

9.4 Maximum Conducted Output Power

9.4.1 Test Requirement:

FCC CFR 47 Rule Part 15.407 (a)

Industry Canada RSS-247 [6.2]

9.4.2 Test Method:

Measurements were performed according to the procedures defined in KDBs 789033- General UNII Test Procedures New Rules v01, 662911 D01 Multiple Transmitter Output v02r01, and ANSI C63.10 2013.

Spectrum Analyzer settings:

Average Power:

RBW= 1 MHz

VBW= 3 MHz

Detector = RMS

Trace Mode= Average over 100 traces

Sweep time= Auto

Sweep Point $\geq 2 \times \text{Span} / \text{RBW}$

Span= large enough to encompass the 26-dB Emission Bandwidth or alternatively the 99% Occupied Bandwidth.

Use the band power measurement function to integrate the power over the 26-dB Emission Bandwidth or 99% Occupied Bandwidth.

9.4.3 Limits:

15.407: The maximum conducted output power shall not exceed the limits given the following table for antennas that do not exceed a directional gain > 6dBi:

Band of Operation (MHz)	15.407 Limit
5150 – 5250	24 dBm
5250 – 5350	24dBm or $11 \text{ dBm} + 10 \log (B)^{(1)}$
5470 – 5725	24dBm or $11 \text{ dBm} + 10 \log (B)^{(1)}$
5725 – 5825	30 dBm

Note(1): B is the 26-dB Emission bandwidth of signal.

15.247: The maximum conducted output power shall not exceed the limits given the following table:

Band of Operation (MHz)	RSS-247 Conducted Output Power Limit	RSS-247 E.I.R.P Limit
5150 – 5250	--	23 dBm or $10 + 10 \log (B)^{(1)}$
5250 – 5350	24 dBm or $11 + 10 \log (B)^{(1)}$	30 dBm or $17 + 10 \log (B)^{(1)}$
5470 – 5725	24 dBm or $11 + 10 \log (B)^{(1)}$	30 dBm or $17 + 10 \log (B)^{(1)}$
5725 – 5825	30 dBm	--

Note(1): B is the 99% Occupied Bandwidth of the signal.

9.4.4 Test Results:

Pass

9.4.5 Test Data

9.4.5.1 Chain A+B 802.11a Maximum Conducted Output Power

Chain A+B 802.11a Maximum Conducted Output Power						
Channel No.	Frequency (MHz)	Chain A (dBm)	Chain B (dBm)	Total Power (dBm)	15.407 Limit (dBm)	RSS-247 Limit (dBm)
36	5180	8.44	8.24	11.35	24	--
44	5220	8.29	8.80	11.56	24	--
48	5240	8.23	8.55	11.4	24	--
52	5260	8.46	8.12	11.3	24	23.2
60	5300	8.44	8.14	11.3	24	23.2
64	5320	8.43	8.40	11.43	24	23.2
100	5500	7.81	7.93	10.88	24	23.2
116	5580	7.88	7.75	10.83	24	23.2
140	5700	7.82	7.63	10.74	24	23.2
149	5745	7.72	7.55	10.65	30	30
157	5785	7.48	7.57	10.54	30	30
165	5825	7.57	7.19	10.39	30	30

Chain A+B 802.11a E.I.R.P					
Channel No.	Frequency (MHz)	Total Power (dBm)	Antenna Gain	E.I.R.P (dBm)	RSS-247 E.I.R.P Limit (dBm)
36	5180	11.35	5.4	16.75	23
44	5220	11.56	5.4	16.96	23
48	5240	11.4	5.4	16.8	23
52	5260	11.3	5.6	16.9	29.2
60	5300	11.3	5.6	16.9	29.2
64	5320	11.43	5.6	17.03	29.2
100	5500	10.88	5.7	16.58	29.2
116	5580	10.83	5.7	16.53	29.2
140	5700	10.74	5.7	16.44	29.2
149	5745	10.65	5.6	16.25	--
157	5785	10.54	5.6	16.14	--
165	5825	10.39	5.6	15.99	--



Figure 290. Maximum Conducted Output Power Chain A 802.11a (Ch. 36)

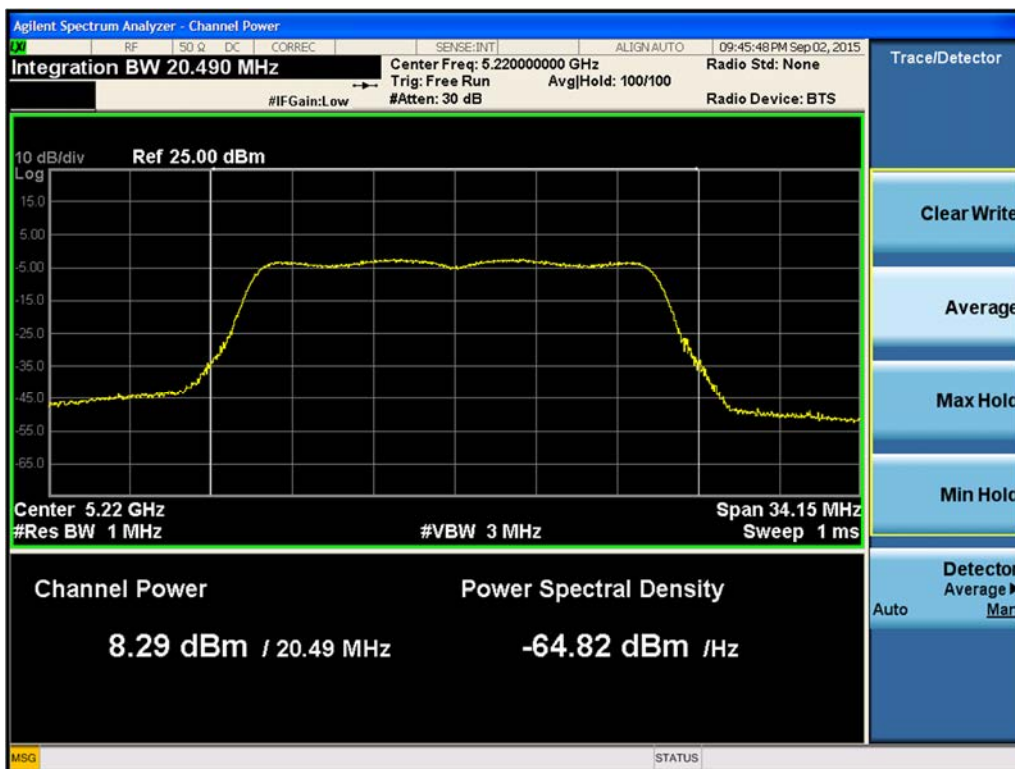


Figure 291. Maximum Conducted Output Power Chain A 802.11a (Ch. 44)



Figure 292. Maximum Conducted Output Power Chain A 802.11a (Ch. 48)

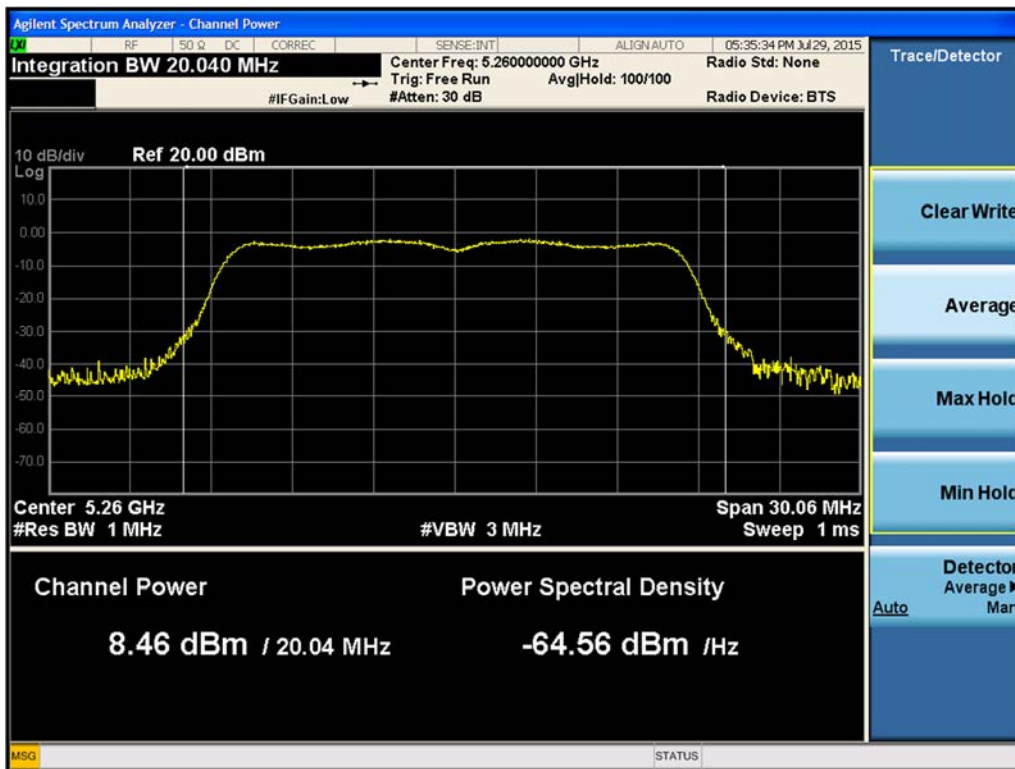


Figure 293. Maximum Conducted Output Power Chain A 802.11a (Ch. 52)

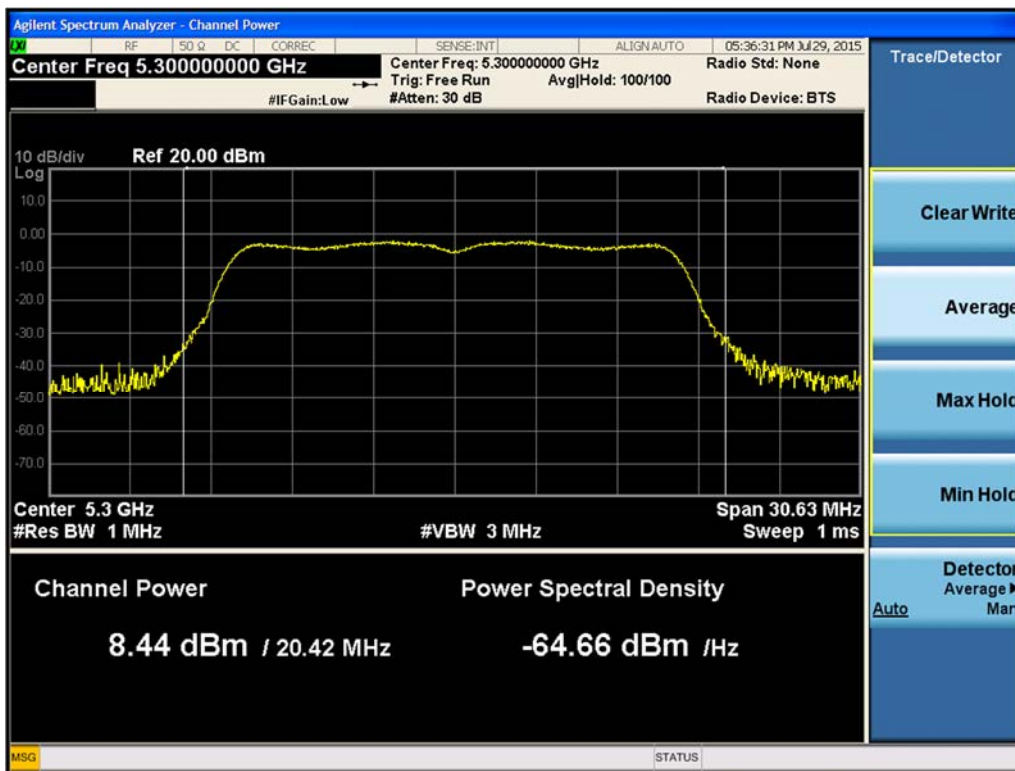


Figure 294. Maximum Conducted Output Power Chain A 802.11a (Ch. 60)

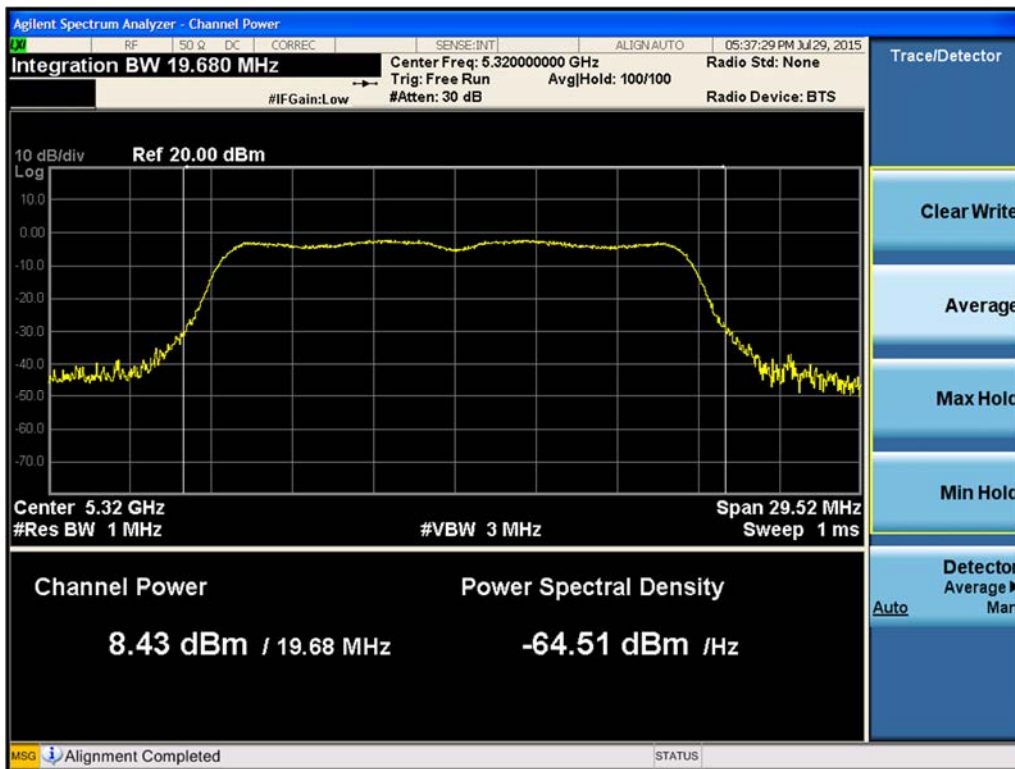


Figure 295. Maximum Conducted Output Power Chain A 802.11a (Ch. 64)

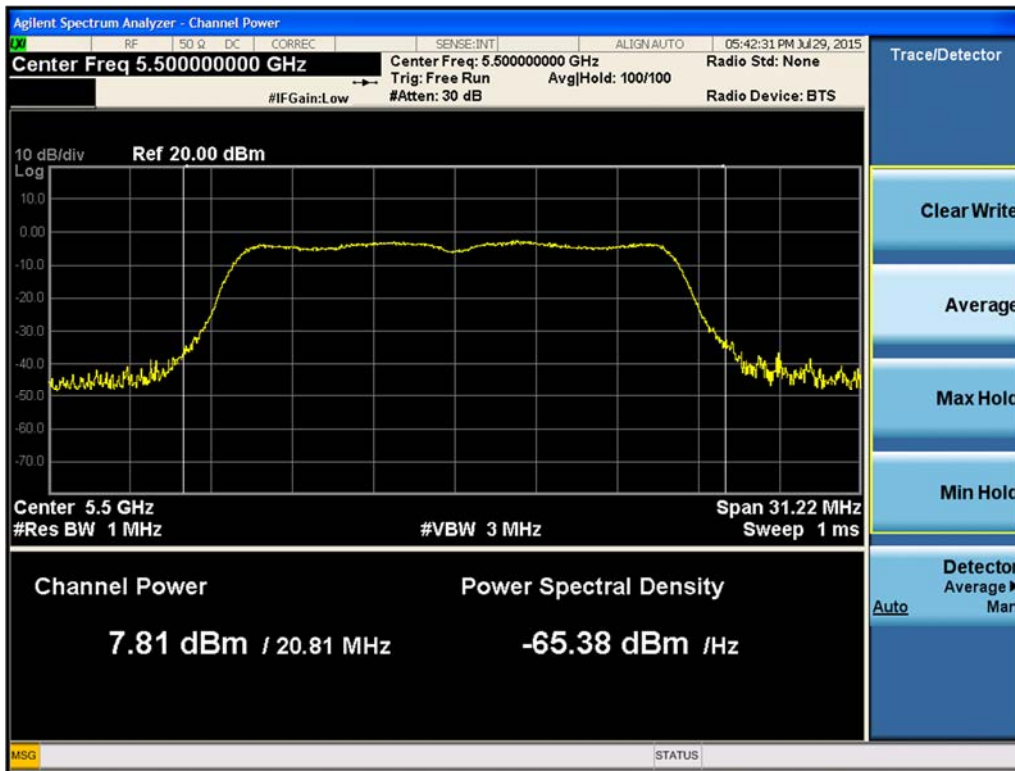


Figure 296. Maximum Conducted Output Power Chain A 802.11a (Ch. 100)

