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Datasheet for the decision of 2 August 2012

Case Number: T 2125/08 - 3.5.05

Application Number: 99914300.1

Publication Number: 990311

IPC: H04L5/14, H04L29/06

Language of the proceedings: EN

Title of invention:
ACTIVATION OF MULTIPLE xDSL MODEMS WITH IMPLICIT CHANNEL PROBE

Applicant:
Panasonic System Networks Co., Ltd.

Headword:
Multi-carrier channel probing in DSL systems/PANASONIC

Relevant legal provisions:
EPC Art. 56, 84, 123(2)
EPC R. 137(4) (2007)
EPC 1973 R. 86(4)
RPBA Art. 12(4)

Keyword:
Added subject-matter - auxiliary and second amended auxiliary requests (yes)
Claims - clarity - main request (no)
Novelty - (yes)
Inventive step - (no)
Unsearched subject-matter - (no)
Admissibility of requests - (yes)

Decisions cited:
T 0274/03

Catchword:

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Case Number: T 2125/08 - 3.5.05

D E C I S I O N
of the Technical Board of Appeal 3.5.05
of 2 August 2012

Appellant: (Applicant)	Panasonic System Networks Co., Ltd. 4-1-62, Minoshima Hakata-ku Fukuoka-shi Fukuoka 812-8531 (JAPON)
Representative:	Diehl & Partner GbR Patentanwälte Augustenstrasse 46 80333 München (ALLEMAGNE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 3 June 2008 refusing European patent application No. 99914300.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair: A. Ritzka
Members: K. Bengi-Akyuerek
F. Blumer

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division, dispatched on 3 June 2008, refusing European patent application No. 99914300.1 on the grounds of added subject-matter (Article 123(2) EPC), lack of clarity (Article 84 EPC), and unsearched subject-matter (Rule 137(4)(2007) EPC) with regard to a main request, and for lack of clarity (Article 84 EPC) as well as lack of inventive step (Article 56 EPC) with respect to an auxiliary request, having regard to the following documents:

D2: EP-A-0 820 168;
D3: US-A-5 644 573.

II. Notice of appeal was received on 21 July 2008. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 29 September 2008. The appellant requested that the decision of the examining division be set aside and that a patent be granted based on a main request (claims 1 to 10) or an auxiliary request (claims 1 to 10) submitted with the statement setting out the grounds of appeal. In addition, oral proceedings were requested as an auxiliary measure.

III. A summons to oral proceedings scheduled for 2 August 2012 was issued on 8 May 2012. In an annex to this summons pursuant to Article 15(1) RPBA, the board gave its preliminary opinion on the appeal. In particular, objections were raised under Articles 123(2), 84, and 52(1) EPC in conjunction with 54 or 56 EPC, mainly in view of D2. Moreover, the appellant was informed that the board was provisionally minded to exercise its discretion not to admit the auxiliary request into the

appeal proceedings under Article 12(4) RPBA, since it could have already been filed in the first-instance proceedings.

IV. With a letter of reply dated 2 July 2012, the appellant submitted new claims according to further auxiliary requests, i.e. a first amended main request (claims 1 to 10), a second amended main request (claims 1 to 10), a first amended auxiliary request (claims 1 to 10), and a second amended auxiliary request (claims 1 to 10), and requested that a patent be granted based on the main request or any of the pending auxiliary requests. Furthermore, seven documents were additionally filed as evidence of the meaning of the term "identical timing", in reaction to the objection under Article 123(2) EPC raised by the board, in particular,

D4: US-A-5 920 817;
D5: M. El Astal: "Distributed Space Time Block Coding for Asynchronous Cooperative Communication Systems", M.Sc. thesis, Islamic University of Gaza, 2011;
D6: A. Aziz et al.: "Timing-Safe Replaceability for Combinational Designs", University of California Berkeley, USA;
D7: US-B-6 768 772.

V. Oral proceedings were held as scheduled on 2 August 2012, during which the first amended main request, the auxiliary request, and the first amended auxiliary request were withdrawn while two further auxiliary requests, i.e. an auxiliary request (claims 1 and 6) and a third auxiliary request (claims 1 to 4), were filed. All the pending requests were admitted into the proceedings and discussed.

The appellant finally requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of any of the main request as filed with the statement setting out the grounds of appeal, the second amended main request as filed with the letter dated 2 July 2012, the auxiliary request or the third auxiliary request, both as filed during the oral proceedings before the board, or the second amended auxiliary request as filed with the letter dated 2 July 2012. At the end of the oral proceedings, the decision of the board was announced.

