**NARRATIVE EXPLANATION OF OPERATION and Technical Parameters**

Service to provide

The intention of the tests is to cover the validation and in-orbit demonstration phase of the first satellite already operational (which has no commercial exploitation). It is the 3B5GSAT satellite that provides service in the UHF band (399.9-400.05 uplink and 400.15-400.99Mhz downlink). For the test conducted in the US, the satellite will provide service in the 400.007-400.033MHz band.

Once the satellite has completed the commissioning of the service (the prior technical validation phase), the Proof of Concept (PoC) will be carried out. These tests consist of demonstrating the technical feasibility of the solution proposed by Sateliot. The IoT sensors will be connected to a terminal that will be connected to an antenna, and this will communicate with the satellite using the UHF band (there will only be 1 satellite in the UHF band). The satellite sends beacons when it is over the area of interest and thus the connection is established, and the terminal can communicate with the satellite. The messages that will be sent from the terminal will be a maximum of 192 Bytes and the terminal will communicate with the satellite between one and two times a day for 4 minutes, which is the time spent over the area of interest. The satellite operates in store & forward mode, which consists of storing the information obtained from the terminal and then transmitting it on the ground station. The data will be downloaded later when the satellite communicates with the Svalbard ground station using the S-band. From the ground station it will be stored on a server and the information can be received through the API.

The set of emissions from the terminals and the antenna comply with the limit established in note no.5.260A and do not exceed 5dbW in the entire UHF band. With these tests it is hoped to prove that the current need for connectivity in remote areas can be covered.
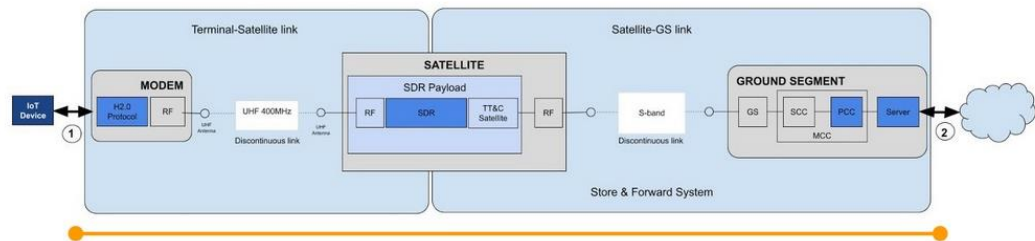
**Technical Parameters for Sateliot's LEO satellite**

TECHNICAL PARAMETERS	
TX frequencies	399.9-400.05mHz
RX frequencies	400.15-400.99mHz
Emission denomination	60J0F1D--
Polarization	CR
Bandwidth	25 kHz
Orbital position	SSO (550KM)
Transmission beam	PL1DN1
Reception beam	PL1UP1
Registered name at ITU	SATELIOT_UHF

Characteristics are as follows:

● H2.0 modem protocol

- Terminal-satellite: UHF 400MHz
- Satellite-GS link: Store & Forward System
- Maximum packet length: 192 bytes, 1.5 times / day
- Increasing the size reduces the number of useful users in the same space.
- For 100 users, the message length is 48 bytes / user
- Bit rate: 2400 bps uplink and 1200 bps downlink
- The IoT terminal can consume up to 3W. The modem has direct UART and USB access with an FTDI cable
- The processor must have the same voltage, 3 logic levels of 3V. If it is less, a conversion could be performed
- Antenna: 16 cm in height, 8 cm in diameter and 3 dBi
- The Base of the antenna: 10cm (diameter) x 1cm (height)
- Emissions comply with the EIRP of maximum 3dBW.
- Input power at antenna flange: 1 watts

3. Specification data sheet from manufacture or the antenna patterns for Custom made user terminal antennas: Co-polarized gain in the azimuth plane and elevation plane.

Radiation Pattern - Elevation (E-plane)

Units: dBic, RHCP

Frequency: 402 MHz
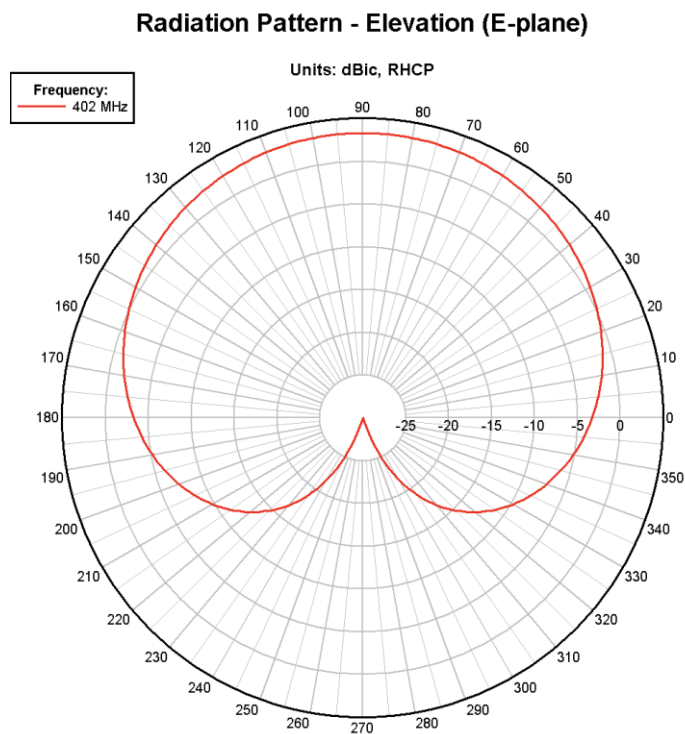
The Ground Stations

The 3B5GSAT satellite will connect with Deimos ground station in Puerto Llano. Satellite telemetry and control, as well as data download and upload between the satellite and the ground station will also be carried out with the KSAT ground station in Svalbard.

This is done through an agreement between Sateliot and Open Cosmos in which their filing is used to carry out this type of operation. The Open Cosmos filing through which the 3B5GSAT operates is the BEESAT-OC-LS, published in the special section API / A / 1232, and BR IFIC 894 dated 04.30.2019 and identification number 119545025.

User's Terminals

Equipment with the following technical characteristics will be used.

      - **Modem**: The modem uses a proprietary protocol called H2.0 developed by Alén Space. The modem supports direct UART and USB access with an FTDI cable.

      - **Antenna**: antenna (quadrifilar-helix).
- Antenna: 8cm (diameter) x 16cm (height)
- Base: 10cm (diameter) x 1cm (height)
- Connector: SMA 50ohm
- Gain 3dBi
- Circular polarization