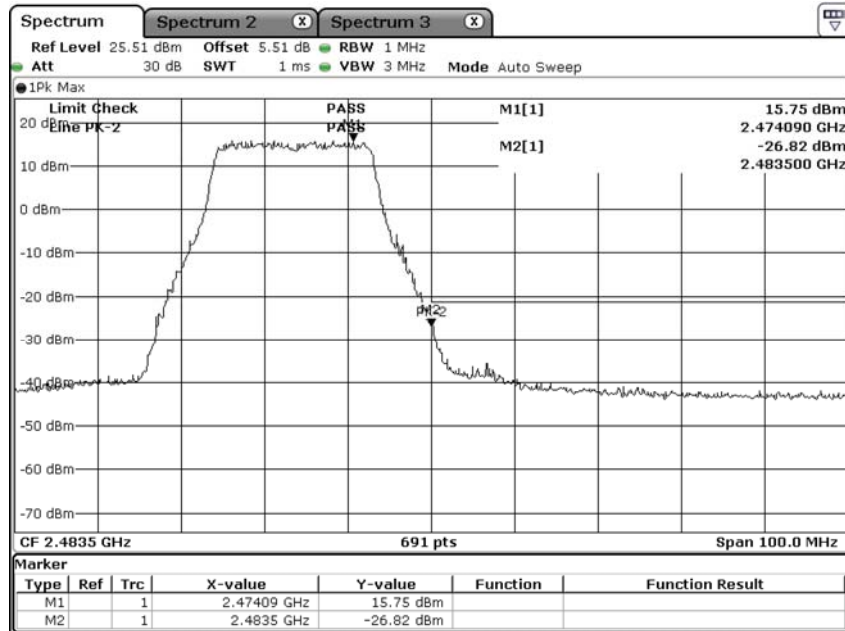


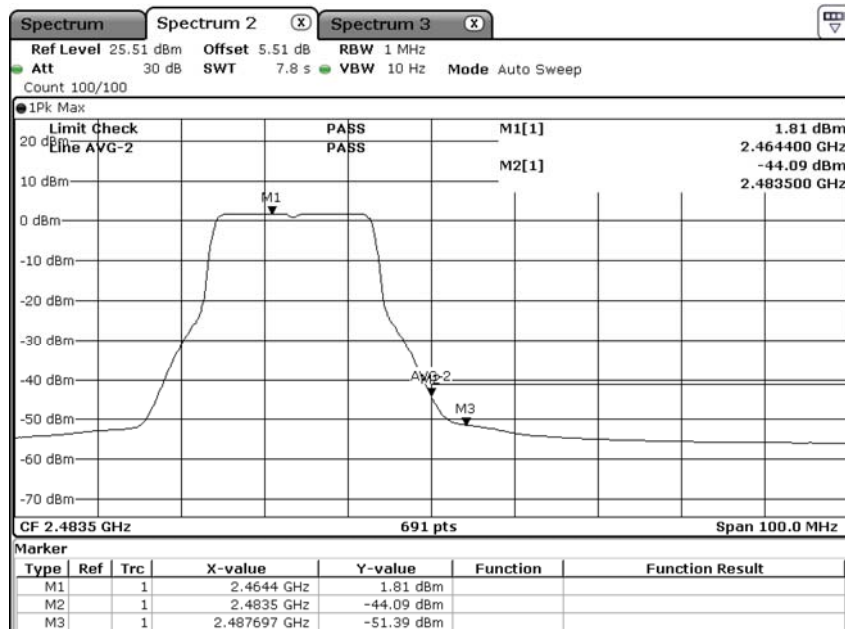
Product : Notebook Computers
 Test Item : Band Edge Data
 Test Mode : Mode 15 MIMO: Transmit (802.11ax-20BW_17.2Mbps) (2467MHz)
 Test Date : 2020/11/19

Peak: - Chain B



Date: 13.NOV.2020 14:42:58

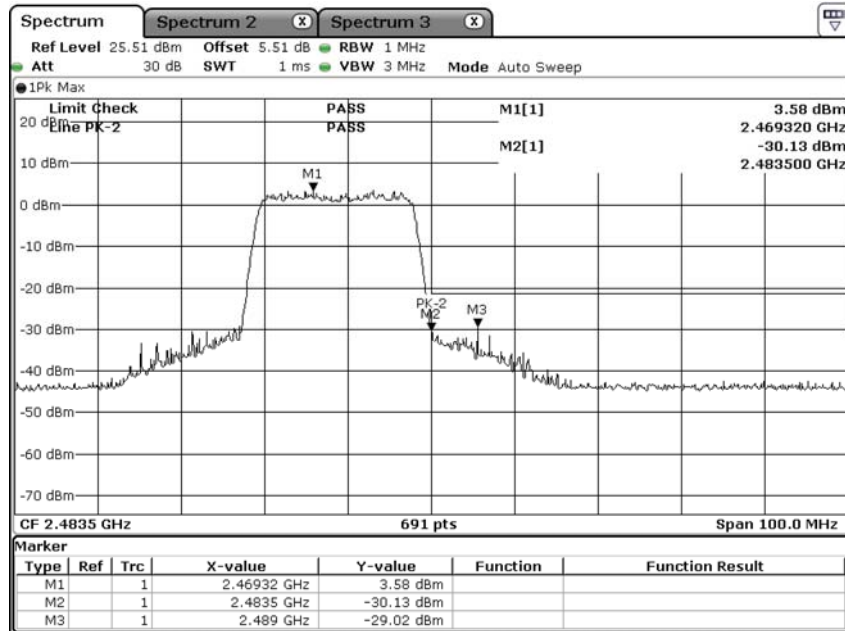
Average: - Chain B



Date: 13.NOV.2020 14:42:26

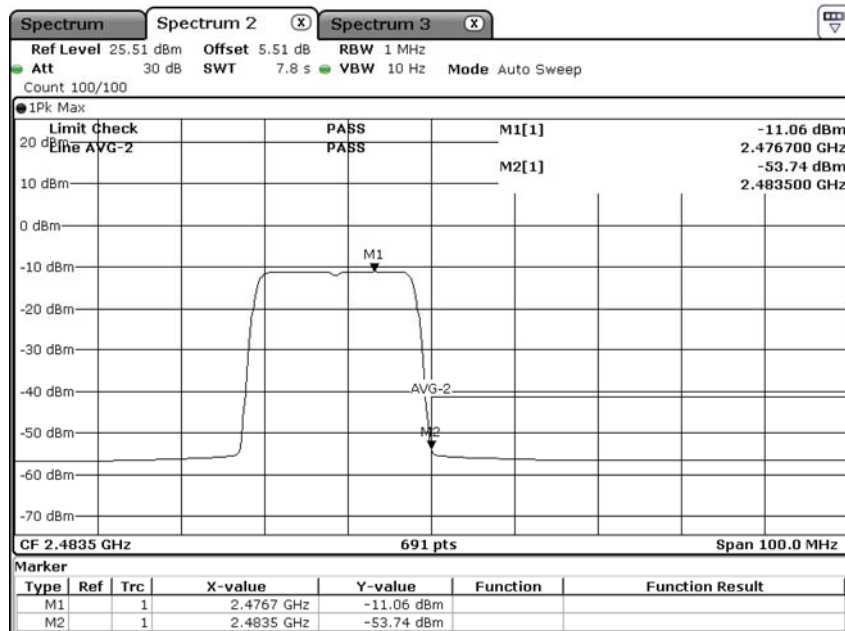
Product : Notebook Computers
 Test Item : Band Edge Data
 Test Mode : Mode 15 MIMO: Transmit (802.11ax-20BW_17.2Mbps) (2472MHz)
 Test Date : 2020/11/19

Peak: - Chain A



Date: 13.NOV.2020 14:56:32

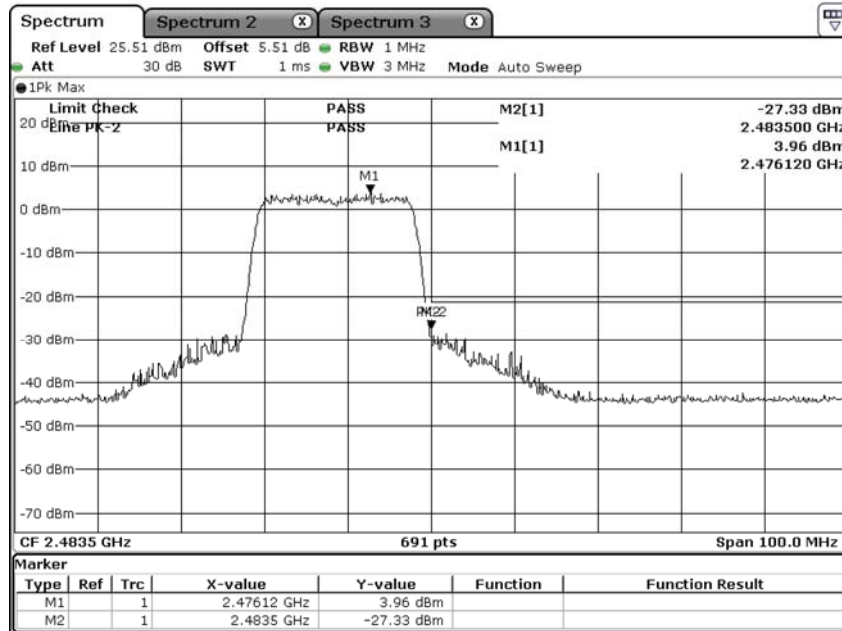
Average: - Chain A



Date: 13.NOV.2020 14:55:55

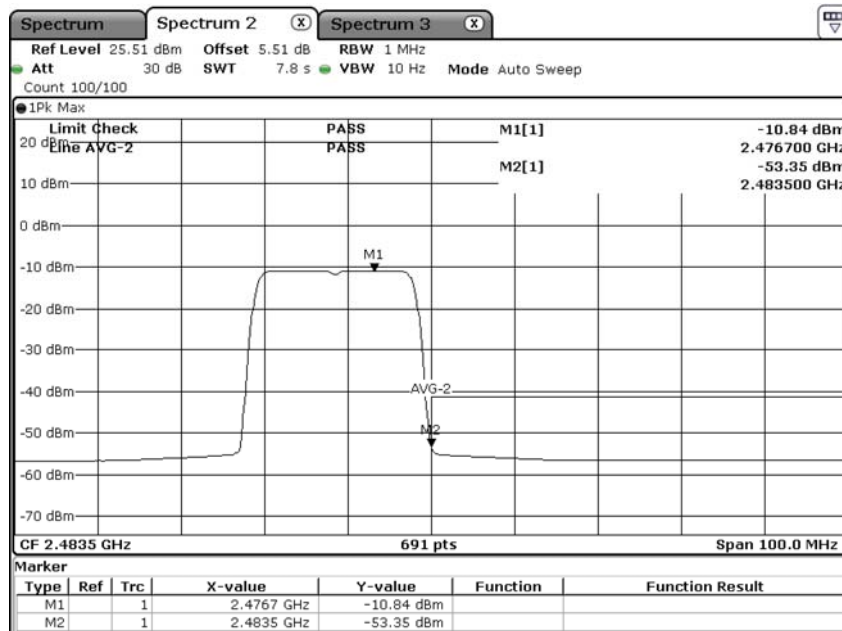
Product : Notebook Computers
 Test Item : Band Edge Data
 Test Mode : Mode 15 MIMO: Transmit (802.11ax-20BW_17.2Mbps) (2472MHz)
 Test Date : 2020/11/19

Peak: - Chain B



Date: 13.NOV.2020 14:58:40

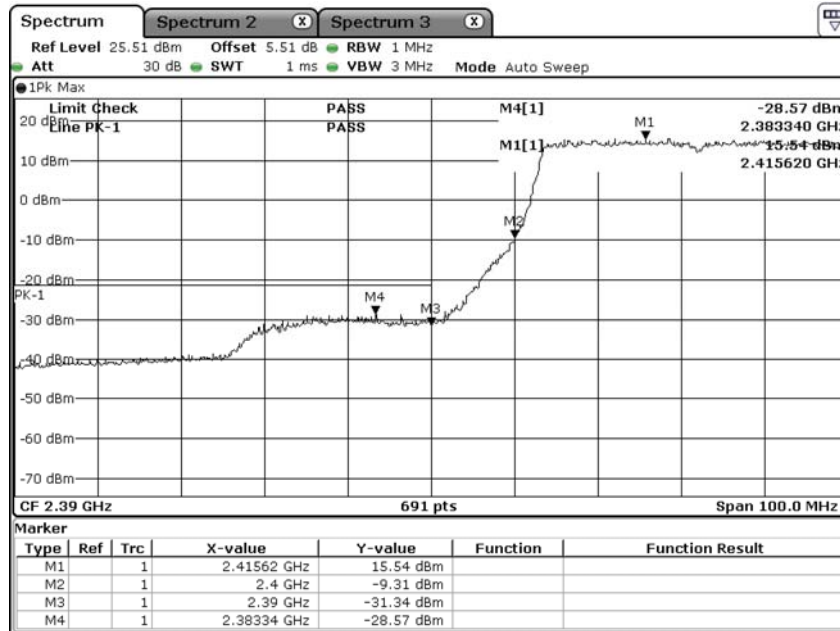
Average: - Chain B



Date: 13.NOV.2020 14:59:23

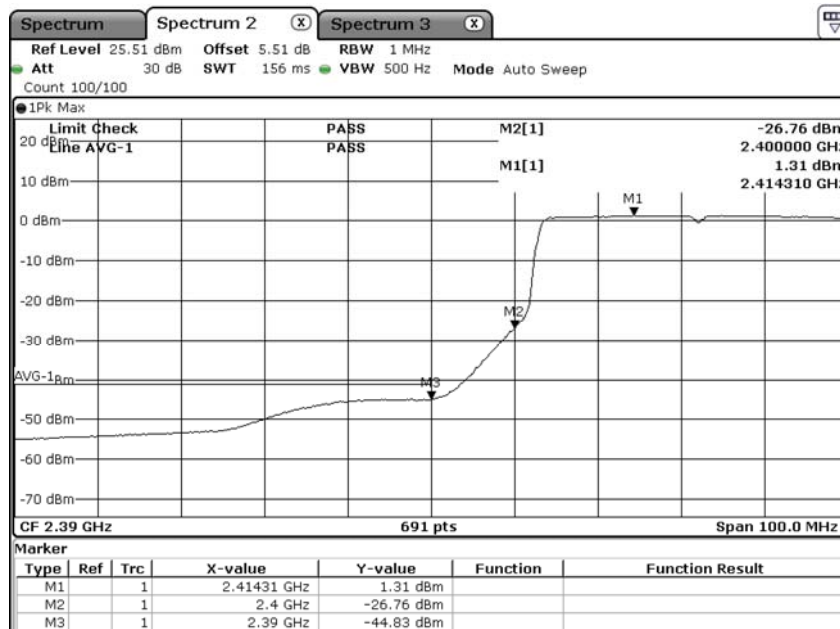
Product : Notebook Computers
 Test Item : Band Edge Data
 Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2422MHz)
 Test Date : 2020/11/19

Peak: - Chain A



Date: 13.NOV.2020 16:26:14

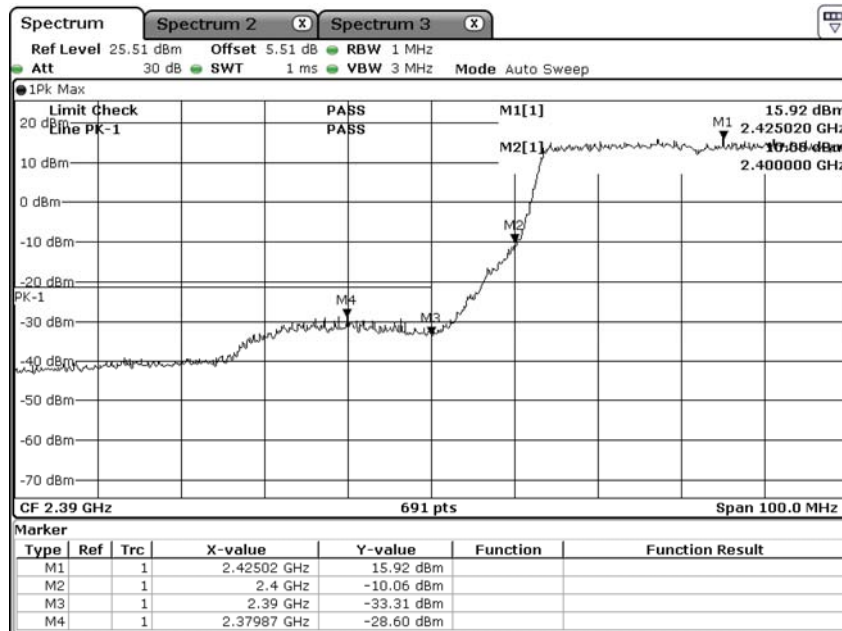
Average: - Chain A



Date: 13.NOV.2020 17:23:10

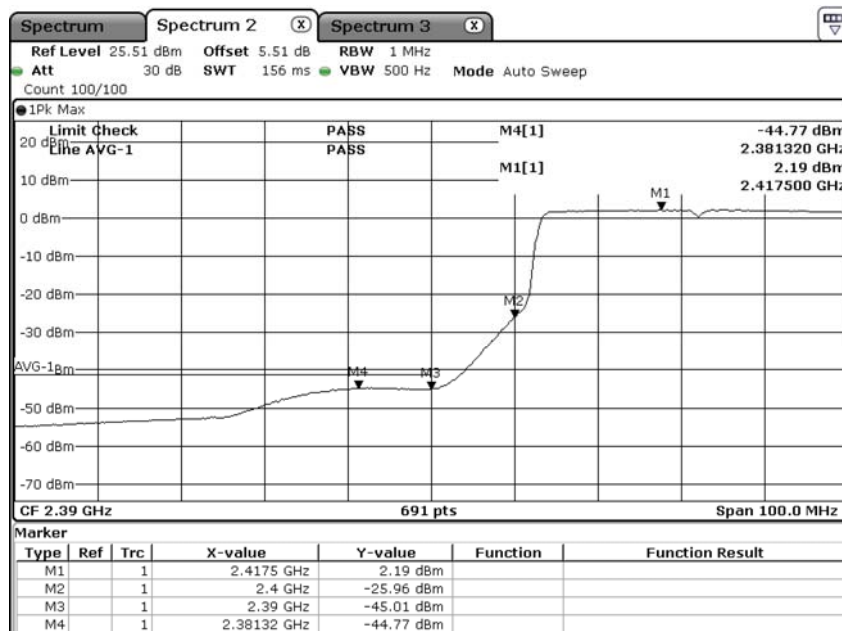
Product : Notebook Computers
 Test Item : Band Edge Data
 Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2422MHz)
 Test Date : 2020/11/19

Peak: - Chain B



Date: 13.NOV.2020 17:24:50

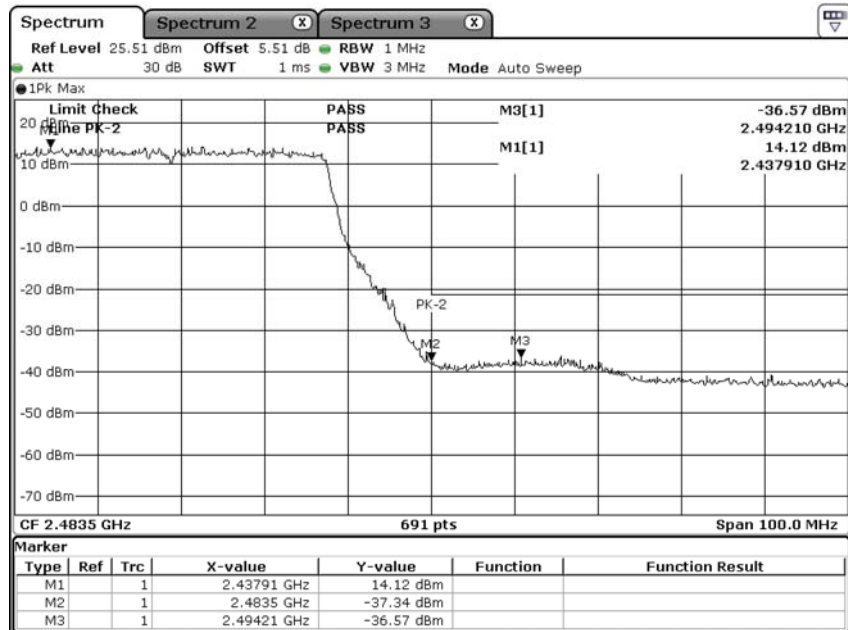
Average: - Chain B



Date: 13.NOV.2020 17:25:33

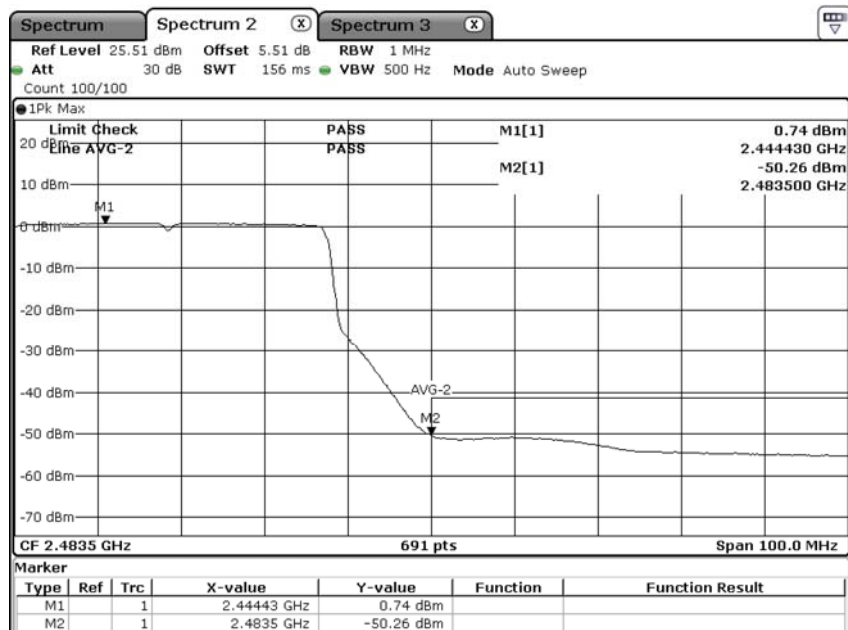
Product : Notebook Computers
 Test Item : Band Edge Data
 Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2452MHz)
 Test Date : 2020/11/19

Peak: - Chain A



Date: 13.NOV.2020 17:30:43

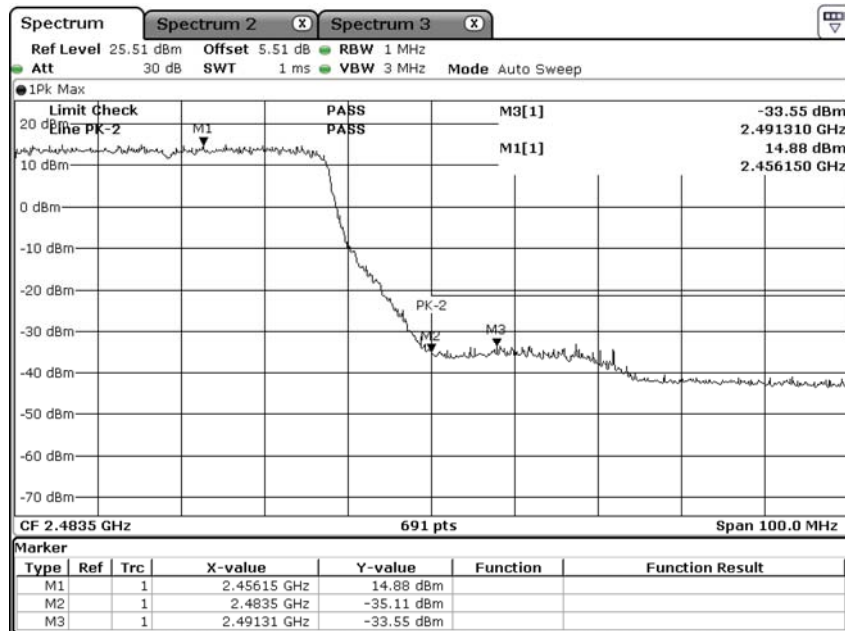
Average: - Chain A



Date: 13.NOV.2020 17:31:29

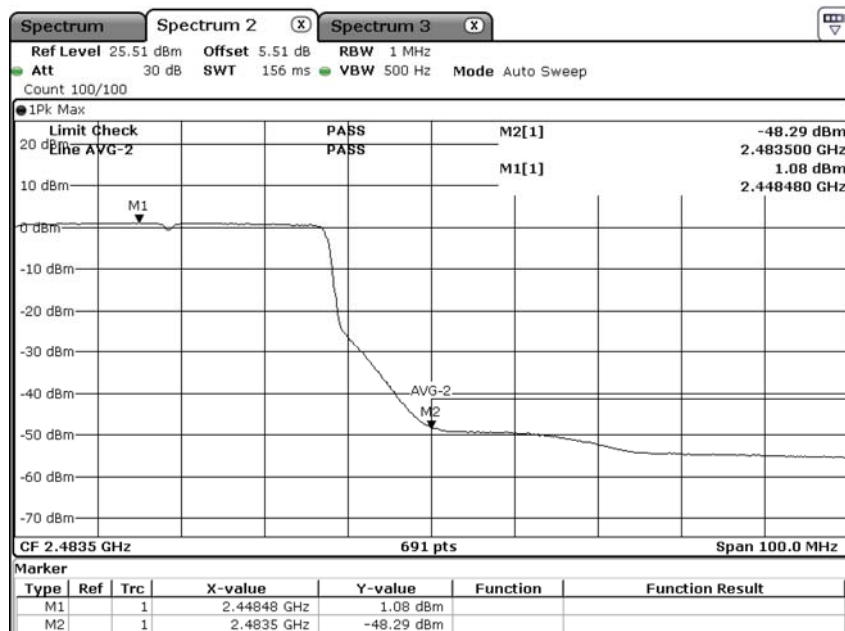
Product : Notebook Computers
Test Item : Band Edge Data
Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2452MHz)
Test Date : 2020/11/19

Peak: - Chain B



Date: 13.NOV.2020 17:28:53

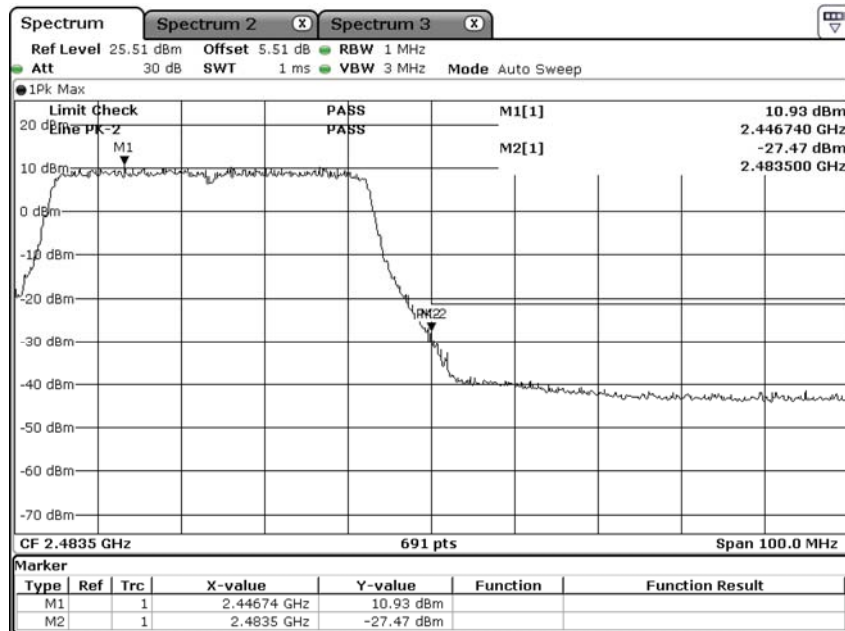
Average: - Chain B



Date: 13.NOV.2020 17:29:25

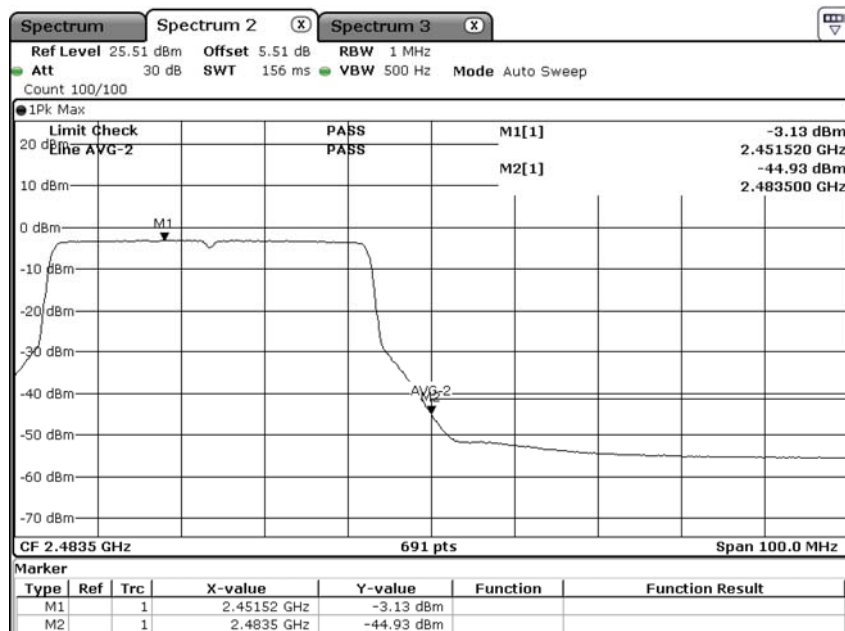
Product : Notebook Computers
Test Item : Band Edge Data
Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2457MHz)
Test Date : 2020/11/19

Peak: - Chain A



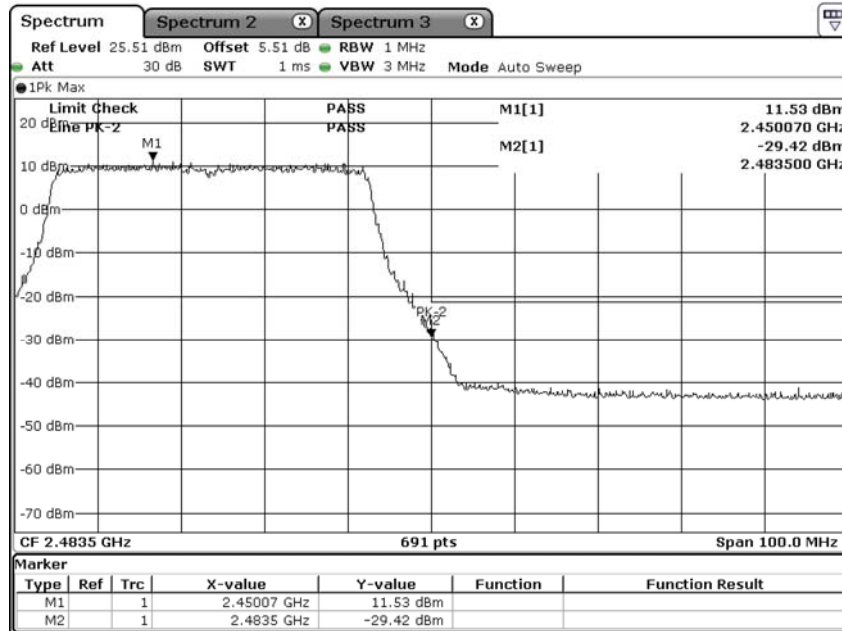
Date: 13.NOV.2020 17:32:33

Average: - Chain A

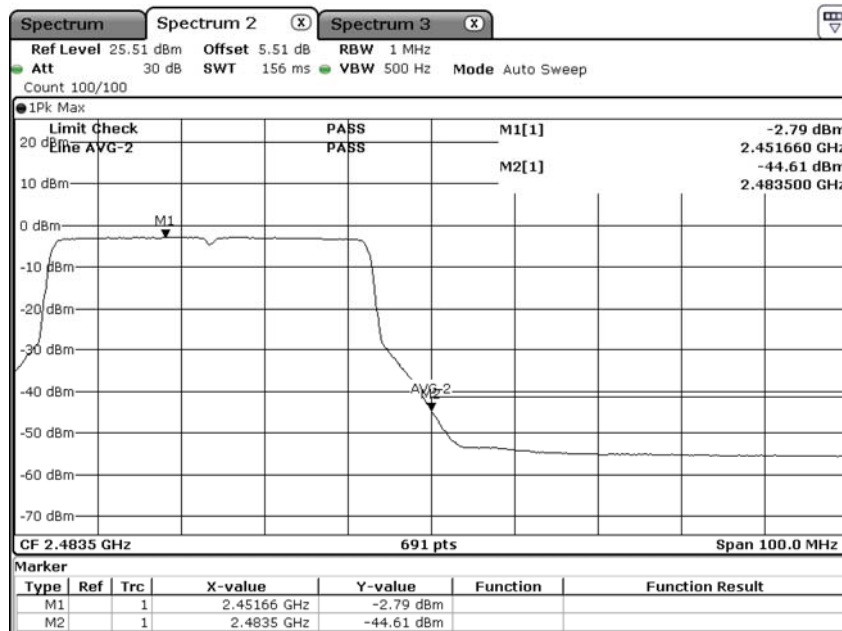


Date: 13.NOV.2020 17:33:00

Product : Notebook Computers
Test Item : Band Edge Data
Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2457MHz)
Test Date : 2020/11/19

