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Datasheet for the decision of 10 July 2020

Case Number: T 0617/16 - 3.5.03

Application Number: 11174472.8

Publication Number: 2381590

H04B7/26, H04W52/02 IPC:

Language of the proceedings: ΕN

Title of invention:

Multi-mode base station method and apparatus for use in a wireless communications system

Patent Proprietor:

Qualcomm Incorporated

Opponent:

Swisscom AG

Headword:

Multi-mode base station/QUALCOMM

Relevant legal provisions:

EPC Art. 56

RPBA 2020 Art. 12(2)

Keyword:

Admissibility of prior-art document admitted by the opposition division - (yes): denial would contravene Art. 12(2) RPBA 2020 Inventive step - all requests (no): juxtaposition of obvious features



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Case Number: T 0617/16 - 3.5.03

DECISION
of Technical Board of Appeal 3.5.03
of 10 July 2020

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Patent- und Markenanwälte

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Decision under appeal: Interlocutory decision of the Opposition

Division of the European Patent Office posted on 4 January 2016 concerning maintenance of the European Patent No. 2381590 in amended form.

Composition of the Board:

R. Romandini

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Summary of Facts and Submissions

I. This case concerns the appeals filed by both the proprietor (appellant I) and the opponent (appellant II) against the interlocutory decision of the opposition division.

The opposition division held that the ground for opposition according to Article 100(a) EPC in connection with Article 54 EPC prejudiced the maintenance of the patent as granted (main request), that a first auxiliary request was not admissible under Rule 80 EPC but that, account having been taken of the amendments made by the proprietor in accordance with a second auxiliary request, the patent and the invention to which it relates according to this request met the requirements of the EPC.

II. In the appealed decision, the opposition division referred inter alia to the following prior art document:

D13: WO 2004/075583 A1.

III. Appellant I submitted the following documents with their response to the board's communication under Article 15(1) RPBA 2020:

BP1: J. Edney, W. A. Arbaugh: "Real 802.11 Security: Wi-Fi Protected Access and 802.11i", 2004, ISBN 03211362006, pp. 1-3.

BP2: IEEE 802.11-1999, Part 11: Wireless LAN Medium

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Access Control (MAC) and Physical Layer (PHY) Specifications, ANSI/IEEE Std 802.11, 1999 Edition, pp. 128-129.

- IV. With their response to the board's communication, appellant II stated that they would not attend the scheduled oral proceedings.
- V. Oral proceedings were held on 10 July 2020 in the absence of appellant II.
 - Appellant I requested that the decision under appeal be set aside and that the opposition be rejected (main request), or, in the alternative, that the patent be maintained in amended form on the basis of the claims of one of first to fourth auxiliary requests.
 - Appellant II requested in writing that the decision under appeal be set aside and that the patent be revoked.

At the end of the oral proceedings, the board's decision was announced.

VI. Claim 1 of the patent as granted (main request) reads as follows:

"A method of operating a base station, the method comprising:

checking (1312) whether any wireless terminals is [sic] being serviced are in an active state, incrementing (1314) an inactivity timer, if no wireless terminals are currently in an active state,

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checking (1318) whether the timer has exceeded a predetermined limit, wherein the base station is transitioned to a transmit standby mode (1320) if the predetermined limit is exceeded."

Claim 1 of the **first auxiliary request** reads (board's underlining indicating changes vis-à-vis claim 1 as granted):

"A method of operating a base station of a communications system including a plurality of base stations, each base station having a corresponding cellular coverage area, the method comprising: checking (1312) whether any wireless terminals being serviced are in an active state, incrementing (1314) an inactivity timer, if no wireless terminals are currently in an active state, checking (1318) whether the timer has exceeded a predetermined limit, wherein the base station is transitioned to a transmit standby mode (1320) if the predetermined limit is exceeded."

Claim 1 of the **second auxiliary request** reads (board's underlining indicating changes vis-à-vis claim 1 as granted):

"A method of operating a base station, the method comprising: checking (1312) whether any wireless terminals is [sic] being serviced are in an active state, wherein a wireless terminal may be in a sleep state or an active state, incrementing (1314) an inactivity timer, if no wireless terminals are currently in an active state, checking (1318) whether the timer has exceeded a

predetermined limit, wherein the base station is

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transitioned to a transmit standby mode (1320) if the predetermined limit is exceeded."

