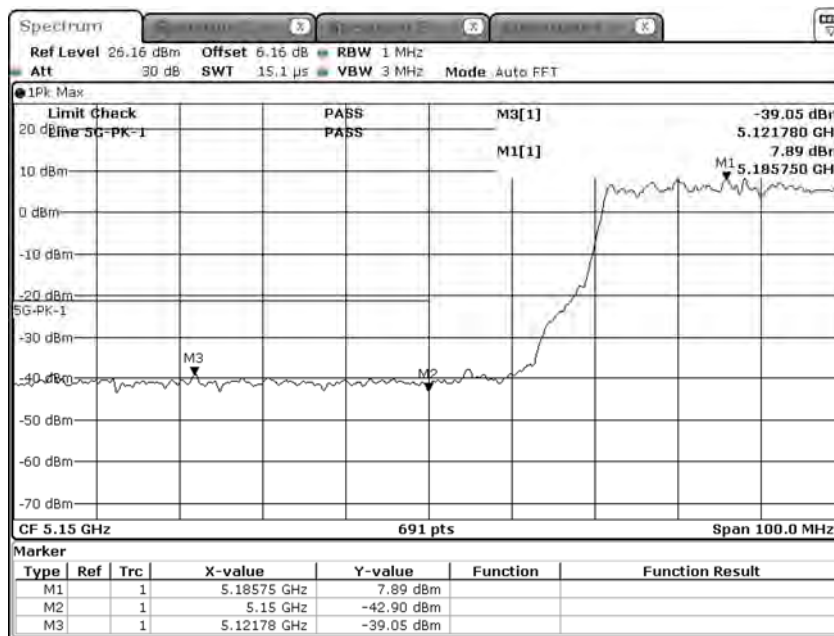


Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5190MHz)

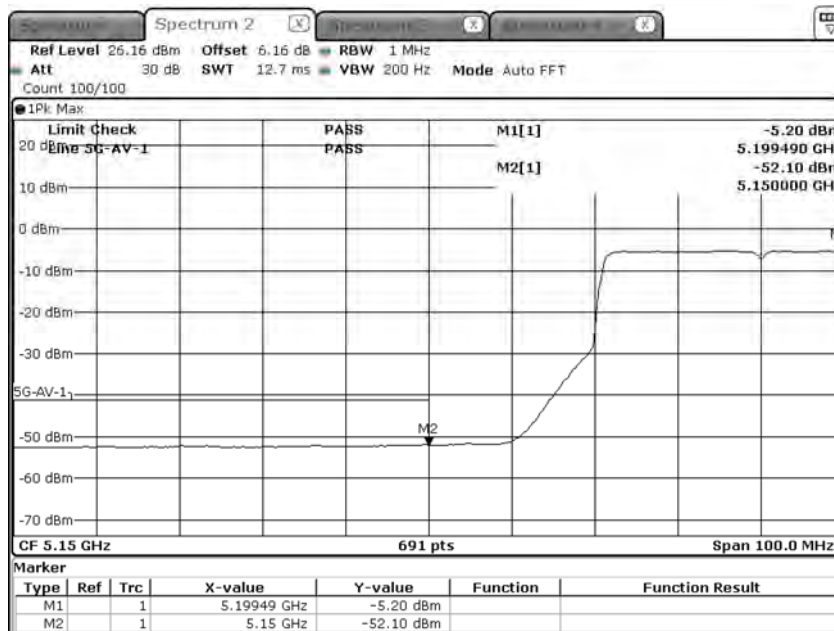
Chain A

Peak:



Date: 27.NOV.2020 17:25:05

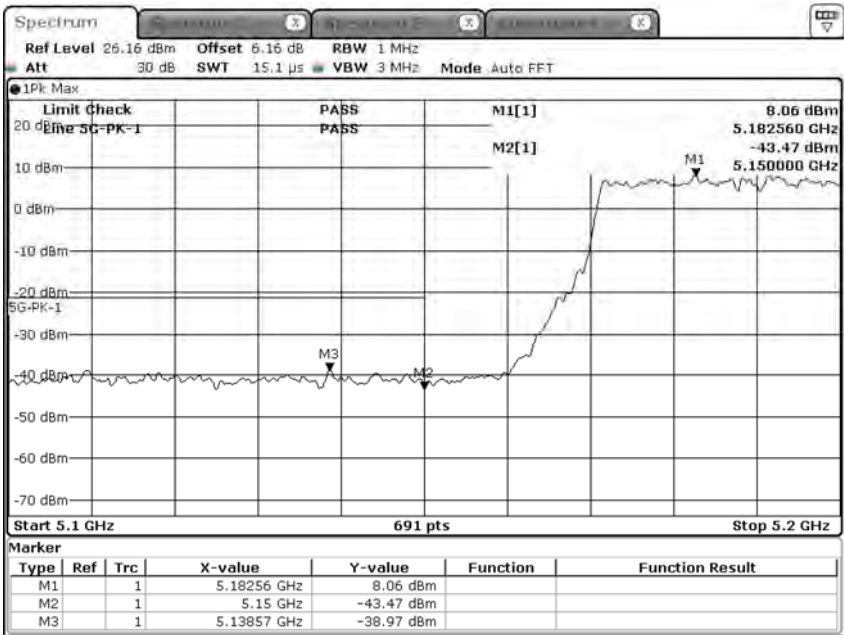
Average:



Date: 27.NOV.2020 17:27:08

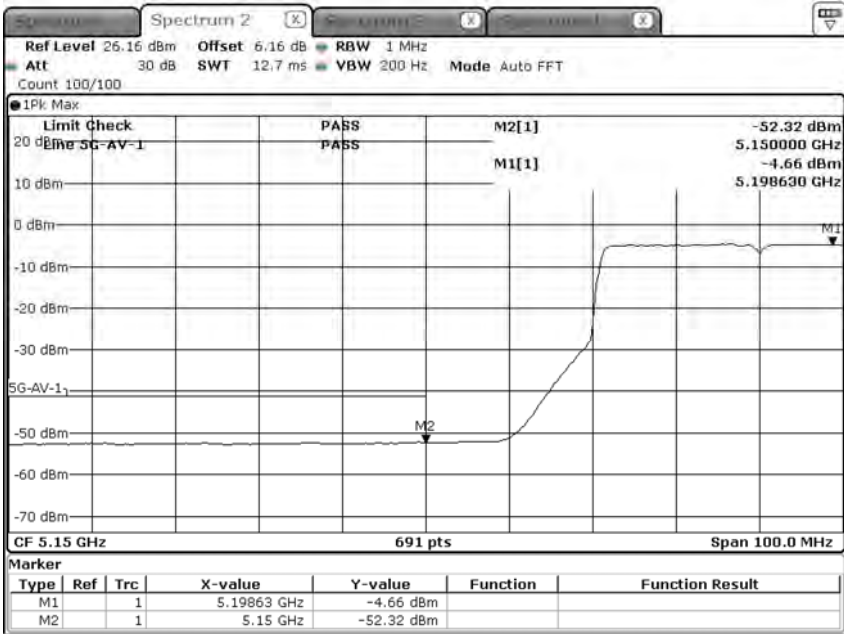
Chain B

Peak:



Date: 27.NOV.2020 16:49:52

Average:

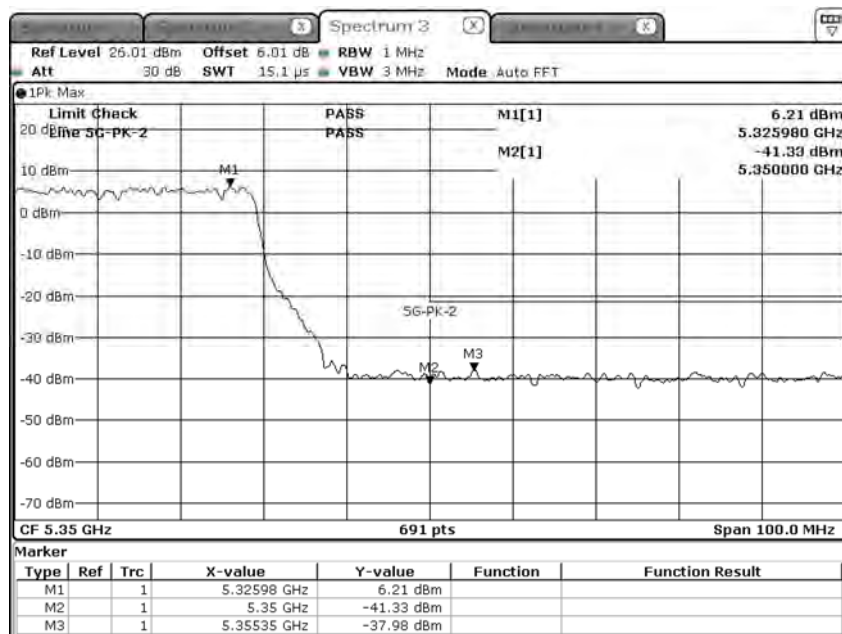


Date: 27.NOV.2020 16:48:36

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5310MHz)

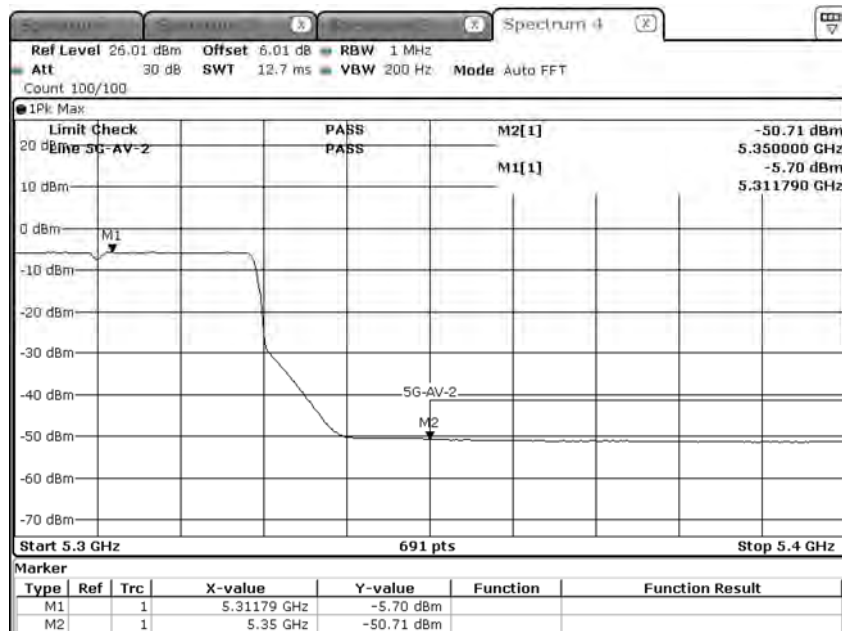
Chain A

Peak:



Date: 27.NOV.2020 17:20:03

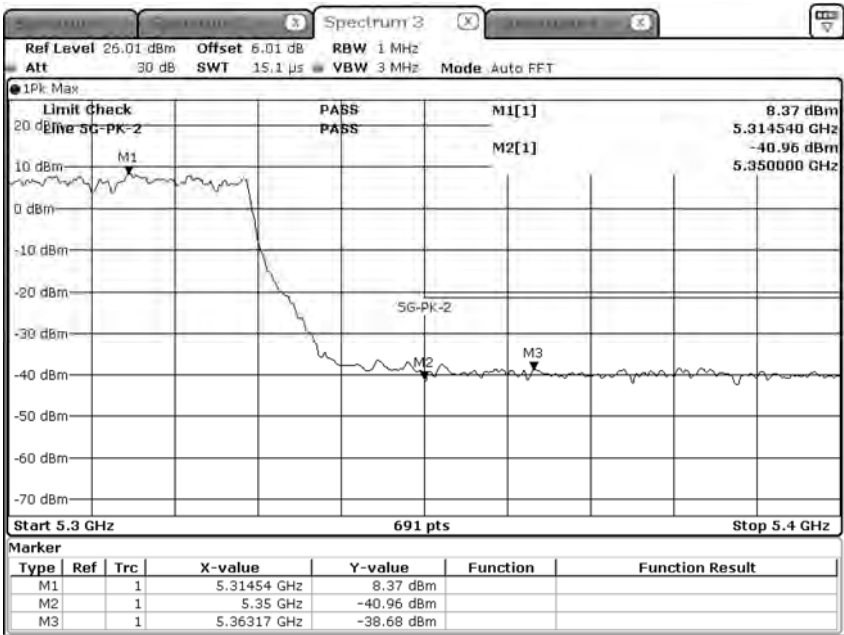
Average:



Date: 27.NOV.2020 17:20:52

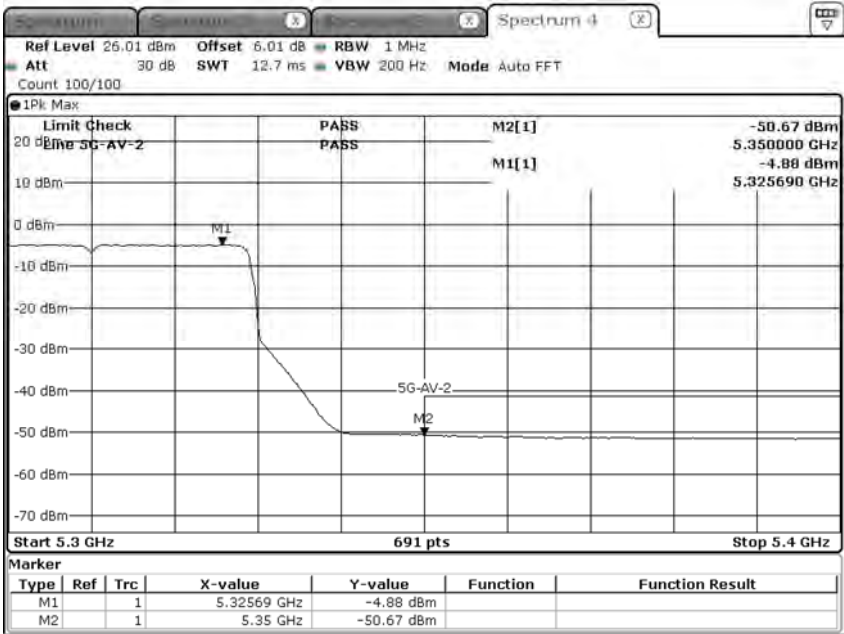
Chain B

Peak:



Date: 27.NOV.2020 16:52:29

Average:

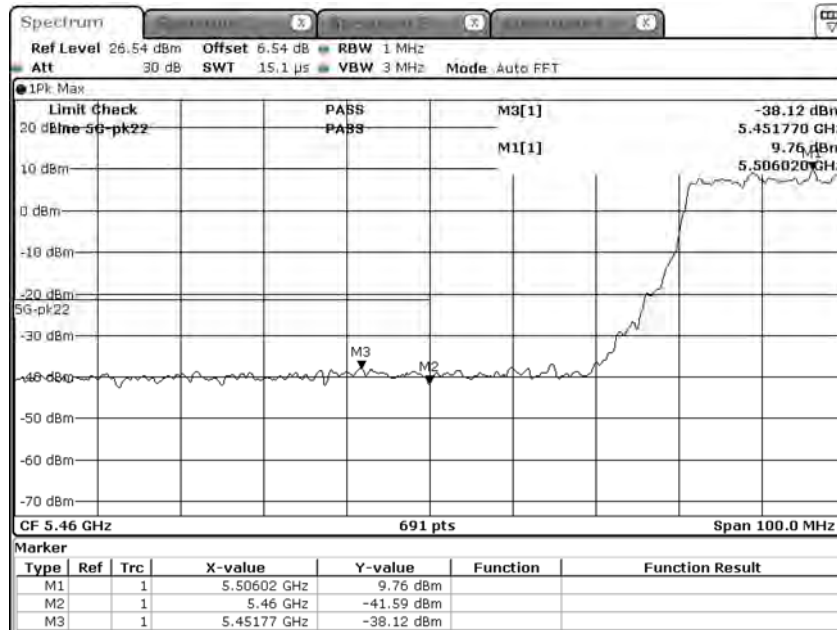


Date: 27.NOV.2020 16:51:20

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5510MHz)

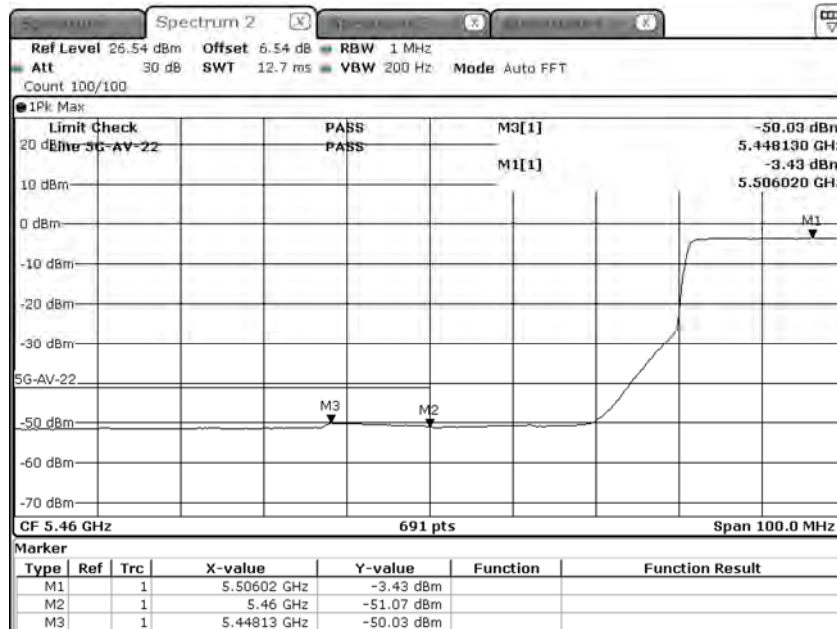
Chain A

Peak:



Date: 27.NOV.2020 17:16:32

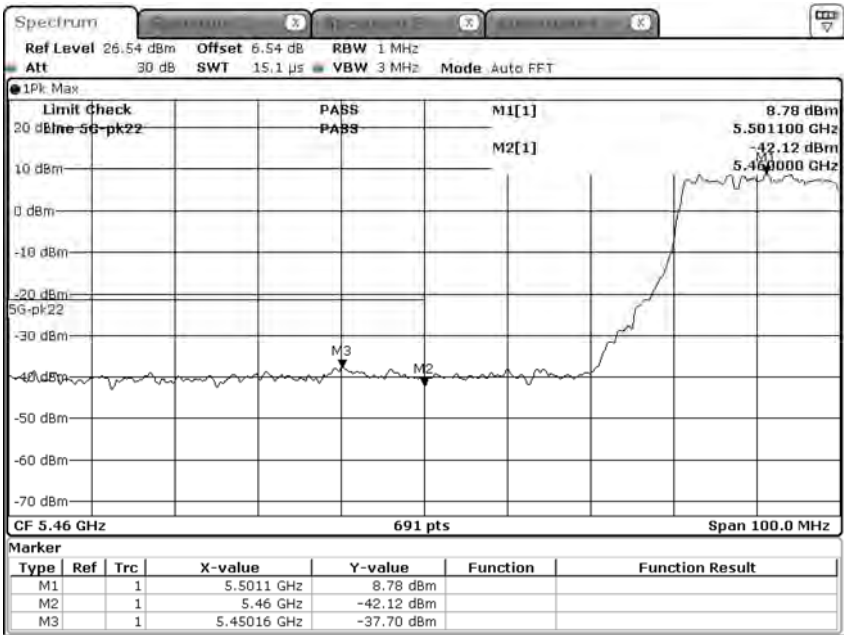
Average:



Date: 27.NOV.2020 17:17:49

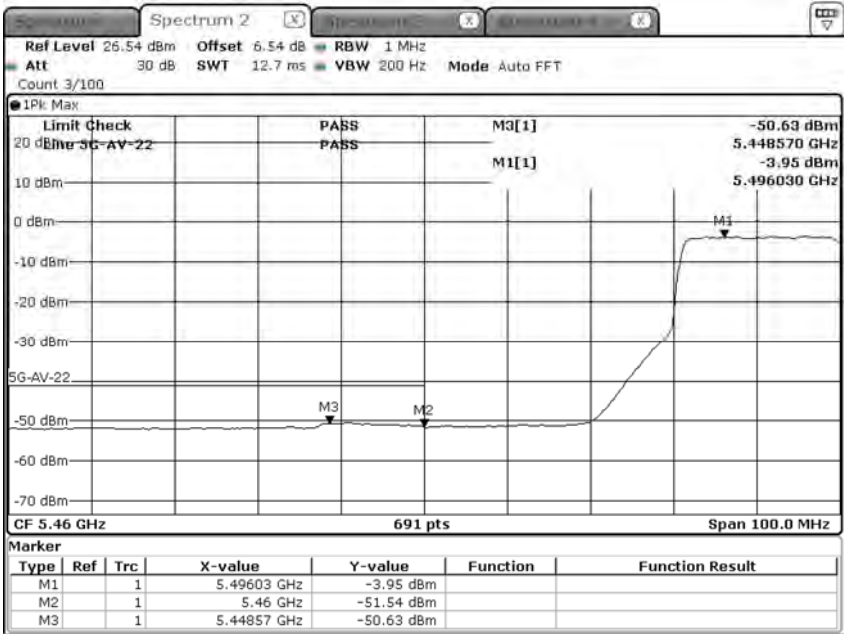
Chain B

Peak:



Date: 27.NOV.2020 16:56:13

Average:

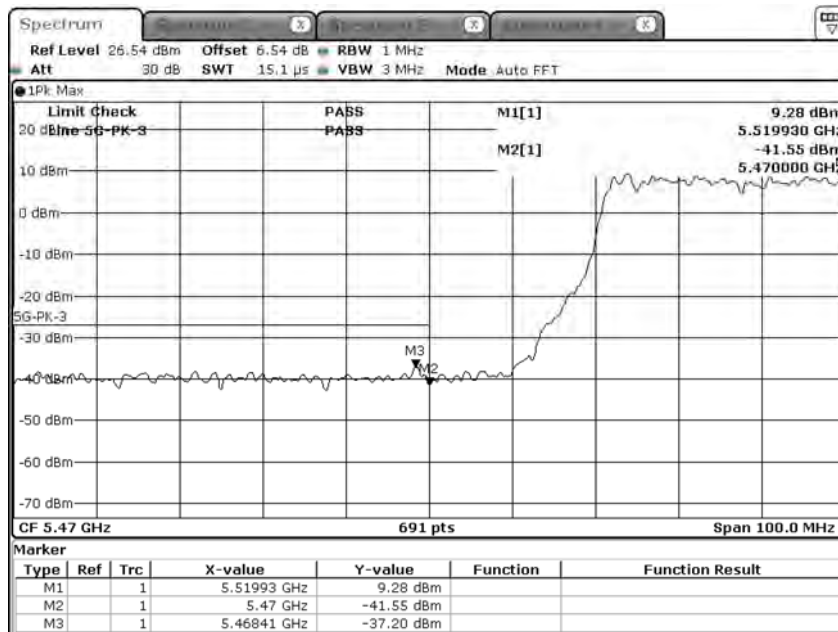


Date: 27.NOV.2020 16:54:47

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5510MHz)

Chain A

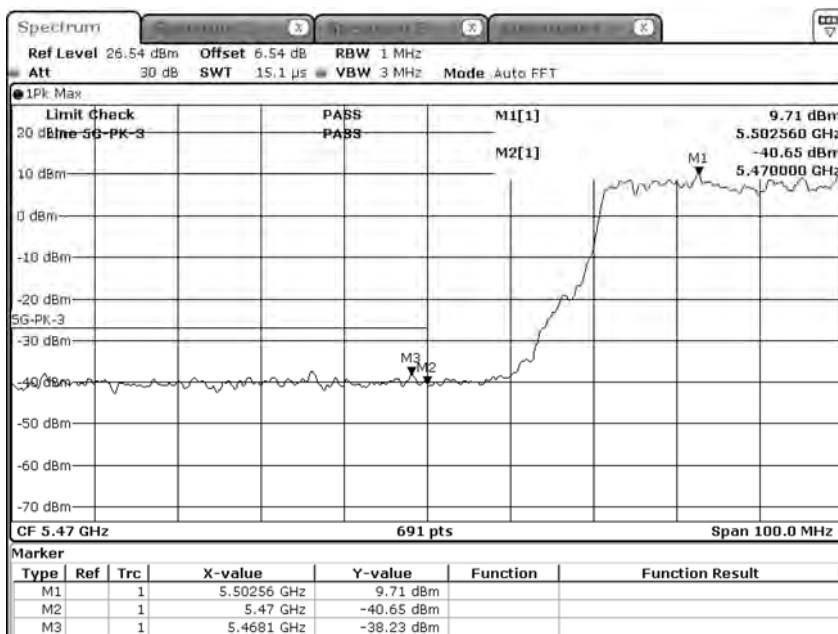
Peak:



Date: 27.NOV.2020 17:14:58

Chain B

Peak:

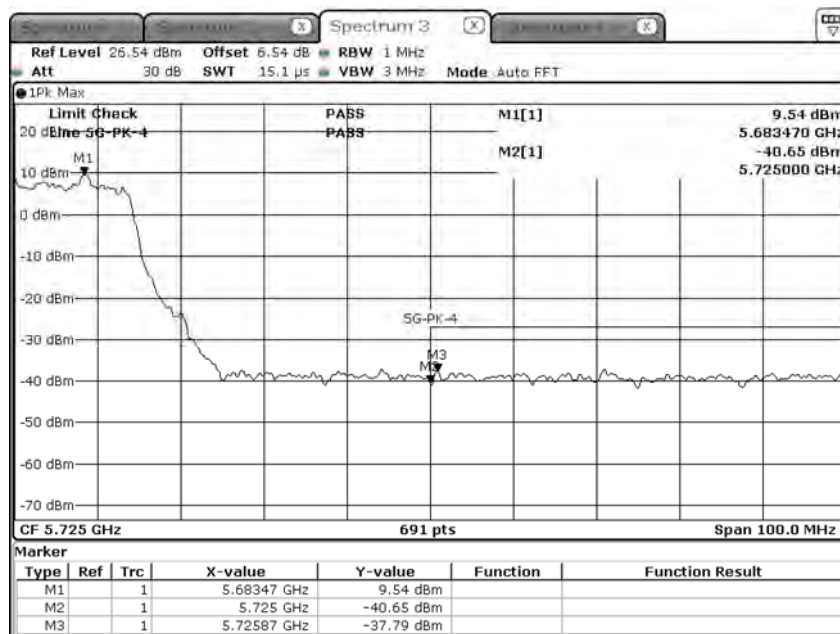


Date: 27.NOV.2020 16:57:59

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5670MHz)

Chain A

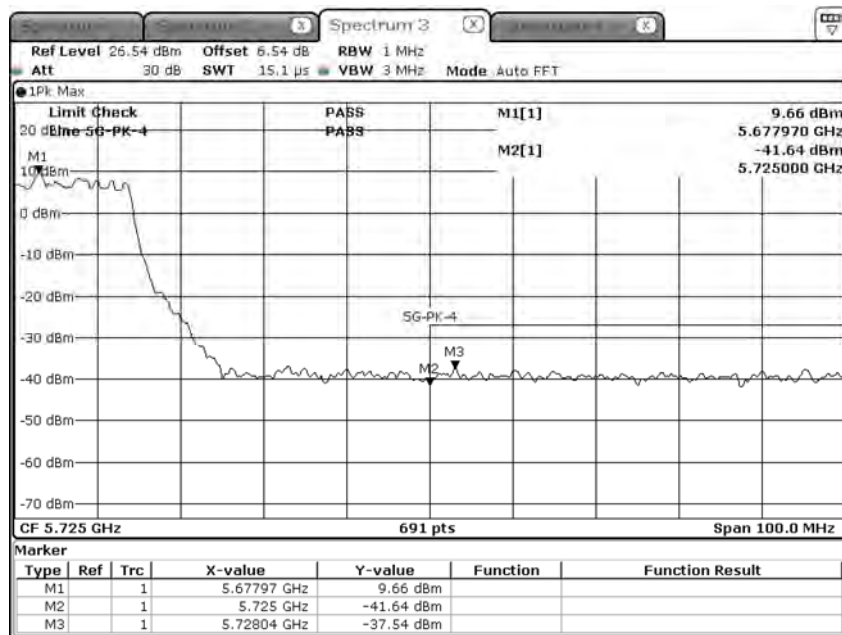
Peak:



Date: 27.NOV.2020 17:12:23

Chain B

Peak:

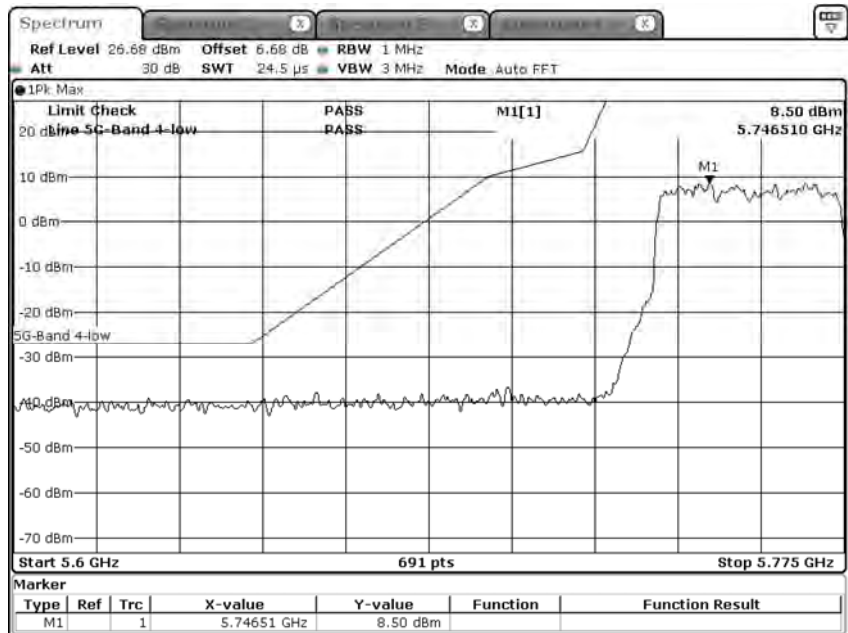


Date: 27.NOV.2020 17:01:54

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5755MHz)

Chain A

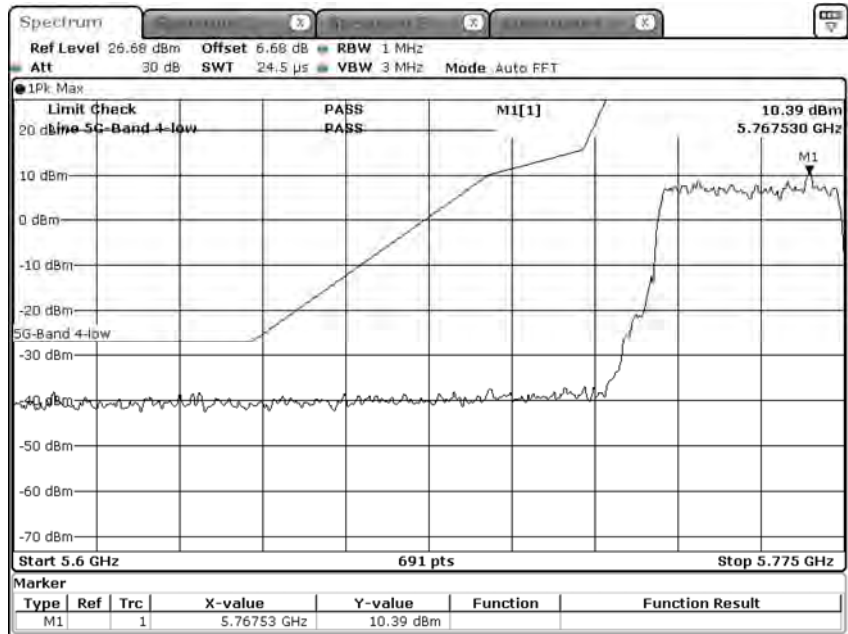
Peak:



Date: 27.NOV.2020 17:09:42

Chain B

Peak:

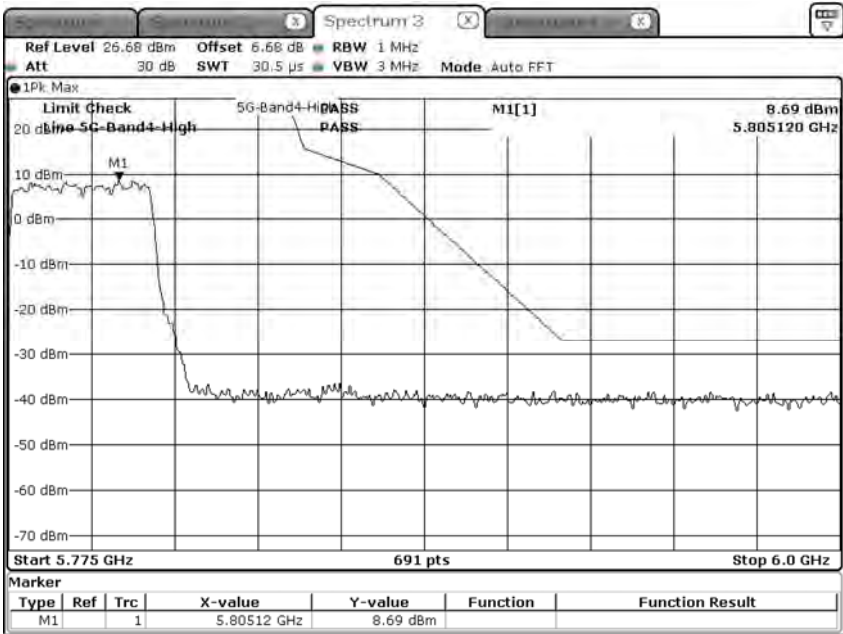


Date: 27.NOV.2020 17:05:14

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5795MHz)

Chain A

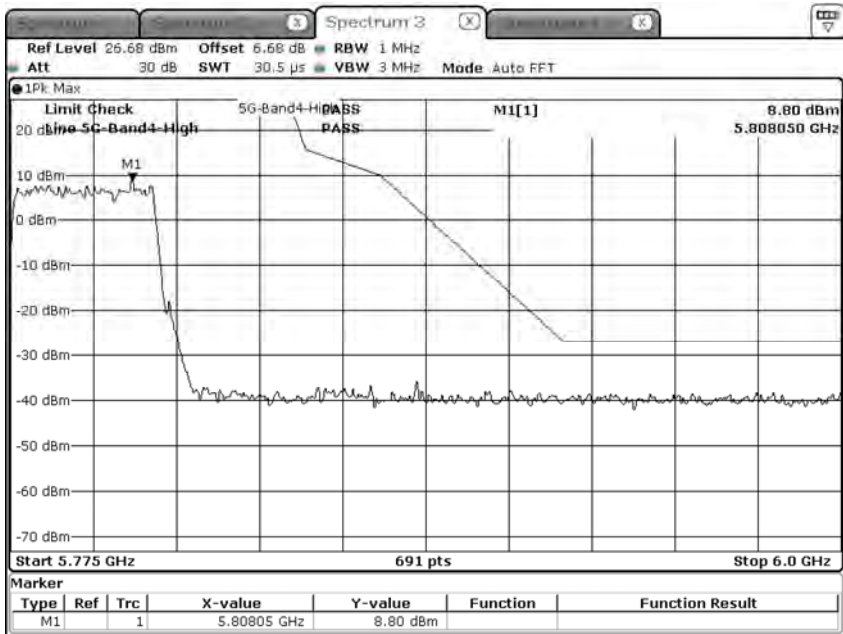
Peak:



Date: 27.NOV.2020 17:08:46

Chain B

Peak:

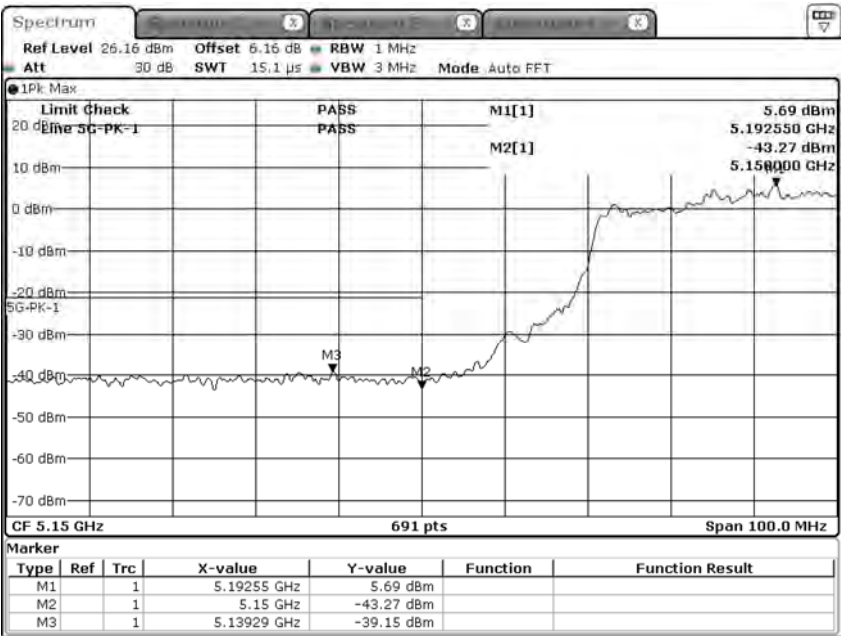


Date: 27.NOV.2020 17:06:59

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 25: MIMO Transmit (802.11ax-80BW_72.1Mbps) (5210MHz)

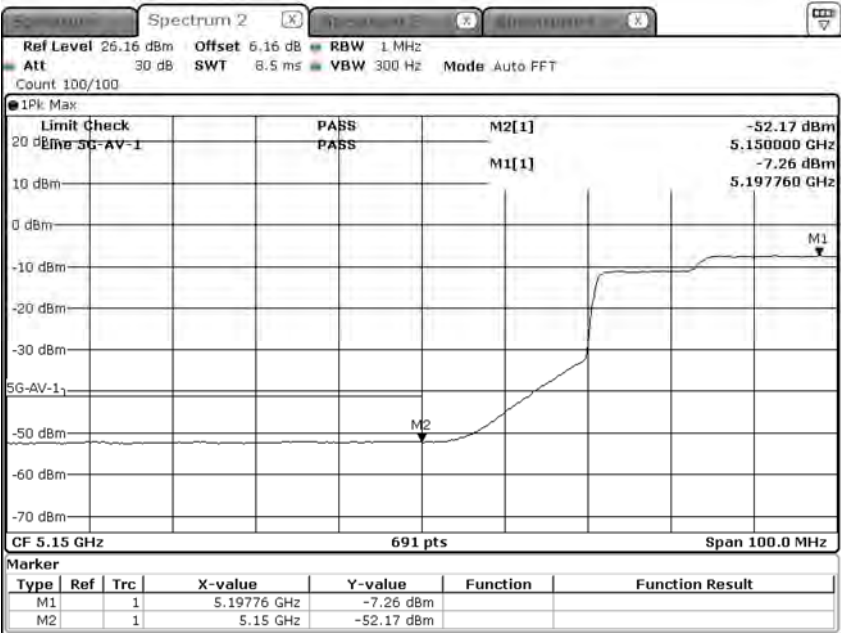
Chain A

Peak:



Date: 27.NOV.2020 17:33:38

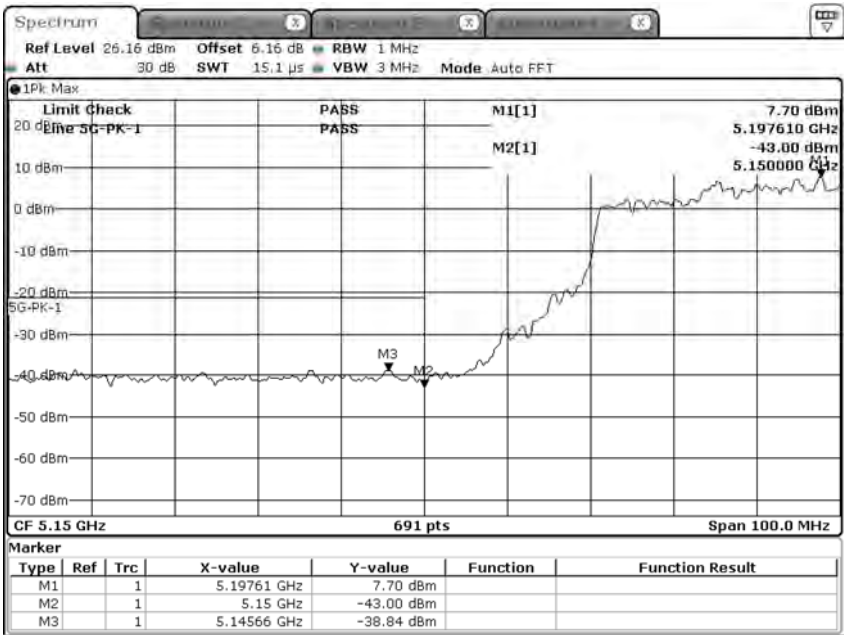
Average:



Date: 27.NOV.2020 17:32:45

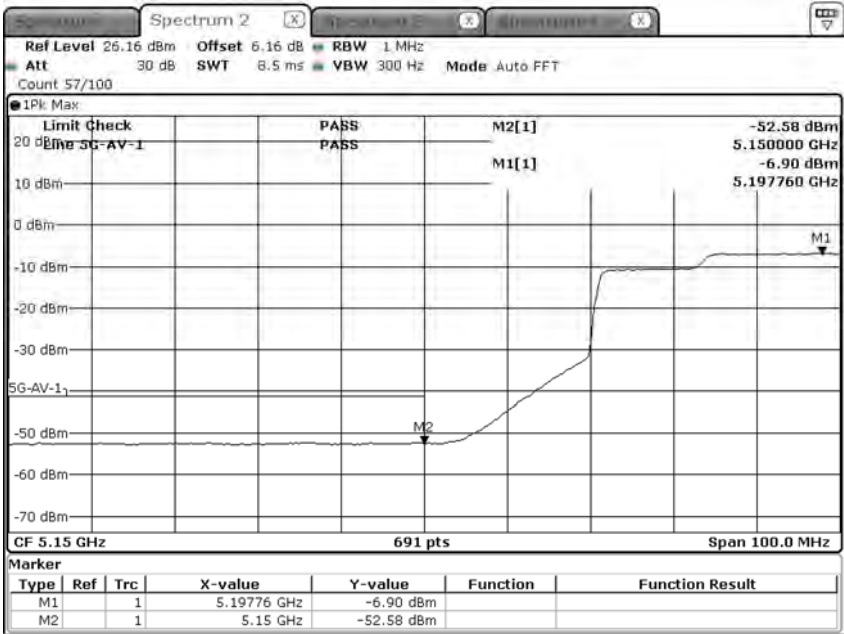
Chain B

Peak:



Date: 27.NOV.2020 18:02:50

Average:



Date: 27.NOV.2020 18:04:41

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 25: MIMO Transmit (802.11ax-80BW_72.1Mbps) (5290MHz)

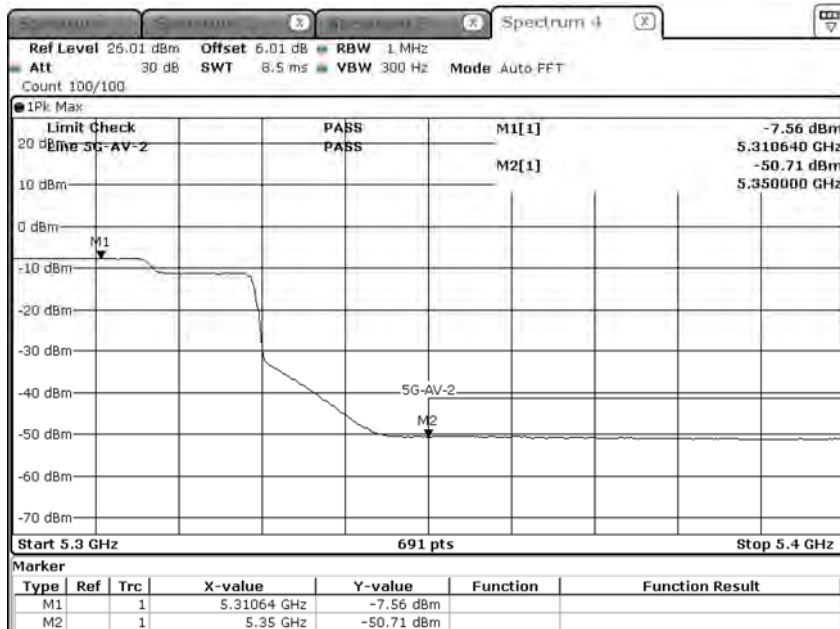
Chain A

Peak:



Date: 27.NOV.2020 17:35:36

Average:



Date: 27.NOV.2020 17:34:48

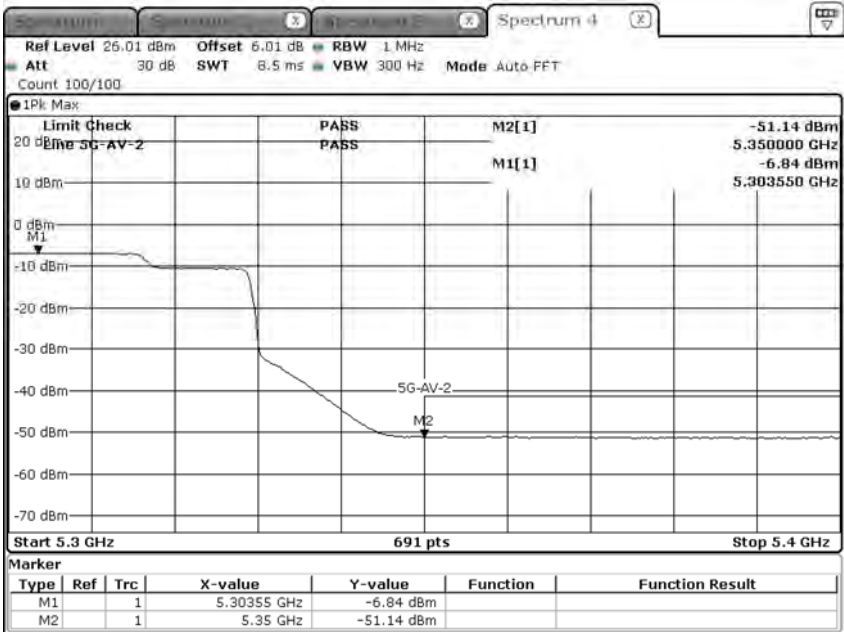
Chain B

Peak:



Date: 27.NOV.2020 17:58:11

Average:

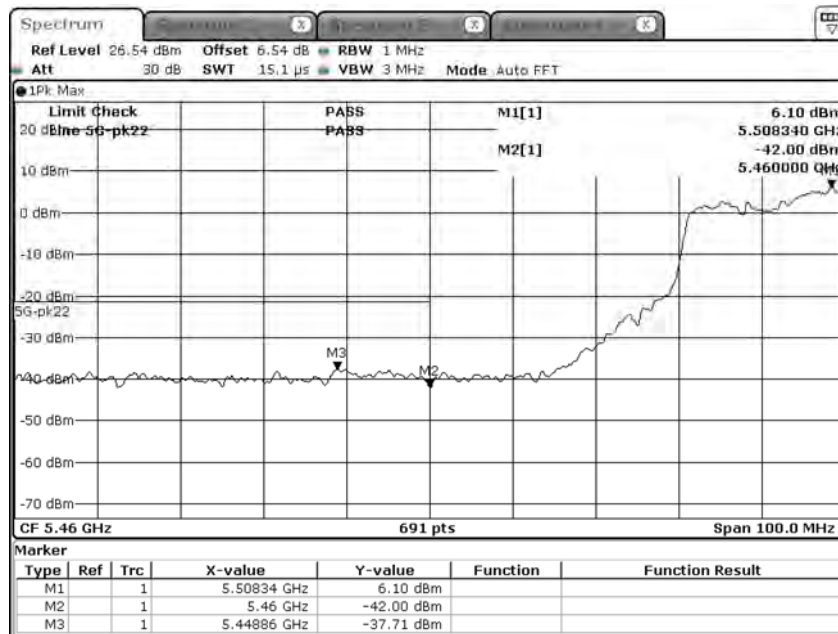


Date: 27.NOV.2020 17:59:19

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 25: MIMO Transmit (802.11ax-80BW_72.1Mbps) (5530MHz)

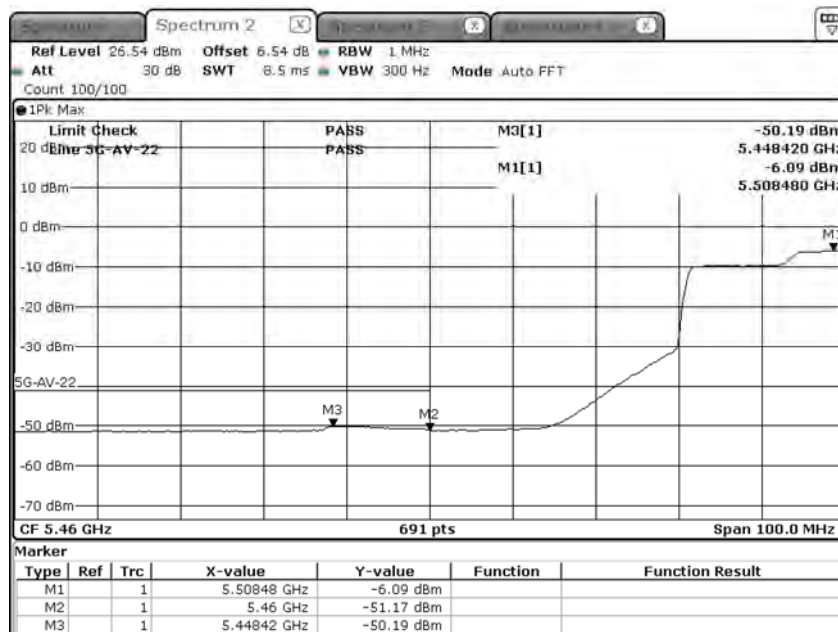
Chain A

Peak:



Date: 27.NOV.2020 17:39:45

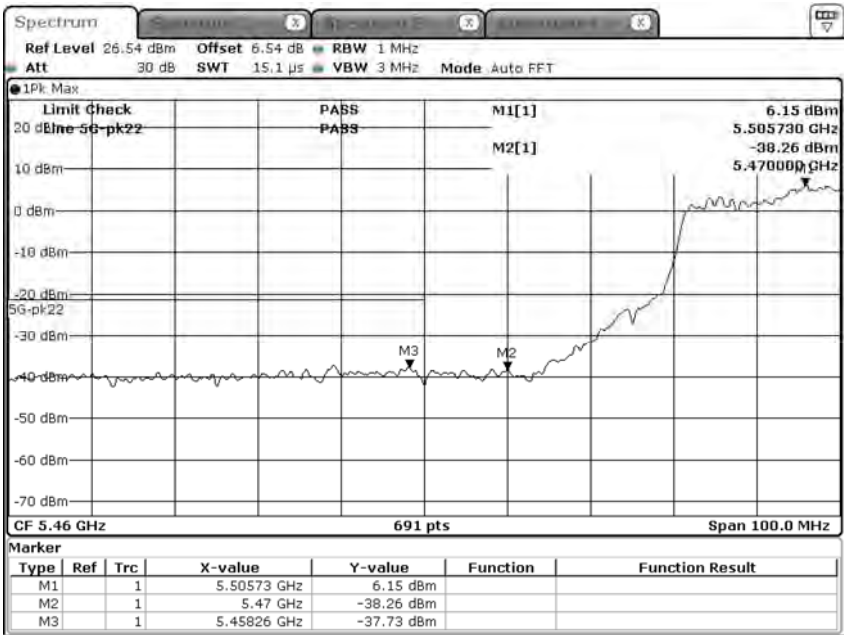
Average:



Date: 27.NOV.2020 17:37:44

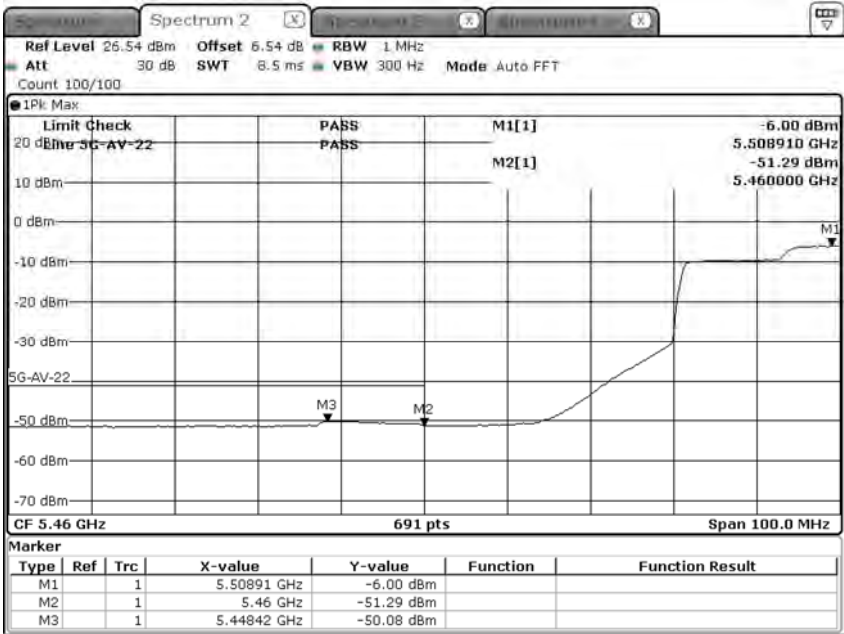
Chain B

Peak:



Date: 27.NOV.2020 17:53:43

Average:

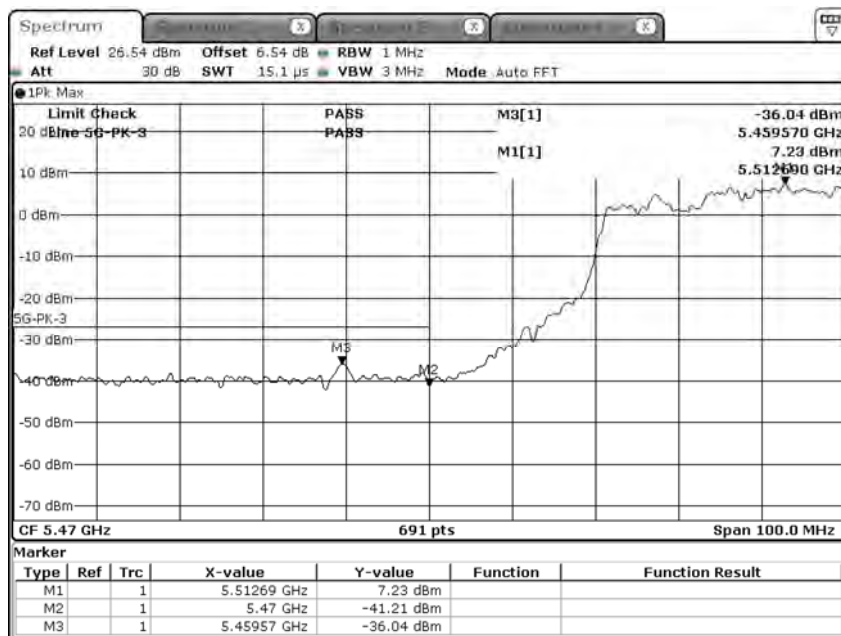


Date: 27.NOV.2020 17:54:58

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 25: MIMO Transmit (802.11ax-80BW_72.1Mbps) (5530MHz)

Chain A

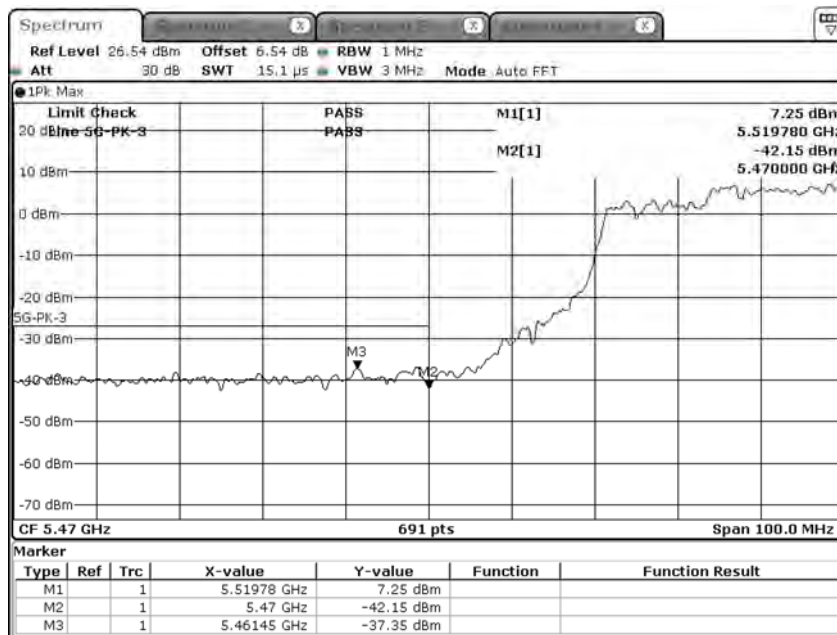
Peak:



Date: 27.NOV.2020 17:42:28

Chain B

Peak:

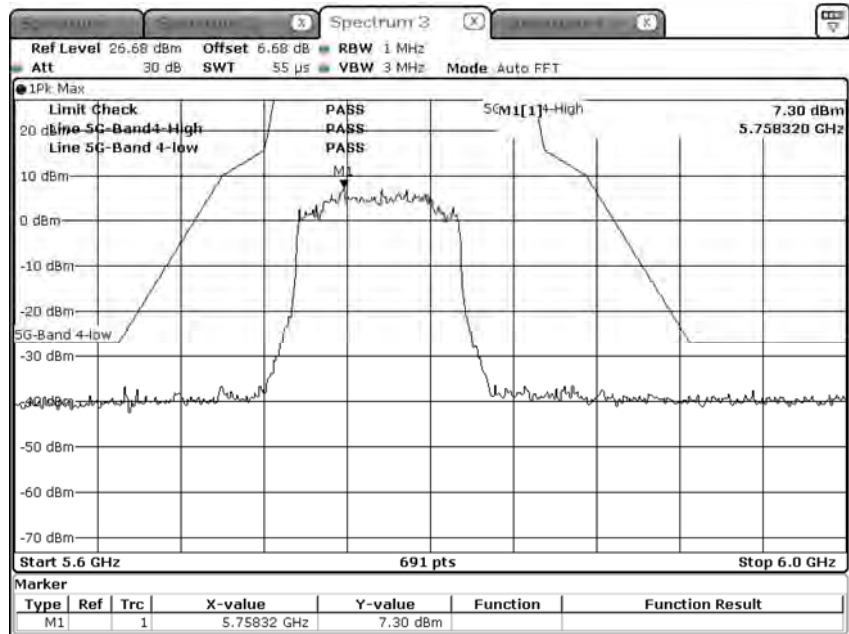


Date: 27.NOV.2020 17:51:24

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 25: MIMO Transmit (802.11ax-80BW_72.1Mbps) (5775MHz)

Chain A

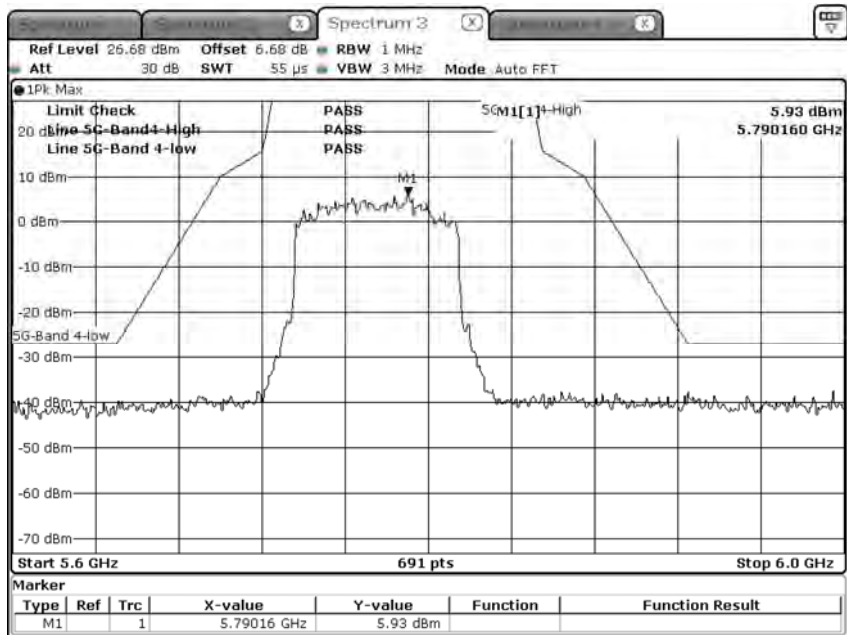
Peak:



Date: 27.NOV.2020 17:46:59

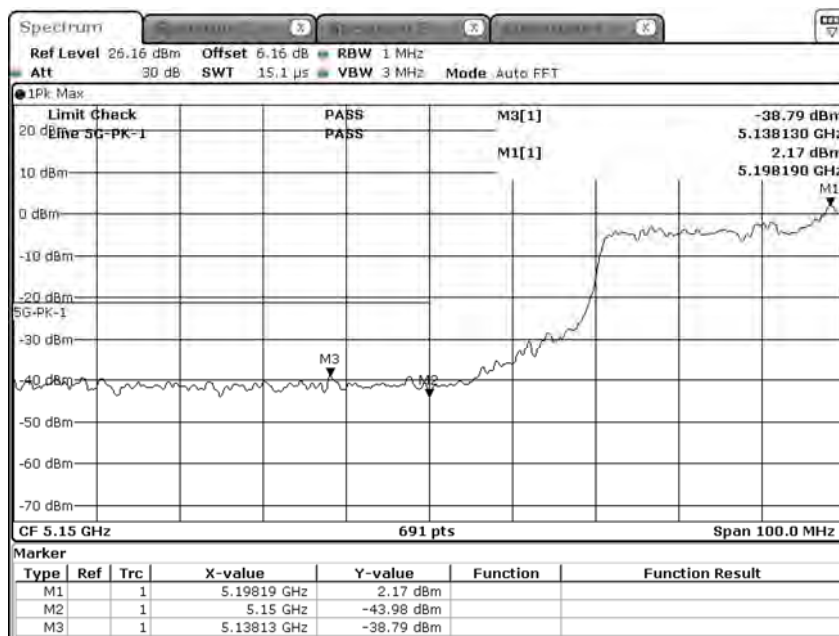
Chain B

Peak:

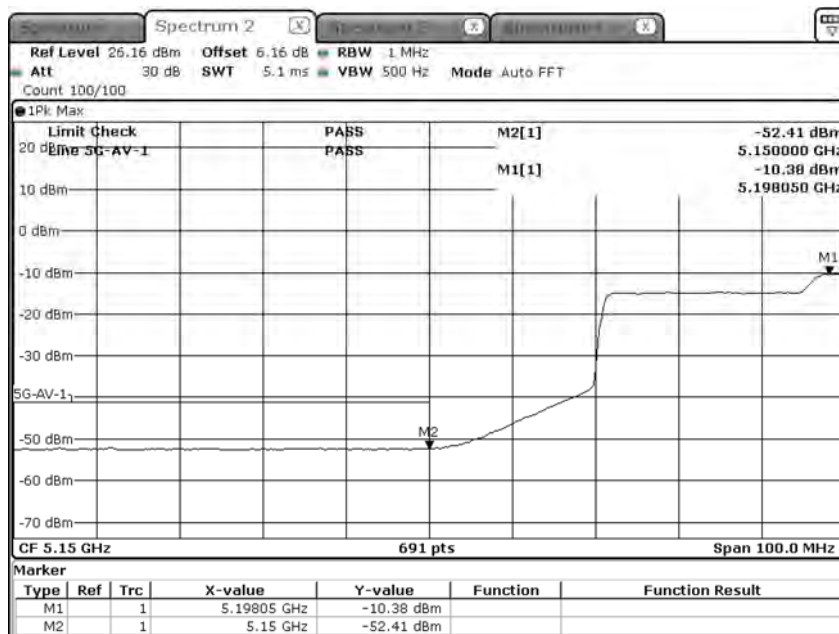


Date: 27.NOV.2020 17:49:48

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 26: MIMO Transmit (802.11ax-160BW_144.1Mbps) (5250MHz)

(Band 1) Chain A**Peak:**

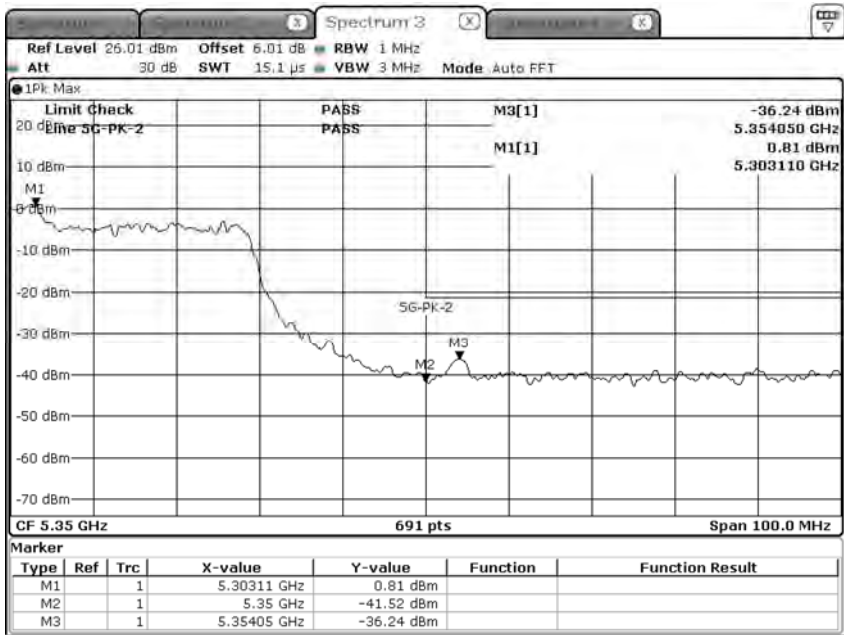
Date: 27.NOV.2020 18:17:07

Average:

Date: 27.NOV.2020 18:16:21

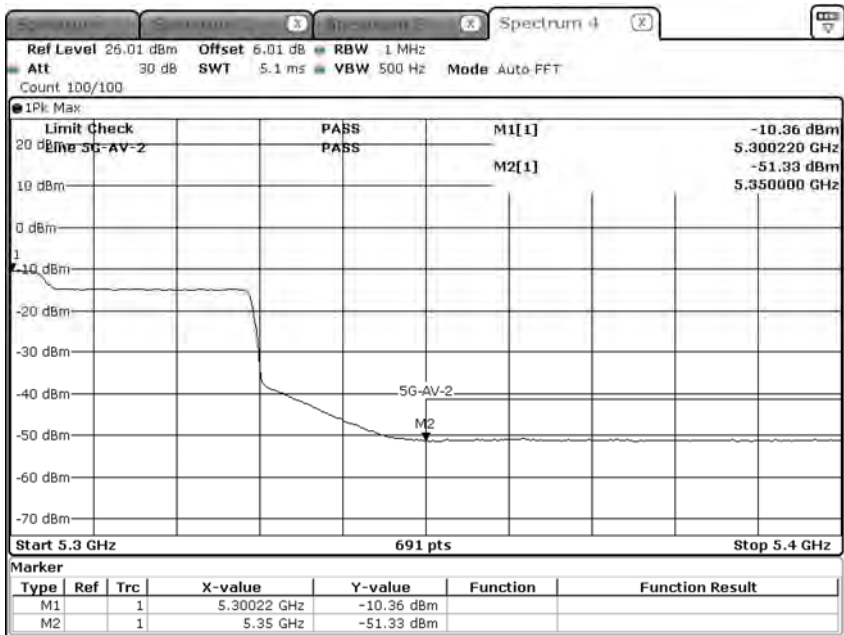
(Band 2) Chain A

Peak:



