



Agilent Spectrum Analyzer - Swept SA

Center Freq 1.91000000 GHz

Ref Offset 7.1 dB
Ref 30.00 dBm

10 dB/div
Log

Mkr1 1.910 000 GHz
-30.750 dBm

Center 1.91000 GHz
#Res BW 30 kHz
#VBW 91 kHz*
Span 2.000 MHz
#Sweep 1.000 s (1001 pts)

Auto Tune

Center Freq
1.91000000 GHz

Start Freq
1.90900000 GHz

Stop Freq
1.91100000 GHz

CF Step
200.000 kHz
Auto

Freq Offset
0 Hz

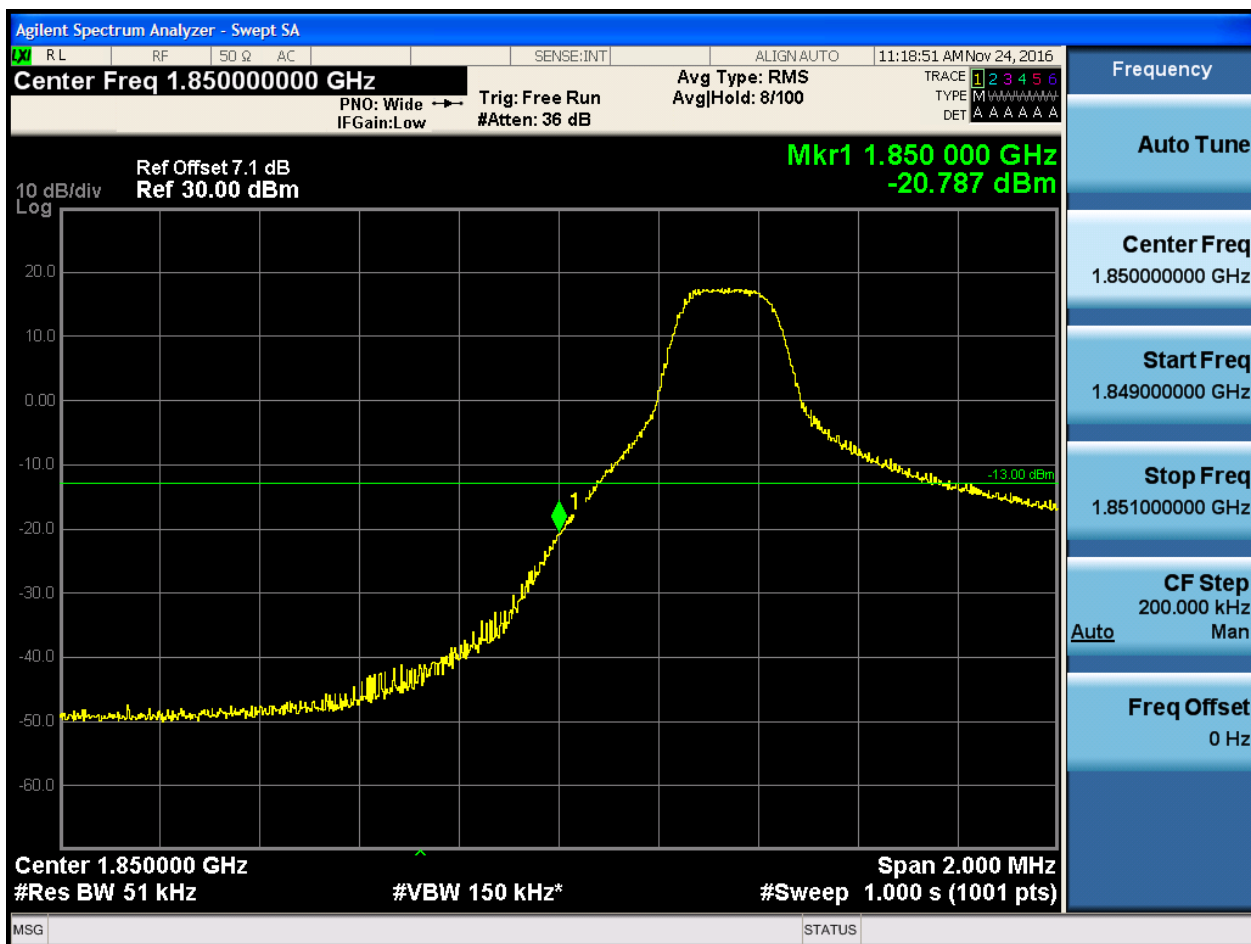
The image shows a screenshot of an Agilent Spectrum Analyzer. The main display is a log-frequency plot with a yellow trace showing a signal that drops sharply at 1.91 GHz. A green horizontal line is at -13.00 dBm. A green marker '1' is placed on the trace at the drop point, labeled 'Mkr1 1.910 000 GHz -30.750 dBm'. The top of the screen shows various settings: Center Freq 1.91000000 GHz, Ref Offset 7.1 dB, Ref 30.00 dBm, 10 dB/div, Log, Mkr1 1.910 000 GHz -30.750 dBm, Center 1.91000 GHz, #Res BW 30 kHz, #VBW 91 kHz*, Span 2.000 MHz, #Sweep 1.000 s (1001 pts). The right side of the screen has a blue sidebar with buttons for 'Auto Tune', 'Center Freq', 'Start Freq', 'Stop Freq', 'CF Step', and 'Freq Offset'. The bottom of the screen shows 'MSG' and 'STATUS' indicators.



5.1.1.2.3 Test Bandwidth = 5

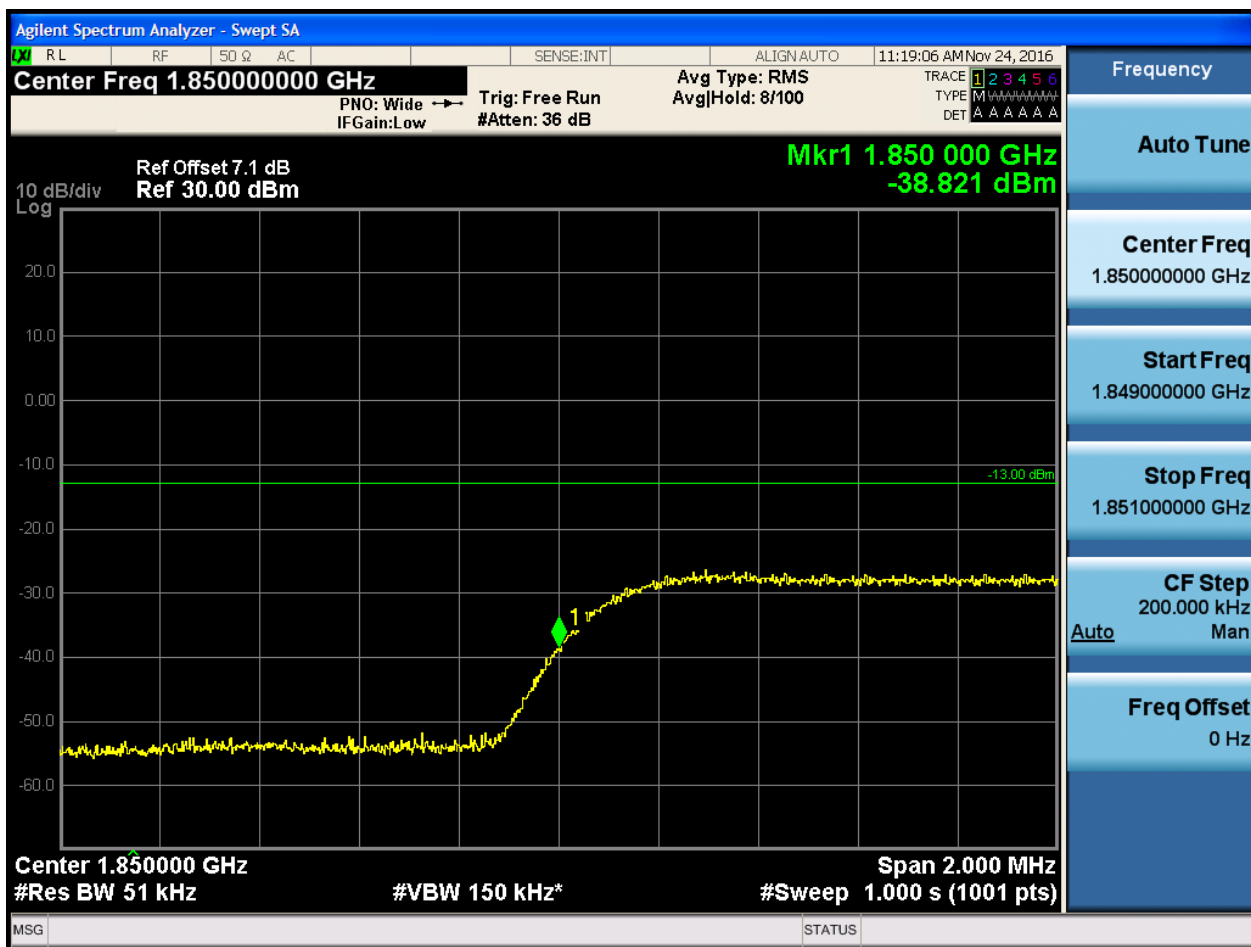
5.1.1.2.3.1 Test Channel = LCH

5.1.1.2.3.1.1 Test RB = RB1#0





5.1.1.2.3.1.2 Test RB = RB1#24





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 11:19:20 AM Nov 24, 2016

Center Freq 1.850000000 GHz Avg Type: RMS
PNO: Wide Trig: Free Run AvgHold: 8/100
IFGain:Low #Atten: 36 dB

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

Ref Offset 7.1 dB
Ref 30.00 dBm

Mkr1 1.850 000 GHz
-34.919 dBm

10 dB/div
Log

-13.00 dBm

Center 1.850000 GHz
#Res BW 51 kHz

#VBW 150 kHz*

Span 2.000 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
1.850000000 GHz

Start Freq
1.849000000 GHz

Stop Freq
1.851000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

Center Freq 1.850000000 GHz

Ref Offset 7.1 dB
Ref 30.00 dBm

Mkr1 1.850 000 GHz
-32.050 dBm

10 dB/div
Log

Center 1.850000 GHz

#Res BW 51 kHz

#VBW 150 kHz*

#Sweep 1.000 s (1001 pts)

Span 2.000 MHz

Frequency

Auto Tune

Center Freq
1.850000000 GHz

Start Freq
1.849000000 GHz

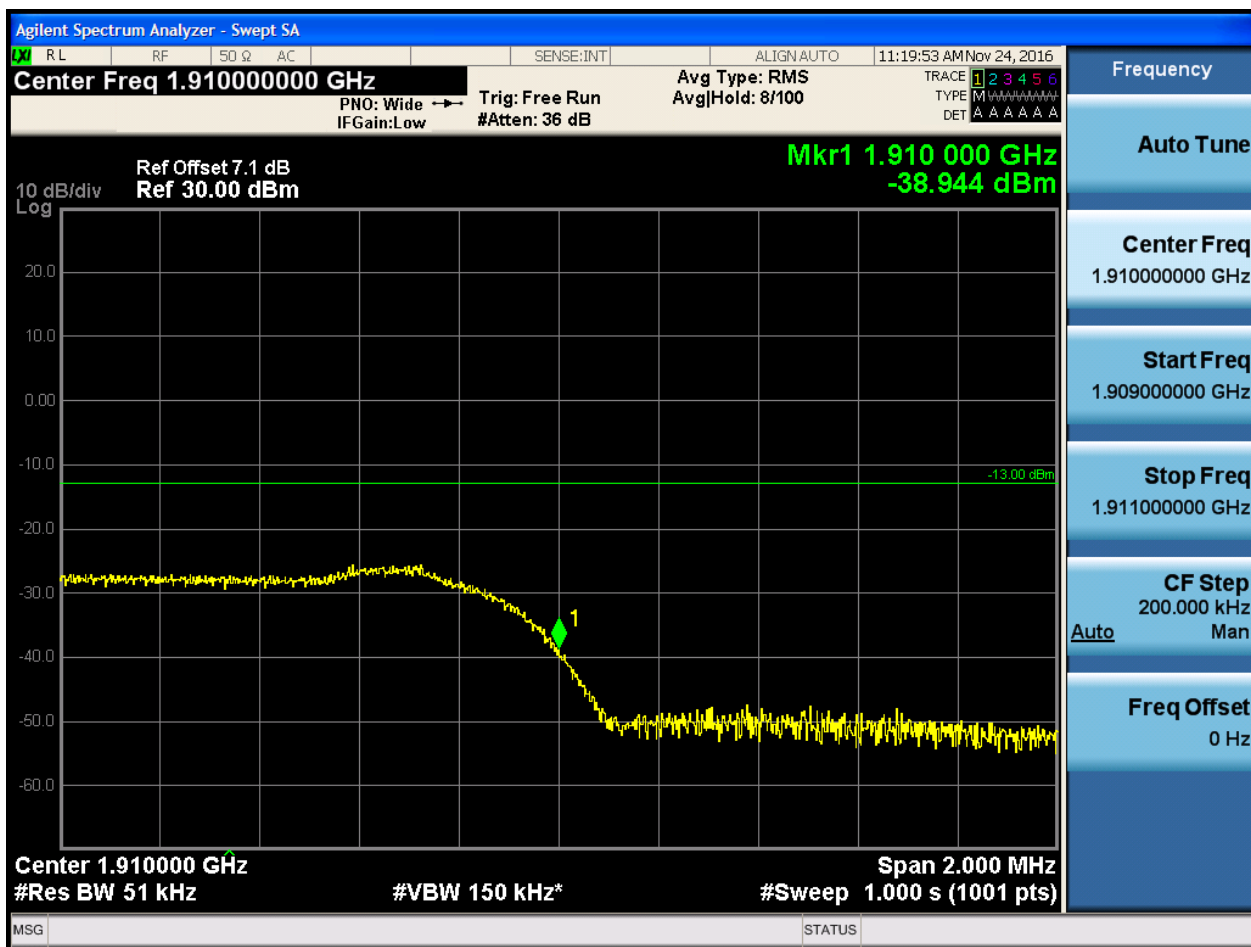
Stop Freq
1.851000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

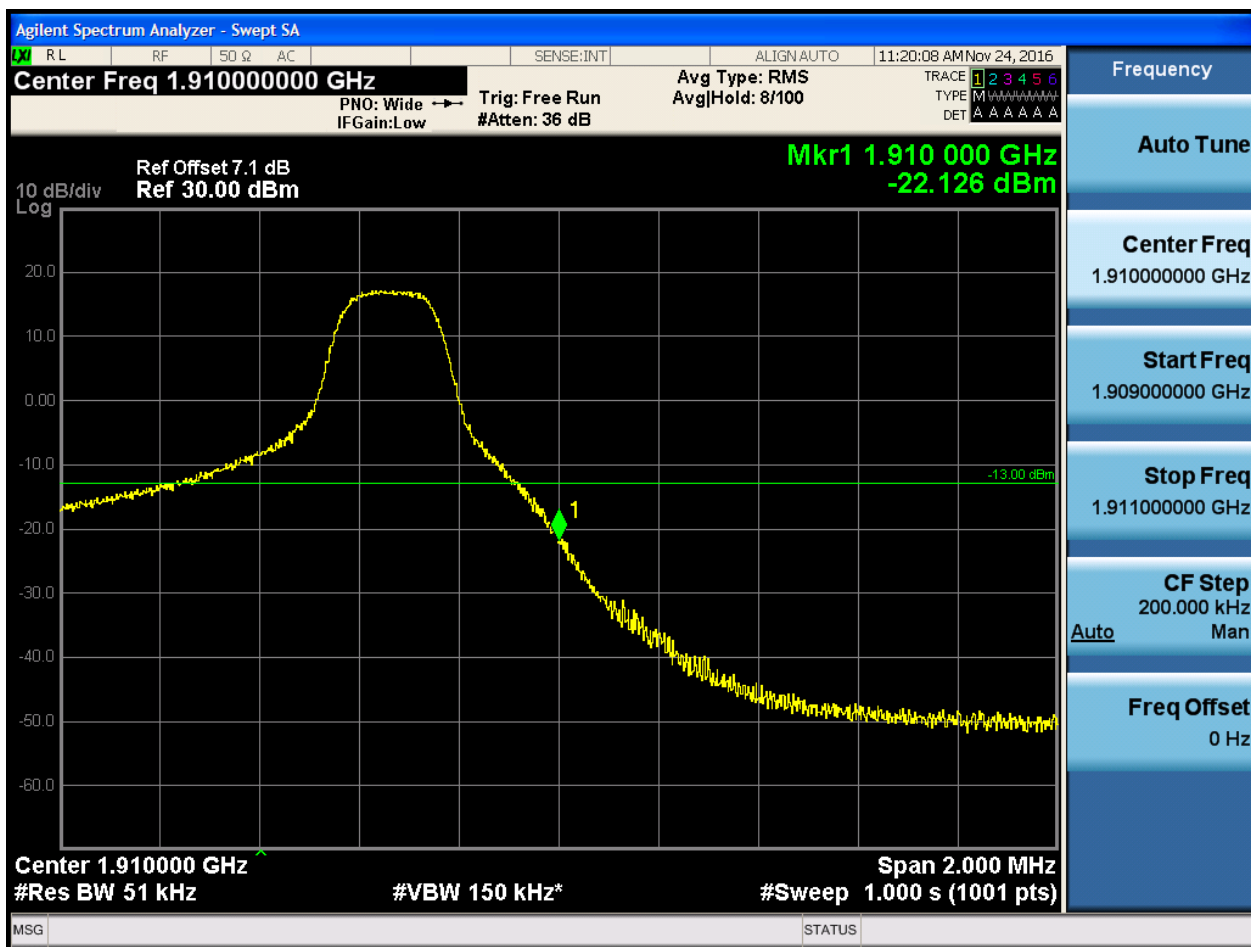
5.1.1.2.3.2 Test Channel = HCH

5.1.1.2.3.2.1 Test RB = RB1#0





5.1.1.2.3.2.2 Test RB = RB1#24



5.1.1.2.3.2.3 Test RB = RB12#6





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:20:36 AM Nov 24, 2016

Center Freq 1.910000000 GHz Avg Type: RMS
PNO: Wide IFGain:Low Trig: Free Run AvgHold: 7100
#Atten: 36 dB

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

Ref Offset 7.1 dB
Ref 30.00 dBm

Mkr1 1.910 000 GHz
-30.922 dBm

10 dB/div
Log

The plot shows a signal at 1.910 GHz. The power level is approximately 0 dBm at the start of the sweep, then drops sharply to about -30.9 dBm. A green horizontal line is drawn at -13.00 dBm. A yellow marker '1' is placed on the signal at approximately -30.9 dBm.

Center 1.910000 GHz
#Res BW 51 kHz
#VBW 150 kHz*
Span 2.000 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
1.910000000 GHz

Start Freq
1.909000000 GHz

Stop Freq
1.911000000 GHz

CF Step
200.000 kHz
Auto Man

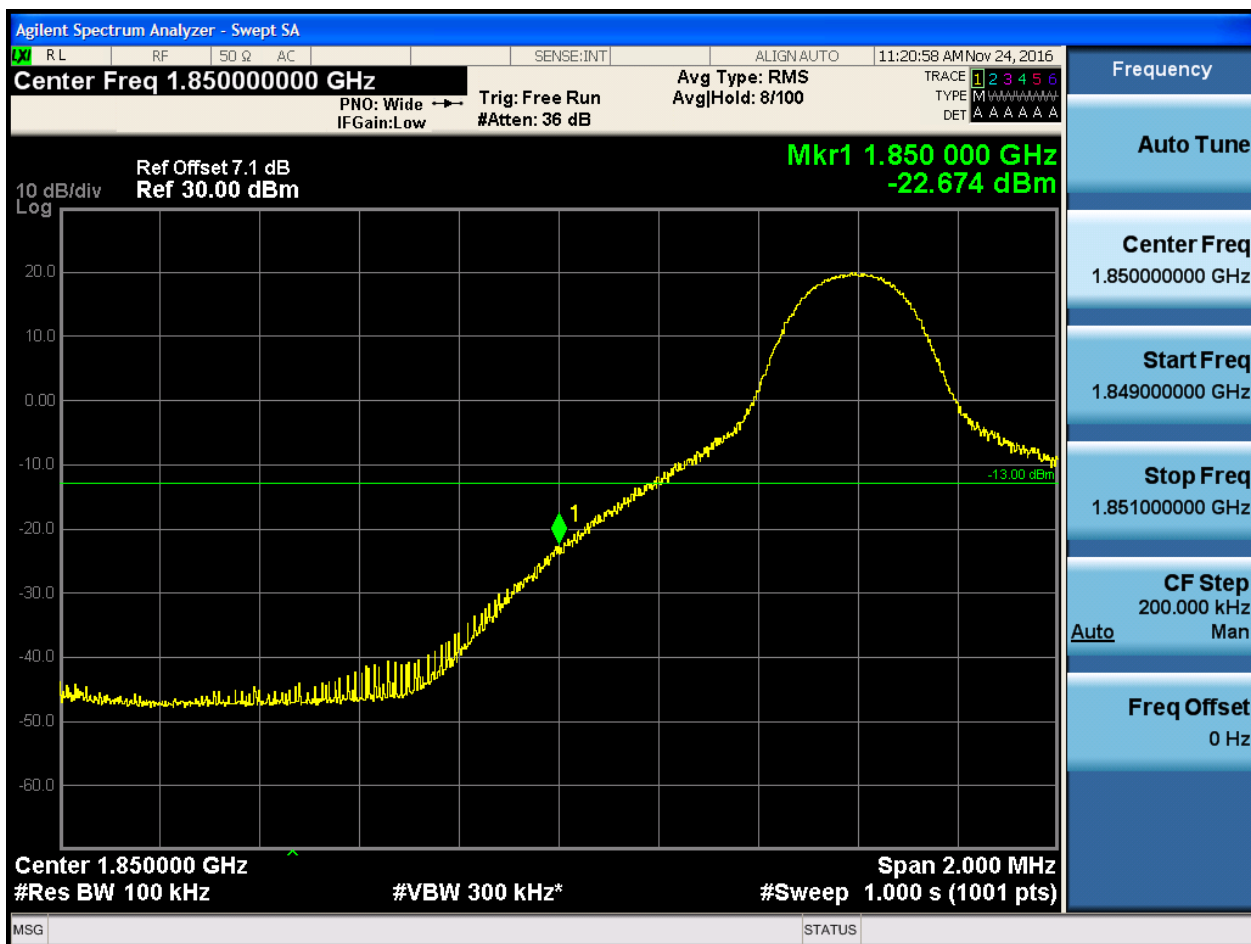
Freq Offset
0 Hz



5.1.1.2.4 Test Bandwidth = 10

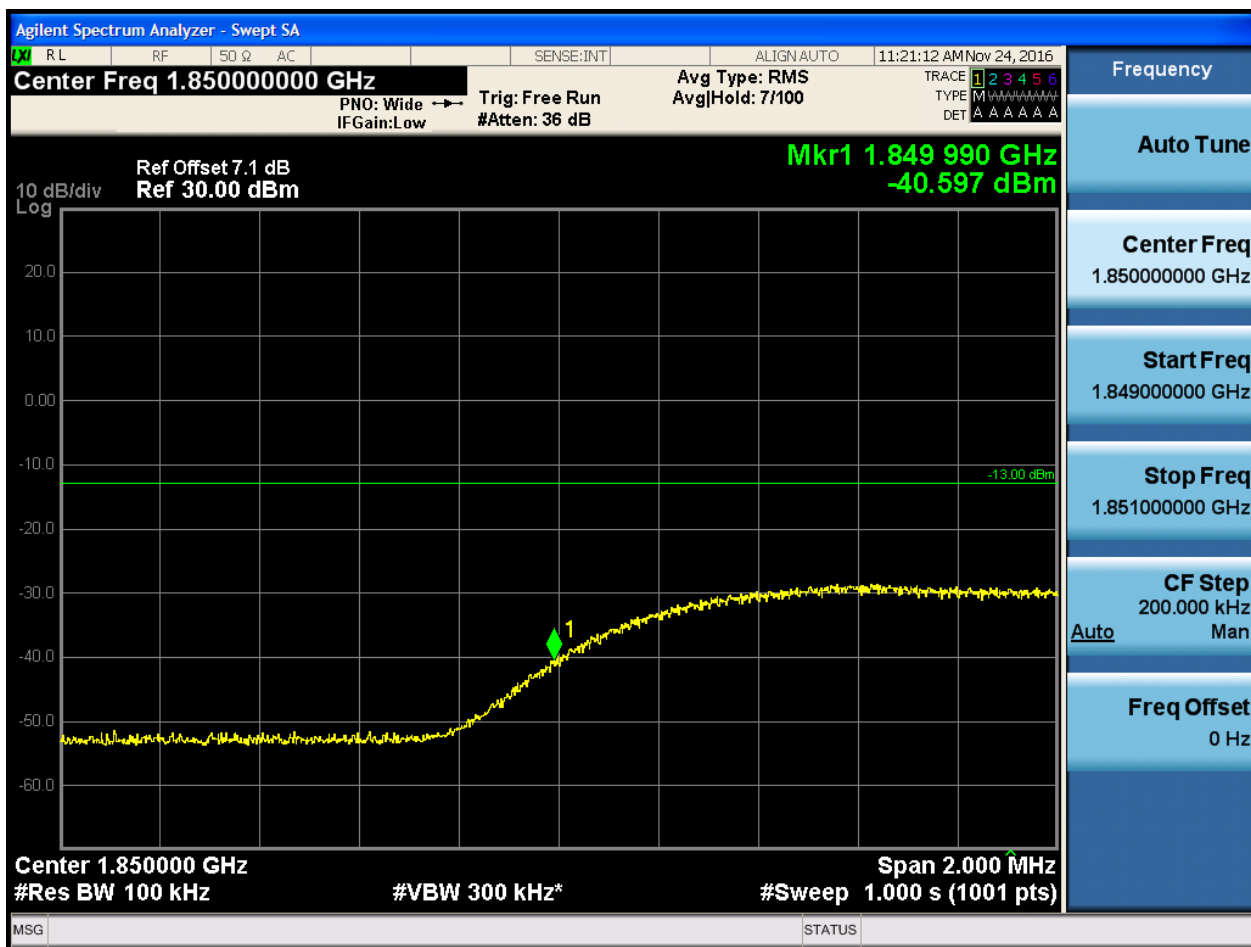
5.1.1.2.4.1 Test Channel = LCH

5.1.1.2.4.1.1 Test RB = RB1#0



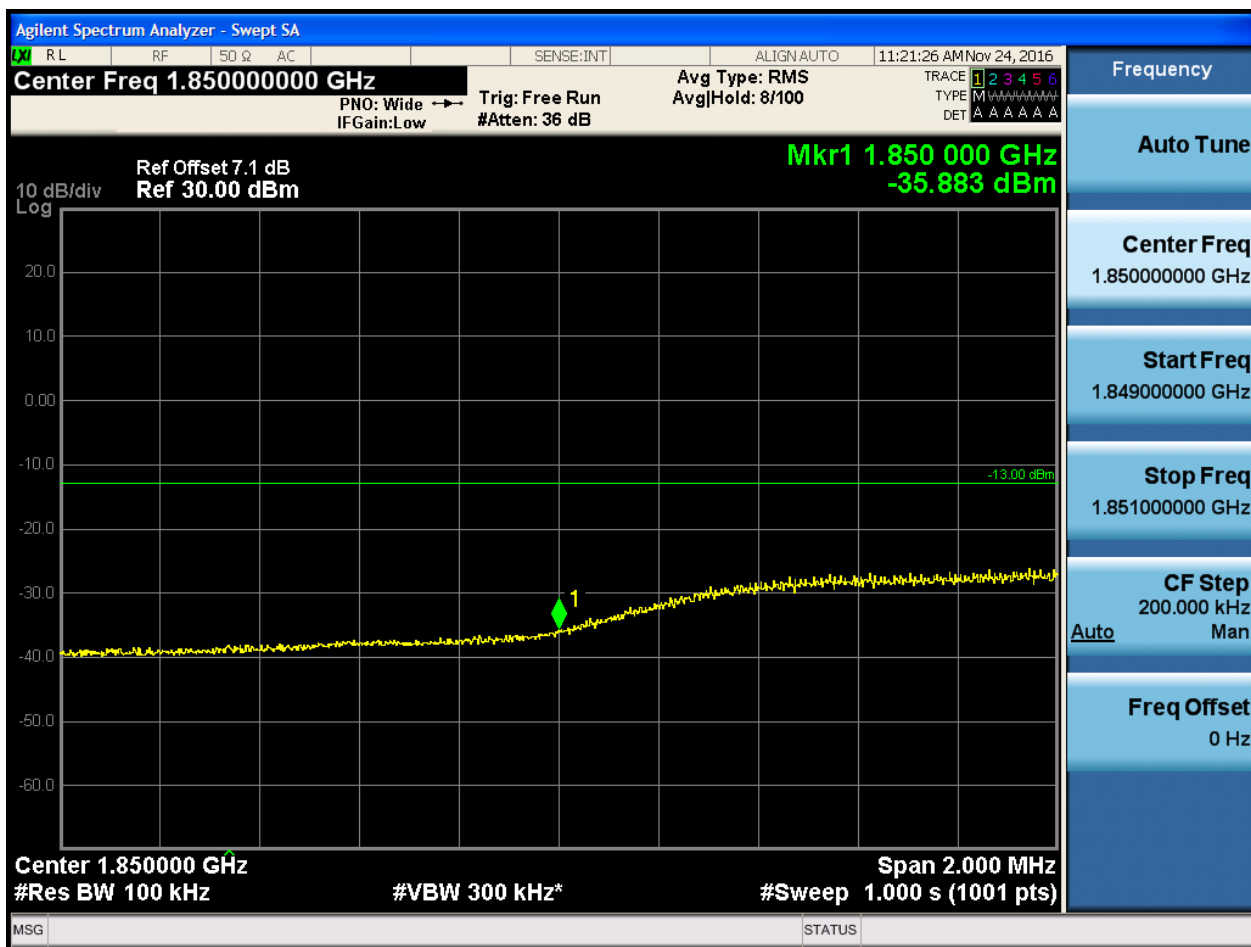


5.1.1.2.4.1.2 Test RB = RB1#49



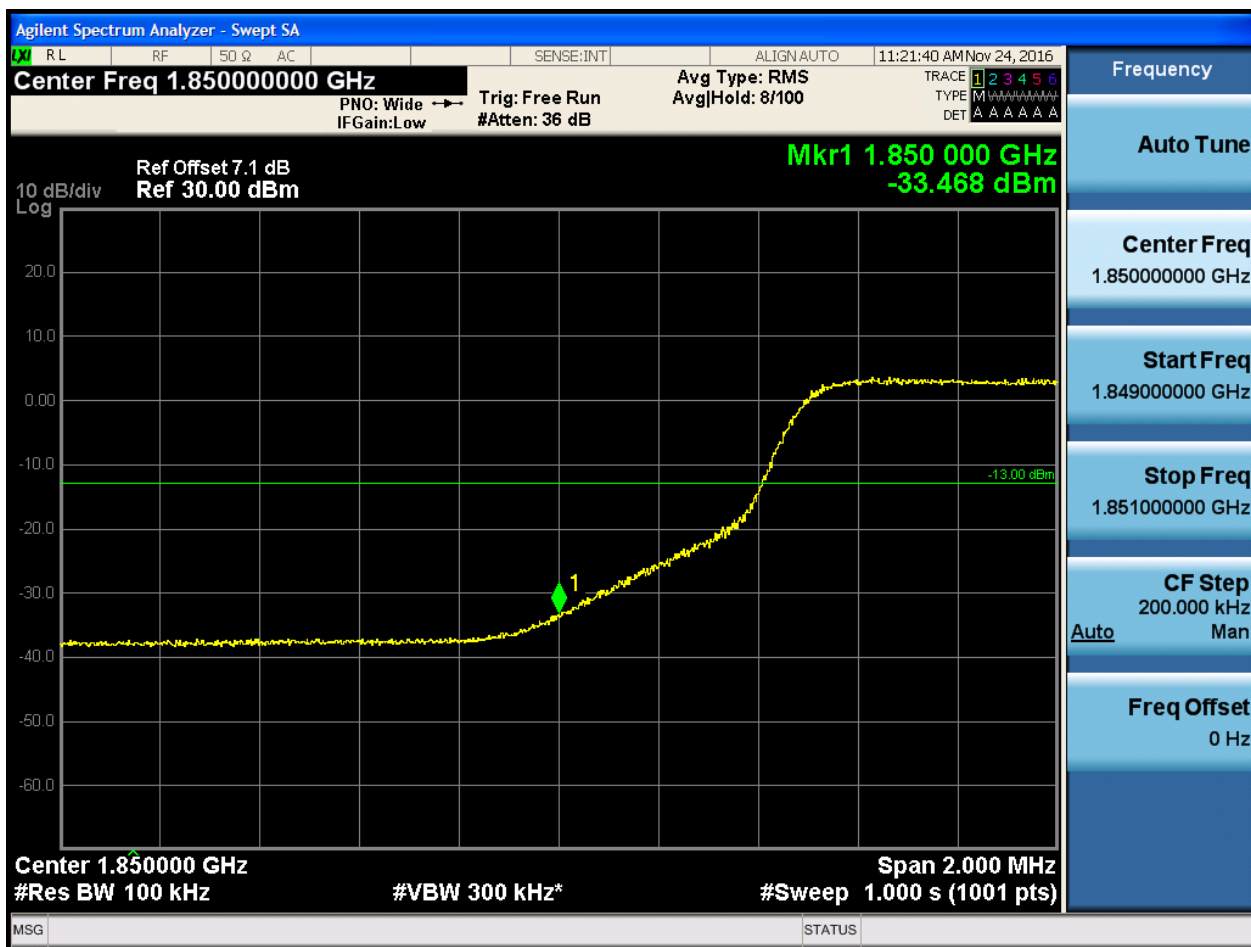


5.1.1.2.4.1.3 Test RB = RB25#13





5.1.1.2.4.1.4 Test RB = RB50#0



5.1.1.2.4.2 Test Channel = HCH

5.1.1.2.4.2.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 11:22:14 AM Nov 24, 2016

Center Freq 1.910000000 GHz Avg Type: RMS
PNO: Wide IF Gain: Low Trig: Free Run Avg Hold: 8/100
#Atten: 36 dB

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

Ref Offset 7.1 dB
Ref 30.00 dBm

Mkr1 1.910 010 GHz
-24.396 dBm

10 dB/div
Log

Center 1.910000 GHz
#Res BW 100 kHz #VBW 300 kHz* Span 2.000 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 11:22:28 AM Nov 24, 2016

Center Freq 1.910000000 GHz Avg Type: RMS
 PNO: Wide IFGain: Low Trig: Free Run AvgHold: 8/100
 #Atten: 36 dB

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

Ref Offset 7.1 dB
 Ref 30.00 dBm

**Mkr1 1.910 010 GHz
 -34.853 dBm**

10 dB/div
 Log

Center 1.910000 GHz
 #Res BW 100 kHz
 #VBW 300 kHz*
 Span 2.000 MHz
 #Sweep 1.000 s (1001 pts)

MSG STATUS



5.1.1.2.4.2.4 Test RB = RB50#0

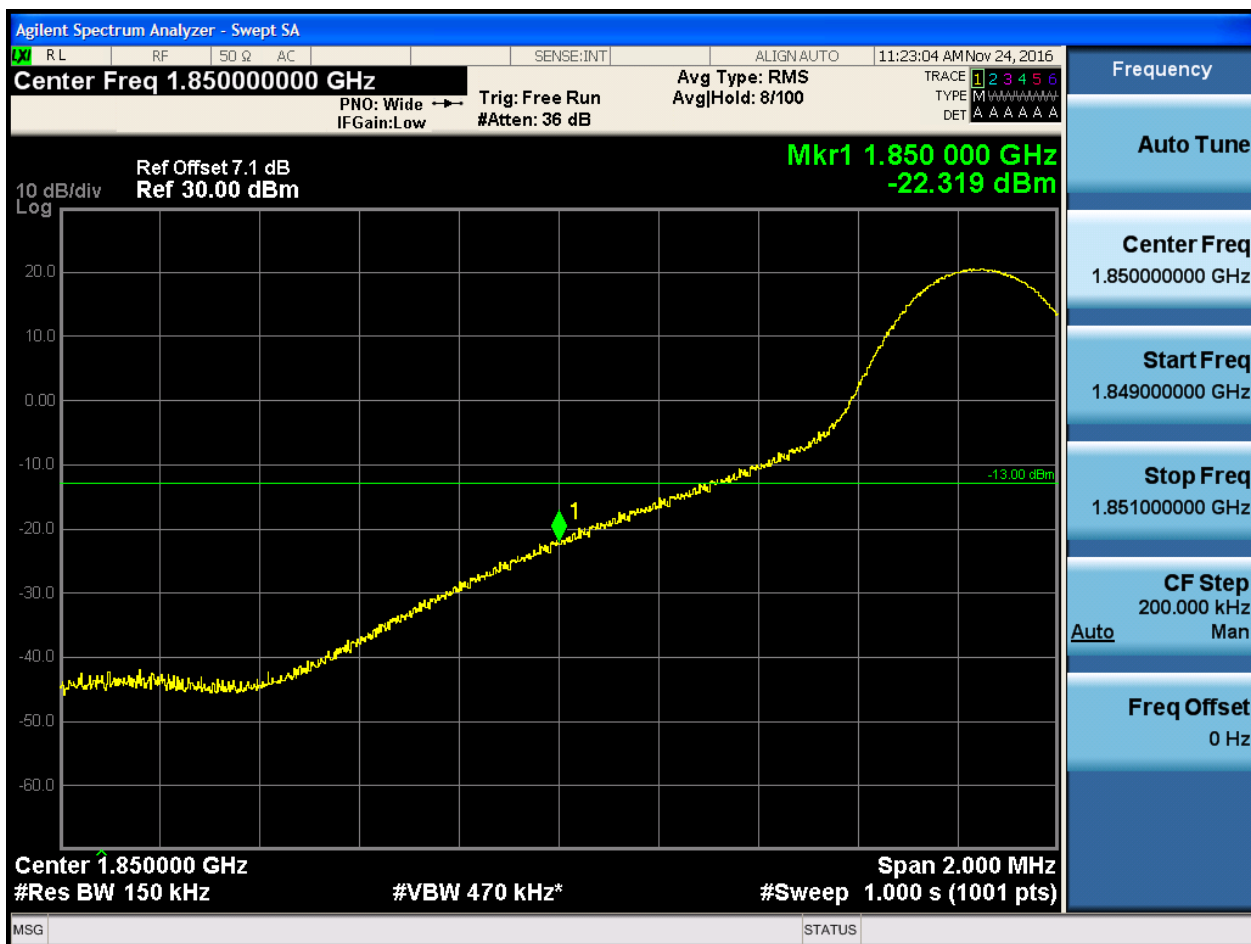




5.1.1.2.5 Test Bandwidth = 15

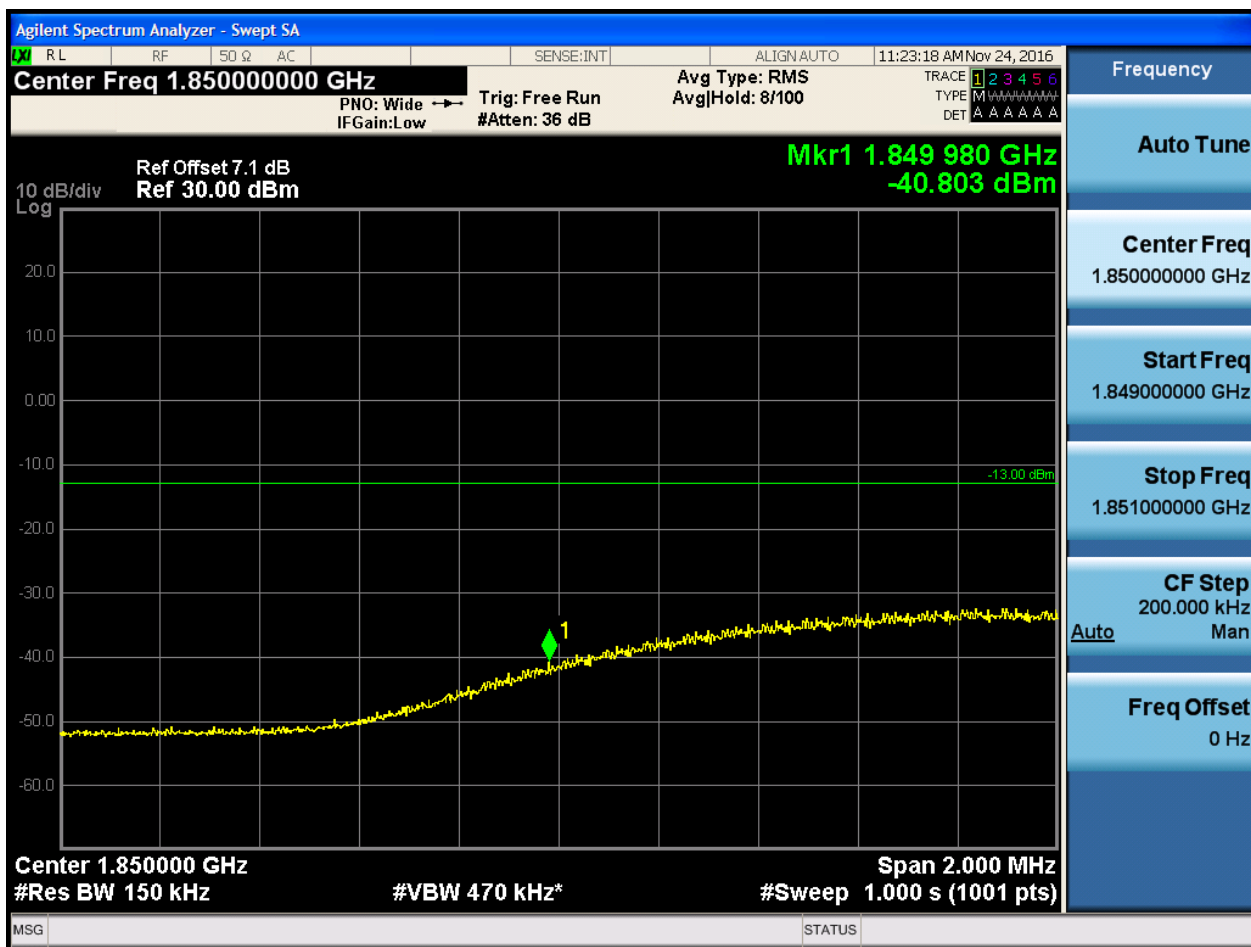
5.1.1.2.5.1 Test Channel = LCH

5.1.1.2.5.1.1 Test RB = RB1#0



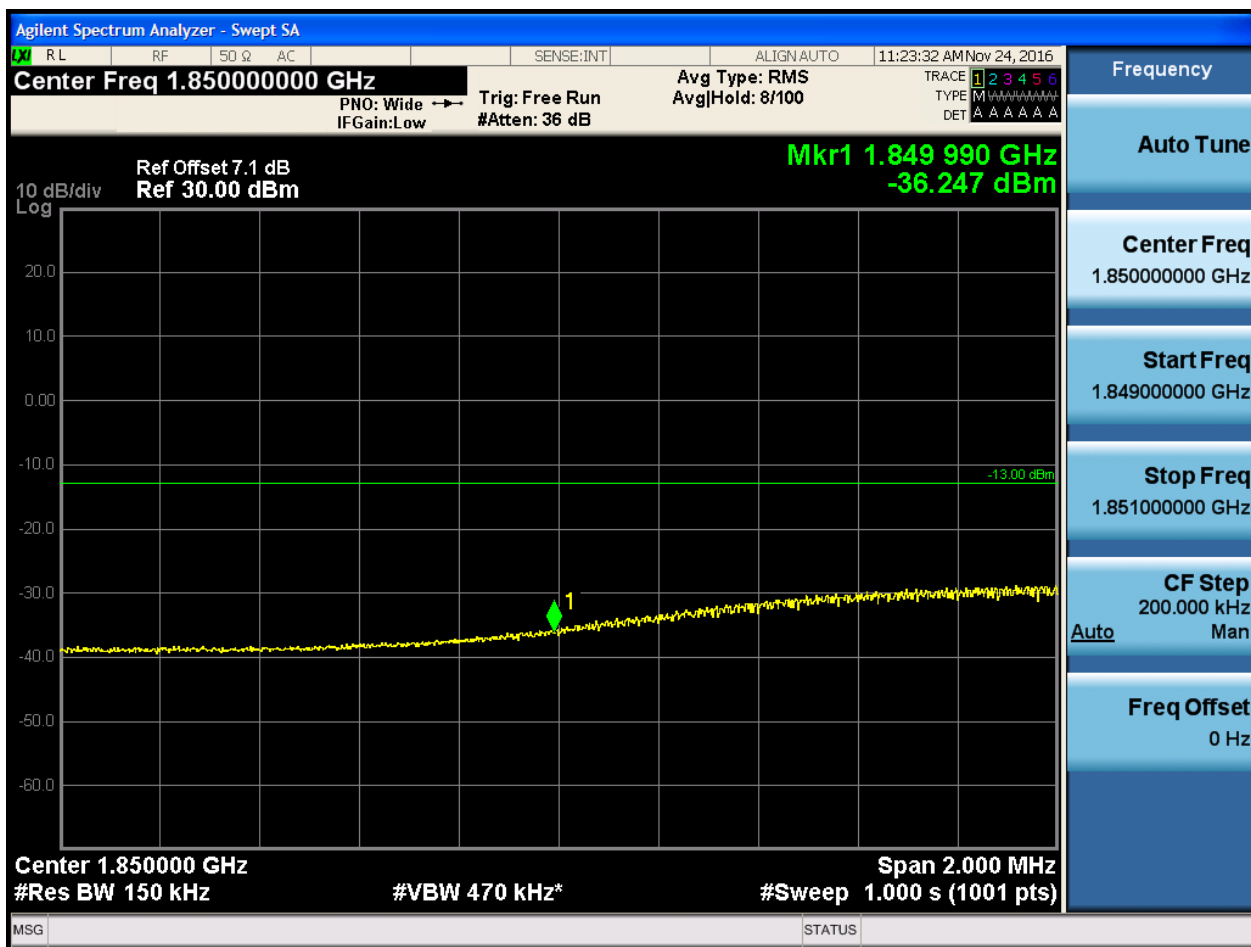


5.1.1.2.5.1.2 Test RB = RB1#74





5.1.1.2.5.1.3 Test RB = RB38#19





5.1.1.2.5.1.4 Test RB = RB75#0





5.1.1.2.5.2 Test Channel = HCH

5.1.1.2.5.2.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:24:20 AM Nov 24, 2016

Center Freq 1.910000000 GHz Avg Type: RMS
PNO: Wide Trig: Free Run
IFGain: Low #Atten: 36 dB

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

Ref Offset 7.1 dB
Ref 30.00 dBm

Mkr1 1.910 000 GHz
-24.057 dBm

10 dB/div
Log

-13.00 dBm

Center 1.910000 GHz
#Res BW 150 kHz
#VBW 470 kHz*
Span 2.000 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency
Auto Tune
Center Freq 1.910000000 GHz
Start Freq 1.909000000 GHz
Stop Freq 1.911000000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

5.1.1.2.5.2.3 Test RB = RB38#19





5.1.1.2.5.2.4 Test RB = RB75#0

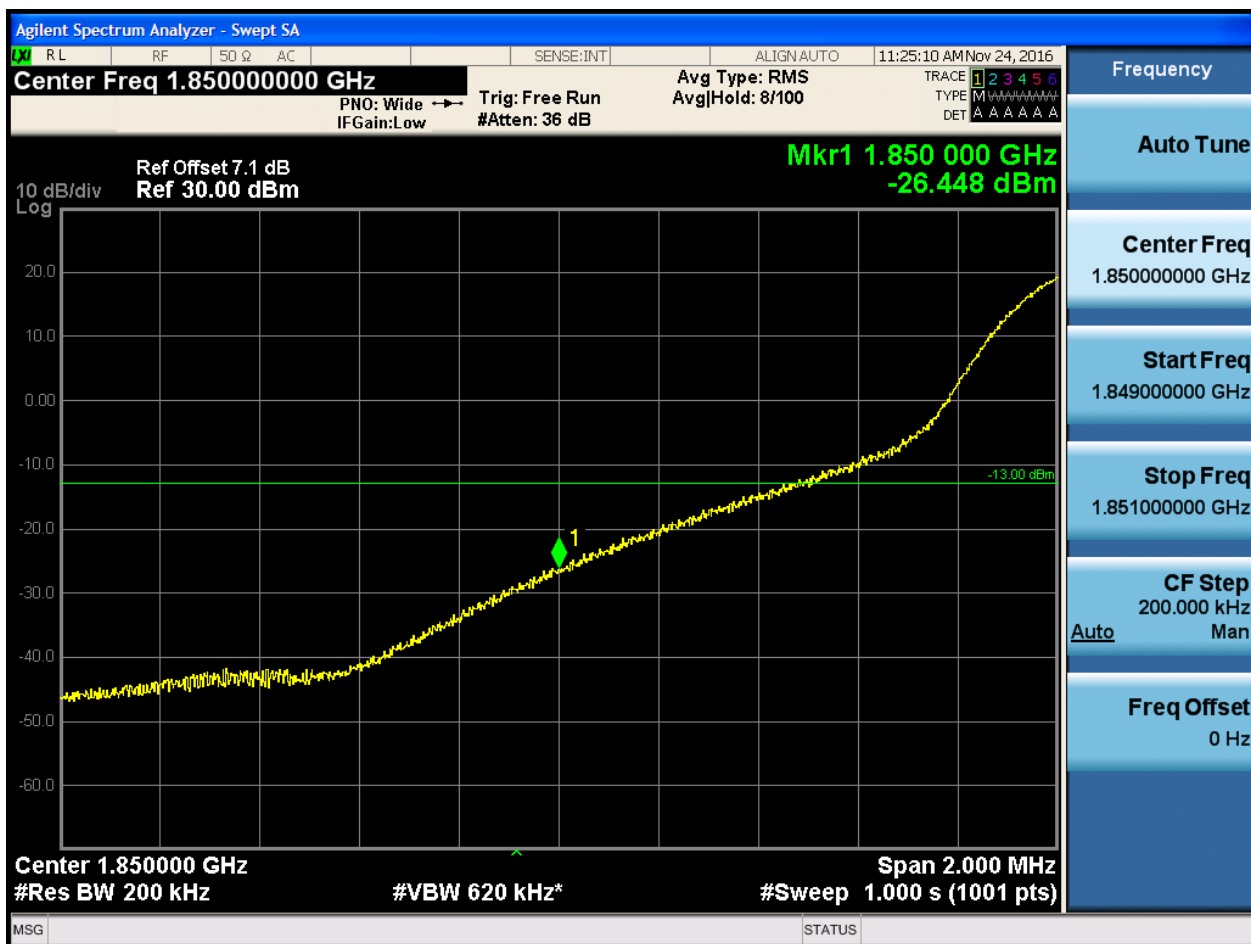




5.1.1.2.6 Test Bandwidth = 20

5.1.1.2.6.1 Test Channel = LCH

5.1.1.2.6.1.1 Test RB = RB1#0





5.1.1.2.6.1.2 Test RB = RB1#99





Agilent Spectrum Analyzer - Swept SA

Center Freq 1.850000000 GHz

Ref Offset 7.1 dB
Ref 30.00 dBm

10 dB/div
Log

Mkr1 1.849 970 GHz
-36.183 dBm

Center 1.850000 GHz
#Res BW 200 kHz
#VBW 620 kHz*

Span 2.000 MHz
#Sweep 1.000 s (1001 pts)

