WAIVER REQUESTS

Request for Partial Waiver of Section 25.115(e) Application for 20/30 GHz Earth Stations

Section 25.115(e) of the Commission's rules provides that "[a]pplications to license individual earth stations operating in the 20/30 GHz band shall be filed on FCC Form 312, Main Form and Schedule B, *and shall also include the information described in Sec. 25.138.*" (emphasis added)

Section 25.138 (a) Off-Axis EIRP Performance

Section 25.138 (a) provides that an application for a blanket Ka-band earth station license will be routinely processed if it meets the following requirements:

> GSO FSS earth station antenna off-axis EIRP spectral density for co-polarized signals shall not exceed the following values, within 3° of the GSO arc, under clear sky conditions:
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> 18.5-25log(theta)-10log(N) dBW/40kHz..... for 2.0° <= theta <= 7°
> -2.63-10log(N)..... dBW/40kHz..... for 7° <= theta <= 9.23°
> 21.5-25log(theta)-10log(N) dBW/40kHz..... for 9.23° <= theta <= 48°
> -10.5-10log(N)..... dBW/40kHz..... for 48° <= theta <= 180°
>
> Where:
> theta is the angle in degrees from the axis of the main lobe; for systems where more than one earth station is expected to transmit simultaneously in the same bandwidth, e.g., CDMA systems, N is the likely maximum number of simultaneously transmitting co-frequency earth stations in the receive beam of the satellite; N=1 for TDMA and FDMA systems.

This portion of Section 25.138 is clearly intended to ensure that the level of off-axis EIRP from the applicant's earth station meets an agreed-upon level and thereby does not cause excessive interference to neighboring satellites spaced at 2° increments from the applicant's satellite. When taken in conjunction with Section 25.209, which governs earth station antenna performance, it can be readily shown that, for TDMA and FDMA systems, if the applicant proposes an input power density of less than -10.63 dBW/40 kHz into an antenna that meets or exceeds the requirements Section 25.209, then the applicant's antenna naturally meets Section 25.138(a).

There is only one transmit carrier type associated with this application, that being a digital transmission with a maximum per carrier EIRP of 83.0 dBW/36 MHz. After subtracting the main beam antenna gain, and scaling for bandwidth, it can be readily shown that the maximum power density into the antenna for this carrier is -12.9 dBW/40 kHz, which is compliant with the required -10.63 dBW/40 kHz value.

Section 25.138 (d) Earth Station Antenna Radiation Parameters

Section 25.138(d) states as follows:

> The applicant shall provide for each earth station antenna type, a series of radiation patterns measured on a production antenna performed on a calibrated antenna range and, as a minimum, shall be made at the bottom, middle, and top frequencies of the 30 GHz band. The radiation patterns are:
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> (1) Co-polarized patterns for each of two orthogonal senses of polarizations in two orthogonal planes of the antenna.
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> (i) In the azimuth plane, plus and minus 10 degrees and plus and minus 180 degrees.
>
> (ii) In the elevation plane, zero to 30 degrees.
>
> (2) Cross-polarization patterns in the E- and H-planes, plus and minus 10 degrees.
>
> (3) Main beam gain."

As indicated by its title, Section 25.138 was intended to address blanket licensing of relatively small, mass produced antennas. Clearly, the wide range of measurement parameters specified in the rule was meant to account for the wide range of installation possibilities for such mass marketed antennas, and for the fact that not every antenna would be tested after installation. These small antennas could be readily subjected to the testing described in Section 25.138(d).

The current DIRECTV 20/30 GHz earth station application is for a 9.1-meter antennas that is to be constructed on-site. This is not a small, mass produced antenna, of the type that was contemplated under Section 25.138, and DIRECTV believes that for this case of relatively large individually licensed antennas, strict application of Section 25.138 is not appropriate. This is due to the fact that each individual antenna will be meticulously constructed and mechanically aligned "on site" before any antenna testing begins. In fact, state-of-the-art photogrammetry techniques will be employed to complete the final alignment of the main reflector surface, ensuring reflector surface tolerances within a small fraction of a wavelength. This will then be followed by in situ antenna performance verification testing, of the type called for in Section 25.132(c) for individually licensed, relatively large, C- and Ku-Band antennas. By employing these careful construction techniques, followed by antenna performance verification measurements, it can be fully assured that the overall performance of the various antennas will be quite similar and will meet or exceed the requirements of Section 25.209[1].

