	Model:	XCM Capsule	Test Number:	210419					
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)	0.0						
		Transmitter Output power (W)	0.00002						
Output Power for % duty Cycle operation (Watts)	100		0.000			Antenna Gain (dBi)	1		
	Output Power for 100% duty Cycle operation (Watts)		0.000			Antenna Gain (Numeric)	1.26		
Tx Frequency (MHz)	433	Calcualtion power (Watts)	0.000		dBd + 2.17 = dBi	dBi to dBd	2.2		
						Antenna Gain (dBd)	-1.17		
Cable Loss (dB)	0.0	Adjusted Power (dBm)	-17.98			Antenna minus cable (dBi)	1.00		
						Antenna Gain (Numeric)	1.26		
	Calculated ERP (mw)	0.012				EIRP = Po(dBM) + Gain (dB)			
	Calculated EIRP (mw)	0.020				Radiated (EIRP) dBm	-16.979		
						ERP = EIRP - 2.17 dB			
						Radiated (ERP) dBm	-19.149		

Power density (S) mW/cm² = EIRP / (4 p r^2)

r (cm) EIRP (mW)

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

	Occupational Limit	IC radio frequency radiation exposure limits per RSS-102		
$0.6455f^{0.5}$	W/m^2			
16.7	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	
1.7	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) =	433 MHz
P_T = Power Input to Antenna (mW)		P_T (mW) =	0.0159 mW
Duty cycle (percentage of operation)		% =	100 %
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)		P_A (mW) =	0.02 mW
G_N = Numeric Gain of the Antenna		GN (numeric) =	1.26 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) =	0.00 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) =	0.00 W/m^2
S_L = Power Density Limit (W/m^2)		S_L (W/m^2)=	1.659 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) =	0.1 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) =	1.66 W/m^2
R_{20} = 20cm		R20=	20 cm

For Complaince with Canada General Population Limits, User Manual must indicate a minimum seperation distance of	0.1	cm
Or in Meters for Complaince with Canada General Population Limits, a minimum seperation distance of	0.00	Meters

Summary: Standalone MPE Calculations and Summary								
Band (MHZ)	Tx Duty Cycle (%)	Tx Frequeny (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)
433	100	433	0	1.26	1.659	0.00	0.1	1.66
Band (MHZ)	Tx Duty Cycle (%)	Tx Frequeny (MHz)	Power Total (mW)	Antenna Gain (dBi)	SL (W/m2)	S20 (W/m2)	RC (cm)	SC (W/m2)
24,025	100	24025	2.44	1.26	1.602	0.01	1.2	1.60

Simlutaneous MPE Calculation		
	Transmitter 1	Transmitter 2
Tx Frequeny (MHz)	433	24025
S_{20} (W/m^2)	0.00	0.01
S_L (W/m^2)	1.659	1.602
Power Ratio (S_L / S_{20})	0.000	0.004
Sum of Power Ratios at 20cm (Tx1 + Tx2)		0.004
Requirement = Σ of MPE Ratio ≤ 1		

	Model:	XCM1	Test Number:	210419			
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)	2.4				
		Transmitter Output power (W)	0.002				
Output Power for % duty Cycle operation (Watts)	100		0.002		Antenna Gain (dBi)	1	
	Output Power for 100% duty Cycle operation (Watts)		0.002		Antenna Gain (Numeric)	1.26	
Tx Frequency (MHz)	24,025.00	Calcualtion power (Watts)	0.002	dBd + 2.17 = dBi	dBi to dBd	2.2	
					Antenna Gain (dBd)	-1.17	
Cable Loss (dB)	0.0	Adjusted Power (dBm)	3.87		Antenna minus cable (dBi)	1.00	
					Antenna Gain (Numeric)	1.26	
	Calculated ERP (mw)	1.863			EIRP = Po(dBM) + Gain (dB)		
	Calculated EIRP (mw)	3.070			Radiated (EIRP) dBm	4.871	
					ERP = EIRP - 2.17 dB		
					Radiated (ERP) dBm	2.701	

Power density (S) mW/cm² = EIRP / 4 p r^2

r (cm) EIRP (mW)

	Occupational Limit	FCC radio frequency radiation exposure limits per 1.1310		
5	mW/cm^2	Frequency (MHz)	Occupational Limit (mW/cm^2)	Public Limit (mW/cm^2)
50	W/m^2	30-300	1	0.2
	General Public Limit	300-1,500	f/300	f/1500
1	mW/cm^2	1,500-100,000	5	1
10	W/m^2			
	Occupational Limit			
$3.33 \times 10^{-4} f$	W/m^2	IC radio frequency radiation exposure limits per RSS-102		
8.0	W/m^2	Frequency (MHz)	Occupational Limit (W/m^2)	Public Limit (W/m^2)
	General Public Limit	100-6,000	$0.6455 f^{0.5}$	
$6.67 \times 10^{-5} f$	W/m^2	6,000-15,000	50	
1.6	W/m^2	48-300		1.291
		300-6,000		$0.02619 f^{0.6834}$
		6,000-15,000	50	10
		15,000-30,000	$3.33 \times 10^{-4} f$	$6.67 \times 10^{-5} f$
		Note: f is in MHz		

f = Transmit Frequecny (MHz)			f (MHz) =	24025	MHz
P_T = Power Input to Antenna (mW)			P_T (mW) =	2.4385	mW
Duty cycle (percentage of operation)			% =	100	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P_A (mW) =	2.44	mW
G_N = Numeric Gain of the Antenna			GN (numeric) =	1.26	numeric
S_{20} = Power Density of device at 20cm (mW/m^2)		$S_{20}=(P_A G_N)/(4\pi R_{20})^2$	S_{20} (mW/m^2) =	0.00	mW/m^2
S_{20} = Power Density of device at 20cm (W/m^2)		$S_{20}=(P_A G_N)/(4\pi R_{20})^2$	S_{20} (W/m^2) =	0.01	W/m^2
S_L = Power Density Limit (W/m^2)			S_L (W/m^2)=	1.602	W/m^2
R_C = Minimum distance to the Radiating Element for Compliance (cm)		$R_C=\sqrt{(P_A G_N/4\pi S_L)}$	R_C (cm) =	1.2	cm
S_C = Power Density of the device at the Compliance Distance R_C (W/m^2)		$S_C=(P_A G_N)/(4\pi R_C)^2$	S_C (W/m^2) =	1.60	W/m^2
R_{20} = 20cm			R20=	20	cm
	For Complaince with Canada General Population Limits, User Manual must indicate a minimum seperation distance of			1.2	cm
	Or in Meters for Complaince with Canada General Population Limits, a minimum seperation distance of			0.01	Meters