Appendix A) RF Power Output

Test Band	Test Mode	Test Channel	Measured(dBm)	Limit (dBm)	Verdict
GSM850	GSM	LCH	32.71	38.5	PASS
		MCH	32.42	38.5	PASS
		HCH	33.09	38.5	PASS
	GPRS	LCH	32.58	38.5	PASS
		MCH	32.38	38.5	PASS
		HCH	33.07	38.5	PASS
Test Band	Test Mode	Test Channel	Measured(dBm)	Limit (dBm)	Verdict
GSM1900	GSM	LCH	27.18	33	PASS
		MCH	27.30	33	PASS
		HCH	27.04	33	PASS
	GPRS	LCH	27.09	33	PASS
		MCH	27.25	33	PASS
		HCH	26.89	33	PASS

Appendix A) Peak-to-Average Ratio

Test Band	Test Mode	Test Channel	Measured (dB)	Limit (dB)	Verdict
GSM850	GSM	LCH	0.64	13	PASS
		MCH	0.68	13	PASS
		HCH	0.59	13	PASS
	GPRS	LCH	0.54	13	PASS
		MCH	0.48	13	PASS
		HCH	0.56	13	PASS
Test Band	Test Mode	Test Channel	Measured (dB)	Limit (dB)	Verdict
GSM1900	GSM	LCH	1.54	13	PASS
		MCH	1.49	13	PASS
		HCH	1.52	13	PASS
	GPRS	LCH	1.48	13	PASS
		MCH	1.42	13	PASS
		HCH	1.46	13	PASS

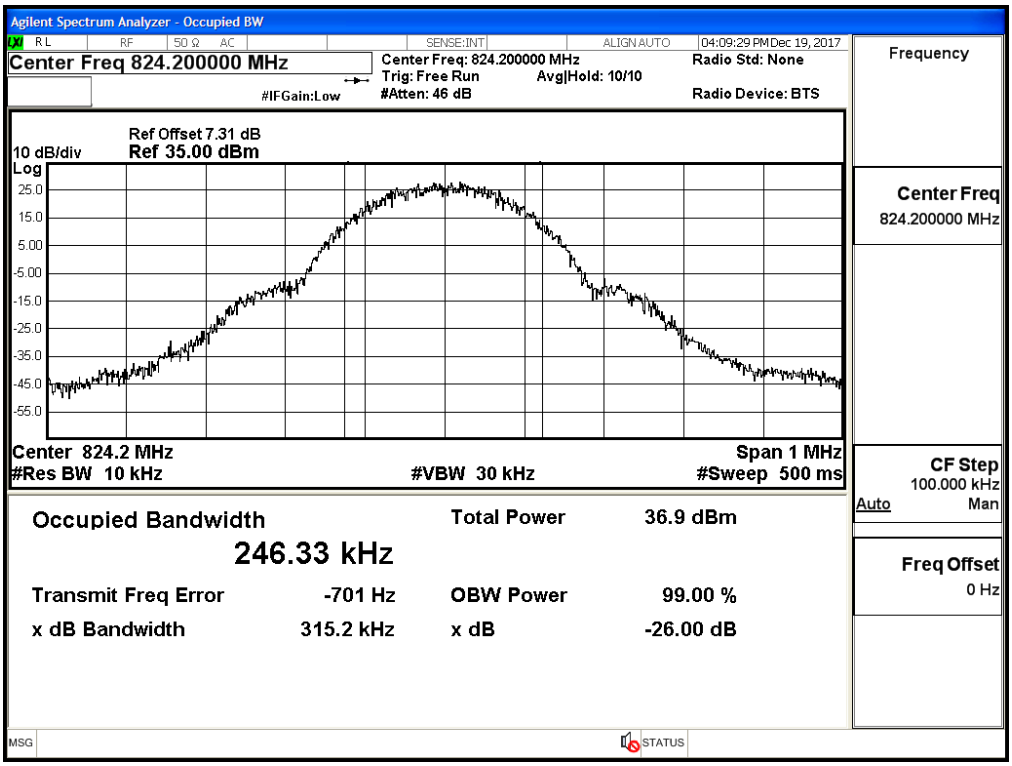
Appendix A) BandWidth

Test Band	Test Mode	Test Channel	Occupied Bandwidth (**KHZ**)	Emission Bandwidth (KHZ)	Verdict
GSM850	GSM	LCH	246.3	315	PASS
		MCH	245.4	317	PASS
		HCH	247.5	309	PASS
	GPRS	LCH	245.4	312	PASS
		MCH	246.7	316	PASS
		HCH	242.9	311	PASS

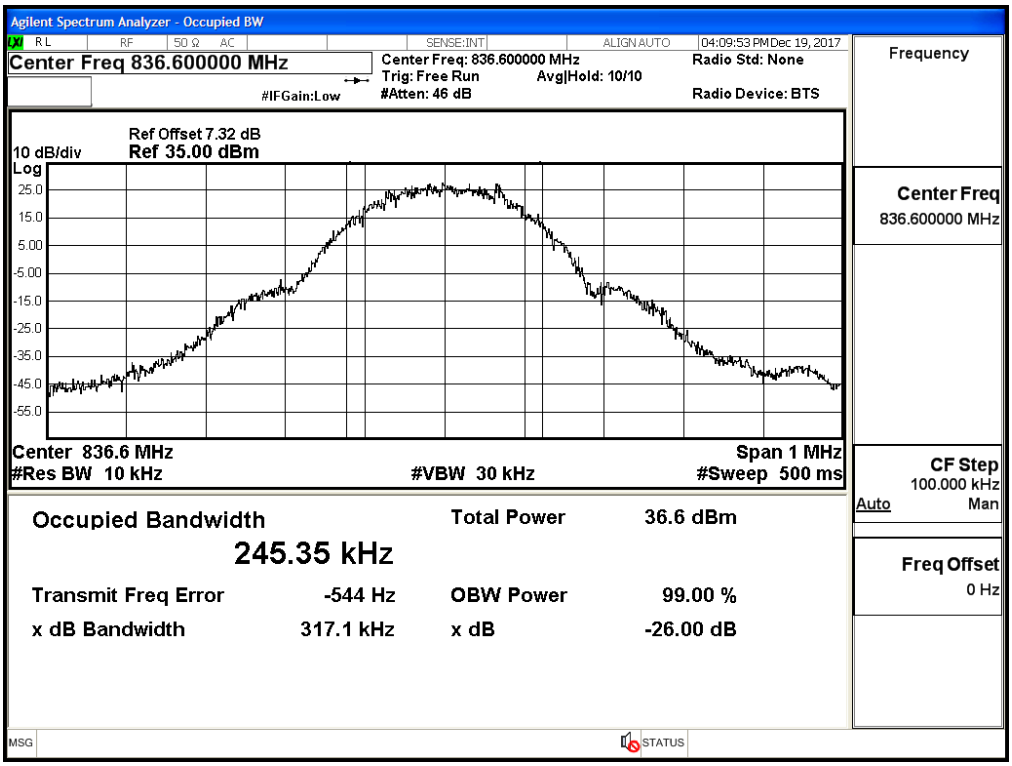
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM1900	GSM	LCH	245.0	312	PASS
		MCH	246.0	316	PASS
		HCH	247.6	318	PASS
	GPRS	LCH	244.6	317	PASS
		MCH	246.0	312	PASS
		HCH	245.0	316	PASS

