



APPENDIX A: RF EXPOSURE CALCULATIONS FOR HIGH GAIN ANTENNAS

FCC Rules and Regulations Part 1.1307, 1.1310, 2.1091, 2.1093:
RF EXPOSURE COMPLIANCE

1. General Information:

FCCID: AFJ SB-110

Environment: General Population/Uncontrolled Exposure

Device category: Fixed operations

2. Operating Configurations and Test Conditions:

2.1 Antenna Type(s):

Antenna Mfg	Type	Gain (dBi)
ICOM	Pattern antenna (patch)	5.5

Operating Conditions:

This device (built-in antenna) is specifically designed to be operated and installed on a mast or a wall, either indoor or outdoor. A minimum separation distance of 20 cm is normally maintained between all users, bystanders and the antenna (including any radiating structure) during normal operation of this device.

The peak conducted and peak radiated (EIRP) output power does not exceed 200 mW.

Test signal, Time-averaging, Max. Measured Output Power:

Modulation Type/Mode: DSSS/11.0 Mbps

Frequency Range	Freq. Tolerance (ppm)	Emission Designator
2412-2462 MHz	N/A	N/A

Output Power (Watt) ^B	High	Time averaging (___% Duty Cycle)
ERP	N/A	N/A
EIRP	0.054 (17.3 dBm)	N/A
Conducted	0.015	N/A
Rated	N/A	N/A

^B = Measured output power

3. MPE Calculation:

The maximum distance, from the antenna at which MPE is met or exceeded, is calculated from the equation relating field strength E in V/m, transmit power P in Watts, transmit antenna numeric gain G, and separation distance in meters:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

Frequency^A : 2437 MHz – Channel 6

The limit for general population/uncontrolled exposure environment above 1500MHz is 1 mW/cm^2 .



SEPARATION DISTANCE:

Separation Distance ^A	Antenna Gain (dBi)		Duty Cycle
	(in)	(cm)	
Power ^B (Watt)			
0.054	0.8	2.0	N/A
N/A	N/A	N/A	50%

Notes:

^A = Distances are calculated for the largest (worst-case) separation distance as applicable

^B = Measured radiated output power EIRP

CONCLUSION:

The device complies with the MPE requirements by providing a safe separation distance between the antenna, including any radiating structure, and any persons.

Proposed RF exposure safety information to include in User's Manual:

CAUTION: To comply with the FCC RF exposure requirements, this transmitter (built-in antenna) must be fixed-mounted on permanent structures with a separation distance of at least 8 inches (20cm) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.