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**Datasheet for the decision
of 21 April 2026**

Case Number: T 0882/24 - 3.5.05

Application Number: 16739697.7

Publication Number: 3251376

IPC: H04R1/10, A61F11/08, A61F11/14

Language of the proceedings: EN

Title of invention:
Active hearing protection device and method therefor

Patent Proprietor:
Eers Global Technologies Inc.

Opponent:
K/S HIMPP

Headword:
Individual acoustic characteristics/EERS

Relevant legal provisions:
EPC Art. 54
RPBA 2020 Art. 12(6), 13(2)

Keywords:

Admittance of late-filed novelty objection - (yes): opposition division's *prima facie* assessment incorrect + circumstances of the appeal case justify admittance

Novelty - main request (no)

Admittance of claim request filed after Art. 15(1) RPBA communication - auxiliary request 3 (no): no "exceptional circumstances" + amendment gives rise to new objections

Catchword:

If a discretionary decision not to admit a submission is based on a flawed technical or factual assessment by the opposition division – such as the erroneous *prima facie* finding regarding the disclosure of document D1 in the present case – the board may overturn that discretionary decision to assess the underlying merits of the submission *de novo* (see point 2.3.2 of the Reasons).



Beschwerdekammern

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Case Number: T 0882/24 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 21 April 2026

Appellant:

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted/
electronically transmitted on 3 May 2024
concerning maintenance of the European Patent
No. 3251376 in amended form.**

Composition of the Board:

Chair

K. Bengi-Akyürek

Members:

K. Peirs

C. Heath

Summary of Facts and Submissions

I. The appeal of the opponent lies from the interlocutory decision of the opposition division to maintain the opposed patent in amended form in accordance with the proprietor's "**auxiliary request 2**" (Article 101(3)(a) EPC).

The opposition division found that the ground for opposition under Article 100(a) EPC in conjunction with Article 54 EPC prejudiced the maintenance of the patent as granted. It also found the proprietor's "auxiliary request 1" not to be allowable under Article 54 EPC.

In the appealed decision, the opposition division took into account the following prior-art document:

D1: US 2014/0126734 A1.

II. Oral proceedings before the board were held on 21 April 2026.

The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed (**main request**), or that the patent be maintained on the basis of **auxiliary request 3** filed after notification of the board's communication under Article 15(1) RPBA.

At the end of the oral proceedings, the board's decision was announced.

III. Claim 1 of the **main request**, i.e. of auxiliary request 2 maintained by the opposition division, reads as follows (board's feature labelling):

- (a) "A hearing protection device (20) for protecting an ear of a user while reducing an occlusion effect (OE) and an isolation effect (IE) induced by the hearing protection device (20), the device (20) comprising:
- (b) - an earpiece (22) adapted to be located into the ear for occluding an ear canal (10) of the ear, said earpiece having an inner-ear microphone (IEM) (24) adapted to be in fluid communication with the occluded ear canal (10), an outer-ear microphone (OEM) (26) adapted to be in fluid communication with an adjacent environment outside the ear, and a receiver (28) adapted to be in fluid communication with the occluded ear canal (10); and
- (c) - a controller (30) connecting to the inner-ear microphone (IEM) (24) to receive an internal signal therefrom over a predetermined frequency range and to the outer-ear microphone (OEM) (26) to receive an external signal therefrom over the predetermined frequency range, said controller (30) digitally actively processing the internal and external signals taking into account individual acoustic characteristics (40) of the occluded ear canal (10) and sending a processed signal to the receiver (28),
- (d) and wherein an actual signal that is heard by the ear of the user with the ear canal of said ear being occluded is configured to have a sound pressure level distribution being substantially uniformly attenuated over the predetermined frequency range relative to a corresponding virtual sound pressure level distribution of a virtual

signal that would be heard by the ear of the user with the ear canal of said ear being non-occluded, the actual signal compensating for occlusion (OE) and isolation (IE) effects of the earpiece (22), wherein the controller (30) includes:

- (e) - for accounting of the occlusion effect, OE, of the earpiece (22), an OE compensator (56) digitally compensating the internal signal toward a target performance signal curve (54) into an OE compensated signal using the individual acoustic characteristics (40) and an acoustic plant response model (42) including the inner-ear microphone (24) and the receiver (28), the target performance signal curve (54) being derived from at least one of a pre-defined performance signal curve (48) and a monitoring of an OE induced signal (50); and
- (f) - for accounting of the isolation effect, IE, of the earpiece (22), an IE filter (60) digitally filtering the external signal toward a target system frequency response signal curve (70) into an IE filtered signal using the individual acoustic characteristics (40) and an acoustic system response model (44) including the inner-ear and outer-ear microphones (24, 26) and the receiver (28), the target system frequency response signal curve (70) being derived from at least one of a pre-defined loudness model curve (66) and a pre-defined passive attenuation signal curve (68) of the earpiece (22);
- (g) wherein the controller (30) is configured to send the processed signal combining the OE compensated and IE filtered signals to the receiver (28)."

IV. Claim 1 of **auxiliary request 3** differs from claim 1 of auxiliary request 2 underlying the appealed decision in that, between features (c) and (d), the following

feature has been added (board's feature labelling):

- (h) "wherein the individual acoustic characteristics (40) are determined upon insertion of the hearing protection device (20) in a preliminary identification phase (32), where the device uses test signals to gather information about the individual acoustics characteristics (40) of the user and their effect on the earpiece resulting acoustics,".

Reasons for the Decision

1. *Opposed patent - technical background*

1.1 The opposed patent relates to an "active hearing-protection device". According to the patent specification, musicians and other users often reject such a device due to a perceptual discomfort caused by two main factors:

- **Occlusion effect (OE)**: occluding the ear canal traps bone-conducted sound, particularly the low frequencies generated by the user's own voice. This results in an unnatural, "boomy" perception of the user's own speech or singing.
- **Isolation effect (IE)**: the passive attenuation inherent to the hearing-protection device blocking the ear canal affects sound unevenly, typically reducing high frequencies more heavily than low frequencies. This shifts the ear's natural resonance and leaves the user feeling isolated from their surrounding acoustic environment.

1.2 The invention underlying the opposed patent provides an "active hearing-protection device" that compensates for both the occlusion and isolation effects while adapting to the user's specific ear anatomy.

