



[Home](#) / [Databases & Searches](#) /

FMpower - Find ERP for an FM Station Class

FMPOWER uses the [FM propagation curves program \(/media/radio/fm-and-tv-propagation-curves\)](/media/radio/fm-and-tv-propagation-curves) to calculate the effective radiated power (ERP) needed to achieve facilities equivalent to the reference facilities for an FM station class. Only three pieces of information are required to use this program -- the U.S. state of interest, the station class, and the [antenna height above average terrain \(HAAT\) \(/media/radio/haat-calculator\)](/media/radio/haat-calculator). The HAAT for a particular FM station may be found via the [FM Query \(/media/radio/fm-query\)](/media/radio/fm-query). [More after the form.](#)

FMpower Results

'100 watt' LPFM facilities for equivalency determination:

Reference ERP = 0.100 kW ERP

Reference HAAT= 30 meters HAAT

F(50,50) 60 dBu protected contour at 5.6 km distance

Equivalent ERP = 0.005 kilowatts (kW)
(rounded per [47 CFR 73.212](#))

Unrounded ERP = 0.005 kW for 126 meters HAAT

Low Power FM (LPFM) stations are authorized throughout the United States.

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For example, FMpower shows that 4.1 kW ERP at 122 meters HAAT is equivalent to reference Class A facilities of 6.0 kW ERP at 100 meters HAAT. Reference parameters for the various classes are specified in [47 CFR 73.211 \(http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1211\)](http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1211) and are listed in a table at [FM Station Classes and Service Contours \(/media/radio/fm-station-classes\)](#).

For shorter antenna heights, FMpower may display an equivalent ERP that is larger than the maximum permitted ERP for the station class. In such cases, a warning message will be posted. In practical terms, this means that coverage equivalent to the reference facilities for the station class cannot be

obtained with the given HAAT. (This also illustrates the importance of antenna height on coverage for FM and TV facilities.)

Equivalence between FM facilities is made by comparing the distances to the 60 dBu (1 mV/m) F(50,50) service contour. The sole exception to this practice is for those grandfathered Class A stations covered by rule section [47 CFR 73.213\(c\)](http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1213) (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1213). For these grandfathered stations, equivalence is determined by comparing the 34 dBu F(50,10) interfering contour if the HAAT is below the Class A reference HAAT of 100 meters, or by comparing the 60 dBu contours if the HAAT is 100 meters or more.

For more information on AM and FM radio broadcasting, please visit the [Audio Division \(/media/radio/audio-division\)](/media/radio/audio-division) website, and the [Broadcast Radio Links \(/media/radio/broadcast-radio-links\)](/media/radio/broadcast-radio-links) page.

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[FM Radio \(/tags/fm-radio\)](/tags/fm-radio)

[Radio \(/tags/radio\)](/tags/radio)

[Low Power FM \(/tags/low-power-fm-0\)](/tags/low-power-fm-0)

[Radio \(/tags/radio\)](/tags/radio)

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