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**Datasheet for the decision
of 5 December 2011**

Case Number: T 0117/09 - 3.4.01
Application Number: 04737993.8
Publication Number: 1629569
IPC: H01Q 9/04, H01Q 1/38
Language of the proceedings: EN

Title of invention:
Internal antenna with slots

Applicant:
Psion Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)
RPBA R. 13(1)

Relevant legal provisions (EPC 1973):
EPC Art. 84, 111(1)

Keyword:
-

Decisions cited:
T 0630/93, T 0238/88, T 0523/91, T 0688/91, T 0068/85

Catchword:
-



Case Number: T 0117/09 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 5 December 2011

Appellant: Psion, Inc.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 3 July 2008
refusing European patent application
No. 04737993.8 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairwoman: F. Neumann
Members: G. Assi
T. Karamanli

Summary of Facts and Submissions

- I. The European patent application No. 04737993.8 (European publication number 1 629 569; International publication number WO-A-2005/008835) was refused by the examining division which, in its decision dispatched on 3 July 2008, held that the claimed invention according to the requests then on file did not meet the requirements of Articles 84, 52(1), 54(1),(2) and 56 EPC.
- II. The applicant (appellant) lodged an appeal, received on 22 August 2008, against the decision of the examining division. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 13 November 2008.
- III. In the grounds of appeal explicit reference was made to the following amended application documents:
- Description pages 1, 2, 4-13 filed with a letter of 11 September 2006,
 - Description pages 3, 3a filed with the letter of 9 January 2008,
 - Drawings sheets 1/8, 4/8-8/8 of the published application,
 - Drawing Sheets 2/8, 3/8 filed with a letter of 14 February 2006.
- IV. Oral proceedings before the Board of appeal took place on 5 December 2011.
- V. The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the main request, filed with a letter dated 13 November

2008, or, as an auxiliary measure, on the basis of the first to seventh auxiliary requests, all filed with the letter dated 13 November 2008, the eighth and ninth auxiliary requests, both filed with a letter of 4 November 2011, or the tenth auxiliary request, filed during oral proceedings of 5 December 2011.

VI. The wording of claim 1 of the main request reads as follows:

"An antenna (100) comprising
- a substrate (110) having a pair of oppositely directed surfaces,
- a source plane conductor (120) on one of said surfaces having a signal line connected thereto,
- a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), said slots (122, 132) being different and being sized and positioned relative to one another to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130)."

The wording of claim 1 of the first auxiliary request reads as follows:

"An antenna (100) comprising
- a substrate (110) having a pair of oppositely directed surfaces,

- a source plane conductor (120) on one of said surfaces having a signal line connected thereto,
- a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), said slots (122, 132) being different in at least one of their respective shape and size and being sized and positioned relative to one another to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130)."

The wording of claim 1 of the second auxiliary request reads as follows:

"An antenna (100) comprising
- a substrate (110) having a pair of oppositely directed surfaces,
- a source plane conductor (120) on one of said surfaces having a signal line connected thereto,
- a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),
characterized in that each of said conductors (120, 130) has at least one slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), said at

least one slot (132) in the ground plane conductor (130) and said at least one slot (122) in the source plane conductor (120) having different shapes, and said at least one slot (132) in the ground plane conductor (130) and said at least one slot (122) in the source plane conductor (120) being sized and positioned relative to one another to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130)."

The wording of claim 1 of the third auxiliary request reads as follows:

"An antenna (100) comprising
- a substrate (110) having a pair of oppositely directed surfaces,
- a source plane conductor (120) on one of said surfaces having a signal line connected thereto,
- a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), said slots (122, 132) being different in at least one of their respective shape and length and being sized and positioned relative to one another to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130)."

