

IEC 60318-4 Ear Simulators

RA0045 Externally Polarized Ear Simulator IEC 60318-4

RA0045-S1 Prepolarized Ear Simulator IEC 60318-4



RA0045 is an IEC 60318-4 (former 60711) Ear Simulator for making acoustic measurements on earphones coupled to the human ear by ear inserts such as tubes, ear moulds or ear tips in accordance with:

- IEC 60318-4 (former 60711) Occluded-ear simulator for the measurement of earphones coupled to the ear by ear inserts.
- ITU-T Recommendations P.57 (08/96) Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears.

It is delivered with a built-in 40AG ½" microphone and an individual calibration chart for the coupler-microphone combination. Can be used with either of the RA0056 and RA0057 Pinna Simulators to simulate a complete ear for testing telephones and loudspeakers.



RA0045-S1 is similar to RA0045 but is delivered with a built-in prepolarized microphone GRAS 40A0 for use with CCP preamplifiers.

More RA0045 Variants

RA0045-S4 High-sensitivity, 40AP Ext. Pol. Microphone

RA0045-S5 High-pressure, 40BP Ext. Pol. Microphone

RA0045-S6 High-sensitivity, 40AD Prepol. Microphone

Specifications for these RA0045 variants can be found at www.grasacoustics.com

IEC 60318-4 Ear Simulators, High-Frequency

RA0401 Externally Polarized High-Frequency Ear Simulator IEC 60318-4

RA0402 Prepolarized High-Frequency Ear Simulator IEC 60318-4



RA0401 is a high-frequency version of the standardized 60318-4 ear simulator (RA0045), which has gained wide acceptance as the preferred tool for measurements with simulation of the acoustic load presented by the human ear. Below 10 kHz, the standardized ear simulator does a good job. However, above 10 kHz, the steep resonance at 13.5 kHz dominates. In RA0401 this resonance is damped and the useful frequency range is extended to 20 kHz.

RA0401 complies with IEC60318-4 and is fully backward compatible as its acoustic transfer impedance is within the tolerance band specified by IEC60318-4. From 10 to 20 kHz the transfer impedance is within ± 2.2 dB, resulting in improved repeatability. Also, realistic THD measurements are now possible.



It is measured and calibrated according to the ITU-T Recommendation P.57 and delivered with a calibration chart specifying its sensitivity and frequency response.



RA0402 is similar to RA0401 but has a built-in prepolarized microphone for use with CCP preamplifiers.

Specifications	RA0045/RA0045-S1	RA0401/RA0402	RA0403/RA0404
Standards	IEC 60318-4 (former 60711) ITU-T Rec. P.57 (08/96)	IEC 60318-4 (former 60711) ITU-T Rec. P.57 (08/96)	IEC 60318-4 (former 60711) compatible ITU-T Rec. P.57 (08/96)
Dynamic Range	25 dB(A) – 164 dB/25 dB(A) – 150 dB	25 dB(A) – 164 dB/25 dB(A) – 150 dB	44 dB(A) – 169 dB/44dB(A) – 166 dB
Effective Volume	1260 @ 500 Hz	1260 @ 500 Hz	1260 @ 500 Hz
Resonant Frequency	13.5 kHz $\pm$ 1 kHz	13.5 kHz $\pm$ 1 kHz	13.5 kHz $\pm$ 1 kHz
Height	36.5 mm	36.5 mm	36.5 mm
Diameter	23.8 mm	23.8 mm	23.8 mm
Weight	71 g	74 g	74 g

IEC 60318-4 Ear Simulators, Hi-Res

RA0403 Externally Polarized Hi-Res Ear Simulator

RA0404 Prepolarized Hi-Res Ear Simulator



RA0403 is a Hi-Res version of the well-known standardized 60318-4 ear simulator (RA0045), which has gained wide acceptance as the preferred tool for measurements with simulation of the acoustic load presented by the human ear. Below 10 kHz, the standardized ear simulator does a good job. However, above 10 kHz, the steep resonance at 13.5 kHz dominates. In RA0403 this resonance is damped. This, in combination with the use of a ¼" microphone, extends the useful frequency range to 50 kHz.

RA0403 is compatible with IEC60318-4 and is fully backward compatible as its acoustic transfer impedance is within the tolerance band specified by IEC60318-4. From 10 to 20 kHz the transfer impedance is within ± 2.2 dB, from 20 kHz to 50 kHz it is within ± 3.2 dB, resulting in improved repeatability. Also, realistic THD measurements are now possible in the full audible frequency range.



It is measured and calibrated according to the ITU-T Recommendation P.57 and delivered with a calibration chart specifying its sensitivity and frequency response.



RA0404 is similar to RA0403 but is delivered with a built-in prepolarized microphone for use with CCP preamplifiers.

Specifications on the previous page.

ITU-T PINNA SIMULATORS

GRAS RA0056

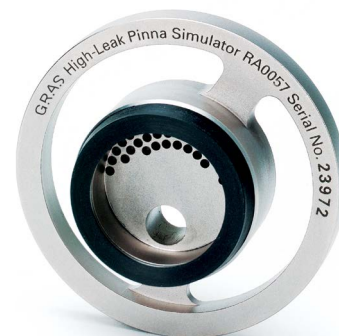
Low-leak Pinna Simulator



A low-leak pinna (outer ear) simulator for use with the RA0045 Ear Simulator to simulate a complete ear for testing telephones and loudspeakers. The RA0056 meets the specifications in the ITU-T Recommendation P.57 (08/96) "Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears".

GRAS RA0057

High-leak Pinna Simulator



A high-leak pinna (outer ear) simulator for use with the RA0045 Ear Simulator to simulate a complete ear for testing telephones and loudspeakers. The RA0057 meets the specifications in the ITU-T Recommendation P.57 (08/96) "Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears".