



**ARLISS2005**  
**SOKA**  
**UNIVERSITY**  
**CanSat**  
**Nexus Tiger**

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# Mission



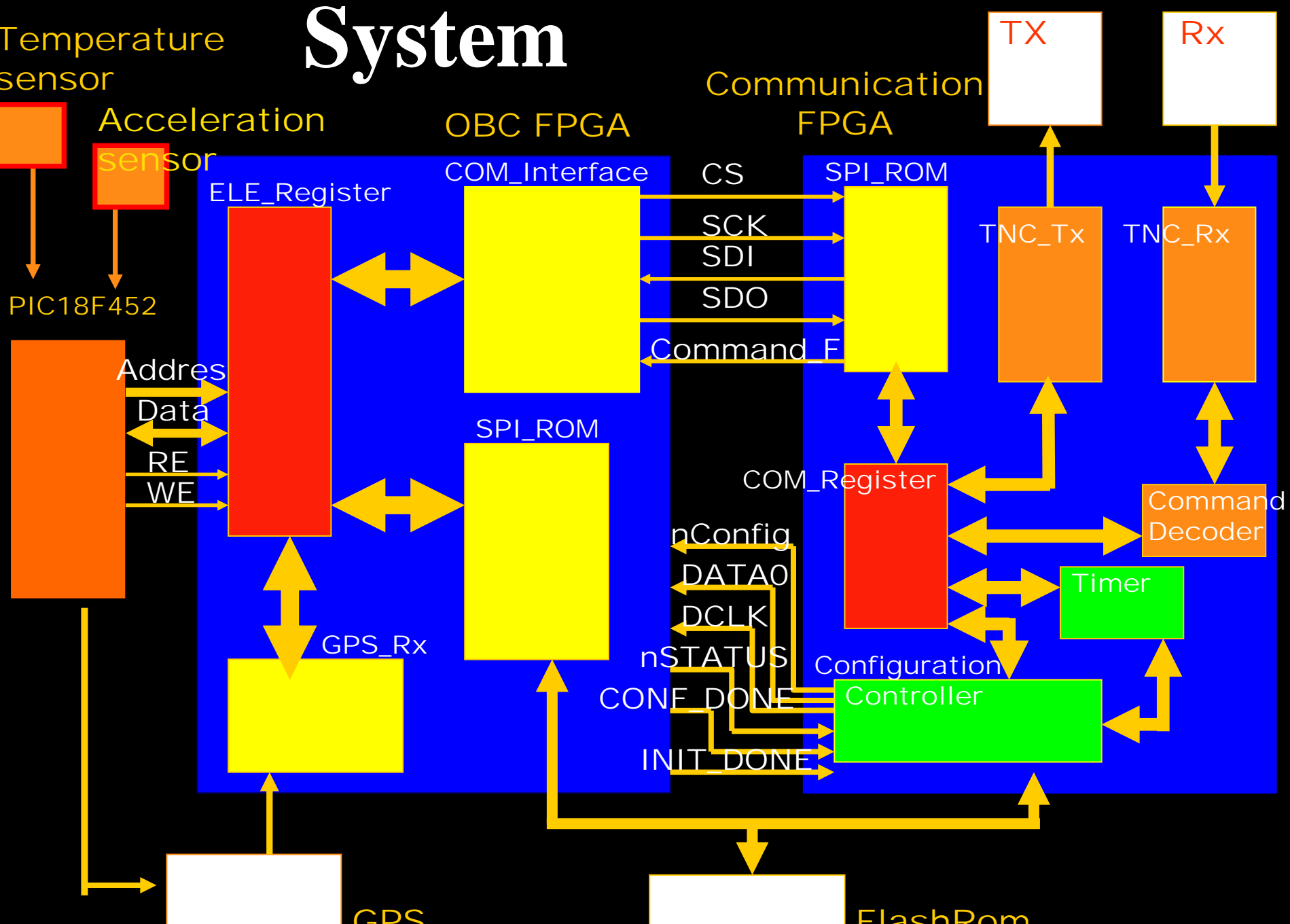
## **Mission1**

Successful communication of Up-link & Down-link described below.

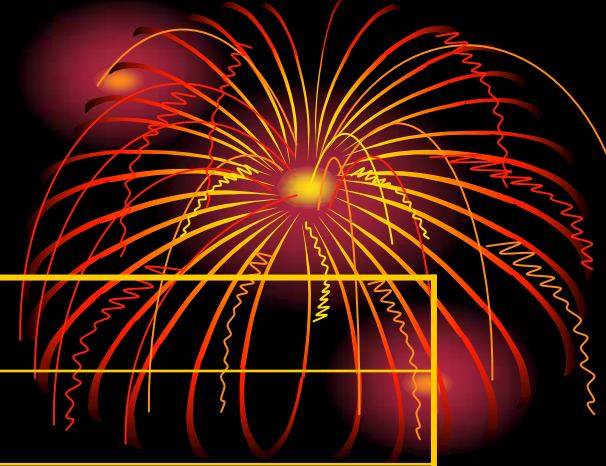
## **Mission2**

Configuration control of FPGA( Field Programmable Gate Array) from a peripheral device for our future CubeSat.