Peak: - Chain B

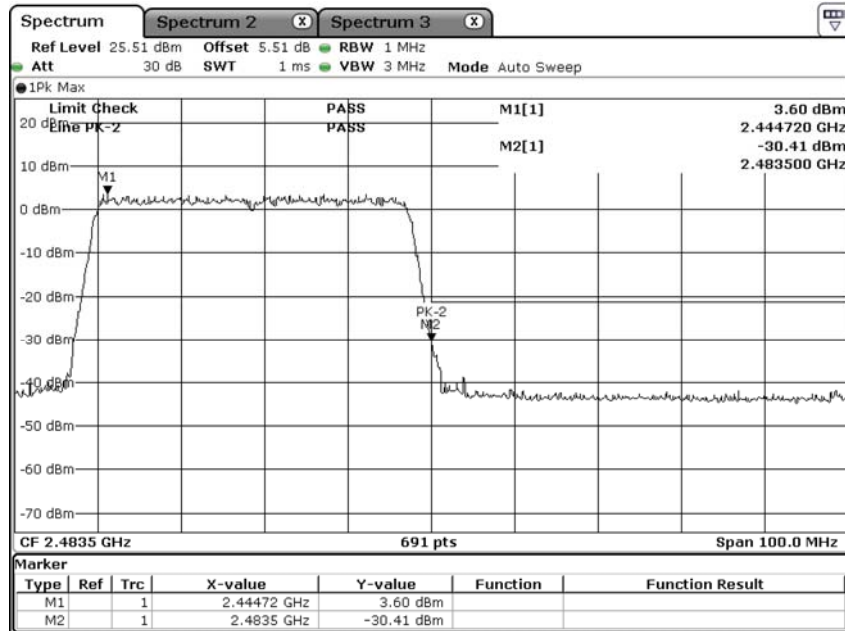
Date: 13.NOV.2020 17:34:09

Average: - Chain B

Date: 13.NOV.2020 17:34:48

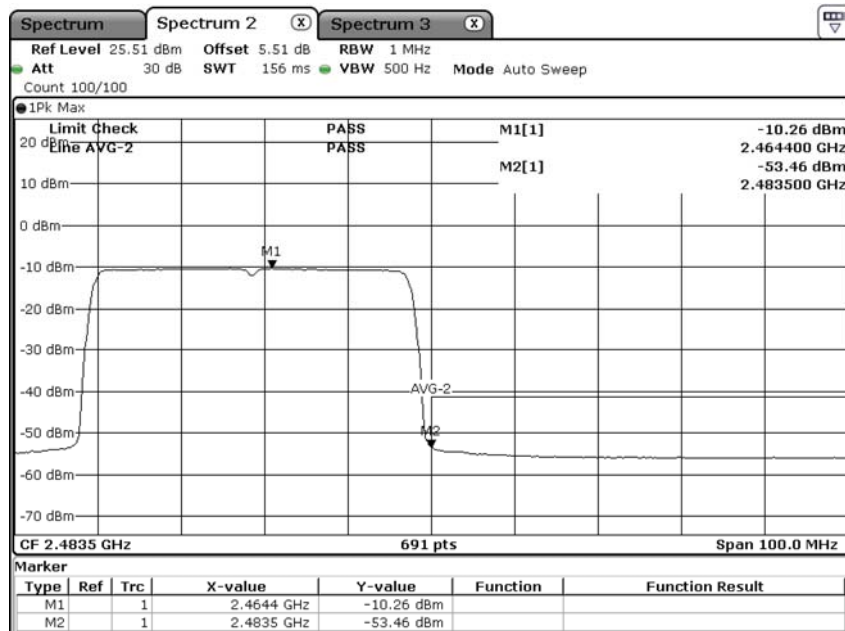
Product : Notebook Computers
Test Item : Band Edge Data
Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2462MHz)
Test Date : 2020/11/19

Peak: - Chain A



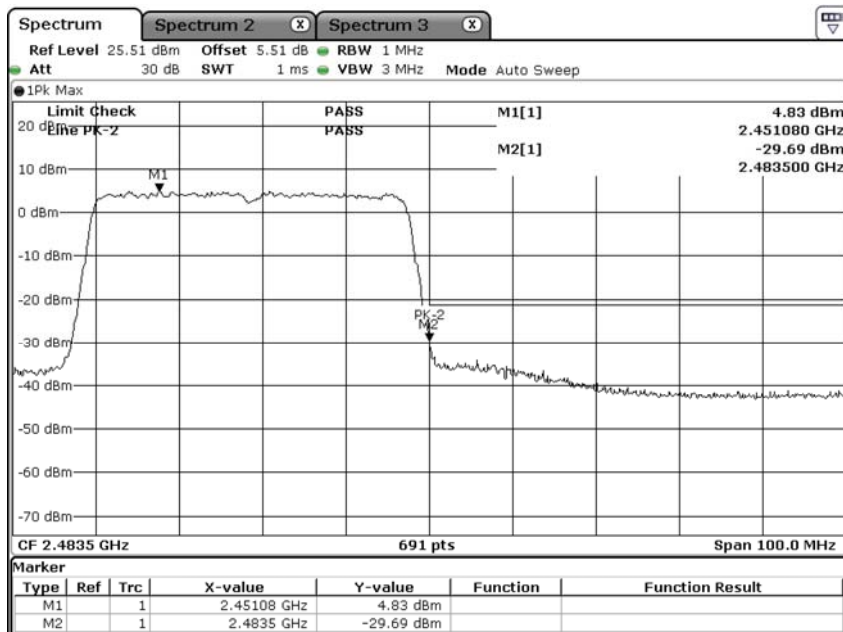
Date: 13.NOV.2020 18:09:08

Average: - Chain A

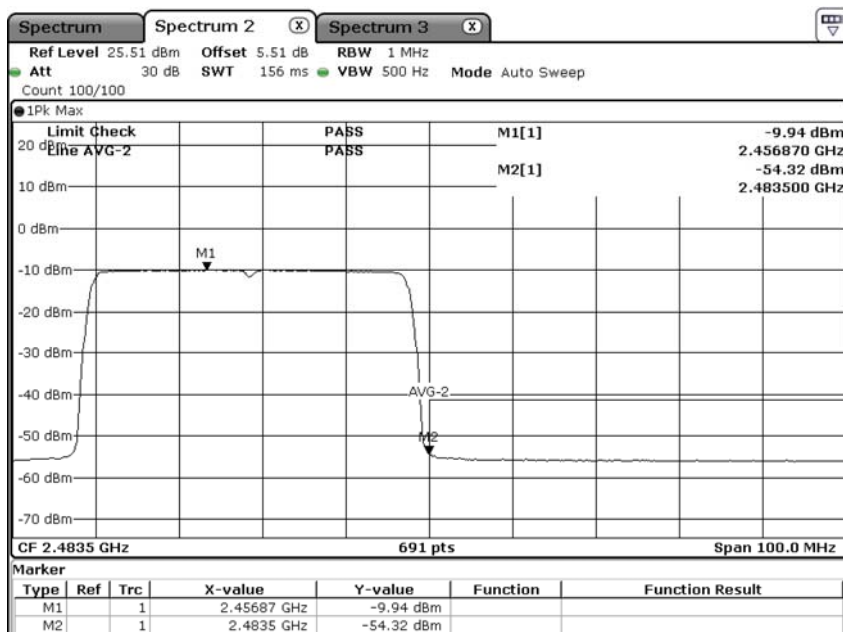


Date: 13.NOV.2020 18:10:11

Product : Notebook Computers
Test Item : Band Edge Data
Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps) (2462MHz)
Test Date : 2020/11/19

Peak: - Chain B

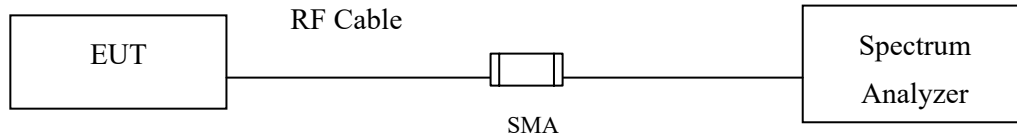
Date: 13.NOV.2020 18:07:35

Average: - Chain B

Date: 13.NOV.2020 18:08:06

7. 6dB Bandwidth

7.1. Test Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. Test Procedure

The EUT was setup according to ANSI C63.4, 2014; tested according to ANSI C63.10 Section 11.8 for compliance to FCC 47CFR 15.247 requirements.

7.4. Test Result of 6dB Bandwidth

Product : Notebook Computers
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 1 SISO A: Transmit (802.11b_1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	9150	>500	Pass
7	2442	9150	>500	Pass
11	2462	9150	>500	Pass
12	2467	9150	>500	Pass
13	2472	9150	>500	Pass

Figure Channel 01:

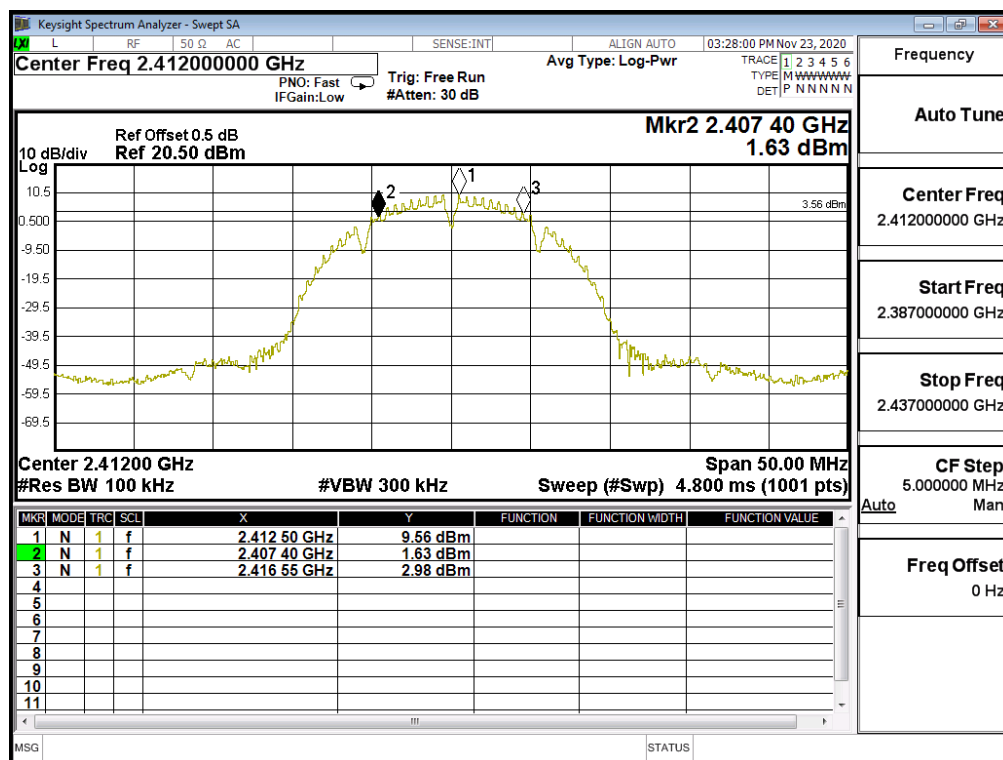


Figure Channel 07:

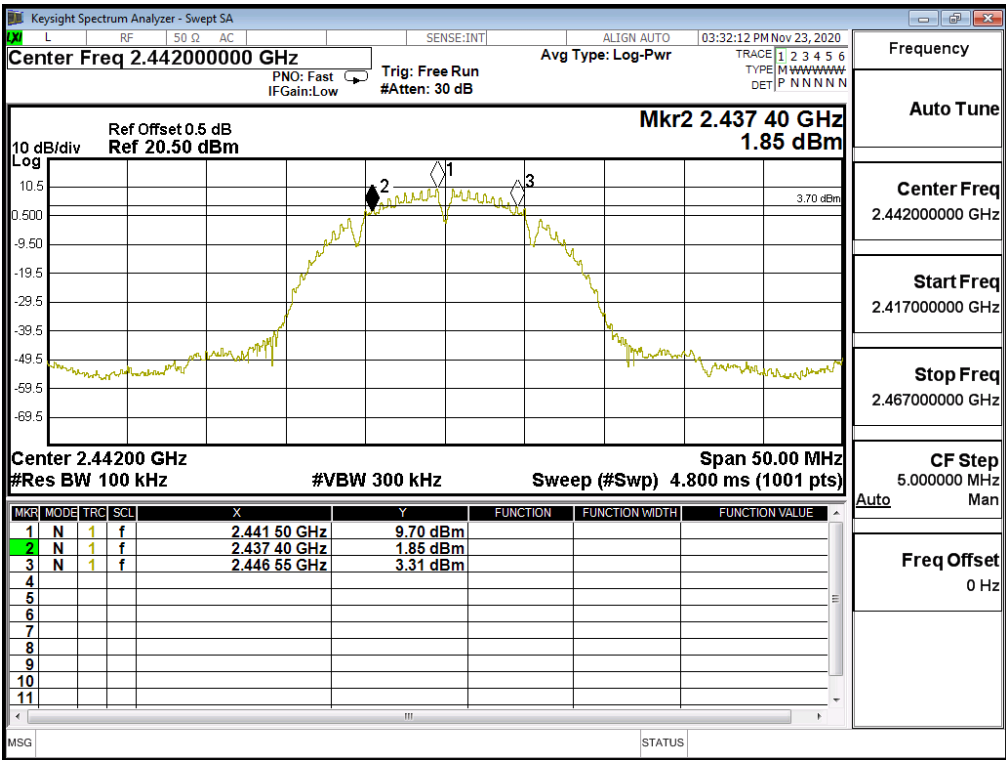


Figure Channel 11:

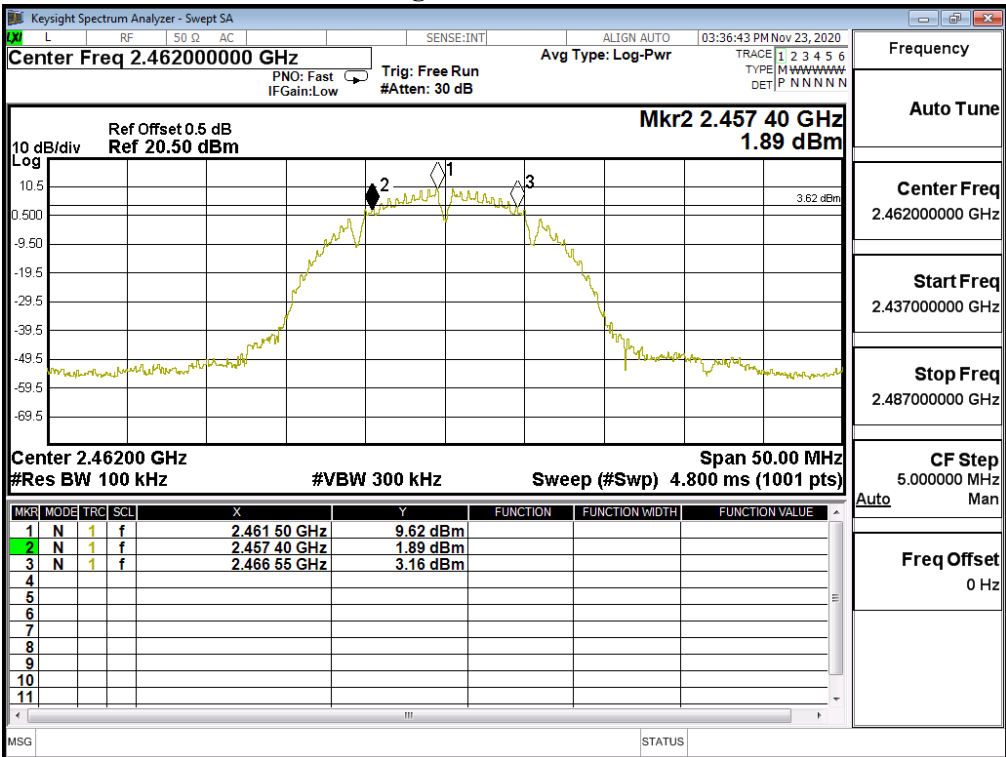


Figure Channel 12:

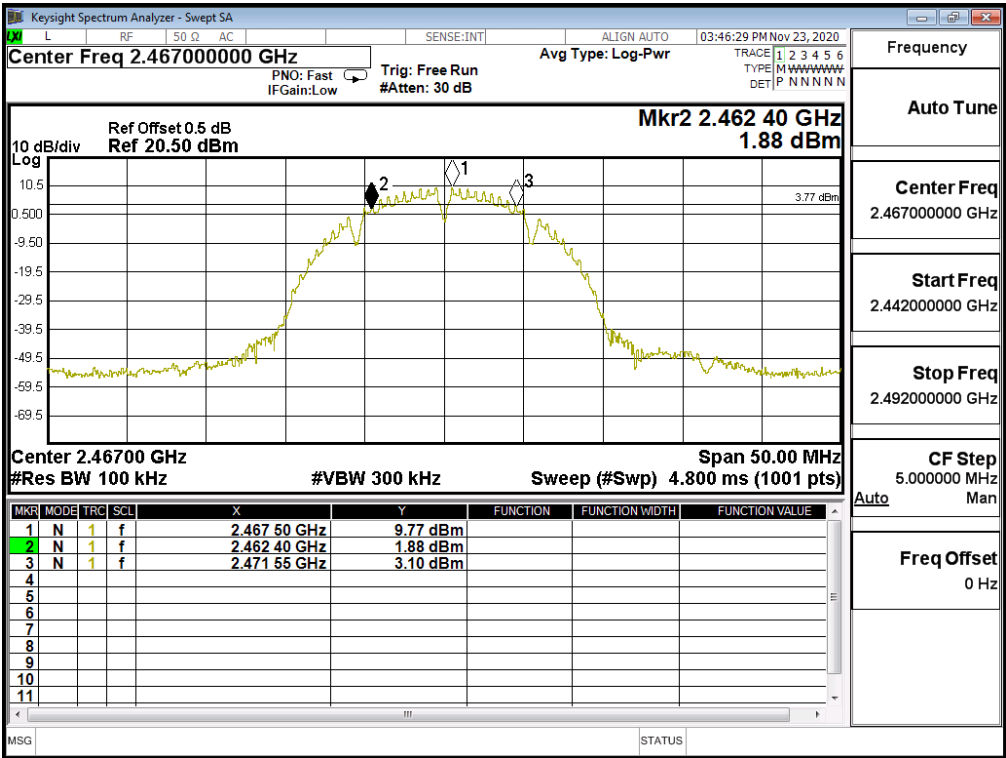
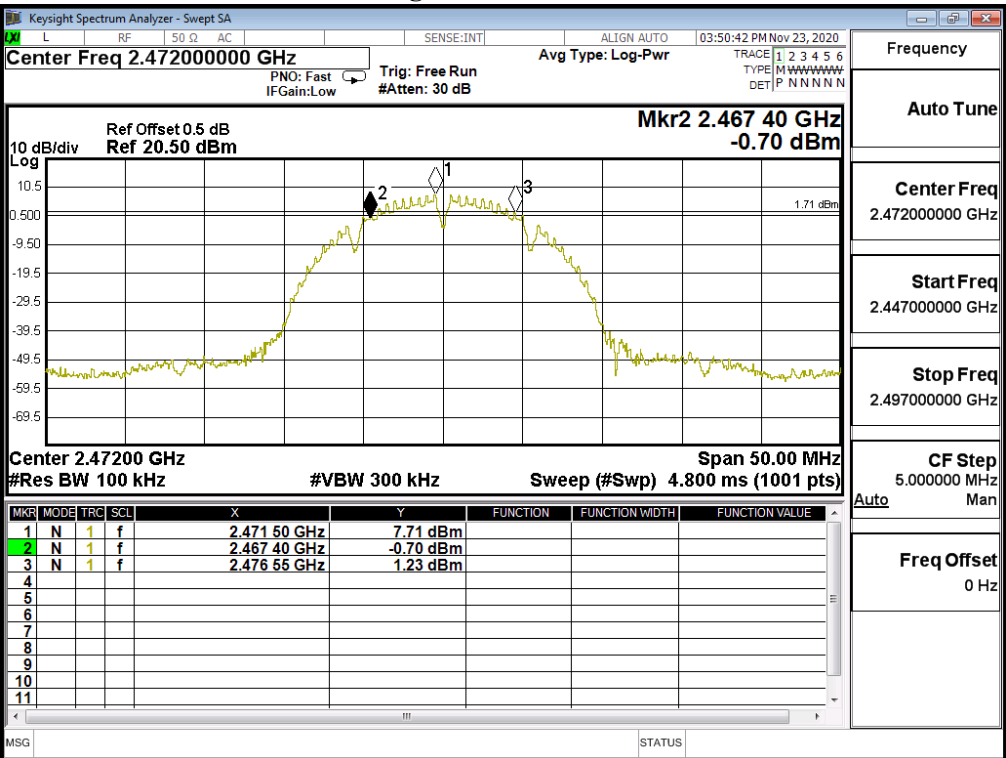


Figure Channel 13:



Product : Notebook Computers
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 15 MIMO: Transmit (802.11ax-20BW_17.2Mbps)

Chain A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	19050	>500	Pass
7	2442	19000	>500	Pass
11	2462	19000	>500	Pass
12	2467	18950	>500	Pass
13	2472	18750	>500	Pass

Figure Channel 01: (Chain A)

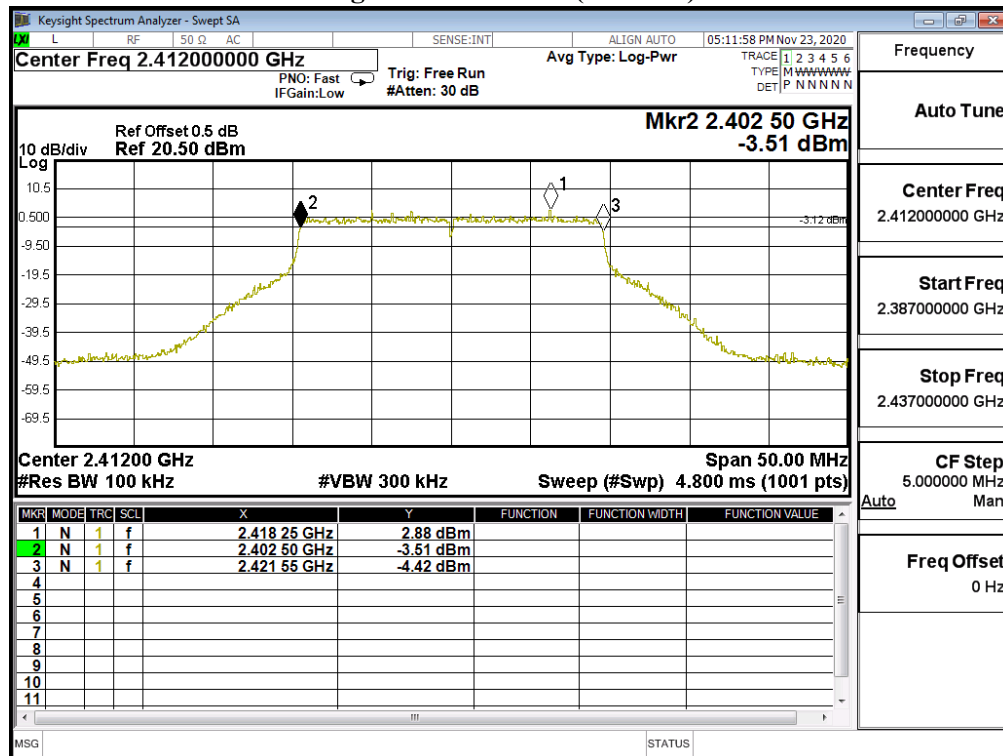


Figure Channel 07: (Chain A)

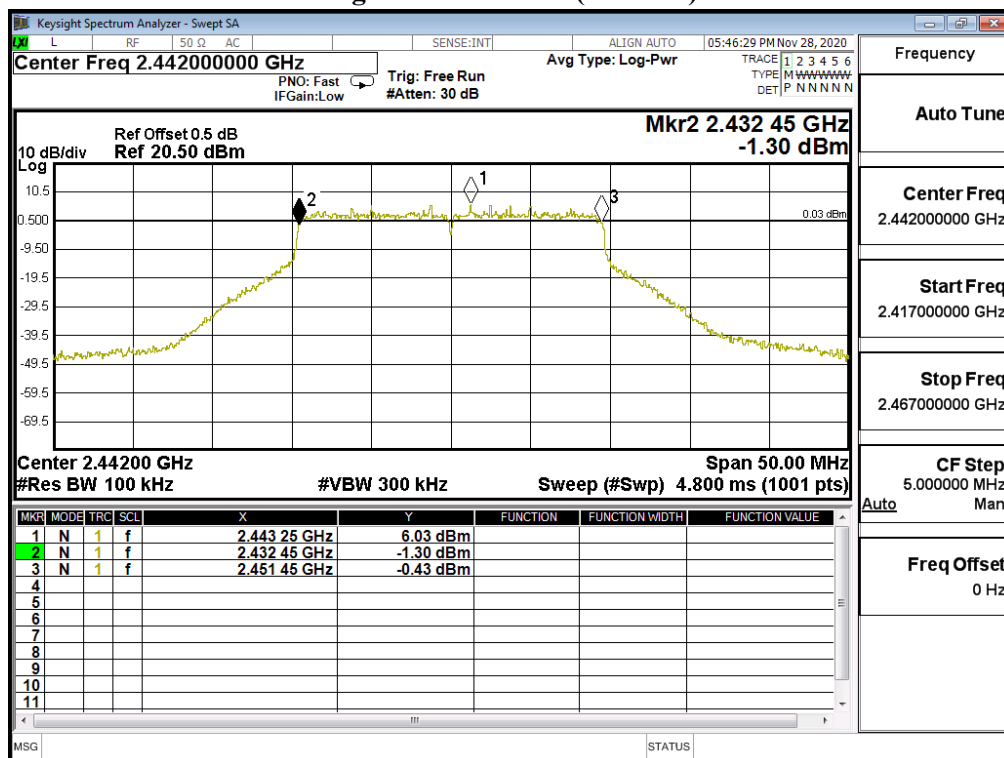


Figure Channel 11: (Chain A)

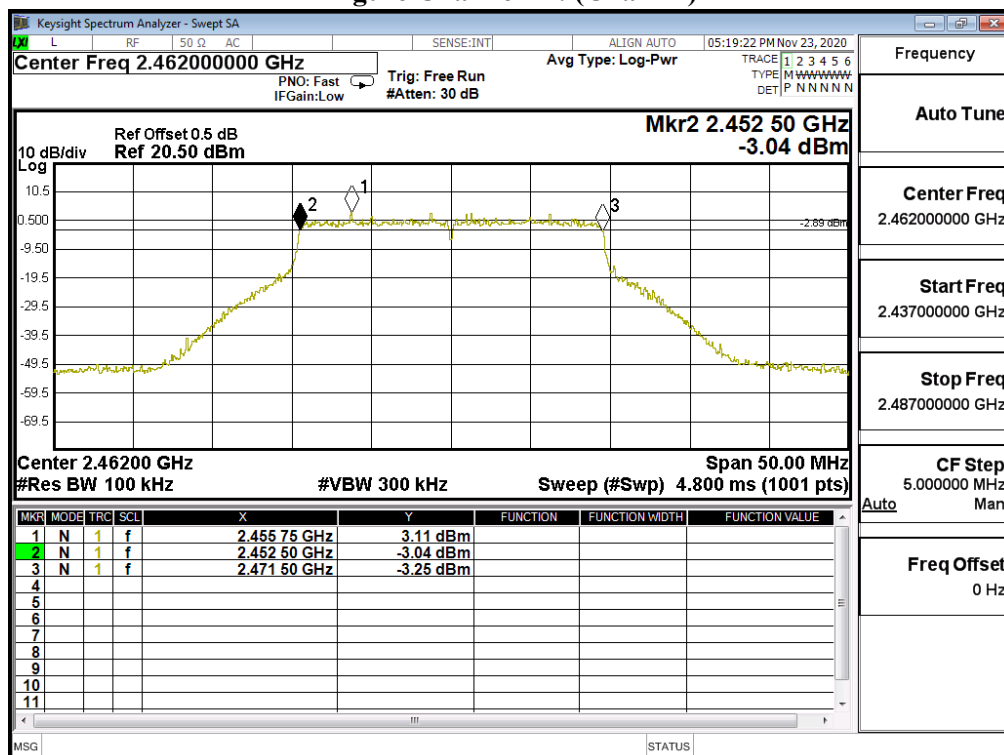


Figure Channel 12: (Chain A)

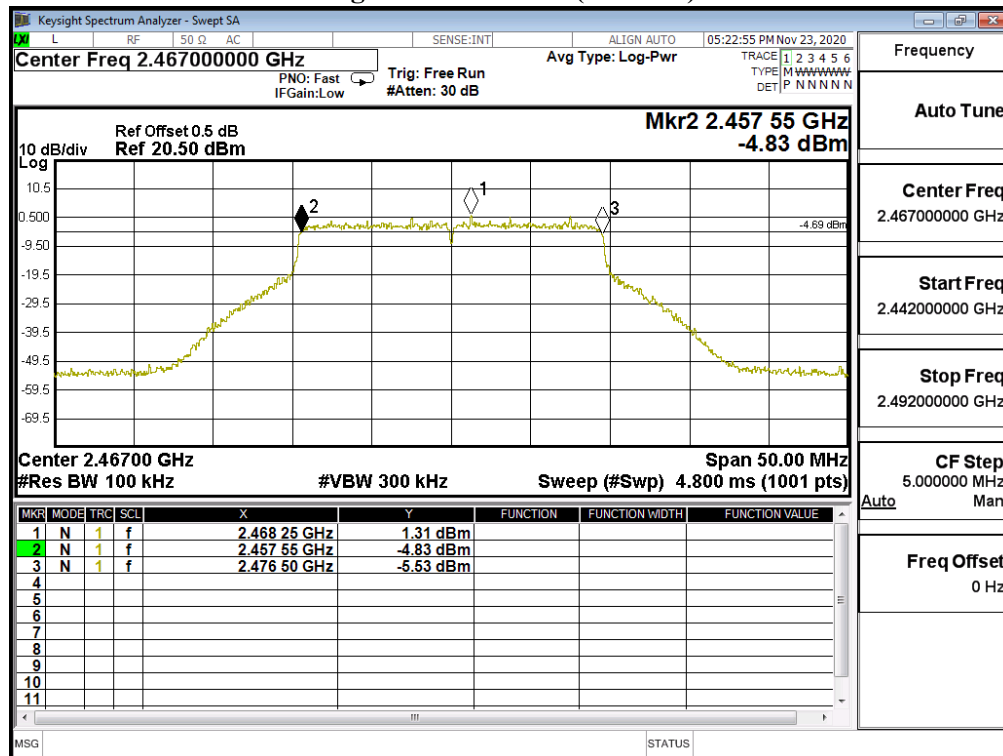
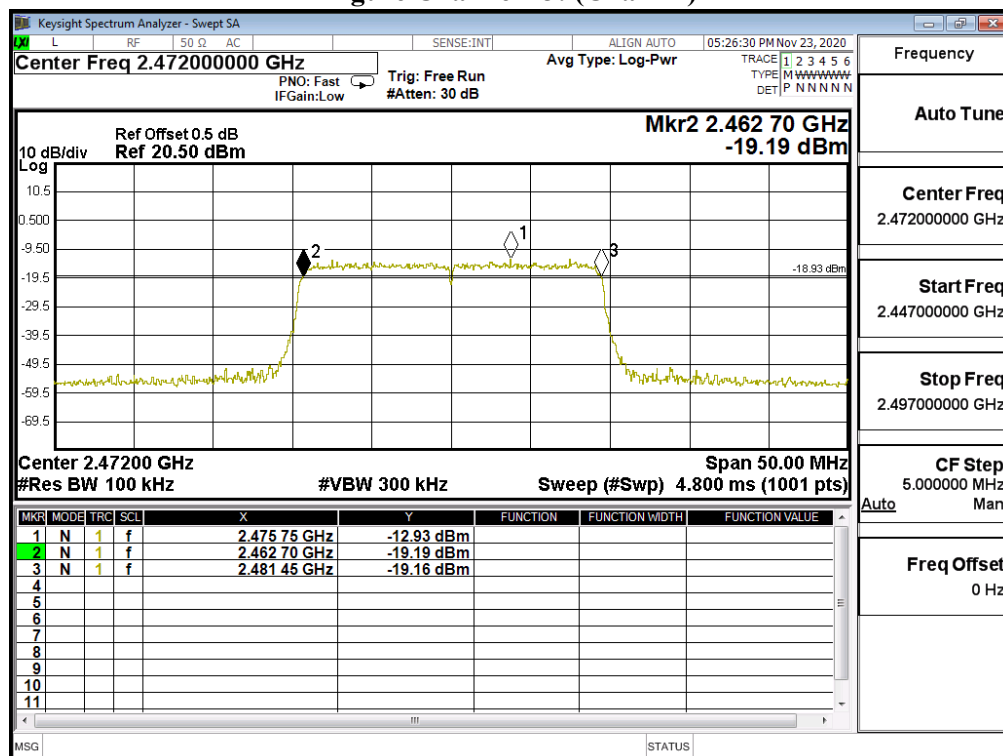


Figure Channel 13: (Chain A)



Product : Notebook Computers
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 15 MIMO: Transmit (802.11ax-20BW_17.2Mbps)

Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	19000	>500	Pass
7	2442	18800	>500	Pass
11	2462	19000	>500	Pass
12	2467	19000	>500	Pass
13	2472	18600	>500	Pass

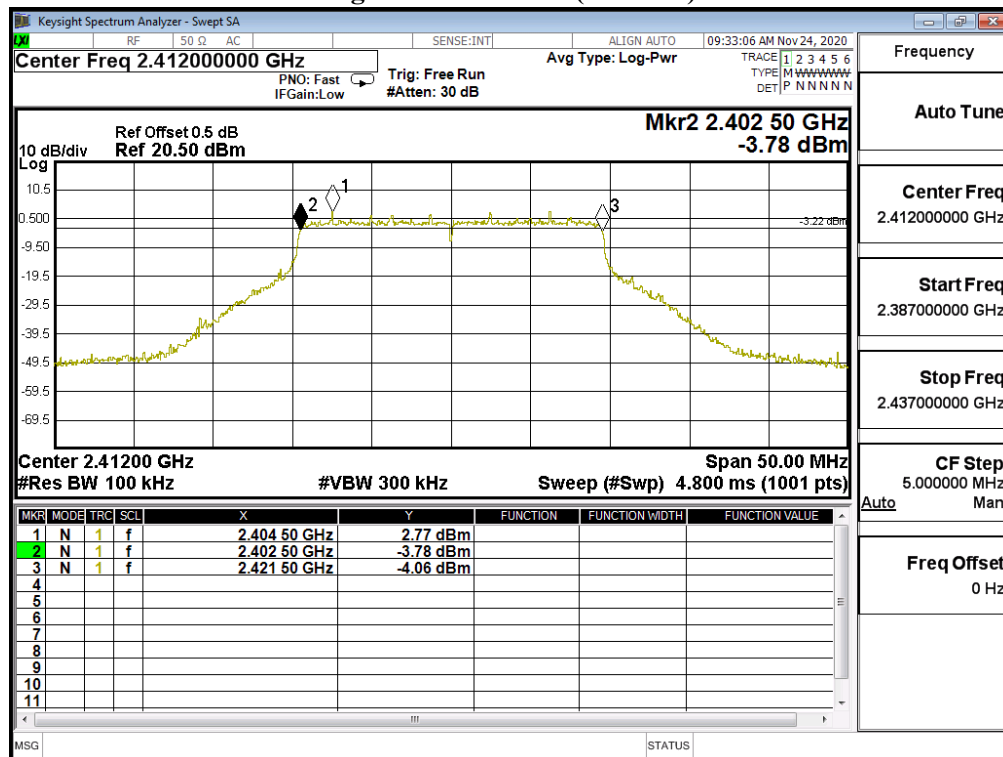
Figure Channel 01: (Chain B)

Figure Channel 07: (Chain B)

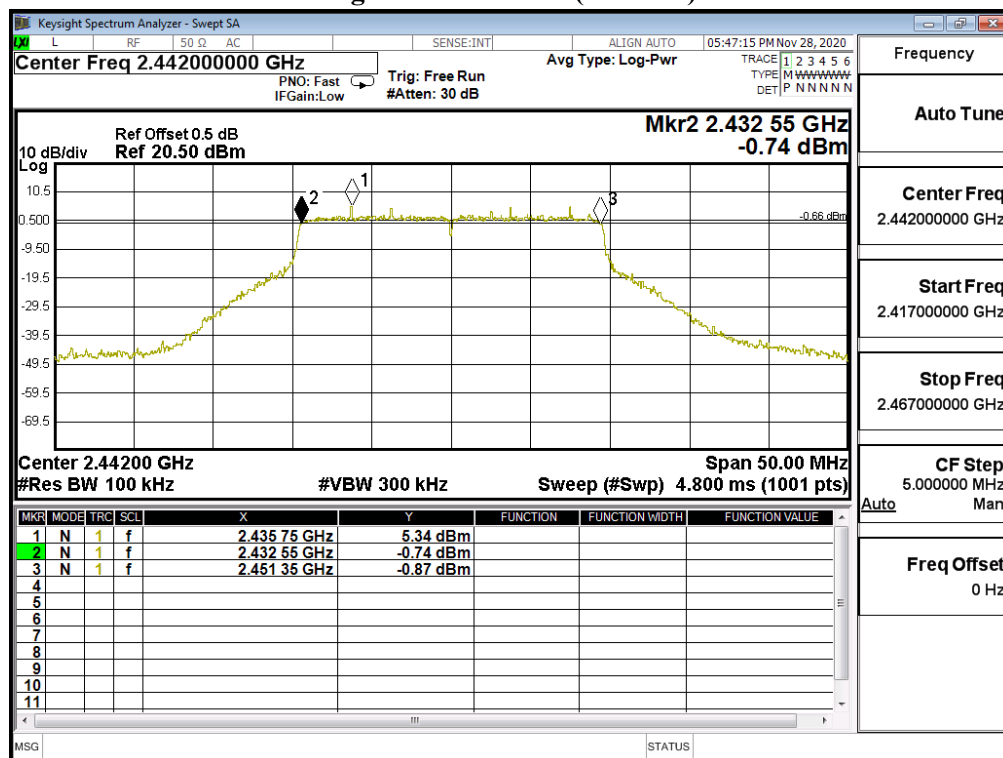


Figure Channel 11: (Chain B)

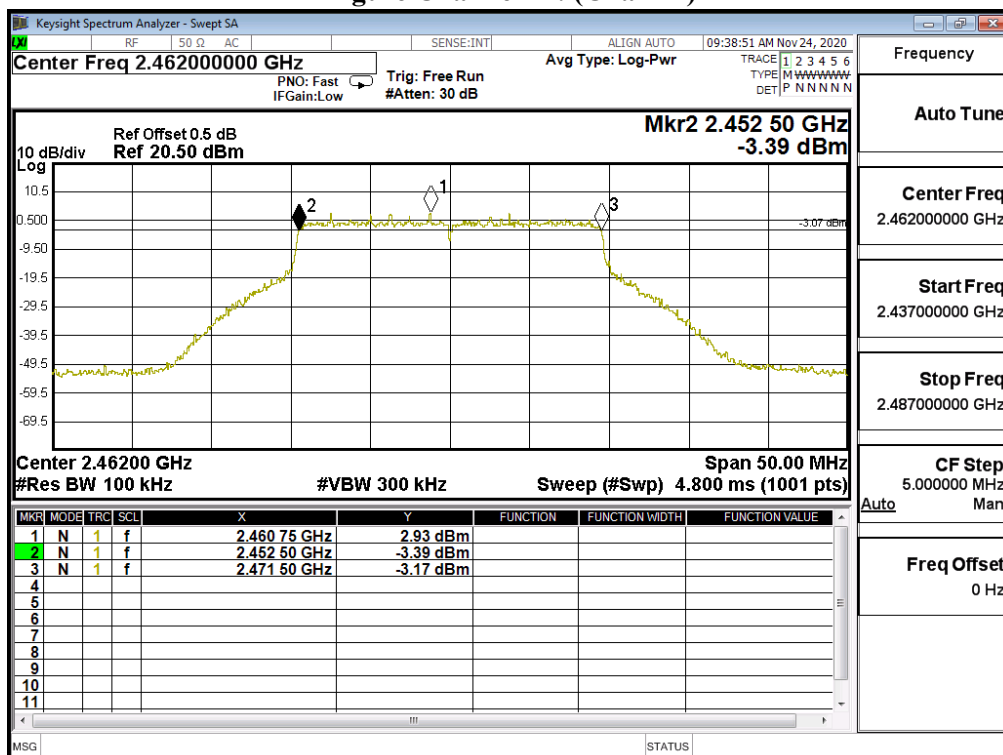


Figure Channel 12: (Chain B)

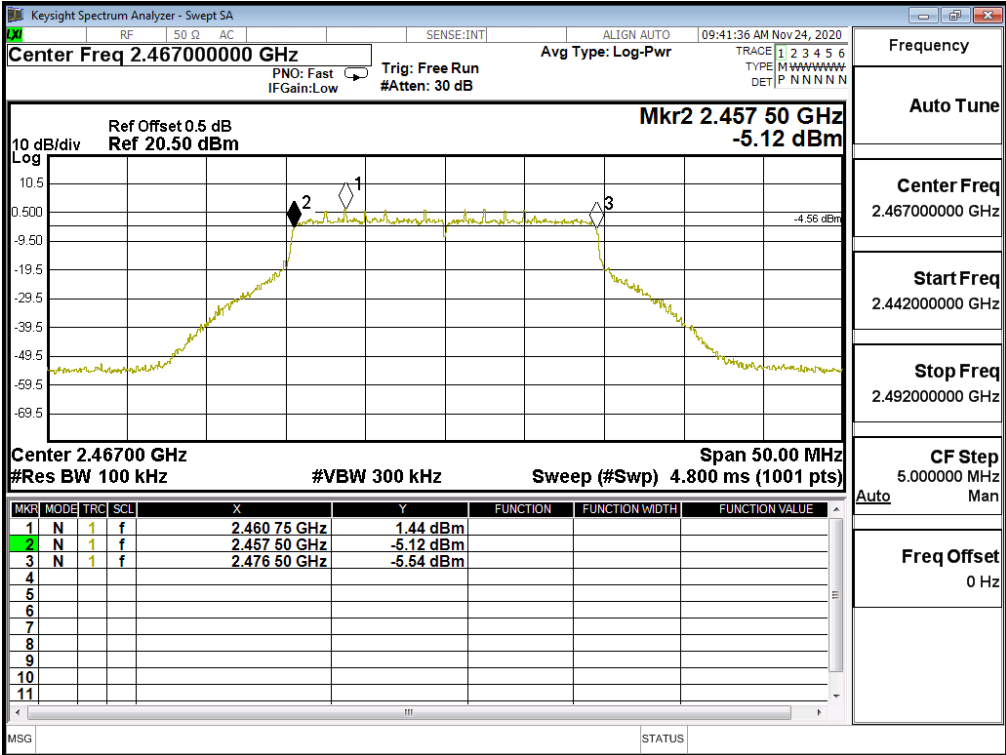
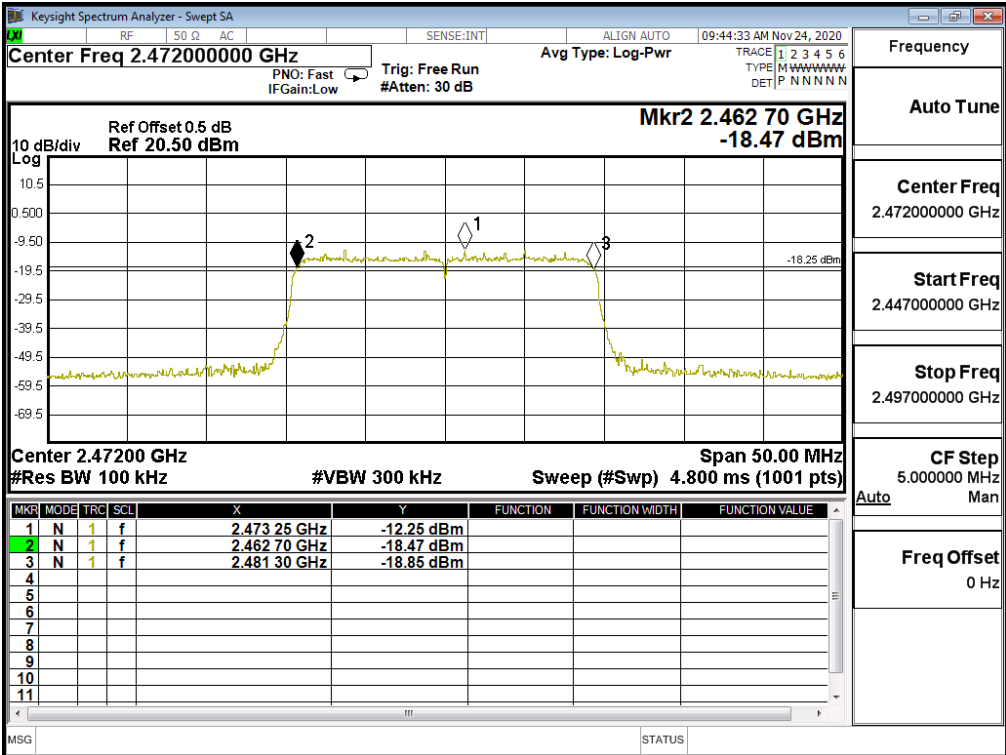


Figure Channel 13: (Chain B)



Product : Notebook Computers
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps)

Chain A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
3	2422	38100	>500	Pass
7	2442	38100	>500	Pass
9	2452	38000	>500	Pass
10	2457	38000	>500	Pass
11	2462	37900	>500	Pass

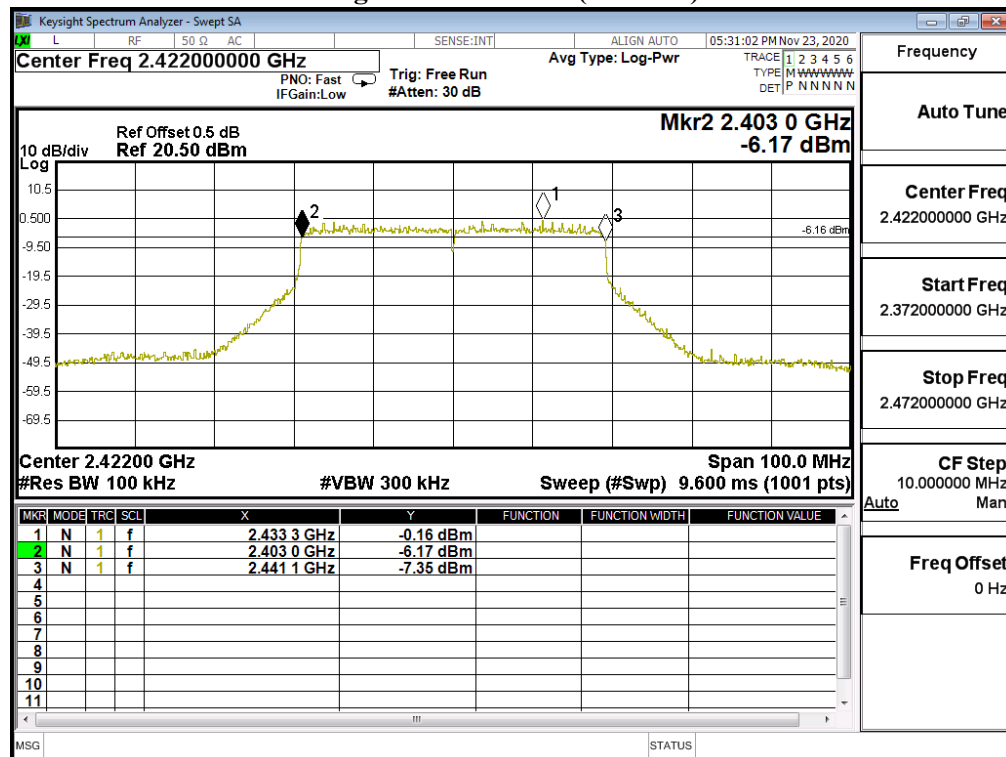
Figure Channel 03: (Chain A)

Figure Channel 07: (Chain A)

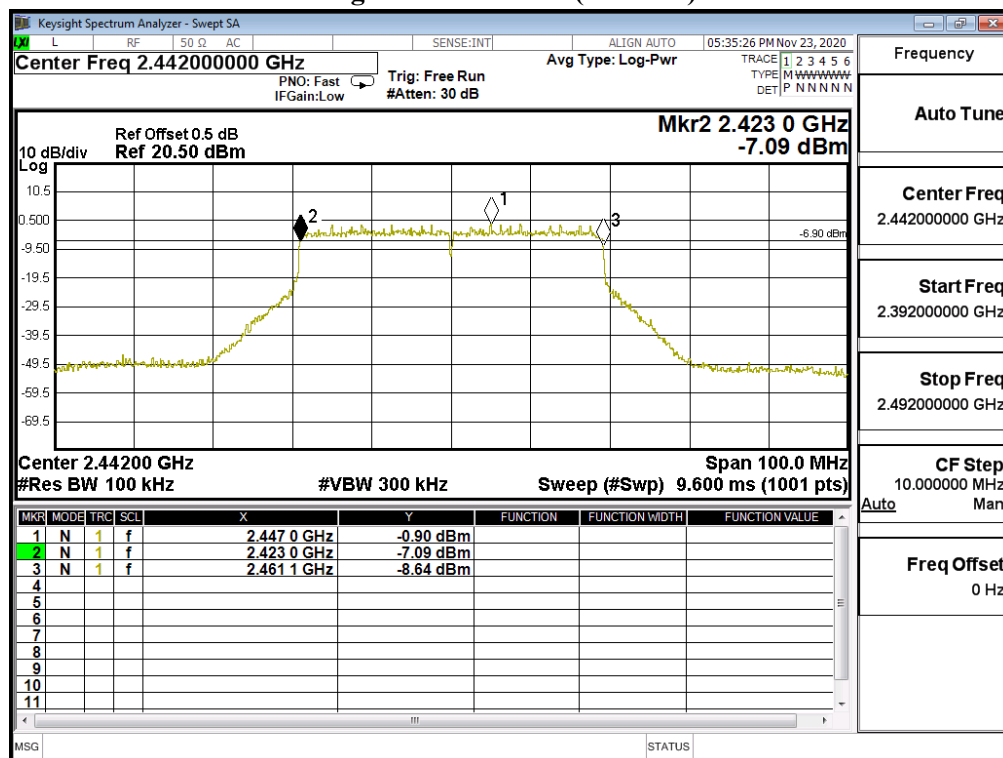


Figure Channel 09: (Chain A)

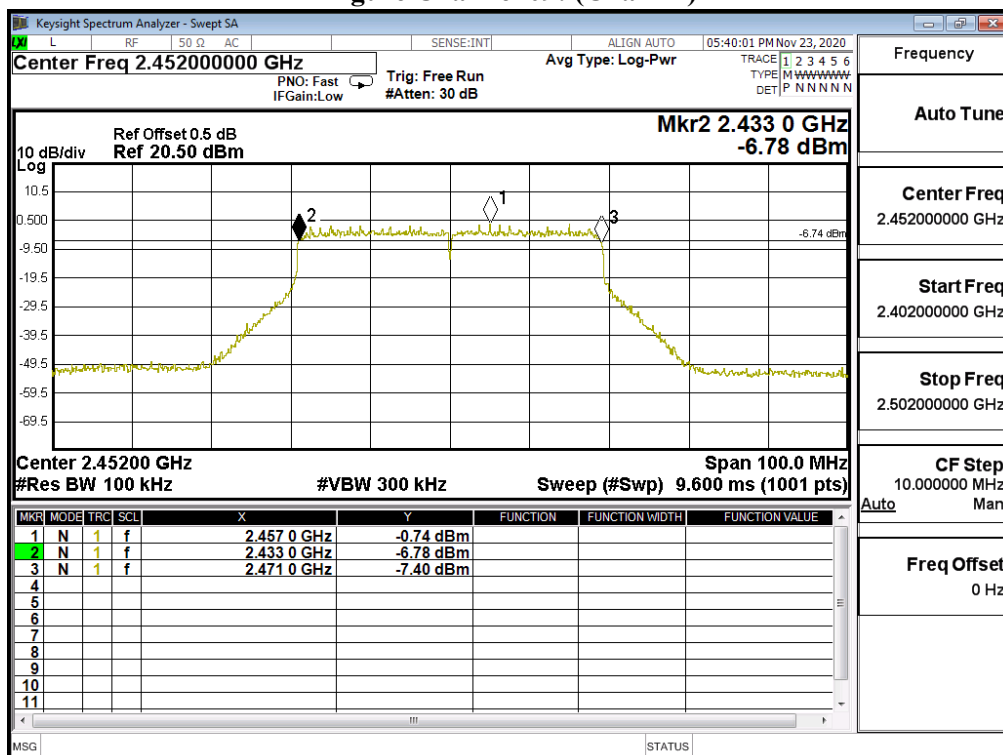


Figure Channel 10: (Chain A)

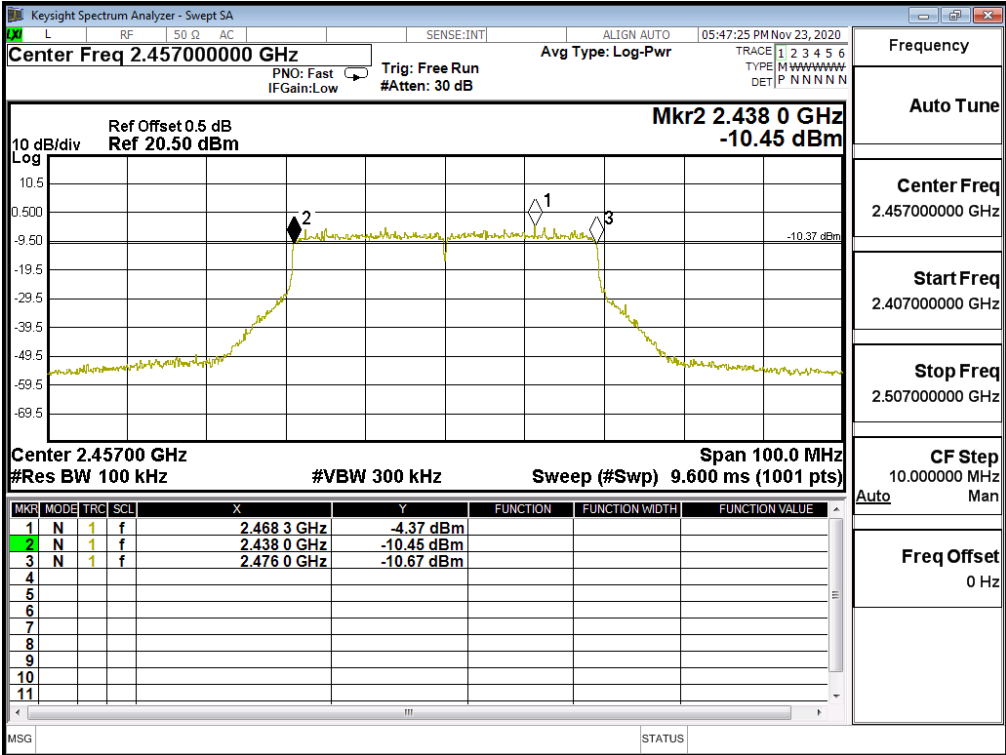
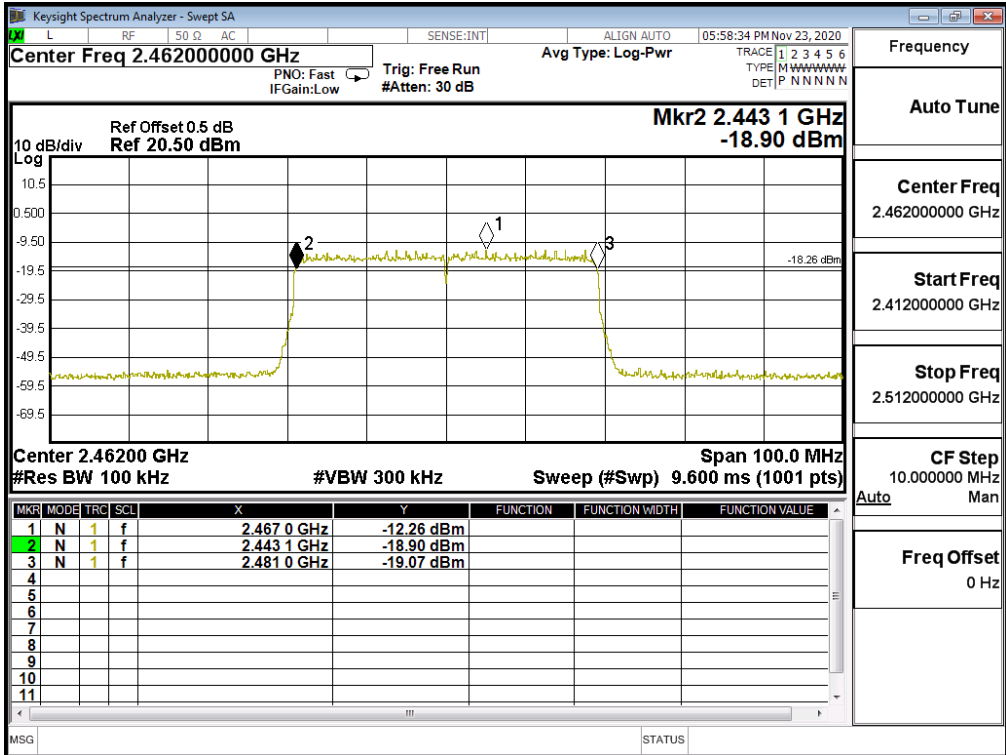


Figure Channel 11: (Chain A)



Product : Notebook Computers
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 16 MIMO: Transmit (802.11ax-40BW_34.4Mbps)

Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
3	2422	38000	>500	Pass
7	2442	38000	>500	Pass
9	2452	37900	>500	Pass
10	2457	38000	>500	Pass
11	2462	37700	>500	Pass

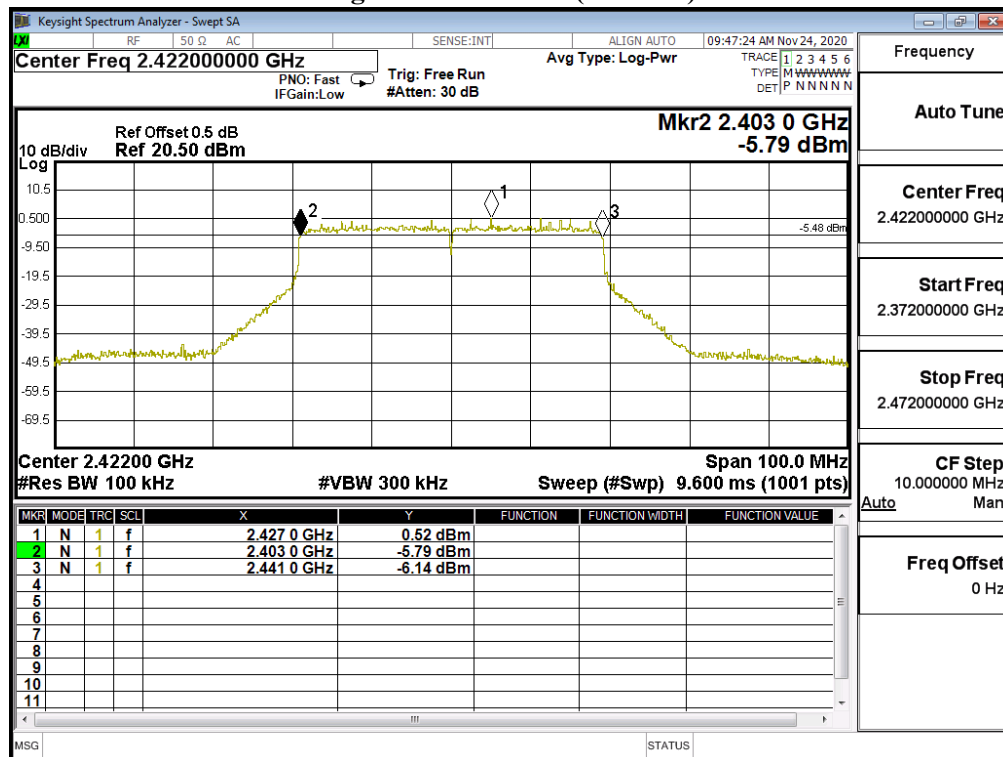
Figure Channel 03: (Chain B)

Figure Channel 07: (Chain B)

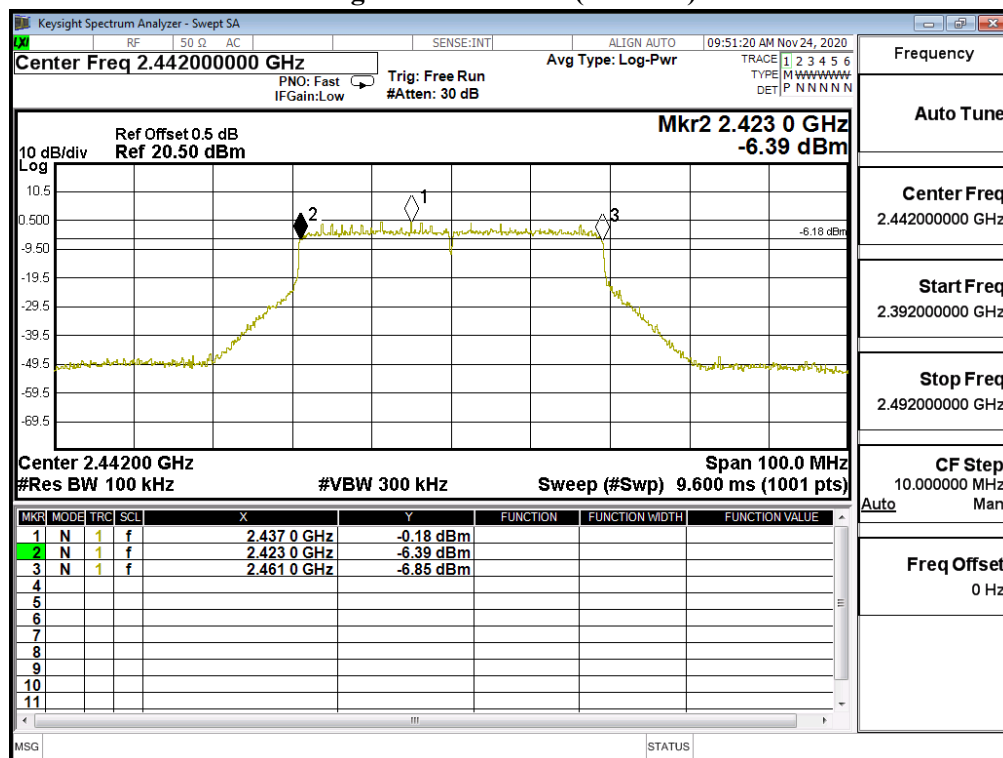


Figure Channel 09: (Chain B)

