

APPENDIX H: IEEE 802.11 RU SAR EXCLUSION

H.1 IEEE 802.11ax/be RU SAR Exclusion

To make the most efficient use of the additional available subcarriers (data tones), IEEE 802.11ax/be 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 996Tx2, 996Tx4.

Per FCC Guidance, 802.11ax/be 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/be 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.

H.2 IEEE 802.11ax/be RU Target Powers

H.2.1 Maximum 802.11ax/be RU WLAN Output Power

Tones		SISO / SISO in MIMO				
		2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz
26T	Maximum	12 ch 12: 9.0 ch 13: 3.0	10 ch 48: 4.0	10 ch 46: 4.0	10	10
	Nominal	11 ch 12: 8.0 ch 13: 2.0	9 ch 48: 3.0	9 ch 46: 3.0	9	9
52T	Maximum	13 ch 12: 9.0 ch 13: 3.0	13 ch 48: 7.0	13 ch 46: 7.0	13	13
	Nominal	12 ch 12: 8.0 ch 13: 2.0	12 ch 48: 6.0	12 ch 46: 6.0	12	12
106T	Maximum	15 ch 12: 9.0 ch 13: 3.0	15 ch 48: 10.0 UNII3: 14.0	15 ch 46: 10.0 UNII3: 14.0	15 UNII3: 14.0	15
	Nominal	14 ch 12: 8.0 ch 13: 2.0	14 ch 48: 9.0 UNII3: 13.0	14 ch 46: 9.0 UNII3: 13.0	14 UNII3: 13.0	14
242T	Maximum	17 ch 12: 9.0 ch 13: 3.0	15 ch 48: 12 UNII3: 14	15 ch 46: 13.0 UNII3: 14.0	15 UNII3: 14.0	15
	Nominal	16 ch 12: 8.0 ch 13: 2.0	14 ch 48: 11.0 UNII3: 13.0	14 ch 46: 12.0 UNII3: 13.0	14 UNII3: 13.0	14
484T	Maximum			15 UNII 1 : 11.0 UNII3: 14.0	15 UNII 1 : 11.0 UNII3: 14.0	15 UNII 1 : 11.0
	Nominal			14 UNII 1 : 10.0 UNII3: 13.0	14 UNII 1 : 10.0 UNII3: 13.0	14 UNII 1 : 10.0
996T	Maximum					15 UNII1,2A: 9.5 UNII 2C: 11.5 UNII3,4 : 13.0
	Nominal					14 UNII1,2A: 8.5 UNII 2C: 10.5 UNII 3,4 : 12.0
996T*2	Maximum					15 UNII1,2A: 10.0 UNII 2C: 12.5
	Nominal					14 UNII1,2A: 9.0 UNII 2C: 11.5

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

Tones		SISO / SISO in MIMO				
		2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	5GHz/160MHz
26T	Maximum	12 ch 12: 9.0 ch 13: 3.0	9.5 ch 48: 4.0 ch 149~177: 8.5	9.5 ch 48: 4.0 ch 149~177: 8.5	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5
	Nominal	11 ch 12: 8.0 ch 13: 2.0	8.5 ch 48: 3.0 ch 149~177: 7.5	8.5 ch 48: 3.0 ch 149~177: 7.5	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5
52T	Maximum	13 ch 12: 9.0	9.5 ch 48: 7.0	9.5 ch 48: 7.0	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5
	Nominal	12 ch 12: 8.0	8.5 ch 48: 6.0	8.5 ch 48: 6.0	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5
106T	Maximum	13.5 ch 12: 9.0	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5
	Nominal	12.5 ch 12: 8.0	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5
242T	Maximum	13.5 ch 12: 9.0 ch 13: 3.0	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5
	Nominal	12.5 ch 12: 8.0	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5
484T	Maximum			9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5
	Nominal			8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5
996T	Maximum				9.5 ch 149~177: 8.5	9.5 ch 149~177: 8.5
	Nominal				8.5 ch 149~177: 7.5	8.5 ch 149~177: 7.5
996T*2	Maximum					9.5 ch 149~177: 8.5
	Nominal					8.5 ch 149~177: 7.5

