BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 12 June 2013

Case Number: T 1485/09 - 3.5.02

Application Number: 05848150.8

Publication Number: 1817756

IPC: G08B 13/24

Language of the proceedings: EN

Title of invention:
Combination EAS and RFID label or tag

Applicant:
Tyco Fire & Security GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56, 123(2)

Keyword:
"Inventive step - yes, after amendment"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1485/09 - 3.5.02

D E C I S I O N
of the Technical Board of Appeal 3.5.02
of 12 June 2013

Appellant: (Applicant)
Tyco Fire & Security GmbH
Victor von Bruns-Strasse 21
CH-8212 Neuhausen am Rheinfall (CH)

Representative:
Hafner, Dieter
Hafner & Partner
Patent-/Rechtsanwaltskanzlei
Schleiermacherstraße 25
D-90491 Nürnberg (DE)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 13 February 2009 refusing European patent application No. 05848150.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: M. Ruggiu
Members: R. Lord
W. Ungler

Summary of Facts and Submissions

I. This is an appeal of the applicant against the decision of the examining division to refuse European patent application No. 05 848 150.8. The reason given for the refusal was that the subject-matter of claim 11 then on file did not involve an inventive step according to Article 56 EPC.

II. The following documents of the state of the art have been cited during the procedure before the first instance:

D1: WO 00/36572 A1;
D2: US 6 147 606 A;
D3: US 6 097 347 A;
D4: WO 01/84667 A1;
D5: US 2002/0097153 A1.

III. Oral proceedings before the board took place on 12 June 2013. The appellant requested that the decision under appeal be set aside and that a patent be granted in the following version:

Description:
Pages 1, 2, 2A, 2B, 2C, 3 to 5, 5A, 6 to 22, 22A, 23 to 26 and 26A as filed during oral proceedings of 12 June 1013;

Claims:
Claims 1 to 5 as filed during oral proceedings of 12 June 1013;

Drawings:
Sheets 1/10 to 6/10 and 8/10 to 10/10 as originally filed;
Sheet 7/10 as filed during oral proceedings of 12 June 1013.

IV. Claim 1 of the appellant's request reads as follows:

"A security tag (200) comprising:

- an electronic article surveillance (EAS) component (1) having a defined surface area; and
- a radiofrequency identification (RFID) component (2) having a defined surface area, the surface area of the EAS component (1) configured to at least partially overlap (3) the surface area of the RFID component (2), and
- wherein the RFID component (2) includes an antenna (204) and an application specific integrated circuit (208) (ASIC) attached to a substrate (202)

characterized in that

- the ASIC (208) having a complex impedance, and the complex impedance of the ASIC (208) matches a coupled complex conjugate impedance of the antenna (204) including loading effects of the EAS component (1);
- the antenna geometry of antenna (204) is configured to traverse around the perimeter of said substrate (202) and spiral inwardly, and wherein
- the antenna comprises a first portion (306) and a second portion (308) and both portions form an inwardly spiral pattern from the integrated circuit (208) and terminate inside the spiral patterns, and

- each of the portions (306, 308) of the antenna (204) comprises a slot at a segment point (SP2, SP3, SP4) on which the antenna (204) is severed to tune the antenna length of each antenna portion."

Claims 2 to 4 are dependent on claim 1.

Claim 5 of the appellant's request reads as follows:

"A method of tuning a combination of an electronic article surveillance (EAS) component and a radiofrequency identification (RFID) component, said RFID component comprising a substrate (202), the method comprising the step of:

- moving said RFID component to be overlapped by the EAS component so as to change impedance of an antenna of the RFID component,

characterized in
providing an antenna including an antenna conductor having a geometry configured to traverse around the perimeter of said substrate (202) and spiral inwardly, wherein the antenna comprises first (306) and second (308) portions that form an inwardly spiral pattern from the integrated circuit (208) and terminate inside the spiral patterns, and wherein the antenna is tuned by:

- severing the antenna conductors of the two portions (306, 308) into at least two segments such that at least one segment point corresponds to an operating frequency for the antenna based upon the length of the at least two antenna segments; and
- isolating the severed antenna conductor from remaining portions of the conductor, wherein

– a complex impedance of the antenna, including loading effects of the EAS component, is substantially equal to a complex conjugate impedance of an application specific integrated circuit (ASIC) included in the RFID component."

V. The appellant essentially argued as follows:

None of the cited prior art documents disclosed a dipole antenna which spirals inwardly such that, when tuning the antenna by severing end portions, the effective area of the antenna remains unchanged.

The documents D4 and D5 related to a different type of antenna from that claimed, since the independent claims specify a dipole antenna as used in UHF RFID systems, whereas D4 and D5 relate to inductive loop antennae for use in HF RFID systems.

