Telephone Test Head Type 45AA

Product Data and Specifications

Features and applications

- *Reproducible tests of handset acoustic performance*

- *LRGP-Hats-AEN-REF configurations*

- *Minimum acoustic interference from test stand*

- *Adjustable readable positioning of telephone also with room for asymmetric configurations*

- *Easy calibration of microphone and linearisation of mouth with ¼ " and ½ " microphone*

- *Adaptable to IEC60318 or IEC60711 and ITU-T Rec 57 type 3.2, with a low-leak pinna simulator*

The G.R.A.S. Telephone Test Head Type 45AA (Fig. 1) is a tailor-made fixture for testing the acoustic performance of telephone handsets in accordance with international standards and recommendations.

Its design combines precision with a robust construction to ensure stability and reproducible test results with a minimum of acoustic interference.

When used with an Artificial Ear Type 43AD or an Ear Simulator Type 43AE, and a Mouth Simulator Type 44AA or 44AB, it can be set up for testing telephone handsets in accordance with ITU-T recommendations.

Positioning of the mouth

Four different, detachable brackets are provided for mounting the Mouth Simulator according to the the standardised positions shown in Table. 1 for speaking into a telephone. These positions are maintained to within an accuracy of 1mm. Reference gauges (RA0141) are available for verifying this.

Fig. 1   Telephone Test Head Type 45AA shown here with a Mouth Simulator and Artificial Ear (both available from G.R.A.S.) for testing a mobile telephone

Speaking Position	Recommendation
LRGP	ITU-T Rec. P76
AEN	ITU-T Rec. P76
HATS	ITU-T P58
REF	OREM A

Table 1 Speaking positions according to current recommendations

G.R.A.S.
Sound & Vibration

Anti-vibration Mounts

The Type 45AA stands on four anti-vibration mounts to isolate it from extraneous vibrations which could otherwise lead to spurious measurement results.

Handset Alignment

The Type 45AA is provided with graduated guides and stops for aligning a telephone handset correctly in postion over the Artificial Ear. Lateral guides are independently adjustable to cater for asymmetrical handsets.
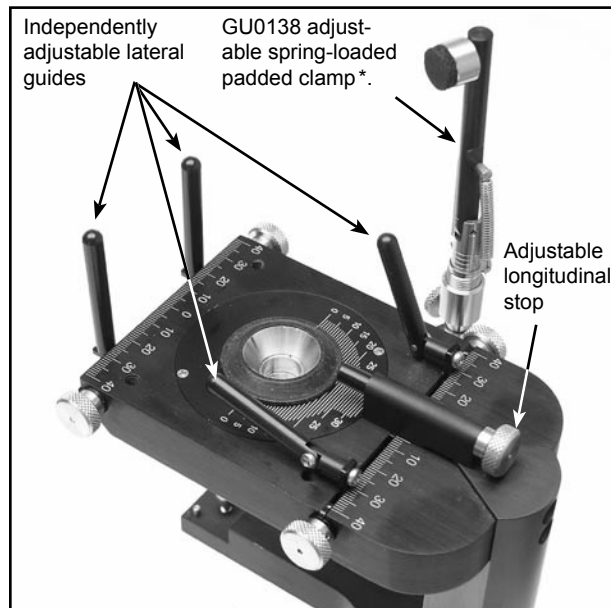
*   Can be replaced by GU0133 heavy-duty snap clamp for production testing

Fig. 2   Showing graduated stops and guides for aligning a telephone handset

Once aligned, an adjustable spring-loaded, padded clamp will hold the handset in postion (see Fig. 2). As specified in some tests, an adjustable force can be applied by adding a small mass to the measurement object.

Mouth Simulators Types 44AA and 44AB

These Mouth Simulators (Figs. 3 and 4) are available from G.R.A.S. Both are for testing telephone mouthpieces as well as other microphones similarly used in vocal communication networks.

At the mouth reference point (MRP), which is 25 mm from the detachable lip ring (35 mm from the
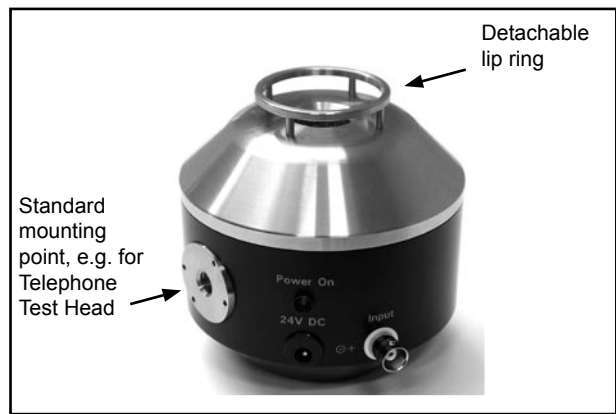

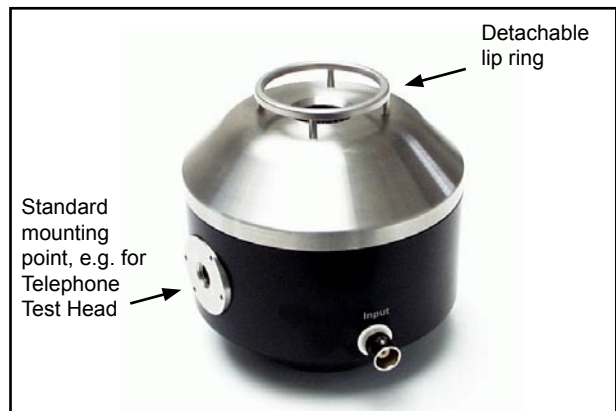*Fig. 3   The Mouth Simulator Type 44AA*

Fig. 4   The Mouth Simulator Type 44AB

Simulators' mouths), the minimum-continuous equalised signal it can produce in ⅓-octave bands is 100 dB re. 20 µPa in the frequency range 100 Hz to 16 kHz. Their loudspeakers can accept an external signal directly or, in the case of the Type 44AA, indirectly via a built-in power amplifier.

Fig. 5 shows typical frequency response curves for a swept sine. The left curve shows the true response of the Mouth Simulator to the signal. The right curve shows the equalised response when the signal is compensated for the "ups-and-downs" of the left curve. See also separate Data sheets.

IEC 318 Artificial Ear and IEC 711 Ear Simulator

These are available from G.R.A.S. (Figs. 6 and 7) and all can be fitted to the Type 45AA to cover
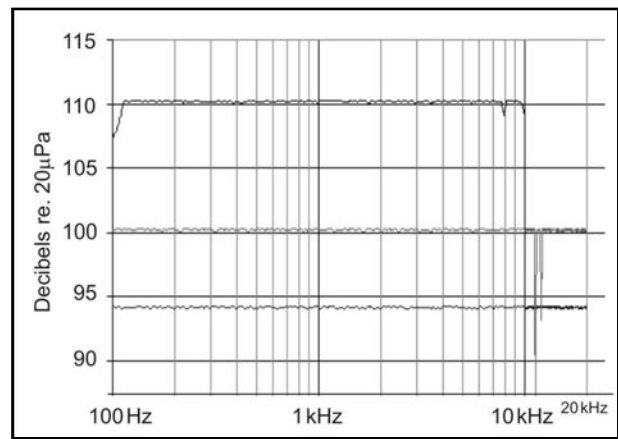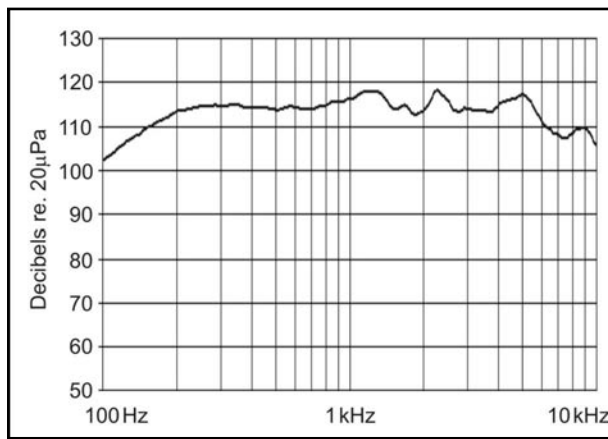
Fig. 5   Typical frequency-response measurements of G.R.A.S. Mouth Simulators (for Frp IEEE 269 set up). Left; true response for an input signal of 3.16 V RMS. Right; equalised response at the Mouth Reference Point for 94 dB, 100 dB and 110 dB SPLs

Fig. 6   Artificial Ear Type 43AD

measurement set-ups according to any of current standards and recommendations.

Type 43AD (Fig. 6): for the requirements of:

- IEC 60318 Electroacoustics – Simulators of human head and ear - Part 1: Ear simulator for the calibration of supra-aural earphones, 1998-07.
- ITU-T Recommendations P.57 (08/96) Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears

Type 43AE (Fig. 7): for the requirements of:

- ITU-T Recommendations P.57 (08/96) Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears.

RA0056 or RA0057
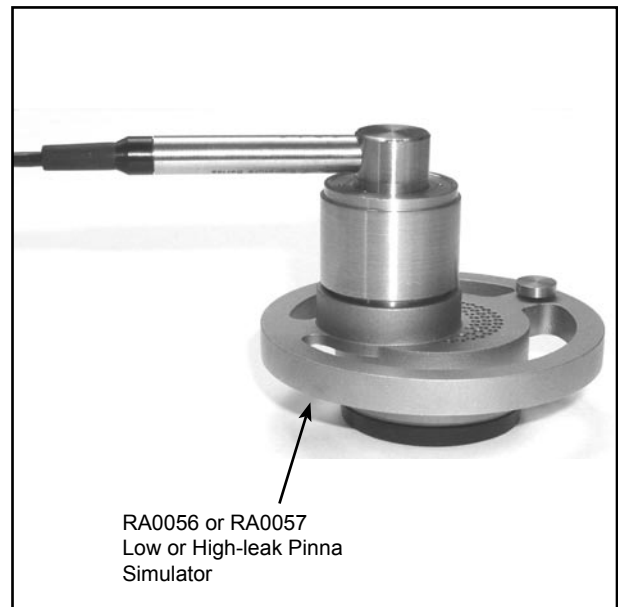Low or High-leak Pinna
Simulator

Fig. 7   IEC 60711 Ear Simulator Type 43AE. Includes both high- and low-leak pinna simulators

When fitted with the Low-leak Pinna Simulator RA0056, the Type 43AE fulfils the requirements of:

- ITU-T Recommendation Rec. P.57 type 3.2.

