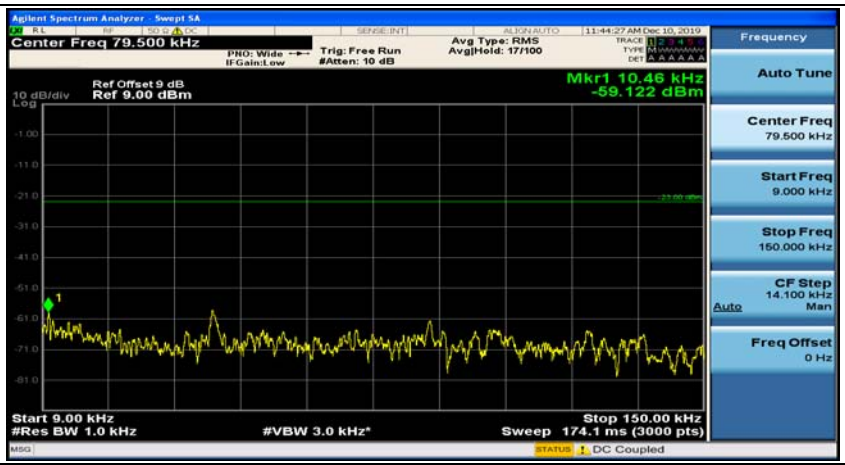
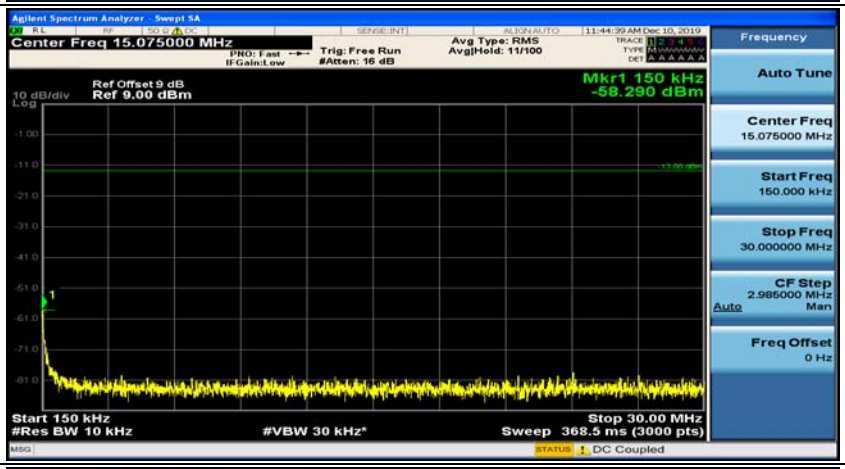
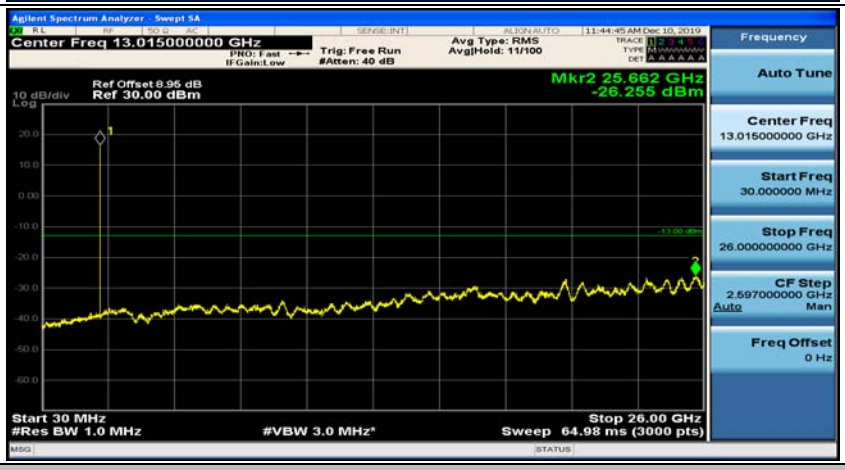
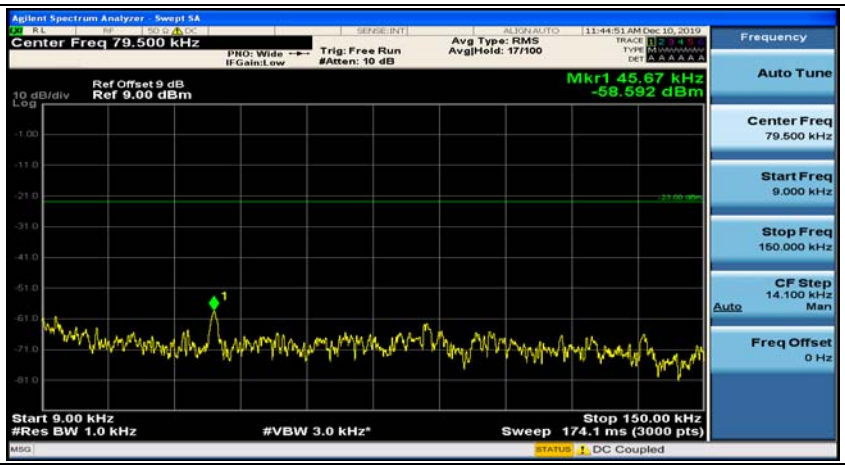
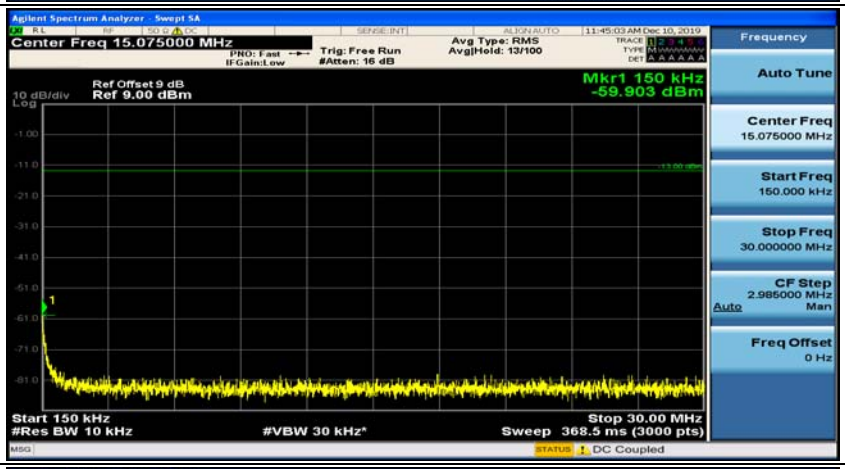


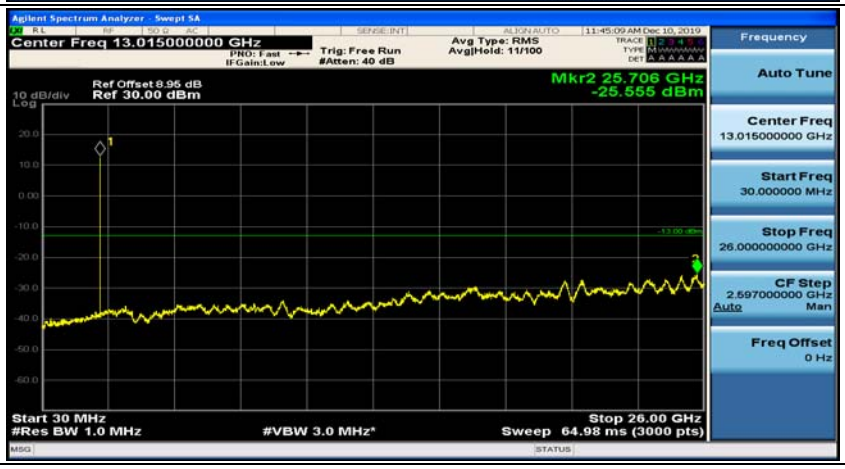



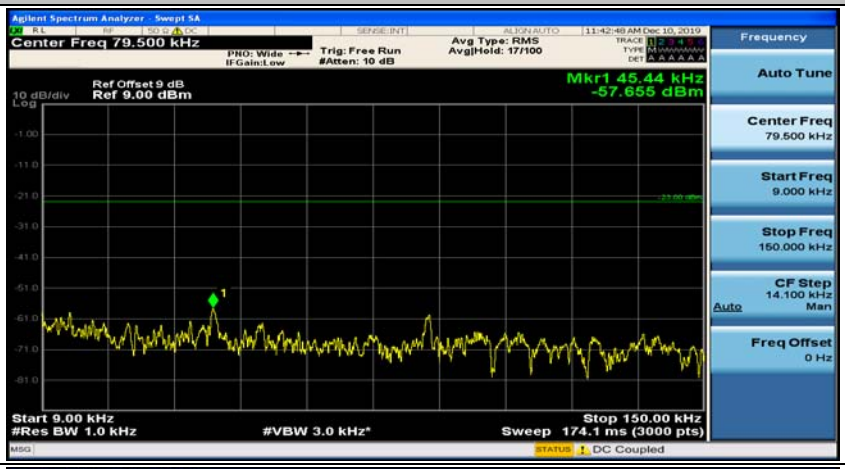
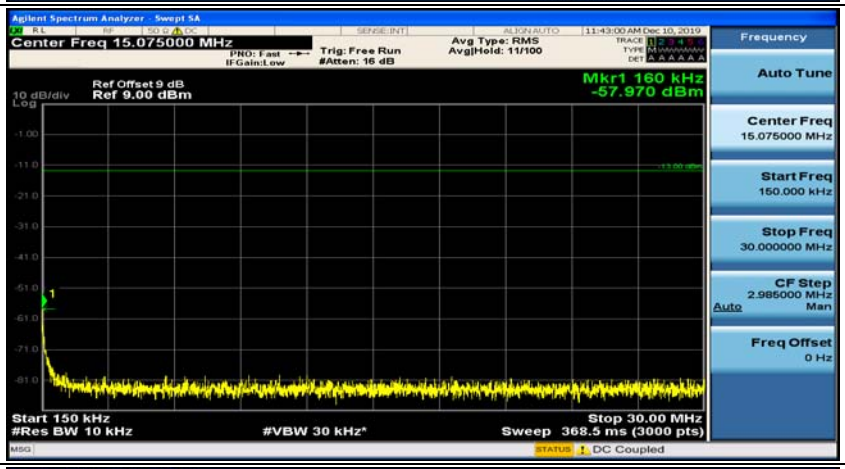
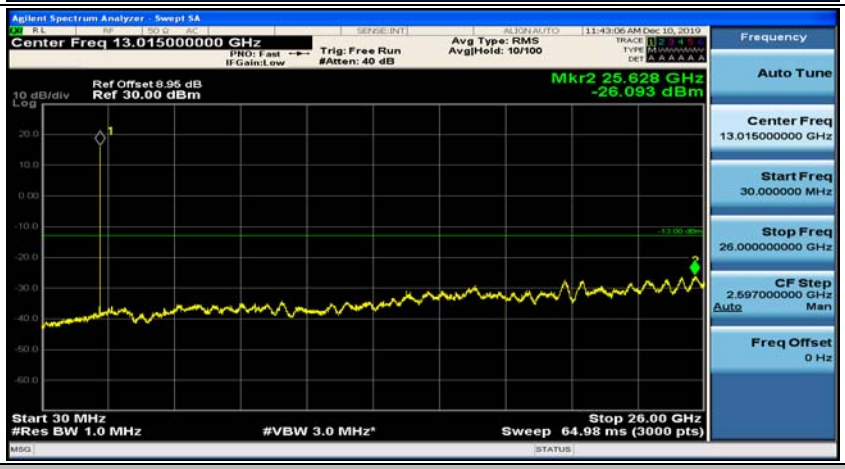



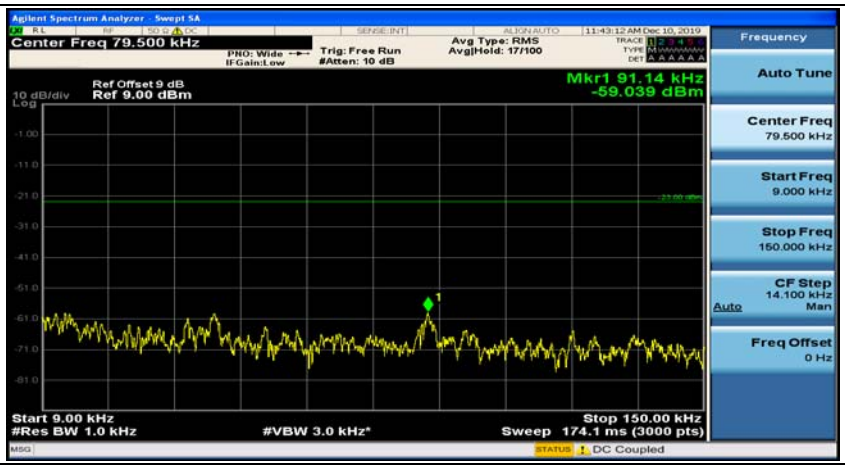

(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#24

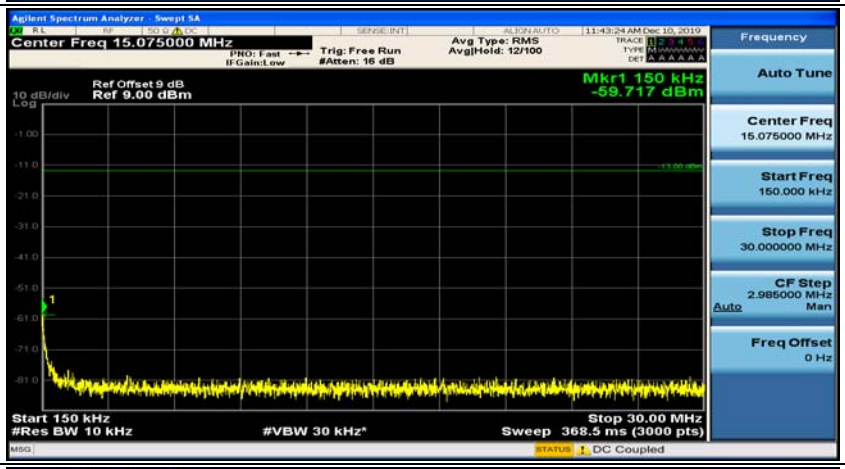

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:44:51 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.67 kHz
-58.592 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz

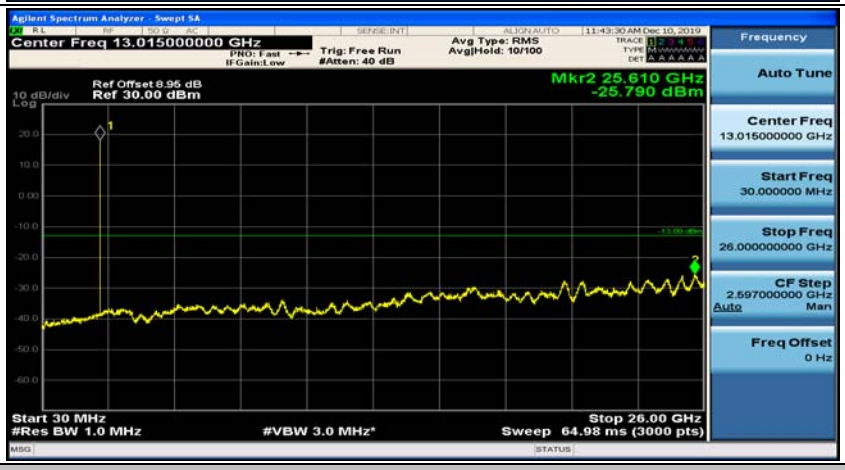

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 13/100
11:45:03 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-59.903 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 11/100
11:45:09 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.706 GHz
-25.555 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

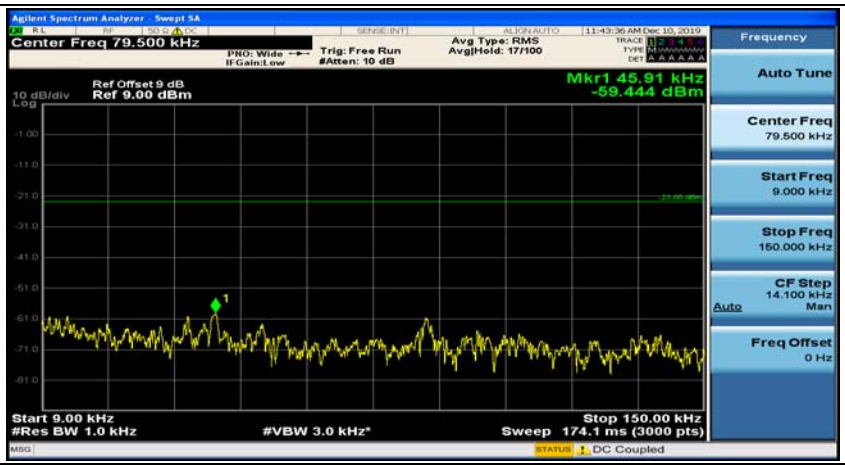
| (Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#0 |
| --- |
|  |
|  |
|  |
| (Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#12 |

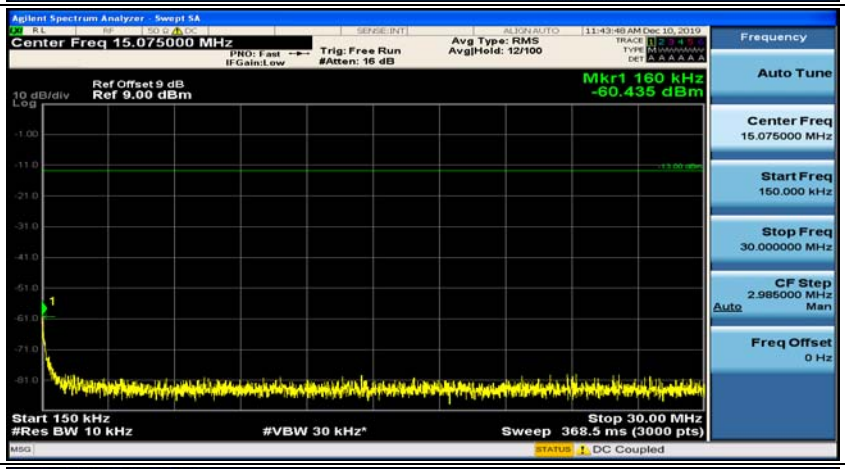


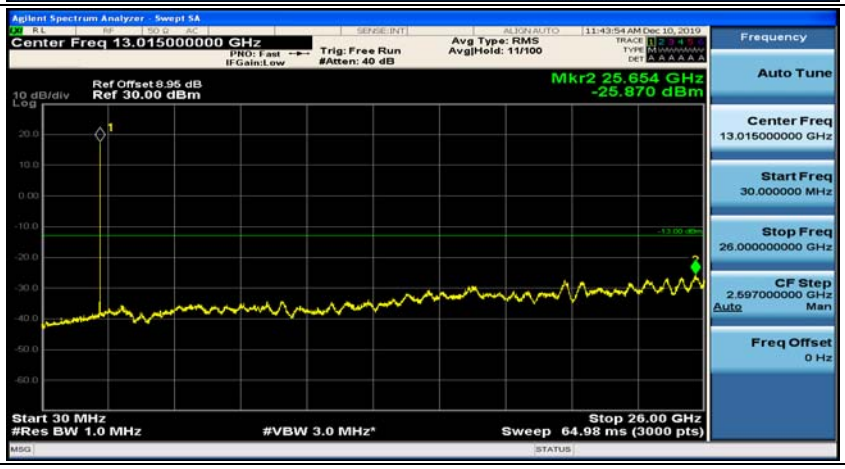



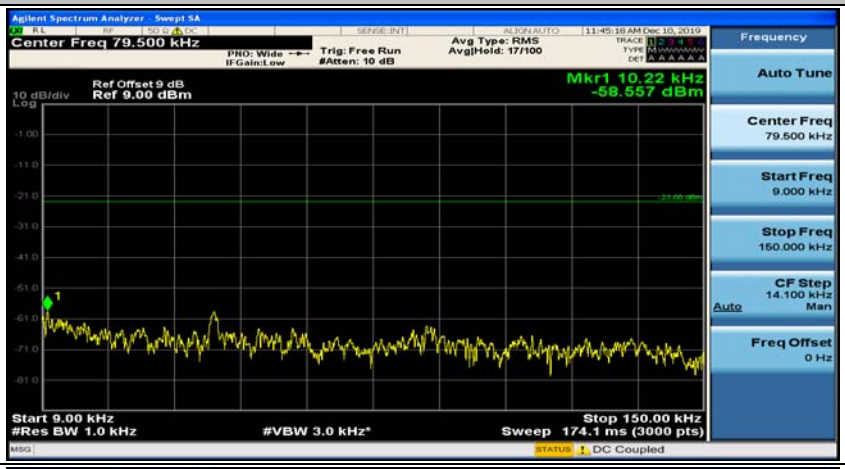
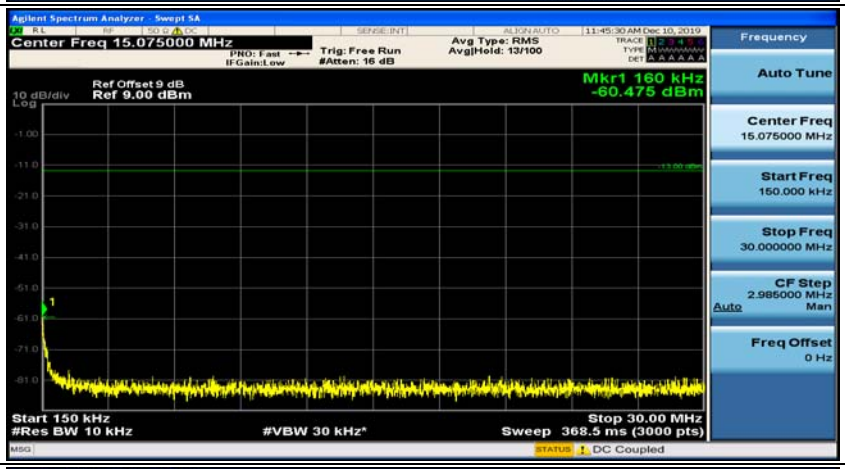
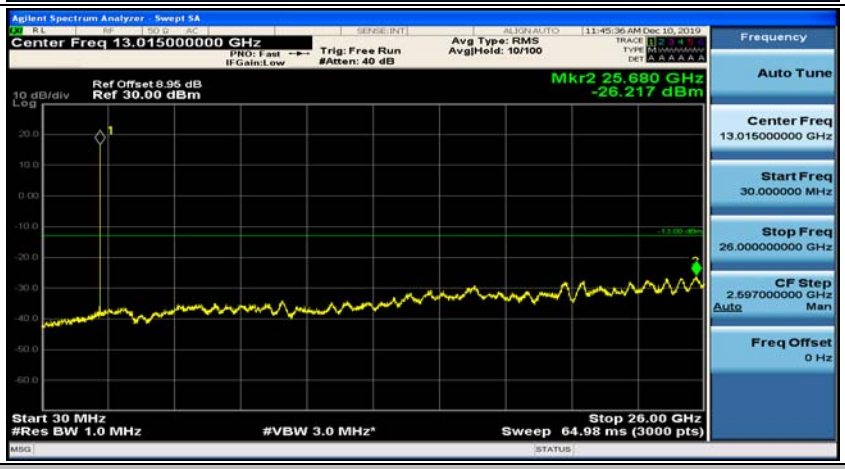



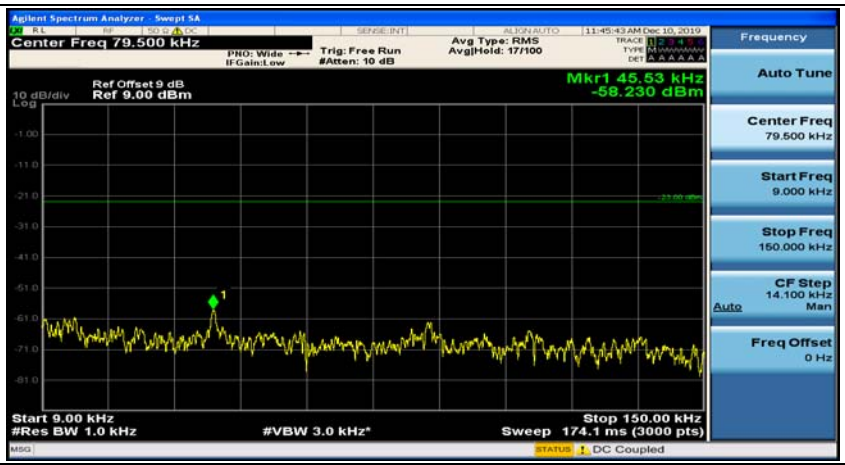

(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#24

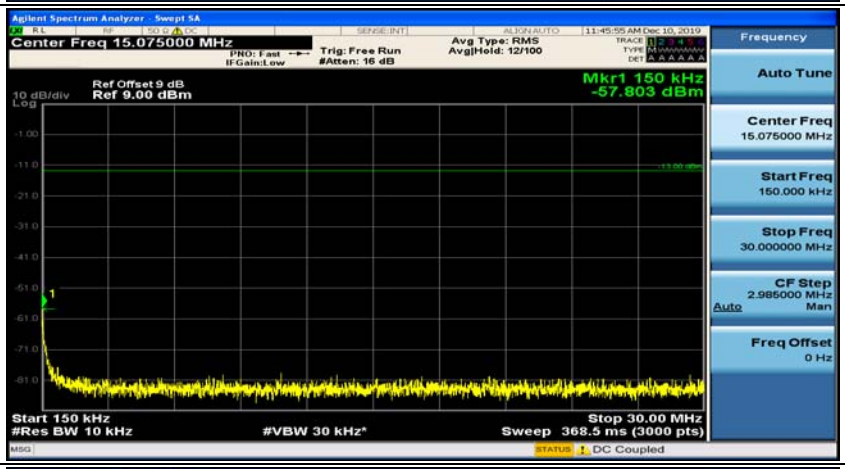

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:43:36 AM Dec 10, 2019
Frequency
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.91 kHz
-59.444 dBm
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled

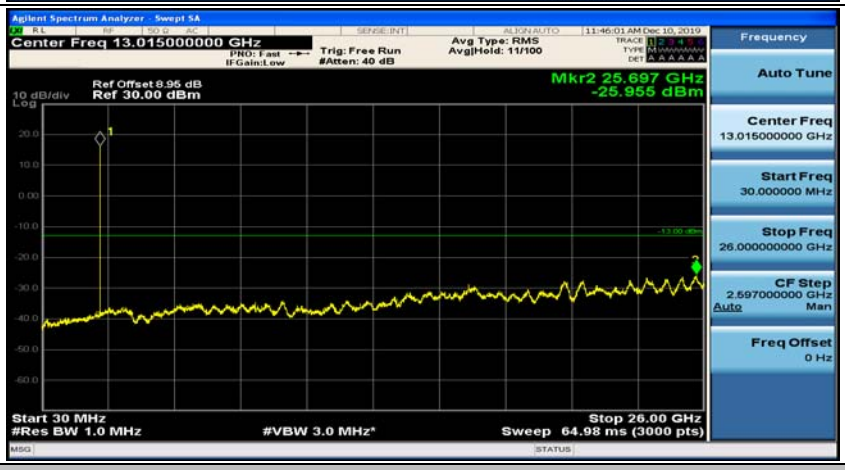

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 12/100
11:43:48 AM Dec 10, 2019
Frequency
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 160 kHz
-60.435 dBm
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 11/100
11:43:54 AM Dec 10, 2019
Frequency
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.654 GHz
-25.870 dBm
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)

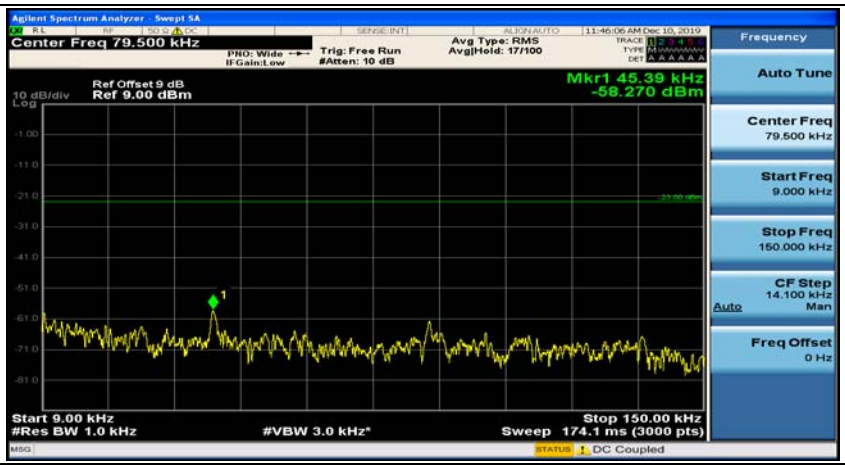
| (Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#0 |
| --- |
|  |
|  |
|  |
| (Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#12 |

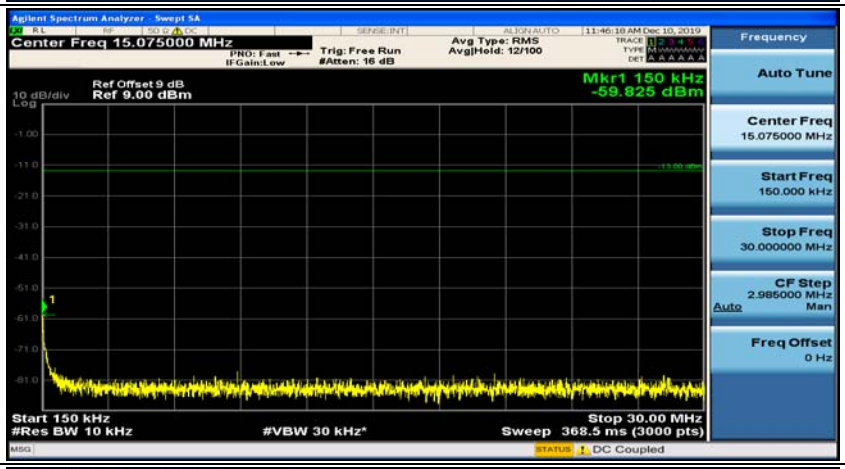


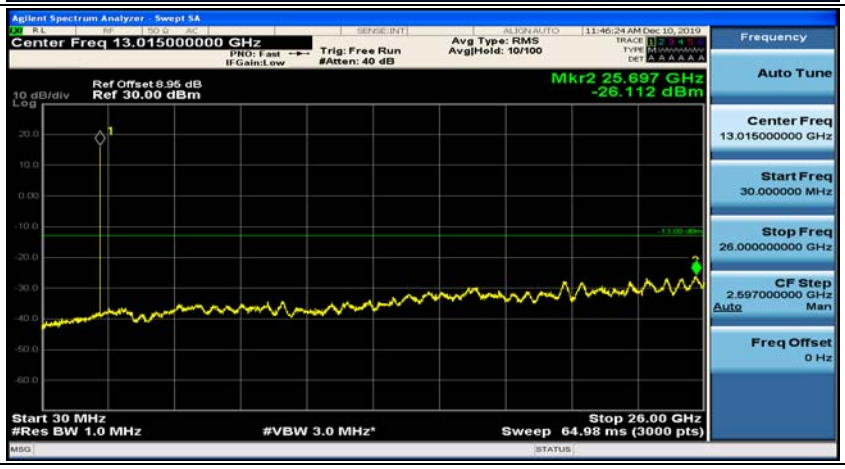



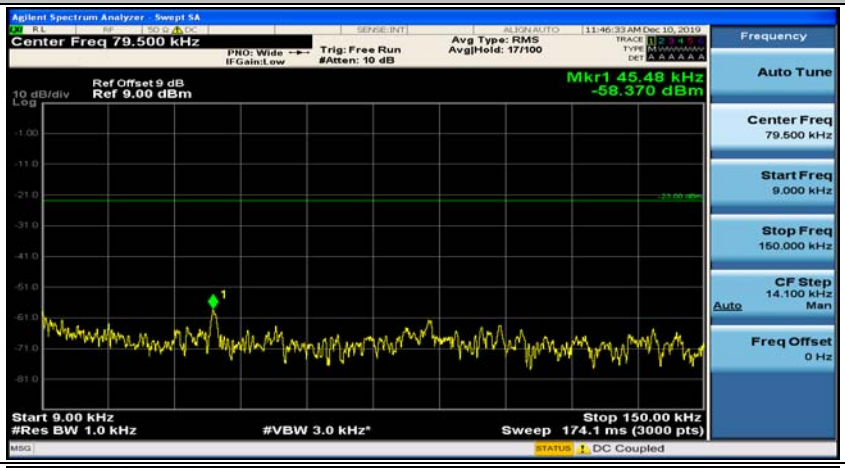
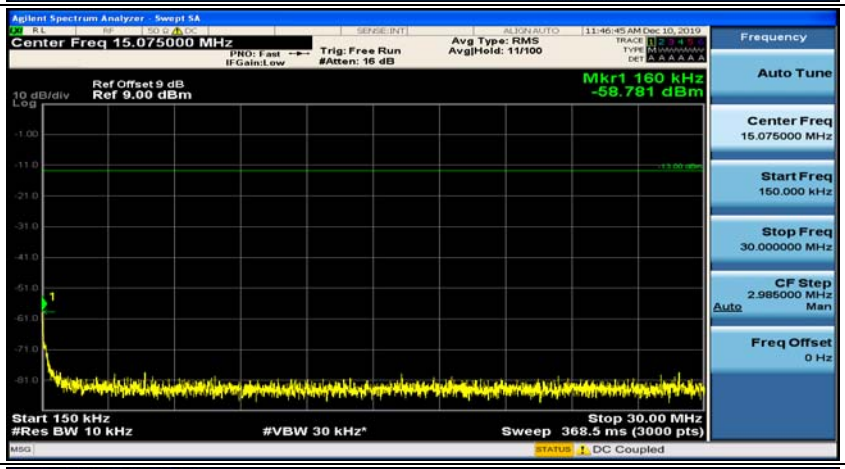
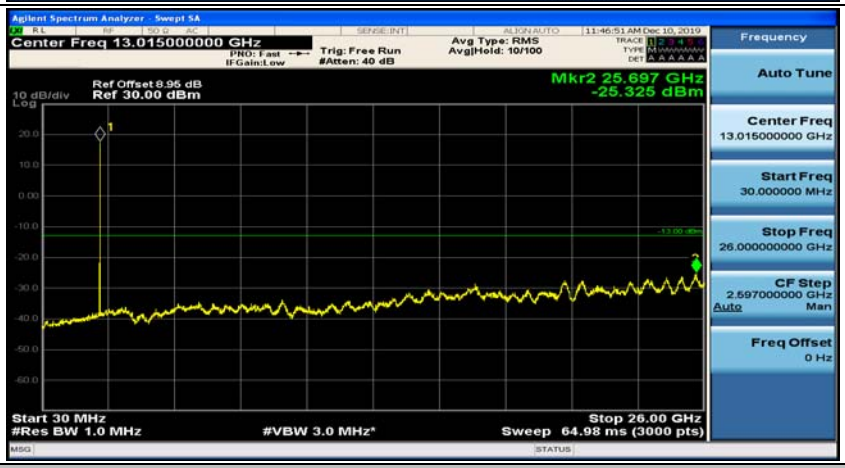

(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#24

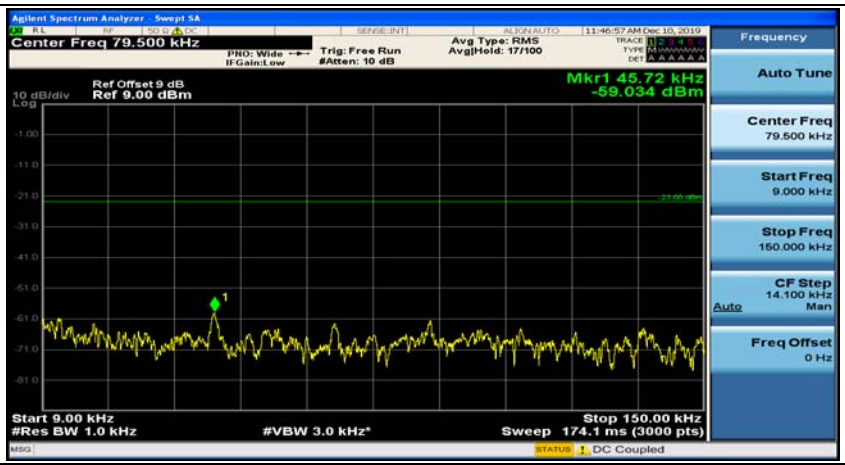

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:46:06 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.39 kHz
-58.270 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz

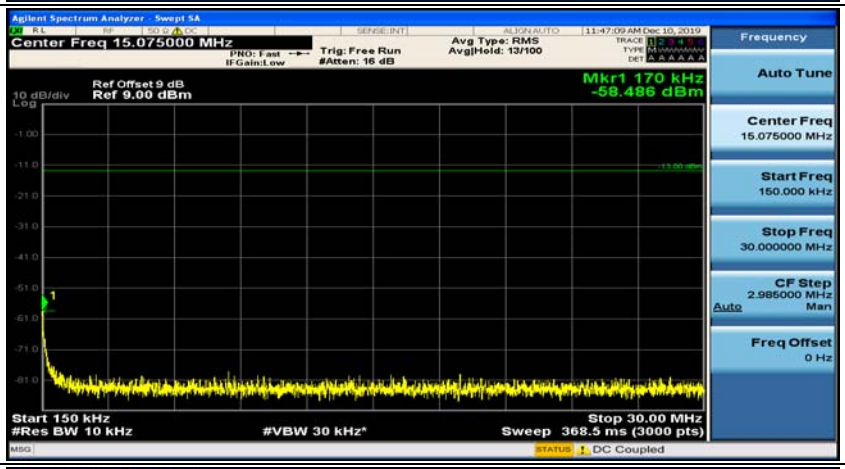

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 12/100
11:46:18 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-59.825 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 10/100
11:46:24 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.697 GHz
-26.112 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

## Channel Bandwidth: 10 MHz

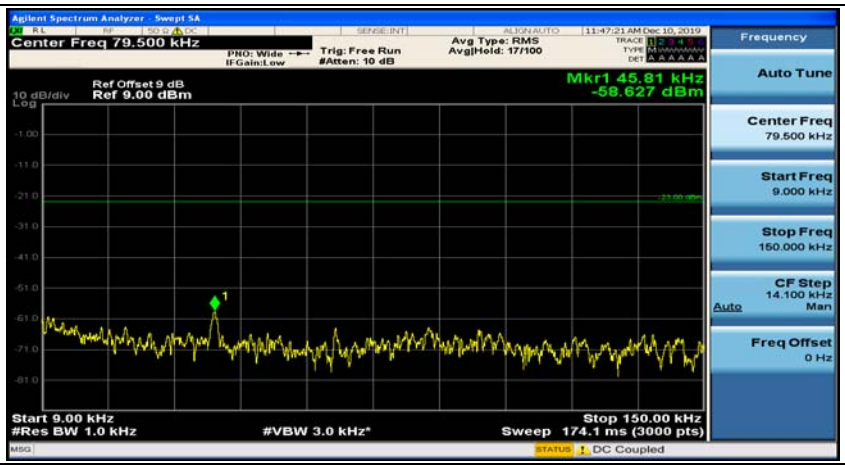
| Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#0 |
| --- |
|  |
|  |
|  |
| Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#24 |

