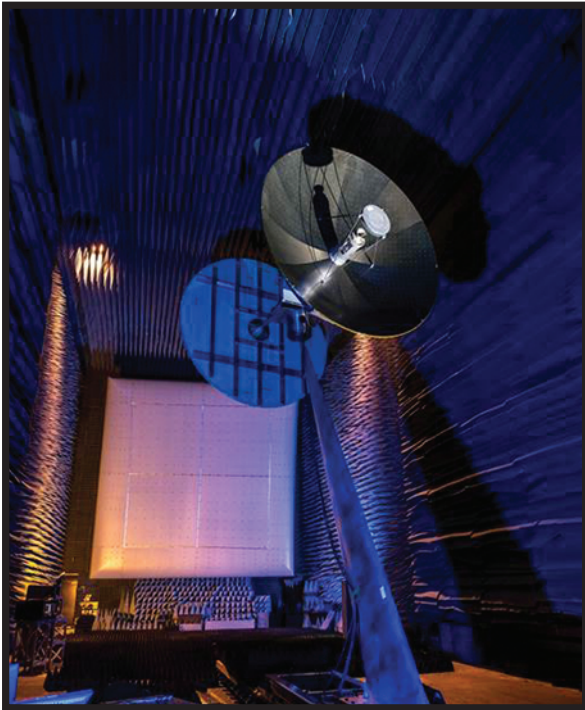




ETR



ETR has a 26' x 26' corner feed reflector, shown with pylon and space-based antenna.

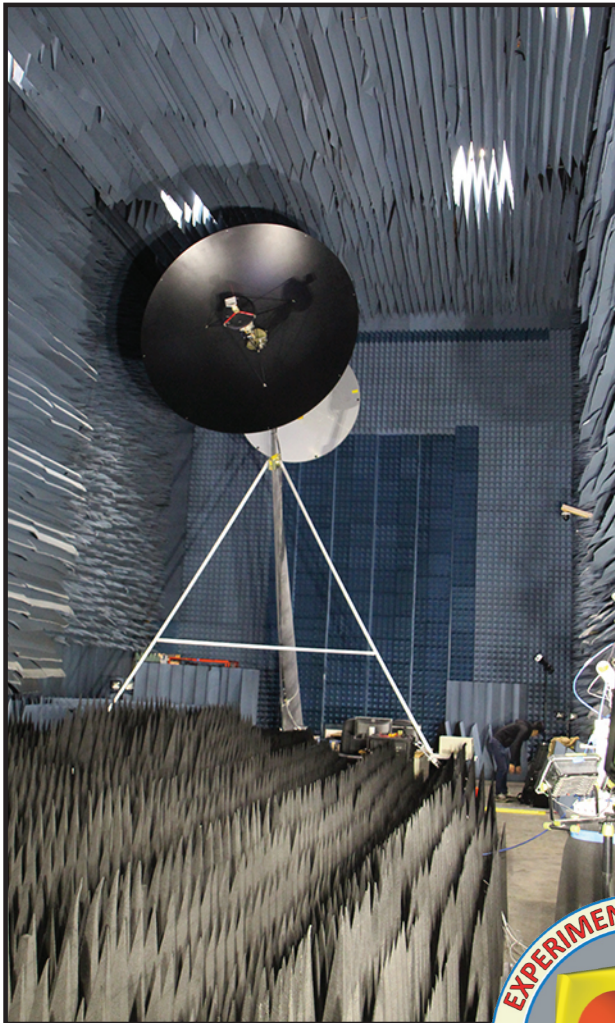
The NASA Langley Experiment Test Range (ETR) is a unique and relatively large indoor compact antenna test range (CATR) that provides a free space radio environment that can be used to measure antenna performance, material properties, and radio wave backscatter. The facility is an offset fed system with a large rolled-edge parabolic reflector (26' x 26') that creates transverse electromagnetic plane waves in the Quiet Zone at distances considerably shorter than those needed under conventional far-field criteria. (i.e. far-field is over 1.9 km for 3m antenna at 31.86 GHz for the Europa Clipper high gain antenna.). ETR has many data acquisition modes and test article mount systems to customize measurements to unique requirements.

