**OVERVIEW**

The ITU-T recommendation P.381 specifies critical physical and electrical-acoustic characteristics for the universal wired headset or headphone interface of digital mobile terminals and defines corresponding test methods.

HEAD acoustics provides the **full implementation** of all measurements specified by ITU-T P.381 as automated test suite for the analysis system ACQUA.

By testing their devices with the P.381 test suite, manufacturers can ensure adequate compatibility between the digital mobile terminal and the wired analog headset/headphone, also contributing to a better user experience.

**DESCRIPTION**

The critical physical and electrical-acoustic characteristics for the universal wired headset or headphone interface of digital mobile terminals from a QoS/QoE (Quality of Service/Quality of Experience) perspective as perceived by the user are specified by the ITU-T recommendation P.381.

HEAD acoustics has implemented the test methods for narrowband and wideband as specified by the ITU-T recommendation into a test suite for the advanced communication quality analysis system ACQUA. Since Rev02 of the test suite, super-wideband and fullband scenarios are also covered. The measurements can be modified or extended if required in order to conduct additional tests. The tests can be arranged in any way to create individual test sequences.

In conjunction with the analysis system ACQUA and various other HEAD acoustics components (cf. system requirements), the P.381 test suite with its predefined measurement descriptors and automated test sequences allows the fast and easy acquisition, analysis and documentation of measurement data.

**APPLICATIONS**

- Automated analysis of the wired headset or headphone interface of digital mobile terminals from a QoS/QoE perspective as perceived by the user according to ITU-T recommendation P.381 (03/2017)

**SYSTEM REQUIREMENTS**

P.381 requires the following system components:

- **ACQUA** Advanced Communication Quality Analysis System as one of the following versions (3.5.200 or later):
  - Full-license (Code 6810)
  - Workplace (Code 6830, for post-analysis and documentation only)
  - Compact Systems (Code 6860.xx)
- **ACOPT 09 (Code 6819)**, Option SLVM P56
- **ACOPT 30 (Code 6857)**: Option POLQA
- **HIB I (Code 6002)**, Headset Interface Box

**SYSTEM REQUIREMENTS**

- **MFE VI.1 (Code 6462)**, USB Measurement Front End Analog with Integrated Power Amplifier
- **MFE VIII.1 (Code 6484)**, VoIP Reference Gateway with Ethernet Interfaces and SIP-VoIP Client (only required for 4G use case)
- 2G/3G/4G Radio Tester (not provided by HEAD acoustics)
- **HMS II.3­33 (Code 1230.1)**, HEAD Measurement System with Pinna Type 3.3.

Note: Additional left ear simulator HIS L (Code 1231) required, depending on use case.

The following components are required, but limit values for the corresponding measurements are still to be defined:

- **ACOPT 21 (Code 6844)**, Option 3QUEST, 3-fold Quality Evaluation of Speech in Telecommunications
- **ACOPT 35 (Code 6866)**, Option 3QUEST Super-wideband/Fullband according to ETSI TS 103 281, Model A
- **HAE-BGN (Code 6971)**, Background Noise Simulation, including necessary system components, cf. separate data sheet for Code 6971

---

<table>
<thead>
<tr>
<th>Database Revision</th>
<th>Based on Specification Version</th>
<th>Min. ACQUA Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>ITU-T P.381 (03/2017)</td>
<td>3.5.200</td>
</tr>
</tbody>
</table>

Overview of database revision and specification version.
### MEASUREMENTS

The following table gives a summary of the measurements included in P.381:

<table>
<thead>
<tr>
<th>SMD Title</th>
<th>Communication mode</th>
<th>Multimedia playback mode</th>
<th>Acoustic Headset Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay in SND</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Sensitivity SND</td>
<td>n/a</td>
<td>n/a</td>
<td>•</td>
</tr>
<tr>
<td>Level (ASL) SND NOM. IN</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Level (ASL) SND -10 dB</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Level rel. to target Level -10dB</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Level (ASL) SND +5dB</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Level rel. to target +5dB</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Frequency Response SND</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Idle channel noise SND</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Speech Level SND S/N Cal.</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Distortion SND</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Speech Quality SND</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Activation Sensitivity SND</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Sensitivity RCV</td>
<td>n/a</td>
<td>n/a</td>
<td>•</td>
</tr>
<tr>
<td>Frequency Response RCV</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Level (ASL) NOM. IN</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Idle channel Noise RCV</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Speech Level RCV S/N Cal.</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Distortion RCV</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Speech Quality RCV</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>STMR Real Speech</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>BGN Measurement</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>TCLw</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Temporal Echo Effects</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Att. Range dur. Double Talk SND</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Att. Range dur. Double Talk RCV</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Echo Attenuation during Double Talk</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
<tr>
<td>Crosstalk</td>
<td>n/a</td>
<td>n/a</td>
<td>•</td>
</tr>
<tr>
<td>U – Speech Level SND S/N Cal.</td>
<td>n/a</td>
<td>n/a</td>
<td>•</td>
</tr>
<tr>
<td>U – Idle channel Noise SND Peak</td>
<td>n/a</td>
<td>n/a</td>
<td>•</td>
</tr>
<tr>
<td>U – Clock Drift Measurement</td>
<td>•</td>
<td>•</td>
<td>n/a</td>
</tr>
</tbody>
</table>

### DELIVERY

- **P.381** (Code 60005), delivered as ACQUA database
- **V2C file**
- **Manual** as PDF

Configuration example for headset interface test of mobile phone.