



**ORAL ARGUMENT FOR PATENT OWNER'S
REVISED NON-CONTINGENT MOTION TO AMEND
IPR2024-00402
(U.S. PATENT NO. 10,841,958)**

Before Administrative Patent Judges

- Christopher L. Ogden
- Russell E. Cass
- Mary C. Hoffman

IPR2024-00402 – Current Status

(12) United States Patent Ishii

(10) Patent No.: US 10,841,958 B2
(45) Date of Patent: *Nov. 17, 2020

(54) ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL, AND A METHOD FOR A WIRELESS TERMINAL

(71) Applicants: SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)

(72) Inventor: Atsushi Ishii, Vancouver, WA (US)

(73) Assignees: SHARP KABUSHIKI KAISHA, Sakai (JP); FG Innovation Company Limited, Tuen Mun (HK)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.

(21) Appl. No.: 16/597,325

(22) Filed: Oct. 9, 2019

(65) Prior Publication Data
US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823. (Continued)

(51) Int. Cl.
H04W 74/08 (2009.01)
H04W 48/70 (2009.01)
(Continued)

(52) U.S. Cl.
CPC H04W 74/0833 (2013.01); H04W 48/70 (2013.01); H04W 48/12 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

(58) Field of Classification Search
CPC H04W 48/10; H04W 72/005; H04W 4/06; H04W 48/12; H04W 72/042; H04W 74/0833
See application file for complete search history.

(56) References Cited
U.S. PATENT DOCUMENTS
8,379,567 B2* 2/2013 Cho H04W 48/12 370/326
8,538,444 B2 9/2013 Lee et al. (Continued)
FOREIGN PATENT DOCUMENTS
JP 2 816 741 A2 12/2014
WO WO 2008/04664 A1 4/2008 (Continued)
OTHER PUBLICATIONS
Notice of Allowance dated Apr. 19, 2019 in U.S. Appl. No. 15/658,980. (Continued)
Primary Examiner — Dung Hong
(74) Attorney, Agent, or Firm — ScienBiziP, P.C.

(57) ABSTRACT
Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

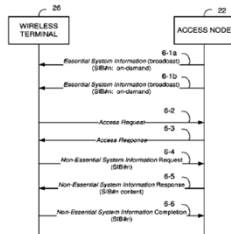


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Issues to Decide:

- Whether Revised Substitute Claims are Broadening
- Whether Revised Substitute Claims comply with § 112
- Whether Revised Substitute Claims are novel / non-obvious over Lee or Lee and Agiwal

Issues Already Decided:

- Validity of Original Claims
 - Surrendered by Patent Owner for Non-Contingent Motion to Amend

McKool Smith

PD3.2

Petitioners' Exhibit 1012, p.2
AT&T, et al. v. Daingean
IPR2024-00402

IPR2024-00402 – Procedural History - Petition

Petition (Paper 2) Challenges Claims 1-4 Based on Lee (Ground 1) and Brismar (Ground 2)

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC., NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.
Petitioners,

v.

DAINGEON TECHNOLOGIES LTD.,
Patent Owner.

Case No. IPR2024-00402
U.S. Patent No. 10,841,958

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,841,958

US 2019/0158988 A1

(19) United States
(12) Patent Application Publication
(43) Pub. No.: US 2019/0158988 A1
(41) Pub. Date: May 23, 2019

(54) METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM

(71) Applicant: LG ELECTRONICS INC., Seoul (KR)

(72) Inventor: Yongjae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)

(21) Appl. No.: 16386216
(22) PCT Filed: May 10, 2017
(86) PCT No.: PCT/KR2017/004792
(37) Date: Nov. 9, 2018

Publication Classification
(51) Int. Cl. H04W 4/66 (2006.01); H04W 76/27 (2006.01); H04W 68/02 (2006.01); H04W 4/79 (2006.01); H04W 1/16 (2006.01)
(52) U.S. Cl. CPC H04W 4/66 (2013.01); H04W 76/27 (2013.02); H04W 68/02 (2013.01); H04W 4/79 (2013.02); H04W 1/16 (2013.01); H04W 4/62 (2013.01)

ABSTRACT
Provided are a method for a terminal for requesting a system information block (SIB), and an apparatus for supporting the method in a wireless communication system. The method may comprise the steps of: receiving, from a radio access network (RAN), an SIB list comprising one or more SIBs supported by a cell; receiving, from the RAN, SIB broadcast information indicating whether the SIB supported by the cell is broadcast in a broadcast control channel (BCCH) section; detecting an omitted SIB on the basis of the SIB list and SIB broadcast information; and requesting the omitted SIB from the RAN.

Related U.S. Application Data
Provisional application No. 62/334,418, filed on May 10, 2016, provisional application No. 62/373,427, filed on May 10, 2016, provisional application No. 62/384,443, filed on May 10, 2016, provisional application No. 62/366,645, filed on Jul. 26, 2016.

Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

Ex. 1004

US 2015/0382284 A1

(19) United States
(12) Patent Application Publication
(43) Pub. No.: US 2015/0382284 A1
(41) Pub. Date: Dec. 31, 2015

(54) EXTENDED SYSTEM INFORMATION DISTRIBUTION MECHANISMS

(71) Applicant: TELEFONAKTIEBOLAGET L M ERICSSON (PUBL), Stockholm (SE)

(72) Inventors: Sofia BRISMAR, LIDINGO (SE); Julia BECHTHOLD, STOCKHOLM (SE); Lutz LARSON, STOCKHOLM (SE); Johan RING, LIDINGO (SE)

(21) Appl. No.: 14708359
(22) PCT Filed: Jun. 22, 2014
(86) PCT No.: PCT/SE2014/050074
(37) Date: Aug. 17, 2015

Publication Classification
(51) Int. Cl. H04W 4/62 (2006.01); H04W 76/26 (2006.01); H04W 24/00 (2006.01)
(52) U.S. Cl. CPC H04W 4/62 (2013.01); H04W 76/26 (2013.01); H04W 24/00 (2013.01)

ABSTRACT
A disclosed method is implemented by a network node in a wireless communication network for transmitting system information to a plurality of wireless terminals. The network node transmits a first group of system information blocks (SIBs) via a first physical channel, and transmits a second group of additional SIBs via a different, second physical channel. A corresponding network node operation is implemented by a wireless terminal in a wireless communication network. The wireless terminal processes information received from a base station over a first physical channel to identify a first group of SIBs, and processes information received from the base station over a different, second physical channel to identify a second group of additional SIBs. A corresponding wireless terminal operation to implement the method is also disclosed.

Related U.S. Application Data
Provisional application No. 61/760,073, filed on Feb. 25, 2013.

Exhibit 1005
IPR2024-00402
U.S. Patent 10,841,958

Ex. 1005

Jan. 8, 2024

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.3

Petitioners' Exhibit 1012, p.3
AT&T, et al. v. Daingean
IPR2024-00402

IPR2024-00402 – Procedural History - POPR

Paper 10
Filed: April 22, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.,
PETITIONERS,

v.

DAINGEAN TECHNOLOGIES LTD.,
PATENT OWNER.

CASE IPR2024-00402
PATENT 10,841,958

PATENT OWNER'S PRELIMINARY RESPONSE
37 C.F.R. § 42.107

Patent Owner Preliminary Response:

- Ground 1 (Lee) only disputed as to Limitation 1c/3b's "Requirement that Information in a First Type SIB Regarding the Delivery Method for a Second Type SIB Switches from On Demand to By Broadcast"

VI. PETITIONERS' PRIOR ART REFERENCES FAIL TO ANTICIPATE OR RENDER OBVIOUS ALL CLAIMS

A. Lee Fails to Anticipate or Render Obvious All Claims

- Petitioners Fail to Show that Lee Teaches Limitation 1c's Requirement that Information in a First Type SIB Regarding the Delivery Method for a Second Type SIB Switches from On Demand to By Broadcast or That a POSITA Would Be Motivated to Modify Lee to Do So

[1c] upon a change of a second type SIB whose associated information indicated before the change that the second type SIB was provided on-demand, to include in the first type SIB the information associated with the second type SIB indicating that the second type SIB is provided by broadcast;

As explained above (*see supra* Section II.C), during prosecution the patentee amended limitation 1c and clarified that it requires "the method of delivery of the 'associated second type system information blocks' is essentially switched from 'on-demand' to 'by broadcast' according to the change of the 'associated second type system information blocks'" in the first type SIB. Ex. 1007 at 1756.

Paper 10 at 19

Paper 10

Jan. 8, 2024

Apr. 22, 2024

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.4

Petitioners' Exhibit 1012, p.4
AT&T, et al. v. Daingean
IPR2024-00402

IPR2024-00402 – Procedural History - Institution

Trials@uspto.gov
571-272-7822

Paper 12
Entered: July 16, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, and T-MOBILE USA, INC.,
Petitioner,

v.
DAINGEAN TECHNOLOGIES LTD.,
Patent Owner.

IPR2024-00402
Patent 10,841,958 B2

Before CHRISTOPHER L. OGDEN, JOHN R. KENNY, and
MARY C. HOFFMAN, Administrative Patent Judges.

HOFFMAN, Administrative Patent Judge.

DECISION
Granting Institution of Inter Parties Review
35 U.S.C. § 314

(d) Conclusion as to Claim 1

For the above reasons, we determine that Petitioner has shown, sufficiently persuasively at this stage, that Lee anticipates claim 1 and/or renders claim 1 obvious. We therefore determine that Petitioner is reasonably likely to prevail in showing that claim 1 is unpatentable.

2. Claims 2–4

For claims 2–4, Petitioner advances arguments mapping with particularity every claim limitation to disclosures in Lee. Pet. 33–37.

At this stage in the proceeding, Patent Owner does not contest those arguments except to contend that Lee does not disclose limitation [3b] of claim 3. Prelim. Resp. 23. Limitation [3b] includes the same subject matter as limitation [1c]. Ex. 1001, 27:41–46, 28:3–8. For similar reasons as discussed above with respect to limitation [1c], we are sufficiently persuaded at this stage that Lee discloses or suggests limitation [3b].

We therefore determine that Petitioner is reasonably likely to prevail in showing that claims 2–4 are unpatentable.

Institution:

- Lee (Ground 1) found to teach only disputed limitation on then-current record

Paper 12

Paper 12, p. 19



Jan. 8, 2024

Apr. 22, 2024

July 16, 2024

McKool Smith

PD3.5

Petitioners' Exhibit 1012, p.5
AT&T, et al. v. Daingean
IPR2024-00402

Demonstrative Exhibit - Not Evidence

IPR2024-00402 – Procedural History – Claim Surrender and Non-Contingent MTA

Paper 20
Filed: October 8, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

—

BEFORE THE PATENT TRIAL AND APPEAL BOARD

—

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.,
PETITIONERS,

v.

DAINGANE TECHNOLOGIES LTD.,
PATENT OWNER.

—

CASE IPR2024-00402
PATENT 10,841,958

—

PATENT OWNER'S NON-CONTINGENT MOTION TO AMEND¹
37 C.F.R. § 42.121

¹ Per § 42.121(a), Patent Owner conferred with the Board on September 26, 2024, prior to filing this motion. See Order re Conduct of Proceeding (Paper 19).

PATENT OWNER'S NON-CONTINGENT MOTION TO AMEND¹
37 C.F.R. § 42.121

Ref	Limitation
7pre	7. (proposed substitute for claim 1) An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:
7a	processor circuitry configured:
7b	to generate a first type system information block (SIB) comprising information and a value tag <u>associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibilDs and the group has a group identifier</u> , the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB <u>belonging to the group</u> , the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;
7c	upon a change of a second type SIB <u>belonging to the group</u> whose associated information indicated before the change that <u>the group containing</u> the second type SIB was provided on-demand, to include in the first type SIB the information associated with <u>the group containing</u> the second type SIB indicating that <u>the group containing</u> the second type SIB is provided by broadcast;
7d	transmitter circuitry configured to:
7e	transmit the first type SIB;
7f	transmit a message that triggers the wireless terminal to receive the first type SIB, wherein;
7g	whether or not <u>the group containing</u> the second type SIB has changed is determined based on a value tag, associated with <u>the group containing</u> the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to <u>the group containing</u> the second type SIB.

- Groups of 2nd type SIBs added
- Value tag now associated with a group of 2nd type SIBs, not a single SIB

- Determination is now “whether or not the group containing the 2nd type SIB” has changed, not “whether or not the 2nd type SIB”

Paper 20

[illegible]

Jan. 8, 2024

Apr. 22, 2024

July 16, 2024

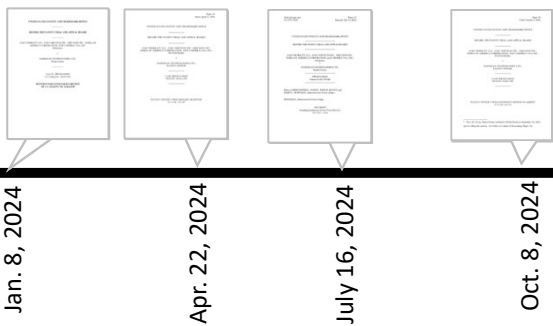
Oct. 8, 2024

IPR2024-00402 – Procedural History – Opposition to Non-Contingent MTA

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD
AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC., NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.
Petitioners,
v.
DAINGEAN TECHNOLOGIES LTD.,
Patent Owner.
Case No. IPR2024-00402
U.S. Patent No. 10,841,958
PETITIONERS' RESPONSE IN OPPOSITION TO PATENT OWNER'S NON-CONTINGENT MOTION TO AMEND 37 C.F.R. § 42.121

Paper 22

Challenge (Basis)	Burden	Summary Argument
Improper Broadening (§ 316(d)(3))	Patent Owner / Movant	Change of determination step from determining 2 nd Type SIB change to group change is broadening
Indefiniteness (§ 112)	Petitioner / Non-Movant	2 nd type SIBs not defined and requirement that group of 2 nd type SIBs have less than all 2 nd type SIBs renders claim indefinite
Anticipation (§ 102)	Petitioner / Non-Movant	Lee teaches all elements of the claim
Obviousness (§ 103)	Petitioner / Non-Movant	Lee or Lee combined with Agiwal render the claims obvious



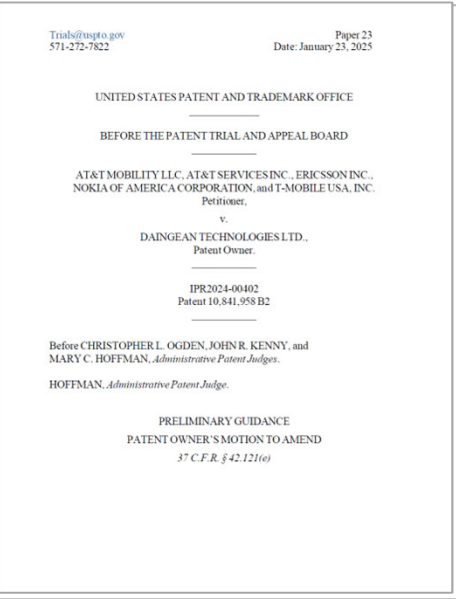
Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.7

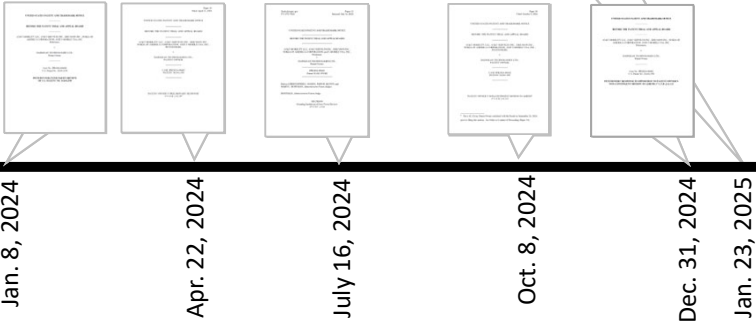
Petitioners' Exhibit 1012, p.7
AT&T, et al. v. Daingean
IPR2024-00402

IPR2024-00402 – Procedural History – Preliminary Guidance



Paper 23

Challenge (Basis)	Burden	Summary Argument	Board's Preliminary Guidance
Improper Broadening (§ 316(d)(3))	Patent Owner / Movant	Change of determination step from determining 2 nd Type SIB change to group change is broadening	Agreed with Petitioner
Indefiniteness (§ 112)	Petitioner / Non-Movant	2 nd type SIBs not defined and requirement that group of 2 nd type SIBs have less than all 2 nd type SIBs renders claim indefinite	Agreed with Petitioner
Anticipation (§ 102)	Petitioner / Non-Movant	Lee teaches all elements of the claim	Not Addressed
Obviousness (§ 103)	Petitioner / Non-Movant	Lee or Lee combined with Agiwal render the claims obvious	Agreed with Petitioner



Demonstrative Exhibit - Not Evidence

McKool Smith

IPR2024-00402 – Procedural History – Revised Non-Contingent MTA

PATENT OWNER'S REVISED NON-CONTINGENT MOTION TO AMEND¹ 37 C.F.R. § 42.121(f)

Paper 24
Filed: February 11, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.,
PETITIONERS,

v.