# System



# Device details

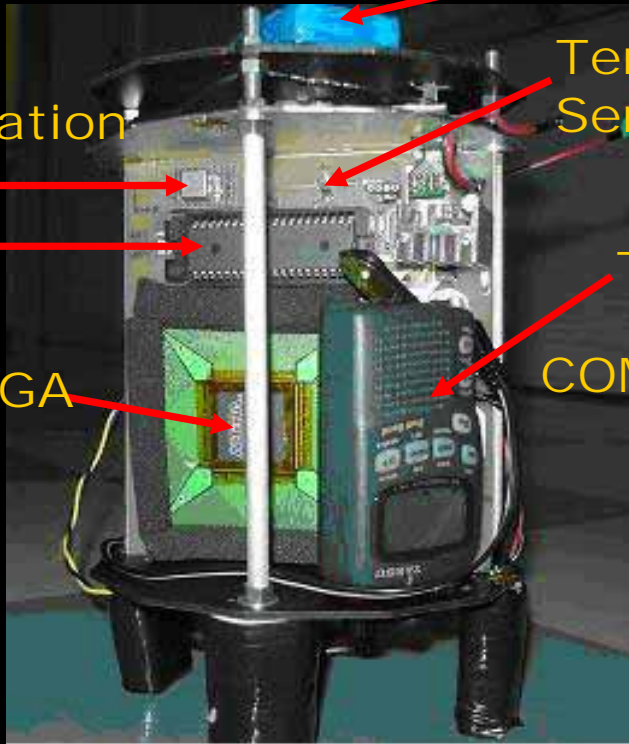


PIC18F452	PIC
EPF10K100E	FPGA (FLEX)
EP1C3T100	FPGA (Cyclone)
V <sub>x</sub> -1, V <sub>x</sub> -2	Transceivers
M25P16	ST FlashRom
EPC2	Configuration Rom
FX614	Modem Chip
78T05CT	5V Regulator
TA48M025F	2.5V Regulator
TA48M033F	3.3V Regulator
CR-V6 × 6	Battery

# Pictures



Battery



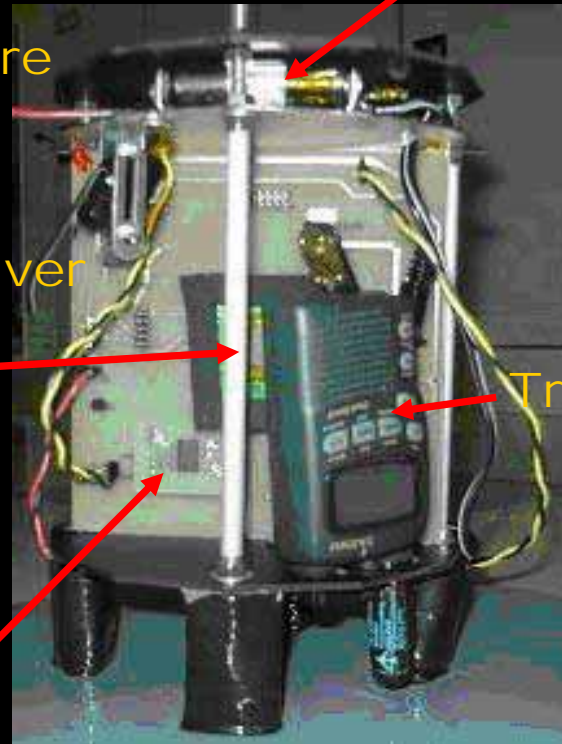
GPS

Temperature  
Sensor

Acceleration  
Sensor

PIC

OBC\_FPGA



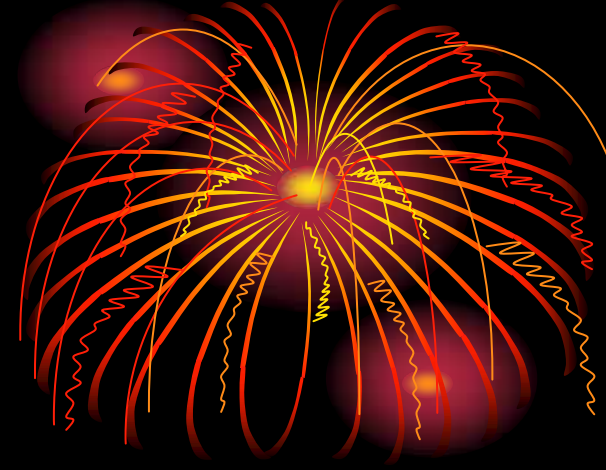
Transceiver

COM\_FPGA

ROM

Transceiver

# Structure



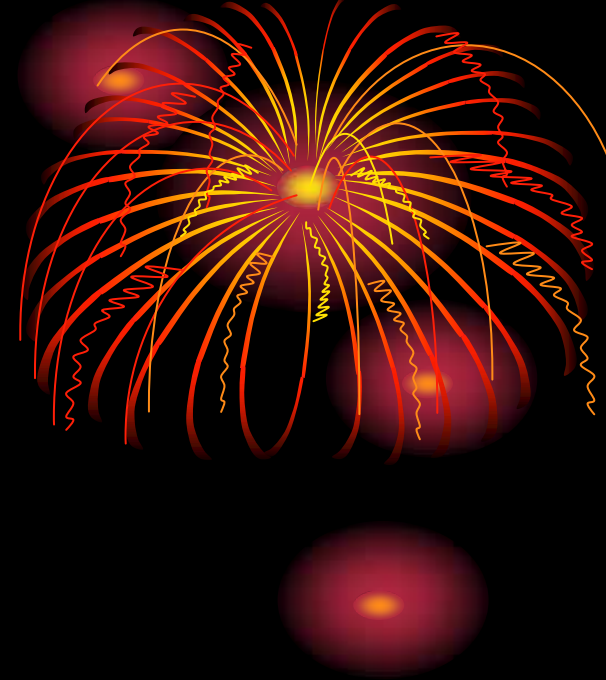
**Size : Open Class 140mm × 200mm**

**Weight : 1100g (50g over)**

**Material: CFRP(Carbon Fiber Reinforced Plastics)**

# Communication

- Frequency
  - Down Link 430MHz Band
  - Up Link 144MHz Band
- Protocol
  - AX.25 1200bps
- Radio
  - YAESU Vx-1, Vx-2
- Antenna
  - Downlink & Uplink SRH805 (gain 0dB)



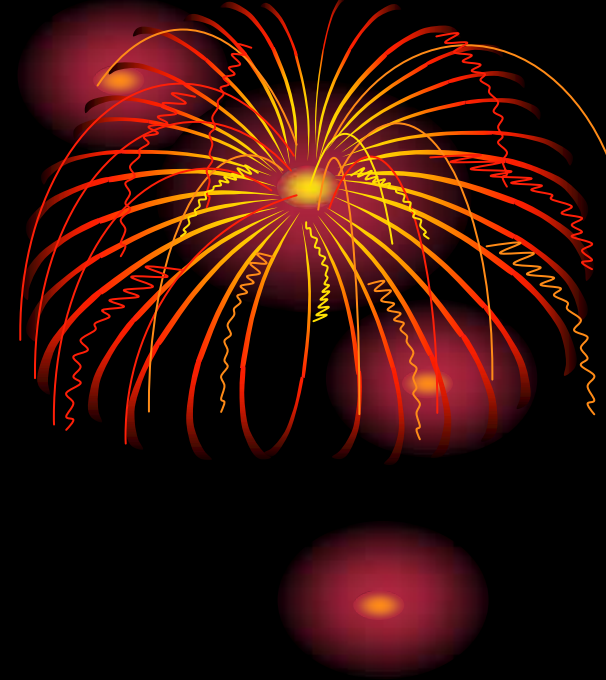
# Power

- Battery

CR-V3 (3V) × 3

- Voltage transformer

Regulator (transform to 5V, 3.3V, 1.5V)



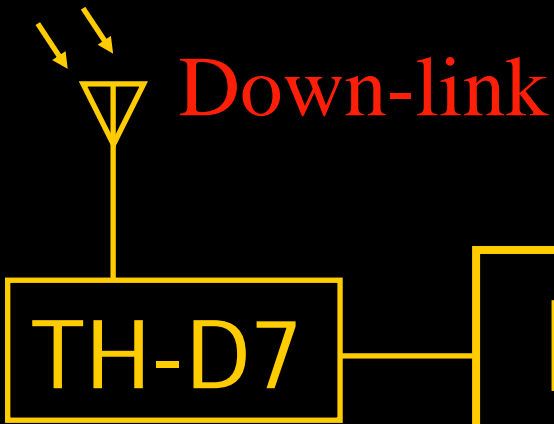


# Ground Station

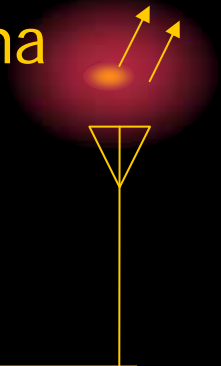


Yagi Antenna

GP Antenna



Up-link



PK-96



# Result



## **Mission1**

We could communicate successfully.

However, we found a communication problem within OBC FPGA and Communication FPGA.

## **Mission2**

We could control configuration of FPGA.

OBC FPGA has re-configured by timer & command from ground station in this time

# Conclusion



We will figure out the communication error  
Within OBC FPGA and communication  
FPGA.

We will make much better cubesat by using  
this lessons.



**Thank you for your attention.**  
**If you want to know more details,**  
**Please don't hesitate to ask us.**

**Team Nexus**