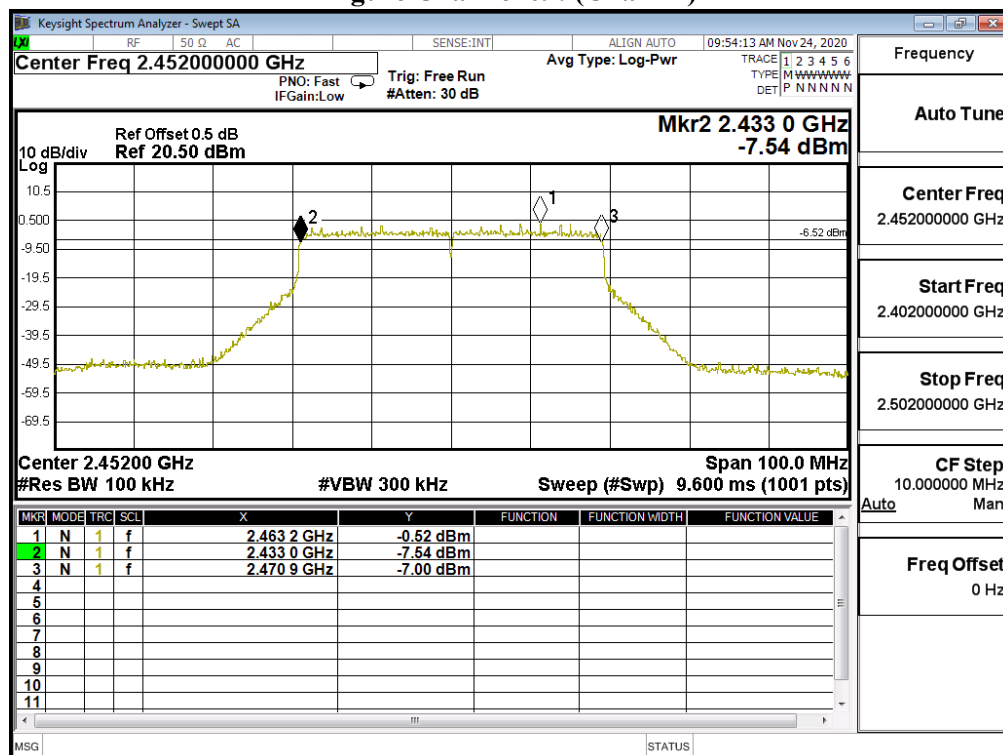


Figure Channel 10: (Chain B)

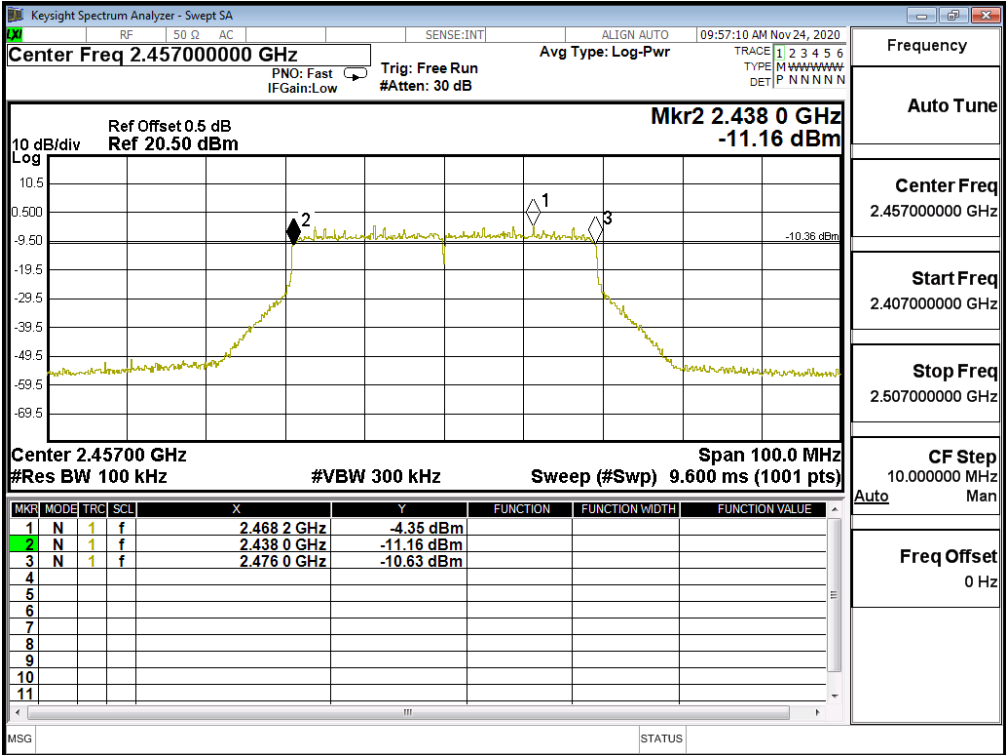
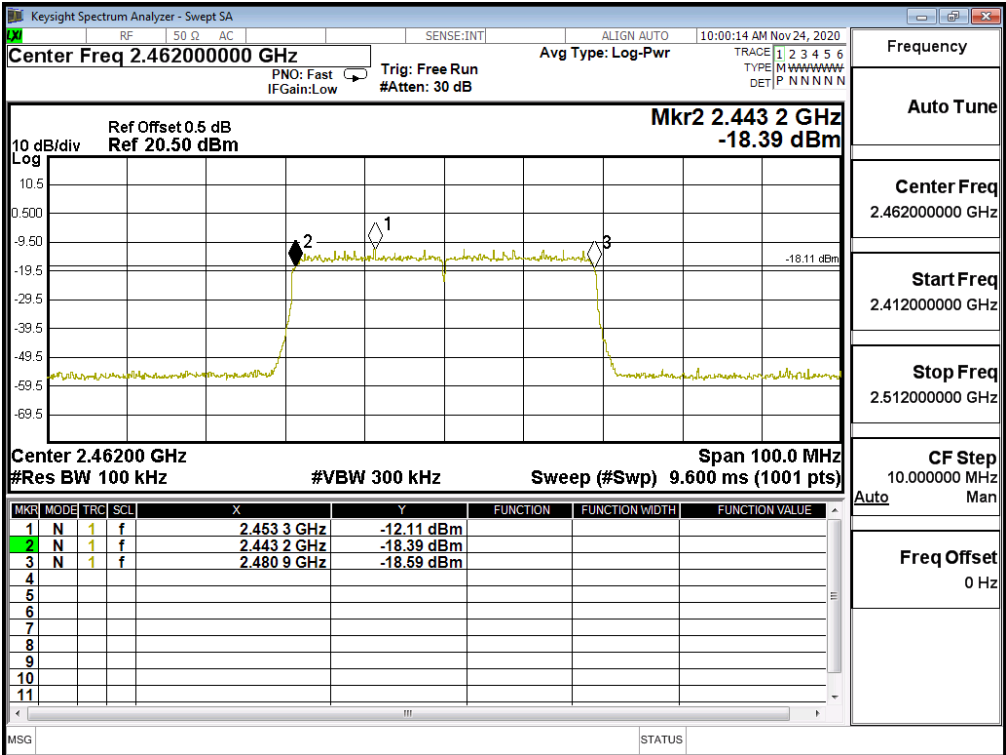
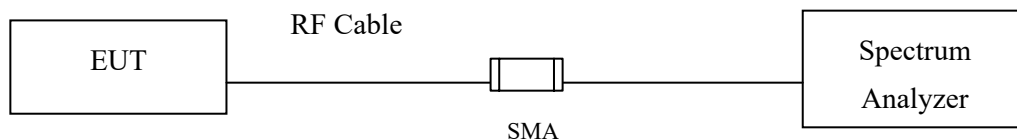


Figure Channel 11: (Chain B)



8. Power Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The maximum power spectral density using C63.10 Section 11.10.2 Method PKPSD (peak PSD)

8.4. Test Result of Power Density

Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 1 SISO A: Transmit (802.11b_1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
01	2412	7.28	0.11	7.39	$\leq 8\text{dBm}$	Pass
07	2442	7.38	0.11	7.49	$\leq 8\text{dBm}$	Pass
11	2462	7.36	0.11	7.47	$\leq 8\text{dBm}$	Pass
12	2467	7.49	0.11	7.60	$\leq 8\text{dBm}$	Pass
13	2472	7.78	0.11	7.89	$\leq 8\text{dBm}$	Pass

Figure Channel 1:

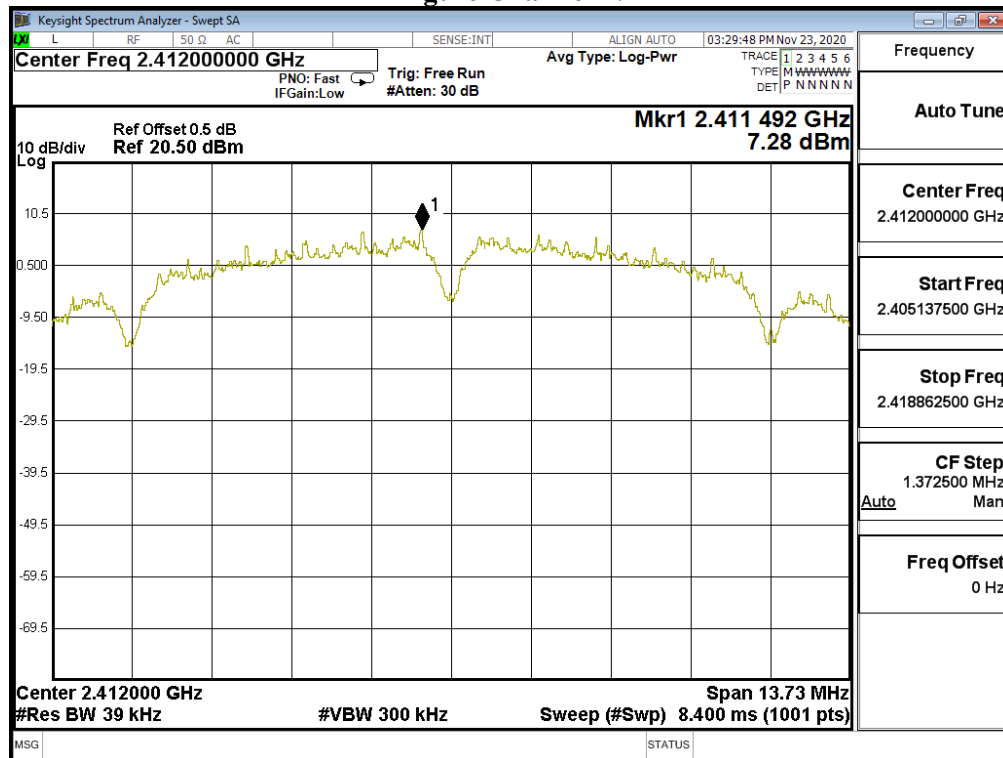


Figure Channel 7:

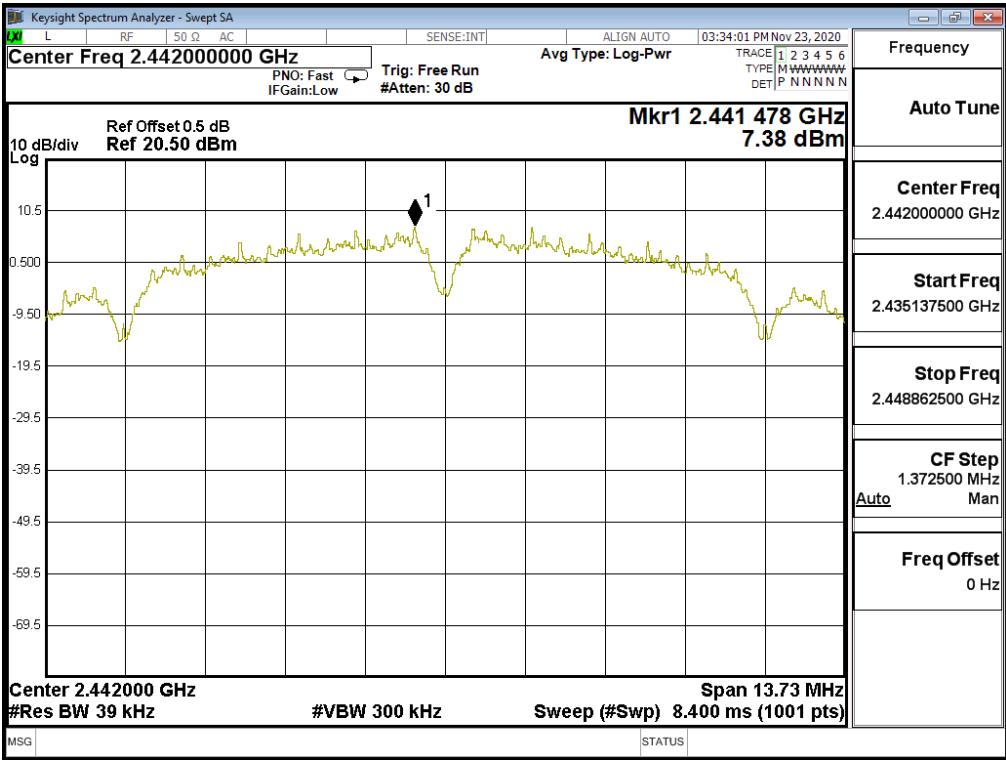


Figure Channel 11:

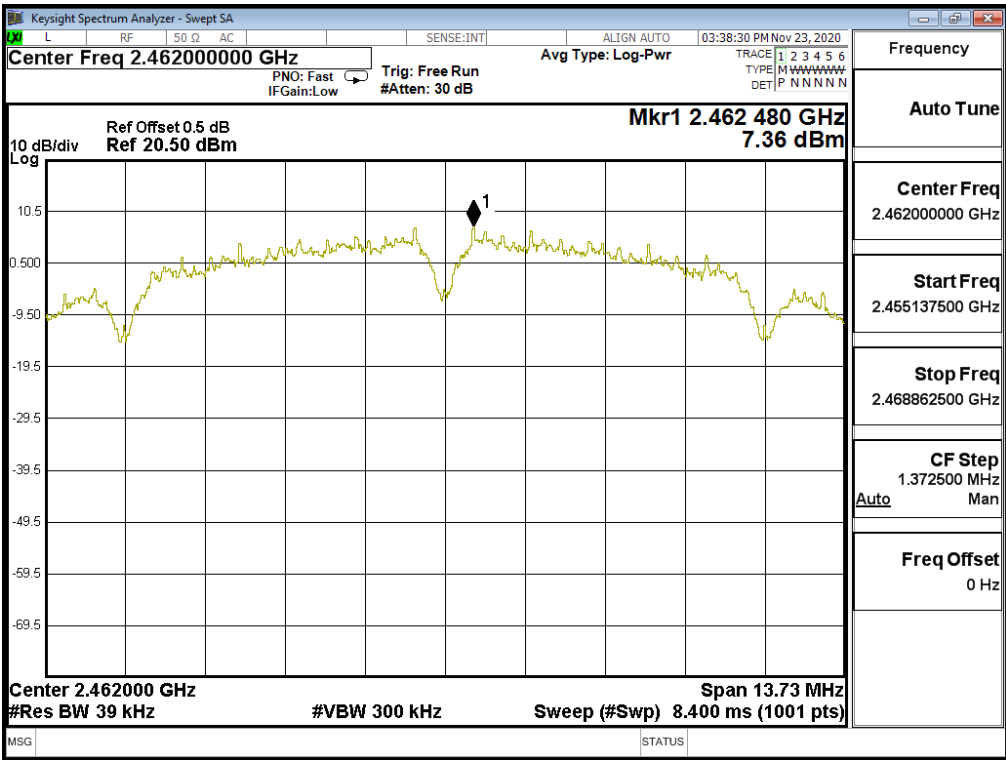


Figure Channel 12:

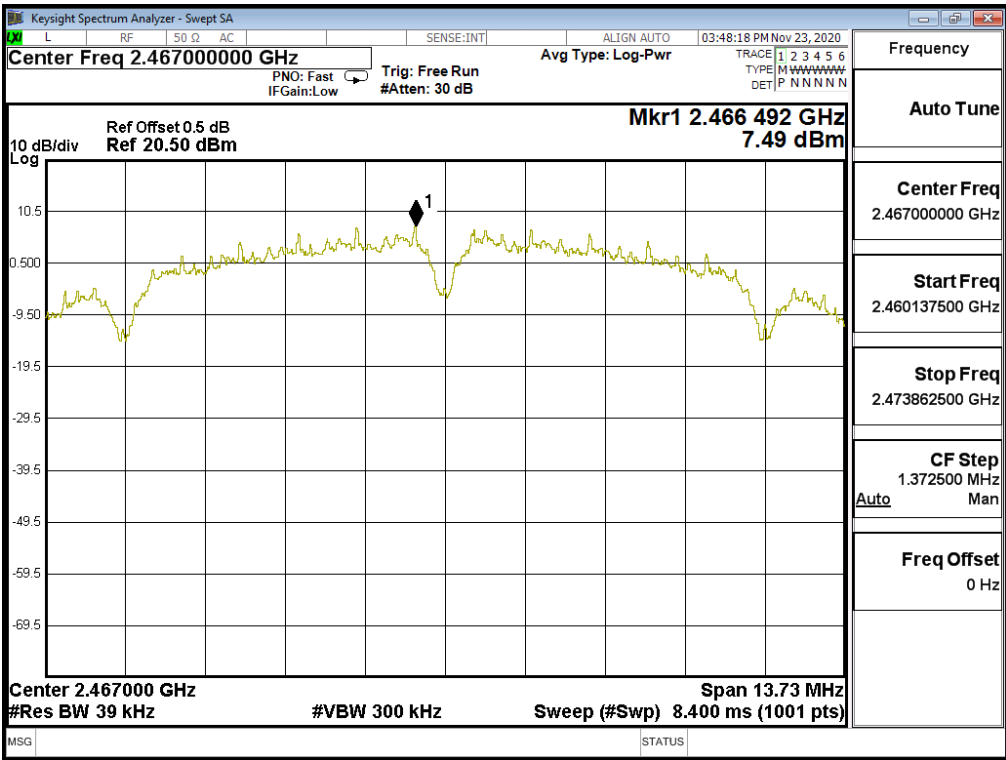
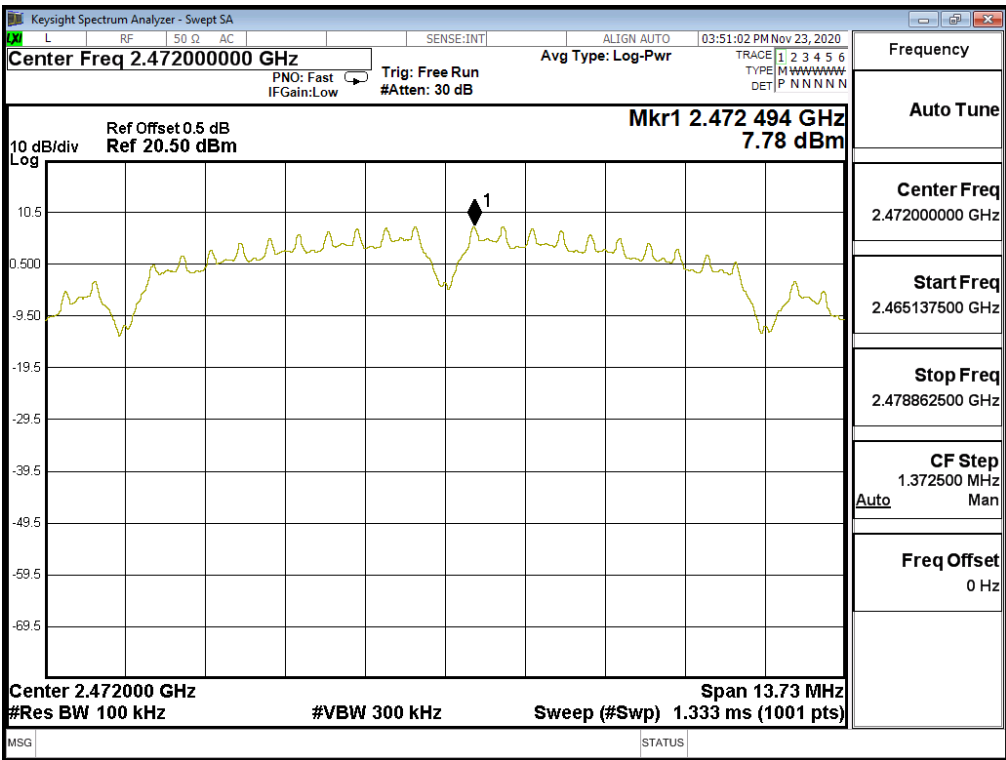


Figure Channel 13:



Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 3 SISO A: Transmit (802.11n-20BW_7.2Mbps)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
01	2412	6.45	0.05	6.50	$\leq 8\text{dBm}$	Pass
07	2442	7.04	0.05	7.09	$\leq 8\text{dBm}$	Pass
11	2462	5.25	0.05	5.30	$\leq 8\text{dBm}$	Pass
12	2467	4.74	0.05	4.79	$\leq 8\text{dBm}$	Pass
13	2472	-9.20	0.05	-9.15	$\leq 8\text{dBm}$	Pass

Figure Channel 1:

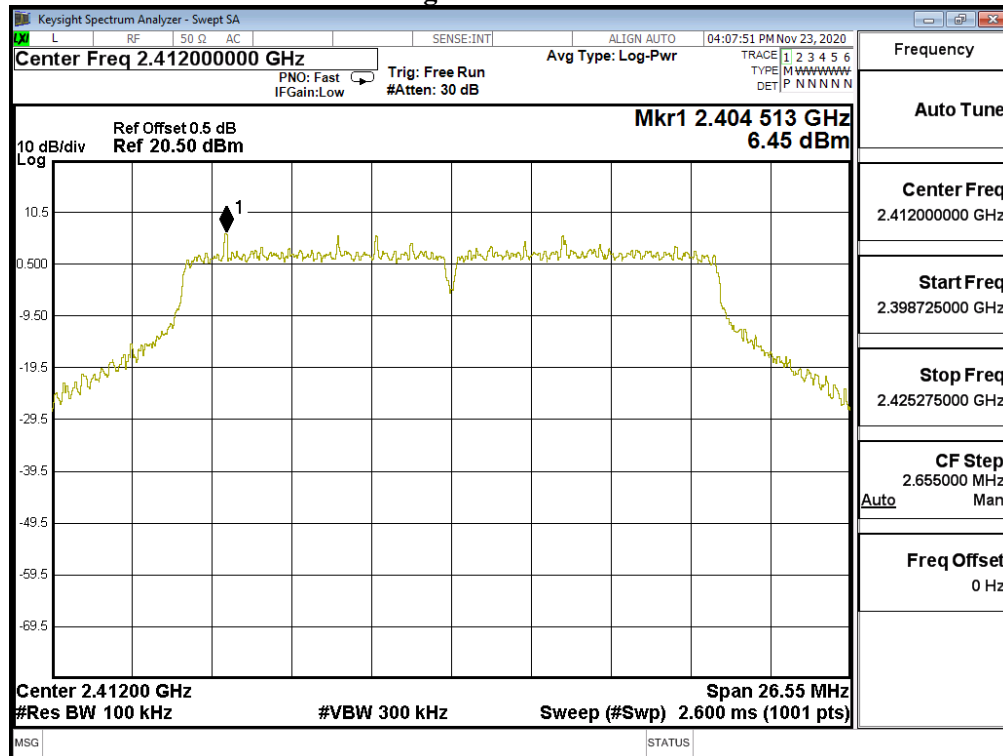


Figure Channel 7:

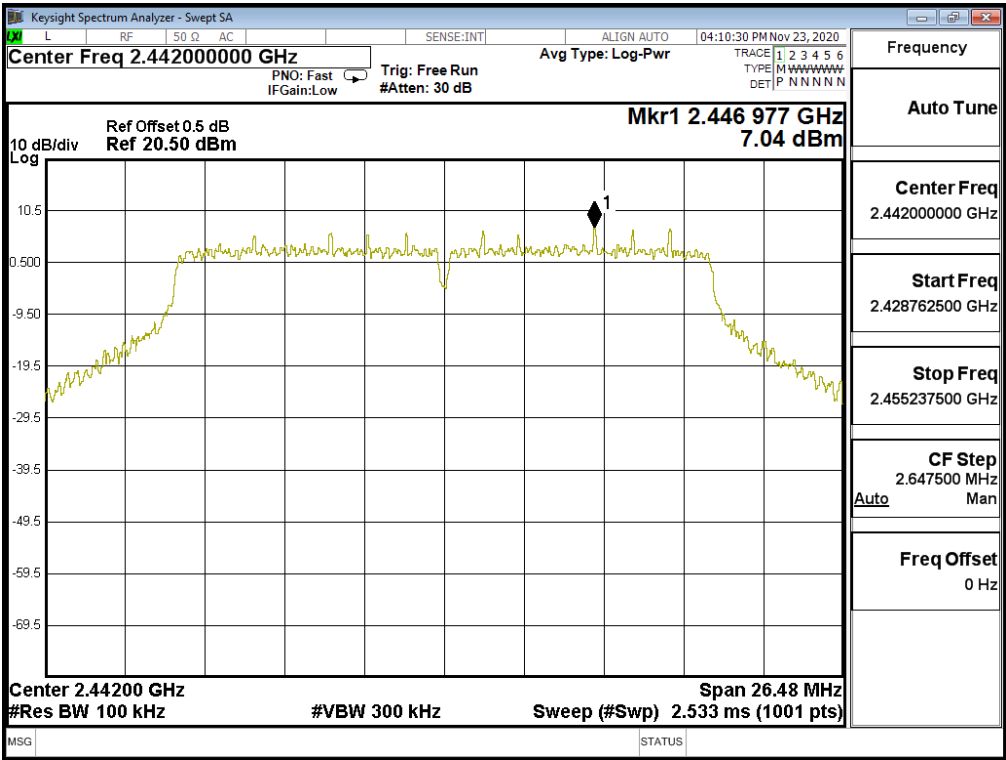


Figure Channel 11:

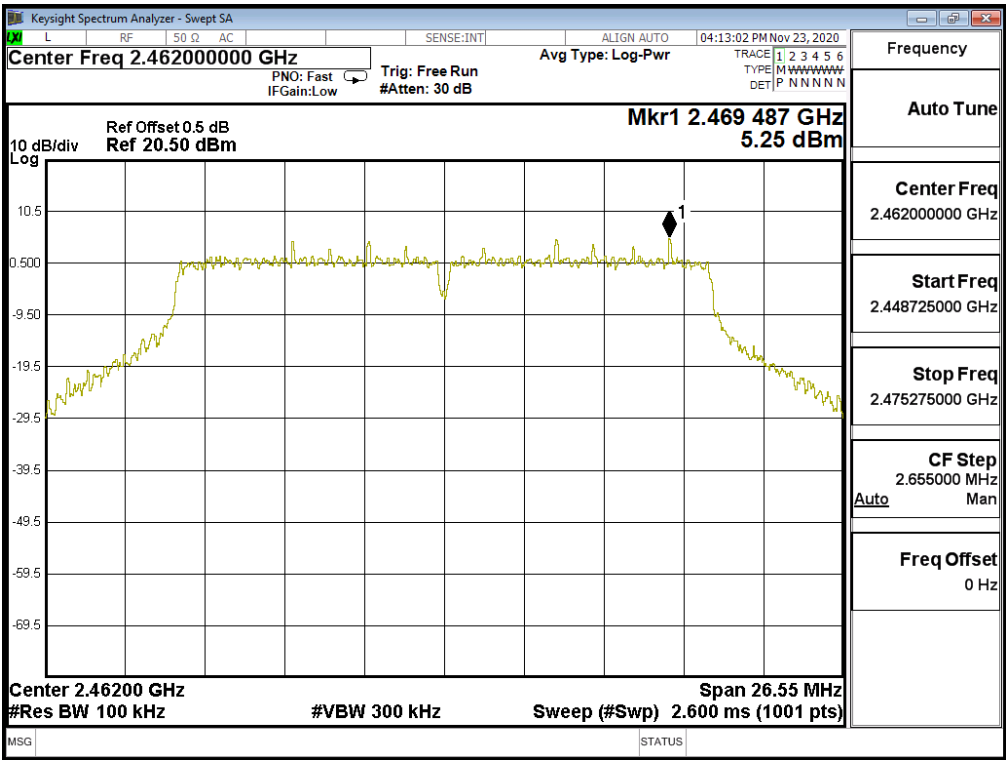


Figure Channel 12:

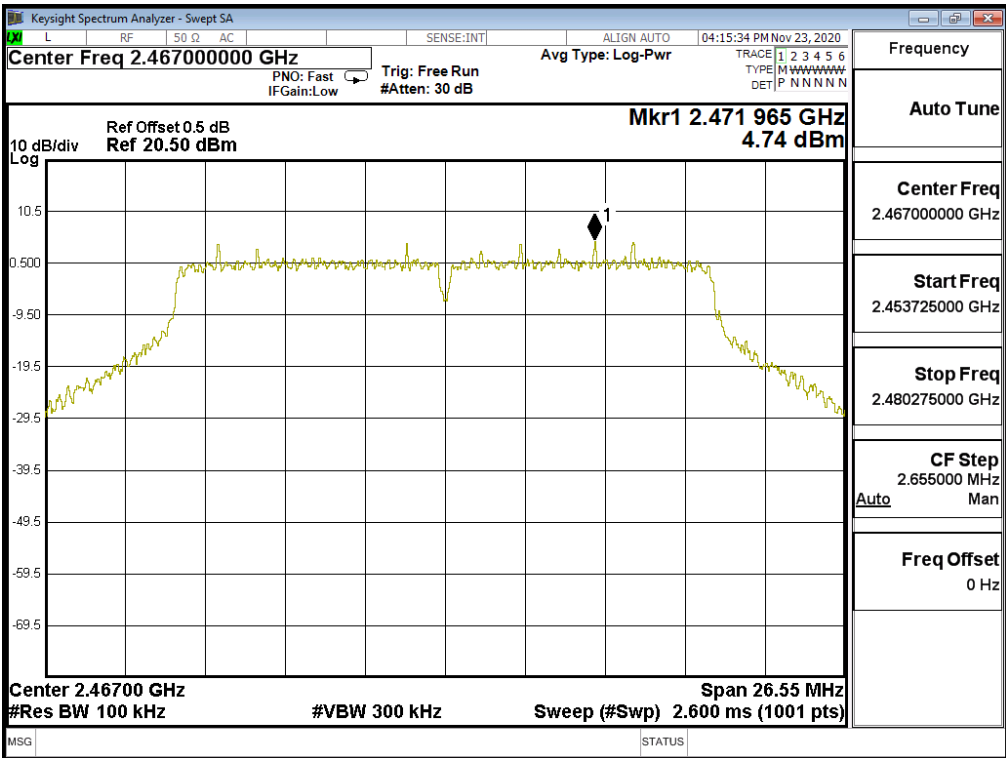
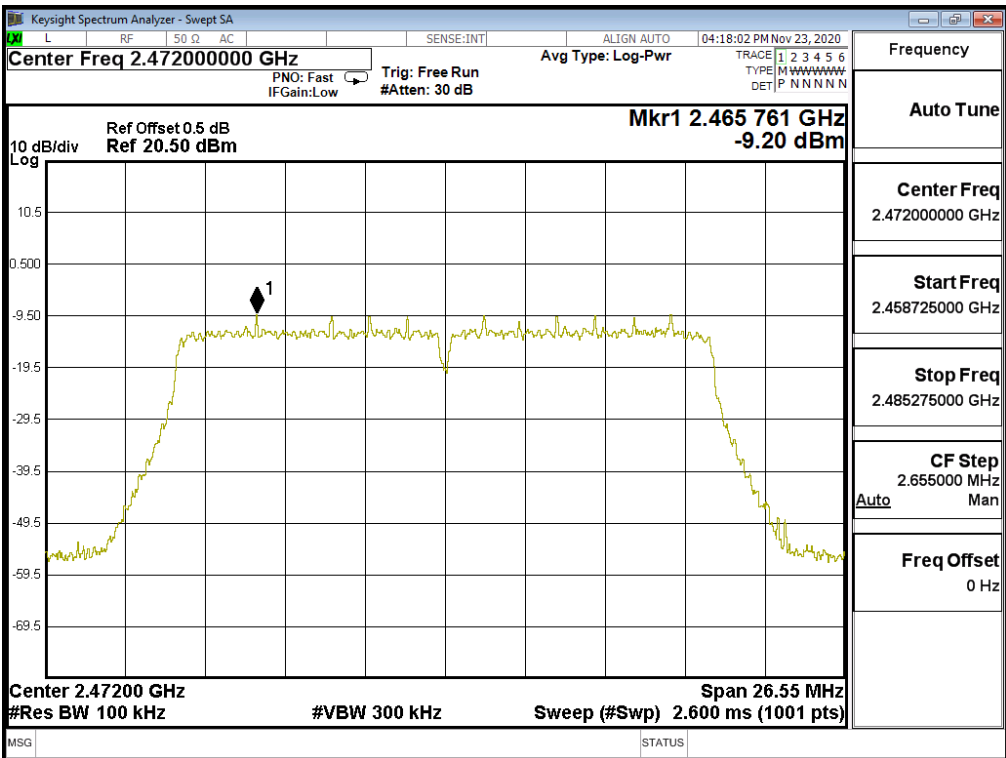