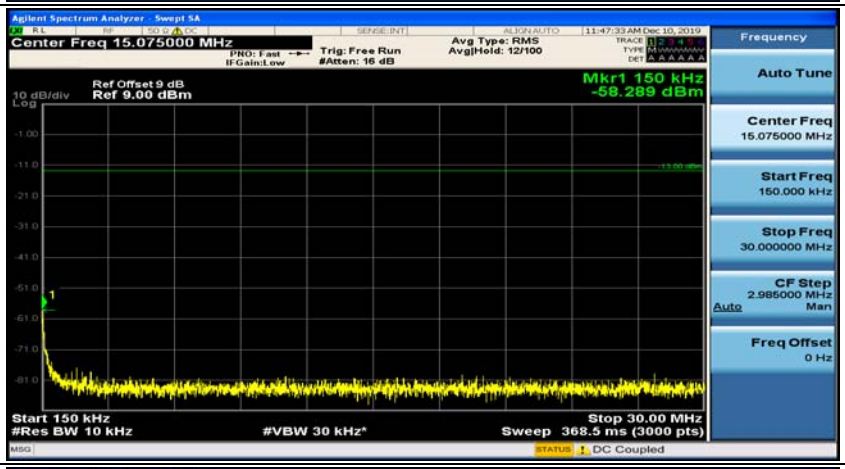


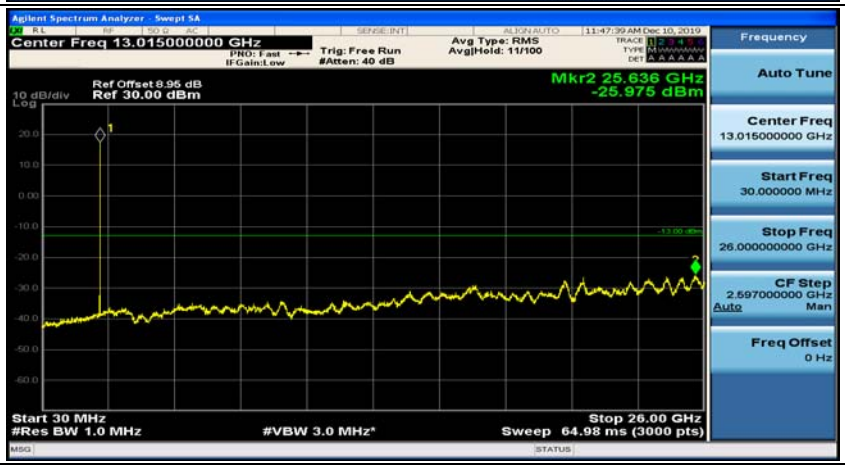



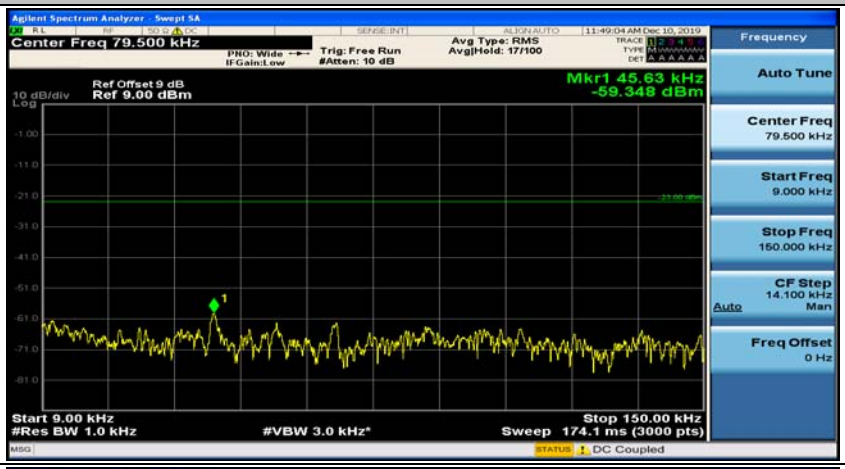
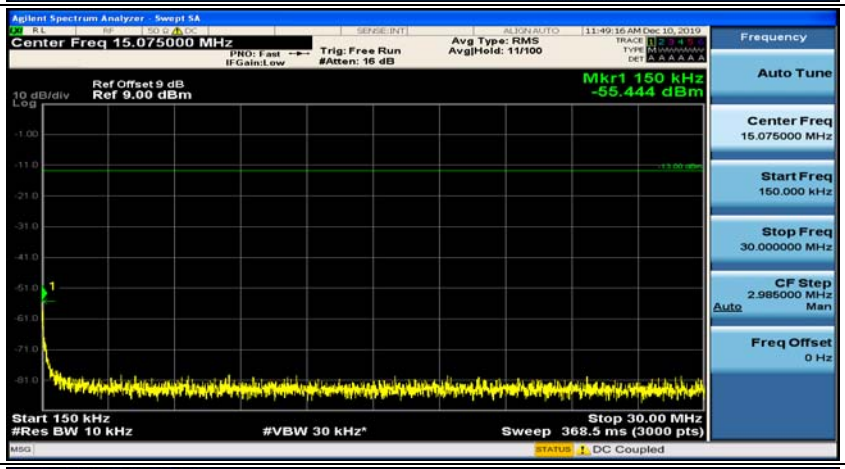
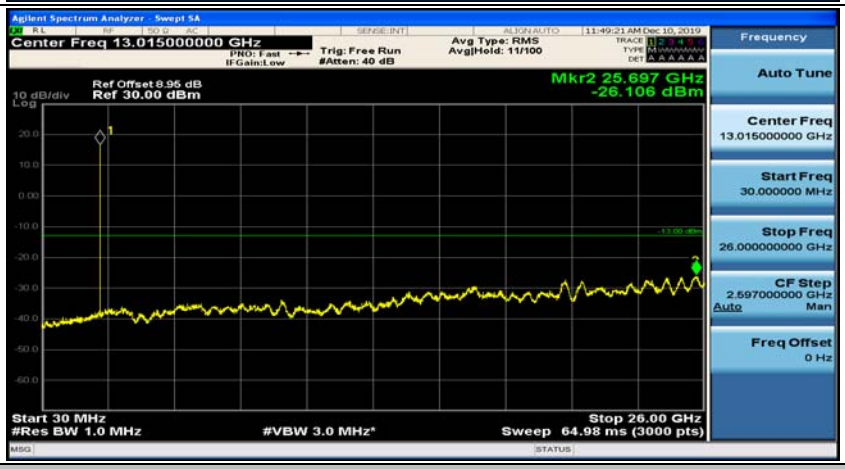


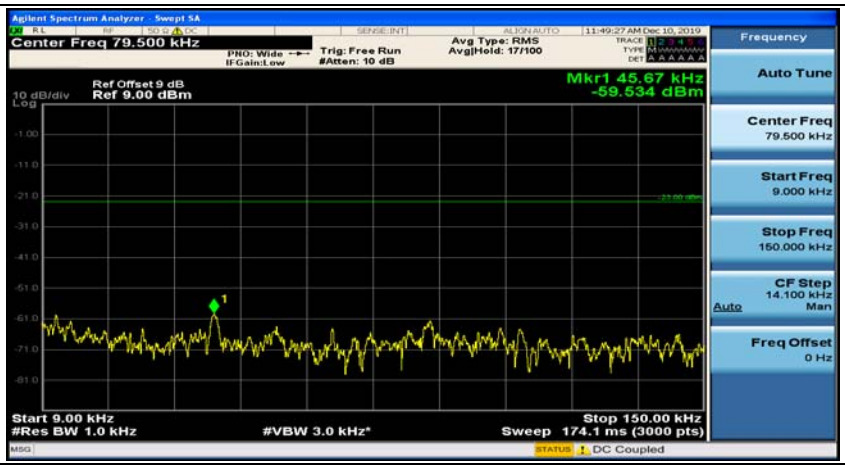
Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#49

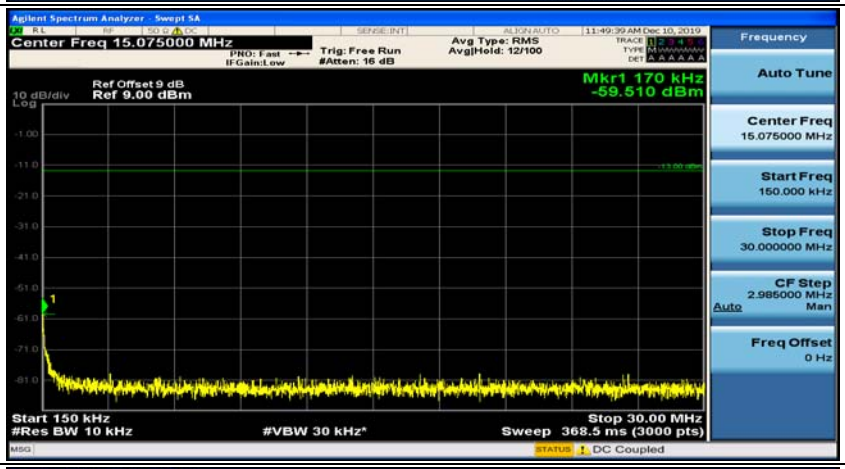

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:47:21 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.81 kHz
-58.627 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 12/100
11:47:33 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-58.289 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 11/100
11:47:39 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.636 GHz
-25.975 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

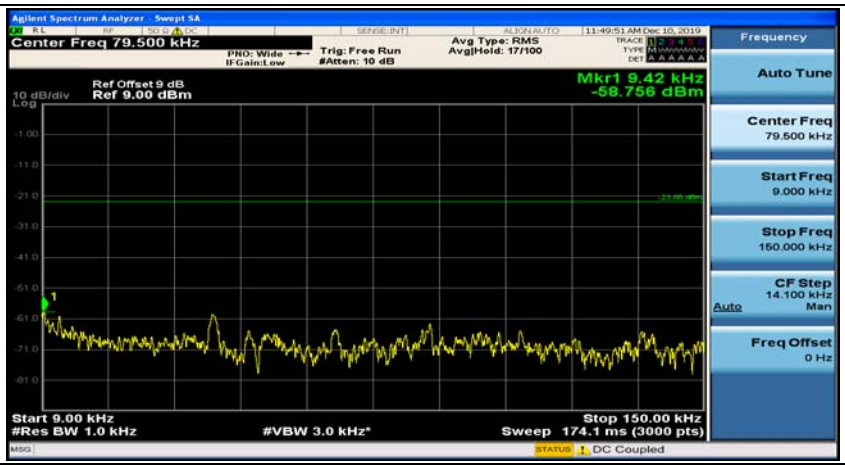
| Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#0 |
|---|
|  |
|  |
|  |
| Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#24 |

