Kepler Communications Inc.
675 King Street West, #204
Toronto, ON Canada
M5V 1M9

**Before the**
**Federal Communications Commission**
**Washington, D.C. 20554**

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| In the Matter of<br><br>Kepler Communications Inc., Petition for Declaratory Ruling | )<br>)<br>)<br>)<br>) | IBFS File No. SAT-LOI-20161115-00114<br>(Call Sign S2981) |

## ADDITIONAL INFORMATION FOR 140 SATELLITE FILING

Kepler Communications Inc. (Kepler) is hereby providing the Commission with further information on its non-geostationary satellite orbit (NGSO) fixed-satellite service (FSS) system, for which market access to the US was requested.

1. Kepler's geographic coverage has been updated to show the surface area covered by a single satellite's steerable beam, as well as the entire constellation. These have been provided in Schedule S in four separate figures. The first two figures show the steered beam coverage area for a single satellite and for the constellation respectively. The last two figures show the visible un-steered half power beam width visible on the ground, and the half power beam width for a beam steered to 64 degrees off boresight. The Commission should note the large difference between the visible half power beam width and the coverage region of steerable beams.

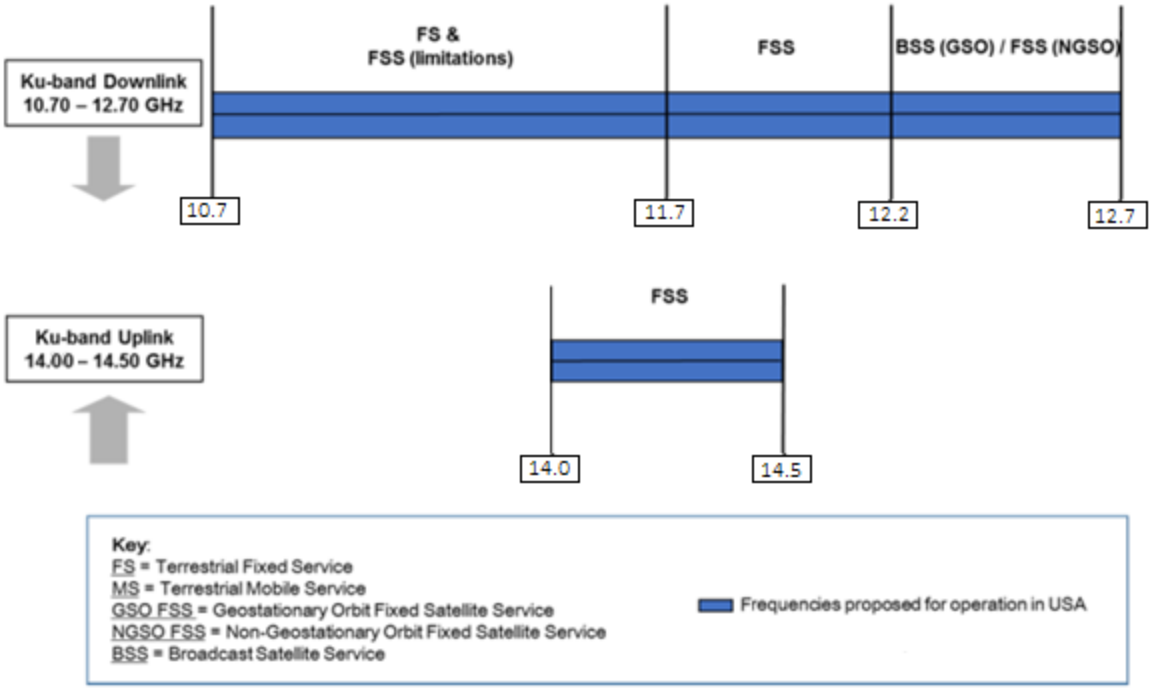
2. As noted previously, Kepler's satellite is designed to maintain a target power-flux density ("PFD") at the surface of the earth as shown in Figure 5 of Kepler's petition for declaratory ruling[1]. For further clarity, this is achieved by maintaining a constant EIRP density across all bands and bandwidths. Ensuring EPFD, and PFD compliance independent of how the SDR parameters[2] change to support coordination and customer requirements. As noted in Schedule S, the maximum EIRP density that is maintained across all beams is -50.5 dBW/Hz. It should be noted that the center frequencies shown in Schedule S are the minimum and maximum the SDR is capable of operating at[3]. Listing all center frequencies would be overly burdensome. Similarly, the bandwidths are representative of the SDR's diverse capability. In reality, the system can operate in any bandwidth

[1] See Kepler Technical Narrative
[2] Power, bandwidth, and center frequency
[3] Based on the respective sample bandwidths provided

in the given band. Regardless of the bandwidth – maximum EIRP density will be limited to -50.5 dBW/Hz.

3. A constant EIRP density is maintained using Kepler's proprietary SDR by varying the power output and bandwidth. This is pre-programmed but can be altered as needed during operation. As noted in Kepler's previous comments[4], the maximum EIRP of the system is seen at a steered angle of 64 degrees off boresight.

4. Provided below is a graphical representation of the band strapping table for Kepler's system. As noted in the original filing, 12.75 – 13.25 GHz was not included in this application. Uplink and Downlink frequencies are used for both gateways and user terminals in Kepler's system.




5. Attached as an accompanying document, Kepler is providing the Commission with its 140 satellite EPFD results based on the May 5th, 2017 version of Transfinite – as provided on the ITU website. The constellation passes all scenarios and limitations imposed by the EPFD limits. Kepler further notes that the results provided are over protective and not representative of possible operating

[4] See Kepler's letter to the Commission dated 04/20/2017

conditions. The present EPFD software iteration assumes that the steerable beams onboard the spacecraft are emitting in every direction at the highest power level. This is not possible in actual operation and would be an extremely inefficient use of the constellation, where at times nearly 9[5] satellites are assumed to overlap and maliciously provide interfering emissions[6]. Given the assumption that all satellites operate consistently[7] without accounting for spot beam technology, Kepler does not foresee any difficulty in protecting GSO operations with its proposed 140 satellite constellation. Note that the EPFD results provided already account for increases in PFD due to beam overlapping during handoff.

Respectfully submitted,

Kepler Communications Inc. - June 6, 2017
By: /s/ *Nickolas G. Spina*

Nickolas G. Spina
Manager of Launch and Regulatory Affairs
Kepler Communications Inc.

[5] Note that at most 2 spacecraft are used to communicate to a single location and this only occurs during a handoff for a short period of time

[6] See Figure 2 in Schedule S Service Area for further clarity on the assumptions made around interference from a single satellite's emissions steered in all directions within the EPFD software as compared to Figure 3, the true spot beam width visible on the ground

[7] Unlike bent-pipe architectures, Kepler's system can choose to not operate at all times over given locations