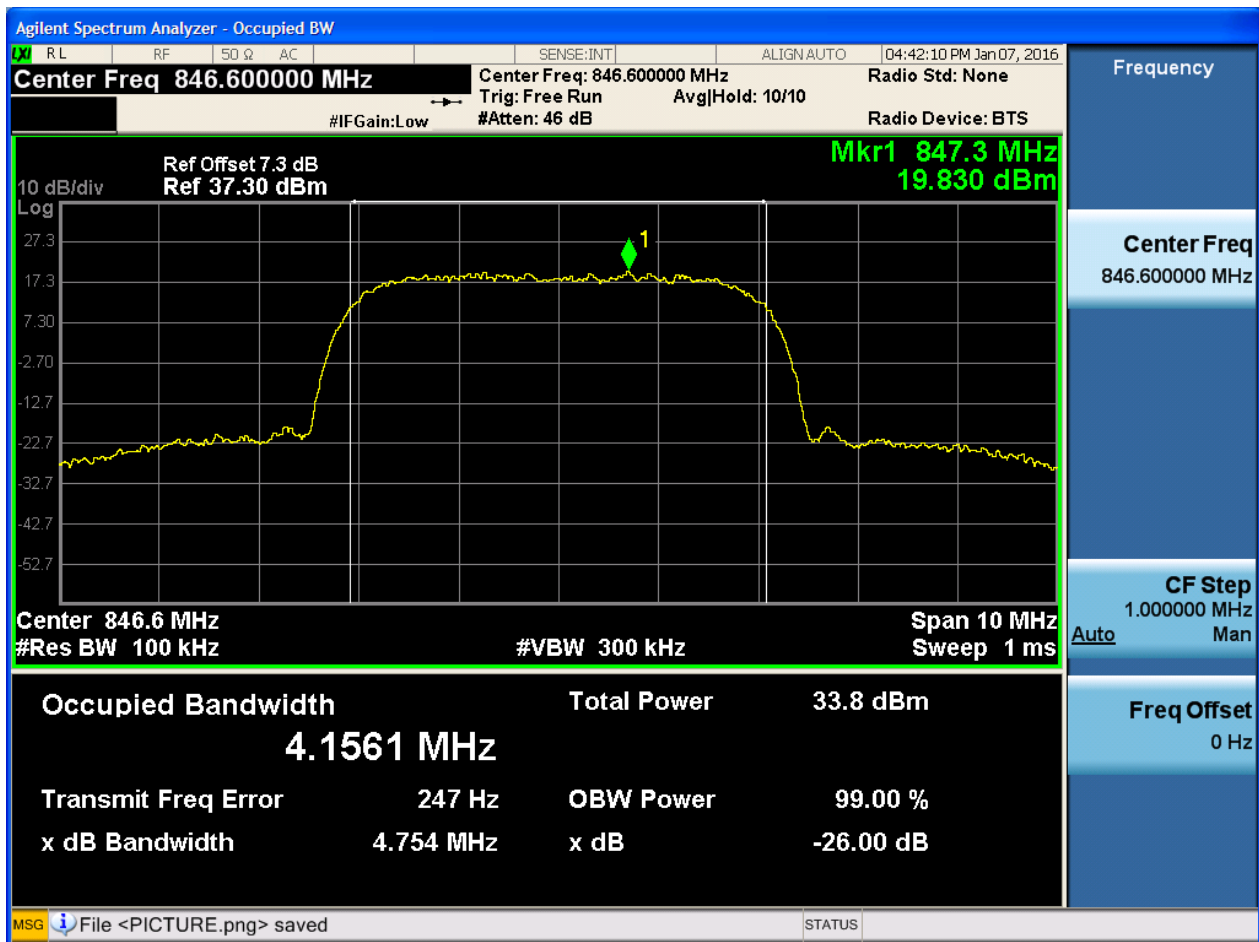


4.2.1.1.2 Test Channel = MCH





4.2.1.1.3 Test Channel = HCH

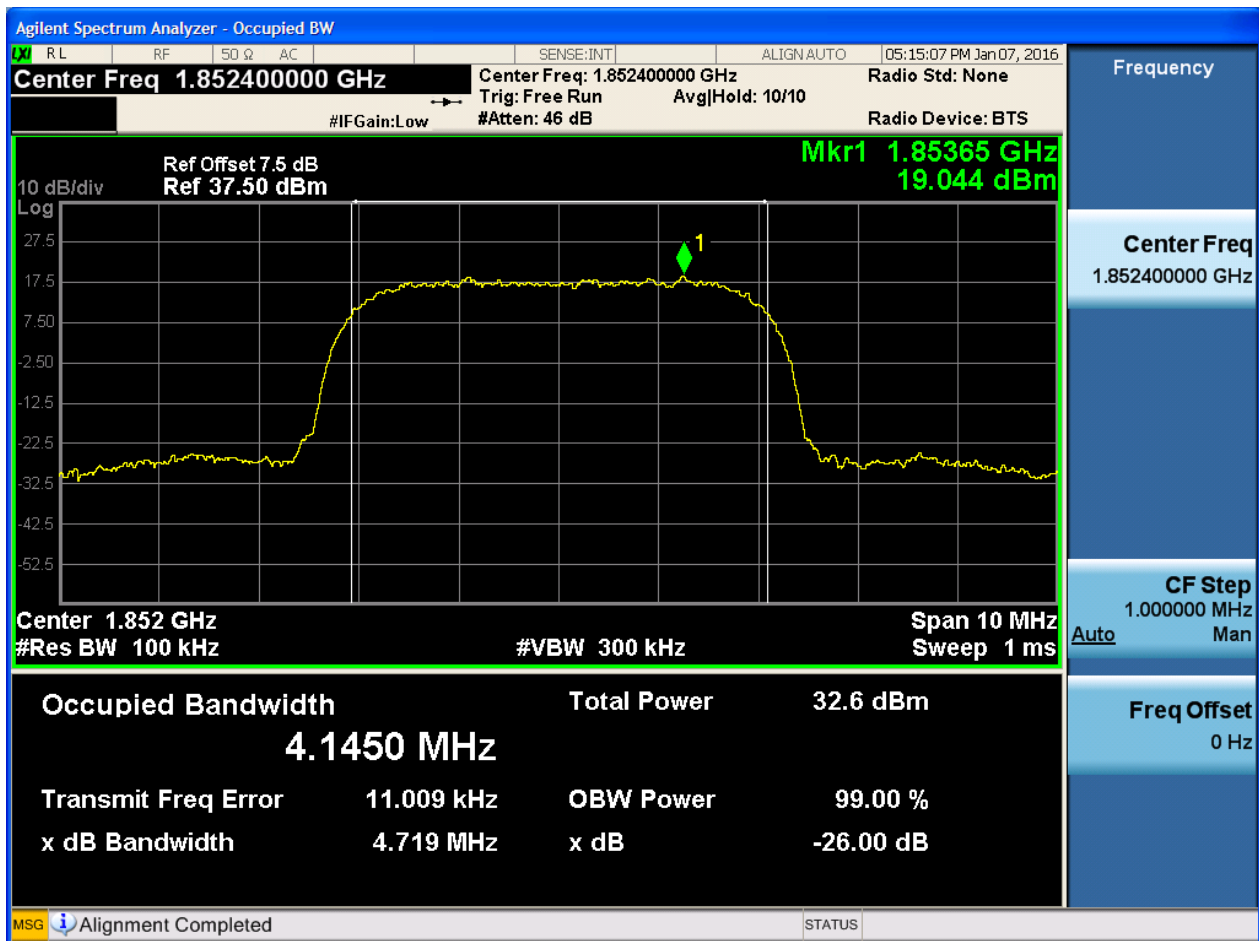




4.2.2 Test Band = WCDMA1900

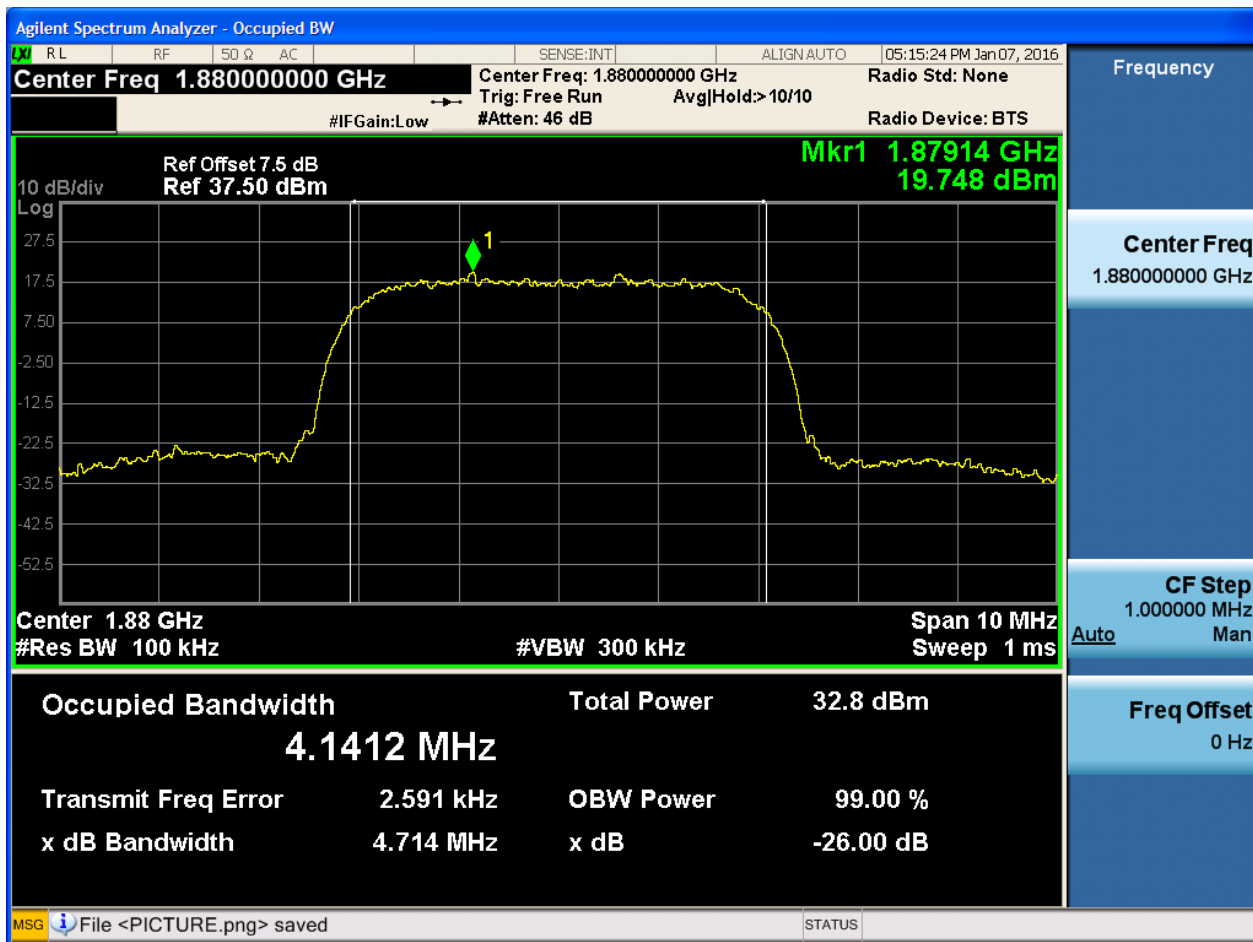
4.2.2.1 Test Mode = UMTS/TM1

4.2.2.1.1 Test Channel = LCH



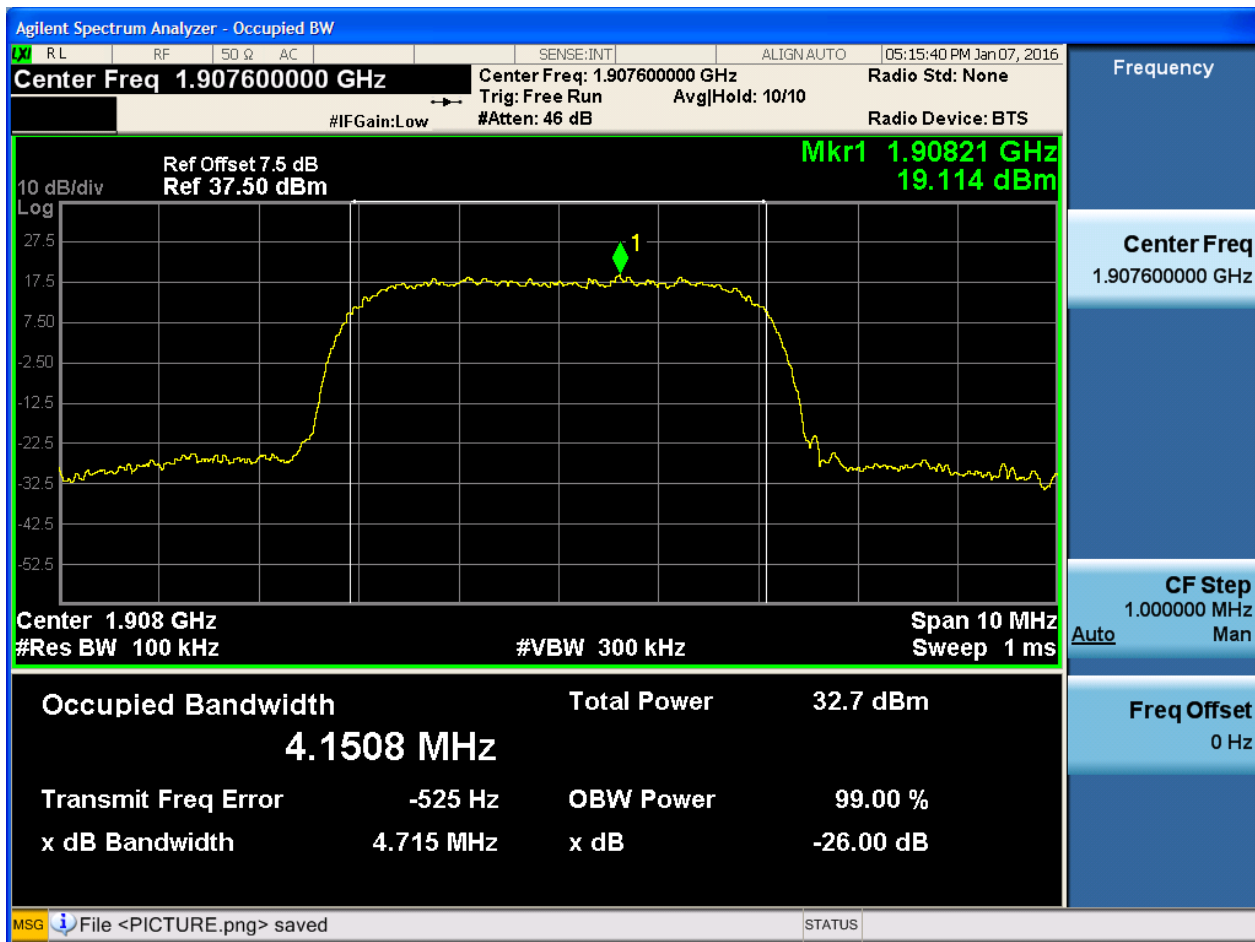


4.2.2.1.2 Test Channel = MCH





4.2.2.1.3 Test Channel = HCH

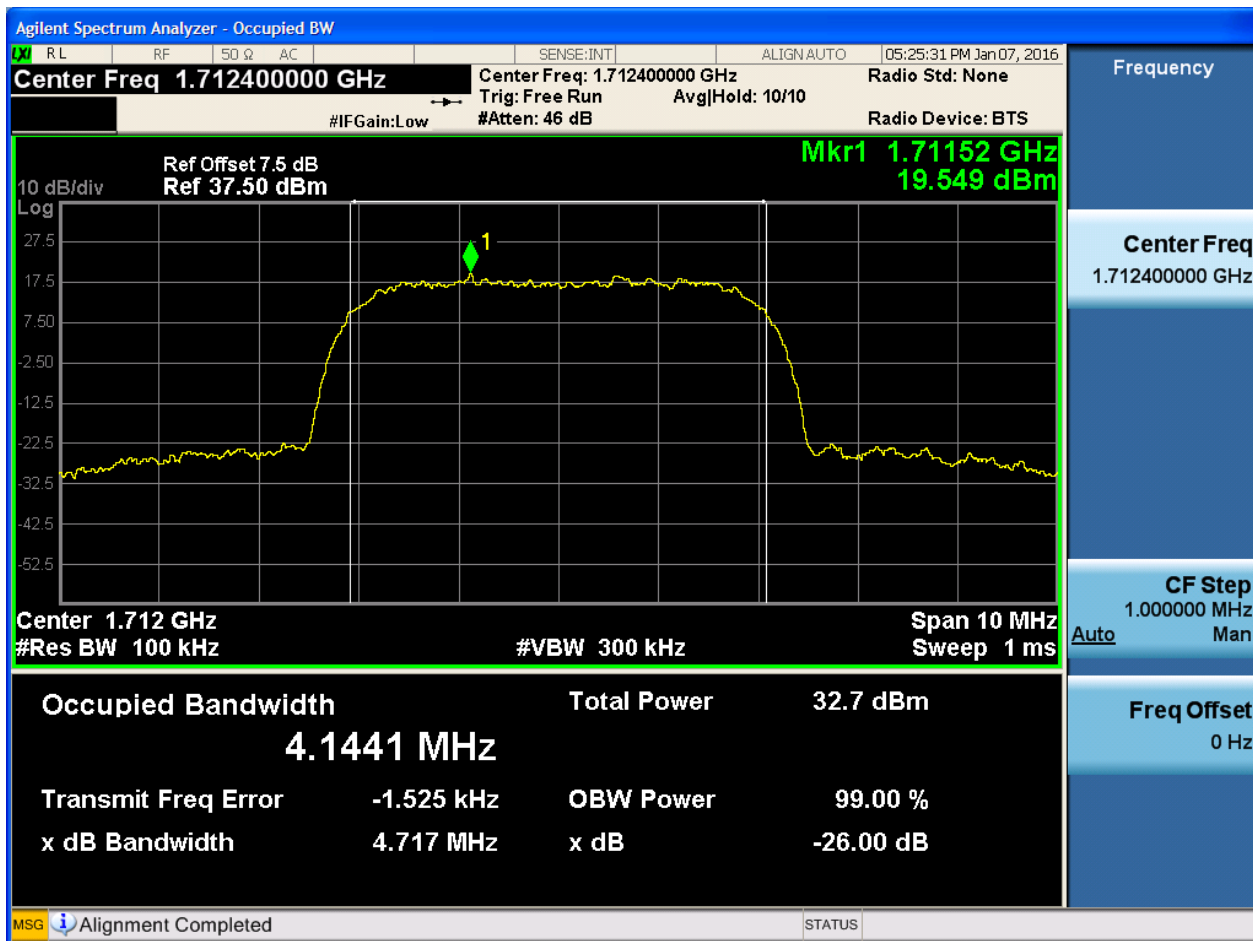




4.2.3 Test Band = WCDMA1700

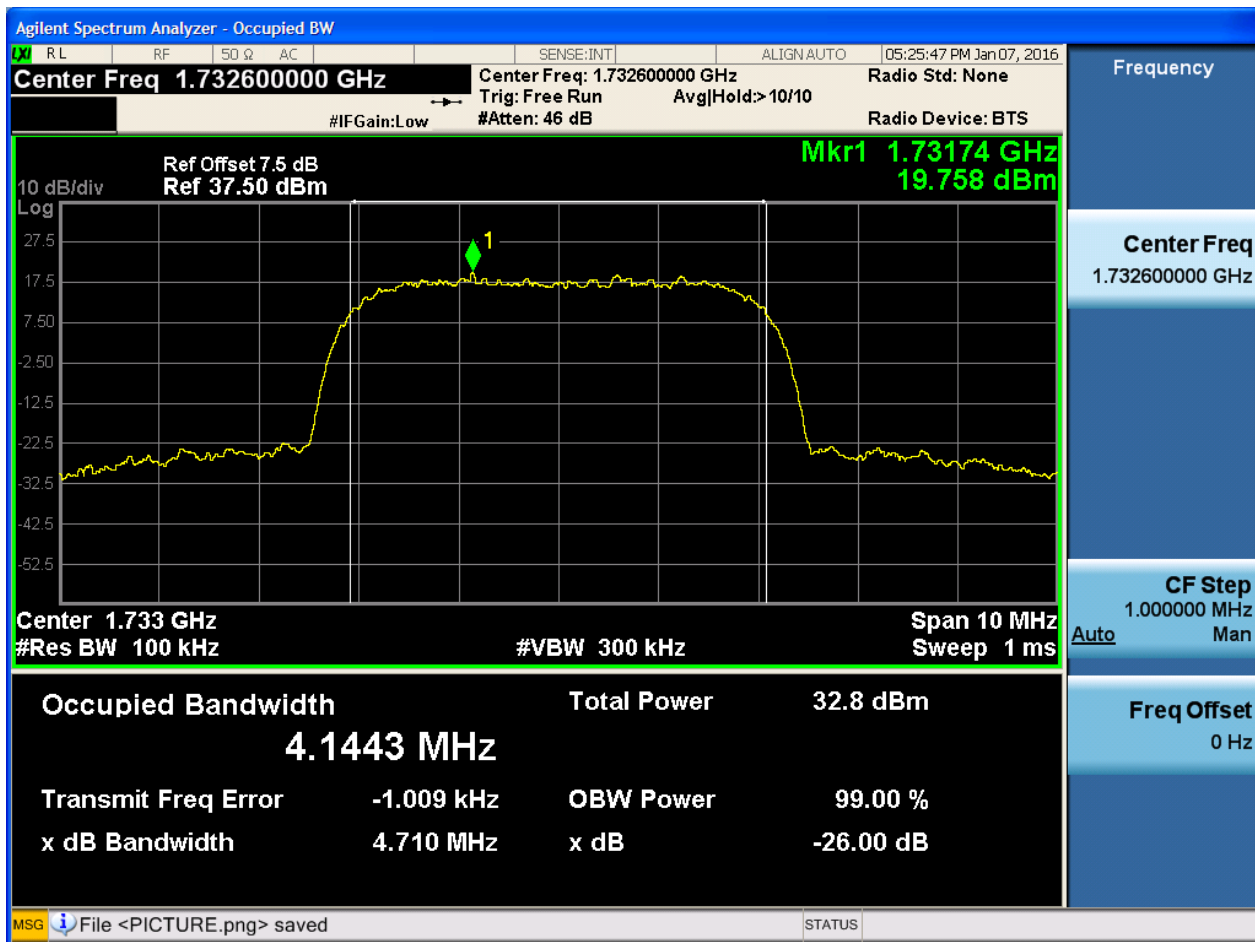
4.2.3.1 Test Mode = UMTS/TM1

4.2.3.1.1 Test Channel = LCH



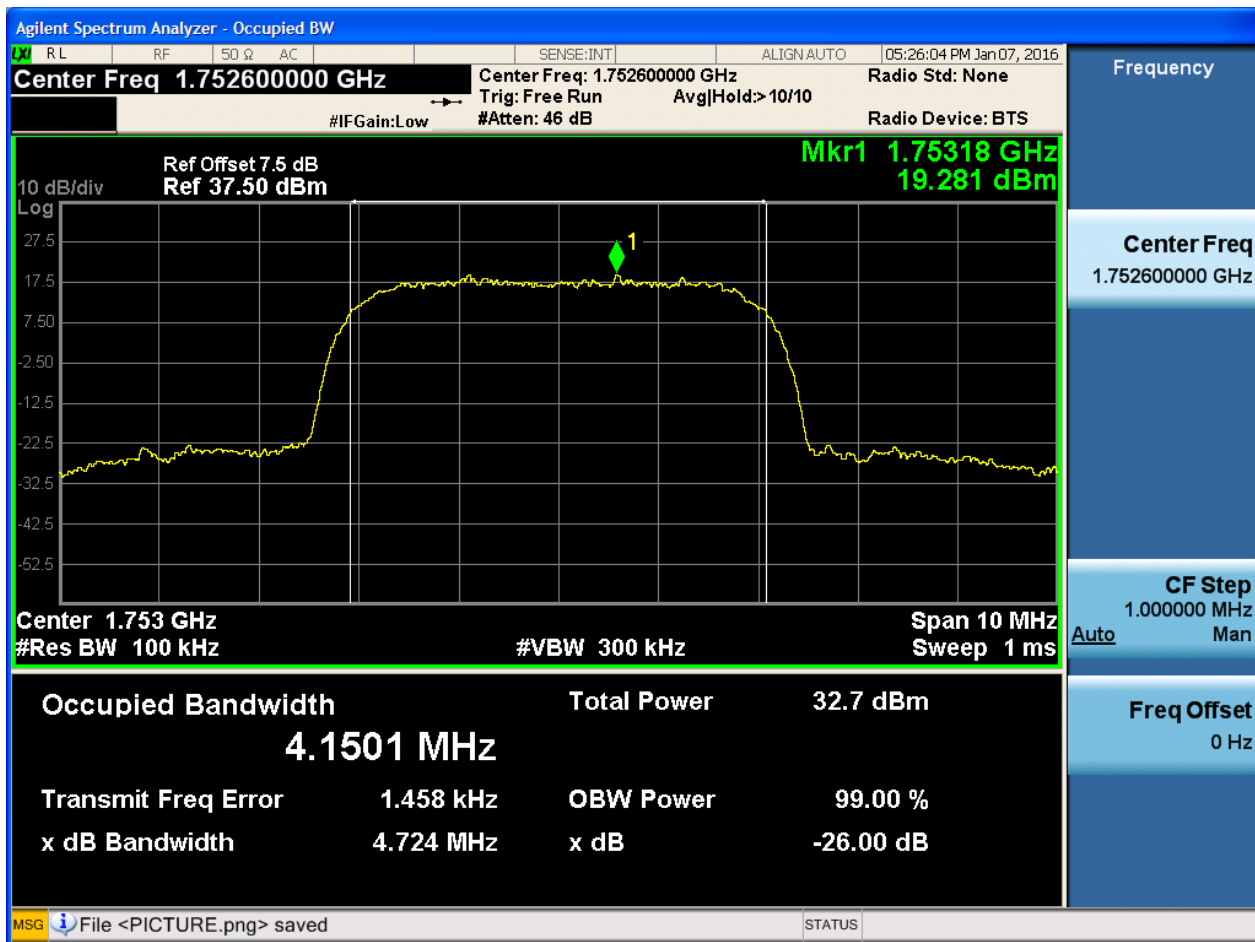