DAINGEAN TECHNOLOGIES LTD.,
PATENT OWNER.

CASE IPR2024-00402
PATENT 10,841,958

PATENT OWNER'S REVISED NON-CONTINGENT MOTION TO AMEND¹
37 C.F.R. § 42.121(f)

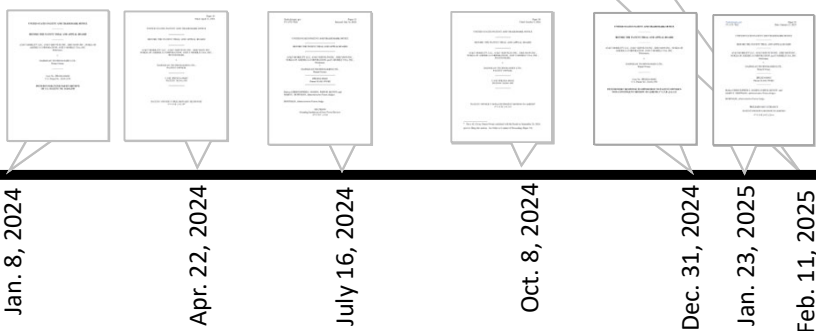
¹ Per § 42.121(a), Patent Owner conferred with the Board on September 26, 2024, prior to filing this motion. See Order re Conduct of Proceeding (Paper 19).

Ref	Limitation
7pre	7. (proposed substitute for claim 1) An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:
7a	processor circuitry configured:
7b	to generate a first type system information block (SIB) comprising information and a value tag <u>associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier</u> , the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB <u>belonging to the group</u> , the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;
7c	upon a change of a second type SIB <u>belonging to the group</u> whose associated information indicated before the change that <u>the group containing</u> the second type SIB was provided on-demand, to include in the first type SIB the information associated with <u>the group containing</u> the second type SIB indicating that <u>the group containing</u> the second type SIB is provided by broadcast;
7d	transmitter circuitry configured to:
7e	transmit the first type SIB;
7f	transmit a message that triggers the wireless terminal to receive the first type SIB, wherein:
7g	whether or not the second type SIB <u>belonging to the group</u> has changed is determined based on a value tag, associated with <u>the group containing</u> the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to <u>the group containing</u> the second type SIB; <u>and</u> <u>[.]</u>
7h	<u>transmit by broadcast after the change the group identifier and the group containing the second type SIB in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.</u>

Unchanged from MTA

- Determination now “whether or not the second type SIB belonging to the group has changed”
- Post-change transmission by broadcast now uses “compressed format” with only changed parameters

Paper 24



Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.9

IPR2024-00402 – Procedural History – Revised Non-Contingent MTA

PATENT OWNER'S REVISED NON-CONTINGENT MOTION TO AMEND¹ 37 C.F.R. § 42.121(f)

Ref	Limitation
7pre	7. (proposed substitute for claim 1) An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:
7a	processor circuitry configured:
7b	to generate a first type system information block (SIB) comprising information and a value tag <u>associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier</u> , the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB <u>belonging to the group</u> , the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;
7c	upon a change of a second type SIB <u>belonging to the group</u> whose associated information indicated before the change that <u>the group containing</u> the second type SIB was provided on-demand, to include in the first type SIB the information associated with <u>the group containing</u> the second type SIB indicating that <u>the group containing</u> the second type SIB is provided by broadcast;
7d	transmitter circuitry configured to:
7e	transmit the first type SIB;
7f	transmit a message that triggers the wireless terminal to receive the first type SIB, wherein:
7g	whether or not the second type SIB <u>belonging to the group</u> has changed is determined based on a value tag, associated with <u>the group containing</u> the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to <u>the group containing</u> the second type SIB; <u>and ([.])</u>
7h	<u>transmit by broadcast after the change the group identifier and the group containing the second type SIB in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.</u>

Arguments Raised:

Claim Construction

- 2nd type SIBs should be construed to be all SIBs that are not 1st type SIBs

Alleged Distinction over Lee / Lee + Agiwal

- Lee or Lee + Agiwal do not teach “the sending of only changed parameters of a group—i.e., a group in compressed format—as defined in the revised claims” as required by 7h/8f
- No other limitations distinguished

Paper 24, pp. 11-14, 16-17

Paper 24
Filed: February 11, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.,
PETITIONERS,

v.

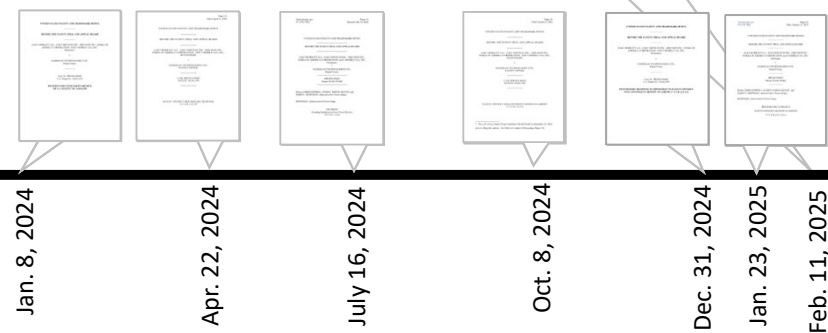
DAINGEAN TECHNOLOGIES LTD.,
PATENT OWNER.

CASE IPR2024-00402
PATENT 10,841,958

PATENT OWNER'S REVISED NON-CONTINGENT MOTION TO AMEND¹
37 C.F.R. § 42.121(f)

¹ Per § 42.121(a), Patent Owner conferred with the Board on September 26, 2024, prior to filing this motion. See Order re Conduct of Proceeding (Paper 19).

Paper 24



Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.10

IPR2024-00402 – Procedural History – Revised Non-Contingent MTA Resp.

Challenge (Basis)	Burden	Summary Argument
Improper Broadening (§ 316(d)(3))	Patent Owner / Movant	- Change of value tag from association with SIB to association with SIB group is broadening - Partial broadcast of SIBs by “compressed format” is broadening
Indefiniteness (§ 112)	Petitioner / Non-Movant	2nd type SIBs not defined and requirement that group of 2nd type SIBs have less than all 2nd type SIBs is indefinite - New partial broadcast renders claims indefinite
Written Description / Enablement (§ 112)	Petitioner / Non-Movant	Newly claimed compressed format broadcast based on comparison of value tags not described or enabled
Anticipation (§ 102)	Petitioner / Non-Movant	Lee teaches all elements of the claim
Obviousness (§ 103)	Petitioner / Non-Movant	Lee or Lee combined with Agiwal render the claims obvious

UNITED STATES PATENT AND TRADEMARK OFFICE
 BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC., NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.,
 Petitioners,

v.

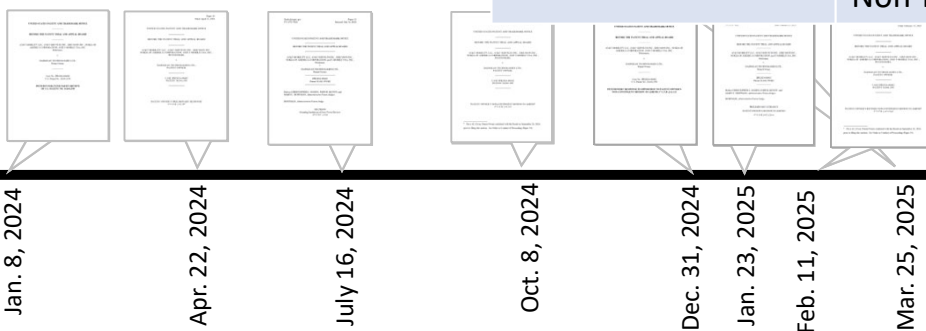
DAINGEAN TECHNOLOGIES LTD.,
 Patent Owner.

Case No. IPR2024-00402
 U.S. Patent No. 10,841,958

PETITIONERS' RESPONSE IN OPPOSITION TO PATENT OWNER'S REVISED NON-CONTINGENT MOTION TO AMEND 37 C.F.R. § 42.121(d)

Mail Stop "PATENT BOARD"
 Patent Trial and Appeal Board
 U.S. Patent and Trademark Office
 P.O. Box 1450
 Alexandria, VA 22313-1450

Paper 26



Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.11

The Revised Substitute Claims Improperly Broaden

Any Broadening is Strictly Prohibited

The requirements for a motion to amend are set out in, among other places, 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. As relevant to this appeal, 35 U.S.C. § 316(d)(3) provides that when a patent owner seeks to amend its claims during an inter partes review, the amended claims "may not enlarge the scope of the claims of the patent." Similarly, 37 C.F.R. § 42.121(a)(2)(ii) explains that "[a] motion to amend may be denied where . . . [t]he amendment seeks to enlarge the scope of the claims." In the similar contexts of claim reissuance and reexamination, which likewise disallow a patent owner from enlarging the scope of its claims, we have explained that a claim "is broader in scope than the original claim[] if it contains within its scope any conceivable apparatus or process which would not have infringed the original patent." *Hockerson-Halberstadt, Inc. v. Converse Inc.*, 183 F.3d 1369, 1374 (Fed. Cir. 1999); see also *id.* at 1373-74 ("In determining whether a patentee broadened a reexamined claim under 35 U.S.C. § 305, this court uses the same test as for reissue claims . . .").

Sisvel Int'l S.A. v. Sierra Wireless, Inc., 81 F.4th 1231, 1237 (Fed. Cir. 2023)

Paper 26 at 1

McKool Smith

PD3.13

Improper Broadening

1. The Revised Substitute Claims improperly broaden by changing the claimed association of the value tag from between the value tag and a SIB to between the value tag and a group of SIBs
2. The Revised Substitute Claims improperly broaden by introducing partial broadcast of changed SIB

'958 Patent – Original Claims

(12) United States Patent Ishii

- (54) ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL AND A METHOD FOR A WIRELESS TERMINAL
- (71) Applicants: SHARP KABUSHIKI KAISHA, Saka (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)
- (72) Inventor: Atsushi Ishii, Vancouver, WA (US)
- (73) Assignees: SHARP KABUSHIKI KAISHA, Saka (JP); FG Innovation Company Limited, Tuen Mun (HK)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.
- (21) Appl. No.: 16/597,325
- (22) Filed: Oct. 9, 2019
- (65) Prior Publication Data
US 2020/0045747 A1 Feb. 6, 2020
- Related U.S. Application Data
- (63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)
- (51) Int. Cl.
H04W 74/08 (2009.01)
H04W 48/70 (2009.01)
(Continued)
- (52) U.S. Cl.
CPC H04W 74/0833 (2013.01); H04W 48/70 (2013.01); H04W 48/72 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

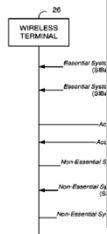


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

- [1pre]. An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:
- [1a] processor circuitry configured:
- [1b] to generate a first type system information block (SIB) comprising information and a value tag, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;
- [1c] upon a change of a second type SIB whose associated information indicated before the change that the second type SIB was provided on-demand, to include in the first type SIB the information associated with the second type SIB indicating that the second type SIB is provided by broadcast;
- [1d] transmitter circuitry configured to:
- [1e] transmit the first type SIB;
- [1f] transmit a message that triggers the wireless terminal to receive the first type SIB, wherein;
- [1g] whether or not the second type SIB has changed is determined based on a value tag, associated with the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the second type SIB.
- [2] The access node of claim 1, wherein the transmitter circuitry is further configured to transmit the second type SIB by broadcast after the change.

Ex. 1001 at 27:28-58.

'958 Patent – Original Claims

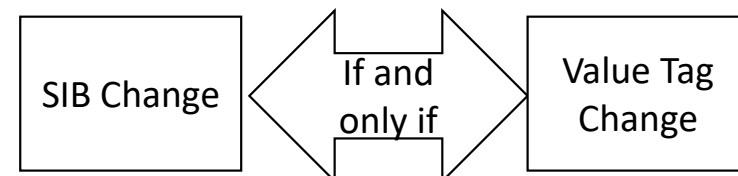
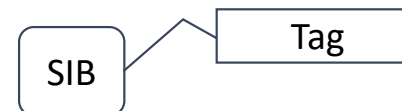
[...]

[1b] to generate a first type system information block (SIB) comprising information and a value tag, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, **the value tag being updated upon a change of a corresponding second type SIB**, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[1c] upon a change of a second type SIB whose associated information indicated before the change that the second type SIB was provided on-demand, to include in the first type SIB the information associated with the second type SIB indicating that the second type SIB is provided by broadcast;

[...]

[1g] **whether or not the second type SIB has changed is determined based on a value tag**, associated with the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the second type SIB.



Paper 26 at 2; Paper 32 at 2-3

'958 Patent – Substitute Claims – Board Guidance

Trials@uspto.gov
571-272-7822

Paper 23
Date: January 23, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, and T-MOBILE USA, INC.
Petitioner,

v.

DAINGEAN TECHNOLOGIES LTD.,
Patent Owner.

IPR2024-00402
Patent 10,841,958 B2

Before CHRISTOPHER L. OGDEN, JOHN R. KENNY, and
MARY C. HOFFMAN, *Administrative Patent Judges*.

HOFFMAN, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND
37 C.F.R. § 42.121(e)

PRELIMINARY GUIDANCE

PATENT OWNER'S MOTION TO AMEND

37 C.F.R. § 42.121(e)

As a preliminary matter of interpreting the original claims, we agree with Petitioner that claims 1 and 3 require that the value tag be associated with a particular second type SIB. Challenged claim 1 requires “upon a change of a second type SIB” (limitation 1c) and “whether or not *the* second type SIB has changed is determined based on a value tag associated with *the* second type SIB” (limitation 1g) (emphasis added). The recitations of “the second type SIB” in limitation 1g refer back to “a second type SIB” in limitation 1c. Thus, “the second type SIB” of limitation 1g relies on limitation 1c for antecedent basis, and “the second type SIB” of limitation 1g must be the same second type SIB that underwent “a change” in limitation 1c. Thus, the determination of limitation 1g must involve the particular second type SIB identified in limitation 1c. Challenged claim 3 recites similar limitations.

Paper 23 at 5

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[7pre]. An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:

[7a] processor circuitry configured:

[7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibilDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[7d] transmitter circuitry configured to:

[7e] transmit the first type SIB;

[7f] transmit a message that triggers the wireless terminal to receive the first type SIB, wherein;

[7g] whether or not ~~[[the group containing]]~~ the second type SIB belonging to the group has changed is determined based on a value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB; and[[.]]

[7h] ~~[[the access node of claim 7, wherein the transmitter circuitry is further configured to]]~~ transmit by broadcast after the change the group identifier and the group containing the second type SIB ~~[[by broadcast after the change]]~~ in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.

Non-Essential System Information Completion (SIBs)

Exhibit 1001
IPR2024-00402
U.S. Patent 10,941,958

Papers 20, 24

McKool Smith

PD3.18

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[...]

[7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

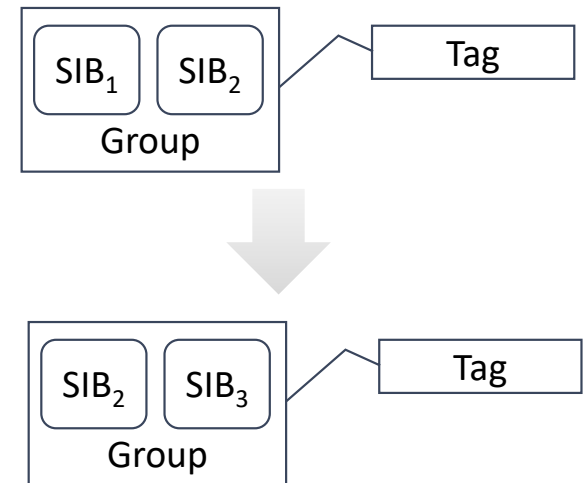
[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[...]

[7g] whether or not ~~[[the group containing]]~~ the second type SIB belonging to the group has changed is determined based on a value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB; and[.]

[...]

EXHIBIT 1001
IPR2024-00402
U.S. Patent 10,841,958



Paper 26 at 2-4; Paper 32 at 2-3

'958 Patent – Substitute Claims – Board Guidance

Trials@uspto.gov
571-272-7822

Paper 23
Date: January 23, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, and T-MOBILE USA, INC.
Petitioner,

v.

DAINGEAN TECHNOLOGIES LTD.,
Patent Owner.

IPR2024-00402
Patent 10,841,958 B2

Before CHRISTOPHER L. OGDEN, JOHN R. KENNY, and
MARY C. HOFFMAN, *Administrative Patent Judges*.

