

**Trials Conducted  
for be by ReSound™**

be BY RESOUND™

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## 1. Executive Summary:

The purpose of the Internal Trials was to investigate subjective and objective benefits of **be by ReSound™**, as well as to evaluate the stability and performance of the device. The ReSound-sponsored Oldenburg Trial compared subjective sound quality and amplification of **be by ReSound™** to three micro-BTE hearing instruments from three different manufacturers.

Results demonstrated that **be by ReSound™** is a viable and competitive hearing instrument with a new form factor that will better meet the needs of end-users. Specifically, results demonstrated that **be by ReSound™** is cosmetically appealing, non-occluding, comfortable, has great sound quality, has a tremendously positive impact for potential hearing instrument users where neither a micro-BTE or CIC is sufficient/acceptable, and will be a welcomed amplification option by first-time hearing instrument users.

### Internal Trials demonstrated:

- **be by ReSound™** is the first open-fit hearing instrument that utilizes Invisible Open Technology (IOT). Objective occlusion was found to be less than five decibels in 92% adult ears tested, and subjectively **be by ReSound™** was rated as non-occluding.
- **be by ReSound™** is very cosmetically appealing, not only to non-hearing instrument users but also to experienced micro-BTE and CIC users. From the Wearing Comfort, Pre-Alpha 1, Pre-Alpha 2, and Alpha trials, both inexperienced and experienced test subjects rated the cosmetic appeal of **be by ReSound™** as high.
- **be by ReSound™** is rated as exceedingly comfortable to wear. Pre-Alpha 1, pre-Alpha 2, and Alpha trials revealed that **be by ReSound™** was rated comparably comfortable to micro-BTE devices and superior in comfort to CIC devices.
- **be by ReSound™** has a significant advantage of protection from wind noise in conjunction with maintained speech intelligibility without the use of a wind noise suppression algorithm. This is accomplished through the unique microphone placement in the area of the concha cymba.

### **The Oldenburg Trial revealed:**

- Overall perceived sound quality for **be by ReSound™** was rated as better than micro-BTEs from three hearing instrument manufacturers. The listening environments included listening in the presence of office talk, cafeteria talk, discotheque, shopping center, and kitchen cutlery; and for each environment, the following aspects of sound quality were rated: is sound too loud, is overall sound quality good, is sound natural, is sound shrill, is sound tinny, is sound dull, is sound scratchy, crackling, is sound reverberant/echoey?
- Sound quality of **be by ReSound™** was rated as superior vs. micro-BTEs from three hearing instrument manufacturers in three out of five listening environments and rated comparably in two out of five listening environments.
- Sound quality of **be by ReSound™** was rated as superior vs. micro-BTEs for three hearing instrument manufacturers in four out of eight subcategories of sound quality and rated comparably in four out of eight subcategories of sound quality.

## 2. Introduction

When ReSound launched ReSoundAIR, it profiled the company as being innovative and end-user driven. Because of the tremendous impact on the hearing instrument industry, nearly all competitors have launched similar products. The majority of hearing instrument product innovations over the last period have been with BTE devices. **be by ReSound™** is a new and unique form factor that has thus far not been seen in the hearing industry. It has challenged the hearing instrument industry to think “out of the box”. With its Invisible Open Technology (IOT), **be by ReSound™** takes one step forward by adding another alternative for end-users that has similar characteristics to micro-BTEs (non-occluding, great sound, quicker fittings than custom devices, less repairs) with the benefits from CICs (protection from wind noise, cosmetic appeal).

**be by ReSound™** is designed for hearing-impaired individuals with hearing thresholds of better than 40dB HL in the low frequencies (250-750Hz) and 70dB HL or better in the higher frequencies (1000-6000Hz). The main distinctions in design for **be by ReSound™** compared to conventional hearing instruments are relief from occlusion, wind noise, and instant fitting. Candidates for **be by ReSound™** include experienced hearing instrument wearers, as well as those new to amplification.

**be by ReSound™** consists of a miniature modular ear canal unit, a flexible and transparent tube that fits in the concha bowl, and a microphone capsule. A wire runs through the tube and connects the ear canal unit with the tiny plastic-encased microphone unit. The microphone port is located inside the concha cymba behind the crus of the helix (figures 1 and 2).

**Fig. 1: 90° View of Ear**



**Fig. 2: 120° View of Ear**



### 3. Methods

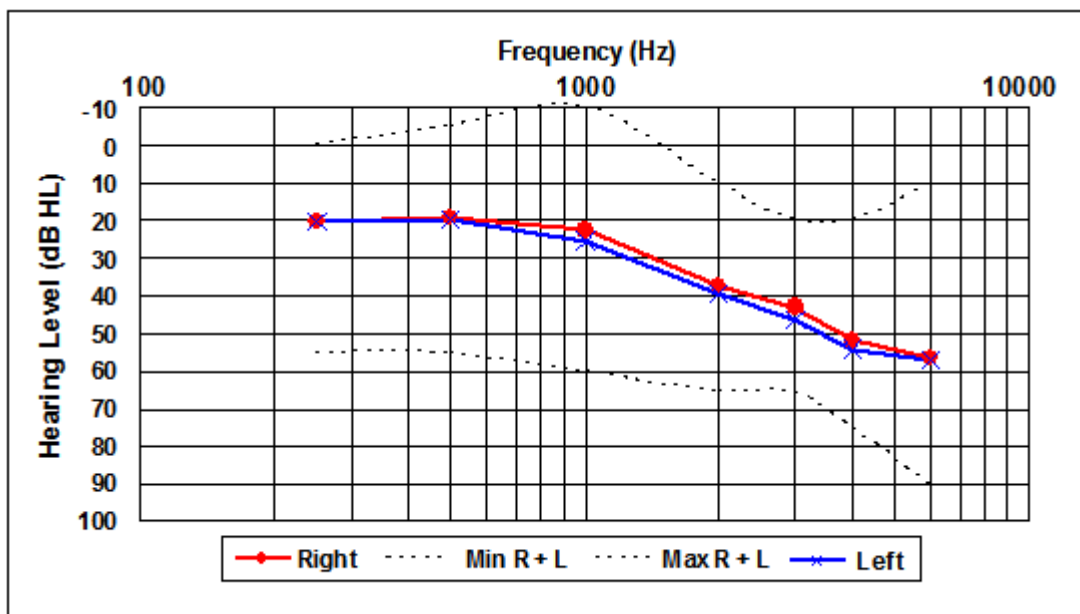
#### Internal trials:

148 test subjects participated in five trials, which included:

- Wearing Comfort Trial
- Pre-Alpha 1 Trial
- Pre-Alpha 2 Trial
- Pre-Alpha 3 Trial
- Alpha Trial