Figure Channel 13:



Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 4 SISO A: Transmit (802.11n-40BW_15Mbps)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
03	2422	2.65	0.09	2.74	$\leq 8\text{dBm}$	Pass
07	2442	1.77	0.09	1.86	$\leq 8\text{dBm}$	Pass
09	2452	0.79	0.09	0.88	$\leq 8\text{dBm}$	Pass
10	2457	-0.53	0.09	-0.44	$\leq 8\text{dBm}$	Pass
11	2462	-8.70	0.09	-8.61	$\leq 8\text{dBm}$	Pass

Figure Channel 3:

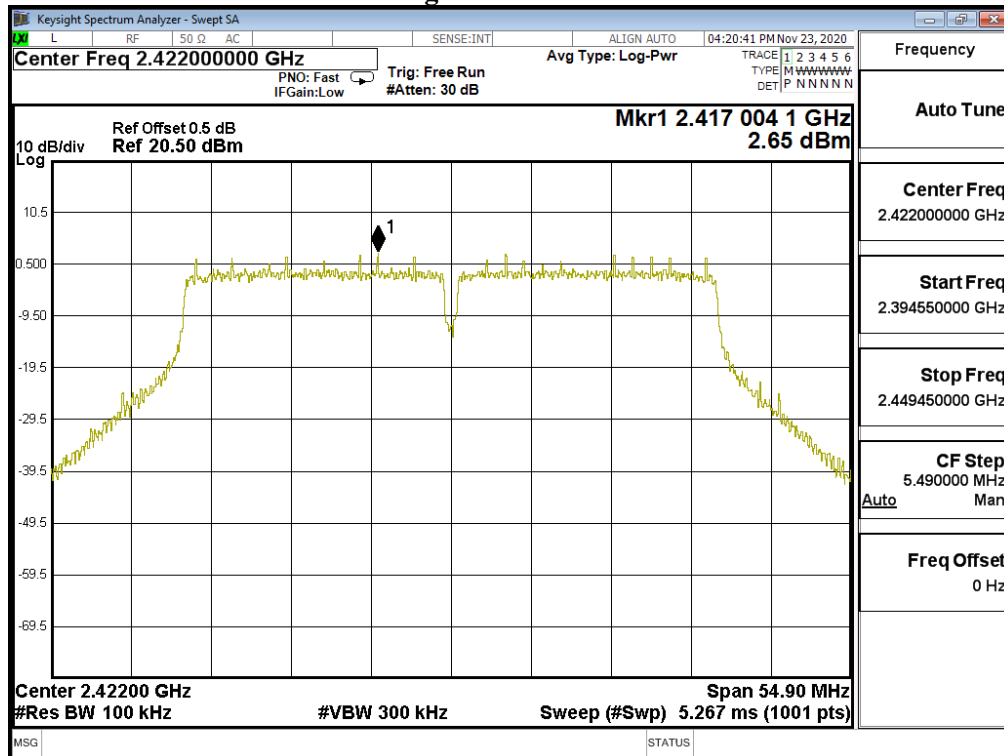


Figure Channel 7:

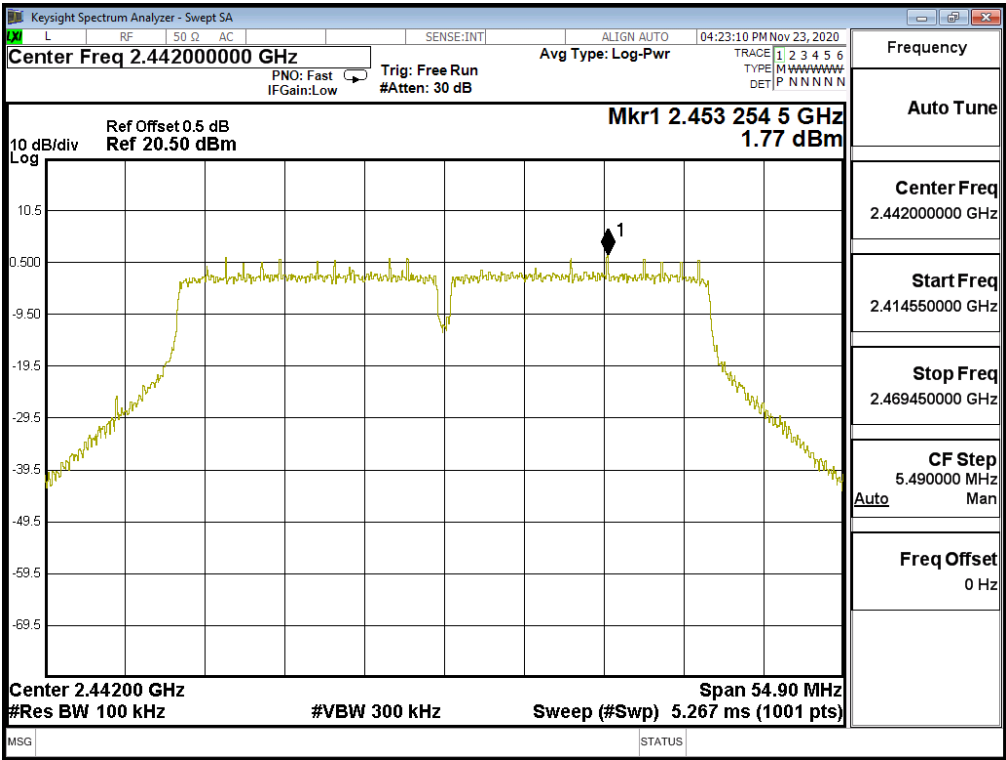


Figure Channel 9:

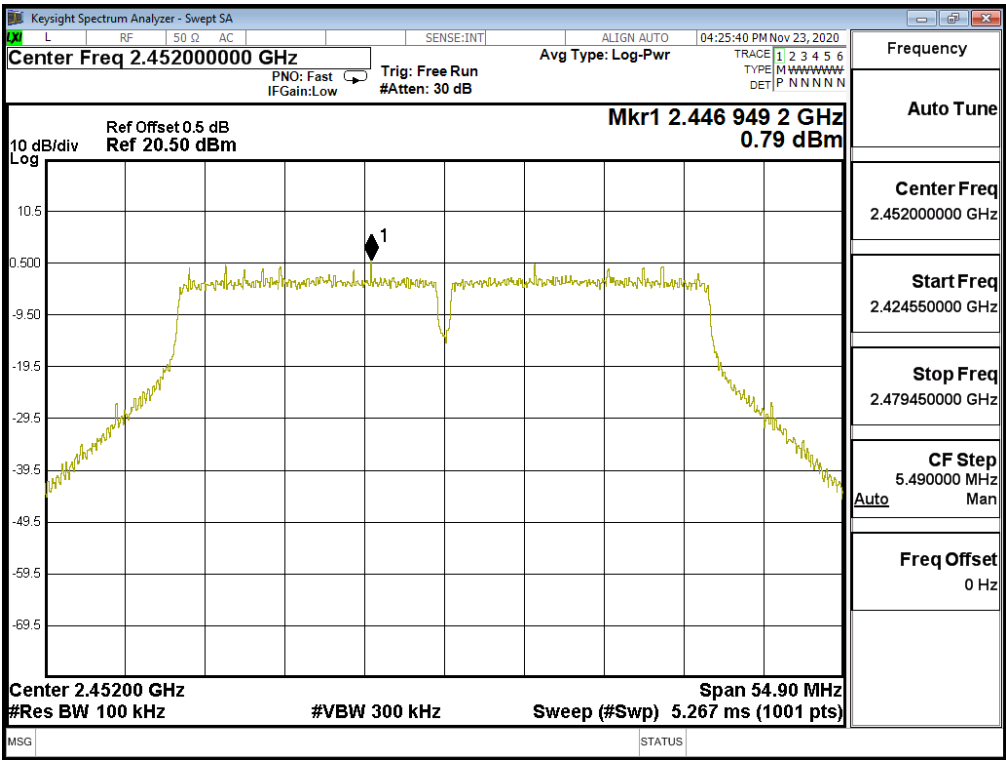


Figure Channel 10:

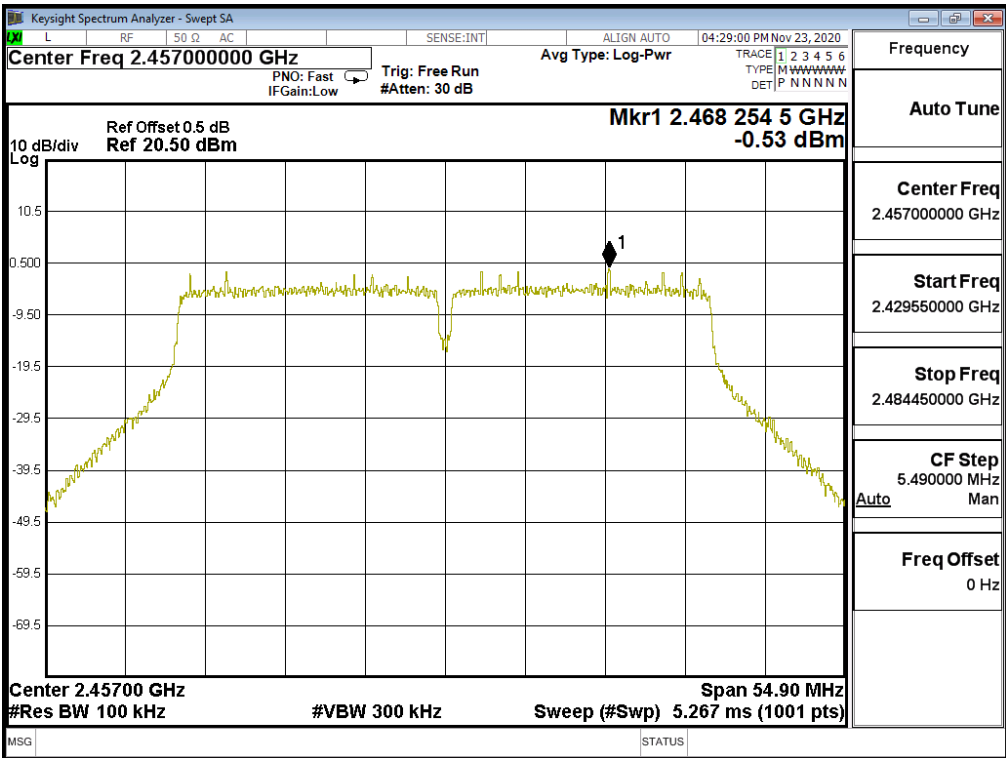
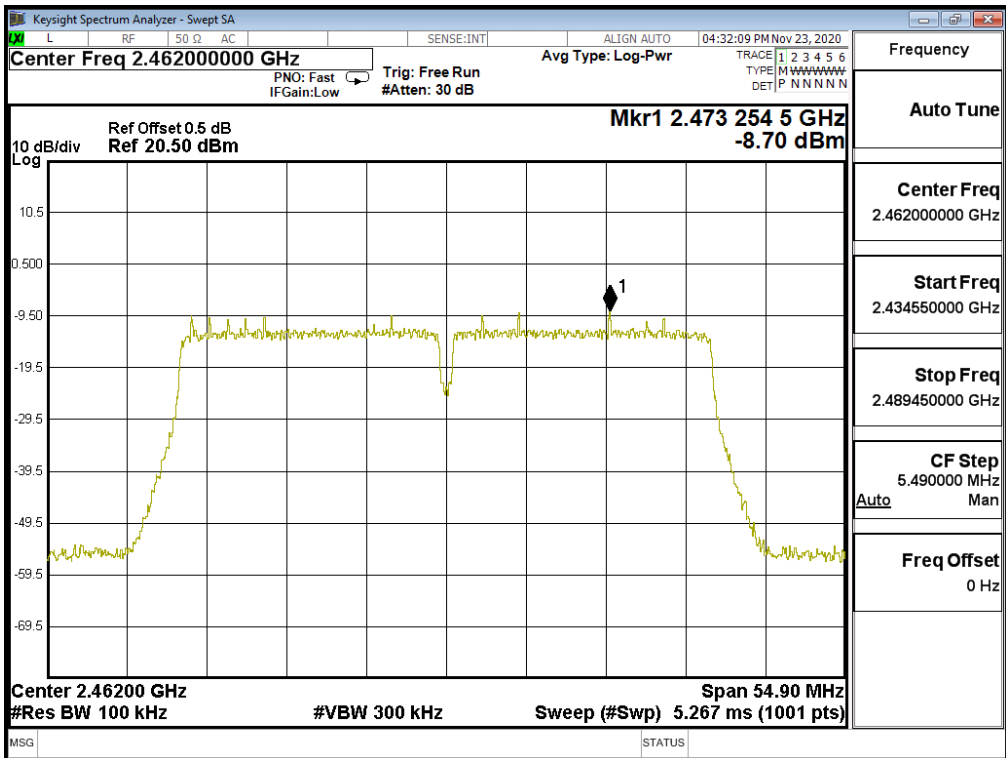


Figure Channel 11:



Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 5 SISO A: Transmit (802.11ax-20BW_8.6Mbps)

RU config: Full

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
01	2412	6.61	0.06	6.67	≤ 8 dBm	Pass
07	2442	6.54	0.06	6.60	≤ 8 dBm	Pass
11	2462	4.55	0.06	4.61	≤ 8 dBm	Pass
12	2467	5.07	0.06	5.13	≤ 8 dBm	Pass
13	2472	-8.28	0.06	-8.22	≤ 8 dBm	Pass

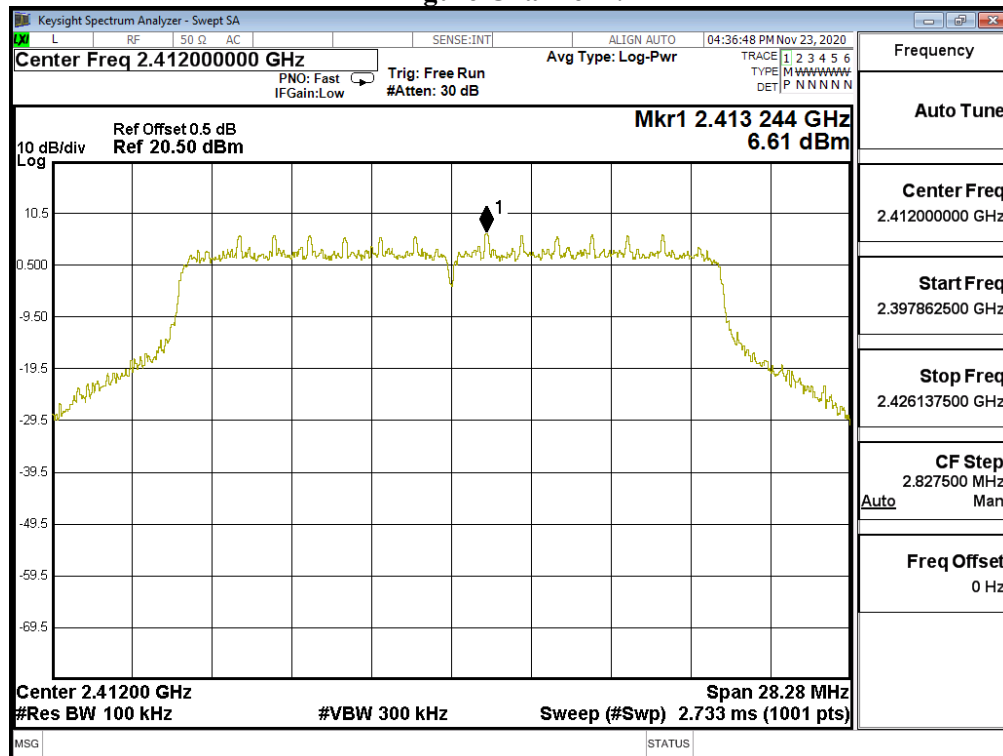
Figure Channel 1:

Figure Channel 7:

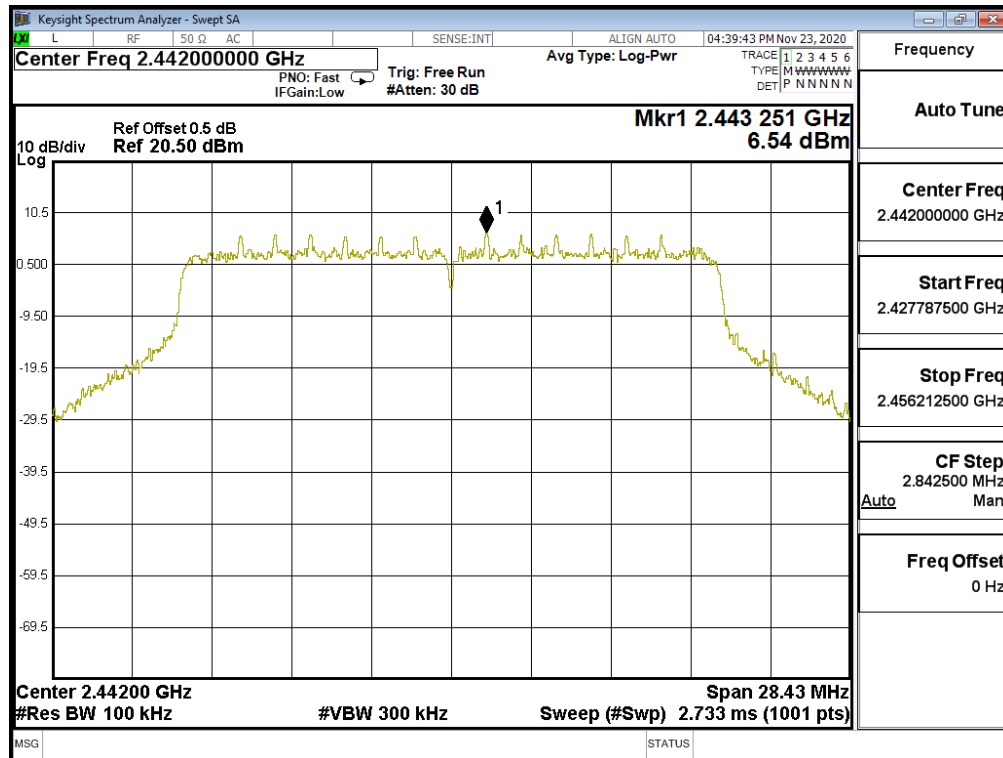


Figure Channel 11:

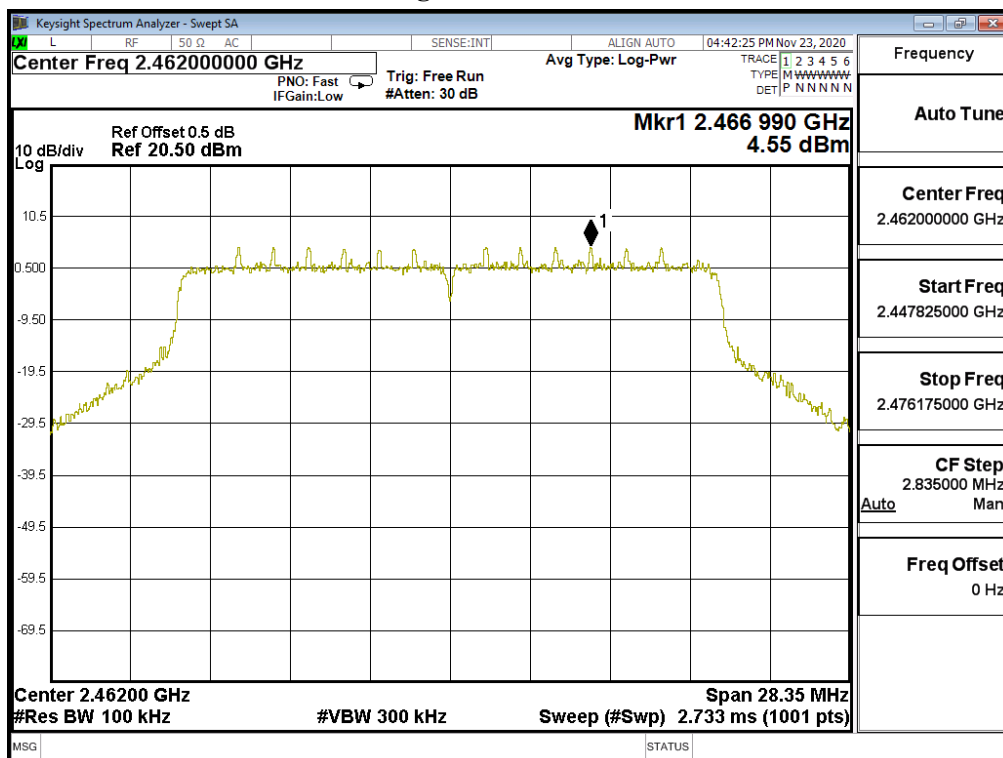


Figure Channel 12:

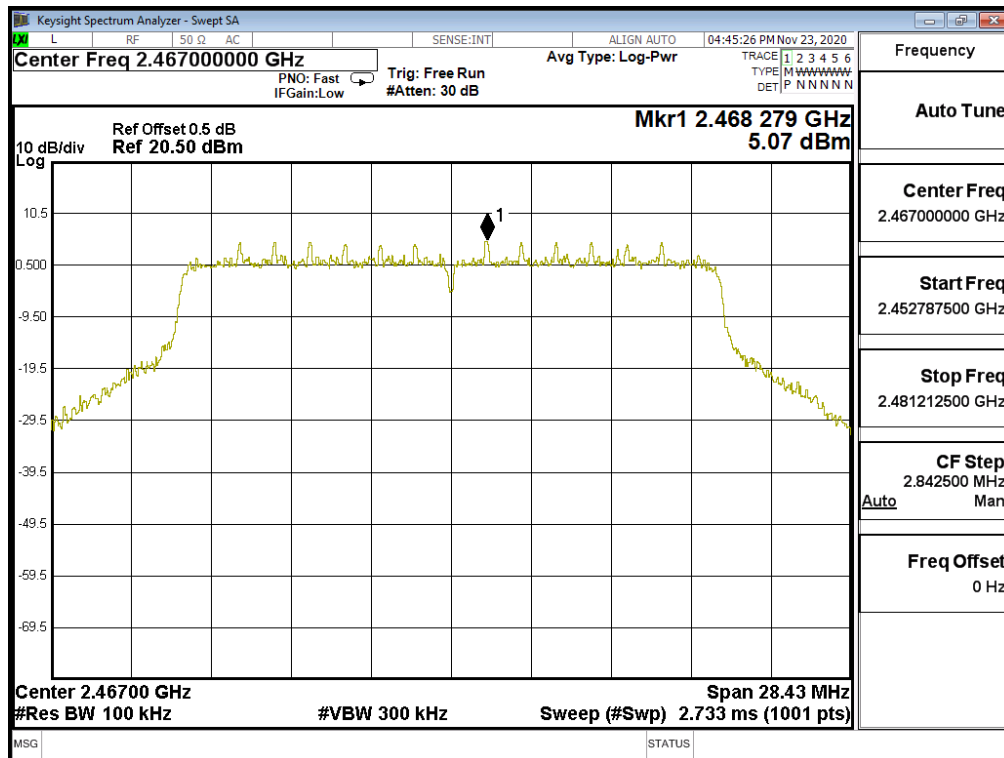
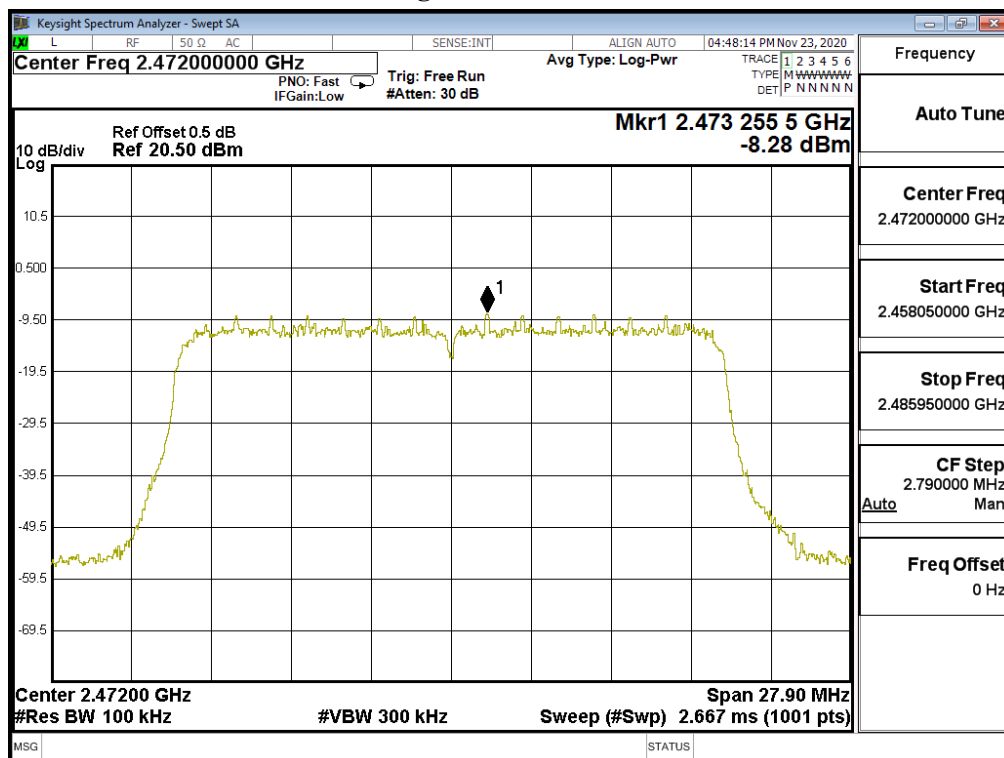


Figure Channel 13:



Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 5 SISO A: Transmit (802.11ax-20BW_8.6Mbps)

RU config: Other

Channel No.	Frequency (MHz)	RU setting	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
1	2412	26/0	5.86	0.14	6.00	≤ 8 dBm	Pass
		52/37	7.69	0.17	7.86	≤ 8 dBm	Pass
		106/53	6.32	0.14	6.46	≤ 8 dBm	Pass
13	2472	26/8	-0.55	0.14	-0.41	≤ 8 dBm	Pass
		52/40	-2.86	0.17	-2.69	≤ 8 dBm	Pass
		106/54	-5.94	0.14	-5.80	≤ 8 dBm	Pass

