

## AKG K280 EARPHONES

### Manufacturer's Specifications

**Transducer Design:** Dynamic.

**Coupling to the Ear:** Circumaural.

**D.c. Resistance:** Left, 76.3 ohms; right, 77.0 ohms.

**Absolute Polarity:** Negative.

**Cord:** 9 feet long from left earcup, with ¼-inch stereo phone plug.

**Adjustments:** Headband slides in bail; self-adjusting with elastic tension band.

**Weight:** 10½ oz.

**Price:** \$199.

**Company Address:** 1525 Alvarado St., San Leandro, Cal. 94577.

For literature, circle No. 95

AKG is an Austrian company that specializes in making high-quality audio transducers such as microphones, phono cartridges, and earphones. Over the years, they have spent a considerable amount of time researching the problems associated with the design of earphones. Their goal is to produce earphones that give the same impression one would have when listening to the original sound in a natural, diffuse-field environment.

The AKG K280 earphones are well made, with good finish. The attention to detail is very evident, from the easy adjustment of the comfortable headband and the stitching around the foam-filled vinyl ear cushions, to the "L" and "R" embossed on the bail spacer that indicate left and right channels. I especially like the idea of having "open-air" type earphones with cushions that fit around the ears rather than sit on them, as is the case with some other earphones that use the open-air acoustical design concept. There is very little pressure against the ears, and although the K280 earphones weigh 10½ ounces, they feel much lighter and it's easy to forget you are wearing them. Ordinarily, the lack of tight seal around the ears would impair bass output, but the K280 earphones are designed to allow for this; their bass output has been increased accordingly. AKG uses two identical dynamic transducer elements mount-



ed in the same earcup, both covering the entire frequency range. They are placed one above the other and canted at about 15° toward the ear. This provides the ability to deliver higher acoustic output than a single element could at the same distortion level, as

well as a better sensitivity match between the left and right earphones because two elements average out any difference in sensitivity.

The subjective sound qualities of the AKG K280 earphones were rated by members of a listening panel, some of

## EARPHONE EVALUATION

PARAMETER	RATING	COMMENTS
<b>Overall Sound</b>	Good	
<b>Bass</b>	Very good	"Boomy" and "Bass-heavy"
<b>Midrange</b>	Good	"Bright upper range" and "Sharp"
<b>Treble</b>	Good	"Slightly smeared"
<b>Overall Isolation</b>	Poor	
<b>Bass</b>	Poor	"No low-frequency isolation"
<b>Midrange</b>	Poor	"It's easy to hear normal outside conversation"
<b>Treble</b>	Fair	"Highs from outside are muted"
<b>Comfort</b>	Very good	"Very good for long-term listening"
<b>Value</b>	Very good	

**GENERAL COMMENTS:** Very comfortable; good adjustments; good bass; distant perspective; some coloration but very pleasant for long-term listening.

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The AKG K280s deliver high sound levels from low power and are comfortable for long-term listening.

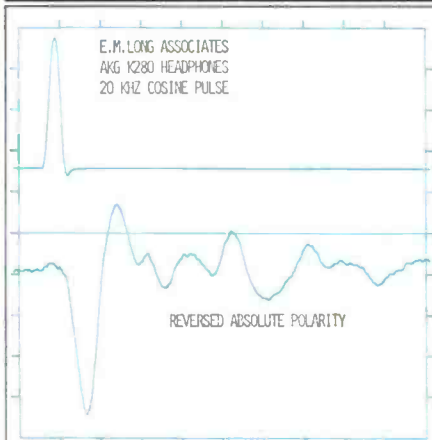


Fig. 1—Output vs. time (bottom) for 20-kHz cosine pulse (top); see text.

whom years of experience evaluating high-quality audio components. They were asked to listen to various selections and write down their comments. Remarks about the bass being "boomy" and "bassy" correlate well with measurements that I made, which showed an increase in output in the lower range that reached a maximum at 125 Hz. Comments about the perspective being "distant" and "recessed" may be correlated with the range between 2 and 5 kHz, where the output was lower than it should be.

Comments from the listening panel about the mid- and high-frequency ranges (shown in the Evaluation Table) can be correlated with the way the K280 earphones reproduced the spectrum of a 500-Hz square wave. The output at the ninth, 11th, 13th, and 21st harmonics (4.5, 5.5, 6.5, and 10.5 kHz, respectively) were higher than they should have been. This correlates with the comment regarding "bright upper range," while the level of the seventh harmonic (3.5 kHz) was low, resulting in "distant" perspective. The levels of the 17th harmonic (8.5 kHz) and 23rd harmonic (11.5 kHz) were also lower than they should have been, correlating with other measurements that I made which showed reduced output above about 12.5 kHz.

Figure 1 is the output of the AKG K280 earphones for a 20-kHz cosine input. The input pulse is shown at the top; the output from the AKG K280

earphones is below. The output after the input has stopped correlates with a comment that the sound was "slightly smeared." The output also shows a negative absolute polarity, which may account for the comments made about the articulation of voices ("lacks clarity" and "not as clear as the reference earphones"). Although I didn't give the panel members the option of changing the absolute polarity, I did do it myself. The articulation and realism of the voices, on some recordings, were better when I reversed the polarity.

I also measured output versus frequency with a Fast Fourier Transform analyzer. I made two measurements, one directly in front of one transducer element and the other between the two elements. The response between elements showed good output up to 12.5 kHz, where it dropped off sharply. The response directly in front of one element was higher above 9 kHz. This shows that slight changes in position of the earphones can affect the output in the upper range. Although this isn't a major problem, you should be aware that the sound quality of the K280 is slightly position-dependent. Since I measured the earphones before the listening sessions, I asked each panel member to adjust the position to get the best sound, especially in the upper range. Some response irregularities that I found may have been due to reflections from the plastic side walls of the earcup to which the dynamic transducers are mounted. Comments such as "nasal sound" and "coloration" can be correlated with this type of problem. I measured the phase transfer function, and the results indicated that it also is affected by the K280's position.

The AKG K280 earphones have the advantage of being able to produce very high sound levels with relatively little input power. They are very comfortable for long-term listening, and it is easy to forget that you are wearing them. Despite what might appear to be a rather negative tone to some of the comments made by members of the listening panel, they gave the AKG K280 overall ratings of "good" and "very good" for sonic qualities and "very good" to "excellent" for physical attributes. Give them a listen if you are thinking of buying high-quality earphones.  
Edward M. Long