



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 10:53:58 PM Jan 15, 2018

Center Freq 2.500000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain:Low Trig: Free Run AvgHold: 12/100
#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 7.3 dB
Ref 30.00 dBm

Mkr1 2.499 995 GHz
-34.521 dBm

10 dB/div
Log

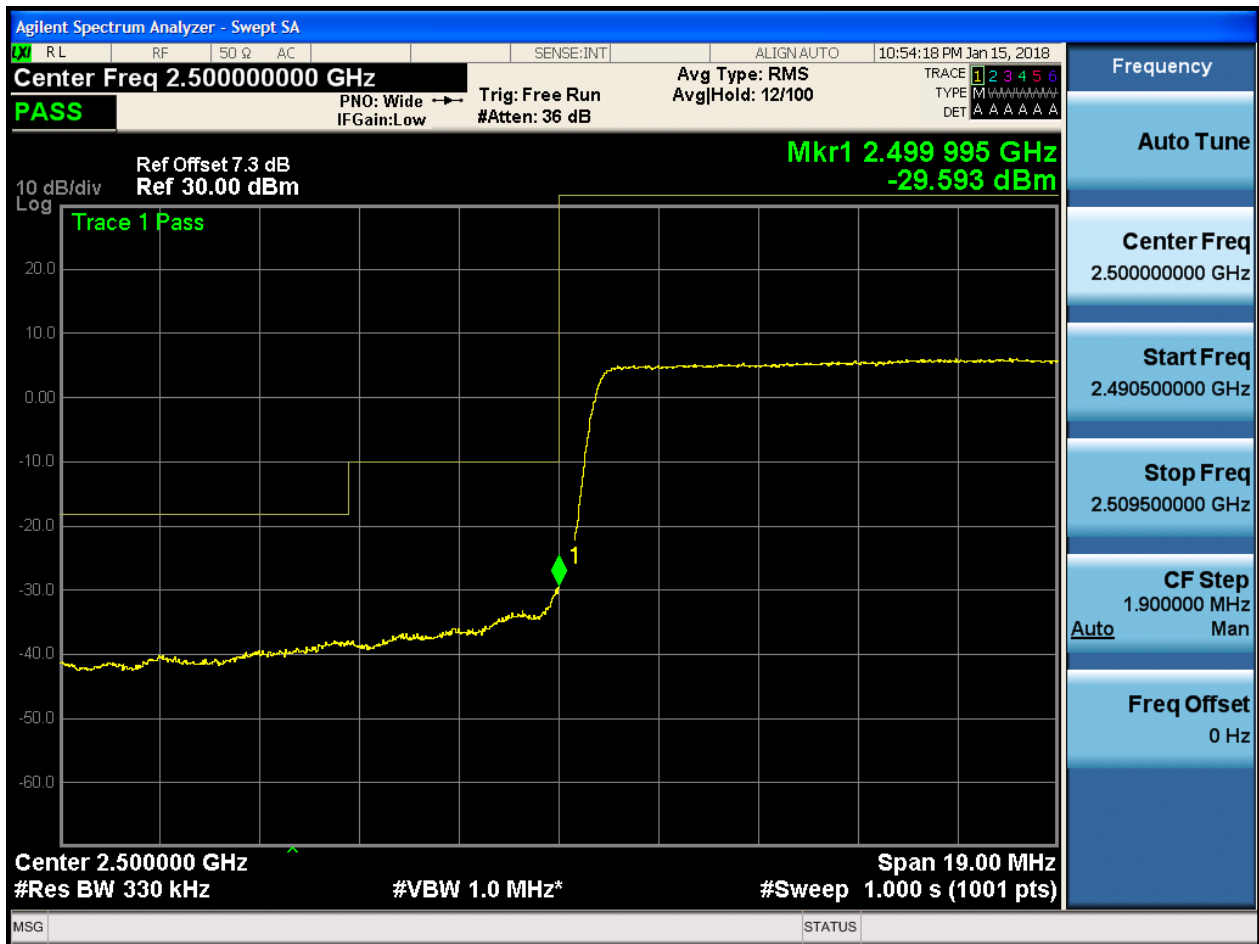
Trace 1 Pass

Center 2.500000 GHz
#Res BW 330 kHz #VBW 1.0 MHz* Span 19.00 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS



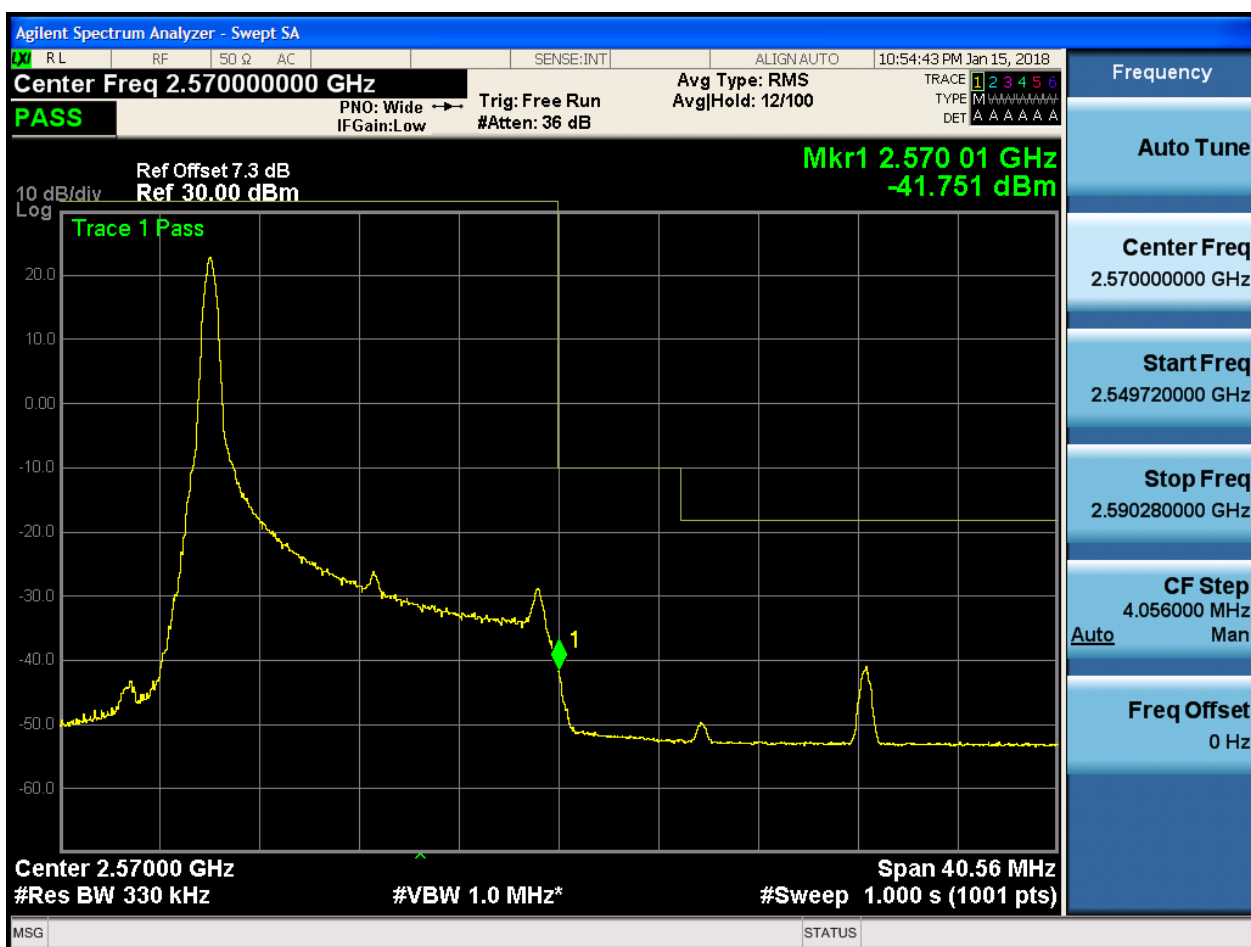
5.1.1.1.3.1.4 Test RB = RB75#0





5.1.1.1.3.2 Test Channel = HCH

5.1.1.1.3.2.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 10:55:02 PM Jan 15, 2018

Center Freq 2.570000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain:Low Trig: Free Run AvgHold: 12/100
#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 7.3 dB
Ref 30.00 dBm

Mkr1 2.570 01 GHz
-13.133 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.57000 GHz Span 40.56 MHz
#Res BW 330 kHz #VBW 1.0 MHz* #Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.570000000 GHz

Start Freq
2.549720000 GHz

Stop Freq
2.590280000 GHz

CF Step
4.056000 MHz
Auto Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 10:55:22 PM Jan 15, 2018

Center Freq 2.570000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain:Low Trig: Free Run AvgHold: 12/100
#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 7.3 dB
Ref 30.00 dBm

Mkr1 2.570 01 GHz
-31.499 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.57000 GHz
#Res BW 330 kHz
#VBW 1.0 MHz*
Span 40.56 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.570000000 GHz

Start Freq
2.549720000 GHz

Stop Freq
2.590280000 GHz

CF Step
4.056000 MHz
Auto Man

Freq Offset
0 Hz



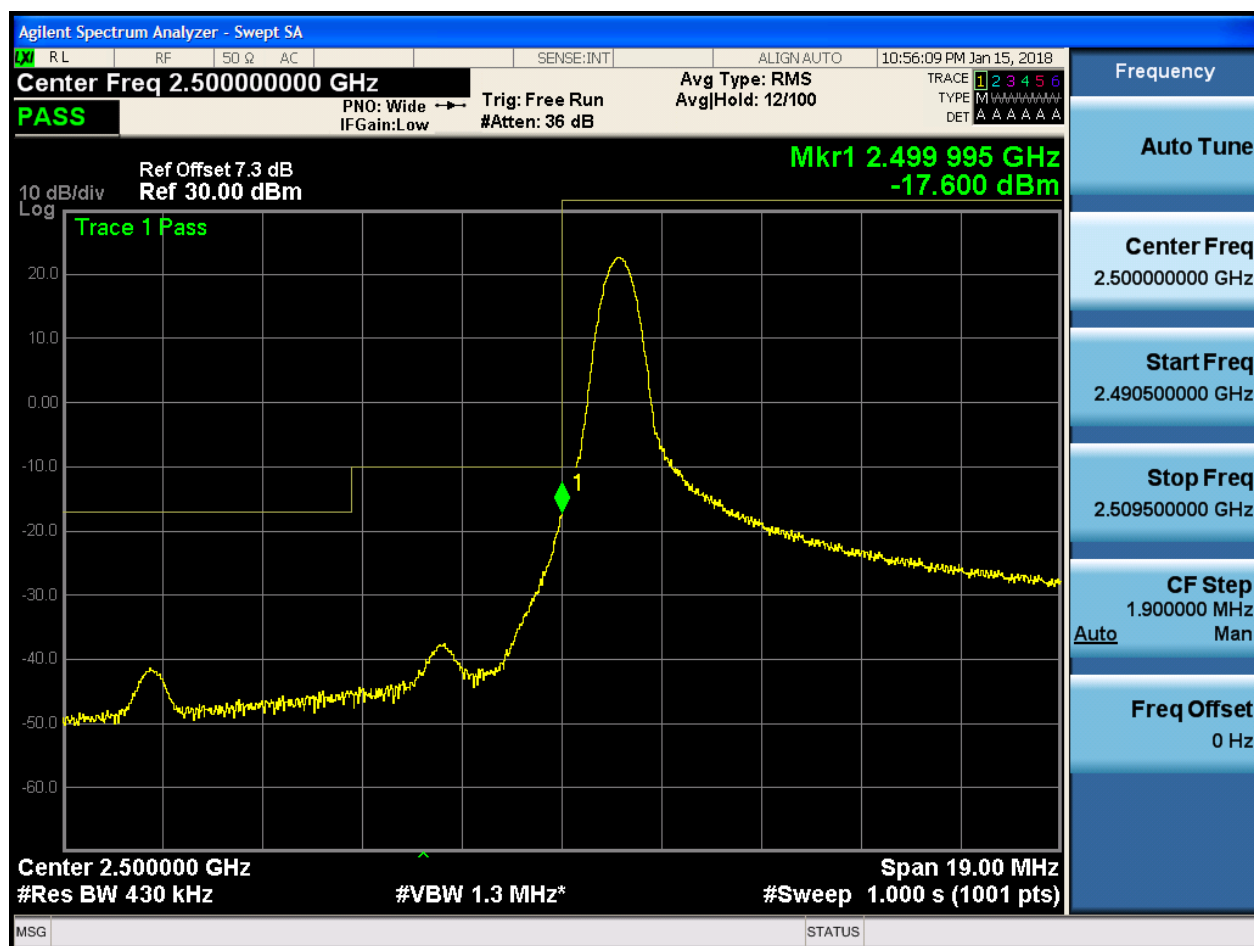
5.1.1.1.3.2.4 Test RB = RB75#0



5.1.1.1.4 Test Bandwidth = 20

5.1.1.1.4.1 Test Channel = LCH

5.1.1.1.4.1.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 10:56:29 PM Jan 15, 2018

Center Freq 2.500000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain: Low Trig: Free Run AvgHold: 12/100
#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 7.3 dB
Ref 30.00 dBm

Mkr1 2.499 995 GHz
-40.038 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.500000 GHz
#Res BW 430 kHz
#VBW 1.3 MHz
Span 19.00 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency
Auto Tune
Center Freq 2.500000000 GHz
Start Freq 2.490500000 GHz
Stop Freq 2.509500000 GHz
CF Step 1.900000 MHz Auto Man
Freq Offset 0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 10:56:48 PM Jan 15, 2018

Center Freq 2.500000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain:Low Trig: Free Run AvgHold: 12/100
#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 7.3 dB
Ref 30.00 dBm

Mkr1 2.499 995 GHz
-36.834 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.500000 GHz
#Res BW 430 kHz
#VBW 1.3 MHz*
Span 19.00 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.500000000 GHz

Start Freq
2.490500000 GHz

Stop Freq
2.509500000 GHz

CF Step
1.900000 MHz
Auto Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.500000000 GHz

PASS

Ref Offset 7.3 dB
Ref 30.00 dBm

Mkr1 2.499 995 GHz
-32.717 dBm

Trace 1 Pass

Center 2.500000 GHz
#Res BW 430 kHz
#VBW 1.3 MHz*

Span 19.00 MHz
#Sweep 1.000 s (1001 pts)