Date: 27.NOV.2020 18:18:10

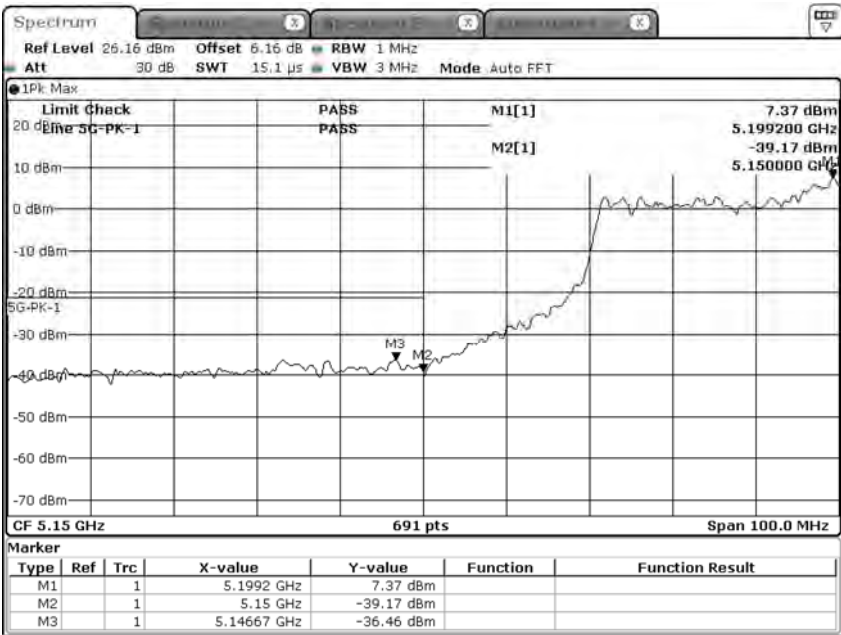
Average:



Date: 27.NOV.2020 18:17:37

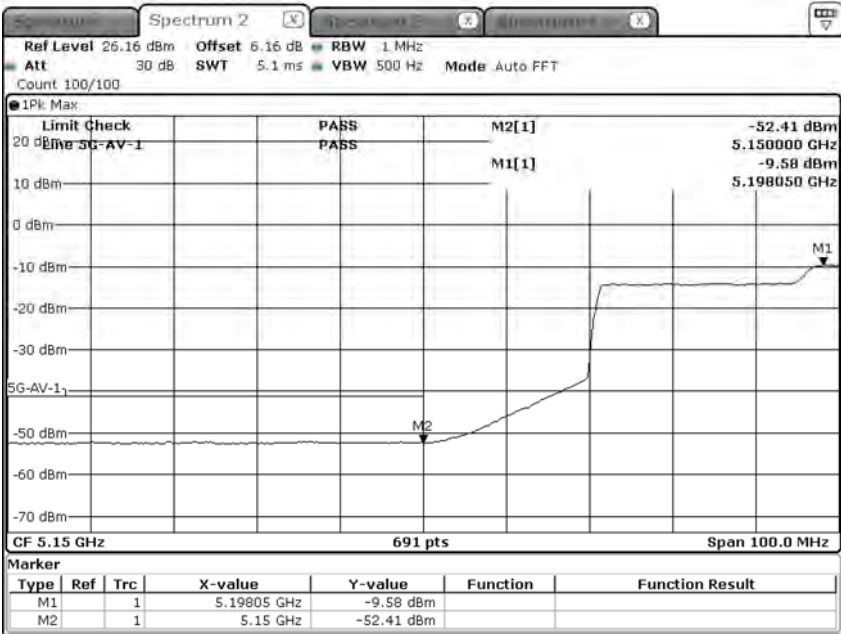
(Band 1) Chain B

Peak:



Date: 16.NOV.2020 06:02:16

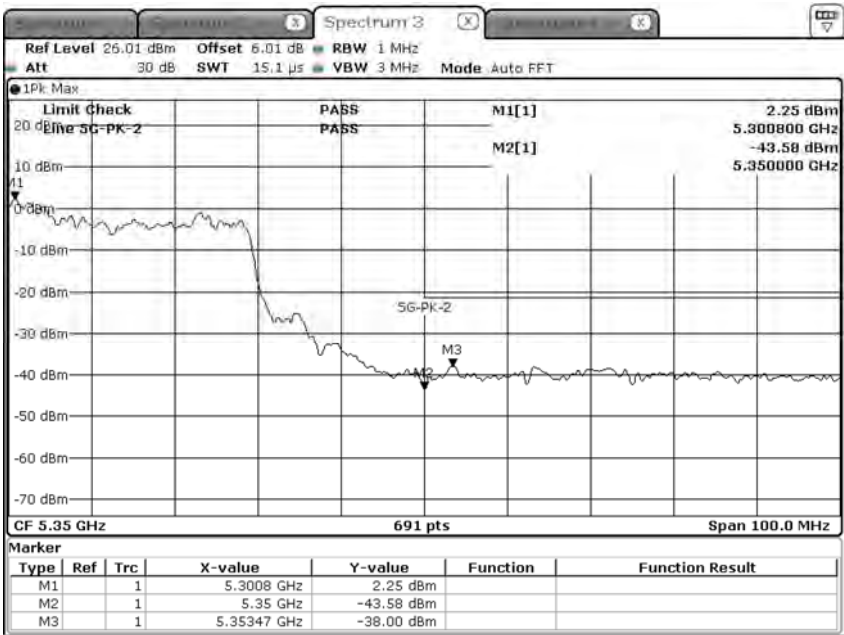
Average:



Date: 27.NOV.2020 18:10:26

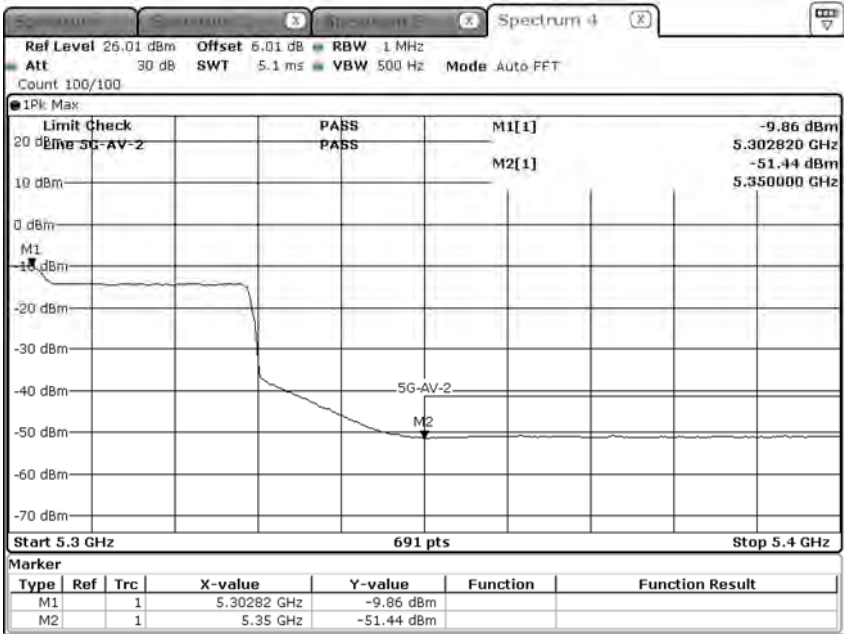
(Band 2) Chain B

Peak:



Date: 27.NOV.2020 18:14:21

Average:

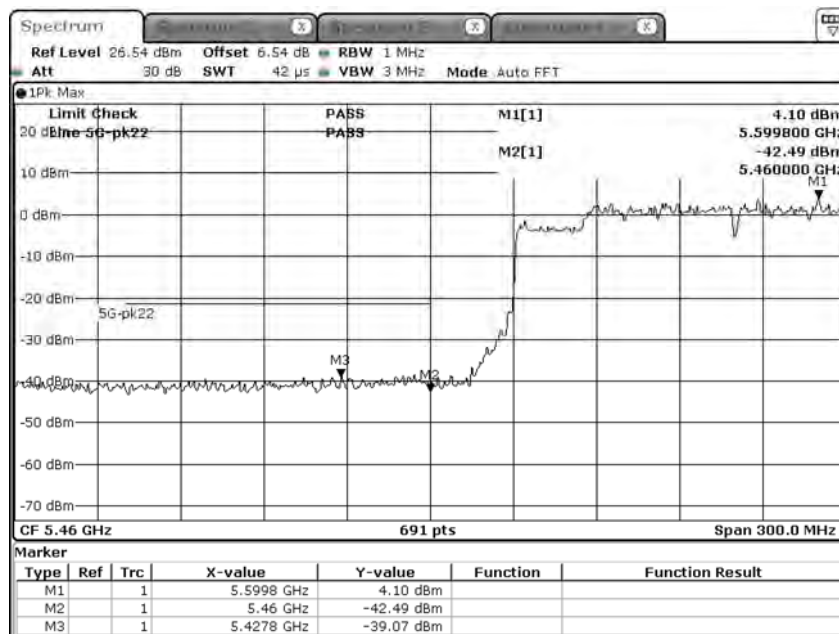


Date: 27.NOV.2020 18:13:21

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 26: MIMO Transmit (802.11ax-160BW_144.1Mbps) (5570MHz)

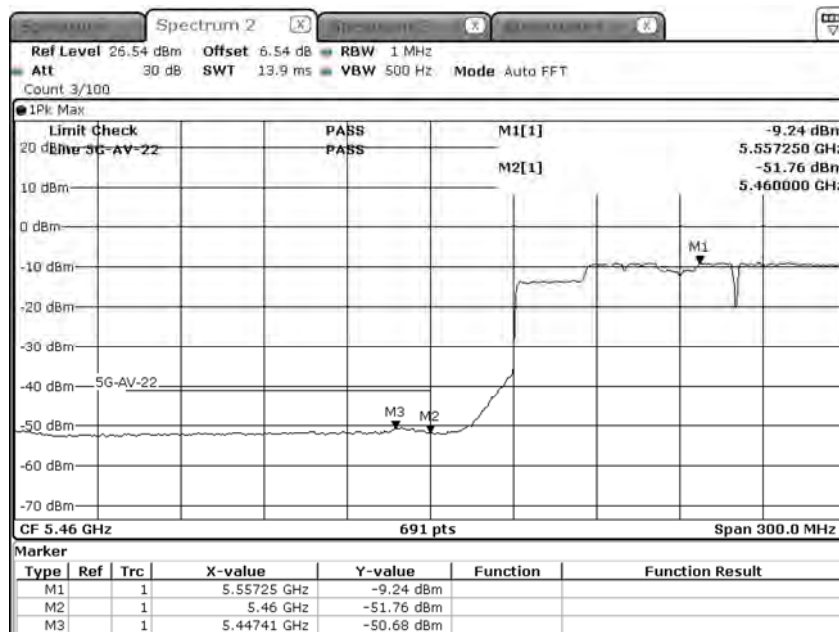
Chain A

Peak:



Date: 27.NOV.2020 18:23:05

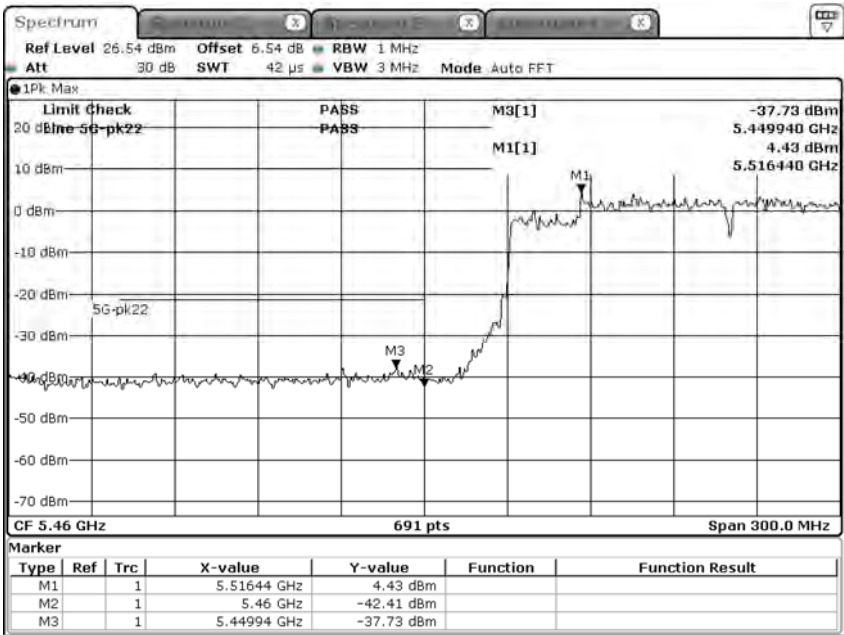
Average:



Date: 27.NOV.2020 18:20:42

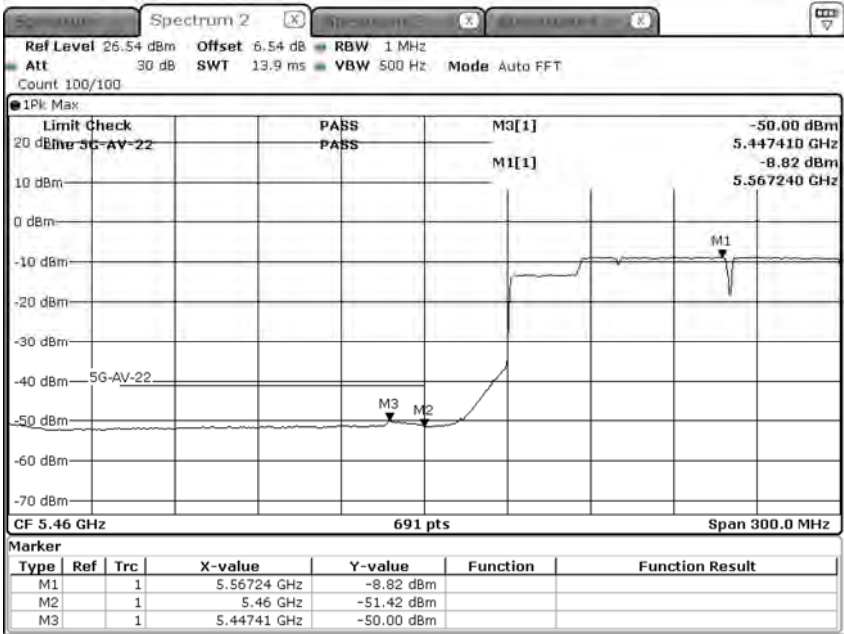
Chain B

Peak:



Date: 27.NOV.2020 18:28:31

Average:

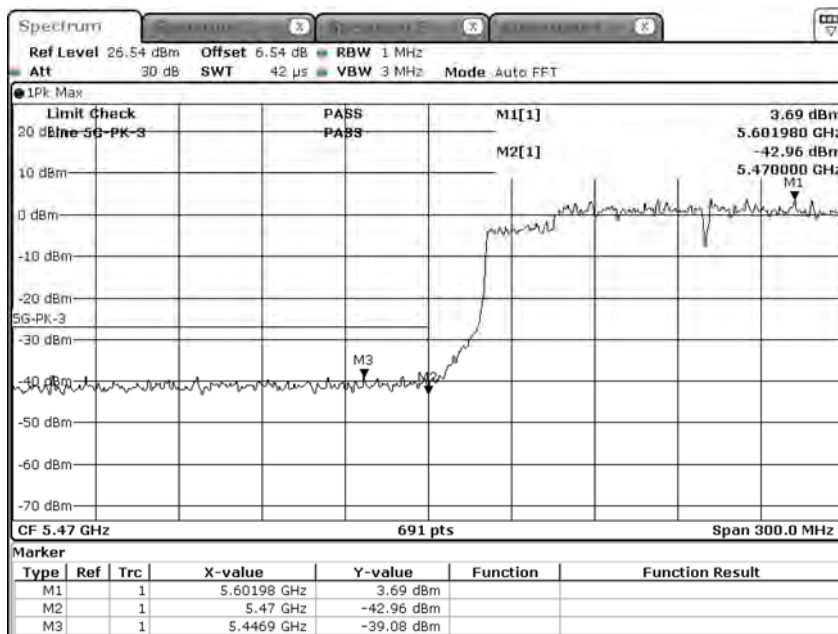


Date: 27.NOV.2020 18:29:10

Product : Notebook Computers
Test Item : Band Edge Data
Test Date : 2020/11/27
Test Mode : Mode 26: MIMO Transmit (802.11ax-160BW_144.1Mbps) (5570MHz)

Chain A

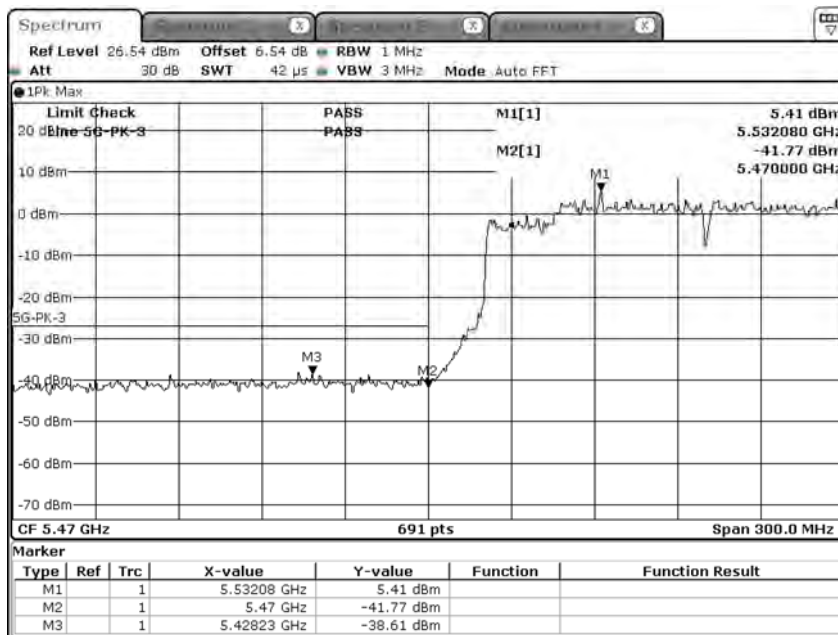
Peak:



Date: 27.NOV.2020 18:24:51

Chain B

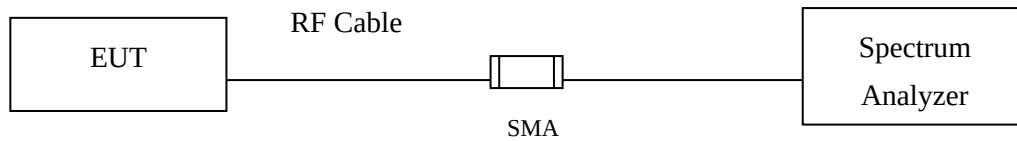
Peak:



Date: 27.NOV.2020 18:26:28

7. Occupied Bandwidth

7.1. Test Setup



7.2. Limits

For the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

7.3. Test Procedure

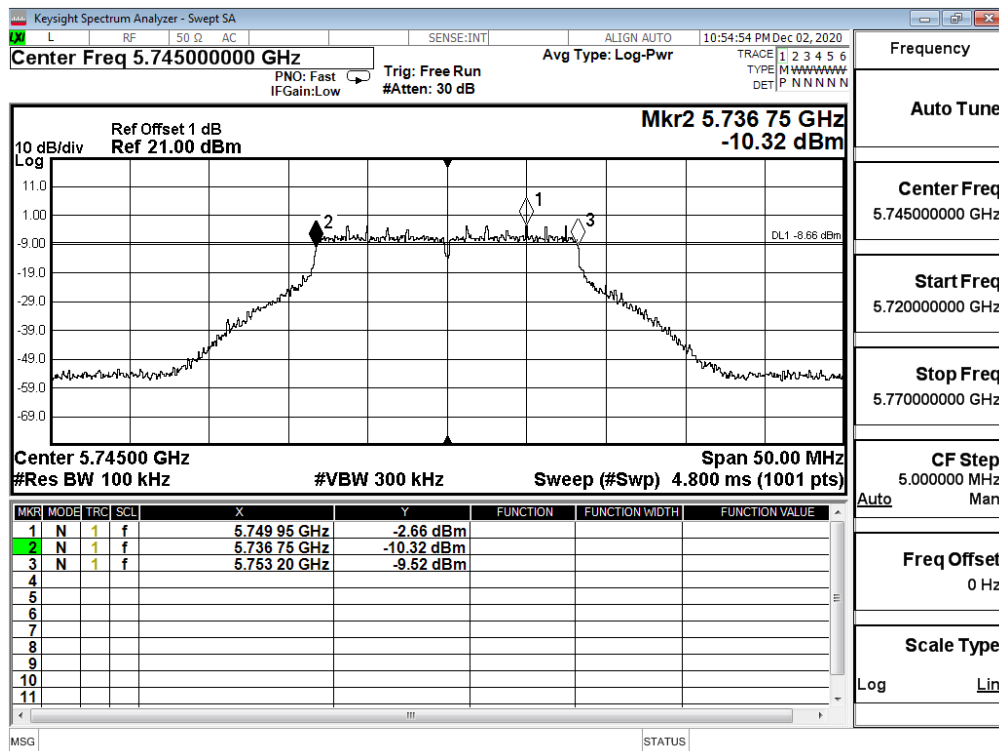
The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

7.4. Test Result of Occupied Bandwidth

Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 1: SISO A Transmit (802.11a_6Mbps) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	16450	>500	Pass