DIRECTV is including with this application, and in compliance with Section 25.138(d), a series of antenna performance verification measurement results from identical model, previously licensed, antennas. As was explained in the original applications for these previously licensed antennas, a number of practical and physical

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[1] This is an expectation that is borne out by actual tests performed on previously licensed identical model antennas at another DIRECTV earth station location (*i.e.*, call signs E070111 and E070023).

limitations precluded the generation of a complete set of measured radiation patterns, as called for in 25.138(d), however, these performance verification measurement results clearly demonstrate the validity of the points made in the previous paragraph. After grant of the currently applied-for the license, DIRECTV will construct the antennas and conduct antenna performance verification measurements. The results of this verification testing will be made available to the Commission, upon request.

Summary

DIRECTV has included with this application a set of antenna radiation patterns for identical model, previously licensed, antennas. These radiation patterns demonstrate that these previously licensed antennas meet or exceed all required FCC performance parameters for such antennas as called for in Section 25.209, and DIRECTV maintains that there is every reason to expect that the applied-for antennas will also meet these required performance parameters. In addition, the maximum EIRP density into the antenna for the applied-for carrier type is compliant with -10.63 dBW/40 kHz, which consequentially indicates that the antennas will meet the off-axis EIRP requirements of Section 25.138 and are therefore two-degree compliant. Accordingly, to the extent that the Commission deems it is required, DIRECTV requests a waiver of the specific information requirements of Section 25.115(e) and asks that this application be accepted as complete.

Request for Partial Waiver of Section 25.203(b)

Section 25.203(b) requires that applicants for an earth station authorization, other than an ESV, in a frequency band shared with equal right with terrestrial services submit a frequency coordination report demonstrating frequency compatibility with the terrestrial services. The frequency bands included in this application that are shared with equal rights with the terrestrial services are the 18.3-18.8 GHz receive band and the 29.25-29.5 GHz band.

DIRECTV notes that the terrestrial services are prohibited from installing new facilities in the 18.3-18.8 GHz band as a consequence of the *18 GHz Order* and the *Second Order on Reconsideration.*[2]

The frequency coordination report submitted with the application for other physically and technically identical antennas that are essentially co-located with the antenna that is the subject of this application[3] was produced in May 2006, and clearly demonstrates that no terrestrial interference would be received at the presently applied for

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[2] *See Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-20.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Service Use*, 15 FCC Rcd. 13430 (2000); *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-20.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Service Use*, 17 FCC Rcd. 24248 (2002).

[3] *I.e.*, call sign E060299

location in the 18 GHz band at that time. This, in combination with the fact that no new terrestrial facilities could be constructed in this frequency band in the interim time period from May 2006 to the present, necessarily means that the coordination situation cannot have changed since the report was issued. Accordingly, to the extent necessary, DIRECTV requests that the Commission accept this somewhat dated frequency coordination report in support of this application for this frequency band.

As for the 29.25-29.5 GHz band, DIRECTV understands that although this band is not available for terrestrial use,[4] a limited number of terrestrial authorizations issued prior to July 1996 for temporary fixed operations in several bands, including 27.5-29.5 GHz, remain outstanding.[5] Under the Commission's rules, such temporary operations may be conducted at a given location for a period of no more than six months, and are subject to prior coordination with existing licensees, permittees, and applicants in the area whose facilities could affect or be affected by such temporary operations.[6] Moreover, the operator is required to notify the Commission at least five days prior to installation of such temporary facilities, providing the location and operational parameters for its system and confirmation that required coordination with earth station facilities has been completed.[7]

DIRECTV has been operating other antennas in this band at this location for several years and at no time during this period has it experienced interference from a terrestrial wireless system, been informed that it has caused interference to a terrestrial wireless system, or been approached for coordination with a terrestrial wireless system. As such, there clearly can be no fixed service system operating within the coordination distance of this location, and DIRECTV maintains that a formal frequency coordination report for this band is therefore unnecessary. Accordingly, to the extent necessary, DIRECTV requests that the Commission waive the requirement for this particular frequency band in this particular instance.

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4 *See* 47 C.F.R. §§ 101.101, 101.147(a) (2007) (listing frequencies available for fixed wireless use in this band as 27.5-28.35 GHz and 29.1-29.25 GHz).

5 *See id.*, § 101.4. Such systems are subject to the requirements under Part 21 as in effect in July 1996.

6 *See* 47 C.F.R. §§ 21.706(d), 21.707(a) (1995). *See also* 47 C.F.R. §§ 101.31(a)(i), 101.103(d) (2007) (apply same requirements today).

7 *See* 47 C.F.R. § 21.708 (1995).