

Engineering Exhibit  
KWNR (FM)  
Facility ID 61527  
Minor Change Application  
March 25, 2008

By this application it is sought to modify KWNR (FM) to specify a new antenna mounting height and location upon a tower very near the present location.

The proposed KWNR (FM) antenna is to be located 133 meters above ground level upon a tower identified by antenna structure registration number 1253233.

From this location KWNR (FM) is fully spaced as a C facility in accordance with Section 73.207 to all known facilities, applications and allocations. A detailed analysis of the terrain surrounding the antenna location has determined the height above average terrain to be 451.6 meters. That analysis has been made part of this exhibit.

The proposed facilities were evaluated in terms of potential radio frequency radiation exposure at ground level in accordance with OET Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio frequency Radiation."

The proposed antenna system is a Dielectric DCBD-03-12FMB/36H-4, 12- bay, 0.50 wave spaced "panel" style antenna, mounted with its center of radiation 133 meters above ground level. This proposal will operate with an effective radiated power of 100 kilowatts in both the horizontal and vertical planes. Using elevation pattern data supplied by the manufacturer, analysis has determined that at 2 meters above ground, at 96 meters from the base of the tower, this proposal will contribute worst case 0.76 microwatts per square centimeter, or 0.08 percent of the allowable ANSI limit for controlled exposure, and 0.38 percent of the allowable limit for uncontrolled exposure. This figure is less than 5% of the applicable FCC exposure limit at all locations extending out from the base of the tower. Section 1.1307(b)(3) excludes applications when the calculated level is predicted to be less than 5% of the applicable exposure limit. It is therefore believed that this proposal is in compliance with OET Bulletin Number 65 as required by the Federal Communications Commission.

Further, the applicant will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The site itself is restricted from public access. The applicant will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

JAMES B. HATFIELD, PE  
BENJAMIN F. DAWSON III, PE  
THOMAS M. ECKELS, PE  
STEPHEN S. LOCKWOOD, PE  
DAVID J. PINION, PE

PAUL W. LEONARD, PE  
ERIK C. SWANSON, EIT  
THOMAS S. GORTON, PE

HATFIELD & DAWSON  
CONSULTING ELECTRICAL ENGINEERS  
9500 GREENWOOD AVE. N.  
SEATTLE, WASHINGTON 98103

TELEPHONE  
(206) 783-9151  
FACSIMILE  
(206) 789-9834  
E-MAIL  
hatdaw@hatdaw.com

MAURY L. HATFIELD, PE  
CONSULTANT  
OAKHURST, NSW  
AUSTRALIA

**Engineering Statement  
HAAT Calculation  
May 2007**

On behalf of Citicasters Licenses, L.P., I have calculated the antenna height above average terrain (HAAT) for a new antenna to be installed with a center of radiation at 1143.2 meters AMSL at NAD27 coordinates of N36-00-28 x W115-00-21.

This calculation has been made using terrain elevation data from the USGS 7.5 minute topographic quadrangle maps Las Vegas NE, Las Vegas SE, Las Vegas SW, Henderson, Boulder Beach, Boulder City NW, Sloan NE, Sloan SE, and Sloan (all Nevada). The terrain data was read from the maps at 0.1 km increments between 3 and 16 km from the transmitter site, along each of the eight standard radials. The results of this calculation are summarized in the following table:

Azimuth (degrees True)	Height of Average Terrain
0	530.1 meters
45	564.6 meters
90	769.8 meters
135	698.2 meters
180	778.0 meters
225	913.2 meters
270	690.4 meters
315	588.6 meters

The overall height of average terrain is 691.6 meters. For an antenna located at 1143.2 meters AMSL at this location, the corresponding HAAT value is 451.6 meters.

A complete list of the terrain data read from the USGS 7.5 minute maps is attached.

May 22, 2007

A handwritten signature in black ink, appearing to read "Erik C. Swanson". The signature is fluid and cursive, with the first name "Erik" and last name "Swanson" clearly distinguishable.