HOFFMAN, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND
37 C.F.R. § 42.121(e)

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND
37 C.F.R. § 42.121(e)

SIB”¹ of the original claims discussed above. Proposed substitute independent claims 7 and 9 introduce the new limitation of “a group of *plural* second type system information blocks” (emphasis added). So, the “group” of claims 7 and 9 includes *at least* the original second type SIB as well as other second type SIBs. Thus, the proposed substitute claims recite a broader relationship between a value tag and a group. For example, proposed substitute claim 7 recites “upon a change of a second type SIB belonging to the group” (limitation 7c) and “whether or not *the group containing the second type SIB* has changed is determined based on a value tag, associated with *the group containing the second type SIB*” (limitation 7g). Thus, unlike claim 1, the particular “second type SIB” of limitation 7c need not change in order to determine that “the group containing the second type SIB has changed” in limitation 7g. All that is required to meet limitation 7g is that the

Paper 23 at 6

Improper Broadening

1. The Revised Substitute Claims improperly broaden by changing the claimed association of the value tag from between the value tag and a SIB to between the value tag and a group of SIBs
2. The Revised Substitute Claims improperly broaden by introducing partial broadcast of changed SIB

'958 Patent – Original Claims

[...]

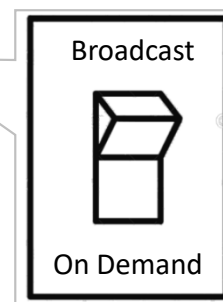
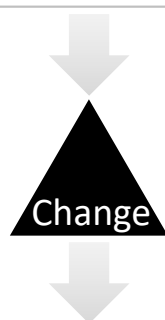
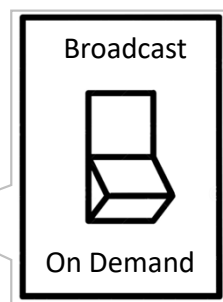
[1b] to generate a first type system information block (SIB) comprising information and a value tag, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[1c] upon a change of a second type SIB whose associated information indicated before the change that the second type SIB was provided on-demand, to include in the first type SIB the information associated with the second type SIB indicating that the second type SIB is provided by broadcast;

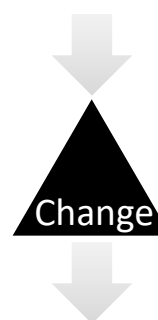
[...]

Non-Essential System Information
(SIBs)

Exhibit 1001
IPR2024-00402
U.S. Patent 10,941,958



SIB (On-Demand, Pre-Change)
Param 1 A
Param 2 B
Param 3 Z



SIB (Post-change broadcast)
Param 1 X (changed)
Param 2 Y (changed)
Param 3 Z

Paper 26 at 4-5; Paper 32 at 3-5

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

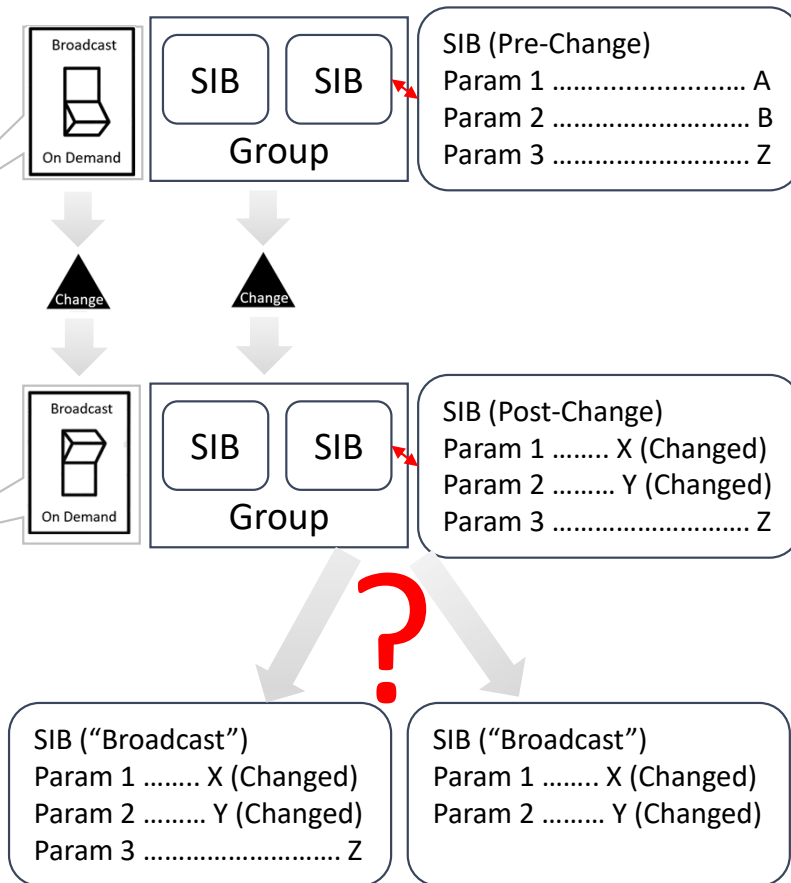
[...]

[7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibilDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[...]

[7h] [[the access node of claim 7, wherein the transmitter circuitry is further configured to]] transmit by broadcast after the change the group identifier and the group containing the second type SIB [[by broadcast after the change]] in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.



Paper 26 at 4-5; Paper 32 at 3-5

The Revised Substitute Claims Are Indefinite

Indefiniteness

1. The Revised Substitute Claims' recitation of "a group of plural second type system information blocks fewer than the total number of second type information blocks" allows the claim scope to be arbitrarily manipulated through the undefined second type SIB term.
2. The Revised Substitute Claims' partial broadcast scheme makes distinction between "on demand" and "broadcast" of a SIB vague and ambiguous.

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[...]

[7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[...]

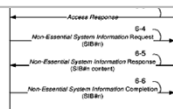
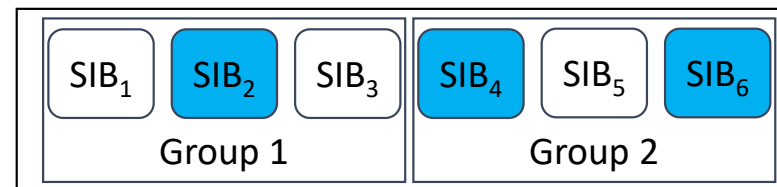
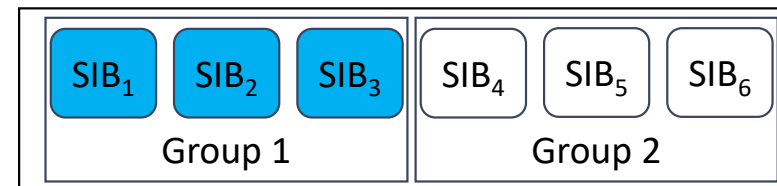


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Claim Practiced



Claim Avoided



Paper 26 at 6-10; Paper 32 at 5-7

'958 Patent – Substitute Claims – Board Guidance

Trials@uspto.gov
571-272-7822

Paper 23
Date: January 23, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, and T-MOBILE USA, INC.

Petitioner,

v.

DAINGEAN TECHNOLOGIES LTD.,
Patent Owner.

At this preliminary stage, without the benefit of evidence and argument from Patent Owner on this issue, we tend to agree with Petitioner that proposed substitute claims 7–10 lack reasonable clarity regarding the claimed “second type SIB” and “the total number of second type information blocks.”

HOFFMAN, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER’S MOTION TO AMEND
37 C.F.R. § 42.121(e)

PRELIMINARY GUIDANCE
PATENT OWNER’S MOTION TO AMEND

37 C.F.R. § 42.121(e)

Cir. 2005)). Here, we are concerned that the breadth of the term “a second type SIB” in proposed substitute claims 7 and 9 cannot be ascertained with reasonable certainty, particularly with respect to “the total number of second type information blocks.” We do not see how a person skilled in the art would be able to ascertain the “number of second type information blocks” to arrive at “the total” number with any reasonable certainty. As Petitioner points out (Opp. 4), the claims do not exclude overlap between the first and second types of SIB. Although proposed substitute claims 7 and 9 recite “the first type SIB being required for the wireless terminal to perform an initial access to the radio access network,” the scope of the claimed “second type SIB” could also encompass information that is “required for the wireless terminal to perform an initial access to the radio access network.” The possible overlap between the first and second type SIBs leaves open the question of whether to include other first type SIBs when ascertaining the total number of second type SIBs. Also, as Petitioner points out, “[t]here could be third or fourth type SIBs” (Opp. 4), and a person skilled in the art would not know how to differentiate between the second type SIB and the third or fourth types. Although

Paper 23 at 9-10

Testimony of Karthikeyan Sundaresan, Ph.D. (Patent Owner's Expert)



Transcript of Karthikeya Sundaresan, Ph.D.

Date: December 13, 2024

Case: AT&T Mobility, LLC, et al. -v- Daingean Technologies, LLC

Planet Depos
Phone: 888.433.3767 | Email: transcripts@planetdepos.com
www.planetdepos.com
Michigan #8598 | Nevada #089F | New Mexico #566

WORLDWIDE COURT REPORTING & LITIGATION TECHNOLOGY

Petitioners' Exhibit 1011, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

Q. Okay. So there could be additional types of system information block in addition to the ones that the claim recites, correct?

A. The system could have a different, yeah, third type system information block, sure.

Ex. 1011 at 49:2-6.
Paper 26 at 9-10

McKool Smith

Demonstrative Exhibit - Not Evidence

PD3.28

Petitioners' Exhibit 1012, p.28
AT&T, et al. v. Daingean
IPR2024-00402

Unrebutted Testimony of Dr. Stark

UNITED STATES PATENT AND
TRADEMARK OFFICE

BEFORE THE PATENT TRIAL
AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICE
OF AMERICA CORPORATION
Petitioners

v.

DAINGEAN TECHNOLOGIES, INC.
Patent Owner

Case No. IPR2024-00402
U.S. Patent No. 10,101,000

SECOND DECLARATION OF

32. While there are examples of different types of system information in the '958 Patent, those types are non-limiting and potentially overlapping. For example, the patent refers to essential and non-essential system information as first and second type system information. Ex. 1001 at 8:34-55. The patent makes clear this is only one example embodiment and the claim recites first/second type rather than essential/non-essential. There are also other classifications of system information in the patent, such as broadcast and on-demand. As a result, a POSITA would not understand first/second type system information blocks to be limited to essential / non-essential system information.

Petitioners' Exhibit 1010, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

Ex. 1010 at Para. 32
Paper 26 at 7-8

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.29

Petitioners' Exhibit 1012, p.29
AT&T, et al. v. Daingean
IPR2024-00402

Unrebutted Testimony of Dr. Stark

UNITED STATES PATENT AND

BEFORE THE PATENT TRIAL

AT&T MOBILITY LLC, AT&T SERVICE
OF AMERICA CORPORATION
Petitioners

v.

DAINGEAN TECHNOLOGIES
Patent Owner

Case No. IPR2024-00402
U.S. Patent No. 10,111,111

SECOND DECLARATION OF

33. Further, Substitute Claims 7 and 9 are comprising claims, meaning additional types of system information are allowed and not excluded by the claim. In other words, if the claim were satisfied by a classification of system information into two types, it could be avoided by classifying any second type system information blocks outside of the claimed group into a third or fourth type of system information blocks. Patent Owner's expert agrees that additional types of system information are permitted by the claims. Ex. 1011 at 49:2-6. These classifications are arbitrary and subjective within the context of the claim, and as a result the claim fails to provide an objective boundary.

Petitioners' Exhibit 1010, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

Ex. 1010 at Para. 33
Paper 26 at 7-8

McKool Smith

'958 Patent (Ex. 1001)

(12) **United States Patent**
Ishii

(10) **Patent No.:** US 10,841,958
(45) **Date of Patent:** *Nov. 1, 2020

(54) **ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL, AND A METHOD FOR A WIRELESS TERMINAL**

(71) **Applicants:** SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)

(72) **Inventor:** Atsushi Ishii, Vancouver, WA (US)

(73) **Assignees:** SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.

(21) **Appl. No.:** 16/597,325
(22) **Filed:** Oct. 9, 2019
(65) **Prior Publication Data**
US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data

(63) **Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.**
(Continued)

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/70 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC H04W 74/0833 (2013.01); H04W 48/70 (2013.01); H04W 48/72 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

(58) **Field of Classification Search**
CPC H04W 48/10; H04W 72/005; H04W 48/12; H04W 72/04
See application file for complete search history

(56) **References Cited**
U.S. PATENT DOCUMENTS
8,379,567 B2* 2/2013 Cho H
8,538,444 B2 9/2013 Lee et al. (Continued)
FOREIGN PATENT DOCUMENTS
JP WO 2 816 741 A2 12/2014
WO 2008/044664 A1 4/2008 (Continued)
OTHER PUBLICATIONS
Notice of Allowance dated Apr. 19, 2019 in U.S. 15/658,980. (Continued)
Primary Examiner — Dung Hong
(74) **Attorney, Agent, or Firm —** Sciencelink, P.C.

(57) **ABSTRACT**
Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essential system information. In certain example embodiments, an access node (22) may initiate broadcast of system information when its content gets updated in order to avoid many on-demand delivery requests to wireless terminals. In certain example implementations, access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

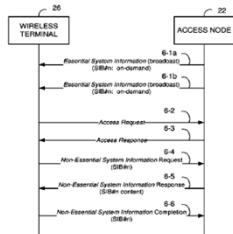


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

In view of the fact that, in certain example embodiments and modes, the system information (SI) is classified into plural categories or types, the system information (SI) generator 54 is depicted in FIG. 5 as comprising SIB type classifier 60 which defines the plural categories or types of system information, and may further define an association between the plural types and respective system information blocks. For sake of example two representative categories or types of system information (SI) are shown as defined by the SIB type classifier 60 in FIG. 5: a first type of system information (1TYP SIB) and a second type of system information (2TYP SIB). Definitions and procedures for handling for the first type of system information (1TYP SIB) and the second type of system information (2TYP SIB) may be selectively configured and maintained, and are accordingly reflected by 1TYP SIB controller 62 and 2TYP SIB controller 64, respectively.

Ex. 1001 at 8:17-33
Paper 26 at 8-9

'958 Patent (Ex. 1001)

(12) **United States Patent**
Ishii

(10) **Patent No.:** US 10,841,958 B2
(45) **Date of Patent:** *Nov. 17, 2020

(54) **ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL AND A METHOD FOR A WIRELESS TERMINAL**

(71) Applicants: SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)

(72) Inventor: Atsushi Ishii, Vancouver, WA (US)

(73) Assignees: SHARP KABUSHIKI KAISHA, Sakai (JP); FG Innovation Company Limited, Tuen Mun (HK)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.

(21) Appl. No.: 16/597,325

(22) Filed: Oct. 9, 2019

(65) **Prior Publication Data**
US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823. (Continued)

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/70 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC H04W 74/0833 (2013.01); H04W 48/70 (2013.01); H04W 48/72 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

(58) **Field of Classification Search**
CPC H04W 48/10; H04W 72/005; H04W 48/12; H04W 72/04

See application file for complete search history

(56) **References Cited**
U.S. PATENT DOCUMENTS
8,379,567 B2* 2/2013 Cho H
8,538,444 B2 9/2013 Lee et al. (Continued)
FOREIGN PATENT DOCUMENTS
JP WO 2008/04664 A1 4/2008 (Continued)

OTHER PUBLICATIONS
Notice of Allowance dated Apr. 19, 2019 in U.S. 15/658,980. (Continued)

Primary Examiner — Dung Hong
(74) **Attorney, Agent, or Firm** — SciGenBIP, P.C.

(57) **ABSTRACT**
Method and apparatus use a value tag in conjunction with second type system information or non-essential system information. In certain example embodiments, an access node (22) may initiate broadcast type system information when its content gets in order to avoid many on-demand delivery requests to wireless terminals. In certain example implementations, access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

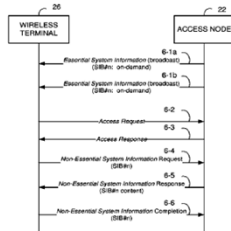


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Although the description above contains many specificities, these should not be construed as limiting the scope of the technology disclosed herein but as merely providing illustrations of some of the presently preferred embodiments of the technology disclosed herein. Thus the scope of the technology disclosed herein should be determined by the appended claims and their legal equivalents. Therefore, it will be appreciated that the scope of the technology disclosed herein fully encompasses other embodiments which may become obvious to those skilled in the art, and that the scope of the technology disclosed herein is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular is not intended to mean “one and only one” unless explicitly so stated, but rather “one or more.” All structural, chemical, and functional

Ex. 1001 at 26:65-27:12
Paper 26 at 8-9

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

(12) **United States Patent**
Ishii

(10)
(45)

(54) **ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL AND A METHOD FOR A WIRELESS TERMINAL**

(58) F
C
S

(71) Applicants: **SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)**

(56)

(72) Inventor: **Atsushi Ishii, Vancouver, WA (US)**

8,37

(73) Assignees: **SHARP KABUSHIKI KAISHA, Sakai (JP); FG Innovation Company Limited, Tuen Mun (HK)**

8,5

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.