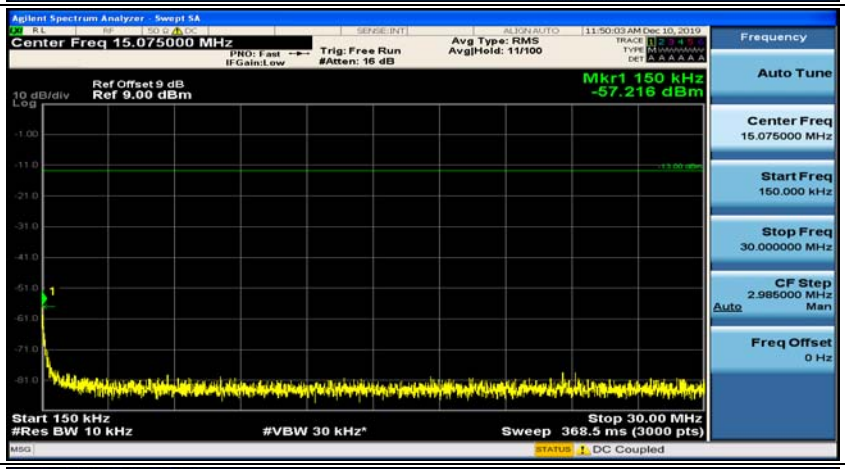


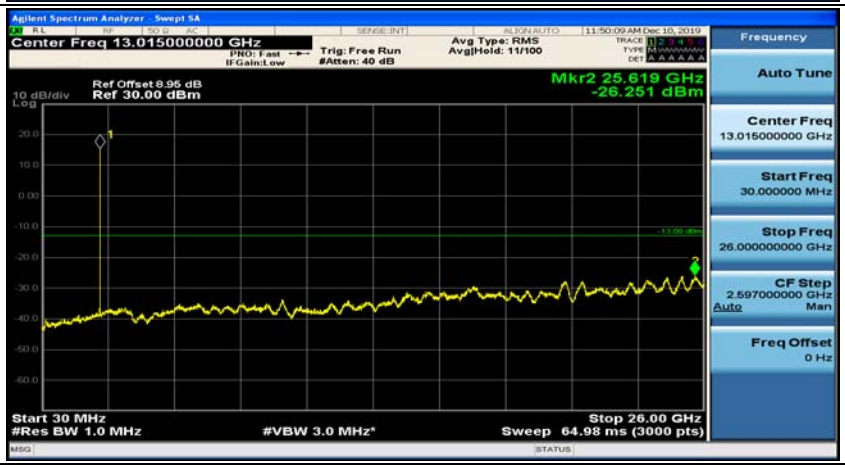



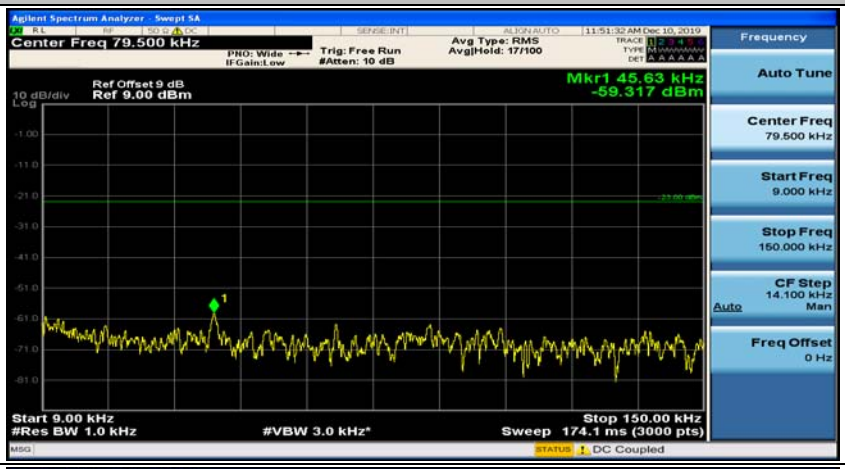
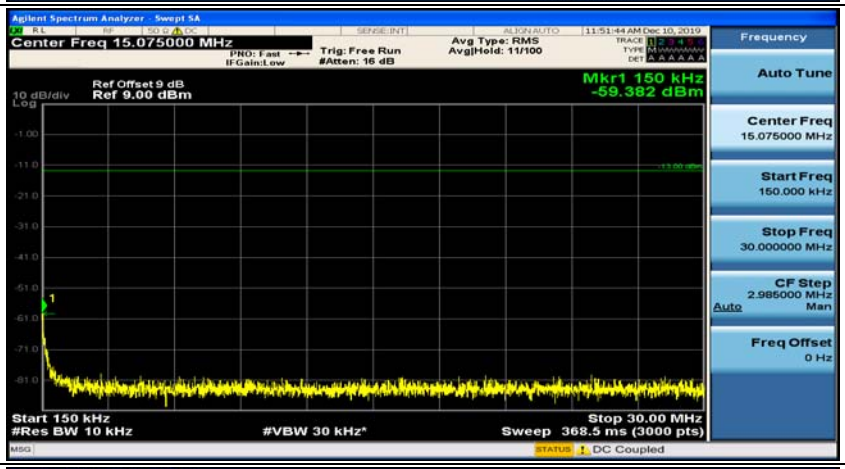
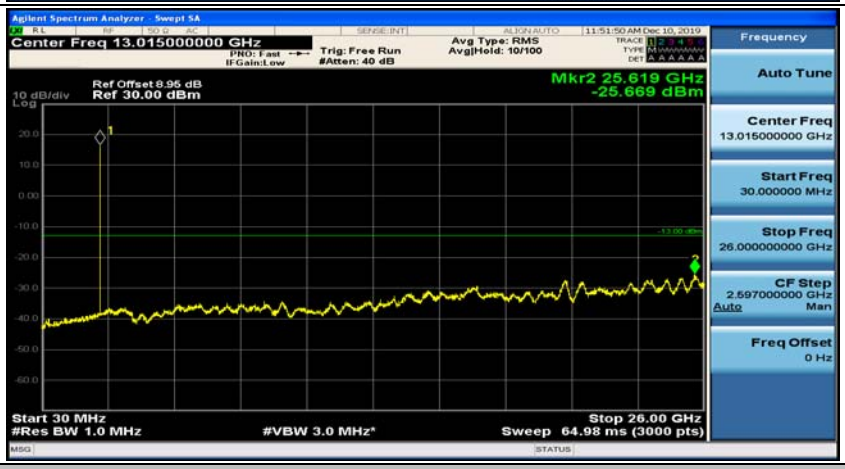


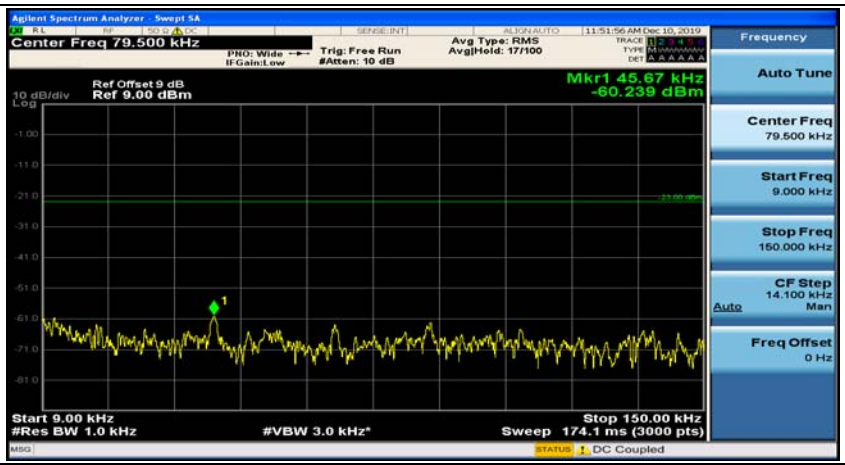
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#49

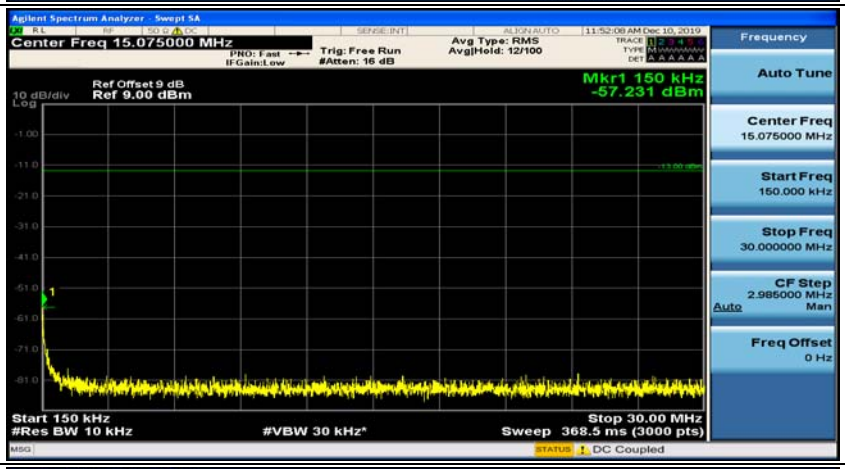

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:49:51 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 9.42 kHz
-58.756 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz

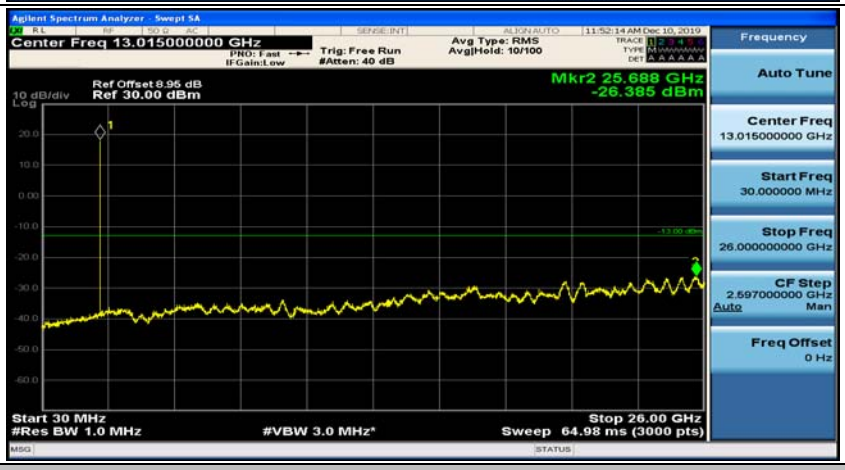

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 11/100
11:50:03 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-57.216 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 11/100
11:50:09 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.619 GHz
-26.251 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

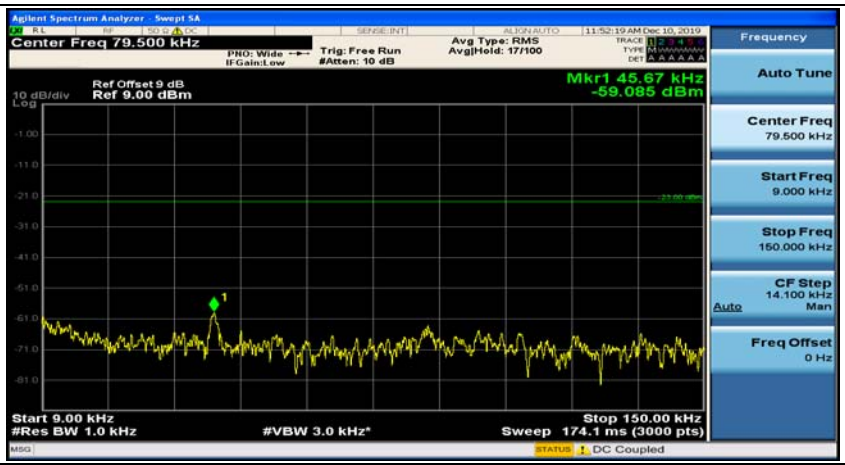
| Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#0 |
|---|
|  |
|  |
|  |
| Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#24 |

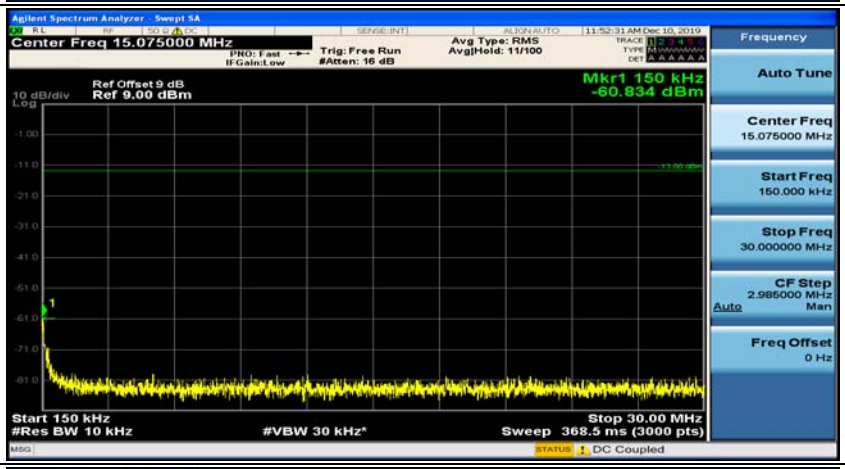


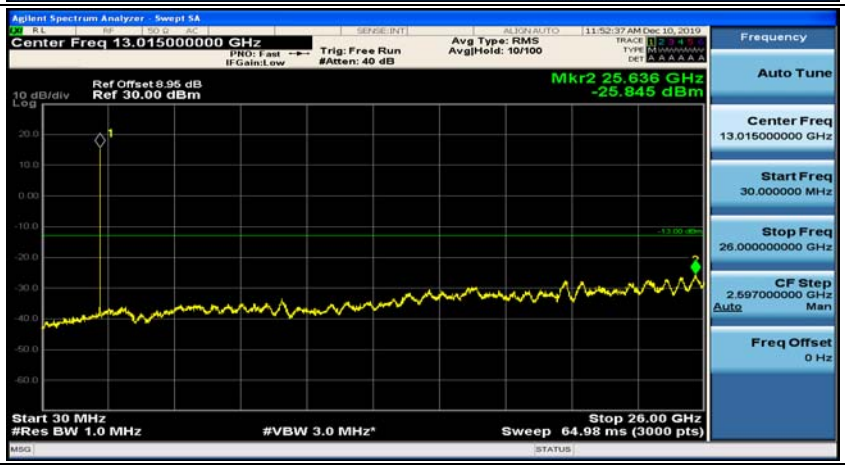



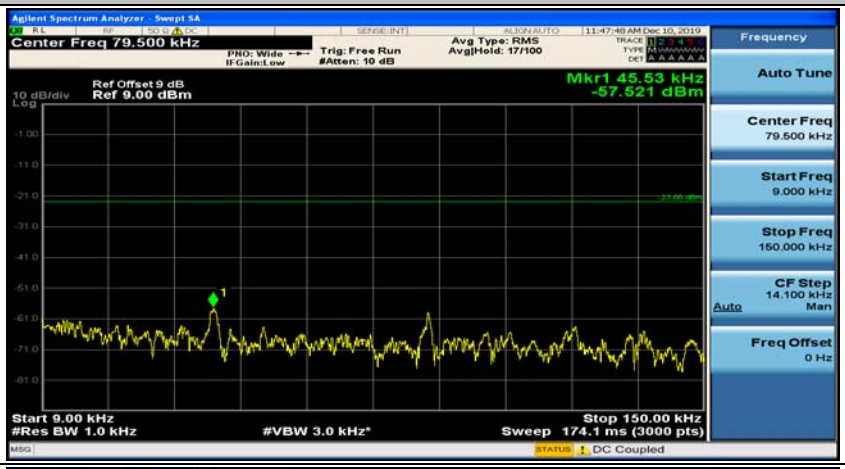
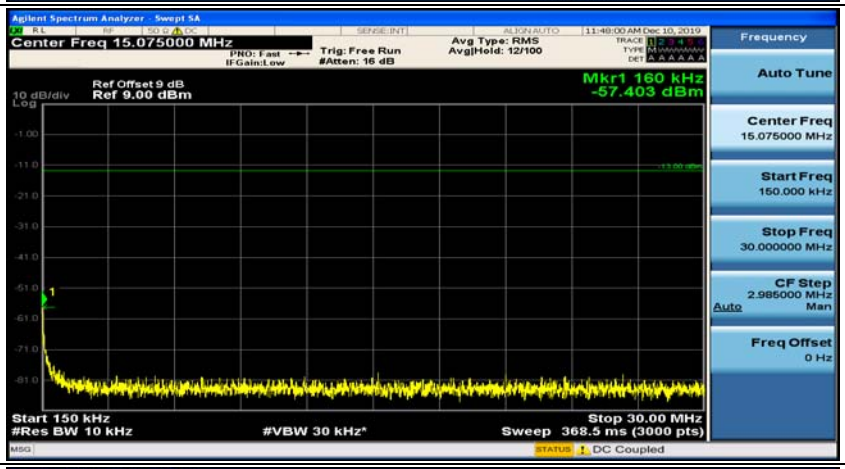
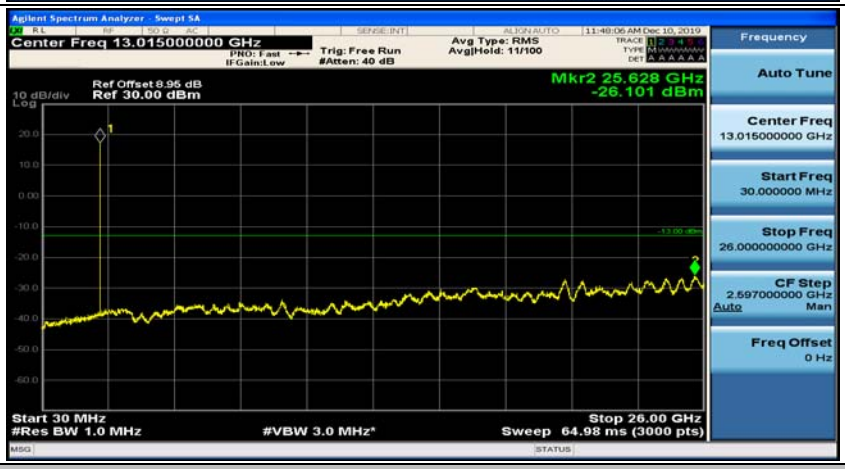