Auto Tune

Center Freq
1.850000000 GHz

Start Freq
1.849000000 GHz

Stop Freq
1.851000000 GHz

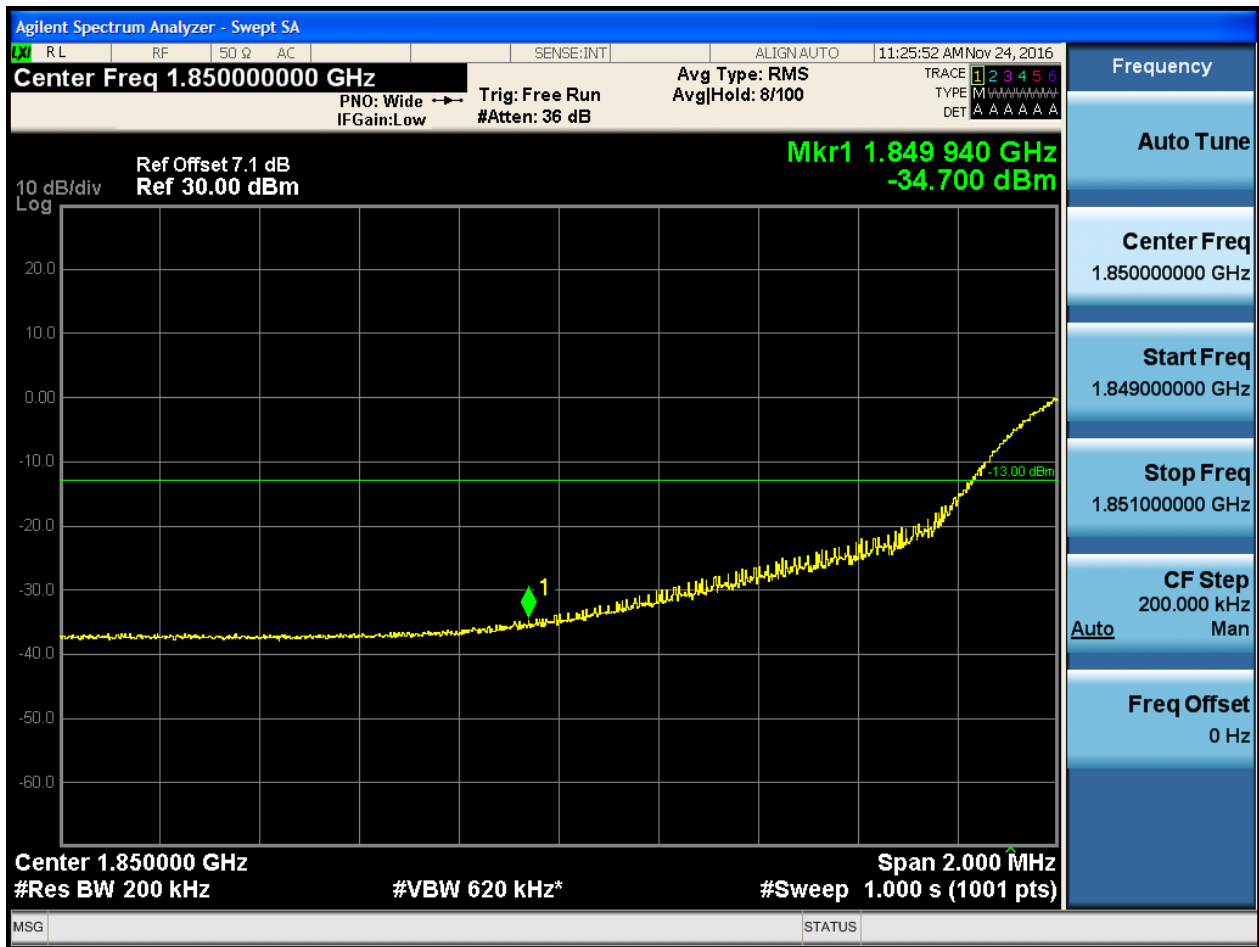
CF Step
200.000 kHz
Auto

Freq Offset
0 Hz

The image shows a screenshot of an Agilent Spectrum Analyzer in Swept SA mode. The main display is a log-scale plot of power (dBm) versus frequency (GHz). The center frequency is set to 1.850000 GHz, and the span is 2.000 MHz. The resolution bandwidth (RBW) is 200 kHz, and the video bandwidth (VBW) is 620 kHz. The reference level is 30.00 dBm, and the offset is 7.1 dB. A yellow trace shows the swept spectrum, which is relatively flat around -36 dBm. A green marker is placed at 1.849970 GHz, indicating a specific frequency point. The right side of the screen displays various settings and parameters, including Auto Tune, Center Freq, Start Freq, Stop Freq, CF Step, and Freq Offset. The bottom status bar shows the message 'MSG' and the status 'STATUS'.



5.1.1.2.6.1.4 Test RB = RB100#0





5.1.1.2.6.2 Test Channel = HCH

5.1.1.2.6.2.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:26:26 AM Nov 24, 2016

Center Freq 1.910000000 GHz Avg Type: RMS
PNO: Wide IFGain: Low Trig: Free Run AvgHold: 8/100
#Atten: 36 dB

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

Ref Offset 7.1 dB
Ref 30.00 dBm

Mkr1 1.910 010 GHz
-28.516 dBm

10 dB/div
Log

-13.00 dBm

Center 1.910000 GHz Span 2.000 MHz
#Res BW 200 kHz #VBW 620 kHz* #Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency
Auto Tune
Center Freq 1.910000000 GHz
Start Freq 1.909000000 GHz
Stop Freq 1.911000000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz



5.1.1.2.6.2.3 Test RB = RB50#25





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 11:26:54 AM Nov 24, 2016

Center Freq 1.910000000 GHz Avg Type: RMS
PNO: Wide IF Gain: Low Trig: Free Run AvgHold: 8/100
#Atten: 36 dB

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

Ref Offset 7.1 dB
Ref 30.00 dBm

Mkr1 1.910 000 GHz
-35.182 dBm

10 dB/div
Log

Center 1.910000 GHz
#Res BW 200 kHz
#VBW 620 kHz*
Span 2.000 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
1.910000000 GHz

