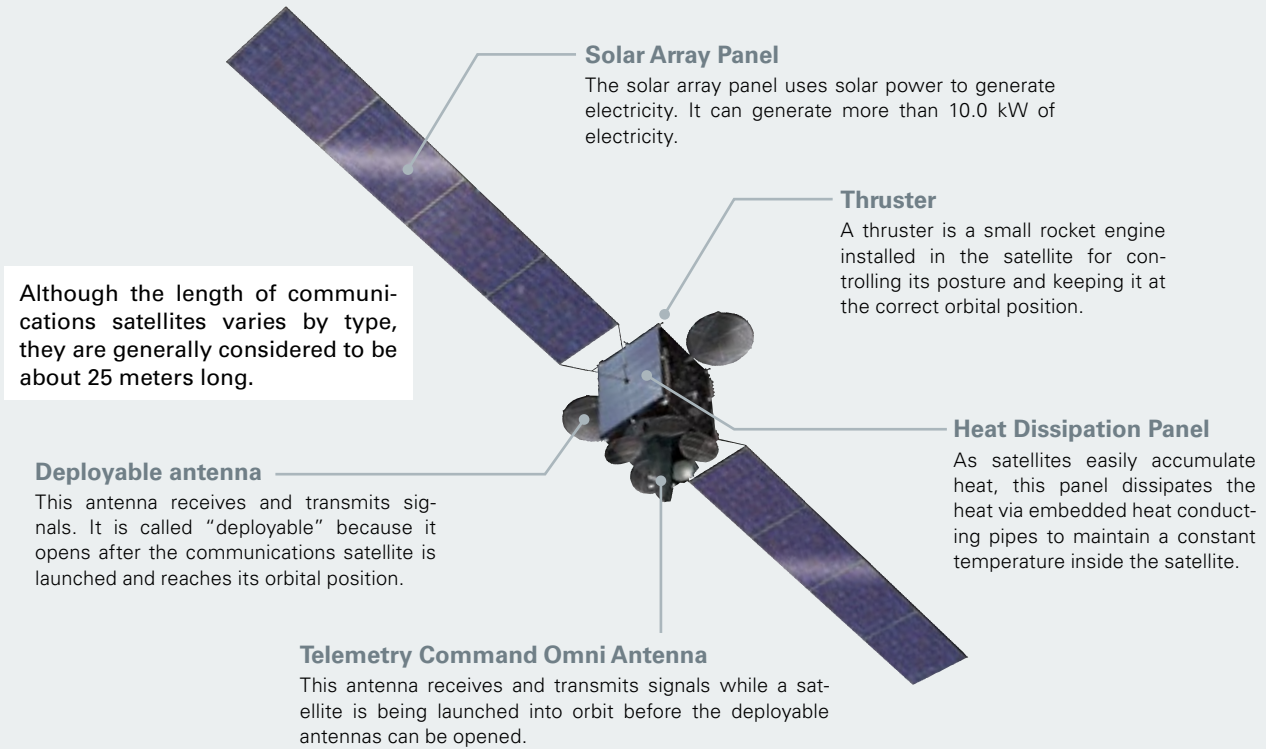


# Satellite Basics

## Communications satellite's main components

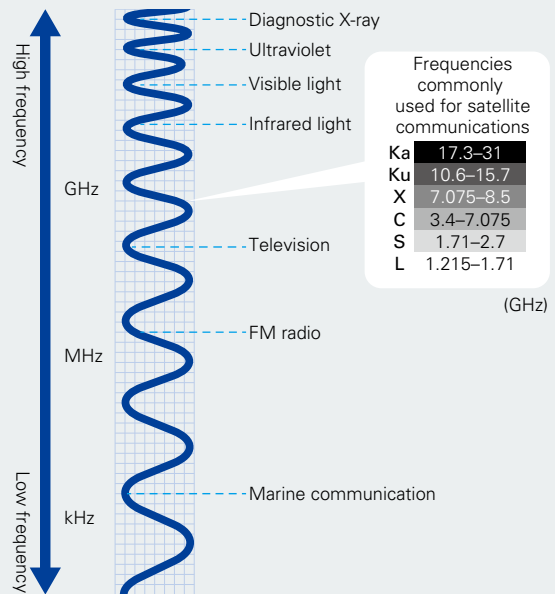


## Types of radio frequencies used by communications satellites

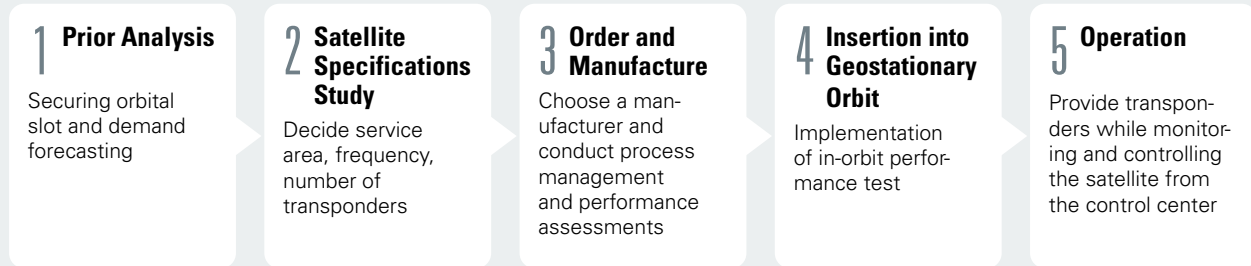
The signals used generally in Japan for satellite communications are called Ku band and the C band.

C band (frequency range 3.4-7.075GHz: uses a frequency range of 3.4-4.2GHz for downlink and 5.8-6.7GHz for uplink) has been widely used ever since satellite communications started because it is less affected by rain. However, it requires a large antenna to catch the signals because the frequencies are low. On the other hand, since Ku band (frequency range 10.6- 15.7GHz: uses a frequency range of 12.25-12.75GHz for downlink and 14.0-14.5 GHz for uplink) can be received even with a small antenna, it suits SKY PerfectTV's broadcasts and domestic communications. The signals can certainly be received with a small antenna, but they are weakened when they collide with waterdrops in the air and are sometimes adversely affected during heavy rains and other weather conditions. In recent years, the use of Ka band (frequency range: 17.3-31GHz) has started to spread for large-capacity communications because this band is widely allocated for satellite communications.

