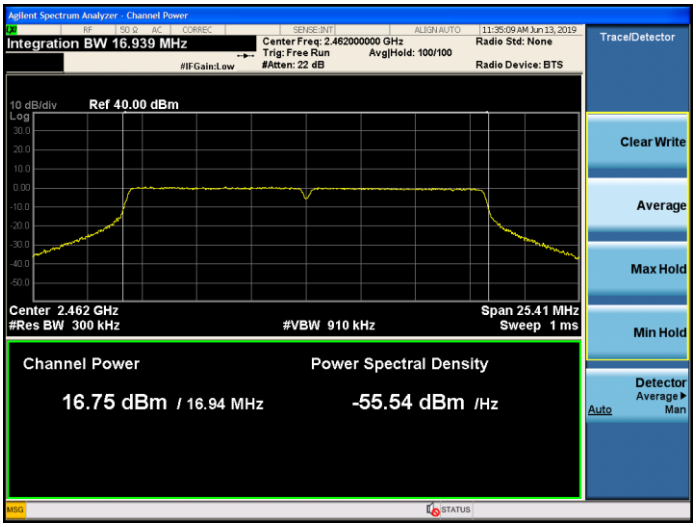

Figure 9-104 Chain 1 Average Power 802.11g- Ch.11

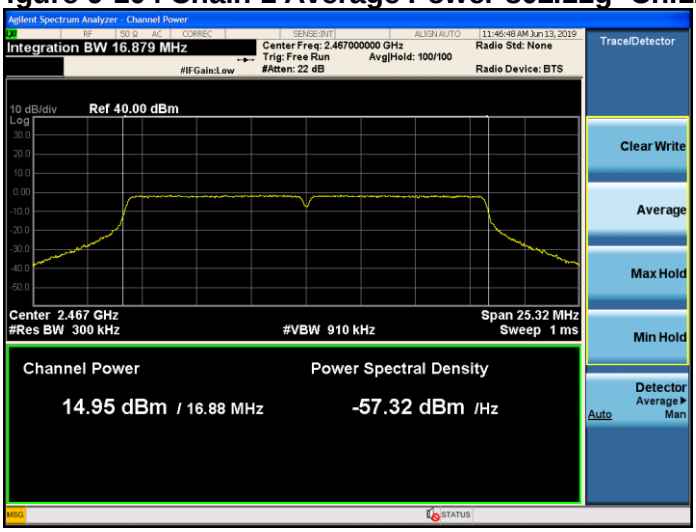

Figure 9-105 Chain 0 Average Power 802.11g- Ch.12

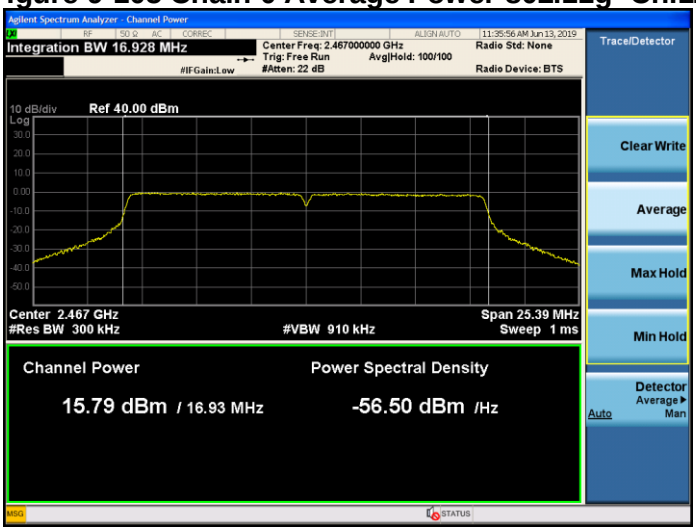

Figure 9-106 Chain 1 Average Power 802.11g- Ch.12

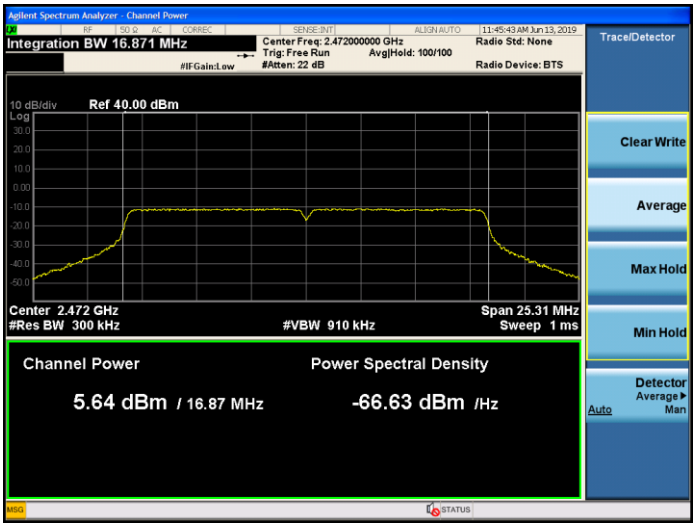

Figure 9-107 Chain 0 Average Power 802.11g- Ch.13

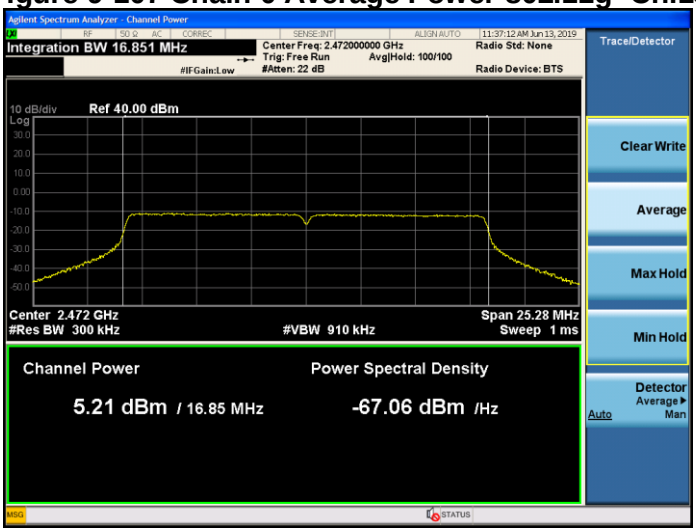

Figure 9-108 Chain 1 Average Power 802.11g- Ch.13

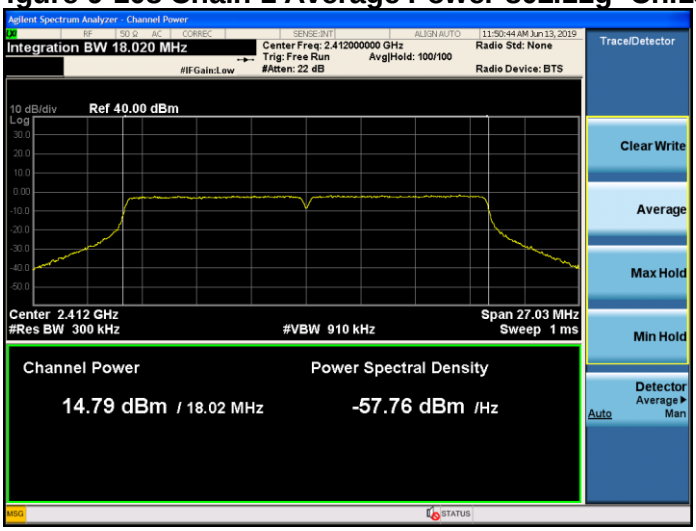

Figure 9-109 Chain 0 Average Power 802.11n20 - Ch.1

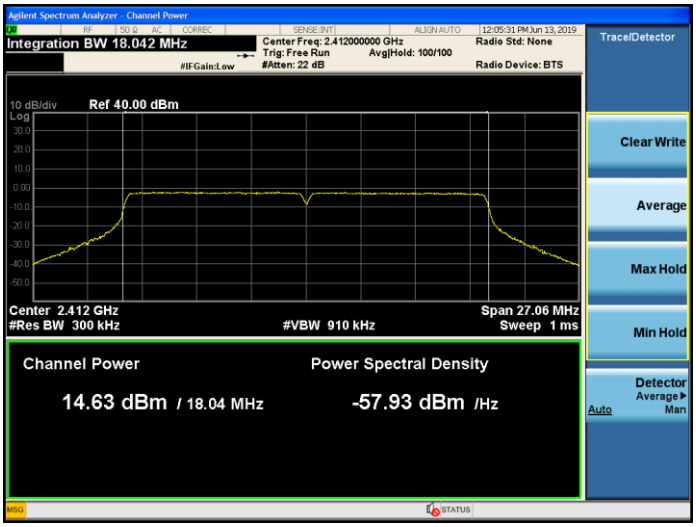

Figure 9-110 Chain 1 Average Power 802.11n20- Ch.1

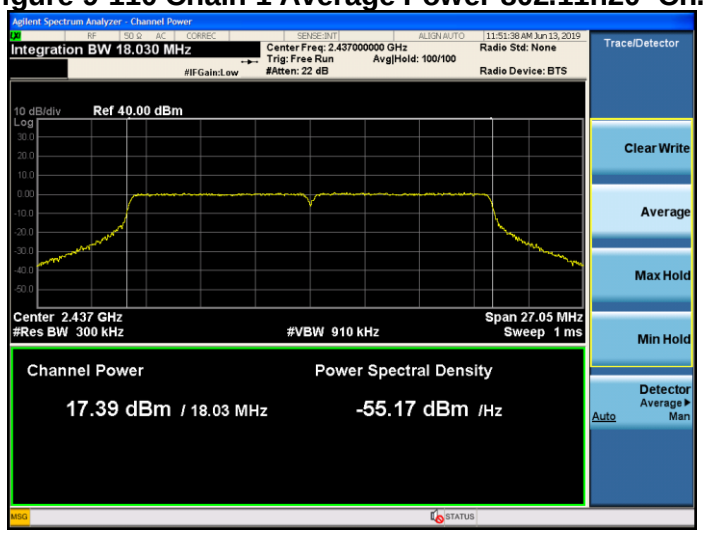

Figure 9-111 Chain 0 Average Power 802.11n20- Ch.6

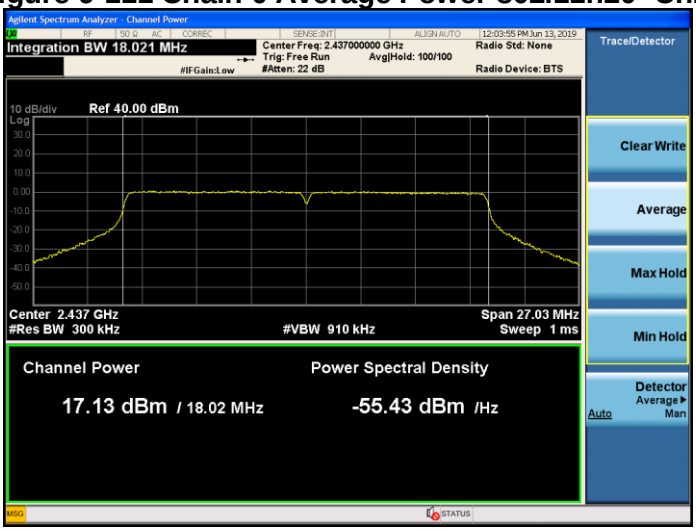

Figure 9-112 Chain 1 Average Power 802.11n20- Ch.6

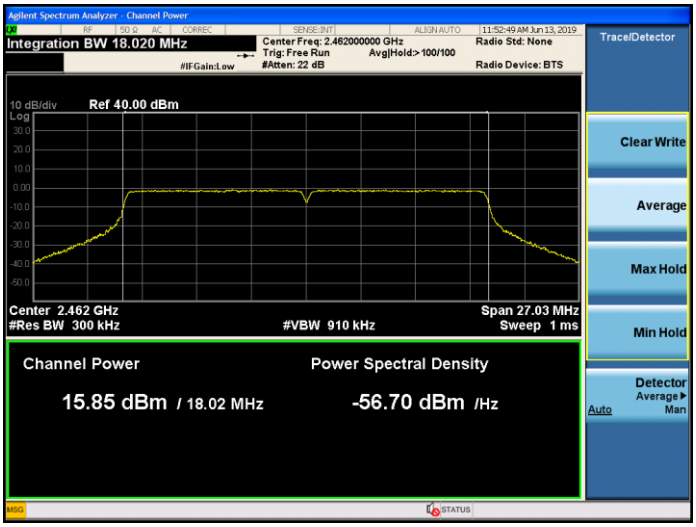

Figure 9-113 Chain 0 Average Power 802.11n20- Ch.11

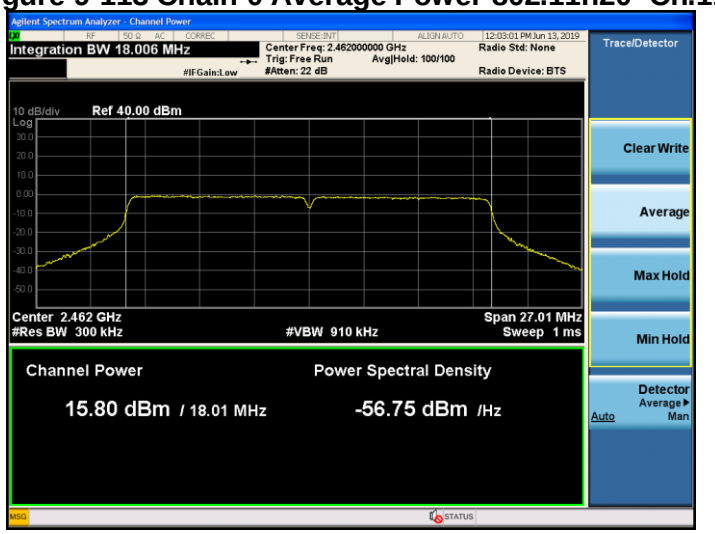

Figure 9-114 Chain 1 Average Power 802.11n20- Ch.11

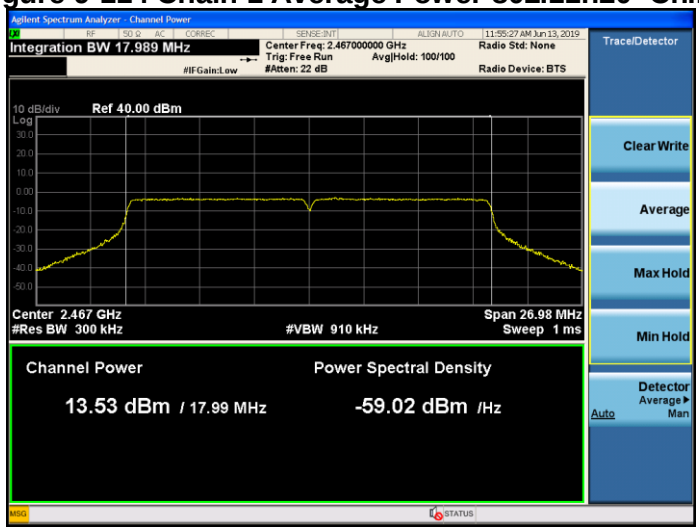

Figure 9-115 Chain 0 Average Power 802.11n20- Ch.12

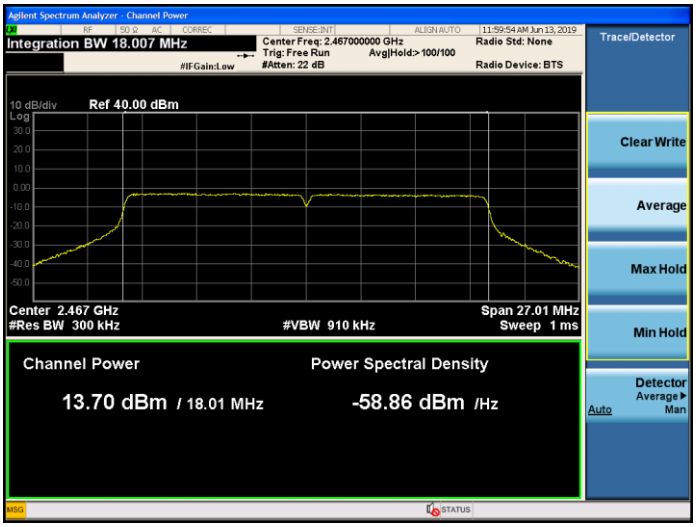

Figure 9-116 Chain 1 Average Power 802.11n20- Ch.12

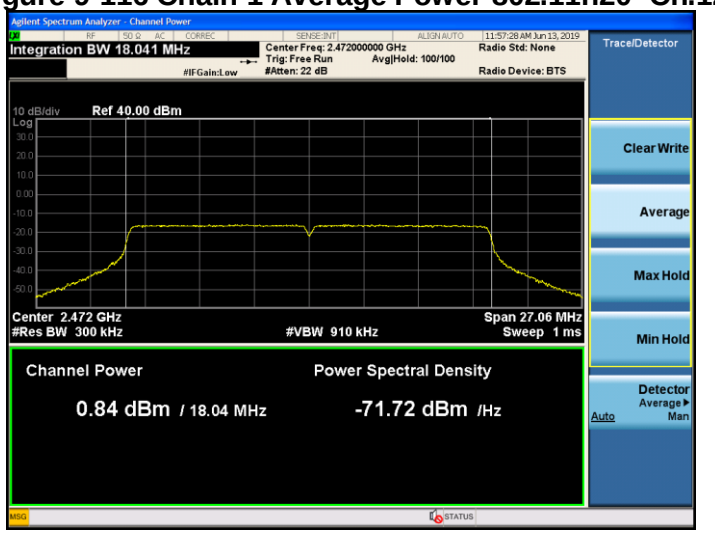

Figure 9-117 Chain 0 Average Power 802.11n20- Ch.13

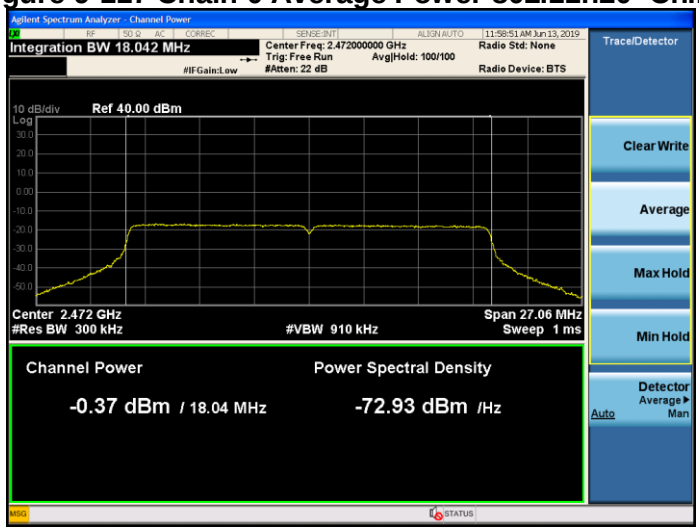

Figure 9-118 Chain 1 Average Power 802.11n20- Ch.13

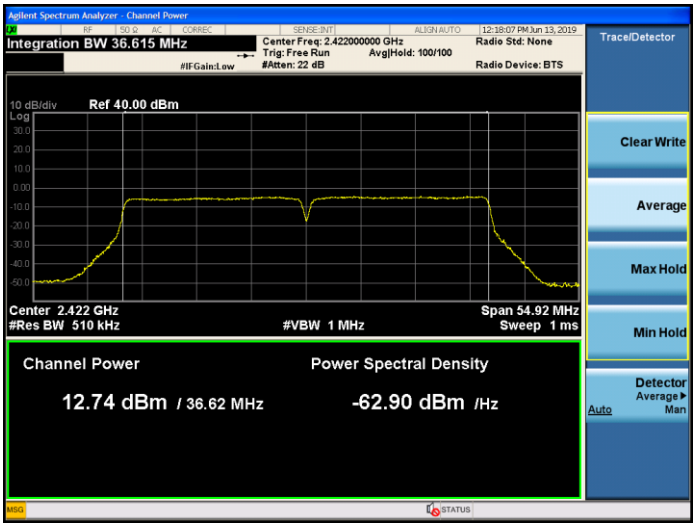

Figure 9-119 Chain 0 Average Power 802.11n40 - Ch.3

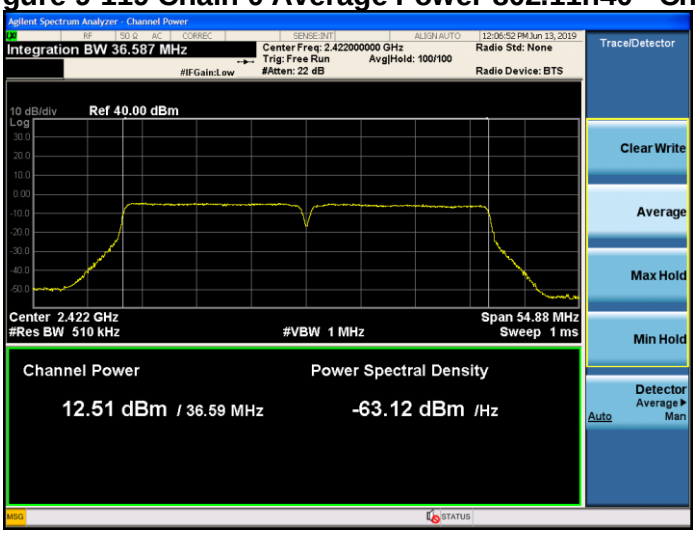

Figure 9-120 Chain 1 Average Power 802.11n40- Ch.3

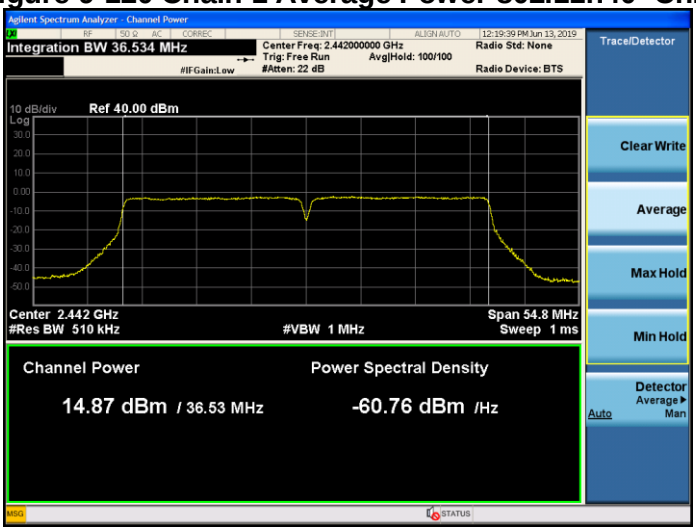

Figure 9-121 Chain 0 Average Power 802.11n40- Ch.7

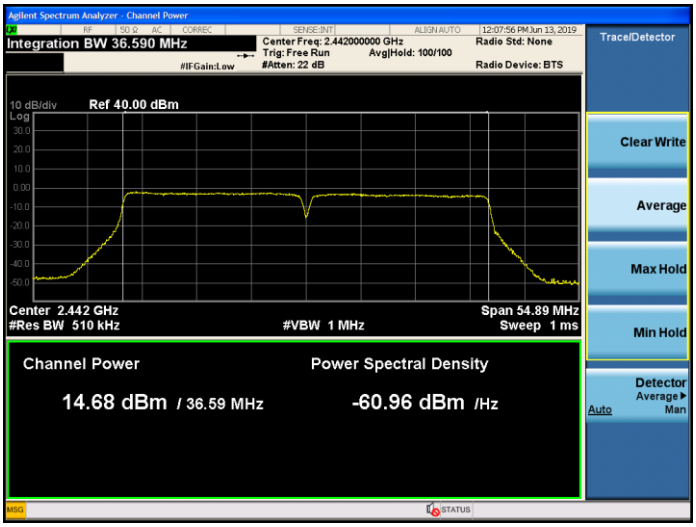

Figure 9-122 Chain 1 Average Power 802.11n40- Ch.7

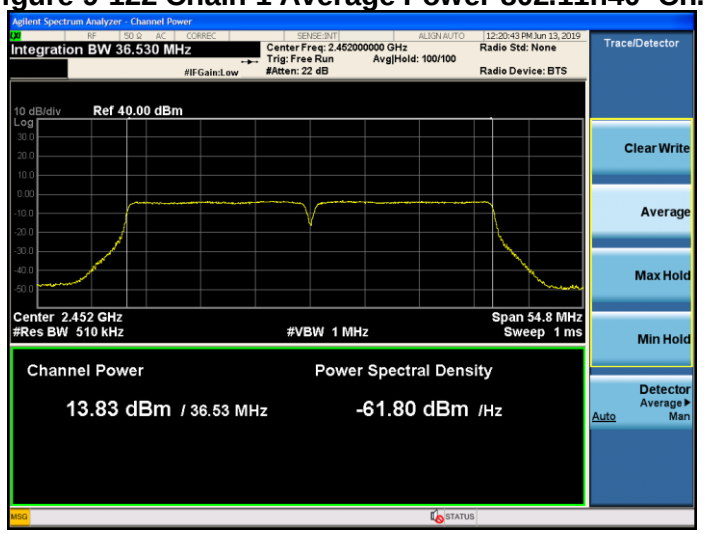

Figure 9-123 Chain 0 Average Power 802.11n40- Ch.9

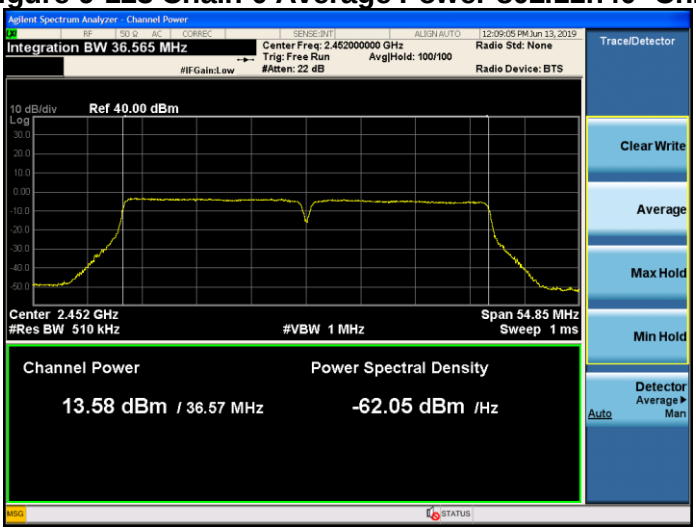

Figure 9-124 Chain 1 Average Power 802.11n40- Ch.9

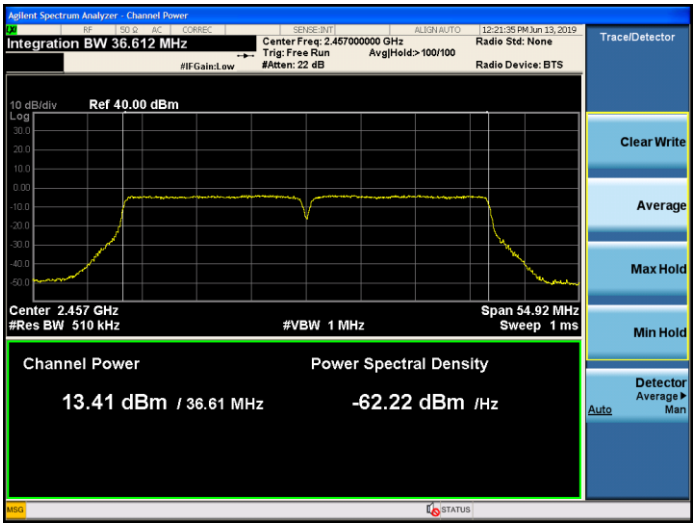

Figure 9-125 Chain 0 Average Power 802.11n40- Ch.10

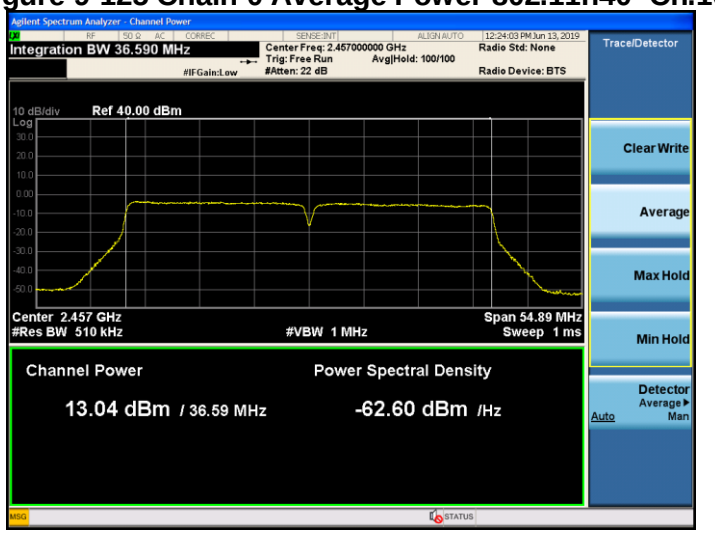

Figure 9-126 Chain 1 Average Power 802.11n40- Ch.10

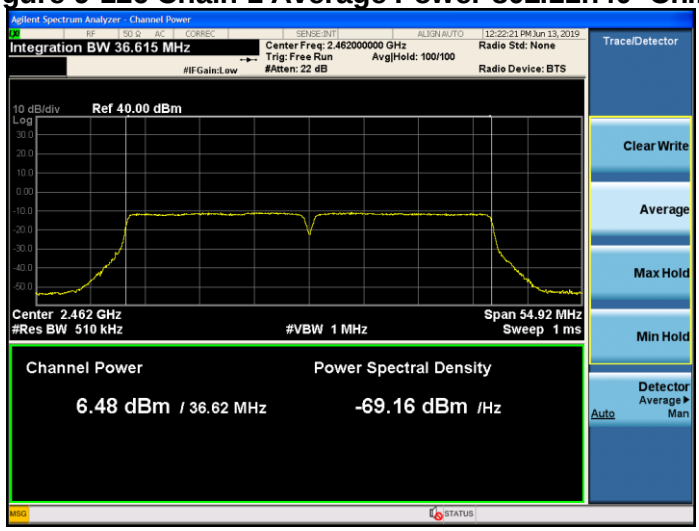

Figure 9-127 Chain 0 Average Power 802.11n40- Ch.11

