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**Datasheet for the decision
of 27 April 2012**

Case Number: T 2096/09 - 3.4.01

Application Number: 05257624.6

Publication Number: 1679764

IPC: H01Q 21/24, H01Q 9/30,
H01Q 13/08, H01Q 1/38,
H01Q 21/28

Language of the proceedings: EN

Title of invention:
Array antenna with dual polarization and method

Applicant:
RAYTHEON COMPANY

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)
EPC R. 103

Keyword:
"Added subject-matter (yes, all requests)"
"Substantial procedural violation (no)"
"Reimbursement of the appeal fee (no)"

Decisions cited:
T 0169/83 (OJ 1985, 193), T 0191/93

Catchword:
-



Case Number: T 2096/09 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 27 April 2012

Appellant:
(Applicant)

RAYTHEON COMPANY
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Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 15 June 2009
refusing European patent application
No. 05257624.6 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: G. Assi
Members: H. Wolfrum
M. J. Vogel

Summary of Facts and Submissions

I. European patent application 05 257 624.6 (publication No. EP 1 679 764) was refused by a decision of the examining division dispatched on 15 June 2009 for reasons of lack of novelty and/or inventive step for the subject-matter of a main request and a first auxiliary request then on file. Two further auxiliary requests of the applicant had not been admitted into the proceedings.

II. The applicant lodged an appeal against the decision on 24 August 2009. The prescribed appeal fee was paid on the same day. A statement of grounds of appeal was filed on 22 September 2009.

The appellant requested that the decision be set aside and a patent be granted, by way of a main request, on the basis of a set of claims 1 to 15. Claims 1 to 7 and 12 to 15 of the main request had been filed by a letter dated 6 June 2008, whereas claims 8 to 11 had been filed by a letter dated 14 April 2009. Alternatively, the appellant requested grant of a patent on the basis of a set of claims 1 to 15 filed by the letter dated 14 April 2009, according to a first auxiliary request, or on the basis of sets of claims 1 to 15 according to second and third auxiliary requests and claims 1 to 11 according to a fourth auxiliary request, all filed with the statement setting out the grounds of appeal.

Moreover, the appellant considered the examining division's refusal to admit the then second and third auxiliary requests into the proceedings to amount to a

substantial procedural violation and requested a refund of the appeal fee.

Furthermore, an auxiliary request for oral proceedings was made.

III. On 7 February 2012 the appellant was summoned to oral proceedings to take place on 16 May 2012.

In a communication pursuant to Article 15(1) RPBA dated 28 February 2012 the Board commented on the issues to be addressed during the oral proceedings. In this context, the Board pointed to a number of problems of added subject-matter (Article 123(2) EPC) in the amendments made to the requests that are pursued with the appeal.

IV. The appellant did not comment on the Board's observations nor did it file any further amendments. Instead, the appellant informed the Board by letter of 12 March 2012 that it did not plan to attend the oral proceedings. Moreover, the appellant requested that a decision be issued based on the papers currently held on file.

V. Oral proceedings were cancelled by notification of 29 March 2012.

VI. Independent claims 1 and 12 of the appellant's **main request** read as follows:

*"1. An array antenna (40; 140) comprising:
at least one substrate body;*

a plurality of first antenna elements (70; 170) coupled to a first side of the at least one substrate body (80; 180) and each operable to transmit or receive a first signal; and

a plurality of second antenna elements (60; 160) coupled to the first side of the at least one substrate body (80; 180) and each operable to transmit or receive a second signal;

wherein the plurality of first antenna elements (70; 170) are interleaved with and of a different radiator type than the plurality of second antenna elements (60; 160) to establish a plurality of first and second antenna element pairs; and

wherein a direction of polarization of the first signal is different than a direction of polarization of the second signal.

12. *A method of transmitting or receiving signals with two different polarizations in an array antenna (40; 140), the method comprising:*

providing a plurality of first. antenna elements (70; 170) on a first side of at least one substrate body;

providing a plurality of second antenna elements (60; 160) on the first side of the at least one substrate body, wherein the plurality of first antenna elements (70; 170) are interleaved with and of a different radiator type than the plurality of second antenna elements (60; 160) to establish a plurality of first and second antenna element pairs;

transmitting or receiving a first signal having a first polarization from or at each of the plurality of first antenna elements (70; 170) ; and

transmitting or receiving a second signal having a second polarization from or at each of the plurality of second antenna elements (60; 160) , wherein a direction of the second polarization is different than a direction of the first polarization."

Claims 2 to 11 and 13 to 15 are dependent claims.

The **first auxiliary request** differs from the main request only in that in claim 1 the last feature of claim 1 of the main request is replaced by the feature "*wherein a direction of polarization of the plurality of first antenna elements (70; 170) is different than a direction of polarization of the plurality of second antenna elements (60; 160)*".

The **second auxiliary request** differs from the main request only in that in claim 1 the last feature of claim 1 of the main request is replaced by the feature "*wherein a direction of polarization of the plurality of first antenna elements is different than any direction of polarization of the plurality of second antenna elements*".