Frequency

Auto Tune

Center Freq
2.500000000 GHz

Start Freq
2.490500000 GHz

Stop Freq
2.509500000 GHz

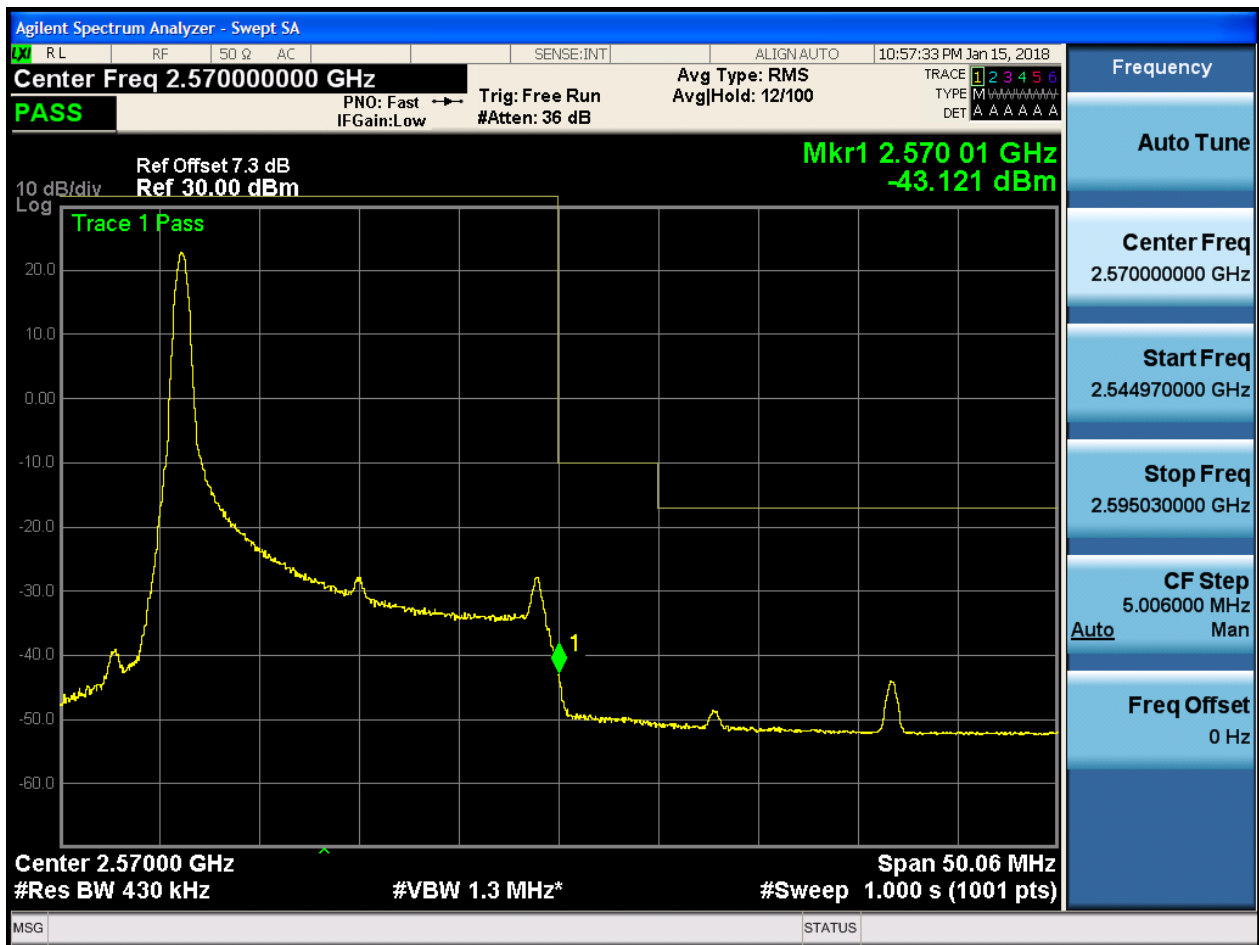
CF Step
1.900000 MHz
Auto

Freq Offset
0 Hz



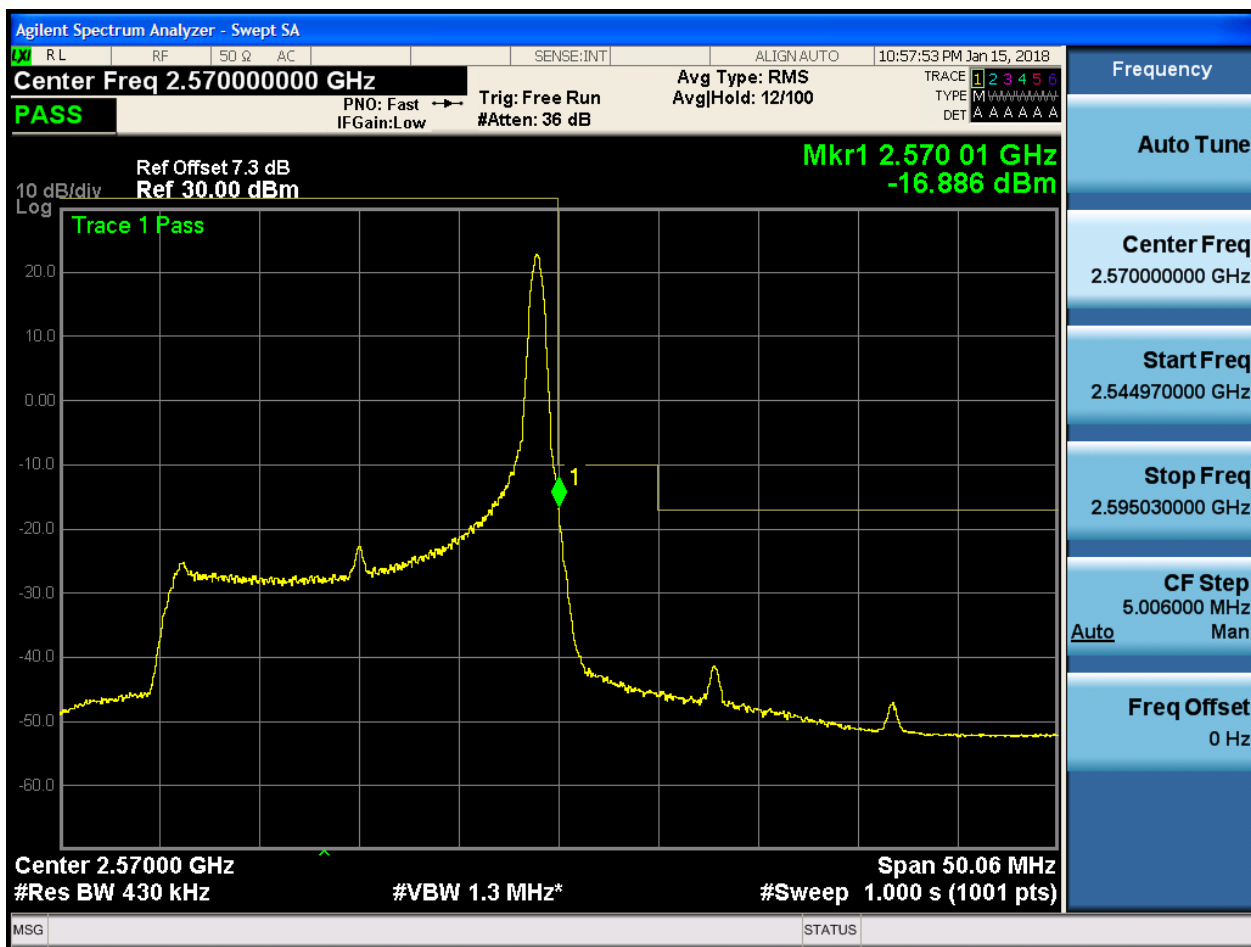
5.1.1.1.4.2 Test Channel = HCH

5.1.1.1.4.2.1 Test RB = RB1#0



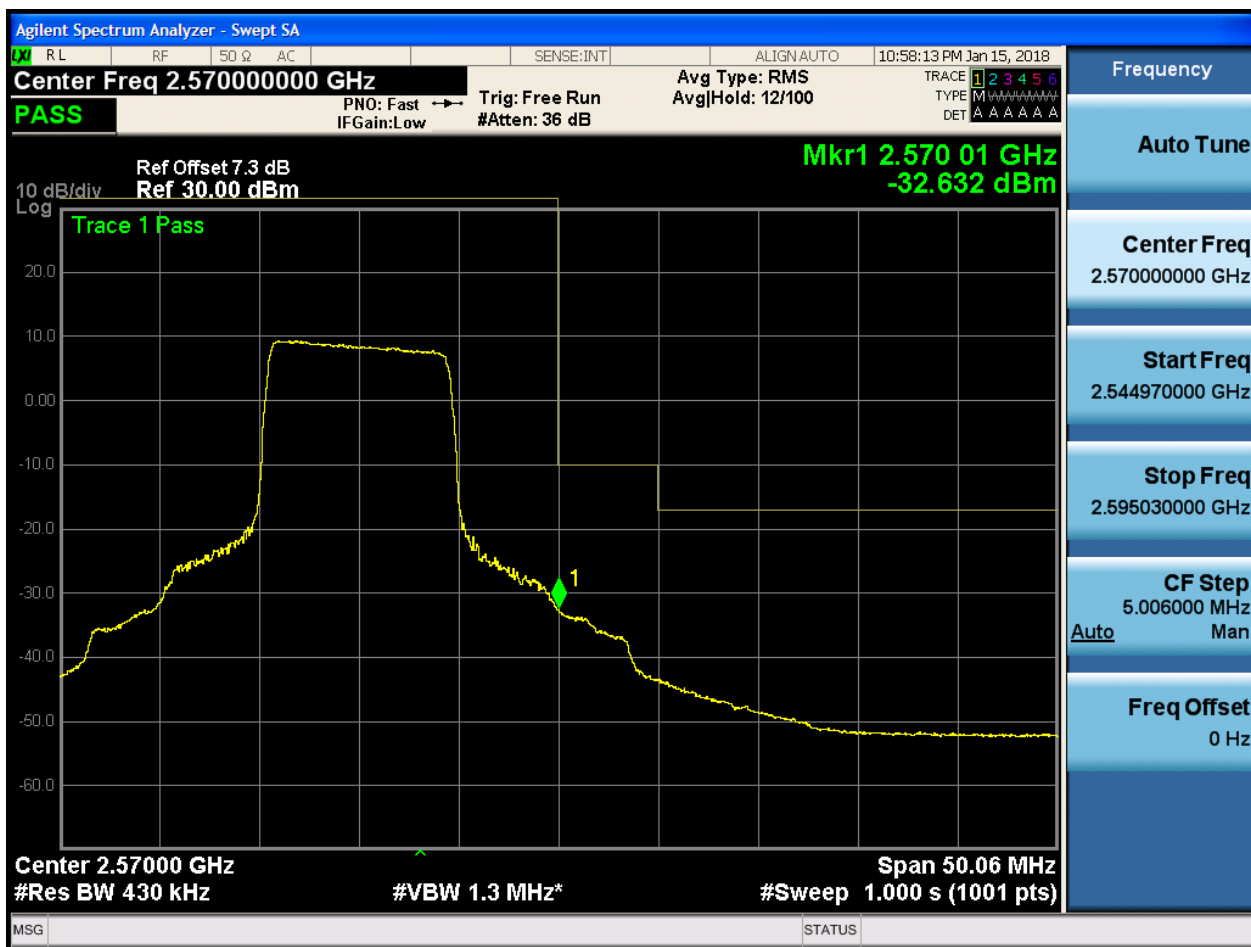


5.1.1.1.4.2.2 Test RB = RB1#99





5.1.1.1.4.2.3 Test RB = RB50#25





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 10:58:32 PM Jan 15, 2018

Center Freq 2.57000000 GHz Avg Type: RMS
PASS PNO: Fast Trig: Free Run
IFGain:Low #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 7.3 dB
Ref 30.00 dBm

Mkr1 2.570 01 GHz
-29.096 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.57000 GHz
#Res BW 430 kHz
#VBW 1.3 MHz*
Span 50.06 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

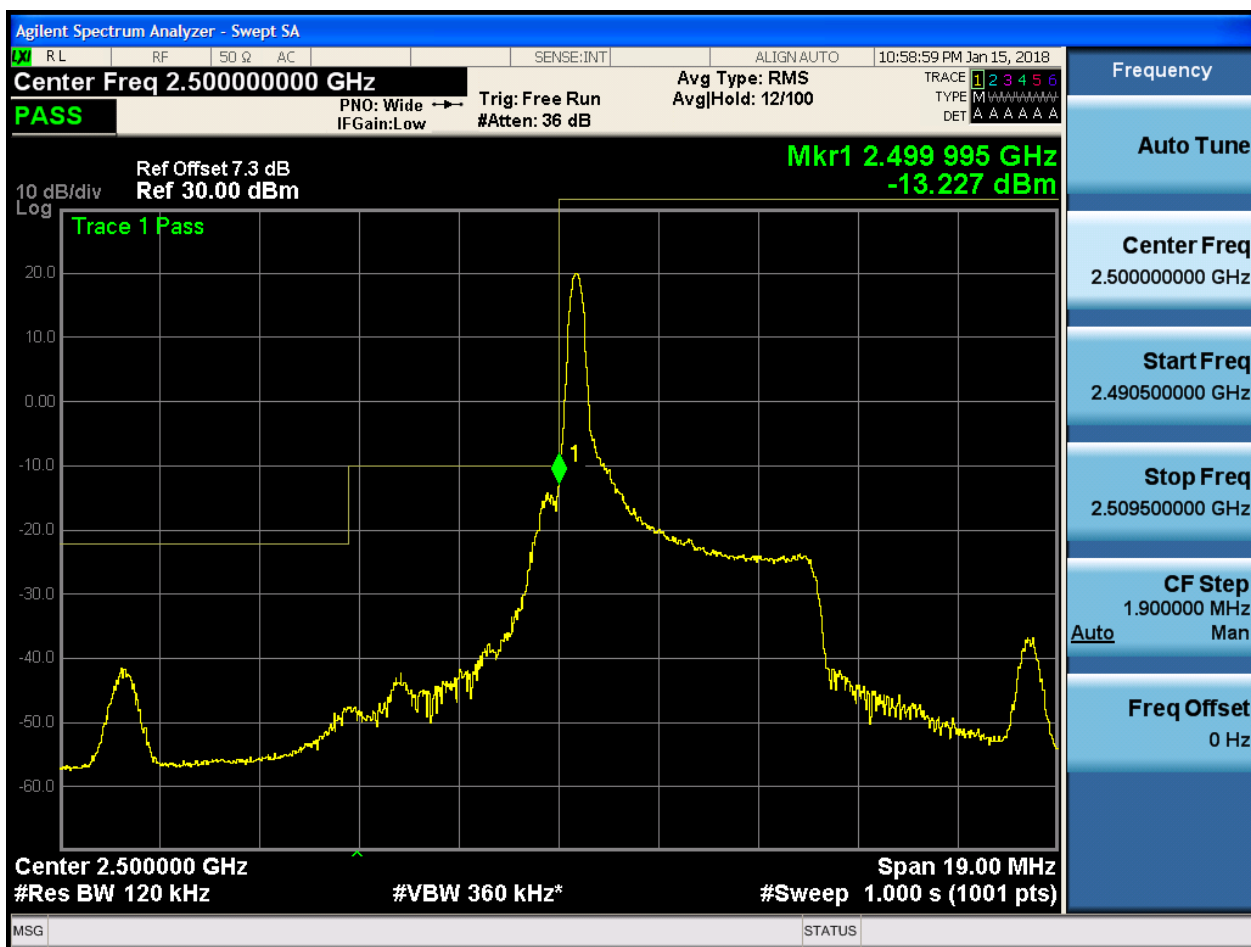


5.1.1.2 Test Mode = LTE/TM2

5.1.1.2.1 Test Bandwidth = 5

5.1.1.2.1.1 Test Channel = LCH

5.1.1.2.1.1.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 10:59:17 PM Jan 15, 2018

Center Freq 2.500000000 GHz Avg Type: RMS Trg: Free Run
PNO: Wide IFGain:Low #Atten: 36 dB

PASS

Ref Offset 7.3 dB Ref 30.00 dBm

Mkr1 2.499 995 GHz -35.851 dBm

10 dB/div Log

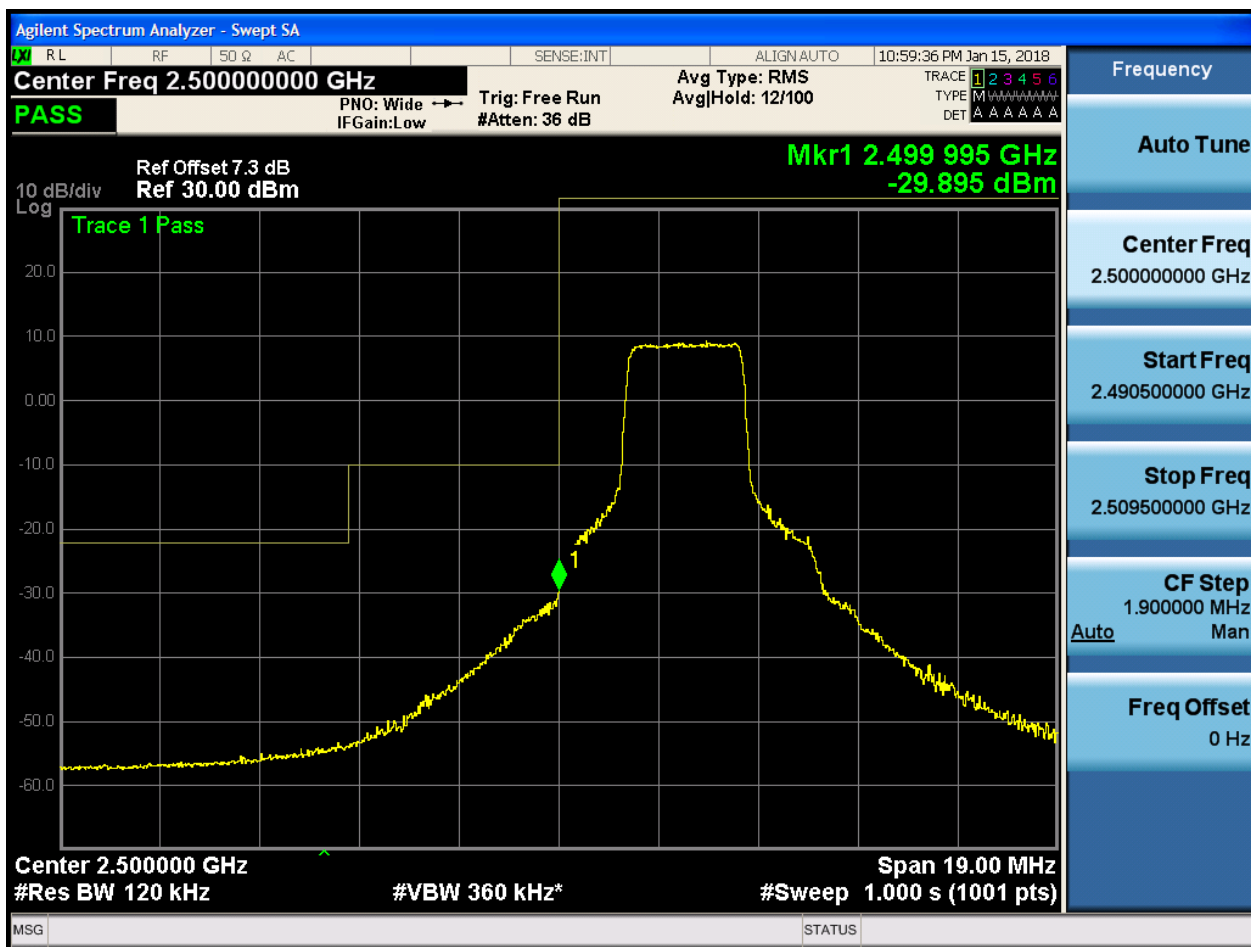
Trace 1 Pass

Center 2.500000 GHz #Res BW 120 kHz #VBW 360 kHz* Span 19.00 MHz #Sweep 1.000 s (1001 pts)