Figure 9-128 Chain 1 Average Power 802.11n40- Ch.11

9.5 Power Spectral Density

9.5.1 Test Requirement:

FCC CFR 47 Rule Part 15.247 (e)
ISED RSS-247 Issue 1 [5.2]

9.5.2 Test Method:

Measurements were performed according to the procedure defined in KDB 558074- Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 V05 and ANSI C63.10: 2013.

Spectrum Analyzer settings:
Set analyzer center frequency to DTS channel center frequency.
Span to 1.5 times the DTS bandwidth
RBW: 3 kHz ≤ RBW ≤ 100 kHz
VBW ≥ 3 RBW
Detector = Peak
Sweep time = auto couple
Trace mode = max hold
Use the peak marker function to determine the maximum amplitude level within the RBW
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

9.5.3 Sample Calculation:

For MIMO, the total average PSD is calculated as follows,

Total PSD=10*LOG ((10^ (PSD $_{(Chain\ 0)}$/10) +10^ (PSD $_{(Chain\ 1)}$/10)

For e.g. Total PSD= 10* LOG (10^ (3.41/10) +10^ (2.41/10)) = 5.94dBm/100kHz

9.5.4 Limits:

The maximum permissible power density is 8 dBm/3kHz, however if the antenna gain is >6dBi, the limit is reduced by the total Directional Antenna Gain –6dBi.

In this case:

Correlated Directional gain = 6.02dBi.

Test limits are adjusted to 7.98dBm/3kHz here.

9.5.5 Test Results:

802.11 mode	Frequency (MHz)	Chain 0 Power Spectral Density (dBm/100kHz)	Chain 1 Power Spectral Density (dBm/100kHz)	Total Power Spectral Density (dBm/100kHz)	Limit (dBm/3kHz)	Pass/Fail
b	2412	3.41	2.41	5.95	7.98	Pass
b	2437	3.03	3.35	6.21	7.98	Pass
b	2462	3.51	2.97	6.26	7.98	Pass
b	2467	3.23	2.97	6.11	7.98	Pass
b	2472	2.25	2.21	5.24	7.98	Pass
g	2412	-1.31	-1.29	1.71	7.98	Pass
g	2437	-1.32	-1.37	1.67	7.98	Pass
g	2462	-2.13	-1.79	1.05	7.98	Pass
g	2467	-1.27	-0.82	1.97	7.98	Pass
g	2472	-14.43	-14.89	-11.64	7.98	Pass
n20	2412	-4.41	-4.97	-1.67	7.98	Pass
n20	2417	-3.59	-3.67	-0.62	7.98	Pass
n20	2462	-4.18	-3.62	-0.88	7.98	Pass
n20	2467	-4.52	-4.39	-1.45	7.98	Pass
n20	2472	-18.73	-18.25	-15.47	7.98	Pass
n40	2422	-9.23	-9.41	-6.31	7.98	Pass
n40	2442	-4.70	-4.45	-1.56	7.98	Pass
n40	2452	-5.03	-4.69	-1.84	7.98	Pass
n40	2457	-4.70	-4.42	-1.55	7.98	Pass
n40	2462	-15.38	-15.42	-12.39	7.98	Pass

The test data shows that the EUT passes the requirement using 100kHz RBW setting and hence will meet the requirement for 3kHz BW.