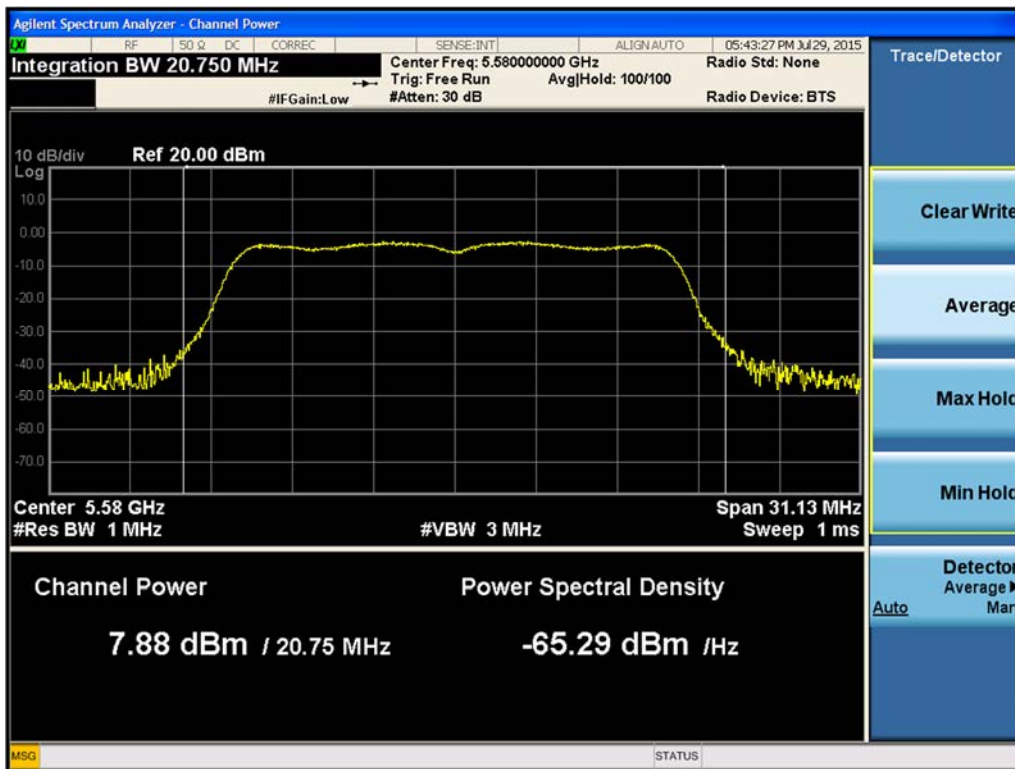


Figure 297. Maximum Conducted Output Power Chain A 802.11a (Ch. 116)

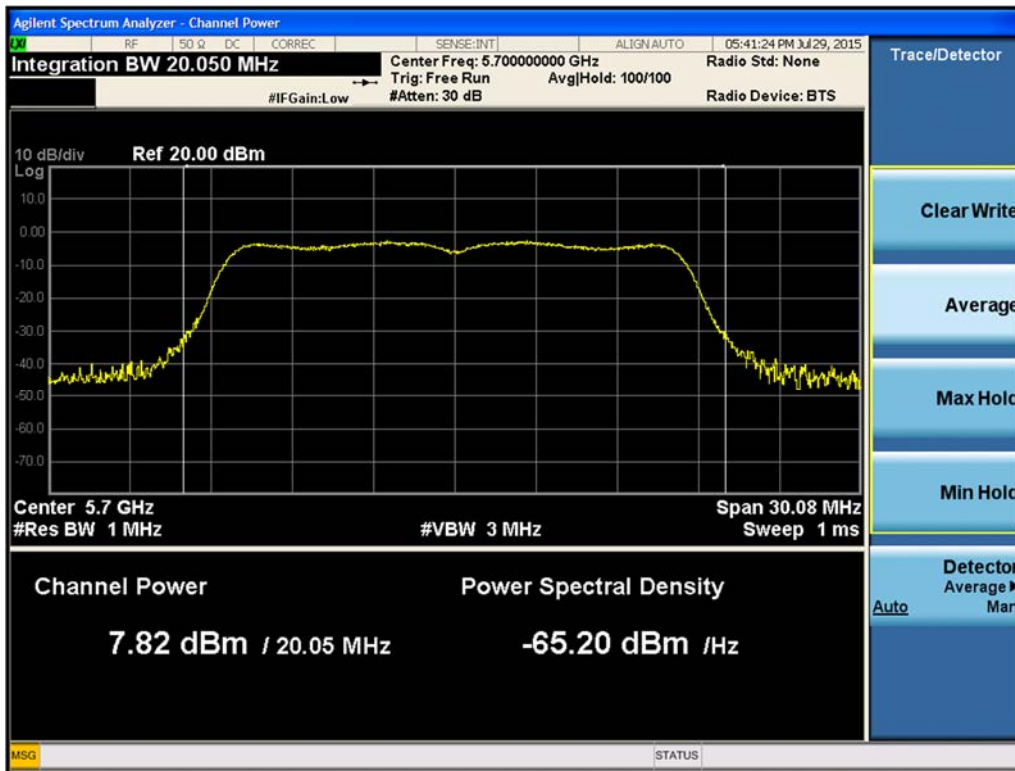


Figure 298. Maximum Conducted Output Power Chain A 802.11a (Ch. 140)

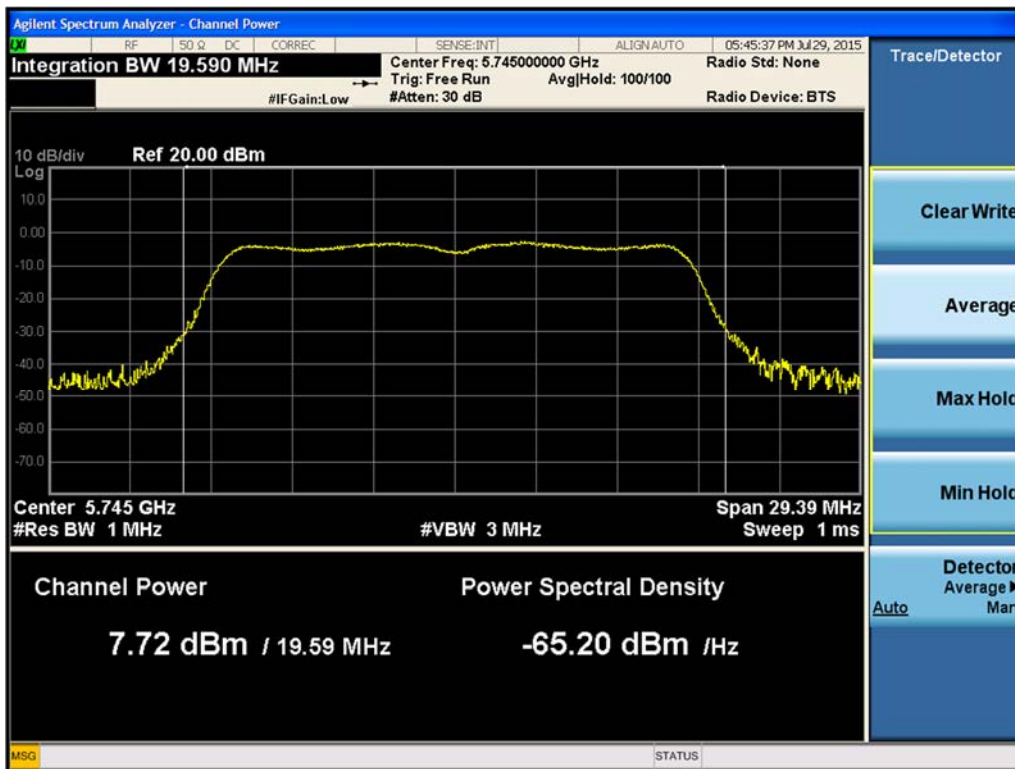


Figure 299. Maximum Conducted Output Power Chain A 802.11a (Ch. 149)

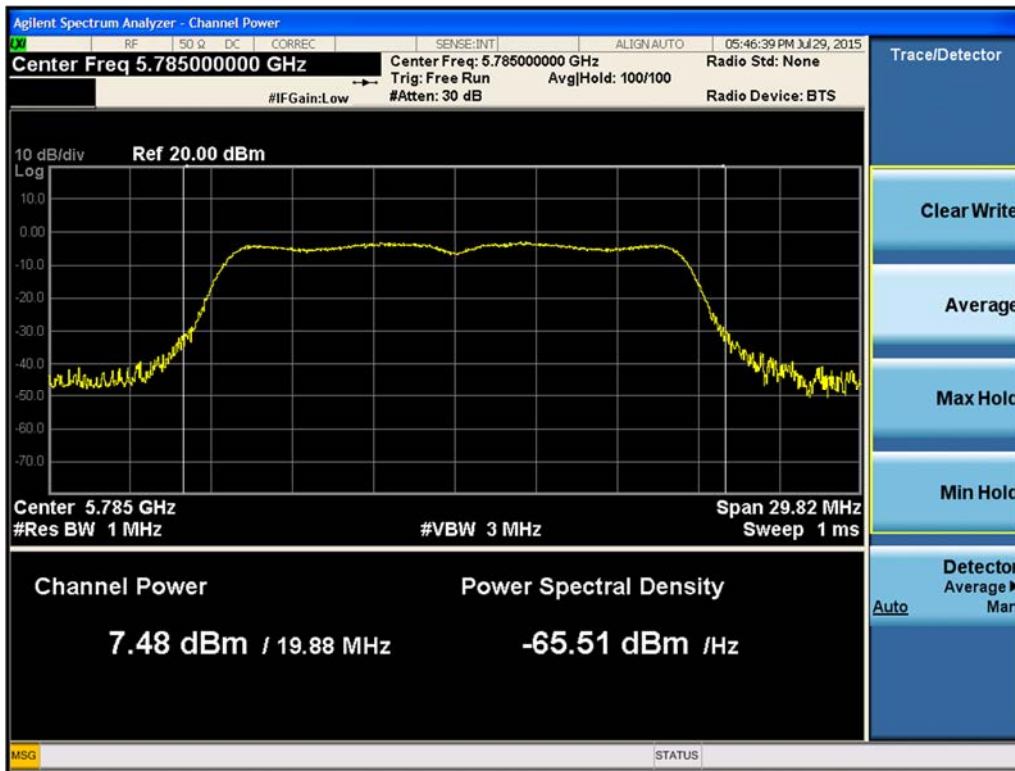


Figure 300. Maximum Conducted Output Power Chain A 802.11a (Ch. 157)

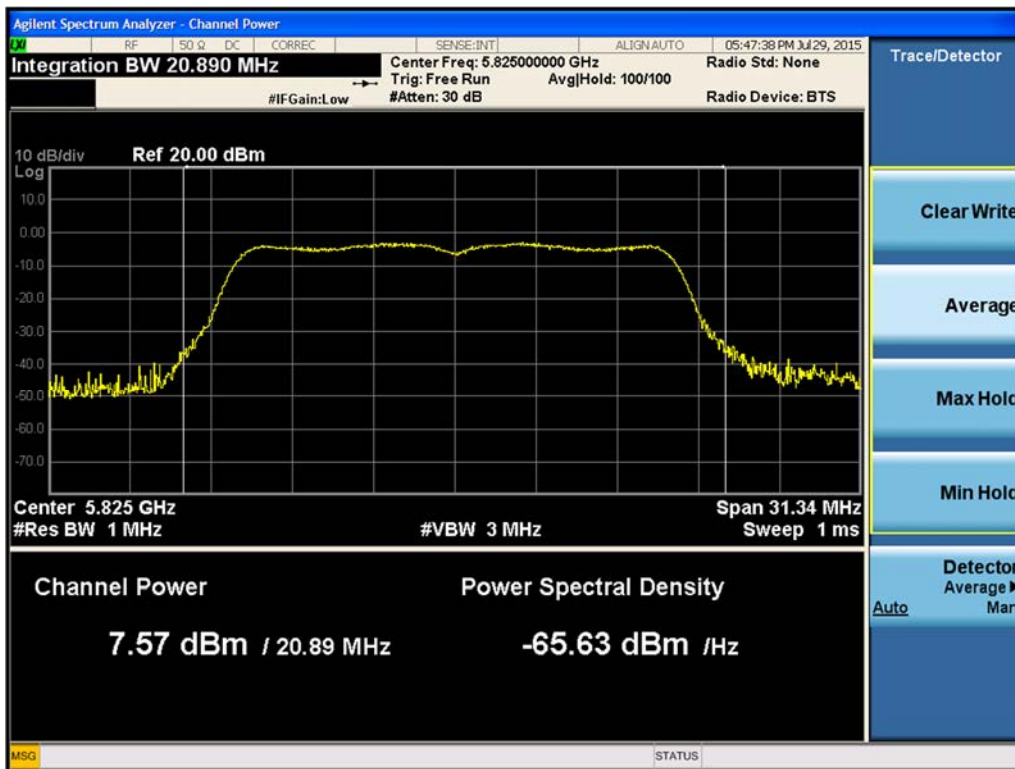


Figure 301. Maximum Conducted Output Power Chain A 802.11a (Ch. 165)



Figure 302. Maximum Conducted Output Power Chain B 802.11a (Ch. 36)

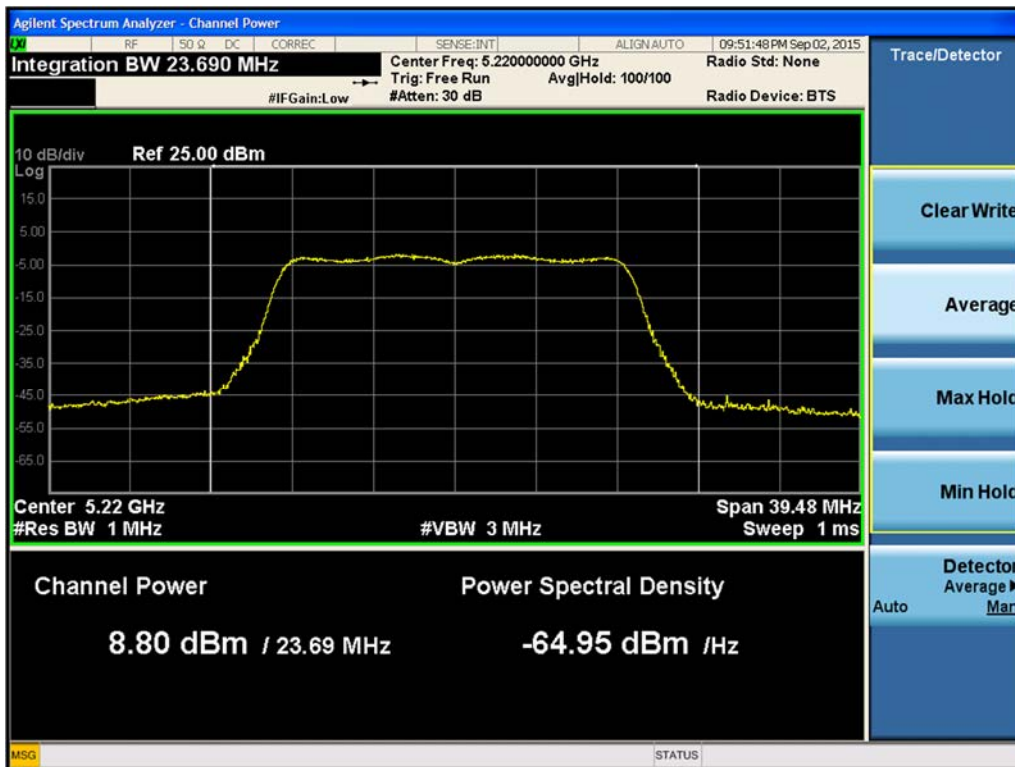


Figure 303. Maximum Conducted Output Power Chain B 802.11a (Ch. 44)



Figure 304. Maximum Conducted Output Power Chain B 802.11a (Ch. 48)

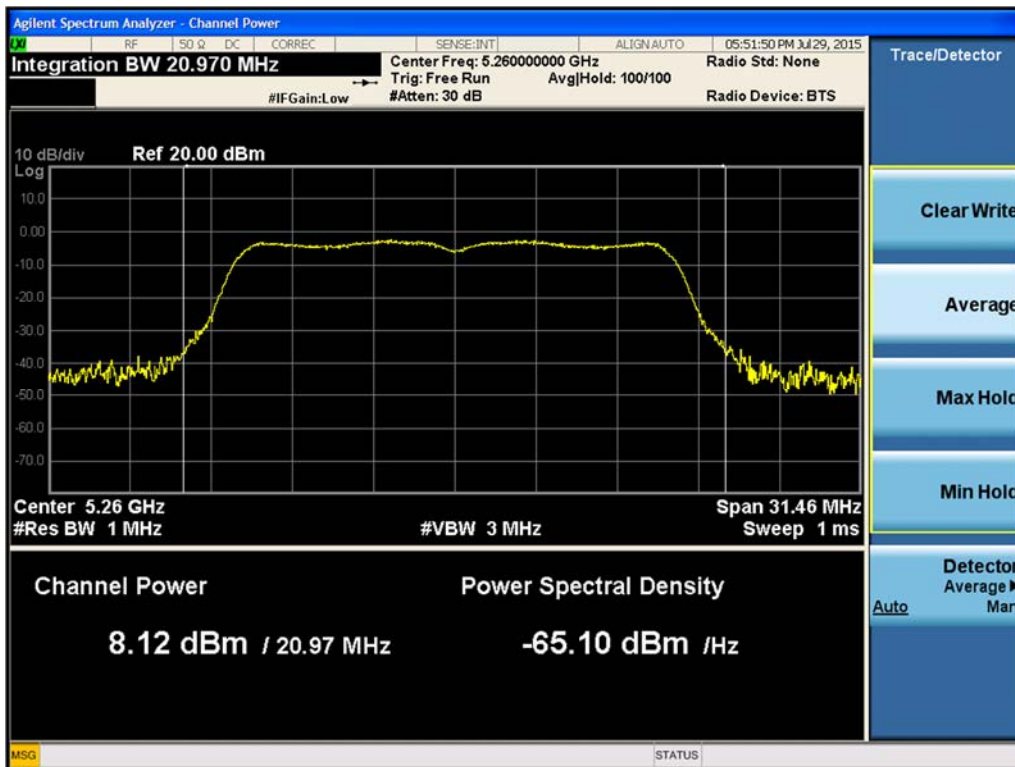


Figure 305. Maximum Conducted Output Power Chain B 802.11a (Ch. 52)



Figure 306. Maximum Conducted Output Power Chain B 802.11a (Ch. 60)

