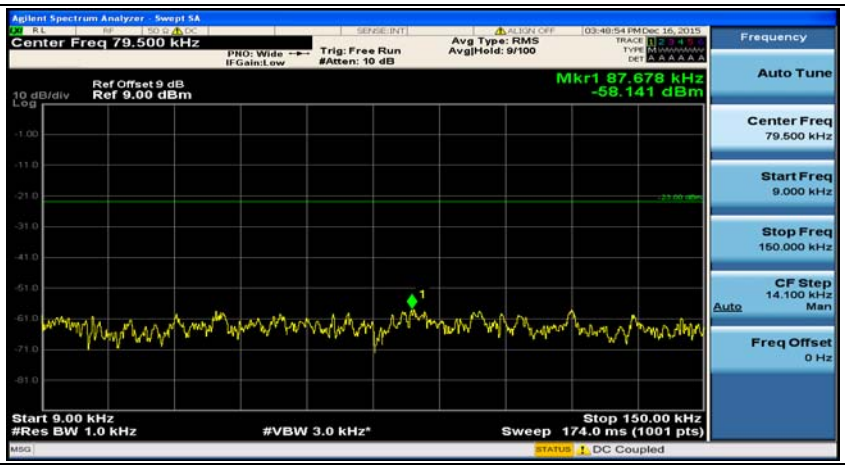
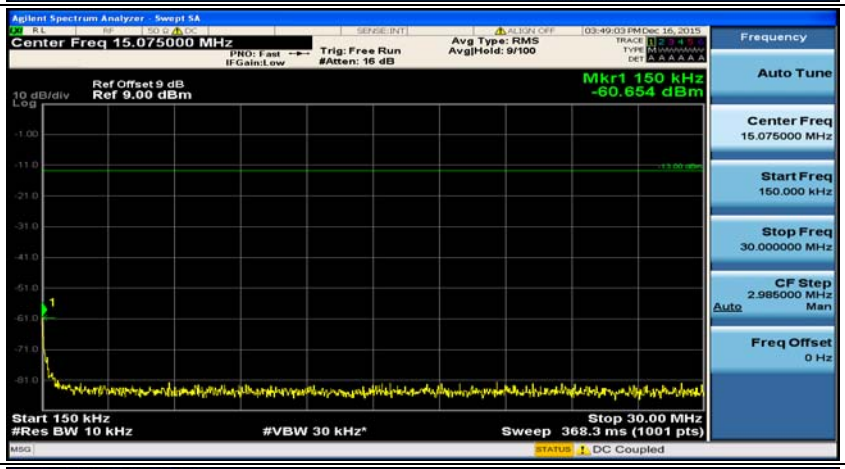
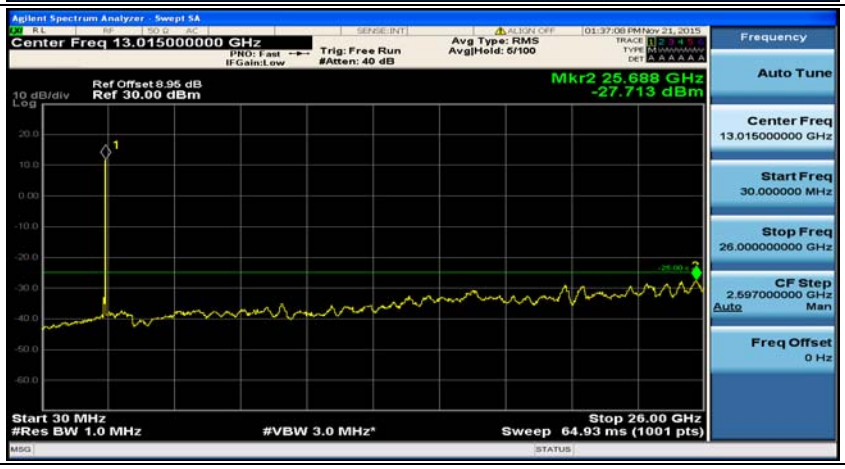
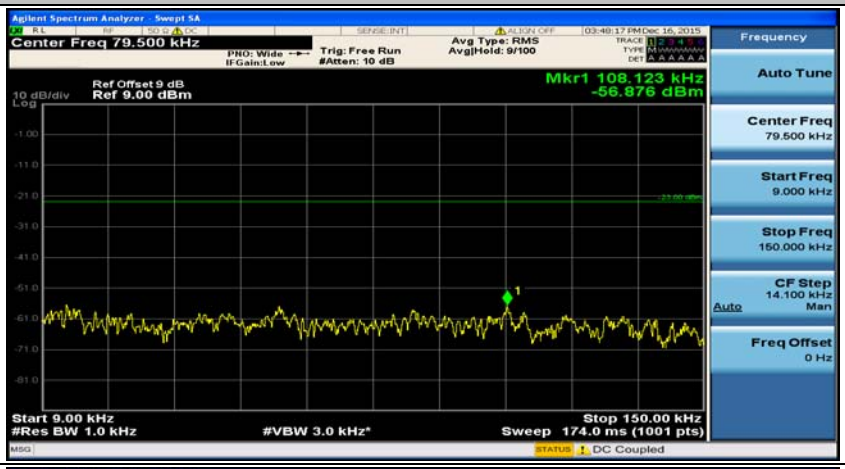
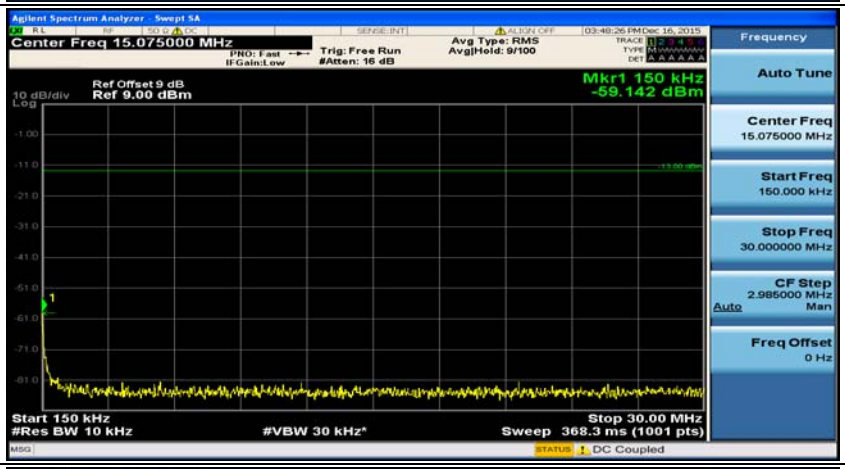
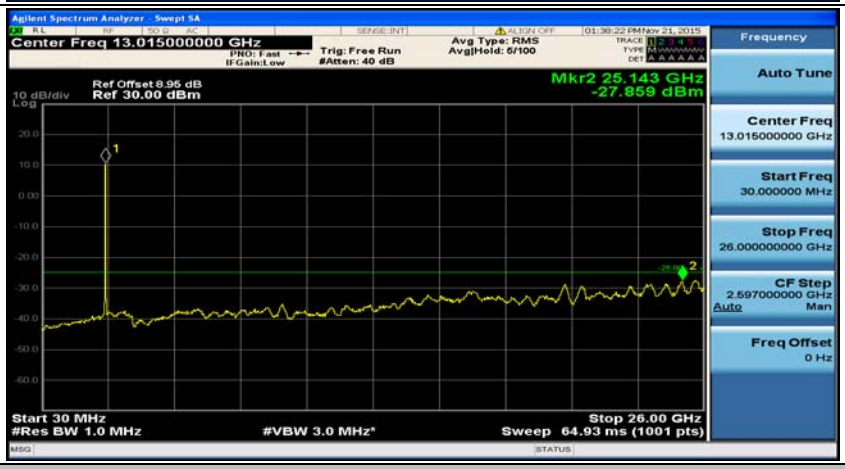
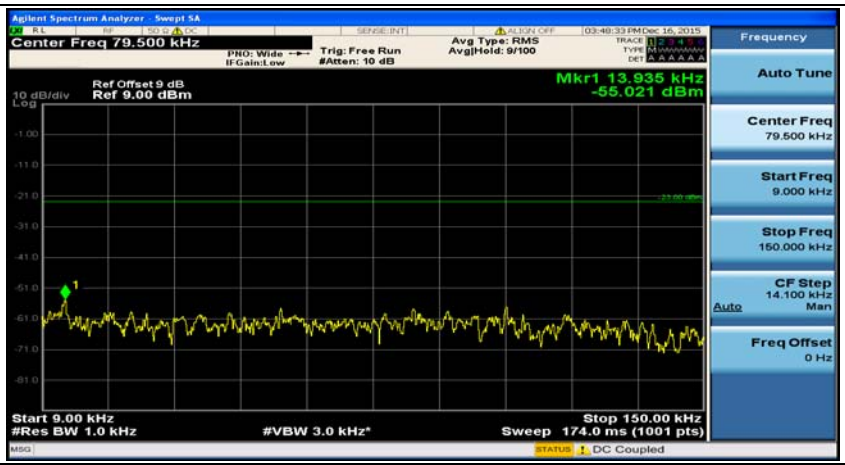
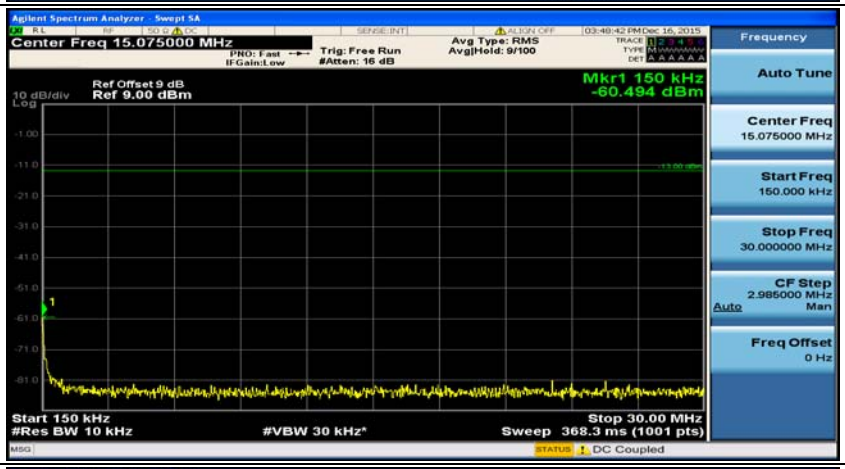

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
03:48:54 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 87.678 kHz
-58.141 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 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

