

## EXHIBIT - SPECIAL TEMPORARY AUTHORITY JUSTIFICATION

### Narrative Statement

Loon Inc. ("Loon") outlines below its need for the requested Special Temporary Authority (STA) and the compelling reasons why this STA should be granted expeditiously. Loon requests that the STA be granted for a period of 180 days. The STA is needed to support experimental testing within a portion of LTE Band 20 in the area immediately surrounding our launch facility in Winnemucca, NV. Specifically, Loon balloons with directional antennas will be positioned over the proposed test area and used to relay communications between ground terminals (handsets). Loon will itself be using ordinary, FCC approved handsets to communicate with the balloons, and then Wi-Fi to interconnect with the ground terminals. The frequencies specified in this application will be used in conjunction with Part 15 unlicensed Wi-Fi to support these communications.

Loon will provide service to the proposed test area only to the extent it can be done without interference to neighboring services. Loon holds all necessary government authorizations for the related aeronautical activities.

Loon will have the ability to terminate transmissions if the platforms exit the test area. First, the platforms will continue to contain a GPS receiver. If the receiver detects that the platform has exited the test area, it will automatically disable transmissions over the test frequencies. Second, connections to the ground infrastructure can be used to manually disable transmissions. Third, the airborne radios will automatically be disabled if connection to the ground infrastructure is lost for a defined period of time.

In connection with the proposed operations, end user wireless devices would operate at power levels consistent with Band 8 in the European Union (UE Class 3 with max power of 23dBm, +/-2dB tolerance). Loon is advised that this may include a temporarily update to the software on the device through an Over the Air (OTA) update to allow Band 20 operation, and that at the end of the authorization, a separate OTA update would disable this operation.

The proposed experimental operations accordingly will be conducted without harmful interference to other authorized users. Should any interference be reported, the proposed tests will cease immediately unless and until the interference is resolved to the satisfaction of the complainant. Protected users should report possible interference to Leonard Bouygues of Loon (email: [LoonMC@google.com](mailto:LoonMC@google.com); telephone: 650-966-7655).

<b>Regulatory Contact</b>	<b>Technical Contact</b>
Julie Jin 1600 Amphitheatre Parkway Mountain View, CA 94043 415-736-1122 <a href="mailto:juliejin@google.com">juliejin@google.com</a>	Ben Wojtowicz 1600 Amphitheatre Parkway Mountain View, CA 94043 847-767-0554 <a href="mailto:bwojtowi@x.team">bwojtowi@x.team</a>

## Transmitter Equipment and Station Details

### Radio Information

<b>Equipment</b>	Various custom equipment manufactured by Loon (various custom)
<b>Quantity</b>	Up to 30 at any time
<b>Area of Operation</b>	Operation not to exceed 11 km from the following geographic centerpoint: <ul style="list-style-type: none"> <li>• 40° 53' 55" N, 117° 48' 16" W</li> </ul>

<b>Frequency</b>	<b>Low (MHz)</b>	<b>High (MHz)</b>
Various custom	791.0	806.0
Various custom	824.0	835.0

### Antenna Details

<b>Antennas</b>	Ethertronics Part No. 1003445	Ethertronics Part No. 1003113
<b>Type</b>	Dual-polarization dipole	Dual-polarization dipole/monopole
<b>Gain</b>	8 dBi @ 0 degrees from boresight	3 dBi @ 45 degrees from boresight
<b>Beam Width at Half-Power Point</b>	90 degrees from boresight, symmetric	120 degrees from boresight, symmetric
<b>Orientation in Horizontal Plane</b>	Boresight pointing towards the earth	Boresight pointing towards the earth
<b>Orientation in Vertical Plane</b>	Boresight pointing towards the earth	Boresight pointing towards the earth

*Transmitter*

<b>Radio</b>	<b>Modulation</b>	<b>Emission Designator</b>	<b>Bandwidth (MHz)</b>	<b>Max Output Power (W)</b>	<b>Max ERP (W)</b>
Various custom with antenna #1003445	LTE (BPSK, QPSK, 16QAM, 64QAM)	5M00W7W	5MHz	5W	19.3W
Various custom with antenna #1003113	LTE (BPSK, QPSK, 16QAM, 64QAM)	5M00W7W	5MHz	5W	6.1W