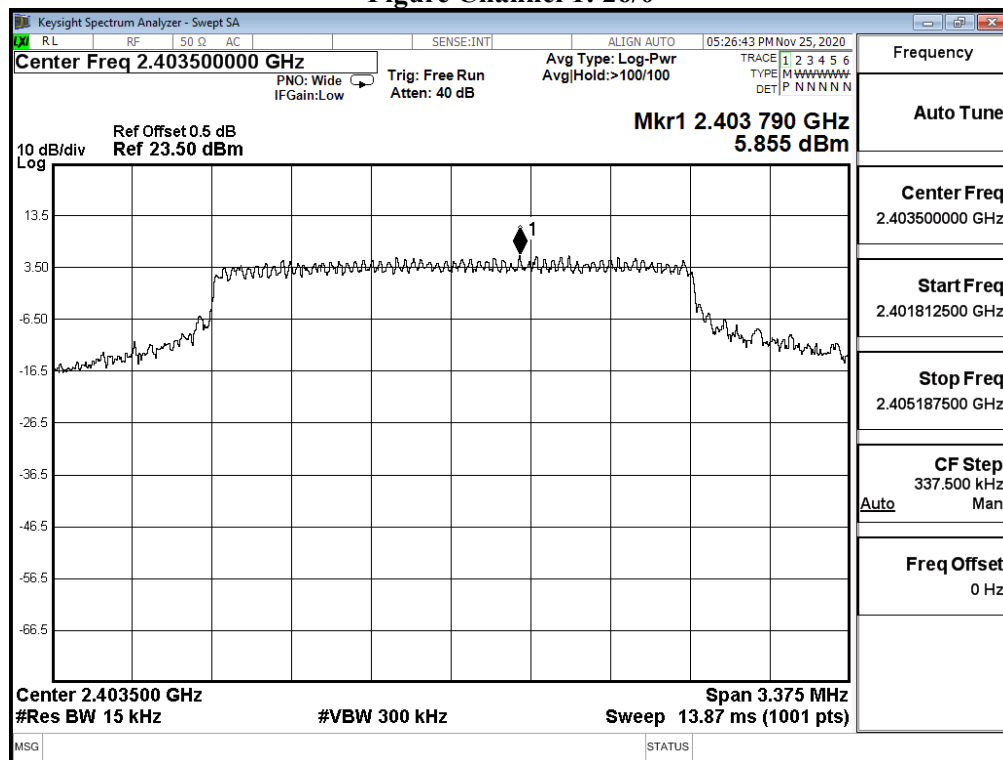
Figure Channel 1: 26/0

Figure Channel 1: 52/37

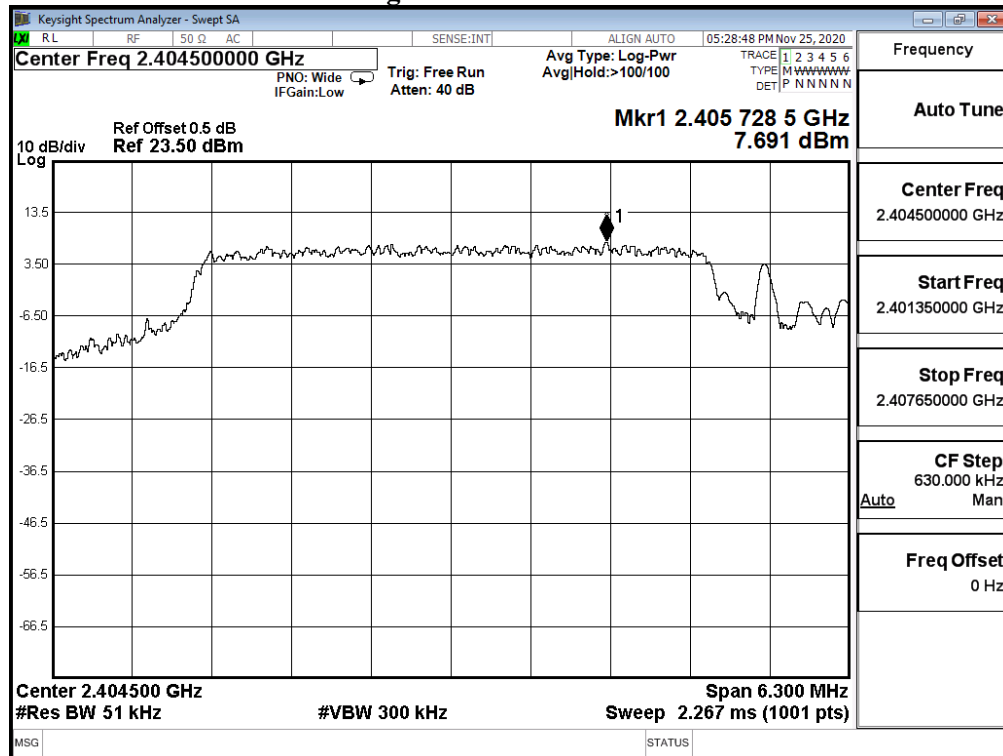


Figure Channel 1: 106/53

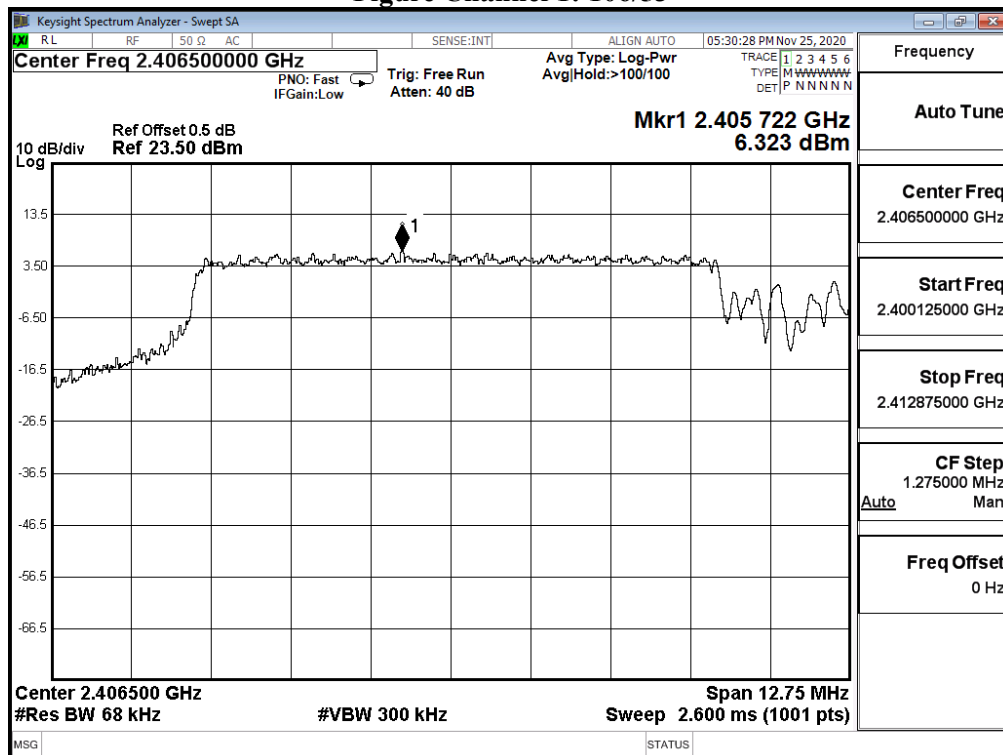


Figure Channel 13: 26/8

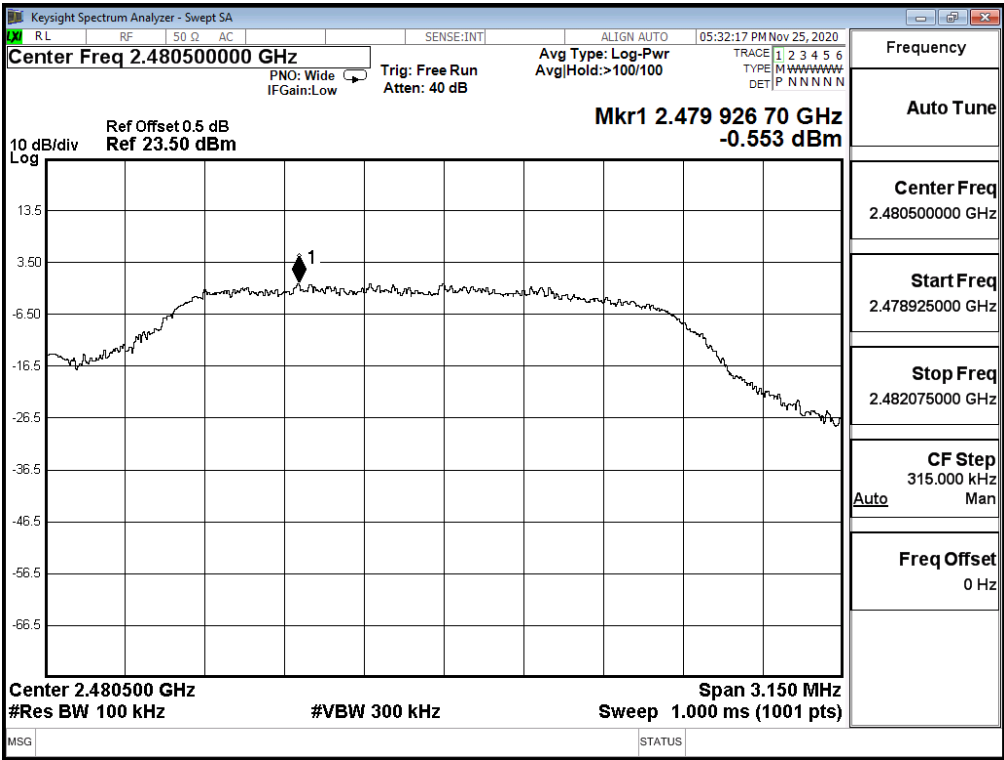


Figure Channel 13: 52/40

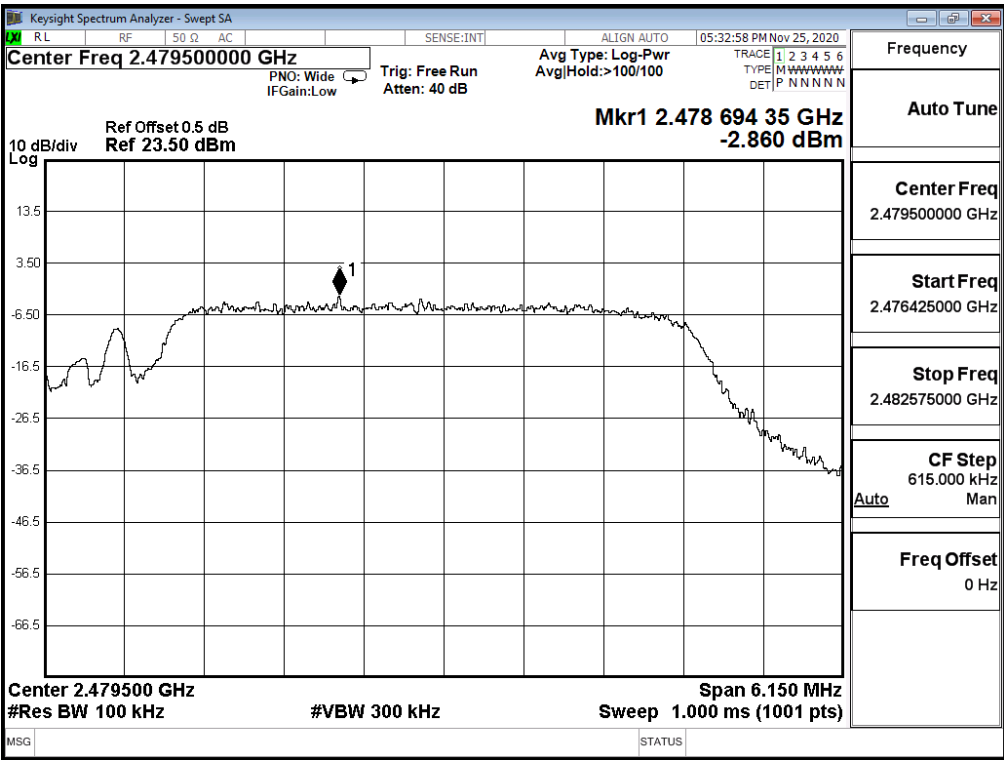
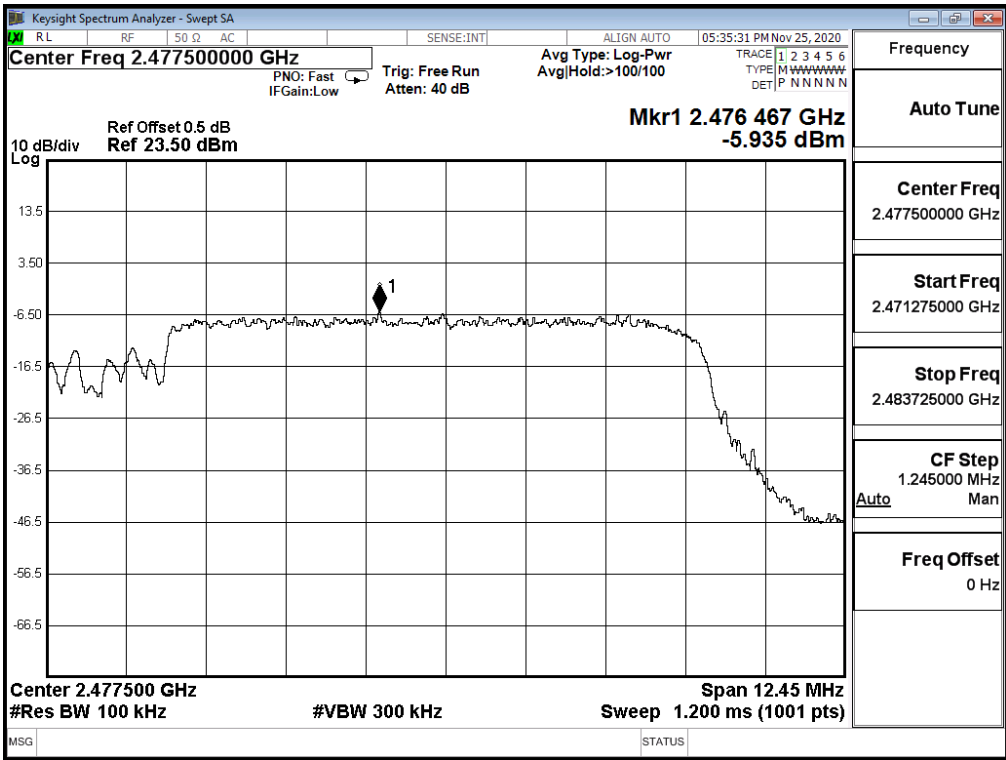


Figure Channel 13: 106/54



Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 6 SISO A: Transmit (802.11ax-40BW_17.2Mbps)

RU config: Full

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
03	2422	1.94	0.07	2.01	≤ 8dBm	Pass
07	2442	2.00	0.07	2.07	≤ 8dBm	Pass
09	2452	2.07	0.07	2.14	≤ 8dBm	Pass
10	2457	-1.07	0.07	-1.00	≤ 8dBm	Pass
11	2462	-8.71	0.07	-8.64	≤ 8dBm	Pass

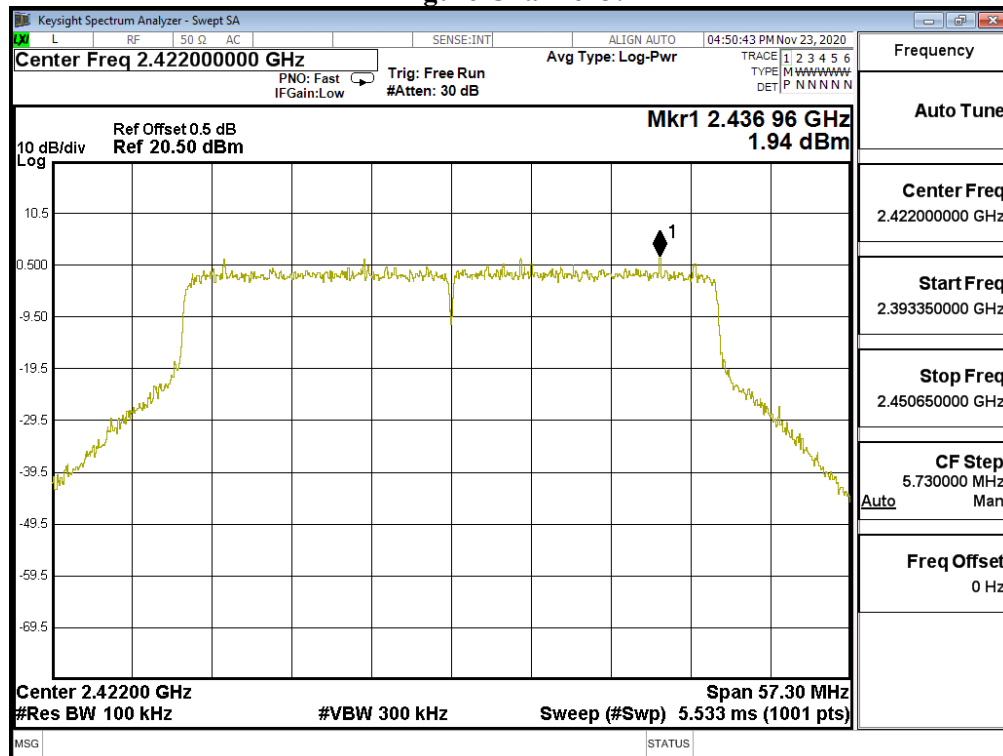
Figure Channel 3:

Figure Channel 7:

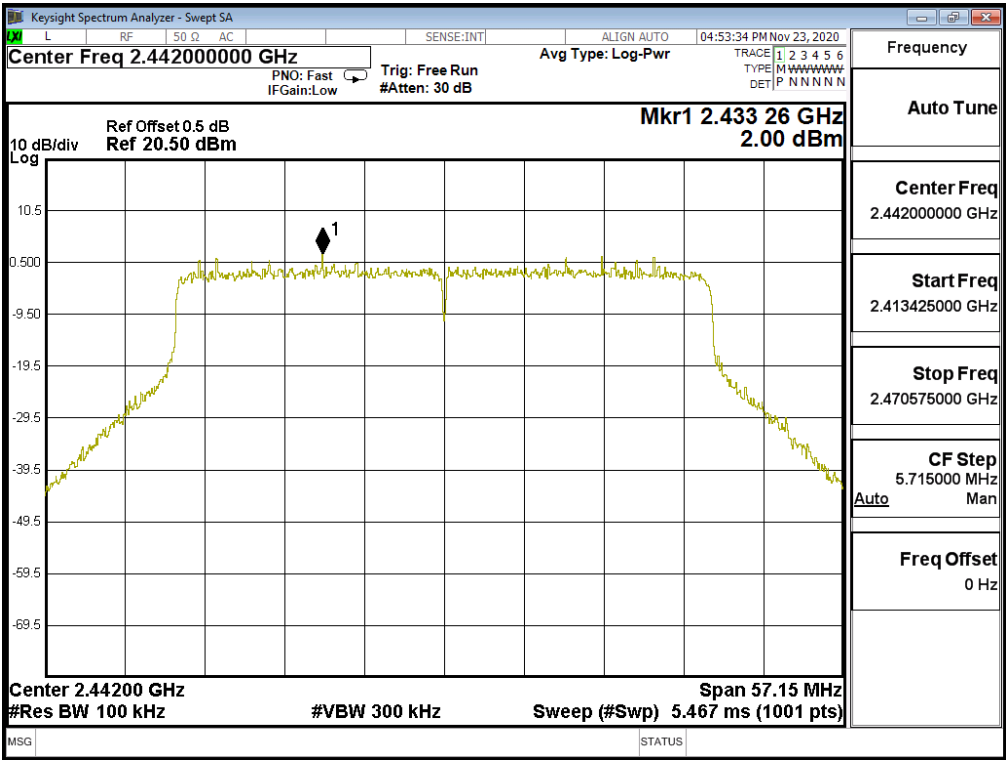


Figure Channel 9:

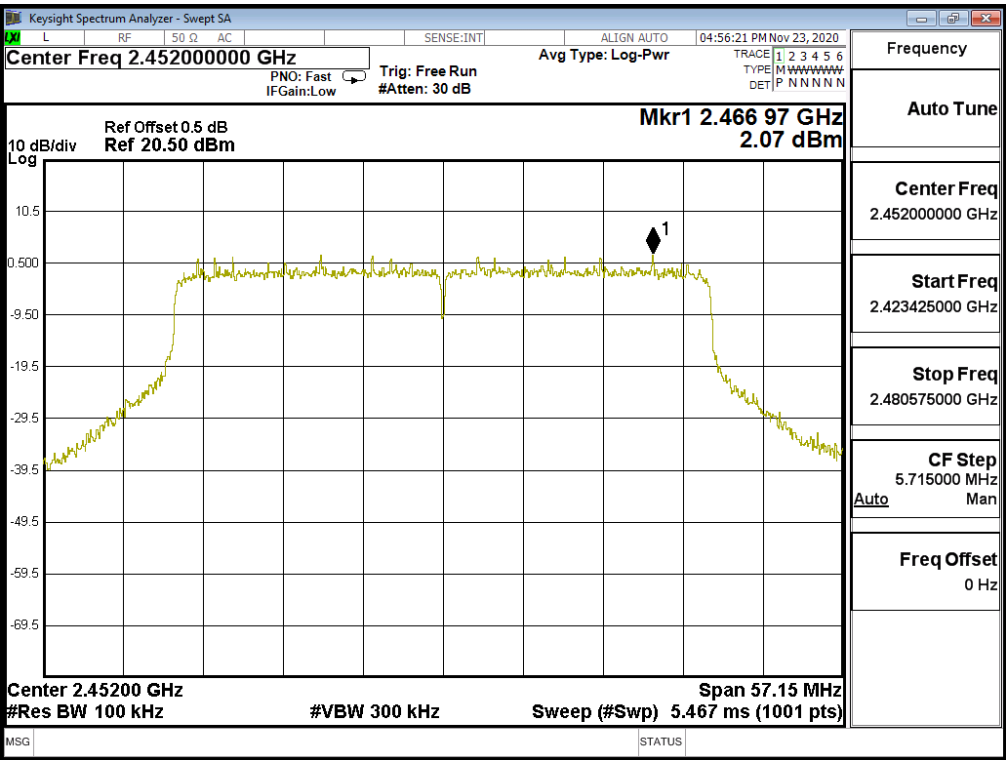


Figure Channel 10:

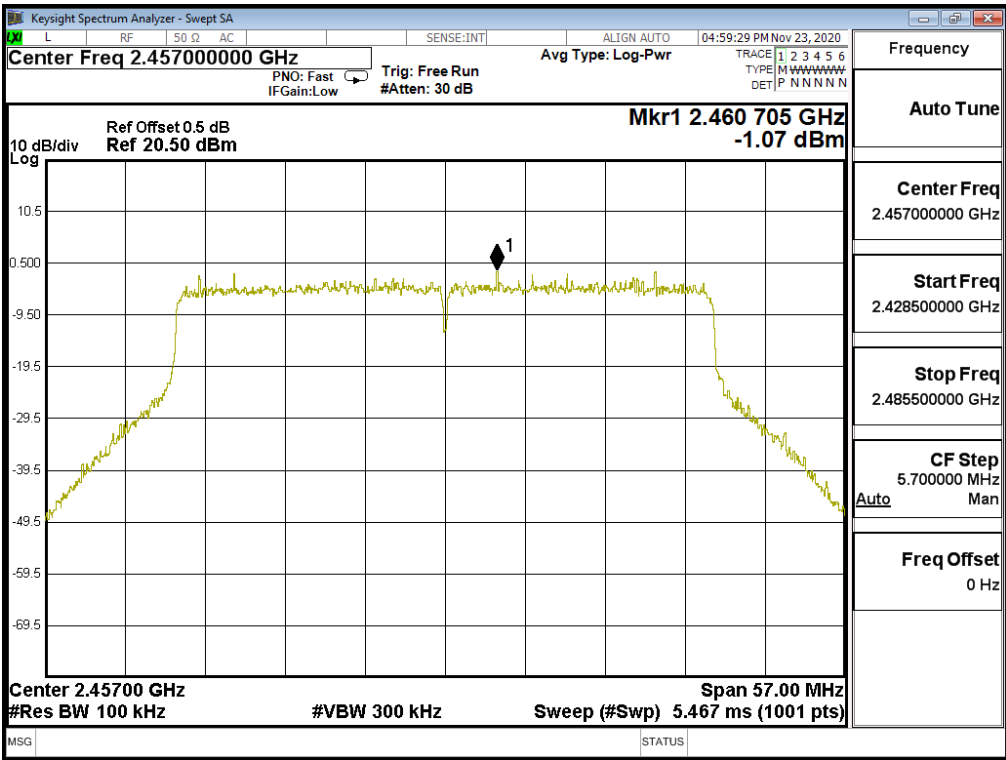
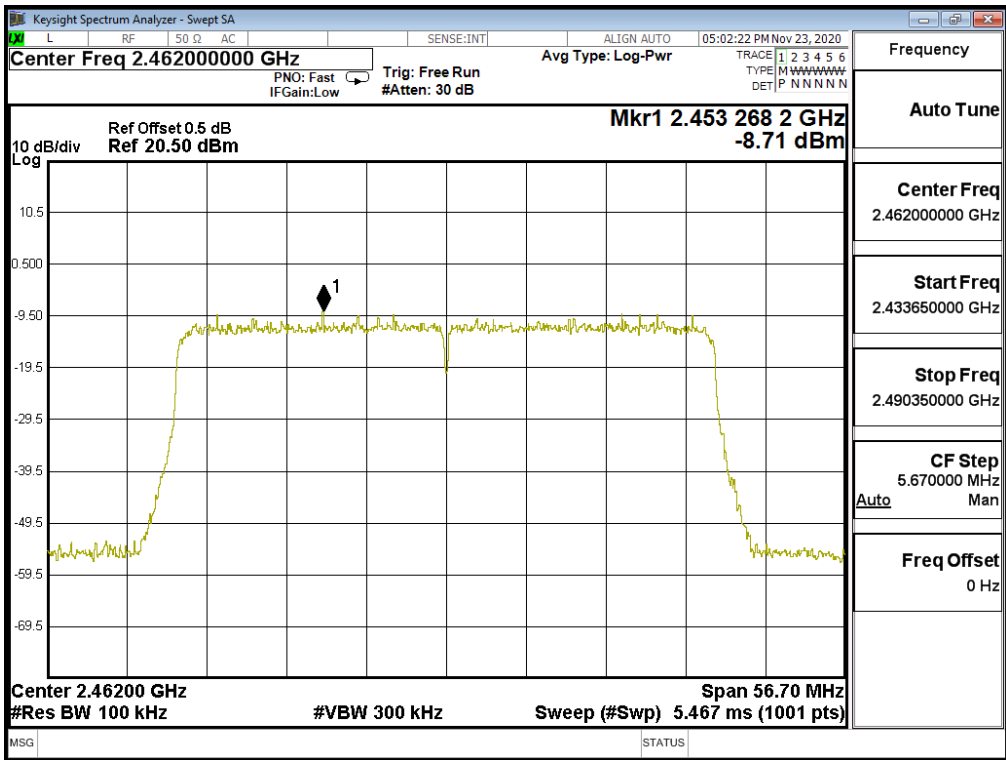


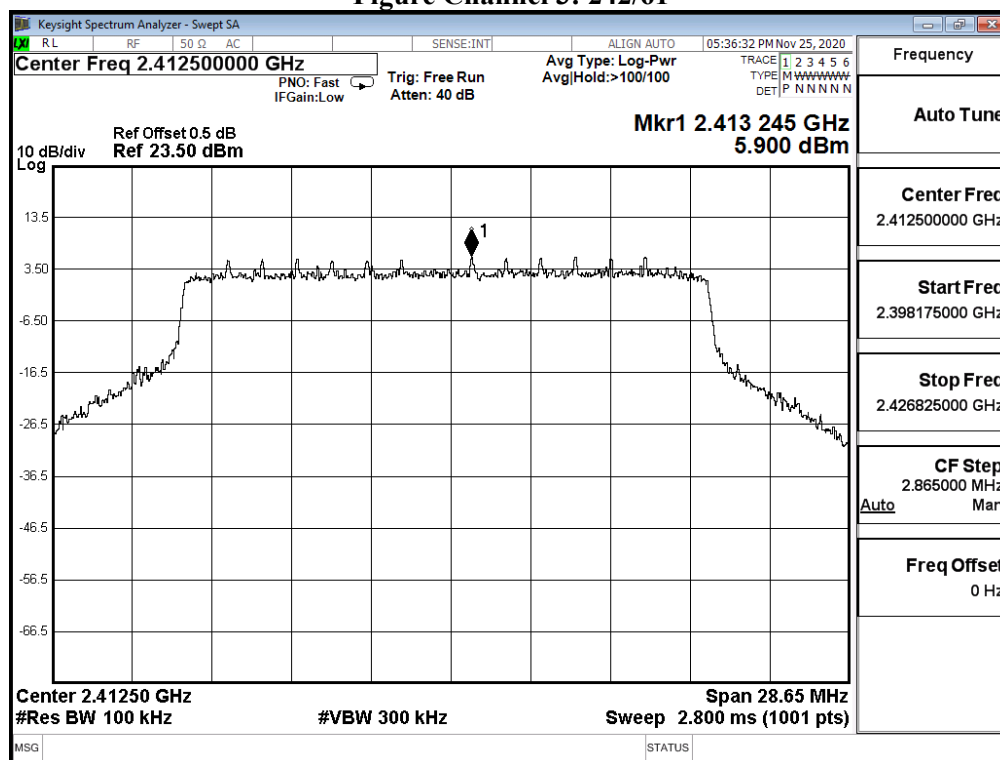
Figure Channel 11:



Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 6 SISO A: Transmit (802.11ax-40BW_17.2Mbps)

RU config: Other

Channel No.	Frequency (MHz)	RU setting	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
3	2422	242/61	5.90	0.07	5.97	$\leq 8\text{dBm}$	Pass
11	2462	242/62	-5.83	0.07	-5.76	$\leq 8\text{dBm}$	Pass

Figure Channel 3: 242/61

[illegible]

Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 13 MIMO: Transmit (802.11n-20BW_14.4Mbps)

Channel No.	Frequency (MHz)	Chain	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
1	2412	A	3.60	0.14	6.75	$\leq 8\text{dBm}$	Pass
		B	3.27	0.14	6.42	$\leq 8\text{dBm}$	Pass
7	2442	A	4.39	0.14	7.54	$\leq 8\text{dBm}$	Pass
		B	3.38	0.14	6.53	$\leq 8\text{dBm}$	Pass
11	2462	A	3.71	0.14	6.86	$\leq 8\text{dBm}$	Pass
		B	4.23	0.14	7.38	$\leq 8\text{dBm}$	Pass
12	2467	A	1.46	0.14	4.61	$\leq 8\text{dBm}$	Pass
		B	1.70	0.14	4.85	$\leq 8\text{dBm}$	Pass
13	2472	A	-12.50	0.14	-9.35	$\leq 8\text{dBm}$	Pass
		B	-12.33	0.14	-9.18	$\leq 8\text{dBm}$	Pass

Note :

The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 1: (Chain A)

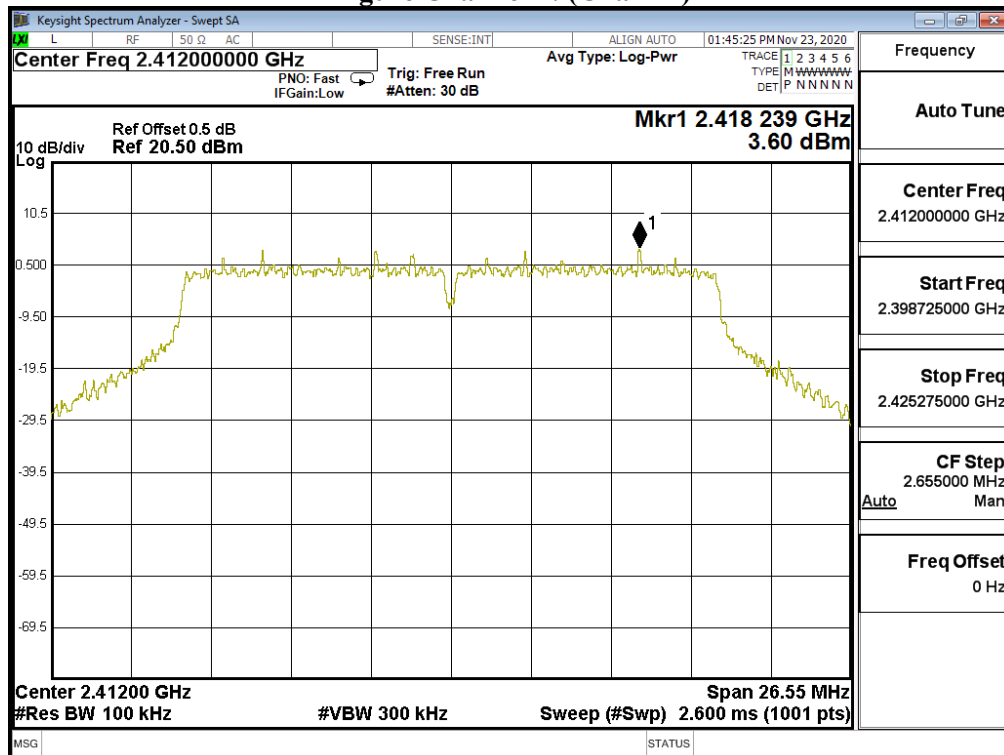


Figure Channel 7: (Chain A)

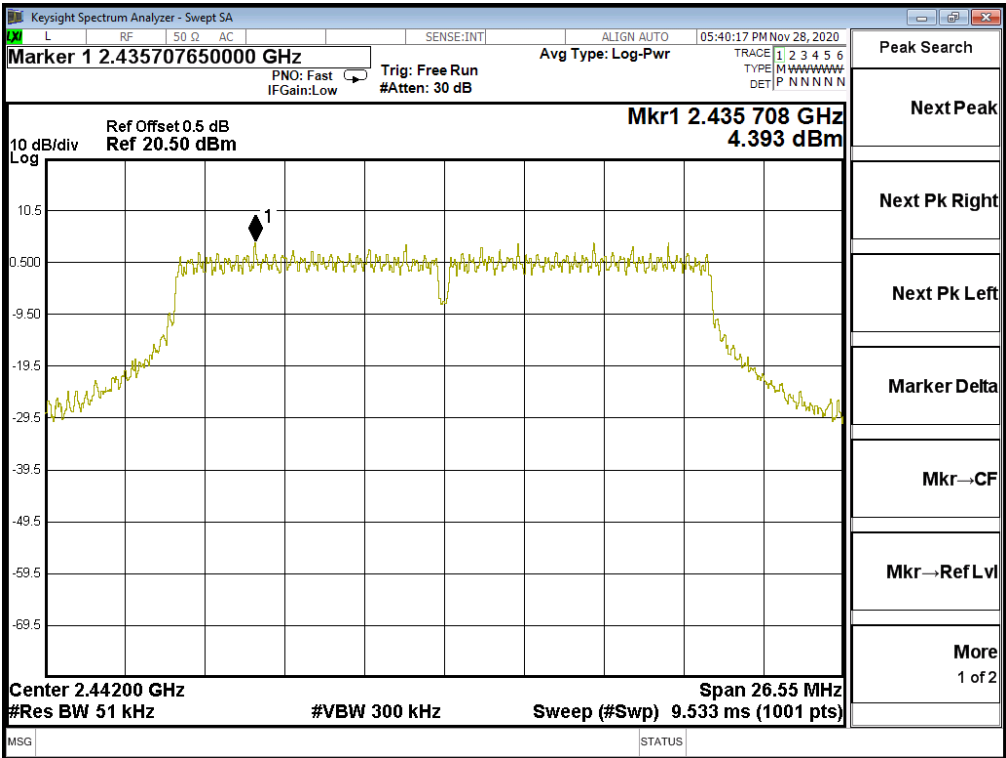


Figure Channel 11: (Chain A)

