FC **Federal
Communications
Commission**

FM and TV Propagation Curves

This function uses the FM or TV television propagation curves to compute the distance to a service or interfering contour, or the corresponding field strength at a given contour distance. More after the form.

Screen 3 - Results

Results of Calculation

Distance to Contour = 0.062 kilometers

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Input Data from Screens 1 and 2

ERP = 0.099 kW
HAAT = 74.0 meters
Field Strength = 121.0 dBu

Distances are in **meters and kilometers**
Power is in **kW (kilowatts)**
Field Strength is in **dBu**
FM and NTSC TV Channels 2 through 6
F(50,10) for interfering contours selected
Find Distance, given a Field Strength

This function uses the FCC's CURVES program to make calculations of the F(50,50) FM and NTSC (analog) TV service curves, the F(50,10) interfering signal curves, and the F(50,90) digital TV service curves. Printable copies of these propagation curves are available at FM and TV Propagation Curves Graphs (/encyclopedia/fm-and-tv-propagation-curves-graphs-sections-73333-73525-and-73699).

Antenna Height Above Average Terrain (HAAT) values for a particular FM or TV station can be obtained from the FM Query (/media/radio/fm-query) or the TV Query (/media/television/tv-query), or use the HAAT Calculator (/media/radio/haat-calculator). The class of an FM station may be retrieved from the FM Query (/media/radio/fm-query).

FM Broadcast Radio

F(50,50) protected service contours for FM stations are defined as follows:

- 54 dBu contour for commercial Class B stations
- 57 dBu contour for commercial Class B1 stations
- 60 dBu (1 mV/m) contour for commercial Class A, C3, C2, C1, and C stations
- 60 dBu for all classes of noncommercial educational stations in the reserved band (88.1 to 91.9 MHz)

For LPFM (low power FM) stations, the 60 dBu service contour is not protected from interference caused by changes made to regular FM stations:

- 60 dBu service contour for LPFM stations

For radio stations, the service contour generally does not define the outer limit of listenable signal. In the absence of interference, FM stations can often be heard in locations well beyond the protected service contour. That extended service is not protected from interference caused by other stations.

City coverage for commercial FM stations is defined by the F(50,50) 70 dBu contour, per Section 73.315 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1315). For noncommercial educational stations (except LPFM), coverage over the community of license is defined by the 60 dBu contour (see Section 73.515 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1515)).

For the appropriate FM interfering contour, please consult Section 73.509 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1509) for noncommercial educational stations (88.1 MHz to 91.9 MHz) or Section 73.215 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1215) for commercial FM stations (92.1 MHz to 107.9 MHz).

If you already know the FM station class (/media/radio/fm-station-classes) and the HAAT, use FMpower (/media/radio/fmpower) to compute the effective radiated power (ERP) needed to achieve coverage equivalent to the reference (maximum) facilities for the station class.

Digital Television (DTV)

For DTV TV stations, service is defined to exist where the received signal strength exceeds the limit shown in the following table, using the F(50,90) propagation curves. These field strength values are defined in Section 73.622 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1622) and Section 73.625 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1625)).

Channels	DTV Noise-Limited Service	Minimum Field Strength over Community of License
Channels 2 through 6	28 dBu	35 dBu
Channels 7 through 13	36 dBu	43 dBu
Channels 14 through 69	41 dBu	48 dBu

Note: Using ERP and HAAT to define the F(50,90) contour may not give identical results to the more complex methods of noise-limited coverage prediction used for DTV allocations work.

NTSC (analog) Television

For NTSC (analog) TV stations, the service contours are as follows (from Section 73.683 (http://www.ecfr.gov/cgi-bin/text-idx?node==se47.4.73_1683) and Section 73.685 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1685)):

Channels	Grade B Service Contour	Grade A Service Contour	City Grade Service Contour
Channels 2 through 6	47 dBu	68 dBu	74 dBu
Channels 7 through 13	56 dBu	71 dBu	77 dBu
Channels 14 through 69	64 dBu	74 dBu	80 dBu

Frequencies corresponding to TV channels are available from Section 73.603 (http://www.ecfr.gov/cgi-bin/text-idx?node=se47.4.73_1603).

Information about AM and FM broadcast radio stations is available at the Audio Division (/media/radio/audio-division) on the FCC's website, and at Broadcast Radio Links (/media/radio/broadcast-radio-links)

Information about TV stations is available at the Video Division (/media/television/video-division).

FCC (https://www.fcc.gov) > Media Bureau (/media) > Audio Division (/media/radio/audio-division) and Video Division (/media/television/video-division).

Tags:

Radio (/tags/radio)

FM Radio (/tags/fm-radio)

Radio (/tags/radio)

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

Radio (/tags/radio)

Translators (/tags/translators)

Television (/tags/television)

Digital Television (/tags/digital-television)

Television (/tags/television)

Class A and Low Power Television (/tags/class-and-low-power-television)

Data, Maps, Reports (/tags/data-maps-reports)

Data (/tags/data)

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