VI. Independent claim 1 of the main request reads as follows:

"An apparatus for establishing a communication link, comprising an initiating communication device (48; 46) and a selecting device (82; 84), with the initiating communication device (48; 46) having
- a negotiation data transmitting section (50; 54) that is adapted to transmit a first set of carriers representing first negotiation information (14; 26) to a responding communication device (46; 48);
- a negotiation data receiving section (56; 52) that is adapted to receive a second set of carriers representing second negotiation information (10; 22) from the responding communication device (46; 48) in response to said transmitted first set of carriers;

and with the selecting device (82; 84) being adapted to select an appropriate communication device from a plurality of communication devices (68, 70) in accordance with said second set of carriers received from said responding communication device (46; 48) to establish a communication channel;
wherein

said transmission of said first set of carriers and said reception of said second set of carriers occurs prior to an initialization of an actual high speed data communication."

The further independent claim 6 of the main request is directed to a corresponding method.

Independent claim 1 of the second amended main request reads as follows:

"An apparatus for establishing a communication link, comprising an initiating communication device (48; 46) and a selecting device (82; 84), with the initiating communication device (48; 46) having
- a negotiation data transmitting section (50; 54) that is adapted to transmit a first set of carriers representing first negotiation information (14; 26) to a responding communication device (46; 48);
- a negotiation data receiving section (56; 52) that is adapted to receive a second set of carriers representing second negotiation information (10; 22) from the responding communication device (46; 48) in response to said transmitted first set of carriers;

and with the selecting device (82; 84) being adapted to select an appropriate high speed data communication device from a plurality of high speed data communication devices (68, 70) in accordance with said second set of carriers received from said responding communication device (46; 48) to establish a communication link;
wherein
said transmission of said first set of carriers and said reception of said second set of carriers occurs prior to an initialization of an actual high speed data communication."

The further independent claim 6 of the second amended main request is directed to a corresponding method.

Independent claim 1 of the auxiliary request reads as follows:

"An apparatus for establishing a communication link, comprising an initiating communication device (48; 46) and a selecting device (82; 84), with the initiating communication device (48; 46) having
- a negotiation data transmitting section (50; 54) that is adapted to transmit a first set of carriers representing first negotiation information (14; 26) to a responding communication device (46; 48), the first set of carriers being a set of one or more frequencies associated with a power spectral density mask of a particular high speed data communication standard;
- a negotiation data receiving section (56; 52) that is adapted to receive a second set of carriers representing second negotiation information (10; 22) from the responding communication device (46; 48) in response to said transmitted first set of carriers, the second set of carriers being a set of one or more frequencies associated with a power spectral density mask of a particular high speed data communication standard;

and with the selecting device (82; 84) being adapted to select an appropriate high speed data communication device from a plurality of high speed data communication devices (68, 70) in accordance with said second set of carriers received from said responding communication device (46; 48) to establish a communication link;

wherein said transmission of said first set of carriers and said reception of said second set of carriers occurs prior to an initialization of an actual high speed data communication; and
wherein each carrier of said first and second set of carriers has a different frequency, with the frequencies of the first and the second set of carriers being a multiple of a family frequency."

The further independent claim 6 of the auxiliary request is directed to a corresponding method.

The single independent claim 1 of the third auxiliary request reads as follows:

"A method for establishing a communication link between an initiating communication device (48, 46) and a responding communication device (46, 48), the method comprising steps for:
a) transmitting a first set of carriers from a negotiation data transmitting section (50, 54) associated with the initiating communication device (48, 46) to a responding communication device (46, 48), whereby the first set of carriers represents first negotiation information (14, 26);
b) receiving at a negotiation data receiving section (56, 52) being associated with the initiating communication device (48, 46) a second set of carriers from the responding communication device (46, 48) in response to the transmitted first set of carriers (14, 26), whereby the second set of carriers represents second negotiation information (14, 26) of the responding communication device (46, 48);
selecting an appropriate high speed data communication device from a plurality of high speed data communi-

cation devices (68, 70) associated with the initiating communication device (48, 46) in accordance with said second set of carriers received from said responding communication device (46, 48) to establish a communication link;
wherein said transmitting of said first set of carriers and said receiving of said second set of carriers occurs prior to an initialization of an actual high speed data communication; and
wherein each carrier of said first and second set of carriers has a different frequency, with the frequencies of the first and the second set of carriers being a multiple of a family frequency."