Test subjects included non-users of hearing instruments, experienced micro-BTE users, and experienced CIC users. The test subjects' median age was 65, and figure 3 displays the mean hearing threshold levels:

**Fig. 3: Mean Hearing Threshold Levels (HTL's)**



*Source: Internal Trials (N= 148).*

These trials primarily focused on the following areas:

- Cosmetic appeal
- Non-occluding
- Physical fit
- Wearing comfort

- Wind noise
- Sound quality

Table 1 below presents an overview of how the trials addressed each of these six areas:

**Table 1: Six primary areas of investigation for internal and Oldenburg trials.**

Trial	Cosmetic Appeal	Non-occluding	Physical Fit	Wearing Comfort	Wind Noise	Sound Quality
Wearing Comfort	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pre-Alpha 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pre-Alpha 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pre-Alpha 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alpha	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Oldenburg*						<input checked="" type="checkbox"/>

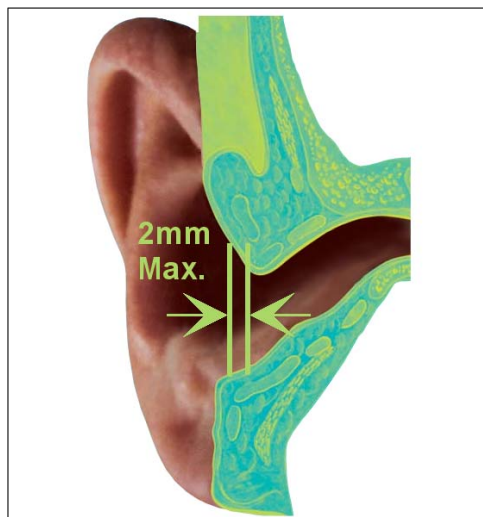
Source: Internal and Oldenburg Trials.

\* See pages 8-9 for a description of the Oldenburg Trial.

The viability, quality, and reliability of **be by ReSound™** was thoroughly examined by ReSound. The approximate time professionals spent testing **be by ReSound™** was 960 hours, and test subjects participated in the trials for approximately 150 days, with a conservative estimate of seven hours per day of wearing time. Combined wearing time of all test subjects for **be by ReSound™** was estimated to be over 31,000 hours. Areas of examination that occurred in more than one trial helped to further verify key findings through repeatability.

For assurance of positive cosmetic appeal, test subjects subjectively rated **be by ReSound™**. This was accomplished by not only subjects' view of themselves in a mirror with the devices in place but also through photographs taken at various angles from the side (i.e., 60°, 90°, and 120°). Cosmetic appeal was rated on a one to ten-point scale, where one is a poor rating, and a ten is an excellent rating. For experienced micro-BTE and CIC users, test subjects rated **be by ReSound™** compared to their own devices. Cosmetic appeal, from the trials' audiology perspective, was deemed to be good if an ear canal could accommodate the body of **be by ReSound™** device with no more than two millimeters of protrusion (fig. 4) from the opening of the ear canal.

**Fig. 4: Maximum acceptable protrusion from ear canal.**



In order to measure how non-occluding **be by ReSound™** is, both subjective and objective occlusion measures were obtained. For objective occlusion measures, the first of these is to compare the level of the wearer’s own voice at the reference microphone to the level in the ear canal. This test method is utilized in the Audioscan Verifit as well as the Etymotic Research ER-33 occlusion meter. Alternatively, the level of the wearer’s own voice or a bone-conducted stimulus measured in the ear canal can be compared in occluded and unoccluded conditions. This test method is implemented as a special test in the GN Otometrics Visible Speech Mapping (VSM). Both of these test methods were used in laboratory investigations and field trials of **be by ReSound™**. Objective occlusion was conservatively defined to be acceptable if measured at 5 dB or less.

For subjective occlusion ratings, the occlusion effect was evaluated with **be by ReSound™** and test subjects’ own hearing instruments. The evaluation included:

1. Ask test subjects to read a text sample aloud (use the same text sample for all test subjects).
2. Ask test subjects to read the test sample aloud with nothing in the ears and tell them that the way his/her own voice sounds correspond to one on a one to ten-point scale, with one being “very natural”, and ten being “very unnatural”.

3. Ask test subjects to read the same test sample aloud with a finger in both ears and tell them that this corresponds to ten on the one to ten-point scale.
4. Ask test subjects to place **be by ReSound™** or own hearing instruments in both ears and rate naturalness of his/her own voice on the one to ten-point scale. Test subjects can read the text sample aloud as many times as he/she finds necessary.

For experienced micro-BTE and CIC users, test subjects rated **be by ReSound™** compared to their own devices.

For assessment of physical fit, as with cosmetic appeal discussed above, in order to be considered a successful physical fit, **be by ReSound™** can protrude from the ear canal no more than two millimeters. A second aspect physical fit assessment was to determine the correct microphone tubing length and how many tube lengths must be available to fit close to 100% of all ears. Other factors involved in the determination of good physical fit were whether or not atypical pinna anatomy is present (e.g., very shallow concha cavum and concha cymba) and how ear canal size/shape would affect retention of the device in the ear.

To assess wearing comfort, participants reported their initial reactions to how comfortable **be by ReSound™** was to wear, as well as their impressions over a several week trial period. More specifically, they were asked to rate comfort of the devices in their ears while sitting, speaking, chewing, smiling, and moving, as well as after removing and inserting the instruments five times. Finally, participants indicated whether the devices remained in position and were comfortable enough to wear throughout each day. For experienced micro-BTE and CIC users, test subjects rated **be by ReSound™** compared to their own devices.

Additionally, protection from wind noise through microphone placement in the concha cymba area was examined. Subjective ratings were obtained for comfort in wind noise, as well as speech intelligibility in wind noise. Note that **be by ReSound™** does not utilize a wind noise reduction algorithm. It is not necessary. To rate their experiences when using **be by ReSound™** in the presence of wind noise, participants could choose from a list of responses, which included:

1. Are you bothered by wind noise?

2. Can you hear wind noise in the hearing instruments but prefer to wear the devices, as you can also hear better while wearing them?
3. Can you hear wind noise in the hearing instruments but would prefer that the wind noise was reduced, even though this would also affect your audibility of, for instance, speech understanding while in a windy environment?

For experienced micro-BTE and CIC users, test subjects rated **be by ReSound™** compared to their own devices.

