

U.S. Air Force Facilities



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Advanced Indoor Compact Range

Air Force Research Laboratory

Wright-Patterson AFB, OH

TYPE OF FACILITY: Indoor, static, research and development, advanced stealth/low observable developmental component and model testing. Advanced measurement and calibration research.

POINT OF CONTACT: AFRL/XPN, Bldg 254
Attn: Mr. Richard Porter
2591 K Street
Wright-Patterson AFB, OH 45433-7602
Phone: (937) 255-0277 [DSN: 785]
Fax: (937) 656-7074

PERTINENT TESTING: RCS measurements of aircraft models, aircraft and missile components, antennas, radomes and arrays, primary and secondary radar calibration standards, full polarimetric calibration.

FACILITY DESCRIPTION: Compact range based upon a Gregorian geometry for reflector illumination.

RANGE LENGTH: 100 feet (compact)

FREQUENCY COVERAGE: 0.15 to 18 GHz, 26-35 GHz

POLARIZATION COVERAGE: HH, VV, VH, HV (HH or VV only @ <0.5 GHz; Polarimetric-circular can be synthesized)

DYNAMIC RANGE: >95 dB

RANGE RESOLUTION: <0.34 inches

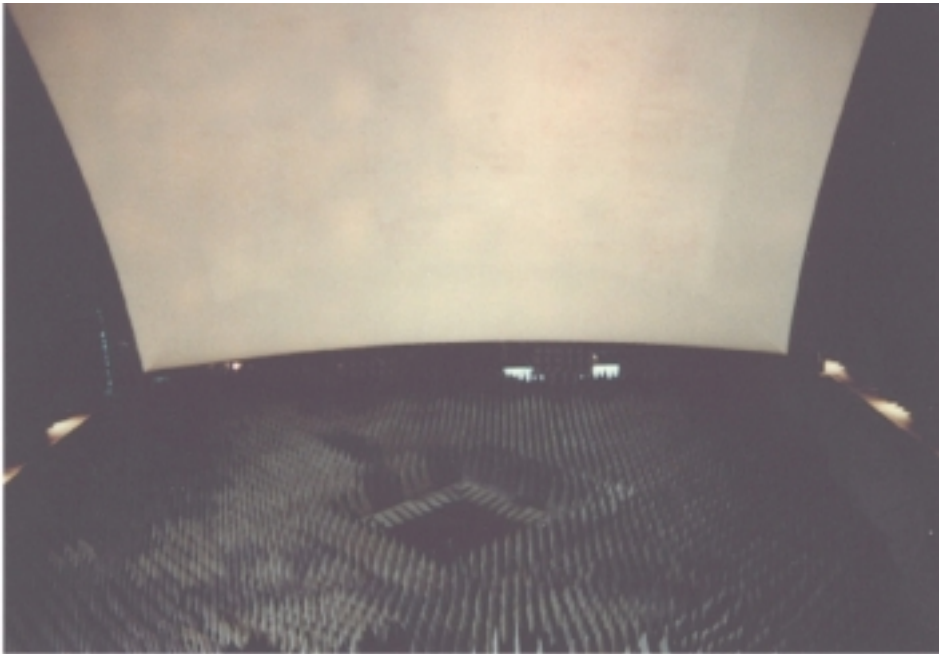
TARGET SUPPORTS: Pylon, traditional rotator, advanced 'kneeling' rotator, foam interfaces available, limited string suspension

TARGET SIZE: up to 20 feet (0.5 to 35 GHz)

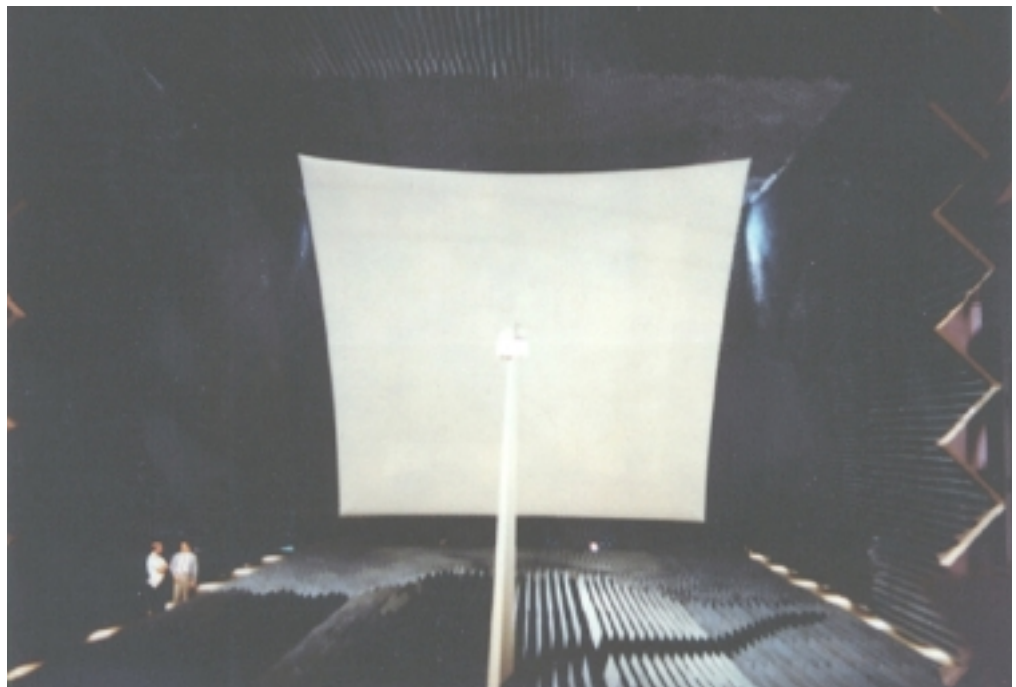
TARGET LIMITATIONS: 6,000 pounds (<500 pound for az only; 500-1500 pounds az/el compatible with RAMS 26.5 rotor; 1500-6000 pounds az/el compatible with RAMS 76.5 rotor; 2000-6000 pounds on 'kneeling' point mount for missiles.

DATA PROCESSING: Full processing capability to include RCS-vs-frequency, RCS-vs-azimuth, time domain, global ISAR, generalized ISAR, Inverse Global range, 3D imaging, Antenna, Measurements, Full Polarimetric, Near Fields Simulation Capability (displaced feeds).

View of Coupling Aperture Connecting the two chambers



View of Main Reflector looking North from open back doors



Airborne Instrumentation System (AIS)

95 GHz Radar Mapping System (95-RIMS)

Eglin AFB, FL

TYPE OF FACILITY: Outdoor, dynamic (airborne)

POINT OF CONTACT: William Parnell
46 Test Wing/TSWM
Eglin AFB, FL 32542-5000
Phone: (904) 882-2560 [DSN: 872]
Fax: (904) 882-9929
E-mail: parnell@eglin.af.mil

PERTINENT TESTING: Airborne and ground targets, clutter backgrounds, fixed and hardened targets/facilities at various locations/sites.

FACILITY DESCRIPTION: Modified NC-130A airborne platform with highly stable 5-axis turret, 600 pound payload capacity; mobile data processing trailers/vans; multiple sensor suites available: EO-IR-MMW-RF.

RANGE LENGTH: Variable flight parameters, typically 200 feet minimum altitude; measurement slant range for RCS is 200 to 3,000 feet.

FREQUENCY COVERAGE: 94.5-95.5 GHz MMW stepped frequency waveform with variable step size; 3-5 and 8-12 micron IR

POLARIZATION COVERAGE: Full polarization scattering matrix, circular or linear basis selectable; alternates polarization pulse-to-pulse.

DYNAMIC RANGE: >70 dB

RANGE RESOLUTION: 6 inch range resolution, supports Doppler Beam Shaping (DBS), SAR & Super resolution processing for improved cross range resolution.

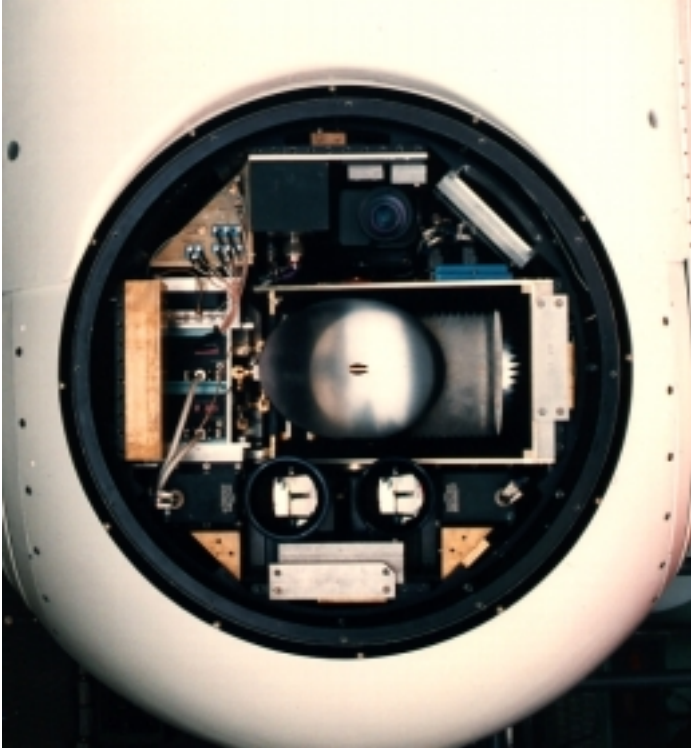
TARGET SUPPORTS: Not Applicable

TARGET SIZE: Not Applicable

TARGET LIMITATIONS: Not Applicable

DATA PROCESSING: Real-time IR (Short-wave, Long-wave) Imagery, video and MMW ground mapping. Quick-look calibration (I-Q, PDM, RCVR transfer) and data analysis at remote sites. Range-vs-crossrange ground maps, GPS, INS, turret position, motion compensation, real beam, DBS, SAR (strip map and spotlight), supports FCID Super resolution algorithms. Data media: S-VHS tapes, HDDR tapes (M14LR/SP280); On-site independent data analysis capability; 3700 Hi-D HDDR record/playback. IR/MMW data processing near-real-time (10-12 hours per 3 sets of HDDR tapes, typically ~5GB raw data).

95 GHz Airborne Radar Mapping System, Multi-spectral Instrumentation Platform



Airborne Seeker Evaluation Testbed



Millimeter Wave Instrumentation High-Resolution Imaging Radar Systems (MIHRIRS)

Eglin AFB, FL

TYPE OF FACILITY: Outdoor, static
POINT OF CONTACT: William Parnell
46 Test Wing/TSWM
Eglin AFB, FL 32542-5000
Phone: (904) 882-2560 [DSN: 872]
Fax: (904) 882-9929
E-mail: parnell@eglin.af.mil
PERTINENT TESTING: Full-scale threat targets up to 20 meters in length
FACILITY DESCRIPTION: 300-foot tower with 2,500-pound payload capacity, rail car/turntable assembly; completely instrumented MMW and IR data acquisition/processing trailers; dedicated laboratory and control room facilities. On-site support includes operation/maintenance of tower and turntable, full meteorological collection and processing.
RANGE LENGTH: 950 foot rail car/track assembly
FREQUENCY COVERAGE: 9.0-10.0 GHz, 34.5-35.5 GHz, 94.5-95.5 GHz Operational, with 139.5-140.5 GHz under development.
POLARIZATION COVERAGE: Full polarization scattering matrix, circular or linear basis (pulse-to-pulse) fixed or agile.
DYNAMIC RANGE: Typically 70 dB (pre-processed), 80 dB ISAR (post-processed)
RANGE RESOLUTION: 6 to 8 inches in range and cross range (FFT Window dependent)
TARGET SUPPORTS: 70-ton capacity track mounted turntable, 21.5 feet diameter with 50-foot plat for large targets. Rotation rates and slant range can be automatically controlled. Various aspects and depression angles; 0-360 degrees in azimuth, 0-80 degrees in depression (elevation).
TARGET SIZE: Up to 65 feet in length.
TARGET LIMITATIONS: 70 tons.
DATA PROCESSING: Data acquisition (Lintek, Core Elan'), analysis and calibration performed on three Pentium Pros; three sets of 4x9 GB removable hard disks, four 4 GB optical disks systems; real-time S-VHS video, real-time RCS plots (up to 8 channels) with target video insertion/record and playback. Near real-time ISAR imaging capability (all on-site). Independent data analysis performed on-site in separate secure facility.



**Seeker Test
Evaluation Facility
(STEF) View from
MHRIRS Tower**

**Millimeter Wave
Instrumentation High-
Resolution Imaging
Radar System (MHRIRS)**
on vertical rail car-track tower
structure

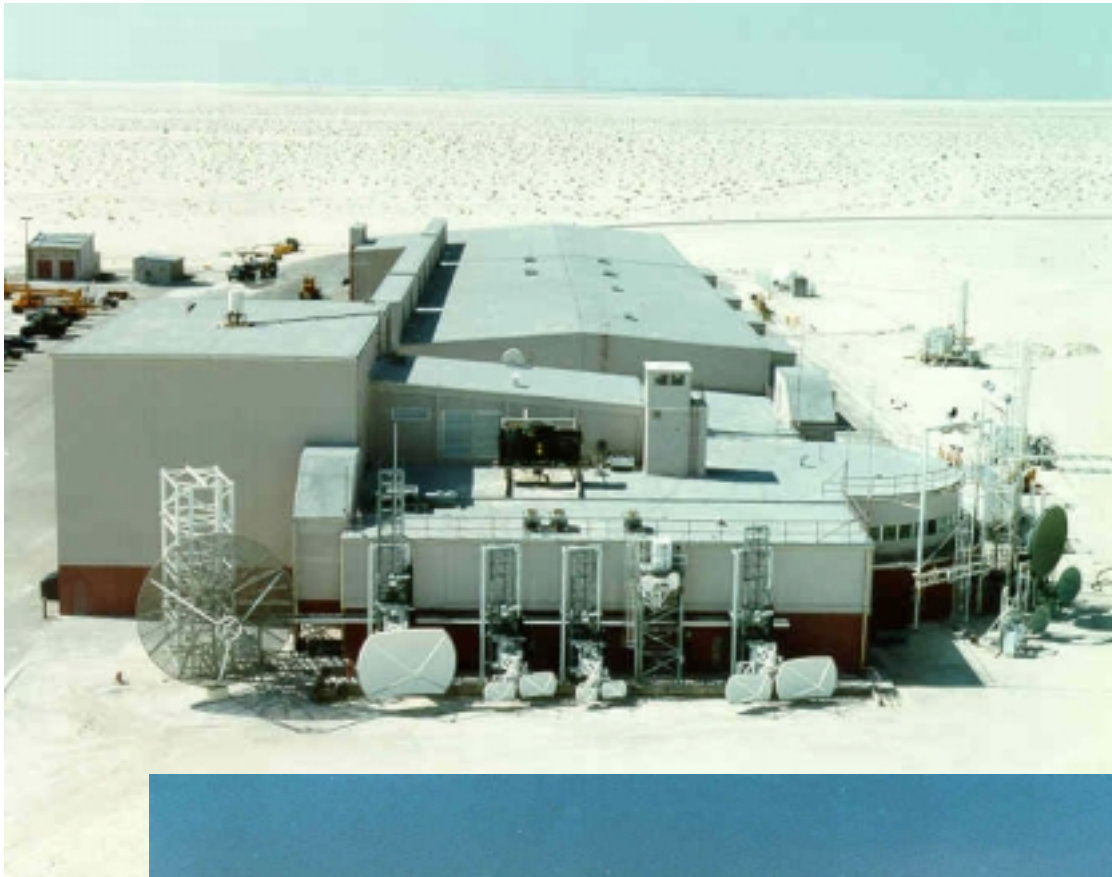


Radar Target Scatter (RATSCAT) - Main Site

Holloman AFB/White Sands Missile Range, NM

TYPE OF FACILITY: Outdoor, static, ground bounce
POINT OF CONTACT: 46 TG/TGR
Attn: Major Stephen D. Hargis
871 DeZonia Road
Holloman AFB, NM 88330-7715
Phone: (505) 679-3323 [DSN: 349]
Fax: (505) 679-3316
e-mail: shargis@mailgate.46tg.af.mil
PERTINENT TESTING: RCS, IR, antenna patterns and bistatic measurement of scale an full-size missiles, aircraft, models, components, tanks and trucks.
FACILITY DESCRIPTION: Multiple ground-bounce ranges available (up to 7500 feet) with pylon, foam column and turntable pit locations. Bistatic and glint testing and an on-site model fabrication shop. Facility located inside White Sands National monument.
RANGE LENGTH: Variable up to 7500 feet.
FREQUENCY COVERAGE: 1-18 GHz, 34-36 GHz, 94 GHz*
POLARIZATION COVERAGE: HH, VV, HV, VH
DYNAMIC RANGE: 90 dB
RANGE RESOLUTION: 1 to 12 inches
TARGET SUPPORTS: 14-foot fixed pylon, foam columns, three turntables (max weight 60,000 pounds)
TARGET STORAGE: Three target preparation areas
DATA PROCESSING: Near real-time processing of RCS-vs-azimuth and ISAR images. CompuQuest Inc. Processing system and other tools available to support typical output requirements. Vector background subtraction and full polarimetric calibration available or in development.
* 94 GHz measurements available with leased radar.

RATSCAT Main Site



RATSCAT Advanced Measurement System (RAMS)

Holloman AFB/White Sands Missile Range, NM

TYPE OF FACILITY: Outdoor, static, ground bounce
POINT OF CONTACT: 46 TG/TGR
Attn: Major Stephen D. Hargis
871 DeZonia Road
Holloman AFB, NM 88330-7715
Phone: (505) 679-3323 [DSN: 349]
Fax: (505) 679-3316
E-mail: shargis@mailgate.46tg.af.mil
PERTINENT TESTING: RCS and antenna pattern measurement of sub-scale through full-size missiles, aircraft and components.
FACILITY DESCRIPTION: Longest outdoor ground-plan static range featuring a shadow designed target area with 95-foot retractable pylon. Target capacity up to 30,000 pounds.
RANGE LENGTH: 8900 feet
FREQUENCY COVERAGE: 0.12 to 18 GHz, 34-36 GHz, 94 GHz*
POLARIZATION COVERAGE: HH, VV, HV, VH
DYNAMIC RANGE: 64 dB
RANGE RESOLUTION: 1.5 to 12 inches
TARGET SUPPORTS: Retractable pylon up to 56 feet above ground plane, permanent pit for foam column supports
TARGET LIMITATIONS: 30,000 pounds, 70 feet
TARGET STORAGE: Storage and preparation in silo area; storage and preparation in paint facility; storage in storage buildings.
DATA PROCESSING: Near real-time processing of RCS-vs-azimuth and ISAR images. CompuQuest Inc. Processing system and other tools available to support typical output requirements. Vector background subtraction and full polarimetric calibration available in some bands.
OTHER PROVISIONS: Facility located 50 miles Northwest of Holloman AFB in restricted WSMR property. Airspace is restricted and surveillance is available from FAA. Helo flights, patrols and roadblocks available as needed. SATRAN data available on-site. Retractable target & pylon to underground covered silo and work area.
* 94 GHz measurements available with leased radar.

RATSCAT Advanced Measurement System (RAMS)



B-2 Signature Testing at RAMS

