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March 21, 2017

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Via IBFS

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

**Re: IBFS File No. SES-LIC-20150616-00357, Call Sign E150095
*Higher Ground LLC, Blanket License Application for C-band Mobile Earth Terminals
Ex Parte Communication***

Dear Ms. Dortch:

The Fixed Wireless Communications Coalition, Inc. (FWCC) files this letter in response to the *ex parte* letter of Higher Ground LLC (HG) dated March 13, 2017.

There are mounting indications that HG's coordination algorithms may not prevent interference to the Fixed Service (FS). In two specific instances, HG has shown it does not understand possible interference sources. HG's deficiencies in the relevant physics and engineering put the FS at needless risk. We have further concerns about the possibility of other interference situations that HG may have likewise mishandled but that have not yet come to light.

Earlier in the proceeding we noted HG's failure to protect the FS against adjacent channel interference.¹ Frequency coordinators routinely evaluate possible interference into channels next to those being coordinated. It is unclear whether HG was unaware of this need or chose to ignore it. Both possibilities

¹ Letter from Cheng-yi Liu and Mitchell Lazarus to Marlene H. Dortch, Secretary, FCC at 4 (filed June 8, 2016).

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are troubling. More troubling still was HG's response: a promise to comply with out-of-band emissions limits.² (HG must comply with these limits anyway.) We noted that out-of-band limits address an altogether different problem.³ The Bureau *Order* that granted HG's waiver erroneously accepted the out-of-band emissions remedy.⁴ We re-raised the issue in our Application for Review, and explained in detail that out-of-band emissions have no bearing on adjacent channel interference.⁵

HG now switches arguments. It relies instead on a sentence in the *Order* saying its low signal strength and small likelihood of proximity to an FS station produce minimal risk of adjacent channel interference.⁶ The *Order* pulls this conclusion out of the air with no analysis or explanation to support it.

UTC's Application for Review raises a second coordination issue that HG had passed over: interference from unwanted reflections in the environment.⁷ Again, HG's response exhibited a disturbing lack of technical understanding:

Given that SatPaqs must be pointed toward the satellite overhead in order to transmit, UTC's un-intentional reflection scenario is simply unrealistic ...⁸

Geosynchronous satellites can never be "overhead" in the United States.⁹ As seen from northern Maine, HG's nearest satellite is only 30 degrees above the horizon. HG's license includes Alaska; from Fairbanks, its nearest satellite is 15 degrees above the horizon. The SatPaq antennas have a low enough gain (9 dBi) that the antenna pattern spans several tens of degrees.¹⁰ Even when "pointed toward the satellite," the antenna can transmit much of its energy at angles low enough to cause interference from ground reflections—interference that HG's algorithms ignore. Even at latitudes where the satellites are higher in the sky, reflections can occur from buildings and other vertical surfaces. HG ignores these as well.

We are alarmed, first, at HG's initially having disregarded these issues, and second, at its fundamental errors in trying to explain away the omissions. HG does not show a grasp of frequency coordination adequate to develop a system that protects the FS. Even if HG were now to update its

² *Ex parte* statement of Higher Ground at 5 (filed July 21, 2016).

³ Letter from Cheng-yi Liu and Mitchell Lazarus to Marlene H. Dortch, Secretary, FCC at 5 (filed July 29, 2016).

⁴ *Higher Ground LLC*, Order and Authorization, DA 17-80 (IB, OET, WTB released Jan. 18, 2017) (*Order*).

⁵ Application for Review of the Fixed Wireless Communications Coalition at 8-9.

⁶ *Ex parte* letter of Higher Ground at 2 (March 13, 2017), *citing Order* at ¶ 22.

⁷ Application for Review of UTC at 13 n.29.

⁸ *Ex parte* letter of Higher Ground at 3 (March 13, 2017).

⁹ A geosynchronous satellite can be overhead only from points on the Equator. For an observer north of the Equator, the satellite's height in the sky depends on both the observer's latitude and the difference in longitude between the observer and the satellite. The farther north the observer, and the greater the difference in longitude, the lower the satellite appears.

¹⁰ Application of Higher Ground, LLC Technical Appendix at 2, 3, Figures A-1 and A-2 (filed June 15, 2015).

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algorithms to properly handle the issues discussed here, we are unable to know what others it may have missed.

HG mocks the FWCC's stand on its service as "no way, no how."¹¹ To the contrary, as we have said before: we will drop our opposition if HG shows it does not present an interference threat.¹² It has not yet passed that test.

Please contact us with any questions.

Respectfully submitted,



Cheng-yi Liu
Mitchell Lazarus
Counsel for the Fixed Wireless
Communications Coalition

cc: Courtesy service list

¹¹ Higher Ground Opposition at 7.

¹² *E.g.*, Letter from Cheng-yi Liu and Mitchell Lazarus, Counsel to FWCC, to Marlene H. Dortch, FCC, at 3 (filed July 29, 2016).

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