Independent claim 1 of the second amended auxiliary request reads as follows:

"An apparatus for establishing a communication link, comprising an initiating communication device (48; 46) and a selecting device (82; 84), with the initiating communication device (48; 46) having
- a negotiation data transmitting section (50; 54) that is adapted to transmit a first set of carriers representing first negotiation information (14; 26) to a responding communication device (46; 48);
- a negotiation data receiving section (56; 52) that is adapted to receive a second set of carriers representing second negotiation information (10; 22) from the responding communication device (46; 48) in response to said transmitted first set of carriers;

and with the selecting device (82; 84) being adapted to select an appropriate high speed data communication device from a plurality of high speed data communication devices (68, 70) in accordance with said second set of carriers received from said responding

communication device (46; 48) to establish a communication link;
wherein each carrier of said first and second set of carriers has a different frequency, with the frequencies of the first and the second set of carriers being a multiple of a family frequency; and
wherein the negotiation data transmitting section (50; 54) is adapted to concurrently transmit the carriers of the first set of carriers and the negotiation data receiving section (56; 52) is adapted to concurrently receive carriers of the second set of carriers; and
wherein said transmission of said first set of carriers and said reception of said second set of carriers occurs prior to an initialization of an actual high speed data communication."

The further independent claim 6 of the second amended auxiliary request is directed to a corresponding method.

Reasons for the Decision

1. Admissibility of the appeal

The appeal complies with the provisions of Articles 106 to 108 EPC (cf. point II above) and is therefore admissible.

2. Line numbering of the application

Due to a mismatch between the line numbers appearing on the left-hand side of each sheet of the application as filed and the actual (countable) line numbers, the left-hand line numbering is used henceforth when

referring to the original description.

3. Main Request

The claim set of this request differs from that of the main request underlying the appealed decision mainly in that the phrases "first negotiation information representing a first set of carriers" and "second negotiation information representing a second set of carriers" are replaced by the statements "a first set of carriers representing first negotiation information" and "a second set of carriers representing second negotiation information", respectively, in independent claims 1 and 6 as amended.

3.1 Article 123(2) EPC

In the board's judgment, this request complies with the provision of Article 123(2) EPC for the following reasons:

3.1.1 Based on the aforementioned amendments made, the board is satisfied that the corresponding objection of the examining division with regard to the relationship between the negotiation information and the carrier sets has been overcome.

3.1.2 The examining division further found that the feature specifying that said transmission of said first set of carriers and said reception of said second set of carriers occurs prior to an initialisation of an actual high speed data communication as comprised in claims 1 and 6 contravened Article 123(2) EPC, as the original application merely indicated that the negotiation procedure takes place prior to the initiation of an actual high speed data communication (referring to

page 17, lines 13-15). "Initialization" and "initiation" would not be the same since an "initialization" procedure implied a further handshake procedure while an "initiation" procedure did not.

3.1.3 The board shares the view of the appellant that the above feature is in fact disclosed in the application as filed, since the original description teaches that "subsequent initializations" take place after having exchanged the respective set of carriers (cf. page 32, lines 23-27: "In their initial states, the xTU-R and xTU-C ... transmit as many carriers as possible, in order to determine whether any common carriers exist ... to specify the transmission ... of carriers for ... subsequent initializations" and page 33, lines 3-5). Further, the description also states that, prior to the "initiation" of a high speed data communication, a test and negotiation process in terms of conditions and capacities of the underlying system is performed (cf. page 17, lines 13-15 and page 17, lines 17-19).

In conclusion, the phrase "initialization of an actual high speed data communication" can be viewed as the "establishment" of the corresponding communication link in the context of the present application. Due to the lack of a precise definition of the terms "initiation" and "initialization" in the original application, and since both processes are not strictly linked with any further handshake procedure, these terms are considered to be interchangeably used throughout the whole application.

Hence, the use of the term "initialization" in claims 1 and 6 does not contravene Article 123(2) EPC.

3.1.4 In view of the above, claims 1 and 6 no longer contain subject-matter which extends beyond the content of the application as filed.

3.2 Rule 137(4)(2007) EPC: Unsearched subject-matter

The board finds that the claims of this request fulfil the provision of Rule 137(4) EPC in its applicable version before 1 April 2010 ("Rule 137(4)(2007) EPC"), the reasons being as follows:

3.2.1 The examining division held that the former independent claims related to unsearched subject-matter which did not combine with any of the groups of inventions one to six (as established in the first communication of the examining division dated 21 July 2005) to form a single general inventive concept, since the alleged special technical feature "transmission/reception of negotiation information, representing a first/second set of carriers", which supposedly solved the problem of which signals were to be transmitted for establishing a communication link, was not included in any of the originally filed claims 1 to 41 and thus no single general inventive concept existed.

