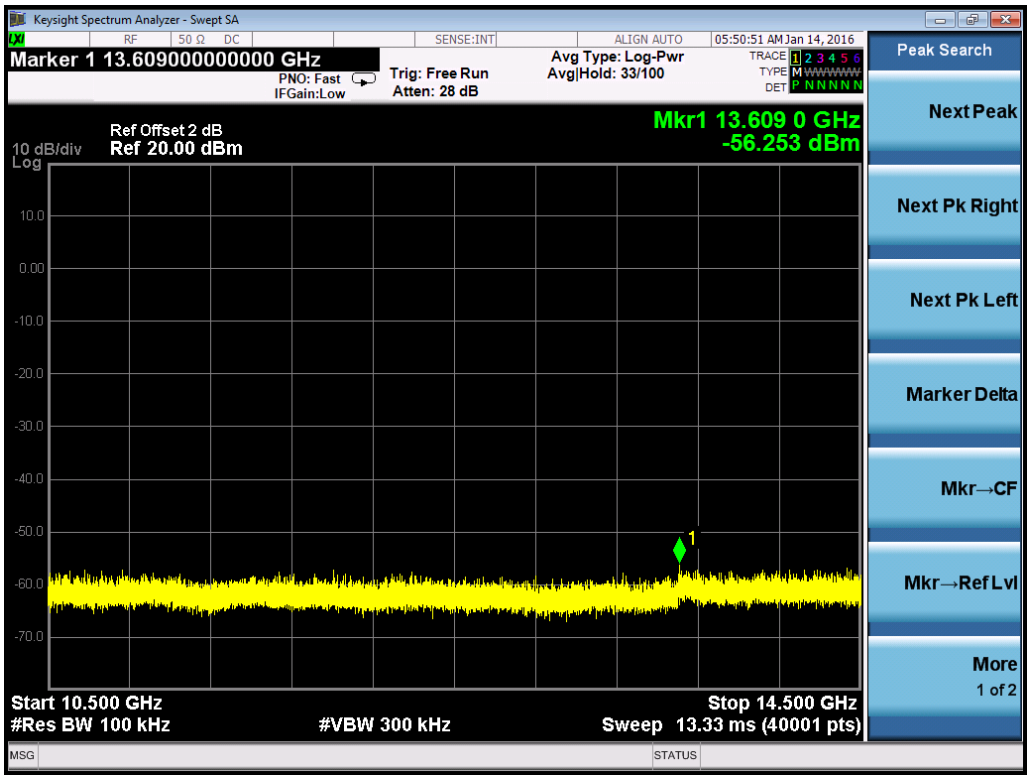
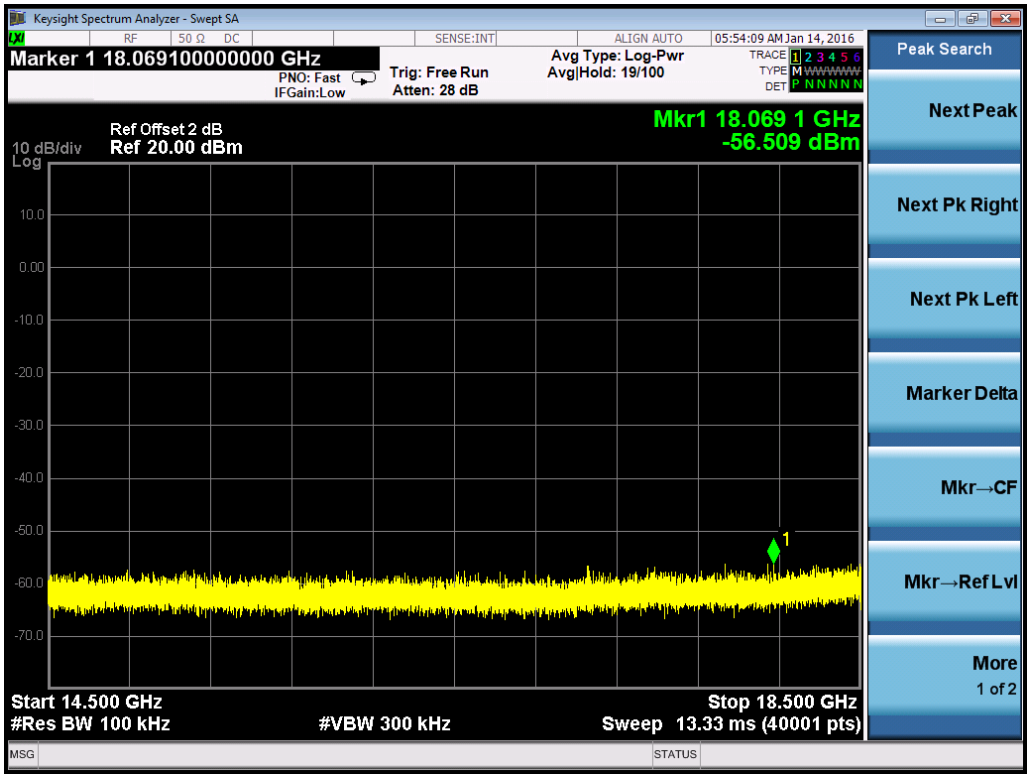
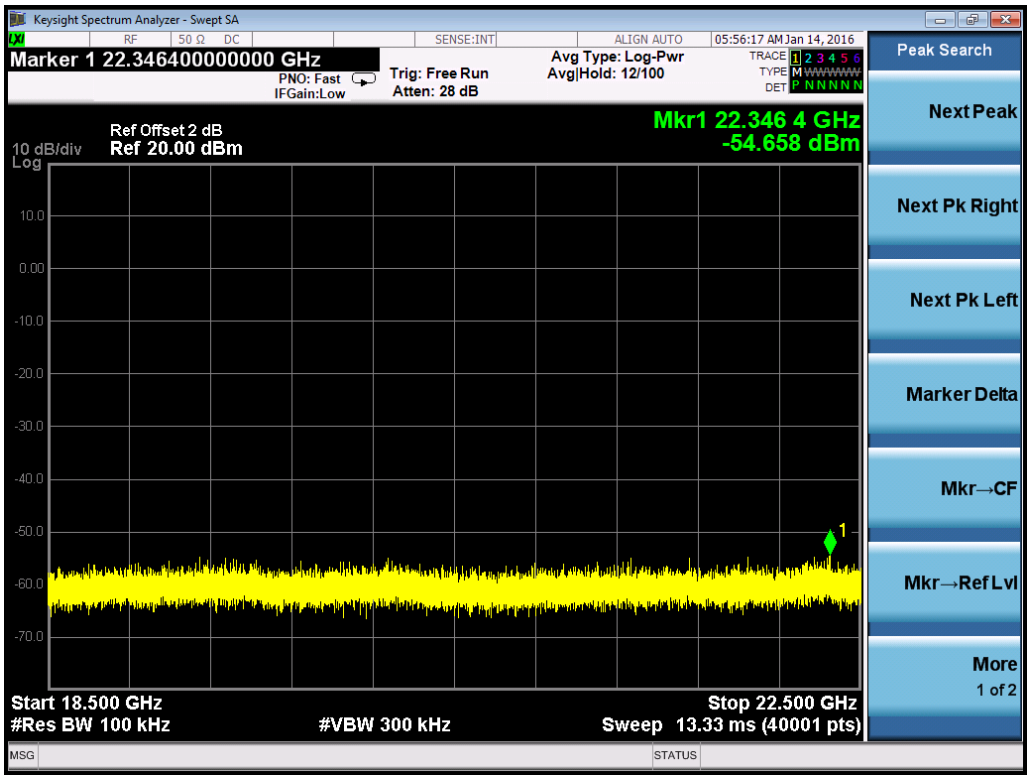
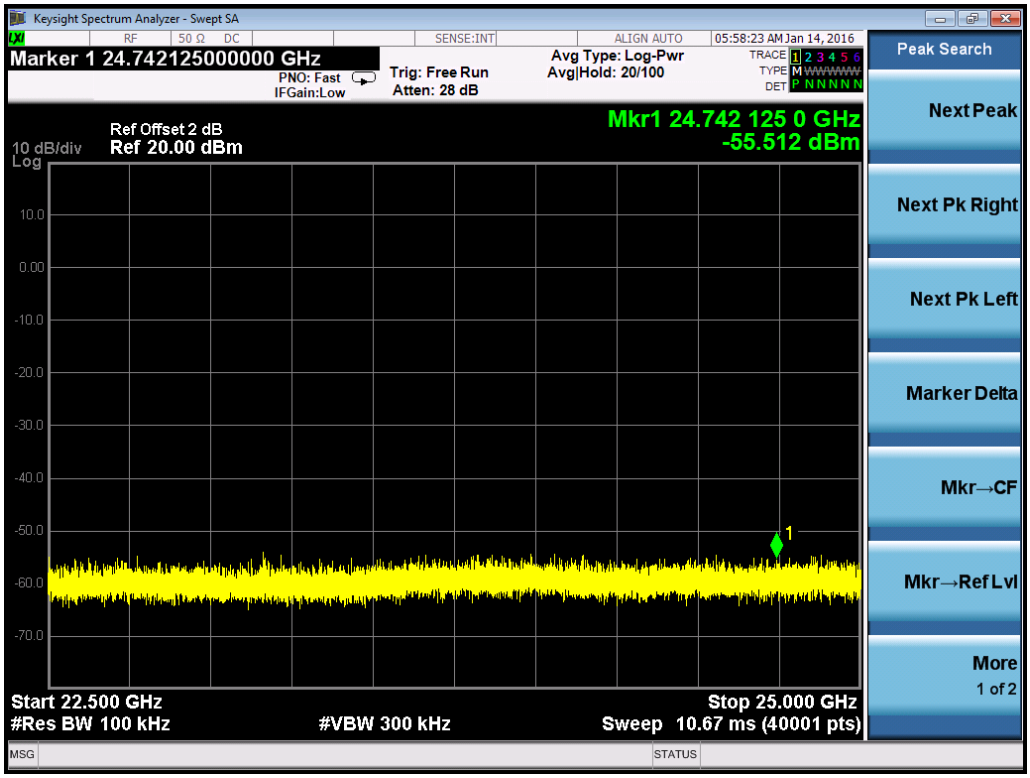
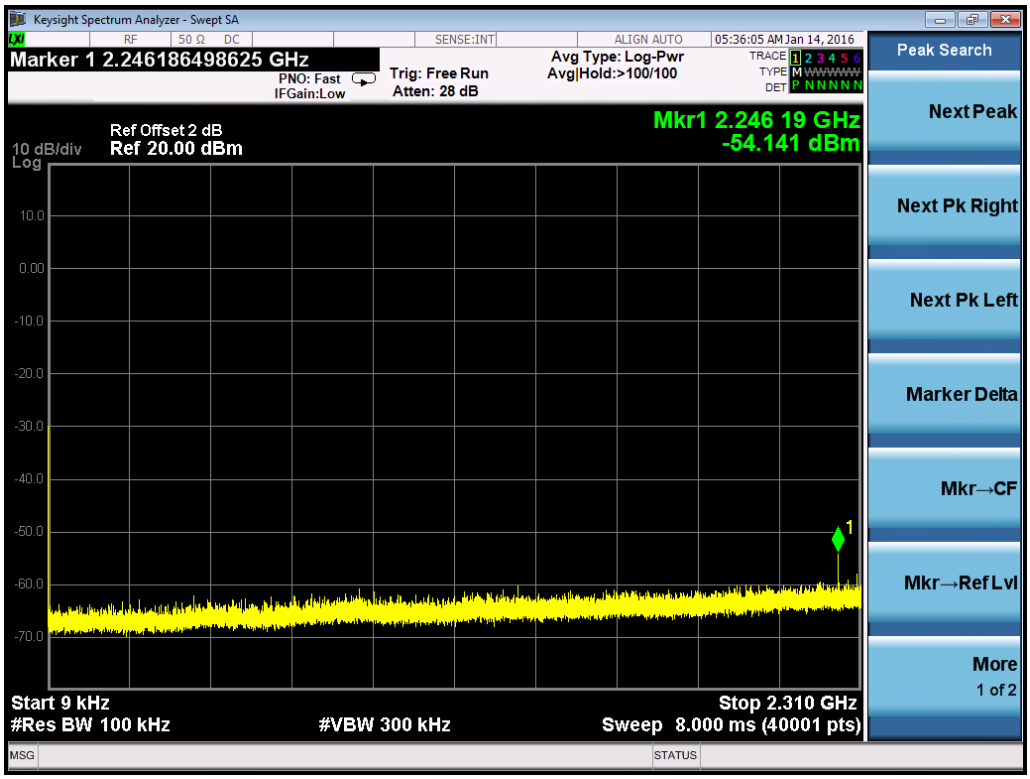

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:50:51 AM Jan 14, 2016
Marker 1 13.609000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 33/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 13.609 0 GHz
-56.253 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 10.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 14.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

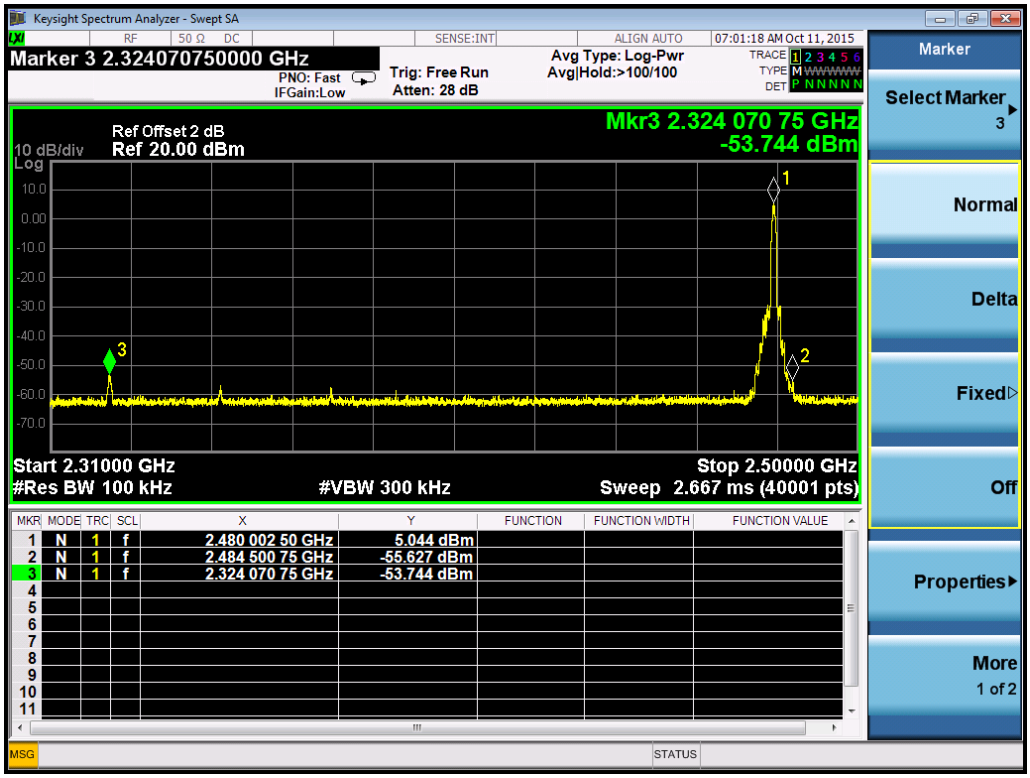

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:54:09 AM Jan 14, 2016
Marker 1 18.069100000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 19/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 18.069 1 GHz
-56.509 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 14.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 18.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

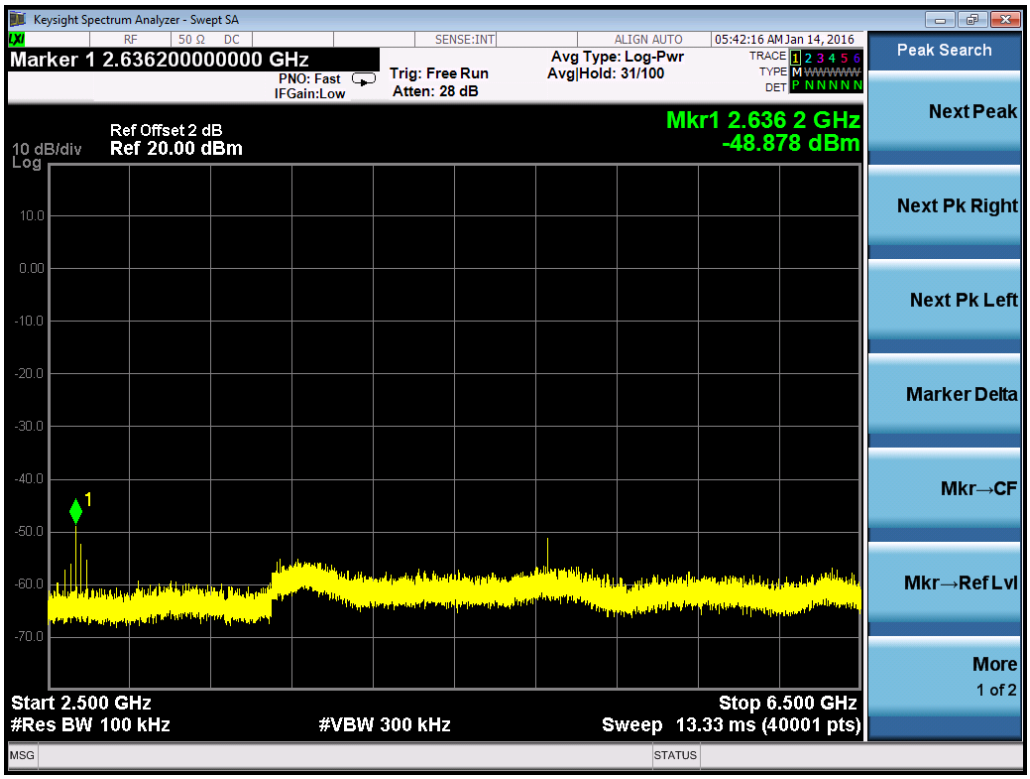

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:56:17 AM Jan 14, 2016
Marker 1 22.346400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 22.346 4 GHz
-54.658 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 18.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 22.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

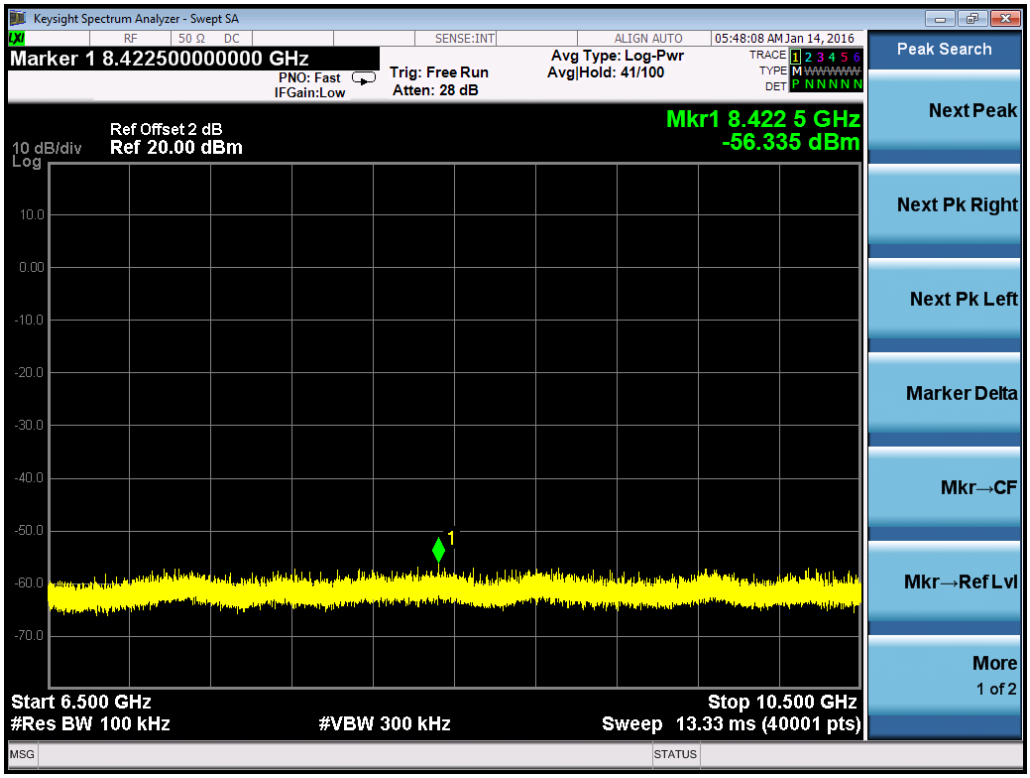

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:58:23 AM Jan 14, 2016
Marker 1 24.742125000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 20/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 24.742 125 0 GHz
-55.512 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 22.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 10.67 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

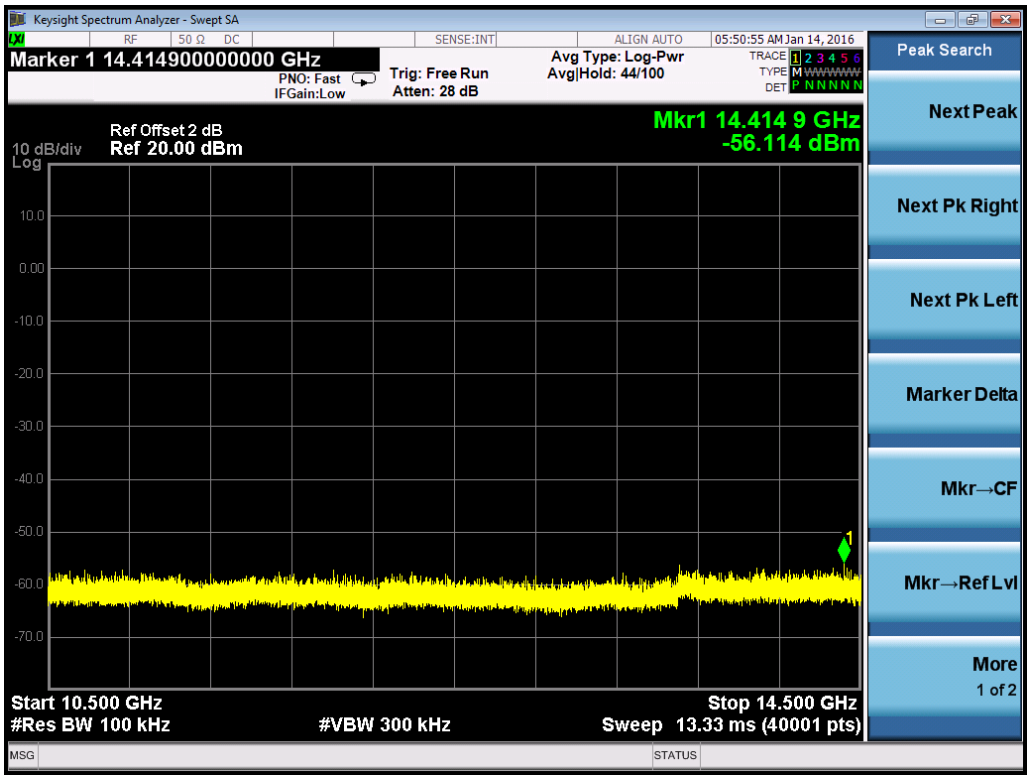
Channel H

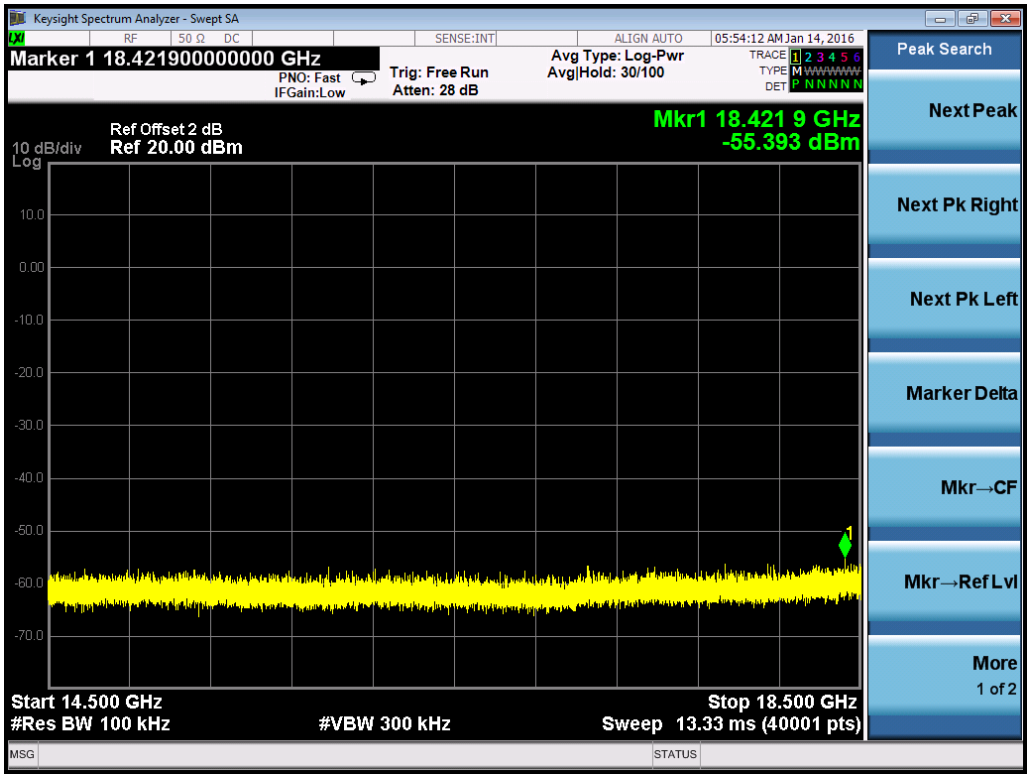

Keysight Spectrum Analyzer - Swept SA
Marker 1 2.246186498625 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
05:36:05 AM Jan 14, 2016
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.246 19 GHz
-54.141 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.310 GHz
Sweep 8.000 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