4.2.3.1.2 Test Channel = MCH





4.2.3.1.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

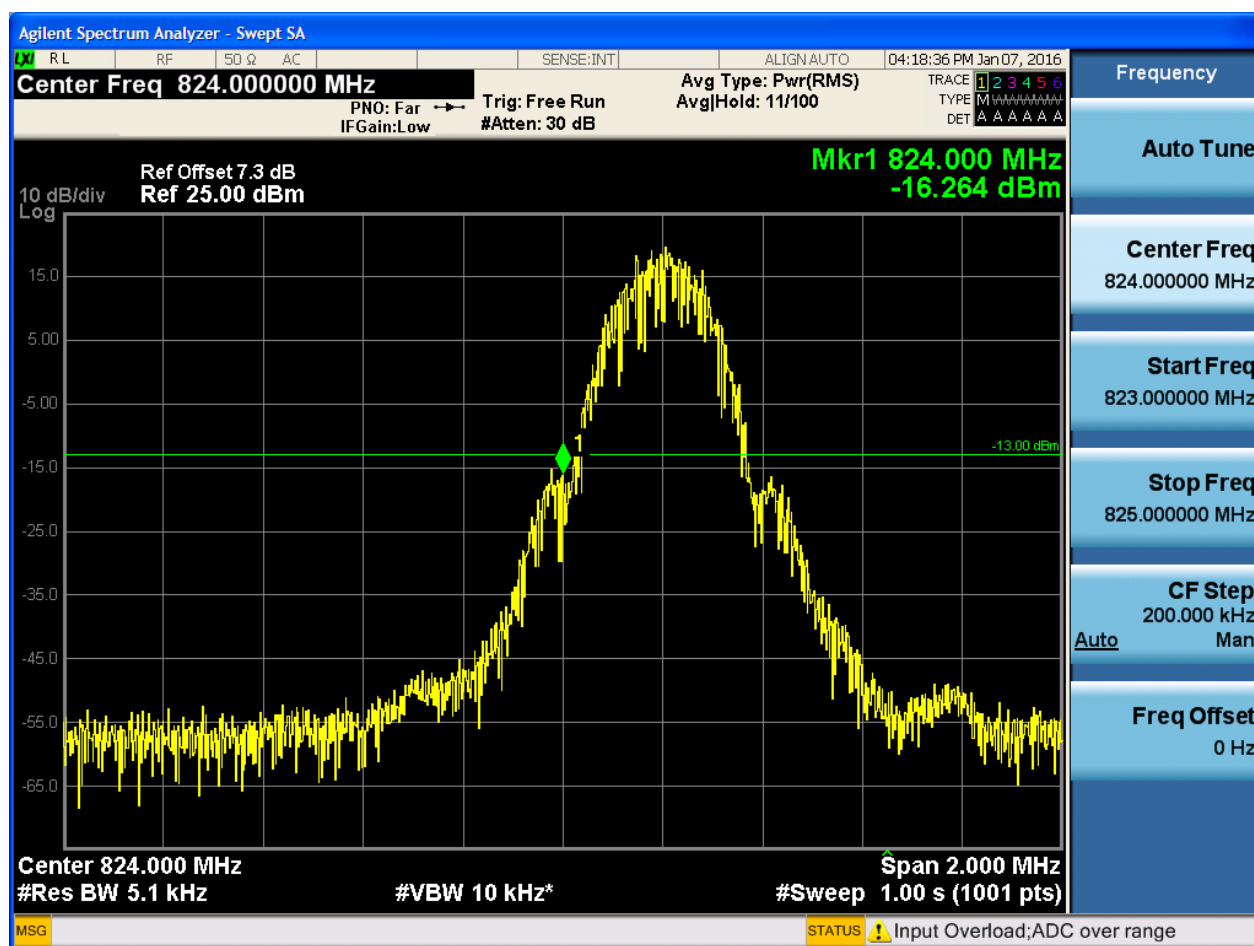
Part I - Test Plots

5.1 For GSM

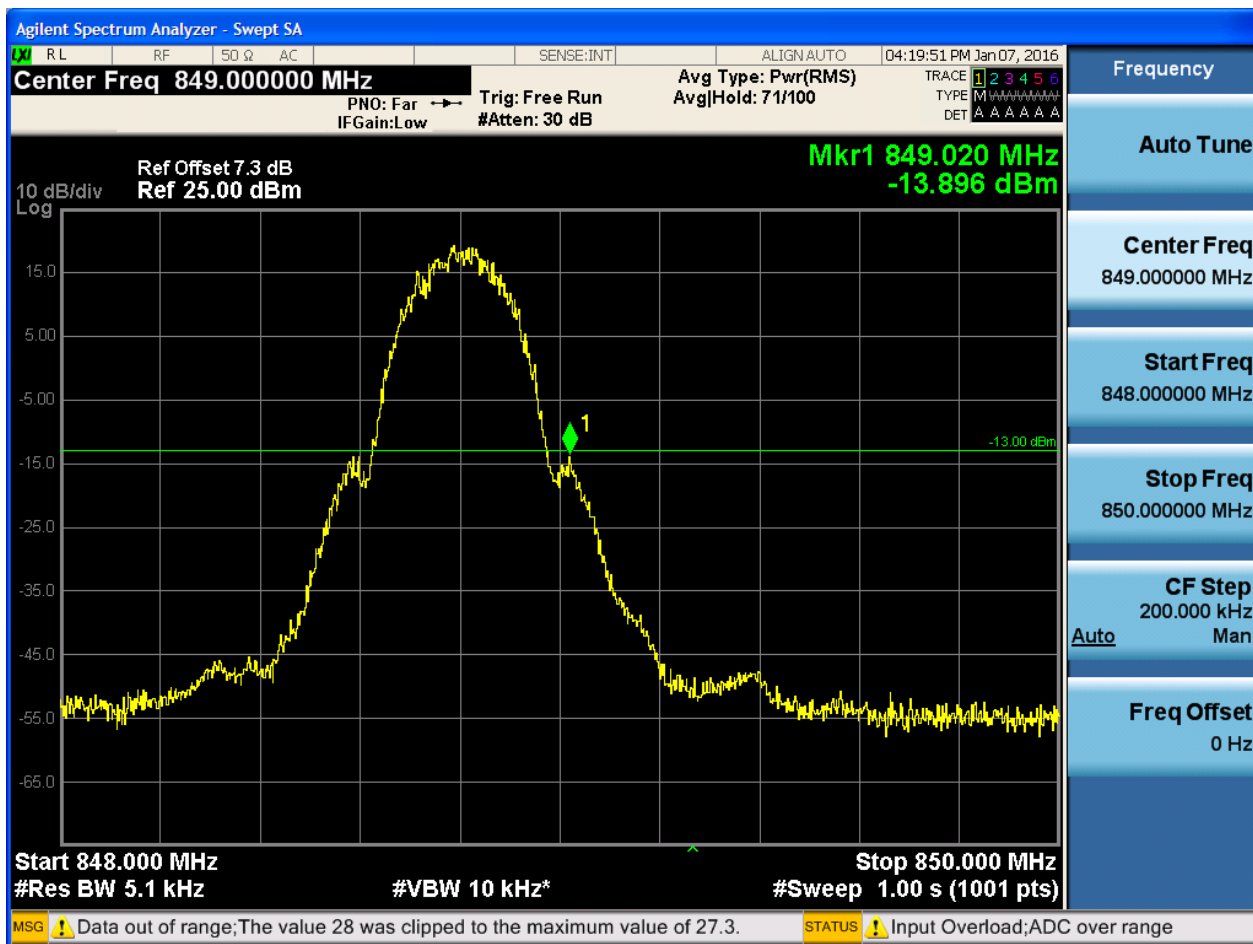
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



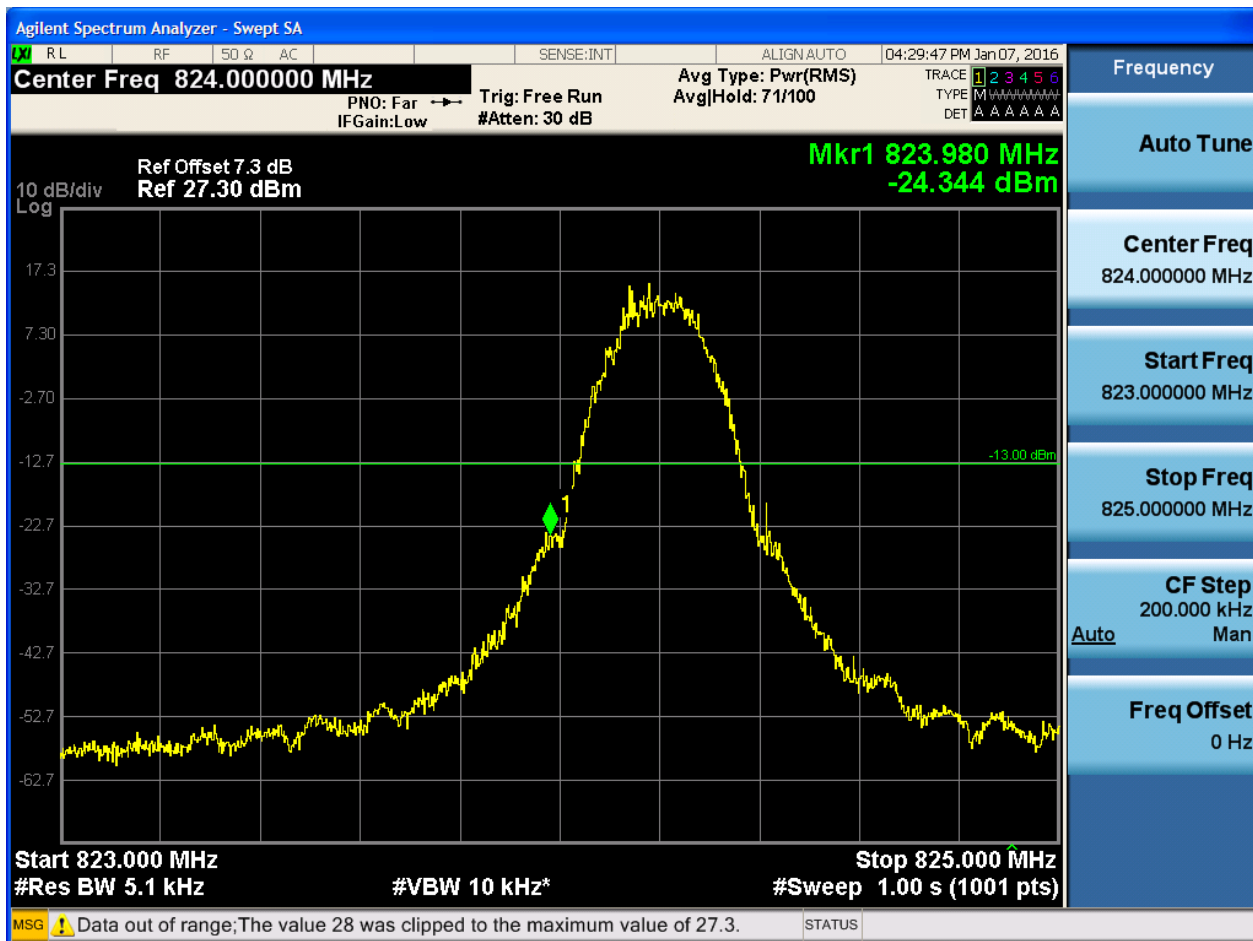
5.1.1.1.2 Test Channel = HCH



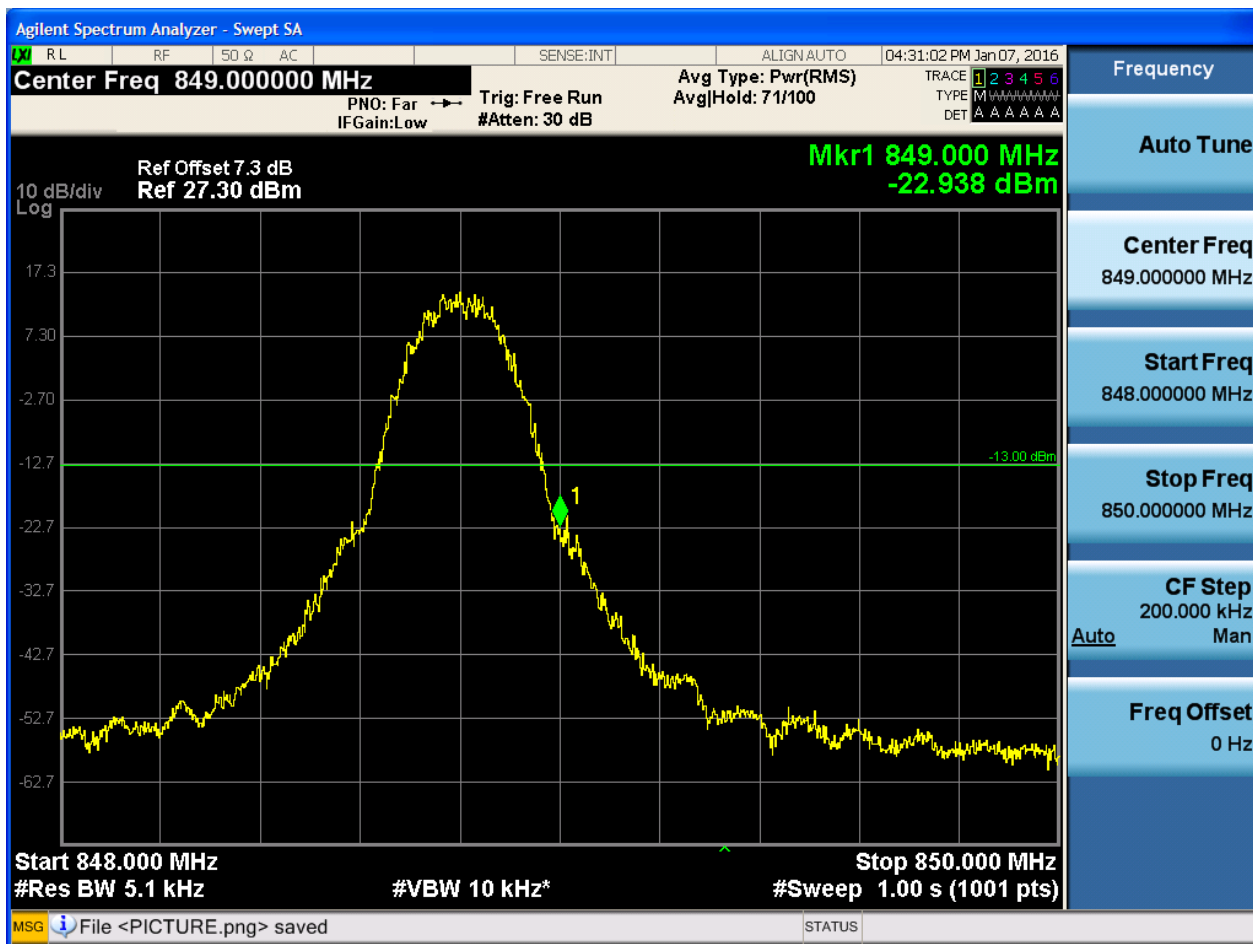


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



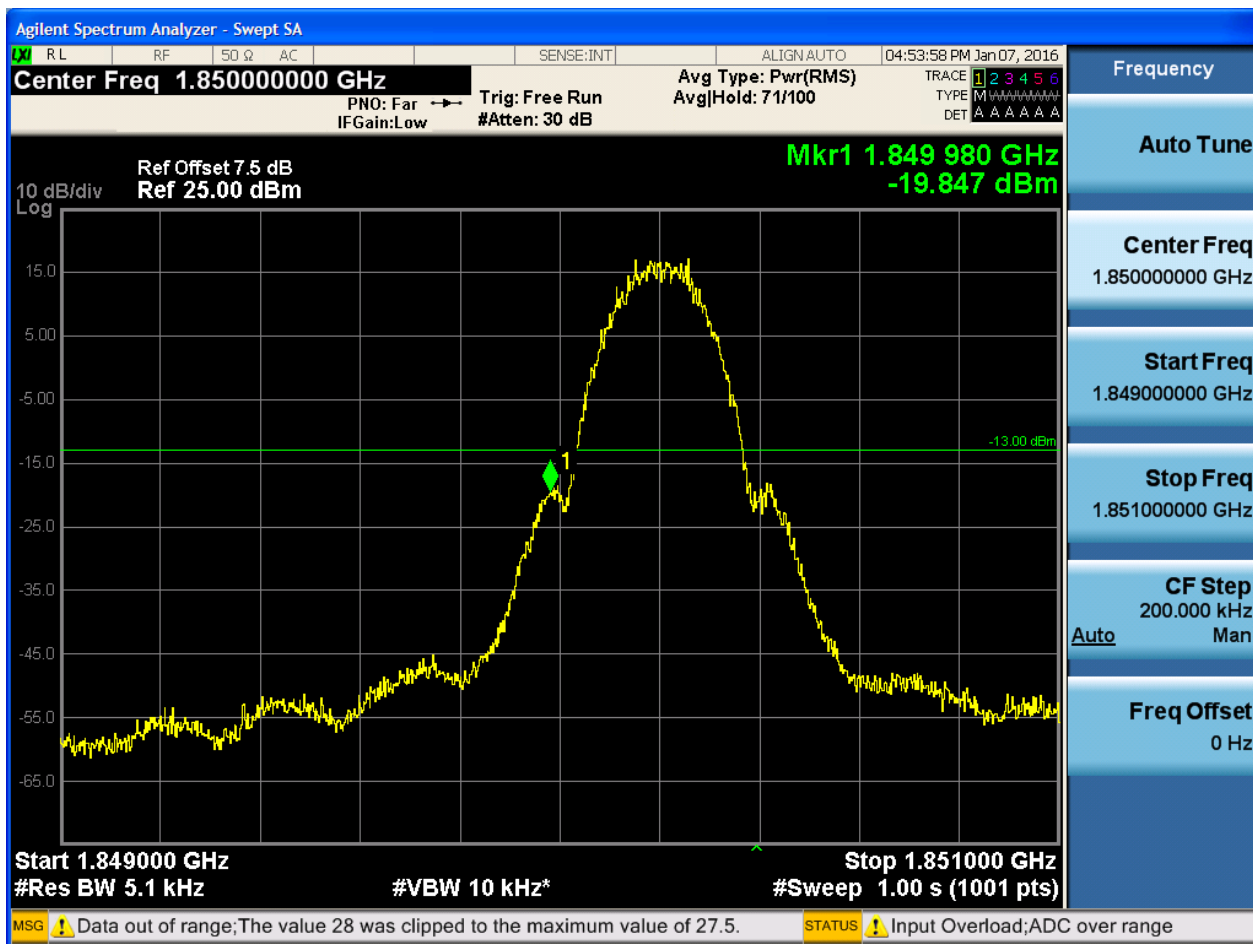
5.1.1.2.2 Test Channel = HCH



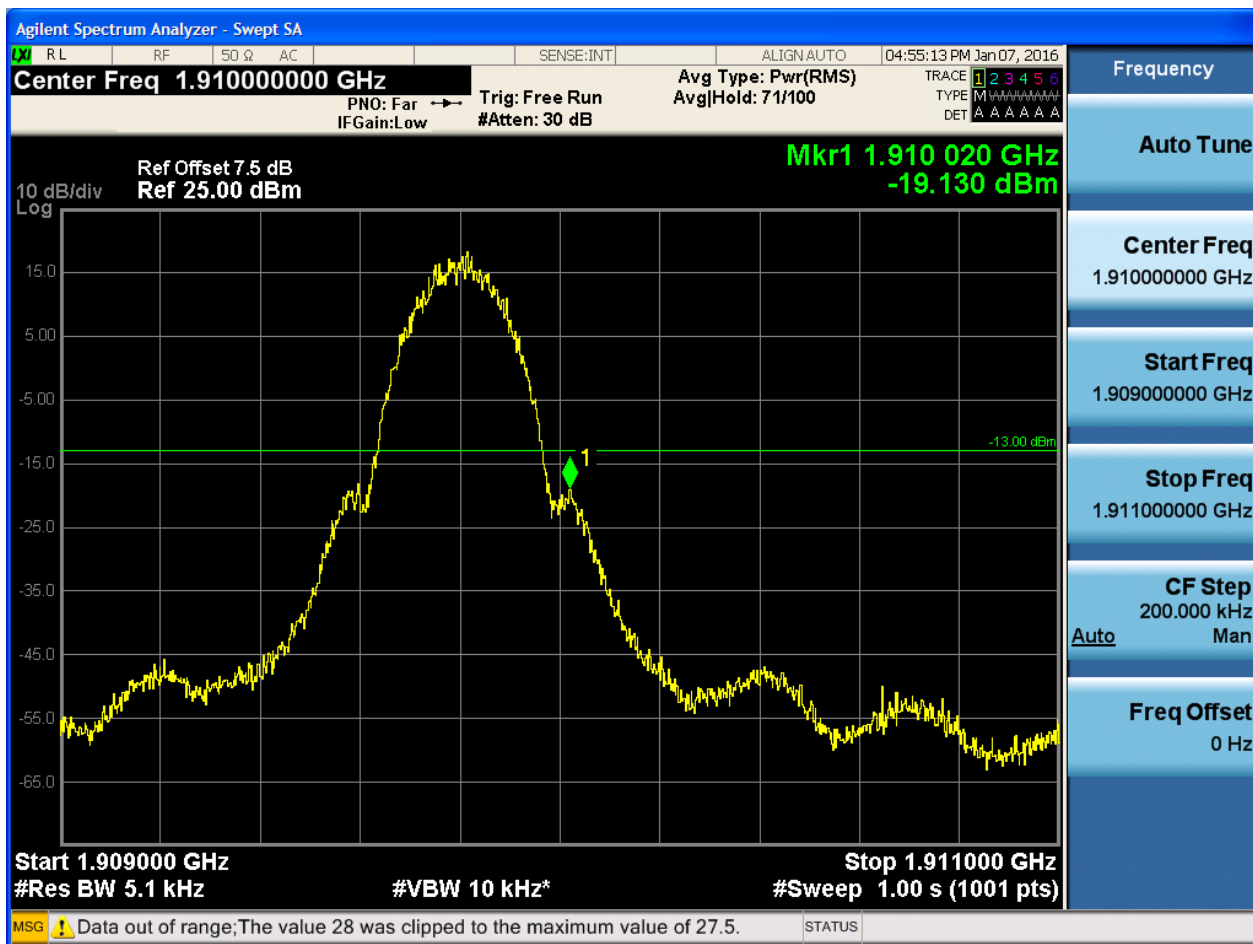
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