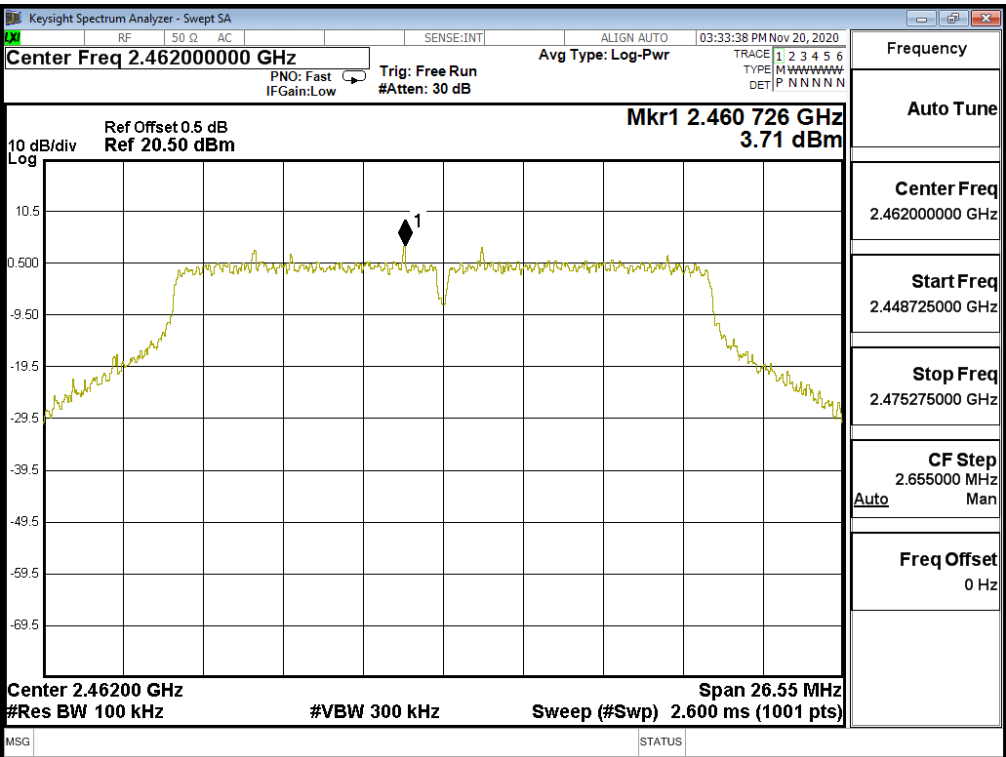


Figure Channel 12: (Chain A)

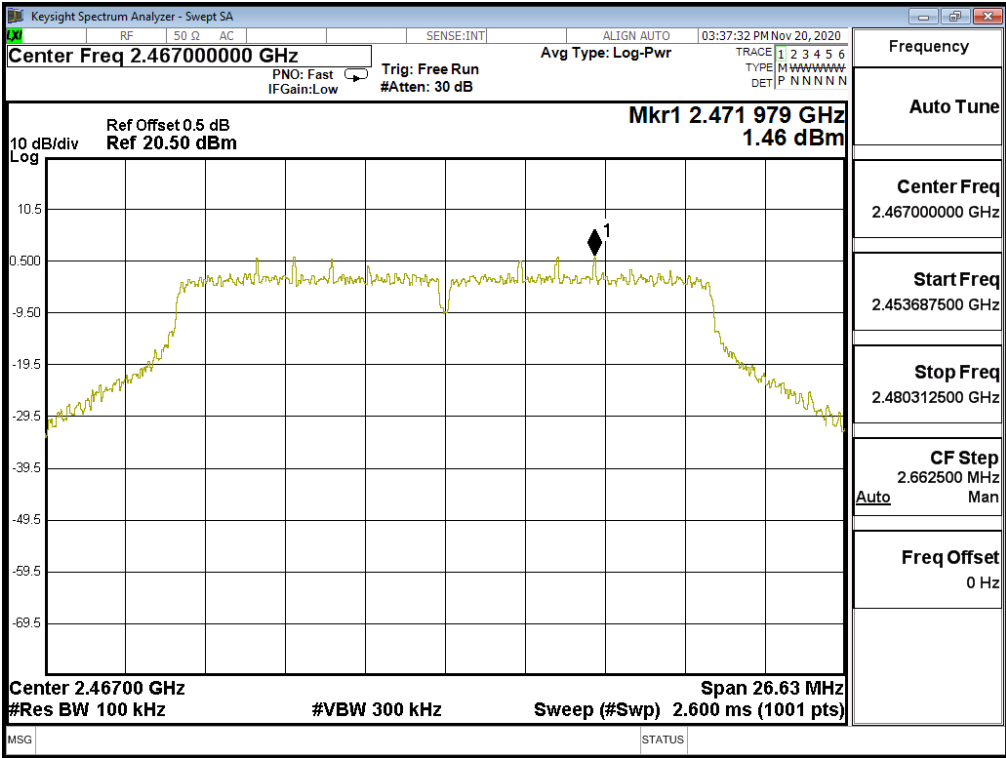


Figure Channel 13: (Chain A)

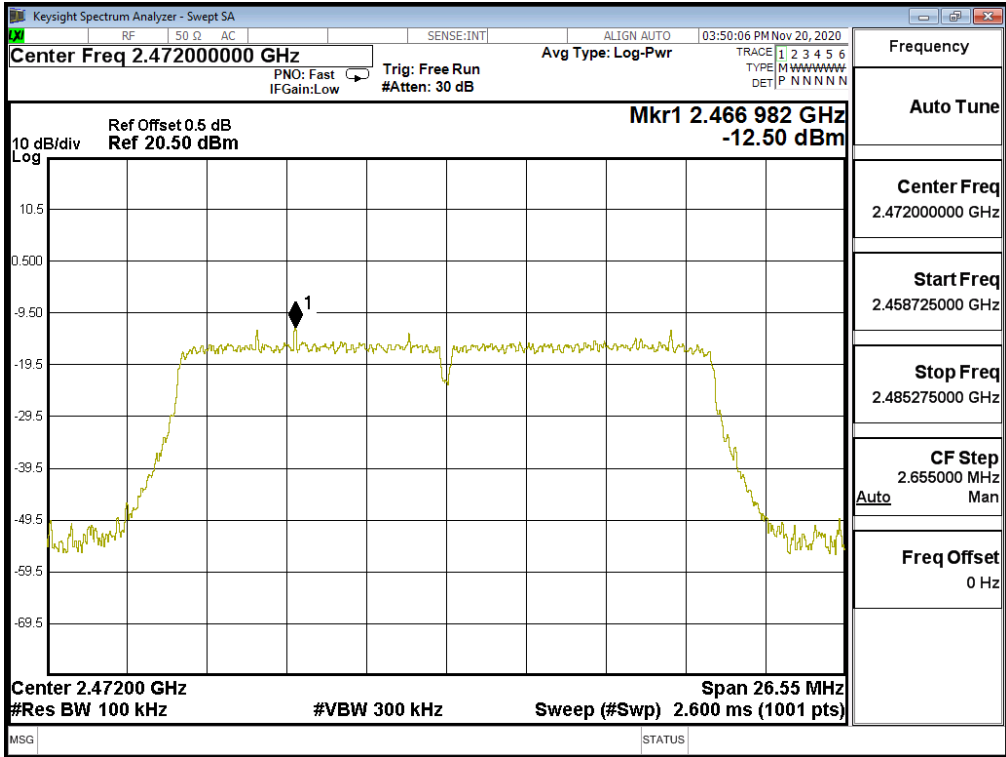


Figure Channel 1: (Chain B)

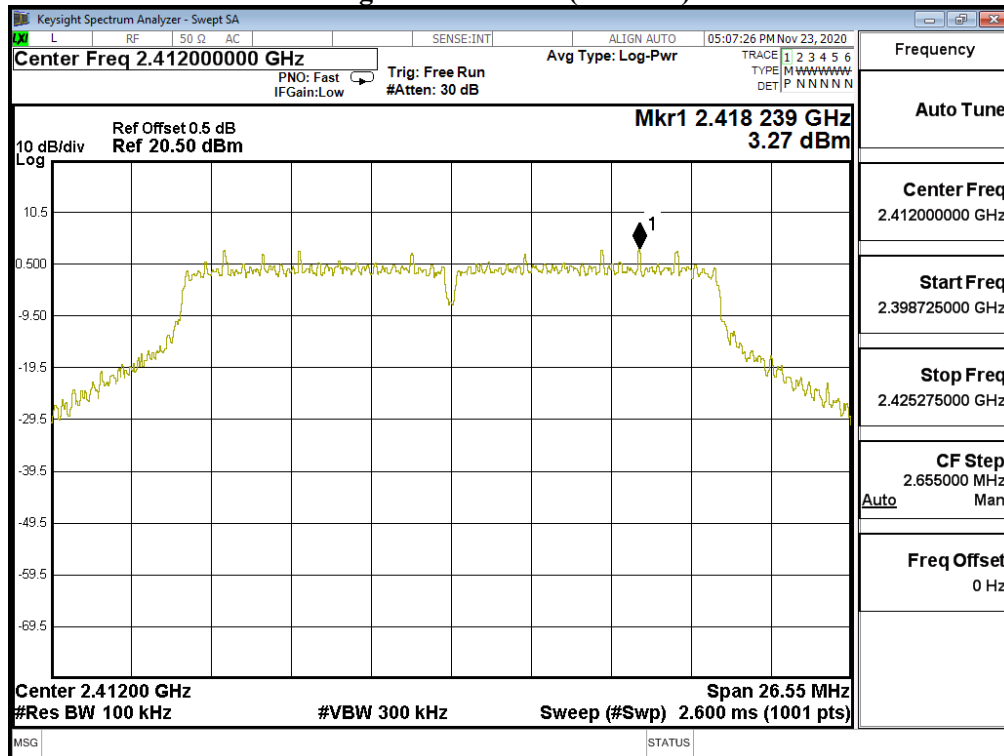


Figure Channel 7: (Chain B)

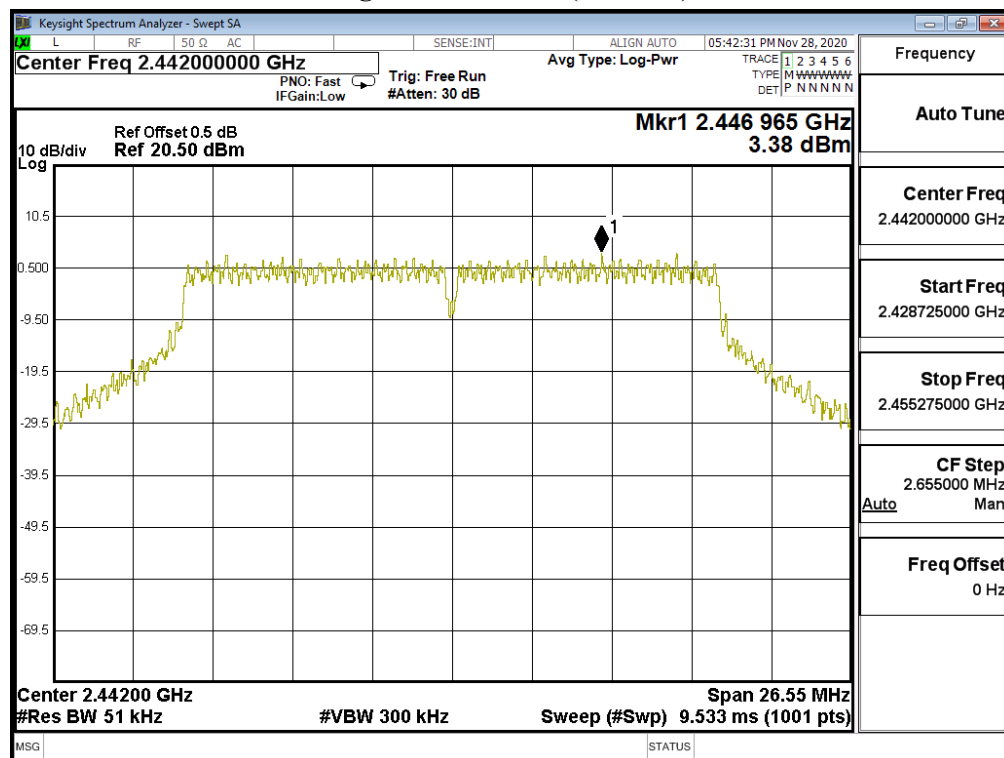


Figure Channel 11: (Chain B)

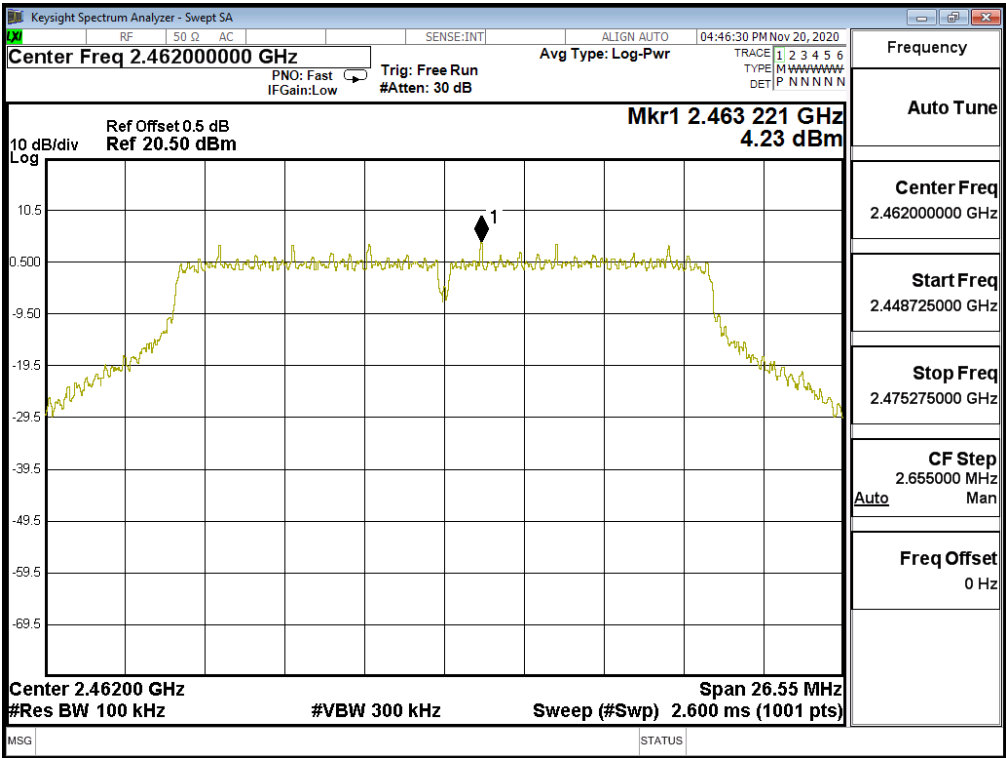


Figure Channel 12: (Chain B)

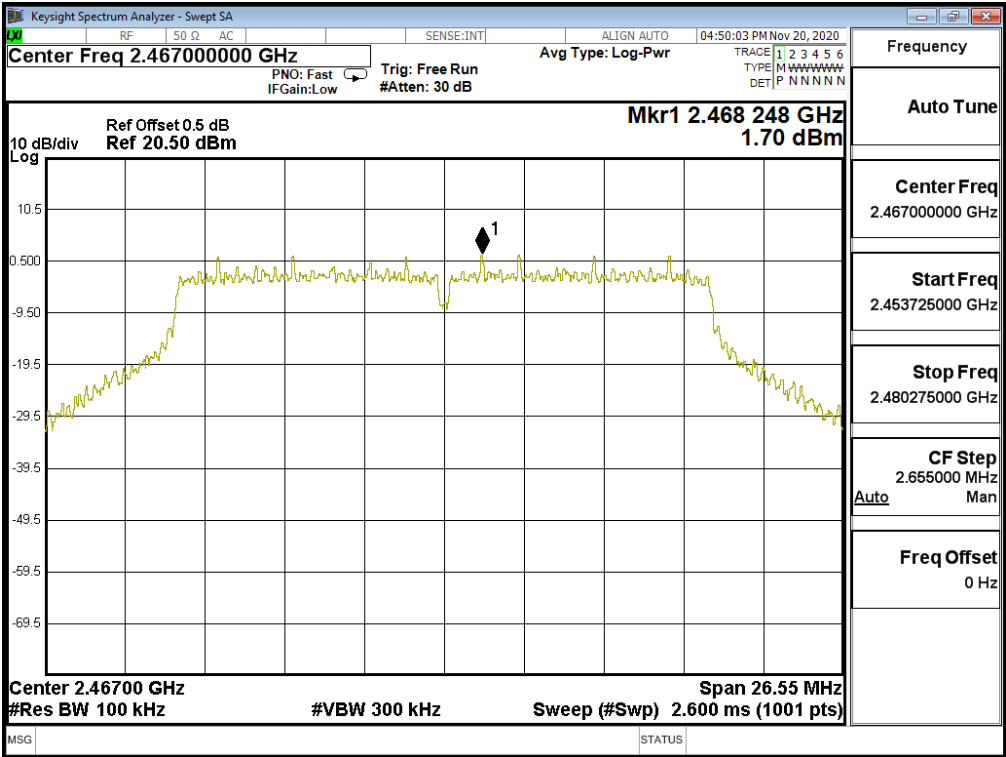
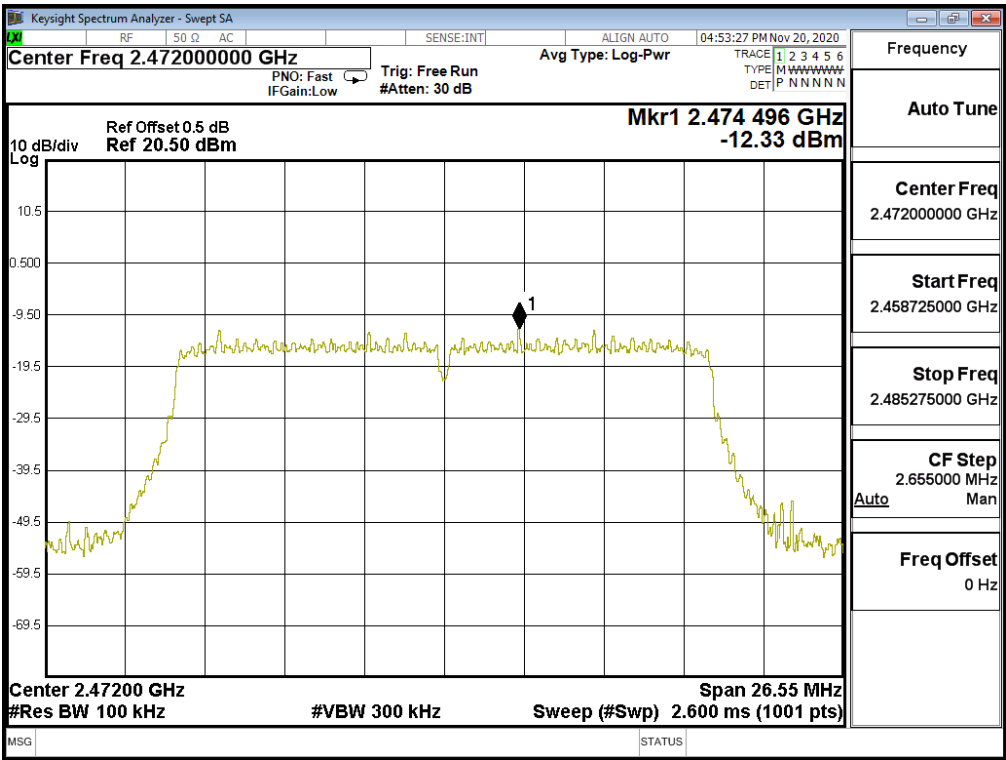


Figure Channel 13: (Chain B)



Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 14 MIMO: Transmit (802.11n-40BW_30Mbps)

Channel No.	Frequency (MHz)	Chain	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
3	2422	A	0.67	0.19	3.87	$\leq 8\text{dBm}$	Pass
		B	0.31	0.19	3.51	$\leq 8\text{dBm}$	Pass
7	2442	A	0.24	0.19	3.44	$\leq 8\text{dBm}$	Pass
		B	0.02	0.19	3.22	$\leq 8\text{dBm}$	Pass
9	2452	A	-0.30	0.19	2.90	$\leq 8\text{dBm}$	Pass
		B	-0.20	0.19	3.00	$\leq 8\text{dBm}$	Pass
10	2457	A	-4.02	0.19	-0.82	$\leq 8\text{dBm}$	Pass
		B	-4.35	0.19	-1.15	$\leq 8\text{dBm}$	Pass
11	2462	A	-11.15	0.19	-7.95	$\leq 8\text{dBm}$	Pass
		B	-11.27	0.19	-8.07	$\leq 8\text{dBm}$	Pass

Note :

The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 3: (Chain A)

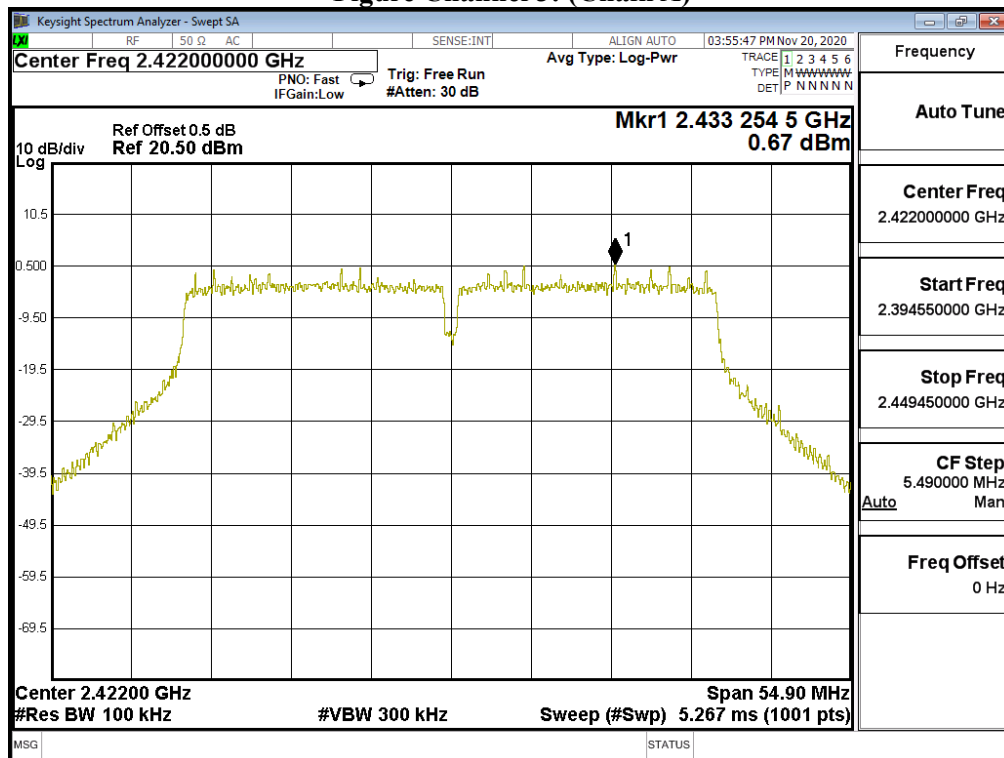


Figure Channel 7: (Chain A)

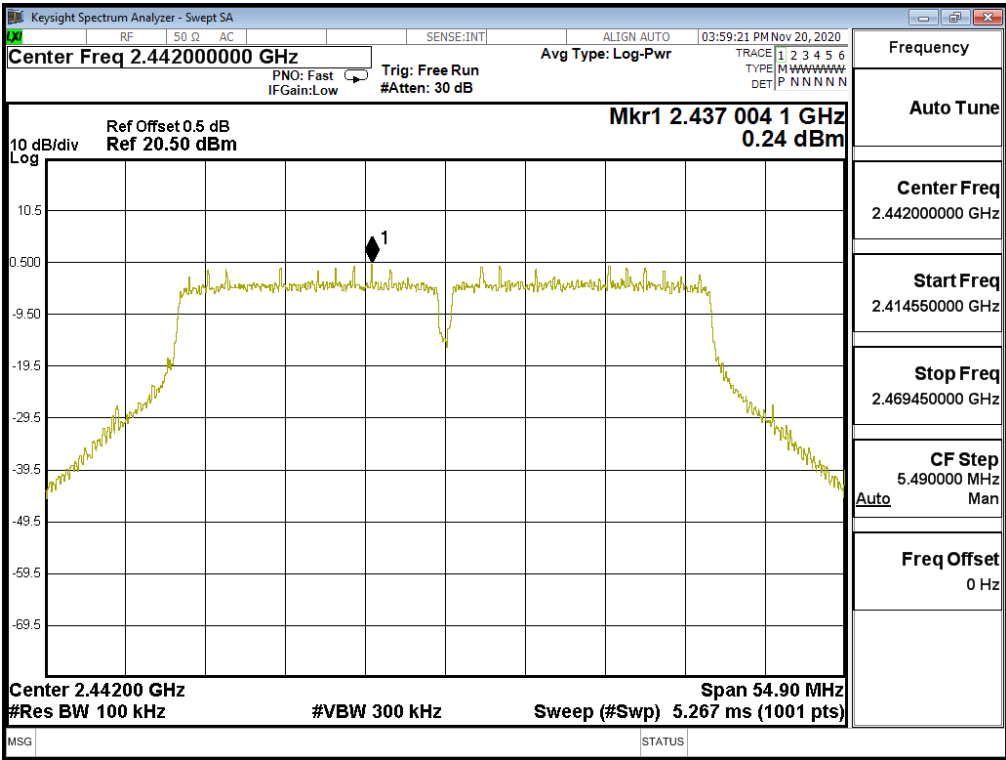


Figure Channel 9: (Chain A)

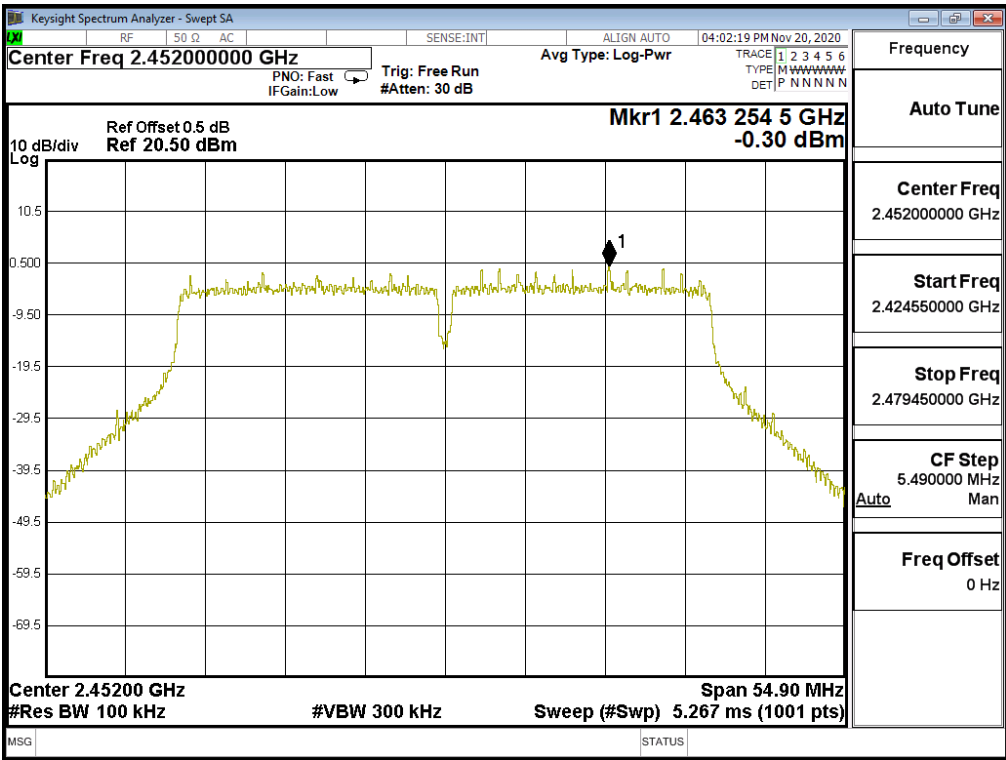


Figure Channel 10: (Chain A)

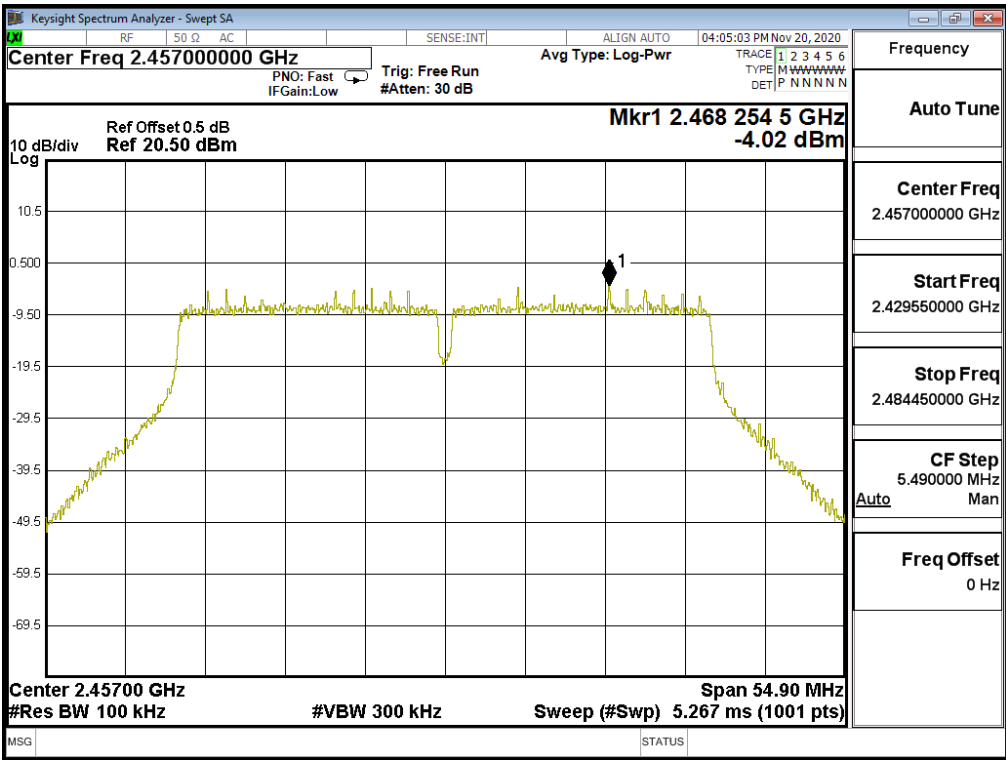


Figure Channel 11: (Chain A)

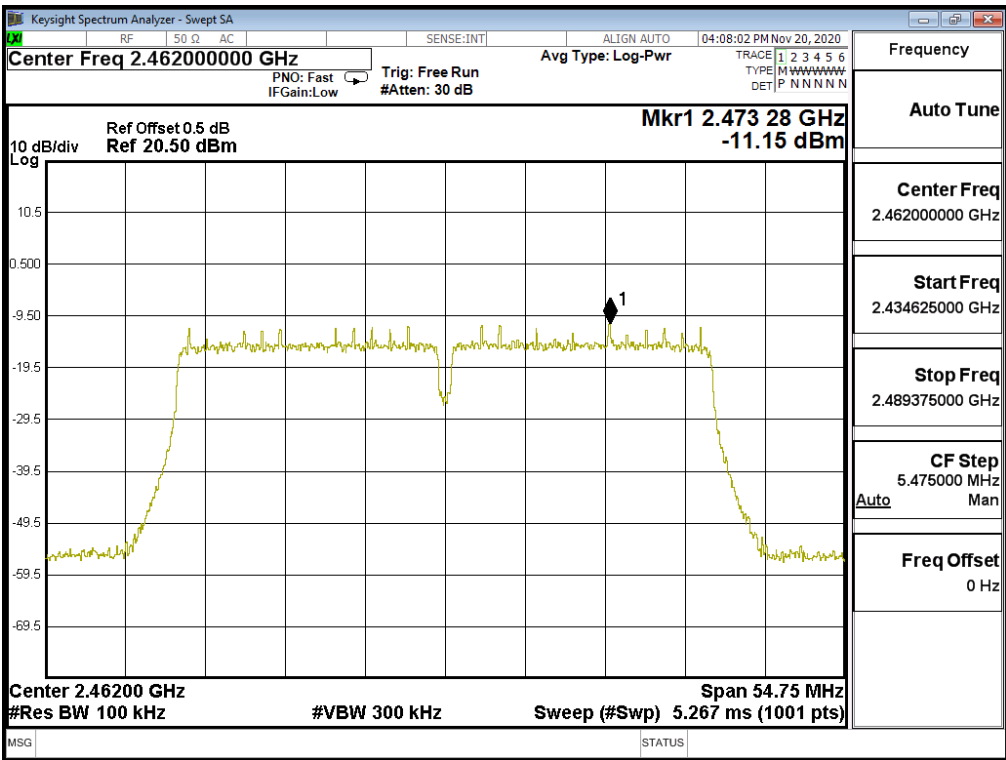


Figure Channel 3: (Chain B)

