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**Datasheet for the decision  
of 8 July 2016**

**Case Number:** T 1033/12 - 3.5.03

**Application Number:** 04014150.9

**Publication Number:** 1569367

**IPC:** H04B10/18

**Language of the proceedings:** EN

**Title of invention:**

Optical device for optical communication

**Applicant:**

FUJITSU LIMITED

**Headword:**

Optical communication device/FUJITSU

**Relevant legal provisions:**

EPC Art. 83, 84

**Keyword:**

Sufficiency of disclosure - (no)  
Claims - clarity (no)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
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Case Number: T 1033/12 - 3.5.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.03**  
**of 8 July 2016**

**Appellant:** FUJITSU LIMITED  
(Applicant) 1-1, Kamikodanaka 4-chome,  
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Kanagawa 211-8588 (JP)

**Representative:** Hoffmann Eitle  
Patent- und Rechtsanwälte  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 24 November  
2011 refusing European patent application  
No. 04014150.9 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** F. van der Voort  
**Members:** K. Schenkel  
S. Fernández de Córdoba

## Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division refusing European patent application No. 04014150.9, with publication number EP 1 569 367.
- II. The reason given for the refusal was that claim 1 of a main request did not meet the requirements of Article 84 EPC. First to seventh auxiliary requests were not admitted into the proceedings.

The decision referred, *inter alia*, to the following documents:

D1: US 2004/005110 A; and

D5: EP 0 622 916 A.

- III. With the statement of grounds of appeal the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request as submitted on 30 June 2011. It also submitted arguments in support of that request. Oral proceedings were conditionally requested.
- IV. In a communication annexed to a summons to oral proceedings the board, without prejudice to its final decision, raised objections under Articles 83 and 84 EPC (disclosure of the invention and clarity) and under Article 52(1) EPC in combination with Article 56 EPC (inventive step) in respect of the subject-matter of claim 1. Reference was made to documents D1 and D5.

The board raised the following specific objections under Articles 83 and 84 EPC:

"3. Article 83 EPC

3.1 In the statement of grounds of appeal, the appellant refers to the example of Fig. 6 of the application in suit, in which a laser light signal with frequency  $f_c$  is phase modulated with a frequency  $f_p$  and subsequently intensity modulated with a frequency  $f_i$ . In this example,  $f_i$  is equal to  $f_p$  and, according to the figure on page 5 of the statement of grounds of appeal, all signals are sine wave signals.

If the phase modulation signal is a sine wave signal, as in this example, the frequency chirp follows a cosine wave. However, a cosine wave is linear only at the very zero crossing. Hence, only in infinitesimally small regions at the zero crossings of the cosine signal will the frequency chirp be linear.

Further, in the example, the phase modulated signal is intensity modulated by a sine wave signal. The intensity modulation signal has its maxima coinciding in time with the zero crossings of the cosine signal of the frequency chirp. Since the intensity modulation signal is a sine wave, only in infinitesimally small regions will the signal reach its minima, at which points the phase modulated signal is completely suppressed. Moreover, during half of the cycle time the intensity modulation signal exceeds 50 per cent of the average value. Hence, in the given example, the output signal of the intensity modulation means has a significant amplitude outside the infinitesimally small region in which the frequency chirp is linear. Consequently, not only linear frequency chirp is thereby extracted.

It follows that by driving the phase modulation means and the intensity modulation means according to the features of claim 1, even in the specific example in which sine wave signals are used, this does not result in the extraction of only linear frequency chirp.

3.2 The board understands the appellant's argument such that it argues that the amplitude of the intensity modulated signal is significant only if the input of the phase and intensity modulation function is approximately  $n\pi/2$ ,  $n$  being odd-numbered. The board is however not convinced by this argument, since the feature in claim 1 states that only linear frequency chirp is extracted or, in other words, that no non-linear frequency chirp is present.

3.3 Hence, the application does not appear to disclose the claimed optical device in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

#### 4. Article 84 EPC

4.1 Claim 1 includes the wording "so as to ... extract only linear frequency chirp" and "such that, by making the phases of all frequency spectral components the same, a generated optical pulse becomes a TL pulse". This wording, in the board's preliminary view, is merely defining a result to be achieved, which would satisfy the requirement of clarity pursuant to Article 84 EPC only if it is clear to the skilled reader, without exceeding his normal skills and knowledge, which constructional features of the claimed optical device are thereby implied. This is not fulfilled in the present case. In this respect, the board notes that, since the application as filed does

not appear to disclose any means for extracting only linear frequency chirp (see above, point 3) and making the phases of all frequency spectral components the same, it appears that this clarity objection can not be overcome by the inclusion in the claim of any relevant, originally disclosed constructional features."

- V. The appellant did not file a substantive response, it merely informed the board that it would not be attending the scheduled oral proceedings. Further, it requested a decision according to the state of the file.
- VI. Oral proceedings were held on 8 July 2016 in the absence of the appellant.

The board understood the appellant to be requesting in writing that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 17 of the main request filed with the letter dated 30 June 2011.

After due deliberation, the chairman announced the board's decision.

- VII. Claim 1 reads as follows:

"An optical device for generating light with a narrow pulse width, comprising:  
continuous wave (CW) light generation means (20) arranged to generate continuous wave light;  
phase modulation means (26) arranged to modulate the CW light by phase in dependence upon an electrical data signal or sine wave signal applied to the phase modulation means;

intensity modulation means (27) arranged to modulate the phase-modulated CW light by intensity, in dependence upon an electrical data signal or sine wave signal with the same frequency as that of the electrical data signal applied to the phase modulation means, so as to apply a time gate and extract only linear frequency chirp; and optical dispersion means (28) arranged to generate optical pulses by compensating for frequency chirp, which has been generated in the phase-modulated CW light by said phase modulation; wherein the intensity modulation means is driven in the timing when the respective phases of the phase modulation means and intensity modulation means are the same or reverse; such that, by making the phases of all the frequency spectral components the same, a generated optical pulse becomes a TL pulse."

### **Reasons for the Decision**

1. As noted above, the appellant made no substantive response to the board's communication. Having again considered its own reasoned objections under Articles 83 and 84 EPC as set out in that communication (see point IV above), the board sees no reason to deviate from its preliminary view and therefore confirms the objections under Articles 83 and 84 EPC in respect of claim 1 of the main request.

Consequently, the main request is not allowable.

2. There being no allowable request, it follows that the appeal must be dismissed.



**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



G. Rauh

F. van der Voort

Decision electronically authenticated