

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) [X] To Chairmen

**D E C I S I O N**  
**of 25 May 1994**

**Case Number:** T 0666/91 - 3.5.1

**Application Number:** 87302225.5

**Publication Number:** 0238284

**IPC:** H04L 1/20

**Language of the proceedings:** EN

**Title of invention:**  
Analysis of digital radio transmissions

**Applicant:**  
Hewlett-Packard Limited

**Opponent:**  
-

**Headword:**  
-

**Relevant legal norms:**  
EPC Art. 111(1)

**Keyword:**  
"Substantial amendments"  
"Remittal to first instance"

**Decisions cited:**  
-

**Catchword:**



**Europäisches  
Patentamt**

**European  
Patent Office**

**Office européen  
des brevets**

Beschwerdekammern

Boards of Appeal

Chambres de recours

**Case Number:** T 0666/91 - 3.5.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.5.1**  
**of 25 May 1994**

**Appellant:** Hewlett-Packard Limited  
Cain Road  
Bracknell  
GB-Berkshire RG12 1HN (GB)

**Representative:** Smith, Norman Ian  
F.J. CLEVELAND & COMPANY  
40-43 Chancery Lane  
GB-London WC2A 1JQ (GB)

**Decision under appeal:** **Decision of Examining Division of the European  
Patent Office dated 13 March 1991 refusing  
European patent application No. 87 302 225.5  
pursuant to Article 97(1) EPC.**

**Composition of the Board:**

**Chairman:** P.K.J. van den Berg  
**Members:** R. Randes  
G. Davies

## Summary of Facts and Submissions

- I. European patent application No. 87 302 225.5 (publication No. EP-A-0 238 284), filed on 16 March 1987, was refused by a decision of the Examining Division dated 13 March 1991.
- II. The reason given for the refusal was that Claim 1 (as originally filed) was not allowable in that it did not comply with Article 56 EPC because of lack of inventive step having regard to the prior art known from

D1: US-A-4 381 546

D2: IBM TECHNICAL DISCLOSURE BULLETIN, vol. 18, No. 8, January 1976, pages 2726 - 2727, New-York, US, P.G. BRYANT et al.: "Line quality monitoring method";

D3: ICC'80, CONFERENCE RECORD OF THE INTERNATIONAL CONFERENCE ON COMMUNICATIONS, 8th-12th June 1980, Seattle, WA, vol. 2, pages 33.6.1 - 33.6.6, IEEE, New YORK, US; G.L. HEITER et al.: "Measurement and analysis of nonlinearities in digital transmission".

- III. On 22 May 1991, the Applicant filed a Notice of Appeal and paid the appeal fee on the same day. A Statement of Grounds of appeal was filed on 23 July 1991 accompanied by a new set of Claims 1 to 10. Claim 1 reads as follows:

"Apparatus for analysing digital radio transmissions comprising means (52,53) for sampling received digital radio signals to produce for each sampling instant a signal or signals representative of the modulation state

of the transmission at the sampling instant, and processing means (68) which can receive and measure a given number of said signals, said processing means being operable to process said signals in accordance with one or more stored routines to generate one or more parameters which are indicative of the condition of the transmission, and said samples being represented by digitally encoded numbers **characterised in that** said processing means (68) is arranged to allocate said numbers to one of a plurality of groups, the number of groups corresponding to the number of modulation states of the transmission, the evaluation of said parameters by said processing means is carried out by separate statistical processing of the samples of each group and the processing steps include an evaluation of cluster size by an RMS technique to obtain an indication of constellation closure and a modelling step in which a linear model is matched to a measured constellation to obtain an indication of lock and quad error."

New Claim 1 is distinguished from refused Claim 1 in that the last part of Claim 1, starting with "the evaluation of said parameters ..." is new and in that the characterising part of Claim 1 no longer includes that "said samples being represented by digitally encoded numbers", which phrase has been made the last element of the pre-characterising part of the claim.

The Appellant did not file any amendments to the description or the drawings.

IV. The Appellant contested the Examining Division's conclusion that the invention lacked an inventive step. It was stated that the Appellant, in the only letter before the decision under appeal, had made a careful analysis of document D1 and had been of the view that his invention as claimed contained what was considered

to be a significant distinction over document D1. The Appellant still maintained that view but, nevertheless, submitted a revised set of claims which had been drafted to define more clearly the invention for which protection was sought. He stated that Claim 1 now clearly recited "separate statistical processing of the samples of each group and that the processing means can carry out an evaluation of cluster size using an RMS technique and an evaluation of the constellation by matching a linear model to measured constellation. The step of fitting the model to a measured constellation is clearly not disclosed in Document D1 and there is no suggestion that it should be carried out in conjunction with the RMS cluster size technique. This technique allows effective measurement of quad and lock error."

