



B.Test Plot:



(Channel 36, 5180MHz, 802.11a, ANT1)



(Channel 44, 5220MHz, 802.11a, ANT1)



(Channel 48, 5240MHz, 802.11a, ANT1)



(Channel 52, 5260MHz, 802.11a, ANT1)



(Channel 60, 5300MHz, 802.11a, ANT1)



(Channel 64, 5320MHz, 802.11a, ANT1)



(Channel 100, 5500MHz, 802.11a, ANT1)



(Channel 120, 5600MHz, 802.11a, ANT1)



(Channel 144, 5720MHz, 802.11a, ANT1)



(Channel 144, 5720MHz, 802.11a, ANT1)



(Channel 149, 5745MHz, 802.11a, ANT1)



(Channel 157, 5785MHz, 802.11a, ANT1)



(Channel 165, 5825MHz, 802.11a, ANT1)

**802.11n (HT20) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5180	-3.52	-2.92	0.85	0.65	10.63	PASS
5220	-2.87	-2.58		1.14		
5240	-2.91	-2.53		1.14		
5260	-2.87	-2.54		1.16		
5300	-2.63	-2.15		1.48		
5320	-2.42	-1.82		1.75		
5500	-3.42	-2.83		0.75		
5600	-3.90	-2.71		0.60		
5720	-3.28	-2.60		0.93		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5720	-6.10	-5.26	0.85	-1.80	29.63	PASS
5745	-5.65	-5.26		-1.59		
5785	-5.43	-5.41		-1.56		
5825	-5.59	-5.41		-1.64		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						





B.Test Plot:



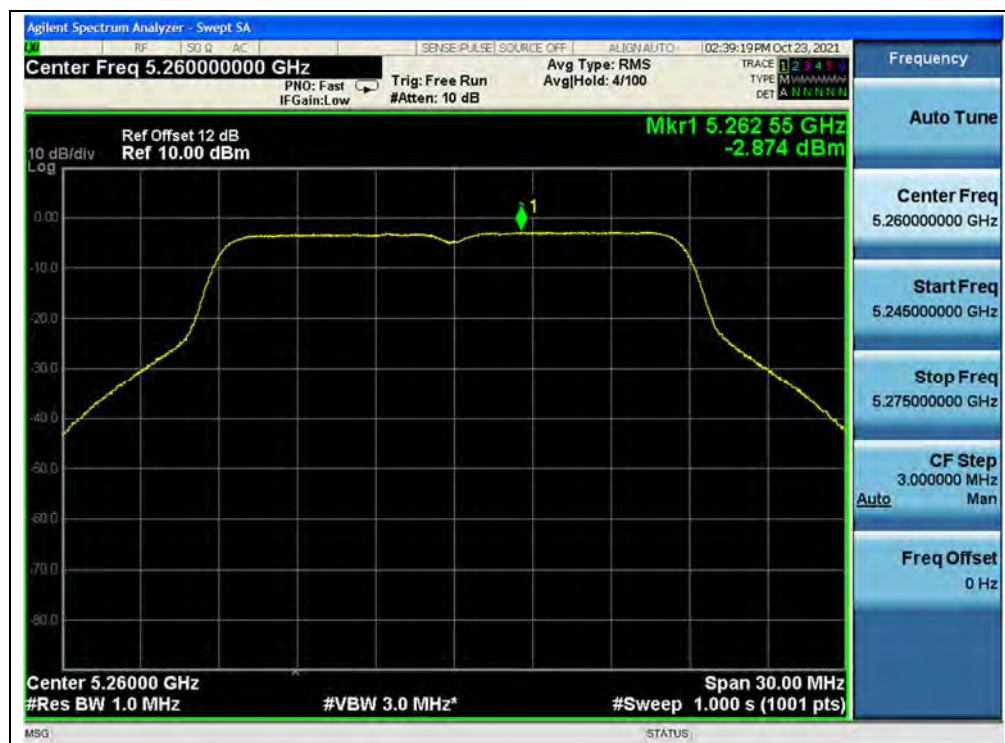
(Channel 36, 5180MHz, 802.11n (HT20), ANT1)



(Channel 44, 5220MHz, 802.11n (HT20), ANT1)



(Channel 48, 5240MHz, 802.11n (HT20), ANT1)



(Channel 52, 5260MHz, 802.11n (HT20), ANT1)



(Channel 60, 5300MHz, 802.11n (HT20), ANT1)



(Channel 64, 5320MHz, 802.11n (HT20), ANT1)



(Channel 100, 5500MHz, 802.11n (HT20), ANT1)



(Channel 120, 5600MHz, 802.11n (HT20), ANT1)



(Channel 144, 5720MHz, 802.11n (HT20), ANT1)



(Channel 144, 5720MHz, 802.11n (HT20), ANT1)



(Channel 149, 5745MHz, 802.11n (HT20), ANT1)



(Channel 157, 5785MHz, 802.11n (HT20), ANT1)



(Channel 165, 5825MHz, 802.11n (HT20), ANT1)

**802.11n (HT40) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5190	-6.15	-5.92	0.82	-2.20	10.63	PASS
5230	-5.88	-5.56		-1.89		
5270	-5.81	-5.47		-1.81		
5310	-5.53	-4.88		-1.36		
5510	-6.43	-5.77		-2.26		
5630	-6.80	-5.51		-2.28		
5710	-6.50	-5.41		-2.09		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5710	-9.18	-8.16	0.82	-4.81	29.63	PASS
5755	-8.59	-8.32		-4.62		
5795	-8.39	-8.40		-4.56		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



Agilent Spectrum Analyzer - Swept SA

RF 50 Q AC SENSE:PULSE SOURCE:OFF ALIGN:AUTO 02:58:00 PM Oct 23, 2021

Center Freq 5.190000000 GHz

PN0: Fast IF Gain: Low Trig: Free Run Avg Type: RMS Avg/Hold: 4/100

TRACE 1 2 3 4 5 6 7 TYPE M W W W W W W W DET A N N N N N N

Ref Offset 12 dB Ref 10.00 dBm

Mkr1 5.20248 GHz -6.145 dBm

10 dB/div Log

Center 5.19000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Span 60.00 MHz #Sweep 1.000 s (1001 pts)

Frequency

Auto Tune

Center Freq 5.190000000 GHz

Start Freq 5.160000000 GHz

Stop Freq 5.220000000 GHz

CF Step 6.000000 MHz

Auto Man

Freq Offset 0 Hz

Agilent Spectrum Analyzer - Swept SA

3.7 RF 50.0 AC SENSE: PULS(E) SOURCE: OFF ALIGN: AUTO 102:58:18 PM Oct 23, 2021

Center Freq 5.230000000 GHz PNO: Fast IF Gain: Low Trig: Free Run Avg Type: RMS Avg/Hold: 2/100

TRACE 1 2 3 4 5 TYPE M H A A A A A A A A DET A N N N N N N

Ref Offset 12 dB Ref 10.00 dBm

Mkr1 5.242 54 GHz -5.877 dBm

10 dB/div Log

Center 5.23000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* #Sweep 1.000 s (1001 pts) Span 60.00 MHz

MSG STATUS

Frequency

Auto Tune

Center Freq 5.230000000 GHz

Start Freq 5.200000000 GHz

Stop Freq 5.260000000 GHz

CF Step 6.000000 MHz

Auto Man

Freq Offset 0 Hz

MORLAB

E-mail: service@morlab.cn



(Channel 54, 5270MHz, 802.11n (HT40), ANT1)



(Channel 62, 5310MHz, 802.11n (HT40), ANT1)



(Channel 102, 5510MHz, 802.11n (HT40), ANT1)



(Channel 126, 5630 MHz, 802.11n (HT40), ANT1)



(Channel 142, 5710MHz, 802.11n (HT40), ANT1)



(Channel 142, 5710MHz, 802.11n (HT40), ANT1)



(Channel 151, 5755MHz, 802.11n (HT40), ANT1)



(Channel 159, 5795MHz, 802.11n (HT40), ANT1)

