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Datasheet for the decision of 5 June 2024

Case Number: T 1290/23 - 3.5.05

Application Number: 16784026.3

Publication Number: 3286857

IPC: H04J3/00, H04J3/24, H04B7/0452, H04W74/08

Language of the proceedings: EN

Title of invention:
Preamble and payload for high efficiency (HE) transmission

Patent Proprietor:
Atlas Global Technologies LLC

Opponents:
Dilg, Andreas ("opponent 1")
Acer Computer GmbH ("opponent 2" until 29 January 2024)
ASUS Computer GmbH ("opponent 3" until 17 April 2024)
TP-Link Corporation Limited ("opponent 4")
HP Inc. ("opponent 5" until 22 May 2024)
Dell Inc. ("opponent 6" until 26 January 2024)

Headword:
Trigger frames/ATLAS

Relevant legal provisions:
EPC Art. 100(b)

Keyword:
Sufficiency of disclosure - (no): no enablement of the use of a post-published IEEE standard

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Beschwerdekammern

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Case Number: T 1290/23 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 5 June 2024

Appellant: (Opponent 1)	Dilg, Andreas Dilg, Haeusler, Schindelmann Patentanwaltsgesellschaft mbH Leonrodtrs. 58 80636 München (DE)
Representative:	Dilg, Haeusler, Schindelmann Patentanwaltsgesellschaft mbH Leonrodstraße 58 80636 München (DE)
Respondent: (Patent Proprietor)	Atlas Global Technologies LLC Suite 101, 4413 Spicewood Springs Road Austin, TX 78759 (US)
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Party as of right: (Opponent 4)	TP-Link Corporation Limited Suite 901, New East Ocean Centre 9 Science Museum Road Tsim Sha Tsui Hong Kong SAR (HK)
Representative:	Richter, Stefan Clifford Chance PartG mbB Königsallee 59 40215 Düsseldorf (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 8 May 2023 rejecting the opposition filed against European patent No. 3286857 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chair	K. Bengi-Akyürek
Members:	J. Eraso Helguera
	F. Bostedt

Summary of Facts and Submissions

I. The appeal was filed by opponent 1 (appellant) against the decision of the opposition division to reject the opposition under Article 101(2) EPC.

II. Subsequently, opponents 2 to 6 filed respective notices of intervention. Then, opponents 2, 3, 5 and 6 withdrew their respective interventions. Opponent 4 is a party as of right in the present appeal proceedings.

III. The appealed decision mentioned *inter alia* the following document:

D5: Stacey R. et al.: "Proposed TGax draft specification", IEEE 802.11-16/0024r1, March 2016.

IV. Oral proceedings before the board were held on 5 June 2024.

- The appellant and opponent 4 ("opponents" henceforth) requested that the decision under appeal be set aside and that the patent be revoked.

- The respondent (patent proprietor) requested that the appeal be dismissed.

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

V. **Claim 1 as granted** reads as follows:

"An access point, AP, for facilitating multi-user communication in a wireless network (100) operating in compliance with Institute of Electrical and Electronics

Engineers Standard 802.11ax, the access point, AP, comprising:

one or more memories (240); and
one or more processors (210, 211, 212, 213, 215, 280, 290) coupled to the one or more memories (240), the one or more processors (210, 211 , 212, 213, 215, 280, 290) configured to cause:

generating a trigger frame (710), wherein the trigger frame (710) is used to allocate resource for an uplink multi-user, UL MU, transmission and to solicit an uplink multi-user, UL MU, transmission from the participating stations in response to the trigger frame (710), the trigger frame comprising a first content and a second content, wherein the first content is associated with a legacy signal, L-SIG, field of an uplink frame, and the second content is associated with a high efficiency signal-A, HE-SIG-A, field of the uplink frame;
providing the trigger frame (710) for transmission;
receiving the uplink frame (720, 730, 740, 750) in response to the trigger frame (710), the uplink frame (720, 730, 740, 750) comprising the L-SIG field and the HE-SIG-A field, wherein a length, e.g. in microseconds, in the L-SIG field of the uplink frame (720, 730, 740, 750) is based on the trigger frame (710), and wherein a time duration in the HE-SIG-A field of the uplink frame (720, 730, 740, 750) is based on the trigger frame (710), wherein the second content is information associated with a transmission opportunity, TXOP, duration; and

providing the uplink frame (720, 730, 740, 750) for processing."

