802.11n (HT20)

TX-Low Channel

Freq. MHz	Reading dBuv	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuv/m	Limit dBuv/m	Margin dB	Remark	Pol.
2377.51	50.04	32.89	35.16	3.51	51.28	74	-22.72	Peak	Horizontal
2377.53	38.52	32.9	35.16	3.51	39.77	54	-14.23	Average	Horizontal
2390.00	52.25	32.92	35.16	3.54	53.55	74	-20.45	Peak	Horizontal
2389.97	41.26	32.92	35.16	3.54	42.56	54	-11.44	Average	Horizontal
2400.00	58.55	32.92	35.16	3.54	59.85	74	-14.15	Peak	Horizontal
2399.97	48.27	32.92	35.16	3.54	49.57	54	-4.43	Average	Horizontal
2377.51	50.49	32.89	35.16	3.51	51.73	74	-22.27	Peak	Vertical
2377.53	39.67	32.9	35.16	3.51	40.92	54	-13.08	Average	Vertical
2390.00	52.56	32.92	35.16	3.54	53.86	74	-20.14	Peak	Vertical
2389.97	42.52	32.92	35.16	3.54	43.82	54	-10.18	Average	Vertical
2400.00	60.07	32.92	35.16	3.54	61.37	74	-12.63	Peak	Vertical
2399.97	48.56	32.92	35.16	3.54	49.86	54	-4.14	Average	Vertical

TX-High Channel

Freq. MHz	Reading dBuv	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuv/m	Limit dBuv/m	Margin dB	Remark	Pol.
2483.50	49.43	33.06	35.18	3.60	50.91	74	-23.09	Peak	Horizontal
2483.53	39.52	33.08	35.18	3.60	41.02	54	-12.98	Average	Horizontal
2488.61	51.04	33.08	35.18	3.62	52.56	74	-21.44	Peak	Horizontal
2488.64	40.43	33.08	35.18	3.62	41.95	54	-12.05	Average	Horizontal
2483.50	50.61	33.06	35.18	3.60	52.09	74	-21.91	Peak	Vertical
2483.53	41.28	33.08	35.18	3.60	42.78	54	-11.22	Average	Vertical
2488.61	51.79	33.08	35.18	3.62	53.31	74	-20.69	Peak	Vertical
2488.64	41.07	33.08	35.18	3.62	42.59	54	-11.61	Average	Vertical

802.11n (HT40)

TX-Low Channel

Freq. MHz	Reading dBuv	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuv/m	Limit dBuv/m	Margin dB	Remark	Pol.
2378.13	49.38	32.89	35.16	3.51	50.62	74	-23.38	Peak	Horizontal
2378.15	38.75	32.90	35.16	3.51	40.00	54	-14.00	Average	Horizontal
2390.00	51.25	32.92	35.16	3.54	52.55	74	-21.45	Peak	Horizontal
2389.98	40.38	32.92	35.16	3.54	41.68	54	-12.32	Average	Horizontal
2400.00	52.43	32.92	35.16	3.54	53.73	74	-20.27	Peak	Horizontal
2399.97	42.48	32.92	35.16	3.54	43.78	54	-10.22	Average	Horizontal
2378.13	50.16	32.89	35.16	3.51	51.40	74	-22.60	Peak	Vertical
2378.15	40.75	32.90	35.16	3.51	42.00	54	-12.00	Average	Vertical
2390.00	52.10	32.92	35.16	3.54	53.40	74	-20.60	Peak	Vertical
2389.98	41.89	32.92	35.16	3.54	43.19	54	-10.81	Average	Vertical
2400.00	54.38	32.92	35.16	3.54	55.68	74	-18.32	Peak	Vertical
2399.97	47.49	32.92	35.16	3.54	48.79	54	-5.21	Average	Vertical

TX-High Channel

Freq. MHz	Reading dBuv	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuv/m	Limit dBuv/m	Margin dB	Remark	Pol.
2483.50	49.42	33.06	35.18	3.60	50.90	74	-23.10	Peak	Horizontal
2483.53	39.21	33.08	35.18	3.60	40.71	54	-13.29	Average	Horizontal
2489.57	50.34	33.08	35.18	3.62	51.86	74	-22.14	Peak	Horizontal
2489.60	40.08	33.08	35.18	3.62	41.60	54	-12.40	Average	Horizontal
2483.50	50.06	33.06	35.18	3.60	51.54	74	-22.46	Peak	Vertical
2483.53	39.75	33.08	35.18	3.60	41.25	54	-12.75	Average	Vertical
2489.57	50.96	33.08	35.18	3.62	52.48	74	-21.52	Peak	Vertical
2489.60	40.64	33.08	35.18	3.62	42.16	54	-11.84	Average	Vertical

BLE 4.0

TX-Low Channel

Freq. MHz	Reading Level dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
2377.65	42.81	32.89	35.16	3.51	44.05	74	-29.95	Peak	Horizontal
2377.63	33.95	32.90	35.16	3.51	35.20	54	-18.80	Average	Horizontal
2390.00	44.85	32.92	35.16	3.54	46.15	74	-27.85	Peak	Horizontal
2390.00	36.85	32.92	35.16	3.54	38.15	54	-15.85	Average	Horizontal
2400.00	51.84	32.92	35.16	3.54	53.14	74	-20.86	Peak	Horizontal
2400.00	41.36	32.92	35.16	3.54	42.66	54	-11.34	Average	Horizontal
2377.65	44.68	32.89	35.16	3.51	45.92	74	-28.08	Peak	Vertical
2377.63	34.96	32.90	35.16	3.51	36.21	54	-17.79	Average	Vertical
2390.00	45.73	32.92	35.16	3.54	47.03	74	-26.97	Peak	Vertical
2390.00	36.46	32.92	35.16	3.54	37.76	54	-16.24	Average	Vertical
2400.00	51.42	32.92	35.16	3.54	52.72	74	-21.28	Peak	Vertical
2400.00	43.65	32.92	35.16	3.54	44.95	54	-9.05	Average	Vertical

TX-High Channel

Freq. MHz	Reading Level dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
2483.50	45.47	33.06	35.18	3.60	46.95	74	-27.05	Peak	Horizontal
2483.50	36.99	33.08	35.18	3.60	38.49	54	-15.51	Average	Horizontal
2487.43	43.21	33.08	35.18	3.62	44.73	74	-29.27	Peak	Horizontal
2487.46	33.51	33.08	35.18	3.62	35.03	54	-18.97	Average	Horizontal
2483.50	45.95	33.06	35.18	3.60	47.43	74	-26.57	Peak	Vertical
2483.53	38.40	33.08	35.18	3.60	39.90	54	-14.10	Average	Vertical
2487.43	44.06	33.08	35.18	3.62	45.58	74	-28.42	Peak	Vertical
2487.46	34.40	33.08	35.18	3.62	35.92	54	-18.08	Average	Vertical

5.6. Conducted Spurious Emissions and Band Edges Test

5.6.1. Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a)is not required. In addition, 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) (see§15.205(c)).

5.6.2. Instruments Setting

The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Detector	Peak
Attenuation	Auto
RB / VB (Emission in restricted band)	100KHz/300KHz
RB / VB (Emission in non-restricted band)	100KHz/300KHz

5.6.3. Test Procedures

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz

The spectrum from 9 kHz to 26.5GHz is investigated with the transmitter set to the lowest, Middle, and highest channels.

5.6.4. Test Setup Layout

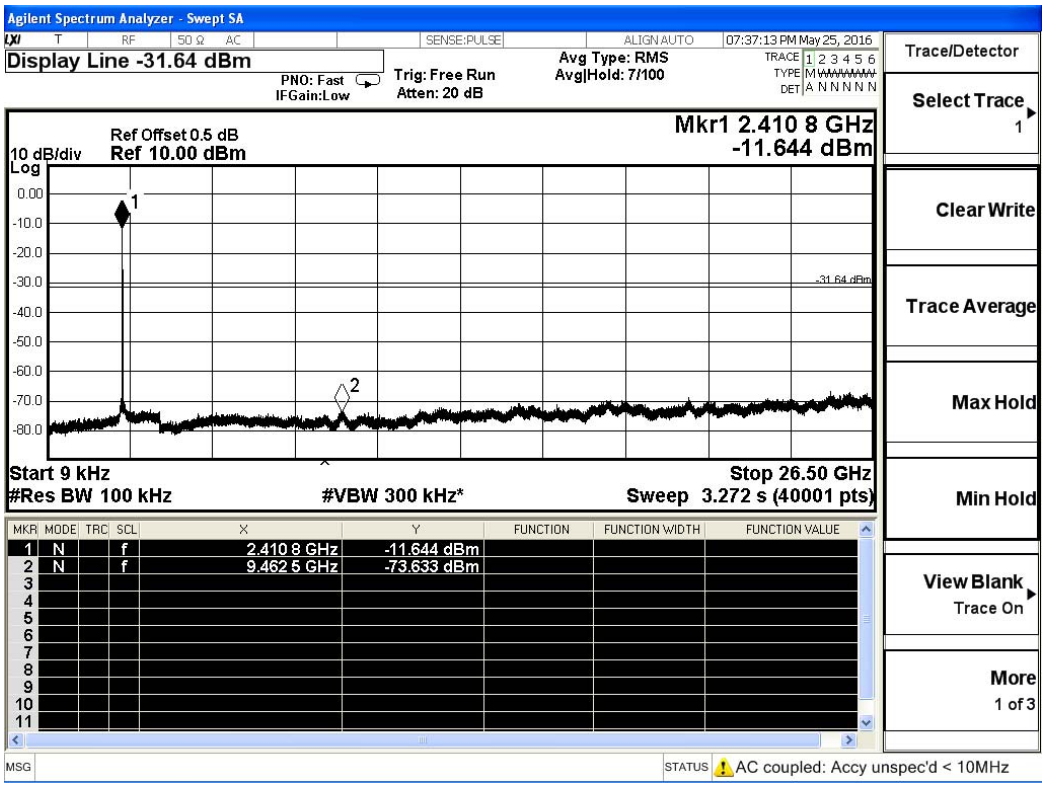
This test setup layout is the same as that shown in section 5.3.4.