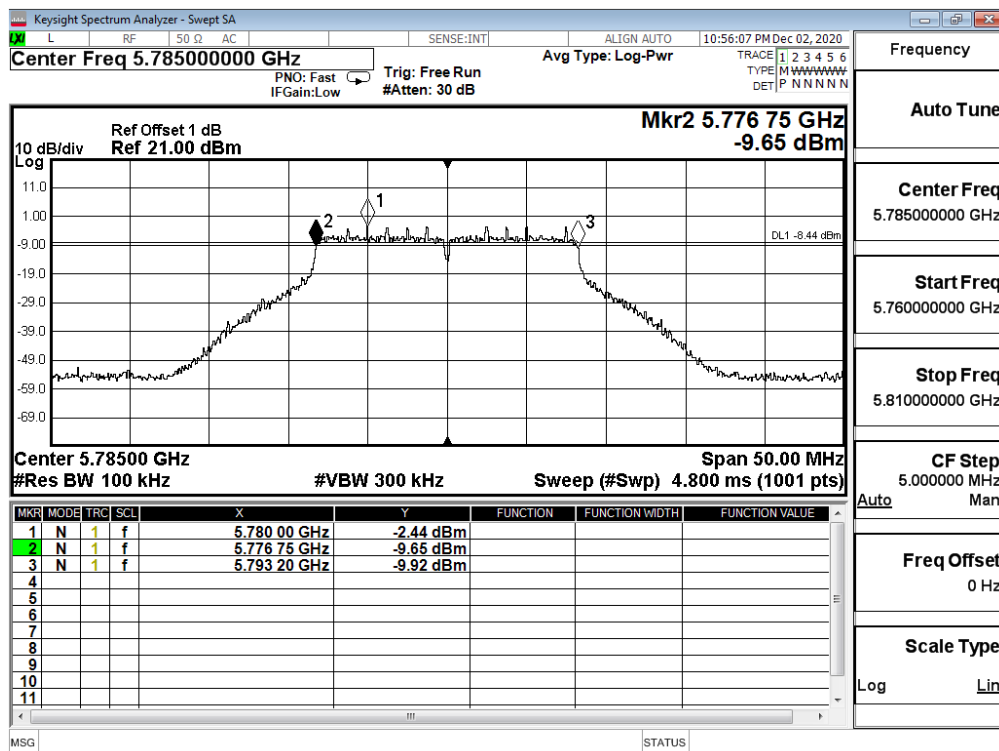
Figure Channel 149:



Product	:	Notebook Computers
Test Item	:	Occupied Bandwidth Data
Test Mode	:	Mode 1: SISO A Transmit (802.11a_6Mbps) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	16450	>500	Pass

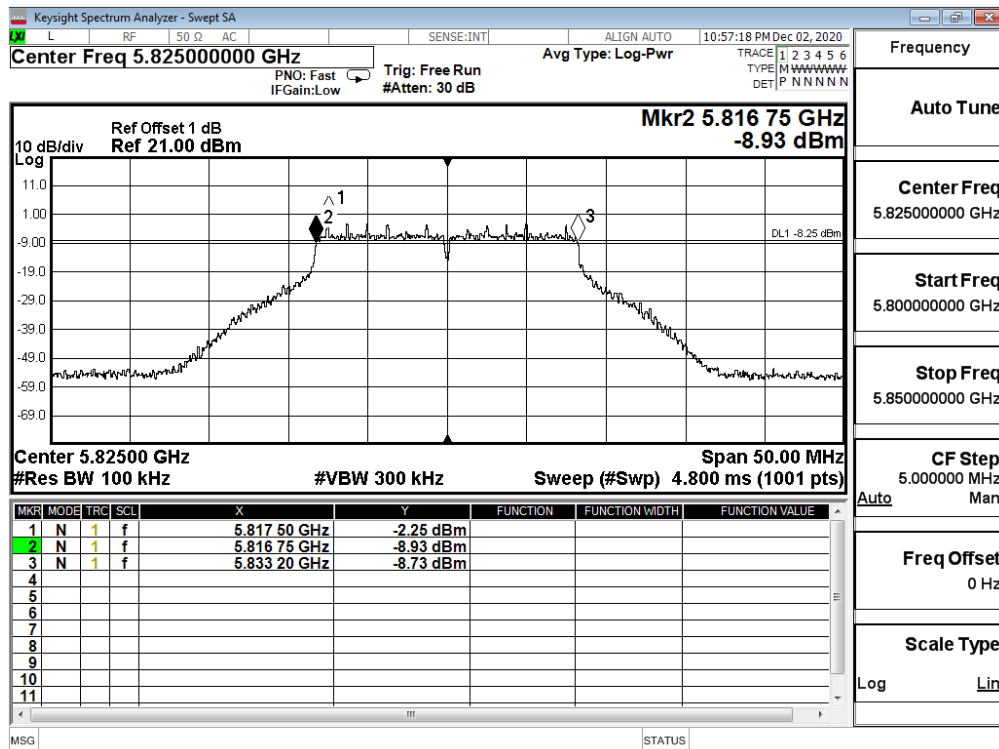
Figure Channel 157:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 1: SISO A Transmit (802.11a_6Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	16450	>500	Pass

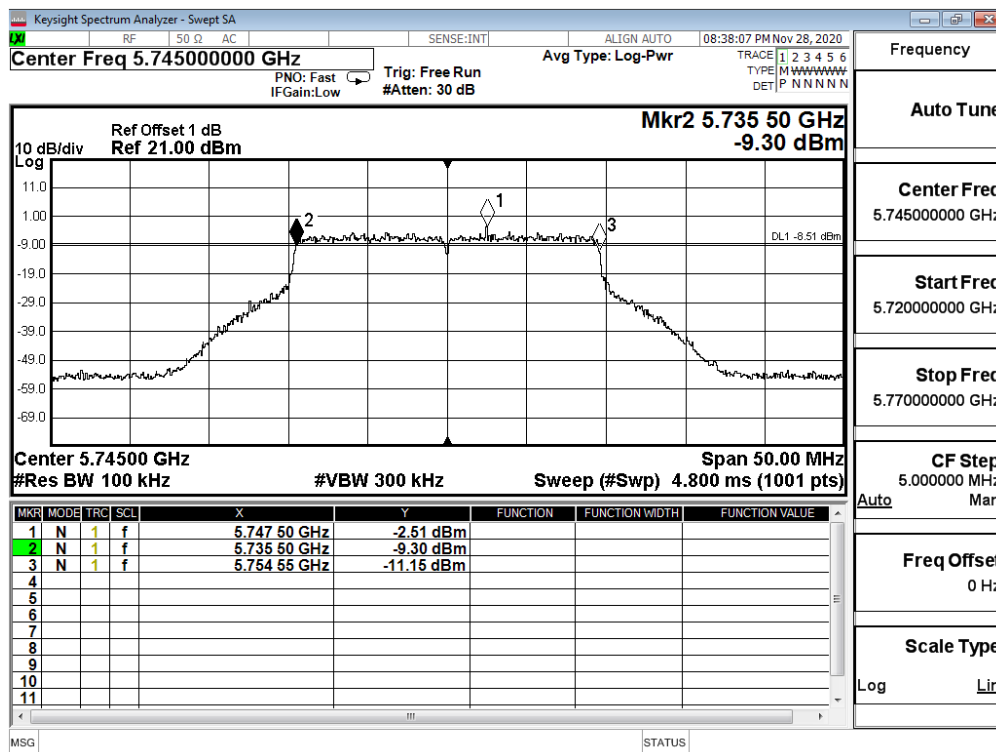
Figure Channel 165:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 6: SISO A Transmit (802.11ax-20BW_8.6Mbps) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	19050	>500	Pass

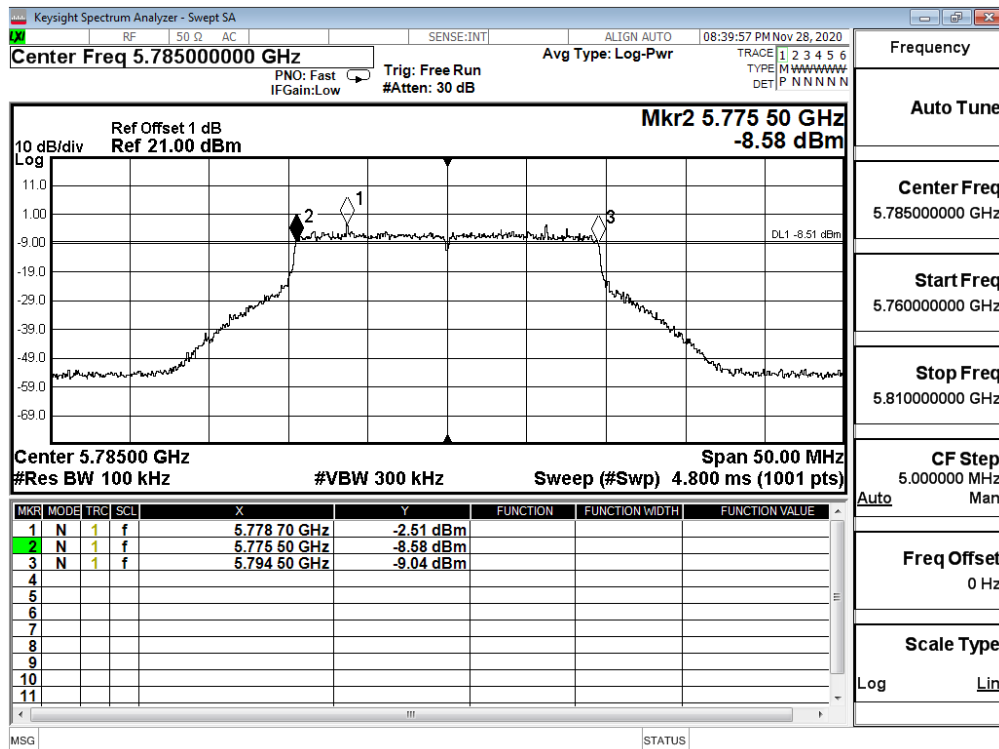
Figure Channel 149:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 6: SISO A Transmit (802.11ax-20BW_8.6Mbps) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	19000	>500	Pass

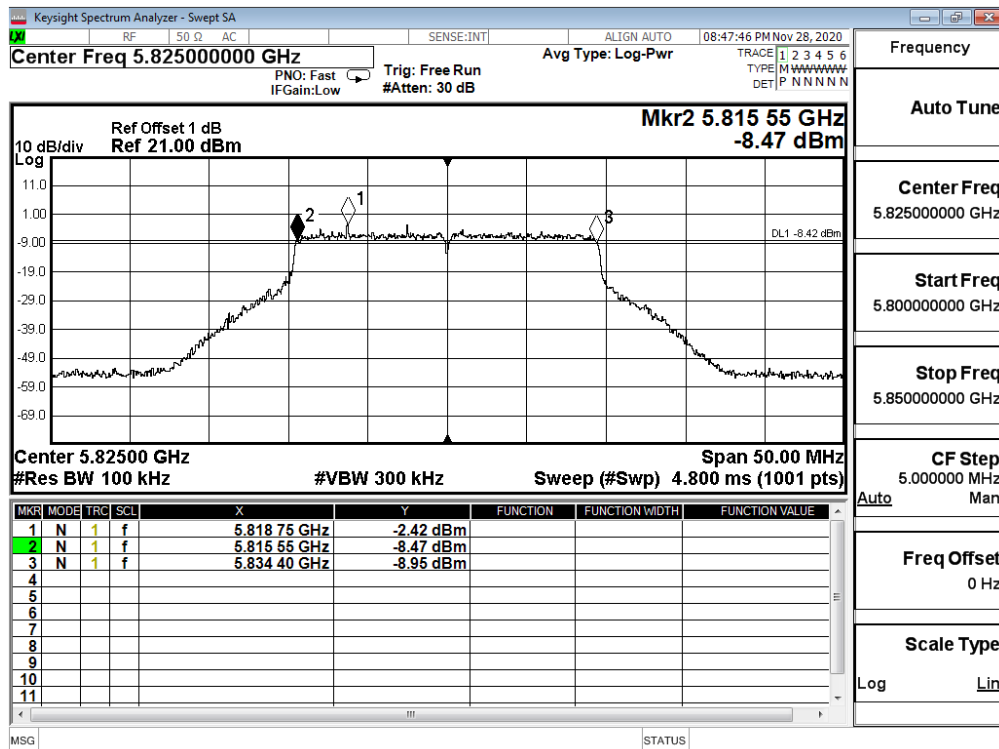
Figure Channel 157:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 6: SISO A Transmit (802.11ax-20BW_8.6Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	18850	>500	Pass

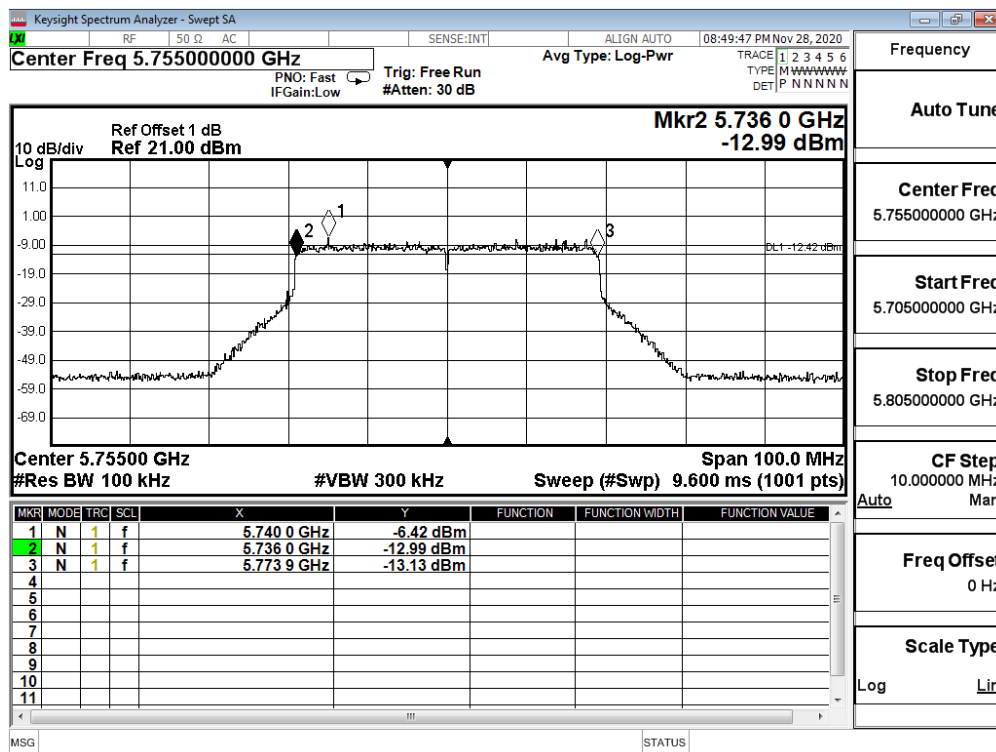
Figure Channel 165:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 7: SISO A Transmit (802.11ax-40BW_17.2Mbps) (5755MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	37900	>500	Pass

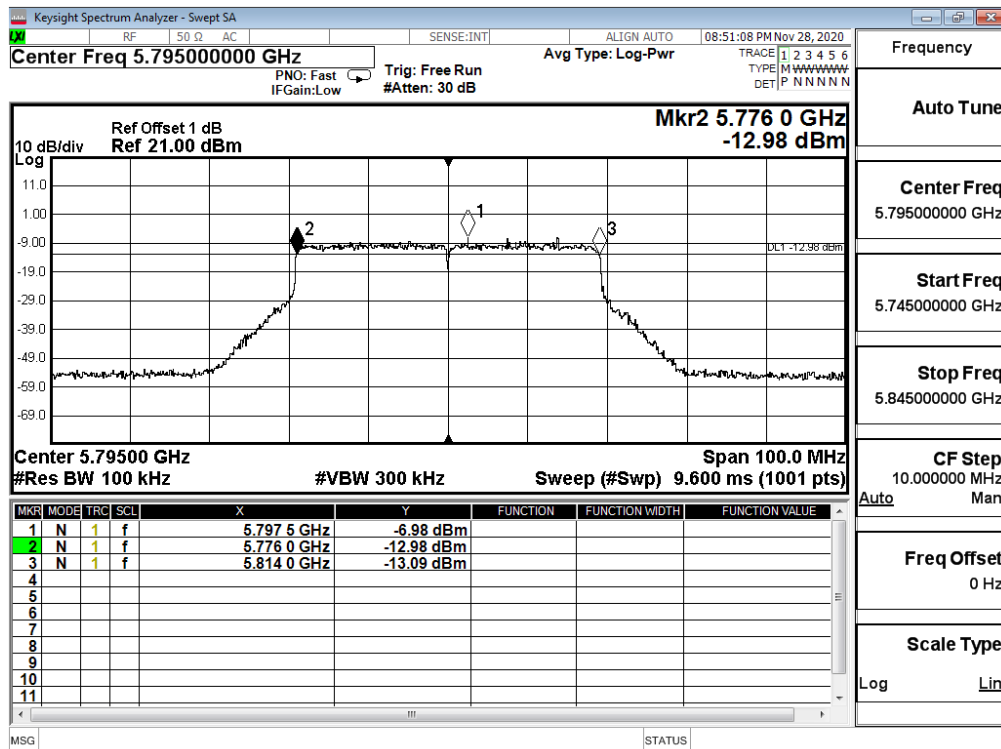
Figure Channel 151:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 7: SISO A Transmit (802.11ax-40BW_17.2Mbps) (5795MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795.00	38000	>500	Pass

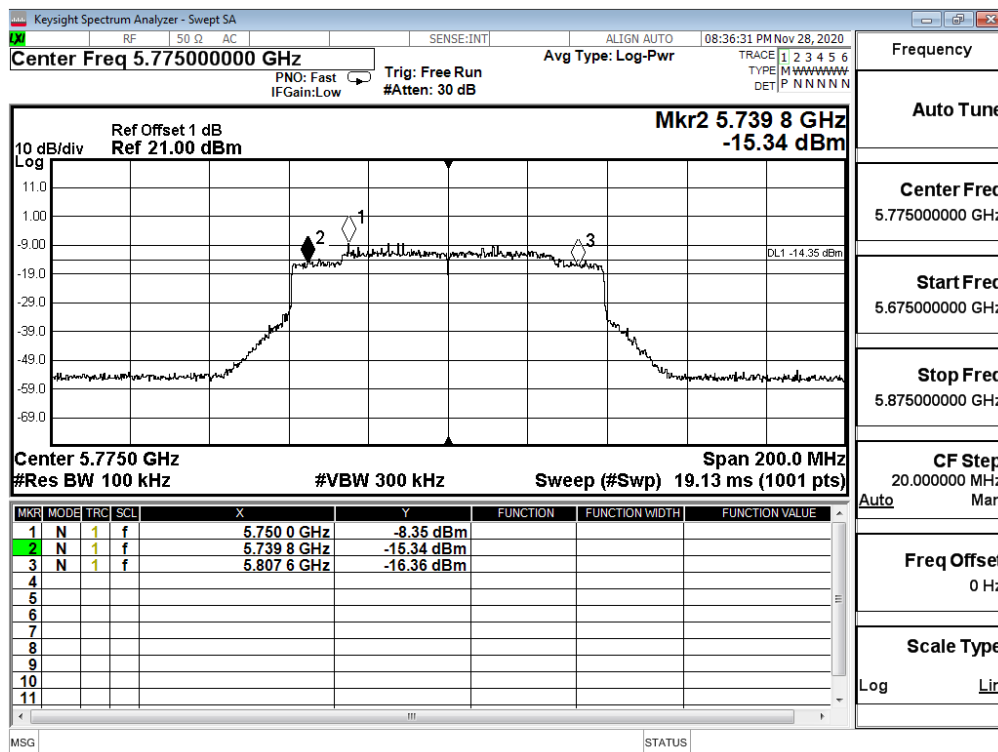
Figure Channel 159:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 8: SISO A Transmit (802.11ax-80BW_36Mbps) (5775MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775.00	67800	>500	Pass

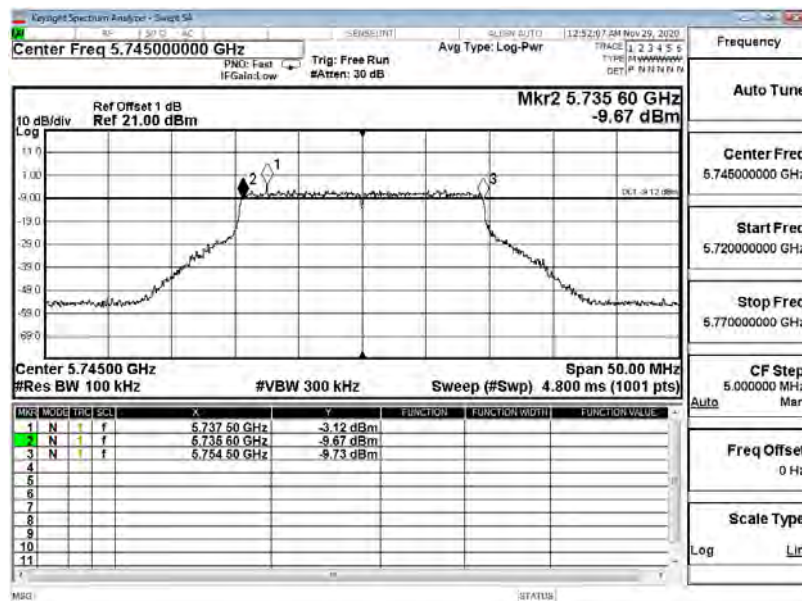
Figure Channel 155:



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 23: MIMO Transmit (802.11ax-20BW_17.2Mbps) (5745MHz)

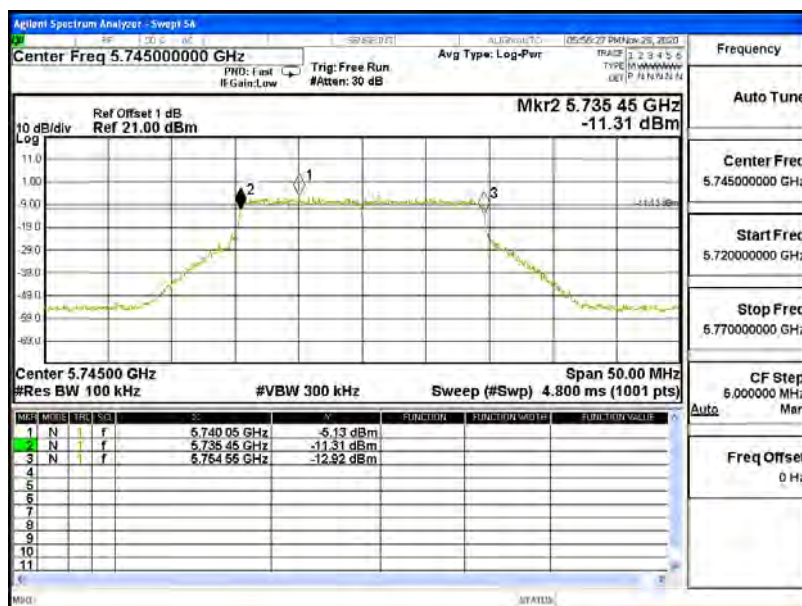
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745	18900	>500	Pass

Figure Channel 149: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745	19100	>500	Pass

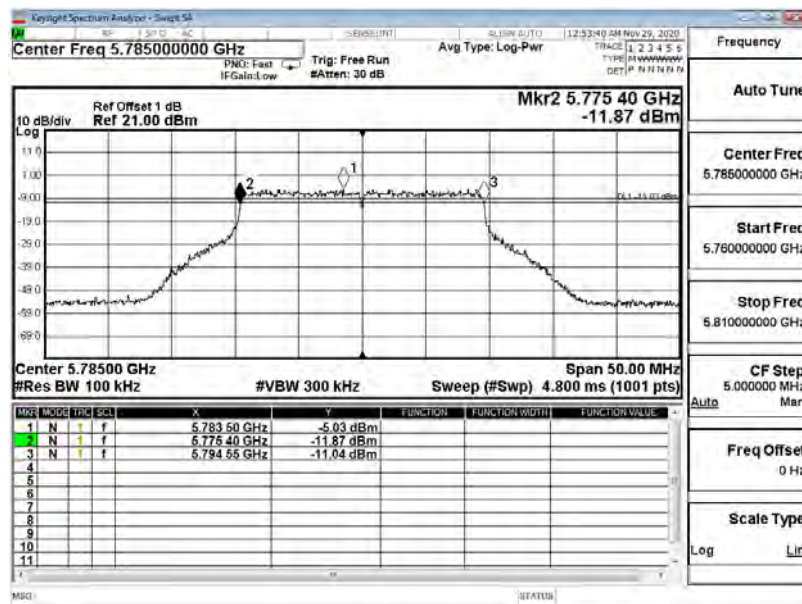
Figure Channel 149: (Chain B)



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 23: MIMO Transmit (802.11ax-20BW_17.2Mbps) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785	19150	>500	Pass

Figure Channel 157: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785	18800	>500	Pass

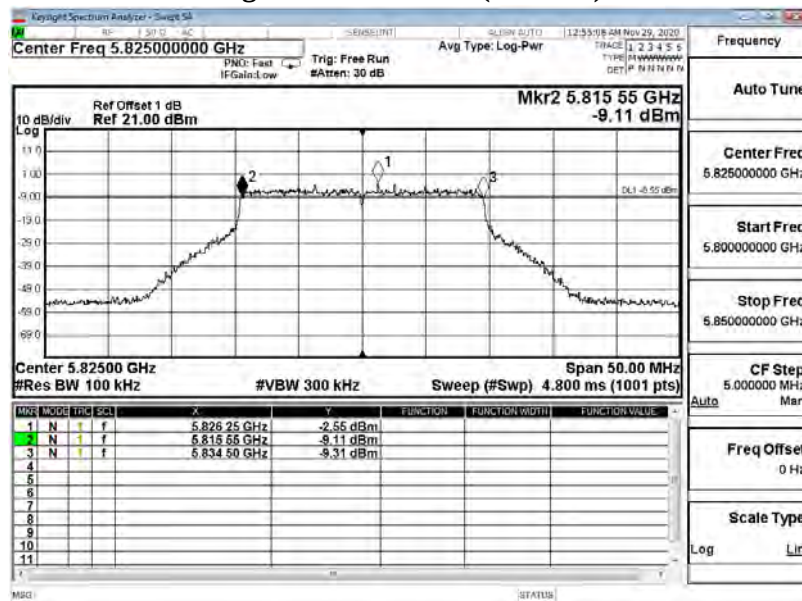
Figure Channel 157: (Chain B)



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 23: MIMO Transmit (802.11ax-20BW_17.2Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825	18950	>500	Pass

Figure Channel 165: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825	19150	>500	Pass

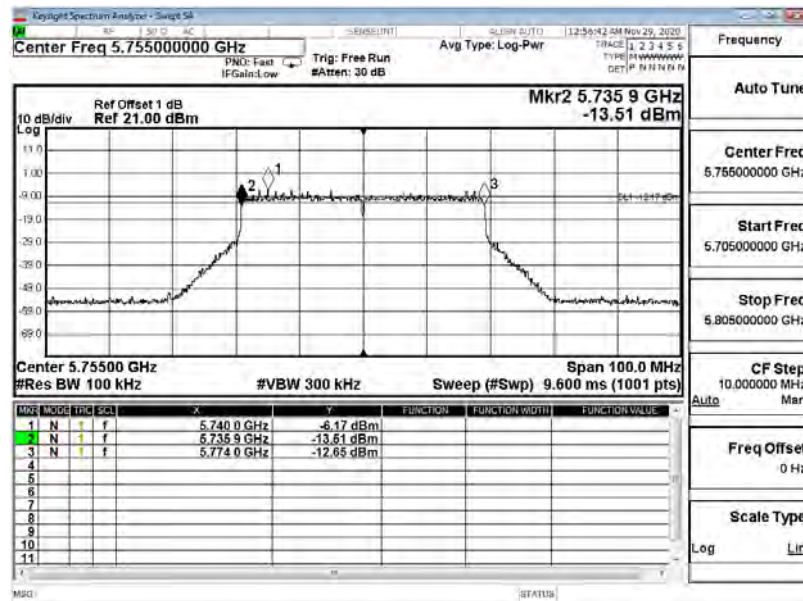
Figure Channel 165: (Chain B)



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5755MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755	38100	>500	Pass

Figure Channel 151: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755	37800	>500	Pass

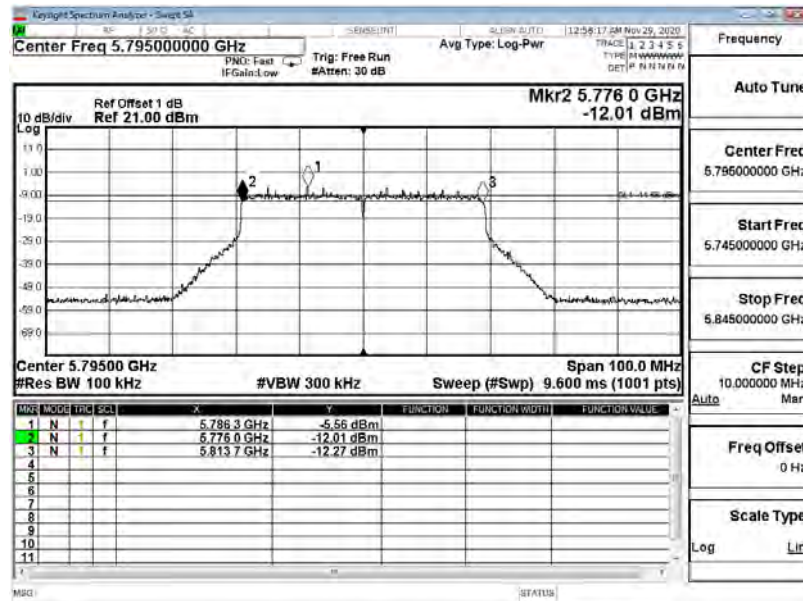
Figure Channel 151: (Chain B)



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 24: MIMO Transmit (802.11ax-40BW_34.4Mbps) (5795MHz)

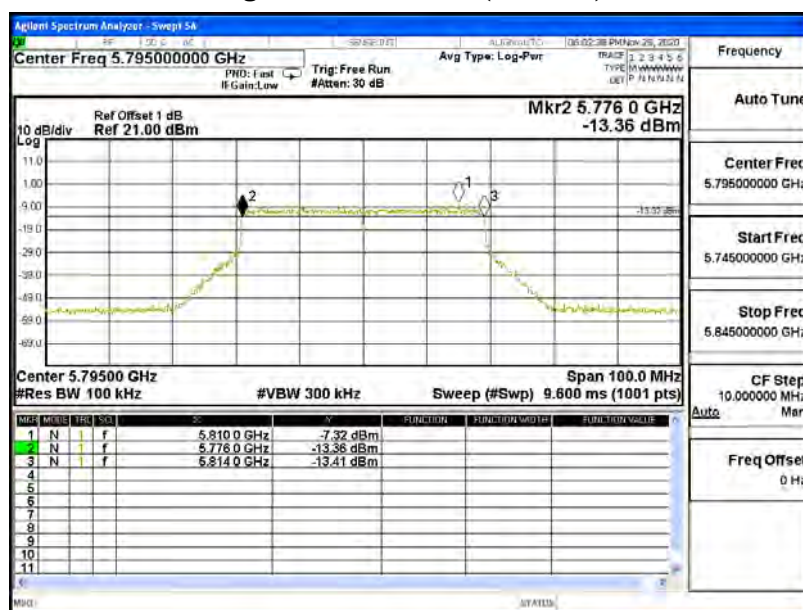
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795	37700	>500	Pass

Figure Channel 159: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795	35300	>500	Pass

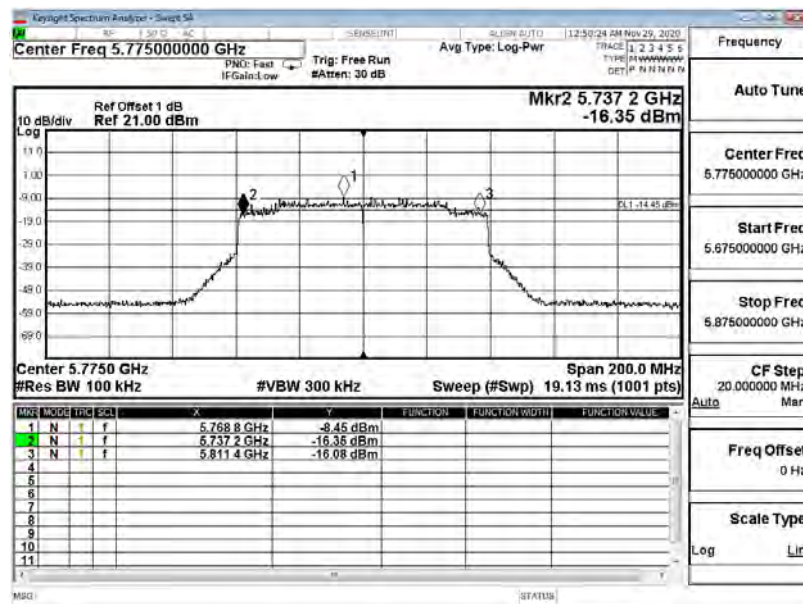
Figure Channel 159: (Chain B)



Product : Notebook Computers
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 25: MIMO Transmit (802.11ax-80BW_72.1Mbps) (5775MHz)

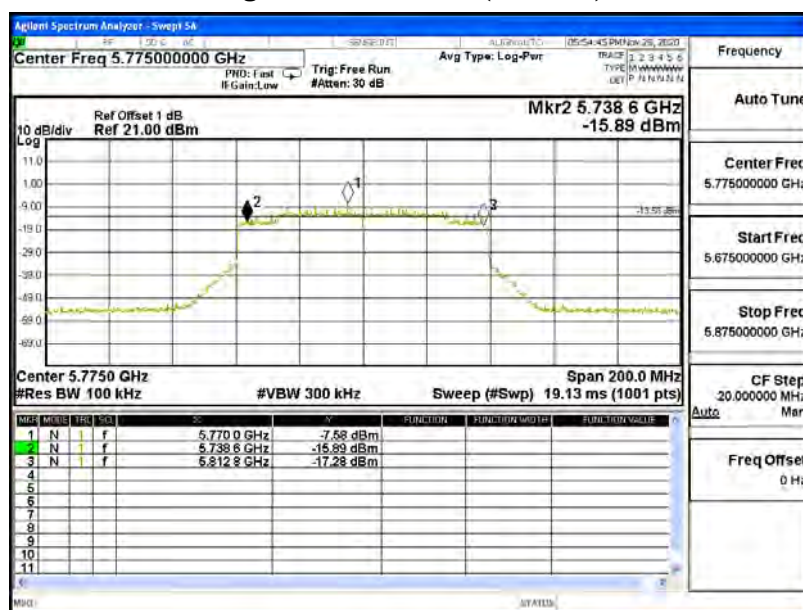
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775	74200	>500	Pass

Figure Channel 155: (Chain A)



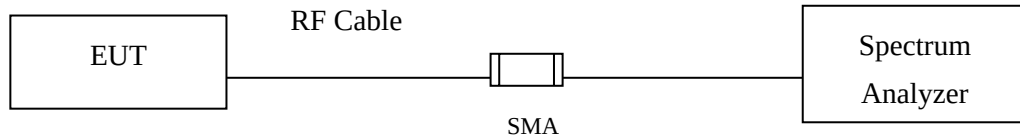
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775	74200	>500	Pass

Figure Channel 155: (Chain B)



8. Duty Cycle

8.1. Test Setup



8.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to test procedure of KDB789033 for compliance to FCC 47CFR 15.407 requirements.

8.3. Test Result of Duty Cycle

Product : Notebook Computers
 Test Item : Duty Cycle
 Test Mode : Transmit

Duty Cycle Formula:

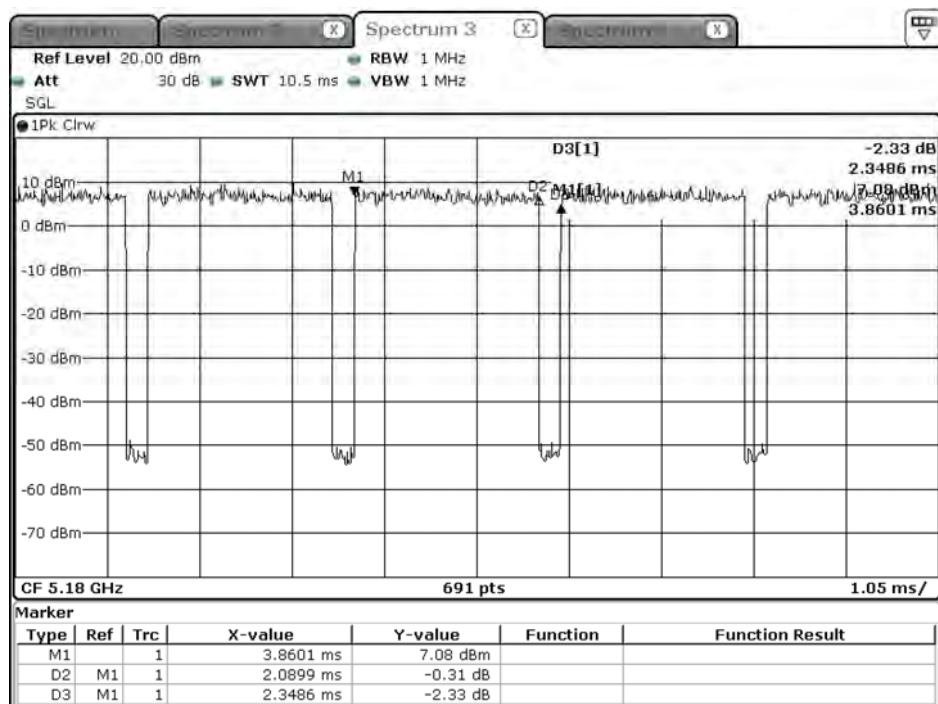
Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

Results: SISO A

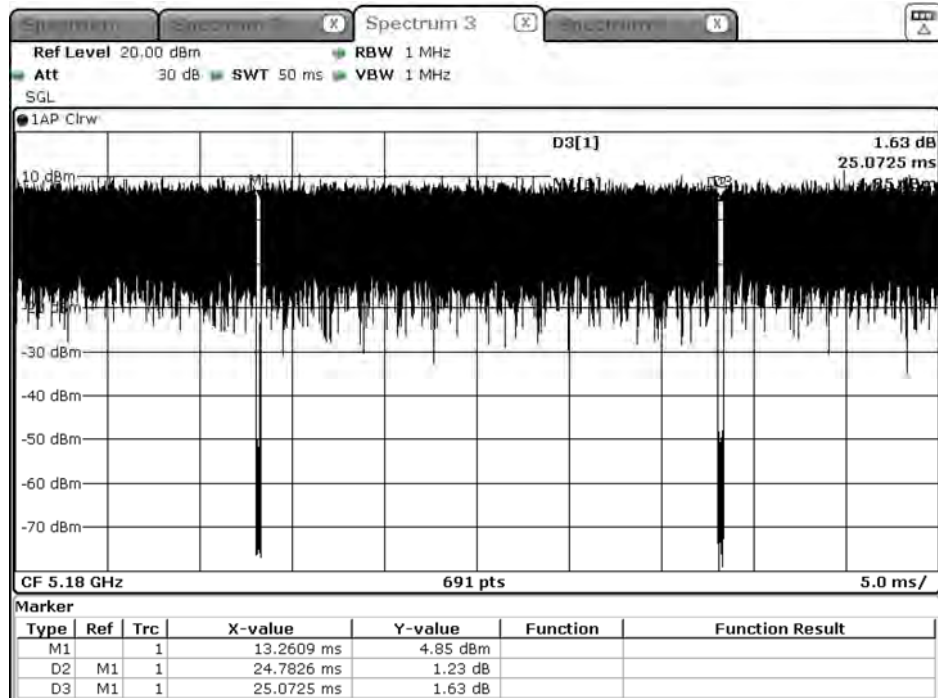
5GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 a	2.0899	2.3486	88.98	0.51
802.11 ax20	24.7826	25.0725	98.84	0.05
802.11 ax40	18.6232	18.9130	98.47	0.07
802.11 ax80	16.5942	16.9565	97.86	0.09
802.11 ax160	4.4928	4.7536	94.51	0.25
802.11 ax20-26/0-RU	5.3949	5.7428	93.94	0.27
802.11 ax20-52/37-RU	5.3949	5.7138	94.42	0.25
802.11 ax20-106/53-RU	5.3949	5.7138	94.42	0.25
802.11 ax40-242-61-RU	5.4239	5.7138	94.93	0.23
802.11 ax80-484-65-RU	5.3949	5.7428	93.94	0.27
802.11 ax160-996-67-RU	5.4348	5.7397	94.69	0.24

802.11a - SISOA



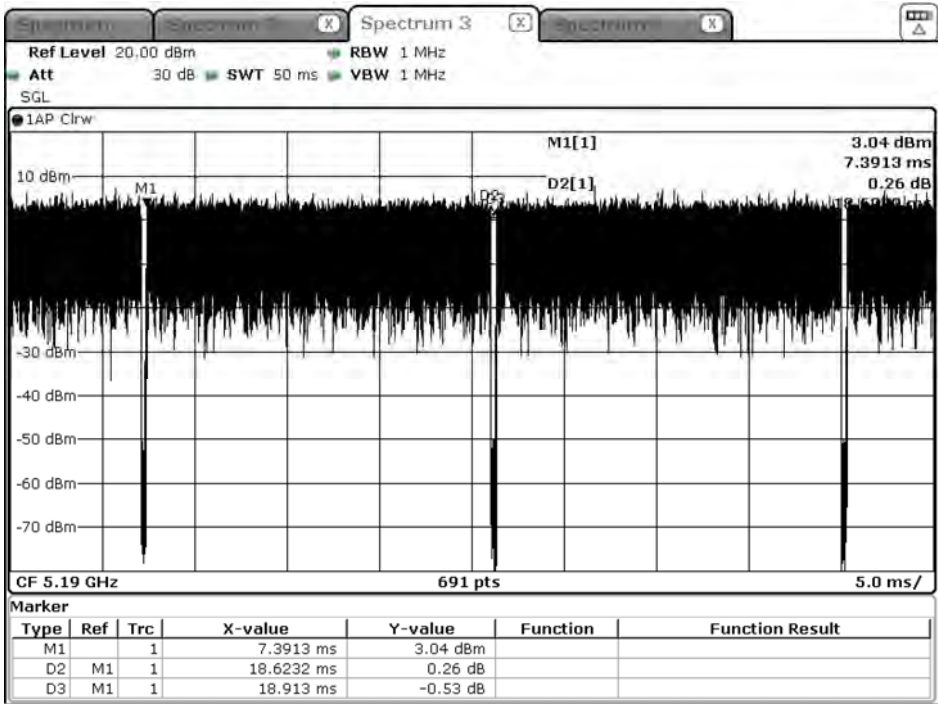
Date: 14.NOV.2020 03:30:06

802.11 ax20 - SISOA



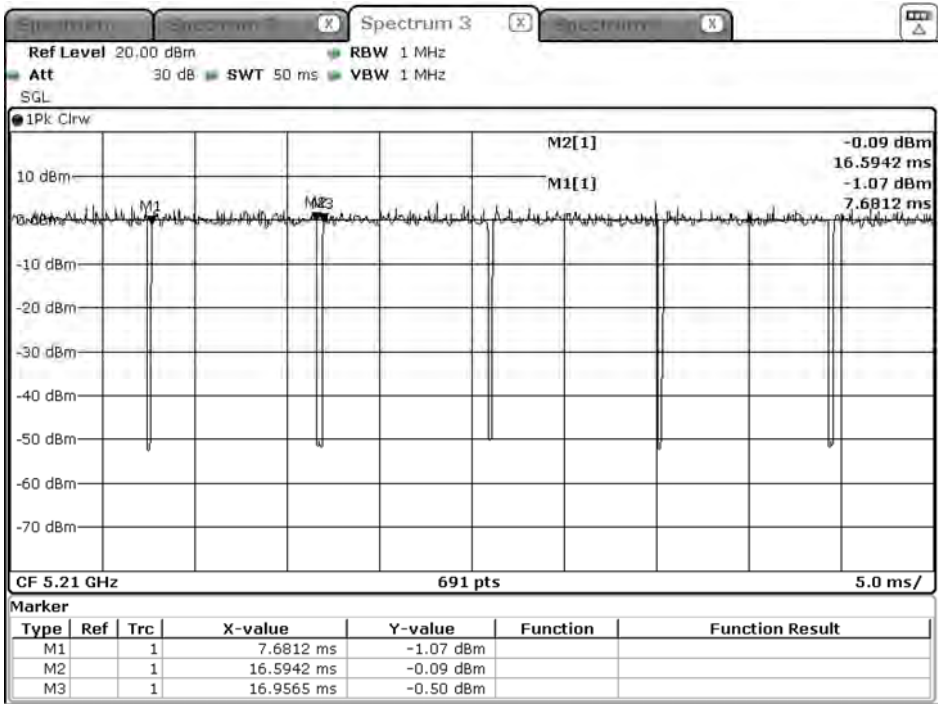
Date: 14.NOV.2020 05:04:01

802.11 ax40 - SISOA



Date: 14.NOV.2020 06:47:56

802.11 ax80 - SISOA

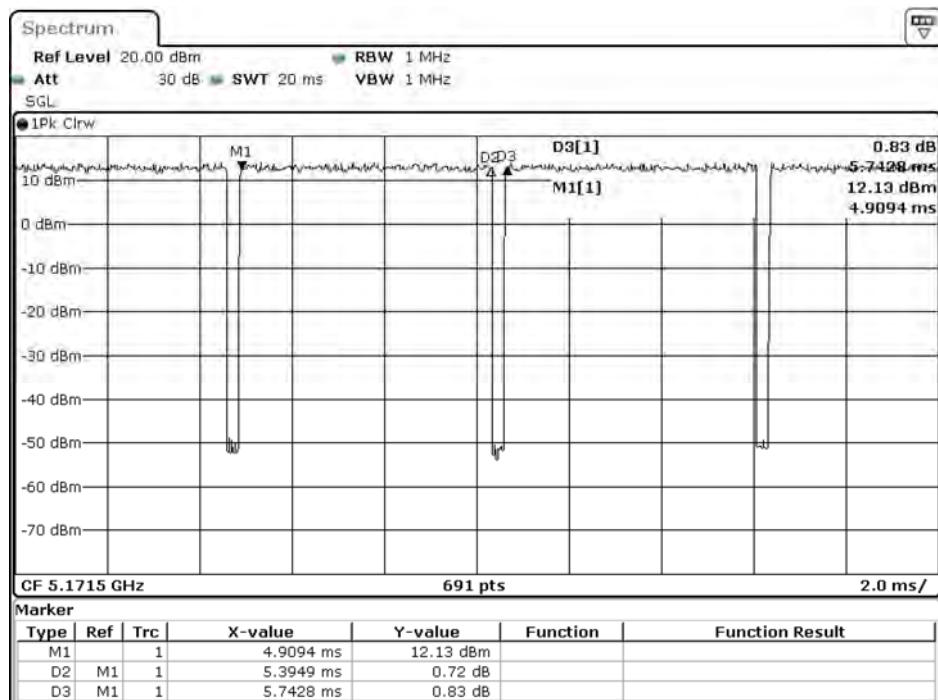


Date: 14.NOV.2020 07:49:17

The screenshot displays a Spectrum Analyzer interface. At the top, there are tabs for 'Spectrum 1', 'Spectrum 2', 'Spectrum 3', and 'Spectrum 4'. The 'Spectrum 3' tab is active. Below the tabs, there are control panels for 'Ref Level' (20.00 dBm), 'Att' (30 dB), 'RBW' (1 MHz), and 'VBW' (1 MHz). The 'SGL' (Single Gate) mode is selected. The main display area shows a signal trace with three markers: M1, D2, and D3. The y-axis represents power in dBm, ranging from -70 dBm to 10 dBm. The x-axis represents time, with a scale of 2.0 ms. The signal trace shows a noisy signal with three distinct peaks. Marker M1 is at 4.9565 ms, D2 is at 4.4928 ms, and D3 is at 4.7536 ms. The table below the trace provides the following data:

