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**Datasheet for the decision
of 16 July 2025**

Case Number: T 1275/23 - 3.5.05

Application Number: 18855978.5

Publication Number: 3687241

IPC: H04W72/04, H04L5/00, H04W74/08

Language of the proceedings: EN

Title of invention:
Resource selection method and apparatus under multiple carriers, computer device and storage medium

Applicant:
Datang Mobile Communications Equipment Co., Ltd.

Headword:
Resource selection under multiple carriers/DATANG

Relevant legal provisions:
EPC Art. 56
RPBA 2020 Art. 12(8)

Keyword:
Decision in written proceedings - (yes): cancellation of hearing following appellant's announcement of non-attendance
Inventive step - (no): obvious combination of known features



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Case Number: T 1275/23 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 16 July 2025

Appellant: Datang Mobile Communications Equipment Co., Ltd.
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 21 April 2023
refusing European patent application
No. 18855978.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

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

Summary of Facts and Submissions

- I. The appellant lodged an appeal against the decision of the examining division to refuse the present European patent application for, *inter alia*, lack of inventive step (Article 56 EPC) with respect to a sole claim request.
- II. The appealed decision referred, *inter alia*, to the following prior-art documents:
- D1:** CATT: "Discussion on carrier aggregation for mode 4 in V2X Phase 2", R1-1712339, 3GPP TSG RAN WG1 Meeting #90, Prague (CZ), 21-25 August 2017,
- D8:** TS 36.321 V14.3.0 (2017-06).
- III. With its statement of grounds of appeal, the appellant requested that the appealed decision be set aside and that a patent be granted on the basis of the claims of the sole claim request on which the appealed decision is based.
- IV. In a communication pursuant to Article 15(1) RPBA, the board indicated its negative preliminary opinion on the allowability of the sole claim request and introduced the following prior-art document under Article 114(1) EPC (board's numbering):
- D11:** Chen S. et al.: "Vehicle-to-Everything (v2x) Services Supported by LTE-Based Systems and 5G", IEEE Communication Standards Magazine, Volume 1, Issue 2, pages 70-76, 25 July 2017.

V. In response to that communication, the appellant filed a new set of claims (**new claim request**), and submitted further arguments on inventive step. By another letter, the appellant informed the board that it would not be attending the arranged oral proceedings.

VI. The board subsequently cancelled those oral proceedings (cf. Article 12(8) RPBA).

VII. Claim 1 of the **new claim request** reads as follows:

"A resource selection method under multiple carriers, comprising:

determining (301) at least one candidate carrier according to a resource occupation exclusion result on each carrier;

setting (302) resources on a determined candidate carrier to be available, carrying out a resource exclusion procedure on the resources according to a sensing result to obtain an available resource set; and

selecting (303) transmission resources from the available resource set, and setting a Semi-Persistent Schedule, SPS, counter for resource scheduling;

wherein the setting the SPS counter used for resource scheduling comprises: randomly selecting a same SPS counter in a configured SPS counter range to serve as the SPS counter of service packets for current resource selection."

Reasons for the Decision

1. NEW CLAIM REQUEST

1.1 Claim 1 of the **new claim request** comprises the following limiting features (board's labelling):

A resource selection method under multiple carriers, comprising:

- (a) determining at least one candidate carrier according to a resource occupation exclusion result on each carrier;
- (b) setting resources on a determined candidate carrier to be available, carrying out a resource exclusion procedure on the resources according to a sensing result to obtain an available resource set;
- (c) selecting transmission resources from the available resource set,
- (d) setting an SPS counter for resource scheduling; wherein the setting the SPS counter used for resource scheduling comprises: randomly selecting a same SPS counter in a configured SPS counter range to serve as the SPS counter of service packets for current resource selection.

1.2 Present claim 1 differs from claim 1 of the claim request underlying the decision under appeal in the following amendment to feature (d):

"[...] ~~the~~ a same SPS counter in a configured SPS counter range [...]".

1.3 However, the board's preliminary opinion on inventive step already considered the use of "one and the same SPS counter" and the following reasoning applies equally to both claim requests.

1.4 *Claim 1 - inventive step (Article 56 EPC)*

1.4.1 Document **D1** relates to carrier aggregation (CA) in a "V2X" system, just like the present application. Specifically, D1 makes proposals for the introduction

of CA into the known "mode 4" as supported in "Rel-14 V2X". Using the wording of claim 1, D1 discloses:

A resource selection method under multiple carriers, comprising:

- (a) determining at least one candidate carrier according to a resource occupation exclusion result on each carrier (*section 3.2, Proposal 2, page 4: "Step 1: For a MAC PDU corresponding to the packet, UE selects a subset of the carriers for actual transmission(s) within the carrier set determined in step 0 [...] Option 2: Carrier selection based on the occupied resource exclusion according to PSSCH-RSRP."*);
- (b) setting resources on a determined candidate carrier to be available, carrying out a resource exclusion procedure on the resources according to a sensing result to obtain an available resource set (*section 3.2, Proposal 2, page 4: "Step 2: UE performs the resource reservation and sensing based resource exclusion on the carriers selected in the step 1"*);
- (c) selecting transmission resources from the available resource set (*section 3.2, Proposal 2, page 4: "Step 3: UE ranks the S-RSSI and selects the transmission resources"*).

1.4.2 The board agrees with the appellant that the subject-matter of claim 1 differs from the disclosure of document D1 in **feature (d)**.

1.4.3 The appellant submitted that **feature (d)**, as described in paragraph [0036] of the original description, achieved the following technical effect: when a situation of power distribution while multiple carriers were simultaneously transmitting the service was

considered, due to resource selection which aimed at a plurality of service packets being simultaneously transmitted, the same "SPS counter" (i.e. "a same one SPS counter") was arranged to guarantee that the "resource reselection opportunities" of the multiple service packets were kept consistent. Therefore, amended claim 1 could solve the problem mentioned in paragraph [0036] of the original description, i.e. "power distribution is serious since a plurality of service packets are simultaneously transmitted".

1.4.4 In view of this, the board formulates the objective technical problem as being "how to keep the resource reselection opportunities consistent in the system of D1".

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

In the context of "mode 4" in Rel-14 V2X, the use of a (randomly-set) SPS counter for resource allocation constituted "conventional technical means" (see e.g. section 5.14.1.1 of **D8** and pages 74 and 75 of **D11**). The latter document provides a survey of the "up-to-date standardization of LTE V2X in 3GPP" by July 2017. This corresponds to the "existing LTE-V2X" of Fig. 1 and paragraphs [0003] to [0005] of the "Background" section of the application. In particular, document D11 discloses the following at page 74, right-hand column (emphasis added):

"[...] Because of the periodic and predictable size of attributes of V2X services, semi-persistent scheduling (SPS) can be supported as a resource allocation mechanism in Mode 3 and Mode 4. Based on

the periodic resource reservation of SPS, sensing transmissions of other UEs can avoid collisions and thus can be efficient to improve system performance.

The detailed mechanisms of sensing and SPS resource allocation are presented in Fig. 4. UEs should continue the sensing of the transmissions from other UEs in each receiving subframe in a 1000 ms sliding sensing window. If the resource selection or reselection is triggered, the UE will select the available resources in the resource selection window. The upper edge of the resource selection window is restricted by the current payload latency, and the lower edge of the resource selection window is determined by the process delay based on the UE's implementation. According to the occupancy state of the resources detected in the sensing window, if a UE selects the available resources in the resource selection window at $(n + d)$ subframe, the same frequency resource of $(n + d + \text{SPS period})$ will be reserved by the SA transmitted in $(n + d)$.

When resource selection/reselection is triggered, the SPS counter value is uniformly randomly selected between proposed ranges. After every transmission of traffic packets, the value of the SPS counter decreases by one. When the SPS counter meets the expiration condition, the current resources will be kept with probability p and reset the SPS counter, or the reselection is triggered with probability $(1 - p)$."

In summary, in the context of the single-carrier "mode4" of Rel-14 V2X, **feature (d)** constituted a commonplace measure at the relevant date. With this same background, section 3.2 ("Resource selection

enhancements") of D1 proposes the reuse of the "current resource selection mechanism" when introducing CA in "mode 4" of "V2X". However, D1 does not explain how the SPS mechanism of "mode 4" should be set once the transmission resources on the candidate carriers are selected. Therefore, in the board's view, the skilled person seeking to "keep the resource reselection opportunities consistent in D1" would have readily followed the explicit hint of "considering all the resource pools on the selected candidate carriers as a combination". Thus, randomly setting one and the same "SPS counter" for resource scheduling of the - combined - selected candidate carriers would have been the preferable option for the skilled person in that scenario. Consequently, by selecting that option, they would have readily arrived at the subject-matter of claim 1 without the need of inventive skills.

1.4.6 In response to the board's preliminary opinion, the appellant further submitted that D11 failed to teach selecting "a same SPS counter in a configured SPS counter range to serve as the SPS counter of service packets for current resource selection". Thus, it was non-obvious for a person skilled in the art to obtain the solution of claim 1 of the present application by applying the teaching of D11 to the system of D1.

1.4.7 This argument does not sway the board either. There is no need for D11 to disclose "a same SPS counter" because, as explained above, document D1 already prompts the skilled person to consider all the resource pools in combination. Thus, when combining the teaching of D1 with the "SPS counter" known from D11, this would necessarily translate into the use of "one and the same SPS counter" to perform resource reselection, since,

according to D1, the "resource" is to be understood as the combination of "resource pools".

- 1.5 It follows that the new claim request is not allowable under Article 56 EPC. The above reasoning also applies to the sole claim request underlying the appealed decision.
2. Since there is no allowable claim request on file, 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