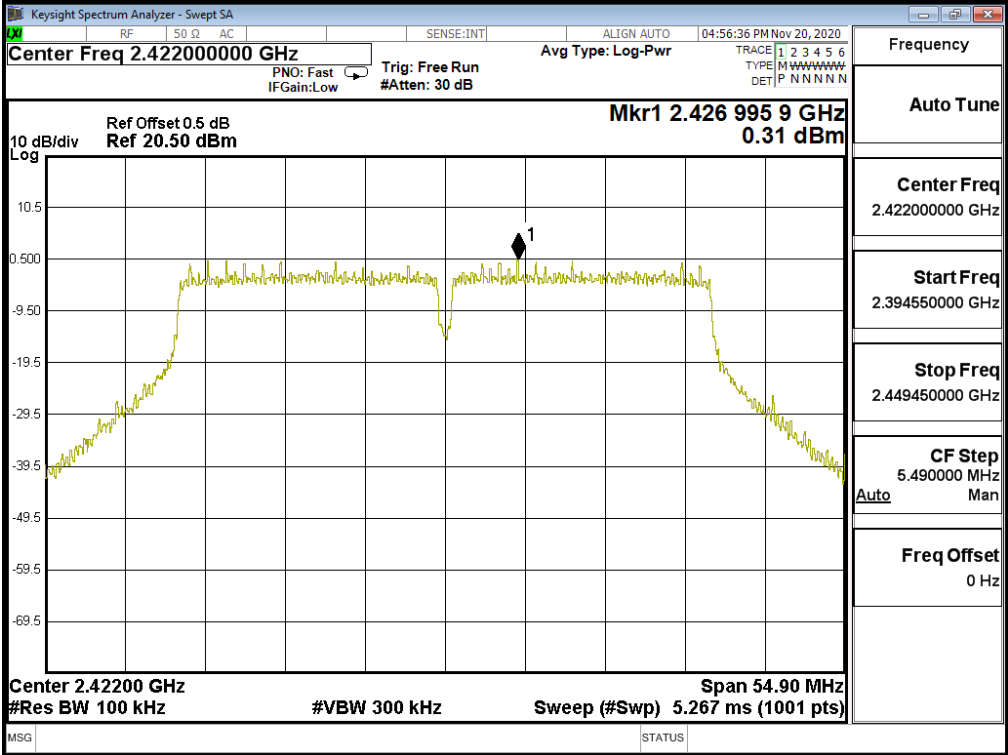


Figure Channel 7: (Chain B)

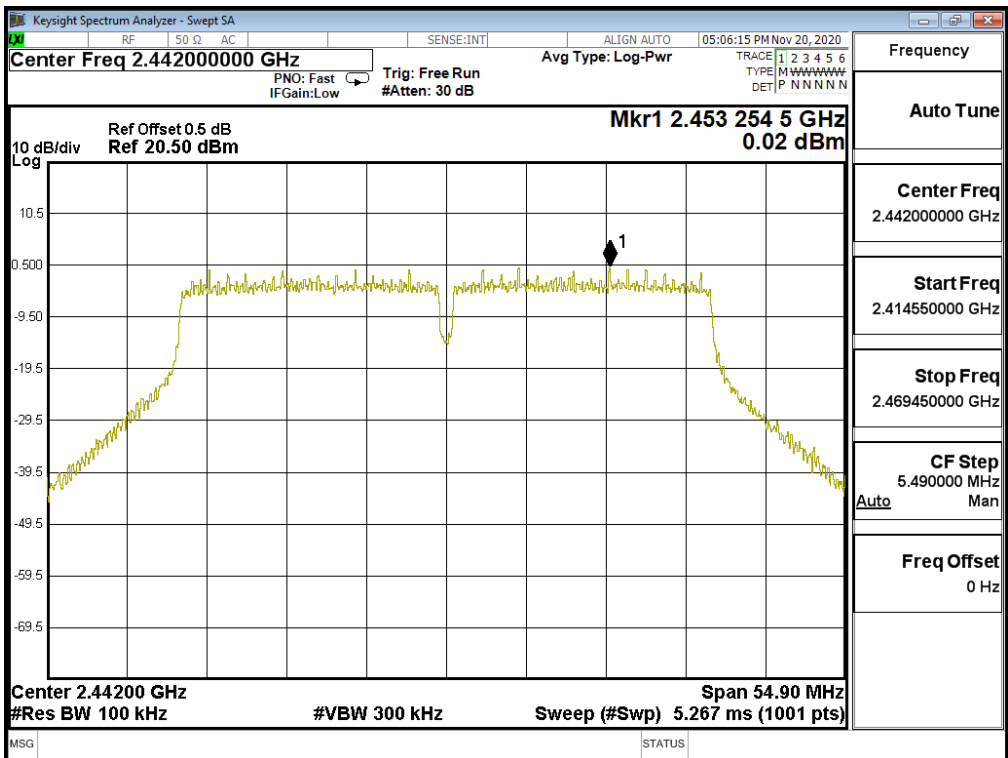


Figure Channel 9: (Chain B)

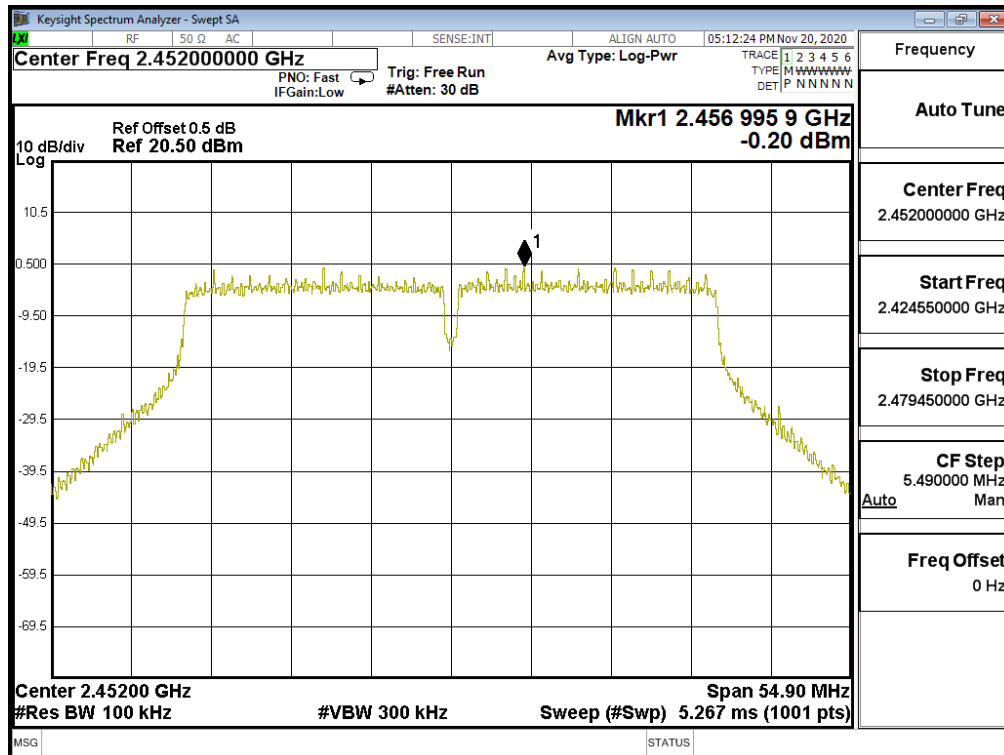


Figure Channel 10: (Chain B)

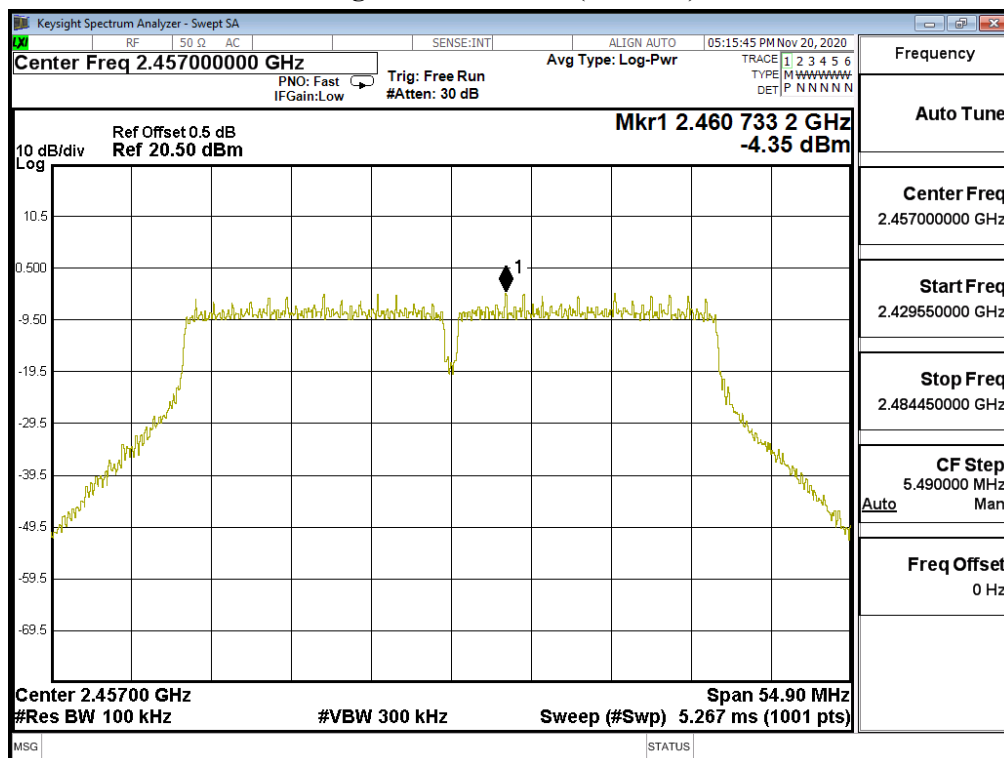
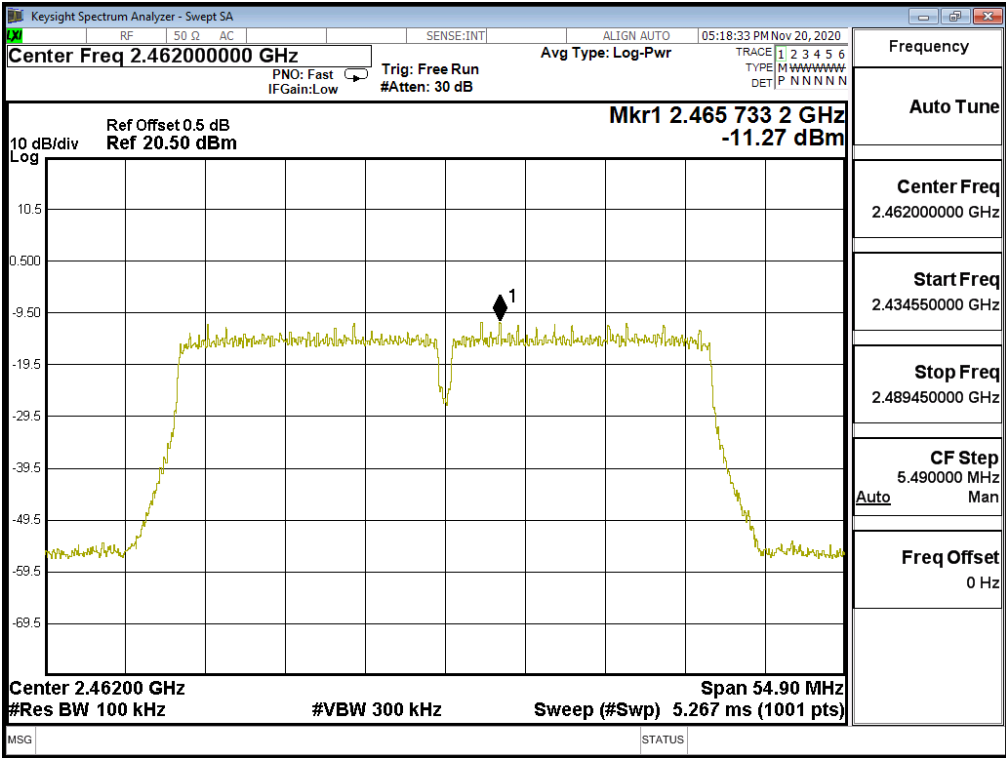


Figure Channel 11: (Chain B)



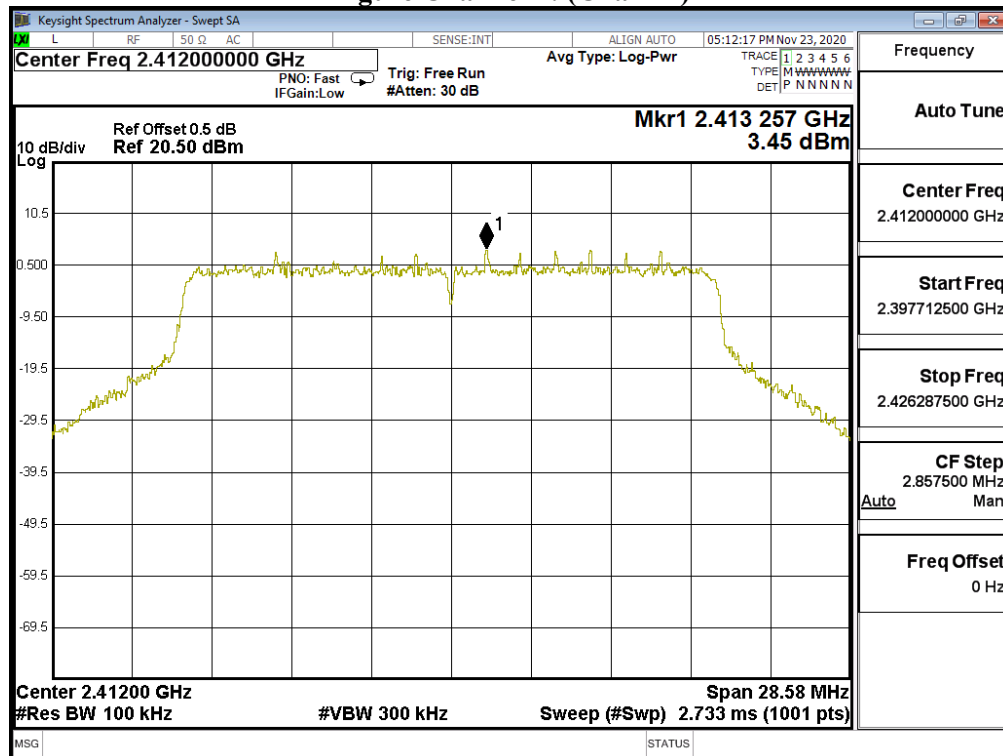
Product : Notebook Computers
 Test Item : Power Density Data
 Test Mode : Mode 15 MIMO: Transmit (802.11ax-20BW_17.2Mbps)

RU config: Full

Channel No.	Frequency (MHz)	Chain	Measurement Level (dBm)	Duty Factor (dB)	Total (dBm)	Limit (dBm)	Result
1	2412	A	3.45	0.07	6.53	$\leq 8\text{dBm}$	Pass
		B	2.98	0.07	6.06	$\leq 8\text{dBm}$	Pass
7	2442	A	2.89	0.07	5.97	$\leq 8\text{dBm}$	Pass
		B	2.83	0.07	5.91	$\leq 8\text{dBm}$	Pass
11	2462	A	3.13	0.07	6.21	$\leq 8\text{dBm}$	Pass
		B	3.43	0.07	6.51	$\leq 8\text{dBm}$	Pass
12	2467	A	1.14	0.07	4.22	$\leq 8\text{dBm}$	Pass
		B	1.44	0.07	4.52	$\leq 8\text{dBm}$	Pass
13	2472	A	-12.97	0.07	-9.89	$\leq 8\text{dBm}$	Pass
		B	-12.56	0.07	-9.48	$\leq 8\text{dBm}$	Pass

Note :

The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 1: (Chain A)

Keysight Spectrum Analyzer - Sweep SA

Center Freq 2.44200000 GHz

Ref Offset 0.5 dB
Ref 20.50 dBm

10 dB/div
Log

Trig: Free Run
#Atten: 30 dB

Avg Type: Log-Pwr

Frequency

Auto Tune

Center Freq
2.44200000 GHz

Start Freq
2.427750000 GHz

Stop Freq
2.456250000 GHz

CF Step
2.850000 MHz
Auto Man

Freq Offset
0 Hz

Mkr1 2.449 467 0 GHz
2.89 dBm

Center 2.44200 GHz
#Res BW 51 kHz

#VBW 300 kHz

Span 28.50 MHz

Sweep (#Swp) 10.20 ms (1001 pts)

MSG STATUS

Keysight Spectrum Analyzer - Swept SA

L RF 50 Ω AC SENSE:INT ALIGN AUTO 05:19:41 PM Nov 23, 2020

Center Freq 2.46200000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr

TRACE 1 2 3 4 5 6
TYPE M W W W W W
DET P N N N N N

Ref Offset 0.5 dB
Ref 20.50 dBm

Mkr1 2.464 508 0 GHz
3.13 dBm

10 dB/div
Log

Center 2.46200 GHz Span 28.50 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep (#Swp) 2.733 ms (1001 pts)

Frequency

Auto Tune

Center Freq
2.46200000 GHz

Start Freq
2.447750000 GHz

Stop Freq
2.476250000 GHz

CF Step
2.850000 MHz
Auto Man

Freq Offset
0 Hz

Figure Channel 12: (Chain A)

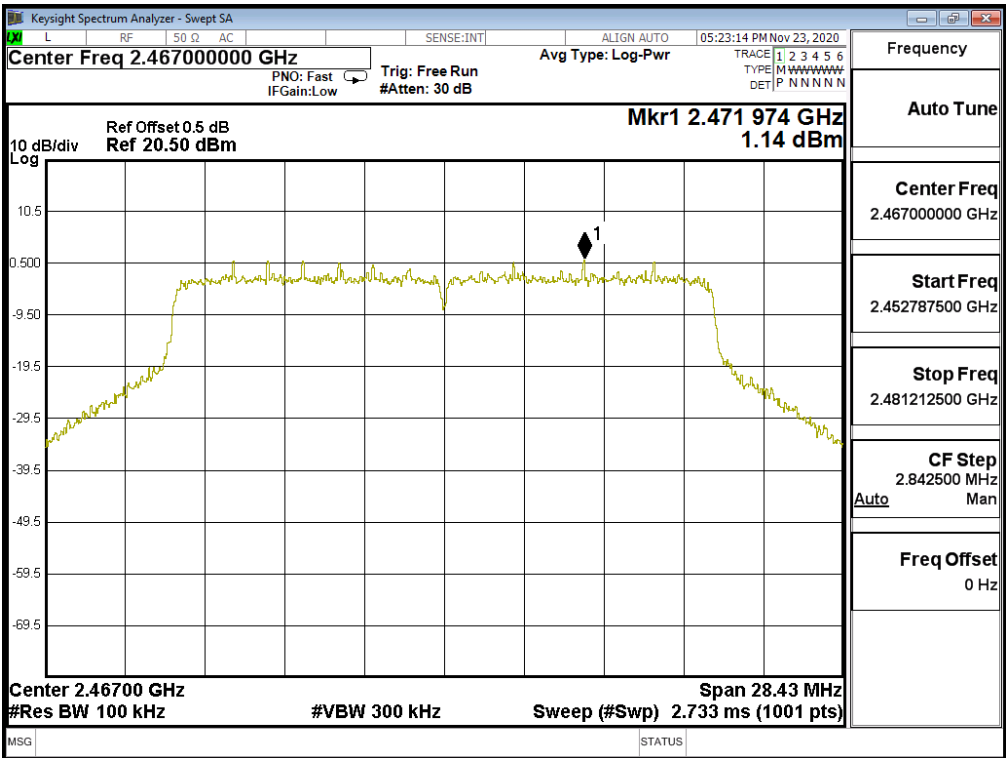


Figure Channel 13: (Chain A)

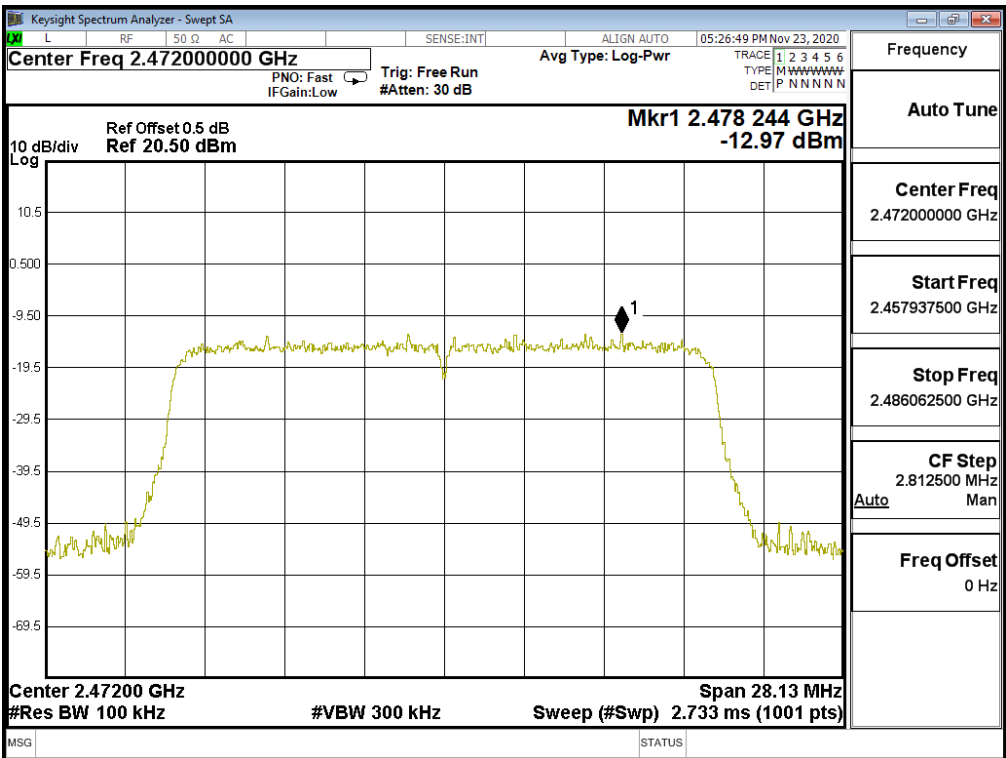


Figure Channel 1: (Chain B)

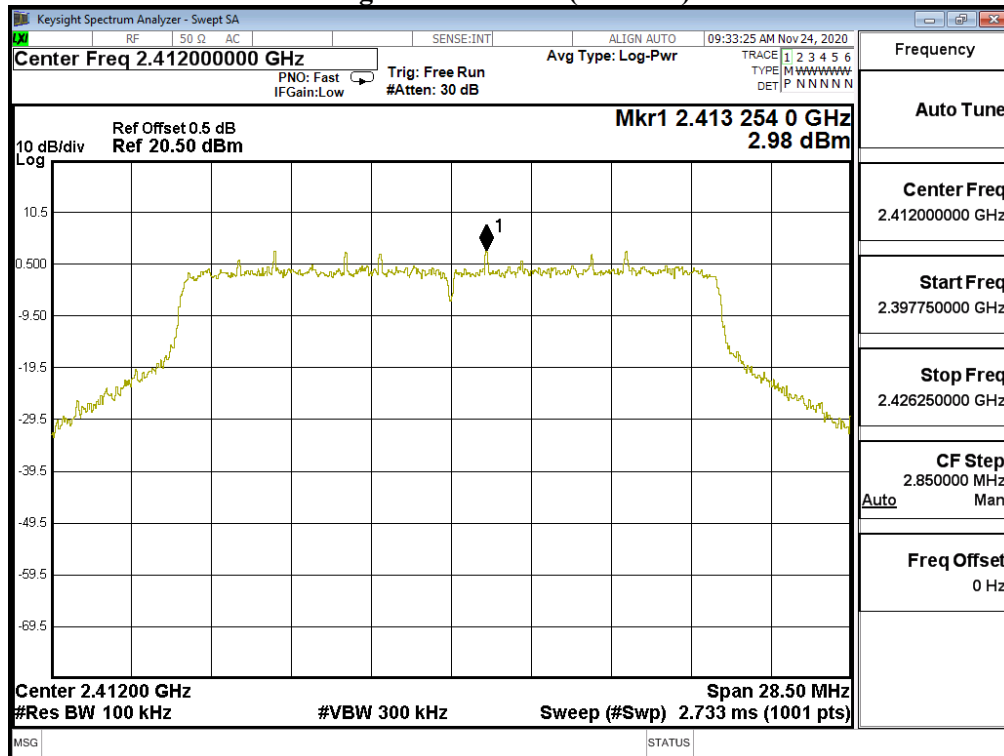


Figure Channel 7: (Chain B)

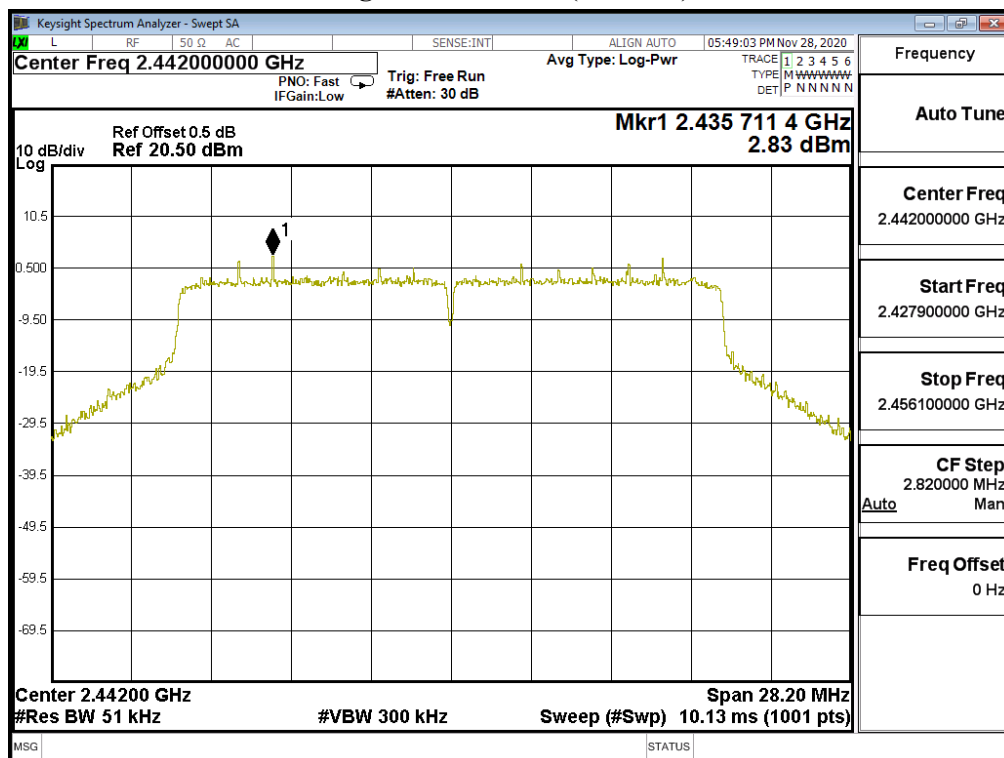


Figure Channel 11: (Chain B)

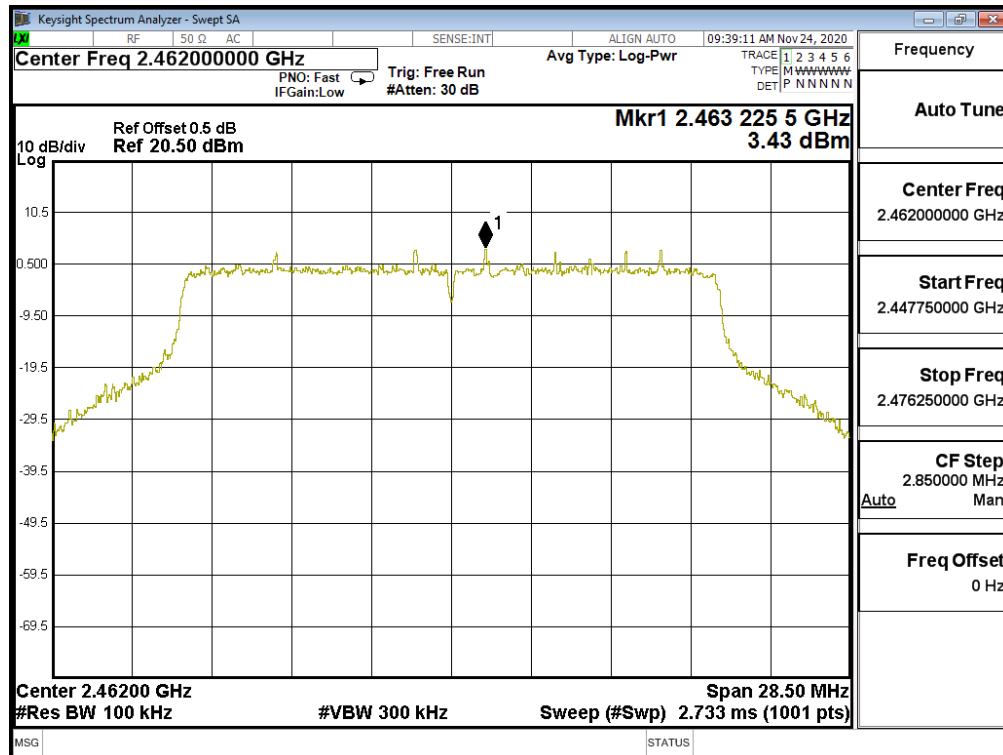


Figure Channel 12: (Chain B)

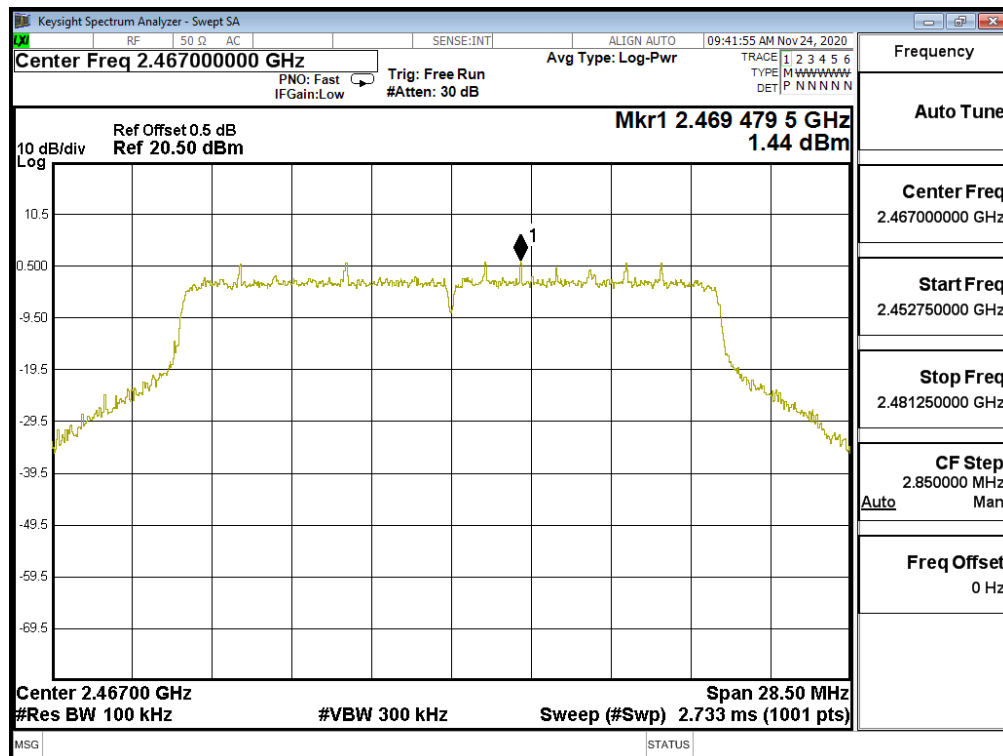


Figure Channel 13: (Chain B)

