

5.2 Iris Transit Mode Checkout

3. Power

Power Circuit	Voltage	Amps	Watts
Power 1 (Op)	28.23	0.03	0.85
Power 2 (Heat)	n/a	n/a	n/a

Note: may be rounding errors in AB's PIMS V and I measurements leading to inaccuracies in power calculation.

4. Data Rate

Success: Buffer not filling.

5. Verify Heartbeat

Success: Heartbeat telemetry verified.

6. Verify Watchdog Commanding

a. Enable 24V Rail

Success. Response: $\text{Command}[\#0] \rightarrow \text{NO_ERROR}[0x0]$

b. Power Hercules On

Success. Response: $\text{Command}[\#0] \rightarrow \text{NO_ERROR}[0x0]$

- b.i. "Battery" power draw increased to $0.0102\mu\text{A}$ to $1.87\mu\text{A}$.

5.3 Iris Checkout & Deployment Sequence

2. Power

Power Circuit	Voltage	Amps	Watts
Power 1 (Op)	28.23	0.03	0.85
Power 2 (Heat)	n/a	n/a	n/a

Note: may be rounding errors in AB's PIMS V and I measurements leading to inaccuracies in power calculation.

3. Verify KeepAlive Heartbeat

Success: Heartbeats downlinked at ~23s interval.

4. Activate WiFi (AB)

Complete.**5. Verify Watchdog Commanding + Prep for Deployment****6. (should be 5.a) Switch to Service Mode**

Success. Successfully sent. Response: `Command[#236] -> NO_ERROR[0x0]` Verified (TVAC-style)

Surface Heartbeats received, indicating successful transition to Service Mode. Examples:

```
FFFF0F000000000000000000F401FD0C3C0034210401013421 -> RS_SERVICE: [Heat: ON, Ctrl:
ON] 260.9°K -> 273.6°K +- 0.92K° Kp = 500 @ Duty Cycle: 8500/65535
```

```
FFFF0F000000000000000000F401FD0C3C0034210401010000 -> RS_SERVICE: [Heat: ON, Ctrl:
ON] 260.9°K -> 273.6°K +- 0.92K° Kp = 500 @ Duty Cycle: 0/65535
```

7. (should be 5.b) Prepare for Deployment

Success. Successfully sent. Response: `Command[#1] -> NO_ERROR[0x0]`

Battery current draw from `0.0102uA` to `0.105A` (note: no cameras attached)

Surface Heartbeats still being received, successfully indicating Mission mode entered. Example:

```
FFFF0FA0CD46C374709660F401FD0C3C0034211000010000 -> RS_MISSION: [Heat: OFF, Ctrl:
ON] 260.9°K -> 273.6°K +- 0.92K° Kp = 500 @ Duty Cycle: 0/65535
```

Hercules Heartbeats received over the wire. Example:

```
00890254FF1000C0000F00000000FFFFF1000C0010F00000000FEFFFF1000C0020F00000000A100
FF1000C0030F000000006300FF1000C0040F00000000D00FF1000C0050F000000004401FF1000C0
00050000000000000000FF1000C0000402000000D0070000FF1000C000090200000000FF1000C002
09020000000000000000FF1000C003090200000000000000FF1000C0000324000000A08C0000FF1000
C0000FF2000000FCFFFF1000C0010FF2000000FCFFFF1000C0020FF2000000A300FF1000C0030FF2
0000004A00FF1000C0040FF2000000F3FFFF1000C0050FF20000005101FF1000C0000525000000E8
030000FF1000C0000FE5010000FAFFFF1000C0010FE5010000FDFFFF1000C0020FE5010000A800FF
1000C0030FE50100005A00FF1000C0040FE5010000E00FF1000C0050FE50100005D01FF1000C000
09F500000000FF1000C00209F50000000000000000FF1000C00309F50000000000000000FF1000C00009
E701000000FF1000C00209E70100000000000000FF1000C00309E70100000000000000FF1000C0000FD7
020000FAFFFF1000C0010FD7020000FEFFFF1000C0020FD7020000A300FF1000C0030FD702000050
00FF1000C0040FD70200001800FF1000C0050FD70200007801FF1000C0000433020000B80B0000FF
1000C0000FCA030000FDFFFF1000C0010FCA030000FDFFFF1000C0020FCA030000A100FF1000C003
0FCA0300003300FF1000C0040FCA030000EAFFFF1000C0050FCA0300001501FF1000C00009DA0200
0000FF1000C00209DA0200000000000000FF1000C00309DA0200000000000000FF1000C00009CC030000
00FF1000C00209CC030000000000000000FF1000C00309CC0300000000000000FF1000C0000FA4080000FE
FFFF1000C0010FA4080000FCFF ->
```

```
ICP[#0::649]: 52 T    - 0 E    - 0 B    - 0 C
    Latest Telemetry: Imu{XAcc}@2212 = -2,  Imu{YAcc}@2212 = -4,
Imu{ZAcc}@970 = 161,    Imu{XAng}@970 = 51,    Imu{YAng}@970 = 65514,
Imu{ZAng}@970 = 277,    ActiveRateGroup-RateGroupHiFreq{RgMaxTime}@37 =
1000,    ActiveRateGroup-RateGroupMedFreq{RgMaxTime}@563 = 3000,
GroundInterface{GiUplinkSeqNum}@972 = 0,
```

```
GroundInterface{GiPacketsReceived}@972 = 0,  
GroundInterface{GiPacketsTransmitted}@972 = 0,    ActiveRateGroup-  
RateGroupLowFreq{RgMaxTime}@36 = 36000
```

8. Verify Hercules Commanding via Watchdog

Failed. No command response from Watchdog (as expected) but Hercules was still downlinking telemetry over the wire. Either primary interface switch is not implemented correctly on Hercules or Watchdog failed to pass the command along to Hercules.

9. Verify Watchdog->Hercules->Watchdog Commanding

Failed/Untested. Prior to command send, power transfer from battery over to lander was observed. Lander power was cut off and battery power returned to roughly nominal Mission mode levels (87–97mA fluctuating, no cameras were connected). No telemetry was received for 5+ minutes from Iris.

Sending `power-hercules-off` in an attempt to observe successful receipt of command as indicated by battery current change and/or a watchdog command response.

After send, no telemetry (command response) observed, no change to power draw from batteries observed (98mA, no cameras were connected).

In a recovery attempt, the battery and lander power were both removed and restored in order to power-cycle the SBC. The SBC returned drawing nominal Mission mode levels of power from the battery (116mA, no cameras connected.). Only a `b'hello, world!\r\n'` was received. No further heartbeat telemetry (or Hercules telemetry) was observed.

Test end. (Early Failure)

Key Results:

- **Correct parsing of IP/UDP/SLIP by Watchdog:** PASS
- **Correct sending of IP/UDP/SLIP by Watchdog:** PASS
- **Switch to wifi mode:** FAIL
- **Deployment test:** UNTESTED (pre-checkouts FAILED)