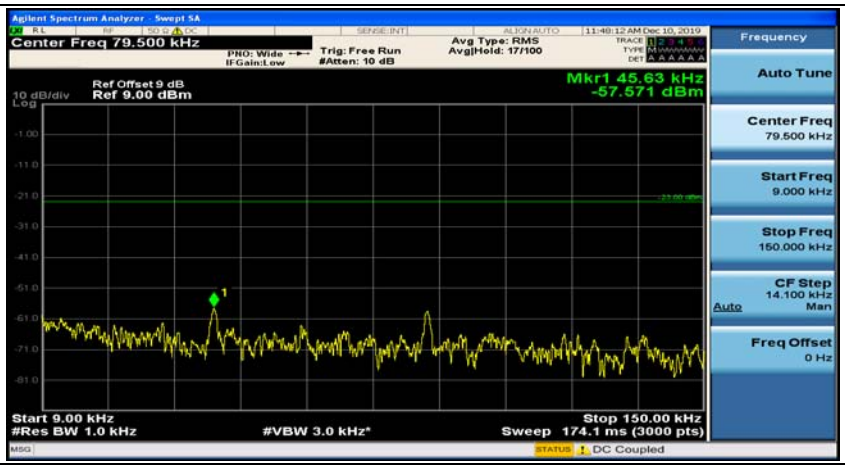

Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#49

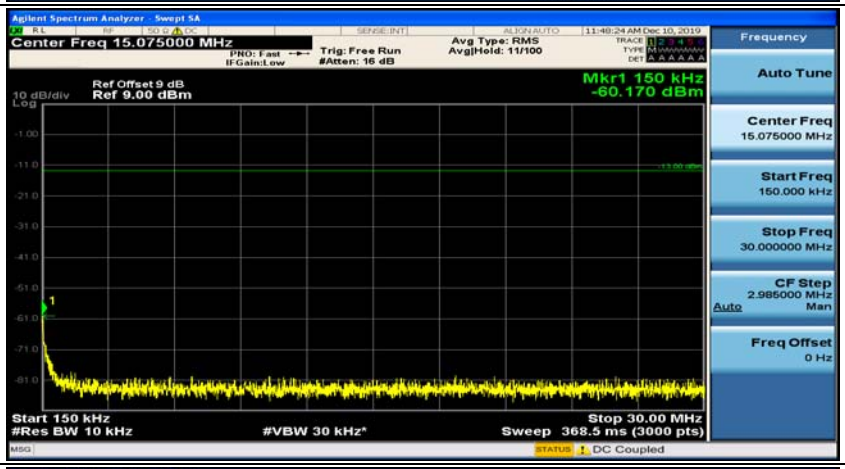

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:52:19 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.67 kHz
-59.085 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz

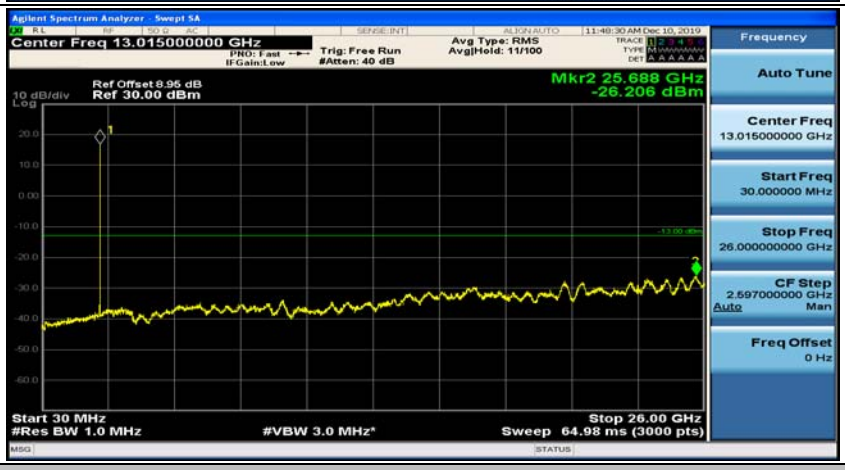

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 11/100
11:52:31 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.834 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 10/100
11:52:37 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.636 GHz
-25.845 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

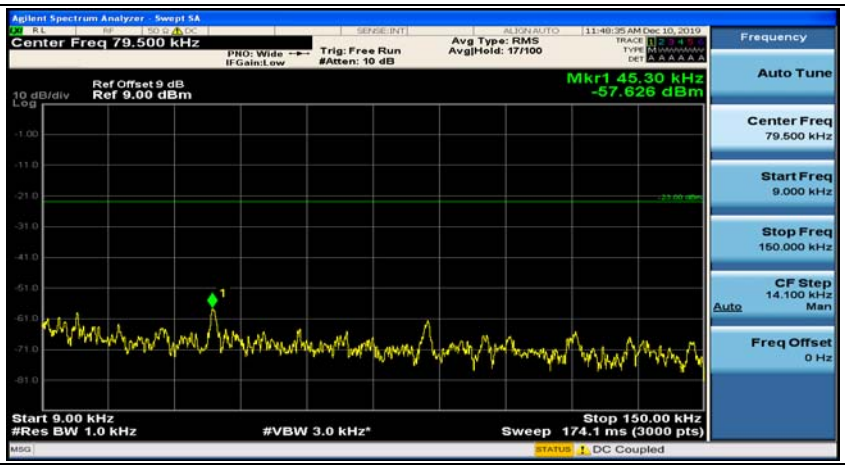
| Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#0 |
|---|
|  |
|  |
|  |
| Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#24 |

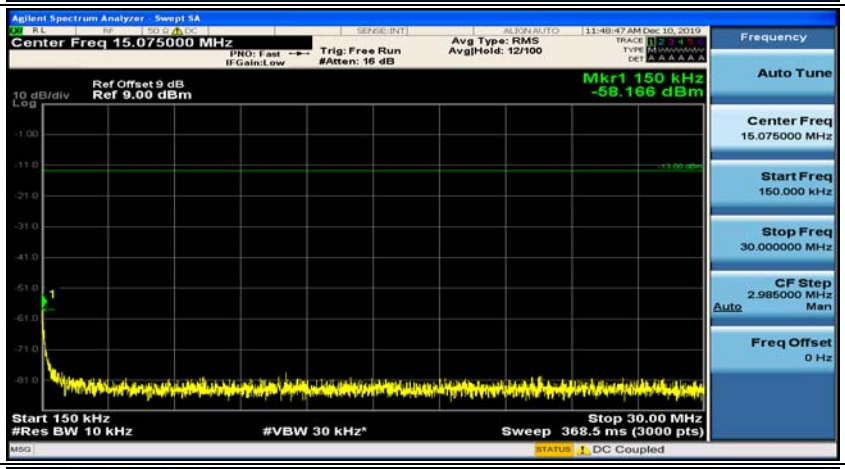


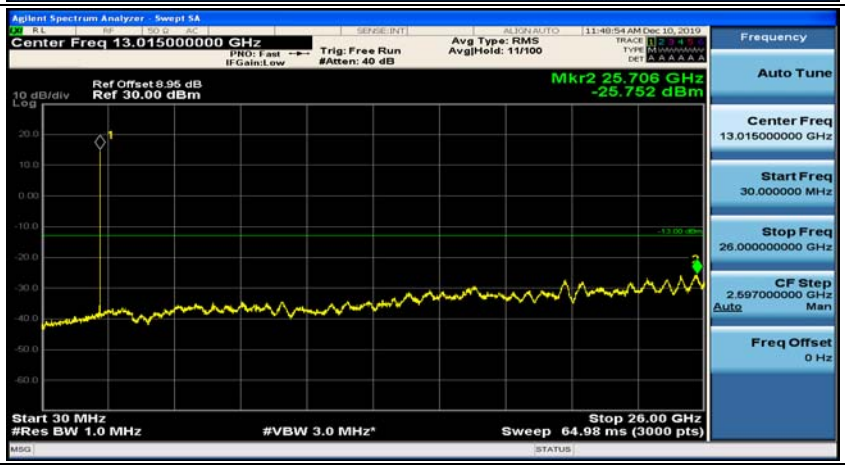



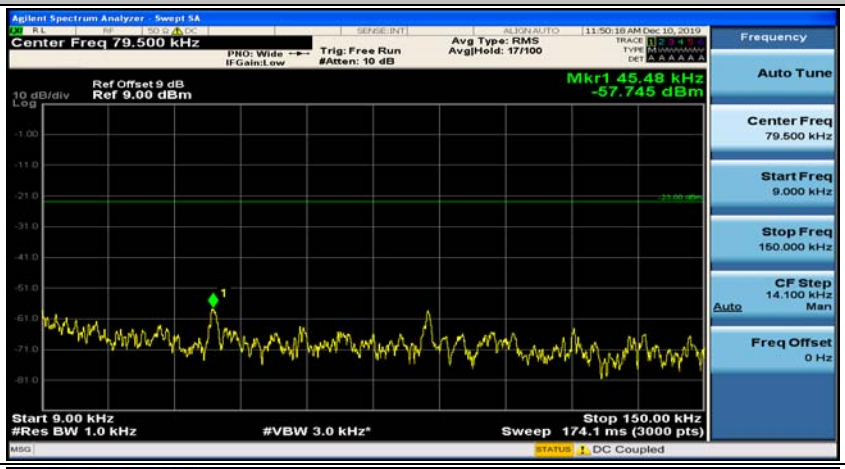
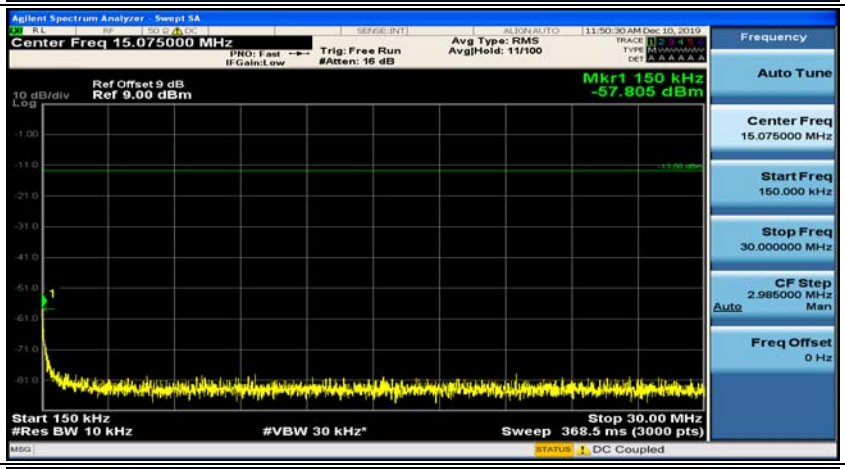
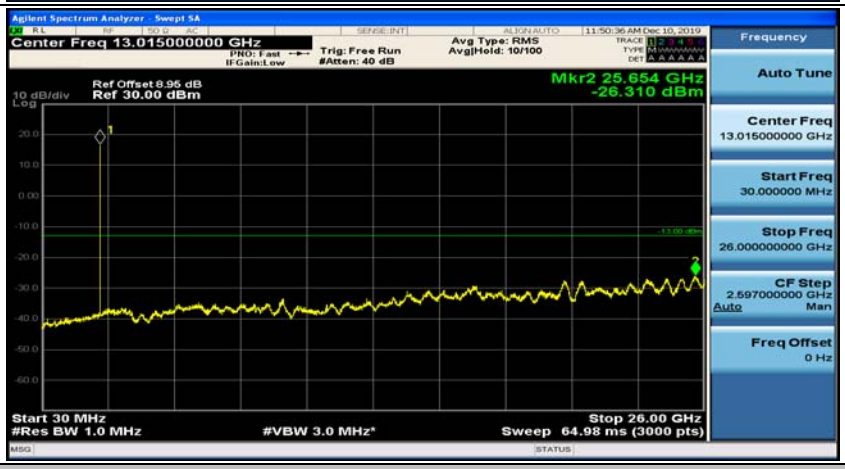