MSG STATUS

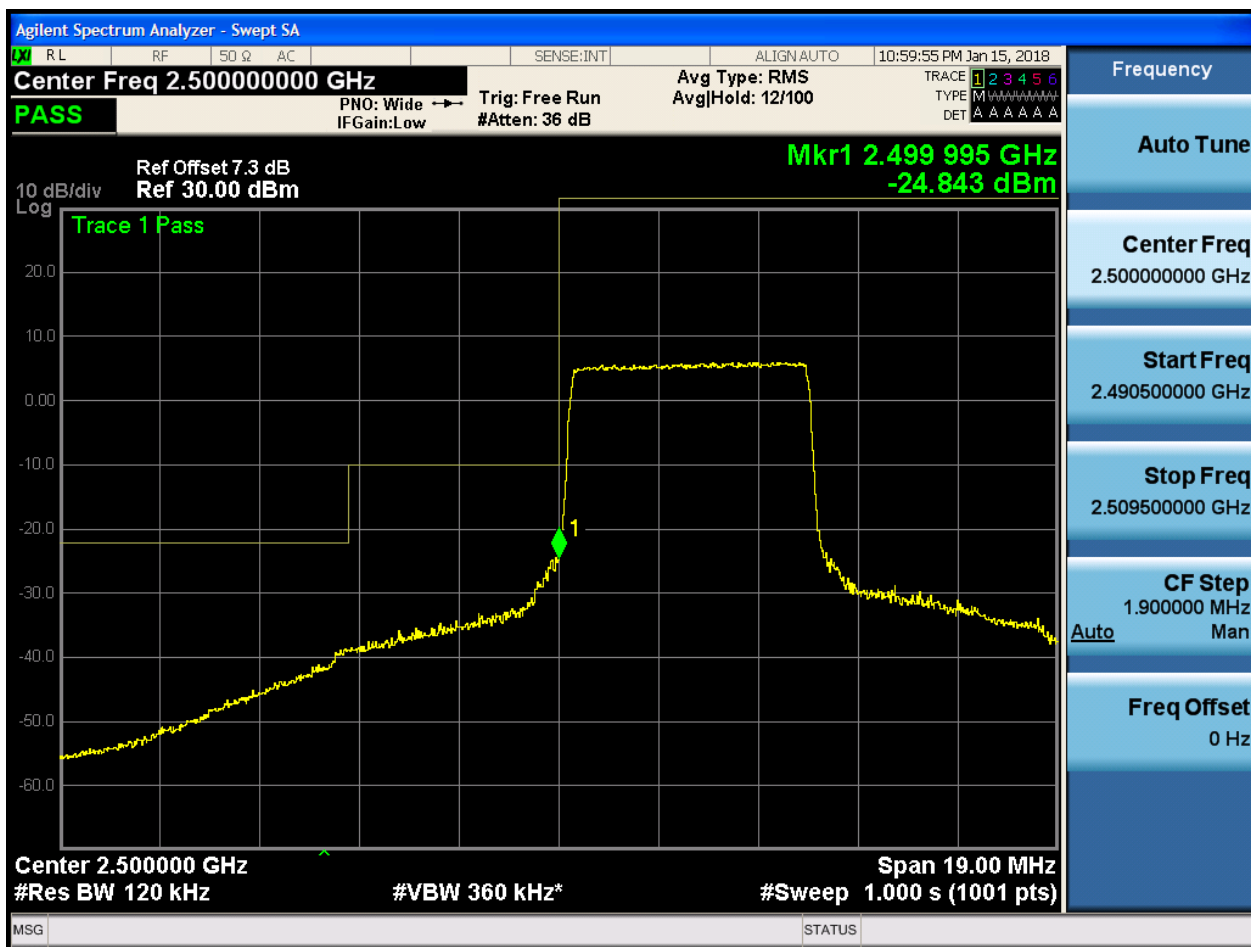


5.1.1.2.1.1.3 Test RB = RB12#6





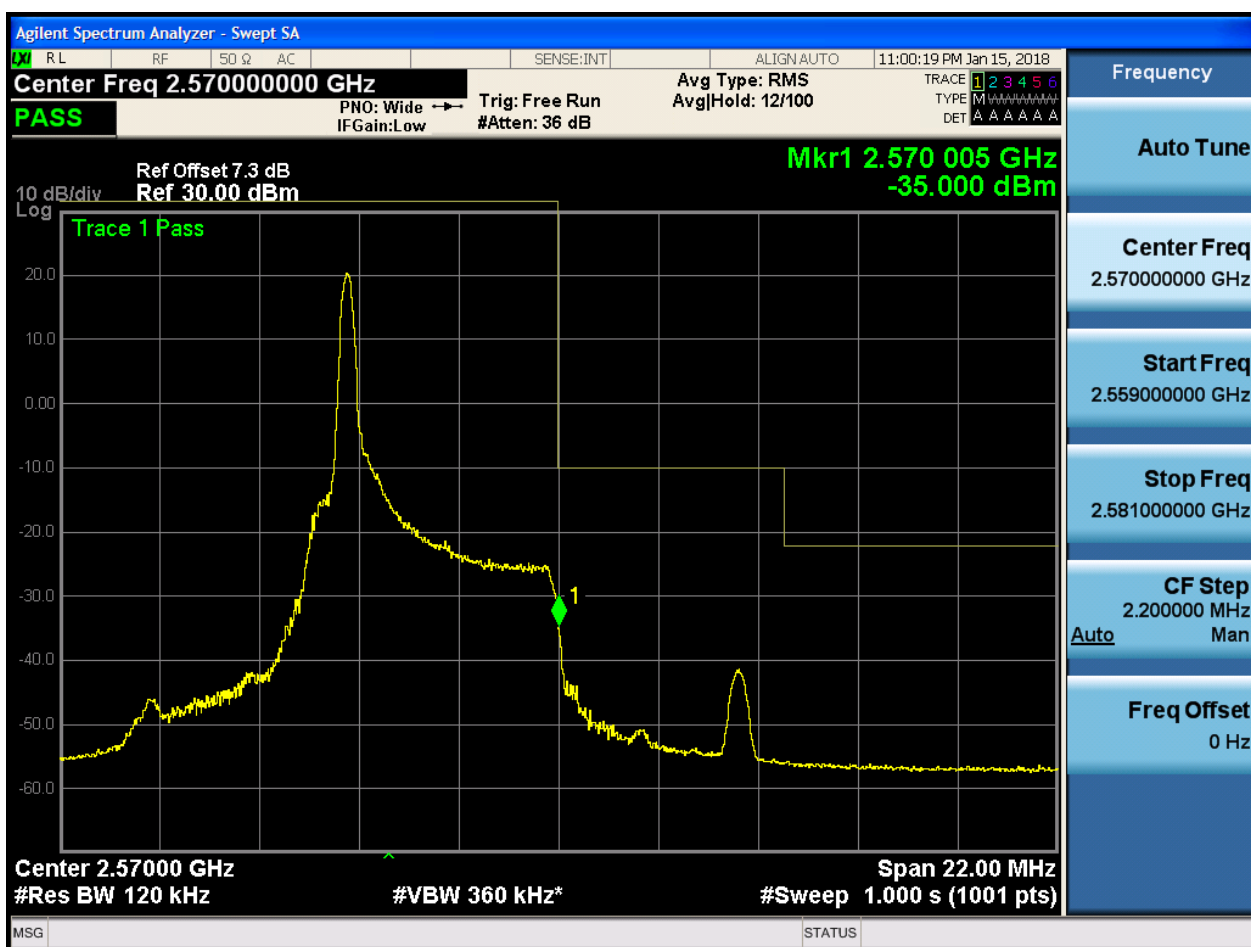
5.1.1.2.1.1.4 Test RB = RB25#0





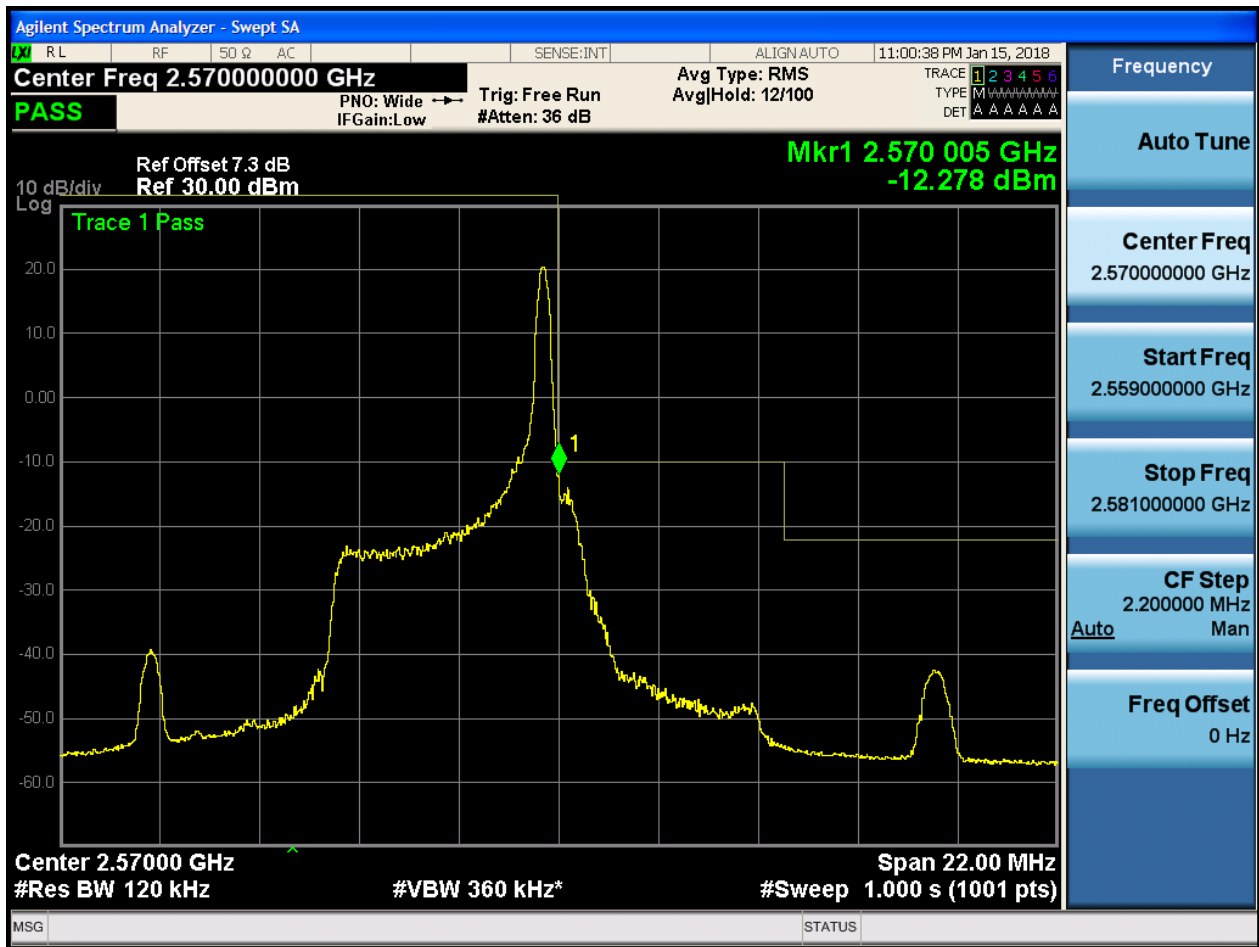
5.1.1.2.1.2 Test Channel = HCH

5.1.1.2.1.2.1 Test RB = RB1#0



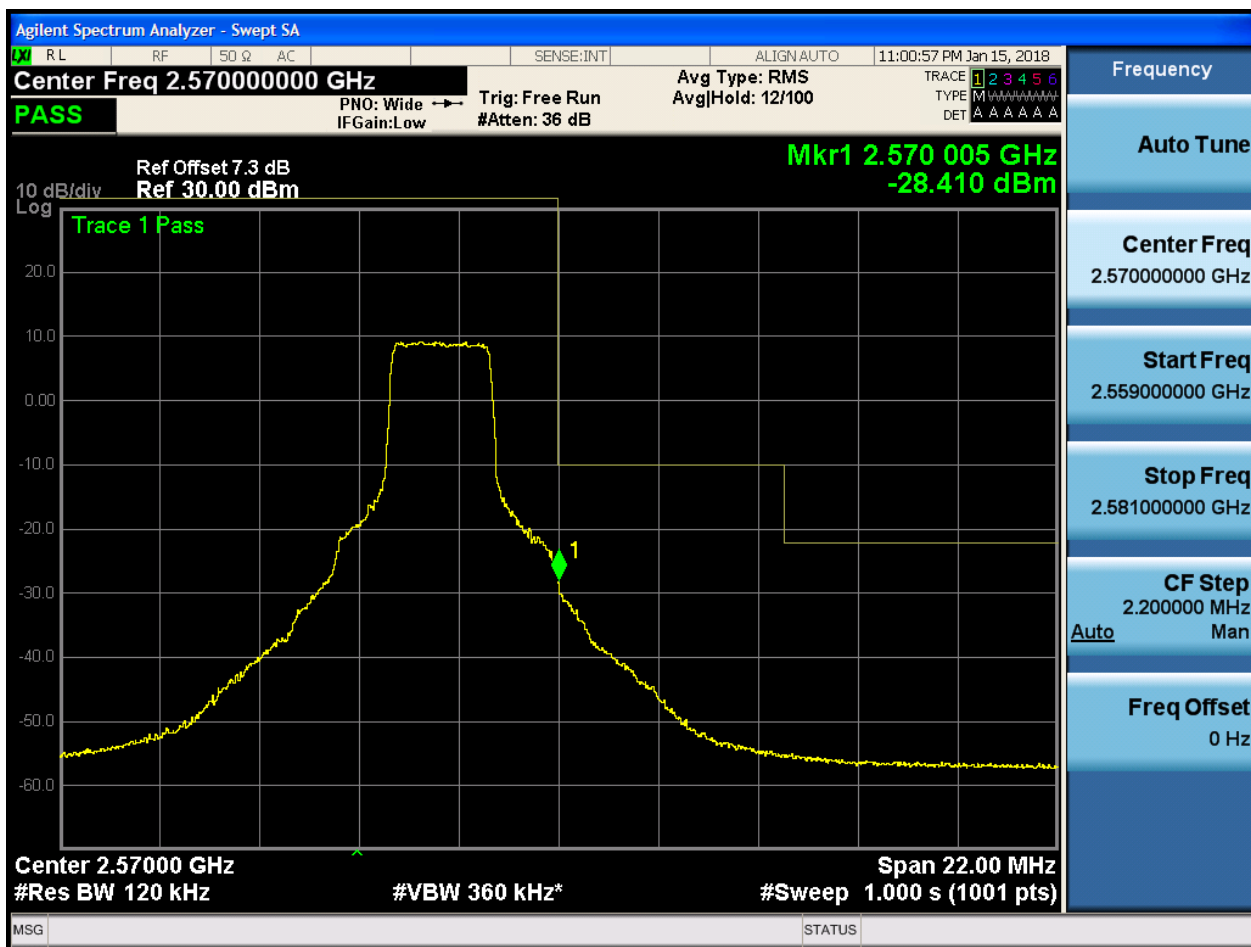


5.1.1.2.1.2.2 Test RB = RB1#24





5.1.1.2.1.2.3 Test RB = RB12#6





5.1.1.2.1.2.4 Test RB = RB25#0

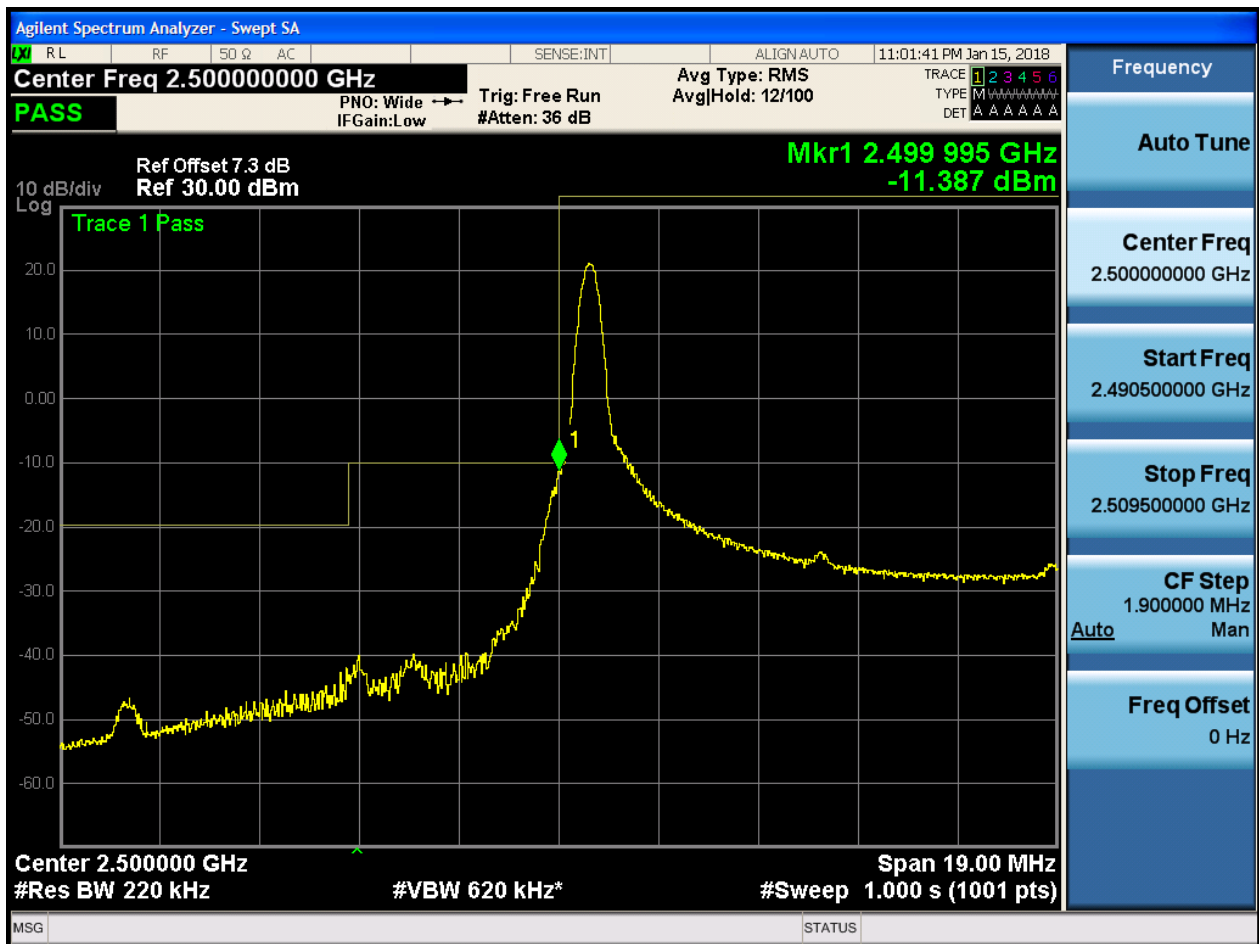




