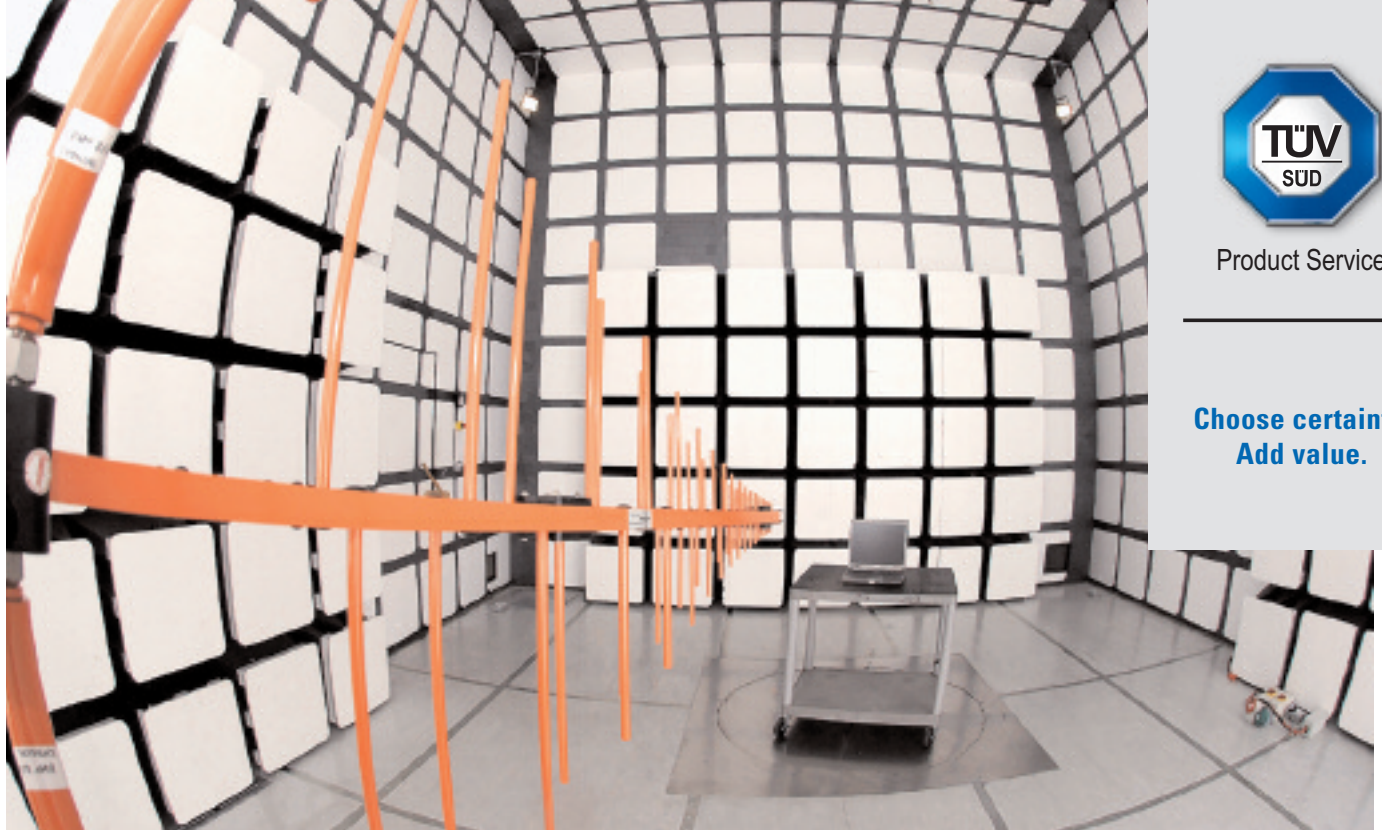




Product Service

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Add value.**



Principles of EMC Design & Test Training Course

TÜV Product Service
TÜV SÜD Group

TÜV®



**Cost: £480 or £430 if booked
30 days before course**
Time: 9am - 5pm

Introduction

Preparing a product or system for EMC testing can be a daunting task. Inadequate preparation can result in costly delays, frustration and failures.

TÜV Product Service has developed a training course for manufacturers of electrical/electronic equipment, designed to deliver a thorough and cost-effective method of ensuring products are properly prepared for EMC compliance testing. Delegate participation is actively encouraged during the course and the learning experience is reinforced by the use of demonstrations, worked examples and case studies.

Course Overview

Meeting target launch dates and maintaining development costs within budget are just two of the many problems faced by manufacturers and producers of electrical and electronic products. Electromagnetic compatibility (EMC) compliance to the European EMC Directive or other contractual requirements, such as military, aerospace or automotive standards, must be catered for in the development programme. Achieving EMC is now recognised as one of the key indicators of a well-engineered product. In common with all design considerations, addressing EMC early in the design process, and careful management throughout product development, can save significant time and money, and minimise delays in production.

The course objective is to provide a thorough understanding of the fundamentals of EMC and the application of this knowledge in:

- Formulating a set of EMC design rules
- Planning a cost-effective and thorough test programme

Course Content

Day 1- EMC Principles

- Basic principles: Coupling mechanisms, frequency & time domain, wavelength, capacitance, inductance, resonance, EM fields, near & far field; demonstration of E & H field coupling.
- Current management: Current return path, self & mutual inductance, loop area, ground plane current flow & effect of slots, shield current flow & effect of apertures, structural geometry & bonding, current paths in ESD events; demonstration of return current in a ground plane and/or cable pair.
- Cables & Coupling: Common and differential mode coupling, RF susceptibility & emissions, screening, transfer impedance, structural geometry; demonstration of CM versus DM emissions.
- Filtering, Shielding and Transient Suppression.
- Case studies: 3 studies on improvements to common design practice & wrap-up discussion.

Day 2 - EMC Test Planning

- Why we need EMC tests: Protection of radio reception, immunity to radio transmitters and transients. The EMC Directive and other related EU Directives. The standards generating structure: CISPR, IEC, CENELEC, MIL, DEF STAN, automotive.
- Content of the test plan: Description of test plan content, evaluation of test results.
- Overview of the required tests: Conducted emissions on AC/DC supply and signal lines, radiated E&H-field emissions, mains harmonics and flicker emissions, radiated E&H-field immunity, conducted LF & RF immunity, transient and ESD immunity.
- Case Studies: Develop test plans for 3 example products; defence, small & large commercial products and wrap-up discussion.



Location: Fareham

Benefits of Attending

- A greater understanding of the basic mechanisms of EMC and their application to the design of a product
- A greater understanding of EMC tests and how to prepare for them in advance
- The likelihood of first-pass compliance through application of the knowledge gained

Who Should Attend

The course is intended for compliance engineers and electrical/electronic engineers involved in the design, development, testing and production of electrical and electronic equipment.

Presenter

Tim Williams

The course is presented by Tim Williams of Elmac Services on behalf of TÜV Product Service. Tim Williams has worked in electronic product design in various industry sectors for many years. He is the author of 'EMC for Product Designers', widely regarded as a standard text for electronics design engineers needing to meet EMC regulations. Tim Williams also cooperated with Keith Armstrong to produce 'EMC for Systems and Installations'. He has worked as a consultant in sectors as diverse as automotive, aerospace, consumer, telecommunications, medical and instrumentation in the area of EMC product design, testing and management. He is also a technical assessor of EMC laboratories for UKAS and SWEDAC.

Why Choose TÜV Product Service

TÜV Product Service is the leading EMC test laboratory in the UK, and have among the most comprehensively equipped EMC test facilities in Europe. We provide a range of training services, sharing our expertise in product and quality system conformance, and can provide you with valuable information on getting your products and services to market: developing your understanding of international standards and regulations at an early stage of your design and development process.

Our expertise is supported by over 50 years' experience in testing, certification and training, and by over 100 accreditations and approvals.

**To book a place a today,
please contact Sandie Peacock on**

Tel: 01489 558227

Email: speacock@tuvps.co.uk

Web: www.tuvps.co.uk/training



**For further information on our training services or to view our
open course programme, visit our website:**

www.tuvps.co.uk/training

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