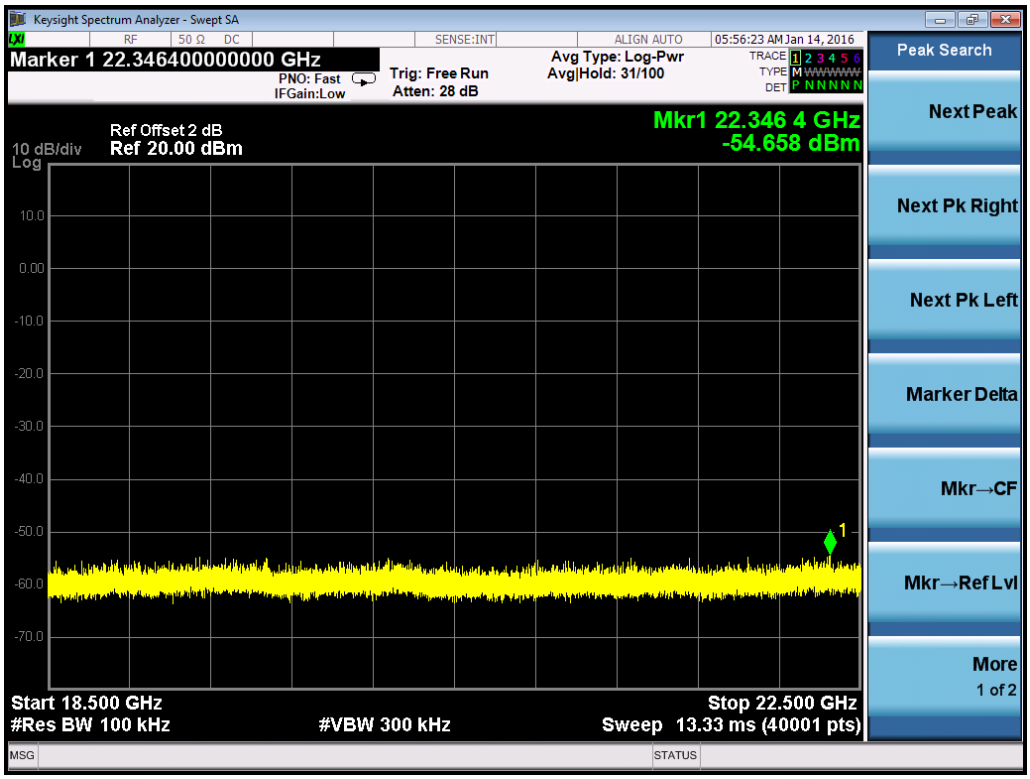

Keysight Spectrum Analyzer - Swept SA
Marker 3 2.324070750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
07:01:18 AM Oct 11, 2015
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr3 2.324 070 75 GHz
-53.744 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.667 ms (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.480 002 50 GHz 5.044 dBm
2 N 1 f 2.484 500 75 GHz -55.627 dBm
3 N 1 f 2.324 070 75 GHz -53.744 dBm
Marker
Select Marker 3
Normal
Delta
Fixed
Off
Properties
More
1 of 2

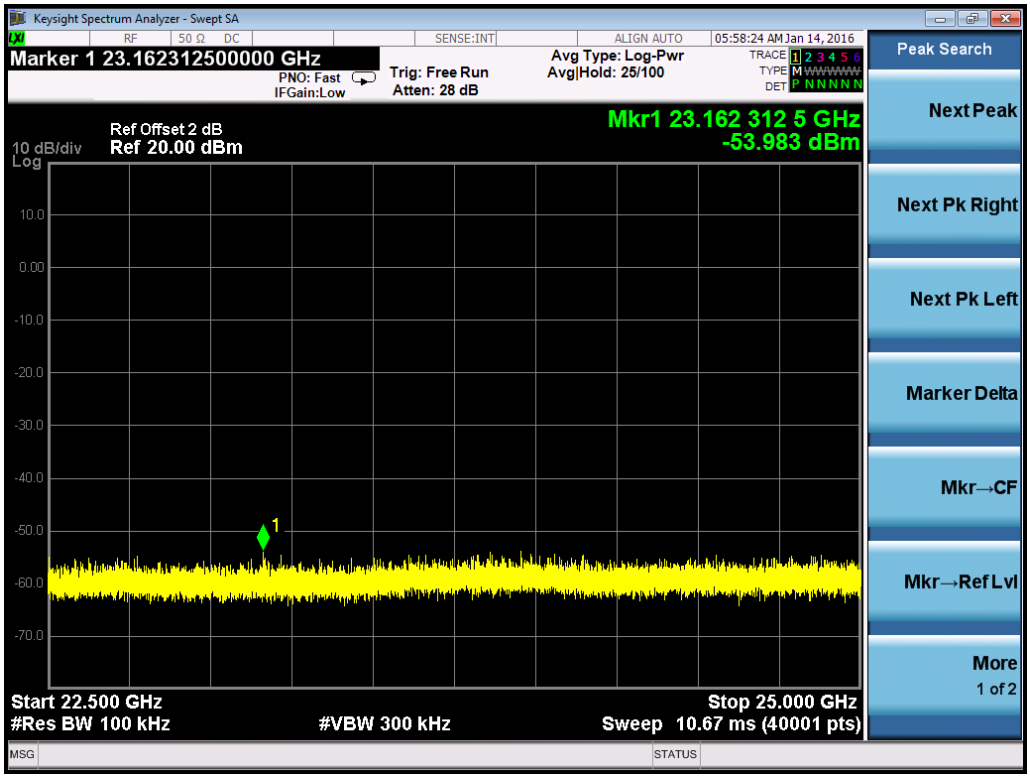

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:42:16 AM Jan 14, 2016
Marker 1 2.636200000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 31/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.636 2 GHz
-48.878 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 6.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:48:08 AM Jan 14, 2016
Marker 1 8.422500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 41/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 8.422 5 GHz
-56.335 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 6.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

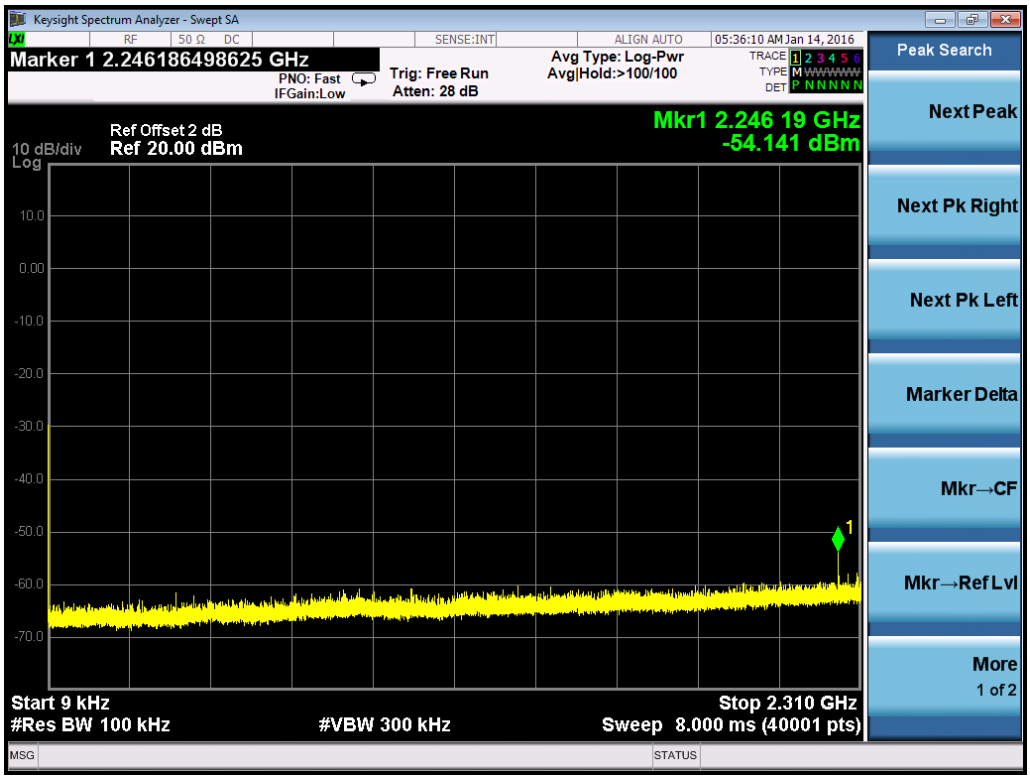

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:50:55 AM Jan 14, 2016
Marker 1 14.414900000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 44/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 14.414 9 GHz
-56.114 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 10.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 14.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

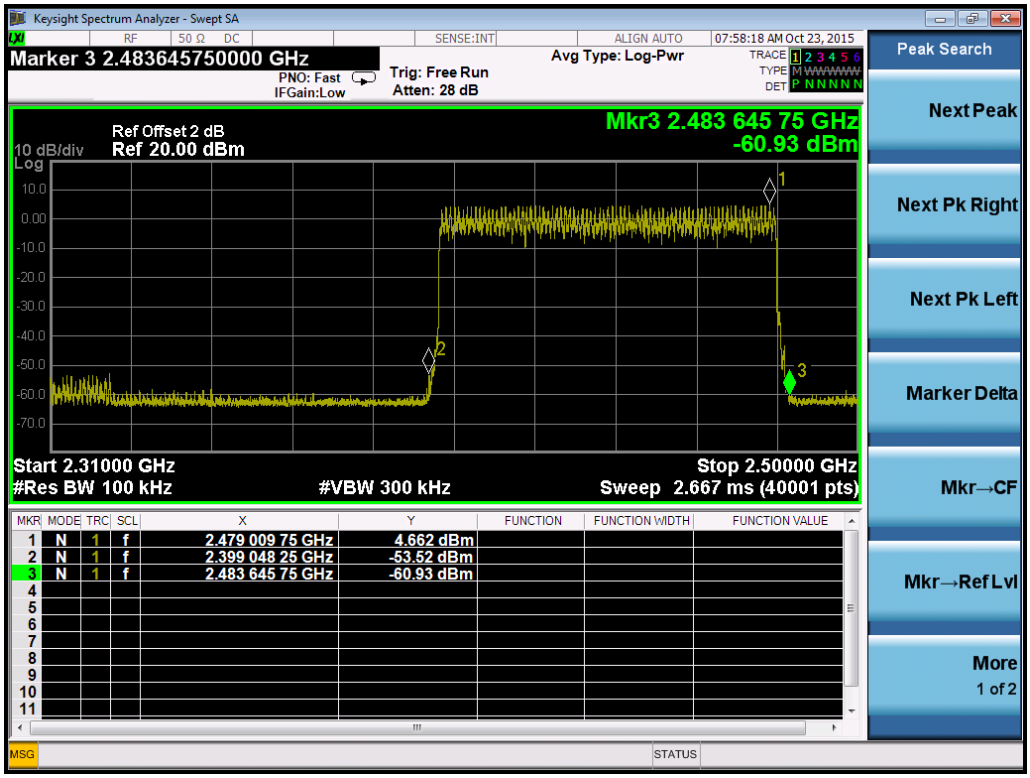

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:54:12 AM Jan 14, 2016
Marker 1 18.421900000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 30/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 18.421 9 GHz
-55.393 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 14.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 18.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

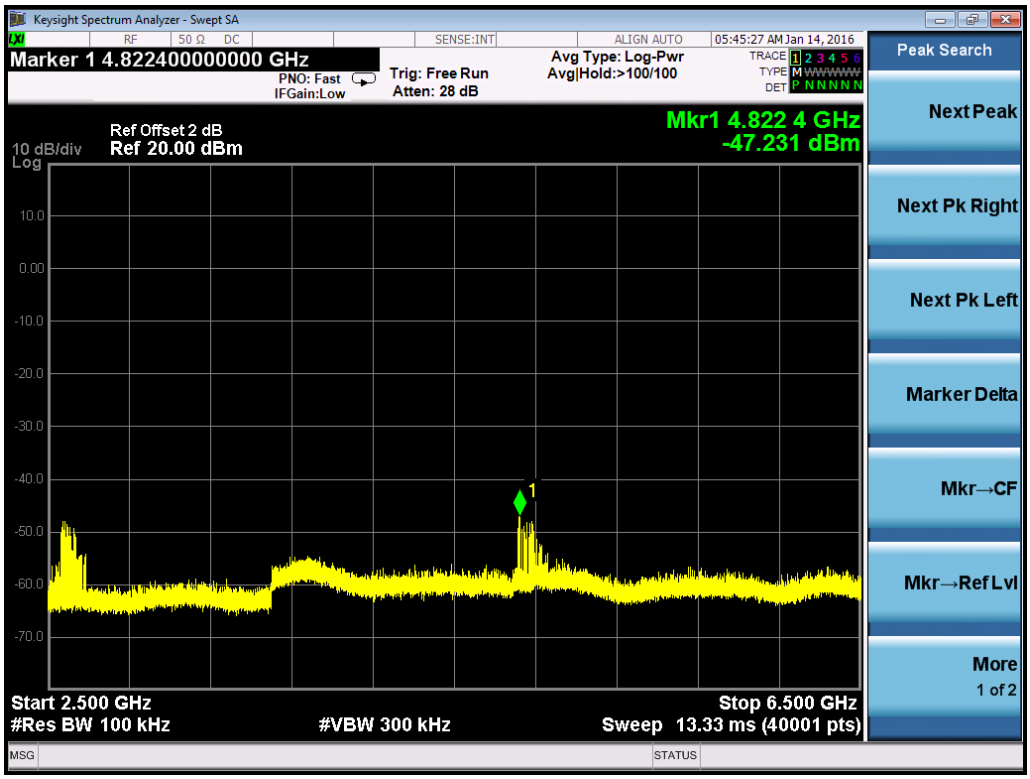

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:56:23 AM Jan 14, 2016
Marker 1 22.346400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 31/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 22.346 4 GHz
-54.658 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 18.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 22.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

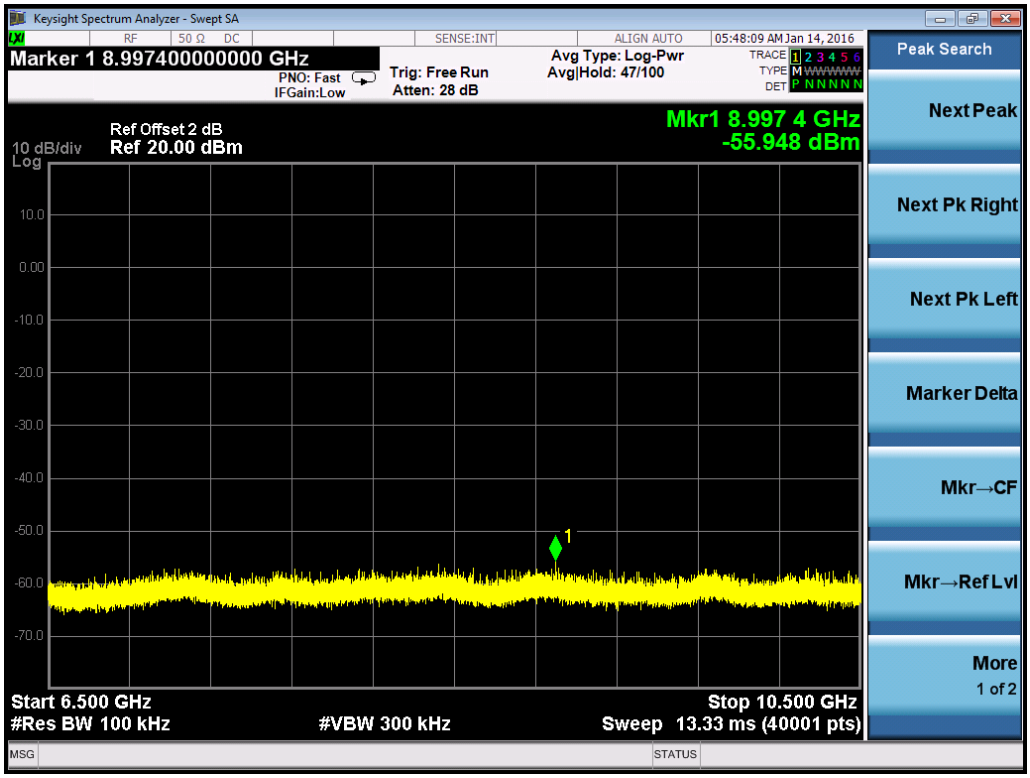

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:58:24 AM Jan 14, 2016
Marker 1 23.162312500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 25/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 23.162 312 5 GHz
-53.983 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 22.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 10.67 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

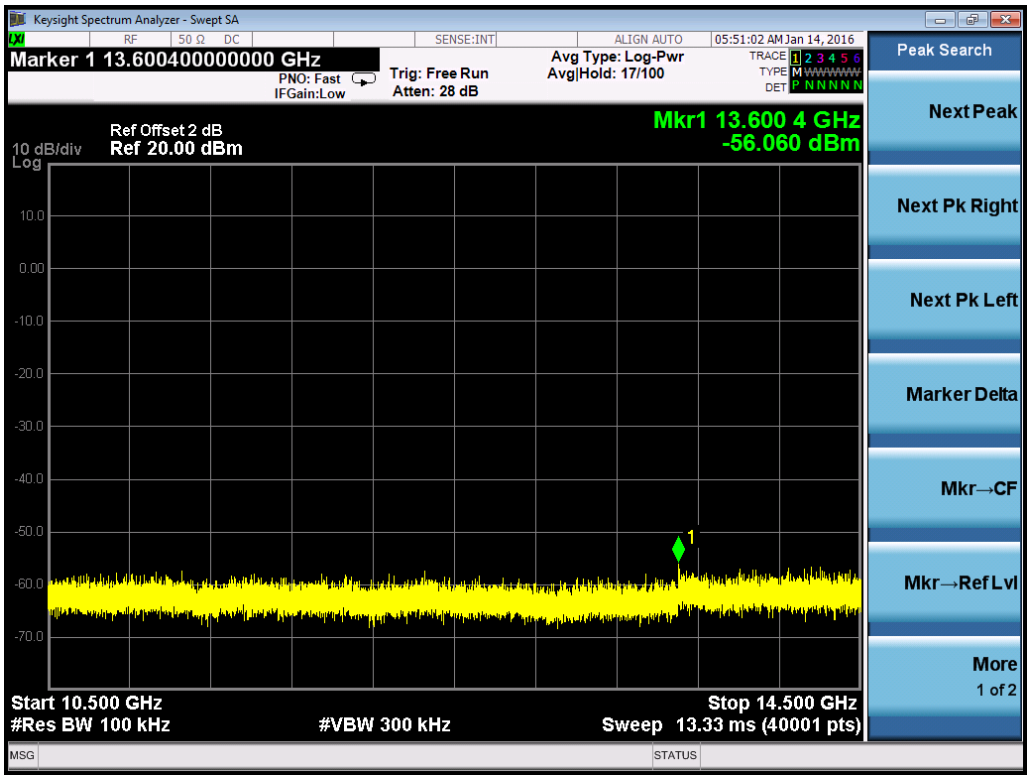
Hopping

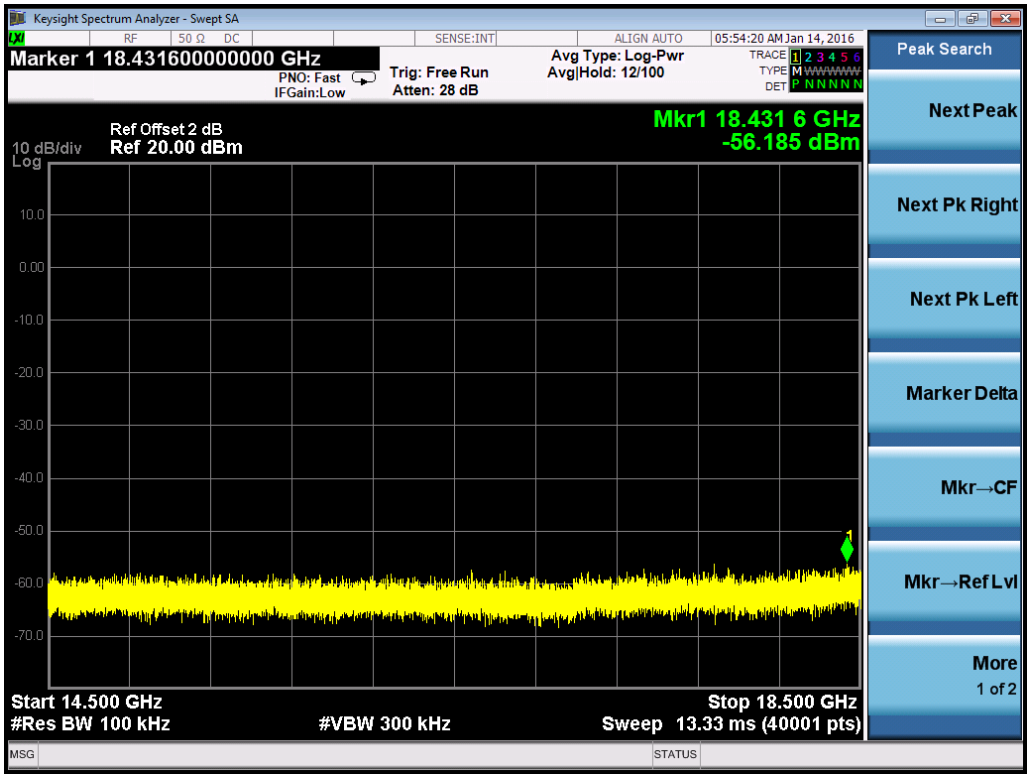

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:36:10 AM Jan 14, 2016
Marker 1 2.246186498625 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.246 19 GHz
-54.141 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.310 GHz
Sweep 8.000 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

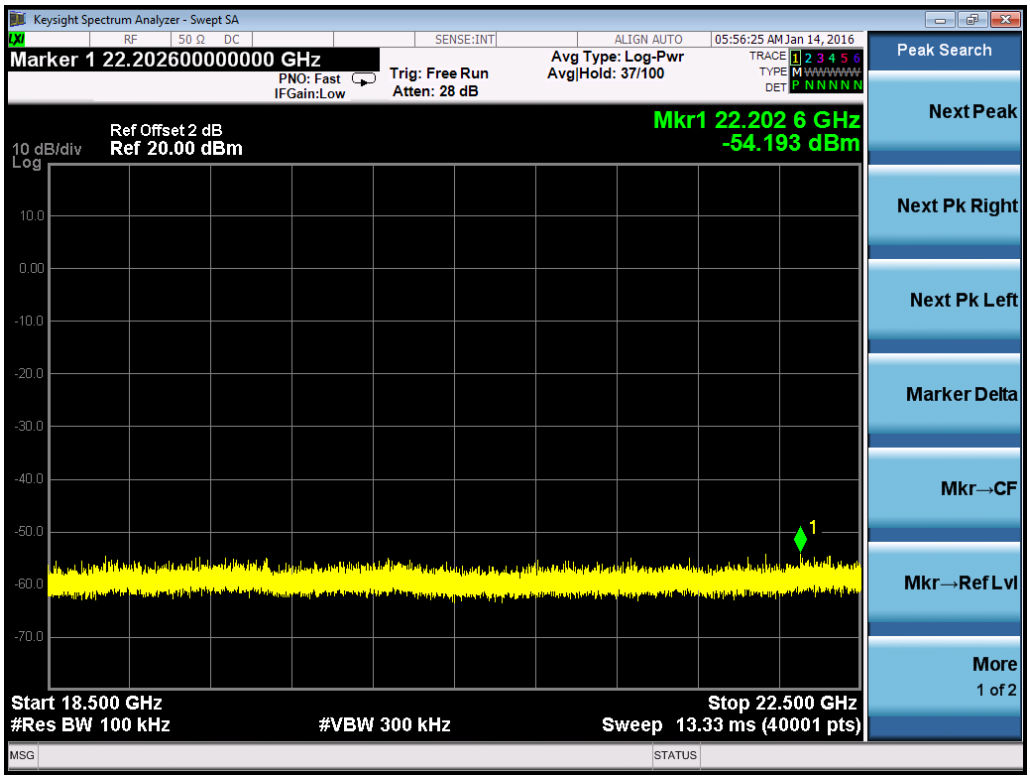

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
07:58:18 AM Oct 23, 2015
Marker 3 2.483645750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr3 2.483 645 75 GHz
-60.93 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.667 ms (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.479 009 75 GHz 4.662 dBm
2 N 1 f 2.399 048 25 GHz -53.52 dBm
3 N 1 f 2.483 645 75 GHz -60.93 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

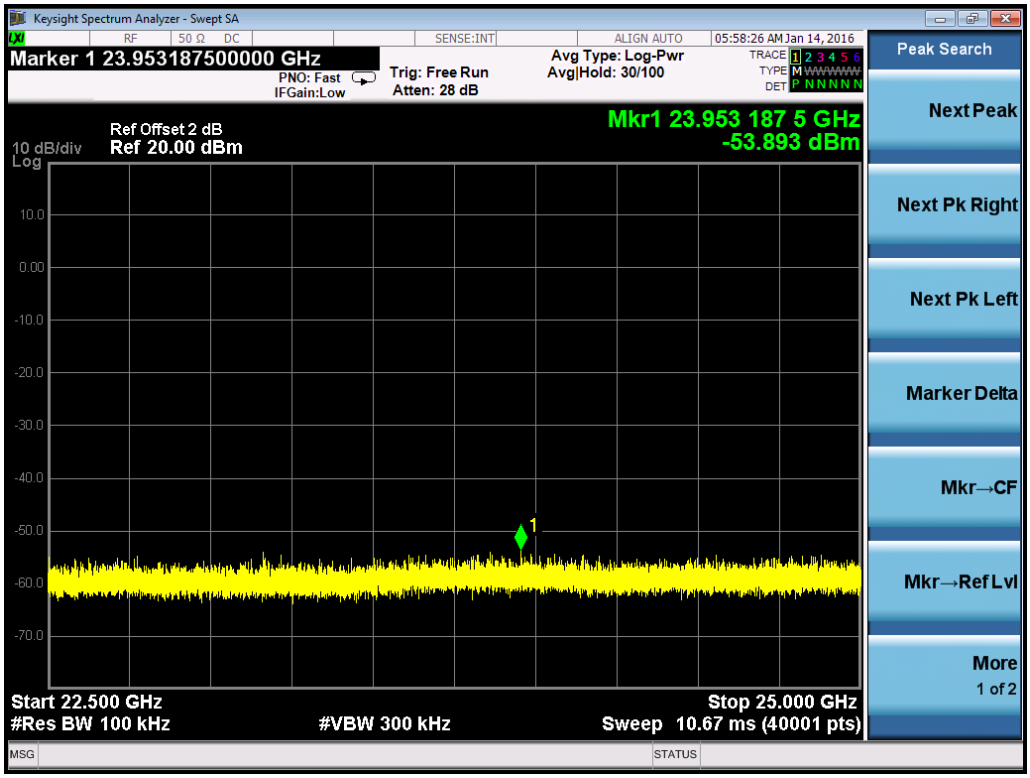

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:45:27 AM Jan 14, 2016
Marker 1 4.822400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 4.822 4 GHz
-47.231 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 6.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:48:09 AM Jan 14, 2016
Marker 1 8.997400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 47/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 8.997 4 GHz
-55.948 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 6.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:51:02 AM Jan 14, 2016
Marker 1 13.600400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 17/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 13.600 4 GHz
-56.060 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 10.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 14.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

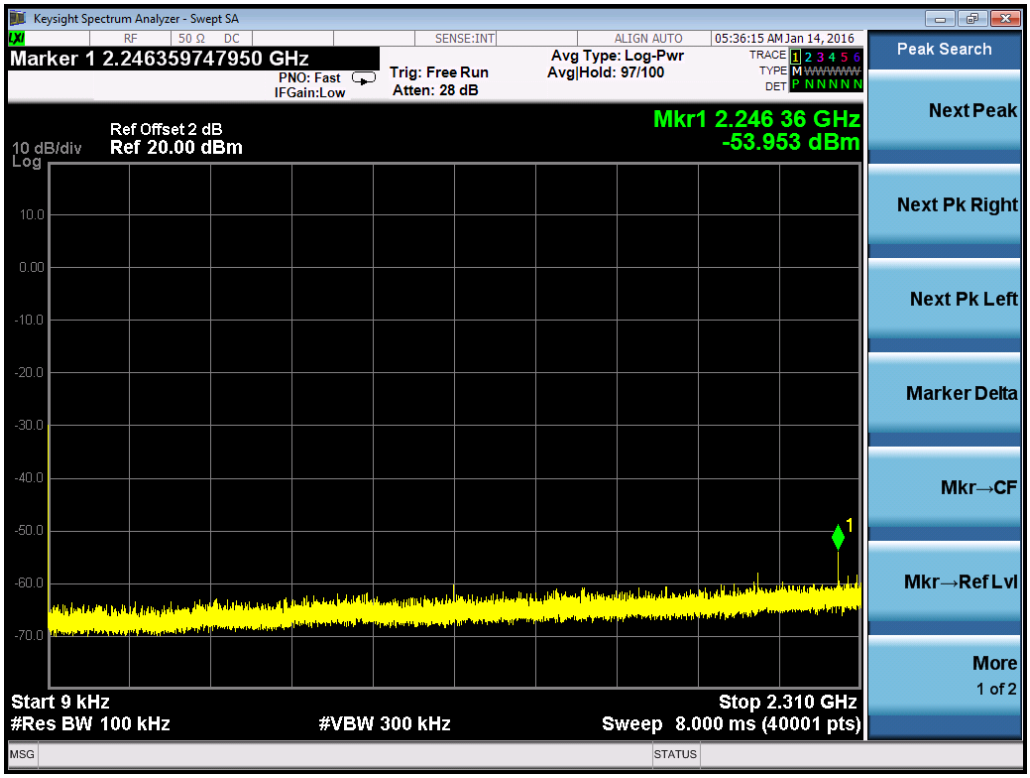

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:54:20 AM Jan 14, 2016
Marker 1 18.431600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 18.431 6 GHz
-56.185 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 14.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 18.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

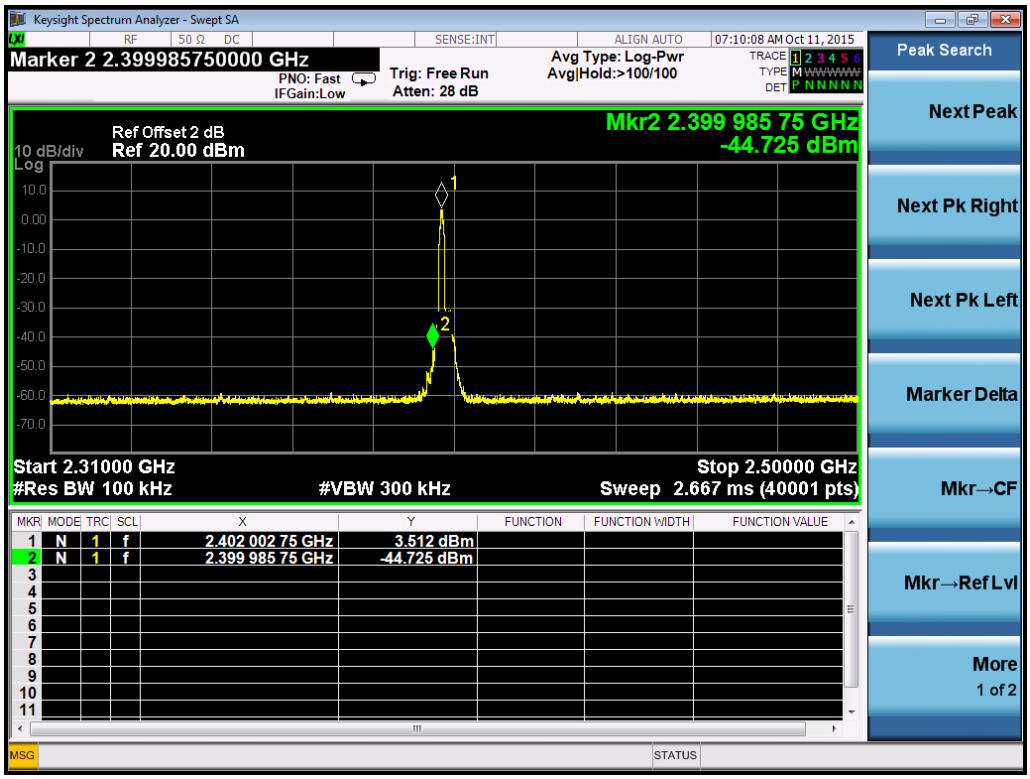

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:56:25 AM Jan 14, 2016
Marker 1 22.202600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 37/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 22.202 6 GHz
-54.193 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 18.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 22.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

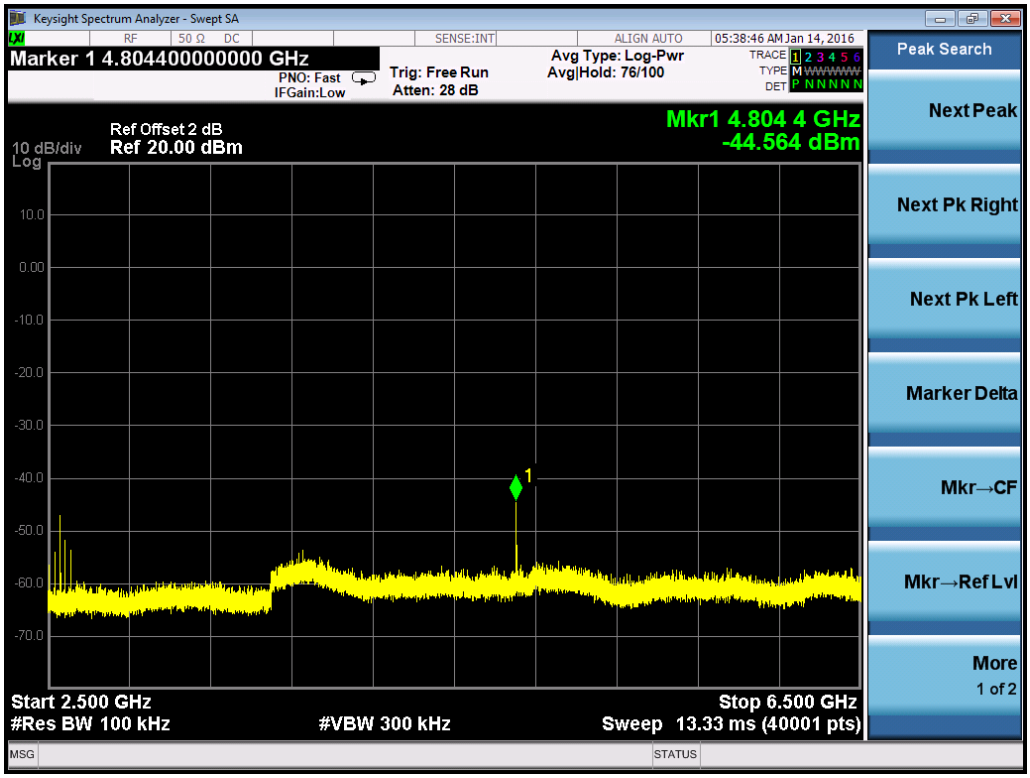

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:58:26 AM Jan 14, 2016
Marker 1 23.953187500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 30/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 23.953 187 5 GHz
-53.893 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 22.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 10.67 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

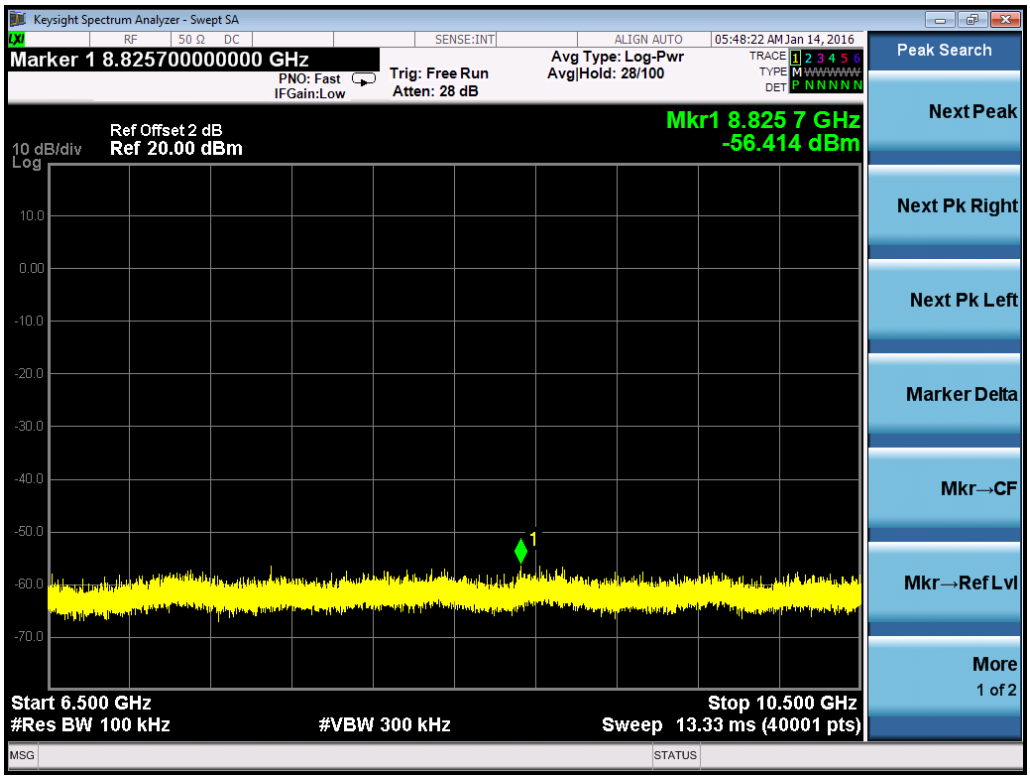
Modulation	Channel	Max reading among band (dBm)	Results	Limit (dBm)
8DPSK	L	3.512	Pass	≥20
	M	4.551	Pass	≥20
	H	5.032	Pass	≥20
	Hopping	4.655	Pass	≥20

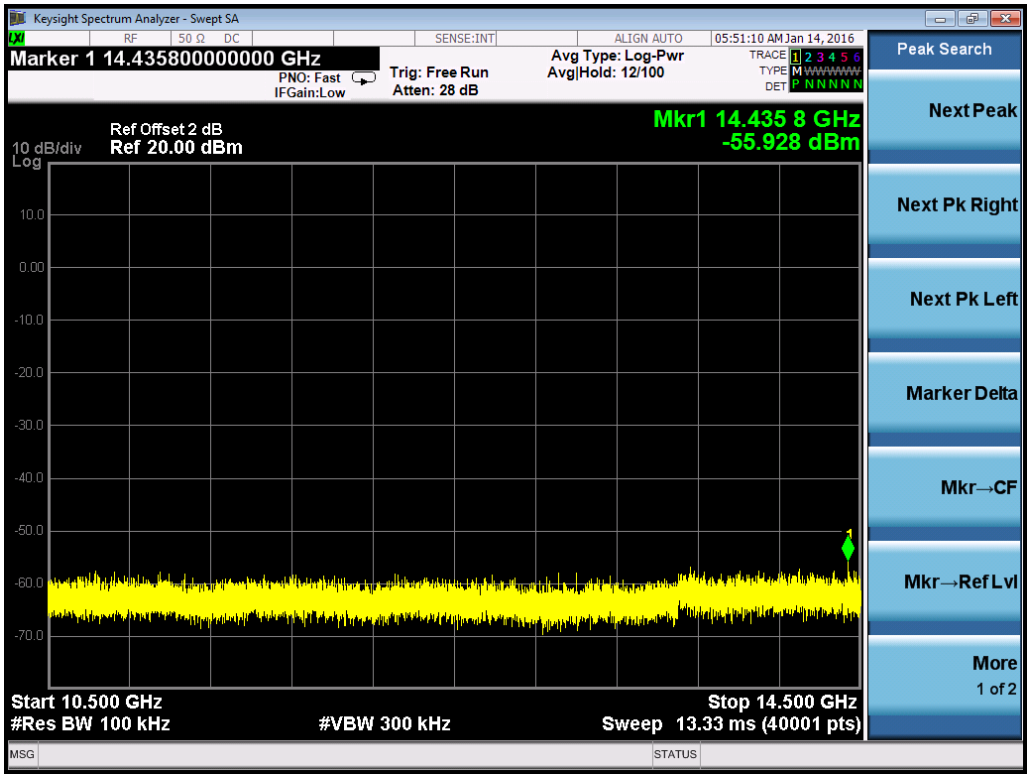
Channel L

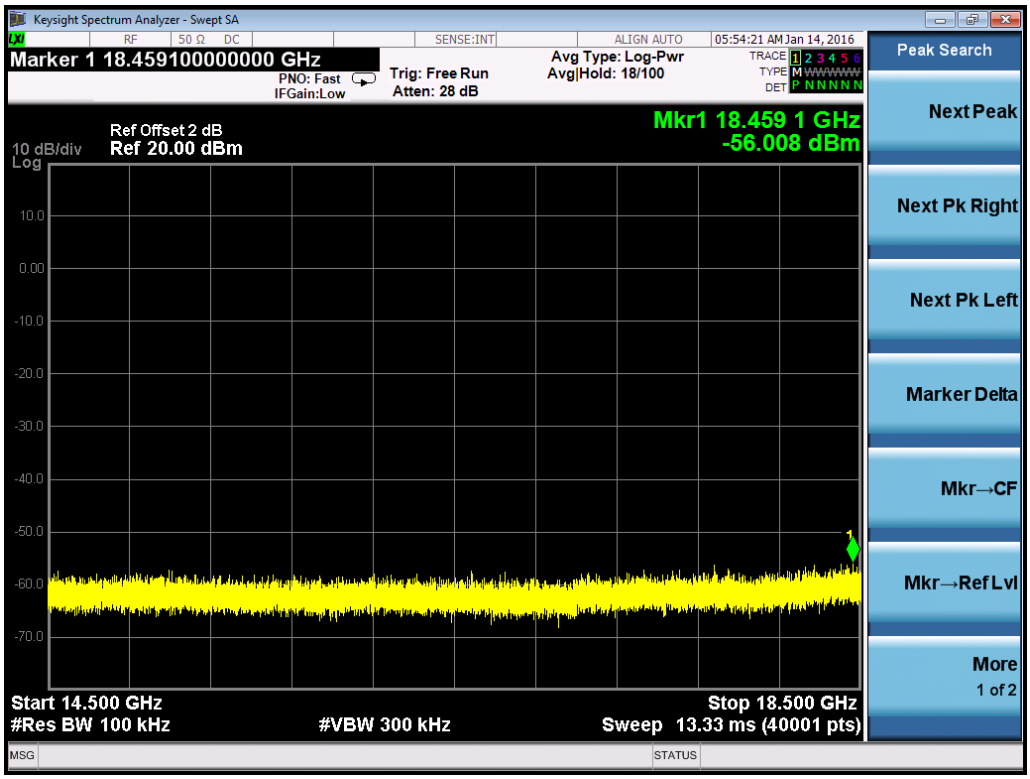


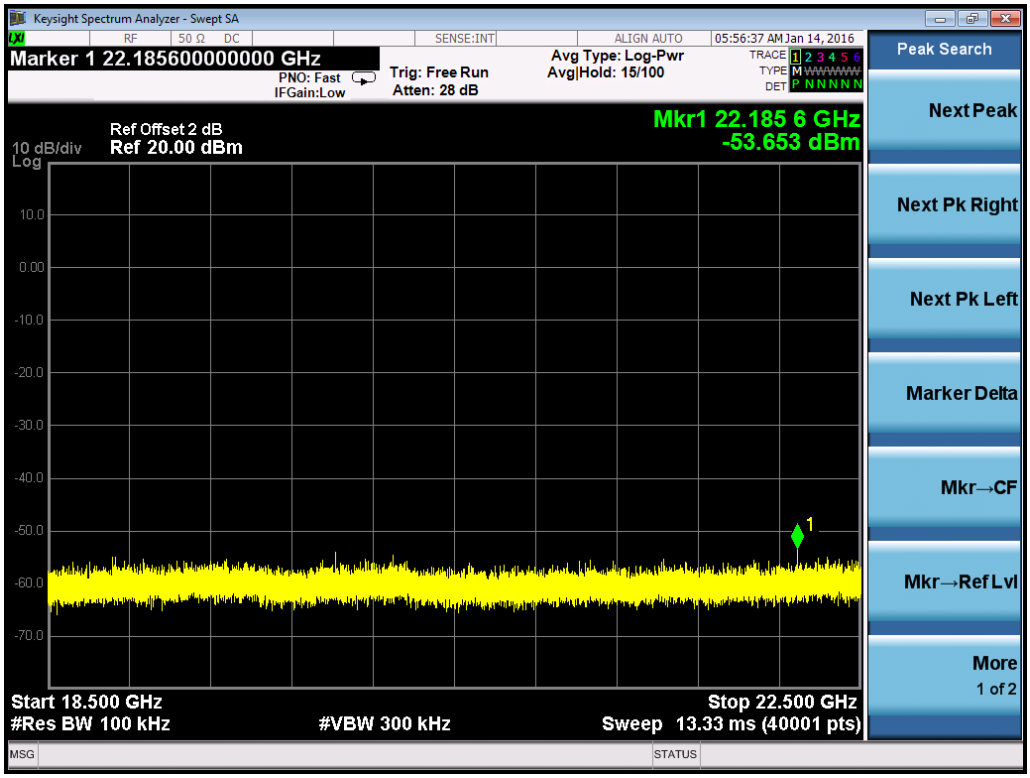

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
07:10:08 AM Oct 11, 2015
Marker 2 2.399985750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 2.399 985 75 GHz
-44.725 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.667 ms (40001 pts)
1 N 1 f 2.402 002 75 GHz 3.512 dBm
2 N 1 f 2.399 985 75 GHz -44.725 dBm
MSG
STATUS

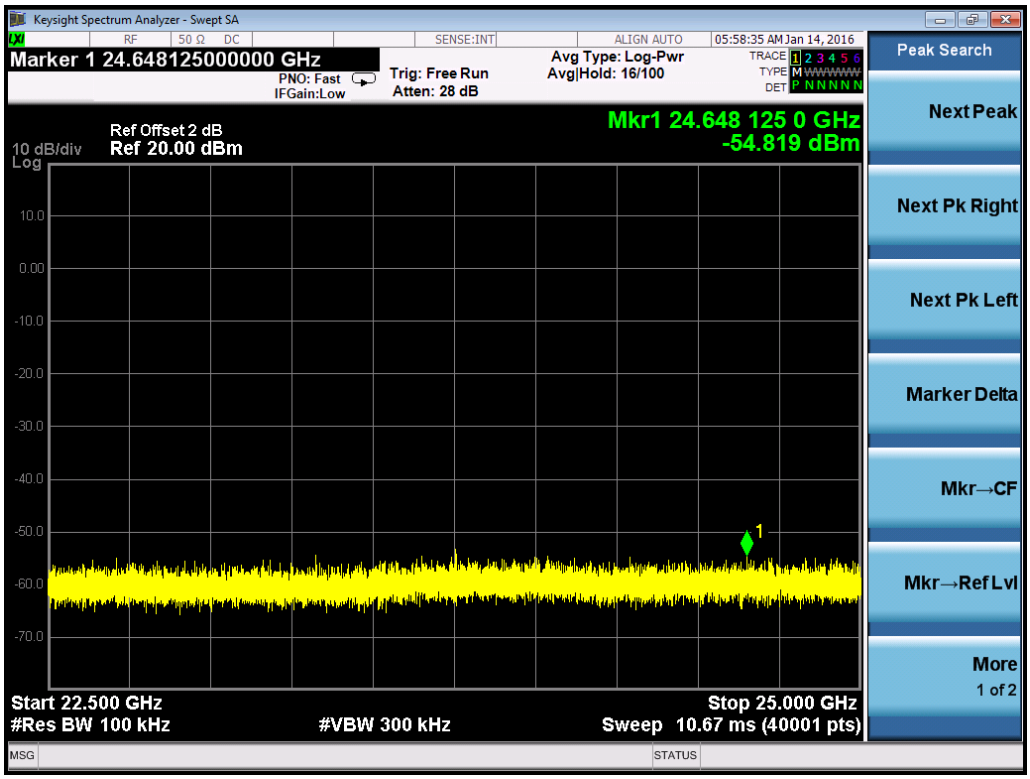

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:38:46 AM Jan 14, 2016
Marker 1 4.804400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 76/100
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 4.804 4 GHz
-44.564 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 6.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:48:22 AM Jan 14, 2016
Marker 1 8.825700000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 28/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 8.825 7 GHz
-56.414 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 6.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

