



Kyutech

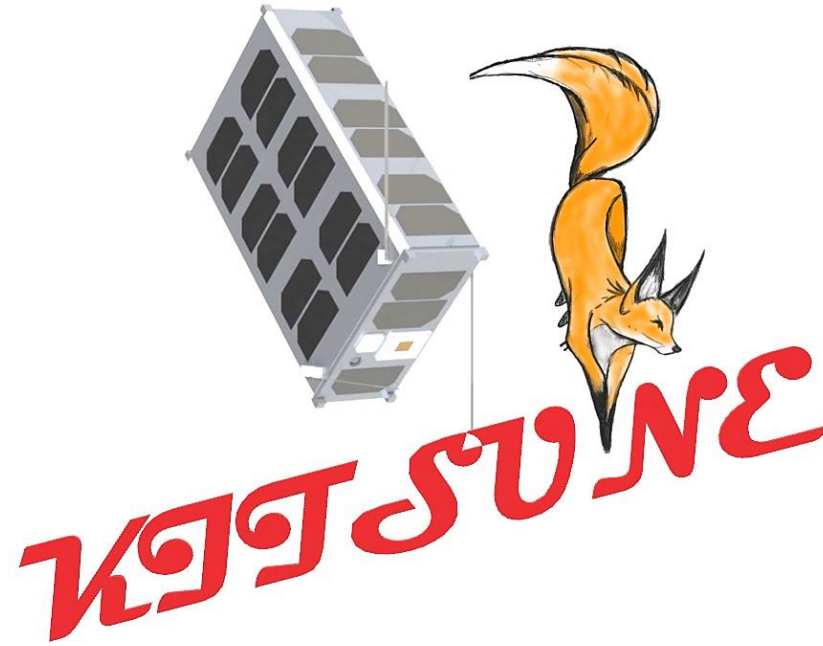
Kyushu Institute of Technology

国立大学法人

九州工業大学



Laboratory of
Spacecraft
Environment
INteraction
Engineering



Communication Plan

Date: 12th of March 2020

Editor : Daisuke Nakayama



Uplink Command

- The KITSUNE satellite mainly uses the same uplink frequencies as HORYU-II/IV and BIRDS series.
(435MHz-438MHz, GMSK)
- The KITSUNE satellite has C-band receiver for backup uplink.
(5650-5670MHz, BPSK or PCM-PSK-PM)
- Any licensed amateur radio station can send a C-band request signal for the image data of 2M pixel camera onboard KITSUNE satellite and the satellite acknowledges the signal reception by sending image data on C-band downlink.
(5658MHz, GMSK)



Uplink command for small camera

- GMSK 4800bps
(5658MHz)
- PCM-PSK-PM 1kbps/4kbps
(5650~5670MHz)
- Data format is published before launch.



CW Transmission

- UHF transmitter send CW beacon every 90 seconds.
- CW beacon contain House Keeping data.
- The contents are the minimum satellite status such as battery voltage, current, rotation rate, etc.

- C-band transmitter has function of CW beacon.
- This will work when battery capacity is enough.

- CW decoder will be released



Downlink Telemetry

- UHF downlink telemetry is modulated at GMSK4800bps according to AX.25.
- Each packet has 81 bytes data.

- C-band downlink telemetry is modulated at BPSK or QPSK.
- 500kbps – 20Mbps
- The frame length is 1115Bytes.



Downlink Telemetry

- 437.375MHz
 - GMSK 4800bps

- 5840MHz
 - BPSK 100kbps – 5Mbps
 - QPSK 10Mbps/20Mbps
 - GMSK 4800bps