Nidec

Measuring Quality

Application Information

In-Ear Headphone Test

Force to pull Earbud Tips off In-Ear Headphone speakers

One of the most crucial components of in-ear headphones is the earbud rubber tips due to the comfort and conformance to the user's ear. With hundreds of brands of in-ear headphones at low cost points, consumers can easily forego one brand for another if the headphone's rubber tips do not meet their expectations. Therefore manufacturers of the earbuds have to facilitate in their design for optimal sound, comfort, and durability.

One leading design and manufacturer of rubber earbud tips has focused on developing these components to perform optimally in all those categories. Since they do not manufacture the entire headphone, they must thoroughly test the compatibility with all in-ear headphone brands. One key test for determining performance on various headphone models involves the testing of the force necessary to remove the tips from the headphone speakers. A standardization test was initially implemented to determine future design compatibility. When the vendor creates a newly designed rubber earbud, they test its force removal off a special apparatus with a Shimpo FGS-100H Manual Force Test Stand combined with a FGV-50XY Digital Force Gauge with 50 lb (20 kg) capacity. Once the removal force is acquired by the FGV-50XY force gauge, the technician can properly classify that earbud tip design for compatibility with all in-ear headphones on the market. This simple test classification process eliminates the previous required testing of the earbuds with all headphones, eliminating an enormous amount of testing time and costs.

This manufacturer chose the Shimpo force gauge/test stand combination due to it producing simple, repeatable and accurate measurements allowing them to hasten their new products to market and stay at the top-end of the quality spectrum with the end user.

Equipment Used

- *FGS-100H Hand Wheel Test Stand*
- *FGV-50XY Digital Force Gauge with 50 lb (20 kg) capacity*

FGV-XY with Memory & Data Output

FGS-100H Hand Wheel Test Stand

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