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**RadFXSat-2 (Fox-1E)** **Aliveness Test Procedure**

## Satellite Team Change Log

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| **Revision** | **Date** | **Author** | **Change Log** |
| 1 | March 11, 2018 | G. Buxton | Version 1 (from 6) to clean up versioning, correct charging and alert LED colors, clarify wording of step 5, correct reference in step 10, correct reference to test table (removed “Basic”), update/clarify wording on many steps |

## Satellite Team Responsible Engineers

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| **Name** | **Contact** |
| Gerald Buxton (N0JY) | foxse@n0jy.org |
| Robert Davis (KF4KSS) | kf4kss@amsat.org |
| Burns Fisher (WB1FJ) | wb1fj@fisher.cc |
| Eric Skoog (K1TVV) | k1tvv@amsat.org |

**Purpose:** The purpose of this document is to detail the procedure for a basic test to quickly determine whether the RadFXSat-2 (Fox-1E) CubeSat is alive.

**What is tested:** Passing this test confirms the following:

1. Batteries have charge and are connected
2. Battery board basic functionality intact
3. At least some bus lines (Vbatt, Alert, Ground) have continuity and that Vbatt and Alert are not shorted to ground
4. The IHU power supply functions and the IHU processor starts
5. The IHU startup program calculated CRC matches
6. The ‘umbilical connected’ bus line is correctly reading ‘false’ at the IHU
7. IHU can successfully energize the alert LED and the sound transducer.
8. IHU “on orbit” flag is correctly set to false.

**Aliveness Test: (*Note: This version performed to test deploy before switch plunger was available. Thus we delayed step 10 until after deploy)***

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| **Step #** | **Description** | **Time** | **Date** | **Initial** |
|  | Confirm that the CubeSat under test is the Fox-1E unit**√** | 0931 | 3/28/18 | ***BF*** |
|  | Confirm that the satellite has had preflight init performed**√** | 0937 |  |  |
|  | Confirm the CubeSat’s deploy switches are released **√** (e.g. position with -Z end up) | 0937 |  |  |
|  | Verify the CubeSat’s physical launch configuration (except RBF Pin must be installed; Solar Panel covers may be installed) **√** | 0938 |  |  |
|  | Ensure proper positioning of the CubeSat such that the ALERT RED deploy LED (on +X internal, adjacent to RBF plug) is visible | 0938 |  |  |
|  | Ensure proper positioning of the CubeSat such that the tester will be able to hear the “alert” tones from the IHU | 0940 |  |  |
|  | Remove the RBF pin (and be prepared to re-install it immediately) | 0940 |  |  |
|  | *There is approximately a 90 second delay after removing the RBF pin before the relays set and power is applied to the bus*. Verify the alert light pulses 3 times, as the tone simultaneously sounds 3 times (One High and then two Low tones)  \_\_\_\_\_**√**\_\_\_\_Pass \_\_\_\_\_\_\_\_\_Fail | 0941 |  |  |
|  | Verify that 4th and subsequent tones are the same pitch  **If the tone changes, reinstall the RBF pin quickly to avoid potentially deploying the antennas**  *[This test is considered “Pass” if the tone is inaudible due to environmental noise and the antennas do not deploy.]*  \_\_\_\_\_\_**√**\_\_\_Pass \_\_\_\_\_\_\_\_\_Fail (***Now wait for deploy)*** |  |  |  |
|  | Reinstall the RBF pin if not already done in step 7. | 1001 |  |  |
|  | Verify RBF pin is properlyinstalled by observing the cessation of the “alert” tone and/or absence of ALERT RED deploy LED. | 1002 |  |  |

**Certification:**

I certify that the RadFXSat-2 (Fox-1E) CubeSat has been tested as shown above and the result is

PASS \_\_\_\_\_\_\_\_\_\_\_\_\_**√**\_\_\_\_\_\_

FAIL \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Notes to any exceptions that exist if result is PASS:**

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| **STEP NUMBER** | **NOTES** |
| **9/10** | **This was performed in order to test the antenna deploy rigging, so we did not re-insert the RBF pin immediately after step 9, but waited until after deploy** |
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**Signed**

***W Burns Fisher, WB1FJ***

**AMSAT Fox-1 Flight Software Lead**

**March 28, 2018**

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**<Name>**

**<Title>**

**<DATE>**