The **third auxiliary request** differs from the main request in that in claim 1 the last feature of claim 1 of the main request is complemented by the feature "*and the plurality of second antenna elements (60; 160) include a monopole radiator*". A corresponding amendment is made to independent method claim 12.

Claim 1 of the **fourth auxiliary request** is also based on claim 1 of the main request, the last feature of which is complemented by the feature "*and wherein the*

plurality of first antenna elements (70; 170) include flared notch radiators and the second antenna elements are centered between the flared notch radiators".

Method claims 12 to 15 of the preceding requests are deleted.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 99 EPC and is, therefore, admissible.

2. Procedural matters

The announcement made by the appellant in its letter of 12 March 2012 that it did not plan to attend the oral proceedings scheduled for 16 May 2012, in particular in combination with the concurrent request for a decision based on the papers currently held on file, amounts to a withdrawal of the appellant's former request for oral proceedings.

Consequently, there was no need for the Board to hold oral proceedings or to wait with issuing a decision until the scheduled date of 16 May 2012.

Therefore, the Board decided to cancel the said oral proceedings and to immediately continue the case in writing.

3. Amendments (Article 123(2) EPC)

3.1 In its communication of 28 February 2012, the Board informed the appellant that various amendments made to the claims of the requests on file did not appear to have a proper basis of disclosure in the application documents as originally filed.

3.2 One of these amendments, which is common to claim 1 of the main request as well as of each of the auxiliary requests on file, concerns the feature that the pluralities of first and second antenna elements (transmitting or receiving signals of different polarization directions) are coupled to the same side (*ie* a "first" side) of the at least one substrate body.

In fact, there is no literal disclosure of this feature in the description or claims of the application documents as originally filed. At best, an array antenna having this structure can be discerned in the specific embodiment of Figures 1A and 1B. However, no explanation is given in the application description as originally filed as to the purpose or function of the claimed measure.

According to established case law (see for instance T 169/83 (OJ 1985, 193) and T 191/93 (not published)), amendments to claims by including features which are recognizable only in drawings are allowable, provided such features are clearly, unmistakably and fully derivable from the drawings by a skilled person in terms of structure and function.

This condition is not met in the present case. In particular, it is not apparent, why an array antenna having antenna elements of different types arranged on opposite sides of a substrate body would function differently than an array antenna having these antenna elements on the same side of the substrate.

Moreover, evidently not just any combination of different kinds of antenna elements can be arranged in a physically meaningful manner on the same side of a substrate, let alone in such a manner that the two pluralities of antenna elements would transmit or receive signals of different polarization directions. In other words: it is not readily apparent which combination of types of antenna elements other than the combination of flared notch radiators arranged in the plane of the substrate body and monopole radiators sticking out from that plane, as shown in Figures 1A and 1B, could meet the claimed requirement for the respective signal polarization directions. As a matter of fact, there is nothing in the application documents as originally filed which could justify the claimed generalization in terms of antenna element types from the specific context of the embodiment according to Figures 1A and 1B.

- 3.3 Furthermore, there is no apparent basis of disclosure for the combination of the aforementioned feature with the additional feature of claim 6 of each of the requests on file according to which the flared notch radiator is "embedded in" a circuit board and with the feature of claim 8 of each of the requests on file according to which the flared notch is formed into an edge of a metal plate.

- 3.4 Already for the above reasons, the Board has come to the conclusion that the appellant's requests do not comply with the requirement of Article 123(2) EPC.

The appellant's requests are therefore not allowable.

4. Although having been informed about the above deficiencies, the appellant did not present any further comments nor propose further amendment.

Given the fact that already a single deficiency renders a request unallowable, there is no need, for the purpose of the present decision, to consider other matters concerning the respective claim 1 or further claims of the appellant's requests on file.

5. Alleged procedural violation

The decision by the examining division not to admit new requests in an advanced stage of examination proceedings is a matter of discretion and can amount to a procedural violation only if such discretion is exercised in an unreasoned and arbitrary manner.

In the present case, the examining division gave a clear reason for its decision, ie the finding that lower ranking auxiliary requests did not build further upon a higher ranking request.

In the Board's view, the reasoning that auxiliary requests filed in a late stage of the examination proceedings do not form a sequence of convergent requests appears to be perfectly sensible, given the

fact that the filing of non-convergent requests has a substantive procedural impact on the extent of examination work. This is all the more true in a case as the present one, in which the party which filed new requests to be considered in oral proceedings before the examining division did not participate at these proceedings.

Therefore, the Board does not see any substantial procedural violation in the circumstance that the examining division decided not to admit two of the auxiliary requests filed by the appellant in reaction to the summons to oral proceedings.

For this reason the appellant's request for reimbursement of the appeal fee (Rule 103 EPC) cannot be granted.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

2. The request for reimbursement of the appeal fee is refused.

The Registrar

The Chairman

R. Schumacher

G. Assi