4 FCC §2.1091 & §15.407(f) - RF Exposure

4.1 Applicable Standard

According to FCC §15.407(f) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)	
Limits for General Population/Uncontrolled Exposure					
0.3-1.34	614	1.63	* (100)	30	
1.34-30	824/f	2.19/f	* (180/f ²)	30	
30-300	27.5	0.073	0.2	30	
300-1500	/	/	f/1500	30	
1500-100,000	/	/	1.0	30	

Linits for General Fopulation/Oncontrolled Exposure	I	Limit	s for	General	Po	pulation	/Unc	ontrolled	Exposure
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f = frequency in MHz

* = Plane-wave equivalent power density

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^{2}$$

Where: S = power density

- P = power input to antenna
- G = power gain of the antenna in the direction of interest relative to an isotropic radiator

 \mathbf{R} = distance to the center of radiation of the antenna

4.3 MPE Results

5250-5350 MHz

Maximum peak output power at antenna input terminal (dBm):	20.80
Maximum peak output power at antenna input terminal (mW):	120.23
Prediction distance (cm):	<u>20</u>
Dradiation fraguancy (MHz)	5260

Prediction frequency (MHz): 5260

- Maximum Antenna Gain, typical (dBi): 6
- Maximum Antenna Gain (numeric): 3.98
- Power density of prediction frequency at 20.0 cm (mW/cm²): 0.095
- <u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u> <u>1.0</u>

5470-5725 MHz

Maximum peak output power at antenna input terminal (dBm):	<u>21.12</u>
Maximum peak output power at antenna input terminal (mW):	<u>129.419</u>
Prediction distance (cm):	<u>20</u>
Prediction frequency (MHz):	<u>5580</u>
Maximum Antenna Gain, typical (dBi):	<u>6</u>
Maximum Antenna Gain (numeric):	<u>3.98</u>
Power density of prediction frequency at 20.0 cm (mW/cm ²):	0.10256
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²):	<u>1.0</u>

MPE calculation under simultaneous transmission condition:

Both of the WLAN 2.4 GHz & 5 GHz built in the final device FAP-320C can transmit Simultaneously. The maximum standalone MPE of WLAN 2.4 GHz (FCC ID: U2M-PCE3300AN) is 0.459 mW/cm²@20cm. The maximum W53 & W56 is 0.10256 mW/cm²@20cm.

Simultaneous transmission MPE= $0.459 + 0.10256 = 0.56156 < 1.0 \text{ mW/cm}^2@20 \text{ cm}$

The device meets FCC MPE requirement for uncontrolled exposure environment at 20 cm distance.