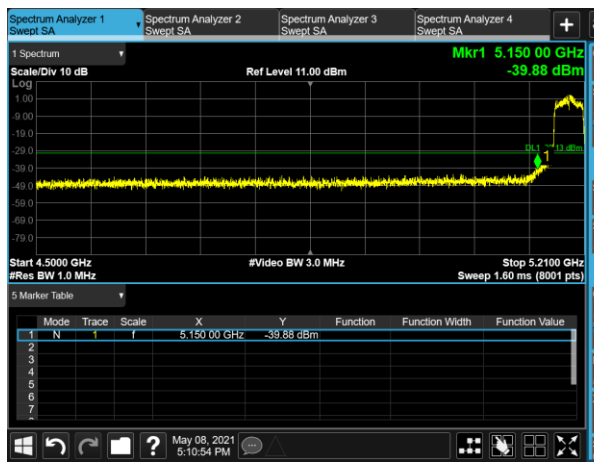


802.11n(40MHz)

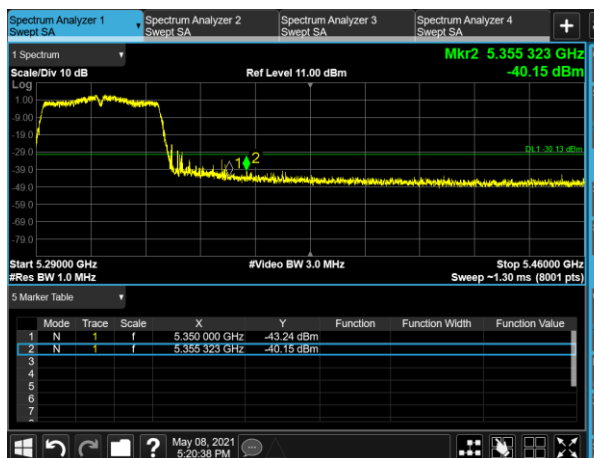
5190MHz with CDD PK



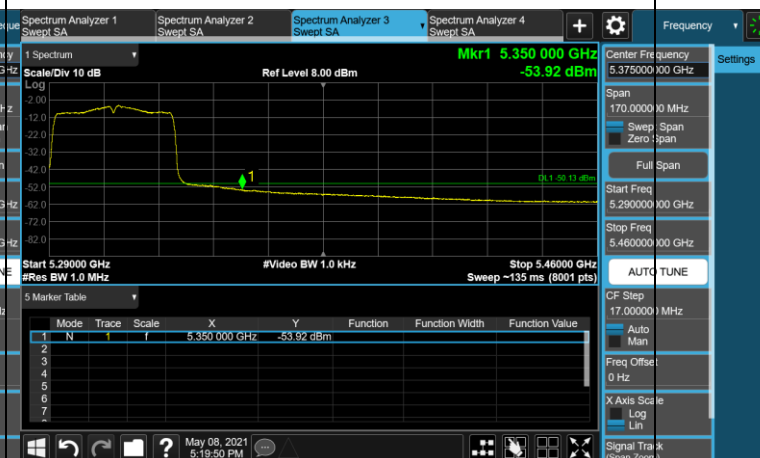
5190MHz with CDD AV



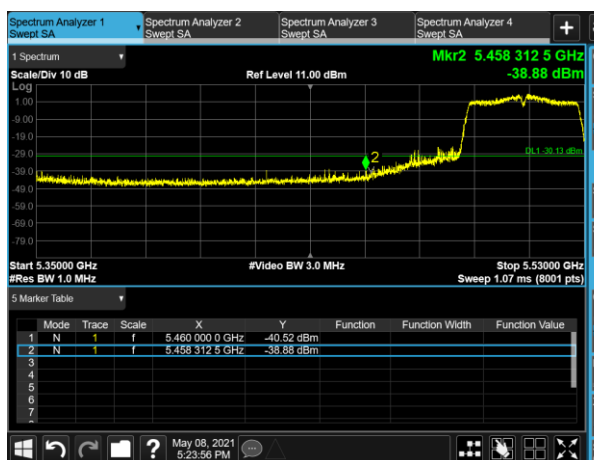
5310MHz with CDD PK



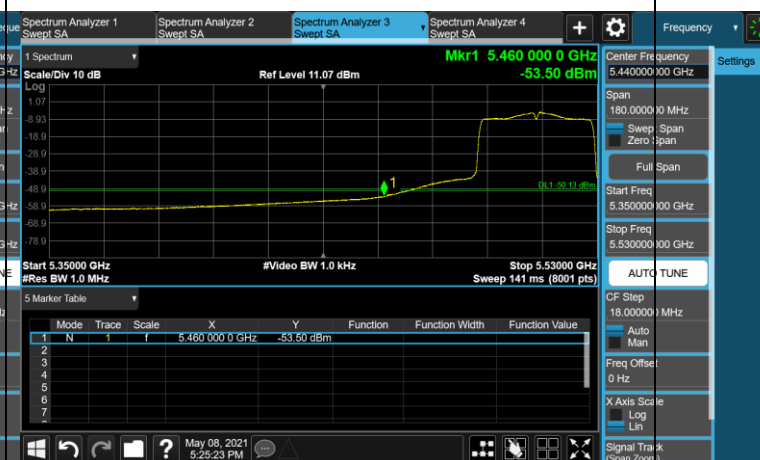
5310MHz with CDD AV

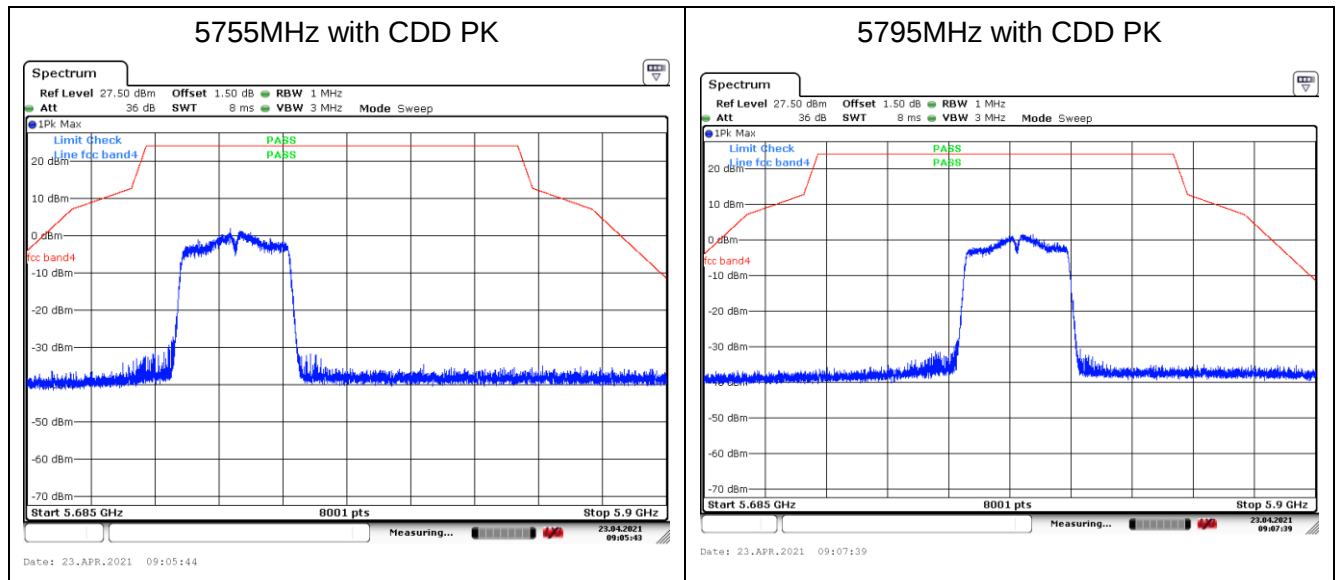


5510MHz with CDD PK



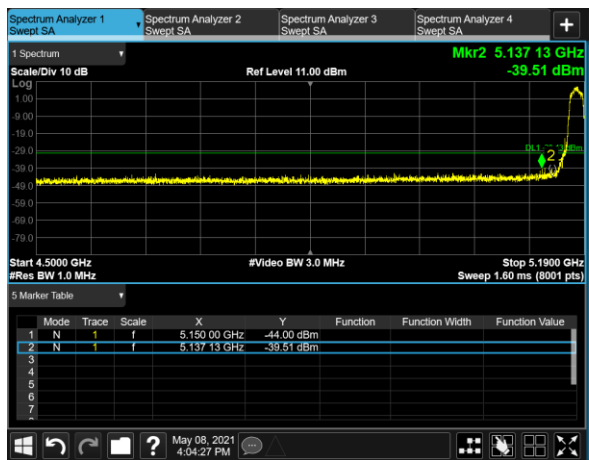
5510MHz with CDD AV



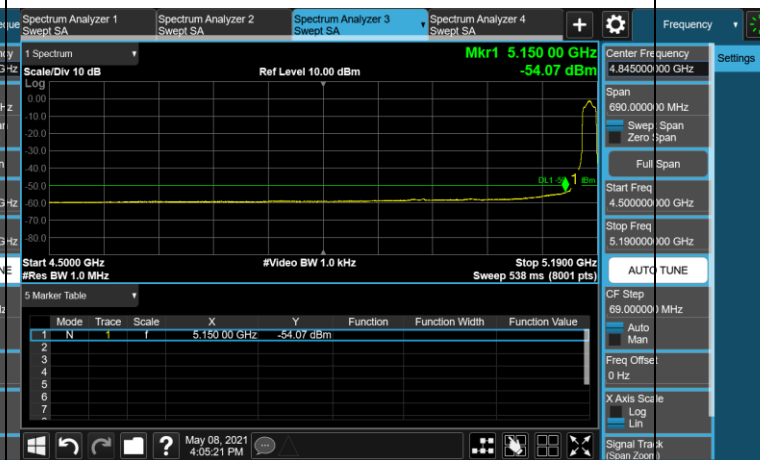


802.11ac(20MHz)

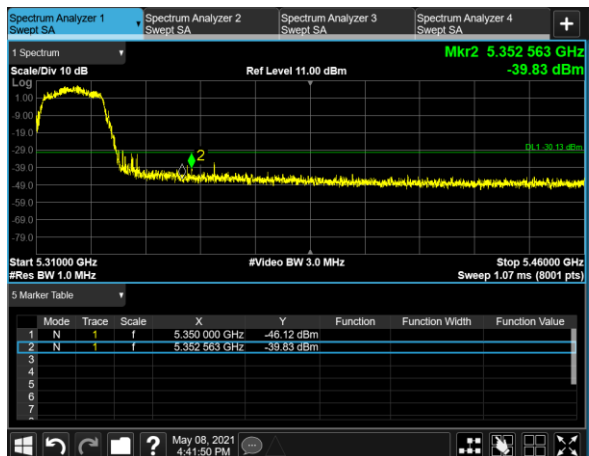
5180MHz with CDD PK



5180MHz with CDD AV



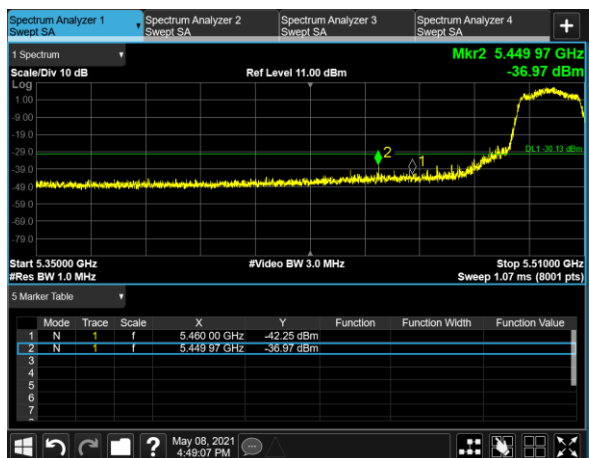
5320MHz with CDD PK



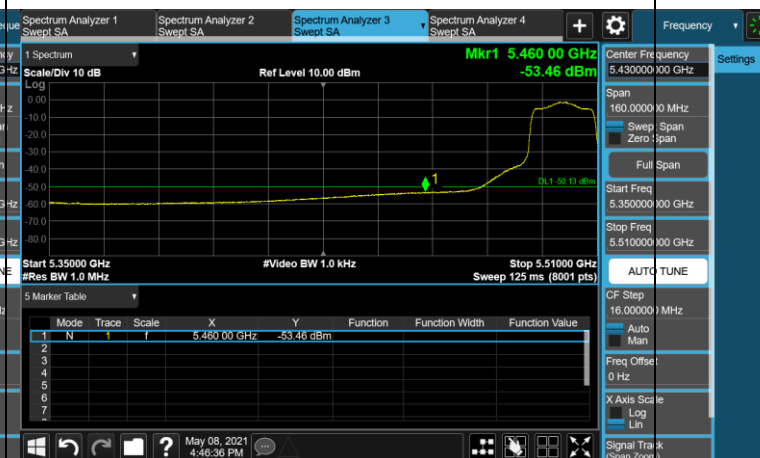
5320MHz with CDD AV



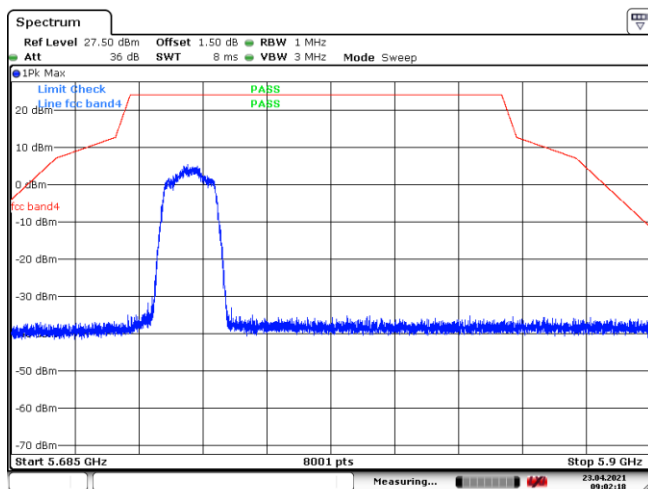
5500MHz with CDD PK



5500MHz with CDD AV

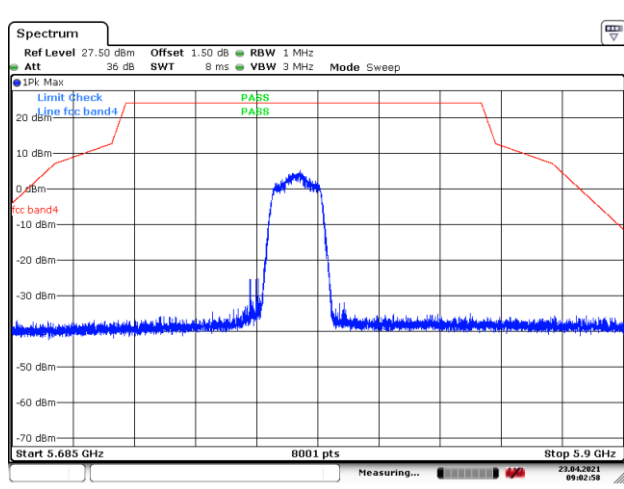


5745MHz with CDD PK



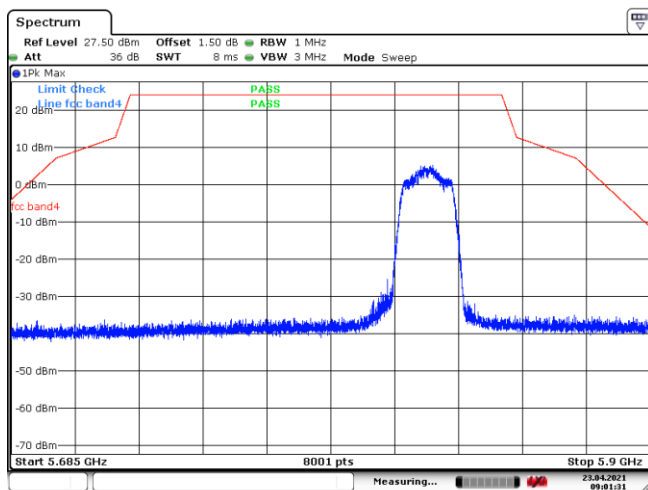
Date: 23.APR.2021 09:02:18

5785MHz with CDD PK



Date: 23.APR.2021 09:02:58

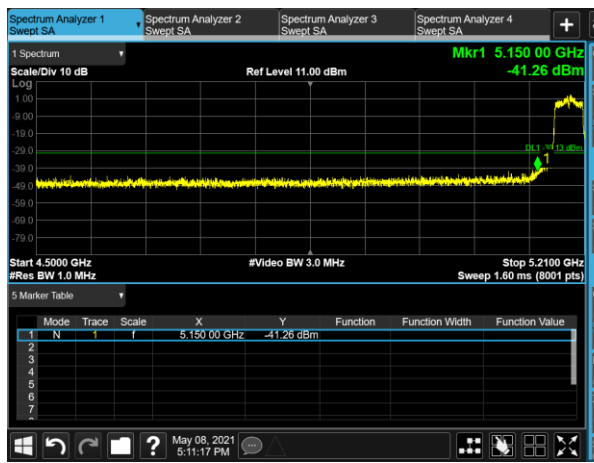
5825MHz with CDD PK



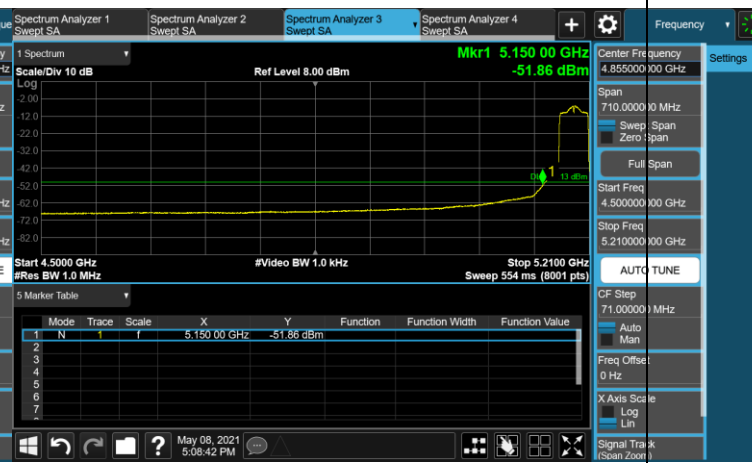
Date: 23.APR.2021 09:01:31

802.11ac(40MHz)

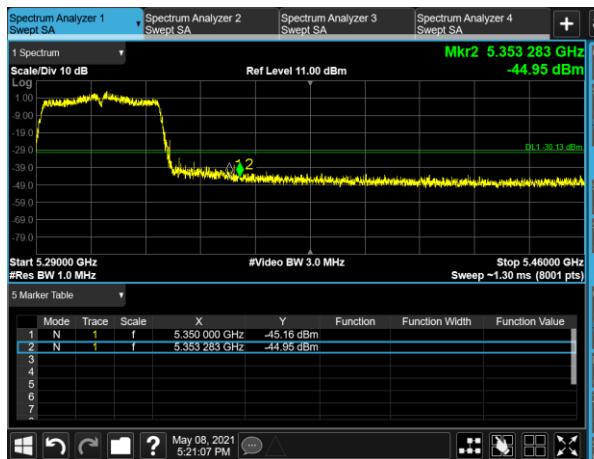
5190MHz with CDD PK



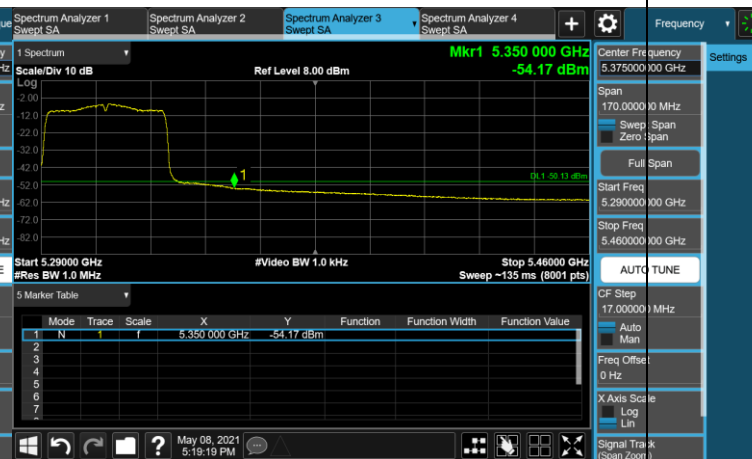
5190MHz with CDD AV



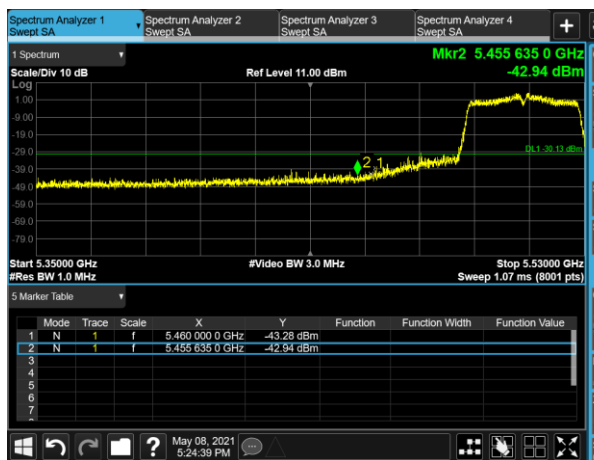
5310MHz with CDD PK



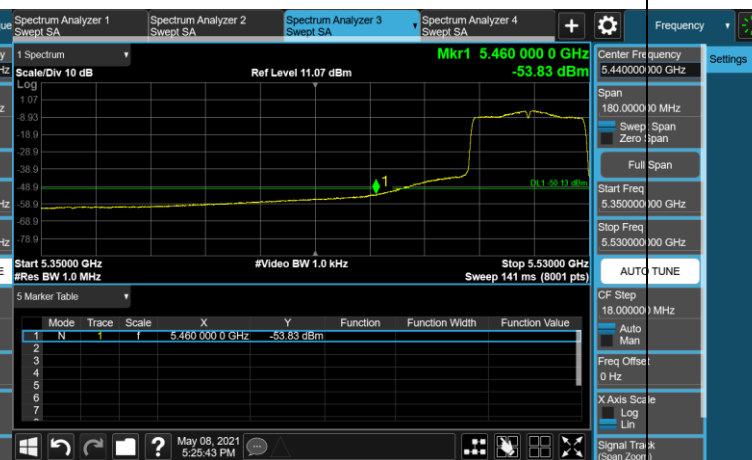
5310MHz with CDD AV

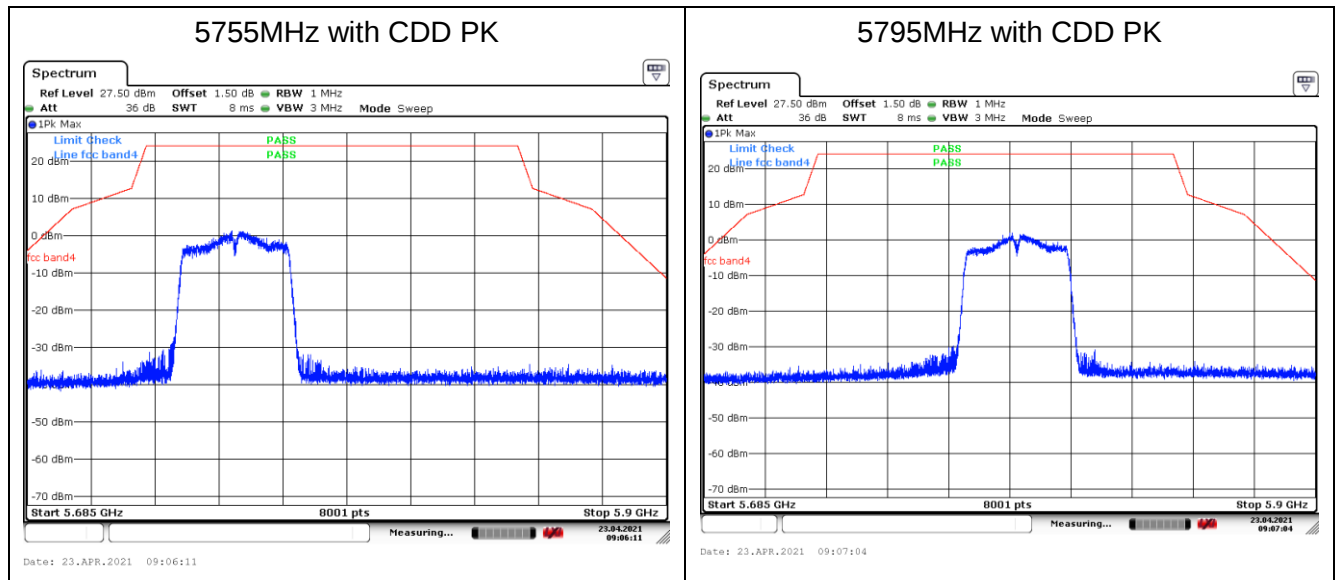


5510MHz with CDD PK



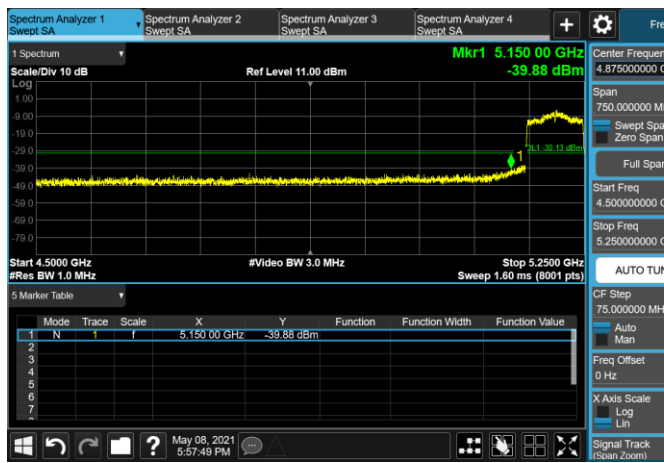
5510MHz with CDD AV



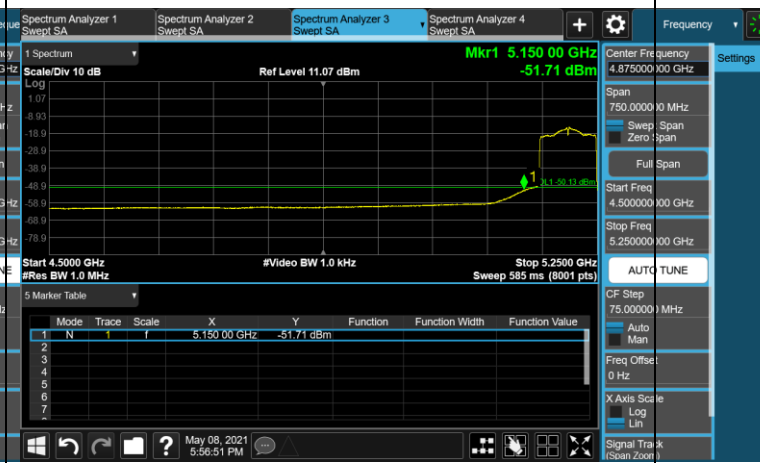


802.11ac(80MHz)

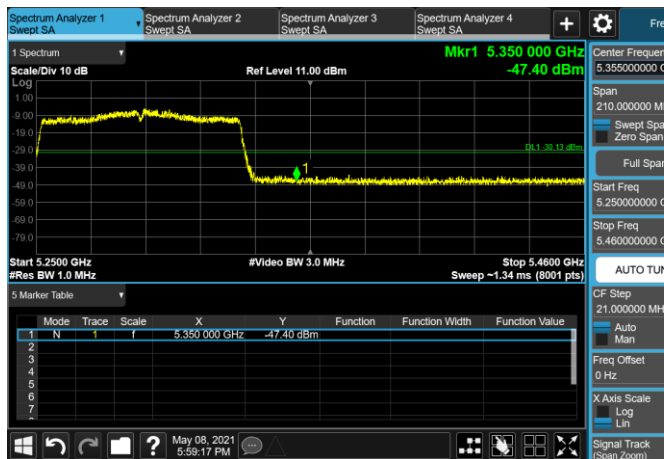
5210MHz with CDD PK



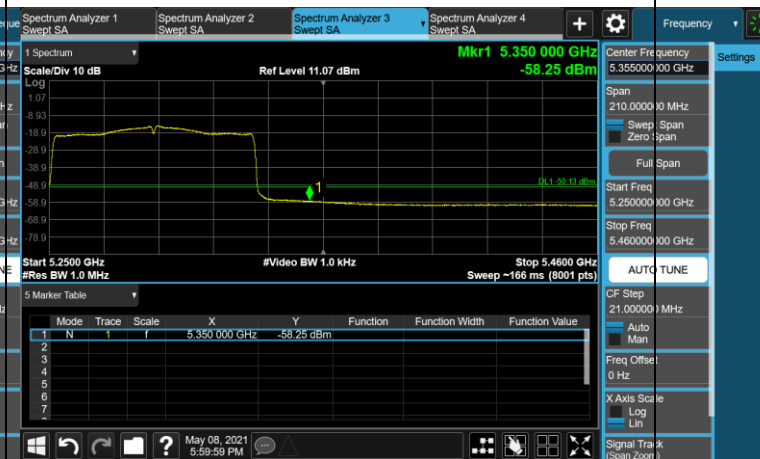
5210MHz with CDD AV



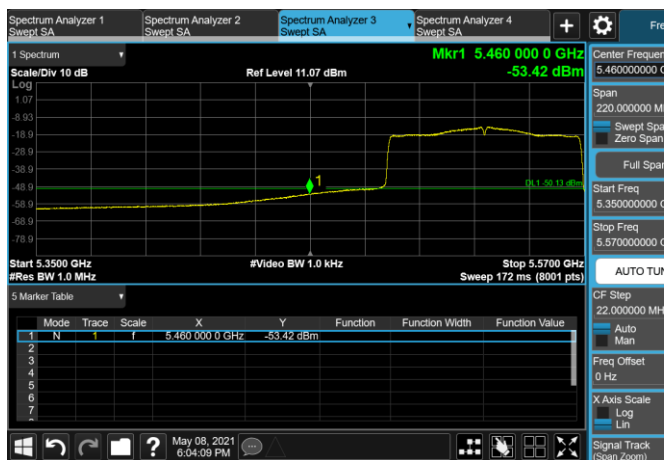
5290MHz with CDD PK



5290MHz with CDD AV

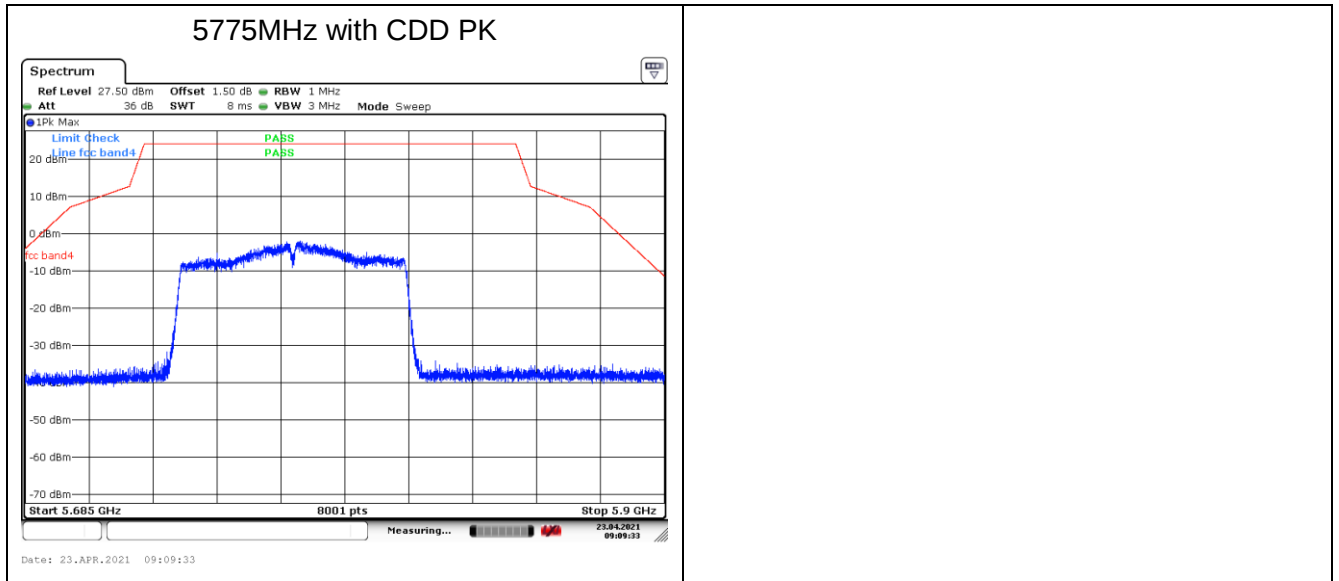


5530MHz with CDD PK



5530MHz with CDD AV





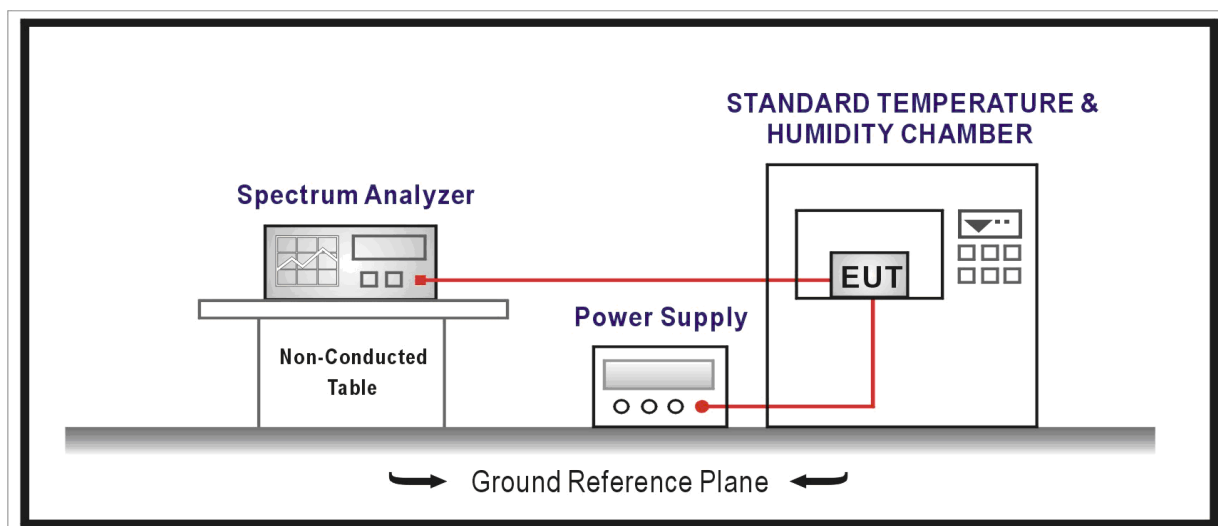
10. Frequency Stability

10.1. Test Equipment

Frequency Stability / TR-7					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2020.08.15	2021.08.14
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2021.03.20	2022.03.19
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2020.08.15	2021.08.14
AC Power Supply	IDRC	CF-500TP	979422	2020.09.16	2021.09.15
DC Power Supply	IDRC	CD-035-020PR	977272	2020.09.16	2021.09.15
Programmable Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2021.01.04	2022.01.03
Temperature/Humidity Meter	RTS	RTS-8S	RF07	2020.08.13	2021.08.12

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

10.2. Test Setup



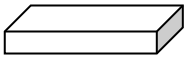
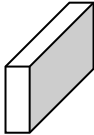
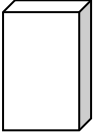
10.3. Limit

Frequency Stability Limit	
UNII Devices	
☒	In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
IEEE Std. 802.11n-2009	
☒	The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band and ± 25 ppm maximum for the 2.4 GHz band.

10.4. Test Procedure

Frequency Stability Test Method				
	References Rule		Chapter	Description
☒	ANSI C63.10		6.8	Frequency stability tests
	☒	ANSI C63.10	6.8.1	Frequency stability with respect to ambient temperature
	☒	ANSI C63.10	6.8.2	Frequency stability when varying supply voltage

10.5. EUT test Axis definition

Item	Frequency Stability				
Device Category	☐	Indoor use			
	☐	Outdoor use			
	☐	Fix position use			
	☒	Client use			
Test mode	Mode 1-6				
Test method	☐	Radiated			
		X Axis	Y Axis	Z Axis	
					
		Worst Axis ☐	Worst Axis ☐	Worst Axis ☐	
	☒	Conducted			
	☒	Chain 1			
					
	☒	Chain 1	Chain 2		
					
	☐	Chain 1	Chain 2	Chain 3	
					
	☐	Chain 1	Chain 2	Chain 3	Chain 4
					

10.6. Test Result

Product Name	:	Touch All In One Computer
Test Mode	:	Carrier Wave

Frequency Stability under Temperature at 0min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	ppm	Limit
-30	5220	-83	-0.016	±20
-20	5220	-126	-0.024	±20
-10	5220	43	0.008	±20
0	5220	21	0.004	±20
10	5220	67	0.013	±20
20	5220	-57	-0.011	±20
30	5220	-90	-0.017	±20
40	5220	118	0.023	±20
50	5220	134	0.026	±20

Frequency Stability under Temperature at 2min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	ppm	Limit
-30	5220	84	0.016	±20
-20	5220	116	0.022	±20
-10	5220	62	0.012	±20
0	5220	49	0.009	±20
10	5220	-37	-0.007	±20
20	5220	-75	-0.014	±20
30	5220	55	0.011	±20
40	5220	101	0.019	±20
50	5220	128	0.025	±20

Frequency Stability under Temperature at 5min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	ppm	Limit
-30	5220	-76	-0.015	± 20
-20	5220	-84	-0.016	± 20
-10	5220	-42	-0.008	± 20
0	5220	34	0.007	± 20
10	5220	47	0.009	± 20
20	5220	97	0.019	± 20
30	5220	83	0.016	± 20
40	5220	-73	-0.014	± 20
50	5220	115	0.022	± 20

Frequency Stability under Temperature at 10min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	ppm	Limit
-30	5220	89	0.017	±20
-20	5220	106	0.020	±20
-10	5220	77	0.015	±20
0	5220	46	0.009	±20
10	5220	53	0.010	±20
20	5220	-62	-0.012	±20
30	5220	-71	-0.014	±20
40	5220	92	0.018	±20
50	5220	84	0.016	±20

Frequency Stability under Voltage

AC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	ppm	Limit
102	5220	75	0.014	±20
120	5220	86	0.016	±20
138	5220	63	0.012	±20

11. Antenna Requirement

11.1. Limit

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

11.2. Antenna Connector Construction

Antenna Connector Construction	
☒	The use of a permanently attached antenna
☐	The antenna use of a unique coupling to the intentional radiator
☐	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document "Internal Photograph" to show the antenna connector.	

_____ The End _____

Appendix 1: 5GHz FCC RF output power

FCC 5GHz Power Table									
Standard:	FCC 15.407	Test Date:	2021.05.06	Temperature:	25℃	Humidity:	55%RH		
Project No. :	2140224R			Product Name:	Touch All one Computer	Model Name:	ESY2214		
Antenna Gain(dBi)		Ant 1	2.73	Ant 2	2.91				
CDD-Directional Gain-Power(dBi)		2.91							
Antenna Technology:	CDD								
Mode:	802.11a	Data Rate:	6Mbps	Conducted power					
				SISO mode					
				Ant1	Ant2	Total Power		Limit	
Test Conditions		Channel	Frequency	Reading Level	Reading Level	Ant1	Ant 2		
			(MHz)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)		Avg. (dBm)	Pass/Fail
Tnom (25℃)	Vnom (120V)	36	5180	9.98	10.33	9.98	10.33	24	Pass
		44	5220	10.04	10.42	10.04	10.42	24	Pass
		48	5240	10.08	10.39	10.08	10.39	24	Pass
		52	5260	12.96	13.34	12.96	13.34	24	Pass
		60	5300	13.27	13.64	13.27	13.64	24	Pass
		64	5320	13.21	13.59	13.21	13.59	24	Pass
		100	5500	13.21	13.54	13.21	13.54	24	Pass
		116	5580	12.91	13.23	12.91	13.23	24	Pass
		140	5700	12.67	13.04	12.67	13.04	24	Pass
		149	5745	6.70	7.05	6.70	7.05	30	Pass
		157	5785	6.13	6.44	6.13	6.44	30	Pass
		165	5825	6.07	6.37	6.07	6.37	30	Pass
Mode:	802.11a	Data Rate:	6Mbps	Conducted power					
				MIMO Mode(2TX+2RX)					
				Ant 1+2		Total Power		Limit	
Test Conditions		Channel	Frequency	Reading Level					
			(MHz)	Avg. (dBm)		Avg. (dBm (Ant 1+2))		Avg. (dBm)	Pass/Fail
		36	5180	9.87	10.25	13.07		24	Pass
		44	5220	9.97	10.35	13.17		24	Pass
		48	5240	10.00	10.32	13.17		24	Pass

Tnom (25 °C)	Vnom (120V)	52	5260	12.79	13.18	16.00	24	Pass			
		60	5300	13.13	13.50	16.33	24	Pass			
		64	5320	13.06	13.47	16.28	24	Pass			
		100	5500	13.05	13.47	16.28	24	Pass			
		116	5580	12.85	13.12	16.00	24	Pass			
		140	5700	12.53	12.97	15.77	24	Pass			
		149	5745	6.64	6.93	9.80	30	Pass			
		157	5785	6.07	6.35	9.22	30	Pass			
		165	5825	5.99	6.24	9.13	30	Pass			
Mode:	802.11n(20MHz)	Data Rate:	MCS0	Conducted power							
				SISO mode							
				Ant1		Ant2		Total Power		Limit	
Test Conditions		Channel	Frequency	Reading Level		Reading Level		Ant1	Ant 2	Limit	
			(MHz)	Avg. (dBm)		Avg. (dBm)		Avg. (dBm)			
Tnom (25 °C)	Vnom (120V)	36	5180	9.85	10.21	9.85	10.21	24	Pass		
		44	5220	9.87	10.31	9.87	10.31	24	Pass		
		48	5240	10.00	10.23	10.00	10.23	24	Pass		
		52	5260	12.83	13.19	12.83	13.19	24	Pass		
		60	5300	13.22	13.54	13.22	13.54	24	Pass		
		64	5320	13.08	13.53	13.08	13.53	24	Pass		
		100	5500	13.08	13.39	13.08	13.39	24	Pass		
		116	5580	12.84	13.07	12.84	13.07	24	Pass		
		140	5700	12.60	12.91	12.60	12.91	24	Pass		
		149	5745	6.61	6.88	6.61	6.88	30	Pass		
		157	5785	6.03	6.28	6.03	6.28	30	Pass		
		165	5825	5.97	6.22	5.97	6.22	30	Pass		
Mode:	802.11n(20MHz)	Data Rate:	MCS0	Conducted power							
				MIMO Mode(2TX+2RX)							
				Ant 1+2			Total Power		Limit		
Test Conditions		Channel	Frequency	Reading Level							
			(MHz)	Avg. (dBm)		Avg. (dBm (Ant 1+2))		Avg. (dBm)	Pass/Fail		
		36	5180	9.91	10.26	13.10	24	Pass			
		44	5220	9.98	10.30	13.15	24	Pass			
		48	5240	9.91	10.25	13.09	24	Pass			
		52	5260	12.84	13.28	16.08	24	Pass			
		60	5300	13.19	13.57	16.39	24	Pass			

Tnom (25 °C)	Vnom (120V)	64	5320	13.09		13.46		16.29		24	Pass
		100	5500	13.07		13.42		16.26		24	Pass
		116	5580	12.79		13.16		15.99		24	Pass
		140	5700	12.52		12.90		15.72		24	Pass
		149	5745	6.57		6.90		9.75		30	Pass
		157	5785	6.07		6.32		9.21		30	Pass
		165	5825	6.01		6.27		9.15		30	Pass
		Mode:	802.11n(40MHz)	Data Rate:	MCS0	Conducted power					
SISO mode											
Ant1						Ant2		Total Power		Limit	
Test Conditions		Channel	Frequency	Reading Level		Reading Level		Ant1	Ant 2		
			(MHz)	Avg. (dBm)		Avg. (dBm)		Avg. (dBm)		Avg. (dBm)	Pass/Fail
Tnom (25 °C)	Vnom (120V)	38	5190	9.26		9.59		9.26	9.59	24	Pass
		46	5230	9.12		9.42		9.12	9.42	24	Pass
		54	5270	11.00		11.36		11.00	11.36	24	Pass
		62	5310	11.18		11.52		11.18	11.52	24	Pass
		102	5510	11.28		11.61		11.28	11.61	24	Pass
		118	5590	11.10		11.46		11.10	11.46	24	Pass
		134	5670	11.20		11.55		11.20	11.55	24	Pass
		151	5755	4.93		5.25		4.93	5.25	30	Pass
Mode:	802.11n(40MHz)	Data Rate:	MCS0	Conducted power							
				MIMO Mode(2TX+2RX)							
				Ant 1+2				Total Power		Limit	
Test Conditions		Channel	Frequency	Reading Level							
			(MHz)	Avg. (dBm)		Avg. (dBm (Ant 1+2))		Avg. (dBm)	Pass/Fail		
Tnom (25 °C)	Vnom (120V)	38	5190	9.39		9.66		12.54		24	Pass
		46	5230	9.23		9.48		12.37		24	Pass
		54	5270	11.09		11.44		14.28		24	Pass
		62	5310	11.26		11.65		14.47		24	Pass
		102	5510	11.44		11.69		14.58		24	Pass
		118	5590	11.19		11.61		14.42		24	Pass
		134	5670	11.33		11.65		14.50		24	Pass
		151	5755	5.01		5.36		8.20		30	Pass
Mode:	802.11n(40MHz)	Data Rate:	MCS0	Conducted power							

Mode:	802.11ac(20MHz)	Data Rate:	MCS0	SISO mode					
				Ant1	Ant2	Total Power		Limit	
Test Conditions		Channel	Frequency	Reading Level	Reading Level	Ant1	Ant 2		
			(MHz)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)		Avg. (dBm)	Pass/Fail
Tnom (25 °C)	Vnom (120V)	36	5180	9.87	10.18	9.87	10.18	24	Pass
		44	5220	9.97	10.26	9.97	10.26	24	Pass
		48	5240	9.95	10.24	9.95	10.24	24	Pass
		52	5260	12.85	13.17	12.85	13.17	24	Pass
		60	5300	13.18	13.54	13.18	13.54	24	Pass
		64	5320	13.16	13.42	13.16	13.42	24	Pass
		100	5500	13.10	13.43	13.10	13.43	24	Pass
		116	5580	12.78	13.11	12.78	13.11	24	Pass
		140	5700	12.51	12.94	12.51	12.94	24	Pass
		149	5745	6.56	6.88	6.56	6.88	30	Pass
		157	5785	6.07	6.38	6.07	6.38	30	Pass
		165	5825	5.94	6.22	5.94	6.22	30	Pass
Mode:	802.11ac(20MHz)	Data Rate:	MCS0	Conducted power					
				MIMO Mode(2TX+2RX)					
Test Conditions		Channel	Frequency	Ant 1+2		Total Power		Limit	
				Reading Level					
				(MHz)	Avg. (dBm)		Avg. (dBm (Ant 1+2))	Avg. (dBm)	Pass/Fail
Tnom (25 °C)	Vnom (120V)	36	5180	9.88	10.27	13.09	24	Pass	
		44	5220	9.88	10.34	13.13	24	Pass	
		48	5240	10.02	10.30	13.17	24	Pass	
		52	5260	12.80	13.22	16.03	24	Pass	
		60	5300	13.11	13.52	16.33	24	Pass	
		64	5320	13.06	13.46	16.27	24	Pass	
		100	5500	13.07	13.47	16.28	24	Pass	
		116	5580	12.76	13.09	15.94	24	Pass	
		140	5700	12.54	12.97	15.77	24	Pass	
		149	5745	6.63	6.89	9.77	30	Pass	
		157	5785	6.00	6.30	9.16	30	Pass	
		165	5825	5.92	6.24	9.09	30	Pass	
Mode:	802.11ac(40MHz)	Data Rate:	NSSMCS0	Conducted power					
				SISO mode					
				Ant1	Ant2	Total Power	Limit		

Test Conditions		Channel	Frequency	Reading Level	Reading Level	Ant1	Ant 2	Limit		
			(MHz)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)		Avg. (dBm)	Pass/Fail	
Tnom (25 °C)	Vnom (120V)	38	5190	9.40	9.72	9.40	9.72	24	Pass	
		46	5230	9.27	9.48	9.27	9.48	24	Pass	
		54	5270	11.09	11.49	11.09	11.49	24	Pass	
		62	5310	11.35	11.63	11.35	11.63	24	Pass	
		102	5510	11.37	11.72	11.37	11.72	24	Pass	
		118	5590	11.18	11.59	11.18	11.59	24	Pass	
		134	5670	11.28	11.70	11.28	11.70	24	Pass	
		151	5755	5.07	5.39	5.07	5.39	30	Pass	
		159	5795	4.79	5.13	4.79	5.13	30	Pass	
Mode:	802.11ac(40MHz)	Data Rate:	NSSMCS0	Conducted power						
				MIMO Mode(2TX+2RX)						
Test Conditions		Channel	Frequency	Ant 1+2		Total Power		Limit		
			Reading Level							
				Avg. (dBm)						
			(MHz)	Ant1	Ant2	Avg. (dBm (Ant 1+2))	Avg. (dBm)	Pass/Fail		
Tnom (25 °C)	Vnom (120V)	38	5190	9.42	9.69	12.57	24	Pass		
		46	5230	9.27	9.49	12.39	24	Pass		
		54	5270	11.10	11.44	14.28	24	Pass		
		62	5310	11.34	11.64	14.50	24	Pass		
		102	5510	11.42	11.75	14.60	24	Pass		
		118	5590	11.24	11.54	14.40	24	Pass		
		134	5670	11.25	11.70	14.49	24	Pass		
		151	5755	5.02	5.30	8.17	30	Pass		
		159	5795	4.73	5.10	7.93	30	Pass		
Mode:	802.11ac(80MHz)	Data Rate:	NSSMCS0	Conducted power						
				SISO mode						
Test Conditions		Channel	Frequency	Ant1	Ant2	Total Power		Limit		
			Reading Level		Reading Level		Ant1	Ant 2		
			(MHz)	Avg. (dBm)		Avg. (dBm)		Avg. (dBm)		Avg. (dBm)
Tnom (25 °C)	Vnom (120V)	42	5210	8.55	8.89	8.55	8.89	24	Pass	
		58	5290	10.52	10.92	10.52	10.92	24	Pass	
		106	5530	10.42	10.76	10.42	10.76	24	Pass	
		155	5775	4.12	4.42	4.12	4.42	30	Pass	
				Conducted power						

Mode:	802.11ac(80MHz)	Data Rate:	NSSMCS0	MIMO Mode(2TX+2RX)				
				Ant 1+2		Total Power	Limit	
Test Conditions		Channel	Frequency	Reading Level			Avg. (dBm (Ant 1+2))	Avg. (dBm)
				Avg. (dBm)				
			(MHz)	Ant1	Ant2			
Tnom (25 °C)	Vnom (120V)	42	5210	8.60	8.04	11.34	24	Pass
		58	5290	10.57	11.05	13.83	24	Pass
		106	5530	10.50	10.83	13.68	24	Pass
		155	5775	4.21	4.57	7.40	30	Pass