Claim 1 of the **third auxiliary request** reads (board's underlining indicating changes vis-à-vis claim 1 as granted):

"A method of operating a base station, the method comprising:

operating (1310) the base station in an active mode of operation including transmitting synchronization signals at a first rate,

checking (1312) whether any wireless terminals being serviced are in an active state,

incrementing (1314) an inactivity timer, if no wireless terminals are currently in an active state, checking (1318) whether the timer has exceeded a predetermined limit, wherein the base station is transitioned to a transmit standby mode (1320) if the predetermined limit is exceeded, and operating (1322) the base station in the transmit standby mode of operation including transmitting synchronization signals at at least one of: a lower rate than the first rate and at a lower power level than the synchronization signals transmitted in the

Claim 1 of the **fourth auxiliary request** reads (board's strike-through indicating changes vis-à-vis claim 1 of the third auxiliary request):

active mode."

"A method of operating a base station, the method comprising:

operating (1310) the base station in an active mode of operation including transmitting synchronization signals at a first rate,

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checking (1312) whether any wireless terminals being serviced are in an active state, incrementing (1314) an inactivity timer, if no wireless terminals are currently in an active state, checking (1318) whether the timer has exceeded a predetermined limit, wherein the base station is transitioned to a transmit standby mode (1320) if the predetermined limit is exceeded, and operating (1322) the base station in the transmit standby mode of operation including transmitting synchronization signals at at least one of: a lower rate than the first rate and at a lower power level than the synchronization signals transmitted in the active mode."

Reasons for the Decision

1. MAIN REQUEST

Claim 1 as granted comprises the following limiting features (as labelled in the opposition proceedings):

- F1 A method of operating a base station, the method comprising:
- F2 checking whether any wireless terminals is being serviced are in an active state,
- F3 incrementing an inactivity timer, if no wireless terminals are currently in an active state,
- F4 checking whether the timer has exceeded a predetermined limit,
- F5 wherein the base station is transitioned to a transmit standby mode if the predetermined limit is exceeded.
- 1.1 Claim 1 Novelty and inventive step in view of D13

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1.1.1 Admissibility of document **D13**

Appellant I argued that the reasoning for rejecting the request not to admit document D13 into the opposition proceedings was incorrect and should be reverted, since features F2 and F3 could not be considered to be disclosed in D13.

In that regard, the board notes that the EPC does not provide a legal basis for excluding, in appeal proceedings, submissions (such as prior-art documents) which were admitted into the first-instance proceedings, in particular when the impugned decision is based on them (see e.g. T 1549/07, Reasons 2.1; T 1852/11, Reasons 1.3; T 1201/14, Reasons 2). In view of the very aim of the appeal proceedings to review the decision under appeal in a judicial manner according to Article 12(2) RPBA 2020, such submissions are automatically part of the appeal proceedings (see T 487/16, Reasons 3; T 2603/18, Reasons 1). Accordingly, the board sees no reason to revert the opposition division's decision to admit D13 into the opposition proceedings. Appellant I did not further comment on that issue during the oral proceedings before the board.

1.1.2 Using the wording of claim 1, D13 discloses:

- F1 A method of operating a base station ("base station 2", "AP 2"), the method comprising:
- F2 checking whether any wireless terminals being serviced are in an active state (page 14, lines 16-17: "... If, in the normal transmitting and receiving mode, the base station does not

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- receive any connection signal from a mobile network unit 1 ..."),
- F3 incrementing monitoring an inactivity timer, if no wireless terminals are currently in an active state (page 14, lines 17-18: "... the AP 2 waits for a predefinable period of time 24 ..."),
- F4 checking whether the timer has exceeded a predetermined limit (page 14, lines 17-18: "... the AP 2 waits for a predefinable period of time 24 ..."),
- F5 wherein the base station is transitioned to a transmit standby mode if the predetermined limit is exceeded (page 14, lines 18-20: "... if thereafter it still does not receive any connection signal 25, the base station 2 switches over into sleep mode 26 ...").
- 1.1.3 The subject-matter of claim 1 is new (Article 54 EPC), contrary to the findings of the opposition division in the decision under appeal (see Reasons 7). It differs from D13 in the exact implementation of the monitoring of the timer according to features F3 and F4 in document D13, in particular, in that the timer is incremented according to feature F3.