1.3 Figure 8 of the opposed patent, reproduced below, best illustrates the complete system architecture.

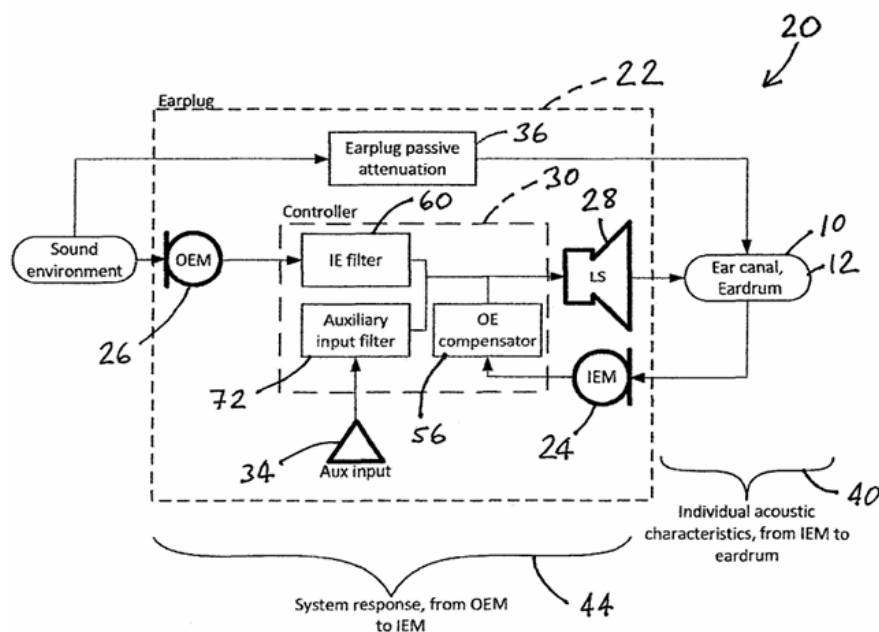


FIG.8

An outer ear microphone (OEM, 26) captures the external acoustic environment. An inner ear microphone (IEM, 24) monitors the actual acoustic signal inside the occluded ear canal (10) near the eardrum (12). A controller (30) applies two primary digital corrections:

- An OE compensator (56) that reduces low-frequency trapped sound using a feedback loop based on the plant response (42; see Figure 6 of the patent).
- An IE filter (60) that adjusts the incoming external signal to compensate for uneven passive

attenuation (36), ensuring that the signal sent to the loudspeaker (LS, 28) yields a uniform sound-pressure-level attenuation.

2. *Auxiliary request 2: lack of novelty - admittance*

2.1 In Reasons 7.4 of the appealed decision, the opposition division did not admit the late-filed novelty objection against claim 1 of **auxiliary request 2**. This was based on a *prima facie* finding that the IE filter " K_{ht} " of document **D1** (paragraph [0052], equation (2)) did not use "individual acoustic characteristics" as per **feature (f)**.

2.2 Under Article 12(6), first sentence, RPBA, the board shall not admit objections which were not admitted in the proceedings leading to the decision under appeal, unless the decision not to admit them suffered from an error in the use of discretion or unless the circumstances of the appeal case justify their admittance.

2.3 Regarding novelty of claim 1 of auxiliary request 2, the board finds that the circumstances of the present appeal case indeed justify the admittance and full examination of the appellant's objection in this regard:

2.3.1 The appellant convinced the board that the opposition division's aforementioned *prima facie* assessment regarding the "IE filter" was erroneous and that it was indeed appropriate to assess document D1's disclosure regarding the "individual acoustic characteristics" as mentioned in claim 1 on the merits. This is because the appellant persuasively put forward that the transfer function G_{pfb} , used in the system of document D1 (cf.

paragraphs [0045] and [0052], in particular equation (2)) for the calculation of IE-filter K_{ht} , appears to inherently represent such "individual acoustic characteristics", as the respective frequency response is determined through the headphones and with the feedback active-noise reduction system being active, an arrangement that *prima facie* relies on an individual tuning.

- 2.3.2 During the oral proceedings before the board, the respondent argued against admitting the appellant's novelty objection, asserting that the appellant could not have been taken by surprise when auxiliary request 2 was filed during the first-instance oral proceedings. The respondent emphasised that the features of the independent apparatus claim underlying auxiliary request 2 had already been introduced in the preceding auxiliary request 1, which was filed in response to the opposition division's preliminary opinion. Consequently, in the respondent's view, the appellant should have raised its novelty objection against the independent apparatus claim at that earlier stage, rather than restricting its attack on auxiliary request 1 solely to a deficiency in the independent method claim.

The board is not convinced by this argument. An opponent is not procedurally obliged to present every conceivable objection exhaustively against a pending claim request if a single objection is already sufficient to prejudice the maintenance of the patent on the basis of that request. When a proprietor subsequently files a new claim request to remedy a deficiency, this normally creates a new factual and procedural situation. An opponent must then be given the opportunity to advance pertinent arguments against

this newly filed claim request. Furthermore, the board's review of a discretionary decision is not limited to assessing whether a party was procedurally "surprised". If a discretionary decision not to admit a submission is based on a flawed technical or factual assessment by the opposition division – such as the erroneous *prima facie* finding regarding the disclosure of document D1 in the present case – the board may overturn that discretionary decision to assess the underlying merits of the submission *de novo*.

