***\*Notice:***

***This file is an example based on generic satellite design and does not guarantee to be approved on the review process for launch or deployment. In accordance with design of each satellite, this document may have to be changed. Details of this template are subject to change without notice. Please change YELLOW sentence according to each satellite.***

***(本文書は標準的な設計の衛星を想定した一例であり、打上げ・放出のための審査プロセスでの承認を保証しているものではありません。各衛星の設計によって内容を変更する必要があります。また、本テンプレートの内容は予告なく変更される場合があります。黄色の箇所を各衛星に応じて変更してください。)***

[Satellite Name]

Antenna Deployment and RF transmissions Test Report

Initial Release: DD/MM/YYYY

[Project Team Name]

Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Writer | Annotations |
| 1 | DD/MM/YYYY | XXX | Initial Release |
| 1.1 |  |  |  |
| 1.2 |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

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# **Purpose**

This document summarizes the results of antenna deployment and RF transmissions test for [Satellite Name] which will be deployed from JEM Small Satellites Orbital Deployer (J-SSOD).

# **Applicable Document and Requirements**

1. JX-ESPC-101132-C JEM Payload Accommodation Handbook-Vol.8-

Small Satellite Deployment Interface Control Document

**Section 2.3. Operational Requirements**

(4) All deployables such as booms, antennas, and solar panels shall wait to deploy for 30 minutes at minimum after the deployment switches are activated at ejection of the satellite from the J-SSOD. Whenever either of two deployment switches is re-depressed, the timer shall be reset.

(5) RF transmissions shall wait to transmit for 30 minutes at minimum after the deployment switches are activated at ejection of the satellite from the J-SSOD. Whenever either of two deployment switches is re-depressed, the timer shall be reset.

1. [Document Number] [Satellite Name] Flight Safety Assessment Report

for phase XXX

# **Design for the Circuit of Antenna Deployment and RF transmissions**

All deployables such as booms, antennas, and solar panels shall wait to deploy, and RF transmissions shall wait to transmit for 30 minutes at minimum after the deployment switches are activated at deployment of the satellite from the J-SSOD. Therefore, the On-Board Computer (OBC) counts 30 minutes after the deployment, and if the time passes more than 30 minutes and the battery charge voltage is enough for cutting the strings, then the OBC sends high signal to a relay to be conducted, the nichrome wire is heated up by battery current and the nylon strings are burned off. After that, RF transmissions starts to transmit.

Please include the image of antenna deployment mechanism

Figure 3-1 Antenna Deployment Mechanism

# **Test Method**

1. Figure 4-1 shows a test flow of the Antenna Deployment and RF transmissions test. A spectrum analyzer was used to check if Radio Frequency is transmitted.
2. The battery is charged until the planned voltage at launch.
3. All deployment switches are released, then satellite is activated. After activation, each deployment switch is pushed and released separately to reset timer at 10-minute intervals.
4. After over 30 min after releasing the last deployment switch, confirm that the four booms of antenna and lid the antenna are deployed, and then RF signal is transmitted. A picture of configuration after deployment is taken, and record time of deployment and starting RF transmission.

Battery charged until planned voltage at launch.

Release all deployment switches (power on).

Confirm deploying antenna and transmitting RF signal after over 30 min from previous step

Push the deployment switch to reset timer

Wait 10 min

For all switches

Figure 4-1 Test sequence

Table 4-1 Test objectives

|  |  |  |  |
| --- | --- | --- | --- |
|  | Objectives | Quantity | Remarks |
| 1 | Antennas | 4 | - |
| 2 | Lids of Antenna | 4 | - |
| 3 | RF Transmission | - | - |
| 4 | Timer | - | Designed timer setting: XX min |

# **Test Results**

Date of test: [YYYY/MM/DD]

Place of test: [XXXX]

Figure 5-1, Figure 5-2, Table 5-1 and Table 5-2 show the result of the Antenna Deployment and RF transmissions test. Deployment of antennas and transmitting of Radio Frequency were conducted over 30 minutes after releasing the deployment switches.

In addition, whenever either of three deployment switches was re-depressed, the timer was reset.

**The following configuration is example. This test needs to confirm the time of each step of the procedure, and also measure RF signal to confirm starting time. We recommend taking video of satellite, clock and spectrum analyzer. Please change Figure 5-1 to an actual photo of your test, and add information of name of instruments.**

XX:XX

Clock or Stopwatch

Satellite

Spectrum Analyzer

**Please replace to real photo**

Figure 5-1 Test configuration (Before test)

XX:XX

Clock or Stopwatch

Satellite

Spectrum Analyzer

**Please replace to real photo**

Figure 5-2 Test result (After antenna deployment)

Table 5-1 Result of activation sequence

|  |  |  |  |
| --- | --- | --- | --- |
|  | Action | Requirement | Recorded time |
| 1 | Release all deployment switches | - | XX:XX:XX |
| 2 | Reset timer by pushing deployment switch#1 | Over 10min from previous step | XX:XX:XX |
| 3 | Reset timer by pushing deployment switch#2 | Over 10min from previous step | XX:XX:XX |
| 4 | Reset timer by pushing deployment switch#3 | Over 10min from previous step | XX:XX:XX |
| 5 | Release the deployment switch | - | XX:XX:XX |
| 6 | Antennas are deployed | Over 30 min from releasing all switches | XX:XX:XX |
| 7 | Lids are deployed | Over 30 min from releasing all switches | XX:XX:XX |
| 8 | RF signal is started transmitting | Over 30 min from releasing all switches | XX:XX:XX |

# **Conclusion**

The result of the antenna deployment and RF transmissions test conforms to the requirement.