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**Datasheet for the decision
of 23 October 2025**

Case Number: T 2047/23 - 3.5.05

Application Number: 14181151.3

Publication Number: 2986030

IPC: H04R25/00, H01Q1/27

Language of the proceedings: EN

Title of invention:
A hearing aid with an antenna

Patent Proprietor:
GN Hearing A/S

Opponent:
Oticon A/S

Headword:
Hearing-aid antenna and planes/GN HEARING

Relevant legal provisions:
EPC Art. 54, 100(a), 123(2)
RPBA 2020 Art. 12(6), 13(1)

Keywords:

Claim construction: "plane" not restricted to a *physical* plane
Novelty - main request, 2nd and 13th auxiliary requests (no)
Admittance - 1st, 3rd and 8th to 12th auxiliary requests (no):
amendments should have been submitted earlier
Added subject-matter - 4th and 5th auxiliary requests (yes)
Admittance - 6th and 7th auxiliary requests (no): no erroneous
exercise of discretion by the opposition division
Admittance - 14th auxiliary request (no): amendment does not
overcome the issues raised + gives rise to new objections

Decisions cited:

G 0001/24, T 0190/99, T 0367/20, T 0010/22, T 1465/23,
T 0405/24

UPC_CFI_373/2023, Local Division Dusseldorf, 31 October 2024



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Case Number: T 2047/23 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 23 October 2025

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 19 October 2023
revoking European patent No. 2986030 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: K. Peirs
C. Heath

Summary of Facts and Submissions

- I. The appeal lies from the decision of the opposition division to revoke the opposed patent (Article 101(2) and 101(3)(b) EPC).

The opposition division deemed the ground for opposition under Article 100(a) in combination with Article 54 EPC to prejudice the maintenance of the patent as granted. The first to fourth auxiliary requests were considered to be not allowable under Articles 54 or 123(2) EPC. The fifth and sixth auxiliary requests were not admitted into the proceedings under Rule 116(1) EPC.

The decision of the opposition division had regard to the following prior-art document:

D1: US 2014/0010394 A1.

- II. Oral proceedings before the board were held on 23 October 2025.

The appellant (patent proprietor) requested that the decision under appeal be set aside and that the opposition be rejected (**main request**), or, that the patent be maintained in amended form on the basis of one of fourteen auxiliary requests, of which

- **auxiliary requests 1, 3 and 8 to 12** were filed for the first time with the statement of grounds of appeal,
- **auxiliary requests 2, 4 to 7 and 13** were re-filed with the statement of grounds of appeal and

correspond, respectively, to the second to sixth and the first auxiliary requests underlying the appealed decision

and

- **auxiliary request 14** was filed with the appellant's rejoinder.

The respondent requested that the appeal be dismissed.

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

III. Claim 1 of the **main request** and of **auxiliary request 13** reads as follows (board's feature labelling):

- (a) "A hearing aid (30, 40, 400, 50) comprising an assembly, the assembly comprising
- (b) a microphone for reception of sound and conversion of the received sound into a corresponding first audio signal,
- (c) a signal processor for processing the first audio signal into a second audio signal compensating a hearing loss of a user of the hearing aid (30, 40, 400, 50),
- (d) a wireless communication unit (32, 42, 420, 52) configured for wireless communication,
- (e) connected with an antenna (33, 43, 430, 53) configured for electromagnetic field emission and/or electromagnetic field reception, the antenna (33, 43, 430, 53) comprising:
- (f) a first feed point (310, 410, 510) connected to the wireless communication unit (32, 42, 420, 52),
- (g) a second feed point (311, 411, 511),

- (h) a first branch (34, 44, 47, 54) connected to the first feed point (310, 410, 510), the first branch (34, 44, 47, 54) comprising a first segment (341, 441, 471, 541) and a first free end (36, 46, 460, 56, 85), wherein the first segment (341, 441, 471, 541) extends in a first plane,
- (i) and a second branch (35, 45, 49, 55) connected to the second feed point (311, 411, 511), the second branch (35, 45, 49, 55) comprising a second segment (351, 451, 491, 551) and a second free end (38, 48, 58, 86), wherein the second segment (351, 451, 491, 551) extends in a second plane,
- (j) wherein the first feed point (310, 410, 510) and the second feed point (311, 411, 511) are located between the first plane and the second plane wherein a length of the first branch (34, 44, 47, 54) is a quarter of a wavelength of the electromagnetic field emitted by the antenna (33, 43, 430, 53) +/-10% and
- (k) wherein a length of the second branch (35, 45, 49, 55) is a quarter of the wavelength of the electromagnetic field emitted by the antenna (33, 43, 430, 53) +/-10%."

IV. Claim 1 of **auxiliary request 1** differs from claim 1 of the main request in that it further includes, at the end, the following feature (board's feature labelling):

- (l) ", wherein the antenna (33, 43, 430, 53) has a third plane comprising the first feed point (310, 410, 510) and the second feed point (311, 411, 511), wherein the first segment (341, 441, 471, 541) and/or the second segment (351, 451, 491, 551) does not intersect the third plane".