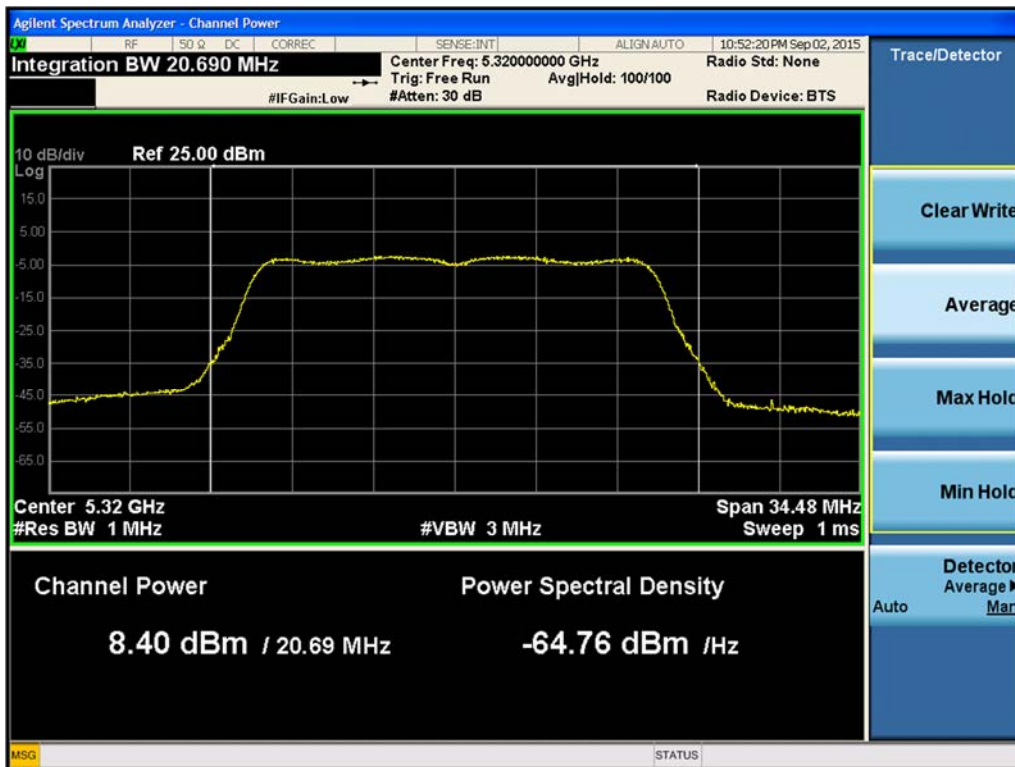


Figure 307. Maximum Conducted Output Power Chain B 802.11a (Ch. 64)

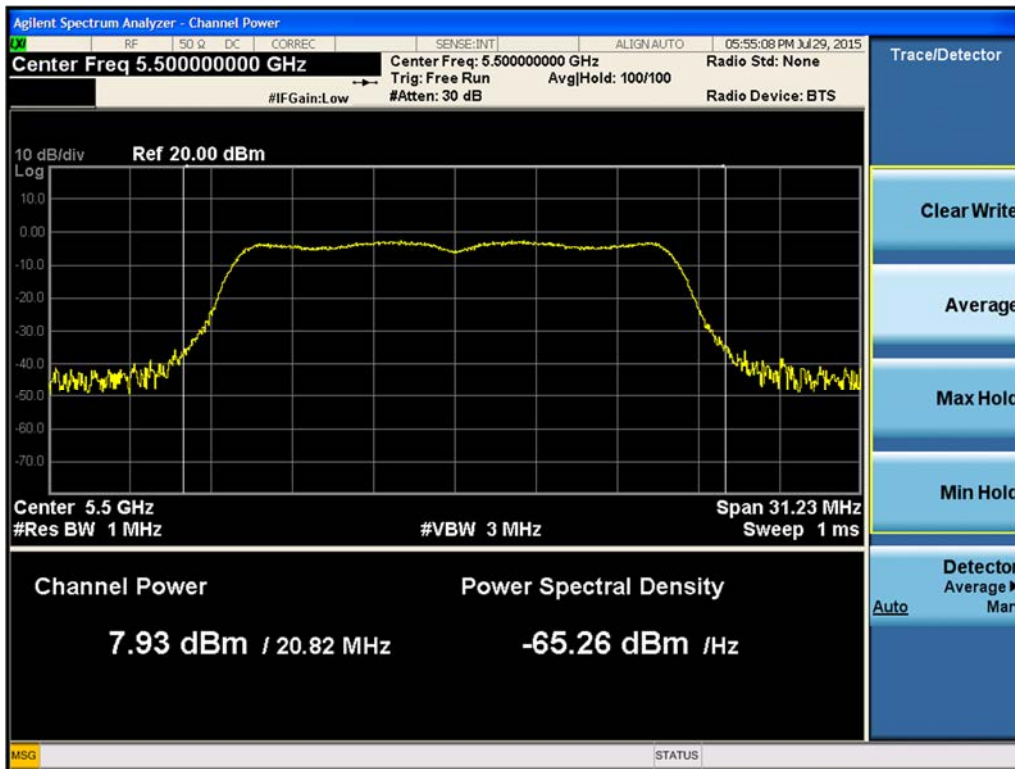


Figure 308. Maximum Conducted Output Power Chain B 802.11a (Ch. 100)

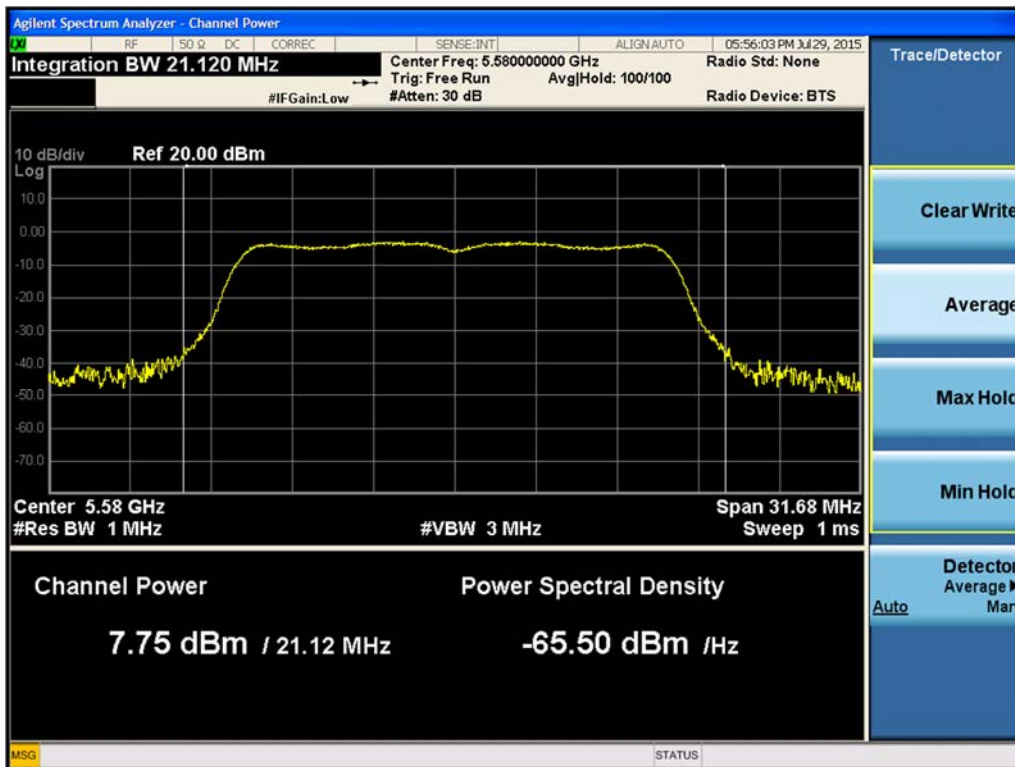


Figure 309. Maximum Conducted Output Power Chain B 802.11a (Ch. 116)

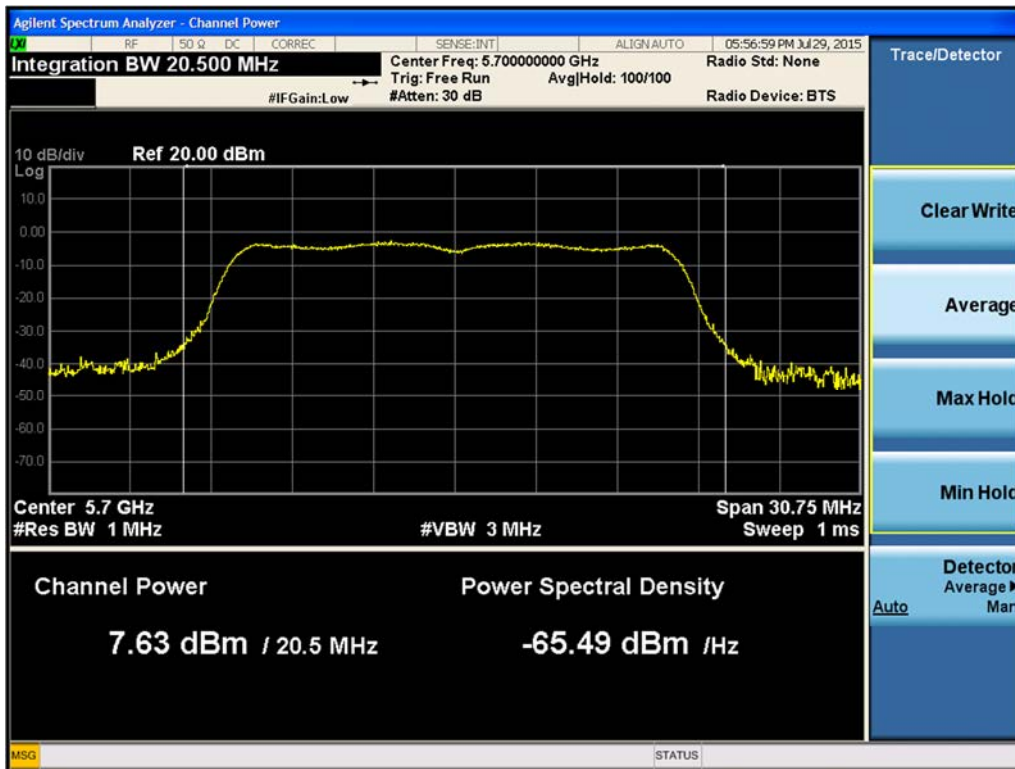


Figure 310. Maximum Conducted Output Power Chain B 802.11a (Ch. 140)

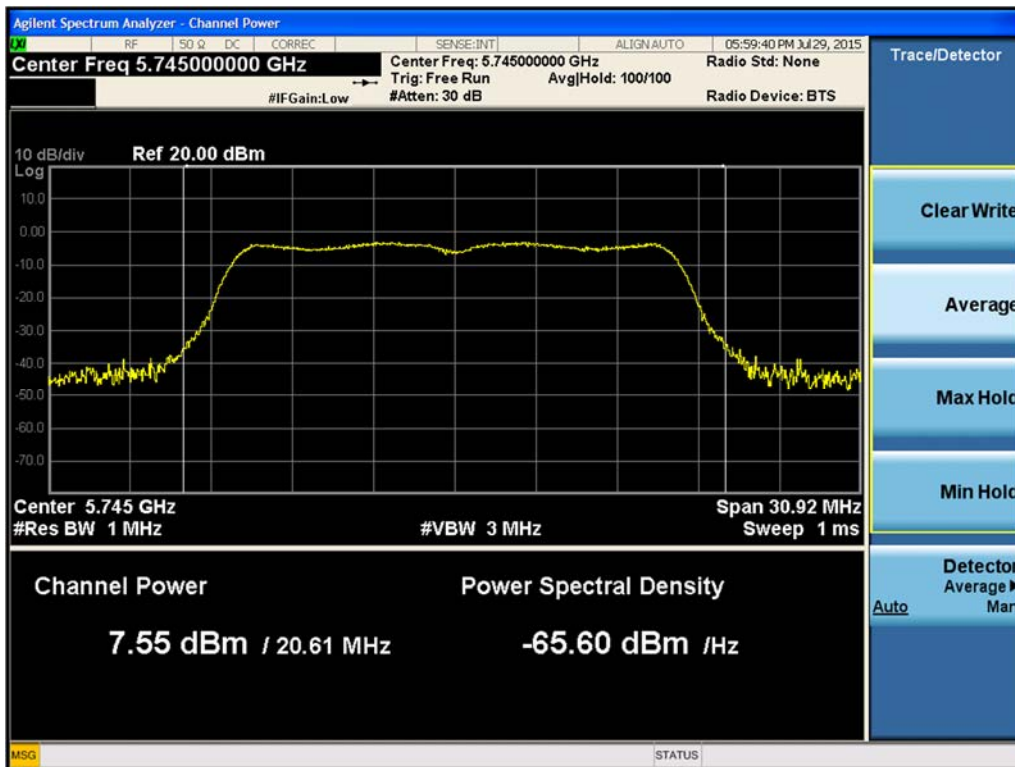


Figure 311. Maximum Conducted Output Power Chain B 802.11a (Ch. 149)

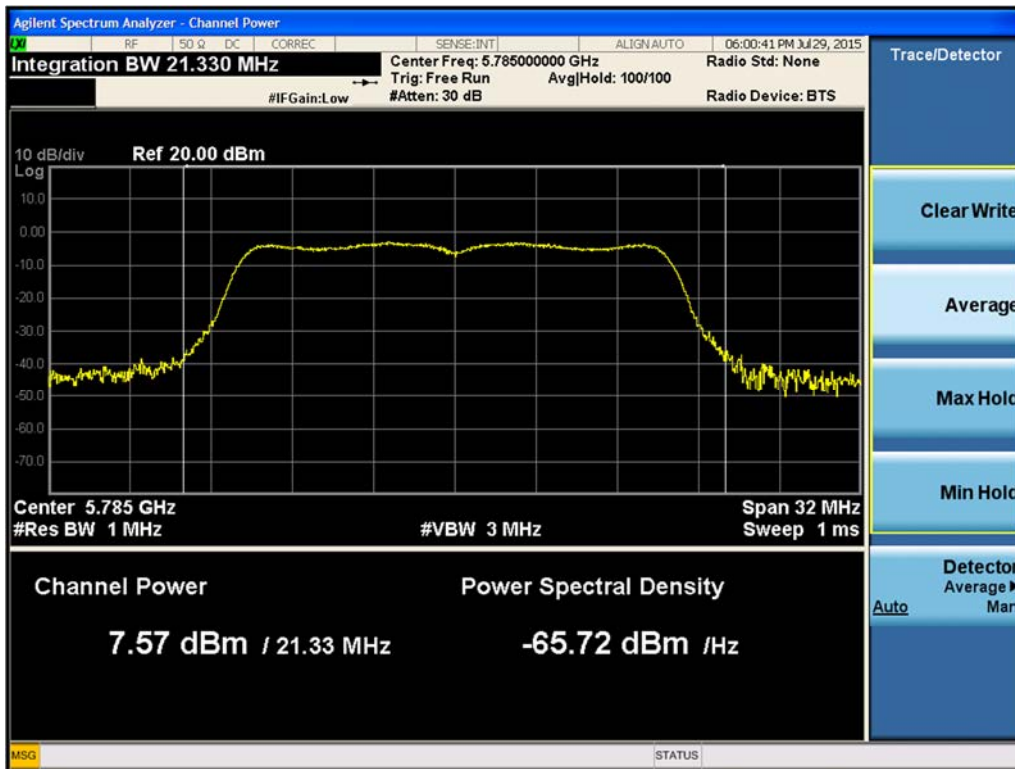


Figure 312. Maximum Conducted Output Power Chain B 802.11a (Ch. 157)

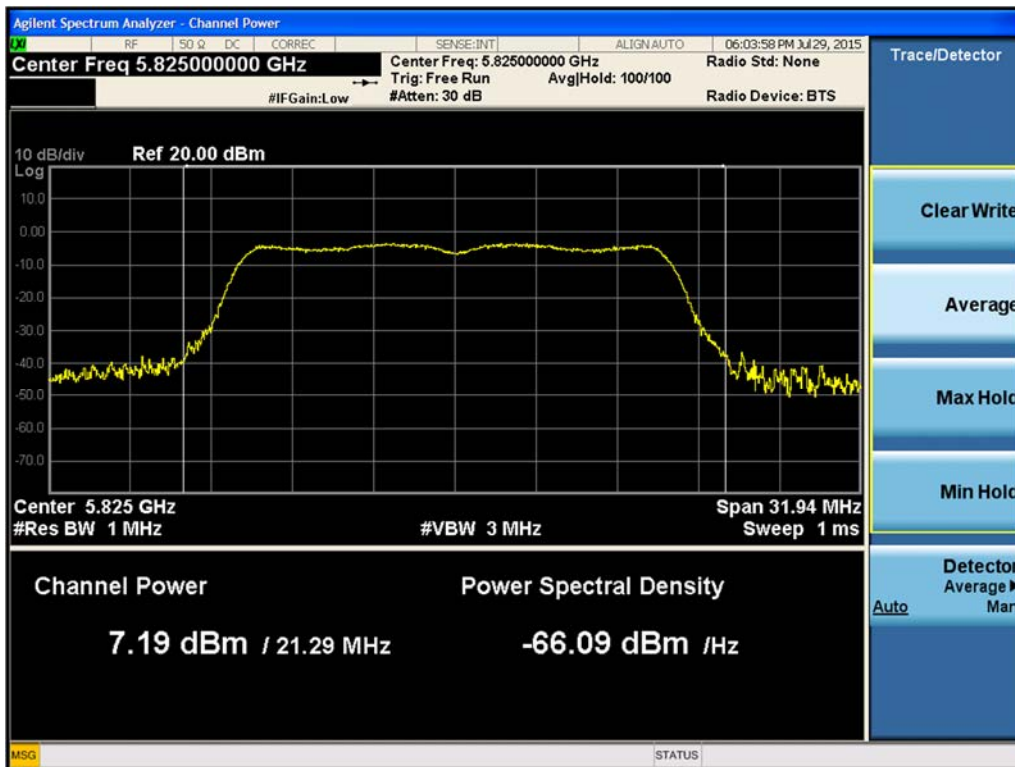


Figure 313. Maximum Conducted Output Power Chain B 802.11a (Ch. 165)

