Form 1 (Re: Article 5, paragraph (1))

Application for Permission Related to Launching of a Spacecraft, etc.

April 1, 2018

To: Prime Minister

(Postal code) 100-0013
Address: XXX, Kasumigaseki, Chiyoda-ku, Tokyo
Name (Seal)
(Company name, in cases of a corporation)
XXXX K.K. (Seal)
Contact information: ***-**** XXX, Otemachi, Chiyoda-ku, Tokyo
XXXX K.K., General Affairs Department, General Affairs Section, Taro Naikaku
Tel: 03-6205-**** (Ext.) 9999
Email address: naikaku-taro@xxx.co.jp

The applicant hereby submits an application for permission related to launching of a spacecraft, etc. pursuant to the provisions of Article 4, paragraph (2) of Act on Launching Spacecraft, etc. and Control of Spacecraft.

<table>
<tr><td>Design of the launch vehicle (Attachment 1) or type certification number</td><td colspan="2">Type certification No.: ○○○○○</td></tr>
<tr><td>Place, design and facility of launch site (Attachment 2) or compliance certification number</td><td colspan="2">Compliance certification number: ○○○○○</td></tr>
<tr><td>Launch plan (Attachment 3)</td><td colspan="2">As indicated in Attachment 3</td></tr>
<tr><td>Type, name of vehicle and serial number of the launch vehicle</td><td colspan="2">Type: CAO launch vehicle
Name of vehicle: Type II
Vehicle Number: ○</td></tr>
<tr><td rowspan="4">Number of spacecraft to be loaded on the launch vehicle, as well as the names, purposes and methods of use of the respective spacecraft</td><td colspan="2">Number of spacecraft: 2</td></tr>
<tr><td>(Name)</td><td>Purposes and methods</td></tr>
<tr><td>CAO spacecraft (Main spacecraft)</td><td>Purpose: Business activity (geospatial information)
Method: Provision of data (sale of data)</td></tr>
<tr><td>ABC spacecraft (Piggyback spacecraft)</td><td>Purpose: Experiment (communication experiment)
Method: S-band</td></tr>
</table>

		This may be replaced with dummy mass of the same size and mass.
Name of officers or employees in charge of business with respect to the launching of spacecraft, etc.	Officer: ○○ ○○ (President, CAO Space Center) Employee: ○○ ○○ (Launch manager)	
Whether the applicant falls under any of the disqualification grounds under Article 5 of the Act	Applicable ☐ Non-applicable ☑	

1. The size of the paper must be Japan Industrial Standards (JIS) A4.
2. An applicant may affix a signature instead of affixing the applicant's name and seal. In this case, the applicant must personally affix the signature.
3. Attach documents set forth in the items of Article 5, paragraph (2) of the Regulation for Enforcement of the Act on Launching Spacecraft, etc. and Control of Spacecraft.

If the applicant is a corporation, state the names and addresses of officers or employees as stated in their residence records.

If, at the time of the application, the applicant intends to replace the payload with dummy mass, the applicant is required to state that intention and make a notification upon the replacement.

(Attachment 3)

Launch plan

Fill in information based on 6.3 of the Guidelines on Permission Relating to Launching of Spacecraft, etc.

1. Safety and security measures
2. Development of disaster prevention plan, etc.
3. Safety measures related to handling of propellant, etc.
4. Design of trajectory considering the planned impact area, etc.
5. Design of the appropriate impact limit lines
6. Creation of restricted area and establishment of system to prevent entry of third parties
7. Measures to be taken at the time of natural disaster warning, etc.
8. Prior notice to aircraft, ships, etc.
9. Determination of the appropriate date and time for launch
10. Flight capability considering the spacecraft to be loaded
11. Confirmation of feasibility for flight considering weather conditions
12. Prevention of third-party damage prior to the termination of designation of restricted areas
13. Implementation of flight safety operation
14. Implementation of flight termination
15. Retrieval of objects remaining buoyant on the sea
16. Mitigation of the generation of orbital debris
17. Removal of an orbital stage of a launch vehicle from protected regions
18. Establishment of organizational structures for the implementation of launch plan

Form 9 (Article 13, paragraph (1))

Application for Type Certification

April 1, 2018

To: Prime Minister

(Postal code) 100-0013
Address: XXX, Kasumigaseki, Chiyoda-ku, Tokyo
Name (Seal)
(Company name, in cases of a corporation)
XXXX K.K. (Seal)
Contact information: ***-**** XXX, Otemachi, Chiyoda-ku, Tokyo
XXXX K.K., General Affairs Department, General Affairs Section, Taro Naikaku
Tel: 03-6205-**** (Ext.) 9999
Email address: naikaku-taro@xxx.co.jp

The applicant hereby submits an application for type certification for the design of launch vehicle pursuant to the provisions of Article 13, paragraph (2) of the Act on Launching Spacecraft, etc. and Control of Spacecraft.