V. Claim 1 of **auxiliary request 2** differs from claim 1 of the main request in that it further includes, at the end, the following features (board's feature labelling):

(m) ", wherein the antenna (33, 43, 430, 53) has a partition plane (301),

(n) wherein a second part (342, 442, 472, 542, 542a, 542b, 742) of the first branch (34, 44, 47, 54) extending from the first plane to the first feed point (310, 410, 510) is orthogonal to the partition plane (301), wherein a second part (352, 452, 552, 552a, 552b, 752) of the second branch (35, 45, 49, 55) extending from the second plane to the second feed point (311, 411, 511) is orthogonal to the partition plane (301)".

VI. Claim 1 of **auxiliary request 3** differs from claim 1 of auxiliary request 2 in that it further includes, at the end, the following feature (board's feature labelling):

(o) "such that, during operation, the currents flowing in the second part (342, 442, 472, 542, 542a, 542b, 742) of the first branch (34, 44, 47, 54) and in the second part (352, 452, 552, 552a, 552b, 752) of the second branch (35, 45, 49, 55) may contribute to an electromagnetic field that travels around the head of the user, thereby providing a wireless communication that is robust and has low loss".

VII. Claim 1 of **auxiliary request 4** differs from claim 1 of auxiliary request 2 in that it further includes, at the end, the following feature (board's feature labelling):

(p) ", wherein the antenna (33, 43, 430, 53) is fed such that the current in the first branch (34, 44, 47, 54) will be out of phase with the current in the second branch (35, 45, 49, 55), preferably 180 degrees out of phase".

VIII. Claim 1 of **auxiliary request 5** differs from claim 1 of auxiliary request 4 in that it further includes, at the end, the following feature (board's feature labelling):

(q) ", so that a current flowing in the second part (342, 442, 472, 542, 542a, 542b, 742) of the first branch (34, 44, 47, 54) has a same direction as a current flowing in the second part (352, 452, 552, 552a, 552b, 752) of the second branch (35, 45, 49, 55)".

IX. Claim 1 of **auxiliary request 6** differs from claim 1 of auxiliary request 5 in that it further includes, at the end, the following features (board's feature labelling):

(r) "wherein the partition plane forms a symmetry plane for the antenna,

(s) so that the first branch is symmetric with the second branch with respect to the partition plane, wherein the currents in the second part of the first branch and in the second part of the second branch flows in a direction that is parallel or substantially parallel to an ear-to-ear axis, when the hearing aid is worn in its operational position on the head of the user,

(t) wherein a current flowing in the first segment has a direction that is opposite to a direction of current flowing in the second segment,

(u) wherein the first plane and the second plane are parallel within +/- 20 degrees".

X. Claim 1 of **auxiliary request 7** differs from claim 1 of auxiliary request 6 in that it further includes, at the end, the following feature (board's feature labelling):

(v) "wherein an electromagnetic field radiated by the first segment is substantially cancelled by an electromagnetic field radiated by the second segment, wherein currents flowing in the in the [sic] second part the first branch and in the second part of the second branch contribute significantly to the electromagnetic field radiated by the antenna".

XI. Claim 1 of **auxiliary request 8** differs from claim 1 of auxiliary request 2 in that it further includes, between features (m) and (n), the following feature (board's feature labelling):

(w) "the partition plane forming a symmetry plane for the antenna,".

XII. Claim 1 of **auxiliary request 9** differs from claim 1 of auxiliary request 2 in that feature (n) is replaced by the following feature (board's feature labelling and underlining, the latter reflecting amendments vs. feature (n)):

(x) "wherein a second part (342, 442, 472, 542, 542a, 542b, 742) of the first branch (34, 44, 47, 54) extending from the first plane to the first feed point (310, 410, 510) is elongated and orthogonal to the partition plane (301), and/or wherein a second part (352, 452, 552, 552a, 552b, 752) of the

second branch (35, 45, 49, 55) extending from the second plane to the second feed point (311, 411, 511) is elongated and orthogonal to the partition plane (301)".

XIII. Claim 1 of **auxiliary request 10** differs from claim 1 of the main request in that it further includes, at the end, the following feature (board's feature labelling):

(y) ", wherein a second part of the first branch extending from the first plane to the first feed point is elongated and orthogonal (normal +/- 25 degrees) to a surface of a head of a user, when the hearing aid is worn in its operational position on the head of the user, and/or wherein a second part of the second branch extending from the second plane to the second feed point is elongated and is orthogonal (normal +/- 25 degrees) to a surface of a head of a user, when the hearing aid is worn in its operational position on the head of the user".

XIV. Claim 1 of **auxiliary request 11** differs from claim 1 of the main request in that

- it further includes, between, respectively, features (h) and (i) and features (i) and (j), the following features (board's feature labelling):

(z) "the first branch (34, 44, 47, 54) comprising a second part (342, 442) extending from the first plane to the first feed point (310, 410, 510)";

(aa) "the second branch (35, 45, 49, 55) comprising a second part (352, 452) extending from the second plane to the second feed point (311, 411, 511),"

- and in that it further includes, at the end, the following feature (board's feature labelling):

(ab) ", wherein the second parts (342, 442, 352, 452) are arranged in extension of one another in a direction of an ear-to-ear access when the hearing aid is worn in its operational position on the head of a user, with respective distal ends thereof located opposite one another, each distal end being connected to the first feed point (310, 410, 510) and second feed point (311, 411, 511), respectively".

