

Version
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EMC Test System for Hearing Aids R&S®TS9981H

Immunity of hearing aids to high-frequency radiated electromagnetic fields

- ◆ Complies with Final Draft of EN 60118-13
- ◆ GSM and DECT mobile radio bands covered
- ◆ New compact design with Integrated Measurement System R&S®IMS
- ◆ Extended system version up to 3 GHz available
- ◆ Automatic measurement and documentation of IRIL
- ◆ Automatic generation of qualification test reports
- ◆ Equipment control via standard Windows PC, IEC/IEEE bus and reliable Rohde & Schwarz EMC software
- ◆ Flexible test routines for design phase
- ◆ Automatic calibration routines for system and components

**ROHDE & SCHWARZ**

Is your hearing aid ready for mobile communications?

Description

High-frequency electromagnetic fields generated by modern radiocommunications and multimedia equipment can considerably impair the performance of hearing aids.

Hearing aids are particularly susceptible to signals emitted by GSM mobile phones, for example. Instead of a continuous signal, equipment of this type emits carriers that have undergone low-frequency pulse modulation. If a hearing aid is close to a mobile phone, the low-frequency pulse modulation (217 Hz) and internal rectifying effects can produce an acoustic signal so intrusive that it considerably impairs the performance of the hearing aid. Therefore, hearing aids need to be checked for RFI immunity during quality assessment. EN 60118-13 (2004) defines suitable test methods and minimum requirements for ensuring the RFI immunity of hearing aids. However, the defined test field strengths are very low since a relatively restricted performance criterion is used to evaluate immunity.

As mobile phones become more common, hearing aid owners will also want to use them extensively. This means that an increasing number of hearing aids with enhanced RFI immunity will be needed in the future. To meet this challenge, the new version of EN 60118-13 specifies significantly higher test field strengths (up to 75 V/m). The Final Draft of this new version of the standard was adopted in August 2004 and is expected to be published as a standard in 2005.

Rohde & Schwarz EMC Test System for Hearing Aids R&S®TS9981H

Rohde & Schwarz has many years of experience in EMC system engineering, from benchtop systems to complex test halls. Based on the standard EMS Test System R&S®TS9981, a special application using a GTEM cell was developed for hearing aids.

This means that immunity measurements on hearing aids in the GSM and DECT frequency bands can be performed using the test field strength required by future standards. The system has been designed for frequencies up to 3 GHz to cover applications such as Bluetooth® and UMTS. Immunity measurements are carried out in a homogeneous, calibrated field. This makes it possible to perform reproducible qualification tests. Standardized test routines and reports ensure straightforward operation for routine applications. Moreover, flexible automatic and semiautomatic software routines support more in-depth immunity analyses, for example during the design phase.



Specifications

Test standard	EN 60118-13 (Final Draft 08/2004)
Frequency range	0.8 GHz to 2 (3) GHz
Field strength	max. 75 V/m + 80% AM (135 V/m CW), higher field strength on request
EUT ¹⁾ monitoring	automatic measurement of IRIL ²⁾ to EN 60118-13
Test routines	fully and semiautomatic standard routines for qualification testing and immunity analysis during design
System control	fully automatic control via IEC/IEEE bus, using specific test software
System calibration	automatic routines for system components

Field calibration

Audio analysis
Operating system
GTEM dimensions (L x W x H)
System components

factory calibration or semiautomatic
on-site calibration with optional field
sensor
multipurpose Audio Analyzer R&S®UPL
Windows NT, 2000 and XP
typ. 1.25 m x 0.65 m x 0.45 m
GTEM cell, Integrated Measurement
System R&S®IMS, power meter; options:
Audio Analyzer R&S®UPL, audio coupler,
standard PC or notebook, field sensor

¹⁾ EUT = equipment under test.

²⁾ IRIL = input-related interference level.

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