Reasons for the Decision

1. The appeal is admissible.

2. *Admissibility of the amendments (Article 123(2) EPC)*

The examining division did not raise any objections under Article 123(2) EPC to the claims which formed the basis of the decision under appeal. The appellant has correctly indicated the basis for the further amendments to the independent claims introduced during the appeal procedure as being in paragraphs [0096], [0097] and [00102] (of the original international application, published as WO 2006/055653). The

remaining dependent claims are equivalent to original dependent claims 3, 9 and 10, and the description has been amended merely to address formal objections and for consistency with the amended claims. The amended application documents therefore do not contravene Article 123(2) EPC.

3. *Inventive step (Article 56 EPC)*

3.1 Independent claim 1 according to the appellant's current main request differs in substance from that which was the subject of the decision under appeal firstly in that it additionally defines that the antenna is configured to traverse around the periphery of the substrate of the RFID component and spiral inwardly, secondly in that this spiral antenna comprises two portions, each spiralling inwardly from the integrated circuit and terminating inside the spiral pattern, and thirdly in that each antenna portion is severed to produce a slot to tune the antenna length (rather than merely being severable).

3.2 These amendments have two consequences with regard to the objection of lack of inventive step which was the ground for refusal in the decision under appeal. That decision was based on the combination of document D1 with common general knowledge concerning impedance matching illustrated by D2 and D3 and with the teaching of documents D4 and D5 relating to the concept of tuning an RFID antenna by forming slots severing it.

3.2.1 Firstly, the definitions that the antenna comprises two portions and that these each extend from the integrated circuit to a termination inside the antenna spiral

implies that the antenna is a dipole aerial, so that the claims are (in terms of the disclosure of the original application) restricted to the case of using the UHF (ultra-high frequency) band, whereas the claims which formed the basis of the decision under appeal also covered the alternative case using the HF (high frequency) band. This is significant for the assessment of inventive step, because the two documents D4 and D5, which represent the only disclosure in the available prior art of the concept of severing parts of the antenna in order to tune it, specifically relate to RFID components operating in the HF band. In this respect the board agrees with the appellant that the differences in the manner in which the antenna functions in the HF and UHF bands, and the consequences which this has on the effect achieved by the severing of parts of the antenna, are such that the skilled person would not consider the teaching of D4 and D5 to be relevant to the problem of tuning a UHF dipole antenna. In particular, the board notes that for a UHF dipole antenna the main parameter which is relevant for the tuning is the physical length of the antenna portions extending from the integrated circuit, whereas for an HF antenna the relevant parameter is the inductance of the antenna loop which extends between the two terminals of the integrated circuit.

3.2.2 The second consequence of the amendments to the claim concerns the above issue in combination with the definitions relating to the spiral form of the antenna. Specifically, the board notes that D1 provides little teaching concerning the shape of the dipole antenna, since the relevant figures (Figs. 1 to 4) are highly schematic, and that in D2 and D3, which relate to

UHF RFID components with dipole antennae, the only suggestion of a spiral form appears in Fig. 10 of D2, but in that case the antenna spirals outwards from the integrated circuit. As the appellant has argued, the choice of an inward spiral has the advantage that when the ends of the spiral portions are severed for the purposes of tuning, this does not affect the overall area of the antenna, and thus reduces the impact on the antenna sensitivity. As noted in paragraph 3.2.1 above, the teaching of D4 and D5 is of limited relevance, because those documents relate to HF, not UHF devices. Thus, although the antennae depicted in those documents (see e.g. Fig. 2 of D4 and Figs. 5 and 7 to 9 of D5) do show antennae which spiral inwards and portions of which are severed in the centre of the spiral, those antennae do not extend from the integrated circuit to a termination inside the spiral, but instead the integrated circuit is connected to both the external and internal ends of the spiral (e.g. pads 9 in Fig 2 of D4). From this it is apparent that it would not be possible to simply adapt this known spiral structure to the case of a dipole antenna.

3.2.3 For both of the above reasons, the board concludes that, based on the available prior art documents, the skilled person would not be able to arrive in an obvious manner at the combination of technical features now claimed in independent claim 1. Since the independent claim 5 defines the method features which correspond to the device features of claim 1, this conclusion applies also to that claim.

4. The board therefore concludes that the subject-matter of the independent claims 1 and 5 according to the

appellant's main request involves an inventive step within the meaning of Article 56 EPC. Moreover, the amendments to the dependent claims and the description result in them meeting the relevant formal requirements of the EPC. Hence the board finds that a patent can be granted on the basis of this request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent in the following version:

Description:
Pages 1, 2, 2A, 2B, 2C, 3 to 5, 5A, 6 to 22, 22A, 23 to 26 and 26A as filed during oral proceedings of 12 June 1013;

Claims:
Claims 1 to 5 as filed during oral proceedings of 12 June 1013;

Drawings:
Sheets 1/10 to 6/10 and 8/10 to 10/10 as originally filed;
Sheet 7/10 as filed during oral proceedings of 12 June 1013.

The Registrar: The Chairman:

C. Moser M. Ruggiu