



Federal Patent Court

In the name of the people

Judgment

Delivered on
October 18, 2023

...

4 Ni 69/22 (EP)

(File number)

In Patent Nullity Proceedings

...

on European Patent 2 227 923 (DE 60 2008 039

323)

ECLI:DE:BPatG:2023:181023U4Ni69.22EP.0

the 4th Senate (Nullity Senate) of the Federal Patent Court, following the oral hearing on 18 October 2023 by Presiding Judge Voit, Judge Werner M.A. and Judges Dipl.-Ing. Univ. Dr. Haupt and Dipl.-Ing. Tischler

hereby rules:

- I. The European patent 2 227 923, in so far as it is challenged, is declared invalid in part with effect for the territory of the Federal Republic of Germany in so far as it extends beyond the following version:

“1. A method of receiving a random access response, the method comprising:
a user equipment (UE) transmits a random access preamble to a base station (Node-B) (S430; S930);
the user equipment (UE) receives the random access response corresponding to the random access preamble from the base station (Node-B) (S450; S950),
the received random access response including information of a transmission time when the random access preamble is transmitted,
the user equipment (UE) determines whether or not the received random access response is the response to the transmitted random access preamble,
characterized in that the method further comprises:
the user equipment (UE) stores a subframe number for transmitting the random access preamble (S420);
the information of the transmission time when the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, the number being a number allocated to a subframe, in which a random access channel, RACH, slot is present,
the user equipment (UE) checks whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960),

the user equipment (UE) determines that the received random access response is the response to the transmitted random access preamble, if the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960), and
the user equipment (UE) receives the random access response within a predetermined time span including a predetermined time point after a transmission time when the random access preamble is transmitted, and the predetermined time point is obtained by adding an offset time to the random access preamble transmission time,
wherein the offset time is equal to half of a round trip time for a hybrid automatic repeat request, HARQ, process.

2. The method according to claim 1,
wherein the number is the uplink subframe number of the time point when a user equipment (UE) transmits a random access preamble to a base station (Node-B).
9. A user equipment (UE) being adapted
to transmit a random access preamble to a base station (Node-B) (S430; S930);
to receive a random access response corresponding to the random access preamble from the base station (Node-B) (S450; S950), the received random access response including information of a transmission time when the random access preamble is transmitted, and
to determine whether or not the received random access response is the response to the transmitted random access preamble,
characterized in that the information of the transmission time when the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, the number being a number allocated to a subframe, in which a random access channel, RACH, is present,
in that the user equipment is further adapted to store a subframe number for transmitting the random access preamble (S420);

to check whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960), and
to determine that the received random access response is the response to the transmitted random access preamble, if the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960),
in that the user equipment (UE) comprises means arranged to receive the random access response from the base station (Node-B) within a predetermined time span including a predetermined time point after a transmission time of the random access preamble, and means arranged to obtain the predetermined time point as the sum of an offset time and the random access preamble transmission time, and
in that the offset time is equal to half of a round trip time for a hybrid automatic repeat request, HARQ, process.”

- II. The action is dismissed for the remainder.
- III. The costs of the litigation are set aside against each other.
- IV. The judgment is provisionally enforceable against the provision of security in the amount of 120% of the respective amount to be enforced.

T a t b e s t a n d

The defendant is the proprietor of the European patent 2 227 923 (patent in suit), which – according to the patent specification in suit, claiming the priority of the Korean application KR 20080047656 (= document NK3-P2) dated 22 May 2008 and the US application US 18492 P dated 1 January 2008 (English language). Translation as document NK3-P1) – on 31 December 2008. The grant of the European patent was published on 29 July 2015 (patent specification EP 2 227 923 B1 = document NK3). The patent in suit, which is in English, is in force.

The German Patent and Trademark Office lists the patent in suit under the file number 60 2008 039 323. It bears the designation

"Determination that a random access response received from a base station by a user equipment corresponds to a random access preamble previously transmitted by the same user equipment"

and in the German translation

"Finding that a direct access response received from a base station from a user terminal is equivalent to a direct access request previously transmitted from the same user terminal"

and, as granted, comprises ten patent claims, which the plaintiff partially challenges in its nullity action of August 15, 2022, namely to the extent of patent claims 1, 2 and 9.

Claim 1 relating to the process, as granted, reads:

1. A method of receiving a random access response, the method comprising:
a user equipment (UE) transmits a random access preamble to a base station (Node-B) (S430; S930);

the user equipment (UE) receives the random access response corresponding to the random access preamble from the base station (Node-B) (S450; S950),

the received random access response including information of a transmission time when the random access preamble is transmitted, the user equipment (UE) determines whether or not the received random access response is the response to the transmitted random access preamble,

characterized in that the method further comprises:

the user equipment (UE) stores a subframe number for transmitting the random access preamble (S420);

the information of the transmission time when the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, the number being a number allocated to a subframe, in which a random access channel, RACH, slot is present,

the user equipment (UE) checks whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960),

the user equipment (UE) determines that the received random access response is the response to the transmitted random access preamble, if the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960), and the user equipment (UE) receives the random access response within a predetermined time span including a predetermined time point after a transmission time when the random access preamble is transmitted, and the predetermined time point is obtained by adding an offset time to the random access preamble transmission time.

Claim 9 relating to the apparatus, as granted, reads:

9. A user equipment (UE) being adapted

to transmit a random access preamble to a base station (Node-B) (S430; S930);

to receive a random access response corresponding to the random access preamble from the base station (NodeB) (S450; S950), the received random access response including information of a transmission time when the random access preamble is transmitted, and to determine whether or not the received random access response is the response to the transmitted access preamble, characterized in that the information of the transmission time when the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, the number being a number allocated to a subframe, in which a random access channel, RACH, is present,

in that the user equipment is further adapted

to store a subframe number for transmitting the random access preamble (S420);

to check whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960), and

to determine that the received random access response is the response to the transmitted random access preamble, if the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960), and

in that the user equipment (UE) comprises means arranged to receive the random access response from the base station (Node-B) within a predetermined time span including a predetermined time point after a transmission time of the random access preamble, and means arranged to obtain the predetermined time point as the sum of an offset time and the random access preamble transmission time.

Claim 2 is directly related to Claim 1.

The plaintiff is of the opinion that the subject-matter of the contested claims 1 and 9 is inadmissibly extended in comparison with the disclosure of the international application of 31 December 2008 and is not disclosed in the patent specification in suit in such a clear and complete way that it can be carried out by a person skilled in the art. The priority of the US advance notification had not been validly claimed, at least substantively. The subject-matter of the challenged independent claims 1 and 9 according to the patent in suit was not new in relation to the prior art and in any case did not involve an inventive step.

In support of its arguments, the applicant relies on the following documents:

- NK3-P1 English translation of US 18492 P of 1 January 2008;NK3-PCT Notice of disclosure WO 2009/084924 A2 of 9 July 2009;NK4: CATT, "RA-RNTI design", R2-081673 (resubmission of R2-080718), 3GPP TSG RAN WG2 #61bis, Shenzhen, China, 31stMarch – 4thApril 2008, 5 pages;
- NK5: CN 101128062 A, published on 20 February 2008;
- NK6: CATT, "Text Proposal of RA-RNTI", R2-082794, 3GPP TSG RAN WG2 #62, Kansas City, USA, May 5-9, 2008, 2 pages;
- NK7: Qualcomm Europe, "RA_WINDOW and RA-RNTI allocation", R2-081559, 3GPP TSG RAN WG2 #61bis, Shenzhen, China, 31stMarch – April 4th2008, 3 pages.

With reference to the application of 15 August 2022, the plaintiff claims that the Court should:

revoke European patent 2 227 923 for the territory of the Federal Republic of Germany to the extent of claims 1, 2 and 9.

The defendant claims that the Court should:

dismiss the action,

in the alternative, dismiss the action;

insofar as it also challenges one of the versions of the patent in suit according to auxiliary requests 1 to 5, filed with the written submission of 9 June 2023,

with the proviso that the auxiliary requests are to be examined in numerical order and are presented as closed sets of claims.