**802.11ac (VHT20) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5180	-3.59	-2.99	0.89	0.62	10.63	PASS
5220	-2.87	-2.67		1.13		
5240	-3.02	-2.56		1.12		
5260	-2.89	-2.69		1.11		
5300	-2.58	-2.22		1.50		
5320	-2.34	-1.86		1.81		
5500	-3.46	-2.96		0.70		
5600	-4.12	-2.79		0.50		
5720	-3.56	-2.70		0.79		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5720	-6.19	-5.46	0.89	-1.91	29.63	PASS
5745	-5.78	-5.35		-1.66		
5785	-5.60	-5.51		-1.65		
5825	-5.66	-5.52		-1.69		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 36, 5180MHz, 802.11ac (VHT20), ANT1)



(Channel 44, 5220MHz, 802.11ac (VHT20), ANT1)



(Channel 48, 5240MHz, 802.11ac (VHT20), ANT1)



(Channel 52, 5260MHz, 802.11ac (VHT20), ANT1)



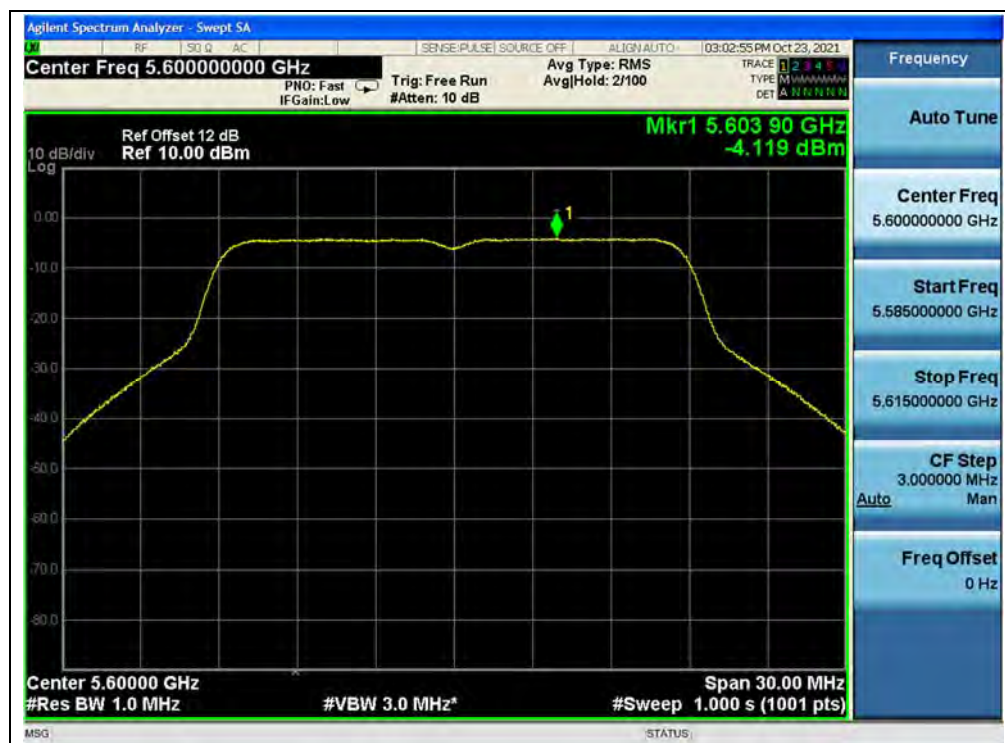
(Channel 60, 5300MHz, 802.11ac (VHT20), ANT1)



(Channel 64, 5320MHz, 802.11ac (VHT20), ANT1)



(Channel 100, 5500MHz, 802.11ac (VHT20), ANT1)



(Channel 120, 5600MHz, 802.11ac (VHT20), ANT1)



(Channel 144, 5720MHz, 802.11ac (VHT20), ANT1)



(Channel 144, 5720MHz, 802.11ac(VHT20), ANT1)



(Channel 149, 5745MHz, 802.11ac (VHT20), ANT1)



(Channel 157, 5785MHz, 802.11ac (VHT20), ANT1)



(Channel 165, 5825MHz, 802.11ac (VHT20), ANT1)





802.11ac (VHT40) Mode

A.Test Verdict:

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5190	-6.22	-6.03	0.89	-2.22	10.63	PASS
5230	-5.90	-5.64		-1.87		
5270	-5.76	-5.55		-1.75		
5310	-5.45	-4.92		-1.28		
5510	-6.37	-5.82		-2.19		
5630	-6.68	-5.62		-2.22		
5710	-6.44	-5.48		-2.03		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5710	-9.13	-8.24	0.89	-4.76	29.63	PASS
5755	-8.61	-8.30		-4.55		
5795	-8.44	-8.37		-4.50		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 38, 5190MHz, 802.11ac (VHT40), ANT1)



(Channel 46, 5230MHz, 802.11ac (VHT40), ANT1)



(Channel 54, 5270MHz, 802.11ac (VHT40), ANT1)



(Channel 62, 5310MHz, 802.11ac (VHT40), ANT1)



(Channel 102, 5510MHz, 802.11ac (VHT40), ANT1)



(Channel 126, 5630MHz, 802.11ac (VHT40), ANT1)



(Channel 142, 5710MHz, 802.11ac (VHT40), ANT1)



(Channel 142, 5710MHz, 802.11ac (VHT40), ANT1)



(Channel 151, 5755MHz, 802.11ac (VHT40), ANT1)



(Channel 159, 5795MHz, 802.11ac (VHT40), ANT1)

**802.11ac (VHT80) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5210	-8.09	-8.06	0.70	-4.36	10.63	PASS
5290	-7.91	-7.53		-4.01		
5530	-8.82	-7.92		-4.64		
5610	-9.17	-8.17		-4.93		
5690	-8.64	-7.82		-4.50		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5690	-11.38	-10.49	0.70	-7.20	29.63	PASS
5775	-10.72	-10.69		-6.99		

Note: Directional gain = $3.36\text{dBi} + 10\log(2) = 6.37\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11 - (6.37 - 6) = 10.63\text{dBm}$ for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to $30 - (6.37 - 6) = 29.63\text{dBm}$ for 5.745-5.825 GHz band.

B.Test Plot:

(Channel 42, 5210MHz, 802.11ac (VHT80), ANT1)



(Channel 58, 5290MHz, 802.11ac (VHT80), ANT1)



(Channel 106, 5530MHz, 802.11ac (VHT80), ANT1)



(Channel 122, 5610MHz, 802.11ac (VHT80), ANT1)



(Channel 138, 5690MHz, 802.11ac (VHT80), ANT1)



(Channel 138, 5690MHz, 802.11ac (VHT80), ANT1)



(Channel 155, 5775MHz, 802.11ac (VHT80), ANT1)

**802.11ax (HEW20) Mode****A.Test Verdict:**

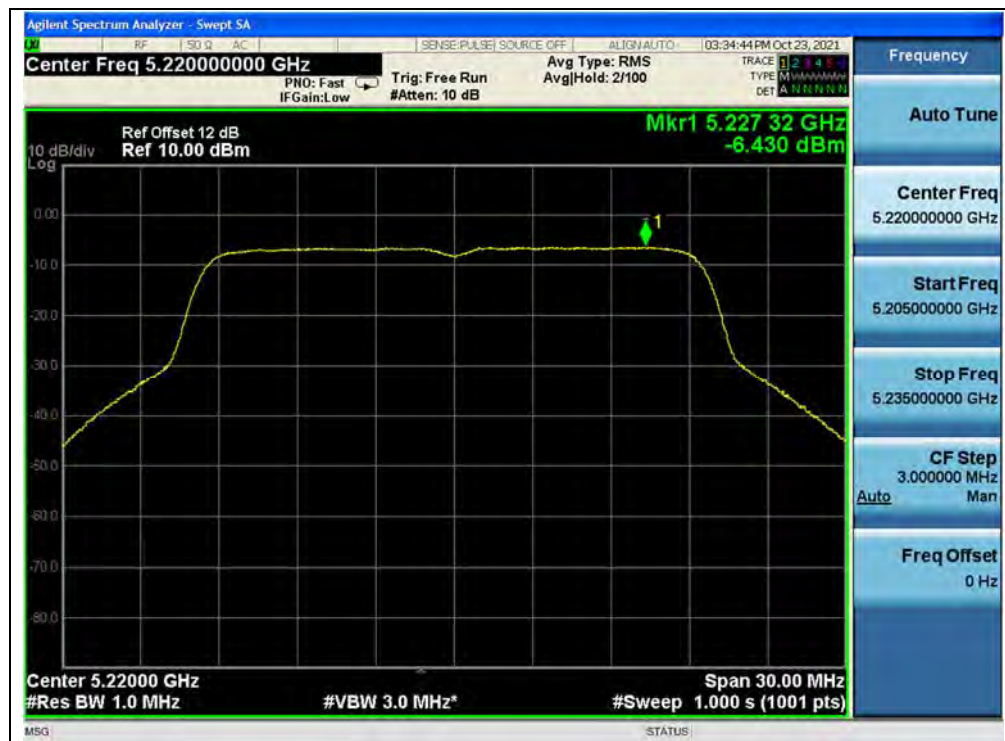
Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5180	-7.17	-6.64	0.81	-3.08	10.63	PASS
5220	-6.43	-6.14		-2.46		
5240	-6.48	-6.15		-2.49		
5260	-6.41	-6.14		-2.45		
5300	-6.01	-5.66		-2.01		
5320	-5.82	-5.33		-1.75		
5500	-6.90	-6.40		-2.82		
5600	-7.45	-6.26		-2.99		
5720	-6.87	-6.27		-2.74		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5720	-9.52	-8.81	0.81	-5.33	29.63	PASS
5745	-9.20	-8.82		-5.19		
5785	-8.93	-9.08		-5.18		
5825	-9.07	-8.93		-5.18		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 36, 5180MHz, 802.11ax (HEW20), ANT1)