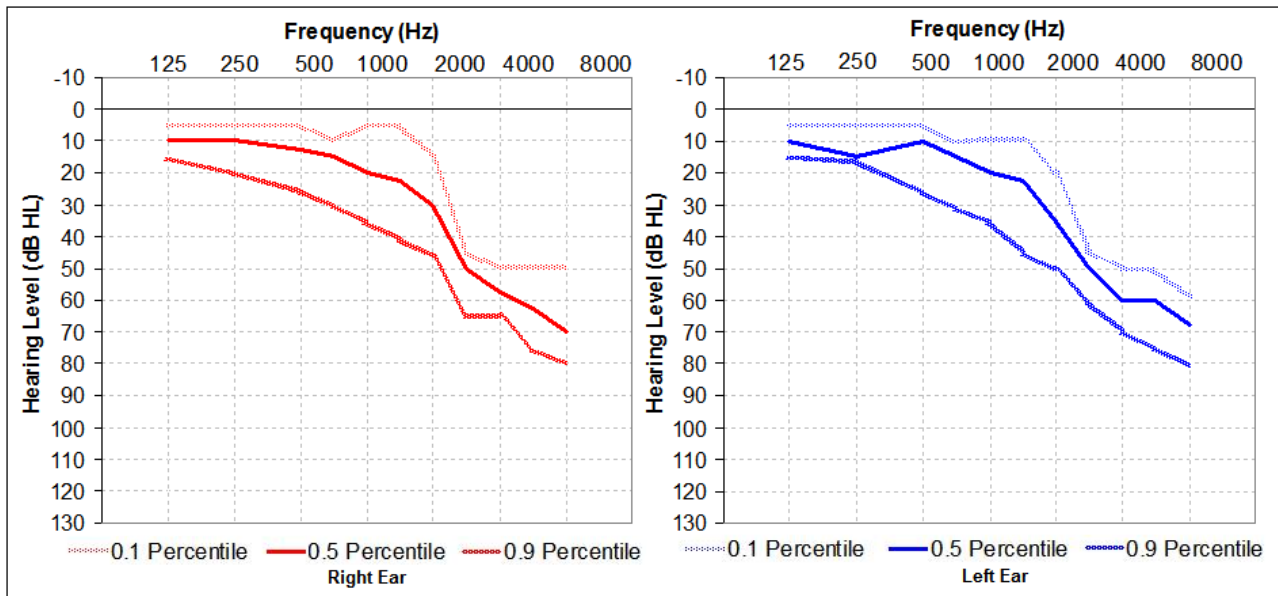
Lastly, sound quality was measured both subjectively and objectively. Objective measures included real ear insertion gain (REIG), precision of G50 and G80 levels, and precision of maximum stable gain (MSG). Subjective measurements included the Abbreviated Profile of Hearing Aid Benefit (APHAB) and the Hearing Aid Satisfaction Scale (HASS). For experienced micro-BTE and CIC users, test subjects rated **be by ReSound™** compared to their own devices.

#### Oldenburg Trial:

Twenty test subjects participated in the Oldenburg trial. Four subjects were experienced hearing instrument users, one subject currently tests hearing instruments for daily use, six subjects were first time users, and nine subjects were non-hearing instrument users with some experience with hearing instrument studies. Test subjects rated sound quality and wearing comfort (as pertains to sound) on a rating scale in which the lower the numerical value, the worse the rating, and the higher the numerical value, the higher the rating.

Micro-BTEs were fit using the prescribed fit settings. Directional microphones were set to fixed directionality, and noise reduction and other features were disabled. Figure 5 shows the ranges of 90% of hearing threshold levels.

**Fig. 5: Hearing Threshold Levels (HTL's)**



Source: Oldenburg Trial, sponsored by ReSound (N= 20).

Wearing comfort was rated after the hearing instruments were fit, and scaling was such that the higher the number, the better the rating. The categories used for rating included wearing comfort, loudness comfort, sound quality, and quality of own voice. Sound environments were rated for each of the hearing instruments, including office talk, cafeteria talk, discotheque, shopping center, and kitchen cutlery. For each of these sound environments, the following areas were rated:

1. Loudness
2. Overall sound quality
3. Do the sound environments sound:
  - Natural?
  - Sharp or Shrill?
  - Tinny?
  - Dull?
  - Scratchy or crackling?
  - Reverberant or echoey?

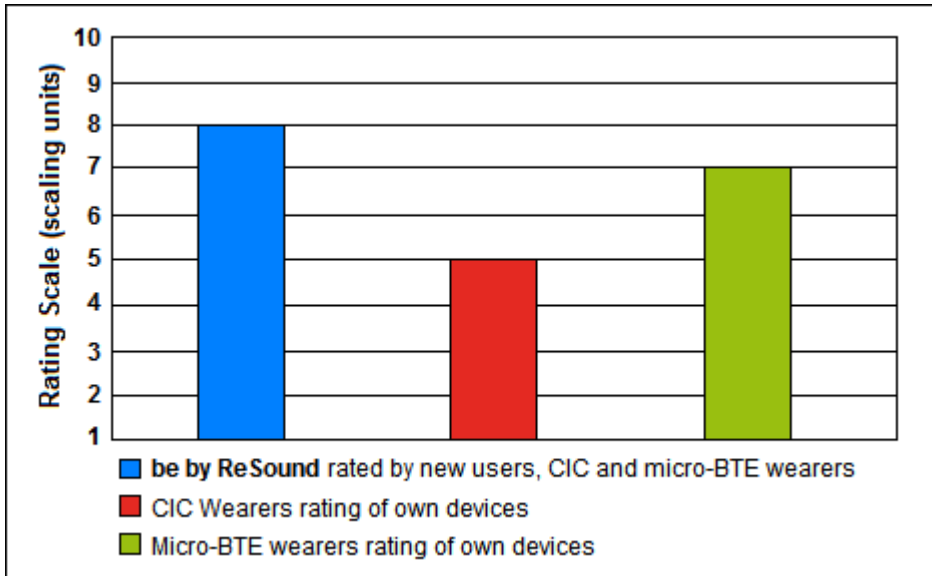
## 4. Results

### Internal Trials

#### Cosmetic Appeal

Test subjects' rating of **be by Resound**<sup>TM</sup> in terms of cosmetic appeal was very high (figure 6).