9.4.5.2 Chain A+B 802.11n HT20 Maximum Conducted Output Power

Chain A+B 802.11n HT20 Maximum Conducted Output Power						
Channel No.	Frequency (MHz)	Chain A (dBm)	Chain B (dBm)	Total Power (dBm)	15.407 Limit (dBm)	RSS-247 Limit (dBm)
36	5180	8.44	8.24	11.35	24	--
44	5220	8.29	8.80	11.56	24	--
48	5240	8.23	8.55	11.4	24	--
52	5260	8.27	7.92	11.11	24	23.2
60	5300	8.26	8.14	11.21	24	23.2
64	5320	8.52	8.40	11.47	24	23.2
100	5500	7.85	7.58	10.73	24	23.2
116	5580	7.60	7.83	10.73	24	23.2
140	5700	7.91	7.78	10.86	24	23.2
149	5745	7.77	7.36	10.58	30	30
157	5785	7.73	7.32	10.54	30	30
165	5825	7.44	7.07	10.27	30	30

Chain A+B 802.11n HT20 E.I.R.P					
Channel No.	Frequency (MHz)	Total Power (dBm)	Antenna Gain	E.I.R.P (dBm)	RSS-247 E.I.R.P Limit (dBm)
36	5180	11.35	5.4	16.75	23
44	5220	11.56	5.4	16.96	23
48	5240	11.4	5.4	16.8	23
52	5260	11.11	5.6	16.71	29.2
60	5300	11.21	5.6	16.81	29.2
64	5320	11.47	5.6	17.07	29.2
100	5500	10.73	5.7	16.43	29.2
116	5580	10.73	5.7	16.43	29.2
140	5700	10.86	5.7	16.56	29.2
149	5745	10.58	5.6	16.18	--
157	5785	10.54	5.6	16.14	--
165	5825	10.27	5.6	15.87	--



Figure 314. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 36)

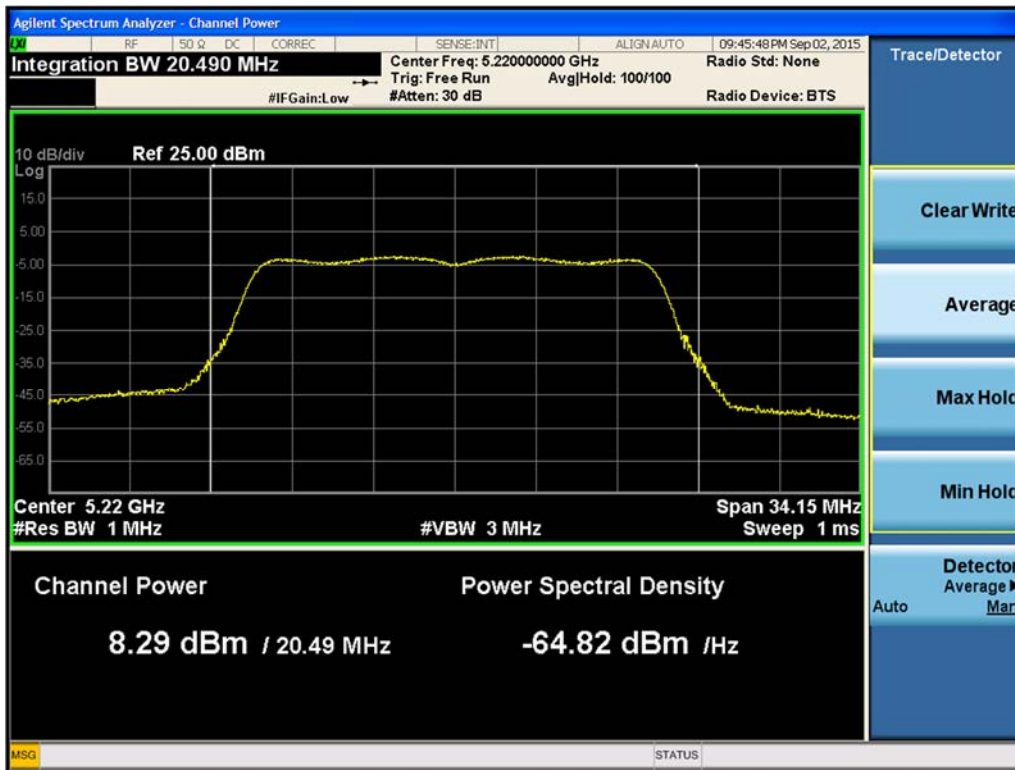


Figure 315. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 44)



Figure 316. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 48)

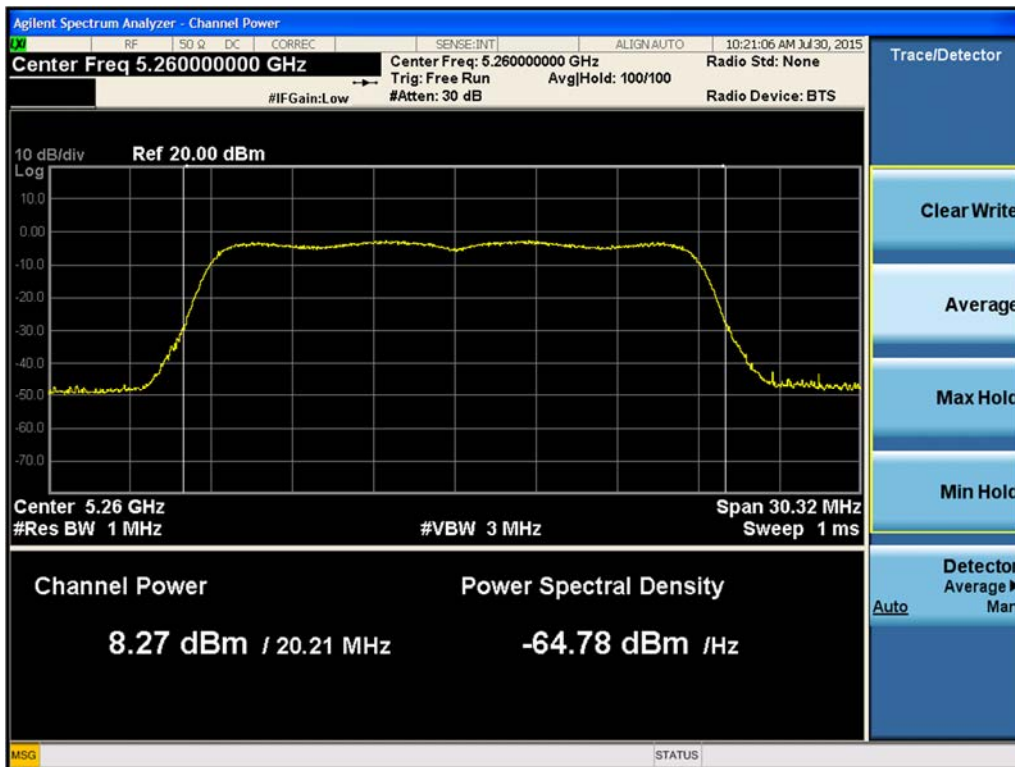


Figure 317. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 52)



Figure 318. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 60)

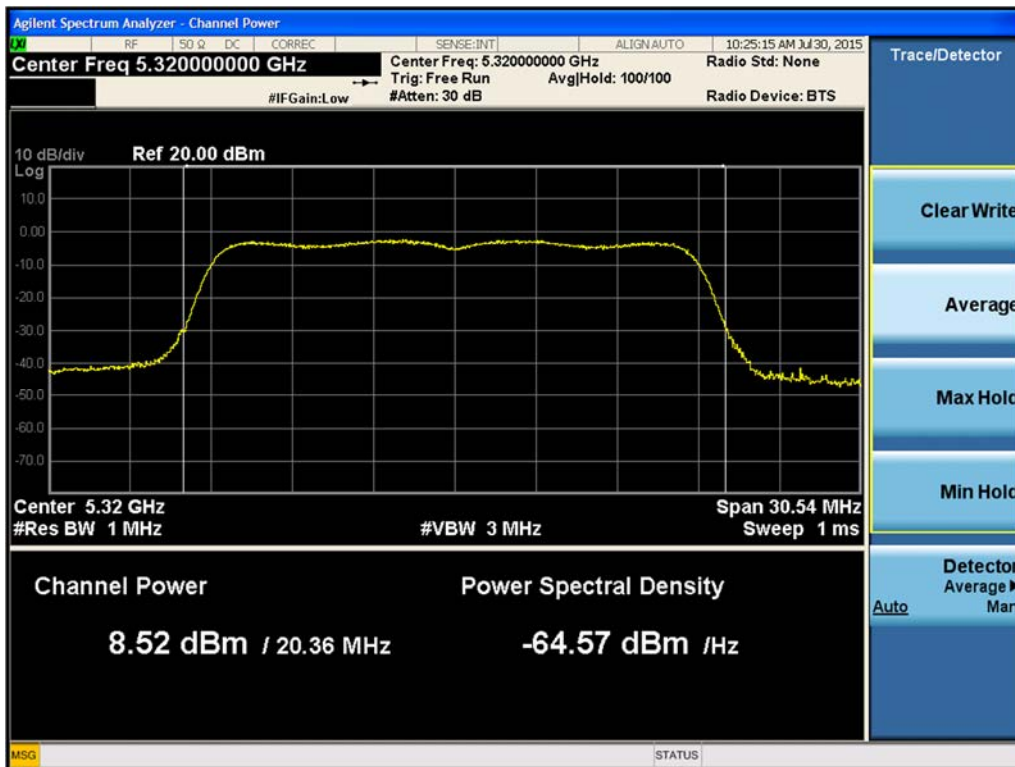


Figure 319. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 64)

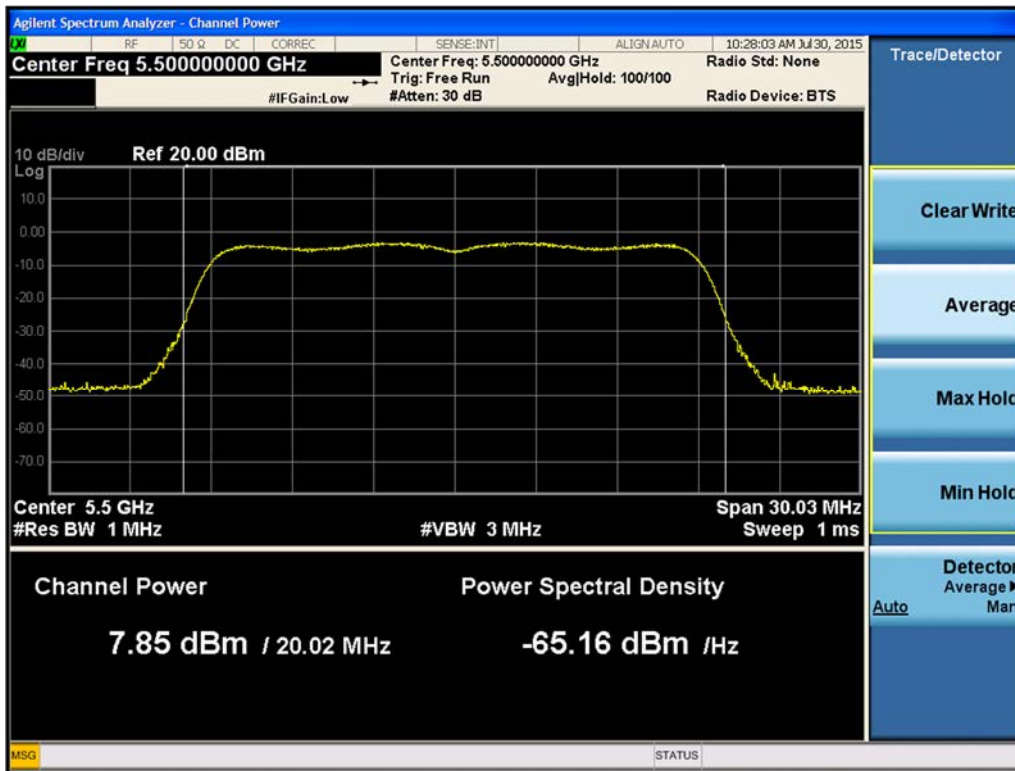


Figure 320. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 100)

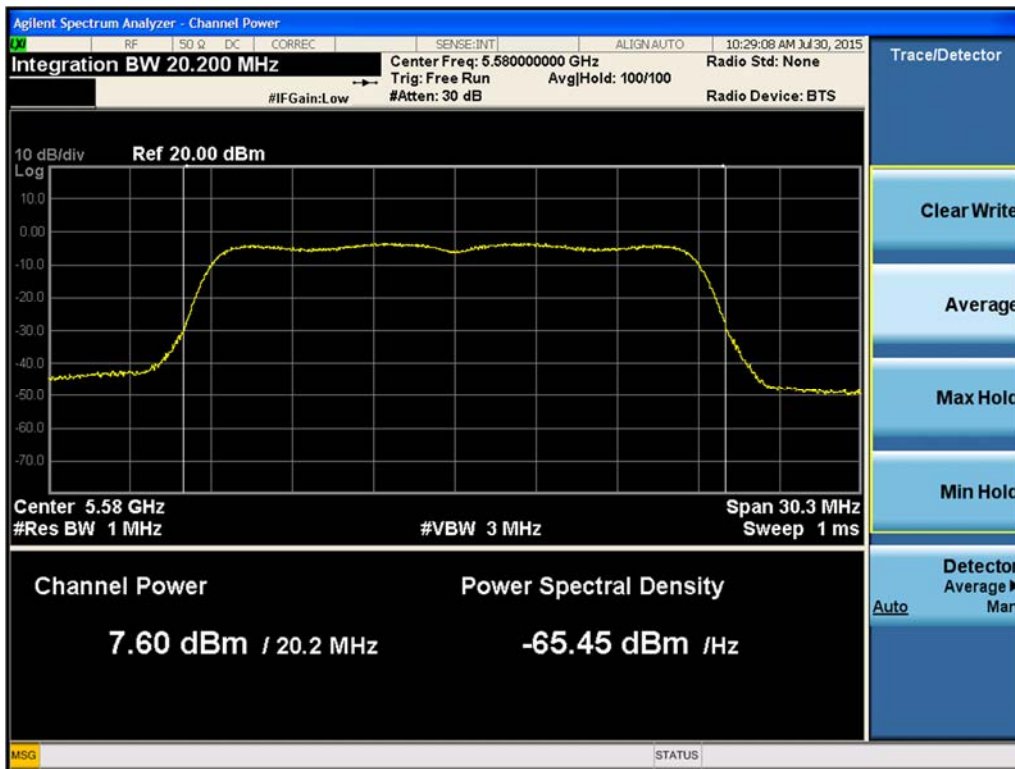


Figure 321. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 116)

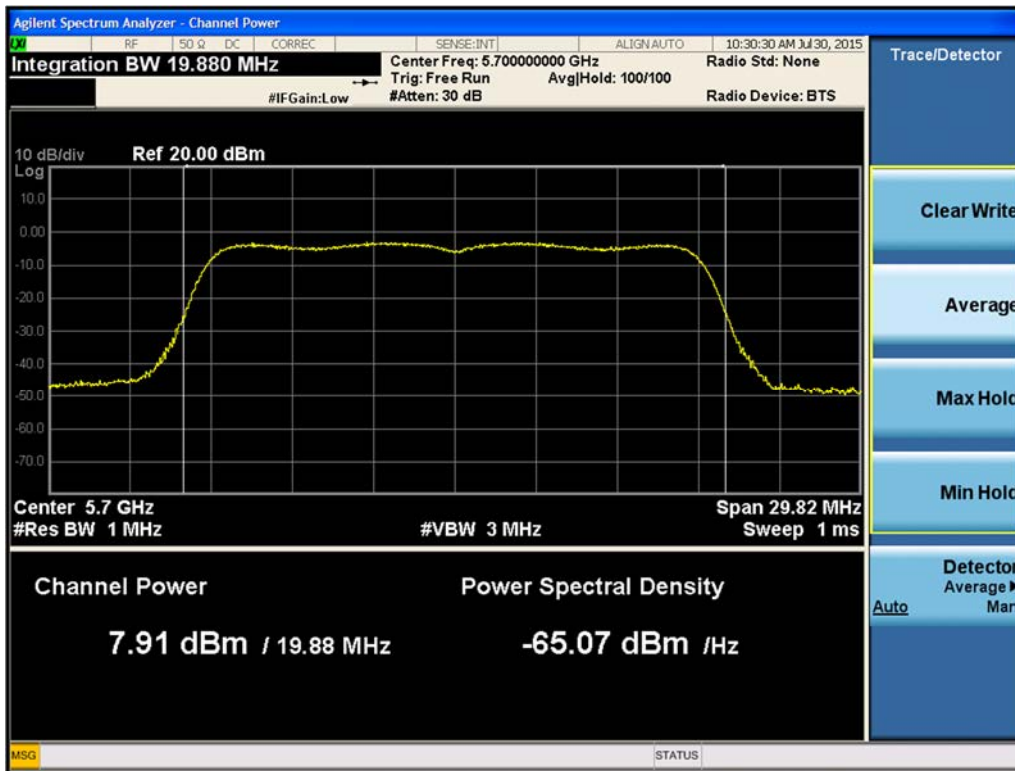


Figure 322. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 140)

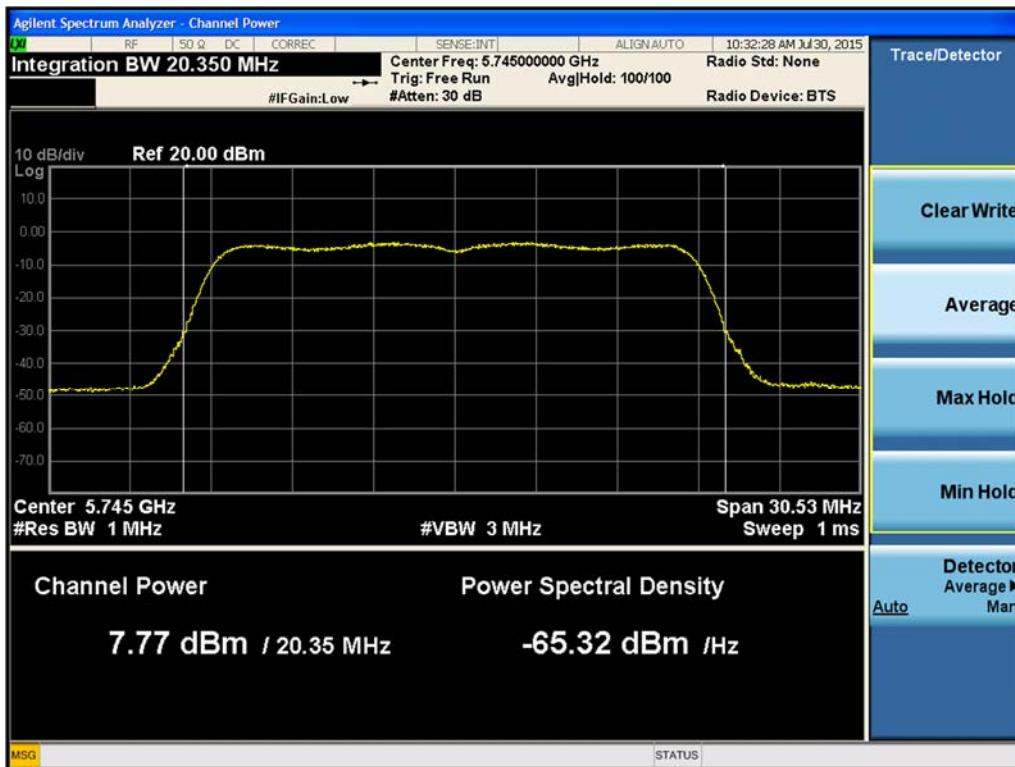


Figure 323. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 149)

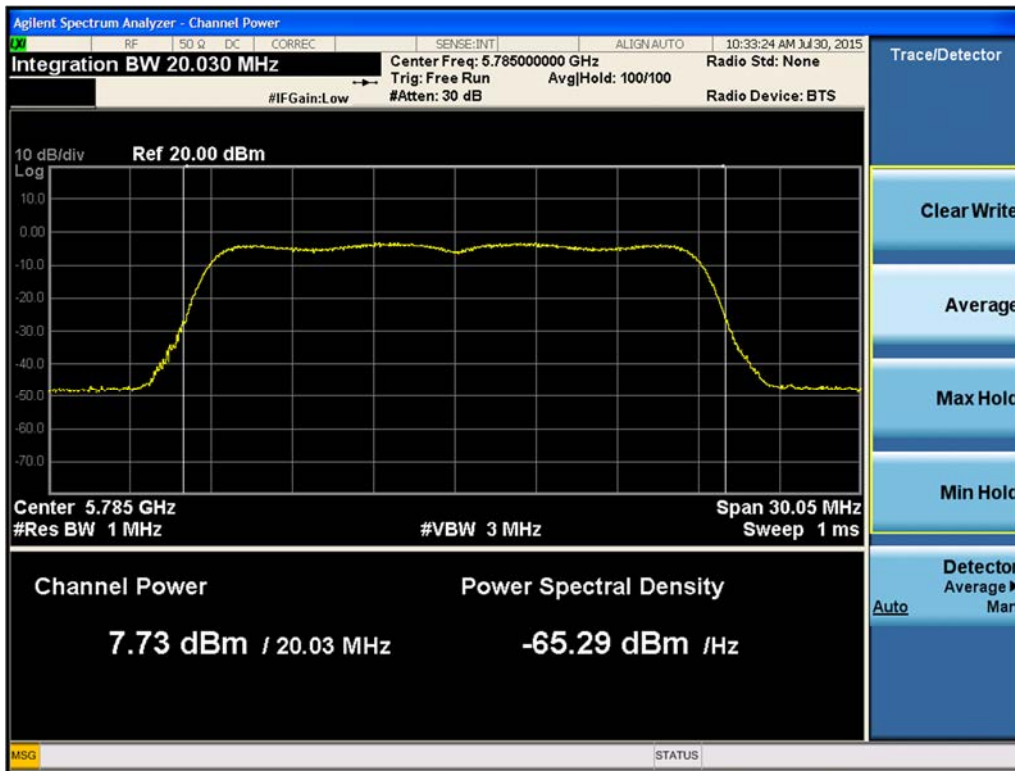


Figure 324. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 157)

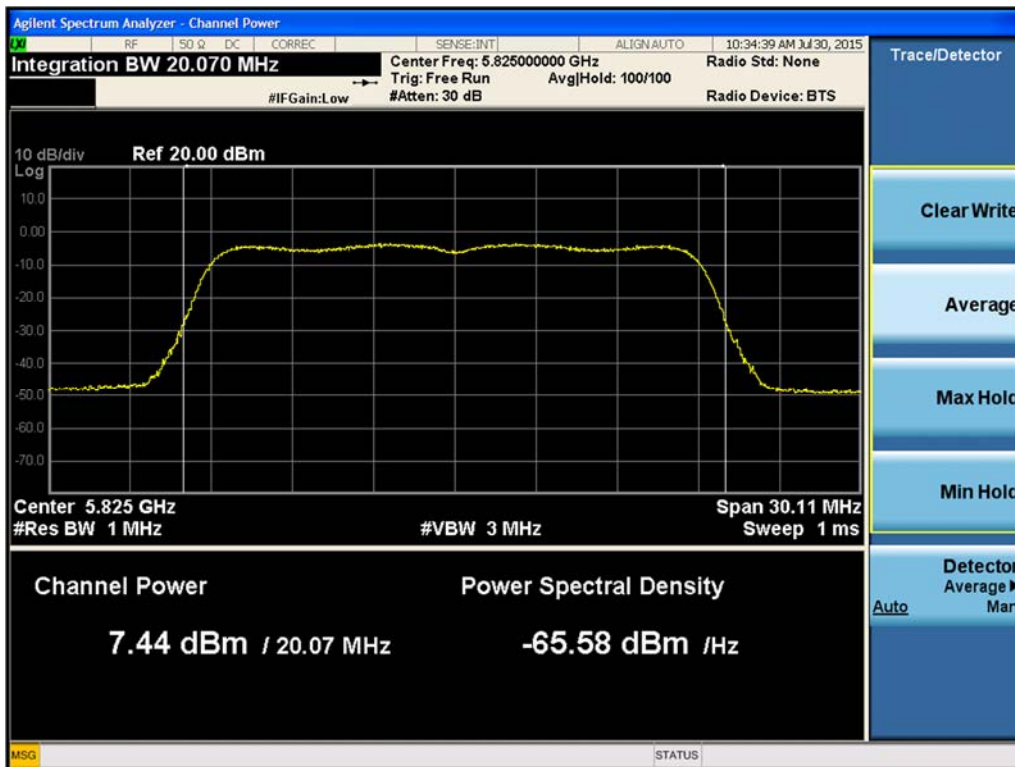


Figure 325. Maximum Conducted Output Power Chain A 802.11n HT20 (Ch. 165)

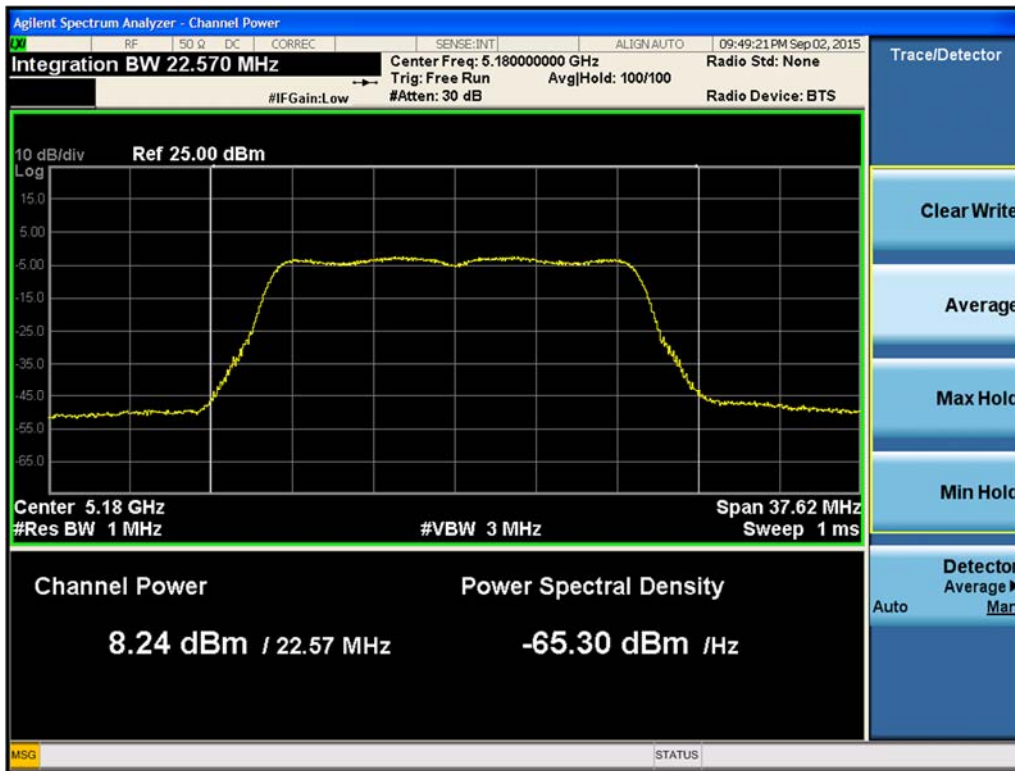


Figure 326. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 36)



Figure 327. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 44)



Figure 328. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 48)



Figure 329. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 52)



Figure 330. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 60)



Figure 331. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 64)

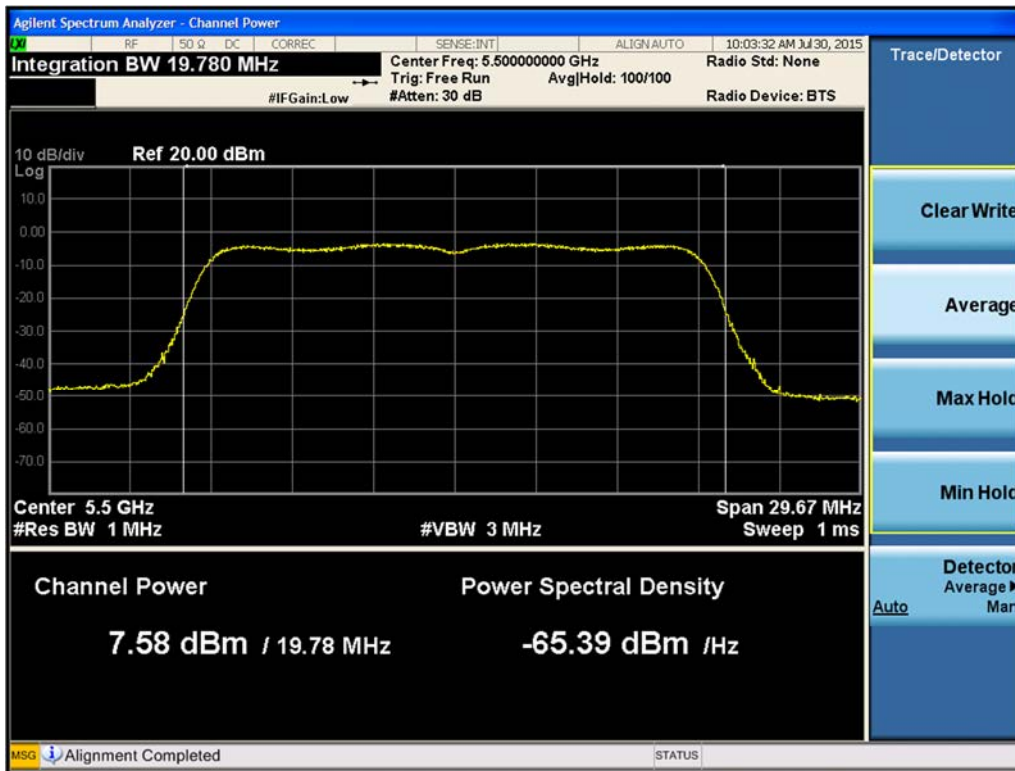


Figure 332. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 100)

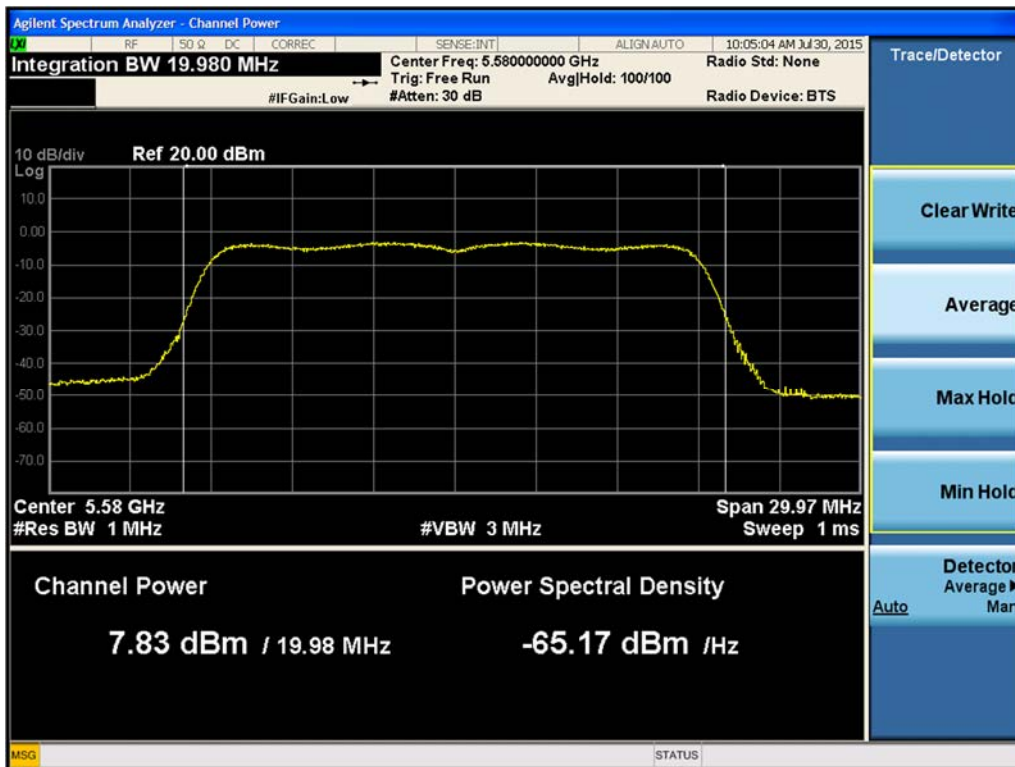


Figure 333. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 116)

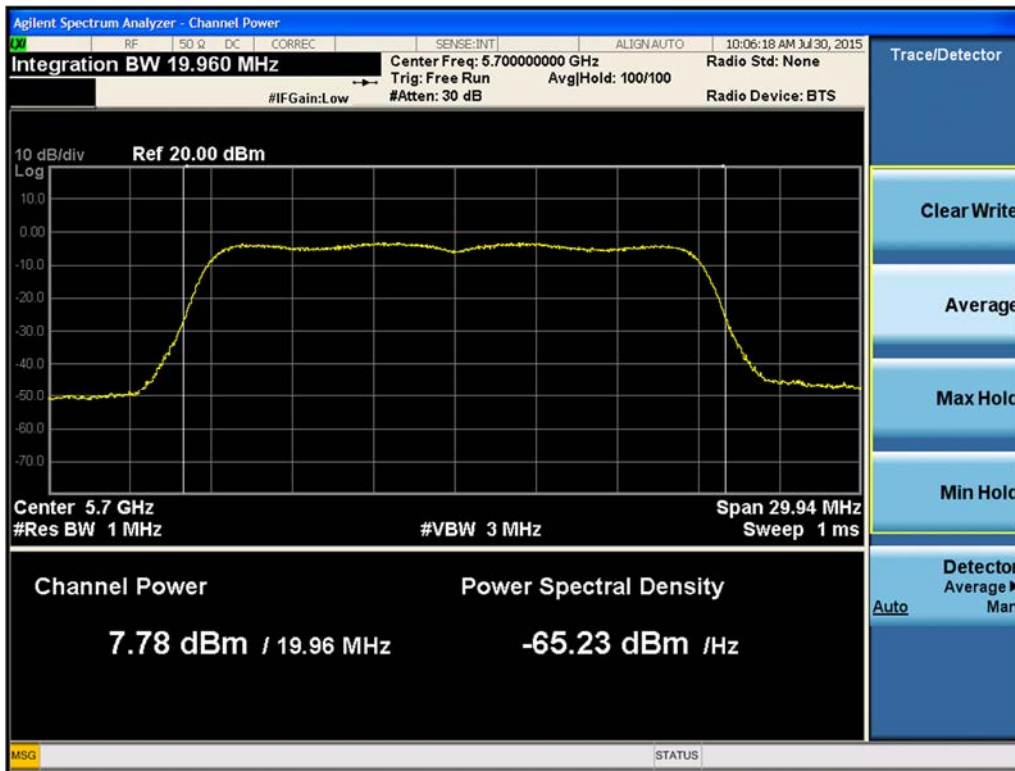


Figure 334. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 140)

