

Cassini Radio Science Operations Archive

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About This Archive

The Cassini Radio Science Non-Science Archive contains data, documentation, and notes from activities conducted during the prime, extended, and solstice phases of the Cassini mission at Saturn from 2004 to 2017. This data set does not contain science data (such as open-loop recordings) or ancillary supporting products (such as media calibration files), but rather contains information that was collected in support of the real-time operations and analysis to collect the science data. Science data and ancillary supporting products for Cassini Radio Science are available on the [PDS Atmospheres Node](#). A description of some of the operations is on the [Data Information](#) page.

About the RSS Subsystem

Cassini's Radio Science Subsystem (RSS) is designed to take measurements using radio waves beamed to Earth that explore similar concepts at a distance of more than a billion kilometers (more than 621 million miles).

The largest instrument on the mission, RSS is split in two parts: one resides on the spacecraft, the other at stations equipped to receive very stable radio signals at each of the three Deep Space Network complexes.

The instrument's split personality allows it to measure the forces acting on the spacecraft by detecting slight changes in the frequency of radio signals sent from the spacecraft to Earth. It also measures how radio signals are affected by whatever material comes between the spacecraft and Earth -- allowing scientists to study the composition and properties of Saturn's rings and atmosphere.

The Radio Science instrument can measure changes in velocity less than a micron per second at enormous distances allowing scientists to gain information on the interior structure of the planet and its many natural satellites.

Cassini is the only deep space mission to transmit to Earth at three radio wavelengths (approximately 14 cm wavelength, designated S-band; 4 cm, designated X-band; and 1 cm, designated Ka-band) simultaneously.

- Mass (current best estimate) = 14.38 kg
- Peak Operating Power (current best estimate) = 80.70 W
- Peak Data Rate (current best estimate) = not applicable: carrier only (the RSS sensing devices are on Earth at the Deep Space Stations in California, Spain and Australia)

For more information, visit the RSS page at the official Cassini site [here](#).

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