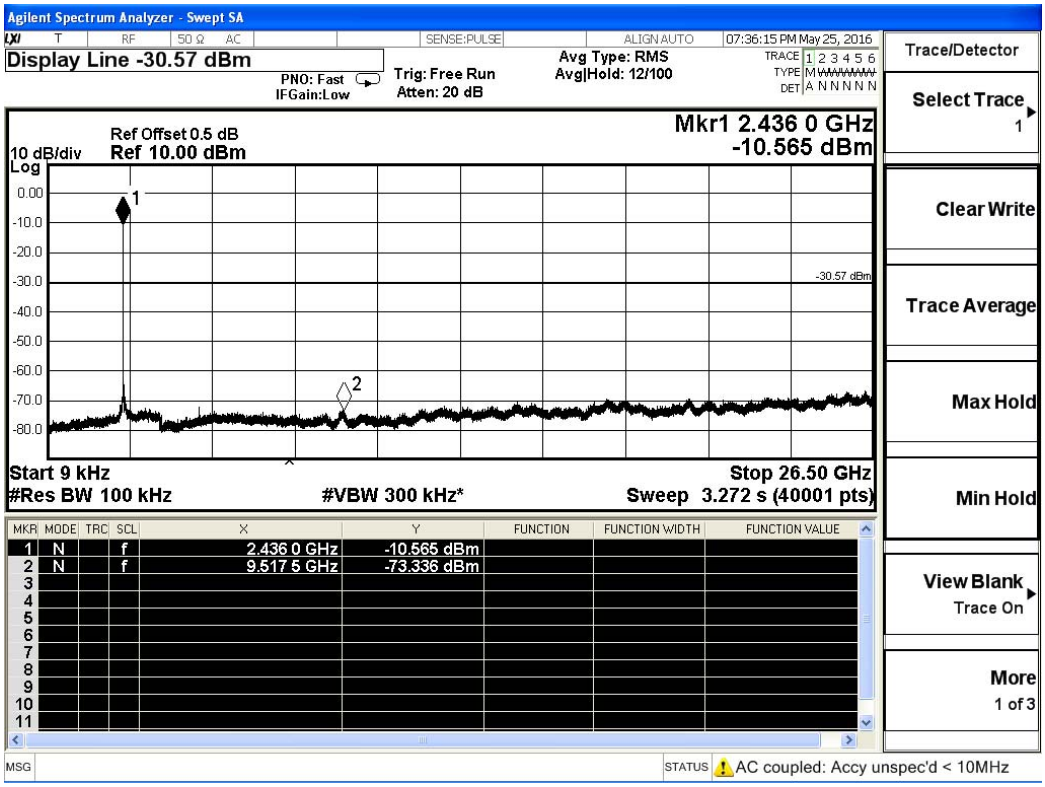
5.6.5. EUT Operation during Test

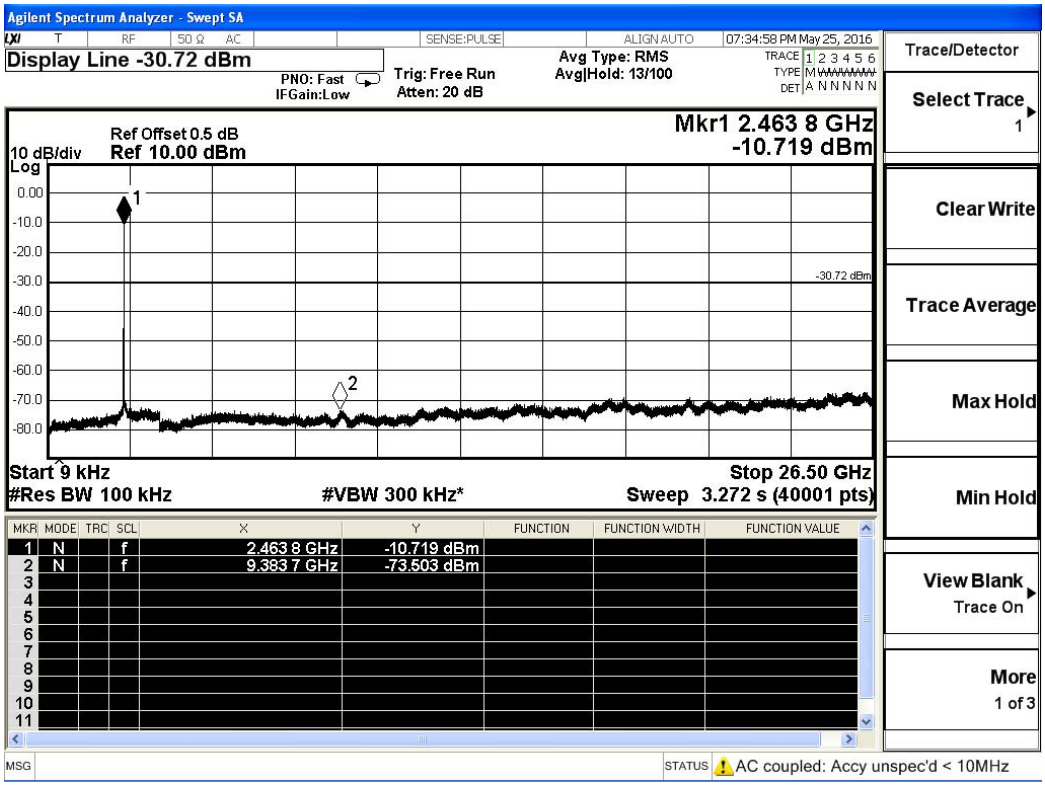
The EUT was programmed to be in continuously transmitting mode.

5.6.6. Test Results of Conducted Spurious Emissions

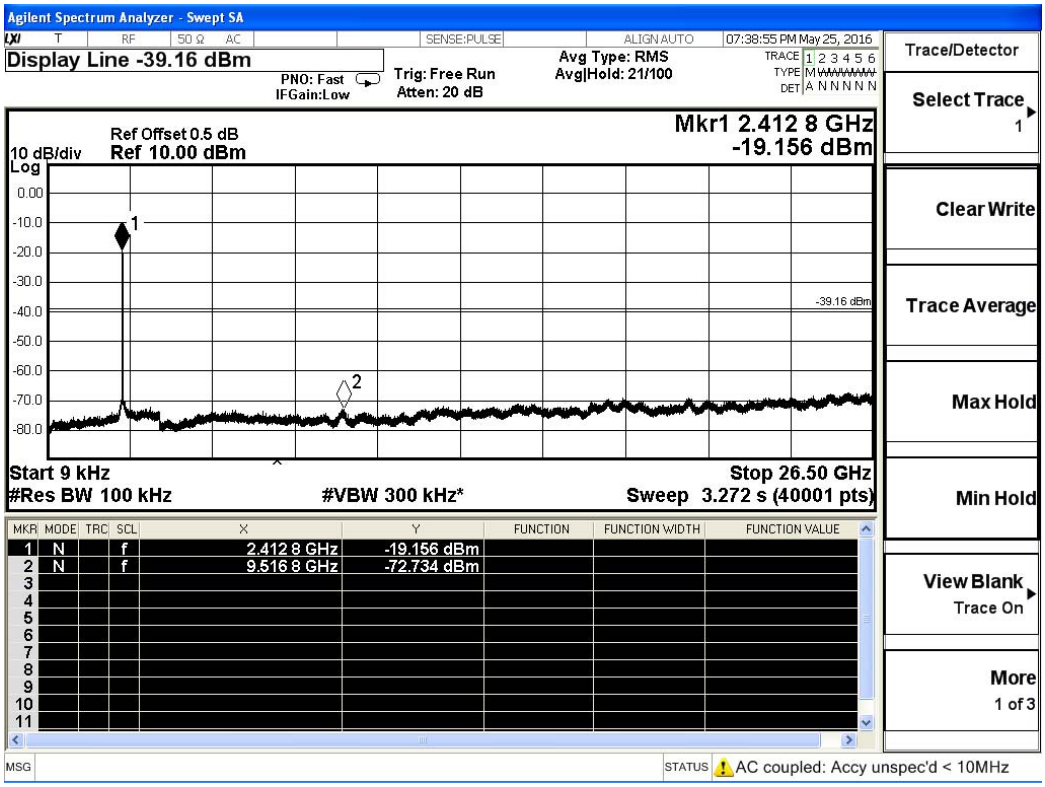
802.11b

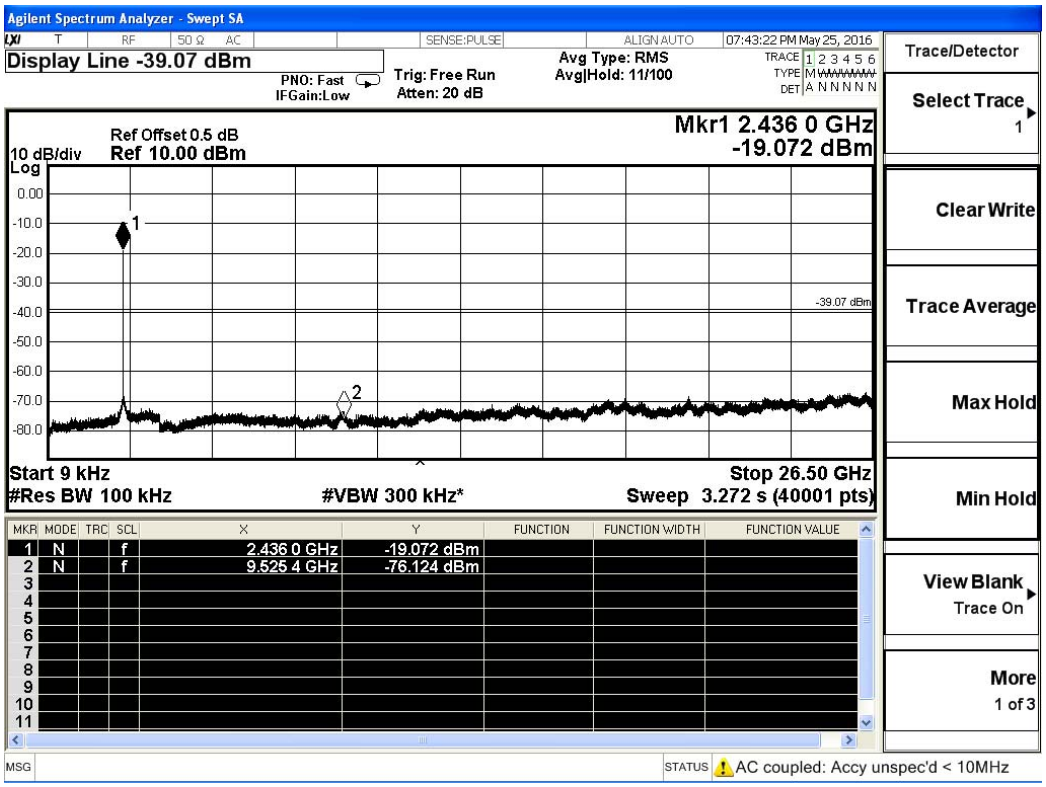


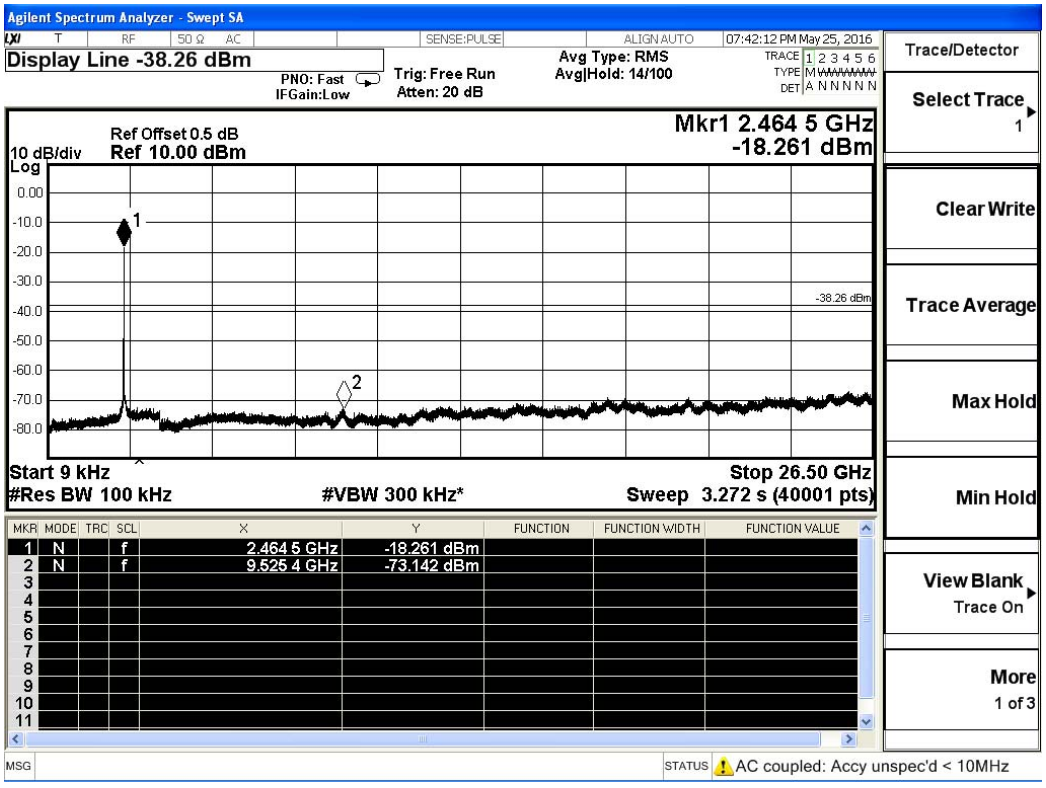



Agilent Spectrum Analyzer - Swept SA
Display Line -30.72 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 13/100
07:34:58 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.463 8 GHz
-10.719 dBm
-30.72 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.463 8 GHz -10.719 dBm
2 N f 9.383 7 GHz -73.503 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz

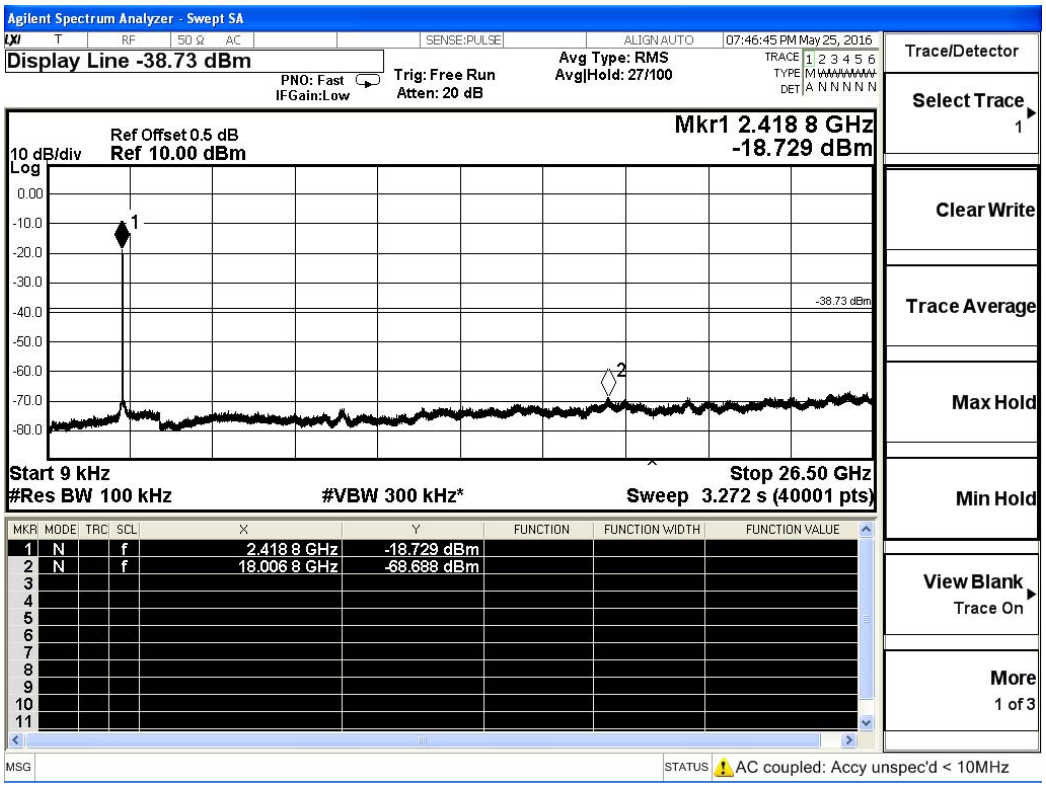
802.11g

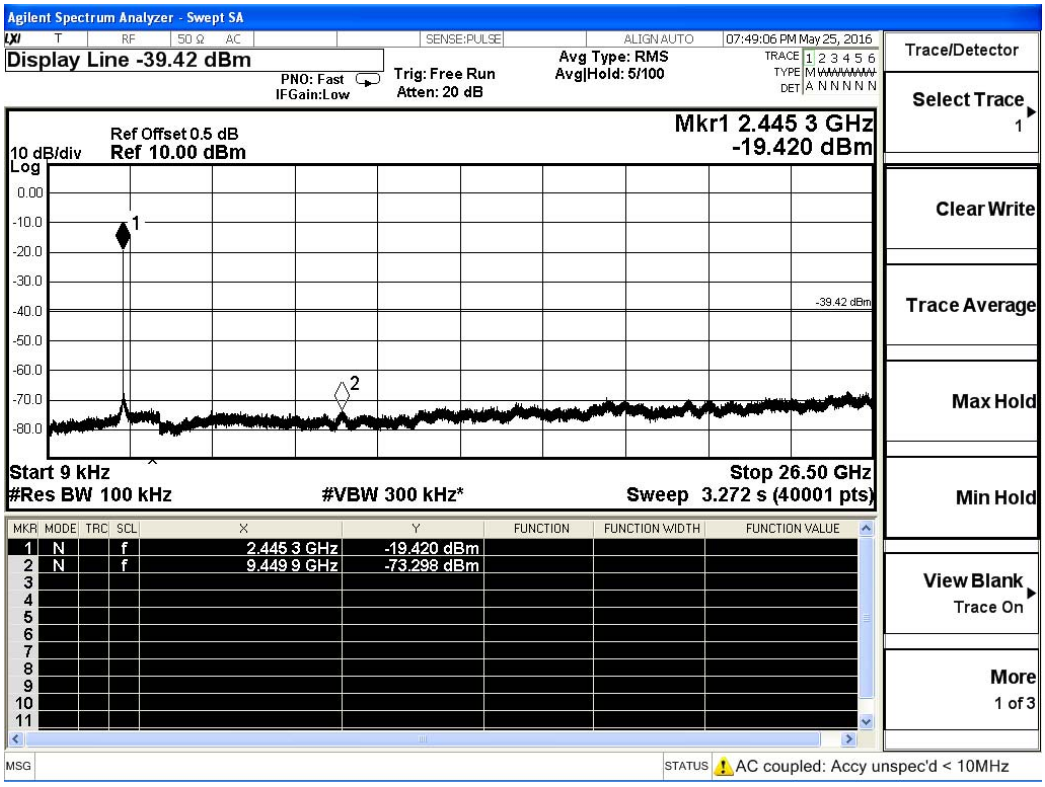

Agilent Spectrum Analyzer - Swept SA
Display Line -39.16 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 21/100
07:38:55 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.412 8 GHz
-19.156 dBm
-39.16 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.412 8 GHz -19.156 dBm
2 N f 9.516 8 GHz -72.734 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz

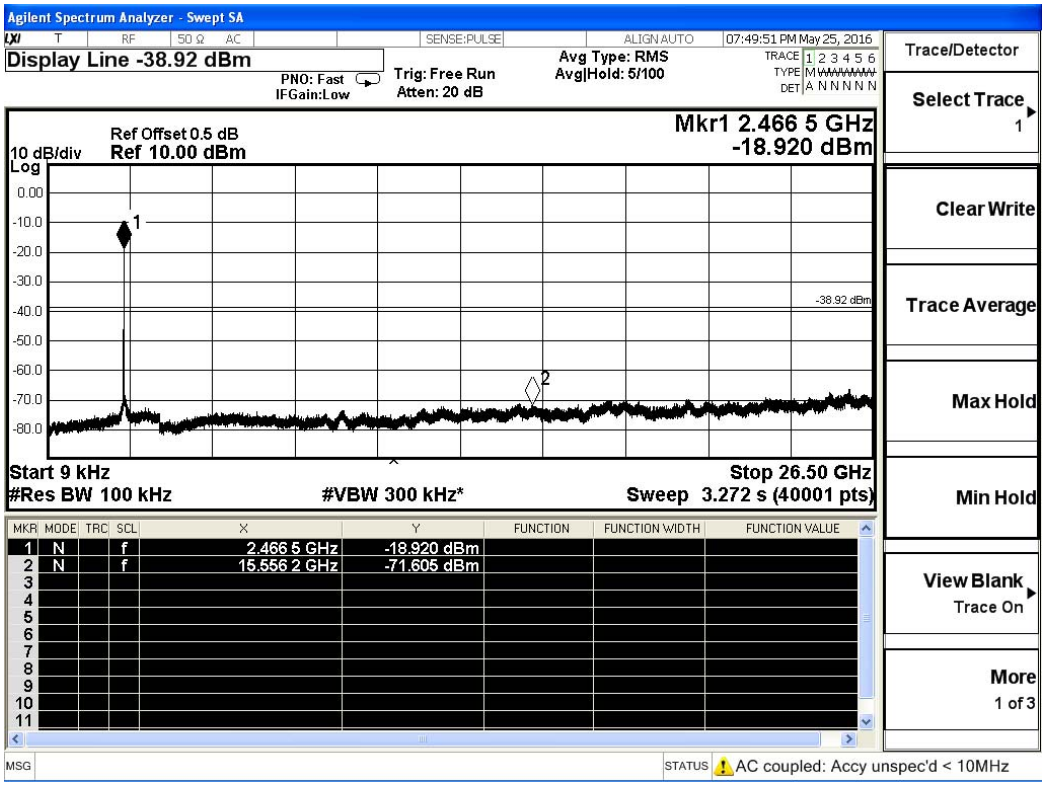

Agilent Spectrum Analyzer - Swept SA
Display Line -39.07 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 11/100
07:43:22 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.436 0 GHz
-19.072 dBm
-39.07 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.436 0 GHz -19.072 dBm
2 N f 9.525 4 GHz -76.124 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz


Agilent Spectrum Analyzer - Swept SA
Display Line -38.26 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 14/100
07:42:12 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.464 5 GHz
-18.261 dBm
-38.26 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.464 5 GHz -18.261 dBm
2 N f 9.525 4 GHz -73.142 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz

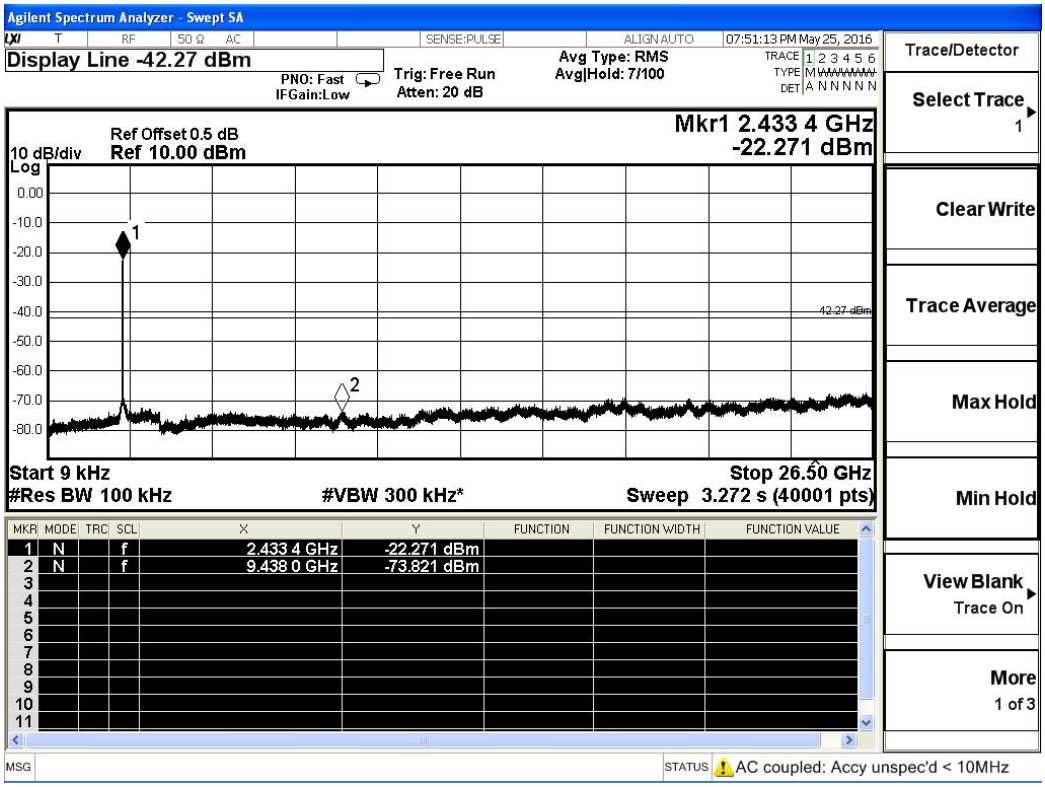
802.11n HT20

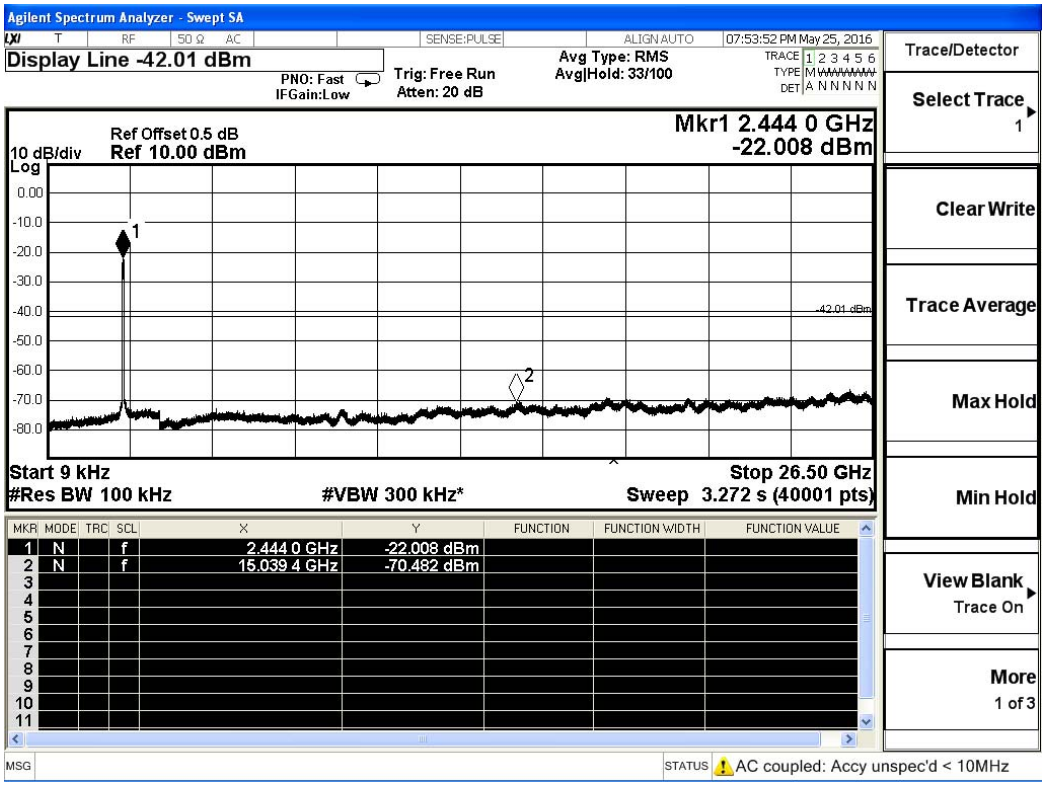

Agilent Spectrum Analyzer - Swept SA
Display Line -38.73 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 27/100
07:46:45 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.418 8 GHz
-18.729 dBm
-38.73 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N 1 f 2.418 8 GHz -18.729 dBm
2 N 1 f 18.006 8 GHz -68.688 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz

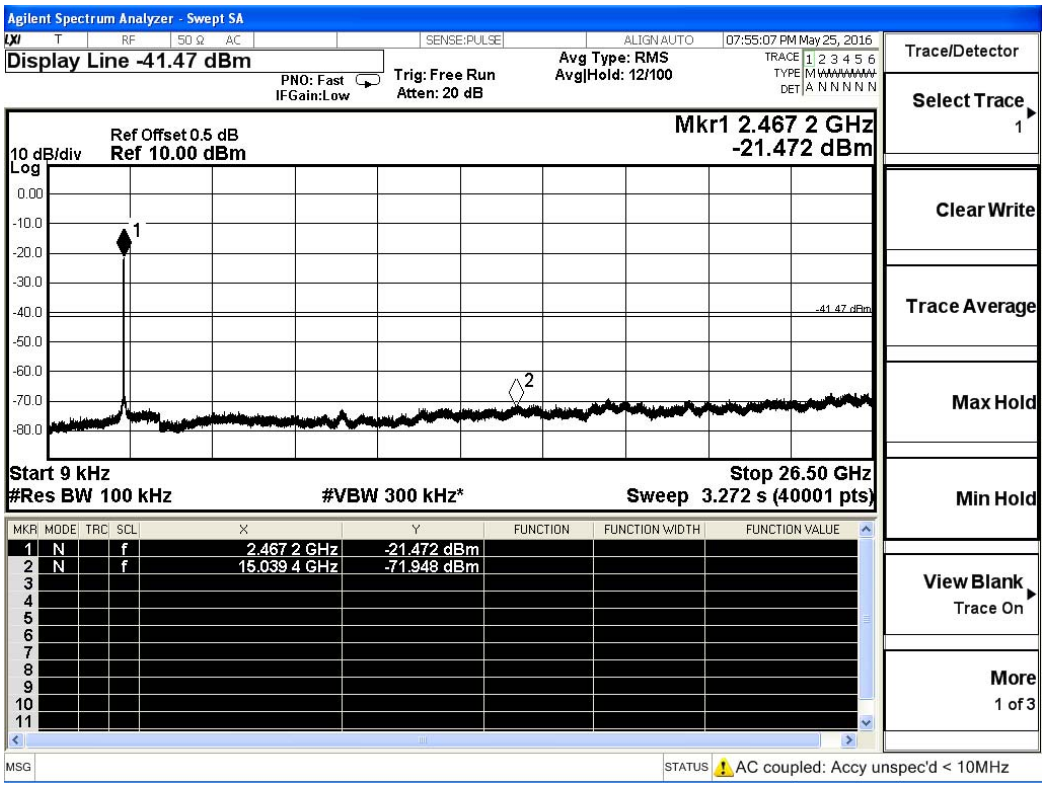

Agilent Spectrum Analyzer - Swept SA
Display Line -39.42 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 5/100
07:49:06 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.445 3 GHz
-19.420 dBm
-39.42 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N 1 f 2.445 3 GHz -19.420 dBm
2 N 1 f 9.449 9 GHz -73.298 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz


Agilent Spectrum Analyzer - Swept SA
Display Line -38.92 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 5/100
07:49:51 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.466 5 GHz
-18.920 dBm
-38.92 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.466 5 GHz -18.920 dBm
2 N f 15.556 2 GHz -71.605 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz

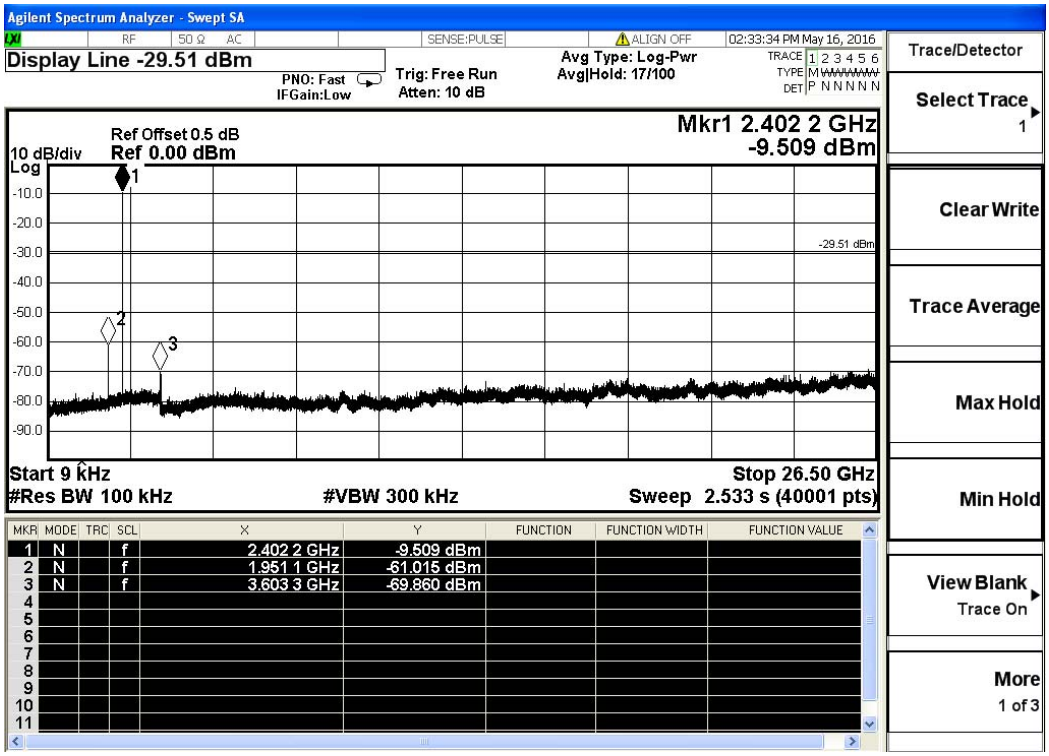
802.11n HT40

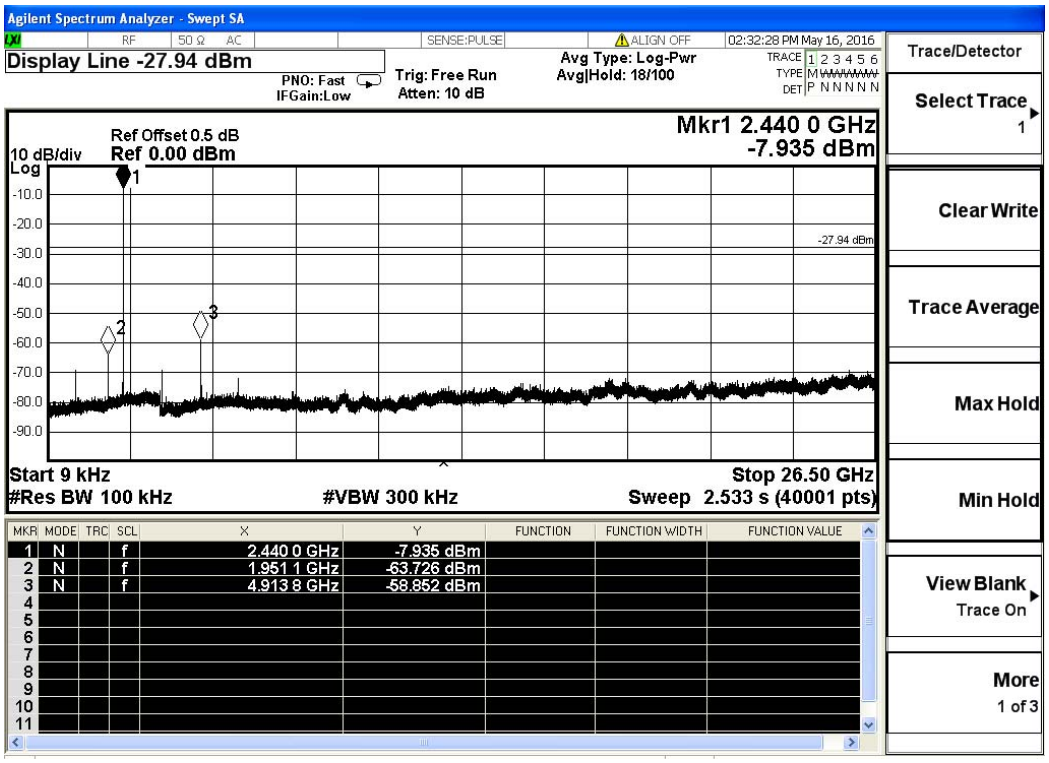

Agilent Spectrum Analyzer - Swept SA
Display Line -42.27 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 7/100
07:51:13 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.433 4 GHz
-22.271 dBm
42.27 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.433 4 GHz -22.271 dBm
2 N f 9.438 0 GHz -73.821 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz

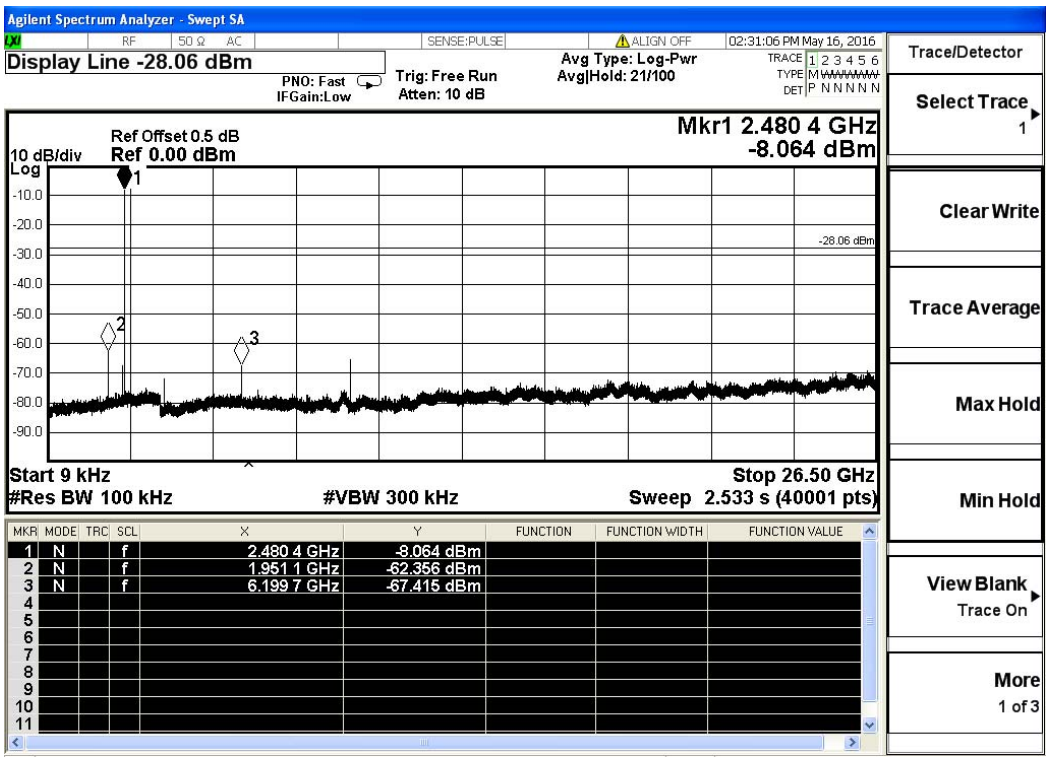

Agilent Spectrum Analyzer - Swept SA
Display Line -42.01 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 33/100
07:53:52 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.444 0 GHz
-22.008 dBm
-42.01 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.444 0 GHz -22.008 dBm
2 N f 15.039 4 GHz -70.482 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz


Agilent Spectrum Analyzer - Swept SA
Display Line -41.47 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold: 12/100
07:55:07 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.467 2 GHz
-21.472 dBm
-41.47 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 26.50 GHz
Sweep 3.272 s (40001 pts)
1 N f 2.467 2 GHz -21.472 dBm
2 N f 15.039 4 GHz -71.948 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
AC coupled: Accy unspec'd < 10MHz

BLE 4.0

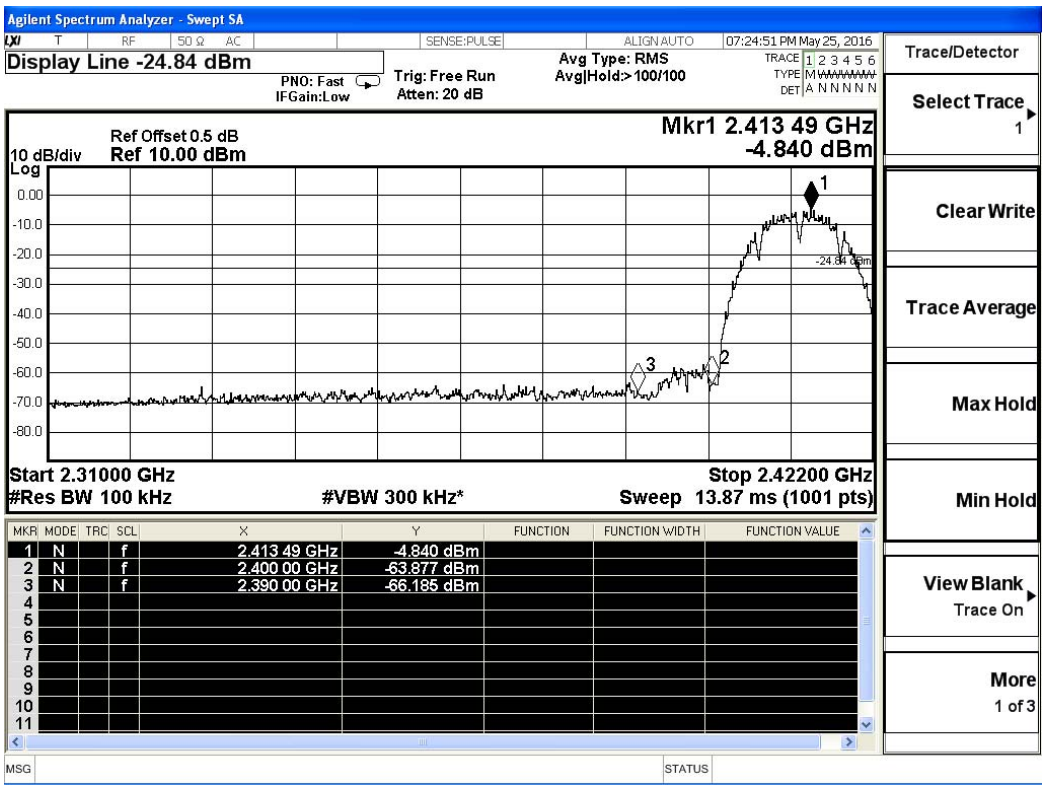

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
02:33:34 PM May 16, 2016
Display Line -29.51 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold: 17/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 0.5 dB
10 dB/div Ref 0.00 dBm
Log
Mkr1 2.402 2 GHz
-9.509 dBm
-29.51 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.533 s (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N f 2.402 2 GHz -9.509 dBm
2 N f 1.951 1 GHz -61.015 dBm
3 N f 3.603 3 GHz -69.860 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

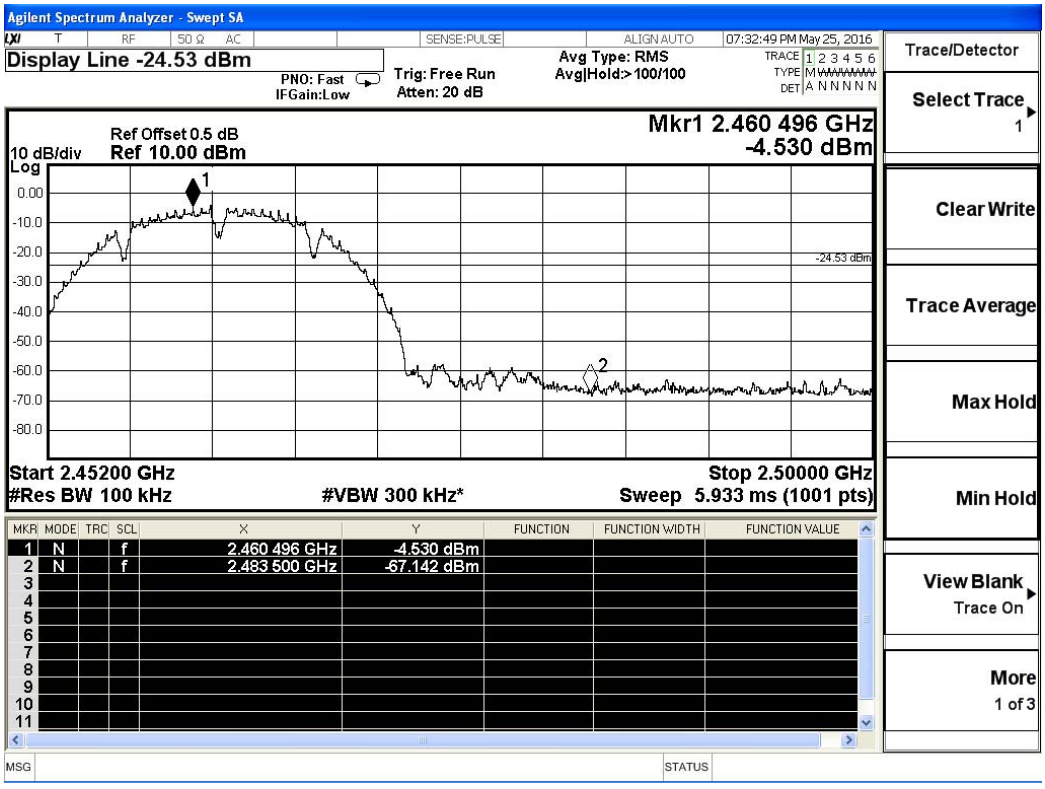

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
02:32:28 PM May 16, 2016
Display Line -27.94 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold: 18/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 0.5 dB
10 dB/div Ref 0.00 dBm
Log
Mkr1 2.440 0 GHz
-7.935 dBm
-27.94 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.533 s (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N f 2.440 0 GHz -7.935 dBm
2 N f 1.951 1 GHz -63.726 dBm
3 N f 4.913 8 GHz -58.852 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
02:31:06 PM May 16, 2016
Display Line -28.06 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold: 21/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 0.5 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 2.480 4 GHz
-8.064 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-28.06 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.533 s (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N f 2.480 4 GHz -8.064 dBm
2 N f 1.951 1 GHz -62.356 dBm
3 N f 6.199 7 GHz -67.415 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