XV. Claim 1 of **auxiliary request 12** differs from claim 1 of the main request in that it additionally includes features (z) and (aa) between, respectively, features h) and (i) and features (i) and (j) and in that it further includes, at the end, the following feature (board's feature labelling):

(ac) ", wherein the second parts (342, 442, 352, 452) are elongated and extending towards one another with respective distal ends thereof located opposite one another, each distal end being connected to respective transmission lines".

XVI. Claim 1 of **auxiliary request 14** differs from claim 1 of auxiliary request 2 in that it further includes, at the end, the following feature (board's feature labelling):

(ad) "the first segment (341, 441, 471, 541) has a geometry relative to the second segment (351, 451, 491, 551) such that the first segment (341, 441, 471, 541) is a mirror of the second segment (351, 451, 491, 551), wherein a current flowing in the first segment (341, 441, 471, 541) has a direction

that is opposite to a direction of current flowing in the second segment (351, 451, 491, 551), wherein a current flowing in the second part (342, 442, 472, 542, 542a, 542b, 742) of the first branch (34, 44, 47, 54) has a same direction as a current flowing in the second part (352, 452, 552, 552a, 552b, 752) of the second branch (35, 45, 49, 55), wherein the first plane and the second plane are parallel with +/- 20 degrees, wherein the second parts of the antenna extending orthogonally to the first plane and/or the second plane are orthogonal to the surface of the head, and wherein the direction of the currents flowing in second parts is orthogonal to the surface of the head of the user when the hearing aid is worn in its operational position on the head of the user".

Reasons for the Decision

1. *Technical background*
- 1.1 The opposed patent concerns a hearing aid provided with an antenna to enable wireless communication with other devices (e.g. with another hearing aid in a binaural hearing-aid system).
- 1.2 The patent's description explains that hearing aids are very small devices containing many electronic and metallic components within a compact housing. This environment is supposed to impose high design constraints on radio-frequency antennas, making it difficult to achieve a satisfactory performance. The object of the invention is therefore to provide a hearing aid with an improved wireless-communication

capability.

- 1.3 To solve this problem, claim 1 as granted proposes a hearing aid comprising an antenna with a specific geometry. The antenna is supposed to comprise a "first branch" and a "second branch", each having a length of approximately a quarter of a wavelength. The first branch includes a "first segment" that "extends in a first plane" and the second branch includes a "second segment" that "extends in a second plane". The claimed solution is characterised in that the "first feed point" and the "second feed point" of the antenna are "located between the first plane and the second plane".
- 1.4 The technical principle of the intended solution is illustrated, for example, in Figure 7a of the opposed patent (reproduced below).

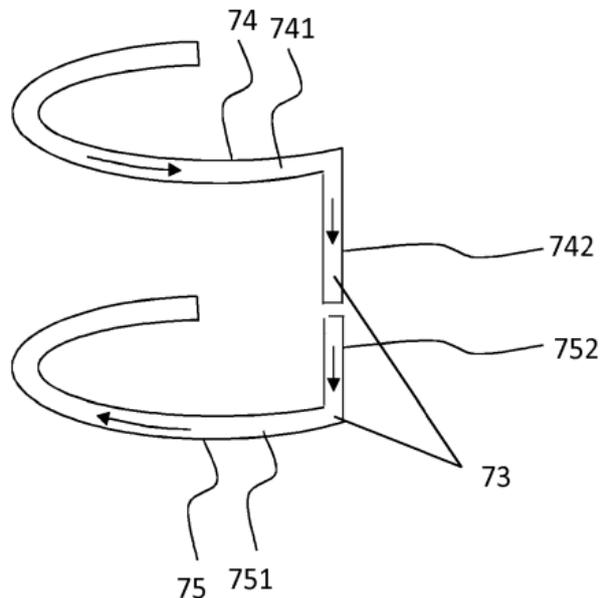


Fig. 7a

This drawing schematically shows an antenna (73) comprising a first branch (74) and a second branch (75). The main segments (741, 751) of these branches are arranged in parallel planes. The "second parts" (742, 752) connect these main segments to the antenna's "feed points", which are located between the planes of the main segments. Furthermore, the description explains that this geometry is designed to control the corresponding radiation pattern. When the antenna is fed appropriately, the currents in the main segments (741, 751) flow in *opposite* directions, causing their respective electromagnetic fields to substantially cancel each other out. Conversely, the currents in the "second parts" (742, 752) are supposed to flow in the *same* direction. As these second parts are intended to be oriented orthogonally to the user's head surface (i.e. parallel to the ear-to-ear axis), they become the primary radiators, efficiently exciting a low-loss surface wave for robust communication around the head.

2. *Main request and auxiliary request 13: claim 1 - claim construction*

2.1 Concerning the construction of claim 1 of the **main request** and of **auxiliary request 13**, there is, in the board's view and contrary to what the appellant suggested, no objective reason to restrict the interpretation of the term "plane" used in claim 1 to a purely *physical* one: the opposed patent itself (see e.g. paragraph [0060]) uses this term in an "abstract, mathematical" context and the respondent correctly noted the reasonableness of this "abstract, mathematical" interpretation.