(Channel 44, 5220MHz, 802.11ax (HEW20), ANT1)



(Channel 48, 5240MHz, 802.11ax (HEW20), ANT1)



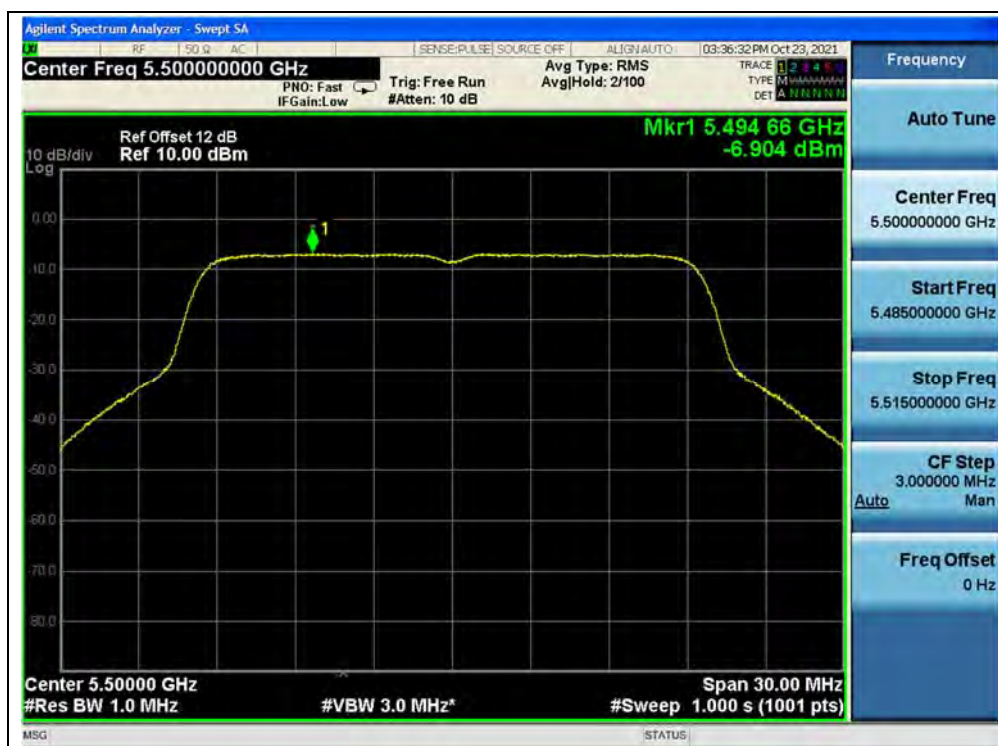
(Channel 52, 5260MHz, 802.11ax (HEW20), ANT1)



(Channel 60, 5300MHz, 802.11ax (HEW20), ANT1)



(Channel 64, 5320MHz, 802.11ax (HEW20), ANT1)



(Channel 100, 5500MHz, 802.11ax (HEW20), ANT1)



(Channel 120, 5600MHz, 802.11ax (HEW20), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20), ANT1)



(Channel 149, 5745MHz, 802.11ax (HEW20), ANT1)



(Channel 157, 5785MHz, 802.11ax (HEW20), ANT1)



(Channel 165, 5825MHz, 802.11ax (HEW20), ANT1)

**802.11ax (HEW20)(RU26) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5180	5.75	5.53	0.49	9.14	10.63	PASS
5220	5.92	6.01		9.47		
5240	5.84	5.99		9.42		
5260	5.79	5.94		9.37		
5300	6.07	6.52		9.80		
5320	6.22	6.59		9.91		
5500	4.78	5.83		8.84		
5600	4.13	5.91		8.61		
5720	4.94	6.35		9.20		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5720	2.20	3.67	0.49	6.50	29.63	PASS
5745	2.52	3.74		6.67		
5785	2.64	3.62		6.66		
5825	2.32	3.10		6.23		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 36, 5180MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 44, 5220MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 48, 5240MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 52, 5260MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 60, 5300MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 64, 5320MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 100, 5500MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 120, 5600MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 149, 5745MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 157, 5785MHz, 802.11ax (HEW20)(RU26), ANT1)



(Channel 165, 5825MHz, 802.11ax (HEW20)(RU26), ANT1)

**802.11ax (HEW20)(RU52) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5180	2.82	2.97	0.49	6.40	10.63	PASS
5220	3.35	3.43		6.89		
5240	3.05	3.13		6.59		
5260	3.15	3.11		6.63		
5300	3.40	3.23		6.82		
5320	3.66	3.79		7.23		
5500	2.57	2.77		6.17		
5600	2.19	2.90		6.06		
5720	2.97	3.47		6.73		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5720	0.03	0.60	0.49	3.82	29.63	PASS
5745	0.42	0.69		4.06		
5785	0.47	0.31		3.89		
5825	0.27	0.46		3.87		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 36, 5180MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 44, 5220MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 48, 5240MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 52, 5260MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 60, 5300MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 64, 5320MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 100, 5500MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 120, 5600MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 149, 5745MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 157, 5785MHz, 802.11ax (HEW20)(RU52), ANT1)



(Channel 165, 5825MHz, 802.11ax (HEW20)(RU52), ANT1)

**802.11ax (HEW20)(RU106) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5180	0.05	0.24	0.49	3.65	10.63	PASS
5220	0.39	0.40		3.90		
5240	0.23	0.31		3.77		
5260	0.35	0.17		3.76		
5300	0.34	0.54		3.94		
5320	0.58	0.65		4.12		
5500	-0.41	0.04		3.32		
5600	-0.71	-0.04		3.14		
5720	0.07	0.46		3.77		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5720	-2.73	-2.26	0.49	1.01	29.63	PASS
5745	-2.41	-2.28		1.47		
5785	-2.28	-2.53		1.41		
5825	-5.57	-2.45		0.07		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 36, 5180MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 44, 5220MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 48, 5240MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 52, 5260MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 60, 5300MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 64, 5320MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 100, 5500MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 120, 5600MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 144, 5720MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 149, 5745MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 157, 5785MHz, 802.11ax (HEW20)(RU106), ANT1)



(Channel 165, 5825MHz, 802.11ax (HEW20)(RU106), ANT1)





802.11ax (HEW40) Mode

A.Test Verdict:

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5190	-10.00	-9.54	0.80	-5.95	10.63	PASS
5230	-9.69	-9.20		-5.63		
5270	-9.61	-9.00		-5.48		
5310	-9.17	-8.51		-5.02		
5510	-10.07	-9.31		-5.86		
5630	-10.64	-9.43		-6.18		
5710	-10.20	-9.08		-5.79		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5710	-12.89	-11.77	0.80	-8.48	29.63	PASS
5755	-12.26	-11.76		-8.19		
5795	-12.18	-11.95		-8.25		
Note: Directional gain = 3.36dBi +10log(2) = 6.37dBi>6dBi, so the limit shall be reduced to 11-(6.37-6) = 10.63dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to 30-(6.37-6) = 29.63dBm for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 38, 5190MHz, 802.11ax (HEW40), ANT1)



