

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

In this application, DIRECTV Enterprises, LLC (“DIRECTV”) requests, in part, operating authority to allow an earth station antenna at DIRECTV’s Los Angeles Broadcast Center (LABC) to communicate with DIRECTV RB-1 and DIRECTV RB-2, the 17/24 GHz BSS communications payloads on the DIRECTV 14 and DIRECTV 15 satellites, respectively. 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 Los Angeles, CA, which is in EA 160. According to the Commission’s ULS database, there are no FS licensees in that EA authorized to operate in the relevant band. The table on the following page was produced as a result of a search of the ULS database for authorizations to operate in the 25.05-25.15 GHz band. As can be seen, there are thirty one active licenses in this frequency band. As can be readily determined, the Market/Areas for all licenses but one are well removed from Los Angeles County, CA and from DIRECTV’s LABC location. The one exception is call sign WPNH294 in Stockton, CA, which is in EA 163.

An analysis of EA 163 shows that Monterey County, CA is the closest county in EA 163 to DIRECTV’s LABC location. A Google Earth search of California counties resulted in the image on the following page and as can be seen, the shortest distance from DIRECTV’s LABC site to Monterey County, or the edge of EA 163, is just under 257 km. The analysis below demonstrates that the applied for earth station will meet the $-114 \text{ dBW/m}^2/\text{MHz}$ level at the boundary of EA 163 with over 17 dB of margin.

13.2m uplink	
24 GHz BSS Feeder Link Antenna Parameters	Monterey Co
Max EIRP/carrier (dBW)	80.0
Antenna size (m)	13.2
Antenna on-axis gain (dBi)	67.0
Max power into antenna (dBW)	13.0
Bandwidth normalizing factor for 36 MHz carrier (dB)	15.6
Max power density into antenna (dBW/MHz)	-2.6
Max gain towards the horizon (dBi) (§25.209)	-10.0
Max eirp density towards the horizon (dBW/MHz)	-12.6
Min distance to EA border (km)	256.99
Spreading loss over min distance to EA border (dB-m^2)	119.1
Max PFD at EA boder ($\text{dBW/m}^2/\text{MHz}$)	-131.7
Margin in DEMS protection (dB)	17.7

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