2.2 As a result, several constructions of claim 1 would objectively occur to a skilled reader, including:

- the construction adopted by the opposition division in Reasons 2.6 of the appealed decision, involving mathematical "planes",

and

- the appellant's preferred so-called "practical implementation" scenario where "planes" are defined by antenna segments.

2.3 In its written submissions, the appellant argued that **G 1/24** mandated that the description and drawings must be referred to when interpreting a claim, which would thus lead the skilled person naturally to the appellant's "practical implementation" scenario.

This argument is not persuasive. **G 1/24** indeed requires that the description and drawings be "consulted" or "referred to", but not that the scope of the claimed subject-matter be limited to the embodiments described therein. As confirmed in, for instance, **T 1465/23** (Reasons 2.4), the description may, for example, be consulted to define the skilled reader, but this does not preclude interpreting claim terms according to their common meaning in that field, nor does it invalidate broader, technically viable interpretations. Therefore, the "abstract, mathematical" construction set out in point 2.2 above remains an equally valid interpretation of the claim's language, even after "consulting" the description and the drawings.

2.4 During the oral proceedings before the board, the appellant reiterated and expanded upon its arguments as

to the "practical implementation" scenario. It defined the skilled reader as an engineer in hearing-aid antennas who, upon reading the claim as a whole, would understand the components to be very thin, like a flexprint of 1mm thickness. From this, the appellant argued that the skilled reader could interpret the "planes" as *mathematical* abstractions but then would understand that there was no technical meaning to be associated with the requirement in claim 1 that the physical "feed points" must lie "between" those "planes". Likewise, the appellant emphasised that a "feed point" in the context of claim 1 must have a *physical* extension. It further contended that, since feature (j) specifically defined the location of the "feed points", the skilled reader would understand that the "feed points" are not located on the "segments" and that the "planes" must therefore be the *physical* planes of the segments themselves, implying a spatial separation between those feed points and the segments. The appellant underlined that this was how a skilled reader would actually understand the claim as a whole. Then, following **G 1/24**, the skilled reader would, in the appellant's view, consult the description and note that there was nothing that spoke against what the skilled reader had understood from the claim alone. The appellant further argued that this reading was supported by the conclusions of **T 190/99** and of the UPC decision UPC_CFI_373/2023.

The board is not convinced by these arguments, for the following reasons:

- 2.4.1 As the respondent correctly submitted during the oral proceedings before the board, the claim language, used in features (h) and (i), deliberately defines the "segments" as extending in a "plane". Moreover, in

feature (j), it defines the location of the "feed point" relative to the "plane" and *not* relative to the "segment". The skilled reader would recognise this deliberate choice of different terms and conclude that a different meaning - namely, an abstract, *mathematical* one - is intended for the term "plane" in this context. Moreover, during the oral proceedings before the board, the respondent correctly drew the attention to the term "symmetry plane" that is used at several instances in the opposed patent (e.g. paragraphs [0012], [0020] and [0071]) and to the terms "orthogonal" and "parallel" in paragraph [0060] of the opposed patent. These terms all belong to the realm of mathematics and the respondent correctly pointed out that the language of mathematics is part of the skilled reader's common general knowledge to describe geometric relationships between components. In addition, the whole description is silent as to a "plane" made of any *physical* material.

2.4.2 Moreover, the board finds the appellant's reliance on **T 190/99** to be misplaced here. That decision (see Reasons 2.4) concerns ruling out interpretations that are "illogical or which do not make technical sense" (cf. **T 10/22**, Reasons 2.3). The "abstract, mathematical" interpretation is neither; it is rather a standard method of geometric definitions in engineering, as the respondent confirmed during the oral proceedings before the board. The appellant's reference to the UPC decision of the Local Division Dusseldorf UPC_CFI_373/2023 is, if anything, counter-productive to its case, as Headnote 1 of that decision explicitly states: "*The claim must not be limited to the scope of preferred embodiments*", which is precisely what the appellant's "practical implementation" scenario seeks to do.

2.5 During the oral proceedings before the board, the appellant also argued that the board must choose one interpretation, given that, in its view, the two interpretations set out in point 2.2 above could not co-exist. It then reiterated that the "abstract, mathematical" interpretation would not make technical sense because feature (j) would be meaningless if there were no *physical* distances implied by the term "between".

This argument could not sway the board, either. Rather, the appellant's premise that a deciding body must choose a single "correct" interpretation is flawed from the outset. Instead, the deciding body's duty is to assess a claim against all interpretations that are technically sensible to the skilled reader. The board is aware that other decisions, such as **T 367/20** (Reasons 1.3.9), have suggested that a deciding body must choose a single "correct" interpretation where mutually exclusive interpretations exist. Yet, in line with its established jurisprudence (cf. **T 405/24**, Reasons 1.2.3), this board finds that the decisive criterion in this regard is what the reader skilled in the respective technical field would understand from the technical terms of a claim. As explained in Reasons 1.2.3 of **T 405/24**, an approach that forces a choice for a *single* "correct" interpretation, such as the one derivable from the description, would jeopardise legal certainty. Such an approach could lead to the untenable result that some provisions of the EPC, such as Article 123(2) EPC, might be rendered ineffective. The board thus holds that all technically reasonable interpretations are to be taken into account instead.