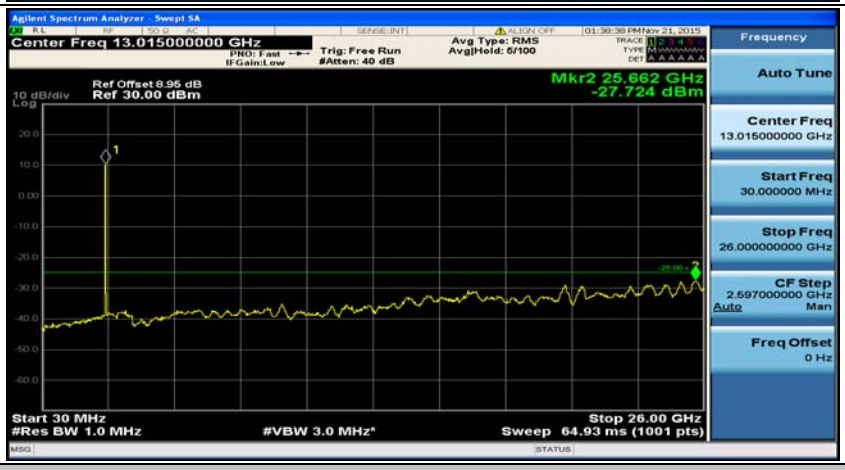

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 9/100
03:49:03 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.654 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 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: 5/100
01:37:08 PM Nov 21, 2015
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.688 GHz
-27.713 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 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

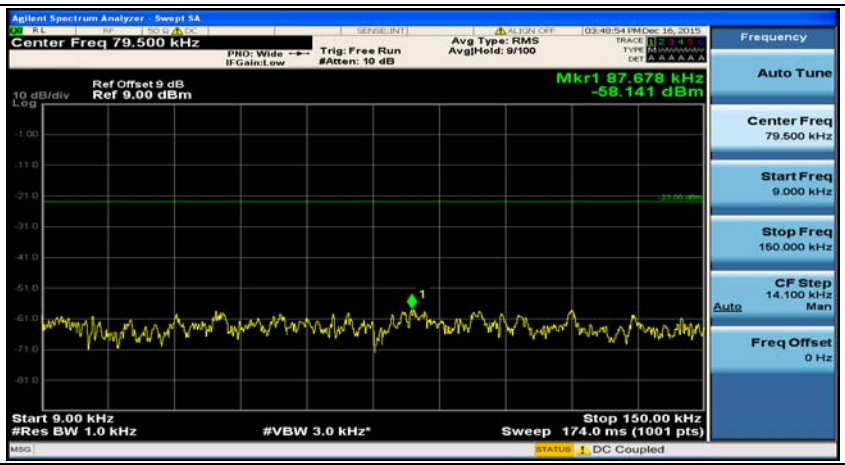
| (Channel Bandwidth:20 MHz)_MCH_QPSK_1RB#0 |
| --- |
|  |
|  |
|  |
| (Channel Bandwidth:20 MHz)_MCH_QPSK_1RB#49 |

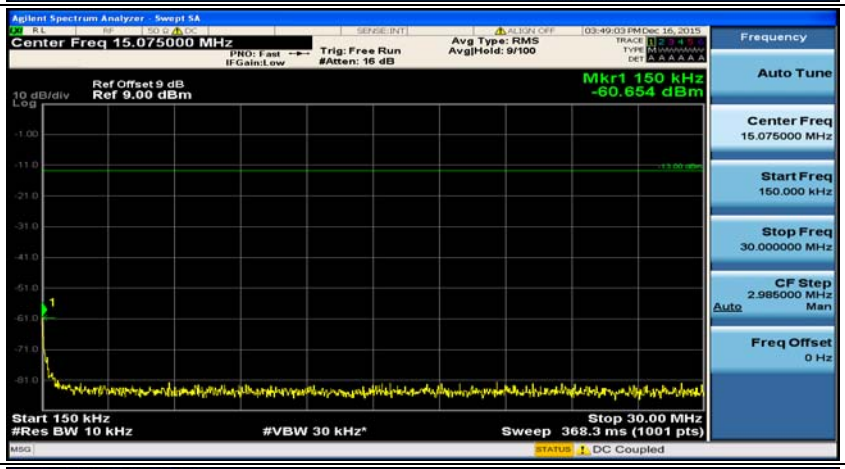


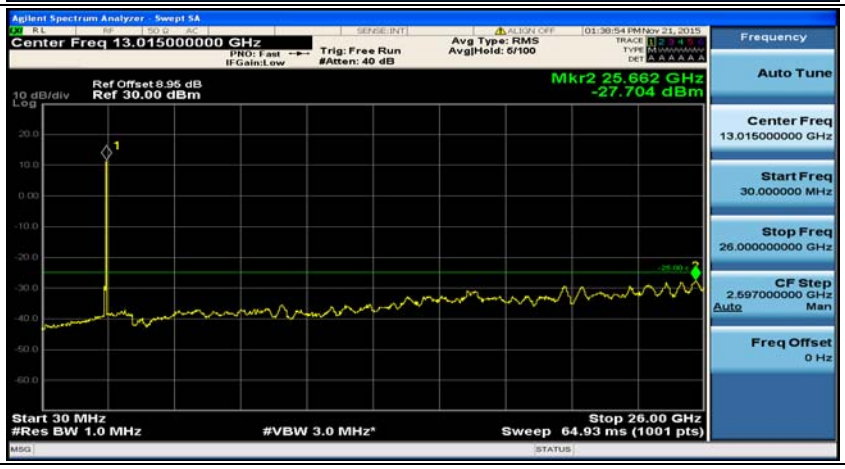



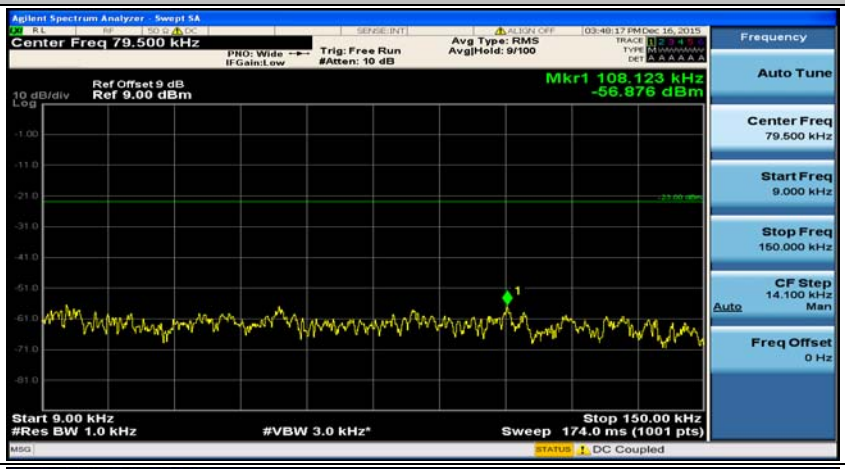
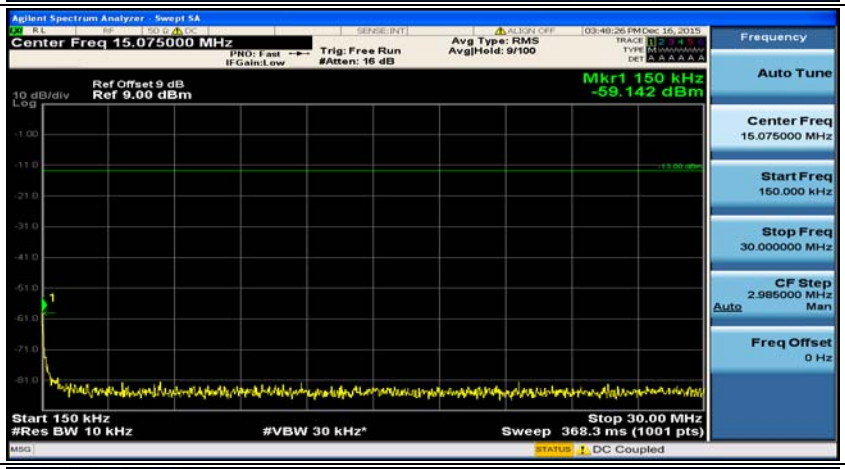
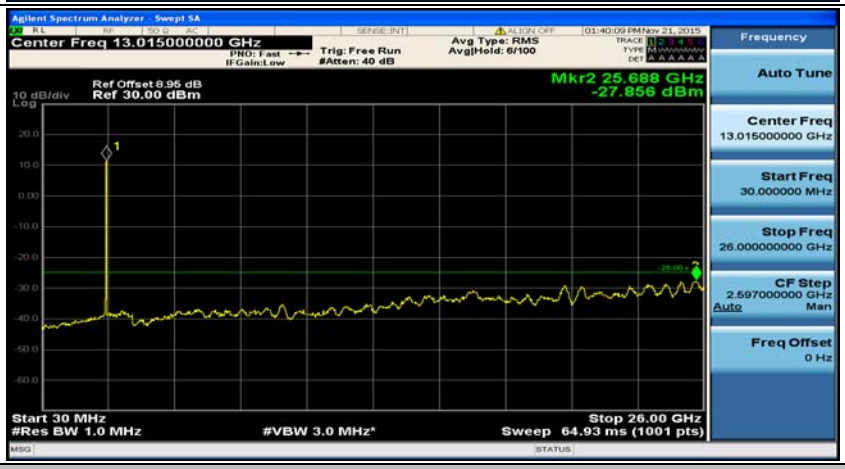



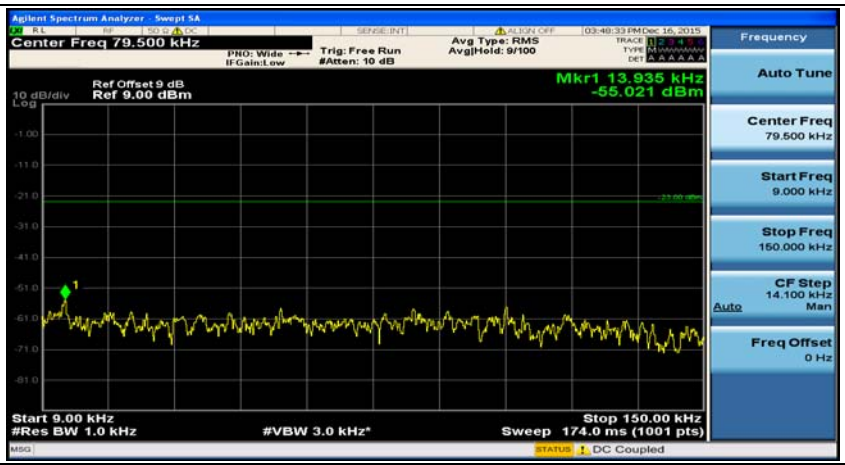

(Channel Bandwidth:20 MHz)_MCH_QPSK_1RB#99

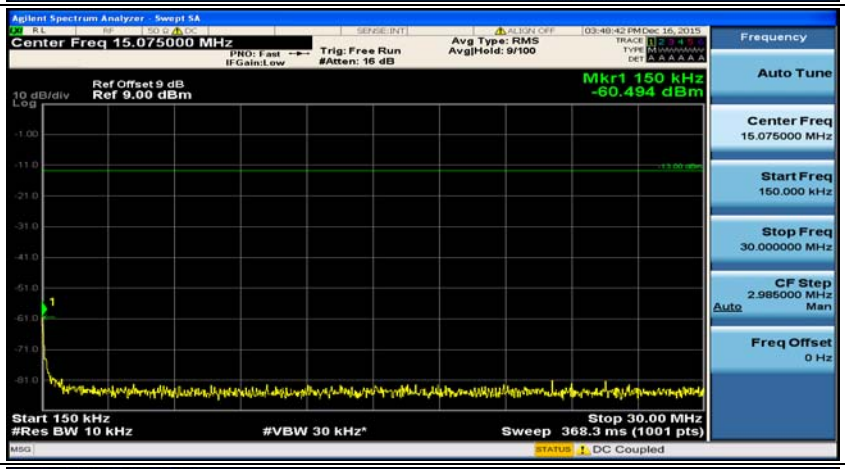

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
03:48:54 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 87.678 kHz
-58.141 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 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: 9/100
03:49:03 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.654 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 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: 5/100
01:39:54 PM Nov 21, 2015
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.662 GHz
-27.704 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 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