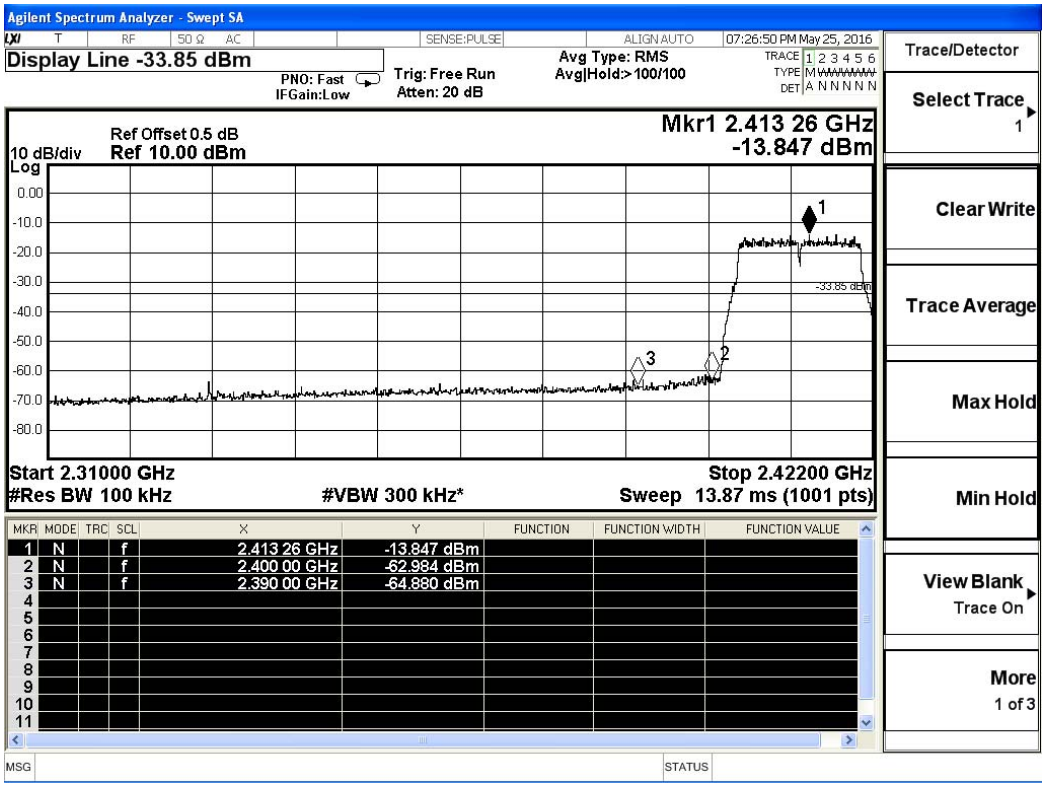
5.6.7. Test Results of Band Edges Test

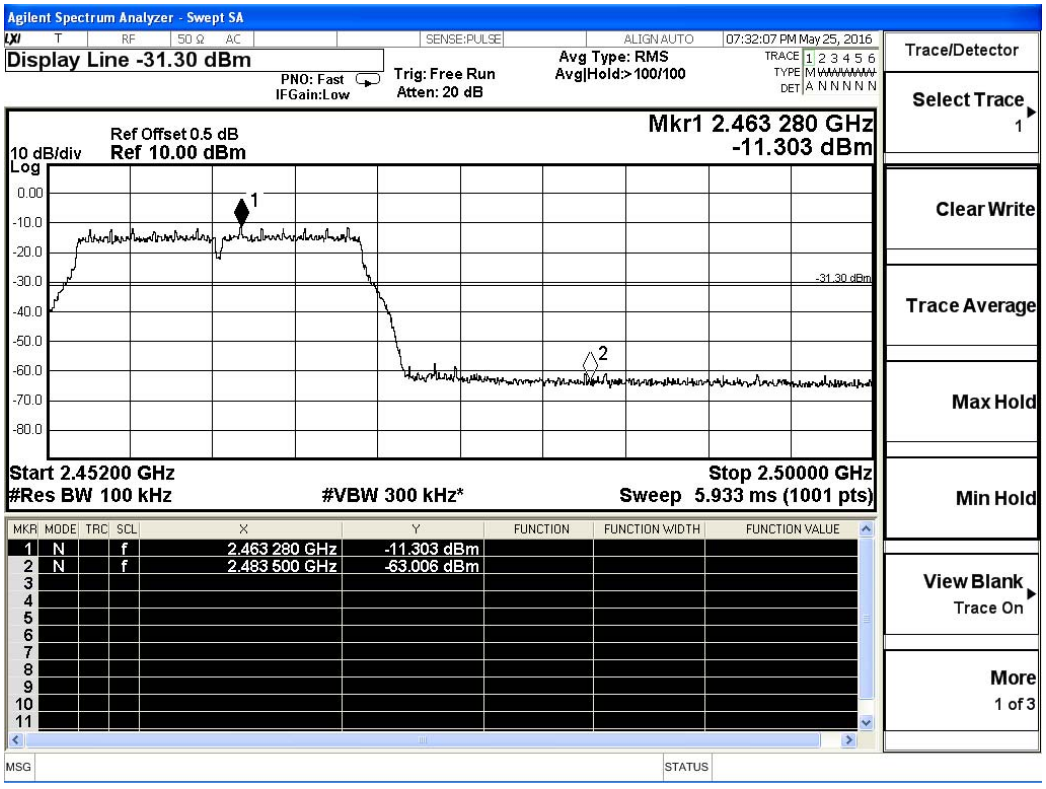
802.11b



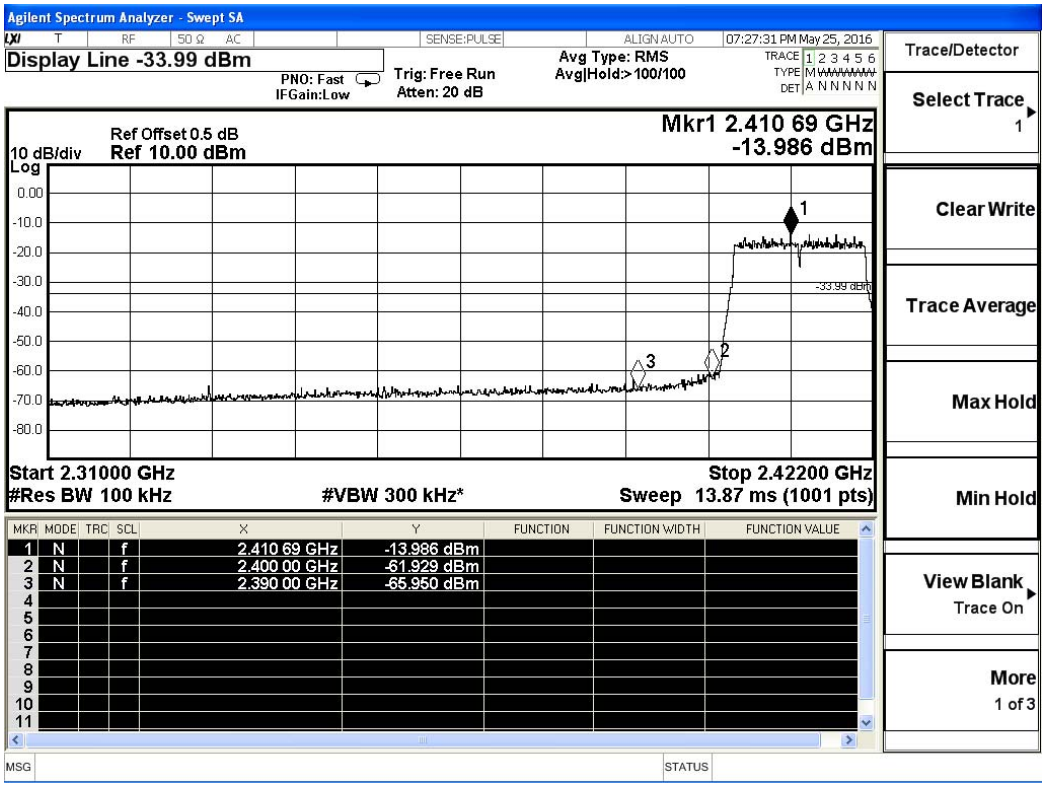


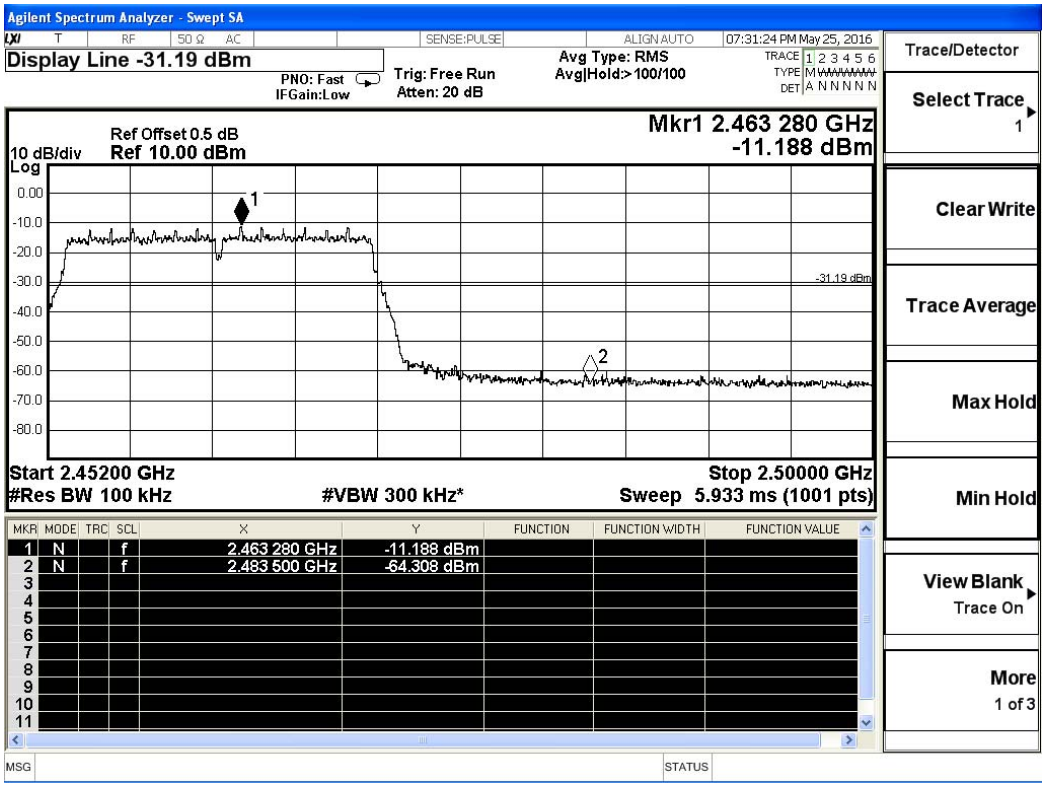
802.11g


Agilent Spectrum Analyzer - Swept SA
Display Line -33.85 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold:>100/100
07:26:50 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.413 26 GHz
-13.847 dBm
-33.85 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 2.42200 GHz
Sweep 13.87 ms (1001 pts)
1 N 1 f 2.413 26 GHz -13.847 dBm
2 N 1 f 2.400 00 GHz -62.984 dBm
3 N 1 f 2.390 00 GHz -64.880 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