Erik C. Swanson  
Technical Consultant

# Citicasters HAAT Calculation

0 deg true

KM	FT	M
3	1870	569.98
3.1	1860	566.93
3.2	1855	565.41
3.3	1850	563.88
3.4	1840	560.83
3.5	1830	557.79
3.6	1820	554.74
3.7	1810	551.69
3.8	1810	551.69
3.9	1805	550.17
4	1800	548.64
4.1	1790	545.59
4.2	1780	542.55
4.3	1775	541.02
4.4	1770	539.50
4.5	1760	536.45
4.6	1750	533.40
4.7	1750	533.40
4.8	1740	530.35
4.9	1740	530.35
5	1725	525.78
5.1	1720	524.26
5.2	1710	521.21
5.3	1705	519.69
5.4	1700	518.16
5.5	1690	515.11
5.6	1685	513.59
5.7	1680	512.07
5.8	1675	510.54
5.9	1670	509.02
6	1665	507.49
6.1	1660	505.97
6.2	1655	504.45
6.3	1650	502.92
6.4	1650	502.92
6.5	1645	501.40
6.6	1640	499.87
6.7	1640	499.87
6.8	1635	498.35
6.9	1630	496.83
7	1630	496.83
7.1	1625	495.30
7.2	1620	493.78
7.3	1620	493.78
7.4	1615	492.25
7.5	1610	490.73
7.6	1610	490.73
7.7	1605	489.21
7.8	1600	487.68
7.9	1598	487.07
8	1595	486.16
8.1	1590	484.63
8.2	1590	484.63
8.3	1590	484.63
8.4	1585	483.11
8.5	1580	481.59
8.6	1580	481.59
8.7	1580	481.59
8.8	1580	481.59
8.9	1578	480.98
9	1580	481.59
9.1	1575	480.06
9.2	1575	480.06
9.3	1575	480.06
9.4	1580	481.59
9.5	1580	481.59
9.6	1580	481.59
9.7	1580	481.59
9.8	1590	484.63

Radial Height  
of Average Terrain  
530.09 meters

9.9	1595	486.16
10	1600	487.68
10.1	1605	489.21
10.2	1610	490.73
10.3	1620	493.78
10.4	1620	493.78
10.5	1620	493.78
10.6	1620	493.78
10.7	1630	496.83
10.8	1640	499.87
10.9	1640	499.87
11	1655	504.45
11.1	1660	505.97
11.2	1665	507.49
11.3	1675	510.54
11.4	1680	512.07
11.5	1690	515.11
11.6	1700	518.16
11.7	1700	518.16
11.8	1720	524.26
11.9	1720	524.26
12	1740	530.35
12.1	1735	528.83
12.2	1740	530.35
12.3	1750	533.40
12.4	1760	536.45
12.5	1765	537.97
12.6	1780	542.55
12.7	1780	542.55
12.8	1780	542.55
12.9	1805	550.17
13	1820	554.74
13.1	1825	556.26
13.2	1830	557.79
13.3	1845	562.36
13.4	1860	566.93
13.5	1860	566.93
13.6	1880	573.03
13.7	1890	576.07
13.8	1900	579.12
13.9	1910	582.17
14	1940	591.31
14.1	1940	591.31
14.2	1940	591.31
14.3	1940	591.31
14.4	1960	597.41
14.5	1965	598.93
14.6	1960	597.41
14.7	1980	603.51
14.8	1975	601.98
14.9	1970	600.46
15	1990	606.55
15.1	2000	609.60
15.2	1990	606.55
15.3	1980	603.51
15.4	2000	609.60
15.5	1980	603.51
15.6	1960	597.41
15.7	1960	597.41
15.8	1955	595.89
15.9	1950	594.36
16	1940	591.31