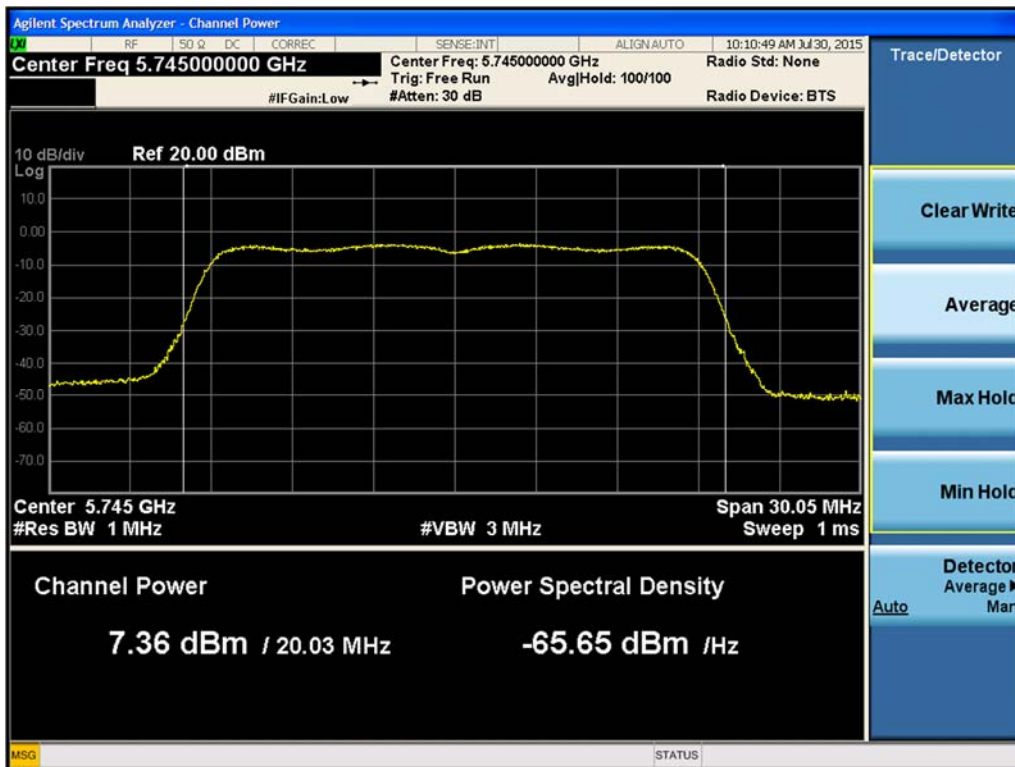


Figure 335. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 149)

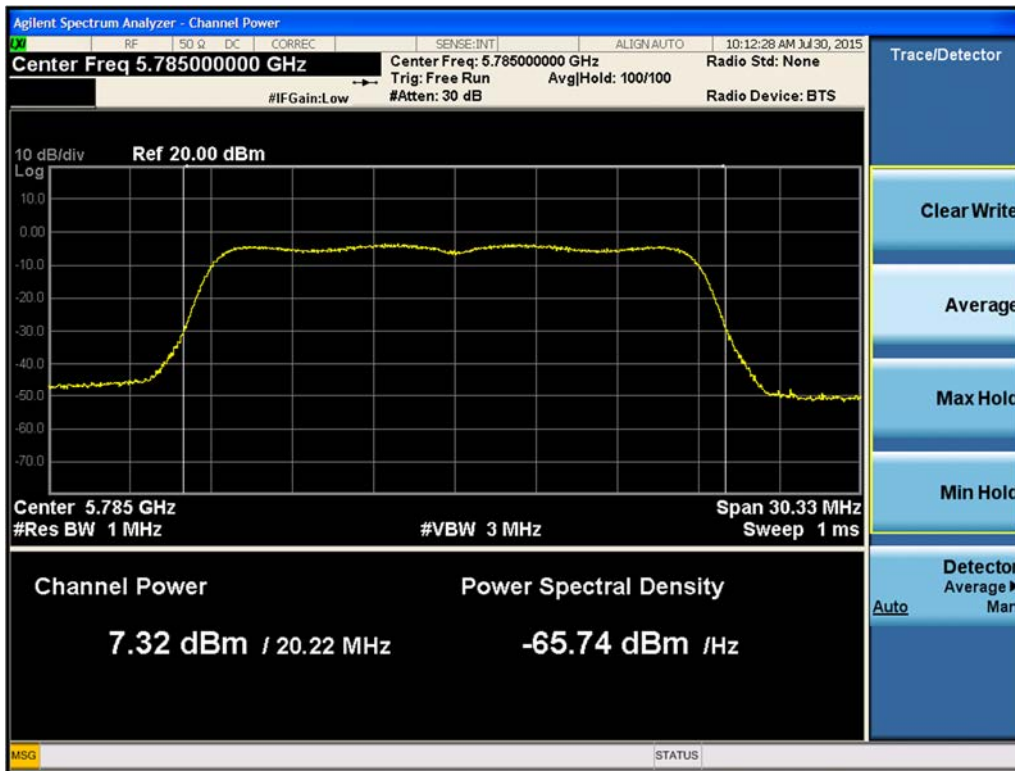


Figure 336. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 157)

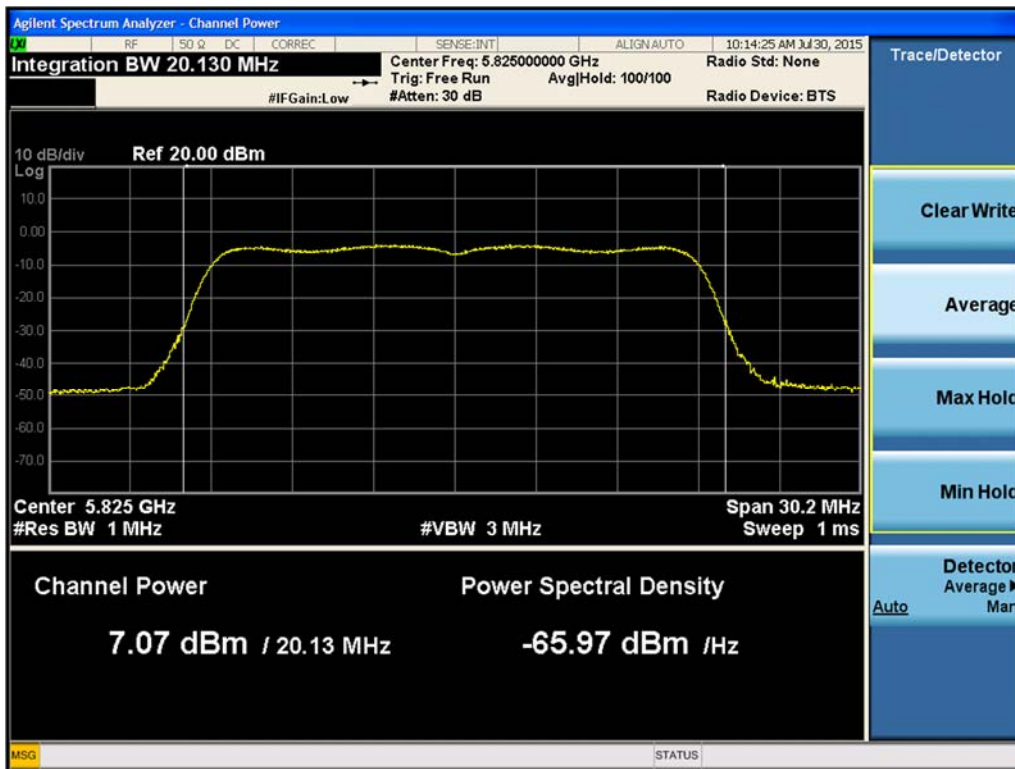


Figure 337. Maximum Conducted Output Power Chain B 802.11n HT20 (Ch. 165)

9.4.5.3 Chain A+B 802.11ac VHT20 Maximum Conducted Output Power

Chain A+B 802.11ac VHT20 Maximum Conducted Output Power						
Channel No.	Frequency (MHz)	Chain A (dBm)	Chain B (dBm)	Total Power (dBm)	15.407 Limit (dBm)	RSS-247 Limit (dBm)
36	5180	8.84	8.91	11.89	24	--
44	5220	8.69	8.85	11.78	24	--
48	5240	8.51	8.65	11.59	24	--
52	5260	8.25	7.92	11.1	24	23.2
60	5300	8.20	7.88	11.05	24	23.2
64	5320	8.31	7.91	11.12	24	23.2
100	5500	7.75	7.68	10.73	24	23.2
116	5580	7.55	7.80	10.69	24	23.2
140	5700	7.75	7.87	10.82	24	23.2
149	5745	7.36	7.27	10.33	30	30
157	5785	7.72	7.24	10.5	30	30
165	5825	7.35	7.01	10.19	30	30

Chain A+B 802.11ac VHT20 E.I.R.P					
Channel No.	Frequency (MHz)	Total Power (dBm)	Antenna Gain	E.I.R.P (dBm)	RSS-247 E.I.R.P Limit (dBm)
36	5180	11.89	5.4	17.29	23
44	5220	11.78	5.4	17.18	23
48	5240	11.59	5.4	16.99	23
52	5260	11.1	5.6	16.7	29.2
60	5300	11.05	5.6	16.65	29.2
64	5320	11.12	5.6	16.72	29.2
100	5500	10.73	5.7	16.43	29.2
116	5580	10.69	5.7	16.39	29.2
140	5700	10.82	5.7	16.52	29.2
149	5745	10.33	5.6	15.93	--
157	5785	10.5	5.6	16.1	--
165	5825	10.19	5.6	15.79	--



Figure 338. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 36)



Figure 339. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 44)



Figure 340. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 48)



Figure 341. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 52)



Figure 342. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 60)

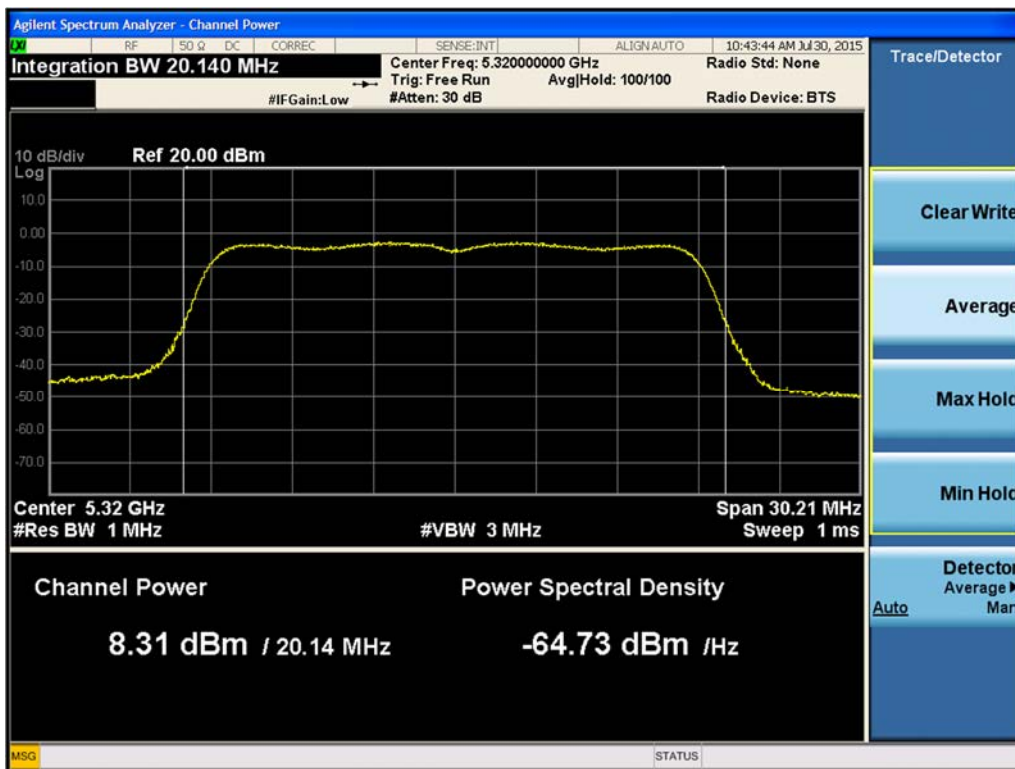


Figure 343. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 64)

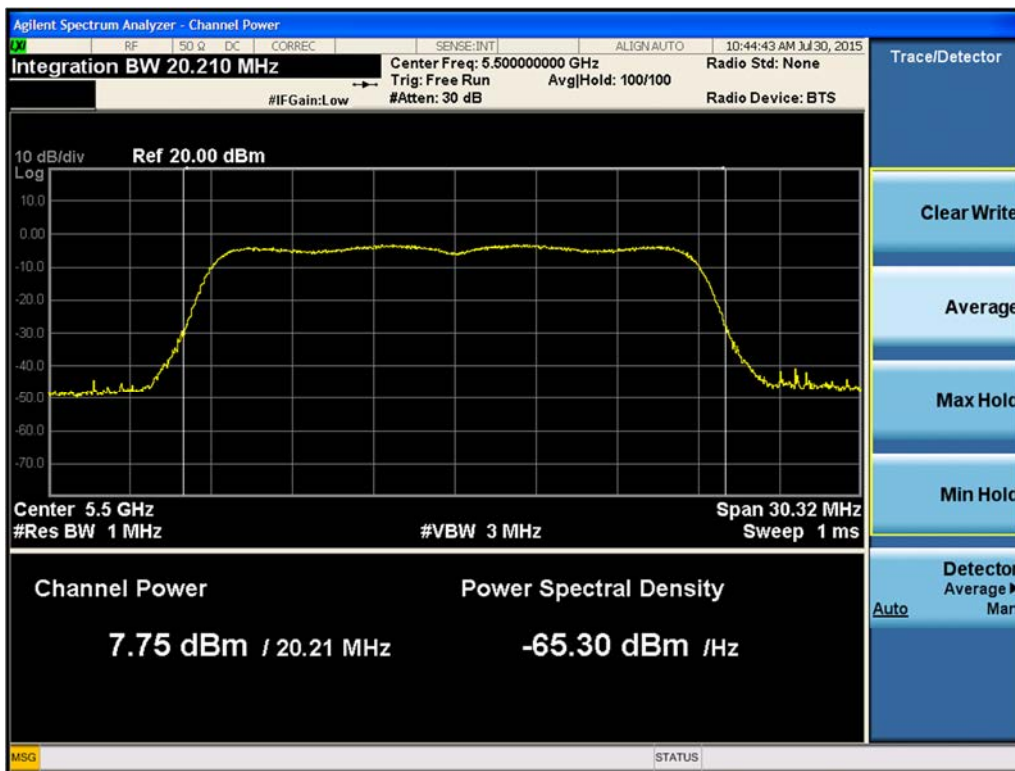


Figure 344. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 100)



Figure 345. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 116)



Figure 346. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 140)

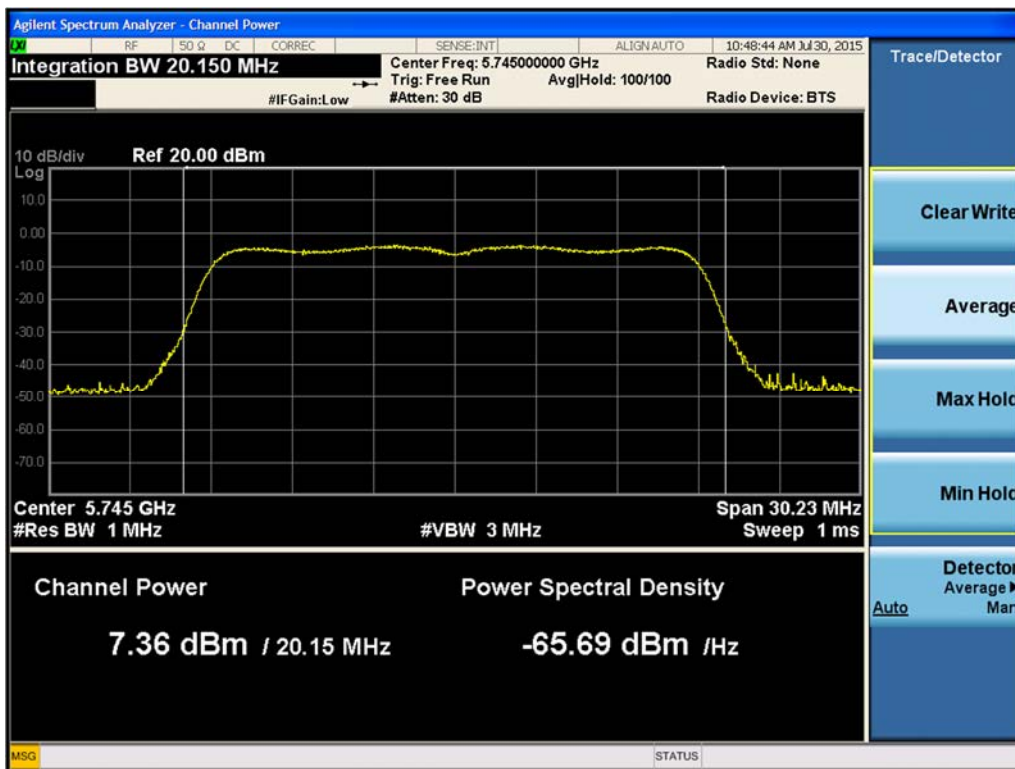


Figure 347. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 149)

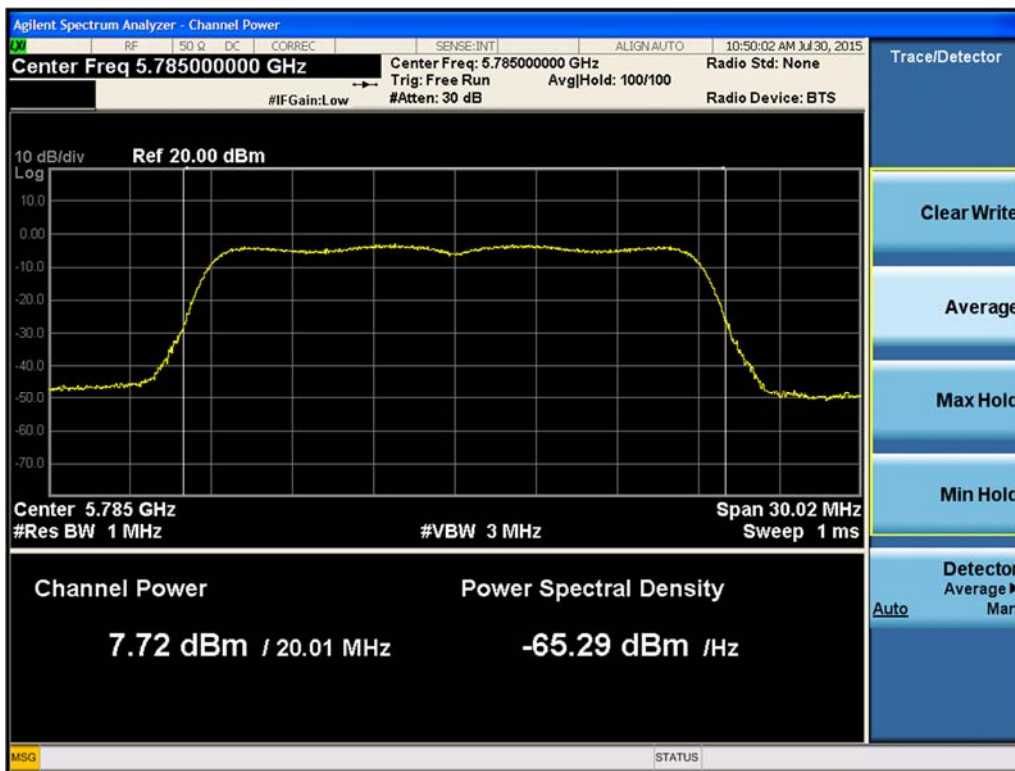


Figure 348. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 157)

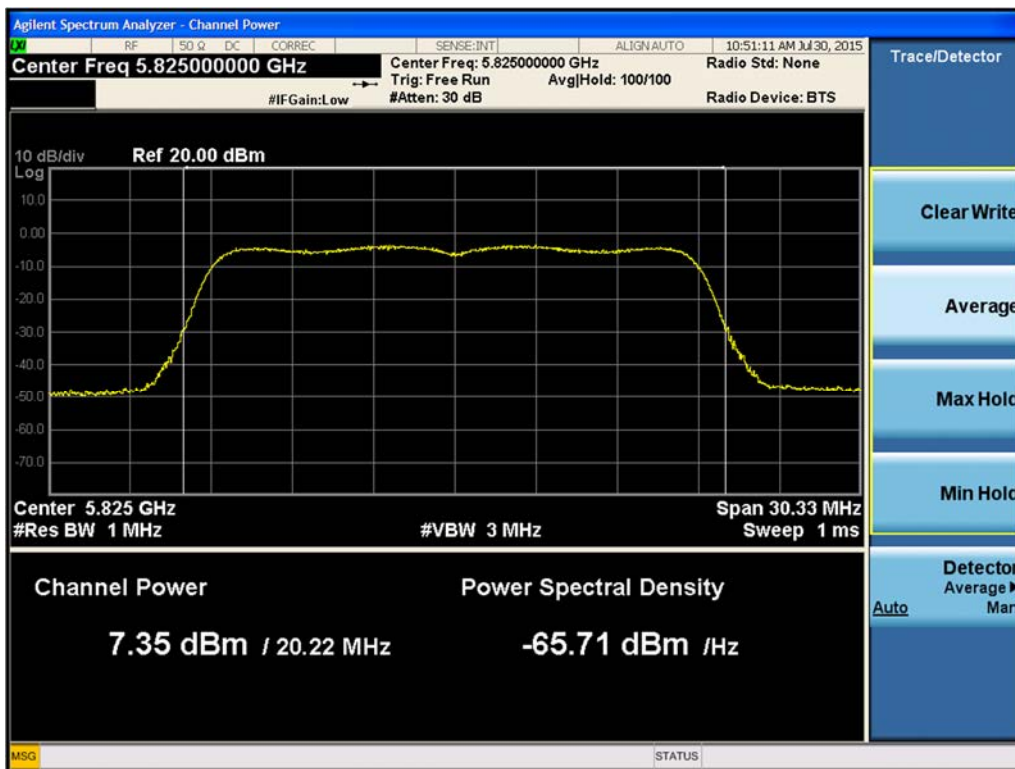


Figure 349. Maximum Conducted Output Power Chain A 802.11ac VHT20 (Ch. 165)



Figure 350. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 36)



Figure 351. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 44)



Figure 352. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 48)

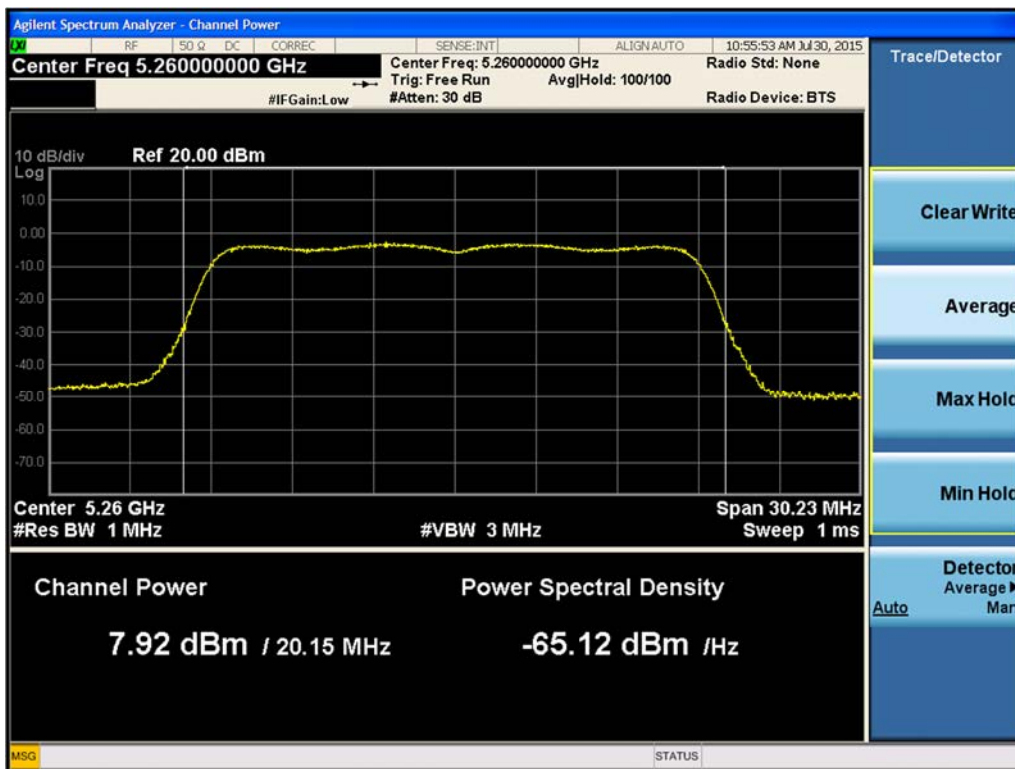


Figure 353. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 52)



Figure 354. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 60)

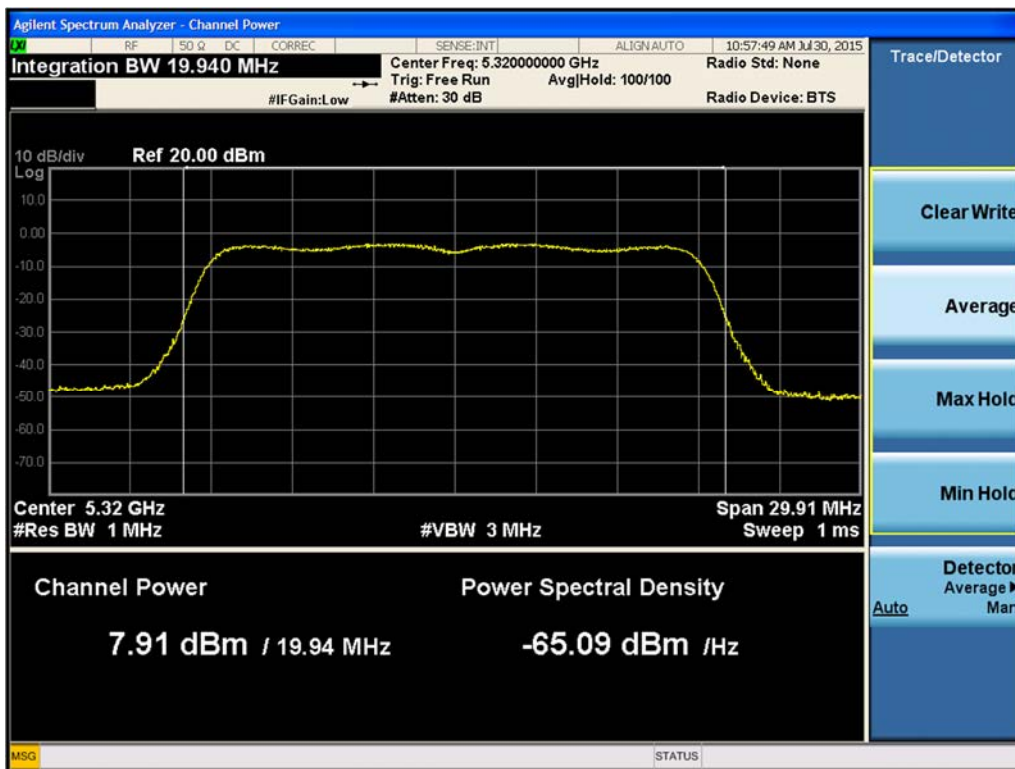


Figure 355. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 64)

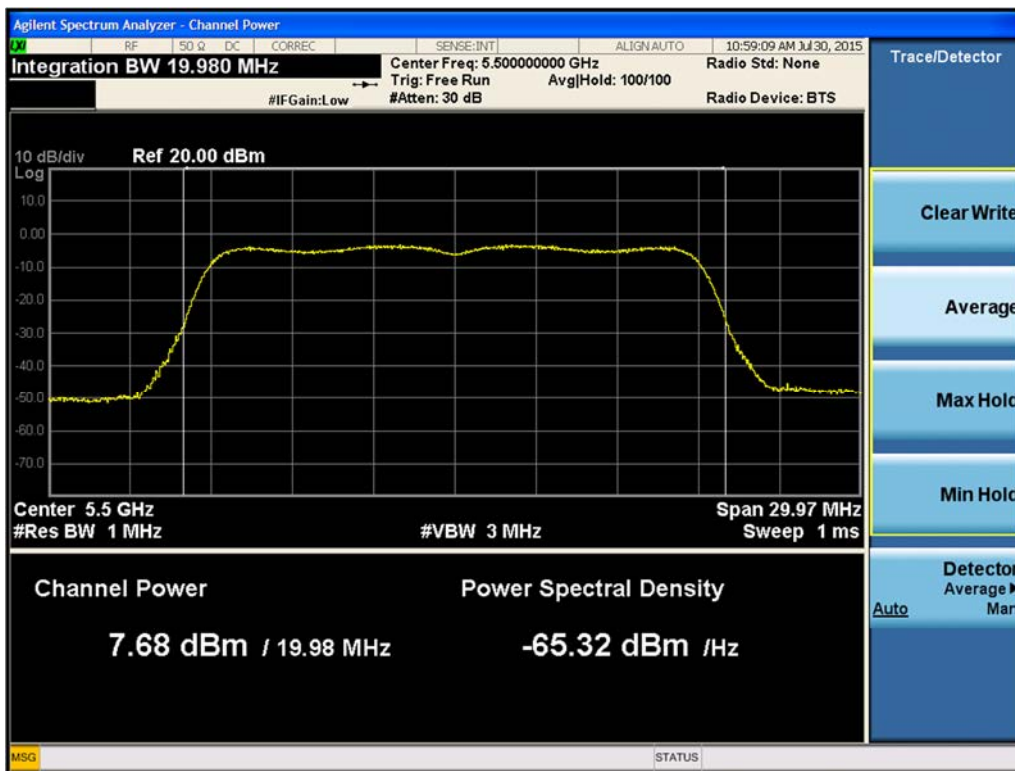


Figure 356. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 100)



Figure 357. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 116)



Figure 358. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 140)

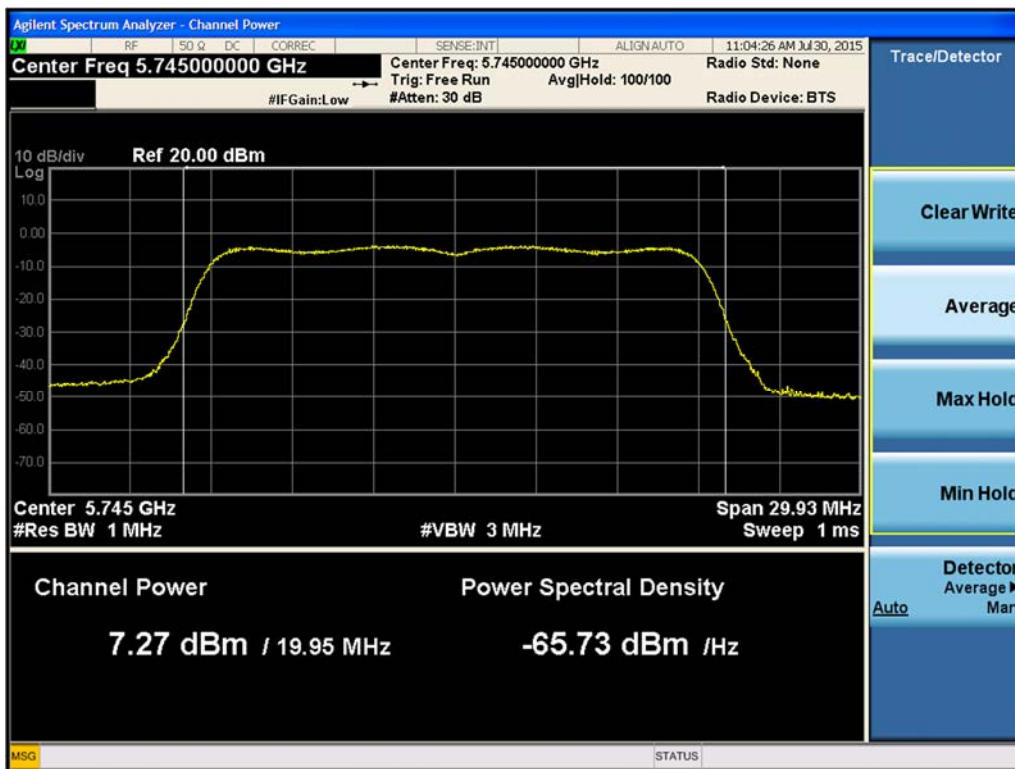


Figure 359. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 149)



Figure 360. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 157)



Figure 361. Maximum Conducted Output Power Chain B 802.11ac VHT20 (Ch. 165)

9.4.5.4 Chain A+B 802.11n HT40 Maximum Conducted Output Power

Chain A+B 802.11n HT40 Maximum Conducted Output Power						
Channel No.	Frequency (MHz)	Chain A (dBm)	Chain B (dBm)	Total Power (dBm)	15.407 Limit (dBm)	RSS-247 Limit (dBm)
38	5190	8.54	8.50	11.53	24	--
46	5230	8.74	8.39	11.58	24	--
54	5270	8.57	8.06	11.33	24	24
62	5310	8.42	7.84	11.15	24	24
102	5510	7.45	7.21	10.34	24	24
110	5550	7.64	7.61	10.64	24	24
134	5670	7.97	7.92	10.96	24	24
151	5755	7.97	7.32	10.67	30	30
159	5795	7.65	7.19	10.44	30	30

Chain A+B 802.11n HT40 E.I.R.P					
Channel No.	Frequency (MHz)	Total Power (dBm)	Antenna Gain	E.I.R.P (dBm)	RSS-247 E.I.R.P Limit (dBm)
38	5190	11.53	5.4	16.93	23
46	5230	11.58	5.4	16.98	23
54	5270	11.33	5.6	16.93	23
62	5310	11.15	5.6	16.75	30
102	5510	10.34	5.7	16.04	30
110	5550	10.64	5.7	16.34	30
134	5670	10.96	5.7	16.66	30
151	5755	10.67	5.6	16.27	30
159	5795	10.44	5.6	16.04	30



Figure 362. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 38)



Figure 363. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 46)



Figure 364. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 54)

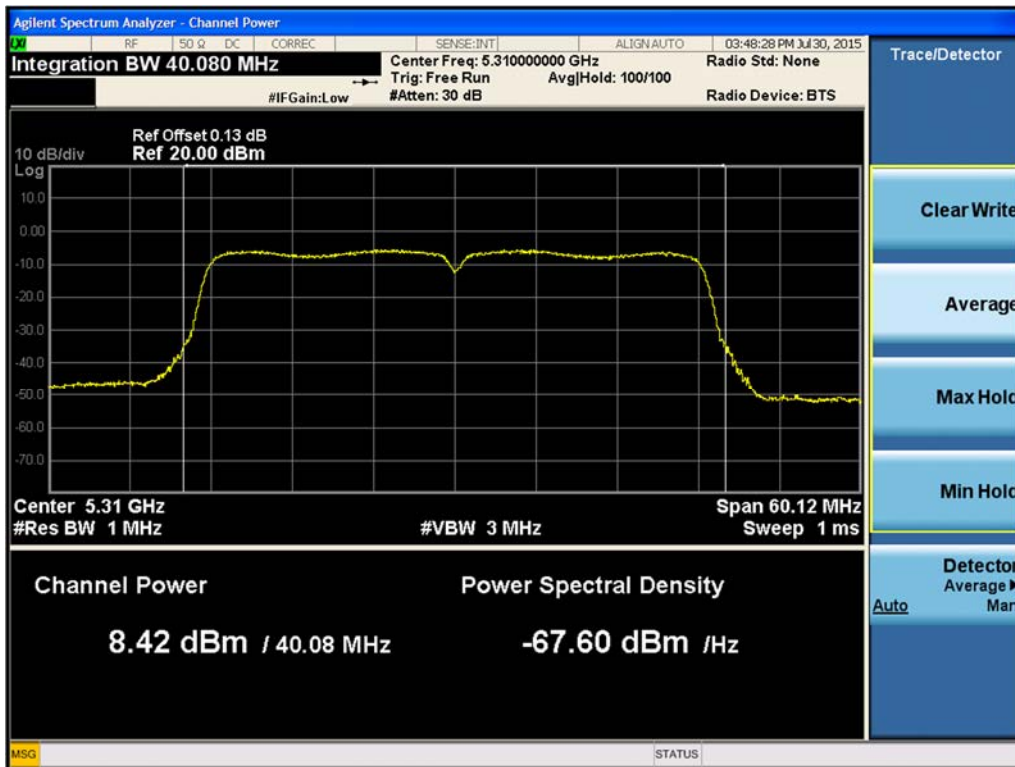


Figure 365. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 62)

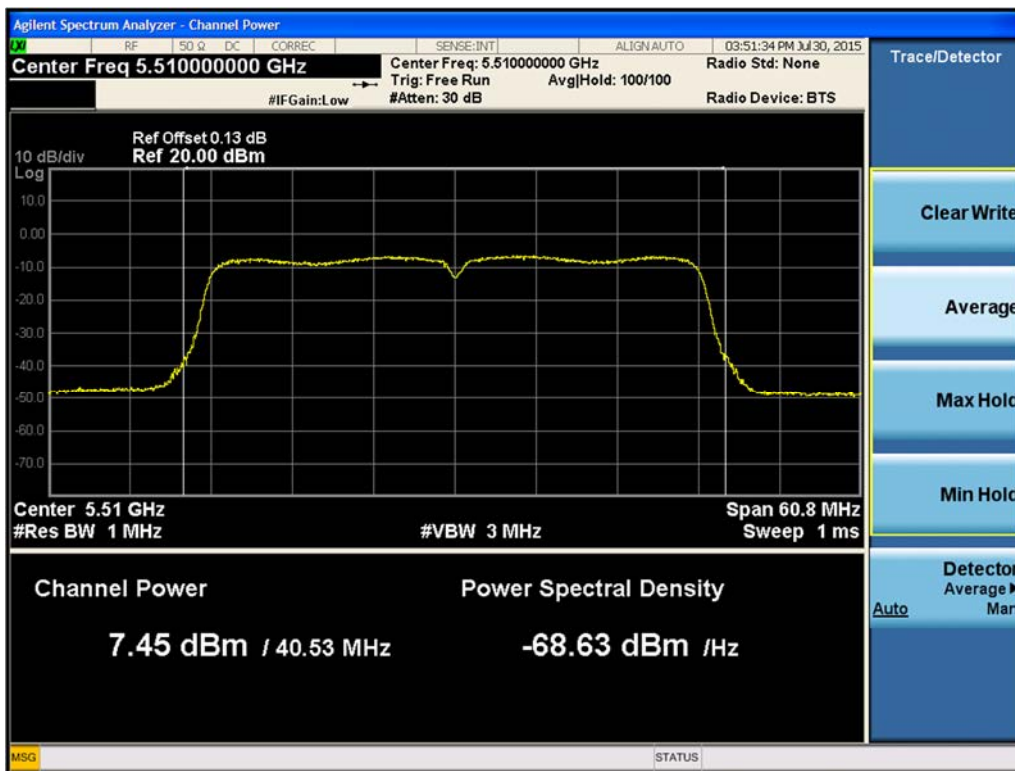


Figure 366. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 102)

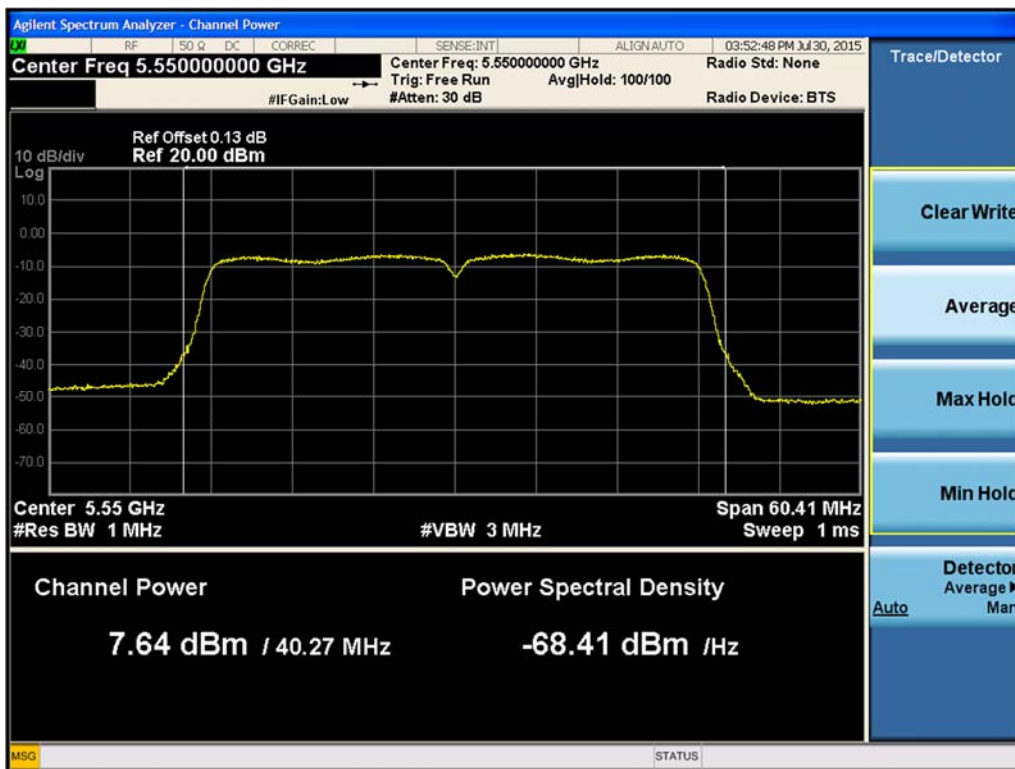


Figure 367. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 110)



Figure 368. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 134)

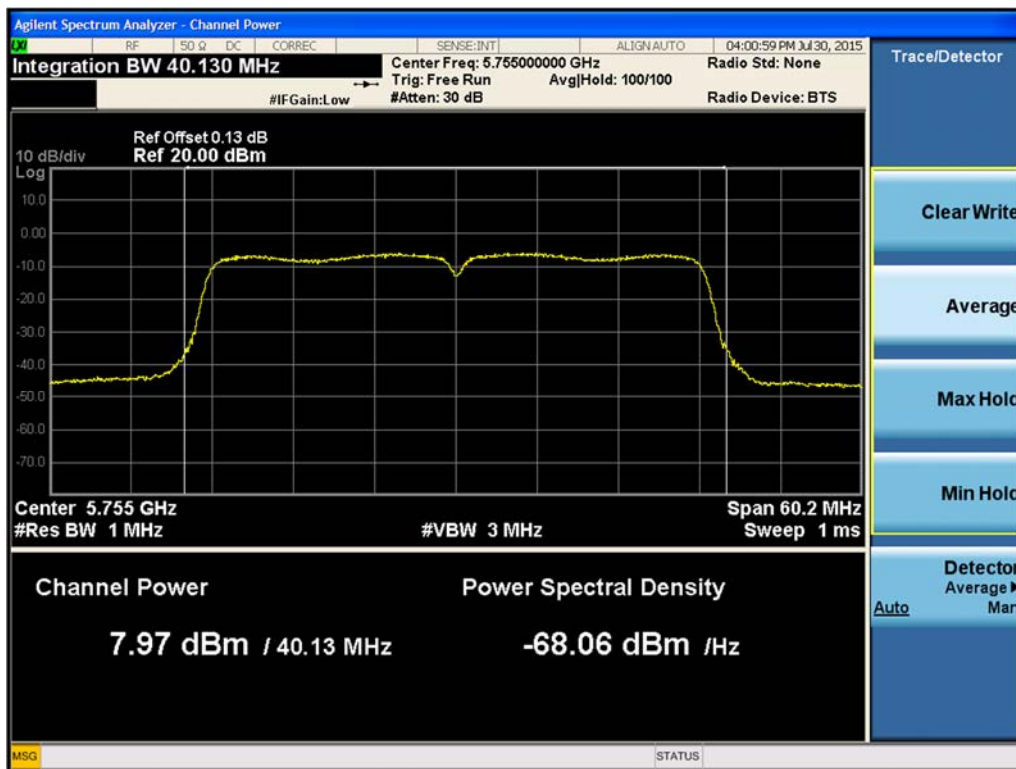


Figure 369. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 151)



Figure 370. Maximum Conducted Output Power Chain A 802.11n HT40 (Ch. 159)

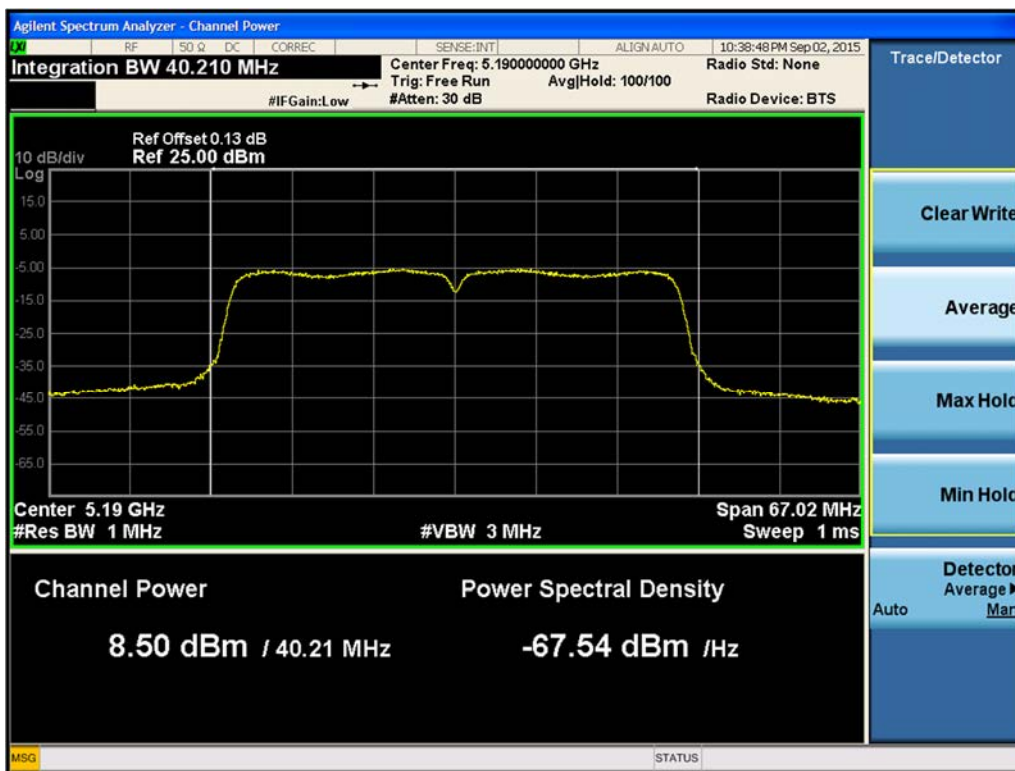


Figure 371. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 38)



Figure 372. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 46)



Figure 373. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 54)

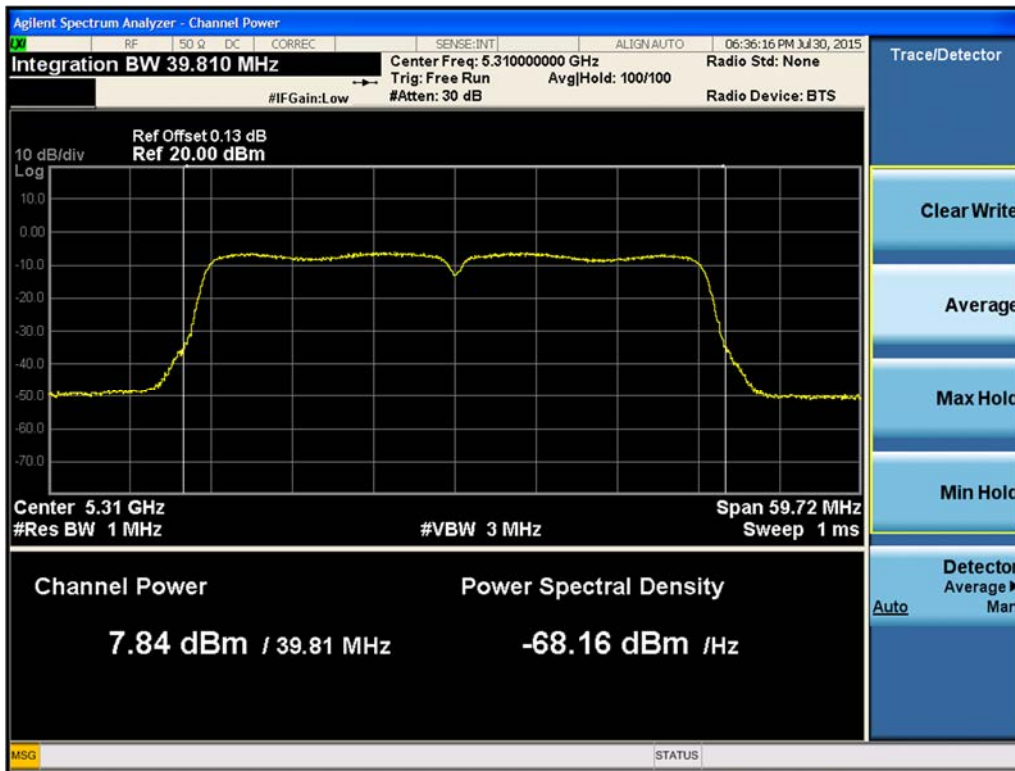


Figure 374. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 62)

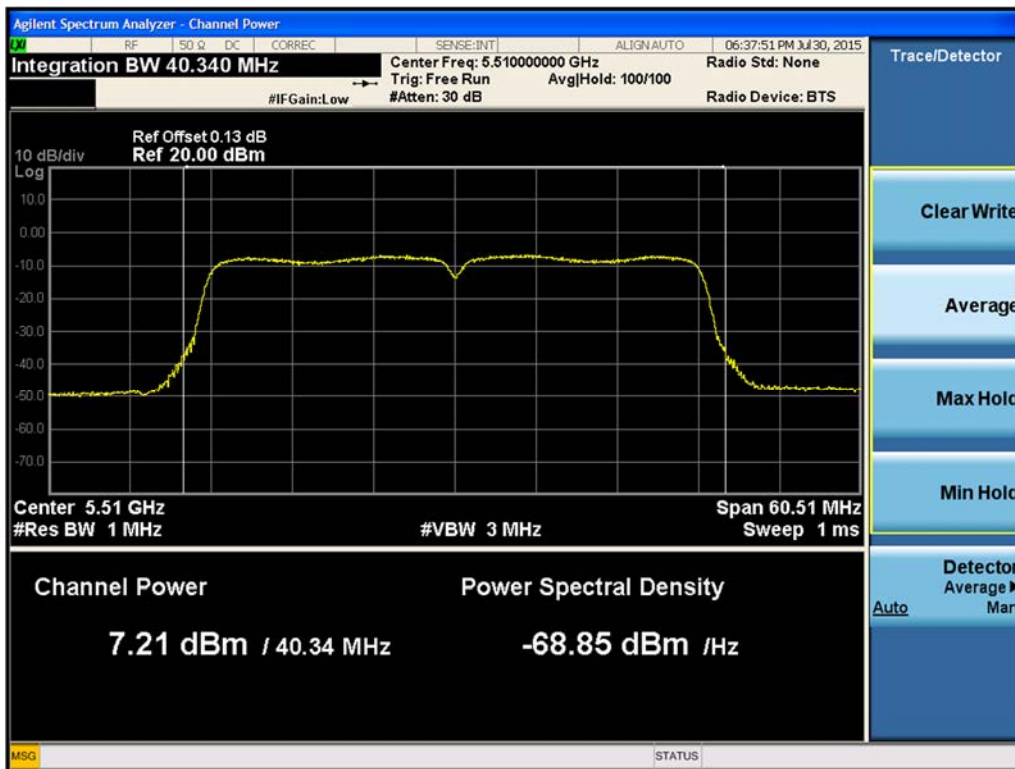


Figure 375. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 102)



Figure 376. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 110)

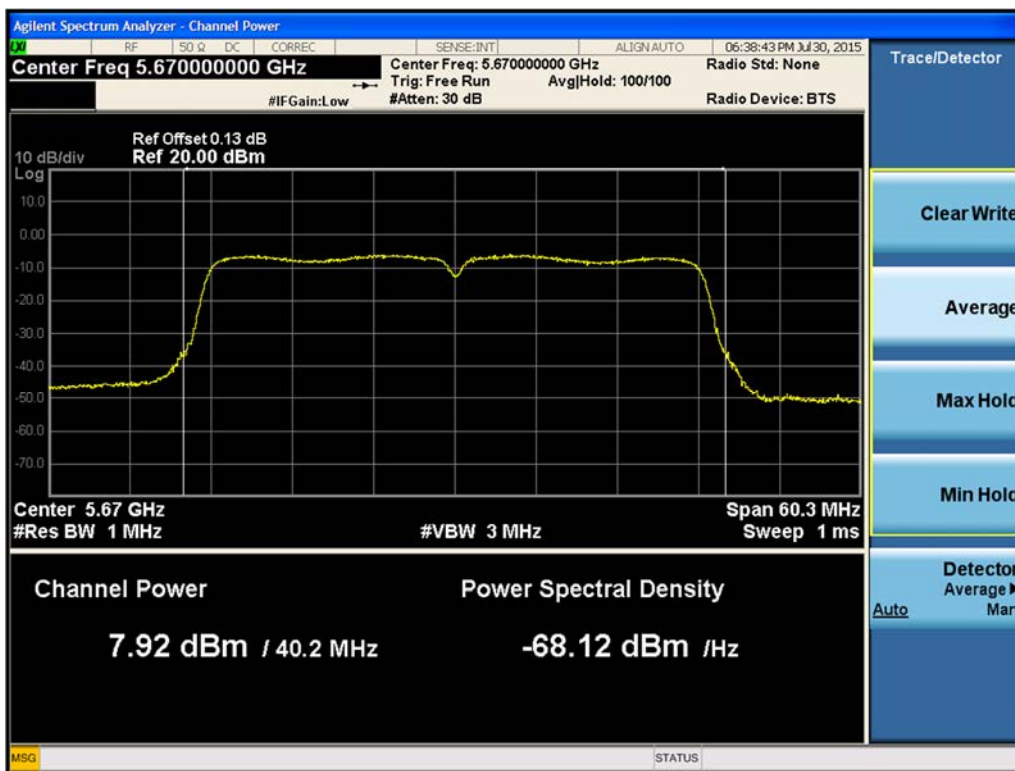


Figure 377. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 134)



Figure 378. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 151)



Figure 379. Maximum Conducted Output Power Chain B 802.11n HT40 (Ch. 159)