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EXAMINER
HARLEY, JASON A

ART UNIT	PAPER NUMBER
2468	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 14/782,783	Applicant(s) KOC ET AL.	
	Examiner JASON HARLEY	Art Unit 2468	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/6/15*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-23* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-23* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *10/6/15* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *10/12/16*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 12, 18, are rejected under 35 U.S.C. 101 because the claimed invention is directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more. Claim(s) 1, 12, 18 are directed receive a buffer overflow message, from a serving gateway (S-GW), indicating a potential overflow at an S-GW buffer when downlink information that is stored at the S-GW buffer exceeds a predetermined threshold. The claim(s) do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the additional computer elements, which are recited at a high level of generality, provide conventional computer functions that do not add meaningful limits to practicing the abstract idea.

Claims 1, 12, 18 recites, in part receive a buffer overflow message, from a serving gateway (S-GW), indicating a potential overflow at an S-GW buffer when downlink information that is stored at the S-GW buffer exceeds a predetermined threshold; select one or more UEs from the plurality of UEs according to predefined criteria; and modify the DRX configurations of

the one or more UEs in order to reduce the downlink information that is stored at the S-GW buffer, thereby reducing the potential for overflow at the S-GW buffer. These steps describe the concept of acquiring delay measurement information which corresponds to concepts identified as abstract ideas by the courts, such as intermediate settlement in Alice, antennas in Mackay. All of these concepts relate to abstract ideas the concepts described in claim 1 is not meaningfully different than those economic concepts found by the courts to be abstract ideas. As such the description in claim 1 of determining delay measurements.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained through the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-4, 6-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Hsiao et al. (U.S. Pub No. 2013/0223309 A1) in view of Maeda et al. (U.S. Pub No. 2009/0180414 A1).

Claim 1, Hsiao show the node having computer circuitry configured to: receive a buffer overflow message, from a serving gateway (S-GW), indicating a potential overflow at an S-GW buffer when downlink information that is stored at the S-GW buffer exceeds a predetermined threshold [par 0031, 0036, *If the information carried in the downlink traffic indication message is (I) the non-having downlink data packet information, then step 607 is executed to determine whether a temporary storage time in which the buffer temporarily stores the uplink data packet exceeds a threshold. If the answer is "no", then step 601 is executed again to enable the buffer to keep temporarily storing the uplink data packet. In this embodiment, unexpected problems can be prevented from occurring when the buffer 131 cannot temporarily store too many packets. On the other hand, the threshold of the temporary storage time may further be set according to the requirements of a user instead of being set according to the formula 1. For example, without considering the total size of uplink data packets 14 that can be stored by the buffer 131, the threshold may be set to be 10 minutes, 30 minutes*]; select one or more UEs from the plurality of UEs according to predefined criteria; and modify the DRX configurations of the one or more UEs in order to reduce the downlink information that is stored at the S-GW buffer, thereby reducing the potential for overflow at the S-GW buffer [par 0036, *If the answer is "yes", then step 609 is executed to enable the transceiver to transmit the uplink data packet to the base station. If the information carried in the downlink traffic indication message is (II) the having*

downlink data packet information, then step 611 is executed to enable the transceiver to receive a downlink data packet from the base station. Then, step 609 is executed to enable the transceiver to transmit the uplink data packet to the base station]. Hsiao fails to show a node operable to control discontinuous reception (DRX) configurations for a plurality of user equipments (UEs). In analogous art Maeda teaches a node operable to control discontinuous reception (DRX) configurations for a plurality of user equipments (UEs) [fig 1, par 0574, 0584, 0585, *the base station transmits the DRX cycle information by using an L1/L2 control signal which the base station transmits for the first time after receiving the Ack signal transmitted from the mobile terminal via the uplink, The base station which has received the Nack signal from the mobile terminal transmits downlink retransmission data. However, the base station does not transmit the DRX cycle information together with the downlink retransmission data. In contrast, when receiving the downlink data from the base station and getting a reception result indicating a success of the reception, the mobile terminal*].

At the time the invention was filed it would have been obvious to one of ordinary skill in the art to combine the teachings of Hsiao and Maeda because an advantage of being able to efficiently achieve low power consumption in the mobile terminal.

Claim 2, Hsiao and Maeda teach the computer circuitry of claim 1, wherein the downlink information is stored at the S-GW buffer until the UEs awake from a low power mode during a discontinuous reception (DRX) sleep cycle [Hsiao, par 0010, *The mobile station stays in a sleep mode, and comprises a buffer, a transceiver and a processor. The buffer is configured to temporarily store an uplink data packet. The transceiver is configured to receive a downlink*

traffic indication message during at least one listening interval. The processor is electrically connected to the transceiver and the buffer, and configured to determine that the downlink traffic indication message carries non-having downlink data packet information to make the buffer continue to temporarily store the uplink data packet so that the mobile station continuously stays in the sleep mode].