5.1.1.2.2 Test Bandwidth = 10

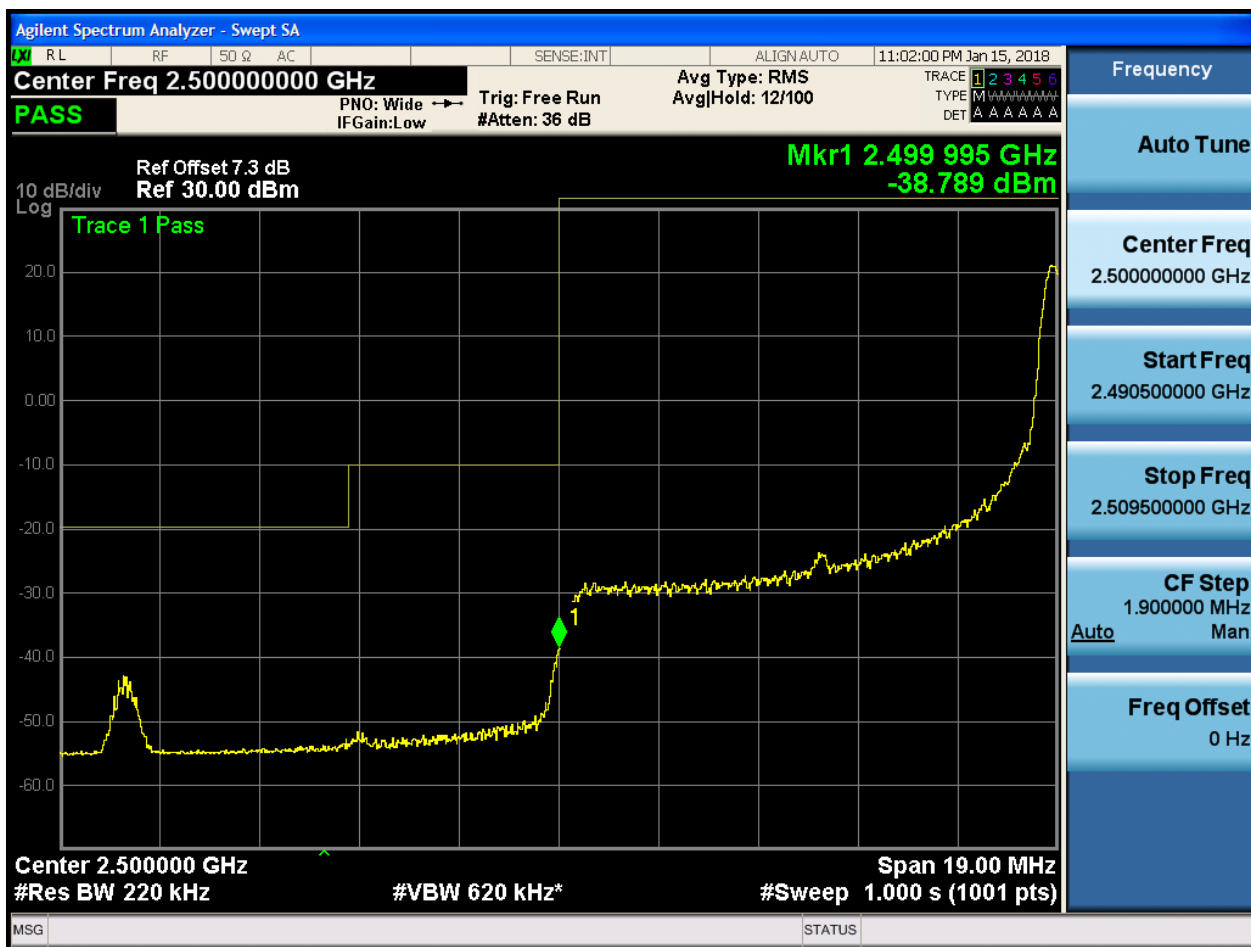
5.1.1.2.2.1 Test Channel = LCH

5.1.1.2.2.1.1 Test RB = RB1#0



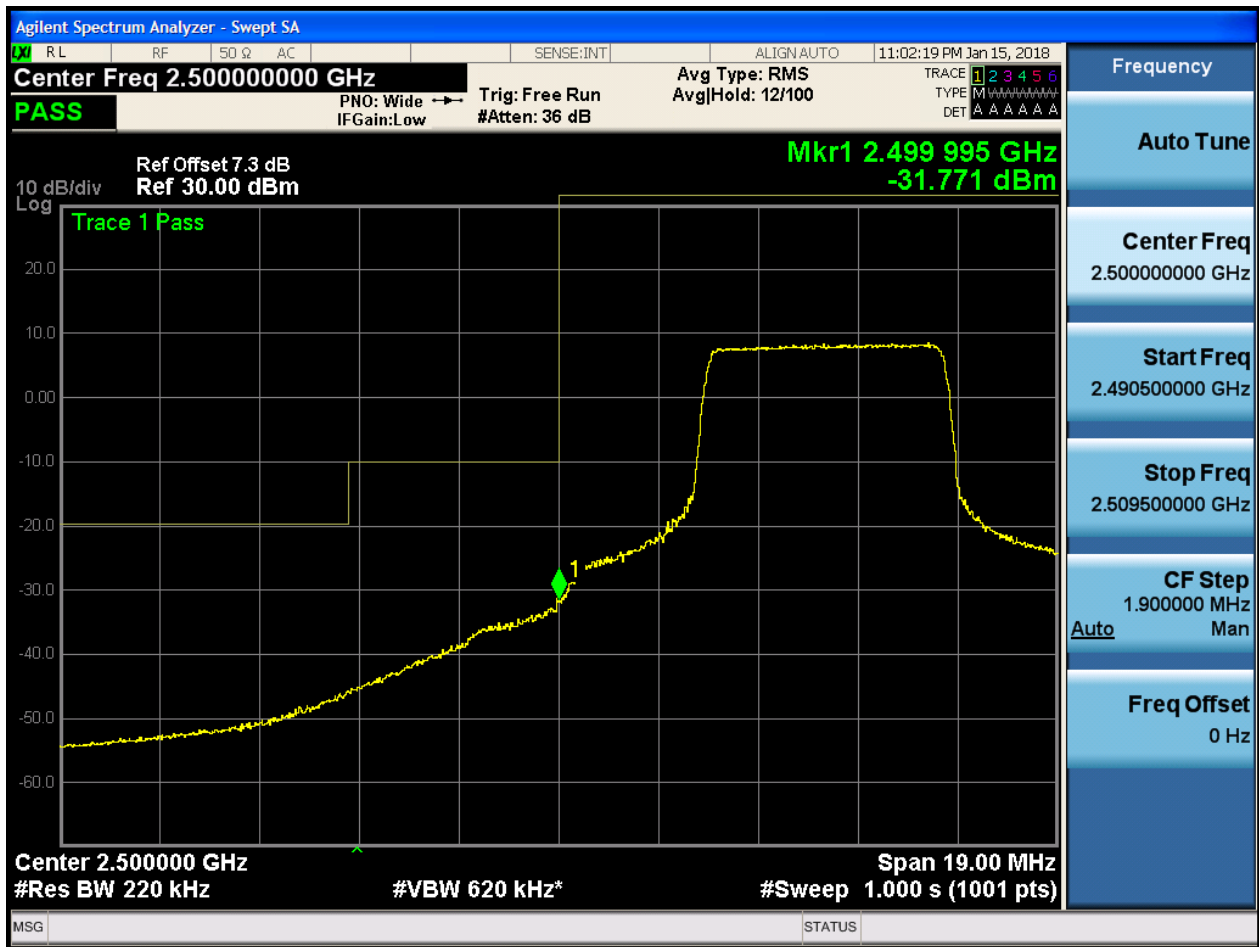


5.1.1.2.2.1.2 Test RB = RB1#49



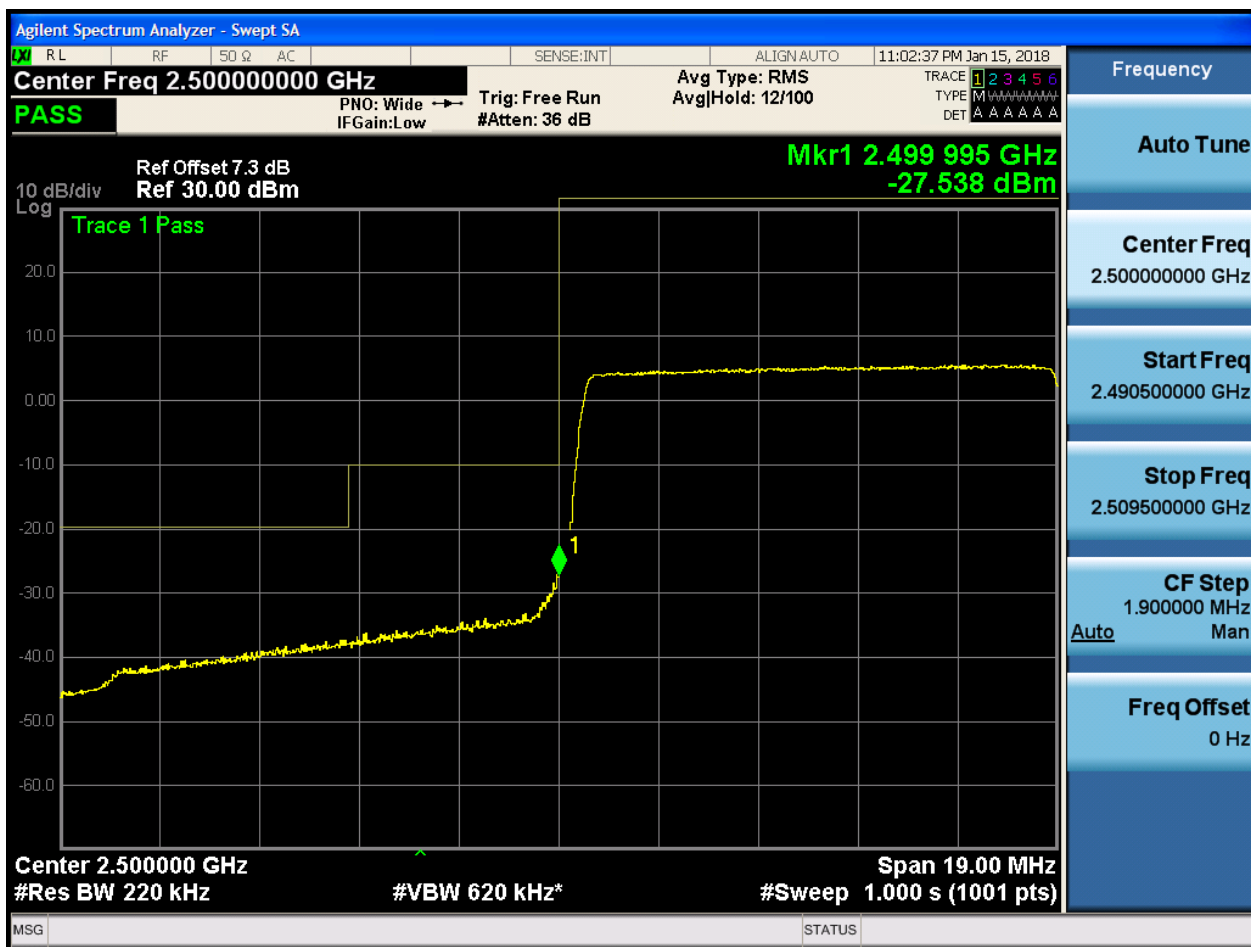


5.1.1.2.2.1.3 Test RB = RB25#13





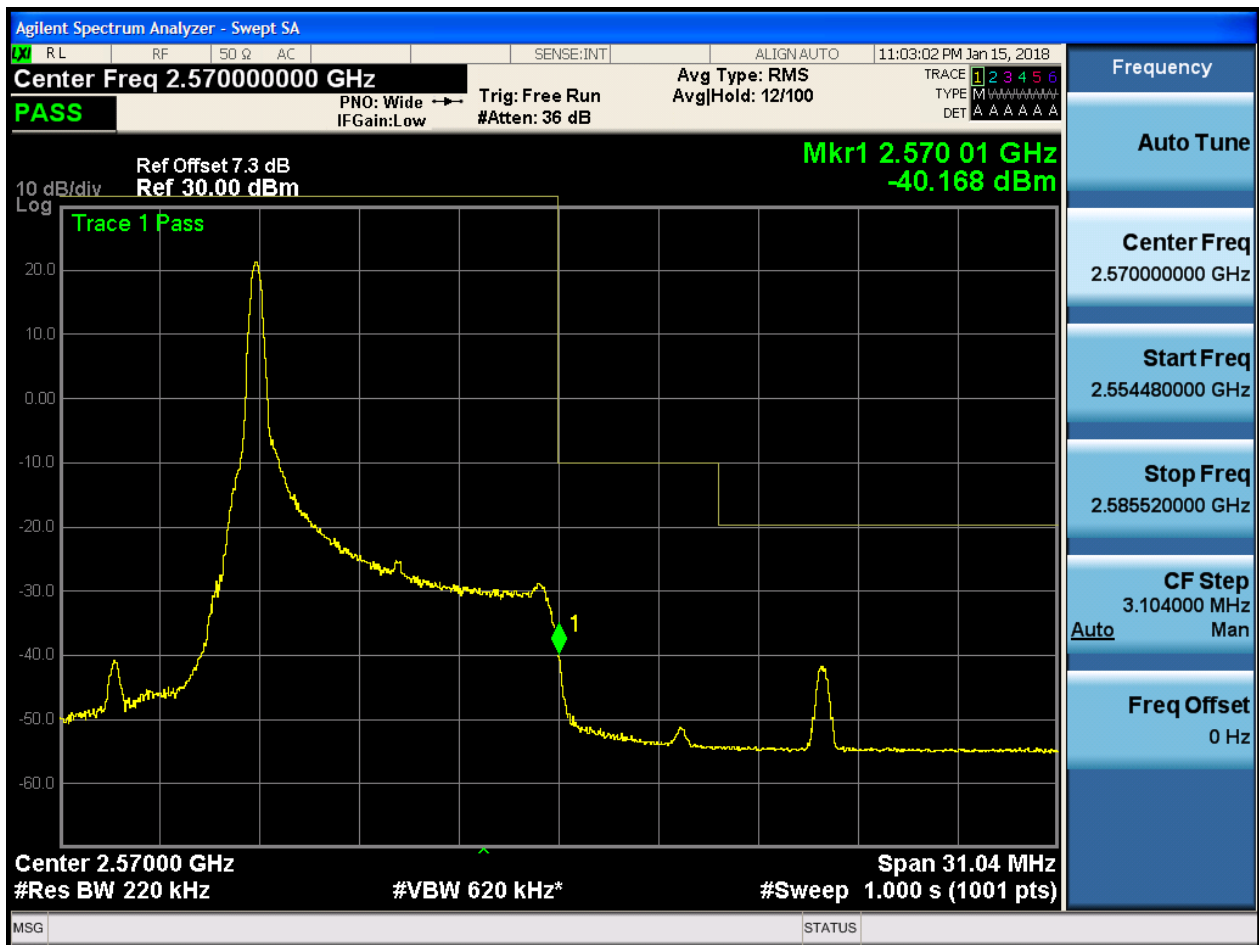
5.1.1.2.2.1.4 Test RB = RB50#0





5.1.1.2.2.2 Test Channel = HCH

5.1.1.2.2.2.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:03:20 PM Jan 15, 2018