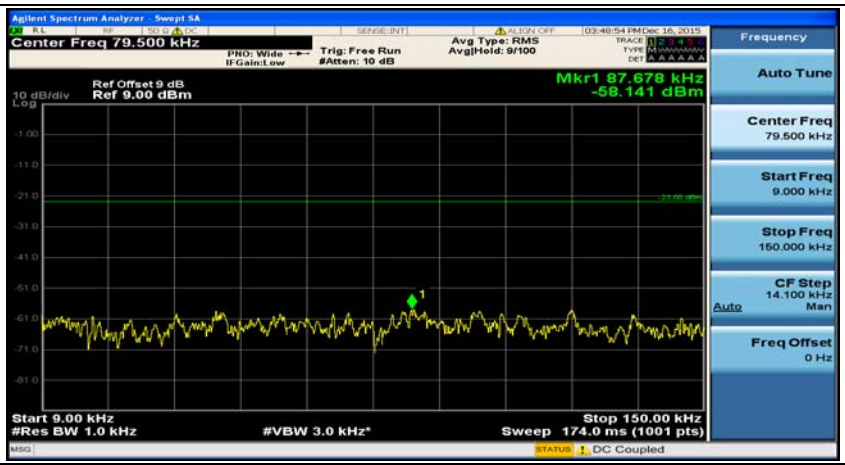
| (Channel Bandwidth:20 MHz)_HCH_QPSK_1RB#0 |
| --- |
|  |
|  |
|  |
| (Channel Bandwidth:20 MHz)_HCH_QPSK_1RB#49 |

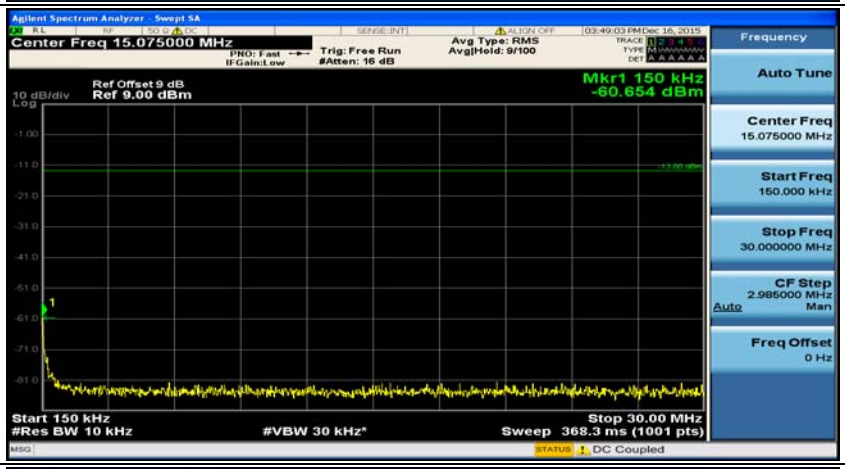


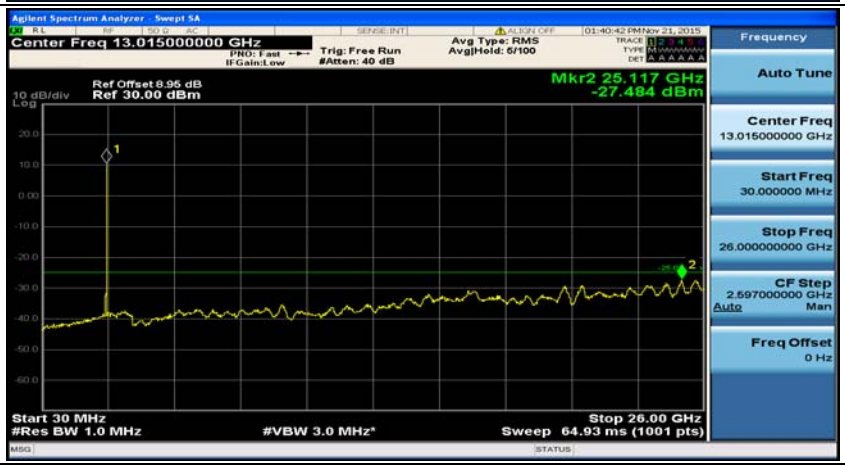



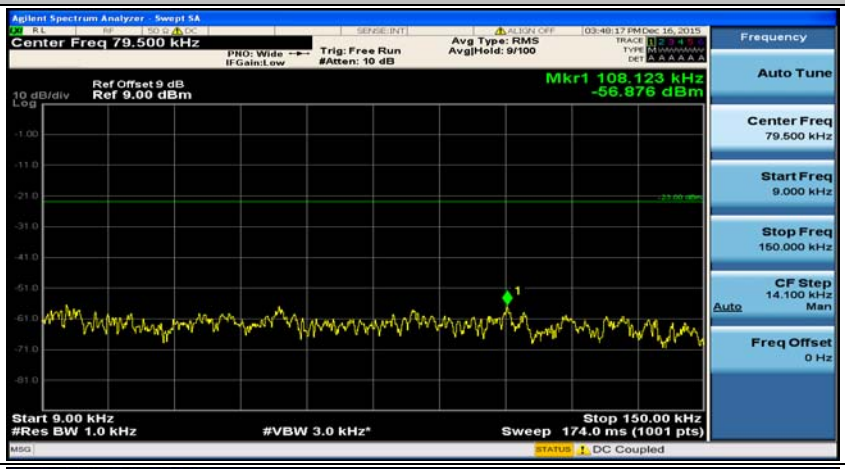
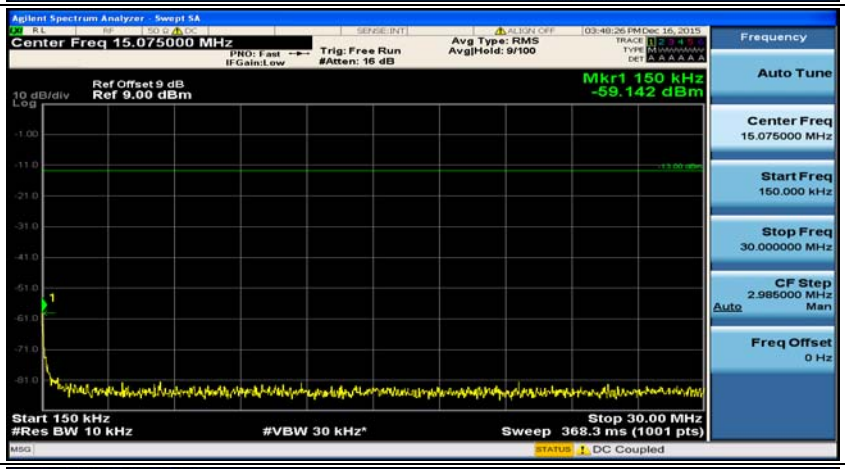


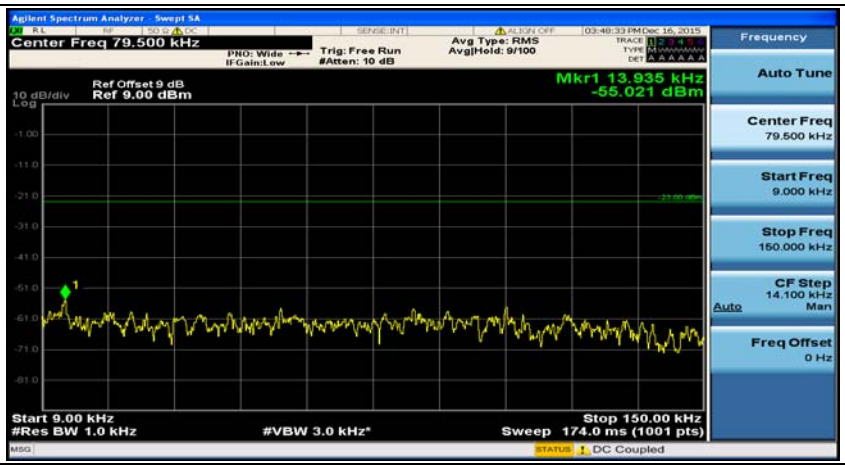
(Channel Bandwidth:20 MHz)_HCH_QPSK_1RB#99

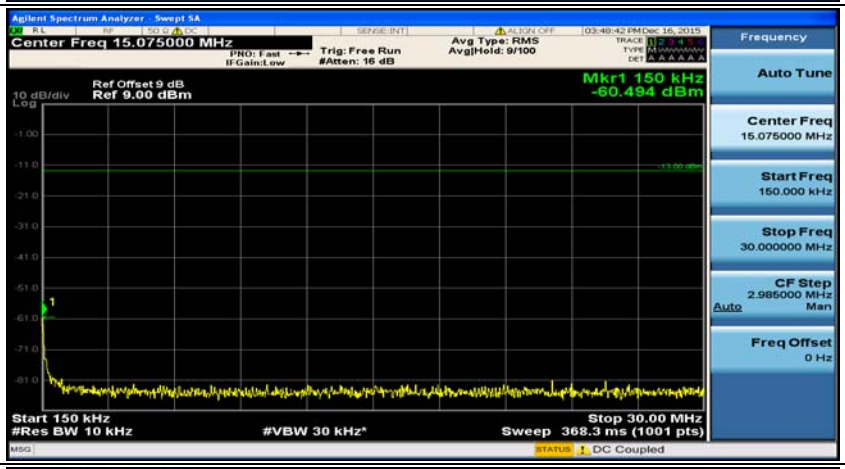

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
03:48:54 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 87.678 kHz
-58.141 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 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: 9/100
03:49:03 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.654 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 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: 5/100
01:40:42 PM Nov 21, 2015
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.117 GHz
-27.484 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 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