For GSM/Test Band=GSM850/Test Mode=GSM

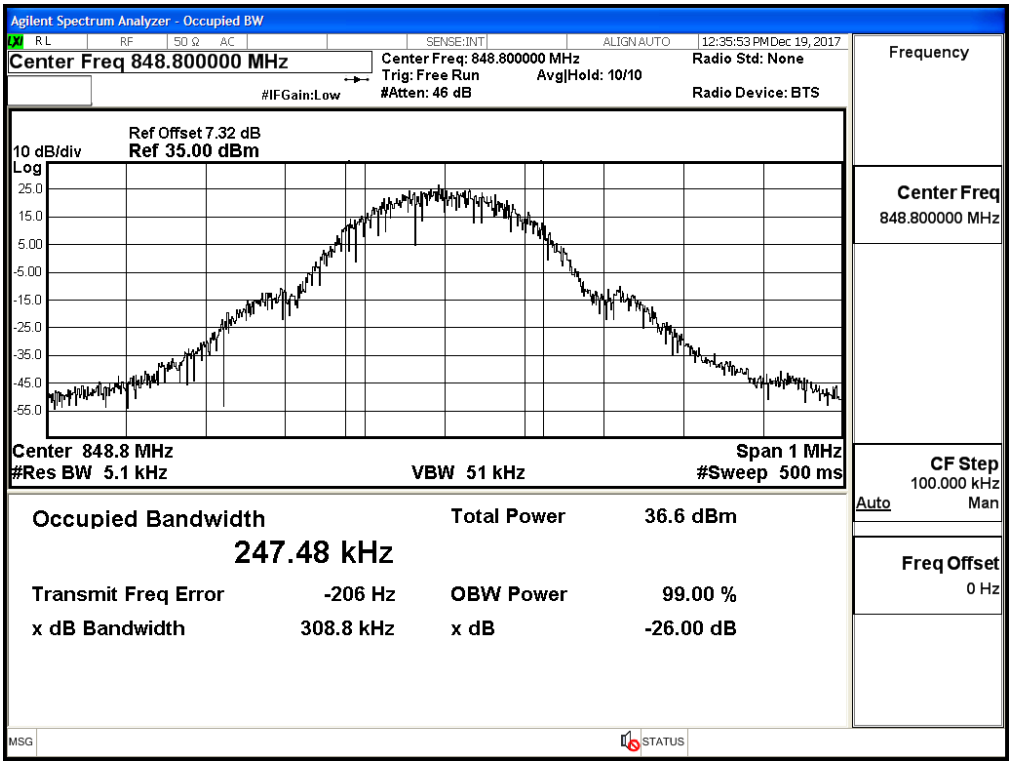
Test Channel=LCH



Test Channel=MCH

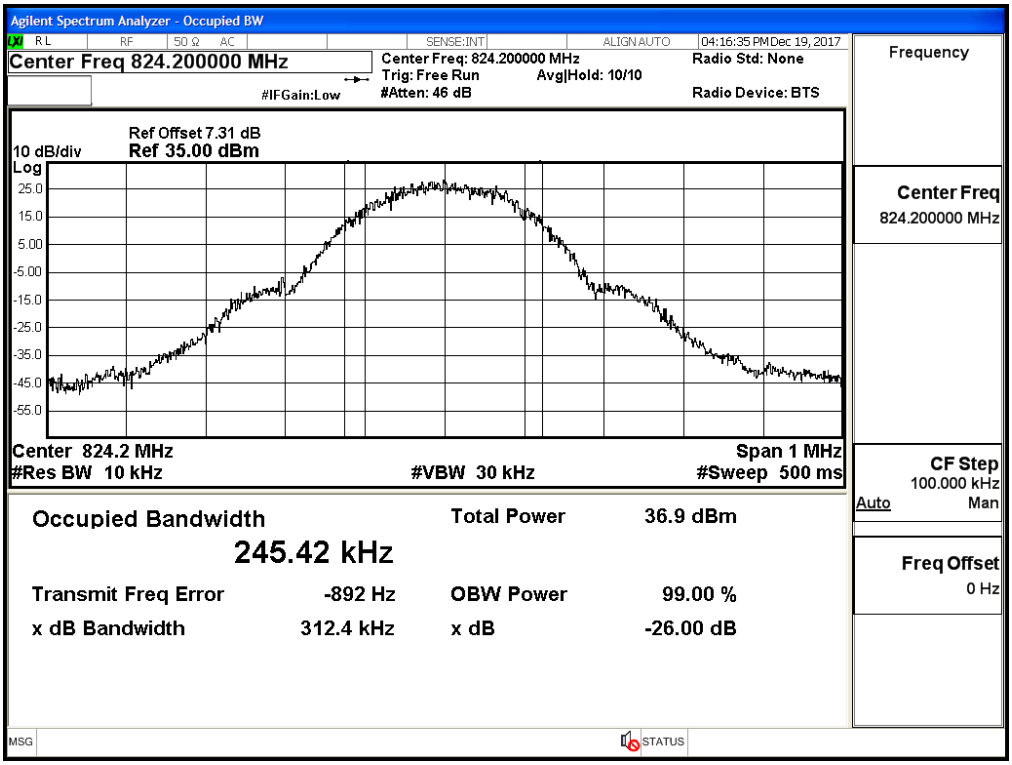


Test Channel=HCH

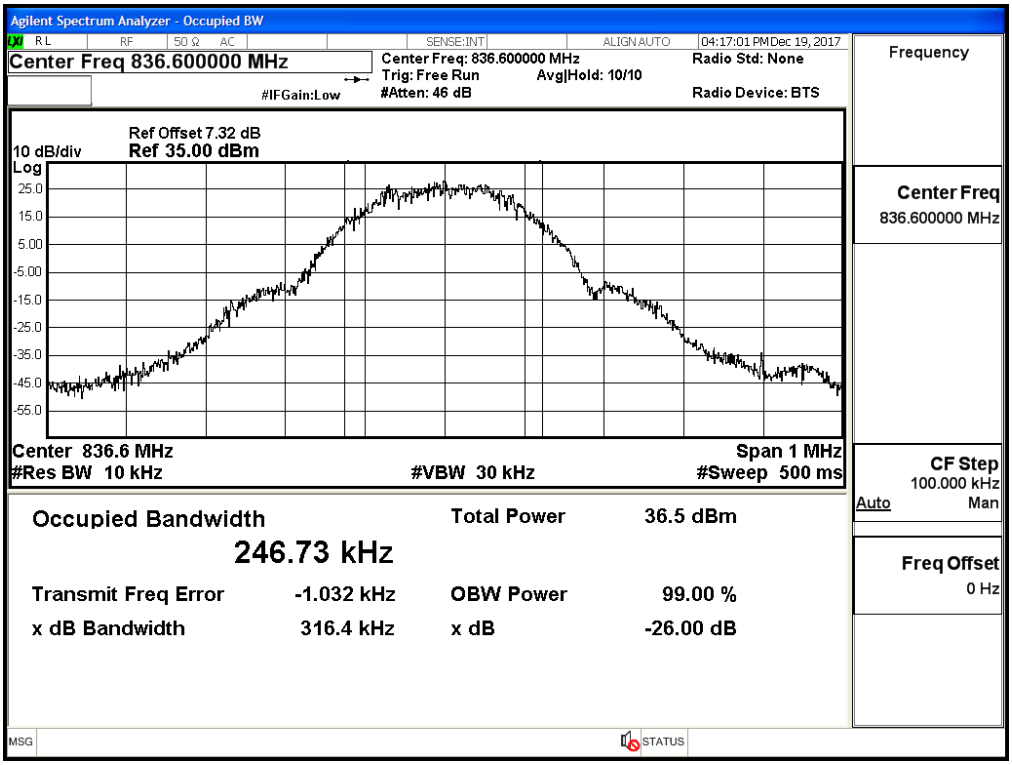


Test Mode=GPRS

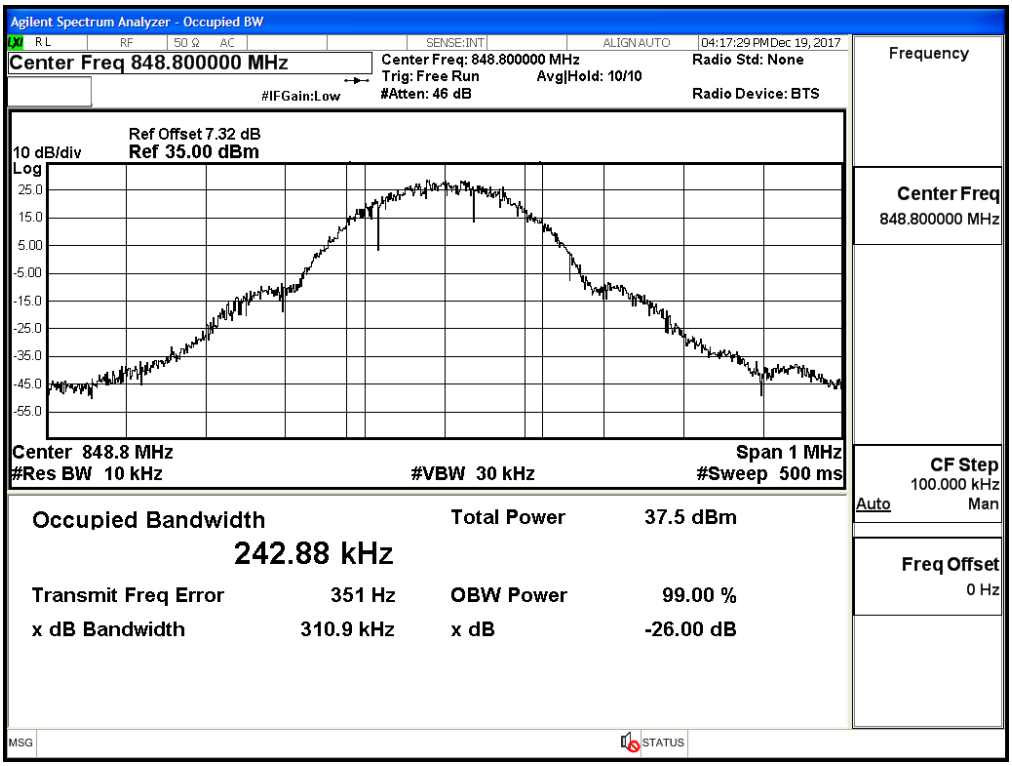
Test Channel=LCH



Test Channel=MCH

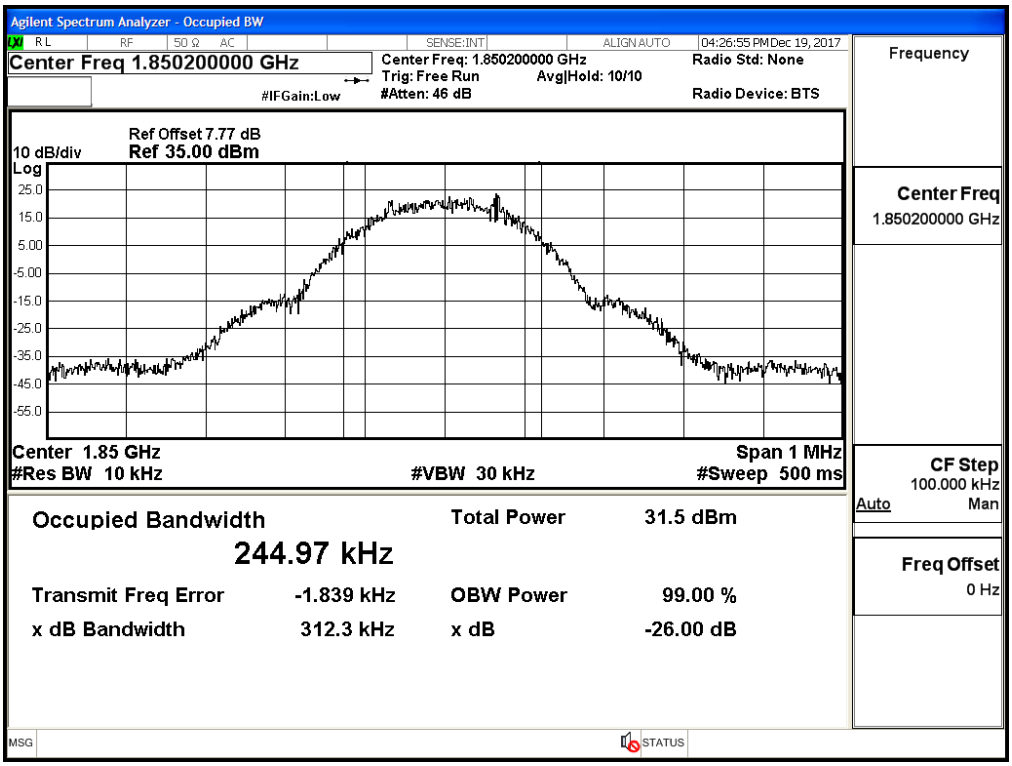


Test Channel=HCH

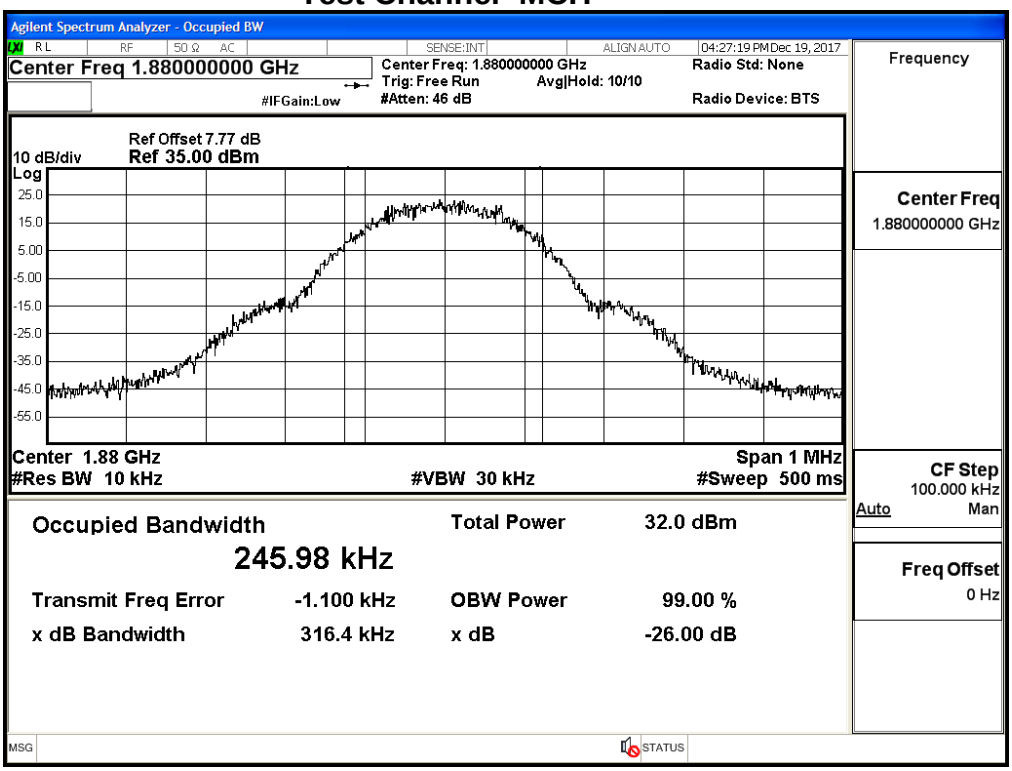


Test Band=GSM1900/Test Mode=GSM

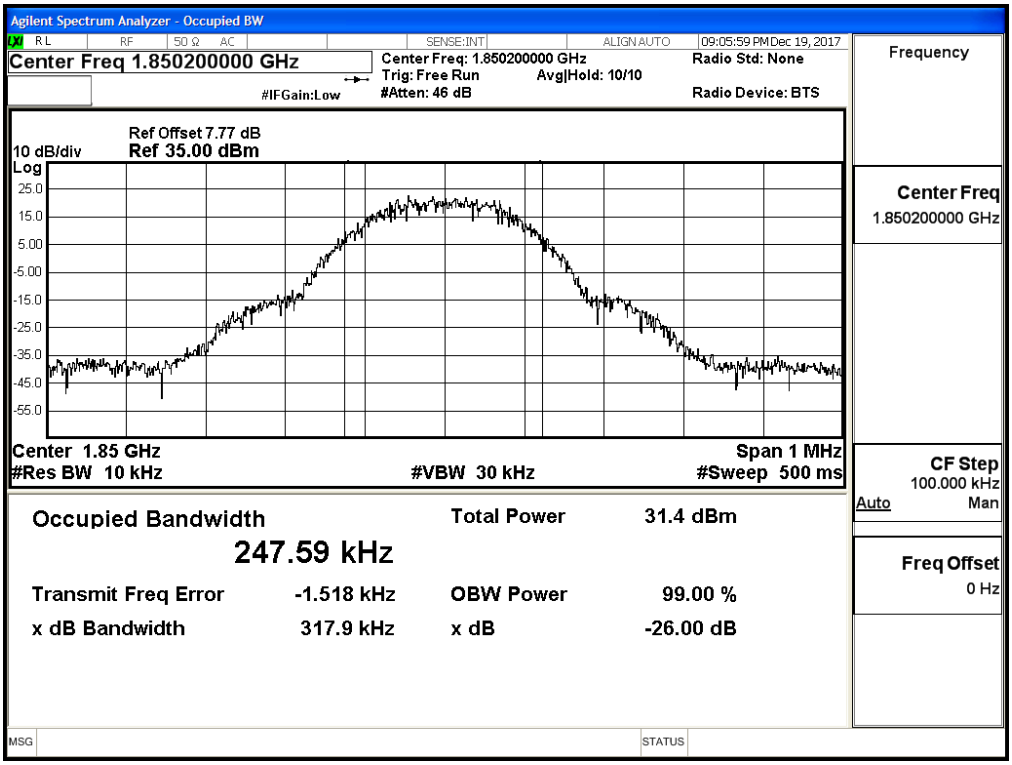
Test Channel=LCH



Test Channel=MCH

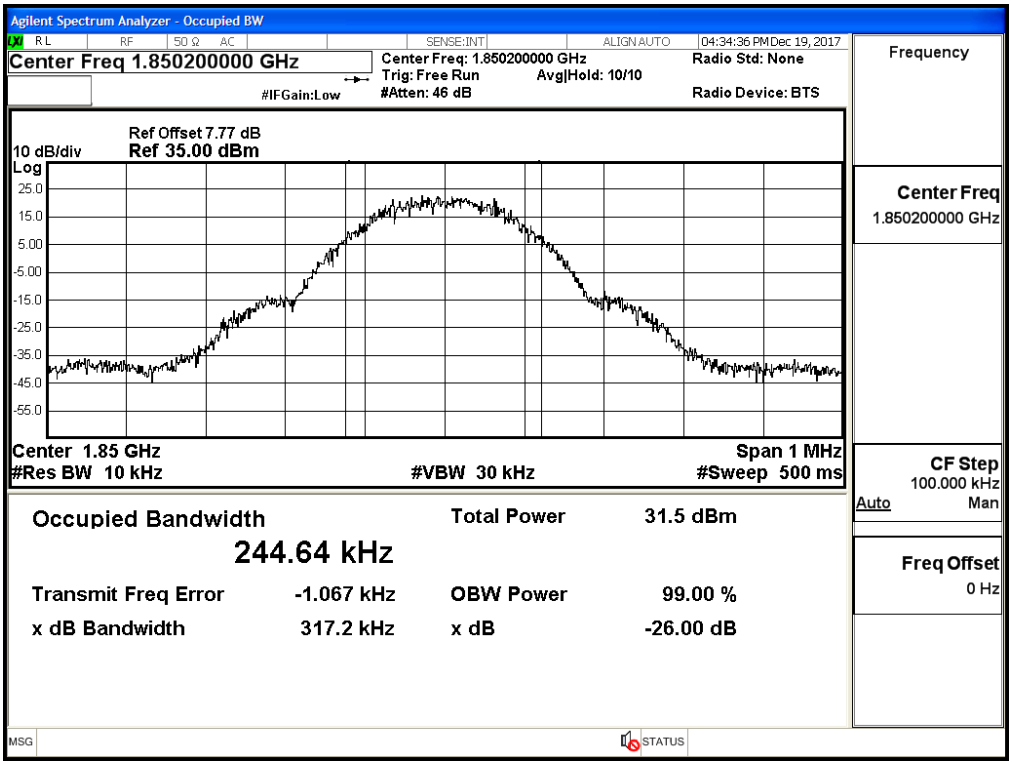


Test Channel=HCH

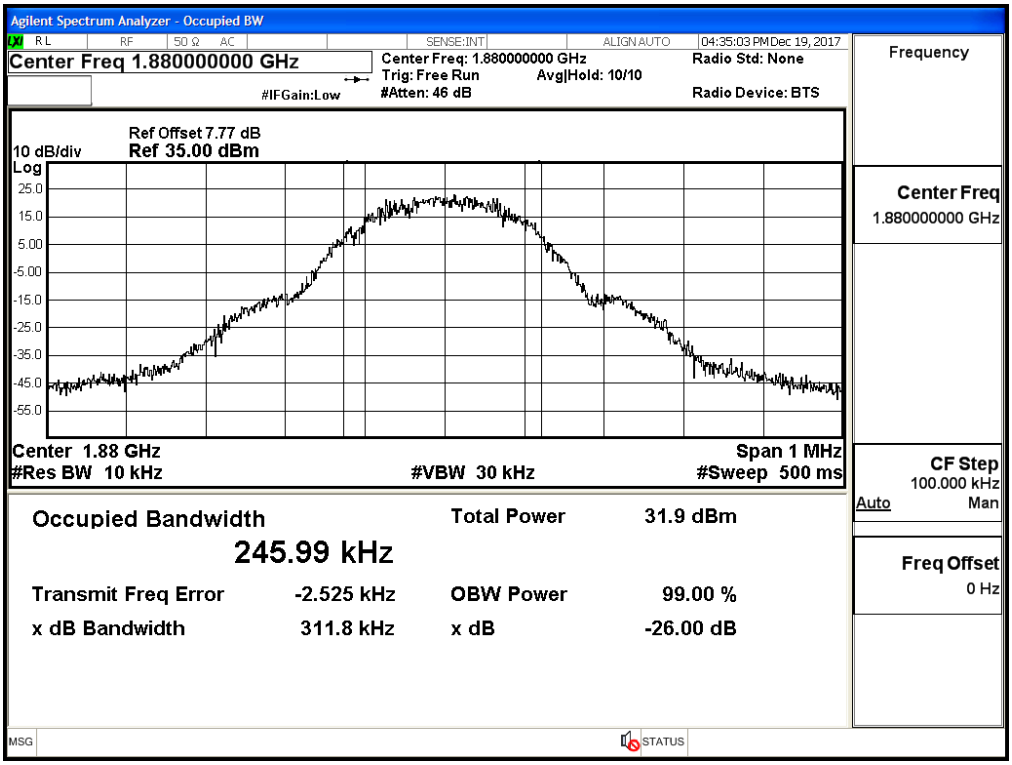


Test Mode=GPRS

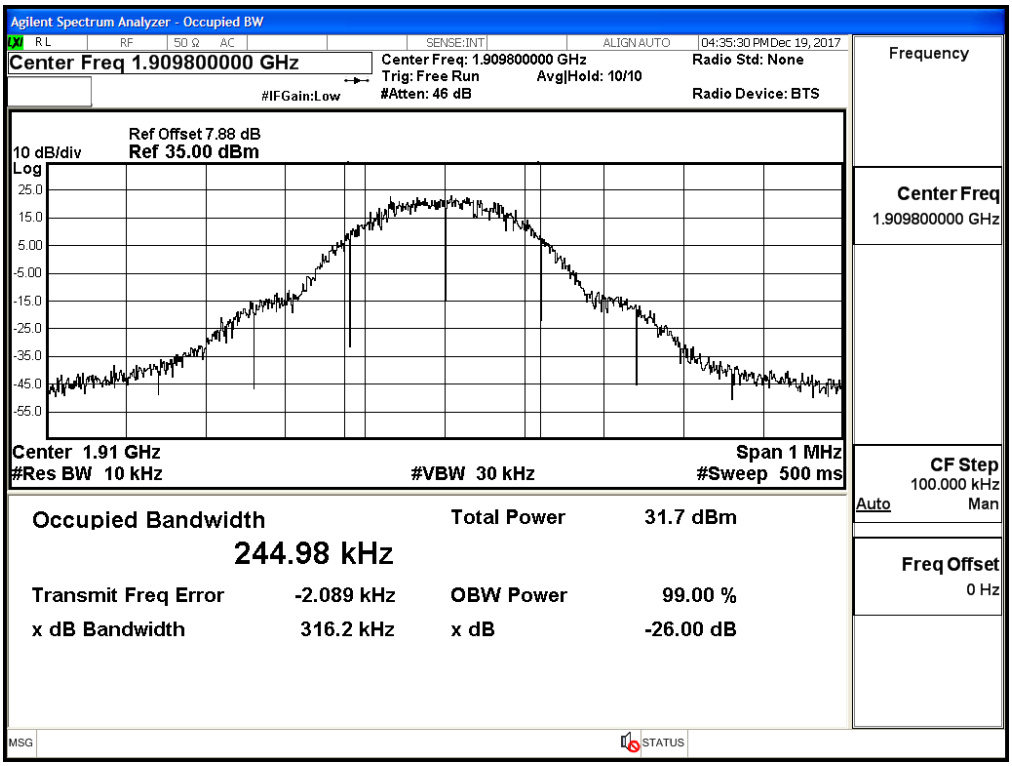
Test Channel=LCH



Test Channel=MCH



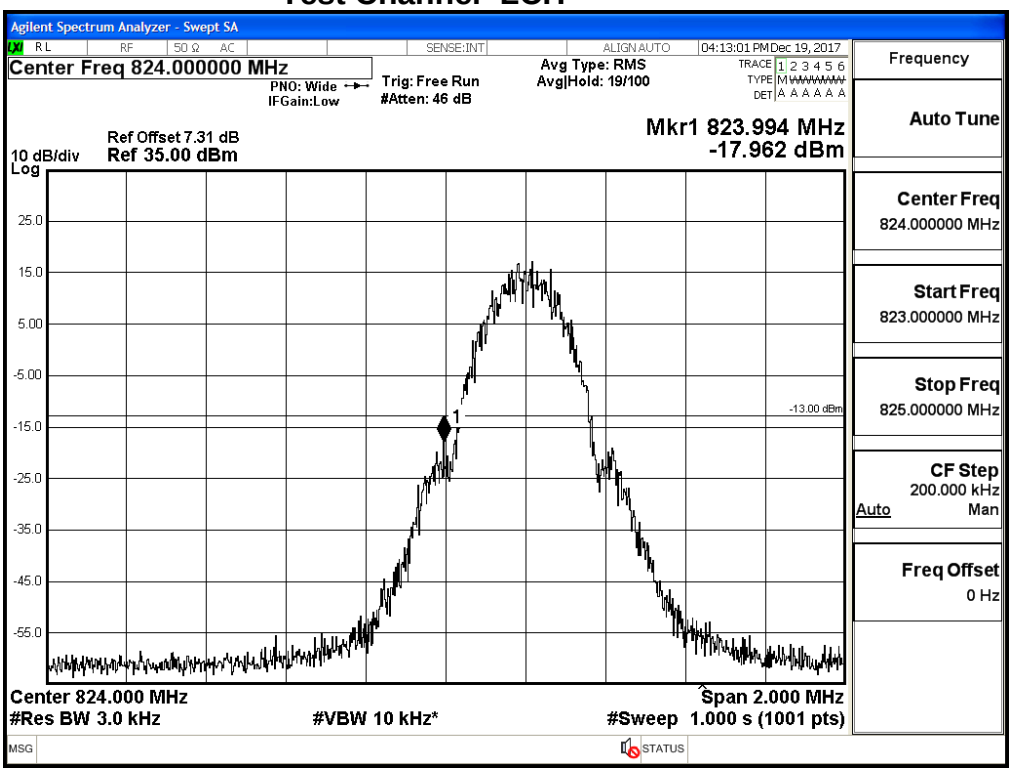
Test Channel=HCH



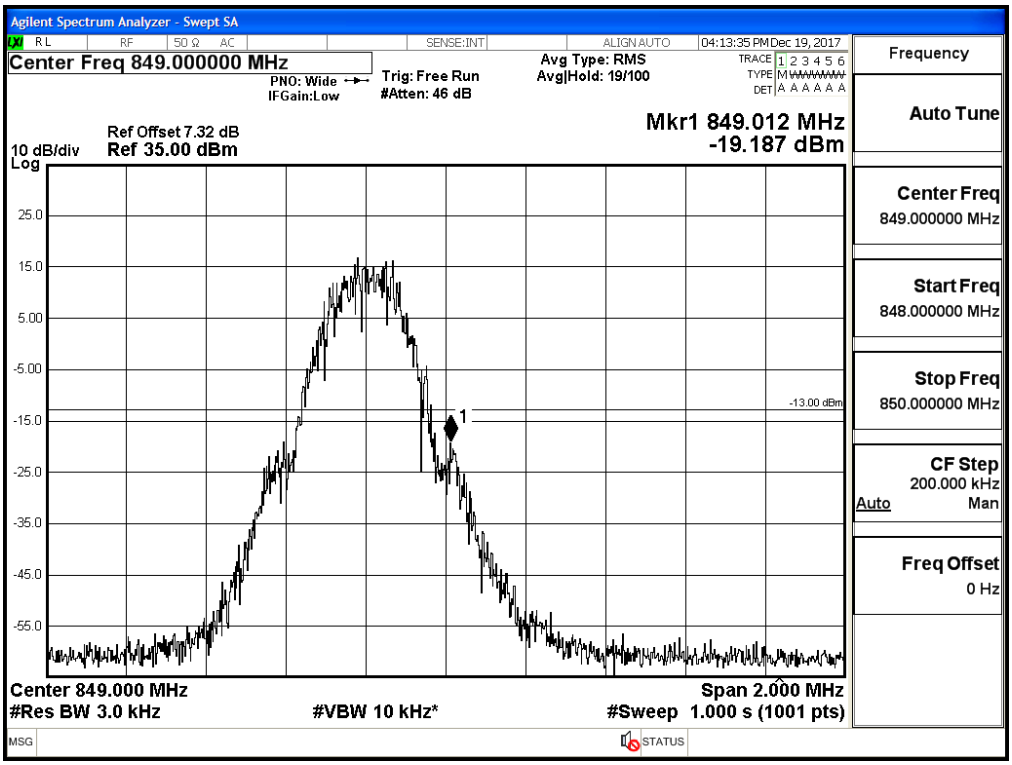
Appendix A)Band Edges Compliance

For GSM/Test Band=GSM850/Test Mode=GSM

Test Channel=LCH

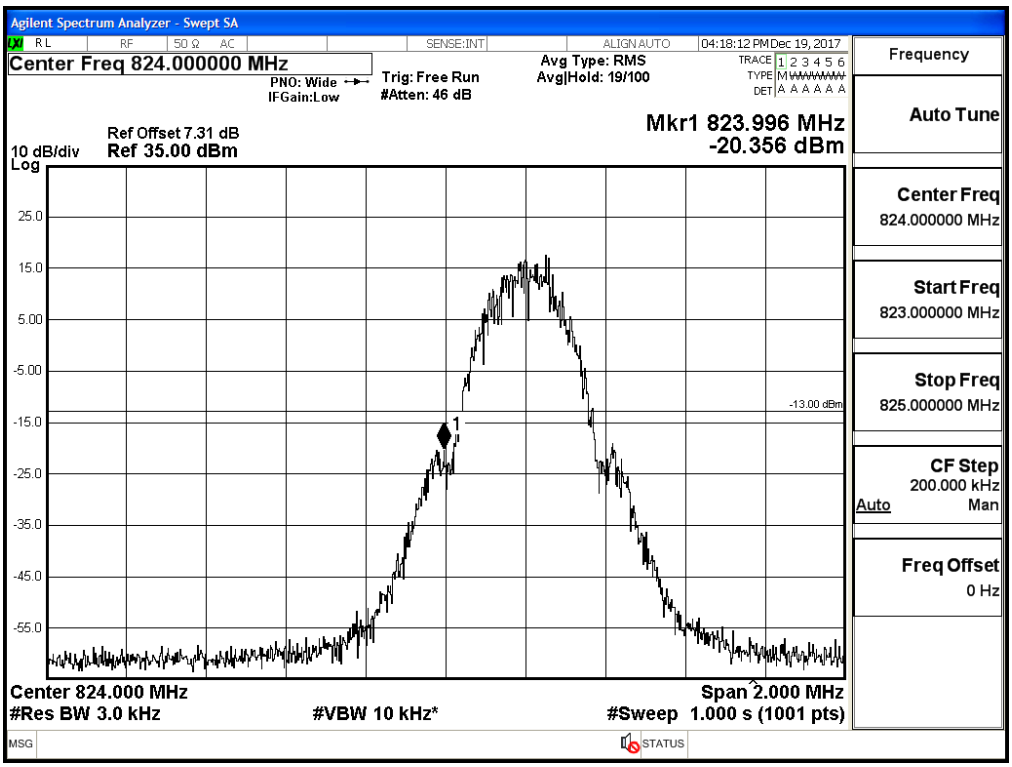


Test Channel=HCH

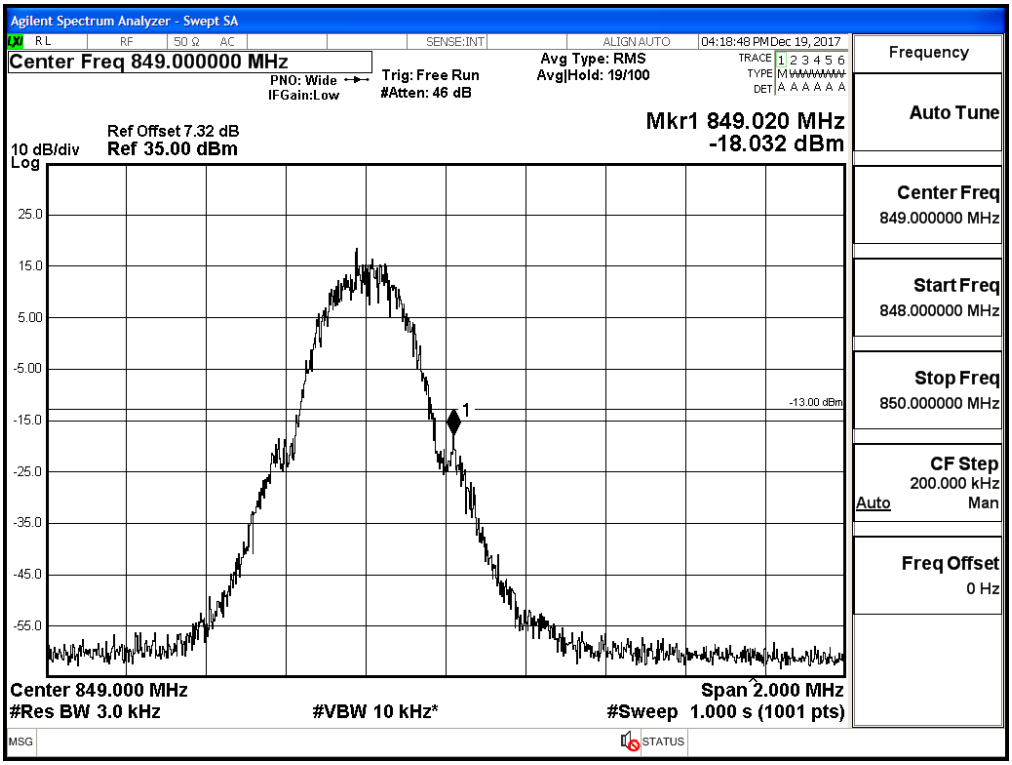


Test Mode=GPRS

Test Channel=LCH

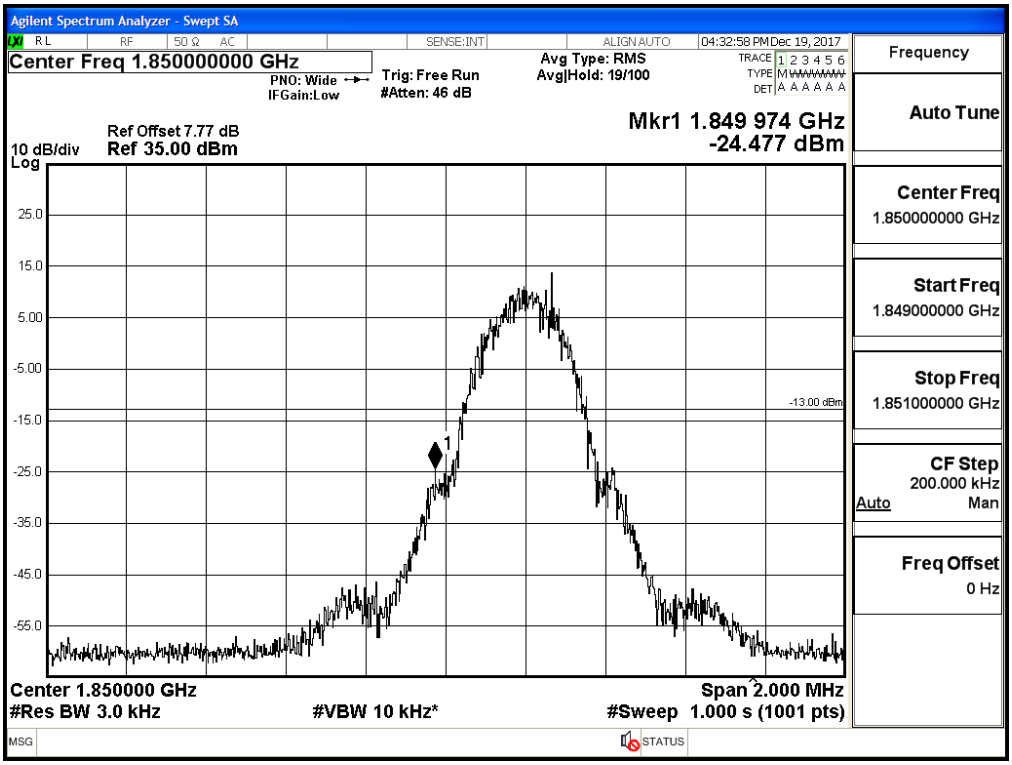


Test Channel=HCH

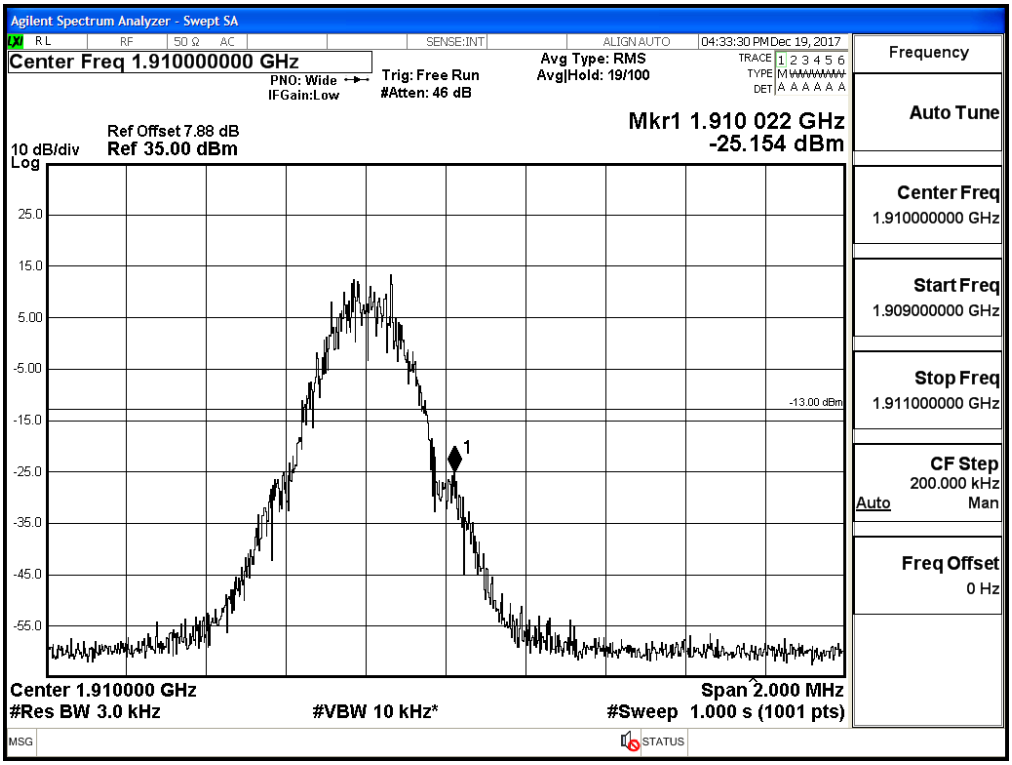


Test Band=GSM1900/Test Mode=GSM

Test Channel=LCH

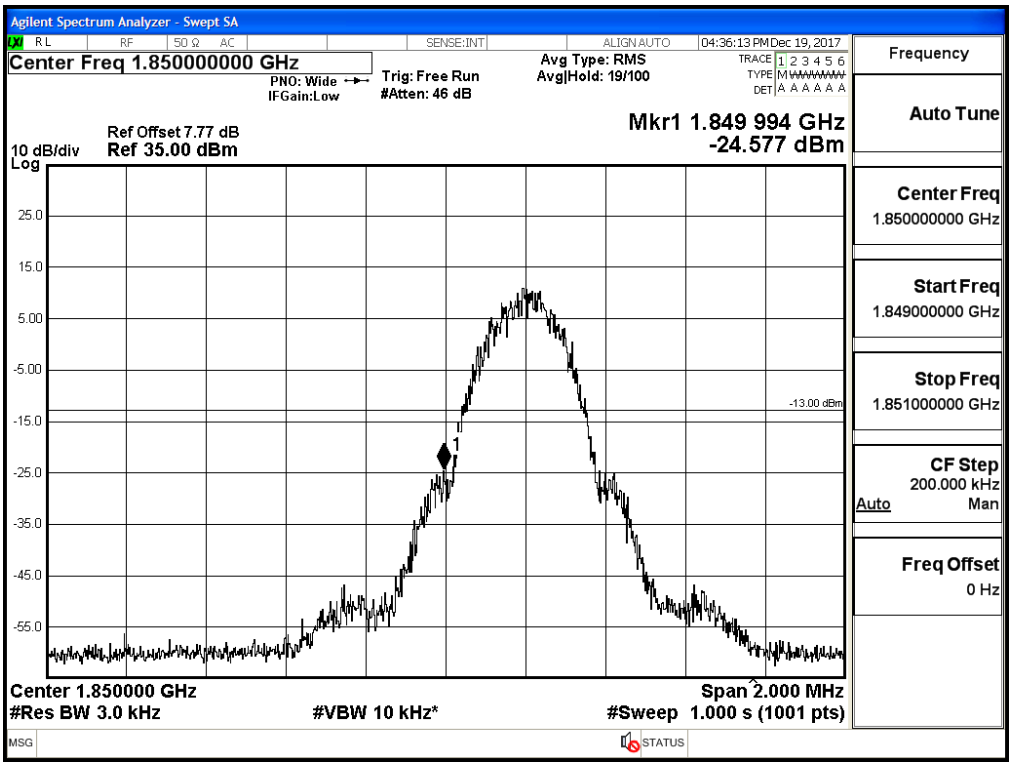


Test Channel=HCH

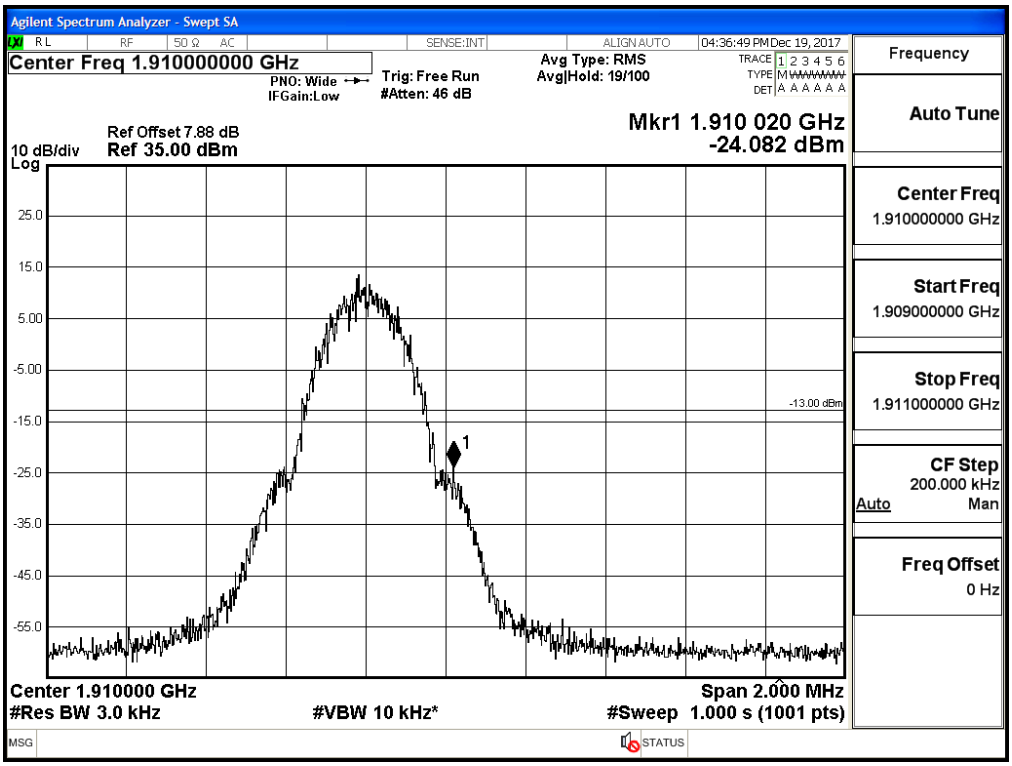


Test Mode=GPRS

Test Channel=LCH



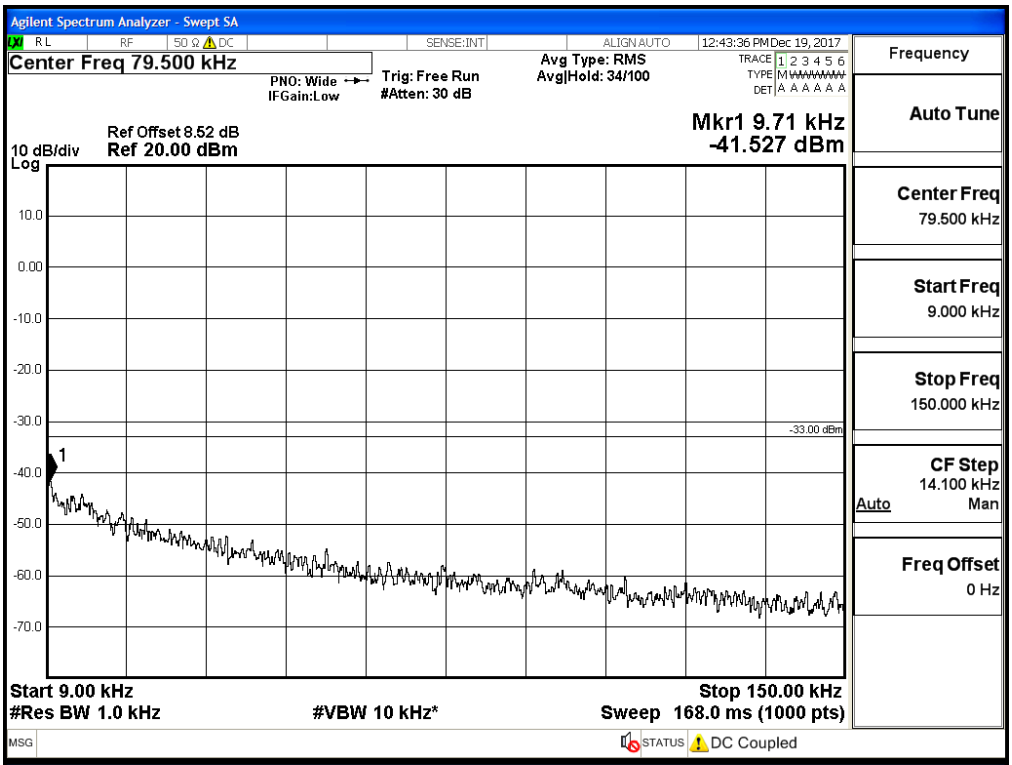
Test Channel=HCH

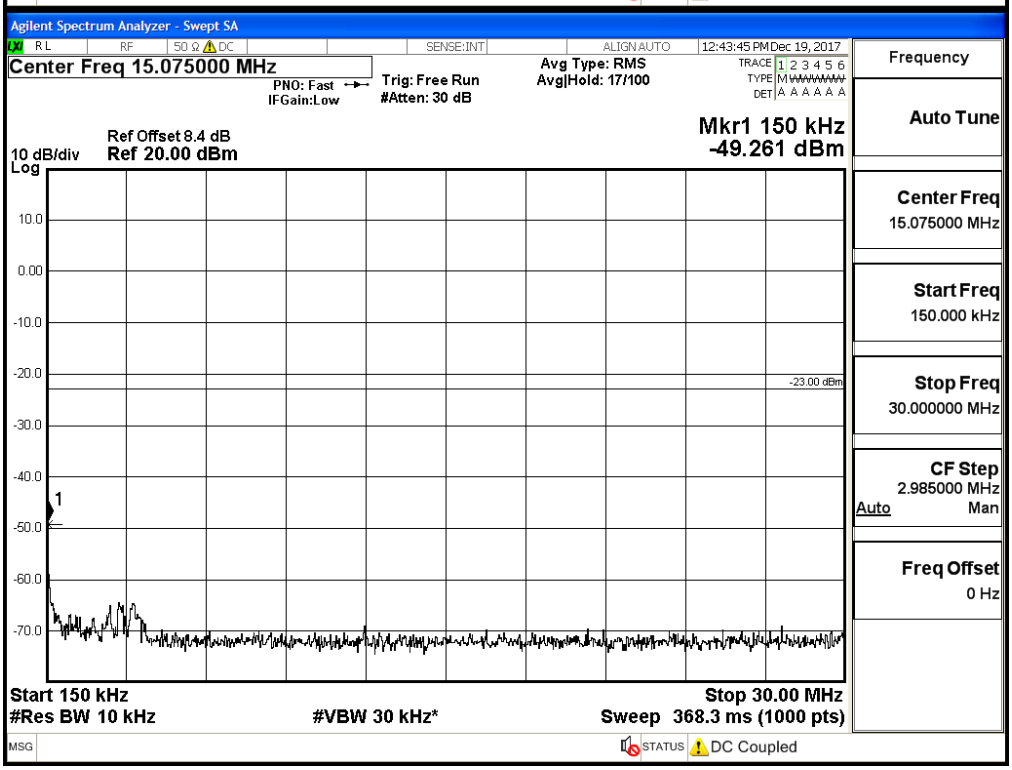


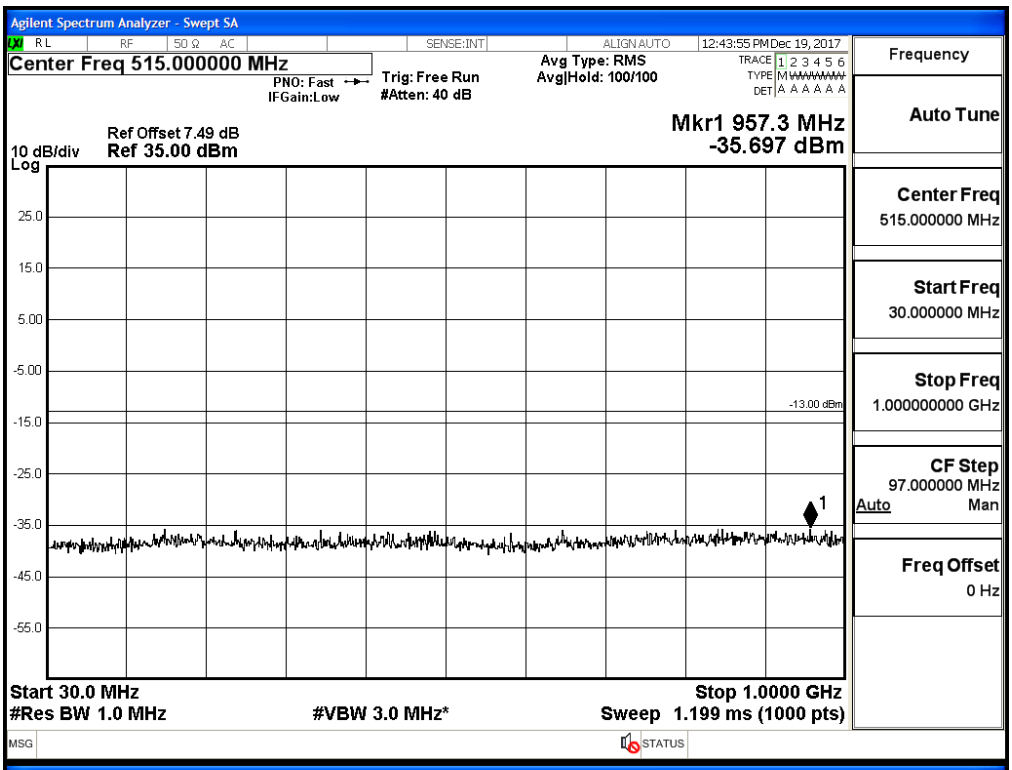
Appendix A)Spurious Emission at Antenna Terminal

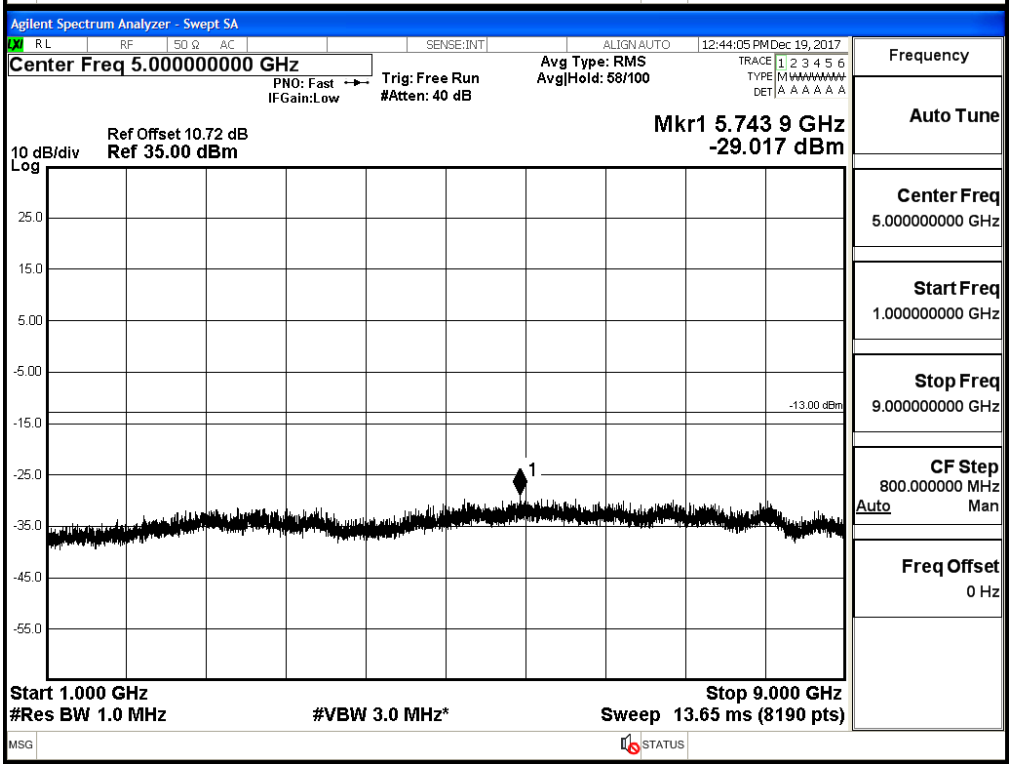
