



# Antenna Test Range Facility

## **Purpose:**

To provide the capability of performing accurate measurements of impedance, insertion loss, isolation, frequency, power, and antenna radiation distribution patterns.

## **Antenna Test Range**

This facility utilizes both a 400-foot and a 2,640 foot range to measure far-field antenna radiation distribution patterns on scale models of spacecraft and/or payloads. Antenna pattern data on all ranges can be recorded in analog or digital form and presented in polar or rectangular form. The facility also has a 120 x 30 x 30 foot tapered anechoic chamber.

The 2,640-foot antenna test range consists of two 90-foot test towers used to elevate the test article and the transmit antenna to simulate free-space conditions. Positioning control and data recording instrumentation are located in a trailer adjacent to the receive site. The transmit site is equipped with an eight foot parabolic dish and a small building for placement of signal generators and power. This range is suitable for antenna pattern measurements from 2 to 60 GHz.

A small, onsite machine shop is used for construction of items needed in tests, such as small model antennas, ground planes, and mounting brackets. The shop and offices for test engineers are located in Building 4194 which also serves as a primary control/monitor center for antenna measurements. There is also a building with a roof-top radome, which provides a free-space environment for some antenna measurements and protects personnel and equipment from the weather.



## **POINT-OF-CONTACT:**

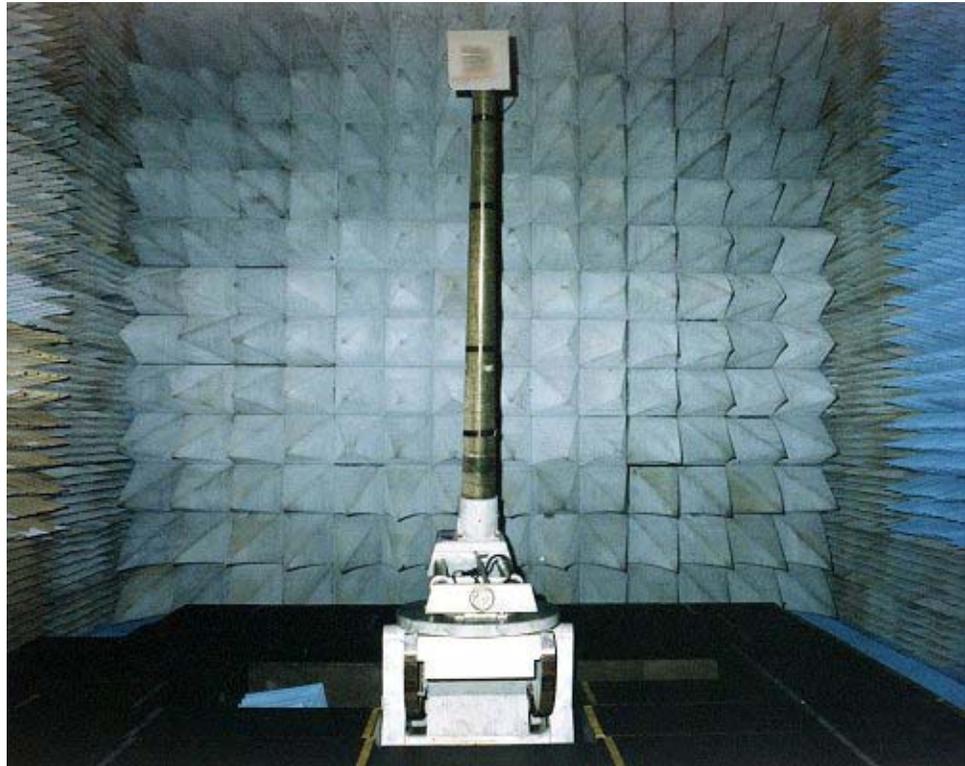
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## Microwave Anechoic Chamber

The MSFC antenna test range also has a 120 X 30 X 30 foot tapered anechoic chamber. The chamber is shielded to prevent interference from external electromagnetic sources, and is equipped with shielded doors which allow test devices to be moved into the chamber. Models or test devices up to 12-feet in diameter may be supported on the 15-foot tower in the chamber. The control room, located underneath the tapered end of the chamber, is equipped with a complete antenna pattern measurement system. The chamber is most often used for antenna pattern measurements to support antenna design work, to verify scale model antenna patterns, and to measure free-space patterns of prototype or flight antennas. It is also used to measure antenna impedance and field strength. The chamber operates from 200 MHz to 40 GHz and has a shielding of > 80 dB at S-band.



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