

25.203(l) Analysis for 17/24 GHz BSS Feeder Link Antenna

In this application, DIRECTV Enterprises, LLC (“DIRECTV”) requests operating authority to allow an earth station antenna at DIRECTV’s Northeast Uplink Diverse Facility (NEDF) in Littleton, NH to communicate with the 17/24 GHz BSS communications payloads on the T14 and T15 satellites. Under Section 25.203(l) of the Commission’s rules, feeder link facilities operating in the 25.05-25.25 GHz band can only be licensed in Economic Areas (“EA”) where no existing FS licensee is authorized, and feeder link operations must be coordinated with FS licensees in nearby EAs when the PFD of the feeder link transmitted signal is equal to or greater than $-114 \text{ dBW/m}^2/\text{MHz}$ at the boundary of the FS licensed area.

DIRECTV notes that the earth station that is the subject of this application is located in Grafton County, NH. According to the Commission’s ULS database, there are no FS licensees authorized to operate in the relevant band in the EA that includes Belknap County. The table on the following page was produced as a result of a search of the ULS database for active authorizations that include the 25.05-25.15 GHz band. As can be seen, there are no active licensees in the relevant frequency band in the state of New Hampshire. The closest terrestrial licensees are in the Boston SMSA (call signs WMT328 and WMT333) and the closest county in that SMSA to the proposed new earth station location is Essex County.

The map on the following page was produced using Google Earth and it shows that the shortest distance from the proposed new earth station at NEDF to Essex County is approximately 170 km. The analysis below demonstrates that the applied for earth station will meet the $-114 \text{ dBW/m}^2/\text{MHz}$ level at the closest boundary of the Boston SMSA with 8.2 dB of margin.

3.5m uplink

24 GHz BSS Feeder Link Antenna Parameters	Essex County
Max EIRP/36 MHz carrier (dBW)	75.7
Antenna size (m)	3.5
Antenna on-axis gain (dBi)	56.7
Max power into antenna (dBW)	19.0
Bandwidth normalizing factor for 36 MHz carrier (dB)	15.6
Max power density into antenna (dBW/MHz)	3.4
Max gain towards Essex County (dBi) (§25.209)	-10.0
Max eirp density towards Essex County (dBW/MHz)	-6.6
Min distance to EA border (km)	170.0
Spreading loss over min distance to EA border (dB-m ²)	115.6
Max PFD at EA border (dBW/m ² /MHz)	-122.2
Margin in DEMS protection (dB)	8.2

ULS Search Results for Licensees in 25.05-25.15 GHz			
Call Sign	Licensee Name	Market/Area	Status
WMF846	FiberTower Spectrum Holdings LLC	St. Louis, MO	Active
WMF848	FiberTower Spectrum Holdings LLC	Kansas City, MO	Active
WMF850	FiberTower Spectrum Holdings LLC	Baltimore SMSA	Active
WMF852	FiberTower Spectrum Holdings LLC	Pittsburg, PA	Active
WMF854	FiberTower Spectrum Holdings LLC	Seattle, WA	Active
WMT304	FiberTower Spectrum Holdings LLC	New York, NY	Active
WMT307	FiberTower Spectrum Holdings LLC	New York, NY	Active
WMT312	FiberTower Spectrum Holdings LLC	Washington DC SMSA	Active
WMT315	FiberTower Spectrum Holdings LLC	New York, NY	Active
WMT318	FiberTower Spectrum Holdings LLC	Chicago, IL	Active
WMT325	FiberTower Spectrum Holdings LLC	Kansas City, KS	Active
WMT328	FiberTower Spectrum Holdings LLC	Boston, MA	Active
WMT331	FiberTower Spectrum Holdings LLC	Dallas, TX	Active
WMT332	FiberTower Spectrum Holdings LLC	Chicago, IL	Active
WMT333	FiberTower Spectrum Holdings LLC	Boston, MA	Active
WMT334	FiberTower Spectrum Holdings LLC	Miami, FL	Active
WMT335	FiberTower Spectrum Holdings LLC	Atlanta, GA	Active
WMT338	FiberTower Spectrum Holdings LLC	Washington DC SMSA	Active
WMT340	FiberTower Spectrum Holdings LLC	Dallas, TX	Active
WPJD304	FiberTower Spectrum Holdings LLC	Detroit, MI	Active
WPNH286	FiberTower Spectrum Holdings LLC	Richmond, VA	Active
WPNH287	FiberTower Spectrum Holdings LLC	Allentown, PA	Active
WPNH294	FiberTower Spectrum Holdings LLC	Stockton, CA (San Joaquin Co.) BEA163	Active
WPNH298	FiberTower Spectrum Holdings LLC	Jacksonville, FL	Active
WPNH299	FiberTower Spectrum Holdings LLC	Orlando, FL	Active
WPNH306	FiberTower Spectrum Holdings LLC	Greensboro, NC	Active
WPNH315	FiberTower Spectrum Holdings LLC	Buffalo, NY	Active
WPNH323	FiberTower Spectrum Holdings LLC	Memphis, TN	Active
WPNH324	FiberTower Spectrum Holdings LLC	Austin, TX	Active
WPNH325	FiberTower Spectrum Holdings LLC	Nashville, TN	Active
WQCJ304	FiberTower Spectrum Holdings LLC	Denver-Boulder-Greeley BEA141	Active