Center Freq 2.57000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain:Low Trig: Free Run AvgHold: 12/100
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 7.3 dB
Ref 30.00 dBm

Mkr1 2.570 01 GHz
-12.374 dBm

10 dB/div
Log

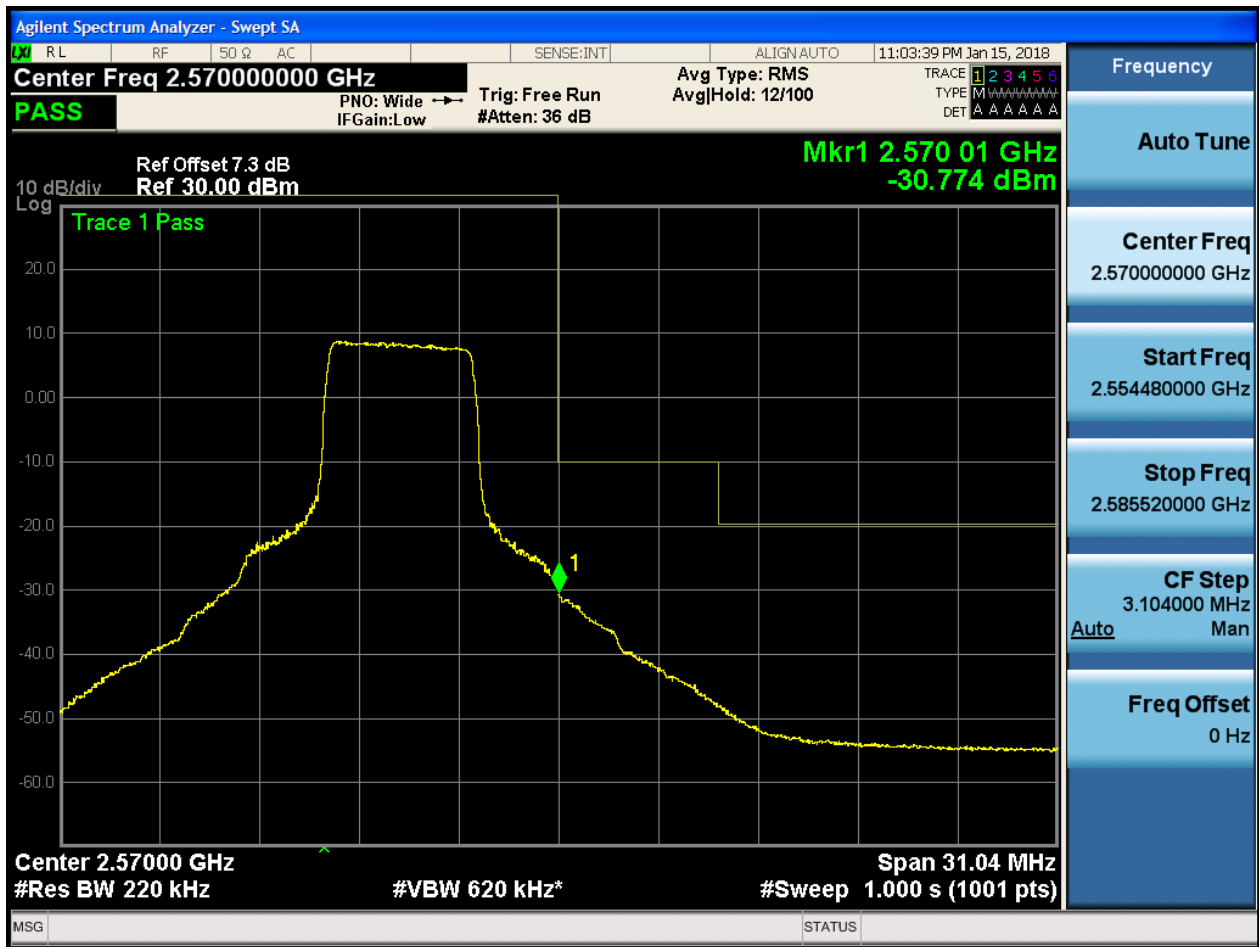
Trace 1 Pass

Center 2.57000 GHz
#Res BW 220 kHz #VBW 620 kHz* Span 31.04 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS



5.1.1.2.2.3 Test RB = RB25#13





5.1.1.2.2.4 Test RB = RB50#0

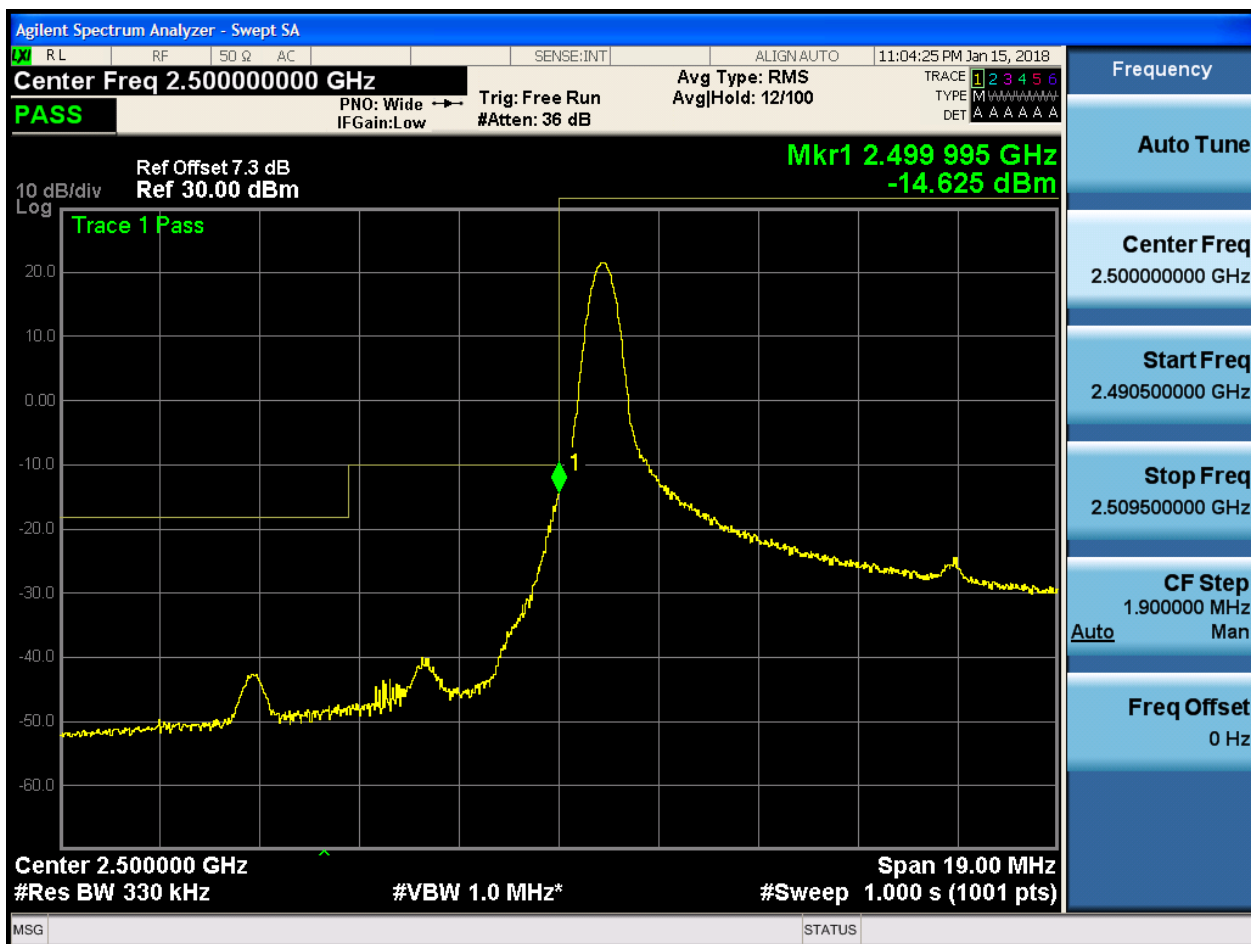




5.1.1.2.3 Test Bandwidth = 15

5.1.1.2.3.1 Test Channel = LCH

5.1.1.2.3.1.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:04:44 PM Jan 15, 2018

Center Freq 2.500000000 GHz Avg Type: RMS
#Res BW 330 kHz IFGain:Low Trig: Free Run AvgHold: 12/100
PASS PNO: Wide → #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 7.3 dB
Ref 30.00 dBm

Mkr1 2.499 995 GHz
-41.158 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.500000 GHz Span 19.00 MHz
#Res BW 330 kHz #VBW 1.0 MHz* #Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.500000000 GHz

Start Freq
2.490500000 GHz

Stop Freq
2.509500000 GHz

CF Step
1.900000 MHz
Auto Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.500000000 GHz

PASS

Ref Offset 7.3 dB
Ref 30.00 dBm

Mkr1 2.499 995 GHz
-34.038 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.500000 GHz
#Res BW 330 kHz
#VBW 1.0 MHz*
Span 19.00 MHz
#Sweep 1.000 s (1001 pts)

Frequency

Auto Tune

Center Freq
2.500000000 GHz

Start Freq
2.490500000 GHz

Stop Freq
2.509500000 GHz

CF Step
1.900000 MHz
Auto Man

Freq Offset
0 Hz

The image shows the front panel of an Agilent Spectrum Analyzer. The main display is a swept spectrum plot with a yellow trace. The trace starts at approximately -50 dBm at 2.4905 GHz, rises to a peak of -34.038 dBm at 2.499995 GHz (marked with a green diamond and '1'), and then levels off at -34 dBm. The plot is on a grid with a 10 dB/div vertical scale and a 19 MHz horizontal span. The center frequency is 2.5000 GHz. The resolution bandwidth (RBW) is 330 kHz, and the video bandwidth (VBW) is 1.0 MHz. The sweep time is 1.000 s. The display includes various control parameters at the top, such as 'Center Freq 2.500000000 GHz', 'PNO: Wide', 'IFGain: Low', 'Trig: Free Run', '#Atten: 36 dB', 'Avg Type: RMS', 'Avg/Hold: 12/100', and 'TRACE 1 2 3 4 5 6'. A right-hand menu contains options like 'Frequency', 'Auto Tune', 'Center Freq', 'Start Freq', 'Stop Freq', 'CF Step', and 'Freq Offset'.



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.500000000 GHz

Ref Offset 7.3 dB
Ref 30.00 dBm

10 dB/div
Log

Trace 1 Pass

Mkr1 2.499 995 GHz
-29.815 dBm

Center 2.500000 GHz
#Res BW 330 kHz
#VBW 1.0 MHz*

Span 19.00 MHz
#Sweep 1.000 s (1001 pts)

Frequency

Auto Tune

Center Freq
2.500000000 GHz

Start Freq
2.490500000 GHz

Stop Freq
2.509500000 GHz

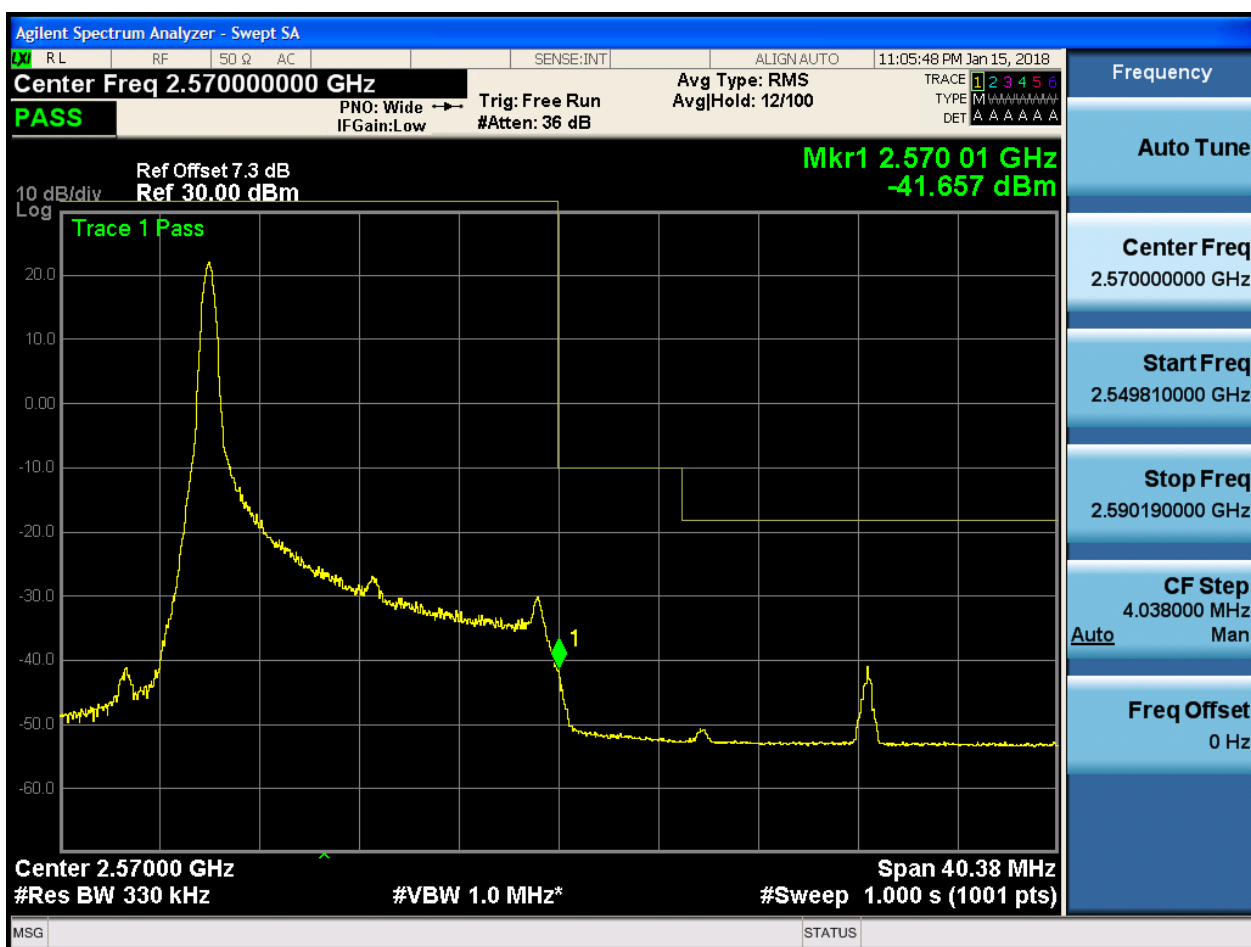
CF Step
1.900000 MHz
Man

Freq Offset
0 Hz



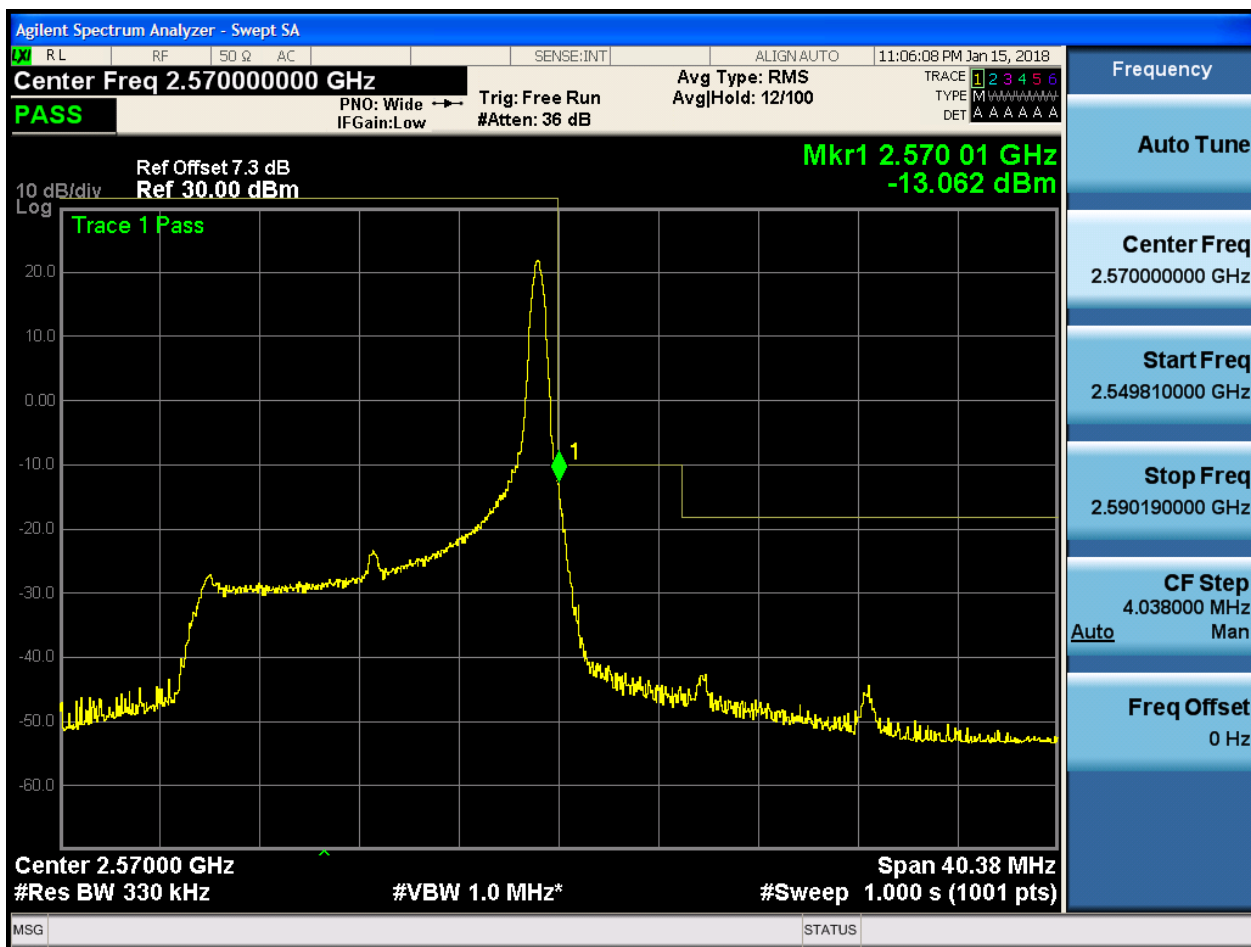
5.1.1.2.3.2 Test Channel = HCH

5.1.1.2.3.2.1 Test RB = RB1#0





5.1.1.2.3.2.2 Test RB = RB1#74





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:06:27 PM Jan 15, 2018

Center Freq 2.570000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain:Low Trig: Free Run AvgHold: 12/100
#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 7.3 dB
Ref 30.00 dBm

Mkr1 2.570 01 GHz
-32.031 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.57000 GHz Span 40.38 MHz
#Res BW 330 kHz #VBW 1.0 MHz* #Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency
Auto Tune
Center Freq 2.570000000 GHz
Start Freq 2.549810000 GHz
Stop Freq 2.590190000 GHz
CF Step 4.038000 MHz Auto Man
Freq Offset 0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:06:47 PM Jan 15, 2018

Center Freq 2.57000000 GHz Avg Type: RMS
PASS PNO: Wide IFGain:Low Trig: Free Run AvgHold: 12/100
#Atten: 36 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 7.3 dB
Ref 30.00 dBm

Mkr1 2.570 01 GHz
-27.708 dBm

10 dB/div
Log

Trace 1 Pass

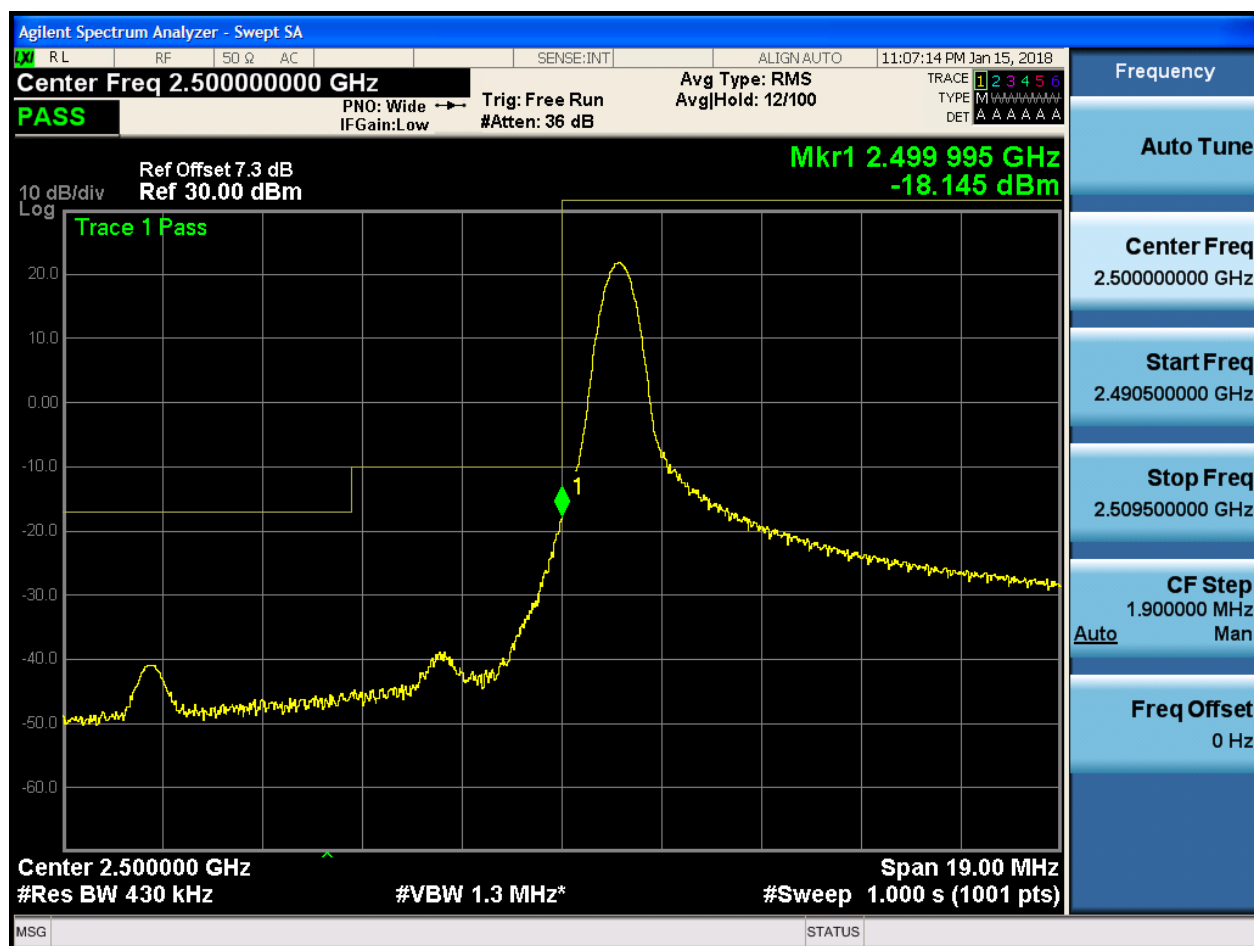
Center 2.57000 GHz
#Res BW 330 kHz #VBW 1.0 MHz* Span 40.38 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

5.1.1.2.4 Test Bandwidth = 20

5.1.1.2.4.1 Test Channel = LCH

5.1.1.2.4.1.1 Test RB = RB1#0





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.500000000 GHz

PASS

Ref Offset 7.3 dB

Ref 30.00 dBm

Mkr1 2.499 995 GHz

-40.606 dBm

Trace 1 Pass

Center 2.500000 GHz

#Res BW 430 kHz

#VBW 1.3 MHz*

Span 19.00 MHz

#Sweep 1.000 s (1001 pts)

Frequency

Auto Tune

Center Freq

2.500000000 GHz

Start Freq

2.490500000 GHz

Stop Freq

2.509500000 GHz

CF Step

1.900000 MHz

Man

Freq Offset

0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:07:54 PM Jan 15, 2018

Center Freq 2.500000000 GHz Avg Type: RMS
PASS PNO: Wide Trig: Free Run AvgHold: 12/100
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 7.3 dB
Ref 30.00 dBm

Mkr1 2.499 995 GHz
-36.265 dBm

10 dB/div
Log

Trace 1 Pass

Center 2.500000 GHz
#Res BW 430 kHz #VBW 1.3 MHz* Span 19.00 MHz
#Sweep 1.000 s (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.500000000 GHz

Start Freq
2.490500000 GHz

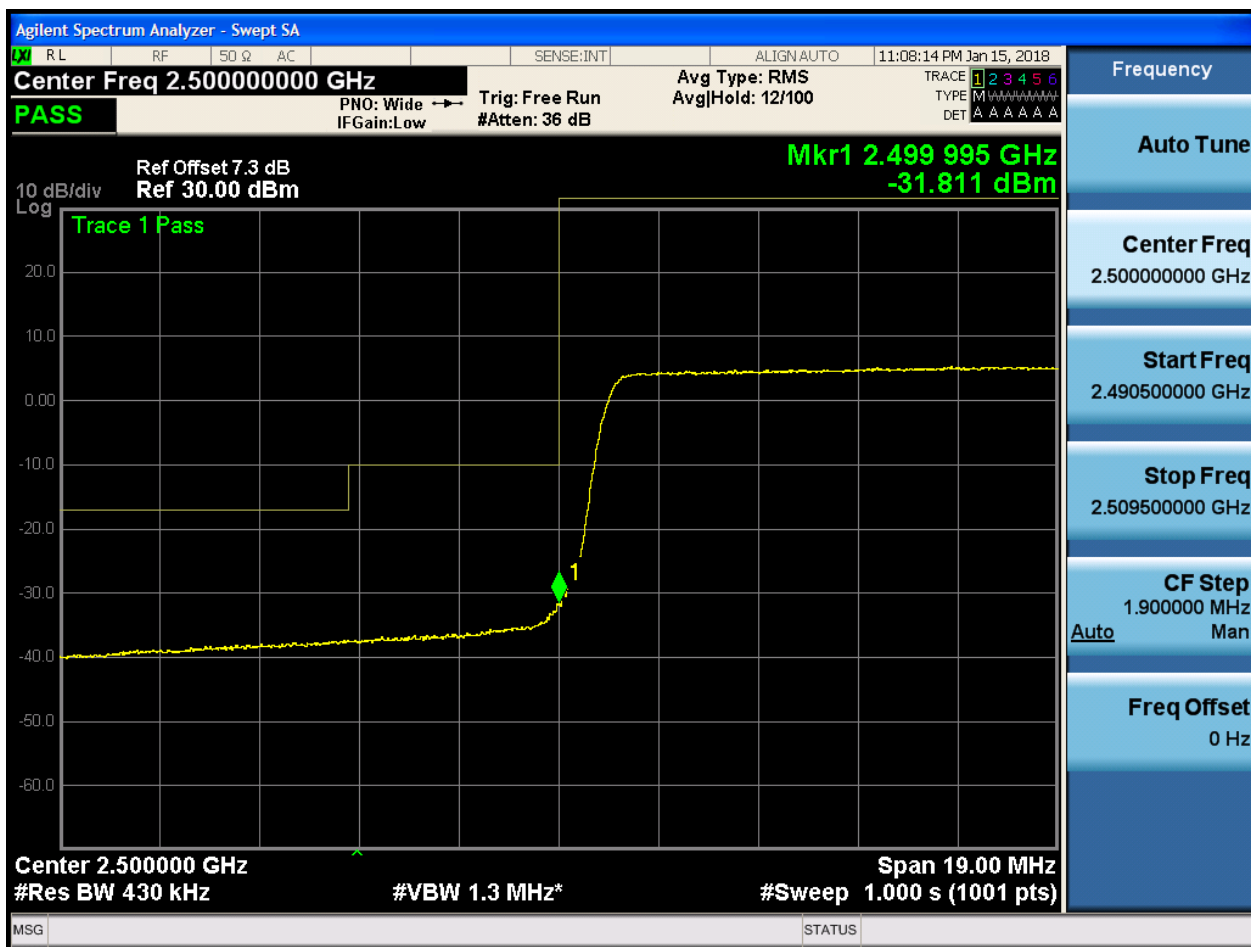
Stop Freq
2.509500000 GHz

CF Step
1.900000 MHz
Auto Man

Freq Offset
0 Hz



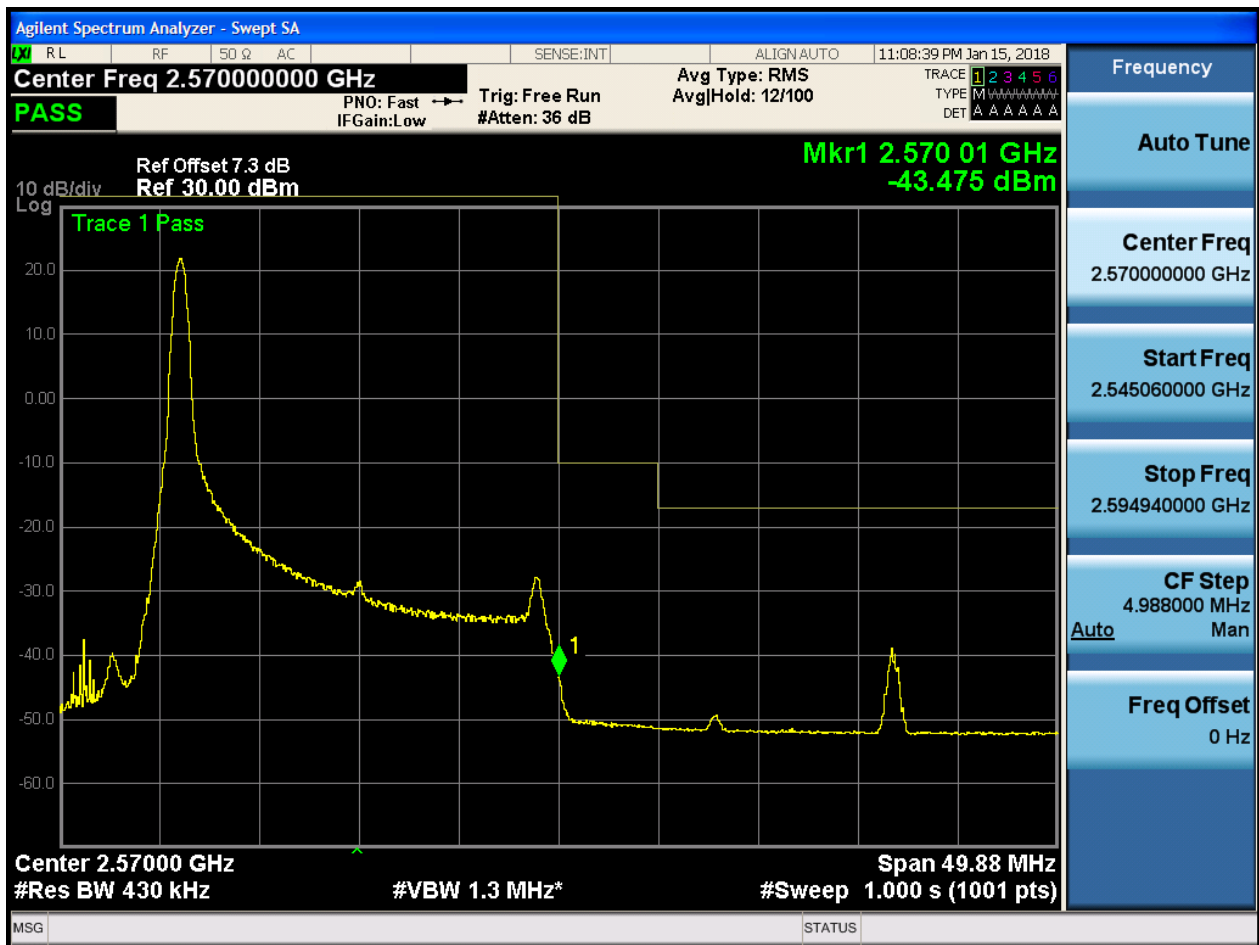
5.1.1.2.4.1.4 Test RB = RB100#0





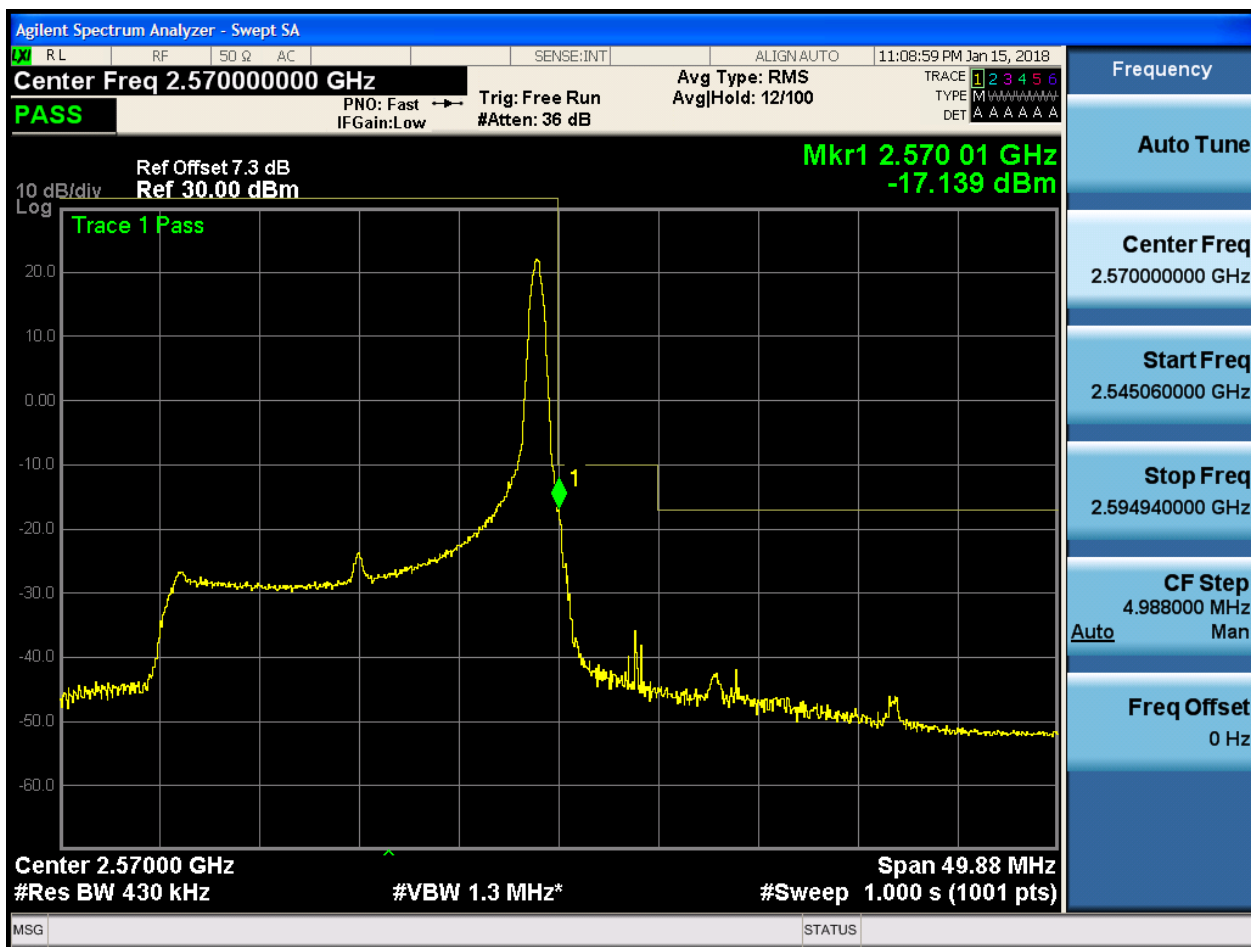
5.1.1.2.4.2 Test Channel = HCH

5.1.1.2.4.2.1 Test RB = RB1#0





5.1.1.2.4.2.2 Test RB = RB1#99





5.1.1.2.4.2.3 Test RB = RB50#25





5.1.1.2.4.2.4 Test RB = RB100#0



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

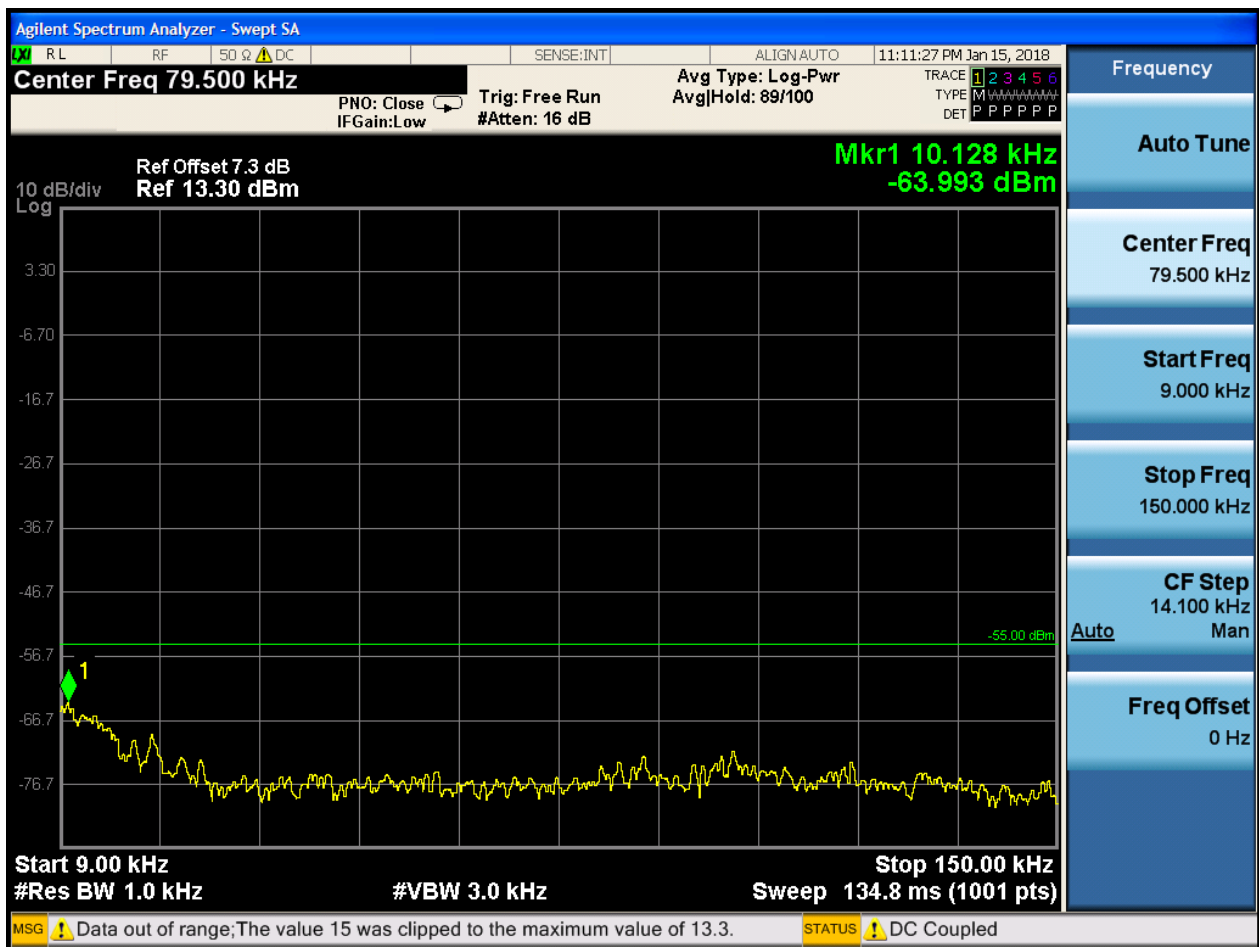
6.1.1 Test Band = BAND7

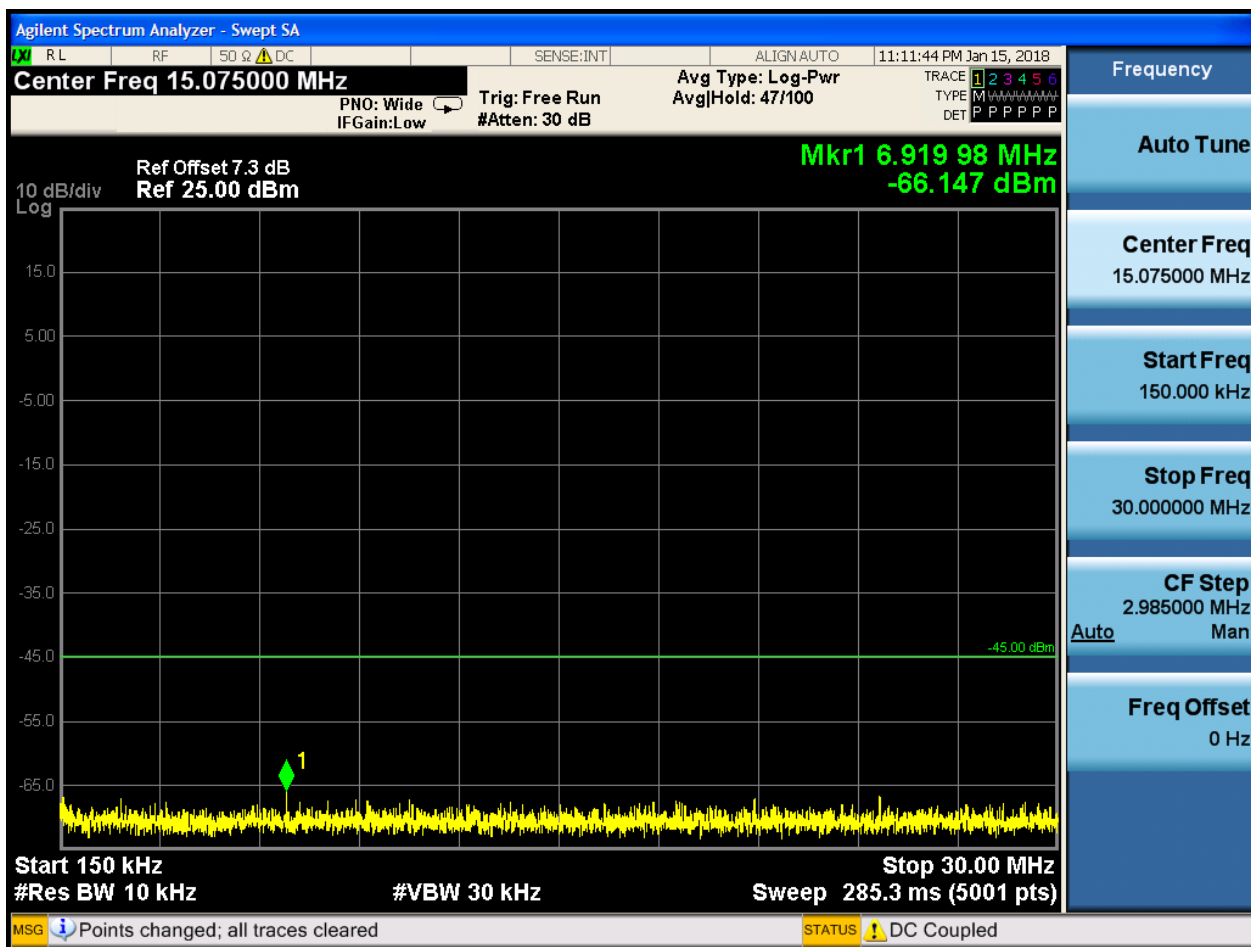
6.1.1.1 Test Mode = LTE/TM1

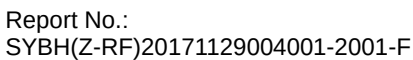
6.1.1.1.1 Test Bandwidth = 5

6.1.1.1.1.1 Test Channel = LCH

6.1.1.1.1.1.1 Test RB = RB1#0

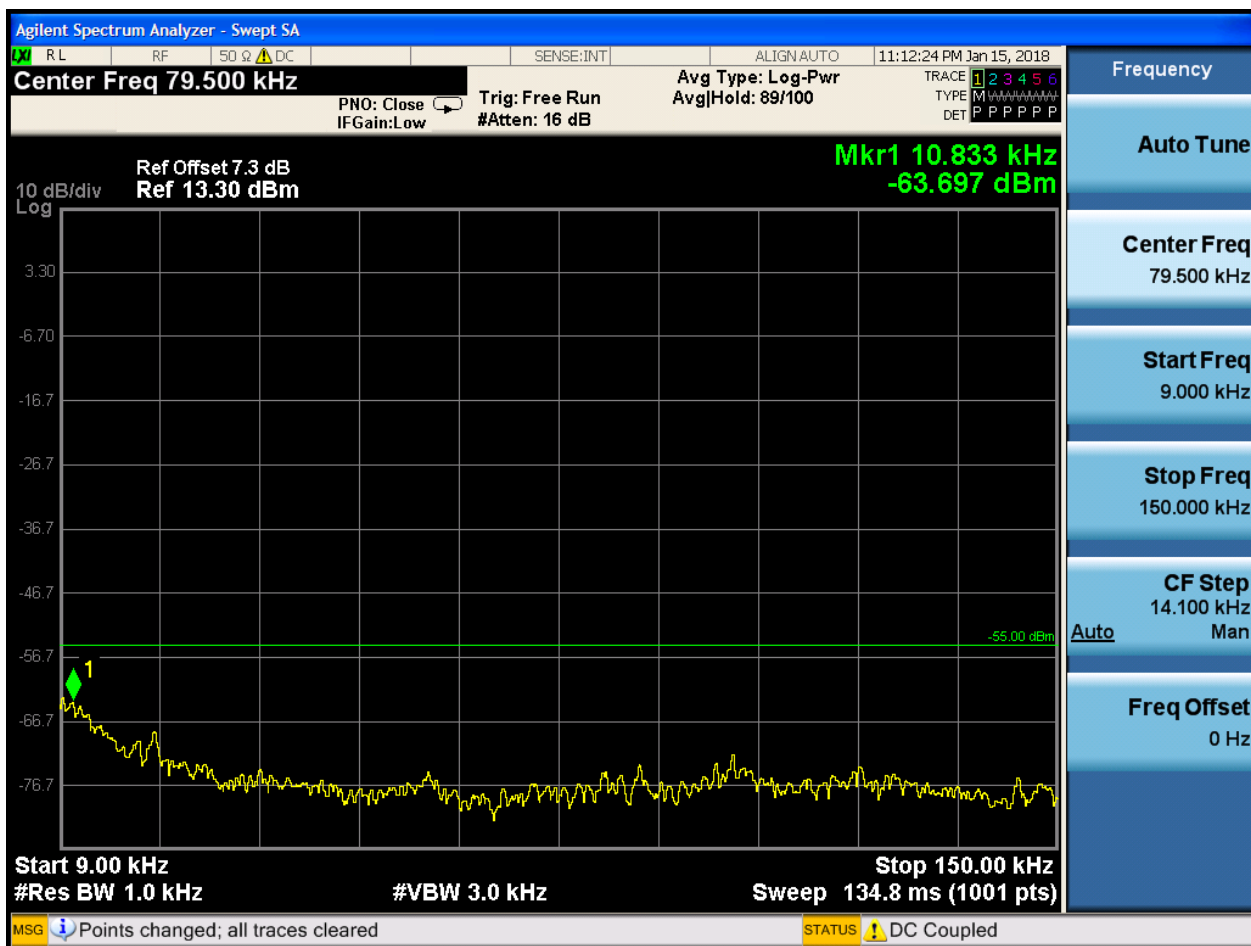




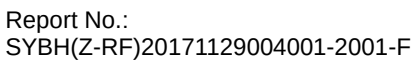


6.1.1.1.1.2 Test Channel = MCH