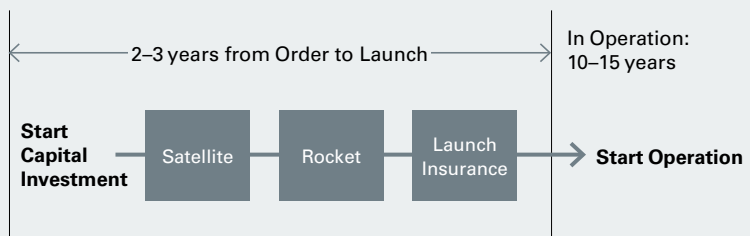
Apart from these, the X band (frequency range 7.075-8.5GHz) is used mainly for military communications and weather and earth observation satellites.



## From Satellite Procurement to Operation



JCSAT-110A Satellite Test ©Space Systems Loral



## The Cost of Procuring and Launching a Satellite is Between about ¥20.0 billion to ¥40.0 billion and the Depreciation Period is generally 15 years.

The process of launching a communications satellite begins with forecasting demand in the coverage area and acquiring an orbital position. Satellite specifications are then discussed, an order is placed with the manufacturer, and the satellite is manufactured. After that, a launch service is selected, and the satellite is launched into a geostationary orbit about 36,000 km above the equator after a preparation stage lasting two to three years. The procurement and launch costs are capitalized at about 20-40 billion yen per satellite. Then, depreciation is calculated for its life period of about 15 years. SKY Perfect JSAT Corporation also covers the satellite launches with insurance in preparation of launch failures.

### Rocket Launch Sequence

(in the case of the Ariane5 rocket)

