Measurements & Calculations

	HVIN:	AP-900NA	Test Number:	240115			
	Max Average Transmitter Output (dBuV/m)		92.9				
	Transmitter Output power (mW)		0.585				
	Transmitter Output power (W)		0.0006				
Output Power for % duty Cycle operation (Watts)		100	0.0006		Antenna Gain (dBi)	0	
	Output Power for 100% duty Cycle operation (Watts)		0.0006		Antenna Gain (Numeric)	1.00	
Tx Frequency (MHz)	915	Calculation power (Watts)	0.0006	dBd + 2.17 = dBi	dBi to dBd	2.17	
					Antenna Gain (dBd)	-2.17	
Cable Loss (dB)	0.0	Adjusted Power (dBm)	-2.33		Antenna minus cable (dBi)	0.00	
					Antenna Gain (Numeric)	1.00	
	Calculated ERP (mw)	0.355			EIRP = Po(dBm) + Gain (dB)		
	Calculated EIRP (mw)	0.585			Radiated (EIRP) dBm	-2.328	
					ERP = EIRP - 2.17 dB		
					Radiated (ERP) dBm	-4.498	

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		
3.05	mW/cm^2	Frequency (MHz)	Occupational Limit (mW/cm^2)	Public Limit (mW/cm^2)
30.5	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
6.1	W/m^2			

	Occupational Limit	IC radio frequency radiation exposure limits per RSS-102, Issue 6		
$4.49f^{0.5}$	W/m^2	Frequency (MHz)	No Occupational limits in RSS-102 Issue 6	Mobile Limit (W/m^2)
135.8	W/m^2			
	General Public Limit	100-6,000	~~$0.6455f^{0.5}$~~	
$0.0131f0.6834$	W/m^2	6,000-15,000	~~50~~	
1.38	W/m^2	20-48		$4.49f0.5$
		300-6,000		$0.0131f0.6834$
		6,000-15,000	~~50~~	

				General Public	Occupational	
f = Transmit Frequency (MHz)			f (MHz) =	915	915	MHz
P_T = Power Input to Antenna (mW)			P_T (mW) =	0.5850	0.5850	mW
Duty cycle (percentage of operation)			% =	100	100	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P_A (mW) =	0.59	0.59	mW
G_N = Numeric Gain of the Antenna			GN (numeric) =	1.00	1.00	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) =	0.0001	0.0001	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) =	0.0012	0.0012	W/m^2
S_L = Power Density Limit (W/m^2) FCC			S_L (W/m^2)=	6.100	30.500	W/m^2
S_L = Power Density Limit (W/m^2) Canada			S_L (W/m^2)=	1.384	135.818	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) =	0.3	0.1	cm
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) =	0.6	0.1	cm
S_C = Power Density of the device at the Compliance Distance R_C (W/m^2) FCC		$S_C=(P_AG_N)/(4\pi R_C)^2$	S_C (W/m^2) =	6.10	30.50	W/m^2
S_C = Power Density of the device at the Compliance Distance R_C (W/m^2) Canada		$S_C=(P_AG_N)/(4\pi R_C)^2$	S_C (W/m^2) =	1.38	~~135.82~~	W/m^2
R_{20} = 20cm			R20=	20	20	cm

For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of 0.6 cm

Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of 0.01 Meters

Summary: Standalone MPE Calculations and Summary					Public Limit		Public	
	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)
FCC	100	915	0.6	1.00	6.100	0.0012	0.3	6.10
Canada	100	915	0.6	1.00	1.384	0.0012	0.6	1.38

Conclusion

The AP-900NA meets RF exposure requirements for both FCC and Industry Canada.

FCC:

This device is exempt from RF exposure testing as described in KDB 447498 D04 v01, paragraph 2.1.2 (1-mW Test Exemption). As described in 47 CFR 1.1307(b)(3)(i)(A), the AP-900NA testing has shown that the maximum time-averaged power is less than 1mW thereby making it exempt.

The maximum time-averaged power of the AP-900NA was found to be 0.585 mW at 915 MHz (the channel with the highest output power the device produced).

Industry Canada:

In addition, per RSS-102 Issue 6, section 6.3, this device is exempt from SAR evaluation based upon its maximum time-averaged power output of 0.585 mW at 915 MHz (the channel with the highest output power the device produced).