



US010517133B2

(12) **United States Patent**
Teyeb et al.

(10) **Patent No.:** **US 10,517,133 B2**

(45) **Date of Patent:** **Dec. 24, 2019**

- (54) **METHODS AND UE FOR RESUMING A CONNECTION WITH FULL CONFIGURATION**
- (71) Applicant: **TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)**, Stockholm (SE)
- (72) Inventors: **Oumer Teyeb**, Solna (SE); **Gunnar Mildh**, Sollentuna (SE)
- (73) Assignee: **Telefonaktiebolaget LM Ericsson (publ)**, Stockholm (SE)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/380,844**

(22) Filed: **Apr. 10, 2019**

(65) **Prior Publication Data**

US 2019/0254102 A1 Aug. 15, 2019

Related U.S. Application Data

(63) Continuation of application No. PCT/IB2019/050836, filed on Feb. 1, 2019.

(60) Provisional application No. 62/631,467, filed on Feb. 15, 2018.

(51) **Int. Cl.**
H04W 76/19 (2018.01)

(52) **U.S. Cl.**
CPC **H04W 76/19** (2018.02)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 2013/0039339 A1* 2/2013 Rayavarapu H04W 76/19 370/331
- 2013/0260740 A1* 10/2013 Rayavarapu H04W 76/27 455/422.1
- 2013/0260810 A1* 10/2013 Rayavarapu H04W 76/19 455/509
- 2013/0260811 A1* 10/2013 Rayavarapu H04W 76/19 455/509
- 2015/0117286 A1* 4/2015 Kim H04W 52/0216 370/311
- 2015/0131540 A1* 5/2015 Koo H04W 76/14 370/329

(Continued)

OTHER PUBLICATIONS

3GPP TS 36.331 V15.0.1 (Jan. 2018), 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification (Release 15), pp. 1-776.

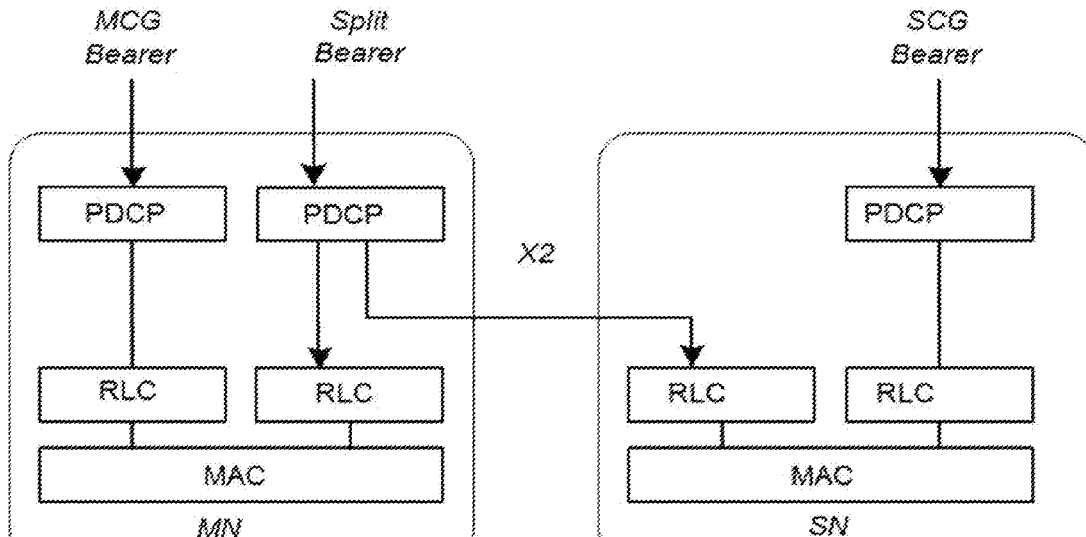
(Continued)

Primary Examiner — Otis L Thompson, Jr.

(57) **ABSTRACT**

A wireless device for resuming a connection in a communication network. The wireless device comprises a communication interface; and one or more processing circuits communicatively connected to the communication interface, the one or more processing circuits comprising at least one processor and memory, the memory containing instructions that, when executed, cause the at least one processor to: send to a network node a request to resume a connection in a communication network; receive a resume response message from the network node, the message comprising an indication to perform a full configuration; and apply the full configuration.

20 Claims, 17 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

| | | | | | |
|--------------|-----|---------|-----------|-------|-----------------------|
| 2015/0181461 | A1* | 6/2015 | Kim | ..... | H04W 74/08 370/236 |
| 2017/0188269 | A1* | 6/2017 | Sunel | ..... | H04W 8/22 |
| 2017/0311206 | A1* | 10/2017 | Ryoo | ..... | H04W 24/08 |
| 2018/0049255 | A1* | 2/2018 | Chen | ..... | H04W 76/12 |
| 2018/0091968 | A1* | 3/2018 | Ly | ..... | H04L 43/16 |
| 2018/0213452 | A1* | 7/2018 | Kim | ..... | H04W 36/0033 |
| 2018/0234941 | A1* | 8/2018 | Kim | ..... | H04W 68/005 |
| 2018/0270741 | A1* | 9/2018 | Enomoto | ..... | H04W 36/12 |
| 2018/0279204 | A1* | 9/2018 | Kim | ..... | H04W 48/02 |
| 2018/0359149 | A1* | 12/2018 | Shaheen | ..... | H04L 5/0092 |
| 2019/0037635 | A1* | 1/2019 | Guo | ..... | H04W 76/27 |
| 2019/0053102 | A1* | 2/2019 | Oohira | ..... | H04W 8/06 |
| 2019/0053199 | A1* | 2/2019 | Fujishiro | ..... | H04W 72/04 |
| 2019/0124572 | A1* | 4/2019 | Park | ..... | H04W 76/27 |
| 2019/0215800 | A1* | 7/2019 | Fujishiro | ..... | H04W 8/08 |
| 2019/0215887 | A1* | 7/2019 | Burbidge | ..... | H04W 48/14 |
| 2019/0254074 | A1* | 8/2019 | Jeon | ..... | H04W 36/0069 |

OTHER PUBLICATIONS

Ericsson, Offline#22 LTE re-establishment and resume while using NR PDCP, 3GPP TSG-RAN WG2 Meeting #100, Reno, US, Nov. 27-Dec. 1, 2017, pp. 1-12.

* cited by examiner

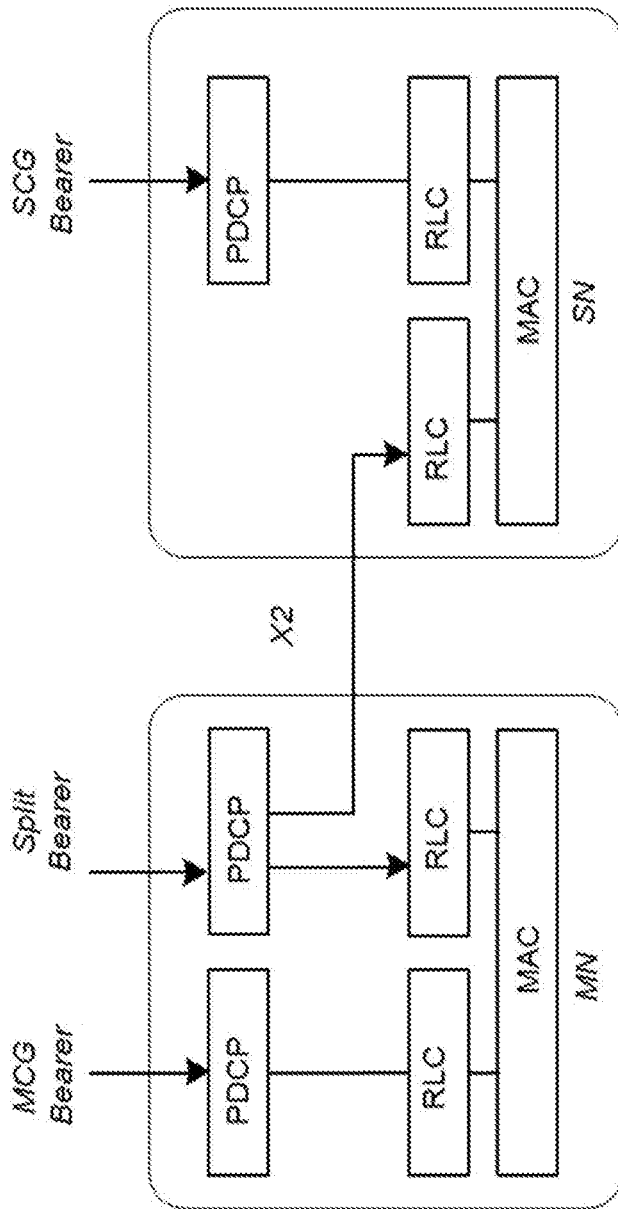


Figure 1

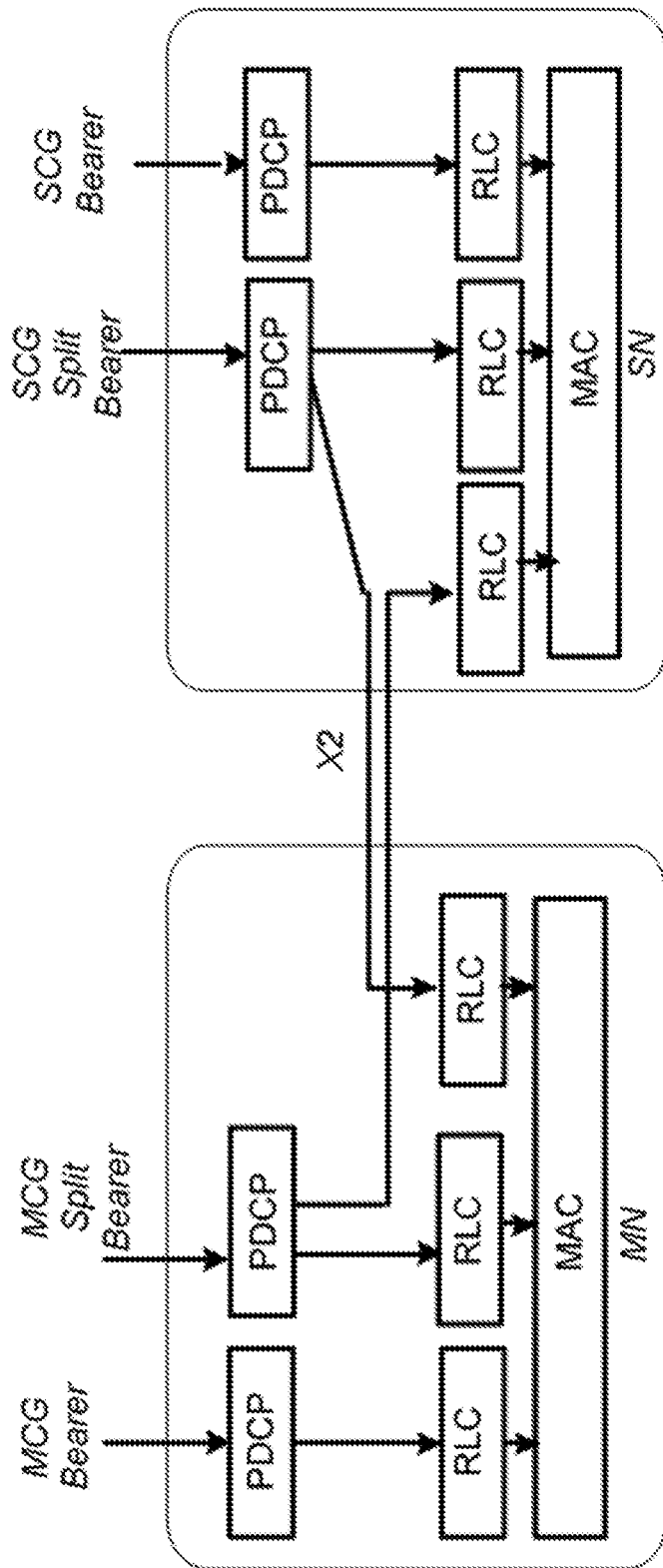


Figure 2

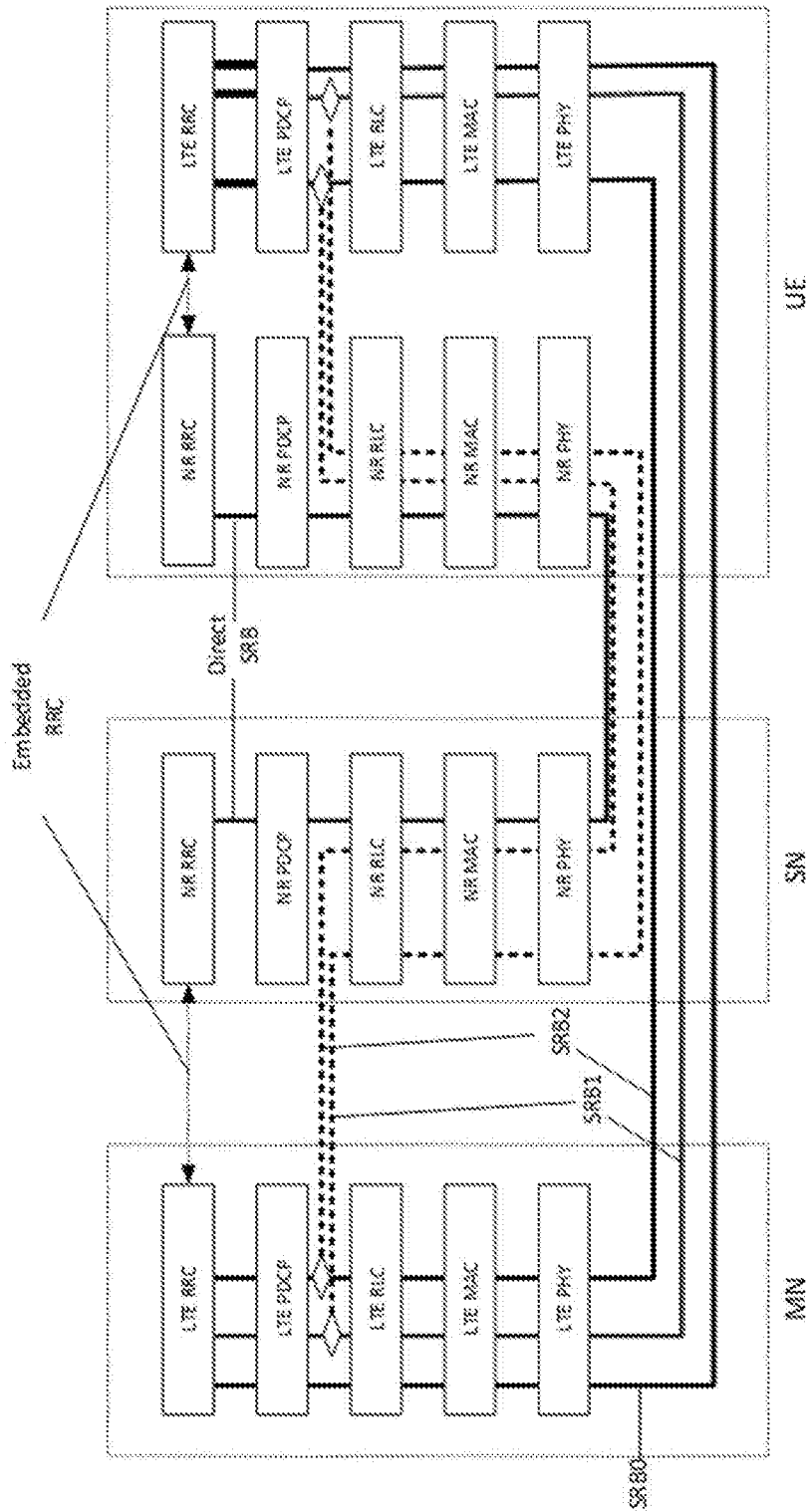


Figure 3

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.