The wording of claim 1 of the fourth auxiliary request reads as follows:

*"An antenna (100) comprising:
a substrate (110) having a pair of oppositely directed surfaces,
a source plane conductor (120) on one of said surfaces having a hole to which a signal line is connected,
a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), said slots (122, 132) having configurations asymmetry to each other with respect to said substrate (110) to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130)."*

The wording of claim 1 of the fifth auxiliary request reads as follows:

*"An antenna (100) comprising:
a substrate (110) having a pair of oppositely directed surfaces,
a source plane conductor (120) on one of said surfaces having a hole to which a signal line is connected,
a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),*

characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), said slots (122, 132) having configurations asymmetry to each other with respect to said substrate (110) to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130), said antenna being placed within a handheld wireless device (2) so that said ground plane (130) faces toward a user using said handheld wireless device (2) thereby reducing a specific absorption rate (SAR) in a head of said user."

The wording of claim 1 of the sixth auxiliary request reads as follows:

*"An antenna (100) comprising:
a substrate (110) having a pair of oppositely directed surfaces,
a source plane conductor (120) on one of said surfaces having a hole to which a signal line is connected,
a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), each of said slots (122, 132) having an axial leg (123, 133) extending parallel to a longitudinal axis of said antenna and a transverse leg (125, 135) extending from the axial leg to a first peripheral edge of the*

corresponding plane (120, 130), the length of the slot in said source plane (120) being longer than the length of the slot in said ground plane (130) to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130)."

The wording of claim 1 of the seventh auxiliary request reads as follows:

*"An antenna (100) comprising:
a substrate (110) having a pair of oppositely directed surfaces,
a source plane conductor (120) on one of said surfaces having a hole to which a signal line is connected,
a ground plane conductor (130) on another of said surfaces,
wherein said source plane conductor (120) is electrically isolated from said ground plane conductor (130),
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough for controlling directional variation in intensity of radiation emanating from said antenna (100), each of said slots (122, 132) having an axial leg (123, 133) extending parallel to a longitudinal axis of said antenna and a transverse leg (125, 135) extending from the axial leg to a first peripheral edge of the corresponding plane (120, 130), the length of the slot in said source plane (120) being longer than the length of the slot in said ground plane (130) to reduce said intensity of radiation in a rear direction extending from said source plane (120) toward said ground plane (130), said antenna being placed within a handheld wireless device (2) so that said ground plane (130)*

faces toward a user using said handheld wireless device (2) thereby reducing a specific absorption rate in a head of said user."

The wording of claim 1 of the eighth auxiliary request reads as follows:

"An antenna (100) comprising
- a substrate (110) having a pair of oppositely directed surfaces,
- a source plane conductor (120) on one of said surfaces having a signal line connected thereto,
- a ground plane conductor (130) on another of said surfaces,
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough, each of said slots (122, 132) extending from a peripheral edge of said substrate (110) and having an axial leg (122a, 122b, 122c, 122d, 132a, 132b, 132c) extending parallel to a longitudinal axis of said antenna (100), said axial legs (122a, 122b, 122c, 122d, 132a, 132b, 132c) being aligned with one another on each of said planes (120, 130), the length of the axial leg of the slot in the source plane (120) being longer than the length of the axial leg of the slot in the ground plane (130), to reduce the intensity of radiation emanating from said ground plane (130) in a rear direction extending from said source plane (120) toward said ground plane (130)."

The wording of claim 1 of the ninth auxiliary request reads as follows:

"An antenna (100) comprising
- a substrate (110) having a pair of oppositely directed surfaces,

- a source plane conductor (120) on one of said surfaces having a signal line connected thereto,
- a ground plane conductor (130) on another of said surfaces,
characterized in that each of said conductors (120, 130) has a slot (122, 132) extending therethrough, each of said slots (122, 132) extending from a peripheral edge of said substrate (110) and having an axial leg (122a, 122b, 122c, 122d, 132a, 132b, 132c) extending parallel to a longitudinal axis of said antenna (100) and a transverse leg extending from said peripheral edge to intersect said axial leg, said axial legs (122a, 122b, 122c, 122d, 132a, 132b, 132c) being aligned with one another on each of said planes (120, 130), the length of the axial leg of the slot in the source plane (120) being longer than the length of the axial leg of the slot in the ground plane (130), to reduce the intensity of radiation emanating from said ground plane (130) in a rear direction extending from said source plane (120) toward said ground plane (130)."