In the present case, where both a broad (abstract) and

a narrow (practical) interpretation of claim 1 are technically reasonable, the allowability of this claim must be assessed also against the broader one. In that regard, the board does not accept that the "abstract, mathematical" construction is technically meaningless. As set out in the first paragraph of point 2.4.2 above, it is a matter of standard engineering practice to use *abstract* geometric constructs to define and analyse *real-world* objects.

- 2.6 The appellant's arguments based on the present description are equally unconvincing. The appellant's written and oral arguments referred to the disclosure of a "millimeter-scale distance" between the "planes" (cf. page 7, lines 26 to 30 of the application as filed or paragraph [0024] of the opposed patent) as proof that the planes must be *physical*.

The board finds that this argument rather backfires. The disclosure of a *precise* range, "*between 1.5 mm and 6.5 mm*", without any error margins or tolerances, is more indicative of a measurement between precise *mathematical* planes than between the irregular and imprecisely defined surfaces of *physical* components. The appellant's argument that the board's reference to paragraph [0060] of the opposed patent made in point 5.3 of its preliminary opinion sent with its communication under Article 15(1) RPBA was puzzling, also fails. From the text reproduced by the appellant on page 3 of its written reply to this communication, it appears that the appellant has in fact confused paragraph [0060] with [0061]. Paragraph [0060] of the patent clearly uses terms of geometric abstraction (e.g. "orthogonal"), supporting *a fortiori* the board's finding that the patent itself uses the term "plane" in

an "abstract, mathematical" context.

2.7 Thus, the appellant's argument that the term "plane" in the context of claim 1 as granted can only be understood as a "physical plane" must fail.

3. *Main request and auxiliary request 13: claim 1 - novelty*

3.1 In relation to the allowability of the **main request** and **auxiliary request 13**, the board concurs with the opposition division's finding (see appealed decision, Reasons 2.1 and 2.7) that the subject-matter of claim 1 lacks novelty over document **D1**. This conclusion is essentially based on two independent lines of reasoning.

3.1.1 As established in point 2.2 above, the board finds that the skilled reader would consider the "abstract, mathematical" construction of the term "plane" to be a technically meaningful interpretation of claim 1. The board concurs with the finding in Reasons 2.1 of the appealed decision that, under this construction, the skilled reader would immediately discern from the wiring in Figure 3 of D1 that the feed points (43, 44), which connect the transceiver (34) via transmission lines (35, 36) to the antenna branches (40, 41), are located between the *abstract* planes spanned by those branches. The appellant's arguments to the contrary, which hinge exclusively on its preferred "practical implementation" construction, do however not overcome this finding.

3.1.2 Even if the board were to disregard the "abstract, mathematical" construction and exclusively adopt the appellant's preferred "practical implementation"

construction, the appellant would still not have been able to persuade the board. In that regard, during the oral proceedings before the board, the appellant argued that, on this construction, the skilled reader would understand from Figures 7 and 9b of D1 that the "feed point" is on the antenna "segment", not *between* the "planes". This, in their view, meant feature (j) was not disclosed.

This line of argument likewise fails, because it requires a precise interpretation of both claim 1 and the prior art. Regarding the former, the board considers that the opposed patent does not properly define the position or spatial extent of the "feed points" (see also point 6.2 of the board's preliminary opinion). As to the latter, the board acknowledges that Figure 3 of D1 is schematic but notes that this figure's accompanying text (e.g. paragraph [0098]) explicitly identifies "transmission lines 35, 36" and "feed point 43"/"feed point 44". A skilled reader thus understands this schematic to represent a physical device where connections are made *"from the inside of the hearing aid"*; this is the extent to which the board agrees with the technical observation made in Reasons 2.5 of the appealed decision. Given this physical arrangement in the prior art and the ambiguity of the patent's term "feed point", the appellant has failed to demonstrate that the physical arrangement schematically disclosed in Figure 3 of D1 does not anticipate feature (j).

3.2 In conclusion, there is no reason for the board to overturn the opposition division's finding set out in Reasons 2.7 of its appealed decision: the ground for opposition under Article 100(a) in conjunction with Article 54 EPC thus indeed prejudices the maintenance

of the patent as granted. Moreover, auxiliary request 13 is, for the same reasons, not allowable under Article 54 EPC.

4. *Auxiliary requests 1, 3 and 8 to 12: admittance*

4.1 The board observes that **auxiliary requests 1, 3 and 8 to 12** constitute an "amendment" within the meaning of Article 12(4), first sentence, RPBA. The admittance of these auxiliary requests into the appeal proceedings is thus at the board's discretion.

4.2 During the oral proceedings before the board, the respondent requested that these auxiliary requests not be admitted into the proceedings, arguing, *inter alia*, that they should have been filed before the opposition division (Article 12(6) RPBA). The board concurs, for the following reasons:

4.2.1 The appellant indicated that these claim requests were in fact filed to overcome the objections that led to the appealed decision, in particular the finding of lack of novelty against claim 1 as granted and the finding of added subject-matter in relation to "auxiliary requests 3-5" (corresponding to the present auxiliary requests 4 to 6; see point II above).

