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LUNAR LINK THE EUROPEAN MODULE THAT CONNECTS THE LUNAR GATEWAY TO THE MOON

Abstract

The Lunar Gateway is part of NASA's Artemis program that will serve as a multi-purpose outpost orbiting the Moon also providing communication relay capabilities to lunar assets.

The European Space Agency contributes via the ESPRIT project that includes the Lunar Link (also known as HALO Lunar Communication System - HLCS) and awarded the contract for its design and development to Thales Alenia Space in 2020.

Lunar Link is devoted to providing the radio-frequency (RF) communications links with spacecrafts that will fly around or to the Moon, and with landed assets on the lunar surface. Lunar Link will be installed on the Habitation and Logistic Outpost (HALO) module, that will be launched together with the Power and Propulsion Element (PPE) no earlier than end 2025.

In this article, an introduction briefly describes the overall Gateway context and the Lunar Link role; a detailed description of the Lunar Link system is then given, with special focus on the RF aspects. The performance of the RF links and data rates are then reported, including the auto-tracking function of the lunar assets.

The paper will also provide updates on the current hardware development status.