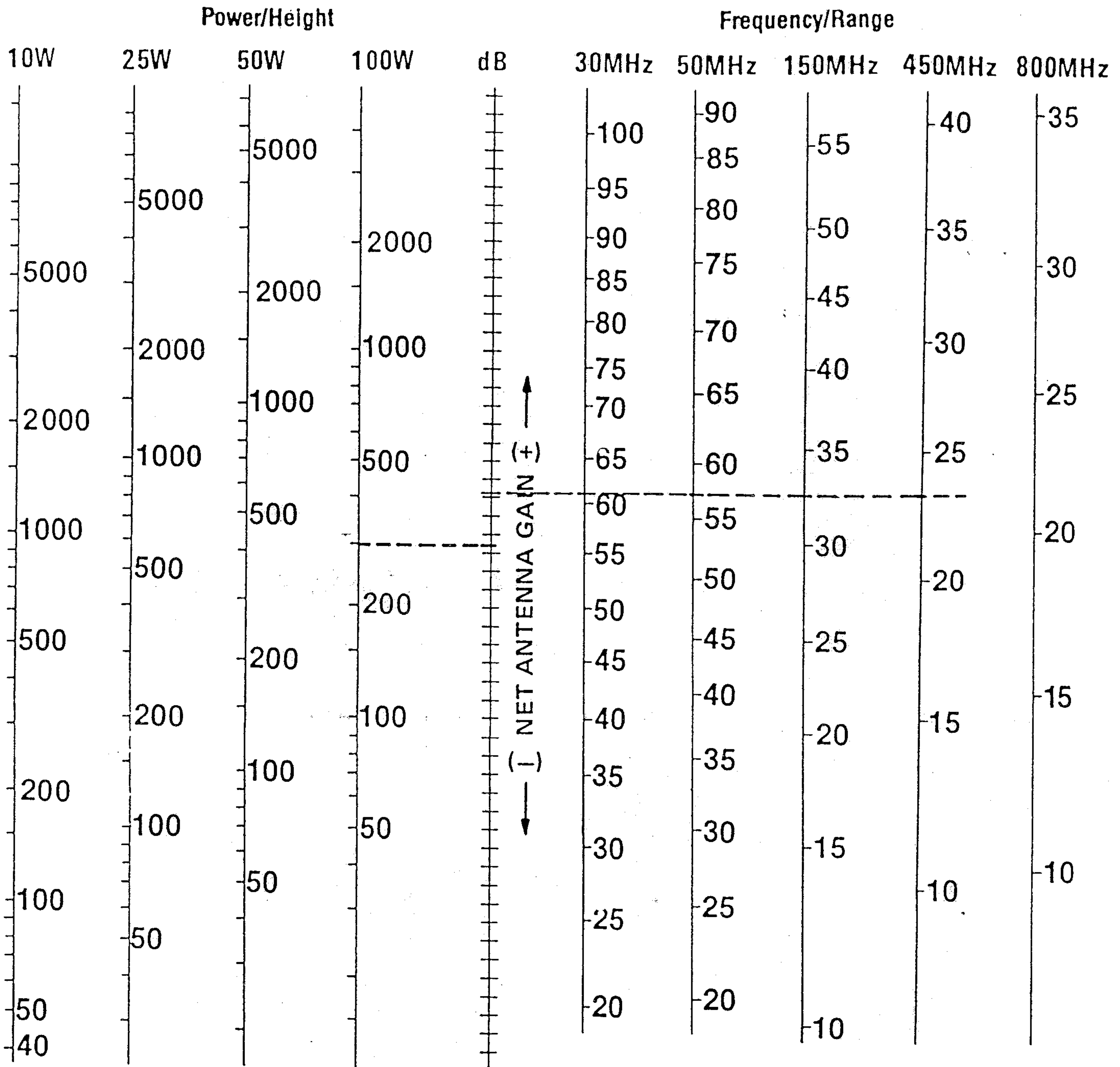


The DB "Range Calculator"



This range chart is designed to assist you in finding the approximate talkout range to a mobile unit when the antenna height, transmitter power, and frequency are known.

There are many factors which determine accurately radio propagation characteristics and resulting coverage. These factors include seasonal changes, atmospheric conditions, local noise level and even sun spot activity. However, it is possible to obtain a rough indication of range in average rolling terrain for a given base station transmitter power, antenna gain and height using the range calculator.

The following steps explain the use of the DB Range Calculator when an estimate of range is needed for base station to mobile communications.

1. Subtract the transmission line loss and combiner, duplexer or filter loss (if used) from the antenna gain. This may be a plus (+) or minus (-) value and we call it NET ANTENNA SYSTEM GAIN.
2. Locate the transmit power column that most closely matches the power output of your base transmitter.
3. Move up this column until you find the height of your antenna (above average terrain).

5. From that point move up or down the column by the number of dBs arrived at in Step 1.

6. Move across to the right until you find the column that represents the frequency band you are using. This figure will give you the approximate talkout range in miles for a 1 microvolt received signal level.

Example:

The facts are: Tower height is 300 ft. (91.44 m), 350 ft. (106.68 m) of 7/8" (22.23 mm) foam cable, antenna gain is +6 dB; transmit power is 100 watts and the frequency range is 450 MHz.

1. 7/8" (22.23 mm) Foam Cable has approximately .9 dB loss per 100 ft. (30.48 m) $(3.5 \times .9) = 3.15$ dB.
2. $+6 - 3.15 = +2.85$ dB NET ANTENNA SYSTEM GAIN.
3. Using the 100 watt Column — move up to the 300 ft. (91.44 m) point.
4. Move across to the net gain column and then up 2.85 dB.
5. From this point move to the right to the 450 MHz column and we find a distance of 23 miles (37 kilometers)