The defendant disputes the plaintiff's arguments and is of the opinion that the patent in suit validly claims the priority of the US prior application, that the subject-matter of the patent in suit in the contested claims 1, 2 and 9 is disclosed in origin and is new compared to the prior art and also involves an inventive step. The subject-matter of the patent in suit was protectable at least in one of the defended versions according to the auxiliary requests filed.

Because of the wording of auxiliary request 1, reference is made to the operative part of the judgment. For the wording of the claims according to the further auxiliary requests, reference is made to the file.

The plaintiff also opposes the auxiliary requests and also considers the subject-matter of claims 1, 2 and 9 in the version of the respective auxiliary requests to be inadmissibly extended, not new and not inventive.

The Senate forwarded a notice of 27 March 2023 to the parties, setting deadlines for comments.

For further details of the state of the facts and the state of the dispute, reference is made to the pleadings exchanged between the parties together with annexes, the minutes of the oral hearing of 18 October 2023 and the other contents of the file.

Entscheidungsgründe

A.

The admissible action directed against claims 1, 2 and 9 of the patent in suit is only partially successful on the merits, namely with regard to the granted version of the patent in suit. In this respect, the ground for revocation of lack of patentability under Art. II, Section 6(1)(1) of the IntPatÜG, Art. 138(1)(a) EPC in conjunction with Art. 52, 56 EPC is in any case met.

In the version according to auxiliary request 1, however, claims 1, 2 and 9 prove to be protectable, so that the action must be dismissed to the extent that it is also directed against this version. The question of whether the patent in suit would also be upheld in the version after the other auxiliary requests is no longer relevant in this factual situation.

I. The Subject-Matter of the Patent in Suit

1. The subject-matter of the patent in suit is methods and apparatus for communication via radio signals in communication systems.

The patent in suit deals with wireless communication systems (hereinafter referred to as mobile networks), such as mobile networks based on the UMTS or LTE standard, in which terminal equipment (UE) and base station (Node-B) communicate with each other via radio signals (see patent specification, paragraphs 0001, 0015, 0019 and 0031).

In order for an end device in a wireless communication system to exchange information, the end device must first gain access to the mobile network via a base station. The end device communicates with the base station via a so-called random access channel (RACH). The procedure used for this purpose, which is known from the prior art, is called the "random access procedure".

In this case, the end device first sends a so-called random access preamble to the base station at a certain time via a random access channel. The random access preamble contains a randomly selected sequence of numbers ("randomly selected sequence", "sequence number", "RACH sequence") (paragraphs 0002 and 0003; Figures 1a and 1b). If a base station receives such a random access preamble, it captures the randomly selected sequence of numbers contained therein and responds with a so-called random access response (RACH response), which also includes the sequence of numbers contained in the random access preamble and randomly selected by the terminal device (paragraphs 0002 and 0003; Figures 1a and 1b).

When the terminal receives such a random access response, it captures the sequence of numbers contained therein and compares it with the sequence of numbers originally randomly selected by the terminal and sent to the base station as part of the random access preamble. If both sequences of numbers match, the terminal recognizes that the received random access response is intended for it (paragraphs 0002 and 0003).

On the basis of this random access response, the radio connection between the base station and the terminal device is then initialized, although this further process is not relevant for the patent in suit.

A larger number of randomly selectable number sequences is available to the terminals, so that it is usually possible to assign the random access preamble sent by the terminal device to the received random access response by comparing the number sequence sent out and the number sequence received as part of the random access response.

A single base station usually serves a large number of different end devices. Therefore, despite the large number of randomly selectable number sequences available, it can happen that several devices randomly assign the same randomly selected number sequence at a short time interval to

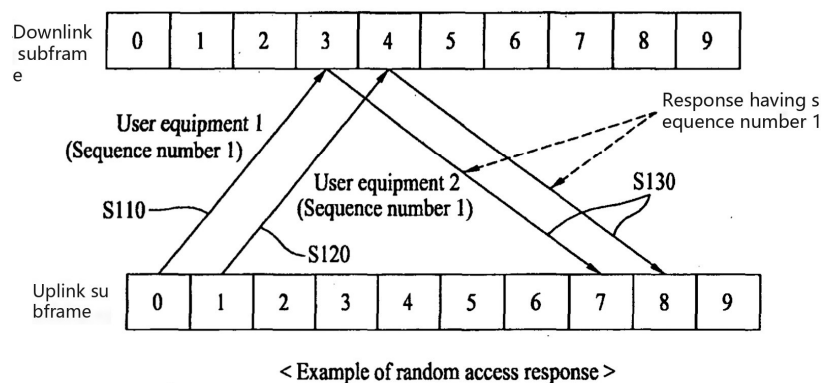
send a base station so that the base station receives several random access preambles at a close time interval, each containing the same sequence of numbers randomly selected by the terminals (paragraphs 0004 and 0006; Figures 1a and 1b).

If a base station receives several random access preambles containing the same randomly selected sequence of numbers at a short time interval, it sends out several random access responses with this number, i.e. with the same sequence of numbers. In such a case, a clear assignment of the random access preamble and the random access response by the end devices may no longer be guaranteed (paragraphs 0003 and 0004). This is because the reception of the random access responses by the terminal equipment may lead to confusion, since an end device mistakenly considers the random access response actually intended for another terminal equipment to be its own random access response, because in such a case the random access responses received cannot be distinguished solely on the basis of the sequence of numbers contained therein.

Such a scenario is exemplified in Figure 1a of the patent in suit reproduced below, in which two terminal devices ("User equipment 1", "User equipment 2") each emit a random access preamble (S110, S120) with the same randomly selected sequence of numbers ("Sequence num-ber 1") at close intervals.

Figure 1a of the patent in suit

FIGURE 1a



In the scenario shown in Figure 1a, both terminals first receive the random access response to the random access preamble (S110) first received by the base station and consider this random access response with the same number sequence ("Response having sequence number 1") to be the response to their own random access preamble. In this scenario, however, the initially incoming random access response is only for the first of the two endpoints, so the second endpoint incorrectly identifies this random access response as its own (paragraph 0004).

2. In view of the prior art described above, the patent in suit sets itself the task of providing a secure and efficient method for receiving a random access response which is intended to prevent an end device which sends a random access preamble with a randomly selected sequence of numbers to a base station from mistakenly receiving a random access response as a response that was actually intended for another terminal equipment which wanted to gain access to the mobile phone network with the same randomly selected sequence of numbers (paragraph 0010).

This problem is to be solved with the help of the subject-matter of the independent claims 1 and 9 challenged by the plaintiff.

3. The relevant expert for the accomplishment of this task is an engineer with a university degree (diploma or master's degree) in electrical engineering, specialising in communications engineering, who has several years of experience in the field of developing mobile radio systems taking into account mobile radio standards and transmission technologies in mobile networks, and who keeps up to date with current developments in this field, including with regard to LTE standardisation.

4. The following remarks on the challenged claims 1, 2 and 9 are made on the basis of the structure of features made by the Senate. The relevant English version, like the German version, is taken from the patent specification in suit.

Patent claim 1:

	in the language of the proceedings: English	Translation according to the patent in suit
M1	A method of receiving a random access response, the method comprising:	Method for receiving a random access response, the procedure including:
M1.1	a user equipment (UE) transmits a random access preamble to a base station (Node-B) (S430; S930);	a terminal device (UE) transmits a random access preamble to a base station (Node-B) (S430;S930);
M1.2	the user equipment (UE) receives the random access response corresponding to the random access preamble from the base station (Node-B) (S450; S950),	the terminal device (UE) receives the random access response from the base station (Node-B) (S450;S950),
M1.2.1	the received random access response including information of a transmission time when the random access preamble is transmitted,	where the random access response received includes information of a transmission time at which the random access preamble is transmitted,
M1.3	the user equipment (UE) determines whether or not the received random access response is the response to the transmitted random access preamble,	the terminal device (UE) determines whether the received random access response is the response to the transmitted random access preamble or not,
	characterized in that the method further comprises:	thereby marked that the procedure also includes:

M1.4	the user equipment (UE) stores a subframe number for transmitting the random access preamble (S420);	the terminal device (UE) stores a subframe number for transmitting the random access preamble (S420);
M1.5	the information of the transmission time when the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, the number being a number allocated to a subframe, in which a random access channel, RACH, slot is present,	the information of the transmission time at which the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, where the number is a number assigned to a subframe in which a random access channel, RACH, slot is present,
M1.6	the user equipment (UE) checks whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960),	the terminal device (UE) checks whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the terminal (S460;S960),
M1.7	the user equipment (UE) determines that the received random access response is the response to the transmitted random access preamble, if the number included in the received random access response is identical to the subframe number of the transmitted random	the terminal device (UE) determines that the received random access response is the response to the transmitted random access preamble if the number included in the received random access response is identical to the subframe number of the transmitted random access preamble,

	access preamble stored by the user equipment (S460; S960), and	which is stored by the end device (S460; S960), and
M1.8	the user equipment (UE) receives the random access response within a predetermined time span including a predetermined time point after a transmission time when the random access preamble is transmitted, and the predetermined time point is obtained by adding an offset time to the random access preamble transmission time.	the terminal device (UE) receives the random access response within a predetermined period of time, which includes a predetermined time after a transmission time at which the random access preamble is transmitted, and the predetermined time is obtained by adding a time offset to the random access preamble transmission time.

Dependent Claim 2:

	in the language of the proceedings: English	Translation according to the patent in suit
	The method according to claim 1, wherein the number is the uplink subframe number of the time point when a user equipment (UE) transmits a random access preamble to a base station (Node-B).	The method of claim 1, wherein the number is the uplink subframe number of the time at which a terminal equipment (UE) transmits a random access preamble to a base station (Node-B).

Ancillary claim 9:

	in the language of the proceedings: English	Translation according to the patent in suit
M9	A user equipment (UE) being adapted	terminal equipment (UE), which is set up to

M9.1	to transmit a random access preamble to a base station (Node-B) (S430; S930);	transmit a random access preamble to a base station (Node-B) (S430;S930);
M9.2	to receive a random access response corresponding to the random access preamble from the base station (Node-B) (S450; S950),	receive a random access response from the base station (Node-B) according to the random access preamble (S450;S950),
M9.2.1	the received random access response including information of a transmission time when the random access preamble is transmitted, and	where the random access response received includes information of a transmission time at which the random access preamble is transmitted, and
M9.3	to determine whether or not the received random access response is the response to the transmitted random access preamble,	determine whether or not the random access response received is the response to the transmitted random access preamble;
	characterized in that	characterized by the fact that
M9.5	the information of the transmission time when the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, the number being a number allocated to a subframe, in which a random access channel, RACH, is present,	the information of the transmission time at which the random access preamble is transmitted includes a number indicating the transmission time of the random access preamble, where the number is a number assigned to a subframe in which a random access channel, RACH, is present,
	in that the user equipment is further adapted	that the terminal is also set up to

M9.4	to store a subframe number for transmitting the random access preamble (S420);	store a subframe number for transferring the random access preamble (S420);
M9.6	to check whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960), and	check whether the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the terminal (S460; S960), and
M9.7	to determine that the received random access response is the response to the transmitted random access preamble, if the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the user equipment (S460; S960), and	declare that the random access response received is the response to the transmitted random access preamble if the number included in the received random access response is identical to the subframe number of the transmitted random access preamble stored by the terminal device (S460; S960), and
M9.8	in that the user equipment (UE) comprises means arranged to receive the random access response from the base station (Node-B) within a predetermined time span including a predetermined time point after a transmission time of the random access preamble, and means arranged to obtain the predetermined time point as the sum	that the terminal equipment (UE) is a means which is ordered to receive the random access response from the base station (Node-B) within a predetermined period of time, which includes a predetermined time after a transmission time of the random access preamble, and a means which is ordered to receive the random access response from the base station (Node-B) within a predetermined period of time, which includes a predetermined time after a transmission time of the random access preamble, and a means which is directed to:

	of an offset time and the random access preamble transmission time.	the predetermined time as the sum of a time offset and the random access preamble transmission time.
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5. Interpretation of the Claims

The features of the attacked claims 1, 2 and 9 require explanation.

5.1 Claim 1

Claim 1 relates to a method for receiving a random access response (feature M1), i.e. a method from the point of view of an end device. From a technical point of view, the sending (by a base station) and the receiving (by a terminal device) of a random access response is one of several steps within a random access procedure.

It is envisaged that the terminal device sends a random access preamble to the base station (so-called "Node-B") (feature M1.1) and receives a corresponding random access response from the base station (feature M1.2).

According to feature M1.2.1, this random access response received from the terminal equipment includes information of a "transmission time at which the random access preamble is transmitted [from the terminal equipment to the base station]". From the overall disclosure of the patent in suit, the skilled person will conclude that the term "transmission time" does not refer to the duration of the transmission of the random access preamble, but to the time of transmission at which the random access preamble was transmitted, i.e. sent out, from the terminal equipment to the base station (see also features M1.5 and M1.6).

The feature M1.3 from the preamble of claim 1 according to the patent in suit provides that the terminal equipment makes a determination as to whether the random access response received in accordance with feature M1.2 and sent out by the base station is the random access response that refers to the random access preamble previously sent from the terminal equipment to the base station in accordance with feature M1.1, or whether the random access response received relates to a random access response sent out from another terminal equipment.random access preamble.

How this determination is to be made in concrete terms is defined by the features from the characterizing part of claim 1 according to the patent in suit. The aim of this determination is to prevent erroneous receipt of a random access response not intended for the corresponding terminal (cf. patent in suit, paragraph 0033, first sentence).

According to feature M1.4, the terminal stores a subframe number "for transmitting" of the random access preamble. The term "for transmission" is also understood by the skilled person, taking into account features M1.6 and M1.7, to mean that the subframe number to be stored is the identifying number or a number derived from it (see below) of the subframe within which the random access preamble is sent from the terminal equipment to the base station.

In the case of the method known from the patent in suit, as in the case of the random access methods known from the prior art at the time of filing of the patent in suit, the random access preamble is sent out within a certain period of time of a radio signal sent by the terminal equipment to the base station. On the time level, such a radio signal is divided into so-called frames, each frame with a temporal length of 10 ms. A frame consists of ten so-called subframes, each with a temporal length of 1 ms; each subframe in turn consists of two so-called slots, each with a temporal length of 0.5 ms (Figure 2a; paragraphs 0026 and 0027).

Based on the subframe number, it is therefore possible to infer the transmission time at which the random access preamble was sent out from the end device, since each subframe refers to a specific period of time of 1 ms.

However, the "subframe number" mentioned in claim 1 of the patent in suit is not only to be understood as the subframe number in the narrower sense, i.e. the identifying number of the subframe itself within which the random access preamble is sent from the terminal equipment to the base station. Rather, the term "subframe number" also includes "numbers derived from the above-mentioned subframe number", which are suitable for identifying the subframe of the transmission time at which the random access preamble was sent out from the end device.

Even though feature M1.2.1 refers to "information of a transmission time at which the random access preamble is transmitted" which, according to features M1.5 and M1.6, comprises a number, wherein the number according to feature M1.5 is an "allocated" number assigned to a subframe, the transfer of the subframe number itself as part of the random access preamble, i.e. from the terminal equipment to the base station, described in the description of the patent in suit in connection with non-restrictive embodiments (page 6, lines 42 and 43, in conjunction with Figure 3a: "[.]the uplink subframe numbers of the random access preambles transmitted by the user equipment 1 and the user equipment 2."; Page 8, line 1, in conjunction with Figure 5a: "[.]the sequence number 1 and the uplink subframe number sf_F_N=O included in the random access preamble [.]"; Page 9, lines 23 to 26, in conjunction with Figure 9: "The user equipment 1 and the user equipment 2 extract the uplink subframe numbers at time points when the random access preambles are transmitted and include the extracted uplink subframe numbers in the random access preambles to be transmitted, in steps S920 and S920', respectively."; Page 9, lines 28 and 29, in conjunction with Figure 9: "[.]the respective uplink subframe numbers included in the random access preambles transmitted by the user equipment 1 and the user equipment 2 [.]").

