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**Datasheet for the decision
of 18 March 2022**

Case Number: T 1675/19 - 3.5.03

Application Number: 09825768.6

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H04L25/02

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Title of invention:
Method, apparatus and system for channel estimation

Applicant:
Huawei Technologies Co., Ltd.

Headword:
Reference signals from cooperative access points/HUAWEI

Relevant legal provisions:
EPC Art. 56
EPC R. 103(4) (c)
RPBA 2020 Art. 12(8)

Keyword:
Decision in written proceedings: cancellation of hearing
following appellant's announcement of non-attendance
Novelty - all requests (yes)
Inventive step - all requests (no)



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 1675/19 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 18 March 2022

Appellant: Huawei Technologies Co., Ltd.
(Applicant) Huawei Administration Building
Bantian
Longgang District
Shenzhen, Guangdong 518129 (CN)

Representative: Gill Jennings & Every LLP
The Broadgate Tower
20 Primrose Street
London EC2A 2ES (GB)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 10 January 2019
refusing European patent application
No. 09825768.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: J. Eraso Helguera
R. Winkelhofer

Summary of Facts and Submissions

I. The appeal was lodged against the decision of the examining division to refuse the present European patent application for lack of novelty (Article 54 EPC) and inventive step (Article 56 EPC) with respect to the independent claims of each of a main request and auxiliary requests 1, 1A, 1B, 2, 2A and 2B and for added subject-matter with respect to the independent claims of auxiliary requests 1C and 2C.

II. During the examination proceedings, the examining division referred *inter alia* to the following prior-art document:

D1: R1-084203, "Consideration on CoMP in LTE-Advanced", LG Electronics, 2008.

The board introduced an additional prior-art document (i.e. reference [2] in D1) into the appeal proceedings under Article 114(1) EPC:

D4: R1-082575, "Proposals for LTE-Advanced Technologies", NTT-DoCoMo, 2008.

III. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of one of seven claim requests subject to the appealed decision and re-submitted with the statement of grounds of appeal (**main request** and **auxiliary requests I, IA, IB, II, IIA, IIB**) or, alternatively, of one of the three claim requests filed with the statement of grounds of appeal (**auxiliary requests ID, IID and III**).

- IV. In a communication pursuant to Article 15(1) RPBA 2020, the board stated its (negative) preliminary opinion on the allowability of all the claim requests and on the admittance of auxiliary requests ID, IID and III into the appeal proceedings.
- V. In its response to the board's communication, the appellant commented on the board's preliminary opinion. The appellant subsequently informed the board that it would not be represented at the oral proceedings.
- VI. The board then cancelled the oral proceedings.
- VII. Claim 1 of the **main request** reads as follows:

"A channel estimation method, comprising:
receiving (101) downlink signals inclusive of dedicated reference signals from two or more Access Points, APs, wherein a specific resource element in a time-frequency lattice is utilized by a first AP among the two or more APs to send downlink signals comprise no data signal, and the specific resource element in the time-frequency lattice is utilized by a second AP among the two or more APs to send a dedicated reference signal; and
performing (102) channel estimation according to the dedicated reference signals."

Claim 1 of **auxiliary request I** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of the main request):

"A channel estimation method, comprising:
receiving (101) downlink signals inclusive of dedicated reference signals from two or more Access Points, APs, in one cell, wherein a specific resource

element in a time-frequency lattice is utilized by a first AP among the two or more APs to send downlink signals comprise no data signal, and the specific resource element in the time-frequency lattice is utilized by a second AP among the two or more APs to send a dedicated reference signal; and

performing (102) channel estimation according to the dedicated reference signals."

Claim 1 of **auxiliary request IA** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of the main request):

"A channel estimation method, comprising:
receiving (101) downlink signals inclusive of dedicated reference signals from two or more Access Points, APs, which are included in one cell, wherein a specific resource element in a time-frequency lattice is utilized by a first AP among the two or more APs to send downlink signals comprise no data signal, and the specific resource element in the time-frequency lattice is utilized by a second AP among the two or more APs to send a dedicated reference signal; and
performing (102) channel estimation according to the dedicated reference signals."

Claim 1 of **auxiliary request IB** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of auxiliary request IA):

"A channel estimation method, comprising:
receiving (101) downlink signals inclusive of dedicated reference signals from two or more Access Points, APs, which are included in one cell, wherein a specific resource element in a time-frequency lattice is utilized by a first AP among the two or more APs to

send downlink signals comprise no data signal, and the specific resource element in the time-frequency lattice is utilized by a second AP among the two or more APs to send a dedicated reference signal; and
performing (102) channel estimation according to the dedicated reference signals;
wherein the Access Points are cooperative Access Points."

Claim 1 of **auxiliary request ID** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of auxiliary request I):

"A channel estimation method, comprising:
receiving (101) downlink signals inclusive of dedicated reference signals from two or more Access Points, APs, in one cell, wherein the two or more APs are connected to a same eNB, a specific resource element in a time-frequency lattice is utilized by a first AP among the two or more APs to send downlink signals comprise no data signal, and the specific resource element in the time-frequency lattice is utilized by a second AP among the two or more APs to send a dedicated reference signal; and
performing (102) channel estimation according to the dedicated reference signals."

Claim 1 of **auxiliary request II** reads as follows:

"A channel estimation method, comprising:
receiving (101) downlink signals from a first access point and a second access point in one cell, wherein the signals comprise a first dedicated reference signal from the first access point, a first data signal from the first access point, a second dedicated reference signal from the second access

point, and a second data signal from the second access point; and

performing (102) channel estimation according to the first dedicated reference signal and the second dedicated reference signal;

wherein resource elements used for transmission of the first dedicated reference signal are not used for transmission of the second data signal, and resource elements used for transmission of the second dedicated reference signal are not used for transmission of the first data signal."

Claim 1 of **auxiliary request IIA** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of auxiliary request II):

"A channel estimation method, comprising:

receiving (101) downlink signals from a first Access Point, AP, and a second Access Point which are included in one cell, wherein the signals comprise a first reference signal from the first Access Point, a first data signal from the first Access Point, a second reference signal from the second Access Point, and a second data signal from the second Access Point; and performing (102) channel estimation according to the first reference signal and the second reference signal;

wherein resource elements used for transmission of the first reference signal are not used for transmission of the second data signal, and resource elements used for transmission of the second reference signal are not used for transmission of the first data signal."

Claim 1 of **auxiliary request IIB** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of auxiliary request IIA):

"A channel estimation method, comprising:
receiving (101) downlink signals from a first Access Point, AP, and a second Access Point which are included in one cell, wherein the signals comprise a first reference signal from the first Access Point, a first data signal from the first Access Point, a second reference signal from the second Access Point, and a second data signal from the second Access Point; and
performing (102) channel estimation according to the first reference signal and the second reference signal;
wherein resource elements used for transmission of the first reference signal are not used for transmission of the second data signal, and resource elements used for transmission of the second reference signal are not used for transmission of the first data signal;
wherein the Access Points are cooperative Access Points."

Claim 1 of **auxiliary request IID** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of the auxiliary request II):

"A channel estimation method, comprising:
receiving (101) downlink signals from a first access point and a second access point in one cell, wherein the signals comprise a first dedicated reference signal from the first access point, a first data signal from the first access point, a second dedicated reference signal from the second access point, and a second data signal from the second access

point, the first access point and the second access point are connected to a same eNB; and

performing (102) channel estimation according to the first dedicated reference signal and the second dedicated reference signal;

wherein resource elements used for transmission of the first dedicated reference signal are not used for transmission of the second data signal, and resource elements used for transmission of the second dedicated reference signal are not used for transmission of the first data signal."

Claim 1 of the **auxiliary request III** reads as follows (board's highlighting indicating amendments vis-à-vis claim 1 of the main request):

"A channel estimation method, comprising:

receiving (101) downlink signals inclusive of dedicated reference signals from two or more Access Points, APs, wherein the two or more APs are connected to a same eNB, a specific resource element in a time-frequency lattice is utilized by a first AP among the two or more APs to send downlink signals comprise no data signal, and the specific resource element in the time-frequency lattice is utilized by a second AP among the two or more APs to send a dedicated reference signal; and

performing (102) channel estimation according to the dedicated reference signals."

Reasons for the Decision

1. *Decision in written proceedings*
 - 1.1 In accordance with established case law, where oral proceedings are appointed upon a party's request and where the party subsequently expresses their intention not to attend, the appellant's statement is equivalent to a withdrawal of the request for oral proceedings.
 - 1.2 As the board does not consider holding oral proceedings to be expedient or necessary in this case (cf. Article 116(1) EPC), these were cancelled and a decision is to be handed down in written proceedings (Article 12(8) RPBA 2020).
 - 1.3 Given that the appellant's indication of non-attendance was not submitted within one month of notification of the board's communication under Article 15(1) RPBA 2020, no reimbursement of the appeal fee can be ordered under Rule 103(4)(c) EPC.
2. MAIN REQUEST

Claim 1 of the **main request** comprises the following limiting features (board's outline):

A channel estimation method, comprising:

- (r) receiving downlink signals inclusive of dedicated reference signals from two or more APs,
- (a) wherein a specific resource element in a time-frequency lattice is utilised by a first AP among the two or more APs to send downlink signals comprise no data signal, and the specific resource element in the time-frequency lattice is utilised

by a second AP among the two or more APs to send a dedicated reference signal;

- (p) performing channel estimation according to the dedicated reference signals.

2.1 *Claim 1 - novelty in view of D1 (Article 54 EPC)*

2.1.1 Using the wording of claim 1, document **D1** discloses:

A channel estimation method, comprising:

- (r) receiving downlink signals inclusive of dedicated reference signals (page 4, section 3: "dedicated reference signals") from two or more APs (page 4, section 3: "multiple eNBs"),
- (p) performing channel estimation according to the dedicated reference signals (page 4, section 3, second paragraph: "... for the UE to accurately estimate multiple downlink channels ...").

2.1.2 According to the decision under appeal, D1 discloses all of the features of claim 1. Specifically **feature (a)** is disclosed by D1, page 4, paragraph entitled "Reference signal design", which states that

"... only 3 orthogonal RS frequency shift is available for 2Tx and 4Tx and this is not fully orthogonal. Therefore, multi-cell orthogonal RS structure may need to be designed for estimating channels accurately for neighboring eNB."

2.1.3 From this paragraph, it can only be inferred that the three-subcarrier reference signal offset conventionally used in *multi-antenna* configurations such as "2Tx" and "4Tx" is not sufficient to achieve fully orthogonal reference signals in a *multi-cell* configuration, and that a specific (e.g. "dedicated") multi-cell

orthogonal reference signal (RS) structure may be required. D1 does not give any particular details as to *which* resource elements such RS structure should use. It cannot be implied that such multi-cell orthogonal RS structure should necessarily require feature (a), since, as indicated by the appellant, interference elimination between data and reference signals could still be plausibly achieved by estimating the data signals when performing channel estimation.

- 2.1.4 The appellant agreed with this assessment in its response to the board's preliminary opinion (cf. point V above).
- 2.2 It follows that, contrary to the finding in Reasons 3 of the decision under appeal, the subject-matter of claim 1 of the main request is new (Article 54 EPC) in view of D1.
- 2.3 *Claim 1 - inventive step starting out from D1 (Article 56 EPC)*
 - 2.3.1 The subject-matter of claim 1 differs from the disclosure of D1 in **feature (a)**.
 - 2.3.2 The technical effect associated with this distinguishing feature is, as indicated by the appellant, that the UE can estimate the channel values between the UE and the cooperative cells/APs more accurately, and the UE performance is improved. The objective technical problem can thus be defined as "how to improve the accuracy of estimating the channel values between the UE and the cooperative APs in the system of D1".

The subject-matter of claim 1 does not involve an inventive step starting out from D1, for the following reasons:

- 2.3.3 The "multi-cell orthogonal RS structure" proposed in D1 only avoids collisions among reference signals from different cooperative APs, i.e. the collaborating eNBs. D1 does however not explicitly address inaccuracies caused by collisions between the reference signals sent by *one* AP and data signals sent on the downlink data channel, i.e. the PDSCH, by *other* cooperative APs.

Starting out from D1 and seeking to improve the accuracy of the channel estimation, the skilled person in the field of 3GPP-based mobile networks would have readily recognised the following trade-off: either (i) data transmission from the first AP is allowed in the same resource element where a second AP sends reference signals, or (ii) it is not. In option (i), the total downlink data rate is increased at the expense of channel estimate accuracy and computing power required for the cancellation of the data signal. In option (ii), the channel estimate accuracy is improved and the computing power required is reduced at the expense of the total downlink data rate. The skilled person seeking to favour the channel estimate accuracy would have evidently selected the second option, arriving thereby at the introduction of **feature (a)** into the system of D1 without the involvement of any inventive skills.

- 2.3.4 The appellant submitted that, when starting from the teaching of D1, the skilled person would not have had the incentive to arrive at the invention without some inducement to do so. This was because, in D1, there was no mention at all of the problem of interfering

reference and data signals, nor any appreciation of the problems that might have arisen when applying the LTE reference signal patterns to the CoMP system. There was no mention of data signals in D1, nor was there any mention of data in the objective technical problem. If the skilled person had considered the trade-off indicated by the board the question arose why not one of the five scenarios of D1 was selected and why no considerations were set out in its sections 2 and 3. The appellant further submitted that, at most, the skilled person would have considered the inter-cell interference mitigation schemes of D1, such as attempting solutions involving orthogonality, but there would have been no motivation to coordinate the transmission of data signals. It was not mentioned in D1 and it would not have been a contemplated solution. From D1, the only derivable teaching was changing the orthogonality of reference signals.

2.3.5 This is not convincing. The five scenarios of section 2 of D1 relate to *different* collaboration levels involving *different* levels of information sharing, considering the trade-off between performance and control overhead. In scenarios 1, 2 and 4, at least scheduling and "ISNR" information is shared among collaborating eNBs. D1 acknowledges that those scenarios have a clear incentive to create an orthogonal design for RS signals. However, such an orthogonal design merely ensures that there will be no collisions between RS signals from neighbouring eNBs. Even without any explicit indication in D1, the skilled person tackling the accuracy of the channel estimation would still have been forced to decide whether overlapping of RS signals from one eNB with data transmissions on the PDSCH from neighbouring eNBs in the same resource element should be allowed. Although

the board already acknowledged that an overlap of RS and data signals from different eNBs was feasible (e.g. using signal cancellation), having neighbouring eNBs "mute" the PDSCH on the resource element used by one of the eNBs to send reference signals was by far the most straightforward technique available.

2.4 Hence, the main request is not allowable under Article 56 EPC.

3. AUXILIARY REQUESTS I AND IA

Claim 1 of each of the **auxiliary requests I and IA** comprises all the limiting features of claim 1 of the main request and the following addition (board's outline):

(b) the two or more APs are included in one cell.

3.1 *Claim 1 - novelty in view of D1 (Article 54 EPC)*

3.1.1 **Feature (a)** is not disclosed by D1 (see point 2.1 above).

3.1.2 With respect to **feature (b)**, the board concurs with the examining division that the subject-matter of claim 1 of these requests encompasses in principle both "physical" and "virtual" cells and that "virtual cell IDs" (VCIDs) in CoMP (Coordinated Multi-Point) systems were generally known to the skilled person at the time when the decision under appeal was announced. However, VCIDs were introduced together with CoMP systems in 3GPP Release 11 (frozen in September 2012) as a tool to decouple the "transmission point" from the "reception point" in such CoMP systems.

Document D1, on the other hand, relates to CoMP discussions carried out much earlier, in November 2008, in the context of LTE-Advanced (Release 10, frozen in March 2011). Therefore, it cannot be implied, without any further supporting evidence, that before the filing date of the present application the skilled person would have necessarily inferred the existence of VCIDs or virtual cells in D1 at all. The only indisputable fact remains that D1 explicitly refers to different "cells" and "inter-cell interference (ICI)".

3.2 Thus, contrary to the finding in Reasons 3 of the decision under appeal, the subject-matter of claim 1 of the main request is new (Article 54 EPC) in view of D1.

3.3 *Claim 1 - inventive step starting out from D1 (Article 56 EPC)*

3.3.1 The subject-matter of claim 1 of auxiliary requests I and IA differs from the disclosure of D1 in **features (a) and (b)**.

3.3.2 The technical effect associated with these features is, as indicated by the appellant, that the UE can estimate the channel values between the UE and the cooperative APs within the same cell more accurately, and that the UE performance is improved.

The objective technical problem can thus be defined as "how to improve the accuracy of estimating the channel values between the UE and the cooperative APs of the system in D1 in the same cell."

The subject-matter of claim 1 does not involve an inventive step starting out from D1, for the following

reasons:

- 3.3.3 The use of more than one cooperative AP connected to the same eNB within the same cell had already been proposed in the ongoing COMP discussions for "LTE-Advanced", and it is hinted at by **D1** through its reference to **D4** (reference [2] in D1), see D4, page 24, second bullet point (emphasis added):

"Use cell structure employing remote radio equipments[*sic*] (RREs) more actively in addition to that employing independent eNB",

and the accompanying figure. Further considering that D4 explicitly proposes the use of common reference signals and "explicit signaling for transmit RRE (or eNB) information" (see D4, page 27), the skilled person seeking to solve the objective problem enounced above would have deemed straightforward the use of the "centralised ICI control" architecture of D4 (see figure on page 26), in which multiple RREs are connected to the same eNB in the same cell, as per **feature (b)**. With respect to the accuracy of the channel estimation, still facing the analogous design decision of allowing or not in the same resource element an overlap of RS signals from one AP with data transmissions on the PDSCH from cooperative APs in the same cell, the skilled person would have recognised the same trade-off as set out in point 3.3.3 above and would have further introduced **feature (a)** into the known system without the involvement of any inventive skills.

- 3.3.4 The appellant agreed with the differences and the objective technical problem identified by the board but disagreed with the conclusion that the skilled person

would have indeed introduced **feature (a)**, in order to improve the accuracy of estimating the channel values between the UE and the cooperative APs in different cells. The appellant further submitted that to then treat **feature (b)** as an extension of the same solution was the wrong approach. Instead, the problem-solution approach should be re-started, rather than assuming that the skilled person was already well-aware of feature (a), which was incorrect.

Feature (a) did not become part of the teaching of the closest prior art. It was not valid to consider that the skilled person would have applied the *same* technique used between cooperating eNBs in *different* cells to cooperating APs in the *same* cell, because D1 did not disclose such an approach. The board might have concluded that the invention of the main request would have been obvious to the skilled person but it was not correct to then incorporate that teaching into the closest prior art when considering feature (b) since it was not explicitly disclosed. Features (a) and (b) had to be considered together as being the collective differences over D1 providing a single combined technical effect. Starting from D1, the skilled person would have found no motivation to seek improvements to intra-cell interference, let alone solutions addressing intra-cell interference between data signals and dedicated reference signals. D1 presented solutions that modified the orthogonality of reference signals between different cells. Thus, not only would the skilled person have had no recognition of the problem from D1, the skilled person would also have had no motivation or inducement to arrive at the claimed solution. The skilled person would have sought only solutions that mitigate interference between different cells but also would have sought only solutions to

modifying the reference signals of those cells (and their orthogonality).

3.3.5 This argument is not persuasive. First, the board uses, in the appellant's favour, the objective problem formulated by the appellant on page 6, point 3 of the statement of grounds of appeal. Second, D1 fails to disclose *intra-cell* interference because each cell in D1 comprises a single transmitter, i.e. the eNB. The *inter-cell* interference of D1 among collaborating eNBs becomes *intra-cell* interference among cooperative APs as soon as the skilled person decides to use more than one transmitter in the same cell. To improve the accuracy of estimating the channel values in the same cell, the skilled person would still have had to make a decision as to whether collisions between RS and PDSCH in the same resource element among the RREs connected to the same eNB in the same cell are allowed, albeit this interference would then be called *intra-cell* rather than *inter-cell* interference.

3.4 Hence, auxiliary requests I and IA are not allowable under Article 56 EPC either.

4. AUXILIARY REQUEST IB

Claim 1 of **auxiliary request IB** comprises all the limiting features of claim 1 of auxiliary request IA and the following addition (board's outline):

(c) wherein the APs are cooperative APs.

4.1 *Claim 1 - novelty and inventive step*
(Articles 54 and 56 EPC)

- 4.1.1 **Feature (c)** is disclosed by both D1 (see page 1, section 1, second paragraph: "the collaborating eNBs") and D4 (see page 27: "Macro Diversity with Multipoint Transmission/Reception Using RREs").
- 4.1.2 Contrary to the finding in Reasons 4 of the decision under appeal, the subject-matter of claim 1 of auxiliary request IB is new (Article 54 EPC) over D1 on the basis of **features (a) and (b)**. However, this subject-matter does not involve an inventive step (Article 56 EPC) for the same reasons as set out in point 3.3 above.
- 4.1.3 The appellant argued that the introduction of the limitation of **feature (c)**, i.e. wherein the APs are cooperative APs, could not be treated separately. Its overall effect should have been incorporated into the objective problem to be solved and the feature itself formed a part of the combined solution. While D1 and D4 considered that cooperative APs existed, there was no consideration of the objective problem nor any teaching that would have addressed the problem and hinted towards the solution.
- 4.1.4 This is not convincing. The use of the "cell structure employing RREs" known from D4 in the system of D1 inevitably leads to the appearance of *cooperative APs* without any need to modify the objective technical problem formulated in point 3.3.2 above. Moreover, the appellant did not modify the objective problem vis-à-vis auxiliary request IA in their argumentation supporting auxiliary request IB in the statement of grounds of appeal (see page 11).
- 4.2 It follows that **auxiliary request IB** is not allowable under Article 56 EPC.

5. AUXILIARY REQUEST ID

Claim 1 of **auxiliary request ID** comprises all the limiting features of claim 1 of auxiliary request I and the following addition (board's outline):

(d) the two or more APs are connected to a same eNB.

5.1 *Claim 1 - inventive step starting out from D1 (Article 56 EPC)*

5.1.1 **Feature (d)** is disclosed in D4 (see figures on pages 24 and 27). The subject-matter of claim 1 does not involve an inventive step for the same reasons as set out in point 3.3 above.

5.1.2 The appellant submitted that simply because D4 taught feature (d) did not mean that the skilled person would have considered the combined solution obvious. There was no motivation in D1 to seek improvements to interference between APs connected to the same eNB even if the skilled person was aware of the notion that APs might be connected to the same AP. Moreover, there was no motivation to consider not sending data signals on resource elements when an AP connected to the same eNB was sending a dedicated reference signal.

5.1.3 The board disagrees. As explained in point 3.3.5 above, the *inter-cell* issues arising between collaborating eNBs in D1 automatically translate into *intra-cell* issues between cooperative APs as soon as the skilled person moves to the alternative "same cell" architecture known from D4.

5.2 Hence, auxiliary request ID is likewise not allowable under Article 56 EPC.

6. AUXILIARY REQUESTS II, IIA and IIB

Claim 1 of **auxiliary request II** comprises the following limiting features (board's outline):

A channel estimation method, comprising:

- (e) receiving downlink signals from a first and a second AP in one cell, wherein the signals comprise a first dedicated reference signal from the first AP, a first data signal from the first AP, a second dedicated reference signal from the second AP, and a second data signal from the second AP;
- (f) performing channel estimation according to the first dedicated reference signal and the second dedicated reference signal;
- (g) wherein resource elements used for transmission of the first dedicated reference signal are not used for transmission of the second data signal, and resource elements used for transmission of the second dedicated reference signal are not used for transmission of the first data signal.

Claim 1 of **auxiliary request IIA** comprises all the limiting features of claim 1 of auxiliary request II, except for the removal of "dedicated" and a slight reformulation of feature (e) so as to read "which are included in one cell".

Claim 1 of **auxiliary request IIB** comprises all the limiting features of claim 1 of auxiliary request IIA with the addition of feature (c).

6.1 *Claim 1 - novelty and inventive step*
(Articles 54 and 56 EPC)

6.1.1 According to the appellant, the subject-matter of claim 1 of auxiliary requests II and IIA differs from the disclosure of D1 in **features (e) and (g)**. These differences correspond in substance to **features (a) and (b)** above, with the explicit reference to a "first AP" and a "second AP" instead of "the two or more APs", and the appellant made indeed reference to the arguments for auxiliary request I. As regards auxiliary request IIB, the appellant identified **feature (c)** as a *further* distinguishing feature.

6.1.2 Contrary to the findings in Reasons 6, 7 and 8 of the decision under appeal, the subject-matter of claim 1 of auxiliary requests II, IIA and IIB is new (Article 54 EPC) in view of D1 (see points 3.1 and 4.1.2 above). However, it does not involve an inventive step (Article 56 EPC) starting out from D1 for the same reasons as set out for auxiliary requests I, IA and IB, respectively (see points 3.3 and 4.1.2 above).

6.2 Auxiliary requests II, IIA and IIB are thus not allowable under Article 56 EPC either.

7. AUXILIARY REQUESTS IID AND III

Claim 1 of **auxiliary request IID** comprises all the limiting features of claim 1 of auxiliary request II and additionally feature (d).

Claim 1 of **auxiliary request III** comprises all the limiting features of claim 1 of the main request and additionally feature (d).

7.1 *Claim 1 - inventive step starting out from D1 (Article 56 EPC)*

The inventive step considerations of point 5.1 above also apply *mutatis mutandis* to these requests.

- 7.2 Hence, **auxiliary requests IID and III** are likewise not allowable under Article 56 EPC.
8. Since there is no allowable claim request, the appeal must 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