For GSM/Test Band=GSM850/Test Mode=GSM

Test Channel=LCH

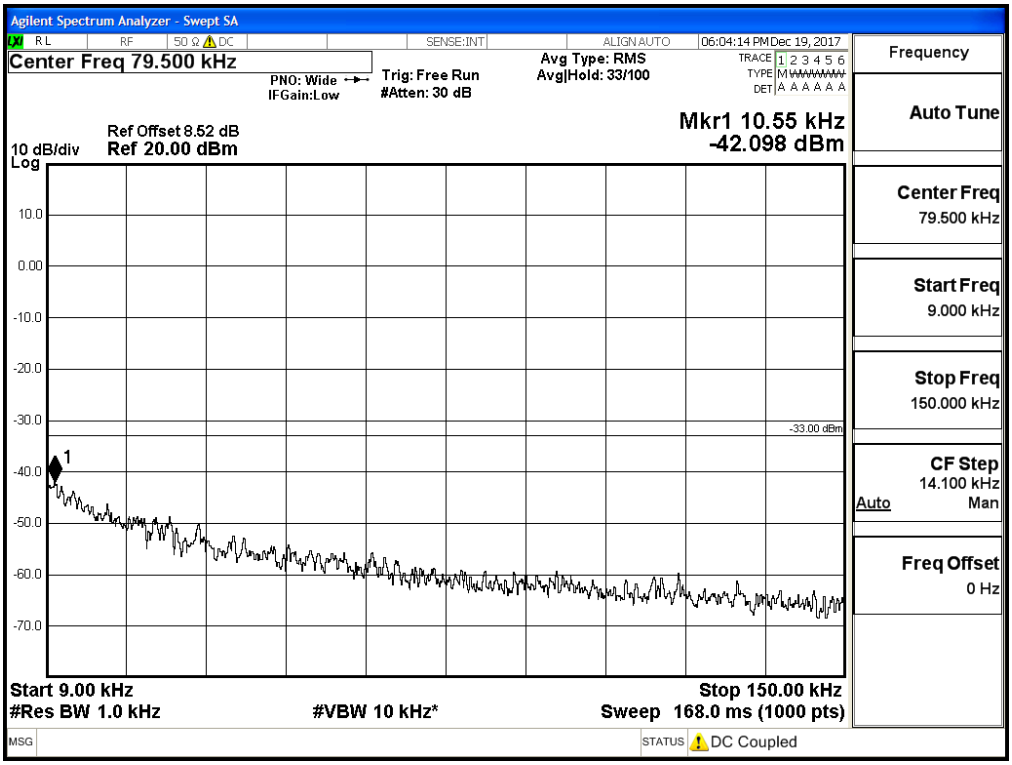


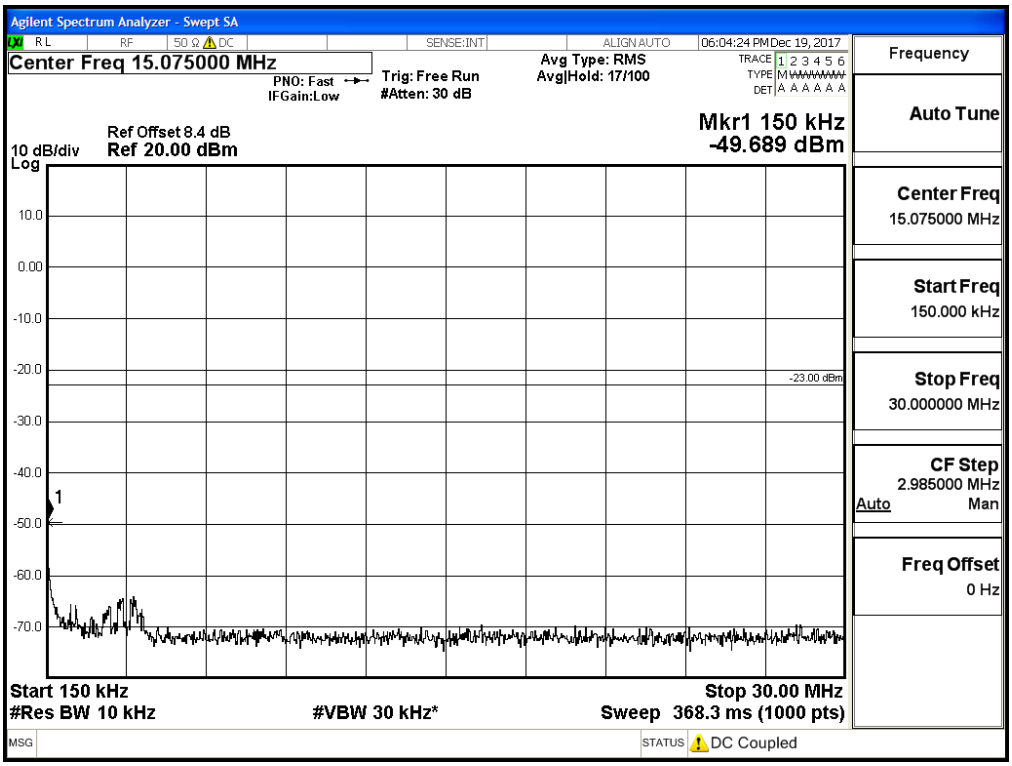


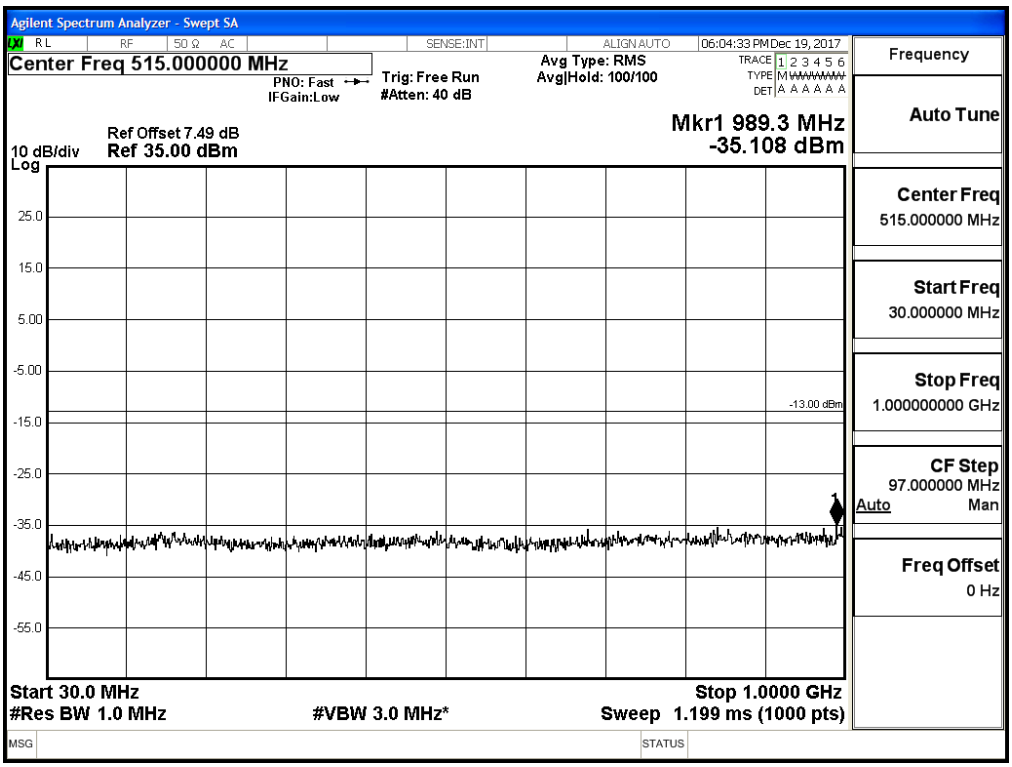

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
12:43:55 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 957.3 MHz
-35.697 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

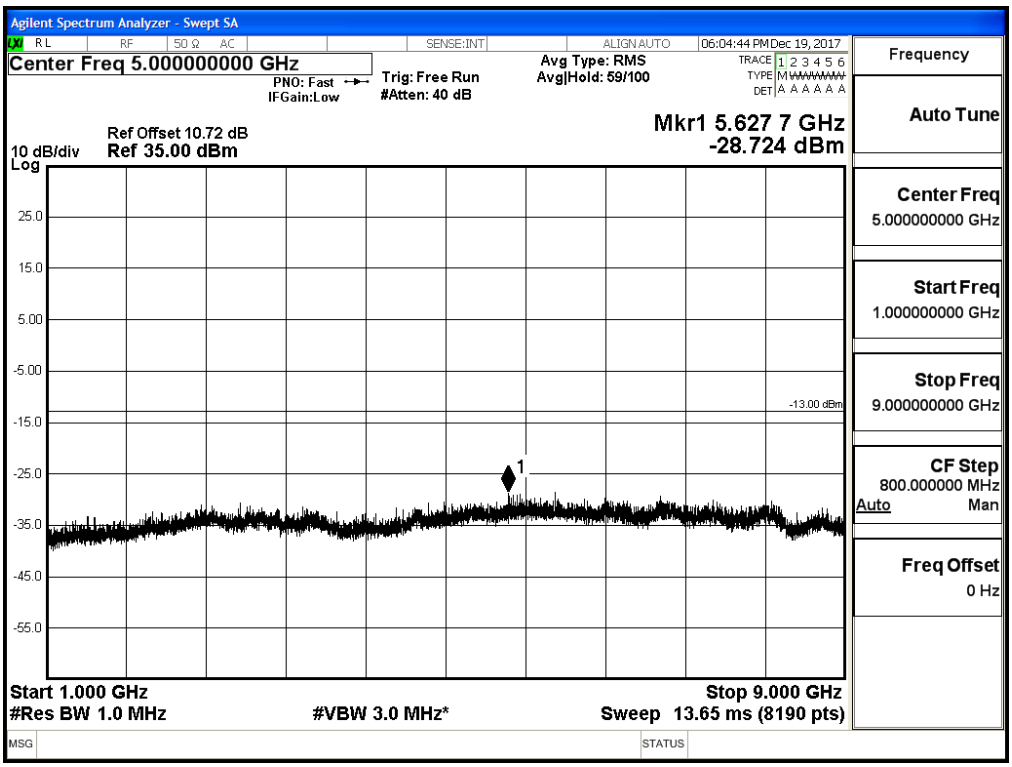

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 58/100
12:44:05 PM Dec 19, 2017
Ref Offset 10.72 dB
10 dB/div
Ref 35.00 dBm
Mkr1 5.743 9 GHz
-29.017 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 9.000 GHz
Sweep 13.65 ms (8190 pts)
Frequency
Auto Tune
Center Freq
5.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
9.000000000 GHz
CF Step
800.000000 MHz
Auto
Man
Freq Offset
0 Hz

Test Channel=MCH

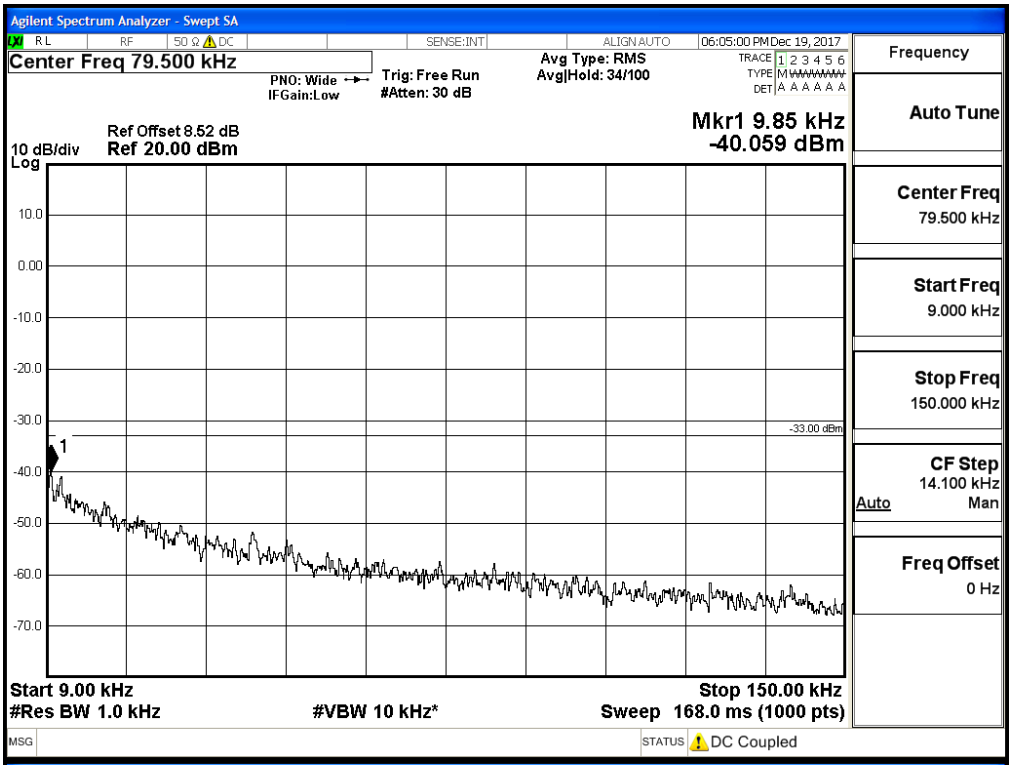


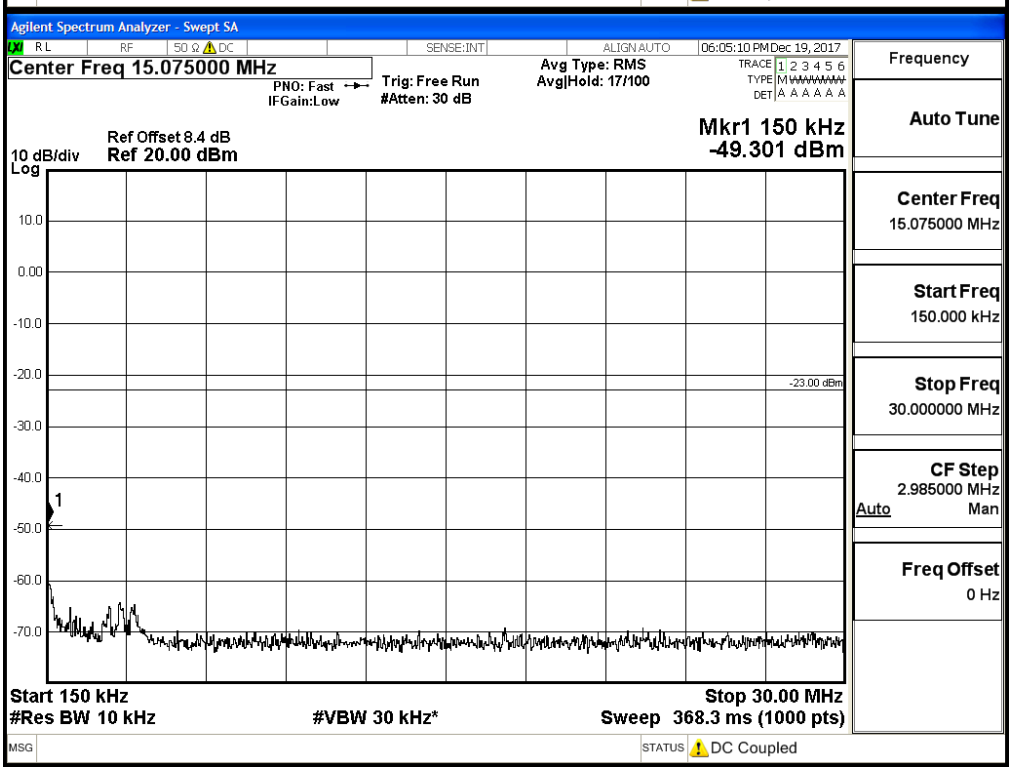


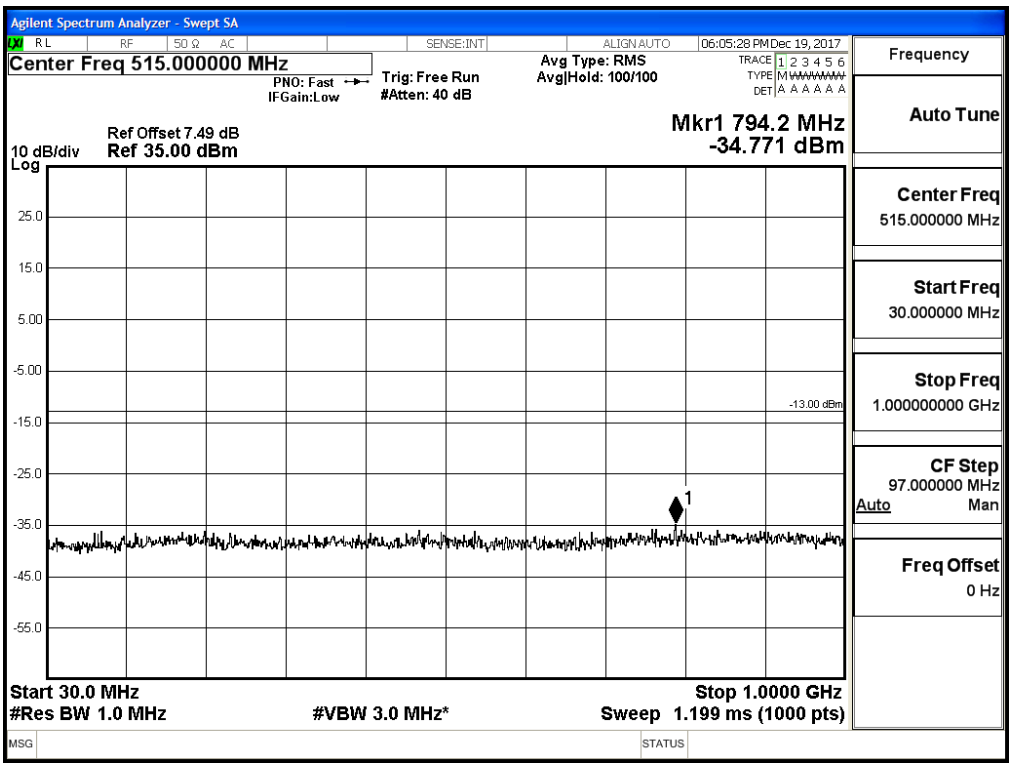

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
06:04:33 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 989.3 MHz
-35.108 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

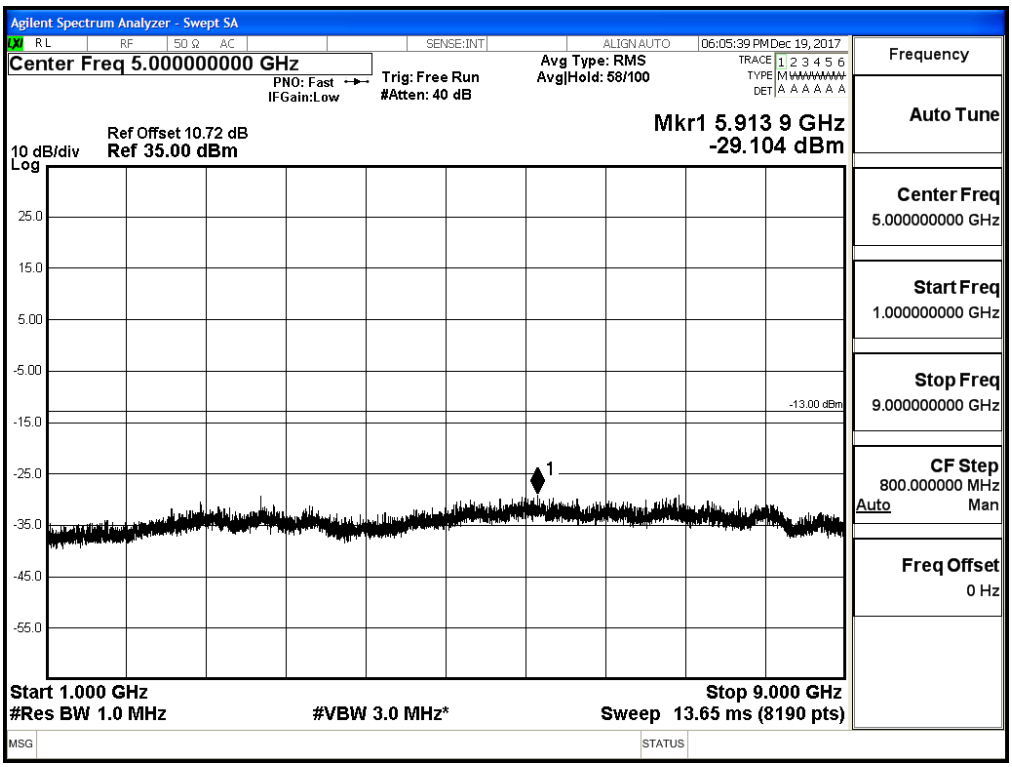

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 59/100
06:04:44 PM Dec 19, 2017
Ref Offset 10.72 dB
10 dB/div
Ref 35.00 dBm
Mkr1 5.627 7 GHz
-28.724 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 9.000 GHz
Sweep 13.65 ms (8190 pts)
Frequency
Auto Tune
Center Freq
5.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
9.000000000 GHz
CF Step
800.000000 MHz
Auto
Man
Freq Offset
0 Hz

Test Channel=HCH



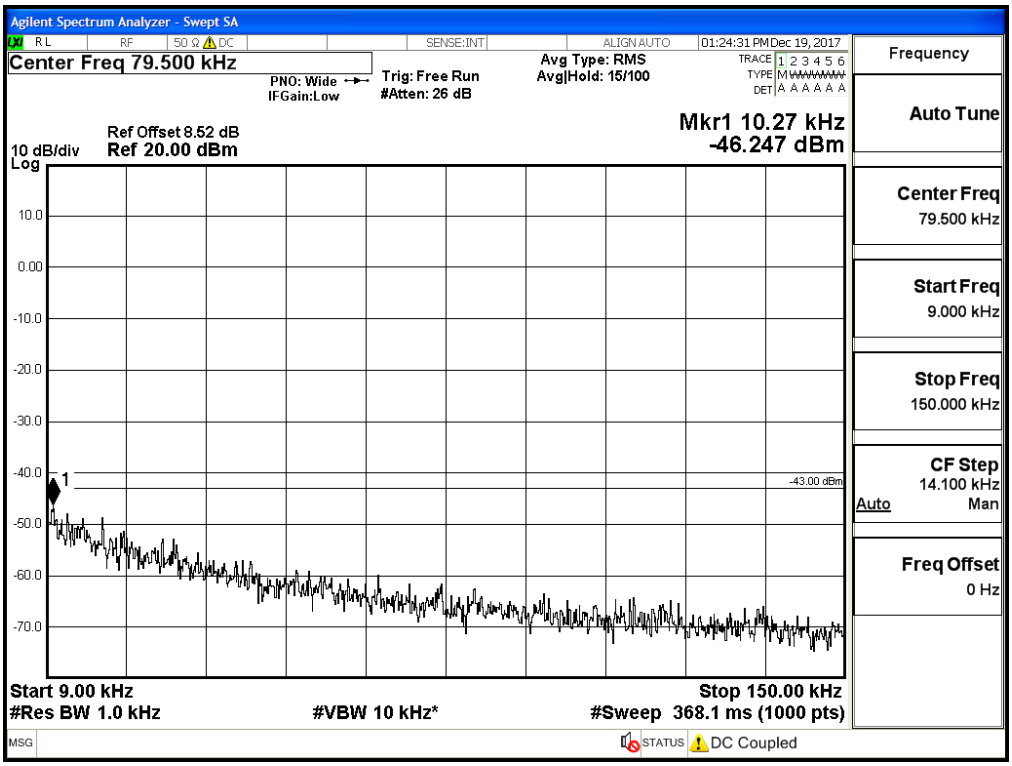


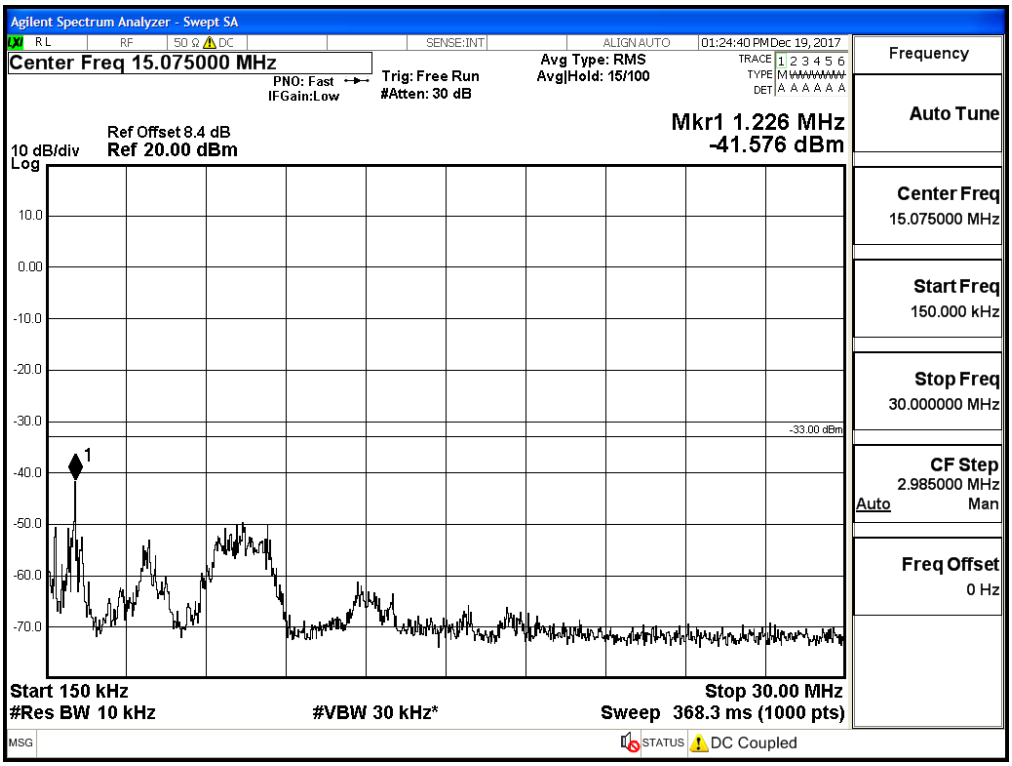

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
06:05:28 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 794.2 MHz
-34.771 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

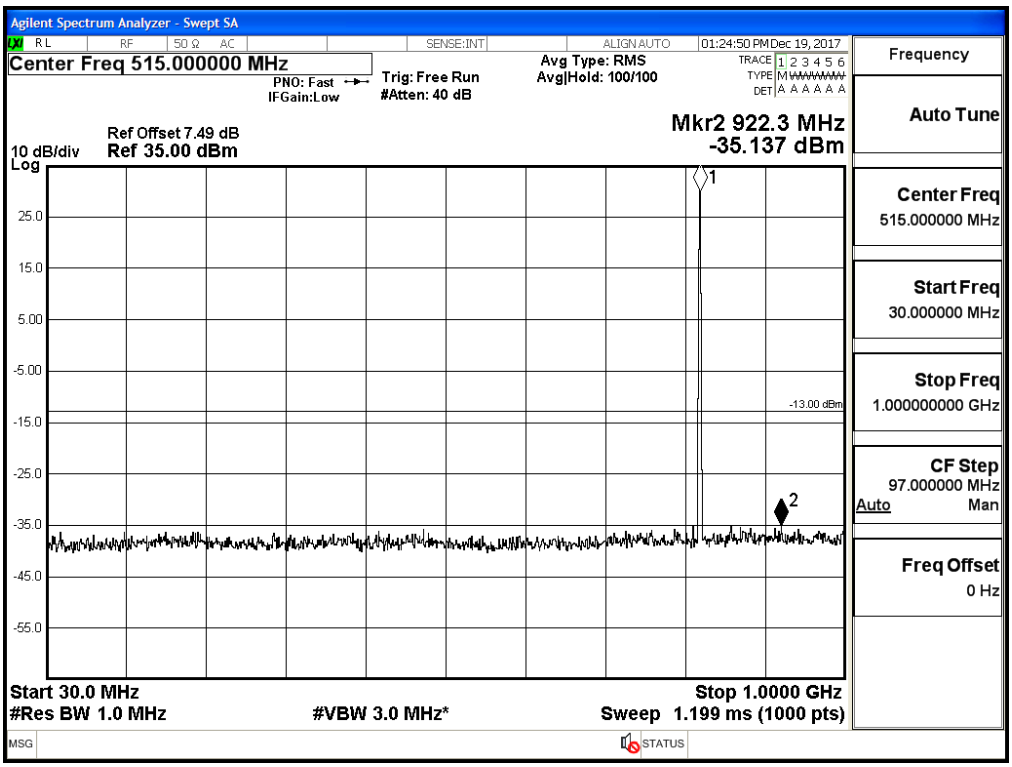

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 58/100
06:05:39 PM Dec 19, 2017
Ref Offset 10.72 dB
10 dB/div
Ref 35.00 dBm
Mkr1 5.913 9 GHz
-29.104 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 9.000 GHz
Sweep 13.65 ms (8190 pts)
Frequency
Auto Tune
Center Freq
5.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
9.000000000 GHz
CF Step
800.000000 MHz
Auto
Man
Freq Offset
0 Hz

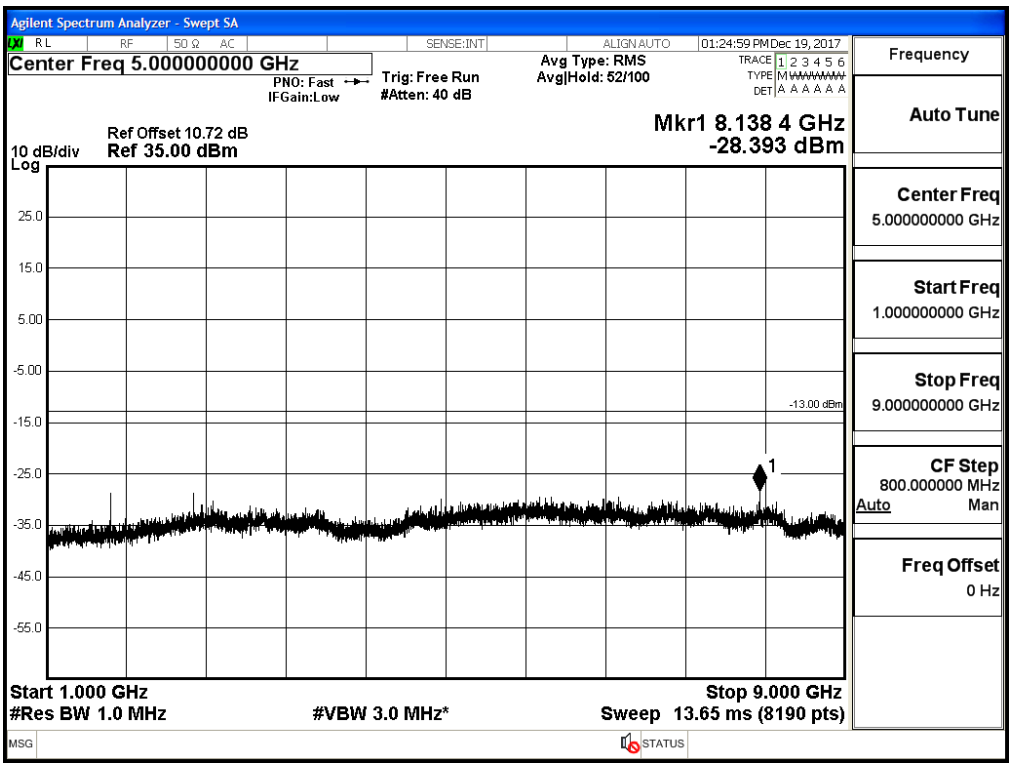
Test Mode=GPRS

Test Channel=LCH

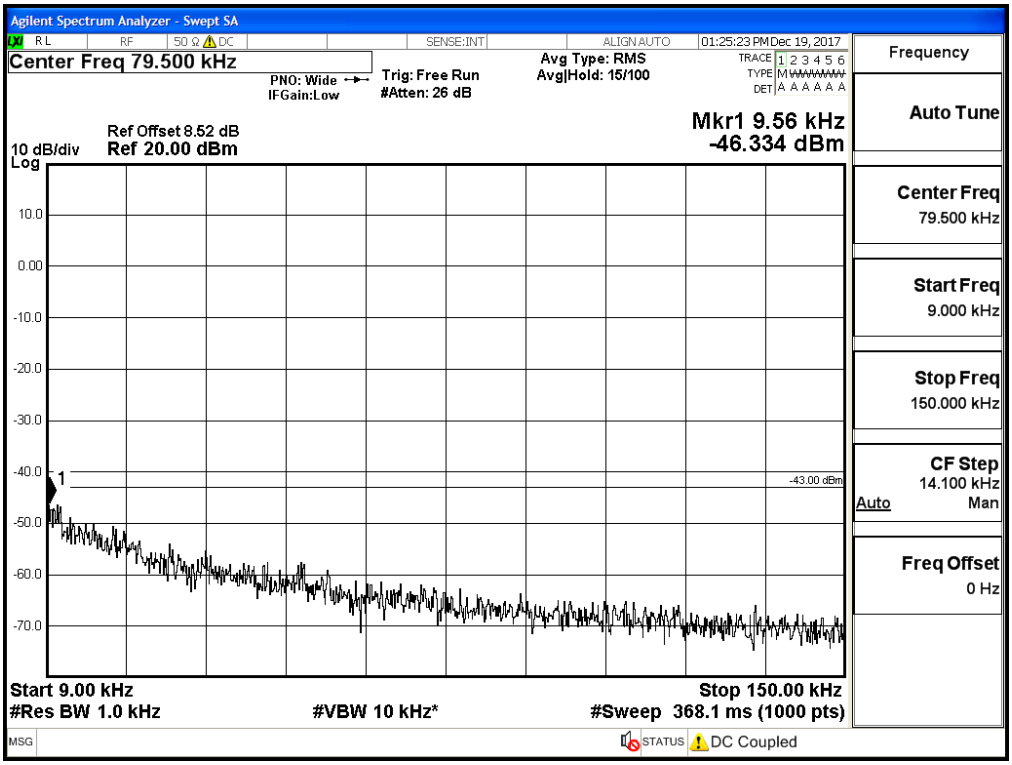


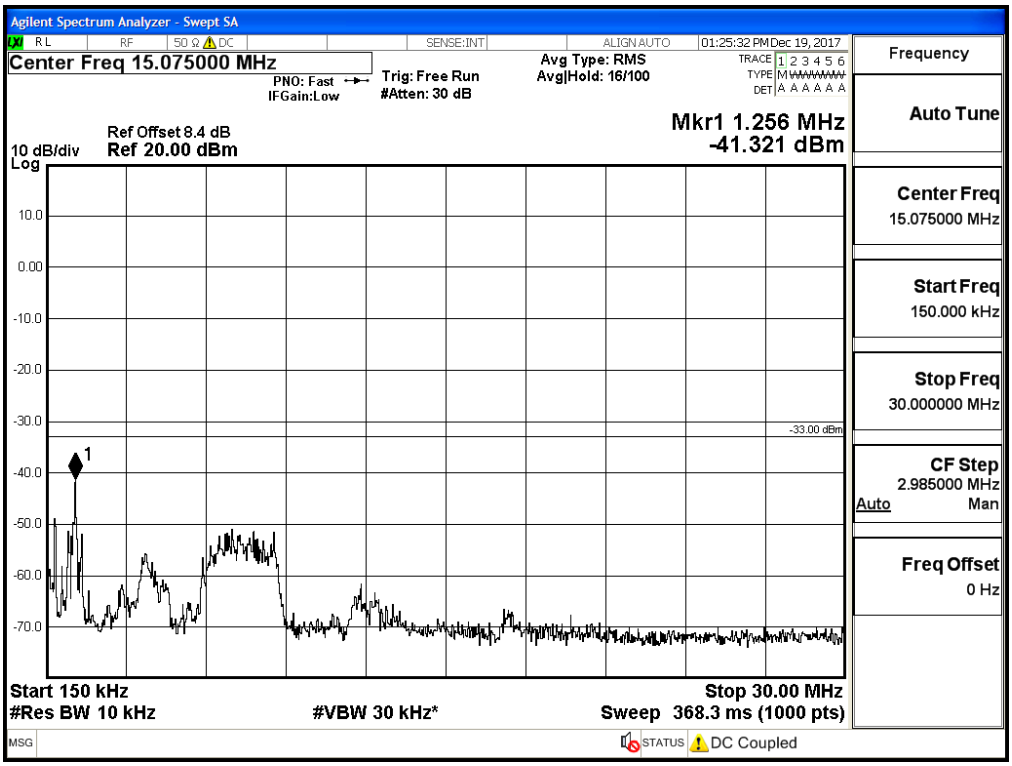


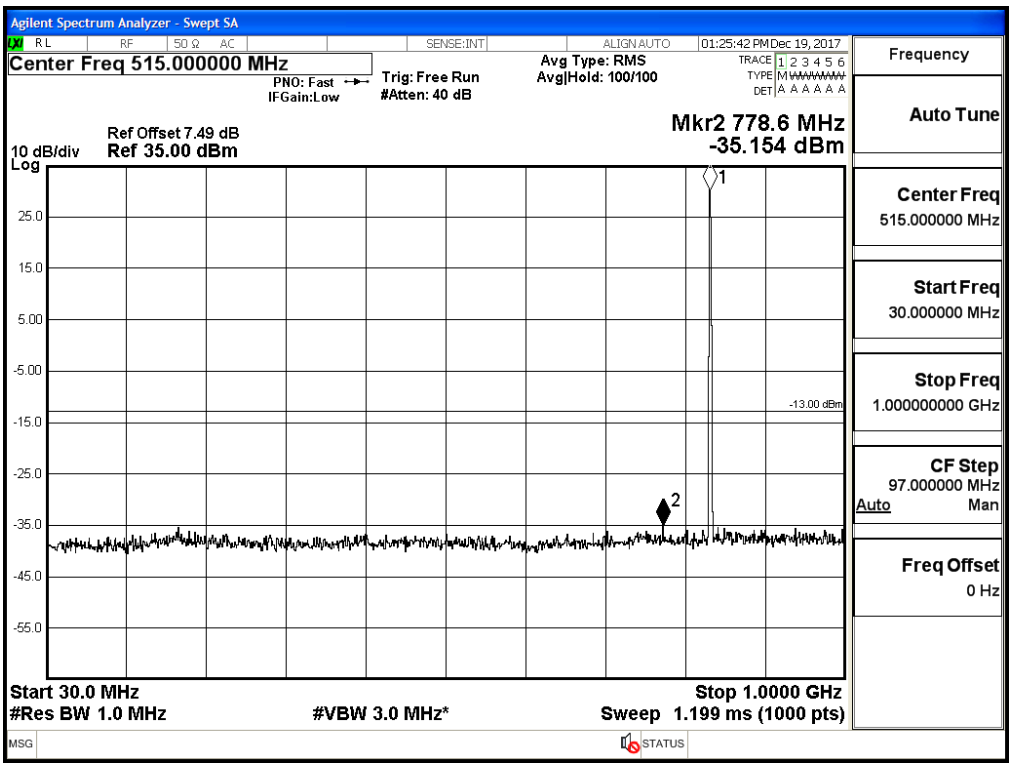

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
01:24:50 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr2 922.3 MHz
-35.137 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

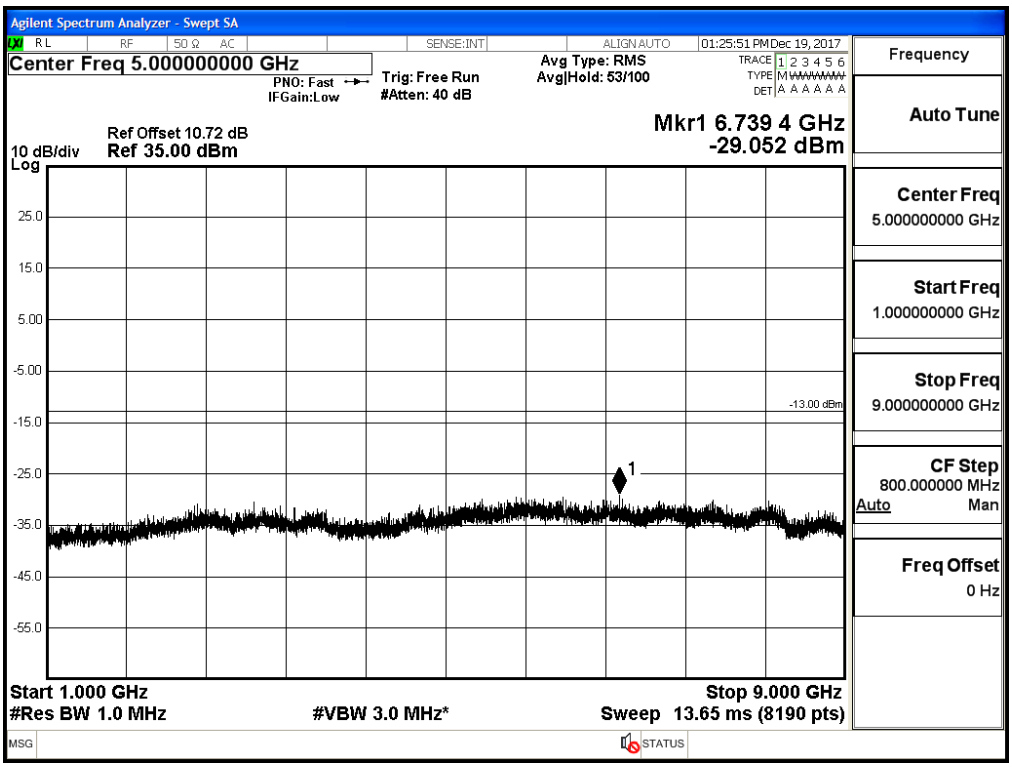

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 52/100
01:24:59 PM Dec 19, 2017
Ref Offset 10.72 dB
10 dB/div
Ref 35.00 dBm
Mkr1 8.138 4 GHz
-28.393 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 9.000 GHz
Sweep 13.65 ms (8190 pts)
Frequency
Auto Tune
Center Freq
5.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
9.000000000 GHz
CF Step
800.000000 MHz
Auto
Man
Freq Offset
0 Hz

Test Channel=MCH

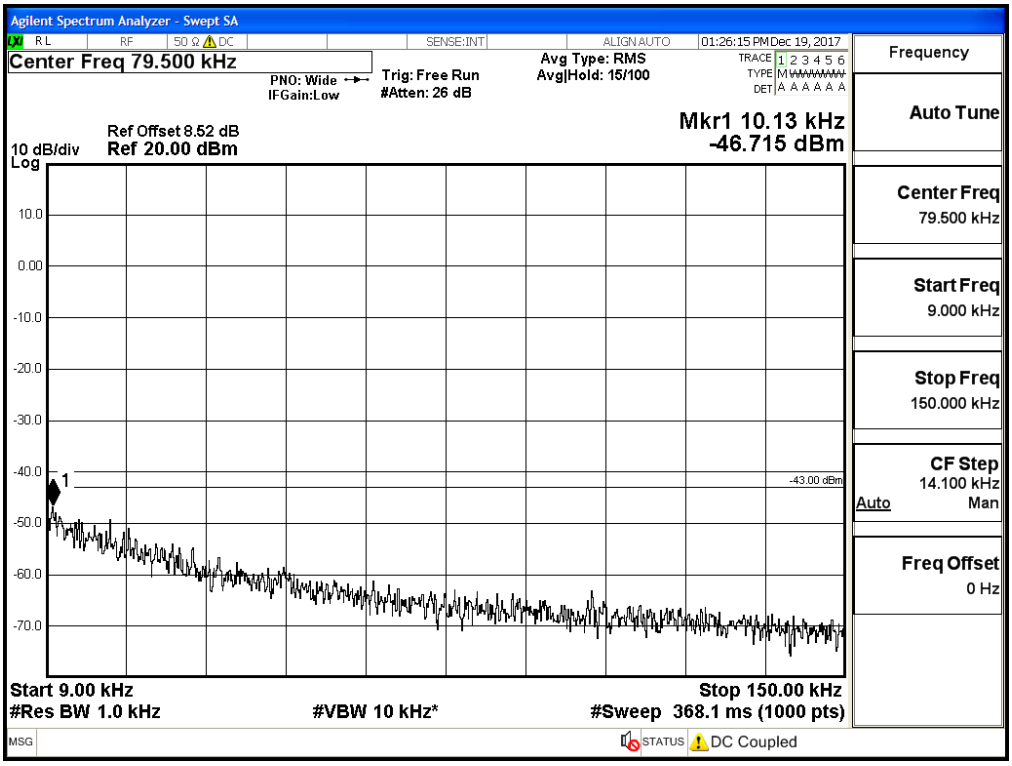


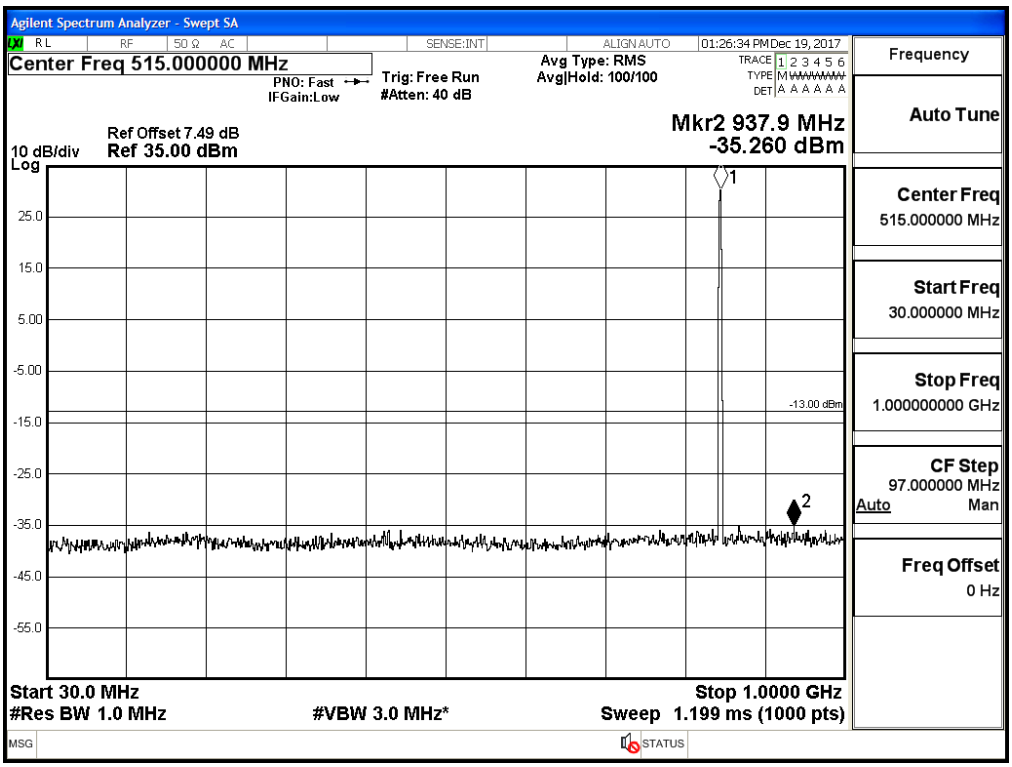


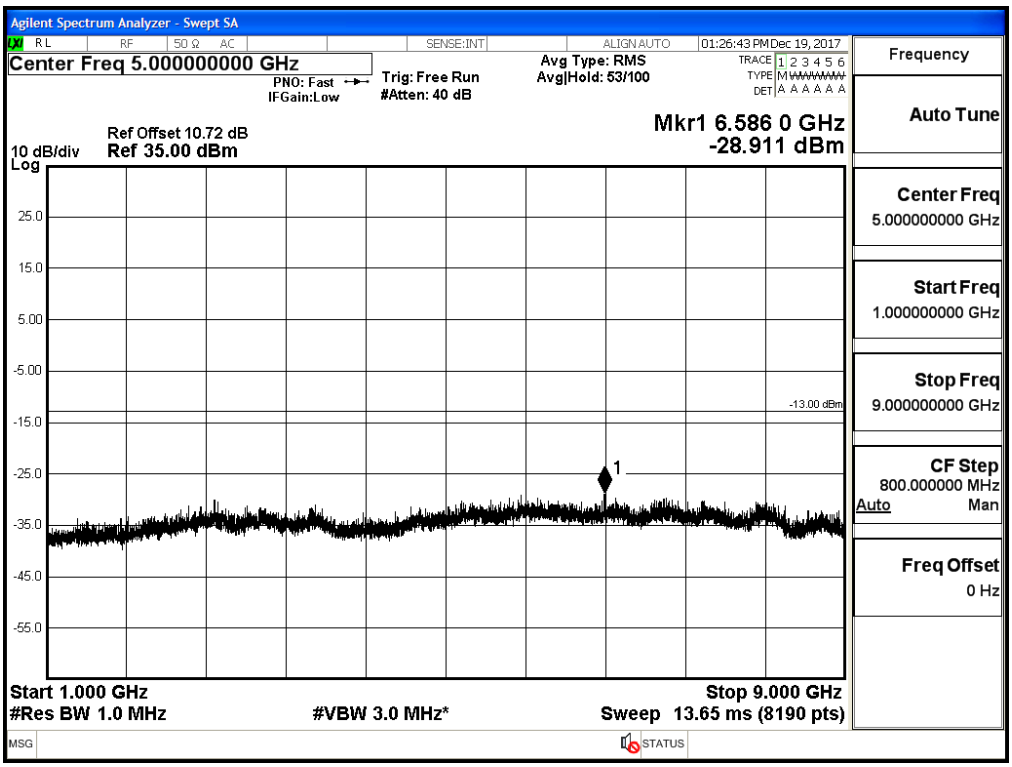

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
01:25:42 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr2 778.6 MHz
-35.154 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 53/100
01:25:51 PM Dec 19, 2017
Ref Offset 10.72 dB
10 dB/div
Ref 35.00 dBm
Mkr1 6.739 4 GHz
-29.052 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 9.000 GHz
Sweep 13.65 ms (8190 pts)
Frequency
Auto Tune
Center Freq
5.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
9.000000000 GHz
CF Step
800.000000 MHz
Auto
Man
Freq Offset
0 Hz

Test Channel=HCH

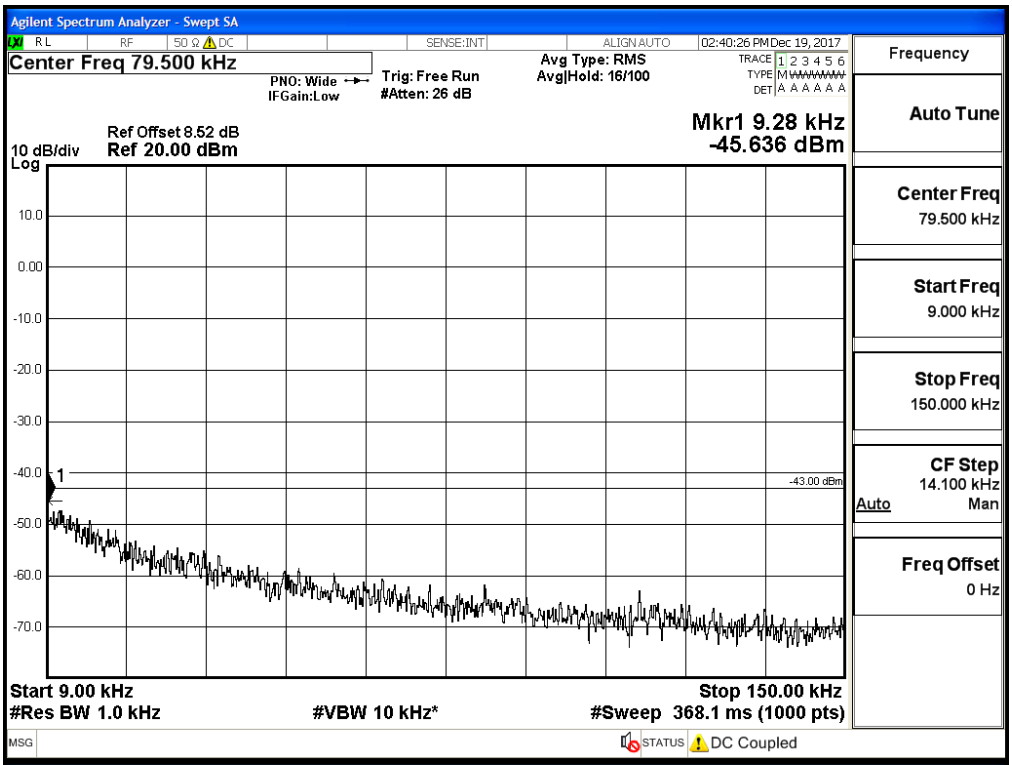


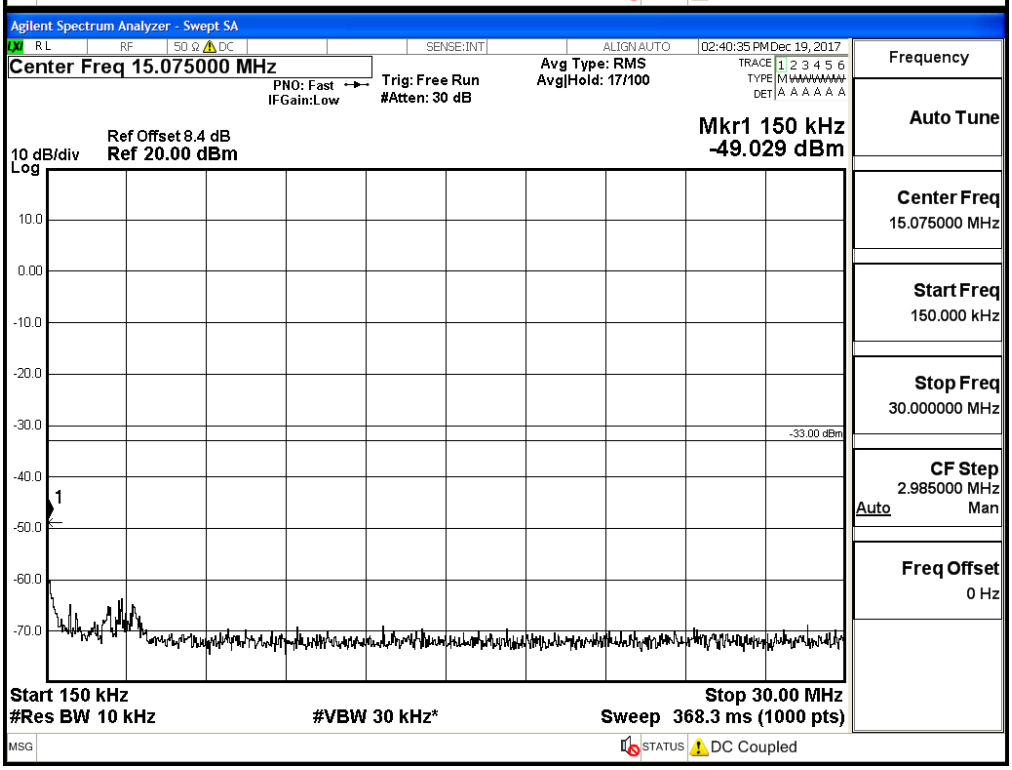

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
01:26:34 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr2 937.9 MHz
-35.260 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

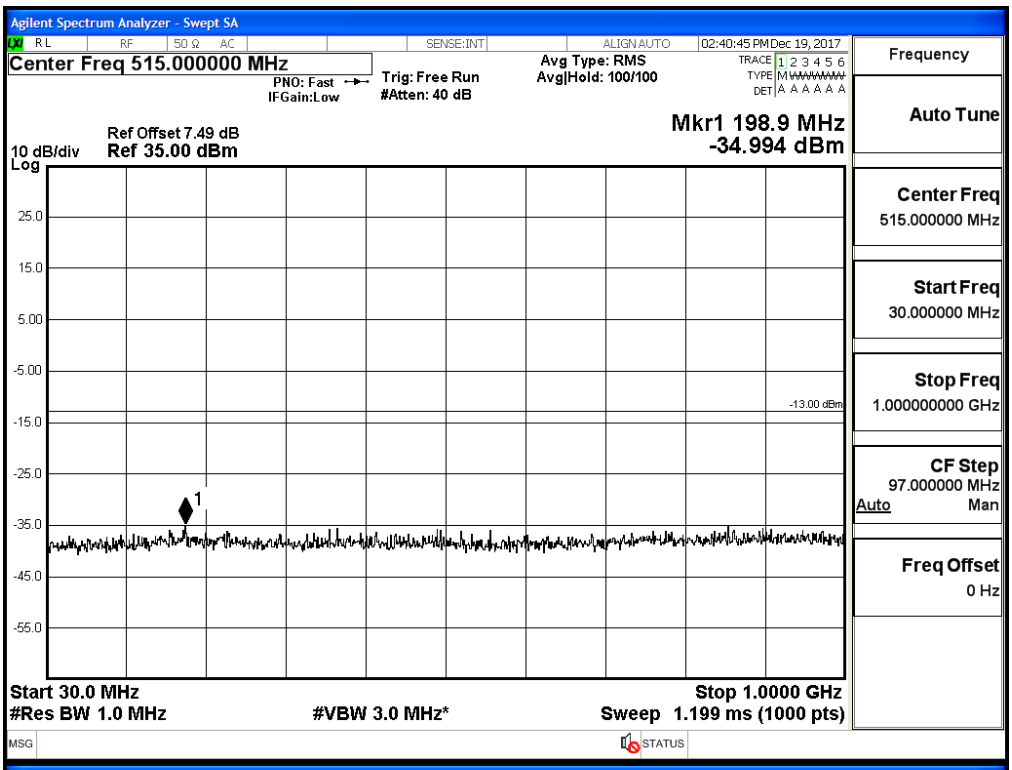

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 53/100
01:26:43 PM Dec 19, 2017
Ref Offset 10.72 dB
10 dB/div
Ref 35.00 dBm
Mkr1 6.586 0 GHz
-28.911 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 9.000 GHz
Sweep 13.65 ms (8190 pts)
Frequency
Auto Tune
Center Freq
5.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
9.000000000 GHz
CF Step
800.000000 MHz
Auto
Man
Freq Offset
0 Hz

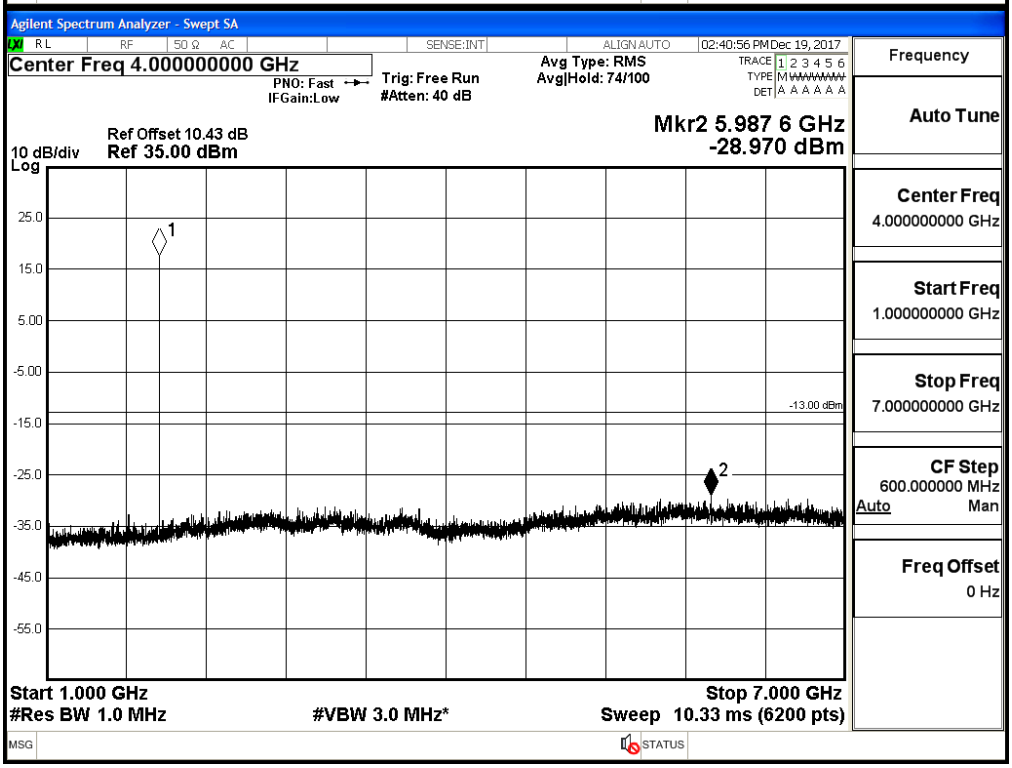
Test Band=GSM1900/Test Mode=GSM

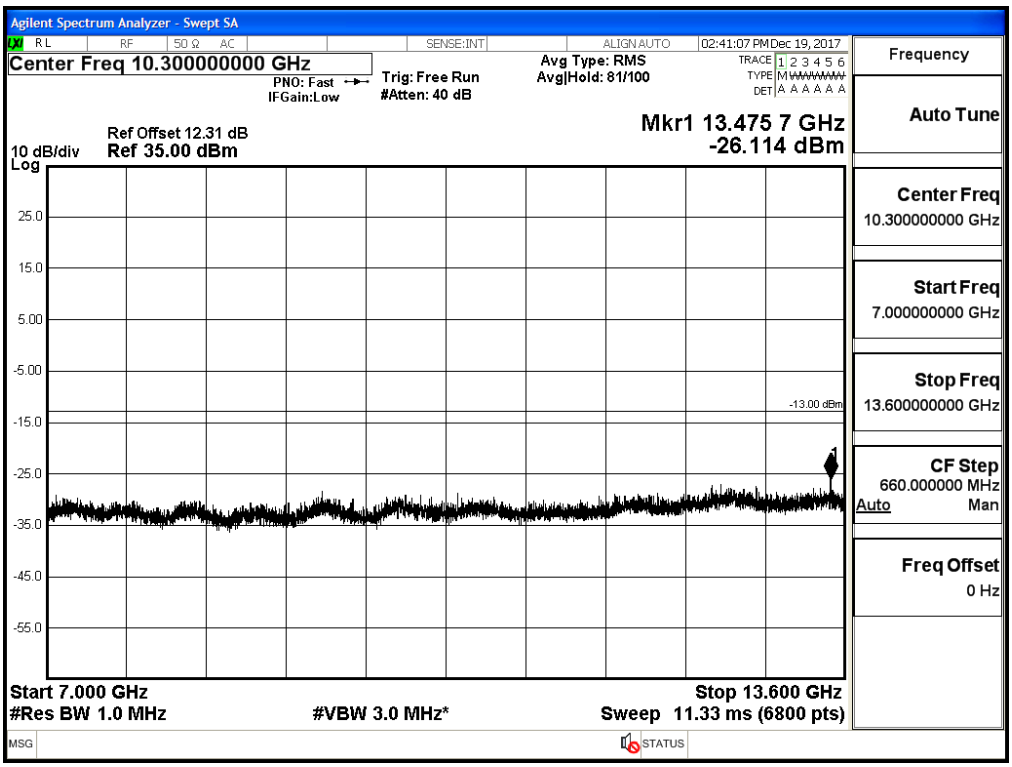
Test Channel=LCH

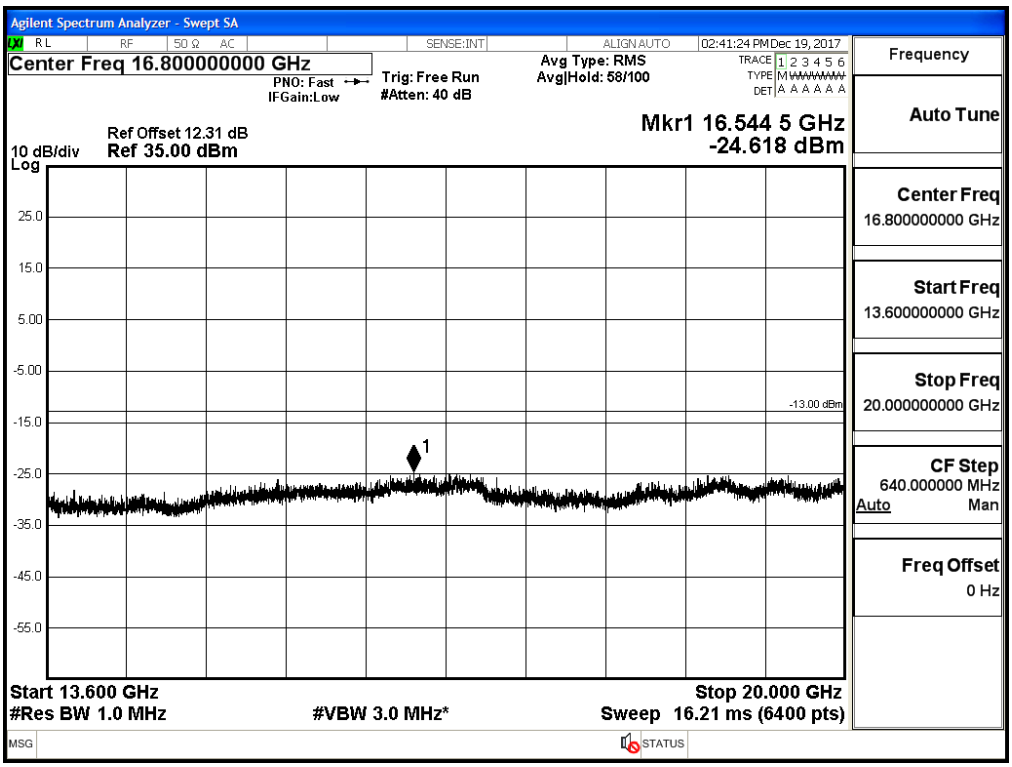




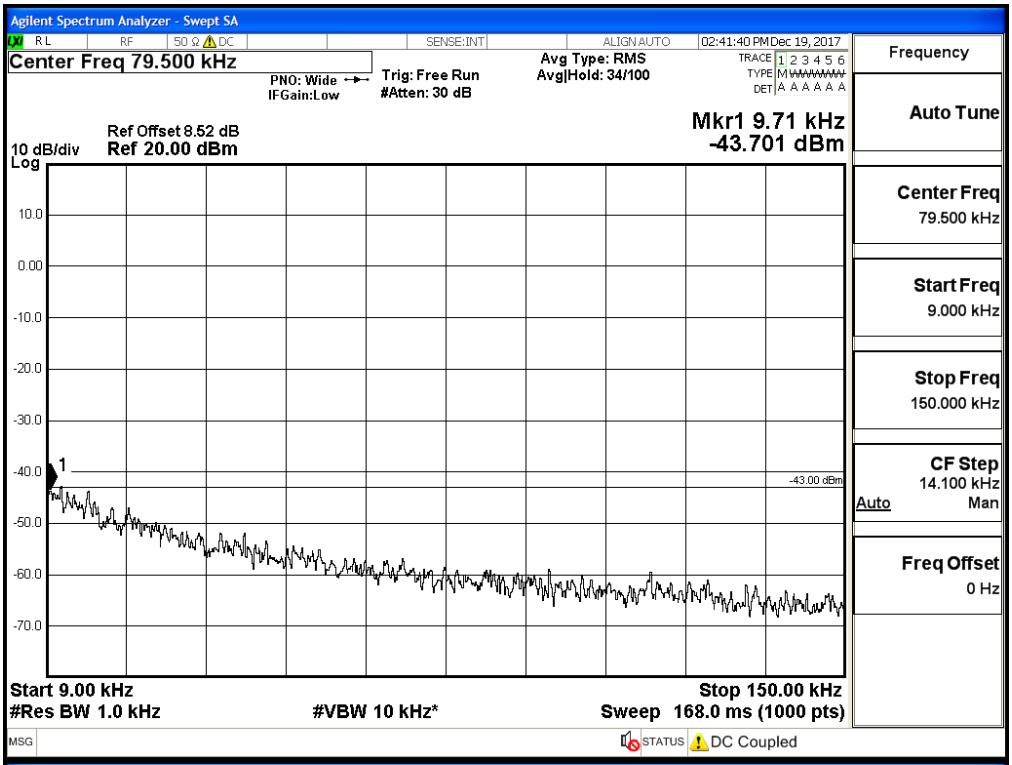

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
02:40:45 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 198.9 MHz
-34.994 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

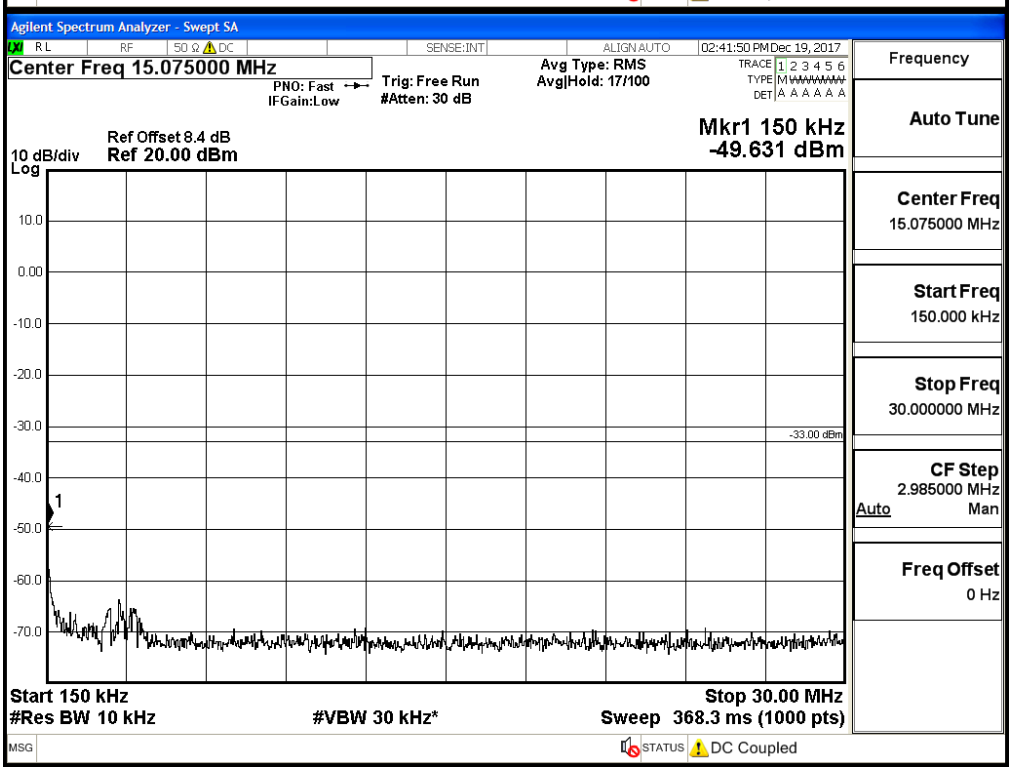

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 74/100
02:40:56 PM Dec 19, 2017
Ref Offset 10.43 dB
10 dB/div
Ref 35.00 dBm
Mkr2 5.987 6 GHz
-28.970 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 7.000 GHz
Sweep 10.33 ms (6200 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
7.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

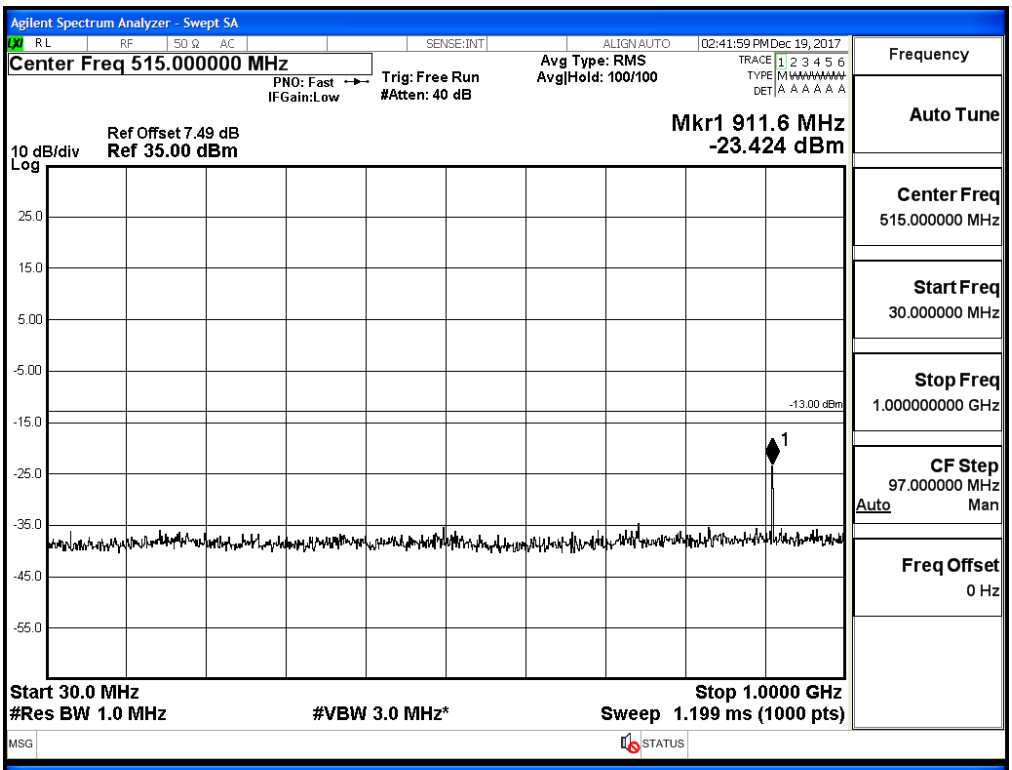

Agilent Spectrum Analyzer - Swept SA
Center Freq 10.300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 81/100
02:41:07 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 13.475 7 GHz
-26.114 dBm
-13.00 dBm
Start 7.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 13.600 GHz
Sweep 11.33 ms (6800 pts)
Frequency
Auto Tune
Center Freq
10.300000000 GHz
Start Freq
7.000000000 GHz
Stop Freq
13.600000000 GHz
CF Step
660.000000 MHz
Auto
Man
Freq Offset
0 Hz