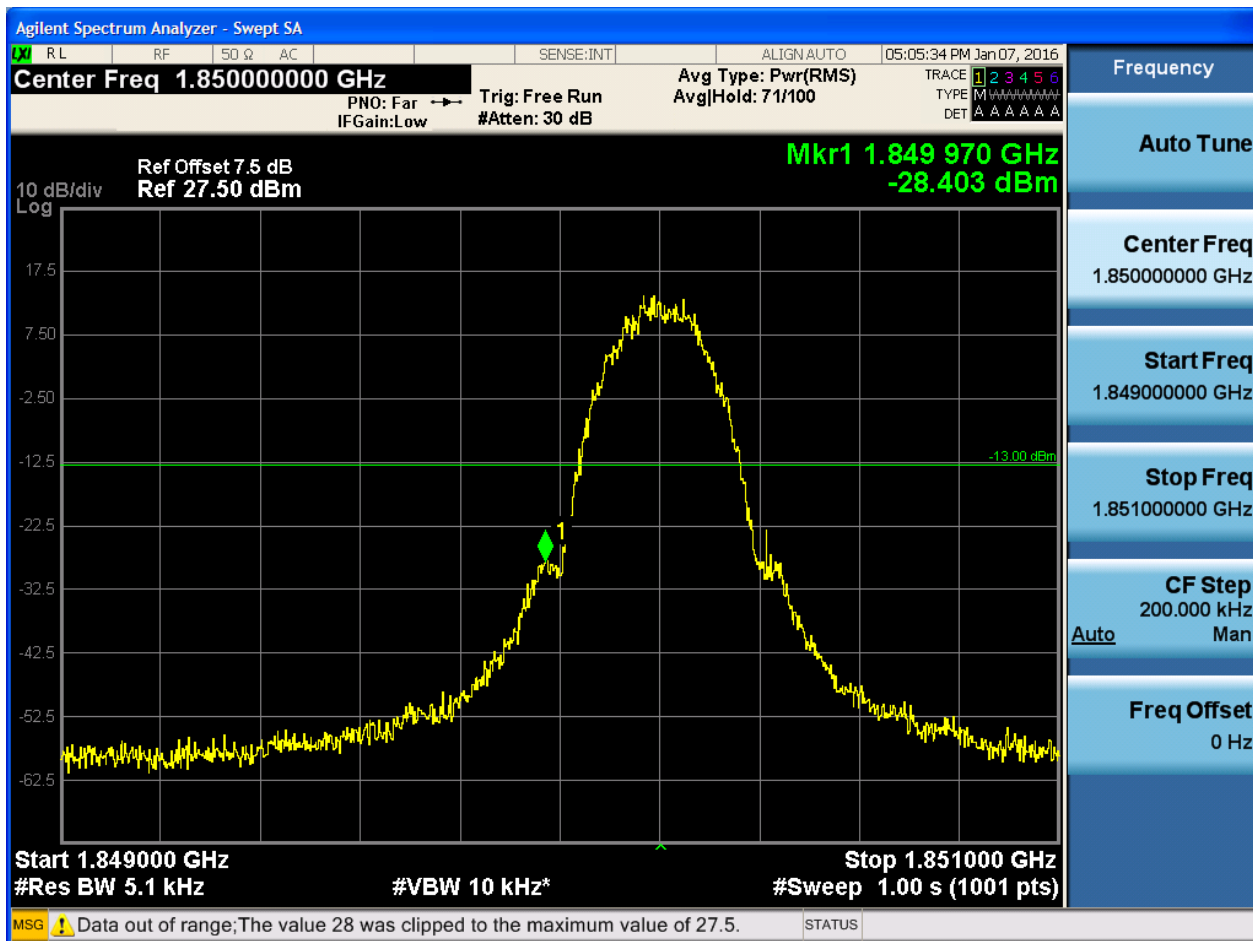
5.1.2.1.2 Test Channel = HCH



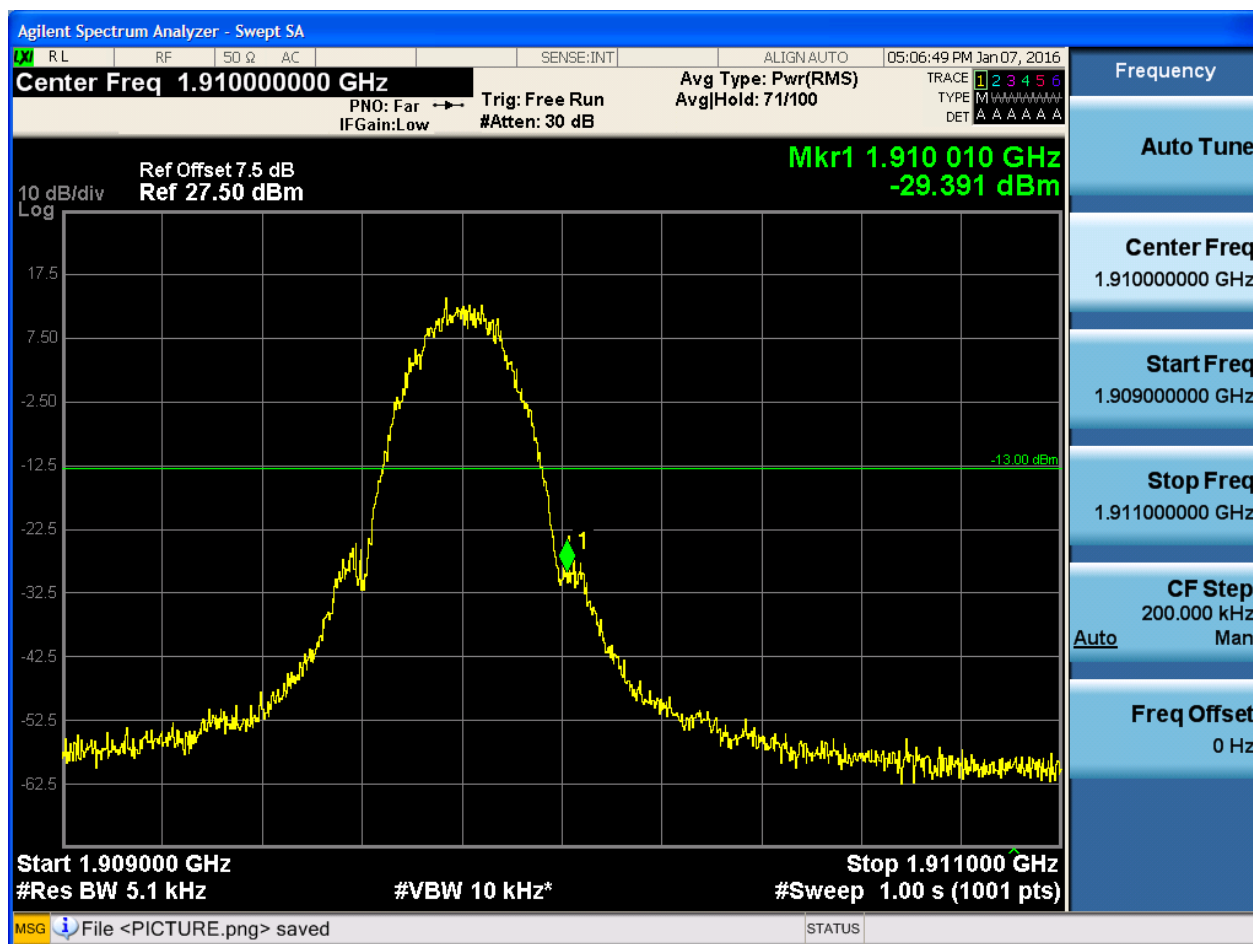


5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



5.1.2.2.2 Test Channel = HCH



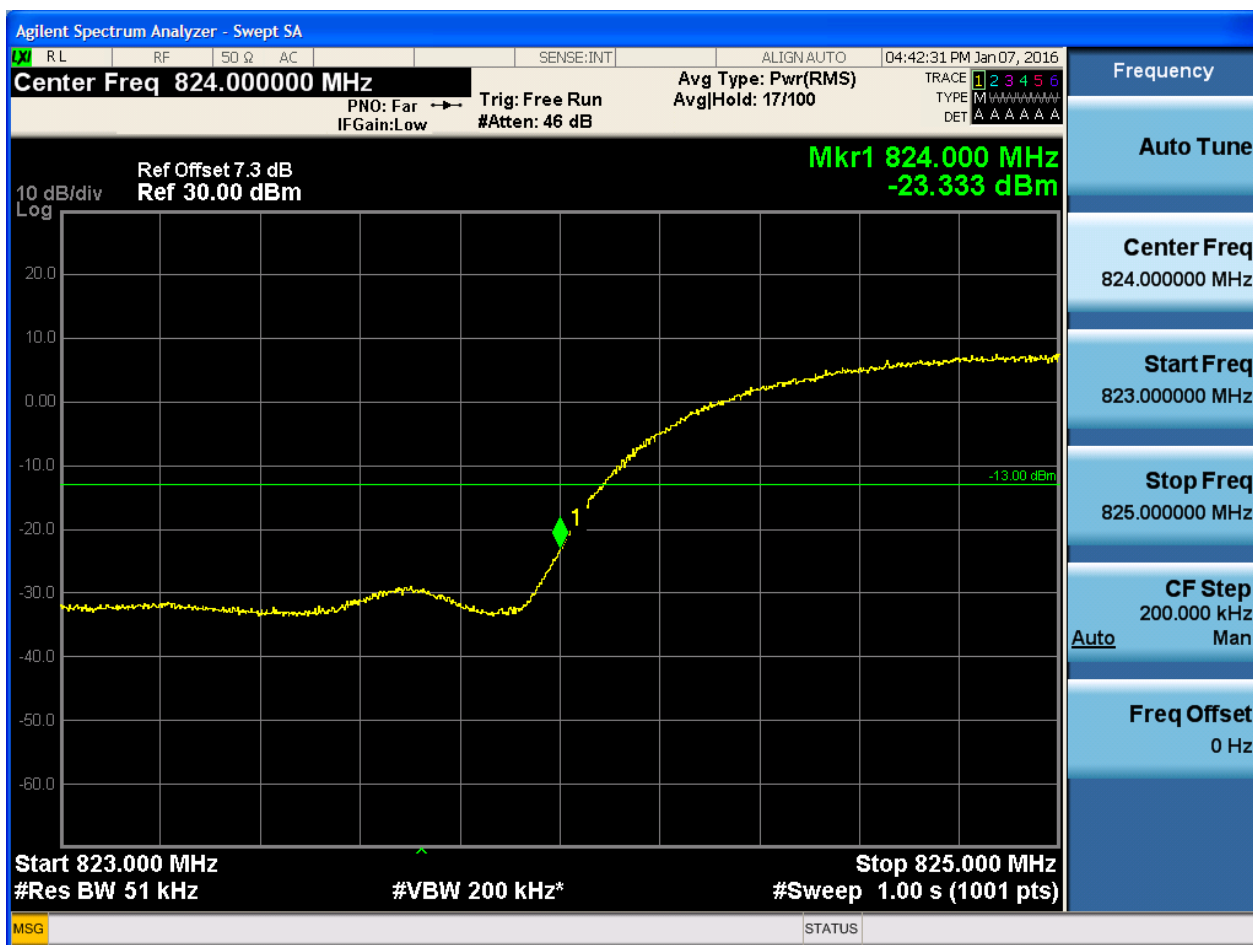


5.2 For UMTS

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

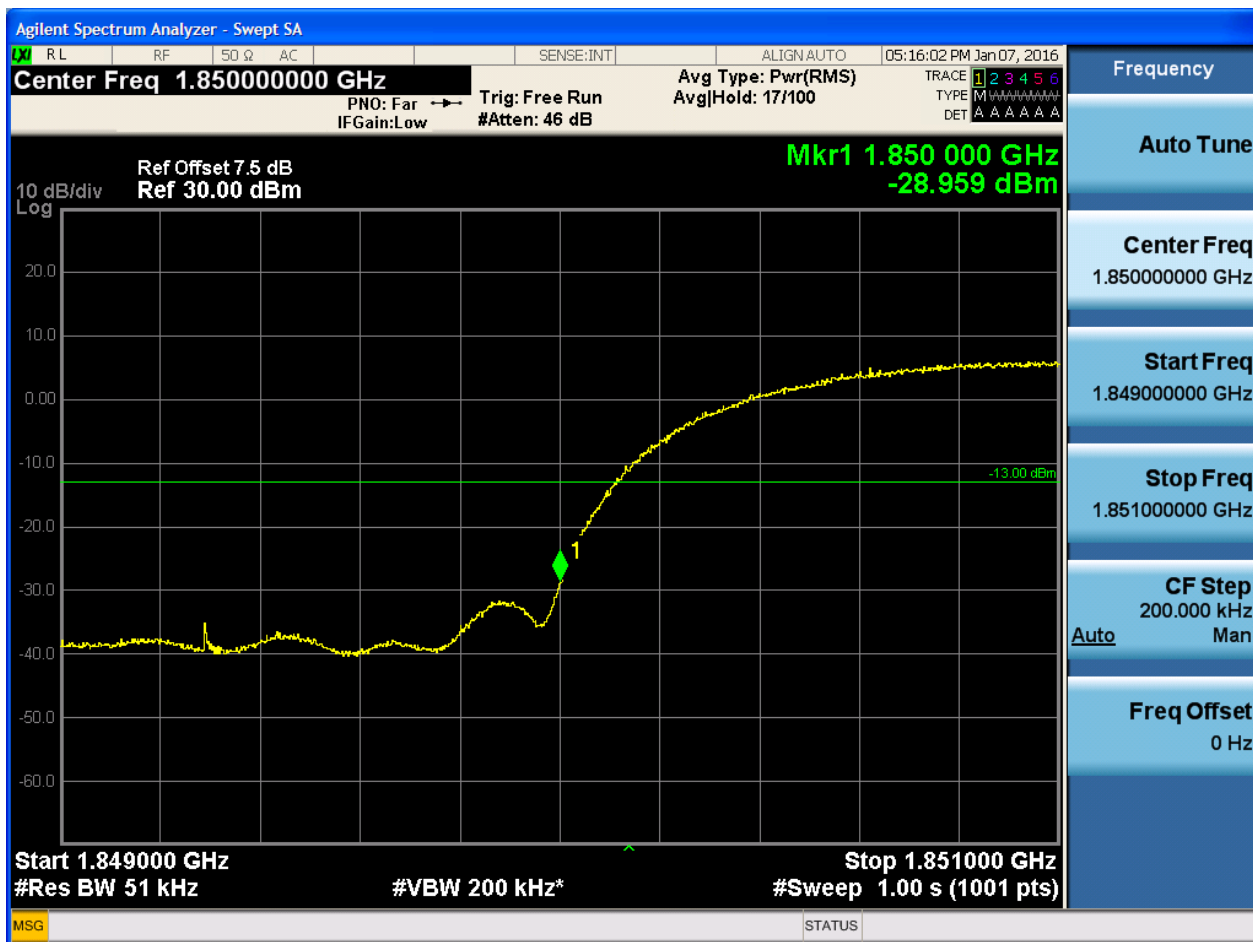




5.2.2 Test Band = WCDMA1900

5.2.2.1 Test Mode = UMTS/TM1

5.2.2.1.1 Test Channel = LCH





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 05:16:22 PM Jan 07, 2016

Center Freq 1.91000000 GHz Avg Type: Pwr(RMS) Avg|Hold: 17/100

PNO: Far Trig: Free Run PNO: Far Trig: Free Run

IFGain:Low #Atten: 46 dB

TRACE 1 2 3 4 5 6

TYPE M M M M M M M M

DET A A A A A A

Ref Offset 7.5 dB

Ref 30.00 dBm

Mkr1 1.910 000 GHz

-27.376 dBm

10 dB/div

Log

20.0

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-13.00 dBm

1

Start 1.909000 GHz

#Res BW 51 kHz

#VBW 200 kHz*

Stop 1.911000 GHz

#Sweep 1.00 s (1001 pts)

MSG File <PICTURE.png> saved

STATUS

Frequency

Auto Tune

Center Freq 1.91000000 GHz

Start Freq 1.90900000 GHz

Stop Freq 1.91100000 GHz

CF Step 200.000 kHz

Man

Freq Offset 0 Hz



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.

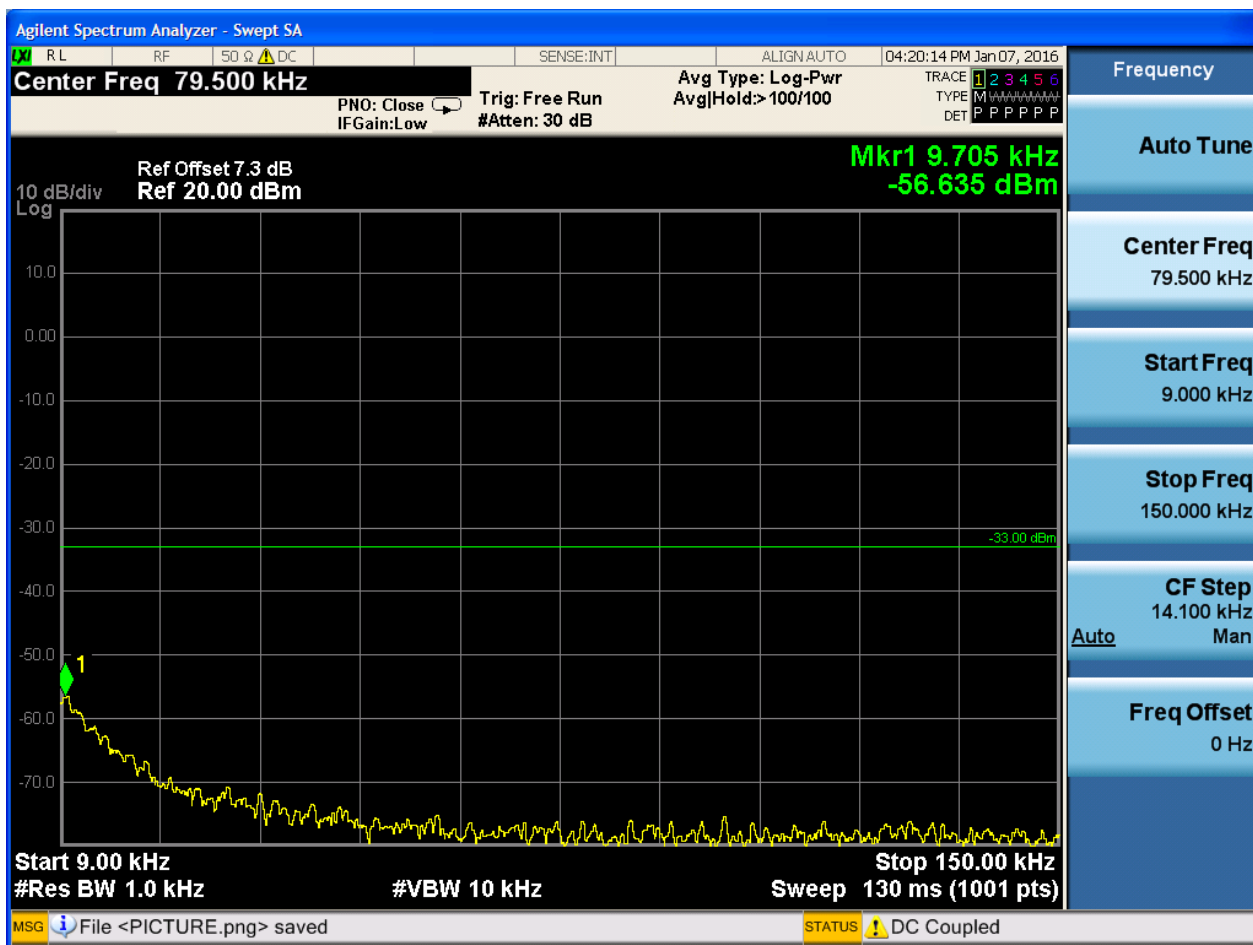
Part I - Test Plots

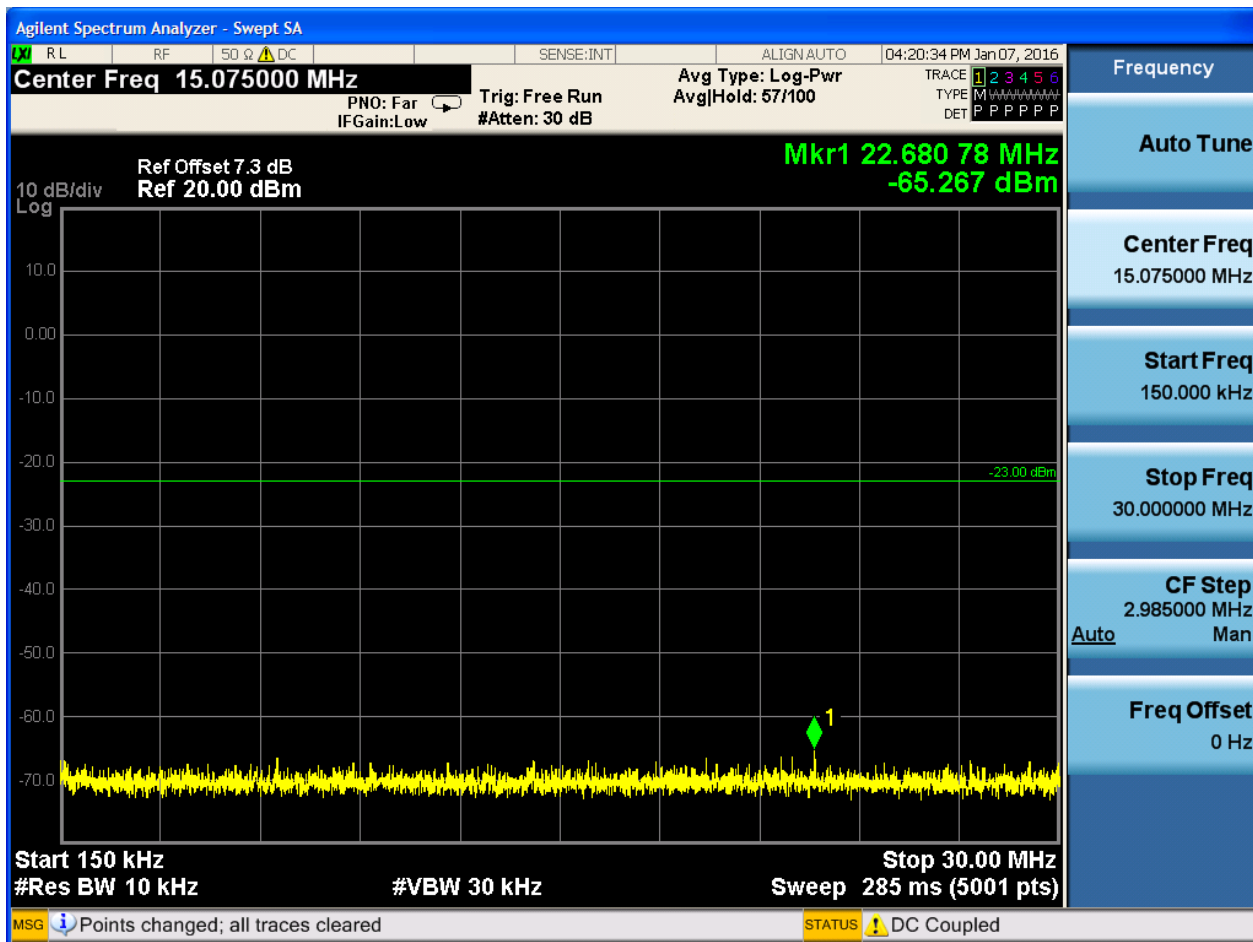
6.1 For GSM

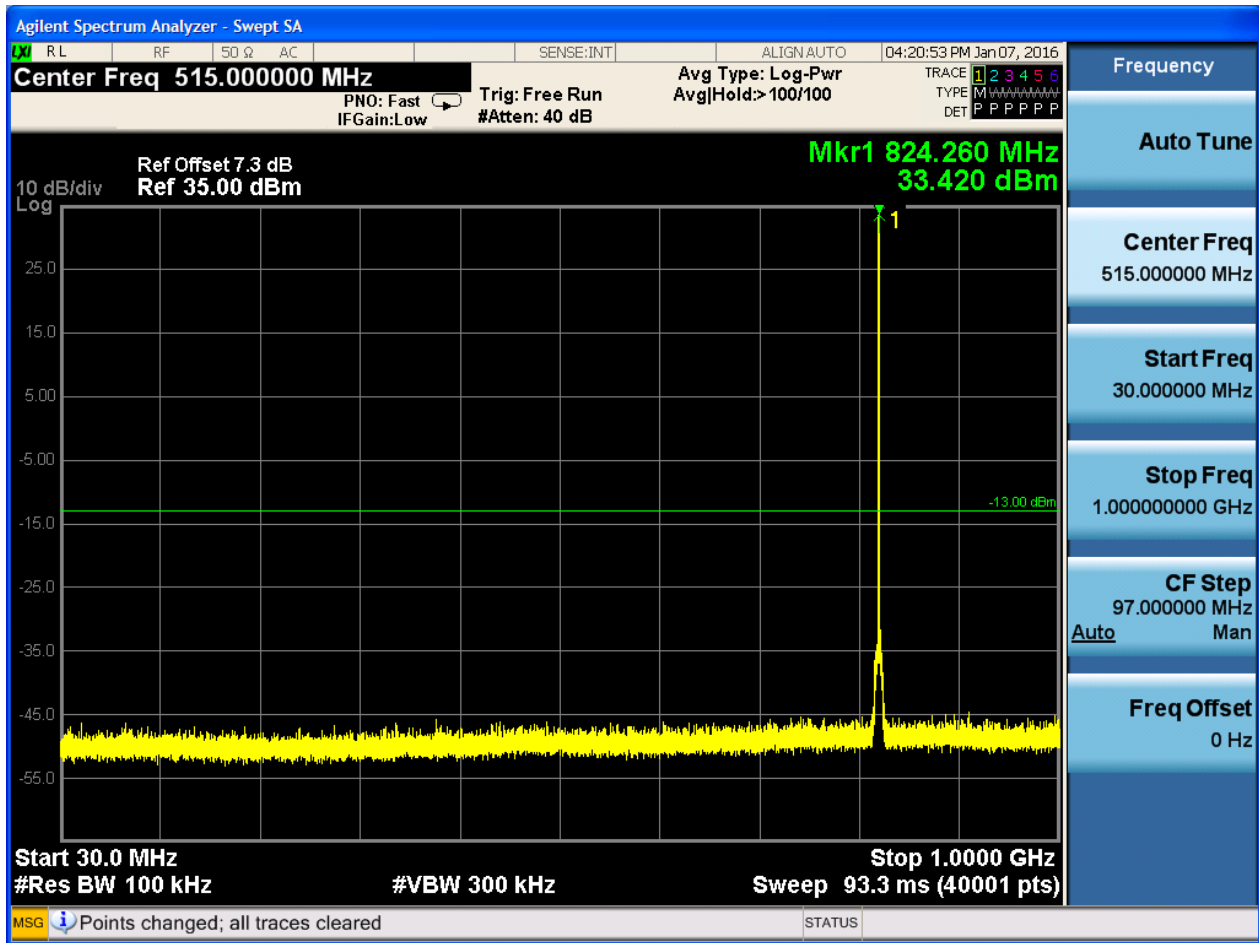
6.1.1 Test Band = GSM850

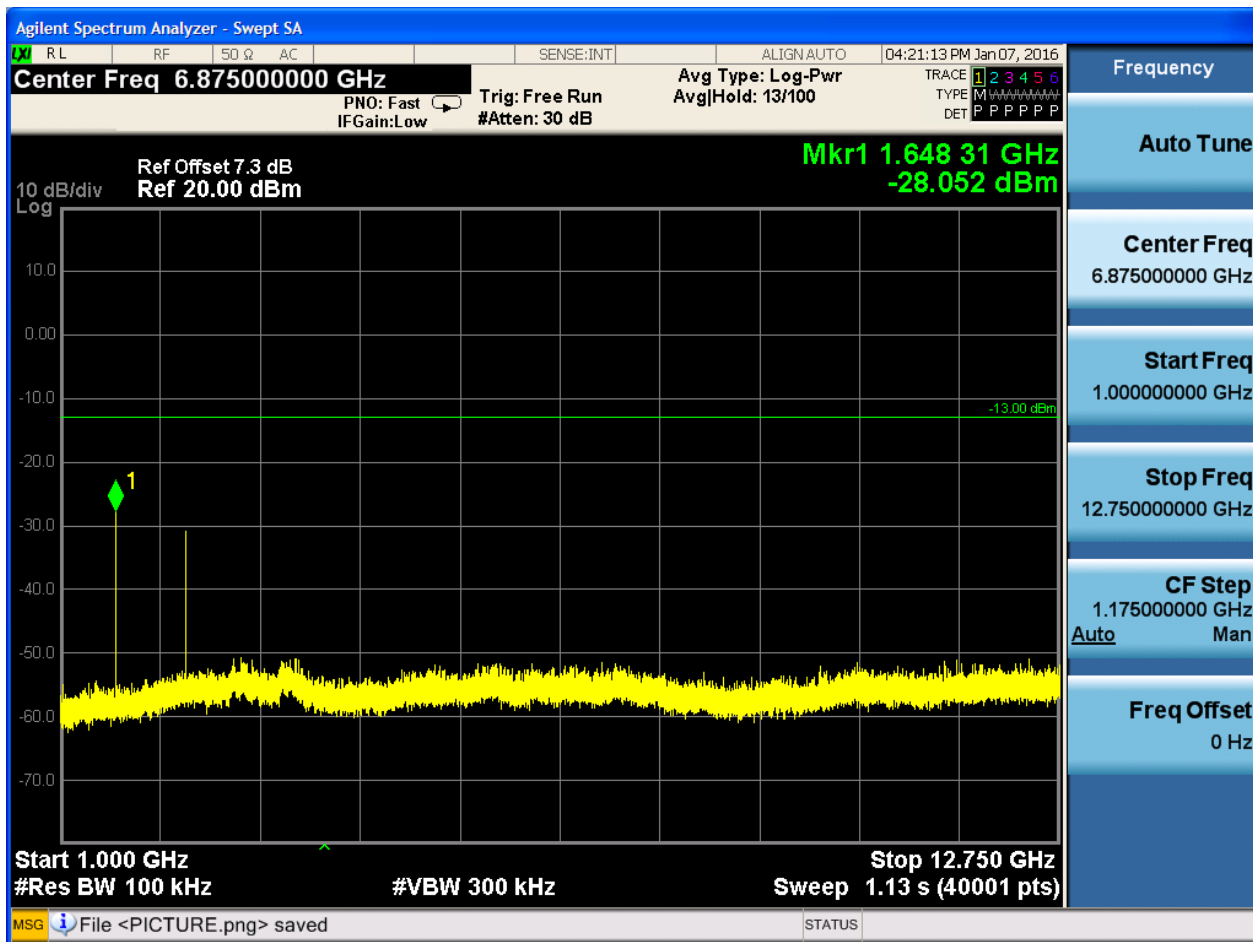
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

