



【ORCA Report】 Summary of Failure Cases about Starlink

The use of Starlink vessels began in 2023, and as of January 2024, we have connected about 40 Starlink units for vessels.

Among them, reports of failures have also been raised. It will be useful for the operation of Starlink on vessels in the future, so we will introduce a summary of failure cases.

Case 1: Damage to the antenna installed on the compass deck

Fault Details	The antenna of Starlink Maritime was installed on the compass deck, but the base of the antenna (bolted part) was damaged by sailing in bad weather and strong winds. The antenna has fallen out of the mount.
Explanation	The antenna of Starlink Maritime is fixed by bolts, but the bolt anchor is embedded in the plastic antenna body, and the main body side is damaged due to insufficient strength on the plastic side.
Measures to prevent recurrence	According to the common knowledge of satellite communications, most vessels install antennas higher than the compass deck. However, due to the characteristics of low-orbit satellites, the satellite to which the communication is to be communicated is always high in the sky, and the communication destination is always close to the top. For this reason, there is not much need to worry about antenna blocking, for example, by radar masts. Considering the above characteristics, as well as the strength of the antenna itself, Starlink's antenna is not necessary to install it in a high position, and it is better to install it in a low position (but in a place where you can see directly above) so that it will be behind the wind.

Case 2: Starlink Maritime power supply unit failure (2 cases)

Fault Details	Fault of the board in the power supply unit. Since the antenna is powered, Starlink is online from the shore, but the Ethernet interface of the unit is faulty, so communication with the onboard LAN is not possible.
Explanation	<p>There have been two cases of this failure. If this fault occurs, the main unit power supply unit must be replaced. Starlink communications will not be restored until replacement equipment reaches the vessel.</p> <p>SpaceX seems to be aware of this type of failure, and it is possible that there will be similar failures depending on the production lot. The company's support made it easy to arrange replacement equipment, but the time lag before it arrives on the vessel is a problem. Also, keep in mind that each Starlink device is basically not designed to be repaired, and in the event of a breakdown, the entire unit must be replaced.</p>
Measures to prevent recurrence	<p>The easiest way to ensure that Starlink is always effective is to have a spare that can be used in the event of a breakdown. Please refer to "ORCA REPORT Recommendation to install two Starlink units" for a method of operating two Starlink Maritime and Starlink Roam, and compensating for the remaining one in the event of a failure. It is possible to realize a two-unit operation system at the minimum cost.</p> <p>Of course, if the budget allows, it is effective to operate with a Starlink Maritime two-unit system. In this case, Starlink on the standby side can usually be suspended. Starlink can be suspended and resumed freely, so there is no operating cost during standby.</p>

In the future, we would like to continue to introduce cases of failures and countermeasures.

2024/01/18