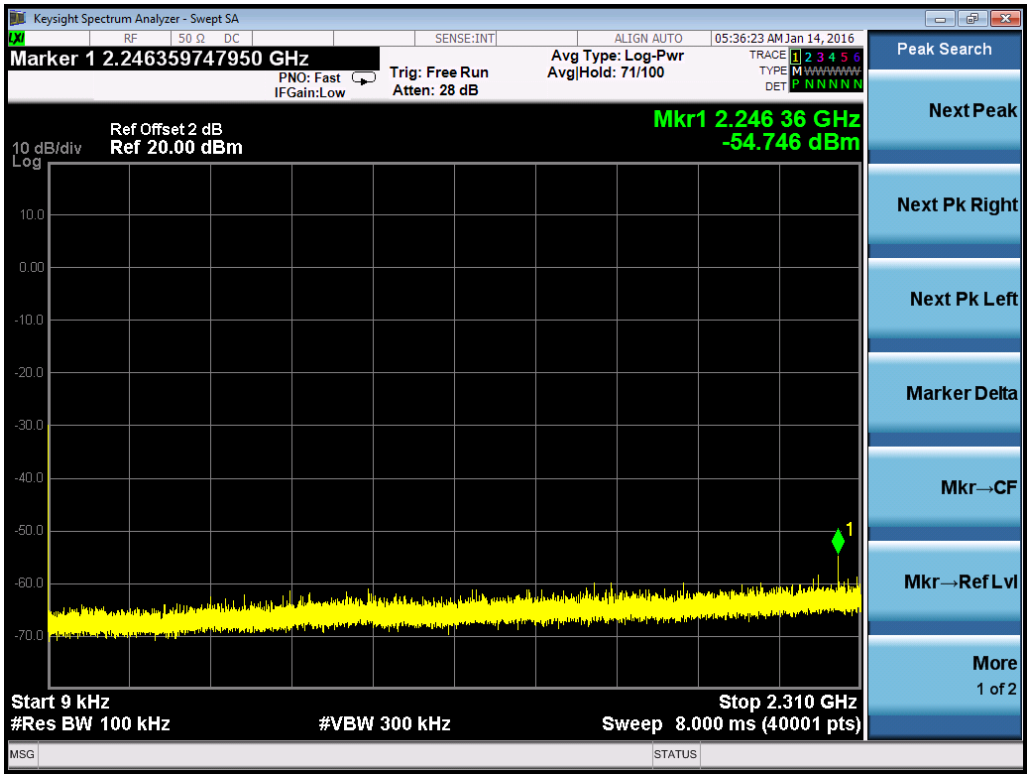

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:51:10 AM Jan 14, 2016
Marker 1 14.435800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 14.435 8 GHz
-55.928 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 10.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 14.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

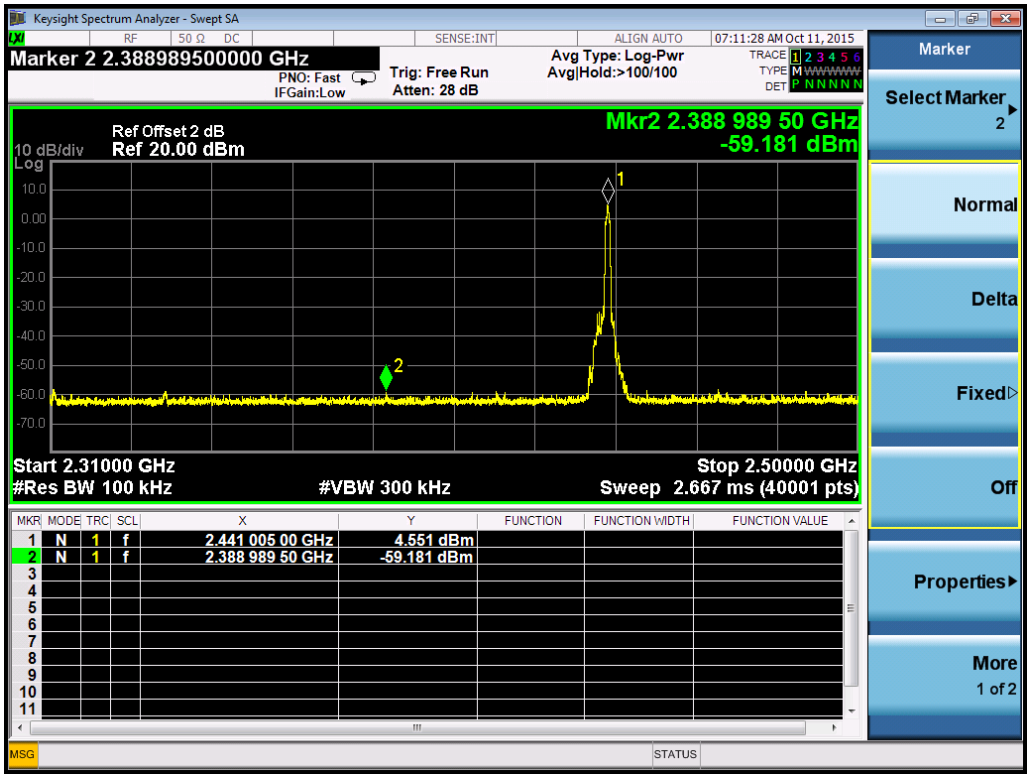

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:54:21 AM Jan 14, 2016
Marker 1 18.459100000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 18/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 18.459 1 GHz
-56.008 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 14.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 18.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

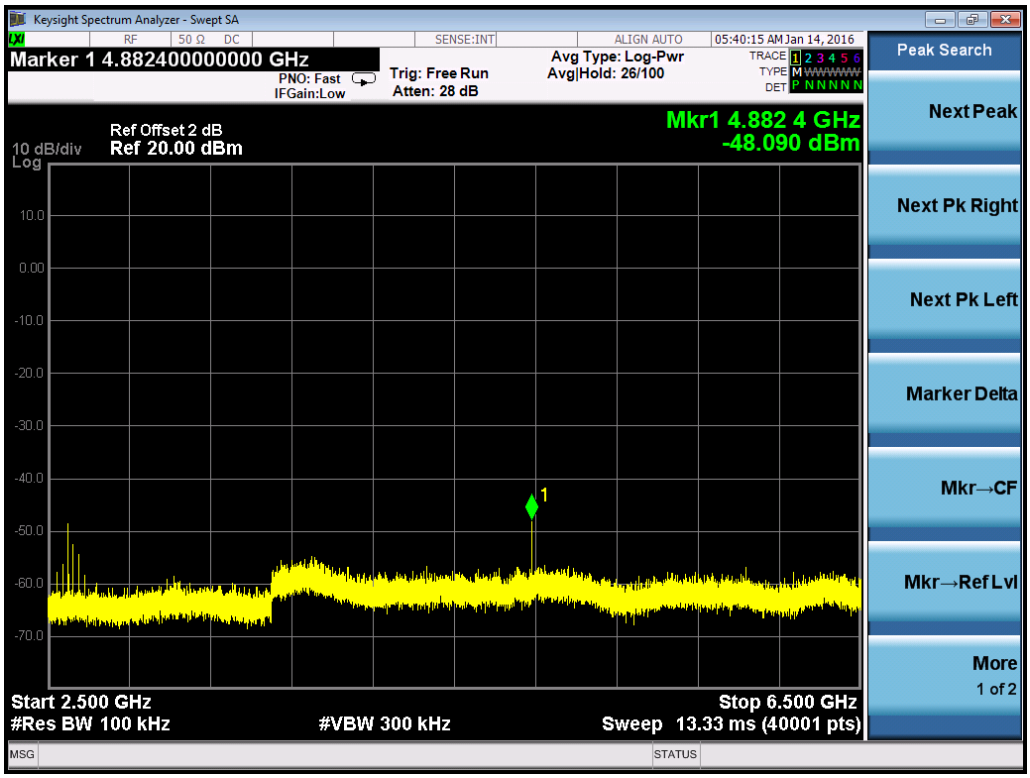

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:56:37 AM Jan 14, 2016
Marker 1 22.185600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 15/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 22.185 6 GHz
-53.653 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 18.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 22.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

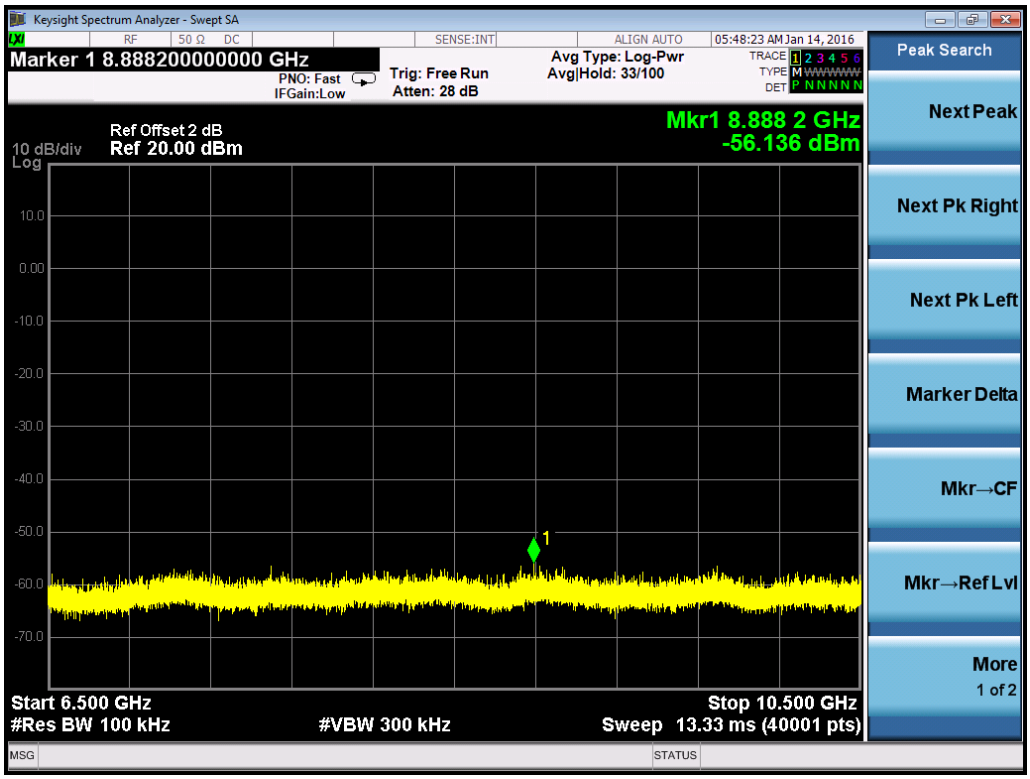

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:58:35 AM Jan 14, 2016
Marker 1 24.648125000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 16/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 24.648 125 0 GHz
-54.819 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 22.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 10.67 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

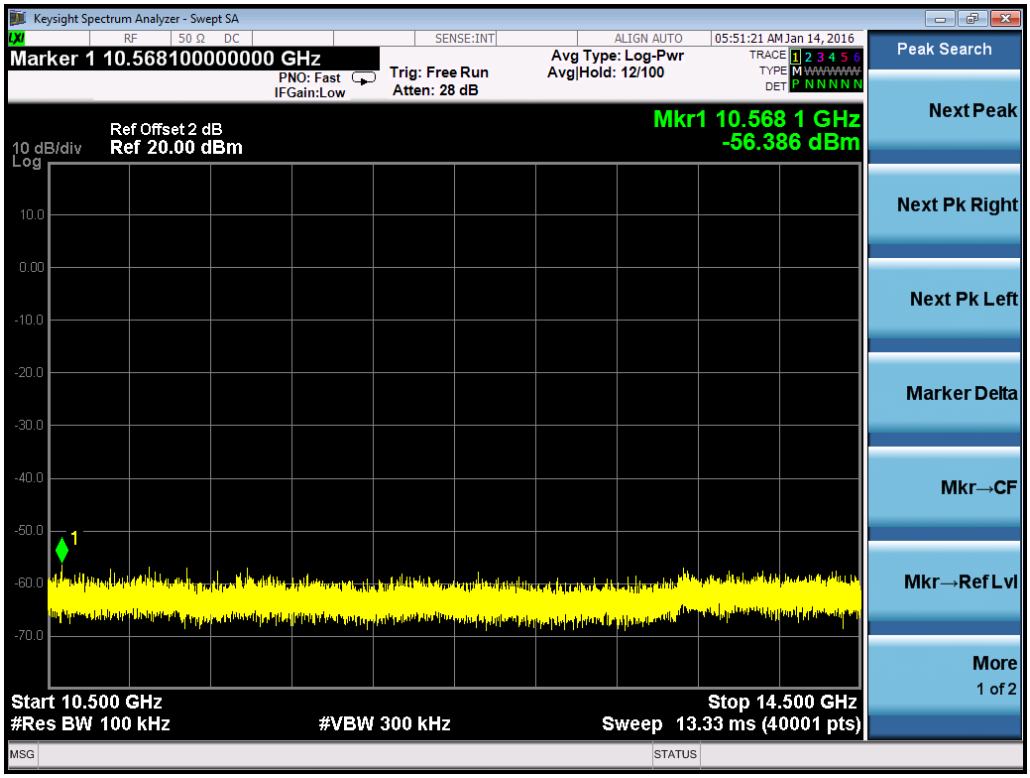
Channel M

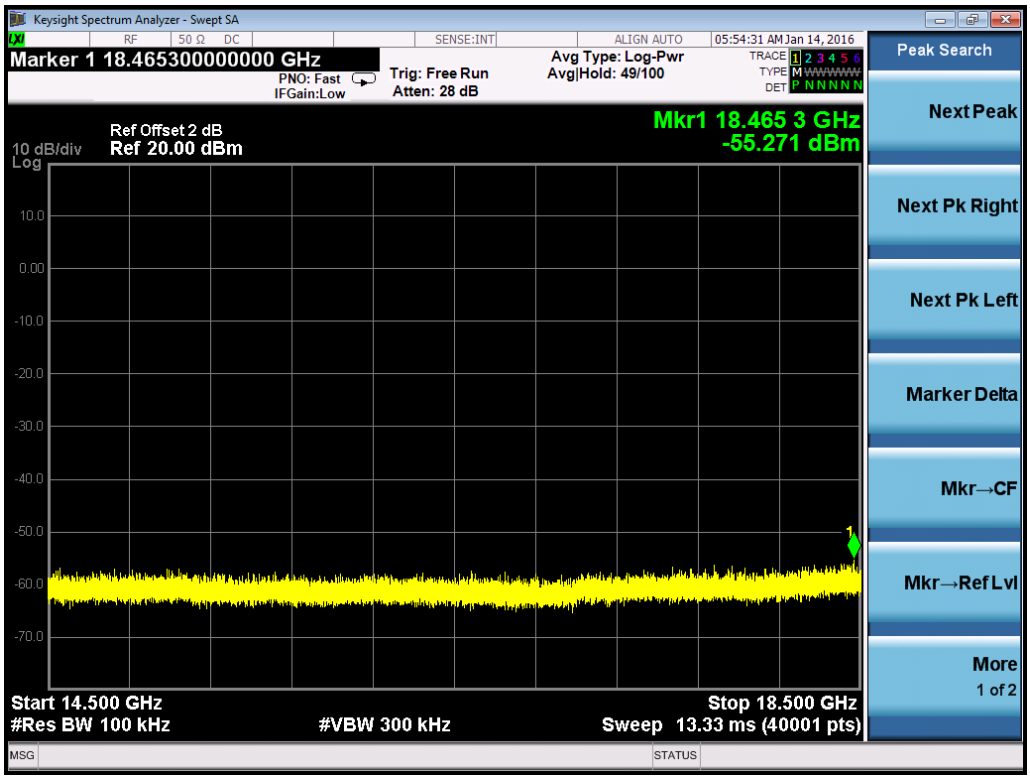

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:36:23 AM Jan 14, 2016
Marker 1 2.246359747950 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 71/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.246 36 GHz
-54.746 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.310 GHz
Sweep 8.000 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

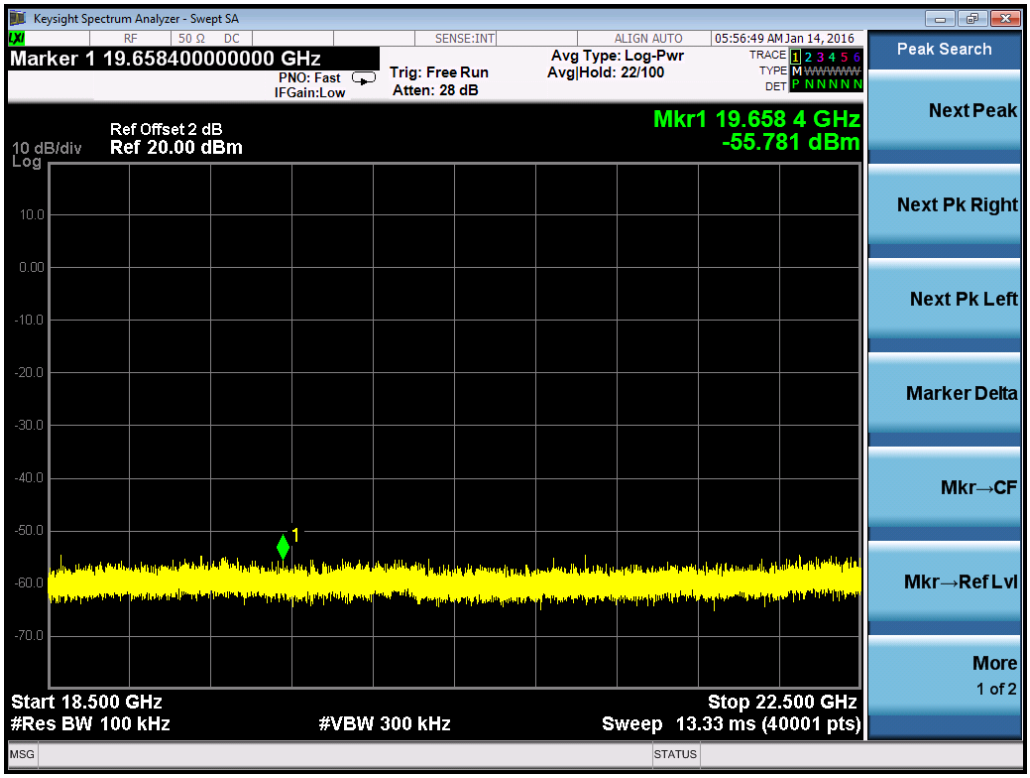

Keysight Spectrum Analyzer - Swept SA
Marker 2 2.388989500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
07:11:28 AM Oct 11, 2015
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 2.388 989 50 GHz
-59.181 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.667 ms (40001 pts)
1 N 1 f 2.441 005 00 GHz 4.551 dBm
2 N 1 f 2.388 989 50 GHz -59.181 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS

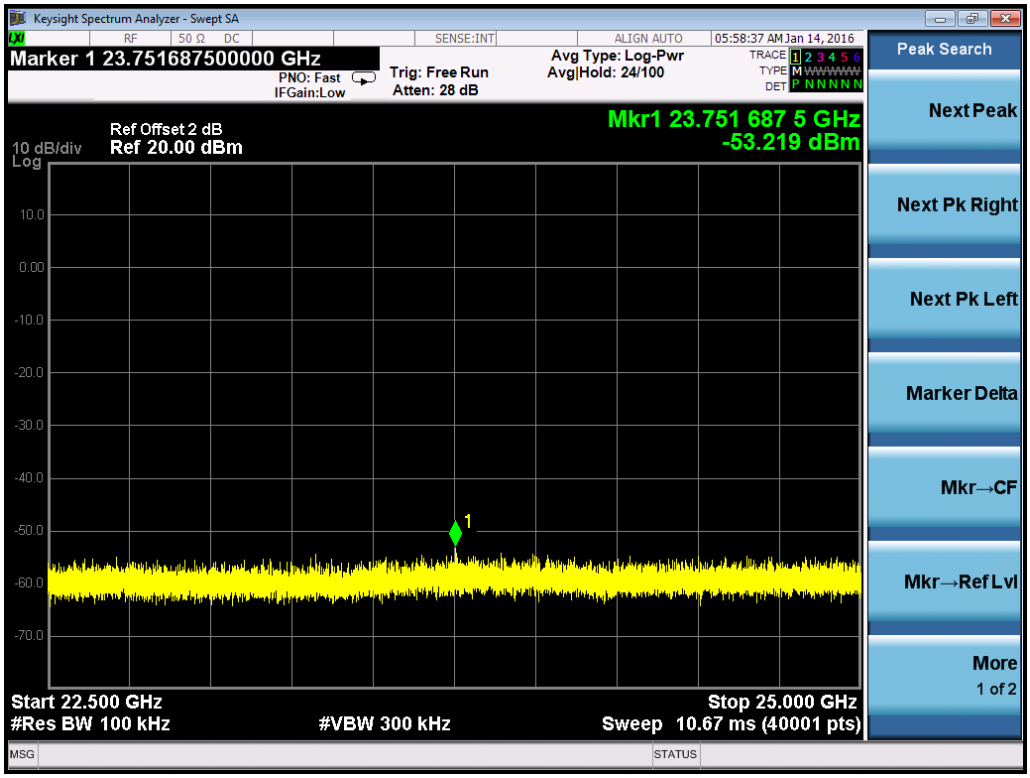

Keysight Spectrum Analyzer - Swept SA
Marker 1 4.882400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 26/100
05:40:15 AM Jan 14, 2016
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 4.882 4 GHz
-48.090 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 6.500 GHz
Sweep 13.33 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:48:23 AM Jan 14, 2016
Marker 1 8.888200000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 33/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 8.888 2 GHz
-56.136 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 6.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

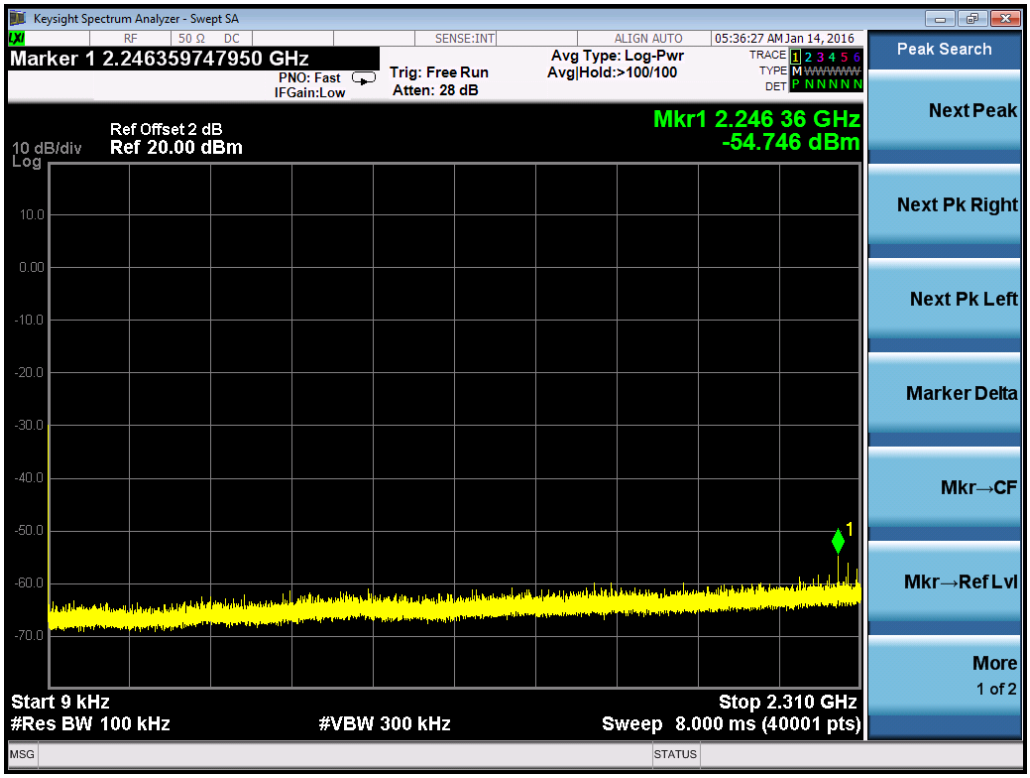

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:51:21 AM Jan 14, 2016
Marker 1 10.568100000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 10.568 1 GHz
-56.386 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 10.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 14.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

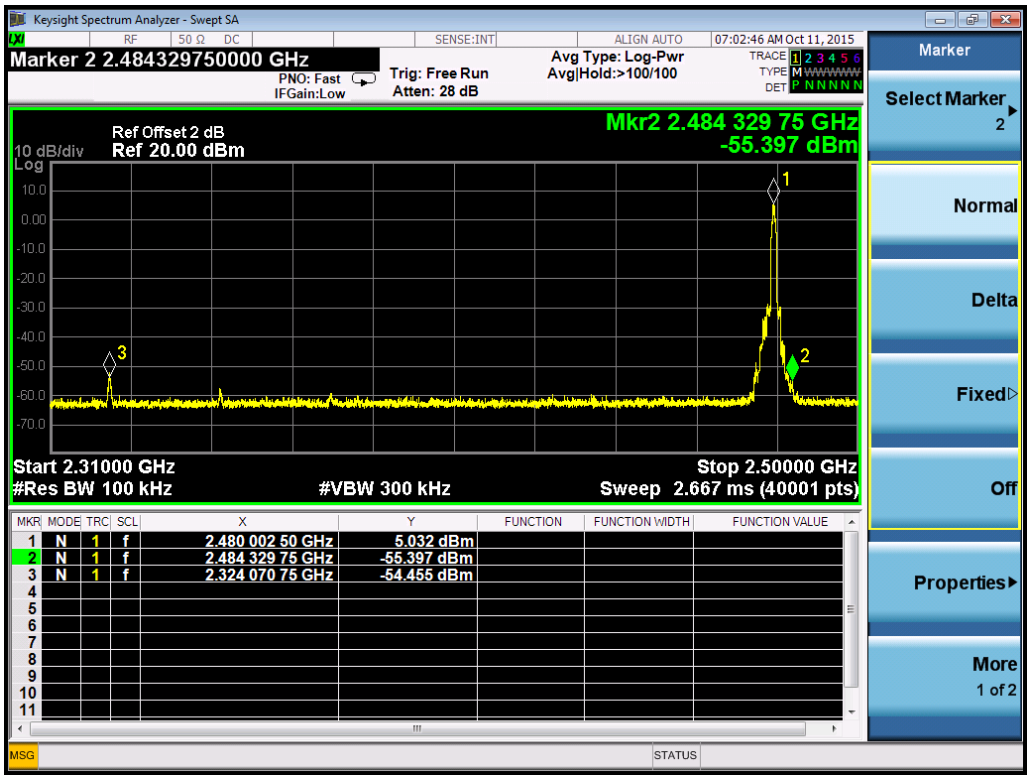

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:54:31 AM Jan 14, 2016
Marker 1 18.465300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 49/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 18.465 3 GHz
-55.271 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 14.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 18.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

