



**National Radio Astronomy Observatory**

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Delivered by email

**S2983 SAT-LOA-20161115-00118**  
Space Exploration Holdings, LLC  
SpaceX Constellation

**IB2016002492**

Hon. Ajit Pai, Chairman  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554  
[Ajit.Pai@fcc.gov](mailto:Ajit.Pai@fcc.gov)

Re: Fixed-satellite service operators' obligation under US131 to coordinate and reach mutual agreement with radio astronomy prior to commencing operations in the 10.7 – 11.7 GHz band

Dear Chairman Pai:

The National Radio Astronomy Observatory is addressing this note to you after reading in the press of your desire to approve the license of SpaceX's constellation for global satellite broadband operations, for instance in

<http://spacenews.com/fcc-chairman-urges-approval-for-spacexs-satellite-internet-constellation/>

and having itself been contacted by the press in regard to the impact of such approval on radio astronomy operations.

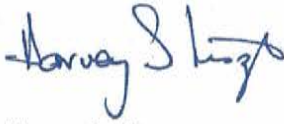
The National Radio Astronomy Observatory and its sister observatories the Green Bank Observatory (<http://greenbankobservatory.org/>) and the Long Baseline Observatory (<https://public.lbo.us>) are operated by Associated Universities, Inc. (<http://www.aui.edu>) under a cooperative agreement with the National Science Foundation. The AUI observatories together operate 12 of the 13 radio telescopes that are listed in Footnote US131 of the US Table of Frequency Allocations 47 CFR 2.106 after this preamble:

**US131** In the band 10.7-11.7 GHz, non-geostationary satellite orbit licensees in the fixed-satellite service (space-to-Earth), prior to commencing operations, shall coordinate with the following radio astronomy observatories to achieve a mutually acceptable agreement regarding the protection of the radio telescope facilities operating in the band 10.6-10.7 GHz:

SpaceX, which plans to use the 10.7 – 12.7 GHz band for its downlink, has not yet fulfilled its obligations under US131. Coordination between SpaceX and the AUI observatories (together with NSF) trailed off inconclusively around the middle of 2017 after a tentative and rather preliminary treatment of radio astronomy's concerns and the manner in which SpaceX planned to address them.

Compatibility between radio astronomy and FSS uses of the Ku band spectrum is not a given but is achievable so no-one should be deprived of affordable satellite broadband service for the sake of protecting radio astronomy. But interference, should it occur, could be very difficult to remediate in a constellation numbered in the thousands of satellites. Successful coordination under US131 should be recognized as a prerequisite for the commencement of SpaceX operations.

Yours truly, from Geneva while attending sessions of the ITU-R,



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