4.2.2 As regards the first one of these objections that auxiliary requests 1, 3, and 8 to 12 allegedly seek to overcome - namely, the lack of novelty of claim 1 over the disclosure in D1 - the board notes that this objection was already raised in detail by the opponent in its notice of opposition. That objection, and the precise reasoning underpinning it, was subsequently adopted by the opposition division in its preliminary view. More specifically, point 12.1 of the opposition

division's preliminary opinion, sent as an annex to its summons, explicitly stated that "*the first and second branches each span a plane in the z-y dimensions*" and concluded from this that "*[t]he feeding points clearly lie between these two planes*".

- 4.2.3 During the oral proceedings before the board, the appellant acknowledged that Reasons 2.1 of the appealed decision was a copy of this reasoning from the opposition division's preliminary opinion. The appellant contended, however, that it only became aware of the opposition division's construction of the term "plane" in a *mathematical* sense from the reasoning set out in the opposition division's final decision.

This argument is not credible and transparently dishonest. The "abstract, mathematical" construction was not new or surprising, but was, in fact, the explicit basis of the opponent's novelty objection from the outset of the opposition proceedings and was even a point raised by the appellant itself as an applicant during examination:

- First, in the notice of opposition (cf. page 4, penultimate sentence), the opponent drew the attention to the fact that the appellant (then applicant) had, during examination proceedings, defined the term "plane" in a purely *mathematical* context as "*a flat, two-dimensional surface that extends infinitely far*" (see the applicant's submission of 29 May 2019, page 2, point 1.5). As the respondent noted during the oral proceedings before the board, this definition was submitted by the *same* representative now representing the appellant. Moreover, on pages 10 and 11 of the notice of opposition, this "abstract, mathematical"

construction was highlighted by the respondent with schematic drawings illustrating how *abstract* planes could be defined within the thickness of the antenna segments.

- Secondly, this claim construction was already unambiguously present in the opposition division's preliminary opinion in point 12.1, as is apparent from the statements referred to in the last sentence of point 4.2.2 above.

- Thirdly, the minutes of the oral proceedings before the opposition division confirm that this "abstract, mathematical" construction was a central topic of debate. The associated minutes (points 4.1 and 4.4) record the opponent arguing that "*the antenna segments are not infinitesimally thin*" and the opposition division ultimately concluding that "*the plane can be anywhere within said thickness*", which in turn is the very essence of the "abstract, mathematical" construction.

4.2.4 The board must therefore conclude that the appellant could not have been "surprised" by the opposition division's reasoning on lack of novelty given in the appealed decision. The appellant's alternative justification for filing auxiliary requests 1, 3 and 8 to 12 - namely, that they were filed to overcome the added-matter objections raised against the former auxiliary requests 3 to 5 - is equally unpersuasive:

Rather, it is apparent from the minutes of the oral proceedings before the opposition division (e.g. points 7 to 9) that compliance with Article 123(2) EPC was undoubtedly discussed during those oral proceedings in relation to the auxiliary requests concerned. The

appellant was therefore fully aware of this objection during the first-instance proceedings. The minutes further show that the appellant was clearly given the opportunity to file further claim requests after the opposition division had found deficiencies in the then pending auxiliary requests (see e.g. point 10.1.2 of the minutes of the first-instance oral proceedings). The appellant, however, chose - for whatever reasons - to file only one further claim request (the "sixth auxiliary request", now auxiliary request 7) at that time. The appellant has, moreover, failed to explain why it did not, and could not, file the currently pending auxiliary requests 1, 3 and 8 to 12 at that same point in time.

- 4.2.5 Therefore, auxiliary requests 1, 3 and 8 to 12 should have indeed been filed in reply to the opposition division's preliminary opinion or, at the very latest, during the oral proceedings before the opposition division.
- 4.2.6 Furthermore, the board cannot discern how the amendments underlying auxiliary requests 1, 3 and 8 to 12 would even be suitable to overcome the objection under Article 54 EPC based on the "abstract, mathematical" construction. As the respondent argued during the oral proceedings before the board, the new features introduced do not, even in the slightest, preclude this *mathematical* interpretation. For instance, feature (t) of claim 1 of auxiliary request 1 introduces even a "third plane" without discriminating between a *mathematical* and *physical* context. Indeed, the terms "intersect" mentioned in feature (l), "orthogonal" as per features (n), (x) and (y) as well as "normal" in accordance with feature (y) not only fail to preclude the *mathematical* context, but arguably

reinforce it, as these are terms of pure geometry. The board therefore agrees with the respondent that the amendments do not genuinely address the "abstract, mathematical" construction of the term "plane".

4.3 Hence, the board decided not to admit auxiliary requests 1, 3 and 8 to 12 into the appeal proceedings (Article 12(6), second sentence, RPBA).

5. *Auxiliary requests 2, 4 and 5: claim 1 - allowability*

Auxiliary requests 2, 4 and 5 were re-filed with the statement of grounds of appeal and correspond, respectively, to the "second to fourth auxiliary requests" underlying the appealed decision. In Reasons 3 of the appealed decision, the "second auxiliary request" was found to be unallowable under Article 54 EPC and, in Reasons 4 and 5 of the appealed decision, the "third and fourth auxiliary requests" were found to be unallowable under Article 123(2) EPC.