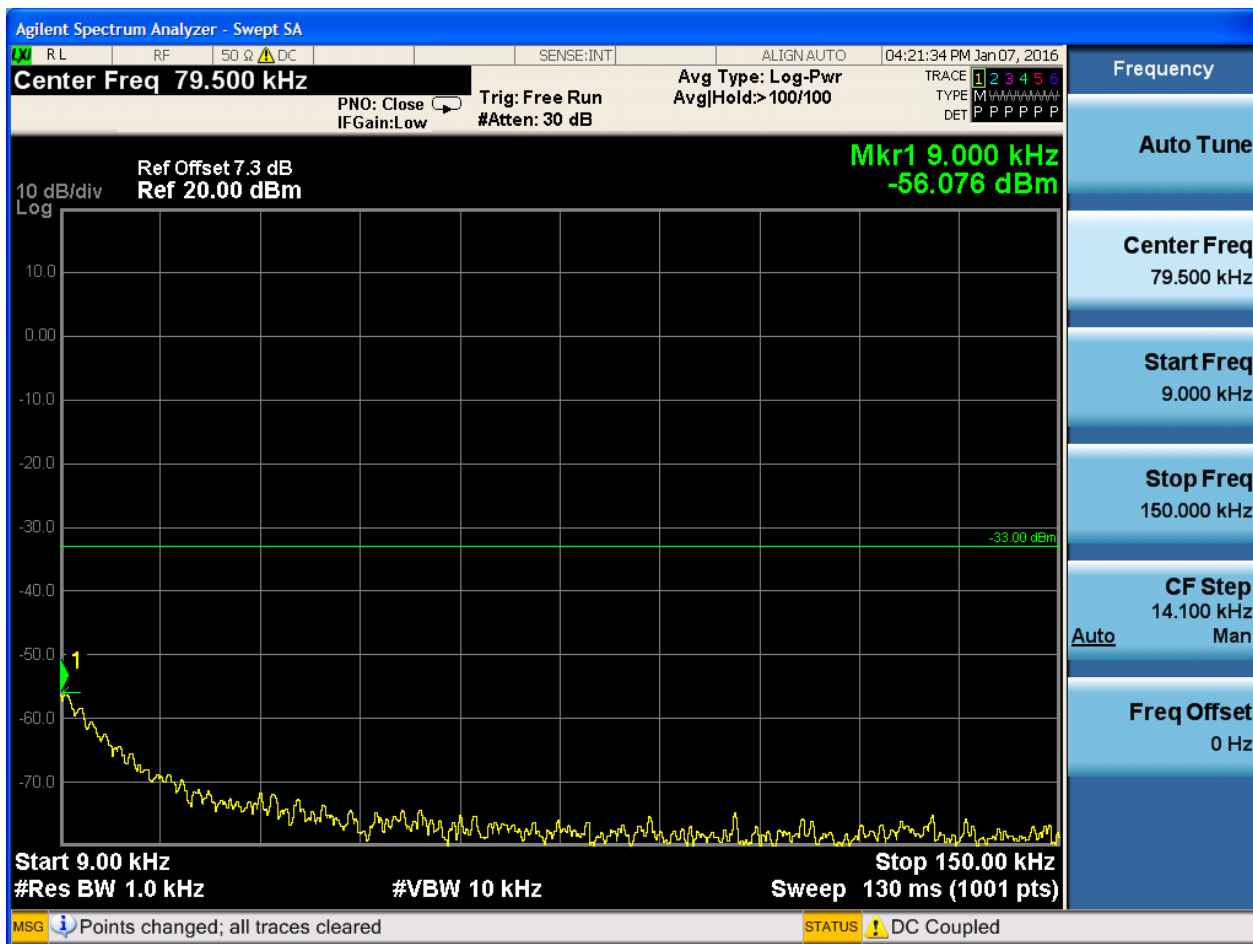


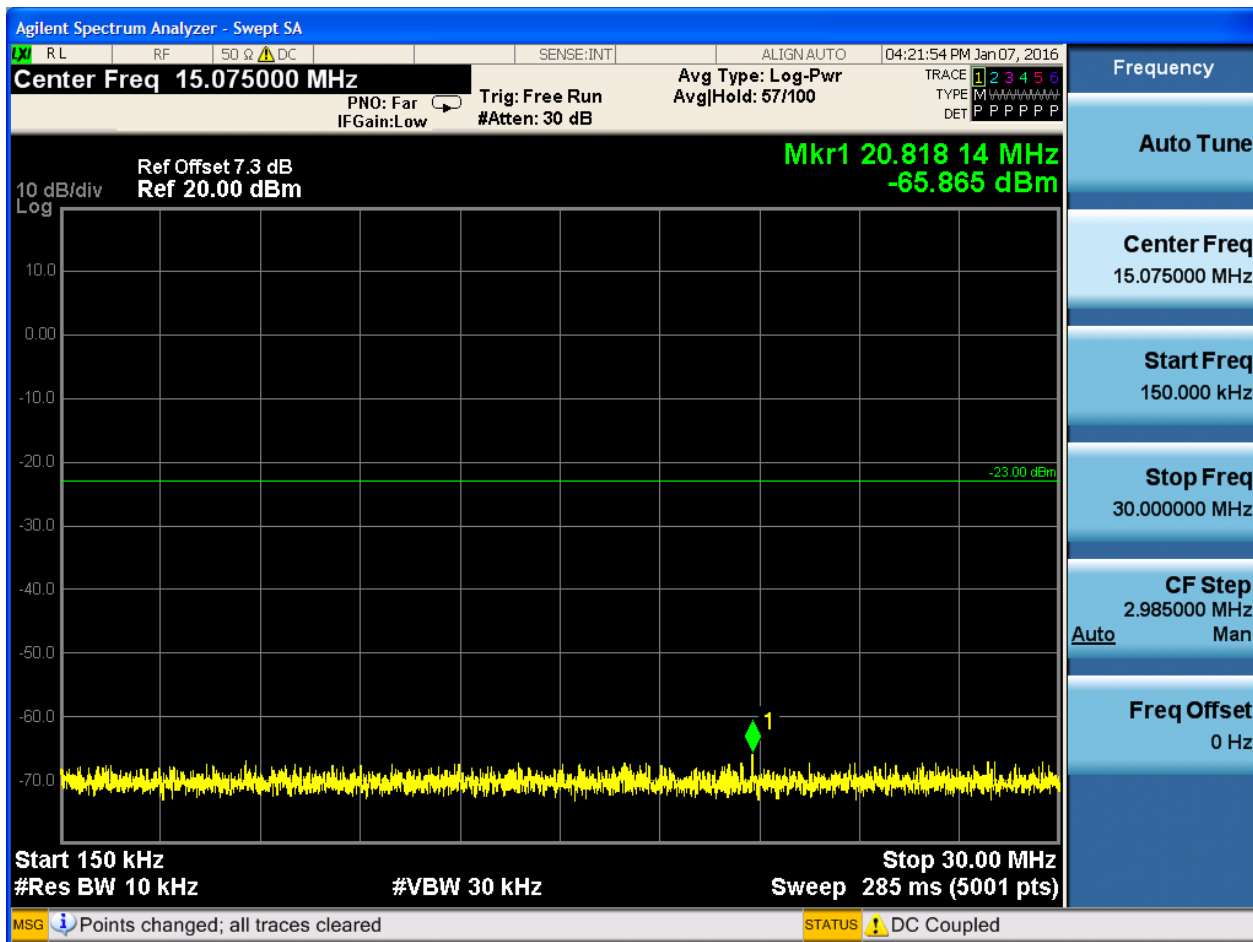


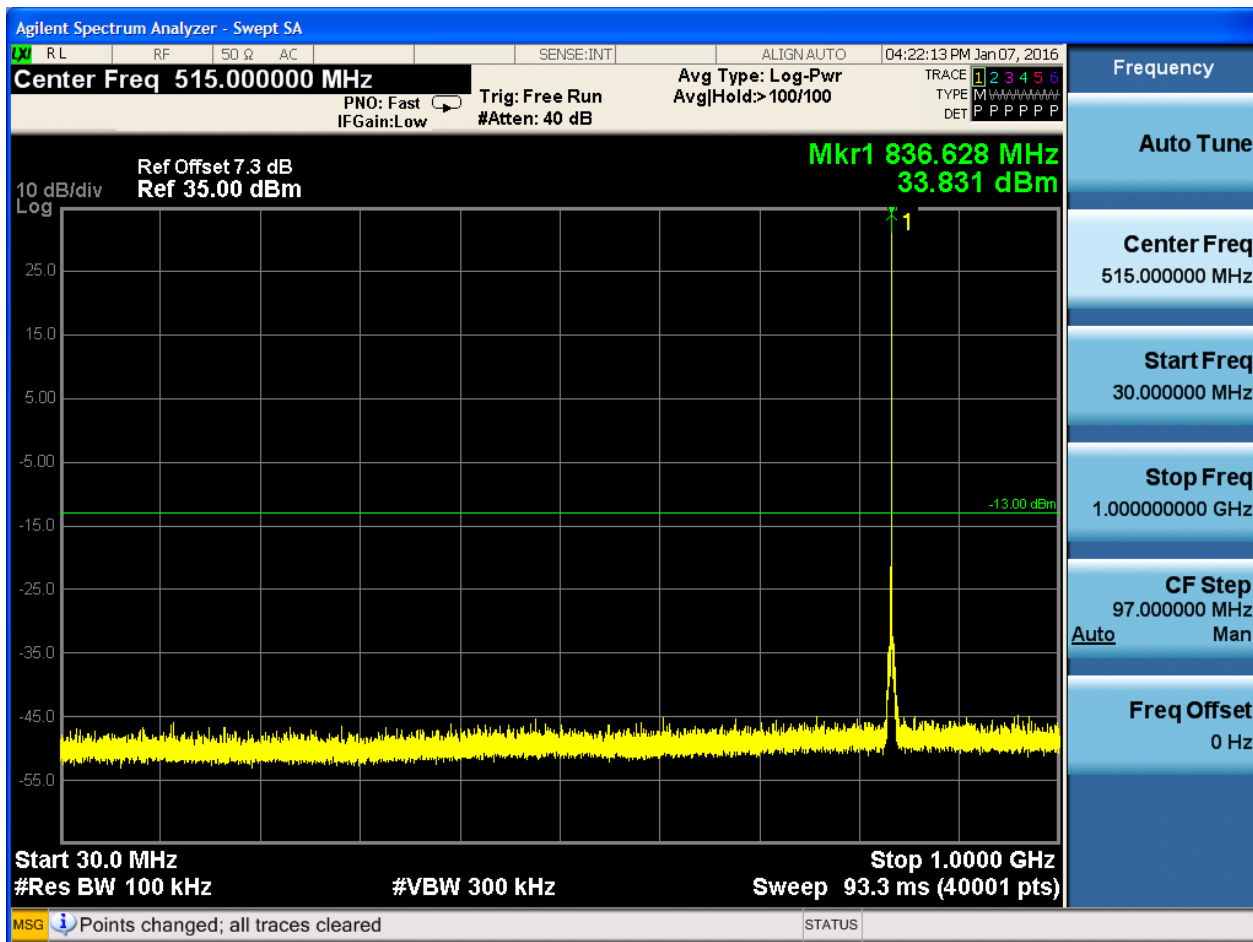


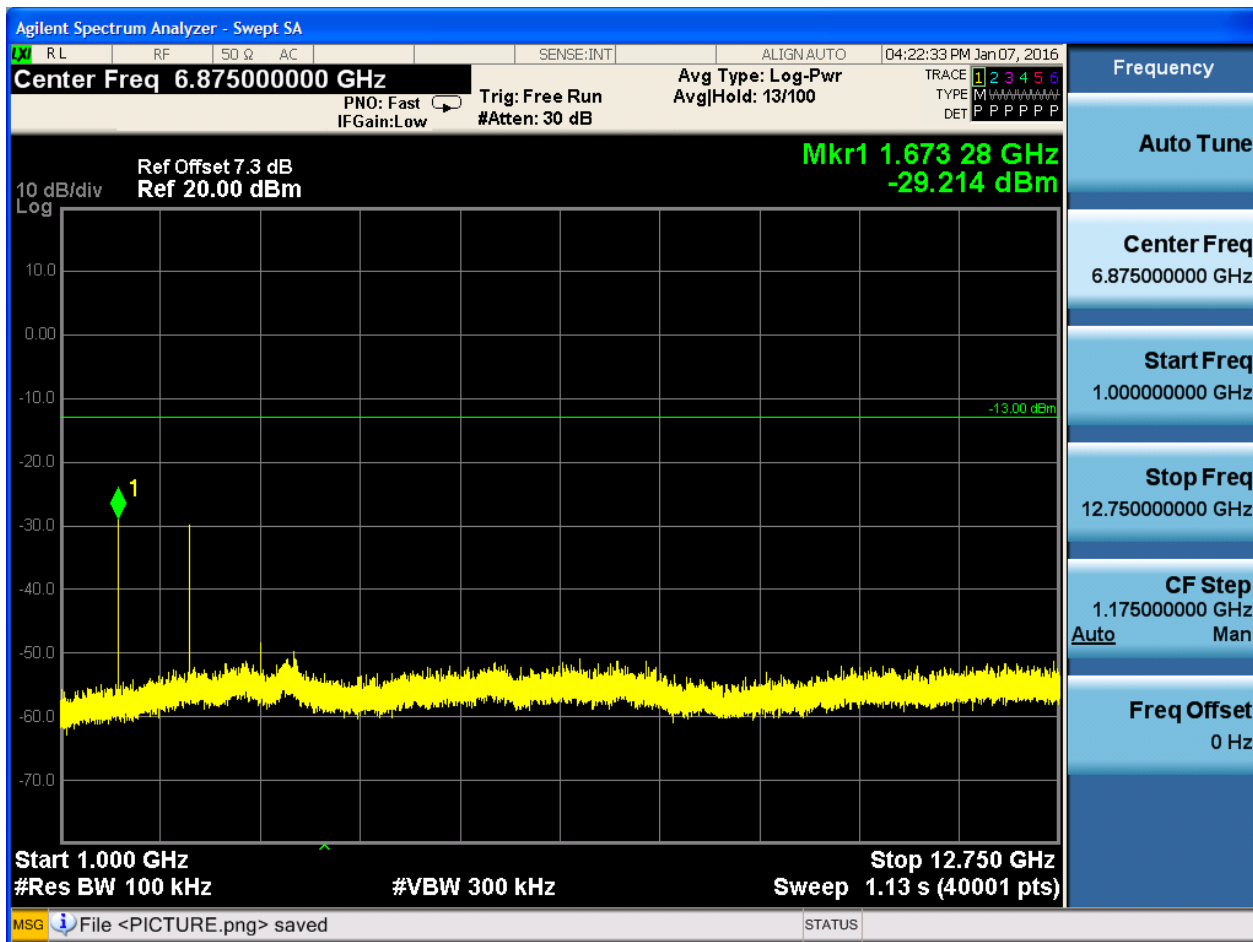


6.1.1.1.2 Test Channel = MCH

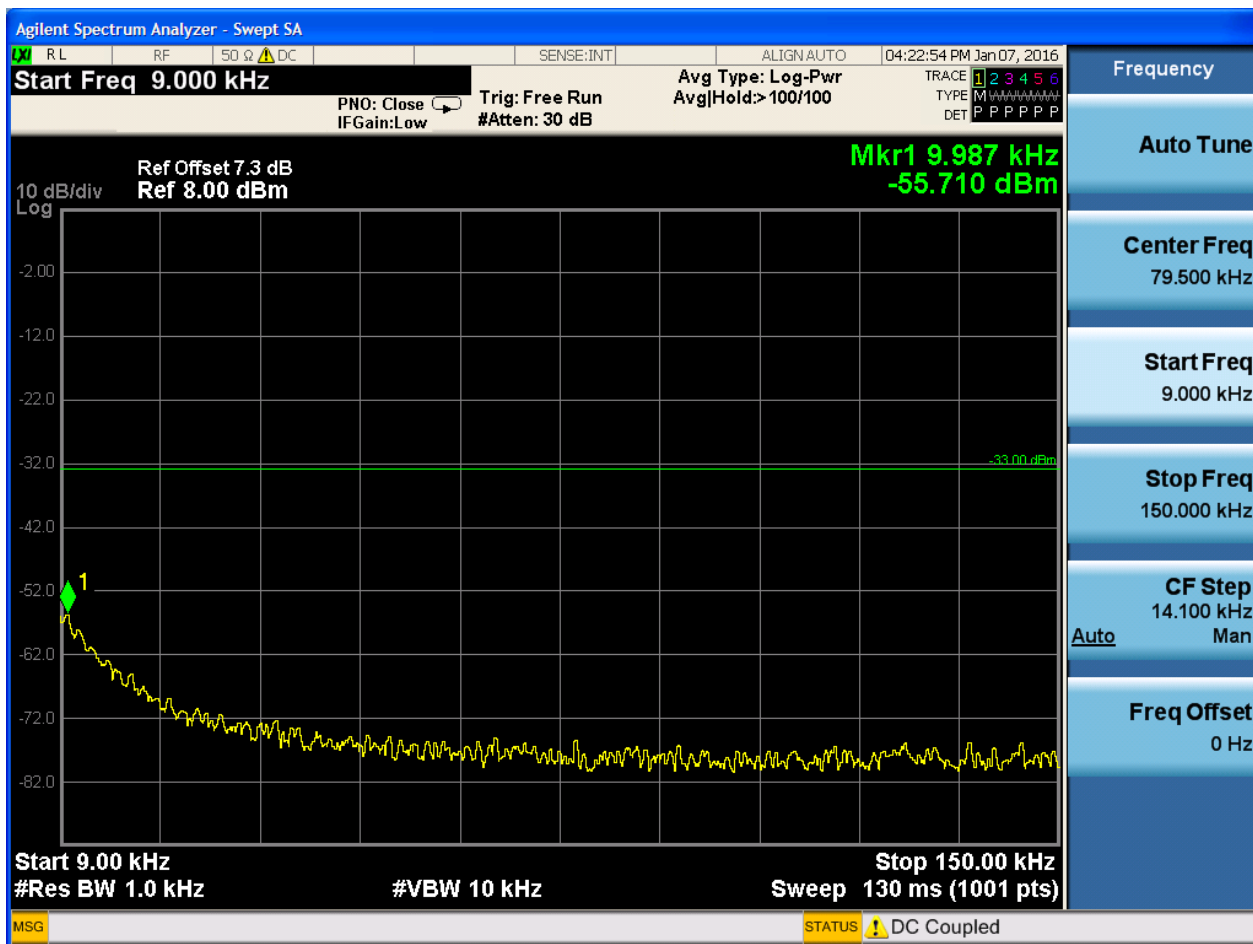


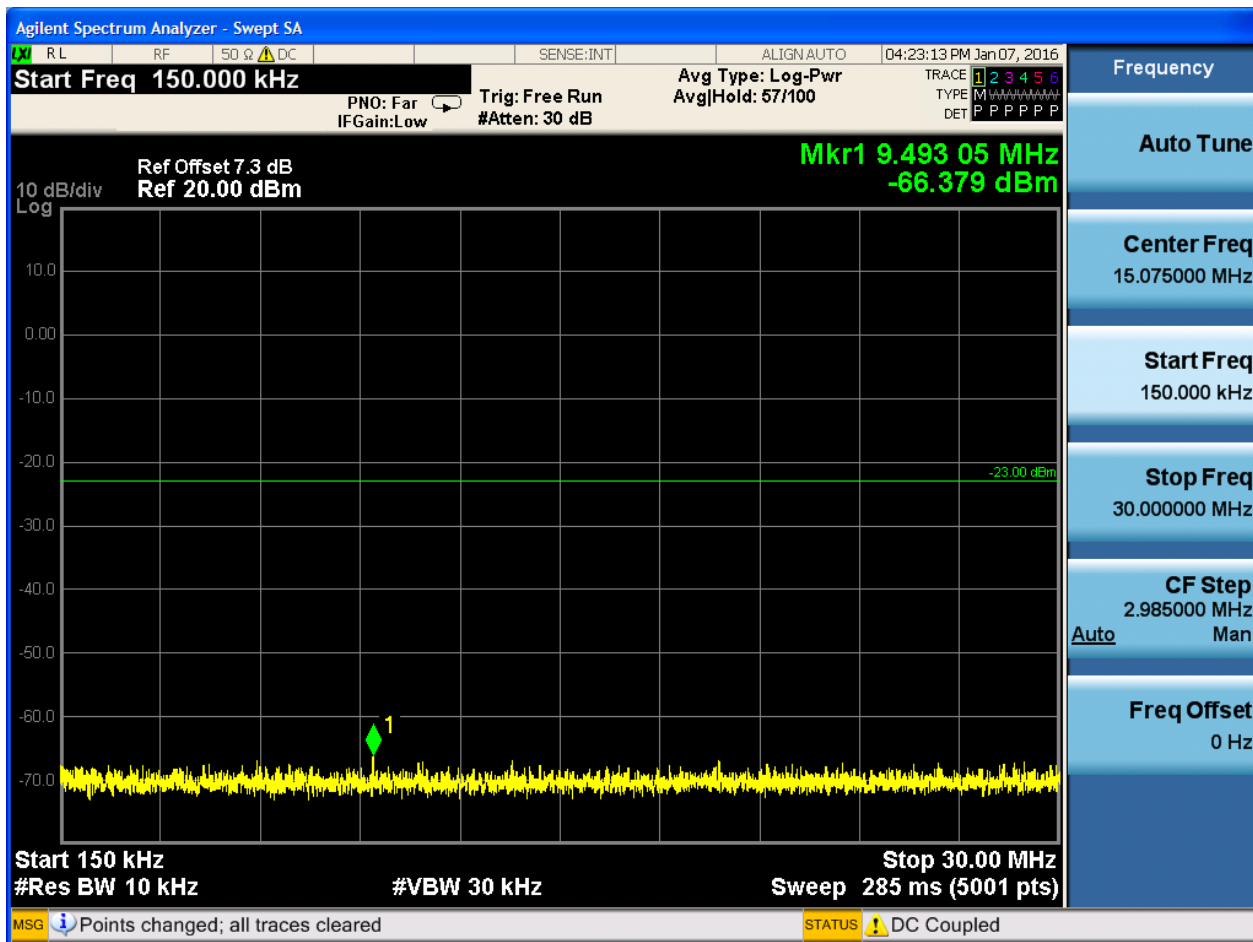


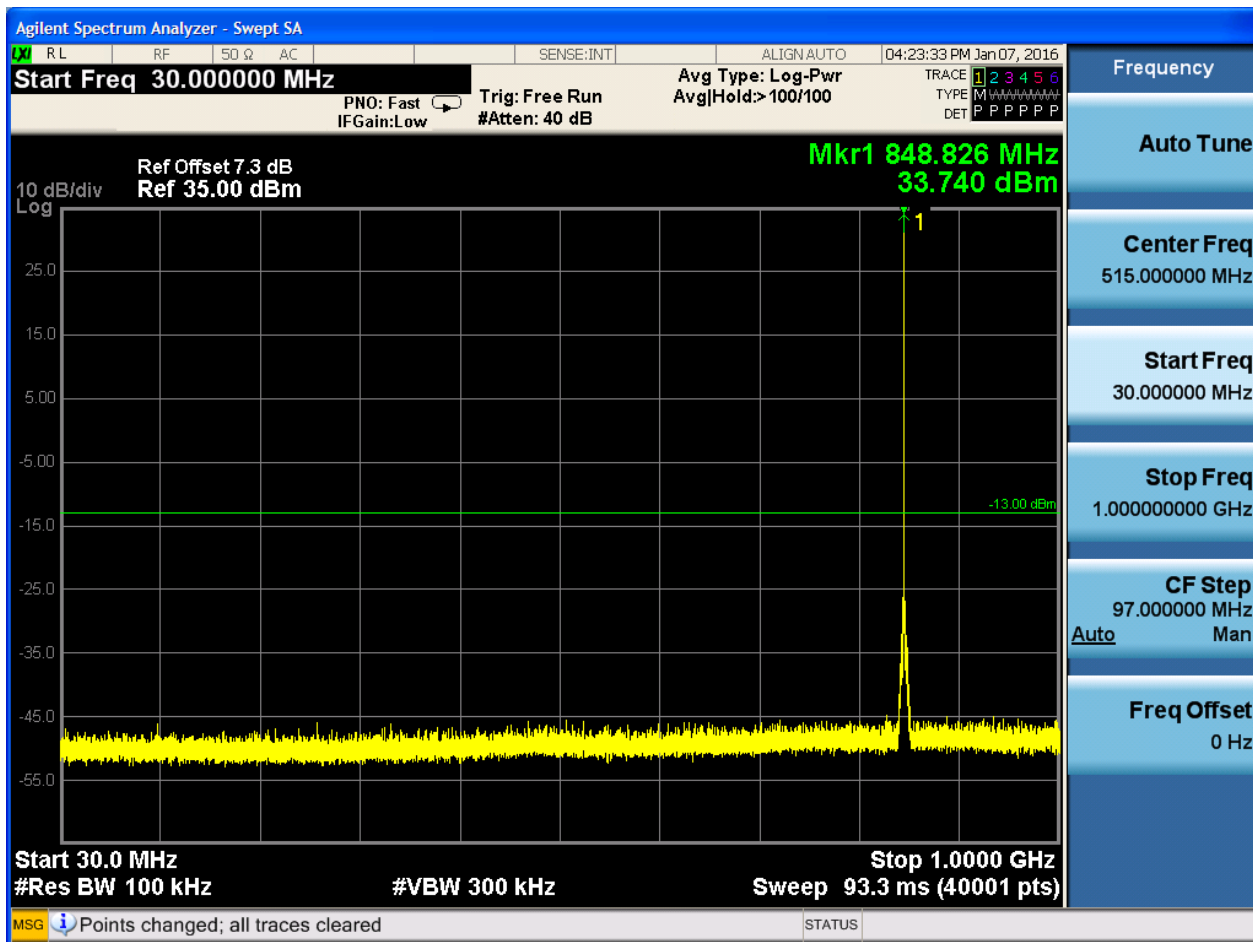


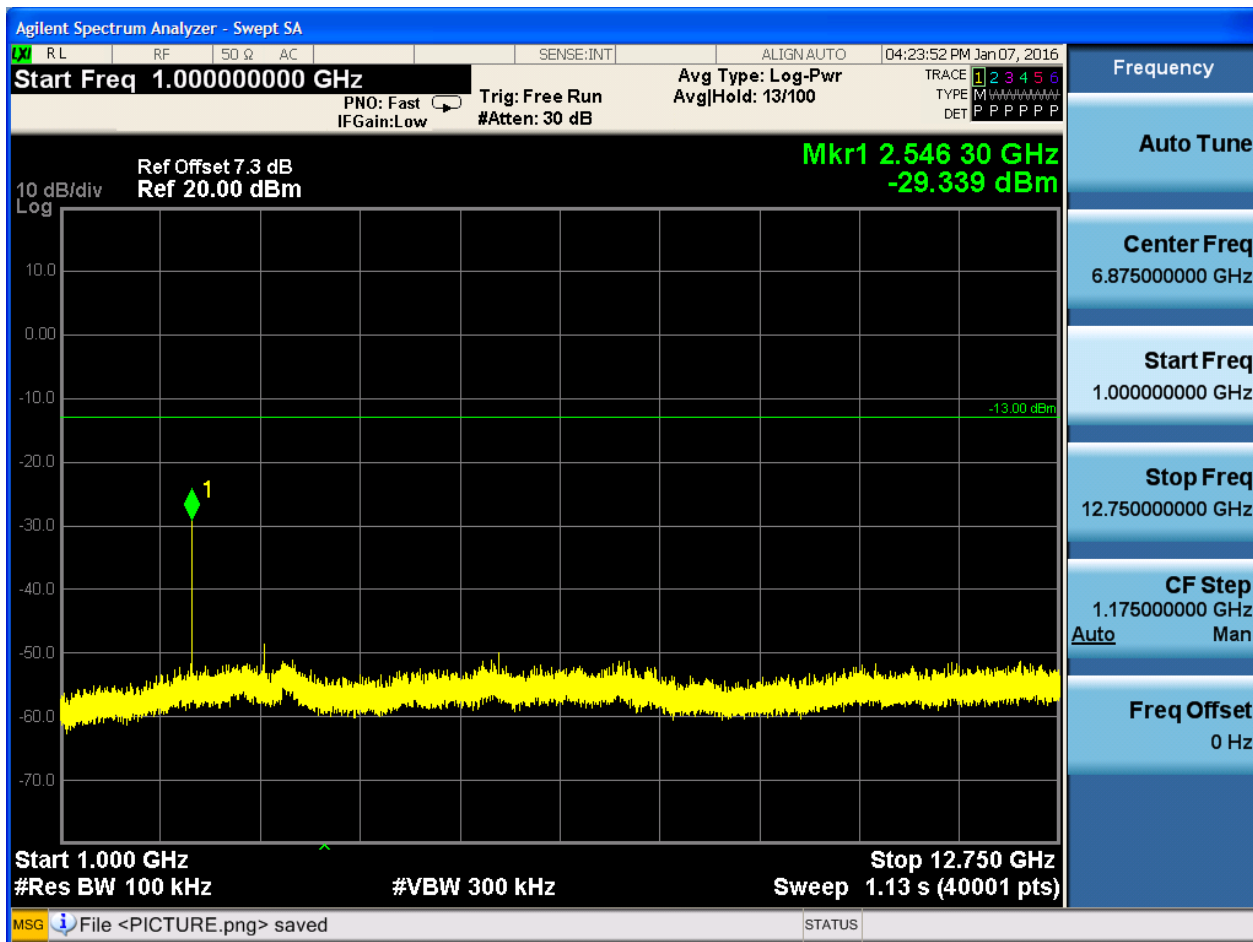


6.1.1.1.3 Test Channel = HCH





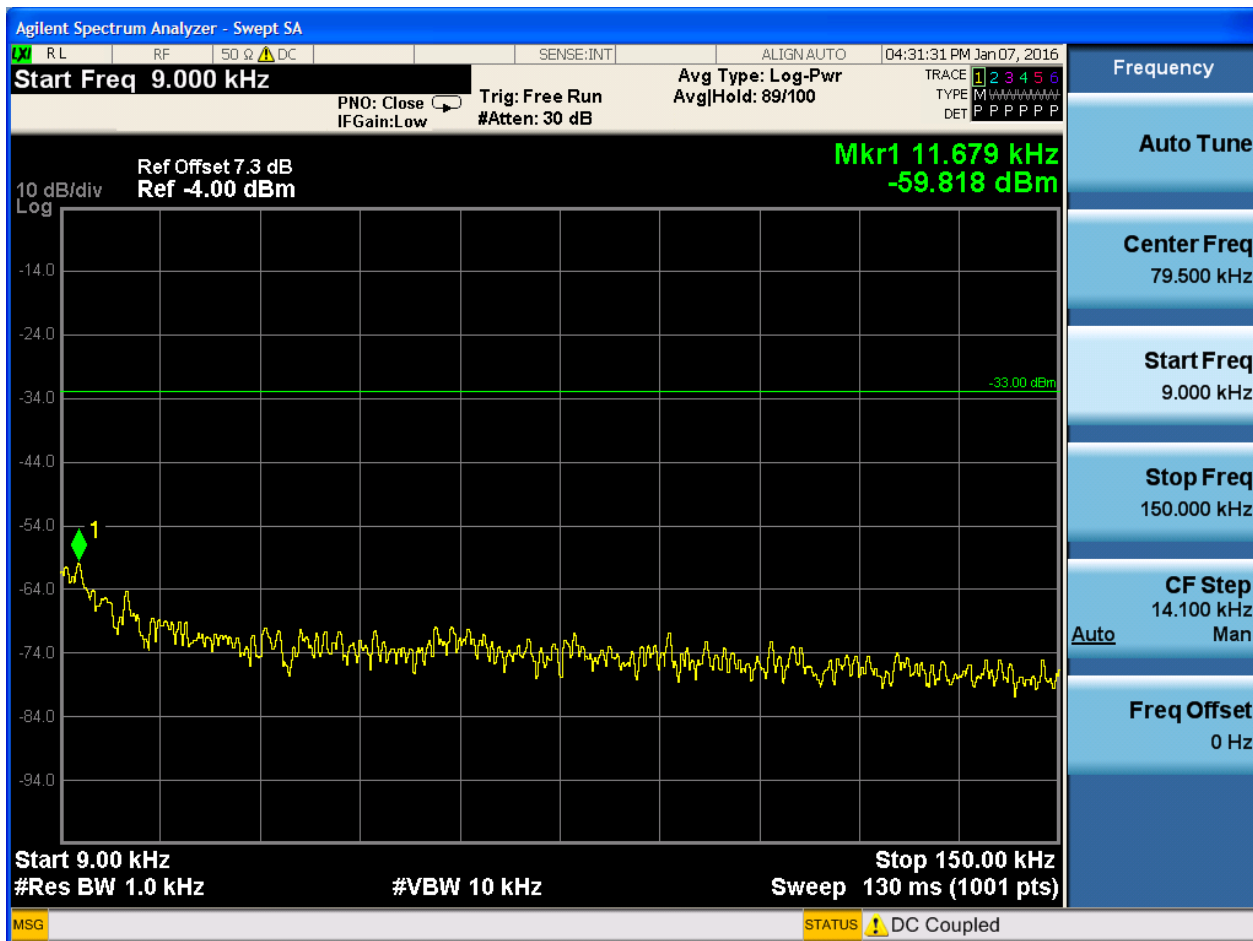


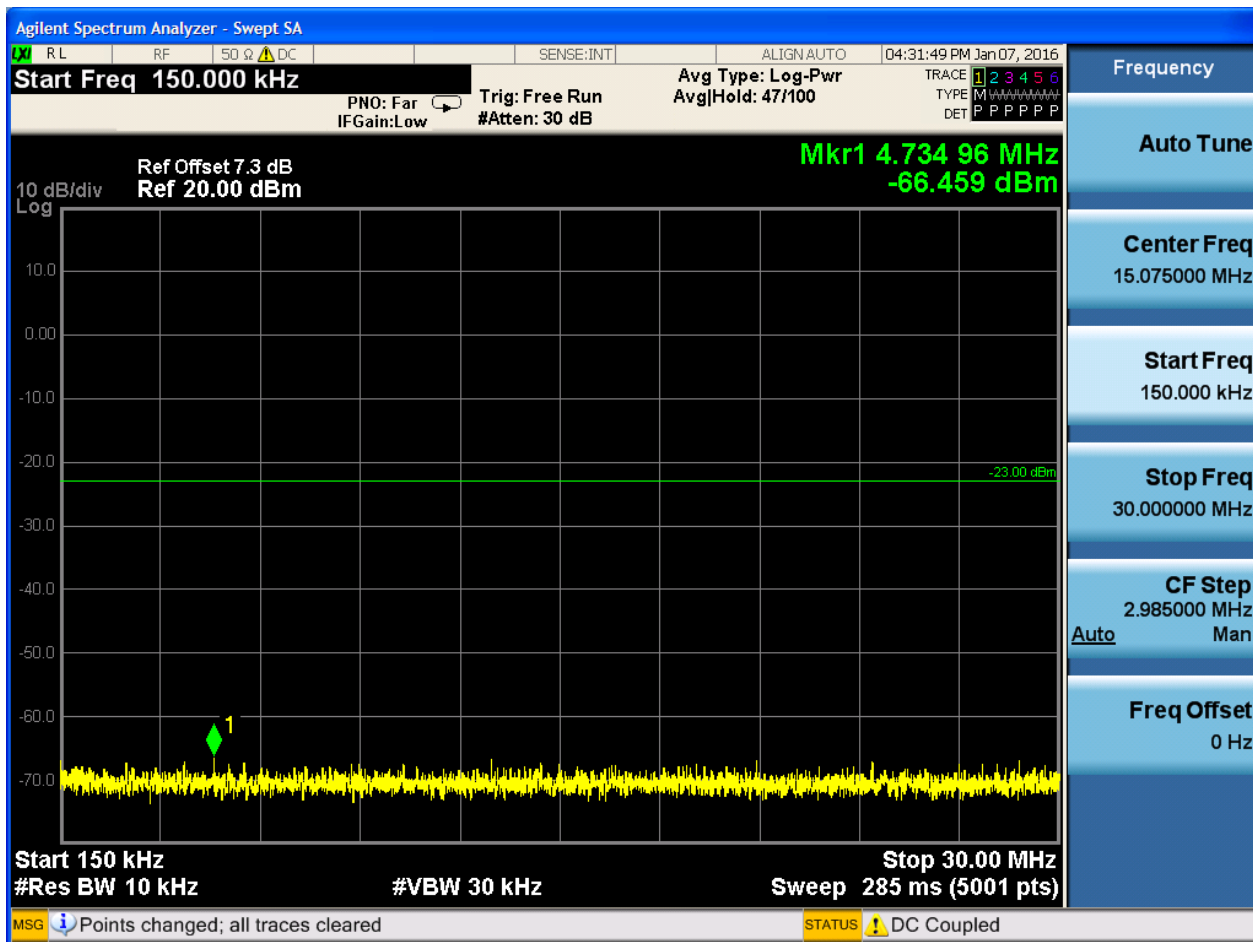


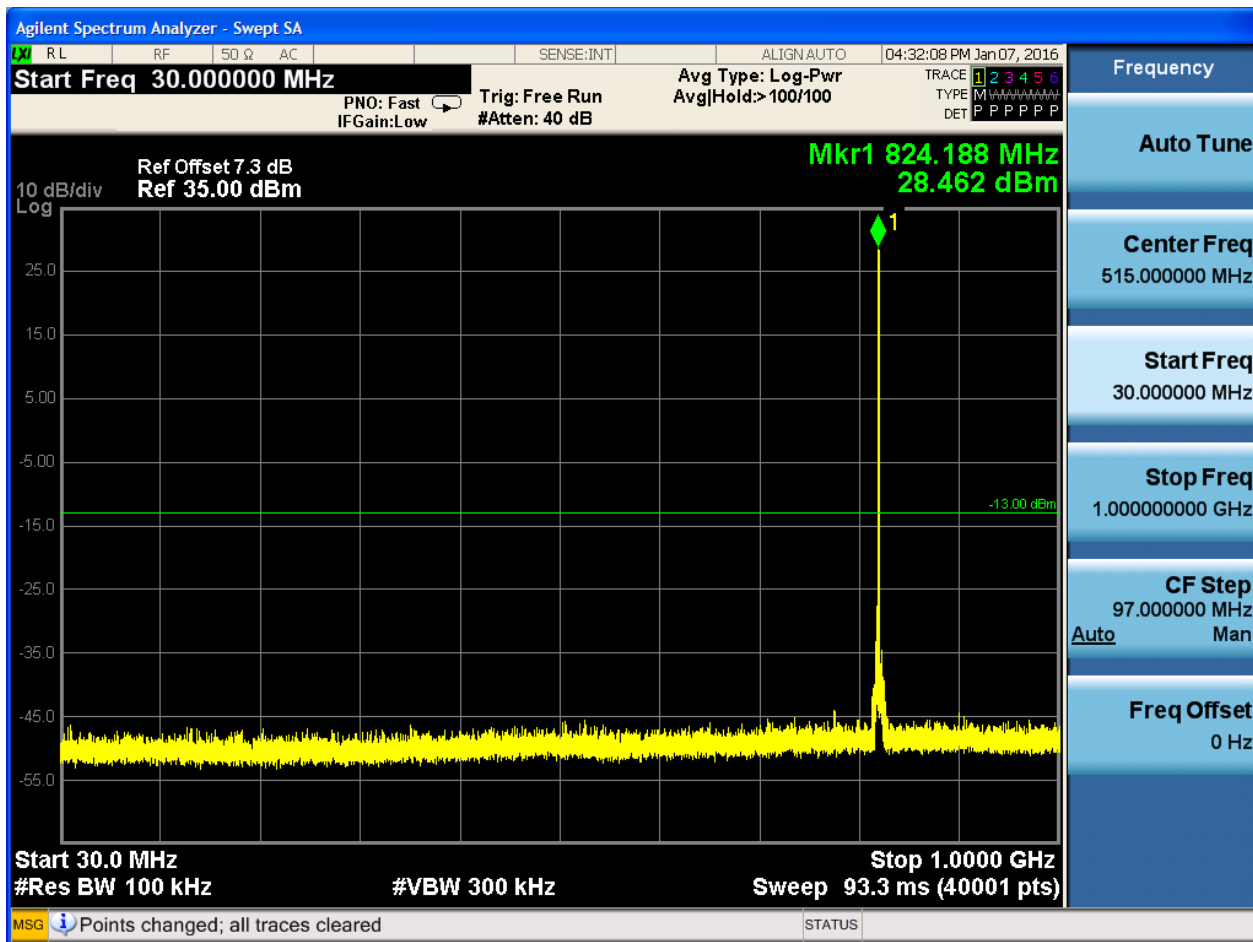


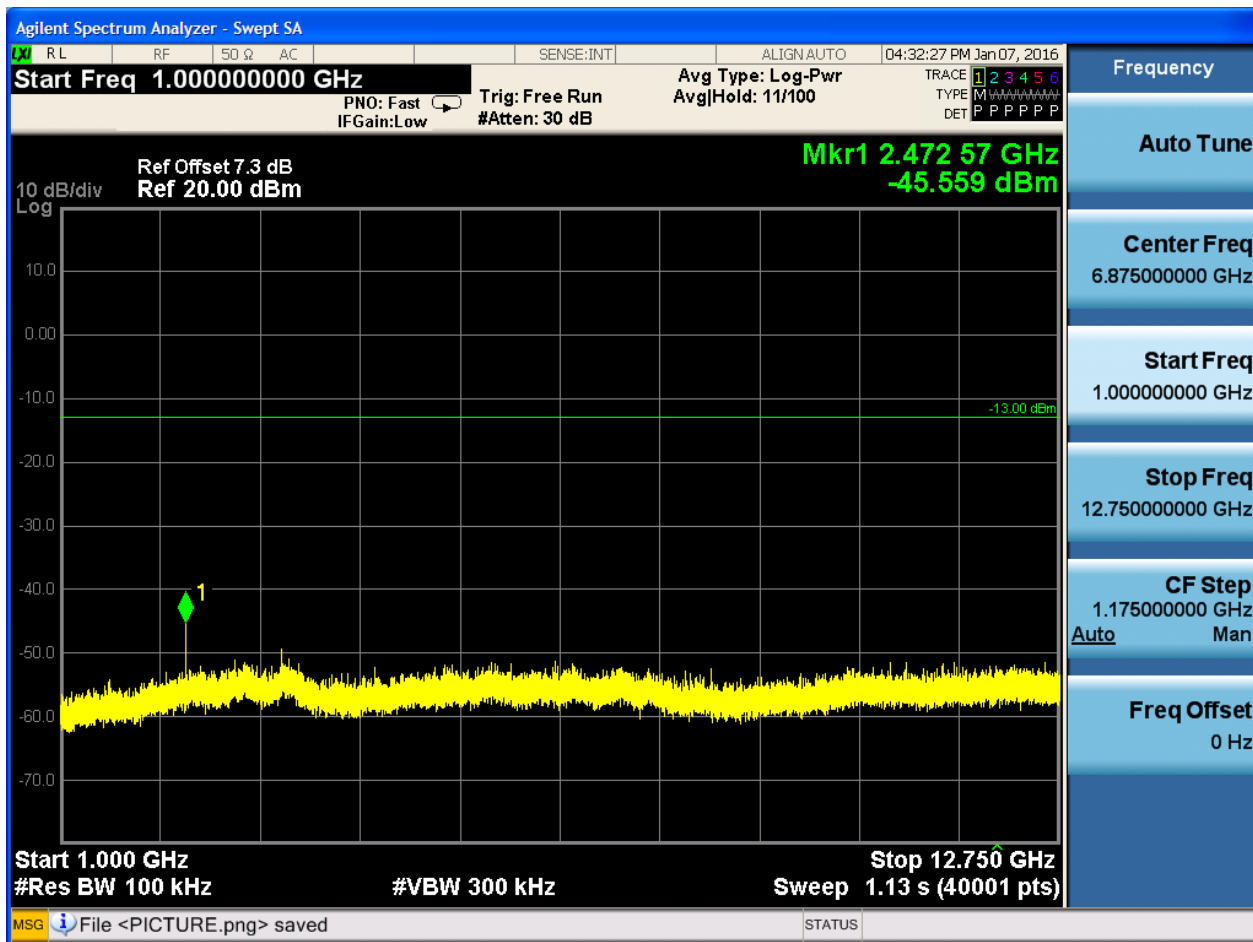
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

