

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

XM Radio Inc. (“XM Radio”)¹, a satellite digital audio radio service (“SDARS”) licensee, hereby requests special temporary authority (“STA”) for a period of 60 days to permit its Washington, D.C. and Ellenwood, Georgia earth stations, Call Signs E000158 and E040204 (the “XM Earth Stations”), to communicate with the XM-4 satellite, Call Sign S2616, during and after the planned relocation of the spacecraft from 115.0° W.L. to 115.25° W.L.² STA is sought pending submission of and action on applications to modify the XM Earth Station licenses to reflect the XM-4 move and other planned changes in the deployment of the satellites in XM Radio’s fleet. Grant of the STA will serve the public interest by permitting XM Radio to maintain continuity of service to customers and facilitating a relocation of XM-4 that will simplify physical stationkeeping at the nominal 115° W.L. orbital location. XM Radio seeks action on this request by October 14 to accommodate the schedule for relocation of XM-4.

XM Radio requests that the Commission permit the XM Earth Stations to communicate with XM-4 as necessary for feeder link communications and Telemetry, Tracking and Control (“TT&C”) during and after the planned relocation. The Commission has generally permitted satellite operators the flexibility to design and modify their networks in response to customer requirements, provided there are no compelling countervailing public interest considerations.³ The requested STA will allow XM Radio to use the XM Earth Stations to

¹ XM Radio is a wholly-owned subsidiary of Sirius XM Radio Inc. (“Sirius XM”).

² XM Radio recently filed an application for modification of the XM-4 license to reflect these changes. *See* File No. SAT-MOD-20100722-00165, Call Sign S2616 (the “XM-4 Modification”). The public notice period for the XM-4 Modification has expired, and no party filed comments with respect to the application.

³ *See, e.g. AMSC Subsidiary Corporation*, 13 FCC Rcd 12316 at ¶ 8 (IB 1998) (the Commission generally leaves space station design decisions to the licensee “because the licensee

communicate with XM-4 during and after its proposed relocation, as part of a plan to enhance the overall reliability of the Sirius XM network.

Grant of the requested authority will not adversely affect other authorized communications systems. The S-band frequencies used by XM Radio are not shared with other licensees except for XM Radio's affiliate Satellite CD Radio. In the X-band frequencies, the XM Earth Stations have been fully coordinated with other spectrum users. The proposed change in the XM-4 orbital location will have no material effect on operations of the XM Earth Stations.

The small shift in XM-4's orbital location by a quarter of a degree may require minor repointing of the relevant earth station antennas, but any impact of that change on terrestrial users will be *de minimis*. The XM Earth Stations were originally coordinated using a western arc limit of 115.0° W.L. In order to accommodate the proposed relocation of XM-4 and allow additional flexibility in the location of its space stations going forward, XM Radio has commenced procedures to modify the coordination parameters for the XM Earth Stations for a broader arc that extends to 120° W.L. on the western edge. Notifications of the proposed change have already been sent to potentially affected terrestrial operations.

XM Radio will submit the final results of the coordination modification as soon as it is completed. For purposes of the instant STA, only a 0.25 degree shift in the antennas' orientation is required, not the full five degrees proposed as part of the coordination modification. XM Radio has calculated that the quarter-degree shift will result in an impact of no more than 0.06 dB on nearby terrestrial operations, which is clearly *de minimis*.⁴

is in a better position to determine how to tailor its system to meet the particular needs of its customers.”) (footnote omitted).

⁴ XM Radio used the following calculations to arrive at this estimate: The antenna sidelobe gain is governed by Section 25.209(a)(2), which provides that “[o]utside the main beam, the gain of the antenna shall lie below the envelope defined by $32-25 \log(\Theta)$ dBi” where Θ is the

The relocation of XM-4 is a time-critical part of XM Radio's plans to rearrange its satellite fleet in connection with the upcoming launch of XM-5 on October 14. Specifically, following the launch of XM-5 into the 85.2° W.L. orbital location, XM Radio plans to relocate its XM-1 and XM-2 spacecraft, which serve as in-orbit spares, from the nominal 85° W.L. orbital location and collocate them with XM-4 at the nominal 115° W.L. orbital location. XM Radio proposes to operate these three spacecraft in formation in an expanded stationkeeping volume. Because there are other spacecraft assigned to 115.0° W.L. and the immediately adjacent orbital positions, XM Radio has proposed to offset XM-4 from 115.0° W.L. The proposed offset location will avoid overlap of the XM-4 stationkeeping volume with that of other spacecraft and permit collocation of XM-4 with the spare satellites. XM Radio must initiate the move of XM-4 in mid-October to accommodate the schedule for relocation of the other spacecraft in the XM Radio fleet and in order to complete the space station relocations prior to the eclipse season.

angle in degrees from the axis of the main lobe. 47 C.F.R. §25.209(a)(2). For the Washington, D.C. earth station antennas (call sign E000158), Theta is approximately 30.25 degrees towards the horizon when XM-4 is at 115.0 W.L., and 30.09 degrees when XM-4 is at 115.25 W.L. Thus, the maximum gain change is $25 [\log (30.25) - \log (30.09)]$, or 0.06 dB. For the Ellenwood, GA earth station antennas (call sign E040204) Theta is approximately 38.92 degrees towards the horizon when XM-4 is at 115.0 W.L., and 38.75 degrees when XM-4 is at 115.25 W.L. Thus, the maximum gain change is $25[(\log (38.92) - \log (38.75))]$, or 0.05 dB.