## Citicasters HAAT Calculation

45 deg true

KM	FT	M
3	2010	612.65
3.1	2000	609.60
3.2	1990	606.55
3.3	1990	606.55
3.4	1980	603.51
3.5	1970	600.46
3.6	1960	597.41
3.7	1955	595.89
3.8	1950	594.36
3.9	1940	591.31
4	1930	588.27
4.1	1925	586.74
4.2	1920	585.22
4.3	1915	583.69
4.4	1910	582.17
4.5	1900	579.12
4.6	1900	579.12
4.7	1890	576.07
4.8	1885	574.55
4.9	1880	573.03
5	1880	573.03
5.1	1870	569.98
5.2	1867	569.06
5.3	1864	568.15
5.4	1860	566.93
5.5	1860	566.93
5.6	1860	566.93
5.7	1860	566.93
5.8	1860	566.93
5.9	1860	566.93
6	1860	566.93
6.1	1860	566.93
6.2	1860	566.93
6.3	1865	568.45
6.4	1870	569.98
6.5	1870	569.98
6.6	1875	571.50
6.7	1880	573.03
6.8	1880	573.03
6.9	1880	573.03
7	1885	574.55
7.1	1885	574.55
7.2	1890	576.07
7.3	1885	574.55
7.4	1890	576.07
7.5	1895	577.60
7.6	1900	579.12
7.7	1900	579.12
7.8	1900	579.12
7.9	1900	579.12
8	1910	582.17
8.1	1920	585.22
8.2	1960	597.41
8.3	1960	597.41
8.4	1920	585.22
8.5	1920	585.22
8.6	1940	591.31
8.7	1940	591.31
8.8	1910	582.17
8.9	1930	588.27
9	1930	588.27
9.1	1930	588.27
9.2	1940	591.31
9.3	1925	586.74
9.4	1920	585.22
9.5	1900	579.12
9.6	1890	576.07
9.7	1880	573.03
9.8	1860	566.93

Radial Height  
of Average Terrain  
564.62 meters

9.9	1870	569.98
10	1850	563.88
10.1	1845	562.36
10.2	1840	560.83
10.3	1840	560.83
10.4	1860	566.93
10.5	1880	573.03
10.6	1840	560.83
10.7	1840	560.83
10.8	1840	560.83
10.9	1840	560.83
11	1840	560.83
11.1	1840	560.83
11.2	1840	560.83
11.3	1840	560.83
11.4	1840	560.83
11.5	1840	560.83
11.6	1840	560.83
11.7	1840	560.83
11.8	1640	499.87
11.9	1760	536.45
12	1870	569.98
12.1	1875	571.50
12.2	1880	573.03
12.3	1860	566.93
12.4	1850	563.88
12.5	1880	573.03
12.6	1960	597.41
12.7	1960	597.41
12.8	1960	597.41
12.9	1920	585.22
13	1890	576.07
13.1	1920	585.22
13.2	2000	609.60
13.3	1970	600.46
13.4	1890	576.07
13.5	1795	547.12
13.6	1780	542.55
13.7	1780	542.55
13.8	1800	548.64
13.9	1815	553.21
14	1790	545.59
14.1	1770	539.50
14.2	1770	539.50
14.3	1760	536.45
14.4	1780	542.55
14.5	1730	527.31
14.6	1710	521.21
14.7	1740	530.35
14.8	1740	530.35
14.9	1700	518.16
15	1630	496.83
15.1	1630	496.83
15.2	1605	489.21
15.3	1605	489.21
15.4	1600	487.68
15.5	1590	484.63
15.6	1590	484.63
15.7	1570	478.54
15.8	1580	481.59
15.9	1570	478.54
16	1530	466.35

## Citicasters HAAT Calculation

90 deg true

KM	FT	M
3	2230	679.71
3.1	2240	682.75
3.2	2240	682.75
3.3	2210	673.61
3.4	2205	672.09
3.5	2200	670.56
3.6	2195	669.04
3.7	2190	667.51
3.8	2190	667.51
3.9	2185	665.99
4	2180	664.47
4.1	2170	661.42
4.2	2170	661.42
4.3	2168	660.81
4.4	2160	658.37
4.5	2160	658.37
4.6	2160	658.37
4.7	2155	656.85
4.8	2155	656.85
4.9	2150	655.32
5	2145	653.80
5.1	2140	652.27
5.2	2135	650.75
5.3	2135	650.75
5.4	2130	649.23
5.5	2130	649.23
5.6	2125	647.70
5.7	2125	647.70
5.8	2123	647.09
5.9	2121	646.48
6	2120	646.18
6.1	2120	646.18
6.2	2120	646.18
6.3	2120	646.18
6.4	2125	647.70
6.5	2125	647.70
6.6	2130	649.23
6.7	2130	649.23
6.8	2140	652.27
6.9	2145	653.80
7	2150	655.32
7.1	2160	658.37
7.2	2170	661.42
7.3	2180	664.47
7.4	2185	665.99
7.5	2190	667.51
7.6	2205	672.09
7.7	2220	676.66
7.8	2235	681.23
7.9	2280	694.95
8	2390	728.47
8.1	2320	707.14
8.2	2315	705.61
8.3	2360	719.33
8.4	2360	719.33
8.5	2490	758.95
8.6	2460	749.81
8.7	2400	731.52
8.8	2440	743.71
8.9	2420	737.62
9	2480	755.91
9.1	2460	749.81
9.2	2500	762.00
9.3	2560	780.29
9.4	2560	780.29
9.5	2600	792.48
9.6	2600	792.48
9.7	2660	810.77
9.8	2720	829.06

Radial Height  
of Average Terrain  
769.77 meters



9.9	2760	841.25
10	2700	822.96
10.1	2770	844.30
10.2	2720	829.06
10.3	2735	833.63
10.4	2760	841.25
10.5	2760	841.25
10.6	2770	844.30
10.7	2760	841.25
10.8	2780	847.35
10.9	2790	850.39
11	2820	859.54
11.1	2840	865.63
11.2	2880	877.83
11.3	2900	883.92
11.4	2860	871.73
11.5	2880	877.83
11.6	2940	896.11
11.7	2920	890.02
11.8	2890	880.87
11.9	2900	883.92
12	2930	893.07
12.1	2940	896.11
12.2	2940	896.11
12.3	2915	888.49
12.4	2925	891.54
12.5	2930	893.07
12.6	2950	899.16
12.7	2960	902.21
12.8	2990	911.35
12.9	3010	917.45
13	3050	929.64
13.1	3055	931.17
13.2	3065	934.21
13.3	3100	944.88
13.4	3140	957.07
13.5	3240	987.55
13.6	3280	999.75
13.7	3320	1011.94
13.8	3360	1024.13
13.9	3440	1048.52
14	3400	1036.32
14.1	3220	981.46
14.2	3040	926.59
14.3	2920	890.02
14.4	2900	883.92
14.5	2780	847.35
14.6	2720	829.06
14.7	2600	792.48
14.8	2560	780.29
14.9	2515	766.57
15	2470	752.86
15.1	2440	743.71
15.2	2420	737.62
15.3	2440	743.71
15.4	2400	731.52
15.5	2320	707.14
15.6	2280	694.95
15.7	2340	713.23
15.8	2360	719.33
15.9	2370	722.38
16	2300	701.04

## Citicasters HAAT Calculation

135 deg true

KM	FT	M
3	2460	749.81
3.1	2470	752.86
3.2	2475	754.38
3.3	2485	757.43
3.4	2480	755.91
3.5	2480	755.91
3.6	2440	743.71
3.7	2460	749.81
3.8	2470	752.86
3.9	2470	752.86
4	2470	752.86
4.1	2475	754.38
4.2	2475	754.38
4.3	2480	755.91
4.4	2490	758.95
4.5	2490	758.95
4.6	2500	762.00
4.7	2500	762.00
4.8	2490	758.95
4.9	2500	762.00
5	2510	765.05
5.1	2520	768.10
5.2	2515	766.57
5.3	2550	777.24
5.4	2620	798.58
5.5	2560	780.29
5.6	2560	780.29
5.7	2590	789.43
5.8	2620	798.58
5.9	2640	804.67
6	2680	816.87
6.1	2620	798.58
6.2	2650	807.72
6.3	2650	807.72
6.4	2690	819.91
6.5	2800	853.44
6.6	2960	902.21
6.7	2880	877.83
6.8	2800	853.44
6.9	2800	853.44
7	2760	841.25
7.1	2800	853.44
7.2	2820	859.54
7.3	2870	874.78
7.4	2950	899.16
7.5	3040	926.59
7.6	3160	963.17
7.7	3300	1005.84
7.8	3560	1085.09
7.9	3700	1127.76
8	3980	1213.11
8.1	3920	1194.82
8.2	3760	1146.05
8.3	3640	1109.48
8.4	3600	1097.28
8.5	3360	1024.13
8.6	3120	950.98
8.7	2880	877.83
8.8	2860	871.73
8.9	2720	829.06
9	2640	804.67
9.1	2460	749.81
9.2	2340	713.23
9.3	2280	694.95
9.4	2200	670.56
9.5	2130	649.23
9.6	2080	633.99
9.7	2040	621.79
9.8	1995	608.08

Radial Height  
of Average Terrain  
698.20 meters

9.9	1960	597.41
10	1940	591.31
10.1	1920	585.22
10.2	1905	580.65
10.3	1890	576.07
10.4	1885	574.55
10.5	1878	572.42
10.6	1870	569.98
10.7	1865	568.45
10.8	1860	566.93
10.9	1850	563.88
11	1840	560.83
11.1	1838	560.22
11.2	1830	557.79
11.3	1825	556.26
11.4	1825	556.26
11.5	1820	554.74
11.6	1815	553.21
11.7	1810	551.69
11.8	1805	550.17
11.9	1803	549.56
12	1797	547.73
12.1	1800	548.64
12.2	1795	547.12
12.3	1790	545.59
12.4	1790	545.59
12.5	1790	545.59
12.6	1788	544.98
12.7	1785	544.07
12.8	1781	542.85
12.9	1780	542.55
13	1778	541.94
13.1	1778	541.94
13.2	1778	541.94
13.3	1778	541.94
13.4	1778	541.94
13.5	1777	541.63
13.6	1778	541.94
13.7	1778	541.94
13.8	1778	541.94
13.9	1778	541.94
14	1778	541.94
14.1	1778	541.94
14.2	1779	542.24
14.3	1780	542.55
14.4	1780	542.55
14.5	1781	542.85
14.6	1785	544.07
14.7	1788	544.98
14.8	1790	545.59
14.9	1790	545.59
15	1795	547.12
15.1	1790	545.59
15.2	1795	547.12
15.3	1795	547.12
15.4	1795	547.12
15.5	1798	548.03
15.6	1805	550.17
15.7	1805	550.17
15.8	1805	550.17
15.9	1808	551.08
16	1810	551.69

## Citicasters HAAT Calculation

180 deg True

KM	FT	M
3	2715	827.53
3.1	2715	827.53
3.2	2725	830.58
3.3	2740	835.15
3.4	2755	839.73
3.5	2765	842.77
3.6	2780	847.35
3.7	2790	850.39
3.8	2800	853.44
3.9	2800	853.44
4	2800	853.44
4.1	2830	862.59
4.2	2850	868.68
4.3	2885	879.35
4.4	2880	877.83
4.5	2920	890.02
4.6	2920	890.02
4.7	2920	890.02
4.8	2930	893.07
4.9	2940	896.11
5	2955	900.69
5.1	2955	900.69
5.2	2950	899.16
5.3	2958	901.60
5.4	2960	902.21
5.5	2958	901.60
5.6	2930	893.07
5.7	2880	877.83
5.8	2860	871.73
5.9	2820	859.54
6	2820	859.54
6.1	2840	865.63
6.2	2990	911.35
6.3	2880	877.83
6.4	2820	859.54
6.5	2800	853.44
6.6	2840	865.63
6.7	2820	859.54
6.8	2820	859.54
6.9	2760	841.25
7	2740	835.15
7.1	2760	841.25
7.2	2780	847.35
7.3	2720	829.06
7.4	2720	829.06
7.5	2715	827.53
7.6	2700	822.96
7.7	2700	822.96
7.8	2710	826.01
7.9	2710	826.01
8	2695	821.44
8.1	2690	819.91
8.2	2675	815.34
8.3	2660	810.77
8.4	2700	822.96
8.5	2720	829.06
8.6	2840	865.63
8.7	2770	844.30
8.8	2680	816.87
8.9	2640	804.67
9	2590	789.43
9.1	2600	792.48
9.2	2590	789.43
9.3	2600	792.48
9.4	2580	786.39
9.5	2575	784.86
9.6	2540	774.19
9.7	2500	762.00
9.8	2460	749.81

Radial Height  
of Average Terrain  
777.97 meters

9.9	2440	743.71
10	2480	755.91
10.1	2500	762.00
10.2	2510	765.05
10.3	2480	755.91
10.4	2440	743.71
10.5	2460	749.81
10.6	2470	752.86
10.7	2470	752.86
10.8	2460	749.81
10.9	2450	746.76
11	2440	743.71
11.1	2415	736.09
11.2	2400	731.52
11.3	2400	731.52
11.4	2400	731.52
11.5	2390	728.47
11.6	2400	731.52
11.7	2420	737.62
11.8	2560	780.29
11.9	2560	780.29
12	2440	743.71
12.1	2500	762.00
12.2	2720	829.06
12.3	2760	841.25
12.4	2800	853.44
12.5	2600	792.48
12.6	2420	737.62
12.7	2330	710.19
12.8	2360	719.33
12.9	2400	731.52
13	2350	716.28
13.1	2320	707.14
13.2	2310	704.09
13.3	2300	701.04
13.4	2275	693.42
13.5	2250	685.80
13.6	2230	679.71
13.7	2220	676.66
13.8	2200	670.56
13.9	2170	661.42
14	2170	661.42
14.1	2165	659.89
14.2	2158	657.76
14.3	2140	652.27
14.4	2140	652.27
14.5	2150	655.32
14.6	2120	646.18
14.7	2080	633.99
14.8	2060	627.89
14.9	2000	609.60
15	1995	608.08
15.1	2000	609.60
15.2	2120	646.18
15.3	2110	643.13
15.4	2100	640.08
15.5	2000	609.60
15.6	1990	606.55
15.7	1980	603.51
15.8	1970	600.46
15.9	1960	597.41
16	2020	615.70

## Citicasters HAAT Calculation

225 deg true

KM	FT	M
3	3400	1036.32
3.1	3450	1051.56
3.2	3465	1056.14
3.3	3480	1060.71
3.4	3465	1056.14
3.5	3450	1051.56
3.6	3360	1024.13
3.7	3300	1005.84
3.8	3240	987.55
3.9	3200	975.36
4	3200	975.36
4.1	3240	987.55
4.2	3075	937.26
4.3	2960	902.21
4.4	3030	923.55
4.5	3100	944.88
4.6	3140	957.07
4.7	3080	938.79
4.8	3030	923.55
4.9	3005	915.93
5	3010	917.45
5.1	3080	938.79
5.2	3180	969.27
5.3	3120	950.98
5.4	3040	926.59
5.5	2960	902.21
5.6	2960	902.21
5.7	3060	932.69
5.8	3120	950.98
5.9	3080	938.79
6	3000	914.40
6.1	3080	938.79
6.2	3020	920.50
6.3	3030	923.55
6.4	3120	950.98
6.5	3120	950.98
6.6	3150	960.12
6.7	3040	926.59
6.8	2980	908.31
6.9	2940	896.11
7	2940	896.11
7.1	2960	902.21
7.2	2960	902.21
7.3	3020	920.50
7.4	2980	908.31
7.5	2990	911.35
7.6	3040	926.59
7.7	3040	926.59
7.8	3080	938.79
7.9	3080	938.79
8	3040	926.59
8.1	3060	932.69
8.2	3080	938.79
8.3	3120	950.98
8.4	3040	926.59
8.5	3070	935.74
8.6	3020	920.50
8.7	2950	899.16
8.8	3000	914.40
8.9	3000	914.40
9	2930	893.07
9.1	2920	890.02
9.2	2900	883.92
9.3	2900	883.92
9.4	2915	888.49
9.5	2940	896.11
9.6	2960	902.21
9.7	2990	911.35
9.8	3010	917.45

Radial Height  
of Average Terrain  
913.25 meters

9.9	3040	926.59
10	3020	920.50
10.1	3030	923.55
10.2	3035	925.07
10.3	3038	925.99
10.4	3040	926.59
10.5	3040	926.59
10.6	3040	926.59
10.7	3020	920.50
10.8	3000	914.40
10.9	2900	883.92
11	2860	871.73
11.1	2860	871.73
11.2	2860	871.73
11.3	2860	871.73
11.4	2840	865.63
11.5	2850	868.68
11.6	2855	870.21
11.7	2860	871.73
11.8	2870	874.78
11.9	2840	865.63
12	2860	871.73
12.1	2860	871.73
12.2	2840	865.63
12.3	2800	853.44
12.4	2800	853.44
12.5	2755	839.73
12.6	2765	842.77
12.7	2805	854.97
12.8	2780	847.35
12.9	2835	864.11
13	2880	877.83
13.1	2901	884.23
13.2	2870	874.78
13.3	2850	868.68
13.4	2810	856.49
13.5	2760	841.25
13.6	2765	842.77
13.7	2770	844.30
13.8	2780	847.35
13.9	2780	847.35
14	2790	850.39
14.1	2795	851.92
14.2	2810	856.49
14.3	2830	862.59
14.4	2840	865.63
14.5	2840	865.63
14.6	2875	876.30
14.7	2880	877.83
14.8	2900	883.92
14.9	2880	877.83
15	2900	883.92
15.1	2910	886.97
15.2	2965	903.73
15.3	2980	908.31
15.4	2960	902.21
15.5	3020	920.50
15.6	3060	932.69
15.7	3090	941.83
15.8	3120	950.98
15.9	3140	957.07
16	3200	975.36

## Citicasters HAAT Calculation

270 deg true

KM	FT	M
3	2320	707.14
3.1	2300	701.04
3.2	2300	701.04
3.3	2300	701.04
3.4	2300	701.04
3.5	2305	702.57
3.6	2290	697.99
3.7	2280	694.95
3.8	2250	685.80
3.9	2260	688.85
4	2280	694.95
4.1	2340	713.23
4.2	2380	725.43
4.3	2440	743.71
4.4	2340	713.23
4.5	2240	682.75
4.6	2190	667.51
4.7	2190	667.51
4.8	2190	667.51
4.9	2200	670.56
5	2200	670.56
5.1	2205	672.09
5.2	2195	669.04
5.3	2190	667.51
5.4	2190	667.51
5.5	2190	667.51
5.6	2200	670.56
5.7	2215	675.13
5.8	2230	679.71
5.9	2240	682.75
6	2240	682.75
6.1	2250	685.80
6.2	2260	688.85
6.3	2270	691.90
6.4	2275	693.42
6.5	2280	694.95
6.6	2300	701.04
6.7	2310	704.09
6.8	2320	707.14
6.9	2325	708.66
7	2330	710.19
7.1	2330	710.19
7.2	2335	711.71
7.3	2340	713.23
7.4	2338	712.62
7.5	2338	712.62
7.6	2335	711.71
7.7	2330	710.19
7.8	2335	711.71
7.9	2330	710.19
8	2325	708.66
8.1	2310	704.09
8.2	2300	701.04
8.3	2300	701.04
8.4	2300	701.04
8.5	2300	701.04
8.6	2300	701.04
8.7	2295	699.52
8.8	2290	697.99
8.9	2285	696.47
9	2280	694.95
9.1	2280	694.95
9.2	2275	693.42
9.3	2265	690.37
9.4	2265	690.37
9.5	2265	690.37
9.6	2260	688.85
9.7	2255	687.33
9.8	2250	685.80

Radial Height  
of Average Terrain  
690.44 meters



9.9	2245	684.28
10	2220	676.66
10.1	2230	679.71
10.2	2235	681.23
10.3	2240	682.75
10.4	2240	682.75
10.5	2240	682.75
10.6	2240	682.75
10.7	2240	682.75
10.8	2245	684.28
10.9	2245	684.28
11	2240	682.75
11.1	2245	684.28
11.2	2240	682.75
11.3	2245	684.28
11.4	2245	684.28
11.5	2242	683.36
11.6	2241	683.06
11.7	2243	683.67
11.8	2240	682.75
11.9	2242	683.36
12	2238	682.14
12.1	2240	682.75
12.2	2243	683.67
12.3	2245	684.28
12.4	2245	684.28
12.5	2245	684.28
12.6	2245	684.28
12.7	2248	685.19
12.8	2250	685.80
12.9	2249	685.50
13	2248	685.19
13.1	2247	684.89
13.2	2249	685.50
13.3	2249	685.50
13.4	2247	684.89
13.5	2248	685.19
13.6	2248	685.19
13.7	2247	684.89
13.8	2246	684.58
13.9	2245	684.28
14	2245	684.28
14.1	2245	684.28
14.2	2245	684.28
14.3	2245	684.28
14.4	2245	684.28
14.5	2245	684.28
14.6	2245	684.28
14.7	2245	684.28
14.8	2247	684.89
14.9	2250	685.80
15	2252	686.41
15.1	2257	687.94
15.2	2260	688.85
15.3	2265	690.37
15.4	2268	691.29
15.5	2271	692.20
15.6	2276	693.73
15.7	2280	694.95
15.8	2285	696.47
15.9	2292	698.60
16	2295	699.52

# Citicasters HAAT Calculation

315 deg true

KM	FT	M
3	1990	606.55
3.1	1955	595.89
3.2	1940	591.31
3.3	1930	588.27
3.4	1940	591.31
3.5	1940	591.31
3.6	1940	591.31
3.7	1940	591.31
3.8	1940	591.31
3.9	1950	594.36
4	1920	585.22
4.1	1910	582.17
4.2	1910	582.17
4.3	1905	580.65
4.4	1895	577.60
4.5	1895	577.60
4.6	1900	579.12
4.7	1895	577.60
4.8	1890	576.07
4.9	1890	576.07
5	1880	573.03
5.1	1890	576.07
5.2	1890	576.07
5.3	1885	574.55
5.4	1890	576.07
5.5	1880	573.03
5.6	1880	573.03
5.7	1875	571.50
5.8	1870	569.98
5.9	1860	566.93
6	1850	563.88
6.1	1845	562.36
6.2	1860	566.93
6.3	1865	568.45
6.4	1870	569.98
6.5	1885	574.55
6.6	1900	579.12
6.7	1905	580.65
6.8	1905	580.65
6.9	1910	582.17
7	1910	582.17
7.1	1911	582.47
7.2	1912	582.78
7.3	1915	583.69
7.4	1915	583.69
7.5	1912	582.78
7.6	1910	582.17
7.7	1905	580.65
7.8	1905	580.65
7.9	1901	579.43
8	1900	579.12
8.1	1900	579.12
8.2	1900	579.12
8.3	1898	578.51
8.4	1899	578.82
8.5	1898	578.51
8.6	1895	577.60
8.7	1895	577.60
8.8	1900	579.12
8.9	1898	578.51
9	1900	579.12
9.1	1900	579.12
9.2	1922	585.83
9.3	1930	588.27
9.4	1940	591.31
9.5	1940	591.31
9.6	1940	591.31
9.7	1940	591.31
9.8	1940	591.31

Radial Height  
of Average Terrain  
588.56 meters

9.9	1940	591.31
10	1920	585.22
10.1	1922	585.83
10.2	1921	585.52
10.3	1922	585.83
10.4	1922	585.83
10.5	1921	585.52
10.6	1919	584.91
10.7	1916	584.00
10.8	1915	583.69
10.9	1915	583.69
11	1915	583.69
11.1	1915	583.69
11.2	1915	583.69
11.3	1917	584.30
11.4	1920	585.22
11.5	1922	585.83
11.6	1923	586.13
11.7	1925	586.74
11.8	1925	586.74
11.9	1930	588.27
12	1934	589.48
12.1	1938	590.70
12.2	1945	592.84
12.3	1950	594.36
12.4	1955	595.89
12.5	1975	601.98
12.6	1980	603.51
12.7	1980	603.51
12.8	1980	603.51
12.9	1980	603.51
13	1965	598.93
13.1	1970	600.46
13.2	1980	603.51
13.3	1982	604.12
13.4	1985	605.03
13.5	1990	606.55
13.6	1995	608.08
13.7	1998	608.99
13.8	1997	608.69
13.9	1990	606.55
14	1987	605.64
14.1	1980	603.51
14.2	1978	602.90
14.3	1979	603.20
14.4	1979	603.20
14.5	1982	604.12
14.6	1982	604.12
14.7	1980	603.51
14.8	1985	605.03
14.9	1983	604.42
15	1980	603.51
15.1	1980	603.51
15.2	1980	603.51
15.3	1980	603.51
15.4	1982	604.12
15.5	1984	604.73
15.6	1985	605.03
15.7	1987	605.64
15.8	1990	606.55
15.9	1990	606.55
16	1995	608.08