Claim 3, Hsiao and Maeda define the computer circuitry of claim 1, further configured to receive the buffer overflow message from the S-GW via a mobility management entity (MME) [Hsiao, par 0009, *the mobile station in a sleep mode keeps temporarily storing an uplink data packet according to the information carried in a downlink traffic indication message from a base station, and this can extend the period of time in which the mobile station stays in the sleep mode so as to achieve the purpose of power saving*].

Claim 4, Hsiao and Maeda disclose the computer circuitry of claim 1, further configured to modify the DRX configurations of the one or more UEs by reducing a DRX sleep cycle length of the one or more UEs [Hsiao, par 0031, *On the other hand, the threshold of the temporary storage time may further be set according to the requirements of a user instead of being set according to the formula 1. For example, without considering the total size of uplink data packets 14 that can be stored by the buffer 131, the threshold may be set to be 10 minutes, 30 minutes or any time value that meets the requirement of non-real-time services*].

Claim 6, Hsiao and Maeda illustrates the computer circuitry of claim 1, Hsiao fail to show further configured to modify the DRX configurations of the one or more UEs that are in a connected mode.

In an analogous art Maeda show further configured to modify the DRX configurations of the one or more UEs that are in a connected mode [par 0009, 0011, *The state 1 of FIG. 13 is called "Idle", "LTE_Idle", "RRC_Idle", "NAS_Idle", or the like, and a mobile terminal placed in the state 1 of FIG. 13 performs a receiving operation in a DRX cycle which is set up by NAS (Non-Access Stratum) (i.e., in a cycle different from the DRX cycle of a DRX/DTX operation period during Active (the state 2-B of FIG. 13)). The state 2-B of FIG. 13 is called "Dormant", "MAC_Dormant", "DRX/DTX period (DRX/DTX period)", "DRX/DTX period during Active", "DRX/DTX period during Connected", or the like, and, in this state, an operation for achieving low power consumption in a mobile terminal during Active is carried out*].

At the time the invention was filed it would have been obvious to one of ordinary skill in the art to combine the teachings of Hsiao and Maeda because an advantage of being able to efficiently achieve low power consumption in the mobile terminal.

Claim 7, Hsiao and Maeda create the computer circuitry of claim 1, Hsiao fail to show further configured to modify a DRX sleep cycle length of the one or more UEs when the UEs transition from the idle mode to the connected mode.

In an analogous Maeda show further configured to modify a DRX sleep cycle length of the one or more UEs when the UEs transition from the idle mode to the connected mode [par 0386, 0387, *The control unit 23 of the mobile terminal 3 judges whether to cause the state of the*

mobile terminal 3 to make a transition to a DRX/DTX operation period during Active. When, in the process of step ST1, the judgment result of the DTX judging unit 19 shows that the mobile terminal can make a transition to a DTX operation period during Active, and the protocol processing unit 11 acquires the control data (the judgment result) of the base station 2 indicating that the mobile terminal can make a transition to a DRX operation period during Active, the control unit 23 of the mobile terminal 3 judges to cause the state of the mobile terminal 3 to make a transition to a DRX/DTX operation period during Active].

At the time the invention was filed it would have been obvious to one of ordinary skill in the art to combine the teachings of Hsiao and Maeda because an advantage of being able to efficiently achieve low power consumption in the mobile terminal.

Claim 8, Hsiao and Maeda reveal the computer circuitry of claim 1, further configured to prevent the one or more UEs from entering a low power mode during a DRX sleep cycle in response to receiving the buffer overflow message from the S-GW [Hsiao, par 0030, *After the processor 135 determines that the temporary storage time in which the buffer 131 temporarily stores the uplink data packet 14 reaches the threshold, the processor 135 enables the mobile station 13 to leave the sleep mode and enables the transceiver 133 to transmit the uplink data packet 14 to the base station 11*].

Claim 9, Hsiao and Maeda define the computer circuitry of claim 1, further configured to modify DRX sleep cycle lengths of the plurality of UEs in response to receiving multiple buffer overflow messages from the S-GW [Hsiao, par 0031, *In other words, by taking the total size of*

uplink data packets 14 that can be stored by the buffer 131 into consideration in this embodiment, unexpected problems can be prevented from occurring when the buffer 131 cannot temporarily store too many packets. On the other hand, the threshold of the temporary storage time may further be set according to the requirements of a user instead of being set according to the formula 1. For example, without considering the total size of uplink

Claim 10, Hsiao and Maeda describe the computer circuitry of claim 1, Hsiao fail to show further configured to reconfigure DRX sleep cycle lengths of the one or more UEs to a previous DRX configuration in response to receiving an indication from the S-GW that the potential for overflow at the S-GW buffer has ended.

In an analogous art Maeda show further configured to reconfigure DRX sleep cycle lengths of the one or more UEs to a previous DRX configuration in response to receiving an indication from the S-GW that the potential for overflow at the S-GW buffer has ended [par 0579, *the DRX cycle information is included in the L1/L2 control signal, a DRX cycle (B) is updated and the base station makes a transition to a DRX operation. In contrast, in a case in which the DRX cycle information is not included in the L1/L2 control signal, an immediately preceding DRX cycle can be applied as previously determined*].

At the time the invention was filed it would have been obvious to one of ordinary skill in the art to combine the teachings of Hsiao and Maeda because an advantage of being able to efficiently achieve low power consumption in the mobile terminal.

Claim 11, Hsiao and Maeda teach the computer circuitry of claim 1, wherein the node is selected from a group consisting of a base station (BS), a Node B (NB), an evolved Node B (eNB), a baseband unit (BBU), a remote radio head (RRH), a remote radio equipment (RRE), or a remote radio unit (RRU) [Hsiao, abstract, *The wireless communication system comprises a base station and the mobile station. The mobile station stays in a sleep mode*].

Hsiao fail to show group consisting of a Node B (NB), an evolved Node B (eNB), a baseband unit (BBU), a remote radio head (RRH), a remote radio equipment (RRE), or a remote radio unit (RRU) [par 0166, 0167, 0195, *Each base station 2 is called NodeB, E-UTRAN NodeB (E-NodeB, eNB), or the like. Each mobile terminal 3 carries out radio communications with a base station 2. in which the control unit 23 temporarily stops the supply of the electric power to the transmission processing units and the receiving processing units is shown, though, instead of the control unit, the protocol processing unit*]

At the time the invention was filed it would have been obvious to one of ordinary skill in the art to combine the teachings of Hsiao and Maeda because an advantage of being able to efficiently achieve low power consumption in the mobile terminal.

Claim 12, Claim 12 is a claim to a gateway to carry out the node of claim 1. Therefore claim 12 is rejected under the same rationale set forth in claim 1 [A Third Generation Partnership Project (3GPP) Hsiao, par 0024].

Claim 13, Claim 13 is a claim to a gateway to carry out the node of claim 4. Therefore claim 13 is rejected under the same rationale set forth in claim 4.

Claim 14, Claim 14 is a claim to a gateway to carry out the node of claim 6. Therefore claim 14 is rejected under the same rationale set forth in claim 6.

Claim 15, Claim 15 is a claim to a gateway to carry out the node of claim 3. Therefore claim 15 is rejected under the same rationale set forth in claim 3.

Claim 16, Hsiao and Maeda determine the computer circuitry of claim 12, wherein the plurality of UEs include machine type communication (MTC) devices [Hsiao, abstract, *The wireless communication system comprises a base station and the mobile station*]

Claim 17, Hsiao and Maeda creates the computer circuitry of claim 12, wherein the plurality of UEs include an antenna, a touch sensitive display screen, a speaker, a microphone, a graphics processor, an application processor, internal memory, or a non-volatile memory port [Hsiao, fig 1, par 0005, *the operating time of portable mobile stations (e.g., apparatuses with mobile communication functionality such as mobile phones, personal digital assistants (PDAs), notebook computers, and flat panel computers)*] .

4. Claims 5, 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Hsiao et al. (U.S. Pub No. 2013/0223309 A1) in view of Maeda et al. (U.S. Pub No. 2009/0180414 A1) in further view of Donthi et al. (U.S. Pub No. 2014/0161007 A1).

Claim 5, Hsiao and Maeda creates the computer circuitry of claim 1, Hsiao and Maeda fail to show further configured to select the one or more UEs based on the predefined criteria of a highest data rate or a longest DRX sleep cycle length in comparison to the plurality of UEs.

In an analogous art Donthi show further configured to select the one or more UEs based on the predefined criteria of a highest data rate or a longest DRX sleep cycle length in comparison to the plurality of UEs [par 0035, *an example representation of a UE-chosen DRX cycle length 300 selected by a UE, e.g., UE 112, that is longer than the DRX cycle length 310 broadcast by an eNB, e.g., eNB 114a*].

At the time the invention was filed it would have been obvious to one of ordinary skill in the art to combine the teachings of Hsiao, Maeda, and Donthi because this provides selectively initiating a tracking area update (TAU) to update a discontinuous reception (DRX) cycle length parameter.

