

# Radio Amateurs

[Aalto-1\\_TLE.txt](#)

## HAM radio information for contacting Aalto-1 satellite (OH2A1S)

- The satellite will be launched on June 23, 2017 (TBC) with Indian PSLV rocker on a sun-synchronous orbit (TBC)
- Launch time 03:59 GMT
- Orbit Two-Line Elements
  - <https://www.celestrak.com/NORAD/elements/cubesat.txt>

## UHF Telecommand uplink / Telemetry downlink / CW beacon

- Frequency: 437.220 MHz
- Bandwidth: 13 kHz
- Max TX power: 1.2 W (dBm 30.8)
- Modulation: GFSK, deviation 3 kHz
- 6 second long beacon every 180 s CW beacon followed by an AX.25 data message
  - Information contained in CW beacon:
    - Callsign: AALTO1
  - Information contained in AX.25 (G3RUH compatible, 9600 bauds) beacon
    - Callsign: From OH2A1S to OH2AGS
    - UI-frame containing following fields TBD
- Telemetry/Telecommand exchange over Aalto Ground Station (OH2AGS) using TI CC1125 packet protocol
  - Preamble and sync word: 0x35 0x2E 0x35 0x2E
  - Data and symbol rate: 9600 bits/s
  - Variable length packets
  - Protocol specification: TBD

## S-Band Science Data Downlink

- The S-band radio is operated only by request of ground operations team
- Frequency: 2402.000 MHz (S-Band)
- Bandwidth: 1.6 MHz
- Polarization: RHCP
- Max TX power: 1.29 W (31.1 dBm)
- Modulation: GMSK, deviation TBD
- Data downlink over Aalto Ground Station (OH2AGS) using TI CC1125 packet protocol
  - Preamble and sync word: 0xD3 0x91 0xD3 0x91
  - Symbol rate: 500k symbols/s
  - Fixed 256 bytes long packets
  - Data is transmitted in long bursts with 50% dutycycle
  - Optional convolutional code (c=1/2, k=3)

### Radio frequencies

- UHF: 437.220 MHz
- S-Band: 2402.000 MHz

### Aalto Ground Station (OH2AGS)

Located at Aalto University in Otaniemi, Espoo, Finland

Maarintie 8, [60.18718° N, 24.81760° E](#)

QTH locator: KP20JE