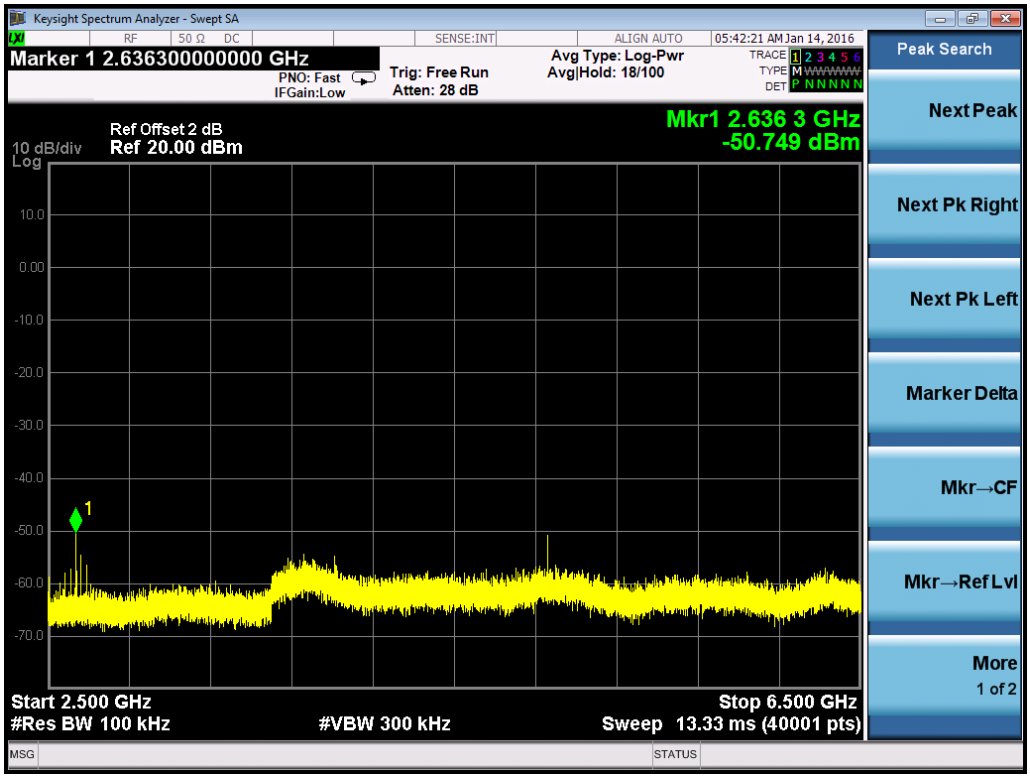

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:56:49 AM Jan 14, 2016
Marker 1 19.658400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 22/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 19.658 4 GHz
-55.781 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 18.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 22.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

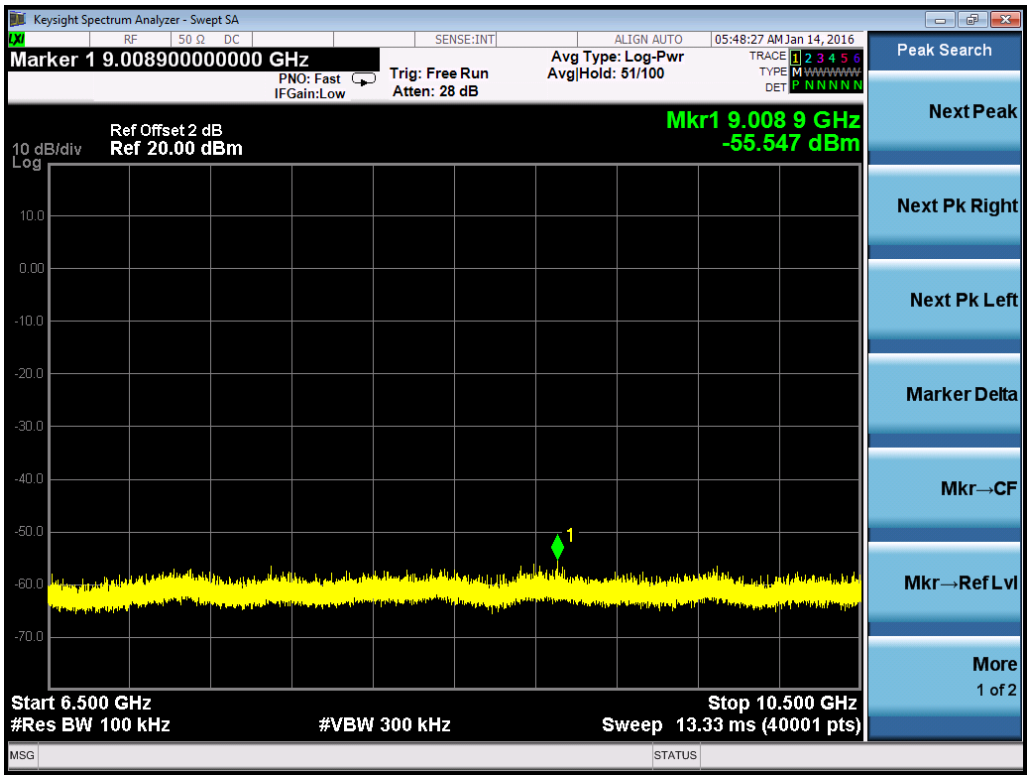

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:58:37 AM Jan 14, 2016
Marker 1 23.751687500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 24/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 23.751 687 5 GHz
-53.219 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 22.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 10.67 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

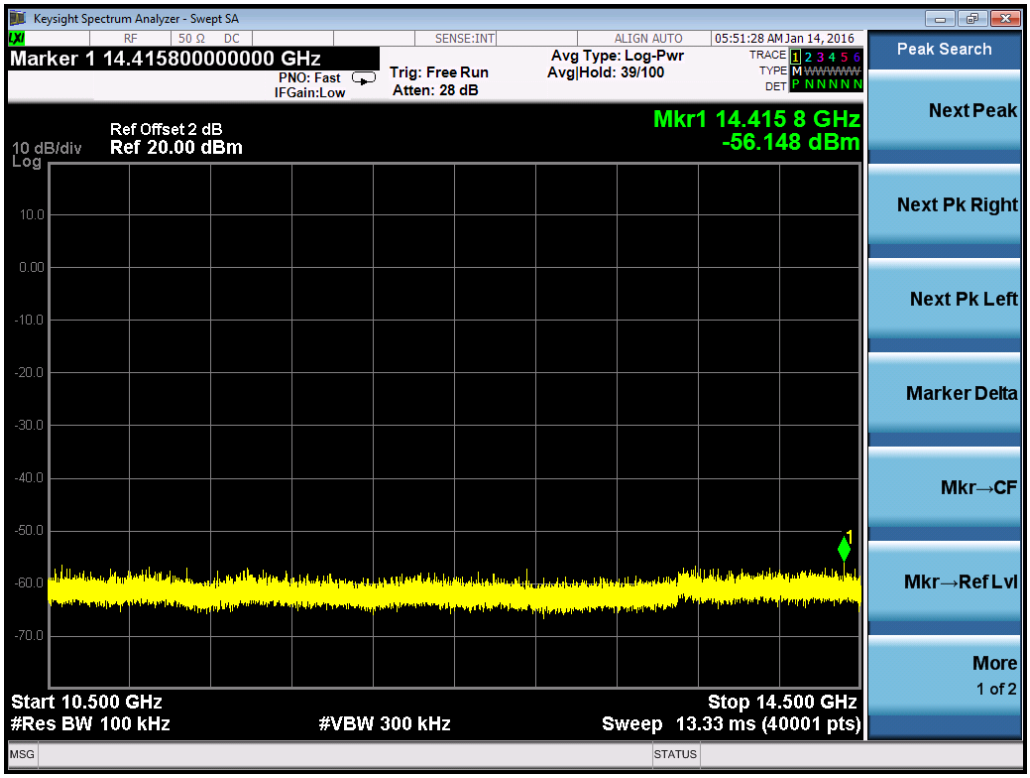
Channel H

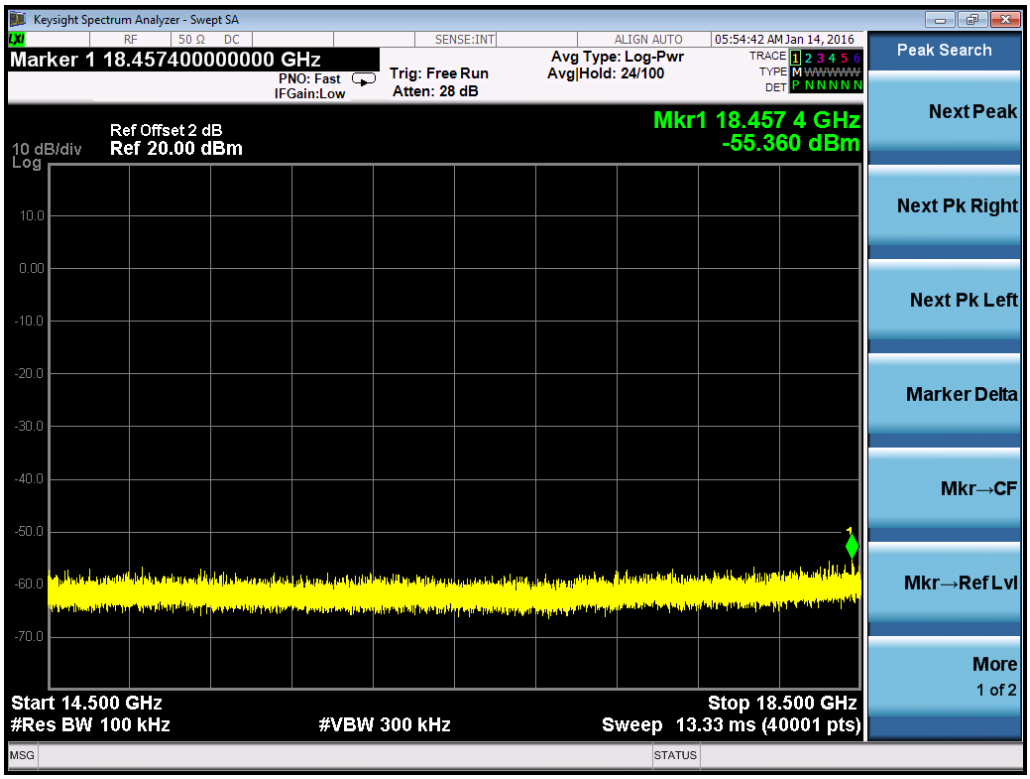

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:36:27 AM Jan 14, 2016
Marker 1 2.246359747950 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.246 36 GHz
-54.746 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.310 GHz
Sweep 8.000 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

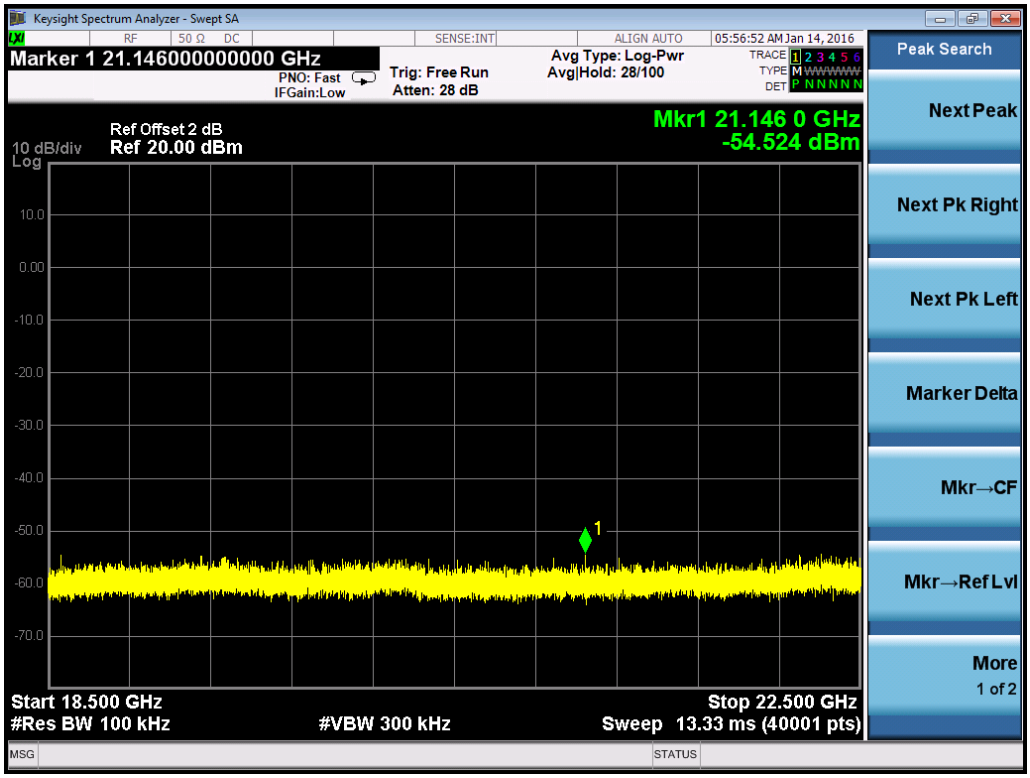

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
07:02:46 AM Oct 11, 2015
Marker 2 2.484329750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 2.484 329 75 GHz
-55.397 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.667 ms (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.480 002 50 GHz 5.032 dBm
2 N 1 f 2.484 329 75 GHz -55.397 dBm
3 N 1 f 2.324 070 75 GHz -54.455 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS

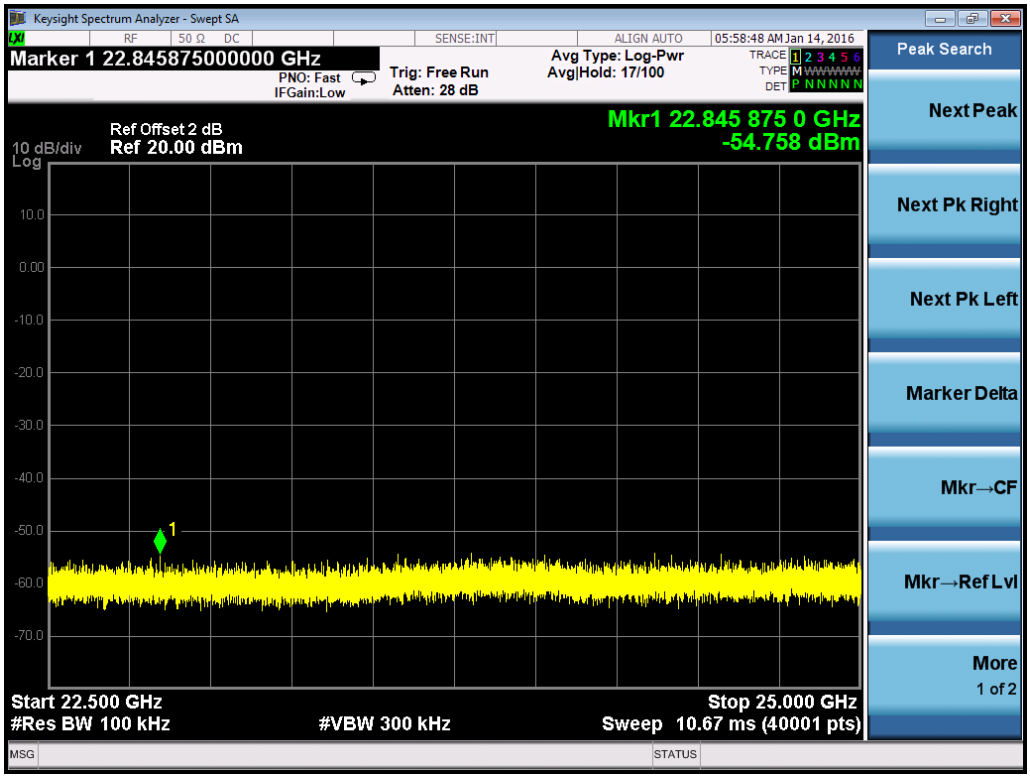

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:42:21 AM Jan 14, 2016
Marker 1 2.636300000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 18/100
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.636 3 GHz
-50.749 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 6.500 GHz
Sweep 13.33 ms (40001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:48:27 AM Jan 14, 2016
Marker 1 9.008900000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 51/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 9.008 9 GHz
-55.547 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 6.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

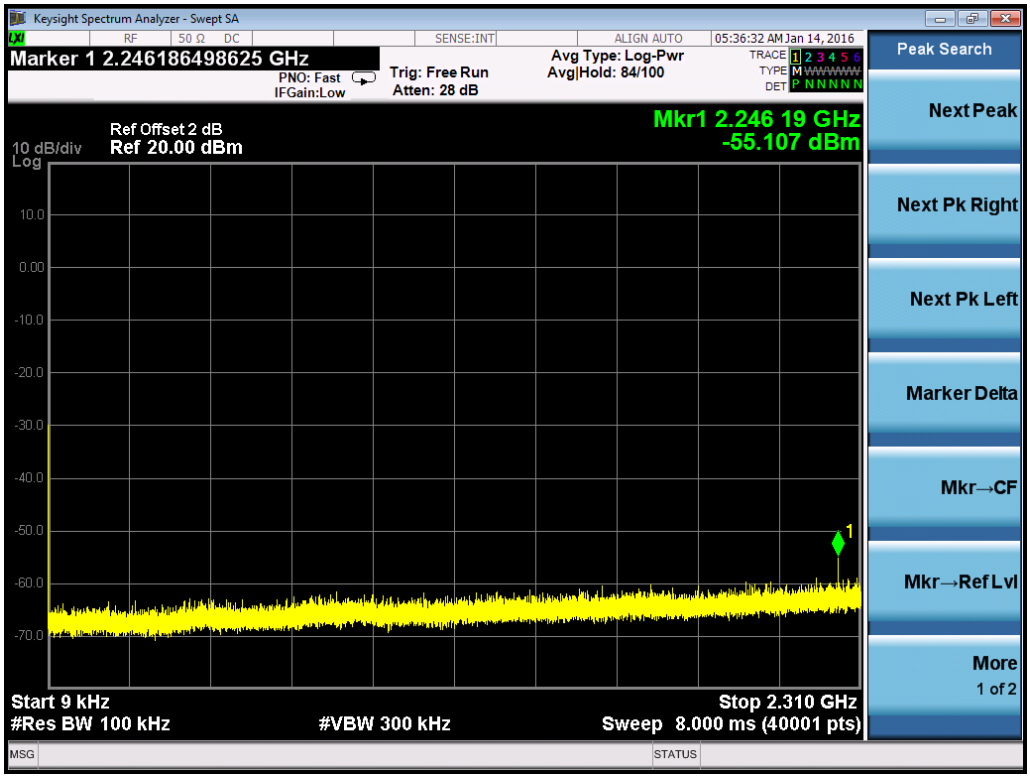

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:51:28 AM Jan 14, 2016
Marker 1 14.415800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 39/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 14.415 8 GHz
-56.148 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 10.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 14.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

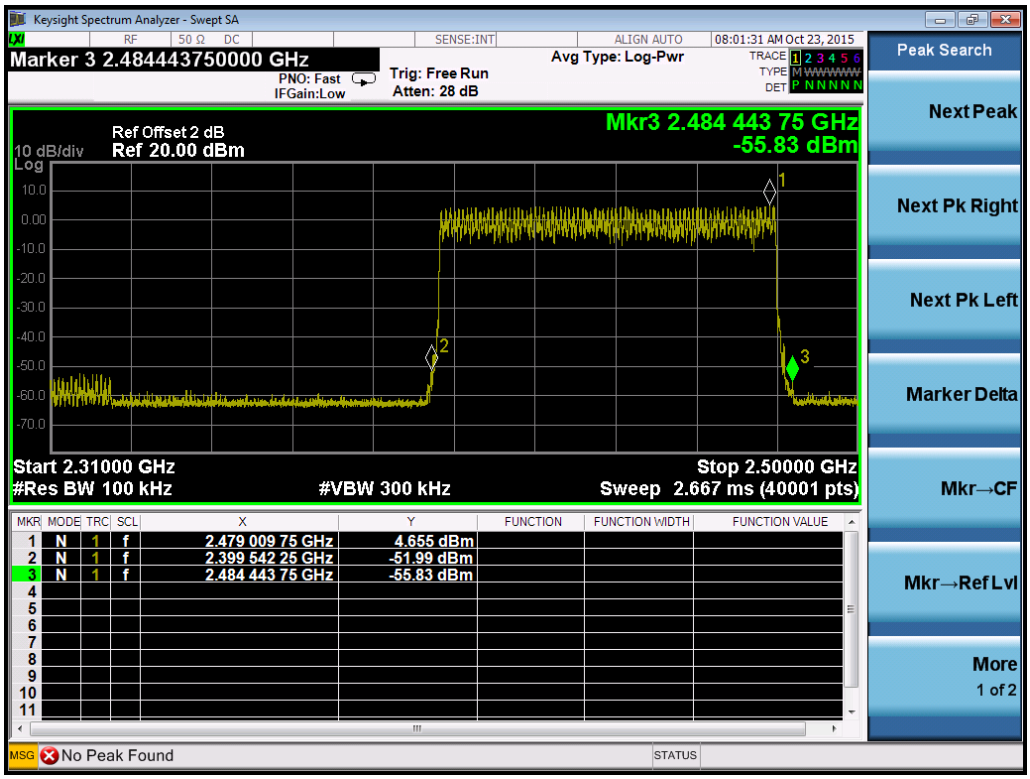

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:54:42 AM Jan 14, 2016
Marker 1 18.457400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 24/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 18.457 4 GHz
-55.360 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 14.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 18.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

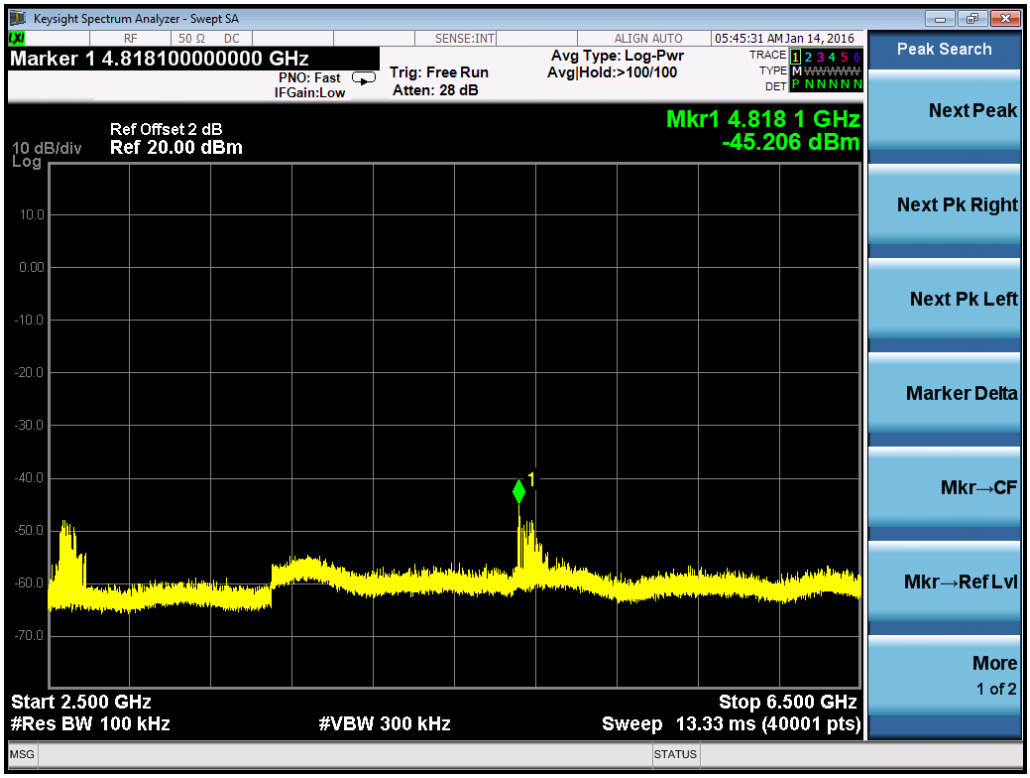

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:56:52 AM Jan 14, 2016
Marker 1 21.146000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 28/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 21.146 0 GHz
-54.524 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 18.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 22.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