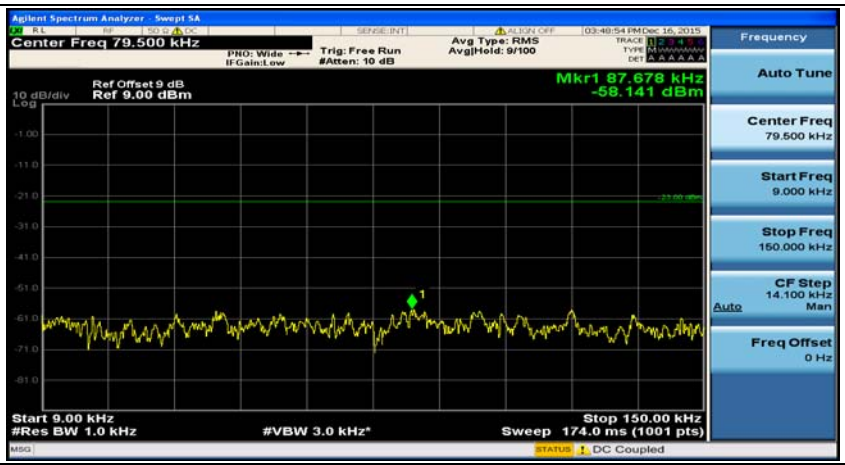
| (Channel Bandwidth:20 MHz)_LCH_16QAM_1RB#0 |
| --- |
|  |
|  |
|  |
| (Channel Bandwidth:20 MHz)_LCH_16QAM_1RB#49 |

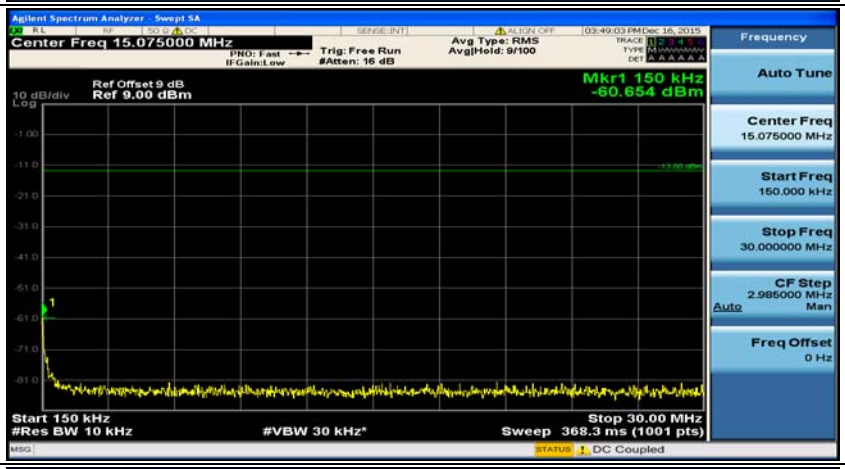


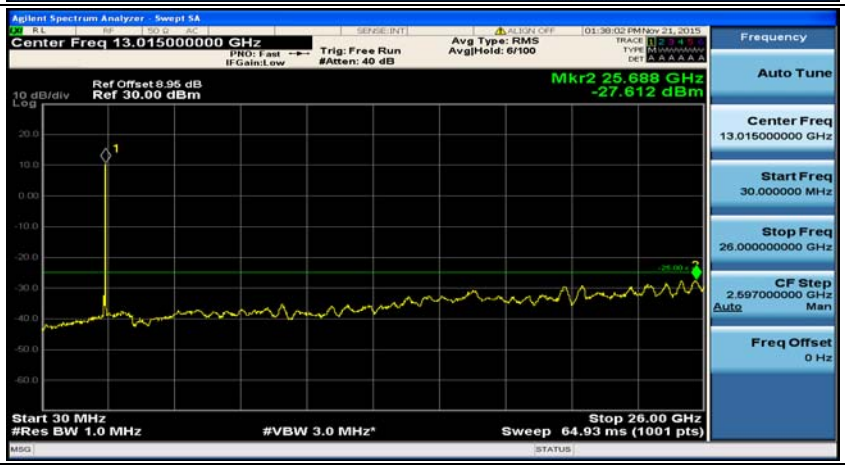



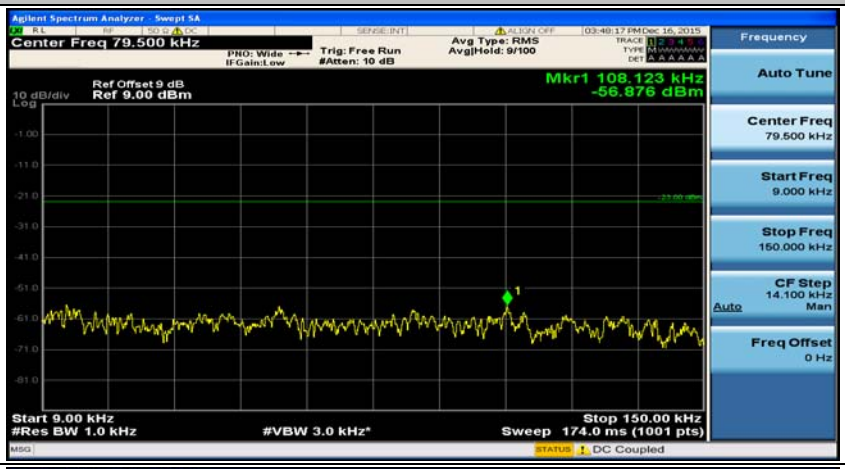
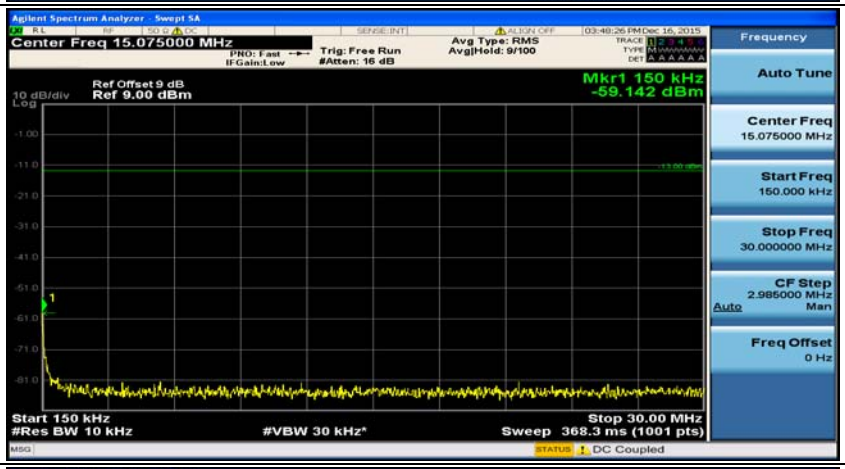
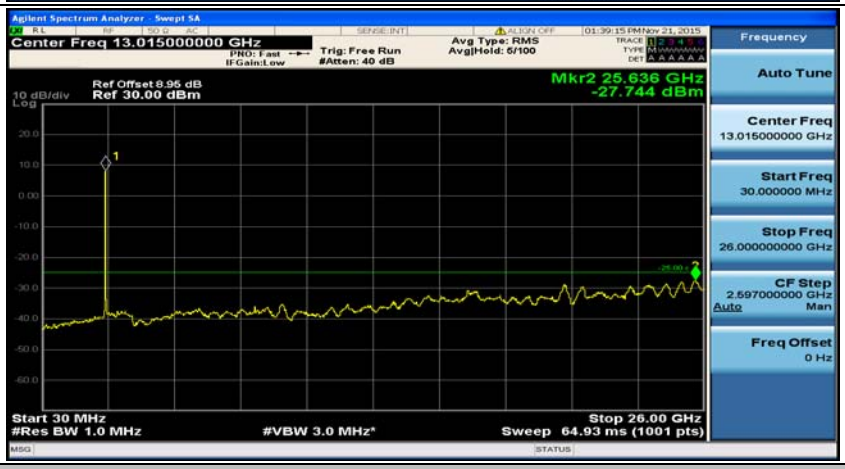


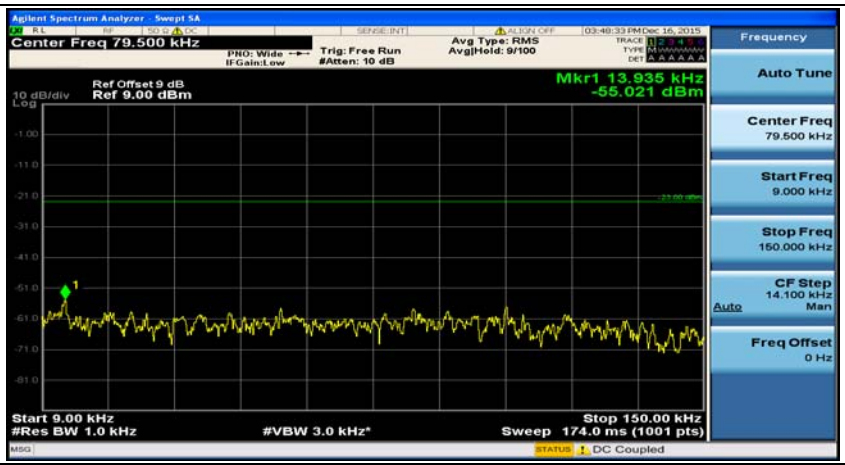
(Channel Bandwidth:20 MHz)_LCH_16QAM_1RB#99

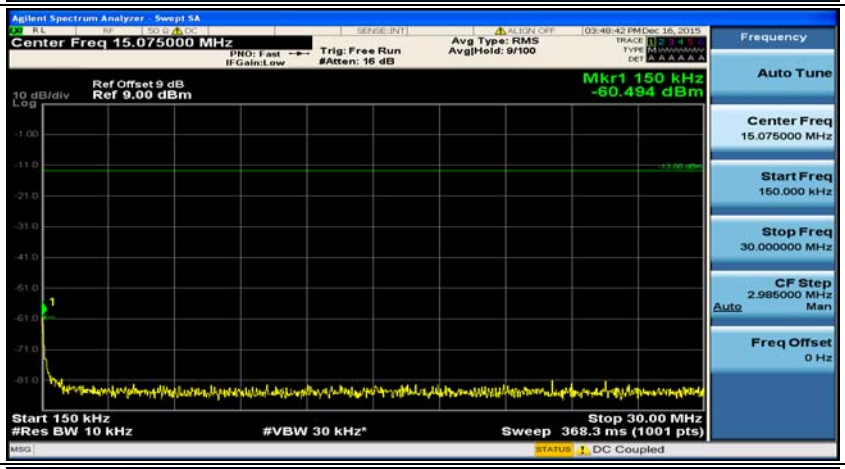

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
03:48:54 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 87.678 kHz
-58.141 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 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