Design of the launch vehicle (Attachment 1 to Form 1)	As indicated in Attachment 1
Flight termination measures and other means of ensuring the safety of the vicinity of the trajectory and launch site of the launch vehicle	As indicated in Attachment ○○.
Technical conditions for securing the conformity of the launch vehicle and launch site	As indicated in Attachment ○○.

Note 1. The size of the paper must be Japan Industrial Standards (JIS) A4.

2. An applicant may affix its signature instead of affixing its name and seal. In this case, the applicant must affix the signature in person.
3. Attach documents set forth in the items of Article 13, paragraph (2) of the Regulation for Enforcement of the Act on Launching Spacecraft, etc. and Control of Spacecraft.

(Attachment 1-1)

Design of the launch vehicle

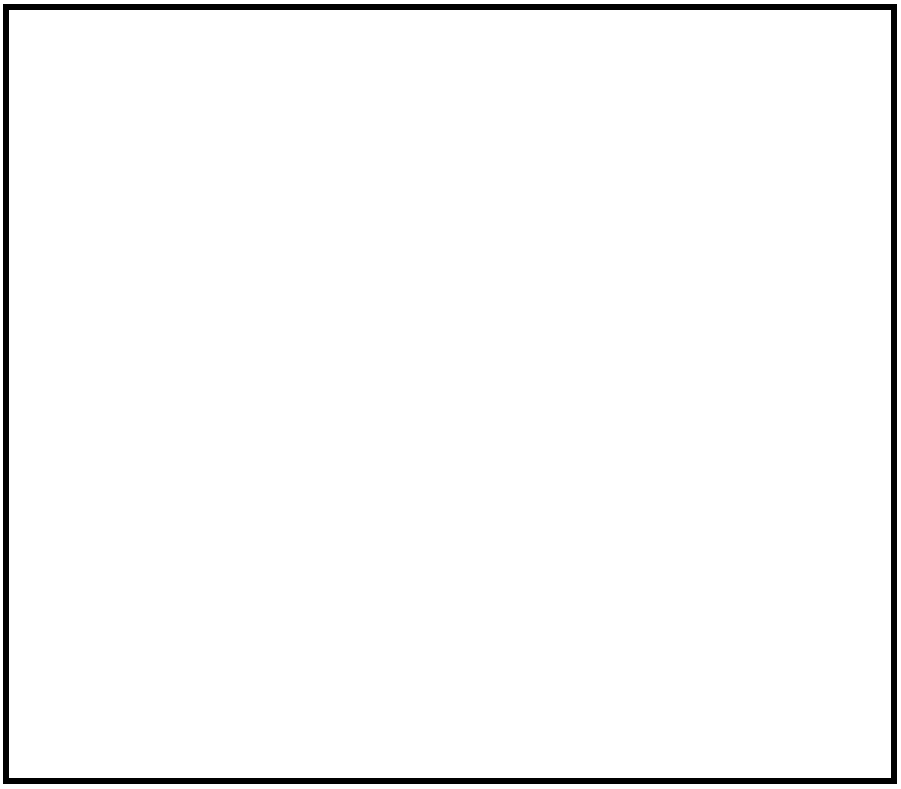
Main specification			
Type (*1)	CAO launch vehicle		
Name of vehicle (*2)	Type I	Type II	
Configuration of stages	Two-stage	Two-stage	
Auxiliary booster and number of boosters, if any	Auxiliary booster: 2	Auxiliary booster: 4	
Total length (m)	60m	60m	
Diameter (m)	4m	4m	
Total mass (t) (excluding spacecraft)	460t	600t	
Guidance method	Inertial guidance system	Inertial guidance system	
Method of flight termination measures	Command destruct	Command destruct	

State the diameter of the main vehicle.