ETR-CATR Characteristics	
Anechoic Chamber	100 ft (L) x 40 ft (W) x 40 ft (H)
Frequency Range	0.500 GHz to 18 GHz (Expandable to: 0.300 GHz - 40 GHz)
Quiet Zone Size	14' x 14' at Chamber Center
Radar	Mark V
Chamber Entry Doors	Downrange Wall 16 ft wide by 30 ft tall
Test Article Support Systems	• Low cross section ogive pylon with az/el motion (1500 lb limit) • Foam Column with azimuth motion • 3 Axis Positioner (1,000 lb limit)
Test Article Motion	Rail system to move Test Article to Quiet Zone
Preparation Area	• Behind chamber back-wall • 4000 lb limit certified lift crane for flight hardware use
Personnel Lift	20 ft lift platform
Secure Test Facility	Approved for Proprietary and Classified Ops

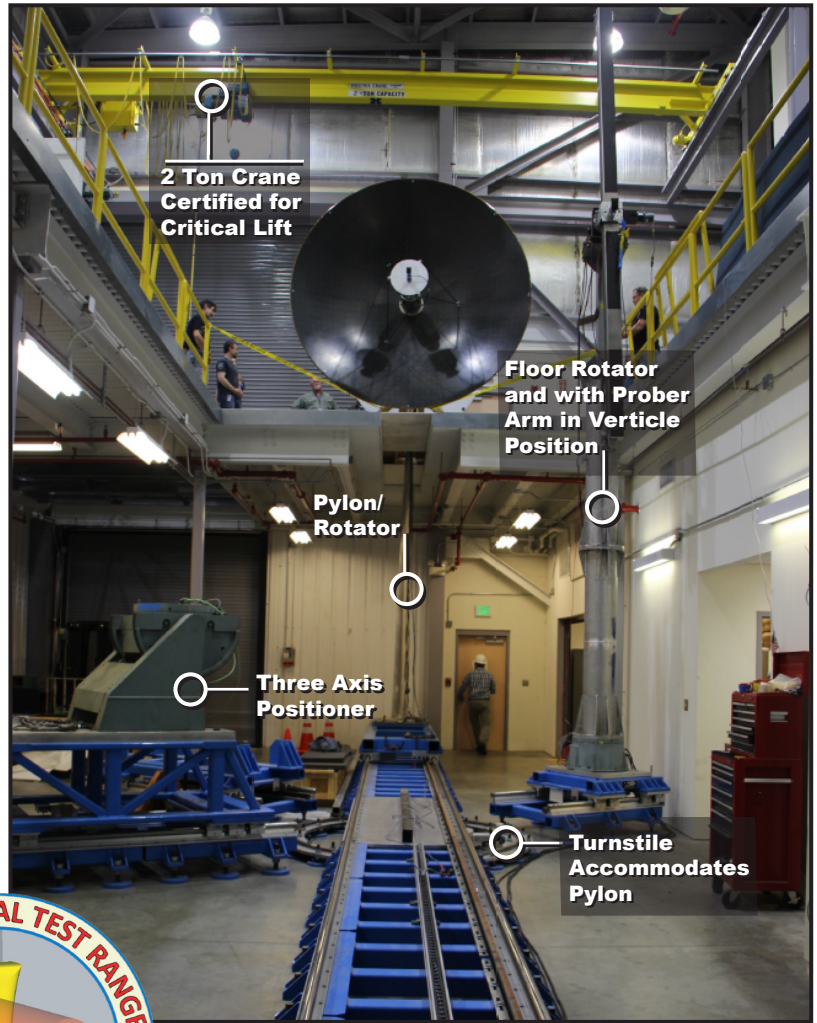
NASAfacts



EM characterization of drone, shown mounted on foam column in ETR.



40' x 40' back wall with movable doors



2 Ton Crane
Certified for
Critical Lift

Floor Rotator
and with Prober
Arm in Verticle
Position

Pylon/
Rotator

Three Axis
Positioner

Turnstile
Accommodates
Pylon

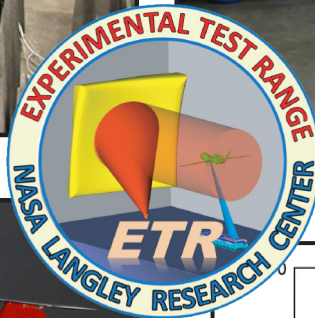
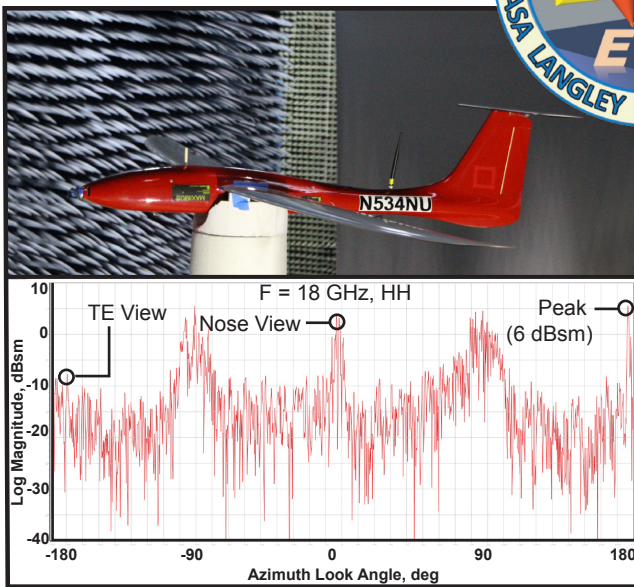
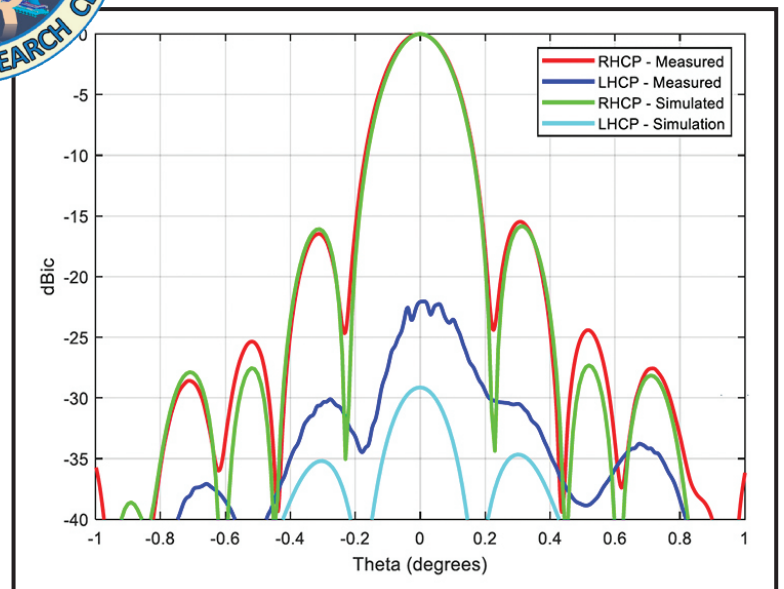


Image of ETR model prep area (above) and rail system with turn style (below).



A drone in ETR and its radar cross section plot.



Radiation Pattern of HGA at 31.86 GHz in ETR.

National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23681

www.nasa.gov

NP-2023-10-101-LaRC

Courtesy of...M. Bray, "Europa Clipper High Gain Antenna Prototype," 2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, 2020, pp. 123-124, doi: 10.1109/IEEECONF35879.2020.9329497

NASA Facts