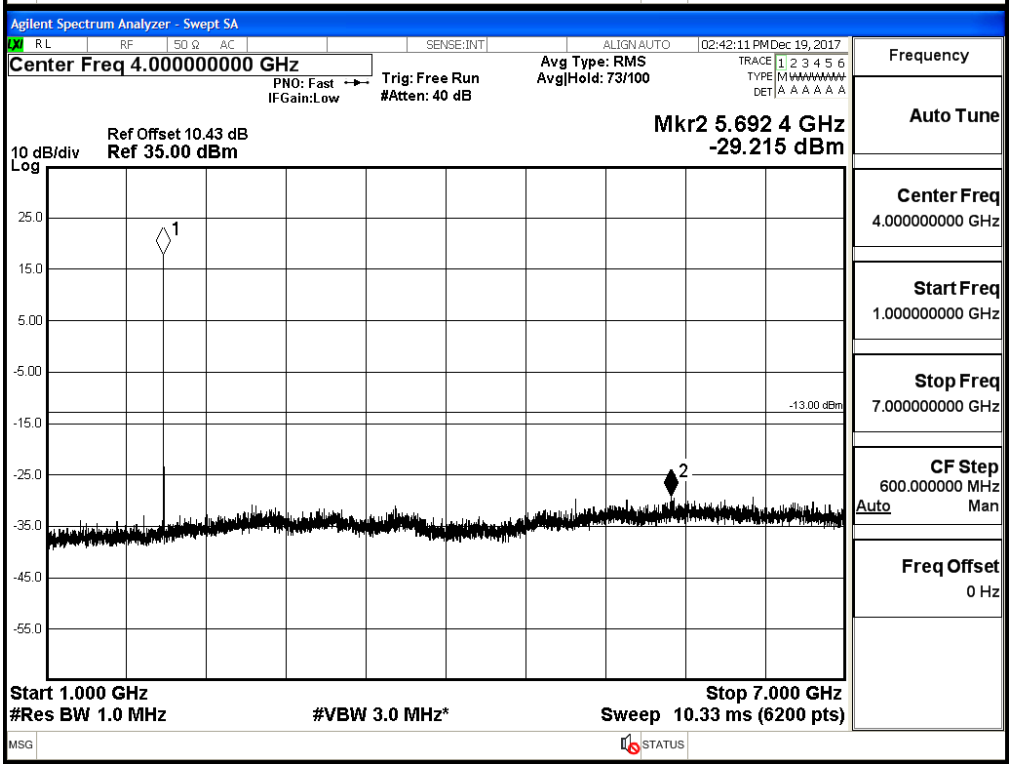

Agilent Spectrum Analyzer - Swept SA
Center Freq 16.800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 58/100
02:41:24 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 16.544 5 GHz
-24.618 dBm
-13.00 dBm
Start 13.600 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 20.000 GHz
Sweep 16.21 ms (6400 pts)
Frequency
Auto Tune
Center Freq
16.800000000 GHz
Start Freq
13.600000000 GHz
Stop Freq
20.000000000 GHz
CF Step
640.000000 MHz
Auto
Man
Freq Offset
0 Hz

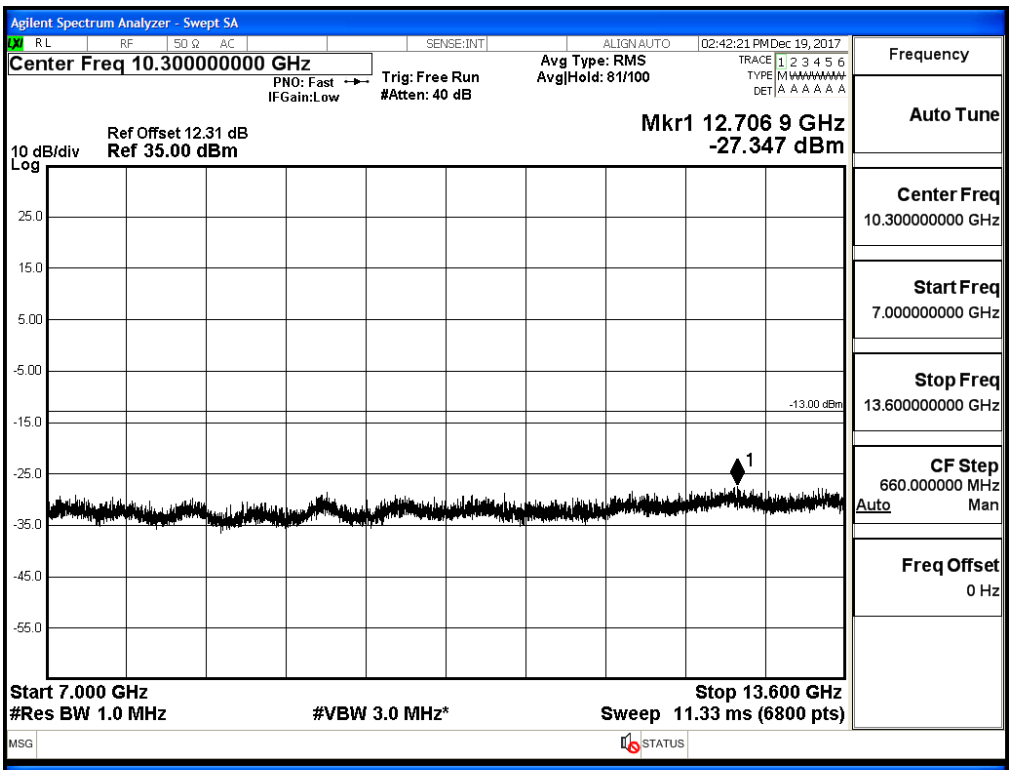
Test Channel=MCH

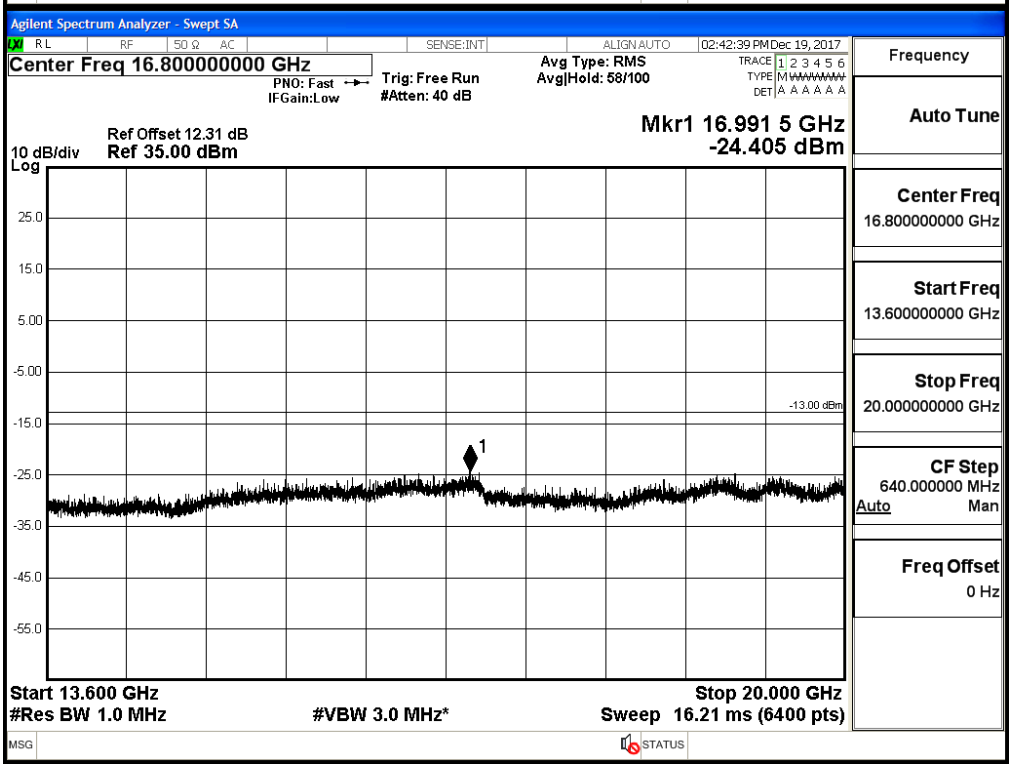




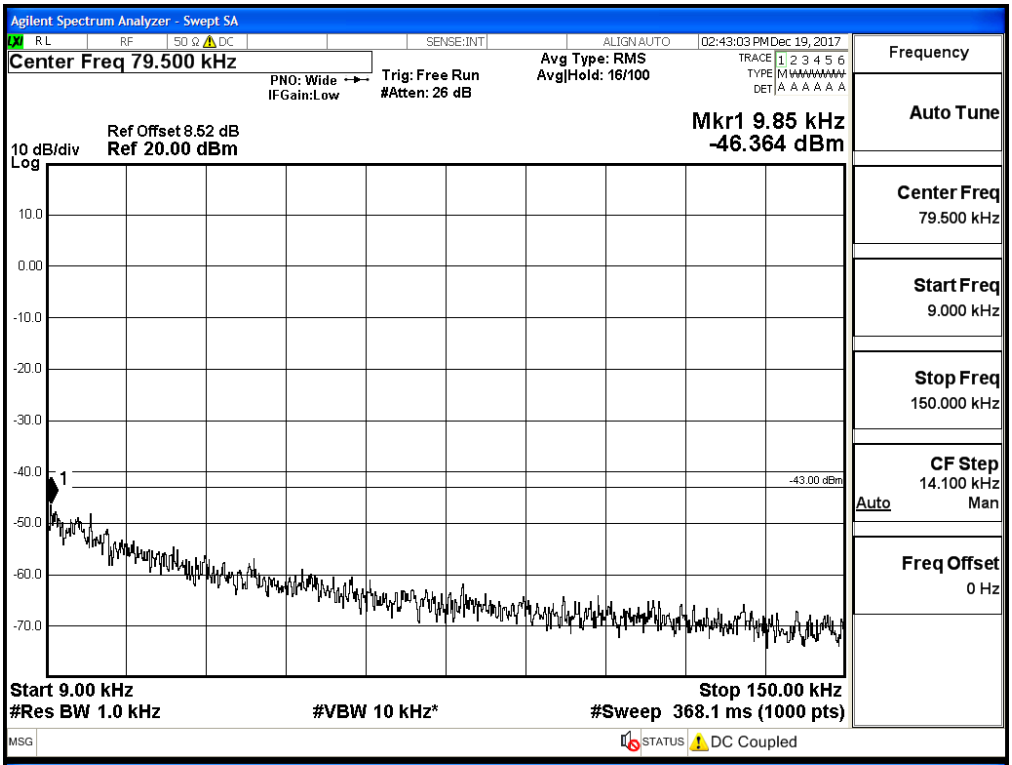

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
02:41:59 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 911.6 MHz
-23.424 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

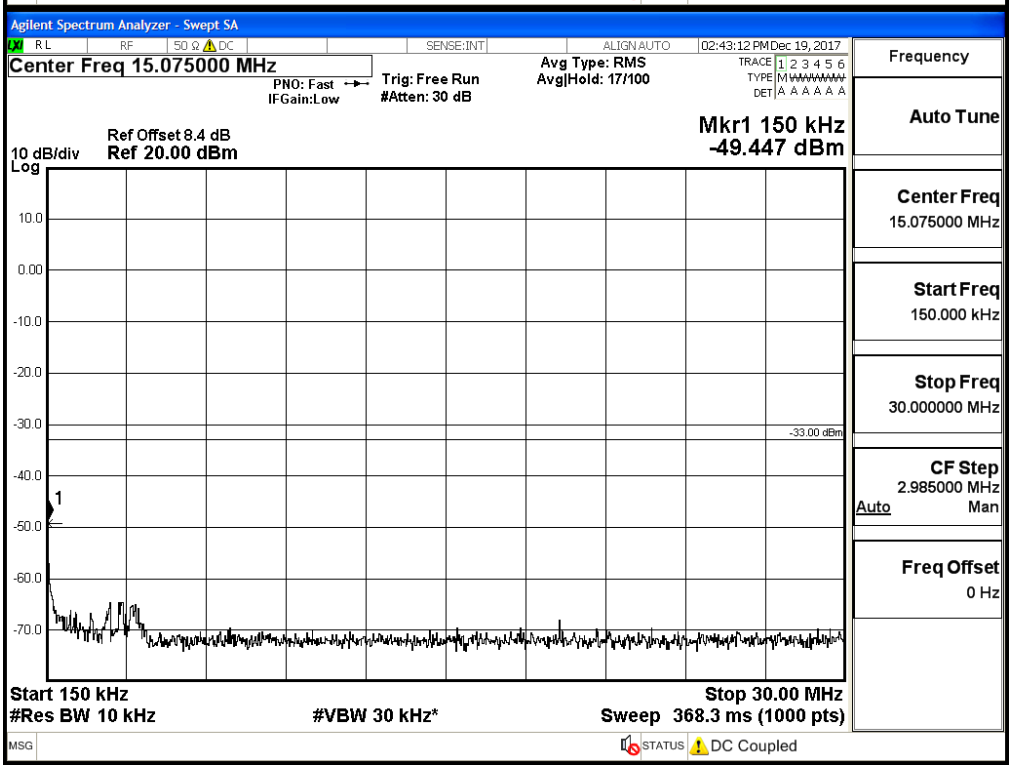

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 73/100
02:42:11 PM Dec 19, 2017
Ref Offset 10.43 dB
10 dB/div
Ref 35.00 dBm
Mkr2 5.692 4 GHz
-29.215 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 7.000 GHz
Sweep 10.33 ms (6200 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
7.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

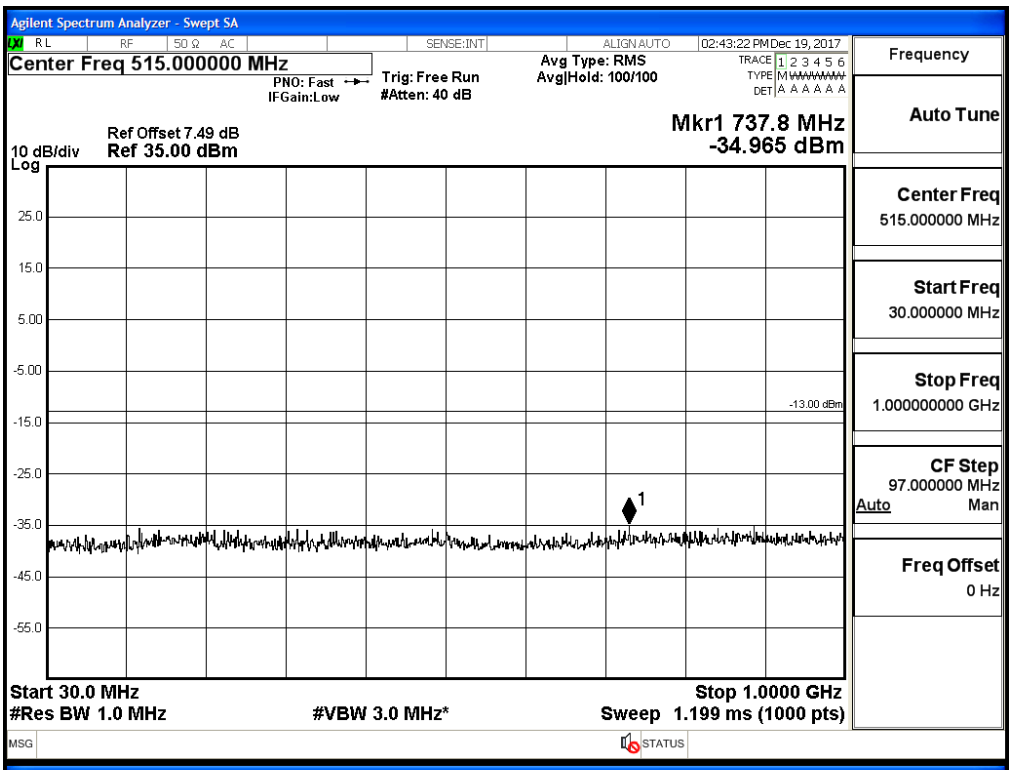

Agilent Spectrum Analyzer - Swept SA
Center Freq 10.300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 81/100
02:42:21 PM Dec 19, 2017
Mkr1 12.706 9 GHz
-27.347 dBm
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
-13.00 dBm
Start 7.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 13.600 GHz
Sweep 11.33 ms (6800 pts)
Frequency
Auto Tune
Center Freq
10.300000000 GHz
Start Freq
7.000000000 GHz
Stop Freq
13.600000000 GHz
CF Step
660.000000 MHz
Auto
Man
Freq Offset
0 Hz

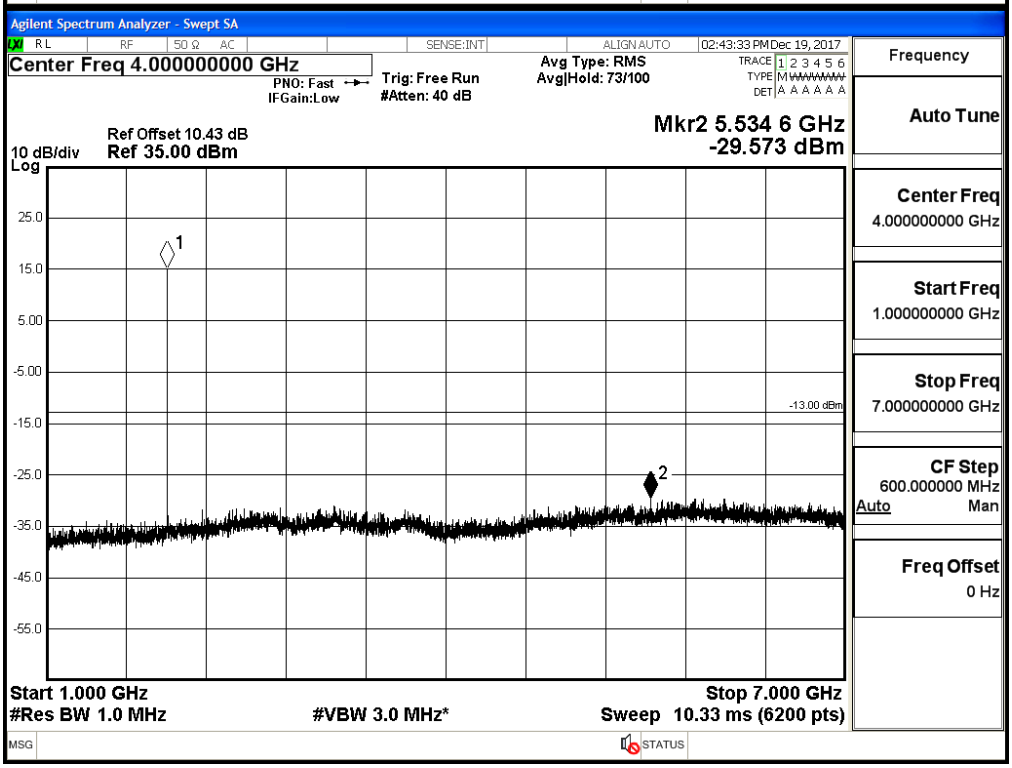

Agilent Spectrum Analyzer - Swept SA
Center Freq 16.800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 58/100
02:42:39 PM Dec 19, 2017
Mkr1 16.991 5 GHz
-24.405 dBm
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
-13.00 dBm
Start 13.600 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 20.000 GHz
Sweep 16.21 ms (6400 pts)
Frequency
Auto Tune
Center Freq
16.800000000 GHz
Start Freq
13.600000000 GHz
Stop Freq
20.000000000 GHz
CF Step
640.000000 MHz
Auto
Man
Freq Offset
0 Hz

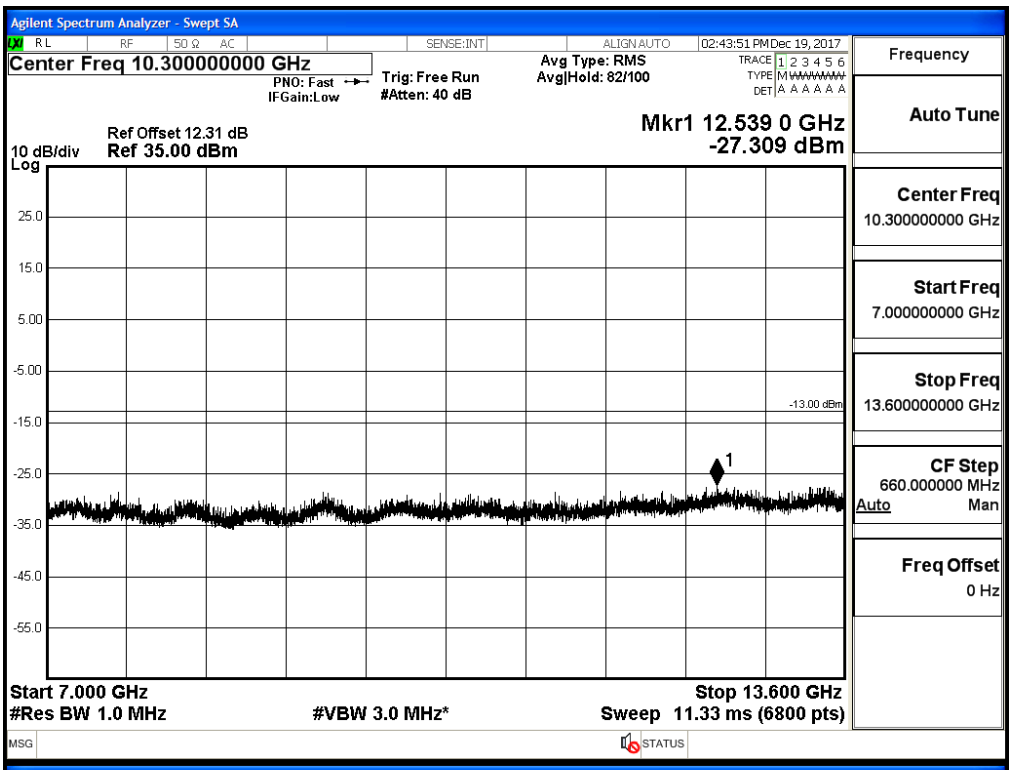
Test Channel=HCH

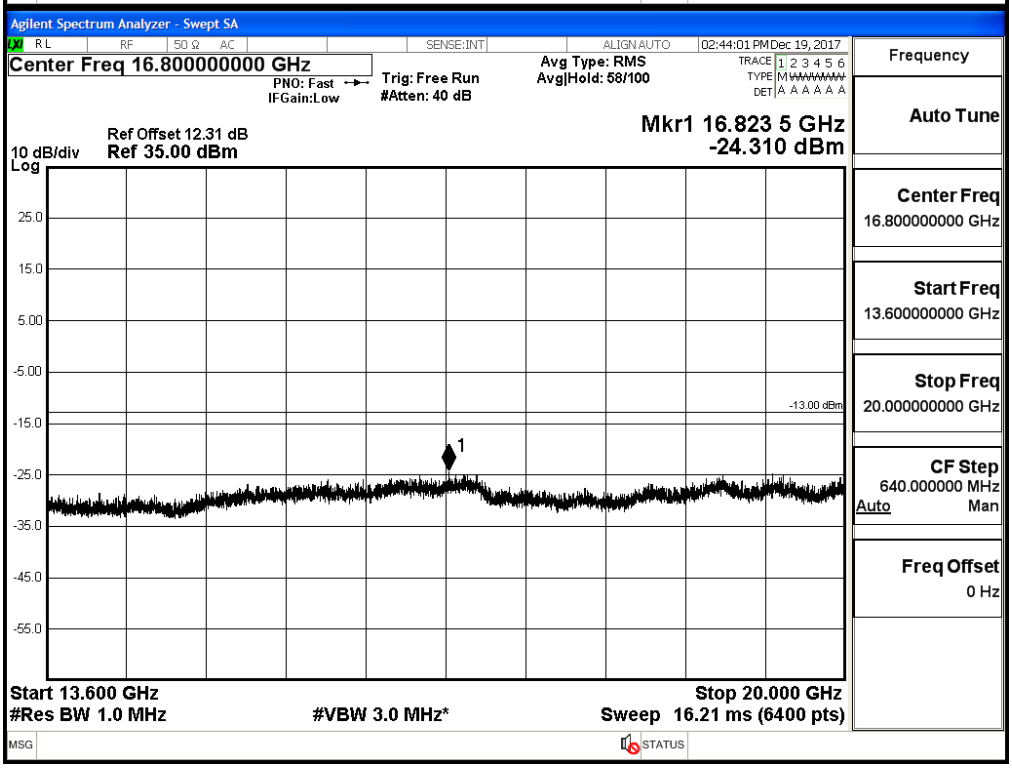





Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
02:43:22 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 737.8 MHz
-34.965 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

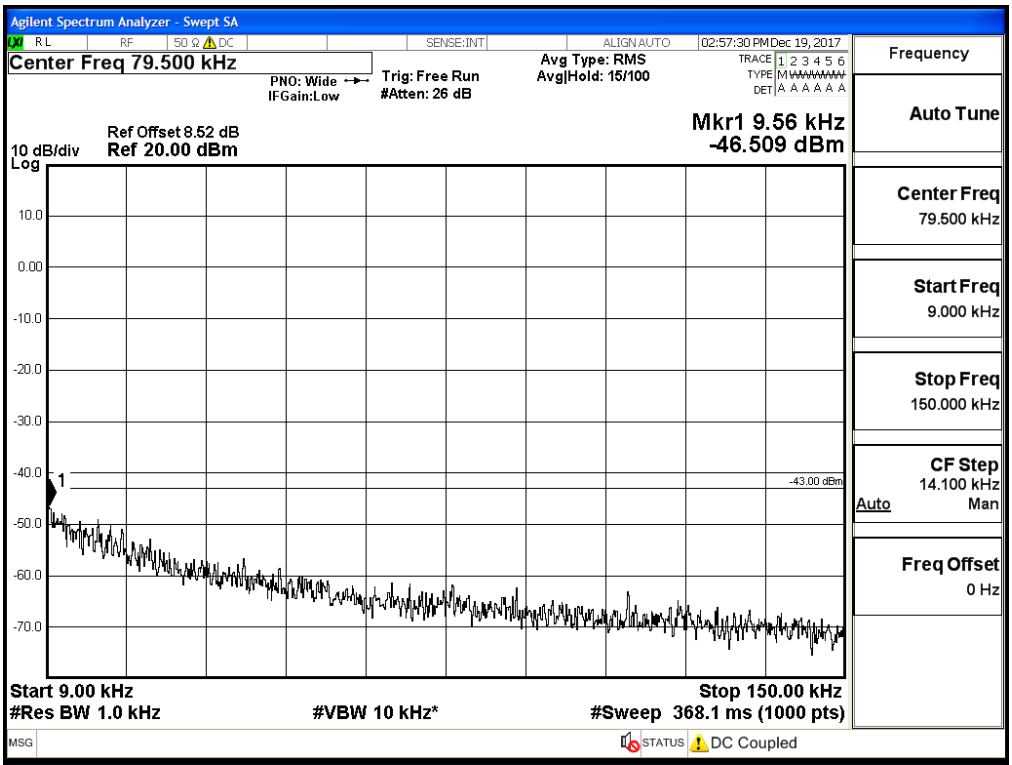

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 73/100
02:43:33 PM Dec 19, 2017
Ref Offset 10.43 dB
10 dB/div
Ref 35.00 dBm
Mkr2 5.534 6 GHz
-29.573 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 7.000 GHz
Sweep 10.33 ms (6200 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
7.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

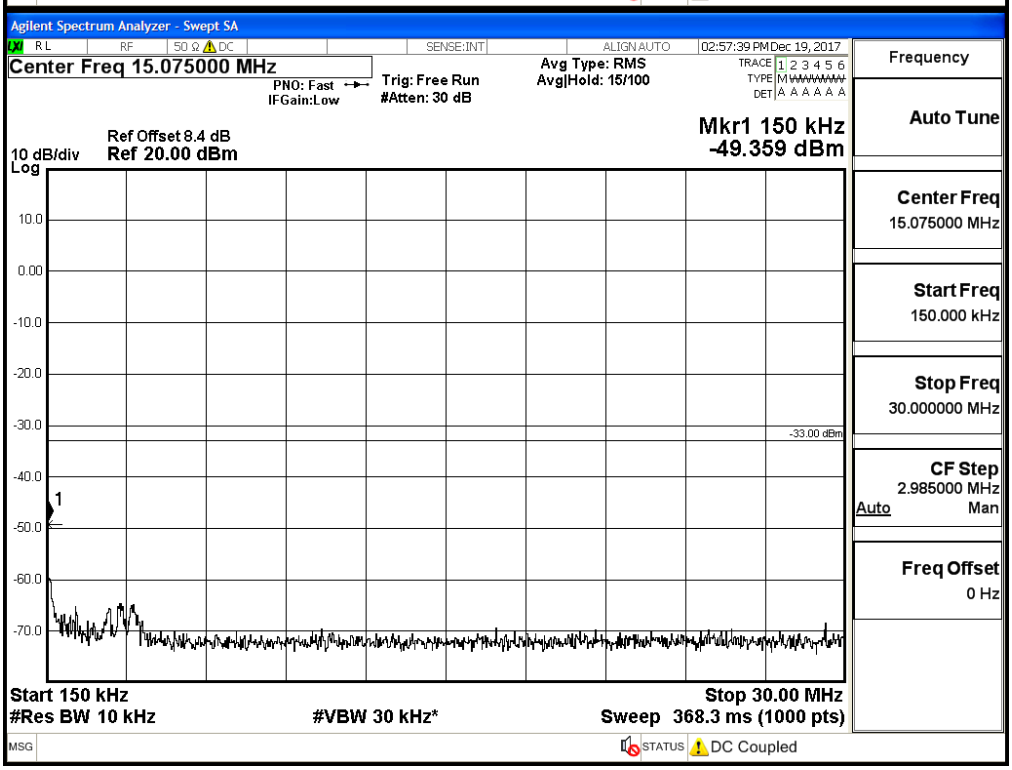

Agilent Spectrum Analyzer - Swept SA
Center Freq 10.300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 82/100
02:43:51 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 12.539 0 GHz
-27.309 dBm
-13.00 dBm
Start 7.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 13.600 GHz
Sweep 11.33 ms (6800 pts)
Frequency
Auto Tune
Center Freq
10.300000000 GHz
Start Freq
7.000000000 GHz
Stop Freq
13.600000000 GHz
CF Step
660.000000 MHz
Auto
Man
Freq Offset
0 Hz

