RF Exposure Calculations

	Model:	1100T	Test Number:	201123		
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)		25.1			
	Transmitter Output power (W)		0.025			
Output Power for % duty Cycle operation (Watts)		100	0.025		Antenna Gain (dBi)	1.5
	Output Power for 100% duty Cycle operation (Watts)		0.025		Antenna Gain (Numeric)	1.41
Tx Frequency (MHz)	915	Calcualtion power (Watts)	0.025	dBd + 2.17 = dBi	dBi to dBd	2.2
					Antenna Gain (dBd)	-0.67
Cable Loss (dB)	0.0	Adjusted Power (dBm)	14.00		Antenna minus cable (dBi)	1.50
					Antenna Gain (Numeric)	1.41
	Calculated ERP (mw)	21.528			EIRP = Po(dBM) + Gain (dB)	
	Calculated EIRP (mw)	35.481			Radiated (EIRP) dBm	15.500
					ERP = EIRP - 2.17 dB	
					Radiated (ERP) dBm	13.330

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	
2.8	W/m^2	48-300		1.291
		300-6,000		$0.02619f^{0.6834}$
		6,000-15,000	50	10

f = Transmit Frequecny (MHz)			f (MHz) =	915	MHz
P_T = Power Input to Antenna (mW)			P_T (mW) =	25.1189	mW
Duty cycle (percentage of operation)			% =	100	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P_A (mW) =	25.12	mW
G_N = Numeric Gain of the Antenna			GN (numeric) =	1.41	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) =	0.01	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) =	0.07	W/m^2
S_L = Power Density Limit (W/m^2)			S_L (W/m^2)=	2.767	W/m^2
R_C = Minimum distance to the Radiating Element for Compliance (cm)		$R_C=\sqrt{(P_AG_N/4\pi S_L)}$	R_C (cm) =	3.2	cm
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) =	2.77	W/m^2
R_{20} = 20cm			R20=	20	cm