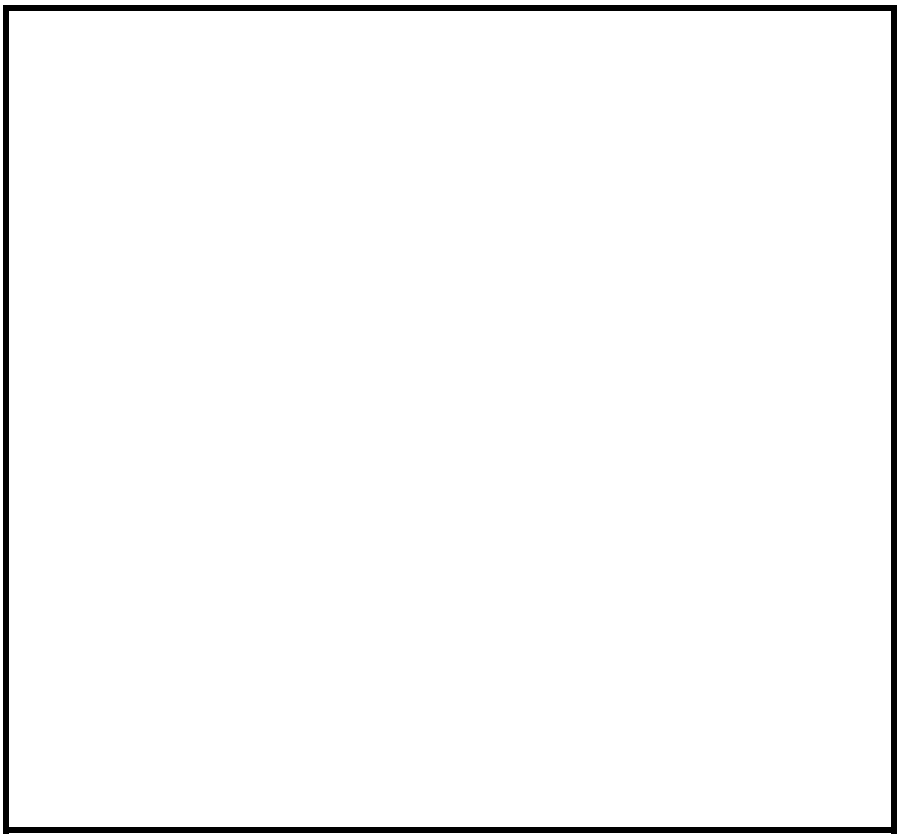
*1 "Type" means a type of launch vehicle without regard to the configuration of vehicles (Ex.: H-IIA)

*2 "Name of vehicle" means the name which differs depending on the configuration of vehicles (Ex: 202)

Payload fairing			
Name	Standard type	Long type	Wide type
Total length (m)	5m	7m	7m
Outer diameter (m)	4m	4m	5m
Mass (t)	1.0t	1.4t	1.8t
Main onboard electronic devices	Beacon	Beacon	Beacon



CAO launch vehicle type-I overview



CAO launch vehicle type-II overview

(Attachment 1-2)

Name of vehicle	Type II					
Details of each stage (describe the specifications of components, such as auxiliary rockets, as necessary)						
	Stage 1		Stage 2		Auxiliary booster	
Total length (m)	40m		20m		2m	
Outer diameter (m)	4m		4m		1m	
Mass (t)	200t		100t		75t×4	
Number of engines, etc.	2		1		4	
Thrust per engine (kN)	1100kN		1100kN		2500kN	
Combustion time (s)	300s		400s		110s	
Type of propellant	LOX	LH2	LOX	LH2	Polybutadiene composite solid propellant	
Mass of propellant (t)	130t	25t	16t	4t	60t×4	
Altitude control system	Inertial guidance system		Inertial guidance system		Inertial guidance system	
Main onboard electronic devices	- Guidance control system - ○○○ - ○○○ - Measurement system - ○○○ - ○○○ - Command destruct system - ○○○ - ○○○		- Guidance control system - ○○○ - ○○○ - Measurement system - ○○○ - ○○○ - Command destruct system - ○○○ - ○○○		- Guidance control system - ○○○ - ○○○ - Measurement system - ○○○ - ○○○ - Command destruct system - ○○○ - ○○○	

Launch capability (Add the nominal orbit as necessary.)			
Name of nominal orbit	Low earth orbit		
Altitude (km)	300		
Inclination (degree)	35		
Payload mass (kg)	5000		

State a nominal orbit other than LEO with the potential for launching.

(Attachment 1-3)

○Launch vehicle system diagram

Include a system diagram of the spacecraft launch vehicle specified in Attachment 1-1.

