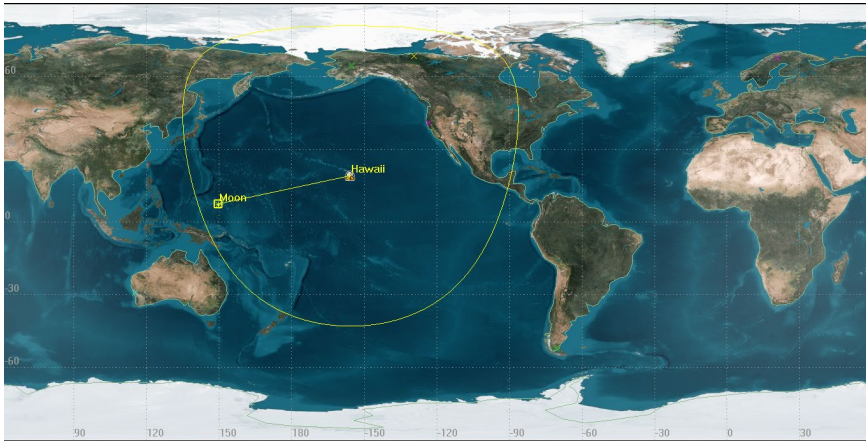


USN test support for Chandrayaan-2 from Hawaii

Chandrayaan-2 is the second lunar mission of the Indian Space Research Organization (ISRO). Chandrayaan-2 is currently orbiting the moon and will explore the polar regions of which this data is essential for the NASA Artemis program and future US/Japanese lunar base. This additional science data collection from Hawaii can benefit the near future missions to the moon.

The additional support is requested to be conducted for a minimum of 180 days for 2 hours each day when the moon is in view of the station.



Chandrayaan-2 typical coverage from Hawaii

Flux Density impinging on the ground in Hawaii from Chandrayaan-2

The Flux density is calculated as:

$$\text{Flux density} = \text{EIRP} \div (4 \pi Rse^2)$$

Where **Rse** is the distance from spacecraft to the ground.

Where **EIRP** is the Effective Isotropic Radiated Power of the Spacecraft.

Data from the spacecraft vendor indicates that the maximum EIRP of Chandrayaan-2 is 35.0 dBW. The altitude (and thus the closest distance to earth during an overhead pass) is = 400,000 Km. Converting 35.0 dBW to scalar watts = 3162.3 watts transmitted at 8484.000 MHz

Therefore:

$$\text{Flux density} = 3162.3 \div (4 \pi * 400,000,000 \text{ meters}^2)$$

$$\text{Flux density} = 1.572 \times 10^{-15} \text{ Watts/meter}^2$$

Or

$$\text{Flux density} = 1.572 \times 10^{-16} \text{ mW/cm}^2$$