

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) No distribution

**Datasheet for the decision
of 17 July 2009**

Case Number: T 2157/08 - 3.5.05

Application Number: 03010129.9

Publication Number: 1359696

IPC: H04L 1/00

Language of the proceedings: EN

Title of invention:

Dynamic adaption of impaired RF communication channels in a communication system

Applicant:

Broadcom Corporation

Opponent:

-

Headword:

Dynamic channel adaptation/BROADCOM

Relevant legal provisions:

EPC Art. 83, 84, 106, 107, 108

Keyword:

"Support by the description (after amendment - yes)"

"Clarity and sufficiency of the disclosure (after amendment - yes)"

Decisions cited:

T 1055/92

Catchword:

-

Case Number: T 2157/08 - 3.5.05

**DECISION
of the Technical Board of Appeal 3.5.05
of 17 July 2009**

Appellant: Broadcom Corporation
5300 California Avenue
Irvine, CA 92617 (US)

Representative: Jehle, Volker Armin
Bosch Jehle Patentanwaltsgesellschaft mbH
Flüggenstrasse 13
D-80639 München (DE)

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 27 June 2008
refusing European application
No. 03010129.9 pursuant to Article 97(2)
EPC.

Composition of the Board:

Chairman: D. H. Rees
Members: A. Ritzka
F. Blumer

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division dispatched 27 June 2008, refusing European Patent Application No. 03 010 129.9 for the reasons that the independent claims 1 and 15 of the main request were not supported by the description, contrary to Article 84 EPC, and that they further comprised unsearched subject-matter. Two auxiliary requests filed during oral proceedings were not admitted into the procedure.
- II. Notice of appeal was submitted on 25 August 2008. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was submitted on 27 October 2008.
- III. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 20 filed with the statement setting out the grounds of appeal. Further, an auxiliary request for oral proceedings was made.
- IV. The board issued an invitation to oral proceedings scheduled to take place on 17 July 2009 accompanied by a communication. In the communication the board objected to lack of support by the description for the independent claims 1, 12 and 19 under Article 84 EPC, implying also an objection under Article 83 EPC, and that they were further not clear.
- V. With its letter of 17 June 2009, in reaction to the summons, the appellant filed claims 1 to 18 of a main request and claims 1 to 14 of an auxiliary request. Further, it presented comments on the objections under Articles 83 and 84 EPC.
- VI. At the oral proceedings, which took place as scheduled on 17 July 2009, the appellant withdrew its main request and maintained the auxiliary request as its sole request. It requested that the decision under appeal be set aside and a patent granted on the basis of the sole request.
- VII. At the end of the hearing the board announced its decision.
- VIII. Claim 1 of the sole request reads as follows:

"A method (2100) of dynamically adapting a communication channel to channel impairments, comprising:
 (a) operating (2104) the communication channel in accordance with a set of operating parameters;
 (b) determining (2108) a channel impairment characteristic related to a channel impairment present in the communication channel;
 (c) determining (2110) a quality metric indicative of channel performance for the communication channel; and
 (d) adjusting (2112) one or more operating parameters in the set of operating parameters when the quality metric

is not within the target range, said adjusting being based on the channel impairment characteristic determined in step (b) so as to bring the quality metric within the target range."

Reason for the Decision

1. *Admissibility*

The appeal complies with the provisions of Articles 106 to 108 EPC. Therefore it is admissible (see Facts and Submissions, point II).

2. *Unsearched subject-matter*

Claims 1 to 14 are based on claims 1 to 5, 7, 10 to 13, 15, 21 to 24, 26, 29 and 31 as originally filed. All of these original claims belong to the group of claims for which the search report was drawn up. Thus, the present claims do not comprise unsearched subject-matter.

3. *Article 84 EPC*

According to established case law of the Boards of Appeal, the requirement for the claims to be supported by the description has to be interpreted in the sense that all the features which the skilled person would understand from the description to be necessary to carry out the invention must be present in a corresponding claim. Thus, in particular features which are necessary to solve the underlying technical problem must be present in the claim. See e.g. T 1055/92, point 5.

The problem underlying the application is inferred from the description, paragraphs [0005] to [0009], to be to mitigate impairments in a communication system.

