



RF Shielded rooms

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COMTEST
ENGINEERING

Controlled Electromagnetic Environments

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CONTROLLED ELECTROMAGNETIC ENVIRONMENTS

Comtest Engineering supplies high performance RF shielded rooms, reverberation and anechoic chambers. The company is located in The Netherlands and was founded in 1985.

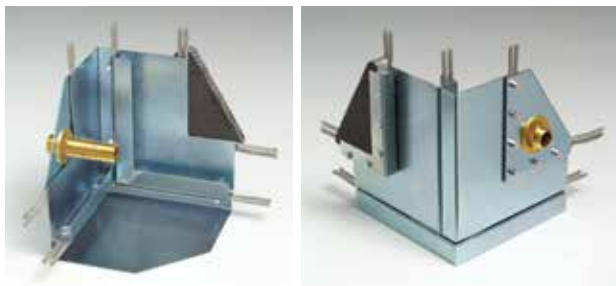
We are a professional organization and recognized for our quality and flexibility. Comtest high performance RF shielded doors, mode-stirrer systems and microwave absorbers have been internationally recognized as state of the art products.

Our skilled and experienced team is dedicated to satisfy your need to control the electromagnetic environment!

RF shielded rooms

Due to increased environmental electromagnetic pollution, sensitive and accurate measurements are often affected by RF noise. Communication and data centers, calibration and EMC test laboratories as well as many other related test facilities all require electromagnetic shielding.

The application of Comtest RF shielded rooms provides the highest possible shielding attenuation, creating a controlled electromagnetic environment to perform high sensitive testing without distortion. RF shielded rooms are also suited to protect meeting rooms and computer data centers in accordance to Tempest requirements.



Modular pan type system

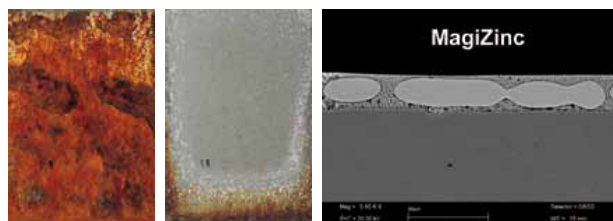
The shielding of Comtest RF shielded rooms is established by constructing the chambers from a 2 mm pan-type galvanized panel system. The corners of the shielded panels are welded, spray galvanized and assembled with special fasteners M10 on a pitch of 150mm. These fasteners are installed upon a pre-defined torque to ensure a long life RF shielding attenuation. Between the flanges of the RF shielded panels a high performance gasket is installed. This construction is based on best practices and provides the highest RF shielding performance for both military and industrial applications.

The 2mm pan-type shielding system ensures a quick installation on site without the need for welding. The modular construction of the shield room provides a flexible design which can be tailored to each customer's specific requirement.

ZMA-140

As a result of our continuous efforts to use only the very best components for our products and our dedication to innovation Comtest Engineering is using a new and innovative galvanized sheet metal plate material for the production of shielded panels. This new material is called ZMA-140 or Magi Zinc. It is a newly developed hot dip galvanizing coating on steel with improved corrosion protection properties. The shielding effectiveness characteristics of our chambers are the same or even slightly improved by using ZMA-140 compared to Zink 275. The long-life performance of the panels is definitely improved.

Comparison of Z275 and ZMA140 after a nine month accelerated outdoor test:



Zink 275

ZMA-140

Microscopic image of a cross-section of MagiZinc coated steel.

Flexible solution

All RF shielded rooms, reverberation and anechoic chambers supplied by Comtest Engineering are built as a modular concept which enables us to supply many different and unique solutions in almost every dimension and form. The flanges of the RF shielded panels can be installed on the inside to position the chamber close to the existing walls of the parent building.

Common applications

RF shielded rooms can be used for different purposes like:

- RF shielded data centers (Tempest shielded rooms)
- Conference room and crisis control centers
- High voltage test room
- Conductive test room (B.C.I.)
- Semi anechoic chambers
- Amplifier and control rooms
- Antenna test rooms
- Reverberation chambers
- MRI rooms