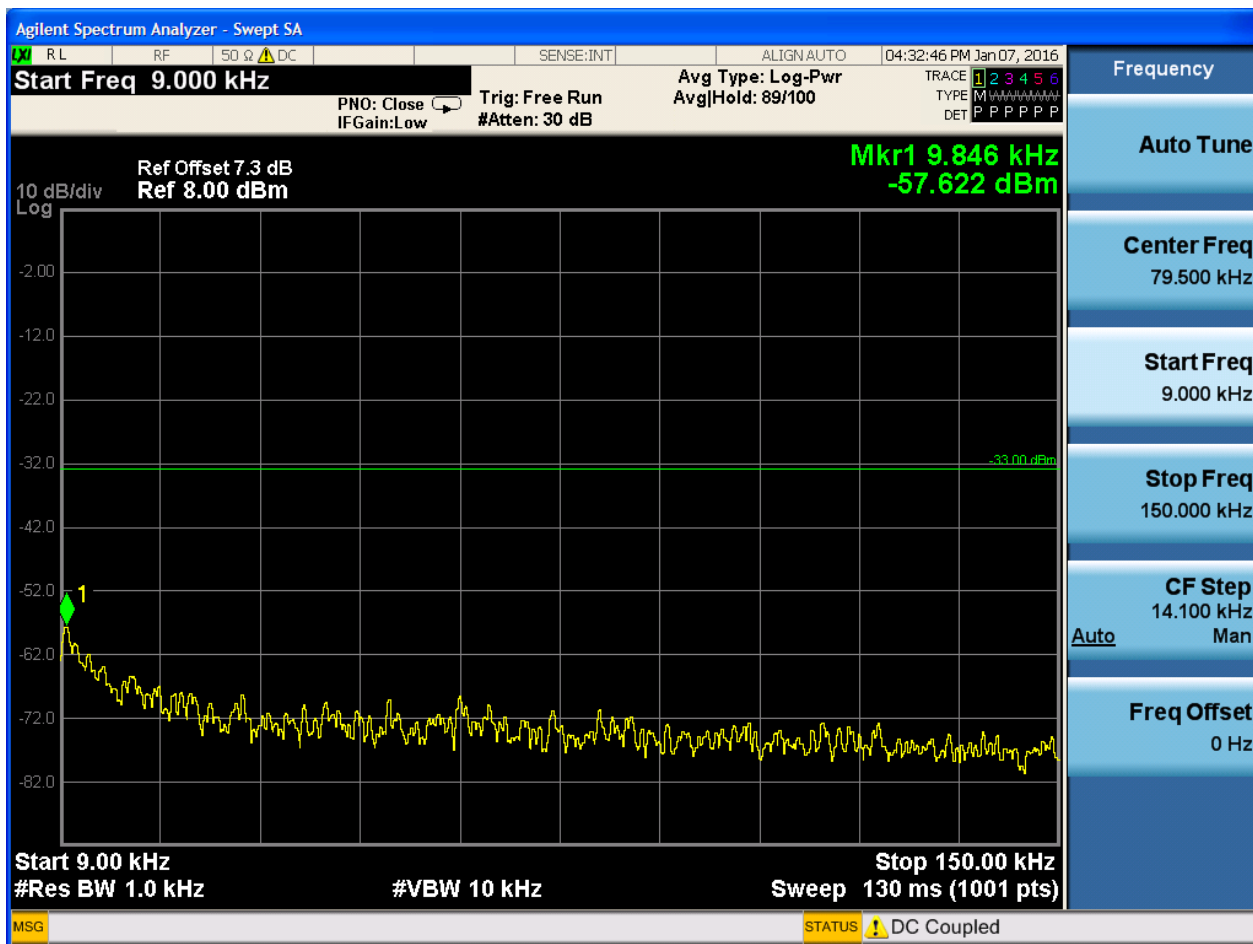


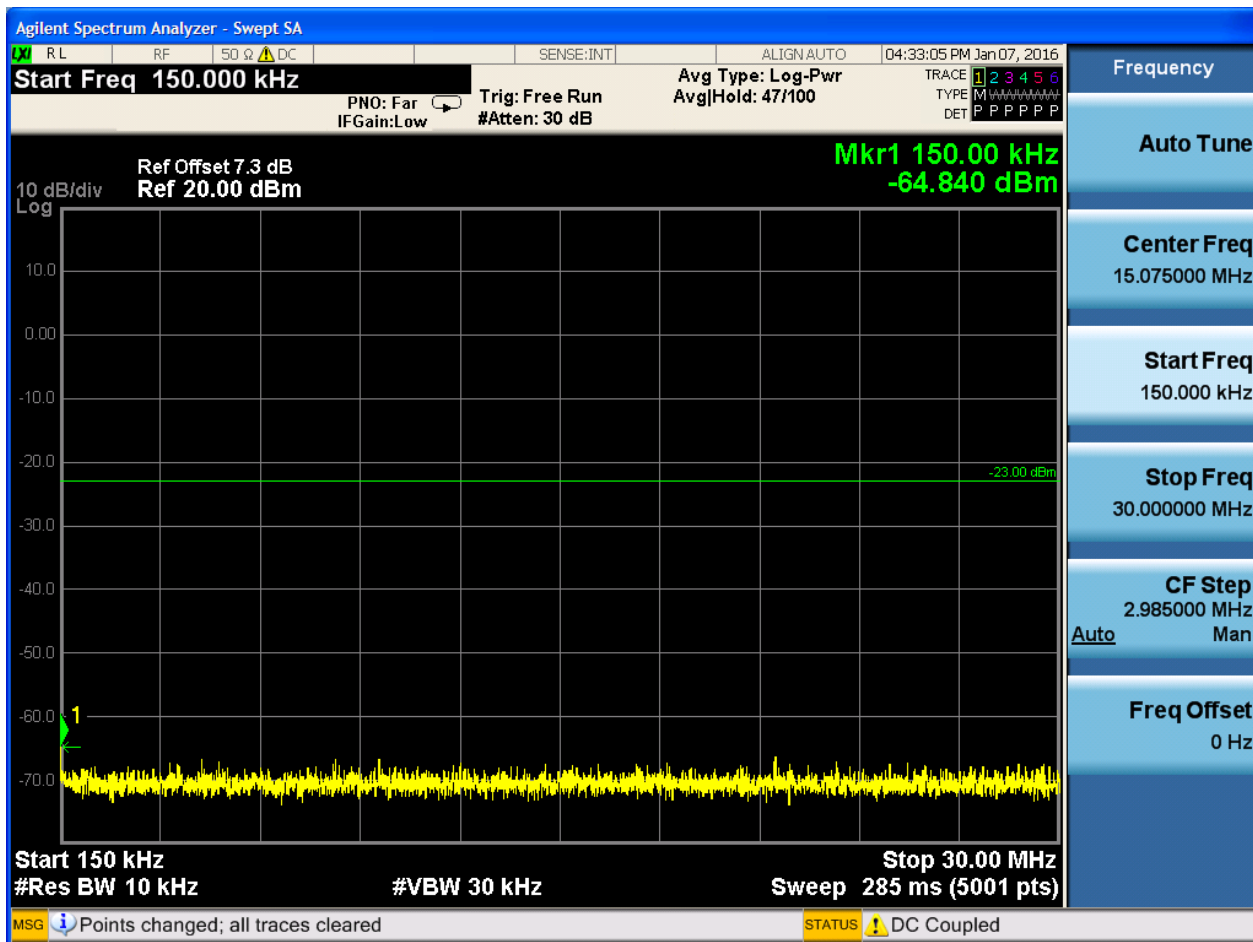


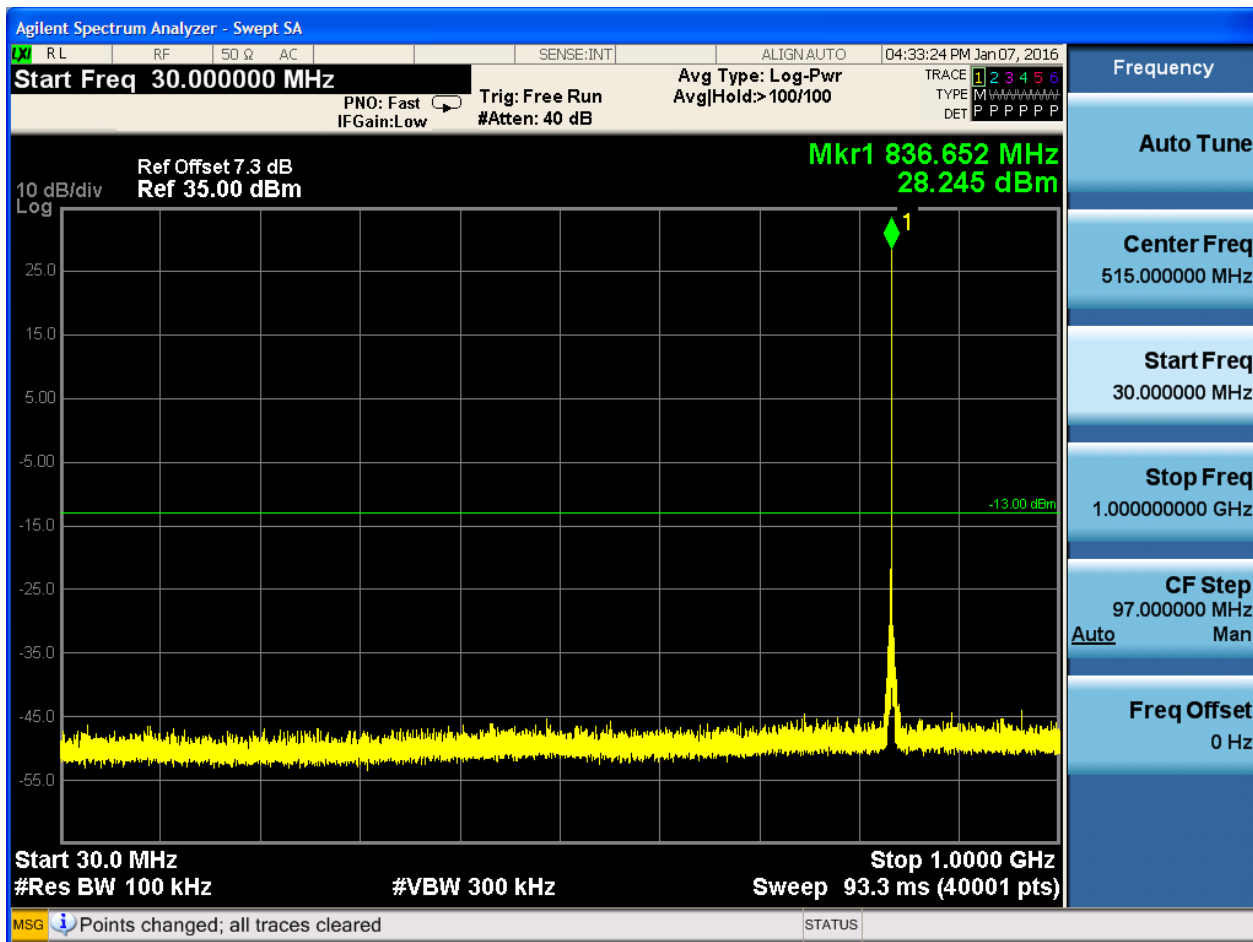


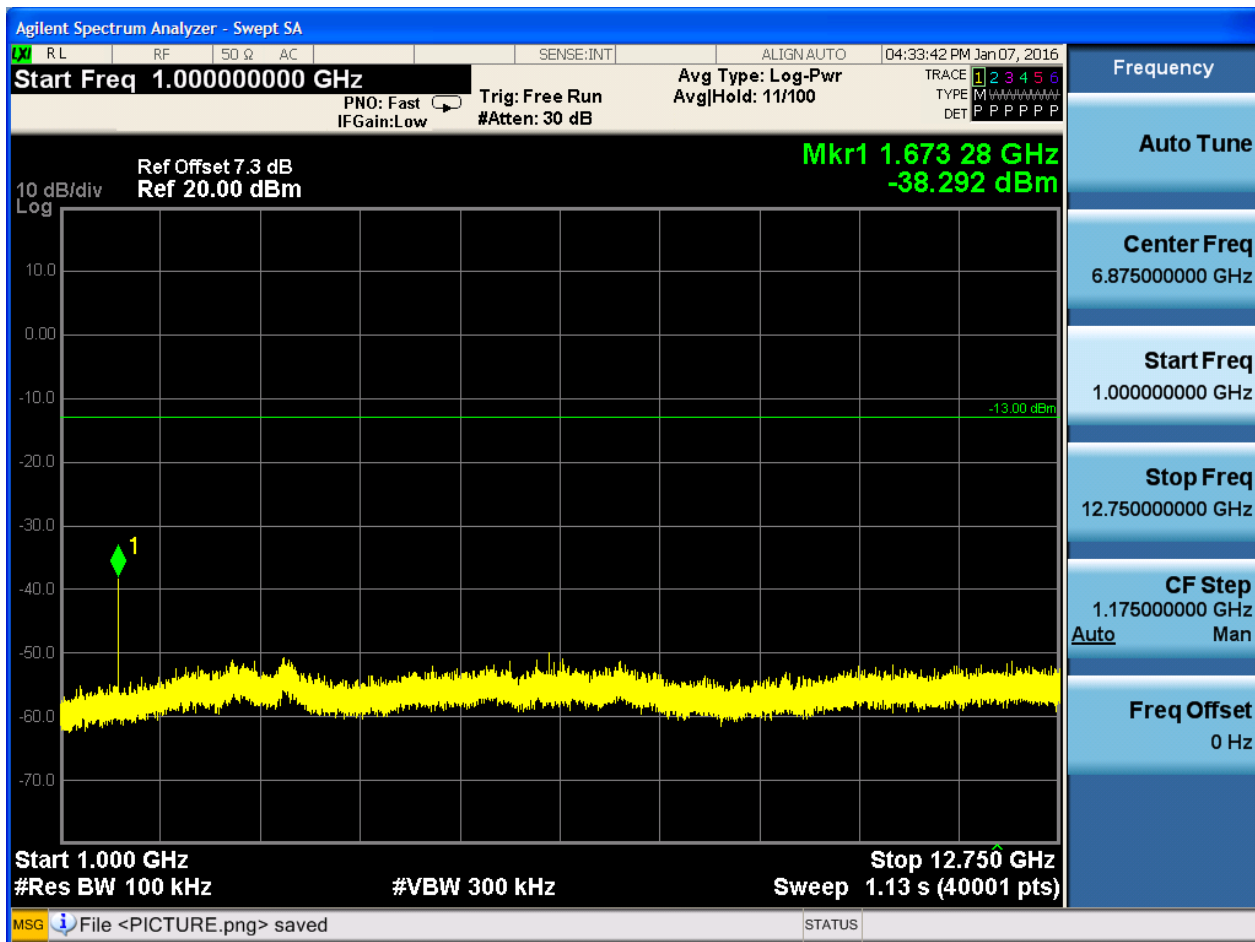


6.1.1.2.2 Test Channel = MCH



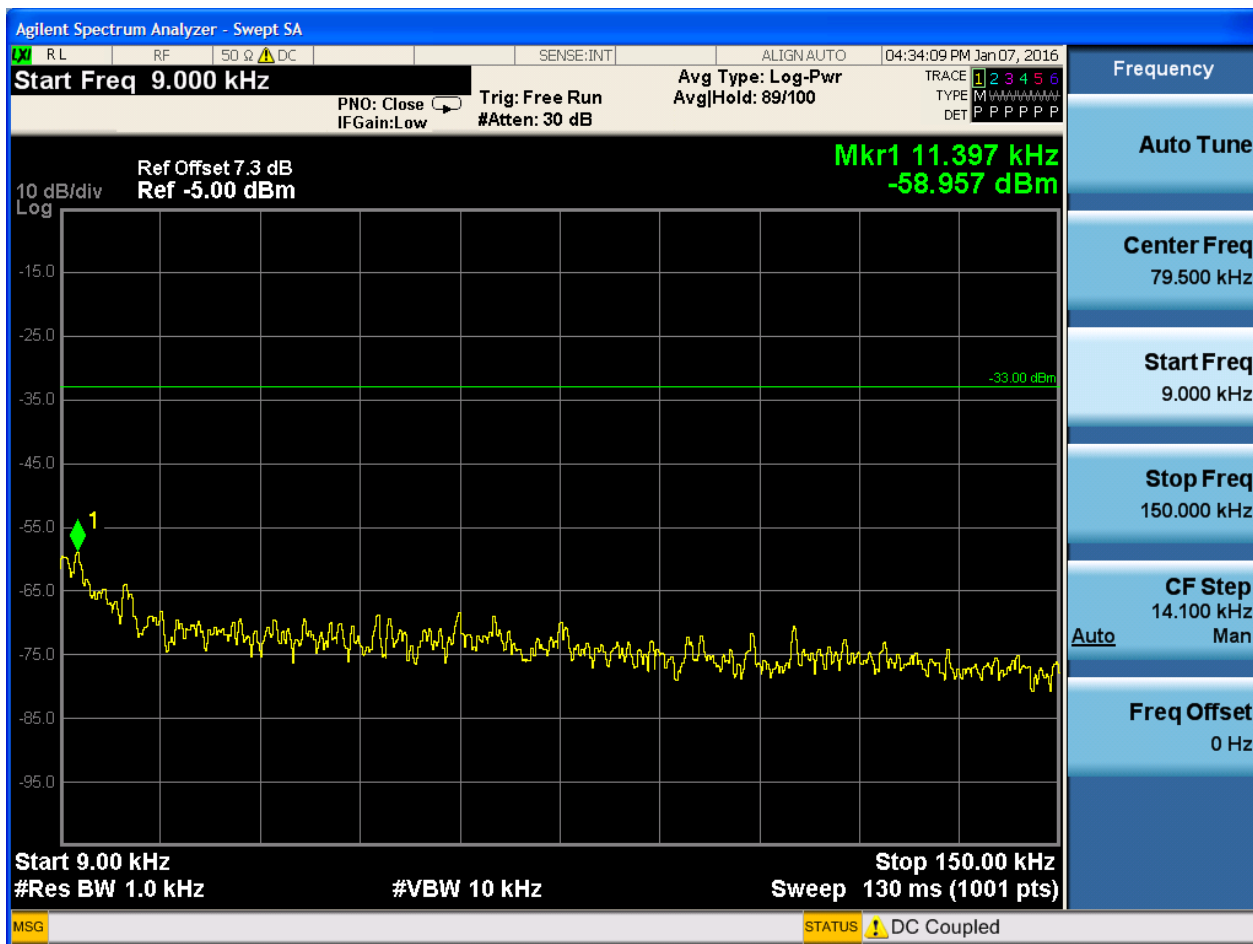


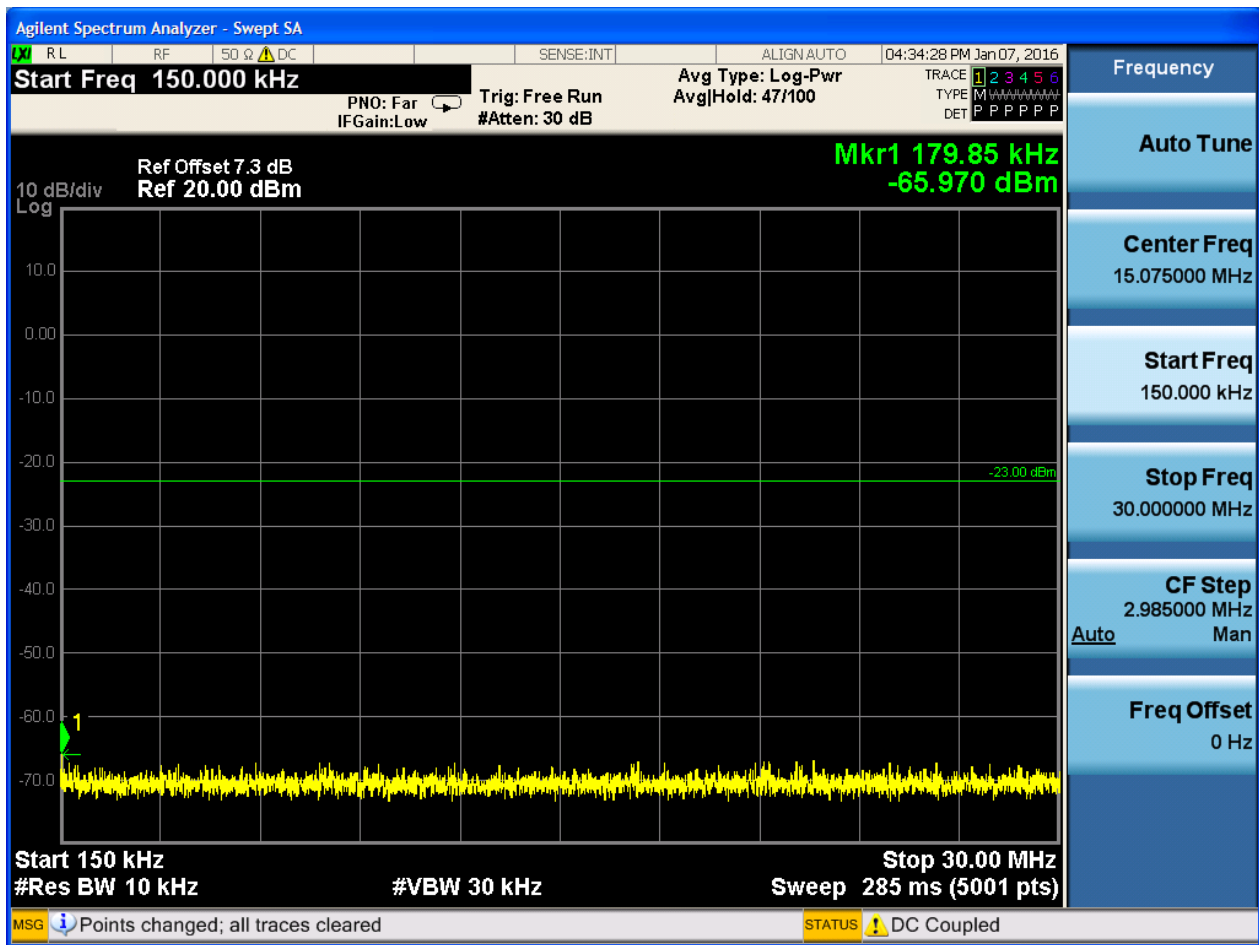


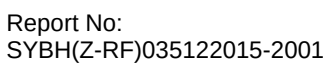


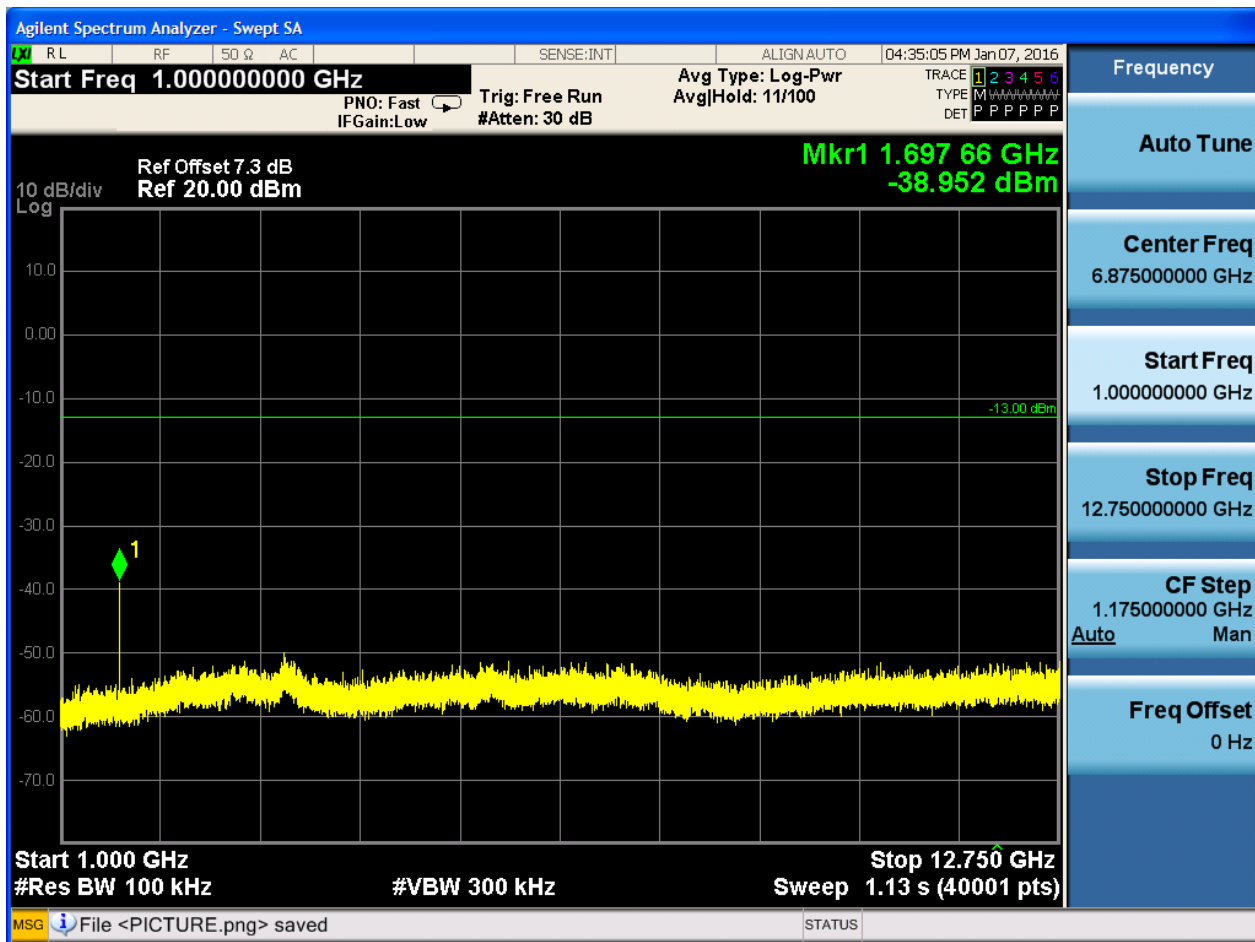


6.1.1.2.3 Test Channel = HCH





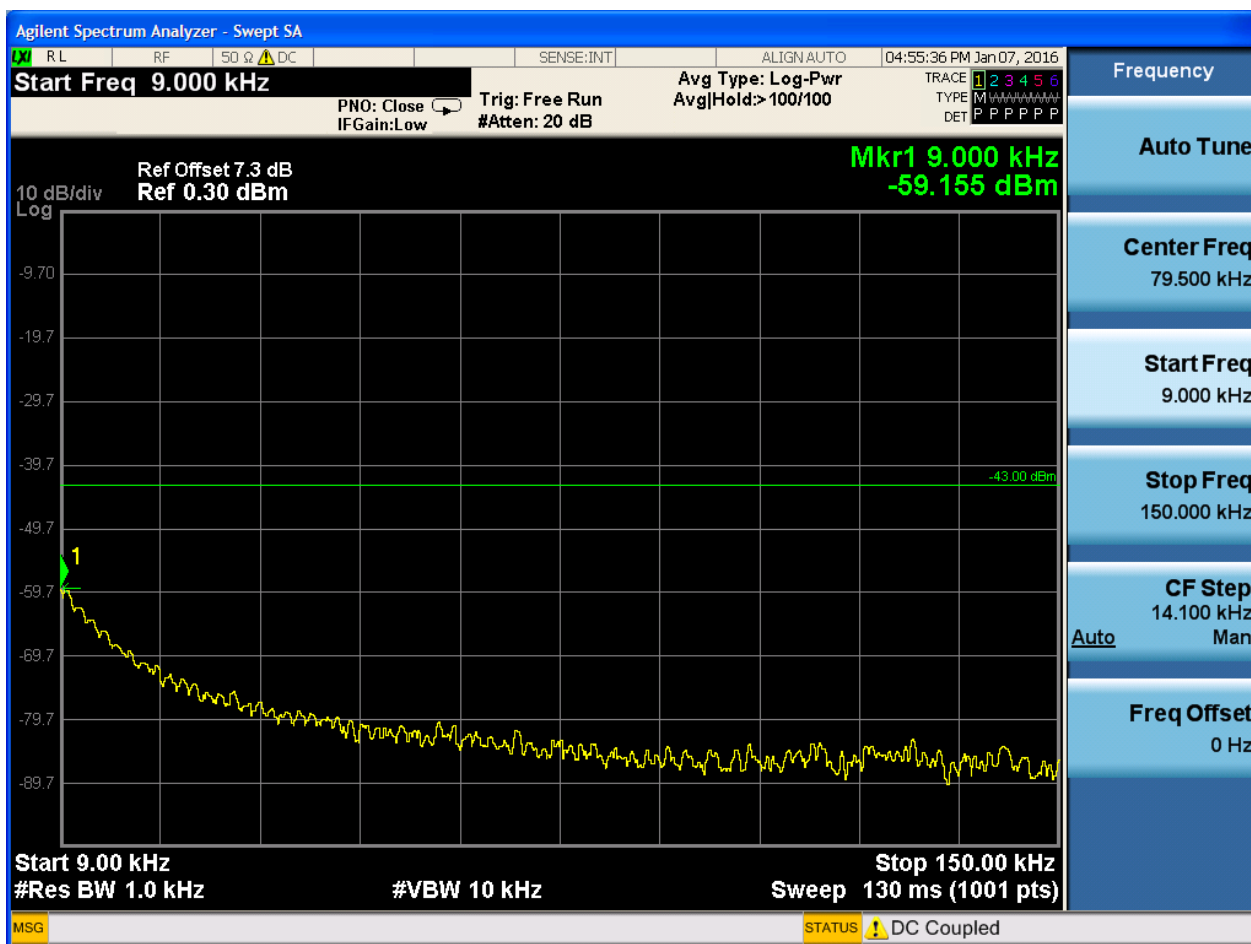


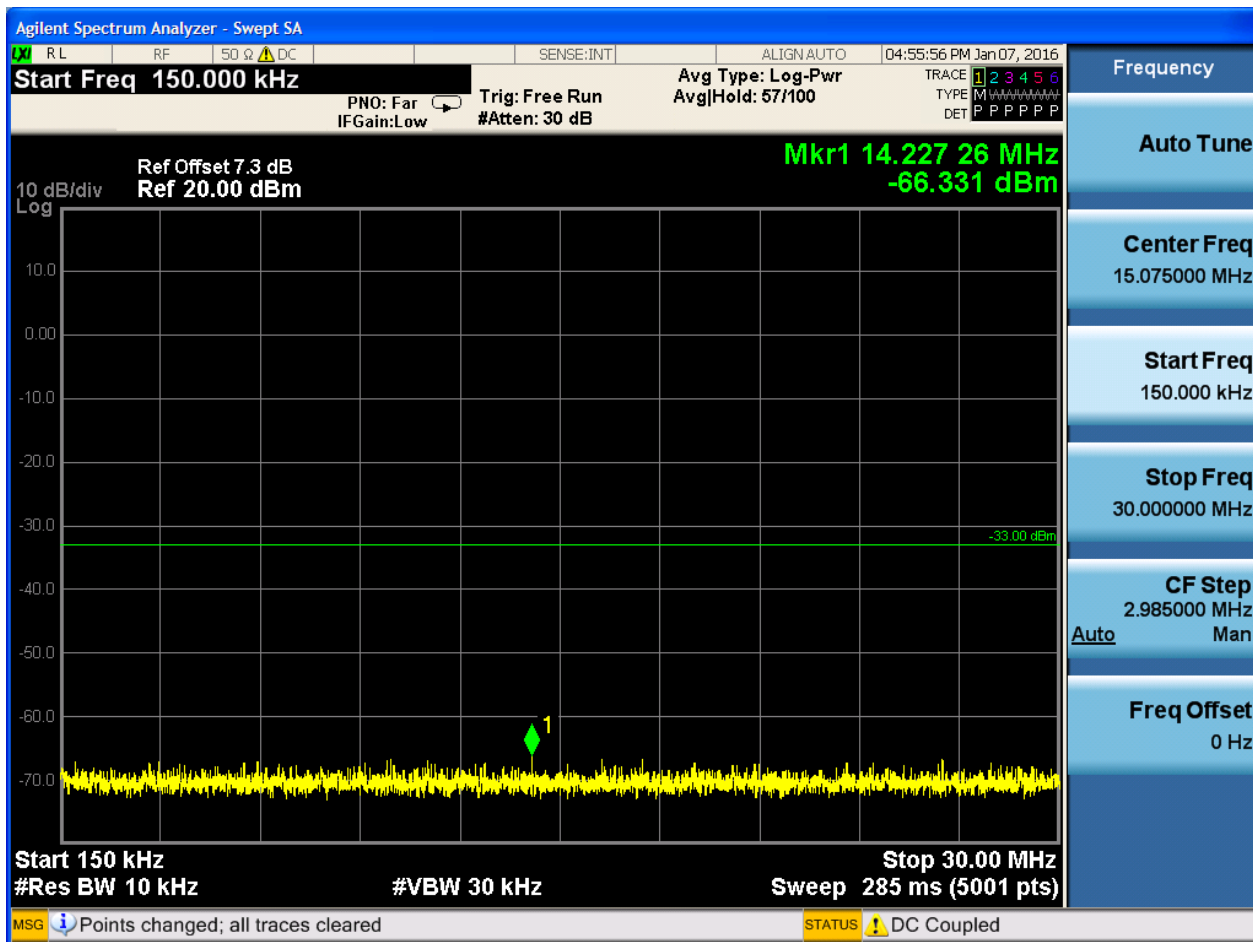


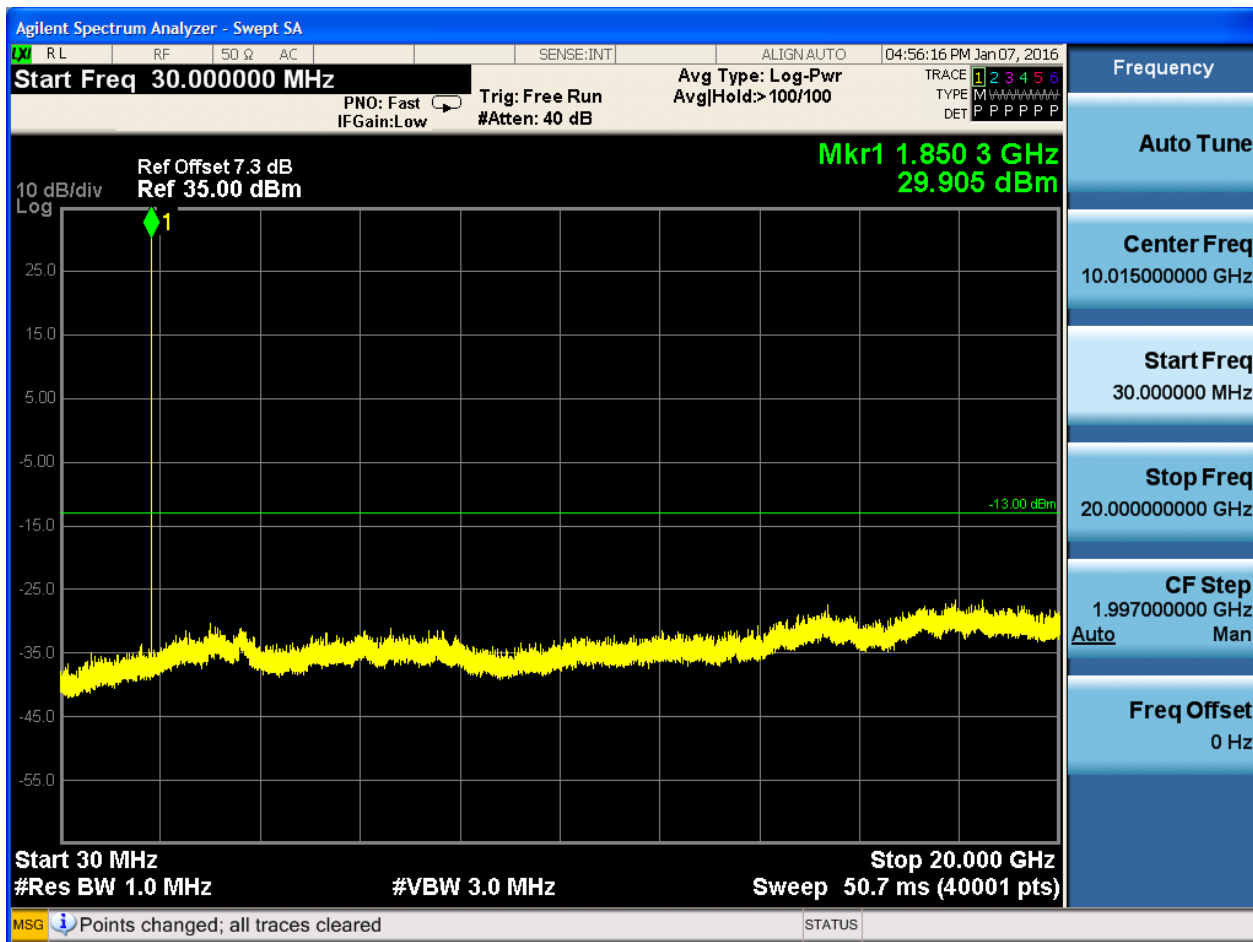
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH

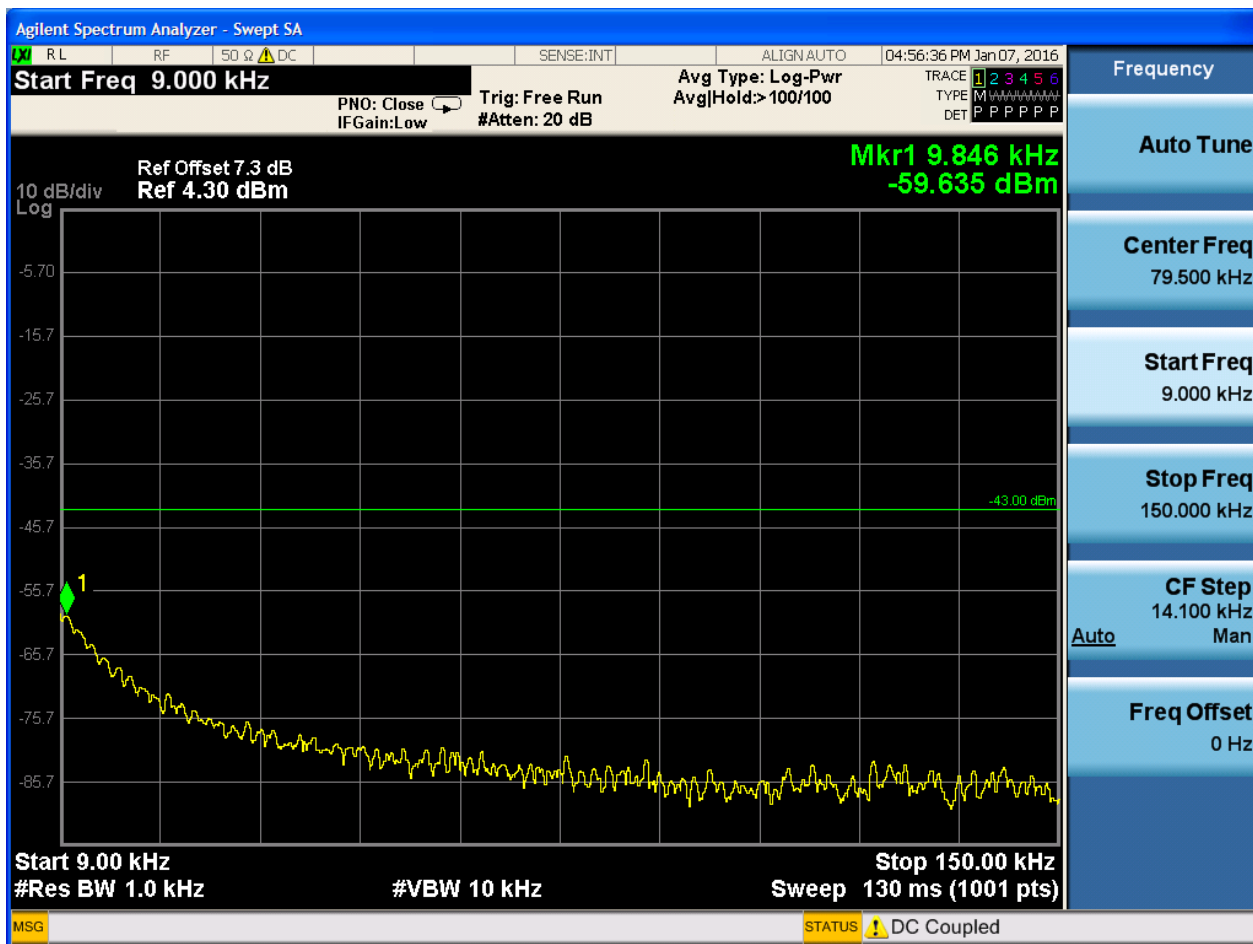


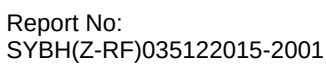


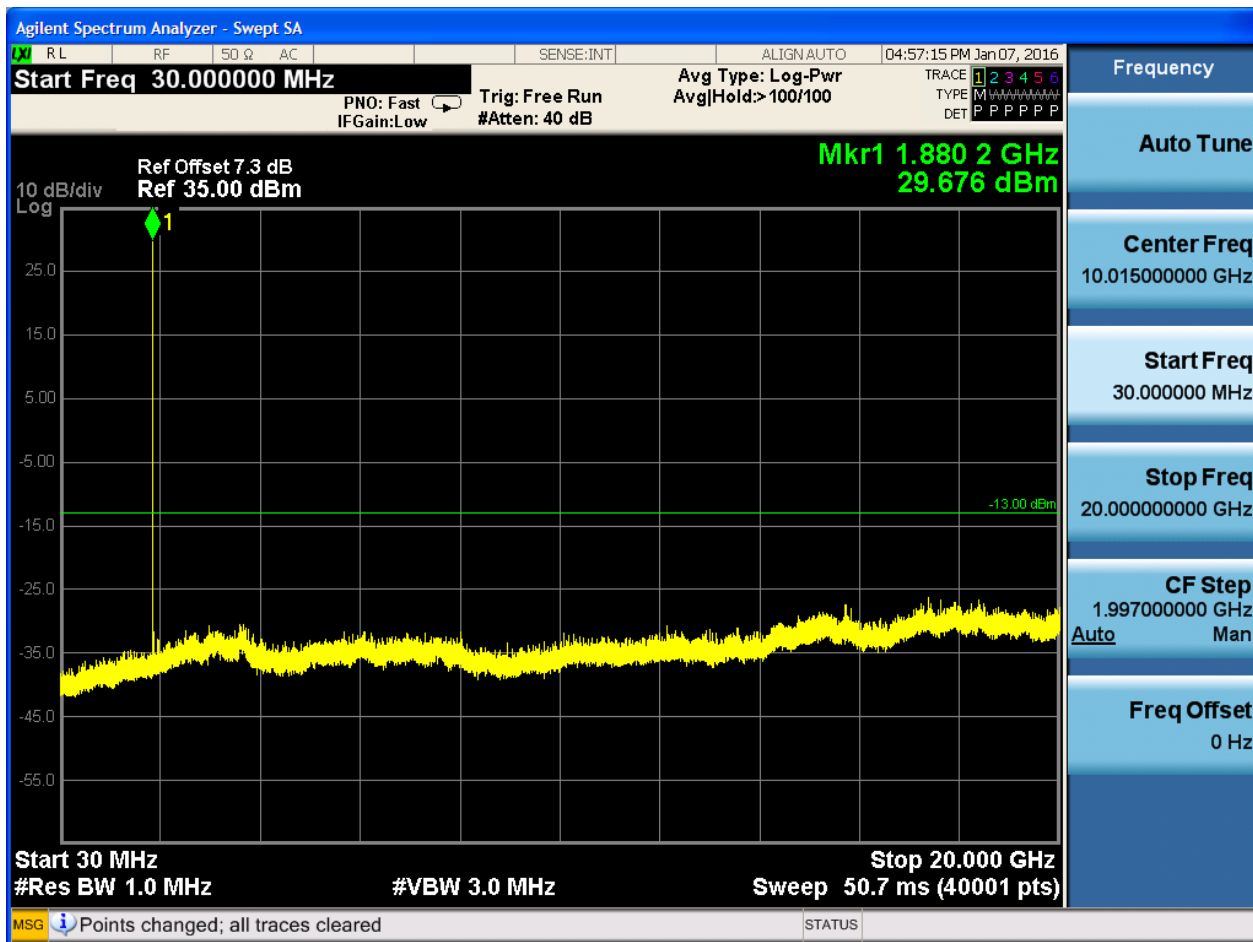




6.1.2.1.2 Test Channel = MCH

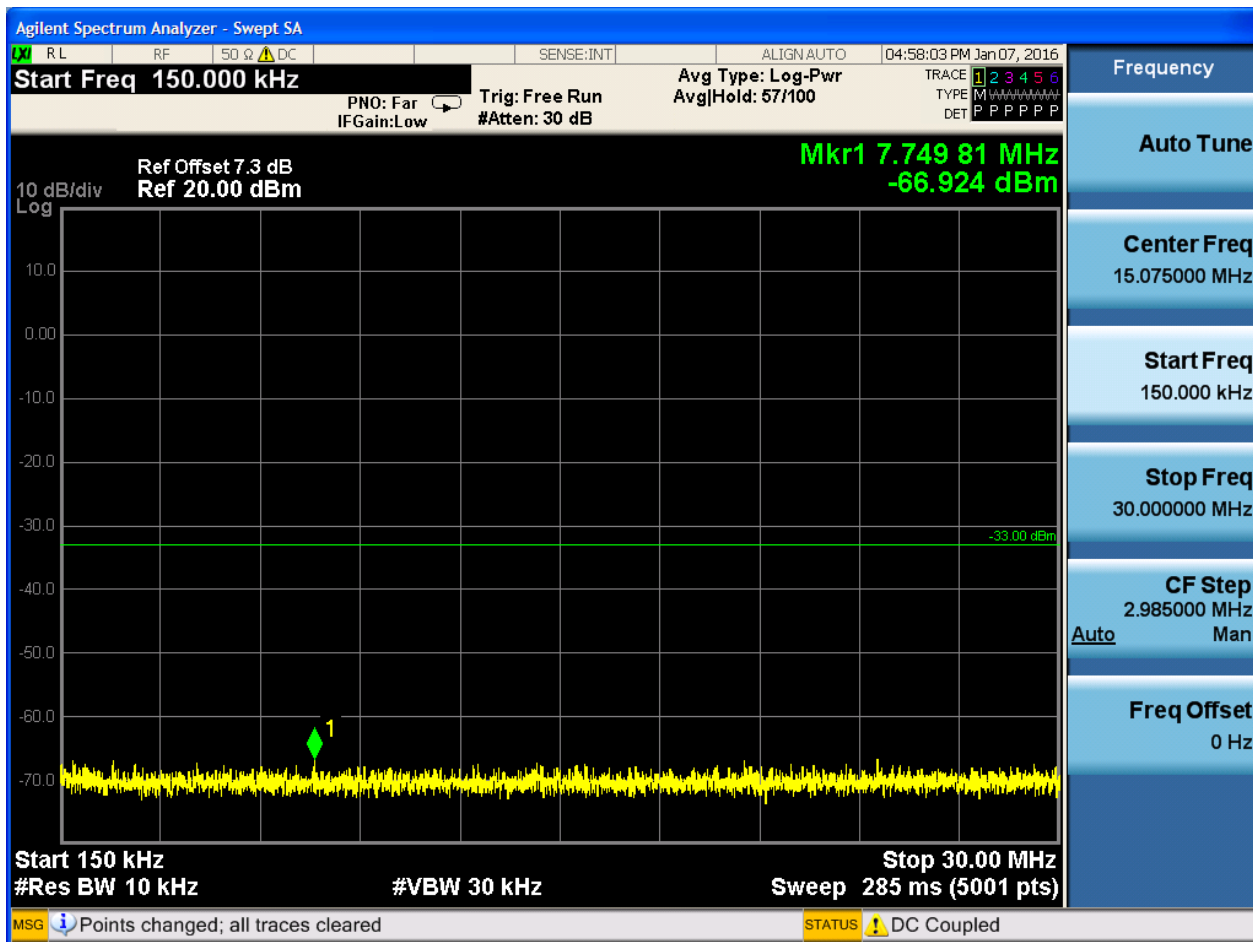


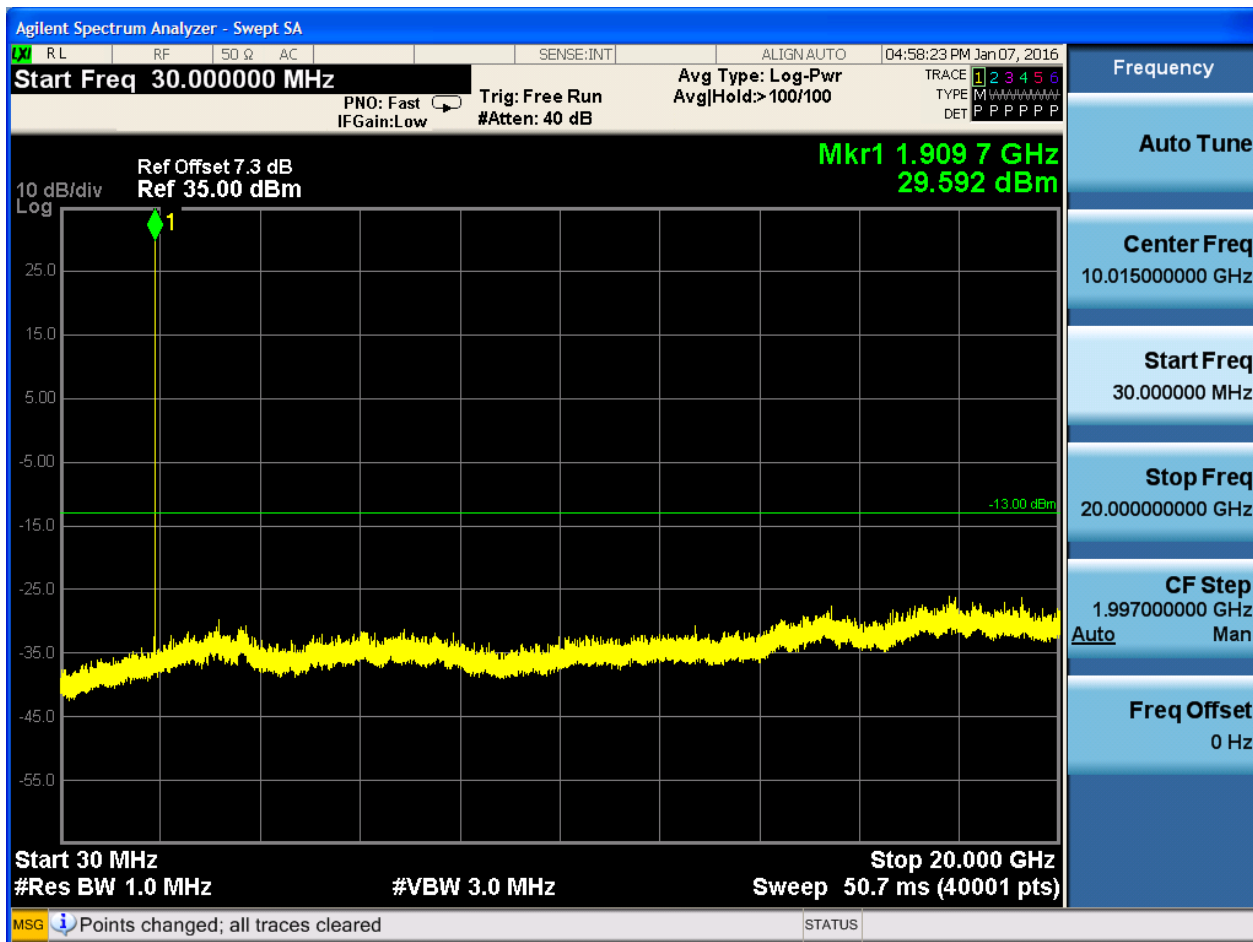




6.1.2.1.3 Test Channel = HCH



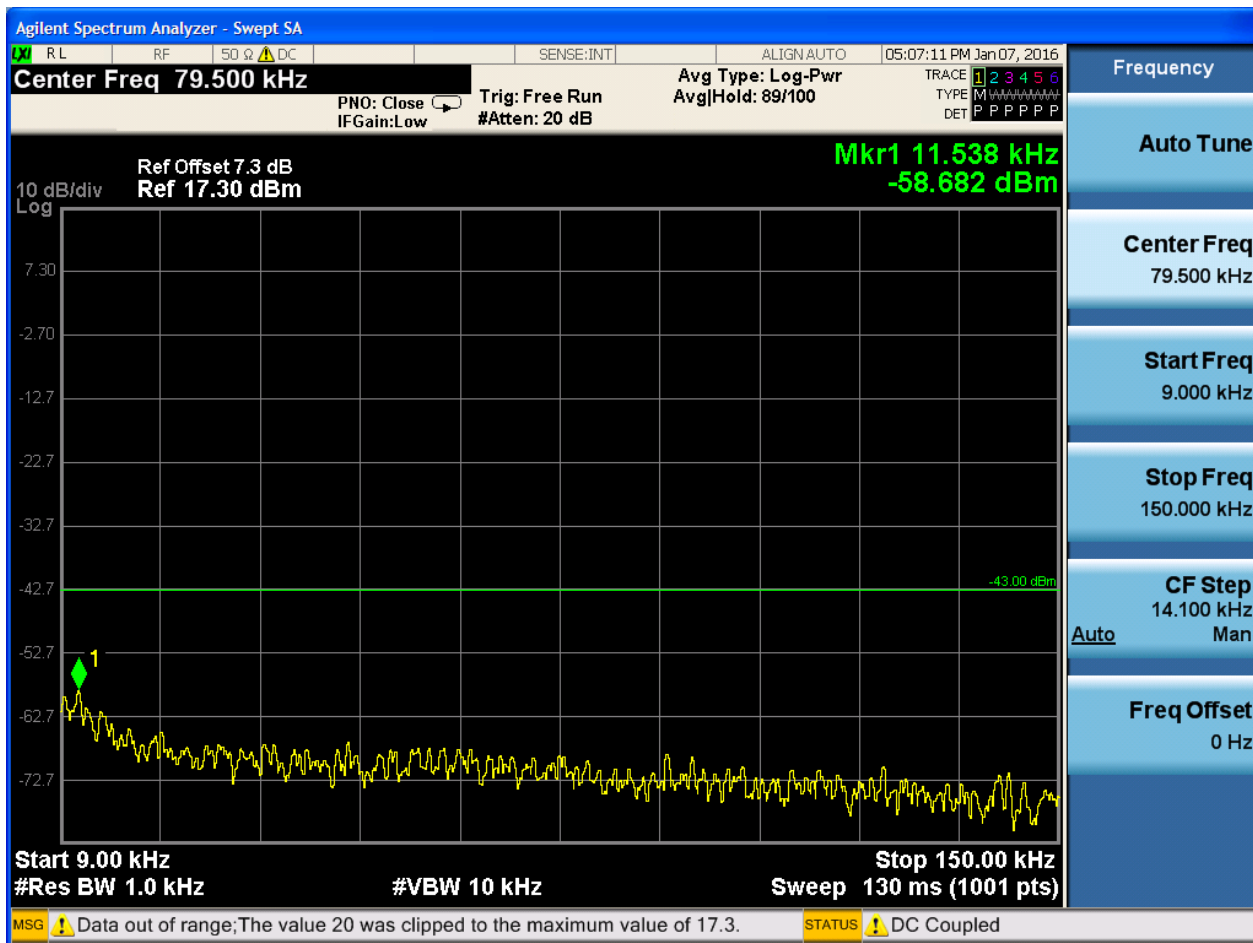


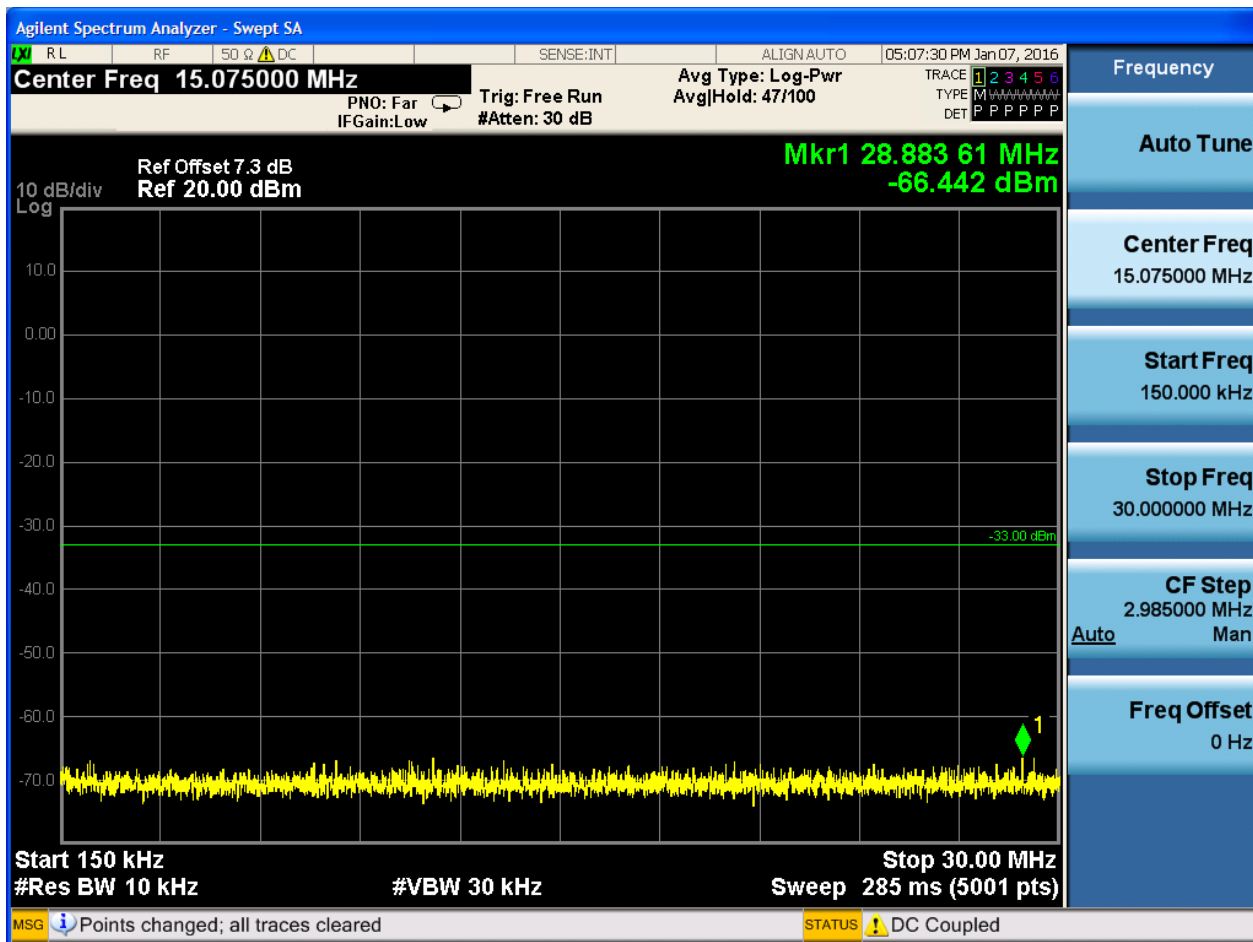


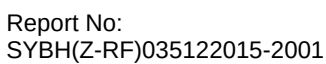


6.1.2.2 Test Mode = GSM/TM2

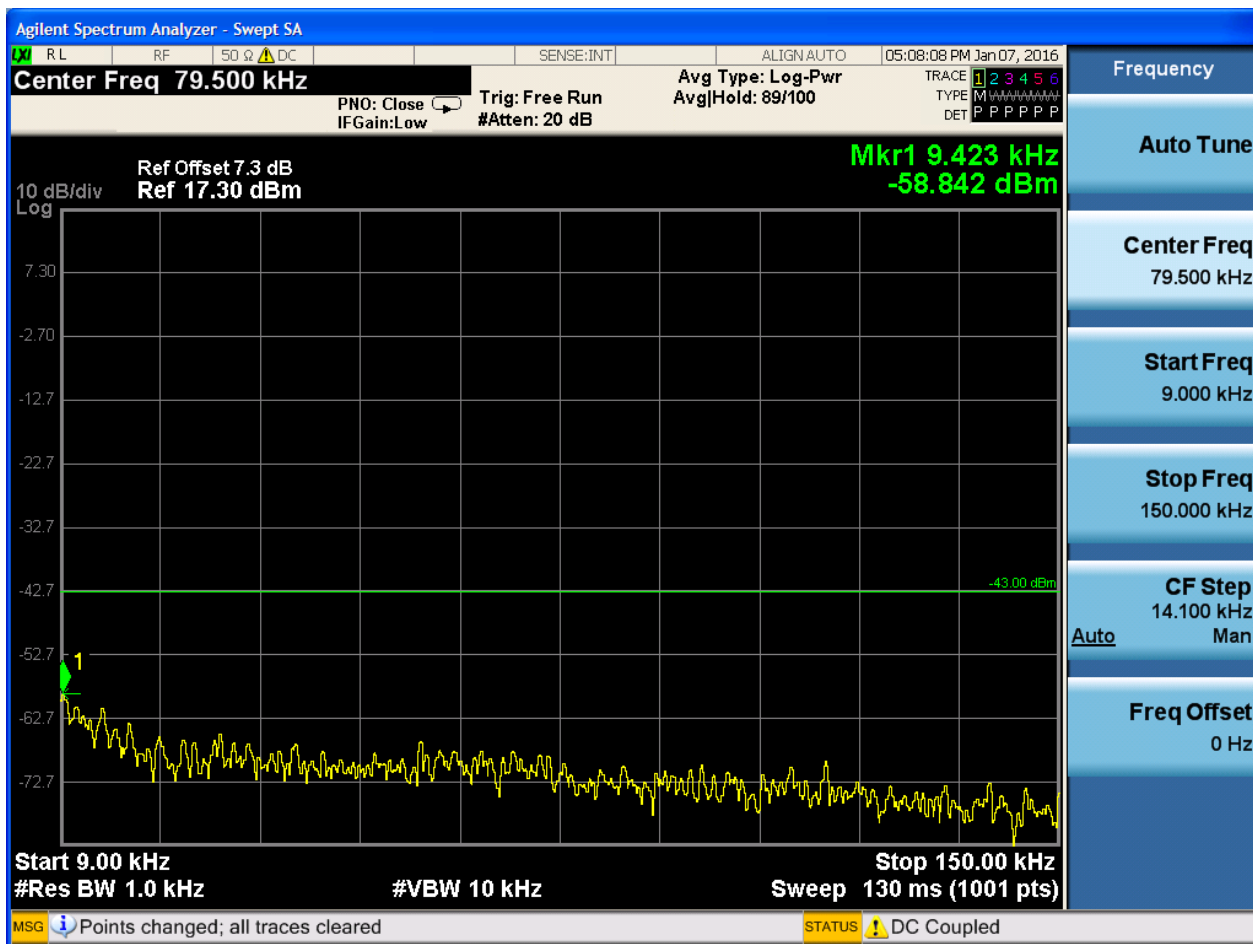
6.1.2.2.1 Test Channel = LCH

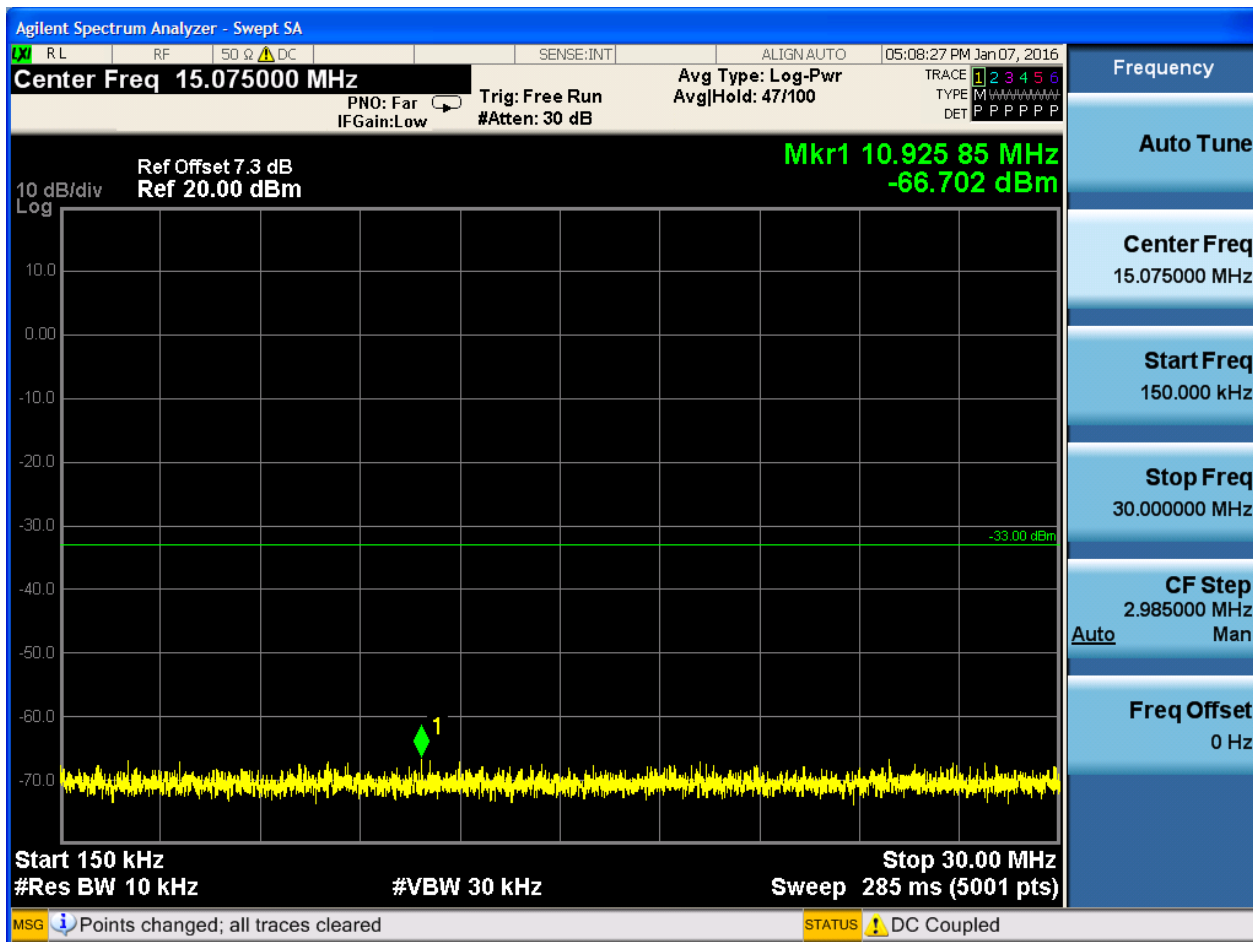


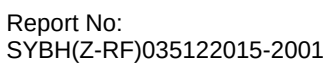




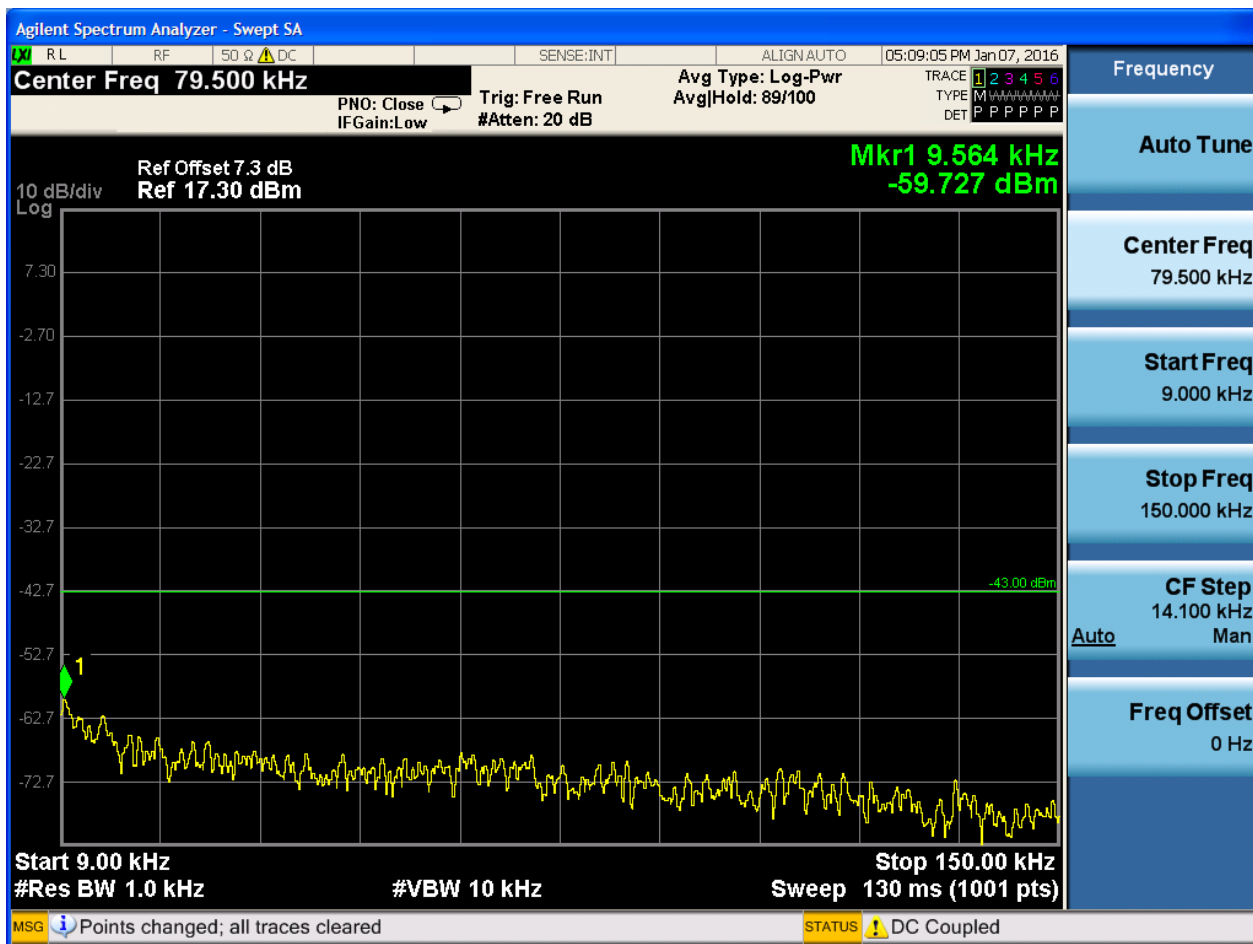
