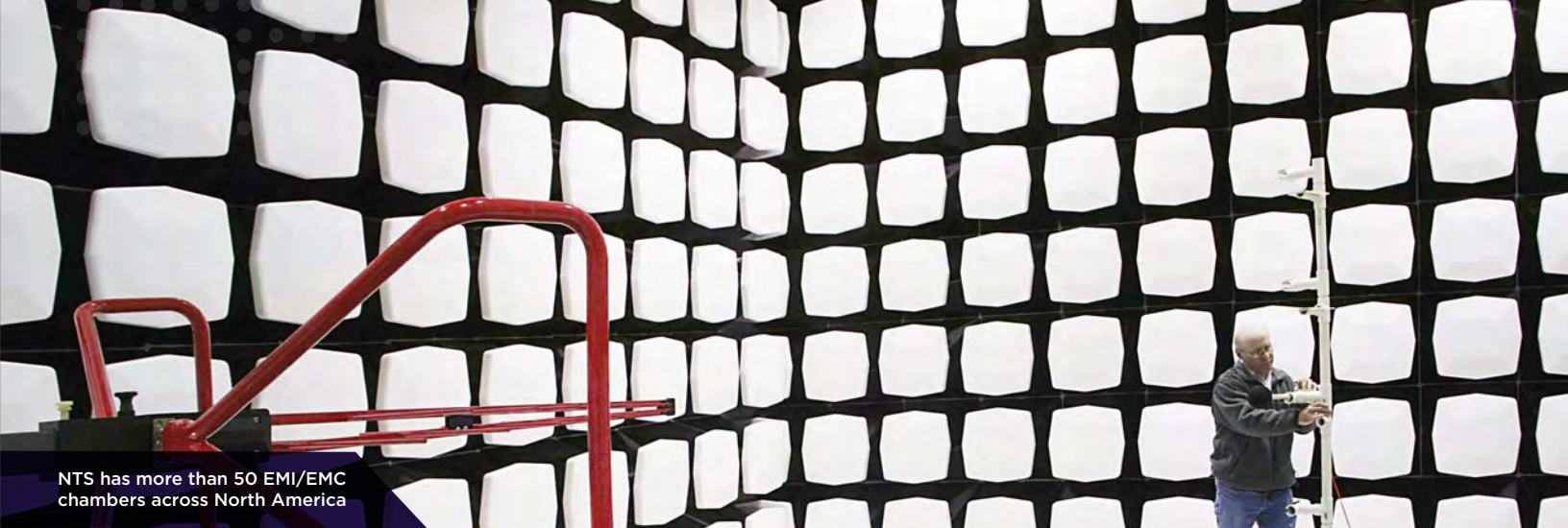


EMI/EMC SERVICE

2019 CAPABILITIES



A HIGHER STANDARD
ADVANCED EMI/EMC TESTING



NTS has more than 50 EMI/EMC chambers across North America

EMC/EMI EXPERTS

NTS is known worldwide as the industry leading provider of Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI) testing and compliance services. Our Subject Matter Experts offer your company integrated analysis, testing and evaluation services, reducing your product development costs and time to market.

YOUR CHALLENGES

The frenetic pace of business requires smart solutions to the numerous challenges you face in getting your electronic product to market. Challenges like:

- Launching your product in a new market with unfamiliar compliance requirements
- A design team stretched to the limit to meet short development time lines
- A client demanding that your product meet more stringent requirements which your engineering team has no experience with

NTS can help you meet these challenges and more

THE NTS SOLUTION

Whatever you require to speed your product to market —engineering, design analysis, testing, technical training —NTS will customize solutions to meet all of your needs. We offer a wide range of EMI and EMC services to seamlessly take your design from concept to final product. Our Program Managers and Subject Matter Experts work closely with you, conducting extensive technical reviews to determine your needs and structure your solution.

A REPUTATION YOU CAN TRUST

NTS has been in business for over fifty years, and we have solid credentials. We are the largest independent test and certification service provider in the United States, with the most comprehensive list of service offerings in the world. Nationally Recognized Testing Laboratories, we've been recognized as a Verizon Independent Test Laboratory (NEBS Program), and we have ISO/IEC 17025 accreditation.

NTS has the credentials and expertise to test and certify equipment, systems, materials, and components deployed in any platform, for every industry under the sun. No project is too small, or too complex. Every project is equally important to us. Satisfied clients of ours include Boeing, Hewlett-Packard, Microsoft, Sony, Lockheed Martin, the US Department of Defense, EMC, Motorola, Cisco, Texas Instruments, United Technologies, Tyco Electronics Corporation, ViaSat, Inc., Rockwell Collins, Raytheon, Pratt & Whitney Rocketdyne, Northrop Grumman, L3 Communications, General Electric, Eaton Aerospace, Agilent Technologies, and Aerojet.

50+ YEARS OF INNOVATION

Since opening our doors in 1961, NTS has become one of the largest commercial test laboratory networks in North America. We are experts in environmental stress simulation testing and certification--and offer best in class services in every discipline, including but not limited to environmental, dynamics, and electromagnetics. In fact, our engineers have exceptional knowledge in all test and conformity requirements in both domestic and international.

HIGHLIGHTS AND PRIMARY TEST SPECIFICATIONS

EMI/EMC

- Radiated Susceptibility up to 200V/m, 10kHz to 40GHz
- Magnetic Susceptibility DC to 10MHz
- HIRF Testing - Per RTCA DO160 G exceeding Cat L 7,200 V/m
- Reverberation Chambers 100 MHz to 18 GHz, to 40 GHz
 - Mode Tuning, Mode Stirring Test Method Capabilities Chambers
- Lightning Effects Testing
 - Indirect Lightning to 10 kV/10 kA
 - Single Stroke
 - Multi-Stroke
 - Multi-Burst
 - All Waveforms per SAE ARP 5416, DO160, Airbus, and Boeing Specifications
 - High Voltage Testing to 2.5 MV
 - High Current Testing to 300 kA
 - Individual Waveform Component Testing
- NEBS/Telecom/ITE product compliance testing.
- Surge, lightning, ESD, AC power fault,
- Radiated and Conducted Emissions/Immunity
- Electrical Safety, Bonding & grounding
- DC power characteristics
- TEER (energy efficiency testing)

- Acoustic Noise (GR-63, ISO, and MIL-STD)
- 3 and 10 Meter Listed Semi-Anechoic Chambers
- 40' x 40' x 20' Semi-Anechoic Chambers for MIL and Aerospace applications
- TEM Cell and Strip Line Cells

ESD Capabilities

Wide variety of network models up to +/- 30 kV Contact and Air discharges, 300 kV Vertical lift simulation and P-static discharges.

Primary Specifications

GR-1089-CORE, RBOC Supplements, EN300-386, CISPR 32/35, EN55024, EN61000-4-x, MIL-STD-461/462/464, MIL-STD-704, MIL-STD-1275, MIL-STD-1399 section 300, DO-160, FCC, VCCI, BSMI, IC ICES-003, IEEE C37.90.1, IEEE C37.90.2, ETSI K20, K21

- HERO Test & Analysis Services - Extrapolation method per MIL-HDBK-240, and Go-No-Go testing on inert and All Up Rounds
- RADHAZ Evaluations
- Shielding Effectiveness Evaluations for Enclosures & Cables
- Secure Facilities holding National Clearances and are capable of conducting classified work.
- VCCI, BSMI, Korea Mic Mark, Australia, and New Zealand

EMI/EMC Engineering Services

- Electromagnetic Environmental Effects (E³) Test & Analysis of Systems and Platforms
- EMC Control Plan
- EMI and EMC Analysis
- EMI and EMC Product Design Review and Compliance Risk Assessments
- Troubleshooting, and Design Mitigation
- Performance Requirements Definition and Flow Down
- Requirements Gap Analysis
- Risk Mitigation Plans
- Test Procedures, EMI Test plans and procedures development

Worldwide EMI/EMC Laboratory Network

- | | |
|-------------------|----------------------|
| • Boxborough, MA | • Plano, TX |
| • Chicago, IL | • Rockford, IL |
| • Fullerton, CA | • Rustburg, VA |
| • Huntsville, AL | • Silicon Valley, CA |
| • Longmont, CO | • Tempe, AZ |
| • Munich, Germany | • Tinton Falls, NJ |
| • Orlando, FL | • Kitchener, Ontario |

REVERBERATION TESTING AT NTS

NTS boasts a variety with a copper lined reverberation chamber coupled with state-of-the-art amplifiers. The chambers achieve greater than DO-160 Category L levels—and are capable of reaching test frequencies as high as 40 GHz. Reverberation chambers are also capable measuring electromagnetic radiated emissions in accordance with commercial, automotive, and aerospace standards.

NTS Rockford

NTS Rockford The newest chamber at the NTS Rockford laboratory is 12' × 20' × 10' with a test volume of over 438 cubic feet or 12.42 cubic meters and a 4' × 7' door. The chamber and 10' × 10' ground plane are configured for convenience and efficiency. It has field densities capable of achieving peak fields up to 15,000 V/m. Like other NTS Rockford EMI chambers, this reverberation chamber is drive stand-adaptable and can be mated to a motor drive for rotating equipment.



A reverberation chamber
in Fullerton, California



A state-of-the-art reverberation chamber in Plano, Texas

NTS Fullerton

NTS Fullerton boasts a state-of-the-art reverberation chamber with interior shield dimensions of 21.4' x 16.5' x 11.8' and an automated 10' x 10' sliding door. The chamber's computer-controlled Vertical stir assembly is mounted unobtrusively in the rear corner of the chamber allowing for a usable uniform field volume of approximately 15 x 8 x 8.

NTS Plano

NTS Plano leverages a reverberation chamber with interior shield dimensions of 21.4' x 16.5' x 11.8' and an automated 10' x 10' sliding door. The chamber is also equipped with a large customer support equipment staging area along its outer wall with both feed through panels and sub terrain cable raceways for ease of test setup. The chamber's computer-controlled Vertical stir assembly is mounted unobtrusively in the rear corner of the chamber allowing for a usable uniform field volume of approximately 15 x 8 x 8.

NTS Tempe

NTS Tempe is equipped with a custom copper lined reverberation chamber with interior shield dimensions of 15.8' x 11.8' x 10'. The chamber is also equipped with a large customer support equipment staging area along its outer wall with both feed through panels. The chamber's computer-controlled Vertical stir assembly is mounted unobtrusively in the rear corner of the chamber allowing for a usable uniform field volume of approximately 14 x 8 x 8.

NTS Boxborough

NTS Boxborough uses an advanced reverberation chamber with interior shield dimensions of 21.4' x 16.5 x 11.8 and an automated 10' x 10' sliding door. The chamber is also equipped with a large customer support equipment staging area along its outer wall with large feed through panels for ease of test setup. The chamber's computer-controlled Vertical stir assembly is mounted unobtrusively in the rear corner of the chamber allowing for a usable uniform field volume of approximately 15 x 8 x 8.

ABOUT NTS

NTS is the undisputed leader in testing, inspection, and certification. With 1,300 employees and 28 labs in North America, NTS leverages its expertise to serve more than 8,000 customers. NTS thought leaders sit on advisory boards, speak at conferences, and author technical papers. Established in 1961, NTS leverages its rich experience and technical expertise to create best-in-class queue times, on-time reporting, and rigorous testing programs in a variety of areas, including:

NEBS MATERIALS
FAILURE ANALYSIS HYDRAULICS/PNEUMATICS
LIGHTNING PRECISION CLEANING
BALLISTICS ENVIRONMENTAL
MANAGED ENGINEERING SERVICES
EMI/EMC GLOBAL MARKET ACCESS
DYNAMICS



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