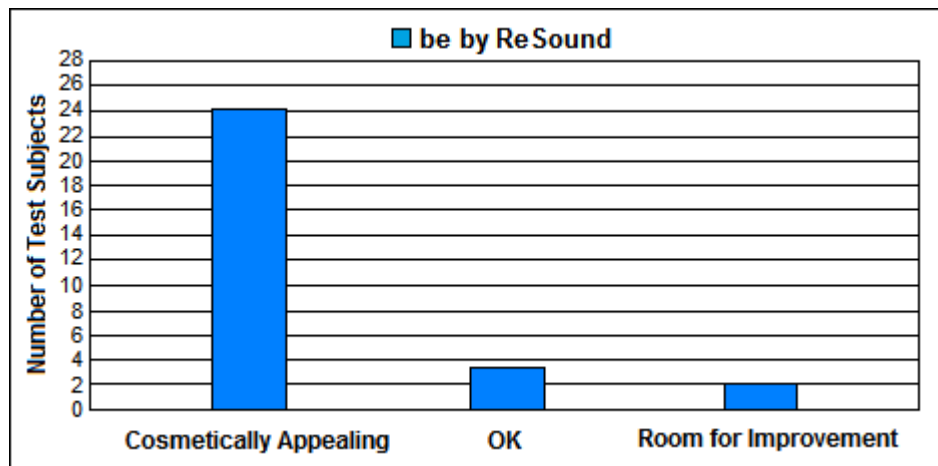
**Fig. 6: Cosmetic Acceptance Rating**



Source: Pre-Alpha 1, Pre-Alpha 2, and Alpha Trials (N= 86)

Ratings for **be by ReSound**<sup>TM</sup> were found to be comparable to micro-BTEs and better than for CICs. As well, inexperienced users also reported **be by ReSound**<sup>TM</sup> as cosmetically appealing. Test subjects were also asked whether or not **be by ReSound**<sup>TM</sup> was cosmetically appealing, if it was just okay, or whether or not there was room for improvement (figure 7).

**Fig. 7: Test Subjects' Cosmetic Appeal Comments**



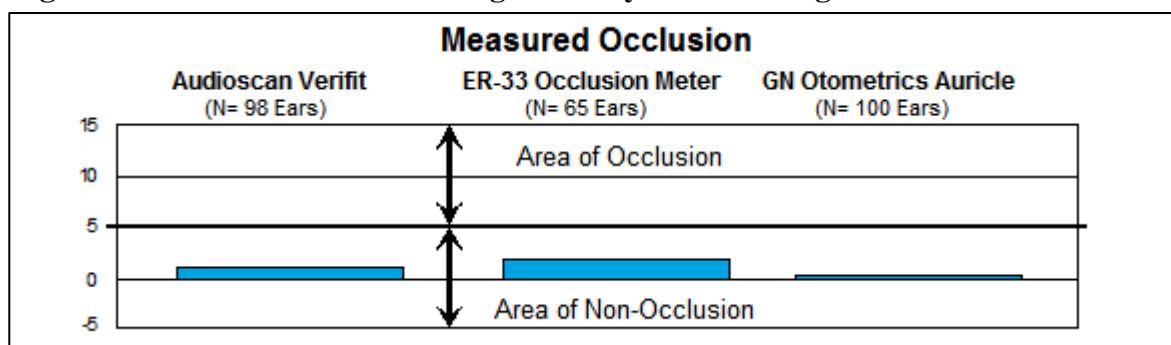
Source: Pre-Alpha 1, Pre-Alpha 2, and Alpha Trials (N= 30).

The majority of test subjects rated the cosmetic appeal of **be by ReSound™** as high. This is a very significant point, as one of the primary deterrents for non-hearing instrument users is cosmetic appeal. Both test subjects inexperienced with hearing instruments and those with experience wearing either micro-BTEs or CICs also rated the cosmetic appeal of **be by ReSound™** as high. This suggests that **be by ReSound™** will prove to be a significant cosmetically-appealing alternative to current devices owned by experienced end-users, and **be by ReSound™** will help inexperienced users with cosmetic concerns to be more open to wearing hearing instruments sooner after they are diagnosed with a hearing impairment.

### Occlusion

Using a variety of test measures, 241 of 263 (92%) adult ears tested were measured as non-occluding (figure 8).

**Figure 8: Occlusion Measures Using a Variety of Measuring Methods.**



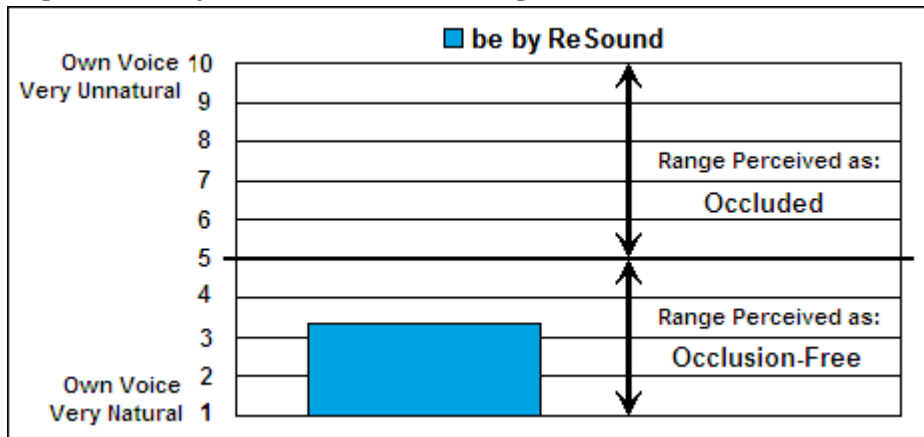
Source: Data compiled from internal trials (N= 263).

The mean objective occlusion effect was 1 dB (SD 1 dB) which is comparable to the objectively determined occlusion of 0 dB for the type of open dome used for many micro-BTE fittings<sup>1</sup>.

In testing this product, it was anticipated that objectively measured occlusion would generally be greater for female ears than for male ears. This was based on findings that ear canals in females have smaller dimensions and smaller volumes than male ears. It follows that the device would occupy proportionally more space in female ears, and it was thus expected that this would be reflected in greater occlusion effect in female ears. **be by ReSound™** was placed in 263 adult ears to determine the fit in the ear. Contrary to expectations, no significant gender differences in objective occlusion were revealed between the 136 adult male ears and 127 adult female ears tested.

Perceived occlusion ratings included test subjects that were inexperienced users, experienced users of CICs, and experienced users of micro-BTEs. The overall subjective rating for **be by ReSound™** was non-occluding (figure 9).

**Figure 9: Subjective Occlusion Rating.**

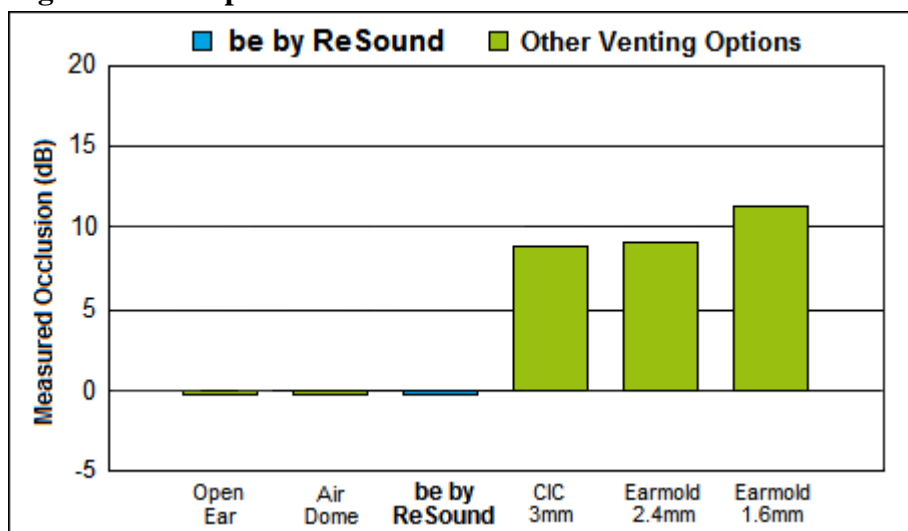


Source: Data compiled from internal trials (N= 148).

Internal trials revealed that **be by ReSound™** been verified as a non-occluding fit, and trial participants perceived **be by ReSound™** to be an open fit. The benefit for end-users is that not only is **be by ReSound™** a cosmetically appealing instant-fit device, but for the majority of end-users, occlusion will not be experienced.

As well, to further verify the openness of **be by ReSound™**, comparisons can be made to not only micro-BTEs but to CICs and different earmold venting options (Figure 10).

**Figure 10: Compared Occlusion Measures**



Source: **be by ReSound™** data from internal trials (N= 263). All other data from Kiessling et al, 2005.

Referencing data from Kiessling et al, 2005, **be by ReSound™** can be considered an open fit solution comparable to micro-BTEs. The method of measurement used in Kiessling et al, 2005 was similar to objective occlusion measures of **be by ReSound™** from internal trials.

The occlusion effect was measured objectively, and for each test subject, both ears were measured. All measurements were conducted in a sound-insulated audiometric test booth. Objective occlusion measures were performed with the GN Otometrics VisibleSpeech probe microphone system. After placement of a probe tube in the ear canal, a reference response was recorded with an open ear canal. The test subjects were asked to vocalize the vowel /ee/ at approximately 75dB SPL. This process was then repeated for each type of earmold connected to a BTE hearing instrument. The BTE instruments were turned off while measurements were conducted. Results of these measurements show the difference in frequency response compared to an open ear canal. To quantify the occlusion effect, a three-frequency average (250, 500, and 750Hz) was taken of the real ear sound pressure level for the test condition minus the three-frequency average of the sound pressure level for the non-occluding condition. When results are compared to occlusion data from internal trials, the openness of **be by ReSound™** is comparable to micro-BTEs.

#### *Physical fit*

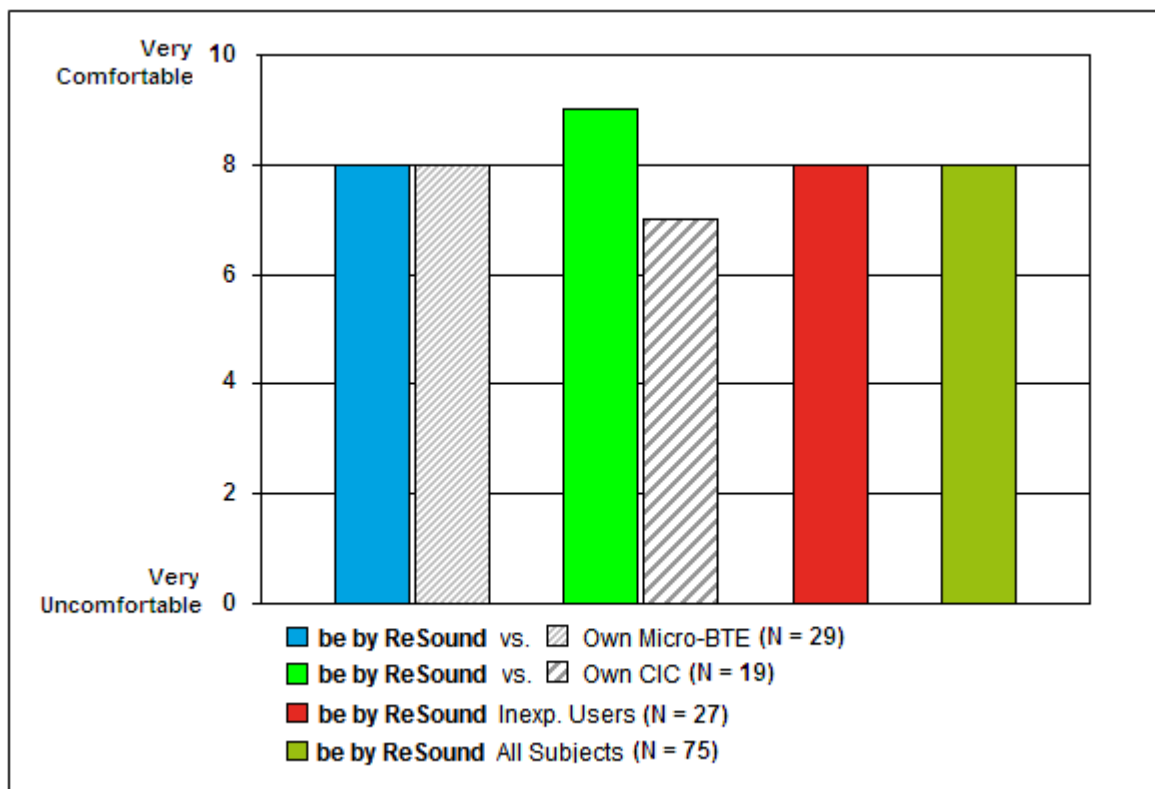
**be by ReSound™** was judged as an acceptable fit for most test subjects. As **be by ReSound™** is an instant-fit device, not all test subjects' ear canals would accommodate the device. A successful fit was determined to be a protrusion from the opening of the ear canal by no more than two millimeters. Overall, **be by ReSound™** was determined to be a well-fitting device in the majority of cases. Physical fit within male ear canals was better than for female canals do to overall larger ear canal sizes. In addition to physical fit within the ear canal, the minimum number of tubes that would accommodate the most number of ears was found to be five. Internal trials found that a selection of five tube lengths can accommodate 94% of adult ears.

#### *Wearing Comfort*

During internal trials, participants wore **be by ReSound™** from four to eight weeks, and datalogging indicated a somewhat wide range of wearing times ranging from a few hours per day to more than 15 hours per day, with a conservative average estimate of seven hours per day.