Reasons for the Decision

1. THE PATENT AS GRANTED

Claim 1 as granted comprises the following limiting features (respondent's outline):

1 An access point, AP, for facilitating multi-user communication in a wireless network operating in compliance with IEEE Standard 802.11ax, the AP comprising:

2 one or more memories and one or more processors coupled to the one or more memories, the one or more processors configured to cause:

3.1 generating a trigger frame,
3.1.1 the trigger frame is used to allocate resources for an uplink multi-user (UL MU), transmission and to solicit an UL MU transmission from the participating stations (STAs), in response to the trigger frame,
3.1.2 the trigger frame comprising a first content and a second content,
3.1.2.1 the first content is associated with a legacy signal (L-SIG) field of an uplink frame,
3.1.2.2 the second content is associated with a high efficiency signal-A (HE-SIG-A) field of the uplink frame;

3.2 providing the trigger frame for transmission;

3.3 receiving the uplink frame in response to the trigger frame,

3.3.1 the uplink frame comprising the L-SIG field and the HE-SIG-A field,

3.3.1.1 a length in the L-SIG field of the uplink frame is based on the content of the trigger frame,

3.3.1.2 a time duration in the HE-SIG-A field of the uplink frame is based on the content of the trigger frame,

3.1.2.3 the second content is information associated with a transmission opportunity (TXOP) duration;

3.4 providing the uplink frame for processing.

1.1 Sufficiency of disclosure (Article 100(b) EPC)

1.1.1 The opponents objected that the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

In particular, opponent 1 did not deny that document **D5** (i.e. a pre-version of the Draft D0.1 of the IEEE Standard 802.11ax) was available online at the opposed patent's filing date. However, D5 (Draft D0.1) included several TBD ("To Be Defined") statements. This showed that numerous features of the IEEE Standard 802.11ax had not been defined at the time of its publication. All subsequent drafts of the same standard (D1.0 to D8.0) had been published *after* the filing date. These documents were not publicly available - they did not exist - at the opposed patent's filing date. Thus, a skilled person could not have implemented a "trigger frame" and an "uplink frame" *compliant with the IEEE*

Standard 802.11ax, because a significant number of parameters of said frames were not defined at that time. In view of the missing fields in the "trigger frame", a skilled person could thus not have caused any equipment to send a "trigger frame" compliant with the IEEE Standard 802.11ax on the basis of D5. Moreover, the "uplink frame" depended on the trigger frame. For this reason, the skilled person could not cause any equipment such as a mobile station (STA) to generate and send such an "uplink frame" compliant with the IEEE Standard 802.11ax on the basis of D5.

1.2 The respondent submitted that the reference to the "IEEE Standard 802.11ax" in claim 1 only defined the technical context of the "AP" according to claim 1, i.e. the invention underlying the patent, by specifying in which type of wireless network the multi-user communication should be provided by the claimed "AP". The examining division required such reference, to meet a clarity objection, during the examination proceedings that led to the granted patent. Rather, claim 1 was not directed to an "AP" *in compliance with* IEEE Standard 802.11ax. Claim 1 was not even directed to an AP for facilitating multi-user communication *in compliance with* IEEE Standard 802.11ax. Only the wireless network in which the AP facilitates multi-user communication should be operating in compliance with IEEE Standard 802.11ax. And such network should also be backwards-compatible with preceding standards, such as "IEEE Standard 802.11ac", also known as the Very High Throughput (VHT) standard. Whether or not the AP of claim 1 complied with IEEE Standard 802.11ax was not defined by claim 1. Only the preamble of claim 1 referred to IEEE Standard 802.11ax. The rest of the features of claim 1 did not contain such a reference. Consequently, claim 1 did not require that the "trigger

frame", the "uplink frame", the "HE-SIG-A field", or the "L-SIG field" complied with IEEE Standard 802.11ax. Those elements had been addressed in the patent specification at a rather abstract level. Yet, the skilled person would have had no difficulty in figuring out *at least one* operational AP on the basis of the patent specification - in particular paragraphs [0009], [0069] to [0071], [0076] to [0093] and Figs. 6, 7, 8, and 9 - and of the skilled person's common general knowledge available at the patent's date of filing, e.g. the IEEE Standard 802.11ac:

- The skilled person was certainly able to generate a "trigger frame" and provide it for transmission. For instance, paragraph [0060] and Fig. 6 of the patent showed a frame format which could indeed be used both for downlink and uplink.

- Similarly, they were able to implement the features relating to the "uplink frame", in particular since these features did not require that the uplink frame was constructed in compliance with the specifications of IEEE Standard 802.11ax. A PPDU comprising an "L-SIG field" and an "HE-SIG-A field", such as the claimed "uplink frame", was described in sufficient detail in Fig. 6 of the patent.

Such an AP would still "facilitat[e] multi-user communication in a wireless network operating in compliance with IEEE Standard 802.11ax", as required by claim 1. In other words, the AP could coexist in the wireless network with other devices operating in accordance with IEEE Standard 802.11ax, without the need to be itself compliant with IEEE Standard 802.11ax. Moreover, the skilled person would have been

able to implement the claimed "AP" using document D5. Only the uplink multi-user communication had to be implemented, not the entire network. Moreover, the gaps in D5 could be easily filled. For instance, Table 26-17 of D5 showed the HE fields in the "HE-SIG-A" for an HE trigger-based PPDU. The number of bits for many of those fields, such as "Format", "BSS Color", "CRC" and "Field" were already set. The remaining ones - "Spatial Reuse", "TXOP Duration", "Bandwidth" and "Reserved" - could easily be defined without undue burden. Again, the resulting implementation needed not to be compliant with any (future) IEEE Standard 802.11ax.

1.3 The board is not persuaded by these arguments:

1.3.1 The question at stake is whether the opposed patent discloses the "invention" in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The patent concerns an "AP" and an "STA" communicating with each other as well as respective methods. For the case at hand, the board based the discussion under Article 100(b) EPC on the following requirement:

> Was the skilled person able to carry out an operational AP **in at least one way** on the basis of the **patent specification** and of their **common general knowledge** available at the patent's date of filing without **undue burden** and without the need of **inventive skill**?

If the question is answered in the negative, the ground for opposition under Article 100(b) EPC prejudices the maintenance of the granted patent. Only if the answer to this question is affirmative, the opponents'

arguments relating to "the whole area claimed" or "the entire breadth of the claim" become relevant.

(a) Construction of the features of the "invention" as defined in claim 1

1.3.2 The board is not convinced that the reference to "IEEE Standard 802.11ax" made in claim 1 should be decoupled from the remaining features in the manner suggested by the respondent. As indicated by the opponents, the "AP" is a key element of the "wireless network". It cannot "facilitate multi-user communication" without being "in compliance with IEEE Standard 802.11ax". Nor is compliance with the earlier IEEE Standard 802.11ac sufficient to satisfy this requirement. For, as far as the proposed uplink multi-user communication is concerned, neither the "trigger frame" nor the "HE-SIG-A field" in the "uplink frame" are backwards-compatible. Thus, an AP "for facilitating multi-user communication in a wireless network operating in compliance with IEEE Standard 802.11ax" should at the very least operate in conformity with the known principles - however broad - defined for the upcoming IEEE Standard 802.11ax, at the latest, by the patent's date of filing.

(b) Sources of information for implementation purposes

(i) The patent specification

1.3.3 The patent specification acknowledges that, in "IEEE 802.11ax", an STA sends a UL MU physical layer convergence procedure (PLCP) protocol data unit (PPDU), i.e. UL MU PPDU, as a response to a "trigger frame" sent by an AP. Against this background, it proposes "a new design for a SIG-A field in UL MU PPDUs" (see

paragraph [0010]). Since, in some cases, the AP already knows the content of the "L-SIG" and the "HE-SIG-A" fields of the UL MU PPDUs, prior to receiving the UL MU PPDUs from the "STA", the patent recognises that it may be redundant to include this information into the *valuable* preamble portion of the UL MU PPDUs. Thus, an STA may generate its "uplink frame" having the "L-SIG field" and the "HE-SIG-A field", where the uplink frame's L-SIG field is provided based on the L-SIG information contained in the "trigger frame", and the uplink frame's HE-SIG-A field is generated based on the SIG-A information contained in the "trigger frame" (see paragraph [0078]). More specifically, both a "length" in the "L-SIG field" and a "time duration" in the "HE-SIG-A field" are based on the associated "trigger frame" (see paragraphs [0083] and [0094] as well as feature group 3 of claim 1).