The Appellant also argued that the analysis technique used according to Claim 1 is particularly advantageous for larger rectangular modulation schemes such as 9 PRS and 16 QAM which the apparatus of document D1 is not able to cater for.

The Appellant, moreover, stated that reference to D3 in the decision seemed to be relevant only in respect of certain features set out in the dependent claims. The Examining Division had suggested that D2 was equivalent to D1. According to the Appellant that document, however, did not seem to be more relevant than D1. On the contrary it appeared to be less pertinent than D1 and, therefore, the comments with regard to D1 also appeared to cover D2.

- V. The Appellant requests that the decision to refuse the present application be set aside and the application be granted on the basis of the Claims 1 to 10 (cf. paragraph III above).

Moreover, the Appellant requests oral proceedings should the Board be minded to dismiss the appeal.

### **Reasons for the Decision**

1. The appeal is admissible.
2. As has been made clear above, the Appellant has added new features to Claim 1. These can be identified as follows:
  - (a) the evaluation of said parameters by said processing means is carried out by separate statistical processing of the samples of each group,
  - (b) the processing steps include an evaluation of cluster size by an RMS technique to obtain an indication of constellation closure,
  - (c) a modelling step in which a linear model is matched to a measured constellation to obtain an indication of lock and quad error.

These additions appear to have been made in an attempt to distinguish more clearly the subject-matter of Claim 1 from the teaching of D1 and to overcome the Examining Division's objections in the impugned decision.

Thus, with feature (a) the Examining Division's criticism that "Claim 1 does not contain any features relating to separate statistical processing of the samples of each group" is overcome. The introduction of this feature, which has been taken from the description

(page 4, lines 40 to 50), apparently distinguishes the processing technique now defined in Claim 1 very clearly from the technique disclosed in D1, which teaches to use phase rotation to superimpose all samples into a combined cluster on the C axis.

Feature (b) corresponds to original Claim 7 and feature (c) is supported by the teaching of original Claims 8 and 9. The Examining Division in the impugned decision stated in a general way that "a closest fit (Claim 8) and a lock/quadratur angle evaluation (Claim 9) are also suggested in D1 (see D1, Claim 10; column 4, lines 17-54)" and that "the measurements of constellation closure (Claim 7) ..... are evident from D3". However, these statements were made with regard to isolated features in the dependent claims and in the light of the overall teaching of the then valid independent Claim 1 which did not include the restrictive feature (a) now introduced into Claim 1. Moreover, the impugned decision is silent with regard to the feature that a linear model is matched to a measured constellation as specified in feature (c). Prima facie this feature does not appear to be disclosed by the cited prior art.

3. Thus, the Appellant has made amendments that the Examining Division did not consider in its decision, either in isolation or in combination with other features of the claim. The Examining Division has not rectified the decision under Article 109 EPC. Nor is it obliged to explain the grounds on which it based its refusal to rectify the impugned decision. For this reason the Board is unable to examine that refusal.

However, the Board finds that substantial amendments have been made which require a further examination of the application. It appears to be proper that this re-examination be carried out by the Examining Division,

so that the Appellant is not denied the opportunity of having patentability examined by two instances. The Board, therefore, deems it appropriate to remit the case to the first instance for further prosecution (Article 111(1) EPC).

4. In this respect it is noted that the Examining Division has not indicated whether it has considered the patentability of the subject-matter of refused Claim 1 with regard to Articles 52(2) and (3) EPC. Clearly, this aspect has not been considered with regard to new Claim 1 and should, therefore, be considered in the further prosecution. This should be done in the light of the accepted case law of the Boards of Appeal, that the intention of the EPC is to permit patenting in only those cases in which the invention involves a contribution to the art in a field not excluded from patentability (T 38/86, OJ EPO 90, 384).

It has been concluded in earlier decisions by the Boards of Appeal (e.g. T 115/85, OJ EPO 90, 30), that giving visual indication automatically about conditions prevailing in an apparatus or system is basically a technical problem. However, present Claim 1 does not explicitly mention that the evaluated parameters are displayed or made visible. *Prima facie*, it appears that the contribution by the subject-matter of Claim 1 to the art (which art apparently appears to be represented by the teaching of D1) would be in principle the **evaluation steps** defined in the new part of Claim 1, which steps are performed on said samples represented by said digitally encoded numbers and which are measured by known apparatus. Thus, it appears to be necessary to determine whether such evaluation steps in the given context are of a technical character.



5. Since the appeal is not being dismissed, there is no need to hold oral proceedings (cf. paragraph V above).

**Order**

**For these reasons, it is decided that:**

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution of the application on the basis of the Claims 1 to 10 filed on 23 September 1994 (cf. paragraph III above).

The Registrar:

The Chairman:

M. Kiehl

P.K.J. van den Berg