LV2 (Rev. A) Avionics System

Portland State Aerospace Society

Inertial Measurement Unit

- X axis Linear Accelerometer
- Y axis Linear Accelerometer
- Z axis Linear Accelerometer
- Pitch Rate Gyroscope
- Yaw Rate Gyroscope
- Roll Rate Gyroscope
- Temperature

Maxim MAX197 12bit ADC
8 channel, 100ksps

Microchip PIC18F458 Microcontroller
40MHz 8 bit RISC uC with CAN running PicCore

Avionics Power System

Umbilical Cord
19V shore power
Launch relay interlock

16.8V 4Ah Battery Pack
4S4P pack of 4.2V 1Ah Lithium ion Batteries

Power System Board
MOSFET power switches to subsystems
Battery charging and monitoring

Microchip PIC18F458 Microcontroller
40MHz 8 bit RISC uC with CAN running PicCore

Flight Computer

256MB CompactFlash Disk

MOPS/520 PC104 Single-board computer
133MHz 586 (AMD SC520) w/64MB SDRAM and an Intel 82C250 CAN controller, running Debian Linux

PC104 to PC Card Adapter
Lucent Orinoco IEEE 802.11b "WiFi" PC Card

2.4GHz Bidirectional Power Amplifier
YFI Inc: +16dB Transmit, +9dB Receive

Controller Area Network (CAN) Bus
1Mbps differential serial bus with lossless arbitration based on message ID

Amateur TV Broadcast

Microchip PIC18F458 Microcontroller
40MHz 8 bit RISC uC with CAN running PicCore

Color Camera
NTSC, Audio out

Video Overlay Board
BOB-II: NTSC & Serial in, NTSC out

1.253GHz FM Amateur TV Trasnmitter
15mW output

1.25GHz Class C Power Amplifier
3W output

GPS

Microchip PIC18F458 Microcontroller
40MHz 8 bit RISC uC with CAN running PicCore

Conexant Jupiter GPS Receiver
12-channel OEM receiver based on the Zodiac chipset

1.575GHz Low Noise Preamp
Macom +30dB AM50-0002 Preamplifier

Recovery System

Microchip PIC18F458 Microcontroller
40MHz 8 bit RISC uC with CAN running PicCore

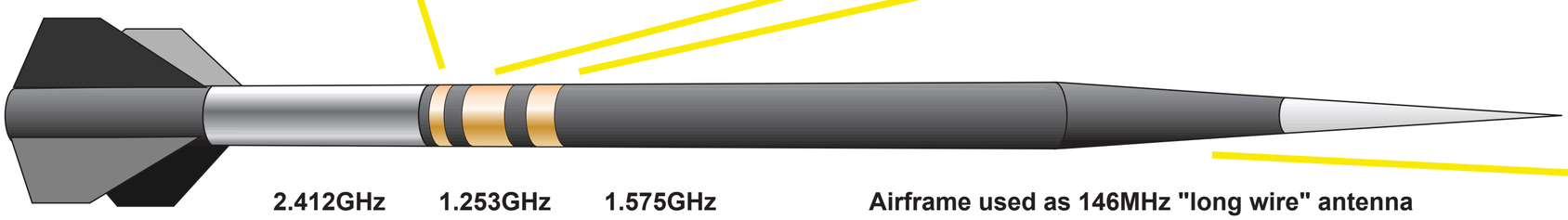
DTMF Decoder
Holtek 9170

2m FM Receiver
MC13135 with DPLL LO

Pyrotechnic System
100V switching supply with MOSFET switches

- Drogue Igniter
- Main Chute Igniter

4.1V Lithium ion battery backup



2.412GHz 1.253GHz 1.575GHz
Cylindrical Patch Antennas

Airframe used as 146MHz "long wire" antenna