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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 Gilseman from the International Bureau's Office of the Bureau Chief.

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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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