The opposition division held that "for the realization of waiting for a predefinable time interval in a computer implemented solution an incrementation of a kind of timer is necessarily needed" (cf. appealed decision, Reasons 7.1). The board concedes that the presence of a "predefinable period of time" according to D13 necessarily implies the presence of an "inactivity timer" and checking the timer against a time limit. However, the board cannot see the disclosure of the exact implementation of the monitoring of the timer in D13. Thus, feature F3 of

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present claim 1 is not disclosed by D13 and constitutes the only distinguishing feature with respect to document D13.

- The skilled person, starting out from D13 and being 1.1.4 confronted with the objective problem of "how to monitor a predefined time interval for switching between normal mode and sleep mode in the system of D13", would have easily envisaged incrementing an inactivity timer and checking whether a predetermined time limit is exceeded as a straightforward implementation option. This measure in fact constitutes one of two equally likely alternatives, the other alternative being the use of a "countdown timer". As a consequence, the sole distinguishing feature relates to a straightforward implementation of a timer for switching between a normal and a sleep mode in the system of D13 and can therefore not contribute to an inventive step (Article 56 EPC).
- 1.1.5 The parties' arguments are based on different interpretations of features F2 and F3 of claim 1, more specifically, on the interpretation of "wireless terminals being serviced are in an active state".
- 1.1.6 The board finds that, in view of the breadth of the term "active state" in features F2 and F3, the detection by a base station of connection signals sent from a mobile network unit such as a mobile terminal according to the system in D13 falls well within the scope of feature F2 (see e.g. D13, page 14, lines 14-20 and claim 1, board's underlining: "... the base station (2) changes over from the normal transmitting-receiving mode into sleep mode after a predefinable time interval without connection signal to a mobile network unit (1) ..." and on page 14,

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lines 16-19 that (board's underlining) "... <u>If</u>, in the normal transmitting and receiving mode, <u>the base</u> <u>station does not receive</u> any connection signal from a mobile network unit 1, <u>the AP 2 waits</u> for a predefinable period of time 24, if thereafter it still does not receive any connection signal 25 ...").

This necessary implies checking, at the base station, whether any wireless terminals have sent a "connection signal" (received by the base station) before checking whether the predefinable time interval has elapsed, because otherwise the timer should be reset.

Furthermore, given that claim 1 as granted does not further specify what "being serviced" and "being in an active state" should entail, the wireless terminal sending a connection signal can be considered as "being serviced" (i.e. being physically reachable) and as "being in an active state", as opposed to terminals being switched off or not sending signals. Hence, the base station of D13 effectively checks whether any wireless terminals being serviced are in an active state in full accordance with feature F2.

- 1.1.7 Appellant I submitted that the aspects (i) "being serviced" and (ii) "being in an active state" were disjoint and were actively checked according to feature F2. Consequently, they were not anticipated by the "onefold activity" of sending a connection signal as disclosed in D13.
- 1.1.8 This argument is not convincing. Feature F2 refers to a single step of "checking whether any wireless terminals being serviced are in an active state" (emphasis added). Whenever a connection signal is received in D13, the base station determines that the terminal is both "in an active state", because it has sent the

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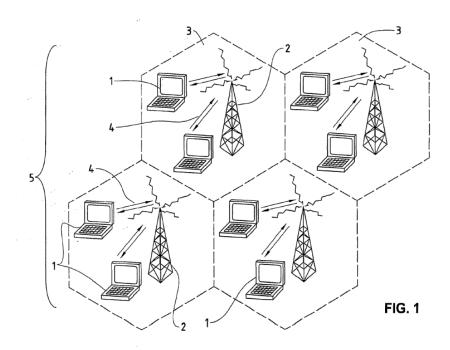
received connection signal, and is "being serviced", as opposed to other terminals that might be switched off within the coverage area of the base station.

- 1.2 Hence, the main request is not allowable under Articles 52(1) and 56 EPC.
- 2. FIRST AUXILIARY REQUEST

Claim 1 of the **first auxiliary request** differs from claim 1 of the main request essentially in that it further specifies that (board's underlining):

- the base station is a base station of a communication system including a <u>plurality of base stations</u>, each base station having a corresponding <u>cellular coverage area</u>.
- 2.1 Claim 1 Inventive step in view of D13
- 2.1.1 Document D13 further discloses a communication system including a plurality of base stations, wherein each base station has a corresponding cellular coverage area (see e.g. page 10, lines 13-20). This is most illustratively demonstrated by Fig. 1, depicting a wireless local network 5 comprising four base stations 2, each of them communicating via radio frequency signals 4 with two mobile network units 1 (notebook computers) in their respective basic service area 3:

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Hence, added feature F6 is specifically disclosed by D13 and the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step (Article 56 EPC) for the same reasons as set out above for the main request.

- 2.1.2 Appellant I submitted that the skilled person would have recognised that the term "cellular coverage" implied a cellular network and was to be distinguished from a wireless local area network (WLAN/WiFi), and further filed reference **BP1** in support of this argument.
- 2.1.3 The board disagrees. Even assuming that the term "cellular network" was limited to 3GPP networks and excluded WLAN networks, feature F6 merely refers to "each base station having a corresponding cellular coverage area" and is to be broadly interpreted as encompassing any wireless network featuring a division of the coverage area into cells, each cell being served

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by a corresponding base station, as shown in Fig. 1 of D13. No further assumptions can be made on the basis of the wording of the claim alone, nor are WLAN networks to be ruled out in view of paragraph [00141] of the description as filed, which states that (emphasis added)

"... [t]he methods and apparatus of the present invention may be, and in various embodiments are, used with CDMA, orthogonal frequency division multiplexing (OFDM), and/or various other types of communication techniques which may be used to provide wireless communication links between access nodes and mobile nodes. In some embodiments the access nodes are implemented as base stations which establish communication links with mobile nodes using OFDM and/or CDMA. In various embodiments the mobile nodes are implemented as notebook computers, personal data assistants (PDAs), or other portable devices including receiver/transmitter circuits and logic and/or routines, for implementing the methods of the present invention.".

Furthermore, BP1 discloses that

"... [o]ne major vendor, Nokia, has introduced a combined cellular data/Wi-Fi LAN adapter so the system can switch back and forth between hotspot and cellular coverage".

Although in this specific context "cellular coverage" excludes Wi-Fi networks, BP1 is not a dictionary and cannot convincingly justify a thus narrow interpretation within the different context of claim 1 or the application as a whole for the reasons set out above.

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- 2.2 It follows that the first auxiliary request is not allowable under Articles 52(1) and 56 EPC either.
- 3. SECOND AUXILIARY REQUEST

Claim 1 of the **second auxiliary request** differs from claim 1 of the main request in that it further specifies that:

- F7 a wireless terminal may be in a <u>sleep state</u> or in an active state (emphasis added).
- 3.1 Claim 1 Inventive step in view of D13
- 3.1.1 Given that D13 does not mention the available states of the wireless terminal, added feature F7 is not directly and unambiguously anticipated by D13.

In spite of the fact that the "sleep state" per se does not necessarily mean that the terminal, as suggested by appellant I, is not switched off but operates e.g. in a standby mode, the board accepts, in appellant I's favour, that added feature F7 may yield the technical effect that the <u>wireless terminal</u> may reduce its energy consumption.

3.1.2 However, this technical effect does not at all interact with the effect of the remaining features of present claim 1, namely the switching of the base station between active and standby modes. According to the wording of claim 1 as it stands, the base station does not even detect whether the wireless terminal is in the "sleep state". Hence, the distinguishing features F3 and F7 are associated with distinct partial objective problems and represent a mere juxtaposition of features

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which are not functionally interdependent and do not produce any surprising synergistic effect going beyond the sum of their individual effects. This means in turn that the contribution of those features to an inventive step can be assessed separately, i.e. on the merits of each distinguishing feature per se.

3.1.3 In particular, as regards the second distinguishing feature F7, document D13 explicitly mentions in page 4, line 14 the use of the IEEE 802.11 network technology. The 802.11 specification (see BP2, page 129, section 11.2.1.1) explains that:

"A STA may be in one of two different power states:

- Awake: STA is fully powered.
- Doze: STA is not able to transmit or receive and consumes very low power."

Hence, the skilled person tasked with implementing the teaching of D13 in accordance with the 802.11 specification would have introduced the use of the doze (i.e. "sleep") mode at the wireless terminal for the purpose of reducing its energy consumption, thereby arriving at the addition of feature F7 without the involvement of any inventive skills. Consequently, the reception of connection signals by the base station according to feature F2 would necessarily mean that the wireless terminal is in the awake (i.e. "active") mode, since it cannot transmit any signals while being in the doze mode.

