	Model:	A03302	Test Number:	210505a				
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 (dBm)	31.55					
		Transmitter Output power (mW)	1430.01					
Duty Cycle	50	Output power (W)	1.4300		Antenna Gain (dBi)	3		
	Output Power corrected for Duty Cycle (Watts)		0.715		Antenna Gain (Numeric)	2.00		
Tx Frequency (MHz)	1621	Calcualtion power (Watts)	0.72	dBd + 2.17 = dBi	dBi to dBd	2.2		
					Antenna Gain (dBd)	0.83		
Cable Loss (dB)	0.0	Adjusted Power (dBm)	28.54		Antenna minus cable (dBi)	3.00		
		Calculated ERP (mw)	865.586		EIRP = Po(dBM) + Gain (dB)			
		Calculated ERP (W)	0.87		Radiated (EIRP) dBm	31.543		
		Calculated EIRP (mw)	1,426.626		ERP = EIRP - 2.17 dB			
		Calculated EIRP (W)	1.43		Radiated (ERP) dBm	29.373		

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		
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	Frequency (MHz)	Occupational Limit (W/m^2)	Public Limit (W/m^2)
32.3	W/m^2	100-6,000	$0.6455f^{0.5}$	
	General Public Limit	6,000-15,000	50	
$0.02619f^{0.6834}$	W/m^2	48-300		1.291
4.1	W/m^2	300-6,000		$0.02619f^{0.6834}$
		6,000-15,000	50	10

f = Transmit Frequecny (MHz)			f (MHz) =	1621	MHz
P_T = Power Input to Antenna (mW)			P_T (mW) =	1,430.0130	mW
Duty cycle (percentage of operation)			% =	50	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P_A (mW) =	715.01	mW
G_N = Numeric Gain of the Antenna			GN (numeric) =	2.00	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) =	0.28	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) =	2.84	W/m^2
S_L = Power Density Limit (W/m^2)			S_L (W/m^2)=	4.090	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) =	16.7 cm	6.6 inches
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) =	4.09	W/m^2
R_{20} = 20cm			R20=	20 cm	7.9 inches

Summary: Standalone MPE Calculations and Summary								
Band (MHZ)	Tx Duty Cycle (%)	Tx Frequeny (MHz)	Power Total (mW)	Antenna Gain (dBi)	S_L (W/m^2)	S_{20} (W/m^2)	R_C (cm)	S_C (W/m^2)
1616-1626	50	1621	715	3	4.090	2.84	16.7	4.09
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)
2412-2462	100	2437	15.52	6.00	5.404	0.12	3.0	5.40

For Complaince with Canada General Population Limits, User Manual must indicate a minimum seperation distance of 16.7 cm

Or in Meters for Complaince with Canada General Population Limits, a minimum seperation distance of 0.17 Meters

Simlutaneous MPE Calculation		
	Transmitter 1	Transmitter 2
Tx Frequeny (MHz)	1621	2437
S_{20} (W/m^2)	2.84	0.12
S_L (W/m^2)	4.090	5.404
Power Ratio (S_L / S_{20})	0.694	0.023
Sum of Power Ratios at 20cm (Tx1 + Tx2)		0.717
Requirement = Σ of MPE Ratio ≤ 1		

	Model:	AA3851	Test Number: 210505					
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 (dBm)	11.91					
		Transmitter Output power (mW)	15.52					
Duty Cycle	100	Output power (W)	0.0155			Antenna Gain (dBi)	6	
		Output Power corrected for Duty Cycle (Watts)	0.016			Antenna Gain (Numeric)	3.98	
Tx Frequency (MHz)	2437	Calcualtion power (Watts)	0.02	dBd + 2.17 = dBi		dBi to dBd	2.2	
						Antenna Gain (dBd)	3.83	
Cable Loss (dB)	0.0	Adjusted Power (dBm)	11.91			Antenna minus cable (dBi)	6.00	
		Calculated ERP (mw)	37.497			EIRP = Po(dBM) + Gain (dB)		
		Calculated ERP (W)	0.037			Radiated (EIRP) dBm	17.910	
		Calculated EIRP (mw)	61.802			ERP = EIRP - 2.17 dB		
		Calculated EIRP (W)	0.062			Radiated (ERP) dBm	15.740	

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		
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			
$0.6455f^{0.5}$	W/m^2	IC radio frequency radiation exposure limits per RSS-102		
39.7	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	
5.4	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) =	2437	MHz	
P_T = Power Input to Antenna (mW)			P_T (mW) =	15.5239	mW	
Duty cycle (percentage of operation)			% =	100	%	
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P_A (mW) =	15.52	mW	
G_N = Numeric Gain of the Antenna			GN (numeric) =	3.98	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) =	0.12	W/m^2	
S_L = Power Density Limit (W/m^2)			S_L (W/m^2)=	5.404	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) =	3.0	cm	1.2 inches
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) =	5.40	W/m^2	
R_{20} = 20cm			R20=	20	cm	7.9 inches

Summary: Standalone MPE Calculations and Summary								
Band (MHZ)	Tx Duty Cycle (%)	Tx Frequeny (MHz)	Power Total (mW)	Antenna Gain (dBi)	S_L (W/m^2)	S_{20} (W/m^2)	R_C (cm)	S_C (W/m^2)
2412-2462	100	2437	15.52	6	5.404	0.12	3.0	5.40