IP
WO

(21) Appl. No.: **16/597,325**

Notice of

(22) Filed: **Oct. 9, 2019**

15,658,98

(65) **Prior Publication Data**

US 2020/0045747 A1 Feb. 6, 2020

Primary
(74) Att

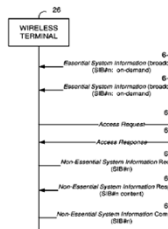
Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823. (Continued)

(57) Method transmits wireless with access system modes, a type sys order to wireless access n mation t

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC **H04W 74/0833** (2013.01); **H04W 48/10** (2013.01); **H04W 48/12** (2013.01); **H04W 72/0446** (2013.01); **H04W 88/02** (2013.01)



[...]

[7b] to generate a **first type system information block (SIB)** comprising information and a value tag **associated with a group of plural second type system information blocks fewer than the total number of second type information blocks**, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB **belonging to the group**, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[...]

[7h] **[[the access node of claim 7, wherein the transmitter circuitry is further configured to]]** transmit **by broadcast after the change the group identifier and the group containing the second type SIB** **[[by broadcast after the change]] in compressed format** including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, **associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.**

Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Paper 26 at 10

Indefiniteness

1. The Revised Substitute Claims' recitation of "a group of plural second type system information blocks fewer than the total number of second type information blocks" allows the claim scope to be arbitrarily manipulated through the undefined second type SIB term.
2. The Revised Substitute Claims' partial broadcast scheme makes distinction between "on demand" and "broadcast" of a SIB vague and ambiguous.

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

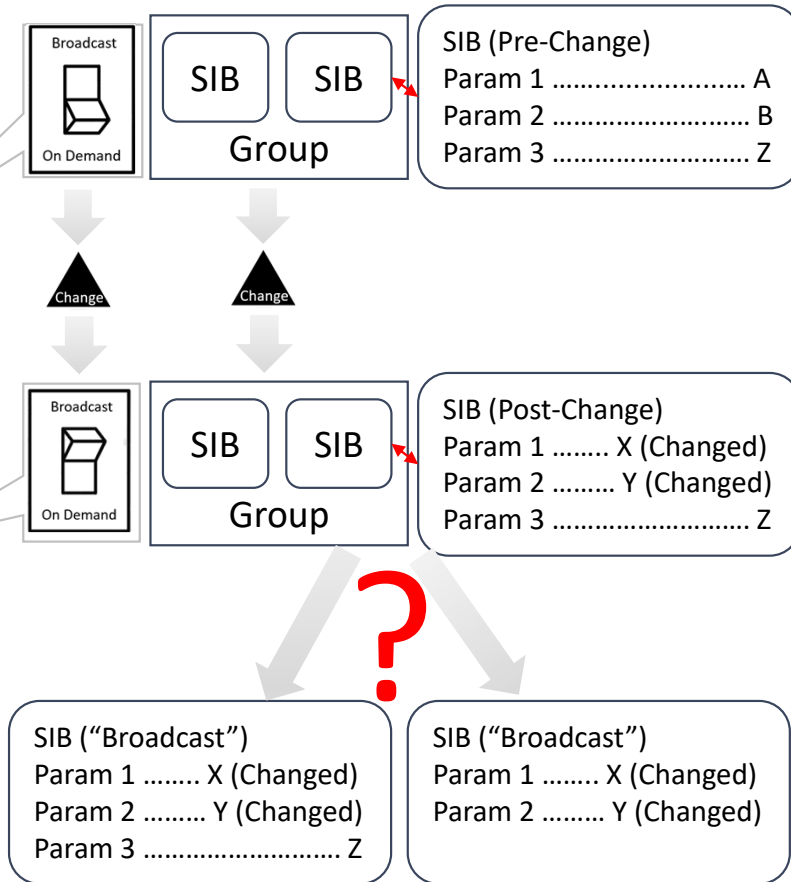
[...]

[7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibilDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[...]

[7h] [[the access node of claim 7, wherein the transmitter circuitry is further configured to]] transmit by broadcast after the change the group identifier and the group containing the second type SIB [[by broadcast after the change]] in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.



Paper 26 at 10-11; Paper 32 at 7-8

The Revised Substitute Claims Lack Sufficient Written Description and Enabling Disclosure

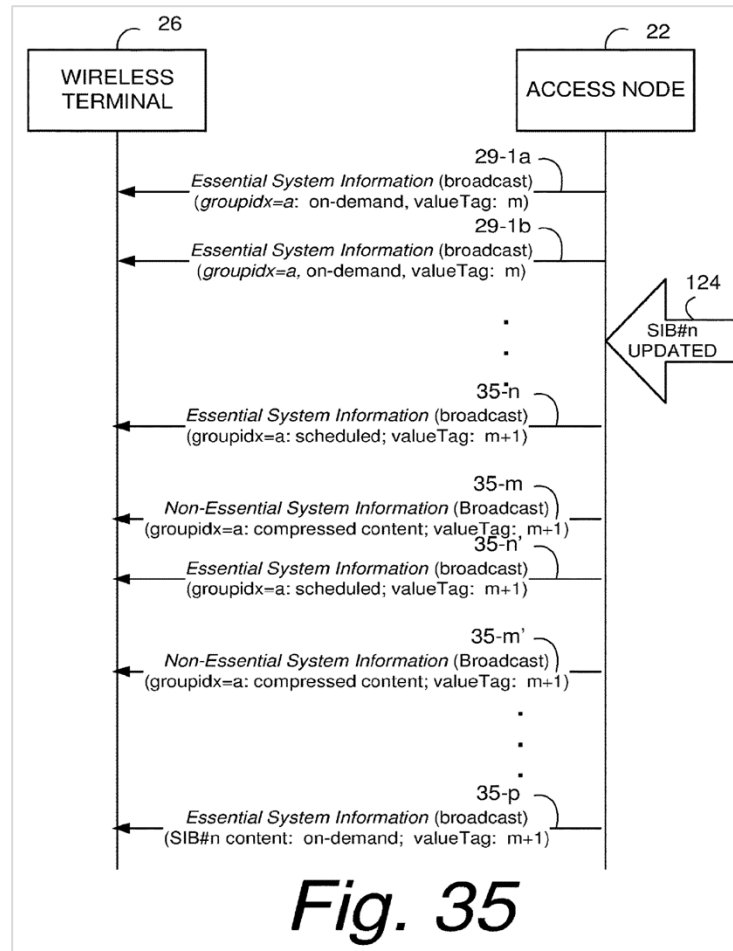
'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[...]

[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[...]

[7h] [[the access node of claim 7, wherein the transmitter circuitry is further configured to]] transmit by broadcast after the change the group identifier and the group containing the second type SIB [[by broadcast after the change]] in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.



Broadcast Embodiment:

- No communication of value tag from terminal to access node
- No explanation of how group value tags (differing by 1) allow change in SIBs or change of parameters in SIBs to be determined
- No explanation of how value tag comparisons are used to derive compressed format

Paper 26 at 11

McKool Smith

PD3.37

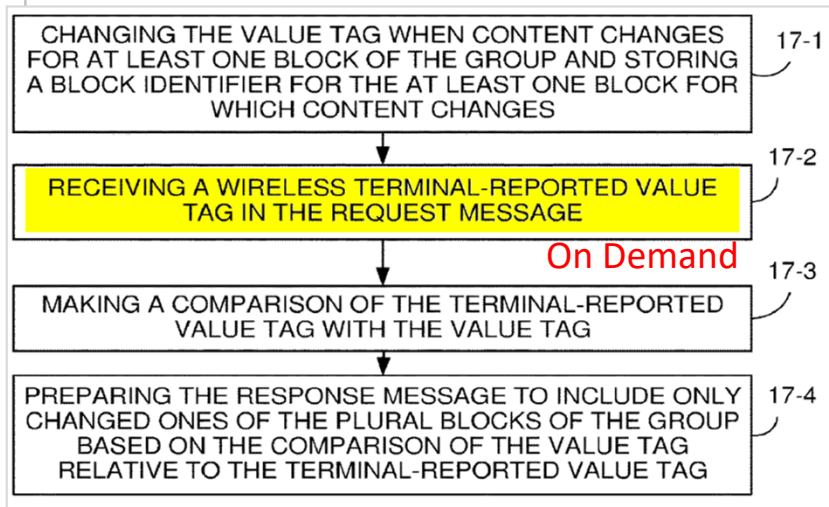
'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[...]

[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[...]

[7h] [[the access node of claim 7, wherein the transmitter circuitry is further configured to]] transmit by broadcast after the change the group identifier and the group containing the second type SIB [[by broadcast after the change]] in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.



On Demand Embodiment:

- Claimed broadcast does not occur
- No explanation of how group value tags (differing by 1) allow change in SIBs or change of parameters in SIBs to be determined
- No explanation of how value tag comparisons are used to derive compressed format

Paper 32 at 11

McKool Smith

PD3.38

The Revised Substitute Claims Are Anticipated by Lee or Obvious over Lee and Agiwal

Uncontested Issues – Lee / Lee and Agiwal

- Prior Art status of Lee and Agiwal
- Motivation to combine Lee and Agiwal
- Most claim limitations
 - Only 7h/8f addressed in Revised Motion to Amend

Paper 24

Unrebutted Expert Testimony – Lee and Lee + Agiwal

UNITED STATES BEFORE THE FEDERAL COURTS IN DISTRICT OF AMERICA DAIN SECOND DEC	Corresponding Substitute Claim Limitation	Corresponding Revised Substitute Claim Limitation	Stark I (Ex. 1002) Stark II (Ex. 1010)
	7Pre/9Pre	7Pre/8Pre	Ex. 1002 ¶¶ 89-93, 137
	7a	7a	Ex. 1002 ¶¶ 94-97
	7b/9a	7b/8a	Ex. 1002 ¶¶ 98-106, 138 Ex. 1010 ¶¶ 42-48, 58
	7c/9b	7c/8b	Ex. 1002 ¶¶ 107-112, 139 Ex. 1010 ¶¶ 49-50, 58
	7d	7d	Ex. 1002 ¶¶ 113-115
	7e/9c	7e/8c	Ex. 1002 ¶¶ 116-119, 140
	7f/9d	7f/8d	Ex. 1002 ¶¶ 120-126, 141
	7g/9e	7g/8e	Ex. 1002 ¶¶ 127-131, 142 Ex. 1010 ¶¶ 51-52, 58
	8/10	7h/8f	Ex. 1002 ¶¶ 132-134, 143 Ex. 1010 ¶¶ 53-57, 59

Petitioners' Exhibit 1010, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

Papers 2, 22, 26 (Passim)

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data
 (63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
 (Continued)

Int. Cl.
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
 (Continued)

U.S. Cl.
 CPC *H04W 74/0833* (2013.01); *H04W 48/10* (2013.01); *H04W 48/12* (2013.01); *H04W 72/0446* (2013.01); *H04W 88/02* (2013.01)

ABSTRACT
 (57) Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

Exhibit 1001
 IPR2024-00402
 U.S. Patent 10,841,958

Paper 24

McKool Smith

PD3.43

Petitioners' Exhibit 1012, p.43
 AT&T, et al. v. Daingean
 IPR2024-00402

'958 Patent – Revised Substitute Claim 8 (Delta from Original Substitute Claim 9 and 10 in Red/Green)

[8a] generating a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

US 20200045747 A1 Feb. 6, 2020 (14) Attorney, Agent, or Firm — Scient!Smith, P.C.

Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)

(51) Int. Cl. (2009.01)
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
(Continued)

(52) U.S. Cl. CPC H04W 74/0833 (2013.01); H04W 48/10 (2013.01); H04W 48/12 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

ABSTRACT

(57) Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Papers 24

McKool Smith

PD3.44

Lee Teaches 1st Type SIB with Info to Obtain other SIBs



US 2019/0158988 A1

(19) **United States**

(12) **Patent Application Publication** (10) Pub. No.: US 2019/0158988 A1
LEE et al. (43) Pub. Date: May 23, 2019

(54) **METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM**

Publication Classification

(71) Applicant: LG ELECTRONICS INC., Seoul (KR)

(51) Int. Cl.
H04W 4/06 (2006.01)
H04W 76/27 (2006.01)
H04W 68/02 (2006.01)
H04W 4/70 (2006.01)
H04L 1/16 (2006.01)
H04W 36/08 (2006.01)

(72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)

(52) U.S. Cl.
CPC: H04W 4/06 (2013.01); H04W 76/27 (2018.02); H04W 36/08 (2013.01); H04W 4/70 (2018.02); H04L 1/16 (2013.01); H04W 68/02 (2013.01)

(21) Appl. No.: 16/306,216

(22) PCT Filed: May 10, 2017

(86) PCT No.: PCT/KR2017/004792

§ 371 (c)(1),
(2) Date: Nov. 9, 2018

Related U.S. Application Data

(60) Provisional application No. 62/334,418, filed on May 10, 2016, provisional application No. 62/334,427, filed on May 10, 2016, provisional application No. 62/334,443, filed on May 10, 2016, provisional application No. 62/366,643, filed on Jul. 26, 2016.

(57) **ABSTRACT**
Provided are a method for a terminal for requesting a system information block (SIB), and an apparatus for supporting the method in a wireless communication system. The method may comprise the steps of: receiving, from a radio access network (RAN), an SIB list comprising one or more SIBs supported by a cell; receiving, from the RAN, SIB broadcast information indicating whether the SIB supported by the cell is broadcast in a broadcast control channel (BCCH) section; detecting an omitted SIB on the basis of the SIB list and SIB broadcast information; and requesting the omitted SIB from the RAN.

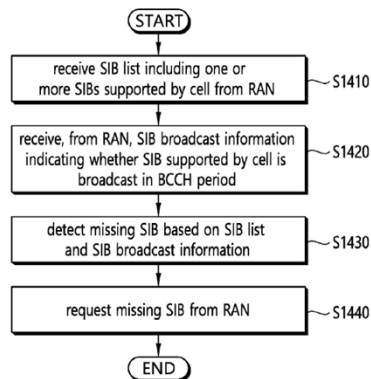


Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

[0071] SIB1 includes pieces of information associated with cell access, and particularly includes scheduling information on other SIBs (SIB2 to SIBn) than SIB1. SIBs having the same transmission periodicity among the SIBs other than SIB1 are transferred via the same system information (SI) message. Thus, scheduling information includes a mapping relationship between each SIB and an SI message. An SI message is transmitted within an SI window in a time domain, and each SI message is associated with one SI window. Since SI windows for different pieces of SI do not overlap, only one SI message is transmitted within an SI window. Thus, scheduling information includes the duration of an SI window and an SI transmission periodicity. Time/frequency for transmitting an SI message is determined by dynamic scheduling by a BS. SIB1 is broadcast through a downlink shared channel (DL SCH) according to a periodicity of eight radio frames (that is, 80-ms periodicity), and SIB1 is repeatedly retransmitted on a fifth subframe of an SFN-mod-2 radio frame within the 80-ms periodicity.

[0072] SIB2 includes necessary information for a UE to access a cell. SIB2 includes information on an uplink cell bandwidth, a random access parameter, and an uplink power control parameter.

Ex. 1004 at [0071]-[0072]
Paper paper 2 at 20; 20 at 6

McKool Smith

PD3.45

Petitioners' Exhibit 1012, p.45
AT&T, et al. v. Daingean
IPR2024-00402

Lee Teaches 1st Type SIB with Info to Obtain other SIBs

(19) **United States**
 (12) **Patent Application Publication** (10) Pub. No.: US 2019/0158988 A1
 LEE et al. (43) Pub. Date: May 23, 2019

(54) **METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM**
 (71) Applicant: LG ELECTRONICS INC., Seoul (KR)
 (72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)
 (21) Appl. No.: 16/306,216
 (22) PCT Filed: May 10, 2017
 (86) PCT No.: PCT/KR2017/004792
 § 371 (c)(1),
 (2) Date: Nov. 9, 2018

Related U.S. Application Data

(60) Provisional application No. 62/334,418, filed on May 10, 2016, provisional application No. 62/334,427, filed on May 10, 2016, provisional application No. 62/334,443, filed on May 10, 2016, provisional application No. 62/366,643, filed on Jul. 26, 2016.

Publication Classification
 (51) Int. Cl.
 H04W 4/06 (2006.01)
 H04W 76/27 (2006.01)
 H04W 68/02 (2006.01)
 H04W 4/70 (2006.01)
 H04L 1/16 (2006.01)
 H04W 36/08 (2006.01)
 (52) U.S. Cl.
 CPC: H04W 4/06 (2013.01); H04W 76/27 (2018.02); H04W 36/08 (2013.01); H04W 4/70 (2018.02); H04L 1/1614 (2013.01); H04W 68/02 (2013.01)

ABSTRACT
 Provided are a method for a terminal for requesting a system information block (SIB), and an apparatus for supporting the method in a wireless communication system. The method may comprise the steps of: receiving, from a radio access network (RAN), an SIB list comprising one or more SIBs supported by a cell; receiving, from the RAN, SIB broadcast information indicating whether the SIB supported by the cell is broadcast in a broadcast control channel (BCCH) section; detecting an omitted SIB on the basis of the SIB list and SIB broadcast information; and requesting the omitted SIB from the RAN.