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H.2.3 Maximum 802.11 ax/be 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	966T*4
6 GHz WIFI (20MHz BW)	Maximum	1.0 ch 113-125: 2.0 ch 225-233: 2.0	4.0 ch 113-125: 5.0 ch 225-233: 5.0	7.0 ch 113-125: 8.0 ch 225-233: 8.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0				
	Nominal	0.0 ch 113-125: 1.0 ch 225-233: 1.0	3.0 ch 113-125: 4.0 ch 225-233: 4.0	6.0 ch 113-125: 7.0 ch 225-233: 7.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0				
6 GHz WIFI (40MHz BW)	Maximum	1.0 ch 113-125: 2.0 ch 225-233: 2.0	4.0 ch 113-125: 5.0 ch 225-233: 5.0	7.0 ch 113-125: 8.0 ch 225-233: 8.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0			
	Nominal	0.0 ch 113-125: 1.0 ch 225-233: 1.0	3.0 ch 113-125: 4.0 ch 225-233: 4.0	6.0 ch 113-125: 7.0 ch 225-233: 7.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0			
6 GHz WIFI (80MHz BW)	Maximum	1.0 ch 113-125: 2.0 ch 225-233: 2.0	4.0 ch 113-125: 5.0 ch 225-233: 5.0	7.0 ch 113-125: 8.0 ch 225-233: 8.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0		
	Nominal	0.0 ch 113-125: 1.0 ch 225-233: 1.0	3.0 ch 113-125: 4.0 ch 225-233: 4.0	6.0 ch 113-125: 7.0 ch 225-233: 7.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0		
6 GHz WIFI (160MHz BW)	Maximum	1.0 ch 113-125: 2.0 ch 225-233: 2.0	4.0 ch 113-125: 5.0 ch 225-233: 5.0	7.0 ch 113-125: 8.0 ch 225-233: 8.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	
	Nominal	0.0 ch 113-125: 1.0 ch 225-233: 1.0	3.0 ch 113-125: 4.0 ch 225-233: 4.0	6.0 ch 113-125: 7.0 ch 225-233: 7.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	
6 GHz WIFI (320MHz BW)	Maximum	1.0 ch 113-125: 2.0 ch 225-233: 2.0	4.0 ch 113-125: 5.0 ch 225-233: 5.0	7.0 ch 113-125: 8.0 ch 225-233: 8.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.0 ch 113-125: 11.0 ch 225-233: 11.0	10.00 ch 113-125: 11.0 ch 225-233: 11.0
	Nominal	0.0 ch 113-125: 1.0 ch 225-233: 1.0	3.0 ch 113-125: 4.0 ch 225-233: 4.0	6.0 ch 113-125: 7.0 ch 225-233: 7.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.0 ch 113-125: 10.0 ch 225-233: 10.0	9.00 ch 113-125: 10.0 ch 225-233: 10.0

H.2.4 Maximum 802.11 ax/be RU WLAN Output Power with Grip Sensor Active – 6 GHz WLAN

Mode		IEEE 802.11ax RU (in dBm)									
		SISO / SISO in MIMO									
		Antenna 6									
		26T	52T	106T	242T	484T	996T	996T*2	966T*4		
6 GHz WIFI (20MHz BW)	Maximum	1.0	4.0	7.0	8.0						
		ch 113-125: 2.0 ch 225-233: 2.0	ch 113-125: 5.0 ch 225-233: 5.0	ch 113-125: 8.0 ch 225-233: 8.0	ch 113-125: 9.0 ch 225-233: 9.0						
	Nominal	0.0	3.0	6.0	7.0						
		ch 113-125: 1.0 ch 225-233: 1.0	ch 113-125: 4.0 ch 225-233: 4.0	ch 113-125: 7.0 ch 225-233: 7.0	ch 113-125: 8.0 ch 225-233: 8.0						
6 GHz WIFI (40MHz BW)	Maximum	1.0	4.0	7.0	8.0						
		ch 113-125: 2.0 ch 225-233: 2.0	ch 113-125: 5.0 ch 225-233: 5.0	ch 113-125: 8.0 ch 225-233: 8.0	ch 113-125: 9.0 ch 225-233: 9.0						
	Nominal	0.0	3.0	6.0	7.0						
		ch 113-125: 1.0 ch 225-233: 1.0	ch 113-125: 4.0 ch 225-233: 4.0	ch 113-125: 7.0 ch 225-233: 7.0	ch 113-125: 8.0 ch 225-233: 8.0						
6 GHz WIFI (80MHz BW)	Maximum	1.0	4.0	7.0	8.0						
		ch 113-125: 2.0 ch 225-233: 2.0	ch 113-125: 5.0 ch 225-233: 5.0	ch 113-125: 8.0 ch 225-233: 8.0	ch 113-125: 9.0 ch 225-233: 9.0						
	Nominal	0.0	3.0	6.0	7.0						
		ch 113-125: 1.0 ch 225-233: 1.0	ch 113-125: 4.0 ch 225-233: 4.0	ch 113-125: 7.0 ch 225-233: 7.0	ch 113-125: 8.0 ch 225-233: 8.0						
6 GHz WIFI (160MHz BW)	Maximum	1.0	4.0	7.0	8.0						
		ch 113-125: 2.0 ch 225-233: 2.0	ch 113-125: 5.0 ch 225-233: 5.0	ch 113-125: 8.0 ch 225-233: 8.0	ch 113-125: 9.0 ch 225-233: 9.0						
	Nominal	0.0	3.0	6.0	7.0						
		ch 113-125: 1.0 ch 225-233: 1.0	ch 113-125: 4.0 ch 225-233: 4.0	ch 113-125: 7.0 ch 225-233: 7.0	ch 113-125: 8.0 ch 225-233: 8.0						
6 GHz WIFI (320MHz BW)	Maximum	1.0	4.0	7.0	8.0						
		ch 113-125: 2.0 ch 225-233: 2.0	ch 113-125: 5.0 ch 225-233: 5.0	ch 113-125: 8.0 ch 225-233: 8.0	ch 113-125: 9.0 ch 225-233: 9.0						
	Nominal	0.0	3.0	6.0	7.0						
		ch 113-125: 1.0 ch 225-233: 1.0	ch 113-125: 4.0 ch 225-233: 4.0	ch 113-125: 7.0 ch 225-233: 7.0	ch 113-125: 8.0 ch 225-233: 8.0						

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