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Product Compliance Solutions

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RF Exposure

Reference: CFR 47 FCC Part 1.1310

Description: All measurements were peak or RMS power readings taken from test reports from accredited test labs. Where relevant, antenna gains were taken from the manufacturer's specifications.

Limits: Maximum exposure limits from CFR 47, FCC Part 1.1310:

Table 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)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) 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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Calculations:

Transmitter	Frequency	Antenna Gain*	Duty cycle	Power	Power	Power + 10%	Power Density	Limit at specified distance	% of limit	Type
	MHz	numerical		dBm	mW	mW	mW/cm^2	mW/cm^2	Percent of limit	
1	902.3	1	100%	17.94	62.23	68.45	0.01363	0.60	2.27%	Peak
1	908.5	1	100%	17.41	55.08	60.59	0.01206	0.61	1.99%	Peak
1	914.9	1	100%	18.13	65.01	71.51	0.01423	0.61	2.33%	Peak

PASS?	YES

Distance	20	cm

The power density is calculated as shown below:

S = (P x G x DC)/(4 x π x d^2) – used to calculate exposure at 20 cm

d = √(S/(P x G) x 4 X π) – used to calculate minimum distance to meet limits

1 mW/cm^2 = 10 W/m^2

S= power density P = transmitter power (in mw). G = antenna numeric gain d = distance to radiation center

DC = Duty Cycle *Power values taken from EIRP, so antenna gain was set to 1 (numeric)