(Channel 46, 5230MHz, 802.11ax (HEW40), ANT1)



(Channel 54, 5270MHz, 802.11ax (HEW40), ANT1)



(Channel 62, 5310MHz, 802.11ax (HEW40), ANT1)



(Channel 102, 5510MHz, 802.11ax (HEW40), ANT1)



(Channel 126, 5630MHz, 802.11ax (HEW40), ANT1)



(Channel 142, 5710MHz, 802.11ax (HEW40), ANT1)



(Channel 142, 5710MHz, 802.11ax (HEW40), ANT1)



(Channel 151, 5755MHz, 802.11ax (HEW40), ANT1)



(Channel 159, 5795MHz, 802.11ax (HEW40), ANT1)



802.11ax (HEW80) Mode

A. Test Verdict:

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5210	-11.73	-11.45	0.77	-7.81	10.63	PASS
5290	-11.64	-10.94		-7.50		
5530	-12.48	-11.45		-8.15		
5610	-12.79	-11.53		-8.33		
5690	-12.43	-11.11		-7.94		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5690	-15.06	-13.73	0.77	-10.56	29.63	PASS
5775	-14.36	-14.03		-10.41		

Note: Directional gain = $3.36\text{dBi} + 10\log(2) = 6.37\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11 - (6.37 - 6) = 10.63\text{dBm}$ for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and reduced to $30 - (6.37 - 6) = 29.63\text{dBm}$ for 5.745-5.825 GHz band.

B. Test Plot:



(Channel 42, 5210MHz, 802.11ax (HEW80), ANT1)



(Channel 58, 5290MHz, 802.11ax (HEW80), ANT1)



(Channel 106, 5530MHz, 802.11ax (HEW80), ANT1)



(Channel 122, 5610MHz, 802.11ax (HEW80), ANT1)



(Channel 138, 5690MHz, 802.11ax (HEW80), ANT1)



(Channel 138, 5690MHz, 802.11ax (HEW80), ANT1)



(Channel 155, 5775MHz, 802.11ax (HEW80), ANT1)



2.6. Frequency Stability

2.6.1. Requirement

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

2.6.2. Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 5°C to 40°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

2.6.3. Test Result

U-NII-1 (Ch. 36) 5180MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	5.00	+20(Ref)	23	4.440
100%		-30	31	5.985
100%		-20	29	5.598
100%		-10	26	5.019
100%		0	25	4.826
100%		+10	22	4.247
100%		+20	20	3.861
100%		+30	23	4.440
100%		+40	26	5.019
100%		+50	23	4.440
115%	5.75	+20	28	5.405
85%	4.25	+20	30	5.792



U-NII-2A (Ch. 52)				
5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	5.00	+20(Ref)	18	3.422
100%		-30	22	4.183
100%		-20	25	4.753
100%		-10	27	5.133
100%		0	19	3.612
100%		+10	17	3.232
100%		+20	22	4.183
100%		+30	26	4.943
100%		+40	31	5.894
100%		+50	25	4.753
115%	5.75	+20	19	3.612
85%	4.25	+20	21	3.992

U-NII-2C (Ch. 100)				
5500MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	5.00	+20(Ref)	21	3.818
100%		-30	25	4.545
100%		-20	30	5.455
100%		-10	29	5.273
100%		0	22	4.000
100%		+10	19	3.455
100%		+20	23	4.182
100%		+30	32	5.818
100%		+40	35	6.364
100%		+50	25	4.545
115%	5.75	+20	27	4.909
85%	4.25	+20	30	5.455





U-NII-3 (Ch. 149) 5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	5.00	+20(Ref)	22	3.829
100%		-30	26	4.526
100%		-20	27	4.700
100%		-10	21	3.655
100%		0	30	5.222
100%		+10	25	4.352
100%		+20	26	4.526
100%		+30	26	4.526
100%		+40	28	4.874
100%		+50	28	4.874
115%	5.75	+20	31	5.396
85%	4.25	+20	29	5.048



2.7. Conducted Emission

2.7.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

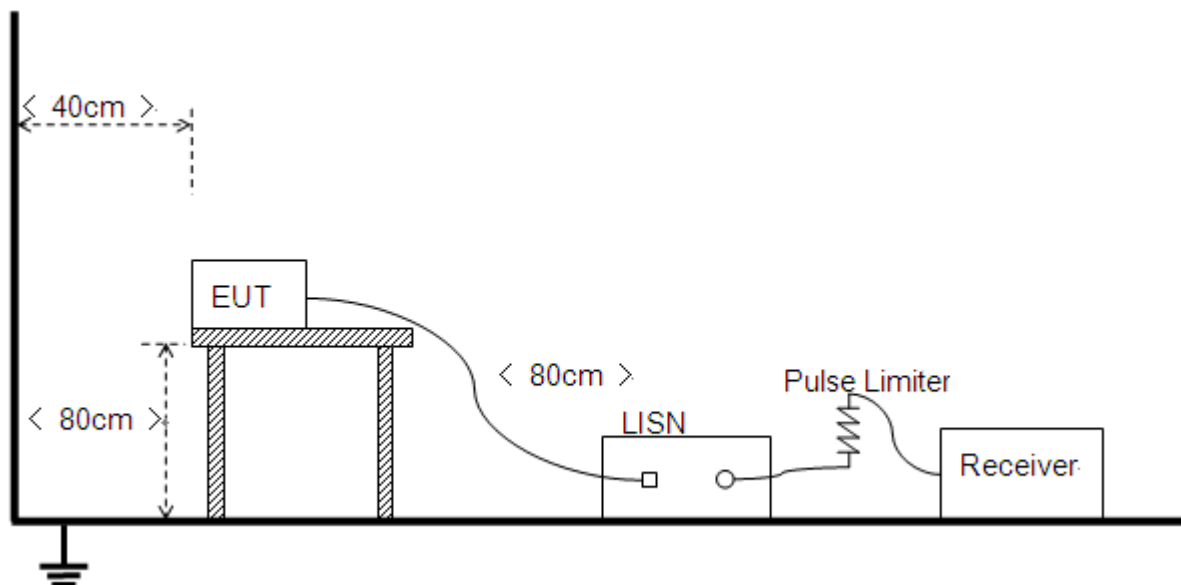
Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.7.2. Test Description

Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.



2.7.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and Plot below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT +ADAPTER+ WIFI TX

Test Voltage: AC 120V/60Hz

The measurement results are obtained as below:

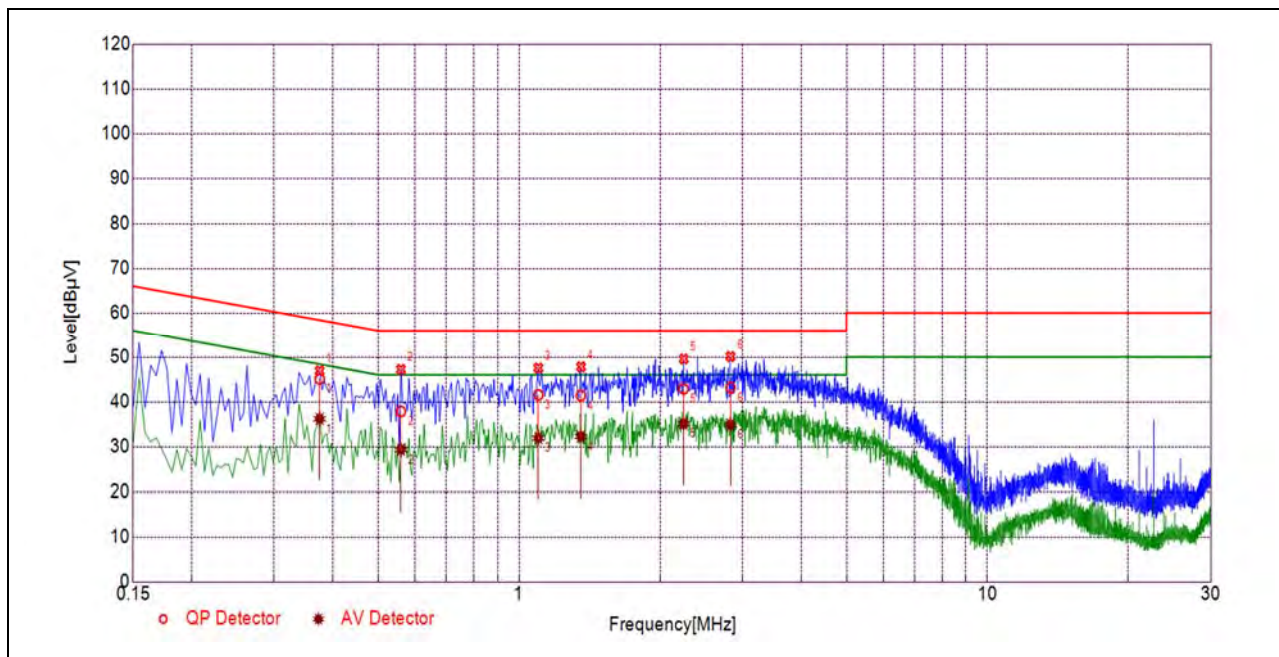
$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

A_{Factor} : Voltage division factor of LISN

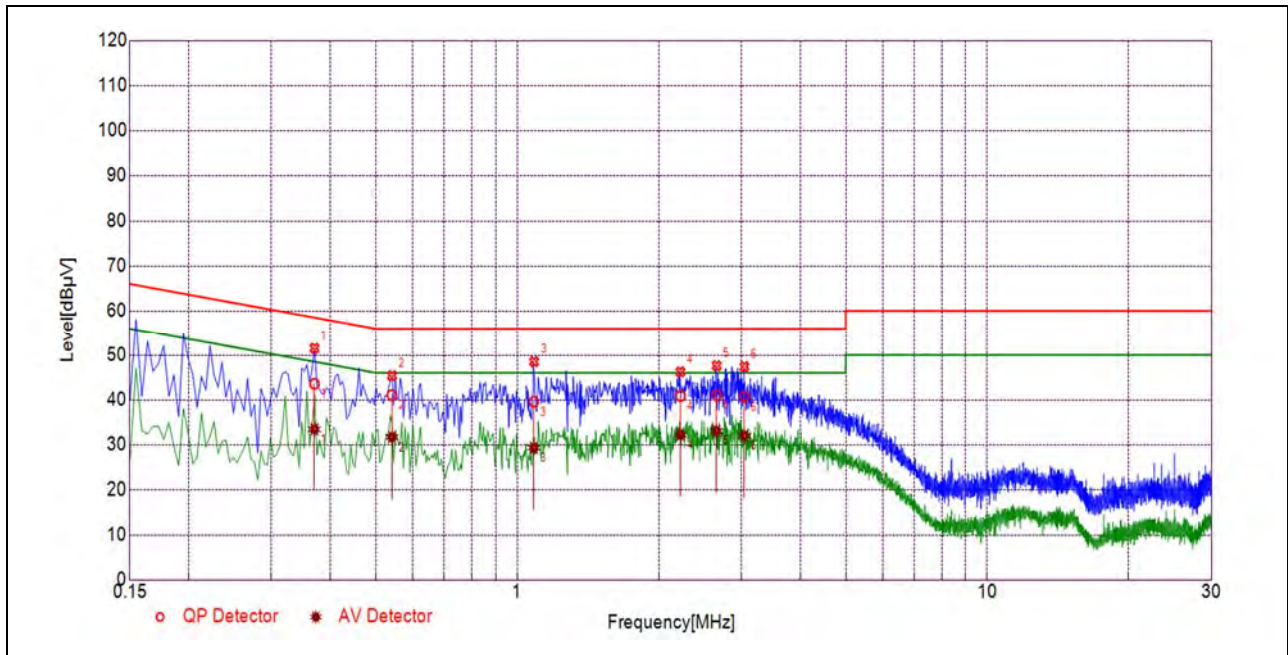


B.Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.3752	45.09	36.17	58.38	48.38	Line	PASS
2	0.5597	37.83	29.29	56.00	46.00		PASS
3	1.0995	41.50	31.89	56.00	46.00		PASS
4	1.3547	41.38	32.25	56.00	46.00		PASS
5	2.2458	42.89	35.07	56.00	46.00		PASS
6	2.8274	43.15	34.92	56.00	46.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.3703	43.55	33.42	58.49	48.49	Neutral	PASS
2	0.5413	41.03	31.65	56.00	46.00		PASS
3	1.0851	39.57	29.30	56.00	46.00		PASS
4	2.2254	40.84	32.14	56.00	46.00		PASS
5	2.6548	41.00	33.03	56.00	46.00		PASS
6	3.0432	40.72	31.97	56.00	46.00		PASS

2.8. Restricted Frequency Bands

2.8.1. Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \mu\text{V/m}$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

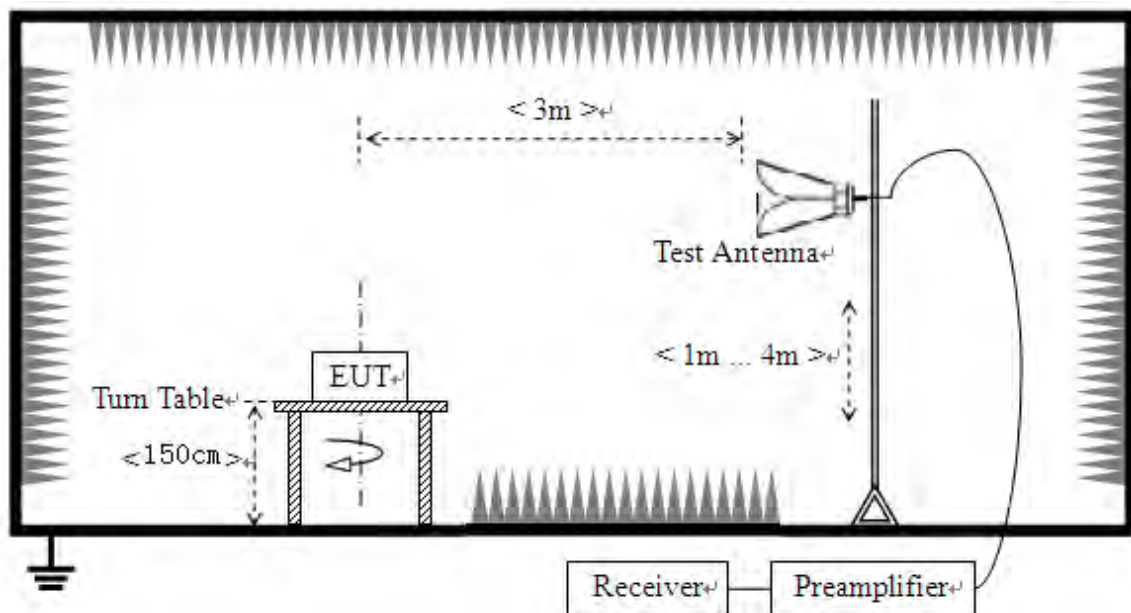
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

2.8.2. Test Description

Test Setup





The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

2.8.3. Test Result

The lowest and highest channels are tested to verify Restricted Frequency Bands.

The measurement results are obtained as below:

$E [dB\mu V/m] = U_R + A_T + A_{Factor} [dB]; A_T = L_{Cable loss} [dB] - G_{preamp} [dB]$

A_T : Total correction Factor except Antenna; U_R : Receiver Reading

G_{preamp} : Preamplifier Gain; A_{Factor} : Antenna Factor at 3m

Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

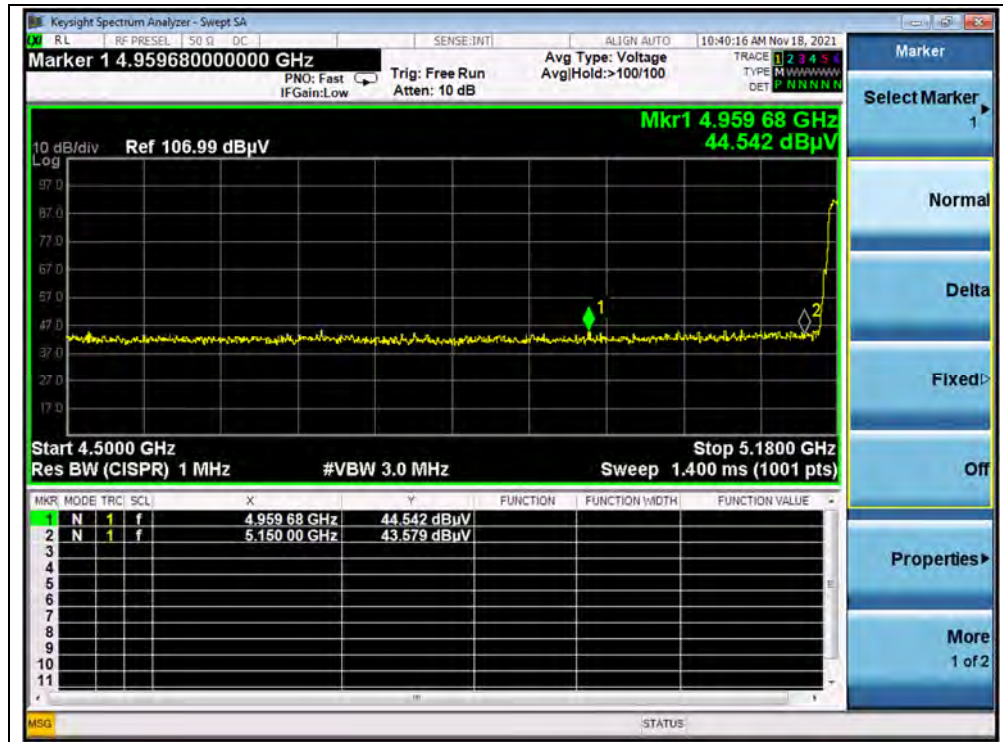
Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

802.11a Mode

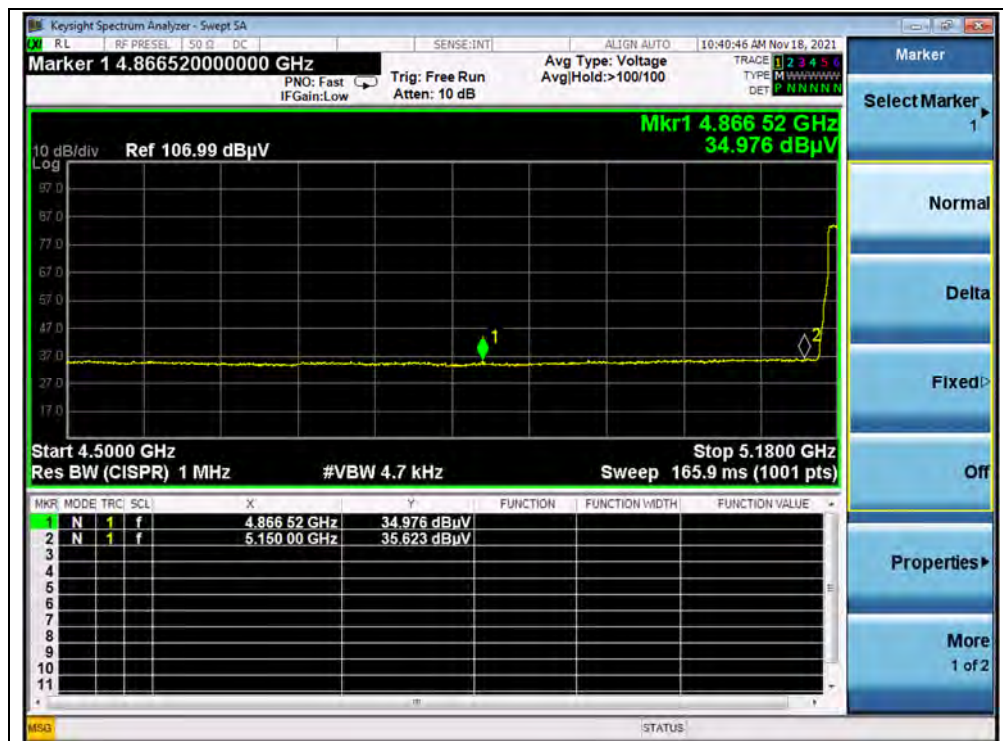
A.Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
36	4959.68	PK	44.54	-19.54	32.20	57.2	74	PASS
36	5150.00	AV	35.62	-19.54	32.20	48.28	54	PASS
64	5398.65	PK	43.75	-18.80	32.20	57.15	74	PASS
64	5375.40	AV	33.31	-18.80	32.20	46.71	54	PASS
100	5411.57	PK	42.86	-19.20	32.20	55.86	74	PASS
100	5470.00	AV	34.52	-19.20	32.20	47.52	54	PASS
144	5750.00	PK	42.77	-19.20	32.20	55.77	68.23	PASS
144	5725.00	AV	35.24	-19.20	32.20	48.24	54	PASS
149	5725.00	PK	48.84	-19.01	32.20	62.03	122.23	PASS
165	5880.00	PK	41.84	-19.01	32.20	55.03	101.53	PASS

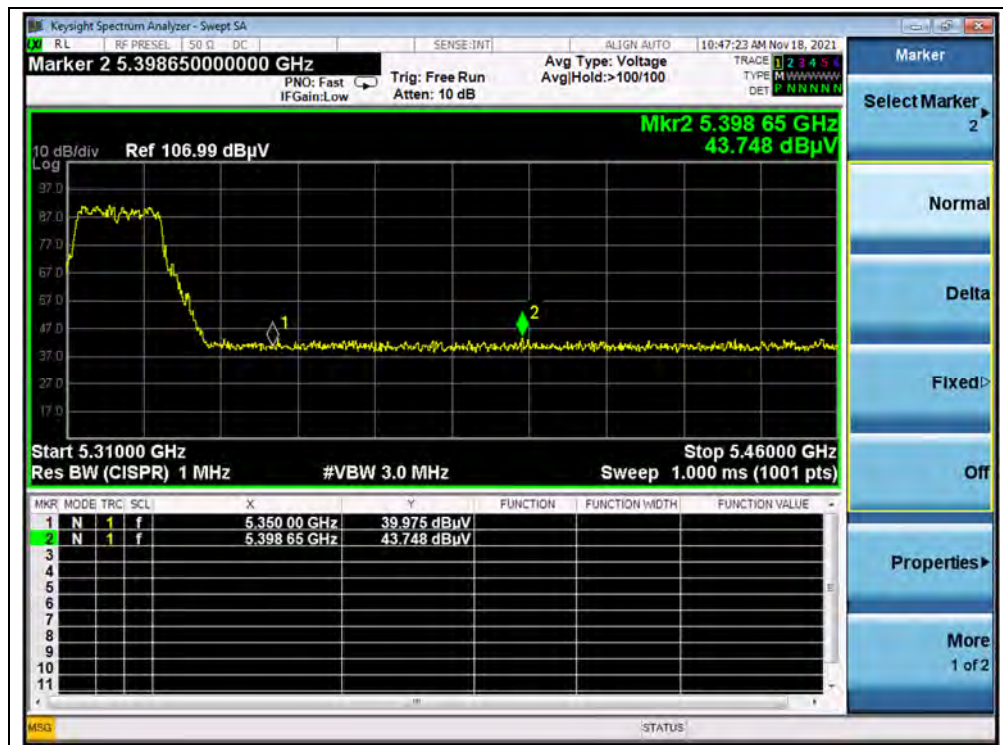
B.Test Plot:



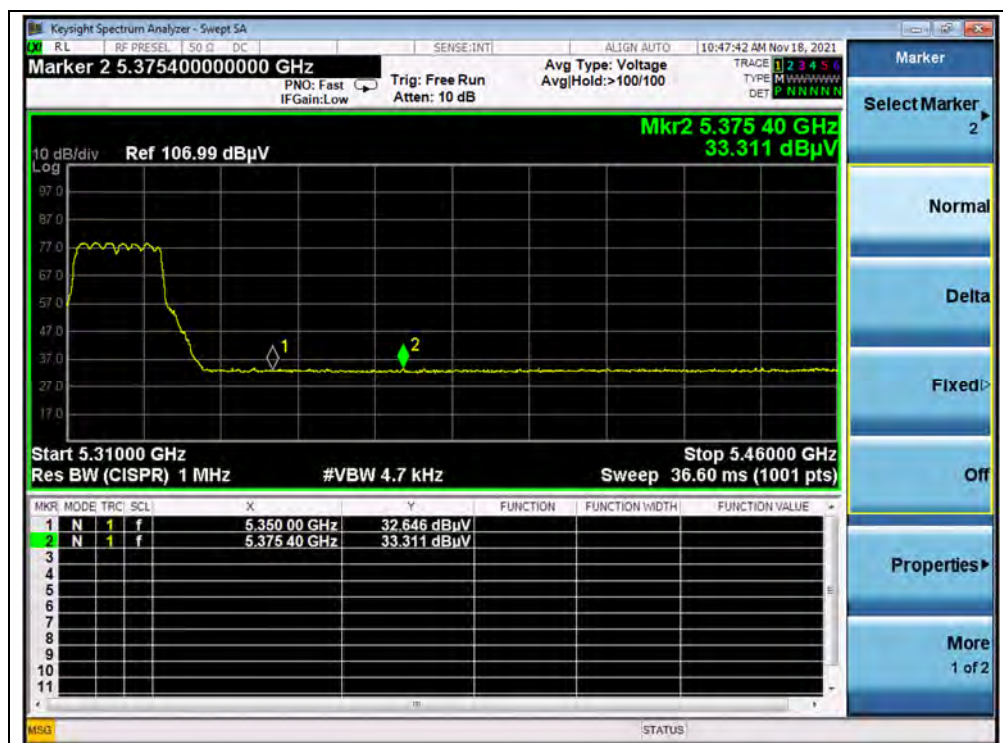
(PEAK, Channel 36, 802.11a)



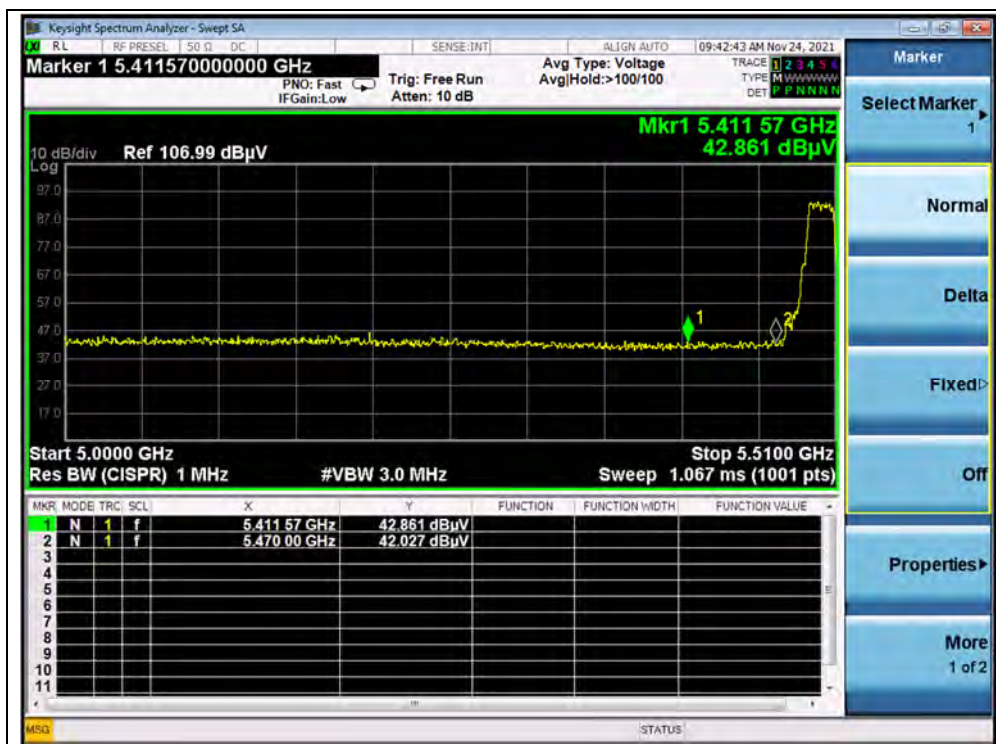
(AVERAGE, Channel 36, 802.11a)



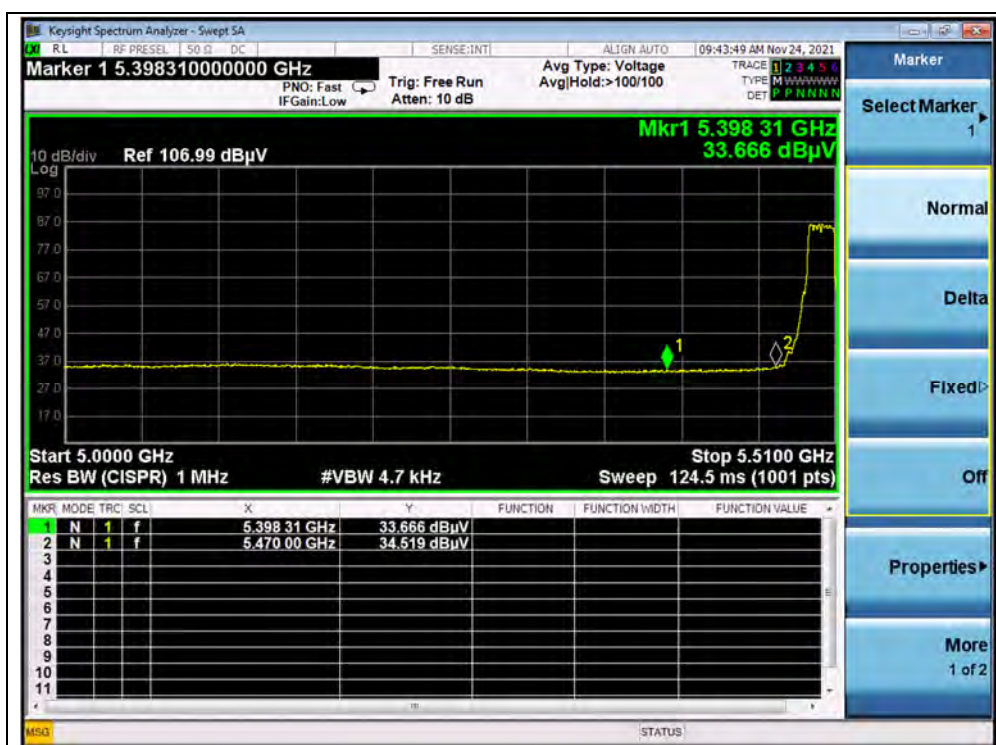
(PEAK, Channel 64, 802.11a)



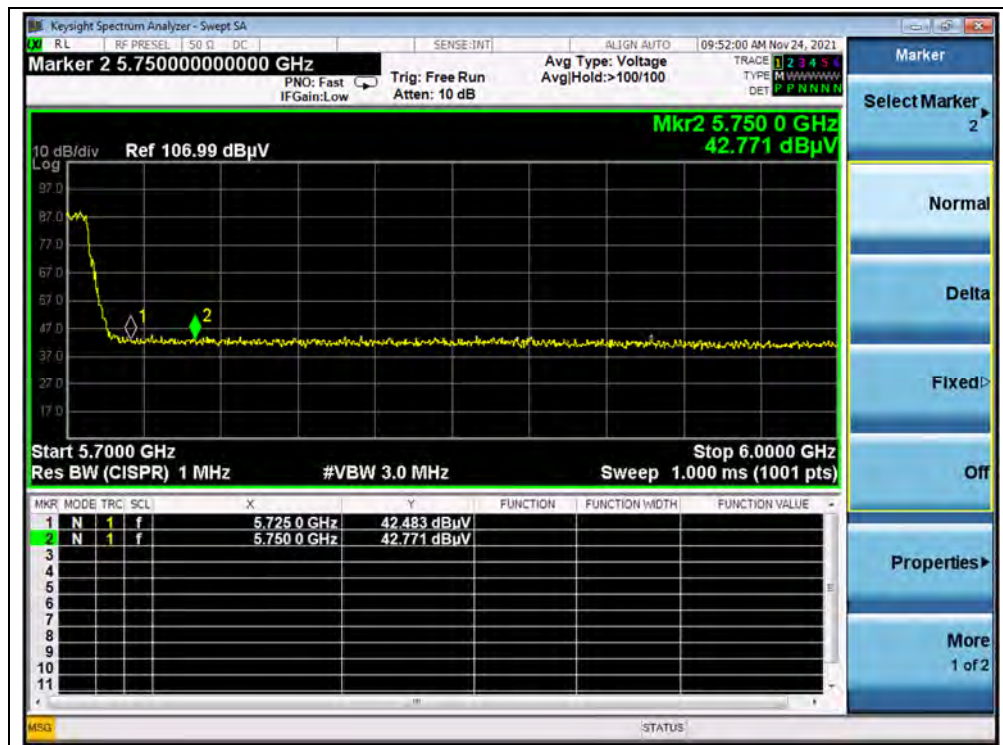
(AVERAGE, Channel 64, 802.11a)



