

# **Radio Beacon Monitoring for Ionospheric Scintillation Specification and Total Electron Content from the FORMOSAT- 7/COSMIC-2 Science Mission**

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**Key words:** New beacon satellite mission, COSMIC-2, Ionosphere, Scintillation.

**Summary:** Introduction of the SSAEM RF Beacon instrument package on the COSMIC-2 satellite constellation.

**Abstract:** Remote sensing of radio signals from low-Earth orbiting (LEO) satellites provides a wealth of information on the presence and location of disturbances in the equatorial ionosphere which result in scintillations. With its low inclination orbit, the FORMOSAT-7/COSMIC-2 mission promises to provide unprecedented capabilities for detecting and tracking ionospheric irregularities from ground-based sensors monitoring signals from an RF beacon transmitter. RF Beacon receivers in the equatorial zone can anticipate overflights every 15-20 minutes from the six-satellite constellation providing a longitudinal swath of ionospheric scintillation measurements at three frequencies: UHF/LBAND/SBAND. Differential phase measurements of the 3-frequency tones will allow for computation of Total Electron Content along the slant path between the receiver and satellite. Researchers with current capabilities monitoring active VHF/UHF/LBAND high-inclination LEO beacon satellites will want to be aware of the new opportunities provided from the FORMOSAT-7/COSMIC-2 mission. With a tentative launch scheduled for June 2019, we will provide an overview and status update of the COSMIC-2 RF beacon system and, hopefully, present a first look at data from a specially designed RF beacon receiver system installed at an equatorial location as part of the formal satellite checkout.

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