Claim 18, Hsiao defines a method for reducing buffer overflow at a Third Generation Partnership Project (3GPP) Serving Gateway (S-GW), the method comprising: receiving a buffer overflow message, at an evolved node B (eNB) from the S-GW indicating potential overflow of downlink information at a S-GW buffer [par 0024, 0031, 0036, *If the information carried in the downlink traffic indication message is (I) the non-having downlink data packet information, then step 607 is executed to determine whether a temporary storage time in which the buffer temporarily stores the uplink data packet exceeds a threshold. If the answer is "no", then step 601 is executed again to enable the buffer to keep temporarily storing the uplink data packet. In this embodiment, unexpected problems can be prevented from occurring when the buffer 131 cannot temporarily*

store too many packets. On the other hand, the threshold of the temporary storage time may further be set according to the requirements of a user instead of being set according to the formula 1. For example, without considering the total size of uplink data packets 14 that can be stored by the buffer 131, the threshold may be set to be 10 minutes, 30 minutes], wherein the downlink information is stored at the S-GW buffer until a of user equipment (UE) awake from a low power mode during a discontinuous reception (DRX) sleep cycle[Hsiao, par 0030, *After the processor 135 determines that the temporary storage time in which the buffer 131 temporarily stores the uplink data packet 14 reaches the threshold, the processor 135 enables the mobile station 13 to leave the sleep mode and enables the transceiver 133 to transmit the uplink data packet 14 to the base station 11*];and modifying the DRX configurations of the one or more UEs in order to reduce the downlink information that is stored at the S-GW buffer, thereby reducing the potential for overflow at the S-GW buffer [Hsiao, par 0031, *On the other hand, the threshold of the temporary storage time may further be set according to the requirements of a user instead of being set according to the formula 1. For example, without considering the total size of uplink data packets 14 that can be stored by the buffer 131, the threshold may be set to be 10 minutes, 30 minutes or any time value that meets the requirement of non-real-time services*].

Hsiao fail to show a plurality of user equipments (UEs), and selecting one or more UEs from the plurality of UEs according to predefined criteria, wherein the one or more UEs are in a connected mode;

In an analogous art Maeda show a plurality of user equipments (UEs) [par 0014, *The RAN 110 may support radio communications for UEs (such as UE 112) within its coverage area. The RAN 110 may be referred to as an Evolved Universal Terrestrial Radio Access Network (E-*

UTRAN), as it may employ evolved universal mobile telecommunications system (UMTS) terrestrial radio access (E-UTRA) radio technology to communicate with one or more UEs over an air interface], and selecting one or more UEs from the plurality of UEs according to predefined criteria, wherein the one or more UEs are in a connected mode[par 0035, *an example representation of a UE-chosen DRX cycle length 300 selected by a UE, e.g., UE 112, that is longer than the DRX cycle length 310 broadcast by an eNB, e.g., eNB 114a*].

At the time the invention was filed it would have been obvious to one of ordinary skill in the art to combine the teachings of Hsiao and Donthi because this provides selectively initiating a tracking area update (TAU) to update a discontinuous reception (DRX) cycle length parameter.

Claim 19, Hsiao and Donthi provide the method of claim 18, further comprising receiving the buffer overflow message from the S-GW when the downlink information that is stored at the S-GW buffer exceeds a predetermined threshold [par 0037, *Then, step 605 is executed to determine that information carried in the downlink traffic indication message is (I) a non-having downlink data packet information or (II) a having downlink data packet information. If the information carried in the downlink traffic indication message is (I) the non-having downlink data packet information, then step 607 is executed to determine whether a temporary storage time in which the buffer temporarily stores the uplink data packet exceeds a threshold. If the answer is "yes", then step 609 is executed to enable the transceiver to transmit the uplink data packet to the base station*].

Claim 20, Claim 20 is a claim to a method to carry out the node of claim 3. Therefore claim 20 is rejected under the same rationale set forth in claim 3.

Claim 21, Claim 21 is a claim to a method to carry out the node of claim 5. Therefore claim 21 is rejected under the same rationale set forth in claim 5.

Claim 22, Claim 22 is a claim to a method to carry out the node of claim 4. Therefore claim 22 is rejected under the same rationale set forth in claim 4.

Claim 23, Claim 23 is a claim to a method to carry out the node of claim 8. Therefore claim 23 is rejected under the same rationale set forth in claim 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON HARLEY whose telephone number is (571)270-5435. The examiner can normally be reached on Monday- Friday 7:00 am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Asad Nawaz can be reached on (571)272-3988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JASON HARLEY/
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