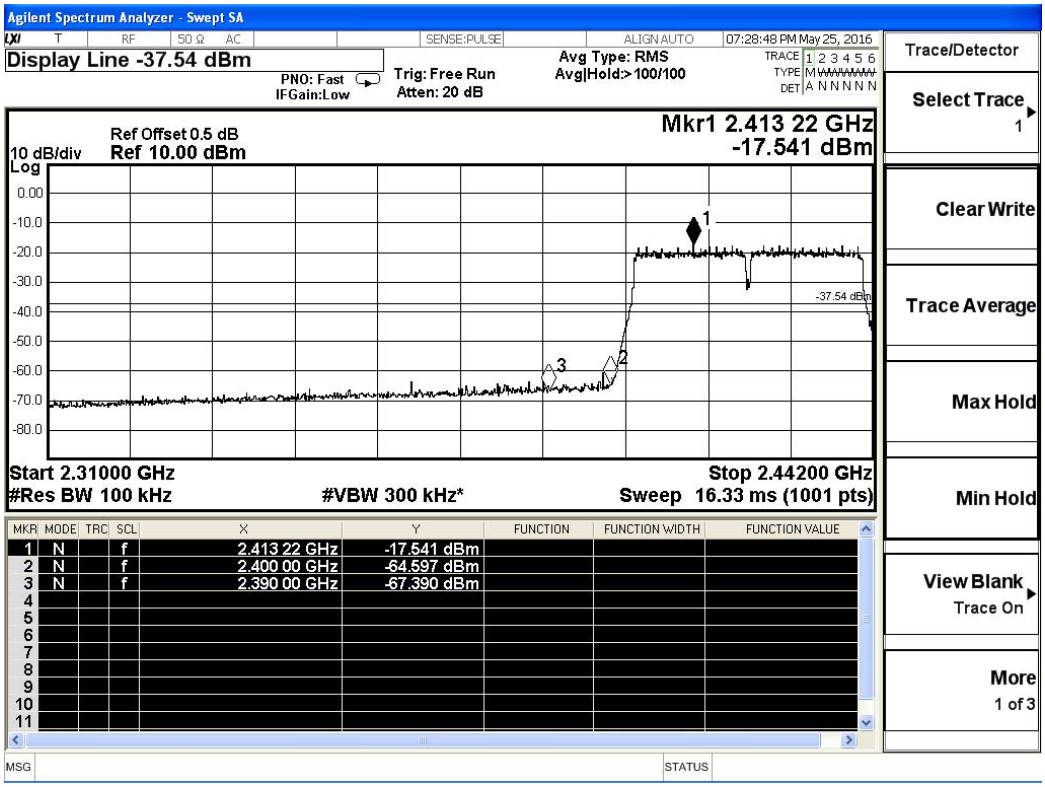

Agilent Spectrum Analyzer - Swept SA
Display Line -31.30 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold:>100/100
07:32:07 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.463 280 GHz
-11.303 dBm
-31.30 dBm
Start 2.45200 GHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 2.50000 GHz
Sweep 5.933 ms (1001 pts)
1 N 1 f 2.463 280 GHz -11.303 dBm
2 N 1 f 2.483 500 GHz -63.006 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

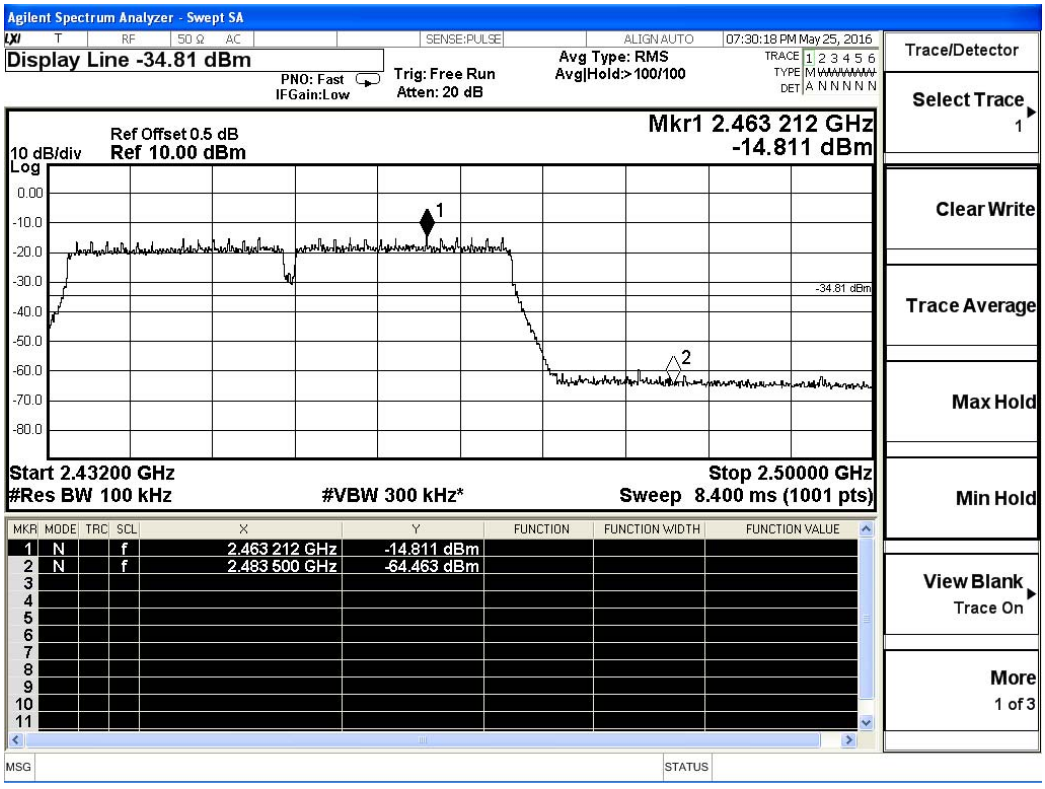
802.11n HT20


Agilent Spectrum Analyzer - Swept SA
Display Line -33.99 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold:>100/100
07:27:31 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.410 69 GHz
-13.986 dBm
-33.99 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 2.42200 GHz
Sweep 13.87 ms (1001 pts)
1 N 1 f 2.410 69 GHz -13.986 dBm
2 N 1 f 2.400 00 GHz -61.929 dBm
3 N 1 f 2.390 00 GHz -65.950 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

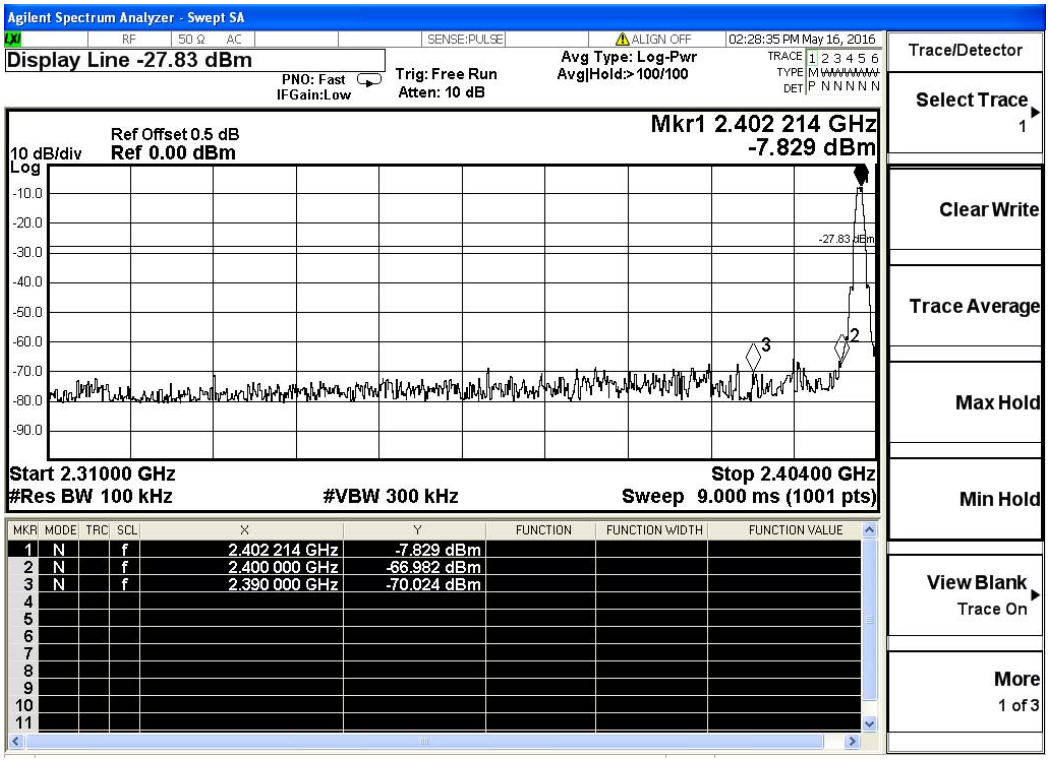

Agilent Spectrum Analyzer - Swept SA
Display Line -31.19 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold:>100/100
07:31:24 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.463 280 GHz
-11.188 dBm
-31.19 dBm
Start 2.45200 GHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 2.50000 GHz
Sweep 5.933 ms (1001 pts)
1 N 1 f 2.463 280 GHz -11.188 dBm
2 N 1 f 2.483 500 GHz -64.308 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

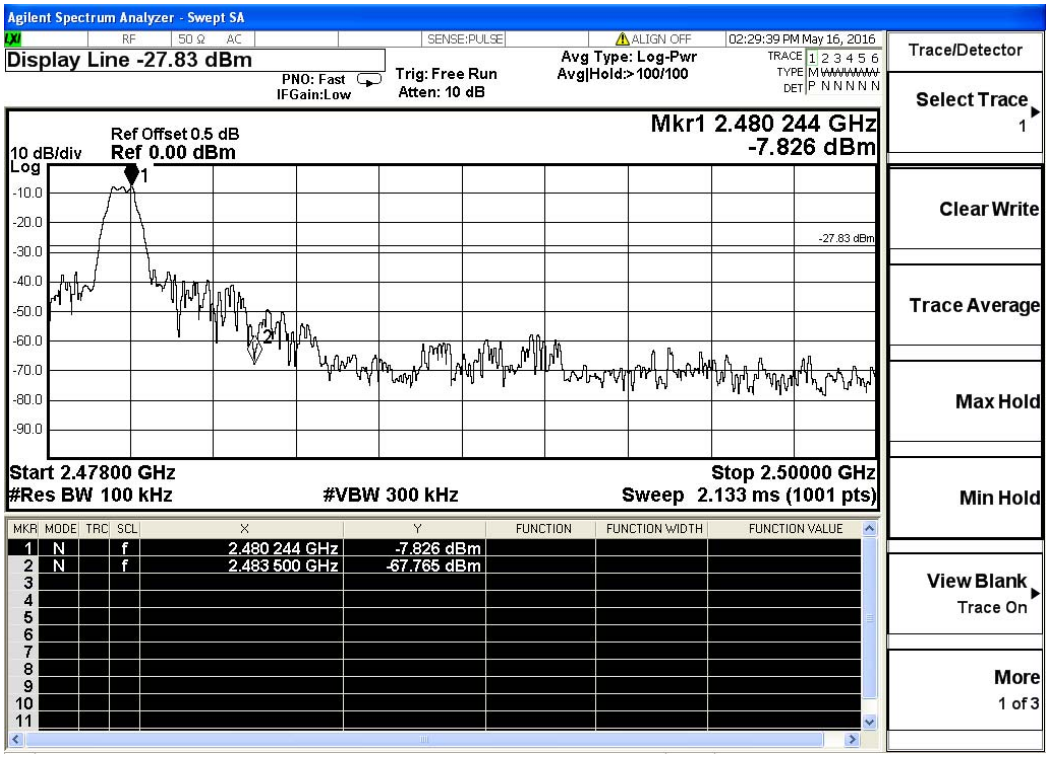
802.11n HT40


Agilent Spectrum Analyzer - Swept SA
Display Line -37.54 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold:>100/100
07:28:48 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.413 22 GHz
-17.541 dBm
-37.54 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 2.44200 GHz
Sweep 16.33 ms (1001 pts)
1 N 1 f 2.413 22 GHz -17.541 dBm
2 N 1 f 2.400 00 GHz -64.597 dBm
3 N 1 f 2.390 00 GHz -67.390 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3


