

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 29 July 2022**

Case Number: T 1224/18 - 3.5.03

Application Number: 12191062.4

Publication Number: 2592762

IPC: H04B5/00

Language of the proceedings: EN

Title of invention:

Wireless power transmitter, wireless power receiver, wireless power transmission method and wireless power reception method

Applicant:

LG Innotek Co., Ltd.

Headword:

Transmission-power ranges/LG

Relevant legal provisions:

EPC Art. 56

RPBA Art. 12(4)

Keyword:

Decision in written proceedings: cancellation of oral proceedings following party's announcement of non-attendance
Inventive step - main and 1st to 6th auxiliary requests (no)
Admittance of requests filed with the appeal - 7th and 8th auxiliary requests (no): fresh case



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1224/18 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 29 July 2022

Appellant: LG Innotek Co., Ltd.
(Applicant) 98, Huam-ro, Jung-gu
Seoul, 04637 (KR)

Representative: DREISS Patentanwälte PartG mbB
Friedrichstraße 6
70174 Stuttgart (DE)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 4 December 2017
refusing European patent application
No. 12191062.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: K. Schenkel
C. Heath

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse the present European patent application for lack of inventive step (Article 56 EPC) with respect to a main request and first to third auxiliary requests, having regard to the disclosures of

D1: US 2010/0181961 A1

D5: WO 2011/128969 A1 in Japanese language

D5': EP 2 560 266 A1.

Document **D5'** is the European publication under Article 153(4) EPC of the international patent application **D5** with a publication date earlier than the priority date of the present application and is considered to be a translation of the latter.

II. With its statement setting out the grounds of appeal, the appellant filed amended sets of claims according to five additional auxiliary requests (fourth to eighth auxiliary requests). It requested that the decision under appeal be set aside and that a patent be granted on the basis of the **main request** or, in the alternative, of one of **auxiliary requests 1 to 8**.

III. In a communication annexed to the summons to oral proceedings pursuant to Article 15(1) RPBA 2020, the board expressed its negative preliminary opinion on the appeal, including objections under Article 56 EPC and admittance considerations under Article 12(4) RPBA 2007.

IV. By its letter of reply, the appellant informed the board that it would not be attending the scheduled oral

proceedings. It did not submit any comments on the substance of the board's communication under Article 15(1) RPBA.

V. Oral proceedings were then cancelled.

VI. Claim 1 of the **main request** reads as follows (labelling by the board):

- (a) "A wireless power transmission method of a wireless power transmitter (200) for transmitting power to a wireless power receiver (300) using resonance coil via a resonance frequency band, the wireless power transmission method comprising:
- (b) transmitting (S101) a connection signal for identifying the wireless power receiver (300);
- (c) identifying the wireless power receiver (300) by receiving a response signal in response to the connection signal from the wireless power receiver (300);
- (d) negotiating (S105) a power transmission condition with the identified wireless power receiver (300); and
- (e) transmitting (S109) the power to the identified wireless power receiver (300) according to the negotiated power transmission condition,
- (f) wherein frequency band for exchanging information for the power transmission is different from the resonance frequency band, and
- (g) wherein the negotiating (S105) of the power transmission condition comprises:
- (h) transmitting a state information of the wireless power transmitter (200) including information about an available amount of power to the identified wireless power receiver, and

(i) receiving a specific state information including information about a demanded amount of power determined by the identified wireless power receiver within a range of the available amount of power from the identified wireless power receiver (300)".

VII. Claim 1 of the **first auxiliary request** differs from claim 1 of the main request in that features (h) and (i) now read as follows (labelling by the board):

(h1) "the wireless power transmitter (200) transmitting to the identified wireless power receiver (300) a state information of the wireless power transmitter (200) including an amount of power available for supplying, and

(i1) the wireless power transmitter (200) receiving from the wireless power receiver (300) a specific state information including a demanded amount of power determined by the identified wireless power receiver within a range of the amount of power available for supplying".

VIII. Claim 1 of the **second auxiliary request** differs from claim 1 of the main request in that feature (d) now reads as follows (labelling by the board):

(d1) "after identifying the wireless power receiver (300), negotiating (S105) a power transmission condition with the identified wireless power receiver (300);".

IX. Claim 1 of the **third auxiliary request** differs from claim 1 in that features (d), (h) and (i) are replaced with features (d1), (h1) and (i1) respectively.