3.2.2 Rule 137(4)(2007) EPC (corresponding to Rule 86(4) EPC 1973 and Rule 137(5) EPC as from 1 April 2010) stipulates that amended claims "may not relate to unsearched subject-matter which does not combine with the originally claimed invention or group of inventions to form a single general inventive concept". This rule is, in principle, intended to prevent amendments of the application which circumvent the established principle that a search fee must always be paid for an invention presented for examination and thus to stop applicants switching to unsearched and non-unitary subject-matter

extracted from the description in the reply to a communication from the examining division (cf. T 274/03 and Notice of 1 June 1995, OJ EPO 1995, 420-421).

3.2.3 Thus, in order to determine the compliance with this Rule, it has to be first ascertained whether the amended claims relate to unsearched subject-matter or not and only in the event that the subject-matter is considered to be unsearched must it be further checked whether this subject-matter combines with the originally claimed invention to form a single general inventive concept, i.e. whether the corresponding subject-matters may be considered to be unitary. In the present case, the above alleged special technical feature has been amended to read "transmit/receive a first/second set of carriers representing first/second negotiation information" in claims 1 and 6, respectively. Based on the original description, the "CL/CLR messages" (cf. page 32, lines 12-15) or "predetermined flags" (cf. page 33, lines 24-28 and page 34, lines 1-3) can be seen as "negotiation information" in the underlying context.

In its first communication dated 21 July 2005, the examining division held that the searched claims 1 to 10 as originally filed were directed to the establishment of a communication link and dealt with the problem of minimising the interference with neighbouring receiving stations. This problem was solved by negotiating the carriers to be used via the exchange of carriers between the respective modems. Consequently, the feature of transmitting and receiving a first and second set of carriers representing first and second negotiation information, respectively, should have already been searched by the search division pursuant to Article 92 EPC (which stipulates

that the "European Patent Office shall ... draw up and publish a European search report ... on the basis of the claims, with due regard to the description and any drawings"). This is, in particular, evidenced by the non-unity reasoning and the assessment of novelty and inventive step set out by the examining division in its first communication (cf. section I).

Since the first requirement of Rule 137(4)(2007) EPC, i.e. that the amended claims may not relate to unsearched subject-matter, is found to be fulfilled, there is no need to assess the second requirement, i.e. that this unsearched subject-matter shall combine with the originally claimed invention or group of inventions to form a single general inventive concept.

In view of the above, the claims of this request do not relate to unsearched subject-matter within the meaning of Rule 137(4)(2007) EPC.

3.3 Article 84 EPC: Clarity

The board judges that claims 1 and 6 of this request do not meet the requirements of Article 84 EPC, the reasons being as follows:

3.3.1 The terms "communication link" and "communication channel" are used in claims 1 and 6. In principle, irrespective of whether physical or logical links and channels are being considered, these terms are typically associated with different meanings in the field of communication networks. Owing to the fact that these two terms are used within a single claim, doubts arise as to whether they are meant to relate to the same or different items, i.e. whether they are conterminous or complementary. For these reasons, the

matter for which protection is sought is rendered unclear.

3.3.2 The appellant argued that the above terms were quite clearly distinguishable from each other, since "communication channel" referred to a physical link connecting the communication devices and having an effect on the underlying communication method while "communication link" involved the use of the communication method for transmitting and receiving information, referring in this connection to page 5, lines 17-21 of the original description. In other words, the establishment of a communication channel formed part of the establishment of a communication link.

However, the board finds that this assumption is derivable neither from the wording of the respective claims alone nor from the original description or drawings. In particular, the phrase on page 13, line 24 to page 14, line 4 of the description as filed ("for establishing a communication link ... to establish the communication channel ...") alone implies that there are no semantic or technical differences between "link" and "channel", i.e. that these terms are indeed used interchangeably in the present case.

In view of the above, independent claims 1 and 6 lack clarity.

3.4 In conclusion, this request is not allowable under Article 84 EPC.

4. Second Amended Main Request

The claim set of this request differs from the claim

set of the main request in that the communication devices to be selected by the selecting device are now referred to as "high speed data communication devices" and the term "channel" is changed to "link" in claims 1 and 6 as amended.

These amendments are supported e.g. by the disclosure of page 11, lines 10-15 in conjunction with page 17, lines 19-25 of the description as filed.

4.1 Article 84 EPC: Clarity

As a result of the amendments made in this request (i.e. the term "channel" being changed to "link" in claims 1 and 6), the requirements of Article 84 EPC are considered to be met.

