



MPE/RF EXPOSURE REPORT

FCC CFR 47 Part 1.1310

Report No.: DIGI144-U5 Rev A

Company: Digi International Inc.

Model: XBEE HPX & XBEE 9XRQ

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To: FCC CFR 47 Part 1.1310

Report No.: DIGI144-U5 Rev A

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1. MAXIMUM PERMISSIBLE EXPOSURE

Calculations for Maximum Permissible Exposure Levels

Power Density = Pd (mW/cm²) = EIRP/(4*π*d²)

EIRP = P * G

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

Numeric Gain = 10 ^ (G (dBi)/10)

The calculations in the table below use the highest conducted power values together with the highest antenna gain specified for the EUT. These calculations represent worst case in terms of the exposure levels.

Table shows assessment for two different antennas

8.0 dBi antenna is highest gain omni directional antenna assessed with the maximum conducted power measured during the test program.

15.0 dBi Yagi antenna is assessed with the maximum conducted power allowable in order to meet the EIRP limits.

Calculations for separation distance of 20 cm

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Conducted Output Power (dBm)	Output Power (mW)	Calculated Power Density (mW/cm ²) @ 20cm	Power Density Limit (mW/cm ²)	Min Calculated safe distance for Limit (cm)
902.0 – 928.0	8.0	6.31	23.88	244.34	0.307	0.60	14.28
902.0 – 928.0	15.0	31.62	21.00	125.89	0.792	0.60	22.95

Note: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

Summary:

8.0 dBi Antenna.

Equipment meets the RF exposure requirements at minimum separation distance of 20 cm using antennas up to 8.0 dBi as listed for equipment.

15.0 dBi Yagi Antenna

The minimum safe distance required when using the Yagi 15.0 dBi antenna in order to meet the power density limits is **23.0 cm.**

Specification - Maximum Permissible Exposure Limits

The Limits are defined in Table 1 of FCC §1.1310.

The Limits for General Population/Uncontrolled Exposure apply.

Table 1 to [§ 1.1310\(e\)\(1\)](#)—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(ii) 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
300-1,500			f/1500	<30
1,500-100,000			1.0	<30



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