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Datasheet for the decision of 25 June 2024

Case Number: T 0907/22 - 3.5.05

Application Number: 09174629.7

Publication Number: 2146439

IPC: H04B1/16

Language of the proceedings: EN

Title of invention:
Discontinuous reception for user equipment

Patent Proprietor:
Intellectual Ventures I LLC

Opponents:
Deutsche Telekom AG ("opponent 1" until 14 March 2022)
Telekom Deutschland GmbH ("opponent 2" until 14 March 2022)
Telefónica Germany GmbH & Co. OHG ("opponent 3" until 10 April 2024)
Vodafone GmbH ("opponent 4" until 21 December 2023)
Bouygues Telecom ("opponent 5")
Société Française du Radiotéléphone-SFR ("opponent 6")

Headword:
Entering DRX mode/INTELLECTUAL VENTURES

Relevant legal provisions:
EPC Art. 100(c), 76(1)
EPC R. 103(1)(a)

Keyword:
Added subject-matter - patent as granted and all auxiliary requests (yes)
Reimbursement of the appeal fee in full - (no)

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Beschwerdekammern

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Case Number: T 0907/22 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 25 June 2024

Appellant: (Patent Proprietor)	Intellectual Ventures I LLC 2711 Centerville Road, Suite 400 Wilmington, DE 19808 (US)
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Representative:	Loyer & Abello 9, rue Anatole de la Forge 75017 Paris (FR)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 28 March 2022 revoking European patent No. 2146439 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chair	K. Bengi-Akyürek
Members:	J. Eraso Helguera
	F. Bostedt
	P. Tabery
	R. Romandini

Summary of Facts and Submissions

I. This case concerns the appeal filed by the proprietor against the decision of the opposition division to revoke the opposed patent under Article 101(2) and 101(3)(b) EPC.

II. Oral proceedings before the board were held on 25 June 2024. The final requests of the parties were:

- The proprietor (appellant) requested, as a **main request**, that the decision under appeal be set aside and that the opposition be rejected, or that the patent be maintained in amended form on the basis of the claims of one of the following **auxiliary requests**, in the following order **A**, **A.1**, **B**, **B.1**, **C**, **C.1**, **D**, **D.1**, **I**, **I.1**, **II**, **II.1**, **IIa**, **IIa.1**, **III**, **III.1**, **IV**, **IV.1**, **V**, **V.1**, **VI**, **VI.1**, **VII and VII.1**.

  The appellant further requested the reimbursement of the appeal fee on account of an alleged violation of its right to be heard under Article 113(1) EPC.

- Opponents O5 and O6 (respondents) requested that the appeal be dismissed.

At the end of those oral proceedings, the board announced its decision.

III. Granted claim 4 (claim 4 of the **main request**) reads as follows:

"A base station (14) in a telecommunication network (10), the base station having a physical radio transmission layer when transmitting packets while maintaining a logical connection in higher protocol layers during a packet service mode with a user equipment (18, 20, 22), **characterized in that** the base station (14) comprises:

> means (14a) for entering the user equipment (18, 20, 22) into a discontinuous reception mode by signalling the user equipment (18, 20, 22) by transmission of one or more frames (n, n+1, 200, 300, 402, 404a, 404b, 404c, 404d, 406, 410) and wherein the discontinuous reception mode has one or more predefined periods signalled by the telecommunication network in which a receiver means of the user equipment is caused to be powered down, so as to provide a discontinuous radio link for the user equipment in the telecommunication network in a physical radio transmission layer when receiving the packets while maintaining a logical connection in higher protocol layers during the packet service mode."

Claim 4 of **auxiliary request A** differs from granted claim 4 in the addition of the phrase:

> ", wherein the signalling is based on a signal received from a controller (12) in the telecommunication network,"

right after the phrase "one or more frames (n, n+1, 200, 300, 402, 404a, 404b, 404c, 404d, 406, 410)".

Claim 4 of **auxiliary request B** differs from granted claim 4 in the addition of the phrase:

", controlled by a controller (12) of the telecommunication network (10),"

right after the phrase "into a discontinuous reception mode by signalling".

Claim 4 of **auxiliary request C** differs from granted claim 4 in the addition of the phrase:

", wherein the signalling is controlled by a controller (12) of the telecommunication network,"

right after the phrase "one or more frames (n, n+1, 200, 300, 402, 404a, 404b, 404c, 404d, 406, 410)".

