



# 20th International Zurich Symposium on Electromagnetic Compatibility

## WS-3 on Monday, 12 January, afternoon

Title workshop	The evolution of CISPR 16
Organizer's name	Martin Wiles
Organizer's affiliation	ETS-Lindgren, UK

The basic standard series CISPR 16 is under constant development by CISPR Sub Committee A and this workshop has gathered together a number of experts from CISPR/A to talk about areas where the standard is very actively changing as follows:

- Test instrumentation, test methods and measurement uncertainty aspects
  - **Werner Schaefer – CISCO Systems, USA**
    - FTT-based test instrumentation
    - Use of spectrum analyzers for compliance measurements
    - Influence of setup tables on test results
    - Amendment of conducted emission measurement methods
    - Update of measurement uncertainty calculations
- Calibration of antennas for EMC compliance testing from 30 MHz to 18 GHz.
  - **Martin Alexander - NPL, UK**

The default antenna factor for EMC radiated emission testing is the free-space antenna factor. However measurements are rarely made in an ideal free-space environment. From 30 MHz to 1000 MHz measurements are made above a ground plane and the measurement result is affected by the measurement geometry and the interaction of the antenna with the ground plane. The reasons for adopting free-space antenna factor are explained. Primary methods of antenna calibration to give traceability are described, but these may be time consuming and not for every day use; some are for the establishment of antenna factor uncertainties. Secondary methods are described, including those that are time saving and those that make less demands on the quality of the calibration test site. CISPR/A is working on an antenna calibration standard, to be CISPR 16-1-6.
- Antenna Calibration Reference Site Method CISPR 16-1-5 :
  - **Alexander Kriz - Austrian Research Center Seibersdorf, Austria**

The Reference Site Method had been de facto standard for industry for the past 15 years. Now it is incorporated to the CISPR 16 series as an alternative method for NSA testing. The relation to different NSA (CISPR and ANSI) methods is presented, as well as the result of an international intercomparison of large Open Area Test Sites.
- Chamber Validation CISPR 16-1-4 & Product Measurements CISPR 16-2-3
  - **Martin Wiles - ETS-Lindgren, UK**

CISPR 16 has introduced new methods for measurement in anechoic chambers both below and above 1GHz. We will focus on CISPR 16-1-4 and CISPR 16-2-3 that describe the chamber validation and the product measurement methods in anechoic chambers. Recent work has focused on the extension of the frequency range above 1GHz which has introduced issues such as antenna beamwidth and the sampling of the emission pattern of the equipment under test.

## **Workshop: WS-3**

**Title :** The Evolution of CISPR 16

**Organiser :** Martin Wiles ETS-Lindgren

**Date :** Monday 12<sup>th</sup> January 2008

**Time:** 13h30-17h00

# Speakers

- *Martin Wiles* - *ETS-Lindgren, UK*
- *Werner Schaefer* – *CISCO Systems, USA*
- *Martin Alexander* - *NPL, UK*
- *Alexander Kriz* - *ARC Seibersdorf , Austria*

# Schedule

13h30- 13h40	Introduction	<i>Martin Wiles ETS-Lindgren, UK</i>
13h40- 14h00	Overview of CISPR 16	<i>Werner Schaefer CISCO Systems, USA</i>
14h00 -14h45	Test instrumentation, test methods and measurement uncertainty aspects	<i>Werner Schaefer CISCO Systems, USA</i>
14h45 -15h30	Calibration of antennas for EMC compliance testing from 30 MHz to 18 GHz.	<i>Martin Alexander NPL, UK</i>
15h30-16h15	Antenna Calibration Reference Site Method CISPR 16-1-5 :	<i>Alexander Kriz ARCS , Austria</i>
16h15-17h00	Chamber Validation CISPR 16-1-4 & Product Measurements CISPR 16-2-3	<i>Martin Wiles ETS-Lindgren, UK</i>