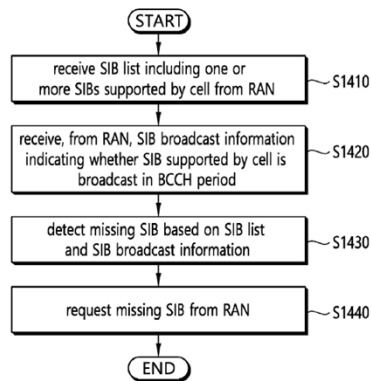
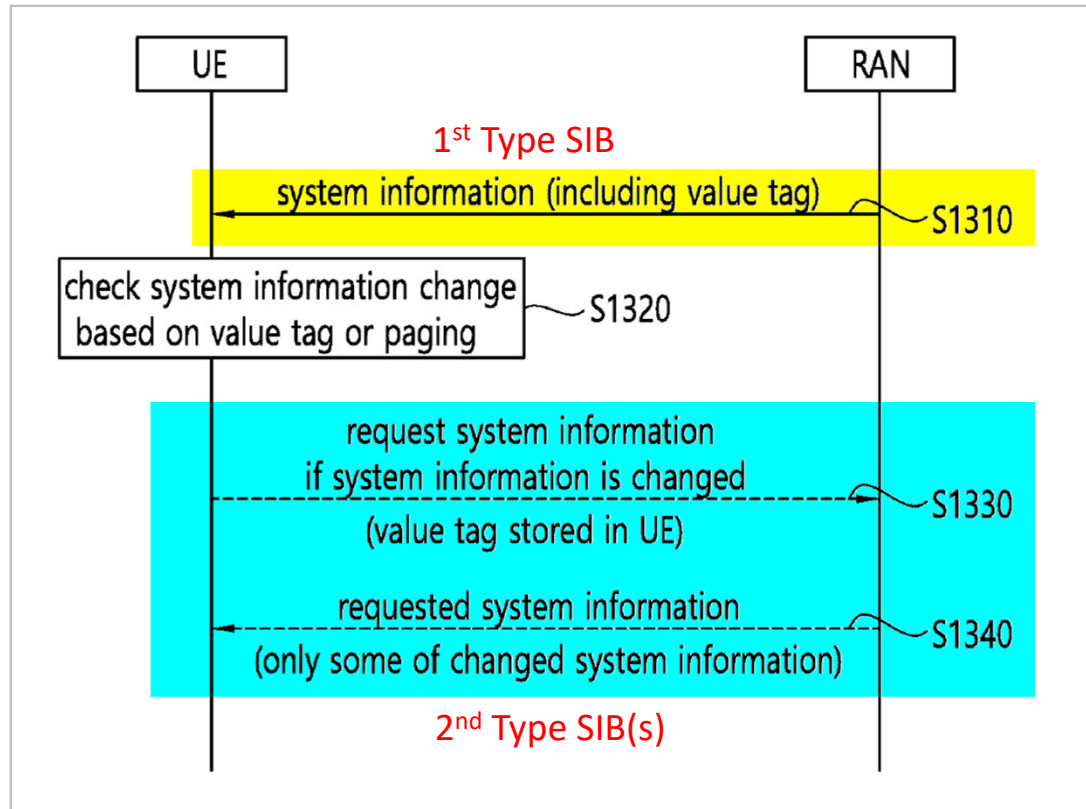


Exhibit 1004
 IPR2024-00402
 U.S. Patent 10,841,958



Ex. 1004 at Fig. 13
 Paper paper 2 at 20; 22 at 6

McKool SMITH

PD3.46

Petitioners' Exhibit 1012, p.46
 AT&T, et al. v. Daingean
 IPR2024-00402

Lee Teaches Second-Type, Non-Broadcast SIBs



US 20190158988A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2019/0158988 A1
LEE et al. (43) Pub. Date: May 23, 2019

(54) METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM

(71) Applicant: LG ELECTRONICS INC., Seoul (KR)

(72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)

(21) Appl. No.: 16/306,216

(22) PCT Filed: May 10, 2017

(86) PCT No.: PCT/KR2017/004792

§ 371 (c)(1),
(2) Date: Nov. 9, 2018

Related U.S. Application Data

(60) Provisional application No. 62/334,418, filed on May 10, 2016, provisional application No. 62/334,427, filed on May 10, 2016, provisional application No. 62/334,443, filed on May 10, 2016, provisional application No. 62/366,643, filed on Jul. 26, 2016.

Publication Classification

(51) Int. Cl.
H04W 4/06 (2006.01)
H04W 76/27 (2006.01)
H04W 68/02 (2006.01)
H04W 4/70 (2006.01)
H04L 1/16 (2006.01)
H04W 36/08 (2006.01)
(52) U.S. Cl.
CPC: H04W 4/06 (2013.01); H04W 76/27 (2018.02); H04W 36/08 (2013.01); H04W 4/70 (2018.02); H04L 1/1614 (2013.01); H04W 68/02 (2013.01)

(57) ABSTRACT
Provided are a method for a terminal for requesting a system information block (SIB), and an apparatus for supporting the method in a wireless communication system. The method may comprise the steps of: receiving, from a radio access network (RAN), an SIB list comprising one or more SIBs supported by a cell; receiving, from the RAN, SIB broadcast information indicating whether the SIB supported by the cell is broadcast in a broadcast control channel (BCCH) section; detecting an omitted SIB on the basis of the SIB list and SIB broadcast information; and requesting the omitted SIB from the RAN.

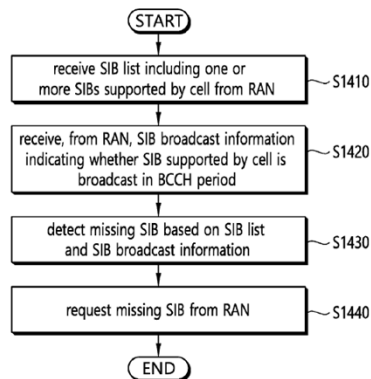


Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

[0118] Some SIBs may be missing. For example, even though a cell supports an MBMS service, a D2D service, a V2X service, or WLAN interworking/integration, the cell may not broadcast an SIB associated with the MBMS service, the D2D service, the V2X service, or the WLAN interworking/integration.

Ex. 1004 at [0118], [0175]-[0178]
Paper 20 at 7

McKool Smith

PD3.47

Petitioners' Exhibit 1012, p.47
AT&T, et al. v. Daingean
IPR2024-00402

Lee Teaches Value Tags for Different Types of On-Demand System Info

(19) **United States**
(12) **Patent Application Publication** (10) Pub. No.: US 2019/0158988 A1
LEE et al. (43) Pub. Date: May 23, 2019

(54) **METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM**
(71) Applicant: LG ELECTRONICS INC., Seoul (KR)
(72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)
(21) Appl. No.: 16/306,216
(22) PCT Filed: May 10, 2017
(86) PCT No.: PCT/KR2017/004792
§ 371 (c)(1),
(2) Date: Nov. 9, 2018

Related U.S. Application Data

(60) Provisional application No. 62/334,418, filed on May 10, 2016, provisional application No. 62/334,427, filed on May 10, 2016, provisional application No. 62/334,443, filed on May 10, 2016, provisional application No. 62/366,643, filed on Jul. 26, 2016.

Publication Classification
(51) Int. Cl.
H04W 4/06 (2006.01)
H04W 76/27 (2006.01)
H04W 68/02 (2006.01)
H04W 4/70 (2006.01)
H04L 1/16 (2006.01)
H04W 36/08 (2006.01)
(52) U.S. Cl.
CPC: H04W 4/06 (2013.01); H04W 76/27 (2018.02); H04W 36/08 (2013.01); H04W 4/70 (2018.02); H04L 1/1614 (2013.01); H04W 68/02 (2013.01)

ABSTRACT
Provided are a method for a terminal for requesting a system information block (SIB), and an apparatus for supporting the method in a wireless communication system. The method may comprise the steps of: receiving, from a radio access network (RAN), an SIB list comprising one or more SIBs supported by a cell; receiving, from the RAN, SIB broadcast information indicating whether the SIB supported by the cell is broadcast in a broadcast control channel (BCCH) section; detecting an omitted SIB on the basis of the SIB list and SIB broadcast information; and requesting the omitted SIB from the RAN.

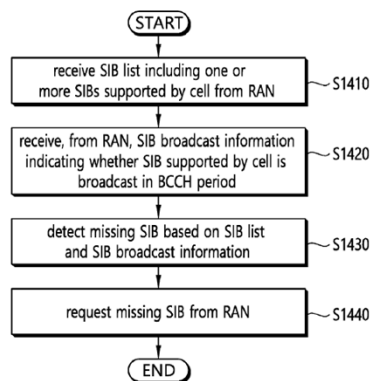


Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

[0118] Some SIBs may be missing. For example, even though a cell supports an MBMS service, a D2D service, a V2X service, or WLAN interworking/integration, the cell may not broadcast an SIB associated with the MBMS service, the D2D service, the V2X service, or the WLAN interworking/integration.

[0168] Referring to FIG. 13, in step S1310, the network may indicate to the UE that on-demand system information is to be changed by broadcast signaling during a specified period. For example, the broadcast signaling may be essential system information or a paging message. This indication may include a value tag for a particular type of system information or a common value tag for all system information. Additionally, the network may indicate to the UE whether on-demand system information is broadcast in the next period (e.g., the next modification period). When the network intends to broadcast on-demand system information in the next period, the network may indicate to the UE whether all system information is broadcast or only changed on-demand system information is broadcast. Regardless of on-demand system information, the network may broadcast all system information or changed on-demand system information without a request by the UE.

Ex. 1004 at [0118], [0168]
Paper 22 at 7

McKool SMITH

PD3.48

Lee Teaches Associating SIBs with a Service and requesting SIB(s) by Service

US 2019/0158988 A1

(19) **United States**
(12) **Patent Application Publication**
LEE et al.

(10) Pub. No.: US 2019/0158988 A1
(43) Pub. Date: May 23, 2019

(54) **METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM**

(71) Applicant: LG ELECTRONICS INC., Seoul (KR)

(72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)

(21) Appl. No.: 16/306,216
(22) PCT Filed: May 10, 2017
(86) PCT No.: PCT/KR2017/004792
§ 371 (c)(1),
(2) Date: Nov. 9, 2018

Publication Classification

(51) Int. Cl.
H04W 4/06 (2006.01)
H04W 76/27 (2006.01)
H04W 68/02 (2006.01)
H04W 4/70 (2006.01)
H04L 1/16 (2006.01)
H04W 36/08 (2006.01)

(52) U.S. Cl.
CPC: H04W 4/06 (2013.01); H04W 76/27 (2018.02); H04W 36/08 (2013.01); H04W 4/70 (2018.02); H04L 1/1614 (2013.01); H04W 68/02 (2013.01)

(57) **ABSTRACT**
Provided are a method for a terminal for requesting a system information block (SIB), and an apparatus for supporting the method in a wireless communication system. The method may comprise the steps of: receiving, from a radio access network (RAN), an SIB list comprising one or more SIBs supported by a cell; receiving, from the RAN, SIB broadcast information indicating whether the SIB supported by the cell is broadcast in a broadcast control channel (BCCH) section; detecting an omitted SIB on the basis of the SIB list and SIB broadcast information; and requesting the omitted SIB from the RAN.

Related U.S. Application Data

(60) Provisional application No. 62/334,418, filed on May 10, 2016, provisional application No. 62/334,427, filed on May 10, 2016, provisional application No. 62/334,443, filed on May 10, 2016, provisional application No. 62/366,643, filed on Jul. 26, 2016.

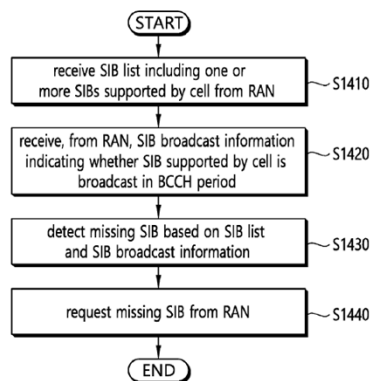


Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

[0118] Some SIBs may be missing. For example, even though a cell supports an MBMS service, a D2D service, a V2X service, or WLAN interworking/integration, the cell may not broadcast an SIB associated with the MBMS service, the D2D service, the V2X service, or the WLAN interworking/integration.

[0175] In step S1430, the UE may detect a missing SIB based on the SIB list and the SIB broadcast information.

[0176] The missing SIB may be an SIB that is not broadcasted in the BCCH period among the SIBs included in the SIB list. The BCCH period may be the current BCCH period or the next BCCH period.

[0177] The missing SIB may be an SIB that the UE needs to receive from the RAN in order to perform a particular service. The particular service may include at least one of an MBMS service, a D2D service, a V2X service, or WLAN interworking.

[0178] In step S1440, the UE may request the missing SIB from the RAN. The missing SIB may be requested from the RAN by indicating a service associated with the missing SIB. In response to the request, the UE may receive the missing SIB from the RAN.

Ex. 1004 at [0118], [0175]-[0178]
Paper 22 at 7

McKool Smith

PD3.49

Agiwal Teaches Grouping of SIBs

(19) United States
(12) Patent Application
AGIWAL et al.

(54) APPARATUS AND METHOD FOR
SIGNALING SYSTEM INFORMATION

(71) Applicant: Samsung Electronics
Suwon-si (KR)

(72) Inventors: Anil AGIWAL, Sun
Yongbin CHANG,

(21) Appl. No.: 15/443,307

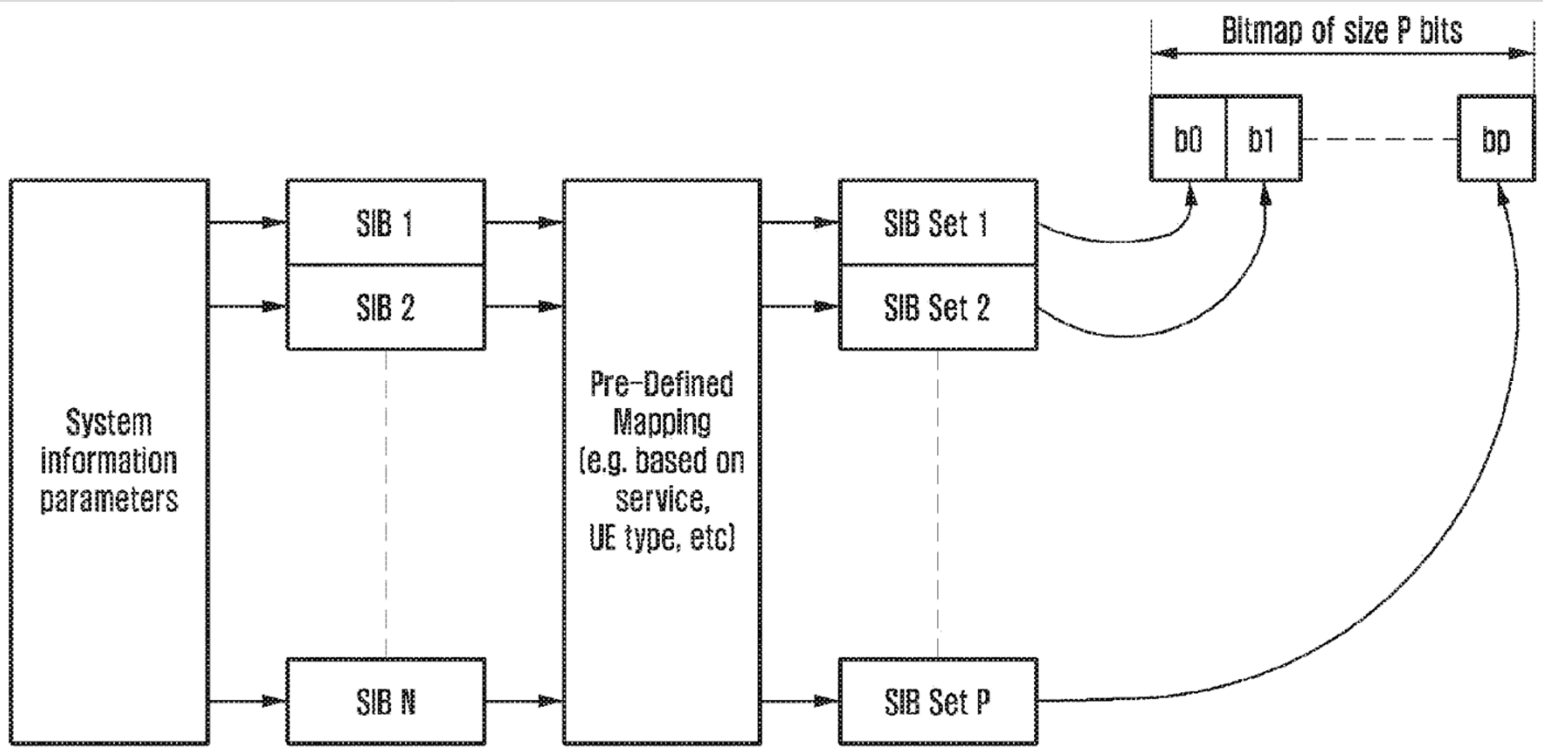
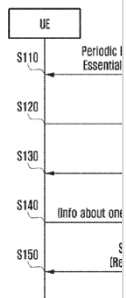
(22) Filed: Feb. 27, 2017

Related U.S. Application

(60) Provisional application No. 62/3
29, 2016, provisional application
filed on May 11, 2016.

Publication Classification

(51) Int. Cl.
H04W 74/08 (2006.01)
H04W 72/04 (2006.01)
H04W 72/14 (2006.01)
H04W 4/06 (2006.01)



Petitioners' Exhibit 1008, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

Ex. 1008 at Fig. 3
Paper 22 at 13

McKool Smith

PD3.50

Petitioners' Exhibit 1012, p.50
AT&T, et al. v. Daingean
IPR2024-00402

Agiwal Teaches Grouping of SIBs



US 20170251500A1

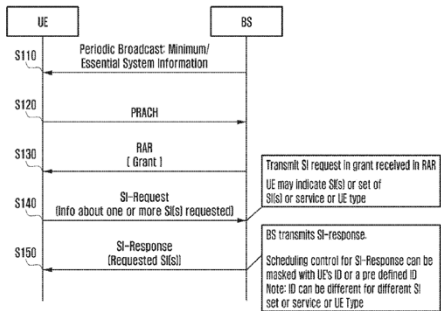
(19) **United States**
(12) **Patent Application Publication** (10) **Pub. No.: US 2017/0251500 A1**
AGIWAL et al. (43) **Pub. Date: Aug. 31, 2017**

(54) **APPARATUS AND METHOD FOR SIGNALING SYSTEM INFORMATION**
(71) Applicant: Samsung Electronics Co., Ltd., Suwon-si (KR)
(72) Inventors: Anil AGIWAL, Suwon-si (KR); Youngbin CHANG, Anyang-si (KR)
(21) Appl. No.: 15/443,307
(22) Filed: Feb. 27, 2017

(52) **U.S. CL.**
CPC ——— *H04W 74/0833* (2013.01); *H04W 4/06* (2013.01); *H04W 72/0413* (2013.01); *H04W 72/14* (2013.01)
(57) **ABSTRACT**
The present disclosure relates to a communication method and system for converging a 5th-generation (5G) communication system for supporting higher data rates beyond a 4th-generation (4G) system with a technology for internet of things (IoT). The present disclosure may be applied to intelligent services based on the 5G communication technology and the IoT-related technology, such as smart home, smart building, smart city, smart car, connected car, health care, digital education, smart retail, security and safety services. A method for receiving system information (SI) by a user equipment (UE) in a wireless communication system is provided. The method includes receiving, from a base station (BS), first type SI associated with SI which is essential for communication with the BS, transmitting, to the BS, a physical random access channel (PRACH) preamble based on the first type SI, receiving, from the BS, a random access response (RAR) message, and receiving, from the BS, second type SI associated with at least one SI which the UE needs.

Related U.S. Application Data
(60) Provisional application No. 62/301,016, filed on Feb. 29, 2016, provisional application No. 62/334,706, filed on May 11, 2016.

Publication Classification
(51) **Int. Cl.**
H04W 74/08 (2006.01)
H04W 72/04 (2006.01)
H04W 72/14 (2006.01)
H04W 4/06 (2006.01)



Petitioners' Exhibit 1008, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

[0066] FIG. 3 illustrates a method for categorizing system information parameters into SIBs according to another embodiment of the present disclosure.

[0067] Referring to FIG. 3, system information parameters are categorized into SIBs. SIBs are then grouped into an SIB set (or SI message) wherein each set comprises one or more SIBs.

[0068] An SIB can be present in more than one SIB set. Grouping of SIBs into SIB set can be done based on service (e.g. mobile broadband (MBB), URLL, mobile telecommunications company (MTC), device to device (D2D), D2D-discovery, D2D-Communication, vehicle-to-everything (V2X), vehicle-to-vehicle (V2V) etc.) or UE type (MTC UE, MBB UE, D2D UE, etc.).

Ex. 1008 at [0066]-[0068]
Paper 22 at 13

Agiwal Teaches Broadcast of Value Tags for Groups of SIBs



US 20170251500A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2017/0251500 A1
(43) Pub. Date: Aug. 31, 2017

(54) APPARATUS AND METHOD FOR
SIGNALING SYSTEM INFORMATION

(71) Applicant: Samsung Electronics Co., Ltd.,
Suwon-si (KR)

(72) Inventors: Anil AGIWAL, Suwon-si (KR);
Yongbin CHANG, Anyang-si (KR)

(21) Appl. No.: 15/443,307

(22) Filed: Feb. 27, 2017

Related U.S. Application Data

(60) Provisional application No. 62/301,016, filed on Feb.
29, 2016, provisional application No. 62/334,706,
filed on May 11, 2016.

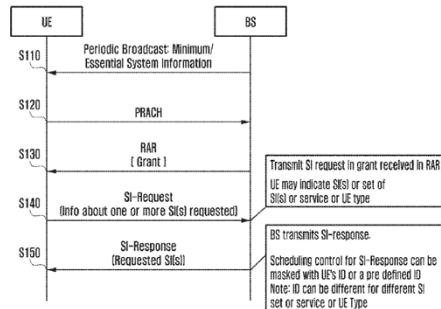
Publication Classification

(51) Int. Cl.
H04W 74/08 (2006.01)
H04W 72/04 (2006.01)
H04W 72/14 (2006.01)
H04W 4/06 (2006.01)

(52) U.S. CL.
CPC ——— H04W 74/0833 (2013.01); H04W 4/06
(2013.01); H04W 72/0413 (2013.01); H04W
72/14 (2013.01)

ABSTRACT

The present disclosure relates to a communication method and system for converging a 5th-generation (5G) communication system for supporting higher data rates beyond a 4th-generation (4G) system with a technology for internet of things (IoT). The present disclosure may be applied to intelligent services based on the 5G communication technology and the IoT-related technology, such as smart home, smart building, smart city, smart car, connected car, health care, digital education, smart retail, security and safety services. A method for receiving system information (SI) by a user equipment (UE) in a wireless communication system is provided. The method includes receiving, from a base station (BS), first type SI associated with SI which is essential for communication with the BS, transmitting, to the BS, a physical random access channel (PRACH) preamble based on the first type SI, receiving, from the BS, a random access response (RAR) message, and receiving, from the BS, second type SI associated with at least one SI which the UE needs.



Petitioners' Exhibit 1008, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

[0256] System information is categorized into various parts/groups/sets. BS broadcasts System Information Set(s) supported. BS also broadcasts ValueTag/identifier/configuration index for each supported system information set/part/group. Change in value tag/identifier/configuration index corresponding to a system information set indicates that system information set/group/part is updated. Additionally BS may also broadcast change notification for each system information of a service. OR

Ex. 1008 at [00256]
Paper 22 at 13

Agiwal Teaches Broadcast of Info for Secondary SIBs with Essential System Info



US 20170251500A1

(19) **United States**
(12) **Patent Application Publication** (10) **Pub. No.:** US 2017/0251500 A1
AGIWAL et al. (43) **Pub. Date:** Aug. 31, 2017

(54) **APPARATUS AND METHOD FOR SIGNALING SYSTEM INFORMATION** (52) **U.S. CL.**
CPC ——— **H04W 74/0833** (2013.01); **H04W 4/06** (2013.01); **H04W 72/0413** (2013.01); **H04W 72/14** (2013.01)

(71) **Applicant:** Samsung Electronics Co., Ltd., Suwon-si (KR)

(72) **Inventors:** Anil AGIWAL, Suwon-si (KR); Youngbin CHANG, Anyang-si (KR)

(21) **Appl. No.:** 15/443,307

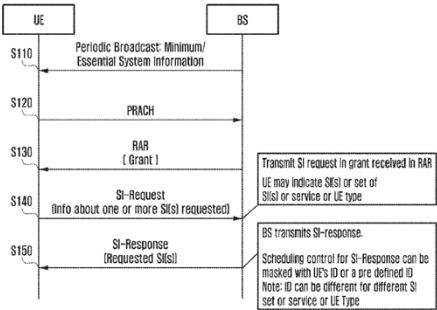
(22) **Filed:** Feb. 27, 2017

Related U.S. Application Data

(60) Provisional application No. 62/301,016, filed on Feb. 29, 2016; provisional application No. 62/334,706, filed on May 11, 2016.

Publication Classification

(51) **Int. Cl.**
H04W 74/08 (2006.01)
H04W 72/04 (2006.01)
H04W 72/14 (2006.01)
H04W 4/06 (2006.01)



Petitioners' Exhibit 1008, p. 1
AT&T, et al. v. Daigean
IPR2024-00402

[0080] Alternately, minimum SI or essential SI may include a separate indication for each SI (e.g., SIB) or set of SIs (i.e., SIBs) wherein each indication indicates whether the associated SI or set of SIs are periodically broadcasted or are provided on demand.

[0081] Alternately, minimum SI or essential SI may include a separate indication for each SI message wherein each SI message carries one or more SIs (i.e., SIBs). The indication associated with an SI message indicates whether SIs associated with that SI message are broadcasted or provided on demand. Mapping of SI message to SIBs is included in minimum SI or essential SI. In order to acquire a SI of second category, UE first determines whether that SI is periodically broadcasted or provided on demand. UE determines this based on indication included in first category (also referred as minimum SI or essential SI) of system information.

Ex. 1008 at [0080]-[0081]
Paper 22 at 13

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)



US010841958B2

[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

This patent is subject to a terminal disclaimer.

OTHER PUBLICATIONS

(21) Appl. No.: 16/597,325

Notice of Allowance dated Apr. 19, 2019 in U.S. Appl. No. 15/658,980.

(22) Filed: Oct. 9, 2019

(Continued)

(65) **Prior Publication Data**

US 2020/0045747 A1 Feb. 6, 2020

Primary Examiner — Dung Hong

(74) Attorney, Agent, or Firm — ScienBziP, P.C.

Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)

ABSTRACT

Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

(51) Int. Cl.

H04W 74/08 (2009.01)

H04W 48/10 (2009.01)

(Continued)

(52) U.S. Cl.

CPC H04W 74/0833 (2013.01); H04W 48/10

(2013.01); H04W 48/12 (2013.01); H04W

72/0446 (2013.01); H04W 88/02 (2013.01)

6 Claims, 31 Drawing Sheets

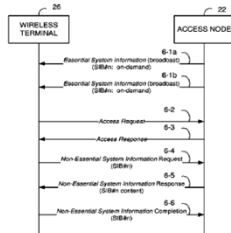


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Paper 24

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.54

Petitioners' Exhibit 1012, p.54
AT&T, et al. v. Daingean
IPR2024-00402

'958 Patent – Revised Substitute Claim 8 (Delta from Original Substitute Claim 9 and 10 in Red/Green)

(12) **United States Patent**
Ishii

(10) **Patent No.:** US 10,841,958 B2
(45) **Date of Patent:** *Nov. 17, 2020

(54) **ACCESS NODE, A METHOD FOR AN**

(58) **Field of Classification Search**

[8b] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

(21) Appl. No.: 16/597,325

(22) Filed: Oct. 9, 2019

(65) **Prior Publication Data**
US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data
(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC *H04W 74/0833* (2013.01); *H04W 48/10* (2013.01); *H04W 48/12* (2013.01); *H04W 72/0446* (2013.01); *H04W 88/02* (2013.01)

OTHER PUBLICATIONS
Notice of Allowance dated Apr. 19, 2019 in U.S. Appl. No. 15/658,980.
(Continued)

Primary Examiner — Dung Hong
(74) *Attorney, Agent, or Firm — ScienBizIP, P.C.*

(57) **ABSTRACT**
Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

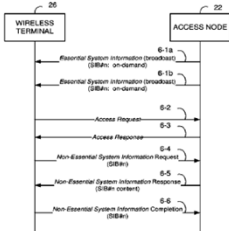


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Paper 24

Lee Teaches Broadcast of On-Demand System Info after Change

(19) **United States**
(12) **Patent Application Publication** (10) Pub. No.: US 2019/0158988 A1
LEE et al. (43) Pub. Date: May 23, 2019

(54) **METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM**

(71) Applicant: LG ELECTRONICS INC., Seoul (KR)

(72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)

Publication Classification

(51) Int. Cl.
H04W 4/06 (2006.01)
H04W 76/27 (2006.01)
H04W 68/02 (2006.01)
H04W 4/70 (2006.01)
H04L 1/16 (2006.01)
H04W 36/08 (2006.01)
(52) U.S. Cl.

[0118] Some SIBs may be missing. For example, even though a cell supports an MBMS service, a D2D service, a V2X service, or WLAN interworking/integration, the cell may not broadcast an SIB associated with the MBMS service, the D2D service, the V2X service, or the WLAN interworking/integration.

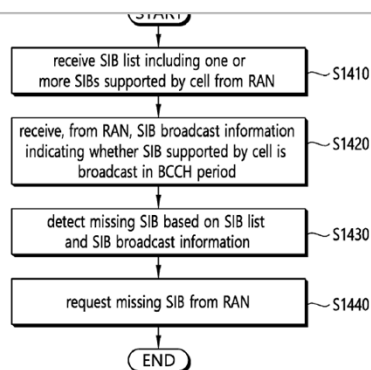


Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

[0167] When a network changes a particular type of on-demand system information, the network may broadcast the changed system information or all system information during a specified period. For example, the specified period may be a modification period. The specified period may be set in master system information or any necessary system information.

[0168] Referring to FIG. 13, in step S1310, the network may indicate to the UE that on-demand system information is to be changed by broadcast signaling during a specified period. For example, the broadcast signaling may be essential system information or a paging message. This indication may include a value tag for a particular type of system information or a common value tag for all system information. Additionally, the network may indicate to the UE whether on-demand system information is broadcast in the next period (e.g., the next modification period). When the network intends to broadcast on-demand system information in the next period, the network may indicate to the UE whether all system information is broadcast or only changed on-demand system information is broadcast. Regardless of on-demand system information, the network may broadcast all system information or changed on-demand system information without a request by the UE.

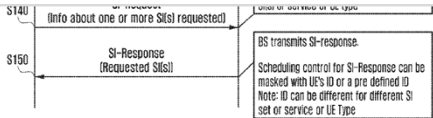
Ex. 1004 at [0118], [0167], [0168]
Paper 22 at 7-8

Agiwal Teaches Change from On-Demand to Broadcast System Information



(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2017/0251500 A1
AGIWAL et al. (43) Pub. Date: Aug. 31, 2017
(54) APPARATUS AND METHOD FOR (52) U.S. CL

[0079] For example, in case of heterogeneous network comprises of macro cell and small cells, macro cell may indicate that system information is broadcasted whereas small cells may indicate that system information is not broadcasted. In another example, if there are several requests for system information provided on demand then network may start to broadcast the system information instead of providing on demand. Minimum SI or essential SI may include in indication which indicates that all SIs of second category of system information are periodically broadcasted or are provided on demand.



Petitioners' Exhibit 1008, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

Obtaining Updated Information

[0262] UE request updated system information set or service specific system information if the update indication is received using the methods explained earlier (i.e. broadcast or on demand). If the system information set changed is part of broadcasted information then UE obtains updated system information from broadcast. If the system information set changed is part of on demand system information then UE obtains updated system information using on demand signaling.

[0263] Alt: network (NW) may broadcast the updated information for defined time period. UE reads broadcasted information.

Ex. 1008 at [0079], [0262]-[0263]
Paper 22 at 14-15

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[7g] whether or not ~~[[the group containing]]~~ the second type SIB belonging to the group has changed is determined based on a value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB; and~~[[.]]~~

(12) U.S. Patent 10,841,958

(54) Title

(71) Applicant

(72) Inventor

(73) Assignee

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.

(21) Appl. No.: 16/597,325

(22) Filed: Oct. 9, 2019

(65) Prior Publication Data
US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data
(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823. (Continued)

(51) Int. Cl.
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
(Continued)

(52) U.S. Cl.
CPC H04W 74/0833 (2013.01); H04W 48/10 (2013.01); H04W 48/12 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

(Continued)

FOREIGN PATENT DOCUMENTS

IP WO 2008/044664 A1 4/2008
WO (Continued)

OTHER PUBLICATIONS

Notice of Allowance dated Apr. 19, 2019 in U.S. Appl. No. 15/658,980. (Continued)

Primary Examiner — Dung Hong
(74) Attorney, Agent, or Firm — ScienBizIP, P.C.

(57) ABSTRACT

Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

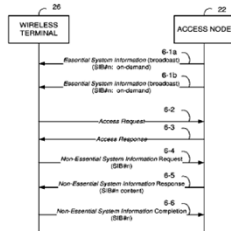


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Papers 20, 24

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.58

Petitioners' Exhibit 1012, p.58
AT&T, et al. v. Daingean
IPR2024-00402

'958 Patent – Revised Substitute Claim 8 (Delta from Original Substitute Claim 9 and 10 in Red/Green)



US 10,841,958 B2

(12) United States Patent
Ishii

(10) Patent No.: US 10,841,958 B2
(45) Date of Patent: Nov. 17, 2020

[8e] whether or not ~~[[the group containing]]~~ the second type SIB belonging to the group has changed is determined based on a value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB; and ~~[[.]]~~

U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.

WO/2008/040094 A1 4/2008
(Continued)

OTHER PUBLICATIONS

(21) Appl. No.: 16/597,325
(22) Filed: Oct. 9, 2019
(65) Prior Publication Data
US 2020/0045747 A1 Feb. 6, 2020

Notice of Allowance dated Apr. 19, 2019 in U.S. Appl. No. 15/658,980.
(Continued)

Primary Examiner — Dung Hong
(74) Attorney, Agent, or Firm — ScienBizIP, P.C.

ABSTRACT

(51) Int. Cl. (2009.01)
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
(Continued)

(52) U.S. Cl. (2013.01); H04W 74/0833 (2013.01); H04W 48/10 (2013.01); H04W 48/12 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

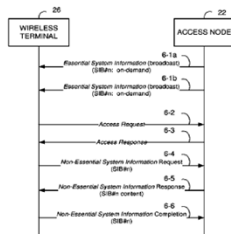


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Papers 20, 24

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.59

Petitioners' Exhibit 1012, p.59
AT&T, et al. v. Daingean
IPR2024-00402

Lee Teaches Use of Value Tag to Determine What 2nd Type SIB Groups Changed



US 20190158988A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2019/0158988 A1
LEE et al. (43) Pub. Date: May 23, 2019

(54) METHOD
FOR
REQU
COMM

(71) Applicant

(72) Inventor

(21) Appl. No.

(22) PCT Filed

(86) PCT No.

§ 371 (2) Date

(60) Provisional

10, 2019

filed on

62/334,111

publication

[0168] Referring to FIG. 13, in step S1310, the network may indicate to the UE that on-demand system information is to be changed by broadcast signaling during a specified period. For example, the broadcast signaling may be essential system information or a paging message. This indication may include a value tag for a particular type of system information or a common value tag for all system information. Additionally, the network may indicate to the UE whether on-demand system information is broadcast in the next period (e.g., the next modification period). When the network intends to broadcast on-demand system information in the next period, the network may indicate to the UE whether all system information is broadcast or only changed on-demand system information is broadcast. Regardless of on-demand system information, the network may broadcast all system information or changed on-demand system information without a request by the UE.

request missing one from network

S1340

END

Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

[0169] In step S1320, the UE may check whether the on-demand system information is changed. For example, the UE may determine whether the on-demand system information is changed based on the value tag. For example, the UE may determine whether the on-demand system information is changed based on the paging message.

Ex. 1004 at [0168], [0169]
Paper 22 at 9

Lee Teaches Use of Value Tag to Determine What 2nd Type SIB Groups Changed



US 20190158988A1

(19) **United States**
 (12) **Patent Application Publication** (10) Pub. No.: US 2019/0158988 A1
 LEE et al. (43) Pub. Date: May 23, 2019

(54) **METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM**

(71) Applicant: LG ELECTRONICS INC., Seoul (KR)

(72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)

(21) Appl. No.: 16/306,216
 (22) PCT Filed: May 10, 2017
 (86) PCT No.: PCT/KR2017/004792
 § 371 (c)(1),
 (2) Date: Nov. 9, 2018

Publication Classification

(51) Int. Cl.
H04W 4/06 (2006.01)
H04W 76/27 (2006.01)
H04W 68/02 (2006.01)
H04W 4/70 (2006.01)
H04L 1/16 (2006.01)
H04W 36/08 (2006.01)

(52) U.S. Cl.
 CPC: *H04W 4/06* (2013.01); *H04W 36/08* (2013.02); *H04W 76/27* (2013.02); *H04L 1/16* (2013.02); *H04W 68/02* (2013.02)

(57) **ABSTRACT**
 Provided are a method for a terminal for request information block (SIB), and an apparatus for an method in a wireless communication system. may comprise the steps of: receiving, from a network (RAN), an SIB list comprising one or supported by a cell; receiving, from the RAN, S information indicating whether the SIB support is broadcast in a broadcast control channel (BCCH) detecting an omitted SIB on the basis of the SIB broadcast information; and requesting the omitt the RAN.

Related U.S. Application Data

(60) Provisional application No. 62/334,418, filed on May 10, 2016, provisional application No. 62/334,427, filed on May 10, 2016, provisional application No. 62/334,443, filed on May 10, 2016, provisional application No. 62/366,643, filed on Jul. 26, 2016.

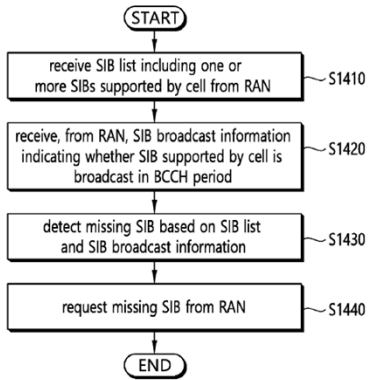


Exhibit 1004
 IPR2024-00402
 U.S. Patent 10,841,988

[0177] The missing SIB may be an SIB that the UE needs to receive from the RAN in order to perform a particular service. The particular service may include at least one of an MBMS service, a D2D service, a V2X service, or WLAN interworking.

[0178] In step S1440, the UE may request the missing SIB from the RAN. The missing SIB may be requested from the RAN by indicating a service associated with the missing SIB. In response to the request, the UE may receive the missing SIB from the RAN.

Ex. 1004 at [0177], [0178]
 Paper 22 at 9

Agiwal Teaches Broadcast of Value Tags for Groups of SIBs to Indicate Change in SIBs in Group



US 20170251500A1

(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2017/0251500 A1
AGIWAL et al. (43) Pub. Date: Aug. 31, 2017

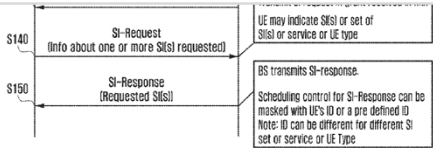
(54) APPARATUS AND METHOD FOR SIGNALING SYSTEM INFORMATION (52) U.S. CL. CPC: H04W 74/0833 (2013.01); H04W 4/06 (2013.01); H04W 72/0413 (2013.01); H04W 72/14 (2013.01)

(71) Applicant: Samsung Electronics Co., Ltd., Suwon-si (KR)

(72) Inventors: Anil AGIWAL, Suwon-si (KR); Sungho CHANG, Suwon-si (KR)

(57) ABSTRACT
The present disclosure relates to a communication method

[0256] System information is categorized into various parts/groups/sets. BS broadcasts System Information Set(s) supported. BS also broadcasts ValueTag/identifier/configuration index for each supported system information set/part/group. Change in value tag/identifier/configuration index corresponding to a system information set indicates that system information set/group/part is updated. Additionally BS may also broadcast change notification for each system information of a service. OR



Petitioners' Exhibit 1008, p. 1
AT&T, et al. v. Daingean
IPR2024-00402

Obtaining Updated Information

[0262] UE request updated system information set or service specific system information if the update indication is received using the methods explained earlier (i.e. broadcast or on demand). If the system information set changed is part of broadcasted information then UE obtains updated system information from broadcast. If the system information set changed is part of on demand system information then UE obtains updated system information using on demand signaling.

[0263] Alt: network (NW) may broadcast the updated information for defined time period. UE reads broadcasted information.

Ex. 1008 at [0256], [0262]-[0263]
Paper 22 at 14-15

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)



US010841958B2

(12) United States Patent

(10) Patent No.: US 10,841,958 B2

[7h] [[the access node of claim 7, wherein the transmitter circuitry is further configured to]] transmit by broadcast after the change the group identifier and the group containing the second type SIB [[by broadcast after the change]] in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.

(22) Filed: Oct. 9, 2019

(Continued)

(65) **Prior Publication Data**

US 2020/0045747 A1 Feb. 6, 2020

Primary Examiner — Dung Hong

(74) Attorney, Agent, or Firm — ScienBizP, P.C.

Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)

ABSTRACT

Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC *H04W 74/0833* (2013.01); *H04W 48/10* (2013.01); *H04W 48/12* (2013.01); *H04W 72/0446* (2013.01); *H04W 88/02* (2013.01)

6 Claims, 31 Drawing Sheets

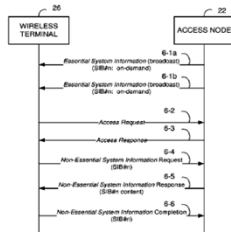


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Papers 20, 24

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.63

Petitioners' Exhibit 1012, p.63
AT&T, et al. v. Daingean
IPR2024-00402

'958 Patent – Revised Substitute Claim 8 (Delta from Original Substitute Claim 9 and 10 in Red/Green)



US010841958B2

(12) United States Patent
Ishii

(10) Patent No.: US 10,841,958 B2
(45) Date of Patent: *Nov. 17, 2020

(54) [8f] [[The method of claim 9, further comprising]] transmitting by broadcast after the change the group identifier and the group containing the second type SIB [[by broadcast after the change]] in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.

(22) Filed: Oct. 9, 2019

(Continued)

(65) **Prior Publication Data**
US 2020/0045747 A1 Feb. 6, 2020

Primary Examiner — Dung Hong
(74) Attorney, Agent, or Firm — ScienBizIP, P.C.

Related U.S. Application Data

(57) **ABSTRACT**

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)

Method and apparatus use a value tag in conjunction with transmission and/or processing of system information in a wireless communication network, especially in conjunction with second type system information or non-essentially type system information. In certain example embodiment and modes, an access node (22) may initiate broadcasting second type system information when its content gets updated, in order to avoid many on-demand delivery requests from wireless terminals. In certain example implementations, the access node (22) may compress second type system information to be delivered by broadcast.

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/10 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC *H04W 74/0833* (2013.01); *H04W 48/10* (2013.01); *H04W 48/12* (2013.01); *H04W 72/0446* (2013.01); *H04W 88/02* (2013.01)

6 Claims, 31 Drawing Sheets

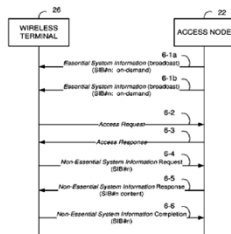


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Papers 20, 24

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.64

Petitioners' Exhibit 1012, p.64
AT&T, et al. v. Daingean
IPR2024-00402

Lee Teaches Broadcasting Only Changed On-Demand System Info of Particular Type

(19) United States	 US 20190158988A1
(12) Patent Application Publication	
LEE et al.	(10) Pub. No.: US 2019/0158988 A1
	(43) Pub. Date: May 23, 2019
(54) METHOD AND APPARATUS FOR REQUESTING SIB IN WIRELESS COMMUNICATION SYSTEM	Publication Classification
(71) Applicant: LG ELECTRONICS INC., Seoul (KR)	(51) Int. Cl. H04W 4/06 (2006.01) H04W 76/27 (2006.01) H04W 68/02 (2006.01)
(72) Inventors: Youngdae LEE, Seoul (KR); Sangwon KIM, Seoul (KR); Jaewook LEE, Seoul (KR)	H04L 1/16 (2006.01) H04W 36/08 (2006.01)
	(52) U.S. Cl. C1C H04W 4/06 (2013.01); H04W 76/27 (2018.02); H04W 36/08 (2013.01); H04W 4/07 (2018.02); H04L 1/1614 (2013.01); H04W 68/02 (2013.01)
(21) Appl. No.: 16/900,216	(57) ABSTRACT
(22) PCT Filed: May 10, 2017	Provided are a method for a terminal for requesting a system information block (SIB), and an apparatus for supporting the method in a wireless communication system. The method may comprise the steps of: receiving, from a radio access network (RAN), an SIB list comprising one or more SIBs supported by a cell; receiving, from the RAN, SIB broadcast information indicating whether the SIB supported by the cell is broadcast in a broadcast control channel (BCCH) section; detecting an omitted SIB on the basis of the SIB list and SIB broadcast information; and requesting the omitted SIB from the RAN.
(26) PCT No.: PCT/KR2017/004792	
(37) Date of filing: Nov. 9, 2018	
(73) (c)(1), (2):	
(73) (c)(2):	
(73) (c)(3):	
(73) (c)(4):	
(73) (c)(5):	
(73) (c)(6):	
(73) (c)(7):	
(73) (c)(8):	
(73) (c)(9):	
(73) (c)(10):	

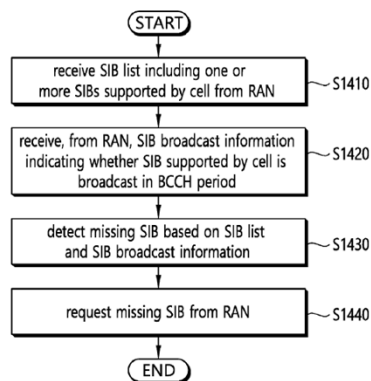


Exhibit 1004
IPR2024-00402
U.S. Patent 10,841,958

[0167] When a network changes a particular type of on-demand system information, the network may broadcast the changed system information or all system information during a specified period. For example, the specified period may be a modification period. The specified period may be set in master system information or any necessary system information.

[0175] In step S1430, the UE may detect a missing SIB based on the SIB list and the SIB broadcast information.

[0176] The missing SIB may be an SIB that is not broadcasted in the BCCH period among the SIBs included in the SIB list. The BCCH period may be the current BCCH period or the next BCCH period.

[0177] The missing SIB may be an SIB that the UE needs to receive from the RAN in order to perform a particular service. The particular service may include at least one of an MBMS service, a D2D service, a V2X service, or WLAN interworking.

[0178] In step S1440, the UE may request the missing SIB from the RAN. The missing SIB may be requested from the RAN by indicating a service associated with the missing SIB. In response to the request, the UE may receive the missing SIB from the RAN.

Ex. 1004 at [0167], [0175]-[0178]
Paper 22 at 10, Paper 26 at 16-17

McKool Smith

PD3.65

Petitioners' Exhibit 1012, p.65
AT&T, et al. v. Daingean
IPR2024-00402

Agiwal Teaches Transmission of SIB Groups with SIB Group Ids

US 20170251500A1

(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2017/0251500 A1
AGIWAL et al. (43) Pub. Date: Aug. 31, 2017

(54) APPARATUS AND METHOD FOR SIGNALING SYSTEM INFORMATION (52) U.S. CL. CPC: H04W 74/0833 (2013.01); H04W 4/06 (2013.01); H04W 72/0413 (2013.01); H04W 72/14 (2013.01)

(71) Applicant: Samsung Electronics Co., Ltd., Suwon-si (KR)

(72) Inventors: Anil AGIWAL, Suwon-si (KR); Youngbin CHANG, Anyang-si (KR)

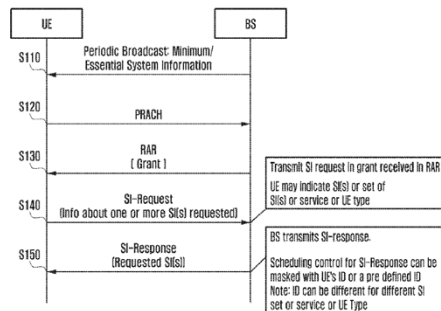
(21) Appl. No.: 15/443,307

(22) Filed: Feb. 27, 2017

Related U.S. Application Data
(60) Provisional application No. 62/301,016, filed on Feb. 29, 2016; provisional application No. 62/334,706, filed on May 11, 2016.

Publication Classification
(51) Int. Cl. H04W 74/08 (2006.01); H04W 72/04 (2006.01); H04W 72/14 (2006.01); H04W 4/06 (2006.01)

(57) ABSTRACT
The present disclosure relates to a communication method and system for converging a 5th-generation (5G) communication system for supporting higher data rates beyond a 4th-generation (4G) system with a technology for internet of things (IoT). The present disclosure may be applied to intelligent services based on the 5G communication technology and the IoT-related technology, such as smart home, smart building, smart city, smart car, connected car, health care, digital education, smart retail, security and safety services. A method for receiving system information (SI) by a user equipment (UE) in a wireless communication system is provided. The method includes receiving, from a base station (BS), first type SI associated with SI which is essential for communication with the BS, transmitting, to the BS, a physical random access channel (PRACH) preamble based on the first type SI, receiving, from the BS, a random access response (RAR) message, and receiving, from the BS, second type SI associated with at least one SI which the UE needs.



Petitioners' Exhibit 1008, p. 1
AT&T, et al. v. Daigean
IPR2024-00402

[0066] FIG. 3 illustrates a method for categorizing system information parameters into SIBs according to another embodiment of the present disclosure.

[0067] Referring to FIG. 3, system information parameters are categorized into SIBs. SIBs are then grouped into an SIB set (or SI message) wherein each set comprises one or more SIBs.

[0068] An SIB can be present in more than one SIB set. Grouping of SIBs into SIB set can be done based on service (e.g. mobile broadband (MBB), URLL, mobile telecommu-

[0256] System information is categorized into various parts/groups/sets. BS broadcasts System Information Set(s) supported. BS also broadcasts ValueTag/identifier/configuration index for each supported system information set/part/group. Change in value tag/identifier/configuration index corresponding to a system information set indicates that system information set/group/part is updated. Additionally BS may also broadcast change notification for each system information of a service. OR

Ex. 1008 at [0067], [0256]
Paper 22 at 15

McKool Smith

PD3.66

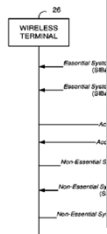
Petitioners' Exhibit 1012, p.66
AT&T, et al. v. Daigean
IPR2024-00402

Original Challenged Claims

'958 Patent – Original Claims 1 and 2

(12) United States Patent Ishii

- (54) ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL AND A METHOD FOR A WIRELESS TERMINAL
- (71) Applicants: SHARP KABUSHIKI KAISHA, Saka (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)
- (72) Inventor: Atsushi Ishii, Vancouver, WA (US)
- (73) Assignees: SHARP KABUSHIKI KAISHA, Saka (JP); FG Innovation Company Limited, Tuen Mun (HK)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.
- (21) Appl. No.: 16/597,325
- (22) Filed: Oct. 9, 2019
- (65) Prior Publication Data
US 2020/0045747 A1 Feb. 6, 2020
- Related U.S. Application Data
- (63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)
- (51) Int. Cl.
H04W 74/08 (2009.01)
H04W 48/70 (2009.01)
(Continued)
- (52) U.S. Cl.
CPC H04W 74/0833 (2013.01); H04W 48/70 (2013.01); H04W 48/72 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)



[1pre]. An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:

[1a] processor circuitry configured:

[1b] to generate a first type system information block (SIB) comprising information and a value tag, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[1c] upon a change of a second type SIB whose associated information indicated before the change that the second type SIB was provided on-demand, to include in the first type SIB the information associated with the second type SIB indicating that the second type SIB is provided by broadcast;

[1d] transmitter circuitry configured to:

[1e] transmit the first type SIB;

[1f] transmit a message that triggers the wireless terminal to receive the first type SIB, wherein;

[1g] whether or not the second type SIB has changed is determined based on a value tag, associated with the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the second type SIB.

[2] The access node of claim 1, wherein the transmitter circuitry is further configured to transmit the second type SIB by broadcast after the change.

Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Ex. 1001 at 27:28-58.

'958 Patent – Original Claims 3 and 4

(12) United States Patent Ishii

- (54) ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL AND A METHOD FOR A WIRELESS TERMINAL
- (71) Applicants: SHARP KABUSHIKI KAISHA, Saka (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)
- (72) Inventor: Atsushi Ishii, Vancouver, WA (US)
- (73) Assignees: SHARP KABUSHIKI KAISHA, Saka (JP); FG Innovation Company Limited, Tuen Mun (HK)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.
- (21) Appl. No.: 16/597,325
- (22) Filed: Oct. 9, 2019
- (65) Prior Publication Data
US 2020/0045747 A1 Feb. 6, 2020
- Related U.S. Application Data
- (63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)
- (51) Int. Cl.
H04W 74/08 (2009.01)
H04W 48/00 (2009.01)
(Continued)
- (52) U.S. Cl.
CPC H04W 74/0833 (2013.01); H04W 48/00 (2013.01); H04W 48/12 (2013.01); H04W 72/0446 (2013.01); H04W 88/02 (2013.01)

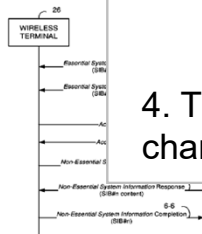


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

[3pre]. A method for an access node of a radio access network that communicates over a radio interface with a wireless terminal, the method comprising:

[3a] generating a first type system information block (SIB) comprising information and a value tag, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[3b] upon a change of a second type SIB whose associated information indicated before the change that the second type SIB was provided on-demand, including in the first type SIB the information associated with the second type SIB indicating that the second type SIB is provided by broadcast;

[3c] transmitting the first type SIB;

[3d] transmitting a message that triggers the wireless terminal to receive the first type SIB, wherein;

[3e] whether or not the second type SIB has changed is determined based on a value tag, associated with the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the second type SIB.

4. The method of claim 3, further comprising transmitting the second type SIB by broadcast after the change.

Ex. 1001 at 27:59-28:18

'958 Patent – Original Claims Correspondence

(12) United States Patent Ishii	(10) Patent No.: US 10,841,958 B2 (45) Date of Patent: *Nov. 17, 2020
(54) ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL AND A METHOD FOR A WIRELESS TERMINAL	(58) Field of Classification Search CPC H04W 48/12; H04W 72/04; H04W 48/12; H04W 72/04 See application file for complete search history
(71) Applicants: SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)	(56) References Cited U.S. PATENT DOCUMENTS 8,379,567 B2 * 2/2013 Cho 8,538,444 B2 9/2013 Lee et al. (Continued) FOREIGN PATENT DOCUMENTS EP 2 816 741 A2 12/2014 WO WO 2008/046664 A1 4/2008 (Continued)
(73) Inventor: Atsushi Ishii, Vancouver, WA (US)	OTHER PUBLICATIONS
(73) Assignees: SHARP KABUSHIKI KAISHA, Sakai (JP); FG Innovation Company Limited, Tuen Mun (HK)	Notice of Allowance dated Apr. 19, 2019 in 15/658,290.
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.	(Continued)
(21) Appl. No.: 16/597,325	(Continued)
(22) Filed: Oct. 9, 2019	(Continued)
(65) Primary Publication Data US 2020/0045747 A1 Feb. 6, 2020	Primary Examiner — Dung Hong (74) Attorney, Agent, or Firm — SciEnBiz
Related U.S. Application Data	ABSTRACT
(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823. (Continued)	Method and apparatus use a value tag in transmission and/or processing of system wireless communication network, especial with second type system information or not system information. In certain example 4 modes, an access node (22) may initiate broadcast type system information when its content order to avoid many on-demand deliver wireless terminals. In certain example imp access node (22) may compress second type information to be delivered by broadcast.
(51) Int. Cl. H04W 74/08 (2009.01) H04W 48/10 (2009.01) (Continued)	6 Claims, 31 Drawing Sheets
(52) U.S. CL. CPC H04W 74/0833 (2013.01); H04W 48/10 (2013.01); H04W 48/12 (2013.01); H04W 72/0446 (2013.01); H04W 58/02 (2013.01)	CLAIMS

Claim 1/2 Limitation	Corresponding Claim 3/4 Limitation
1Pre	3pre
1a	
1b	3a
1c	3b
1d	
1e	3c
1f	3d
1g	3e
2	4

Ex. 1001 at 27:59-28:18

Substitute Claims

'958 Patent – Original Substitute Claims 7 and 8

(12) [7pre]. An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:

(54) [7a] processor circuitry configured:

(71) [7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

(21) [7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

(52) [7d] transmitter circuitry configured to:

[7e] transmit the first type SIB;

[7f] transmit a message that triggers the wireless terminal to receive the first type SIB, wherein;

[7g] whether or not the group containing the second type SIB has changed is determined based on a value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.

[8] The access node of claim 7, wherein the transmitter circuitry is further configured to transmit the group identifier and the group containing the second type SIB by broadcast after the change.

IPR2024-00402
U.S. Patent 10,941,958

Paper 20

McKool Smith

'958 Patent – Original Substitute Claims 9 and 10

(12) [9pre]. A method for an access node of a radio access network that communicates over a radio interface with a
(54) wireless terminal, the method comprising:

(71) [9a] generating a first type system information block (SIB) comprising information and a value tag associated with a
(72) group of plural second type system information blocks fewer than the total number of second type information
(73) blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a
(*) group identifier, the information indicating whether one or more associated second type system information blocks
(21) are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second
(22) type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial
(65) access to the radio access network;

(63) [9b] upon a change of a second type SIB belonging to the group whose associated information indicated before the
(51) change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the
(52) information associated with the group containing the second type SIB indicating that the group containing the
(51) second type SIB is provided by broadcast;

(52) [9c] transmitting the first type SIB;

[9d] transmitting a message that triggers the wireless terminal to receive the first type SIB, wherein;

[9e] whether or not the group containing the second type SIB has changed is determined based on a value tag,
associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag
included in the first type SIB corresponding to the group containing the second type SIB.

10. The method of claim 9, further comprising transmitting the group identifier and the group containing the second
type SIB by broadcast after the change.

Exhibit 1001
IPR2024-00402
U.S. Patent 10,941,958

Paper 20

McKool Smith

'958 Patent – Original Substitute Claims Correspondence



US010841958B2

(12) **United States Patent**
Ishii

(10) **Patent No.:** US 10,841,958 B2
(45) **Date of Patent:** *Nov. 17, 2020

(54) **ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL, AND A METHOD FOR A WIRELESS TERMINAL**

(71) Applicants: **SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)**

(72) Inventor: **Atsushi Ishii, Vancouver, WA (US)**

(73) Assignees: **SHARP KABUSHIKI KAISHA, Sakai (JP); FG Innovation Company Limited, Tuen Mun (HK)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.

(21) Appl. No.: **16/597,325**

(22) Filed: **Oct. 9, 2019**

(65) **Prior Publication Data**
US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823. (Continued)

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/70 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC **H04W 74/0833** (2013.01); **H04W 48/70** (2013.01); **H04W 48/72** (2013.01); **H04W 72/0446** (2013.01); **H04W 88/02** (2013.01)

(58) **Field of Classification Search**
CPC **H04W 48/10**; **H04W 72/04**; **H04W 48/12**; **H04W 72/04**

See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
8,379,567 B2* 2/2013 Cho
8,538,444 B2 9/2013 Lee et al. (Continued)

FOREIGN PATENT DOCUMENTS
JP 2008-741 A2 12/2014
WO 2008/044664 A1 4/2008 (Continued)

OTHER PUBLICATIONS
Notice of Allowance dated Apr. 19, 2019 in U.S. Pat. No. 10,462,823. (Continued)

Primary Examiner — Dung Hong (74) Attorney, Agent, or Firm — ScienBiz

(57) **ABSTRACT**
Method and apparatus use a value tag in transmission and/or processing of system information in a wireless communication network, especially with second type system information or system information. In certain example modes, an access node (22) may initiate broadcast system information when its content order to avoid many on-demand deliver wireless terminals. In certain example modes, an access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

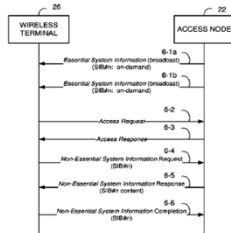


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Claim 7/8 Limitation

7Pre

7a

7b

7c

7d

7e

7f

7g

8

Corresponding Claim 9/10 Limitation

9pre

9a

9b

9c

9d

9e

10

Paper 20

McKool SMITH

PD3.74

Petitioners' Exhibit 1012, p.74
AT&T, et al. v. Daingean
IPR2024-00402

Revised Substitute Claims

'958 Patent – Revised Substitute Claim 7 (Delta from Original Substitute Claim 7 and 8 in Red/Green)

[7pre]. An access node of a radio access network that communicates over a radio interface with a wireless terminal, the access node comprising:

[7a] processor circuitry configured:

[7b] to generate a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibilDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[7c] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[7d] transmitter circuitry configured to:

[7e] transmit the first type SIB;

[7f] transmit a message that triggers the wireless terminal to receive the first type SIB, wherein;

[7g] whether or not ~~[[the group containing]]~~ the second type SIB belonging to the group has changed is determined based on a value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB; and[[.]]

[7h] ~~[[the access node of claim 7, wherein the transmitter circuitry is further configured to]]~~ transmit by broadcast after the change the group identifier and the group containing the second type SIB ~~[[by broadcast after the change]]~~ in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.

Non-Essential System Information Completion (SIBs)

Exhibit 1001
IPR2024-00402
U.S. Patent 10,941,958

Papers 20, 24

'958 Patent – Revised Substitute Claim 8 (Delta from Original Substitute Claim 9 and 10 in Red/Green)

[8pre]. A method for an access node of a radio access network that communicates over a radio interface with a wireless terminal, the method comprising:

[8a] generating a first type system information block (SIB) comprising information and a value tag associated with a group of plural second type system information blocks fewer than the total number of second type information blocks, wherein each of the second type information blocks in the group has different sibIDs and the group has a group identifier, the information indicating whether one or more associated second type system information blocks are provided by broadcast or on-demand, the value tag being updated upon a change of a corresponding second type SIB belonging to the group, the first type SIB being required for the wireless terminal to perform an initial access to the radio access network;

[8b] upon a change of a second type SIB belonging to the group whose associated information indicated before the change that the group containing the second type SIB was provided on-demand, to include in the first type SIB the information associated with the group containing the second type SIB indicating that the group containing the second type SIB is provided by broadcast;

[8c] transmitting the first type SIB;

[8d] transmitting a message that triggers the wireless terminal to receive the first type SIB, wherein;

[8e] whether or not ~~[[the group containing]]~~ the second type SIB belonging to the group has changed is determined based on a value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB; and [[.]]

[8f] ~~[[The method of claim 9, further comprising]]~~ transmitting by broadcast after the change the group identifier and the group containing the second type SIB ~~[[by broadcast after the change]]~~ in compressed format including only changed ones of plural parameters of the group containing the second type SIB based on a comparison of the value tag, associated with the group containing the second type SIB, stored in the wireless terminal, and the value tag included in the first type SIB corresponding to the group containing the second type SIB.

EXHIBIT 1001
IPR2024-00402
U.S. Patent 10,941,958

Papers 20, 24

'958 Patent – Revised Substitute Claims Correspondence



US010841958B2

(12) **United States Patent**
Ishii

(10) **Patent No.:** US 10,841,958 B2
(45) **Date of Patent:** *Nov. 17, 2020

(54) **ACCESS NODE, A METHOD FOR AN ACCESS NODE, A WIRELESS TERMINAL, AND A METHOD FOR A WIRELESS TERMINAL**

(71) Applicants: **SHARP KABUSHIKI KAISHA, Sakai (JP); FG INNOVATION COMPANY LIMITED, Tuen Mun (HK)**

(72) Inventor: **Atsushi Ishii, Vancouver, WA (US)**

(73) Assignees: **SHARP KABUSHIKI KAISHA, Sakai (JP); FG Innovation Company Limited, Tuen Mun (HK)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.

(21) Appl. No.: **16/597,325**

(22) Filed: **Oct. 9, 2019**

(65) **Prior Publication Data**
US 2020/0045747 A1 Feb. 6, 2020

Related U.S. Application Data

(63) Continuation of application No. 15/659,060, filed on Jul. 25, 2017, now Pat. No. 10,462,823.
(Continued)

(51) **Int. Cl.**
H04W 74/08 (2009.01)
H04W 48/70 (2009.01)
(Continued)

(52) **U.S. Cl.**
CPC **H04W 74/0833** (2013.01); **H04W 48/70** (2013.01); **H04W 48/72** (2013.01); **H04W 72/0446** (2013.01); **H04W 88/02** (2013.01)

(58) **Field of Classification Search**
CPC **H04W 48/10**; **H04W 72/04**; **H04W 48/12**; **H04W 72/04**
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
8,379,567 B2* 2/2013 Cho
8,538,444 B2 9/2013 Lee et al. (Continued)
FOREIGN PATENT DOCUMENTS
JP 2008-741 A2 12/2014
WO 2008/044664 A1 4/2008 (Continued)
OTHER PUBLICATIONS
Notice of Allowance dated Apr. 19, 2019 in U.S. Pat. No. 10,462,823.
(Continued)
Primary Examiner — Dung Hong
(74) Attorney, Agent, or Firm — ScienBiz, LLC

(57) **ABSTRACT**
Method and apparatus use a value tag in transmission and/or processing of system information in a wireless communication network, especially with second type system information or system information. In certain example modes, an access node (22) may initiate broadcast system information when its content order to avoid many on-demand deliver wireless terminals. In certain example modes, an access node (22) may compress second type system information to be delivered by broadcast.

6 Claims, 31 Drawing Sheets

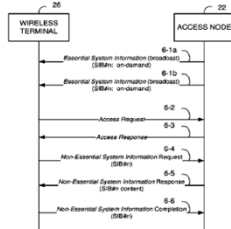


Exhibit 1001
IPR2024-00402
U.S. Patent 10,841,958

Claim 7 Limitation	Corresponding Claim 8 Limitation
7Pre	8pre
7a	
7b	8a
7c	8b
7d	
7e	8c
7f	8d
7g	8e
7h	8f

Papers 20, 24

Demonstrative Exhibit - Not Evidence

McKool Smith

PD3.78

Petitioners' Exhibit 1012, p.78
AT&T, et al. v. Daingean
IPR2024-00402