3.1.4 Appellant I explained that, according to Figs. 8 to 10 and paragraphs [0021] to [0023] of the present application as filed, a "serviced" wireless terminal could be either in a "active" or in a "sleep" mode.

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Appellant I further submitted that feature F7, taken in conjunction with features F2 and F3, defined an inactivity timer at the base station being incremented upon a check of the state of the serviced wireless terminals. The inactivity timer was incremented if no wireless terminals were in an "active state". Thus, the check was performed with regard to the "active state" which was to be distinguished from at least one further state, namely the "sleep state". As a result, feature F7 clarified that the base station actively determined the state of the wireless terminals being serviced by it in order to check whether to transition into the transmit standby mode. In addition, the "sleep mode" of the base station (AP) as envisaged by the teaching of D13 was incompatible with the "power-save (PS) mode" as foreseen by the IEEE 802.11 specification, because the STAs operating in accordance with the 802.11 specification required a certain transmit behaviour of the AP, namely periodic transmission of beacons. However, entering the "sleep mode" by the AP according to D13 would necessarily stop the transmission of beacons by this AP.

3.1.5 This is not convincing. The introduction of feature F7 into claim 1 does not automatically result in the base station being able to determine that a wireless terminal is in the "sleep mode" (see point 3.1.2 above). In fact, claim 1 is only concerned with the transition to a transmit standby mode if no wireless terminals are in an active state for a predetermined amount of time; it does not require the base station to be aware of which wireless terminals are switched off or operate in the sleep state in its cell.

As to the alleged incompatibility of the system of D13 with the "PS mode" as foreseen by the IEEE 802.11

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specification, BP2 explains on page 128, section 11.2.1, that "... STAs operating in PS modes shall periodically listen for beacons ...". The skilled person following the explicit teaching of D13 would have no difficulty in modifying the wireless terminal so as to send an alert signal if needed, instead of merely listening (see D13, page 7, lines 29-31: "In an embodiment variant, when in need of a network connection, the mobile network unit transmits an alert signal only if it does not receive any recognition signal from a base station ...").

- 3.2 It follows that the second auxiliary request is likewise not allowable under Articles 52(1) and 56 EPC.
- 4. THIRD AUXILIARY REQUEST

Claim 1 of the **third auxiliary request** differs from claim 1 of the main request essentially in that it further specifies that (board's underlining)

- F8 the base station transmits <u>synchronisation signals</u> at a first rate in an active mode of operation;
- F9 the base station transmits, in the transmit standby mode of operation, synchronisation signals at at least one of a <u>lower rate</u> than the first rate and at a <u>lower power level</u> than the synchronisation signals transmitted in the active mode.
- 4.1 Claim 1 Inventive step in view of D13
- 4.1.1 Document **D13** further discloses added feature F8, i.e. that the base station transmits synchronisation signals at a first rate in an active mode (see page 13, lines 10-12: "... the base station in normal transmitting and receiving mode transmits beacon

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signals periodically 11 ...").

- 4.1.2 Although the board has some sympathy with the argument of appellant II that no transmission of synchronisation (such as beacon signals) also corresponded to a "lower rate than the first rate" within the meaning of feature F9, the board eventually follows appellant I's interpretation that a data rate of zero would be at odds with "transmitting" synchronisation signals, as required by this feature. Hence, D13 fails to directly and unambiguously disclose feature F9 since the base station according to D13 either transmits regularly synchronisation messages or does not transmit them at all.
- 4.1.3 The subject-matter of present claim 1 thus differs from **D13** in distinguishing features F3 and F9.
- 4.1.4 As regards the technical effect of feature F9, appellant I argued at the oral proceedings before the board that this feature enabled an improved support of wireless terminals when the base station was in the transmit standby mode, whilst avoiding delays when resuming connectivity, maintaining synchronisation and allowing wireless terminals to be paged.
- 4.1.5 In that regard, the board first notes that distinguishing features F3 and F9 do not synergistically interact with each other, since the former is related to the implementation of the timer for switching between the two modes of the base station whereas the latter is related to the definition of the base station's "active mode" and the "standby mode". Hence, distinguishing features F3 and F9 are associated with distinct partial objective problems and represent a mere juxtaposition of features which are not

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functionally interdependent. Hence, their contributions to inventive step can be assessed individually.

- 4.1.6 The board holds that distinguishing feature F9 brings about the technical effect that the <u>base station</u> may further reduce its energy consumption in the "transmit standby mode" whilst maintaining connectivity. As to the argument that this feature contributed to avoiding delays when resuming connectivity, the board notes that in the absence of any further information about the typical frequency of and latencies between connectivity transition periods, such an effect cannot be accepted.
- 4.1.7 In D13, the base station in sleep mode stops sending beacons and, consequently, it must keep its receiver constantly switched on and wait for alert messages from the mobile terminals in order to transition to the normal (active) mode. By sending synchronisation signals at a lower rate or at a lower power level, it is possible to reduce the overall power consumption while being in sleep mode and still maintain connectivity with the mobile terminals, so as to transition to the active mode if any mobile terminal is active.
- 4.1.8 The person skilled in the field of wireless networks would have been aware that there is an apparent trade-off between power consumption and connectivity. In D13, the base station with the receiver being constantly switched on while in transmit standby mode can receive signals from mobile terminals at any time in an asynchronous manner, but this design decision is typically made at the expense of a higher energy consumption. On the other hand, if a base station sends synchronisation signals at a known rate and there are no active terminals, it is possible to switch on both

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transceiver and receiver only during the connectivity windows triggered by the synchronisation signals. Power consumption can then be further limited while being in sleep mode by reducing the frequency of such signals, their power level or both. However, in this case, the transition to the active (normal) mode will not be immediate and mobile stations located further away from the base station might not receive those synchronisation signals, i.e. connectivity will diminish. The skilled person starting out from D13 and making use of customary engineering skills would readily consider favouring one aspect of the trade-off over the other in accordance with the specific design objectives. Consequently, the addition of feature F9 does not involve an inventive step within the meaning of Article 56 EPC either.

- 4.1.9 Appellant I argued that the skilled person, starting out from D13, would find no motivation to include this feature into the system of D13. D13 aimed at reducing mobile radio radiation due to interference, security and health concerns. The only solution the skilled person could possible envisage would be to increase the timer so as to remain, for longer periods, in the normal mode of operation. Furthermore, since D13 related to WLAN technology, there was no need to page the wireless terminals, because data was buffered at the base station in any case, as explained on page 129, section 11.2.1.2 of BP2.
- 4.1.10 The board is not convinced. Remaining for longer periods in the normal mode of operation in order to improve connectivity, as suggested by appellant I, would equally increase the overall amount of radiation and power consumption. Therefore, the board is satisfied that the addition of feature F9 constitutes

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an equally valid approach starting out from D13 and keeping in mind that compromises will have to be made between power consumption and radiation, on the one hand, and connectivity on the other hand.

As to the enablement of paging signals, the board notes that claim 1 does not mention "paging signals", but rather "synchronization signals", i.e. beacon signals and/or pilot signals (see e.g. Fig. 11 and paragraph [00100] of the underlying application as filed).

- 4.2 The third auxiliary request is thus likewise not allowable under Articles 52(1) and 56 EPC.
- 5. FOURTH AUXILIARY REQUEST

Claim 1 of the **fourth auxiliary request** differs from claim 1 of the third auxiliary request solely in that feature F9 comprises only one option, namely the "lower rate" (see point VI above).

- 5.1 Claim 1 Inventive step
- 5.1.1 Claim 1 of the fourth auxiliary request corresponds to the second option of feature F9. The reasoning set out in point 4.1 above for the third auxiliary request therefore applies *mutatis mutandis* to present claim 1.
- 5.1.2 Appellant I further argued that reducing the rate of synchronisation signals while being in transmit standby mode would be even less obvious than reducing their power level.
- 5.1.3 The board disagrees. The skilled person would have been well aware of the fact that the overall power

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consumption and radiation caused by the transmission of synchronisation signals is given not only by their signal power level, but also by their transmission rate.

- 5.2 Hence, the fourth auxiliary request is not allowable under Articles 52(1) and 56 EPC either.
- 6. Since there are no allowable claim requests, the patent must be revoked.

Order

For these reasons it is decided that:

- 1. The decision under appeal is set aside.
- 2. The patent is revoked.

The Registrar:

The Chair:



C. Rodríguez Rodríguez

K. Bengi-Akyürek

Decision electronically authenticated