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D E C I S I O N
of 21 March 2006

Case Number: T 1014/03 - 3.5.01
Application Number: 00104013.8
Publication Number: 1006724
IPC: H04N 7/173, H04N 7/14
Language of the proceedings: EN

Title of invention:

A local area network for simultaneous, bi-directional transmission of video bandwidth signals

Applicant:

iGate Inc

Opponent:

-

Headword:

Local area network/IGATE

Relevant legal provisions:

EPC Art. 56, 123(2)

Keyword:

"Added subject matter (main request - yes)"

"Inventive step (auxiliary request - no)"

Decisions cited:

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Catchword:

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Case Number: T 1014/03 - 3.5.01

D E C I S I O N
of the Technical Board of Appeal 3.5.01
of 21 March 2006

Appellant: iGate Inc.
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Representative: Moore, David Simon
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 29 April 2003
refusing European application No. 00104013.8
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. Steinbrener
Members: R. Wibergh
A. Pignatelli

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse European patent application No. 00 104 013.8.
- II. The following document will be referred to in the present decision:
- D5: US-A-4 199 668.
- III. The notice of appeal was received on 30 June 2003 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal, received on 24 August 2003, contained an amended set of claims and arguments.
- IV. By a communication dated 24 August 2005, the Board summoned the appellant to oral proceedings. Observations were made under Articles 84 and 123(2) EPC. It was further stated that the distinguishing features of claim 1 were well known as such and that it was not apparent that the invention involved an inventive step.
- V. By letter dated 19 March 2006, the appellant filed an amended set of claims forming a new main request.
- VI. Oral proceedings were held on 21 March 2006. The appellant submitted an amended set of claims according to an auxiliary request.

VII. Claim 1 according to the appellant's *main request* reads:

"1. A method for automatically equalising a signal sent over twisted pair wiring, comprising the steps of:
sending from a transmitter a reference frequency signal on the twisted pair wiring along with the signal to be equalised;
receiving the signal a reception point */sic/* (540);
splitting the reference frequency signal off from the signal to be equalised at the reception point (540);
measuring the amount of attenuation of the reference frequency signal at the reception point;
at the transmitter an analog signal is combined with a data signal as a differential signal, wherein at the receiver the differential signal is converted into common mode by a convertor (706)
characterised in that
the common mode signal is filtered by a filter (710) to remove the reference frequency so that the attenuation of the reference frequency can be measured, the receiver being adapted to communicate any attenuation or degradation to the transmitter and
providing a plurality of circuits (C1-C8) adapted to boost the signal; and
automatically selectively engaging said circuits by means of a CPU (700) controlled digital control (716) to equalise the signal depending upon the amount of attenuation measured in the reference frequency,
wherein frequency modulators (920, 922, 930 & 940) are provided, which modulators are adapted to translate the modulated signals to new spectral locations, which translation is controlled by CPU (700)."

Claim 1 according to the appellant's *auxiliary request* reads:

"1. A method for automatically equalising a signal sent over twisted pair wiring, comprising the steps of: sending from a transmitter a reference frequency signal on the twisted pair wiring along with the signal to be equalised; receiving the signal at a reception point (540); splitting the reference frequency signal off from the signal to be equalised at the reception point (540); measuring the amount of attenuation of the reference frequency signal at the reception point; at the transmitter an analog signal is combined with a data signal as a differential signal, wherein at the receiver the differential signal is converted into common mode by a convertor (706) characterised in that the common mode signal is filtered by a filter (710) to remove the reference frequency so that the attenuation of the reference frequency can be measured, and providing a plurality of circuits (C1-C8) adapted to boost the signal; and automatically selectively engaging said circuits by means of a CPU (700) controlled digital control (716) to equalise the signal depending upon the amount of attenuation measured in the reference frequency, wherein frequency modulators (920, 922) and frequency shift key modulators (930, 940) are provided, the frequency modulators (920, 922) being adapted to translate the analog signal to new spectral locations and the frequency shift key modulators (930, 940) being adapted to translate the data signal to new spectral locations, which signals are then combined."

VIII. In respect of the main request the appellant argued that the support for the added feature "the receiver being adapted to communicate any attenuation or degradation to the transmitter" could be found in figure 14 and on p. 30, l. 20-27 of the original application. It was however true that the precise language of the claim was not used in the description.

As to the issue of inventive step, the appellant noted that claim 1 was delimited against D5, which document represented the closest prior art. D5 addressed the issue of signal degradation solely in the context of the transmission of a television program via a telephone system, which would be a unidirectional system. It should be borne in mind that a significant level of noise was generally acceptable in a television system, whereas noise became a much more significant issue in the transmission of data packets.

Furthermore, the known circuit was slow since the carrier had to be boosted several times in the event of signal degradation. The invention according to claim 1 advantageously solved the problem of signal degradation of electrical signals caused by noise in such a manner that the differential signal transmitting the combined analog and digital data signals only required about half of the available frequency spectrum on a standard twisted pair copper wire. As according to the invention an auto-equalisation process would be applied across the whole of the frequency spectrum, the circuitry could typically restore an entire signal within 3 dB. The automatically selectively engageable circuits could then move the signal around within the available

bandwidth to obtain the best results. This was not contemplated or suggested by the prior art.

- IX. The appellant requested that the appealed decision be set aside and the patent be granted on the basis of claims 1 to 5 as filed with the letter of 19 March 2006 (main request) or alternatively claims 1 to 5 as filed during the oral proceedings (auxiliary request).
- X. At the end of the oral proceedings the Board announced its decision.

Reasons for the Decision

1. Admissibility of the appeal

The appeal complies with the requirements referred to in Rule 65(1) EPC and is therefore admissible.

The main request

2. Amendments

There is no unambiguous support in the original application for the feature "the receiver being adapted to communicate any attenuation or degradation to the transmitter" in claim 1. As admitted by the appellant, this precise language is not used in the application as originally filed. The passage referred to by the appellant (p. 30, l. 20-27 of the original application, corresponding to col. 20, l. 36-43 of the A1 publication) does not concern information about the signal degradation. It is however clear from figures 14

and 20 that the combined signals from the transmitter (user interface 530C1) are processed in the receiver (hub 750) by the circuits 850 and 857 to obtain a signal "characteristic of the incoming signal degradation that occurred through the transmission line" (cf. paragraph [0081]). However, this signal is intended for the central processor 700, which is not located in the transmitter but in the receiver (cf. fig. 14). There is thus no basis for the feature that degradation data are communicated to the transmitter.

It follows that claim 1 according to the main request comprises added subject-matter going beyond the content of the application as originally filed, contrary to the requirements of Article 123(2) EPC. Thus, this request is refused.

The auxiliary request

3. Amendments

In claim 1 of the auxiliary request filed during oral proceedings the added subject-matter has been deleted and the last feature of the claim has been brought in line with the original disclosure (see paragraph [0078] of the A1 publication). Claim 1 is therefore considered admissible.

4. Inventive step

4.1 The appellant has acknowledged that claim 1 is delimited against D5, ie that its preamble is known from this document. D5 further discloses

- providing a plurality of circuits (the different stages in the equaliser EV) adapted to boost the received signal, and
 - automatically selectively engaging said circuits by means of a microprocessor-controlled digital control (UC_r , MM in fig. 3) to equalise the received signal depending upon the amount of attenuation measured in the reference frequency (which is any one of the signals $f_1 - f_4$ shown in fig. 2).
- 4.2 The invention as defined in claim 1 thus differs from the method known from D5 in that:
- a) frequency modulators and frequency shift key modulators are provided, the frequency modulators being adapted to translate an analog signal to new spectral locations and the frequency shift key modulators being adapted to translate a data signal to new spectral locations, which signals are then combined; and
 - b) the signal to be equalised is filtered by a filter in order to remove (ie discriminate) the reference frequency. Here it is assumed, to the benefit of the appellant, that the expression "filter" does not cover the heterodyne detection used in D5 to split off the reference frequency from the signal to be equalised (cf. fig. 3 of D5, frequency synthesizer GL and mixer CV).
- 4.3 The objective problem solved by distinguishing feature a) is to transmit a plurality of different signals through the twisted pair wiring. However, frequency modulators and frequency shift key modulators are as such well known circuits, something which the

appellant has not denied. In the invention these techniques are used for modulating audio and digital signals, respectively (cf. fig. 14), which is nothing but their normal application. Such modulators are thus obvious choices for processing any analog and digital signals to be transmitted over a communication channel. In D5 a television program is transmitted (col. 1, l. 36). A television signal would normally include audio signals, and often digital signals as well. Thus, it was obvious to add feature a) to the equalising method known from D5.

- 4.4 The objective technical problem of distinguishing feature b) can be seen in finding an alternative to the heterodyne detection used in D5.

The general principle of separating signals of different frequencies using a filter is, naturally, basic knowledge in electrical engineering. Depending on the circumstances, such as the frequencies involved and the complexity of the circuits, the skilled person would select a filter instead of a heterodyne detector without the exercise of inventive skill. Thus, this modification was also obvious.

- 4.5 The appellant has argued the equalisation according to D5 is comparatively slow since performed serially (there are four reference frequencies $f_1 - f_4$, which are applied cyclically), whereas the invention uses a parallel concept leading to a faster solution. However, the Board cannot see that claim 1 indicates such a parallel concept.

4.6 No synergetic or surprising effect between features a) and b) is apparent which could support an inventive step, nor was the appellant able to submit convincing arguments in this respect during the oral proceedings. If the allegation that the equalization is improved (see the last part of point VIII above) is based on the understanding that the receiver can control the signal modulations performed in the transmitter, the Board can only repeat that the application does not disclose any such method steps (as noted with respect to the main request).

Thus, the subject-matter of claim 1 of the auxiliary request does not involve an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

P. Guidi

S. Steinbrener