And the corresponding frequency responses for open and closed ear conditions are as shown in Fig. 8.
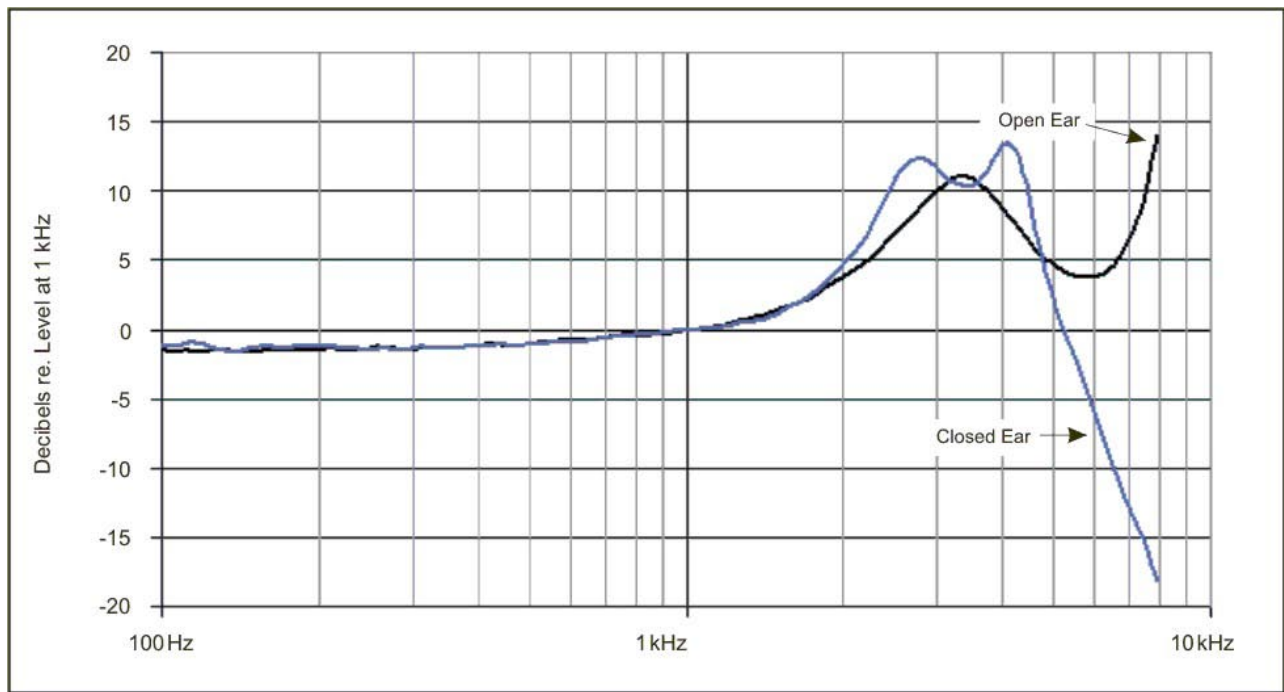
Fig. 8   Frequency response curves of the assembly shown in Fig. 7 with a low-leak pinna simulator fitted.

Specifications

Mouth positions:

LGRP	ITU-T Rec. P76
AEN	ITU-T Rec. P76
HATS	ITU-T P58
REF	OREM A

Accuracy:
  direction of mouth axis:- . . . . ±1 mm
  plain of mouth:- . . . . ±2 mm

Handset alignment:
Four lateral guides independently adjustable over 35 mm to cater for asymmetrical handsets. Longitudinal stop adjustable over 35 mm. All adjustments relative to centre of coupler aperture.
Two types of adjustable padded clamps are provided.

Dimensions:
Height: . . . . .375 mm (14.8 in)
Width:. . . . . .180 mm (7.1 in)
Depth:. . . . . .200 mm (7.9 in)
Weight:. . . . . 2.3 kg (5.6 lb)

Accessories included:
Detachable brackets for speaking positions
  LRGP: GR0826
  AEN:. GR0827
  HATS:. GR0828
  REF: GR0829
Adjustable detachable clamps
  Spring loaded[1]:. GU0138
  Snap[2]:. GU0133

Accessories available:
Mouth Simulators:-
  with amplifier: . . . . .Type 44AA
  without amplifier:. . . . . .Type 44AB
IEC 318 Artificial Ear. . . . . .Type 43AD
IEC 711 Ear Simulator . . . . .Type 43AE
Low-leak Pinna Simulator:. RA0056
High-leak Pinna Simulator: RA0057
Pistonphones: . . . . .Type 42AA / 42AP
Power Module . . . . .Type 12AK
Reference Guages. RA0141

[1]   For laboratory testing, adjustable from 0 to 8 N
[2]   For production testing, heavy duty