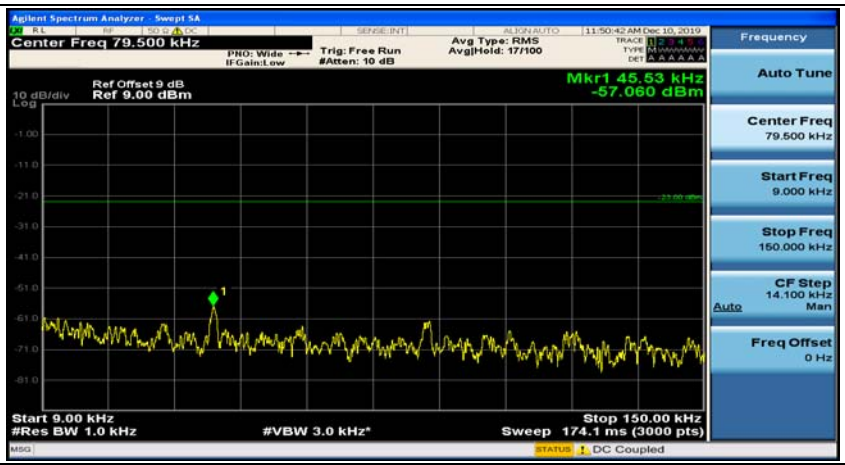

Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#49

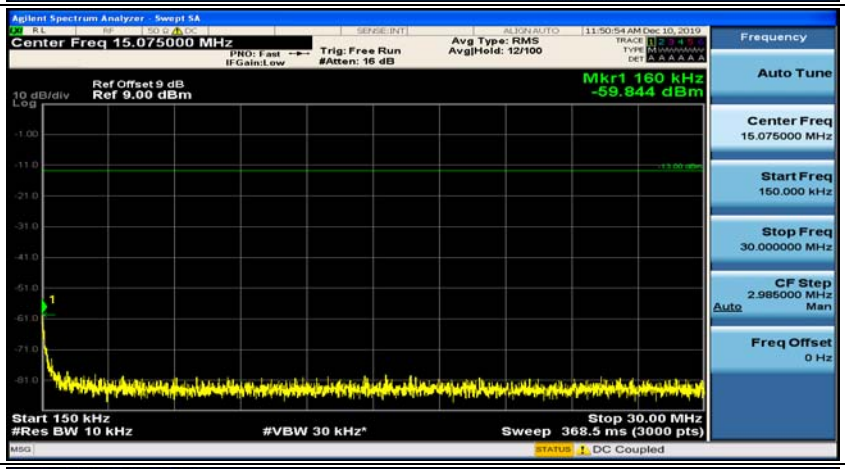

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:48:35 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.30 kHz
-57.626 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz

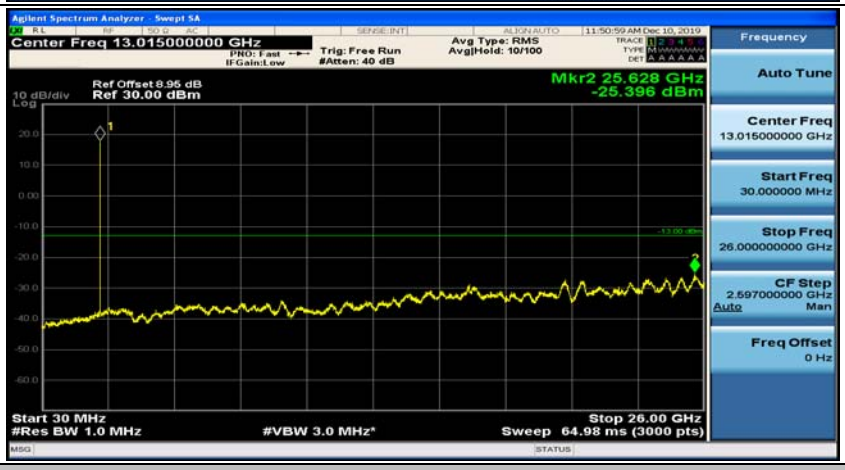

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 12/100
11:48:47 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-58.166 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 11/100
11:48:54 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.706 GHz
-25.752 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

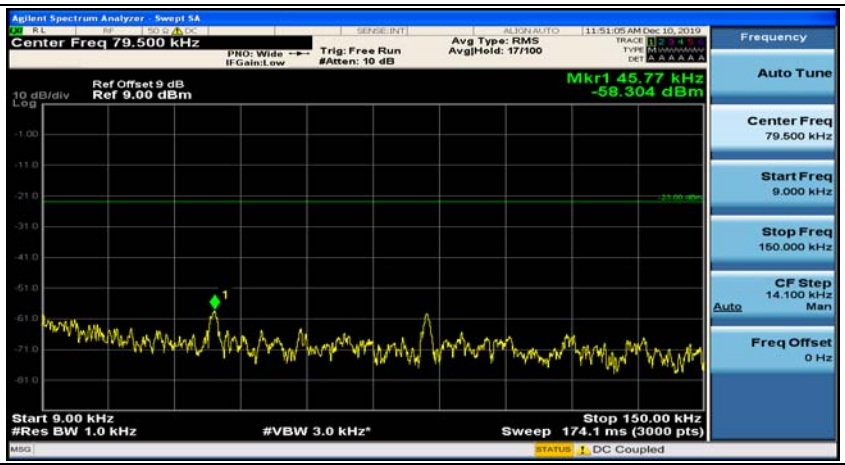
| Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#0 |
|---|
|  |
|  |
|  |
| Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#24 |

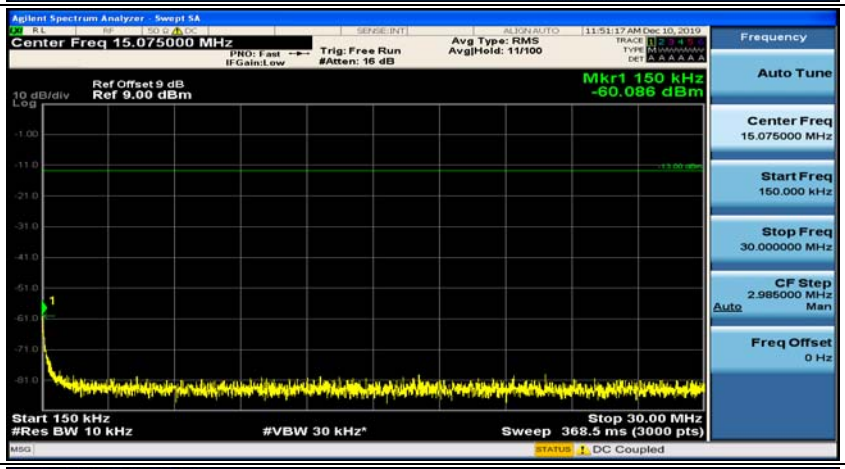


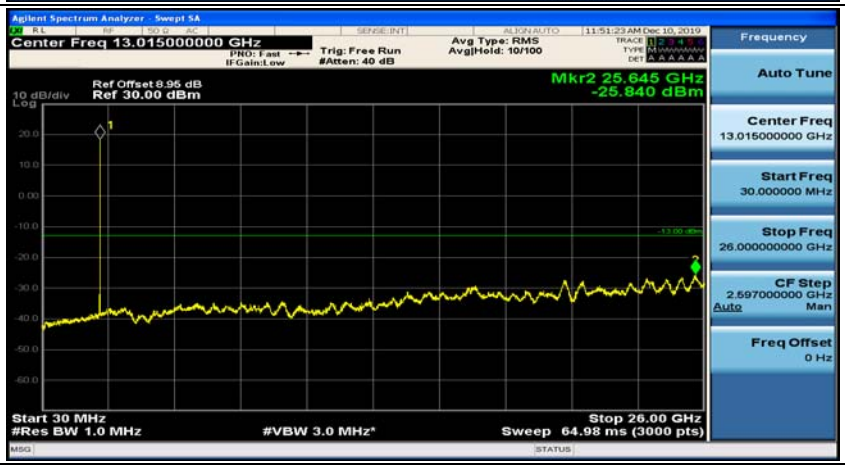



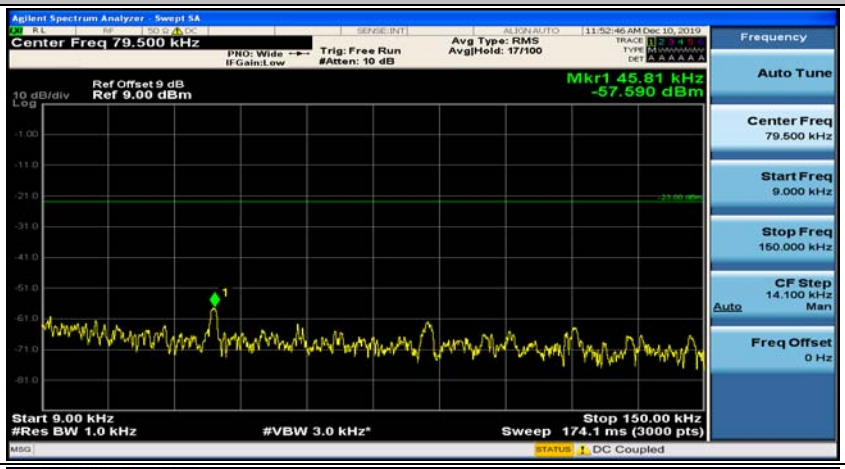
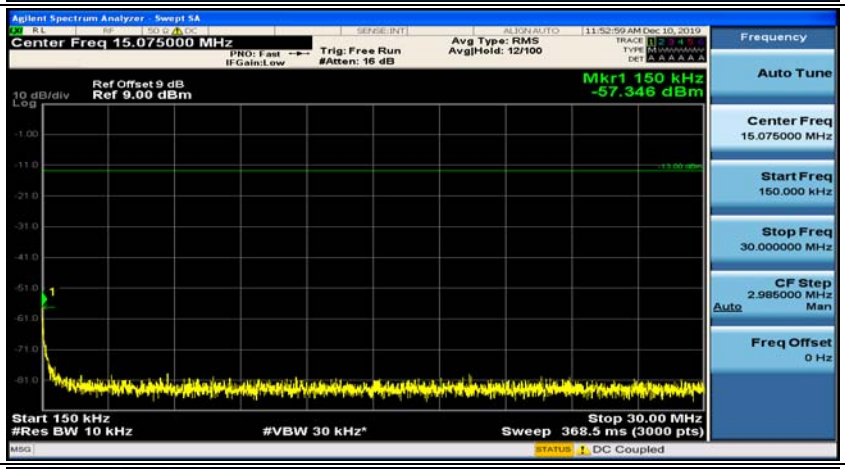
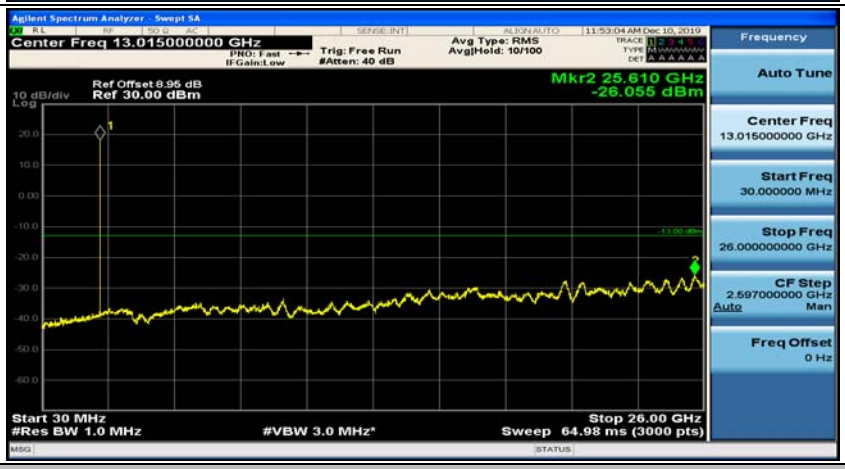



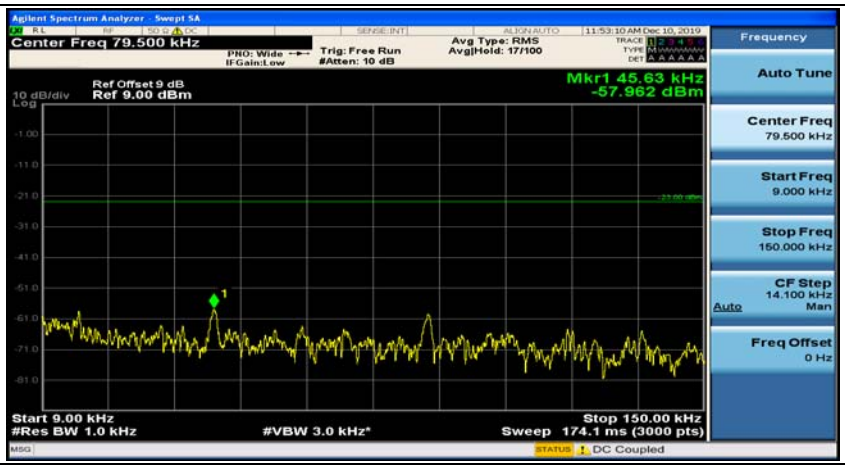

Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#49

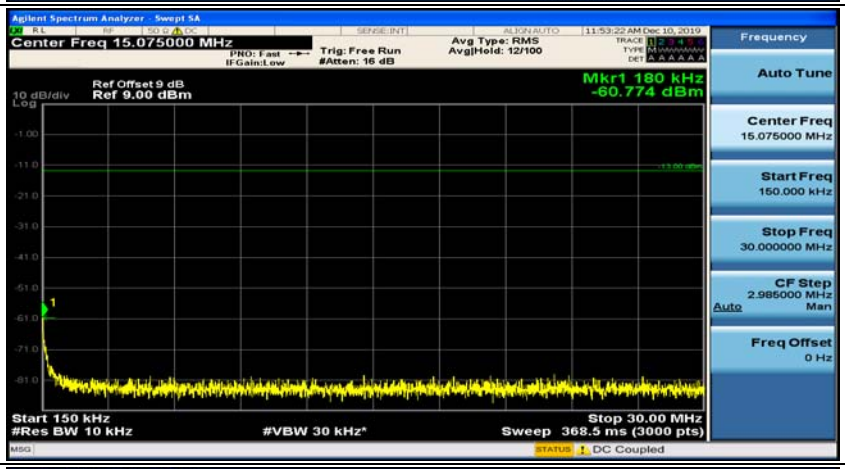

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:51:05 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.77 kHz
-58.304 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz

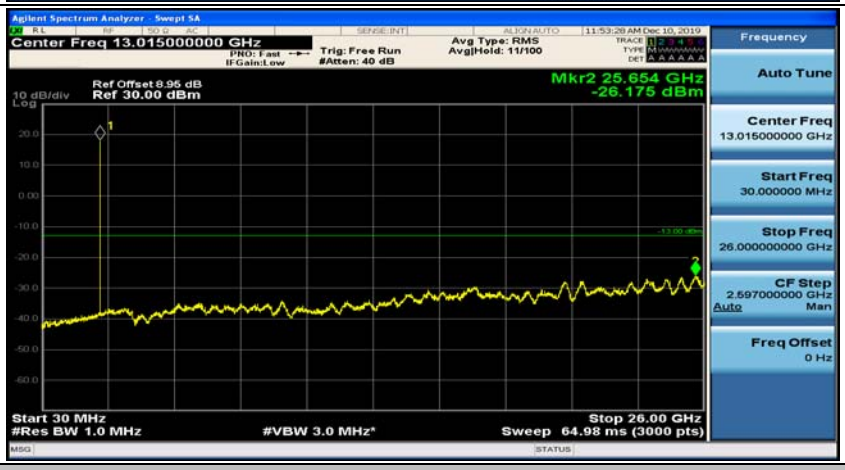

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 11/100
11:51:17 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.086 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 10/100
11:51:23 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.645 GHz
-25.840 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

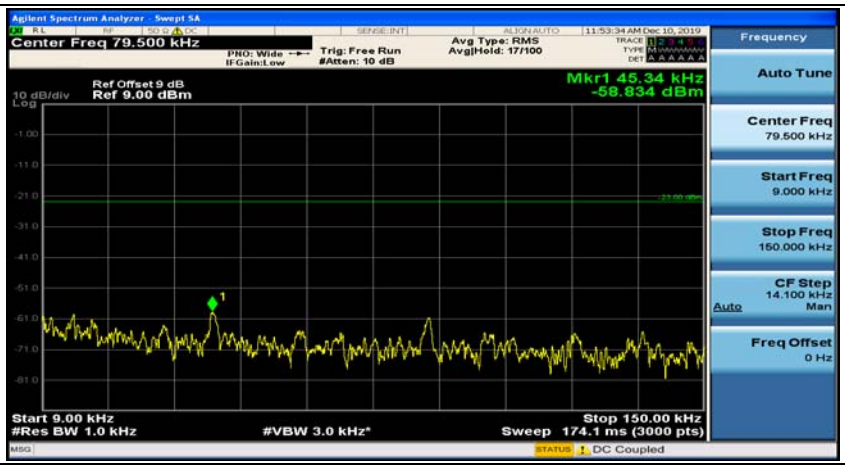
| Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#0 |
| --- |
|  |
|  |
|  |
| Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#24 |

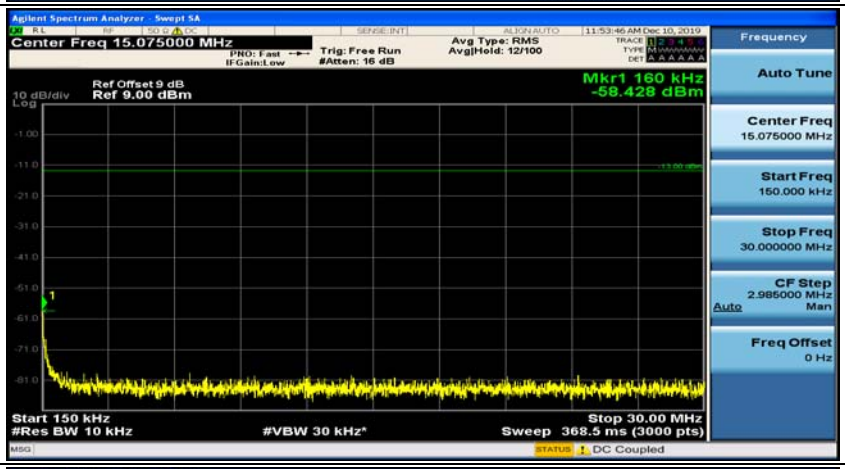


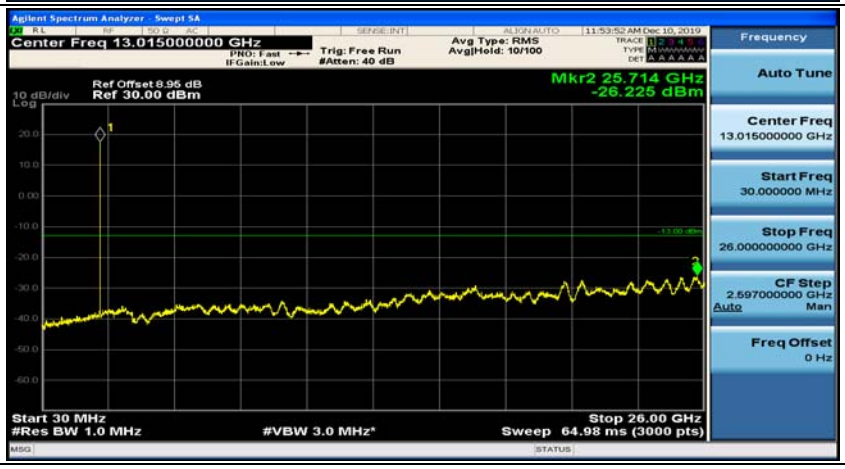




Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#49


Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
11:53:34 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 45.34 kHz
-58.834 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 12/100
11:53:46 AM Dec 10, 2019
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 160 kHz
-58.428 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 10/100
11:53:52 AM Dec 10, 2019
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.714 GHz
-26.225 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
Frequency
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz

# Appendix F: Frequency Stability

## Test Result

## Channel Bandwidth: 5 MHz

| Channel Bandwidth: 5 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| Voltage | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | LCH | VL | TN | 1.88 | 0.000815 | ± 2.5 | PASS |
| | | VN | TN | 4.48 | 0.001941 | ± 2.5 | PASS |
| | | VH | TN | 2.39 | 0.001036 | ± 2.5 | PASS |
| | HCH | VL | TN | 2.07 | 0.000895 | ± 2.5 | PASS |
| | | VN | TN | -0.88 | -0.000381 | ± 2.5 | PASS |
| | | VH | TN | 2.24 | 0.000969 | ± 2.5 | PASS |
| 16QAM | LCH | VL | TN | 1.72 | 0.000745 | ± 2.5 | PASS |
| | | VN | TN | 3.3 | 0.001430 | ± 2.5 | PASS |
| | | VH | TN | 0.52 | 0.000225 | ± 2.5 | PASS |
| | HCH | VL | TN | -1.09 | -0.000471 | ± 2.5 | PASS |
| | | VN | TN | 0.1 | 0.000043 | ± 2.5 | PASS |
| | | VH | TN | 4.52 | 0.001955 | ± 2.5 | PASS |
| Temperature | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | LCH | VN | -30 | 0.62 | 0.000269 | ± 2.5 | PASS |
| | | VN | -20 | 0.45 | 0.000195 | ± 2.5 | PASS |
| | | VN | -10 | -1.84 | -0.000797 | ± 2.5 | PASS |
| | | VN | 0 | 3.91 | 0.001694 | ± 2.5 | PASS |
| | | VN | 10 | -0.5 | -0.000217 | ± 2.5 | PASS |
| | | VN | 20 | 2.01 | 0.000871 | ± 2.5 | PASS |
| | | VN | 30 | -1.15 | -0.000498 | ± 2.5 | PASS |
| | | VN | 40 | 1.67 | 0.000724 | ± 2.5 | PASS |
| | | VN | 50 | -0.33 | -0.000143 | ± 2.5 | PASS |
| | HCH | VN | -30 | -1.24 | -0.000536 | ± 2.5 | PASS |
| | | VN | -20 | -0.32 | -0.000138 | ± 2.5 | PASS |
| | | VN | -10 | 1.15 | 0.000497 | ± 2.5 | PASS |
| | | VN | 0 | -1.47 | -0.000636 | ± 2.5 | PASS |
| | | VN | 10 | -0.89 | -0.000385 | ± 2.5 | PASS |
| | | VN | 20 | 2.99 | 0.001293 | ± 2.5 | PASS |
| | | VN | 30 | 2.44 | 0.001055 | ± 2.5 | PASS |
| | | VN | 40 | 2.83 | 0.001224 | ± 2.5 | PASS |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | VN | 50 | 3.22 | 0.001392 | ± 2.5 | PASS |
| 16QAM | LCH | VN | -30 | -0.62 | -0.000269 | ± 2.5 | PASS |
| | | VN | -20 | -0.12 | -0.000052 | ± 2.5 | PASS |
| | | VN | -10 | 4.65 | 0.002015 | ± 2.5 | PASS |
| | | VN | 0 | -0.83 | -0.000360 | ± 2.5 | PASS |
| | | VN | 10 | 0.69 | 0.000299 | ± 2.5 | PASS |
| | | VN | 20 | 1.65 | 0.000715 | ± 2.5 | PASS |
| | | VN | 30 | 2.38 | 0.001031 | ± 2.5 | PASS |
| | | VN | 40 | 1.83 | 0.000793 | ± 2.5 | PASS |
| | | VN | 50 | 3.54 | 0.001534 | ± 2.5 | PASS |
| | HCH | VN | -30 | 4.87 | 0.002106 | ± 2.5 | PASS |
| | | VN | -20 | 0.43 | 0.000186 | ± 2.5 | PASS |
| | | VN | -10 | -0.49 | -0.000212 | ± 2.5 | PASS |
| | | VN | 0 | 4.4 | 0.001903 | ± 2.5 | PASS |
| | | VN | 10 | 2.99 | 0.001293 | ± 2.5 | PASS |
| | | VN | 20 | -0.58 | -0.000251 | ± 2.5 | PASS |
| | | VN | 30 | 0.75 | 0.000324 | ± 2.5 | PASS |
| | | VN | 40 | 3.74 | 0.001617 | ± 2.5 | PASS |
| | | VN | 50 | 0.33 | 0.000143 | ± 2.5 | PASS |

## Channel Bandwidth: 10 MHz

| Channel Bandwidth: 10 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| Voltage | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | MCH | VL | TN | 0.84 | 0.000364 | ± 2.5 | PASS |
| | | VN | TN | 0.4 | 0.000173 | ± 2.5 | PASS |
| | | VH | TN | -1.5 | -0.000649 | ± 2.5 | PASS |
| 16QAM | MCH | VL | TN | 1.25 | 0.000541 | ± 2.5 | PASS |
| | | VN | TN | 4.56 | 0.001974 | ± 2.5 | PASS |
| | | VH | TN | 2.04 | 0.000883 | ± 2.5 | PASS |
| Temperature | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | MCH | VN | -30 | -0.37 | -0.000160 | ± 2.5 | PASS |
| | | VN | -20 | -1.41 | -0.000610 | ± 2.5 | PASS |
| | | VN | -10 | -0.63 | -0.000273 | ± 2.5 | PASS |
| | | VN | 0 | 1.43 | 0.000619 | ± 2.5 | PASS |
| | | VN | 10 | 4.78 | 0.002069 | ± 2.5 | PASS |
| | | VN | 20 | -0.95 | -0.000411 | ± 2.5 | PASS |
| | | VN | 30 | -0.68 | -0.000294 | ± 2.5 | PASS |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | VN | 40 | -1 | -0.000433 | ± 2.5 | PASS |
| | | VN | 50 | 4.22 | 0.001827 | ± 2.5 | PASS |
| 16QAM | MCH | VN | -30 | 4.97 | 0.002152 | ± 2.5 | PASS |
| | | VN | -20 | 3.81 | 0.001649 | ± 2.5 | PASS |
| | | VN | -10 | 0.93 | 0.000403 | ± 2.5 | PASS |
| | | VN | 0 | 4.9 | 0.002121 | ± 2.5 | PASS |
| | | VN | 10 | -0.37 | -0.000160 | ± 2.5 | PASS |
| | | VN | 20 | 2 | 0.000866 | ± 2.5 | PASS |
| | | VN | 30 | 3.43 | 0.001485 | ± 2.5 | PASS |
| | | VN | 40 | -1.45 | -0.000628 | ± 2.5 | PASS |
| | | VN | 50 | -0.26 | -0.000113 | ± 2.5 | PASS |