

MPE Estimates

FCC ID: S57 - 51306343
Industry Canada ID: 5731 - 51306343

Multinode 2.4GHz DSSS-FH Radio

Application	Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/cm ²)	General Population Exposure Limit from 1.1310 (mW/cm ²)	Ratio of Power Density to the Exposure Limit
Integral Co-located	Omni	PactWireless 022484-5 Honeywell 51506534-101	2.402 - 2.482	99.08	5	0	0.062	1.00	0.062333
Integral Co-located	Omni	SMARTANT HON04-052100 Honeywell 51506534-101	2.402 - 2.482	99.08	5	0	0.062	1.00	0.062333
Integral Co-located	Omni	SMARTANT HON04-052100 Honeywell 51506534-100	2.402 - 2.482	99.08	5	0	0.062	1.00	0.062333
Remote		Hyperlink HG2409U							
Not Co-located	Omni	Honeywell 50018414-001	2.402 - 2.483	90.36	8	0.9	0.092	1.00	0.092195
Remote		Hyperlink HG2414P-120	2.402 - 2.484	90.36	14	0.9	0.367	1.00	0.367034

Overall Worst Case Ratio of Power Density to the Exposure Limit: 0.367034
Worst Case Co-located Antenna Ratio of Power Density to the Exposure Limit: 0.062333

FCC ID: S57 - WNMNCM9
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802.11 (a,b,g) Bridge/Mesh Radio

Application	Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/cm ²)	General Population Exposure Limit from 1.1310 (mW/cm ²)	Ratio of Power Density to the Exposure Limit	
Integral Co-located	Omni	SMARTANT SAA04-220080	2.412 - 2.462	57.28	4.5	0	0.032	1.00	0.032117	
Integral Co-located	Omni	SMARTANT SAA04-220080	5.745 - 5.825	264.24	7	0	0.263	1.00	0.263469	
Not Co-located	Omni	Hyperlink HG2409U	2.412 - 2.462	57.28	8	0.9	0.058	1.00	0.058443	
Remote	Not Co-located	Omni	Hyperlink HG5812U-PRO	5.745 - 5.825	264.24	12	1.8	0.550	1.00	0.550464
Remote	Not Co-located	Omni	Hyperlink HG2414P-120	2.412 - 2.462	57.28	14	2.4	0.165	1.00	0.164715
Remote	Not Co-located	Sector 90 deg.	Hyperlink HG5817P-090	5.745 - 5.825	73.11	17	1.8	0.482	1.00	0.481623
Remote	Not Co-located	Yagi 19 deg.	Telex 5816AB	5.745 - 5.825	73.11	16.5	1.8	0.429	1.00	0.429247

Overall Worst Case Ratio of Power Density to the Exposure Limit: 0.550464
Worst Case Co-located Antenna Ratio of Power Density to the Exposure Limit: 0.263469

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802.11 (a,b,g) Access Point / Client Radio

Application	Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/cm ²)	General Population Exposure Limit from 1.1310 (mW/cm ²)	Ratio of Power Density to the Exposure Limit	
Integral Co-located	Omni	SMARTANT SAA04-220080	2.412 - 2.462	57.28	4.5	0	0.032	1.00	0.032117	
Integral Co-located	Omni	SMARTANT SAA04-220080	5.745 - 5.825	264.24	7	0	0.263	1.00	0.263469	
Remote	Not Co-located	Omni	Hyperlink HG2409U	2.412 - 2.462	57.28	8	0.9	0.058	1.00	0.058443
Remote	Not Co-located	Omni	Hyperlink HG5812U-PRO	5.745 - 5.825	264.24	12	1.8	0.550	1.00	0.550464
Remote	Not Co-located	Sector 120 deg.	Hyperlink HG2414P-120	2.412 - 2.462	57.28	14	2.4	0.165	1.00	0.164715
Remote	Not Co-located	Sector 90 deg.	Hyperlink HG5817P-090	5.745 - 5.825	73.11	17	1.8	0.482	1.00	0.481623
Remote	Not Co-located	Yagi 19 deg.	Telex 5816AB	5.745 - 5.825	73.11	16.5	1.8	0.429	1.00	0.429247

Application	Antenna Type	Antenna Part No.	Transmit Frequency	Max Peak Conducted Output Power	Antenna Gain	Minimum Antenna Cable Loss	Power Density @ 100 cm	General Population Exposure Limit from 1.1310	Ratio of Power Density to the Exposure Limit		
Remote	Not Co-located	Fixed Point to Point	Dish 9 deg.	Hyperlink HG5824D	5.745 - 5.825	264.24	24	1.8	0.349	1.00	0.348970

Overall Worst Case Ratio of Power Density to the Exposure Limit: 0.550464
Worst Case Co-located Antenna Ratio of Power Density to the Exposure Limit: 0.263469

MPE Estimates for Self Co-located Device

HFSS Radio Worst Case Ratio of Power Density to the Exposure Limit	802.11 (a,b,g) Bridge/Mesh Radio Worst Case Ratio of Power Density to the Exposure Limit	802.11 (a,b,g) Access Point/Client Radio Worst Case Ratio of Power Density to the Exposure Limit	Sum of Worst Case Ratios	FCC Limit for Sum of Worst Case Ratios
0.06233	0.26347	0.26347	0.58927	1.0

PASS

The results shown in the above table are equivalent to the Sum of the EIRP of the Two Co-located Transmitters (EIRP TX1 + EIRP TX2) compared to the exposure limit. The benefit of this method, is that accounts for transmitters operating at different frequencies against different exposure limits.

RF Safety Statement:

To comply with FCC's and Industry Canada's RF exposure requirements, the following antenna installation and device operating configurations must be satisfied.

- Remote Point-to-Multi-Point antenna(s) for this unit must be fixed and mounted on outdoor permanent structures with a separation distance between the antenna(s) of greater than 20cm and a separation distance of at least 20cm from all persons.
- Remote Fixed Point-to-Point antenna(s) for this unit must be fixed and mounted on outdoor permanent structures with a separation distance between the antenna(s) of greater than 20cm and a separation distance of at least 100cm from all persons.
- Furthermore, when using integral antenna(s) the Multinode unit must not be co-located with any other antenna or transmitter device and have a separation distance of at least 20cm from all persons.