	Model:	E4V45 Reader	Test Number:	210519				
MPE Calculator	RF Exposure uses EIRP for calculation. EIRP is based on TX power added to the antenna gain in dBi.							
	dBi = dB gain compared to an isotropic radiator.							
	S = power density in mW/cm^2							
		Transmitter Output power (mW)	2000.0					
		Transmitter Output power (W)	2.00					
Output Power for % duty Cycle operation (Watts)	100		2.00		Antenna Gain (dBi)	13.8		
	Output Power for 100% duty Cycle operation (Watts)		2.00		Antenna Gain (Numeric)	23.99		
Tx Frequency (MHz)	915	Calculation power (Watts)	2.00	dBd + 2.17 = dBi	dBi to dBd	2.2		
					Antenna Gain (dBd)	11.63		
Cable Loss (dB)	0.0	Adjusted Power (dBm)	33.01		Antenna minus cable (dBi)	13.80		
					Antenna Gain (Numeric)	23.99		
	Calculated ERP (mw)	29109.182			EIRP = Po(dBm) + Gain (dB)			
	Calculated EIRP (mw)	47976.658			Radiated (EIRP) dBm	46.810		
					ERP = EIRP - 2.17 dB			
					Radiated (ERP) dBm	44.640		

Power density (S) mW/cm^2 = EIRP / (4 p r^2)

r (cm) EIRP (mW)

	Occupational Limit	FCC radio frequency radiation exposure limits per 1.1310		
3.05	mW/cm^2	Frequency (MHz)	Occupational Limit (mW/cm^2)	Public Limit (mW/cm^2)
31	W/m^2	30-300	1	0.2
	General Public Limit	300-1,500	f/300	f/1500
0.61	mW/cm^2	1,500-10,000	5	1
6	W/m^2			

	Occupational Limit			
$0.6455f^{0.5}$	W/m^2	IC radio frequency radiation exposure limits per RSS-102		
24.3	W/m^2	Frequency (MHz)	Occupational Limit (W/m^2)	Public Limit (W/m^2)
	General Public Limit	100-6,000	$0.6455f^{0.5}$	
$0.02619f^{0.6834}$	W/m^2	6,000-15,000	50	
8.8	W/m^2	48-300		1.291
		300-6,000		$0.02619f^{0.6834}$
		6,000-15,000	50	10

f = Transmit Frequency (MHz)			f (MHz) =	915	MHz
P_T = Power Input to Antenna (mW)			P_T (mW) =	2,000.0000	mW
Duty cycle (percentage of operation)			% =	100	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P_A (mW) =	2,000.00	mW
G_N = Numeric Gain of the Antenna			GN (numeric) =	23.99	numeric
S_{20} = Power Density of device at 20cm (mW/m^2)		$S_{20}=(P_AG_N)/(4\pi R_{20})^2$	S_{20} (mW/m^2) =	9.54	mW/m^2
S_{20} = Power Density of device at 20cm (W/m^2)		$S_{20}=(P_AG_N)/(4\pi R_{20})^2$	S_{20} (W/m^2) =	95.45	W/m^2
S_L = Power Density Limit (W/m^2) FCC			S_L (W/m^2)=	6.100	W/m^2
S_L = Power Density Limit (W/m^2) Canada			S_L (W/m^2)=	8.766	W/m^2
R_C = Minimum distance to the Radiating Element for Compliance (cm) FCC		$R_C=\sqrt{(P_AG_N/4\pi S_L)}$	R_C (cm) =	79.1 cm	31.1 in
R_C = Minimum distance to the Radiating Element for Compliance (cm) Canada		$R_C=\sqrt{(P_AG_N/4\pi S_L)}$	R_C (cm) =	66.0 cm	26.0 in
S_C = Power Density of the device at the Compliance Distance R_C (W/m^2)		$S_C=(P_AG_N)/(4\pi R_C)^2$	S_C (W/m^2) =	8.77	W/m^2
R_{20} = 20cm			R20=	20 cm	7.9 in

For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of	66.0	cm
Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of	0.66	Meters

Summary: Standalone MPE Calculations and Summary

Band (MHZ)	Tx Duty Cycle (%)	Tx Frequency (MHz)	Power Total (mW)	Antenna Gain (numeric)	S_L (W/m^2)	S_{20} (W/m^2)	R_C (cm)	S_C (W/m^2)
902-928	100	915	2,000	23.99	8.766	95.45	66.0	8.77