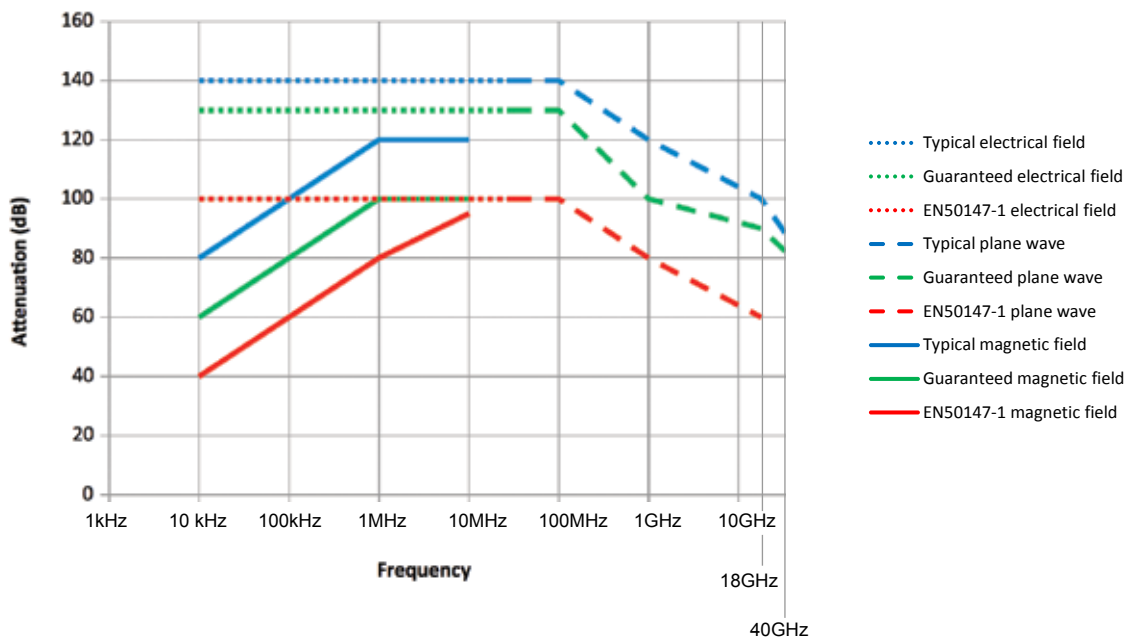
ZMA-140 benefits:

- Improved corrosion resistance 3 times better than Zinc 275
- Less harmful for the environment due to decrease of zinc
- The high attenuation of the all-metal elements will not deteriorate with time under normal ambient conditions.

Standards / test methods

- IEEE-299
 - IEC/EN 50147-1 March 1996
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Typical SE performance:



Specifications:

All RF shielded rooms are tailored to our customers individual requirements.

Options for inner finishing

Upon customer request the RF shielded room can be lined with plasterboard walls and a suspended ceiling. The floor can be constructed as a raised computer floor for easy cable routing. The raised computer floor is constructed using standard anti-static floor tiles onto adjustable pedestals, in order to withstand an minimum average payload of 500 kg/m². A raised computer floor system provides a flush entrance to the control or amplifier room when a EMC facility is built inside a pit. Another advantage of a raised computer floor in a RF shielded room is to facilitate ducting for cables and electrics.



Tempest qualified RF shielded rooms and RF shielded data centers

Uncontrolled distribution of secure information for governments, military or financial institutions can be caused through conducted wires and cables as well as radiation of equipment such as computers. To avoid this uncontrolled distribution of secure data a high performance RF shielded room will provide a

cost-effective solution. Comtest is well experienced in designing and installing RF shielded data centers for government and military customers. Comtest can design special cooling water feed throughs and feed throughs for exhaust outlets for emergency generator systems. Upon request the RF shielded doors can be equipped with special mounting materials for burglary protection.

Radio astronomy applications

Today's radio telescopes often consist of an array of antennas to increase the sensitivity of the system. In addition computer controlled multi beam forming antenna feeds are used more often. All received data is combined and collected by computer systems and transferred to a central high capacity computer centre for correlation and data analyzing.

Due to the high RF sensitivity of such radio telescopes high performance RF shielding is required to avoid interference from local instrumentation such as computers and control systems. Comtest mobile RF shielded containers are designed for such applications and provide an air-conditioned temperature stable environment with a high RF shielding effectiveness.

Comtest shielded mobile containers have been successfully using in following Radio Astronomy projects:

- Astron – LOFAR
- WRST – Apertif
- SKA - KAT-7
- SKA - PAPER



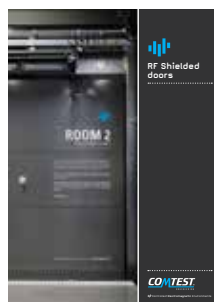
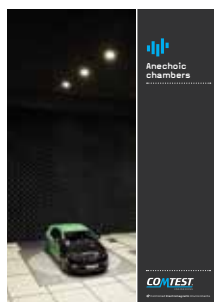
RF shielded rooms for MRI rooms

Magnetic Resonance Imaging (MRI) systems operate receiving very weak signals. The RF spectrum in a hospital is polluted due to wide range of electronic equipment generating RF signals. For this reason environmental RF shielding attenuation is required to avoid electromagnetic environmental influences to the MRI system.

In general the required shielding attenuation shall be at least 90dB in the operating frequency range of the MRI. Since there is also a large magnetic field around the

MRI system, the RF shielded room shall be constructed of non-Ferro materials like aluminum.

Comtest MRI rooms are based on the modular pan-type shielding principle using 3mm aluminum. Since this is a modular self supporting system, no soldering or welding is required during onsite installation.



Please also view our other literature or visit our website:

www.comtest.eu



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