Agilent Spectrum Analyzer - Swept SA
Display Line -34.81 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
Avg|Hold:>100/100
07:30:18 PM May 25, 2016
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.463 212 GHz
-14.811 dBm
-34.81 dBm
Start 2.43200 GHz
#Res BW 100 kHz
#VBW 300 kHz*
Stop 2.50000 GHz
Sweep 8.400 ms (1001 pts)
1 N 1 f 2.463 212 GHz -14.811 dBm
2 N 1 f 2.483 500 GHz -64.463 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

BLE 4.0


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
02:28:35 PM May 16, 2016
Display Line -27.83 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 0.5 dB
10 dB/div Ref 0.00 dBm
Log
Mkr1 2.402 214 GHz
-7.829 dBm
-27.83 dBm
Start 2.31000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.40400 GHz
Sweep 9.000 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N f 2.402 214 GHz -7.829 dBm
2 N f 2.400 000 GHz -66.982 dBm
3 N f 2.390 000 GHz -70.024 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
02:29:39 PM May 16, 2016
Display Line -27.83 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 0.5 dB
10 dB/div Ref 0.00 dBm
Log
Mkr1 2.480 244 GHz
-7.826 dBm
-27.83 dBm
Start 2.47800 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.133 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N f 2.480 244 GHz -7.826 dBm
2 N f 2.483 500 GHz -67.765 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

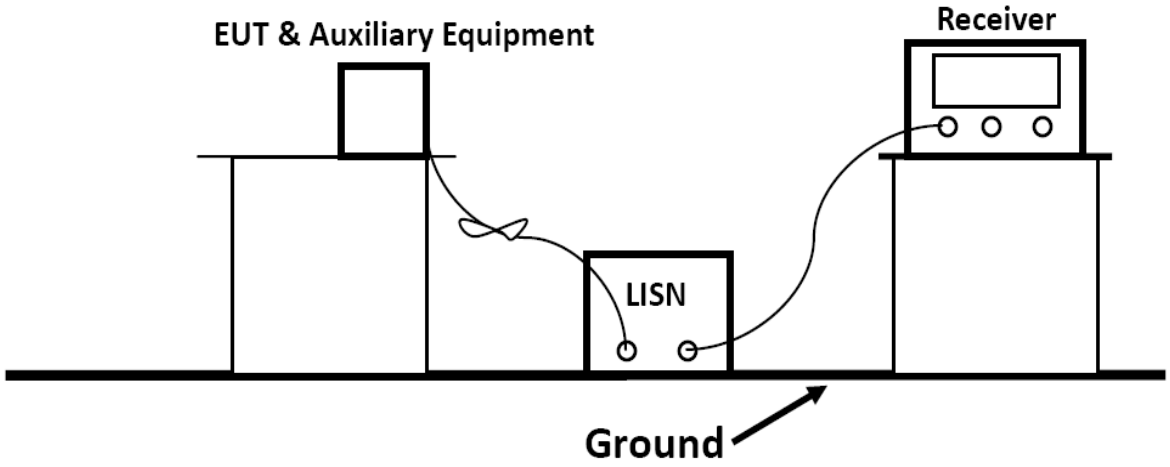
5.7. Power line conducted emissions

5.7.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

5.7.2 Block Diagram of Test Setup



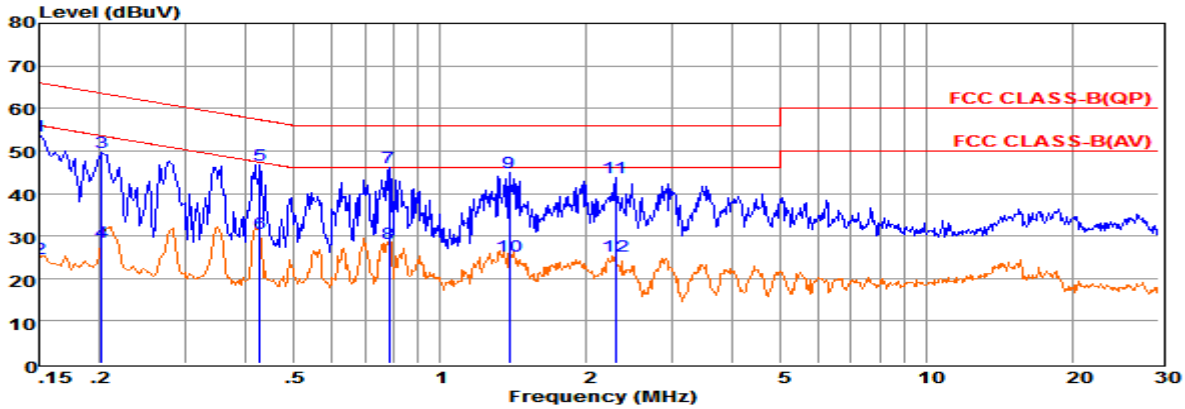
5.7.3 Test Results

PASS.

The test data please refer to following page.

Test Result for Line Power Input AC 120V/60Hz (Worst Case)

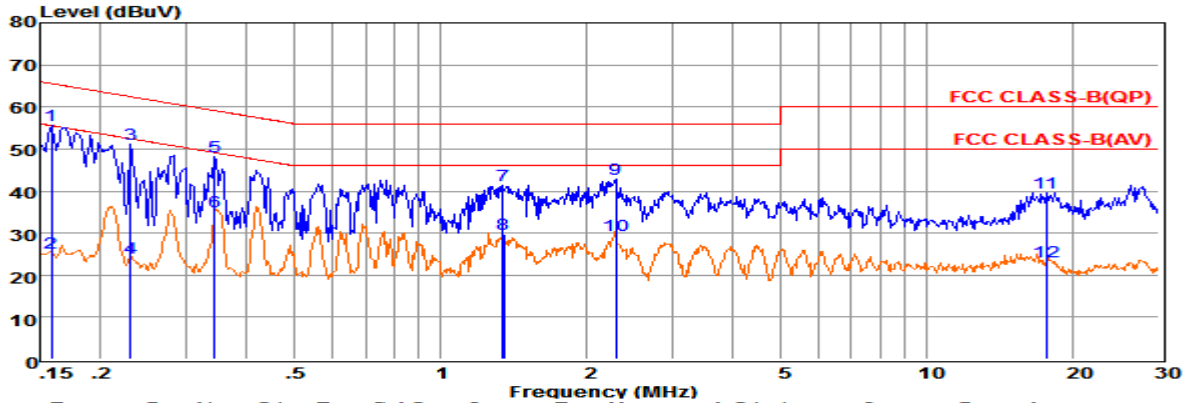
Line:



	Freq MHz	Reading dBuV	LisnFac dB	CabLos dB	Atten Fac dB	Measured dBuV	Limit dBuV	Over dB	Remark
1	0.15000	34.08	9.57	0.02	10.00	53.67	66.00	-12.33	QP
2	0.15010	5.14	9.57	0.02	10.00	24.73	55.99	-31.26	Average
3	0.20181	29.95	9.63	0.02	10.00	49.60	63.54	-13.94	QP
4	0.20191	8.97	9.63	0.02	10.00	28.62	53.53	-24.91	Average
5	0.42598	27.18	9.62	0.04	10.00	46.84	57.33	-10.49	QP
6	0.42608	10.96	9.62	0.04	10.00	30.62	47.33	-16.71	Average
7	0.78761	26.48	9.64	0.04	10.00	46.16	56.00	-9.84	QP
8	0.78771	8.50	9.64	0.04	10.00	28.18	46.00	-17.82	Average
9	1.38843	25.18	9.63	0.05	10.00	44.86	56.00	-11.14	QP
10	1.38943	5.46	9.63	0.05	10.00	25.14	46.00	-20.86	Average
11	2.29679	24.07	9.64	0.05	10.00	43.76	56.00	-12.24	QP
12	2.29779	5.53	9.64	0.05	10.00	25.22	46.00	-20.78	Average

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss+Atten_Fac.
2. The emission levels that are 20dB below the official limit are not reported.

Neutral:



	Freq MHz	Reading dBuV	LisnFac dB	CabLos dB	Atten Fac dB	Measured dBuV	Limit dBuV	Over dB	Remark
1	0.15816	35.84	9.68	0.02	10.00	55.54	65.56	-10.02	QP
2	0.15826	5.53	9.68	0.02	10.00	25.23	55.55	-30.32	Average
3	0.23040	31.56	9.59	0.03	10.00	51.18	62.44	-11.26	QP
4	0.23050	4.50	9.59	0.03	10.00	24.12	52.43	-28.31	Average
5	0.34281	28.41	9.61	0.03	10.00	48.05	59.13	-11.08	QP
6	0.34291	15.45	9.61	0.03	10.00	35.09	49.13	-14.04	Average
7	1.34499	21.76	9.63	0.05	10.00	41.44	56.00	-14.56	QP
8	1.34599	9.95	9.63	0.05	10.00	29.63	46.00	-16.37	Average
9	2.29679	23.22	9.63	0.05	10.00	42.90	56.00	-13.10	QP
10	2.29779	9.91	9.63	0.05	10.00	29.59	46.00	-16.41	Average
1117	.56779	19.56	9.79	0.11	10.00	39.46	60.00	-20.54	QP
1217	.56879	3.35	9.79	0.11	10.00	23.25	50.00	-26.75	Average

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss+Atten_Fac.
2. The emission levels that are 20dB below the official limit are not reported.

****Note: Pre-scan all modes and recorded the worst case results in this report (802.11g (TX-Low Channel)).*

5.8. Antenna Requirements

5.8.1. Standard Applicable

According to antenna requirement of §15.203.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

5.8.2. Antenna Connected Construction

5.8.2.1 Standard Applicable

According to § 15.203 & RSS-Gen, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.8.2.2 Antenna Connector Construction

The directional gains of antenna used for transmitting is 0.9dBi, and the antenna is connected to PCB board and no consideration of replacement. Please see EUT photo for details.

The BT and WLAN share same internal antenna, the maximum gain is 0.9dBi for BT;

5.7.3. Results: Compliance.

Measurement

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.

Conducted power refers ANSI C63.10:2013 Output power test procedure for DTS devices.

Radiated power refers to ANSI C63.10:2013 Radiated emissions tests.

Measurement parameters

Measurement parameter	
Detector:	Peak
Sweep Time:	Auto
Resolution bandwidth:	1MHz
Video bandwidth:	3MHz
Trace-Mode:	Max hold

Limits

FCC	IC
Antenna Gain	
6 dBi	

Note: The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For WLAN devices, the DSSS mode is used;

T_{nom}	V_{nom}	Lowest Channel 2402 MHz	Middle Channel 2440 MHz	Highest Channel 2480 MHz
Conducted power [dBm] Measured with GFSK modulation		-5.82	-4.85	-5.64
Radiated power [dBm] Measured with GFSK modulation		-7.52	-4.27	-5.22
Gain [dBi] Calculated		-1.70	0.58	-0.95
Measurement uncertainty			± 1.6 dB (cond.) / ± 3.8 dB (rad.)	

T_{nom}	V_{nom}	Lowest Channel 2412 MHz	Middle Channel 2437 MHz	Highest Channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		7.17	7.65	7.78
Radiated power [dBm] Measured with DSSS modulation		6.34	8.19	7.84
Gain [dBi] Calculated		-0.83	0.54	0.06
Measurement uncertainty			± 1.6 dB (cond.) / ± 3.8 dB (rad.)	

Result: -/-

----------THE END OF REPORT----------