The wording of claim 1 of the tenth request reads as follows:

"An antenna (100) comprising
- a substrate (110) having a pair of oppositely directed surfaces,
- a source plane conductor (120) on one of said surfaces having a signal line connected thereto,
- a ground plane conductor (130) on another of said surfaces,
characterized in that each of said plane conductors (120, 130) has a single slot (122, 132) extending therethrough, each of said slots (122, 132) extending from a peripheral edge of said substrate (110) and

having an axial leg (122a, 122b, 122c, 122d, 132a, 132b, 132c) extending on a longitudinal axis of said antenna (100) and a transverse leg (125, 122f) extending from said peripheral edge to said axial leg, the axial legs and transverse legs being juxtaposed on each plane conductor (120, 130) so that the legs are aligned with one another, the length of the slot in the source plane conductor (120) being longer than the length of the slot in the ground plane conductor (130), to reduce the intensity of radiation emanating from said ground plane conductor (130) when compared to the source plane conductor (120)."

The remaining claims according to all the requests are dependent claims.

- VII. The appellant essentially submitted (grounds of appeal, 1.1.1.2; letter of 4 November 2011, 2.1.1) that the primary function of a claim was to define the matter for which protection was sought (Article 84 and Rule 29(1) EPC 1973). It would be inappropriate to mention features that unduly limited an otherwise clearly defined scope of protection. The presence of specific embodiments in the description was not a reason to restrict the claimed subject-matter to the features contained in those embodiments. In this respect, it was not always necessary for a claim to identify technical features or steps in full detail. All features necessary to solve the technical problem had to be mentioned in the claim. However, the function of such essential features was often to define the borders of an invention rather than the details of the invention within the borders. Thus, essential features could be of a very general character, in extreme cases they

could indicate only principles or a new idea (T 630/93, unpublished).

Clarity of a claim was not impaired by the breadth of a term contained in it, provided that the meaning of such term was unambiguous for a skilled person, either *per se* or in the light of the description (T 238/88, OJ EPO 1992, 709). Likewise, the breadth of a claim covering several possibilities should not be equated with a lack of clarity (T 523/91, unpublished; T 688/91, unpublished).

A claim had to be drafted in terms of the technical features of the invention. However, it was not necessary that every feature should be expressed in structural terms. Functional features might also be included. Moreover, statements of purpose should be allowed if they assisted in defining an invention that could not otherwise be defined more precisely without unduly restricting the scope of protection. In this respect, attention was drawn to the example concerning an ashtray mentioned in the Guidelines for Examination, April 2010 (C-III, 4.10).

In the present case, claim 1 of the main request clearly taught the skilled person the general principle that, in order to achieve the effect of reducing the intensity of radiation in the rear direction, the slot patterns in each of the plane conductors had to be "*different*", i.e. non-identical. Moreover, the slots had to be appropriately "*sized and positioned relative to one another*". These essential features clearly defined the borders of the invention for which protection was sought without unduly limiting the scope

of protection of the claim. Embodiments of the invention within these borders were given in the description describing in detail three specific examples of slot configurations resulting in the desired effect.

With regard to claim 1 of each of the auxiliary requests, the appellant submitted that features were added so as to improve clarity of the claimed subject-matter. This resulted in the objection of lack of clarity raised by the Board against claim 1 of the main request being overcome.

Reasons for the Decision

1. The appeal is admissible.
2. The revised version of the European Patent Convention ("*EPC 2000*") entered into force on 13 December 2007. In the present decision, reference is made to "*EPC 1973*" for the EPC valid until that time or to "*EPC*" for the EPC 2000 (EPC, 13th Edition, Citation Practice, pages 4-6) depending on the version to be applied according to Article 7(1), second sentence, of the Revision Act dated 29 November 2000 (Special Edition No. 1, OJ EPO 2007, 196) and the decisions of the Administrative Council dated 28 June 2001 (Special Edition No. 1, OJ EPO 2007, 197) and 7 December 2006 (Special Edition No. 1, OJ EPO 2007, 89).

3. Claim 1 of the main request

- 3.1 Claim 1 concerns an antenna comprising, as structural features, a substrate, a source plane conductor on one surface of the substrate having a signal line connected thereto, a ground plane conductor on another surface of the substrate, the source plane conductor being electrically isolated from the ground plane conductor, each of the plane conductors having "a slot" extending therethrough, the slots being "different".

The claimed antenna is further defined by functional features. In particular, the slots are provided for controlling directional variation in intensity of radiation emanating from the antenna and are sized and positioned relative to one another to reduce the intensity of radiation in a rear direction extending from the source plane conductor toward the ground plane conductor.

- 3.2 From a semantic point of view, the expression "a slot" implies that each of the plane conductors has at least one slot. Such an understanding is supported, from a technical point of view, by the embodiment of Figures 3B and 4B of the published application, according to which the source plane conductor has two slots (122b, 122c), whereas the ground plane conductor has a single L-shaped slot.

The Board notes that the appellant agreed with this understanding in writing (letter of 4 November 2011, 2.1.2) and during the oral proceedings.

3.3 The arguments produced by the appellant are not convincing.

3.3.1 Article 84 EPC 1973 requires that the claims define the matter for which protection is sought in a clear and concise manner and that the claims be supported by the description. Rule 29(1) EPC 1973 specifies that the matter for which protection is sought be defined in terms of the technical features of the invention. These requirements serve the purpose of ensuring that the public is not left in any doubt as to which subject-matter is covered by a claim.

Moreover, these requirements imply that a claim must be non-ambiguous and comprehensible for a skilled person, and that a claim must identify all the essential technical features of the invention, these being the features which are necessary in order to obtain a desired effect. The claimed features may be expressed in structural or functional terms, the latter case applying if, from an objective point of view, the features cannot otherwise be defined more precisely without unduly restricting the scope of the claim, and if the functional features provide instructions which are sufficiently clear for the skilled person to reduce them to practice without undue burden (T 68/85, OJ EPO 1987, 228, Headnote). However, an applicant cannot simply define a technical feature as it wishes. Rather, the objectively more precise form must be chosen (T 68/85, *supra*, Reasons, 8.4.2).

3.3.2 In the present case, claim 1 of the main request results from a generalisation of the three disclosed embodiments (Figures 2; 3A, 4A; 3B, 4B; 3C, 4C).

The Board agrees with the appellant that the extent of protection should not be unduly limited. The Board also agrees that the claim may include structural and functional features. Nevertheless, the claim must clearly define the subject-matter for which protection is sought. In the Board's view, this is not the case, as may be seen from the following paragraphs.

- 3.3.3 As stated above, the expression "a slot" in claim 1 implies that each of the plane conductors has at least one slot. With this understanding, the feature that the slots are "*different*" causes a lack of clarity because the claim does not specify which particular slots on the source plane conductor and the ground plane conductor are indeed different. For example, the claim covers the case of plane conductors, each having an identical arrangement of different slots, wherein a given slot on the source plane conductor would differ or not from a slot on the ground plane conductor depending on which particular slots are considered.

In the appellant's view, the slot patterns in the plane conductors were "*different*" in that the slots were non-identical and appropriately "*sized and positioned relative to one another*".

This may be. The appellant's argument, however, does not remove the ambiguity mentioned above concerning which combination of slots is being considered.

- 3.3.4 In claim 1, the size and position of the slots are not defined structurally. They are defined instead by the effect of reducing the radiation intensity in the rear direction. The Board acknowledges the fact that a structural definition of the size and position of each

slot of the patterns on the source plane conductor and the ground plane conductor would amount to an unduly limited extent of protection of the claim. However, the use of the expression "a slot" means that the claim covers innumerable arrangements of slots having any size and position, most of which are not at all envisaged by the description. Moreover, no evidence is provided in the application to conclude that all such arrangements would effectively permit the desired effect to be achieved. In other words, doubts exist as to whether this effect can readily be obtained for all of the possible arrangements of slots claimed. Although at least some arrangements of slots will undoubtedly give rise to the effect, in the absence of any indication of which slots have to be different and appropriately sized and positioned, the claim lacks clarity, notwithstanding its breadth.

- 3.3.5 Even the claimed effect of reducing the intensity of radiation in a rear direction extending from the source plane conductor to the ground plane conductor lacks clarity, because it is not stated with regard to what the intensity of radiation is reduced.
- 3.3.6 The example cited in the Guidelines, April 2010 (C-III, 4.10) concerns an ashtray in which a smouldering cigarette end will be automatically extinguished due to the shape and relative dimensions of the ashtray. The latter may vary considerably in a manner difficult to define whilst still providing the desired effect. So long as a claim specifies the construction and shape of the ashtray as clearly as possible, it may define the relative dimensions by reference to the result to be achieved, provided that the specification includes

adequate directions to enable the reader to determine the required dimensions by routine test procedures.

In this example, it is clear which structural features have to be appropriately designed in order to achieve the desired effect. The relative dimensions of the ashtray may vary, but will always be such as to automatically extinguish a cigarette.

In the present case, the specific structural features which have to be appropriately designed are not clear from the wording of the claim. With regard to a multi-slot antenna, no indication is given as to which of the many slots shall be designed so as to reduce rearward radiation intensity.

- 3.3.7 With regard to the jurisprudence cited by the appellant (see point VII above), the Board agrees that essential features may be of a very general character (T 630/93, *supra*), and that the breadth of a claim covering several possibilities (T 523/91, *supra*; T 688/91, *supra*) or of a term contained in a claim (T 238/88, *supra*) do not necessarily impair clarity.

However, this jurisprudence does not invalidate the Board's assessment mentioned above. In the present case, it is indeed possible to define the claimed subject-matter in clear terms on the basis of a generalisation of the embodiments of Figures 3A, 4A and 3C, 4C, which is supported by the description, entails a fair extent of protection and does not extend beyond the content of the application as filed (see claim 1 of the tenth auxiliary request).

3.4 In conclusion, claim 1 of the main request does not meet the provisions of Article 84 EPC 1973. Therefore, the main request is not allowable.

4. Claim 1 of the first auxiliary request

4.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the slots are further defined to be different *"in at least one of their respective shape and size"*.

This amendment only makes clear the meaning of the term *"different"*, which is not defined in claim 1 of the main request, by referring, in a general way, to the shape and size of the slots. However, it does not invalidate the objection raised under Article 84 EPC 1973 against claim 1 of the main request.

4.2 Therefore, claim 1 of the first auxiliary request does not meet the provisions of Article 84 EPC 1973. The first auxiliary request is not allowable.

5. Claim 1 of the second auxiliary request

5.1 Claim 1 of the second auxiliary request differs from claim 1 of the main request in that each of the plane conductors has *"at least one slot"*, *"said at least one slot in the ground plane conductor and said at least one slot in the source plane conductor having different shapes"*.

The amendment *"at least one slot"* renders explicit the meaning given by the Board to the term *"a slot"* in claim 1 of the main request. The further amendment made

does not invalidate the objection raised under Article 84 EPC 1973 against claim 1 of the main request.

5.2 Therefore, claim 1 of the second auxiliary request does not meet the provisions of Article 84 EPC 1973. The second auxiliary request is not allowable.

6. Claim 1 of the third auxiliary request

6.1 Claim 1 of the third auxiliary request differs from claim 1 of the main request in that the slots are further defined to be different *"in at least one of their respective shape and length"*.

As for claim 1 of the first auxiliary request, this amendment makes clear the meaning of the term *"different"*, which is not defined in claim 1 of the main request, by referring, in a general way, to the shape and length of the slots. However, it does not invalidate the objection raised under Article 84 EPC 1973 against claim 1 of the main request.

6.2 Therefore, claim 1 of the third auxiliary request does not meet the provisions of Article 84 EPC 1973. The third auxiliary request is not allowable.

7. Claim 1 of the fourth auxiliary request

7.1 Claim 1 of the fourth auxiliary request differs from claim 1 of the main request in that the source plane conductor has *"a hole to which a signal line is connected"* and in that the slots have *"configurations asymmetry to each other with respect to said substrate"*.

The first amendment is not related at all to the issue of lack of clarity. The second amendment, which attempts to further clarify the relationship between the slots, does not invalidate the objection raised under Article 84 EPC 1973 against claim 1 of the main request, the specific combination of slots which have "*configurations asymmetry to each other*" remaining unclear.

7.2 Therefore, claim 1 of the fourth auxiliary request does not meet the provisions of Article 84 EPC 1973. The fourth auxiliary request is not allowable.

8. Claim 1 of the fifth auxiliary request

8.1 Claim 1 of the fifth auxiliary request differs from claim 1 of the fourth auxiliary request in that the antenna is "*placed within a handheld wireless device*" so that the ground plane conductor "*faces toward a user using said handheld wireless device*" thereby reducing the SAR value with regard to the head of the user.

These amendments lead to an uncertainty as to whether claim 1 would concern an antenna or rather a handheld wireless device comprising said antenna.

Moreover, they do not invalidate the objection raised under Article 84 EPC 1973 against claim 1 of the main request.

8.2 Therefore, claim 1 of the fifth auxiliary request does not meet the provisions of Article 84 EPC 1973. The fifth auxiliary request is not allowable.

9. Claim 1 of the sixth auxiliary request

9.1 Claim 1 of the sixth auxiliary request differs from claim 1 of the fourth auxiliary request in that, instead of defining that the slots have *"configurations asymmetry to each other with respect to said substrate"*, *"each of"* the slots are defined as having *"an axial leg extending parallel to a longitudinal axis of said antenna and a transverse leg extending from the axial leg to a first peripheral edge of the corresponding plane, the length of the slot in said source plane being longer than the length of the slot in said ground plane"*.

Although these amendments represent an attempt to specify the shape and length of the slots, which are not at all defined in claim 1 of the main and first to third auxiliary requests, they still rely on the feature that a plurality of slots are arranged on each of the source plane conductor and ground plane conductor, this feature causing a lack of clarity as mentioned in relation to claim 1 of the main request.

9.2 Therefore, claim 1 of the sixth auxiliary request does not meet the provisions of Article 84 EPC 1973. The sixth auxiliary request is not allowable.

10. Claim 1 of the seventh auxiliary request

10.1 Claim 1 of the seventh auxiliary request corresponds essentially to a combination of claim 1 of the fifth and sixth auxiliary requests, each of which lacks clarity as mentioned above. The combination does not remove the lack of clarity either.

10.2 Therefore, claim 1 of the seventh auxiliary request does not meet the provisions of Article 84 EPC 1973. The seventh auxiliary request is not allowable.

11. Claim 1 of the eighth and ninth auxiliary requests

11.1 The eighth and ninth auxiliary requests were filed with the letter of 4 November 2011 in reply to the Board's communication of 7 October 2011. The amended claim 1 of each of these requests represents an attempt to overcome the Board's objection of lack of clarity raised against claim 1 of the main request. For this reason, the Board, exercising its discretion, admit them into the proceedings (Article 13(1) RPBA).

11.2 Claim 1 of the eighth auxiliary request concerns an antenna comprising a substrate, a source plane conductor and a ground plane conductor, each of the conductors having "a slot" extending therethrough, each of the slots extending from a peripheral edge of the substrate and having an axial leg extending parallel to a longitudinal axis of the antenna, the axial legs being aligned with one another on each of the plane conductors, the length of the axial leg of the slot in the source plane conductor being longer than the length of the axial leg of the slot in the ground plane conductor, to reduce the intensity of radiation emanating from the ground plane conductor in a rear direction extending from the source plane conductor toward the ground plane conductor.

As stated above, the expression "a slot" implies that each of the plane conductors has at least one slot.

With this understanding, the feature that the axial legs of the slots are "*aligned with one another*" on each of the plane conductors causes a lack of clarity because the claim does not specify which particular slots on the source plane conductor and the ground plane conductor are considered. For example, the claim covers the case of plane conductors, each having a plurality of slots, wherein a given slot on the source plane conductor would have an axial leg aligned or not with the axial leg of a slot on the ground plane conductor depending on which particular slots are considered.

Moreover, the further feature that the length of the axial leg of "*the slot in the source plane conductor*" is longer than the length of the axial leg of "*the slot in the ground plane conductor*" also causes a lack of clarity for the same reason.

- 11.3 Claim 1 of the ninth auxiliary request differs from claim 1 of the eighth auxiliary request in that the slots also have a transverse leg extending from the peripheral edge to intersect said axial leg.

Although this addition is an attempt to further specify the shape of the slots, it does not invalidate the objection raised under Article 84 EPC 1973 against claim 1 of the eighth auxiliary request.

- 11.4 Therefore, neither claim 1 of the eighth auxiliary request nor claim 1 of ninth auxiliary request meets the provisions of Article 84 EPC 1973.
The eighth and ninth auxiliary requests are not allowable.

12. Tenth auxiliary request

12.1 The tenth auxiliary request was filed during the oral proceedings on 5 December 2011. The amended claim 1 of this request overcomes the Board's objection of lack of clarity and, for this reason, was admitted in the proceedings (Article 13(1) RPBA).

12.2 Claim 1 of the tenth auxiliary request specifies that each of the plane conductors of the antenna has "*a single slot*" (Figures 3A, 4A and 3C, 4C). This feature solves all the clarity problems mentioned with regard to the higher ranking requests, of which claim 1 relates to the case that each of the plane conductors of the antenna has a plurality of slots.

Moreover, it results from the description of the application as filed that the embodiments disclosed in Figures 3A, 4A and 3C, 4C (the embodiment of Figures 3B, 4B is not covered by claim 1 and is therefore disregarded) both disclose an antenna, in which each of the two slots, one on the source plane conductor and one on the ground plane conductor, has an axial leg and a transverse leg, the axial legs and transverse legs being juxtaposed on each plane conductor so that the legs are aligned with one another (page 4, lines 20-21; page 5, lines 25-26), the length of the slot in the source plane conductor being longer than the length of the slot in the ground plane conductor (page 5, lines 7-10; page 5, line 26 to page 6, line 2). Claim 1 recites all these features in combination.

Furthermore, the claimed effect to be achieved is clarified in that it is specified in respect to what the intensity of radiation emanating from the ground plane conductor is reduced.

In summary, claim 1 is a generalisation resulting from the embodiments of Figures 3A, 4A and 3C, 4C entailing a fair extent of protection. It is clearly formulated and supported by the description (Article 84 EPC 1973). It does not extend beyond the content of the application as filed (Article 123(2) EPC).

12.3 Dependent claims 2, 3 and 4 of the tenth auxiliary request are also clearly formulated. They correspond respectively to claims 3, 4 and 9 of the published application.

13. Remittal of the case

Claim 1 of the tenth auxiliary request defines an antenna with a combination of features that was not the object of any request dealt with by the examining division in the examination procedure. For this reason, the Board holds it equitable to remit the case to the examining division (Article 111(1) EPC 1973) for assessing whether the present claims of the tenth auxiliary request, which meet the requirements of Article 84 EPC 1973 and Article 123(2) EPC (see point 12 above), also meet the further requirements of the EPC.

The Board notes that the appellant agreed with the remittal of the case for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar

The Chairwoman:

R. Schumacher

F. Neumann