

# NTS Facility Spotlight: Munich, Germany, Europe

## Specialists in NEBS (ITL) | Defense | Aerospace | Wireless Testing

### About NTS Europe

NTS is ideally positioned to assist our European clients with their telecommunications testing and global certification needs. NTS is a Verizon authorized ITL (Independent Test Lab) and is able to serve all customer's needs for US RBOC (Regional Bell Operating Companies) qualifications including Verizon, AT&T and Qwest.

NTS, the only ITL and NRTL (Nationally Recognized Test Lab) in Europe, is able to provide global qualification, knowhow and consultancy for Central Office Telecom products in Europe under one roof, close to your development and manufacturing operations.

### EMC - Electromagnetic Compatibility

With one of the largest EMC labs in Europe, NTS offers a variety of test chambers that fulfill the ANSI NSA free-space path loss requirements in the whole frequency range. These measuring stations are complemented by several large shielded rooms, striplines, TEM measuring cells, near-field scanners and more.

Inspections during the development cycle make possible an early determination of remedial measures and minimize costs. All inspections are carried out in accordance with national and international standards.

Using our consulting services right at the concept and design phase of your product development cycle means that cutbacks on prototyping can be avoided, development times shortened and costs optimized. Your product can then enter the market more rapidly. NTS's global compliance capabilities include CE, CISPR, FCC, VCCI and ISO 17025 conformance.

### Telecom Conformance Inspections

We are accredited to measure all CE, FCC, and VCCI (Japan) related requirements and also flexibly to accurately verify local and operator specific requirements. We offer testing services for the following telecom technologies:

- ▶ Qualification of the wireless interface of GSM/EDGE, UMTS and WiMAX mobile telephone system base stations
- ▶ Inspection of electrical and optical broadcast interfaces such as PDHD, PDHVG, SDH, xDSL, Ethernet/Gigabit Ethernet
- ▶ Conformance inspections of broadcast protocols such as CCS7, SIGTRAN und SIP

### Safety Conformance

For all of your global safety compliance needs turn to NTS Europe where our facilities are equipped to perform testing in accordance to a number of requirements including:

- ▶ CE Mark, EN/IC/UL 60950 with in-house CB-Report capabilities
- ▶ Seamlessly integrate your EN/IC/UL 60950 test results into an NRTL listing via our partners CEBEC, CSA and TUV

### MIL-STD and FAA/JAA Test Capabilities

Our Munich lab offers Electromagnetic Compatibility (EMC) testing, environmental simulation, and engineering services for the military and commercial aircraft industries. Our accredited laboratory offers testing in accordance with MIL-STD-461, MIL-STD-810, and DO-160 (ED14) along with airframer requirements such as Boeing and Airbus. Some of our testing capabilities include:

- ▶ MIL-STD-461 and DO-160 EMC conducted and radiated emissions testing from 30Hz – 40GHz, accommodating large test units or small aircraft.
- ▶ MIL-STD-810 climatic testing with chambers as large as XXX x XX that meet the temperature and altitude Procedure of Method 500 - 503 with temperature range of -700°C to 1800°C, and ramp rate as high as 15K/minute.
- ▶ DO-160 (Combined environmental and EMC specification) covers testing to Section 15 – 22 and 25, with requirements including emissions, susceptibility, indirect lightning (need Deniz to confirm), audio effects, magnetic effects, and electromagnetic discharge.
- ▶ RTCA DO-160 test capabilities include temperature, humidity and altitude testing as well as Shock, Sine, Random and Sine-on-Random vibration that meet Section 7 and 8 requirements.

### Environment Simulation

The facilities at our environment lab enable qualification in the areas of climatical and mechanical testing. The qualification service encompasses:

- ▶ Climate inspection from -100°C to +150°C and humidity from 10% to 98%
- ▶ Vibration inspection for specimens with a weight of up to 1,000 kg
- ▶ Vibration inspection with climate interaction
- ▶ Salt fog test and flowing mixed gas corrosion test

We also offer services within the context of heat management and thermography. Complementing the classic environment inspections is the HALT process (Highly Accelerated Life Test). HALT pushes products beyond the specification limits in order to identify and remove potential weak points at an early stage.

### About NTS

NTS is a world leader in assisting organizations to access domestic and international markets. We are a single source for a full range of integrated engineering solutions, product testing, standards compliance, project management staffing solutions, engineering and managed services. Globally accredited by leading regulatory agencies, NTS can provide cost-effective programs to meet your requirements at one of our many U.S. or international facilities, or we can provide onsite solutions. NTS is the nation's largest independent standards compliance and product testing company serving companies within the aerospace, defense, automotive, telecommunications, electronics, power, medical device, computer, software and financial markets.

## Electromagnetic Compatibility / Product Safety (Technical Details)

Chamber	1	2	3	4 / 5	6
Dimensions (net)	17.7 * 10.8 * 6.8m	9.6 * 8.5 * 5.3m	7.4 * 6.6 * 5.2m	4.1 * 3.5 * 3.5m	6.4 * 4.3 * 4.3m
Max. Door Exit	5.0 * 3.86m	3.9 * 4.0m	2.0 * 2.7m	0.9 * 2.25m	1.8 * 3.0mm
Shielding Material	Sheet steel (thickness: 1.5mm on floor, 1.0mm on walls/ceiling)	Sheet steel	Sheet steel	Sheet steel	Sheet steel
Absorbers	<ul style="list-style-type: none"> <li>Hybrid absorbers on walls and ceiling (TDK), length 1m</li> </ul>	<ul style="list-style-type: none"> <li>Hybrid absorbers on walls and ceiling (E+C), length 0.5m</li> </ul>	<ul style="list-style-type: none"> <li>Hybrid absorbers on walls and ceiling (E+C), length 0.3m</li> </ul>	<ul style="list-style-type: none"> <li>without absorbers</li> </ul>	<ul style="list-style-type: none"> <li>without absorbers</li> </ul>
Floor	<ul style="list-style-type: none"> <li>Metallic ground plane</li> <li>Floor load: 12 t/m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>Metallic ground plane</li> <li>Floor load: 1.5 t/m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>Metallic ground plane</li> <li>Floor load: 1 t/m<sup>2</sup></li> </ul>		
Specials	<ul style="list-style-type: none"> <li>measuring distance of max 10m</li> <li>turntable Ø 4m / 6t</li> </ul> <p>Test chamber no. 1 complies with:</p> <p><b>Emission</b> (10m distance and frequency range 30-1000MHz)</p> <ul style="list-style-type: none"> <li>DIN EN 55022 / 2003-09</li> <li>CISPR 16-1-4, Ed. 1.1 / 2004-05</li> <li>ANSI C63.4 / 2003</li> <li>FCC-listed until June 2009, Reg. Nr.: 90932</li> </ul> <p><b>Immunity</b> (field uniformity in the frequency range 80-3000MHz)</p> <ul style="list-style-type: none"> <li>EN 61000-4-3:2006</li> </ul>	<ul style="list-style-type: none"> <li>measuring distance of 3m (max 5m)</li> <li>turntable Ø 3.2m / 1.5t</li> </ul> <p>Test chamber no. 2 complies with:</p> <p><b>Emission</b> (3m distance and frequency range 30-1000MHz)</p> <ul style="list-style-type: none"> <li>DIN EN 55022 / 2003-09</li> <li>CISPR 16-1-4, Ed. 1.1 / 2004-05</li> <li>ANSI C63.4 / 2003</li> <li>FCC-listed until March 2009, Reg. Nr.: 97242</li> </ul> <p><b>Immunity</b> (field uniformity in the frequency range 80-3000MHz)</p> <ul style="list-style-type: none"> <li>EN 61000-4-3:2006</li> </ul>	<ul style="list-style-type: none"> <li>measuring distance of max 3m</li> <li>turntable Ø 2.0 / 1t</li> </ul> <p>Test chamber no. 3 complies with:</p> <p><b>Emission</b> (3m distance and frequency range 30-1000MHz)</p> <ul style="list-style-type: none"> <li>DIN EN 55022 / 2003-09</li> <li>CISPR 16-1-4, Ed. 1.1 / 2004-05</li> <li>ANSI C63.4 / 2003</li> <li>Site VSWR 1 - 18GHz acc. CISPR 16-1-4 (2007)</li> <li>FCC-listed until March 2010, Reg. Nr.: 299569</li> </ul> <p><b>Immunity</b> (field uniformity in the frequency range 80-3000MHz)</p> <ul style="list-style-type: none"> <li>EN 61000-4-3:2006</li> </ul>		

## Environmental Simulations, Components, Technology (Test Systems)

### Mechanical System, Earthquake Simulation

Test System	Weight of test object (kg)	Installation area (m x m)	Excitation	Temp °C	Remarks
Vibration system, electrodynamic with sliding table	200	0.8 x 0.7	Sine wave Random Shock		
Vibration system, electrodynamic	200	0.8 x 0.7	Sine wave Random Shock	-80 / +150	Thermo-vibro
Vibration system, electrodynamic with sliding table	1000	1.6 x 0.9	Sine wave, Random Shock, Random/Sine wave	-60 / +110	Thermo-vibro
Vibration system, hydraulic	1000	1.8 x 1.1	Earthquake (time history) Shock		Earthquake Zone 4 acc. to Telcordia
Shock systems	up to 200kg	0.8 x 0.7	Half sine wave max 2000g / 30 - 0.5ms		

### Climatic and Corrosion Effects

System	Interior (WxHxT) m x m x m	Temperature Range (°C)	Damp Area % r.h.	Gradient °C/min	Power Loss kW
Climatic test chamber	3 x 3.2 x 4	-50 / +100	10 - 95	3	max 12
Climatic test chamber	2.7 x 2.9 x 2.5	-60 / +90	10 - 98	1	max 4
Temperature chamber	2.4 x 2.3 x 3.5	-60 / +90	-	3	max 8
Industrial climate (corrosion) 4-component mixed flowing gas	.85 x .60 x 1.20	+20 / +40	10 - 90		

### Other Systems

Rooms with alternating climatic conditions, dust room, sun/rain room, climatic cabinets, (partial) vacuum, condensation water SO<sub>2</sub> (Kesternich), salt fog



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