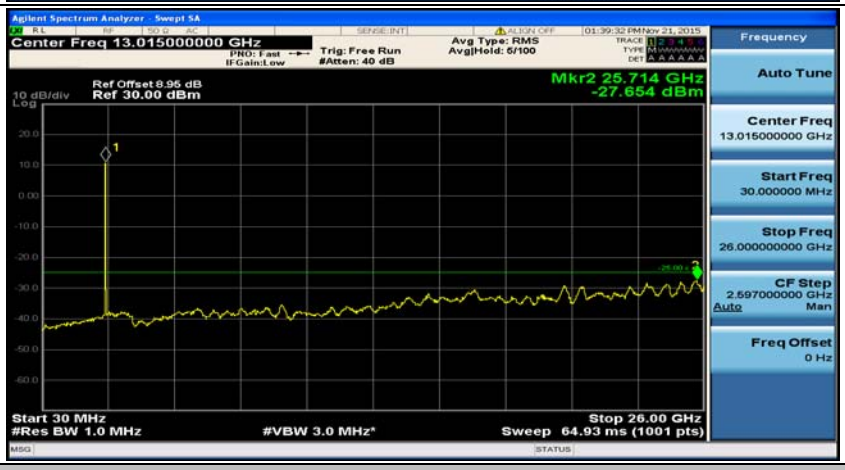

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 9/100
03:49:03 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.654 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 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: 6/100
01:38:02 PM Nov 21, 2015
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.688 GHz
-27.612 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 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

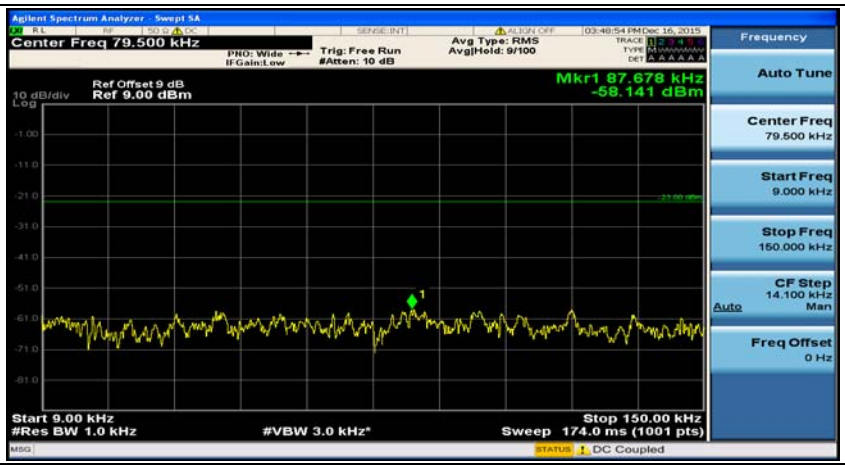
| (Channel Bandwidth:20 MHz)_MCH_16QAM_1RB#0 |
| --- |
|  |
|  |
|  |
| (Channel Bandwidth:20 MHz)_MCH_16QAM_1RB#49 |

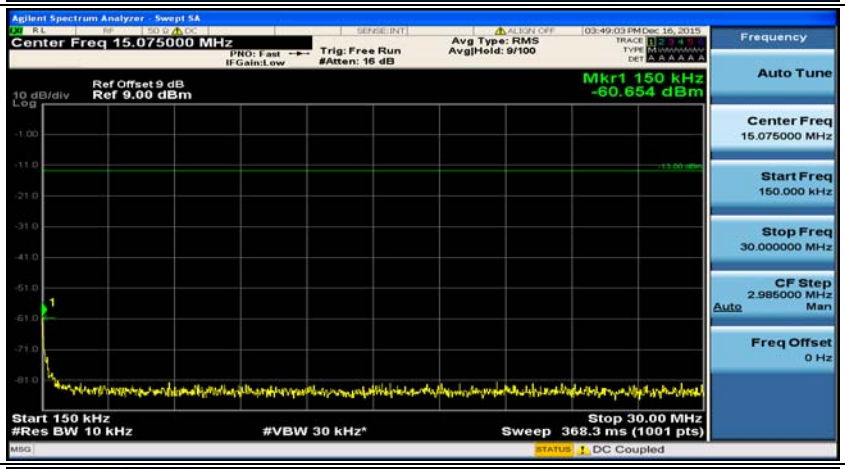


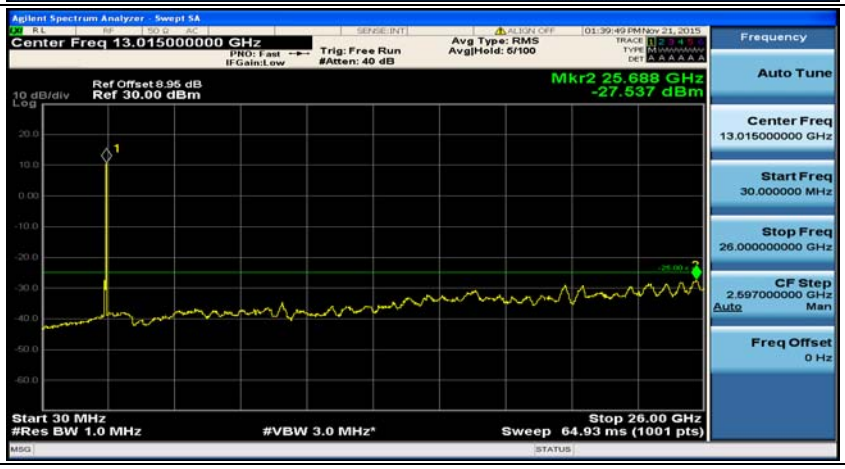



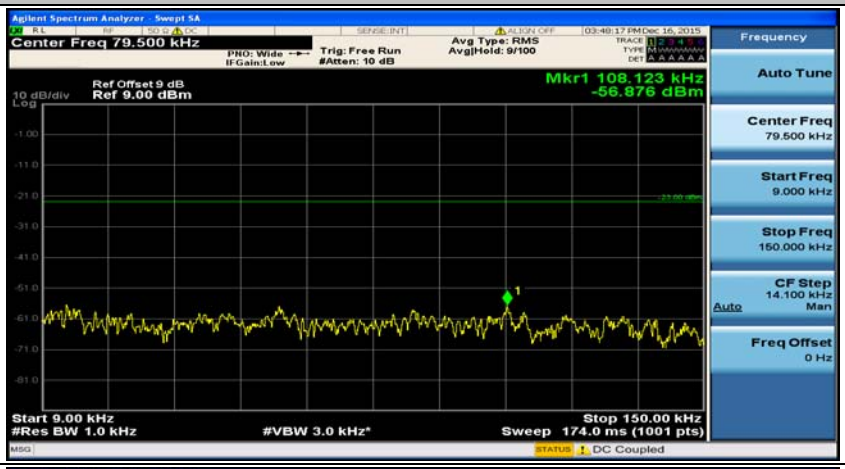
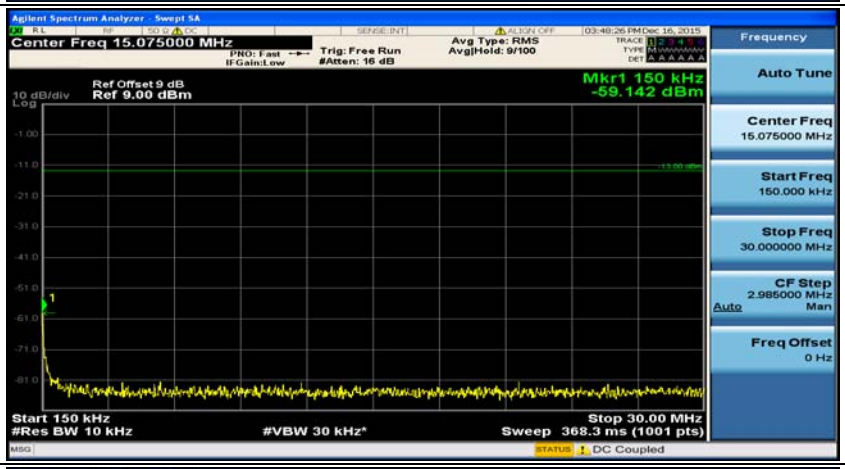



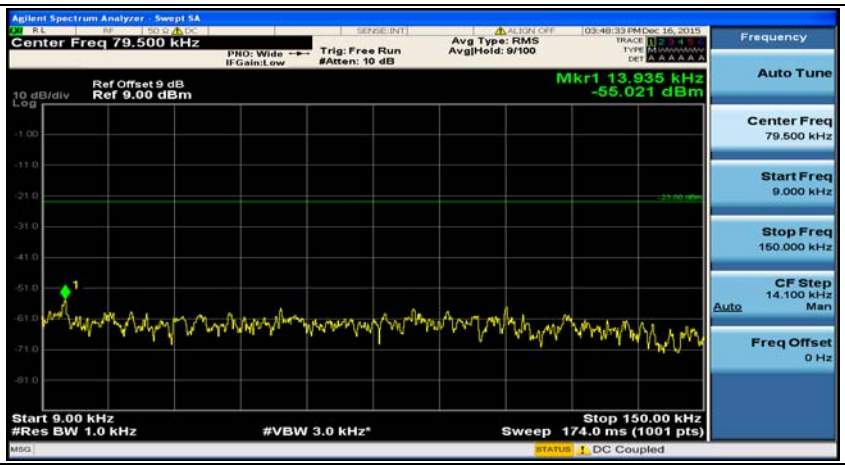

(Channel Bandwidth:20 MHz)_MCH_16QAM_1RB#99

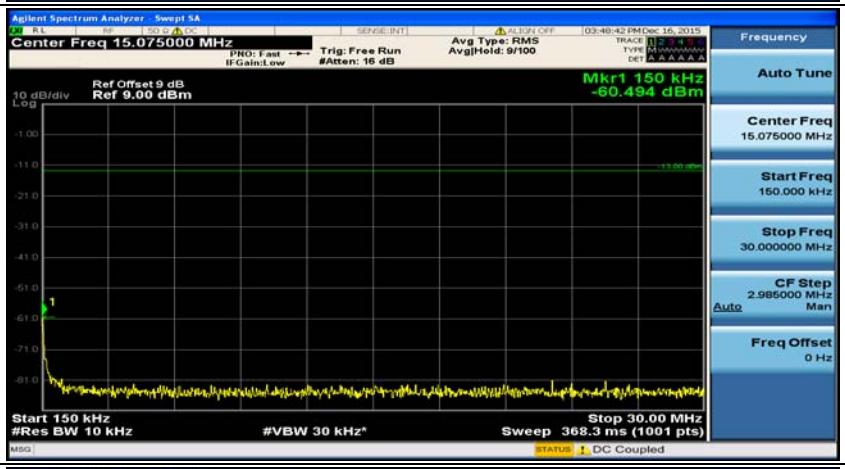

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
03:48:54 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 87.678 kHz
-58.141 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 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

