

## Experimental Application

### Exhibit information: Narrative Statement

We hereby request an experimental license for testing the use of satellite-based short-message/IoT transmitters, provided by UK company Lacuna Space Ltd. Our experiments are related to the development of a return channel for digital course materials in remote areas.

We collaborate with Lacuna Space and request to test their satellite gateways in various locations, using up to 100 ground devices. The ground devices are development kits that will transmit in line with Title 47 CFR Part 15 regulations (up to 0 dBW with max 6 dBi gain). Transmissions to the satellite will be possible up to 2 times per day. Transmissions from satellite to the ground are not part of this experimental license request. The devices only transmit when the satellite is in view. In order to consider the use of satellite-based gateways on a large scale, the satellite gateway's capacity as well as its performance in different environments have to be investigated. This explains the requirement and plan to test up to 100 ground devices in different locations. **No space-to-Earth transmissions are requested under this license.**

The whole experiment will be conducted on a non-interference, non-protection bases. We will use polite spectrum access techniques to not harmfully interfere with existing terrestrial applications. The ground devices will use antennas that are quasi-omnidirectional while reducing emissions in the horizontal plane.

This license request does not include the forwarding of collected data from the satellite gateway back to us. For the data forwarding, Lacuna Space provides other channels to us. The tests in 902-928 MHz will be solely conducted for device-to-satellite gateway transmissions.

ODARs are added as confidential documents (as they contain confidential information on the satellite bus).

### Ground Device Antenna Information:

City/ State	Lat, Lon	Height [m]	Number of devices
Long Grove/IL	42.1784° N, 87.9979° W	0	100

*Applicable to all above mentioned ground devices:*

Polarization: RHCP

Beamwidth: Omnidirectional

Azimuth: N/A (Omnidirectional)

Height: 0-2 m above ground

Manufacturer: Lacuna Space

Model: LS200\_devboard

*There is no fixed location for the devices, but rather an approx. 15 km radius around the locations given above. Devices will not be in motion, but exact location might change in this radius for testing purposes.*

### Information on Lacuna Space satellites

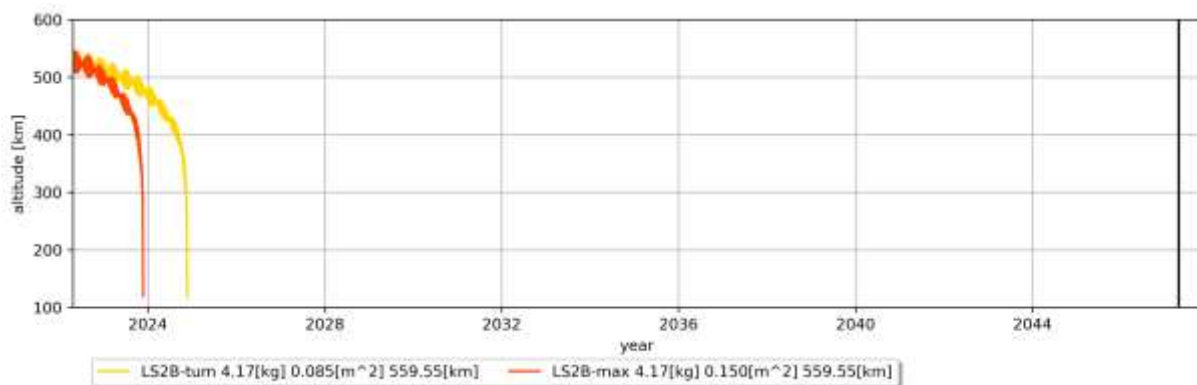
Lacuna Space has filed their spectrum use in 902-928 MHz via the Federal Network Agency of Germany (BNetzA) under the name 'LS-4' (SNS ID 119545250). Lacuna Space is responsible for the

control of the satellite, cessation of service in terms of harmful interference and as well as in any other unforeseen events.

#### Orbital characteristics of the receiving satellite

<b>NORAD</b>	<b>47948</b>
<b>Name</b>	<b>LS2B</b>
<b>ODAR report name</b>	<b>LS2/ LacunaSat2-B</b>
<b>Altitude</b>	534.4 km 560.1 km
<b>Inclination</b>	97.5°
<b>Period</b>	95.4 minutes
<b>LTAN</b>	10:57
<b>Dimensions</b>	3U with two double deployable solar panels
<b>Mass</b>	4.16 kg

All additional information for LS2B and LS2E, e.g. orbital debris assessment reports, reentry survivability, collision risk, have been provided to FCC as part of another already granted experimental license (file number 0188-EX-CM-2021). We received confirmation from Lacuna Space that the parameters did not change in the meantime.



#### Contact

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