In connection with the embodiment according to Figure 8, the patent in suit describes the possibility of reassigning subframe numbers (page 9, lines 9 and 10: "[.]are reallocated [.]") and if necessary, additionally apply a grouping method, such as the modulo function. In contrast to the embodiments of Figures 5a and 7a or 7b, the embodiment of Figure 8 explicitly provides that the subframe number newly assigned in step S820 is stored by the terminal device in step S840 (paragraph 0050: "In a step S810, subframes in which a RACH slot is present are detected. In a step S820, numbers are reallocated to only the uplink subframes in which the RACH slot is present. In a step S830, the reallocated number of an uplink subframe at a time point when a random access will be transmitted is decided. In a step S840, the decided reallocated number is stored. Although, in this embodiment, the RACH slots are present only in even-numbered frames, the RACH slots may be present in any numbered frames. That is, the reallocation of the numbers in the step S830 may use the grouping method. In more detail, the modulo operation may be used.").

Taking this into account, the skilled person will infer from the patent in suit that the subframe number stored by the terminal equipment may be the subframe number itself or a number derived from it.

The relationship between the numbers mentioned in features M1.4 and M1.5 is explained in features M1.6 and M1.7.

Feature M1.6 provides for a check to determine whether the subframe number stored in the terminal equipment in accordance with feature M1.4 corresponds to the number contained in the random access response received in accordance with feature M1.2.1 ("Information of transmission time"). The content of this test is defined in feature M1.7.

Feature M1.7 defines as the first condition for determining that the random access response received by the terminal equipment is the response to the random access preamble transmitted by the terminal equipment, that the random access response specified in feature M1.4 in the

The subframe number stored on the terminal device matches the number contained in the random access response received in accordance with the M1.2.1 feature. Thus, if the result of the test described in features M1.6 and M1.7 is positive, the terminal knows that the random access response received relates to the random access preamble emitted by that terminal and is not a random access response to a random access preamble sent out by another terminal equipment.

Claim 1 according to the patent in suit does not provide any further definition of the substantive number ("number") mentioned in feature M1.5, in particular it cannot be inferred from claim 1 that the number ("number") mentioned in feature M1.5 must be the subframe number itself.

It is only in dependent claim 2 of the patent in suit that it is defined that the number mentioned in feature M1.5 is the uplink subframe number of the time at which the terminal transmits a random access preamble to a base station, i.e. the subframe number itself. According to the unchallenged dependent claims 3 and 4, the number mentioned in feature M1.5 is defined as a number obtained by a modulo function.

The second condition of feature M1.8 for the determination that the random access response received is the response to the transmitted random access preamble (feature M1.7) provides that the reception of the random access response sent out by the base station by the terminal equipment must occur within a predetermined period of time after the random access preamble is sent out by the terminal equipment, i.e. that the random access response must be received by the terminal within that time period becomes. This predetermined period of time comprises as a time end limit according to feature M1.8 a point in time which is determined by adding a time offset to the time of transmission of the random access preamble. Criteria or a definition with regard to the length of this predetermined period of time cannot be derived either from Claim 1 or from the rest of the patent specification in suit.

5.2 Dependent Claim 2

Claim 2 according to the patent in suit defines that the number mentioned in feature M1.5 and encompassed by the random access response received by the terminal equipment is the uplink subframe number of the time when a terminal equipment transmits a random access preamble to a base station, i.e., and thus the subframe number itself.

5.3 Ancillary Claim 9

The explanations of features M1 to M1.8 from claim 1 of the patent in suit also apply mutatis mutandis to features M9 to M9.8 of ancillary claim 9 of the patent in suit.

II. The Granted Version (main Request)

The admissible action, which is directed against claims 1, 2 and 9 of the patent in suit, is partially successful on the merits, namely with regard to the granted version of the patent in suit. In this respect, although the challenged claims 1, 2 and 9 are not inadmissibly extended and executable, the ground for revocation of lack of patentability under Art. II, Art. 6(1)(1) Int-PatÜG, Art. 138(1)(a) EPC in conjunction with Art. 52, 54, 56 EPC is in any case met.

Since documents NK4 to NK7 represent pre-published prior art, since the patent in suit has given priority to US prior application US 18492 P. Translation as document NK3-P1) dated 1 January 2008, it is irrelevant whether the subject-matter of independent claims 1 and 9 is new according to the patent in suit compared to the prior art according to documents NK4 to NK 7 and, with regard to documents NK4 and NK5, also involves an inventive step. Compared with the prior art, they are obvious to the skilled person on the basis of the teaching of document NK6 taking into account the teaching of document NK7.

1. Contrary to the plaintiff's view, the subject-matter of granted Claims 1, 2 and 9 does not extend beyond the content of the original application documents (disclosed as WO 2009/084924 A2 = NK3-PCT).

1.1 Claim 1 According to the Patent in Suit

Features M1 to M1.6 of the subject-matter of claim 1 according to the patent in suit are originally disclosed in the application documents.

Contrary to the assumption of the plaintiff, features M1.7 and M1.8 also do not lead to an inadmissible extension of the subject-matter of claim 1 according to the patent in suit. In particular,

- a) disclosed a use of a time offset (feature M1.8) together with a transfer time (features M1.2 to M1.7); and
- b) a use of a time offset (feature M1.8) is not only disclosed in connection with other features.

1.1.1 Use of a Time Offset (feature M1.8) Together with a Transfer Time (features M1.2 to M1.7)

It is true that Claim 1 according to the patent in suit provides for a two-part examination of the random access response received. On the one hand, the random access response should include information relating to the time of transmission of the corresponding random access preamble (see features M1.2 to M1.7). On the other hand, the random access response is to be received within a predetermined period of time, which is determined on the basis of a predetermined time offset at the time of transmission of the random access preamble (cf. feature M1.8). However, the skilled person recognises that these are complementary aspects in the context of the overall disclosure of the invention.

Like the plaintiff, the Senate sees that originally three independent claims 1, 7 and 10 were filed, whereby

- Claim 1 is directed to a method to be carried out by means of terminal equipment and in which information on the transmission time, i.e. the time of transmission, the random access preamble by the terminal equipment

is sent as part of the base station's random access response and received by the terminal equipment (part of the M1.7 feature);

- Claim 10 is directed to a method to be performed by a terminal equipment in which the random access response is to be received from the terminal within a predetermined period of time, the time period having a predetermined time offset from the time of transmission of the random access preamble by the terminal equipment (part of feature M1.8); and
- Claim 7 is directed to a method to be performed by a base station and is directed to the use of a transmission time (corresponding to Claim 1) or an internal processing delay time as part of the random access response.

The receipt by the terminal device of information about the transmission time, i.e. the time of transmission, the random access preamble by the terminal device (cf. originally filed claim 1) and the provision of a predetermined time offset for the receipt of the random access response by the terminal equipment (cf. originally filed claim 10) are thus claimed in the application documents by separate independent claims. Nor do the originally filed dependent claims provide a direct disclosure for the combination of these two methods.

In the figures as originally filed and the parts of the description as originally filed corresponding to these individual figures, the two aspects of the examination defined by features M1.7 (cf. Figures 3 and 4) and M1.8 (cf. Figure 13) of Claim 1 according to the patent in suit are also disclosed by means of independent embodiments.

To the extent that the plaintiff takes the view that the aspects of the test defined by features M1.7 and M1.8 are two independent alternatives for achieving the same goal, without a clear and unambiguous disclosure for the joint use of these two alternatives, the Senate does not see this. Even to the extent that the plaintiff justifies this by the fact that in the original

originally submitted in connection with the alternative represented by the embodiment according to Figure 13 (feature M1.8) as an advantage of this embodiment is that this embodiment can reduce the signalling effort compared to the embodiment according to Figures 3 and 4, since the corresponding information regarding the time of transmission or the subframe number of the random access preamble is not included as part of the random access response (see page 28, line 24 to page 29, line 3 of Annex NK3-PCT), the Senate does not share this view.

This is because the description as originally filed explicitly states that the individual embodiments described in the application documents are not to be regarded as independent of each other, but can be combined with each other – e.g. also by combining the subject-matter of independent claims (cf. page 32, lines 14 to 21: "Also, some constituent components and/or characteristics may be combined to implement the embodiments of the present invention. The order of operations to be disclosed in the embodiments of the present invention may be changed to another. Some components or characteristics of any embodiment may also be included in other embodiments, or may be replaced with those of the other embodiments as necessary. It will be apparent to those skilled in the art that unrelated claims are combined so as to configure embodiments or are included in new claims by amendments after an application.").

