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February 8, 2021

VIA ECFS AND IBFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street, NE
Washington, DC 20554

Re: *Ex Parte* Notice, *Expanding Flexible Use of the 12.2-12.7 GHz Band*, WT Docket No. 20-443; File No. SAT-MOD-20200417-00037; Call Signs: S2983 and S3018

Dear Ms. Dortch:

On Thursday, February 4, 2021, V. Noah Campbell, CEO of RS Access, LLC, as well as Tom Peters, Trey Hanbury, and Ryan Thompson of Hogan Lovells US LLP spoke with Ethan Lucarelli of acting FCC Chairwoman Jessica Rosenworcel's office.

Mr. Campbell reviewed the points contained in the attachment to this letter. He added that it was scarcely three months ago that RS Access alerted the Commission to SpaceX's "pattern of behavior designed to end run and box in the Commission's policymaking options on a matter of extraordinary national import."¹ The Commission has subsequently adopted, in a bipartisan and unanimous vote, a notice of proposed rulemaking to explore the feasibility of offering 5G mobile broadband service in the 12 GHz band.² Mr. Campbell said RS Access supports the Commission's decision and looks forward to the opportunity to comment about the potential of the band to enhance consumer welfare and America's 5G competitiveness.

Mr. Campbell also expressed RS Access's disappointment that SpaceX continues to demand a wholesale modification of its satellite system design, which could render moot the very notice of proposed rulemaking that the Commission, after months of careful deliberation, just unanimously adopted. RS Access urged the Commission to issue a decision on SpaceX's proposed system redesign only following a review of the record in the 12 GHz proceeding.

¹ Comments of RS Access, IBFS File No. SES-MOD-20200731-00807, at 1-2 (filed Nov. 6, 2020); see also Letter from V. Noah Campbell, CEO, RS Access, to Marlene H. Dortch, Secretary, FCC, RM-11768 (filed Nov. 13, 2020); Letter from V. Noah Campbell, CEO, RS Access, to Marlene H. Dortch, Secretary, FCC, RM-11768 (filed June 11, 2020).

² *Expanding Flexible Use of the 12.2-12.7 GHz Band*, Notice of Proposed Rulemaking, FCC 21-13, WT Docket No. 20-443, GN Docket No. 17-183, RM-11768 (rel. Jan. 15, 2021).

Please contact me with any questions regarding this submission.

Sincerely,

/s/ Trey Hanbury

Trey Hanbury
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Counsel to RS Access, LLC

cc: Ethan Lucarelli
Attachment

**RS ACCESS, LLC MEETING WITH ETHAN LUCARELLI,
ACTING WIRELESS ADVISOR TO ACTING FCC CHAIRWOMAN ROSENWORCEL**

- We commend the Commission’s recent unanimous vote to initiate a proceeding to explore how the 12.2-12.7 GHz (“12 GHz”) band can advance U.S. leadership in 5G.
- The record-shattering revenue from the ongoing C-band auction is evidence of insatiable demand for 5G spectrum, particularly for frequencies that can accommodate wide channels.
- We have joined others in supporting this transparent, public proceeding on how to update antiquated rules governing the 12 GHz Multichannel Video Distribution and Data Service.
- Our preliminary engineering analysis indicates that spectrum sharing with SpaceX and other NGSO FSS licensees is feasible.
- But if the FCC’s engineers conclude that sharing is not feasible, we need to be clear-eyed about this fact: SpaceX and the other aspiring NGSO FSS service providers have a wealth of other frequencies available to them (more than 15 gigahertz of spectrum in SpaceX’s case) and, indeed, these companies, which promise to offer global service, must already accommodate spectrum allocation regimes around the world that do not include NGSO FSS rights to use the 12 GHz band. And several major NGSO FSS aspirants – including Amazon’s Kuiper system – *don’t plan to use 12 GHz band spectrum at all, including in the United States.*
- The FCC has an opportunity to add a contiguous 500-megahertz block of mid-band spectrum to the U.S. 5G spectrum inventory.
 - The 12 GHz band is virtually unique in that it offers a contiguous 500-megahertz block that *does not require impairing a single government incumbent.*
 - Nor does accessing the band involve a complex, years-long relocation of commercial incumbents because they can keep using what they have wherever it is.

ENHANCING FLEXIBILITY IN THE 12 GHz BAND IS NOT A ZERO-SUM CHOICE BETWEEN SATELLITE AND TERRESTRIAL OPERATIONS

- While the C-band auction is nearly complete, and there is a 3.45-3.55 GHz auction slated for EOY 2021, there’s little other mid-band spectrum available for licensed flexible use aside from the 12 GHz band.
- Fortunately, 5G broadband in the 12 GHz band is not an either-or decision among terrestrial, DBS, and NGSO FSS licensees.
- Technical innovations have created new possibilities for sharing between terrestrial and satellite.
- With an NPRM released and ready to be published, the Commission will be in an ideal position to enhance terrestrial flexibility in the 12 GHz band based on sound technical analysis.
 - For example, in 2016, prior to the First Processing Round NGSO applications, NGSO earth stations were envisioned to track NGSO satellites nearly from horizon to horizon, which made these earth stations susceptible to interference from co-channel terrestrial operations.

- However, with the deployment of NGSO “mega-constellations,” earth stations do not need to look low in the sky to find a satellite because there are always several overhead offering service.
- In addition, relatively inexpensive phased array antennas are now readily available due to vast improvements to the manufacturing process of these antennas, and this development has greatly improved the gain and sidelobe performance of small antennas used at an NGSO customer’s premise.
- As a result of these developments, in 2021 and beyond, NGSO earth station antennas are able to operate at very high elevation angles most of the time and have excellent rejection of potential interfering signals arriving from much lower elevation angles, thus facilitating NGSO and terrestrial coexistence.

SPACE X SEEKS MAXIMAL FLEXIBILITY FOR ITSELF, NO MATTER THE ENCUMBRANCES OR DETRIMENTS TO OTHER OPERATORS

- SpaceX already has more than 15 gigahertz of spectrum available for its system. The 500 megahertz of the 12 GHz band represents about three percent of the spectrum assigned to SpaceX.
- SpaceX is already authorized to deploy 4,409 Ku- and Ka-band satellites.
- Full grant of SpaceX’s proposed satellite system redesign could render flexible use of the 12 GHz band that much harder to achieve. Among other things, SpaceX proposes to:
 - lower the altitude of 2,824 of its 4,409 satellites by as much as 785 km;
 - double the number of satellites that may communicate with any gateway earth station; and
 - widen the elevation angles of user terminals in a manner that would greatly increase the area of the sky in which SpaceX’s satellites will be visible.
- The proposed redesign could increase the likelihood of harmful interference between terrestrial and satellite systems in the 12 GHz band.
 - Widening the skyward view of user beams from a minimum elevation angle of 40 degrees to 25 degrees could effectively block future 5G terrestrial operations by increasing the probability that SpaceX subjects itself to harmful interference from terrestrial operations.
 - An NGSO receiver operating at a low elevation angle could have a higher antenna gain toward the horizon – the angle at which interfering signals from terrestrial operations will arrive – than one operating at a higher elevation angle.
 - This change could make the NGSO receiver more vulnerable to interference from terrestrial sources and coexistence between NGSO and terrestrial operations more challenging.
 - For example, a lower NGSO minimum operational elevation angle could result in a requirement for larger separation distances from terrestrial services and/or more burdensome coordination requirements.
 - SpaceX’s redesign could preemptively block large swaths of the country in which terrestrial licensees can site their future 5G base stations.
 - The proposed altitudes and overlapping orbital shells could increase the number of in-line interference events.

- At a minimum, the Commission should hold SpaceX's system redesign proposal in abeyance pending the outcome of the 12 GHz band NPRM.
 - When it authorized co-primary NGSO FSS licensees to operate in the band, the Commission put each NGSO FSS licensee, including SpaceX, on notice that their use of the 12 GHz band remained contingent on the outcome of this proceeding.
 - Acting only after developing a thorough record represents both a practical and prudent means of preserving the Commission's flexibility to reach a decision in this proceeding based on the merits after stakeholders have had the chance to provide critical input.

SPACE X CORRESPONDENCE FROM JAN. 15, 2021 IN ELS FILE NO. 0773-EX-CN-2020¹

FCC: Please provide the antenna radiation pattern for 0.48m antenna.

SpaceX: The SpaceX earth station antenna has a complex antenna pattern that varies depending on steering angle. Because neither the FCC's rules nor ITU requirements specify antenna pattern radiation or similar limits for NGSO earth station antennas, similar NGSO earth station applications have commonly been granted without the applicant's being required to submit detailed antenna pattern information. This was the case for both SpaceX's existing blanket authorization to deploy 1,000,000 earth stations and the prior experimental authorizations issued to SpaceX for testing at various locations within the United States and on board military aircraft. As noted above, this application seeks only to deploy ten earth stations on board seagoing platforms which will otherwise be consistent with SpaceX's existing blanket authorization.

¹ SpaceX requested experimental authority for ten earth stations on vessels near Port Canaveral, FL.