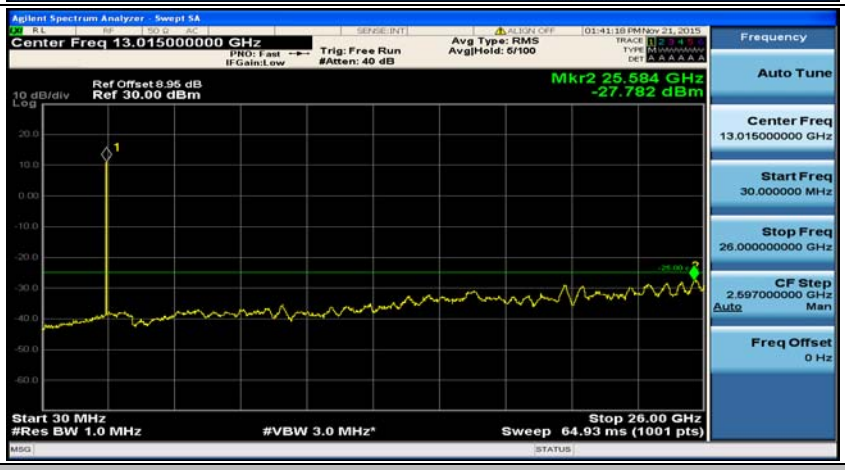

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: RMS
Avg|Hold: 9/100
03:49:03 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.654 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 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: 5/100
01:39:49 PM Nov 21, 2015
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.688 GHz
-27.537 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 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

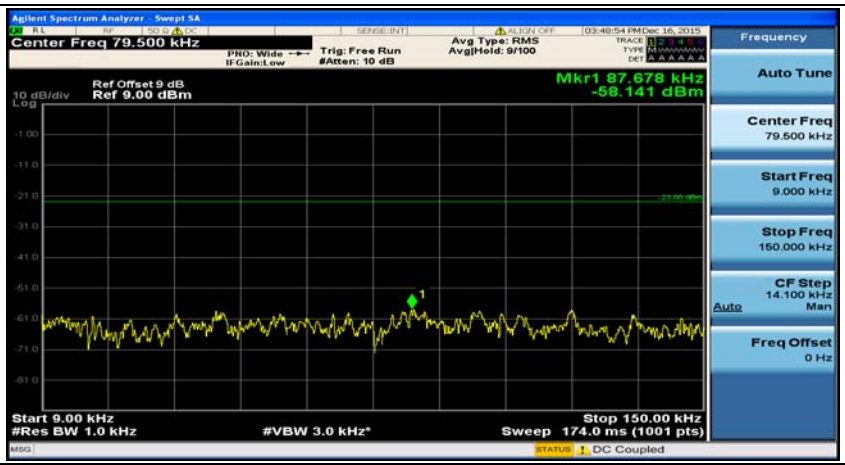
| (Channel Bandwidth:20 MHz)_HCH_16QAM_1RB#0 |
| --- |
|  |
|  |
|  |
| (Channel Bandwidth:20 MHz)_HCH_16QAM_1RB#49 |

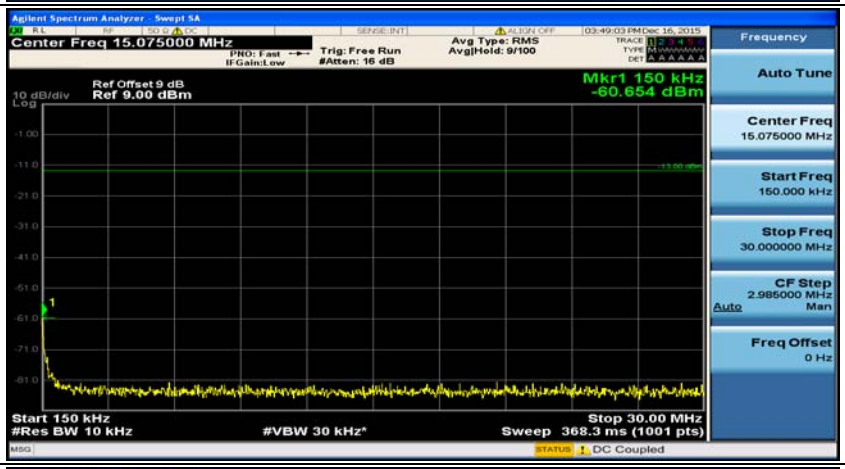


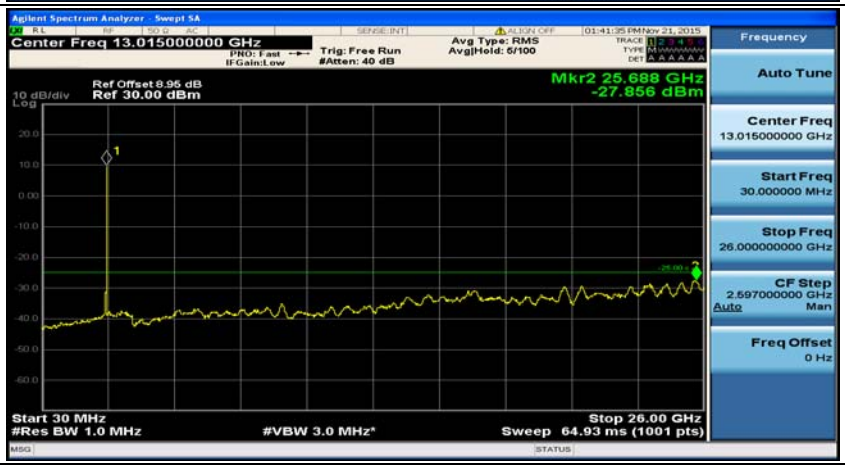




(Channel Bandwidth:20 MHz)_HCH_16QAM_1RB#99


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: 9/100
03:48:54 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 87.678 kHz
-58.141 dBm
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 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: 9/100
03:49:03 PM Dec 16, 2015
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-60.654 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 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: 5/100
01:41:35 PM Nov 21, 2015
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.688 GHz
-27.856 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 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 | 1.50 | 0.000600 | ± 2.5 | PASS |
| | | VN | TN | 1.50 | 0.000600 | ± 2.5 | PASS |
| | | VH | TN | 1.50 | 0.000600 | ± 2.5 | PASS |
| | MCH | VL | TN | 1.50 | 0.000600 | ± 2.5 | PASS |
| | | VN | TN | 1.73 | 0.000683 | ± 2.5 | PASS |
| | | VH | TN | 1.73 | 0.000683 | ± 2.5 | PASS |
| | HCH | VL | TN | 1.73 | 0.000683 | ± 2.5 | PASS |
| | | VN | TN | 0.73 | 0.000284 | ± 2.5 | PASS |
| | | VH | TN | 0.73 | 0.000284 | ± 2.5 | PASS |
| 16QAM | LCH | VL | TN | 1.76 | 0.000703 | ± 2.5 | PASS |
| | | VN | TN | 1.76 | 0.000703 | ± 2.5 | PASS |
| | | VH | TN | 0.87 | 0.000344 | ± 2.5 | PASS |
| | MCH | VL | TN | 0.87 | 0.000344 | ± 2.5 | PASS |
| | | VN | TN | 0.87 | 0.000344 | ± 2.5 | PASS |
| | | VH | TN | 0.87 | 0.000344 | ± 2.5 | PASS |
| | HCH | VL | TN | 0.03 | 0.000011 | ± 2.5 | PASS |
| | | VN | TN | 0.03 | 0.000011 | ± 2.5 | PASS |
| | | VH | TN | 0.03 | 0.000011 | ± 2.5 | PASS |
| Temperature | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | LCH | VN | -30 | 3.32 | 0.001326 | ± 2.5 | PASS |
| | | VN | -20 | 3.32 | 0.001326 | ± 2.5 | PASS |
| | | VN | -10 | 3.32 | 0.001326 | ± 2.5 | PASS |
| | | VN | 0 | 3.32 | 0.001326 | ± 2.5 | PASS |
| | | VN | 10 | 3.32 | 0.001326 | ± 2.5 | PASS |
| | | VN | 20 | 3.32 | 0.001326 | ± 2.5 | PASS |
| | | VN | 30 | 1.85 | 0.000737 | ± 2.5 | PASS |
| | | VN | 40 | -0.33 | -0.000131 | ± 2.5 | PASS |
| | | VN | 50 | 2.49 | 0.000995 | ± 2.5 | PASS |
| | MCH | VN | -30 | 2.49 | 0.000995 | ± 2.5 | PASS |
| | | VN | -20 | 2.49 | 0.000995 | ± 2.5 | PASS |
| | | VN | -10 | 2.49 | 0.000995 | ± 2.5 | PASS |
| | | VN | 0 | 2.49 | 0.000995 | ± 2.5 | PASS |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | VN | 10 | 1.43 | 0.000564 | ± 2.5 | PASS |
| | | VN | 20 | 1.43 | 0.000564 | ± 2.5 | PASS |
| | | VN | 30 | 0.29 | 0.000113 | ± 2.5 | PASS |
| | | VN | 40 | 2.12 | 0.000835 | ± 2.5 | PASS |
| | | VN | 50 | 0.27 | 0.000107 | ± 2.5 | PASS |
| | HCH | VN | -30 | 0.27 | 0.000107 | ± 2.5 | PASS |
| | | VN | -20 | 0.27 | 0.000107 | ± 2.5 | PASS |
| | | VN | -10 | 0.27 | 0.000107 | ± 2.5 | PASS |
| | | VN | 0 | -0.21 | -0.000084 | ± 2.5 | PASS |
| | | VN | 10 | -0.21 | -0.000084 | ± 2.5 | PASS |
| | | VN | 20 | -0.21 | -0.000084 | ± 2.5 | PASS |
| | | VN | 30 | -0.17 | -0.000067 | ± 2.5 | PASS |
| | | VN | 40 | 1.56 | 0.000607 | ± 2.5 | PASS |
| | | VN | 50 | 0.16 | 0.000061 | ± 2.5 | PASS |
| 16QAM | LCH | VN | -30 | 0.16 | 0.000061 | ± 2.5 | PASS |
| | | VN | -20 | 0.16 | 0.000061 | ± 2.5 | PASS |
| | | VN | -10 | 0.16 | 0.000061 | ± 2.5 | PASS |
| | | VN | 0 | 0.16 | 0.000061 | ± 2.5 | PASS |
| | | VN | 10 | 0.16 | 0.000061 | ± 2.5 | PASS |
| | | VN | 20 | 0.64 | 0.000257 | ± 2.5 | PASS |
| | | VN | 30 | 2.22 | 0.000886 | ± 2.5 | PASS |
| | | VN | 40 | -1.16 | -0.000463 | ± 2.5 | PASS |
| | | VN | 50 | 0.47 | 0.000189 | ± 2.5 | PASS |
| | MCH | VN | -30 | 0.47 | 0.000189 | ± 2.5 | PASS |
| | | VN | -20 | 0.47 | 0.000189 | ± 2.5 | PASS |
| | | VN | -10 | 0.47 | 0.000189 | ± 2.5 | PASS |
| | | VN | 0 | 0.47 | 0.000189 | ± 2.5 | PASS |
| | | VN | 10 | 0.47 | 0.000189 | ± 2.5 | PASS |
| | | VN | 20 | 1.36 | 0.000536 | ± 2.5 | PASS |
| | | VN | 30 | 0.73 | 0.000288 | ± 2.5 | PASS |
| | | VN | 40 | -0.43 | -0.000169 | ± 2.5 | PASS |
| | | VN | 50 | 3.50 | 0.001383 | ± 2.5 | PASS |
| | HCH | VN | -30 | 3.50 | 0.001383 | ± 2.5 | PASS |
| | | VN | -20 | 3.50 | 0.001383 | ± 2.5 | PASS |
| | | VN | -10 | 3.50 | 0.001383 | ± 2.5 | PASS |
| | | VN | 0 | 3.50 | 0.001383 | ± 2.5 | PASS |
| | | VN | 10 | -0.44 | -0.000173 | ± 2.5 | PASS |
| | | VN | 20 | -0.44 | -0.000173 | ± 2.5 | PASS |
| | | VN | 30 | 0.31 | 0.000123 | ± 2.5 | PASS |
| | | VN | 40 | 0.86 | 0.000334 | ± 2.5 | PASS |
| | | VN | 50 | 1.37 | 0.000535 | ± 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 | LCH | VL | TN | 1.59 | 0.000634 | ± 2.5 | PASS |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | VN | TN | 1.59 | 0.000634 | ± 2.5 | PASS |
| | | VH | TN | 1.66 | 0.000655 | ± 2.5 | PASS |
| | MCH | VL | TN | 1.66 | 0.000655 | ± 2.5 | PASS |
| | | VN | TN | 1.66 | 0.000655 | ± 2.5 | PASS |
| | | VH | TN | 1.66 | 0.000655 | ± 2.5 | PASS |
| | HCH | VL | TN | 1.66 | 0.000655 | ± 2.5 | PASS |
| | | VN | TN | 1.65 | 0.000641 | ± 2.5 | PASS |
| | | VH | TN | 1.65 | 0.000641 | ± 2.5 | PASS |
| 16QAM | LCH | VL | TN | 1.65 | 0.000641 | ± 2.5 | PASS |
| | | VN | TN | -0.59 | -0.000234 | ± 2.5 | PASS |
| | | VH | TN | -0.59 | -0.000234 | ± 2.5 | PASS |
| | MCH | VL | TN | -0.59 | -0.000234 | ± 2.5 | PASS |
| | | VN | TN | 1.16 | 0.000457 | ± 2.5 | PASS |
| | | VH | TN | 1.16 | 0.000457 | ± 2.5 | PASS |
| | HCH | VL | TN | 1.16 | 0.000457 | ± 2.5 | PASS |
| | | VN | TN | 4.32 | 0.001684 | ± 2.5 | PASS |
| | | VH | TN | 4.32 | 0.001684 | ± 2.5 | PASS |
| Temperature | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| 16QAM | LCH | VN | -30 | 4.32 | 0.001684 | ± 2.5 | PASS |
| | | VN | -20 | 4.32 | 0.001684 | ± 2.5 | PASS |
| | | VN | -10 | 4.32 | 0.001684 | ± 2.5 | PASS |
| | | VN | 0 | 4.32 | 0.001684 | ± 2.5 | PASS |
| | | VN | 10 | 4.32 | 0.001684 | ± 2.5 | PASS |
| | | VN | 20 | 2.56 | 0.001022 | ± 2.5 | PASS |
| | | VN | 30 | 2.73 | 0.001091 | ± 2.5 | PASS |
| | | VN | 40 | 1.16 | 0.000463 | ± 2.5 | PASS |
| | | VN | 50 | 2.17 | 0.000868 | ± 2.5 | PASS |
| | MCH | VN | -30 | 2.17 | 0.000868 | ± 2.5 | PASS |
| | | VN | -20 | 2.17 | 0.000868 | ± 2.5 | PASS |
| | | VN | -10 | 2.17 | 0.000868 | ± 2.5 | PASS |
| | | VN | 0 | 2.17 | 0.000868 | ± 2.5 | PASS |
| | | VN | 10 | 1.86 | 0.000734 | ± 2.5 | PASS |
| | | VN | 20 | 1.86 | 0.000734 | ± 2.5 | PASS |
| | | VN | 30 | 1.04 | 0.000412 | ± 2.5 | PASS |
| | | VN | 40 | 0.94 | 0.000372 | ± 2.5 | PASS |
| | | VN | 50 | 0.73 | 0.000288 | ± 2.5 | PASS |
| | HCH | VN | -30 | 0.73 | 0.000288 | ± 2.5 | PASS |
| | | VN | -20 | 0.73 | 0.000288 | ± 2.5 | PASS |
| | | VN | -10 | 0.73 | 0.000288 | ± 2.5 | PASS |
| | | VN | 0 | 0.73 | 0.000288 | ± 2.5 | PASS |
| | | VN | 10 | 2.75 | 0.001071 | ± 2.5 | PASS |
| | | VN | 20 | 2.75 | 0.001071 | ± 2.5 | PASS |
| | | VN | 30 | 3.49 | 0.001361 | ± 2.5 | PASS |
| | | VN | 40 | 2.95 | 0.001149 | ± 2.5 | PASS |
| | | VN | 50 | 2.39 | 0.000931 | ± 2.5 | PASS |
| QPSK | LCH | VN | -30 | 2.39 | 0.000931 | ± 2.5 | PASS |
| | | VN | -20 | 2.39 | 0.000931 | ± 2.5 | PASS |
| | | VN | -10 | 2.39 | 0.000931 | ± 2.5 | PASS |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | VN | 0 | 2.39 | 0.000931 | ± 2.5 | PASS |
| | | VN | 10 | 0.29 | 0.000114 | ± 2.5 | PASS |
| | | VN | 20 | 0.29 | 0.000114 | ± 2.5 | PASS |
| | | VN | 30 | 0.86 | 0.000343 | ± 2.5 | PASS |
| | | VN | 40 | 1.87 | 0.000748 | ± 2.5 | PASS |
| | | VN | 50 | 0.17 | 0.000069 | ± 2.5 | PASS |
| | MCH | VN | -30 | 0.17 | 0.000069 | ± 2.5 | PASS |
| | | VN | -20 | 0.17 | 0.000069 | ± 2.5 | PASS |
| | | VN | -10 | 0.17 | 0.000069 | ± 2.5 | PASS |
| | | VN | 0 | 0.17 | 0.000069 | ± 2.5 | PASS |
| | | VN | 10 | 2.02 | 0.000796 | ± 2.5 | PASS |
| | | VN | 20 | 2.02 | 0.000796 | ± 2.5 | PASS |
| | | VN | 30 | 0.31 | 0.000124 | ± 2.5 | PASS |
| | | VN | 40 | -0.43 | -0.000169 | ± 2.5 | PASS |
| | | VN | 50 | -0.07 | -0.000028 | ± 2.5 | PASS |
| | HCH | VN | -30 | -0.07 | -0.000028 | ± 2.5 | PASS |
| | | VN | -20 | -0.07 | -0.000028 | ± 2.5 | PASS |
| | | VN | -10 | -0.07 | -0.000028 | ± 2.5 | PASS |
| | | VN | 0 | -0.07 | -0.000028 | ± 2.5 | PASS |
| | | VN | 10 | -0.07 | -0.000028 | ± 2.5 | PASS |
| | | VN | 20 | 1.82 | 0.000708 | ± 2.5 | PASS |
| | | VN | 30 | 2.90 | 0.001132 | ± 2.5 | PASS |
| | | VN | 40 | 1.16 | 0.000452 | ± 2.5 | PASS |
| | | VN | 50 | 3.22 | 0.001255 | ± 2.5 | PASS |

## Channel Bandwidth: 15 MHz

| Channel Bandwidth: 15 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| Voltage | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | LCH | VL | TN | -0.13 | -0.000051 | ± 2.5 | PASS |
| | | VN | TN | -0.13 | -0.000051 | ± 2.5 | PASS |
| | | VH | TN | -0.13 | -0.000051 | ± 2.5 | PASS |
| | MCH | VL | TN | -0.13 | -0.000051 | ± 2.5 | PASS |
| | | VN | TN | 0.39 | 0.000152 | ± 2.5 | PASS |
| | | VH | TN | 0.39 | 0.000152 | ± 2.5 | PASS |
| | HCH | VL | TN | 0.39 | 0.000152 | ± 2.5 | PASS |
| | | VN | TN | 2.25 | 0.000876 | ± 2.5 | PASS |
| | | VH | TN | 2.25 | 0.000876 | ± 2.5 | PASS |
| 16QAM | LCH | VL | TN | 2.25 | 0.000876 | ± 2.5 | PASS |
| | | VN | TN | 0.21 | 0.000086 | ± 2.5 | PASS |
| | | VH | TN | 0.21 | 0.000086 | ± 2.5 | PASS |
| | MCH | VL | TN | 0.21 | 0.000086 | ± 2.5 | PASS |
| | | VN | TN | -0.16 | -0.000062 | ± 2.5 | PASS |
| | | VH | TN | -0.16 | -0.000062 | ± 2.5 | PASS |
| | HCH | VL | TN | -0.16 | -0.000062 | ± 2.5 | PASS |
| | | VN | TN | 1.60 | 0.000625 | ± 2.5 | PASS |
| | | VH | TN | 1.60 | 0.000625 | ± 2.5 | PASS |

| Temperature | | | | | | | |
|---|---|---|---|---|---|---|---|
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | LCH | VN | -30 | 0.89 | 0.000354 | ± 2.5 | PASS |
| | | VN | -20 | 0.89 | 0.000354 | ± 2.5 | PASS |
| | | VN | -10 | 0.89 | 0.000354 | ± 2.5 | PASS |
| | | VN | 0 | 0.89 | 0.000354 | ± 2.5 | PASS |
| | | VN | 10 | 0.89 | 0.000354 | ± 2.5 | PASS |
| | | VN | 20 | 0.89 | 0.000354 | ± 2.5 | PASS |
| | | VN | 30 | 0.37 | 0.000148 | ± 2.5 | PASS |
| | | VN | 40 | -0.20 | -0.000080 | ± 2.5 | PASS |
| | | VN | 50 | 1.37 | 0.000548 | ± 2.5 | PASS |
| | MCH | VN | -30 | 1.37 | 0.000548 | ± 2.5 | PASS |
| | | VN | -20 | 1.37 | 0.000548 | ± 2.5 | PASS |
| | | VN | -10 | 1.37 | 0.000548 | ± 2.5 | PASS |
| | | VN | 0 | 1.37 | 0.000548 | ± 2.5 | PASS |
| | | VN | 10 | 1.47 | 0.000581 | ± 2.5 | PASS |
| | | VN | 20 | 1.47 | 0.000581 | ± 2.5 | PASS |
| | | VN | 30 | 2.15 | 0.000846 | ± 2.5 | PASS |
| | | VN | 40 | 0.47 | 0.000186 | ± 2.5 | PASS |
| | | VN | 50 | 0.89 | 0.000350 | ± 2.5 | PASS |
| | HCH | VN | -30 | 0.89 | 0.000350 | ± 2.5 | PASS |
| | | VN | -20 | 0.89 | 0.000350 | ± 2.5 | PASS |
| | | VN | -10 | 0.89 | 0.000350 | ± 2.5 | PASS |
| | | VN | 0 | 1.44 | 0.000564 | ± 2.5 | PASS |
| | | VN | 10 | 1.44 | 0.000564 | ± 2.5 | PASS |
| | | VN | 20 | 1.44 | 0.000564 | ± 2.5 | PASS |
| | | VN | 30 | 1.24 | 0.000486 | ± 2.5 | PASS |
| | | VN | 40 | 0.93 | 0.000363 | ± 2.5 | PASS |
| | | VN | 50 | 3.02 | 0.001178 | ± 2.5 | PASS |
| QPSK | LCH | VN | -30 | 3.02 | 0.001178 | ± 2.5 | PASS |
| | | VN | -20 | 3.02 | 0.001178 | ± 2.5 | PASS |
| | | VN | -10 | 3.02 | 0.001178 | ± 2.5 | PASS |
| | | VN | 0 | 0.79 | 0.000314 | ± 2.5 | PASS |
| | | VN | 10 | 0.79 | 0.000314 | ± 2.5 | PASS |
| | | VN | 20 | 0.79 | 0.000314 | ± 2.5 | PASS |
| | | VN | 30 | 0.31 | 0.000126 | ± 2.5 | PASS |
| | | VN | 40 | 1.03 | 0.000411 | ± 2.5 | PASS |
| | | VN | 50 | 0.23 | 0.000091 | ± 2.5 | PASS |
| | MCH | VN | -30 | 0.23 | 0.000091 | ± 2.5 | PASS |
| | | VN | -20 | 0.23 | 0.000091 | ± 2.5 | PASS |
| | | VN | -10 | 0.23 | 0.000091 | ± 2.5 | PASS |
| | | VN | 0 | 0.23 | 0.000091 | ± 2.5 | PASS |
| | | VN | 10 | 1.00 | 0.000395 | ± 2.5 | PASS |
| | | VN | 20 | 1.00 | 0.000395 | ± 2.5 | PASS |
| | | VN | 30 | 0.53 | 0.000209 | ± 2.5 | PASS |
| | | VN | 40 | 0.66 | 0.000260 | ± 2.5 | PASS |
| | | VN | 50 | 0.76 | 0.000299 | ± 2.5 | PASS |
| | HCH | VN | -30 | 0.76 | 0.000299 | ± 2.5 | PASS |
| | | VN | -20 | 0.76 | 0.000299 | ± 2.5 | PASS |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | VN | -10 | 0.76 | 0.000299 | ± 2.5 | PASS |
| | | VN | 0 | 1.20 | 0.000469 | ± 2.5 | PASS |
| | | VN | 10 | 1.20 | 0.000469 | ± 2.5 | PASS |
| | | VN | 20 | 1.20 | 0.000469 | ± 2.5 | PASS |
| | | VN | 30 | 1.06 | 0.000413 | ± 2.5 | PASS |
| | | VN | 40 | 2.30 | 0.000899 | ± 2.5 | PASS |
| | | VN | 50 | 1.83 | 0.000715 | ± 2.5 | PASS |

## Channel Bandwidth: 20 MHz

| Channel Bandwidth: 20 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| Voltage | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | LCH | VL | TN | 2.66 | 0.001060 | ± 2.5 | PASS |
| | | VN | TN | 2.66 | 0.001060 | ± 2.5 | PASS |
| | | VH | TN | 2.66 | 0.001060 | ± 2.5 | PASS |
| | MCH | VL | TN | 0.51 | 0.000203 | ± 2.5 | PASS |
| | | VN | TN | 0.51 | 0.000203 | ± 2.5 | PASS |
| | | VH | TN | 0.51 | 0.000203 | ± 2.5 | PASS |
| | HCH | VL | TN | 1.27 | 0.000497 | ± 2.5 | PASS |
| | | VN | TN | 1.27 | 0.000497 | ± 2.5 | PASS |
| | | VH | TN | 1.27 | 0.000497 | ± 2.5 | PASS |
| 16QAM | LCH | VL | TN | 3.36 | 0.001339 | ± 2.5 | PASS |
| | | VN | TN | 3.36 | 0.001339 | ± 2.5 | PASS |
| | | VH | TN | 3.36 | 0.001339 | ± 2.5 | PASS |
| | MCH | VL | TN | 1.42 | 0.000559 | ± 2.5 | PASS |
| | | VN | TN | 1.42 | 0.000559 | ± 2.5 | PASS |
| | | VH | TN | 1.42 | 0.000559 | ± 2.5 | PASS |
| | HCH | VL | TN | 1.42 | 0.000559 | ± 2.5 | PASS |
| | | VN | TN | 1.42 | 0.000559 | ± 2.5 | PASS |
| | | VH | TN | 1.42 | 0.000559 | ± 2.5 | PASS |
| Temperature | | | | | | | |
| Modulation | Channel | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| QPSK | LCH | VN | -30 | 2.98 | 0.001185 | ± 2.5 | PASS |
| | | VN | -20 | 2.98 | 0.001185 | ± 2.5 | PASS |
| | | VN | -10 | 2.98 | 0.001185 | ± 2.5 | PASS |
| | | VN | 0 | 2.98 | 0.001185 | ± 2.5 | PASS |
| | | VN | 10 | 2.98 | 0.001185 | ± 2.5 | PASS |
| | | VN | 20 | 2.98 | 0.001185 | ± 2.5 | PASS |
| | | VN | 30 | 2.32 | 0.000923 | ± 2.5 | PASS |
| | | VN | 40 | 2.68 | 0.001066 | ± 2.5 | PASS |
| | | VN | 50 | 3.29 | 0.001311 | ± 2.5 | PASS |
| | MCH | VN | -30 | 3.29 | 0.001311 | ± 2.5 | PASS |
| | | VN | -20 | 3.29 | 0.001311 | ± 2.5 | PASS |
| | | VN | -10 | 3.29 | 0.001311 | ± 2.5 | PASS |
| | | VN | 0 | 3.29 | 0.001311 | ± 2.5 | PASS |
| | | VN | 10 | 3.29 | 0.001311 | ± 2.5 | PASS |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | VN | 20 | 0.34 | 0.000135 | ± 2.5 | PASS |
| | | VN | 30 | 0.11 | 0.000045 | ± 2.5 | PASS |
| | | VN | 40 | 1.09 | 0.000429 | ± 2.5 | PASS |
| | | VN | 50 | 0.77 | 0.000305 | ± 2.5 | PASS |
| | HCH | VN | -30 | 0.77 | 0.000305 | ± 2.5 | PASS |
| | | VN | -20 | 0.77 | 0.000305 | ± 2.5 | PASS |
| | | VN | -10 | 0.77 | 0.000305 | ± 2.5 | PASS |
| | | VN | 0 | 0.77 | 0.000305 | ± 2.5 | PASS |
| | | VN | 10 | 0.97 | 0.000380 | ± 2.5 | PASS |
| | | VN | 20 | 0.97 | 0.000380 | ± 2.5 | PASS |
| | | VN | 30 | 1.26 | 0.000492 | ± 2.5 | PASS |
| | | VN | 40 | 0.70 | 0.000274 | ± 2.5 | PASS |
| | | VN | 50 | 1.60 | 0.000626 | ± 2.5 | PASS |
| QPSK | LCH | VN | -30 | 1.60 | 0.000626 | ± 2.5 | PASS |
| | | VN | -20 | 1.60 | 0.000626 | ± 2.5 | PASS |
| | | VN | -10 | 1.60 | 0.000626 | ± 2.5 | PASS |
| | | VN | 0 | 3.39 | 0.001351 | ± 2.5 | PASS |
| | | VN | 10 | 3.39 | 0.001351 | ± 2.5 | PASS |
| | | VN | 20 | 3.39 | 0.001351 | ± 2.5 | PASS |
| | | VN | 30 | 1.86 | 0.000741 | ± 2.5 | PASS |
| | | VN | 40 | 2.85 | 0.001134 | ± 2.5 | PASS |
| | | VN | 50 | 2.46 | 0.000980 | ± 2.5 | PASS |
| | MCH | VN | -30 | 2.46 | 0.000980 | ± 2.5 | PASS |
| | | VN | -20 | 2.46 | 0.000980 | ± 2.5 | PASS |
| | | VN | -10 | 2.46 | 0.000980 | ± 2.5 | PASS |
| | | VN | 0 | 0.92 | 0.000361 | ± 2.5 | PASS |
| | | VN | 10 | 0.92 | 0.000361 | ± 2.5 | PASS |
| | | VN | 20 | 0.92 | 0.000361 | ± 2.5 | PASS |
| | | VN | 30 | 1.04 | 0.000412 | ± 2.5 | PASS |
| | | VN | 40 | 1.69 | 0.000666 | ± 2.5 | PASS |
| | | VN | 50 | 1.23 | 0.000485 | ± 2.5 | PASS |
| | HCH | VN | -30 | 1.23 | 0.000485 | ± 2.5 | PASS |
| | | VN | -20 | 1.23 | 0.000485 | ± 2.5 | PASS |
| | | VN | -10 | 1.23 | 0.000485 | ± 2.5 | PASS |
| | | VN | 0 | 1.02 | 0.000397 | ± 2.5 | PASS |
| | | VN | 10 | 1.02 | 0.000397 | ± 2.5 | PASS |
| | | VN | 20 | 1.02 | 0.000397 | ± 2.5 | PASS |
| | | VN | 30 | -0.04 | -0.000017 | ± 2.5 | PASS |
| | | VN | 40 | 0.89 | 0.000346 | ± 2.5 | PASS |
| | | VN | 50 | 0.11 | 0.000045 | ± 2.5 | PASS |