6.1.1.1.1.2.1 Test RB = RB1#0

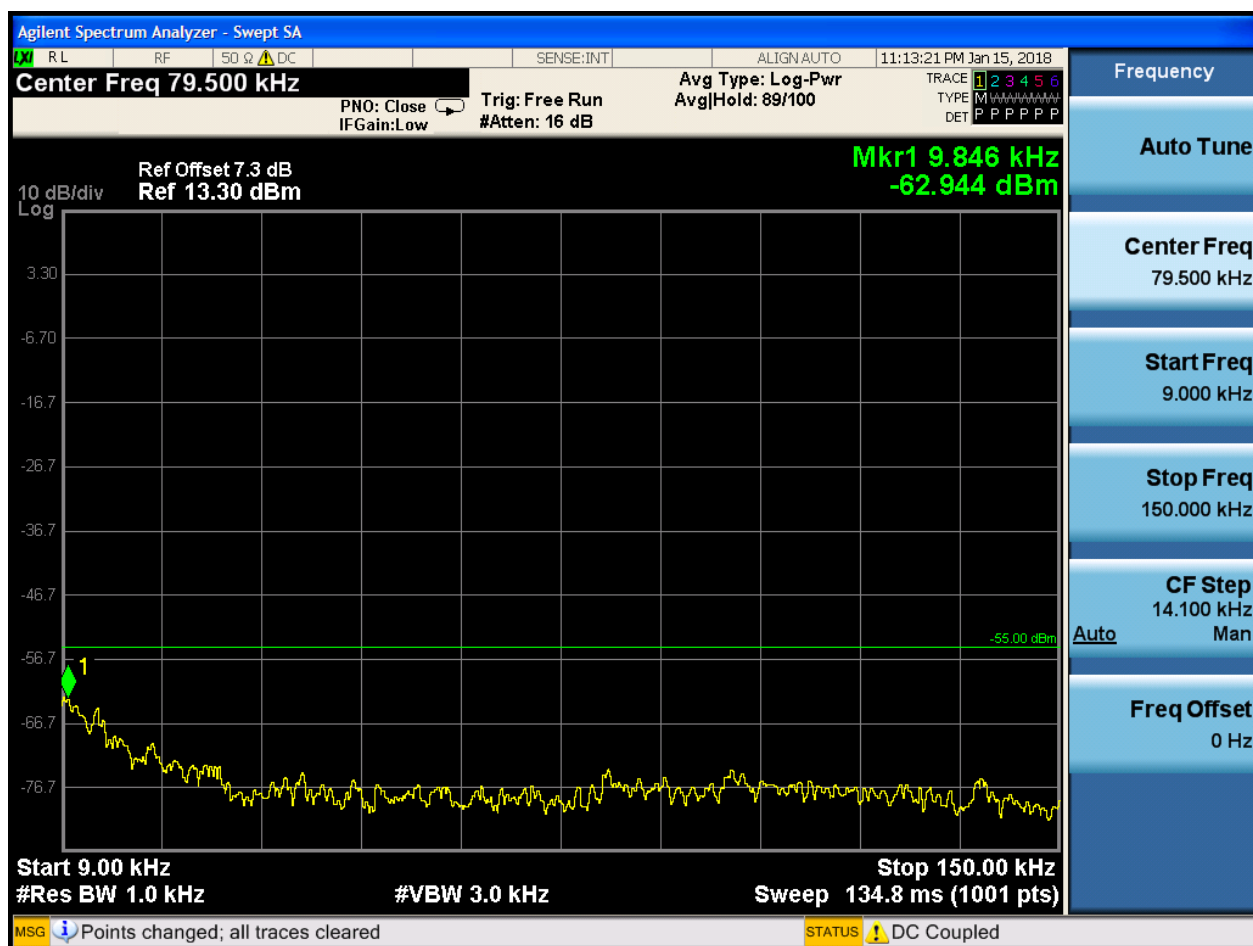


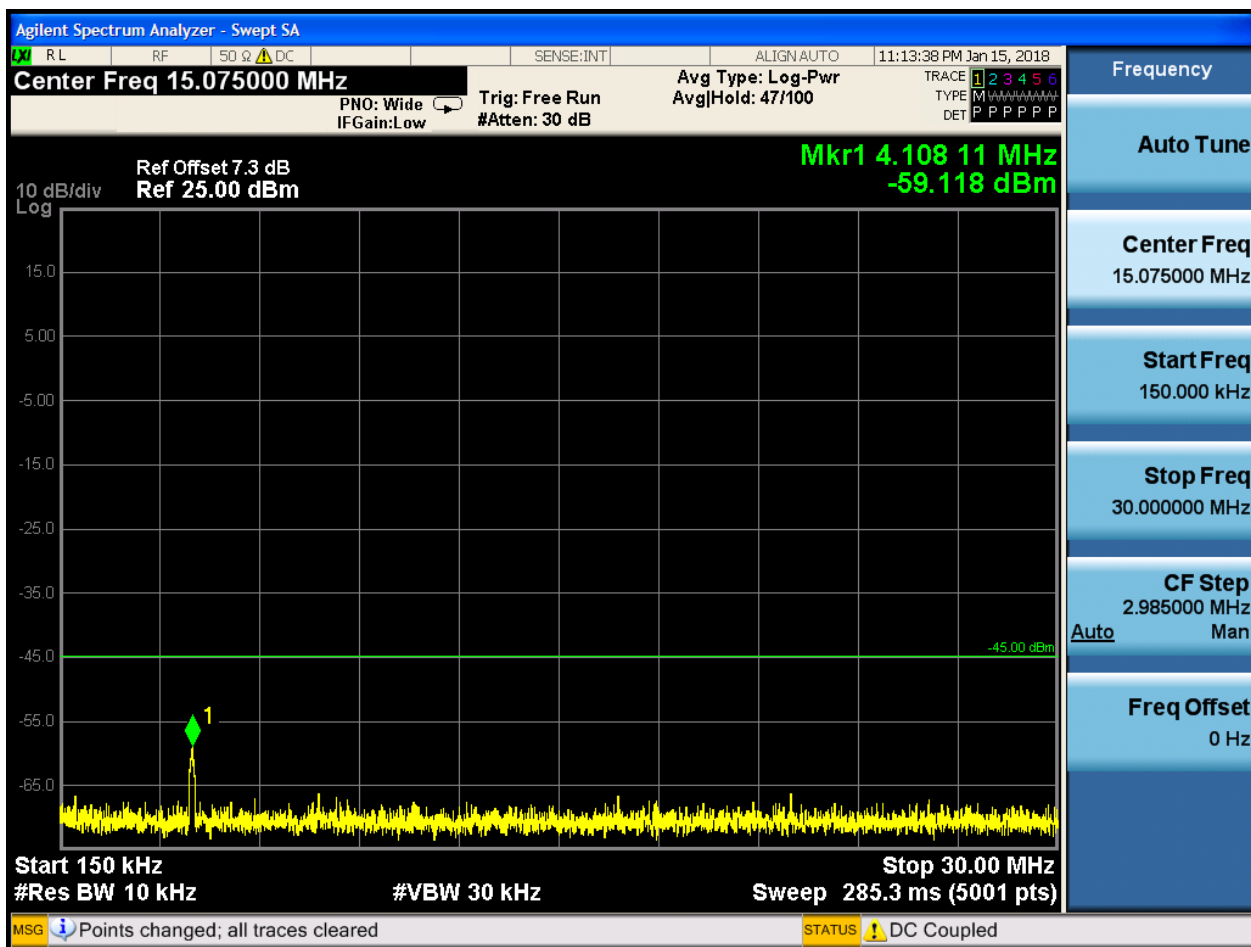


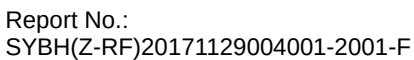


6.1.1.1.1.3 Test Channel = HCH

6.1.1.1.1.3.1 Test RB = RB1#0



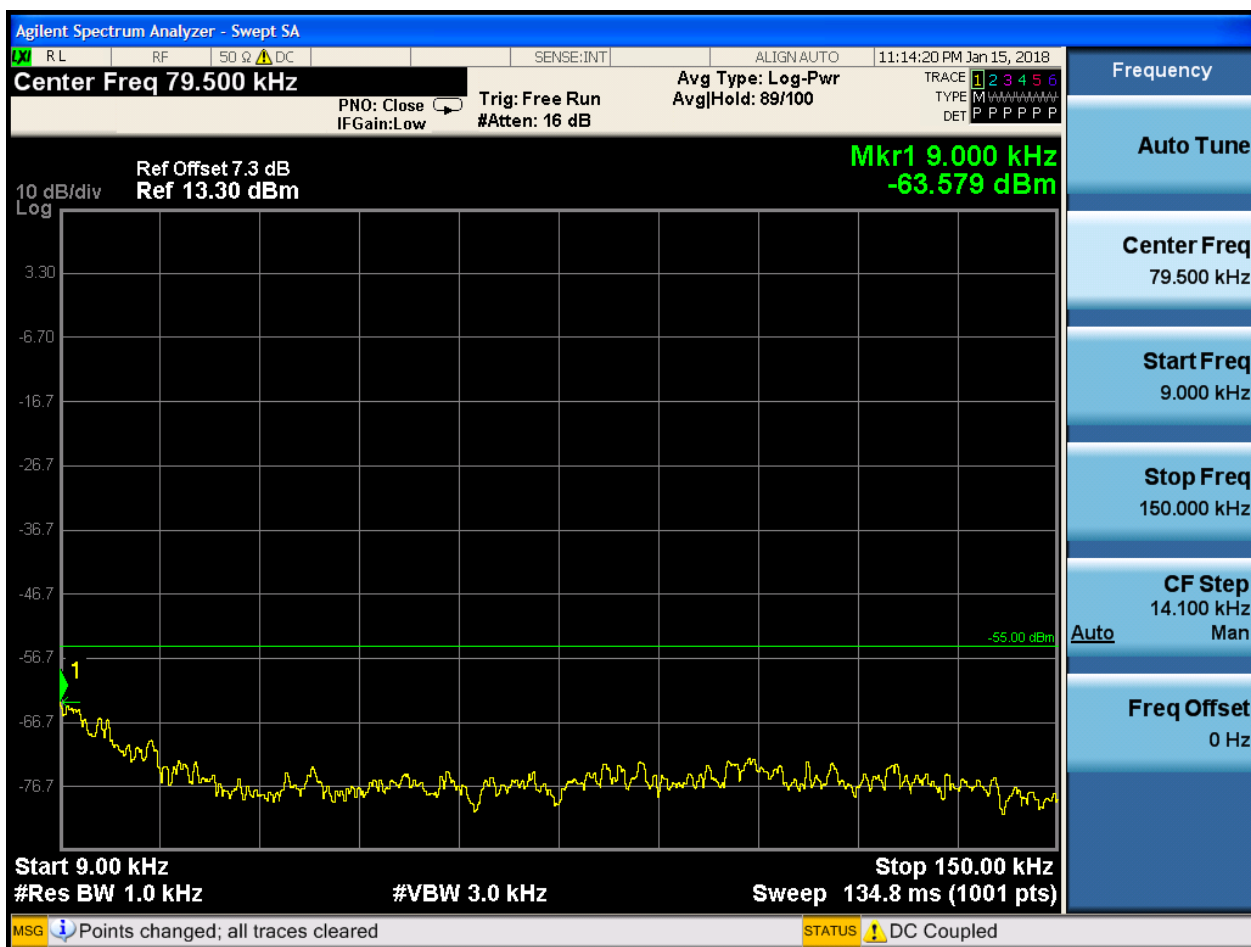




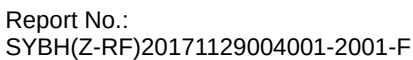
6.1.1.1.2 Test Bandwidth = 10

6.1.1.1.2.1 Test Channel = LCH

6.1.1.1.2.1.1 Test RB = RB1#0

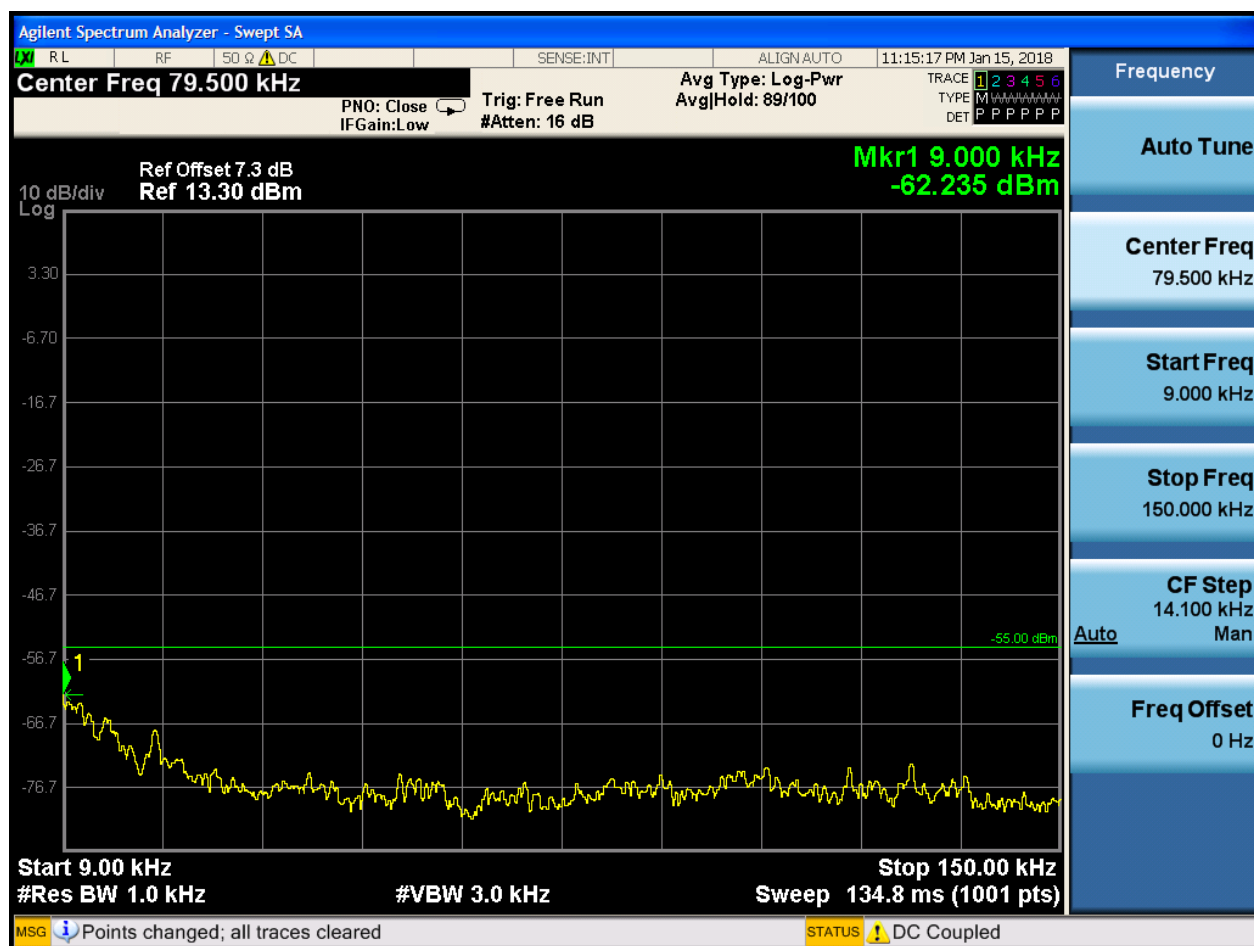


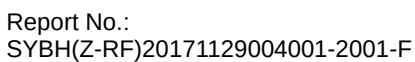


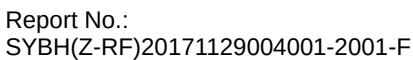


6.1.1.1.2.2 Test Channel = MCH

6.1.1.1.2.2.1 Test RB = RB1#0



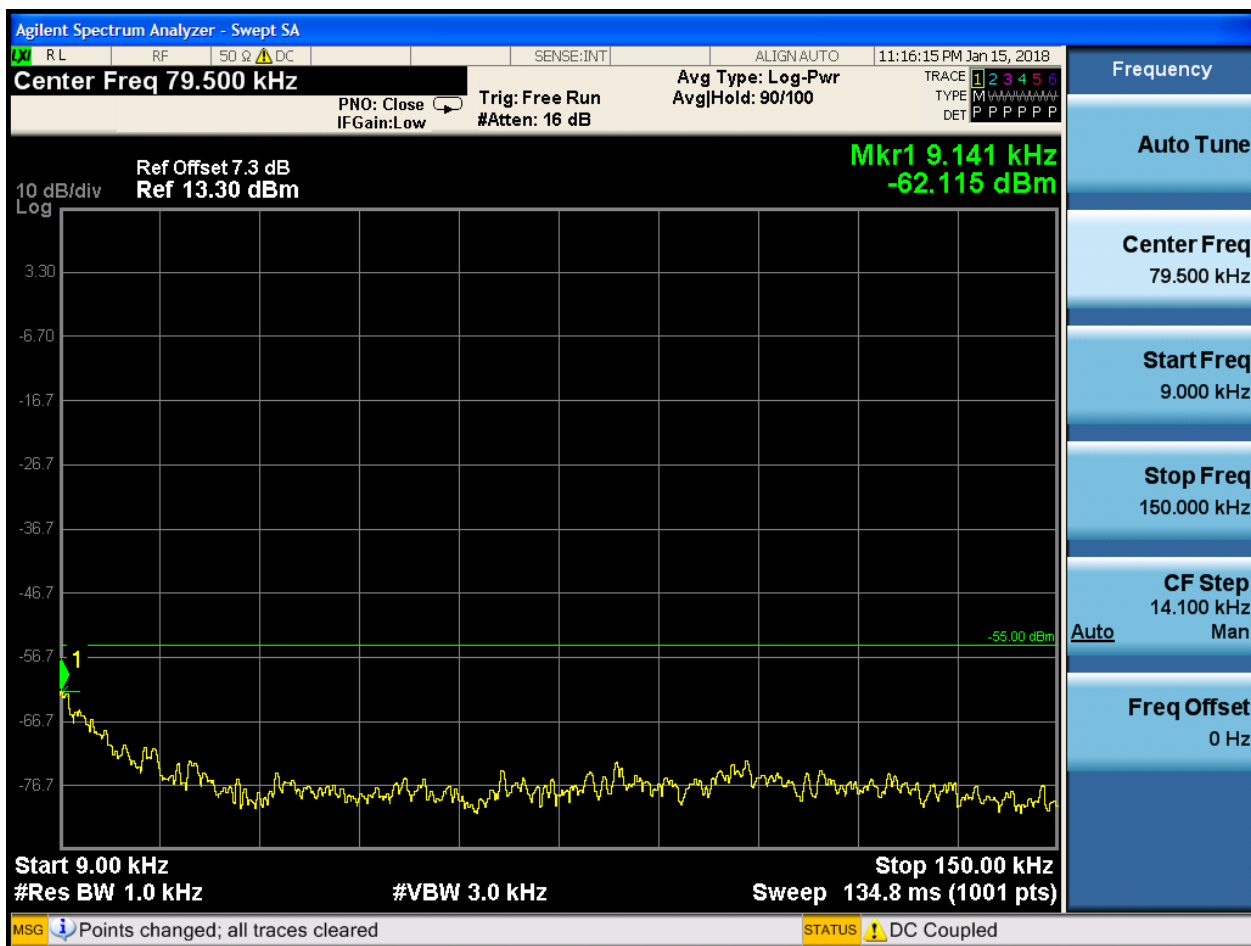


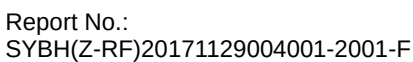


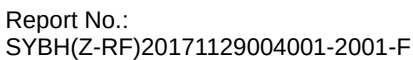


6.1.1.1.2.3 Test Channel = HCH

6.1.1.1.2.3.1 Test RB = RB1#0







6.1.1.1.3 Test Bandwidth = 15

6.1.1.1.3.1 Test Channel = LCH

6.1.1.1.3.1.1 Test RB = RB1#0