4.2 Article 52(1) EPC: Novelty and inventive step

In the board's judgment, claims 1 and 6 of this request do not meet the requirements of Articles 52(1) and 56 EPC for the following reasons:

4.2.1 The board agrees with the appellant and the examining division in considering D2 as the closest prior art.

4.2.2 D2 is related to multiple-carrier transmissions in DSL systems and discloses, with regard to the terminology of claim 1, an initiating communication device (*viz.* "MDSL modem at the subscriber-end") and a selecting device (see e.g. "DSP 150" in Figs. 1a and 5a) for establishing a communication link. The initiating communication device is further adapted to transmit a first set of carriers (see e.g. page 13, lines 8-9: "An MDSL modem at the subscriber-end sends probing tones in the upstream band ...") to a responding communication

device (*viz.* "MDSL modem at the central office"). This first set of carriers also represents first negotiation data (*viz.* "line code capability of the subscriber-end modem"; see page 13, line 15) according to D2.

Moreover, D2 further teaches that the initiating communication device is adapted to receive a second set of carriers along with second negotiation data (*viz.* "line code capability of the central office end modem") transmitted from the responding communication device in response to said transmitted first set of carriers (see page 13, lines 9-14: "... the MDSL modem at the central office end responds with channel probing tones in the downstream band ... After the initial channel probing period, the MDSL modem at the subscriber-end has determined the line code capability of the central office end modem ...").

In addition, according to D2, the initiating device ("MDSL modem 100" or "multimode modem 500"; see page 7, line 46 and page 11, lines 49-52) can further select via its digital signal processor ("DSP 150") from different modems such as a DSL modem ("DSL AFE 110"), a voice-band modem ("VB AFE 120"), an ISDN modem ("ISDN AFE 510"), and an "audio front end 520" (see page 7, lines 18-20 and page 12, lines 3-4 in connection with Fig. 1a and Fig. 5a), which corresponds to the selection of an appropriate communication device (*viz.* "modem") from a plurality of communication devices. Further, due to the breadth of the term "high speed", these modems would have been considered to be "high speed data communication devices" as claimed at the application's priority date.

Finally, the board agrees with the appellant that D2 additionally specifies that an initialisation process

including the channel probing stage takes place to establish a communication link (referring to page 13, lines 2-7), which implies that the exchange of the respective carriers has to occur before the initialisation of the actual data communication, i.e. the establishment of the corresponding communication link.

4.2.3 Hence, the difference between the subject-matter of claim 1 and the disclosure of D2 is seen as being that the selection of the appropriate high speed data communication device is performed in accordance with the received second set of carriers.

In view of the above, the subject-matter of claim 1 is considered to be novel over the cited prior art (Article 54 EPC).

4.2.4 The objective problem to be solved by claim 1 is regarded as being how to avoid the initiating device selecting a communication device which cannot support the notified communication capabilities of the responding device in the multi-carrier transmission system under consideration.

4.2.5 The skilled person would learn from the teaching of D2 that the respective MDSL modem at the subscriber-end, i.e. the initiating device, consists of multiple modems (see e.g. Fig. 5a) and that, after the initial channel probing phase, this initiating device has determined the line code capability of the MDSL modem at the central office, i.e. the responding device (see e.g. page 13, lines 13-14).

When confronted with the above objective problem and further considering that the MDSL modem may select from

multiple line codes in D2 (see page 7, lines 18-19), the skilled person in the field of telecommunication systems would ensure that a modem is selected at the initiating device which indeed conforms to the line code capabilities of the other end device rather than arbitrarily choosing a communication device which possibly uses a different line code. Consequently, the skilled person would readily perform such a modem selection at the subscriber side based upon the respective line code capability information received from the responding device, since otherwise no successful communication could take place between the subscriber and the central office in the system of D2.

4.2.6 The above reasoning also applies to the corresponding method claim 6.

4.2.7 In view of the above, the subject-matter of claims 1 and 6 does not involve an inventive step having regard to D2 and the skilled person's common general knowledge (Article 56 EPC).

4.2.8 The appellant argued that claims 1 and 6 yielded the technical effect of supporting multiple variants of the DSL technology and that the resulting objective problem was to enable a fast detection of supported high speed communication standards between two high speed communication devices in a multi-carrier system.

In this regard, the board notes, firstly, that the above-mentioned technical effect may not be derived from the wording of the above claims alone, as their subject-matter is not confined to any DSL system or component but only to any "high speed data communication devices". Secondly, claims 1 and 6 are supposed to be based on the embodiment related to the initial

process of finding a common set of carriers between the respective devices, as taught in the original description (cf. page 34, lines 4-7 or page 34, line 28 to page 35, line 3). According to this governing embodiment, the responding communication device may continuously attempt an initiation with a different carrier family if it "receives carriers of a family that it cannot transmit", which could lead to unacceptable waiting times for the negotiating devices or even result in an infinite loop. It is therefore quite clear to the board that even the more specific teaching of the description with regard to the initial negotiation phase definitely runs counter to the alleged "fast" detection as used in the above problem formulation. Hence, the objective problem established by the appellant does not match the teaching of the application.

4.2.9 The appellant also submitted that D2 taught the selection of different operation modes of DSL modems while solely switching between a low-speed modem (i.e. voice-band modem) and a high-speed modem (i.e. DSL modem), referring to Fig. 1a, rather than disclosing a plurality of selectable high speed communication devices.

In this connection, apart from the use of more than one selectable high speed communication device as evidenced by Fig. 5a of D2, the board finds that - based on the broad term "high speed" - even the voice-band modem used in D2 would have been considered as a high speed data communication device at the application's priority date, since the mentioned voice-band modem exemplarily represents a V.34 modem according to D2 (see page 7, line 19 and page 12, line 4) which typically permits full-duplex transmissions at rates up to 33,6 kb/s (see

e.g. D2, page 2, lines 54-55 or page 1, lines 16-19 of the application as filed).

However, even if, for the sake of argument, only the DSL modem ("DSL AFE 110") were to be considered as "high speed data communication devices" in D2 (see e.g. Figs. 1a and 5a), the skilled person would derive from the teaching of D2 that multiple similar and different modems might be simultaneously implemented in the underlying system (see page 12, lines 3-5) and that, in the near future, multiple DSL modems within one communication device would presumably predominate (see page 12, lines 12-15). Hence, the skilled person in the field of telecommunication systems would therefrom understand that it would be desirable to render the system in question more future-proof by supporting more than one DSL technology in the respective end devices for the purpose of successful data communications between devices using different DSL standards.

Consequently, in order to extend the usability of the above system of D2 to different variants of the DSL technology, the skilled person would readily adapt the respective end communication devices, so that multiple high-speed modems corresponding to different DSL standards like ADSL, VDSL or SDSL (known at the priority date of the application, as evidenced e.g. by page 1, line 26 to page 2, line 2 of the application as filed or D2, page 12, lines 21-22) are incorporated into the devices based on his common general knowledge. Thereby, the selection would be simply extended by the skilled person to switching between different DSL modems, without encountering any difficulties in the implementation process, rather than merely between the low-speed and high-speed modems as alleged by the

appellant.

4.3 In conclusion, this request is not allowable under Article 56 EPC.

5. Auxiliary Request

The claim set of this request differs from the claim set of the second amended main request in that claims 1 and 6 as amended further specify that

(a) the first and second set of carriers are a set of one or more frequencies associated with a power spectral density mask of a particular high speed data communication standard,

(b) each carrier of the first and second set of carriers has a different frequency,

(c) the frequencies are multiples of a family frequency.

Added features (b) and (c) are supported e.g. by page 29, lines 28-33 of the description as filed.

This request was submitted during the oral proceedings held on 2 August 2012, i.e. at a relatively late stage of the procedure. Furthermore, it is based on a second auxiliary request filed with letter of 6 March 2008 in the examination procedure, which was not admitted into the first-instance proceedings under Rule 137(3) EPC by the examining division *inter alia* because feature (a) was considered to contravene Article 123(2) EPC (cf. appealed decision, sections 15.b and 19.b).

Although the board has the power to hold requests which were not admitted in the first-instance proceedings inadmissible pursuant to Article 12(4) RPBA, this request was nevertheless admitted into the proceedings

at the board's discretion under Articles 12(4) and 13(1) RPBA, since it was considered as a serious attempt to overcome the objections raised under Article 56 EPC, *inter alia* by further incorporating features (b) and (c) into claims 1 and 6.

5.1 Article 123(2) EPC

The board judges that claims 1 and 6 of this request do not comply with the provision of Article 123(2) EPC for the following reasons:

5.1.1 Added feature (a), specifying that the first and second set of carriers are a set of frequencies associated with a power spectral density (PSD) mask of a particular high speed data communication standard, amounts to an inadmissible limitation of the application's original content.

The subject-matter of claims 1 and 6 is based on the corresponding embodiments of the original application related to finding a common set of carriers between the initiating and responding devices in the initial phase (cf. page 33, lines 19-24 and page 34, lines 4-7 or page 34, lines 11-13 and page 34, line 28 to page 35, line 3). In the context of the embodiment referring to the initiation by the remote device (cf. page 33, line 19 to page 34, line 13), the original application teaches that the initiating communication device (i.e. "xTU-R") transmits the first set of carriers ("upstream carriers") selected from one or both families of the upstream group and that the responding xTU-C transmits the second set of carriers ("downstream carriers") selected from only one family of the downstream group in order to initially find a common set of carriers between the devices (cf. page 33, lines 19-24 in

conjunction with page 22, lines 13-15).

In addition, tables 1 and 2 on page 23 provide examples of various frequency spectra related to the upstream and downstream directions of typical xDSL services. Moreover, the families of the upstream and downstream groups represent the individual carriers to be used according to the application as filed (cf. page 25, line 24 to page 26, line 16).

However, according to the relevant embodiments, the carriers to be selected from those families are not linked with any power spectral density mask of a high speed data communication standard ("xDSL service") as feature (a) suggests. Rather, it is merely indicated, in a generic way, that the frequency bands for the transmission of negotiation data channels are to be selected e.g. based upon the overall power spectral densities of the respective xDSL services (cf. page 22, lines 19-22), which cannot validly constitute support for the transmission of specific negotiation carriers (i.e. frequencies) being associated with a power spectral density mask of a particular xDSL standard.

Hence, claims 1 and 6 contain subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

5.1.2 The appellant argued that feature (a) was supported mainly by page 6, lines 3-4 ("carrier set - a set of one or more frequencies associated with a PSD mask of a particular xDSL Recommendation") in connection with page 8, line 18 ("PSD - Power Spectral Density") of the original description.

The board is not convinced in this regard, since the

above definition of a "carrier set" is only part of a glossary providing a general framework for the terminology used throughout the application, rather than delivering conclusive and specific definitions for all embodiments presented therein. Therefore, contrary to the appellant's assertion, the board holds that it is not directly and unambiguously derivable from the original application that a "set of carriers", being specifically used for negotiating a common set of carriers between two communication devices, is indeed associated with a PSD mask of a particular xDSL standard.

5.2 In conclusion, this request is not allowable under Article 123(2) EPC.

6. Third Auxiliary Request

The claim set of this request differs from the claim set of the auxiliary request basically in that claims 1 to 5 are assumed to be deleted (while renumbering the former claims 6 to 10 as claims 1 to 4) and that feature (a) is no longer recited in claim 1 as amended.

Consequently, this request complies with the provision of Article 123(2) EPC.

6.1 Article 52(1) EPC: Novelty and inventive step

In the board's judgment, claim 1 of this request does not meet the requirements of Articles 52(1) and 56 EPC, the reasons being as follows:

6.1.1 The feature analysis concerning the second amended main request set out in point 4.2.2 above applies *mutatis mutandis* to claim 1 of this request.

Hence, the subject-matter of claim 1 is considered to be new over the cited prior art (Article 54 EPC).

6.1.2 D2 also discloses the added feature that each carrier of said first and second set of carriers has a different frequency (see e.g. page 13, lines 35-36).

6.1.3 However, added feature (c), further specifying that the frequencies of the respective carrier sets are a multiple of a family frequency, is not directly and unambiguously derivable from D2.

6.1.4 Consequently, the difference between the subject-matter of claim 1 and the disclosure of D2 is regarded as being that

(i) the selection of the appropriate high speed data communication device is performed in accordance with the received second set of carriers (cf. point 4.2.3 above),

(ii) the frequencies of the first and second carrier sets are a multiple of a family frequency.

6.1.5 The respective objective technical problems associated with the above distinguishing features (i) and (ii) are found to constitute independent and unrelated technical problems, since feature (i) solves the problem of avoiding the initiating device selecting a communication device which cannot support the notified communication capabilities of the responding device in the corresponding multi-carrier transmission system (cf. point 4.2.4 above) whereas feature (ii) is regarded as solving the problem of efficient and accurate (reproducible) carrier configurations in the underlying system.

6.1.6 Concerning feature (i), the reasoning with regard to the obviousness of the distinguishing feature related to the second amended main request (cf. point 4.2.5 above) applies *mutatis mutandis* to this feature.

As to feature (ii), the selection of appropriate carrier frequencies to be used for exchanging the negotiation information represents a common problem with which the skilled person in data communications could be faced at the respective priority date and the selection thereof typically depends on the practical circumstances. Starting from the teaching of D2, according to which various DSL modems are already employed (see e.g. Figs. 1a and 5a, "DSL AFE 110"; Fig. 2a, "DSL 100"), the skilled person, using his common general knowledge on DSL standards, would understand that deriving the individual carrier frequencies from a base frequency is one straightforward and standard option among equally likely alternatives for efficient and accurate carrier configurations. Therefore, the skilled person would implement such a well-established carrier configuration without exercising any inventive skills.

6.1.7 In view of the above, the subject-matter of claim 1 of this request does not involve an inventive step having regard to D2 and the skilled person's common general knowledge.

6.2 In conclusion, this request is not allowable under Article 56 EPC.

7. Second Amended Auxiliary Request

The claim set of this request differs from the claim set of the second amended main request in that claims 1

and 6 as amended, in addition to features (b) and (c) as indicated in point 5 above, further specify that

(d) the respective carriers are transmitted and received concurrently.

7.1 Admissibility (Article 12(4) RPBA)

This request was submitted with the letter of reply to the summons to oral proceedings and is based on an auxiliary request filed with the statement setting out the grounds of appeal (see point II above) in which feature (d) had been explicitly introduced into the appeal proceedings for the very first time. The question whether feature (d) could be actually derived from the respective claim wording and rendered the claimed subject-matter novel and inventive was extensively discussed in the first-instance proceedings (cf. minutes of the oral proceedings before the examining division, section 4.2 and the appealed decision, section 13). Consequently, the appellant could have filed a corresponding request with a claim set including feature (d) in order to ensure that the examining division took a reasoned decision on its merits. However, for whatever reasons, a new request with claims including this feature was never submitted before the department of first instance.

Nevertheless, the request was admitted into the proceedings at the board's discretion under Articles 12(4) and 13(1) RPBA, since it was considered as an appropriate attempt to overcome the objections raised, by further adding features (b) and (c).

7.2 Article 123(2) EPC

The board judges that claims 1 and 6 of this request do

not comply with the provision of Article 123(2) EPC, for the reasons given below:

7.2.1 The newly introduced feature (d) represents an inadmissible limitation of the application's original subject-matter according to which the respective communication devices are merely supposed to transmit identical data with identical timing on all downstream and upstream carriers (cf. page 34, lines 11-13 and page 35, lines 7-9). Therefore, it cannot be unequivocally derived from the original disclosure that the respective carriers are indeed transmitted and received "concurrently" or "in parallel" as feature (d) suggests.

Hence, claims 1 and 6 contain subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

7.2.2 The appellant argued that feature (d) was mainly derivable from page 33, lines 19-22 of the original description ("The initiating xTU-R transmits unmodulated carriers ... When the negotiation data receiving section 52 receives the carriers from the xTU-R for a predetermined period of time (at least 200 ms in the preferred embodiment), the responding xTU-C transmits unmodulated carriers ..."), since the phrase "for a predetermined period of time" indicated the time period at which all carriers were actually received and thus corresponded to concurrent data transmissions and receptions.

The board holds, in this respect, that the mere fact that carriers are received within a certain time period does not lend itself to proving that the carriers are indeed sent or received at the same time. On that

basis, the predetermined time period could well be attributed to each carrier individually or covering all the available carriers, so that the respective carriers are, for example, received within different time units, i.e. sequentially, as opposed to an alleged parallel carrier transmission.

7.2.3 Furthermore, the appellant pointed out that, in the context of the application, the phrase "identical timing" would be understood by the skilled person as "concurrent transmissions" or "transmissions in parallel" by referencing the documents submitted with the letter dated 2 July 2012 (cf. point IV above).

In this regard, the board holds that none of those documents cited by the appellant in support of such a definition of the term "identical timing" provides a well-recognised definition of this term. They merely evidence that, in a specific context, the term could be interpreted as argued by the appellant. Even if it was accepted that, in the context of D4, "simultaneously" and "identical timing" were used in a similar manner, this document does not exclude a different interpretation of those terms. Moreover, the board notes that D5 and D7 were published after the application's priority date while the publication date of D6 is unknown. Those documents are therefore not suitable as support for a general definition of the term "identical timing" at the application's priority date.

Further, the board takes the view that also the statements "The xTU-C transmits identical data, with identical timing on any and all downstream carriers. The xTU-R transmits identical data with identical timing on any and all upstream carriers" in the

original description (cf. page 34, lines 11-13 or page 35, lines 7-9) cannot be validly taken as a basis for the above feature since, in this context, "timing" is understood by the skilled person in the field of data communications to be any time-related transmission information such as "transmission starting time", "transmission duration" or "transmission offset". Therefore, the skilled person could not unequivocally derive from this term an instruction to perform data transmissions on the different carriers concurrently.

Even if the interpretation of simultaneous data transmissions for "identical timing" based on the submitted documents were admitted as a possible construction, the evidence submitted does not in any way appear to limit the meaning of the term to this specific interpretation. Rather, interpreting "timing" as "transmission starting time" is one but not the only technical option which would technically make sense in this context. In particular, the skilled reader would appreciate that "identical timing" also encompasses the case that the respective data could well be transmitted one-by-one over the different carriers e.g. using an identical time offset or the same transmission duration (e.g. via predetermined time slots) between the carriers.

7.3 In conclusion, this request is not allowable under Article 123(2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

K. Götz A. Ritzka

Decision electronically authenticated