

APPENDIX J: IEEE 802.11 RU SAR EXCLUSION

J.1 IEEE 802.11ax RU SAR Exclusion

To make the most efficient use of the additional available subcarriers (data tones), IEEE 802.11ax can utilize Orthogonal Frequency-Division Multiple Access (OFDMA) which divides the existing 802.11 channels into smaller subchannels called Resource Units (RUs). Possible RU sizes are: 26T, 52T, 106T, 242T, 484T, 996T and 996T*2.

Per FCC Guidance, 802.11ax was considered a higher order 802.11 mode when compared to a/b/g/n/ac to apply KDB Publication 248227 D01v02r02 for OFDM mode selection. Therefore, SAR tests were not required for 802.11ax based on the maximum allowed output powers of OFDM modes and the reported SAR values. Per FCC Guidance, maximum conducted powers were performed for each RU size to demonstrate that the output powers would not be higher than the other OFDM 802.11 modes.

Note: Targets for 6GHz are applicable for both SP and LPI.

J.2 IEEE 802.11ax RU Target Powers

J.2.1 Maximum 802.11ax RU WLAN Output Power – 2.4/5 GHz WLAN

Tones		SISO (WIFI ANT0/ WIFI ANT1) /in dBm					MIMO (ALL) /in dBm				
		2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz	2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz
26T	Maximum	12	6	6	6	3.5	15	9	9	9	6.5
	Nominal	11	5	5	5	2.5	14	8	8	8	5.5
52T	Maximum	14	6	6	6	6	17	9	9	9	9
	Nominal	13	5	5	5	5	16	8	8	8	8
106T	Maximum	15	6	6	6	6	18	9	9	9	9
	Nominal	14	5	5	5	5	17	8	8	8	8
242T	Maximum	15	11	11	11	11	18	14	14	14	14
	Nominal	14	10	10	10	10	17	13	13	13	13
484T	Maximum			11	11	11			14	14	14
	Nominal			10	10	10			13	13	13
996T	Maximum				11					14	
	Nominal				10	Ch. 50: 8.5 Ch. 50: 7.5			13		Ch. 50: 11.5 Ch. 50: 10.5
996T*2	Maximum					11					14
	Nominal					Ch. 50: 10.0 Ch. 50: 9.0					Ch. 50: 13.0 Ch. 50: 12.0

J.2.2 Reduced 802.11ax RU WLAN Output Power with Grip Sensor Active – 2.4/5 GHz WLAN

Tones		SISO (WIFI ANT0/ WIFI ANT1) /in dBm					MIMO (ALL) /in dBm				
		2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz	2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz
26T	Maximum	12	6	6	6	3.5	15	9	9	9	6.5
	Nominal	11	5	5	5	2.5	14	8	8	8	5.5
52T	Maximum	12	6	6	6	6	15	9	9	9	9
	Nominal	11	5	5	5	5	14	8	8	8	8
106T	Maximum	12	6	6	6	6	15	9	9	9	9
	Nominal	11	5	5	5	5	14	8	8	8	8
242T	Maximum	12	8	8	8	8	15	11	11	11	11
	Nominal	11	7	7	7	7	14	10	10	10	10
484T	Maximum			8	8	8			11	11	11
	Nominal			7	7	7			10	10	10
996T	Maximum				8	8				11	11
	Nominal				7	7				10	10
996T*2	Maximum					8					11
	Nominal					7					10

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J.2.3 Reduced 802.11ax RU WLAN Output Power with RSDB Active and/or 5G NR Active – 2.4/5 GHz WLAN

Tones		SISO (WIFI ANT0/ WIFI ANT1) /in dBm					MIMO (ALL) /in dBm				
		2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz	2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz
26T	Maximum	11	6	6	6	3.5	14	9	9	9	6.5
	Nominal	10	5	5	5	2.5	13	8	8	8	5.5
52T	Maximum	11	6	6	6	6	14	9	9	9	9
	Nominal	10	5	5	5	5	13	8	8	8	8
106T	Maximum	11	6	6	6	6	14	9	9	9	9
	Nominal	10	5	5	5	5	13	8	8	8	8
242T	Maximum	11	6.5	6.5	6.5	6.5	14	9.5	9.5	9.5	9.5
	Nominal	10	5.5	5.5	5.5	5.5	13	8.5	8.5	8.5	8.5
484T	Maximum			6.5	6.5	6.5			9.5	9.5	9.5
	Nominal			5.5	5.5	5.5			8.5	8.5	8.5
996T	Maximum				6.5	6.5				9.5	9.5
	Nominal				5.5	5.5				8.5	8.5
996T *2	Maximum					6.5					9.5
	Nominal					5.5					8.5

J.2.4 Maximum 802.11ax RU WLAN Output Power - 6 GHz WLAN

Mode		IEEE 802.11ax RU (in dBm)							
		SISO / SISO in MIMO							
		26T	52T	106T	242T	484T	996T	996T*2	
6 GHz WIFI (20MHz BW)	Maximum	1.0	4.0	7.0	10.0				
	Nominal	0.0	3.0	6.0	9.0				
6 GHz WIFI (40MHz BW)	Maximum	1.0	4.0	7.0	10.0	10.0			
	Nominal	0.0	3.0	6.0	9.0	9.0			
6 GHz WIFI (80MHz BW)	Maximum	1.0	4.0	7.0	10.0	10.0	10.0		
	Nominal	0.0	3.0	6.0	9.0	9.0	9.0		
6 GHz WIFI (160MHz BW)	Maximum	1.0	4.0	7.0	10.0	10.0	10.0	10.0	
	Nominal	0.0	3.0	6.0	9.0	9.0	9.0	9.0	

J.2.5 Reduced 802.11ax RU WLAN Output Power with Grip Sensor Active - 6 GHz WLAN

Mode		IEEE 802.11ax RU (in dBm)							
		SISO / SISO in MIMO							
		26T	52T	106T	242T	484T	996T	996T*2	
6 GHz WIFI (20MHz BW)	Maximum	1.0	4.0	6.5	6.5				
	Nominal	0.0	3.0	5.5	5.5				
6 GHz WIFI (40MHz BW)	Maximum	1.0	4.0	6.5	6.5	6.5			
	Nominal	0.0	3.0	5.5	5.5	5.5			
6 GHz WIFI (80MHz BW)	Maximum	1.0	4.0	6.5	6.5	6.5	6.5		
	Nominal	0.0	3.0	5.5	5.5	5.5	5.5		
6 GHz WIFI (160MHz BW)	Maximum	1.0	4.0	6.5	6.5	6.5	6.5	6.5	
	Nominal	0.0	3.0	5.5	5.5	5.5	5.5	5.5	

J.2.6 Reduced 802.11ax RU WLAN Output Power with 2.4 GHz WLAN Active and/or 5G NR Active - 6 GHz WLAN

Mode		IEEE 802.11ax RU (in dBm)							
		SISO / SISO in MIMO							
		26T	52T	106T	242T	484T	996T	996T*2	
6 GHz WIFI (20MHz BW)	Maximum	1.0	2.5	2.5	2.5				
	Nominal	0.0	1.5	1.5	1.5				
6 GHz WIFI (40MHz BW)	Maximum	1.0	2.5	2.5	2.5	2.5			
	Nominal	0.0	1.5	1.5	1.5	1.5			
6 GHz WIFI (80MHz BW)	Maximum	1.0	2.5	2.5	2.5	2.5	2.5		
	Nominal	0.0	1.5	1.5	1.5	1.5	1.5		
6 GHz WIFI (160MHz BW)	Maximum	1.0	2.5	2.5	2.5	2.5	2.5	2.5	
	Nominal	0.0	1.5	1.5	1.5	1.5	1.5	1.5	

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