1.3.4 Still, the text of the opposed patent does not include a self-contained specification of the "IEEE Standard 802.11ax" or, for that matter, of any other standard. Rather, it incorporates by reference two different standards, without a specific version number, as indicated in paragraph [0010], last two sentences:

> "One or more aspects of the present disclosure provide a new design for a SIG-A field in UL MU PPDUs. The SIG-A field may include modifications and/or additions to the SIG-A field of the very high throughput (VHT) WLAN utilized in the IEEE 802.11ac standard, which is incorporated herein in its entirety."

and the third bullet point of paragraph [0095]:

"Example of a third approach: Reuse Compressed MAC (CMAC) in IEEE 802.11ah, which is incorporated herein in its entirety."

Moreover, it contains further references to "the IEEE 802.11a, b, g, n, and ac specifications" (see paragraph [0081]), and to "IEEE 802.11ah draft v6.0" (see paragraphs [0125] and [0126]).

(ii) Common technical knowledge available

1.3.5 The board has examined neither the validity of the priority claim nor the opposed patent's effective date of filing under Article 89 EPC. In the respondent's favour, and for the sake of argument, the board considers that the skilled person could have consulted:

- all the available information about preceding standards, such as "IEEE Standard 802.11ac" and earlier, including final versions, drafts and contributions, as well as

- all the available information at the patent's filing date which could illustrate the state of development of "IEEE Standard 802.11ax", including drafts and contributions - in particular **D5** - made in the relevant working groups.

(c) Implementation strategies

1.3.6 On the one hand, as suggested by the respondent, the skilled person willing to implement the invention could have tried to combine the IEEE Standard 802.11ac - and possibly IEEE Standard 802.11ah - with the modifications proposed in the patent specification. All the same, there was no "trigger frame" in any of the

IEEE Standards 802.11ac, 802.11ah or earlier. This concept was first introduced with IEEE Standard 802.11ax (see for instance page 17, lines 17 and 18 of D5, where section 9.3.1.23 is preceded by the phrase "*Insert a new subclause after 9.3.1.22*:"). That means that the skilled person would have had to develop not only "UL MU PPDUs" modified in accordance with the opposed patent but also at least a minimum operational specification as to the new "trigger frame". Yet, the patent scarcely gives a general overview (see Fig. 7 and paragraphs [0069] to [0071]) with some details about a portion of the "trigger frame 710" (see Fig. 7 and paragraph [0076]). Besides, although the opposed patent repeatedly mentions the "HE-SIG-A field" (see paragraph [0063] and Fig. 6), which appeared for the first time in IEEE Standard 802.11ax, it does not specify its structure.

Hence, the board is not convinced that the skilled person would succeed in their endeavour to put into practice the claimed invention simply by resorting to the preceding standards and the information provided in the patent specification.

1.3.7 On the other hand, the skilled person could have tried to combine the teachings of D5 and the patent specification. Document D5 indeed introduces the "trigger frame" and the "HE-SIG-A field" in section 9.3.1.23. Nonetheless, the board agrees with the appellant (see point 4.2.2 of its statement of grounds of appeal) that it would have been unrealistic for the skilled person to fill the numerous "TBD" gaps in the teaching of D5 so as to achieve an operational "AP" using nothing but common technical knowledge and without undue burden. As indicated above, the patent specification falls short of details about both the

"trigger frame" and the "HE-SIG-A field". The technical decisions concerning the number of fields and sub-fields and their respective lengths indicated as "TBD" in the trigger frame of Fig. 9-51a and in the "HE-SIG-A field" of Table 26-17 on page 85 go well beyond an arbitrary selection of values. Every choice might have unforeseen effects in the functioning of the "AP", both with *new* and *legacy* stations. This is one of the reasons why the development of a technical standard takes many rounds of discussions and refinements.

The board concedes that the implementation of an operational AP for "facilitating multi-user communication in a wireless network" operating in compliance with D5 would not necessarily require anticipating exactly the same frame structures and fields defined in future versions of IEEE Standard 802.11x. This is because, as opponent 4 correctly indicated, those features are subject to changes from version to version. But the gaps in the teaching of D5 are not small details that could be finalised using arbitrary choices or straightforward analogies with preceding versions. On the contrary, the skilled person would be expected to develop on one's own an operational AP on the basis of a very early and incomplete specification. The board considers that this endeavour cannot succeed without undue burden.

1.4 It follows that the ground for opposition under Article 100(b) EPC prejudices the maintenance of the opposed patent.

2. Since there is no allowable claim request on file, 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:

B. Brückner K. Bengi-Akyürek

Decision electronically authenticated