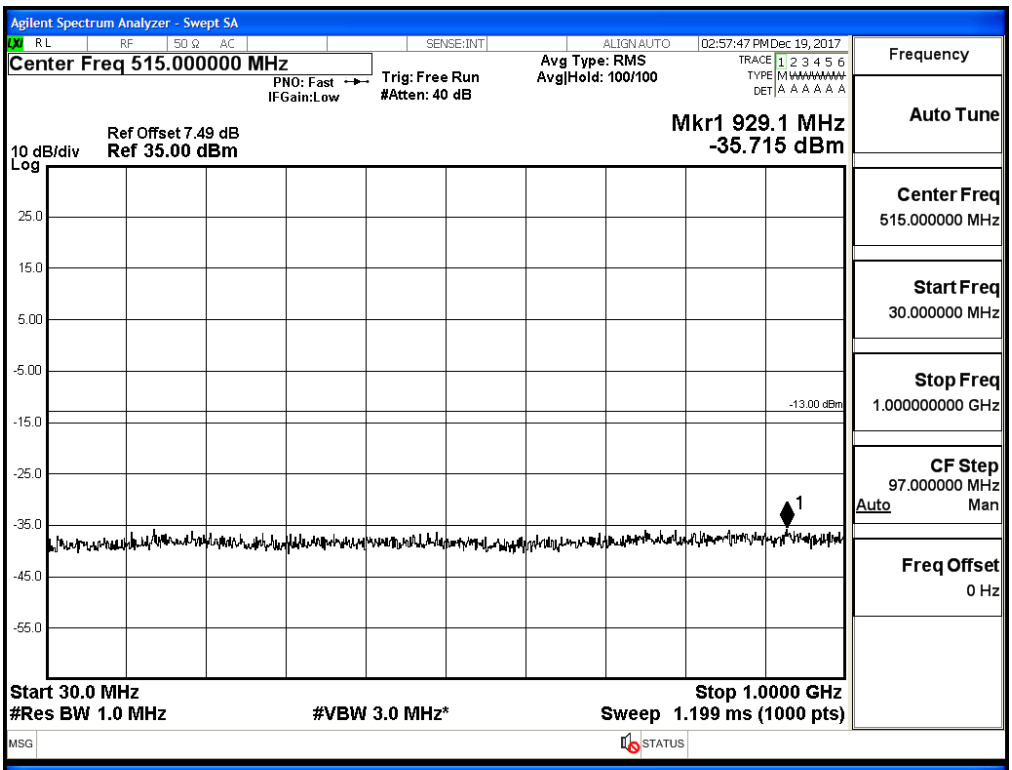

Agilent Spectrum Analyzer - Swept SA
Center Freq 16.800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 58/100
02:44:01 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 16.823 5 GHz
-24.310 dBm
-13.00 dBm
Start 13.600 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 20.000 GHz
Sweep 16.21 ms (6400 pts)
Frequency
Auto Tune
Center Freq
16.800000000 GHz
Start Freq
13.600000000 GHz
Stop Freq
20.000000000 GHz
CF Step
640.000000 MHz
Auto
Man
Freq Offset
0 Hz

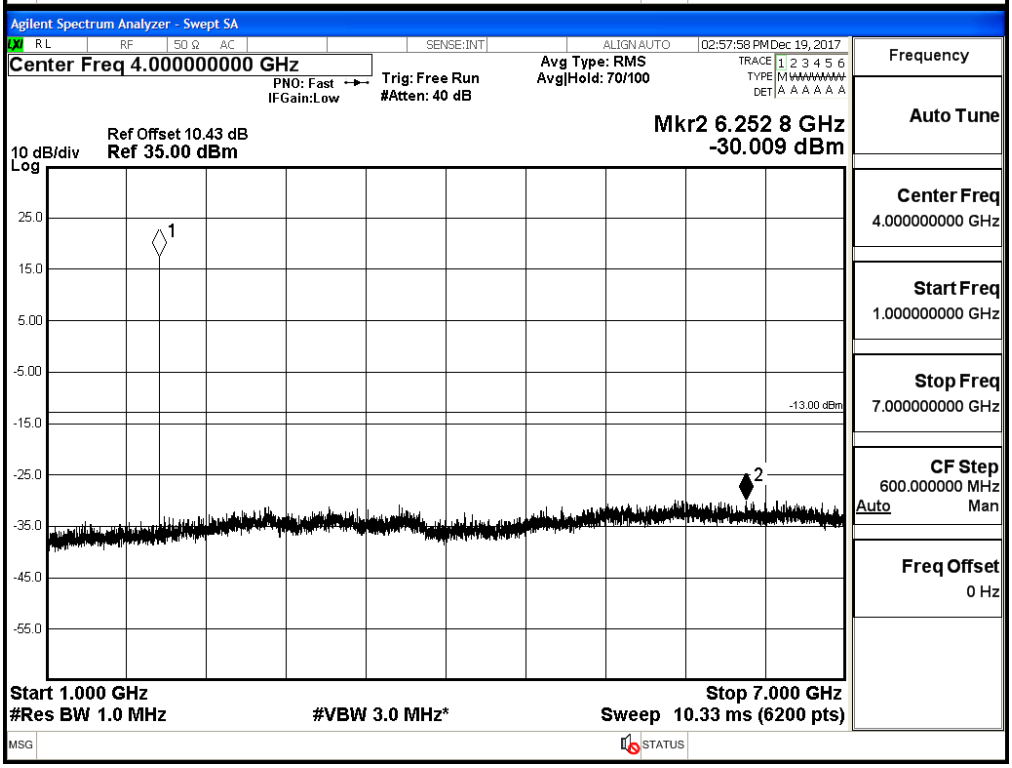
Test Mode=GPRS

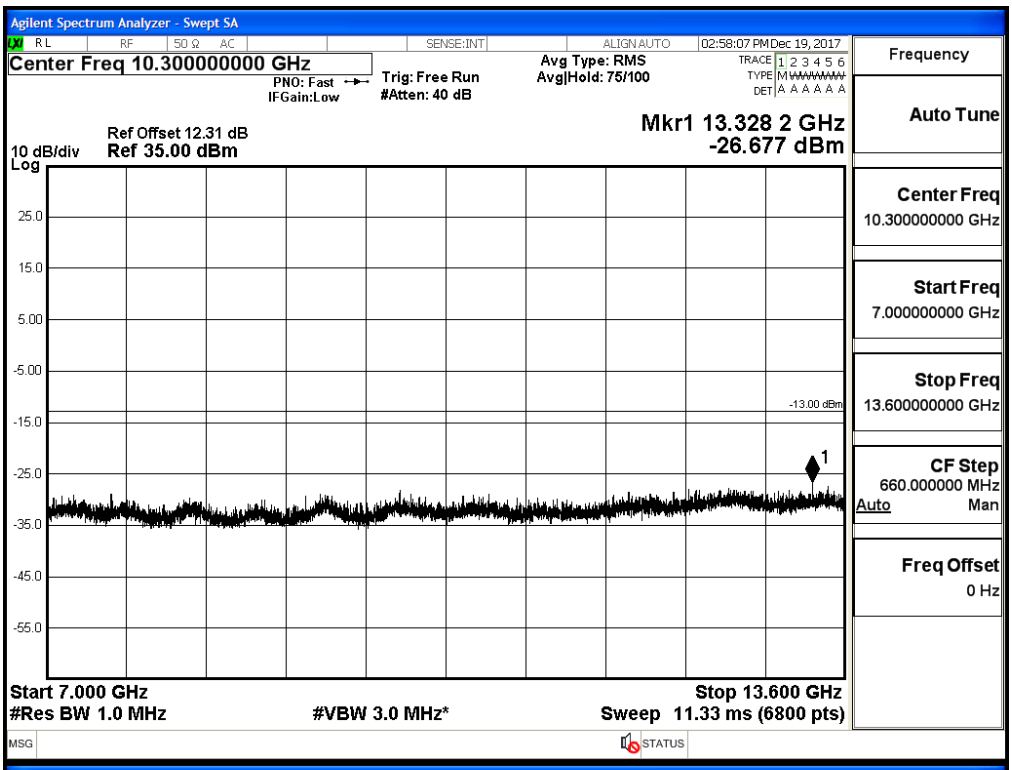
Test Channel=LCH

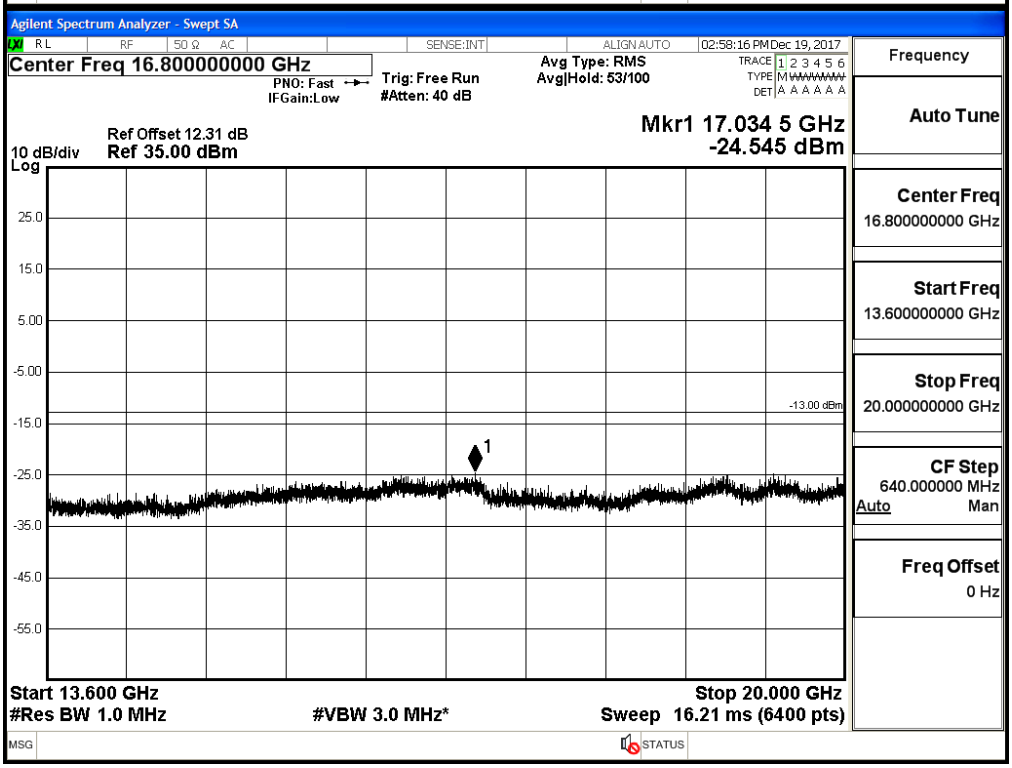




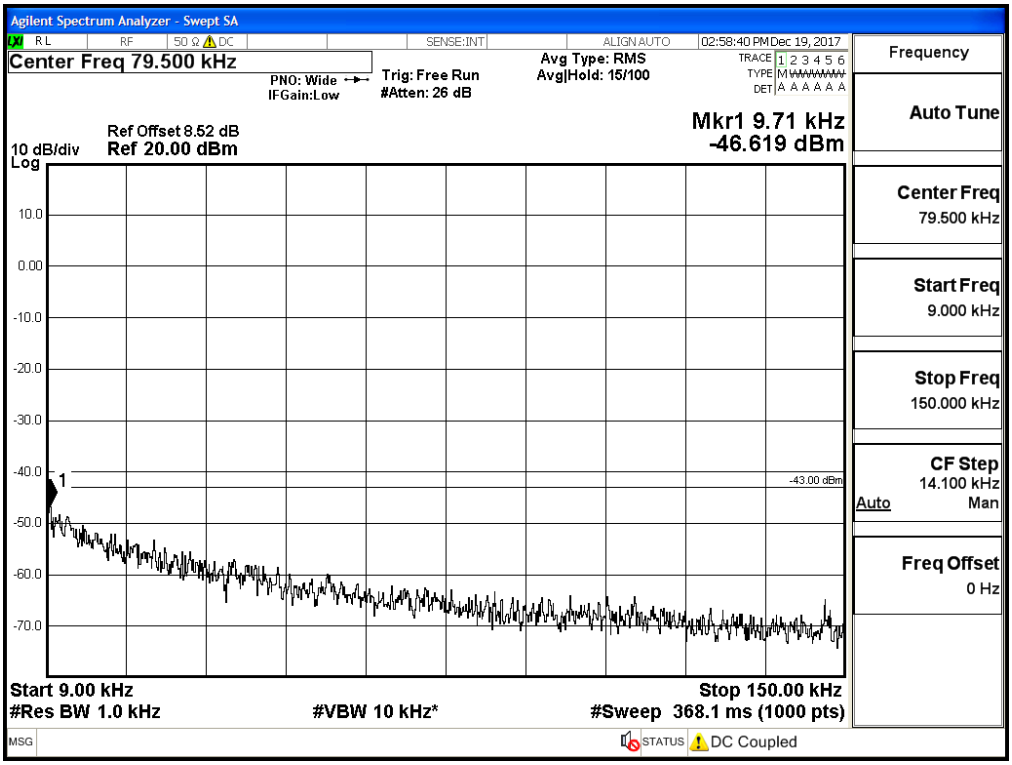

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
02:57:47 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 929.1 MHz
-35.715 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

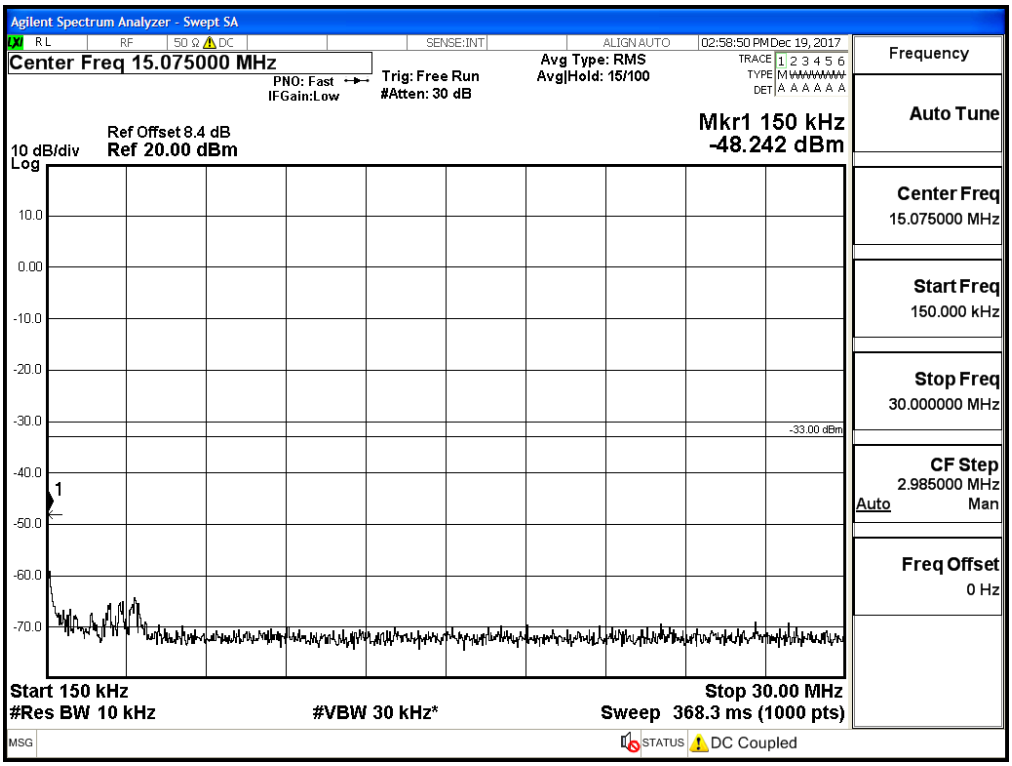

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 70/100
02:57:58 PM Dec 19, 2017
Ref Offset 10.43 dB
10 dB/div
Ref 35.00 dBm
Mkr2 6.252 8 GHz
-30.009 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 7.000 GHz
Sweep 10.33 ms (6200 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
7.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

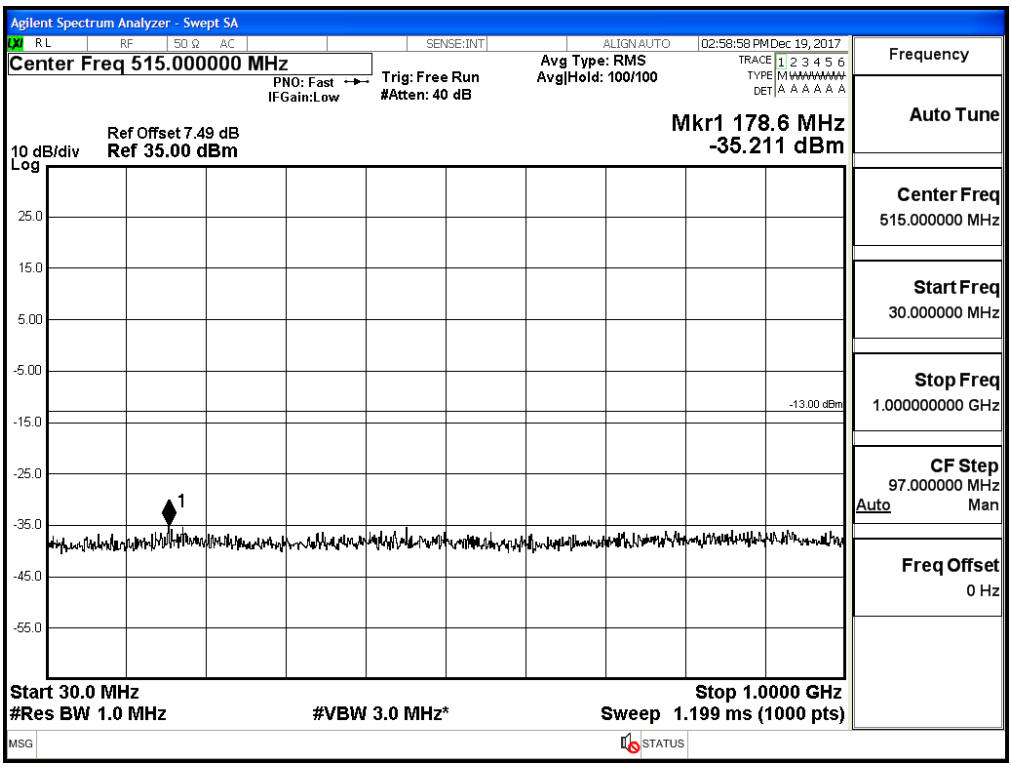

Agilent Spectrum Analyzer - Swept SA
Center Freq 10.300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 75/100
02:58:07 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 13.328 2 GHz
-26.677 dBm
-13.00 dBm
Start 7.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 13.600 GHz
Sweep 11.33 ms (6800 pts)
Frequency
Auto Tune
Center Freq
10.300000000 GHz
Start Freq
7.000000000 GHz
Stop Freq
13.600000000 GHz
CF Step
660.000000 MHz
Auto
Man
Freq Offset
0 Hz

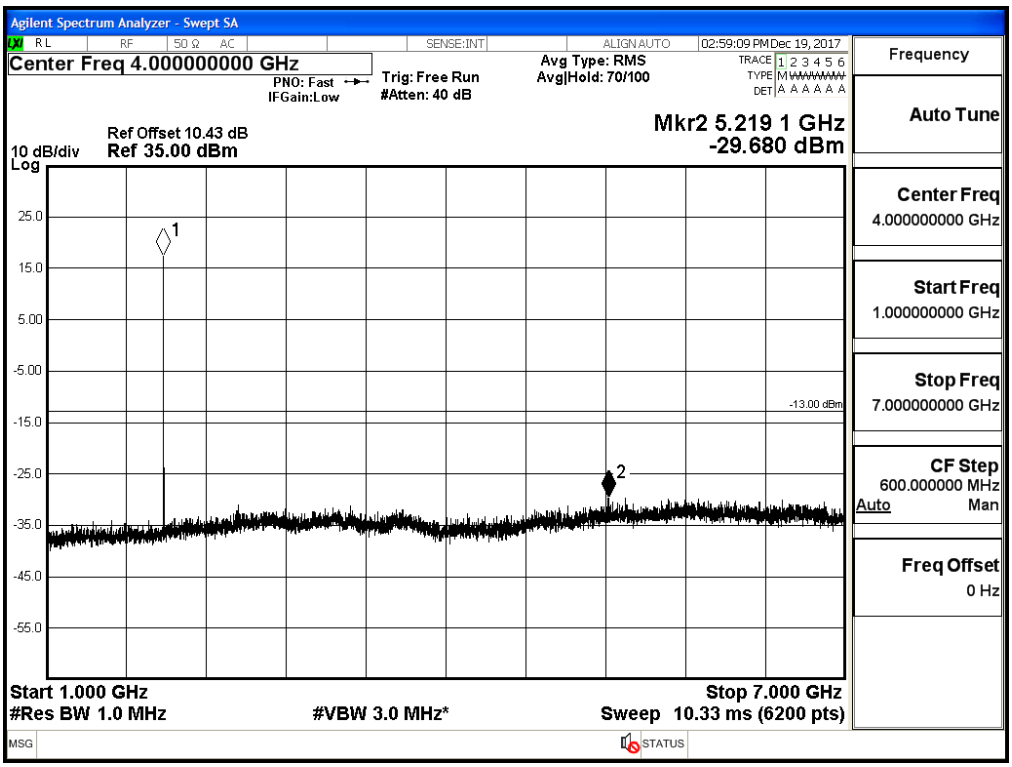

Agilent Spectrum Analyzer - Swept SA
Center Freq 16.800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 53/100
02:58:16 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 17.034 5 GHz
-24.545 dBm
-13.00 dBm
Start 13.600 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 20.000 GHz
Sweep 16.21 ms (6400 pts)
Frequency
Auto Tune
Center Freq
16.800000000 GHz
Start Freq
13.600000000 GHz
Stop Freq
20.000000000 GHz
CF Step
640.000000 MHz
Auto
Man
Freq Offset
0 Hz

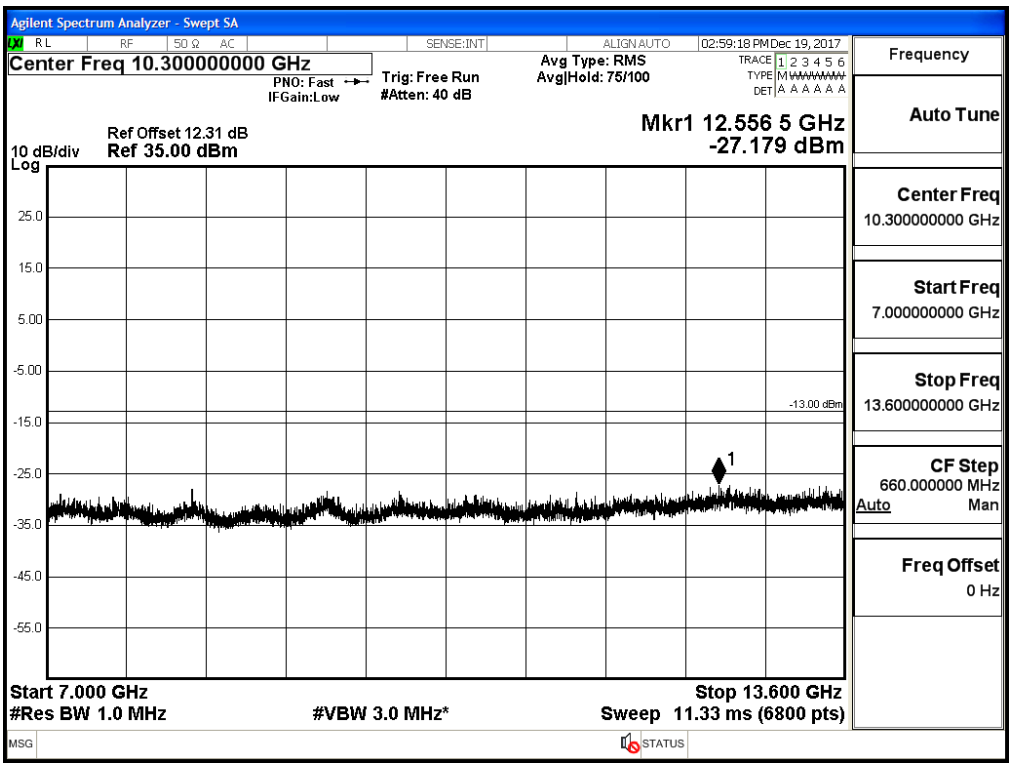
Test Channel=MCH

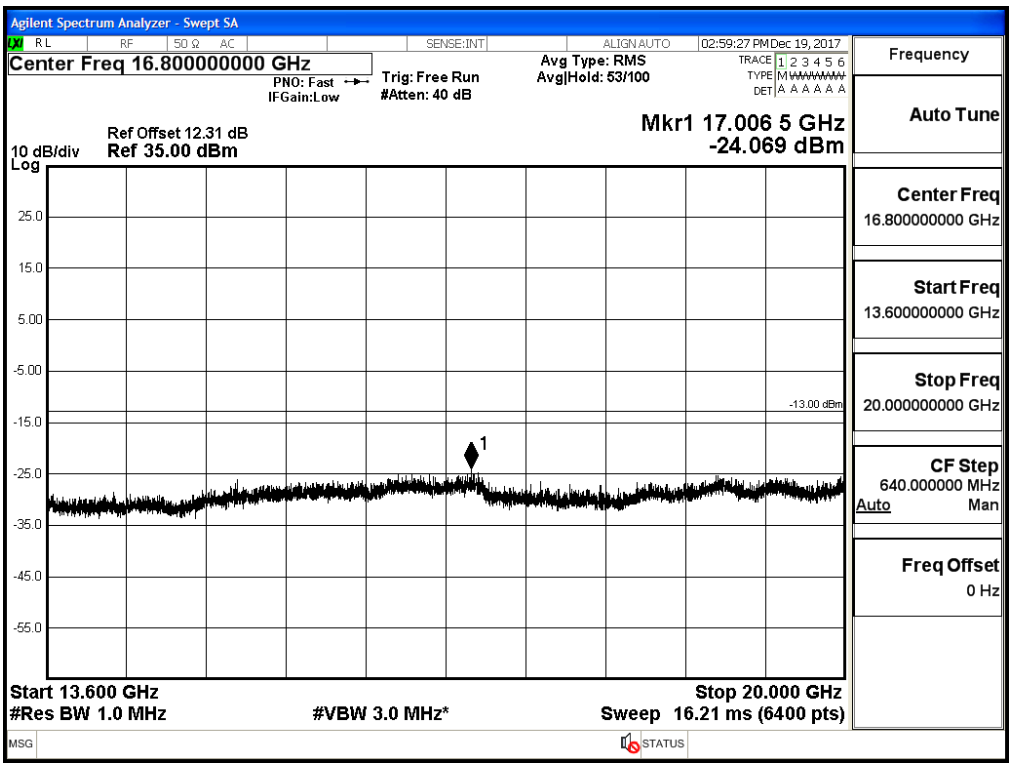




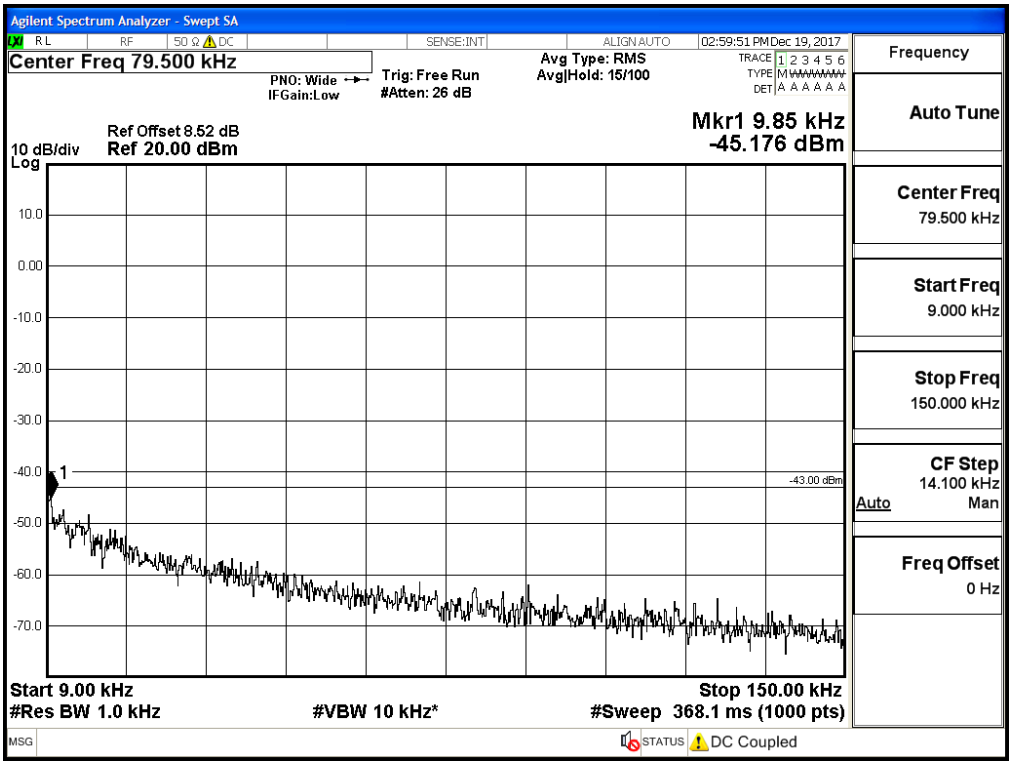

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
02:58:58 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 178.6 MHz
-35.211 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

