HAC-Suite (Code 60021)
Hearing Aid Compatibility Test Suite

OVERVIEW

Each standard is used to examine a handset’s magnetic coupling ability employing the HAC II handset positioner and probe coil.

The measurements include:
- Magnetic field strength and linearity for different probe coil positions and orientations
- Magnetic frequency response
- Volume control range checks and RLR (receiving loudness rating)

HAC-Suite can be used by manufacturers of landline and mobile phones to qualify and optimize the hearing aid compatibility of their products and ensure compliance with the standards it implements.

DESCRIPTION
The tests implemented in HAC-Suite examine aspects concerning a handset’s magnetic coupling ability as specified by the standards FCC 47CFR CH.1 §68.316/317, ITU-T P.370, ETSI ES 200381-1, TIA-1083-B and ANSI C63.19.

In conjunction with the analysis system ACQUA, the HAC II handset positioner and probe coil as well as further components (cf. system requirements), HAC-Suite with its predefined measurement descriptors and automated measurement sequences allows the fast and easy acquisition, analysis and documentation of measurement data.

APPLICATIONS
- Hearing Aid Compatibility analysis of landline and mobile phones
- Experimental optimization of magnetic coil coupling of landline and mobile phones

TEST SIGNALS
- Artificial Voice (P.50)
- Stepped Sine Sweep
- Sine 1000Hz
- Real Speech (IEEE 269)

SYSTEM REQUIREMENTS
HAC-Suite requires the following system components:
- ACQUA Advanced Communication Quality Analysis System as one of the following variants (version 3.5.100 or later):
  - Full-license (Code 6810)
  - Workplace (Code 6830, for post-analysis and documentation only)
  - Compact Systems (Code 6860.xx)
- HAC II (Code 6594) Induction coil with non-magnetic handset positioner
- MFE VI/VI.1 (Code 6460/6462) Measurement Front End
- Appropriate phone interface (e.g. MFE VIII.1 for VoIP, MFE X for DECT)
- Radio Communication Tester, e.g. R&S CMW 500 (not delivered by HEAD acoustics)
- BNC cable Only required for acoustic measurements:
  - HMS II.3-33/II.3-34 (Code 1230.1/1230.2) HEAD Measurement System with 3.3/3.4 Pinna
  - HHP IV (Code 1406) HEAD Handset Positioner “MotoMount” (Hexapod Version)

<table>
<thead>
<tr>
<th>Database Revision</th>
<th>Based on Specification Version</th>
<th>Min. ACQUA Version</th>
</tr>
</thead>
</table>

Overview of database revision and specification version.
MEASUREMENTS
The following table gives a summary of the measurements included in HAC-Suite:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>FCC 47CFR CH-1 §68.316/317</th>
<th>ITU-T P.370</th>
<th>TIA 1083-B</th>
<th>ETSI ES 200 381-1</th>
<th>ANSI C63.19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic Field Strength/Intensity</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Linearity of Magnetic Field Strength/Intensity</td>
<td>n/a</td>
<td>●</td>
<td>n/a</td>
<td>●</td>
<td>n/a</td>
</tr>
<tr>
<td>Receive Objective Loudness Rating (ROLR)</td>
<td>●</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Calibration of Acoustic Receive Level</td>
<td>●</td>
<td>●</td>
<td>n/a</td>
<td>●</td>
<td>n/a</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Total Harmonic Distortion (THD)</td>
<td>n/a</td>
<td>n/a</td>
<td>●</td>
<td>●</td>
<td>n/a</td>
</tr>
<tr>
<td>Idle Noise</td>
<td>n/a</td>
<td>n/a</td>
<td>●</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Signal-to-Noise Ratio</td>
<td>n/a</td>
<td>n/a</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

OPTIONS
For result representation using the “Quality Pie Wizard”, the following option is required:
- **ACOPT 20 (Code 6843),**
  ACQUA Option Quality Pie

DELIVERY
- **HAC-Suite** (Code 60021),
  delivered as ACQUA database
- **V2C file**
- **Standard documentation** as PDF

HAC-Suite analysis result example