



Animation: Building GMI

1. **Instrument Spacecraft Structure**—the base structure for GMI.
2. **Spin Mechanism Assembly**—the DC motor that spins GMI.
3. **Slip Ring Assembly**—passes receiver subsystem data from the instrument's spinning portion to its non-spinning portion (see #15, the ICA), which then sends data to the spacecraft and then to Earth.
4. **Instrument Base Structure (IBS)**—holds all the receiver components.
5. **Hot Load Tray** – keeps the sun out of the hot load (#7) and helps maintain its thermal environment.
6. **Feed Horns**—focus the reflected RF energy and send it down the wave-guides (#12) to the RF receivers (#11).
7. **Hot Load**—provides warm temperature reference for the receivers. GMI self-calibrates by using the constant temperature references of the hot load, the cold sky reflector (#9), and the noise diodes (#12).
8. **De-spin Assembly**—holds the cold sky reflector and the hot load tray in place.
9. **Cold Sky Reflector**—looks at deep space to provide a cold temperature reference for the receivers.
10. **Launch Locks**—hold the IBS to the deck during launch.
11. **RF Receivers** (attached to the IBS's sides)—detect/measure the RF energy associated with the Earth's precipitation (moisture from humidity, dew, snow, rain, and so on).
12. **Wave-guides, Noise Diodes, Mixer-Preamplifiers, RF Coaxial Cables**—the wave-guides and RF coaxial cables are conduits from the feed horns (#6) to the receiver subsystem. The noise diodes provide mid-range temperature references to the three low-frequency receivers for calibration purposes. The mixer-preamplifiers are the front ends for the three high-frequency receivers.
13. **Sunshade and Struts**—the sunshade exposes one side of the instrument to the Sun and blocks the other side from the Sun; the struts hold the main reflector.
14. **Main Reflector** (and its support structure)—reflects the RF energy emitted from the Earth's atmosphere into the feed horns; its coating of aluminum and then silicon oxide diffuses sunlight, which could damage the feed horns. The feed horns are located near the focal point to achieve the best combination of efficiency and beam-width performance across the various frequencies.
15. **Instrument Control Assembly, or ICA** (attached below the Instrument Spacecraft Structure)—controls the power from the spacecraft to the instrument; controls the temperature of the instrument; controls the transmittal of science data from the receiver system; and maintains the spinning of the system through the spin mechanism assembly (#2).