9.5.6 Test Data:

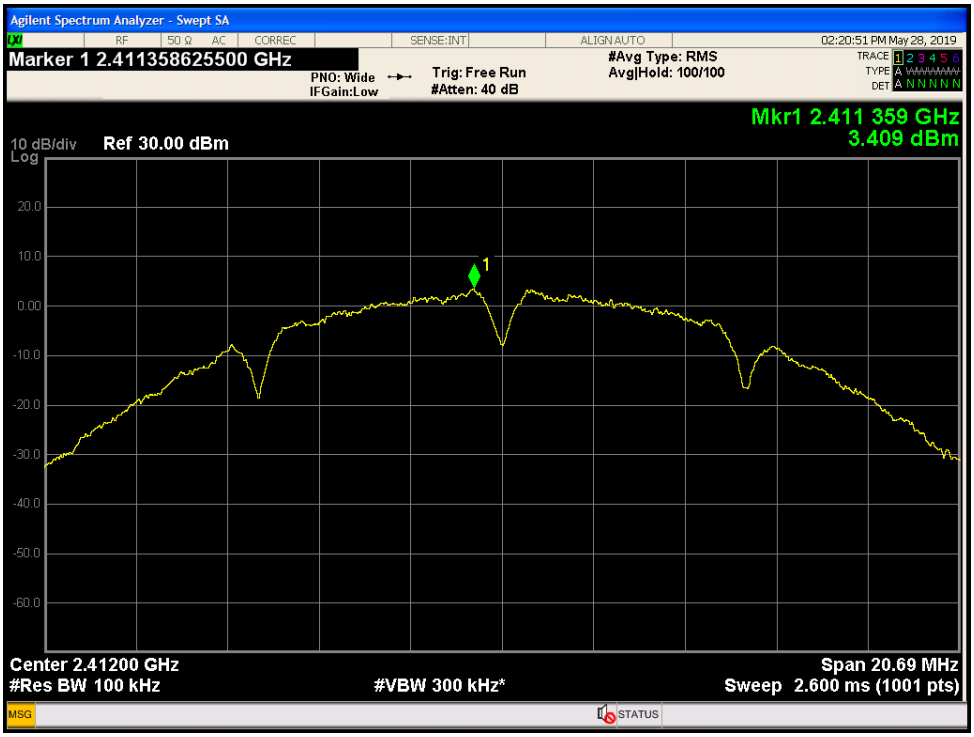

Figure 9-129 Chain 0 Average Power Spectral Density 802.11b - Ch.1

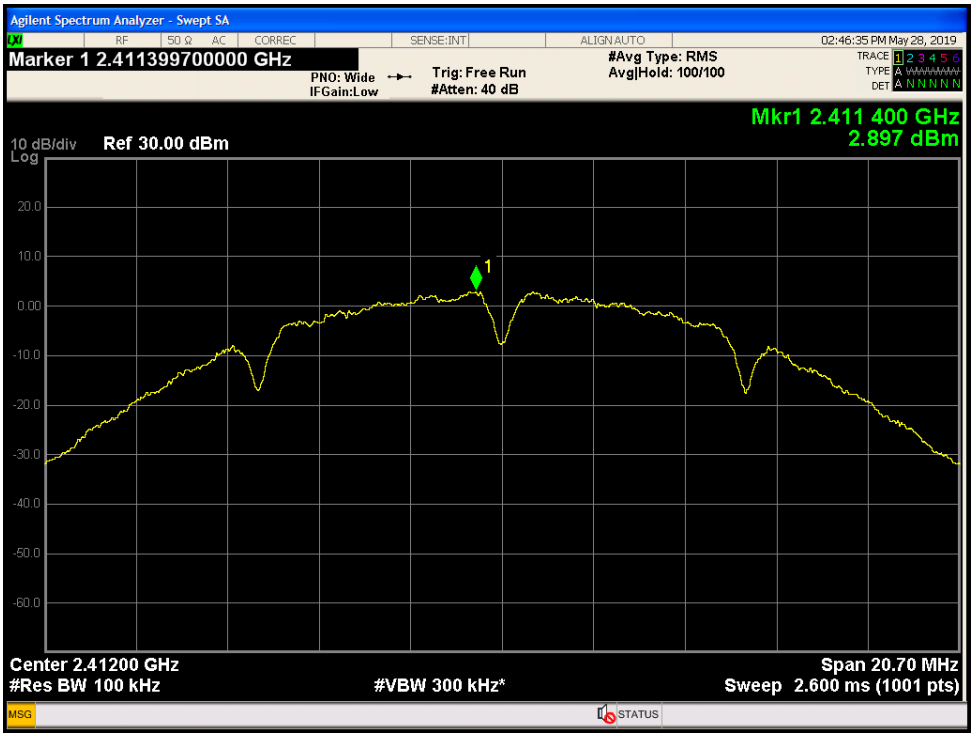

Figure 9-130 Chain 1 Average Power Spectral Density 802.11b - Ch.1

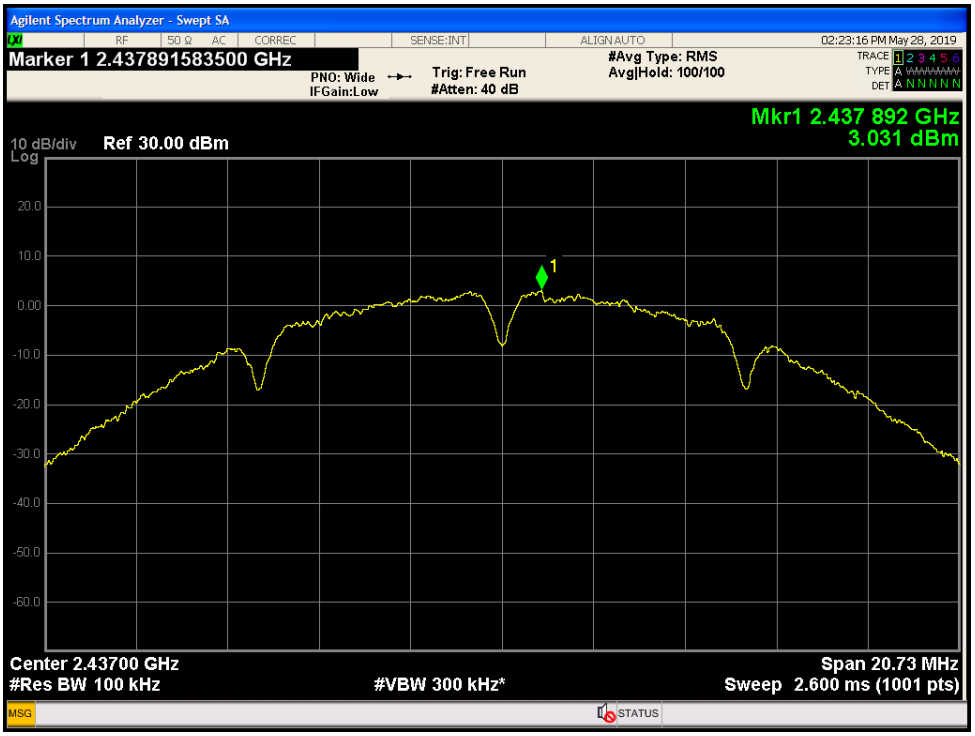

Figure 9-131 Chain 0 Average Power Spectral Density 802.11b - Ch.6

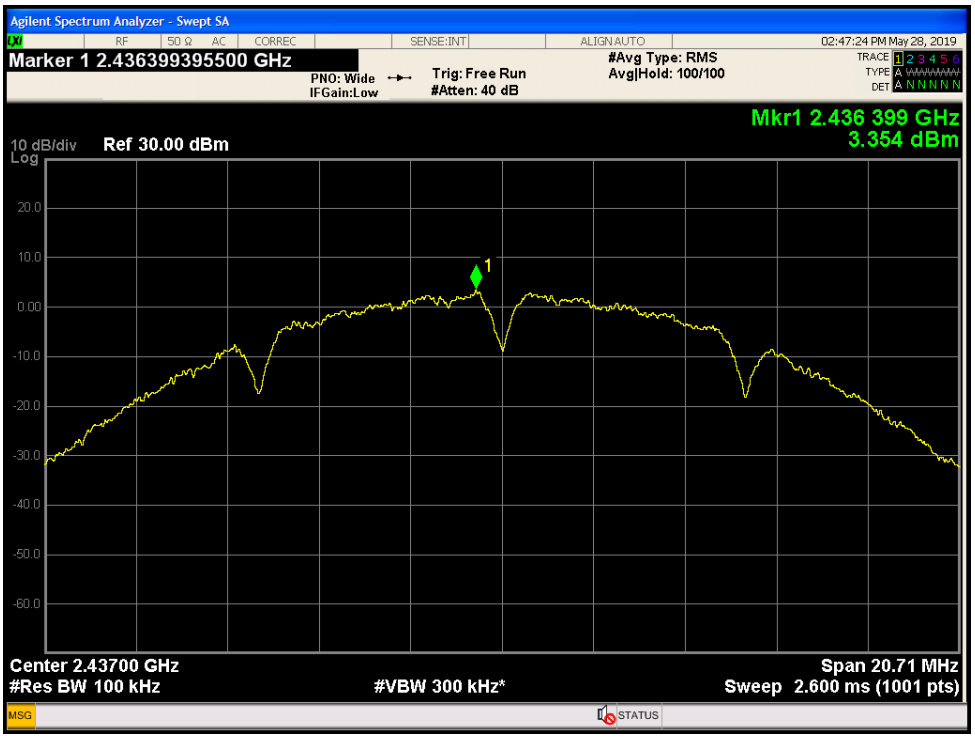

Figure 9-132 Chain 1 Average Power Spectral Density 802.11b - Ch.6

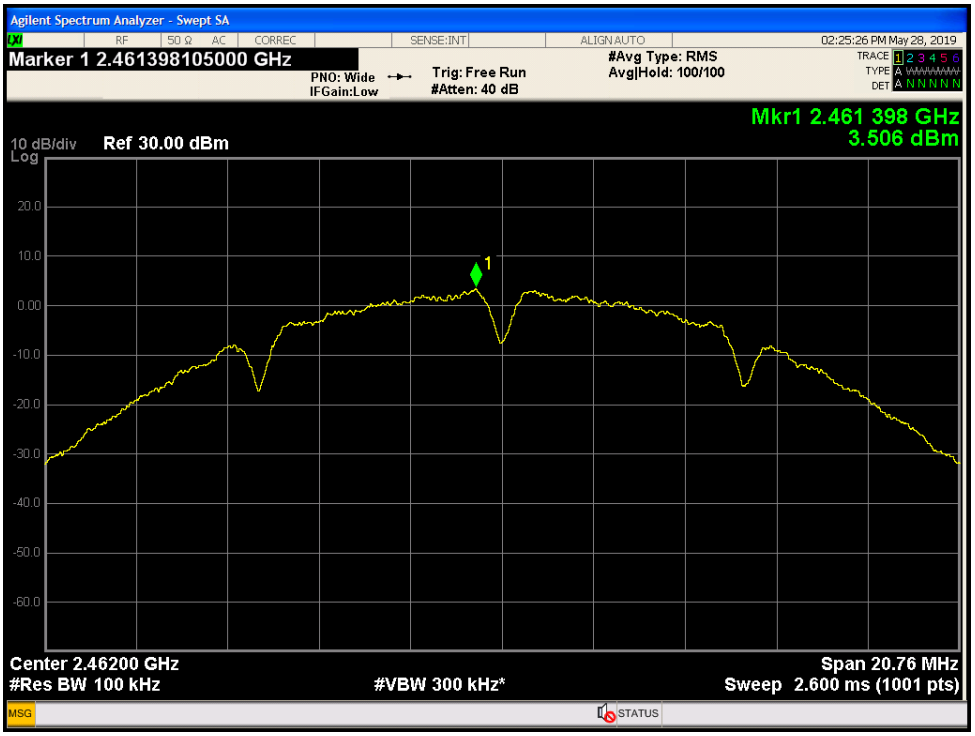

Figure 9-133 Chain 0 Average Power Spectral Density 802.11b - Ch.11

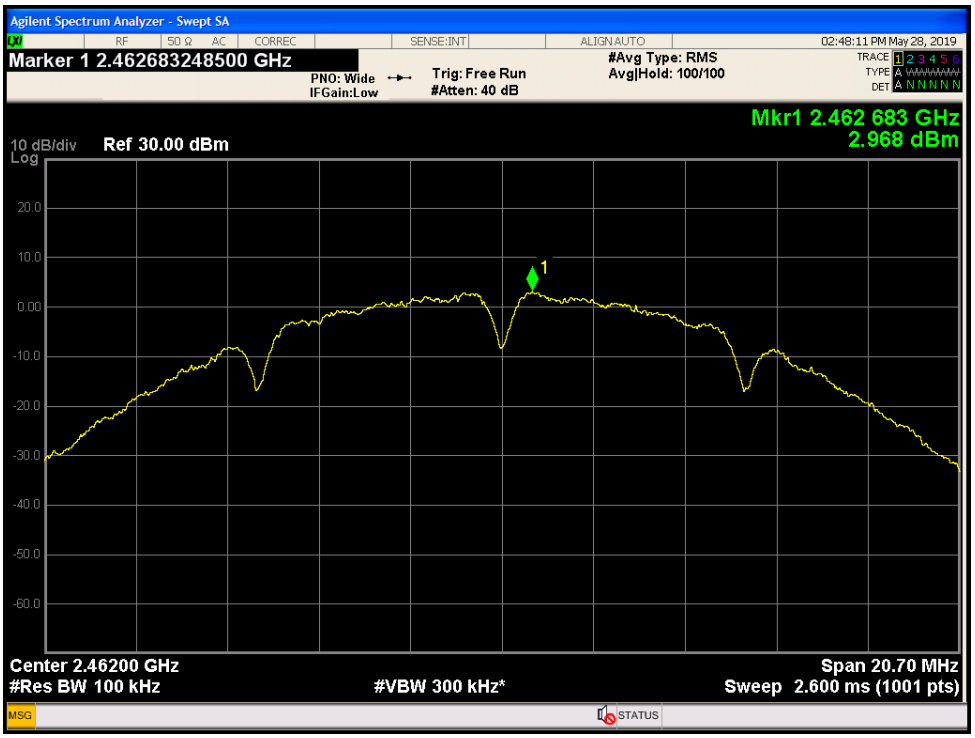

Figure 9-134 Chain 1 Average Power Spectral Density 802.11b - Ch.11

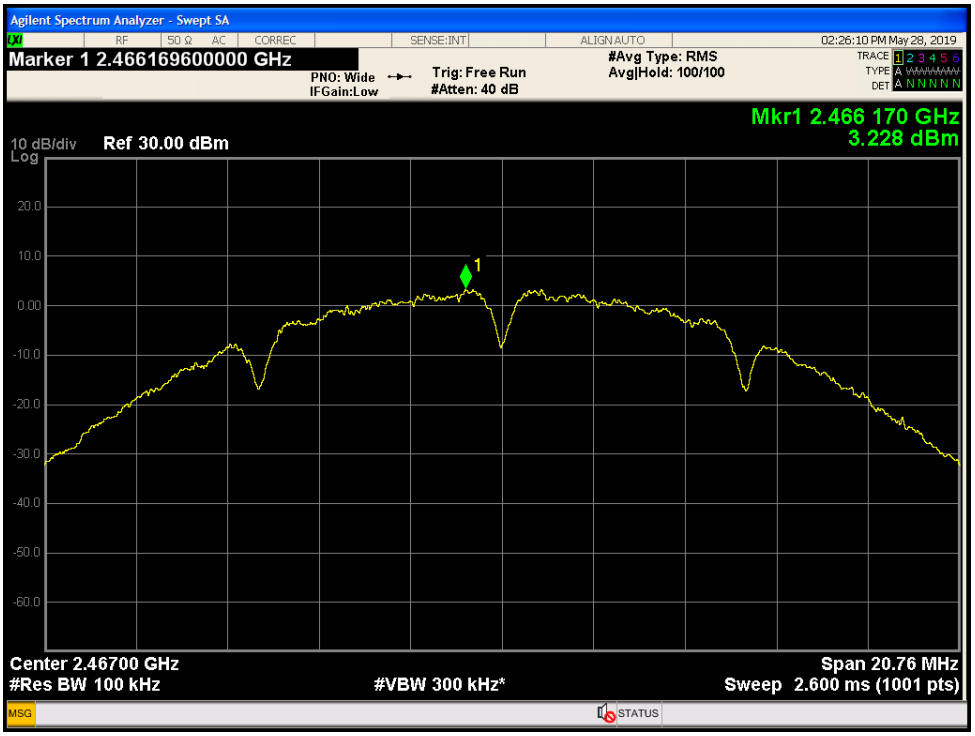

Figure 9-135 Chain 0 Average Power Spectral Density 802.11b - Ch.12

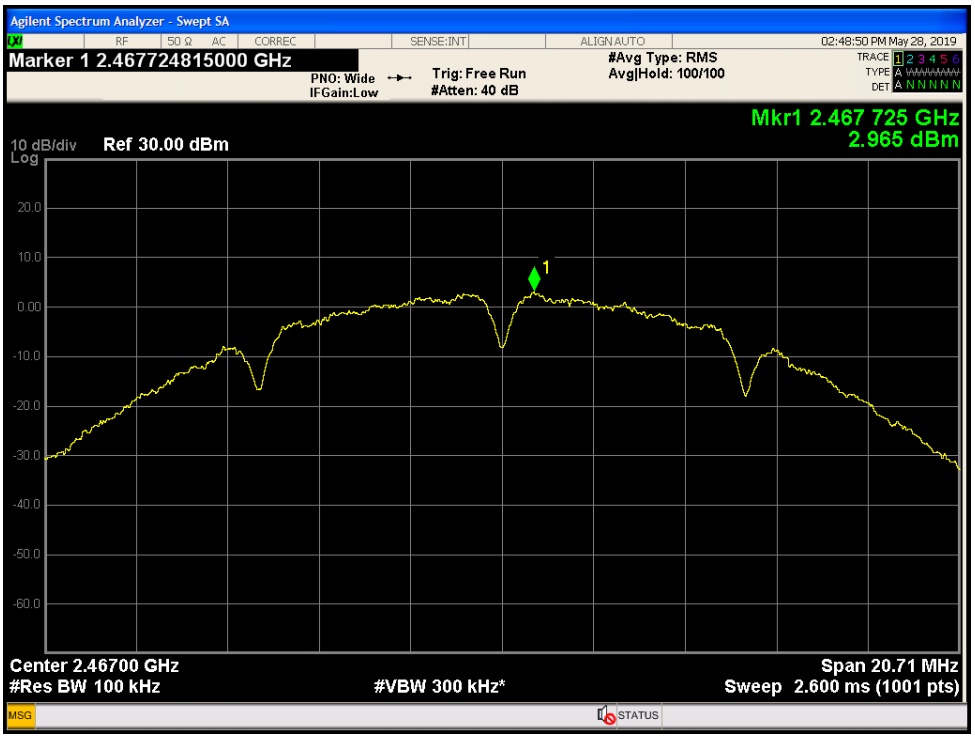

Figure 9-136 Chain 1 Average Power Spectral Density 802.11b- Ch.12

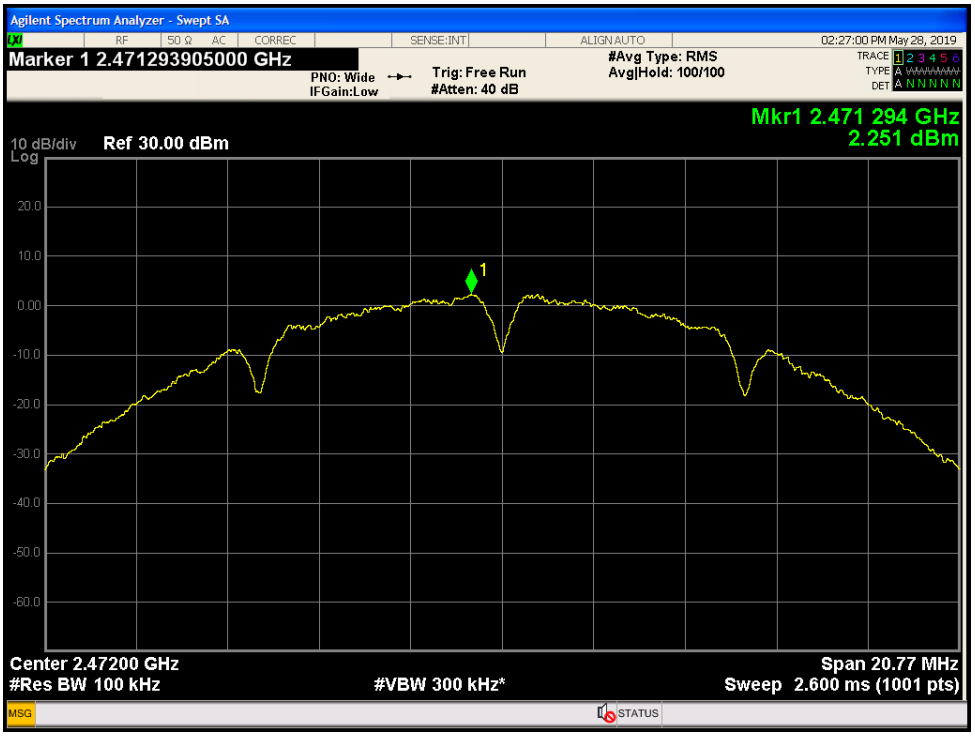

Figure 9-137 Chain 0 Average Power Spectral Density 802.11b - Ch.13

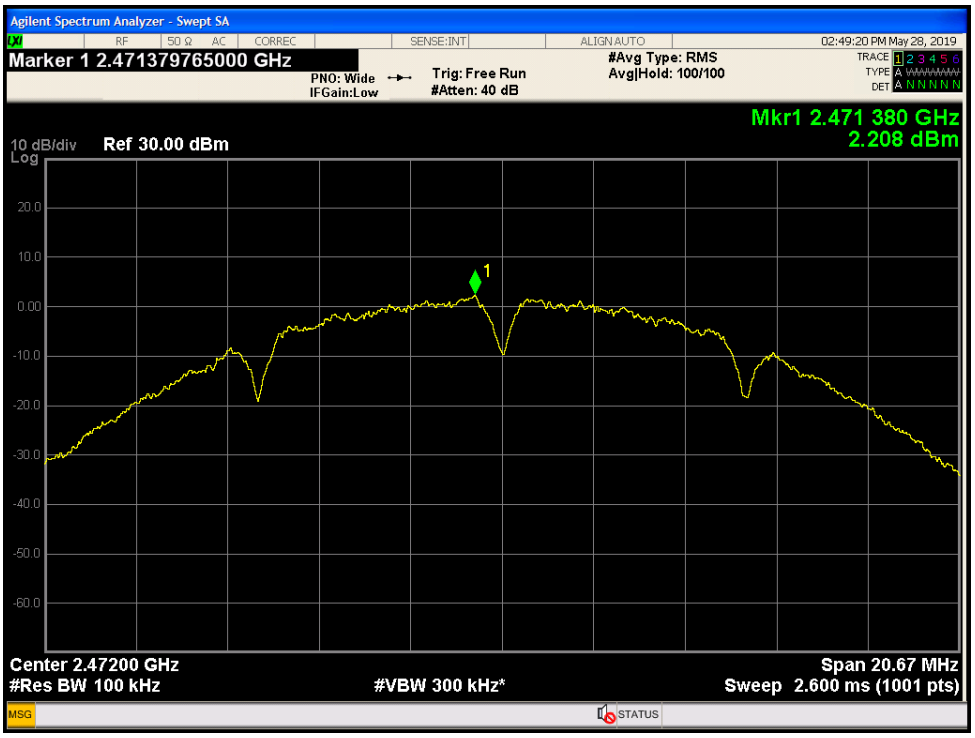