The board concurs with the opposition division's findings, for the following reasons.

5.1 In relation to **features (m) and (n)**, i.e. that the antenna has a "partition plane" with the second parts of the first and second antenna branches being orthogonal to that partition plane respectively (cf. point V above), the board endorses the conclusions drawn in Reasons 4.3 of the appealed decision. The appellant's arguments against this finding are not persuasive:

5.1.1 During the oral proceedings before the board, the appellant argued that a skilled reader of claim 1, in an attempt to make technical sense of the newly added

features (m) and (n), would map the claimed "second parts" onto the "current bridge (42)" of D1. The appellant contended that on the basis of this new mapping, the added features were not disclosed, as the "current bridge" in D1 did not extend to the "feed points (43, 44)".

This argument fails. As the respondent correctly argued, features (m) and (n) are broadly drafted. They define a "second part" as *"extending from the first plane to the first feed point"* and being *"orthogonal to the partition plane"*, but do not define the location or orientation of the "partition plane" itself, which can therefore be any arbitrary "plane". The board sees in this respect no reason to depart from the feature mapping underlying Reasons 4.2 and 4.3 of the appealed decision.

5.1.2 Given the board's finding that the "abstract, mathematical" construction of the term "plane" is technically sensible (see point 2 above), the respondent is correct that the "second parts" as per feature (n) can be mapped onto any portion of the respective physical antenna branches in the system of D1 that extends to some degree from the abstract "plane" towards the "feed point". As any physical branch has a non-infinitesimal thickness, such a portion, however small, can always be identified. The appellant's subsequent argument that such a "second part" would be so small as to have no technical function does not overcome the fact that it is encompassed by the breadth of feature (n).

5.1.3 Therefore, the board concurs with the opposition division's finding that auxiliary request 2 is not

allowable for lack of novelty (Article 54 EPC).

- 5.2 Concerning **features (p) and (q)**, i.e. that the respective currents flowing in the second parts of the first and the second antenna branches are supposed to flow in a direction being (substantially) *parallel* to an ear-to-ear axis, while the currents flowing in the respective first antenna segment are supposed to flow in a direction being *opposite* to the currents in the second antenna segment, the board also concurs with Reasons 5.3, 5.4 and 6.2 of the appealed decision: the amendments underlying these features indeed introduce subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

The board in particular observes the following in this regard:

- 5.2.1 Features (p) and (q) constitute an unallowable intermediate generalisation of the embodiment disclosed in Figure 7a as filed and its associated description. As the respondent correctly argued, these passages disclose a functionally interrelated set of features. In that specific embodiment, the functional consequence of feature (q) is achieved *only* by the combination of a specific feed (180 degrees "out of phase") and a specific, *symmetrical*, "mirror-image" geometry of the two branches. The amended claim, however, omits the "mirror-image" feature and, at the same time, broadens the specific 180-degree feed to the generic term "out of phase" (i.e. feature (p)). Thus, it now also covers *asymmetrical* embodiments where a phase shift other than the disclosed "180 degrees" could, in theory, still result in currents according to feature (q) having the "same direction". This generalisation towards undisclosed combinations of "geometry" and "feeding"

however contravenes Article 123(2) EPC.

- 5.2.2 The appellant's argument, put forward during the oral proceedings before the board, that the claimed features *imply* the missing geometrical constraints is not convincing, either. The same applies to the appellant's argument that, for the skilled reader, it would be clear that feature (p) was not linked to other features.

The board agrees in this regard with the respondent's counter-argument that claim 1 of auxiliary requests 4 and 5 remains broad and is not limited to the specific, *symmetrical* geometry of Figure 7a (e.g. the "mirror-image" feature referred to in point 5.2.1 above is omitted). It is precisely this omission of key features in the claim that creates the added-matter problem here.

- 5.2.3 Additionally, the appellant's reliance on other passages (e.g. page 3, lines 1 to 7 as well as page 11, lines 1 and 2 of the description as filed) also fails. As the respondent correctly noted, these passages only concern "opposite directions" (i.e. a 180-degree phase shift), whereas the amended feature (p) is broader, covering any "out of phase" relationship.

- 5.2.4 Furthermore, the board agrees with the respondent that the causal link implied by the wording "so that" in feature (q) aggravates the added-matter objection, given that it presents a technical effect as an inevitable consequence of features like features (m), (n) and (p) that, in their claimed breadth and separated from their original structural context, cannot guarantee such an effect.

5.3 In sum, there is no convincing reason for the board to disagree with the opposition division's conclusion drawn in Reasons 4.4 of the appealed decision that auxiliary request 2 is not allowable under Article 54 EPC and, in Reasons 5.5 and 6.2 of the appealed decision, that auxiliary requests 4 and 5 are not allowable under Article 123(2) EPC.

6. *Auxiliary requests 6 and 7: admittance*

6.1 Concerning **auxiliary requests 6 and 7**, the board notes that these auxiliary requests were, under the labels "fifth and sixth auxiliary requests" (see points I and II above), not admitted into the proceedings by the opposition division. The respondent correctly referred to Article 12(6), first sentence, RPBA in this regard, according to which such requests are not to be admitted by the board, 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.

6.2 The appellant failed to demonstrate that the opposition division erred in its discretionary decision not to admit auxiliary requests 6 and 7. The board finds that the opposition division correctly identified *prima facie* deficiencies under Articles 84 and 123(2) EPC for the former auxiliary request (cf. appealed decision, Reasons 7.4) and under Article 84 EPC for the latter auxiliary request (cf. appealed decision, Reasons 8.4). Furthermore, the appellant did not demonstrate any changed circumstances of the case that would justify admittance under Article 12(6), first sentence, RPBA.

6.3 During the oral proceedings before the board, the appellant argued that the opposition division had

wrongly exercised its discretion regarding auxiliary request 6 because its *prima facie* assessment was incorrect (referring to the appealed decision, Reasons 7.4). The appellant found that the opposition division's reasoning in this regard was "not very detailed" and posited that the opposition division might have deemed the term "ear-to-ear axis" in feature (s) to be unclear.

However, the board's review of a discretionary decision taken by a first-instance department is typically restricted to establishing whether the opposition division committed an error, for example by applying the wrong criteria when exercising its discretion. The appellant's argument as to the "ear-to-ear axis" is merely speculative; as the respondent correctly noted, Reasons 7.4 of the appealed decision does not mention this term at all as a basis for the finding. The appellant has thus failed to demonstrate any error in the opposition division's exercise of discretion.

- 6.4 In relation to **auxiliary request 7**, the appellant argued during the oral proceedings before the board that the opposition division's *prima facie* assessment (see appealed decision, Reasons 8.4) was wrong because the skilled reader would in fact understand the term "substantially cancelled" in a clear, technical sense, particularly in view of the claimed "symmetry plane" mentioned in feature (r).

The board again finds no error in the opposition division's exercise of discretion. As the respondent argued, the opposition division's finding of lack of clarity in Reasons 8.4 of the appealed decision was not unreasonable. Indeed, the minutes of the first-instance oral proceedings (e.g. points 10.1.1 and 10.3.1)

confirm that, next to the clarity of the term "substantially cancelled", also the clarity issues with other relative terms, such as "significantly contribute" (or "contribute significantly" as per feature (v)), was a central part of the debate that led to the opposition division's *prima facie* finding, even if not explicitly detailed in the final written reasons of the appealed decision. The opposition division's conclusion that claim 1 of auxiliary request 7 was *prima facie* unclear was therefore not wrong.

6.5 Therefore, the board did not overturn the opposition division's decision not to admit auxiliary requests 6 and 7 into the proceedings (Article 12(6), first sentence, RPBA).

7. *Auxiliary request 14: admittance*

7.1 The board notes that **auxiliary request 14** was filed with the appellant's rejoinder (see point II above). This constitutes an "amendment" to the appellant's appeal case *after* it has filed its statement of grounds of appeal and its admittance is therefore subject to the board's discretion under Article 13(1) RPBA.

7.2 Article 13(1) RPBA requires the appellant in this case to provide reasons for submitting the amendment at this stage of the appeal proceedings. The appellant's stated justification is that this auxiliary request was filed "*in response to the Respondent's objection*" (see appellant's rejoinder, page 1) and that it "*further includes the features 1-6 suggested by the Respondent on page 16 of the Letter*" (see appellant's rejoinder, page 30).

7.3 The board finds this justification to be insufficient. As the appellant acknowledged during the oral proceedings before the board, the opposition division had already drawn the attention in Reasons 5.4 and 7.4 of the appealed decision to features that are functionally interlinked in this context. However, the appellant has provided no valid reason why this auxiliary request, which purports to overcome these very objections, could not have been filed earlier, e.g. already during the oral proceedings before the opposition division.

7.4 In exercising its discretion under Article 13(1) RPBA, the board may also consider, *inter alia*, whether the appellant has demonstrated that the amendment, at least *prima facie*, overcomes the issues raised. In this regard, the board notes that the appellant's amendment incorporates only a subset (features "1" to "6") of the nine features identified by the respondent (cf. respondent's written reply to the statement of grounds of appeal, page 16) as being functionally interrelated in the embodiment illustrated by Figure 7a. The appellant's justification for omitting the remaining features (namely, that the respondent provided no basis for them) does not, *prima facie*, resolve the fundamental and dual objections that:

- the amendments underlying claim 1 of auxiliary request 14 remain an unallowable intermediate generalisation (Article 123(2) EPC) and
- the claimed subject-matter, still lacking the full combination of features, fails to credibly achieve the purported technical effect over its entire scope (Article 56 EPC) as raised by the respondent on page 16 of its written reply to the statement of

grounds of appeal.

7.5 Given the appellant's failure to provide a sufficient justification for the lateness of the auxiliary request as well as the board's *prima facie* view that the amendment is not suitable to resolve the outstanding added-matter issues and that it potentially gives rise to an inventive-step objection, the board decided not to admit auxiliary request 14 into the appeal proceedings, either (Article 13(1) RPBA).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated