July 15, 2016

Via Electronic Filing

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington DC 20554

Re: Ex Parte Presentation
Higher Ground LLC, Blanket License Application for C-band Mobile Earth Terminals; IBFS File No. SES-LIC-20150616-00357

Dear Ms. Dortch:

On Wednesday, July 13, 2016, representatives from the Fixed Wireless Communications Coalition, Inc. (FWCC) and the Federal Communications Commission (FCC) met to discuss the FWCC’s positions in the above-referenced matter. These positions were detailed in the FWCC’s written ex parte presentation filed previously in this proceeding on June 8, 2016 and in the attached presentation handouts given to meeting participants. During the meeting, participants also raised the option of a limited or conditional waiver. The FWCC would be amenable to considering this option over a full scale launch of an untested unilateral coordination mechanism.

In addition to the undersigned, the following individuals were in attendance on behalf of the FWCC: Mitchell Lazarus, Fletcher, Heald & Hildreth, PLC; Larrie Sutliff, AT&T; and Joe Marzin, Comsearch.

The following individuals were in attendance on behalf of the FCC: Blaise Scinto and Stephen Buenzow (by phone) from the Wireless Telecommunications Bureau’s Broadband Division; Jose Albuquerque, Kerry Murray, Paul Blais (by phone), Chip Fleming, Cindy Spiers, Hsing Liu and Cally Richter (legal intern) from the International Bureau’s Satellite Division; and Jennifer Gilsenan from the International Bureau’s Office of the Bureau Chief.
Please do not hesitate to contact the undersigned for any questions.

Respectfully submitted,

Cheng-yi Liu
Counsel for the Fixed Wireless Communications Coalition, Inc.

Attachment

cc (via email):

Meeting Participants
Adam D. Krinsky, Counsel for Higher Ground LLC
Susan H. Crandall, Intelsat Corporation
David E. Meyer, National Spectrum Management Association
Tiffany West Smink, CenturyLink
Fixed Wireless Communications Coalition

opposition to

Higher Ground LLC, Blanket License Application for C-Band Mobile Earth Terminals

IBFS File No. SES-LIC-20150616-00357, call sign E150095

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July 13, 2016
About the FWCC

- Companies, associations, and individuals interested in terrestrial fixed microwave communications
- Formed in 1998; speaks for the fixed service community
- Active in 65+ FCC proceedings plus NTIA, FAA, GAO, courts
- Membership includes:
  - microwave equipment manufacturers
  - fixed microwave engineering / frequency coordinating firms
  - licensees of fixed microwave systems (and/or associations)
  - communications service providers (and/or associations)
  - major end users (railroads, public utilities, petroleum and pipeline, public safety agencies) and/or associations
  - backhaul providers, communications carriers
  - telecommunications attorneys and engineers.
Higher Ground Proposal

- Transmit from consumer mobile satellite devices in the 5925-6425 MHz fixed service band
- Coordinate unilaterally by using ULS data on fixed links to predict interference.
Current Uses of 6 GHz Fixed Service Band

- Many applications are critical to safety of life and property
  - typical availabilities of 99.999+ percent
- Some 6 GHz applications:
  - pipeline control
  - operation of electric grid
  - synchronizing movement of railroad trains
  - public safety backhaul
  - real-time financial and market data
  - urgent business data
  - Internet and telephone
- High availabilities are expensive: the last few dB can cost many thousands.
Existing Frequency Coordination

- Relies on *bilateral* notice-and-response protocol
  - applicant circulates detailed Prior Coordination Notice (PCN)
  - potential victim has opportunity to review and object
  - facilitates post-licensing checks on potential interference
- All but foolproof for 40 years: virtually no interference between fixed systems
- Interference control for high-availability fixed service requires prior calculation, coordination, agreed-upon rules
- Lower 6 GHz has effective spectrum sharing (and FCC rule success)
  - 22,243 fixed microwave links
  - 2,110 fixed satellite earth stations.
Higher Ground Proposal Falls Short

- Higher Ground seeks to bypass existing frequency coordination
- Approach is wholly unilateral: system makes its own decision on whether to transmit
  - no review by third parties
  - no way for victim to head off interference
  - no recourse if interference occurs
- System is complex with many moving parts, many opportunities for failure
- No way to detect, identify, or discontinue interference that occurs.
Reliance on Consumer Equipment

- Higher Ground system will use consumer devices in very large numbers
  - subject to mishandling and abuse
  - subject to breakdowns that are common in consumer electronics
- Device will check orientation of directional antenna using sensors in attached cell handset
  - makes critical interference protection dependent on a feature designed for casual games, etc.
Specific Concerns – 1

- **Conflicting incentives.** Higher Ground’s business model relies on completing most communications
  - company has every incentive to please customers despite risk of interfering

- **Adjacent channel interference.** Fixed service receivers (like others) can be vulnerable to interference from adjacent channels
  - Higher Ground has said its algorithms will not be aggressive on this issue.

- **Lack of recourse.** Even if a fixed service operator could prove Higher Ground caused interference, it will have no recourse
  - harmful interference should lead to revocation of Higher Ground’s waiver
  - but not likely in practice.
Specific Concerns – 2

- **Errors in ULS database.** ULS has known errors (e.g., in tower locations) that could lead Higher Ground to cause interference
  - licensees are responsible for accuracy—but proposal would greatly worsen consequences of even small errors

- **Overly Generalized Interference Model.** Higher Ground’s model for calculating interference uses a “one-size-fits-all” approach
  - fixed service band is a complex RF environment
  - requires hands-on, individualized frequency coordination.
Specific Concerns – 3

- **Attributing interference.** Even if Higher Ground seriously degrades fixed service operations, operators will have no way to associate the interference with Higher Ground
  - problem made worse by rarity of fixed service outages
  - no way to detect, report, or discontinue interference

- **Suitable bands available.** The Commission has allocated Mobile Satellite Service bands specifically for Higher Ground’s type of application
  - C-band’s lower cost to Higher Ground does not justify risk of interference to fixed service.
“Statistical Ceiling of Interference” is Suspect

- Higher Ground says worst-case “uncoordinated” interference is one incident per 13 months for every northward-facing fixed receiver
- Calculation rests on unrealistic assumptions:
  - each mobile device averages only 5 messages per month
  - mobile device messages occur evenly over time
  - mobile devices are spread evenly over the country
  - pointing of mobile devices is random over 360 degrees
  - fixed receivers are spread evenly over the country
  - pointing of fixed receivers at any location is random
- Concentrations of mobile devices or fixed receivers (or both) will result in far more frequent interference.
Bad History of Mobile Use in Fixed Band

- 2005: FCC authorized C-band earth stations on moving ships
  - “Earth Stations aboard Vessels” (ESVs)
  - required full bilateral frequency coordination
- Fixed service operators experienced interference from ESVs
  - sources went undetected for years
  - discovered ESVs as cause only accidentally
- Illustrates the high risk from mobile devices in fixed bands
  - even with best efforts at frequency coordination.
Waiver Proceeding Not Appropriate

- Proposal raises novel issues and departures from precedent
- Under waiver, first test would come with widespread deployment
- Mobile use needs detailed technical rules for protection to the fixed service
  - plus procedures to promptly ameliorate any interference that occurs
  - plus sanctions in the event that Higher Ground causes harmful interference
- Changes of this scope and consequence require a rulemaking
  - should include stakeholder discussion and testing comparable to TV White Space proceeding
- Adoption of rules would also open band to competition for mobile satellite service.
Thank you!

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