2.4 As a result, the board used its discretion to admit the objection as to lack of novelty (Article 54 EPC) over document D1 against auxiliary request 2 underlying the appealed decision into the appeal proceedings (Article 12(6), first sentence, RPBA).

3. *Main request: claim 1 - novelty*

3.1 In assessing novelty of claim 1 of the **main request** over document **D1**, the crucial point of discussion between the parties was the interpretation of the term "individual acoustic characteristics" as recited, for instance, in **feature (f)**. The respondent construed this term as meaning the "*acoustic properties of the specific, individual user's occluded ear canal (shape, length, stiffness, eardrum impedance)*" and contested its disclosure by D1.

3.2 However, the board notes that, even when adopting the respondent's construction of this term, the definition of transfer function G_{pfb} set out in paragraph [0045] of D1 – namely as a frequency response "*from noise to ear, through the headphones and with feedback ANR active*" – requires measuring noise-to-the-ear when the device is *in use*. The skilled reader would directly and

unambiguously conclude from this that the transfer function unavoidably contains information regarding the "individual acoustic characteristics" of the cavity between the earpiece and the eardrum resulting from the insertion of the earpiece into the user's ear canal. This information undoubtedly encompasses parameters such as the shape, length, stiffness or eardrum impedance of this cavity. Consequently, filter K_{ht} , calculated by virtue of equation (2) indicated in paragraph [0052] of D1, uses the "individual acoustic characteristics" as required by feature (f).

3.3 During the oral proceedings before the board, the respondent argued that, while the measurement mentioned in paragraph [0052] of D1 encompassed "acoustic characteristics", these characteristics were not *individual* in nature. The respondent submitted that the definition of G_{pfb} in paragraph [0045] of D1 merely establishes a general parameter rather than an individual one and fails to specify how the parameter is set. It emphasised that D1 did not explicitly mention the word "individual" in this context and posited that D1 targets a general "cohort of people" rather than a specific user. Furthermore, the respondent argued that the laboratory measurements mentioned in paragraph [0075] of D1 related to a different experimental setup that could not be transferred to individual users in the field.

3.4 These arguments could not convince the board for the following reasons:

3.4.1 In regard to the respondent's assertion that D1 targets a "cohort of people" rather than a specific user, the board agrees with the appellant that the concept of an "individual" characteristic inherently involves a

question of granularity. As the appellant convincingly argued, even an individual user's acoustic characteristics vary depending on physiological states (such as time of day or blood pressure). Furthermore, if a specific acoustic model successfully fits a defined "cohort of people", it still captures the "individual acoustic characteristics" distinguishing that cohort from others. For the respondent's argument to succeed, the skilled reader would have to understand D1 as applying identical parameters universally to all users regardless of their physical traits (i.e. corresponding to a "*one size fits all*" or "*one size fits most*" approach). However, the board can find no textual basis for such a reading of D1.

3.4.2 In fact, the board finds that D1 *exclusively* contains references indicating the opposite. In view of paragraphs [0045], [0078], [0079] and [0083] as well as Figure 3 of D1, the board is convinced that this document is concerned with settings tailored to a particular individual.

3.4.3 To explain this in more detail, the board concurs with the arguments brought forward by the appellant during the oral proceedings before the board, demonstrating that "individual acoustic characteristics" are inherently reflected in the "IE filter" of D1. As the appellant explained, paragraph [0045] of D1 defines G_{pfb} as the frequency response from noise-to-the-ear with the feedback active noise reduction (ANR) being active. When the ANR system is engaged, there is a mechanical and acoustic interplay between the earpiece and the user's ear canal. If the earpiece fits poorly, the ANR feedback loop will exhibit a different activity profile than if it fits perfectly. Thus, characterising the transfer function from noise-to-the-ear through the

headphones with an active ANR is technically impossible without taking the "individual characteristics" of the user's ear canal into account. This individual interplay is mathematically coined into transfer function G_{pfb} .