The participants in these trials were either inexperienced with amplification, or were experienced CIC or micro-BTE wearers. All were asked to rate wearing comfort on a rating scale from 1 to 10 with one being “uncomfortable” and 10 being “very comfortable”. As shown below, **be by ReSound™** is rated highly in terms of comfort by all three groups of participants. For micro-BTE users, **be by ReSound™** was rated comparably comfortable, and CIC users, **be by ReSound™** was rated as more comfortable than their own devices. Inexperienced users also rated **be by ReSound™** as high (figure 11).

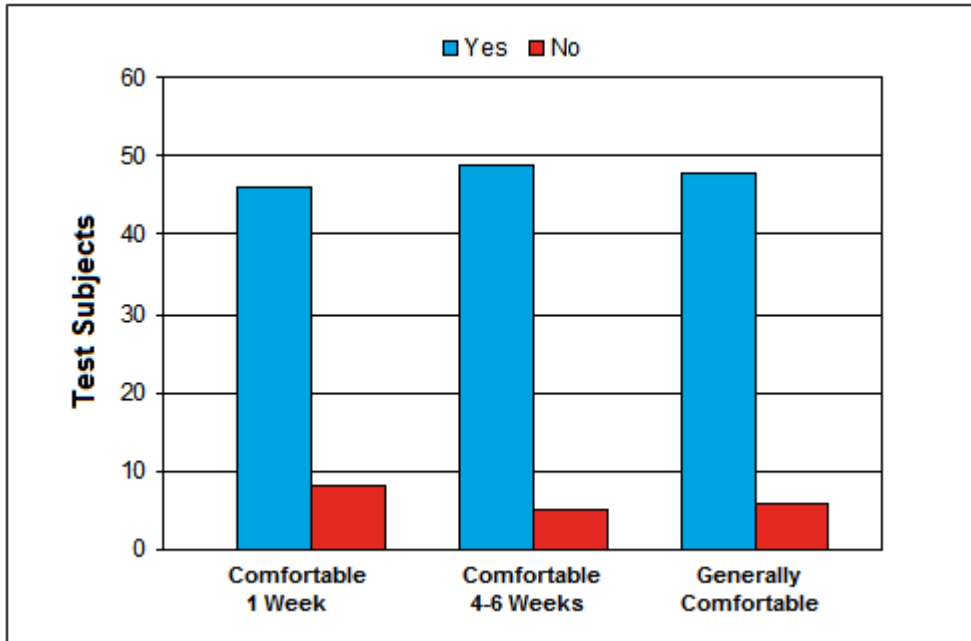
**Fig. 11: Median Wearing Comfort Rating**



Source: Data compiled from internal trials (N= 75).

It can thus be concluded that **be by ReSound™** will be perceived by all users as comfortable, and comparably comfortable to micro-BTEs and more comfortable than CICs. Also investigated was the wearing comfort of **be by ReSound™** over the course of several weeks (figure 12).

**Fig. 12: Wearing Comfort Ratings Over Time.**



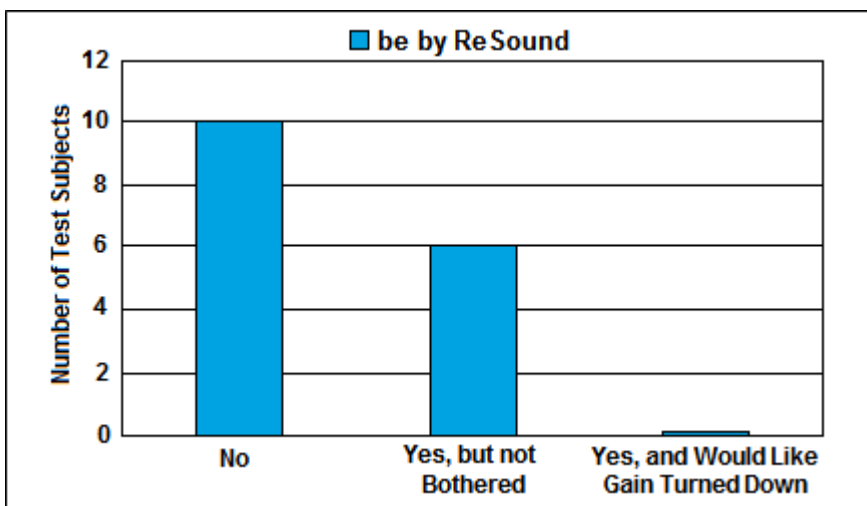
Source: Pre-Alpha 2 and Alpha Trials (N= 54).

What this means is that end-users will experience initial and continued comfort with **be by ReSound™**. In addition, ease of use was investigated as a part of wearing comfort. Results revealed that insertion and removal were easy to accomplish. These results suggest that end-users will generally have fewer complaints of wearing discomfort or problems with insertion and removal.

*Wind noise protection*

Subjective ratings of wind noise reduction were very positive. First, test subjects were asked if they could hear wind noise while wearing **be by Resound™** (figure 13).

**Fig. 13: Can Here Wind Noise?**

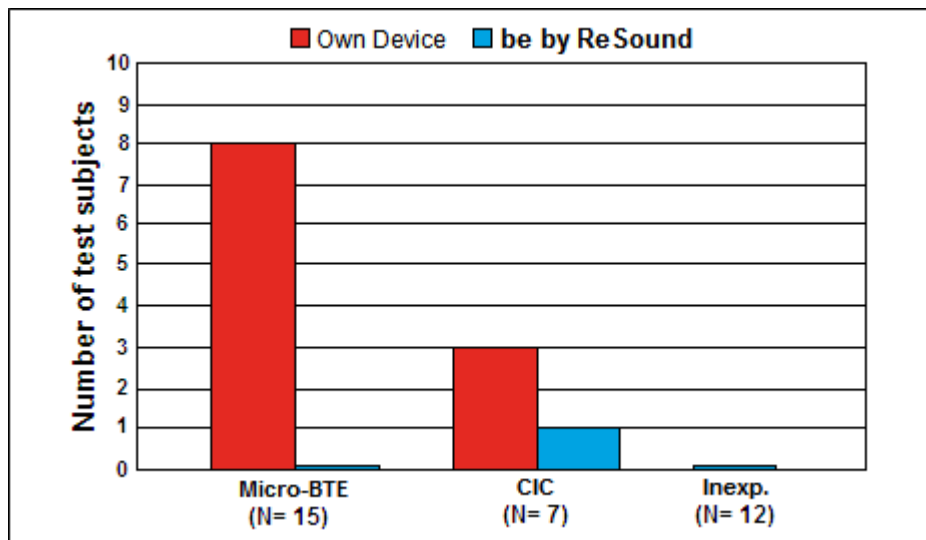


Source: Alpha trial (N= 16).

Based subjective ratings of wind noise, as well as spontaneous comments from end-users, **be by Resound™** can be worn in windy conditions without the hassle of wind noise. For experienced end-users that have worn any form of BTEs in the past, as well as for end-users that spend significant amounts of time outdoors, the protection from wind noise that **be by Resound** offers will be a significant benefit.

Experienced CIC and micro-BTE users were also asked to rate **be by Resound™** as compared to their own devices in the presence of wind noise. Inexperienced users were also asked to rated wind noise. Most noticeable was degree to which micro-BTE users were bothered by wind noise as compared to **be by Resound™** (figure 14).

**Fig. 14: Bothered by Wind Noise**



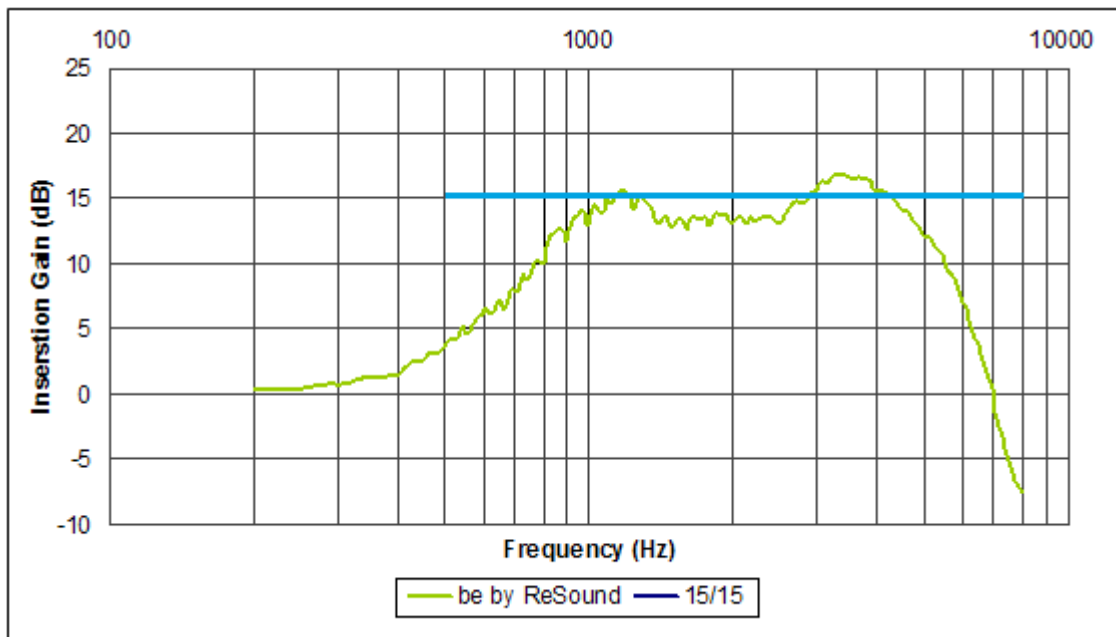
Source: Pre-Alpha 2 Trial (N= 35).

Wind noise can be a chief complaint from end-users, especially those who are active in outdoor activities. While noise reduction algorithms can be very good at make listening more comfortable in windy environments, the disadvantage is that speech intelligibility may be reduced. With **be by Resound™**, because of the unique microphone placement concha cymba area, a wind noise reduction algorithm is not necessary, and speech intelligibility is not affected.

### Sound quality

Because of the non-occluding fit of **be by ReSound™**, end-users' own voice will sound natural, and both low frequency sound and sound that occurs at a higher input level do not require amplification. In addition, the frequency response of **be by ReSound™** has been verified numerous times (figure 15).

**Fig. 15: Real Ear Insertion Gain (REIG).**



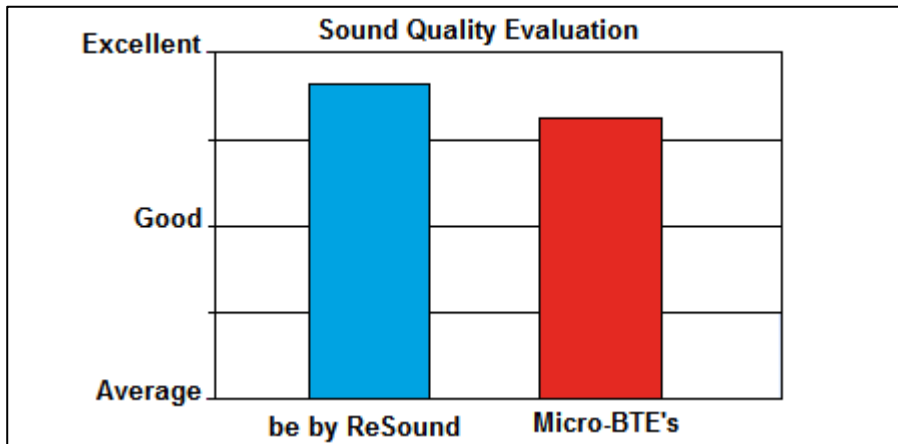
Source: Data compiled from internal trials ( $N = 117$  ears).

Results show that the frequency response is relatively broad and flat, which is likely due to receiver placement in the ear canal. Additionally, microphone placement in the concha cymba area takes advantage of the sound enhancing and sound attenuation of the pinna and head.

## Oldenburg Trial

Subjective ratings of the sound quality of **be by ReSound™** were good, indicating that **be by ReSound™** was favored over micro-BTEs (figure 16).

**Fig. 16: Overall Sound Quality Evaluation**

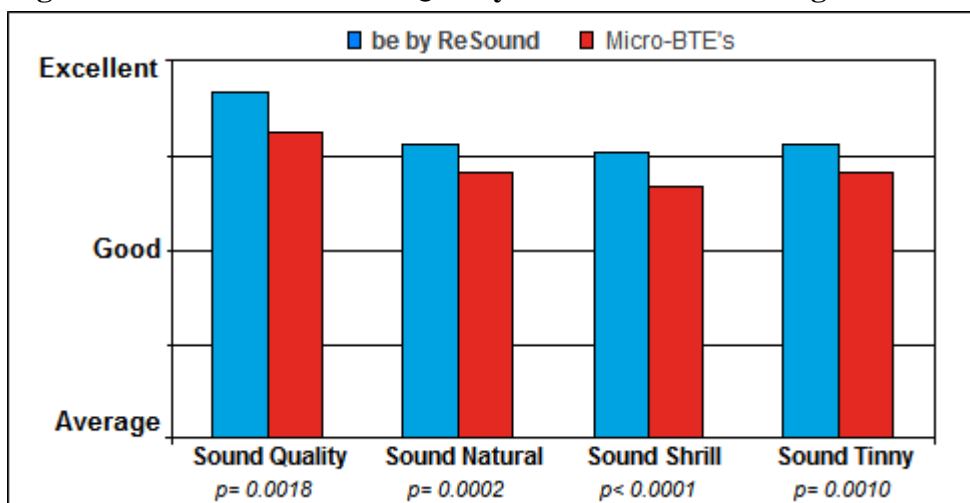


Source: Oldenburg Trial, sponsored by ReSound (N= 20). Significant difference  $p= 0.0001$ .

Within each of the five acoustic listening environments, sound quality was rated on a one to five-point scale. The overall ratings were better for **be by ReSound™** than for the three micro-BTEs in the trial. The level of significance was  $p= 0.0001$ , which gives us over a 99% certainty that **be by ReSound™** was rated higher than micro-BTEs and that the observed difference is unlikely to have occurred by chance or random fluctuation.

When examining various aspects of the listening experience for all five listening environments, **be by ReSound™** was preferred over micro-BTEs in four out of eight sound categories (figure 17).

**Fig. 17: Evaluation of Sound Quality for Different Listening Environments**

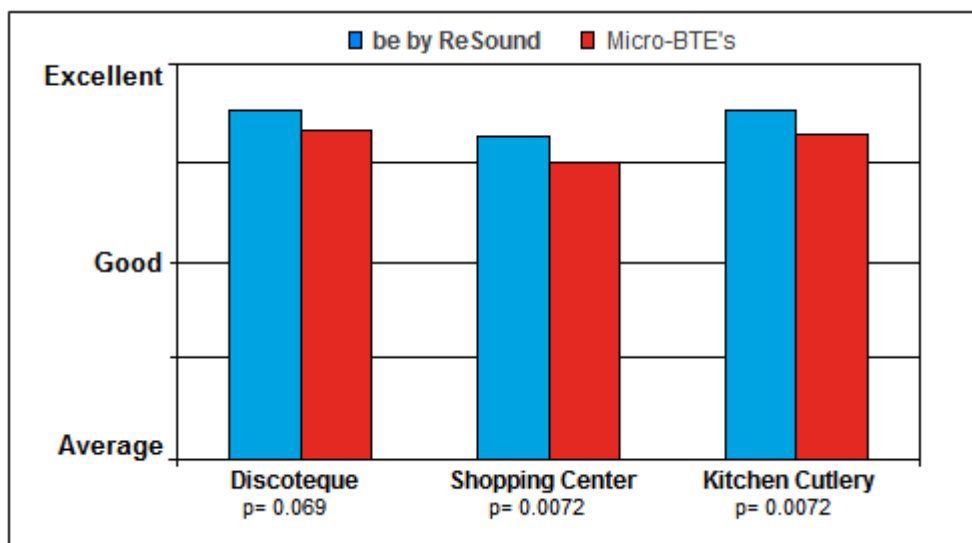


Source: Oldenburg Trial, sponsored by ReSound. (N= 20).

For the remaining four sound categories, **be by ReSound™** was comparably rated by test subjects. What this means is that for day-to-day use of **be by ReSound™**, end-users will have less of a resistance to wearing the device and will report that the sound quality is clear, natural, and comfortable.

When examining different listening environments, **be by ReSound™** sound quality was preferred over micro-BTEs in three out of five listening environments (figure 18).

**Fig. 18: Evaluation of Listening Environments for Different Sound Categories**



Source: Oldenburg Trial, sponsored by ReSound (N= 20).

For the remaining two listening environments, **be by ReSound™** was rated as comparable to micro-BTEs. Based on these results, end-users will also be more likely to wear **be by ReSound™** in all listening environments.

## 5. Discussion

One of the areas of interest with **be by ReSound™** was the determination of how a candidate is chosen for the device. Assuming the candidate's hearing loss is similar to that of the ReSoundAIR, three key areas for a successful fit must be considered during assessment for candidacy:

- **be by ReSound™** is a cosmetically appealing fit:
  - The correct tube length must be determined.
  - An acceptable shape of the concha bowl and concha cymba must be determined for maximum retention of **be by ReSound™**.
  - The maximum amount of protrusion of the body of **be by ReSound™** from the opening of the ear canal should be no more than two millimeters. Ideally, the body of **be by ReSound™** should be flush with the opening of the ear canal.
- **be by ReSound™** is comfortable to wear:
  - As with a cosmetically appealing fit, an acceptable ear canal size and pinna shape will be necessary for an end-user to wear **be by ReSound™** comfortably on a day-to-day basis.
  - Data from wearing comfort ratings in the internal trials for **be by ReSound™** suggest that the chance of wearing discomfort for **be by ReSound™** is low.
- **be by ReSound™** is non-occluding:
  - Even with less ideal fits, **be by ReSound™** will be an open fit for the majority of end-users.

Cosmetic ratings were benefits of open micro-BTE hearing instruments are clearly established. Hearing-impaired individuals with normal or near normal low frequency hearing and sloping high frequency hearing losses can be provided with comfortable, occlusion-free, cosmetically appealing instant fittings with open micro-BTE instruments.

Based on the total number of ears in which the device was attempted to be fit, it is estimated that **be by ReSound™** will fit in 80% of adult female ears and 90% of adult male ears if slight protrusion from the canal is cosmetically accepted (less than or equal to two millimeters of protrusion). If the device physically fits in the ear, the occlusion will probably be less than a few decibels.

Internal trials have demonstrated that by far the majority of test subjects experienced a non-occluding instant fit with **be by ReSound™**. Utilizing both male and female ears, objective occlusion was found to be low. It was anticipated that females would experience more occlusion than males, but this was not the case. This was likely due to the fact that potential test subjects that had an unacceptable fit of **be by ReSound™** within the ear canal we excluded. This underscores the importance of staying within the recommended parameters for an acceptable fit.

Thus far, results support **be by ReSound™** as a cosmetically appealing, instant fit, non-occluding, and comfortable-to-wear hearing instrument sound quality. Of notable significance is the new form factor that **be by ReSound™** has to offer, as some end-users may still reject a behind the ear instrument. There are certain disadvantages to the micro-BTE style, such as interference with glasses and from hair noise, and susceptibility to wind noise. CIC devices may be considered an alternative for these end-users, and indeed, depending on how well the CIC fits within an ear canal (i.e., whether or not there are space limitations for a given ear canal), similar benefits can be achieved. However, occlusion cannot be satisfactorily overcome in many cases. Because of all of the great positive benefits of **be by ReSound™**, most notably cosmetic appeal and great sound quality, both new and experienced users will have yet another hearing instrument that will help them overcome one of the biggest barriers to amplification: stigma.

## References

1. Kiessling J, Brenner B, Jespersen CT, Groth J Jensen OD. Occlusion effect of earmolds with different venting systems. *J. Am. Acad. Audiol.* 2005;16:237-249.