The skilled person would understand that the flow chart depicted in Figure 21 and the corresponding description in paragraphs [0099] to [0115] disclose the general principle of the claimed solution and that paragraphs [0016] to [0098] disclose details of a cable modem system, representing a specific embodiment. According to the flow chart of Figure 21 a channel is operated according to a set of operating parameters. Channel impairments, e.g. common path distortion, ingress, impulse/burst noise or AWGN (additive white Gaussian noise) are detected and characteristics, e.g. signal to noise ratio SNR, of each impairment are determined. Further, a quality metric which indicates the channel performance, e.g. packet error rate, latency, spectral efficiency, etc. is determined. If the quality metric is not within a given target range, one or more operating parameters are adjusted to bring the quality metric within the target range based on at least one of (a)

the quality metric and (b) at least one of the impairment characteristics.

The board observes that the specific embodiment is disclosed with reference to a large number of apparently interrelated tables including results of measurements without explicit explanation how these tables are to be created or applied and that this extended description of the specific embodiment is only of limited help for understanding the general principle of the claimed subject-matter.

However, the board is satisfied that, after careful analysis of the description, the skilled person would understand that the general method claimed may be applied to all kinds of communication channels affected with known channel impairments and that the CMTS (cable modem termination system) in which the method may be performed is only mentioned as an exemplary embodiment (see page 15, line 15 and page 4, lines 27 and 28). The board accepts that it would be a matter of professional routine to analyse what the relevant channel impairments for a specific communication channel are, to determine the characteristics of each impairment and a quality metric indicative of channel performance and to set up a target range of the quality metric.

Page 16, lines 2 and 3 discloses somewhat ambiguously that the "predetermined ranges may be stored in Adaptation Lookup Tables, as described above." This phrase might be understood as referring to the specific adaptation lookup tables disclosed in paragraphs [0082] to [0098], i.e. to the specific embodiments of the communication channel, the impairments and the quality metrics. It may equally be interpreted as referring to other adaptation lookup tables, only similar in structure to those disclosed in paragraphs [0082] to [0098]. However, the skilled person would understand that it is only one option to store the predetermined ranges in adaptation lookup tables and that the method disclosed with reference to the flow chart of Figure 21 might use different representations of quality metrics target ranges (see page 16, lines 5 and 6).

Figure 21 and the corresponding description disclose that the step of adjusting one or more operating parameters to bring the quality metrics within the target range is based on at least one of (a) the quality metrics and (b) at least one of the impairment characteristics. The skilled person would understand the reference to the quality metrics as basis of the adjustment as merely a reference to bringing the quality metrics within the target range.

Claim 1, which corresponds to a combination of claims 1, 2 and 3 as originally filed, is limited to the option that the adjustment of the operating parameters is based on the impairment characteristics. In addition, it comprises steps 2104, 2106, 2108, 2110 and 2111 of the flow chart depicted

in Figure 21. The board is satisfied that these steps are necessary and sufficient to solve the underlying problem. Thus, claim 1 is supported by the description.

Moreover, the board accepts that claim 1 fulfills the requirements of support and sufficiency in the sense that the method can be put into practice over the whole claimed range for the following reasons. The claimed method is only directed to operating the channel according to a set of operating parameters, detecting channel impairments, determining characteristics of each impairment and a quality metric indicative of channel performance and, if the quality metric is not within a predetermined range, adjusting the operating parameters based on the impairments characteristic so as to bring the quality metric within the target range.

As noted above the board considers that it would normally be a matter of professional routine to analyse what are the quality metrics, relevant impairments to measure them and to determine appropriate corrections of operating parameters, for any specific communications channel. Even though there might be exceptional cases where this would not be a routine undertaking, the board considers reproducibility of the method in all normal cases satisfying the requirement of case law that the claimed invention must be disclosed in a manner which makes it executable across the whole claimed range.

Thus, claim 1 fulfils the provisions of Articles 83 and 84 EPC.

Similar arguments apply *mutatis mutandis* to claim 10, which is directed to a device corresponding to the method of claim 1.

4. *Remittal*

As the decision under appeal was only based on the grounds of unsearched matter and Article 84 EPC and no substantive examination, in particular with regard to novelty and inventive step, has been carried out so far, the case is remitted to the department of first instance for further prosecution.

The board observes that the passage "the target range" in the second line of step (d) of claim 1 should be replaced by "a target range".

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 for further prosecution on the basis of the sole request, corresponding to the auxiliary request filed with letter of 17 June 2009.

Registrar:

Chairman:

K. Götz

D. H. Rees