# 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 for 30 days while the commission is taking action on SES-STA-20210223-00379. Support may consist of 2 hours each day when the moon is in view of the station.
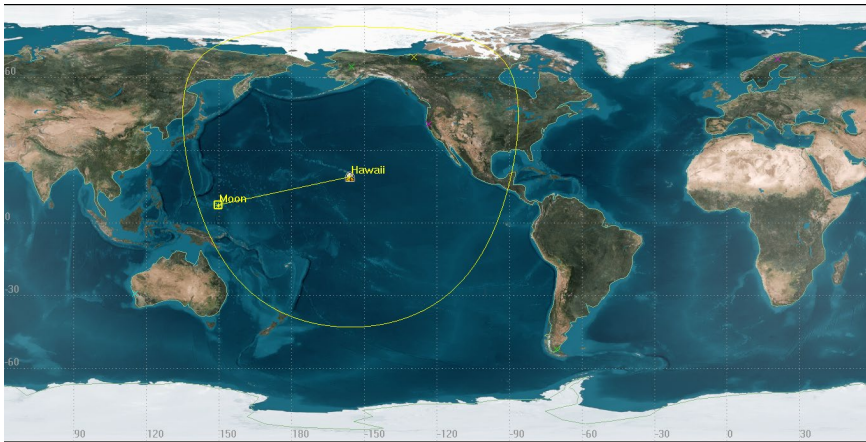
Chandrayaan-2 typical coverage from Hawaii

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

The Flux density is calculated as:

$$Flux\ density = EIRP \div (4\,\pi\,Rse^2)$$

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

Therefor:
$$Flux\ density = 3162.3 \div (4\,\pi * 400,000,000\ meters^2)$$

Flux density = 1.572 x 10^{-15} Watts/meter^2
Or
Flux density = 1.572 x 10^{-16} mW/cm^2