Start Freq
1.909000000 GHz

Stop Freq
1.911000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

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 LTE

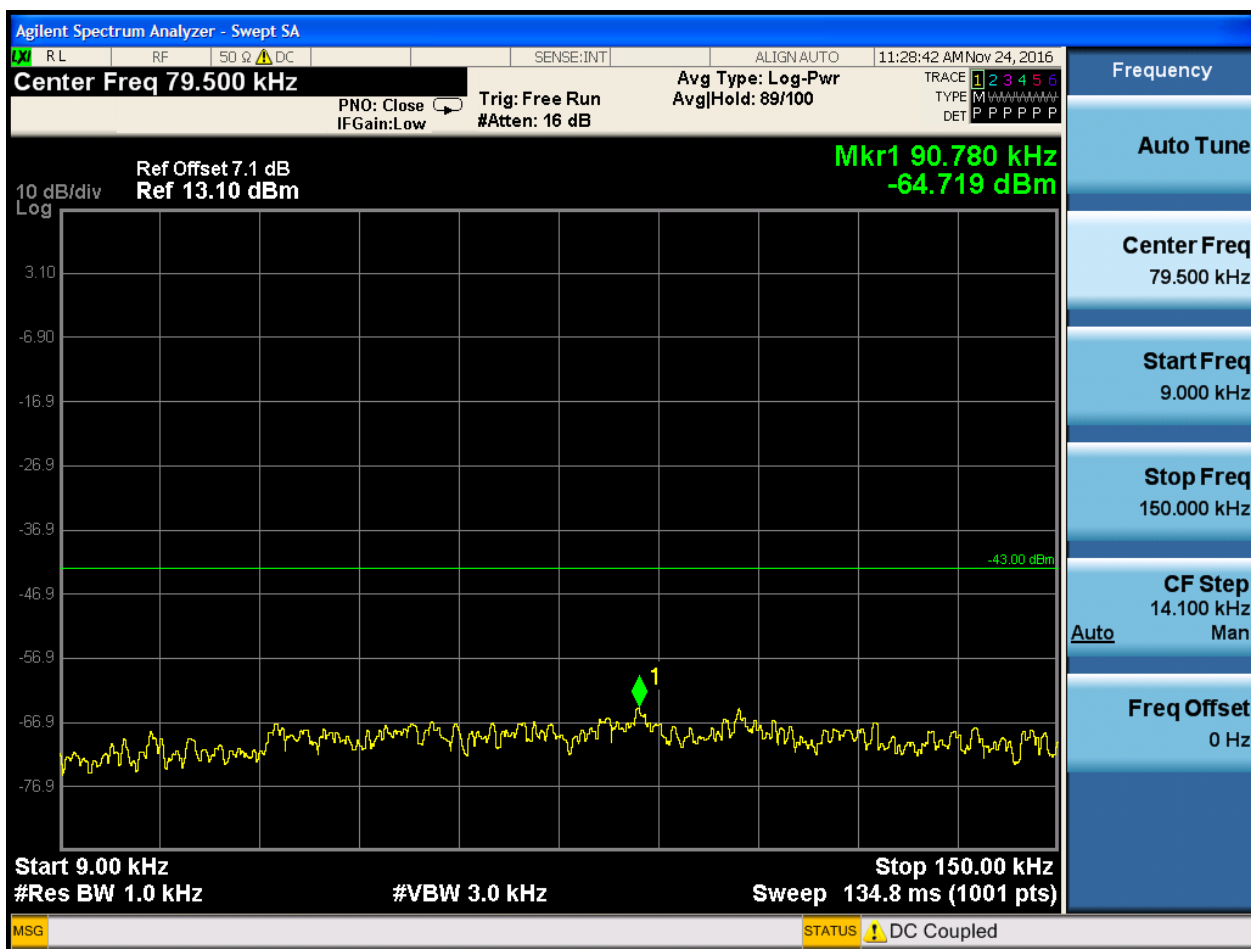
6.1.1 Test Band = BAND2

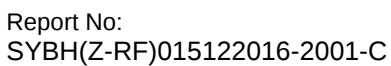
6.1.1.1 Test Mode = LTE/TM1

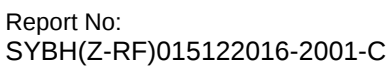
6.1.1.1.1 Test Bandwidth = 1.4

6.1.1.1.1.1 Test Channel = LCH

6.1.1.1.1.1.1 Test RB = RB1#0

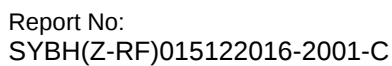


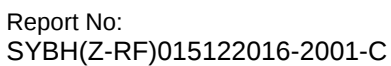


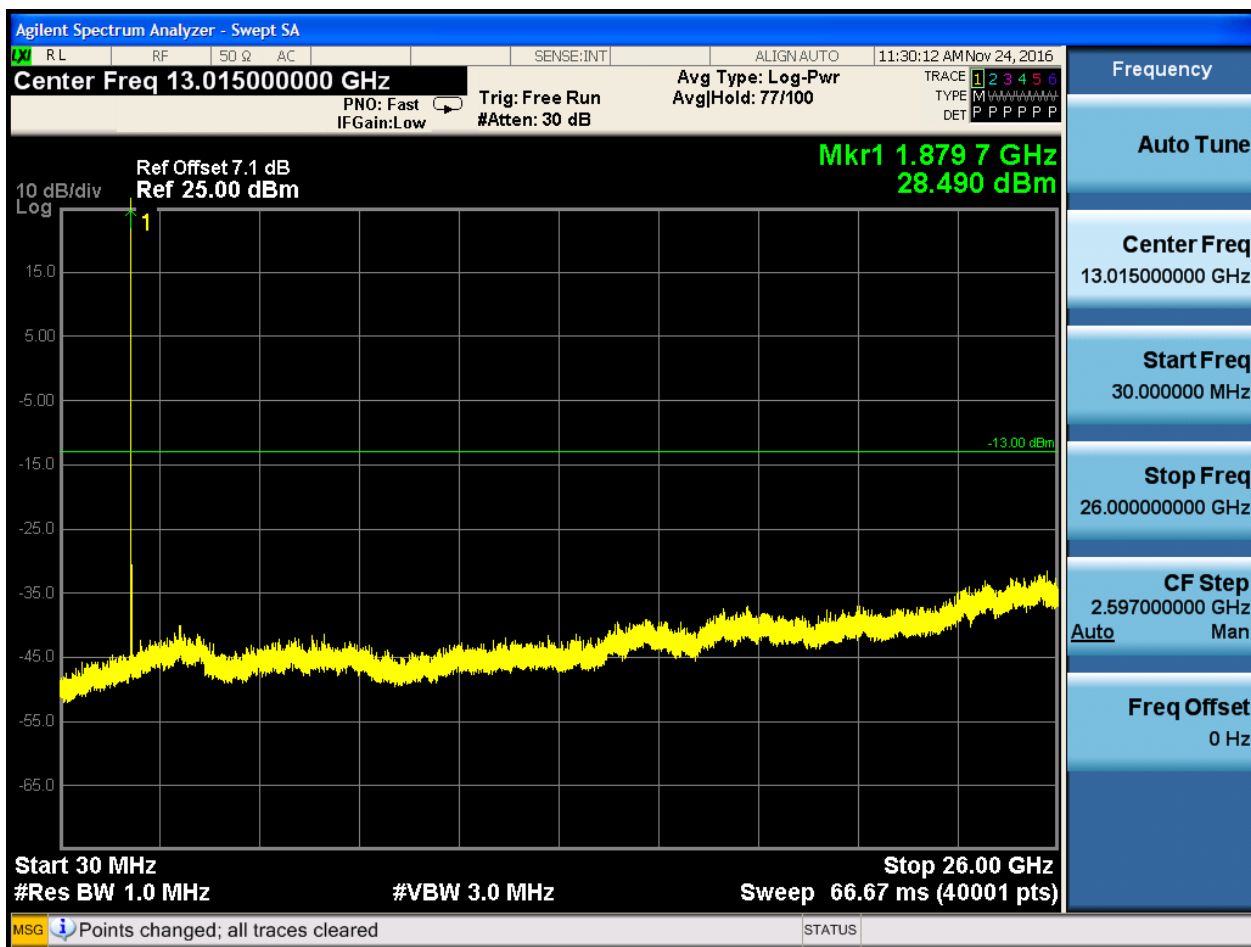




6.1.1.1.1.2.1 Test RB = RB1#0

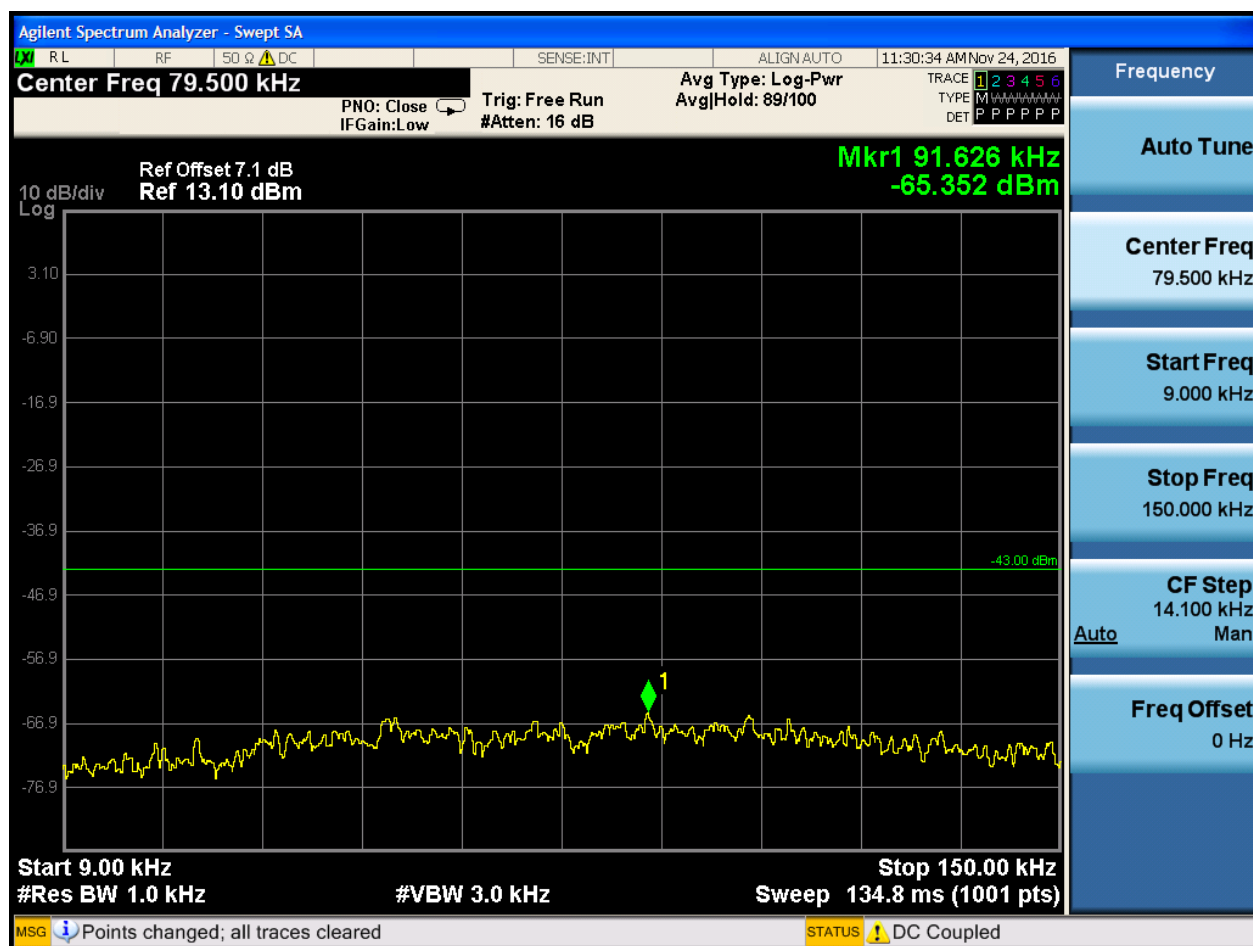


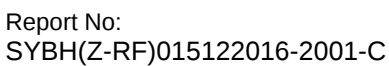


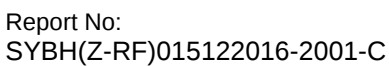


6.1.1.1.1.3 Test Channel = HCH

6.1.1.1.1.3.1 Test RB = RB1#0



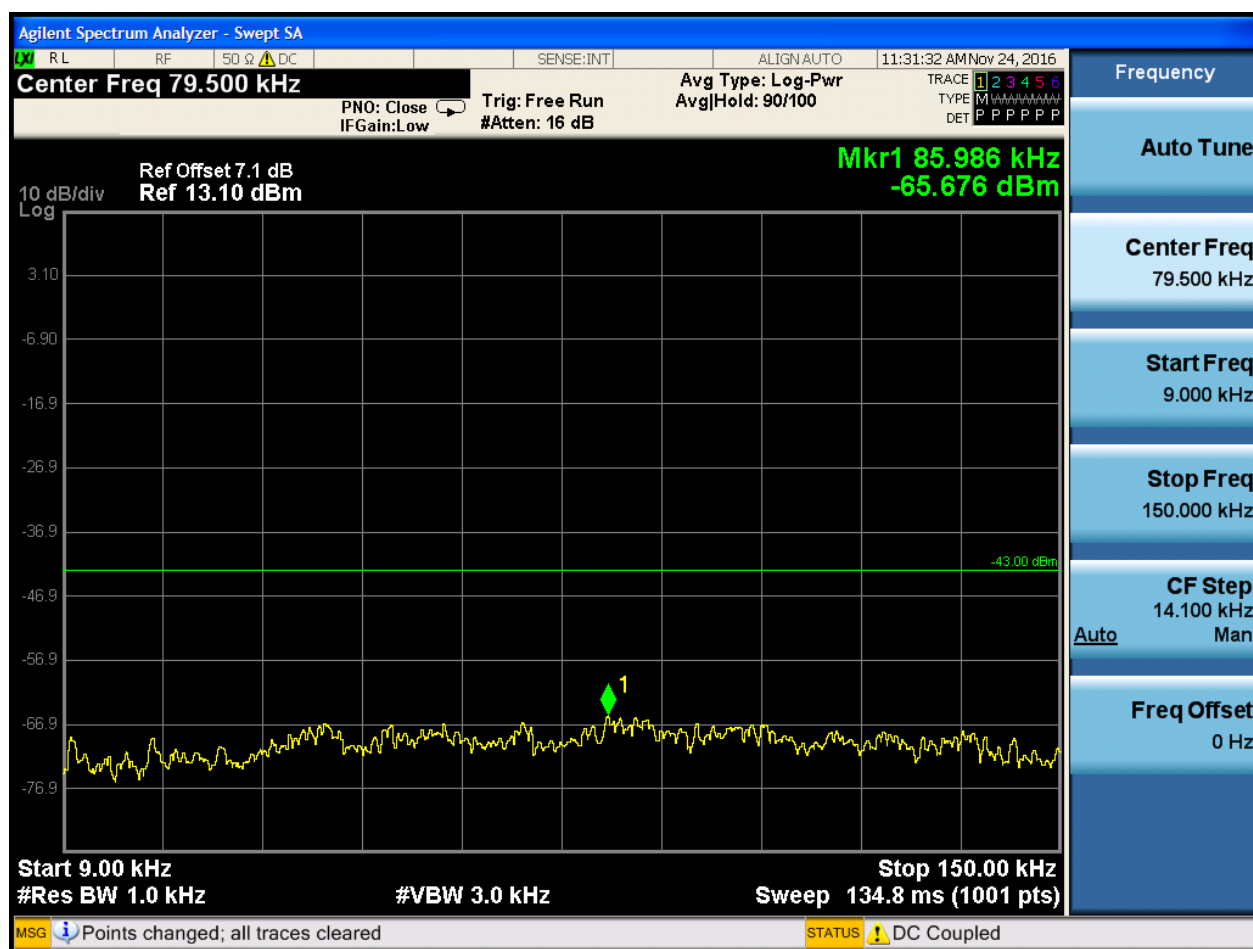


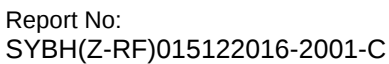


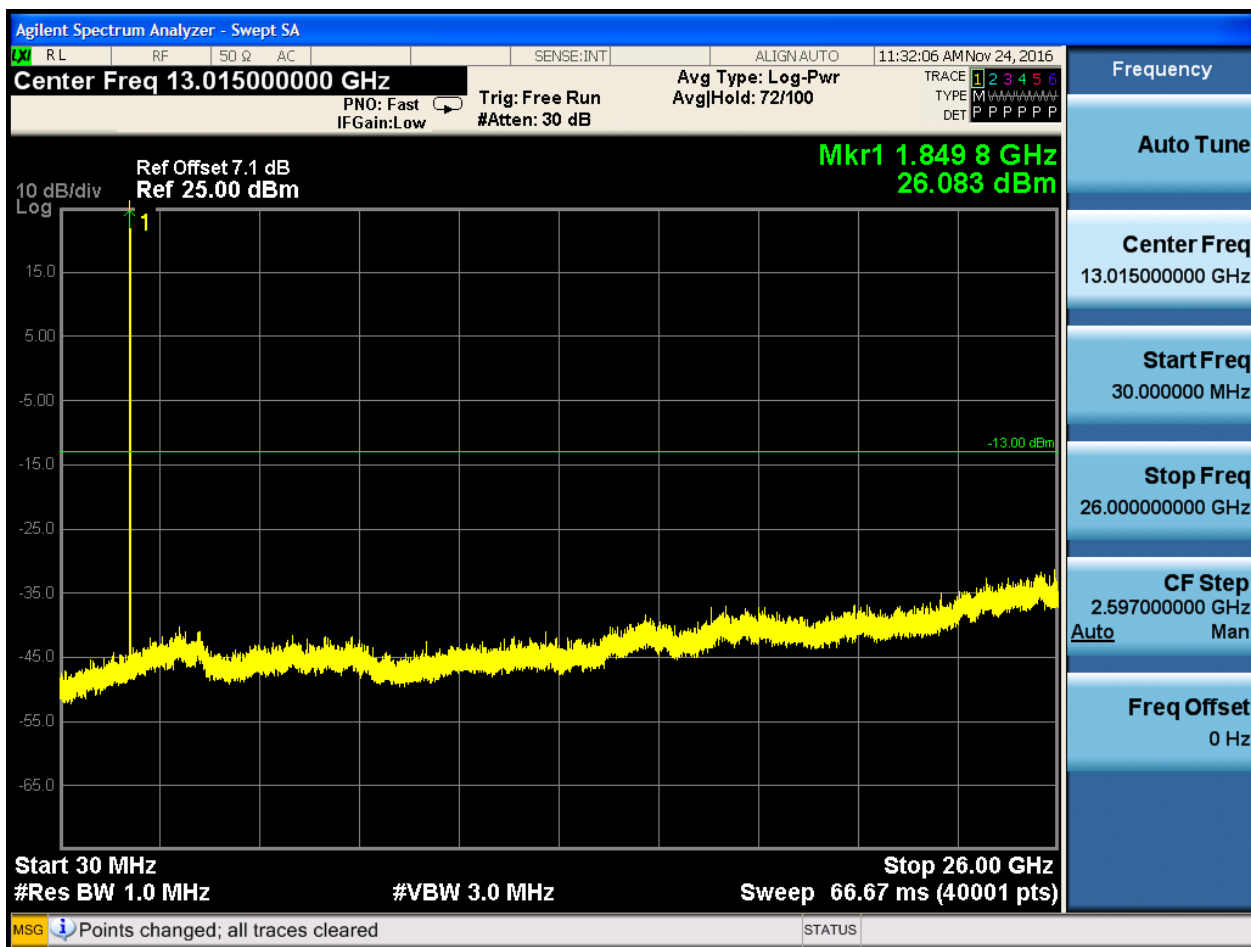
6.1.1.1.2 Test Bandwidth = 3

6.1.1.1.2.1 Test Channel = LCH

6.1.1.1.2.1.1 Test RB = RB1#0



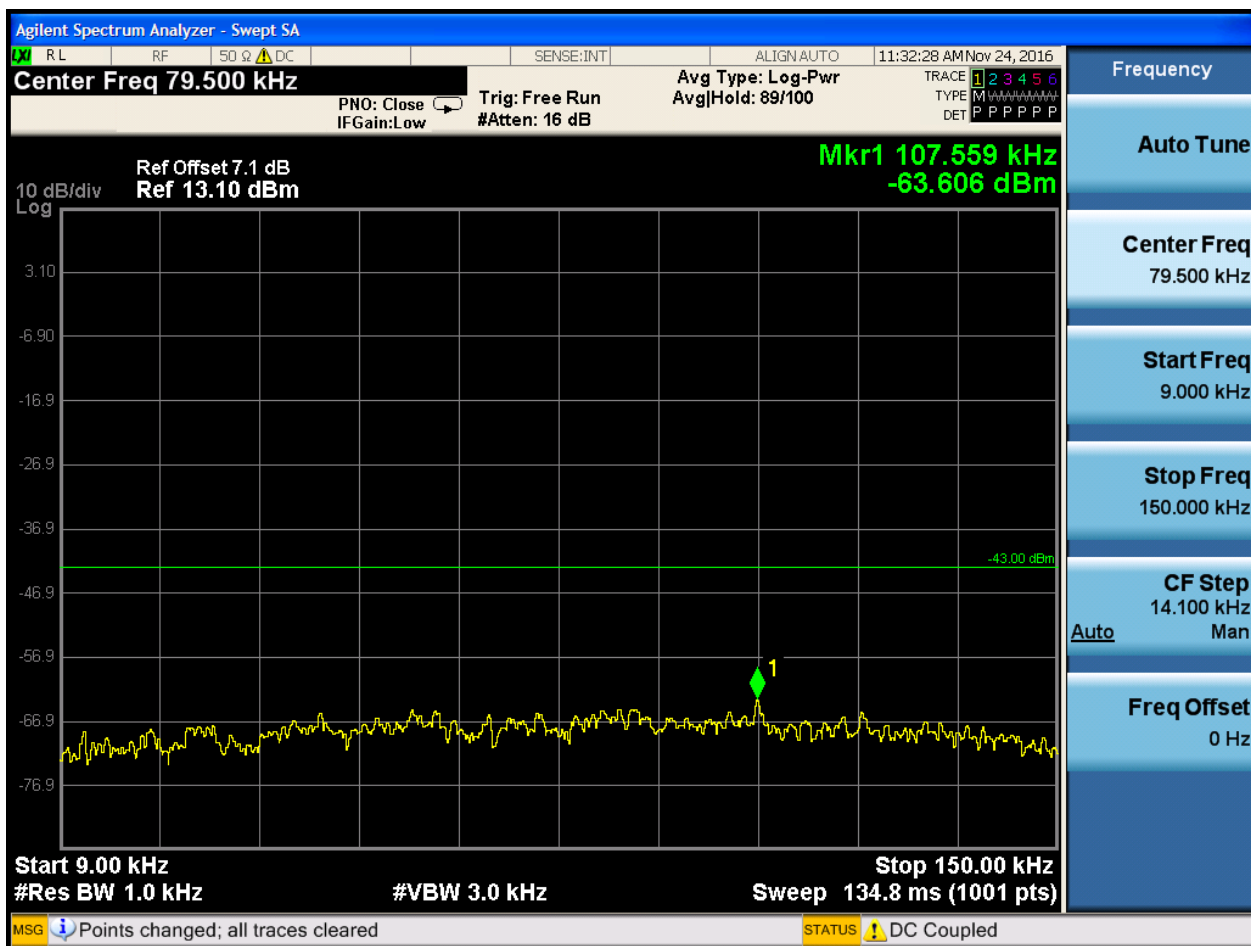


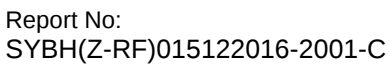


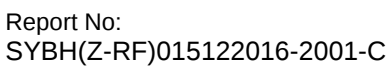


6.1.1.1.2.2 Test Channel = MCH

6.1.1.1.2.2.1 Test RB = RB1#0

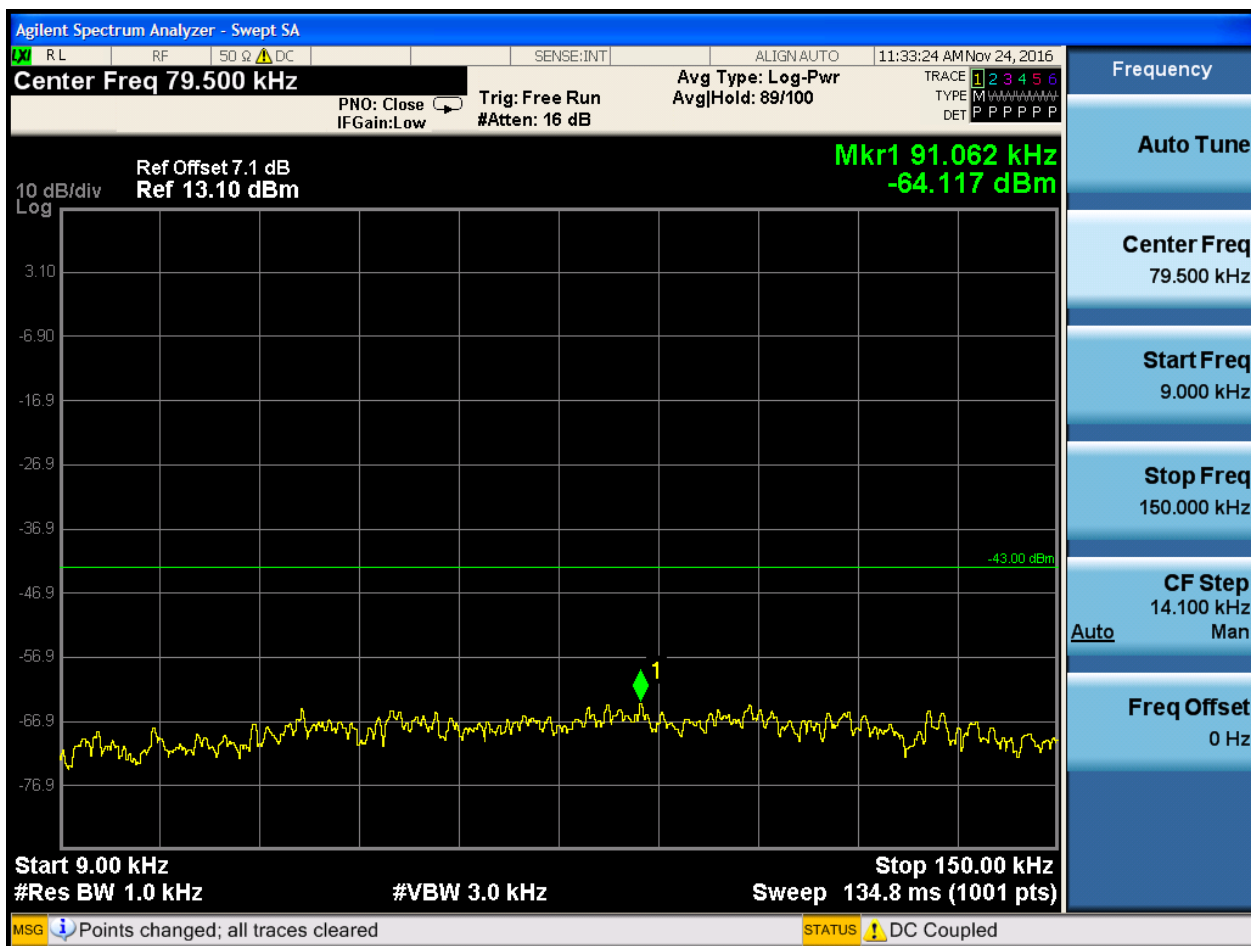