X. Claim 1 of the **fourth auxiliary request** differs from claim 1 of the main request in that the phrase "characterized by" has been inserted between features (c) and (d) and in that features (c), (h) and (i) now read as follows (labelling by the board):

(h2) "transmitting a state information of the wireless power transmitter (200) including information about an available transmission power to the identified wireless power receiver, and
(i2) receiving a specific state information including information about a demanded transmission power determined by the identified wireless power receiver within a range of the available transmission power from the identified wireless power receiver (300)".

XI. Claim 1 of the **fifth auxiliary request** differs from claim 1 of the main request in that the phrase "characterized by" has been inserted between features (c) and (d) and in that the following feature is added at the end (labelling by the board):

(j) "wherein the transmitting of the power to the identified wireless power receiver (300) comprises:
transmitting the power corresponding to the specific state information to the identified wireless power receiver (300)".

XII. Claim 1 of the **sixth auxiliary request** differs from claim 1 of the fourth auxiliary request in that feature (j) is added at the end.

XIII. Claim 1 of the **seventh auxiliary request** differs from claim 1 of the fifth auxiliary request in that the

following feature is added after feature (g) (labelling by the board):

(k) "detecting a change of an available transmission power,"

and in that features (h) and (i) now read as follows (labelling by the board):

(h3) "transmitting a state information of the wireless power transmitter (200) including information about the changed available transmission power to the identified wireless power receiver, and

(i3) receiving a specific state information including information about a demanded transmission power determined by the identified wireless power receiver within a range of the changed available transmission power from the identified wireless power receiver (300),".

XIV. Claim 1 of the **eighth auxiliary request** differs from claim 1 of the fifth auxiliary request in that features (h), (i) and (j) now read as follows (labelling by the board):

(h4) "transmitting a first state information of the wireless power transmitter (200) including information about a first available transmission power to the identified wireless power receiver, and

(i4) receiving a first specific state information of the wireless power receiver (300) including information about a first demanded transmission power determined by the identified wireless power receiver within a range of the first available

transmission power from the identified wireless power receiver (300),

- (j2) wherein the transmitting of the power to the identified wireless power receiver (300) comprises:
 - transmitting a first power corresponding to the first specific state information to the identified wireless power receiver (300),"

and in that the following features are added at the end (labelling by the board):

- (l) "transmitting a second state information of the wireless power transmitter (200) including information about a second available transmission power to the identified wireless power receiver, and
- (m) receiving a second specific state information of the wireless power receiver (300) including information about a second demanded transmission power determined by the identified wireless power receiver within a range of the second available transmission power from the identified wireless power receiver (300),
- (n) wherein the transmitting of the power to the identified wireless power receiver (300) comprises:
 - transmitting a second power corresponding to the first specific state information to the identified wireless power receiver (300)".

Reasons for the Decision

1. Background of the invention

The present invention relates to the field of wireless power transmission from a power transmitter to a power

receiver, for example, for charging wirelessly a mobile phone. Both devices exchange data for setting the amount of power to be transferred, the data and power transmission being performed in different frequency bands. The communicated data include information about an amount of available power from the power transmitter and information about a demanded amount of power from the power receiver.

2. Main request - inventive step (Article 56 EPC)

2.1 Claim 1 of the main request includes the following limiting features (board's labelling):

- (a) A wireless power transmission method of a wireless power transmitter for transmitting power to a wireless power receiver using [a] resonance coil via a resonance frequency band, the wireless power transmission method comprising:
- (b) transmitting a connection signal for identifying the wireless power receiver;
- (c) identifying the wireless power receiver by receiving a response signal in response to the connection signal from the wireless power receiver;
- (d) negotiating a power transmission condition with the identified wireless power receiver;
- (e) transmitting the power to the identified wireless power receiver according to the negotiated power transmission condition,
- (f) wherein frequency band for exchanging information for the power transmission is different from the resonance frequency band,
- (g) wherein the negotiating of the power transmission condition comprises:
- (h) transmitting a state information of the wireless power transmitter including information about an

available amount of power to the identified wireless power receiver,

- (i) receiving a specific state information including information about a demanded amount of power determined by the identified wireless power receiver within a range of the available amount of power from the identified wireless power receiver.

2.2 The step of "negotiating a power transmission condition" according to feature (d) is only further specified in that it includes the data transmission of steps (h) and (i). It is however not specified on which *basis* or according to which *rules* the power transmission condition is indeed negotiated. The description of the present patent application does not provide any details in this respect either. Negotiating the power transmission condition is therefore understood as simply determining the power transmission condition.

The term "demanded" in step (i) does not further limit the so-specified amount of power since it only indicates an *intention* behind this information but not how it is actually calculated or how it is used. It is further noted that the step of negotiating includes the communication of the "demanded amount of power" but leaves it open whether or how determining the power transmission condition is based on that "demanded amount of power".

2.3 Prior-art documents

Document **D1**, which was considered the closest prior art in the appealed decision, relates to the wireless power transmission via resonant coils (paragraphs [0035], [0048] and [0108]) and discloses the transmission of

"power requirement needs" from a power receiver to a power transmitter (abstract and paragraph [0067]). The transmission of signalling data and the transmission of power may be performed in different frequency bands (paragraphs [0072] and [0104]).

Document **D2** relates to the wireless power transmission from a transmitter to a receiver. The power transmitter tries to establish a data communication link to the power receiver and requests an identification information from it. If no identification information is received, the transmitted power is limited to a "first predetermined value" to enable the power receiver to communicate and to charge the battery (abstract). If an identification information is received, the amount of transferred power is set to a value in a range between the first predetermined value and a "second predetermined value" which is higher than the first one (page 5, lines 11 to 14). Data and power transmission may be performed in different frequency bands (page 10, lines 17 to 26).

Document **D5'** discloses a system for wireless power transmission from at least one power transmitter to at least one power receiver via resonant coils including the exchange of various information (abstract, paragraphs [0011], [0032] and [0039]). The at least one power transmitter transmits a transmitting identification information and a power transmitting condition to the power receiver (paragraph [0011]). The at least one power receiver transmits a receiving identification information and a power receiving condition to the power transmitter (*ibid.*). Power is transmitted based on the power transmitting condition and the power receiving condition (*ibid.*). Control for or determination of the power transmission lies within

a control unit of the power transmitter (paragraph [0035], FIG. 3). The power transmitting condition may include the range of transmitted power (paragraph [0069]). The power receiving condition may include the range of received power (paragraph [0070]). Further, it is checked whether the power transmission condition and the power receiving condition fit together and the power transmission is only started in the affirmative (paragraph [0071] and FIG. 6A, steps S621, S622, S721 and S722). The power may be transmitted in a frequency band between 5 and 20 MHz whereas the data communication may use a different frequency band of around 2,4 GHz of Bluetooth or wireless LAN (paragraphs [0021] and [0047]).

- 2.4 Contrary to the finding of the impugned decision (cf. Reasons 2.1), the board deems **D5** (i.e. its translation **D5'**) to be the most suitable starting point for assessing inventive step. Document D5' discloses a method with features (a) to (e) (abstract and paragraph [0011]). Feature (f) is disclosed in paragraphs [0021] and [0047]. Features (g) and (h) are disclosed in paragraph [0069]. As to feature (i), D5' discloses that the power receiver transmits to the power transmitter information about the "range of the received power (W)" which is understood to be the range of power which can be absorbed by the power receiver (paragraph [0070]).
- 2.5 The method of claim 1 thus differs from the method of **D5'** in that the "information about a demanded amount of power", which is included in the specific state information received from the identified power receiver, is determined by the identified wireless power receiver within a range of the available amount

of power (i.e. feature (i)).

- 2.6 The technical effect of this difference is that the amount of power communicated by the power receiver is limited from the very beginning to an amount of power which can actually be delivered by the transmitter. In that regard, it is noted that a limitation to the available amount of power as such is already disclosed in D5', namely as implicit part of the step of checking whether the power transmission condition and the power receiving condition fit together (paragraph [0071] and FIG. 6A, steps S621, S622, S721 and S722). The underlying objective technical problem is therefore indeed seen in "providing a more accurate and efficient determination of the amount of power to be transmitted" (cf. appealed decision, Reasons 2.3).
- 2.7 In the board's view, it would have been obvious for the skilled person in the field of electric power transmission to limit, beforehand, the amount of *demanded* power to the amount of *available* power to solve the aforementioned problem. In other words, the board considers the distinguishing feature to be a minor and straightforward amendment of the method of D5' being within the skilled person's common general knowledge.
- 2.8 The appellant intensively analysed the disclosure of D5' and argues that the document did not disclose the transmission of an *available* power to the receiver, the transmission of the *demanded* power to the transmitter or a determination of the *demanded* power within the *available* power.

The board disagrees with respect to the transmission of the amounts of available and demanded power. In the

method of D5', first the power transmission condition and the power receiving condition are exchanged and then the power is transmitted on the basis of these conditions (paragraph [0011] and FIG. 6A). The "range of the transmitted power (W)" and the "range of the received power (W)" included in the power transmission and receiving conditions (paragraphs [0069] and [0070]) do therefore not refer to a *past* power transmission but to power amounts of the envisaged *future* transmission. Further, the power transmission and receiving conditions are checked whether they fit together (steps S621 and S721 of FIG. 6A) which implies that the power ranges communicated in the exchanged conditions are feasible for the power transmitter *and* for the power receiver.

A "range of the transmitted power" is therefore understood by the board as a range of power which can be provided by the power transmitter, i.e. an available amount of power. Likewise the "range of the received power" is understood by the board as a range of power which can be received by the power receiver (see point 2.4 above). In view of the board's understanding set out in point 2.2 above, the "received power" in D5' may indeed be read onto the "demanded amount of power".

- 2.9 The method of claim 1 is therefore considered to lack an inventive step having regard to **D5'** combined with the skilled person's common general knowledge (Article 56 EPC).
3. First to sixth auxiliary requests - inventive step (Article 56 EPC)

3.1 Claim 1 of the **first auxiliary request** adds essentially the features that

- the state information is transmitted by the power transmitter (cf. feature (h1))
- the specific state information is transmitted by the power receiver (cf. feature (i1)).

3.2 Claim 1 of the **second auxiliary request** adds essentially the feature that

- negotiating the power transmission condition takes place after identifying the power receiver (cf. feature (d1)).

3.3 Claim 1 of the **third auxiliary request** combines the features added to claim 1 of the first and the second auxiliary requests.

3.4 Claim 1 of the **fourth auxiliary request** has been amended essentially in that

- "amount of power" now reads "transmission power" (cf. features (h2) and (i2)).

3.5 Claim 1 of the **fifth auxiliary request** has been amended essentially in that

- transmitting the power to the identified power receiver includes transmitting the power corresponding to the specific state information (cf. feature (j)).

3.6 Lastly, claim 1 of the **sixth auxiliary request** combines essentially the amendments made to claim 1 of the fourth and the fifth auxiliary requests.

3.7 In the board's view, the features added to claim 1 of each of first to sixth auxiliary requests are either at least implicitly disclosed in D5' or minor amendments which do not contribute to an inventive step. The board therefore concludes that claim 1 of each of first to sixth auxiliary requests lack an inventive step having regard to **D5'** combined with the skilled person's common general knowledge as well (Article 56 EPC).

4. Seventh auxiliary request - admittance (Article 12(4) RPBA 2007)

4.1 Claim 1 of the **seventh auxiliary request** includes the amendments of the sixth auxiliary request and the step of

- detecting a change of an available power and that the state information which are exchanged refer to the changed available transmission power (cf. features (k), (h3) and (i3)).

The claim requests underlying the appealed decision do not refer to the detection of a change of the available power or how such a change is taken into account. They only disclose "detecting a change of the state of the wireless power transmitter" and that the change of state of the wireless power receiver relates to the "maximum amount of power to be supplied" or the "number of wireless power receiver[s]" (cf. claims 7 and 9 of all requests). Hence, the board concludes that the seventh auxiliary request creates a "fresh case", the examination of which being generally not the purpose of

the appeal proceedings (cf. Article 12(4) RPBA 2020).

The board does therefore not admit the seventh auxiliary request into the appeal proceedings (cf. Article 12(4) RPBA 2007).

5. Eighth auxiliary request - admittance (Article 12(4) RPBA 2007)

5.1 Claim 1 of the **eighth auxiliary request** has been amended in that it further includes the features of

- transmitting a second state information about a second available power to the power receiver,
- receiving a second specific state information about a second demanded power within the range of the second available power, and that
- the step of transmitting power includes transmitting a second power corresponding to the first [*sic*] specific state information (cf. features (l), (m) and (n)).

5.2 The claim requests underlying the appealed decision merely refer to a repetition of the negotiation step when a state of the power transmitter changed, wherein the change comprised a change of the amount of power to be transmitted or the number of power receiver (cf. claim 9 of those requests). A repetition performed independently of a change of state was not subject of any claim of the requests underlying the appealed decision. Hence, the board concludes that the eighth auxiliary request likewise creates a "fresh case", the examination of which being generally not the purpose of appeal proceedings (cf. Article 12(2) RPBA 2020).

The board does therefore not admit the eighth auxiliary

request into the appeal proceedings either (cf. Article 12(4) RPBA 2007).

6. Since there is no allowable claim request on file, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated