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Datasheet for the decision of 5 October 2007

Case Number: T 1529/05 - 3.5.03

Application Number: 01916220.5

Publication Number: 1260072

IPC: H04B 3/38

Language of the proceedings: EN

Title of invention:
DSL repeater

Applicant:
2Wire, Inc.

Opponent:
-

Headword:
DSL repeater/2WIRE

Relevant legal provisions:
EPC Art. 56, 84, 123(2)

Keyword:
"Inventive step (no)"
"Clarity (no)"
"Added subject-matter (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1529/05 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 5 October 2007

Appellant: 2Wire, Inc.
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Representative: Käck, Jürgen
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Decision under appeal: **Decision of the examining division of the European Patent Office posted 15 July 2005 refusing European application No. 01916220.5 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. S. Clelland
Members: F. van der Voort
R. Moufang

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division to refuse European patent application No. 01916220.5, publication number EP 1260072, which is based on international application PCT/US01/06017, publication number WO 01/63866 A.

The reason for the refusal was that the claimed subject-matter did not involve an inventive step, Articles 52(1) and 56 EPC.

II. In the statement of grounds of appeal the appellant requested that the decision be set aside and a patent be granted on the basis of the claims as filed during the oral proceedings before the examining division. In a subsequent letter the appellant conditionally requested oral proceedings.

III. Claim 1 as filed during the oral proceedings before the examining division reads as follows:

"A repeater arrangement including a DSL (Digital Subscriber Line) repeater coupled to a local loop and adapted to improve transmission of DSL signals over the local loop (214), the DSL signals having a first frequency band for DSL signals traversing the local loop (214) in a first direction and a second frequency band for DSL signals traversing the local loop (214) in a second direction, wherein the DSL repeater comprises:

a first filter (302) for receiving DSL signals transmitted over the local loop (214) in the first direction and significantly attenuating signals within the second frequency band;

a first amplifying equalizer (304) coupled to and receiving the output signal of the first filter (302), wherein the first amplifying equalizer (304) amplifies higher frequency signals of the first frequency band more than lower frequency signals of the first frequency band to equalize DSL signals filtered by the first filter (302), and passing the amplified DSL signals onto the local loop (214); a second filter (312) for receiving DSL signals transmitted over the local loop (214) in the second direction and significantly attenuating signals within the first frequency band; and

a second amplifying equalizer (314) coupled to and receiving the output signal of the second filter (312) for amplifying and non-adaptively equalizing DSL signals filtered by the second filter (312), and passing the amplified and non-adaptively equalized DSL signals onto the local loop (214);

wherein the second amplifying equalizer (314) is configured to amplify higher frequency signals of the second frequency band DSL signals more than lower frequency signals of the second frequency band DSL signals;

the arrangement further comprising:

POTS (Plain Old Telephone Service) loading coils (402) coupled to the local loop (214) in parallel to the DSL repeater and adapted to improve transmission of POTS band signals over the local loop (214)."

Claim 7 as filed during the oral proceedings before the examining division reads as follows:

"The DSL repeater arrangement of claim 1, wherein the first amplifying equalizer (304) has a capacitor (1404)

with an electrical impedance based on frequency that is electrically connected to a first amplifier (1402) between the first amplifier's (1402) inverting input and output."

IV. The appellant was summoned to oral proceedings. The relevant parts of the communication which accompanied the summons, in which "D1" refers to US 4 970 722 A, read as follows:

"2. ...

The following additional documents, known to the board and cited in accordance with Article 114(1) EPC, are introduced into the proceedings as evidence of common general knowledge relevant to the present case:

D7: US 4 392 225 A;

D8: US 4 262 164 A;

D9: US 3 144 607 A; and

D10: WO 97/20396 A.

...

5. *Article 123(2) EPC*

5.1 The application as originally filed does not appear to provide, either explicitly or implicitly, a basis for the term "non-adaptively" in claim 1, lines 23 and 25, it being noted that

the definition of the second amplifying equalizer (314), to which this term relates, is a generalisation of the specific embodiment of the upstream amplifying element 314 as shown in Fig. 13.

5.2 Similarly, the application as originally filed does not appear to provide a basis for the first amplifying equalizer as specified in claim 7. This claim relates to the embodiment of Fig. 14. However, whereas according to Fig. 14 the capacitor 1404 is one of a number of components which together form the downstream amplifying element, claim 7 specifies the capacitor 1404 in isolation.

5.3 Claims 1 and 7 do not therefore appear to meet the requirements of Article 123(2) EPC.

6. *Article 84 EPC*

6.1 In claim 1, lines 12 and 20, the term "significantly" in "significantly attenuating signals" has no precise meaning within the relevant field. In claim 7, it is unclear what is meant by "based on frequency" in "an electrical impedance based on frequency", since the impedance of a capacitor is, by definition, frequency dependent.

6.2 Claims 1 and 7 do not therefore appear to comply with the requirements of Article 84 EPC due to a lack of clarity.

7. *Inventive step*

7.1 In the statement of grounds of appeal the appellant seems to argue that, although D1 discloses a repeater which includes all of the features of the repeater as specified in claim 1 with the exception of the implied DSL frequency bands, D1 is not a suitable starting point, since it relates to a broadband LAN, in which the network lines as well as the passive and active components are all confined to the frequency standard used in the LAN for transmitting digital signals underlying a specific format, and not to POTS and DSL technology.

7.2 The board notes however that the use of carrier frequency repeaters, in which frequency division multiplexing is used, was, at the priority date of the application in suit, well-known in the field of telephone carrier systems as well, see, for example, the introductory part of D7, col. 1, lines 5 to 40 ("field of invention" and "background").

More specifically, D7 discloses a repeater 10 (see Fig. 1) for a telephone carrier system 12 having a two-conductor transmission line 14, in which signals in a first band (104 - 160 kHz) transverse the line in a first direction and signals in a second band (8 - 64 kHz) transverse in the opposite direction. The repeater 10, see Fig. 2, includes filters 38, 60 and amplifying equalizers, including frequency dependent attenuators 52, 72 and amplifiers 44, 66, for the respective

frequency bands, which compensate for the low-pass characteristic of the transmission line (see col. 11, lines 42 to 51, col. 17, lines 33 to 41 and col. 18, lines 39 to 45).

D7 does not however disclose the exact locations of the repeaters in the transmission line, apart from the suggestion to connect the repeaters to the transmission line "at spaced apart locations", see col. 1, lines 14 to 22.

7.3 It was however furthermore common to space carrier frequency repeaters apart at the standard load coil spacing for voice frequency transmission, see, for example, the prior art acknowledged in D8, col. 2, lines 21 to 24 ("The result often has been that the telephone companies space T1 carrier repeaters, even on these improved cables, at 6000 feet to be coincident with the load coils.") and col. 1, lines 39 and 40 ("... standard load coil spacing of 6000 feet for voice frequency transmission.").

Further, D9, which was published in 1964, appears to prove that it was well-known at the priority date of the application in suit to connect a repeater in parallel to a loading coil. More specifically, D9 discloses a repeater station for carrier frequency signals of at least 60 kHz, in which a loading coil 14, see Fig. 1, is coupled to the local loop in parallel with repeater equipment 5 and which is adapted to improve transmission of POTS band signals over the local loop (see D9,

col. 2, lines 43 to 50 ("engineer's speech") and col. 3, lines 64 to 66).

7.4 In view of the common general knowledge of the person skilled in the art, it would therefore appear that if the person skilled in the art is facing the problem of applying the repeater disclosed in D7 to an existing POTS telephone network including loading coils, he would, without the exercise of inventive skill, arrange the repeaters at the locations of the loading coils and connect the repeaters in parallel to the loading coils in order to maintain the POTS services. Further, since the use of a POTS transmission line for combined POTS and DSL services was well-known at the priority date of the application in suit (see, e.g., D10, page 1, lines 5 to 20), it appears that accordingly adapting the repeater disclosed in D7 for DSL frequency bands is an obvious measure.

7.5 Hence, it appears that the subject-matter of claim 1 does not involve an inventive step (Articles 52(1) and 56 EPC)."

V. In response to the summons to oral proceedings, the appellant informed the board that the applicant and the representative of the applicant would not participate in the oral proceedings. No amendments and no further comments in reply to the communication were filed.

VI. Oral proceedings were held on 5 October 2007. At the end of the oral proceedings the board's decision was announced.

Reasons for the Decision

1. *Procedural matters*

As noted above, the appellant, which was duly summoned, had informed the board that it would not attend the oral proceedings. The oral proceedings were thus held in the absence of the appellant (Rule 71(2) EPC).

2. *Articles 52(1), 56, 84 and 123(2) EPC*

2.1 After having reconsidered the objections raised in its communication and having noted that the appellant did not file any substantive submissions in reply to the communication, the board confirms the reasoning of its preliminary opinion as expressed in its communication and, hence, maintains the objections raised, see point IV above.

2.2 Accordingly, the board concludes that claims 1 and 7 do not comply with the requirements of Articles 84 and 123(2) EPC and that the subject-matter of claim 1 does not involve an inventive step having regard to the disclosure of D7 and taking into account the common general knowledge of the person skilled in the art, Articles 52(1) and 56 EPC.

2.3 Consequently, the board is not in a position to grant a patent on the basis of the present claims.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano A. S. Clelland