The appellant also correctly referred to Figure 3 of document D1, which depicts a system comprising an ear corresponding to an individual user alongside an earpiece, representing the physiological conditions shown in Figure 4 of D1. Furthermore, paragraph [0043] of D1 explicitly defines a transfer function as corresponding to the effect of various components on sounds moving between points in the system. Given that the skilled reader is instructed that the headphone system involves an earpiece inserted into an ear canal, the resulting transfer function necessarily models that specific acoustic environment. By modelling this specific environment, the transfer function inherently captures the acoustic traits that differentiate one user's occluded ear canal from another user's. The board agrees with the appellant that taking these individual traits into account does not require a direct geometric measurement of the canal's physical shape. Even without such a direct measurement, the "individual acoustic characteristics" are inherently used within the context of paragraph [0043] of D1, because the user's unique anatomy physically dictates the acoustic interplay required for the modelling of the underlying transfer function.

This individual tailoring is further supported by paragraphs [0078] and [0079] of D1, which describe measuring the occlusion effect and designing the ANR feedback loop to counterbalance that specific measured occlusion effect. In the board's view, this

demonstrates that the system of D1 tunes its feedback loop to an individual user. The skilled reader would immediately recognise that the IE filter according to equation (2) of D1 uses the "individual acoustic characteristics" in an analogous manner to suppress the isolation effect. This is because the transfer function G_{pfb} , upon which the calculation of the "IE filter" relies, inherently embodies these "individual acoustic characteristics" by its very definition, just as the physical determination of the occlusion effect does.

A definitive confirmation of this finding was provided by the appellant during the oral proceedings before the board. The appellant correctly identified the explicit instruction in paragraph [0083] of D1 that updated values of K_{on} and K_{ht} are "*iterated to find the best balance of desired ambient response and own-voice response*". This iterative adjustment process unequivocally demonstrates that D1 aims at fitting the relevant filters to the individual user, as the hear-through filter K_{ht} is explicitly mathematically adjusted based on the frequency response to the specific user's own voice.

3.4.4 The respondent's counter arguments in this regard are unpersuasive.

- First, relying on paragraph [0057] of D1, the respondent argued that different volume settings chosen by different users merely trigger the application of generic, pre-set filters. The respondent likened this to selecting different generic audio profiles on a mobile phone, arguing that this does not constitute using "*individual acoustic characteristics*". The board acknowledges that the mere selection of "different hear-through

filters" (paragraph [0057] of D1) does not inherently prove that those filters are individualised to a user's morphology. However, the respondent's argument fails because it ignores the origin of those filters. As established above, paragraph [0083] of D1 discloses that the filters are not created as generic factory presets but are instead populated using a highly specific, morphologically driven and iterative calibration process based on the user's "own-voice response".

- Second, regarding paragraph [0083] of D1, the respondent argued that the "own-voice response" merely captures the transient activity of the user speaking and is entirely distinct from the acoustic characteristics of the individual's ear canal. The board understands this argument to mean that measuring the own voice only provides information about the sound source and nothing about the acoustic cavity. However, this premise ignores the explicit wording of paragraph [0083] of D1, which refers to the own-voice *response*, and thereby contradicts fundamental principles of acoustics. In acoustics, a measured response is not merely dictated by the excitation source itself, but rather the result of that source interacting with and being shaped by its acoustic environment. By way of analogy, when air is blown across the open top of an empty bottle to create a sound, the air stream acts as the excitation source. The resulting pitch and resonance (i.e. the frequency response) are determined entirely by the physical volume and shape of the bottle. Similarly, when a user speaks, the bone-conducted vibration of their vocal cords acts as the excitation source. If the ear is plugged, this sound is trapped in the residual

volume between the earplug and the eardrum, causing a massive amplification of low frequencies known as the occlusion effect. The magnitude and profile of this amplification – which actually constitutes the own-voice response measured in D1 – depend entirely on the physical size of the user's ear canal, the impedance of their eardrum and the insertion depth of the earpiece. Therefore, measuring the "own-voice response" inside a plugged ear means that the individual's occluded ear-canal acoustics are directly and unambiguously taken into account. As an aside, the board notes that the patent specification itself (see, for example, paragraph [0053]) relies on comparing microphone signals to estimate the occlusion effect, which fundamentally requires the user to generate noise – such as speaking – to provide the necessary low-frequency content for the measurement. Consequently, the board concludes that both document D1 and the opposed patent utilise exactly the same underlying acoustic mechanism to physically measure the occlusion effect.

- Moreover, regarding the respondent's brief assertion during the oral proceedings that D1 fails to disclose an earpiece located in the ear, the board notes that the opposition division had already concluded in the appealed decision (see Reasons 5, page 8) that this feature is disclosed. In reaching that conclusion, the opposition division explicitly relied on paragraph [0067] of D1. This paragraph discusses "deep-canal earphones" and "earplugs" extending into the ear canal. As correctly pointed out by the appellant, the respondent did not contest this finding in its written appeal submissions or substantiate why this

finding was factually incorrect. Moreover, the board sees no reason to deviate from the opposition division's assessment in this regard.

3.5 As a result, the subject-matter of claim 1 of the main request (filed as auxiliary request 2 underlying the appealed decision) is not novel over the disclosure of D1. Therefore, the main request is not allowable under Article 54 EPC.

4. *Auxiliary request 3: admittance*

4.1 In relation to **auxiliary request 3**, this claim request constitutes an "amendment" to the respondent's appeal case made after notification of the board's communication under Article 15(1) RPBA (cf. point II above). Consequently, its admittance into the appeal proceedings is subject to the board's discretion under Article 13(2) RPBA.

4.2 The respondent argued that the board's preliminary opinion, which adopted the appellant's broader construction of the term "individual acoustic characteristics", constituted "exceptional circumstances" justifying the late filing of this request.

The board is not convinced by this argument. As correctly pointed out by the appellant, the interpretation of this specific term had already been fundamentally challenged in the appellant's statement of grounds of appeal (cf. point c) on page 7). The respondent was therefore fully aware of the appellant's objections from the outset of the appeal proceedings and should have filed any corresponding fallback positions, such as auxiliary request 3, with its

written reply to the statement of grounds of appeal. A board issuing a preliminary opinion that concurs with an appellant's long-standing argument does not constitute an "exceptional circumstance" within the meaning of Article 13(2) RPBA.

4.3 Moreover, the board finds that the admittance of auxiliary request 3 is also detrimental to procedural economy because the newly added **feature (h)** gives rise to new objections, at least under Article 123(2) EPC:

4.3.1 Feature (h) essentially specifies that the "individual acoustic characteristics" are determined upon insertion of the "hearing-protection device" in a *preliminary identification phase* during which "test signals" are used to gather information. The respondent relied on paragraph [0075] of the application as filed as the basis in view of Article 123(2) EPC for this amendment.

However, the board notes that paragraph [0075] does not disclose that the "individual acoustic characteristics" are definitively *determined* upon insertion. The original disclosure merely states that upon insertion of the "hearing-protection device", a *preliminary identification phase* can be triggered where the hearing-protection device uses "test signals" to *gather information*.

4.3.2 In addition, *gathering* information is not synonymous with *determining* the associated characteristics. For instance, the "hearing-protection device" could merely gather raw acoustic data during the *preliminary identification phase* and store it in a data logger or transmit it to an external device such as a smartphone, with the actual determination of the "individual acoustic characteristics" occurring only at a later

stage, i.e. at a stage subsequent to the *preliminary identification phase*. Yet, there is no direct and unambiguous indication in the application as filed that the "individual acoustic characteristics" must be *determined* in exactly the same phase as when the information is *gathered*.

- 4.4 Because the respondent failed to demonstrate "exceptional circumstances" and since the claim request introduces new issues under Article 123(2) EPC, the board exercised its discretion not to admit auxiliary request 3 into the appeal proceedings (Article 13(2) RPBA).

5. With no claim request on file that is both admissible and allowable, the patent has to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated