

## Test System UPL + UPL-B7 for Hearing Aids

Measurements on hearing aids to IEC118 or ANSI S3.22

- Versatile applications in
  - development
  - production
  - quality management
- All standard measurements, eg
  - frequency response
  - sound pressure level
  - transfer characteristics
  - THD
  - equivalent inherent noise
  - attack and release times
  - current drain
- User-defined tests
- Tolerance checks
- Telecoil measurements



**ROHDE & SCHWARZ**

## Complete test assembly for hearing aids

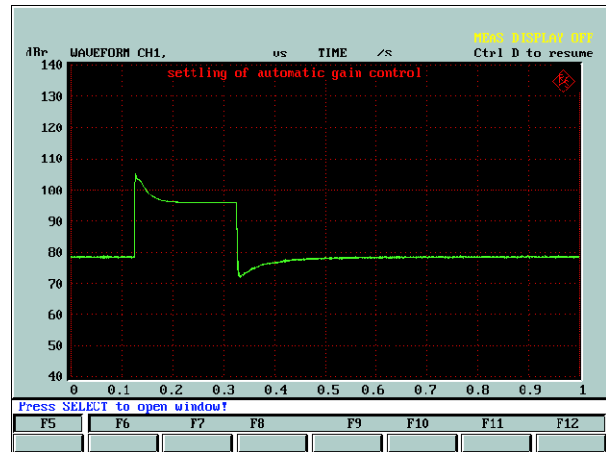
Audio Analyzer UPL (see data sheet 757.2238) in conjunction with option UPL-B7 is a complete test system for all standard measurements on hearing aids. To carry out such measurements, UPL only requires the options Audio Monitoring (UPL-B5) and Universal Sequence Controller (UPL-B10).

The test system meets all the requirements relevant in the production, quality management and service of hearing aids. The HEARPRO software supplied with the system allows the user to generate test routines tailored to the specific characteristics of the device under test. The type and sequence of measurements are freely selectable. All test parameters can be accurately defined.

Test setup with acoustic test chamber



Attack and release times of automatic gain control of hearing aid



Option UPL-B7 includes

- a compact acoustic test chamber
- a complete set of cables
- a 2 cm<sup>3</sup> coupler with built-in microphone and calibration adapter
- a set of battery adapters for all commercial battery sizes for DUT power supply

- groups of curves, eg for displaying the effect of frequency response setting at selectable sound pressure levels
- settings for telecoil measurements on hearing aid
- OSPL curve with telecoil
- THD with telecoil

Calibration of the complete test setup requires a sound level calibrator and a test microphone which are not part of the equipment supplied.

### For all relevant measurements

The convenient HEARPRO test software supplied with the system can handle measurements according to standards EN60118 or ANSI S3.22-1996. All standard measurements can be carried out:

- SSPL curves
- adjustment to reference gain
- OSPL curves
- equivalent inherent noise
- THD at selectable frequencies
- battery current drain
- output sound pressure as a function of input sound pressure
- attack and release times of units using AGC

### Powerful in production

The high measurement speed of the system makes for high throughput in production applications. This can be further optimized by adapting the measurement speed to the DUT response.

Frequency response measurements and test results can be subjected to automatic tolerance checks. The results of these checks are documented and stored as PASS or FAIL results together with all test curves. This ensures consistent production quality. The clear-cut logging of all measurements facilitates evaluation of relevant parameters.

Fast Hearing Aid Test with Rohde & Schwarz Audio Analyzer UPL			
According to IEC 118			
	Setting max Gain:	Setting ref Gain:	Setting Telecoil:
Max OSPL90/OSPL90:	112.4 dB	112.5 dB	101.7 dB
OSPL90/OSPL90 REF:	101.8 dB	101.9 dB	89.8 dB
Maximum gain @ 60dB:	37.6 dB	37.7 dB	
Gain @ 60 dB @ REF:	27.3 dB	27.3 dB	
Maximum gain @ 50dB:	37.4 dB	37.5 dB	
Gain @ 50 dB @ REF:	27.3 dB	27.2 dB	
Equiv. Imp. Noise @ 60 dB:		24.7 dB	
THD 500 Hz @ 70 dB/ 100 mA/m:	6.9 %	14.2 %	
THD 800 Hz @ 70 dB/ 100 mA/m:	1.5 %	6.1 %	
THD 1600 Hz @ 70 dB/ 100 mA/m:	1.7 %	2.9 %	
Battery Current idle/sound:	0.81 mA / 0.81 mA		
Attack Time:	0.5 ms		
Release Time:	4 ms		

