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United States Army

## Redstone Technical Test Center (RTTC)





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### Ranges, Road Courses and Facilities

Bldg. 8975+ : Electromagnetic/Lightning Effects Test Facilities

The E3 Test Branch has extensive E3 test facilities and is further expanding to meet the increasing need for E3 testing. The E3 Test Branch can also perform E3 testing elsewhere as much of their test equipment is portable.



- Overview
- Ranges, Road Courses & Fac.
- High Performance Computer (HPC)
- Unique Equipment & Tools
- Fiber Optic Networks
- Personnel/Tech Expertise

### Facility Descriptions:

1. Open Air Test Sites (OATS) for EMRO, EMRH, HERO, EMV, EMP, EMC, etc. adjacent to Building 8975.

- LF/MF/HF test area – a 100 kHz – 30 MHz, bounded wave chamber
- 2nd HF test area– a 2 – 32 MHz, 54' whip antenna – used to simulate the Navy HERO test environments.
- VHF test area – a 30 – 350 MHz, NURAD log periodic antenna.
- UHF/SHF (microwave) test area – a 350 – 10 GHz,

set of standard gain horns.

- Numerous portable test systems with 100 – 300 W output power in the 1.5 MHz – 18 GHz range.
- Radar Electromagnetic Environment Simulator (REES) – Hi-power pulsed uW transmitter/antenna system

## 2. Lightning Effects test facilities/sites:

- Designated as the DoD lightning effects tester for explosive ordnance and munitions.
- Can simulate MIL-STD-464 - defined lightning current waveforms for both NSL & DSL.
- HV pulsers consisting of Marx capacitor banks & high voltage switching networks used to generate up to 3.6 MV waveforms at moderate levels of peak current (50 kA) or 200 kA waveforms at 60 kV to 220 kV.
- Three LE simulators are available:
  - The Simulated Lightning Effects Test (SLET) non-hazardous test site, adjacent to Building 8975 utilized for testing of systems that are inert or contain only small quantities of Class 1.4 explosives.
  - The High Energy Lightning Simulator (HELs) located at the hazardous test area (Test Area 5) – only one in the free world – has safety cages - limited to 100 lbs of Class 1.1, 5,000 lbs of Class 1.2, 15,000 lbs of Class 1.3 & unlimited Class 1.4 explosives.
  - The Transportable Lightning Effects Simulator (TLES) - mobile test van.

## 3. PESD & HESD test facilities/sites:

- The non-hazardous ESD test area, in Building 8979, is utilized for testing systems that are inert or contain only small quantities of Class 1.4 explosives.
- The hazardous Lightning Effects (LE) test site at Test Area 5 is also utilized for ESD testing.
- Can perform ESD testing at other facilities using their own portable test equipment.



100 db anechoic chamber



Ground view of SLET



Hazardous test safety cage

#### 4. EMP test facilities/sites:

- Transportable EMP Simulator (TEMPS) - a 100 kV pulser, 10 m diameter, 305 m long, horizontally polarized dipole antenna – peak E field of ~ 1000 V/m at 50 m.
- Can also use the Bounded Wave antenna and the log periodic antenna described above.
- Low level, sub-threat facility. Test data can be recorded and extrapolated to threat levels.

#### 5. EMI (MIL-STD-461/462), etc. Test Chambers

- Four 100 dB anechoic test chambers in Building 8935 & adjacent temporary building.
- One 28' (h) x 46' (w) x 17' (h) has a turntable and can handle large items (e.g. helicopters, Bradley).
- Two 100 dB solid shielded rooms (14' x 26' x 8') in Building 8935.

#### 6. EMC, Noise Floor and Power Quality

- "Quiet Ambient" Outdoor Cage – reduces noise floor
- Can handle a helicopter with rotors turning.
- Have the specialized analyzer necessary for power quality measurement testing.

#### 7. Other Test Equipment

- Nanofast OP-300 Fiber Optic Telemetry System & several RV/Trailer Data Acquisition shielded vehicles
- Numerous signal generators, power supplies, field sensors, positioner systems, etc. available for testing.
- HP Frequency Agile Signal Simulator (FASS) – enables the generation of complex waveforms and has been used to evaluate the effectiveness of target recognition systems.



TEMPS test



EMC--noise floor  
analysis of HH-  
60L



MLRS EMRO  
VHF/SHF  
antenna

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[Adobe Acrobat Reader](#) is required.



A horizontal footer bar with a light gray background and a blue gradient. It contains three main elements: a button on the left, a central text box, and a button on the right.

- Left Button:** A blue button with white text that reads "Please read this Privacy & Security Notice".
- Center Text:** A white rectangular box containing the text "Last updated January 2, 2002" in a blue, italicized font.
- Right Button:** A blue button with white text that reads "Please send questions or comments about this page to [webmaster@rttc.army.mil](mailto:webmaster@rttc.army.mil)".

Additionally, there is a "Back to Top" button in the top right corner of the bar, which is a blue button with white text.