Claim 4 of **auxiliary request D** differs from granted claim 4 in the addition of the phrase:

", wherein the control of the user equipment (18, 20, 22) stays in a controller (12) of the telecommunication network"

at the very end of the claim.

Claim 3 of **auxiliary request I** differs from granted claim 4 in the addition of the phrase:

"; and
means for transmitting to the user equipment (18, 20, 22) higher layer signalling that defines a period during which the user equipment (18, 20, 22) is to decode a frame or slots in order to detect if packet transmission is active"

at the very end of the claim.

Claim 2 of **auxiliary request II** differs from claim 3 of auxiliary request I in the deletion of the term "and" right before the phrase "means for transmitting to the user equipment" and in the addition of the phrase:

> "; and
> means for indicating that the frame does not contain data targeted to the user equipment by encoding the frame such that the occurrence of an incorrect redundancy code result while decoding the frame at the user equipment indicates that the frame does not contain data targeted to the user equipment and causes the user equipment to wait an agreed period of time before decoding a subsequent frame"

at the very end of the claim.

Claim 2 of **auxiliary request IIa** is identical to claim 2 of auxiliary request II.

Claim 2 of **auxiliary request III** differs from claim 2 of auxiliary request II in the replacement of the phrase:

> "such that the occurrence of an incorrect redundancy code result while decoding the frame at the user equipment"

by the phrase

> "using a cyclic redundancy code, wherein an incorrect redundancy code".

Claim 3 of **auxiliary request IV** is identical to claim 3 of auxiliary request I, claim 2 of **auxiliary request V**

is identical to claim 2 of auxiliary request II and claim 2 of **auxiliary request VI** is identical to claim 2 of auxiliary request III, except for the replacement, in each case, of the phrase "a frame or slots" by the phrase "the frame or slots".

Claim 1 of **auxiliary request VII** is identical to granted claim 1 and reads as follows:

"A user equipment (18, 20, 22) in a telecommunication network (10), the user equipment having a physical radio transmission layer when receiving packets while maintaining a logical connection in higher protocol layers during a packet service mode, characterized in that the user equipment (18, 20, 22) comprises:

> means (18b) for entering the user equipment into a discontinuous reception mode in response to receipt of one or more frames (n, n+1, 200, 300, 402, 404a, 404b, 404c, 404d, 406, 410) and powering down a receiver means (18a) of the user equipment for one or more predefined periods as signalled by the telecommunication network (10), so as to provide a discontinuous radio link for the user equipment in the telecommunication network in a physical radio transmission layer when receiving the packets while maintaining a logical connection in higher protocol layers during the packet service mode."

Claim 4 of **auxiliary requests A.1 to D.1** differs from claim 4 of auxiliary requests A to D, respectively, in the replacement of the phrase "one or more frames" by "one frame".

Claim 3 of **auxiliary requests I.1 and IV.1** differs from claim 3 of auxiliary requests I and IV, respectively,

in the replacement of the phrase "one or more frames" by "one frame".

Claim 2 of **auxiliary requests II.1, IIa.1, III.1, V.1 and VI.1** differs from claim 2 of auxiliary requests II, IIa, III, V and VI, respectively, in the replacement of the phrase "one or more frames" by "one frame".

Claim 1 of **auxiliary request VII.1** differs from granted claim 1 in the replacement of the phrase "one or more frames" by "one frame".

Reasons for the Decision

1. MAIN REQUEST

Granted claim 4 comprises the following labelled features:

4. A base station (BS) in a telecommunication network,
4.1 the BS having a physical radio transmission layer
4.1.1 when transmitting packets
4.1.2 while maintaining a logical connection in higher protocol layers
4.1.3 during a packet service mode with a user equipment (UE),
the BS comprises:
4.2 means for entering the UE into a discontinuous reception (DRX) mode
4.2.1 by signalling the UE by transmission of one or more frames and
4.2.2 wherein the DRX mode has one or more predefined periods signalled by the telecommunication

network in which a receiver means of the UE is caused to be powered down,

4.3 so as to provide a discontinuous radio link for the UE in the telecommunication network

4.3.1 in a physical radio transmission layer

4.3.2 when receiving the packets

4.3.3 while maintaining a logical connection in higher protocol layers during the packet service mode.

1.1 Granted claim 4 - added subject-matter (Article 100(c) in conjunction with 76(1) EPC)

1.1.1 In Reasons 50 of the decision under appeal, the opposition division found that granted claim 4, with particular reference to **features 4.2 and 4.2.1**, contained added subject-matter.

1.1.2 The appellant provided the following bases in the WO publication of the earlier application (corresponding passages being also present in the present divisional application as filed):

- Page 3, lines 8 to 14 and 18 to 21:

"*In its broadest sense, the present invention features an interface protocol for providing a discontinuous radio 10 link for user equipment (UE) in a telecommunication network a physical radio transmission layer while receiving packets during a packet service mode, wherein the UE enters into a discontinuous reception mode by receiving, either:*
...
b) one or more frames based on the predefined activity period by the network and powering down

the receiver for the remaining time of the packet transfer session."

- Page 6, lines 14 to 18:

"*In the aforementioned method B, when the UE enters into the discontinuous reception and transmit mode by receiving one or more radio frames, and powers down the rest of the time, the UE can perform the closed loop power control by powering on up prior the radio frame(s) the UE decoding of possible user data occurs.*"

- Fig. 1 and page 9, lines 1 to 12 and 24 to 26:

"*Figure 1 shows a telecommunications network generally indicated as 10 having a radio network controller (RNC) 12, base stations (BS) 14, 16 and user equipment (UE) 18, 20, 22. The base station 14 has a base station power control loop module 14a shown in Figure 2, and the UE 18, 20, 22 has receiver equipment 18a and a user equipment power control loop module 18b shown in Figure 3. In operation, the radio network controller 12 provides packets during a packet session to the UE 18, 20, 22 via the base stations 14, 16.*
...
The configuration of the telecommunications network 10 in Figure 1 may be used in implementing either methods of the present invention."

- Page 7, lines 3 to 6:

"*In effect, the control of the UE stays in the controller of the network, but it enables the UE to*

save battery power when no data is sent, while the connection still exists in higher protocol layers."

- Fig. 7 and page 5, lines 4 to 19:

"*In another method, the UE can receive higher layer signalling from a controller in the telecommunications network that defines a period where the UE needs to perform a decoding of the radio frame or slots in order to detect if the packet transmission is active. The UE determines that the radio frame contains data targeted to it by decoding the radio frame using a cyclic redundancy code and having a correct cyclic redundancy code result. Alternatively, the UE determines that the radio frame does not contain data targeted to it by decoding the radio frame using a cyclic redundancy code and having an incorrect cyclic redundancy code result, and waits an agreed period of time before decoding a subsequent radio frame.*"

The appellant acknowledged that **feature 4.2.1** had no literal basis in the earlier application as filed. However, as confirmed by the well-established jurisprudence, this could not justify *per se* the presence of added subject-matter. Granted claim 4 did not require the BS to generate the "signalling". "Signalling" meant the transmission of certain "special" frames that would cause the UE to enter the DRX mode. In the specific, non-limiting example of Figure 7 of the earlier application as filed, this was done by using the CRC contained in the frames. The UE checked the CRC and, as soon as it indicated an error, the UE could enter the DRX mode. However, this did not necessarily mean that the "triggering" was caused by

the BS. The "triggering" might be done by a different entity, e.g. a controller in the network. The referred passages specified that the UE received one or more frames "in a predefined activity period". From the paragraph bridging pages 2 and 3 of the WO publication of the earlier application, it was apparent that this "period" was nothing more than the conventional scheduling of UEs. Thus, the claimed invention was to "signal" during an "activity period" that the UE might enter the DRX mode.

1.1.3 These arguments are not convincing:

Even if feature 4.2.1 is interpreted in the appellant's favour, i.e. considering that the "triggering" might be done by a different entity such as the radio network controller (RNC), the parts of the earlier application as filed cited by the appellant fail to disclose a BS comprising "means for entering the UE into a discontinuous reception mode by signalling the UE by transmission of one or more frames" as per features 4.2 and 4.2.1 and in the context of a "frame-based method", as set by the additional presence of feature 4.2.2 in claim 4.

Firstly, in the earlier application as filed, the disclosure of the invention "[i]n its broadest sense" at page 3, point b) does not mention any kind of "signalling". In fact, it just refers to the invention from the perspective of the UE, rather than the BS. Secondly, Figure 1 and page 7 mention that the BS has a "BS power control loop module". However, these passages merely reveal that "RNC 12" provides packets during a packet session to the UE 18, 20, 22 "via the base stations 14, 16". Again, there is no "signalling" involved, especially not at the BS. Thirdly, in the

embodiment of Figure 7 and page 5, the UE is supposed to check the CRC to detect if the packet transmission is active. Yet, the CRC is not disclosed to have any "signalling" purposes connected to the DRX mode. On the contrary, the UE, *with* or *without* the involvement of the "controller" of the telecommunication network (see page 5, lines 21 to 24), uses this information - typically present in every radio frame - to perform the respective detection. In summary, in all the passages of the earlier application as filed indicated by the appellant, the decisions concerning the DRX mode are made by the UE. The BS disclosed therein has no particular involvement beyond sending the packets or frames on the radio link to the UE.

In contrast to this, **feature 4.2.1** of the granted patent suggests an active role of the BS according to which the BS "signals" to the UE *when* to enter the DRX mode, for instance, by sending "special frames" for this specific purpose, as indicated by the appellant. The board considers that such subject-matter constitutes new technical information to a skilled reader and thus goes beyond the content of the earlier application as filed.

1.2 It follows that the ground for opposition under Article 100(c) EPC in conjunction with at least Article 76(1) EPC prejudices the maintenance of the patent as granted.

2. AUXILIARY REQUESTS A, A.1, B, B.1, C, C.1, D, D.1, I, I.1, II, II.1, IIa, IIa.1, III, III.1, IV, IV.1, V, V.1, VI, VI.1

Claim 4 of each of **auxiliary requests A to D** comprises all the limiting features of claim 4 as granted and the following additions:

4.2.3 the signalling is based on a signal received from a controller in the telecommunication network [**auxiliary request A**].

4.2.4 [the signalling is] controlled by a controller of the telecommunication network [**auxiliary requests B and C**].

4.2.5 the control of the UE stays in a controller of the telecommunication network [**auxiliary request D**].

Claim 3 of **auxiliary request I** comprises all the limiting features of claim 4 as granted and the following addition:

4.4 means for transmitting to the UE higher-layer signalling that defines a period during which the UE is to decode a frame or slots in order to detect if packet transmission is active.

Claim 2 of **auxiliary requests II, IIa** comprises all the features of claim 3 of auxiliary request I and the following addition:

4.5 means for indicating that the frame does not contain data targeted to the UE by encoding the frame such that the occurrence of an incorrect redundancy code result while decoding the frame at the UE indicates that the frame does not contain data targeted to the UE and causes the

UE to wait an agreed period of time before decoding a subsequent frame.

Claim 2 of **auxiliary request III** is identical to claim 2 of auxiliary request II, except for the replacement of:

"such that the occurrence of an incorrect redundancy code result while decoding the frame at the UE"

by

"using a cyclic redundancy code, wherein an incorrect redundancy code"

in feature 4.5.

In feature 4.4 of the independent "BS claim" of each of **auxiliary requests IV, V and VI**, the phrase "a frame or slots" has been replaced by the phrase "the frame or slots".

In feature 4.2.1 of the independent "BS claim" of each of **auxiliary requests A.1 to D.1 and I.1 to VI.1**, the phrase "one or more frames" has been replaced by the phrase "one frame".

2.1 Added subject-matter (Article 76(1) EPC)

2.1.1 Claim 4 of auxiliary requests A to D and A.1 to D.1, claim 3 of auxiliary requests I, I.1, IV and IV.1 and claim 2 of auxiliary requests II, II.1, IIa, IIa.1, III, III.1, V, V.1, VI and VI.1 also comprise "by signalling [...] the UE by transmission of" as included in claim 4 of the main request. Hence, the reasoning

set out in point 1.1 above applies *mutatis mutandis* to those auxiliary requests.

2.1.2 The addition of **feature 4.4** in some of the present auxiliary requests cannot remove the extension of the subject-matter associated with feature 4.2.1 because, as acknowledged by the appellant, these features relate to *different* steps. Indeed, feature 4.4 addresses specifically those embodiments where the "period" is defined by sending "higher-layer signalling" to the UE. This is ostensibly different from the "signalling" mentioned in feature 4.2.1.

2.2 Thus, none of these auxiliary requests is allowable under at least Article 76(1) EPC either.

3. AUXILIARY REQUESTS VII AND VII.1

Claim 1 of **auxiliary request VII** is identical to granted claim 1 and comprises the following limiting features:

1 A UE in a telecommunication network,
1.1 the UE having a physical radio transmission layer
1.1.1 when receiving packets
1.1.2 while maintaining a logical connection in higher protocol layers
1.1.3 during a packet service mode,
the UE comprises:
1.2 means for entering the UE into a DRX mode
1.2.1 in response to receipt of one or more frames
1.2.2 and powering down a receiver means of the UE
1.2.2.1 for one or more predefined periods as signalled by the telecommunication network,

1.3 so as to provide a discontinuous radio link for the UE in the telecommunication network
1.3.1 in a physical radio transmission layer
1.3.2 when receiving the packets
1.3.3 while maintaining a logical connection in higher protocol layers during the packet service mode.

In feature 1.2.1 of claim 1 of **auxiliary request VII.1**, the phrase "one or more frames" has been replaced by the phrase "one frame".

3.1 Claim 1 - added subject-matter (Article 76(1) EPC)

3.1.1 In sections IV.2(a)(cc) and V.4(b) of the respective written replies to the statement of grounds of appeal and during the oral proceedings before the board, the respondents objected that (amended) **feature 1.2.1** did not find bases in the earlier application as filed. At page 3, lines 13 to 21 and page 9, lines 17 to 24 of the WO publication of the earlier application, the reference to the phrase "one or more frames based on the predefined activity period by the network" clarified unambiguously that these were frames transmitted within the DRX mode, i.e. after the transition of the UE into the DRX mode had occurred. In particular, the frames were expressly subjected to the "activity period" which was only defined within the DRX mode. More specifically, the term "activity period" was introduced at page 7, lines 7 to 9 of the WO publication of the earlier application. There, the DRX mode was described for "method B", i.e. for the method which was meant to be covered by the claims of the granted patent. Thus, according to the introductory portion of the description, the "activity period" formed part of the DRX mode. This was explicitly

confirmed by the exemplary description of "method B" based on Figure 7, starting at page 17, lines 5 to 7 of the WO publication of the earlier application, containing the statement:

> "Figure 7 shows a diagram of a higher layer signalling scheme [...] for discontinuous reception defining the activity period."

Correspondingly, in Figure 7, the "Signaled activity period for receiver" formed part of the "Discontinuous reception and transmission" and was displayed as an enlarged view thereof. In addition, if the "reception of one or more frames" was not part of the DRX mode, then this mode would effectively be continuous, since it would only consist of the phases where the receiving means of the UE were "powered down" ("for the rest of the time").

3.1.2 The appellant submitted that the bases for this feature were the same as those provided in point 1.1.2 above, in particular page 3, lines 8 to 14 and 18 to 21 of the WO publication of the earlier application. In addition, Figure 7 showed that this feature was not only related to "exiting" the DRX mode once it had been entered but also to "entering" the DRX mode from continuous transmission, with reference to periods 402 and 406. Moreover, the expression "in response to receipt" had the same meaning as "(by) receiving".

3.1.3 The board however agrees with the respondents. Firstly, the general expression "(by) receiving" at pages 3 and 9 and claim 1 of the earlier application as filed does not convey the same explicit causal link as "in response to the receipt" in feature 1.2.1. Secondly, Figure 7 and page 5 focus on the checks that the UE

performs during the "signaled activity period" to detect if the packet transmission is active (see also page 17, lines 22 to 24). These checks, moreover, take place during the "discontinuous reception and transmission periods 404, 408" rather than during the periods 402, 406 and 410, "when the receiver circuitry of the UE 18, 20, 22 (Fig. 1) has to be on all the time" (see page 17, lines 12 to 15). In fact, this embodiment provides no specific limitation concerning the duration of the "packet transmission period" (see page 18, lines 2 to 9). The mere inclusion in option b) at page 3 and in claim 1 of the earlier application of reference signs 402, 406 and 410 is not sufficient to directly and unambiguously derive the specific causal link of feature 1.2.1.

3.2 Thus, neither auxiliary request VII nor auxiliary request VII.1 is allowable under at least Article 76(1) EPC.

4. Since there is no allowable claim request on file, the appeal must be dismissed.

5. Request for reimbursement of the appeal fee

5.1 Pursuant to Rule 103(1)(a) EPC, the appeal fee can only be reimbursed in the event that the board deems the appeal to be allowable. This is not the case in the present appeal. Already for this reason, the request for reimbursement must be refused.

5.2 Consequently, the request for reimbursement of the appeal fee must be refused.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

2. The request for reimbursement of the appeal fee in full is refused.

The Registrar: The Chair:

B. Brückner K. Bengi-Akyürek

Decision electronically authenticated