F5	F6	F7	F8	F9	F10	F11	F12
BACK		NEXT	REPEAT	GRAPH	SAVE	SER. NO.	REPORT

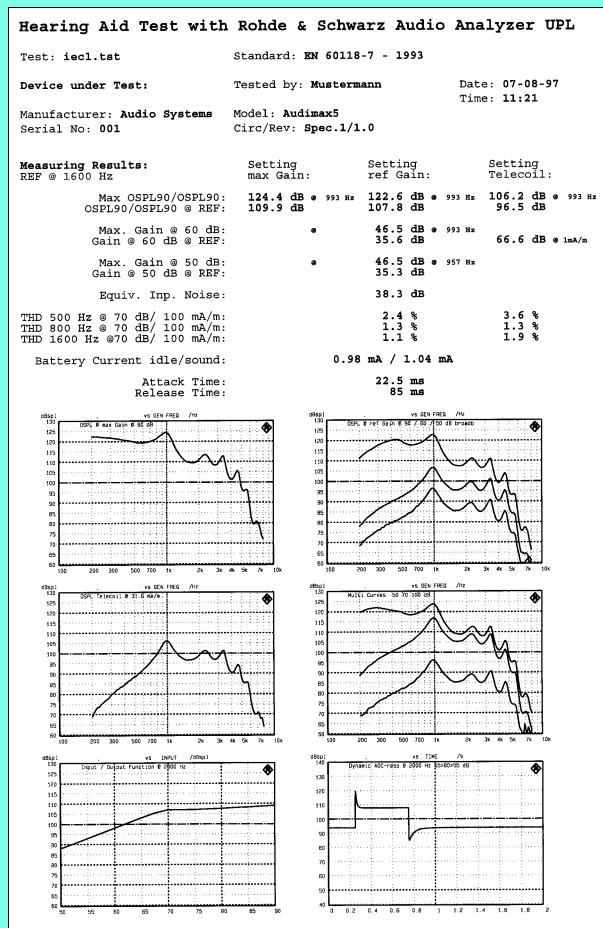
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REF at 90 dBspl  98.9 dBspl
Adjust Hearing Aid to REF -15 dB
or to -7 dB below max. Gain if not adjustable
Continue with <SPACE>

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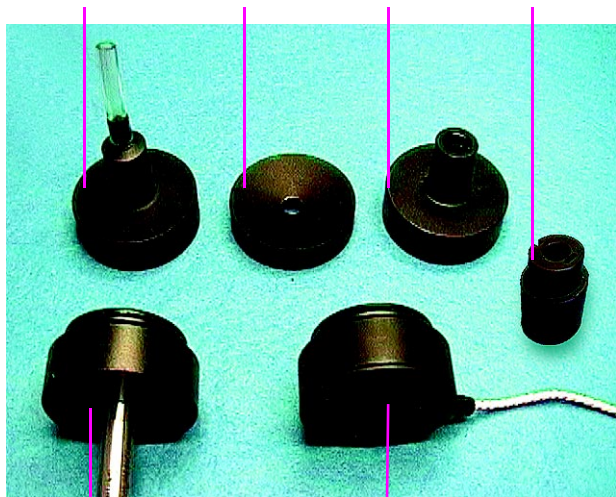
OFF	F6	F7	F8	F9	F10	F11	F12
	DOME						

Screen display of results (top) and setting aid for acoustic gain of hearing aid (bottom)



Log printout

Adapter for behind-the-ear (BTE) hearing aids    Adapter for in-the-ear (ITE) hearing aids    Adapter for body-worn hearing aids    Adapter for calibration of coupler



Coupler for 1/4" microphone (microphone not supplied)

Coupler with built-in microphone

## Specifications for UPL with UPL-B7

Max. sound pressure	>100 dB SPL, typ. 110 dB SPL
THD	<0.3% for 90 dB SPL
Ambient noise attenuation	>40 dB (20 Hz to 1500 Hz) >45 dB (>1500 Hz)
Frequency response of acoustic chamber without correction	±2 dB (100 Hz to 8000 Hz)
Feedthroughs for	<ul style="list-style-type: none"> <li>- microphone connector for coupler with built-in microphone</li> <li>- battery adapter</li> <li>- 2 x 5-contact Mini-DIN for Hi-Pro programmer and 1/4" microphone preamplifier (GRAS 26 AC-R can be used)</li> </ul>
Dimensions of acoustic chamber (W x H x D)	365 mm x 260 mm x 400 mm
Weight	22 kg

Certified Quality System  
**ISO 9001**  
 DQS REG. NO 1954-04

Fax Reply (Test System UPL + UPL-B7 for Hearing Aids)

- Please send me an offer**
- I would like a demo**
- Please call me**
- I would like to receive your free-of-charge CD-ROM catalog**  
(including Test&Measurement Products +  
Sound and TV Broadcasting)

Others: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_  
Company/Department: \_\_\_\_\_  
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