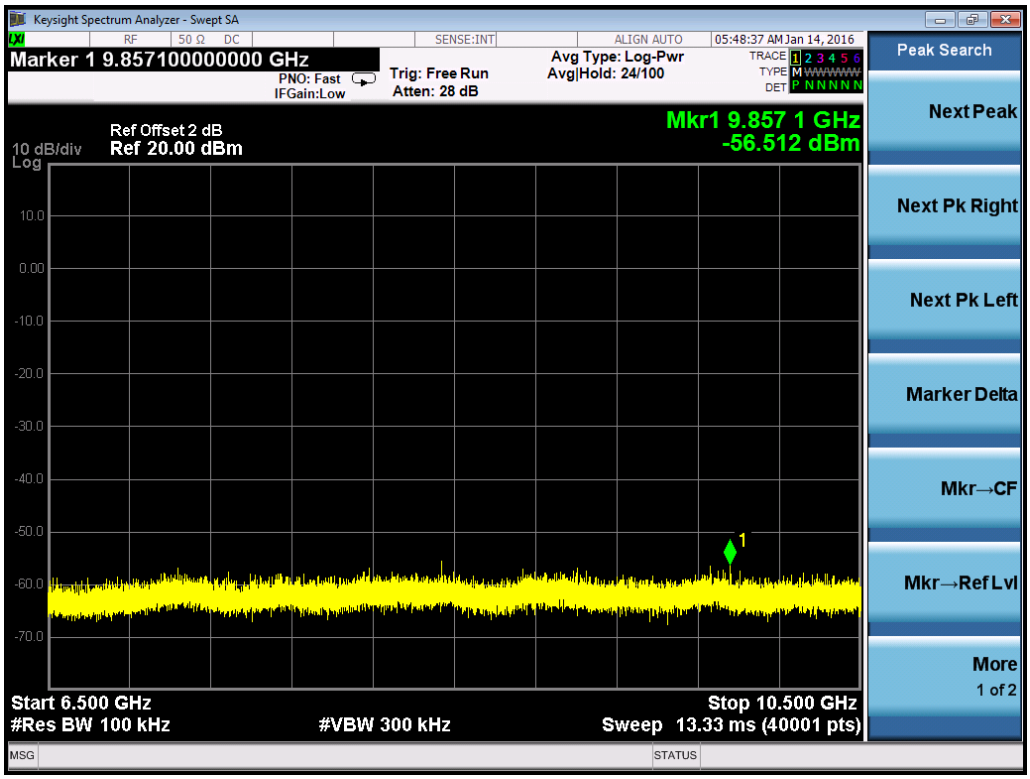

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:58:48 AM Jan 14, 2016
Marker 1 22.845875000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 17/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 22.845 875 0 GHz
-54.758 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 22.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 10.67 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

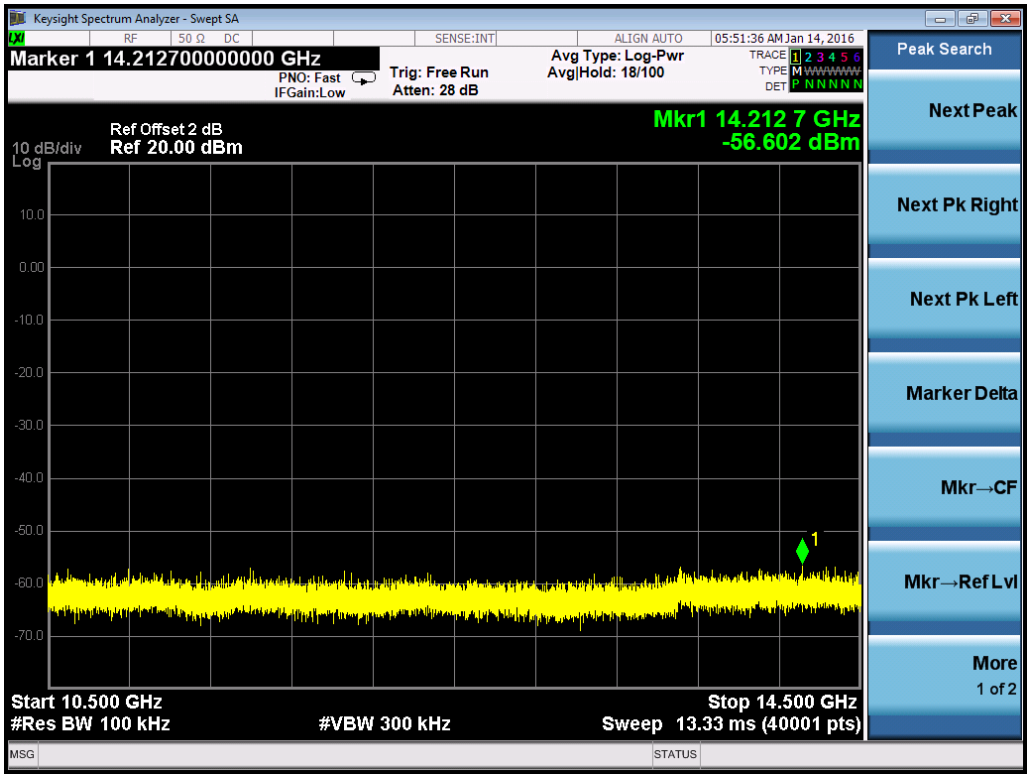
Hopping

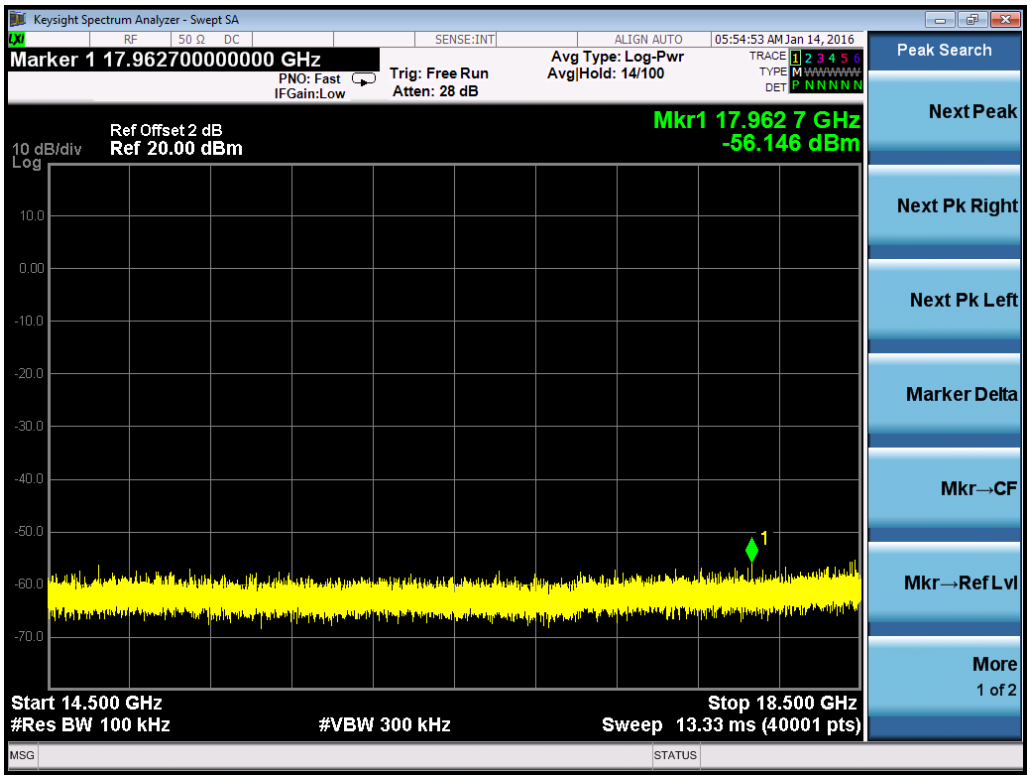

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:36:32 AM Jan 14, 2016
Marker 1 2.246186498625 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 84/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.246 19 GHz
-55.107 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.310 GHz
Sweep 8.000 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

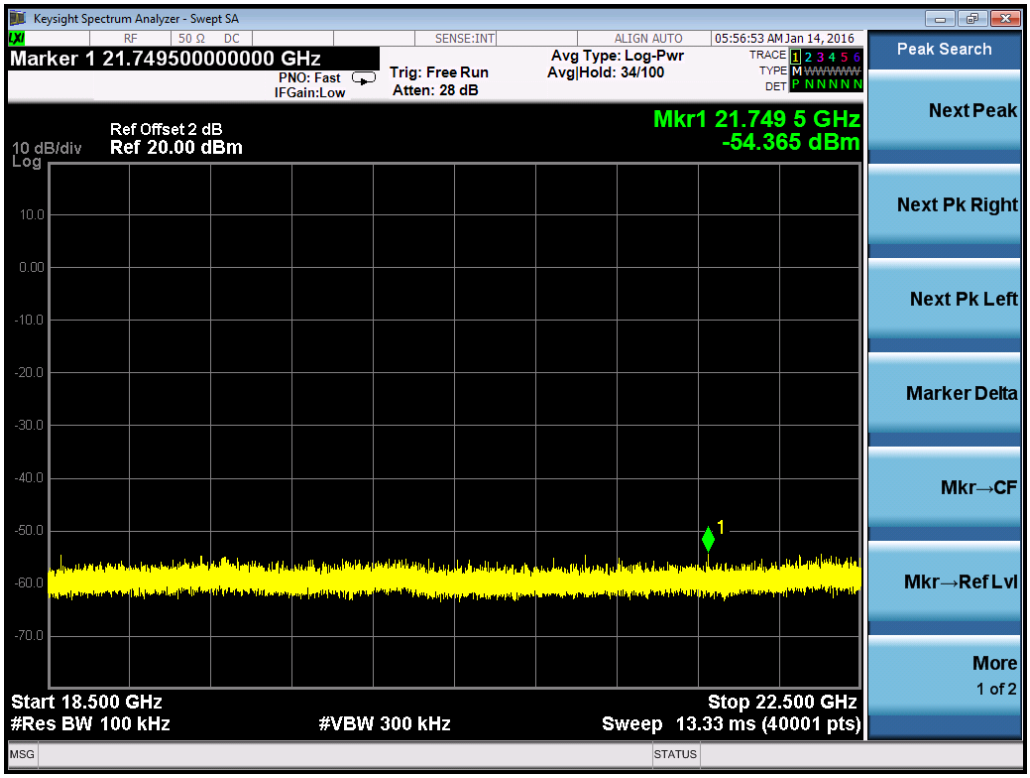

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
08:01:31 AM Oct 23, 2015
Marker 3 2.484443750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr3 2.484 443 75 GHz
-55.83 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.667 ms (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.479 009 75 GHz 4.655 dBm
2 N 1 f 2.399 542 25 GHz -51.99 dBm
3 N 1 f 2.484 443 75 GHz -55.83 dBm
4
5
6
7
8
9
10
11
MSG
No Peak Found
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

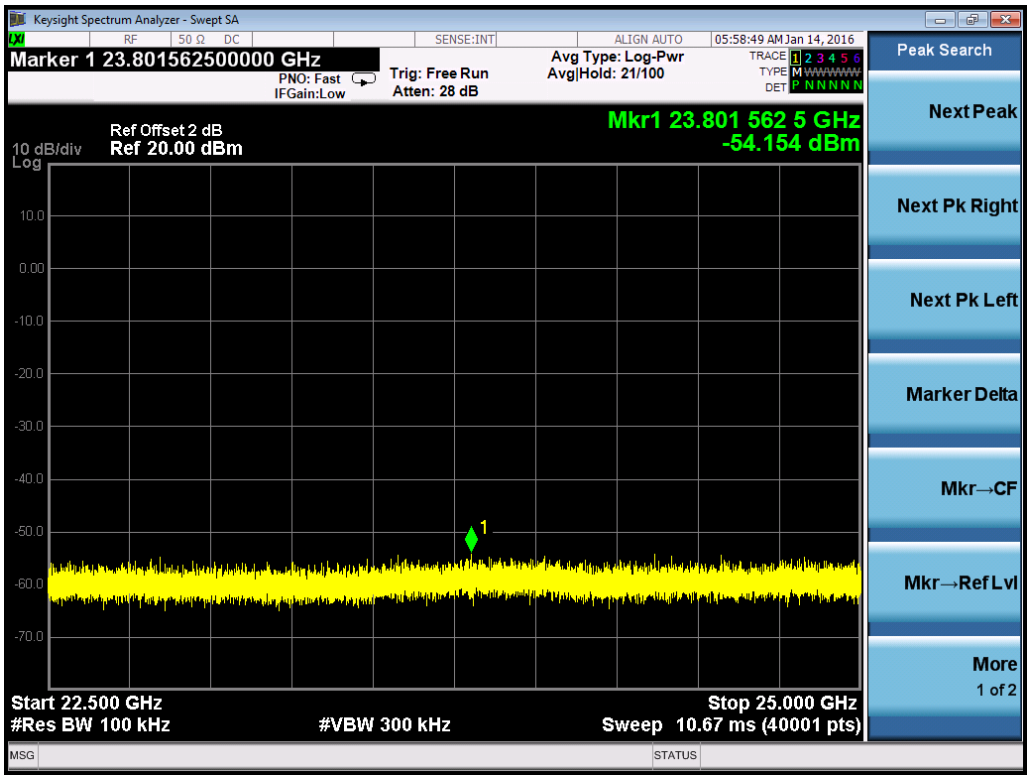

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:45:31 AM Jan 14, 2016
Marker 1 4.818100000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 4.818 1 GHz
-45.206 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 6.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:48:37 AM Jan 14, 2016
Marker 1 9.857100000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 24/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 9.857 1 GHz
-56.512 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 6.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:51:36 AM Jan 14, 2016
Marker 1 14.212700000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 18/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 14.212 7 GHz
-56.602 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 10.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 14.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:54:53 AM Jan 14, 2016
Marker 1 17.962700000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 14/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 17.962 7 GHz
-56.146 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 14.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 18.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
05:56:53 AM Jan 14, 2016
Marker 1 21.749500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 34/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 21.749 5 GHz
-54.365 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 18.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 22.500 GHz
Sweep 13.33 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
05:58:49 AM Jan 14, 2016
Marker 1 23.801562500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Avg|Hold: 21/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 23.801 562 5 GHz
-54.154 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 22.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 10.67 ms (40001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

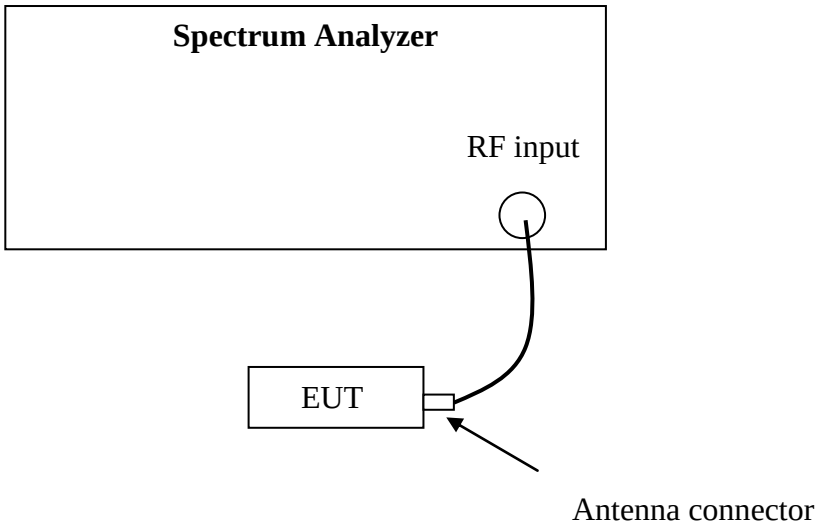
7 Number of hopping frequencies

Test result: **Pass**

7.1 Test limit

Number of Hopping Frequencies in the 2400-2483.5 MHz band shall use at least 15 channels.

7.2 Test Configuration



7.3 Test procedure and test setup

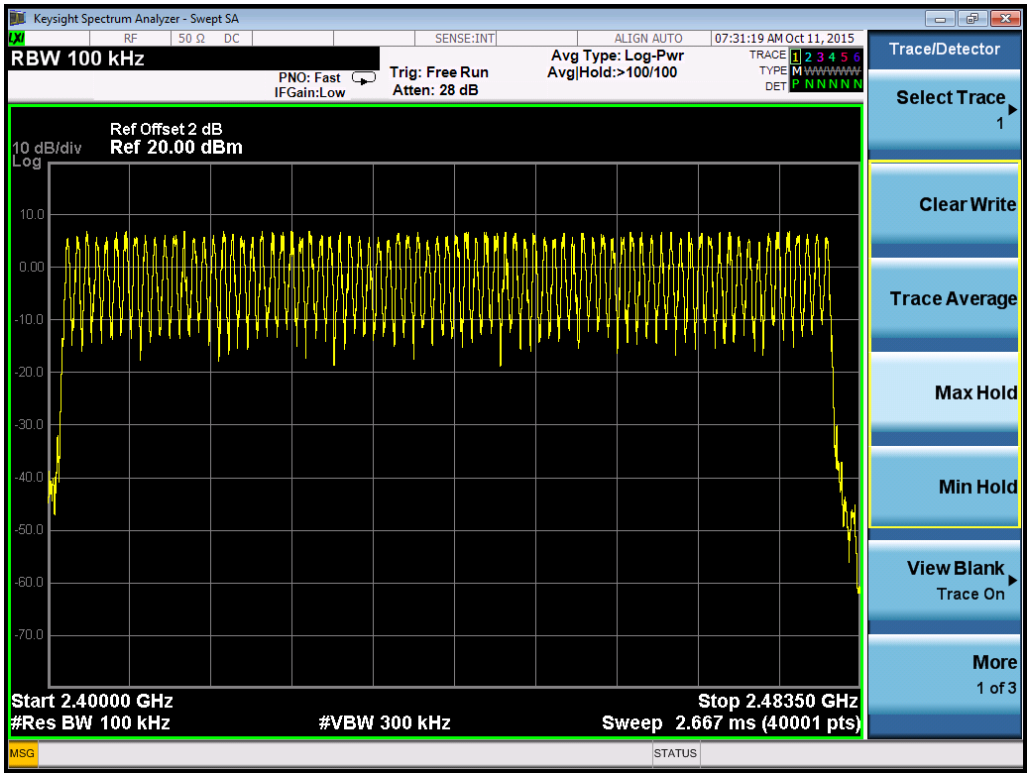
The EUT was tested according to DA 00-705 (Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems).

The Number of hopping frequencies per FCC § 15.247(a)(1)(iii) is measured using the Spectrum Analyzer with RBW=100kHz, VBW≥RBW, Sweep = auto, Detector = peak, Trace = max hold.

7.4 Test Protocol

Temperature: 22°C
Relative Humidity: 54%

Number of Hopping Frequencies	Limit
79	≥15



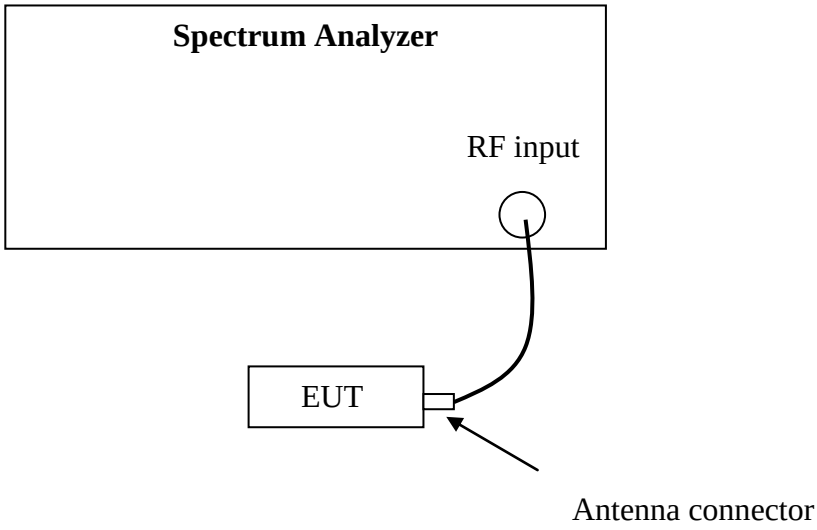
8 Dwell time

Test result: Pass

8.1 Test limit

The dwell time on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.2 Test Configuration



8.3 Test procedure and test setup

The EUT was tested according to DA 00-705 (Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems).

Dwell time per FCC § 15.247(a)(1)(iii) is measured using the Spectrum Analyzer with Span = 0, RBW=1MHz, VBW≥RBW, Sweep can capture the entire dwell time, Detector = peak, Trace = max hold.

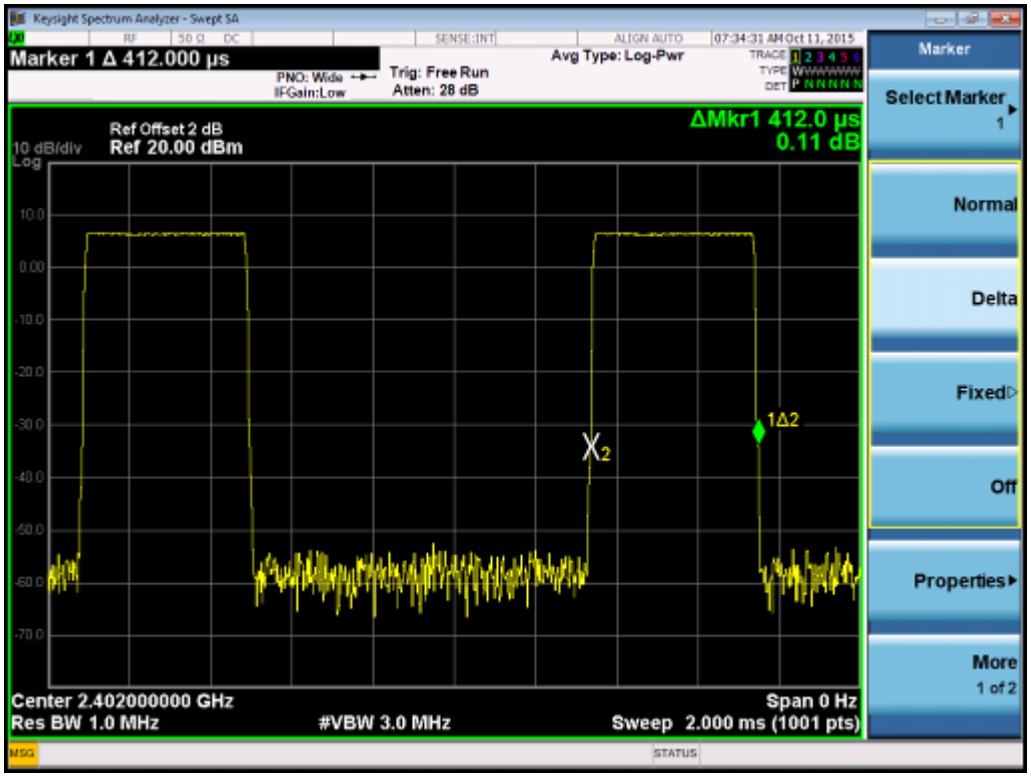
8.4 Test Protocol

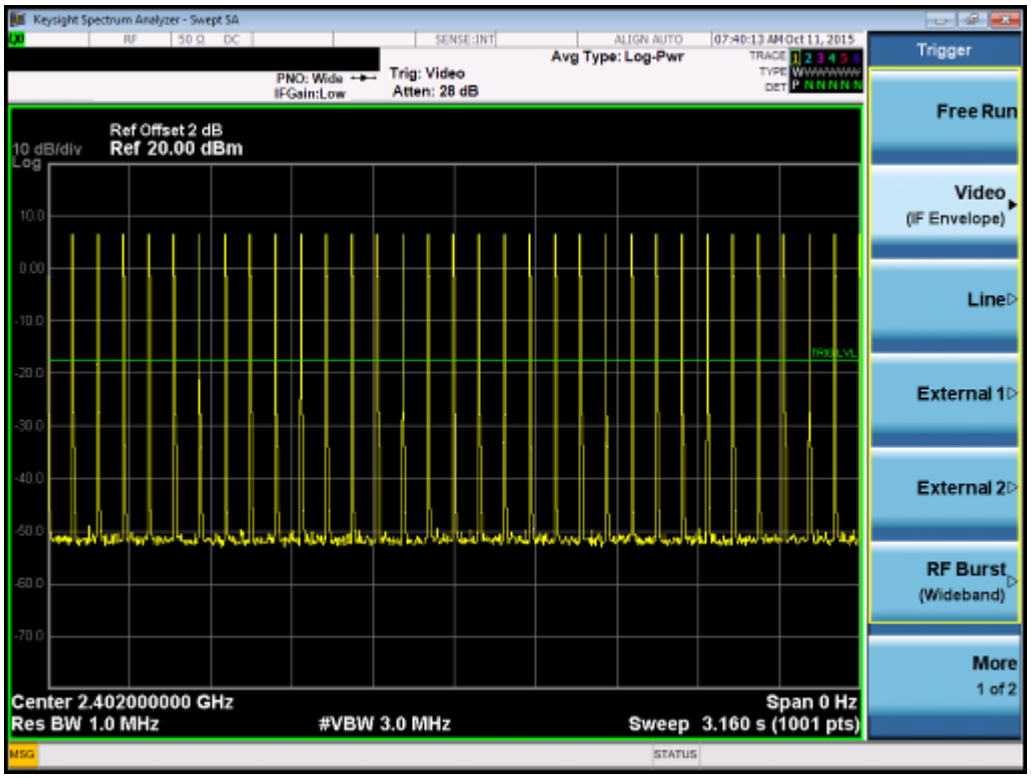
Temperature: 22°C
Relative Humidity: 54%

Packet	Occupancy time for single hop (ms) O	Channel	Real observed period (s) P	Hops among Observed period I	Dwell time (ms) T	Limit (s)
DH1	0.412	L	3.16	32	131.84	≤0.4
		M	3.16	32	131.84	
		H	3.16	32	131.84	
DH3	1.670	L	3.16	16	267.20	
		M	3.16	16	267.20	
		H	3.16	16	267.20	
DH5	2.910	L	3.16	11	320.10	
		M	3.16	11	320.10	
		H	3.16	11	320.10	

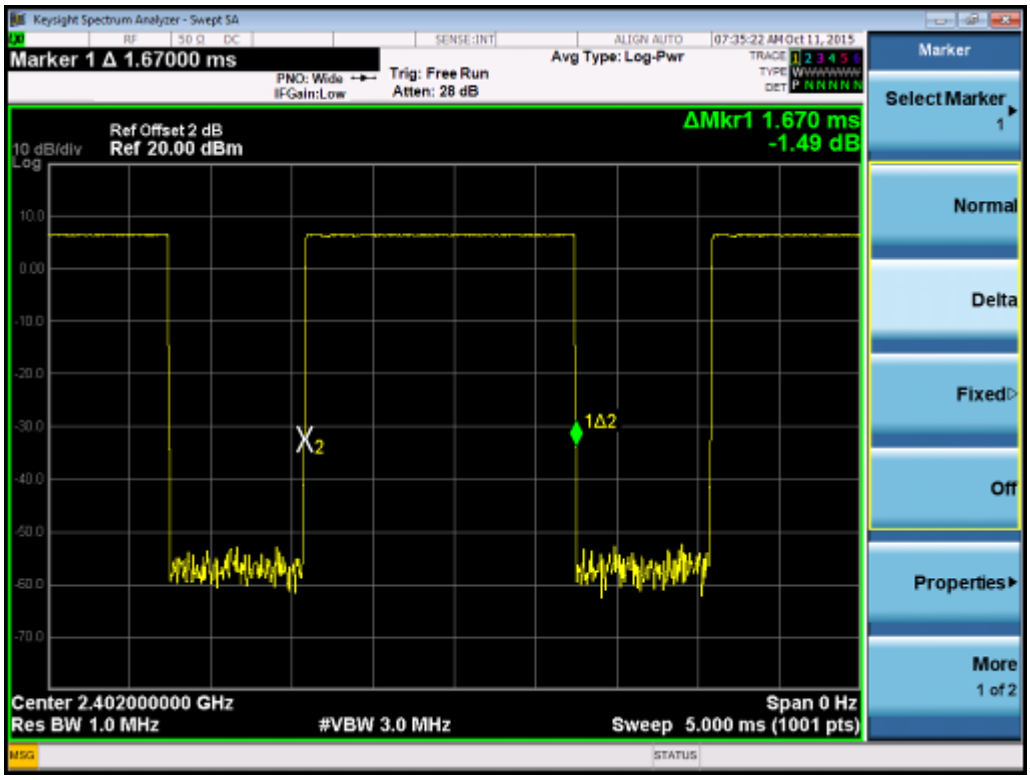
Remark: 1. There are 79 channels in all. So the complete observed period P = 0.4 * 79 = 31.6 s.
2. Average time of occupancy **T = O *I * 31.6 / P**

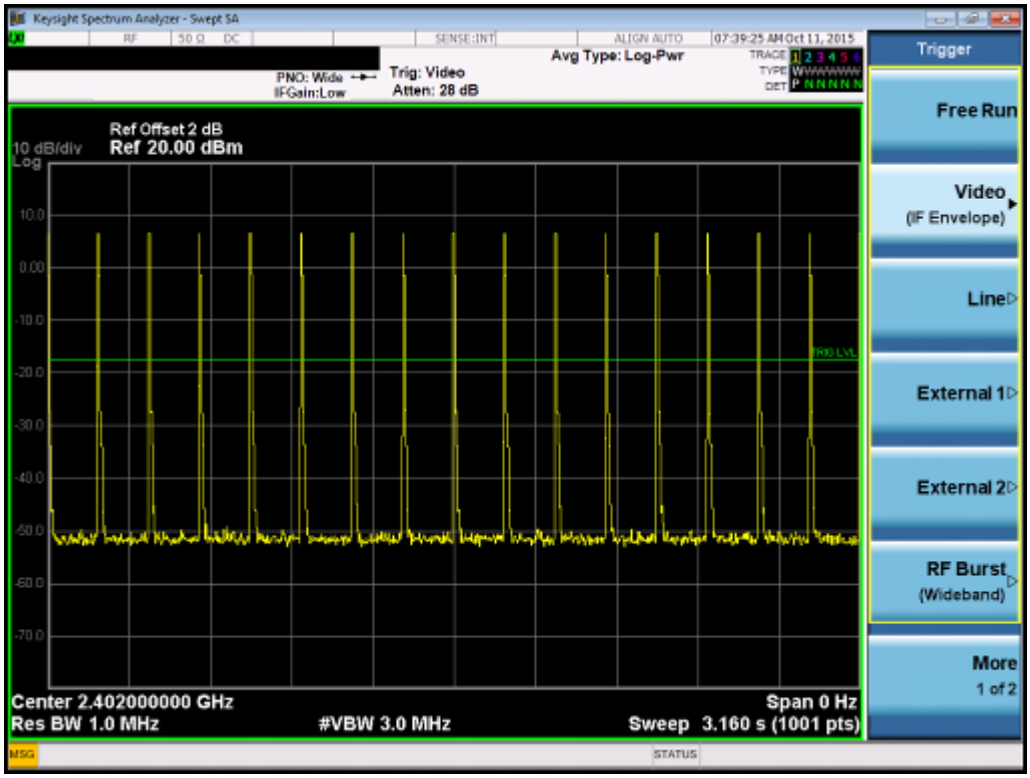
DH1


Keysight Spectrum Analyzer - Swept SA
Marker 1 Δ 412.000 µs
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
07:34:31 AM Oct 11, 2015
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 412.0 µs
0.11 dB
1Δ2
X2
Center 2.402000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 2.000 ms (1001 pts)
Marker
Select Marker
1
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS

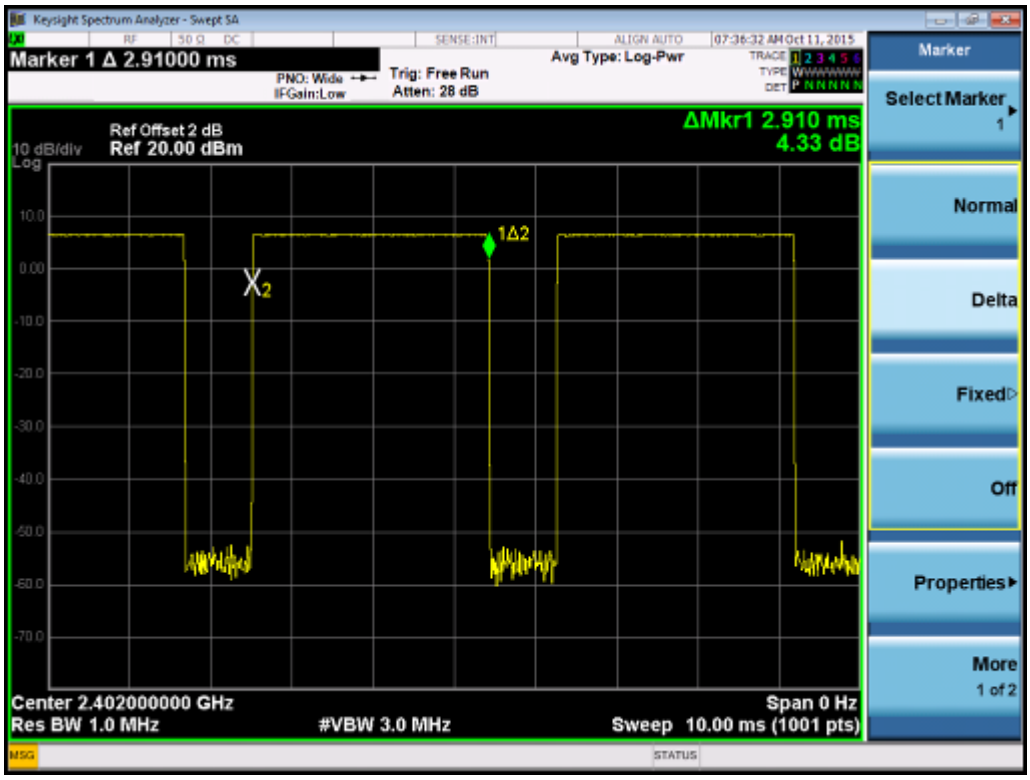

Keysight Spectrum Analyzer - Swept SA
PNO: Wide
IFGain:Low
Trig: Video
Atten: 28 dB
Avg Type: Log-Pwr
07:48:13 AM Oct 11, 2015
Ref Offset 2 dB
10 dB/div
Log
Ref 20.00 dBm
Center 2.402000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 3.160 s (1001 pts)
Trigger
Free Run
Video
(IF Envelope)
Line
External 1
External 2
RF Burst
(Wideband)
More
1 of 2
MSG
STATUS

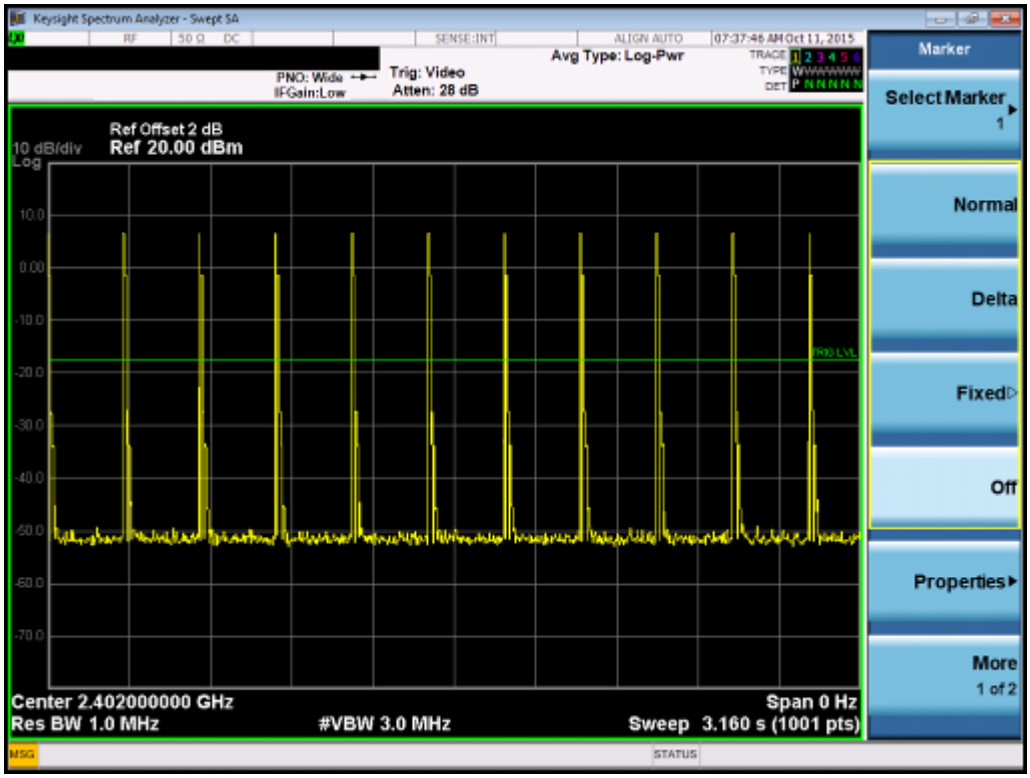
DH3


Keysight Spectrum Analyzer - Swept SA
Marker 1 Δ 1.67000 ms
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
07:35:22 AM Oct 11, 2015
Ref Offset 2 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 1.670 ms
-1.49 dB
Center 2.402000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
PNO: Wide
IFGain:Low
Trig: Video
Atten: 28 dB
Avg Type: Log-Pwr
07:39:25 AM Oct 11, 2015
Ref Offset 2 dB
10 dB/div
Ref 20.00 dBm
Center 2.402000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 3.160 s (1001 pts)
Trigger
Free Run
Video
(IF Envelope)
Line
External 1
External 2
RF Burst
(Wideband)
More
1 of 2

DH5


Keysight Spectrum Analyzer - Swept SA
Marker 1 Δ 2.91000 ms
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 28 dB
Avg Type: Log-Pwr
Ref Offset 2 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 2.910 ms
4.33 dB
1Δ2
X2
Center 2.402000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 10.00 ms (1001 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
PNO: Wide
IFGain:Low
Trig: Video
Atten: 28 dB
Avg Type: Log-Pwr
Ref Offset 2 dB
10 dB/div
Ref 20.00 dBm
Center 2.402000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 3.160 s (1001 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

9 Radiated Emissions

Test result: **Pass**

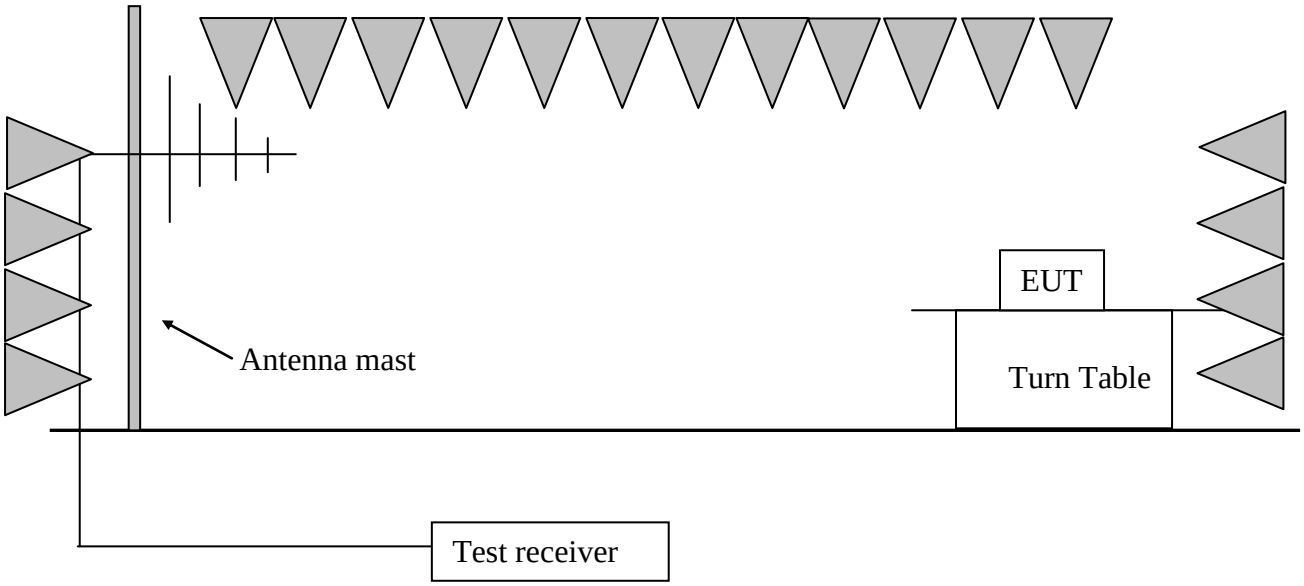
9.1 Test limit

The radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) showed as below:

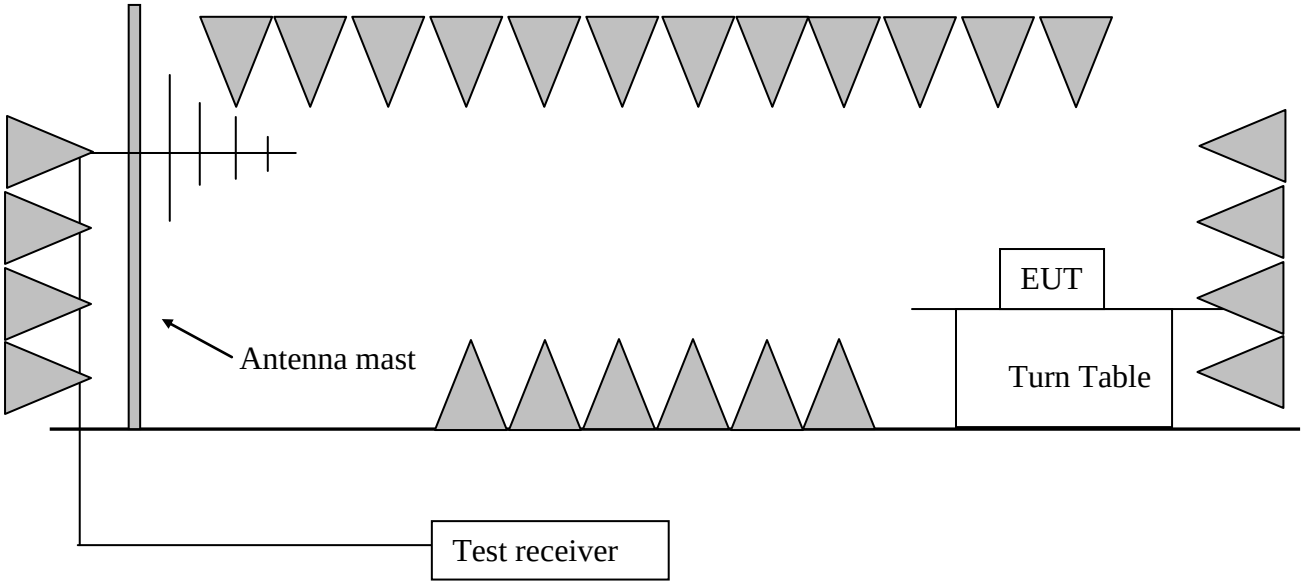
Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

9.2 Test Configuration

Frequency range below 1GHz:



Frequency range above 1GHz:



9.3 Test procedure and test setup

The radiated emissions were tested according to the procedure of ANSI C63.10 for compliance to FCC 47CFR 15.247 requirements.

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m.

The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 300 Hz, VBW = 1 kHz (9 kHz~150 kHz);
RBW = 10 kHz, VBW = 30 kHz (150 kHz~30MHz);
RBW = 100 kHz, VBW = 300 kHz (30MHz~1GHz for PK)
RBW = 1MHz, VBW = 3MHz (>1GHz for PK);

Remark:
1. Factor= Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Measured level= Original Receiver Reading + Factor
3. Margin = Limit – Measured level
4. If the PK measured level is lower than AV limit, the AV test can be elided.

Example:

Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV.
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
Measured level = 10dBuV + 0.20dB/m = 10.20dBuV/m
Assuming limit = 54dBuV/m,
Measured level = 10.20dBuV/m, then Margin = 54 - 10.20 = 43.80dBuV/m.

9.4 Test Protocol

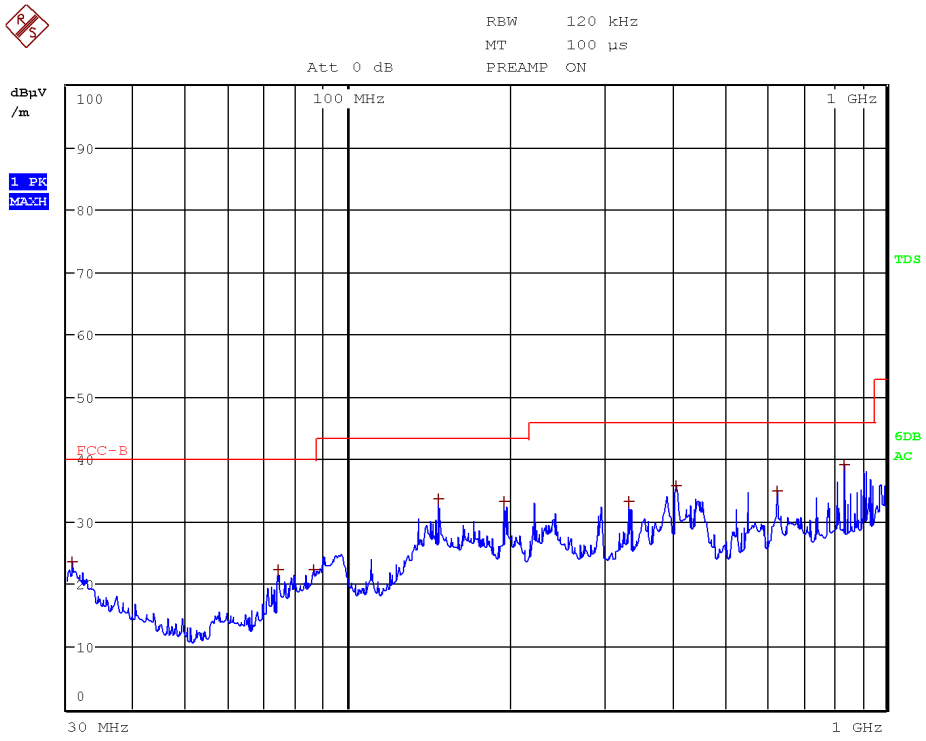
Temperature: 22°C
Relative Humidity: 54%

All the two models of product were tested and the worst data was listed in the report.

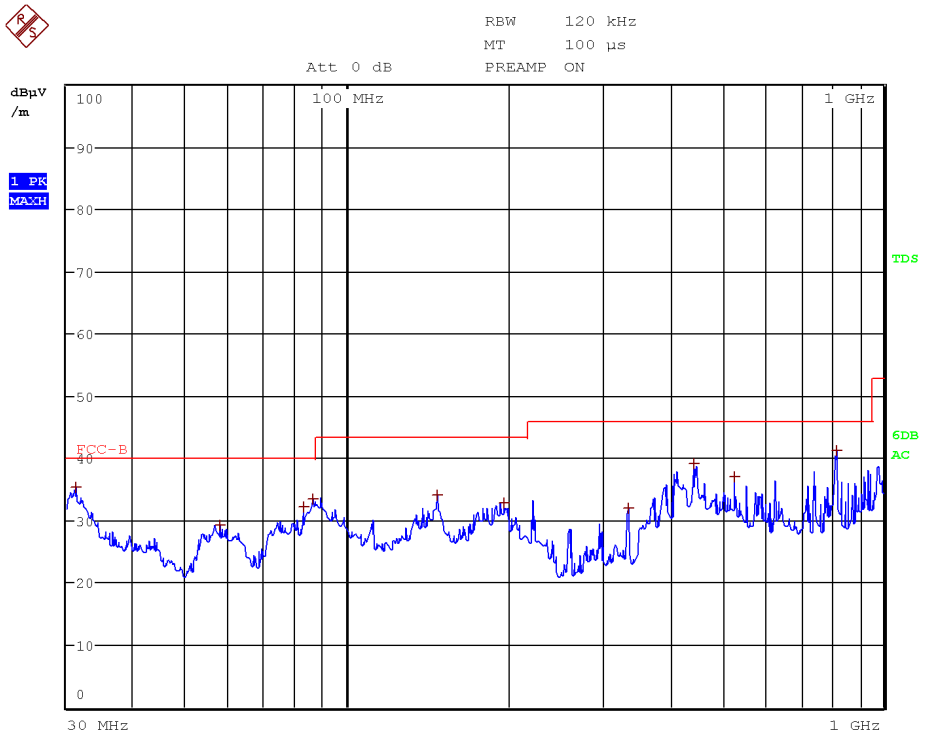
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

The worst waveform from 30MHz to 1000MHz (GFSK, 2402MHz) is listed as below:

Horizontal



Vertical



Test result below 1GHz:

Channel	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	H	146.87	33.25	13.18	43.50	10.25	QP
	H	834.21	39.18	24.79	46.00	6.82	QP
	V	31.24	34.82	19.86	40.00	5.18	QP
	V	86.53	33.09	10.12	40.00	66.91	QP
	V	816.58	40.05	24.59	46.00	5.95	QP

Test result above 1GHz:

The emission within the frequency range of 1GHz to 25GHz was tested.

GFSK:

Channel	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	2402.20	101.60	34.34	Fundamental	/	PK
	V	2389.60	52.20	34.29	74.00	21.80	PK
	V	4803.61	51.20	-3.55	74.00	22.80	PK
M	V	2441.20	101.80	34.60	Fundamental	/	PK
	V	4883.77	50.14	-3.35	74.00	23.86	PK
H	V	2480.20	101.92	34.62	Fundamental	/	PK
	V	2483.60	51.65	34.63	74.00	22.35	PK
	V	4963.93	53.60	-3.16	74.00	20.40	PK

π/4-DQPSK:

Channel	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	2402.20	100.20	34.34	Fundamental	/	PK
	V	2388.65	52.25	34.25	74.00	21.75	PK
	V	4803.61	48.50	-3.55	74.00	25.50	PK
M	V	2441.20	100.60	34.60	Fundamental	/	PK
	V	4883.77	47.50	-3.35	74.00	26.50	PK
H	V	2480.20	101.45	34.62	Fundamental	/	PK
	V	2483.72	51.65	34.65	74.00	22.35	PK
	V	4963.93	52.20	-3.16	74.00	21.80	PK

8DPSK:

Channel	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	2402.20	100.40	34.34	Fundamental	/	PK
	V	2389.27	52.20	34.30	74.00	21.80	PK
	V	4803.61	48.80	-3.55	74.00	25.20	PK
M	V	2441.20	100.84	34.60	Fundamental	/	PK
	V	4883.77	49.50	-3.35	74.00	24.50	PK
H	V	2480.20	101.14	34.62	Fundamental	/	PK
	V	2483.72	51.65	34.65	74.00	22.35	PK
	V	4963.93	51.70	-3.16	74.00	22.30	PK

Remark: 1. Correct Factor = Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin = limit – Corrected Reading

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV.
Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m; Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m
Assuming limit = 54dBuV/m, Corrected Reading = 10.20dBuV/m, then
Margin = 54 -10.20 = 43.80dBuV/m

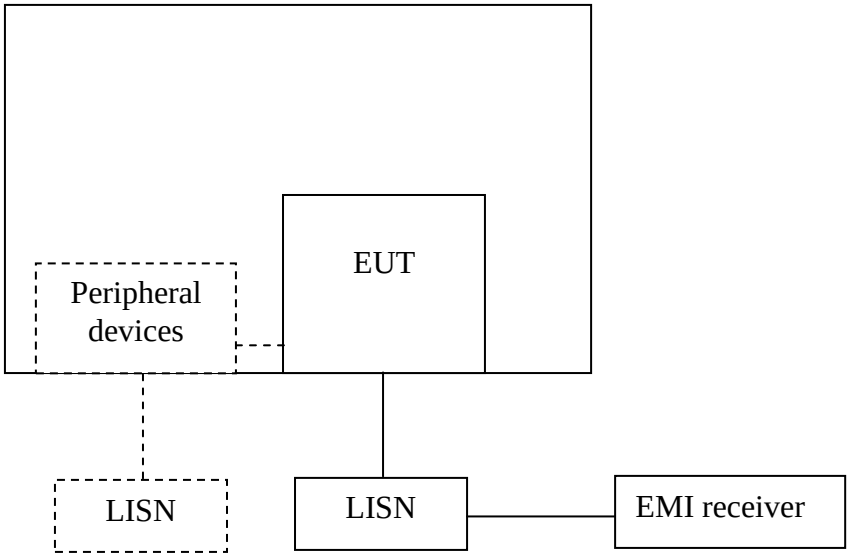
10 Power line conducted emission

Test result: **Pass**

10.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

10.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

10.3 Test procedure and test set up

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), where permitted, terminated into a 50 Ω measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50 Ω measuring port is terminated by a measuring instrument having 50 Ω input impedance. All other ports are terminated in 50 Ω loads.

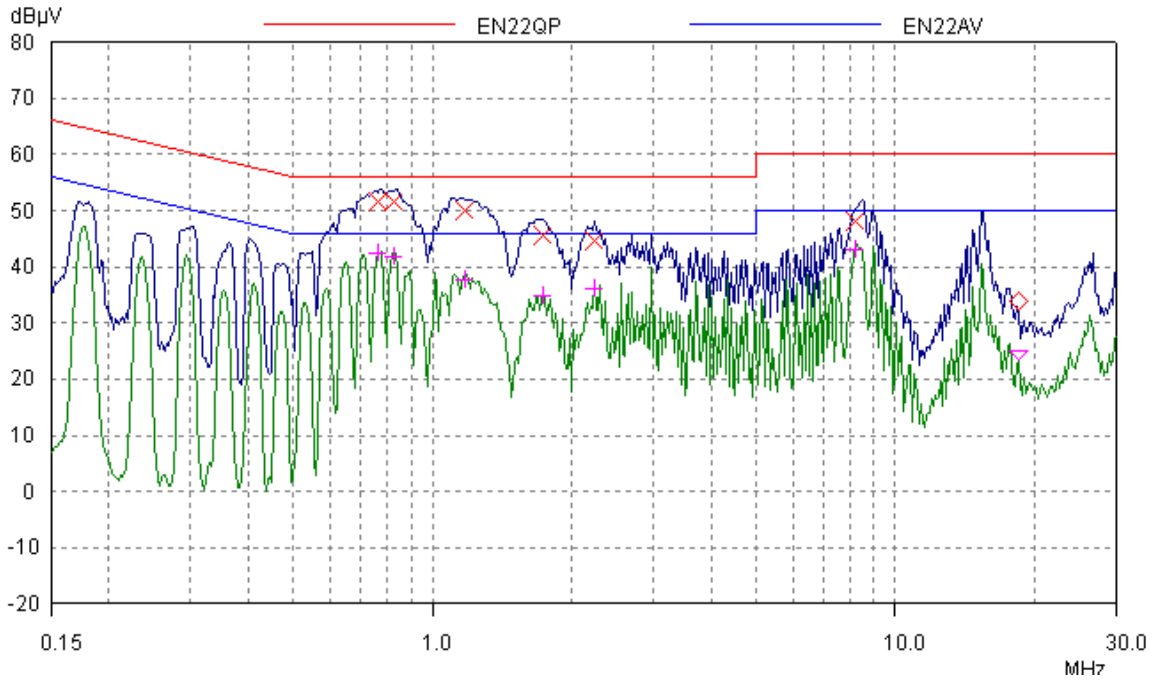
Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

10.4 Test protocol

Temperature: 22°C
Relative Humidity: 54%

All the three models of product were tested and the worst data (GFSK, 2402MHz) was listed in the report.



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(µV)	Limit dB(µV)	Margin (dB)	level dB(µV)	limit dB(µV)	Margin (dB)
0.762	51.64	56.00	4.36	42.35	46.00	3.65
0.818	51.63	56.00	4.37	41.66	46.00	4.34
1.167	50.09	56.00	5.91	37.72	46.00	8.28
1.719	45.53	56.00	10.47	34.75	46.00	11.25
2.229	44.61	56.00	11.39	36.09	46.00	9.91
8.190	48.21	60.00	11.79	42.92	50.00	7.08
Remark: If the margin higher than 20dB, it would be marked as *.						

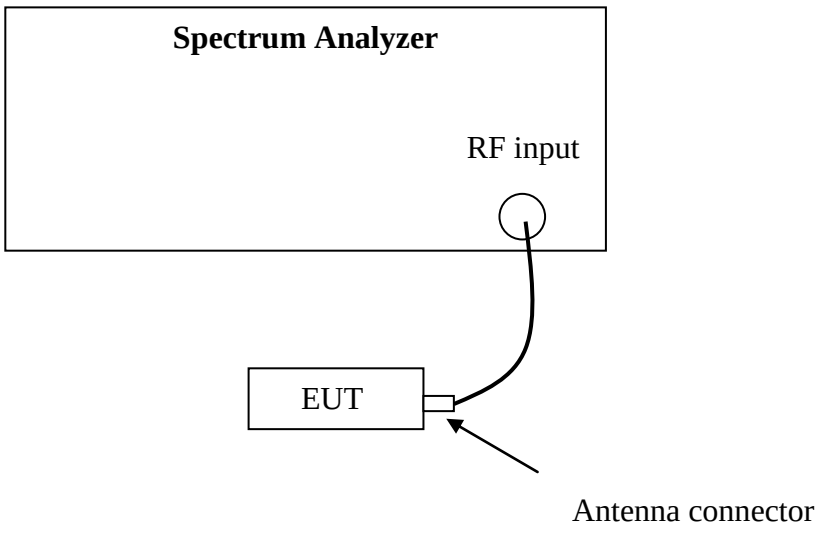
11 Occupied Bandwidth

Test Status: Tested

11.1 Test limit

None

11.2 Test Configuration



11.3 Test procedure and test setup

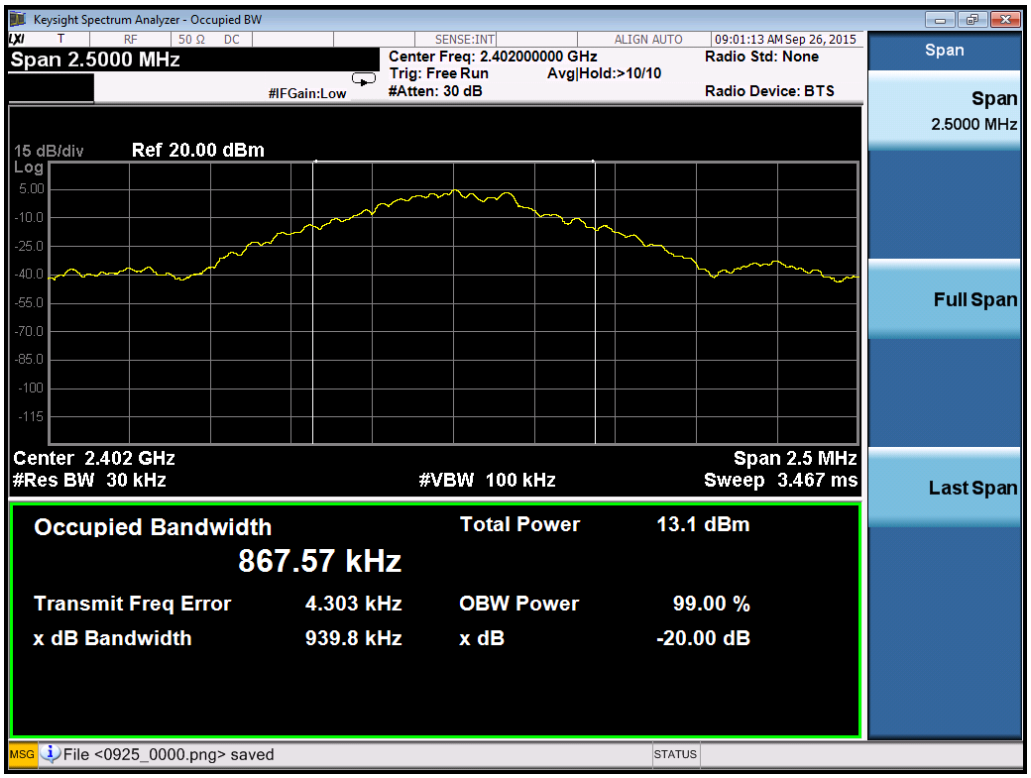
The occupied bandwidth per RSS-Gen Issue 4 Clause 6.6 was measured using the Spectrum Analyzer.

11.4 Test protocol

Temperature : 25 °C
Relative Humidity : 55 %

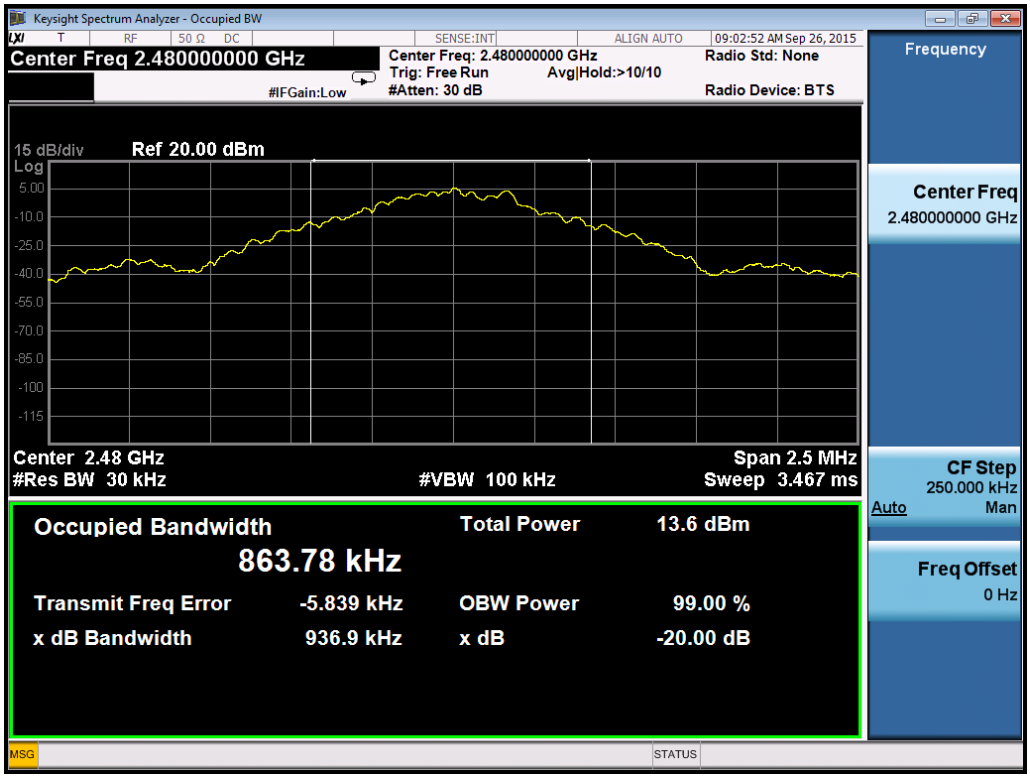
Modulation	Mode	99% Bandwidth (MHz)
GFSK	L	867.57
	M	860.43
	H	863.78

Channel L



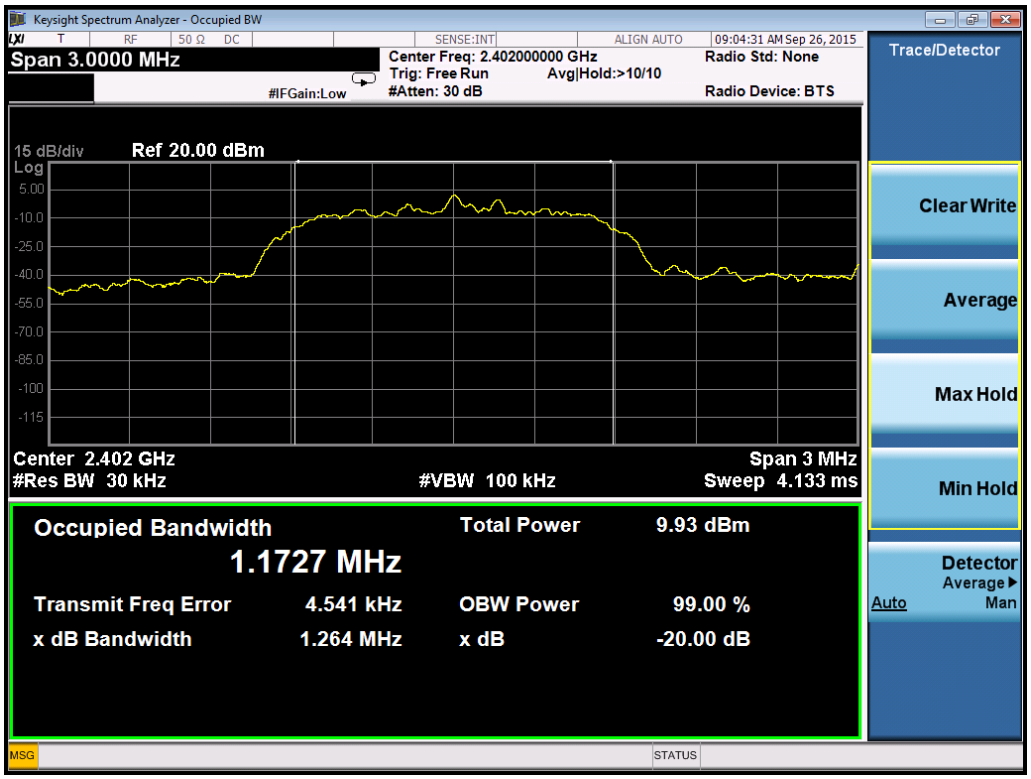
Channel M

Channel H

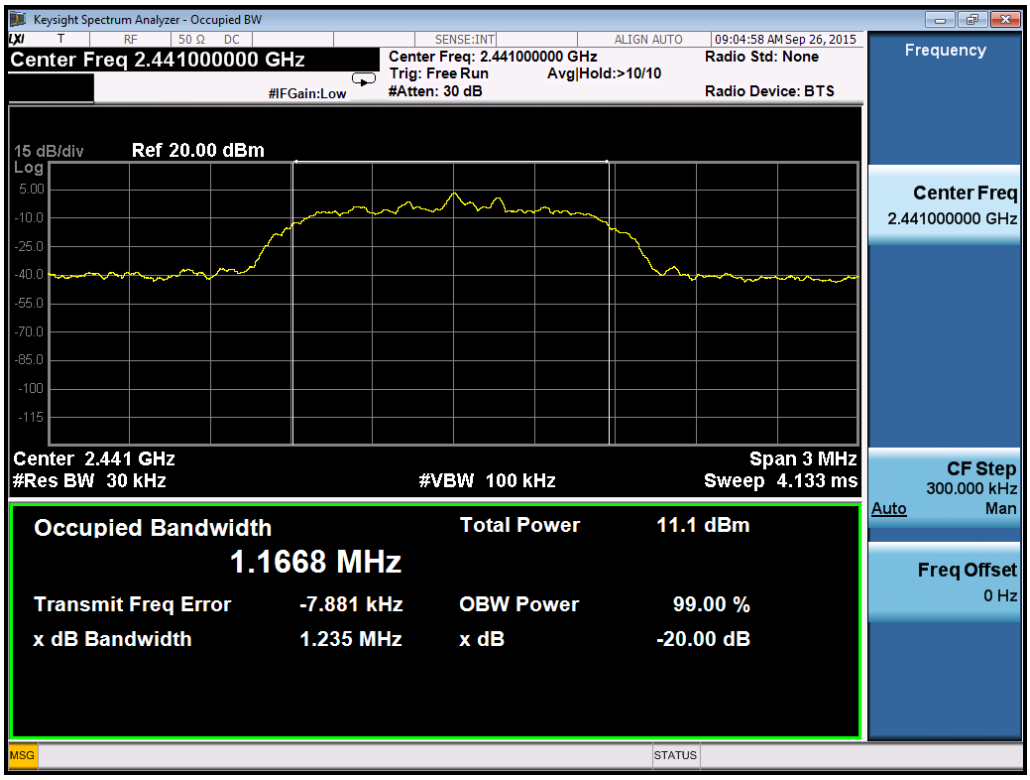


Modulation	Mode	99% Bandwidth (MHz)
π/4-DQPSK	L	1.1727
	M	1.1668
	H	1.1729

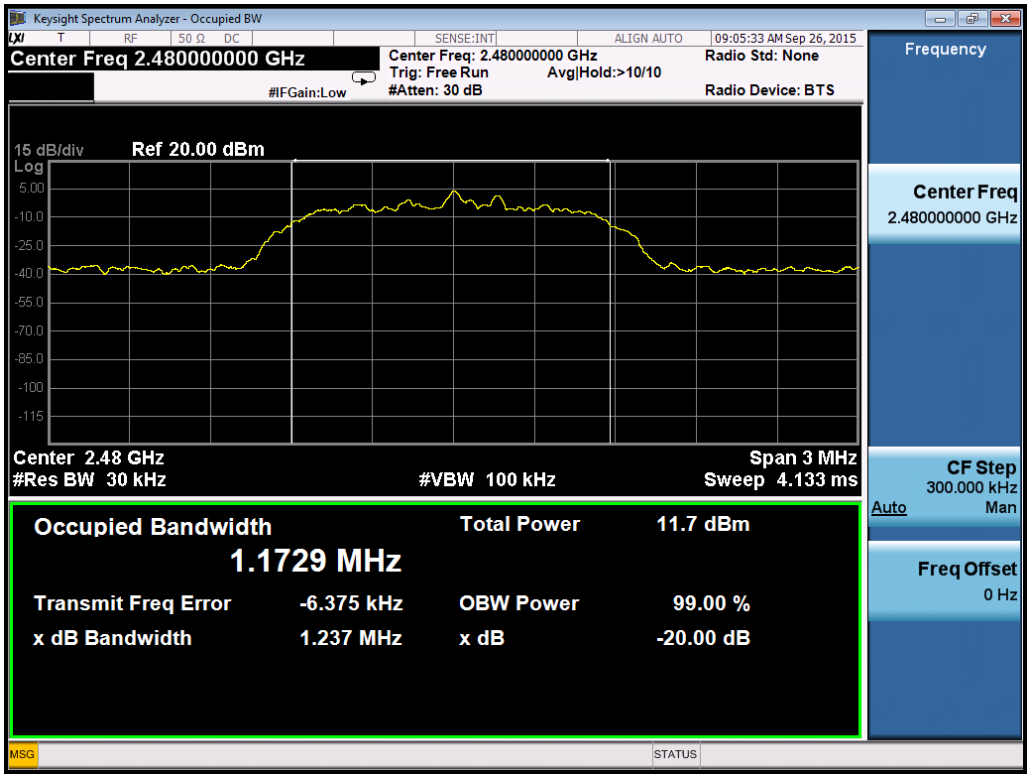
Channel L



Channel M

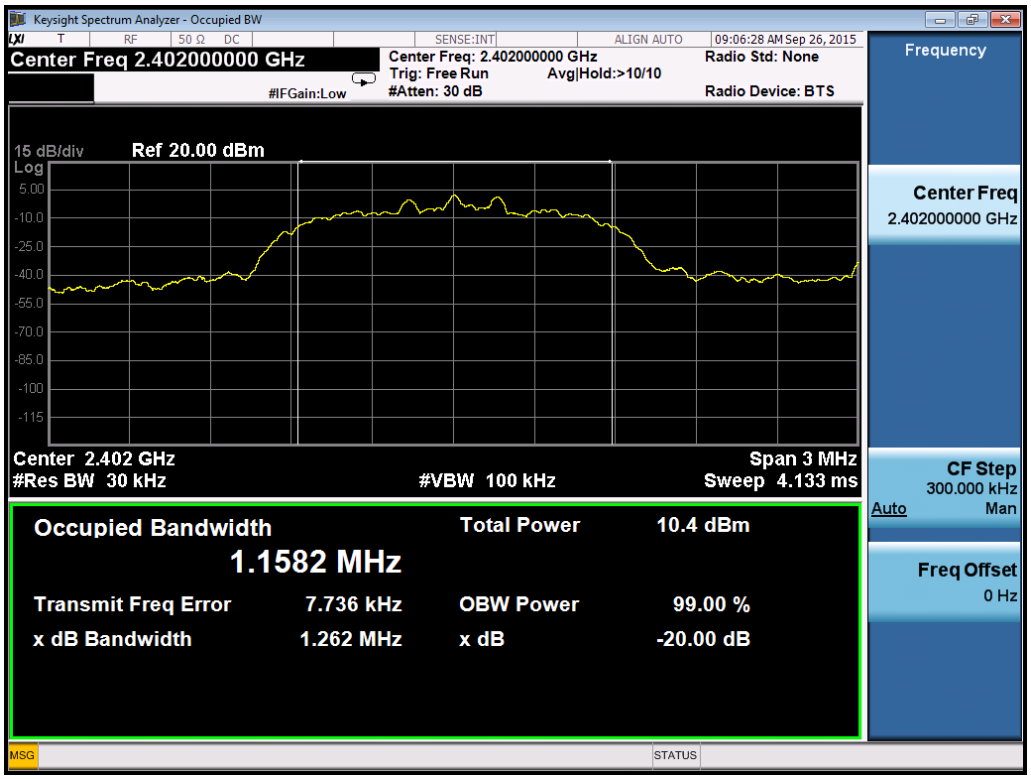


Channel H

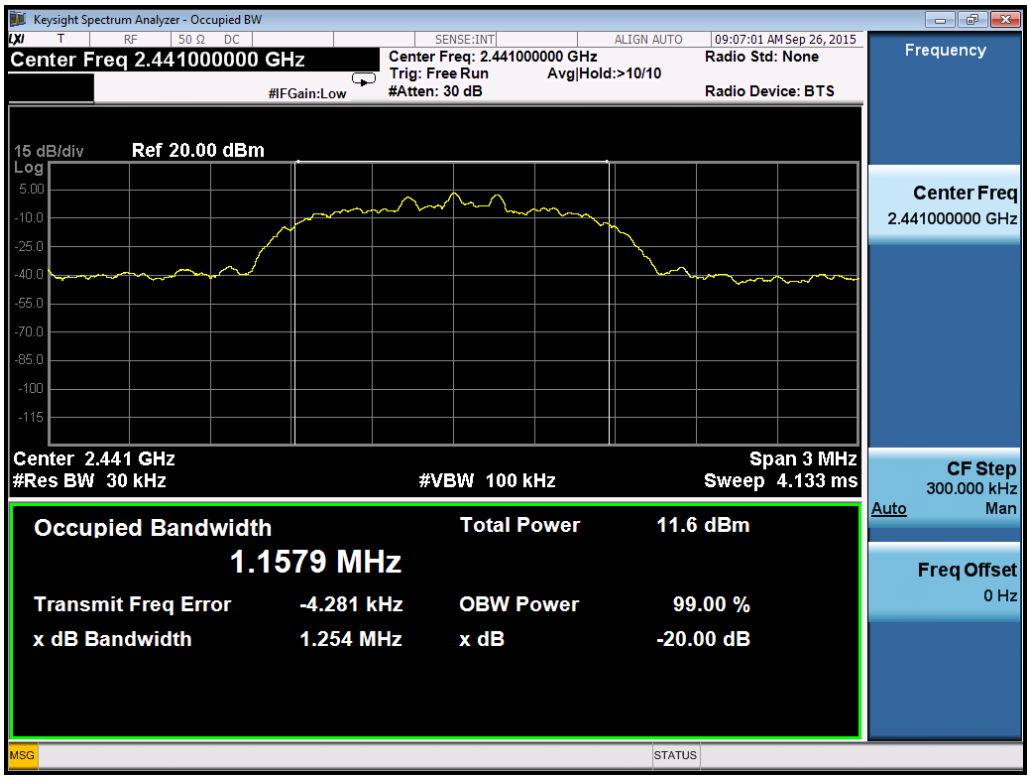


Modulation	Mode	99% Bandwidth (MHz)
8DPSK	L	1.1582
	M	1.1579
	H	1.1665

Channel L



Channel M



Channel H