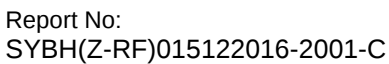


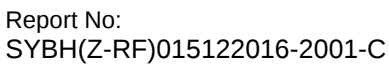


6.1.1.1.2.3 Test Channel = HCH

6.1.1.1.2.3.1 Test RB = RB1#0





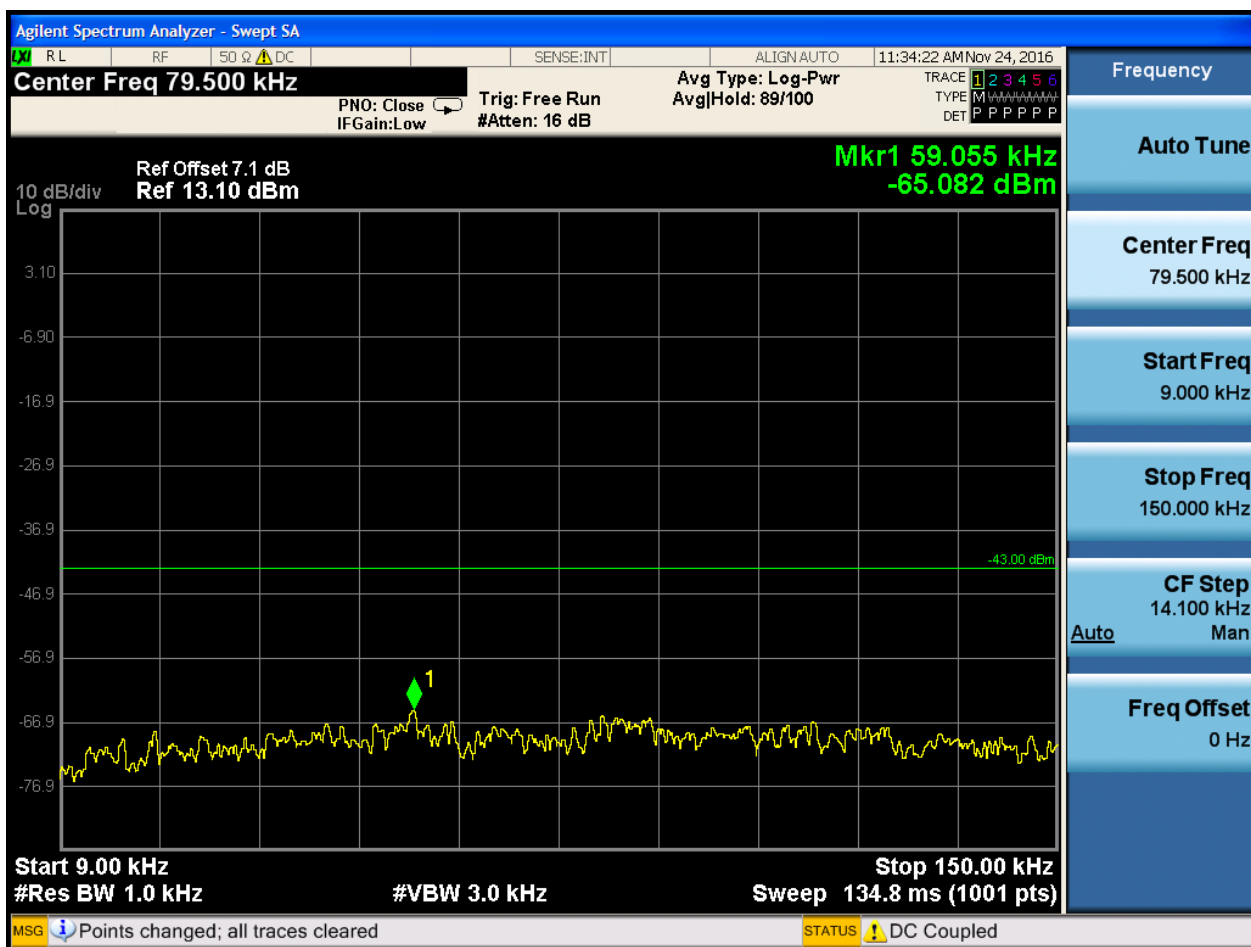


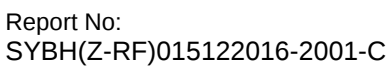


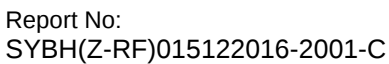
6.1.1.1.3 Test Bandwidth = 5

6.1.1.1.3.1 Test Channel = LCH

6.1.1.1.3.1.1 Test RB = RB1#0

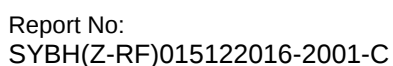


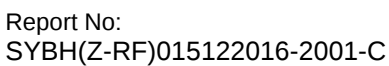


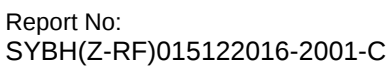




6.1.1.1.3.2.1 Test RB = RB1#0



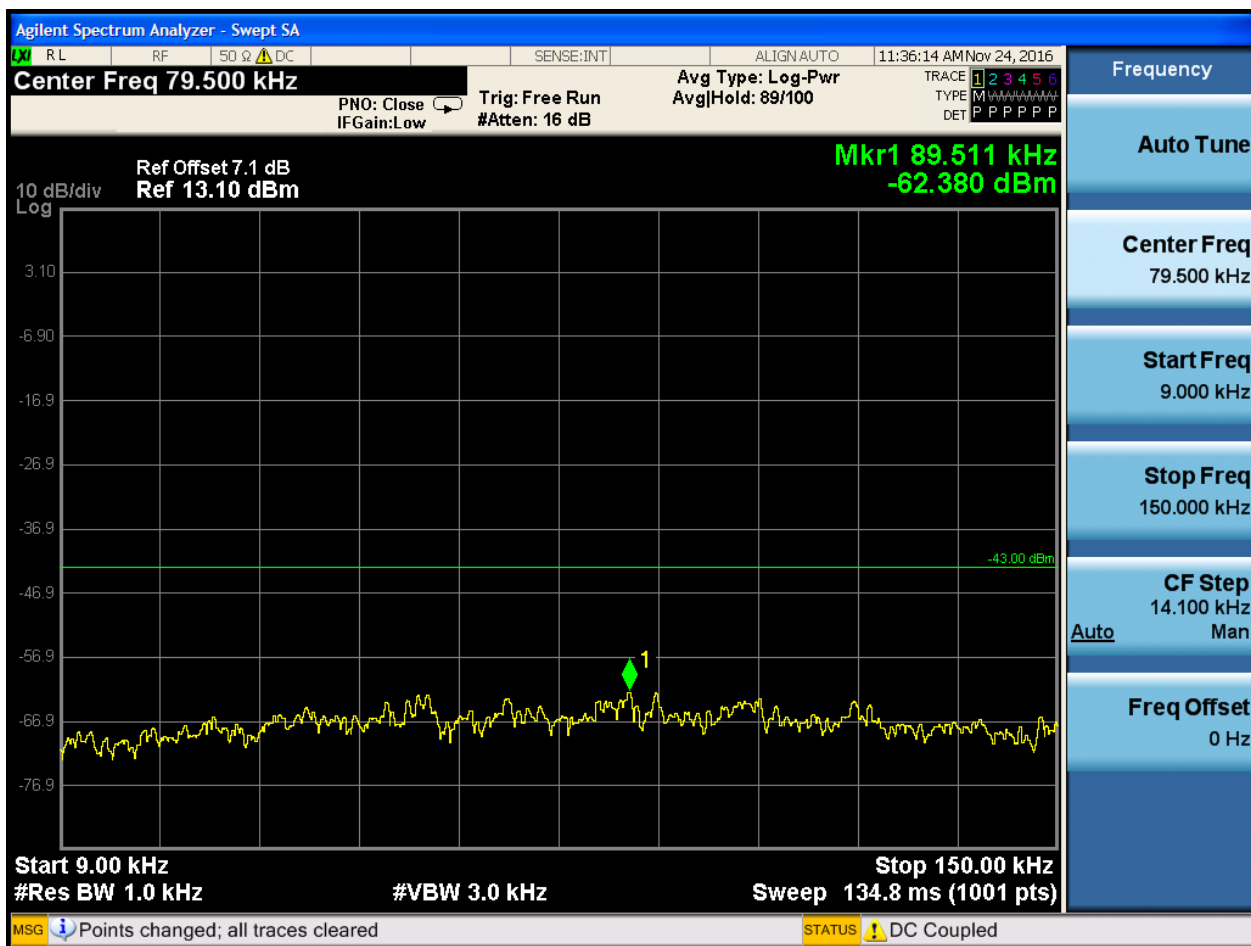


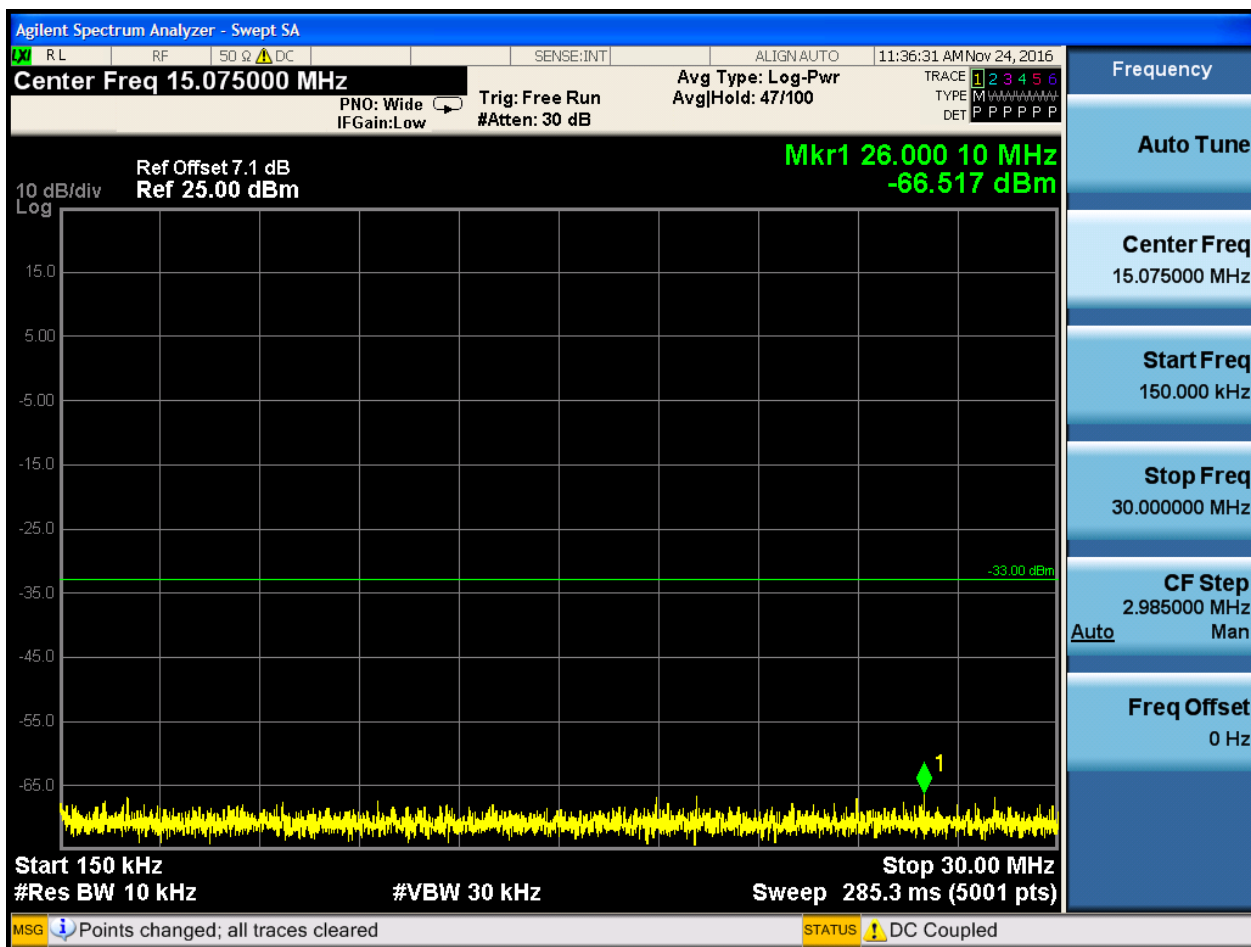


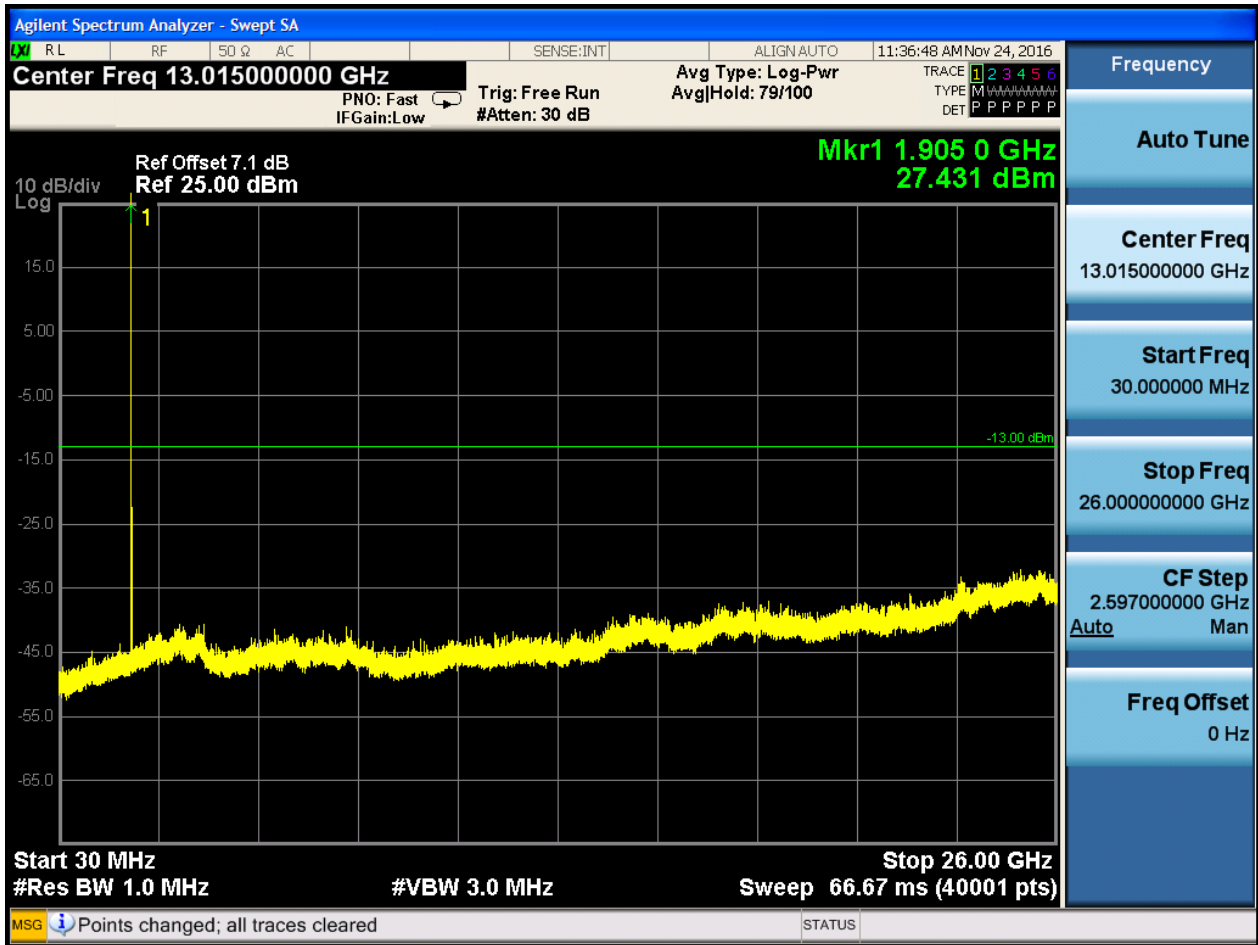


6.1.1.1.3.3 Test Channel = HCH

6.1.1.1.3.3.1 Test RB = RB1#0





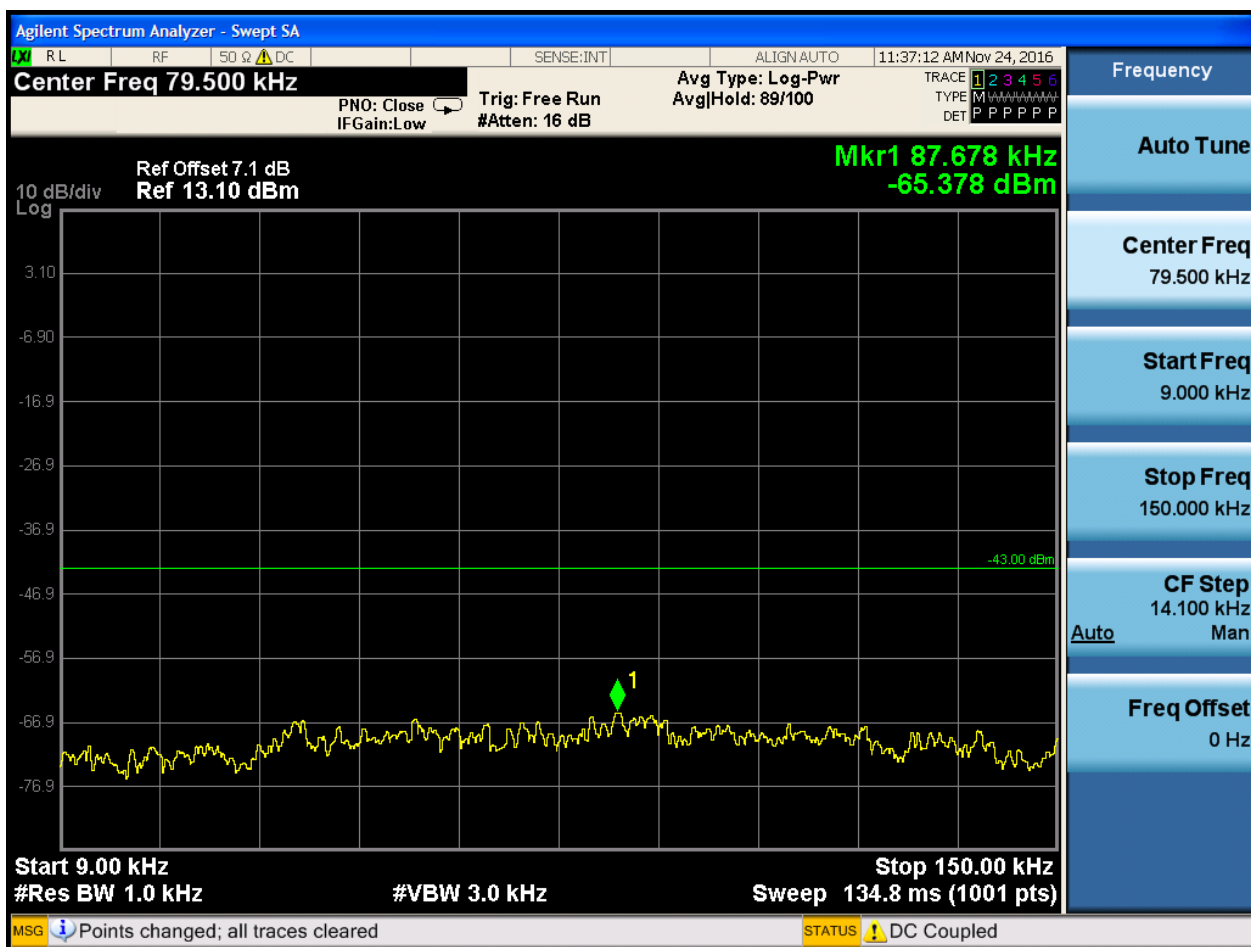


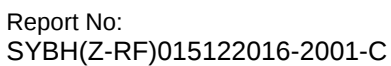


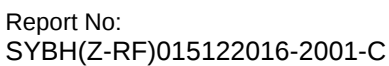
6.1.1.1.4 Test Bandwidth = 10

6.1.1.1.4.1 Test Channel = LCH

6.1.1.1.4.1.1 Test RB = RB1#0

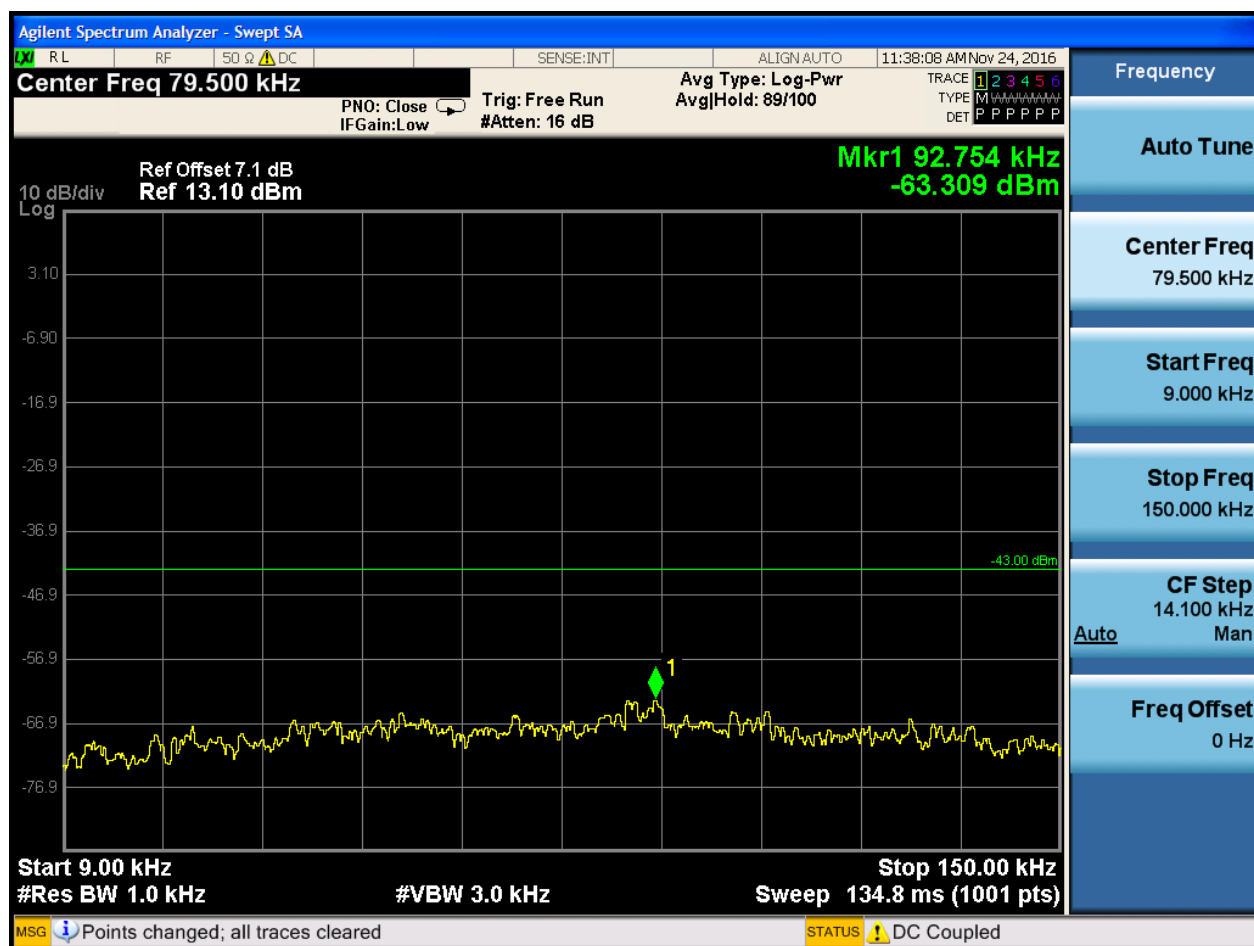


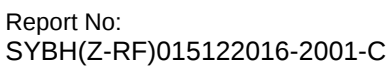


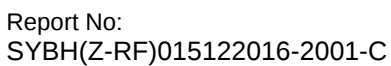


6.1.1.1.4.2 Test Channel = MCH

6.1.1.1.4.2.1 Test RB = RB1#0

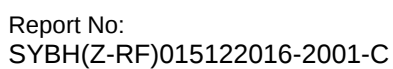


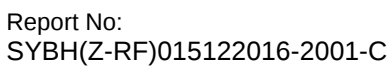