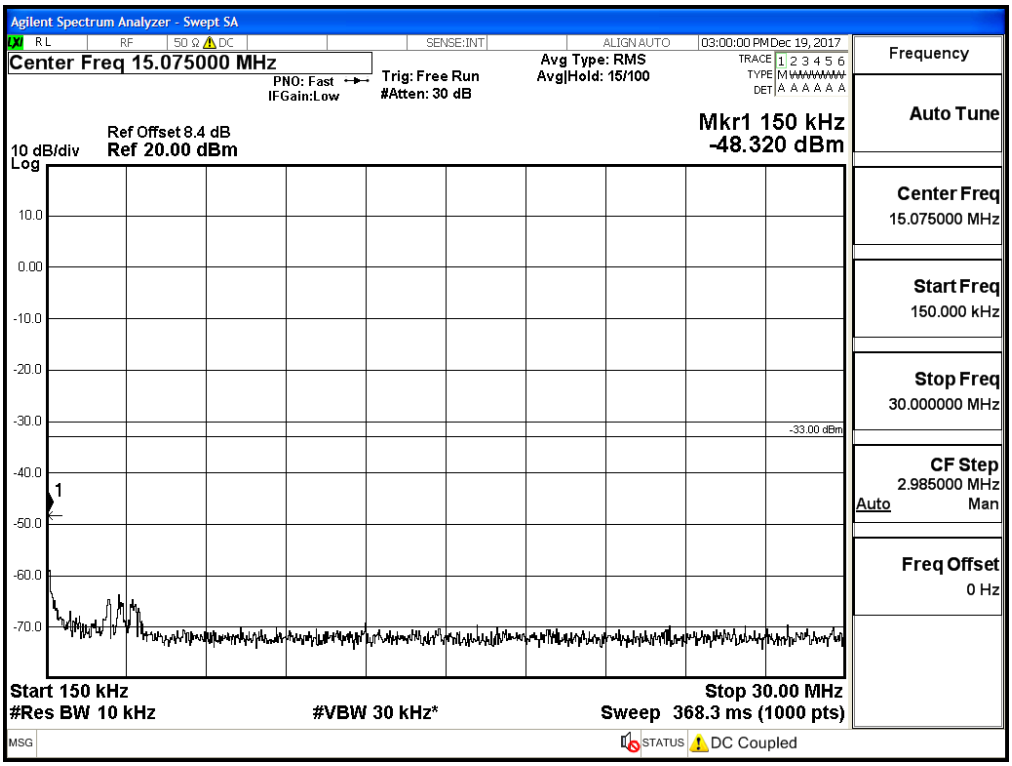

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 70/100
02:59:09 PM Dec 19, 2017
Ref Offset 10.43 dB
10 dB/div
Ref 35.00 dBm
Mkr2 5.219 1 GHz
-29.680 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 7.000 GHz
Sweep 10.33 ms (6200 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
7.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

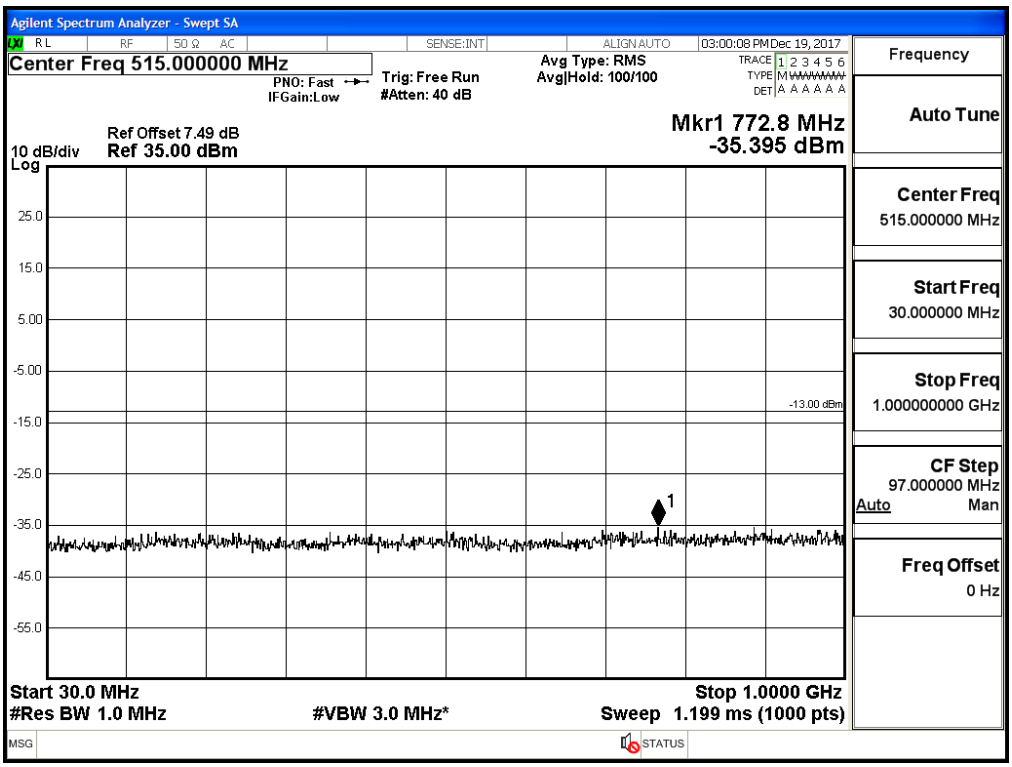

Agilent Spectrum Analyzer - Swept SA
Center Freq 10.300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 75/100
02:59:18 PM Dec 19, 2017
Mkr1 12.556 5 GHz
-27.179 dBm
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
-13.00 dBm
Start 7.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 13.600 GHz
Sweep 11.33 ms (6800 pts)
Frequency
Auto Tune
Center Freq
10.300000000 GHz
Start Freq
7.000000000 GHz
Stop Freq
13.600000000 GHz
CF Step
660.000000 MHz
Auto
Man
Freq Offset
0 Hz

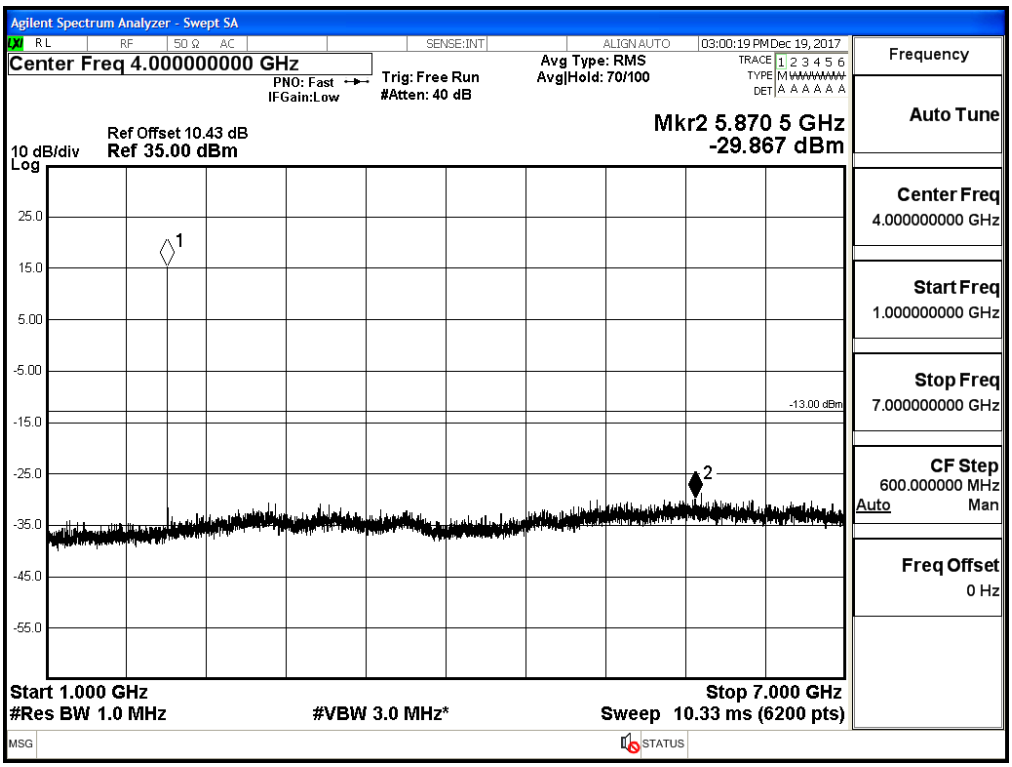

Agilent Spectrum Analyzer - Swept SA
Center Freq 16.800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 53/100
02:59:27 PM Dec 19, 2017
Mkr1 17.006 5 GHz
-24.069 dBm
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
-13.00 dBm
Start 13.600 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 20.000 GHz
Sweep 16.21 ms (6400 pts)
Frequency
Auto Tune
Center Freq
16.800000000 GHz
Start Freq
13.600000000 GHz
Stop Freq
20.000000000 GHz
CF Step
640.000000 MHz
Auto
Man
Freq Offset
0 Hz

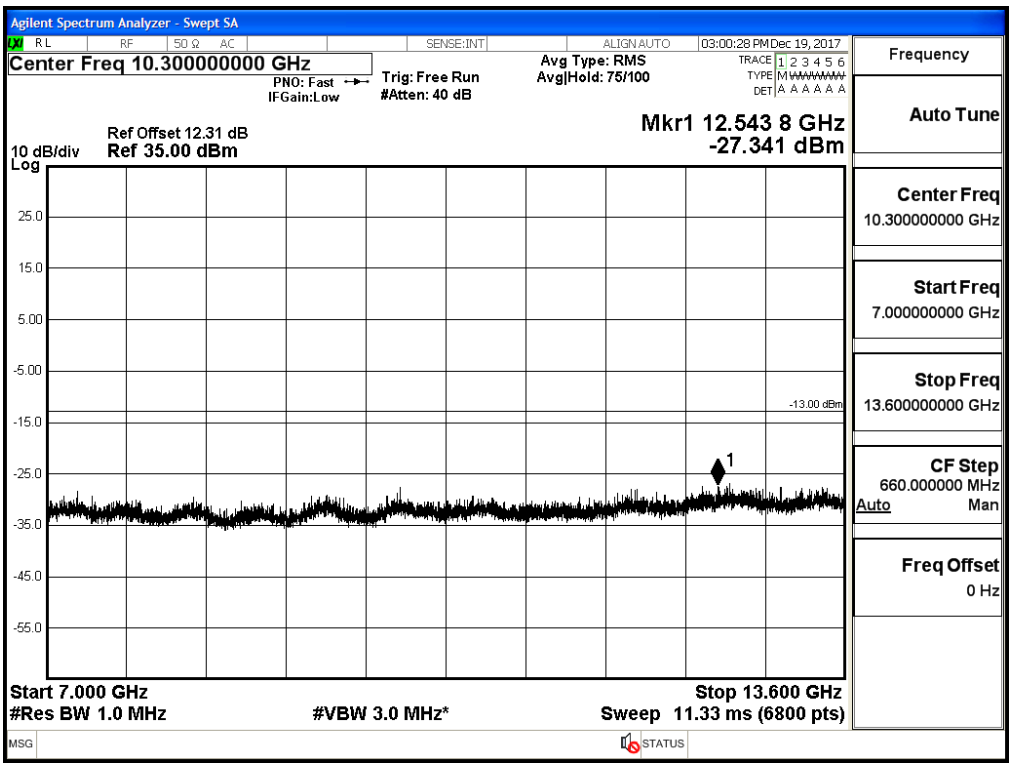
Test Channel=HCH

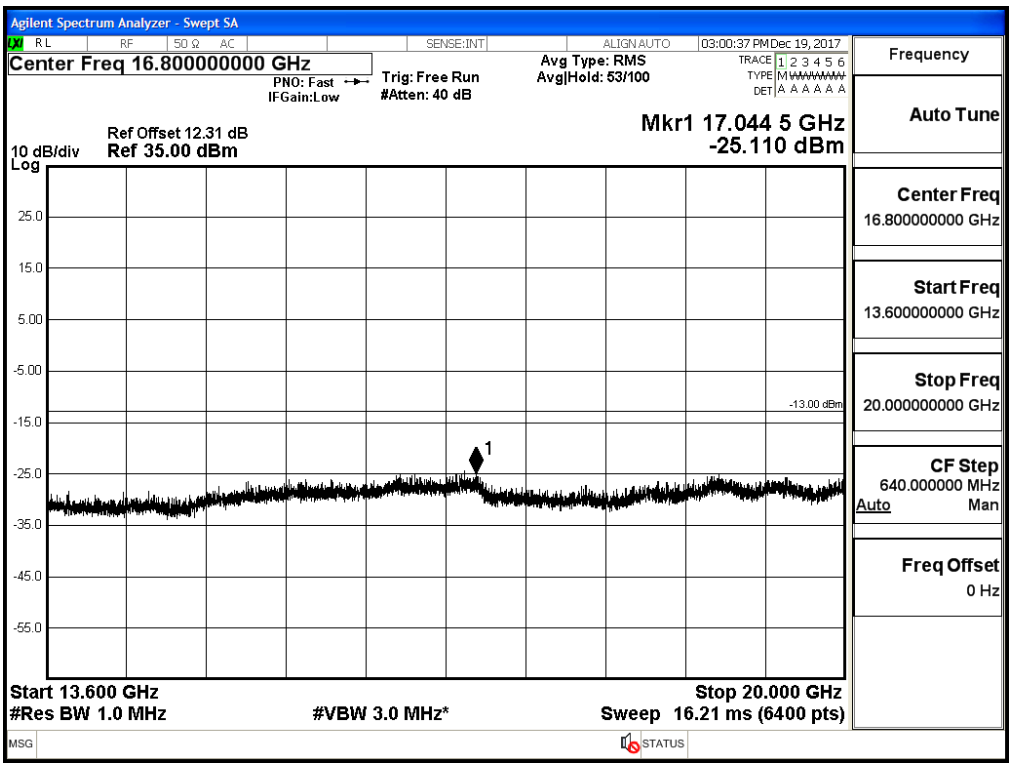





Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 100/100
03:00:08 PM Dec 19, 2017
Ref Offset 7.49 dB
10 dB/div
Ref 35.00 dBm
Mkr1 772.8 MHz
-35.395 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 1.0000 GHz
Sweep 1.199 ms (1000 pts)
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 70/100
03:00:19 PM Dec 19, 2017
Ref Offset 10.43 dB
10 dB/div
Ref 35.00 dBm
Mkr2 5.870 5 GHz
-29.867 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 7.000 GHz
Sweep 10.33 ms (6200 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
7.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 10.300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 75/100
03:00:28 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 12.543 8 GHz
-27.341 dBm
-13.00 dBm
Start 7.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 13.600 GHz
Sweep 11.33 ms (6800 pts)
Frequency
Auto Tune
Center Freq
10.300000000 GHz
Start Freq
7.000000000 GHz
Stop Freq
13.600000000 GHz
CF Step
660.000000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 16.800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 53/100
03:00:37 PM Dec 19, 2017
Ref Offset 12.31 dB
10 dB/div
Ref 35.00 dBm
Log
Mkr1 17.044 5 GHz
-25.110 dBm
-13.00 dBm
Start 13.600 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 20.000 GHz
Sweep 16.21 ms (6400 pts)
Frequency
Auto Tune
Center Freq
16.800000000 GHz
Start Freq
13.600000000 GHz
Stop Freq
20.000000000 GHz
CF Step
640.000000 MHz
Auto
Man
Freq Offset
0 Hz

Appendix A) Frequency Stability

Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM1	LCH	TN	VL	-19.37	-0.023502	±2.5	PASS
			TN	VN	-12.40	-0.015045	±2.5	PASS
			TN	VH	-15.05	-0.018260	±2.5	PASS
		MCH	TN	VL	-10.01	-0.011965	±2.5	PASS
			TN	VN	-11.69	-0.013973	±2.5	PASS
			TN	VH	-5.68	-0.006789	±2.5	PASS
		HCH	TN	VL	-9.04	-0.010650	±2.5	PASS
			TN	VN	-1.36	-0.001602	±2.5	PASS
			TN	VH	-6.52	-0.007681	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM2	LCH	TN	VL	-14.08	-0.017083	±2.5	PASS
			TN	VN	-0.06	-0.000073	±2.5	PASS
			TN	VH	9.30	0.011284	±2.5	PASS
		MCH	TN	VL	8.72	0.010423	±2.5	PASS
			TN	VN	2.78	0.003323	±2.5	PASS
			TN	VH	7.94	0.009491	±2.5	PASS
		HCH	TN	VL	-0.45	-0.000530	±2.5	PASS
			TN	VN	-1.61	-0.001897	±2.5	PASS
			TN	VH	-4.13	-0.004866	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM1	LCH	TN	VL	-20.34	-0.010993	±2.5	PASS
			TN	VN	-3.23	-0.001746	±2.5	PASS
			TN	VH	-8.07	-0.004362	±2.5	PASS
		MCH	TN	VL	-14.79	-0.007867	±2.5	PASS
			TN	VN	-10.98	-0.005840	±2.5	PASS
			TN	VH	-6.59	-0.003505	±2.5	PASS
		HCH	TN	VL	6.26	0.003278	±2.5	PASS
			TN	VN	-1.42	-0.000744	±2.5	PASS
			TN	VH	-0.39	-0.000204	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM2	LCH	TN	VL	-7.94	-0.004291	±2.5	PASS
			TN	VN	5.36	0.002897	±2.5	PASS
			TN	VH	13.04	0.007048	±2.5	PASS
		MCH	TN	VL	16.40	0.008723	±2.5	PASS
			TN	VN	15.88	0.008447	±2.5	PASS
			TN	VH	19.05	0.010133	±2.5	PASS
		HCH	TN	VL	12.59	0.006592	±2.5	PASS
			TN	VN	16.72	0.008755	±2.5	PASS
			TN	VH	9.56	0.005006	±2.5	PASS

Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM1	LCH	VN	-30	-14.40	-0.017471	±2.5	PASS
			VN	-20	-20.02	-0.024290	±2.5	PASS
			VN	-10	-16.27	-0.019740	±2.5	PASS
			VN	0	-13.62	-0.016525	±2.5	PASS
			VN	10	-0.45	-0.000546	±2.5	PASS
			VN	20	-3.16	-0.003834	±2.5	PASS
			VN	30	-6.91	-0.008384	±2.5	PASS
			VN	40	-10.59	-0.012849	±2.5	PASS
			VN	50	-4.78	-0.005800	±2.5	PASS
GSM850	TM1	MCH	VN	-30	-4.33	-0.005176	±2.5	PASS
			VN	-20	-7.23	-0.008642	±2.5	PASS
			VN	-10	-1.94	-0.002319	±2.5	PASS
			VN	0	-2.26	-0.002701	±2.5	PASS
			VN	10	-5.88	-0.007028	±2.5	PASS
			VN	20	-5.23	-0.006251	±2.5	PASS
			VN	30	-6.13	-0.007327	±2.5	PASS
			VN	40	-4.78	-0.005714	±2.5	PASS
			VN	50	-10.85	-0.012969	±2.5	PASS
GSM850	TM1	HCH	VN	-30	-8.59	-0.010120	±2.5	PASS
			VN	-20	-9.23	-0.010874	±2.5	PASS
			VN	-10	-12.53	-0.014762	±2.5	PASS
			VN	0	-10.20	-0.012017	±2.5	PASS
			VN	10	-17.76	-0.020924	±2.5	PASS
			VN	20	-10.40	-0.012253	±2.5	PASS
			VN	30	-10.98	-0.012936	±2.5	PASS
			VN	40	-2.65	-0.003122	±2.5	PASS
			VN	50	-2.13	-0.002509	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM2	LCH	VN	-30	13.43	0.016295	±2.5	PASS
			VN	-20	13.56	0.016452	±2.5	PASS
			VN	-10	14.79	0.017945	±2.5	PASS
			VN	0	16.47	0.019983	±2.5	PASS
			VN	10	12.66	0.015360	±2.5	PASS
			VN	20	8.07	0.009791	±2.5	PASS
			VN	30	9.23	0.011199	±2.5	PASS
			VN	40	9.81	0.011902	±2.5	PASS
			VN	50	6.26	0.007595	±2.5	PASS
GSM850	TM2	MCH	VN	-30	10.85	0.012969	±2.5	PASS
			VN	-20	6.84	0.008176	±2.5	PASS
			VN	-10	7.55	0.009025	±2.5	PASS
			VN	0	-2.58	-0.003084	±2.5	PASS
			VN	10	-2.20	-0.002630	±2.5	PASS
			VN	20	1.68	0.002008	±2.5	PASS
			VN	30	2.32	0.002773	±2.5	PASS
			VN	40	0.97	0.001159	±2.5	PASS
			VN	50	3.42	0.004088	±2.5	PASS
GSM850	TM2	HCH	VN	-30	0.00	0.000000	±2.5	PASS
			VN	-20	-4.91	-0.005785	±2.5	PASS
			VN	-10	-6.59	-0.007764	±2.5	PASS
			VN	0	-8.85	-0.010426	±2.5	PASS
			VN	10	-2.58	-0.003040	±2.5	PASS
			VN	20	-15.95	-0.018791	±2.5	PASS
			VN	30	-6.52	-0.007681	±2.5	PASS
			VN	40	-11.30	-0.013313	±2.5	PASS
			VN	50	-9.88	-0.011640	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM1	LCH	VN	-30	-17.43	-0.009421	±2.5	PASS
			VN	-20	-19.50	-0.010539	±2.5	PASS
			VN	-10	-4.78	-0.002584	±2.5	PASS
			VN	0	-13.04	-0.007048	±2.5	PASS
			VN	10	-11.88	-0.006421	±2.5	PASS
			VN	20	-7.17	-0.003875	±2.5	PASS
			VN	30	0.52	0.000281	±2.5	PASS
			VN	40	6.26	0.003383	±2.5	PASS
			VN	50	0.77	0.000416	±2.5	PASS
GSM1900	TM1	MCH	VN	-30	-7.49	-0.003984	±2.5	PASS
			VN	-20	-6.01	-0.003197	±2.5	PASS
			VN	-10	11.11	0.005910	±2.5	PASS
			VN	0	-19.63	-0.010441	±2.5	PASS
			VN	10	-16.59	-0.008824	±2.5	PASS
			VN	20	-6.52	-0.003468	±2.5	PASS
			VN	30	-2.91	-0.001548	±2.5	PASS
			VN	40	1.29	0.000686	±2.5	PASS
			VN	50	3.29	0.001750	±2.5	PASS
GSM1900	TM1	HCH	VN	-30	-1.74	-0.000911	±2.5	PASS
			VN	-20	-5.94	-0.003110	±2.5	PASS
			VN	-10	-1.23	-0.000644	±2.5	PASS
			VN	0	-2.32	-0.001215	±2.5	PASS
			VN	10	-2.00	-0.001047	±2.5	PASS
			VN	20	4.71	0.002466	±2.5	PASS
			VN	30	13.43	0.007032	±2.5	PASS
			VN	40	-0.26	-0.000136	±2.5	PASS
			VN	50	-3.81	-0.001995	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM2	LCH	VN	-30	13.17	0.007118	±2.5	PASS
			VN	-20	19.63	0.010610	±2.5	PASS
			VN	-10	22.79	0.012318	±2.5	PASS
			VN	0	21.89	0.011831	±2.5	PASS
			VN	10	18.60	0.010053	±2.5	PASS
			VN	20	20.08	0.010853	±2.5	PASS
			VN	30	18.85	0.010188	±2.5	PASS
			VN	40	20.53	0.011096	±2.5	PASS
			VN	50	13.43	0.007259	±2.5	PASS
GSM1900	TM2	MCH	VN	-30	14.92	0.007936	±2.5	PASS
			VN	-20	23.44	0.012468	±2.5	PASS
			VN	-10	18.79	0.009995	±2.5	PASS
			VN	0	21.37	0.011367	±2.5	PASS
			VN	10	17.56	0.009340	±2.5	PASS
			VN	20	21.63	0.011505	±2.5	PASS
			VN	30	18.66	0.009926	±2.5	PASS
			VN	40	18.34	0.009755	±2.5	PASS
			VN	50	9.94	0.005287	±2.5	PASS
GSM1900	TM2	HCH	VN	-30	11.30	0.005917	±2.5	PASS
			VN	-20	9.62	0.005037	±2.5	PASS
			VN	-10	9.62	0.005037	±2.5	PASS
			VN	0	13.30	0.006964	±2.5	PASS
			VN	10	3.23	0.001691	±2.5	PASS
			VN	20	-3.68	-0.001927	±2.5	PASS
			VN	30	-2.13	-0.001115	±2.5	PASS
			VN	40	3.29	0.001723	±2.5	PASS
			VN	50	-3.16	-0.001655	±2.5	PASS