Rawlins H2O North: GENERAL PUBLIC RF EMISSIONS SINGLE SECTOR

The Power Density of a single sector for the site will not exceed the FCC regulations for public exposure limits. We can deduce areas with areas that exceed public exposure regulations by calculating the power density for a single sector and plotting the area in the drawings. The height of these areas were calculated using the Pathagorean theorom where we took the hight of the antennas and the distance to the nearest fence and came up with the closest possible distance anyone could get. A man-lift would be need to be used to reach the areas exceeding public RF exposure levels while being directly in front of the antennas. The line highlighted below in green shows the theoretical percentage of RF exposure the general public could be exposed to while standing directly under the antennas. This calculation is very conservitive as for this to be possible, the antenna would need to be pointing at the ground to have this affect. Antennas are generally installed to where the lowest point of high power RF is 7° from parallel to the ground or roughly 278' from the antennas. The calculation is not shown, but the RF exposure at that distance is about 0.7% of the exposure limits regulated by the FCC. Also, not shown is the RF exposure from the microwave dish as it has a minimal effect on the site or per sector basis. Union Wireless will not exceed public RF exposure limits per the guidelines required by the FCC.

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Number of Technologies / Carriers:	7

The power density of a radiating antenna is found using OET 65 Section 2 Equation 3:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power density (mW/cm2)
P = Power input to the antenna (mW)
G = Antenna gain with respect to an isotropic radiator
R = Distance from the antenna radiation center (cm)

S (TOTAL)	**0.31**	**mW/cm^2**
% of Total Allowable S:	**38.12**	**%**

If the % of Total Allwable Power Density S is Below 100 %, then General Public Exposure Limits are not Exceeded.

Represents Standing Outside of Fenced Lease Area Exposure Percentages

Technology / Carrier 1	UMTS 850	
UMTS 850 Power:	43	dBm
Linear Transmit Power:	19952.62	mW
Number of Transmitters:	2	
Max Antenna Gain:	16.5	dBi
Linear Antenna Gain:	44.67	
Coax Loss:	-0.5	dB
Linear Coax Loss:	0.89	
Distance from Transmitter:	2500	cm
Frequency Band:	850	MHz

Power Density S:	**0.02**	**mW/cm^2**
Freq Specfic Formula for S:	f/1500	mW/cm^2
Freq Specfic Allowable S:	0.57	mW/cm^2
% Contribution to allowable S:	**3.57**	**%**

Technology / Carrier 2	UMTS 1900	
UMTS 1900 Power:	43	dBm
Linear Transmit Power:	19952.62	mW
Number of Transmitters:	2	
Antenna Gain:	17	dBi
Linear Antenna Gain:	50.12	
Coax Loss:	-0.5	dB
Linear Coax Loss:	0.89	
Distance From Transmitter:	2500	cm
Frequency Band:	1900	MHz
Power Density S:	**0.02**	**mW/cm^2**
Freq Specfic Formula for S:	1	mW/cm^2
Freq Specfic Allowable S:	1.00	mW/cm^2
% Contribution to allowable S:	**2.27**	**%**

Technology / Carrier 3	LTE 1900	
LTE 1900 Power:	43	dBm
Linear Transmit Power:	19952.62	mW
Number of Transmitters:	4	
Max Antenna Gain:	17	dBi
Linear Antenna Gain:	50.12	
Coax Loss:	-0.5	dB
Linear Coax Loss:	0.89	
Distance from Transmitter:	2500	cm
Frequency Band:	1900	MHz
Power Density S:	**0.05**	**mW/cm^2**
Freq Specfic Formula for S:	1	mW/cm^2
Freq Specfic Allowable S:	0.57	mW/cm^2
% Contribution to allowable S:	**8.02**	**%**

Technology / Carrier 4	LTE AWS	
LTE AWS Power:	43	dBm
Linear Transmit Power:	19952.62	mW
Number of Transmitters:	4	
Antenna Gain:	17	dBi
Linear Antenna Gain:	50.12	
Coax Loss:	-0.5	dB
Linear Coax Loss:	0.89	
Distance From Transmitter:	2500	cm
Frequency Band:	2100	MHz
Power Density S:	**0.05**	**mW/cm^2**
Freq Specfic Formula for S:	1	mW/cm^2
Freq Specfic Allowable S:	1.00	mW/cm^2
% Contribution to allowable S:	**4.54**	**%**

Power Density S:	**0.02**	**mW/cm^2**
Freq Specfic Formula for S:	f/1500	mW/cm^2
Freq Specfic Allowable S:	0.57	mW/cm^2
% Contribution to allowable S:	**3.57**	**%**

Technology / Carrier 2	UMTS 1900	
UMTS 1900 Power:	43	dBm
Linear Transmit Power:	19952.62	mW
Number of Transmitters:	2	
Antenna Gain:	17	dBi
Linear Antenna Gain:	50.12	
Coax Loss:	-0.5	dB
Linear Coax Loss:	0.89	
Distance From Transmitter:	2500	cm
Frequency Band:	1900	MHz

Technology / Carrier 5	LTE 700	
LTE 700 Power:	43	dBm
Linear Transmit Power:	19952.62	mW
Number of Transmitters:	2	
Max Antenna Gain:	15.8	dBi
Linear Antenna Gain:	38.02	
Coax Loss:	-0.5	dB
Linear Coax Loss:	0.89	
Distance from Transmitter:	2500	cm
Frequency Band:	700	MHz
Power Density S:	**0.02**	**mW/cm^2**
Freq Specfic Formula for S:	f/1500	mW/cm^2
Freq Specfic Allowable S:	0.47	mW/cm^2
% Contribution to allowable S:	**3.69**	**%**

Technology / Carrier 6	LTE 700	
LTE 700 Power:	46	dBm
Linear Transmit Power:	39810.72	mW
Number of Transmitters:	4	
Antenna Gain:	18	dBi
Linear Antenna Gain:	63.10	
Coax Loss:	-1	dB
Linear Coax Loss:	0.79	
Distance From Transmitter:	1990	cm
Frequency Band:	2100	MHz
Power Density S:	**0.16**	**mW/cm^2**
Freq Specfic Formula for S:	1	mW/cm^2
Freq Specfic Allowable S:	1.00	mW/cm^2
% Contribution to allowable S:	**16.04**	**%**

Technology / Carrier 6	LTE AWS	
LTE AWS Power:	46	dBm