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D E C I S I O N
of 23 January 2002

Case Number: T 0317/01 - 3.5.1

Application Number: 95942425.0

Publication Number: 0795252

IPC: H04N 7/14

Language of the proceedings: EN

Title of invention:

Video modem

Applicant:

Video Network Communications, Inc.

Opponent:

-

Headword:

Video modem/VIDEO NETWORK COMMUNICATIONS

Relevant legal provisions:

EPC Art. 56, 111(1), 114(1)

EPC R. 67, 68(2)

Keyword:

"Substantial procedural violation (yes)"

"Remitted to the Examining Division (no)"

"Inventive step (no)"

Decisions cited:

T 0021/81

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0317/01 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 23 January 2002

Appellant: Video Network Communications, Inc.
50 International Drive
Portsmouth, NH 03801-2862 (US)

Representative: Hogg, Jeffery Keith
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 13 October 2000
refusing European patent application
No. 95 942 425.0 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. V. Steinbrener
Members: R. S. Wibergh
P. Mühlens

Summary of Facts and Submissions

I. This appeal is against the decision of the Examining Division to refuse European patent application No 95 942 425.0.

II. The following documents will be referred to in the present decision:

D1: WO-A-93/11637

D2: US-A-4 955 048

D3: US-A-3 974 337.

III. The proceedings before the first instance can be summarised as follows:

The Examining Division issued a communication in which an obviousness argument was developed based on D3, said to be the closest document, in combination with D2. It was not argued that the invention lacked an inventive step with respect to D1. In the letter of reply, dated 10 March 2000, the appellant stated that "D3 relies on the inherent attenuation characteristics of telephone lines and the skilled person would have no motivation to even consider the use of filtering to eliminate one of the side-bands". A new set of claims were filed with the same letter. At that point the application was refused.

IV. In the decision, the Examining Division held that the subject-matter of claim 1 was obvious having regard to document D1, which was now said to represent the closest prior art, together with D2. It was further

observed that claim 1 lacked an inventive step with respect to D3 in combination with D2 and taking the knowledge of the person skilled in the art into account. The complete reasons for this view were as follows: "This is because the skilled person would have considered any type of commonly known filters capable of suppressing one of the sidebands as disclosed in D3. Thus the skilled person would have considered for this purpose a band pass filter as claimed" (decision, point B.1). The decision also contained a description of the cited prior art.

V. Together with the grounds of appeal, dated 16 February 2001, the appellant requested grant of a patent based on the claims as filed with the letter of 10 March 2000. As a first auxiliary request, an amendment was made to independent claim 15. Further amendments to the independent claims were requested as a second auxiliary request.

VI. In a communication from the Board the opinion was expressed that the decision under appeal was lacking in that it contained important reasons to which the appellant had had no opportunity to present his comments. This concerned the argumentation based on D1. As to the alternative reasons in the decision based on D3, a complete argument had not been given and the applicant's observations presented in the letter of reply had not been properly met. Thus the requirements of Rule 68(2) EPC, according to which decisions open to appeal shall be reasoned, were not met. Either way, the Examining Division had committed a substantial procedural violation which would normally lead to the decision under appeal being set aside and the case being remitted to the Examining Division. The appellant

was asked to comment on this issue.

VII. The appellant then declared that it was preferred that the Board should exercise its power under Article 111(1) EPC and decide on the case directly.

VIII. The Board issued an invitation to attend oral proceedings and stated that in its preliminary opinion the invention lacked an inventive step with respect to D3.

IX. Oral proceedings before the Board were held on 23 January 2002. In the course of the proceedings the appellant filed new sets of claims according to second, third and fourth auxiliary requests. The claims of the requests were as follows:

Primary request:

Claim 1:

"A method for transmitting moving video information over a single pair of unshielded twisted pair (UTP) wires, comprising the steps of:

a) frequency modulating a first carrier signal in accordance with a first composite video signal having a luminance component and a color subcarrier and producing thereby a first FM signal comprising a first upper sideband and a first lower sideband each including said color subcarrier of said first composite video signal;

b) filtering said first FM signal with a first band pass filter to suppress one of said first sidebands and to pass the other of said first sidebands and producing

thereby a first filtered signal having a frequency bandwidth less than that of said first FM signal; and

c) from a first physical location, injecting said first filtered signal into said single pair of UTP wires".

Independent claim 15 was directed to a corresponding apparatus for transmitting moving video information, with the difference that the filtering means for filtering the first FM signal was not referred to as a "band pass" filter.

First auxiliary request:

Claim 1 was left unamended and claim 15 was limited to an apparatus comprising a bandpass filter.

Second auxiliary request:

Claim 1 was amended to state that the unshielded twisted pair of wires have a length of up to 2000 feet (ie about 600 m).

Third auxiliary request:

Claim 1 was amended to include the steps of:

"c) frequency modulating a second carrier signal in accordance with a second composite video signal having a luminance component and a color subcarrier and producing thereby a second FM signal comprising a second upper sideband and a second lower sideband each including said color subcarrier of said second composite video signal;

d) filtering said second FM signal with a second band pass filter to suppress one of said second sidebands and to pass the other of said second sidebands, and

producing thereby a second filtered signal having a frequency bandwidth less than that of said second FM signal; and

e) injecting said first and said second filtered signal into said single pair of UTP wires".

Fourth auxiliary request:

This request was a combination of the second and third auxiliary requests.

- X. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the primary request filed with letter dated 10 March 2000 or on the basis of the first auxiliary request filed with letter dated 16 February 2001 or on the basis of claim 1 of the second, third or fourth auxiliary requests filed in the oral proceedings.

- XI. At the end of the oral proceedings the Chairman announced the order of the Board's decision.

Reasons for the Decision

1. *The invention*

The invention concerns the transmission of colour video signals over a pair of unshielded twisted telephone wires. Such wires normally run between 20 and 2000 feet (about 6 to 600 m) within office buildings. A typical NTSC colour signal has a bandwidth of about 6 MHz. This poses a problem since long telephone wires cause severe attenuation at high frequencies (cf. pages 1 and 2 of

the A-publication). It is therefore proposed to transmit the video signals using frequency modulation (FM) with a low modulation index and suppressing one of the sidebands (for example the upper one) with a bandpass filter. With this technique, referred to as "vestigial sideband FM" (cf. page 7, 2nd paragraph of the A-publication), it would even be possible to transmit more than one video signal over the pair of wires (cf. e.g. Figure 2 of the A-publication).

2. *The main request*

2.1 D3 is regarded as describing the closest prior art. An express object in D3 is to transmit wide band video signals without distortion over an ordinary telephone line (column 1, lines 16 to 20). The line may be 1 km long (or more) and the attenuation, which increases strongly with frequency, amounts to 50 or 60 dB already at 4.5 MHz (Figure 4; column 2, lines 58 to 63). To attain this object, low modulation index FM is used. Due to the channel attenuation the upper side band is substantially not transmittable, but a technique is presented involving an amplitude limiter in the receiver which is capable of recreating this sideband. As an example, a video signal having a frequency range between 30 Hz and 4 MHz can be transmitted at .6 to 4.8 MHz. The low signal frequencies are transmitted in both sidebands, the higher frequencies only in the lower sideband (cf the passage bridging columns 2 and 3).

2.2 The appellant has argued that the main difference between the invention according to claim 1 and the prior art known from D3 resides in the "band pass filter /used/ to suppress one of said first sidebands",

thus leading to sharp cutoff points in the frequency characteristic of the filtered signal and allowing an increased number of signals within the available bandwidth. In D3 the channel attenuation was simply accepted and in fact even relied upon to produce a signal having a long trailing edge. Active filtering of the signal before transmission was not suggested.

2.3 The Board agrees in part with this conclusion: if no other modification of the known method is contemplated, no advantage appears to be gained by adding a filter. However, D3 is concerned with comparatively long transmission lines. Depending on the application, the line may be considerably shorter. The skilled person would therefore consider whether the technique described in D3 could also be used at smaller distances. Furthermore, he would realise that the attenuation would then be less (see Figure 4 of D3), which means that a larger bandwidth would be available. A simple calculation, using well-known data, would show that more than one video signal might be transmitted simultaneously over a pair of wires. Clearly this would be of interest. (D3 discusses duplex communications, albeit using two pairs of wires.) Conventionally, bandpass filters are used to suppress inter-channel interference. Adding filters to the described circuit, the skilled person would arrive at what is essentially the subject-matter of claim 1. The further difference that the invention concerns a colour signal rather than a black and white signal is an obviously desirable feature. Therefore, the Board finds that the method of claim 1 does not involve an inventive step.

2.4 The appellant has criticised the above reasoning on the grounds that the skilled person is assumed to be

capable of performing several steps. This would however have required inventive ingenuity. According to the appellant, the skilled person may not have seen the need for transmitting more than one video signal. Furthermore, even if he had recognised this need he would have had to realise that the transmissions could be performed by increasing the bandwidth of the channel rather than adding a second channel, as is done in D3. He must also have understood that more bandwidth can be obtained if the telephone wires are shorter, that the video signals can be squeezed into this wider bandwidth, and that in order to do so a single sideband technique might be used.

- 2.5 The Board is not convinced by these arguments. It should be kept in mind that the skilled person in this case is a telecommunications engineer who is accustomed to think in terms of bandwidth. To him, D3 describes a way of transmitting a wideband signal over a channel having such strong attenuation that previous attempts to do so have failed (cf. D3, column 2, lines 19 to 24). It is thus a technique which is presented as being efficient with respect to bandwidth. The Board is unable to see how the skilled person could avoid considering the use of such a method in analogous situations where the bandwidth is a problem. It is also clear from D3 that the method can be used even if the attenuation is strongly frequency dependent. The possibility to transmit more than one video signal in the same manner was therefore, in the Board's opinion, clearly obvious. The fact that D3 proposes to use separate pairs of wires for the video signals would be attributed by a skilled person to the greater attenuation of longer lines.

Although the bandwidth consideration naturally requires an additional effort by the skilled person, it is not beyond what is normally required by a telecommunication system engineer. The design of this kind of system involves consideration and optimisation of a number of parameters, such as the nature of the data signals, their number, their bandwidth, the channel capacity, the signal to noise ratio, the signal to interference ratio, etc. It cannot be inventive simply to consider all the design factors which are known to be relevant, even if there are many of them. The fact that several steps were needed to go from D3 to the invention is therefore not an indication of an inventive activity as long as all the steps would have to be considered by a skilled person in the course of an ordinary design process. Certainly the crucial parameters in the present case, in particular the channel capacity and the signal bandwidth, are factors which no designer would neglect.

2.6 The appellant has suggested that other bandwidth reduction methods than the one in D3 could have been used to transmit video signals over a poor transmission channel. The Board agrees but cannot see why the existence of such other possibilities would render the invention non-obvious. Furthermore, the method described is even known to be suitable for the particular kind of channel set out in claim 1 of the present application, ie a pair of unshielded twisted wires characterised by a strongly frequency-dependent attenuation.

2.7 The appellant has further submitted that the invention makes use of the particular shape of the attenuation vs. frequency curve for distances between 20 and 2000

feet, which is more flat than the curve at 1 km (D3). The Board first notes that the application seems not to mention this advantage. Second, if it was obvious for other reasons at least to try the method of D3 at cable lengths below 1 km, which the Board holds is the case, any advantage which would then be discovered could be regarded as a mere bonus effect in the meaning of T 21/81 (OJ EPO 1983,15).

2.8 For these reasons, the primary request must be rejected for lack of inventive step (Article 56 EPC).

3. *The first auxiliary request*

This request must also be rejected since claim 1 is the same as according to the primary request.

4. *The second auxiliary request*

The claimed method is limited to wires having a length of 20 to 2000 feet, ie about 6 to 600 m. It has however been concluded above that the skilled person would have had no reason to regard the distance of 1 km as anything more than an example. For other applications, eg within buildings, shorter lengths would be used. Thus claim 1 does not involve an inventive step.

5. *The third auxiliary request*

According to this request a second colour video signal is injected into the wires. The reasoning with regard to the primary request already involves the possibility of using more than one signal. Again, it would be obvious to add a bandpass filter to avoid interference with signals on neighbouring channels.

6. *The fourth auxiliary request*

This request adds the features of the second and third auxiliary requests. Since no combination effect appears to be obtained this final request must also be rejected.

7. *Procedural matters*

The Board is of the opinion that the Examining Division committed a substantial procedural violation when refusing the application for reasons which were based on a prior art document (D1) which had not been discussed before. The appellant's right to be heard was infringed, contrary to Article 113(1) EPC. The alternative reasoning in the decision, based on D3, is nothing more than a brief summing-up of the conclusions arrived at in the communication. It is deficient in particular in that the appellant's counter-arguments presented in reply to the communication are not met. These arguments were not of a trivial or formal nature and should have been commented upon. Thus the reasoning in the decision is not complete, causing Rule 68(2) EPC to be contravened. In this context it does not matter that, in the final analysis, the Board does not regard these arguments as fully convincing.

In spite of a substantial procedural violation having been committed the appeal fee cannot be reimbursed since the appeal is not allowable (cf the requirements for fee reimbursement contained in Rule 67 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

S. Steinbrener