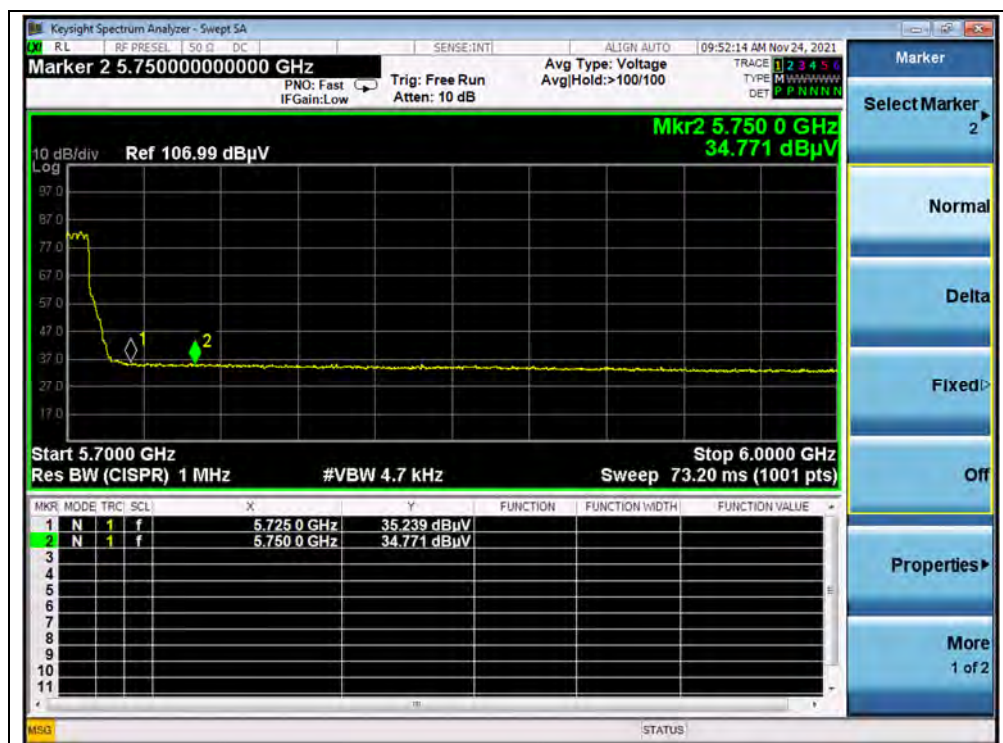
(PEAK, Channel100, 802.11a)



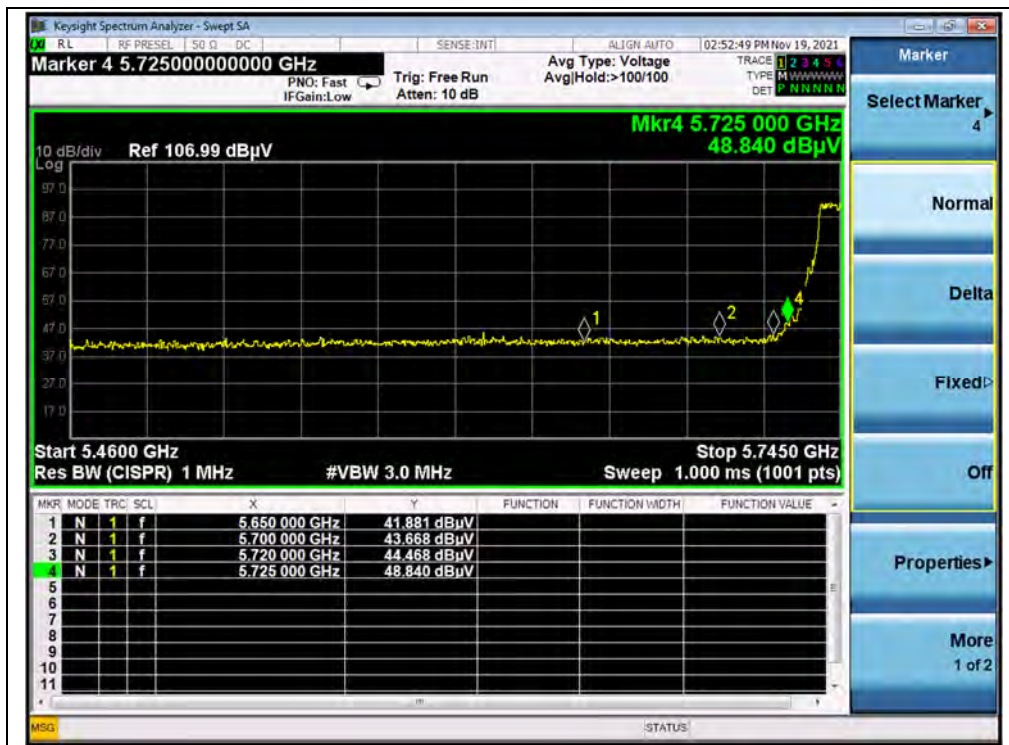
(AVERAGE, Channel 100, 802.11a)



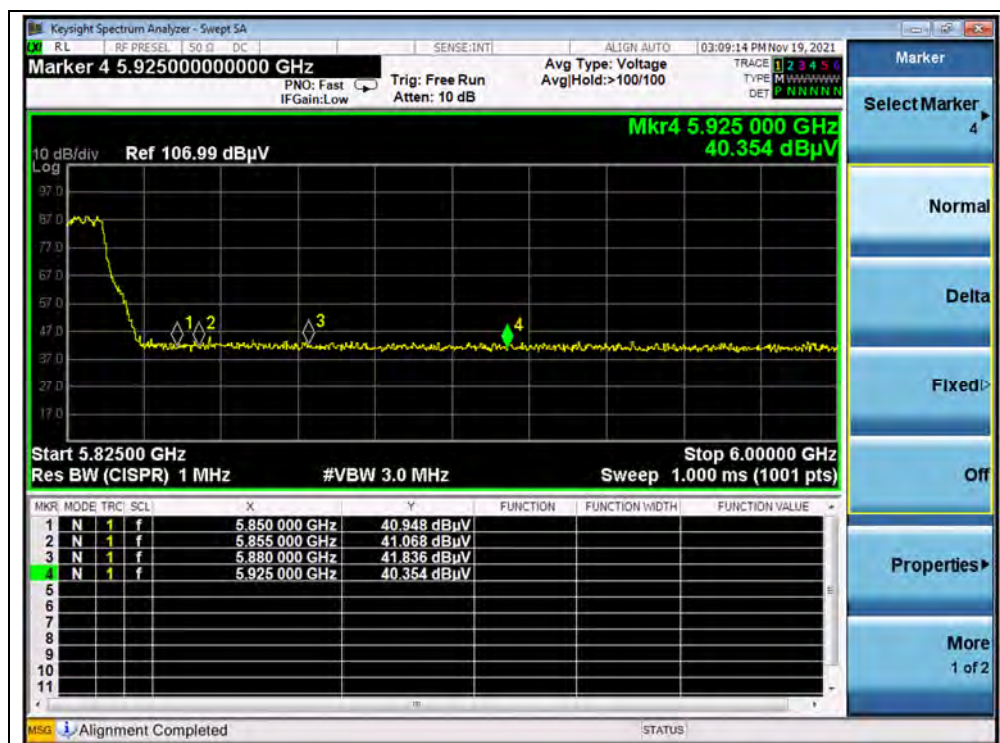
(PEAK, Channel 144, 802.11a)



(AVERAGE, Channel 144, 802.11a)



(PEAK, Channel 149, 802.11a)



(PEAK, Channel 165, 802.11a)