Figure 9-138 Chain 1 Average Power Spectral Density 802.11b- Ch.13

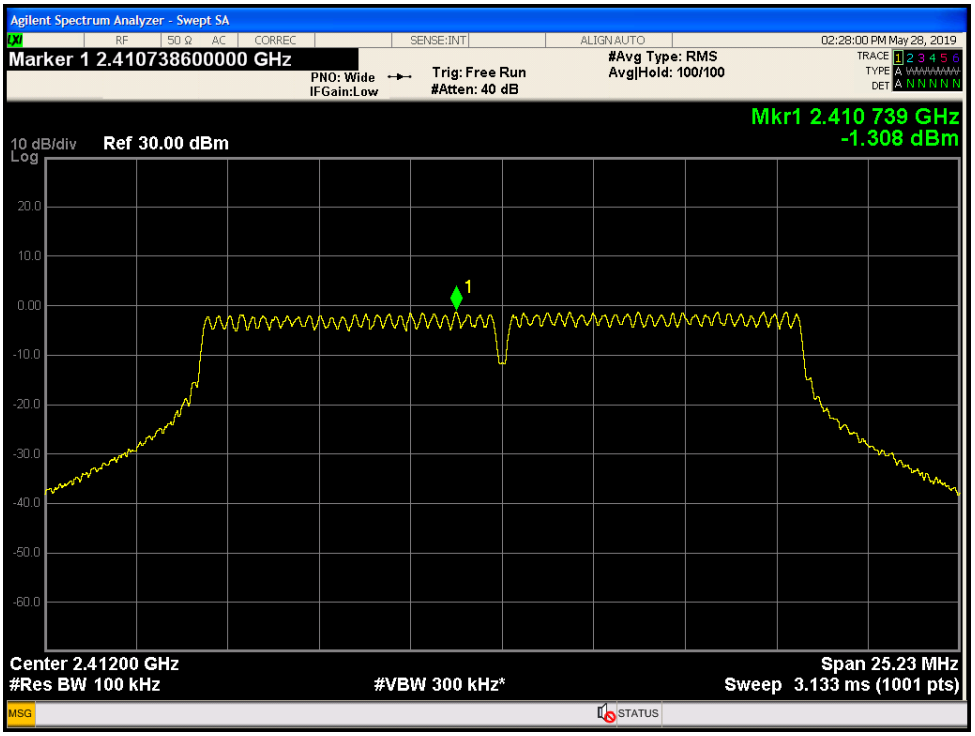

Figure 9-139 Chain 0 Average Power Spectral Density 802.11g - Ch.1

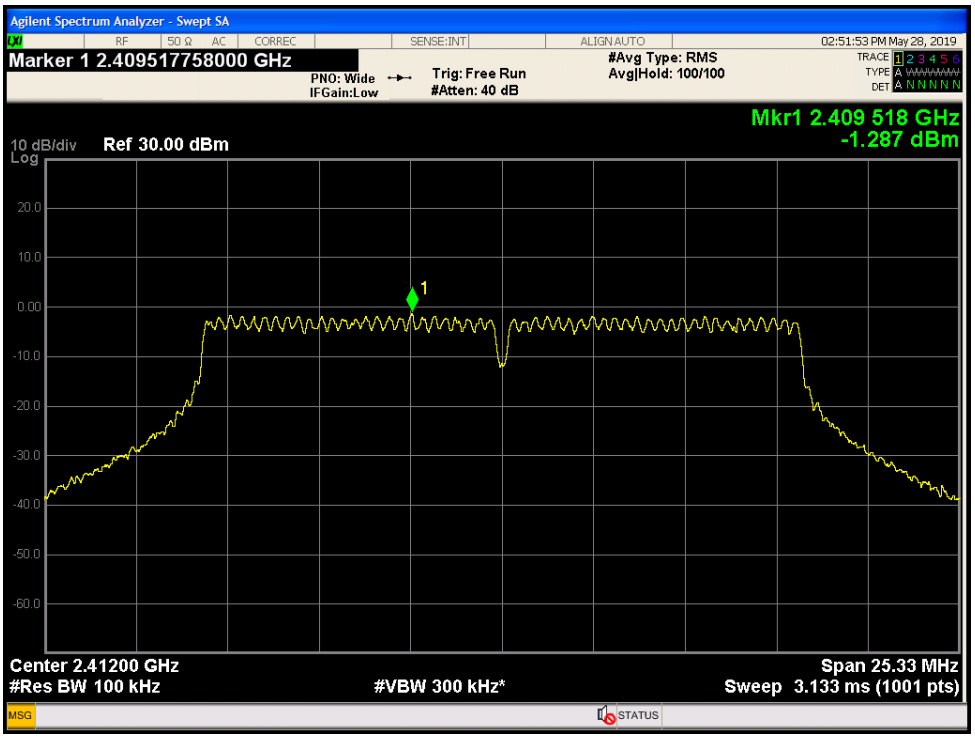

Figure 9-140 Chain 1 Average Power Spectral Density 802.11g - Ch.1

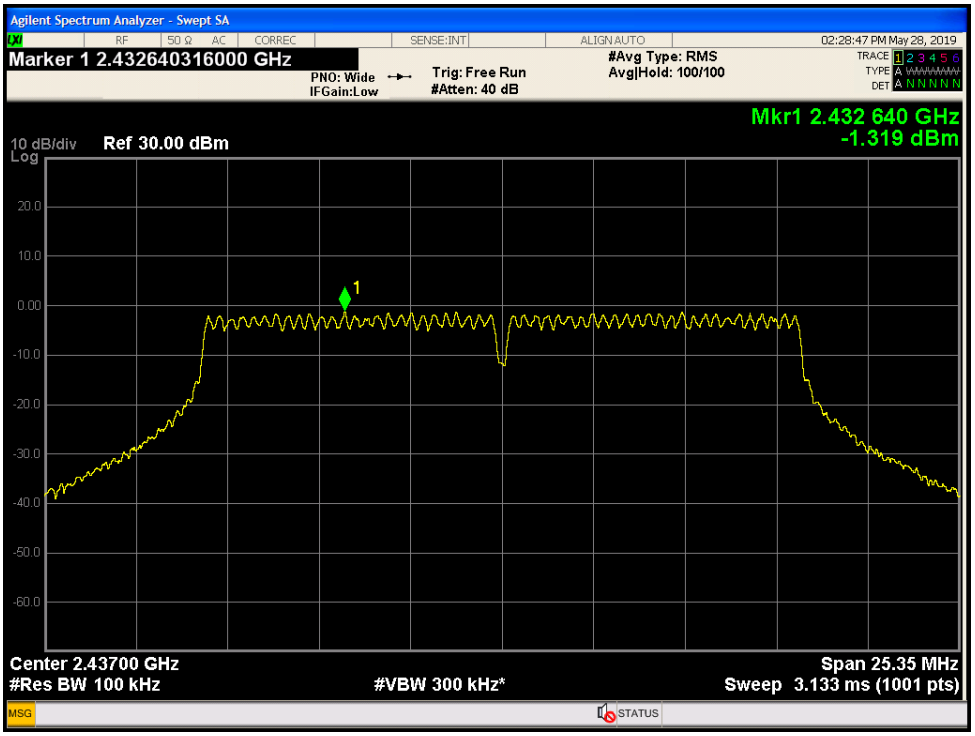

Figure 9-141 Chain 0 Average Power Spectral Density 802.11g - Ch.6

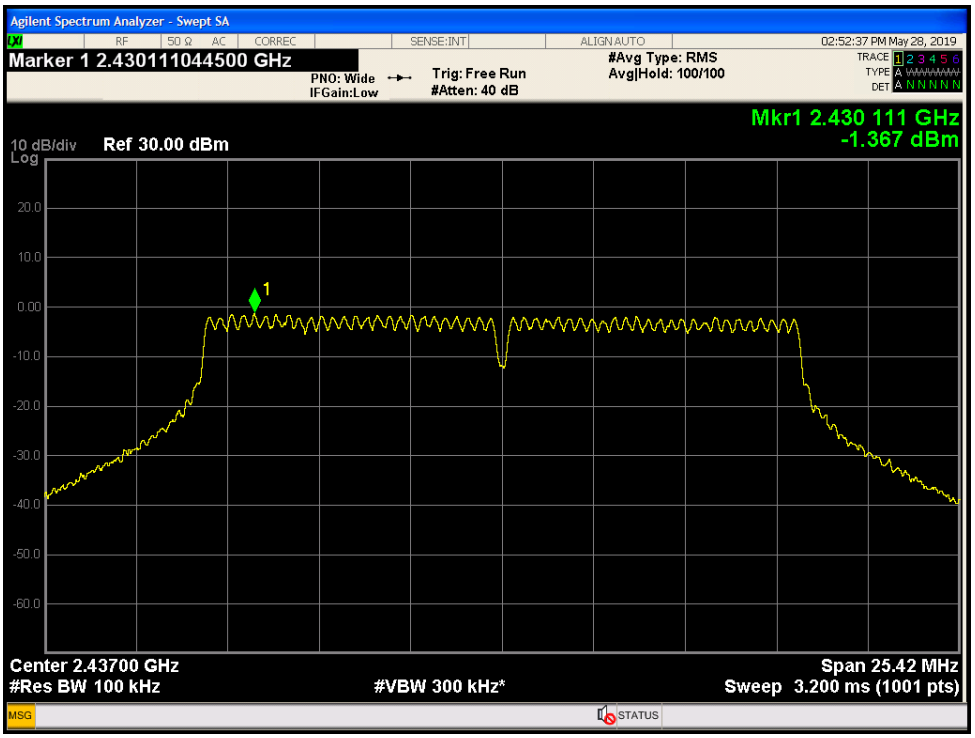

Figure 9-142 Chain 1 Average Power Spectral Density 802.11g - Ch.6

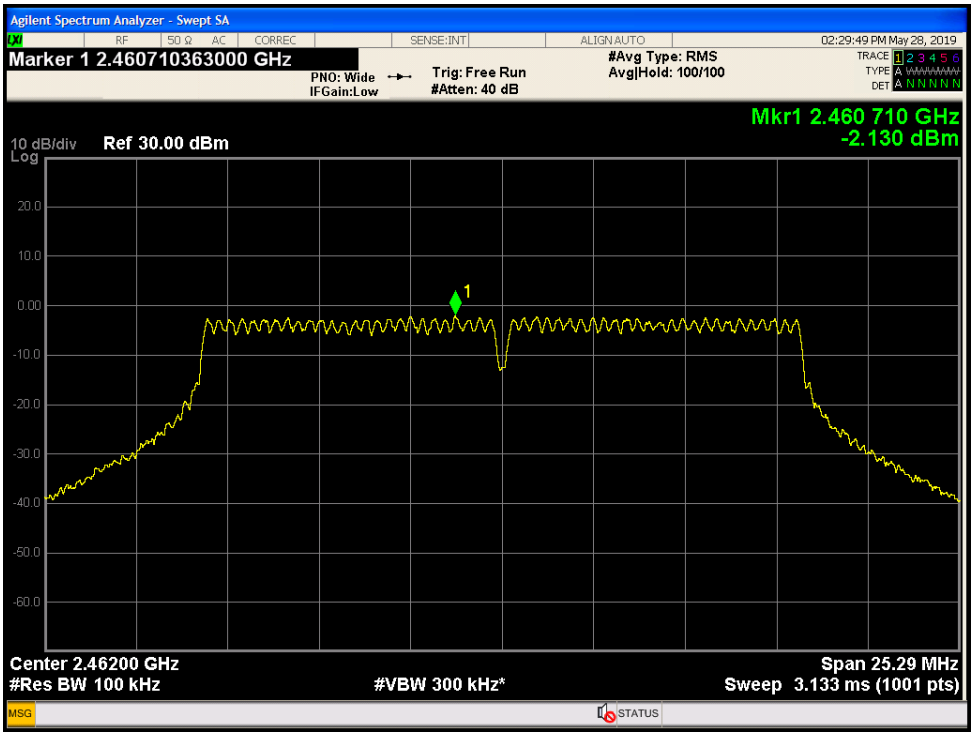

Figure 9-143 Chain 0 Average Power Spectral Density 802.11g - Ch.11

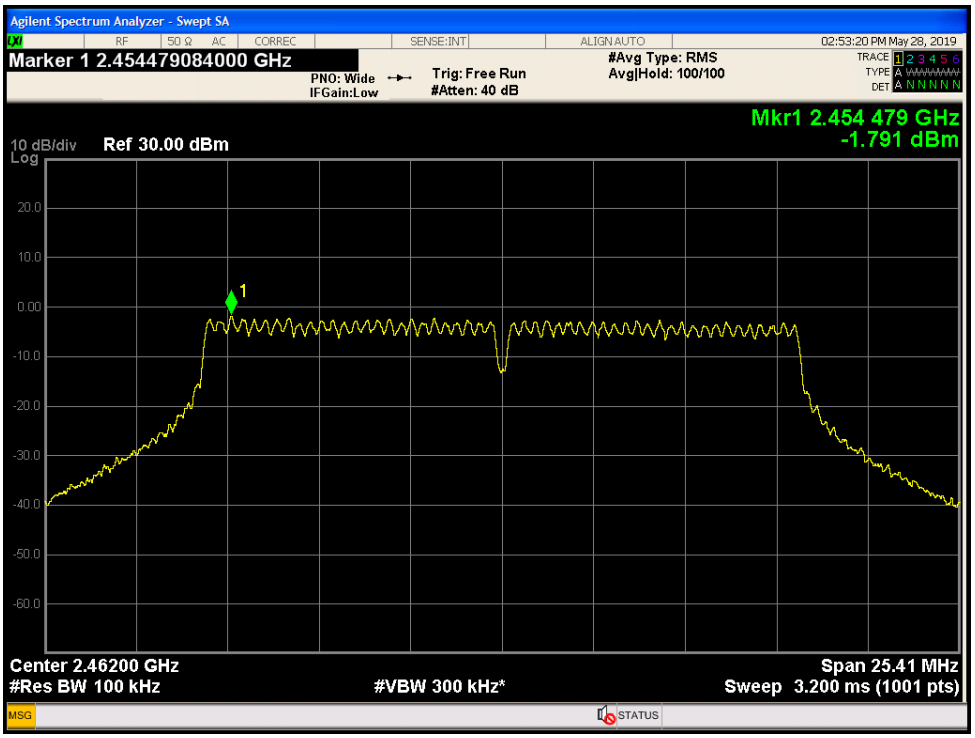

Figure 9-144 Chain 1 Average Power Spectral Density 802.11g - Ch.11

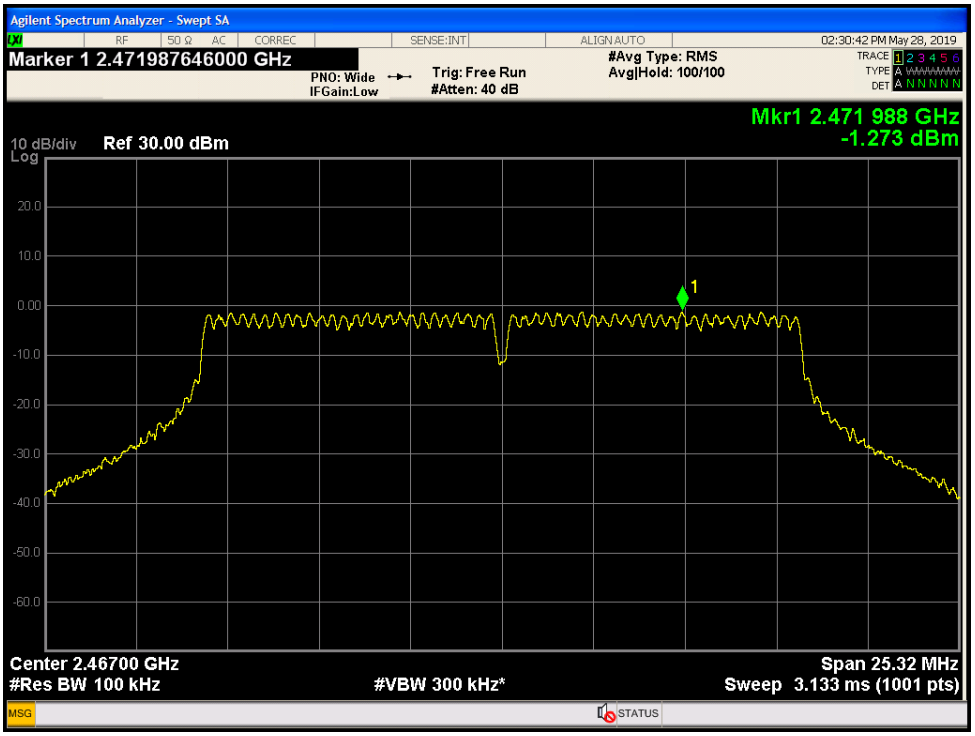

Figure 9-145 Chain 0 Average Power Spectral Density 802.11g - Ch.12

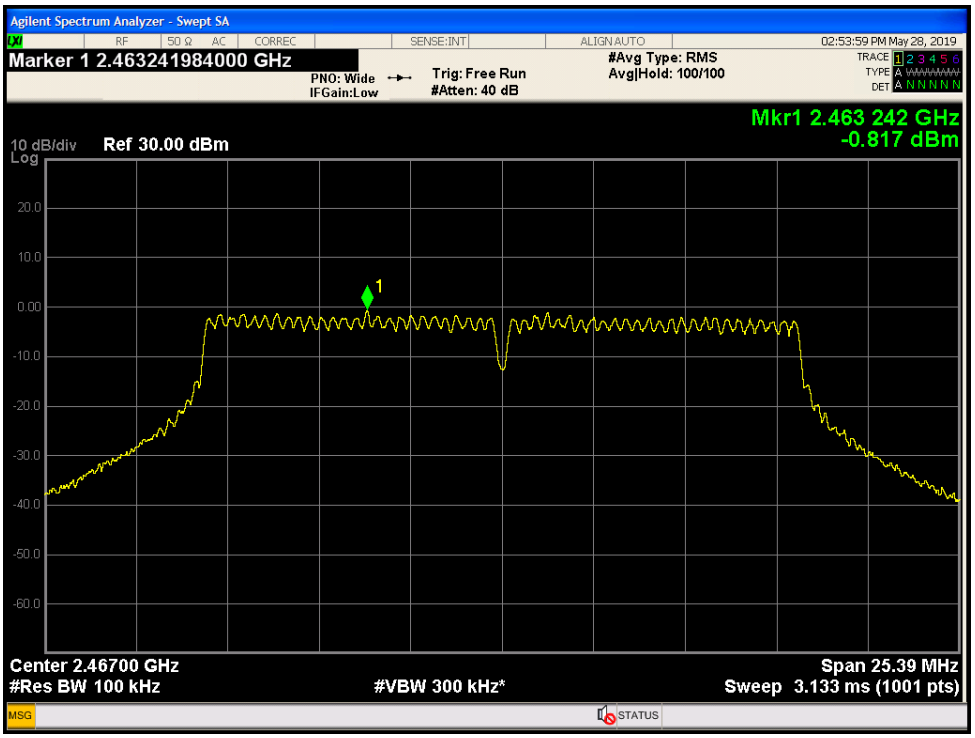

Figure 9-146 Chain 1 Average Power Spectral Density 802.11g- Ch.12

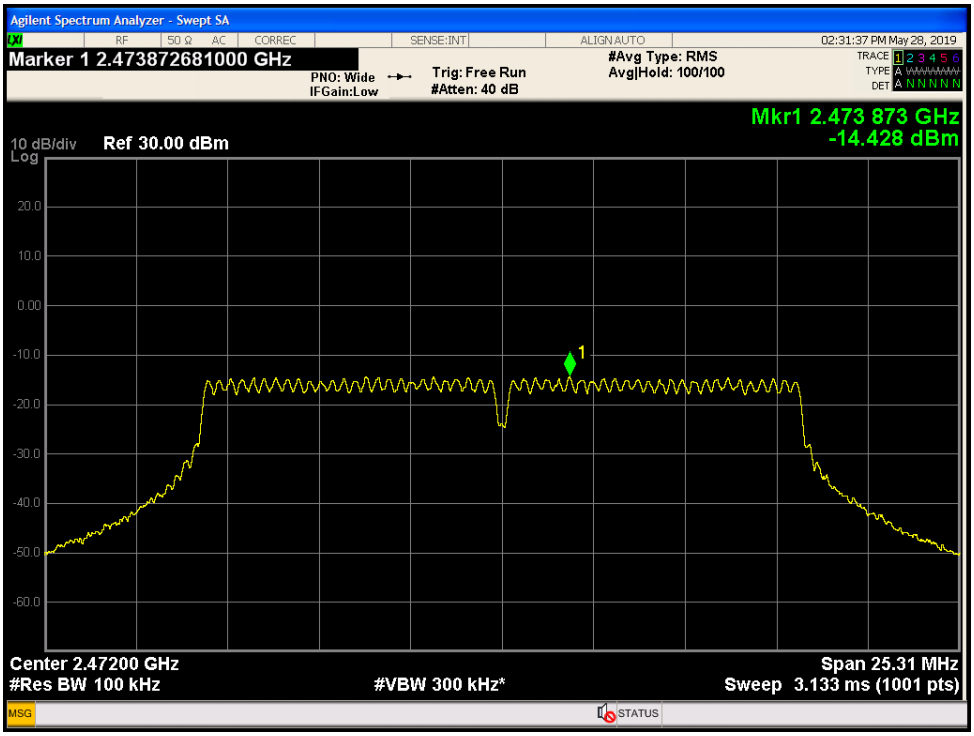

Figure 9-147 Chain 0 Average Power Spectral Density 802.11g- Ch.13

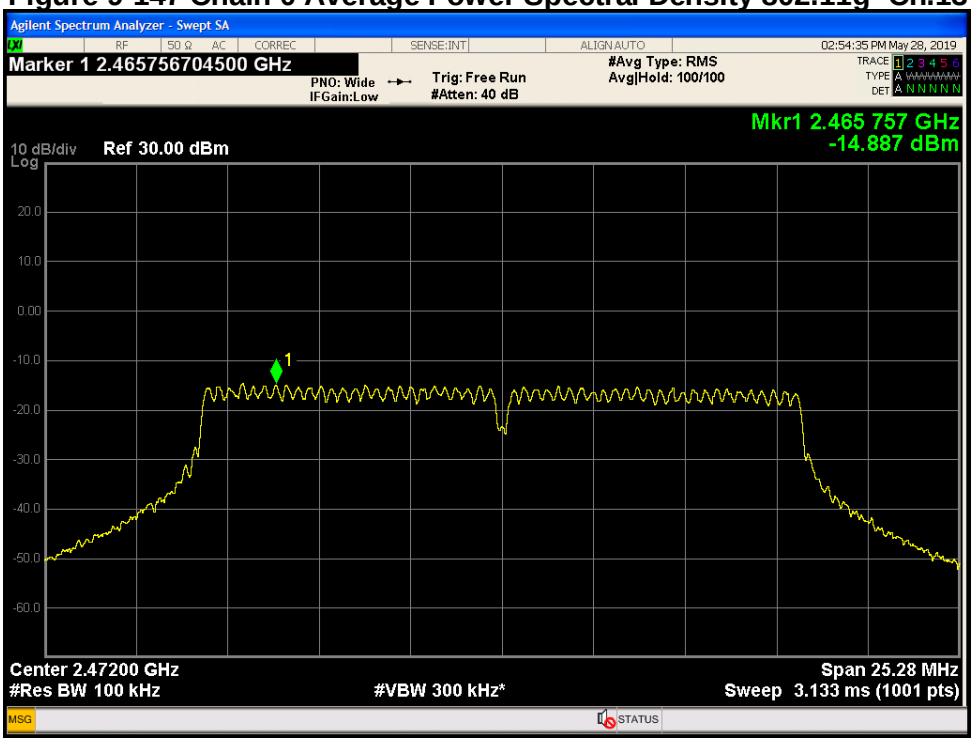

Figure 9-148 Chain 1 Average Power Spectral Density 802.11g- Ch.13

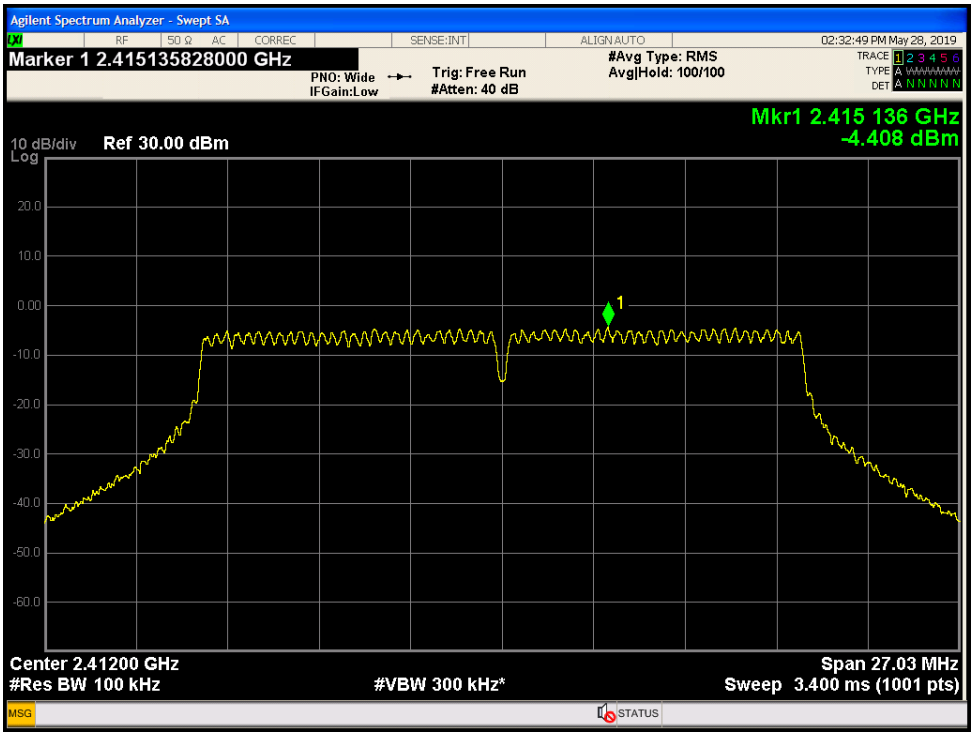

Figure 9-149 Chain 0 Average Power Spectral Density 802.11n20- Ch.1

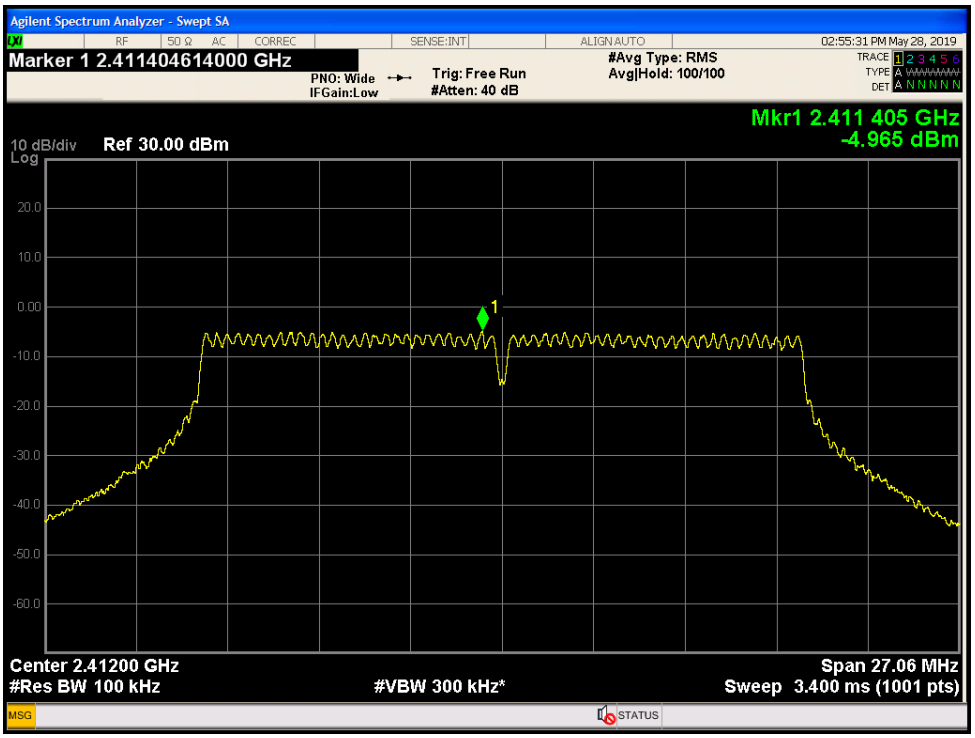

Figure 9-150 Chain 1 Average Power Spectral Density 802.11n20- Ch.1

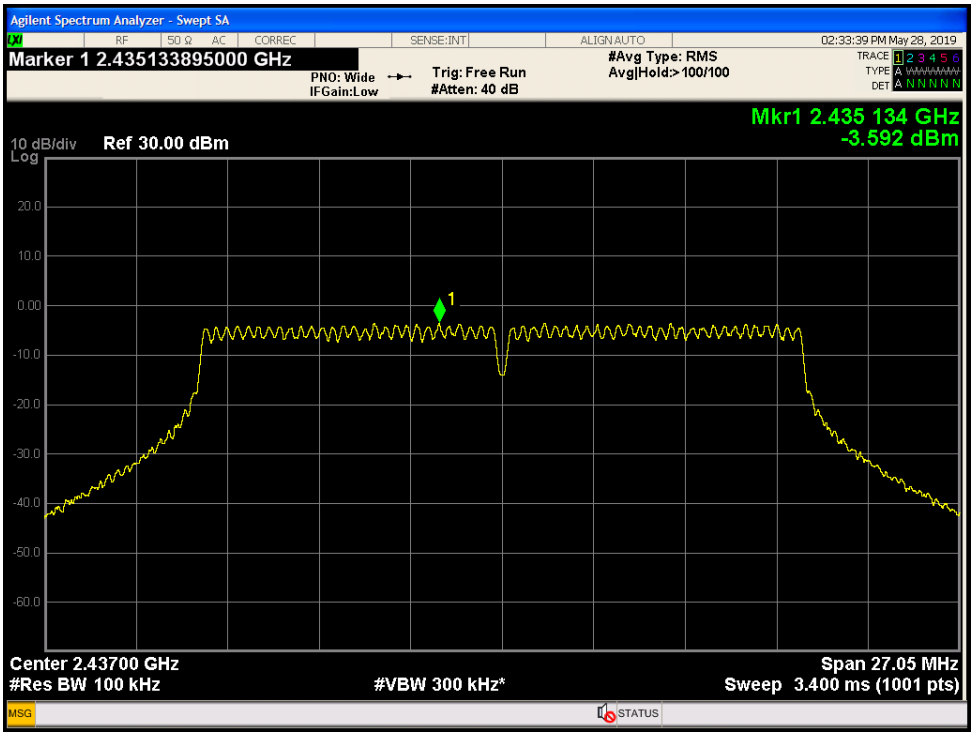

Figure 9-151 Chain 0 Average Power Spectral Density 802.11n20- Ch.6

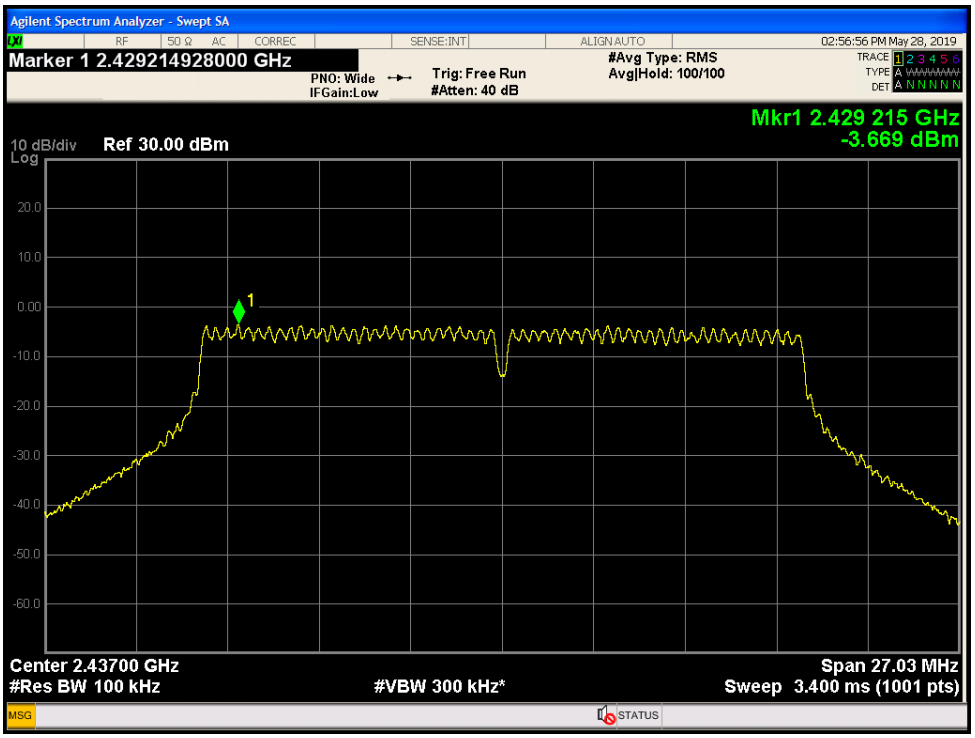

Figure 9-152 Chain 1 Average Power Spectral Density 802.11n20- Ch.6

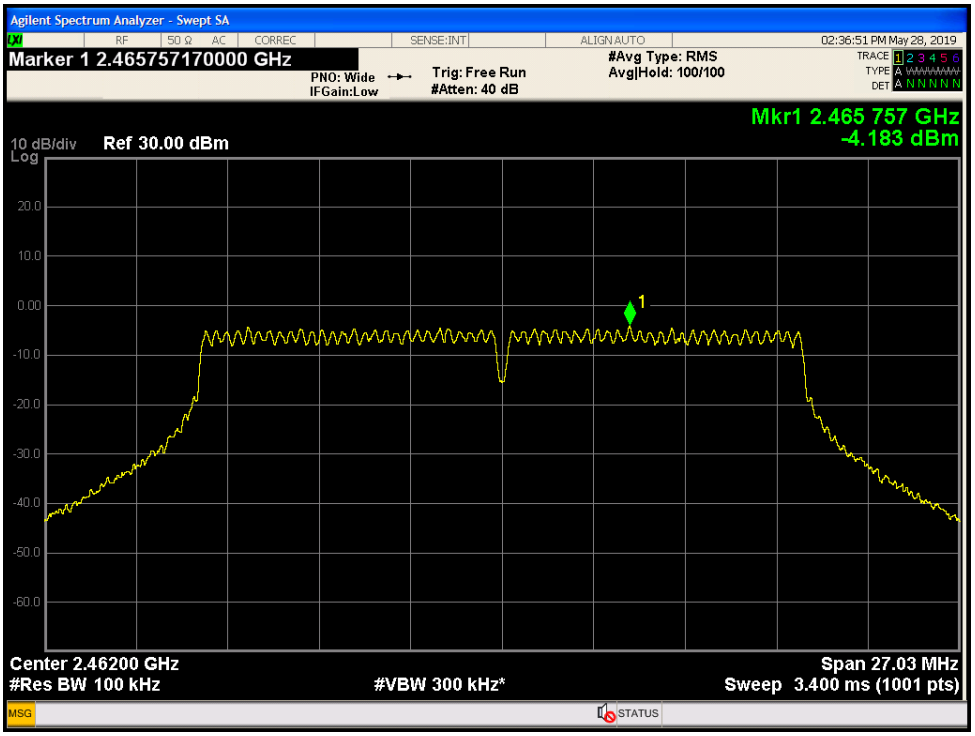

Figure 9-153 Chain 0 Average Power Spectral Density 802.11n20- Ch.11

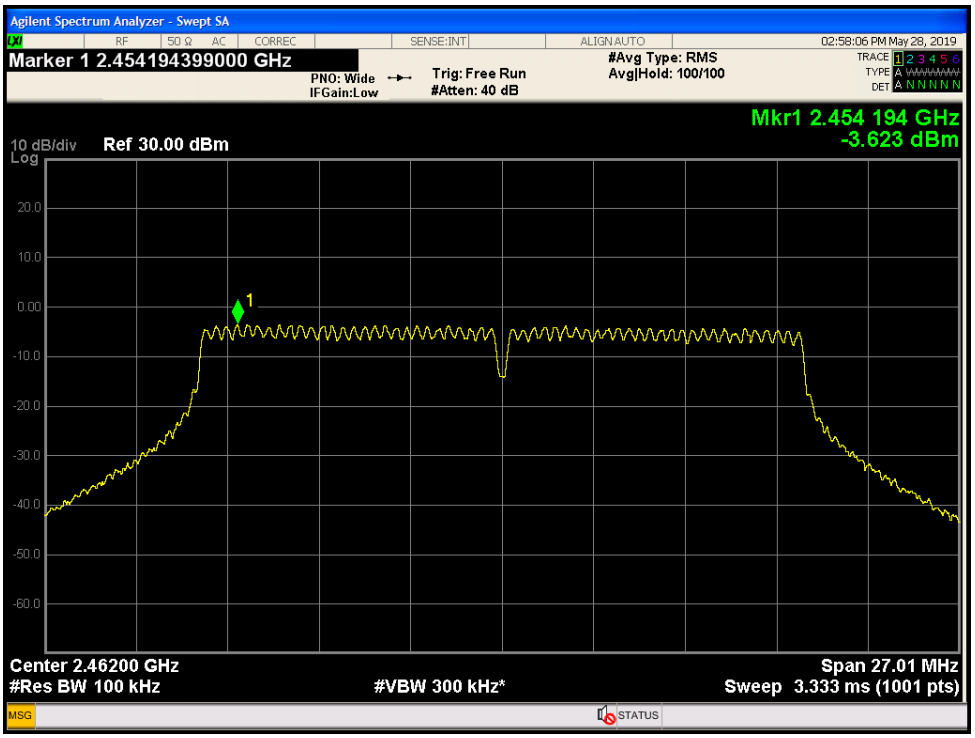

Figure 9-154 Chain 1 Average Power Spectral Density 802.11n20- Ch.11

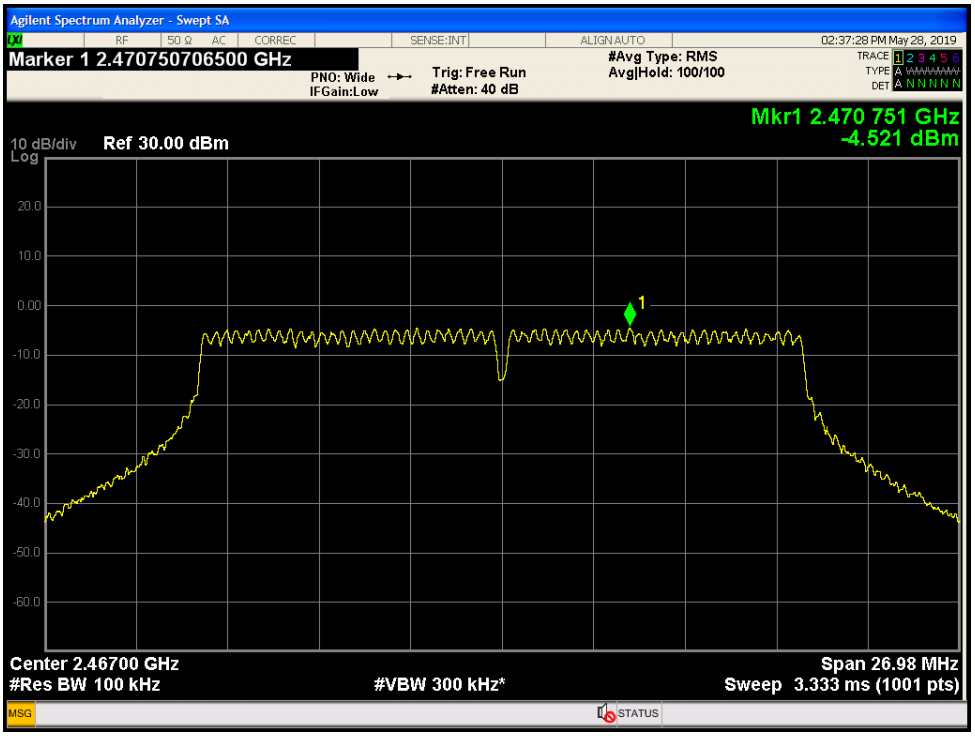

Figure 9-155 Chain 0 Average Power Spectral Density 802.11n20- Ch.12

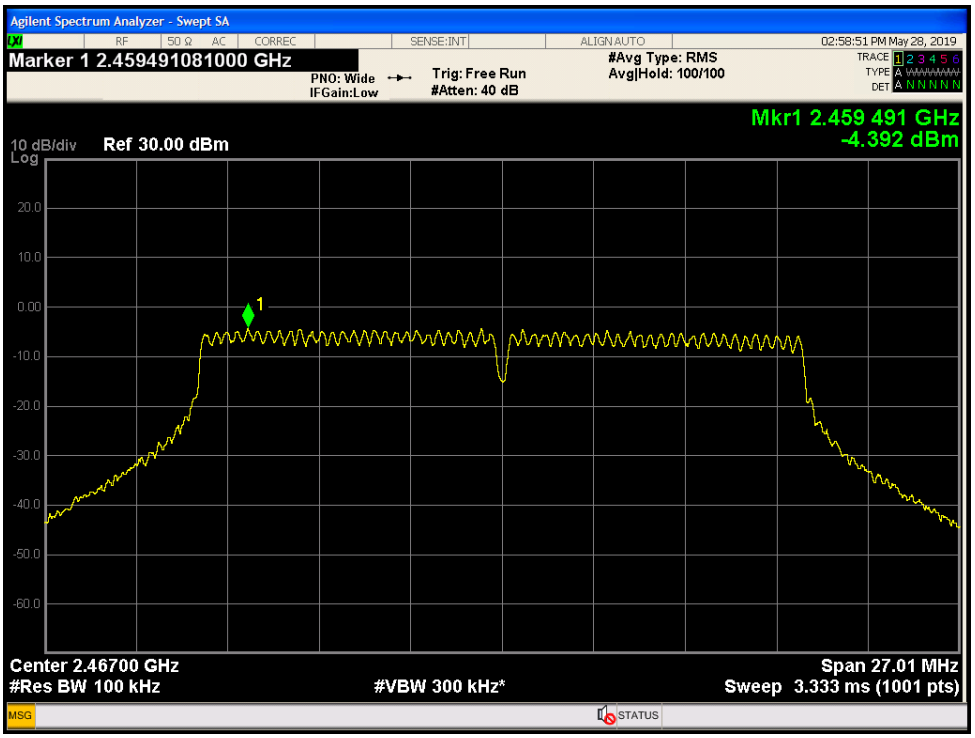

Figure 9-156 Chain 1 Average Power Spectral Density 802.11n20- Ch.12

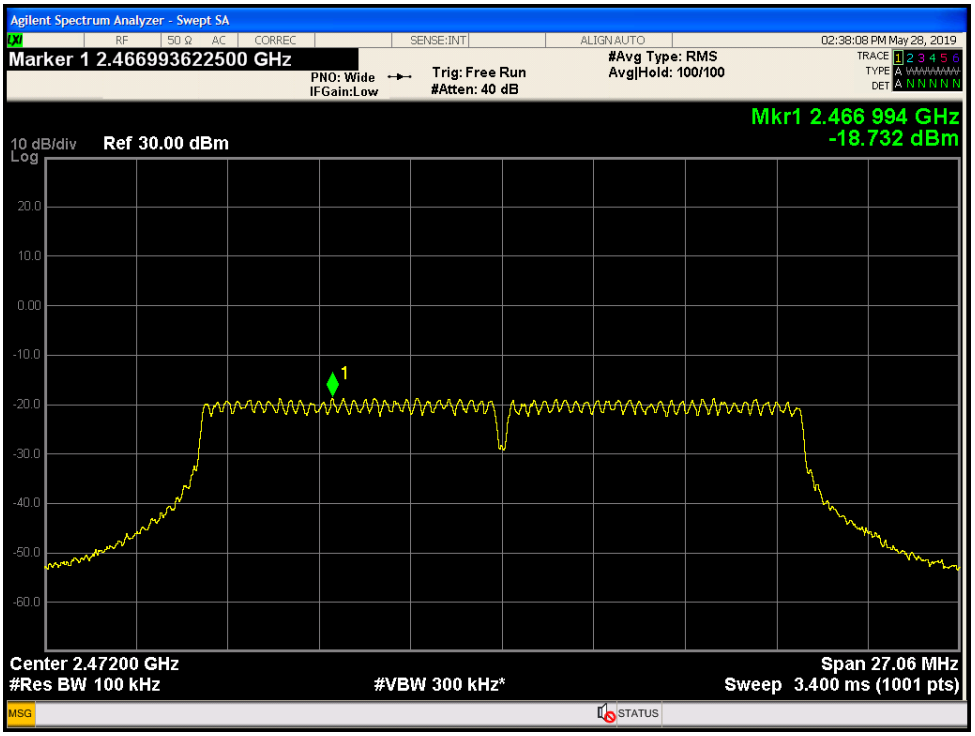

Figure 9-157 Chain 0 Average Power Spectral Density 802.11n20- Ch.13

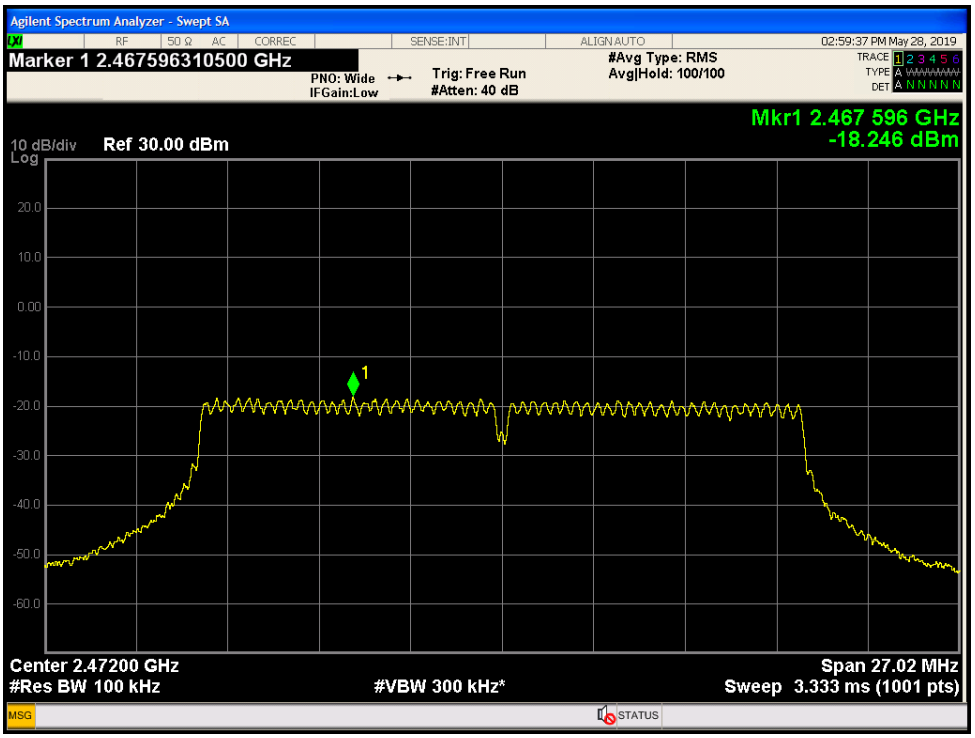

Figure 9-158 Chain 1 Average Power Spectral Density 802.11n20- Ch.13

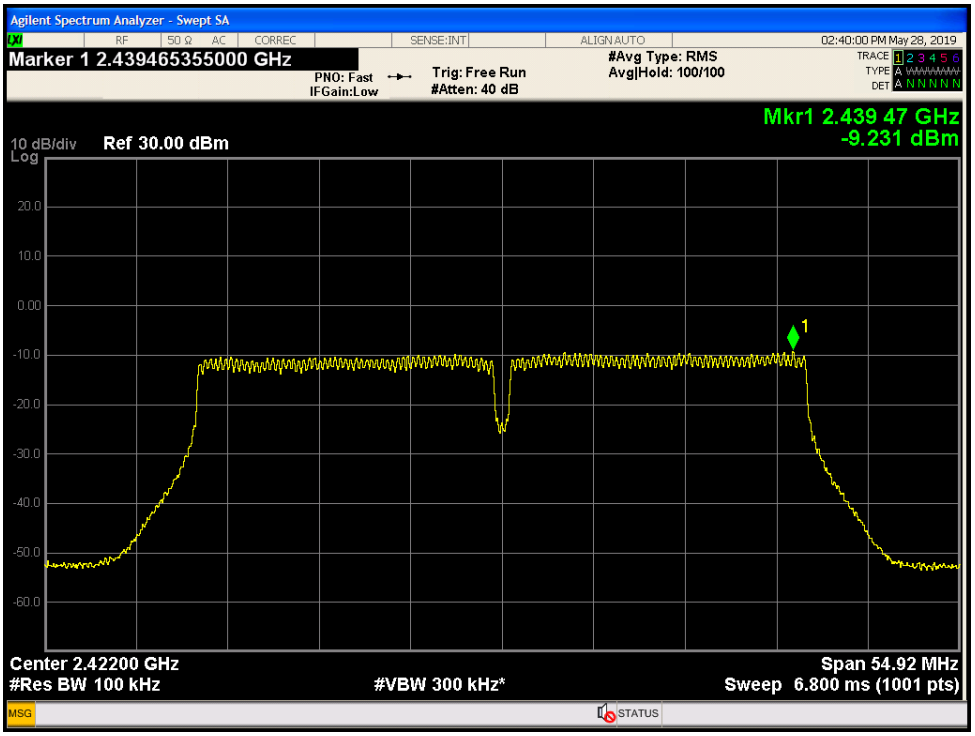

Figure 9-159 Chain 0 Average Power Spectral Density 802.11n40- Ch.3

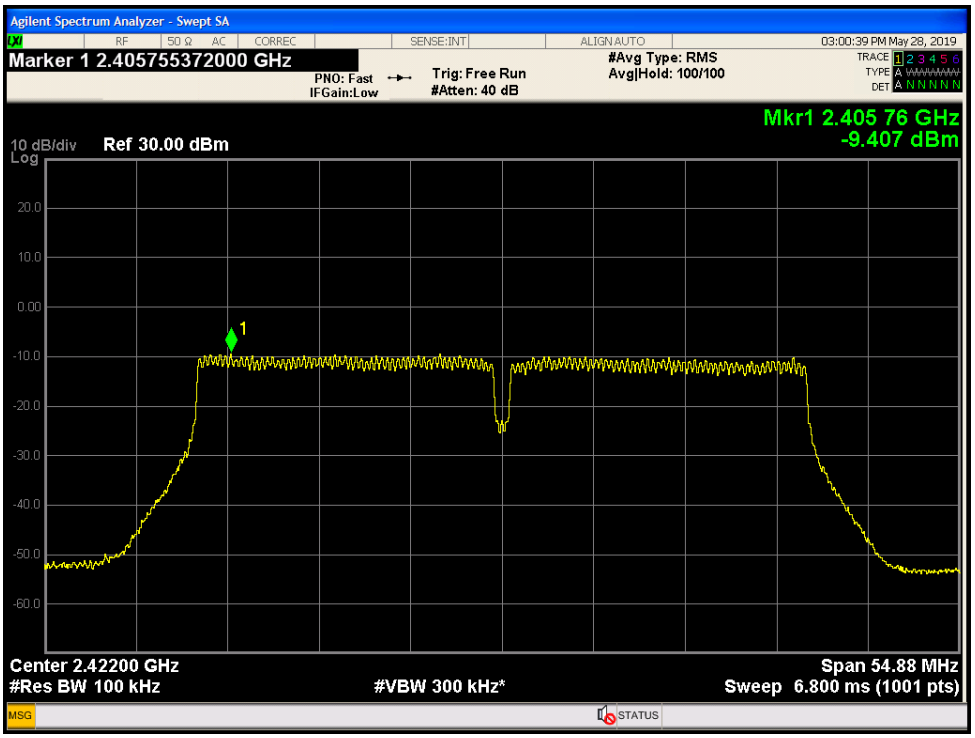

Figure 9-160 Chain 1 Average Power Spectral Density 802.11n40- Ch.3

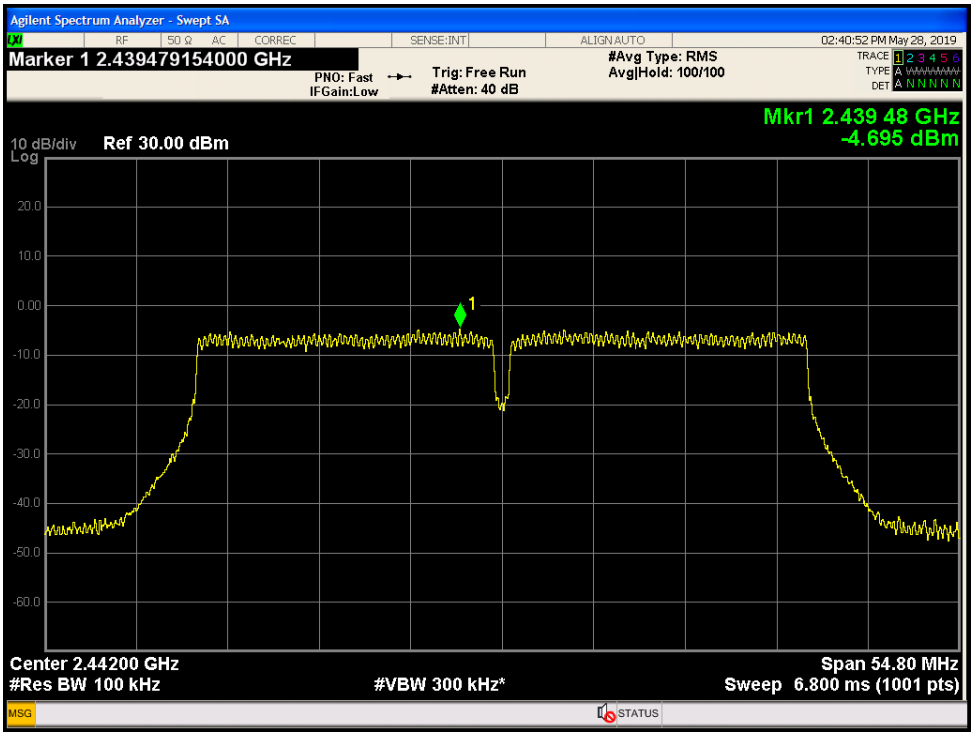

Figure 9-161 Chain 0 Average Power Spectral Density 802.11n40- Ch.7

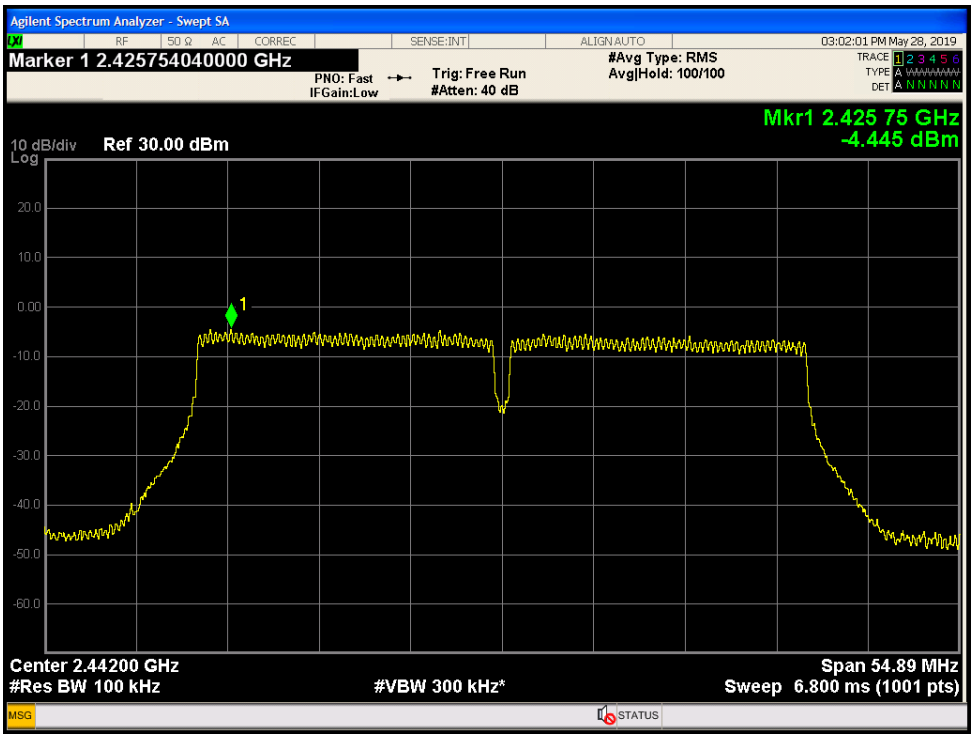

Figure 9-162 Chain 1 Average Power Spectral Density 802.11n40- Ch.7

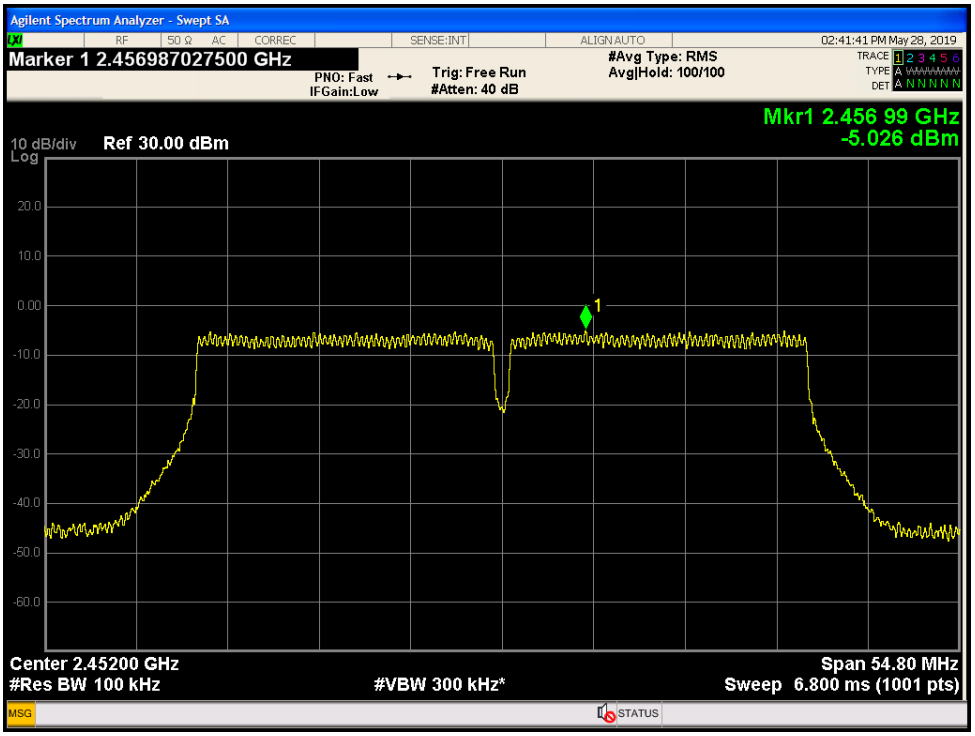

Figure 9-163 Chain 0 Average Power Spectral Density 802.11n40- Ch.9

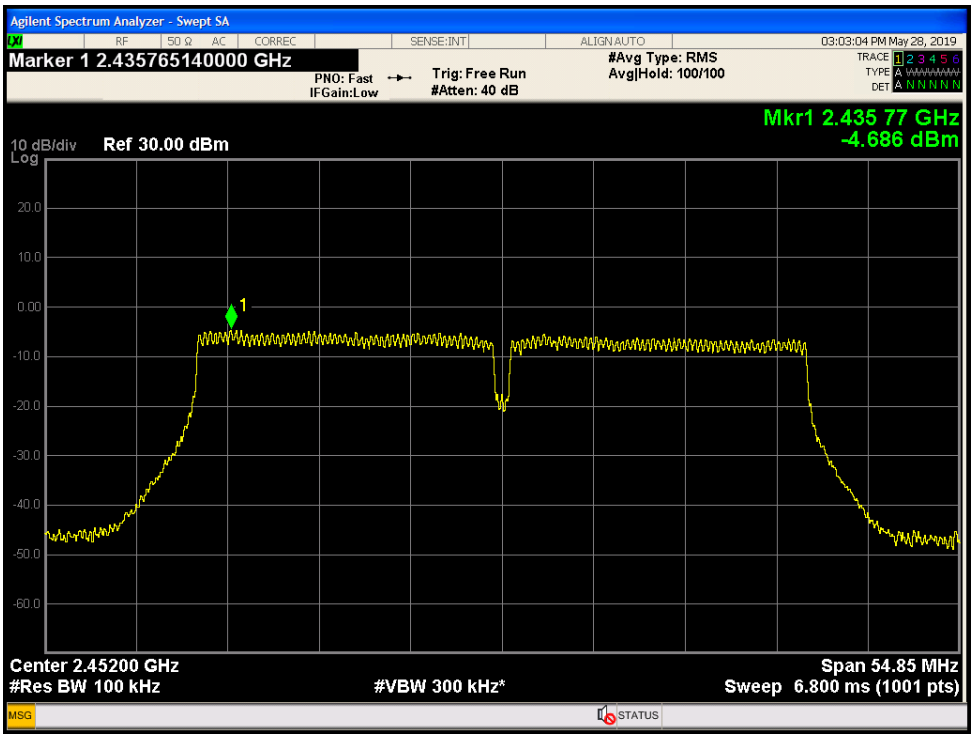

Figure 9-164 Chain 1 Average Power Spectral Density 802.11n40- Ch.9

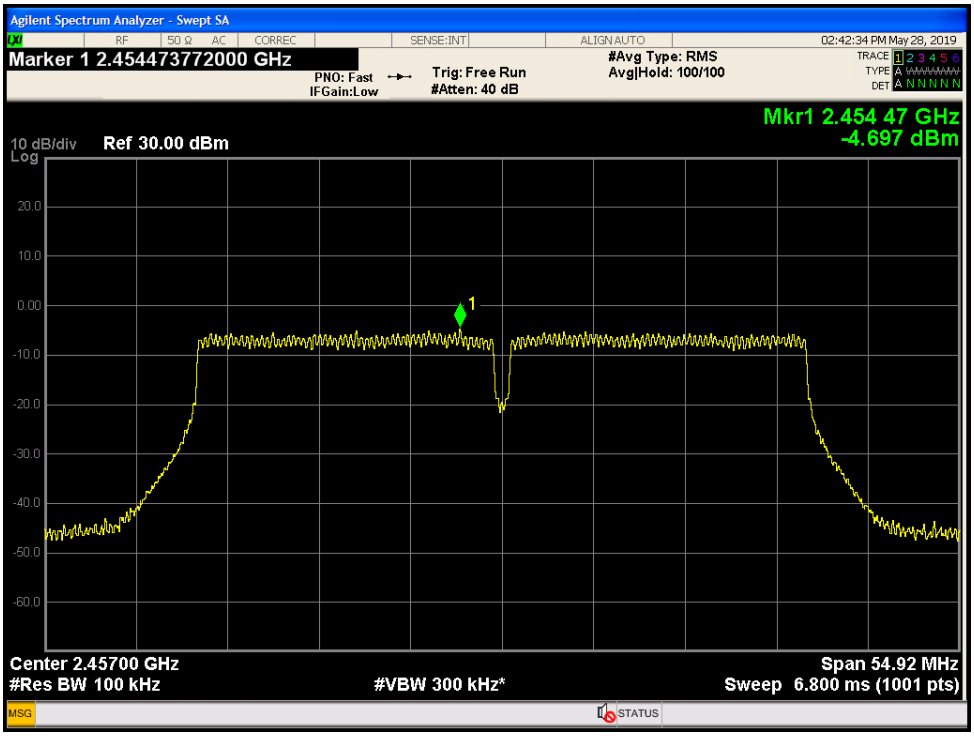

Figure 9-165 Chain 0 Average Power Spectral Density 802.11n40- Ch.10

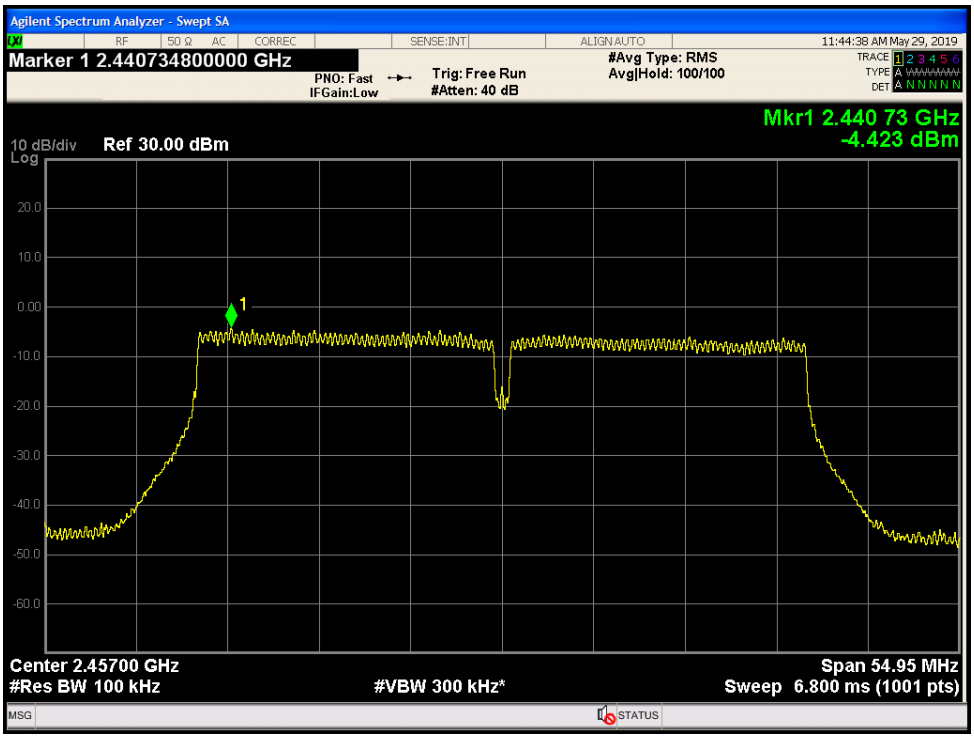

Figure 9-166 Chain 1 Average Power Spectral Density 802.11n40- Ch.10

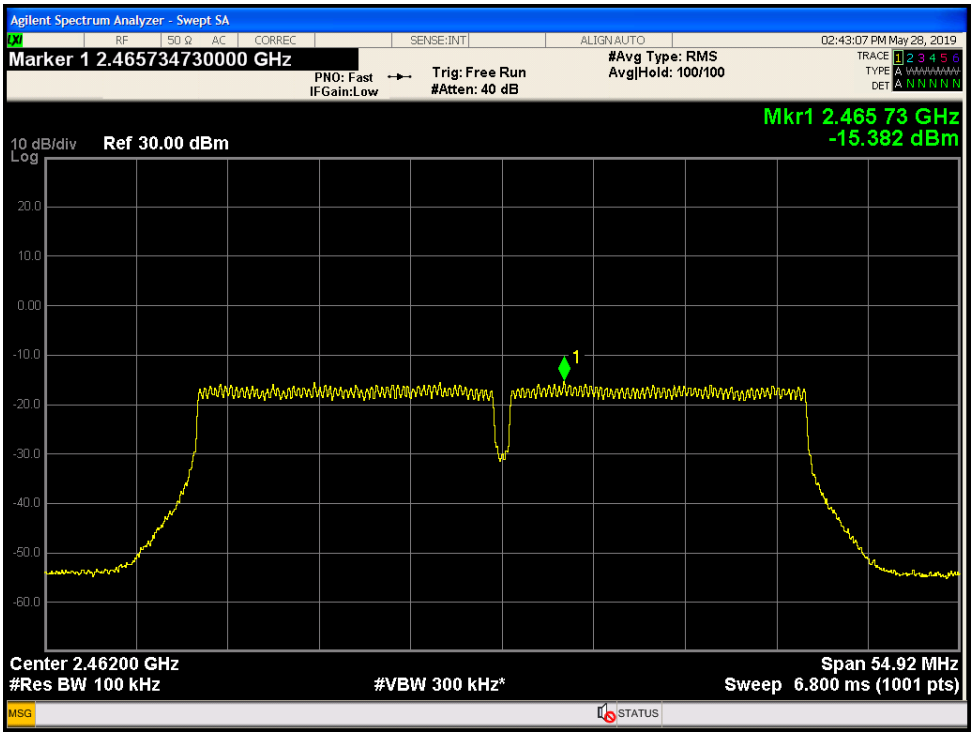

Figure 9-167 Chain 0 Average Power Spectral Density 802.11n40- Ch.11

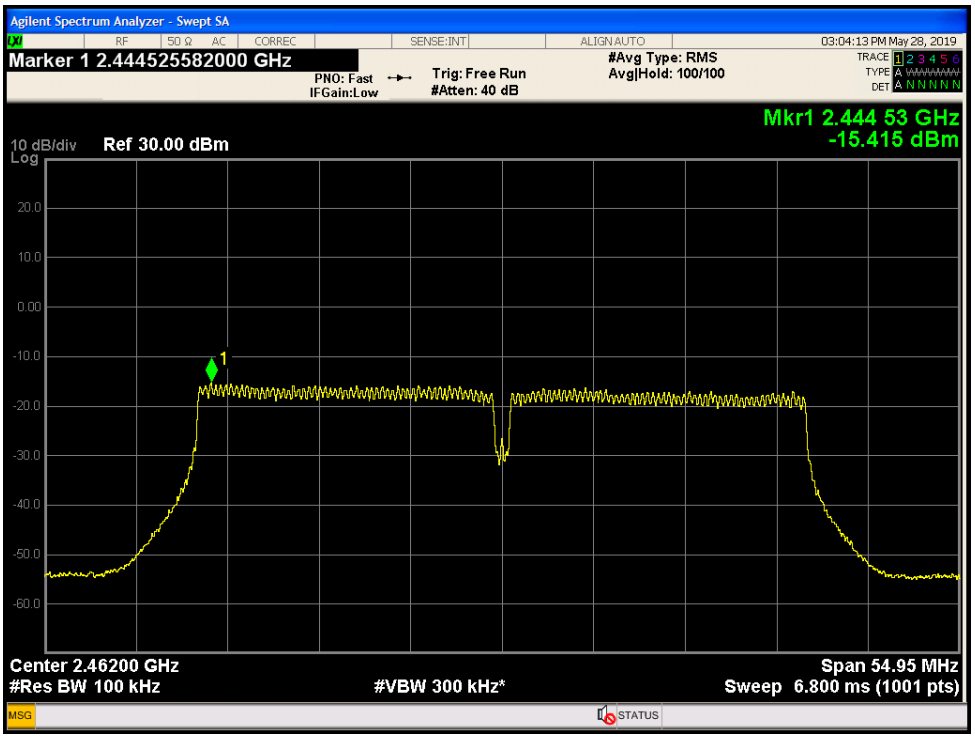

Figure 9-168 Chain 1 Average Power Spectral Density 802.11n40- Ch.11

9.6 Conducted Spurious Emissions

9.6.1 Test Requirement:

FCC CFR 47 Rule Part 15.247 (d)
ISED RSS-247 [5.5]

9.6.2 Test Method:

Measurements were performed according to the procedure defined in KDB 558074 - Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 V05 and ANSI C63.10: 2013.

Spectrum Analyzer settings:
Identification of Reference Level:
RBW= 100 kHz
VBW ≥ 3 x RBW
Trace Mode= Peak Detector (Max Hold)
Sweep time= auto couple
Span ≥1.5 times DTS Bandwidth
Peak Marker function to determine the max PSD level.
Conducted Spurious Emissions:
RBW= 1 MHz
VBW≥ 3 x RBW = 3 MHz
Trace Mode= Peak Detector (Max Hold)
Sweep time= auto couple

Span= 30 MHz- 12 GHz; 12 GHz – 25 GHz
Sweep Points= 30000

9.6.3 Limits:

All spurious emissions at least 30dBc since average power measurements are reported.

9.6.4 Test Result:

Pass.

9.6.5 Test Data:

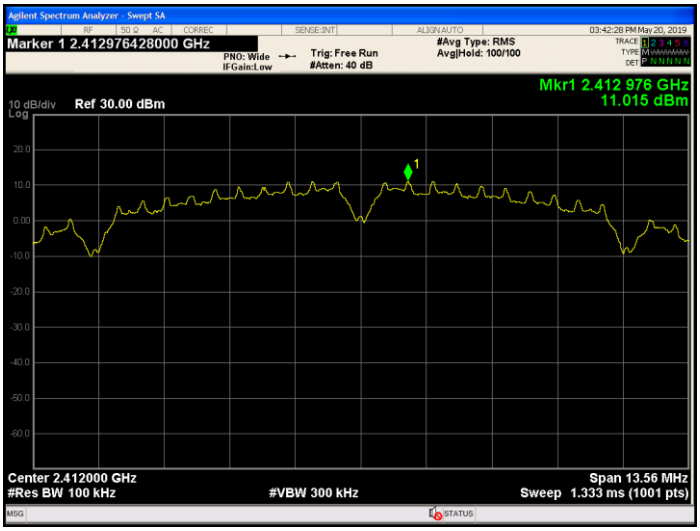

Figure 9-169 Chain 0 Reference Level 802.11b-Ch.1

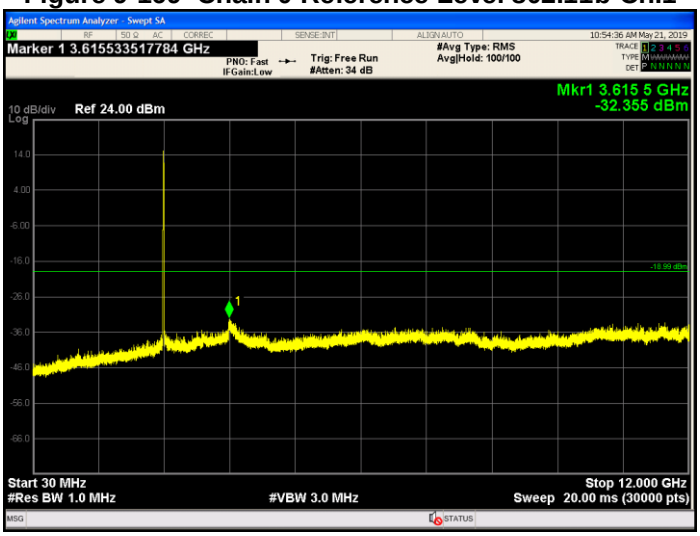

Figure 9-170 Chain 0 Conducted Spurious Emissions 30 MHz-12GHz 802.11b - Ch.1

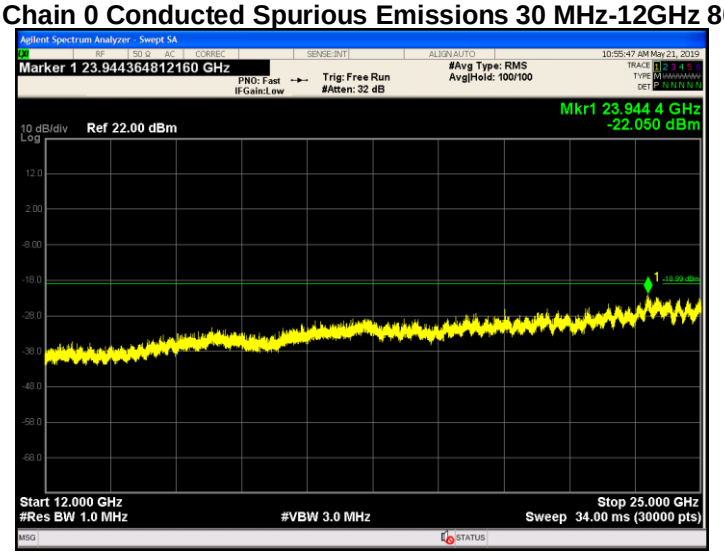

Figure 9-171 Chain 0 Conducted Spurious Emissions 12-25GHz 802.11b - Ch.1

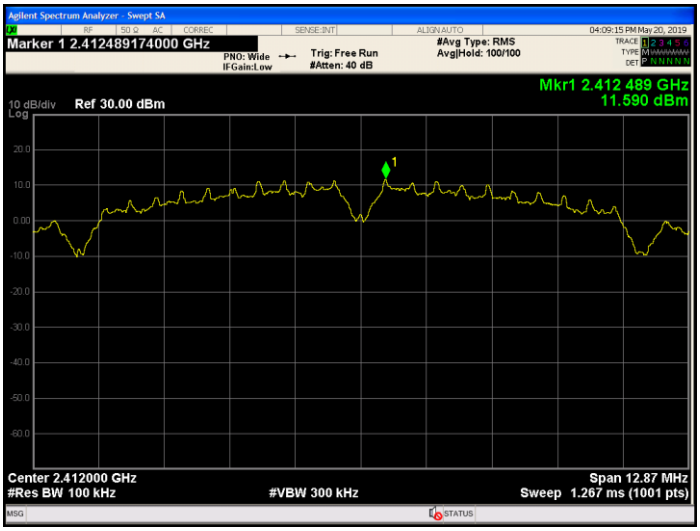

Figure 9-172 Chain 1 Reference Level 802.11b-Ch.1

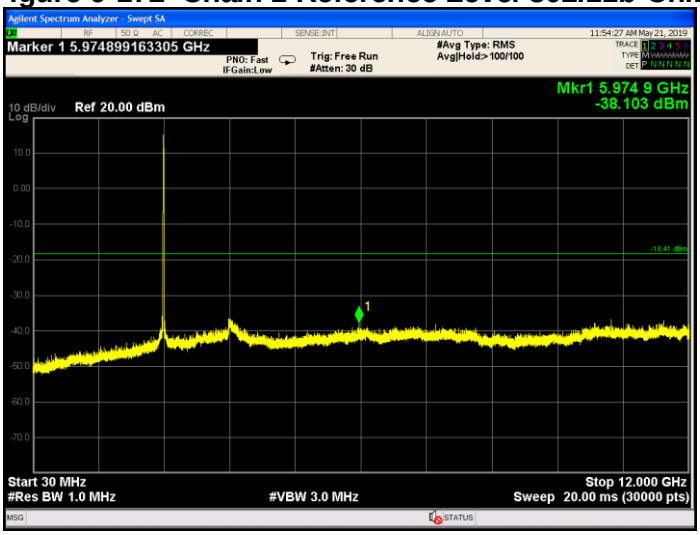

Figure 9-173 Chain 1 Conducted Spurious Emissions 30 MHz-12GHz 802.11b - Ch.1

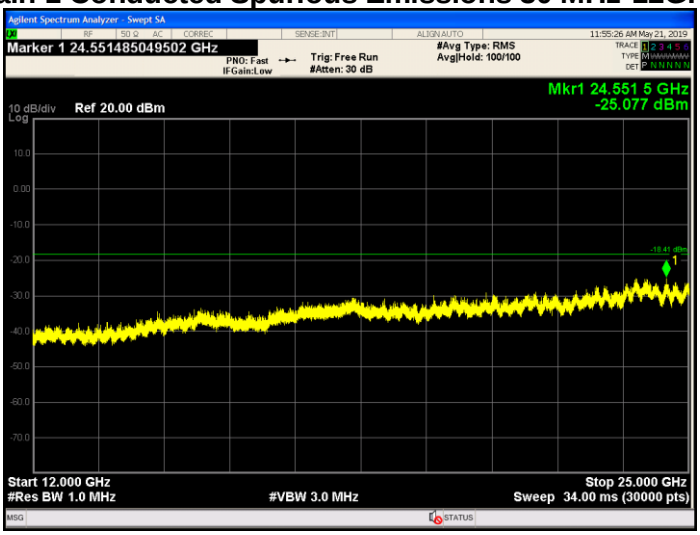

Figure 9-174 Chain 1 Conducted Spurious Emissions 12-25GHz 802.11b - Ch.1

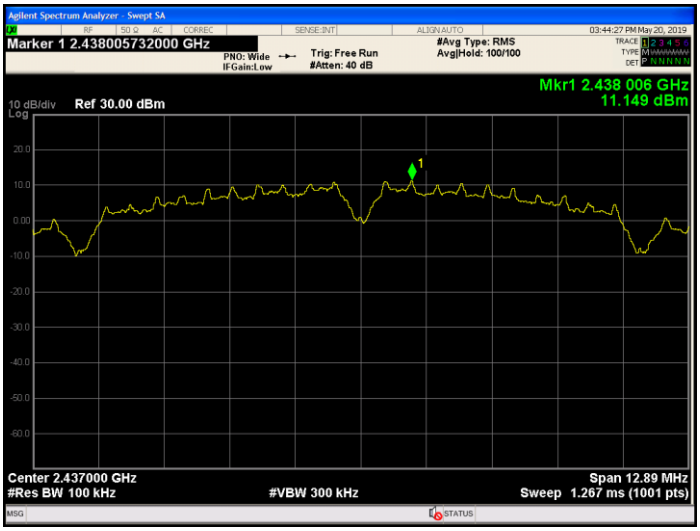

Figure 9-175 Chain 0 Reference Level 802.11b-Ch.6

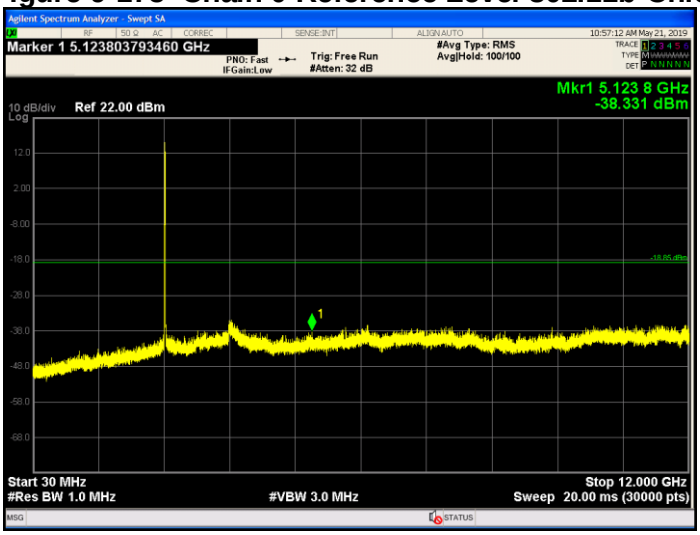

Figure 9-176 Chain 0 Conducted Spurious Emissions 30 MHz-12GHz 802.11b - Ch.6

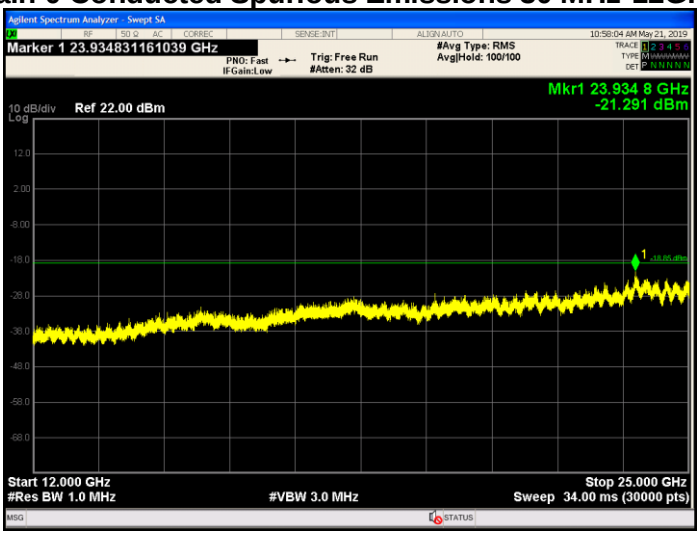

Figure 9-177 Chain 0 Conducted Spurious Emissions 12-25GHz 802.11b - Ch.6