The system diagram needs to show that the system, including the ignition device, satisfies the safety requirements relating to the ignition device, etc. as referred to in Article 7, item (ii) of the Regulation.

○Major component devices, etc. for flight safety operation

※Name, description and stages of devices, etc.

For devices for flight safety operation of a launch vehicle, provide a brief overview, system diagrams, etc., for example, the following:

- Brief overview and system diagram of a system for sending information on flight condition (e.g. attitude, status, etc.) of the launch vehicle.
- Brief overview and functional block diagram, etc. for the flight termination system of the launch vehicle.

If an explanation of the technical conditions for ensuring the compliance of the spacecraft launch vehicle and evidence of the compliance with the conditions are necessary, attach the relevant documents.

(Attachment 1-4)

○Engine system layout diagram (stage: ___)

※Including the functions relating to the safety of ignition device, etc.

Include a system diagram for the engine system of the launch vehicle.

The system diagram needs to show that the system, including the ignition device related to the engine system, satisfies the safety requirements relating to the ignition device, etc. as referred to in Article 7, item (ii) of the Regulation.

※Enter the necessary information depending on the number of engines, etc. on each stage.

(Attachment 1-5)

○ Measures to mitigate the generation of unnecessary artificial object on the orbit (hereinafter referred to as "orbital debris")

※Orbital stage, device for separation of spacecraft, etc.

Include a brief overview of the system, drawing, results of analysis, etc. related to the measures to mitigate orbital debris generated from a launch vehicle.

Form 13 (Article 16, paragraph (1))

Application for Compliance Certification

April 1, 2018

To: Prime Minister

(Postal code) 100-0013
Address: XXX, Kasumigaseki, Chiyoda-ku, Tokyo
Name (Seal)
(Company name, in cases of a corporation)
XXXX K.K. (Seal)
Contact information: ***-**** XXX, Otemachi, Chiyoda-ku, Tokyo
XXXX K.K., General Affairs Department, General Affairs Section, Taro Naikaku
Tel: 03-6205-**** (Ext.) 9999
Email address: naikaku-taro@xxx.co.jp

The applicant hereby submits an application for compliance certification for launch site pursuant to the provisions of Article 16, paragraph (2) of the Act on Launching Spacecraft, etc. and Control of Spacecraft.

Location, design and facility of launch site (Attachment 2 to Form 1)	The location, design and equipment of the launch site are as indicated in Attachment 2-1 to Form 1.
Type certification No.	○○○○○
Type	Type: CAO launch vehicle
Date of type certification	_____
Flight termination measures and other means of ensuring the safety of the vicinity of the trajectory and launch site of the launch vehicle	As indicated in Attachment ○○.

Note 1. The size of the paper must be Japan Industrial Standards (JIS) A4.
2. An applicant may affix its signature instead of affixing its name and seal. In this case, the applicant must affix the signature in person.
3. Attach documents set forth in the items of Article 16, paragraph (2) of the Regulation for Enforcement of the Act on Launching Spacecraft, etc. and Control of Spacecraft.

(Attachment 2-1)

Location, design and facility of launch site

Name of site	CAO Space Center
Location	_____ Prefecture, _____ City, _____
Overview of launch site and layout diagram of main facilities	

Indicate the entire launch site on the map and show the locations of the facilities owned by the facility.
On the map, show the boundary with the outside and the locations of main facilities.

Major facilities include, among others, the following:
- Facilities for the handling and storage of hazardous materials, including gunpowder
- Facilities for the handling of launch vehicles and spacecraft
- Launch pad
- Facilities for flight safety operation

In addition to the name of the facilities, also describe the functions of each facility.

If an explanation of the technical conditions for ensuring the compliance of the launch site and evidence of compliance with the conditions are necessary, attach the relevant documents.

Note 1. Describe the distance information using a reduced scale and other means.

2. Clearly indicate the boundary with outside the launch site.

(Attachment 2-2)

○Main facilities

※Names, brief description and security measures

For the facilities described in Attachment 2-1, state the names, functions and brief overview thereof.

○Launcher

※Brief description and system layout diagram (including the system for the safety of ignition device, etc.)

For launchers including the ignition device, etc. of the launch site, provide a brief outline, system diagrams, etc.

(Attachment 2-3)

○Major component devices, etc. for flight safety operation

※Brief description and system layout diagram

For devices for flight safety operation of the launch site, provide a brief overview, system diagrams, etc.