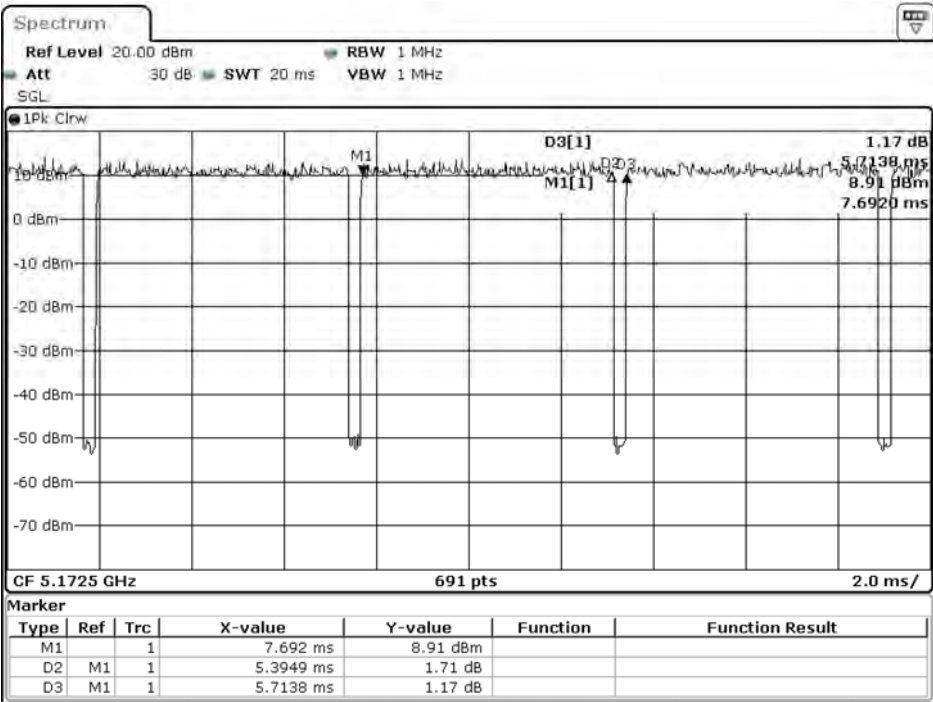
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.9565 ms	-7.01 dBm		
D2	M1	1	4.4928 ms	-6.65 dB		
D3	M1	1	4.7536 ms	-4.32 dB		

802.11 ax20-26/0-RU - SISOA



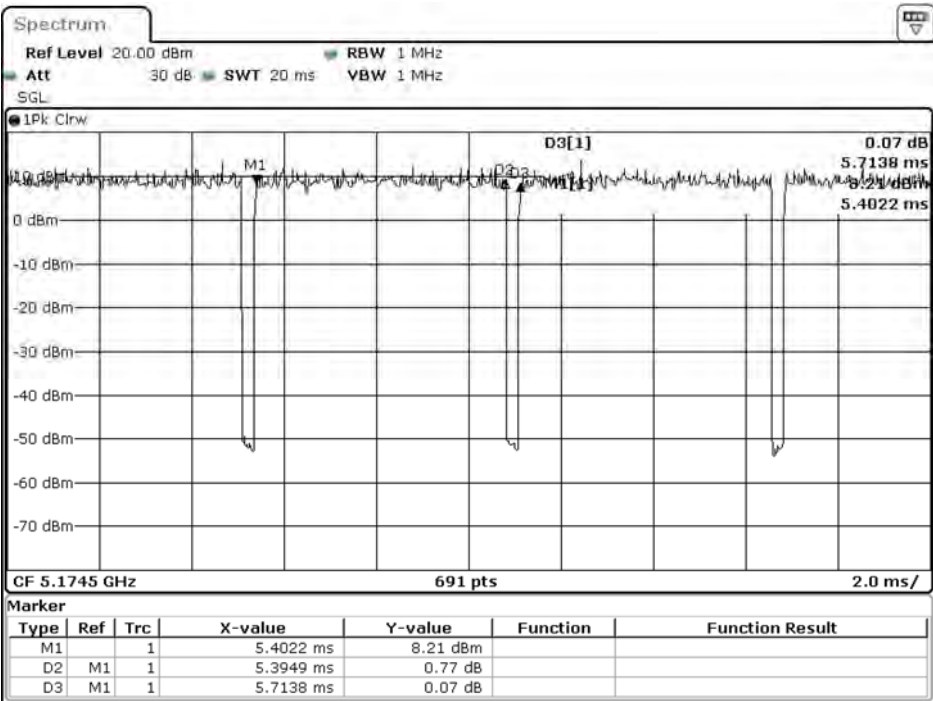
Page: 662 of 674

802.11 ax20-52/37-RU - SISOA



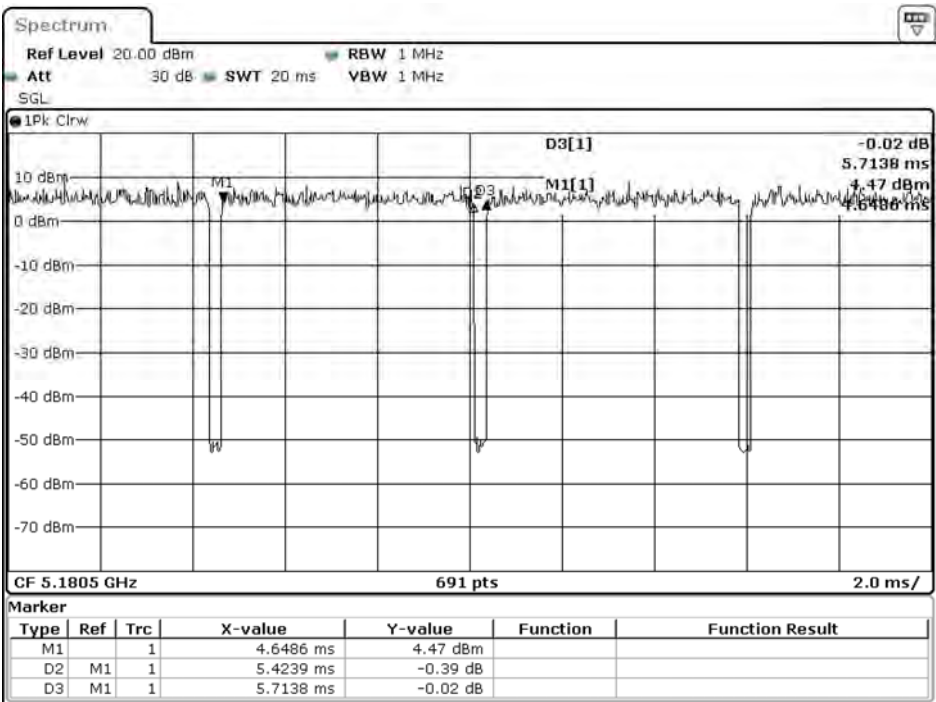
Date: 8.DEC.2020 19:07:10

802.11 ax20-106/53-RU - SISOA



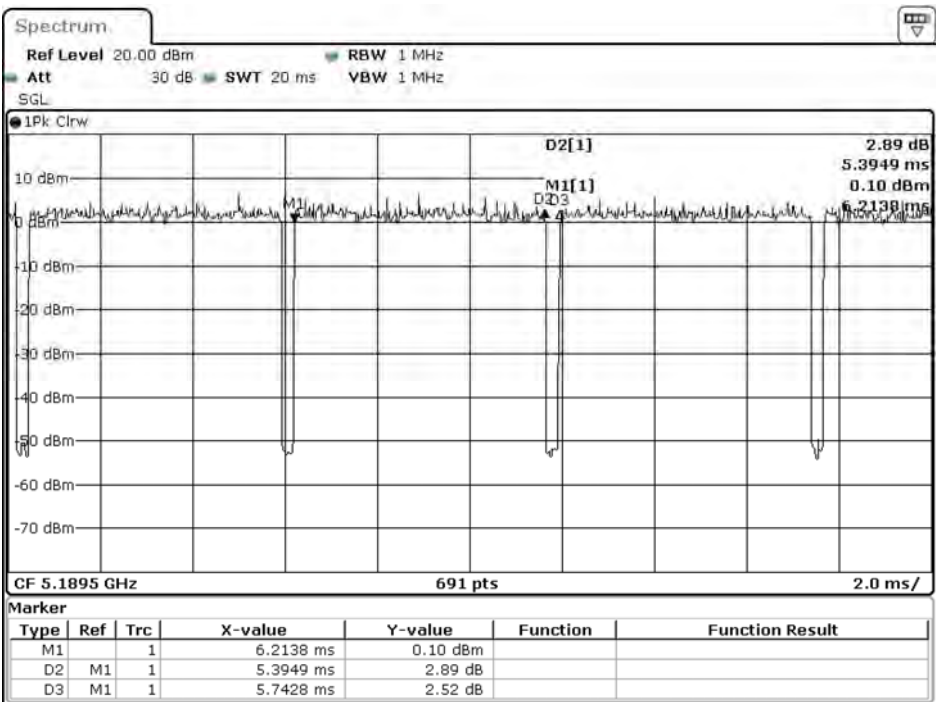
Date: 8.DEC.2020 19:09:46

802.11 ax40-242/61-RU - SISOA



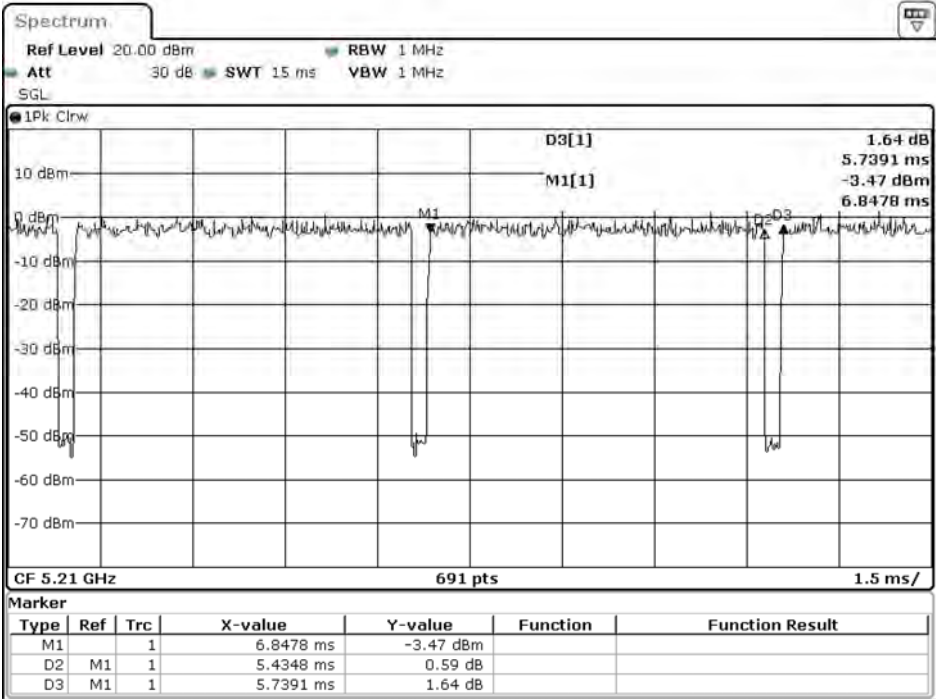
Date: 8.DEC.2020 19:11:27

802.11 ax80-484/65-RU - SISOA



Date: 8.DEC.2020 19:13:29

802.11 ax160-996/67-RU - SISOA



Date: 8.DEC.2020 19:24:42

Product : Notebook Computers
 Test Item : Duty Cycle
 Test Mode : Transmit

Duty Cycle Formula:

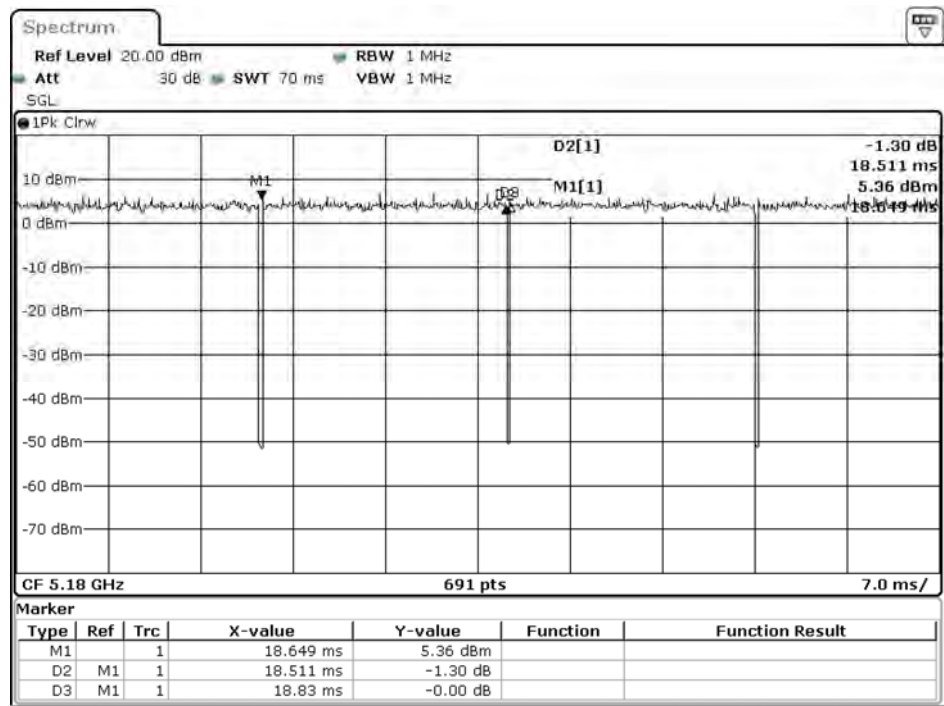
Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

Results: MIMO

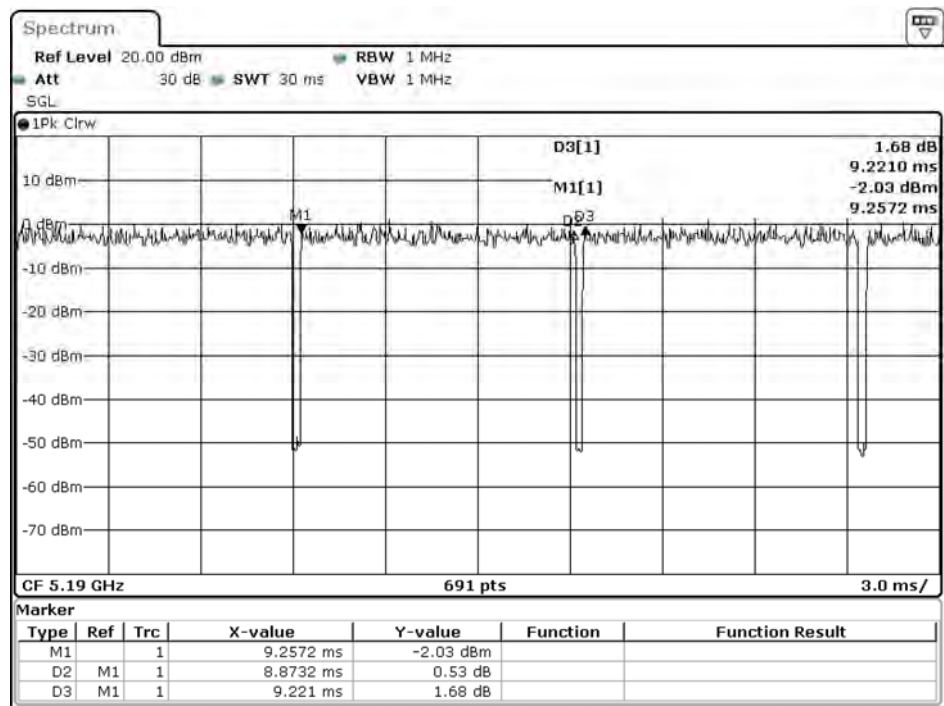
5GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 n20	18.5110	18.8300	98.31	0.07
802.11 n40	8.8732	9.2210	96.23	0.17
802.11 ac80	5.4529	5.7717	94.48	0.25
802.11 ac160	2.6993	3.0181	89.44	0.48
802.11 ax20	18.6899	19.0014	98.36	0.07
802.11 ax40	9.3116	9.6377	96.62	0.15
802.11 ax80	4.4565	4.7826	93.18	0.31
802.11 ax160	2.2754	2.5362	89.71	0.47
802.11 ax20-26/0-RU	5.4348	5.7391	94.70	0.24
802.11 ax20-52/37-RU	5.4348	5.7391	94.70	0.24
802.11 ax20-106/53-RU	5.4130	5.7174	94.68	0.24
802.11 ax40-242-61-RU	5.4130	5.7174	94.68	0.24
802.11 ax80-484-65-RU	5.4348	5.7609	94.34	0.25
802.11 ax160-996-67-RU	5.4130	5.7391	94.32	0.25

802.11 n20 - MIMO



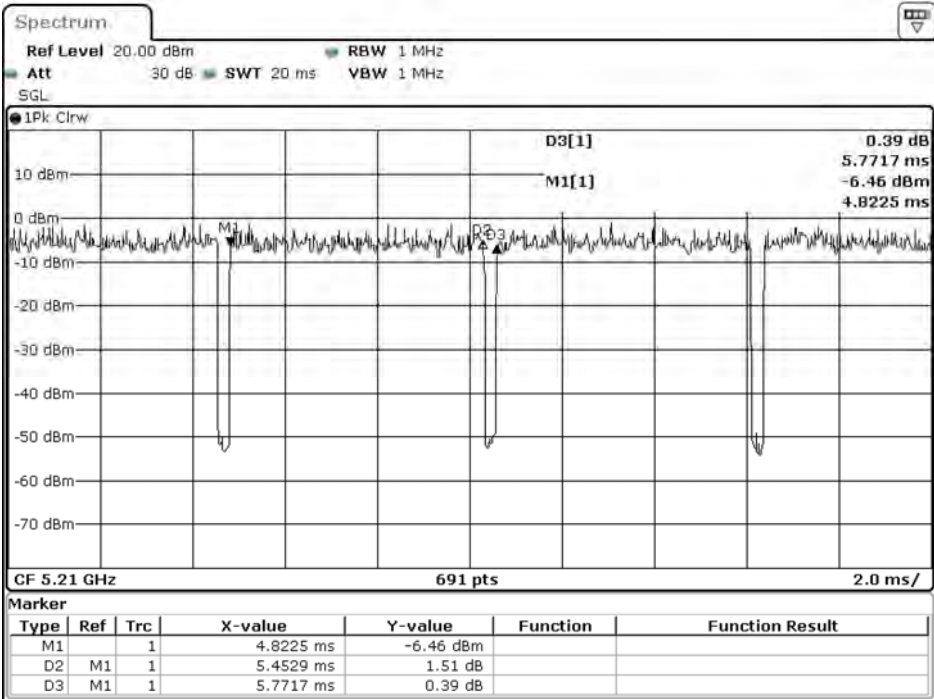
Date: 8.DEC.2020 18:46:46

802.11 n40 - MIMO



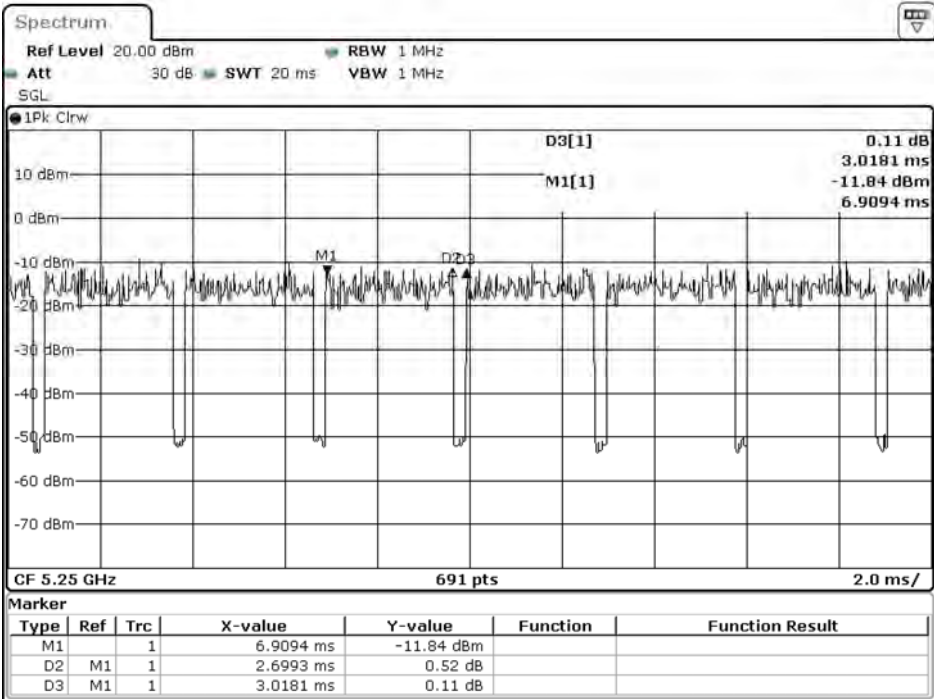
Date: 8.DEC.2020 18:52:00

802.11 ac80 - MIMO



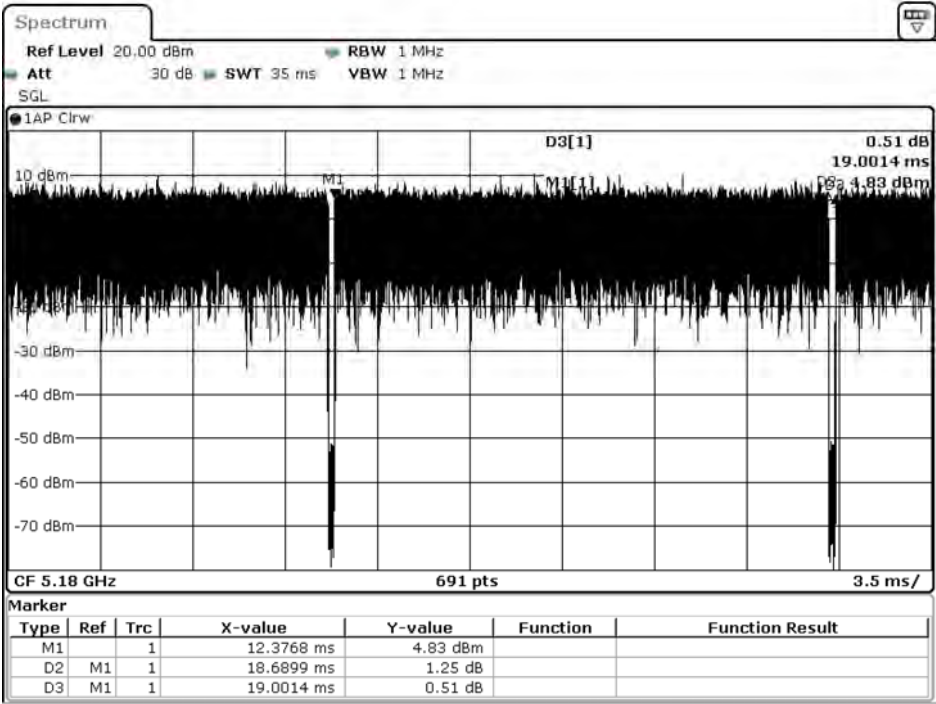
Date: 8.DEC.2020 18:54:14

802.11 ac160 - MIMO



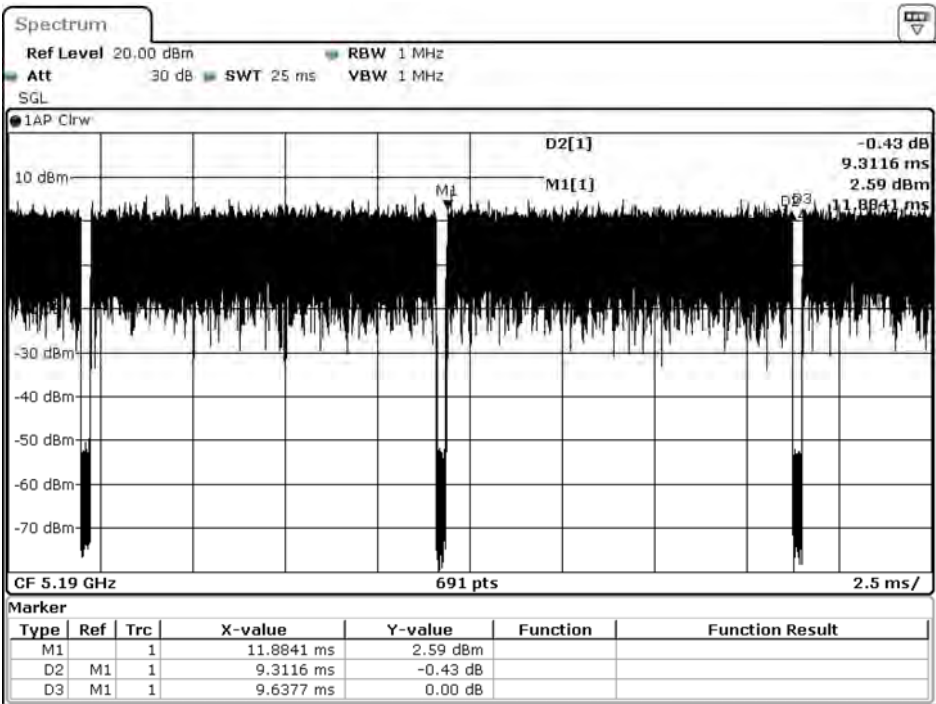
Date: 8.DEC.2020 18:58:09

802.11 ax20 - MIMO



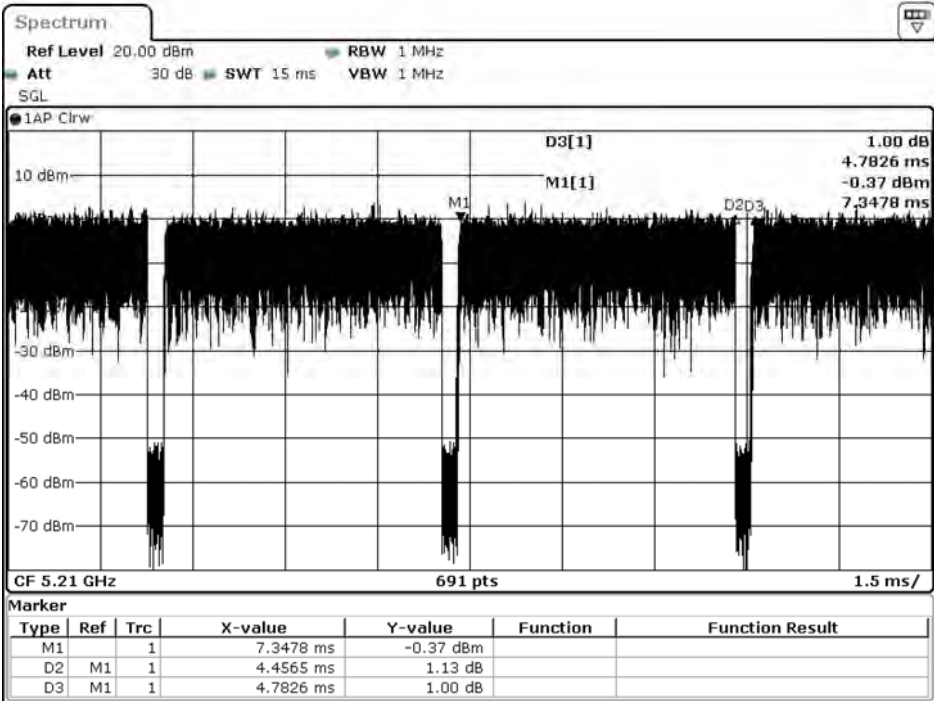
Date: 16.NOV.2020 11:27:12

802.11 ax40 - MIMO



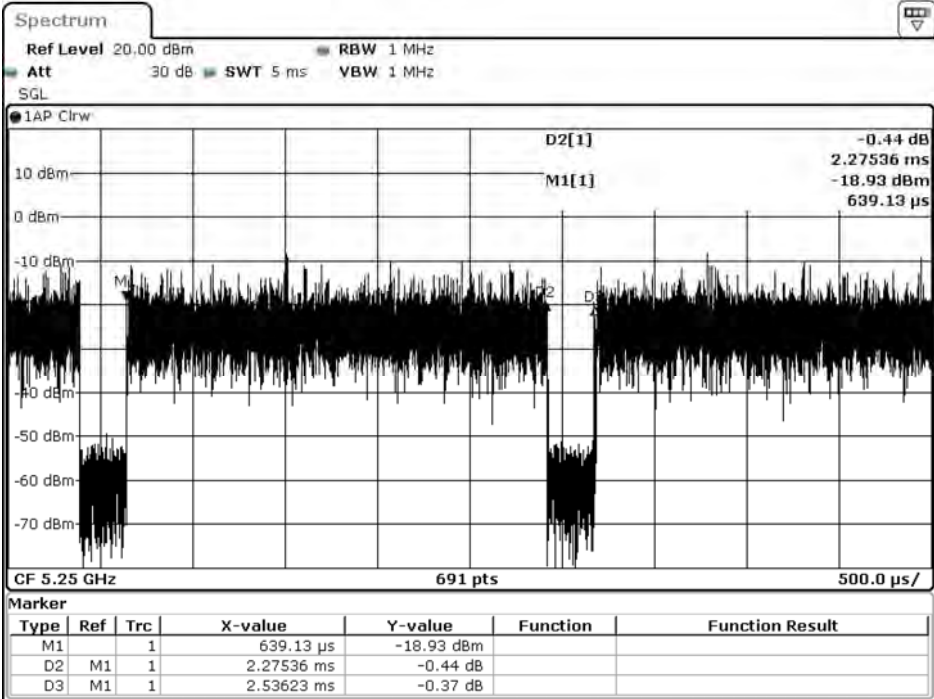
Date: 16.NOV.2020 11:16:28

802.11 ax80 - MIMO



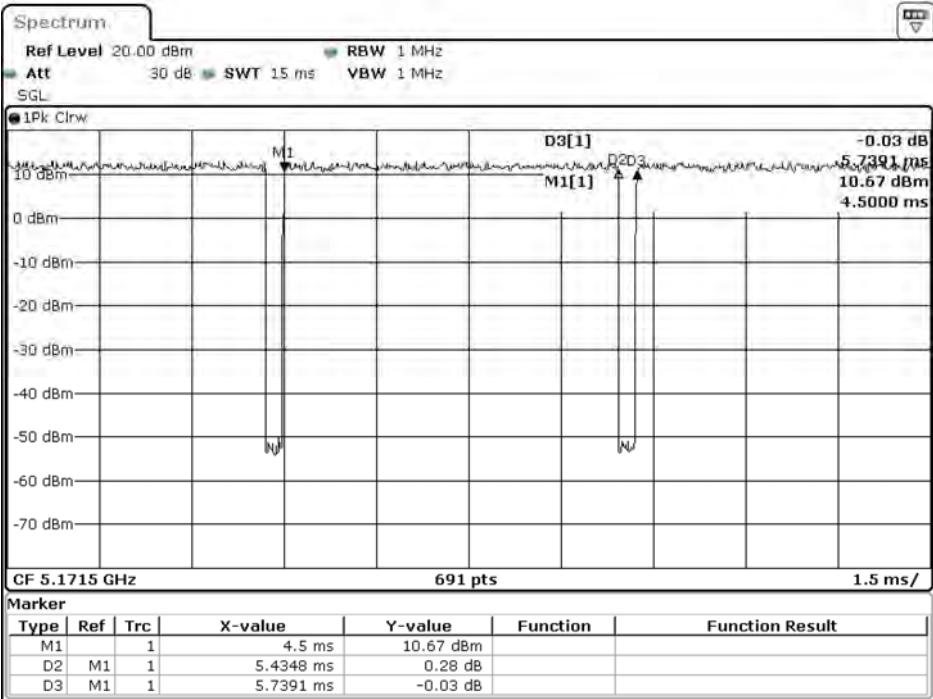
Date: 16.NOV.2020 11:20:06

802.11 ax160 - MIMO



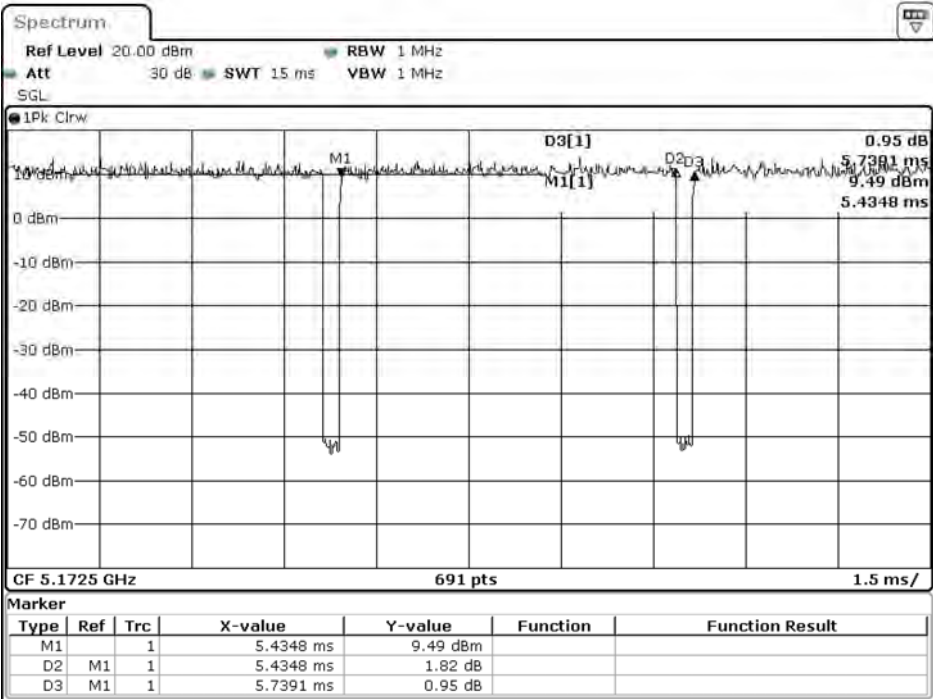
Date: 16.NOV.2020 11:24:20

802.11 ax20-26/0-RU - MIMO



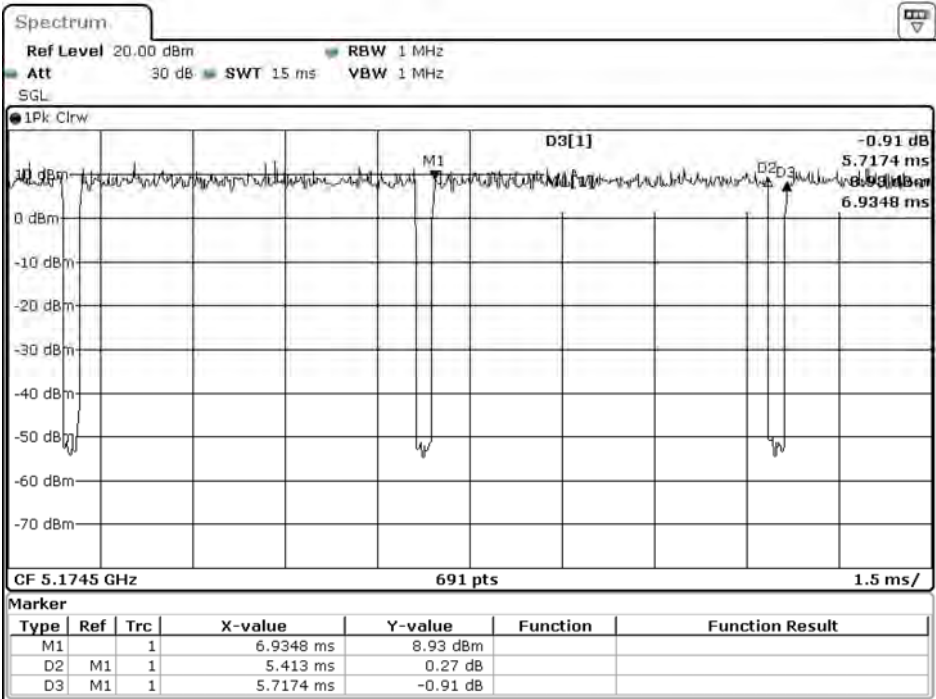
Date: 8.DEC.2020 19:27:12

802.11 ax20-52/37-RU - MIMO



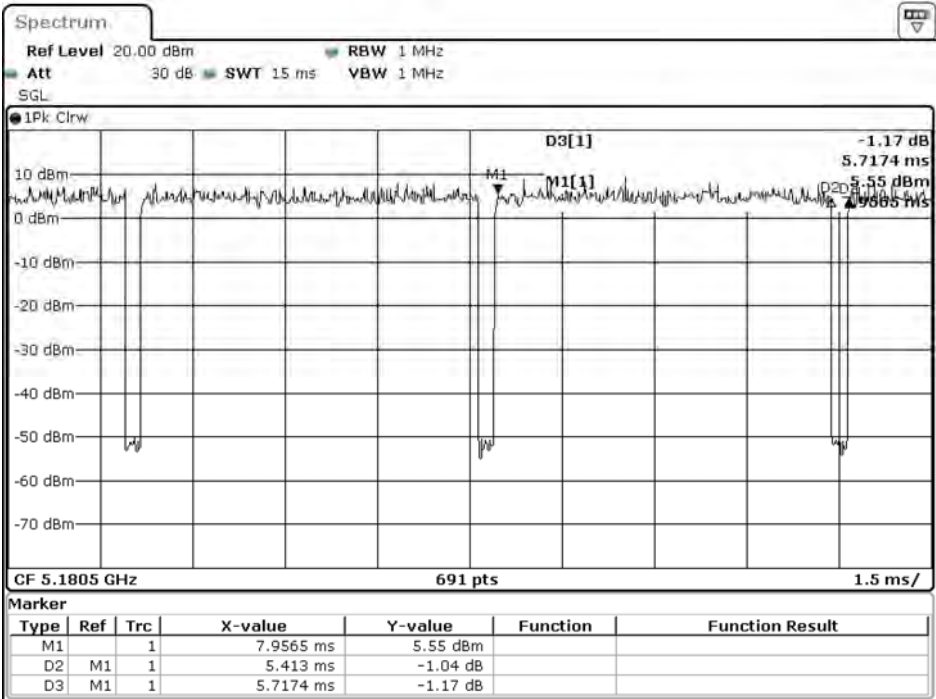
Date: 8.DEC.2020 19:28:35

802.11 ax20-106/53-RU - MIMO



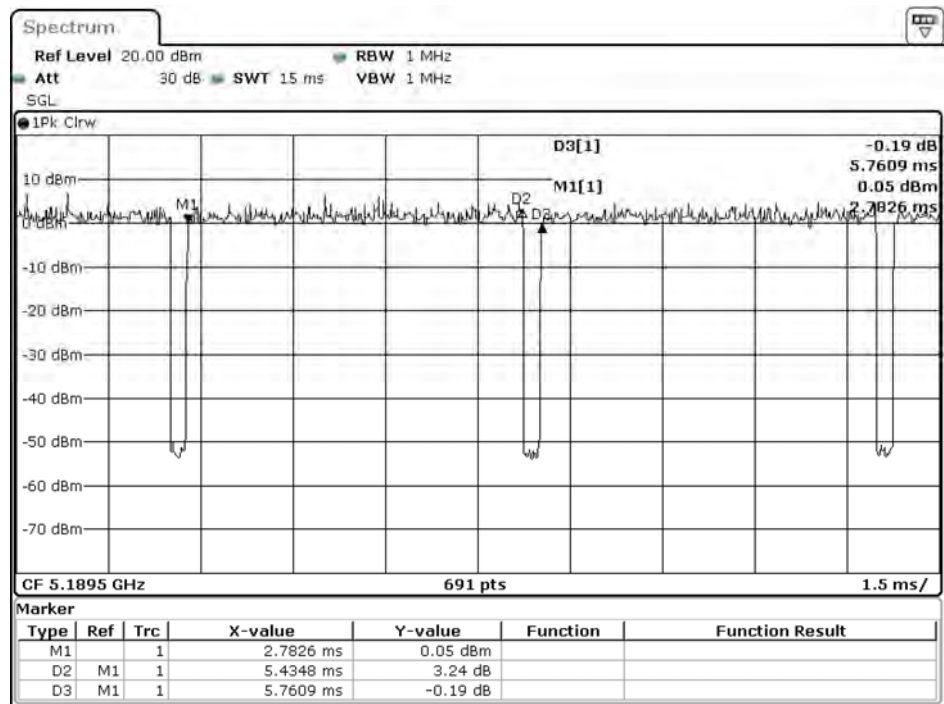
Date: 8.DEC.2020 19:29:52

802.11 ax40-242/61-RU - MIMO



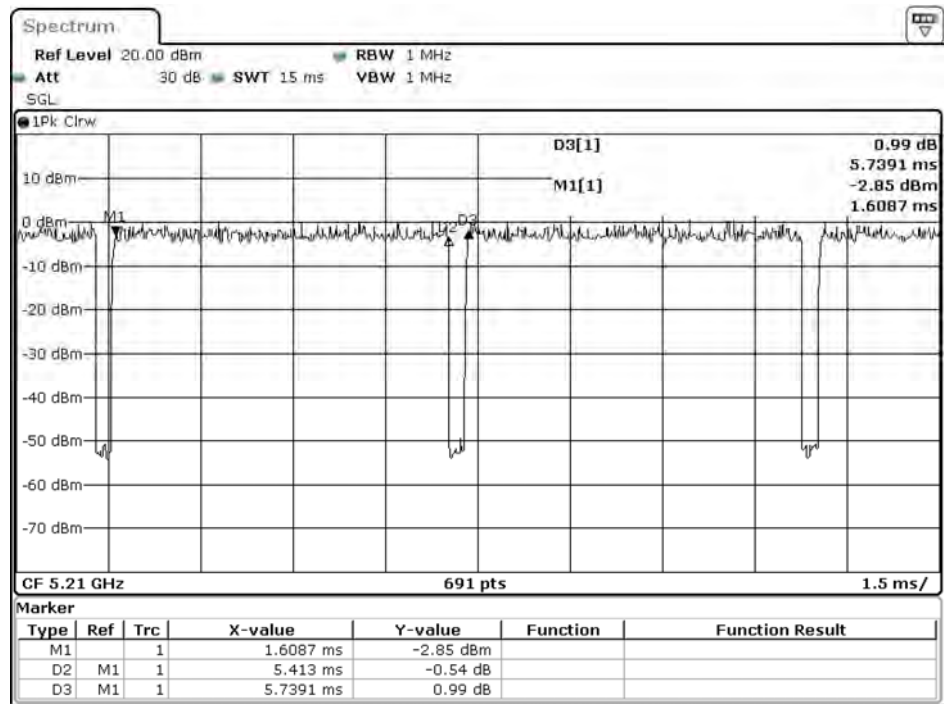
Date: 8.DEC.2020 19:31:17

802.11 ax80-484/65-RU - MIMO



Date: 8.DEC.2020 19:33:13

802.11 ax160-996/67-RU - MIMO



Date: 8.DEC.2020 19:34:56

9. EMI Reduction Method During Compliance Testing

No modification was made during testing.