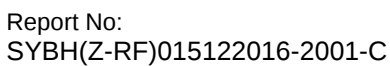




6.1.1.1.4.3.1 Test RB = RB1#0





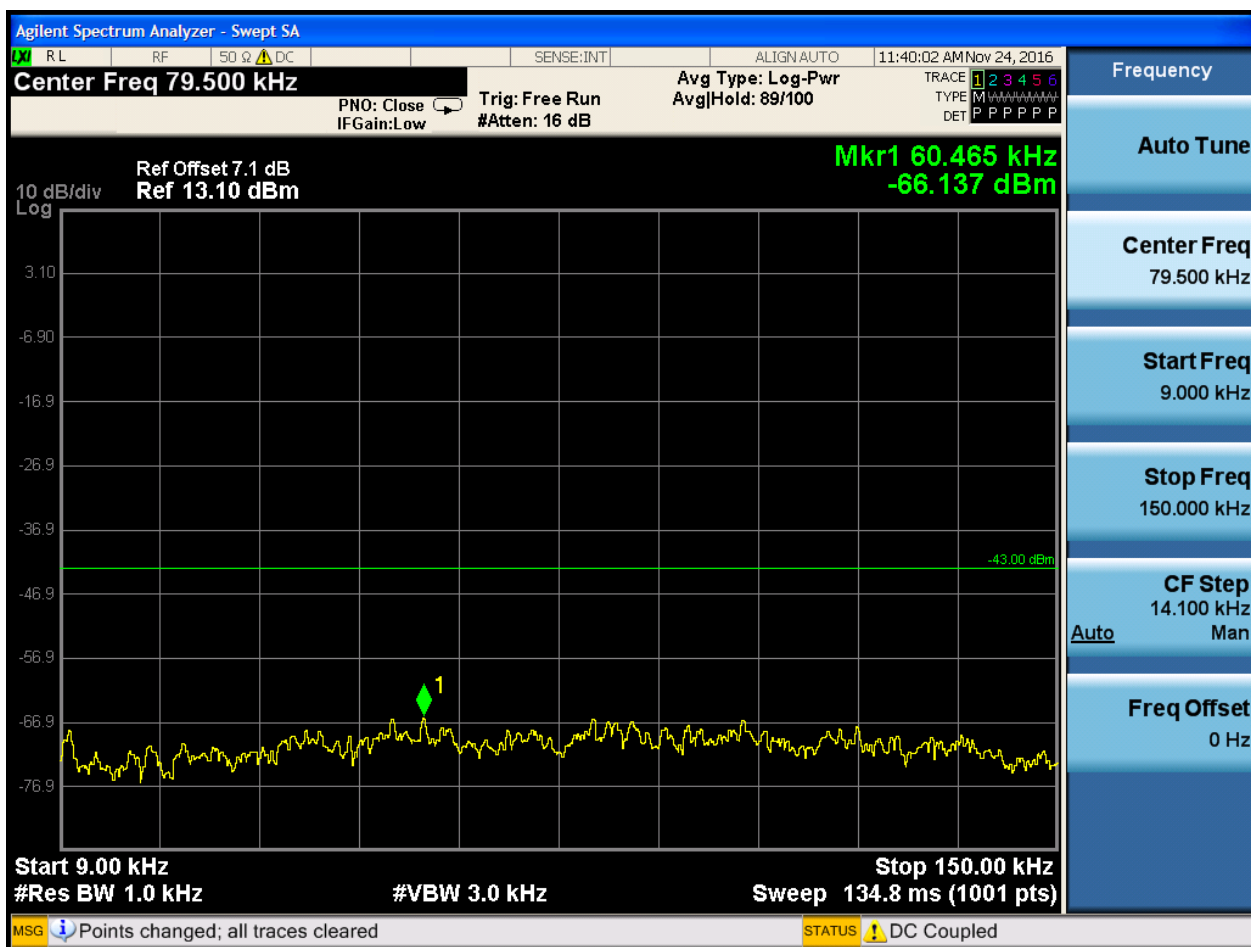


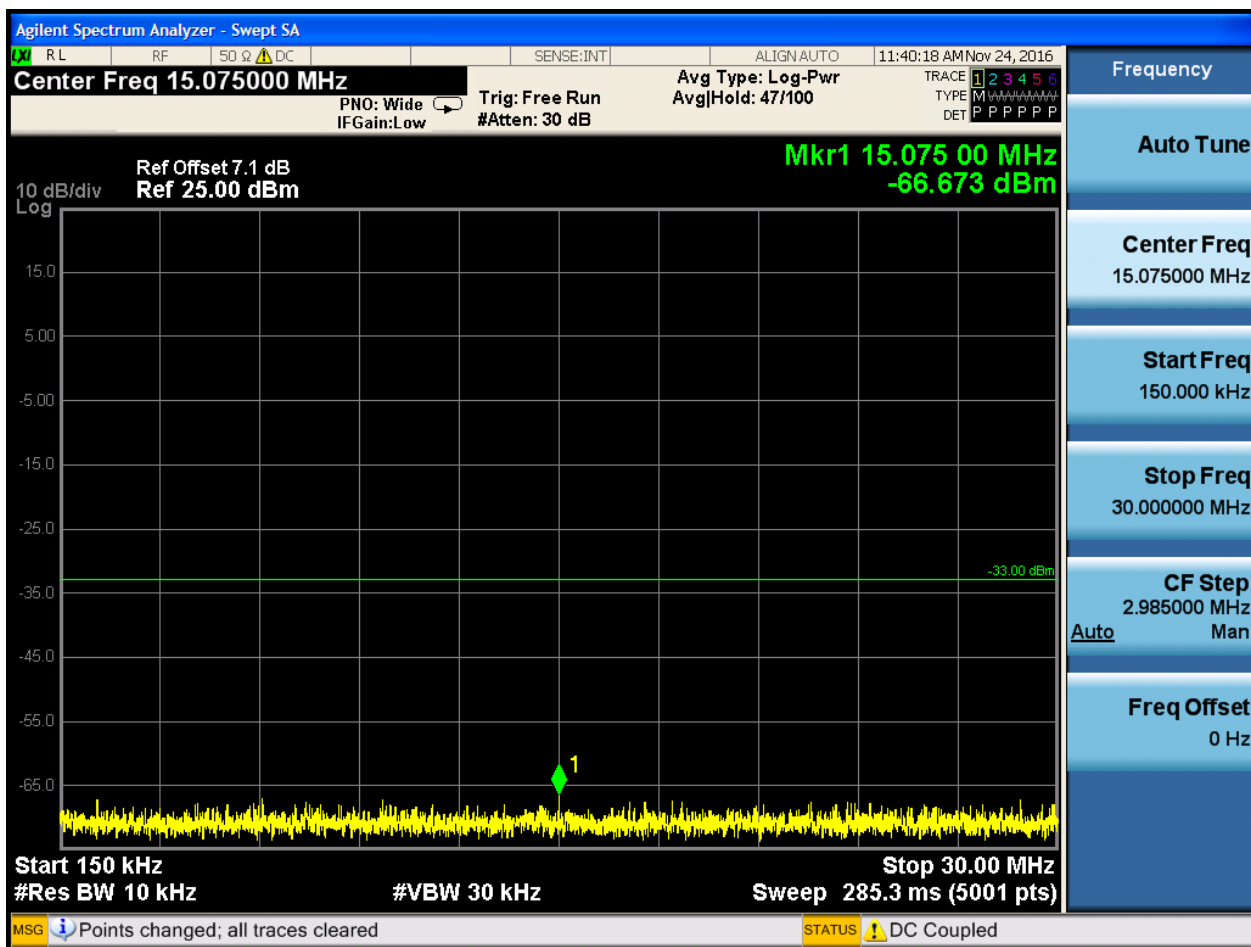


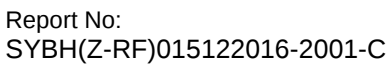
6.1.1.1.5 Test Bandwidth = 15

6.1.1.1.5.1 Test Channel = LCH

6.1.1.1.5.1.1 Test RB = RB1#0

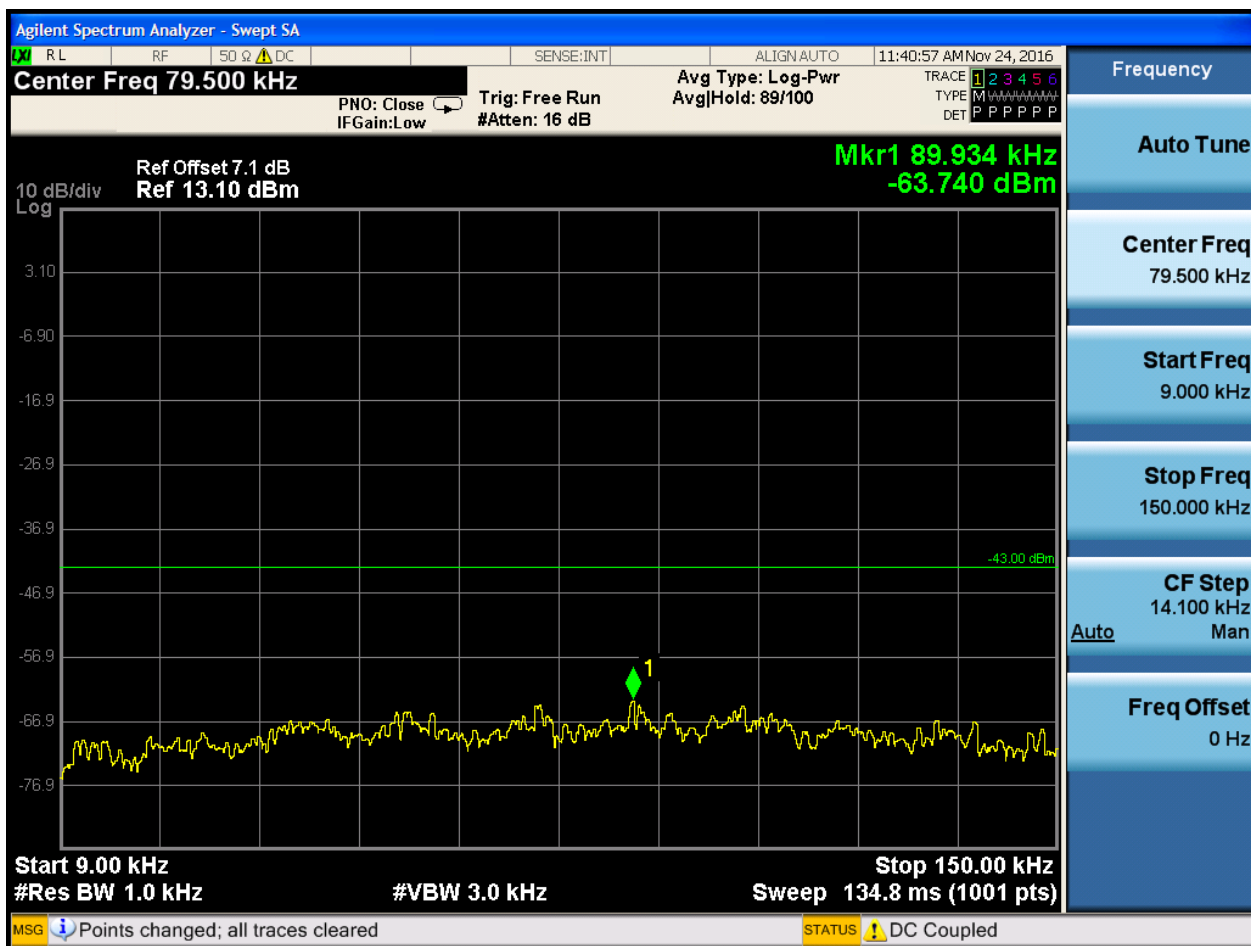


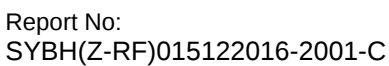


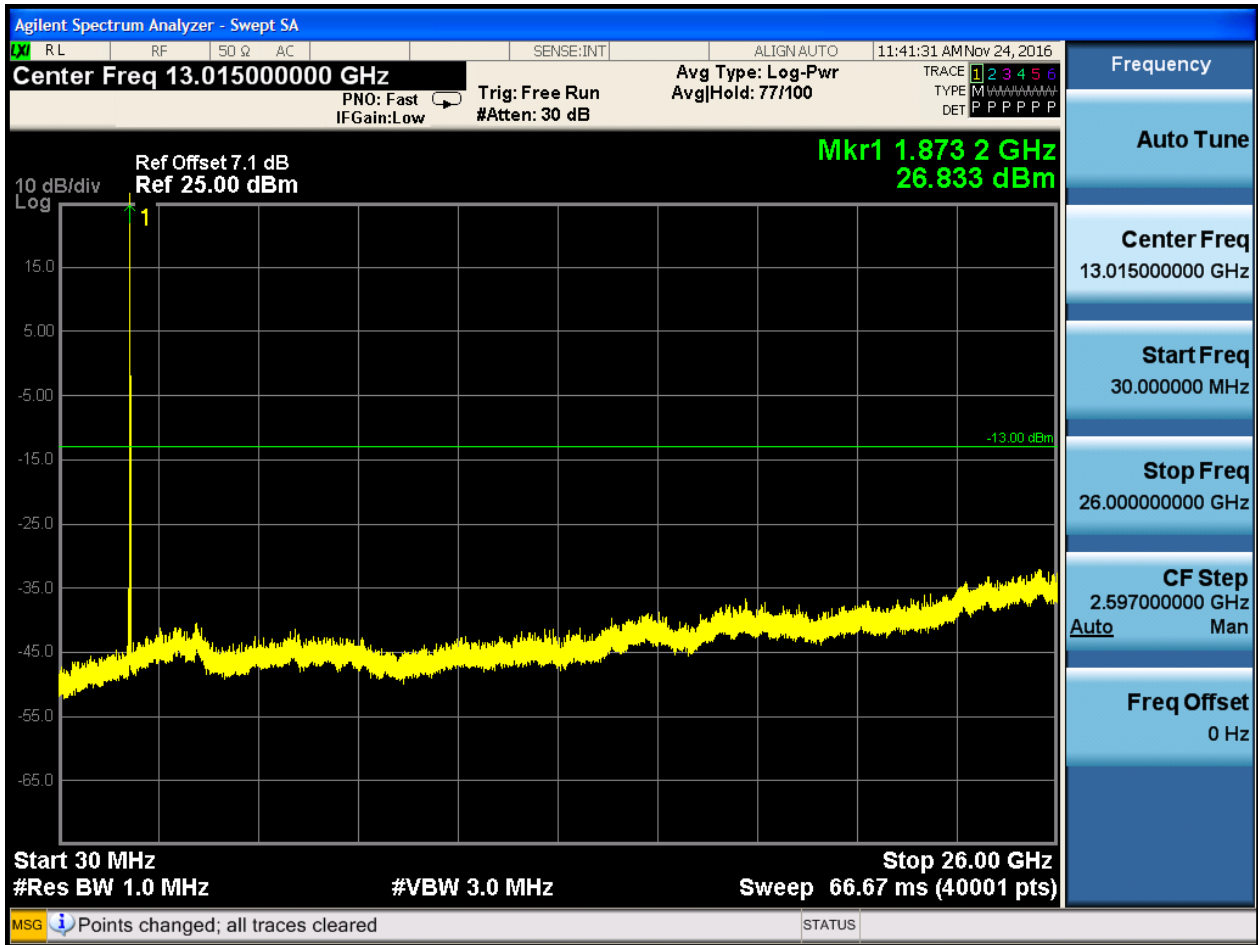


6.1.1.1.5.2 Test Channel = MCH

6.1.1.1.5.2.1 Test RB = RB1#0



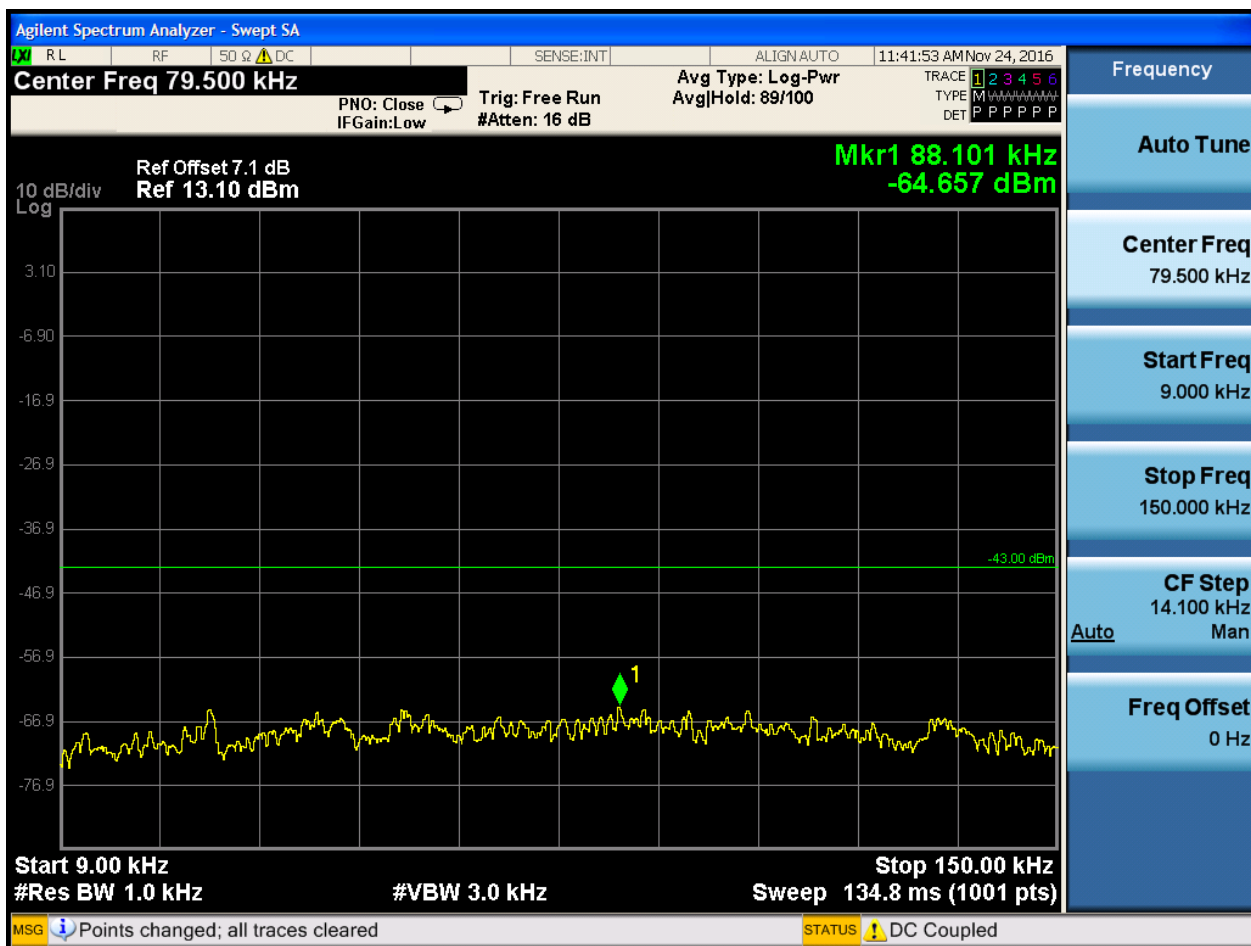


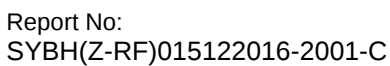


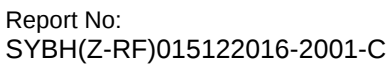


6.1.1.1.5.3 Test Channel = HCH

6.1.1.1.5.3.1 Test RB = RB1#0





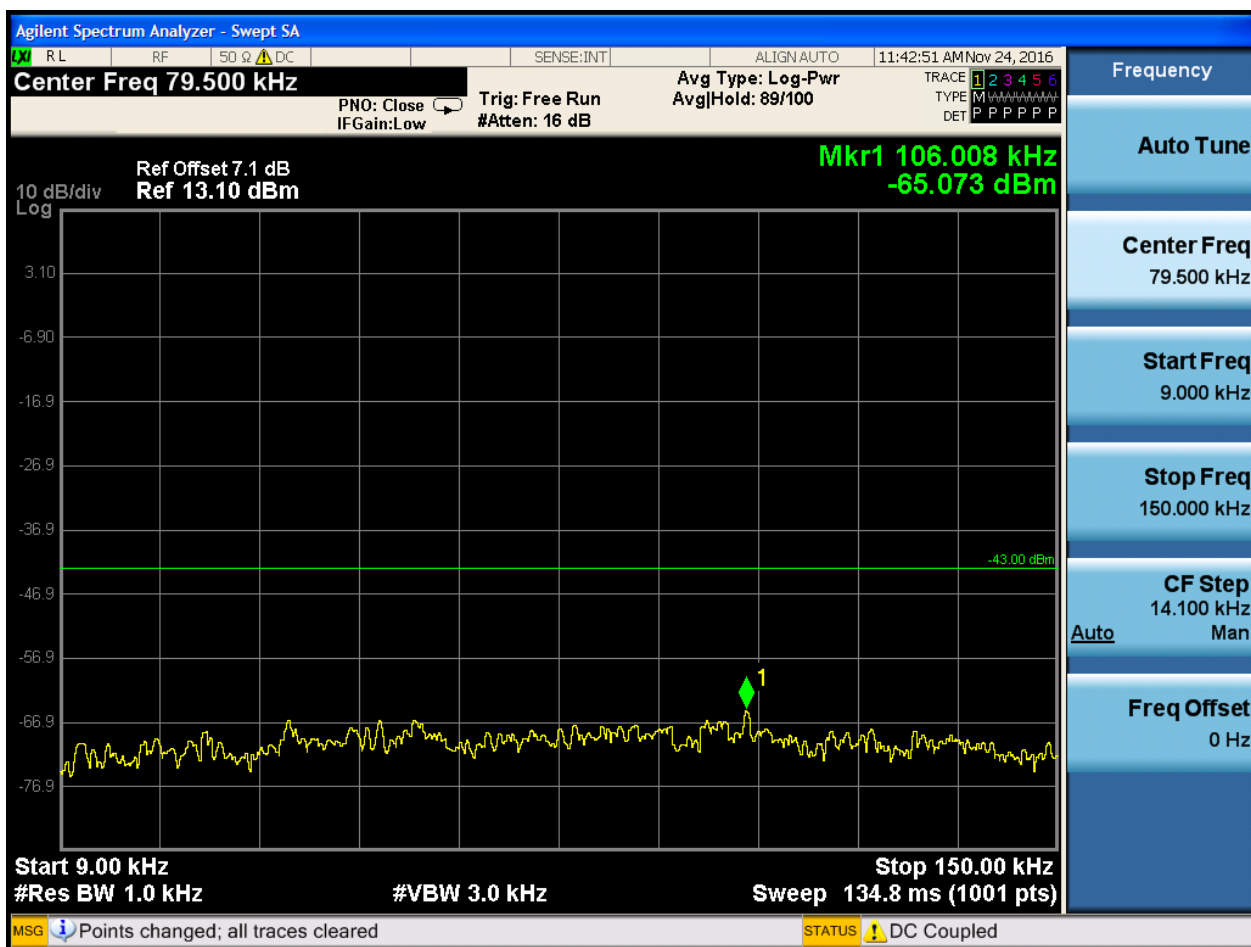


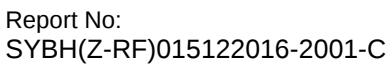


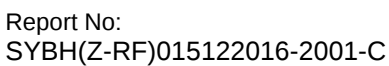
6.1.1.1.6 Test Bandwidth = 20

6.1.1.1.6.1 Test Channel = LCH

6.1.1.1.6.1.1 Test RB = RB1#0

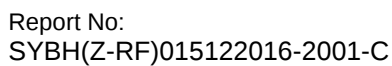


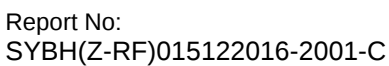


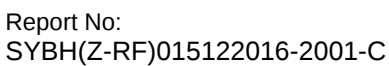




6.1.1.1.6.2.1 Test RB = RB1#0



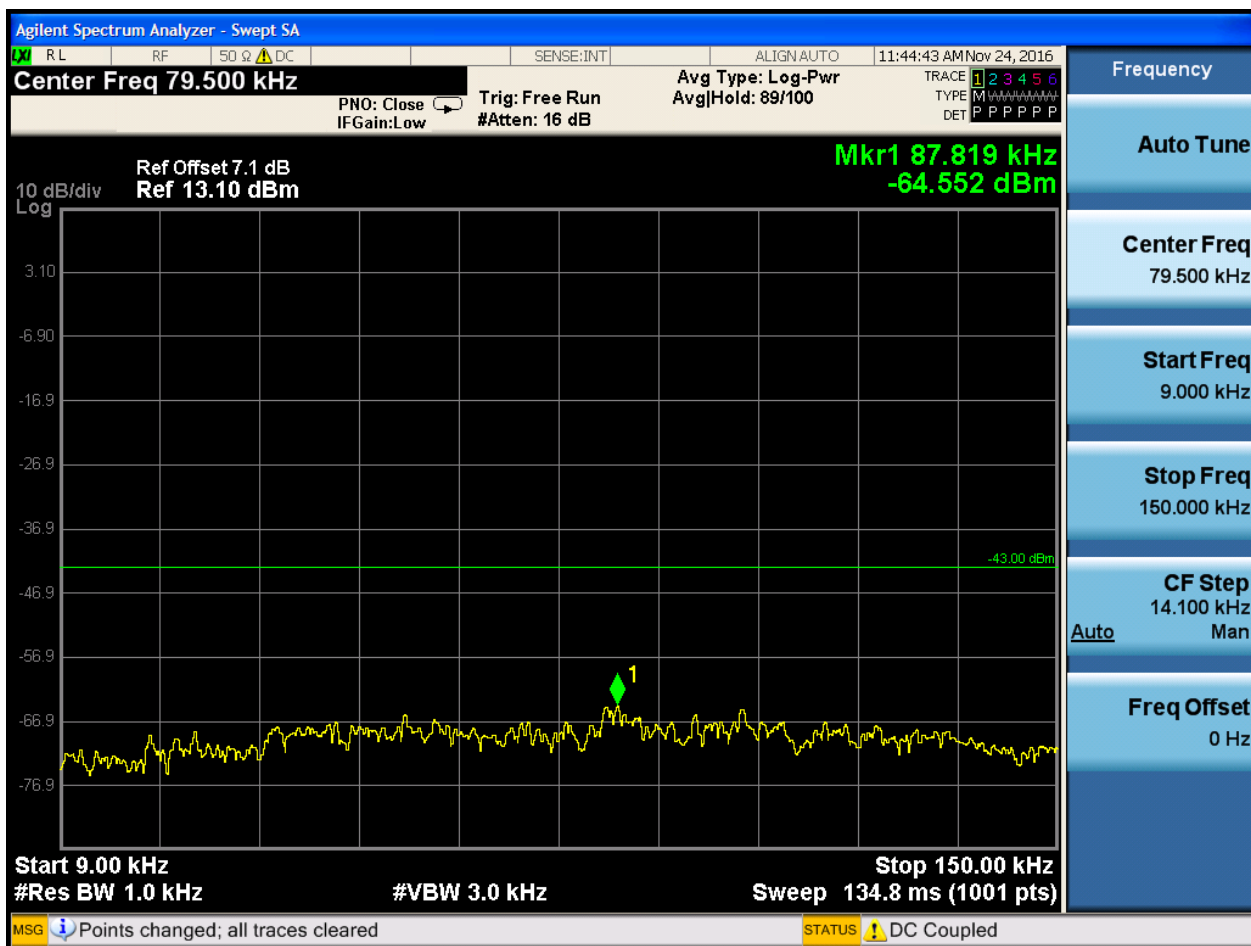


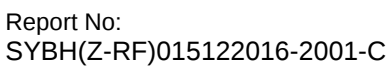




6.1.1.1.6.3 Test Channel = HCH

6.1.1.1.6.3.1 Test RB = RB1#0





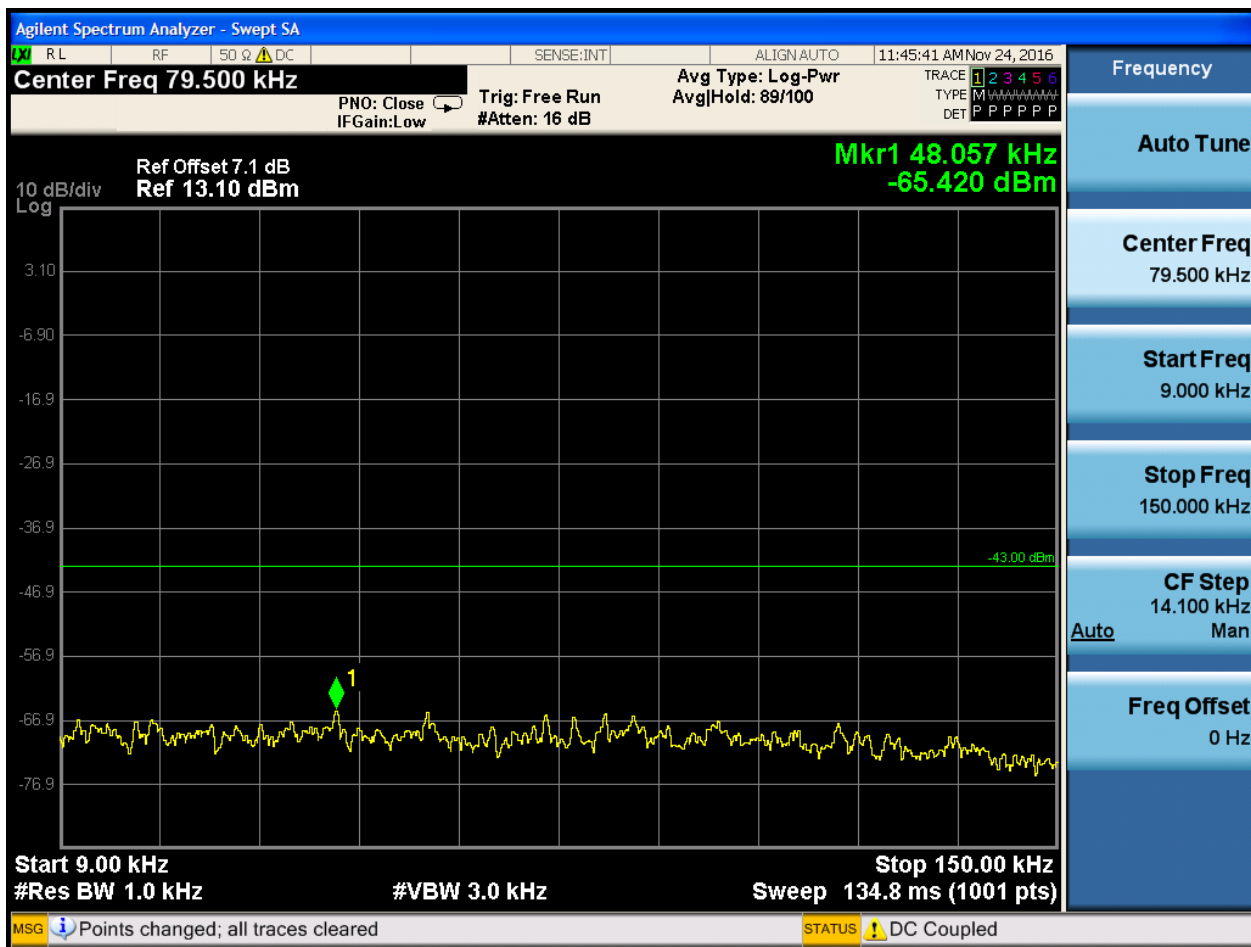


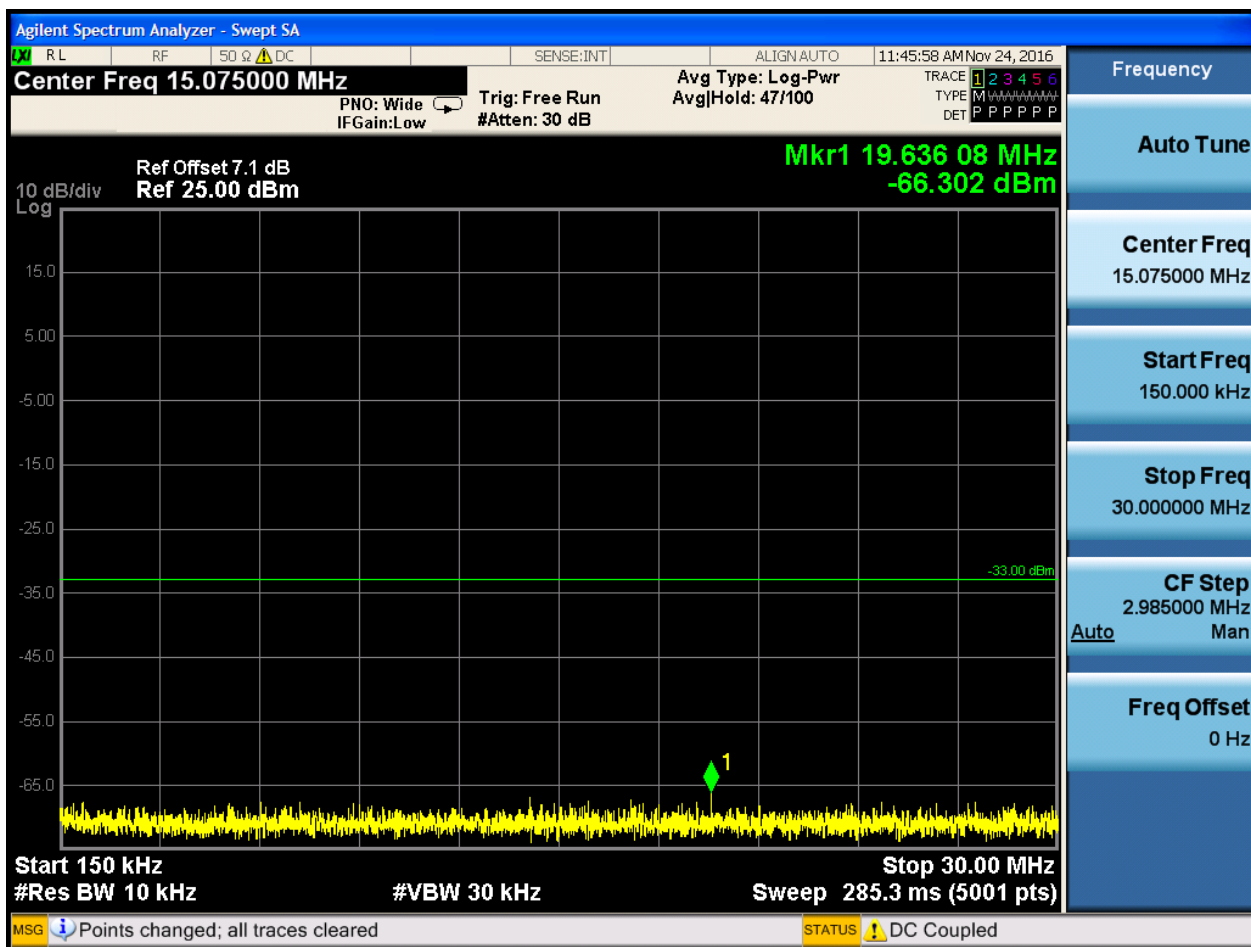
6.1.1.2 Test Mode = LTE/TM2

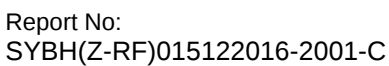
6.1.1.2.1 Test Bandwidth = 1.4

6.1.1.2.1.1 Test Channel = LCH

6.1.1.2.1.1.1 Test RB = RB1#0

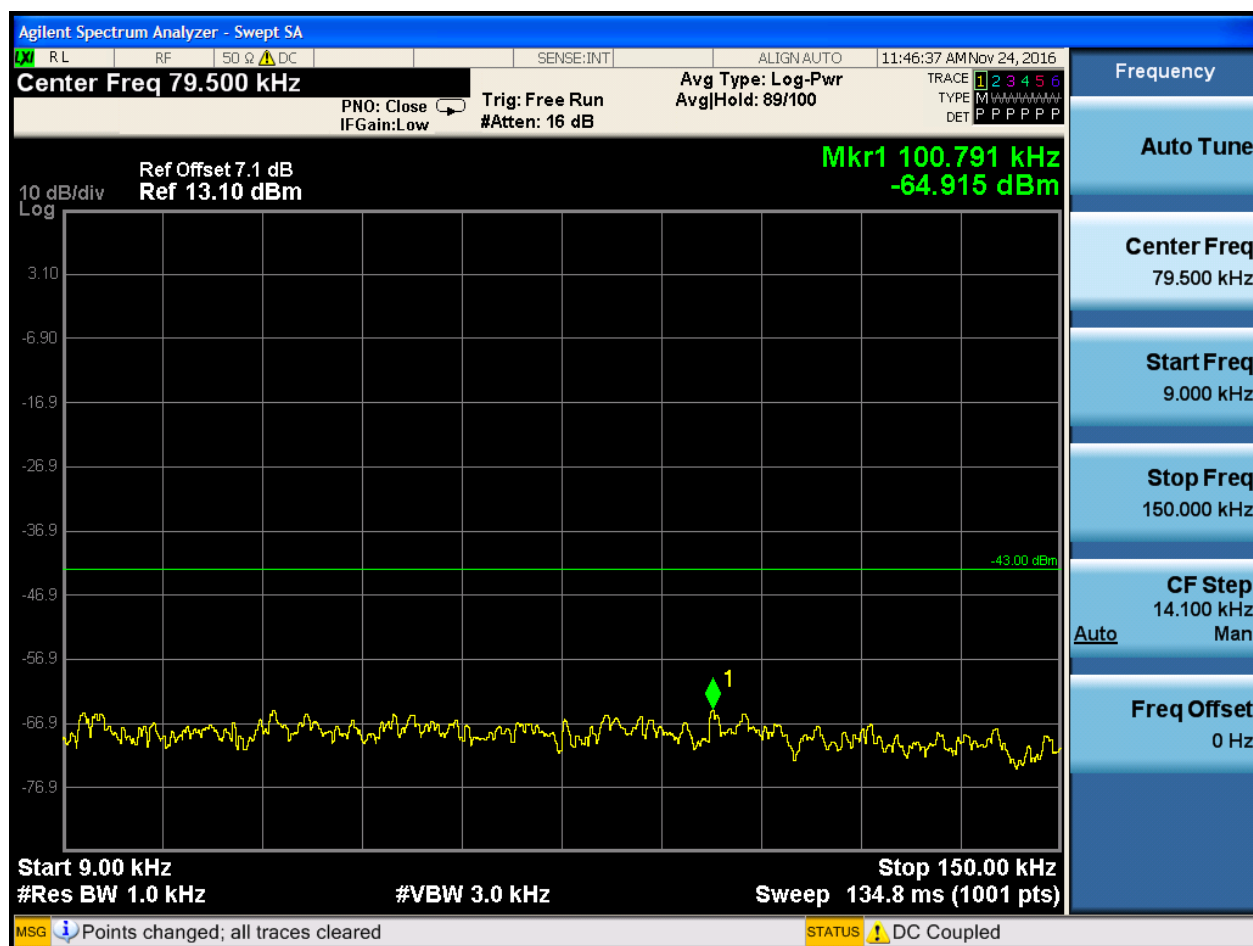


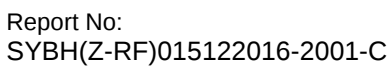


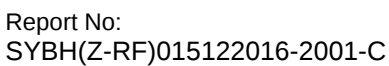


6.1.1.2.1.2 Test Channel = MCH

6.1.1.2.1.2.1 Test RB = RB1#0

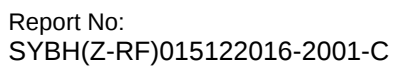


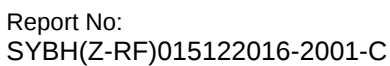


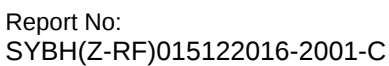




6.1.1.2.1.3.1 Test RB = RB1#0



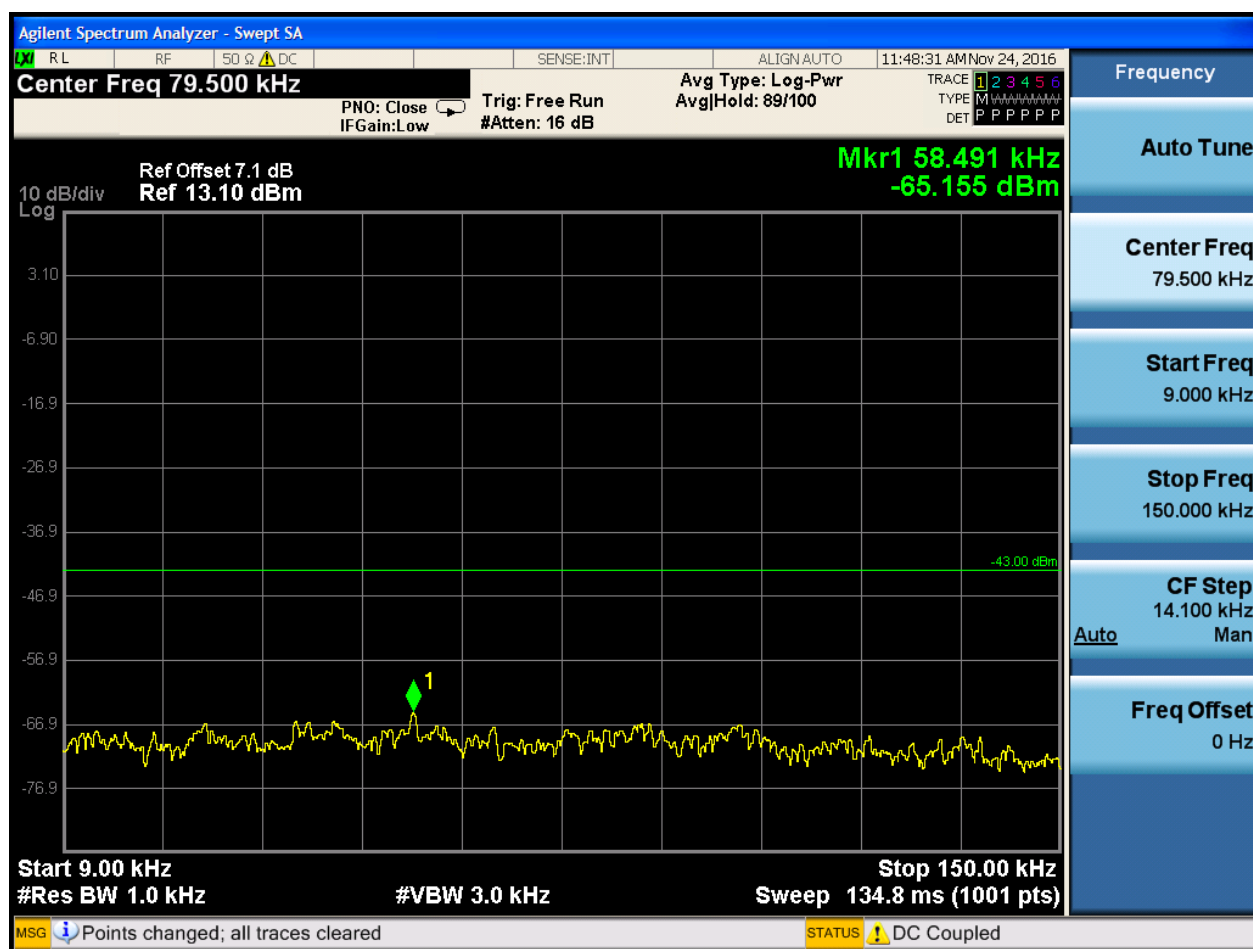


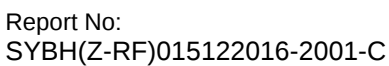


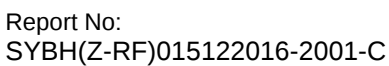
6.1.1.2.2 Test Bandwidth = 3

6.1.1.2.2.1 Test Channel = LCH

6.1.1.2.2.1.1 Test RB = RB1#0

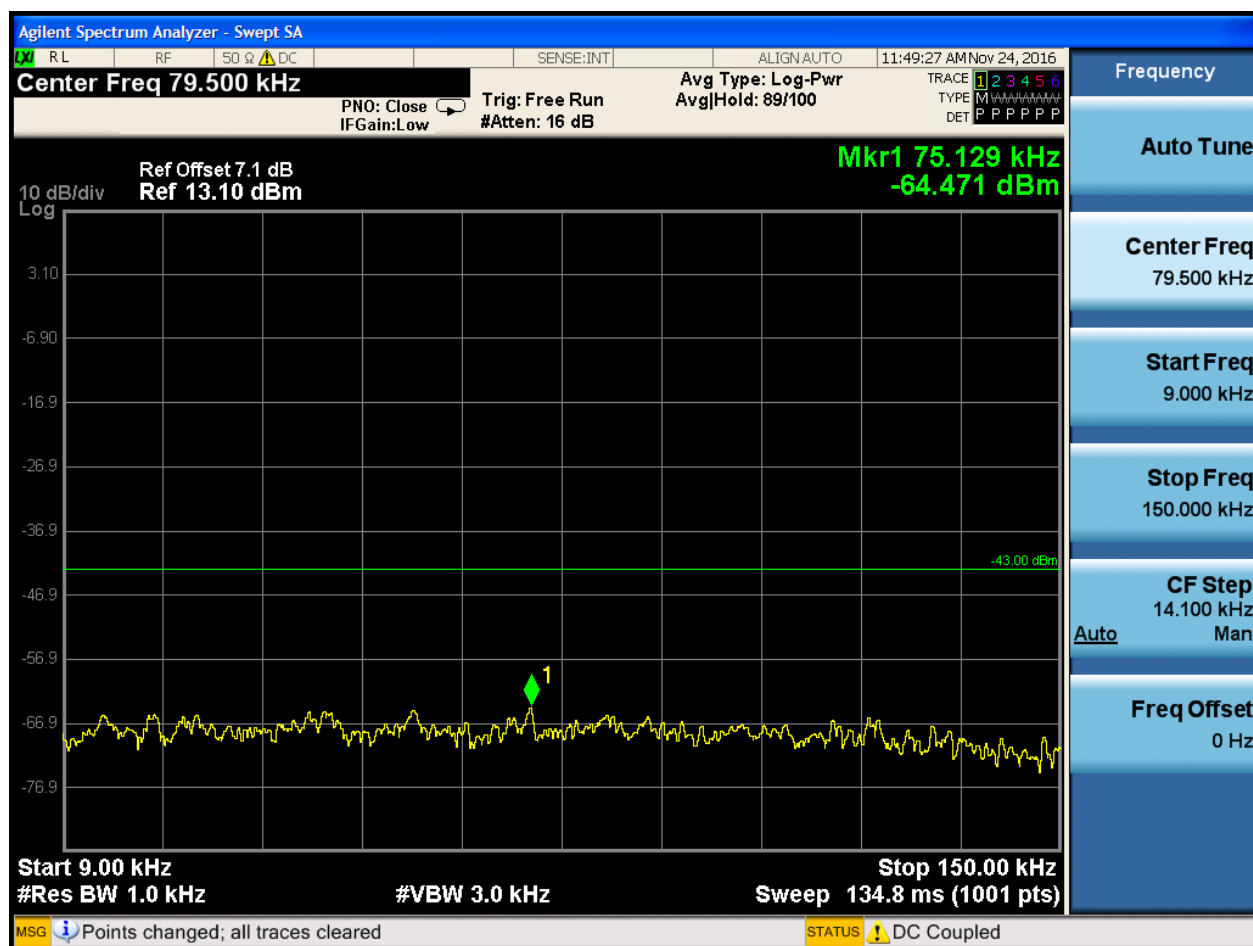


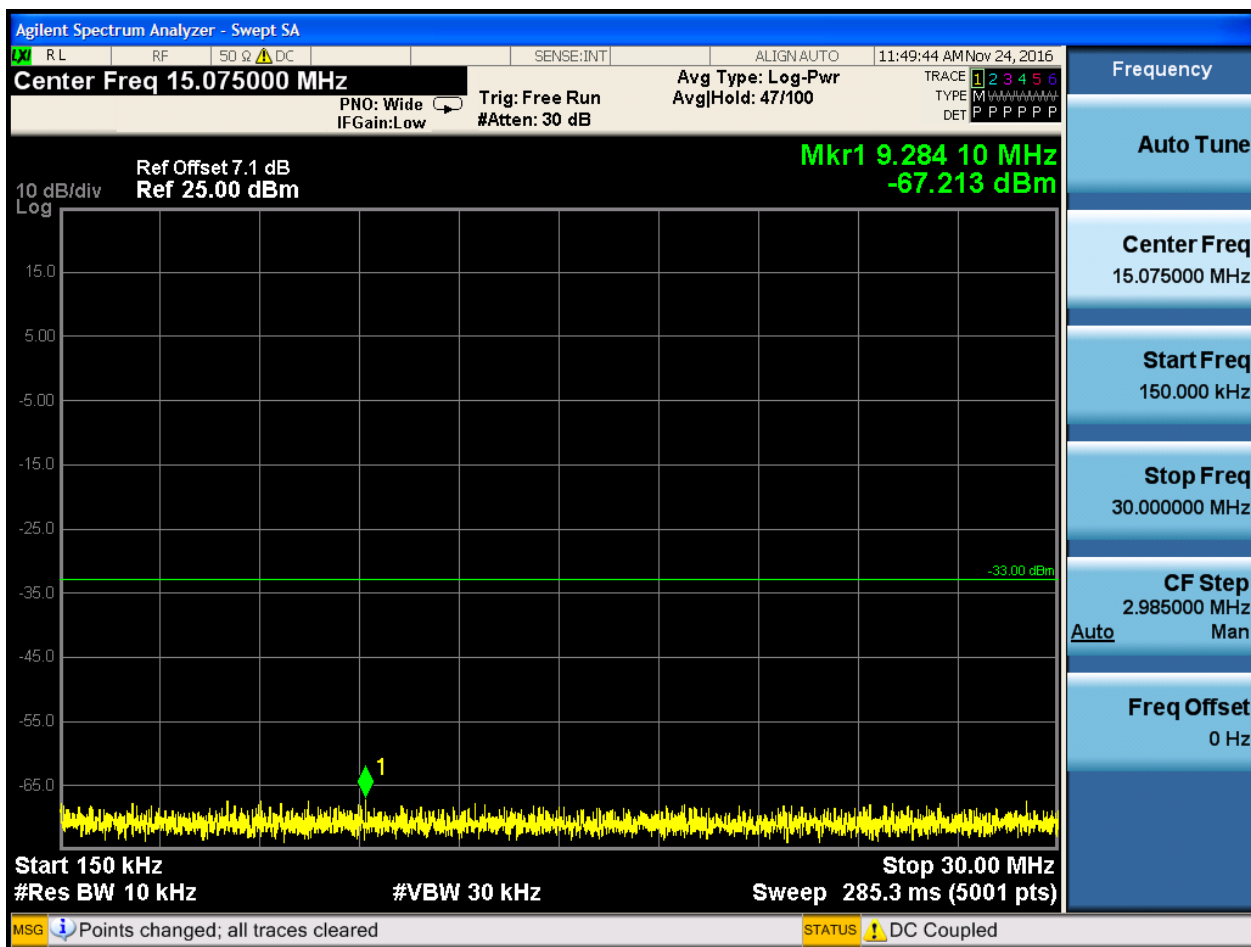


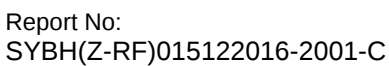


6.1.1.2.2.2 Test Channel = MCH

6.1.1.2.2.2.1 Test RB = RB1#0

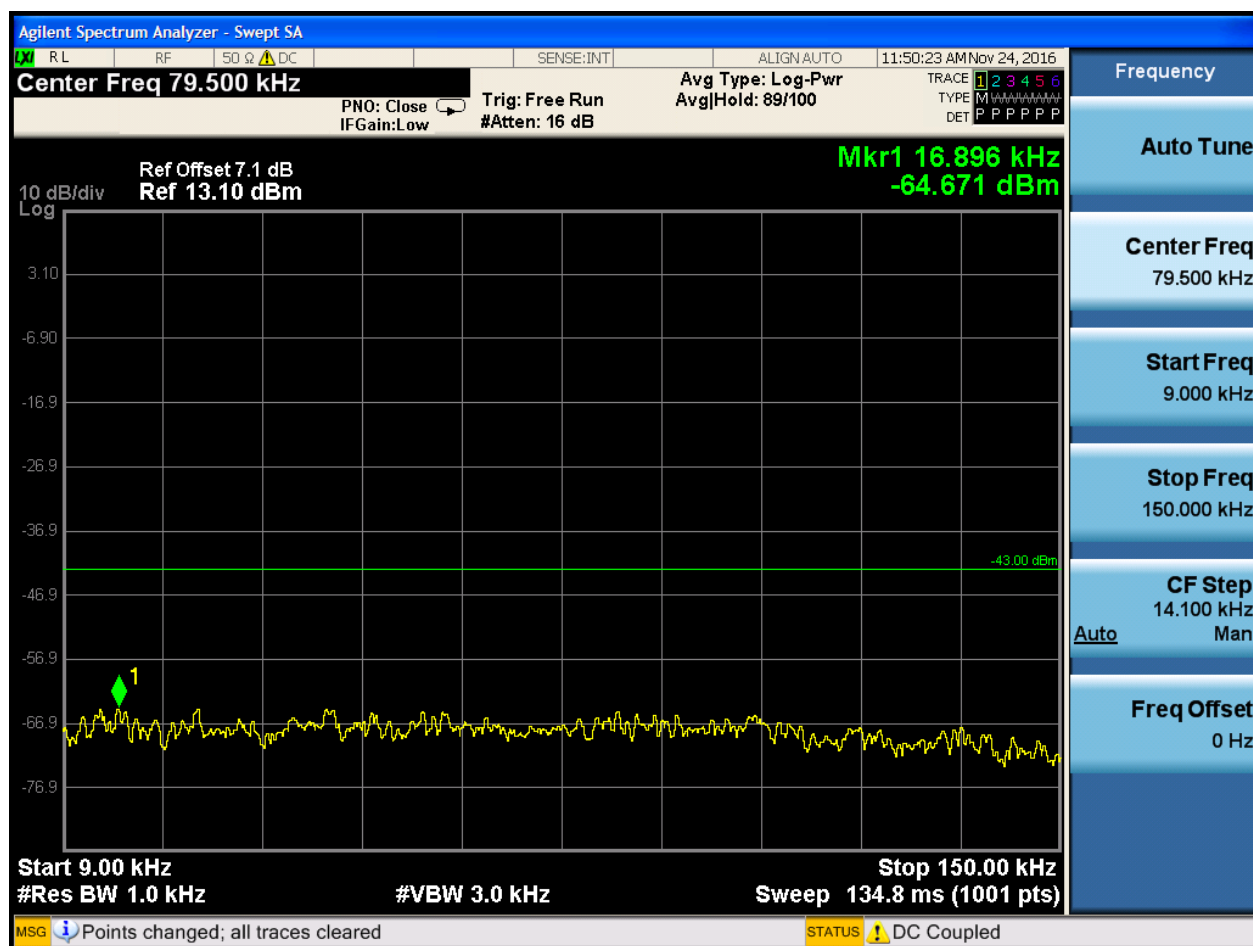


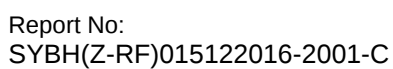


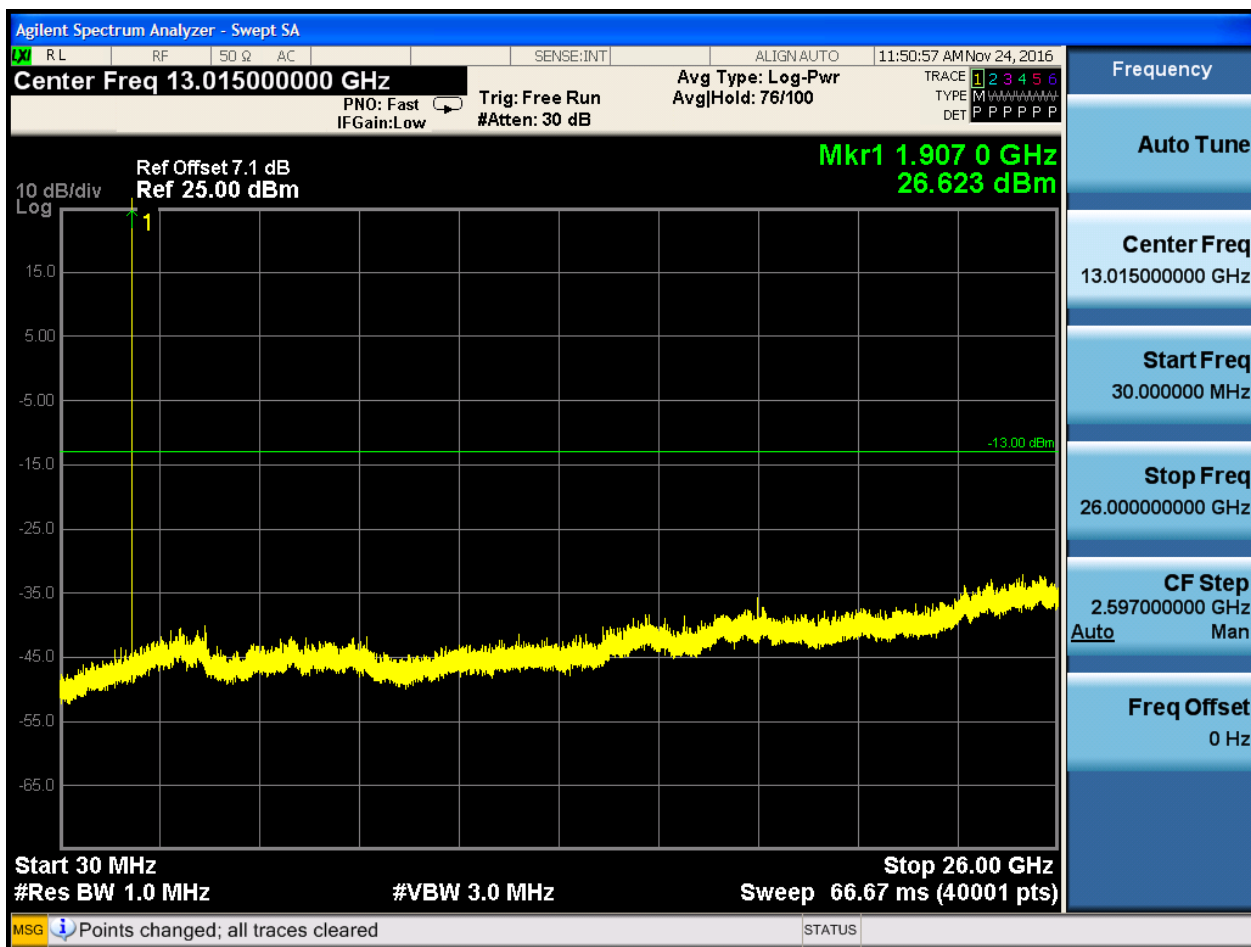


6.1.1.2.2.3 Test Channel = HCH

6.1.1.2.2.3.1 Test RB = RB1#0





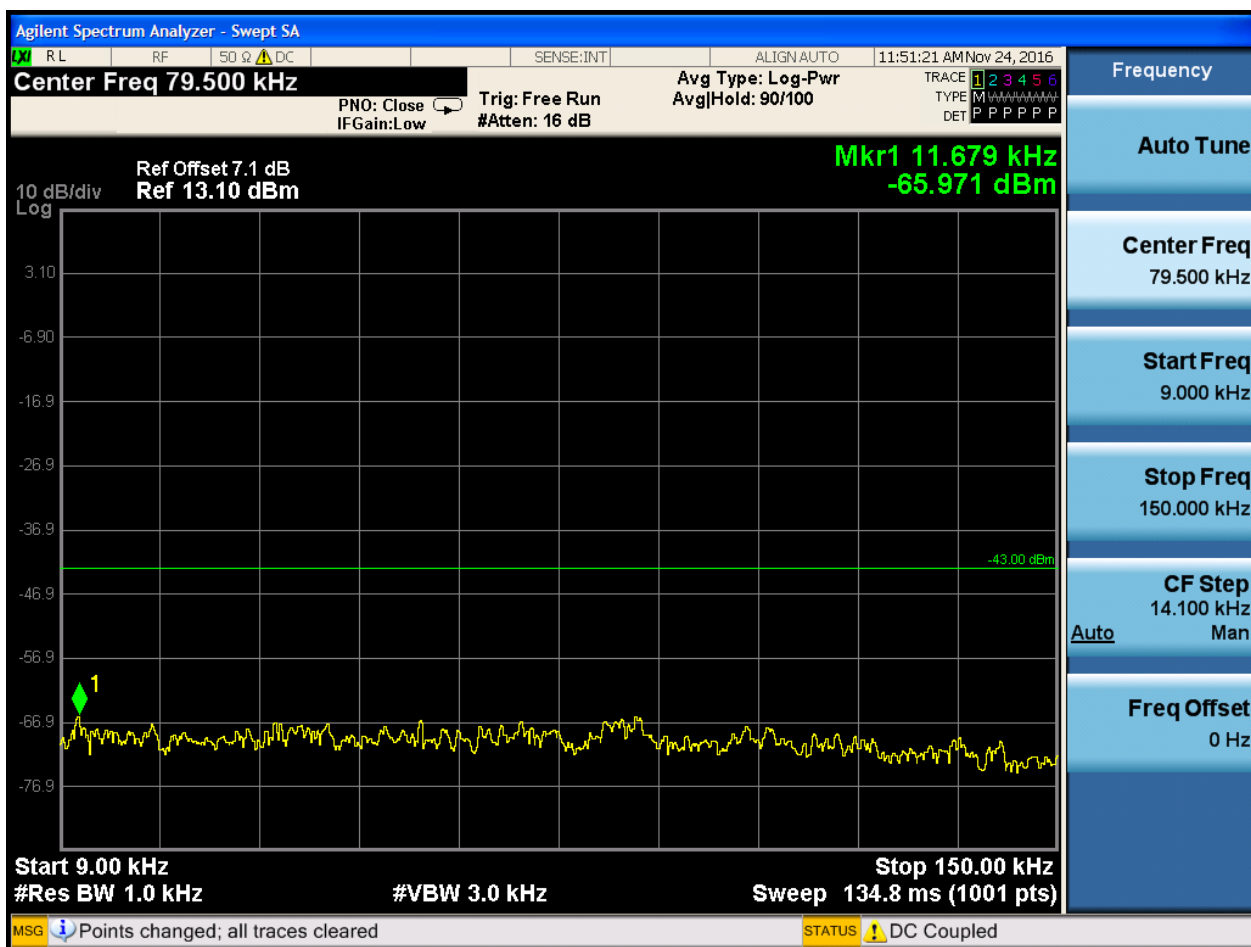


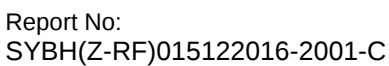


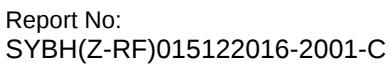
6.1.1.2.3 Test Bandwidth = 5

6.1.1.2.3.1 Test Channel = LCH

6.1.1.2.3.1.1 Test RB = RB1#0

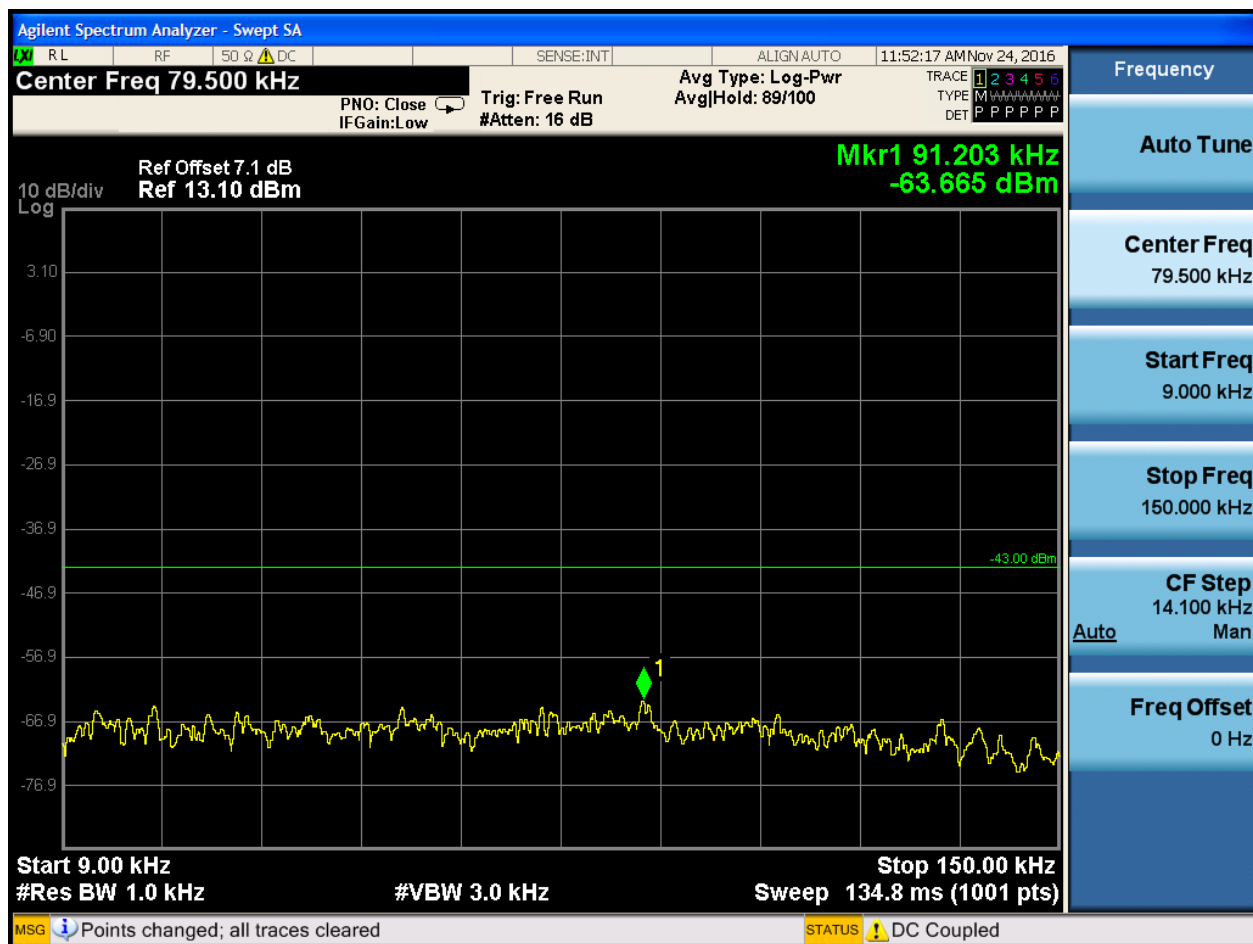


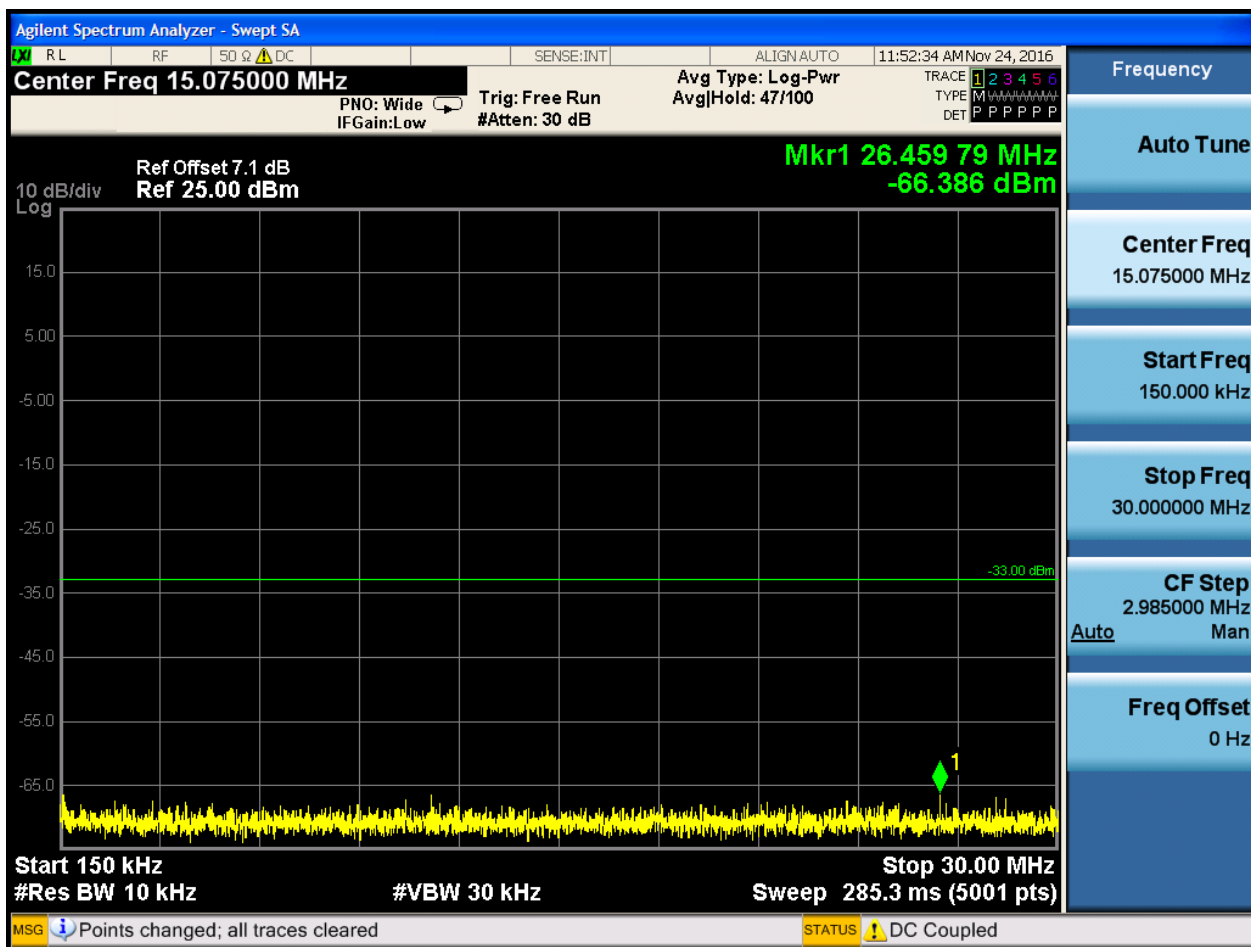


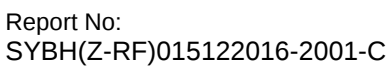


6.1.1.2.3.2 Test Channel = MCH

6.1.1.2.3.2.1 Test RB = RB1#0

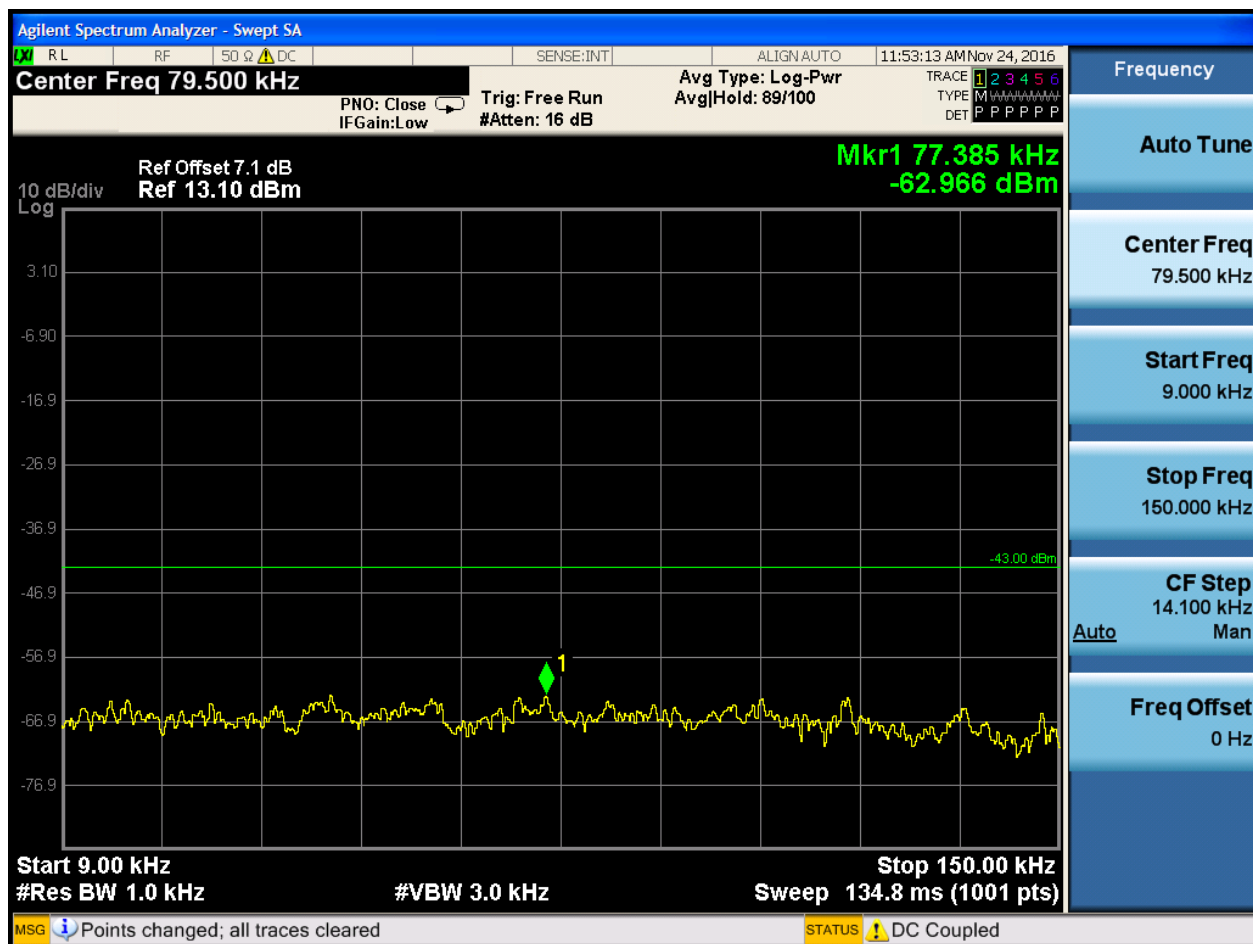


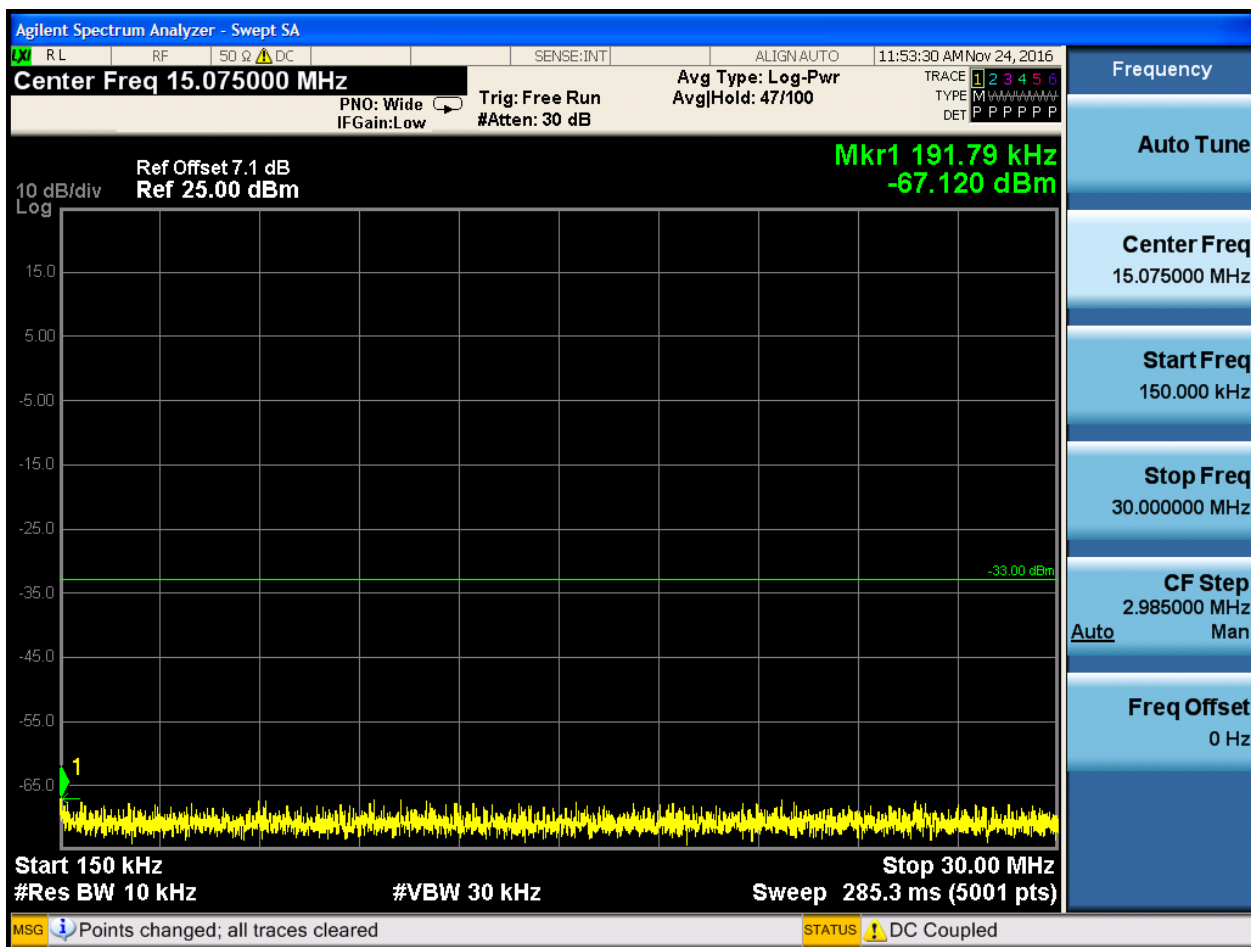


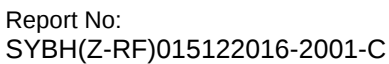


6.1.1.2.3.3 Test Channel = HCH

6.1.1.2.3.3.1 Test RB = RB1#0



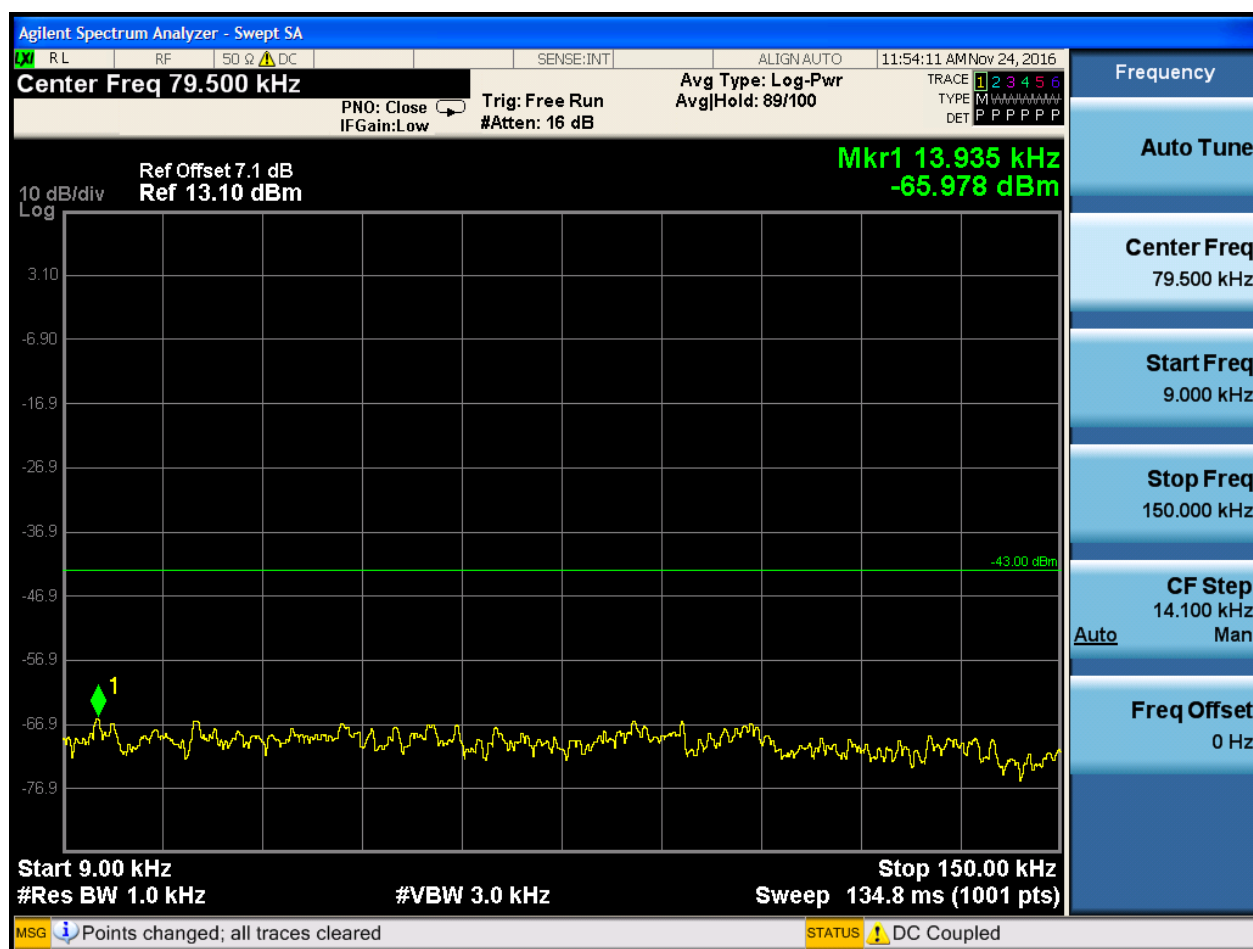


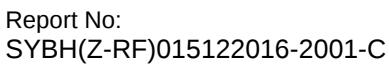


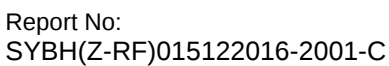
6.1.1.2.4 Test Bandwidth = 10

6.1.1.2.4.1 Test Channel = LCH

6.1.1.2.4.1.1 Test RB = RB1#0

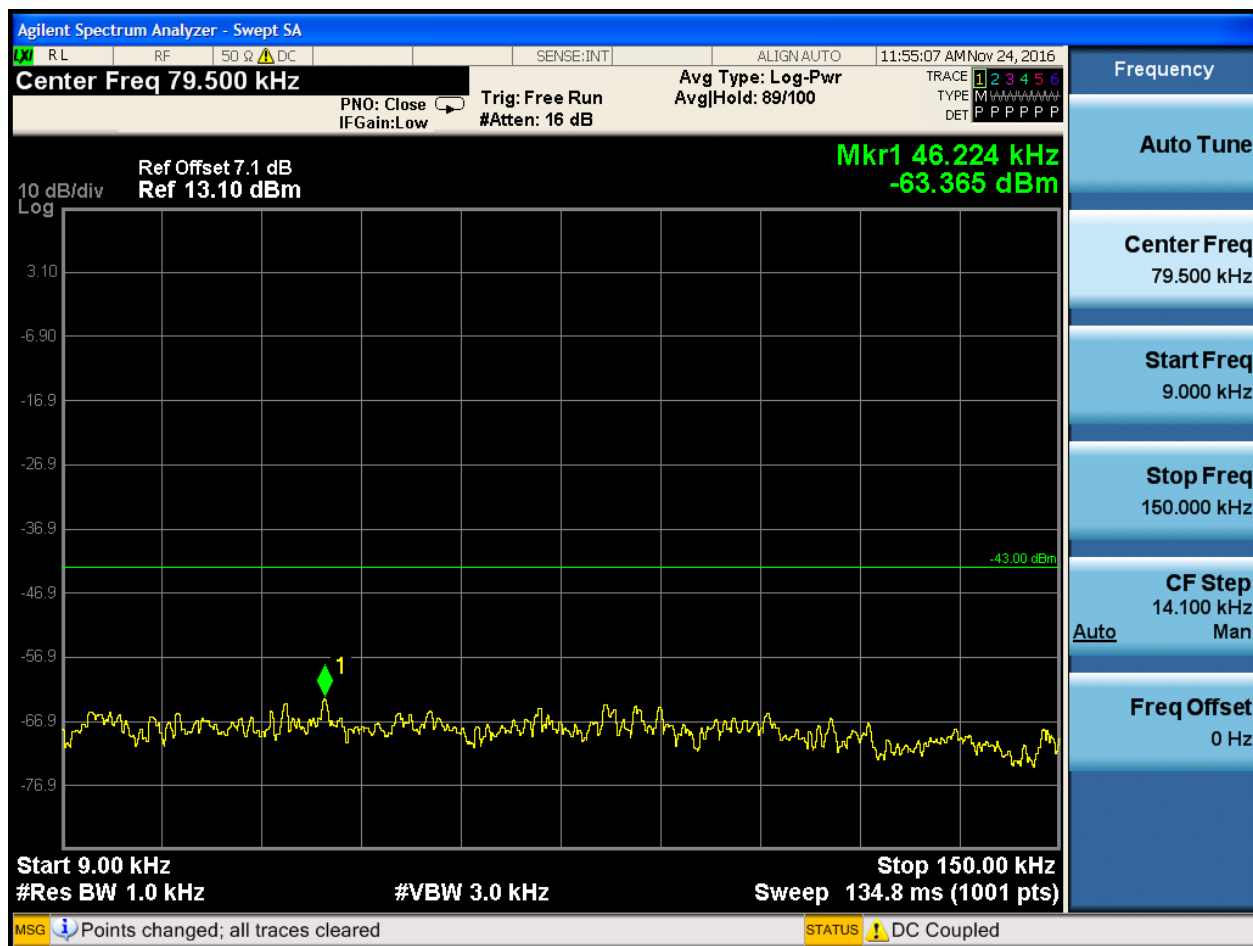


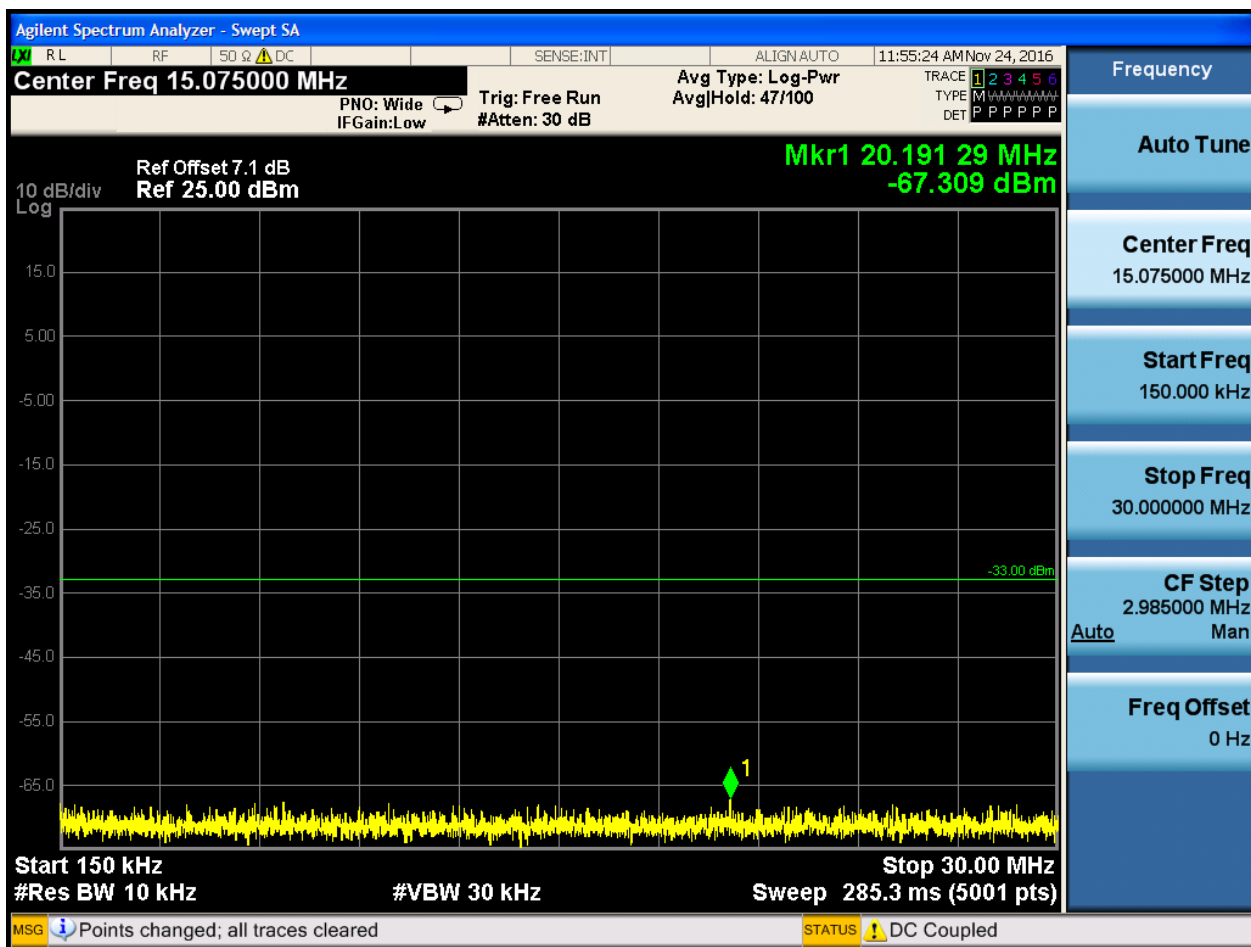


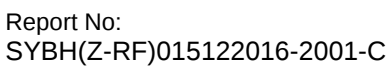


6.1.1.2.4.2 Test Channel = MCH

6.1.1.2.4.2.1 Test RB = RB1#0



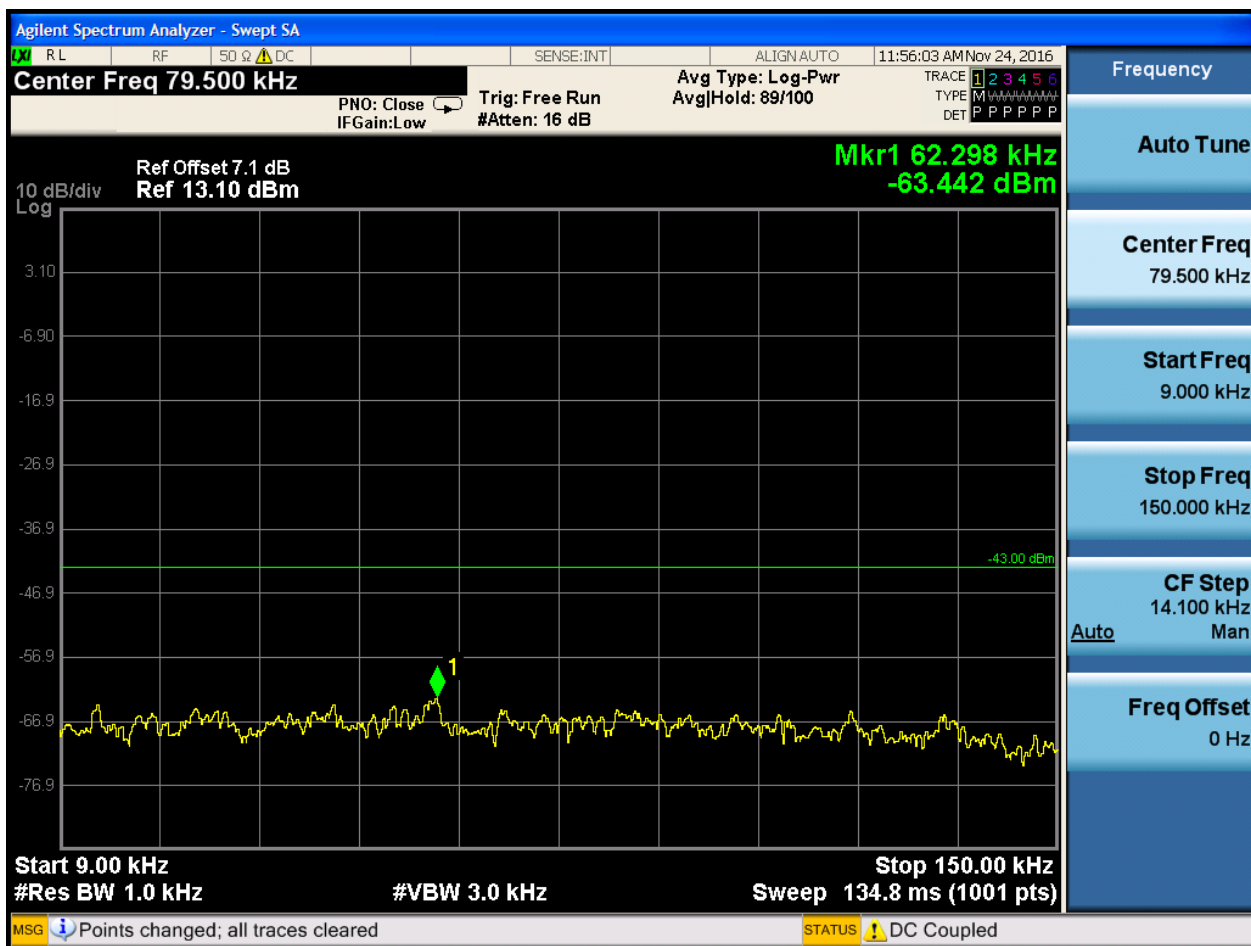


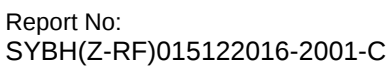


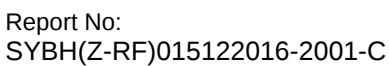


6.1.1.2.4.3 Test Channel = HCH

6.1.1.2.4.3.1 Test RB = RB1#0







6.1.1.2.5 Test Bandwidth = 15

6.1.1.2.5.1 Test Channel = LCH

6.1.1.2.5.1.1 Test RB = RB1#0