6.1.2.2.2 Test Channel = MCH

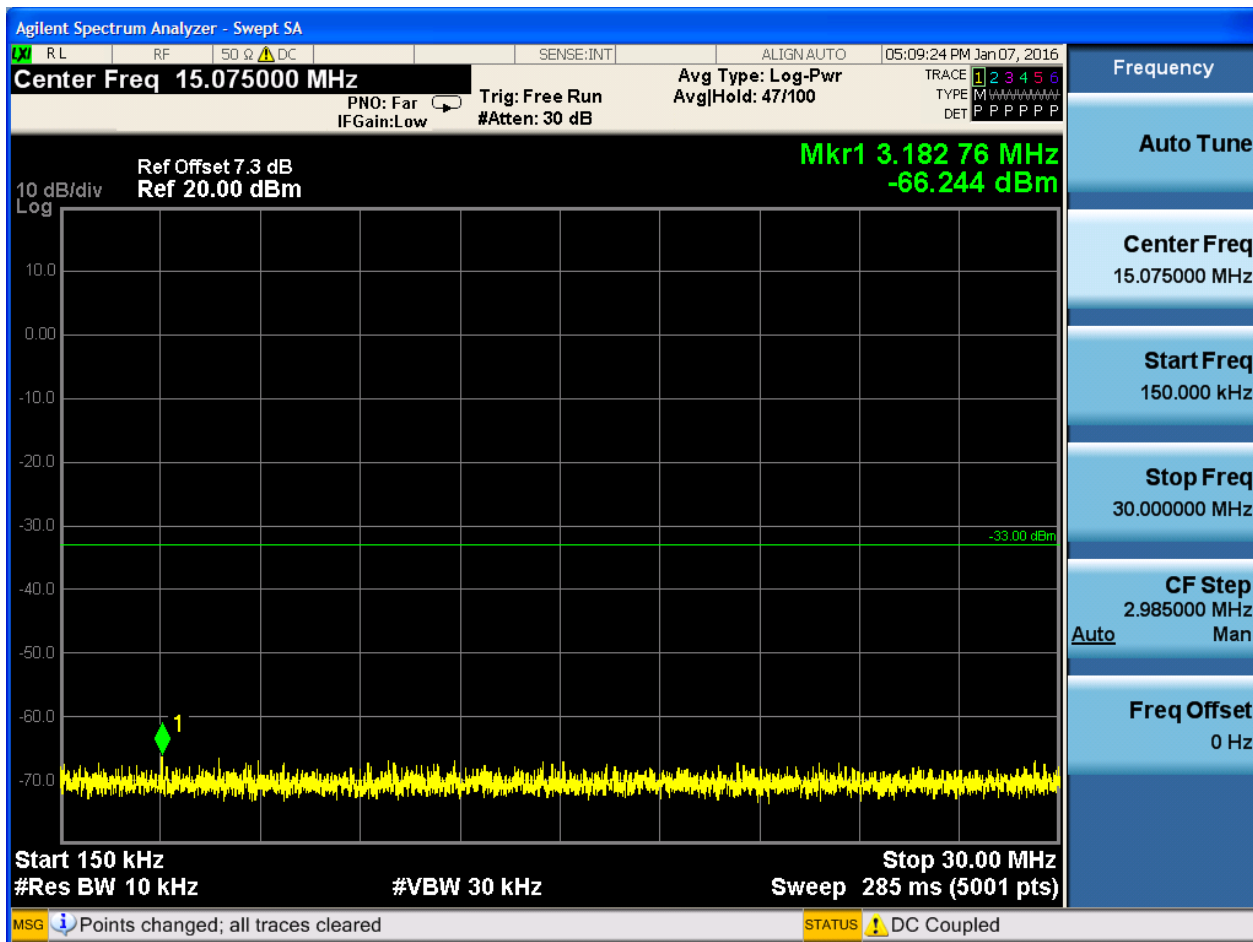


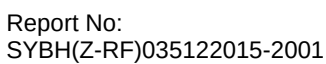




6.1.2.2.3 Test Channel = HCH







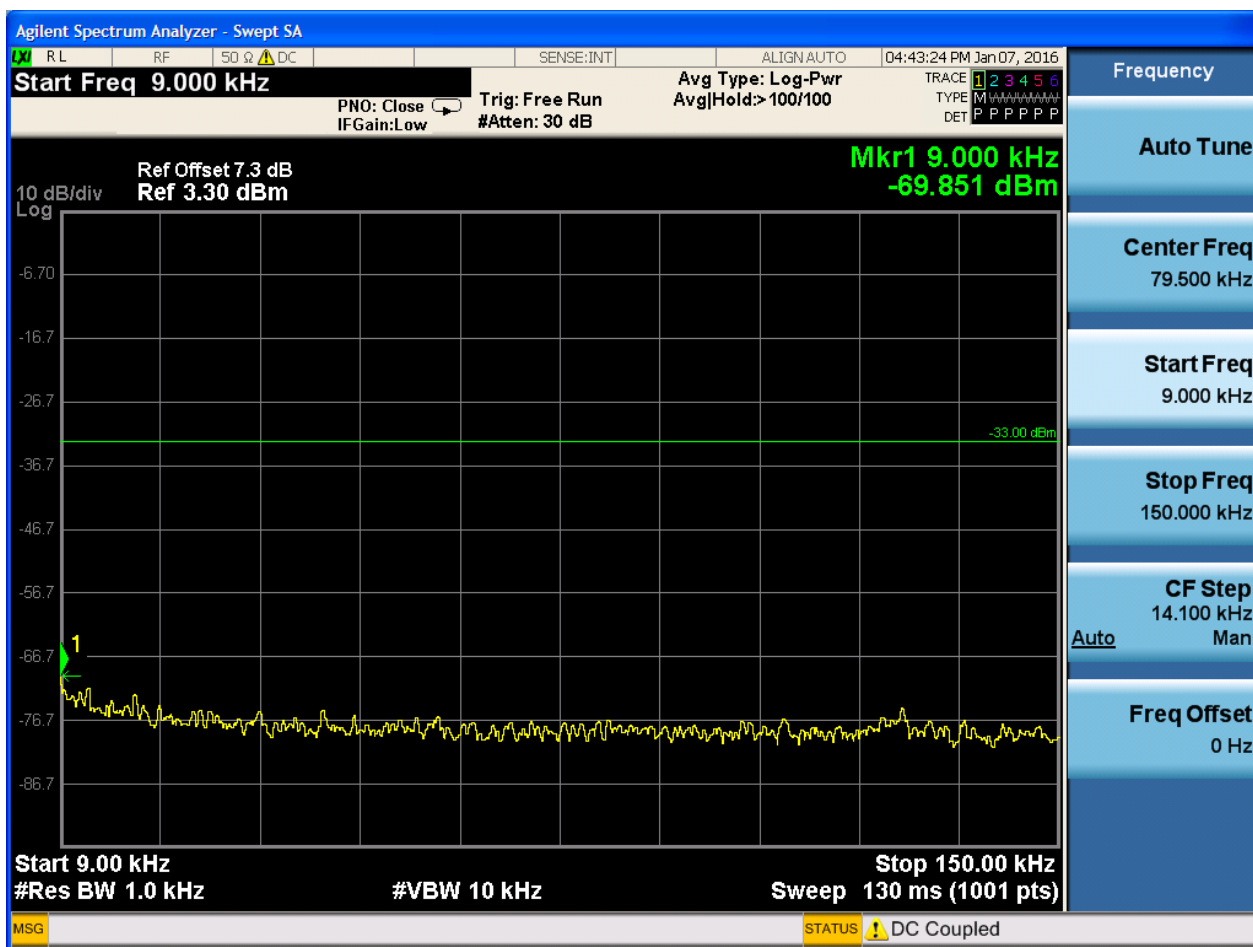


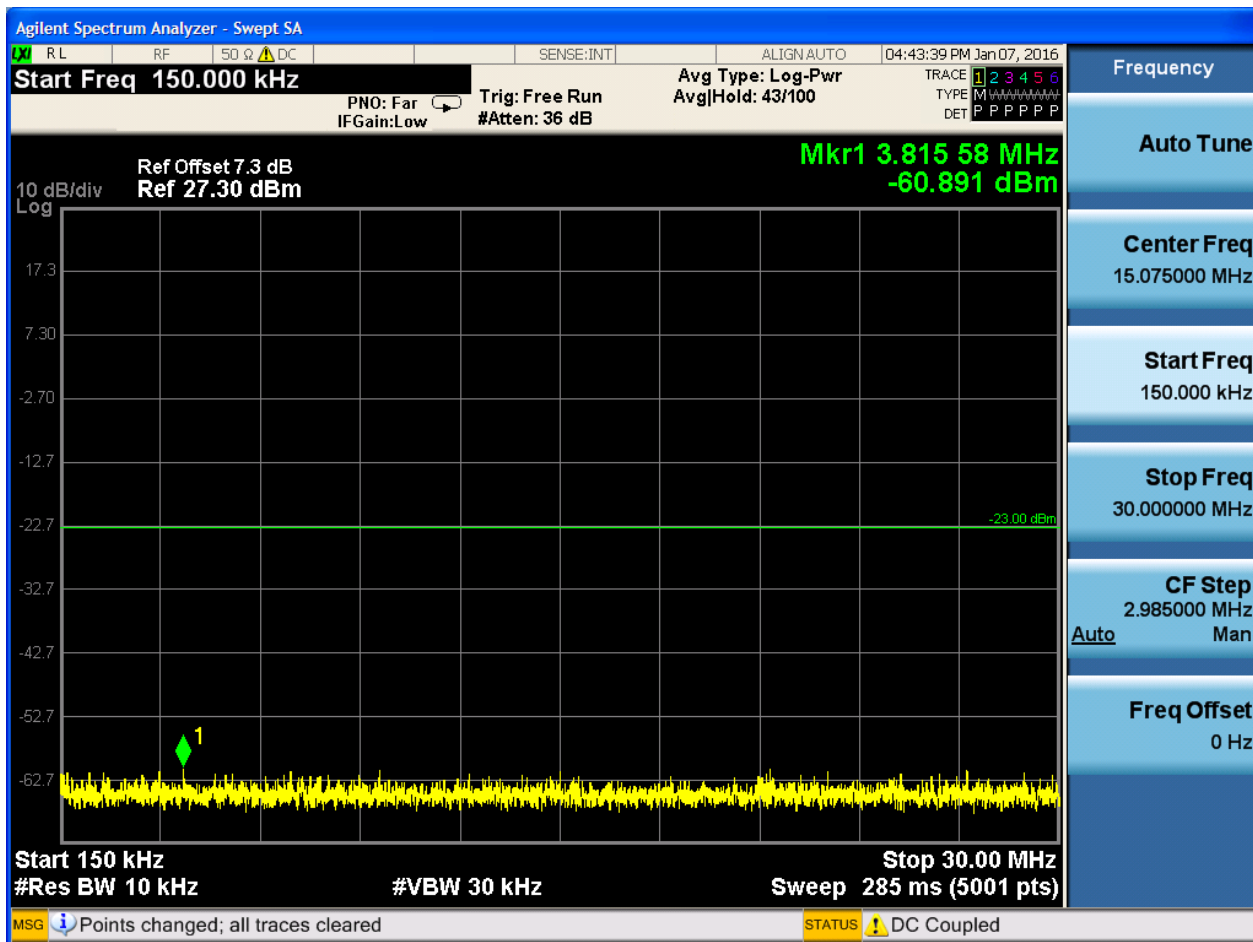
6.2 For UMTS

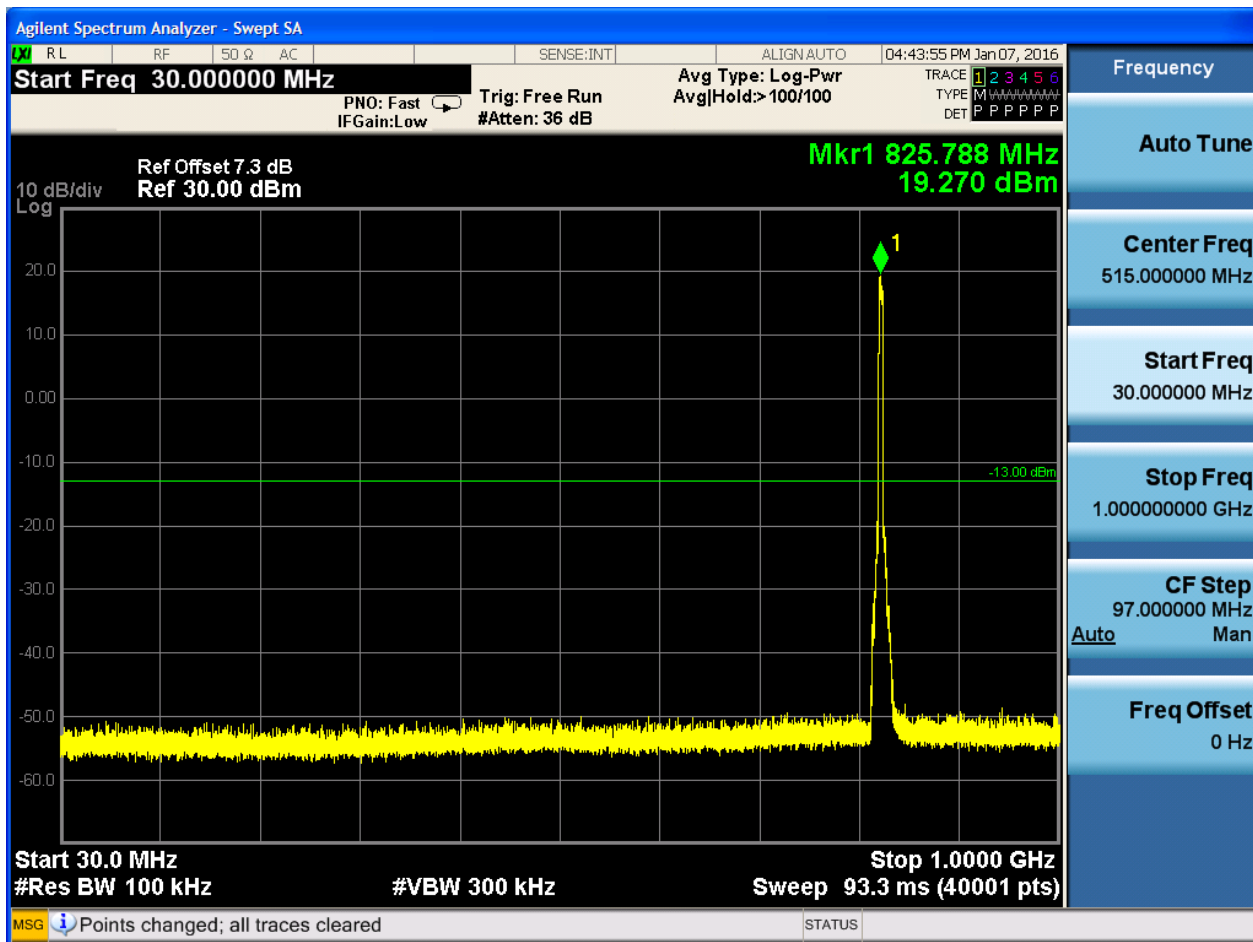
6.2.1 Test Band = WCDMA850

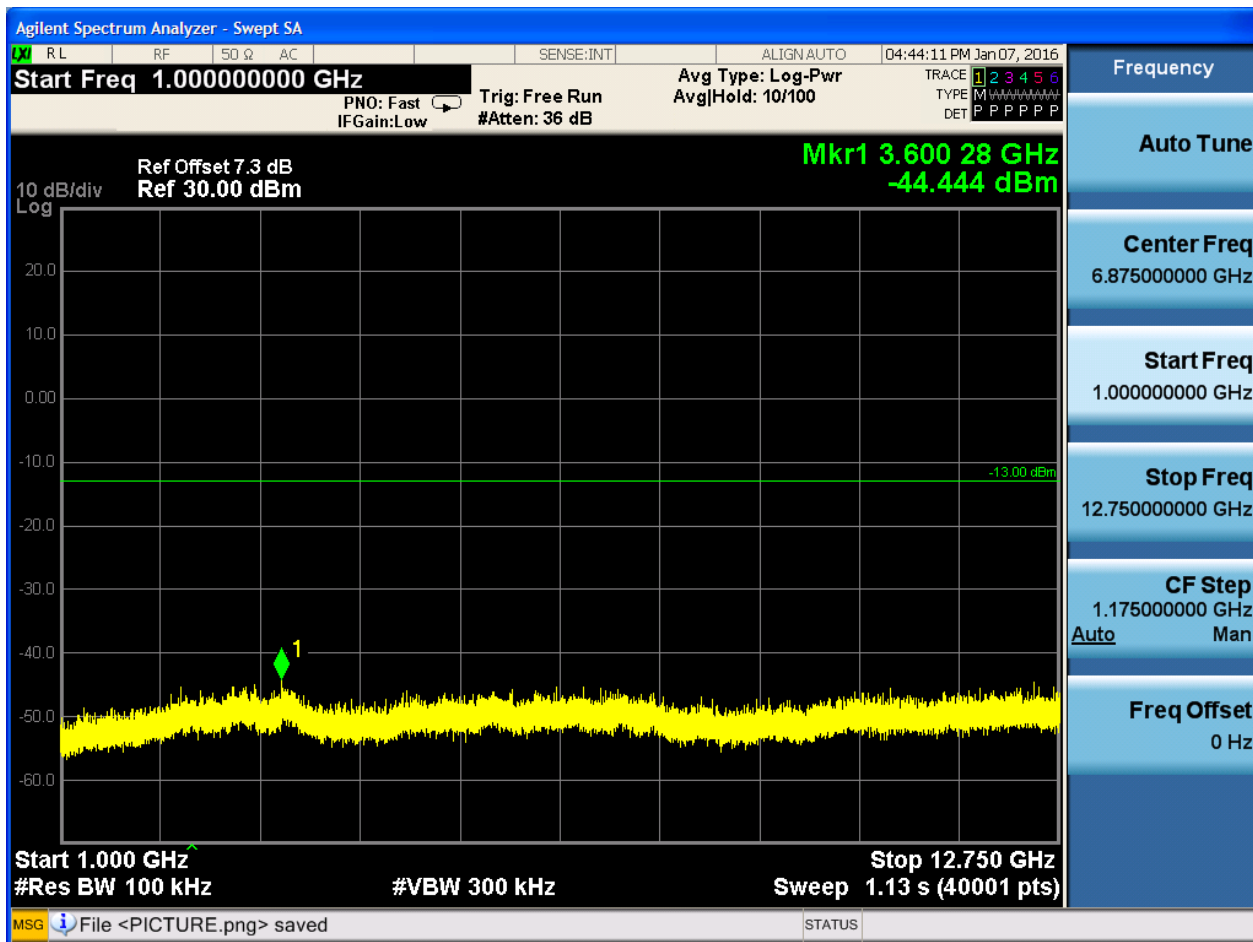
6.2.1.1 Test Mode = UMTS/TM1

6.2.1.1.1 Test Channel = LCH



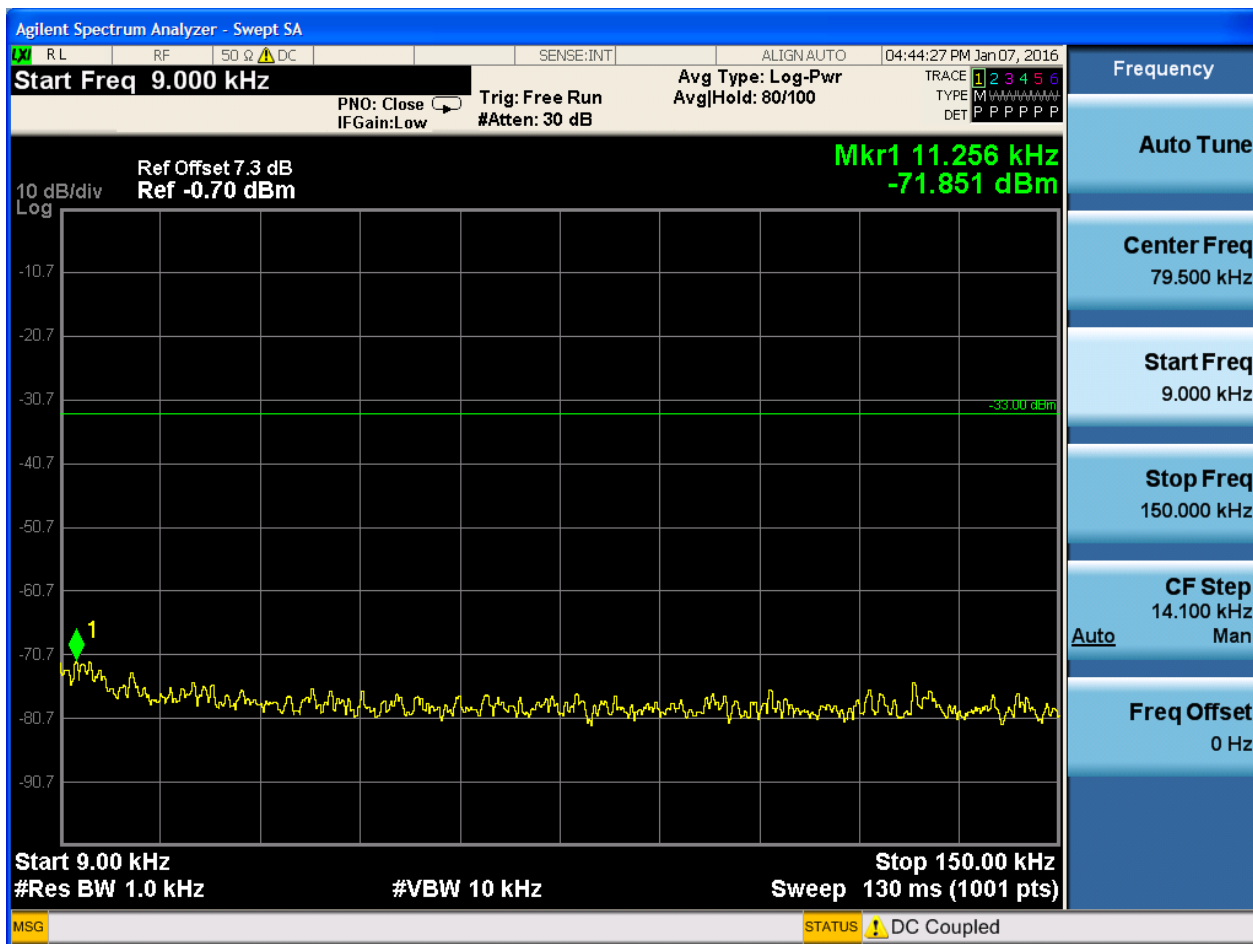


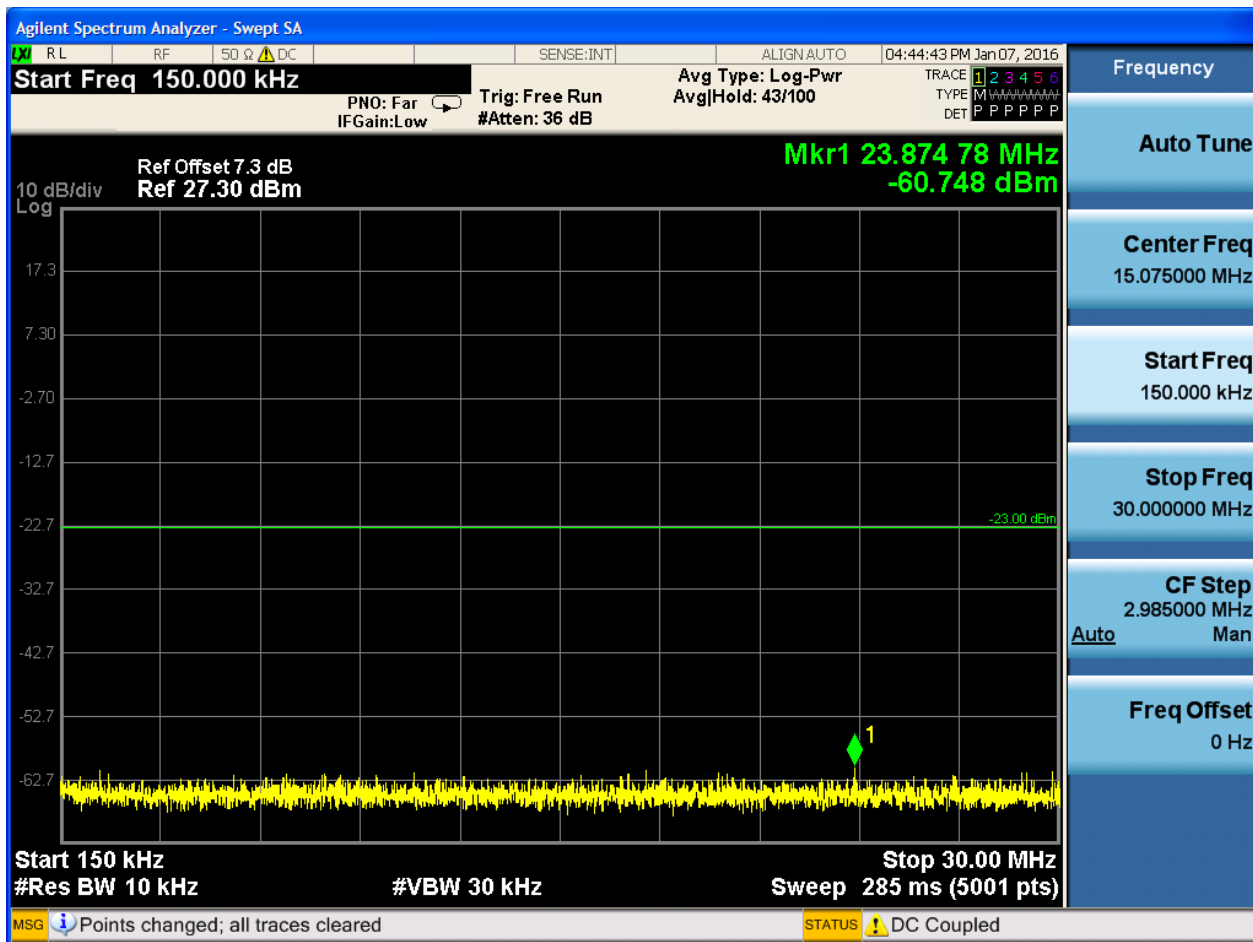


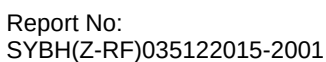


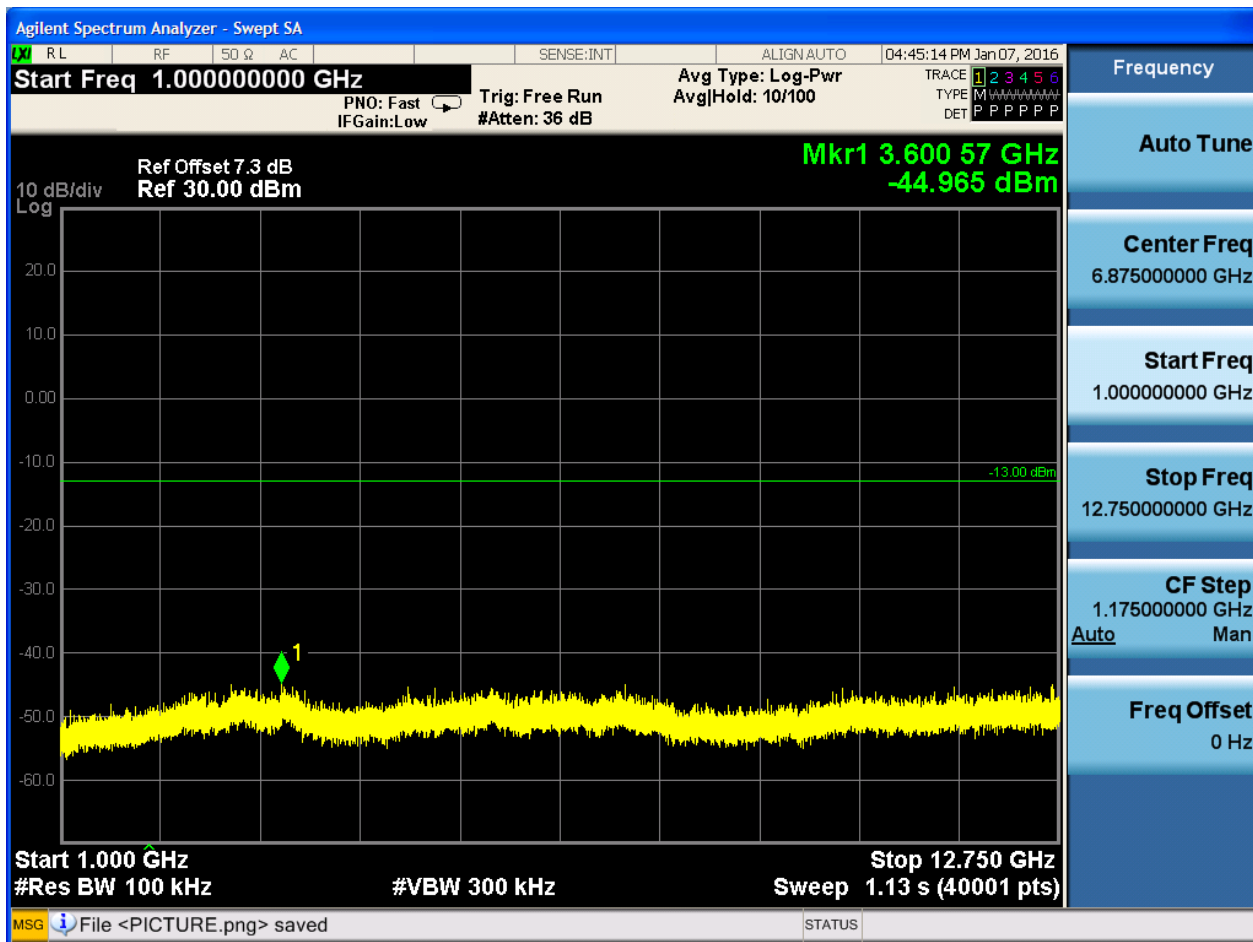


6.2.1.1.2 Test Channel = MCH











6.2.1.1.3 Test Channel = HCH