In this context, the advantage of a comparatively reduced signalling effort described in connection with the embodiment according to Figure 13 does not militate against the use of a predetermined period of time (cf. feature M1.8) together with the transmission of time information (cf. feature M1.7), but rather in favour of carrying out these two parts of the test together. The fact that no additional time information has to be transmitted when using a predetermined period of time (feature M1.8) makes it easy for the skilled person to consider this criterion when evaluating the random access response received in addition to the evaluation of the random access response received.

The random access preamble (feature M1.7) is to be used at the time of transmission received in order to further reduce the susceptibility to error of the random access procedure without the need to transmit additional signaling information as part of the random access response. From a skilled person's point of view, the embodiments of Figures 3 and 4 (cf. feature M1.7) and Figure 13 (cf. feature M1.8) are therefore complementary aspects in the context of the overall disclosure of the invention.

The feature M1.7 is therefore originally disclosed in conjunction with the feature M1.8.

1.1.2 Use of a Time Offset (feature M1.8)

Contrary to the plaintiff's view, the use of a time offset in the claimed method does not require an explicit mention that a corresponding time period is determined by the terminal device, nor does it require the terminal to determine whether the random access response is received within the predetermined time period.

The basis for the original disclosure of the feature M1.8 is in particular the summary description of the embodiments according to figures 11 to 13 (cf. page 26, lines 6 to 14: "FIGs. 11, 12 and 13 are views facilitating the understanding of the other embodiments of the present invention, which show the principle of an ARQ, the principle of a HARQ and a detailed example of a HARQ process, respectively. In the other embodiments of the present invention, a user equipment waits for a response at a predetermined time period. The user equipment which transmits a random access preamble can previously know a time point when a response of the random access preamble transmitted by the user equipment is transmitted, on the basis of the predetermined time period."), as well as the specific description of the embodiment according to Figure 13 (see previously under II. 1.1.1a) together with a transmission time (features M1.2 to M1.7)).

In addition, it is not apparent why it should be "essential" that the terminal device sets the predetermined time period. Rather, what is essential is the fact that

that a predetermined period of time is used in the terminal device for the (expected) reception of the random access response. Which system component specifies this period of time, on the other hand, is not relevant for the course of the method according to the invention. Moreover, the originally filed ancillary claim 10 also does not define that the predetermined time point is determined by the terminal equipment, even if this is probably the most obvious possibility from a technical point of view (avoidance of additional necessary signalling between the base station and the terminal equipment).

Therefore, recognisable to the skilled person, feature M1.8 requires that the terminal equipment determines, i.e. verifies, whether it has received the random access response from the base station within the predetermined period of time, since the terminal equipment makes its further course of action dependent on the result of this determination or verification.

1.2 Dependent Claim 2 According to the Patent in Suit

Contrary to the assumption of the plaintiff, an inadmissible extension of the subject-matter of patent claim 2 according to the patent in suit is not based on its reference to patent claim 1 according to the patent in suit, so that the subject-matter of granted claim 2 is not impermissibly extended for the same reasons as the subject-matter of granted claim 1.

In addition, the additional features of the subject-matter of the granted claim 2 are disclosed, e.g. on page 14, lines 4 to 7, and page 14, line 24 to page 15, line 3 in conjunction with Figure 3a of the application documents.

1.3 Ancillary Claim 9 According to the Patent in Suit

However, the Senate finds, as the plaintiff does, that the statements on granted claim 1 apply mutatis mutandis to the corresponding features of the subject-matter of the granted ancillary claim 9, but with the consequence, which differs from the plaintiff's view, that the subject-matter of the granted ancillary claim 9 also does not go beyond the disclosure of the application documents.

2. The subject-matter of claims 1, 2 and 9 according to the patent in suit is also disclosed in the patent specification in suit so clearly and completely that it can be carried out by a person skilled in the art.

The following remarks on patent claim 1 according to the patent in suit also apply, *mutatis mutandis*, to ancillary claim 9 according to the patent in suit.

2.1 Combination of two embodiments in features M1.7 and M1.8 Contrary to the plaintiff's view, the combination of the embodiments "sending the transmission time of the random access preamble as part of the random access response" (part of feature M1.7) and "receiving the random access response within a predetermined period of time" (part of feature M1.8) is disclosed in the patent specification in suit and is practicable for the skilled person.

The two embodiments "sending the transmission time of the random access preamble as part of the random access response" (hereinafter referred to as the "first embodiment") and "receiving the random access response within a predetermined period of time" (hereinafter referred to as the "second embodiment") are, and in this respect it is not disputed, disclosed individually in the description and in the figures of the patent specification in suit in such a clear and complete manner that a skilled person can be informed by with this information and using his specialist knowledge, is easily able to put into practice the technical teaching disclosed in each case.

There are no discernible contradictions, compatibility problems or other technical difficulties which could deter the skilled person from combining the two embodiments mentioned above in the context of a method to be implemented on the terminal equipment side in accordance with Claim 1 of the patent in suit.

Moreover, a combination of the two embodiments is not explicitly excluded in the patent in suit.

Therefore, the Senate considers a combination of the two above-mentioned embodiments within a method to be implemented on the end device side according to patent claim 1 according to the patent in suit to be so clearly and completely disclosed to the skilled person that he can also perform this combination.

The Senate also does not see this to the extent that a combination of the two above-mentioned embodiments within a method to be implemented on the end device side would not achieve the inventive idea allegedly disclosed in paragraph 0063 of the patent specification in suit to reduce the signalling effort by using a time offset (second embodiment) instead of the transmission time (first embodiment). The plaintiff's reasoning that, according to Claim 1, the transmission time of the random access preamble is also sent as part of the random access response according to the patent in suit (first embodiment), and that no signalling effort is saved as a result, and thus the subject-matter of Claim 1 according to the patent in suit, i.e. the combination of the two embodiments, cannot be inferred as belonging to the invention, also because of the problem described in the patent in suit for the skilled person is not shared by the Senate.

First of all, it can be stated that, according to paragraph 0010 of the patent specification in suit, the patent in suit sets itself the task of providing a secure and efficient method for receiving a random access response, which is intended to prevent an end device that sends a random access preamble with a randomly selected sequence of numbers to the base station from mistakenly receiving a random access response as a response that is actually intended for another terminal which wanted to gain access to the mobile network with the same randomly selected sequence of numbers.

Paragraph 0063 of the patent specification in suit, referred to by the plaintiff, refers to the embodiment according to Figure 13, which reflects an implementation of the above-mentioned second embodiment, i.e. taking into account the feature M1.8. Therefore, the advantage described in paragraph 0063 is a relative advantage of this embodiment compared to other embodiments disclosed in the patent specification. For the specialist, this means that:

in the case of an implementation of the above first embodiment (feature M1.7), the additional implementation of the above second embodiment (feature M1.8), i.e. that the random access response is to be received by the terminal within a predetermined period of time, does not require any additional signaling overhead. On the basis of the reference in paragraph 0063 of the patent specification, the skilled person recognises a combination of the first embodiment and the second embodiment as particularly advantageous in order to be able to further reduce the susceptibility to error of the resulting random access method without additional signalling overhead.

This combination of the two above-mentioned embodiments can also be carried out by the skilled person and at the same time fulfil the task specified in the patent specification in suit.

2.2 Contrary to the plaintiff's view, the Senate does not consider the reproducibility of claim 1 under the patent in suit to be called into question by the fact that feature M1.8 of the subject-matter of claim 1 according to the patent in suit is not linked to an explicit determination, i.e. verification, as to whether the random access response was actually received within the predetermined period of time, but is general in this regard. Also, that the description of the patent in suit in the penultimate sentence of paragraph 0066 reveals a corresponding check on the part of the terminal equipment, and thus no other way is disclosed to the skilled person in the patent specification in the patent in suit other than the above-mentioned explicit "check" on the end device in connection with the use of a time offset, and therefore claim 1 is not reproducible over its entire breadth according to the patent in suit, does not see the Senate.

In this respect, the basis for the disclosure of feature M1.8 in the patent specification in suit is in particular the summary description of the embodiments according to Figures 11 to 13 (see paragraphs 0055 and 0056). Paragraph 0056 of the patent specification in suit also discloses the possibility of waiting for the receipt of the random access response by a terminal device during the period of time described in feature M1.8: "In the other embodiments of the present invention, a user equipment waits for a response at a predetermined time period. The user

equipment which transmits a random access preamble can previously know a time point when a response of the random access preamble transmitted by the user equipment is transmitted, on the basis of the predetermined time period."

The procedure described in paragraph 0056 of the patent in suit requires, at least implicitly, that the terminal device determines, i.e. checks, whether it has actually received the random access response from the base station within the predetermined time period, since the terminal device makes its further procedure dependent on the result of this determination or check.

Therefore, feature M1.8 is sufficiently clear and complete for a person skilled in the art to be able to carry it out.

3. The subject-matter of independent claims 1 and 9 according to the patent in suit is obvious to the skilled person in relation to the prior art on the basis of the teaching of document NK6 taking into account the teaching of document NK7.

Documents NK6 and NK7 are pre-published prior art to be taken into account, since the patent in suit does not give priority to US prior application US 18492 P. Translation as Annex NK3-P1) of 1 January 2008.

The question of whether the patent in suit substantively claims the priority of the Korean prior application KR 20080047656 of May 22, 2008, can be left aside, since all documents NK4 to NK7 cited by the plaintiff were published before the filing date of the Korean prior application.

3.1 The U.S. pre-application US 18492 P was made on January 1, 2008 in Korean. Subsequent references in connection with the US pre-application refer to the certified English translation submitted by the plaintiff (= document NK3-P1). It should be noted that document NK3-P1 contains two figures labeled "FIG.1". In order to avoid confusion, it is therefore

subsequently, in connection with a reference to one of these two figures 1, the corresponding page number (pages 3 or 5) is always given.

3.1.1 *The US prior application does not disclose the claimed combination of "sending the transmission time of the random access preamble as part of the random access response" (part of feature M1.7) and "receiving the random access response within a predetermined time period" (part of feature M1.8).*

Document NK3-P1 describes several embodiments based on the prior art (see Figure 1 on page 3).

- In the "Method 1" embodiment according to Figure 1 on page 5, the terminal already knows, based on a predetermined timing period, at the time the random access preamble is sent to a base station when it should receive the random access response sent by the base station and intended for this terminal (see page 5, first sentence). Therefore, in this exemplary embodiment, no additional signaling is required when transmitting the respective random access response from the base station to the terminal (see page 4, last paragraph: "no overhead case"). The further explanations of this exemplary embodiment (see page 5, second sentence to page 6, second paragraph) describe various procedures for determining or setting this predetermined time period.

The "Method 1" is therefore related to the disclosure of the feature M1.8.

- In deviation from the above-mentioned "Method 1", no predetermined period of time is used on the end device side for the other embodiments described in connection with the embodiments described for a "Method 2". Instead, in these embodiments, time information is transmitted from the base station to the terminal device as part of the random access response (see page 9, first paragraph: "Accordingly, time information is preferably included in the RACH

response."). On the basis of this time information transmitted in "Method 2", the embodiments according to "Method 2" – compared to the above-mentioned "Method 1" – are associated with additional signalling, i.e. an overhead (see page 7, first paragraph: "enduring signaling overhead").

The time information to be transmitted can be the subframe number of the RACH slot at the time the random access preamble is sent out by the terminal. This subframe number can be determined by the base station, taking into account the radius of the corresponding radio cell (see page 7, penultimate paragraph in conjunction with Figure 2: "A base station can know a UL subframe number of a received signal in consideration of a size which can be supportably by a cell. Accordingly, the base station transmits the subframe number in a state of being included in the response in addition to the detected sequence information,."). However, the time information to be transmitted can also be the number of a renumbered subframe (see page 7, last paragraph, in conjunction with Figure 3: "renumbered subframes").

It is also possible that the base station delays the transmission of the random access response to the terminal device if necessary (see Figure 4: "delayed response").

The above-mentioned signaling overhead can be reduced by the base station not transmitting the (renumbered) subframe number to the terminal in its random access response, but merely information about a relative temporal offset of the transmission time of the base station's random access response in relation to a previously defined base station-side reception time of the random access preamble of a terminal (see page 9, second paragraph).

In addition, instead of the subframe number, a number determined from it by means of a modulo operation can also be transferred as part of the random access preamble and the random access response (see page 9, last paragraph, to page 10, first paragraph, in conjunction with Figure 5).

The embodiments described in document NK3-P1 in the context of "Method 2" are therefore related to the disclosure of feature M1.7.

3.1.2 Contrary to the view expressed by the defendant in its statement of grounds of opposition, the skilled person understands the description of the embodiment according to "Method 1" to be independent of the description of the embodiments according to "Method 2". The other parts of document NK3-P1 also do not contain any indications of a combination of the embodiment according to "Method 1" with one of the embodiments according to "Method 2".

Even if the skilled person were to realise that "Method 1" and "Method 2" are not mutually exclusive, but could in principle be combined with each other without causing undesirable mutual influences, a combination of "Method 1" and "Method 2" in the sense of a combination of features M1.8 and M1.7 as part of a single method is not directly and unambiguously construed by the skilled person as belonging to the invention.

3.2 The subject-matter of independent claims 1 and 9 according to the patent in suit is obvious to the skilled person on the basis of the teaching of document NK6 taking into account the teaching of document NK7.

Document NK6 is a CATT draft decision from the LTE standardization process for the 3GPP TSG RAN WG2 #62 meeting from 5 to 9 May 2008 in Kansas City, USA.

Document NK7 is a discussion contribution and a draft decision from Qualcomm Europe from the LTE standardization process for the 3GPP TSG-RAN WG2 #61bis meeting from 31 March to 4 April 2008 in Shenzhen, China.

Document NK6 was uploaded to the 3GPP FTP server on 9 May 2008 and document NK7 was uploaded to the 3GPP FTP server on 25 March 2008, and thus made available to the public, that is to say, after the filing date of the US prior application (1 January 2008) of the patent in suit, before the filing date of the Korean prior application (22 May 2008) of the patent in suit and before the filing of the patent in suit (31 December 2008).

3.2.1 Document NK6 deals with the design of the RA-RNTI (Ran-dom Access – Radio Network Temporary Identifier) (see title: "Text Proposal of RA-RNTI") and contains a proposed amendment to Chapter 5.1.4 "Random Access Response reception" of the standard specification TS 36.321 of the LTE standard. The version of the standard specification TS 36.321 to which this proposed amendment refers is not specified in document NK6.

Document NK6 proposes that the RA-RNTI of the PRACH control channel used for the random access preamble should be calculated by the terminal device according to the following equation (see Chapter 1):

$$\text{RA-RNTI} = t_id + 10 * f_id,$$

with t_id . number ("index") of the first subframe of the specified PRACH resource, with $0 \leq t_id < 10$

f_id . Index of the specified PRACH resource within this first subframe, in ascending order according to frequency, with $0 \leq f_id < 6$.

After the random access preamble has been transmitted from the terminal device to the base station, the terminal device should monitor the PDCCH control channel transmitted by the base station for a random access response corresponding to the transmitted random access preamble, which is identified by the RA-RNTI calculated according to the above equation.

Document NK6 does not explicitly mention that the terminal device stores the number of the subframe in which the random access preamble is transmitted. Rather, document NK6 mentions that the determination of whether

a received random access response corresponds to the random access preamble transmitted by the terminal device, is carried out on the basis of the RA-RNTI used for transmitting the random access preamble. In order to be able to perform such a comparison, the RA-RNTI at the time the random access preamble was transmitted must of course have been stored. The RA-RNTI calculated according to the above equation and necessarily stored by the terminal equipment corresponds, in the case of FDD ("Frequency Division Duplex"), i.e. $f_id = 0$, to the subframe number t_id at the time the random access preamble is transmitted.

Thus, features M1, M1.1, M1.2, M1.2.1, M1.3, M1.4 and M1.5, as well as – contrary to the defendant's view – features M1.6 and M1.7 of the subject-matter of claim 1 are either to be taken explicitly from document NK6, or the skilled person reads them from document NK6 on the basis of his specialist knowledge in teaching.

To the extent that the defendant is of the opinion that feature M1.8 is not disclosed in document NK6, and that documents NK6 and NK7 are not suggested to the skilled person even in the case of a combination, the Senate does not share these conclusions of the defendant.

According to document NK6, the terminal equipment may stop monitoring the PDCCH control channel for a random access response matching the random access preamble after it has received a random access response corresponding to the random access preamble it has transmitted ("The UE may stop monitoring for Random Access Response(s) after successful reception of a Random Access Response corresponding to the Random Access Preamble transmission.").

In addition, document NK6 explains that the terminal device is supposed to monitor the PDCCH control channel for a random access response during a certain time window ("the UE shall monitor the [PDCCH] in the TTI window [RA_WINDOW_BEGIN—RA_WINDOW_END] for Random Access Response(s)."), where this time window is separated by a start time

("RA_WINDOW_BEGIN") and an end date ("RA_WINDOW_END").

Taking this into account, according to the doctrine of document NK6, the terminal device should only be able to receive the random access response corresponding to the sent random access preamble within a predetermined time window, which is indicated by the start time ("RA_WINDOW_BEGIN") and the end time ("RA_WINDOW_END"). It goes without saying in this context that at least this end time of the predetermined time window must be after the time of transmission of the preamble to random access. However, a more detailed definition of the start time of the predetermined time of time in accordance with feature M1.8, in particular with regard to its possible dependence on the time of transmission, the random access preamble or on other parameters or events, cannot be derived from document NK6. Nor can any details be derived from document NK6 as to whether the end time of the predetermined time window is, for example, defined only by a predetermined period of time after the start time, i.e. start time + Δt , or whether this end time depends, for example, on other parameters or events.

Thus, feature M1.8 of the subject-matter of claim 1 according to the patent in suit is at least not fully disclosed in document NK6.

The subject-matter of Claim 1 according to the patent in suit is therefore new compared to the prior art according to document NK6.

3.2.2 Document NK7 deals with the time window ("RA response window", "RA_WINDOW") for the reception by the terminal device of a random access response sent out by a base station as a result of the receipt of a random access preamble (see title: "RA_WINDOW."; Chapter 1, first paragraph: "The UE monitors for the random access response during a window [RA_WINDOW_BEGIN—RA_WINDOW_END].") and would like to make a proposal for the definition of the start time and the end time of this time window (see Chapter 1, first and third paragraphs: "RA_WINDOW_BEGIN and

RA_WINDOW_END need a definition. ...This paper proposes to progress the definition of begin and end of the window.").

Both Document NK6 and Document NK7 were published in connection with meetings of the 3GPP TSG-RAN WG2 Working Group, whereby the meeting related to Document NK6 took place only about five weeks after the meeting related to Document NK7. It is therefore also understandable that in both documents NK6 and NK7 the same designations are used for the start time ("RA_WINDOW_BEGIN") and the end time ("RA_WINDOW_END") of the time slot. In this context, it must be taken into account in particular that the participants in these two meetings are likely to have been composed of the same group of experts, in any case addressed the same group of participants, and therefore the publications in connection with these two meetings are also likely to have been analysed by a group of experts who are at least similar, so that the skilled person can determine the connection in terms of content between the two documents NK6 and NK7.

For this reason, too, it is obvious for the skilled person to have recourse to the design proposal described in document NK7 for the technical implementation of the time window for receiving the random access response, which is only described in general terms in document NK6, in particular its start time, end time and duration.

Document NK7 proposes to set a fixed time as the start time ("RA_WINDOW_BEGIN") of the time window for receiving the random access response. Taking into account a reasonable processing time of the random access preamble of the terminal received from the base station, the start time of this time window could be 2, 3 or 4 milliseconds after the end of the transmission of the random access preamble. Since a subframe of the PRACH control channel has a temporal length of 1 millisecond, the above-mentioned reception time window on the end device can therefore start/start 2, 3 or 4 subframes after the end of the transmission of the random access preamble.

In the FDD-based embodiment shown in Figure 1 of document NK7, the terminal device-side ("RA response window") to receive the random access response starts/begins three subframes ("3ms") after the end of the sending of the random access preamble ("RA_WINDOW_BEGIN").

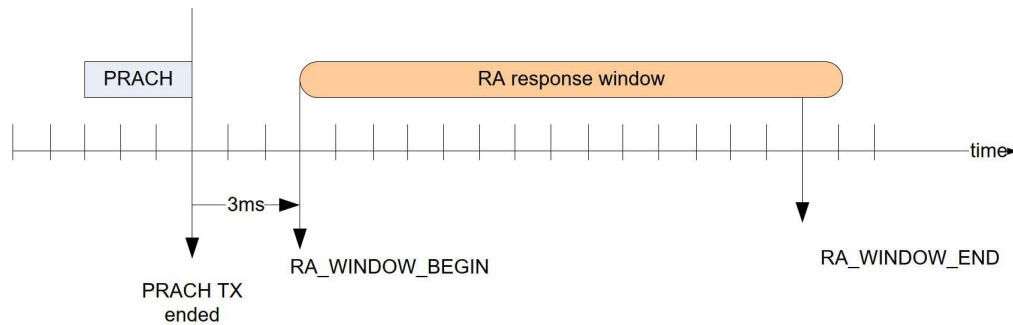


Figure 1 RA_WINDOW_BEGIN starting at least 3ms after PRACH transmission for FDD

Figure 1 of document NK7

The end time ("RA_WINDOW_END") of the time window for the reception of the random access response by the terminal equipment should be set relative to the start time ("RA_WINDOW_BEGIN"), namely a predefined period of time ("RA_WINDOW_WIDTH DL") after the start time of the time window, whereby this predefined period of time should correspond to a predefined number of subframes (see Chapter 2.3, third and fourth paragraphs: "We propose to set RA_WINDOW_END relative to RA_WINDOW_BEGIN as follows[:]
RA_WINDOW_END is set to the subframe occurring RA_WINDOW_WIDTH DL subframes after RA_WINDOW_BEGIN.").

Thus, a method is known from document NK7 in which the terminal receives the random access response within a predetermined period of time ("RA response window", "RA_WINDOW"), which includes a predetermined time ("RA_WINDOW_END") after a transmission time ("PRACH TX ended") at which the random access preamble is transmitted. In the embodiment shown in Figure 1 of document NK7, this predetermined point in time is obtained by creating a time offset consisting of the duration of the time window and the temporal length of three subframes (i.e. 3×1 millisecond)

is added at the time of the end of the broadcast of the random access preamble ("PRACH TX ended").

Thus, a method for receiving a random access response is known from document NK7, which has feature M1.8 of the method claimed by claim 1 according to the patent in suit.

Taking into account the suggestions given in document NK7 for the realisation of a time window for the receipt of the random access response on the terminal equipment in the method known from document NK6, the skilled person thus arrives in an obvious way at a method with the features of the subject-matter of claim 1 according to the patent in suit.

Accordingly, the method according to Claim 1 according to the patent in suit does not involve an inventive step compared to the prior art of document NK6 in conjunction with the teaching of document NK7.

The above remarks on patent claim 1 according to the patent in suit apply mutatis mutandis to ancillary claim 9 according to the patent in suit.

3.3 The additional features of the subject-matter of dependent claim 2 according to the patent in suit are known for the reasons given in connection with claim 1 according to the patent in suit (FDD case, i.e. f_id = 0).

III. The Version According to Auxiliary Request 1

In the version according to auxiliary request 1, however, the patent in suit proves to be protectable, so that the action must be dismissed to the extent that it is also directed against this version. The question of whether the patent in suit would also be upheld in the version after the other auxiliary requests is no longer relevant in this factual situation.

1. Claim 1 according to auxiliary request 1 is based on Claim 1 according to the patent in suit, which was supplemented by the feature M1.8.1 ^{H1} following feature M1.8, which reads:

M1.8.1 ^{H1} wherein the offset time is equal to half of a round trip time for a hybrid automatic repeat request, HARQ, process.

According to feature M1.8.1 ^{H1}, the offset time mentioned for the first time in feature M1.8 but not specified is equal to half of a turnaround time of a HARQ process (process of a hybrid automatic repetition request).

2. Contrary to the plaintiff's view, the added feature M1.8.1 ^{H1} does not inadmissibly extend beyond the originally filed documents or the scope of protection of the granted patent and also sufficiently indicates what is to be protected.

The basis of disclosure of feature M1.8.1 ^{H1} is found in claim 10 as originally filed (cf. Appendix NK3-PCT), which reads:

*"A method of receiving a random access response, the method comprising:
transmitting a random access preamble;and
receiving the random access response,
wherein the receiving of the random access response is performed within a
predetermined time span including a predetermined time point after a
transmission time when the random access preamble is transmitted, and
the predetermined time point is obtained by adding half of the round trip time
for a hybrid automatic repeat request (HARQ) process to the random access preamble transmission time."*

Claim 10 as originally filed is a secondary claim, the subject-matter of which does not explicitly include at least features M1.2.1 and M1.3 to M1.7.

The method claimed by the originally filed subsidiary claim 10 is based on the embodiments described in the description as originally filed (page 27, line 20 to page 28, line 18), which are based on the transmission behaviour in the uplink and downlink exemplified in Figure 13 of the application documents. In particular, the method claimed by the originally filed subsidiary claim 10 is supported by the method described on page 28, lines 7 to 11: "The user equipment which attempts random access may wait for a half of the HARQ round trip time [...] from a time point when a random access preamble is transmitted, and wait for a response within a predetermined time period from a time point when a half of the HARQ round trip time [...] elapses."

The embodiments described in connection with Figure 13 deal exclusively with questions of the timing of the reception of a random access response sent out by a base station by a terminal equipment, taking into account bidirectional transmission or delay times between the terminal equipment and the base station. However, it is obvious to the skilled person that this is only one of several relevant aspects, taking into account the thematic objective and the substantive and technical focus of the application documents, so that the skilled person recognises for this reason alone that he can combine the embodiments disclosed in the context of Figure 13 with other embodiments disclosed in the origin.

In addition, the application documents explicitly state that the disclosed embodiments can also be combined with each other – e.g. also by combining the subject-matter of independent patent claims (page 32, lines 14 to 21: "Also, some constituent components and/or characteristics may be combined to implement the embodiments of the present invention. The order of operations to be disclosed in the embodiments of the present invention may be changed to another. Some components or characteristics of any embodiment may also be included in other embodiments, or may be replaced with those of the other embodiments as necessary. It will be apparent to those skilled in the art that unrelated claims are combined so as to configure embodiments or are included in new claims by amendments after an application.").

Taking this into account, the skilled person recognises the feature M1.8.1 ^{H1} as disclosed by the originally filed claim 10, as well as the possibility of being able to combine this feature with the features M1 to M1.8, and for the reasons explained in connection with claim 1 according to the patent in suit, there being no doubt as to the disclosure of the origin of the features M1 to M1.8.

The subject-matter of claim 1 according to auxiliary request 1 therefore does not extend beyond the disclosure of the application documents.

3. By introducing feature M1.8.1 ^{H1}, claim 1 lacks neither the required clarity nor an executable disclosure according to auxiliary request 1.

The Senate does not share the plaintiff's view that it is unclear what significance should be attached to the definition of the offset time in patent claim 1 according to auxiliary request 1.

The added feature M1.8.1 ^{H1} specifies the time offset time mentioned for the first time in feature M1.8.1 but not specified in more detail in such a way that it is equal to half of a round trip time of a HARQ process (process of a hybrid automatic repetition request). The inclusion of the feature M1.8.1 ^{H1} also leads to a restriction of the scope of protection.

The significance of the orbital period of a HARQ process is known to the competent skilled person as basic knowledge, and is also explained in the application documents in connection with the embodiments according to Figure 13 (page 27, line 20 to page 28, line 6), so that the Senate has no doubts as to the clarity or feasibility of the feature M1.8.1 ^{H1} for the skilled person.

4. The patent in suit in the version according to auxiliary request 1 also proves to be patentable.

None of documents NK4 to NK7 discloses a method with feature M1.8 of the subject-matter of the granted claim 1, and thus neither does subject-matter with feature M1.8.1 ^{H1} further developing feature M1.8.

Document NK7 deals with a period of time within which the terminal equipment must receive the random access response in order for it to determine that the random access response received is the response to the random access preamble it has transmitted, so that feature M1.8 of the subject-matter of claim 1 according to the patent in suit is known from document NK7 (cf. explanations in connection with the lack of patentability of the granted claims in Section II. 3.2.2). However, the turnaround time of a HARQ process is irrelevant in the method known from document NK7 and it is also not apparent that in the case of the method known from document NK7, the skilled person was led to take such a cycle time into account in his considerations. In particular, neither in document NK7 nor in any other prior art document does he receive any indication or suggestion to specify the time offset not specified in feature M1.8 (just) by means of the properties of a HARQ process.

Thus, even taking into account the teaching of document NK7 or his skilled knowledge, the skilled person does not arrive at the subject-matter of claim 1 according to auxiliary request 1 in an obvious manner on the basis of the teaching of document NK6.

Documents NK4 and NK5 are significantly further removed from the subject-matter of Claim 1 according to the patent in suit than document NK7 and thus cannot contribute to the patentability of Claim 1 under auxiliary request 1 either.

Thus, the subject-matter of claim 1 according to auxiliary request 1 is novel in relation to the prior art at issue in the proceedings and is based on an inventive step.

The above remarks on claim 1 according to auxiliary request 1 apply mutatis mutandis to the substantively corresponding subsidiary claim 9 according to auxiliary request 1.

B.

Ancillary decisions

The decision on costs is based on Section 84 (2) German Patent Act in conjunction with Section 92 (1) German Code of Civil Procedure.

In doing so, the Senate took into account that the subject-matter of the patent remaining protectable in the limited version defended according to auxiliary request 1 corresponds to the challenged extent compared to that of the granted version to the challenged extent due to the restriction to a specific specification of the time conditions. In the version according to auxiliary request 1, the patent in suit is clearly restricted by the restriction with the inclusion of feature M1.8.1 ^{H1}, but on the other hand not one that represents only the selection of a single one from an arbitrarily large number of design possibilities.

The design, according to which the offset time is equal to half of a turnaround time of a HARQ process (process of a hybrid automatic repetition request), must be seen in connection with the fact that it was already apparent to the skilled person in the given version on the basis of his specialist knowledge that the time offset could not be chosen arbitrarily, but only within the time ratios of a random access method.

The decision on provisional enforceability is based on Section 99 (1) German Patent Act in conjunction with Section 709 of the German Code of Civil Procedure.

C.

Instructions on legal remedies

An appeal against this judgment is available.

The notice of appeal, which can also be filed as an electronic document in accordance with the Ordinance on Electronic Legal Transactions at the Federal Court of Justice and Federal Patent Court (BGH/BPatGERVV) of 24 August 2007 (Federal Law Gazette I p. 2130), must be signed by a lawyer or patent attorney admitted in the Federal Republic of Germany or, in the case of electronic filing, signed by a lawyer or patent attorney admitted in the Federal Republic of Germany or, in the case of electronic filing, be provided with a qualified electronic signature in accordance with the Signature Act or with an advanced electronic signature issued by an international organization in the field of intellectual property rights and suitable for processing by the respective court. The notice of appeal must contain the name of the judgment against which the appeal is directed and the declaration that this judgment will be appealed. The notice of appeal is to be accompanied by a copy or certified copy of the judgment under appeal.

The notice of appeal must be submitted in writing to the Federal Court of Justice, Herrenstraße 45a, 76133 Karlsruhe within one month or transferred as an electronic document to the electronic mail room of the Federal Court of Justice (www.bundesgerichtshof.de/erv.html). The time limit for filing an appeal begins with the service of the judgment, which is drafted in its entirety, but no later than the expiry of five months after its pronouncement. The deadline is only met if the appeal is received by the Federal Court of Justice before the deadline expires.

Voit

Werner
Carpenter

Grandfather

Dr.

Haupt

At the same time, for the
RiBPatG Dr. Haupt, who was
prevented from signing due to
illness,

(VRiBPatG Can)