

## JAPAN

### National mechanism:

JAXA-Management Requirements (JMR-003B), revised in 2011

The NASDA “Space Debris Mitigation Standard” (NASDA-STD-18)<sup>2</sup> was adopted in 1996. In view of the integration of NASDA with other space related organizations and its transformation to JAXA in 2003, NASDA-STD-18 was changed to the “JAXA-Management Requirements 003 (JMR-003)”. It was revised to version B in 2011 to be equivalent to ISO-24113 “Space Debris Mitigation Requirements”.

### Description:

JMR-003B includes the following requirements:

- Preventing the on-orbit break-up of a space system after the end of its mission, which could generate a large amount of debris
- Transferring a spacecraft that has completed its mission in the Geostationary Earth Orbit (GEO) into a higher orbit in order to preserve the GEO environment
- Reducing the orbital lifetime during which the orbital stage left in the Geostationary Transfer Orbit (GTO) can interfere with the GEO region, in order to preserve the GEO environment
- Minimizing the number of objects released in orbit during the operation of a space system
- Reducing the orbital lifetime during which a space system that had completed operation can interfere with the useful Low Earth Orbit (LEO) region.
- Preventing human casualties on the ground caused by impact of space systems removed from the orbit as well as in the orbit caused by collision with a manned system during space systems launch.
- Minimizing damage caused by on-orbit collision

JMR-003B is an internal document of JAXA, but other Japanese government administrations respect it and apply it in procurement of their spacecraft. This standard is available only in Japanese language.

JAXA standard was among the world first space debris mitigation guidelines developed. It provides in-depth technical procedures for multiple debris mitigation areas involving re-entry risks and specifies detailed requirements to be met by contractors. The technical requirements of Standard 18 are similar to those of NASA Safety Standard 1740.14 “Guidelines and Assessment Procedures for Limiting Orbital Debris” but different points are

---

<sup>2</sup> Also referred to as Standard 18.

it includes management requirements including the assignment of responsible manager and its organization, documentation of the debris mitigation plan, and technical review during lifecycle to ensure the compliance. However it doesn't mention complex requirements as NASA standard, such as guidelines limiting released objects with the product of cross sectional area and orbital lifetime, or that of number of objects and orbital lifetime, which would not be easy to verify the compliances.

Supporting documents: To support the project teams following document and analysis tools are being provided:

- i) JERG-2-144-HB001: Space Debris Protection Design Manual
- j) JERG-0-002: Handbook for Space Debris Mitigation Standard
- k) Debris mitigation assessment tool,
- l) Re-entry survivability analysis tool,
- m) Orbital lifetime estimation tool,
- n) Debris impact damage assessment tool

**Applicability:**

JAXA applies the standard to all of its space projects. JAXA requires the compliance with the standard to the contractors who design its spacecraft and launch vehicles, and recommend other users who apply to launch their spacecraft with the launch vehicles that JAXA has responsibility for their launch and flight safety. To show the compliance, contractors are requested to develop a "Space Debris Mitigation Management Plan" to be authorized by JAXA.

**Relation to international mechanisms:**

JMR-003B makes no reference to other international guidelines, but its requirements are well consistent with ITU-R S.1003, Guidelines of the Committee on the Peaceful Uses of Outer Space and ISO standards (ISO-24113 and other debris related standards).

**Link to other national mechanisms:**

None.

**References:**

None.